MATCHLINE "A" (SEE SCD SHEET 2 OF 11)

MATCHLINE "C" (SEE SCD SHEET 3 OF 11)

STR. W-21 OUTFALL
Q10 = 39.52 cfs
Vo = 9.7 fps
d50 = 9"
dmax = 14"
Length = 21'
Width = 22'
Thickness = 20"

For Channel Cross Section See SCD sheet 10 of 11

DA=1.9 AC.
DA=2.84 AC.
DA=2.77 AC.
DA=1.90 AC.
DA=1.55 AC.
DA=7.31 AC.

Proposed Drainage Divide
Existing Drainage Divide
Existing Drainage Ditch
Proposed D.W.
Ex. Drainage Divide
Ex. Drainage Ditch
Ex. Drainage Inlet
Ex. Drainage Manhole
Ex. Drainage Pipe
Ex. Drainage Swale
Ex. Drainage Flow Arrow
Ex. Contour
Ex. Spot Elevation
Ex. Fence
Ex. Utility Pole
Ex. Guy Wire
Ex. Tree Line
Ex. Edge of Pavement
Ex. Gravel Edge
Ex. Shoulder
Ex. Curb & Gutter
Ex. Sidewalk
Ex. Building
Ex. Entrance
Ex. Concrete Pad
Ex. Retaining Wall
Ex. Gas Line
Ex. Water Line
Ex. Sewer Line
Ex. Overhead Utility Line
Ex. Underground Utility Line
Ex. Underground Telephone Line
Ex. Underground Electric Line
Ex. Underground Cable Line
Ex. Underground Gas Line
Ex. Underground Water Line
Ex. Underground Sewer Line
Ex. Underground Overhead Utility Line
Ex. Underground Underground Utility Line
Ex. Underground Underground Telephone Line
Ex. Underground Underground Electric Line
Ex. Underground Underground Cable Line
Ex. Underground Underground Gas Line
Ex. Underground Underground Water Line
Ex. Underground Underground Sewer Line
Ex. Underground Underground Overhead Utility Line
Ex. Underground Underground Underground Utility Line

STR. W-27 OUTFALL
Q10 = 32.34 cfs
Vo = 8.0 fps
d50 = 9"
dmax = 14"
Length = 17'
Width = 19'
Thickness = 2.0"

STR. 19 OUTFALL
Q10 = 22.0 cfs
Vo = 7.28 fps
d50 = 6"
dmax = 12"
Length = 25' min.
Width = See Rubble channel Detail, sheet 10 of 11
Thickness = 18"

JAMES P. SORESI, et al
L. 7861 F. 418

PALMER ROAD LANDFILL, INC.
L. 7686 F. 538

PALMER ROAD LANDFILL, INC.
7793 / 607

DENNIS W. GREENWAY, et ux
L. 7354 F. 891

HATTIE C. NOBLE
L. 8259 F. 1

HATTIE C. NOBLE, et al
L. 7018 F. 408

HATTIE C. NOBLE
L. 4752 F. 662

LAWTON & VIRGINIA B. WILSON
L. 6831 F. 393

PALMER CORNER
Plat Book WWW 145 Plat No. 68

TUCKER ROAD

PALMER ROAD

100 YR. PONDING LIMIT = 235.46

For profile see sht. 4

Ex. Drainage Divide

North - W.S.S.C. datum

SLOPE VARIES
AVG. SLOPE 11.1%

SLOPE VARIES
AVG. SLOPE 7.1%

SLOPE VARIES
AVG. SLOPE 3.1%

SLOPE VARIES
AVG. SLOPE 3.1%

SLOPE VARIES
AVG. SLOPE 3

(SEE GWM SHEET 1 OF 4) SCD SHEET 4 OF 11

MATCHLINE "B"

MILDRED POSELSKY L.4695 F.209

JOHN B. MCNEIL Jr., et ux L.4695 F.517

JAMES F. SORESI, et al L.1861 F.418

North meas. datum

STR. W-5 OUTFALL
Q10 = 44.00 cfs
V10 = 12.0 fps
RIP-RAP = 9"
d max = 14"
Length = 10'
Width = 21'
Thickness = 20"

STR. W-1 OUTFALL
Q10 = 69.97 cfs
V10 = 11.4 fps
RIP-RAP = 9"
d max = 14"
Length = 20'
Width = 6.0'
Thickness = 20"

STR. W-11 OUTFALL
Q10 = 48.09 cfs
V10 = 9.1 fps
RIP-RAP = 9"
d max = 14"
Length = 10'
Width = 6.0'
Thickness = 20"

DA = 1.88 Ac.
DA = 1.99 Ac.
DA = 1.62 Ac.
DA = 1.69 Ac.
DA = 1.15 Ac.
DA = 2.86 Ac.
DA = 2.81 Ac.
DA = 2.43 Ac.
DA = 2.10 Ac.
DA = 2.51 Ac.
DA = 1.25 Ac.
DA = 1.78 Ac.
DA = 1.85 Ac.

Exist. Drainage Divide

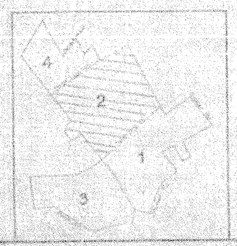
Proposed Drainage Divide

Case Rubble Chimney See Detail on SCD Sheet 10 of 11

Case Rubble Chimney See Detail on SCD Sheet 10 of 11

MATCHLINE "A"

DRAWING LOCATION KEY



INSPECTION NOTIFICATION

PHASE I

SITE GRADING, SEDIMENT & EROSION CONTROL AND STORMWATER MANAGEMENT PLAN

PALMER ROAD LANDFILL

Oxon Hill Election District #12
Prince George's County, Maryland

Owner/Applicant/Developer:
Palmer Road Landfill, Inc.
3333 Kenilworth Ave
Hyattsville, Maryland 20781
Attn: Craig Harris
Phone: 301-405-0400

DATE	REVISIONS: DESCRIPTION	BY
4-8-03	Added Note Over Block, Revised Silt Fence	JB
DATE	DESCRIPTION	BY

DEN-DEK ASSOCIATES, INC. Engineers, Surveyors, Planners & Landscape Architects

SCALE: 1"=50'
APRIL 2003
6.003-2

RICHARD WARD & ASSOCIATES, INC. Engineers & Surveyors

SCALE: 1"=50'
DATE: APRIL 2003
PROJECT NO. 6.003-2

SCD - 11

38

MILDRED PORETSKY
L. 3095 F. 299

North - West B.C. Portion

THESE GRADES & SSF
THIS APPROVAL
PHASE I

MATCH LINE
Limit Phase 1

"C"

SEE S.C.D. SHEET 1 OF 11

FUTURE
PHASE II
(NOT PART OF THIS APPROVAL)

MILDRED PORETSKY
L. 3095
F. 299

JOSEPH L. & BARBARA J. HILL
L. 4041 F. 173

Existing Drainage Divide

EDWARD FOX
L. 3883 F. 9

THERESA FOX
L. 3996 F. 338

O'DANIEL FOX, ET al
L. 6728 F. 440

INEZ E. SUMPLEY FOX, ET al
L. 3883 F. 1

JOSEPH L. & BARBARA J. HILL
L. 4040 F. 173

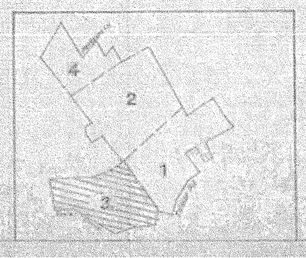
LAWTON & VIRGINIA D. WILSON
L. 6831 F. 383

FOX 5 DRIVE

Existing Drainage Divide

FOX 5 DRIVE

DRAWING LOCATION KEY



DATE	DESCRIPTION	BY
4-23-03	Added Test Pit & Drain, Revised SCD Sheet	JD
	REVISIONS	

ZEIN WOODBURN ROAD, BROOKEVILLE, MD 20833
ZEIN ASSOCIATES, INC.
ENGINEERS, SURVEYORS, PLANNERS
TELEPHONE: (301) 972-0262

1" = 50'	J-80035
APRIL 2003	0.004-2

SITE GRADING, SEDIMENT & EROSION CONTROL AND STORMWATER MANAGEMENT PLAN
PHASE I
PALMER ROAD LANDFILL

Oxon Hill Election District #12
Prince George's County, Maryland

(19)

SCD - SHT. 3 OF 38

INSPECTION NOTIFICATION

Owner/Applicant/Developer:
Palmer Road Landfill, Inc.
3034 Wentworth Ave
Hyattsville, Maryland 20781
Attn.: Craig Hanna
Phone: 301-403-8400

REVISIONS			
DATE	DESCRIPTION	BY	
7-1-03	ADDED TEST PITS & DRAIN	JD	

CORDEIRO-WARD & ASSOCIATES
SURVEYORS, PLANNERS
9010 CORPORATE BOULEVARD - SUITE 410
ROCKVILLE, MARYLAND 20850
(301) 670-0840

SWM POND LANDSCAPING

SITE GRADING, SEDIMENT & EROSION CONTROL AND STORMWATER MANAGEMENT PLAN

PALMER ROAD LANDFILL

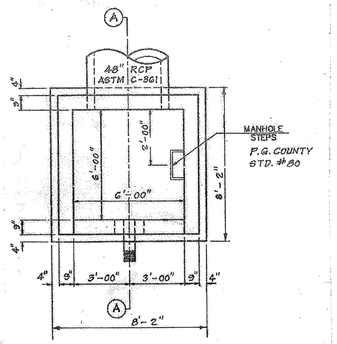
PHASE I, SWM POND #1

Oxon Hill Election District #12

Prince George's County, Maryland

SWM SHT 1 OF 4 SCD SHT 4 OF 11

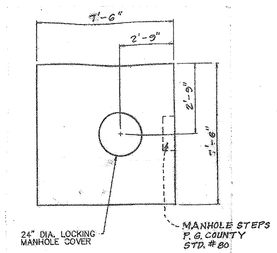
38



PLAN BELOW TOP SLAB

NOT TO SCALE

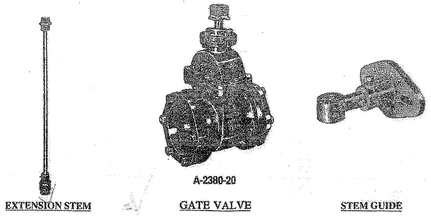
STRUCT. #1



TOP SLAB

NOT TO SCALE

STRUCT. #1



EXTENSION STEM

A-26441— Extension Stem for use with NRS Gate Valves. 2" square wrench nut on top end and socket to fit 2" square nut on bottom end. For use with 2" - 36" Gate Valves.

GATE VALVE

A-2380-20 standard mechanical joint ends with accessories

STEM GUIDE

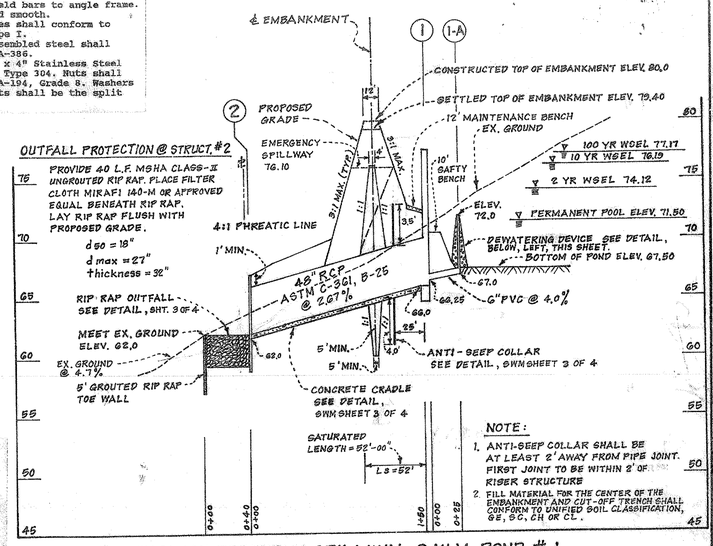
A-26448— Adjustable Stem Guide

MUELLER® GATE VALVE and ACCESSORIES

(Follow Manufacturer's Recommendation For Stem Guide Spacing)

TRASH RACK NOTES

1. Entire trash rack to be preassembled.
2. Angle iron per ASTM A-36 Steel.
3. # 4 Bars per AASHTO M-31 Requirements.
4. Butt weld frame angles. Fillet weld bars to angle frame.
5. All welds and edges to be granted smooth.
6. Prime coat for galvanized surfaces shall conform to requirements of FSS TT-P-641, Type I.
7. Galvanized hot dip coating on assembled steel shall conform to requirements of ASTM A-386.
8. All mounting hardware to be 1/2" x 4" Stainless Steel expansion bolts, per ASTM A-320, Type 304. Nuts shall conform to requirements of ASTM A-194, Grade 8. Washers shall be Type 304. Expansion bolts shall be the split shank type.



OUTFALL PROTECTION @ STRUCT. #2

PROVIDE 40 L.F. MSHA CLASS-II UNGROUTED RIP RAP. PLACE FILTER CLOTH MIRAFI 140-M OR APPROVED EQUAL BENEATH RIP RAP. LAY RIP RAP FLUSH WITH PROPOSED GRADE.

$d_{50} = 18"$

$d_{max} = 27"$

thickness = 32"

PROFILE THROUGH PRINCIPAL SPILLWAY S W M POND #1

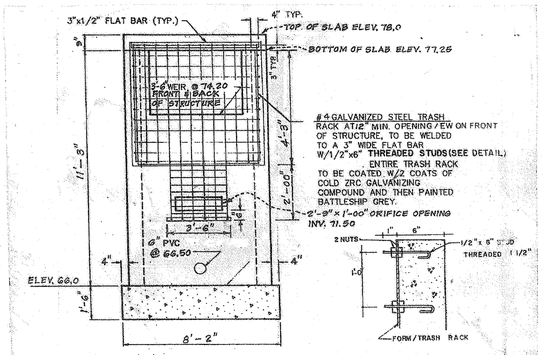
SCALE: HORZ. 1" = 50'
VERT. 1" = 5'

NOTE:

1. ANTI-SEEP COLLAR SHALL BE AT LEAST 2' AWAY FROM PIPE JOINT. FIRST JOINT TO BE WITHIN 2' OF RISER STRUCTURE
2. FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT AND CUT-OFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION, GE, SC, CH OR CL.

NOTE: OFFSITE BORROW AREAS MUST HAVE AN APPROVED AND ACTIVE SEDIMENT CONTROL PLAN.

REVISIONS			11721 WOODMORE ROAD, MITCHELLVILLE, MD 20721
			BEN DYER ASSOCIATES, INC. ENGINEERS, SURVEYORS, PLANNERS TELEPHONE: (301) 430-2000
4-29-03	Added Ben Dyer Block, Revised GCD Sheet Numbers	JB	DRAWN BY: DESIGNED BY: CHECKED BY: RECORD NO. J-80035
DATE	DESCRIPTION	BY	SCALE: AS SHOWN
			DATE: APRIL 2003



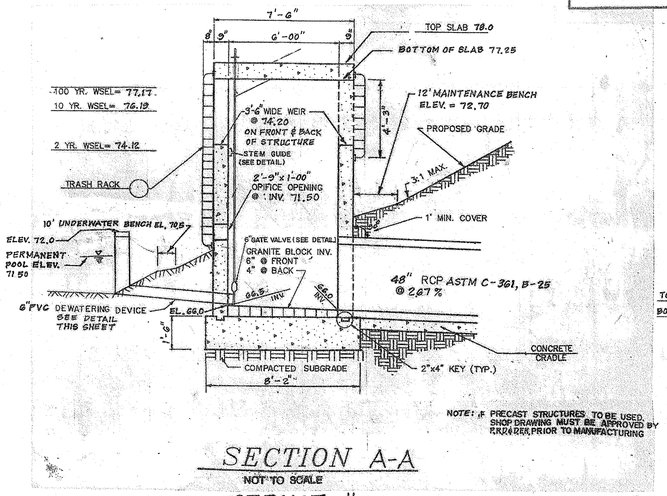
THREADED STUD DETAIL

NO SCALE

FRONT WALL ELEVATION

NOT TO SCALE

STRUCT. #1

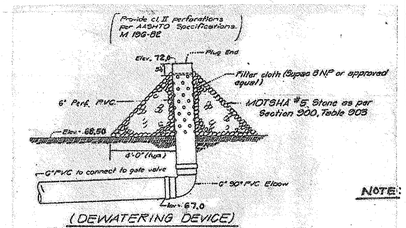


NOTE: IF PRECAST STRUCTURES TO BE USED, SHOP DRAWING MUST BE APPROVED BY ENGINEER PRIOR TO MANUFACTURING

SECTION A-A

NOT TO SCALE

STRUCT. #1

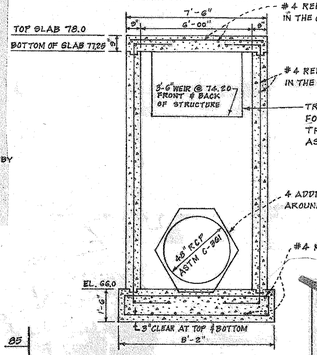


(DEWATERING DEVICE)

6" PERFORATED PVC DETAIL

Not to Scale

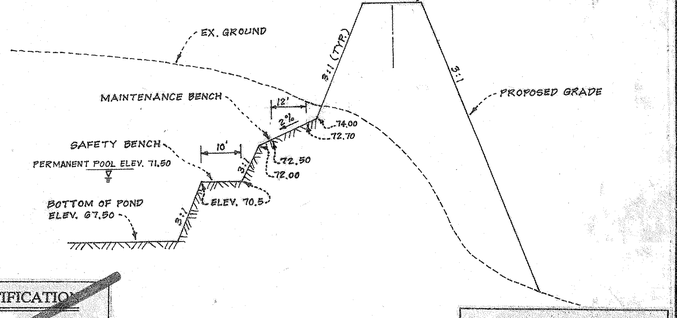
NOTE: OFFSITE BORROW AREAS MUST HAVE AN APPROVED AND ACTIVE SEDIMENT CONTROL PLAN.



BACK WALL ELEVATION

NOT TO SCALE

STRUCT. #1

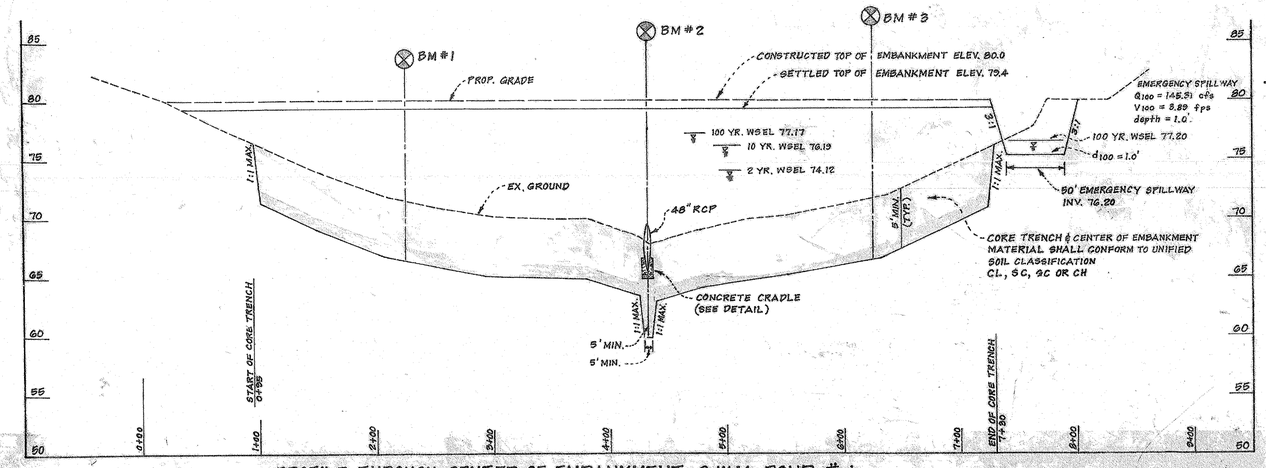


TYPICAL SECTION THROUGH POND

N. T. S.

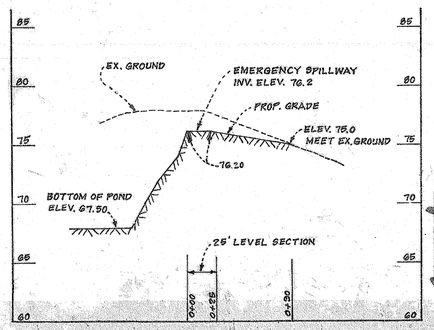
INSPECTION NOTIFICATION

Cordero, Ward and Associates are to be notified 24 hours prior to start of construction of any Storm Drainage or Stormwater Mgmt. depicted per this approved plan. As the Engineer of Record, Cordero, Ward and Associates must provide inspection services separate and distinct from any of those required by Prince George's County so that "As Built" plans and certification may be provided for release of bonds. Failure to do so may result in uncearthing of systems and/or severe hardship in obtaining release of bonds and ultimate Use and Occupancy Permits.



PROFILE THROUGH CENTER OF EMBANKMENT S W M POND #1

SCALE: HORZ. 1" = 50'
VERT. 1" = 5'



PROFILE THROUGH EMERGENCY SPILLWAY S W M POND #1

SCALE: HORZ. 1" = 50'
VERT. 1" = 5'

WARNING: This plan is, and remains the sole property of Cordero, Ward & Associates until released by signature of a principal of that firm. Reproduction or other use may not be made without their prior permission of Cordero, Ward & Associates. Violations will be prosecuted to the full extent of the law.

Released by: _____ Date: 4/30/03

E. Kramer 2/12/03

CSD#	368000940
PROJECT NAME	PALMER ROAD LANDFILL SWM POND #1
	PRINCE GEORGES COUNTY, MD. DEPARTMENT OF ENVIRONMENTAL RESOURCES PERMITS AND REVIEW DIVISION
APPROVED	for Stormwater Management and Storm Drain Only
	T. Lingh 2/5/97 DATE

SITE GRADING, SEDIMENT & EROSION CONTROL AND STORMWATER MANAGEMENT PLAN

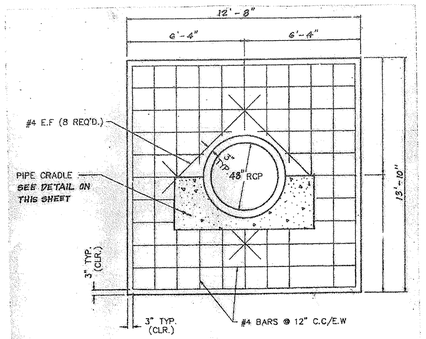
PALMER ROAD LANDFILL

Oxon Hill Election District #12

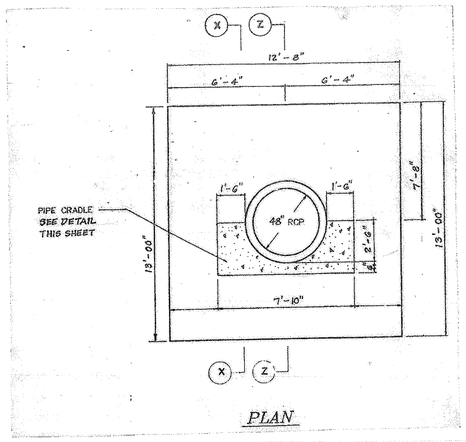
Prince George's County, Maryland

SWM SHT. 2 OF 4 SCD- SHT. 5 OF 37 32

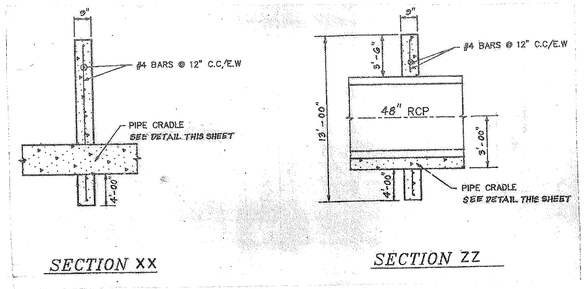
REVISIONS			CORDERO WARD & ASSOCIATES ENGINEERS & PLANNERS
DATE	DESCRIPTION	BY	5010 SILVER HILL AVE. SUITE 100 SUITLAND, MARYLAND 20746 (301) 568-0440
			drawn by: checked by: rec. no.
			scale: AS SHOWN dwg. no. J-80-06
			date: SEPT. 1996

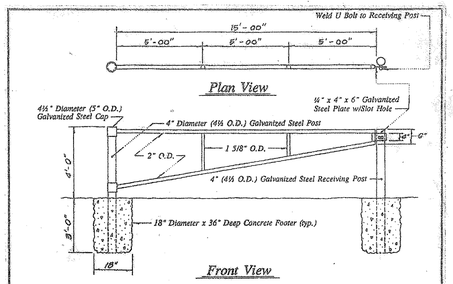


ANTI-SEEP COLLAR
NOT TO SCALE

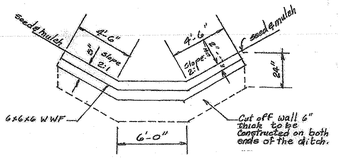


PLAN

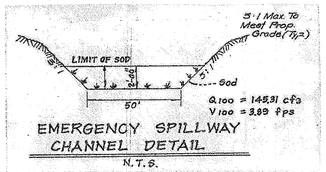




SINGLE ACCESS ROAD GATE DETAIL
Not To Scale

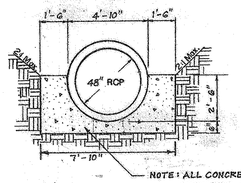


DETAIL CONC. CHANNEL AT END OF RUBBLE CHANNELS TRIBUTARY TO SWM POND #1
N.T.S.

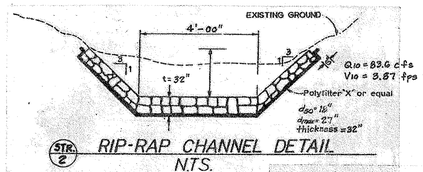


EMERGENCY SPILLWAY CHANNEL DETAIL
N.T.S.

* BACKFILL MATERIAL 95% COMPACTION. SEE GEOTECHNICAL ENGINEERS RECOMENDATIONS.



DETAIL OF 48" RCP CONCRETE CRADLE
NOT TO SCALE



STR. 2 RIP-RAP CHANNEL DETAIL
N.T.S.

STRUCTURE SCHEDULE

NO.	TYPE	WIDTH DIA.	TOP SLAB	INV. THROAT	INV. ELEV. UPPER	INV. ELEV. LOWER	STANDARD DETAIL
5	"B" Manhole	4' *	299.63	293.86	—	290.30	SD 22.0
4	"B" Manhole	4' *	299.63	288.60	285.80	285.30	SD 22.0
3	"B" Manhole	4' *	299.63	288.60	285.80	285.30	SD 22.0
2B	"B" Manhole	4' *	299.63	288.60	285.80	285.30	SD 22.0
2A	"B" Manhole	4' *	169.63	168.80	165.50	165.00	SD 22.0
1A	"B" Manhole	4'	161.00	—	157.30	156.80	SD 22.0
W1	End Wall	—	—	—	—	156.00	SD 30.0

* Provide 6" slots on North & South sides of structure only if with D1 & D2 (SD 14.0) Top.

10	"B" Manhole	4' *	299.00	293.86	—	290.36	SD 22.0
9	"B" Manhole	4' **	264.63	263.80	260.80	260.30	SD 22.0
8	"B" Manhole	4' **	234.63	233.86	230.86	230.30	SD 22.0
7	"B" Manhole	4' *	204.80	203.80	200.80	200.30	SD 22.0
7A	"B" Manhole	4' **	174.63	173.80	170.80	170.30	SD 22.0
6	"B" Manhole	4'	155.00	—	152.00	151.50	SD 22.0
W6	End Wall	—	—	—	—	151.00	SD 30.0

* Provide 6" slots on east & west sides with 6" top slab.
** Provide 6" slots on east & west sides of structure only & D1 & D2 (SD 14.0) Top.

15	"B" Manhole	4' *	304.80	303.80	1'-0" Curtain Wall	300.30	SD 22.0
14	"B" Manhole	4' **	269.63	268.80	265.50	265.00	SD 22.0
13	"B" Manhole	4' **	238.63	237.80	234.50	234.00	SD 22.0
12	"B" Manhole	4' **	193.63	192.80	189.50	189.00	SD 22.0
11	"B" Manhole	4'	193.00	—	189.00	188.50	SD 22.0
W11	End Wall	—	—	—	—	188.00	SD 30.0

* Provide 6" slots on east & west sides with 6" top slab.
** Provided 6" slots on east & west sides of structure only & with D1 & D2 (SD14.0) top

18	"A" Headwall	—	—	—	—	291.5	SD 31.0
19	"A" Headwall	—	—	—	—	287.75	SD 31.0
26	"B" Manhole	4' *	289.63	288.80	—	285.30	SD 22.0
24	"B" Manhole	4' *	289.63	288.80	285.80	285.30	SD 22.0
23	"B" Manhole	4' **	229.63	228.80	225.80	226.30	SD 22.0
22	"B" Manhole	4'	224.50	—	219.00	218.50	SD 22.0
W21	End Wall	—	—	—	—	218.00	SD 30.0

* Provide 6" slots on North & South sides of structure only if with D1 & D2 (SD 14.0) Top.

30	"B" Manhole	4' *	299.80	298.80	297.80	293.00	SD 22.0
29	"B" Manhole	4' **	289.63	288.80	285.30	281.70	SD 22.0
28	"B" Manhole	4' **	299.63	298.80	295.80	295.30	SD 22.0
W21	End Wall	—	—	—	—	294.60	SD 30.0

* Provide 6" slots on North & South sides of structure only with 6" top slab.
** Provide 6" slots on north & South sides of structure only & with D1 & D2 (SD14.0) top.

1	Riser Struct.	6'x6'	78.0	—	66.25	66.0	SEE DETAIL ON NWM DWNG. 2 OF 4
1-A	Dewatering Device	6" ϕ	72.0	—	—	67.0	" " " "
2	DER Endwall	For 48" ϕ Pipe	—	—	—	62.0	FG. DER STD. 22/306

PIPE SCHEDULE

FROM	TO	SIZE		LENGTH
5	6	21"	ACCMP	130'
4	5	21"	"	96'
3	2B	24"	"	95'
2B	2A	27"	"	93'
2A	1A	30"	"	28'
1A	M1	36"	ACCMP	12'
10	9	21"	ACCMP	150'
9	8	21"	"	101'
8	7	21"	"	97'
7	7A	21"	"	92'
7A	6	30"	"	61'
6	W6	30"	ACCMP	16'
15	14	21"	ACCMP	84'
14	13	21"	"	61'
13	12	21"	"	61'
12	11	30"	"	14'
11	W11	30"	ACCMP	12'
18	19	60"	RCP, ASTM C-361, CLASS B	105'
22	24	21"	ACCMP	99'
24	23	21"	"	96'
23	22	27"	"	25'
22	W21	27"	ACCMP	12'
30	29	21"	ACCMP	88'
29	28	21"	"	194'
28	W21	27"	ACCMP	25'
1	1-A	6"	PVC	30'
1-A	2	48"	RCP, ASTM C-361, CLASS B	150'

PIPE SUMMARY

	SIZE	TYPE	LENGTH
SCD	21"	ACCMP	1269'
	24"	"	96'
	27"	"	161'
	30"	"	131'
	36"	ACCMP	12'
	60"	RCP, ASTM C-361, CLASS B	105'
DER	6"	PVC	30'
	48"	RCP, ASTM C-361, CLASS B	150'

INSPECTION NOTIFICATION

Cordero, Ward and Associates are to be notified 24 hours prior to start of construction of any Storm Drainage or Stormwater Mgmt. depicted per this approved plan. As the Engineer of Record, Cordero, Ward and Associates must provide inspection services separate and apart from any inspection required by Prince George's County so that "As Built" plans and certification may be provided for release of bonds. Failure to do so may result in uncertainty of systems and/or severe hardship in obtaining release of bonds and ultimate Use and Occupancy Permits.

STATE OF MARYLAND — STEVEN L. SAMPSON — No. 21599 — REGISTERED PROFESSIONAL ENGINEER
2/12/03

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Released by: _____ Date: _____

STATE OF MARYLAND — JOHN L. SAMPSON — No. 21599 — REGISTERED PROFESSIONAL ENGINEER
4/30/03

6-6-03	Revised Structure Top Dia. To Revised D.A.	ELS	
4-29-03	Added Ben Dyer Block, Revised SCD Sheet Numbers.	JB	
DATE	DESCRIPTION	BY	
REVISIONS			

11721 WOODMORE ROAD, MITCHELLVILLE, MD 20721
BEN DYER ASSOCIATES, INC.
ENGINEERS, SURVEYORS, PLANNERS
TELEPHONE: (301) 459-3600

DRAWN BY	DESIGNED BY	CHECKED BY
RECORD NO	J-80035	
SCALE	AS SHOWN	
DRWG. NO	6.007-E	
DATE	APRIL 2003	

SSD# 968009940

PROJECT NAME PALMER ROAD LANDFILL SWM POND # 1

PRINCE GEORGES COUNTY, MD.
DEPARTMENT OF ENVIRONMENTAL RESOURCES
PERMITS AND REVIEW DIVISION

APPROVED for Stormwater Management and Storm Drain Only

T. Enright 2/5/97
DATE

SITE GRADING, SEDIMENT & EROSION CONTROL AND STORMWATER MANAGEMENT PLAN

PALMER ROAD LANDFILL

Oxon Hill Election District #12
Prince George's County, Maryland

SWM SHT. 3 OF 4 SCD- SHT. 6 OF 8738

REVISIONS			
DATE	DESCRIPTION	BY	

CORDERO WARD & ASSOCIATES
ENGINEERS & PLANNERS
9010 BUNSEN WAY, SUITE 100
BELTSVILLE, MARYLAND 20705
(301) 474-0440

drawn by	checked by
scale AS SHOWN	drwg. no.
date SEPT., 1996	

POND CONSTRUCTION (MD-378, NOV., 1992)

SPECIFICATIONS

These specifications are appropriate to all ponds within the scope of the Standard for practice MD-378. All references to ASTM and AASHTO specifications apply to the most recent version.

Site Preparation

Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped of topsoil. All trees, vegetation, roots and other objectionable material shall be removed. Gravel banks and sharp breaks shall be sloped to no steeper than 1:1.

Areas to be covered by the reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush and stumps shall be cut approximately level with the ground surface. For dry stormwater management ponds, a minimum of a 50 foot radius around the inlet structure shall be cleared.

All cleared and grubbed material shall be disposed of outside and below the limits of the dam and reservoir as directed by the owner or his representative. When specified, a sufficient quantity of topsoil will be stockpiled in a suitable location for use on the embankment and other designated areas.

Earth Fill

Material - The fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, wood, rubbish, stones greater than 6", frozen or other objectionable materials. Fill material for the center of the embankment and cut off trench shall conform to Unified Soil Classification GC, SC, CH, or CL. Consideration may be given to the use of other materials in the embankment if design and construction are supervised by a geotechnical engineer.

Placement - Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill material shall be placed in maximum 8 inch thick (before compaction) layers which are to be continuous over the entire length of the fill. The most permissible borrow material shall be placed in the downstream portions of the embankment. The principal spillway must be installed concurrently with fill placement and not excavated into the embankment.

Compaction - The movement of the hauling and spreading equipment over the fill shall be controlled so that the entire surface of each lift shall be traversed by not less than one tread track of the equipment or compaction shall be achieved by a minimum of four complete passes of a sheepsfoot, rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction will be obtained with the equipment used. The fill material shall contain sufficient moisture so that it formed into a ball it will not crumble yet not be so wet that water can be squeezed out.

Where a minimum required density is specified, it shall not be less than 95% of maximum dry density with a moisture content within ±2% of the optimum. Each layer of fill shall be compacted as necessary to obtain that density, and in to be certified by the Engineer at the time of construction. All compaction is to be determined by AASHTO Method T-99.

Cut Off Trench - The cutoff trench shall be excavated into impervious material along or parallel to the centerline of the embankment as shown on the plans. The bottom width of the trench shall be governed by the equipment used for excavation, with the minimum width being four feet. The depth shall be at least four feet below existing grade or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability.

Structure Backfill

Backfill adjacent to pipes or structures shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24" or greater over the structure or pipe.

Pipe Conduits

All pipes shall be circular in cross section.

Corrugated Metal Pipe - All of the following criteria shall apply for corrugated metal pipe:

1. Materials - (Steel Pipe) - This pipe and its appurtenances shall be galvanized and fully bituminous coated and shall conform to the requirements of AASHTO Specification M-190 Type A with watertight coupling bands. Any bituminous coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound. Steel pipes with polymeric coatings shall have a minimum coating thickness of 0.01 inch (10 mil) on both sides of the pipe. The following coatings or an approved equal may be used: Nexon, Plasti-Cote, Blac-Klad, and Bethe-Cu-Loy. Coated corrugated steel pipe shall meet the requirements of AASHTO M-245 and M-246.

   Materials - (Aluminum Coated Steel Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-274 with watertight coupling bands or flanges. Any aluminum coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound.

   Materials - (Aluminum Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-196 or M-211 with watertight coupling bands or flanges. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer. Hot dip galvanized bolts may be used for connections. The pH of the surrounding soils shall be between 4 and 9.

2. Coupling bands, anti-seep collars, end sections, etc., must be composed of the same material as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials at least 24 mils in thickness.

3. Connections - All connections with pipes must be completely watertight. The drain pipe or barrel connection to the riser shall be welded all around when the pipe and riser are metal. Anti-seep collars shall be connected to the pipe in such a manner as to be completely watertight. Dimple bands are not considered to be watertight.

   All connections shall use a rubber or neoprene gasket when joining pipe sections. The end of each pipe shall be re-rolled as necessary to correct of corrugations to accommodate the band width. The following type connections are acceptable: pipes less than 12" shall have flanges on both ends of the pipe, a 12" wide standard lap type band with O-ring gaskets having a minimum diameter of 1/2" greater than the corrugation depth. Pipes 24" in diameter or smaller shall be connected by a 24" long annular corrugated band using O rods and lugs. A 12" wide by 3/8" thick closed cell circular neoprene gasket will be installed on the end of each pipe for a total of 24".

   Helically corrugated pipe shall have either continuously welded seams or lock seal seams with internal caulking or a neoprene beard.

4. Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

5. Backfilling shall conform to "Structure Backfill."

6. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Reinforced Concrete Pipe - All of the following criteria shall apply for reinforced concrete pipe:

1. Materials - Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets and shall equal or exceed ASTM Specification C-361.

2. Bedding - All reinforced concrete pipe conduits shall be laid in a concrete bedding for their entire length. This bedding shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 10% of its outside diameter with a minimum thickness of 3 inches, or as shown on the drawings.

3. Laying pipe - Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 2 feet from the riser.

4. Backfilling shall conform to "Structure Backfill."

5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Polyvinyl Chloride (PVC) Pipe - All of the following criteria shall apply for polyvinyl chloride (PVC) pipe:

1. Materials - PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241.

2. Joints and connections to anti-seep collars shall be completely watertight.

3. Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

4. Backfilling shall conform to "Structure Backfill."

5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Concrete

Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 600, Mix No. 3

Rock Riprap

Rock riprap shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 905.

The riprap shall be placed to the required thickness in one operation. The rock shall be delivered and placed in a manner that will insure the riprap in place shall be reasonably homogeneous with the larger rocks uniformly distributed and firmly in contact one to another with the smaller rocks filling the voids between the larger rocks. Filter cloth shall be placed under all riprap and shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 919.12.

Care of Water during Construction

All work on permanent structures shall be carried out in areas free from water. The Contractor shall construct and maintain all temporary dikes, levees, cofferdams, drainage channels, and diversion as necessary to protect the areas to be occupied by the permanent works. The contractor shall also furnish, install, operate, and maintain all necessary pumping and other equipment required for removal of water from the various parts of the work and for maintaining the excavations, foundation, and other parts of the work free from water as required or directed by the engineer for constructing each part of the work. After having served their purpose, all temporary protective works shall be removed or leveled and graded to the extent required to prevent obstruction in any degree whatsoever of the flow of water to the spillway or outlet works and so as not to interfere in any way with the operation or maintenance of the structure. Stream diversions shall be maintained until the full flow can be passed through the permanent works. The removal of water from the required excavation and the foundation shall be accomplished in a manner and to the extent that will maintain stability of the excavated slopes and bottom of required excavations and will allow satisfactory performance of all construction operations. During the placing and compacting of material in required excavations, the water level at the locations being refilled shall be maintained below the bottom of the excavation at such location or slope may require dividing the water to sumps from which the water shall be pumped.

Stabilization

All borrow areas shall be graded to provide proper drainage and left in a sightly condition. All exposed surfaces of the embankment, spillway, spoil and borrow areas, and berms shall be stabilized by seeding, liming, fertilizing and mulching in accordance with the Maryland Soil Conservation Service Standards and Specifications for Critical Area Planting (MD-342) or as shown on the accompanying drawings.

Erosion and Sediment Control

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

NOTE: THIS DATA IS DUPLICATED ON S.C.D., SHT. OF FOR AGENCY APPROVAL. INFORMATION IS IDENTICAL.

VEGETATIVE STABILIZATION

Permanent and Temporary Seeding, Sodding and Mulching

I. **Site Preparation**
Permanent or temporary vegetation shall be established within seven (7) days on the surface of all sediment control practices such as diversions, grade stabilization structures, berms, waterways, sediment control basins, and all slopes greater than 3 horizontal to 1 vertical (3:1) and within 14 days for all other disturbed or graded areas on the project site. Mulching may only be used on disturbed areas as temporary cover where vegetation is not feasible or where seeding cannot be completed because of weather.

II. **Seedbed Preparation and Seeding Application**
Loosen the top layer of the soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment such as disc harrows, chisel plows or rippers mounted on construction equipment. Incorporate the lime and fertilizer into the top 3 to 5 inches of soil by disking or by other suitable means. Rough areas should not be rolled or dragged smooth, but left in a roughened condition. Steep slopes greater 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 to 3 inches of soil should be loose and friable. Permanent cover may require an application of topsoil. If so, it must meet the requirements set forth in Section 21.0 Standards and Specifications for topsoil from the 1994 Standards and Specifications.

III. **Soil Amendments**
Soil tests shall be made on sites over five acres to determine the exact requirements for both lime and fertilizer. For sites under 5 acres, in lieu of a soil test, apply the following:

Fertilizer: Nitrogen 2 lbs/1000 sq. ft. (90 lbs/ac)
P_2O_5 4 lbs/1000 sq. ft. (175 lbs/ac)
K_2O 4 lbs/1000 sq. ft. (175 lbs/ac)

For low maintenance areas apply 150 lbs/ac ureaform fertilizer (38-0-0) at 3.5 lbs/1000 sq. ft. in addition to the above fertilizer at the time of seeding.

Ground Limestone 2 tons/ac

IV. **Sediment Control Practice Seeding**
Select a seeding mixture from tables 25 or 26 in Section G of the 1994 Standards and Specifications. Document seeding on the erosion and sediment control plan using appropriate chart below. Note: if sediment control practices are in for longer than 12 months, permanent seeding is required.

V. **Temporary/Permanent Seeding Mixtures and Rates**
Select a seeding mixture from table 25 or 26 in Section G of the 1994 Standards and Specifications. Document seeding on the erosion and sediment control plan using appropriate chart below.

Temporary Seeding Summary

No.	Species	Seed Mixture (Hardiness Zone 7a From Table 26) Application Rate (lb/ac)	Seeding Dates	Seeding Depths	Fertilizer Rate (10-10-10)	Lime Rate
1	Rye	140	2/1-4/30 8/15-10/15	1"-2"	600 lb/ac (15 lb/1000 sf)	2 tons/ac (100 lb/1000 sf)

Permanent Seeding Summary

No.	Species	Seed Mixture (For Hardiness Zone 7a From Table 25) Application Rate (lb/ac)	Seeding Dates	Seeding Depths	Fertilizer Rate (10-20-20) N	P205	K20	Lime Rate
1	Tall Fescue	150	3/1-5/15 8/15-10/15	1"-2"	(2 lb/1000 sf)	(4 lb/1000sf)	(4 lb/1000 sf)	2 tons/ac (100 lbs/1000 sf)
					= 900 lbs/ac of 10-20-20			

VI. **Turfgrass Establishment**
This includes lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance. Areas to receive seed shall be tilled by discing or by other approved methods to a depth of 3 to 5 inches, leveled and raked to prepare a proper seedbed. Stones and debris over 1 1/2 inches in diameter shall be removed. The resulting seedbed shall be in such condition that future mowing of grasses will pose no difficulty. Use certified material and choose a turfgrass mixture from page G-20 of the 1994 Standards and Specifications or select from the list in the most current University of Maryland publication, Agronomy Mimeo #77, "Turfgrass Cultivar Recommendations for Maryland". See mimeo at end of this section.

VII. **Mulching**
All seedings require mulching. Also mulch during non-seeding dates until seeding can be done.

Mulch shall be unrotted, unchopped, small grain straw applied at a rate of 2 tons/acre or 90 lbs/1000 sq. ft. (2 bales). If a mulch anchoring tool is used, apply 2.5 tons/acre. Mulch materials shall be relatively free of all kinds of weeds and shall be completely free of prohibited noxious weeds. Spread mulch uniformly, mechanically or by hand, to a depth of 1-2 inches. Mulch anchoring shall be accomplished immediately after mulch placement to minimize loss by wind or water. This may be done by mulch nettings, mulch anchoring tool, wood cellulose fiber or liquid mulch binders.

Apply wood cellulose fiber at a dry weight of 1,500 lbs/acre. If mixed with water, use 50 lbs. of wood cellulose fiber per 100 gallons of water.

Liquid binder should be applied heavier at the edge, where wind catches mulch in valleys, and on crest of banks. The remainder of the area should appear uniform after binder application. Apply rates recommended by the manufacturer to anchor and mulch. Staple light weight, plastic netting over the mulch according to manufacturer's recommendations.

VIII. **Sodding**
Class of turfgrass sod shall be Maryland or Virginia State certified, or Maryland or Virginia State approved sod. Sod shall be harvested, delivered and installed within a period of 36 hours. Sod is to be laid with the long edges parallel to the contour using staggered joints with all ends tightly abutted and not over lapping. Sod shall be rolled and thoroughly watered after installation. Daily watering to maintain 4 inch depth of moisture for the first week is required in the absence of rainfall. Sod is not to be applied on frozen ground.

IX. **Maintenance**
A. Irrigate - Apply minimum 1" of water every 3 to 4 days depending on soil texture, when soil moisture becomes deficient to prevent loss of stand of protective vegetation.
B. Repairs - If stand provides between 40% and 94% ground coverage, overseed and fertilize using half of the rates originally applied. If stand provides less than 40% coverage, reestablish stand following original rates and procedures.

Note: Use of this information does not preclude meeting all of the requirements of the 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control Vegetative Practices.

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Released by: _____ Date: _____

THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION

6600 Kenilworth Avenue Riverdale Maryland, 20737

October 15, 1996

Silvia Silverman, Engineer
Cordero Ward & Associates
9010 Sunnyside Avenue
Suite 100
Beltsville, MD 20705

RE: PERMIT# 8565-93-G REVISION #04 - PALMER ROAD LANDFILL

Dear Ms. Silverman:

The Park Planning and Development Division has reviewed the above referenced grading permit for potential adverse impacts on parkland. In accordance with our routine policies and procedures, stormwater management (SWM) structures may not be located on parkland owned by The Maryland-National Capital Park and Planning Commission without written permission from the Department of Parks and Recreation.

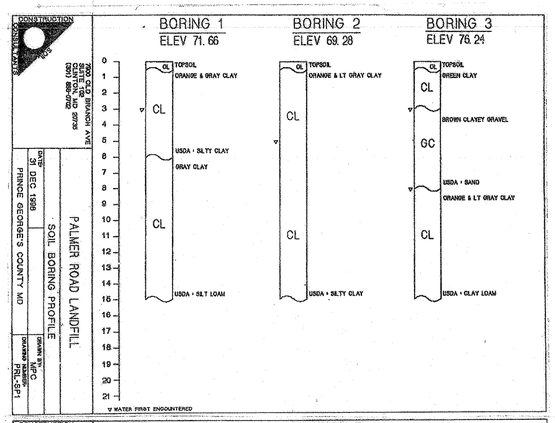
Therefore, the Parks Department will accept the proposed construction of rip-rap associated with SWM pond number 2 on the adjacent Henson Creek Steam Valley Park. We do however, oppose the location of the proposed headwall feature of this structure in the park and therefore recommend that it be pulled back on to the landfill property. It appears that the length of the outfall pipe could be reduced to accommodate this because the SWM plan shows that it crosses a 2.5% slope. It is our contention that this slope could be decreased and the length of the pipe reduced. We request that the SWM plan be revised to reflect this recommendation. Please send revised plans to me at the above address. Our approval of the above permit is granted subject to this condition.

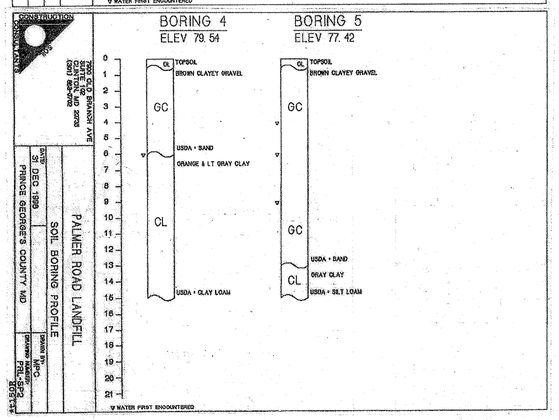
Should you have any questions on this matter, please do not hesitate to contact me. My telephone number is 301-699-2522.

Sincerely,

Yasmin R. Anderson
Principal Planner
Park Planning and Development Division

lr\wp51\ssm\rpalmer





GENERAL NOTES

1. All storm drains shall be constructed in accordance with the latest edition of the general specifications of Prince George's County.
2. Type of structure refers to the Standard Storm Drainage Details of the D.E.R. unless otherwise noted.
3. Information concerning underground utilities was obtained from available records, but the contractor must determine the exact location and elevation of the mains by digging test pits by hand at all utility crossings well in advance of trenching. If clearances are less than shown on this plan or twelve (12) inches whichever is less, contact the Design Engineer before proceeding with construction.

GENERAL NOTES:

1. GENERAL: ALL NOTES ARE FOR SUPPLEMENTING THE PLANS AND SPECIFICATIONS AND ARE IN NO WAY TO BE CONSIDERED AS EXCLUDING ANY ITEM IN THEM.
2. COORDINATION: IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO COORDINATE THE STRUCTURAL DRAWINGS AND THEIR DIMENSIONS WITH OTHER DRAWINGS AND IF A CONFLICT EXISTS HE SHALL NOT CARRY OUT THE AFFECTED WORK UNTIL THE ENGINEER HAS RESOLVED THE CONFLICT.
3. CODE: DESIGN AND CONSTRUCTION TO BE IN ACCORD. WITH THE (BOCA) CODE AND THE PARTICULAR CODES AS REFERENCED IN (BOCA).
4. EXCAVATION FOR AND BEARING MATERIAL FOR FOUNDATIONS SHOULD BE SUPERVISED AND APPROVED BY A SOILS ENGINEER REGISTERED IN THE STATE OF (MARYLAND).
5. THE FOOTINGS SHALL BE EXCAVATED AFTER THE AREAS HAVE BEEN ROUGH GRADED AND PROPERLY DRAINED. ALL EXCAVATIONS FOR CONTROLLED FILL AND BACKFILL MATERIAL AROUND AND ABOVE FOOTINGS SHALL INCLUDE CLEAN SOIL OR (SC & CL). BUT EXCLUDE HIGHLY PLASTIC CLAYS (MH & CH) OR HIGH SHRINK SOILS. THE FILL MATERIALS SHALL BE FREE FROM TOPSOIL ORGANIC CONTAMINATED SOIL AND ROCK FRAGMENTS HAVING MAJOR DIMENSION GREATER THAN FOUR (4) INCHES, AND SHALL CONTAIN NO ICE OR SNOW.
6. ALL FOOTINGS SHALL BE CENTERED DOWN A MINIMUM OF ONE FOOT INTO VIRGIN SOIL OR COMPACTED FILL OR AS DIRECTED BY THE SOILS ENGINEER AND SHALL BE A MINIMUM OF 2'-0" BELOW FINISHED EXTERIOR GRADE. FOOTINGS ARE DESIGNED FOR A SOIL BORING PRESSURE OF 2000 PSF. FOOTING ELEVATIONS HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND SHALL NOT BE TAKEN AS A WAIVER OF THESE REQUIREMENTS.
7. WATER, LOOSE SOIL AND SOIL SOFTENED BY WATER SHALL BE REMOVED FROM THE BOTTOM OF THE FOOTING EXCAVATIONS BEFORE PLACING CONCRETE.
8. FOOTING EXCAVATIONS SHALL NOT BE LEFT OPEN FOR LONG PERIODS. IT IS RECOMMENDED THAT THE BOTTOM OF THE FOOTING EXCAVATIONS AND TRENCHES BE PROTECTED BY UNDERCUTTING AND PLACING THERE (3) INCHES OF A LEAN MIX CONCRETE SLAB IMMEDIATELY UPON APPROVAL AND BEFORE REINFORCING STEEL IS PLACED.
9. PROVISIONS MUST BE TAKEN TO PROTECT ALL CONCRETE WORK FROM FROST DAMAGE WITH SPECIAL ATTENTION PAID TO FOOTINGS AND OTHER CONCRETE OR GRADE PRIOR TO BACKFILLING.
10. CARE SHOULD BE TAKEN TO ASSURE THAT DURING PLACING OF CONCRETE NO ORGANIC MATTER , SALTS, OR CLAYS ARE MIXED WITH THE CONCRETE.
11. CONCRETE: TO BE MIXED AND PLACED IN ACCORDANCE WITH THE CURRENT "AMERICAN CONCRETE INSTITUTE (ACI) BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE". A COPY OF THIS CODE SHALL BE AVAILABLE ON THE PROJECT AT ALL TIMES.
12. ALL REINFORCED CONCRETE, (INCLUDING FLOOR TOPPING), TO HAVE COMPRESSIVE STRENGTH (fc) OF 4000 PSI. UNLESS NOTED.
13. CONCRETE CYLINDER TEST SHALL BE MADE BY AN INDEPENDENT QUALIFIED TESTING AGENCY, TO BE RETAINED AND PAID BY THE OWNER, IN ACCORDANCE WITH ASTM SPECIFICATION FOR "COMPRESSIVE STRENGTH OF CONCRETE". A MINIMUM OF 4 TEST CYLINDERS SHALL BE MADE FOR EACH 50 CUBIC YARDS OF CONCRETE PLACED, TWO TESTED AT SEVEN DAYS AND TWO TESTED AT TWENTY-EIGHT DAYS. THE TESTING AGENCY SHALL BE RESPONSIBLE FOR OBTAINING SAMPLES AND FOR STORAGE.
14. ALL CONTINUOUS REINFORCING SHALL BE CONTINUOUS OR LAPPED AT ALL SPLICES, CORNERS AND INTERSECTIONS A MINIMUM OF 30 BAR DIAMETERS (U.N.O.).
15. PROVIDE SPACERS, CHAIRS, TIES AS REQUIRED AND NECESSARY FOR ASSEMBLING, PLACING AND SUPPORTING ALL REINFORCEMENT IN PROPER POSITION.
16. CONCRETE PROTECTION FOR REINFORCEMENT SHALL BE AS GIVEN IN ACI-318 OR AS SHOWN ON PLANS.

GENERAL NOTES

1. All storm drains shall be constructed in accordance with the latest edition of the general specifications of Prince George's County.
2. Type of structure refers to the Standard Storm Drainage Details of the D.E.R. unless otherwise noted.
3. Information concerning underground utilities was obtained from available records, but the contractor must determine the exact location and elevation of the mains by digging test pits by hand at all utility crossings well in advance of trenching. If clearances are less than shown on this plan or twelve (12) inches whichever is less, contact the Design Engineer before proceeding with construction.

SCD# 968003940
PROJECT NAME PALMER ROAD LANDFILL SWM POND #3
PRINCE GEORGES COUNTY, MD.
DEPARTMENT OF ENVIRONMENTAL RESOURCES
PERMITS AND REVIEW DIVISION
APPROVED for Stormwater Management and Storm Drain Only
DATE 2/6/97

DATE	DESCRIPTION	BY
4-29-03	Added Eng. Cyer Stock, Revised SCD Sheet Numbers.	JB

11721 WOODMORE ROAD, MITCHELLVILLE, MD 20721
BEN DYER ASSOCIATES, INC.
ENGINEERS, SURVEYORS, PLANNERS
TELEPHONE: (301) 430-7000

SCALE: AS SHOWN | DESIGNED BY: | DRAWN BY: | CHECKED BY: | RECORD OF: J-80035
DATE: APRIL 2003 | APPR. NO.: 6008-2

SITE GRADING, SEDIMENT & EROSION CONTROL AND STORMWATER MANAGEMENT PLAN

PALMER ROAD LANDFILL

Oxon Hill Election District #12
Prince George's County, Maryland

ENGINEER'S CERTIFICATION

"I CERTIFY THAT THIS DESIGN PLAN FOR THE CONSTRUCTION OF THE EARTHWORK AND/OR EXCAVATING POND REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY KNOWLEDGE OF THE SITE AND WAS DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SOIL CONSERVATION SERVICE "MARYLAND STANDARDS AND SPECIFICATIONS FOR PONDS" (MD - 378). I HAVE REVIEWED THIS PLAN WITH THE OWNER/DEVELOPER."

SIGNATURE _____
MD. LICENSE NO. 7327
DATE 2/12/03
NAME (PRINTED) HAL VENENDAAL
ADDRESS 9010 Sunnyside, Beltsville, MD
PHONE NUMBER 301-345-0440

INSPECTION NOTIFICATION

Cordero, Ward & Associates are to be notified 24 hours prior to start of construction of any Storm Drainage or Stormwater Mgmt. depicted per this approved plan. As the Engineer of Record, Cordero, Ward & Associates must provide inspection services separate and apart from any of those required by Prince George's County. Final "As Built" plans and certification may be provided & release of bonds. Failure to do so may result in unearthing of systems and/or severe hardship in obtaining release of bonds and ultimate Use and Occupancy Permits.

4/30/03

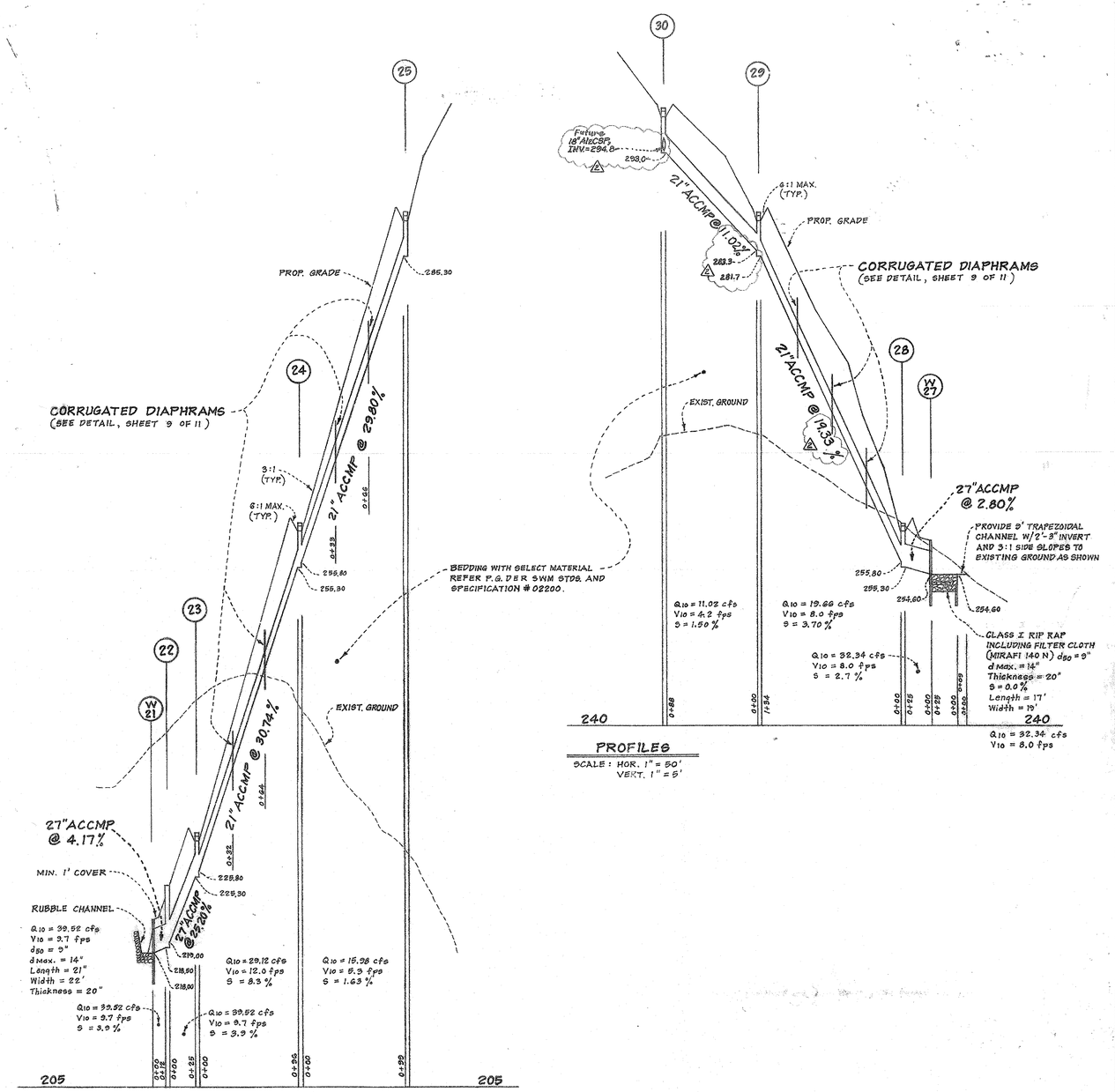
SWM SHT. 4 OF 4 SCD - SHT. 7 OF 37

DATE	DESCRIPTION	BY

CORDERO WARD & ASSOCIATES
ENGINEERS & PLANNERS
9010 SUNNYSIDE AVE. SUITE 100
BELTSVILLE, MARYLAND 20705
(301) 345-0440

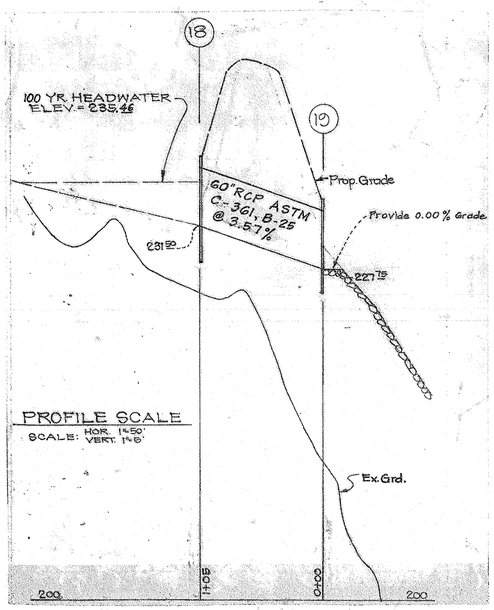
drawn by JB | checked by | record no. | scale | dwg. no. | date SEPT., 1996

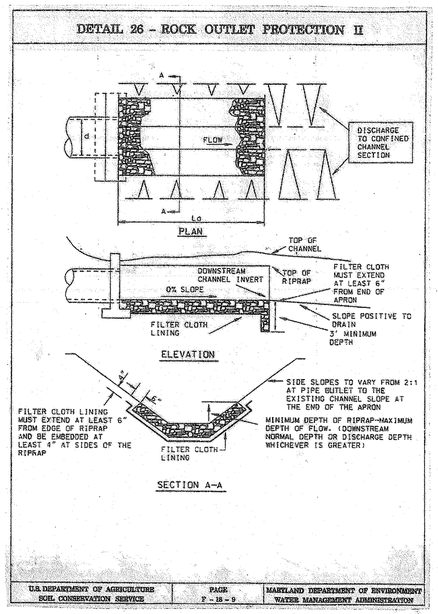
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PROFILES

SCALE: HOR. 1" = 50'
VERT. 1" = 5'





DATE	DESCRIPTION	BY
6-4-03	Revised Structure Top Due To Revised D.A.	ELS
4-29-03	Added Ben Dyer Block, Revised SCD Sheet #	JB
REVISIONS		

11721 WOODMORE ROAD, MITCHELLVILLE, MD 20721
BEN DYER ASSOCIATES, INC.
ENGINEERS, SURVEYORS, PLANNERS
TELEPHONE: (301) 430-2000

DRAWN BY	DESIGNED BY	CHECKED BY	RECORD ID
			J-80035
SCALE: AS SHOWN			LIBER/FOLIO
DATE: APRIL 2003			6.009-Z

SITE GRADING, SEDIMENT & EROSION CONTROL AND STORMWATER MANAGEMENT PLAN

PALMER ROAD LANDFILL

Oxon Hill Election District #12
Prince George's County, Maryland

H.E. Lambert 2/12/03

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STATE OF MARYLAND — JOHN E. CORDERO — No. 10,000 — REGISTERED PROFESSIONAL ENGINEER — 4/30/03

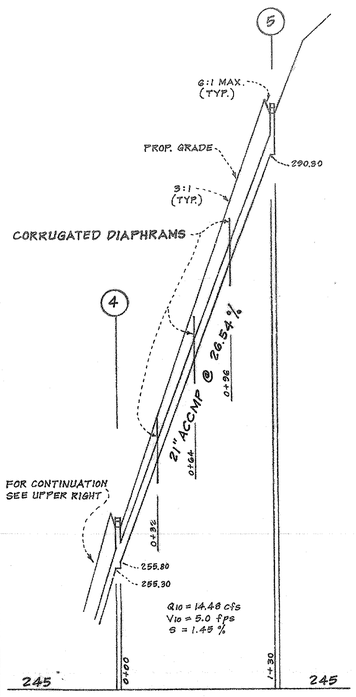
REVISIONS		
DATE	DESCRIPTION	BY

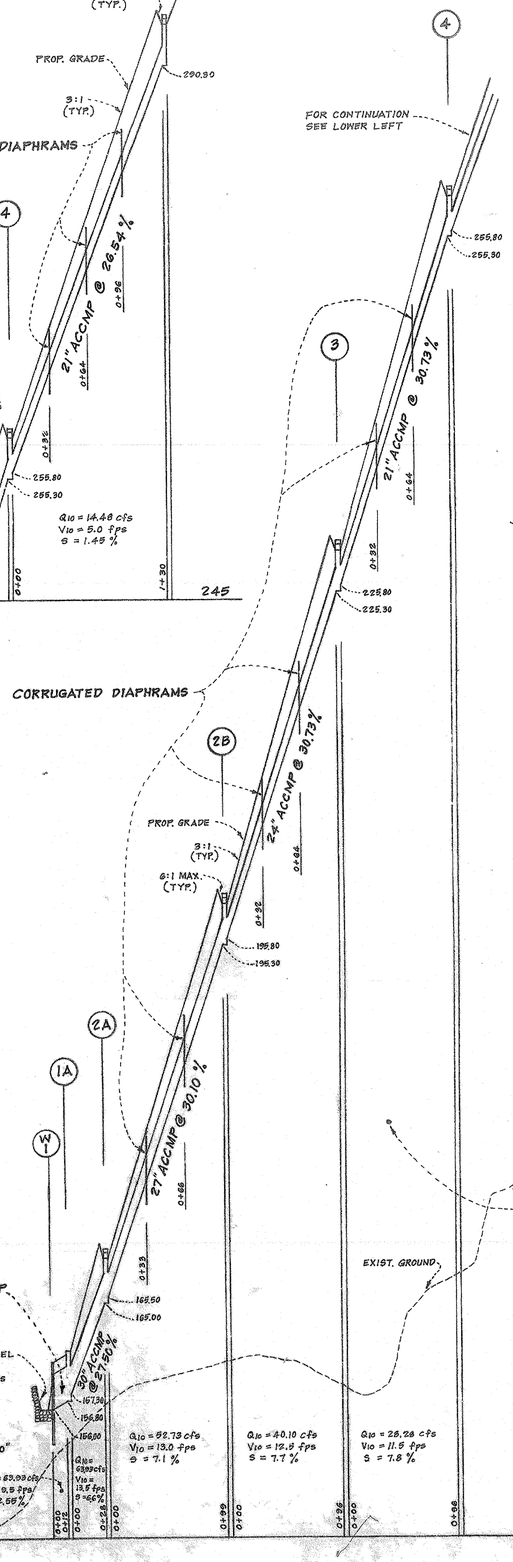
CORDERO WARD & ASSOCIATES
ENGINEERS & PLANNERS
6010 BURNSIDE CT. SUITE 100
BELTSVILLE, MARYLAND 20705
(301) 345-0440

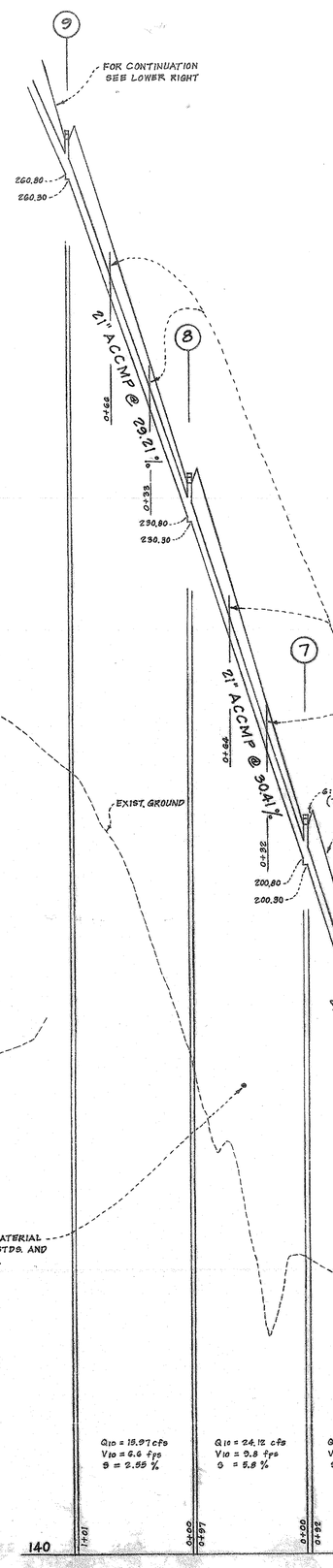
drawn by: LC/CC/DJ/TC/MC/DD/JP | file: P-Palmer-7.dwg
scale: N.T.S. | date: SEPT., 1996 | job: 010

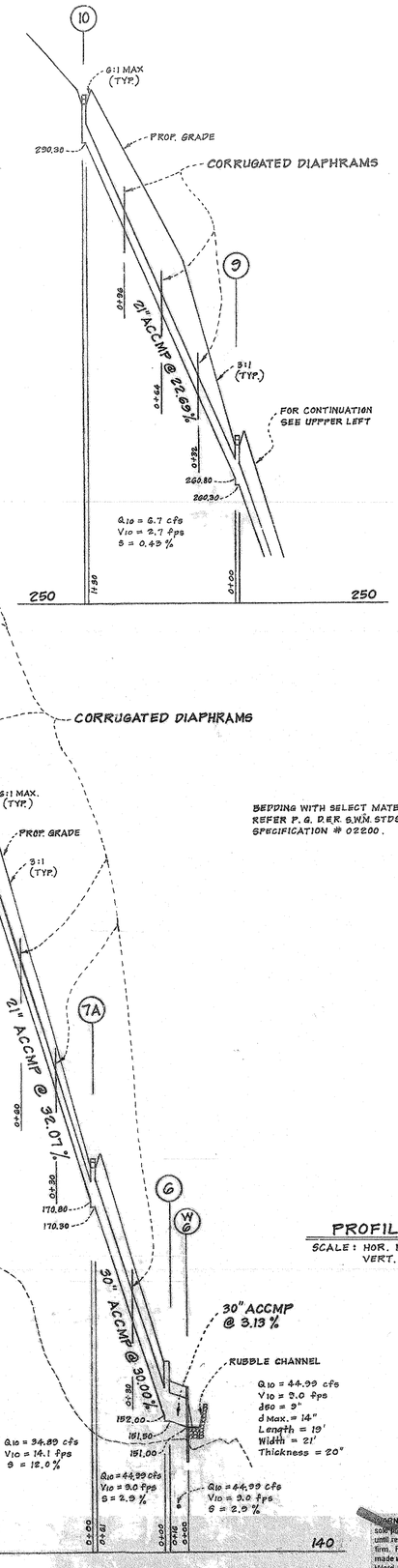
SCD-SHT. 8 OF 37

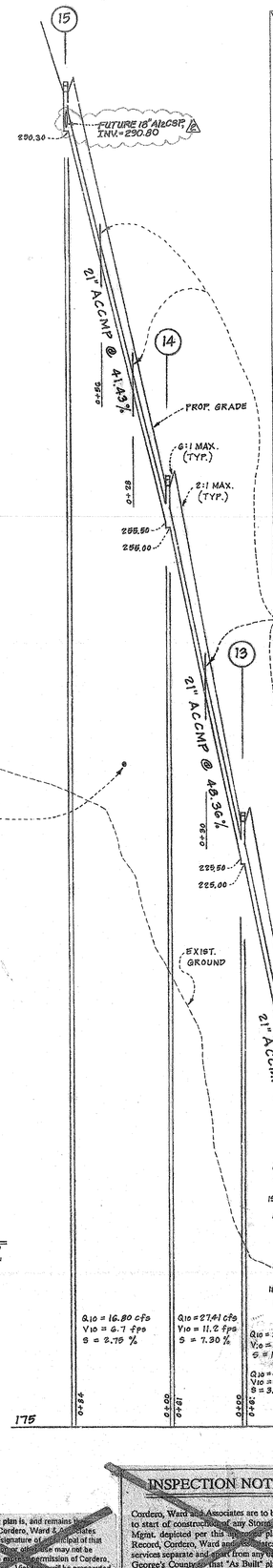
38











BEDDING WITH SELECT MATERIAL REFER P.G. D.E.R. S.W.M. STDS. AND SPECIFICATION # 02200.

BEDDING WITH SELECT MATERIAL REFER P.G. D.E.R. S.W.M. STDS. AND SPECIFICATION #02200.

PROFILES

SCALE: HOR. 1" = 50'
VERT. 1" = 5'

STRUCTURE SCHEDULE

No.	TYPE	WIDTH DIA.	TOP SLAB	INV. THROAT	INV. ELEV. UPPER	INV. ELEV. LOWER	STANDARD DETAIL
5	"B" Manhole	4' *	294.63	293.80	—	290.30	SD 22.0
4	"B" Manhole	4' *	293.63	288.80	286.80	285.30	SD 22.0
3	"B" Manhole	4' *	229.63	228.80	226.80	226.30	SD 22.0
2B	"B" Manhole	4' *	199.63	198.80	196.80	196.30	SD 22.0
2A	"B" Manhole	4' *	169.63	168.80	166.80	166.00	SD 22.0
1A	"B" Manhole	4'	161.00	—	157.30	156.80	SD 22.0
W 1	End Wall	—	—	—	—	156.00	SD 30.0
10	"B" Manhole	4' **	294.63	293.80	—	290.30	SD 22.0
9	"B" Manhole	4' **	264.63	263.80	260.80	260.30	SD 22.0
8	"B" Manhole	4' **	234.63	233.80	230.80	230.30	SD 22.0
7	"B" Manhole	4' **	204.63	203.80	200.80	200.30	SD 22.0
7A	"B" Manhole	4' **	174.63	173.80	170.80	170.30	SD 22.0
6	"B" Manhole	4'	155.00	—	152.30	151.80	SD 22.0
W 6	End Wall	—	—	—	—	151.00	SD 30.0
15	"B" Manhole	4' **	294.63	293.80	—	290.30	SD 22.0
14	"B" Manhole	4' **	290.63	288.80	285.50	285.00	SD 22.0
13	"B" Manhole	4' **	260.63	258.80	255.50	255.00	SD 22.0
12	"B" Manhole	4' **	195.63	193.80	191.50	190.00	SD 22.0
11	"B" Manhole	4'	193.00	—	189.00	188.50	SD 22.0
W 11	End Wall	—	—	—	—	188.00	SD 30.0
25	"B" Manhole	4' *	289.63	286.80	—	285.30	SD 22.0
24	"B" Manhole	4' *	259.63	256.80	256.80	255.30	SD 22.0
23	"B" Manhole	4' *	229.63	228.80	226.80	226.30	SD 22.0
22	"B" Manhole	4'	224.50	—	219.00	218.50	SD 22.0
W 21	End Wall	—	—	—	—	218.00	SD 30.0
30	"B" Manhole	4' *	293.63	286.80	—	285.30	SD 22.0
29	"B" Manhole	4' *	289.63	288.80	286.80	285.30	SD 22.0
28	"B" Manhole	4' *	259.63	258.80	256.80	256.30	SD 22.0
W 27	End Wall	—	—	—	—	256.00	SD 30.0

* Provide 6" slots on North & South sides of structure only & with D1 & D2 (SD 14.0) Top.

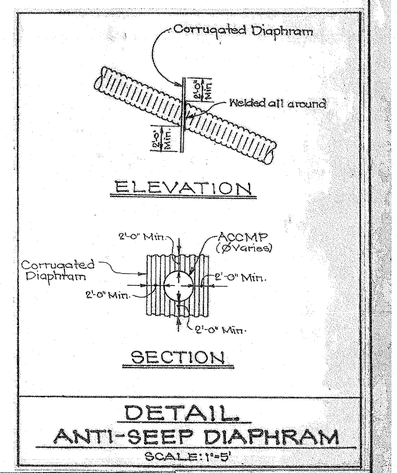
** Provide 6" slots on East & West sides of structure only & with D1 & D2 (SD 14.0) Top.

PIPE SCHEDULE

FROM	TO	SIZE		LENGTH
5	4	21"	ACCMP	130'
4	3	21"	"	96'
3	2B	24"	"	96'
2B	2A	27"	"	96'
2A	1A	30"	"	58'
1A	W 1	36"	ACCMP	112'
10	9	21"	ACCMP	130'
9	8	21"	"	101'
8	7	21"	"	97'
7	7A	21"	"	92'
7A	6	30"	"	61'
6	W 6	30"	ACCMP	18'
15	14	21"	ACCMP	84'
14	13	21"	"	61'
13	12	21"	"	61'
12	11	30"	"	14'
11	W 11	30"	ACCMP	12'
25	24	21"	ACCMP	99'
24	23	21"	"	96'
23	22	27"	"	25'
22	W 21	27"	ACCMP	12'
30	29	21"	ACCMP	88'
29	28	21"	"	194'
28	W 27	27"	ACCMP	29'

PIPE SUMMARY

SIZE	TYPE	LENGTH
21"	ACCMP	1220'
24"	"	96'
27"	"	161'
30"	"	131'
36"	ACCMP	12'



DETAIL ANTI-SEEP DIAPHRAM

SCALE: 1"=5'

DATE	DESCRIPTION	BY
6-4-03	Revised Structure Top Due To Revised DA. 1	EJS
4-29-03	Added Ben Dyer Block, Revised SCD Sheet Numbers. 1	JB

REVISIONS

11721 WOODMORE ROAD, MITCHELLVILLE, MD 20721
BEN DYER ASSOCIATES, INC.
ENGINEERS, SURVEYORS, PLANNERS
TELEPHONE: (301) 430-2000

DRAWN BY | REVIEWED BY | DESIGNED BY | APPROVED NO.: 1
TASK NO.: J-80035
SCALE: AS SHOWN
DATE: APRIL 2003
DRWG. NO.: 6.00.10-Y

4/30/03

SITE GRADING, SEDIMENT & EROSION CONTROL AND STORMWATER MANAGEMENT PLAN

PALMER ROAD LANDFILL

Oxon Hill Election District #12
Prince George's County, Maryland

INSPECTION NOTIFICATION

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Released by: _____ Date: _____

2/17/03

SCD - SHT. 9 OF 37 38

REVISIONS		
DATE	DESCRIPTION	BY

CORDERO WARD & ASSOCIATES
ENGINEERS & PLANNERS
5010 SUNNYSIDE AVE. SUITE 100
BELTSVILLE, MARYLAND 20705
(301) 345-3440

drawn by: JCR/CEB/DV | record no.:
scale: AS SHOWN | dwg. no.:
date: SEPT., 1996 | file name:

163049

19.0 STANDARDS AND SPECIFICATIONS FOR LAND GRADING

Definition

Reshaping of the existing land surface in accordance with a plan as determined by engineering survey and layout.

Purpose

The purpose of a land grading specification is to provide for erosion control and vegetative establishment on those areas where the existing land surface is to be reshaped by grading according to plan.

Design Criteria

The grading plan should be based upon the incorporation of building design and street layouts that fit and utilize existing topography and desirable natural surroundings to avoid extreme grade modifications. Information submitted must provide sufficient topographic survey and soil investigation to determine limitations that must be imposed on the grading operation related to slope stability, effect on adjacent properties and drainage patterns, provisions for drainage and water removal and vegetative treatment, etc.

Many counties have regulations and design procedures already established for land grading and cut and fill slopes. Where these requirements exist, they shall be followed. The plan must show existing and proposed contours of the area(s) to be graded. The plan shall also include practices for erosion control, slope stabilization, safe disposal of excess water and drainage, such as waterways, lined ditches, reverse slope benches (include grade and cross sections), grade stabilization structures, retaining walls, and surface and subsurface drains. The plan shall also include phasing of these practices. The following shall be incorporated into the plan:

1. Provisions shall be made to safely conduct surface runoff to storm drains, protected outlets or to stable water courses to insure that surface runoff will not damage slopes or other graded areas.

2. Cut and fill slopes that are to be stabilized with grasses shall not be steeper than 2:1. (Where the slope is to be mowed the slope should not be steeper than 3:1; 4:1 is preferred because of safety factors related to mowing steep slopes.) Slopes exceeding 2:1 shall require special design and stabilization considerations that shall be adequately shown on site plans.

3. Reverse benches shall be provided wherever the vertical interval (height) of any 2:1 slope exceeds 20 feet; for 3:1 slope it shall be increased to 30 feet and for 4:1 to 40 feet. Benches shall be located to divide the slope face as equally as possible and shall conform to the terrain. Swales shall be provided on benches of sufficient capacity to convey the expected volume of water. Spacing of benches shall be designed with consideration given to the following factors:

a. Benches shall be a minimum of 6 feet wide to provide for ease of maintenance.

b. Benches shall be designed with a reverse slope of 6:1 or flatter to the toe of the upper slope and with a minimum of one foot in depth. Bench gradient to the outlet shall be between 2 percent and 3 percent, unless accompanied by appropriate design and computations.

c. The flow length within a bench shall not exceed 800' unless accompanied by appropriate design and computations. For flow channel stabilization see temporary swale.

4. Surface water shall be diverted from the face of all cut and/or fill slopes by the use of earth dikes, ditches and swales or conveyed downslope by the use of lined/piped structure, except where:

a. The face of the slope itself shall be stabilized and the face of all graded slopes shall be protected from surface runoff until they are stabilized.

b. The face of the slope shall not be subject to any concentrated flows of surface water such as from natural drainageways, graded swales, downspouts, etc.

c. The face of the slope will be protected by special erosion control materials, to include, but not limited to, approved vegetative stabilization practices (see section G), rip-rap or other approved stabilization methods.

5. Cut slopes occurring in soluble rock shall be serrated as shown on the following diagram. These serrations shall be made with conventional equipment as the excavation is made. Each step or serration shall be constructed on the contour and will have steps cut at sufficient horizontal intervals with nominal three-foot horizontal shelves. These steps will vary depending on the slope ratio or the cut slope. The nominal slope face is 1:1. These steps will weather and aid to hold moisture, lime, fertilizer and seed thus producing a much quicker and longer lived vegetative cover and better slope stabilization. Overland flow shall be diverted from the top of all serrated cut slopes and carried to a suitable outlet.

6. Subsurface drainage shall be provided where necessary to intercept seepage that would otherwise adversely affect slope stability or create excessively wet site conditions.

7. Slopes shall not be created so close to property lines as to endanger adjoining properties without adequately protecting such properties against sedimentation, erosion, slippage, settlement, subsidence or other related damages.

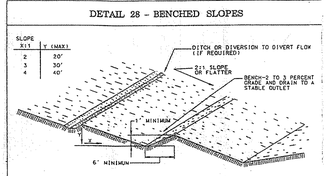
8. Fill material shall be free of brush, rubbish, rocks, logs, stumps, building debris, and other objectionable material. It should be free of sewage over two (2) inches in diameter when compacted by hand or mechanical tampers or over eight (8) inches in diameter when compacted by rollers or other equipment. Frozen material shall not be placed in the fill nor shall the fill material be placed on a frozen foundation.

9. Stockpiles, borrow areas and spoil shall be shown on the plans and shall be subject to the provisions of this Standard and Specifications.

10. All disturbed areas shall be stabilized structurally or vegetatively in compliance with 20.0 Standards and Specifications for Vegetative Stabilization.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F - 19 - 2	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 28 - BENCHED SLOPES



Construction Specifications

1. All fills shall be compacted as required to reduce erosion, slippage, settlement, subsidence or other related problems. Fill intended to support buildings, structures and conduits, etc., shall be compacted in accordance with local requirements or codes.

2. All fill shall be placed and compacted in layers not to exceed 8" in thickness.

3. Except for approved landfills or nonstructural fills, fill material shall be free of brush, rubbish, rocks, logs, stumps, building debris and other objectionable materials that would interfere with or prevent construction of satisfactory fills.

4. Frozen material or soft, mucky or highly compressible materials shall not be incorporated into fill slopes or structural fills. Fill shall not be placed on a frozen foundation.

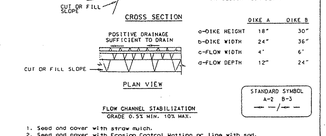
5. All benches shall be kept free of sediment during all phases of development.

6. Seeps or springs encountered during construction shall be handled in accordance with the Standard and Specification for Subsurface Drain or other approved methods.

7. All graded areas shall be permanently stabilized immediately following finished grading.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F - 19 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 1 - EARTH DIKE



	DIKE A	DIKE B
d-DIKE HEIGHT	18"	30"
b-DIKE WIDTH	24"	36"
c-FLOW WIDTH	4'	6'
d-FLOW DEPTH	12"	24"

POSITIVE DRAINAGE SUFFICIENT TO DRAIN

FLOW CHANNEL STABILIZATION
GRADE 0.5% MIN. 10% MAX.

1. Seed and cover with straw mulch.
2. Seed and cover with Erosion Control matting or line with sod.
3. 4" - 7" stone or recycled concrete equivalent pressed into the soil 7" minimum

Construction Specifications

1. All temporary earth dikes shall have uninterrupted positive grade to an outlet. Spot elevations may be necessary for grades less than 1%.

2. Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.

3. Runoff diverted from an undisturbed area shall outlet directly into an undisturbed, stabilized area at a non-erosive velocity.

4. All trees, brush, stumps, obstructions, and other objectional material shall be removed and disposed of so as not to interfere with the proper functioning of the dike.

5. The dike shall be excavated or shaped to line, grade and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.

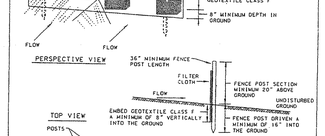
6. Fill shall be compacted by earth moving equipment.

7. All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the dike.

8. Inspection and maintenance must be provided periodically and after each rain event.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE A - 1 - 4	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 22 - SILT FENCE



JOINING TWO ADJACENT SILT FENCE SECTIONS

Construction Specifications

1. Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 1½" x 1½" square (minimum) cut- or 1¾" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or L section weighting not less than 1.00 pond per linear foot.

2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal ft²/ minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

3. Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.

4. Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or sediment accumulation reached 50% of the fabric height.

5. The drainage area to this structure shall be less than ¼ acre.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE E - 8 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

21.0 STANDARD AND SPECIFICATIONS FOR TOPSOIL

Definition

Placement of topsoil over a prepared subsoil prior to establishment of permanent vegetation.

Purpose

To provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.

Conditions Where Practice Applies

I. This practice is limited to areas having 2:1 or flatter slopes where:

a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.

b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.

c. The original soil to be vegetated contains material toxic to plant growth.

d. The soil is so acidic that treatment with limestone is not feasible.

II. For the purpose of these Standards and Specifications, areas having slopes steeper than 2:1 require special consideration and design for adequate stabilization. Areas having slopes steeper than 2:1 shall have site appropriate stabilization shown on the plans.

Construction and Material Specifications

I. Topsoil salvaged from the existing site may be used provided that it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-SCS in cooperation with Maryland Agricultural Experiment Station.

II. Topsoil Specifications - Soil to be used as topsoil must meet the following:

1. Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Regardless, topsoil shall not be a mixture of contrasting textured subsoils and shall contain less than 5% by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1½" in diameter.

2. Topsoil must be free of plants or plant parts such as bermuda grass, quackgrass, Johnsongrass, nutsedge, poison ivy, thistle, or others as listed.

3. Where the subsoil is either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate of 4.4 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil. Lime shall be distributed uniformly over disturbed areas and worked into the soil in conjunction with tillage operations as described in the following procedures.

III. For sites having disturbed areas under 5 acres:

i. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials.

IV. For sites having disturbed areas over 5 acres:

i. On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:

a. pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.

b. Organic content of topsoil shall be not less than 1.5 percent by weight.

c. Topsoil having soluble salt content greater than 500 parts per million shall not be used.

d. No sod or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phytotoxic materials.

Note: Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientistmust approved by the appropriate approval authority, may be used in lieu of natural topsoil.

ii. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials.

V. Topsoil Application

i. When topsoiling, maintain seeded erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Sloe Drains and Sediment Traps and Basins.

ii. Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4" - 8" lower in elevation.

iii. Topsoil shall be uniformly distributed in a 4" - 8" layer and lightly compacted to a minimum thickness of 4". Spreading shall be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.

iv. Topsoil shall not be placed while the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

VI. Alternative for Permanent Seeding - Instead of applying the full amounts of lime and commercial fertilizer, composted sludge and amendments may be applied as specified below:

i. Composted Sludge Material for use as a soil conditioner for sites having disturbed areas over 5 acres shall be tested to prescribe amendments and for sites having disturbed areas under 5 acres shall conform to the following requirements:

a. Composted sludge shall be supplied by, or originate from, a person or persons that are permitted (at the time of acquisition of the compost) by the Maryland Department of the Environment under COMAR 26.04.06.

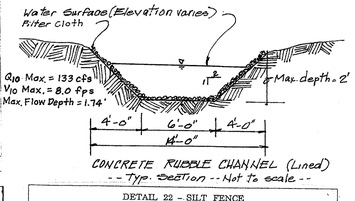
b. Composted sludge shall contain at least 1 percent nitrogen, 1.5 percent phosphorous, and 0.2 percent potassium and have a Ph of 7.0 to 8.0. If compost does not meet these requirements, the appropriate constituents must be added to meet the requirements prior to use.

c. Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.

ii. Composted sludge shall be amended with a potassium fertilizer applied at the rate of 5 lb/1,000 square feet, and 1/3 the normal lime application rate.

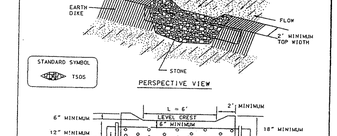
References: Guideline Specifications, Soil Preparation and Sodding. MD-VA, Pub. #1, Cooperative Extension Service, University of Maryland and Virginia Polytechnic Institutes. Revised 1973.

Note: Channel slope varies



CONCRETE RUBBLE CHANNEL (Lined)
-- Typ. Section -- Not to scale --

DETAIL 19 - STONE OUTLET STRUCTURE



Construction Specifications

1. Crushed stone shall be used. Gravel may be used if crushed stone is not available. The stone shall be 2"-3" in size.

2. The crest of the stone dike shall be at least 6" lower than the lowest elevation of the top of the earth dike and shall be level.

3. The stone outlet structure shall be embedded into the soil a minimum of 4".

4. The minimum length of the crest of the stone outlet structure shall be 6'.

5. The stone outlet structure shall be inspected after each rain. Stone shall be replaced when the structure ceases to function and ponding results.

6. The baffle board shall be extended one foot into the dike, staked and embedded 4" into the existing ground.

7. The drainage area to this structure shall be less than ¼ acre.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE C - U - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

VEGETATIVE STABILIZATION

Permanent and Temporary Seeding, Sodding and Mulching

I. Site Preparation
Permanent or temporary vegetation shall be established within seven (7) days on the surface of all sediment control practices such as diversions, grade stabilization structures, berms, waterways, sediment control basins, and all slopes greater than 3 horizontal to 1 vertical (3:1) and within 14 days for all other disturbed or graded areas on the project site. Mulching may only be used on disturbed areas as temporary cover where vegetation is not feasible or where seeding cannot be completed because of weather.

II. Seedbed Preparation and Seeding Application
Loosen the top layer of the soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment such as disc harrows, chisel plows or rippers mounted on construction equipment. Incorporate lime and fertilizer into the top 3 to 5 inches of the soil by discing or by other suitable means. Rough areas should be rolled and dragged smooth, but left in a roughened condition. Steep slopes greater than 3:1 should be treated to be rougher, leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. The top 1 to 3 inches of soil should be loose and friable. Permanent cover may require an application of topsoil, if so, it must meet the requirements set forth in Section 21.0 Standards and Specifications for topsoil from the 1994 Standards and Specifications.

III. Soil Amendments
Soil tests shall be made on sites over five acres to determine the exact requirements for both lime and fertilizer. For sites under 5 acres, in lieu of a soil test, apply the following:

Fertilizer	Nitrogen (N)	2 lbs/1000 sq. ft. (90 lbs/ac)
	P_2O_5	4 lbs/1000 sq. ft. (175 lbs/ac)
	K_2O	4 lbs/1000 sq. ft. (175 lbs/ac)

For low maintenance areas apply 150 lbs/ac urea-form fertilizer (38-0-0), or 3.5 lbs/1000 sq. ft., in addition to the above fertilizer at time of seeding.

Ground Limestone 2 tons/ac

IV. Sediment Control Practice Seeding
Select a seeding mixture from tables 25 or 26 in Section G of the 1994 Standards and Specifications. Document seeding on the erosion and sediment control plan using appropriate chart below. Note: For sediment control practices are in for longer than 12 months, permanent seeding is required.

V. Temporary/Permanent Seeding Mixtures and Rates
Select a seeding mixture from appropriate table 25 or 26 in Section G of the 1994 Standards and Specifications. Document seeding on the erosion and sediment control plan using appropriate chart below.

Temporary Seeding Summary

Seed Mixture (Hardiness Zone From Table 26)	7a			Fertilizer Rate (10-10-10)	Lime Rate
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	
1	Rye	140	2/1 - 4/30 8/15 - 11/30	1"-2"	1600 lb/ac (35 lb/1000 sf)
					1 ton/ac (100 lb/1000 sf)

Permanent Seeding

Seed Mixture (For Hardiness Zone From Table 25)	7a			Fertilizer Rate (10-20-20)			Lime Rate
No.	Species	Application Rate (lb/ac)	Seeding Date	Seeding Depth	N	P205	K20
1	Tall Fescue	100	2/1-5/15 8/15-10/5	1"-2"	90 lb/ac (2.0 lbs/ 1000 sf)	175 lb/ac (4.0 lbs/ 1000 sf)	175 lb/ac (4.0 lbs/ 1000 sf)
					= 900 lbs 10-20-20		2 tons/ac (100 lb/ 1000 sf)

VI. Turfgrass Establishment
This includes lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance. Areas to receive seed shall be tilled by discing or by other approved methods to a depth of 3 to 5 inches, leveled and raked to prepare a proper seedbed. Stones and debris over 1 1/2 inches in diameter shall be removed. The resulting seedbed shall be in such condition that future mowing of grasses will pose no difficulty. Use certified material and choose a turfgrass mixture from page G-20 of the 1994 Standards and Specifications or select from the list in the most current University of Maryland publication, Agronomy Mimeo #77, "Turfgrass Cultivar Recommendations for Maryland". See mimeo at end of this section.

VII. Mulching
All seedings require mulching. Also mulch during non-seeding dates until seeding can be done.

Mulch shall be unrotted, unchopped, small grain straw applied at a rate of 2 tons/acre or 90 lbs/1000 sq. ft. (2 bales). If a mulch anchoring tool is used, apply 1.5 tons/acre. Mulch materials shall be relatively free of all kinds of weeds and shall be completely free of prohibited noxious weeds. Spread mulch uniformly, mechanically or by hand, to a depth of 1-2 inches. Mulch anchoring shall be accomplished immediately after mulch placement to minimize loss by wind or water. This may be done by mulch nettings, mulch anchoring tool, wood cellulose fiber or liquid mulch binders.

Apply wood cellulose fiber at a rate of 1,500 lbs/acre. If mixed with water, use 50 lbs. of wood cellulose fiber per 100 gallons of water.

Liquid binder should be applied heavier at the edge, where wind catches mulch in valleys, and on crest of banks. The remainder of the area should appear uniform after binder application. Apply at the recommended rate by the manufacturer to anchor and mulch. Stapple light weight, plastic netting over the mulch according to manufacturer's recommendations.

VIII. Sodding
Class of turfgrass sod shall be Maryland or Virginia State certified, or Maryland or Virginia State approved sod. Sod shall be harvested, delivered and installed within a period of 36 hours. Sod is to be laid with the long edges parallel to the contour using staggered joints with all ends tightly abutted and not over lapping. Sod shall be rolled and thoroughly watered after installation. Daily watering to maintain 4-inch depth of moisture for the first week as required in the absence of rainfall. Sod is not to be applied on frozen ground.

IX. Maintenance
A. Irrigate - Apply minimum 1" of water every 3 to 4 days depending on soil texture, when soil moisture becomes deficient to prevent loss of stand of protective vegetation.
B. Repairs - If stand provides between 40% and 94% ground coverage, overseed and fertilize using half of the rates originally applied. If stand provides less than 40% coverage, reestablish stand following original rates and procedures.

Palmer Road
Sequence of Construction
SC # 391-88 (6/1-91)

Note: This sequence of construction is to accompany plan SC # 391-88 and phases development of the site due to addition of land area.

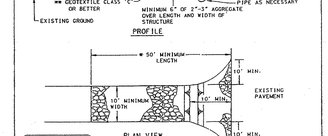
Phase 1 Previously Covered

1. The Palmer Road Landfill is an existing landfill project for which sediment control was approved on September 24, 1982 under SCD Plan No. 217-82. As of this date the basin and hardware have been constructed as well as the haul road and some grading adjacent to the basin.
2. The site superintendent and/or the party that will be directly responsible for maintaining the sediment control devices must meet with the Prince George's County Inspector at the site with a print of the new approved Sediment Control Plan prior to the new Grading Permit issuance. Call 952-4914 or 952-4915 between 7:30 am and 5:00 pm at least 24 hours in advance to request a pre-grading site inspection.
3. Install stabilized construction entrance as shown on plan.
4. Restore sediment basin to meet Maryland Standard 378 and grading as shown on plan (See sheet 1 of 4). Maintain sediment basin and emergency spillway, as per SCD # 217-82. (3 weeks)
5. Call for inspection.
6. Install rip-rap drainage channels as required by plan SC # 391-88.
7. Install Earth Dikes where shown on plan grade stabilization structure and stone outlet structure, begin clearing and grading operations for lift number 1 (up to elevation 170) and construct additional concrete channel and concrete rubble channels where indicated on plan, as desired fill levels are reached.
8. Pre-construction meeting for construction of new sediment/stormwater management basin.
9. Install sediment control devices around new basin#1 Block openings in SWM structure # 75' elevation. Complete as-built.
10. Construct sediment control/storm water management basin#1 Block openings in SWM structure # 75' elevation. Complete as-built.
11. Remove sediment control devices around new sediment basin.
12. Stabilize side slopes and install storm drains as required by grading bench number 1.
13. Repeat steps 7 & 12 for each 15 foot lift until completion of grading operation for the site. (10 years)
14. Upon complete stabilization of the fill site, flush out finished storm drain system and drainage channels and repair as necessary to restore proper operation. (3 weeks)
15. With the permission of the Sediment Control Inspector dewater the sediment basin and re-excavate any sediment as necessary to restore pond invert to original elevation of 195. Eliminate 36" riser for sediment control, install 24" CMP to convert sediment control basin for use as a stormwater management basin. (4 weeks)

Phase 2

1. Pre-construction meeting for construction of Phase 2 Sediment/stormwater management basin.
2. Install sediment control devices.
3. Construct sediment/stormwater management basin. Construct Basin #2
4. Install concrete drainage channels.
5. Install earth dikes where shown on plan. Begin clearing operations for lift number 1 (up to elevation 170) and construct additional concrete channels and rip-rap channels where indicated on plan, as desired fill levels are reached.
6. Remove sediment control devices around sediment basin.
7. Repeat steps 12 - 15 of Phase 1 until completion of grading operation for the Site (10 years)

DETAIL 5 - RIP-RAP INFLOW PROTECTION



Construction Specifications

1. Rip-rap lined inflow channels shall be 1' in depth, have a trapezoidal cross section with top of channel at side slopes and 3' (min.) bottom width. The channel shall be lined with 4" to 12" rip- rap to a depth of 18".

2. Filter cloth shall be installed under all rip-rap. Filter cloth shall be Geotextile Class C.

3. Entrance and exit sections shall be installed as shown on the detail section.

4. Rip-rap used for the lining may be recycled for permanent outlet protection if the basin is to be converted to a stormwater management facility.

5. Section Inflow Protection may be used in lieu of Rip-rap inflow Protection.

6. Rip-rap should blend into existing ground.

7. Rip-rap Inflow Protection shall be used where the slope is between 4:1 and 10:1. For slopes flatter than 10:1 use Earth Dike or Temporary Swale lining criteria.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE B - 4 - 2	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE

Construction Specification

1. Length - minimum of 50' (*50' 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.

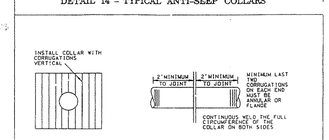
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F - 17 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

INSPECTION NOTIFICATION

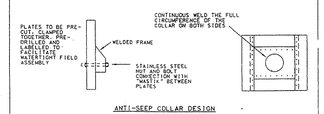
Cordero, Ward and Associates are to be notified 24 hours prior to start of construction of any Storm Drainage or Stormwater Mgmt. depicted per this approved plan. As the Engineer of Record, Cordero, Ward and Associates must provide inspection services separate and apart from any of those required by Prince George's County so that "As Built" plans and certification may be provided for release of bonds. Failure to do so may result in unearthing of systems and/or severe hardship in obtaining release of bonds and ultimate Use and Occupancy Permits.

Released by: _____ Date: _____

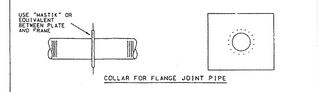
DETAIL 14 - TYPICAL ANTI-SEEP COLLARS



COLLAR WELDED IN PLACE ON BARREL SECTION



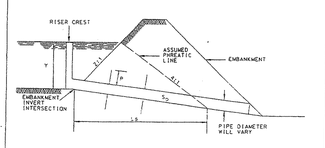
ANTI-SEEP COLLAR DESIGN



COLLAR FOR FLANGE JOINT PIPE

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE C - 10 - 24	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 13 - ANTI-SEEP COLLAR DESIGN



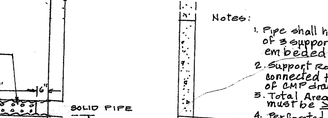
ANTI-SEEP COLLAR DESIGN

where: p= vertical projection of anti-seep collar(ft).
L$_s$ = length of pipe in the saturated zone (ft.)
y= distance in feet from upstream invert of pipe to highest normal water level expected to occur during the life of the structure. usually the top of the riser.
z= slope of upstream embankment as a ratio of 2 ft. horizontal to one ft. vertical.
k$_m$= slope of pipe in feet per foot.

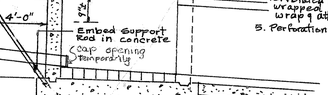
This procedure is based on the phreatic line as shown in the drawing above:

DETAIL 26 - TYPICAL ANTI-SEEP COLLARS

COLLAR WELDED IN PLACE ON BARREL SECTION



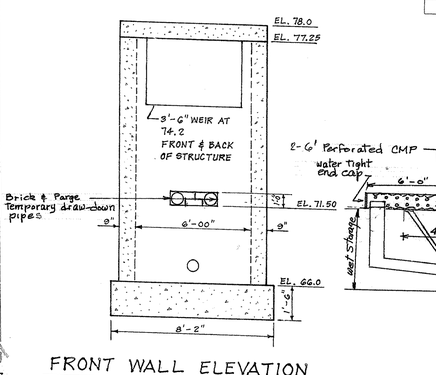
ANTI-SEEP COLLAR DESIGN



COLLAR FOR FLANGE JOINT PIPE

FRONT WALL ELEVATION STRUCT. #1

NOT TO SCALE



CMP HORIZ. DRAW-DOWN PIPE

N.T.S.

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
MICHAEL A. ADDY, PE
LICENSE NO. 17751
EXPIRATION DATE: 03/05/15
05/12/14

DATE	DESCRIPTION	BY
3-25-14	Updated Specs. 88b Sheet 30	MW
4-29-03	Added Ban Dyer Block, Revised SCD Sheet Numbers. ⚠	JB
DATE	DESCRIPTION REVISIONS	BY

11721 WOODMORE ROAD, MITCHELLVILLE, MD 20721
BEN DYER ASSOCIATES, INC
ENGINEERS, SURVEYORS, PLANNERS
TELEPHONE: (301) 420-2000

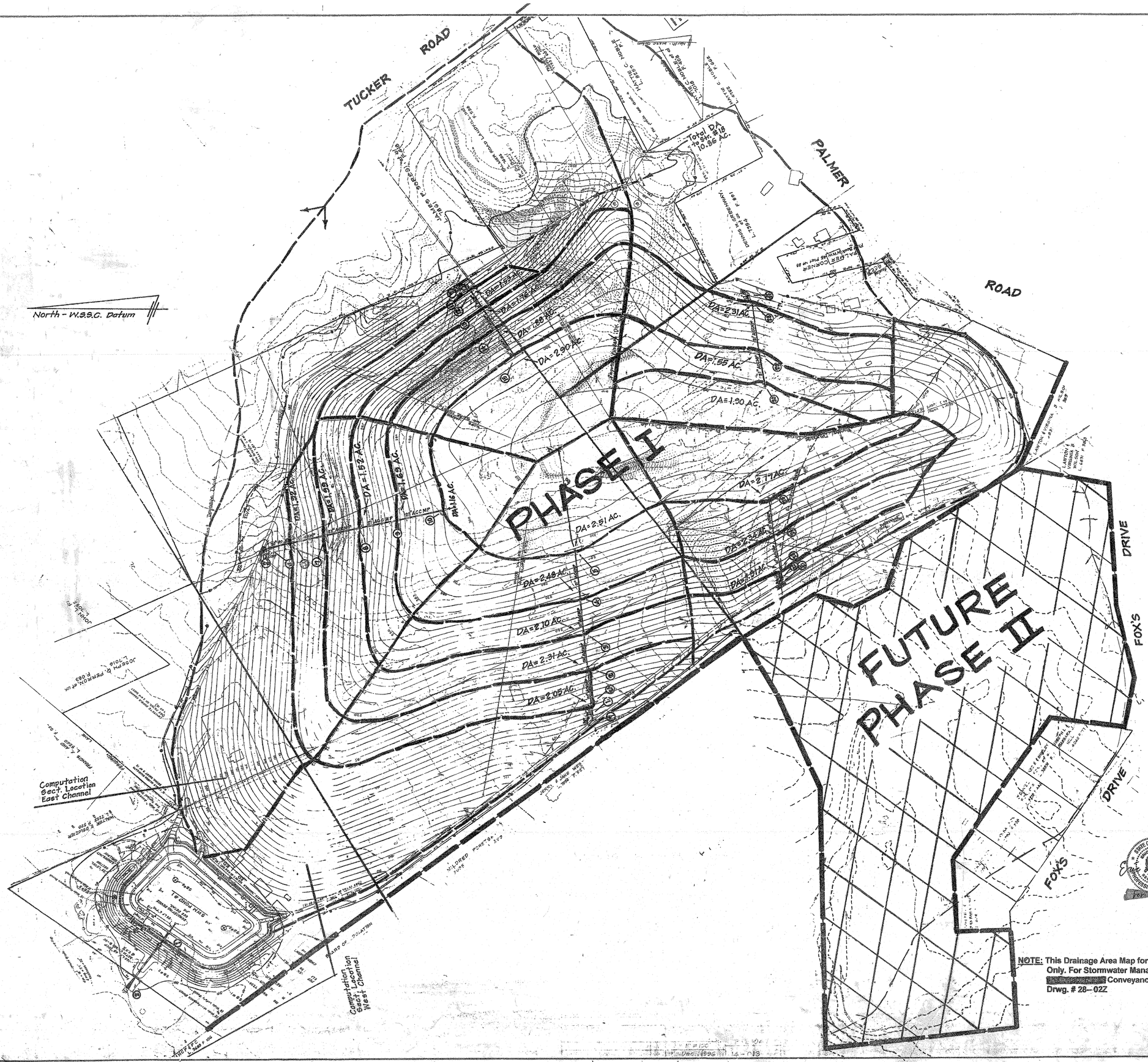
DESIGNED BY	SCALE	JOB NO.
	AS SHOWN	J-80035
DRAWN BY	DATE	SHEET NO.
	APRIL 2003	6.00.11-2

SITE GRADING, SEDIMENT & EROSION CONTROL AND STORMWATER MANAGEMENT PLAN

PALMER ROAD LANDFILL

Oxon Hill Election District #12
Prince George's County, Maryland

(114)



DATE	DESCRIPTION	BY
4-29-03	Added Bern Dyer Block, Revised SCD Sheet Numbers	JA
	REVISIONS	

11721 WOODMORE ROAD, MITCHELLVILLE, MD 20721
BEN DYER ASSOCIATES, INC.
ENGINEERS, SURVEYORS, PLANNERS
TELEPHONE: (301) 430-2090

DESIGNED BY | DRAWN BY | CHECKED BY | RECORD NO.
J-80035
SCALE: 1"=100'
DATE: APRIL 2003
DRAWING NO.: 6.00.12-Z

COMPOSITE AND DRAINAGE AREA MAP FOR SITE GRADING, SEDIMENT & EROSION CONTROL AND STORMWATER MANAGEMENT PLAN

PHASE I

PALMER ROAD LANDFILL

Oxon Hill Election District #12
Prince George's County, Maryland

4/30/03

STATE OF MARYLAND — ERIC JAMES LAWTON — REGISTERED PROFESSIONAL ENGINEER

NOTE: This Drainage Area Map for Conveyance System Only. For Stormwater Management Pond Pipe & Channel Conveyance Information, see Drwg. # 28-02Z

(114)
SCD-SHT. 11 OF 37

REVISIONS			
DATE	DESCRIPTION	BY	

CORDERO WARD & ASSOCIATES
ENGINEERS & PLANNERS
9010 SUNNYSIDE AVE., SUITE 100
BELTSVILLE, MARYLAND 20705
(301) 595-0440

drawn by: JH | checked by: | record no.
scale: 1"=100' | dwg. no.
date: Dec., 1996 | J-80035

Dec. 1996 14-013

STANDARD SYMBOLS

- SUPER SILT FENCE
- HAY BALE DIKE
- HARD INLET PROTECTION
- GRADE INLET PROTECTION
- SP INLET PROTECTION
- HARD INLET PROTECTION
- NEW INLET PROTECTION
- RAMP INLET PROTECTION
- SPIRIT
- LABELIZED CONSTRUCTION ENTRANCE
- REVABLE PUMP BAG



SEDIMENT BASIN DATA:

DRAINAGE AREA = 23.8 Ac.
STORAGE REQ'D = 85,680 Ft³
BOTTOM ELEVATION = 155
TOP OF EMBANKMENT EL. = 160.5
SIDE SLOPES @ 3:1
TOP WIDTH = 10'
CLEANOUT ELEV. = 156.0
NORMAL WATER DEPTH = 2'
TOP OF RISER = 158.5

North - W.S.S.C. Datum

PLEASE NOTE THAT THE CENTERLINE OF SEEPAGE BEGINNING AT THE PROPERTY LINE BETWEEN THE PORETSKY PROPERTY AND PALMER ROAD FILL SITE DISCHARGE POINT OF THE PROPOSED STORMWATER POND IS THE START OF DESIGNATED "WATERS OF THE U.S." AS DEFINED BY THE U.S. ARMY CORPS OF ENGINEERS. PER THE ENVIRONMENTAL PLANNING SECTION OF THE COUNTY WIDE PLANNING DIVISION OF THE MNCPPC (PRINCE GEORGE'S) A 50' BUFFER FROM SUCH WATERS IS REQUIRED, AND THE DAM BREACH FLOOD LIMIT IS CONTAINED WITHIN THIS FUTURE 50' BUFFER.

MILDRED PORETSKY
L. 3095 F. 299

50' BUFFER

C. WATERS OF THE U.S.

MAINTENANCE ACCESS

LOD

SF

TOP OF EMBANKMENT @ EL. 160.5

MAINTENANCE ACCESS

INITIAL GRADING OF SEDIMENT BASIN

STOCKPILES AREA (15' HIGH SIDE SLOPES @ 3:1)

PROVIDE SEDIMENT BASIN BAFFLE (SEE DETAIL)

MAINTENANCE

VEHICLE TURNAROUND

SILT FENCE

EDWARD FOX
L. 3883 F. 9

THERESA FOX
L. 3883 F. 938

H. M. MURPHY
L. 57 F. 583

FOX 3 DRIVE

F. P. & M. E. FLURY
L. 618 F. 577

E. E. WALDEN
L. 8427 F. 621

M. L. & L. PARISH
L. F.

E. E. GREEN
L. 3236 F. 297

T. WILKINSON, ET AL
L. 11310 F. 487

LAWTON & VIRGINIA B. WILSON
L. 6831 F. 383

1/2 DIA. OF 42" HDPE @ 10% TEMPORARY DIVERSION PIPE (EXTEND ENDSECTION AND STONE OUTFALL PAD)

POND GRADING

RUBBLE CHANNEL "A"

RRP

Q25 = 10.2 CFS
FLOW DEPTH UNDER 3' d = 9"
V = 2.7 FPS
Vo = 3.3 FPS

LIMIT OF CLAY CORE TRENCH

24" HDPE

1180' SWALE @ 1.0%

SD DRAINAGE SYSTEMS

INV. @ 161.0

169.5

166.5

EX. TC

MATCHLINE

"C"

100' @ 5.0%

SEE SHEET 2 OF 10

EXISTING COND. & ULTIMATE DRAINAGE AREA = 23.8 Ac.

25' CONSTRUCTION DRIVE

PROP. TC

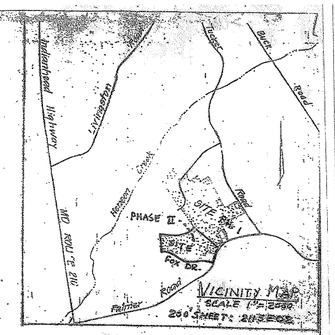
PHASE II

APPROX. LOCATION OF EXISTING STOCKPILE CORE TRENCH MATERIAL SAMPLED BY GEORGE'S AS CL AND CH.

PALMER ROAD

PALMER CORNER SUBDIVISION Plat No 82

Outline of Sediment Basin



VICINITY MAP
SCALE 1"=2000'
200' SHEET: 213 NW 02

TOTAL DISTURBED AREA = 24 ACRES

PRINCE GEORGE'S SOIL CONSERVATION DISTRICT
APPROVED
SEDIMENT CONTROL GRADING PLAN
SCD LOT = 51 EXCESS = 23.0
BOND = 27.- 00
Lance Lardner 5-5-03
DISTRICT INSPECTOR DATE

11721 WOODMORE ROAD, MITCHELLVILLE, MD 20721
BEN DYER ASSOCIATES, INC.
ENGINEERS, SURVEYORS, PLANNERS
TELEPHONE: (301) 430-2000

SCALE	DESIGNED BY	CHECKED BY	RECORD NO.
1" = 50'			J-80035
APRIL 2003			6.0013-Z

DATE	DESCRIPTION	BY
4-29-03	Added Ben Dyer Block, Revised SCD Drawing Numbers, Crossed Out Approval Block.	J.B.

REVISIONS

WARNING: This plan is, and remains the sole property of Cordero, Ward & Associates until released by signature of a principal of that firm. Reproduction of this plan may not be made without the expressed permission of Cordero, Ward & Associates. Violations will be prosecuted to the full extent of the law.

Released by: _____ Date: _____

Owner/Applicant/Developer:
Palmer Road Landfill, Inc.
3336 Kenilworth Ave.
Hyattsville, Maryland 20781
Attn.: Craig Harris
Phone: 301-403-0400

4/30/03

CALL "MISS UTILITY" TELEPHONE: 1-800-257-7777
For utility locations at least 48 hours before beginning construction.
It shall be the responsibility of the Permittee to arrange for adjustments of all Utilities.

PHASE II

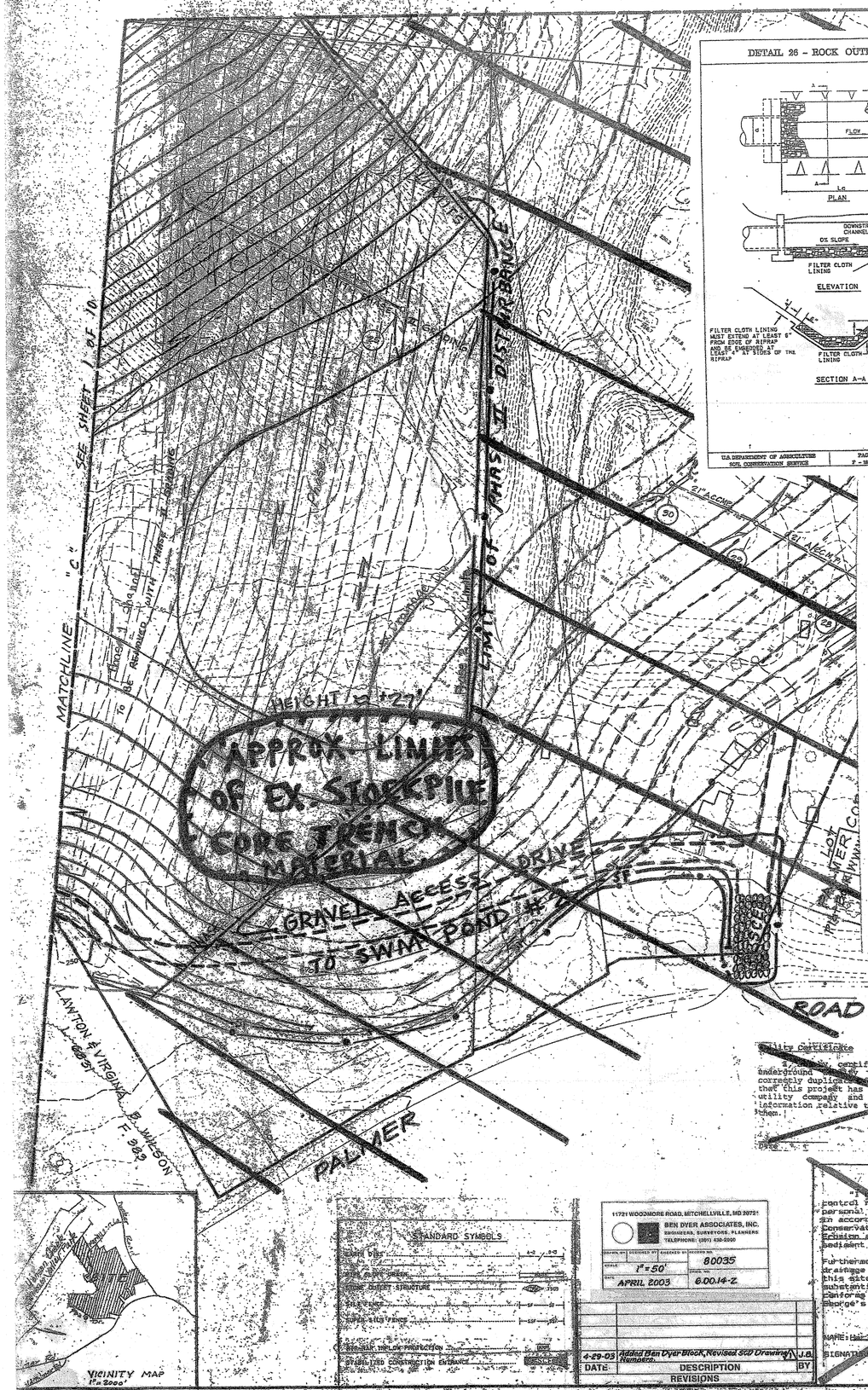
SEDIMENT & EROSION CONTROL PLAN
PALMER ROAD LANDFILL

Oxon Hill Election District #12 (114)
Prince George's County, Maryland
SC-SHT. 12 OF 3738

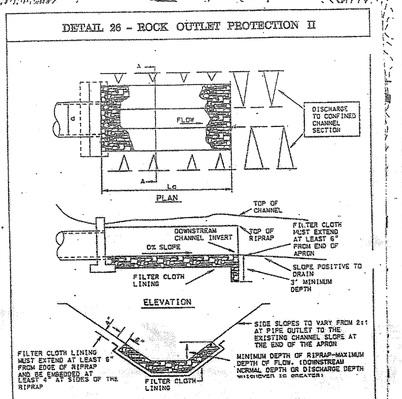
REVISIONS		
DATE	DESCRIPTION	BY

CORDERO WARD & ASSOCIATES
ENGINEERS & PLANNERS
5010 SUNNYSIDE AVE. SUITE 100
BELTSVILLE, MARYLAND 20705
(301) 345-1440

drawn by: [illegible] | checked by: [illegible]
scale: 1"=50' | date: Sept., 2000 | dwg. no. [illegible]

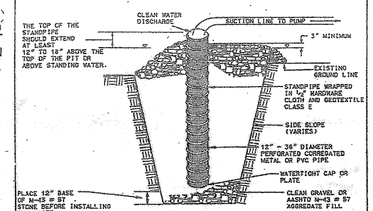


DETAIL 26 - ROCK OUTLET PROTECTION II



U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F-18-3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 20B - SUMP PIT



STANDARD SYMBOL: ☒ SP

Construction Specifications

1. Pit dimensions are variable, with the minimum diameter being 2 times the standpipe diameter.

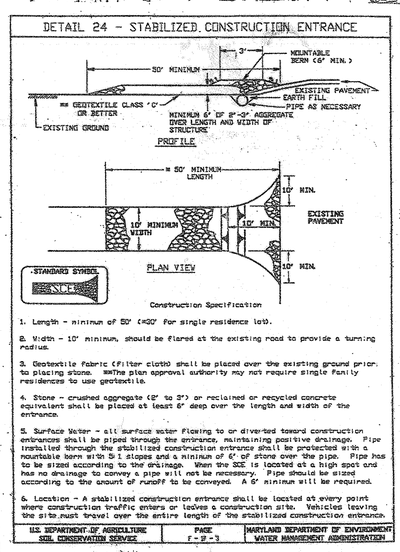
2. The standpipe should be constructed by perforating a 12" to 24" diameter corrugated or PVC pipe. Then wrapping with ½" hardware cloth and Geotextile Class E. The perforations shall be ½" x 6" slits or 1" diameter holes.

3. A base of filter material consisting of clean gravel or #57 stone should be placed in the pit to a depth of 12". After installing the standpipe, the pit surrounding the standpipe should then be backfilled with the same filter material.

4. The standpipe should extend 12" to 18" above the lip of the pit or the riser crest elevation (basin dewatering only) and the filter material should extend 3" minimum above the anticipated standing water elevation.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE D-18-2	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



STANDARD SYMBOL: SCE

Construction Specification

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.

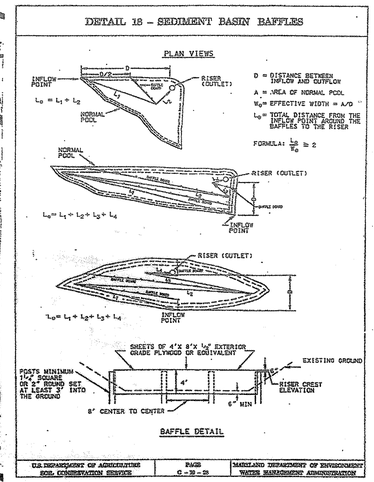
4. Stone - crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.

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.

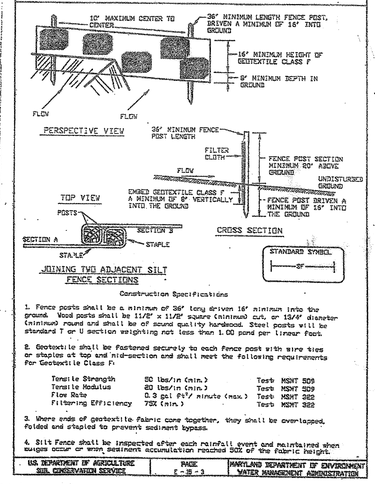
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F-9-3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 18 - SEDIMENT BASIN BAFFLES



U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE C-18-25	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 22 - SILT FENCE



Construction Specifications

1. Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 1½" x 1½" square (minimum) cut, or 13/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighting not less than 1.00 pond per linear foot.

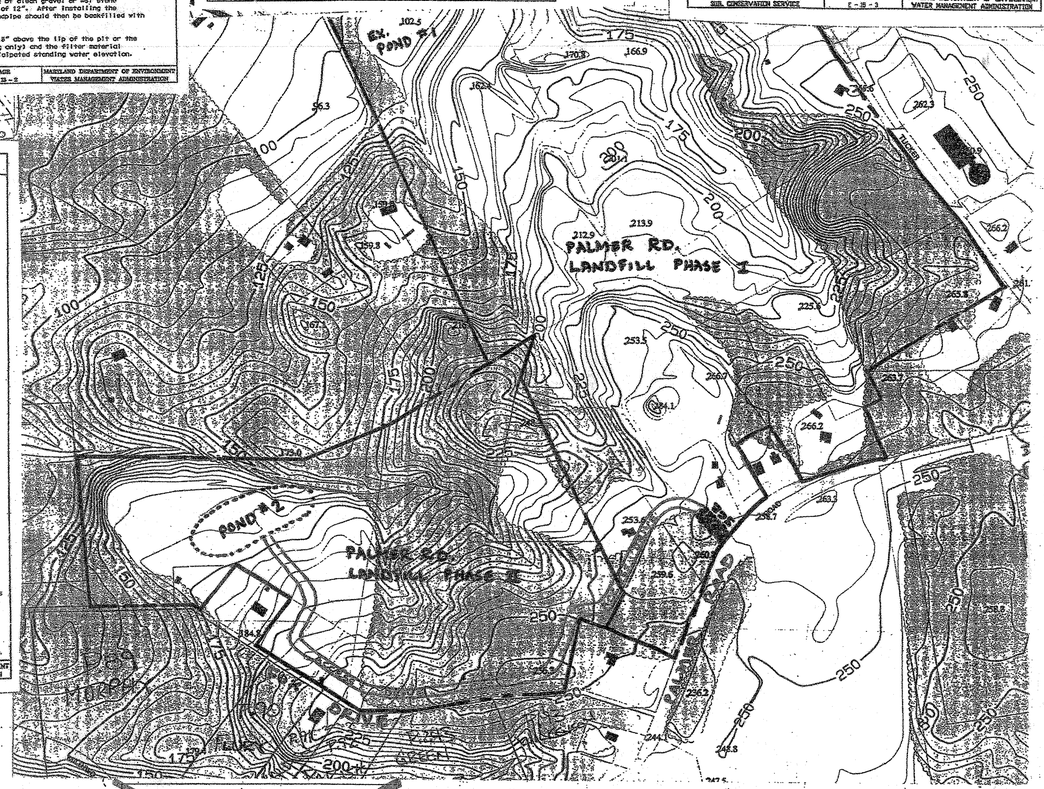
2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test MSMT 509
Flow Rate	0.3 gal ft²/ minute (max.)	Test MSMT 322
Filtering Efficiency	75% (min.)	Test MSMT 322

3. Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.

4. Silt fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F-18-3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION


EX. POND #1
POND #2
PALMER RD. LANDFILL PHASE I
PALMER RD. LANDFILL PHASE II
MATCHLINE
MATCHLINE
MATCHLINE

19.0 STANDARDS AND SPECIFICATIONS FOR LAND GRADING

Definition

...ishing land surface in accordance with a plan as determined by engineering survey and

Purpose

...and grading specifications is to provide for erosion control and vegetative establishment on the existing land surface is to be reshaped by grading according to plan.

Design Criteria

...should be based upon the incorporation of building designs and street layouts that fit and ...opography and desirable natural surroundings to avoid extreme grade modifications. ...ained must provide sufficient topographic surveys and soil investigations to determine ...ions be imposed on the grading operation related to slope stability, effect on adjacent ...drainage patterns, methods for drainage and water removal and vegetative treatment, etc.

...he regulations and design procedures already established for land grading and cut and fill ...ons requirements exist they shall be followed. The plan must show existing and proposed ...ready to be graded. The plan shall also include practices for erosion control, slope ...disposal of runoff water, land drainage, fresh as waterways, lined chutes, reverse slope ...grade, and cross section of grade stabilization structures, retaining walls, and surface and ...The plan shall also include phasing of these practices. The following shall be incorporated

...ans shall be made to safely conduct surface runoff to storm drains, protected outlets or to ...ent courses to insure that surface runoff will not damage slopes or other graded areas.

...ll fill slopes that are to be stabilized with grasses shall not be steeper than 2:1. (Where the ...to be mowed the slope should be no steeper than 3:1; 4:1 is preferred because of safety factors ...in mowing steep slopes.) Slopes steeper than 2:1 shall require special design and stabilization ...ures that shall be adequately shown on the plans.

...ge benches shall be provided whenever the vertical interval (height) of any 2:1 slope exceeds ...0 feet. Each bench shall be laid out to fit the topography as closely as possible. Benches shall be located ...the slope ratio as equally as possible and shall connect the water to a stable outlet. Soils, ...ck outcrops, etc., shall also be taken into consideration when designing benches.

...Benches shall be a minimum of six (6) feet wide to provide for ease of maintenance.

...Benches shall be designed with a reverse slope of 6:1 or flatter to the toe of the upper ...ope and with a minimum of one foot in depth. Such gradient to the outlet shall be ...ween 2 percent and 3 percent, unless accompanied by appropriate design and ...ructures.

...The flow length within a bench shall not exceed 800' unless accompanied by appropriate ...design and computations. For flow charts, assume six inches per twelve feet.

...Water shall be diverted from the face of all cut and/or fill slopes by the use of earth dikes, ...ale, swales or engineered downslope by the use of a designed structure, except where:

...The face of the slope is or shall be stabilized and the face of all graded slopes shall be ...protected from surface runoff until they are accepted.

...The face of the slope shall not be subject to any concentrated flows of surface water such ...from natural drainageways, graded swales, downspouts, etc.

...The face of the slope will be protected by special erosion control materials, to include, but ...not limited to: approved vegetative stabilization practices (see section G), rip-rap or other ...approved stabilization methods.

...Water occurring in rippable rock shall be diverted as shown on the following diagram. These ...shall be made with conventional equipment as the excavation is made. Each step or ...shall be constructed on the contour and will have steps cut at normally two-foot intervals with ...cross-cut horizontal benches shown. These steps will vary depending on the slope ratio or the cut ...The nominal slope line is 1:1. These steps will weather and act to hold moisture, lime, ...and seed thus producing a much quicker and larger final vegetative cover and better slope ...ion. Overland flow shall be diverted from the top of all terraced cut slopes and carried to ...structure.

...Surface drainage shall be provided where necessary to intercept seepage that would otherwise ...to affect slope stability or cause excessively wet site conditions.

...Fills shall not be placed so close to property lines as to endanger adjoining properties without ...protecting such properties against sedimentation, erosion, slippage, settlement, subsidence ...related damage.

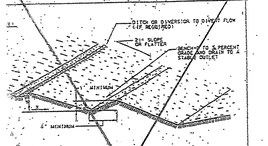
...Fill material shall be free of brush, rubbish, rocks, logs, stumps, building debris and other ...like material. It should be free of stones over two (2) inches in diameter where compacted ...or mechanical tampers or over eight (8) inches in diameter where compacted by rollers or ...earth moving. Stone material shall not be placed in the fill nor shall the fill material be placed on ...frozen ground.

...Fill, borrow areas and spoil shall be shown on the plan and shall be subject to the ...of this Standard and Specifications.

...All disturbed areas shall be stabilized structurally or vegetatively in compliance with 20.0 ...and Specifications for Vegetative Stabilization.

SEE LAND GRADING SPECIFICATIONS ON SHT. 9 OF 10

DETAIL 28 - BENCHED SLOPES



Construction Specifications

...Fills shall be compacted as required to reduce erosion, ...slope settlement, subsidence or other related problems. ...Fill used for structural support (highways and buildings) ...shall be compacted in accordance with local requirements, ...codes.

...Fills shall be placed and compacted in layers not to ...exceed 8" in thicknesses.

...Except for approved landfills or construction fill (Ltd. Fill) ...material shall be free of roots, rubbish, rocks, logs, stumps, ...building debris and other objectionable materials that would ...hinder or prevent construction or satisfactory fills.

...Frozen material or soft, mucky or highly compressible ...materials shall not be placed in fills. Fill material shall not ...be placed on a frozen foundation.

...Fill placement shall be kept free of excessive surface wet ...weather or dry conditions.

...Seeps or springs encountering during construction shall be ...handled in accordance with the Standards and Specifications ...for dewatering or other approved methods.

...All slopes steep shall be permanently stabilized ...immediately following construction.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F-19-1	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

21.0 STANDARD AND SPECIFICATIONS FOR TOPSOIL

Definition

Placement of topsoil over a prepared subsoil prior to establishment of permanent vegetation.

Purpose

To provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, unsuitable toxic material, and/or unacceptable soil gradation.

Conditions Where Practice Applies

I. This practice is limited to areas having 2:1 or flatter slopes where:

a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.

b. The soil material is so shallow that the rooting zone is not deep enough to support plant or furnish continuing supplies of moisture and plant nutrients.

c. The original soil to be vegetated contains material toxic to plant growth.

d. The soil is so acidic that treatment with limestone is not feasible.

II. For the purpose of these Standards and Specifications, areas having slopes steeper than 2:1 require special consideration and design for adequate stabilization. Areas having slopes steeper than 2:1 shall have the appropriate stabilization shown on the plans.

Composition and Material Specifications

I. Topsoil salvaged from the existing site may be used provided that it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-SCS in cooperation with Maryland Agricultural Experiment Station.

II. Topsoil Specifications - Soil to be used as topsoil must meet the following:

1. Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Regardless, topsoil shall not be a mixture of contrasting textured subsoils and shall contain less than 5% by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1½" in diameter.

ii. Topsoil must be free of plants or plant parts such as bermuda grass, quackgrass, Johnsongrass, nutsedge, poison ivy, thistle, or others as specified.

iii. Where the subsoil is either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate of 4-8 tons/acre (90-400 pounds per 1,000 square feet) prior to the placement of topsoil. Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.

III. For sites having disturbed areas under 5 acres:

1. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials.

For sites having disturbed areas over 5 acres:

1. On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:

a. pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.

b. Organic content of topsoil shall be not less than 1.5 percent by weight.

c. Topsoil having soluble salt content greater than 500 parts per million shall not be used.

d. No sod or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic material.

Note: Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.

b. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials.

V. Topsoil Application

i. When topsoiling, maintain seeded erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Slope Silt Fence and Sediment Traps and Basins.

ii. Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4" - 8" higher in elevation.

iii. Topsoil shall be uniformly distributed in a 4" - 8" layer and lightly compacted to a minimum thickness of 4". Spreading shall be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.

iv. Topsoil shall not be placed while the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

VI. Alternative for Permanent Seeding - Instead of applying the full amounts of lime and commercial fertilizer, composted sludge and amendments may be applied as specified below:

i. Composted Sludge Material for use as a soil conditioner for sites having disturbed areas over 5 acres shall be tested to prescribe amendments and for sites having disturbed areas under 5 acres shall conform to the following requirements:

a. Composted sludge shall be supplied by, or originate from, a person or persons that are permitted (at the time of acquisition of the compost) by the Maryland Department of the Environment under COMAR 26.04.06.

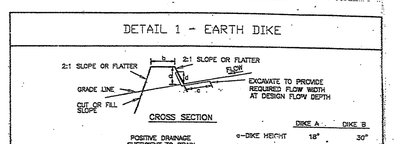
b. Composted sludge shall contain at least 1 percent nitrogen, 1.5 percent phosphorus, and 0.2 percent potassium and have a Ph of 7.0 to 8.0. If compost does not meet these requirements, the appropriate constituents must be added to meet the requirement prior to use.

c. Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.

iv. Composted sludge shall be amended with a potassium fertilizer applied at the rate of 4 lbs/1,000 square feet, and 1/3 the normal lime application rate.

References: Guideline Specifications, Soil Preparation and Sodding. MD-VA. Pub. #1, Cooperative Extension Service, University of Maryland and Virginia Polytechnic Institute. Revised 1973.

DETAIL 1 - EARTH DIKE



DIKE A	DIKE B
a-DIKE HEIGHT 18"	30"
b-DIKE WIDTH 24"	36"
c-FLOW WIDTH 4'	5'
d-FLOW DEPTH 12"	24"

1. Seed and cover with straw mulch.
2. Seed and cover with Erosion Control Matting or line with sod.
3. 4" - 7" stone or recycled concrete equivalent pressed into the soil 7" minimum

Construction Specifications

1. All temporary earth dikes shall have uninterrupted positive grade to an outlet. Spot elevations may be necessary for grades less than 1%.

2. Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.

3. Runoff diverted from an undisturbed area shall outlet directly into an undisturbed, stabilized area at a non-erosive velocity.

4. All trees, brush, stumps, obstructions, and other objectional material shall be removed and disposed of so as not to interfere with the proper functioning of the dike.

5. The dike shall be excavated or shaped to line, grade and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.

6. Fill shall be compacted by earth moving equipment.

7. All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the dike.

8. Inspection and maintenance must be provided periodically and after each rain event.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F-18-3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

VEGETATIVE STABILIZATION

Permanent and Temporary Seeding, Sodding and Mulching

I. **Site Preparation**

Permanent or temporary vegetation shall be established within seven (7) days on the surface of all sediment control structures such as diversions, grade stabilization structures, berms, waterways, sediment control basins, and all slopes greater than 3 horizontal to 1 vertical (3:1) and within 14 days for all other disturbed or graded areas on the project site. Mulching may be used on disturbed areas as temporary cover where vegetation is not feasible or where seeding cannot be completed because of weather.

II. **Seedbed Preparation and Seeding Application**

Loosen the top layer of the soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment such as: disc harrows, chisel plows or rippers mounted on construction equipment. Incorporate the lime and fertilizer into the top 2 to 5 inches of the soil by disking or by other suitable means. Rough areas should not be rolled or dragged smooth, but left in a roughened condition. Steep slopes greater 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 3 to 5 inches of soil should be loose and friable. Permanent cover may require an application of topsoil. If so, it must meet the requirements set forth in Section 21.0 Standards and Specifications for Topsoil in the 1994 Standards and Specifications.

III. **Soil Amendments**

Soil tests shall be made on sites over five acres to determine the exact requirements for both lime and fertilizer. For sites under 5 acres, in lieu of a soil test, apply the following:

Fertilizer	Nitrogen	2.1lbs/1000 sq. ft. (90 lbs/ac)
	P_2O_5	4 lbs/1000 sq. ft. (175 lbs/ac)
	K_2O	4 lbs/1000 sq. ft. (175 lbs/ac)

For low maintenance areas apply 150 lbs/ac ureaform fertilizer (38-0-0) at 3.5 lbs/1000 sq. ft. In addition to the above fertilizer at the time of seeding:

Ground Limestone 2 tons/ac

IV. **Sediment Control Practice Seeding**

Select a seeding mixture from tables 25 or 26 in Section G of the 1994 Standards and Specifications. Document seeding on the erosion and sediment control plan using appropriate chart below. Note: if sediment control practices are in for longer than 12 months, permanent seeding is required.

V. **Temporary/Permanent Seeding Mixtures and Rates**

Select a seeding mixture from appropriate table 25 or 26 in Section G of the 1994 Standards and Specifications. Document seeding on the erosion and sediment control plan using appropriate chart below.

Temporary Seeding Summary

No.	Seed Mixture (Hardiness Zone 7a From Table 26	Application Rate (lbs/ac)	Seeding Dates	Seeding Depth	Fertilizer Rate (10-10-10)	Lime Rate
1	Rye	140	2/1 - 4/30 8/15 - 11/30	1"-2"	600 lbs/ac (13 lbs/1000 sf)	2 tons/ac (100 lbs/1000 sf)

STATE OF MARYLAND — JAMES E. DYER — No. 7721 — PROFESSIONAL ENGINEER — 6/24/04

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

MICHAEL A. MOHR, PE
LICENSE NO. 17711
EXPIRATION DATE: 03/05/15

DATE	DESCRIPTION	BY
3-25-14	Updated specs. See sheet 20	MAV
4-29-03	Added Ben Dyer Block, Revised SCD Drawing Numbers.	J.B.
REVISIONS		

9172I WOODMORE ROAD, MITCHELLVILLE, MD 20721
BEN DYER ASSOCIATES, INC.
ENGINEERS, SURVEYORS, PLANNERS
TELEPHONE: (301) 430-2000

DRAWN BY DESIGNED BY CHECKED BY	SCALE: AS SHOWN
DATE: APRIL 2003	JOB NO.: 80035
	SHEET NO.: 6.00.15-Z

Figure 2 Temporary Sediment Basin Design Data Sheet

Computed by: TG Date: 9/01 Checked by: CH Date: SEPT 2001
Project name: PALMER RD PH#2 Basin #: SEDIMENT BASIN # 1
Location: PHASE II PALMER ROAD LANDFILL AT SWM POND #2

Total area draining to basin: 25.9 acres (ac)

Basin Volume Design

Note: 1. Also see Surface Area Design #20, this form.
2. To convert ft³ to yd³, divide ft³ by 27. To convert ft² to yd², divide ft² by 9.

1. Min. required vol. = 3600 ft³/ac x 23.8 ac drainage = 85680 ft³
2. Actual Volume of basin = 744657 ft³ @ EL. 158.5
3. Excavate 80000 ft³ (2963 yd³) to obtain required capacity.
4. Vol. at dewatering elev. = 1800 ft³/ac x 23.8 ac. = 42840 ft³
5. Vol. of basin at cleanout = 900 ft³/ac x 23.8 ac. = 21420 ft³
6. Elevation corresponding to min. required volume of basin (riser crest elevation) 157.0 ft.
7. Permanent pool elevation 157.0 ft.
8. Distance from riser crest elevation to permanent pool elevation: 1.5 ft.
9. Basin cleanout elevation 156.1 ft.
10. Distance from riser crest elevation to cleanout elevation 2.4 ft.

Spillway Design

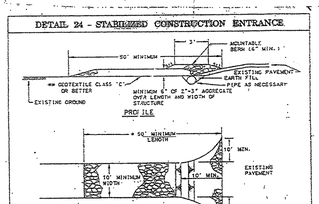
11. Q_{in} = 122 cfs (peak discharge from 10-yr, 24-hr storm event, attach computations)

Principal Spillway (One) (See Detail 11)

12. Design Principal Spillway (Barrel) discharge, Design Q_o = 110 cfs (min. 10% of 10 year peak or 5" Diameter Pipe)
13. H = 8.5 ft.; Barrel length = 175 ft.
14. Barrel Diam. 36 in. Note: Q_o must equal or exceed Design Q_o
Q_o = Q (from Table 15 or 16) .64 x (length correction factor) 1 = 42 cfs.
15. Riser Diameter N/A in.; Riser Height 9 ft.; Riser Head (h) = 8.5 ft.
16. Trash Rack Diam. N/A in.; Trash Rack Height N/A ft.

SEQUENCE OF CONSTRUCTION
1. CONTRACTOR IS TO OBTAIN ALL NECESSARY PERMITS BEFORE BEGINNING CONSTRUCTION.
2. PRIOR TO CLEARING OF TREES, INSTALLATION OF SEDIMENT CONTROL MEASURES OR GRADING, A PRECONSTRUCTION MEETING MUST BE CONDUCTED ONSITE WITH D.E.R. INSPECTOR AND PARTICIPANTS. (ALLOW 48 HOURS NOTICE)
3. CALL MISS-UTILITY TO LOCATE EXISTING LINES, CONTRACTOR IS RESPONSIBLE FOR DAMAGES.
4. THE LIMITS OF DISTURBANCE MUST BE FIELD MARKED PRIOR TO CLEARING OF TREES OR OTHER LAND DISTURBING ACTIVITIES. (5 DAYS)
5. INSTALL STABILIZED CONSTRUCTION ENTRANCE AND TREE PROTECTION DEVICE NECESSARY TO BEGIN CLEARING CONSTRUCTION ACCESS ROAD TO SEDIMENT BASIN LOCATION. (10 DAYS)
6. INSTALL SILT FENCE AT BASIN LOCATION AS SHOWN ON PLAN. BEGIN GRADING SEDIMENT BASIN, CLAY CUTOFF TRENCH AND PRINCIPAL SPILLWAY. A STOCKPILE OF CORE TRENCH MATERIAL HAS BEEN LOCATED ONSITE. THE GEOTECHNICAL ENGINEER HAS SAMPLED THIS STOCKPILE AND CLASSIFIED THE MATERIAL AS CL AND CH. ALLOW FOR DEWATERING DURING CONSTRUCTION AS SUPERVISED BY GEOTECHNICAL ENGINEER. (30 DAYS)
7. CONSTRUCT 42" HDPE TEMPORARY DIVERSION PIPE AND EARTH DIKE TO DRAIN DURING CORE TRENCH CONSTRUCTION. THE BASIN SHALL BE CONSTRUCTED INITIALLY AS A POND AND MODIFIED FOR TEMPORARY SEDIMENT CONTROL USE (15 DAYS)
8. PROVIDE SILT FENCE AROUND STOCKPILE AREA.
9. ONCE SEDIMENT CONTROL DEVICES ARE INSTALLED, CONTRACTOR MUST OBTAIN APPROVAL BY INSPECTOR BEFORE PROCEEDING WITH ANY ADDITIONAL CLEARING OR GRADING. INSTALL AS NECESSARY SUB-DRAINAGE SYSTEM.
10. BEGIN CLEARING AND GRADING OPERATIONS FOR LIFT 1 (UP TO ELEVATION 200). INSTALL RUBBLE DRAINAGE CHANNELS AND STONE DRAIN WEIRS INDICATED ON PLAN AS DESIRED FILL LEVELS ARE REACHED. (TIME ESTIMATED PER PERMIT)
NOTE: PROVIDE MAINTENANCE ON SEDIMENT TRAP AND DRAINAGE CHANNELS IN PHASE I FILL SITE.
11. NOTIFY THE SEDIMENT CONTROL INSPECTOR BEFORE REMOVING ANY DEVICES. IMMEDIATELY STABILIZE SIDE SLOPES UPON COMPLETION. (5 DAYS)
12. UPON COMPLETE STABILIZATION OF FILL SITE, FLUSH OUT COMPLETED STORM DRAIN AND DRAINAGE CHANNELS. REPAIR AS NECESSARY TO RESTORE TO PROPER OPERATIONS. (5 DAYS)
13. UPON INSPECTOR'S APPROVAL, BEGIN FINAL GRADING OF BASIN AND STORMWATER MANAGEMENT POND PRIOR TO CONVERTING BASIN TO POND. REMOVE TEMPORARY BLOCKING AT RISER AND COMPLETE DETAIL. REMOVE TEMPORARY BLOCKING AT RISER AND COMPLETE STRUCTURE AS SHOWN ON SHEET 7 OF 10 (STRUCTURE DETAILS). (30 DAYS)
14. STABILIZE ANY REMAINING DISTURBED AREA, CALL FOR FINAL INSPECTION.

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE

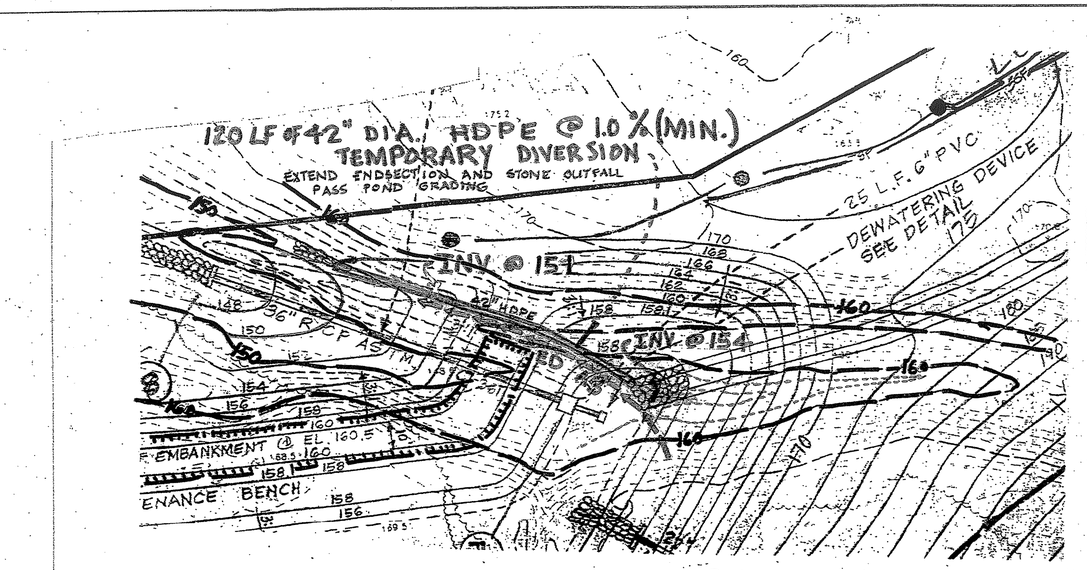


Construction Specification

1. Length - minimum of 50' (*40' 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. Where plan approval authority may not require single family residences to use geotextile.
4. Stone - crushed aggregate (2" to 3") or recycled 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 compacted cover 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 to pipe, ditch, etc. no pipe is required. 4.6" 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.

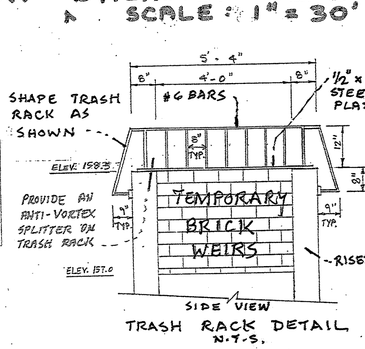
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F-17-1	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

NOTE: PROVIDE "AS-BUILT" WITHIN 30 DAYS AFTER COMPLETION.



TEMPORARY DIVERSION PIPE DETAIL

SCALE: 1" = 30'



TRASH RACK DETAIL
N.T.S.

17. Emergency spillway cap., Q_o = Q_{in} - Q_o = N/A = cfs
18. Width N/A ft; Hp N/A ft
19. Entrance channel slope N/A %
20. Exit channel slope N/A %

Anti-Seep Collar Design (If Required)

21. y = 7.5 ft.; z = 4 :1; pipe slope = 5 %; L_c = 50 ft.
22. Use 1 collars, 13 ft. - 8 in. square; projection = 3.75 ft.
X 11.7

Design Elevations

23. Riser Crest	= 158.5 ft.	24. Design High Water	= 159.0 ft.
25. Emergency Spillway Crest	= N/A ft.	26. Min. settled top of dam	= 160.5 ft.
27. Permanent pool	= 157.0 ft.	28. Bottom of Basin	= 152.0 ft.
29. Draw-down orifice invert	= 157.0 ft.		

Surface Area Design

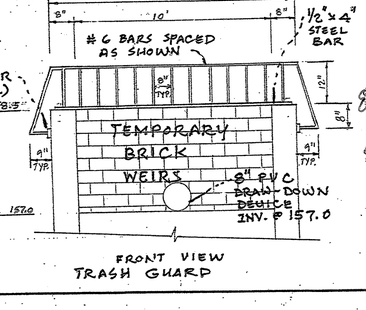
30. Min. basin surface area; SA ≥ 0.0035 x Q_o = 0.0035 x 122 cfs ≤ 1.1 ac.
BOTTOM DIMENSION: 930' x 70' = 0.53 Ac
SURFACE AREA AT SWM = 0.6 AC.

Draw-down Device

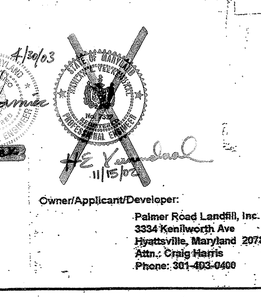
31. Draw-down device orifice diameter = 8 in. (From Table 11)
32. A_o = Total area of perforations ≥ 4A_o
A_o = (# of perforation/foot)(perforation area ft²)(perforated section length ft.)
A_o = 13 ft² x 24 ft²
A_o = Internal orifice area (from Table 11 or computed)
= 0.34 ft²

GENERAL NOTES

1. TRASH RACK TO BE HOT DIPPED GALVANIZED AND WELD #6 SMOOTH BARS TO PLATE, BOLT TO RISER AT CORNERS, TRASH RACK AND BRICK TO BE REMOVED WHEN CONVERTING BASIN TO SWM POND (SEE POND DETAILS).



TRASH GUARD



ELEVATION VIEW (NTS)

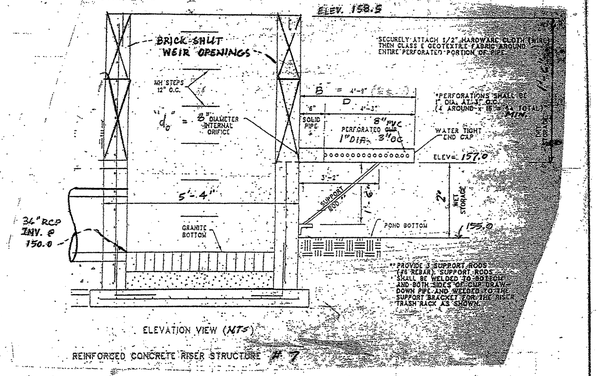
DETAIL OF STRUCTURE # 7

MODIFICATIONS TO BE MADE TO STRUCTURE # 7 TO CONVERT IT INTO A SEDIMENT CONTROL DEVICE.

REFER TO SHEETS 9 AND 10 FOR CONSTRUCTION DETAILS OF BRICK FOR SWM POND

TABLE 1a

Basin # 1		Basin	
d_o	8" IN		IN
B	4.75 LF		LF
C	8" IN		IN
D	2.25 FT		FT



ELEVATION VIEW (NTS)

REINFORCED CONCRETE RISER STRUCTURE # 7

SEDIMENT CONTROL NOTES

1. All erosion and sediment control measures are to be constructed and maintained in accordance with applicable published "1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control".
2. All sediment control measures to be adjusted to meet field conditions at the time of construction and to be constructed prior to any grading or disturbance of existing surface material on balance of site.
3. All sediment control devices are to be temporarily stabilized as per vegetative stabilization specifications, immediately after grading.
4. Periodic inspection and maintenance of all sediment control structures must be provided to insure intended purpose is accomplished. Developer shall be responsible for all sediment leaving the property. Sediment control measures shall be in working condition at the end of each working day.
5. All points of construction ingress and egress will be protected to prevent tracking of mud onto public ways.
6. All sediment will be prevented from entering any storm drainage system (through use of inlet protection). Contractor installing the above shall obtain and follow the "1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control" as distributed by Water Resources Administration, Erosions & Sediment Control Division, Tawes State Office Building, Annapolis, Maryland 21401.
7. All drainage swales and all slopes greater than 3:1 will be sodded. Sediment control structures will be inspected for integrity daily. Any damaged devices shall be corrected immediately.
8. Following initial soil disturbance or redisturbance, permanent or temporary stabilization shall be completed within 7 calendar days to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes greater than 3:1 and 14 days to all other control measures will be maintained on a continuing basis until the site is permanently stabilized and all permit requirements are met.
9. The developer is responsible for the acquisition of all required easements, rights, and/or rights-of-way pursuant to the discharge from the sediment and erosion control practices, storm water conto or across and grading or other work to be performed on adjacent or downstream properties affected by this plan.
10. 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 buildings or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made; and
11. Approval shall be requested upon final stabilization of all sites with disturbed areas in excess of 2 acres before removal of controls.
12. No sediment control structures shall be removed without permission from the sediment control inspector from the Prince George's County Department of the Environment.
13. After removal of temporary sediment structure, the disturbed area must be permanently stabilized per vegetative stabilization guidelines.
14. Disturbed surface area 24.4c.
Volume of spoil material 71,550 c.y.
Volume of borrow material 52,000 c.y.
15. List predominant soil types and general description per PGSCD soil survey.
AuB2 - Adelphi fine sandy loam 2-5% slopes moderately eroded
AuC2 - Aura gravelly loam 5-15% med. eroded
AuD - Aura wravelly loams 12-20%
AvC - Aura croam gravelly loams 20-50% (mostly open)
BeB2 - Beltsville fine sandy loam 2-5% moderately eroded
BeC2 - Beltsville fine sandy loam 5-10% moderately eroded
BlB2 - Beltsville silt loam 2-5% moderately eroded
CmC2 - Collington fine sandy loam 5-10% moderately eroded
CmE2 - Collington fine sandy loam 15-40%
HwB2 - Howell silt loam 0-5% moderately eroded
HwD2 - Howell silt loam 15-20% moderately eroded
HwE2 - Howell silt loam 20-35% moderately eroded
RdC - Runclard - Evesboro
SaE - Sandy land steep
OT - Othello silt loam

STATE OF MARYLAND — ERIC L. HARRIS — No. 21587 — PROFESSIONAL ENGINEER — 4/30/03

STATE OF MARYLAND — MICHAEL A. MOHR — No. 17711 — PROFESSIONAL ENGINEER — 11/15/02

Owner/Applicant/Developer:
Palmer Road Landfill, Inc.
3334 Kenilworth Ave
Hyattsville, Maryland 20781
Attn.: Craig Harris
Phone: 301-403-0400

SEDIMENT CONTROL DETAILS

PALMER ROAD LANDFILL

Oxon Hill Election District #12
Prince George's County, Maryland

(114)

SCD-SHT. 14 OF 37.38

REVISIONS			CORDERO WARD & ASSOCIATES ENGINEERS & PLANNERS
DATE	DESCRIPTION	BY	5010 SUNNYSIDE AVE. SUITE 100 BELTSVILLE, MARYLAND 20705 (301) 345-4660
			drawn by: MCC checked by: record no. 2-03-07
			scale: N/A dwg. no.
			date: APRIL, 1997

PORETSKY, PALMER II, L.L.C.
A MARYLAND LIMITED LIABILITY COMPANY
L. 13770 F. 428

50' STREAM BUFFER

BREACH FLOOD LIMIT
Q_{BR} = 102 CFS
V_{PEAK} = 3.1 FPS

OFFSITE STORM DRAIN EASEMENT

North - NAD 83 - Datum

55 L.F. OF MSHA CL. II UNGROUTED RIP RAP OVER FILTER CLOTH. PROVIDE POSITIVE DRAINAGE TO EXISTING SWALE
Q_{10} = 34 CFS, V_{10} = 3.8 FPS, BW = 6'
d_{50} = 9.5" = 1 stone, d = 15", MIN. THK. = 3'

TREE SAVE AREA

THESE GRADES & SSF
THIS APPROVAL
PHASE I

THIS GRADING (TO BE REMOVED) REPLACED AS SHOWN NEXT SHEET

MATCHLINE

LIMIT PHASE I

"C"

PROPOSED 18" RCP

PROPOSED 24" RCP

PROPOSED 30" RCP

PROPOSED 36" RCP

PROPOSED 42" RCP

PROPOSED 48" RCP

PROPOSED 54" RCP

PROPOSED 60" RCP

PROPOSED 66" RCP

PROPOSED 72" RCP

PROPOSED 78" RCP

PROPOSED 84" RCP

PROPOSED 90" RCP

PROPOSED

MATCH LINE "A" (SEE SWM SHEET 2 OF 7)

MATCH LINE "C" (SEE SWM SHEET 1 OF 7 & SCD SHEET 4 OF 10)

PHASE I GRADING
(NOT A PART OF THIS APPROVAL)

JAMES P. SORESI, et al
L. 7801 F. 418

PALMER ROAD LANDFILL INC.
L. 7686 F. 558

PALMER ROAD LANDFILL INC.
7793 / 607

DENNIS W. GREENWAY, et ux
L. 7354 F. 891

HATTIE C. NOBLE
L. 8259 F. 1

HATTIE C. NOBLE, et al
L. 7018 F. 408

HATTIE C. NOBLE
L. 4752 F. 662

LAWTON E. VIRGIN, et al
L. 6697 F. 349

TUCKER ROAD

PALMER ROAD

Inc. Rubble Channel See Detail on SWM Sheet

Existing Conc. Rubble Channel to be Removed (See Detail on SWM Sheet 2 of 7)

Approx. Limits of Existing Structure Core Trench Material

Approx. Limits of Existing Structure Core Trench Material to be Removed

Existing Pond #1 Elev. 288.0

Existing Pond #2 Elev. 280.0

Existing Pond #3 Elev. 251.5

Existing Pond #4 Elev. 251.5

Existing Pond #5 Elev. 251.5

Existing Pond #6 Elev. 251.5

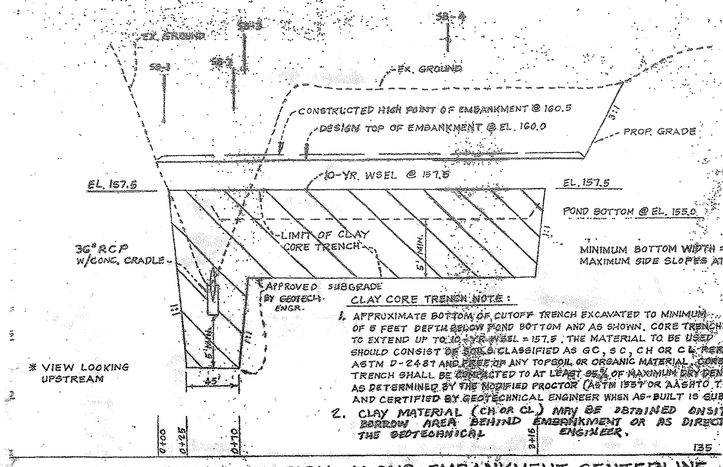
Existing Pond #7 Elev. 251.5

Existing Pond #8 Elev. 251.5

Existing Pond #9 Elev. 251.5

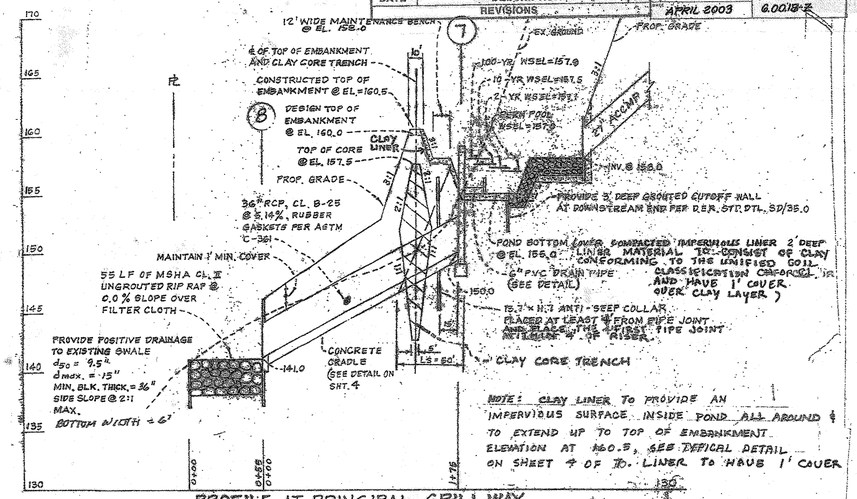
Existing Pond #10 Elev. 251.5

Existing Pond



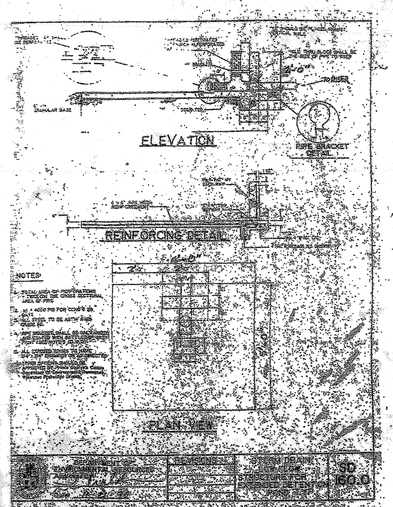
CROSS SECTION ALONG EMBANKMENT CENTERLINE

SCALE: HOR. 1" = 50'
VERT. 1" = 5'



PROFILE AT PRINCIPAL SPILLWAY

SCALE: HOR. 1" = 50'
VERT. 1" = 5'



DATE	DESCRIPTION	BY
4-28-03	Added Ben Dyer Block, Revised SCD Drawing Numbers.	J.B.

11721 WOODSIDE ROAD, HYATTSVILLE, MD 20721
BEN DYER ASSOCIATES, INC.
ENGINEERS, SURVEYORS, PLANNERS
TELEPHONE: (301) 438-2000

AS SHOWN | APRIL 2003 | 6.0018-E

C D T BIO-SOIL SYSTEMS INC. BORING LOG

PROJECT: PALMER ROAD LAND FILL — SHEET 1 OF 1
LOCATION: P. G. COUNTY, MD — BEGIN: 12/18/00 — ENDED: 12/18/00
FOREMAN: D LOOMIS — SPOON — OUT DIA: 2.0" — IN DIA: 1 3/8"
INSPECTOR: D WOOD — HAMMER — WEIGHT: 140# — FALL: 30"
BORING NO: 1 — STATION: — SURFACE ELEVATION:

DEPTH	CLASSIFICATION OF MATERIALS	SAMPLE NO.	SAMPLE BLOWS	REMARKS
0.0	TOP SOIL (OL)			
	FILL ORANGE CLAY AND SAND MIX MOTTLED	1	39	WATER LEVELS ENCOUNTERED 10.0'
2.5		2	18	
5.0		3	43	
7.5	10.0' M DENSE TO DENSE GRAY MULTICOLORED CLAY	4	18	
10.0				
15.0	15.0' M STIFF (CH) BORING TERMINATED	5	20	
20.0				
25.0				
30.0				

C D T BIO-SOIL SYSTEMS INC. BORING LOG

PROJECT: PALMER ROAD LAND FILL — SHEET 1 OF 1
LOCATION: P. G. COUNTY, MD — BEGIN: 12/18/00 — ENDED: 12/18/00
FOREMAN: D LOOMIS — SPOON — OUT DIA: 2.0" — IN DIA: 1 3/8"
INSPECTOR: D WOOD — HAMMER — WEIGHT: 140# — FALL: 30"
BORING NO: 2 — STATION: — SURFACE ELEVATION:

DEPTH	CLASSIFICATION OF MATERIALS	SAMPLE NO.	SAMPLE BLOWS	REMARKS
0.0	FILL ORANGE CLAY AND SAND MIX MOTTLED AND WOOD PIECES			WATER LEVELS ENCOUNTERED 12.0'
2.5		1	9	
5.0		2	65	
7.5		3	38	
10.0	10.0' LOOSE TO V DENSE FILL GRAY MULTICOLORED CLAY MIXED	4	11	
12.5	12.5' STIFF GRAY MULTICOLORED CLAY			
15.0	15.0' V STIFF (CH) BORING TERMINATED	5	16	
20.0				
25.0				
30.0				

C D T BIO-SOIL SYSTEMS INC. BORING LOG

PROJECT: PALMER ROAD LAND FILL — SHEET 1 OF 1
LOCATION: P. G. COUNTY, MD — BEGIN: 12/18/00 — ENDED: 12/18/00
FOREMAN: D LOOMIS — SPOON — OUT DIA: 2.0" — IN DIA: 1 3/8"
INSPECTOR: D WOOD — HAMMER — WEIGHT: 140# — FALL: 30"
BORING NO: 3 — STATION: — SURFACE ELEVATION:

DEPTH	CLASSIFICATION OF MATERIALS	SAMPLE NO.	SAMPLE BLOWS	REMARKS
0.0	FILL ORANGE CLAY AND SAND MIX WOODCHIPS			WATER LEVELS ENCOUNTERED 7.0'
2.5		1	12	
5.0		2	11	
7.5	7.5' M DENSE GRAY CLAY	3	8	
10.0		4	11	
12.5	12.5' M STIFF TO V STIFF (CH) BORING TERMINATED	5	29	
15.0				
20.0				
25.0				
30.0				

C D T BIO-SOIL SYSTEMS INC. BORING LOG

PROJECT: PALMER ROAD LAND FILL — SHEET 1 OF 1
LOCATION: P. G. COUNTY, MD — BEGIN: 12/16/00 — ENDED: 12/16/00
FOREMAN: D LOOMIS — SPOON — OUT DIA: 2.0" — IN DIA: 1 3/8"
INSPECTOR: D WOOD — HAMMER — WEIGHT: 140# — FALL: 30"
BORING NO: 4 — STATION: — SURFACE ELEVATION:

DEPTH	CLASSIFICATION OF MATERIALS	SAMPLE NO.	SAMPLE BLOWS	REMARKS
0.0	FILL ORANGE AND BROWN CLAY AND SAND MIX BOTTOMS AND WOOD PIECES			WATER LEVELS ENCOUNTERED NONE
5.0		1	6	
10.0		2	21	
15.0		3	10	
20.0		4	40	
25.0				
30.0		5	11	
40.0	40.0' LOOSE TO DENSE BROWN AND GREEN CLAYEY FINE SAND	6	9	
50.0		7	8	
55.0	55.0' LOOSE BORING TERMINATED	8	10	
60.0				

Note: Use of this information does not preclude meeting all of the requirements of the 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control Vegetative Practices.

WARNING: This plan is, and remains the sole property of Cordero, Ward & Associates until the original signature of a principal of that firm. Reproduction or other use may not be made without the written permission of Cordero, Ward & Associates. Violators will be prosecuted to the full extent of the law.
Released by: _____ Date: _____

THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION
6600 Kenilworth Avenue • Riverdale, Maryland 20737

October 16, 1990

[illegible]

RE: PERMIT #8902 REVISION #01, PALMER ROAD LANDFILL

[illegible] Planning and Development Division has reviewed the above referenced grading permit [illegible] on the property of [illegible] Road. The [illegible] Planning Board [illegible] Regional District Zoning Ordinance [illegible] Subdivision Regulations [illegible] Maryland-National Capital Park and Planning Commission [illegible] permission [illegible]

[illegible] construction or [illegible] associated with [illegible] Creek, Scott's Valley Park. We do however, [illegible] the proposed [illegible] of the [illegible] is in part and therefore [illegible] a portion of the [illegible] property. It appears that the height of the [illegible] be [illegible] Ordinance. The [illegible] Board [illegible] grant a variance to the [illegible] Ordinance. Our approval of the above permit is granted subject [illegible]

[illegible] Ordinance, prior to any [illegible] or [illegible] Mr. [illegible]

Sincerely,

[illegible]
Development Review Division

cc: [illegible]
Chief, Permits and Development Division

CONSTRUCTION RECOMMENDATIONS

The proposed site is an old landfill with a wide range of fill depth, therefore, CDT recommends constructing an impervious liner in the ponds bottom. This liner does not have to be more than two (2) feet thick compacted to 90% of ASTM-D-1557.

An impervious core trench, a minimum of five (5) feet below the pipe and embankment will also be required. The outfall pipe must be founded on compacted fill. Material or soils used for the impervious liner in the core trench must carry the Unified Classification symbol of CH, CL, [illegible].

Fill must be placed in shallow loose lifts not to exceed eight (8) inches in depth before compaction.

All work should be monitored by a geotechnical engineer or his qualified agent.

Respectfully Submitted,

CDT Bio-Soil Systems, Inc.
By: Douglas C. Wood, C.E.I.

Carl D. Jones, No. 7327, Professional Engineer

DW/jhw/7408

Attachments

SAMPLE NO.: 1
LOCATION: Barrow
CLASSIFICATION: CH/A-7-6
VISUAL DESCRIPTION: Yellow clay

TEST RESULTS

ASTM-D-422: PARTICLE SIZE ANALYSIS OF SOIL

SIEVE SIZE	PERCENT PASSING
#40	100.0
#100	98.4
#200	96.3

ASTM-D-4318: ATTERBRUG LIMITS

LIQUID LIMIT: 51
PLASTICITY INDEX: 28

CDT, Inc.
5411 Kirby Road • Clinton, Maryland 20735
Office: (301) 297-9600 • Fax: (301) 297-2082

December 17, 2001

D.C. Materials
3334 Kenilworth Avenue
Hyattsville, Maryland 20781

RE: Report No. PR/DCM/01-2
Palmer Road Land Fill
Storm Water Management Pond #2
Prince George's County

Gentlemen,

Please find enclosed the specifications for the pond at the referenced size.

1. The proposed earth embankment should be constructed on original virgin subgrade soil or compacted structural fill.

2. The existing subgrade material within the proposed earth embankment area consist of old fill which is unsuitable for subgrade material and should be excavated, removed and replaced with compacted structural fill.

3. The materials used for the newly constructed subgrade shall conform to the Unified Soil Classification as SC and or CL only. All fill placed shall be compacted in accordance with MD-378.

4. During excavations and back fill operations slopes must meet all local and national codes for the proposed construction and shall not be steeper than 1:1.

5. The newly established subgrade should be benched into the existing subgrade.

6. A cutoff trench of relative impervious material shall be constructed under the dam. The cutoff trench and impervious core within the embankment shall be located at or upstream from the centerline of the dam and shall extend up the abutments to the 10-year water surface elevation. The impervious core shall extend from the cutoff trench up to the 10-year water surface elevation throughout the embankment. The cutoff trench should be at least five (5) feet wide at the bottom and should have sides slopes of 1:1(V or flatter. The depth shall be at least five (5) feet below the concrete cradle. The cutoff trench material shall conform to the Unified Soil Classification CL or CH. The fill placement and compaction shall be in accordance with MD 378.

7. The riser and out fall structures and associated pipe extensions to the proposed outfall pipe should be founded on a concrete cradle bearing on the virgin soil or compacted structural fill. The existing fill is not suitable to support the proposed structures and or associated pipes. The material should be replaced with compacted structural fill, same as noted above.

8. No stone bedding should be used for the structure or pipe bedding; only the concrete cradle should be used.

9. The storm drain pipe should be constructed with an anti-seep collar to prevent seepage along the pipe/soil interface.

10. The pond floor area shall be lined. The thickness of the clay liner should be a minimum of twenty-four (24) inches thick. The material used for clay liner shall conform to Unified Soil Classification CL or CH. The fill placement and compaction shall be in accordance with MD 378.

11. All excavation and backfill operations should be tested, monitored, certified and verified by a Geotechnical Engineer or his qualified representative. Certification for compacted fill shall be supported with documenced compaction test results for all layers as defined by MD 378.

12. Certified fill by a geotechnical engineer is required prior to concrete placement.

13. All footings for control structures should be founded at least thirty (30) inches below finished exterior grade to protect against frost heave.

14. We recommend that the raiser structure be designed per Maryland State 378.

15. Core trench material is stockpiled on site and is classified as a CL or CH

CDT, Inc.
5411 Kirby Road • Clinton, Maryland 20735
Office: (301) 297-9600 • Fax: (301) 297-2082

April 30, 2002

Cordero Ward & Associates
Mr. Don Fitzhugh
5010 Sunnyside Avenue suite 100
Beltsville, Maryland 20705

RE: Report No. PR/DCM/02-1
Palmer Road Landfill
Prince George's County

Sir,

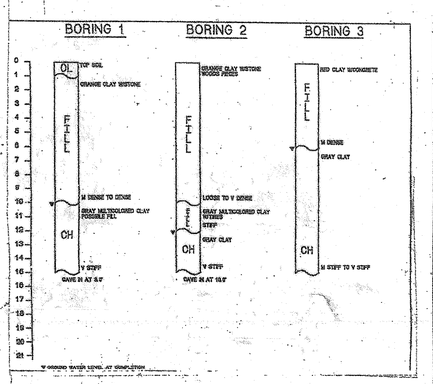
Per your request, CDT has reviewed the remarks and have the following comments;

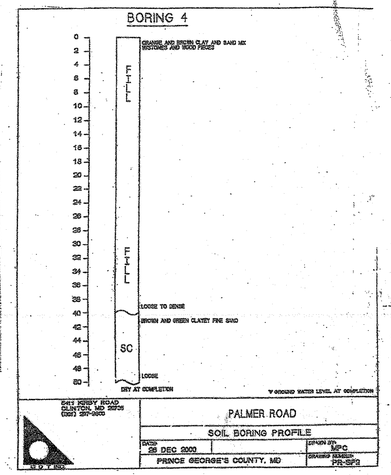
The sequence of construction is the responsibility of Cordero Ward & Associates.

The stockpile has been located on a site plan. CDT has sampled this stockpile and classified the material as CL and CH.

GENERAL NOTES:

1. GENERAL: ALL NOTES ARE FOR SUPPLEMENTING THE PLANS AND SPECIFICATIONS AND ARE IN NO WAY TO BE CONSIDERED AS EXCLUDING ANY ITEM IN THEM.
2. COORDINATION: IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO COORDINATE HIS STRUCTURAL DRAWINGS AND THEIR DIMENSIONS WITH OTHER DRAWINGS AND IF A CONFLICT EXISTS HE SHALL NOT CARRY OUT THE AFFECTED WORK UNTIL THE CONFLICT HAS BEEN RESOLVED BY THE CONTRACTOR.
3. CODES, DESIGN AND CONSTRUCTION TO BE IN ACCORD. WITH THE (BOCA) CODE AND THE PARTICULAR CODES AS REFERENCED IN (BOCA).
4. EXCAVATION FOR AND BEARING MATERIAL FOR FOUNDATIONS SHOULD BE INSPECTED, AND APPROVED BY A SOILS ENGINEER REGISTERED IN THE STATE OF (MARYLAND).
5. THE FOOTINGS SHALL BE EXCAVATED AFTER THE AREAS HAVE BEEN PROPERLY PREPARED. MATERIAL SALISFACTORY FOR UNCONTROLLED FILL AND BACKFILL AROUND AND ABOVE FOOTINGS SHALL INCLUDE CLEAN SOIL OR (SC & CL). BUT EXCLUDE HIGHLY PLASTIC CLAYS (ME & CH) OR HIGH SHRINK SOILS. THE FILL MATERIALS SHALL BE FREE FROM ORGANIC, FROZEN OR CONTAMINATED SOIL AND ROCK FRAGMENTS HAVING MAJOR DIMENSION GREATER THEN FOUR (4) INCHES, AND SHALL CONSIST OF SOIL OR ENGR.
6. ALL FOOTINGS SHALL BE CARRIED DOWN A MINIMUM OF ONE FOOT INTO VIRGIN SOIL OR COMPACTED FILL OR AS DIRECTED BY THE SOILS ENGINEER AND SHALL BE A MINIMUM OF 2'-0" BELOW FINISHED EXTERIOR GRADE. FOOTINGS ARE DESIGNED FOR A SOIL BEARING PRESSURE OF 2000 PSF. FOOTING ELEVATIONS HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND SHALL NOT BE TAKEN AS A WAIVER OF THESE REQUIREMENTS.
7. WATER, LOOSE SOIL AND SOIL SOFTENED BY WATER SHALL BE REMOVED FROM THE BOTTOM OF THE FOOTING EXCAVATIONS BEFORE PLACING CONCRETE.
8. FOOTING EXCAVATIONS SHALL NOT BE LEFT OPEN FOR LONG PERIODS. IT IS SUGGESTED THAT THE BOTTOM OF THE FOOTING EXCAVATIONS AND TRENCHES BE PROTECTED BY UNDERCUTTING AND PLACING (3) INCHES OF A LEAN MIX CONCRETE SLAB IMMEDIATELY UPON APPROVAL AND BEFORE REINFORCING STEEL IS PLACED.
9. PROVISIONS MUST BE TAKEN TO PROTECT ALL CONCRETE WORK FROM FROZEN DAMAGE WITH SPECIAL ATTENTION PAID TO FOOTINGS AND WHERE CONCRETE ON GRADE PRIOR TO BACKFILLING.
10. CARE SHOULD BE TAKEN TO ASSURE THAT DURING PLACING OF CONCRETE NO GROUND WATER, SALTS, OR CLAYS ARE MIXED WITH THE CONCRETE.
11. CONCRETE TO BE MIXED AND PLACED IN ACCORDANCE WITH THE CURRENT "AMERICAN CONCRETE INSTITUTE (ACI) BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE". A COPY OF THIS CODE SHALL BE AVAILABLE ON THE PROJECT AT ALL TIMES.
12. ALL REINFORCED CONCRETE, (INCLUDING SLABS, WALLS, ETC.) SHALL HAVE COMPRESSIVE STRENGTHS (f'c) OF 4000 PSI. UNLESS NOTED.
13. CONCRETE CYLINDER TEST SHALL BE MADE BY AN INDEPENDENT QUALIFIED TESTING AGENCY, TO BE RETAINED AND PAID BY THE OWNER, IN ACCORDANCE WITH ASTM SPECIFICATION FOR "COMPRESSION TESTS OF CONCRETE. A MINIMUM OF A TEST CYLINDER SHALL BE TAKEN FOR EACH 50 CUBIC YARDS OF CONCRETE PLACED; TWO TESTED AT SEVEN DAYS AND TWO TESTED AT TWENTY-EIGHT DAYS. THE TESTING AGENCY SHALL BE RESPONSIBLE FOR OBTAINING SAMPLES AND FOR STORAGE.
14. ALL CONTINUOUS REINFORCING SHALL BE CONTINUOUS OR LAPPED AT ALL SPLICES, CORNERS AND INTERSECTIONS A MINIMUM OF 30 BAR DIAMETERS (U.N.O.).
15. PROVIDE SPACERS, CHAIRS, TIES AS REQUIRED AND NECESSARY FOR ASSEMBLING, PLACING AND SUPPORTING ALL REINFORCEMENT IN PROPER POSITION.
16. CONCRETE PROTECTION FOR REINFORCEMENT SHALL BE AS GIVEN IN ACI-318 OR AS SHOWN ON PLANS.





5411 KIRBY ROAD
CLINTON, MD 20735
(301) 297-9600

PALMER ROAD
SOIL BORING PROFILE
DATE: 28 DEC 2000 | DRAWN BY: MPC
PRINCE GEORGE'S COUNTY, MD | DRAWING NUMBER: PR-SP2

SD# 27534-2001-00

PROJECT NAME PALMER ROAD LANDFILL
SWM POND # 2

PRINCE GEORGES COUNTY, MD.
DEPARTMENT OF ENVIRONMENTAL RESOURCES
PERMITS AND REVIEW DIVISION

APPROVED for Stormwater Management and Storm Drain Only

Henry Liyan 9/2/03
DATE

Approved Varn 01/17/03 Although Rev
02/13/03 Revised

4/30/03

STATE OF MARYLAND — ERIC M. VARN — PROFESSIONAL ENGINEER — No. 21627 — For Review

PHASE II

SWM DETAILS, SOIL BORING LOGS AND SEDIMENT CONTROL NOTES

PALMER ROAD LANDFILL

Oxon Hill Election District #12
Prince George's County, Maryland

(114)

SWM SHT. 3 OF 7 — SCD - SHT. 17 OF 37 38

DATE	DESCRIPTION	BY

CORDERO WARD & ASSOCIATES
ENGINEERS & PLANNERS
5010 SUNNYSIDE AVE., SUITE 100
BELTSVILLE, MARYLAND 20705
(301) 595-2440

drawn by: [illegible] | checked by: [illegible]
scale: [illegible] | date: APRIL, 1997 | file no.: [illegible]

ENGINEERS CERTIFICATION

"I CERTIFY THAT THIS DESIGN PLAN FOR THE CONSTRUCTION OF THE STORMWATER AND/OR EXCESS POND REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY KNOWLEDGE OF THE SITE AND WAS DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SOIL CONSERVATION SERVICE "MARYLAND STANDARDS AND SPECIFICATIONS FOR PONDS". (MD - 378). I HAVE REVIEWED THIS PLAN WITH THE OWNER/DEVELOPER.

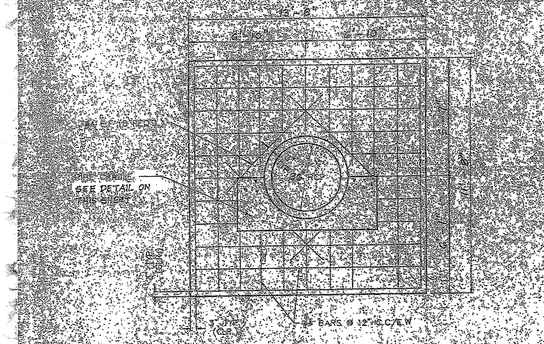
SIGNATURE H.E. Vennedahl
MD. LICENSE NO. 7327
DATE 9/22/00 11/15/02
NAME (PRINTED) H.E. Vennedahl
ADDRESS 5411 Kirby Rd. 20735
Clinton, MD
PHONE NUMBER 301-315-9440

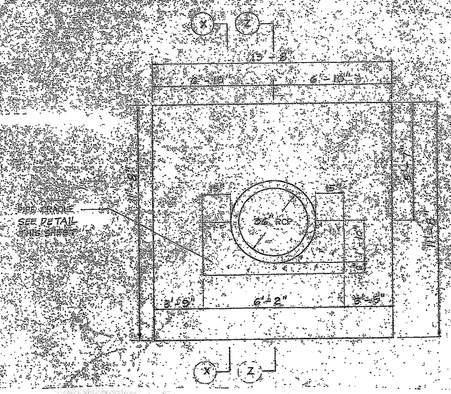
INSPECTION NOTIFICATION

Cordero, Ward and Associates are to be notified 24 hours prior to start of construction of any Storm Drainage or Stormwater Mgmt. depicted per this approved plan. As the Engineer of Record, Cordero, Ward and Associates must provide inspection services separate and apart from any inspection required by Prince George's County, so that "As Built" plans and certification may be provided for release of bonds. Failure to do so may result in uncertainty of systems and/or severe hardship in obtaining release of bonds and ultimate Use and Occupancy Permits.

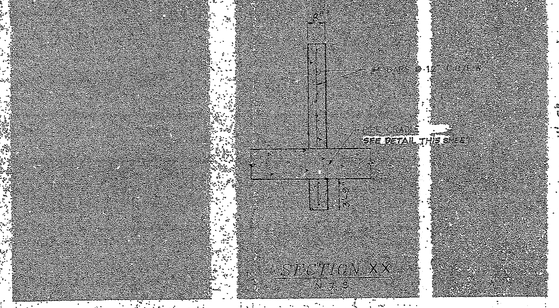
STATE OF MARYLAND — H.E. VENNEDAHL — No. 7327 — PROFESSIONAL ENGINEER

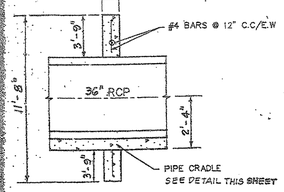
H.E. Vennedahl
11/15/02



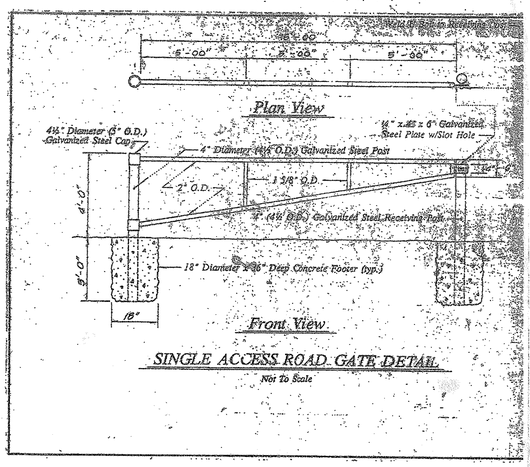


ANTI-SEEP COLLAR
NOT TO SCALE

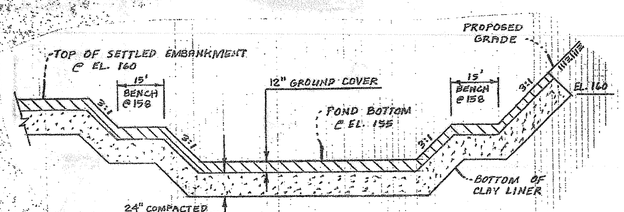




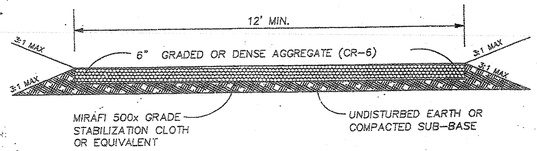
SECTION ZZ
N.T.S.



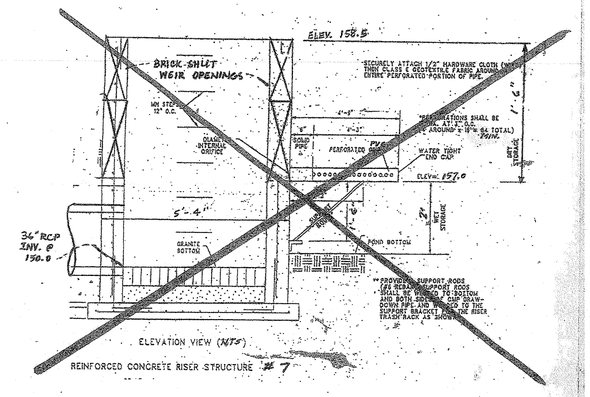
SINGLE ACCESS ROAD GATE DETAIL
Not To Scale



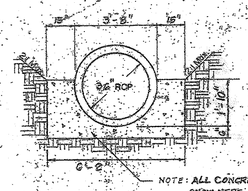
TYPICAL CLAY LINER CROSS SECTION
N.T.S.



SWM ACCESS ROAD DETAIL
N.T.S.

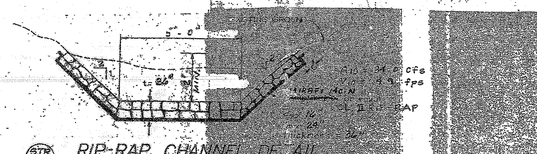


ELEVATION VIEW (NTS)
REINFORCED CONCRETE RISER STRUCTURE # 7

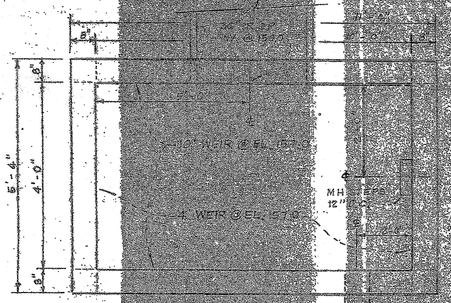


NOTE: ALL CONCRETE FOR ANTI-SEEP COLLAR SHOWN HERE f'_c = 3500 psi @ 28 DAYS

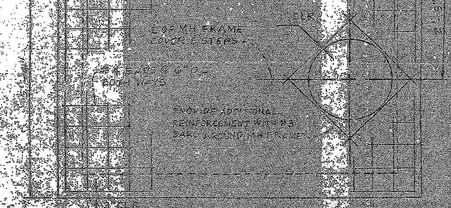
DETAIL OF 36" RCP W/ CONCRETE CRADLE
NOT TO SCALE



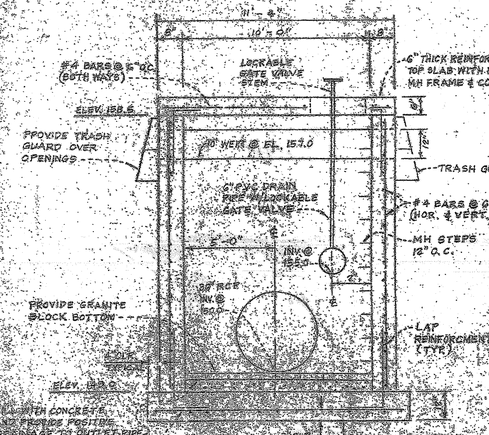
(STR.) RIP-RAP CHANNEL DETAIL
N.T.S.



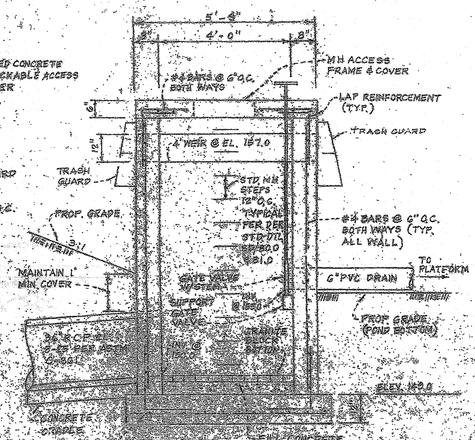
PLAN VIEW
N.T.S.



TOP SLAB DETAIL
N.T.S.



FRONT VIEW

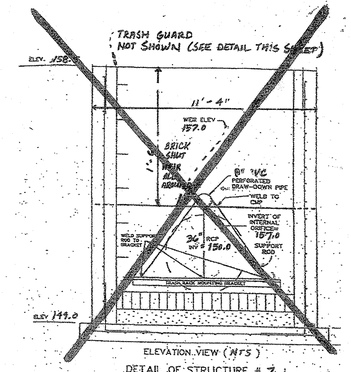


SIDE VIEW
N.T.S.

GENERAL NOTES

1. CONCRETE STRENGTH (f'_c) = 3500 psi @ 28 DAYS.
2. ALL REINFORCING STEEL SHALL BE ASTM A615 GRADE 60.
3. LAP REINFORCING SHALL BE 30 TIMES BAR DIAMETER (MINIMUM).
4. FOR INFORMATION NOT SHOWN REFER TO P.E.P. STD. DETAIL # D/10.0
5. ALL EXCEPTIONS OR FUTURE SHOP DRAWINGS MUST BE APPROVED BY D.E.R. AND ENGINEER PRIOR TO CONSTRUCTION.

10'x4' REINFORCED CONCRETE RISER STRUCTURE DETAIL



ELEVATION VIEW (NTS)
DETAIL OF STRUCTURE # 7

NOTES TO BE MADE TO SWM RISER TO CONVERT IT INTO A STORAGE CONTROL DEVICE.
REFER TO SHEETS 5 OF 7 FOR CONSTRUCTION DETAILS OF RISER FOR SWM POND

SD# 27534-2001-00
PROJECT NAME PALMER ROAD LANDFILL SWM POND #2
PRINCE GEORGES COUNTY, MD.
DEPARTMENT OF ENVIRONMENTAL RESOURCES
PERMITS AND REVIEW DIVISION
APPROVED for Stormwater Management and Storm Drain Only
Henry L. Yen 3/28/01
DATE
Maurice Varat 5/11/01 for ISSUED
5/11/03 APPROVED Revision

STATE OF MARYLAND — ERIC GERMAC — No. 21431 — REGISTERED PROFESSIONAL ENGINEER
1/30/03

DATE	DESCRIPTION	BY
4-29-03	Added Ben Dyer Block, Revised SCD Drawing	J.B
	REVISIONS	

11721 WOODMORE ROAD, MITCHELLVILLE, MD 20721
BEN DYER ASSOCIATES, INC.
ENGINEERS, SURVEYORS, PLANNERS
TELEPHONE: (301) 430-2000

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
AS SHOWN			J-80035
DATE			DRAWING NO.
APRIL 2003			6.00.19-Z

PHASE II

STORMWATER MANAGEMENT POND DETAILS

PALMER ROAD LANDFILL

Oxon Hill Election District #12
Prince George's County, Maryland

INSPECTION NOTIFICATION

...d 24 hours prior ...ge-or Stormwater ... the Engineer of ... provide inspection ... required by Prince ... certification may ... may result in ... obtain release ... permits.

WARNING: This plan is, and remains the sole property of Cordero, Ward & Associates until released by signature of a principal of that firm. Reproduction or other use may not be made without the express permission of Cordero, Ward & Associates. Violators will be prosecuted to the full extent of the law.

Released by: _____ Date: _____

STATE OF MARYLAND — HENRY L. YEN — No. 21431 — REGISTERED PROFESSIONAL ENGINEER
11/15/02

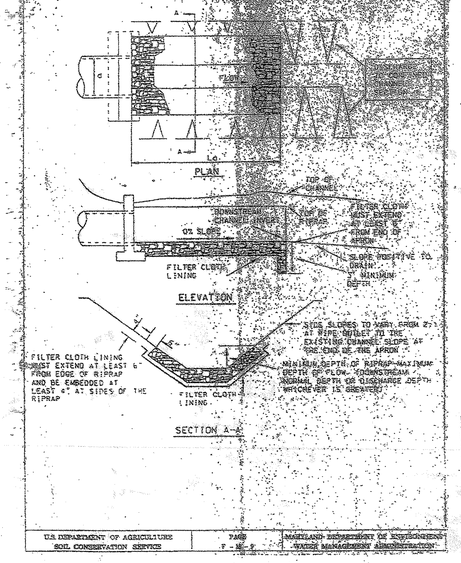
SWM SHT. 4 OF 7 SCD - SHT. 18. OF 37.38

REVISIONS		
DATE	DESCRIPTION	BY

CORDERO WARD & ASSOCIATES
ENGINEERS & PLANNERS
6010 GREENBELT DRIVE, SUITE 1
BELTSVILLE, MARYLAND 20705
(301) 345-0440

drawn by	checked by	rev. no.
scale	date	proj. no.
AS SHOWN	APRIL, 1997	

DETAIL 26 - ROCK OUTLET PROTECTION II



U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F - M - 2	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL ANTI-SEEP DIAPHRAM

NO SCALE

STRUCTURE SCHEDULE

	NO.	TYPE	WIDTH DIA.	TOP SLAB	INV. THROAT	INV. ELEV. UPPER	INV. ELEV. LOWER	STANDARD DETAIL
PRIVATE	1	"B" Manhole	4' *	284.83	284.00	—	278.50	SD 22.0
	2	"B" Manhole	4' *	299.03	298.20	291.00	290.00	SD 22.0
	3	"B" Manhole	4' *	290.13	289.30	282.10	281.00	SD 22.0
	4	"B" Manhole	4' *	285.0	Uphole	277.0	275.50	SD 22.0
	5	"B" Manhole	4'	173.00	—	164.50	163.00	SD 22.5
	6	Endwall	—	—	—	—	158.50	SD 30.0
	7	RISER	SEE DETAILS			ON SHEET 4		
	* Provide 6" slots on North & South sides of structure only & with D1 & D2 (SD 14.0) Top.							
	8	Endwall	—	—	—	—	157.50	SD 30.0
	10	"B" Manhole	4' *	284.83	284.00	—	280.30	SD 22.0
	11	"B" Manhole	4' *	284.83	284.00	280.80	280.30	SD 22.0
	12	"B" Manhole	4' *	284.83	284.00	280.80	280.30	SD 22.0
	13	"B" Manhole	4' *	284.83	284.00	—	280.20	SD 22.0
	14	"B" Manhole	4' *	289.53	289.00	285.80	285.50	SD 22.0
	15	End Section	15" ø	—	—	—	285.50	MD 370.01

* Provide 6" slots on East & West sides of structures only & with D1 & D2 (SD 14.0) Top.

PIPE SUMMARY

	SIZE	TYPE	LENGTH
PRIVATE	18"	ACCMP	165'
	21"	"	221'
	24"	"	67'
	27"	"	52'
	36"	RCP	178'

* RUBBER GASKET PIPE PER ASTM C-361

15"	ACCMP	133'

PIPE SCHEDULE

		SIZE	TYPE	LENGTH
PRIVATE	9	15"	ACCMP	68'
	10	11	18"	4.4'
	11	12	21"	12'
	13	14	15"	45'
	14	15	18"	12'

CONSTRUCTION SPECIFICATIONS

Fill material shall be approved by the engineer. Satisfactory soils are those described by the Unified Soil Classification System as GW, GP, GM, GC, SW, SP, SM, SC, CL, or MH. Any proposed fill material classified as CH, OH, or PT must be approved by the engineer. Frozen material or soft, mucky or highly organic material shall not be placed in the fill.

Site Preparation

Areas designated for fill, which contain existing vegetation, shall be cleared, grubbed and stripped of all vegetation, root mat, topsoil, and other unsuitable material. Trees, stumps, roots, brush, boulders, rock fragments and other objectionable materials encountered in the excavation, borrow and fill areas shall be removed and disposed of in a manner that will not affect the proposed use of the site. Fill shall not be placed on a frozen or muddy surface.

Areas to be covered by the reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush, and stumps shall be cut approximately level with the ground surface. No dry storage, management debris, a minimum of a 25-foot radius around the inlet structure shall be cleared.

All cleared and grubbed material shall be disposed of outside and below the limits of the dam, reservoir and as directed by the owner or his representative. When specified, a sufficient quantity of topsoil shall be stockpiled in a suitable location for use on the embankment and other designated areas.

Earth fill

Material - The fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, wood, rubbish, stones greater than 6" in diameter or other objectionable materials. The material for the center of the embankment, and cut-off trench shall contain sufficient clay or silt to provide stability and to prevent excessive seepage. The material shall be classified as GC, SC, CH, or CL and must have at least 30% passing the #200 sieve. Consideration may be given to the use of other materials in the embankment if designed by a geotechnical engineer. Such special design shall be reviewed and approved by a geotechnical engineer.

Placement - Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in maximum 9 inch (loose) horizontal layers which are to be continuous over the entire length of the fill. The most pervious or porous material shall be placed in the downstream portions of the embankment. The principal shell may not be installed concurrently with fill placement, and not downwind from the embankment.

Compaction - The movement of the hauling and leveling equipment over the fill shall be distributed so that the entire surface of each fill shall be traversed by not less than one track width of heavy equipment or compaction shall be achieved by a minimum of four complete passes of a sheepsfoot, rubber tired, or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction will be attained with the equipment used. The fill material shall contain sufficient moisture so that if formed into a ball it will not crumble, yet not to so wet that water can be squeezed out.

When required by the reviewing agency the minimum required density shall not be less than 95% of maximum dry density with a maximum moisture content within ±2% of the optimum. Each layer of fill shall be compacted as necessary to obtain that density and it is to certified by the Engineer at the time of construction. All compaction is to be determined by AASHTO Method T-99 (Standard Proctor).

Cut Off Trench - The cutoff trench shall be excavated into impervious material along or parallel to the centerline of the embankment as shown on the plans. The bottom width of the trench shall be governed by the equipment used for excavation, but in no case shall the width be less than four feet. The depth shall be at least four feet below existing grade or as shown on the plans. The side slopes of the trench shall be 1:1 or flatter. The backfill shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability.

[redacted]

Structural Backfill

Backfill adjacent to pipes or structures shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other mechanically directed compaction equipment. The material needed to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall unbalanced loadings be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a completed structure or pipe, unless there is compacted fill of 24" or greater over the structure or pipe.

Structure backfill may be flowable fill meeting the requirements of Maryland Department of Transportation, State Highway Administration, Standard Specifications for Construction and Materials, Section 313 as modified. The cohesive shall have a 100-200 psi, 28 day unconfined compressive strength. The flowable fill shall have a minimum slit of 4.0 and a minimum sand/silt of 2.800, whereas. Mechanical shall be placed and/or a minimum of 6" (measured perpendicular to the outside of the pipe) of flowable fill shall be under bedding) over and, on the sides of the pipe. Supply needs to extend up to the spring line for rigid conduits. Adequate steps of the fill shall be to ensure flowability of the material. Alternate backfill materials (select fines, flyash, etc.) to prevent flotation the pipe. When using flowable fill, all metal pipe shall be bituminous coated. Any adjoining soil fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers

[redacted]

Cut Off Trench - The cutoff trench shall be excavated into impervious material along or parallel to the centerline of the embankment as shown on the plans. The bottom width of the trench shall be governed by the equipment used for excavation, but in no case shall the width be less than four feet. The depth shall be at least four feet below existing grade or as shown on the plans. The side slopes of the trench shall be 1:1 or flatter. The backfill shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability.

All cleared and grubbed material shall be disposed of outside and below the limits of the dam, reservoir and as directed by the owner or his representative. When specified, a sufficient quantity of topsoil shall be stockpiled in a suitable location for use on the embankment and other designated areas.

Earth fill

Material - The fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, wood, rubbish, stones greater than 6" in diameter or other objectionable materials. The material for the center of the embankment, and cut-off trench shall contain sufficient clay or silt to provide stability and to prevent excessive seepage. The material shall be classified as GC, SC, CH, or CL and must have at least 30% passing the #200 sieve. Consideration may be given to the use of other materials in the embankment if designed by a geotechnical engineer. Such special design shall be reviewed and approved by a geotechnical engineer.

Placement - Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in maximum 9 inch (loose) horizontal layers which are to be continuous over the entire length of the fill. The most pervious or porous material shall be placed in the downstream portions of the embankment. The principal shell may not be installed concurrently with fill placement, and not downwind from the embankment.

Compaction - The movement of the hauling and leveling equipment over the fill shall be distributed so that the entire surface of each fill shall be traversed by not less than one track width of heavy equipment or compaction shall be achieved by a minimum of four complete passes of a sheepsfoot, rubber tired, or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction will be attained with the equipment used. The fill material shall contain sufficient moisture so that if formed into a ball it will not crumble, yet not to so wet that water can be squeezed out.

When required by the reviewing agency the minimum required density shall not be less than 95% of maximum dry density with a maximum moisture content within ±2% of the optimum. Each layer of fill shall be compacted as necessary to obtain that density and it is to certified by the Engineer at the time of construction. All compaction is to be determined by AASHTO Method T-99 (Standard Proctor).

19.6 STANDARDS AND SPECIFICATIONS FOR LAND GRADING

Definition

Grading of the existing land surface in accordance with a plan as shown on the approved grading, sediment and erosion control plan.

Purpose

The purpose of a land grading specification is to provide for erosion control on sites with changes in topography where the existing land surface is to be reshaped by grading and/or filling.

Design Criteria

Land grading plans should be based upon the interpretation of building design, site conditions and other pertinent factors including topography and desirable natural surroundings to avoid unnecessary destruction of vegetation. Grading operations should not provide sufficient topographic surveys and be designed to fit the natural topography rather than the imposition of an artificial condition related to engineering and architectural considerations. Consideration should be given to the effects of cut and fill operations on runoff characteristics, groundwater tables and drainage patterns, measures for drainage and water removal, and the preservation of trees and other vegetation.

Many counties have regulations and design procedures already established for land grading operations which must be followed. Where these requirements exist, they shall be observed. The plan should show the limits of the project to be graded. The plan shall also include plans for disposal of trees, brush, stumps, spoil material from excavations, and other debris resulting from the grading operations. Provisions shall be made for safe and adequate disposal of runoff water and drainage, both on and off the site, in such a manner as to avoid damage to downstream properties, watercourses, and structures. Areas having steep slopes shall require special treatment to minimize erosion and permit establishment of vegetation. Consideration should be given to the problems of dust control, particularly where dust may be a hazard to highways, neighboring developments, or other activities. Natural features of the landscape, such as trees, brush, existing ground cover, natural contours, and scenic views, shall be preserved to the maximum extent practicable. Final grades should be in keeping with the finished contours of adjacent undisturbed areas, with smooth rounding of sharp corners and reduction of steep grades.

Grading shall be planned and executed so as to create the least erosion potential. The smallest practical area of land should be exposed at any one time during development. When land is exposed during development, the exposure should be kept to the shortest practical period of time. Land should not be exposed for more than one season. Where the period will be short and conditions permit, longer exposures may be acceptable. Temporary vegetation and/or mulching shall be used to protect exposed critical areas during development. Until the final grade is reached, the following principles shall be applied to control erosion and sediment during grading operations:

1. Provision shall be made to safely conduct surface runoff around the area under construction. Water shall be conducted in such a manner that will not cause erosion. Where temporary diversions are used, they shall be cleaned. The plan shall show the outfall provisions for this runoff and indicate the ultimate disposal of runoff water and drainage, both on watercourses, lakes or ponds, and off the property. Outfalls shall be designed to prevent erosion at the point of discharge. The velocity of flow at the outfall of channels and conduits shall be checked to avoid erosive velocities. Where outfall conditions (including existing topography, soil, vegetation, and seepage) are present that may require special protection, they shall be shown on the plan. Special problems which may occur shall be noted and adequate provisions for their treatment shall be indicated on the plan.

2. Cut and fill slopes that are to be stabilized with grasses shall be no steeper than 2:1. Where the slope is to be mowed the slope should be no steeper than 3:1. Cut and fill slopes may be varied in steepness depending upon such factors as soil, climate, and planting techniques. Slopes exceeding 2:1 shall require special design and construction procedures and shall be adequately shown on the plans.

3. Reverse benches should be provided wherever the vertical interval of a cut or fill slope exceeds 30 feet. For 2:1 slopes, it shall be increased to 50 feet and for 4:1 or flatter slopes to 100 feet. Divide the slope into as equally as possible and shall convey the water collected on the benches to a stable outlet, such as a paved drop structure, rock outcrops, etc., shall also be taken into consideration when establishing the location of benches.

a. Benches shall be a minimum of six-feet wide to provide access for maintenance equipment.

b. Benches shall be designed with a reverse slope of 6:1 or flatter to direct the water to the cut slope and with a minimum of one foot in depth. Benches may be located to receive the discharge from surface downspouts.

c. The flow length within a bench shall not exceed 800' unless otherwise approved by the design and compaction. For flow channel stabilization requirements, see Standard and Specifications for Channels.

4. Surface water shall be diverted from the face of all cut and/or fill slopes in such a manner that it will not flow down the slope. Where conditions exist that make it impossible to prevent water from flowing down cut or fill slopes, such water shall be collected in paved ditches and swales or conveyed downslope by the use of a designed structure.

a. The face of the slope is or shall be stabilized and the flow of water diverted by the use of a designed structure before any rainfall event that will cause runoff from surface runoff until they are stabilized.

b. The face of the slope shall not be subject to any concentrated flow of water (such as from natural drainageways, graded swales, downspouts, etc.) unless adequate measures for the safe conveyance of such flows are provided. Such measures may include, but not limited to: approved vegetative stabilization practices, such as sodding, or the use of other approved stabilization methods.

5. Cut slopes consisting in friable rock shall be serrated as shown on the plans. Cuts in erosive soils shall be made with conventional equipment as are available. The serrations shall be constructed on the contour and will have steps or benches with a nominal three-foot horizontal shelves. These steps will vary depending upon the soil type and the nominal slope. The nominal slope line is 1:1. These steps will control and retain water, seed, fertilizer and mulch, thus providing a much quicker and better vegetative stabilization. Overland flow shall be diverted from the top of all cut slopes to a suitable outlet.

6. Subsurface drainage shall be provided where necessary to intercept seepage that would adversely affect slope stability or create unsightly wet ill conditions.

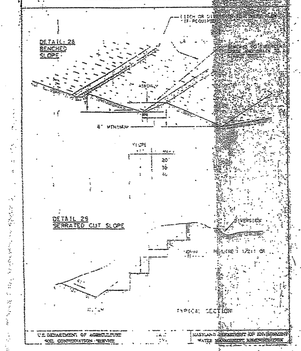
7. Slopes shall not be created so close to property lines as to endanger adjoining property without adequately protecting such properties against sedimentation, erosion, slippage, settlement, subsidence or other related damages.

8. Fill material shall be free of trash, rubbish, rocks, logs, stumps, building debris, and other objectionable material. It should be free of stones over two (2) inches in diameter, unless compacted by hand or mechanical tampers, or over eight (8) inches in diameter, when compacted by other equipment. Frozen material shall not be placed in the fill nor shall fill material be placed on a frozen foundation.

9. Stockpiles, borrow areas and spoil shall be shown on the plans and shall be subject to the provisions of this standard and Specification.

10. All disturbed areas shall be stabilized structurally or vegetatively in accordance with 20.0 Standards and Specifications for Vegetative Stabilization.

18.0 STANDARDS AND SPECIFICATIONS FOR BENCHED AND SERRATED SLOPES



STANDARDS AND SPECIFICATIONS FOR BENCHED AND SERRATED SLOPES

CONSTRUCTION SPECIFICATIONS

1. All graded or disturbed areas including stockpiles and borrow areas resulting from construction operations shall be protected during clearing and construction in accordance with the approved plans and permit and maintained after completion of the project until adequate permanent protection is established.

2. All erosion and sediment control practices and facilities shall be constructed, maintained, and removed when no longer needed in accordance with the approved sediment control plan and the Standards and Specifications for Soil Erosion and Sediment Control.

3. Topsoil required for the establishment of vegetation shall be stockpiled in sufficient quantities as necessary to complete the finish grading of all exposed areas.

4. Areas to be filled shall be cleared, grubbed and stripped of topsoil to remove trees, vegetation, roots or other objectionable materials.

5. All fills shall be compacted as required to reduce erosion, slippage, settlement, subsidence or other related damages. Fills intended to support buildings, structures and conduits, etc., shall be compacted in accordance with local requirements or codes.

6. All fill shall be placed and compacted in layers not to exceed 8 inches in thickness.

7. Except for approved specifics on construction drawings, fill shall not contain broken pavement, brush, roots, sod or other vegetation, concrete or masonry rubble, building debris and other objectionable materials that would impede the use of construction equipment.

8. Frozen materials or soft, muddy or highly compressible materials shall not be incorporated into fills.

9. Fills shall not be placed on unsuitable foundations, such as frozen soil, soft clay, peat or perishable materials.

10. Sloping of the surface of fills shall be provided during the placement of the material to prevent the ponding of water.

11. Seeding and mulching of exposed surfaces shall not be delayed or postponed until the completion of all phases of the project when parts of the project are finished.

12. All disturbed areas into final compliance with applicable requirements of the approved plan.

13. Erosion and sediment control measures are to be maintained in an effective operating condition until the area they protect is permanently stabilized.

14. After final site inspection and approval, all temporary erosion and sediment control measures and practices shall be removed and the disturbed areas brought to the grades shown on the approved plan.

15. Trapped sediment and other disturbed soil areas resulting from the removal of temporary measures shall be corrected to the elevation and condition of the surrounding areas. They shall be planted or otherwise treated as necessary to prevent erosion.

U.S. DEPARTMENT OF AGRICULTURE — MARYLAND DEPARTMENT OF NATURAL RESOURCES

20.0 STANDARDS AND SPECIFICATIONS FOR TOPSOIL

Definition

Topsoil is the surface soil and subsoil modified by incorporation of inorganic materials.

Purpose

To provide a suitable soil medium for vegetative growth. Topsoil serves as a reservoir for moisture and plant nutrients and can improve the physical condition of the soil for plant growth.

Conditions where practice applies

This practice is limited to those areas as follows where:

i. The intent of the area is to establish vegetation for the purpose of erosion and sediment control.

ii. The soil material is not detrimental to plant growth.

iii. The soil material is not chemically or physically unsuitable for supporting plants or having characteristics capable of producing such conditions.

iv. Topsoil will be the minimum material used to establish vegetative plant growth.

v. The soil is to be reclaimed for agricultural purposes and topsoil is not feasible.

Criteria

For the purpose of these standards and specifications, areas having slopes steeper than 2:1 require topsoil to be applied. Areas having slopes steeper than 2:1 shall have the topsoil specifications approved by the appropriate soil conservation district.

Topsoiling shall not be done when the subsoil is frozen or excessively wet or in a condition that may otherwise adversely affect planting operations.

Topsoil shall be free of plants or plant parts such as bermuda grass, quackgrass, Johnsongrass, nutsedge, poison ivy, oak, sumac, or other undesirable plants.

Topsoil shall not be harvested while in a wet condition.

Topsoil shall not be obtained from areas classified as prime or unique farmland or other farmland of statewide importance unless on-site inspection and approval by the appropriate soil conservation district supervisors.

Topsoil shall not be taken from bogs or marshes.

Topsoil shall be free of roots, stones larger than 1½" in diameter, subsoil, debris, and clay lumps.

Topsoil shall contain not less than 1.5 percent organic matter by weight.

Topsoil having soluble salt content greater than 500 parts per million shall not be used.

No soil additives shall be placed on soil which has been tested and found adequate in order to obtain that for which soil tests are made. Additives shall be applied in accordance with the soil test recommendations.

Topsoil shall not be placed while in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

Topsoil shall contain no toxic substances which may be harmful to plant growth or human or animal health.

Topsoil shall not be placed while in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

Alternative for Permanent Seeding - Instead of applying the full amounts of lime and commercial fertilizer, composted sludge and municipal compost may be applied at specified below:

i. Composted Sludge Material: On an as received basis, composted sludge shall contain no more than 5 percent moisture, have a pH of 6.5 or greater, and a soluble salt concentration less than 10 mmhos/cm. Composted sludge shall be tested at least once every 5 acres and shall contain no less than the following nutrient values:

Total Nitrogen (N)	2.0 percent
Available Phosphate (P_2O_5)	2.0 percent
Potash (K_2O)	0.2 percent

ii. Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.

iii. Composted sludge shall be incorporated with a soil incorporator, plow or other suitable equipment to a depth of 4 inches.

iv. Composted sludge shall be applied in accordance with the following schedule:

Fertilizer	1 ton/1,000 sq. ft.
Lime	1 ton/1,000 sq. ft.
Seed	1 ton/1,000 sq. ft.

v. Composted sludge shall be applied only during the months of March through May or August through October.

vi. Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.

Reference: Guideline Specifications, Soil Preparation and Sodding. MD-VA. Pub. #1, Cooperative Extension Service, University of Maryland and Virginia Polytechnic Institute. Revised 1975.

VEGETATIVE STABILIZATION

Permanent and Temporary Seeding, Sodding and Mulching

I. Site Preparation

Permanent or temporary vegetation shall be established within seven (7) days on the surface of all sediment control practices such as diversions, grade stabilization structures, waterways, sediment control basins, and all slopes greater than 3 horizontal to 1 vertical (3:1), and within 14 days for all other disturbed or graded areas on the project site. Mulching may only be used on disturbed areas as temporary cover where vegetation is not feasible or where seeding cannot be completed because of weather.

II. Seedbed Preparation and Seeding Publication

Loosen the top layer of the soil to a depth of 3 to 5 inches by means of suitable agricultural equipment such as a spring tooth or tine harrow, chisel plows or trippers mounted on construction equipment. Incorporate the lime and fertilizer into the top 2 to 3 inches of the soil by disking or by other suitable means. Rough areas should not be rolled or dragged smooth, leaving in a roughened condition. Areas sloped greater than 3:1 should be tracked by a dozer, leaving the soil in an irregular condition with tracks running parallel to the contour of the slope. The top 4 to 5 inches of soil should be loose and friable. Permanent cover may be by means of application of topsoil. If so, it must meet the requirements set forth in Section 21.0 Standards and Specifications for Topsoil from the 1994 Standards and Specifications.

III. Soil Amendments

Soil tests shall be made on sites over five acres to determine the exact requirements for both lime and fertilizer. For sites under 5 acres, in lieu of a soil test, apply the following:

Fertilizer	Nitrogen (N)	2 lbs/1000 sq. ft. (90 lbs/ac)
	P_2O_5	4 lbs/1000 sq. ft. (175 lbs/ac)
	K_2O	4 lbs/1000 sq. ft. (175 lbs/ac)

For low maintenance areas apply 250 lbs/ac urea-form fertilizer (38-0-0) at 6.5 lbs/1000 sq.ft. in addition to the above fertilizer at the time of seeding.

Ground Limestone = tons/ac

IV. Sediment Control Practice Seeding:

Select a seeding mixture from tables 25 or 26 in Section G of the 1994 Standards and Specifications. Document seeding on the erosion and sediment control plan using appropriate chart below. Note: if seedbed conditions are not known before or longer than 12 months, permanent seeding is required.

V. Temporary/Paramanent Seeding Mixtures and Rates

Select a seeding mixture from appropriate table-25 or 26 in Section G of the 1994 Standards and Specifications. Document seeding on the erosion and sediment control plan using appropriate chart below.

Temporary Seeding Summary

No.	Seed Mixture (Section Zone 7) From Table 26	Application Rate (lbs/ac)	Seeding Dates	Soil Amendments: Fertilizer Rate (10-10-10)	Lime Rate
1	Rye	140	9/1 - 11/30 / 3/15 - 5/30	1½ ton	600 lbs/ac (14 lb/1000 sf)	2 tons/ac (100 lb/1000 sf)

Permanent Seeding Summary

No.	Seed Mixture (For Hardiness Zone 7a) (From Table 25)	Application Rate (lbs/ac)	Seeding Dates	Seeding Depths	Fertilizer Rate (10-20-20): N	P2O5	K2O	Lime Rate
1	Tall Fescue	150	3/1-5/15 8/15-10/15	½" - 1"	90 lbs/ac (2 lbs/1000 sf)	175 lbs/ac (4 lbs/1000 sf)	175 lbs/ac (4 lbs/1000 sf)	2 tons/ac (100 lbs/1000 sf)

* 500 lbs/ac of 10-20-20

VI. Turfgrass Establishment:

This includes lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance. Areas to receive sod shall be filled by adding or by other approved methods to a depth of 3 to 5 inches, leveled, and raked to prepare a proper seedbed. Stones and debris over 1 1/2 inches in diameter shall be removed. The remaining seedbed shall be in such condition that future mowing of grasses will pose no difficulty. The specified material and grasses with proper moisture from page 1-20 of the 1994 Standards and Specifications or select from the list in the most current University of Maryland publication, Agronomy Mimeo #77, "Turfgrass Cultivar Recommendations for Maryland". See sites #7 and #8 this section.

VII. Mulching

All seedings require mulching. Also mulch during non-seeding dates until seeding can be done.

Mulch shall be unrotted, unchopped; small grain straw applied at a rate of 2 bales/acre or 90 lbs/1000 sq. ft. (2 bales). If a mulch anchoring tool is used, apply 2-3 tons/acre. Mulch materials shall be relatively free of all kinds of weeds and shall be completely free of prohibited noxious weeds. Spread mulch uniformly mechanically or by hand, to a depth of 1-2 inches. Mulch anchoring shall be accomplished immediately after mulch placement to minimize loss by wind or water. This may be done by mulch nettings, mulch anchoring tool, wood cellulose fiber or liquid mulch binders.

Apply wood cellulose fiber at a dry weight of 1,200 lbs/acre. If mixed with water, use 50 lbs. of wood cellulose fiber per 100 gallons of water.

Liquid binder should be applied heavier at the edge, where wind catches mulch in valleys, and on crest of banks. The remainder of the area should appear uniform after binder application. Apply rates recommended by the manufacturer to anchor each mulch. Staple light weight, plastic netting over the mulch according to manufacturer's recommendations.

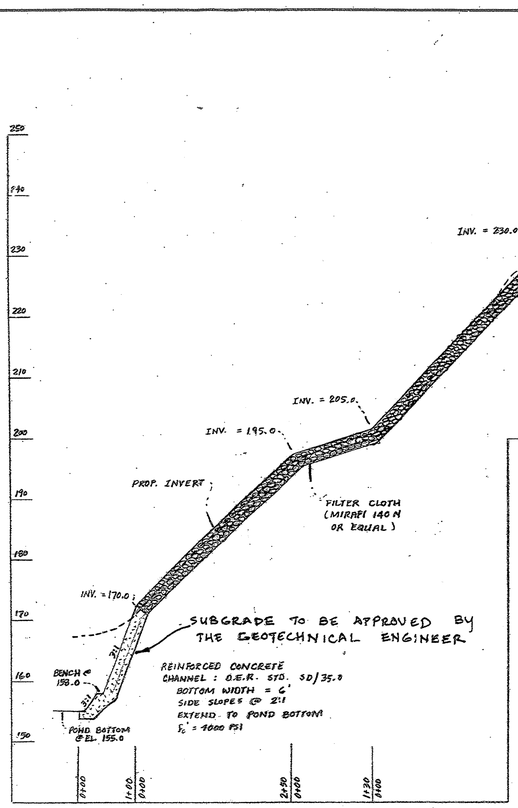
VIII. Sodding

Class of turfgrass sod shall be Maryland or Virginia State approved sod. Sod certified, or Maryland or Virginia State approved sod. Sod shall be harvested, delivered and installed within a period of 36 hours. Sod is to be laid with the long edges parallel to the contour using staggered joints with all ends tightly abutted and not over lapping. Sod shall be rolled and thoroughly watered after installation. Daily watering to maintain a 4 inch depth of moisture for the first week is required in the absence of rainfall. Sod is not to be applied on frozen ground.

IX. Maintenance

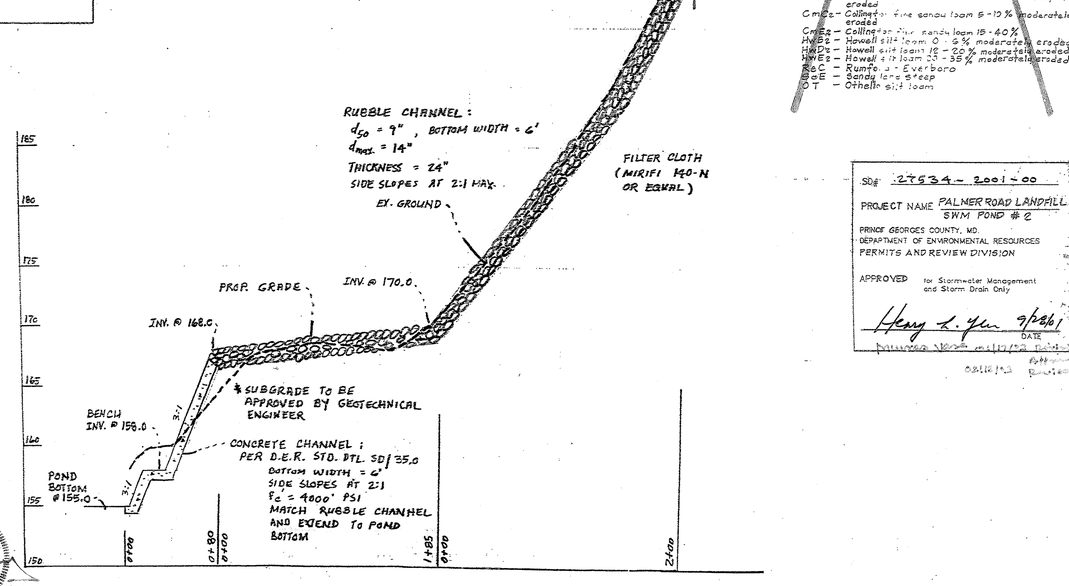
A. Irrigate - Apply minimum 1" of water every 3 to 4 days depending on soil texture, when soil moisture becomes deficient to prevent loss of, or stand of protective vegetation.

B. Reseed - If stand provides between 40% and 94% ground coverage, overseed and fertilize using half of the rates originally applied. If stand provides less than 40% coverage, reestablish stand following original rates and procedures.



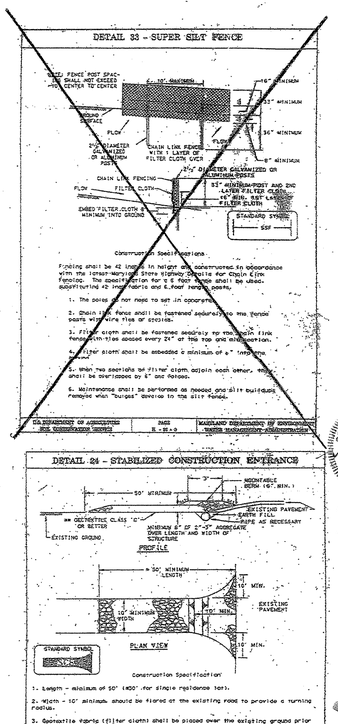
PROFILE ALONG PILOT CHANNEL "B"

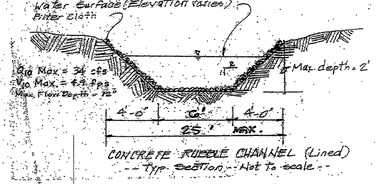
SCALE: HOR. 1" = 100'
VERT. 1" = 10'

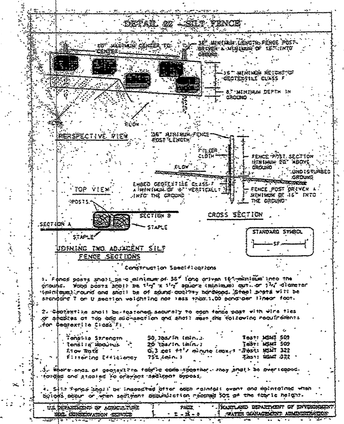


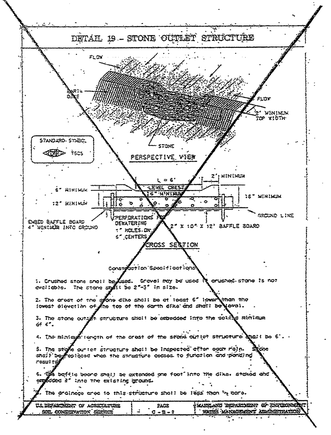
PROFILE ALONG PILOT CHANNEL "A"

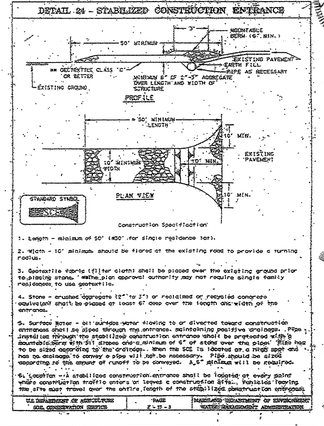
SCALE: HOR. 1" = 50'
VERT. 1" = 5'











INSPECTION NOTIFICATION

Cordero, Ward and Associates are to be notified 24 hours prior to start of construction of any Storm Drainage or Stormwater Mgmt. depicted per this approved plan. As the Engineer of Record, Cordero, Ward and Associates must provide inspection services separate and apart from any of those required by Prince George's County so that "As Built" plans and certification may be provided for release of bonds. Failure to do so may result in uncovering of systems and/or severe hardship in obtaining release of bonds and ultimate Use and Occupancy Permits.

WARNING: This plan is, and remains the sole property of Cordero, Ward & Associates until released by signature of a principal of that firm. Reproductions or other use may not be made without the express permission of Cordero, Ward & Associates. Violations will be prosecuted to the full extent of the law.

Released by: _____ Date: _____

SEDIMENT CONTROL NOTES

1. All erosion and sediment control measures are to be constructed and maintained in accordance with applicable published "1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control".
2. All sediment control measures to be adjusted to meet field conditions at the time of construction and to be constructed prior to any grading or disturbance of existing surface material on balance of site.
3. All sediment control devices are to be temporarily stabilized as per vegetative stabilization specifications, immediately after grading.
4. Periodic inspection and maintenance of all sediment control structures must be provided to insure intended purpose is accomplished. Developer shall be responsible for all sediment leaving the property. Sediment control measures shall be in working condition at the end of each working day.
5. All points of construction ingress and egress will be protected to prevent tracking of mud onto public ways.
6. All sediment will be prevented from entering any storm drainage system (through use of inlet protection). Contractor installing the above shall obtain and follow the "1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control" as distributed by Water Resources Administration, Erosion & Sediment Control Division, Tawes State Office Building, Annapolis, Maryland 21401.
7. All drainage swales and all slopes greater than 3:1 will be sodded. Sediment control structures will be inspected for integrity daily. Any damaged devices shall be corrected immediately.
8. Following initial soil disturbance or redisturbance, permanent or temporary stabilization shall be completed within 7 calendar days to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes greater than 3:1; and 14 days to all other control measures will be maintained on a continuing basis until the site is permanently stabilized and all permit requirements are met.
9. The developer is responsible for the acquisition of all required easements, right, and/or rights-of-way pursuant to the discharge from sediment and erosion control practices, storm water onto or across and grading or other work to be performed on adjacent or downgrade properties affected by this plan.
10. 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; and
11. Approval shall be requested upon final stabilization of all sites with disturbed areas in excess of 2 acres before removal of controls.
12. No sediment control structures shall be removed without permission from the sediment control inspector from the Prince George's County Department of the Environment.
13. After removal of temporary sediment structure, the disturbed area shall be permanently stabilized per vegetative stabilization specifications.
14. Disturbed surface area 24 AC
Volume of spoil material: 13,750 C.Y.
Volume of borrow material: 36,000 C.Y.
15. List predominant soil types and general description per PGSCD soil survey.
AdB2 - Adelphia fine sandy loam 2-5 % slopes moderately eroded
AuC2 - Aura gravelly loam 5-10% moderately eroded
AuD - Aura gravelly loam 10-50 %
AvE - Aura extremely gravelly loams 20-50% (mostly open)
BeB2 - Beltsville fine sandy loam 2-5%
BeC2 - Beltsville fine sandy loam 5-10% moderately eroded
BlB2 - Beltsville silt loam 2-5 % moderately eroded
CmC2 - Collington fine sandy loam 5-10 % moderately eroded
CmE2 - Collington fine sandy loam 10-40 %
HwB2 - Howell silt loam 0 - 5% moderately eroded
HwD2 - Howell silt loam 10 - 20 % moderately eroded
HwE2 - Howell silt loam 20 - 35% moderately eroded
ReC - Rumford - Everboro
SaE - Sandy loam steep
OT - Othello silt loam

SDP: 27534-2001-00
PROJECT NAME PALMER ROAD LANDFILL
SWM POND # 2
PRINCE GEORGES COUNTY, MD.
DEPARTMENT OF ENVIRONMENTAL RESOURCES
PERMITS AND REVIEW DIVISION
APPROVED for Stormwater Management and Storm Drain Only
Henry L. Yu 7/28/03
DATE

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
MICHAEL A. NOVY, PE
LICENSE NO. 17711
EXPIRATION DATE: 03/05/16
STATE OF MARYLAND — MICHAEL ANTHONY NOVY — No. 17711 — REGISTERED PROFESSIONAL ENGINEER
6/24/14

DATE	DESCRIPTION	BY
3-25-14	Updated Spec. See Sheet 30	MW
4-29-03	Added Ben Dyer Block, Revised SCD Drawing Numbers.	J.B. E.Y.

11721 WOODMORE ROAD, MITCHELLVILLE, MD 20721
BEN DYER ASSOCIATES, INC.
ENGINEERS, SURVEYORS, PLANNERS
TELEPHONE: (301) 430-2000

DRAWN BY	DESIGNED BY	CHECKED BY	APPROVED BY
SCALE: AS SHOWN		J-80035	
DATE: APRIL 2003		G.0021-Z	

4/30/03
Eric L. Harmer
For A Rev.
HE. Rumsdoal 11/15/02

PHASE II
STORMWATER MANAGEMENT / SEDIMENT CONTROL NOTES AND DETAILS
PALMER ROAD LANDFILL
Oxon Hill Election District #12
Prince George's County, Maryland

SWM SHT. 6 OF 7 SCD-SHT. 20 OF 3738

REVISIONS			CORDERO WARD & ASSOCIATES ENGINEERS & PLANNERS
DATE	DESCRIPTION	BY	5010 SUITLAND RD. AVE. SUITE 100 SUITLAND, MARYLAND 20746 (301) 736-8440
			drawn by: RockedayJ reviewed by:
			scale: N/A dwg. no.
			date: APRIL, 1997 file no.

SPECIFICATIONS FOR PLANTING

Plant Identification — All plants shall be properly marked for identification and checking.

List of Plant Material — The quantities given in the plant list are approximate only. The contractor will verify plant quantities prior to bidding and any discrepancies shall be brought to the attention of the landscape architect. The Contractor shall furnish, and plant, all plants required to complete the work as shown on the drawings. Substitutions shall not be made.

Plant Quality — All plants shall be sound, free of plant disease, infestation, or insect eggs and shall have a healthy, normal root system. Plants shall be freshly dug and not heeled in stock, nor stock from cold storage. All plants shall be nursery grown. Plants shall not be pruned prior to delivery. The shape of the plant shall, in general, conform to its natural growth proportions unless otherwise specified. All plants, including container grown, shall conform to the branching, caliper and height specifications of the American Association of Nurserymen's Publication entitled American Standard for Nursery Stock, ANSIZ60.1–1990 or latest edition, and shall have a well-shaped, heavy-branched structure for the species. Evergreen trees are to have an internode no greater than 24" and shall be uniformly well-shaped. Plants of a given-size shall not measure less than the minimum size as set forth in the American Standard for Nursery Stock, ANSIZ80.1–1990 or latest edition.

Plant Spacing — Plant spacing is to scale on plan.

Soil Mix — Soil mix will be 2/3 existing topsoil, 1/3 leafmold thoroughly mixed and homogenized.

Rootball Size — The ball size shall conform to the American Association of Nurserymen's Publication entitled American Standard for Nursery Stock, ANSIZ60.1–1990 or latest edition, and shall be wrapped in arrowtext burlap.

Excavation — Holes for all plants shall be 18" larger in diameter than size of ball or container and shall have vertical sides. Organic material (leafmold) will be incorporated into plant beds by tilling again to a depth of 8". Proportions of soil to organic material will be two parts existing soil to one part organic materi l.

Planting — Backfilling shall be done with soil mix previously described, reasonably free of stones, subsoil, clay, lumps, stumps, roots, weeds, Bermuda grass, litter, toxic substances, or any other material which may be harmful to plant growth or hinder grading, planting, or maintenance operations. Plants shall be set plumb and straight and trees shall be spyed or staked at the time of planting. Backfill shall be well worked about the roots and tested by watering. Plants will be planted higher than surrounding grades. Trees will be 3" higher. Remove rope from around tree trunks and lay back burlap and wire baskets from top 1/3 of ell B&B material. Nylon, plastic, or vinyl rope and/or burlap will be completely removed from all plant material prior to planting.

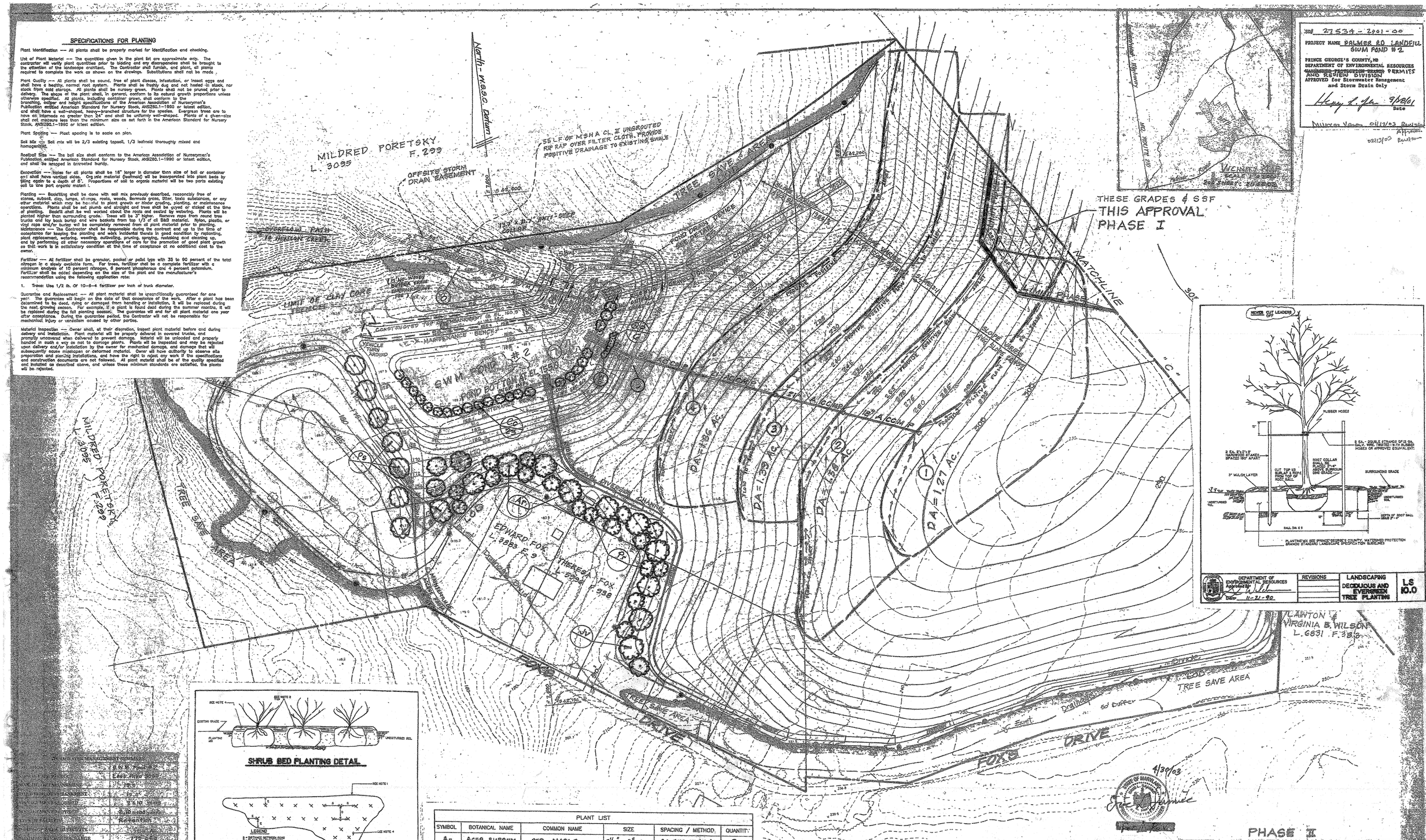
Maintenance — The Contractor shall be responsible during the contract and up to the time of acceptance for keeping the planting and work incidental thereto in good condition by maintaining, plant replacement, watering, weeding, cultivating, pruning, spraying, restaking and cleaning up, and by performing all other necessary operations of care for the promotion of good plant growth so that work is in satisfactory condition at the time of acceptance at no additional cost to the owner.

Fertilizer — All fertilizer shall be granular, pocket or pellet type with 35 to 90 percent of the total nitrogen in a slowly available form. For trees, fertilizer shall be a complete fertilizer with a minimum analysis of 10 percent nitrogen, 6 percent phosphorous and 4 percent potassium. Fertilizer shall be added depending on the size of the plant and the manufacturer's recommendation using the following application rate:

1. Trees: Use 1/2 lb. Of 10–6–4 fertilizer per inch of trunk diameter.

Guarantee and Replacement — All plant material shall be unconditionally guaranteed for one year. The guarantee will begin on the date of that acceptance of the work. After a plant has been determined to be dead, dying or damaged from handling or installation, it will be replaced during the next growing season. For example, if a plant is found dead during the summer months, it will be replaced during the fall planting season. The guarantee will end for all plant material one year after acceptance. During the guarantee period, the Contractor will not be responsible for mechanical injury or vandalism caused by other parties.

Material Inspection — Owner shall, at their discretion, inspect plant material before and during delivery and installation. Plant material will be properly delivered in covered trucks, and promptly unscarred when delivered to prevent damage. Material will be unloaded and properly handled in such a way as not to damage plants. Plants will be inspected and may be rejected upon delivery and/or installation by the owner for mechanical damage, and damage that will subsequently cause misshapen or deformed material. Owner will have authority to observe site preparation and planting procedures, and have the right to reject any work if the specifications and construction documents are not followed. All plant material shall be of the quality specified and installed as described above, and unless these minimum standards are satisfied, the plants will be rejected.



SDP 27534-2001-00

PROJECT NAME PALMER RD LANDFILL SWM POND #2

PRINCE GEORGE'S COUNTY, MD
DEPARTMENT OF ENVIRONMENTAL RESOURCES
WATERSHED PROTECTION BRANCH PERMITS AND REVIEW DIVISION
APPROVED for Stormwater Management and Storm Drain Only

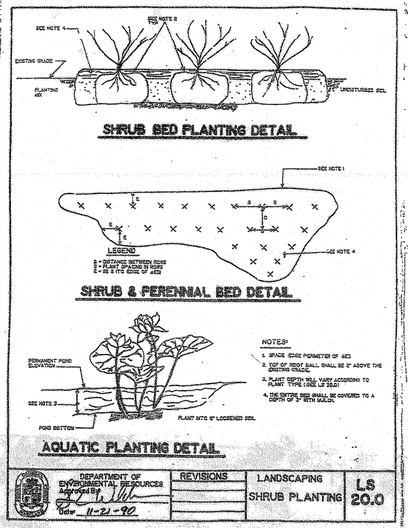
Henry L. Ju 9/18/01
Date

Melissa Jean 04/19/03 Revision
AM-Added
02/13/03 Revision

PLANTING: SEE PRINCE GEORGE'S COUNTY, WATERSHED PROTECTION BRANCH STANDARD LANDSCAPE SPECIFICATION GUIDELINES

DEPARTMENT OF ENVIRONMENTAL RESOURCES Approved: L. Wilson Date: 11-21-90

REVISIONS	LANDSCAPING	LS 10.0
	DECIDUOUS AND EVERGREEN TREE PLANTING	



DEPARTMENT OF ENVIRONMENTAL RESOURCES Approved: L. Wilson Date: 11-21-90

REVISIONS	LANDSCAPING	LS 20.0
	SHRUB PLANTING	

PLANT LIST					
SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	SPACING / METHOD	QUANTITY
Ar	ACER RUBRUM	RED MAPLE	2½"-3" CAL.	AS SHOWN / B&B	9
Jv	JUNIPER VIRGINIANA	EAST RED CEDAR	6'-8' HT.	10'OC / B&B	4
Qp	QUERCUS PALUSTRIS	PIN OAK	2½"-3" CAL.	AS SHOWN	6
Pr	PINUS RIGIDA	PITCH PINE	6'-8' HT.	AS SHOWN / B&B	17
Co	CEPHALANTHUS OCC.	BUTTON BUSH	18"-24" SP.	5' OC. / CONT.	23
Ps	PINUS STROBUS	WHITE PINE	6'-8' HT.	AS SHOWN / B&B	10

			11721 WOODMORE ROAD, MITCHELLVILLE, MD 20721
			BEN DYER ASSOCIATES, INC. ENGINEERS, SURVEYORS, PLANNERS TELEPHONE: (301) 459-3000
4-29-03	Added Ben Dyer Block, Revised SCD Drawing Numbers	J.B.	DESIGNED BY: J.B. DRAWN BY: J.B. CHECKED BY: J.B. SCALE: 1"=50' DATE: APRIL 2003
DATE	DESCRIPTION	BY	J-B0035 Q.00.22-E
	REVISIONS		

INSPECTION NOTIFICATION

Cordero, Ward and Associates are to be notified 24 hours prior to start of construction of any Storm Drainage or Stormwater Mgmt. depicted per this approved plan. As the Engineer of Record, Cordero, Ward and Associates must provide inspection services separate and apart from any inspection required by Prince George's County so that "As Built" plans and certification may be provided for release of bonds. Failure to do so may result in unacceptable systems and/or severe hardship in obtaining release of bonds and ultimate Use and Occupancy Permits.

11/15/02

WARNING: This plan is, and remains the sole property of Cordero, Ward & Associates until receipt of the signature of acceptance of that firm. Reproduction of other forms may not be made without the written permission of Cordero, Ward & Associates. Violators will be prosecuted to the full extent of the law.

Issued by: _____ Date: _____

Owner/Applicant/Developer:
Palmer Road Landfill, Inc.
3334 Kenilworth Ave
Hyattsville, Maryland 20781
Attn.: Craig Harris
Phone: 301-403-0800

4/30/03

PHASE II

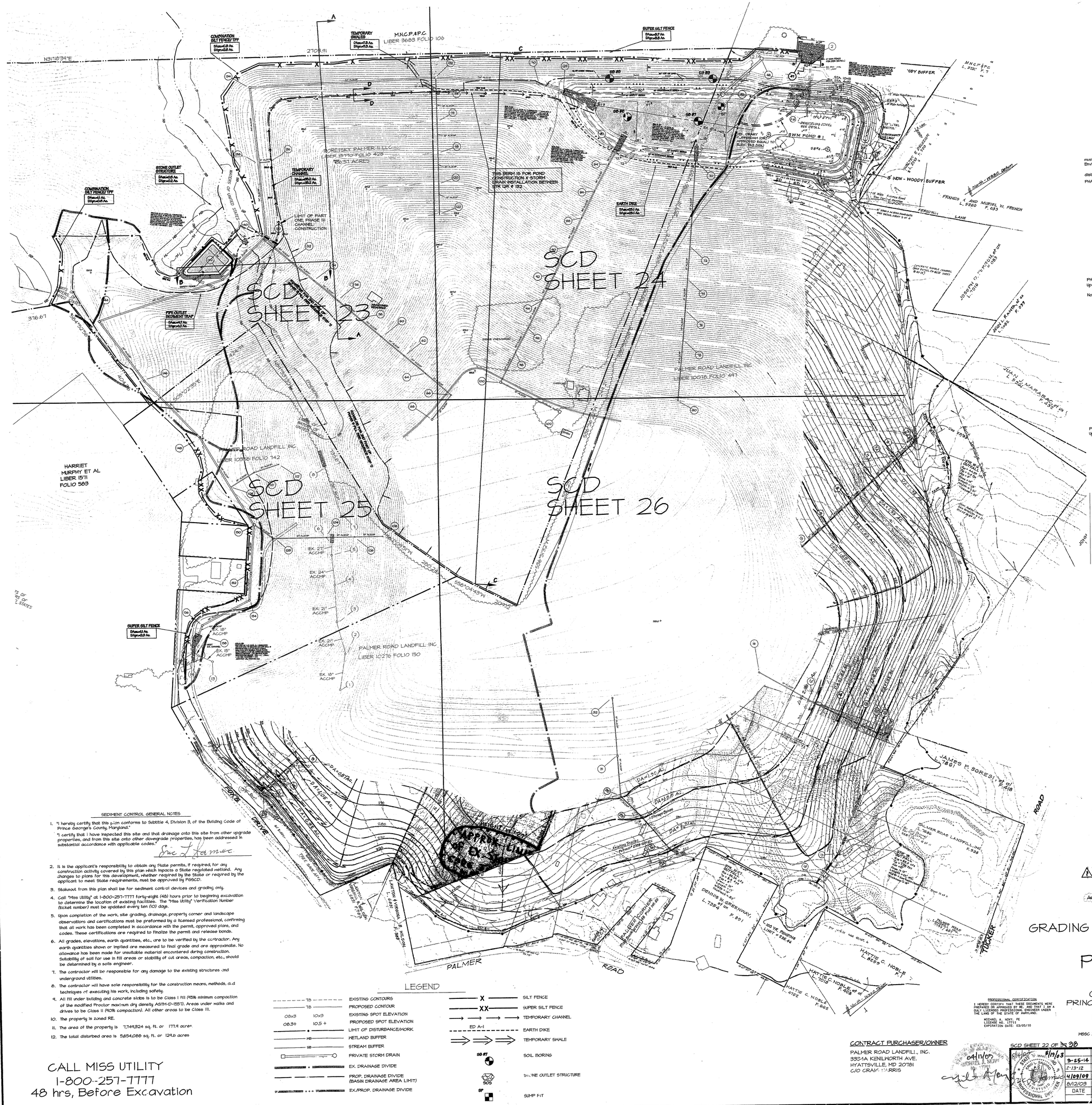
POND LANDSCAPING PLAN

PALMER ROAD LANDFILL

Oxon Hill Election District #12
Prince George's County, Maryland

SWM SHT. 7 OF 7 SCD SHT. 21 OF 3738

REVISIONS			CORDERO WARD & ASSOCIATES ENGINEERS & PLANNERS
DATE	DESCRIPTION	BY	8010 GUILFORD RD. SUITE 330 BELTSVILLE, MARYLAND 20705 (301) 470-0440
			drawn by: JB checked by: JB
			scale: 1"=50'
			date: APRIL 1997


SCD SHEET 23
SCD SHEET 24
SCD SHEET 25
SCD SHEET 26
PALMER ROAD LANDFILL INC LIBER 10018 FOLIO 447
PALMER ROAD LANDFILL INC LIBER 10858 FOLIO 742
PALMER ROAD LANDFILL INC LIBER 10216 FOLIO 150
HARRIET MURPHY ET AL LIBER 1571 FOLIO 583
M.N.C.P.&P.C. LIBER 3683 FOLIO 106
PORETSKY PALMER II LLC LIBER 13710 FOLIO 428 26.51 ACRES
SWM POND #1
TEMPORARY SWALES
SUPER SILT FENCE
COMBINATION SILT FENCE/ TPF
STONE OUTLET STRUCTURE
TEMPORARY CHANNEL
EARTH DIKE
PIPE OUTLET SEDIMENT TRAP
THIS BERM IS FOR POND CONSTRUCTION & STORM DRAIN INSTALLATION BETWEEN STR 128 & 132
LIMIT OF PART ONE, PHASE III CHANNEL CONSTRUCTION
5' NON - WOODY BUFFER
100' WOODY BUFFER
PALMER ROAD
TRUCKER ROAD
FOX'S DRIVE
JAMES F. SORESI 7881
JOSEPH C. & PATRICIA M. LYONS L. 7078
JUAN J. MARABE L. 5921 F. 432
FRANCIS X. AND MURIEL M. FRENCH L. 9250 F. 633
DENNIS S. & GREENWAY L. 7395 F. 891
HATTIE C. NOBLE L. 8699 F.
HATTIE C. NOBLE et al L. 1018 F. 488
HATTIE C. NOBLE L. 6782 F. 605
LAWTON & WILSON L. 6831 F. 388
PALMER CORNER PROPERTIES, LLC
PALMER ROAD LANDFILL INC F. 938
100 YR. PONDING LIMIT = 338.44
APPROX. LIMIT OF DISTURBANCE
EX. 27" RCCMP
EX. 24" RCCMP
EX. 21" RCCMP
EX. 18" RCCMP
EX. 15" RCCMP
DA=0.87Ac.
DA=1.05 Ac.
DA=1.39 Ac.
DA=1.30 Ac.
DA=5.88 Ac.
DA=5.18 Ac.
N31°18'39"E 2709.91
S58°10'28"E 376.67
S58°10'28"E 350.50
S58°10'28"E 200.38
S58°10'28"W 200.38
S58°10'28"W 350.50
S58°15'32"W 1000.00
S58°10'28"E 1000.00
S58°10'28"E 1000.00
S58°10'28"E

N31°18'39"E

2703.91

M.N.C.P.&P.C.
LIBER 3683 FOLIO

COMBINATION SILT FENCE/ TPF
DAex.=2.8 Ac.
DApr.=2.8 Ac.

TEMPORARY SWALES
DAex.=11.5 Ac.
DApr.=11.5 Ac.

RA #1

PA #2
(22.14 AC.)

MARYLAND STATE GRID

Sediment Trap No. 1
Type = ST - 1
Drainage Area = 4.7 ac.
Net Storage Required = 9,000 cf
Net Storage Provided = 10,439 cf
Dry Storage Required = 4,000 cf
Dry Storage Provided = 21,234 cf
Bottom Dimension = As SHOWN
Bottom Elevation = 96.0'
Clean Out Elevation = 96.5'
Net Storage Elevation = 97.5'
Dry Storage Elevation = 99.0'
Spillway Crest Elevation = 99.0'
Top of Dam = 100.0'
Net Storage Depth = 1.5'
Dry Storage Depth = 1.5'
Barrel Diameter = 21"
Riser Diameter = 21"
Trash Rack Diameter = 42"
Side Slopes = 2:1

COMBINATION SILT FENCE/ TPF
DAex.=1.1 Ac.
DApr.=0.6 Ac.

PROVIDE CL I A, CLASS, GL. I UNWOVEN (FILTER-MAX, PETEC, OR APPROVED EQUAL) WITH WIRE (STD. 307.01) REINFORCEMENT AND PLACE FILTER FABRIC (FOR RAP-, LAY AND APPROVED EQUAL) WITH RIGHT HAND SPACING: 2.00 - 1.00 FLUSH, 1.00 - 0.50 EMBEDMENT, 0.25 - 0.00 BELOW

WETLANDS OF UNITED STATES

TEMPORARY CHANNEL
DAex.=63.2 Ac.
DApr.=63.2 Ac.

PROPOSED EXPANSION

LIMIT OF PART ONE PHASE III CHANNEL CONSTRUCTION

PORTSMOUTH PALMER II LLC
LIBER 13770 FOLIO 428
660.57 ACRES

B
SAFETY FENCE

WETLANDS AREA

WETLANDS OF UNITED STATES

FUTURE ACCESS ROAD

PIPE OUTLET SEDIMENT TRAP
DAex.=4.7 Ac.
DApr.=1.0 Ac.

STONE OUTLET STRUCTURE
DAex.= 0.5 Ac.
DApr.= 0.2 Ac.

RA #2

ABANDONED RESIDENCE

LIMITS OF PHASE TWO

S21°36'00"W 316.67

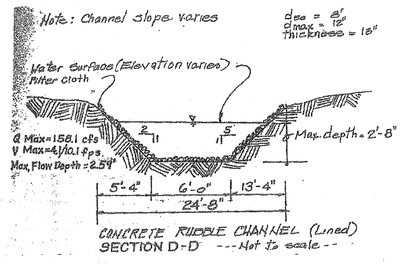
S68°24'00"E

S84°52'56"W 404.13

ADA E
MURPHY ET AL
LIBER 4348

MATCHLINE SEE SCD SHEET 25

MATCHLINE SEE SCD SHEET 24



CONCRETE RUBBLE CHANNEL (Lined)
SECTION D-D ---Not to scale---

M-NCPPC
Prince George's County Planning Department
Natural Resources Division
APPROVAL
TREE CONSERVATION PLAN
TCP II / 111 / 94

	Approved by J. STASZ	DATE 8/6/03
01		
02		
03		
04		3/31/04
05		
08		

TREE CONSERVATION PLAN - TYPE II
AND
GRADING AND SEDIMENT CONTROL PLAN
PHASE III
PALMER ROAD
CLASS III FILL SITE
OXON HILL DISTRICT No. 12
PRINCE GEORGE'S COUNTY, MARYLAND

GRAPHIC SCALE 1"= 50'
0 50 100 150

USGS 200' SHEET SERIES 211 SE 2 ADC MAP BK LOCATION 23 G-H/10-11

(114)

CALL MISS UTILITY
1-800-257-7777
48 hrs, Before Excavation

NOTE: BOUNDARY SURVEY AND TOPOGRAPHIC SURVEY WERE TAKEN FROM CHARLES P. JOHNSON AND ASSOCIATES, INC. RECORDS, FILE NO. 23-092-07 B, PALMER ROAD PROPERTY / CHESTNUT OAKS.

TCP SHEET 7 OF 10
SCD SHEET 23 OF 31 39

3/24/04
DATE
TCPonly
Kevin E. Hedge
Qualified Professional
COMAR 08.19.08.01

4/2/04
STATE OF MARYLAND
KEVIN EDWARD HEDGE
No. 21436
REGISTERED PROFESSIONAL ENGINEER

	DATE	DESCRIPTION	BY
	11/03/03	REV. DUE TO WATERS OF U.S. IMPACTS NEAR STR. 136	JB
		REVISIONS	

10221 WOODMORE ROAD, SUITE 200
BELTSVILLE, MARYLAND 20721
BEN DYER ASSOCIATES, INC.
Engineers / Surveyors / Planners
TELEPHONE (301) 430-2000
COPYRIGHT © 2003 BEN DYER ASSOCIATES, INC.

DRAWN BY | CHECKED BY | DESIGNED BY | PROJECT NO.
SH | MB | EJS | J-80035
SCALE 1" = 50' | DWG. NO.
DATE MARCH, 2003 | 6.0024-Z

S:\SDSKPROJ\80035\SHEETS\SEC-18.dwg Wed Mar 17 10:58:28 2004 benG

MATCHLINE SEE SCD SHEET 23

SUPER SILT FENCE
DAex.=8.7 Ac.
DApr.=3.3 Ac.

M.N.C.P.&P.C.
LIBER 4402 FOLIO 751

PA #3
(0.18 AC.)

MARYLAND STATE GRID

4' HIGH FENCE PER DET. SD-2.10

EX. PRINCIPAL SPILLWAY

SB #5 SB #6 SB #7 SB #8 SB #9 SP

10' TOP OF DAM
10' MAINTENANCE BENCH
10' SAFETY BENCH
5' CORE TRENCH

EX. 512.5' ±100.0'

TEMPORARY COFFERDAM TO ELEV. 73.3 (MIN.) SEE DETAIL ON THIS SHEET. REFER TO MANUFACTURER AND GEOTECHNICAL ENGINEER FOR INSTALLATION AND CONSTRUCTION.

THIS BERM IS FOR POND CONSTRUCTION & STORM DRAIN INSTALLATION BETWEEN STR 129 & 132

EARTH DIKE
DAex.=28.1 Ac.
DApr.=28.1 Ac.

PROPOSED EXPANSION

LIMITS OF PHASE ONE

EX. EMERGENCY SPILLWAY

PA #4
(2.26 AC.)

N/F
FRENCH

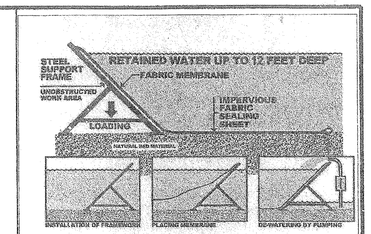
N/F
PERRON

PALMER ROAD LANDFILL INC
LIBER 10018 FOLIO 491

DENSE VINES/SHRUBS

SEDIMENT BASIN No. 1
Drainage Area = 144.9 Ac.
Total Required Volume = 521,640 cf
Wet Storage Required = 260,820 cf
Wet Storage Provided = 264,898 cf
Dry Storage Required = 260,820 cf
Dry Storage Provided = 268,015 cf
Clean Out Volume Required (Min.) = 130,410 cf
Clean Out Volume Provided = 136,212 cf
Bottom Dimension = AS SHOWN
Bottom Elevation = 67.3
Cleanout Elevation = 68.5
Wet Storage/Permanent Pool Elevation = 69.6
Dry Storage/Riser Crest Elevation = 71.5
Emergency Spillway Crest Elevation = 76.2
Constructed Minimum Top of Dam = 80.0
Settled Minimum Top of Dam = 79.4
Barrel Diameter = 48" / 72"
Riser Diameter = 6'x6' / 12'x12'
Trash Rack Diameter = 72"x15'-4"x15'-4" & 48"x8'-10"x 8'-10"
Drain Down Orifice Invert = 72"=69.6
Drain Down Device Diameter = FOUR 12" PVC OR AL2CSP PERF. PIPES
Side Slopes = 3:1

SEE SCD SHEET 22 FOR OVERALL DRAINAGE DIVIDE FOR BASIN No.1



TEMPORARY COFFERDAM

M-NCPPC
Prince George's County Planning Department
Natural Resources Division
APPROVAL
TREE CONSERVATION PLAN
TCP II / 111 / 94

	Approved by	DATE
	IL STASZ	8/8/03
01		
02		
03		
04	IL Staszak	9/21/04
05		
06		

TREE CONSERVATION PLAN - TYPE II
AND
GRADING AND SEDIMENT CONTROL PLAN
PHASE III

PALMER ROAD

CLASS III FILL SITE
OXON HILL DISTRICT No. 12
PRINCE GEORGE'S COUNTY, MARYLAND

GRAPHIC SCALE 1"= 50'
0 50 100 150

WSSC 200' SHEET SERIES 211 SE 2 ADC MAP BK LOCATION 23 G-H/10-11

(114)

TCP SHEET 8 OF 10
SCD SHEET 24 OF 27 38

3/24/04 DATE
TCP only
Kevin E. Heidle
Qualified Professional
COMAR 08.19.06.01

4/21/04 DATE
STATE OF MARYLAND
KEVIN EDWARD HEIDLE
No. 21437
REGISTERED PROFESSIONAL ENGINEER

DATE	DESCRIPTION	BY
11/03/03	REV. DUE TO WATERS OF U.S. IMPACTS NEAR STR. E38	JB
9/21/03	REVISED RT'S #2 & 10 TO ACCOUNT FOR REMOVAL OF RC-FORESTATION AREAS FROM PERMANENT PRS SCD COMMENT	KH
9/12/03	REVISED PER PGSCD COMMENTS	EL'S
DATE	REVISIONS	BY

BEN DYER ASSOCIATES, INC.
Engineers / Surveyors / Planners
10121 WOODSIDE ROAD, SUITE 200
KENSINGTON, MARYLAND 20721
TELEPHONE (301) 430-2000

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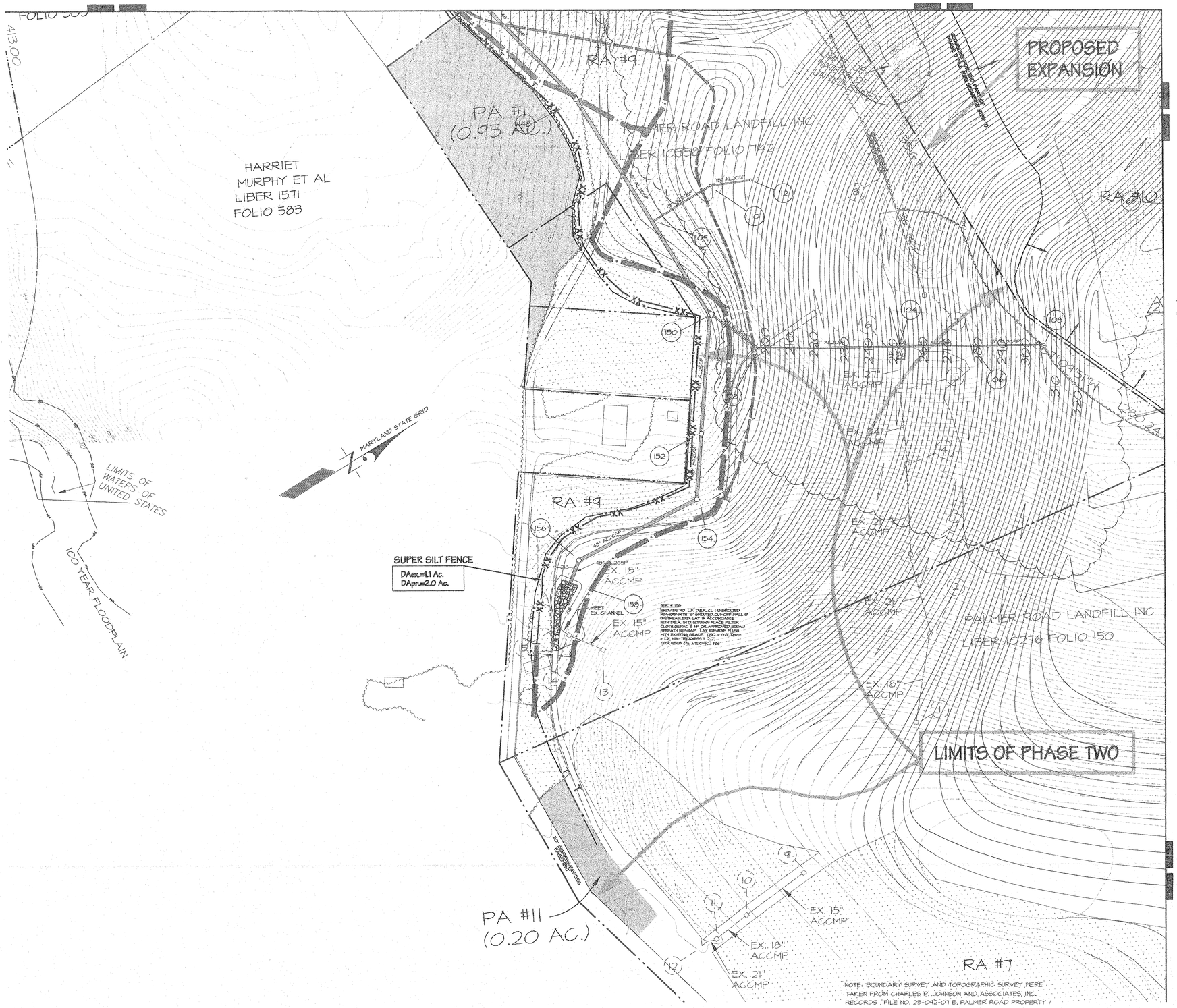
DRAWING INTENDED TO BE PRINTED ON 24" SHEET
SCALE 1" = 50'
DRWG. NO. 6.0025-Z
DATE MARCH 2003
J-80035

CALL MISS UTILITY
1-800-257-7777
48 hrs, Before Excavation

NOTE: BOUNDARY SURVEY AND TOPOGRAPHIC SURVEY WERE TAKEN FROM CHARLES P. JOHNSON AND ASSOCIATES, INC. RECORDS, FILE NO. 23-092-07 B, PALMER ROAD PROPERTY / CHESTNUT OAKS.

S:\SDSKPROJ\80035\SHEETS\SEC-2a.dwg Wed Mar 17 11:00:10 2004 ben46

MATCHLINE SEE SCD SHEET 23



NOTE: BOUNDARY SURVEY AND TOPOGRAPHIC SURVEY WERE TAKEN FROM CHARLES P. JOHNSON AND ASSOCIATES, INC. RECORDS, FILE NO. 23-042-07 B, PALMER ROAD PROPERTY / CHESTNUT OAKS.

MATCHLINE SEE SCD SHEET 26

SEE SCD SHEET 22 FOR OVERALL DRAINAGE DIVIDE FOR BASIN No.1

M-NCPPC
Prince George's County Planning Department
Natural Resources Division
APPROVAL
TREE CONSERVATION PLAN
TCP II / 111 / 84

	Approved by	DATE
	J. STASZ	8/6/03
01		
02		
03		
04	J. Staszak	8/31/04
05		
06		

TREE CONSERVATION PLAN - TYPE II AND GRADING AND SEDIMENT CONTROL PLAN PHASE III

PALMER ROAD

CLASS III FILL SITE

OXON HILL DISTRICT No. 12
PRINCE GEORGE'S COUNTY, MARYLAND

GRAPHIC SCALE 1" = 50'
0 50 100 150

WSSC 200' SHEET SERIES 211 SE 2 ADC MAP BK LOCATION 28 G-H/10-11

114

TCP SHEET 9 OF 10
SCD SHEET 25 OF 27 38

3/24/04 DATE
TCP only
Kevin Hedge
Kevin E. Hedge
Qualified Professional
COMAR 08.19.06.01

4/21/04
STATE OF MARYLAND
KEVIN E. HEDGE
REGISTERED PROFESSIONAL ENGINEER

BY	DESCRIPTION	DATE
JB	REV. DUE TO WATERS OF U.S. IMPACTS NEAR STR. E38	11/03/03
KH	REVISED RPA #12 & 10 TO ACCOUNT FOR REMOVAL OF RE-FORESTATION AREAS FROM EASEMENT PER SCD COMMENT	8/21/03
	REVISIONS	DATE

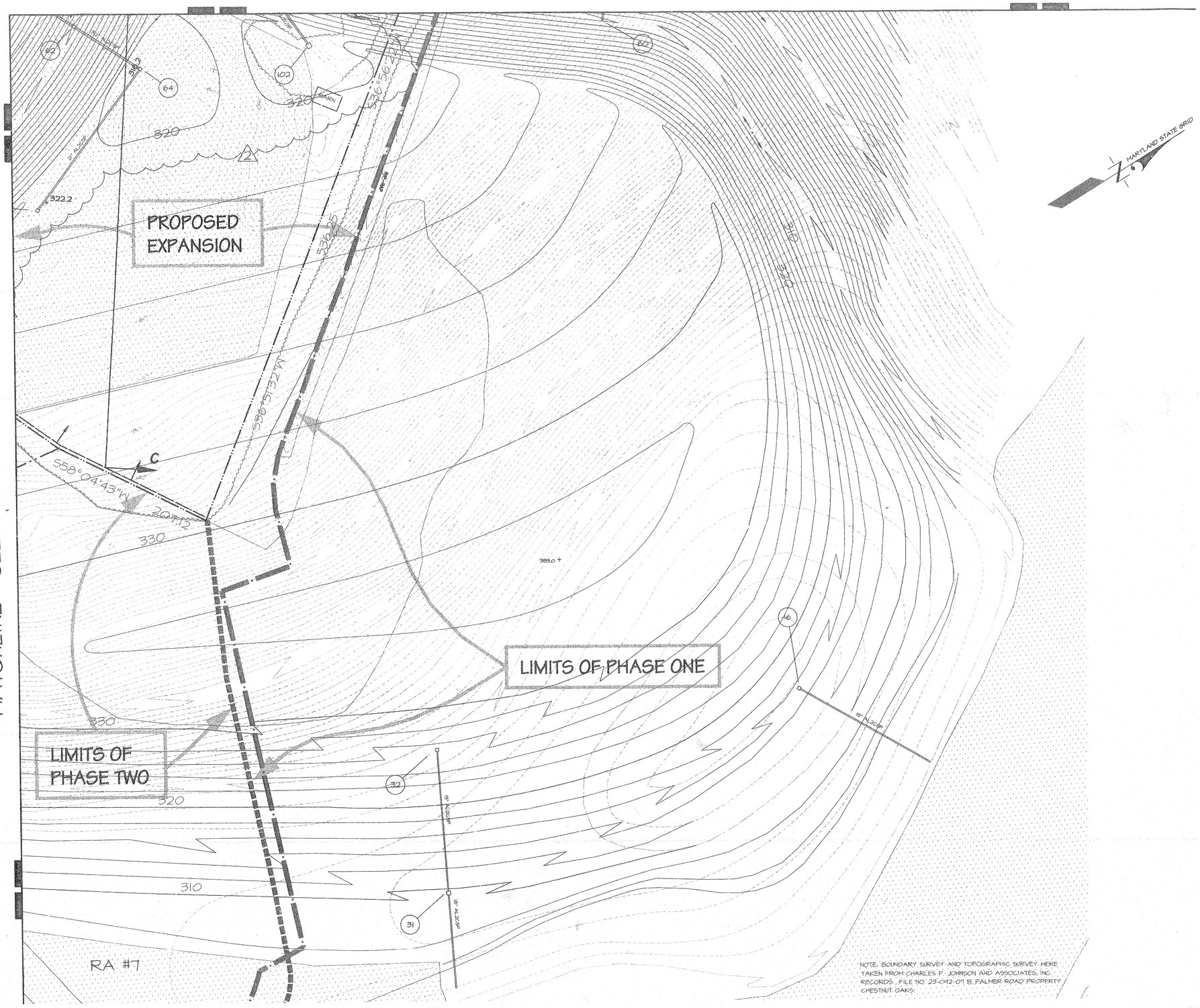
10721 WOODMORE ROAD, SUITE 200
HYATTSVILLE, MARYLAND 20721
BEN DYER ASSOCIATES, INC.
Engineers / Surveyors / Planners
TELEPHONE (301) 490-2660
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DRAWN BY: SAS | DESIGNED BY: SAS | CHECKED BY: ES | RECORD NO.
SCALE: 1" = 50' | J-80055
DATE: MARCH, 2003 | DRWG. NO. 6.0026-2

CALL MISS UTILITY
1-800-257-7777
48 hrs, Before Excavation

I:\SDSKPROJ\80055\SHEETS\SCD-3a.dwg Wed Mar 17 11:10:51 2004 ben45

MATCHLINE SEE SCD SHEET 24



MATCHLINE SEE SCD SHEET 25

NOTE: BOUNDARY SURVEY AND TOPOGRAPHIC SURVEY WERE TAKEN FROM CHARLES P. JOHNSON AND ASSOCIATES, INC. RECORDS, FILE NO. 23-042-01 B, PALMER ROAD PROPERTY CHESTNUT OAKS.

SEE SCD SHEET 22 FOR OVERALL DRAINAGE DIVIDE FOR BASIN No.1

M-NCPPC
Prince George's County Planning Department
Natural Resources Division
APPROVAL
TREE CONSERVATION PLAN
TCP II / 111 / 94

	Approved by	DATE
	J. STASZ	9/16/03
01		
02		
03		
04		3/21/04
05		
06		

TREE CONSERVATION PLAN - TYPE II
AND
GRADING AND SEDIMENT CONTROL PLAN
PHASE III
PALMER ROAD
CLASS III FILL SITE
OXON HILL DISTRICT No. 12
PRINCE GEORGE'S COUNTY, MARYLAND

GRAPHIC SCALE 1" = 50'
0 50 100 150

WSSC 200' SHEET SERIES 211 SE 2 ADC MAP BK LOCATION 23 G-H/10-11

(114)

TCP SHEET 10 OF 10
SCD SHEET 26 OF 27 38

3/24/04 DATE
TCP only
Kevin E. Hodge
Qualified Professional
COMAR 08.19.08.01

4/21/04 DATE
STATE OF MARYLAND
KEVIN E. HODGE
No. 21509
PROFESSIONAL ENGINEER

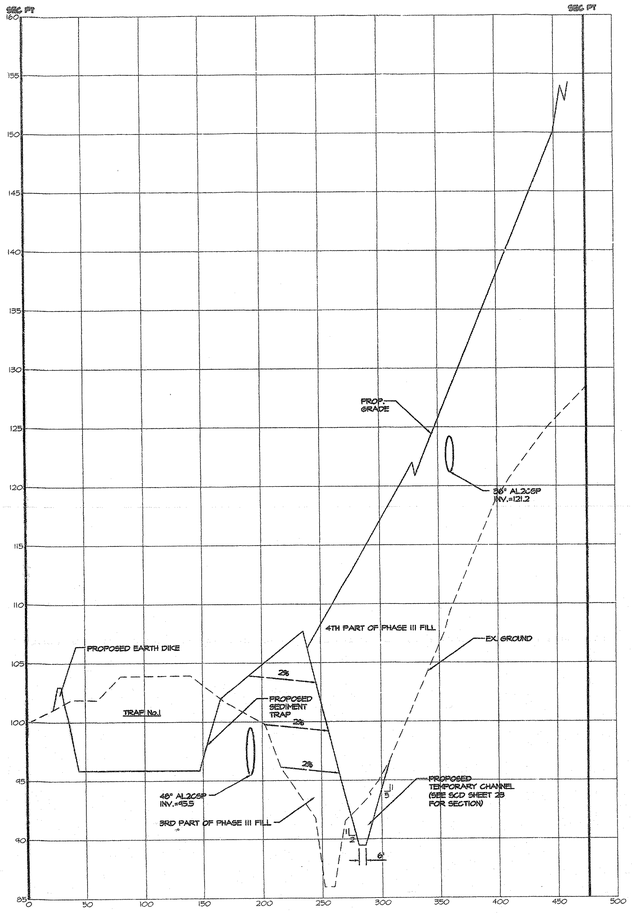
DATE	DESCRIPTION	BY
11/03/03	REV. DUE TO WATERS OF U.S. IMPACTS NEAR STR. 136 (2)	JB
8/21/03	REVISED WSA 83-2 & 97-10 TO ACCOUNT FOR REMOVAL OF RE-FORESTATION AREAS FROM ENHANCEMENT PER SCD COMMENT	KH
	REVISIONS	

BEN DYER ASSOCIATES, INC.
Engineers / Surveyors / Planners
6721 WOODMOOR ROAD, SUITE 320
MITCHELLVILLE, MARYLAND 20721
TELEPHONE (301) 430-2000
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DRAWN BY SM | DESIGNED BY JNB | CHECKED BY ELS
SCALE 1" = 50'
DATE MARCH, 2003
PROJ. NO. J-80035
DWG. NO. 6.0027-Z

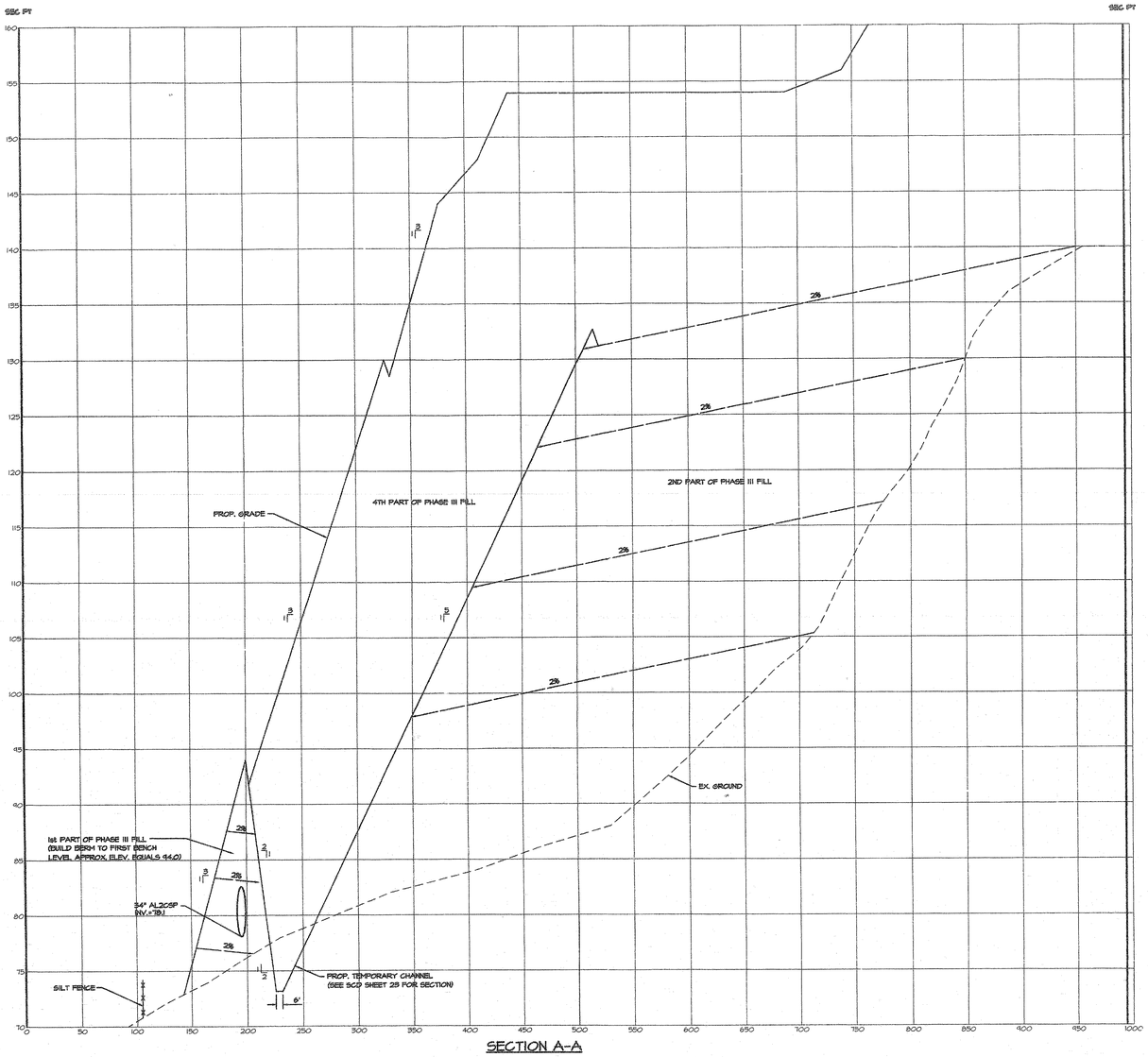
CALL MISS UTILITY
1-800-257-7777
48 hrs, Before Excavation

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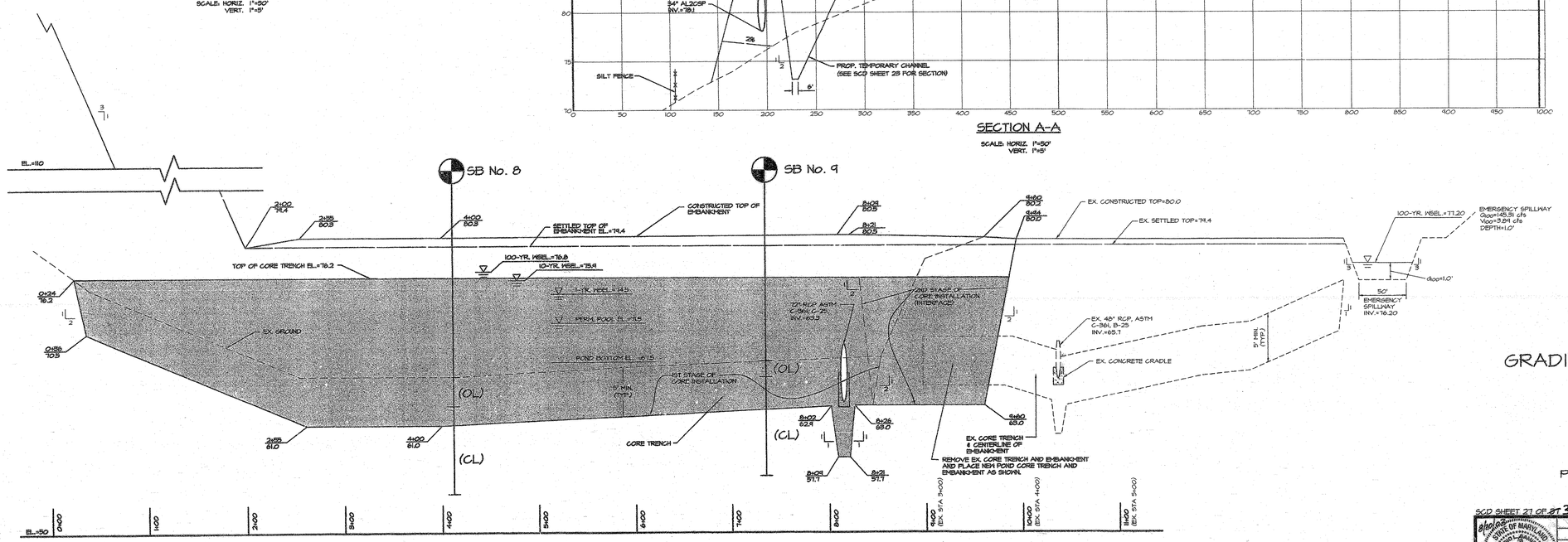
SECTION B-B

SCALE: HORIZ. 1"=50'
VERT. 1"=5'



SECTION A-A

SCALE: HORIZ. 1"=50'
VERT. 1"=5'



PROFILE THROUGH CENTER OF EMBANKMENT- SWM POND #1

SCALE: HORIZ. 1"=50'
VERT. 1"=5'

DRAWING TITLE	DRAWING NUMBER
SITE GRADING, SEDIMENT & EROSION CONTROL AND STORMWATER MANAGEMENT PLAN	6.002 - 6.0011-Z
COMPOSITE AND DRAINAGE AREA MAP FOR SITE GRADING, SEDIMENT & EROSION CONTROL AND STORMWATER MANAGEMENT PLAN	6.0012-Z
SEDIMENT AND EROSION CONTROL PLAN	6.0013-Z
SEDIMENT CONTROL PLAN AND NOTE	6.0014-Z
SEDIMENT CONTROL DETAIL SHEET	6.0015-Z
SITE GRADING AND STORMWATER MANAGEMENT PLAN	6.0016 - 6.0017-Z
STORMWATER MANAGEMENT DETAILS, SOIL BORING LOGS AND SEDIMENT CONTROL NOTES	6.0018-Z
STORMWATER MANAGEMENT POND DETAILS	6.0019-Z
STORMWATER MANAGEMENT PLAN NOTES & DETAILS	6.0020-Z
STORMWATER MANAGEMENT & SEDIMENT CONTROL PLAN NOTES & DETAILS	6.0021-Z
POND LANDSCAPING PLAN	6.0022-Z
COMPOSITE SHEET GRADING & SEDIMENT CONTROL PLAN	6.0023-Z
GRADING & SEDIMENT CONTROL PLAN	6.0024 - 6.0027-Z
CROSS SECTION FOR GRADING & SEDIMENT CONTROL PLAN	6.0028 - 6.0029-Z
DETAIL SHEET GRADING & SEDIMENT CONTROL PLAN	6.0030-Z
PRIVATE STORM DRAIN & STORMWATER MANAGEMENT PLAN	8.005 - 8.006-Y
PROFILES PRIVATE STORM DRAIN & STORMWATER MANAGEMENT PLAN	8.0016-Y
POND DETAIL SHEET PRIVATE STORM DRAIN & STORMWATER MANAGEMENT PLAN	8.0017-Y
POND SPECIFICATIONS PRIVATE STORM DRAIN & STORMWATER MANAGEMENT PLAN	8.0018-Y
DETAIL SHEET PRIVATE STORM DRAIN & STORMWATER MANAGEMENT PLAN	8.0019-Y

CROSS SECTIONS FOR GRADING AND SEDIMENT CONTROL PLAN

PHASE III

PALMER ROAD

CLASS III FILL SITE

OXON HILL DISTRICT No. 12

PRINCE GEORGE'S COUNTY, MARYLAND

WSSC 200' SHEET SERIES 211 SE 2 ADC MAP BK LOCATION 23 G-H10-11

(114)

SCD SHEET 27 OF 27 38

DATE	DESCRIPTION	BY
	REVISIONS	
8/19/03	REVISED PER SCD COMMENTS	ELS
8/13/03	REVISED PER SCD COMMENTS	ELS

11721 WOODMORE ROAD, SUITE 200
BEN DYER ASSOCIATES, INC.
Engineers / Surveyors / Planners
TELEPHONE (301) 430-2000

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DRAWN BY: ELS | DESIGNED BY: ELS | CHECKED BY: MN | RECORD NO.: J-80035

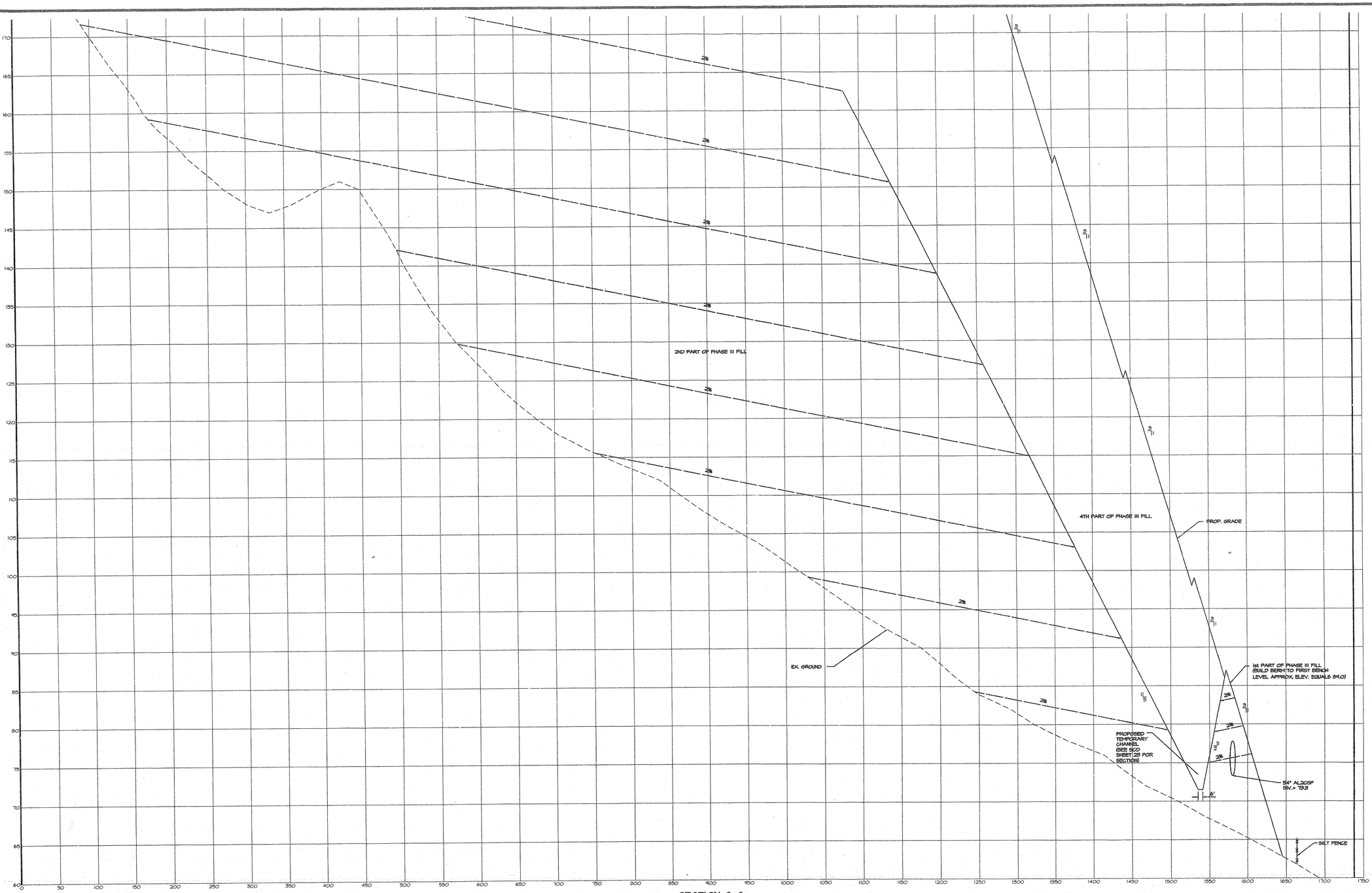
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DATE: MARCH, 2003

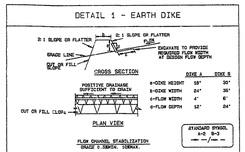
STATE OF MARYLAND — PROFESSIONAL ENGINEER — ELIZABETH L. SCHWARTZ — REGISTERED — 21615

PLANS FOR CONSENT — MARY ANN — 1 OF 1

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DETAIL 1 - EARTH DIKE

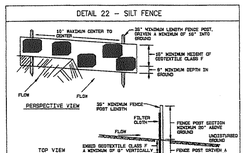


Construction Specifications

1. All temporary earth dikes shall have uninterrupted positive grade to an outlet. Best elevations may be necessary for grades less than 1%
2. Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.
3. Runoff diverted from an undisturbed area shall outlet directly into an undisturbed stabilized area at a non-erosive velocity.
4. All trees, brush, stumps, obstructions, and other objectional material shall be removed and disposed of so as not to interfere with the proper functioning of the dike.
5. The dike shall be constructed or shaped to line, grade and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.
6. Fill shall be compacted by earth moving equipment.
7. All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the dike.
8. Inspection and maintenance must be provided periodically and after each rain event.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE 1 - 28 - 1	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 22 - SILT FENCE



Construction Specifications

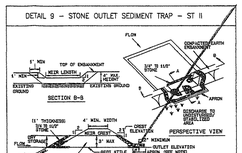
1. Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 1x2" or 1.5x2" square sawn hardwood, or 2x4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighting not less than 1.00 pound per linear foot.
2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal/ft²/minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

3. Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.
4. Silt fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50cm² the fabric height.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE 1 - 28 - 2	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 9 - STONE OUTLET SEDIMENT TRAP - ST II



U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE C-9 - 1	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

RIP-RAP OUTLET SEDIMENT TRAP - ST II

6. The structure shall be inspected periodically and after each rain and repairs made as needed.
7. Construction of traps shall be carried out in such a manner that erosion and pollution is minimized. Earthwork shall be stabilized with seed and mulch. Protection of conservation inflow and outflow channels shall be in accordance with Grade Stabilization Structure criteria. Disturbed areas not planted in temporary cover where vegetation is not feasible or where seeding cannot be completed because of weather.

II. Seeded Preparation and Seeding Application

Loosen the top layer of the soil to a depth of 2 to 5 inches by means of suitable agricultural or construction equipment such as disc harrows, plows or rippers mounted on construction equipment. Incorporate the lime and fertilizer into the top 2 to 3 inches of the soil by disking or by other suitable means. Rough areas should not be rolled or dragged smooth, but left in a roughened condition. 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 to 3 inches of soil should be loose and friable. Permanent cover may require an application of topsoil. If so, it must meet the requirements set forth in Section 21.0 Standards and Specifications for topsoil from the 1994 Standards and Specifications.

III. Soil Amendments

Soil tests shall be made on sites over five acres to determine the exact requirements for lime and fertilizer. For sites under 5 acres, in lieu of a soil test, apply the following:

Fertilizer Nitrogen	2 lbs/1000 s.f. (90 lbs/ac)
P2O5	4 lbs/1000 s.f. (175 lbs/ac)
K2O	4 lbs/1000 s.f. (175 lbs/ac)

For low maintenance areas apply 150 lbs/ac ureaform fertilizer (38-0-0) at 3.5 lbs/1000 s.f. in addition to the above fertilizer at the time of seeding.

Ground Limestone 2 tons/ac

IV. Sediment Control Practice Seeding

Select a seeding mixture from tables 25 or 26 in Section G of the 1994 Standards and Specifications. Document seeding on the erosion and sediment control plan using appropriate chart below.

TEMPORARY SEEDING SUMMARY

CHOOSE ONE

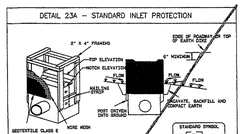
	Seed Mixture (Hardiness Zone ___ To ___) From Table 26				Fertilizer Rate (10-10-10)	Lime Rate
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths		
1	Barley We Plus For Tall Mix	100	2/1 - 11/15	1"		
2	Rye	140	2/1 - 4/30	4" - 7"	600 lb/ac (10 lb/1000 s.f.)	2 tons/ac (90 lb/1000 s.f.)
			8/15 - 11/30	1" - 1 1/2"		
3	Millet	50	5/1 - 8/14	1 1/4" - 1/2"		

PERMANENT SEEDING SUMMARY

CHOOSE ONE

	Seed Mixture (Hardiness Zone ___ To ___) From Table 28				Fertilizer Rate + 600 lbs./AC (10-20-20)			Lime Rate
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	N	P205	K20	
1	Tall Fescue K. Blue grass K. Blue grass	100	3/1 - 5/15 (N) 8/15-10/15 (S) 8/15-11/15	1/4" - 1/2"				
3	Tall Fescue Perennial Rye grass	125 15	3/1 - 5/15 (N) 8/15-10/15 (S) 8/15-11/15	1/4" - 1/2"	(2 lb/ 1000 sf)	(4 lb/ 1000 sf)	(4 lb/ 1000 sf)	2 tons/ac (100 lb/ 1000 sf)
7	Tall Fescue K. Lovegrass S. Lespedeza	110 3 20	3/1 - 5/15 (N) 8/15-10/15 (S) 8/15-11/15	1/4" - 1/2"				

DETAIL 23A - STANDARD INLET PROTECTION

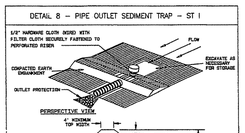


Construction Specifications

1. Excavate completely around the inlet to a depth of 18" below the notch elevation.
2. Drive the 8" x 4" construction grade lumber posts 1' into the ground at each corner of the inlet. Space the rest of the posts between the corners on the ends of the inlet. Attach the wire mesh to the 8" x 4" posts along the entire inlet shown in Detail 23A. The wire mesh shall be fastened to the inside of the hardware when framing and survey lengths may arise.
3. Stretch the 1/2" x 1/2" wire mesh tightly around the frame and fasten securely. The mesh must meet overlap on a post.
4. Stretch the geotextile Class C tightly over the wire mesh with the geotextile extending from the top of the frame to 18" below the inlet notch elevation. Fasten the geotextile securely to the frame. The ends of the geotextile must meet at a post, be overlapped and folded, and fastened down.
5. Backfill around the inlet in compacted 6" layers until the layer of mesh is level with the notch elevation on the ends and the elevation on the sides.
6. If the inlet is not in a sump, construct a compacted earth dike across the ditch line directly below it. The top of the earth dike shall be 6" higher than the top of the inlet.
7. The structure must be inspected periodically and after each rain and repairs made as needed.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE C - 6 - 1	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 8 - PIPE OUTLET SEDIMENT TRAP - ST I

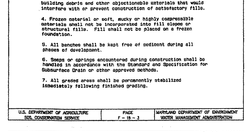


Construction Specifications

1. The area under the embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
2. The fill material for the embankment shall be free of roots or other woody vegetation as well as organic materials. Frozen, organic material, or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed.
3. The total trap volume as measured from the bottom to riser crest elevation shall be 3600 cubic feet per acre of drainage area (see Table 9). The top of embankment must be 0.1' above the riser crest elevation.
4. Sediment shall be removed and the trap restored to its original dimensions when the sediment has accumulated to one half of the wet storage depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
5. The structure shall be inspected periodically and after each rain and repairs made as needed.
6. Fill around the pipe spillway must be compacted by hand tamping or mechanical means. Fill material around the anti-seep collars shall be free of rocks or other debris which may prevent proper compaction. Fill around the pipe spillway must be well compacted to prevent piping failure around the structure.
7. The pipe spillway and all fittings must be watertight.
8. Dewatering devices shall be provided to remove water from the wet storage area for periodic cleanout of accumulated sediment.
9. Structure must be inspected periodically and after each rain and repairs made as needed.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE C - 6 - 2	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 33 - SUPER SILT FENCE



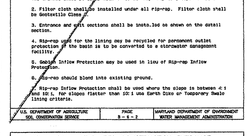
Construction Specifications

1. Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 8' length posts.
2. Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.
3. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid-section.
4. Filter cloth shall be embedded a minimum of 8" into the ground.
5. When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.
6. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50%of fence height.
7. Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal/ft²/minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE 1 - 28 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

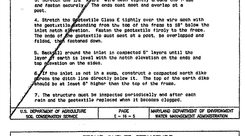
DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



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. Write plan approval authority may not require simple 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 to handle the 10 year storm flow as a minimum. Other sediment control has to be in place to convey a flow will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. 6" diameter 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	PAGE C - 7 - 1	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

STONE OUTLET STRUCTURE



CONSTRUCTION SPECIFICATIONS

1. Crushed stone shall be used. Gravel may be used if crushed stone is not available. The stone shall be 2"-3" in size.
2. The length of the structure shall be at least 8' lower than the lowest elevation of the top of the earth dike and shall be level.
3. The stone outlet structure shall be embedded into the soil a minimum of 4".
4. The minimum length of the crest of the stone outlet structure shall be 4'.
5. The stone outlet structure shall be constructed with a uniform cross section. Stone shall be replaced when the structure ceases to function and pending results.
6. The burlap sheet shall be extended one foot into the dike, staked and embedded 4" into the earthen dike.
7. The drainage area to this structure shall be less than 1/2 acre.

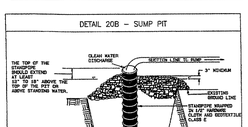
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE C - 7 - 2	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

PIPE OUTLET SEDIMENT TRAP - ST I

6. Construction operations shall be carried out in such a manner that erosion and pollution are minimized. The trap and outlets and all disturbed areas must be stabilized with seed and mulch. Points of conservation inflow and outflow channels shall be in accordance with Grade Stabilization Structure criteria. Disturbed areas not planted in temporary cover where vegetation is not feasible or where seeding cannot be completed because of weather.
7. The structure shall be inspected periodically and after each rain and repairs made as needed.
8. The structure shall be dewatered by approved methods. Dewatering shall be done in such a manner that when the drainage area has been properly stabilized.
9. Refer to section D for specifications concerning trap dewatering.
10. Minimum trap depth shall be measured from the weir elevation.
11. The elevation of the top of any dike directing water into the trap shall be 0.1' above the crest elevation of the trap embankment.
12. Geotextile Class C shall be placed over the bottom and sides of the outlet channel prior to the placement of stone. Sections of filter cloth shall overlap as shown a minimum of 18" and be secured with staples. The filter cloth shall be placed so that the stone will not penetrate or puncture the existing ground at the outlet channel.
13. Outlet - An outlet shall be provided, including a means of conveying the flow from the structure in a manner to a existing stable channel.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE C - 7 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 20B - SUMP PIT

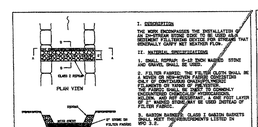


Construction Specifications

1. Pit dimensions are variable, with the minimum diameter being 2 times the standpipe diameter.
2. The standpipe should be constructed by perforating a 12" to 24" diameter corrugated or PVC pipe. Thus wrapping with 1/4" hardware cloth and filter cloth. The perforations shall be 1/2" x 3" slots or 1" diameter holes.
3. A base of filter material consisting of clean gravel or #57 stone shall be placed in the pit to a depth of 12". After installing the standpipe, the backfill surrounding the standpipe should then be backfilled with the same filter material.
4. The standpipe should extend 12" to 18" above the lip of the pit or the riser crest elevation. Gravel dewatering shall not bury the filter material should extend 2" minimum above the anticipated standing water elevation.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE 1 - 18 - 1	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 5 - RIP-RAP INFLOW PROTECTION

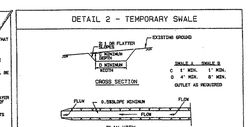


Construction Specifications

1. Rip-rap lined inflow channels shall be 1' in depth, have a trapezoidal cross section with 2:1 or flatter side slopes and 3' (min.) bottom width. The channel shall be lined with 4" to 12" rip-rap set to a depth of 1'.
2. Filter cloth shall be installed under all rip-rap. Filter cloth shall be Geotextile Class C.
3. Entrance and exit sections shall be keyed-in shown on the detail section.
4. Rip-rap used for the lining may be recycled for permanent outlet protection if the stone is to be converted to a stormwater management facility.
5. Outlet Inflow Protection may be used in lieu of Rip-rap Inflow Protection.
6. Rip-rap should blend into existing ground.
7. Rip-rap Inflow Protection shall be placed where the slope is between 4:1 and 10:1, for slopes flatter than 10:1 use Earth Dike or Temporary Swale lining criteria.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE 1 - 18 - 2	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 2 - TEMPORARY SWALE



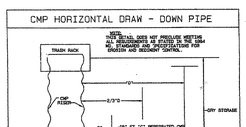
1. Seed and cover with straw mulch.
2. Seed and cover with Erosion Control Matting or line with sod.
3. 4"-7" stone or recycled concrete equivalent pressed into soil to a minimum 7" layer.

Construction Specifications

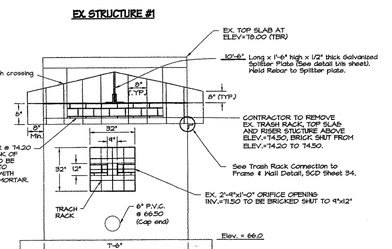
1. All temporary swales shall have uninterrupted positive grade to an outlet. Best elevations may be necessary for grades less than 1%
2. Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.
3. Runoff diverted from an undisturbed area shall outlet directly into an undisturbed stabilized area at a non-erosive velocity.
4. All trees, brush, stumps, obstructions, and other objectional material shall be removed and disposed of so as not to interfere with the proper functioning of the swale.
5. The swale shall be excavated or shaped to line, grade and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.
6. Fill, if necessary, shall be compacted by earth moving equipment.
7. All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the swale.
8. Inspection and maintenance must be provided periodically and after each rain event.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE C - 8 - 1	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

CMP HORIZONTAL DRAW - DOWN PIPE

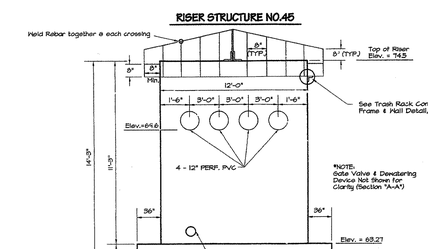


EX STRUCTURE #1



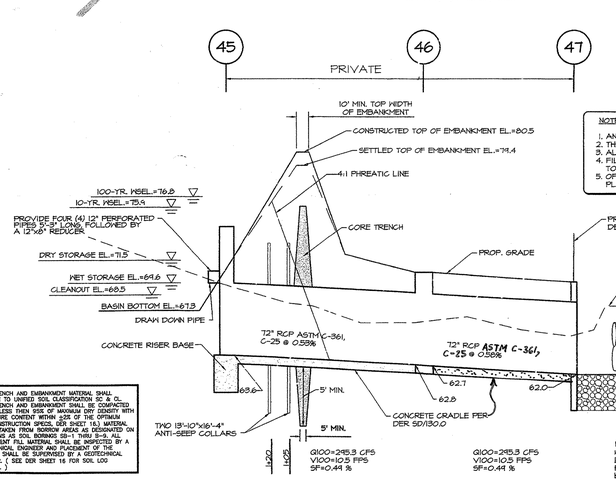
FRONT WALL ELEVATION
Not to Scale

RISER STRUCTURE NO.45



FRONT VIEW
Not to Scale

NOTE: CORE TRENCH AND EMBANKMENT MATERIAL SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION SC & CL. CORE TRENCH AND EMBANKMENT SHALL BE COMPACTED TO NOT LESS THEN 95% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN ±3% OF THE OPTIMUM (SEE CONSTRUCTION SPECS, DEN SHEET 16.) MATERIAL MAY BE PLACED IN LAYERS OF NO MORE THAN 9" COMPACTED OR 12" UNCOMPACTED THICKNESS AND EACH LAYER COMPACTED. EMBANKMENT FILL MATERIAL SHALL BE INSPECTED BY A GEOTECHNICAL ENGINEER AND PLACEMENT OF THE MATERIAL SHALL BE SUPERVISED BY A GEOTECHNICAL ENGINEER. (SEE DER SHEET 16 FOR SOIL LOG PROFILES.)



NOTES:
1. ANTI SEEP COLLARS SHALL BE PLACED A MINIMUM OF 2.0 FT. FROM PIPE JOINTS.
2. THE FIRST JOINT UNDER LAYING PIPE MUST BE LOCATED WITHIN 4.0 FT. FROM THE RISER.
3. ALL ANTISEEP COLLARS AND PIPE CONNECTION WITH RISERS STRUCTURE SHALL BE WATERTIGHT.
4. FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT AND CUT OFF TRENCH SHALL CONFORM TO UNIFORM SOIL CLASSIFICATION SC & CL.
5. OFF SITE BORROW OR SPOIL AREAS MUST HAVE AN APPROVED AND ACTIVE SEDIMENT CONTROL PLAN.

STRUCTURE No. 47
Provide 96 L.F. DER cl. II ungrouted rip-rap with 4' grouted cut-off wall @ downstream end. Lay in accordance with DER std. SD/35.0 Place filter cloth (Supac B NP or approved equal) beneath rip-rap. Lay rip-rap flush with proposed grade. d50 =1.5', dmax = 2.3', min-thickness = 3.0' GIOO= 295.3 cfs, VIOO= 5.3 fps

19.0 STANDARDS AND SPECIFICATIONS FOR LAND GRADING

Definition

Reshaping of the existing land surface in accordance with a plan as determined by engineering survey and layout.

Purposes

The purpose of a land grading specification is to provide for erosion control and vegetative establishment on those areas where the existing land surface is to be reshaped by grading according to plan.

Design Criteria

The grading plan should be based upon the incorporation of building designs and street layouts that fit and utilize existing topography and desirable natural surroundings to avoid extensive grade modifications. Information submitted must provide sufficient topographic surveys and soil investigations to define limitations that must be imposed on the grading operations related to slope stability, effect on adjacent properties and drainage patterns, measures for drainage and vegetative treatment etc.

Many counties have regulations and design procedures already established for land grading and cut and fill slopes. Then those requirements exist, they shall be followed. The plan must show existing and proposed contours of the area(s) to be graded. The plan shall also include practices for erosion control, slope stabilization, safe disposal of runoff water and drainage, such as waterways, lined ditches, reverse slope benches (backup grade and cross section), grade stabilization structures, retaining walls, and surface and subsurface drains. The plan shall also include phasing of these practices. The following shall be incorporated into the plan:

1. Provisions shall be made to satisfy conduct surface runoff to storm drains, protected outlets or to stable natural courses to insure that surface runoff will not damage slopes or other graded areas.
2. Cut and fill slopes that are to be stabilized with grasses shall not be steeper than 2:1 slopes exceeds 20 feet; for 3:1 slope it shall be increased to 20 feet and for 4:1 to 40 feet. Benches shall be located to divide the slope face as equally as possible and shall convey the water to a stable outlet. Soils, seeps, rock outcrops, etc., shall also be taken into consideration when designing benches.
   a. Benches shall be a minimum of six-feet wide to provide for ease of maintenance.
   b. Benches shall be designed with a reverse slope of 6:1 or flatter to the toe of the upper slope and with a minimum of one foot for each 10 feet of vertical elevation, except where
   a. The face of the slope is to be stabilized and the face of all graded slopes shall be protected from surface runoff until they are stabilized.
   b. The face of the slope will be protected by special erosion control materials, to include, but not limited to: approved vegetative erosion control practices (see Section 5), rip-rap or other approved stabilization methods.
3. Reverse benches shall be provided whenever the vertical (height) of any 2:1 slope exceeds 20 feet; for 3:1 slope it shall be increased to 30 feet and for 4:1 to 40 feet. Benches shall be located to divide the slope face as equally as possible and shall convey the water to a stable outlet. Soils, seeps, rock outcrops, etc., shall also be taken into consideration when designing benches.
   a. Benches shall be designed with a reverse slope of 6:1 or flatter to the toe of the upper slope and with a minimum of one foot for each 10 feet of vertical elevation, except where
   a. The face of the slope is to be stabilized and the face of all graded slopes shall be protected from surface runoff until they are stabilized.
   b. The face of the slope will be protected by special erosion control materials, to include, but not limited to: approved vegetative erosion control practices (see Section 5), rip-rap or other approved stabilization methods.
4. Surface water shall be diverted from the face of all cut and/or fill slopes by the use of earth dikes, ditches and swales or conveyed downslope by the use of a designed structure, except where:
   a. The face of the slope is to be stabilized and the face of all graded slopes shall be protected from surface runoff until they are stabilized.
   b. The face of the slope will be protected by special erosion control materials, to include, but not limited to: approved vegetative erosion control practices (see Section 5), rip-rap or other approved stabilization methods.
5. Cut slopes occurring in ripdale rock shall be serrated as shown on the following diagram. These serrations shall be made with conventional excavation equipment as the excavation is made. Each step or serration shall be constructed on the contour and will have slope not a nominal two-foot intervals with nominal three-foot horizontal width. Actual steps will vary depending on the slope ratio of the cut slope. The nominal slope line is shown. These steps will weather into soil to hold moisture, fertilizer and seed thus producing much quicker and longer lived vegetative cover and better slope stabilization. Overland flow shall be diverted from the top of all serrated cut slopes and carried to a suitable outlet.
6.

B-3 STANDARDS AND SPECIFICATIONS
FOR
LAND GRADING

Definition

Reshaping the existing land surface to provide suitable topography for building facilities and other site improvements.

Purpose

To provide erosion control and vegetative establishment for extreme changes in grade.

Conditions Where Practice Applies

Earth disturbances or extreme grade modifications on steep or long slopes.

Design Criteria

The grading plan should be based on the incorporation of building designs and street layouts that fit and utilize existing topography and desirable natural surroundings to avoid extreme grade modifications. Information submitted must provide sufficient topographic surveys and soil investigations to determine limitations that must be imposed on the grading operation related to slope stability, adjacent properties, drainage patterns, measures for water removal, and vegetative treatment, etc. Many jurisdictions have regulations and design procedures already established for land grading that must be followed. The plan must show existing and proposed contours for the area(s) to be graded including practices for erosion control, slope stabilization, and safe conveyance of runoff (e.g., waterways, lined channels, reverse benches, grade stabilization structures). The grading/construction plans are to include the phasing of these practices and consideration of the following:

1. Provisions to safely convey surface runoff to storm drains, protected outlets or stable water courses to ensure that surface runoff will not damage slopes or other graded areas.
2. Cut and fill slopes, stabilized with grasses, no steeper than 2:1. (Where the slope is to be mowed, the slope should be no steeper than 3:1, but 4:1 is preferred because of safety factors related to moving steep slopes.) Slopes steeper than 2:1 require special design and stabilization considerations to be shown on the plans.
3. Benching per Detail B-3-1 whenever the vertical interval (height) of any 2:1 slope exceeds 20 feet; for 3:1 slopes, when it exceeds 30 feet; and for 4:1 slopes, when it exceeds 40 feet. Locate benches to divide the slope face as equally as possible and to convey the water to a stable outlet. Soils, seeps, rock outcrops, etc. are to be taken into consideration when designing benches.
   a. Provide benches with a minimum width of six feet for ease of maintenance.
   b. Design benches with a reverse slope of 6:1 or flatter to the toe of the upper slope and with a minimum of one foot in depth. Grade the longitudinal slope of the bench between 2 percent and 3 percent, unless accompanied by appropriate design and computations.
   c. The maximum allowable flow length within a bench is 800 feet unless accompanied by appropriate design and computations.
4. Diversion of surface water from the face of all cut and fill slopes using earth dikes or swales. Convey surface water down slope using a designed structure, and:
   a. Protect the face of all graded slopes from surface runoff until they are stabilized.
   b. Do not subject the slope's face to any concentrated flow of surface water such as from natural drainage ways, graded swales, downspouts, etc.
   c. Protect the face of the slope by special erosion control materials to include, but not be limited to, approved vegetative stabilization practices, riprap or other approved stabilization methods.
5. Serrated slope as shown in Detail B-3-2. The steepest allowable slope for ripsable rock is 1.5:1. For non rock surfaces, the slopes are to be 2:1 or flatter. These steps will weather and act to hold moisture, lime, fertilizer and seed thus producing a much quicker and longer lived vegetative cover and better slope stabilization.
6. Subsurface drainage provisions. Provide subsurface drainage where necessary to intercept seepage that would otherwise adversely affect slope stability or create excessively wet site conditions.
7. Proximity to adjacent property. Slopes must not be created close to property lines without adequate protection against sedimentation, erosion, slippage, settlement, subsidence, or other related damages.
8. Quality of fill material. Fill material must be free of brush, rubbish, logs, stumps, building debris, and other objectionable material. Do not place frozen materials in the fill nor place the fill material on a frozen foundation.
9. Stabilization. Stabilize all disturbed areas structurally or vegetatively in compliance with Section B-4 Standards and Specifications for Stabilization Practices.

Maintenance

The line, grade, and cross section of benching and serrated slopes must be maintained. Benches and serrated slopes must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization.

B-4 STANDARDS AND SPECIFICATIONS
FOR
VEGETATIVE STABILIZATION

Definition

Using vegetation as cover to protect exposed soil from erosion.

Purpose

To promote the establishment of vegetation on exposed soil.

Conditions Where Practice Applies

On all disturbed areas not stabilized by other methods. This specification is divided into sections on incremental stabilization; soil preparation, soil amendments and topsoiling; seeding and mulching; temporary stabilization and permanent stabilization.

Effects on Water Quality and Quantity

Stabilization practices are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, thereby reducing sediment loads and runoff to downstream areas.

Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Over time, vegetation will increase organic matter content and improve the water holding capacity of the soil and subsequent plant growth.

Vegetation will help reduce the movement of sediment, nutrients, and other chemicals carried by runoff to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present within the root zone.

Sediment control practices must remain in place during grading, seedbed preparation, seeding, mulching, and vegetative establishment.

Adequate Vegetative Establishment

Inspect seeded areas for vegetative establishment and make necessary repairs, replacements, and reseedings within the planting season.

1. Adequate vegetative stabilization requires 85 percent groundcover.
2. If an area has less than 40 percent groundcover, restabilize following the original recommendations for lime, fertilizer, seedbed preparation, and seeding.
3. If an area has between 40 and 84 percent groundcover, over-seed and fertilize using half of the rates originally specified.
4. Maintenance fertilizer rates for permanent seeding are shown in Table B.6.

B-4-1 STANDARDS AND SPECIFICATIONS
FOR
INCREMENTAL STABILIZATION

Definition

Establishment of vegetative cover on cut and fill slopes as work progresses.

Purpose

To provide timely vegetative cover on cut and fill slopes as work progresses.

Conditions Where Practice Applies

Any cut or fill slope greater than 15 feet in height. This practice also applies to stockpiles.

Criteria

A. Incremental Stabilization - Cut Slopes

1. Excavate and stabilize cut slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all cut slopes as the work progresses.
2. Construction sequence example (Refer to Figure B. 1 in 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control):
   a. Construct and stabilize all temporary swales or dikes that will be used to convey runoff around the excavation.
   b. Perform Phase I excavation, prepare seedbed, and stabilize.
   c. Perform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase 1 areas as necessary.
   d. Perform final phase excavation, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once excavation has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

B. Incremental Stabilization - Fill Slopes

1. Construct and stabilize fill slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all slopes as the work progresses.
2. Stabilize slopes immediately when the vertical height of a lift reaches 15 feet, or when the grading operation ceases as prescribed by the plans.
3. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
4. Construction sequence example (Refer to Figure B.2 in 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control):
   a. Construct and stabilize all temporary swales or dikes that will be used to divert runoff around the fill. Construct silt fence on low side of fill unless other methods shown on the plans address this area.
   b. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
   c. Place Phase I fill, prepare seedbed, and stabilize.
   d. Place Phase 2 fill, prepare seedbed, and stabilize.
   e. Place final phase fill, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once the placement of fill has begin the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

B-4-2 STANDARDS AND SPECIFICATIONS
FOR
SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

Definition

The process of preparing the soils to sustain adequate vegetative stabilization.

Purpose

To provide a suitable soil medium for vegetative growth.

Conditions Where Practice Applies

Where vegetative stabilization is to be established.

Criteria

A. Soil Preparation

1. Temporary Stabilization
   a. Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches 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 must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked 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 to 5 inches of soil by disking or other suitable means.
2. Permanent Stabilization
   a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
      i. Soil pH between 6.0 and 7.0.
      ii. Soluble salts less than 500 parts per million. (ppm).
      iii. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: If lovegrass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
      iv. Soil contains 1.5 percent minimum organic matter by weight.
      v. Soil contains sufficient pore space to permit adequate root penetration.
   b. Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
   c. Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.
   d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.
   e. Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.

B. Topsoiling

1. Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.
2. Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.
3. Topsoiling is limited to areas having 2:1 or flatter slopes where:
   a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
   b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
   c. The original soil to be vegetated contains material toxic to plant growth.
   d. The soil is so acidic that treatment with limestone is not feasible.
4. Areas having slopes steeper than 2:1 require special consideration and design.
5. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:
   a. Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1½ inches in diameter.
   b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quackgrass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.
   c. Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
6. Topsoil Application
   a. Erosion and sediment control practices must be maintained when applying topsoil.
   b. Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
   c. Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

C. Soil Amendments (Fertilizer and Lime Specifications)

1. Soil tests must be performed to determine the exact ratios and applications rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
2. Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.
3. Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydroseeding) which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 98 to 100 percent will pass through a #20 mesh sieve.
4. Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disking or other suitable means.
5. Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

B-4-3 STANDARDS AND SPECIFICATIONS
FOR
SEEDING AND MULCHING

Definition

The application of seed and mulch to establish vegetative cover.

Purpose

To protect disturbed soils from erosion during and at the end of construction.

Conditions Where Practice Applies

To the surface of all perimeter controls, slopes, and any disturbed area not under active grading.

Criteria

A. Seeding

1. Specifications
   a. All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject to re-testing by a recognized seed laboratory. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to Table B.4 (in Maryland Standards and Specifications for Soil Erosion and Sediment Control) regarding the quality of seed. Seed tags must be available upon request to the inspector to verify type of seed and seeding rate.
   b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.
   c. Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants 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 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.
   d. Sod or seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min) to permit dissipation of phyto-toxic materials.
2. Application
   a. Dry Seeding: This includes use of conventional drop or broadcast spreaders.
      i. Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries.
      ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with a weighted roller to provide good seed to soil contact.
   b. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
      i. 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.
      ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction.
   c. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer).
      i. If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of soluble nitrogen; P2O5 (phosphorous), 200 pounds per acre; K2O (potassium), 200 pounds per acre.
      ii. 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 any one time. Do not use burnt or hydrated lime when hydroseeding.
      iii. Mix seed and fertilizer on site and seed immediately and without interruption.
      iv. When hydroseeding do not incorporate seed into the soil.
   d. For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 1/2 pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary.
3. Turfgrass Mixtures
   a. Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.
   b. Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan.
      i. Kentucky Bluegrass: Full Sun Mixture. For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rates: 1.5 to 2.0 pounds per 1,000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
      ii. Kentucky Bluegrass/Perennial Rye: Full Sun Mixture. For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rates: 2 pounds per mixture per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
      iii. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture. For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes Certified Tall Fescue Cultivars 85 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rates: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.
      iv. Kentucky Bluegrass/Fine Fescue: Shade Mixture. For use in areas with shade in Eastern lowers. For establishment in high quality, intensively managed turf area. Mixture includes Certified Kentucky Bluegrass Cultivars 30 to 50 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1 1/2 to 3 pounds per 1000 square feet.

      Notes: Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Notes #17, "Turfgrass Cultivar Recommendations for Maryland"

      Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line
   c. Ideal Times of Seeding for Turf Grass Mixtures

      Western MD: March 15 to June 1, August 1 to October 1 (Hardiness Zones: 5b, 6a)

      Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6b)

      Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 7a, 7b)
   d. Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and roots over 1 1/2 inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty.
   e. If soil moisture is deficient, supply new seedings with adequate water for plant growth (1/2 to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

PERMANENT SEEDING SUMMARY
CHOOSE ONE

		Hardiness Zone from Figure B.(3) - 6b (Seed Mixture Rate Table B.1 for add. information)				Fertilizer Rate (10-20-20)			Lime Rate
		Seeding Rates		Seeding Dates	Seeding Depths	N	P_2O_5	K_2O	
No.	Species	Bulk	Inoc(2)	Drilled					
I	Switch Grass or Coastal Panic Grass, and Weeping Love Grass & Partridge Pea	12 10 15 4	0.23 0.23 0.46 0.01	(Bb) 3/1-5/15 (Bb) 5/16-6/15 (Bb) 6/15-6/30	1/4" - 1/2"	45 lbs per acre (1 lbs/ 1000 sf)	90 lbs per acre (2 lbs/ 1000 sf)	90 lbs per acre (2 lbs/ 1000 sf)	2 tons/ac (80 lbs/ 1000 sf)
II	Deertongue and Sheep Fescue; or Canada Wild Rye and Reedgrass Plus Common Lespedeza	20 1 10	0.46 0.01 0.02 0.23	(Bb) 3/1-5/15 (Bb) 5/16-6/15 (Bb) 6/15-6/30	1/4" - 1/2"				
III	Creeping Red Fescue; Chewings Fescue; Kentucky Bluegrass	30 30 20	0.69 0.69 0.46	(Bb) 3/1-5/15 (Bb) 8/1-10/15 (Bb) 6/15-6/30	1/4" - 1/2"				

*Recommend adding Nurse Crop in this period

TEMPORARY SEEDING SUMMARY

Season	Species	Hardiness Zone from Figure B.(3) - 6b (Seed Mixture Rate Table B.1 for add. Information) Seeding Rate: Bulk	Seeding Rate: Inoc(2)	Seeding Dates: Drilled	Seeding Dates: Bb	Seeding Dates: To	Fertilizer 10-20-20	Lime Rate
Cool Seas.	Annual Ryegrass	40	1.0	0.5"	3/1-5/15 8/1-10/15	5/15-8/30 10/15-11/30	436 lbs/ac (10 lbs/1000 sf)	2 tons/ac (80 lbs/1000 sf)
	Barley	96	2.2	1.0"	3/1-5/15 8/1-10/15	5/15-8/30 10/15-11/30		
	Oats	72	1.7	1.0"	3/1-5/15 8/1-10/15	5/15-8/30 10/15-11/30		
	Wheat	120	2.8	1.0"	3/1-5/15 8/1-10/15	5/15-8/30 10/15-11/30		
	General Rye	112	2.8	1.0"	3/1-5/15 8/1-10/15	5/15-8/30 10/15-11/30		
Warm Seas.	Foxtail Millet	30	0.7	0.5"	5/16-7/31	8/1-8/14		
	Pearl Millet	20	0.5	0.5"	5/16-7/31	8/1-8/14		

B-4-5 STANDARDS AND SPECIFICATIONS
FOR
PERMANENT STABILIZATION

Definition

To stabilize disturbed soils with permanent vegetation.

Purpose

To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils.

Conditions Where Practice Applies

Exposed soils where ground cover is needed for 6 months or more.

Criteria

A. Seed Mixtures

1. General Use
   a. Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
   b. Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guide, Section 342 - Critical Area Planting.
   c. For sites having disturbed area over 5 acres, use and show the rates recommended by the soil testing agency.
   d. For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 1/2 pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary.
2. Turfgrass Mixtures
   a. Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.
   b. Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan.
      i. Kentucky Bluegrass: Full Sun Mixture. For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rates: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
      ii. Kentucky Bluegrass/Perennial Rye: Full Sun Mixture. For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rates: 2 pounds per mixture per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
      iii. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture. For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes Certified Tall Fescue Cultivars 85 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rates: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.
      iv. Kentucky Bluegrass/Fine Fescue: Shade Mixture. For use in areas with shade in Eastern lowers. For establishment in high quality, intensively managed turf area. Mixture includes Certified Kentucky Bluegrass Cultivars 30 to 50 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1 1/2 to 3 pounds per 1000 square feet.

      Notes: Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Notes #17, "Turfgrass Cultivar Recommendations for Maryland"

      Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line
   c. Ideal Times of Seeding for Turf Grass Mixtures

      Western MD: March 15 to June 1, August 1 to October 1 (Hardiness Zones: 5b, 6a)

      Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6b)

      Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 7a, 7b)
   d. Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and roots over 1 1/2 inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty.
   e. If soil moisture is deficient, supply new seedings with adequate water for plant growth (1/2 to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

B. Sod: To provide quick cover on disturbed areas (2:1 grade or flatter).

1. General Specifications
   a. Class of turfgrass sod must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector.
   b. Sod must be machine cut at a uniform soil thickness of 3/4 inch, plus or minus 1/4 inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and torn or uneven ends will not be acceptable.
   c. Standard size sections of sod must 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.
   d. Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
   e. Sod must be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period must be approved by an agronomist or soil scientist prior to its installation.
2. Sod Installation
   a. During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the sod.
   b. Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Stagger lateral joints 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.
   c. Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints. Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensure solid contact exists between sod roots and the underlying soil surface.
   d. Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of sod within eight hours.
3. Sod Maintenance
   a. In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.
   b. After the first week, sod watering is required as necessary to maintain adequate moisture content.
   c. Do not mow until the sod is firmly rooted. No more than 1/3 of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless otherwise specified.

B-4-6 STANDARDS AND SPECIFICATIONS
FOR
SOIL STABILIZATION MATTING

Definition

Material used to temporarily or permanently stabilize channels or steep slopes until groundcover is established.

Purpose

To protect the soils until vegetation is established.

Conditions Where Practice Applies

On newly seeded surfaces to prevent the applied seed from washing out in channels and on steep slopes where the flow has erosive velocities or conveys clear water. Temporary swales, earth dikes, and perimeter dike swales as required by the respective design standard, and on stream banks where moving water is likely to wash out newly planted vegetation.

Design Criteria

1. The soil stabilization matting that is used must withstand the flow velocities and shear stresses determined for the area, based on the 2-year, 24-hour frequency storm for temporary applications and the 10-year, 24-hour frequency storm for permanent applications. Designate on the plan the type of soil stabilization matting using the standard symbol and include the calculated shear stress for the respective treatment area.
2. Matting is required on permanent channels where the runoff velocity exceeds two and half feet per second (2.5 fps) or the shear stress exceeds two pounds per square foot (2 lbs/ft2). On temporary channels discharging to a sediment trapping practice, provide matting where the runoff velocity exceeds four feet per second (4 fps).
3. Temporary soil stabilization matting is made with degradable (lasts 6 months minimum), natural, or manmade fibers of uniform thickness. The contact of fibers throughout and is smolder resistant. The maximum permissible velocity for temporary matting is 6 feet per second.
4. Permanent soil stabilization matting is an open weave, synthetic material consisting of non-degradable fibers or elements of uniform thickness and distribution of heavier mass per unit area. The maximum allowable velocity for permanent matting is 8.5 feet per second.

Maintenance

Vegetation must be established and maintained so that the requirements for Adequate Vegetative Establishment are continuously met in accordance with Section B-4 Vegetative Stabilization.

B-4-7 STANDARDS AND SPECIFICATIONS
FOR
HEAVY USE AREA PROTECTION

Definition

The stabilization of areas frequently and intensively used by surfacing with suitable materials (e.g., mulch and aggregate).

Purpose

To provide a stable, non-eroding surface for areas frequently used and to improve the water quality from the runoff of these areas.

Conditions Where Practice Applies

This practice applies to intensively used areas (e.g., equipment and material storage, staging areas, heavily used travel lanes).

Criteria

1. A minimum 4-inch base course of crushed stone or other suitable materials including wood chips over nonwoven geotextile should be provided as specified in Section H-1 Materials.
2. Select the stabilizing material based on the intended use, desired maintenance frequency, and runoff control.
3. The transport of sediments, nutrients, oils, chemicals, particulate matter associated with vehicular traffic and equipment, and material storage needs to be considered in the selection of materials. Additional control measures may be necessary to control some of these potential pollutants.
4. Surface erosion can be a problem on large heavy use areas. In these situations, measures to reduce the flow length of runoff or erosive velocities need to be considered.

Maintenance

The heavy use areas must be maintained in a condition that minimizes erosion. This may require adding suitable material, as specified on the approved plans, to maintain a clean surface.

B-4-8 STANDARDS AND SPECIFICATIONS
FOR
STOCKPILE AREA

Definition

A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

Purpose

To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

Conditions Where Practice Applies

Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

Criteria

1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
2. The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.
3. Runoff from the stockpile area must drain to a suitable sediment control practice.
4. Access the stockpile area from the upgrade side.
5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
7. Stockpiles must be stabilized in accordance with the 3/1 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization.
8. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable sheeting.

Maintenance

The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 30 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.

Table B.1: Temporary Seeding for Site Stabilization
(Refer to Temporary Seeding Summary, this sheet)

9. Seeding rates for the warm-season grasses are in pounds of Pure Live Seed (PLS). Actual planting rates shall be adjusted to reflect percent seed germination and purity, as tested. Adjustments are usually not needed for the cool-season grasses.

   Seeding rates listed above are for temporary seedings, when planted alone. When planted as a nurse crop with permanent seed mixes, use 1/3 of the seeding rate listed above for barley, oats, and wheat. For smaller-seeded grasses (annual ryegrass, pearl millet, foxtail millet), do not exceed more than 15% (by weight) of the overall permanent seeding mix. Cereal rye generally should not be used as a nurse crop, unless planting will occur in very late fall beyond the seeding dates for other temporary seedings. Cereal rye has allelopathic properties that inhibit the germination and growth of other plants. If it must be used as a nurse crop, seed at 1/3 of the rate listed above.

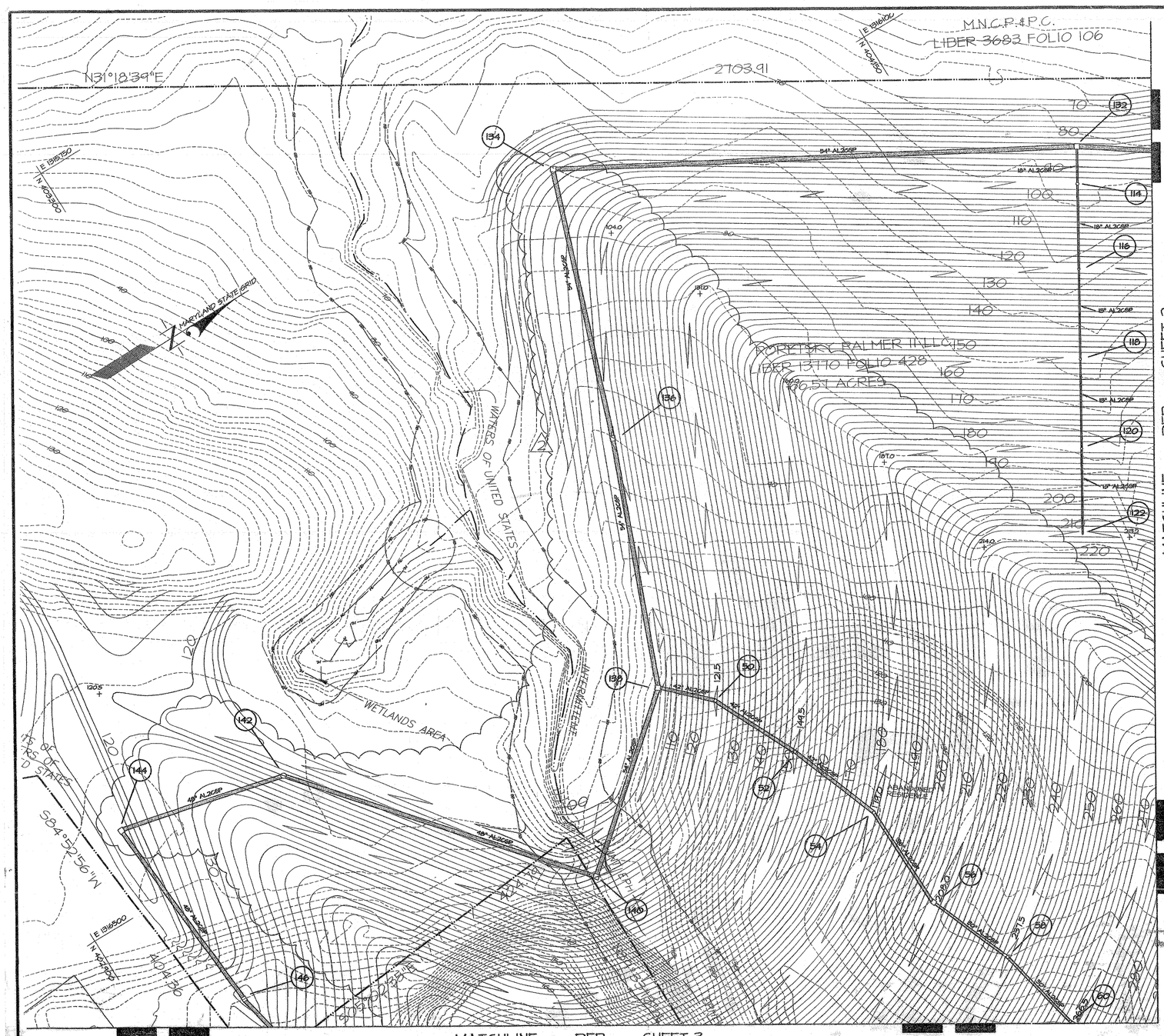
   Oats are the recommended nurse crop for warm-season grasses.
10. For sandy soils, plant seeds at twice the depth listed above.
11. The planting dates listed are averages for each Zone and may require adjustment to reflect local conditions, especially near the boundaries of the zone.

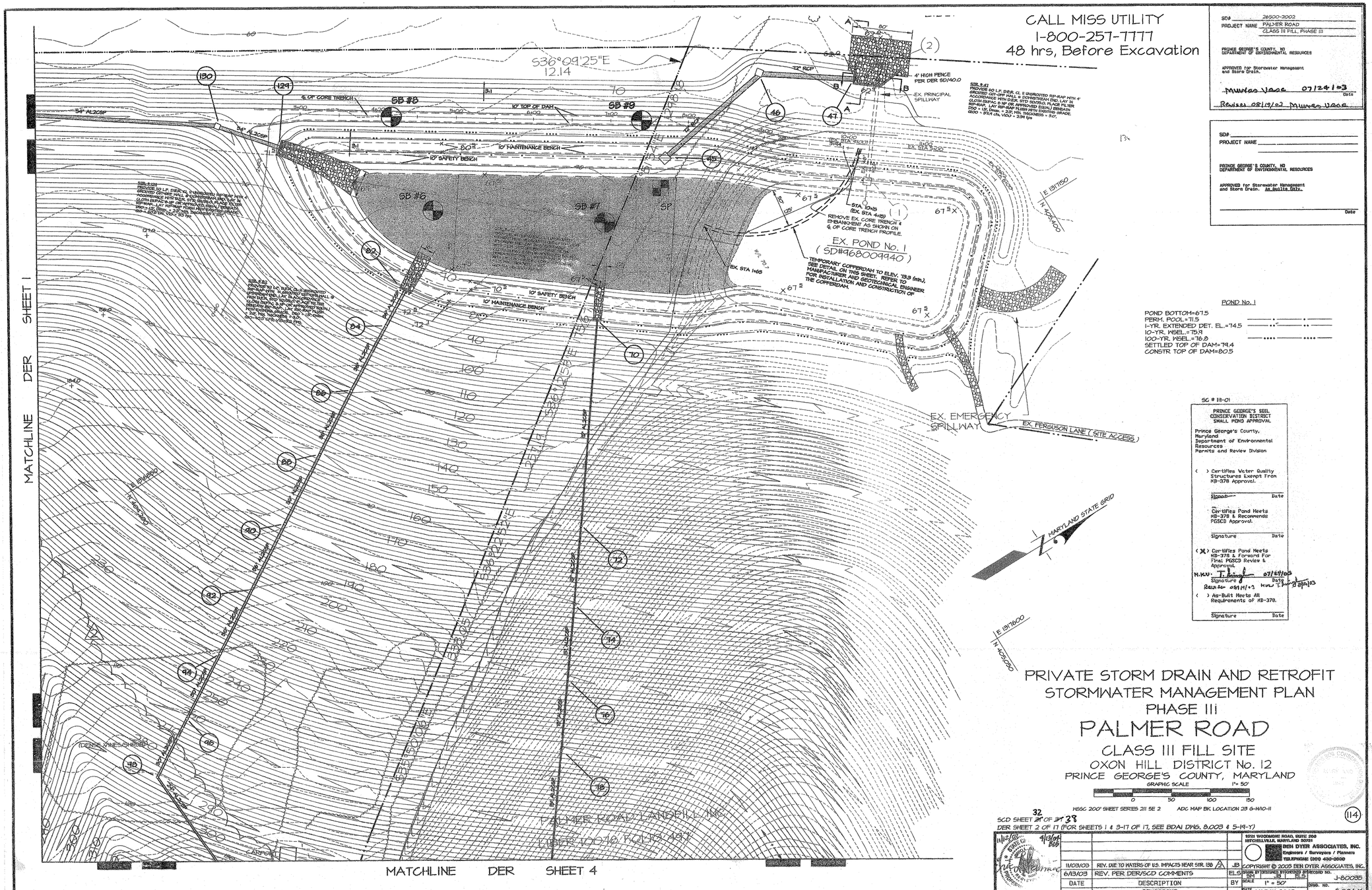
H-1 STANDARDS AND SPECIFICATIONS
FOR
MATERIALS

Table H.1: Geotextile Fabrics

PROPERTY	TEST METHOD	WOVEN SLIT FILM GEOTEXTILE		WOVEN MONOFILAMENT GEOTEXTILE		NONWOVEN GEOTEXTILE	
		MINIMUM AVERAGE ROLL VALUE[1]					
		MD	CD	MD	CD	MD	CD
Grab Tensile Strength	ASTM D-4632	200 lb	200 lb	370 lb	250 lb	200 lb	200 lb
Grab Tensile Elongation	ASTM D-4632	15%	10%	15%	15%	50%	50%
Trapezoidal Tear Strength	ASTM D-4533	75 lb	75 lb	100 lb	60 lb	80 lb	80 lb
Puncture Strength	ASTM D-6241	450 lb		400 lb		450 lb	
Apparent Opening Size[2]	ASTM D-4751	U.S. Sieve 30 (0.54 mm)		U.S. Sieve 70 (0.21 mm)		U.S. Sieve 70 (0.21 mm)	
Permittivity	ASTM D-4491	0.05 sec^{-1}		0.28 sec^{-1}		1.1 sec^{-1}	
Ultraviolet Resistance Retained at 500 hours	ASTM D-4355	70% strength		70% strength		70% strength	

[1] All numeric values except apparent opening size (AOS) represent


N31°18'34"E
2703.91
M.N.C.P.&P.C.
LIBER 3683 FOLIO 106
E 516100
N 403350
E 516150
N 403250
MARYLAND STATE GRID
54" RCP
54" AL.SIDE
18" AL.SIDE
42" AL.SIDE
48" AL.SIDE
15" AL.SIDE
WATERS OF UNITED STATES
WETLANDS AREA
INTERMITTENT STREAM
EX. 60" DRAIN
EX. 24" DRAIN
EX. 18" DRAIN
EX. 15" DRAIN
EX. 12" DRAIN
EX. 8" DRAIN
ABANDONED RESIDENCE
PORTION OF PALMER II LLC 150
LIBER 13110 FOLIO 428
196.54 ACRES
S84°52'56"W
2815.5
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1215
1220
1240
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2180
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2220



SD# 26500-2003
PROJECT NAME PALMER ROAD
CLASS III FILL, PHASE III

PRINCE GEORGE'S COUNTY, MD
DEPARTMENT OF ENVIRONMENTAL RESOURCES

APPROVED for Stormwater Management and Storm Drain.

MWWas Vaas 07/24/03
Date

Revised 08/19/03 MWWas Vaas

SD#
PROJECT NAME

PRINCE GEORGE'S COUNTY, MD
DEPARTMENT OF ENVIRONMENTAL RESOURCES

APPROVED for Stormwater Management and Storm Drain. As built only.

Date

POND No. 1

POND BOTTOM=67.5
PERM. POOL=71.5
1-YR. EXTENDED DET. EL.=74.5
10-YR. WSEL=75.9
100-YR. WSEL=76.8
SETTLED TOP OF DAM=79.4
CONSTR TOP OF DAM=80.5

SG # 111-01

PRINCE GEORGE'S SOIL CONSERVATION DISTRICT
SMALL POND APPROVAL

Prince George's County, Maryland
Department of Environmental Resources
Permits and Review Division

( ) Certifies Water Quality Structures Exempt From MD-378 Approval.

Signature Date

( ) Certifies Pond Meets MD-378 & Recommends PGSCD Approval.

Signature Date

(X) Certifies Pond Meets MD-378 & Forwards For Final PGSCD Review & Approval.

M.W.W. 07/24/03
Signature Date

Revised 08/19/03 MWW 8/19/03

( ) As-Built Meets All Requirements of MD-378.

Signature Date

PRIVATE STORM DRAIN AND RETROFIT STORMWATER MANAGEMENT PLAN PHASE III

PALMER ROAD

CLASS III FILL SITE

OXON HILL DISTRICT No. 12
PRINCE GEORGE'S COUNTY, MARYLAND

GRAPHIC SCALE 1" = 50'
0 50 100 150

VEGC 200' SHEET SERIES 211 SE 2 ADC MAP BK LOCATION 23 G-H10-11

32
SCD SHEET 2 OF 37 38
DER SHEET 2 OF 17 (FOR SHEETS 1 & 3-17 OF 17, SEE BDAI DWG. 8.003 & 5-19-Y)

114

DATE	DESCRIPTION REVISIONS	BY
11/03/03	REV. DUE TO WATERS OF U.S. IMPACTS NEAR STR. 13B	JB
6/13/03	REV. PER DER/SCD COMMENTS	ELS
4/10/03	DES. ELS DRN. JB CHK. ELS	
	SCALE 1" = 50'	
	DATE MARCH, 2003	

9/12/03 BDB

10721 WOODMORE ROAD, SUITE 200
MITCHELLVILLE, MARYLAND 20721
BEN DYER ASSOCIATES, INC.
Engineers / Surveyors / Planners
TELEPHONE (301) 430-2000

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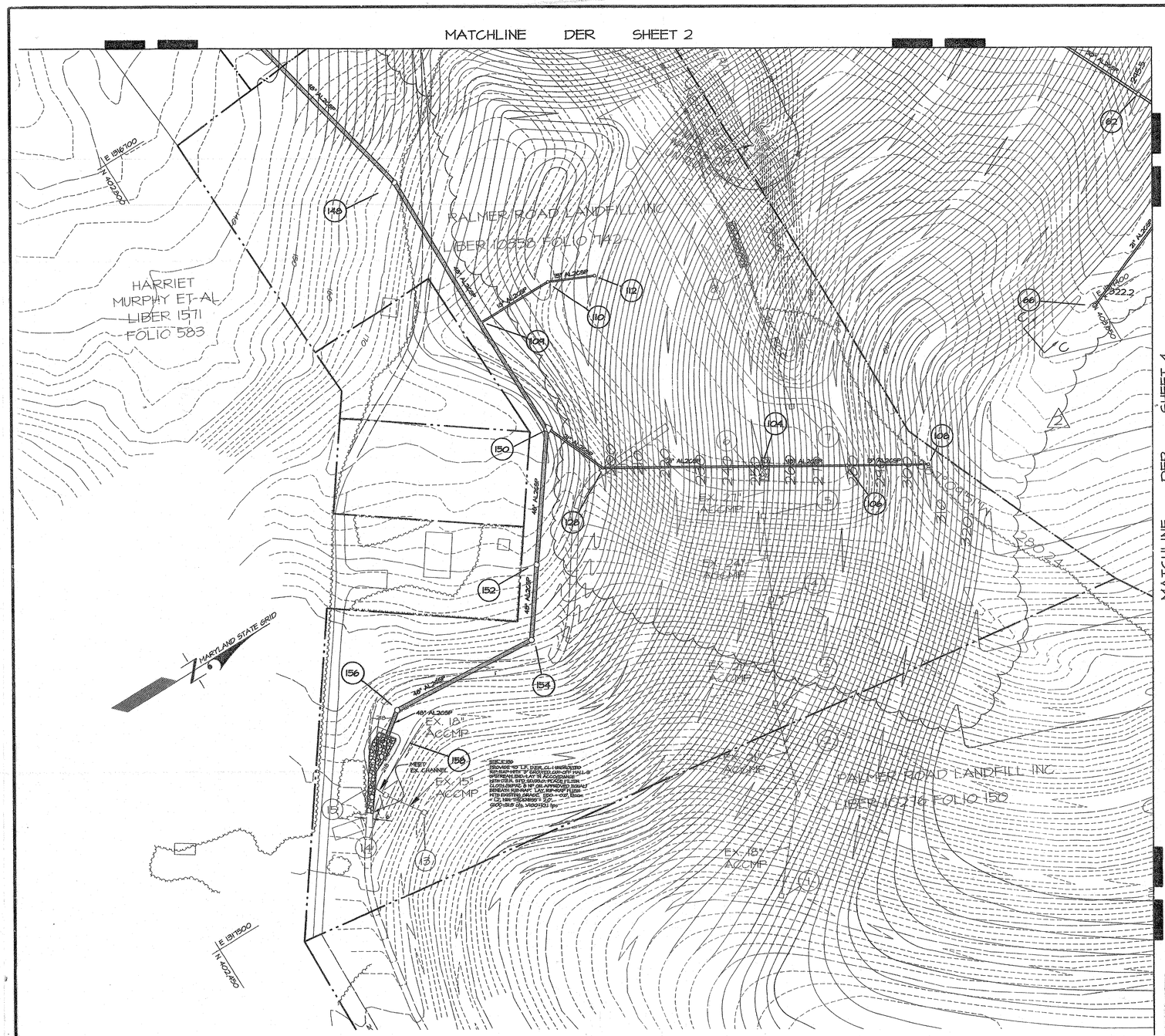
DRAWN BY SYSTEM INTERFACED WITH RECORD NO.

J-80035

Drwg. No. 8.004-Y

MATCHLINE DER SHEET 2

MATCHLINE DER SHEET 4



MATCHLINE DER SHEET 2

MATCHLINE DER SHEET 3

MATCHLINE DER SHEET 4

CALL MISS UTILITY
1-800-257-7777
48 hrs, Before Excavation

SD# 26000-2002
PROJECT NAME PALMER ROAD
CLASS III FILL PHASE III

PRINCE GEORGE'S COUNTY, MD
DEPARTMENT OF ENVIRONMENTAL RESOURCES

APPROVED for Stormwater Management and Storm Drain.

Mwvan Vaas 07/24/03
Date

Revised 08/9/03 Mwvan Vaas

SD#
PROJECT NAME

PRINCE GEORGE'S COUNTY, MD
DEPARTMENT OF ENVIRONMENTAL RESOURCES

APPROVED for Stormwater Management and Storm Drain. As Built's Only

Date

PRIVATE STORM DRAIN AND RETROFIT STORMWATER MANAGEMENT PLAN

PHASE III

PALMER ROAD

CLASS III FILL SITE

OXON HILL DISTRICT No. 12
PRINCE GEORGE'S COUNTY, MARYLAND

GRAPHIC SCALE 1" = 50'
0 50 100 150

WSSC 200' SHEET SERIES 211 SE 2 ADC MAP BK LOCATION 23 G-H10-11

SCD SHEET 34 OF 37 38
DER SHEET 4 OF 17 (FOR SHEETS 1-3 & 5-17 OF 17, SEE BDA) DM6, 8.008-S & 7-19-Y)

11/12/03 4/17/04

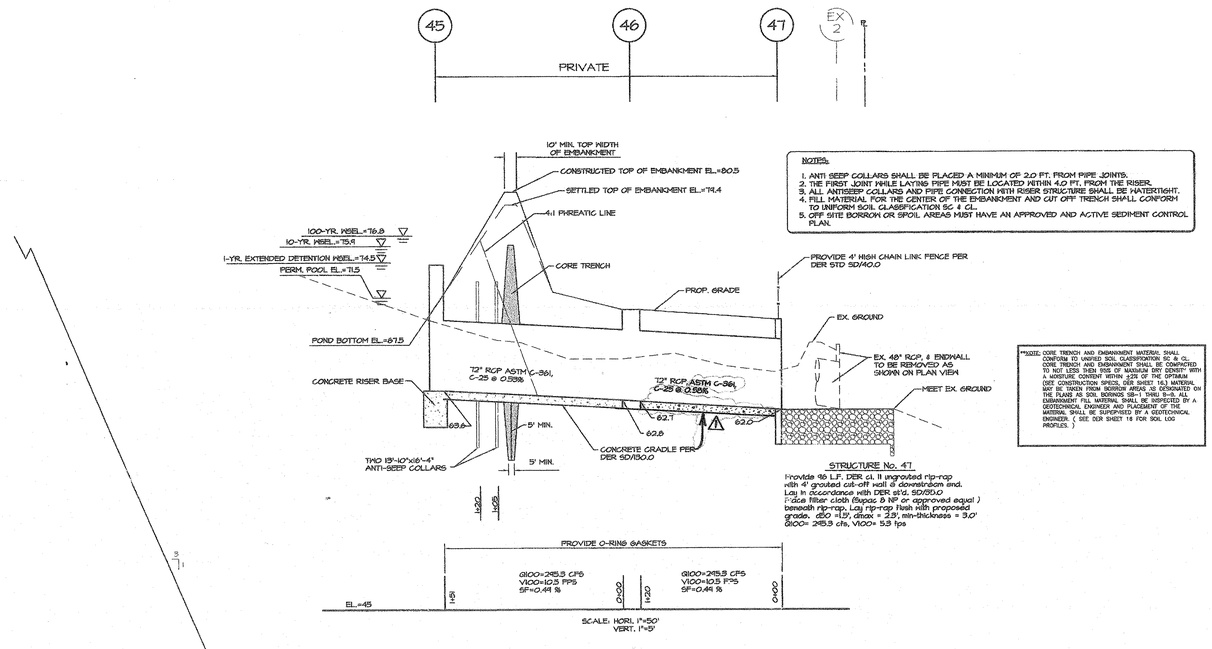
DATE	DESCRIPTION	BY
11/03/03	REV. DUE TO WATERS OF U.S. IMPACTS NEAR STR. 138	JB
6/13/03	REV. PER DER/SCD COMMENTS	ELS
	REVISIONS	

11721 WOODMORE ROAD, SUITE 200
MITCHELLVILLE, MARYLAND 20721
BEN DYER ASSOCIATES, INC.
Engineers / Surveyors / Planners
TELEPHONE (301) 450-2000

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DRAWN BY JB DESIGNED BY ELS RECORD NO. J-800385
SCALE 1" = 50' DRWG. NO. 8.006-Y
DATE MARCH, 2003

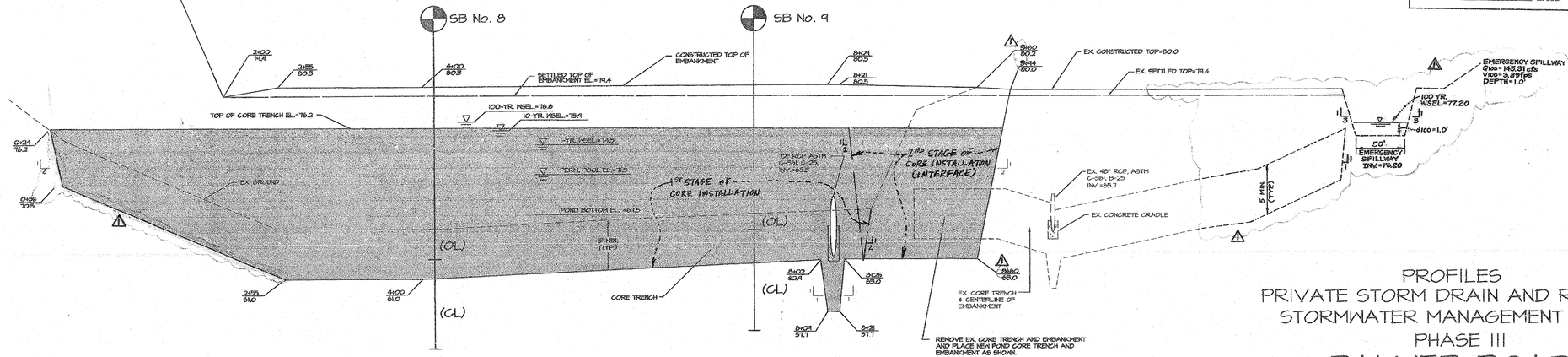
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NOTES:
1. ANTI SEEP COLLARS SHALL BE PLACED A MINIMUM OF 2.0 FT. FROM PIPE JOINTS.
2. THE FIRST JOINT WHILE LAYING PIPE MUST BE LOCATED WITHIN 4.0 FT. FROM THE RISER.
3. ALL ANTISEEP COLLARS AND PIPE CONNECTION WITH RISER STRUCTURE SHALL BE WATERTIGHT.
4. FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT AND CUT OFF TRENCH SHALL CONFORM TO UNIFORM SOIL CLASSIFICATION SC & CL.
5. OFF SITE BORROW OR SPOIL AREAS MUST HAVE AN APPROVED AND ACTIVE SEDIMENT CONTROL PLAN.

**NOTE: CORE TRENCH AND EMBANKMENT MATERIAL SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION SC & CL. CORE TRENCH AND EMBANKMENT SHALL BE COMPACTED TO NOT LESS THEN 95% MAXIMUM DRY DENSITY WITH MOISTURE CONTENT WITHIN 2% WET OF OPTIMUM. (SEE CONSTRUCTION SPECS. DER SHEET 16.) MATERIAL MAY BE TAKEN FROM BORROW AREAS AS DESIGNATED ON THE PLANS AS SOIL BORINGS SB-1 THRU B-8. ALL EMBANKMENT FILL MATERIAL SHALL BE INSPECTED BY A GEOTECHNICAL ENGINEER AND PLACEMENT OF THE MATERIAL SHALL BE SUPERVISED BY A GEOTECHNICAL ENGINEER. (SEE BOR SHEET 16 FOR SOIL LOG PROFILES.)

STRUCTURE No. 47
Provide 96 L.F. DER cl. II ingrouted rip-rap with 4' grouted cut-off wall @ downstream end. Lay in accordance with DER std. SD/130.0 (Mirafi filter cloth (Supac 8 NP or approved equal) beneath rip-rap. Lay rip-rap flush with proposed grade. d50 =1.9', dmax = 2.3', min-thickness = 3.0' Q100= 285.3 cfs, V100= 5.3 fps



PROFILE THROUGH CENTER OF EMBANKMENT- SWM POND #1
SCALE: HORI. 1"=50'
VERT. 1"=5'

SD# 26500-2002
PROJECT NAME PALMER ROAD
CLASS III FILL, PHASE III

PRINCE GEORGE'S COUNTY, MD
DEPARTMENT OF ENVIRONMENTAL RESOURCES

APPROVED for Stormwater Management and Storm Drain.

Mwaya Vaas 07/24/03
Date

Revised 08/19/03 Mwaya Vaas

SD#
PROJECT NAME

PRINCE GEORGE'S COUNTY, MD
DEPARTMENT OF ENVIRONMENTAL RESOURCES

APPROVED for Stormwater Management and Storm Drain. As Builts Only.

Date

* I certify that design plan for the construction of the embankment and/or excavated pond represents a practical and workable plan based on my knowledge of the site and was designed in accordance with the requirements of the Soil Conservation Service Maryland Standards and Specifications for Ponds, (MD-378). I have reviewed this plan with the owner/developer.*

Signature Eric L. Samec Date 7/23/03
Name (printed) ERIC L. SAMEC MD License No. 24501
Address 11721 WOODMORE ROAD, SUITE 200, MITCHELLVILLE, MD 20721
Phone Number (301) 430-2000 P.E. Seal

PROFILES
PRIVATE STORM DRAIN AND RETROFIT STORMWATER MANAGEMENT PLAN
PHASE III
PALMER ROAD
CLASS III FILL SITE
OXON HILL DISTRICT No. 12
PRINCE GEORGE'S COUNTY, MARYLAND

WSSC 200' SHEET SERIES 211 SE 2 ADC MAP BK LOCATION 23 G-H/10-11

SCD SHEET 35 OF 38
PER SHEET 14 OF 17 (FOR SHEETS 1-13 & 15-17 OF 17, SEE BDAI DWG. No. 8.0013-15 & 17-19-Y)

114

			11721 WOODMORE ROAD, SUITE 200 MITCHELLVILLE, MARYLAND 20721
			BEN DYER ASSOCIATES, INC. Engineers / Surveyors / Planners TELEPHONE (301) 430-2000
8-12-03	REVISED PER PGSCD COMMENTS.	ELS	COPYRIGHT © 2003 BEN DYER ASSOCIATES, INC.
6/13/03	REV. PER DER/SCD COMMENTS	ELS	DRAWN BY RJ / CHECKED BY ELS / RECORD NO. MN
DATE	DESCRIPTION	BY	SCALE AS SHOWN / DRAW. NO.
	REVISIONS		DATE MARCH, 2003 / J-00035 / 8.0016-Y

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POND DRAIN NOTES

DESIGN LOADINGS:

1. 100-year flood elevation.
2. Sloped backfill where applicable.

GEOTECHNICAL PARAMETERS:

The following geotechnical parameters were assumed for design:

1. Unit Weight of Wet Soil -	130 pcf
2. Angle of Internal Friction -	25 deg
3. Soil Cohesion -	0
4. Minimum safe bearing capacity -	1500 psf

The design foundation bearing capacity and soil properties shall be verified in the field by a qualified geotechnical engineer prior to construction. If the actual bearing capacity or design properties do not meet the design parameters assumed, the structural engineer shall be contacted before construction continues. When directed by the geotechnical engineer, the subgrade beneath the basin slab shall be removed and backfilled with materials meeting the required of the core trench.

CONCRETE:

All cast-in-place concrete shall conform to Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials, Section 600, Mix No. 3, which shall be modified to obtain a minimum compressive strength of 4000 psi, in lieu of 3500 psi, at 28 days. All exposed corners of concrete shall be chamfered (3/4" x 3/4"). (This does not include perimeter edges beneath trash rack frame steel angle).

REINFORCING STEEL:

All reinforcing steel bars shall conform to ASTM A-615, Grade 60. Concrete cover over all reinforcing shall be 2" unless noted otherwise. All rebar laps, bends and embedment depths shall meet the requirements of ACI 318-89.

KEYS:

All keys are nominal size.

WATERPROOFING:

Apply two-ply membrane waterproofing 15" wide centered on the earth side of all construction joints having air on one side and earth on the other.

CONSTRUCTION DEWATERING:

All work performed for permanent structures shall be carried out in areas free from water. Dewatering of the excavations shall be accomplished by methods approved by the engineer. After having served their purpose, all temporary protective works required by the dewatering shall be removed as required to prevent any obstruction to the flow of water.

STRUCTURAL BACKFILL:

1. CAST-IN-PLACE WALL FOOTINGS: When directed by the geotechnical engineering, undercutting of the soil below the footings and backfilling with materials acceptable to the geotechnical engineer shall be performed. Backfilling of the undercut areas shall consist of 6" minimum suitable subgrade to be approved and certified by the geotechnical engineer.

2. CAST-IN-PLACE WALL: No backfill shall be placed against the cast-in-place walls until the concrete has attained the specified 28 day compressive strength. The static weight of compaction equipment used adjacent to walls shall not exceed 3000 pounds.

SHOP DRAWINGS:

The riser structure shall be cast-in-place. All shop drawings, working drawings and calculations submitted to the Prince George's County Department of Environmental Resources and the Prince George's County Soil Conservation District for review and/or approval shall be sealed, signed and dated by a professional engineer registered in the State of Maryland.

TRASH RACKS:

All exposed rebar shall be given a double coat of gray alkyd paint as per 1983 edition, or later, Maryland department of transportation standard specifications for construction and materials 415.03.11 (painting) and 912.05 (gray alkyd).

RISER STRUCTURE NO.45

#6 Rebar Trash Rack

Weld

1/2" Galv. Expansion Bolt w/Washer (Typical) to Be Embedded 4" Min. into Concrete Wall

4" x 4" x 1/4" Galv. Steel Angle

4" (TYP.)

TRASH RACK CONNECTION TO FRAME & WALL DETAIL
Not to Scale

RISER STRUCTURE NO.45

Provide Two 8" x 4" x 4" x 1/4" Galv. Steel Angles 6" Long, Weld To Trash Rack Frame And Splitter Plate

#6 Rebar Trash Ruck Weld To Splitter Plate

Splitter Plate (7'-0" Long x 1'-6" High x 1/2" Thick Galv. Steel Plate

1'-6"

1'-0"

1/2" Galv. Expansion Bolt w/Washer (typ.) To Be Embedded 4" Min. into Concrete Wall.

4" (TYP.)

SPLITTER PLATE DETAIL
Not to Scale

NOTE: Special design required. Shop drawings shall be prepared, signed and sealed by a Professional Engineer registered in Maryland, and submitted to and approved by the Prince George's County, Departments of Environmental Resources prior to construction.

RISER STRUCTURE NO.45

20'-0"

8" (TYP.)

Trash Rack Frame: Provide 4" x 4" x 1/4" Galvanized Steel Angle. Place angle on side of structure as shown in the structure details. Bolt angle to side of wall with 1/2" x 4" galvanized expansion bolts at 12" o.c. Weld frame to rebar at each crossing.

12" RCP, ASTM A-361, C-25 WITH RUBBER WATERTIGHT JOINTS (DALTON)

Rebar Access Hatch (see Detail This Sheet)

NOTE: Provide 4" x 4" x 1/4" x 8" Long Bearing Angle, to be used as shown. Attach Angles to Splitter & Plate Riser Structure With 1/2" x 4" Galv. Exp. Bolts. (See Splitter Plate Detail This Sheet)

NOTE: For Details, Dimension and Notes Not Shown See DER STD. SD720.0 Type "B" Shallow Manhole and ACI 318-71

4" x 4" x 1/4" Trash Rack Frame Weld Corner (typical)

TOP VIEW
Not to Scale

NOTE: 6" Gate Valve to Conform with ANSI/AWWA C500 Recommended Gate Valve (Mueller Double Disc, NRS Gate Valve with Standard M.J. x M.J. Ends A-2580-20).

RISER STRUCTURE NO.45

Provide 2" min. clearance above trash rack for gate valve extension stem

14'-0"

Splitter Plate

Top of Riser El. = 74.5
100 Year H.W.El.=76.8

10 Year H.W.El.=73.4

Bottom of Trash Rack Frame, See Trash Rack Connection to Frame & Wall Detail This Sheet.

1-Year Ext. Det. H.W.El.=74.5

Provide DER Std. SD760.0 & 8.0 Aluminum Alloy (Solid Bar) MH Ladder Rings

First pipe joint to be within 4'-0" of riser wall.

Provide ASTM Reinforcement around pipe. Allow 2" min. clearance between pipe and rebar.

Permanent Pool El. = 71.5
Pond Bottom El.=67.5

NOTE: Structure shall be cast-in-place.

INV.= 69.6

12" RCP, ASTM C-361, C-25

6" PVC to 6" Perforated PVC Dewatering Device (see Detail This Sheet) Inv. = 69.7

Provide 2" x 4" keyway (typical)

6" min. suitable subgrade to be approved and certified by the geotechnical engineer.

Concrete Cradle (Continue to Structure Base)

4" granite block bottom Provide positive drainage to outfall pipe.

SECTION "A- A"
Not to Scale

RISER STRUCTURE NO.45

Support Bars, 2 1/2" x 1/2" Galv. Steel Bar Threaded On Both Ends w/Nuts & Washers (typical)

Trash Rack (12" PVC with cap)

Pipe Bracket, See DER SD760.0.0 For Bracket Detail

Plate Bottom El.= 71.5

NOTES: 1. PVC For Dewatering Device Shall Be Schedule 40.

2. For Details And Dimensions Not Shown, See DER Std. Detail SD760.0.0

3/4" DIA. PVC SPACERS (TYP.)

Pond Bottom El.= 67.5

Provide CLS Perforations Per AASHTO Specification M 178-82 (Typical)

Concrete Support Slab (2'-0" x 2'-0" With 6" X 6" Hire Mesh)

MODIFIED DER STD SD760.0.0 DEWATERING DEVICE
Not to Scale

NOTE: 6" Gate Valve to Conform with ANSI/AWWA C500 Recommended Gate Valve (Mueller Double Disc, NRS Gate Valve with Standard M.J. x M.J. Ends A-2580-20).

RISER STRUCTURE NO.45

Weld Rebar together @ each crossing

17'-0" Long x 1'-6" High x 1/2" Thick Galvanized Splitter Plate (See detail this sheet). Weld Rebar to Splitter plate.

8" (TYP.)

Top of Riser Elev. = 74.5

14'-0"

Side Trash Rack Connection to Frame & Wall Detail This Sheet

11'-8"

14'-3"

*NOTE: Gate Valve & Dewatering Device Not Shown for Clarity (Section "A-A")

36"

Elev. = 68.27

6" P.V.C. to Dewatering Device Inv. = 69.1

20'-0"

FRONT VIEW
Not to Scale

RISER STRUCTURE NO.45

8" 8" 8"

#6 Rebar Weld To Hatch

Rebar Hinge

Access Hatch

3/4" Dia.

Weld To Hatch

No. 6 Rebar

Hatch Catch

ACCESS HATCH
Not to Scale

RISER STRUCTURE NO.45

MUELLER® GATE VALVE AND ACCESSORIES
(Follow Manufacturer's Recommendation For Stem Guide Spacing)
Mueller Co. 500 West Eldorado Street, Decatur, Illinois 62523
Phone: 1-800-423-1323, Fax: 217-423-7881

GATE VALVE: A-2360-20 Standard Mechanical Joint ends with accessories

EXTENSION STEM: A-28446 — Extension Stem for use with NRS Gate Valves. 2" square wrench nut on top and end socket to fit 2" square nut on bottom end. For use with 2" - 36" Gate Valves.

STEM GUIDE: A-28448 — Adjustable Stem Guide

EX. STRUCTURE #1

Weld Rebar together @ each crossing

EX. TOP SLAB AT ELEV.=70.00 (TYP.)

17'-0" Long x 1'-6" High x 1/2" thick Galvanized Splitter Plate (See detail this sheet). Weld Rebar to Splitter plate.

8" (TYP.)

1'-6"

1.5' Min.

EX. 11'-6" MIN. @ 71.30 PROJECT BACK OF STRUCTURE TO BE BRICKED UP TO ELEV.=74.50 WITH WATERTIGHT MORTAR.

CONTRACTOR TO REMOVE EX. TRASH RACK, TOP SLAB AND RISER STRUCTURE ABOVE ELEV.=74.50, BRICK SHUT FROM ELEV.=74.50 TO 74.50.

32"

12"

See Trash Rack Connection to Frame & Wall Detail this Sheet AS SHOWN.

TRACH RACK

6" P.V.C. @ 66.50

EX. 2'-4"x1'-0" ORIFICE OPENING INV.=71.50 TO BE BRICKED SHUT TO 4"X2"

Elev. = 66.0

7'-0"

FRONT WALL ELEVATION
Not to Scale

RISER STRUCTURE EX. 1

NOTE: 6" Gate Valve to Conform with ANSI/AWWA C500 Recommended Gate Valve (Mueller Double Disc, NRS Gate Valve with Standard M.J. x M.J. Ends A-2580-20).

7'-6"

Splitter Plate

Top of Riser El. = 74.5
100 Year H.W.El.=76.8

10 Year H.W.El.=73.4

1-Year Ext. Det. H.W.El.=74.5

Bottom of Trash Rack Frame, See Trash Rack Connection to Frame & Wall Detail This Sheet.

Permanent Pool El. = 71.5
Pond Bottom El.=67.5

6" PVC Dewatering Device

EX. 48" RCP

SECTION "A- A"
Not to Scale

SHEET HINGE BRACKET: 2 1/2" x 2 1/2" x 3/8" Welded to Hinge Plates

2 1/2" 3/8" 1 1/4"

#6 Rebar (Typical)

STEEL HINGE PLATE, 24" x 4" x 3/8" with 4 Predrilled 1/2" Dia. Holes

1 1/4"

4" x 1/2" Galv. Steel Expansion Bolt w/Washer

Trash Rack Hinge (See Detail This Sheet)

Continuous Weld, Both Sides Of Bracket

7/8" Dia. Hole

HINGE DETAIL

32"

Bolt

8" (TYP.)

4"X12" Orifice

Lift for Maintenance

2" (TYP.) 1'-2" 1'-4" 4" (Typ.)

HINGE PLATE DETAIL

TRASH RACK DETAIL FOR LOW FLOW ORIFICE
Not to Scale

1'-6" 7'-2" 1'-6"

"12" RCP (#20)

Ex Ground

3'-1"

4'-1"

12" RCP

#4 Rebar @ 12" Both Ways Centered in Collar (Typical)

Undisturbed Subgrade

Joint Filler (See Additional Cradle Detail Below)

HIGH CRADLE DETAIL
Not to Scale

10'-4"

Second Pour

First Pour

8'-4" (TYP.)

Anti-Seep Collar Notes:

Provide CPS-20 preformed joint sealant manufactured by CONCRETE PRODUCTS SUPPLY COMPANY/PRESS - SEAL GASKET CORP. or approved equal around pipe at collar as shown.

A construction joint with PVC waterstop must be provided between pours. Anti-seep Collar shall be located 2' minimum from pipe joint.

Concrete Cradle Notes:

Pour concrete against undisturbed earth. Remove sheeting before pouring concrete or leave lower portion of sheeting in place. Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 600, Mix No. 3, which shall be modified to obtain a compressive strength of 4,000 psi after 28 days in lieu of 3500 psi.

Provide 8 Additional No. 5 Rebar Around Pipe As Shown

Anti-Seep Collar

Additional #5 Rebar (Typical)

Concrete Cradle See dimensions this sheet.

SECTION "A- A"

ANTI-SEEP COLLAR & CONCRETE CRADLE DETAILS
Not to Scale

SD# 26500-2002
PROJECT NAME PALMER ROAD
CLASS III FILL, PHASE III

PRINCE GEORGE'S COUNTY, MD
DEPARTMENT OF ENVIRONMENTAL RESOURCES

APPROVED for Storewater Management and Storm Drain.

James Vose 07/24/03
Date

Revised 08/19/03 James Vose

SD# _____
PROJECT NAME _____

PRINCE GEORGE'S COUNTY, MD
DEPARTMENT OF ENVIRONMENTAL RESOURCES

APPROVED for Storewater Management and Storm Drain. As Built Only

Date

DETAIL SHEET
PRIVATE STORM DRAIN AND RETROFIT STORMWATER MANAGEMENT PLAN
PHASE III
PALMER ROAD
CLASS III FILL SITE
OXON HILL DISTRICT No. 12
PRINCE GEORGE'S COUNTY, MARYLAND

WSSC 200' SHEET SERIES 211 SE 2 ADC MAP BK LOCATION 29 G-H/10-11

SCD SHEET 36 OF 37 38
DER SHEET 15 OF 17 (FOR SHEETS 1-14 & 16-17 OF 17, SEE BDAI DWG. No. 8.003-16, 18 & 19-Y)

(114)

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6/19/03	REV. PER DER/SCD COMMENTS	ELS	DRAWN BY: SM / DESIGNED BY: JMB / CHECKED BY: ELS — RECORD NO. J-80035
DATE	DESCRIPTION	BY	SCALE: AS SHOWN — DWG. NO. 8.0017-Y
	REVISIONS		DATE: MARCH, 2003

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STORMWATER MANAGEMENT POND NO. 1

CONSTRUCTION SPECIFICATIONS FOR PONDS

These specifications are appropriate to all ponds within the scope of the Standard for practice MD-378. All references to ASTM and AASHTO specifications apply to the most recent version.

Site Preparation

Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped of topsoil. All trees, vegetation, roots and other objectional material shall be removed. Channel banks and sharp breaks shall be sloped to no steeper than 1:1. All trees shall be cleared and grubbed within 15 feet of the toe of the embankment.

Areas to be covered by the reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush and stumps shall be cut approximately level with the ground surface. For dry stormwater management ponds, a minimum of a 25-foot radius around the inlet structure shall be cleared.

All cleared and grubbed material shall be disposed of outside and below the limits of the dam and reservoir as directed by the owner or his representative. When specified, a sufficient quantity of topsoil will be stockpiled in a suitable location for use on the embankment and other designated areas.

Earth Fill

Material - The fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, wood, rubbish, stones greater than 6", frozen or other objectionable materials. Fill material for the center of the embankment and cut off trench shall conform to Unified Soil Classification GC, SC, CH, or CL and must have at least 30% passing the #200 sieve. Consideration may be given to the use of other materials in the embankment if designed by a geotechnical engineer. Such special designs must have construction supervised by a geotechnical engineer.

Materials used in the outer shell of the embankment must have the capability to support vegetation of the quality required to prevent erosion of the embankment.

Placement - Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in maximum 8 inch thick (before compaction) layers which are to be continuous over the entire length of the fill. The most permeable borrow material shall be placed in the downstream portions of the embankment. The principal spillway must be installed concurrently with fill placement and not excavated into the embankment.

Compaction - The movement of the hauling and spreading equipment over the fill shall be controlled so that the entire surface of each lift shall be traversed by not less than one tread track of heavy equipment or compaction shall be achieved by a minimum of four complete passes of a sheepsfoot, rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction will be obtained with the equipment used. The fill material shall contain sufficient moisture so that if formed into a ball it will not crumble yet not be so wet that water can be squeezed out.

When required by the reviewing agency the minimum required density shall not be less than 95% of maximum dry density with a moisture content within +/- 2% of the optimum. Each layer of fill shall be compacted as necessary to obtain that density, and is to be certified by the Engineer at the time of construction. All compaction is to be determined by AASHTO Method T-99 (Standard Proctor).

Cut Off Trench - The cutoff trench shall be excavated into impervious material along or parallel to the centerline of the embankment as shown on the plans. The bottom width of the trench shall be governed by the equipment used for excavation, with the minimum width being four feet. The depth shall be at least four feet below existing grade or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability.

Embankment Core - The core shall be parallel to the centerline of the embankment as shown on the plans. The top width of the core shall be a minimum of four feet. The height shall extend up to at least the 10 year water elevation or as shown on the plans. The side slopes shall be 1 to 1 or flatter. The core shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability. In addition, the core shall be placed concurrently with the outer shell of the embankment.

Structure Backfill

Backfill adjacent to pipes or structures shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24" or greater over the structure of pipe.

Structure backfill may be flowable fill meeting the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 313 as modified. The mixture shall have a 100-200 psi 28 day unconfined compressive strength. The flowable fill shall have a minimum pH of 4.0 and a minimum resistivity of 2,000 ohm-cm. Material shall be placed such that a minimum of 8" (measured perpendicular to the outside of the pipe) of flowable fill shall be under (bedding), over and, on the sides of the pipe. It only needs to extend up to the spring line for rigid conduits. Average slump of the fill shall be "1" to assure flowability of the material. Adequate measures shall be taken (sand bags, etc.) to prevent floating the pipe. When using flowable fill all metal pipe shall be bituminous coated. Any adjoining soil fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material shall completely fill all voids adjacent to the flowable fill zone. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be drive over any part of a structure or pipe unless there is a compacted fill of 24" or greater over the structure or pipe. Backfill material outside the structural backfill(flowable fill) zone shall be of the type and quality conforming to that specified for the core of the embankment or other embankment materials.

Pipe Conduits

All pipes shall be circular in cross section.

Reinforced Concrete Pipe - All of the following criteria shall apply for reinforced concrete pipe:

1. Materials - Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets and shall equal or exceed ASTM C-361.
2. Bedding - All reinforced concrete pipe conduits shall be laid in a concrete bedding/cradle for their entire length. This bedding/cradle shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 50% of its outside diameter with a minimum thickness of 6 inches. Where a concrete cradle is not needed for structural reasons, flowable fill may be used as described in the "Structure Backfill" section of this standard. Gravel bedding is not permitted.
3. Laying pipe - Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 4 feet from the riser.
4. Backfilling shall conform to "Structure Backfill."
5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Plastic Pipe - The following criteria shall apply for plastic pipe:

1. Materials - PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241. Corrugated High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following: 4" thru 10" pipe shall meet the requirements of AASHTO M252 Type S, and 12" thru 24" shall meet the requirements of AASHTO M294 Type S.
2. Joints and connections to anti-seep collars shall be completely watertight.
3. Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.
4. Backfilling shall conform to "Structure Backfill".
5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Drainage Diaphragms - When a drainage diaphragm is used, a registered professional engineer will supervise the design and construction inspection.

Concrete

Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 414, Mix No. 3.

Rock Rip-Rap

Rock rip-rap shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 311.

Geotextile shall be placed under all riprap and shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 921.09, Class C.

Care of Water during Construction

All work on permanent structures shall be carried out in areas free from 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 necessary pumping and other equipment required for removal of water from the various parts of the work and for maintaining the excavations, foundation, and other parts of the work free from water as required or directed by the engineer for constructing each part of the work. After having served their purpose, all temporary protective works shall be removed or leveled and graded to the extent required to prevent obstruction in any degree whatsoever of the flow of water to the spillway or outlet works and so as not to interfere in any way with the operation or maintenance of the structure. Stream diversions shall be maintained until the full flow can be passed through the permanent works. The removal of water from the required excavation and the foundation shall be accomplished in a manner and to the extent that will maintain stability of the excavated slopes and bottom of required excavations and will allow satisfactory performance of all construction operations. During the placing and compacting of material in required excavations, the water level at the locations being refilled shall be maintained below the bottom of the excavation at such locations which may require draining the water from sumps from which the water shall be pumped.

Stabilization

All borrow areas shall be graded to provide proper drainage and left in a sightly condition. All exposed surfaces of the embankment, spillway, spoil and borrow areas, and berms shall be stabilized by seeding, liming, fertilizing and mulching in accordance with the Natural Resources Conservation Service Standards and Specifications for Critical Area Planting (MD-342) or as shown on the accompanying drawings.

Erosion and Sediment Control

Construction operations will be carried out in such a manner that erosion will be controlled and water and air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures.

OPERATION AND MAINTENANCE

An operation and maintenance plan in accordance with Local or State Regulations will be prepared for all ponds. As a minimum, the dam inspection checklist located in Appendix A shall be included as part of the operation and maintenance plan and performed at least annually. Written records of maintenance and major repairs needs to be retained in a file. The issuance of a Maintenance and Repair Permit for any repairs or maintenance that involves the modification of the dam or spillway from its original design and specifications is required. A permit is also required for any repairs or reconstruction that involve a substantial portion of the structure. All indicated repairs are to be made as soon as practical.

Safety

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

Maintenance

1. Repair all damages caused by soil erosion and construction equipment at or before the end of each working day.
2. Sediment shall be removed from the basin when it reaches the specified distance below the top of the riser as shown on the riser. The sediment shall be placed in such a manner that it will not erode from the site. The sediment shall not be deposited downstream from the embankment, adjacent to a stream or floodplain. Disposal areas must be stabilized.

Final Disposal

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

Conversion to Stormwater Management Structure:

After permanent stabilization of all disturbed contributory drainage areas, temporary sediment basins, if initially built and certified to meet permanent standards, may be converted to permanent stormwater management structures. To convert the basin from temporary to permanent use, the outlet structure must be modified in accordance with approved stormwater management design plans. Additional grading may also be necessary to provide the required storage volume in the basin. Conversion can only take place after all disturbed areas have been permanently stabilized to the satisfaction of the inspection authority and storm drains have been flushed.

C D T BIO-SOIL SYSTEMS INC.
BORING LOG

PROJECT- PALMER ROAD LANDFILL — SHEET 1 OF 1

LOCATION- P. G. COUNTY, MD		BEGIN-1/13/03	ENDED-1/13/03
FOREMAN- D WOOD	SPOON	CUT DIA- 2.0"	IN DIA- 1 3/8"
INSPECTOR- D WOOD	HAMMER	WEIGHT- 140#	FALL- 30"
BORING NO- 1	STATION-	SURFACE ELEVATION- 120.75	

DEPTH	CLASSIFICATION OF MATERIALS	SAMPLE # / BLOWS ON SPOON	REMARKS
0.0	4" TOP SOIL		
0.5	BROWN SAND SILGHTLY SILTY FINE GRAIN		WATER LEVELS
2.5	4.5' @ ELEV. 116.25 ELEV FINE SAND	1 / 12	ENCOUNTERED- NONE
5.0	7.5' @ ELEV. 113.75	2 / 19	
7.5	BROWN CLAYEY FINE SAND	3 / 24	
10.0		4 / 31	
12.5	13.5' @ ELEV. 107.25 BROWN CLAYEY FINE SAND	5 / 50	
15.0		6 / 37	
17.5		7 / 40	
20.0	19.5' @ ELEV. 101.25 BROWN SATURATED		

C D T BIO-SOIL SYSTEMS INC.
BORING LOG

PROJECT- PALMER ROAD LANDFILL — SHEET 1 OF 1

LOCATION- P. G. COUNTY, MD		BEGIN-1/13/03	ENDED-1/13/03
FOREMAN- D WOOD	SPOON	CUT DIA- 2.0"	IN DIA- 1 3/8"
INSPECTOR- D WOOD	HAMMER	WEIGHT- 140#	FALL- 30"
BORING NO- 2	STATION-	SURFACE ELEVATION- 113.25	

DEPTH	CLASSIFICATION OF MATERIALS	SAMPLE # / BLOWS ON SPOON	REMARKS
0.0	4" TOP SOIL		
2.5	BROWN SAND SILGHTLY FINE GRAIN		WATER LEVELS
5.0	4.5' @ ELEV. 108.75 ELEV FINE SAND	1 / 12	ENCOUNTERED- NONE
7.5	7.5' @ ELEV. 105.75	2 / 12	
10.0	BROWN CLAYEY FINE SAND	3 / 13	
12.5		4 / 17	
15.0	14.5' @ ELEV. 98.75 BROWN TERMINATED		

C D T BIO-SOIL SYSTEMS INC.
BORING LOG

PROJECT- PALMER ROAD LANDFILL — SHEET 1 OF 1

LOCATION- P. G. COUNTY, MD		BEGIN-1/13/03	ENDED-1/13/03
FOREMAN- D WOOD	SPOON	CUT DIA- 2.0"	IN DIA- 1 3/8"
INSPECTOR- D WOOD	HAMMER	WEIGHT- 140#	FALL- 30"
BORING NO- 3	STATION-	SURFACE ELEVATION- 100.24	

DEPTH	CLASSIFICATION OF MATERIALS	SAMPLE # / BLOWS ON SPOON	REMARKS
0.0	4" TOP SOIL		
2.5	BROWN CLAYEY FINE SAND		WATER LEVELS
5.0	4.5' @ ELEV. 95.74	1 / 13	ENCOUNTERED NONE
7.5	BROWN CLAYEY FINE SAND WITH GRAVELS	2 / 28	
10.0		3 / 36	
12.5	13.5' @ ELEV. 86.74 DARK GRAY SILTY FINE SAND WITH GRAVELS	4 / 42	
15.0	16.5' @ ELEV. 83.74 BROWN TERMINATED	5 / 40	

C D T BIO-SOIL SYSTEMS INC.
BORING LOG

PROJECT- PALMER ROAD LANDFILL — SHEET 1 OF 1

LOCATION- P. G. COUNTY, MD		BEGIN-1/13/03	ENDED-1/13/03
FOREMAN- D WOOD	SPOON	CUT DIA- 2.0"	IN DIA- 1 3/8"
INSPECTOR- D WOOD	HAMMER	WEIGHT- 140#	FALL- 30"
BORING NO- 4	STATION-	SURFACE ELEVATION- 128.65	

DEPTH	CLASSIFICATION OF MATERIALS	SAMPLE # / BLOWS ON SPOON	REMARKS
0.0	4" TOP SOIL		
2.5	BROWN SAND SILGHTLY SILTY FINE GRAIN		WATER LEVELS
5.0	4.5' @ ELEV. 124.15 BROWN CLAYEY FINE SAND	1 / 10	ENCOUNTERED- NONE
7.5	7.5' @ ELEV. 121.15	2 / 13	
10.0	BROWN CLAYEY FINE SAND	3 / 26	
12.5		4 / 32	
15.0	14.5' @ ELEV. 114.15 BROWN SILTY FINE SAND WITH GRAVELS	5 / 43	
17.5		6 / 43	
20.0	19.5' @ ELEV. 109.15 BROWN SILTY FINE SAND	7 / 43	
22.5		8 / 43	
25.0		9 / 49	
27.5	28.5' @ ELEV. 100.15 BROWN TERMINATED	10 / 41	

D T BIO-SOIL SYSTEMS INC.
BORING LOG

PROJECT- PALMER ROAD LANDFILL — SHEET 1 OF 1

LOCATION- P. G. COUNTY, MD		BEGIN-1/13/03	ENDED-1/13/03
FOREMAN- D WOOD	SPOON	CUT DIA- 2.0"	IN DIA- 1 3/8"
INSPECTOR- D WOOD	HAMMER	WEIGHT- 140#	FALL- 30"
BORING NO- 5	STATION-	SURFACE ELEVATION- 110.85	

DEPTH	CLASSIFICATION OF MATERIALS	SAMPLE # / BLOWS ON SPOON	REMARKS
0.0	4" TOP SOIL		
2.5	BROWN SILTY FINE SAND WITH GRAVELS		WATER LEVELS
5.0	4.5' @ ELEV. 106.35 BROWN SILTY FINE SAND	1 / 19	ENCOUNTERED- 7.0' CAVED IN AT 6.0'
7.5	7.5' @ ELEV. 103.35	2 / 19	
10.0	BROWN CLAYEY FINE SAND	3 / 29	
12.5		4 / 17	
15.0	14.5' @ ELEV. 96.35 BROWN TERMINATED	5 / 18	

C D T BIO-SOIL SYSTEMS INC.
BORING LOG

PROJECT- PALMER ROAD LANDFILL — SHEET 1 OF 1

LOCATION- P. G. COUNTY, MD		BEGIN-1/13/03	ENDED-1/13/03
FOREMAN- D WOOD	SPOON	CUT DIA- 2.0"	IN DIA- 1 3/8"
INSPECTOR- D WOOD	HAMMER	WEIGHT- 140#	FALL- 30"
BORING NO- 6	STATION-	SURFACE ELEVATION- 79.79	

DEPTH	CLASSIFICATION OF MATERIALS	SAMPLE # / BLOWS ON SPOON	REMARKS
0.0	4" TOP SOIL		
2.5	BROWN SILTY FINE SAND WITH GRAVELS		WATER LEVELS
5.0	4.5' @ ELEV. 75.29 BROWN SILTY FINE SAND	1 / 7	ENCOUNTERED NONE
7.5	7.5' @ ELEV. 72.29 BROWN CLAYEY FINE SAND	2 / 9	
10.0		3 / 7	
12.5	13.5' @ ELEV. 66.29 BROWN TERMINATED	4 / 7	

BIO-SOIL SYSTEMS INC.
BORING LOG

PROJECT- PALMER ROAD LANDFILL — SHEET 1 OF 1

LOCATION- P. G. COUNTY, MD		BEGIN-1/13/03	ENDED-1/13/03
FOREMAN- D WOOD	SPOON	CUT DIA- 2.0"	IN DIA- 1 3/8"
INSPECTOR- D WOOD	HAMMER	WEIGHT- 140#	FALL- 30"
BORING NO- 7	STATION-	SURFACE ELEVATION- 72.94	

DEPTH	CLASSIFICATION OF MATERIALS	SAMPLE # / BLOWS ON SPOON	REMARKS
0.0	4" TOP SOIL		
2.5	BROWN SILTY FINE SAND WITH GRAVELS		WATER LEVELS
5.0	4.5' @ ELEV. 68.44 GRAY CLAYEY SILT	1 / 7	ENCOUNTERED- NONE
7.5	7.5' @ ELEV. 65.44 BROWN SILTY FINE SAND	2 / 10	
10.0		3 / 10	
12.5	13.5' @ ELEV. 59.44 BROWN TERMINATED	4 / 13	

C D T BIO-SOIL SYSTEMS INC.
BORING LOG

PROJECT- PALMER ROAD LANDFILL — SHEET 1 OF 1

LOCATION- P. G. COUNTY, MD		BEGIN-1/13/03	ENDED-1/13/03
FOREMAN- D WOOD	SPOON	CUT DIA- 2.0"	IN DIA- 1 3/8"
INSPECTOR- D WOOD	HAMMER	WEIGHT- 140#	FALL- 30"
BORING NO- 8	STATION-	SURFACE ELEVATION- 87.30	

DEPTH	CLASSIFICATION OF MATERIALS	SAMPLE # / BLOWS ON SPOON	REMARKS
0.0	4" TOP SOIL		
2.5	BROWN SILTY FINE SAND WITH GRAVELS		WATER LEVELS
5.0	4.5' @ ELEV. 82.80 GRAY CLAYEY SILT	1 / 8	ENCOUNTERED- NONE
7.5	7.5' @ ELEV. 79.80 BROWN SILTY FINE SAND	2 / 10	
10.0		3 / 7	
12.5	13.5' @ ELEV. 73.80 BROWN TERMINATED	4 / 12	

BIO-SOIL SYSTEMS INC.
BORING LOG

PROJECT- PALMER ROAD LANDFILL — SHEET 1 OF 1

LOCATION- P. G. COUNTY, MD		BEGIN-1/13/03	ENDED-1/13/03
FOREMAN- D WOOD	SPOON	CUT DIA- 2.0"	IN DIA- 1 3/8"
INSPECTOR- D WOOD	HAMMER	WEIGHT- 140#	FALL- 30"
BORING NO- 9	STATION-	SURFACE ELEVATION- 85.85	

DEPTH	CLASSIFICATION OF MATERIALS	SAMPLE # / BLOWS ON SPOON	REMARKS
0.0	4" TOP SOIL		
2.5	BROWN SILTY FINE SAND WITH GRAVELS		WATER LEVELS
5.0	4.5' @ ELEV. 80.85 GRAY CLAYEY SILT	1 / 12	ENCOUNTERED- NONE
7.5	7.5' @ ELEV. 77.85 BROWN SILTY FINE SAND	2 / 13	
10.0		3 / 13	
12.5	13.5' @ ELEV. 71.85 BROWN TERMINATED	4 / 17	

SD# 26500-2002
PROJECT NAME PALMER ROAD
CLASS III FILL, PHASE III

PRINCE GEORGE'S COUNTY, MD
DEPARTMENT OF ENVIRONMENTAL RESOURCES

APPROVED for Stormwater Management and Storm Drain.

Reviewer Date 07/24/03

Revised 08/15/03 Reviewer Date

SD# _____
PROJECT NAME _____

PRINCE GEORGE'S COUNTY, MD
DEPARTMENT OF ENVIRONMENTAL RESOURCES

APPROVED for Stormwater Management and Storm Drain. As Built Only.

_____ Date

POND SPECIFICATIONS
PRIVATE STORM DRAIN AND RETROFIT STORMWATER MANAGEMENT PLAN
PHASE III
PALMER ROAD
CLASS III FILL SITE
OXON HILL DISTRICT No. 12
PRINCE GEORGE'S COUNTY, MARYLAND

MSSC 200' SHEET SERIES 211 SE 2 — ADC MAP BK LOCATION 23 G-H10-11

114

37
SCD SHEET 37 OF 37 38
DER SHEET 16 OF 17 (FOR SHEETS 1-15 & 17 OF 17, SEE BDAI DWG. No. 8.003-17 & 19-Y)

7/23/03

STATE OF MARYLAND — ERIC LEE MINNICH — No. 21708 — REGISTERED PROFESSIONAL ENGINEER

11721 WOODSMORE ROAD, SUITE 200
BOWIE, MARYLAND 20721
BEN DYER ASSOCIATES, INC.
Engineers / Surveyors / Planners
TELEPHONE (301) 430-9090

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DRAWN BY	DESIGNED BY	CHECKED BY	RECORD NO.
RL	ELS	MN	J-800335

DATE	DESCRIPTION	BY
	REVISIONS	

SCALE AS SHOWN
DATE MARCH, 2003
DRWG. NO. 8.0018-Y

S:\PROJ\J800335\SHEETS\PND-SPEC.dwg Wed Jul 23 07:36:42 2003 ben42

PRIVATE STRUCTURE SCHEDULE

INSPECTED BY	NO.	TYPE	WIDTH DIAM.	INV. ELEV.	AS BUILT INV. ELEV.	TOP ELEV. UPPER	TOP ELEV. LOWER	AS BUILT TOP ELEV. UPPER	AS BUILT TOP ELEV. LOWER	STANDARD DETAIL
PRIVATE	16	MOD. B-M1 ◇	4'-0" sq.	310.3		315.0				DER STD. SD/22.0
	31	MOD. B-M1 x	5'-0" sq.	303.0		304.0				DER STD. SD/22.0
	32	MOD. B-M1 ◇◇	4'-0" sq.	320.2		325.0				DER STD. SD/22.0
	45	RISER **	12'-0" sq.	68.6		74.5				SEE DETAIL, DER SHEET 15
	46	MOD. B-M1 **	4'-0" sq.	62.7		70.4				DER STD. SD/22.0
	47	MOD. ENDWALL **	-	62.0		64.6				DER STD. SD/30.0
	50	AL2GSP	42"	119.0		121.5				NEENAH R 5901-J-GRATE
	52	AL2GSP ✓	48"	144.0		149.5				NEENAH R 5901-K-GRATE
	54	AL2GSP *	48"	172.5		179.0				NEENAH R 5901-K-GRATE
	56	MOD. B-M1 ** **	5'-0" sq.	202.5		209.0				DER STD. SD/22.0
	58	AL2GSP *	42"	291.7		297.5				NEENAH R 5901-J-GRATE
	60	AL2GSP *	42"	260.7		266.5				NEENAH R 5901-J-GRATE
	62	AL2GSP *	30"	240.0		245.8				NEENAH R 5901-G-GRATE
	64	MOD. B-M1 **	4'-0" sq.	310.8		314.2				DER STD. SD/22.0
	66	MOD. B-M1 **	4'-0" sq.	318.5		322.2				DER STD. SD/22.0
	68	MOD. B-M1 **	5'-0" sq.	312.7		316.0				DER STD. SD/22.0
	70	ENDWALL (69')	-	71.5		74.0				DER STD. SD/30.0
	72	AL2GSP *	30"	150.1		154.4				NEENAH R 5901-G-GRATE
	74	AL2GSP *	30"	179.6		183.9				NEENAH R 5901-G-GRATE
	76	AL2GSP *	24"	209.8		213.1				NEENAH R 5901-E-GRATE
	78	AL2GSP *	30"	236.1		241.0				NEENAH R 5901-G-GRATE
	80	AL2GSP *	24"	249.6		261.5				NEENAH R 5901-E-GRATE
	82	ENDWALL (86')	-	71.5		76.0				DER STD. SD/30.0
	84	AL2GSP *	42"	83.5		90.0				NEENAH R 5901-J-GRATE
	86	AL2GSP *	42"	112.5		119.0				NEENAH R 5901-J-GRATE
	88	AL2GSP *	36"	141.0		147.0				NEENAH R 5901-H-GRATE
	90	AL2GSP *	42"	170.0		176.0				NEENAH R 5901-J-GRATE
	92	AL2GSP *	42"	198.0		204.0				NEENAH R 5901-J-GRATE
	94	AL2GSP *	42"	226.0		232.0				NEENAH R 5901-J-GRATE
	96	AL2GSP *	42"	254.0		260.0				NEENAH R 5901-J-GRATE
	98	AL2GSP *	36"	280.5		286.0				NEENAH R 5901-H-GRATE
	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]				[illegible]
	102	MOD. B-M1 ** ◇	6'-0" sq.	314.0		319.5				DER STD. SD/22.0
	104	AL2GSP *	42"	245.4		249.9				NEENAH R 5901-J-GRATE
	106	AL2GSP *	30"	212.3		271.1				NEENAH R 5901-G-GRATE
	108	AL2GSP *	30"	300.8		305.0				NEENAH R 5901-G-GRATE
	110	AL2GSP *	30"	185.2		192.7				NEENAH R 5901-G-GRATE
	112	AL2GSP *	24"	186.5		191.4				NEENAH R 5901-E-GRATE
	114	AL2GSP *	42"	88.5	✓2	96.2				NEENAH R 5901-J-GRATE
	116	AL2GSP *	36"	117.5		122.0				NEENAH R 5901-H-GRATE
	118	AL2GSP *	30"	147.0		152.0				NEENAH R 5901-G-GRATE
	120	AL2GSP *	30"	177.5		182.0				NEENAH R 5901-G-GRATE
	122	AL2GSP ◇	18"	206.6		210.0	2			NEENAH R 5901-C-GRATE
	126	AL2GSP *	30"	183.0		(197.5				NEENAH R 5901-G-GRATE
	128	ENDWALL (54')	-	71.5		76				DER STD. SD/30.0
	130	MOD. B-M1 **	6'-0" sq.	72.1		88.0				DER STD. SD/22.0
	132	MOD. B-M1 **	6'-0" sq.	74.9		89.0				DER STD. SD/22.0
	134	MOD. B-M1 **	6'-0" sq.	76.8	✓2	88.0				DER STD. SD/22.0
	136	MOD. B-M1	5'-0" sq.	81.3		100.8				DER STD. SD/22.0
	138	MOD. B-M1 *	6'-0" sq.	94.8		106.3				DER STD. SD/22.0
	140	MOD. B-M1 **	6'-0" sq.	97.5		121.0				DER STD. SD/22.0
	142	TYPE A-M1	6'-0"	102.1		121.0				DER STD. SD/21.3/20.0
	144	MOD. B-M1 ** ◇	6'-0" sq.	104.5		115.0				DER STD. SD/22.0
	146	MOD. B-M1 ** ◇◇	5'-0" sq.	122.5		134.0				DER STD. SD/22.0
	148	TYPE A-M1	6'-0"	136.0		168.3				DER STD. SD/21.3/20.0 ‡
	150	MOD. B-M1 **	7'-0" sq.	172.0		184.0				DER STD. SD/22.0 ‡
	152	TYPE A-M1	6'-0"	178.5		190.0				DER STD. SD/21.3/20.0 ‡
	154	TYPE A-M1	6'-0"	188.7		207.3				DER STD. SD/21.3/20.0
	156	TYPE A-M1	6'-0"	210.5		217.6				DER STD. SD/21.3/20.0
	158	ENDWALL (48')	-	212.0		217.5				DER STD. SD/30.0

Remarks:

◇ PROVIDE TWO 4'-0" LONG 6" HIGH SLOTS UNDER 6" TOP SLAB ON THE EAST & WEST SIDES OF THE STRUCTURE.

× PROVIDE TWO 5'-0" LONG 6" HIGH SLOTS UNDER 6" TOP SLAB ON THE NORTH & SOUTH SIDES OF THE STRUCTURE.

◇◇ PROVIDE TWO 4'-0" LONG 6" HIGH SLOTS UNDER 6" TOP SLAB ON THE NORTH & SOUTH SIDES OF THE STRUCTURE.

** SPECIAL DESIGN REQUIRED. SHOP DRAWINGS SHALL BE PREPARED, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN MARYLAND AND APPROVED BY BEN DYER ASSOCIATES, INC. PRIOR TO CONSTRUCTION.

* SEE DETAILS, DER SHEET 17.

×× PROVIDE TWO 6'-0" LONG 12" HIGH SLOTS UNDER 6" TOP SLAB ON THE NORTH & SOUTH SIDES OF THE STRUCTURE.

✓ PROVIDE TWO 6'-0" LONG 12" HIGH SLOTS UNDER 6" TOP SLAB ON THE NORTH & SOUTH SIDES OF THE STRUCTURE.

✓✓ PROVIDE TWO 7'-0" LONG 6" HIGH SLOTS UNDER 6" TOP SLAB ON THE EAST & WEST SIDES OF THE STRUCTURE.

◇ PROVIDE TWO 6'-0" LONG 6" HIGH SLOTS UNDER 6" TOP SLAB ON THE EAST & WEST SIDES OF THE STRUCTURE.

◇◇ PROVIDE TWO 5'-0" LONG 6" HIGH SLOTS UNDER 6" TOP SLAB ON THE EAST & WEST SIDES OF THE STRUCTURE.

‡ PROVIDE GRANITE BLOCK BOTTOM.

2 PROVIDE FOUR 4'-0" LONG 6" HIGH SLOTS UNDER 6" TOP SLAB.

2 ◇ PROVIDE FOUR 6'-0" LONG 6" HIGH SLOTS UNDER 6" TOP SLAB.

PRIVATE PIPE SCHEDULE

Inspected By	FROM	TO	SIZE	TYPE	LENGTH
PRIVATE	16	15	18"	AL2GSP	190'
	32	31	15"	AL2GSP	179'
	31	30	18"	AL2GSP	125'
	45 *	46	72"	RCP, ASTM C-361, C-25	151'
	46 *	47	72"	RCP, ASTM C-361, C-25	120'
	50	138	42"	AL2GSP ✓	65'
	52	50	42"	AL2GSP	52'
	54	52	42"	AL2GSP ✓2	110'
	56	54	36"	AL2GSP	119'
	58	56	30"	AL2GSP	104'
	60	58	30"	AL2GSP	100'
	62	60	30"	AL2GSP	98'
	64	62	30"	AL2GSP	96'
	66	64	21"	AL2GSP	220'
	68	66	18"	AL2GSP	92'
	72	70	15"	AL2GSP	260'
	74	72	15"	AL2GSP	100'
	76	74	15"	AL2GSP	93'
	78	76	15"	AL2GSP	90'
	80	78	15"	AL2GSP	184'
	84	82	36"	AL2GSP	52'
	86	84	36"	AL2GSP	93'
	88	86	36"	AL2GSP	92'
	90	88	36"	AL2GSP	100'
	92	90	36"	AL2GSP	93'
	94	92	30"	AL2GSP	92'
	96	94	30"	AL2GSP	93'
	98	96	30"	AL2GSP	86'
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	102	98	24"	AL2GSP	226'
	104	128	21"	AL2GSP	176'
	106	104	18"	AL2GSP	92'
	108	106	15"	AL2GSP	90'
	110	109	18"	AL2GSP	87'
	112	110	15"	AL2GSP	50'
	114	132	18"	AL2GSP FLO lb ga.	37'
	116	114	18"	AL2GSP ULTRA FLO lb ga.	92'
	118	116	15"	AL2GSP	96'
	120	118	15"	AL2GSP	94'
	122	120	15"	AL2GSP	92'
	128	150	21"	AL2GSP	68' 3
	130	128	54"	AL2GSP ULTRA FLO lb ga.	80'
	132	130	54"	AL2GSP ULTRA FLO lb ga.	312'
	134	132	54"	AL2GSP ULTRA FLO lb ga.	573' 2
	136	134	54"	AL2GSP ULTRA FLO lb ga.	306'
	138	136	54"	AL2GSP ULTRA FLO lb ga.	280'
	140	138	54"	AL2GSP ULTRA FLO lb ga.	220'
	142	140	48"	AL2GSP	360'
	144	142	48"	AL2GSP	140'
	146	144	48"	AL2GSP	225'
	148	146	48"	AL2GSP	241'
	150	148	48"	AL2GSP	313'
	152	150	48"	AL2GSP	136'
	154	152	48"	AL2GSP	83'
	156	154	48"	AL2GSP	168'
	158	156	48"	AL2GSP	30'
			TOTAL:		(7685' 2

Remarks:

* Provide O-ring joints.

AL2GSP= Aluminized Coated Steel Pipe Type 2. Pipes sized 48" and smaller shall have 2 2/3"x1/2" corrugations. Pipes sized longer than 48" shall have 5"x1" or 5"x1" corrugations. All pipes shall have helical corrugations and watertight joints.

ULTRA FLO= Aluminized Coated Steel Pipe, Type II with smooth interior walls (n=0.013 or better). All pipes shall have 3/4"x3/4"x1 1/2" corrugations.

PRIVATE PIPE SUMMARY

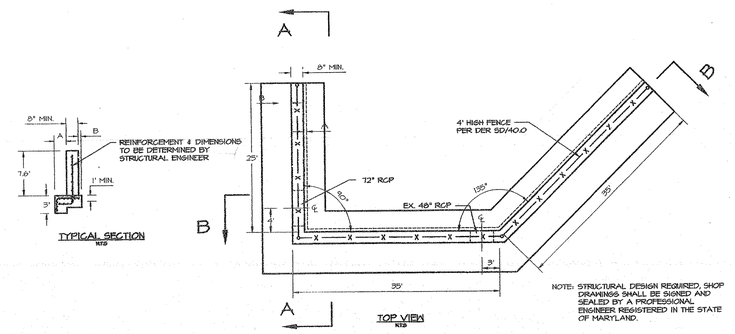
SIZE	TYPE	LENGTH
15"	AL2GSP	1328'
18"	AL2GSP	670'
18"	AL2GSP ULTRA FLO, 16 ga.	37' 1
21"	AL2GSP	464'
24"	AL2GSP	228'
30"	AL2GSP	664' 2
36"	AL2GSP	1344'
42"	AL2GSP	162'
48"	AL2GSP	1746'
54"	AL2GSP ULTRA FLO, 16 ga.	1771'
72"	RCP, ASTM C-361, C-25	271' 1
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
TOTAL		7685'

Remarks:

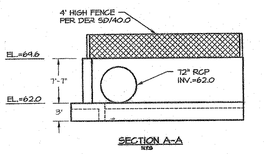
AL2GSP= Aluminized Coated Steel Pipe Type 2. Pipes sized 48" and smaller shall have 2 2/3"x1/2" corrugations. Pipes sized longer than 48" shall have 5"x1" or 5"x1" corrugations. All pipes shall have helical corrugations and watertight joints.

ULTRA FLO= Aluminized Coated Steel Pipe, Type II with smooth interior walls (n=0.013 or better). All pipes shall have 3/4"x3/4"x1 1/2" corrugations.

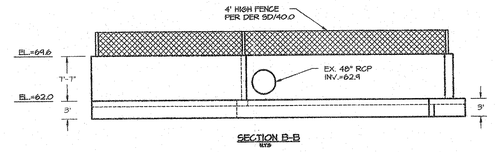
MODIFIED ENDWALL DETAIL (PER DER SD/30.0)



NOTE: STRUCTURAL DESIGN REQUIRED, SHOP DRAWINGS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MARYLAND.

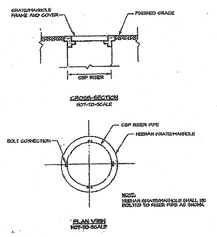


SECTION A-A
N.T.S.



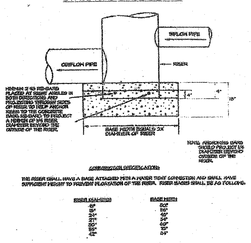
SECTION B-B
N.T.S.

CSP GRATE DETAIL

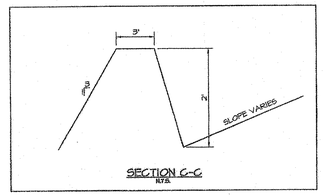


NOTE:
HERRAN #VA1748 MANHOLE SHALL BE INSTALLED TO RISER PIPE AS SHOWN.

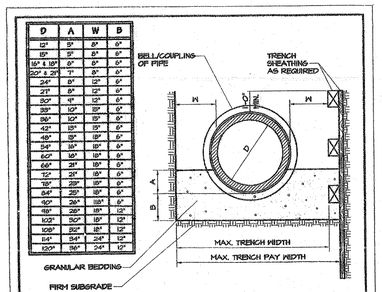
STRUCTURE BASE DETAIL



THE RISER SHALL HAVE A BASE ATTACHED WITH A WATER TIGHT CONNECTION AND SHALL HAVE DIFFERENT MEANS TO INDICATE ELEVATION OF THE RISER. RISER SHOWN SHALL BE AS FOLLOWS:



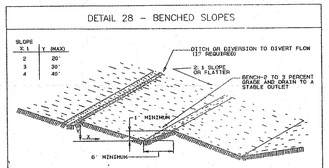
SECTION C-C
N.T.S.



D	A	W	B
12"	5"	8"	6"
15"	5"	8"	8"
18" & 18"ø	6"	8"	8"
22" & 22"ø	7"	8"	8"
24"	8"	12"	8"
27"	9"	12"	8"
30"	9"	12"	8"
33"	10"	15"	8"
36"	10"	15"	8"
42"	11"	15"	8"
48"	12"	18"	8"
54"	14"	18"	8"
60"	15"	18"	8"
66"	21"	18"	8"
72"	23"	18"	8"
78"	23"	18"	8"
84"	25"	18"	8"
90"	26"	18"	8"
96"	26"	18"	12"
102"	30"	18"	12"
108"	30"	18"	12"
114"	34"	24"	12"
120"	36"	24"	12"

BEDDING AND TRENCH WIDTHS FOR PRIVATE STORM DRAIN PIPE
N.T.S.

DETAIL 28 – BENCHED SLOPES



Construction Specifications

1. All fills shall be compacted as required to reduce erosion, slippage, settlement, subsidence or other related problems. Fill intended to support buildings, structures and conduits, etc., shall be compacted in accordance with local requirements or codes.

2. All fill shall be placed and compacted in layers not to exceed 8" in thickness.

3. Except for approved landfills or nonstructural fills, fill material shall be free of brush, rubbish, rocks, logs, stumps, building debris and other objectionable materials that would interfere with or prevent construction of satisfactory fills.

4. Frozen material or soft, mucky or highly compressible materials shall not be incorporated into fill slopes or structural fills. Fill shall not be placed on a frozen foundation.

5. All benches shall be kept free of sediment during all phases of development.

6. Seeps or springs encountered during construction shall be handled in accordance with the Standard and Specification for Subsurface Drain or other approved methods.

7. All graded areas shall be permanently stabilized immediately following finished grading.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE | PAGE F - 18 - 3 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

SD# 28500-3002
PROJECT NAME PALMER ROAD
CLASS III FILL PHASE III

PRINCE GEORGE'S COUNTY, MD
DEPARTMENT OF ENVIRONMENTAL RESOURCES

APPROVED for Stormwater Management and Storm Drain.

Mumtaz Vaqs 07/24/03
Date

Revised 08/15/03 Mumtaz Vaqs

SD# _____
PROJECT NAME _____

PRINCE GEORGE'S COUNTY, MD
DEPARTMENT OF ENVIRONMENTAL RESOURCES

APPROVED for Stormwater Management and Storm Drain. As Built Data.

_____ Date

DETAIL SHEET
STORM DRAIN AND RETROFIT STORMWATER MANAGEMENT PLAN PHASE III
PALMER ROAD
CLASS III FILL SITE
OXON HILL DISTRICT No. 12
PRINCE GEORGE'S COUNTY, MARYLAND

WSSC 200' SHEET SERIES 211 SE 2 ADC MAP LOCATION 2015-W10-11

32
SCD SHEET 27 OF 37 38
DER SHEET 17 OF 17 (FOR SHEETS 1-16 OF 17, SEE BDAI DWG. 8.0019-17)

(114)

4/13/04 ELS			
11/03/03	REV. DUE TO WATERS OF U.S. IMPACTS NEAR STR. 156	2	JB
08/12/03	REVISED PER DPR SCD COMMENTS	1	JB
6/13/03	REV. PER DER/SCD COMMENTS		ELS
DATE	DESCRIPTION		BY
	REVISIONS		

10221 WOODMORE ROAD, SUITE 200
MITCHELLVILLE, MARYLAND 20721
BEN DYER ASSOCIATES, INC.
Engineers / Surveyors / Planners
TELEPHONE (301) 430-2000

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DRAWN BY ELS | CHECKED BY ELS | J-80035
SCALE 1" = 50' | DRWG. NO. 8.0019-Y
DATE MARCH, 2003