

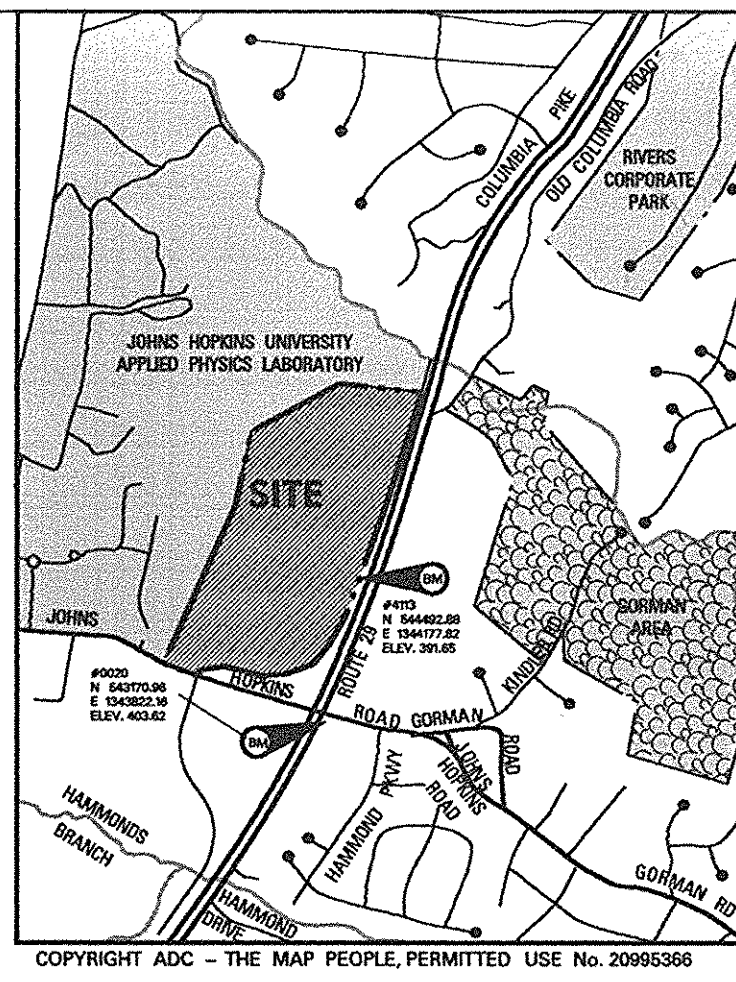
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ADDRESS CHART	
LOT NUMBER	STREET ADDRESS
124,125	10302 JOHN HOPKINS ROAD

# Site Development Plan for Montpelier Research Park

Howard County Maryland



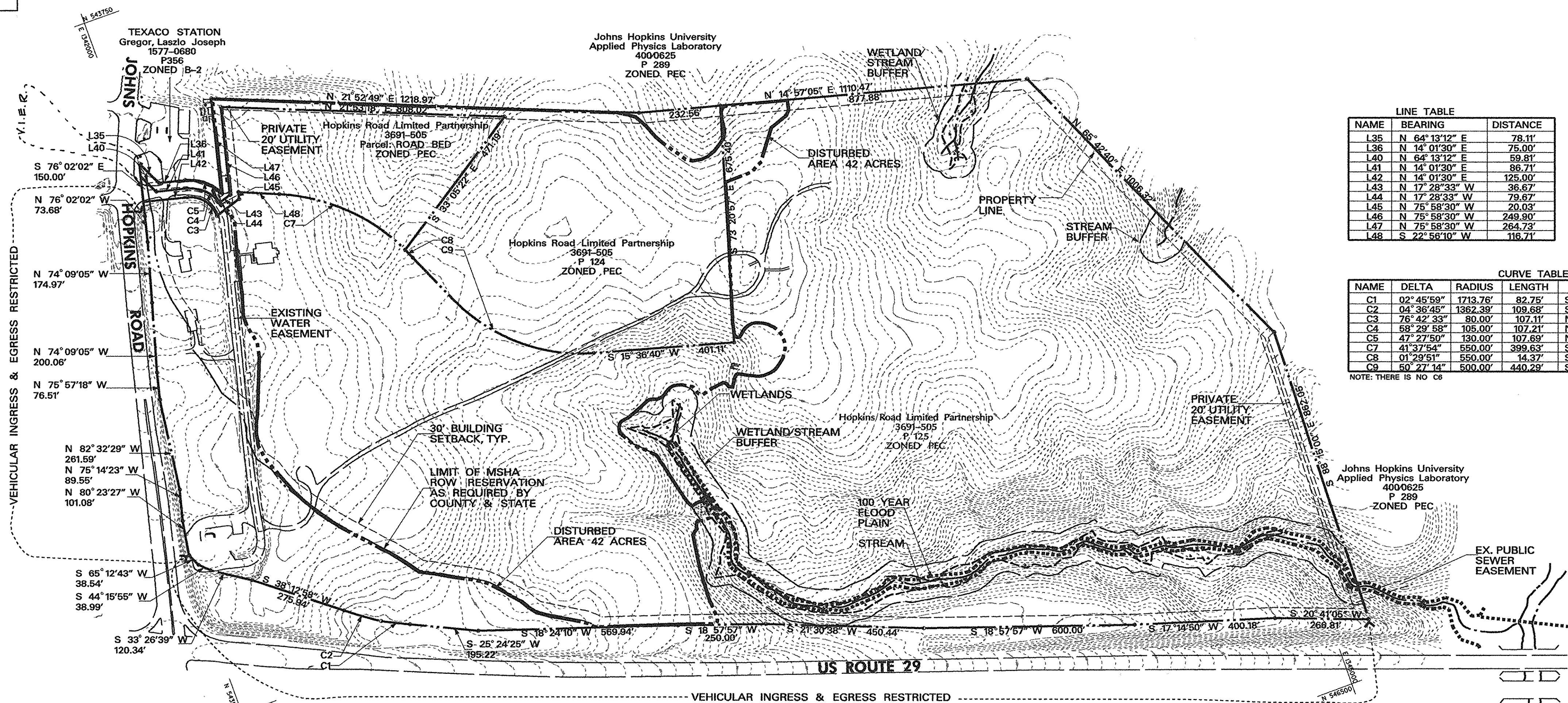
LOCATION MAP  
SCALE: 1" = 2000'

**HORIZONTAL CONTROL**  
THE COURSES AND COORDINATES SHOWN HEREON ARE BASED UPON THE NAD 83 MARYLAND COORDINATE SYSTEM AND ARE DERIVED FROM THE FOLLOWING HOWARD COUNTY SURVEY CONTROL STATIONS:

NO.	NORTH	EAST
0020	549170.96	1343822.16
4113	544492.88	1344177.82
41EA	544826.91	1339217.44
41EB	546222.26	1337778.18

**VERTICAL CONTROL**  
ELEVATIONS SHOWN HEREON ARE REFERRED TO THE NATIONAL GEODETIC VERTICAL DATUM (NGVD29) WITH LOCAL REFERENCE TO HOWARD COUNTY SURVEY CONTROL STATIONS:

NO.	ELEVATION
0020	403.62
4113	391.65
41EA	407.73



**LINE TABLE**

NAME	BEARING	DISTANCE
L35	N 64° 13' 12" E	78.11'
L36	N 14° 01' 30" E	75.00'
L40	N 64° 13' 12" E	59.81'
L41	N 14° 01' 30" E	58.71'
L42	N 14° 01' 30" E	125.00'
L43	N 17° 28' 33" W	36.67'
L44	N 17° 28' 33" W	79.67'
L45	N 75° 58' 30" W	20.03'
L46	N 75° 58' 30" W	249.90'
L47	N 75° 58' 30" W	284.73'
L48	S 22° 58' 10" W	116.71'

**CURVE TABLE**

NAME	DELTA	RADIUS	LENGTH	BEARING	CHORD	TANGENT
C1	02° 45' 59"	1713.76'	82.75'	S 36° 23' 23" W	82.74'	41.38'
C2	04° 38' 45"	1382.33'	103.69'	S 35° 55' 31" W	109.85'	54.87'
C3	76° 42' 33"	80.00'	107.11'	N 52° 22' 47" E	99.28'	63.30'
C4	59° 29' 58"	105.00'	107.21'	N 43° 16' 29" E	102.61'	58.80'
C5	47° 27' 50"	130.00'	107.69'	N 37° 45' 25" E	104.64'	57.15'
C7	41° 37' 54"	550.00'	399.63'	S 43° 45' 07" W	390.90'	209.10'
C8	01° 29' 51"	550.00'	14.37'	S 65° 18' 59" W	14.37'	7.19'
C9	50° 27' 14"	500.00'	440.29'	S 40° 50' 18" W	426.21'	235.57'

NOTE: THERE IS NO C6

Site Analysis Data Chart

- General Site Data
  - Present Zoning: PEC
  - Applicable DPZ File References: BA 96-31 E, WP97-21, PB 190, VP 86-64, WP 91-93, ZB 802 & 767, S 86-47, FDP #1, SDP 88-197, SDP 89-88, WP 98-12
  - Proposed Use of Site or Structure(s): UNDETERMINED - MASS GRADING ONLY
  - Proposed Water and Sewer Systems: X Public - \_\_\_\_\_
  - Water and Sewer contract number 30-1757D
- Area Tabulation
  - Total Project Area: ± 104 Acres  
(Indicate by Section and Area As Shown on Final Plat or As Shown on Deed)
  - Net Area of Site: 97.99 Acres  
(Indicate by Section and Area As Shown on Final Plat)
  - Area of This Plan Submission: 42 Acres
  - Limit of Disturbed Area: 42 Acres
  - Building Coverage of Site: N/A Acres and 0 % of Gross Area (Proposed)
- Open Space Data: N/A
- Parking Space Data N/A

General Notes

- All construction shall be performed in accordance with the latest standards and specifications of Howard County, plus MSHA standards and specifications if applicable or as specified.
- Approximate location of existing utilities are based solely on available records. Contractor shall verify the location of any utilities which may be impacted by the work. The contractor shall take all necessary precautions to protect the existing utilities and maintain uninterrupted service. Any damage incurred due to contractors operation shall be repaired immediately at the contractor's expense.
- The contractor shall test pit existing utilities at least five (5) days before starting work shown on these drawings to verify their location and elevation. The contractor shall notify the engineer immediately if location of utilities is other than shown.
- The contractor shall notify 'Miss Utility' at 1-800-257-7777 at least 48 hours prior to any excavation work being done, and shall notify the Department of Public Works/Bureau of Engineering/Construction Inspection Division at (410) 313-1880 at least five (5) working days prior to the start of work.
- Any damage caused by the Contractor to existing public right-of-way, existing paving, existing curb and gutter, existing utilities, etc. shall be repaired at the Contractors expense.
- Topography derived from aerial photogrammetry by Photogrammetric Data Services in June 1986. Stream crossing sections field run by DMW in May, 1997.
- All hydraulic data is for the 10-year storm unless otherwise noted.
- The subsurface exploration and geotechnical engineering analysis for this project was made by Hillis Carnes, Inc. on Jan 31, 1997.
- All fill areas shall be compacted to a minimum of 95% of the maximum dry density as determined and verified in accordance with AASHTO T-180.
- The coordinates shown hereon are based upon the Howard County geodetic control which is based upon the NAD83 Maryland Coordination System. Howard County monument nos. 0020, 4113, 41EA, 41EB were used for this project (See Location Map).
- Storm water management quantity and quality is provided by a retention facility for the site.
- 100 year floodplain limits per DMW floodplain study, Wetland delineation on Jan. 29, 1998 by Environs; jurisdictional determination reconfirmed by Corps of Engineers in April 1998.
- There are no known cemeteries or burial grounds on this site. However, should evidence of a burial site be discovered, the project will be subject to Section 16.1305 of the Subdivision Regulations.
- No traffic study is required for this project.
- Electric, gas, cable and telephone lines designed by others.
- State & Federal permit tracking number 199765674 (pending)
- WP98.12 granted on 8-22-97 for deferral of landscaping requirements to Final and/or Site Development Plans and for waiver of Sketch & Preliminary Plan for initial stage of subdivision.

Overall Property Outline  
Scale: 1" = 200'

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION 10/29/97 DATE

Conda Hamilton 10/29/97 DATE  
CHIEF, DIVISION OF LAND DEVELOPMENT

James St. John 10/29/97 DATE  
DIRECTOR

Date	No.	Revision Description

Montpelier  
Research Park  
HOWARD COUNTY MARYLAND

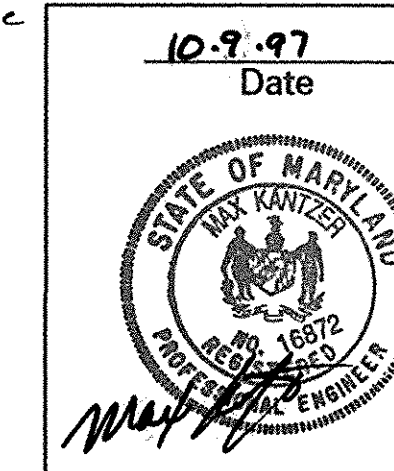
OWNER/DEVELOPER: HOPKINS ROAD LIMITED PARTNERSHIP  
8030 RED BRANCH ROAD, SUITE 200 COLUMBIA, MD 21045

**DMW**  
Daft · McCune · Walker, Inc.  
A Team of Land Planners, Engineers, Surveyors & Environmental Professionals  
200 East Pennsylvania Avenue  
Towson, Maryland 21286  
410 296 3333  
Fax 296 4705

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
Montpelier		
PLAT # OR LF #	BLOCK #	ZONE
L3691, F505	17	PEC
TAXZONE MAP	ELECT. DISTRICT	CENSUS TRACT
41	5th	605102
WATER CODE	SEWER CODE	
E 21	6440000	

COVER SHEET

Des By: TPC	Scale: As Shown	Proj. No. 941715
Drn By: TPC, MSS	Date: 10-9-97	1 OF 18
Chk By: MM	Approved:	

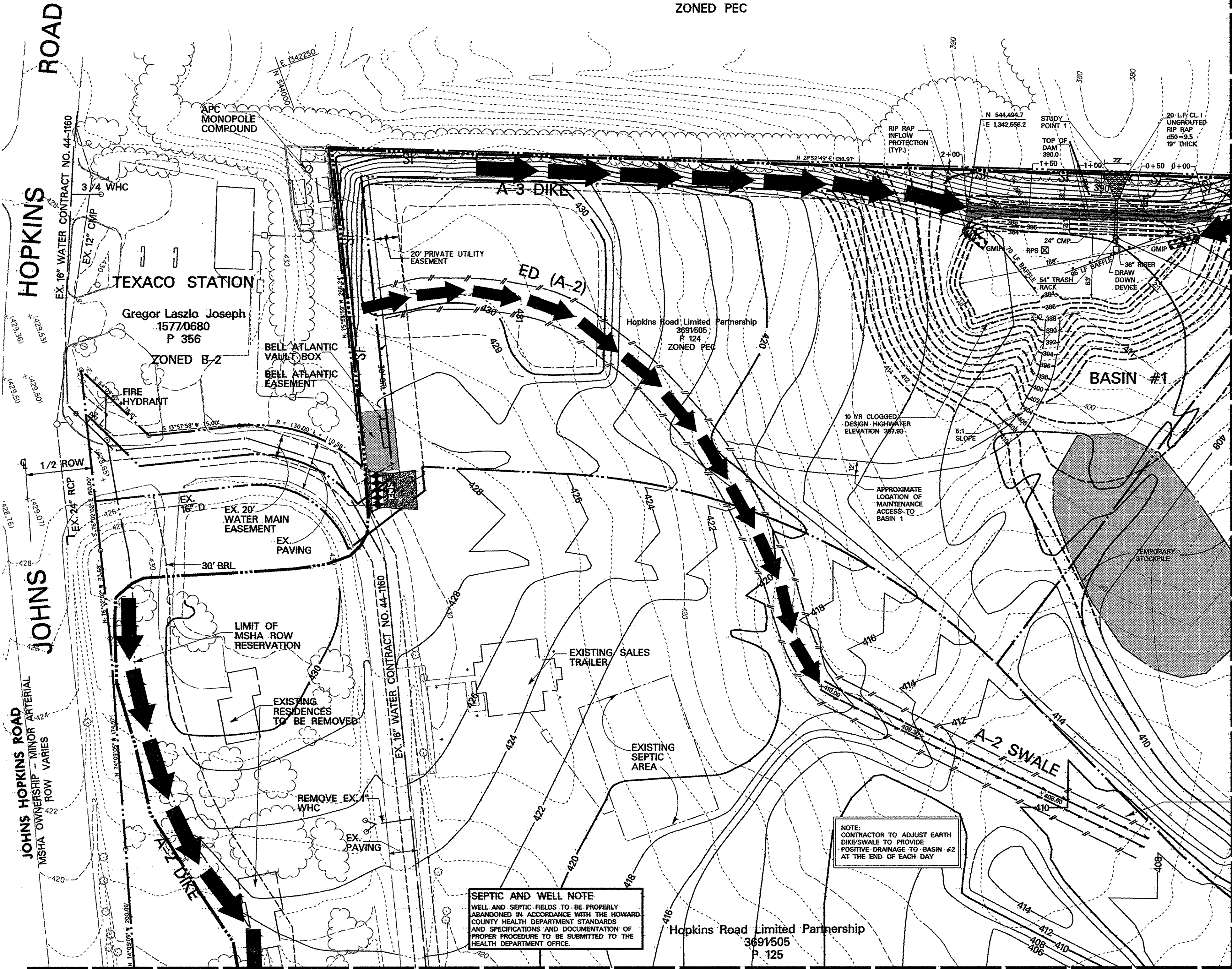


Professional Engr. No. 16872

TRAP #3 TABLE	
TRAP NUMBER	3
TRAP TYPE	ST-IV
EXISTING DRAINAGE AREA AC.	5.6
INTERIM DRAINAGE AREA AC.	NA
PROPOSED DRAINAGE AREA AC.	2.8
STORAGE REQUIRED C.F.	
WET	10080
DRY	10080
TOTAL	20160
STORAGE PROVIDED C.F.	
WET	11282
DRY	23827
TOTAL	35109
EXISTING GROUND ELEV.	
TOP EMBANKMENT ELEV.	4.11
WEIR CREST ELEV.	4.16
WET STORAGE /OUTLET ELEV.	4.14
CLEANOUT ELEV.	4.11
BOTTOM ELEV.	4.09
DEPTH OF CHANNEL	2
OUTLET WIDTH	20
BASIN DEPTH	
WET	2
DRY	3
TOTAL	5
BOTTOM DIMENSIONS	
TRAP SIDE SLOPES	2:1
BARREL DIAMETER	8"
BARREL LENGTH	40'
WET STORAGE ZONE ELEV.	
DRY STORAGE ZONE ELEV.	411-414

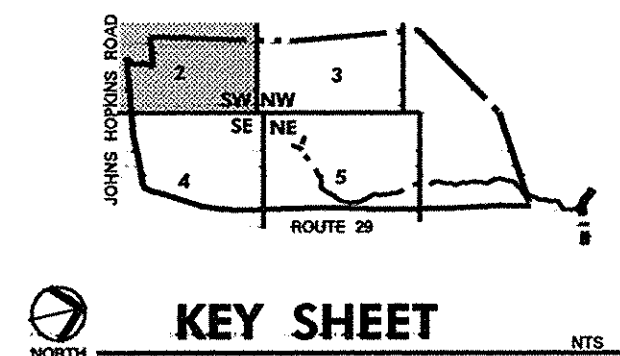
DESIGN FLOW SUMMARY TRAP 3	
PROPOSED INFLOW (CFS)	18.5
ALLOWABLE RELEASE (CFS)	3.27
PROPOSED OUTFLOW (CFS)	2.62
WATER SURFACE ELEVATION (FT.)	213.79
STORAGE PROVIDED (AC-FT)	0.82

Johns Hopkins University  
Applied Physics Laboratory  
400625  
P 289  
ZONED PEC



BASIN #1 TABLE	
BASIN NUMBER	1
EXISTING DRAINAGE AREA AC.	NA
INTERIM DRAINAGE AREA AC.	NA
PROPOSED DRAINAGE AREA AC.	6.7
STORAGE REQUIRED C.F.	
WET	12,060
DRY	12,060
TOTAL	24,120
STORAGE PROVIDED C.F.	
WET	14,029
DRY	17,847
TOTAL	31,876
EXISTING GROUND ELEV.	
TOP EMBANKMENT ELEV.	386.00
RISER CREST ELEV.	387.00
WET STORAGE /OUTLET ELEV.	385.40
CLEANOUT ELEV.	384.68
BOTTOM ELEV.	384.00
Q INTO BASIN C.F.S. (10 yr. Clogged)	
Q OUT BARREL C.F.S. (10 yr. Clogged)	29.71
BASIN DEPTH	
WET	1.40
DRY	1.60
TOTAL	3.0
DESIGN HIGHWATER 10 yr. Clogged	
FREEBOARD PROVIDED	2.0'
BASIN SIDE SLOPES	2:1/3:1
BARREL DIAMETER	24"
RISER DIAMETER	36"
WET STORAGE ZONE ELEV.	
DRY STORAGE ZONE ELEV.	385.40 - 387.00
BOTTOM DIMENSION	188' X 65'
DIMENSION FROM CLEANOUT ELEV. TO RISER TOP	2.3'
START PERFORATIONS AT ELEVATION	385.4

DESIGN FLOW SUMMARY	
BASIN 1 / STUDY POINT 1	
PROPOSED INFLOW (CFS)	20.77
ALLOWABLE RELEASE (CFS)	20.48
PROPOSED OUTFLOW (CFS)	13.17
WATER SURFACE ELEVATION (FT.)	387.44
STORAGE PROVIDED (AC-FT)	0.83



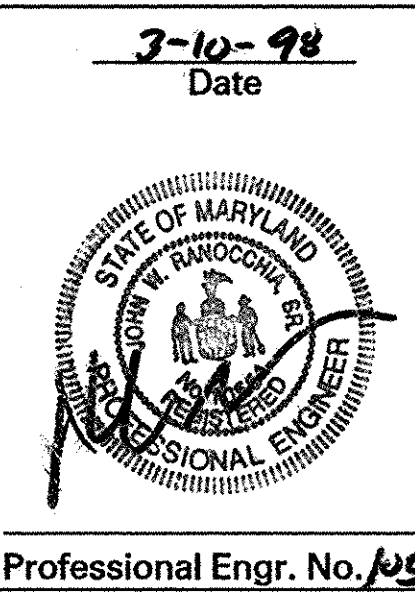
- LEGEND**
- | SYMBOL                  | DESCRIPTION                      |
|-------------------------|----------------------------------|
| (Solid line)            | PROPOSED CONTOURS                |
| (Dashed line)           | PROPOSED INTERMEDIATE CONTOURS   |
| (Wavy line)             | STREAM                           |
| (Dotted line)           | LIMIT OF MSHA ROW RESERVATION    |
| (Dashed line with dots) | EXISTING CONTOURS                |
| (Tree symbol)           | EXISTING TREES / TREE LINE       |
| (Wavy line with dots)   | WETLAND / STREAM BUFFER          |
| (Dashed line with dots) | WETLAND                          |
| (Dashed line)           | TEMPORARY CONTOUR                |
| (Line with dots)        | SILT FENCE                       |
| (Line with dots)        | SUPER SILT FENCE                 |
| (Thick line)            | A-2 DIKE                         |
| (Dashed line)           | LIMIT OF DISTURBANCE             |
| (Square with X)         | REMOVABLE PUMPING STATION (RPS)  |
| (Square with X)         | GABION INFLOW PROTECTION (GIMP)  |
| (Square with X)         | BAFFLE                           |
| (Square with X)         | STABILIZED CONSTRUCTION ENTRANCE |
| (Line with dots)        | BLAZE ORANGE SAFETY FENCE        |
| (Square with X)         | VERTICAL DRAWDOWN DEVICE         |

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING  
*Richard Blood* 5/18/98  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
*Richard Blood* 5/15/98  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
*Richard Blood* 5/12/98  
 DIRECTOR

Date	No.	Revision Description

**Montpelier**  
**Research Park**  
 HOWARD COUNTY MARYLAND  
 OWNER/DEVELOPER: HOPKINS ROAD LIMITED PARTNERSHIP  
 9030 RED BRANCH ROAD, SUITE 200 COLUMBIA, MD 21045

**DMW**  
 Daft - McCune - Walker, Inc.  
 A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals  
 200 East Pennsylvania Avenue  
 Towson, Maryland 21286  
 410 286 3333  
 Fax 286 4706



**NOTES:**  
 TWO EXISTING RESIDENCES TO BE DEMOLISHED. EXISTING WELLS AND SEPTIC SYSTEMS TO BE ABANDONED PER HEALTH DEPARTMENT REGULATIONS.  
 THE TRELLISES SALES OFFICE TO BE RELOCATED. EXISTING WELL AND SEPTIC TO BE ABANDONED PER HEALTH DEPARTMENT REGULATIONS.

NOTE: THIS PLAN SUPERSEDES SDP-98-011, APPROVED 10-29-98.

**SEPTIC AND WELL NOTE**  
 WELL AND SEPTIC FIELDS TO BE PROPERLY ABANDONED IN ACCORDANCE WITH THE HOWARD COUNTY HEALTH DEPARTMENT STANDARDS AND SPECIFICATIONS AND DOCUMENTATION OF PROPER PROCEDURE TO BE SUBMITTED TO THE HEALTH DEPARTMENT OFFICE.

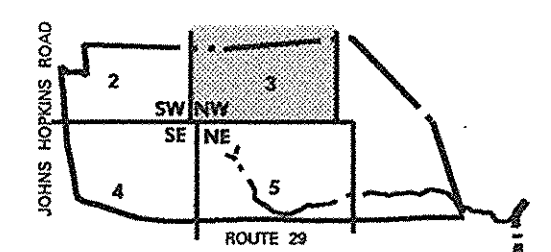
NOTE: CONTRACTOR TO ADJUST EARTH DIKE/SWALE TO PROVIDE POSITIVE DRAINAGE TO BASIN #2 AT THE END OF EACH DAY

DEVELOPER'S CERTIFICATION:  
 I HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AS A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.  
*Howard L. Rebeck* 5/12/98

ENGINEER'S CERTIFICATION:  
 I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.  
*John W. Ranocchia, Jr.* 5/12/98

REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS  
*Clay Swinnick* 5/12/98  
 U.S. NATURAL RESOURCE CONSERVATION SERVICE  
 THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
*Matthew* 5/12/98  
 HOWARD S.C.D.

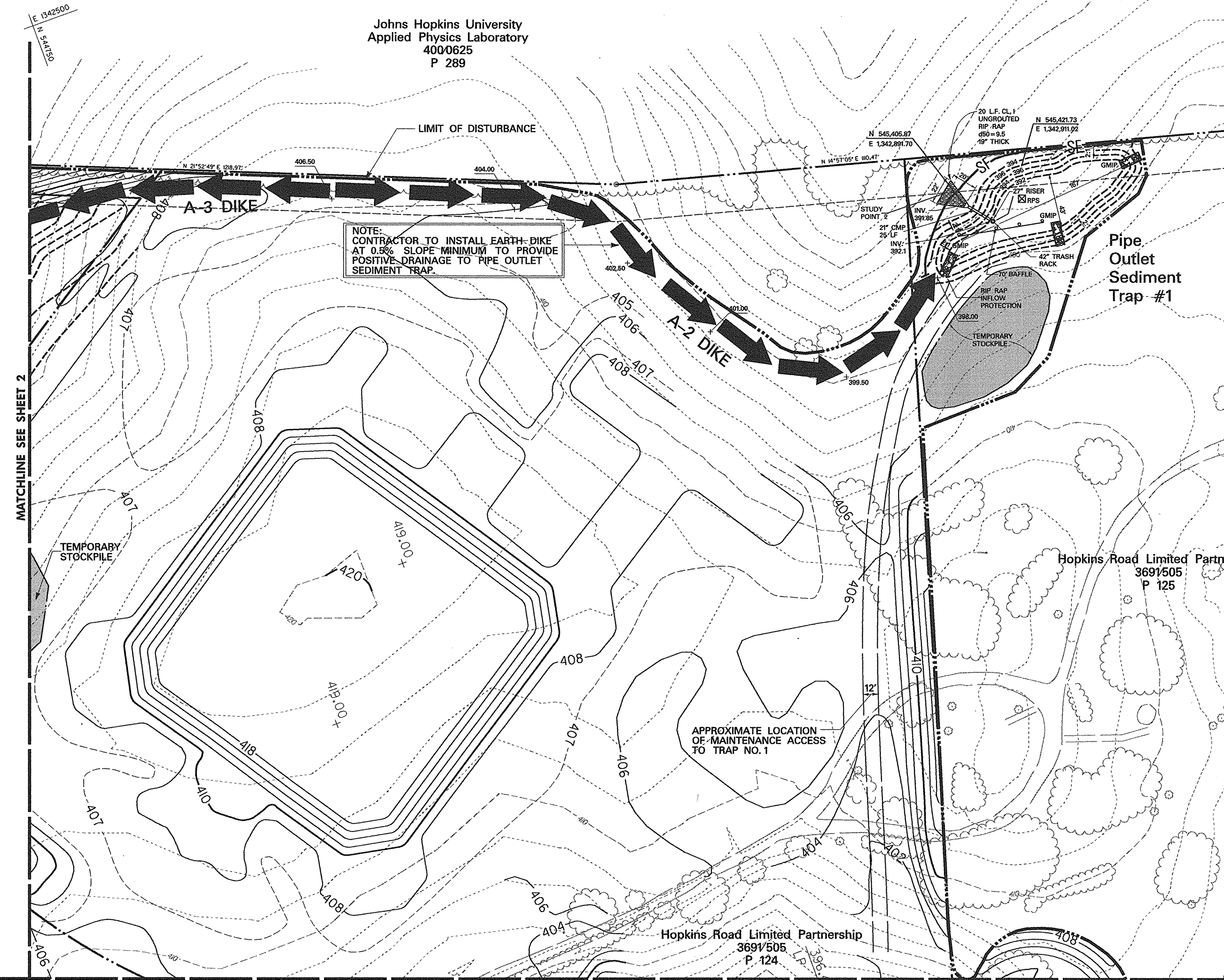
TITLE	
REVISED SW SITE GRADING & SEDIMENT & EROSION CONTROL	
Des By: ZAL	Scale: 1" = 50'
Drn By: TPC, MSS	Date: 3-4-98
Chk By: MM	Approved: 2 OF 18



**KEY SHEET**

**LEGEND**

SYMBOL	DESCRIPTION
	PROPOSED CONTOURS
	PROPOSED INTERMEDIATE CONTOURS
	STREAM
	EXISTING CONTOURS
	EXISTING TREES/ TREE LINE
	WETLAND/STREAM BUFFER
	WETLAND
	TEMPORARY CONTOUR
	SILT FENCE
	SUPER SILT FENCE
	A-2 DIKE
	LIMIT OF DISTURBANCE
	REMOVABLE PUMPING STATION (RPS)
	GABION INFLOW PROTECTION (GIMP)
	BAFFLE
	STABILIZED CONSTRUCTION ENTRANCE



**ESC TRAP TABLE**

TRAP NUMBER	1
TRAP TYPE	P.O.S.T.
EXISTING DRAINAGE AREA AC.	3.90
INTERIM DRAINAGE AREA AC.	N/A
PROPOSED DRAINAGE AREA AC.	3.90
STORAGE REQUIRED C.F.	WET 7,020
	DRY 7,020
	TOTAL 14,040
STORAGE PROVIDED C.F.	WET 8,640
	DRY 8,640
	TOTAL 17,280
EXISTING GROUND ELEV.	396.00
TOP EMBANKMENT ELEV.	396.00
RISER CREST ELEV.	394.85
WET STORAGE /OUTLET ELEV.	393.64
CLEANOUT ELEV.	392.82
BOTTOM ELEV.	392.00
DEPTH OF CHANNEL	N/A
OUTLET WIDTH	N/A
BOTTOM DIMENSION	18' X 43'
TRAP SIDE SLOPES	2 : 1
	WET 1.64
TRAP DEPTH	DRY 1.21
	TOTAL 2.85
BARREL DIAMETER	21"
RISER DIAMETER	27"
WET STORAGE ZONE ELEV.	392.00 - 393.64
DRY STORAGE ZONE ELEV.	393.64 - 394.85
DIMENSION FROM CLEANOUT ELEV. TO RISER TOP	2.8'
START PERFORATIONS AT ELEVATION	393.64

**DESIGN FLOW SUMMARY**

TRAP 1/STUDY POINT 2	2 YEAR
EXISTING PEAK (CFS)	1.28
PROPOSED PEAK (CFS)	0.37

MATCHLINE SEE SHEET 4

MATCHLINE SEE SHEET 5

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION  
*10/29/97*  
DATE

CHIEF, DIVISION OF LAND DEVELOPMENT  
*10/29/97*  
DATE

DIRECTOR  
*10/29/97*  
DATE

Date	No.	Revision Description

**Montpelier Research Park**  
HOWARD COUNTY MARYLAND  
OWNER/DEVELOPER: HOPKINS ROAD LIMITED PARTNERSHIP  
9030 RED BRANCH ROAD, SUITE 200 COLUMBIA, MD 21045

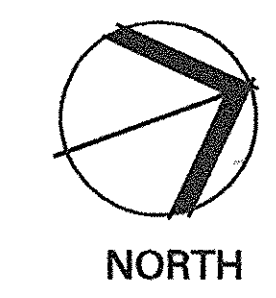
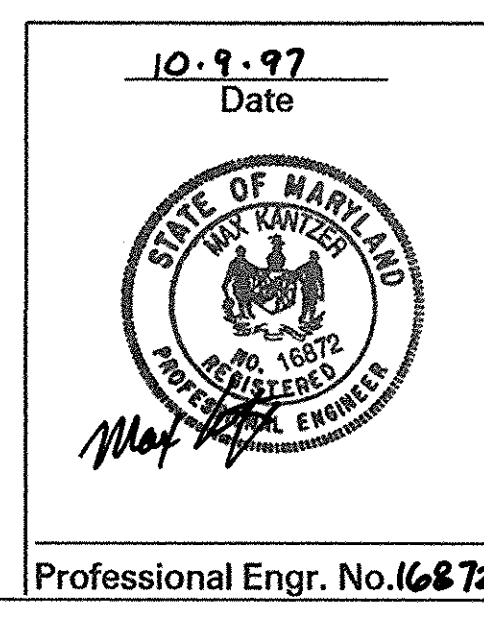
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Daft · McCune · Walker, Inc.  
A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals  
200 East Pennsylvania Avenue  
Towson, Maryland 21286  
410 286 3333  
Fax 286 4705

DATE: 10-9-97

SUBDIVISION NAME: Montpelier  
SECTION/AREA: 124.125 & ROAD BED  
PLAT/ OR L.F. BLOCK ZONE: L3691, F505 17 PEC  
TAXZONE MAP (ELECT. DISTRICT): 41 5th  
CENSUS TRACT: 6051.02  
WATER CODE: E 21  
SEWER CODE: 6440000

TITLE: **NW SITE GRADING & SEDIMENT & EROSION CONTROL**

Des By: ZAL Scale: 1" = 50' Proj. No. 941715  
Drn By: TPC, MSS Date: 10-9-97  
Chk By: MM Approved: **3** OF 18



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

*Howard L. Rensch*  
SIGNATURE OF DEVELOPER  
DATE: 10-1-97

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

*Max Kantzer*  
SIGNATURE OF ENGINEER  
DATE: 10-9-97

REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS

*Cheryl K. Simmons* 10-28-97  
U.S. NATURAL RESOURCE CONSERVATION SERVICE  
DATE

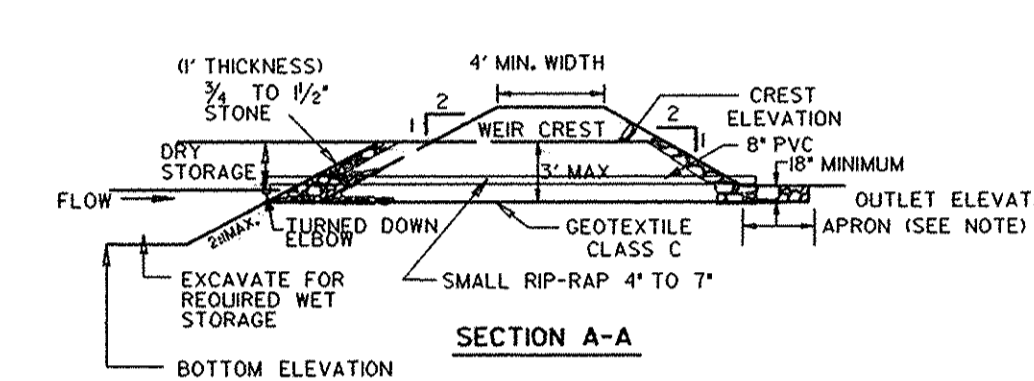
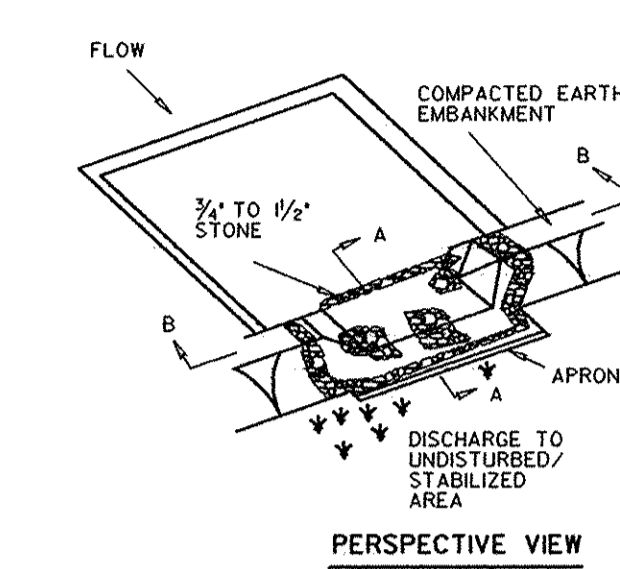
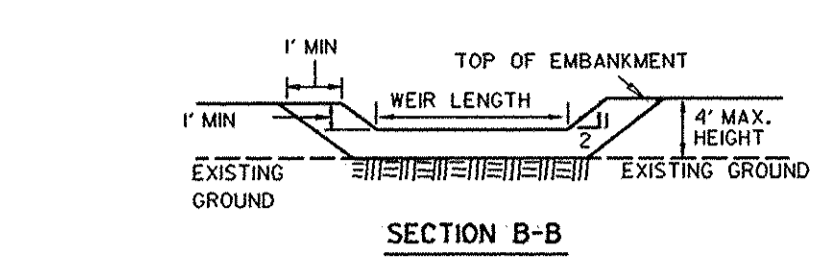
*Robert Z. John* 10/27/97  
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
DATE



MATCHLINE SEE SHEET 2

MATCHLINE SEE SHEET 3

MATCHLINE SEE SHEET 5



U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

STONE / RIP-RAP OUTLET SEDIMENT TRAP - ST IV

- Construction Specifications
- The area under embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
  - The fill material for the embankment shall be free of roots or other woody vegetation as well as over-sized stones, rocks, organic material or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed. Maximum height of embankment shall be 4', measured at centerline of embankment.
  - All cut and fill slopes shall be 2:1 or flatter.
  - Elevation of the top of any dike directing water into trap must equal or exceed the height of trap embankment.
  - Storage area provided shall be figured by computing the volume measured from top of excavation. (For storage requirements see Table 9).
  - Geotextile Class C shall be placed over the bottom and sides of the outlet chamber prior to placement of stone. Section of fabric must overlap at least 1' with section nearest the entrance placed on top. Fabric shall be embedded at least 6" into existing ground at entrance of outlet channel.
  - 4" - 7" stone shall be used to construct the weir and 4" - 12" or Class 1 rip-rap shall be used to construct the outlet channel.
  - Outlet - An outlet shall include a means of conveying the discharge in an erosion free manner to an existing stable channel. Protection against scour at the discharge point shall be provided as necessary.
  - Outlet channel must have positive drainage from the trap.
  - Sediment shall be removed and trap restored to its original dimensions when the sediment has accumulated to 1/2 of the wet storage depth of the trap (900 cu yd). Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
  - The structure shall be inspected periodically after each rain and repaired as needed.
  - Construction of traps shall be carried out in such a manner that sediment pollution is abated. Once constructed, the top and outside face of the embankment shall be stabilized with seed and mulch. Points of concentrated inflow shall be protected in accordance with Grade Stabilization Structure criteria. The remainder of the interior slopes should be stabilized one time with seed and mulch upon trap completion and monitored and maintained erosion free during the life of the trap.
  - The structure shall be dewatered by approved methods, removed and the area stabilized when the drainage area has been properly stabilized.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

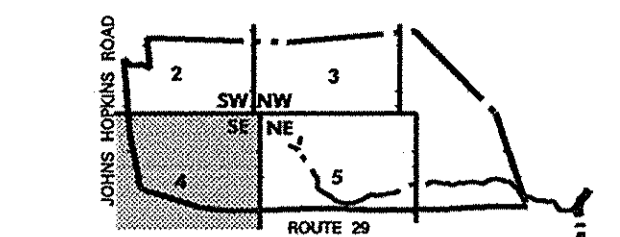
MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

STONE / RIP-RAP OUTLET SEDIMENT TRAP - ST IV

NOTE: THIS PLAN SUPERSEDES SDP-98-01, APPROVED ON 10-29-98.

3-10-98  
Date

Professional Engr. No. 12551



**KEY SHEET**

**LEGEND**

SYMBOL	DESCRIPTION
(Dashed line)	PROPOSED CONTOURS
(Dotted line)	PROPOSED INTERMEDIATE CONTOURS
(Wavy line)	STREAM
(Dashed line with dots)	LIMIT OF MSHA ROW RESERVATION
(Dashed line)	EXISTING CONTOURS
(Line with trees)	EXISTING TREES / TREE LINE
(Wavy line with dots)	WETLAND / STREAM BUFFER
(Wavy line)	WETLAND
(Dashed line)	TEMPORARY CONTOUR
(Line with 'S')	SILT FENCE
(Line with 'SS')	SUPER SILT FENCE
(Thick arrow)	A-2 DIKE
(Dashed line with dots)	LIMIT OF DISTURBANCE
(Rectangular symbol)	GABION INFLOW PROTECTION (GIMP)
(Vertical line)	BAFFLE
(Rectangular symbol with 'S')	STABILIZED CONSTRUCTION ENTRANCE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

<i>Howard L. Rebeck</i>	5/8/98
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE
<i>Richard Blouard</i>	5/15/98
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE
<i>John S. Rancich</i>	5/18/98
DIRECTOR	DATE

Date	No.	Revision Description

**Montpelier Research Park**  
HOWARD COUNTY MARYLAND

OWNER/DEVELOPER: HOPKINS ROAD LIMITED PARTNERSHIP  
9030 RED BRANCH ROAD, SUITE 200 COLUMBIA, MD 21045

**DMW**  
Daft · McCune · Walker, Inc.  
A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

200 East Pennsylvania Avenue  
Towson, Maryland 21286  
410 296 3333  
Fax 296 4705

SUBDIVISION NAME Montpelier	SECTION/AREA E 21	LOT/PARCEL # 124,125, & ROAD BED
PLAT OR LOT L 3301 P 505	BLOCK # ZONE 17 PEC	TAXZONE MAP 41
WATER CODE E 21	SEWER CODE 8440000	ELECT. DISTRICT 41
CENSUS TRACT 6051.02		

TITLE: REVISED SE SITE GRADING & SEDIMENT & EROSION CONTROL

Des By: ZAL Scale: 1" = 50' Proj. No. 941715

Drn By: TPC Date: 3-4-98

Chk By: Approved: 4 OF 18

DEVELOPER'S CERTIFICATION:  
I, THE DEVELOPER, CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THE PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION OF THIS PROJECT WILL HAVE ATTENDED A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD COUNTY CONSERVATION DISTRICT.

*Howard L. Rebeck*  
DATE: 4/29/98

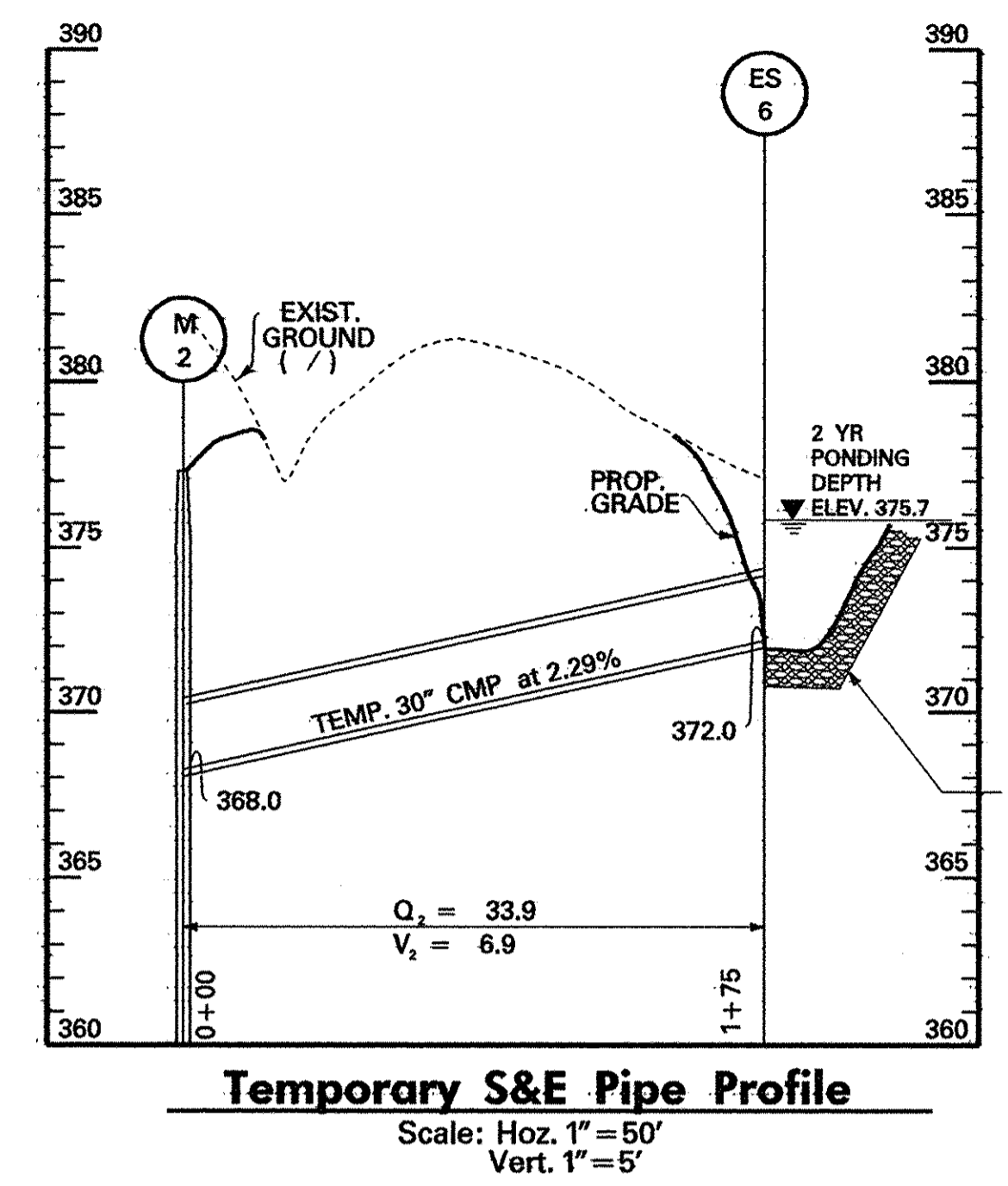
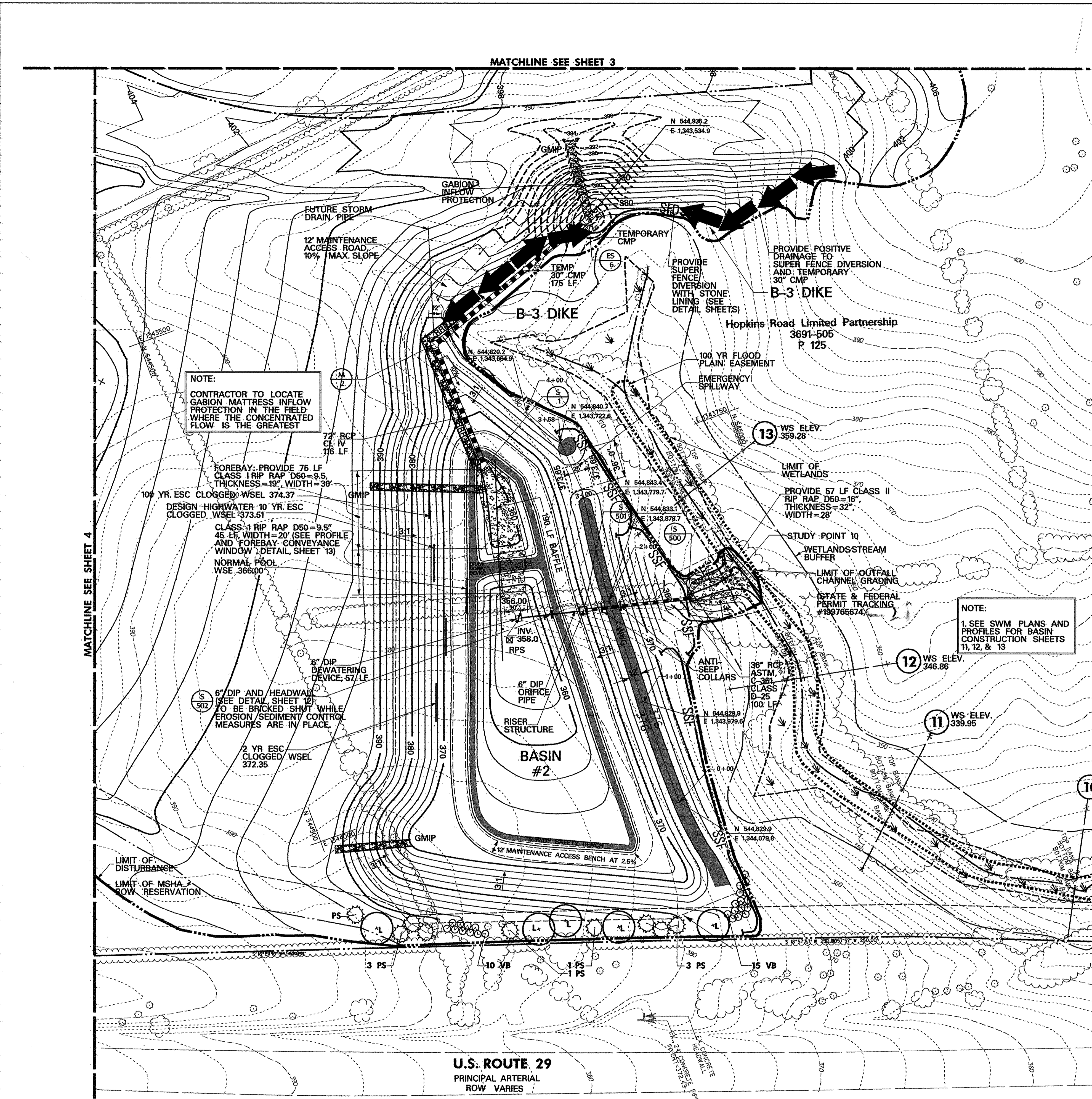
ENGINEER'S CERTIFICATION:  
I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD COUNTY CONSERVATION DISTRICT.

*John W. Rancich, Sr.*  
DATE: 3/10/98

REVIEWED FOR HOWARD COUNTY AND MEETS TECHNICAL REQUIREMENTS

*Cliff Stimmus* 5/7/98  
U.S. NATURAL RESOURCE CONSERVATION SERVICE DATE

*John W. Rancich, Sr.* 5/7/98  
DATE



BASIN #2 TABLE		BASIN #2	
BASIN NUMBER	2	DESIGN FLOW SUMMARY	
EXISTING DRAINAGE AREA AC.	NA	POUND 1/BASIN 2 / STUDY PT. 10	2-YEAR
INTERIM DRAINAGE AREA AC.	NA	PROPOSED INFLOW (CFS)	90.72
PROPOSED DRAINAGE AREA AC.	30	ALLOWABLE RELEASE (CFS)	6.25
STORAGE REQUIRED C.F.	WET 54,000	PROPOSED OUTFLOW (CFS)	1.70
	DRY 54,000	WATER SURFACE ELEVATION (FT)	369.60
	TOTAL 108,000	STORAGE PROVIDED (AC - FT)	3.59
STORAGE PROVIDED C.F.	WET 199,069	STUDY POINT 5	2-YEAR
	DRY 313,196	EXISTING PEAK (CFS)	18.46
	TOTAL 512,265	PROPOSED PEAK (CFS)	18.43
EXISTING GROUND ELEV.	368.00		
TOP EMBANKMENT ELEV.	376.00		
RISER CREST ELEV.	371.50		
WET STORAGE /OUTLET ELEV.	366.00		
CLEANOUT ELEV.	361.00		
BOTTOM ELEV.	356.00		
Q INTO BASIN C.F.S. 10 yr. (10 YR CLOGGED)	129.70		
Q OUT BARREL C.F.S. 10 yr. (10 YR CLOGGED)	25.84		
BASIN DEPTH	WET 12.0		
	DRY 7.5		
	TOTAL 19.5		
DESIGN HIGHWATER (10 YR. CLOGGED)	373.51		
FREEBOARD PROVIDED	2.49'		
BASIN SIDE SLOPES	3 : 1		
BARREL DIAMETER	36"		
RISER INSIDE DIMENSIONS	4' SQ.		
WET STORAGE ZONE ELEV.	356.00 - 366.00		
DRY STORAGE ZONE ELEV.	366.00 - 371.50		
BOTTOM DIMENSION	NA		
DIMENSION FROM CLEANOUT ELEV. TO RISER TOP	14.5'		
START PERFORATIONS AT ELEV.	368		

KEY SHEET

LEGEND

SYMBOL	DESCRIPTION
400	PROPOSED CONTOURS
399.3	PROPOSED INTERMEDIATE CONTOURS
---	STREAM
RRP	RIP RAP INFLOW PROTECTION (RRP)
---	EXISTING CONTOURS
---	EXISTING TREES / TREE LINE
---	WETLAND/STREAM BUFFER
---	WETLAND
---	TEMPORARY CONTOUR
SF	SILT FENCE
SSF	SUPER SILT FENCE
---	A-2 DIKE
---	LIMIT OF DISTURBANCE
---	REMOVABLE PUMPING STATION (RPS)
---	GABION INFLOW PROTECTION (GIMP)
---	LIMIT OF MSHA ROW RESER. BAFFLE
---	STABILIZED CONSTRUCTION ENTRANCE
---	PROPOSED TREES, & SHRUBS
---	VERTICAL DRAWDOWN DEVICE

Conditions and Management Practices for Working in Nontidal Wetlands and Buffers

- REMOVE EXCAVATED MATERIAL, CONSTRUCTION MATERIAL OR DEBRIS TO AN UPLAND DISPOSAL AREA OUTSIDE OF ANY WATERWAY, FLOODPLAIN, NONTIDAL WETLAND, OR BUFFER.
- IF BACKFILL IS OBTAINED, USE CLEAN MATERIAL FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL OR ANY OTHER DELETERIOUS SUBSTANCE.
- PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF THE NONTIDAL WETLAND;
- MAINTAIN THE HYDROLOGIC REGIME OF NONTIDAL WETLANDS OUTSIDE THE LIMITS OF DISTURBANCE.
- RECTIFY ANY NONTIDAL WETLANDS AND BUFFERS TEMPORARILY IMPACTED BY THE PERMITTED ACTIVITY. ALL STABILIZATION IN THE WETLAND AND BUFFER SHALL BE OF THE FOLLOWING RECOMMENDED SPECIES: ANNUAL RYEGRASS (*Lolium multiflorum*), MILLET (*Setaria italica*), OATS (*Avena sp.*) AND/OR RYE (*Secale cereale*). OTHER NON-PERSISTENT VEGETATION MAY BE ACCEPTABLE, BUT MUST BE APPROVED BY THE NONTIDAL WETLANDS AND WATERWAYS DIVISION, KENTUCKY. IF RESCUE SHALL NOT BE UTILIZED IN THE WETLAND OR BUFFER, ALL TEMPORARY FILLS SHALL BE REMOVED IN THEIR ENTIRETY ON OR BEFORE THE COMPLETION OF CONSTRUCTION.
- TO PROTECT IMPORTANT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM AS FOLLOWS:  
USE 1 WATERS. IN-STREAM WORK MAY NOT BE CONDUCTED DURING THE PERIOD MARCH 1 - JUNE 15 INCLUSIVE, DURING ANY YEAR.
- NO REMOVAL OF VEGETATION, GRADING, FILLING, DRAINING, OR OTHER ALTERATION OF THE NONTIDAL WETLANDS OR BUFFER OUTSIDE THE LIMITS OF DISTURBANCE SHALL OCCUR WITHOUT WRITTEN AUTHORIZATION FROM THE WATER MANAGEMENT ADMINISTRATION.

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

*Howard L. Resneck* 5/8/98  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

*Richard Blum* 5/15/98  
CHIEF, DIVISION OF LAND DEVELOPMENT

*John W. Ramech* 5/18/98  
DIRECTOR

Montpelier  
Research Park  
HOWARD COUNTY MARYLAND  
OWNER/DEVELOPER: HOPKINS ROAD LIMITED PARTNERSHIP  
9030 RED BRANCH ROAD, SUITE 200 COLUMBIA, MD 21045

DMW  
Darr McOne Walker, Inc.  
A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

200 East Pennsylvania Avenue  
Towson, Maryland 21286  
410 286 3333  
Fax 286 4705

3-16-98  
Date

PROFESSIONAL ENGINEER

Professional Engr. No. ASS51

REVISION NE SITE GRADING & SEDIMENT & EROSION CONTROL

Des By: ZAL Scale: 1" = 50' Proj. No. 941715  
Dwn By: TPC, MSS Date: 3-4-98  
Chk By: MM Approved: 5 OF 18

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

*David Simons* 5/7/98  
DISTRICT ENGINEER

DATE

DEVELOPERS CERTIFICATE:

I HEREBY CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A COPY OF THESE PLANS AND THE TECHNICAL REQUIREMENTS APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE FLOW CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZED PERIOD ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

*Howard L. Resneck* 5/7/98  
DATE

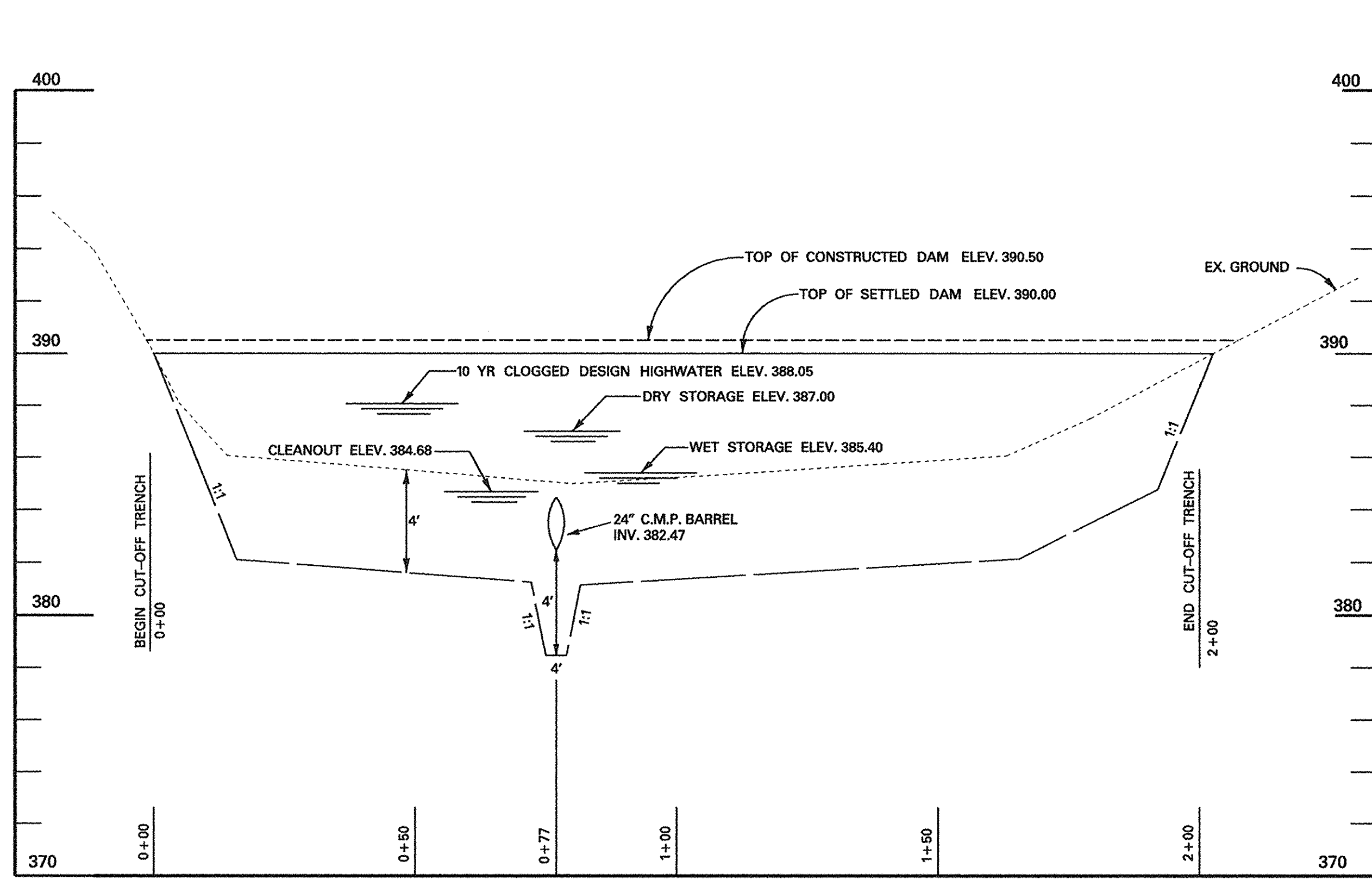
ENGINEERS CERTIFICATE:

I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL, REPRESENTS A PRACTICAL AND DURABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE. I AM A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND AND AM A MEMBER OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTICED THE DEVELOPER OF THESE PLANS HAS ENGAGED A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE FLOW CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

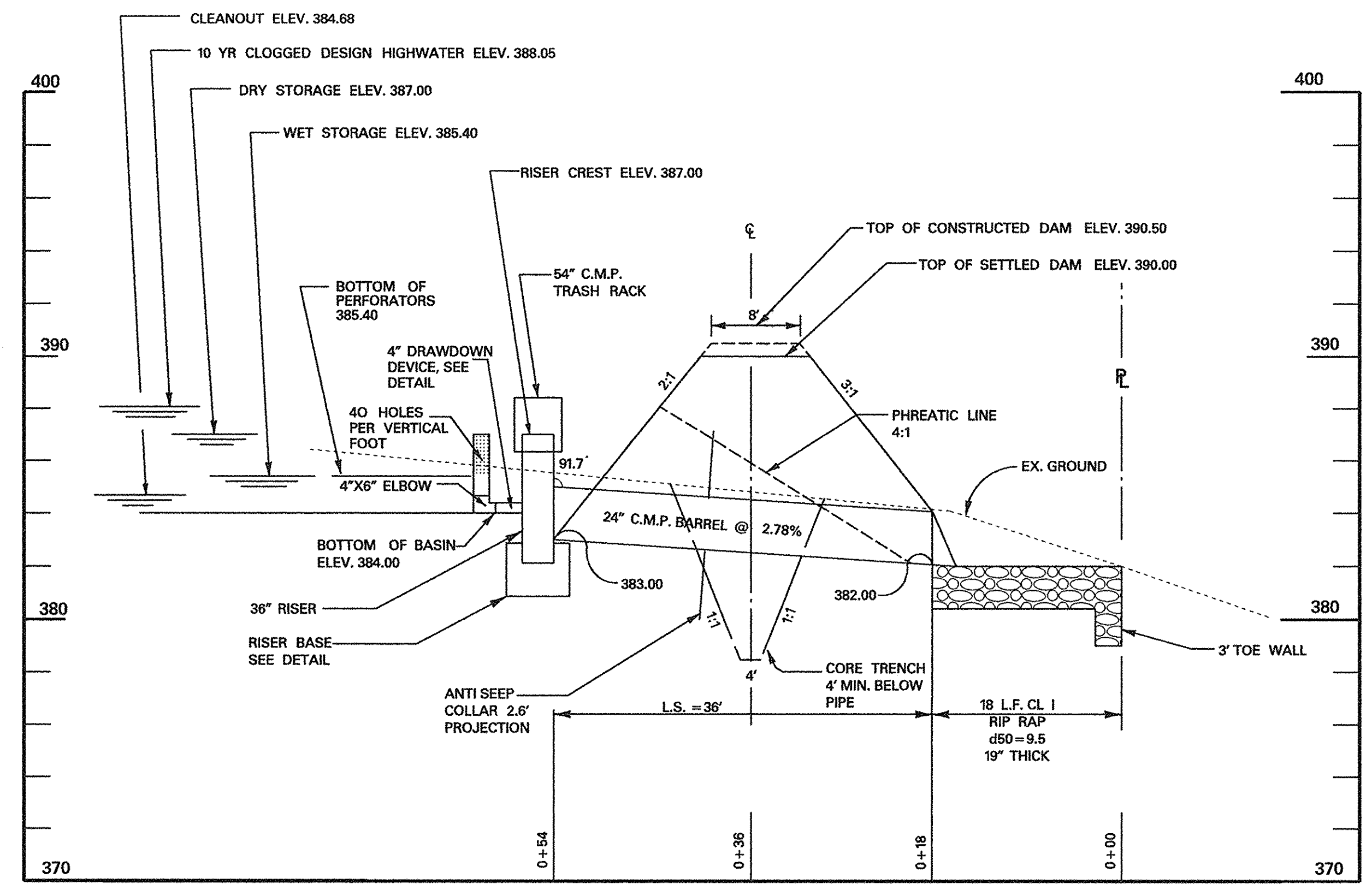
*John W. Ramech* 3/10/98  
DATE

NOTE: THIS PLAN SUPERSEDES SDP-98-011, APPROVED 10-29-97.

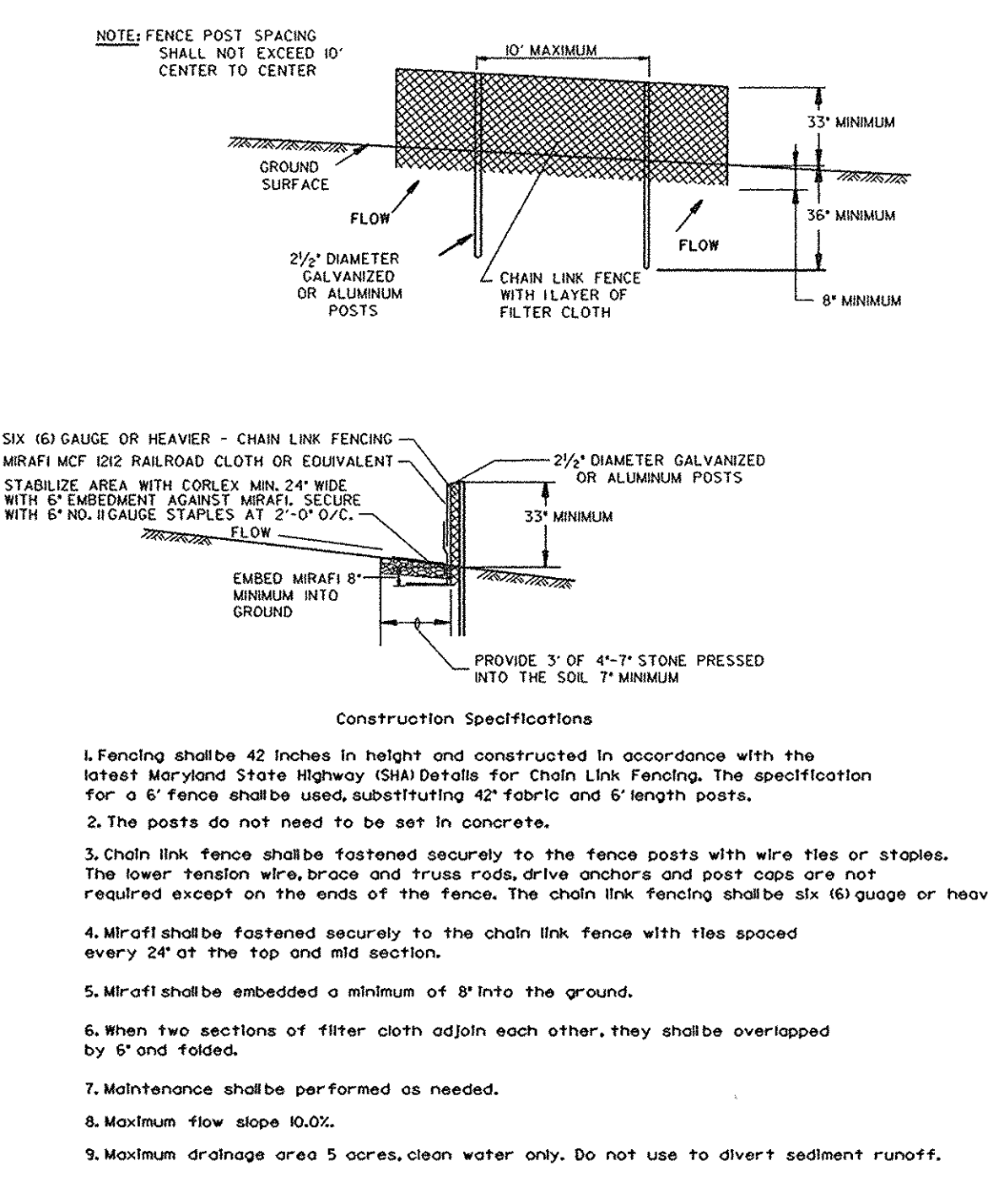




**Profile Along Line of Dam Basin #1**  
 SCALE HOR. 1"=20'  
 VER. 1"=4'



**Profile Along Principal Spillway Basin #1**  
 SCALE HOR. 1"=10'  
 VER. 1"=4'



U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

**Super Fence Diversion**  
 NOT TO SCALE

**Temporary Sediment Basin\* Construction Specifications**

1. Site Preparation: Perimeter sediment control devices must be installed prior to clearing and grubbing. Areas where the embankment is to be placed shall be cleared, grubbed, and stripped of topsoil to remove trees, vegetation, roots or other objectionable material. The pool area shall not be cleared until completion of the dam embankment unless the pool area is to be used for borrow. In order facilitate clean-out and restoration, the pool area (measured at the top of the pipe spillway) shall be cleared of all brush, trees, and other objectionable materials.
2. Cut-off Trench: A cut-off trench shall be excavated along the centerline of earth fill embankments. The minimum depth shall be four feet. The cut-off trench shall extend up both abutments to the riser crest elevation. The minimum bottom width shall be two feet, but wide enough to permit operation of excavation and compaction equipment. The side slopes shall be no steeper than 1:1. Compaction requirements shall be the same as those for the embankment. The trench shall be dewatered during the backfilling-compaction operations. For dewatering, see Section D, Note: All water encountered during core trench construction shall be pumped from trench.
3. Embankment: The fill material shall be taken from approved areas shown on the plans. It shall be clean mineral soil free of roots, woody vegetation, oversized stones, rocks, or other objectionable material. Relatively pervious materials such as sand or gravel (Unified Soil Classes GW, GP, SW, and SP) or organic materials (Unified Soil Classes OL and OH) shall not be placed in the embankment. Areas on which fill is to be placed shall be scarified prior to placement of fill. The fill material shall contain sufficient moisture so that it can be formed by hand into a ball without crumbling. If water can be squeezed out of the ball, it is too wet for proper compaction. Fill material shall be placed in six-inch to eight-inch thick continuous lifts over the entire length of the fill. Compaction shall be obtained by routing and hauling the construction equipment over the fill so that the entire surface of each layer of the fill is traversed by at least one wheel or tread track of the equipment or by the use of a compactor. The embankment shall be constructed to an elevation 10 percent higher than the design height to allow for settlement.

**Vegetative Treatment**

5. Vegetative Treatment: Stabilize the embankment in accordance with the appropriate vegetative Standard and Specifications immediately following construction. In no case shall the embankment remain unstabilized for more than seven (7) days. Once constructed, the top and outside face of the embankment shall be stabilized with seed and mulch. The remainder of the interior slopes should be stabilized (one time) with seed and mulch upon basin completion and monitored and maintained erosion-free during the life of the basin.

**Safety**

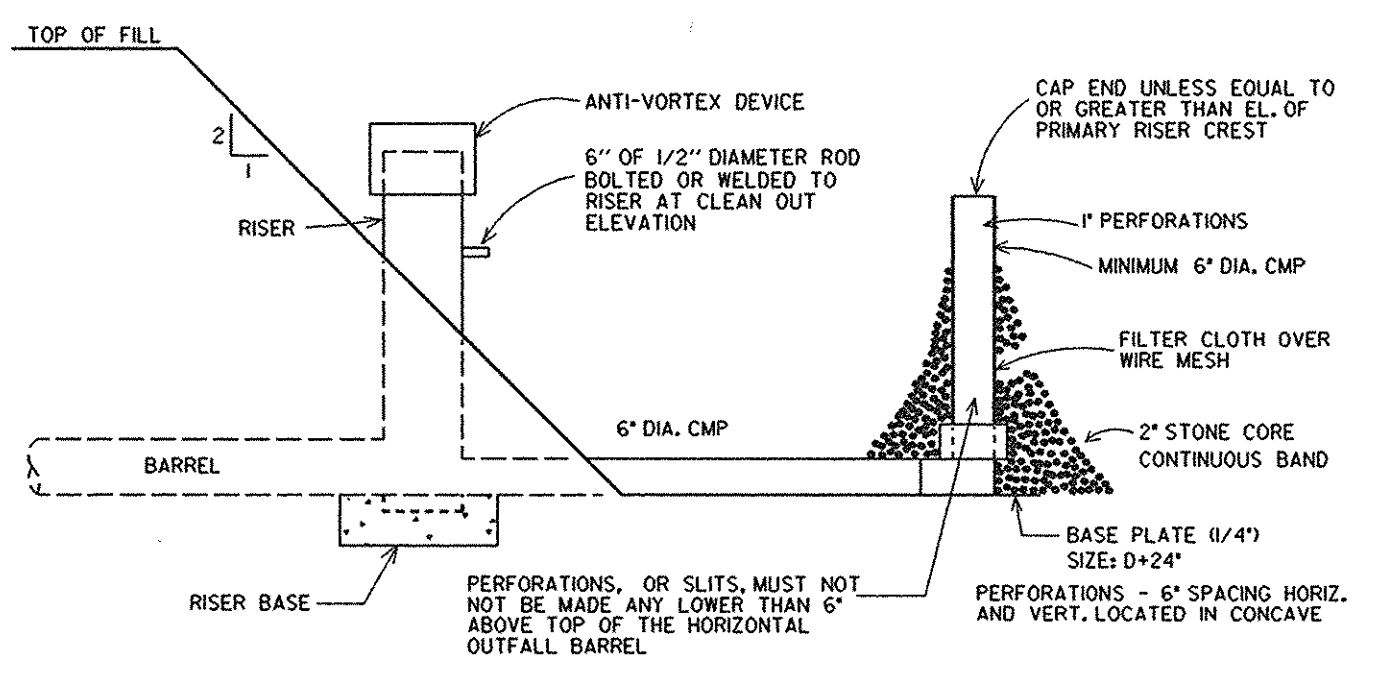
6. Safety: Local requirements concerning fencing and signs shall be met warning the public of hazards of soft sediment and floodwater.
7. Maintenance: Repair all damage caused by soil erosion and construction equipment at or before the end of each working day. Sediment shall be removed from the basin when it reaches the specified distance below the top of the riser as shown on the riser. This sediment shall be placed in such a manner that it will not erode from the site. The sediment shall not be deposited downstream from the embankment, adjacent to the stream or floodplain. Disposal areas must be stabilized.

**Final Disposal**

8. Final Disposal: When temporary structures have served their intended purpose and the contributing drainage areas 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 and safely disposed of and the basin shall be backfilled with a structural fill. When the basin areas is to remain open space, the pond may be pumped dry (using methods in Section D - Dewatering), graded, and backfilled.

**Sequence of Construction**

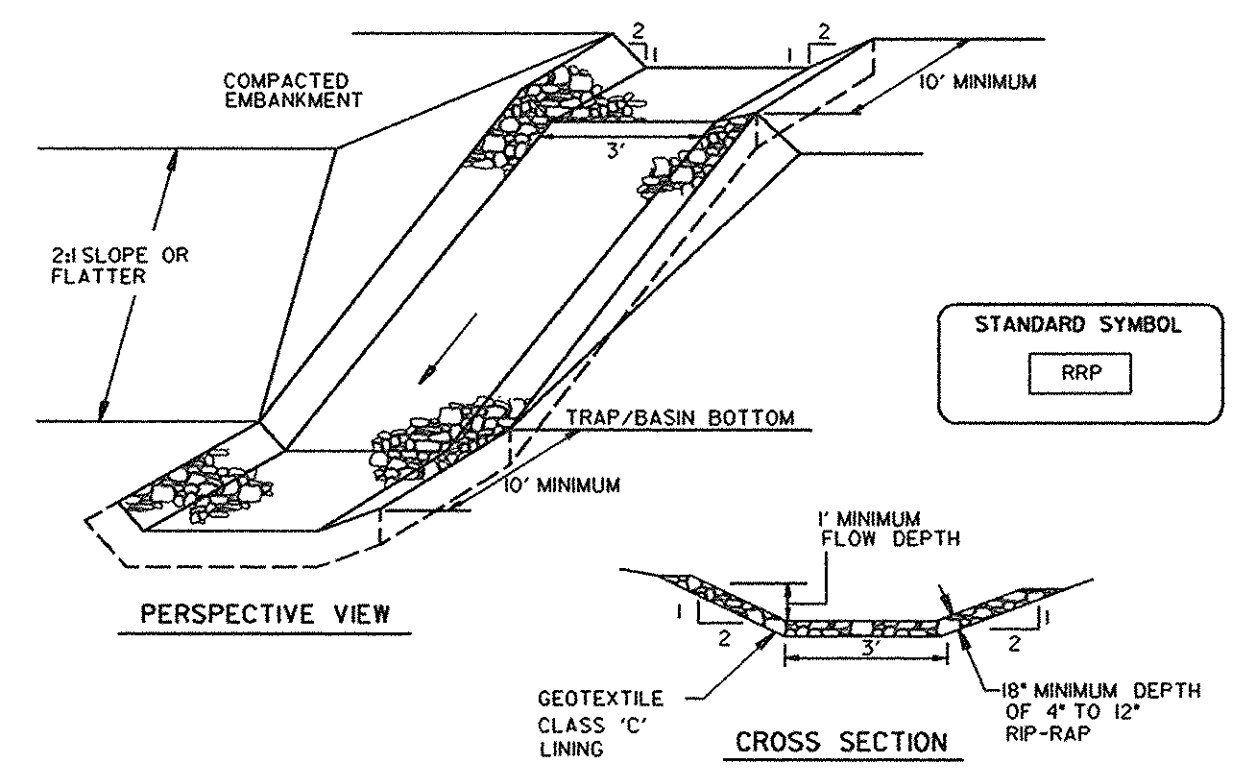
SEQUENCE	NUMBER OF DAYS
1. OBTAIN A GRADING PERMIT.	7
2. INSTALL SEDIMENT BASIN #2.	21
3. INSTALL STORM DRAINS S-1 THROUGH M-2, AND TEMPORARY PIPE ES-6 THROUGH M-2. INSTALL EARTH DIKES, SUPER FENCE DIVERSION AND SLOPE STABILIZATION TO ES-6.	21
4. INSTALL EARTH DIKE AND SWALE; GRADE TO PROVIDE POSITIVE DRAINAGE TO BASIN #2.	14
5. INSTALL REMAINING SEDIMENT AND EROSION CONTROLS AND STABILIZE.	7
6. ROUGH GRADE ROAD, CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE FROM EARTH DIKE AND SWALE TO BASIN #2 AT THE END OF EACH WORKING DAY.	21
7. ROUGH GRADE REMAINDER OF SITE.	21
8. STABILIZE ALL AREAS IN ACCORDANCE WITH STANDARDS AND SPECIFICATIONS.	14
9. UPON APPROVAL OF THE EROSION AND SEDIMENT CONTROL INSPECTOR, REMOVE ALL EROSION AND SEDIMENT CONTROL MEASURES AND STABILIZE.	7
10. CONVERT BASIN #2 TO SWM POND UPON APPROVAL OF THE SEDIMENT CONTROL INSPECTOR AND STABILIZE.	14



**CONSTRUCTION SPECIFICATIONS**

1. DEWATERING DEVICE SHALL BE 6" MINIMUM DIAMETER METAL PIPE EXTENDING INTO BASIN AREA.
2. PIPE SHALL BE WELDED OR CEMENTED TO RISER AND HAVE A 6" MINIMUM DIAMETER PERFORATED METAL PIPE WELDED AT END PERPENDICULAR TO BARREL WITH A METAL CAP WELDED ONTO END OF PIPE UNLESS ABOVE EL. OF PRIMARY RISER CREST.
3. PIPE SHALL BE SECURELY WRAPPED WITH APPROVED FILTER CLOTH AND COVERED ON ALL SIDES WITH NO. 24 STONE TO THE CLEANOUT ELEV.
4. CLEAN OUT ELEVATION FOR BASIN WILL BE DESIGNATED BY A 6" PIECE OF 1/2" DIAMETER ROD BOLTED OF WELDED TO RISER AT THE PROPER ELEVATION. ROD SHOULD BE CLEARLY VISIBLE FROM TOP OF DAM. PLEASE NOTE THAT THE 4" CLEAN OUT HOLE HAS BEEN ELIMINATED.
5. SEDIMENT SHALL BE REMOVED AND BASIN RESTORED TO ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO THE CLEAN-OUT ELEVATION. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
6. THE STRUCTURE WILL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
7. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION IS MINIMIZED. U.S. DEPT. OF AGRICULTURE SOIL CONSERVATION SERVICE COLLEGE PARK, MD. 1680-11

**Vertical Draw-Down Device**  
 NOT TO SCALE



**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 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. Gabion 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 should 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 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

**Rip-Rap Inflow Protection**  
 NOT TO SCALE

**DEVELOPER'S CERTIFICATION:**  
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I/ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.  
 Signature: Howard L. Reusch  
 Date: 10-9-97

**ENGINEER'S CERTIFICATION:**  
 I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.  
 Signature: Max Kantzer  
 Date: 10-9-97

REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS  
 Signature: Charles K. Sumner  
 Date: 10-20-97  
 Signature: Robert W. Ziehl  
 Date: 10-27-97

\* Refer to "Conditions and Management Practices for Working in Nontidal Wetlands and Their Buffers" prior to impacting stream, wetland or buffer.

10-9-97  
 Date  
 STATE OF MARYLAND  
 PROFESSIONAL ENGINEER  
 Signature: Max Kantzer

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DIRECTOR  
 DATE: 10/29/97  
 DATE: 11/21/97  
 DATE: 10/29/97

Date	No.	Revision	Description

**Montpelier Research Park**  
 HOWARD COUNTY MARYLAND

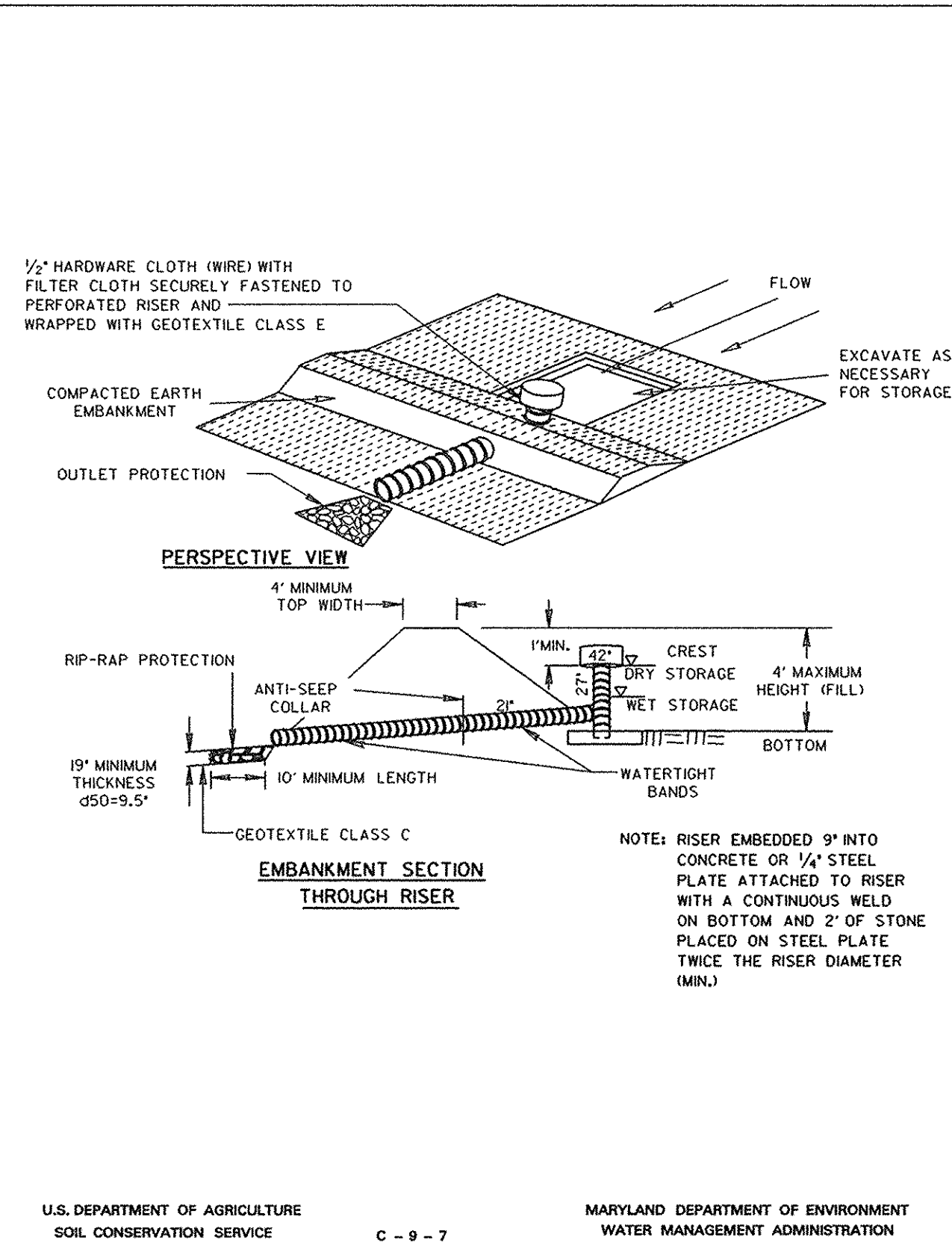
**DMW**  
 Daf - McCune - Walker, Inc.  
 A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals  
 200 East Pennsylvania Avenue  
 Towson, Maryland 21286  
 410 296 3333  
 Fax 296 4705

PROJECT NO.	124.125, & ROAD BED
SECTION	
DATE	
SCALE	
PROJECT	
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PROJECT	
DATE	
PROJECT	
DATE	

TITLE: **SEDIMENT & EROSION CONTROL DETAILS**

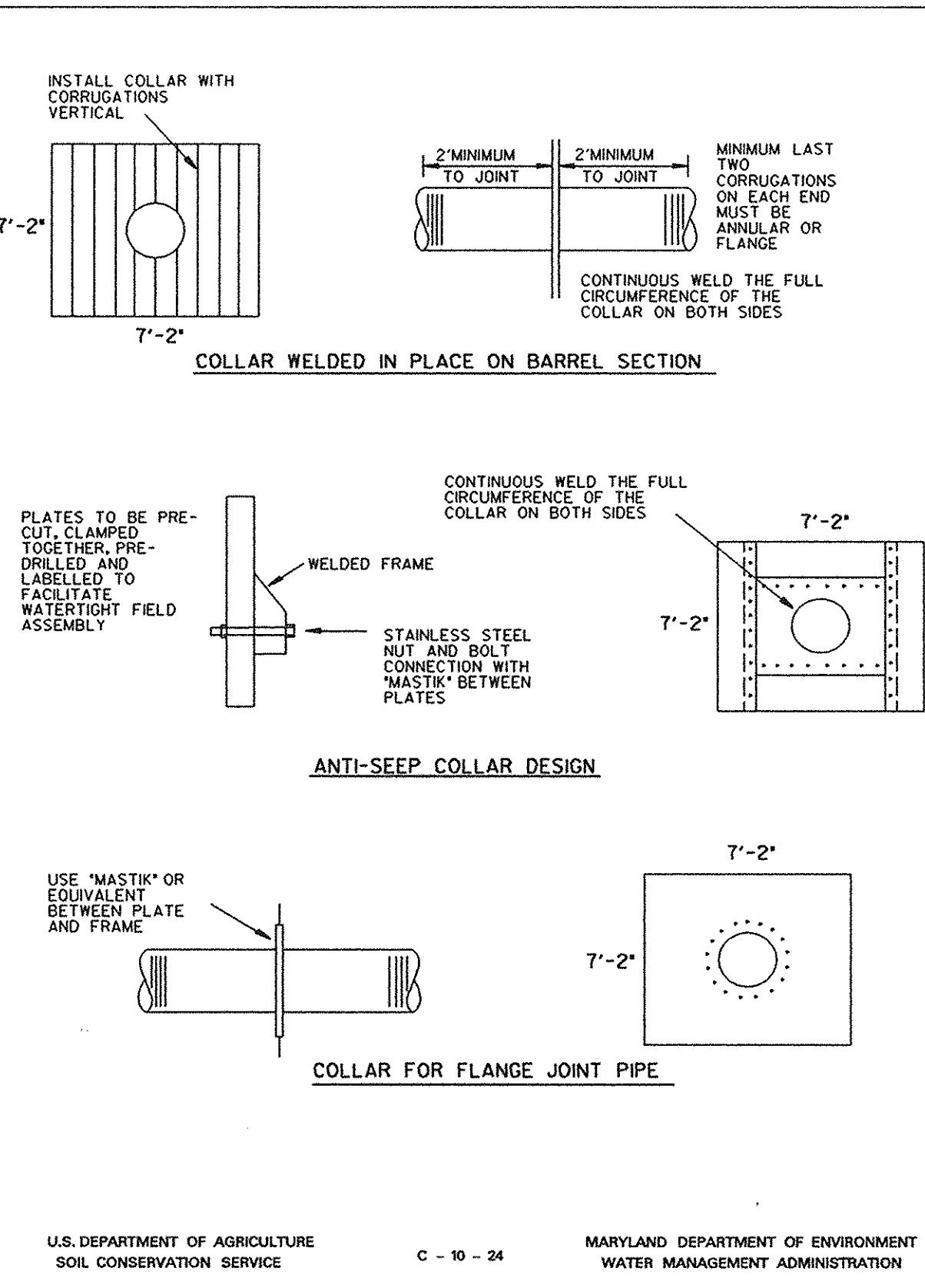
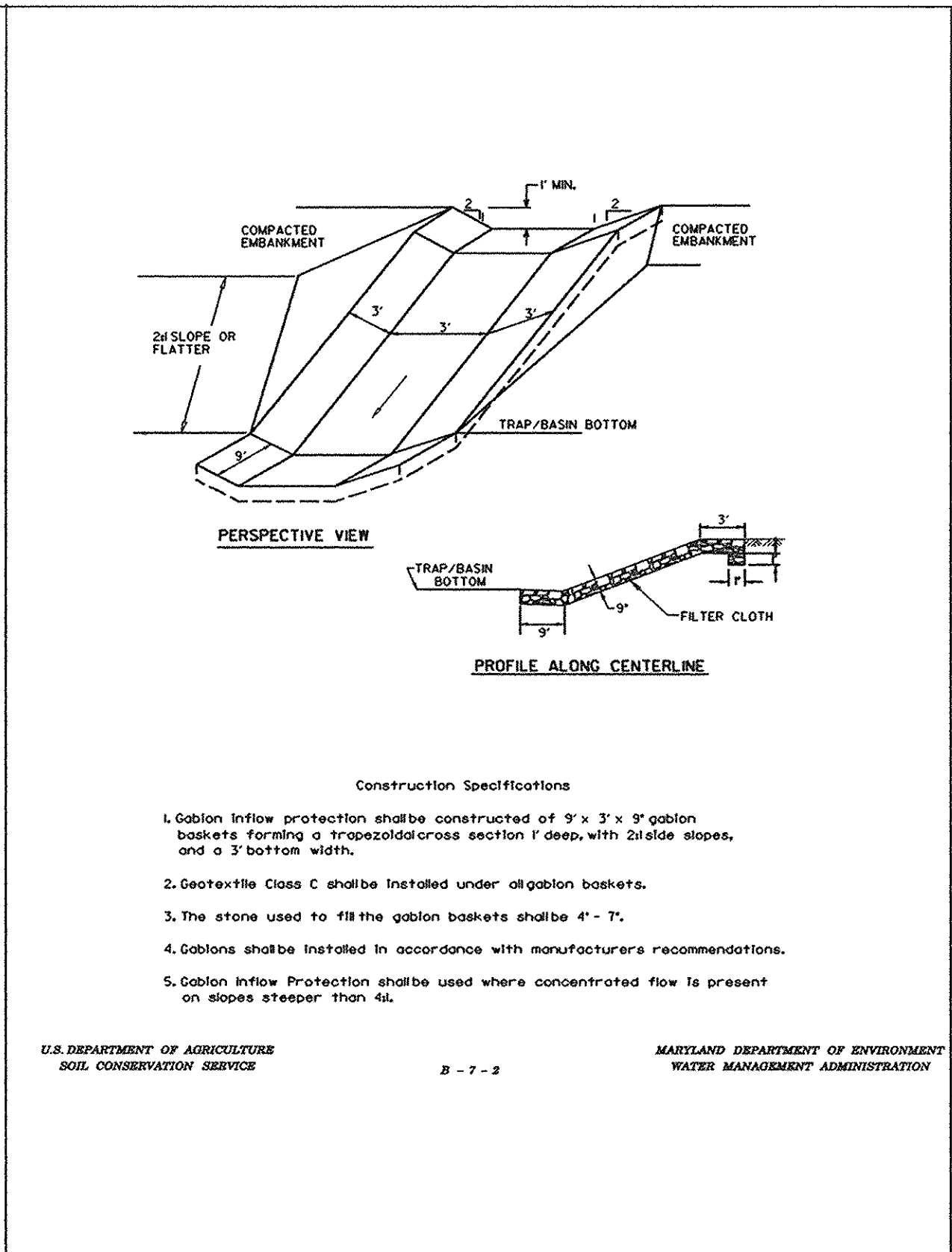
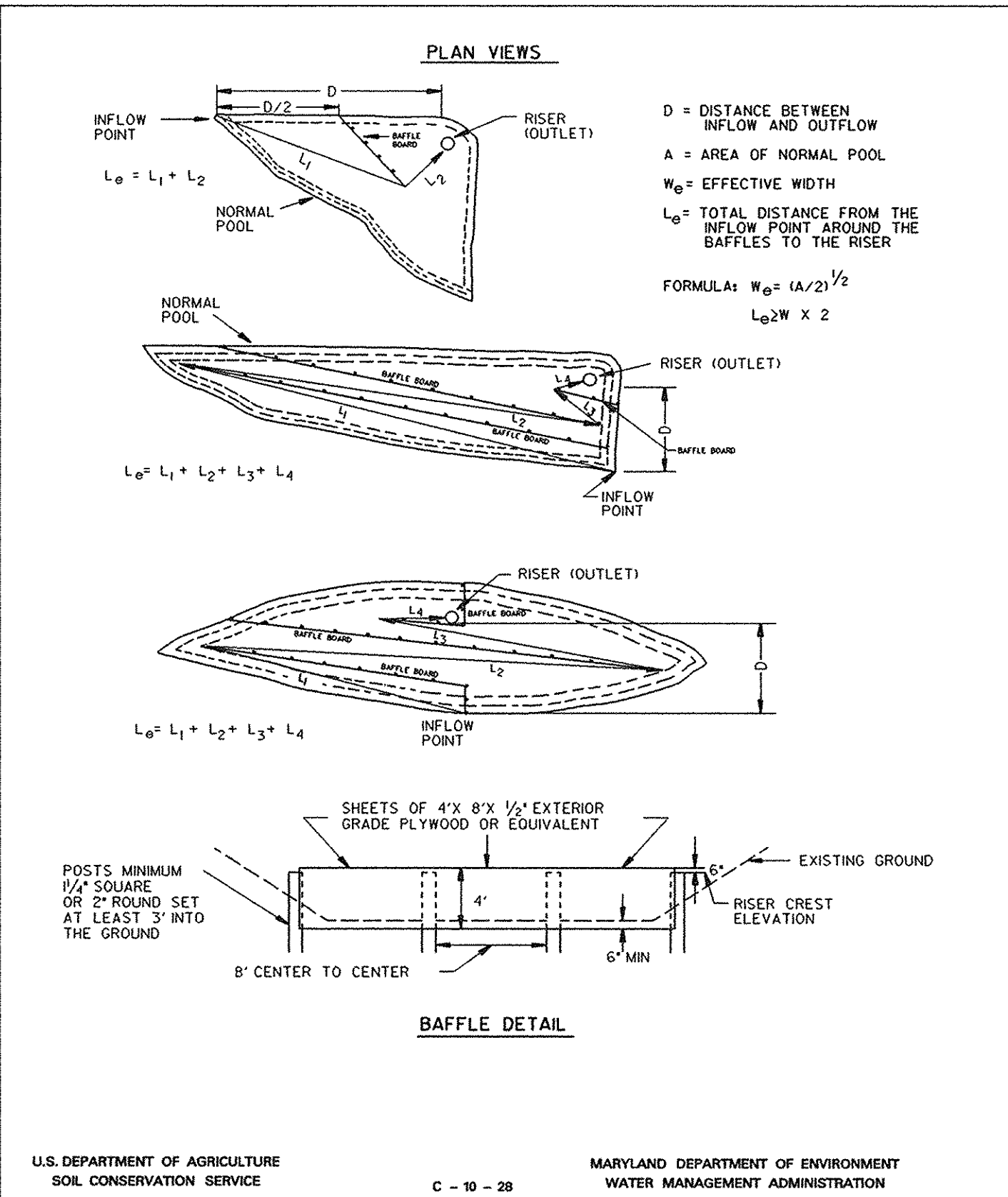
Des By: ZAL Scale: As Shown Proj. No. 941715  
 Drn By: TPC Date: 10-9-97  
 Chk By: MM Approved: 6 OF 18

Professional Engr. No. 16872



**Construction Specifications**

- The area under the embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
- The filter material for the embankment shall be free of roots or other woody vegetation as well as oversized stones, rocks, organic material, or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed.
- The total trap volume as measured from the bottom to riser crest elevation shall be 3500 cubic feet per acre of drainage area (see Table 9). The top of embankment must be at least 2' above the riser crest elevation.
- 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 (9000/3500). The sediment shall be deposited in a suitable area and in such a manner that it will not erode.
- The structure shall be inspected periodically and after each rain and repairs made as necessary.
- Construction operations shall be carried out in such a manner that erosion and water pollution are abated. Once constructed, the top and outside face of the embankment shall be stabilized with seed and mulch. Points of concentrated inflow shall be protected in accordance with Grade Stabilization Structure criteria. The remainder of the interior slopes shall be stabilized (one time) with seed and mulch upon trap completion and monitored and maintained erosion free during the life of the trap.
- The structure shall be removed and area stabilized when the drainage area has been properly stabilized.
- All out and fill slopes shall be 2:1 or flatter.
- All pipe connections shall be watertight.
- Above the wet storage elevation, the riser shall be perforated with 1/2" wide by 6" long slits or 1" diameter holes spaced 6" vertically and horizontally. No perforations will be allowed within 6" of the horizontal barrel.
- The riser shall be wrapped with 1/2" hardware cloth (wire) then wrapped with Geotextile Class E. The filter cloth shall extend 6" above the highest slit and 6" below the lowest slit. Where ends of filter cloth come together, they shall be overlapped, folded and fastened to prevent bypass. Filter cloth shall be replaced as necessary to prevent clogging.
- Straps or connecting bands shall be used to hold the filter cloth and wire fabric in place. They shall be placed at the top and bottom of the cloth.
- Fill material around the pipe spillway shall be hand compacted in 4" layers. A minimum of 2' of hand-compacted backfill shall be placed over the pipe spillway before crossing it with construction equipment.
- The riser shall be anchored with either a concrete base or steel plate base to prevent flotation. Concrete bases shall be at least twice the riser diameter and 12" deep with the riser embedded 9". Steel plate bases shall be at least twice the riser diameter, 1/4" minimum thickness and attached to the bottom of the riser by a continuous weld to form a watertight connection. Then place 2' of stone, gravel or tamped earth on the plate.
- Anti-seep collars shall be constructed in accordance with plans (ref. table 15 and Details C-10-23 and C-10-24).
- Concentric trash rack and anti-vortex device design details are on Detail C-10-26 and C-10-26A.
- Refer to Section D for dewatering requirements of sediment traps.
- Outlet - An outlet shall be provided, which includes a means of conveying the discharge in an erosion free manner to an existing stable channel.
- Where discharge occurs at the property line, local ordinances and drainage easement requirements shall be met.



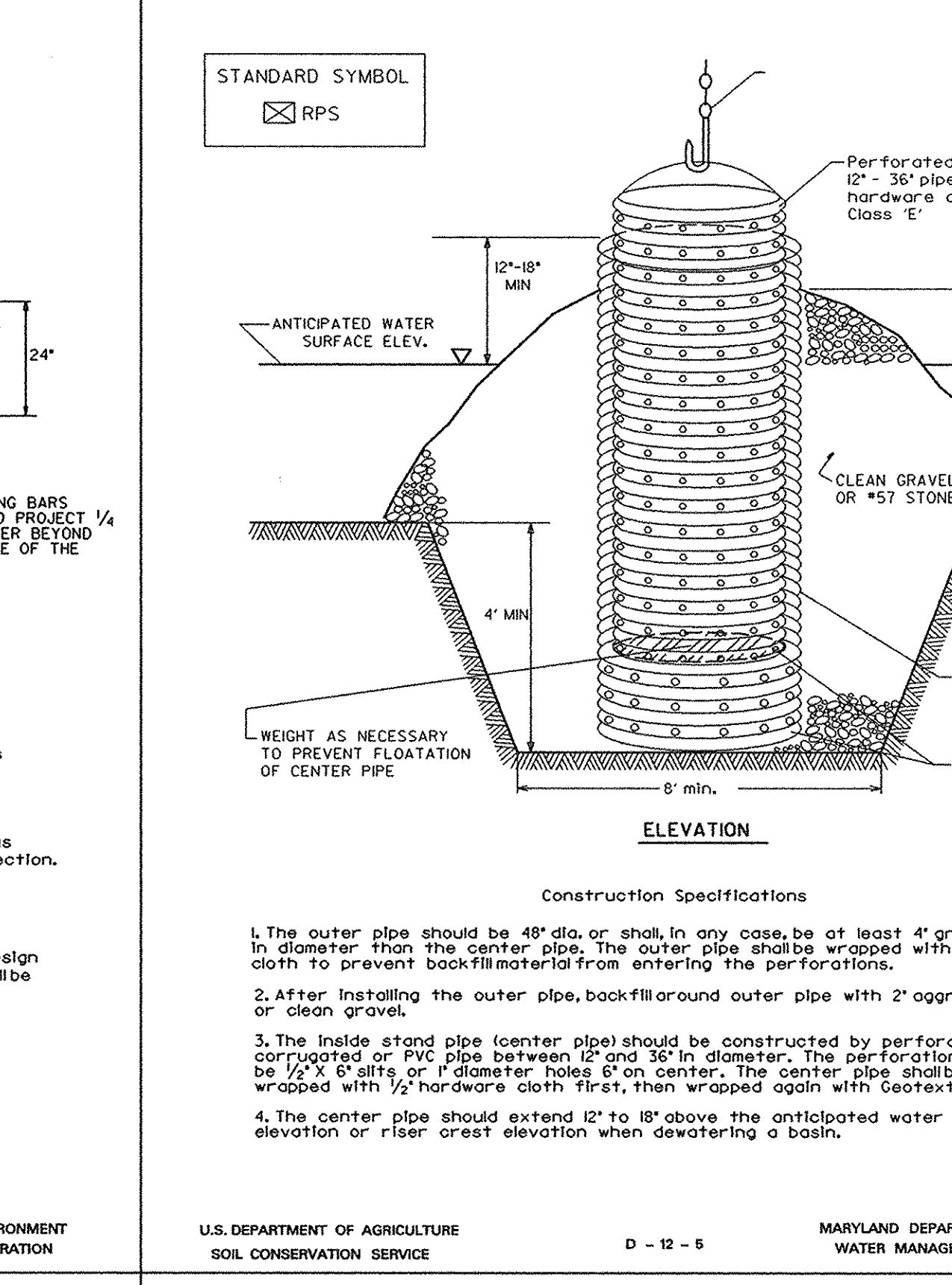
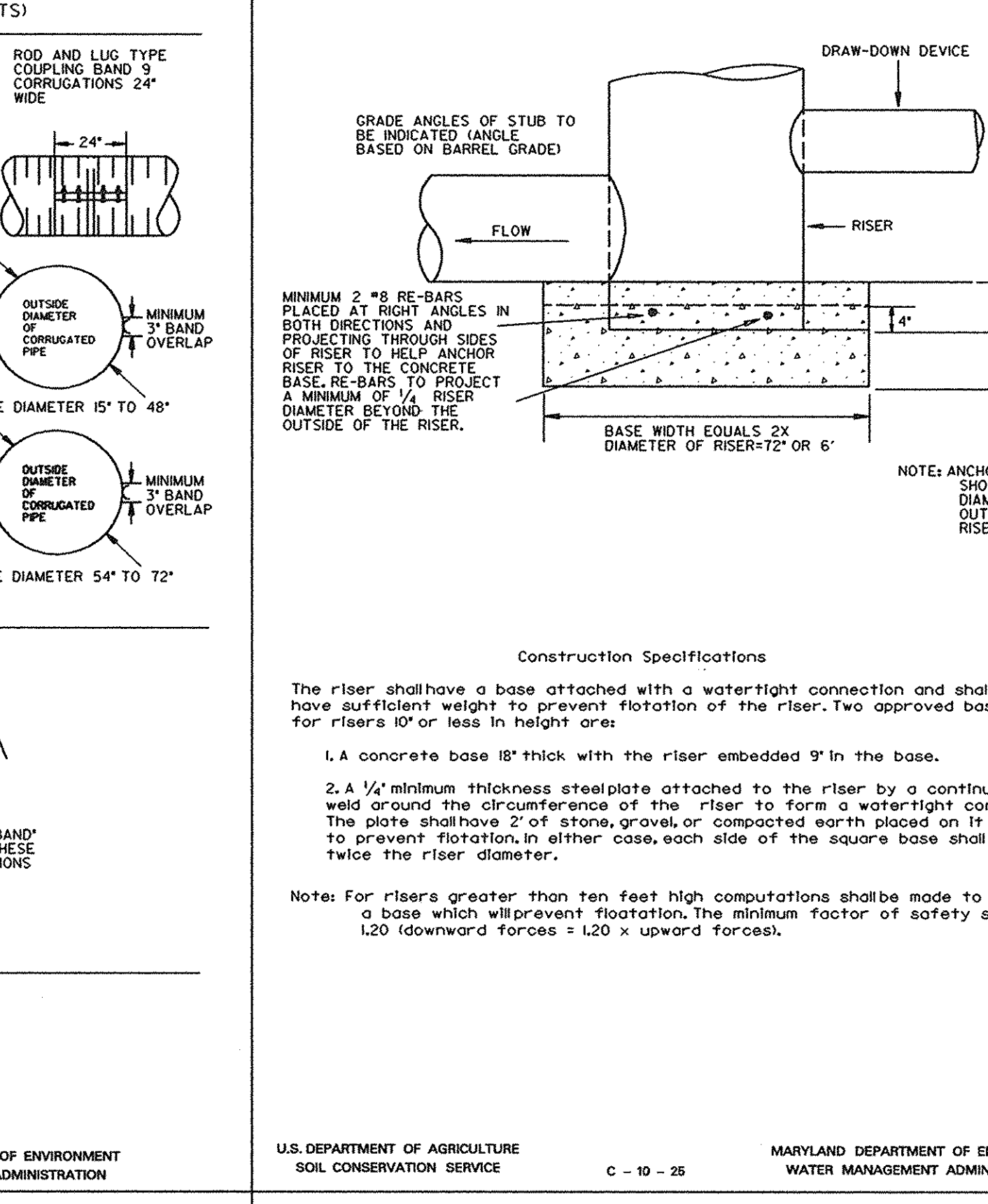
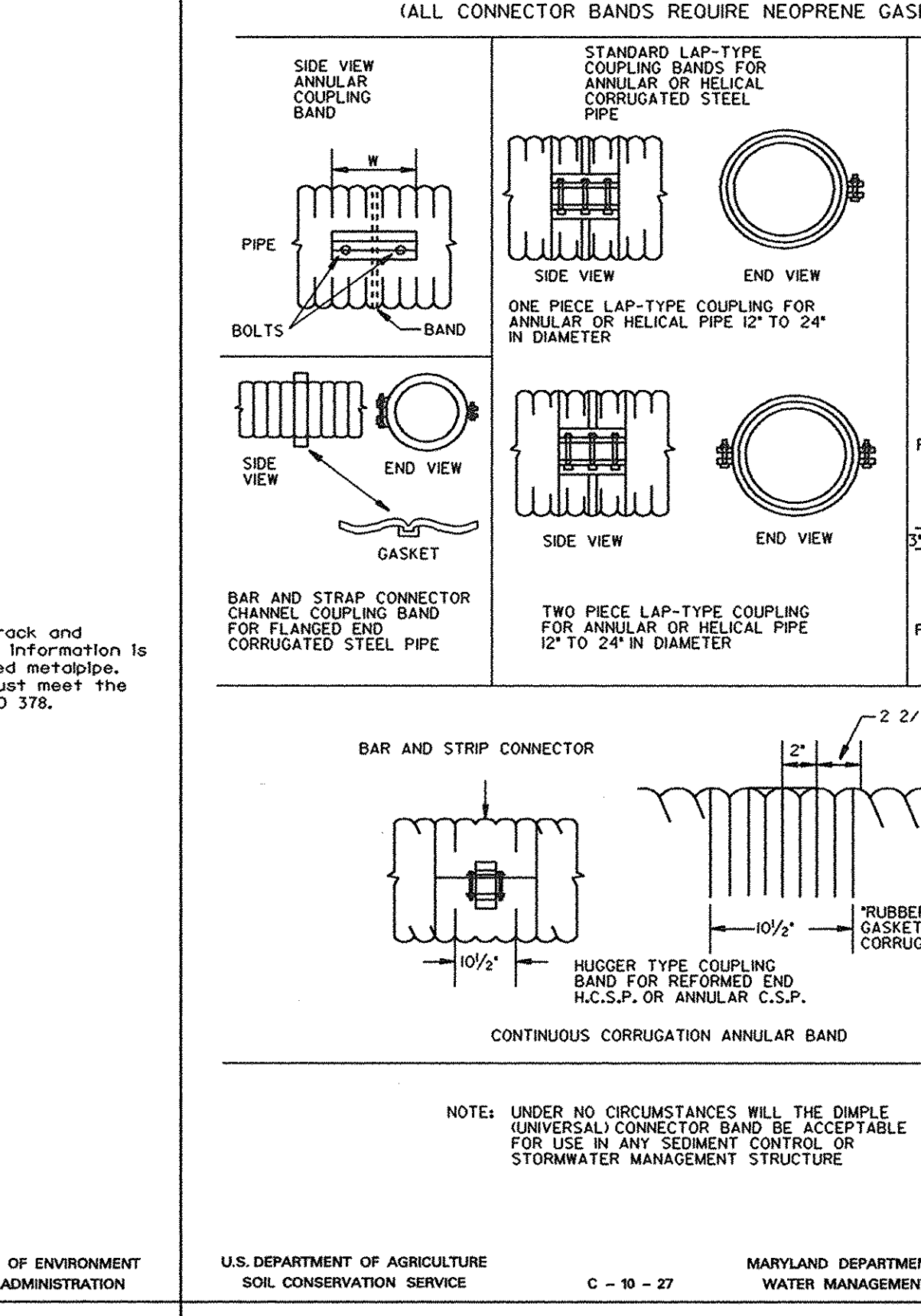
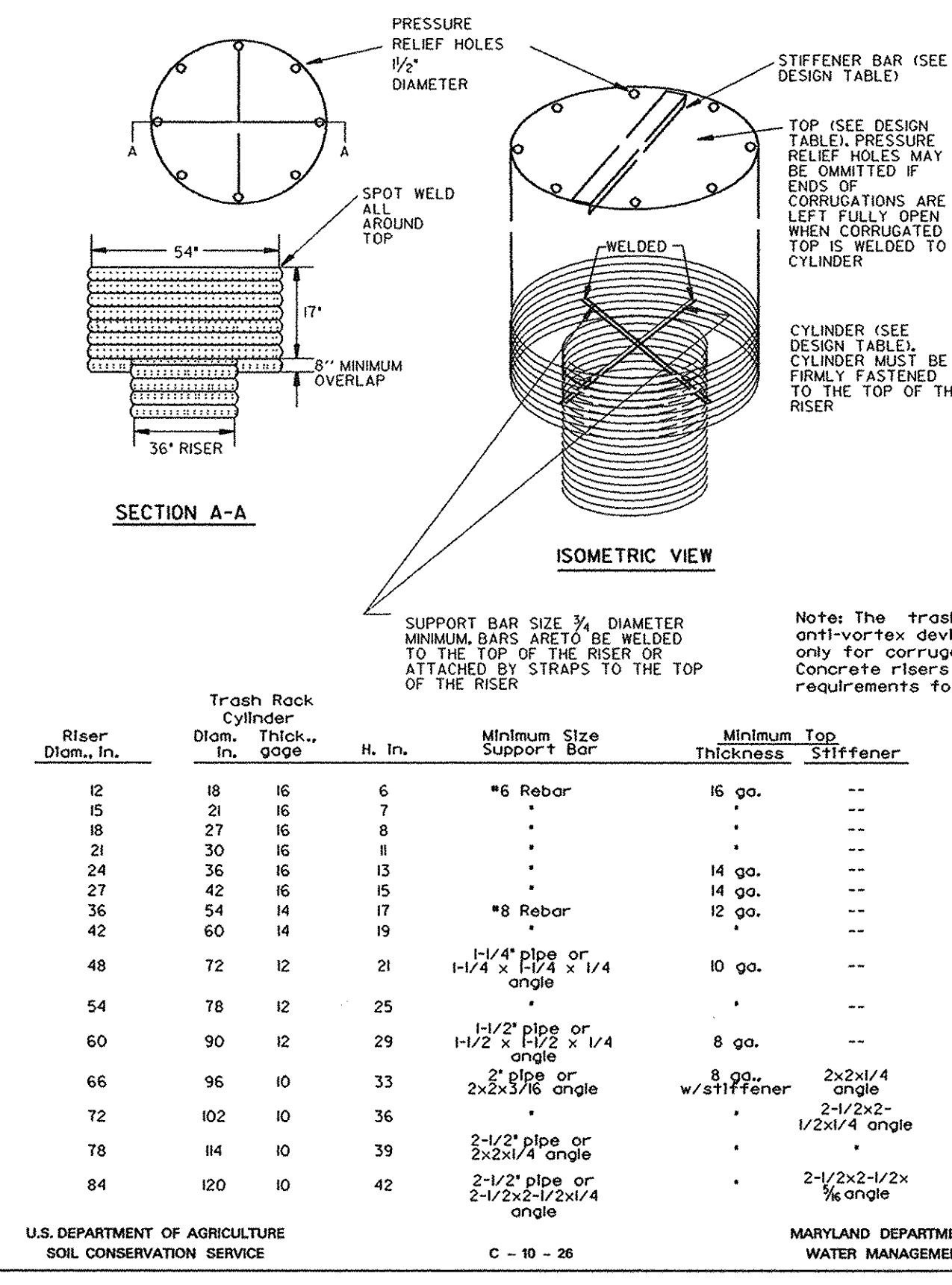
**Pipe Outlet Sediment Trap - ST I**

**Pipe Outlet Sediment Trap - ST I**

**Sediment Trap & Basin Baffles** Not to Scale

**Gabion Inflow Protection** Not to Scale

**Typ. Anti-Seep Collars for P.O.S.T. & Basin #1**



**Concentric Trash-Rack & Anti-Vortex Device** Not to Scale

**Types of Couplers for Corrugated Steel Pipe**

**Riser Base Detail**

**Removable Pumping Station** Not to Scale

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION *[Signature]* 10/29/97 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT *[Signature]* 10/29/97 DATE

DIRECTOR *[Signature]* 10/29/97 DATE

Date	No.	Revision Description

**Montpelier Research Park** HOWARD COUNTY MARYLAND

**DMW**  
Daft · McCune · Walker, Inc.  
A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals  
200 East Pennsylvania Avenue, Towson, Maryland 21286  
410 296 3333 Fax 296 4705

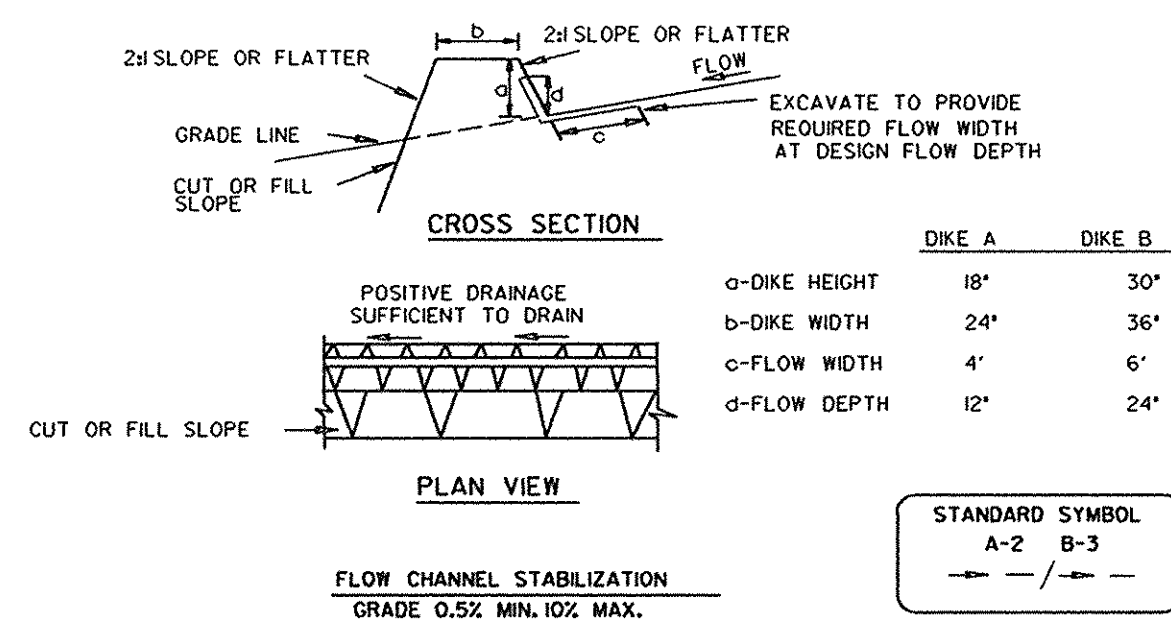
10-9-97 Date

**STATE OF MARYLAND**  
MAX KANTZER  
REGISTERED PROFESSIONAL ENGINEER

**SEDPIMENT & EROSION CONTROL DETAILS**

Des By: ZAL	Scale:	Proj. No. 941715
Drn By: TPC	Date: 10-9-97	
Chk By:	Approved:	7 OF 18

Professional Engr. No. 16872



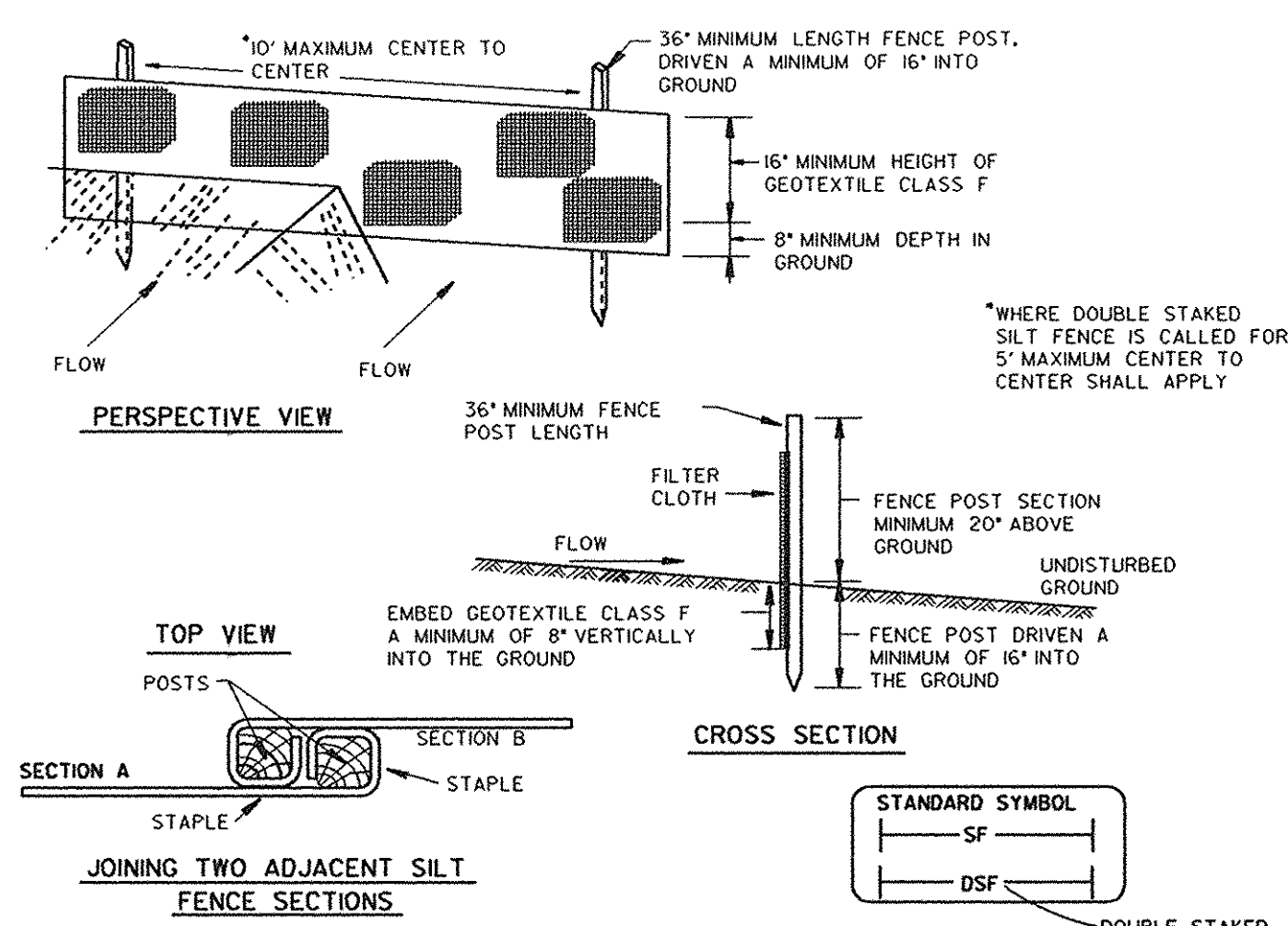
1. Seed and cover with straw mulch.  
 2. Seed and cover with Erosion Control Matting or line with sod.  
 3. 4" - 7" stone or recycled concrete equivalent pressed into the soil 7" minimum

**Construction Specifications**

- All temporary earth dikes shall have uninterrupted positive grade to an outlet. Spot elevations may be necessary for grades less than 1%.
- Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.
- Runoff diverted from an undisturbed area shall outlet directly into an undisturbed, stabilized area at a non-erosive velocity.
- 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.
- 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.
- Fill shall be compacted by earth moving equipment.
- All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the dike.
- Inspection and maintenance must be provided periodically and after each rain event.

- A MINIMUM OF 24 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY OFFICE OF INSPECTIONS AND PERMITS PRIOR TO THE START OF ANY CONSTRUCTION (992-2437).
- ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
- FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:
  - SEVEN CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1
  - FOURTEEN DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE
- ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. I, CHAPTER 12, OF THE "HOWARD COUNTY DESIGN MANUAL," STORM DRAINAGE.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING, SOD, TEMPORARY SEEDING AND MULCHING (SECTION G). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
- ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- SITE ANALYSIS:
 

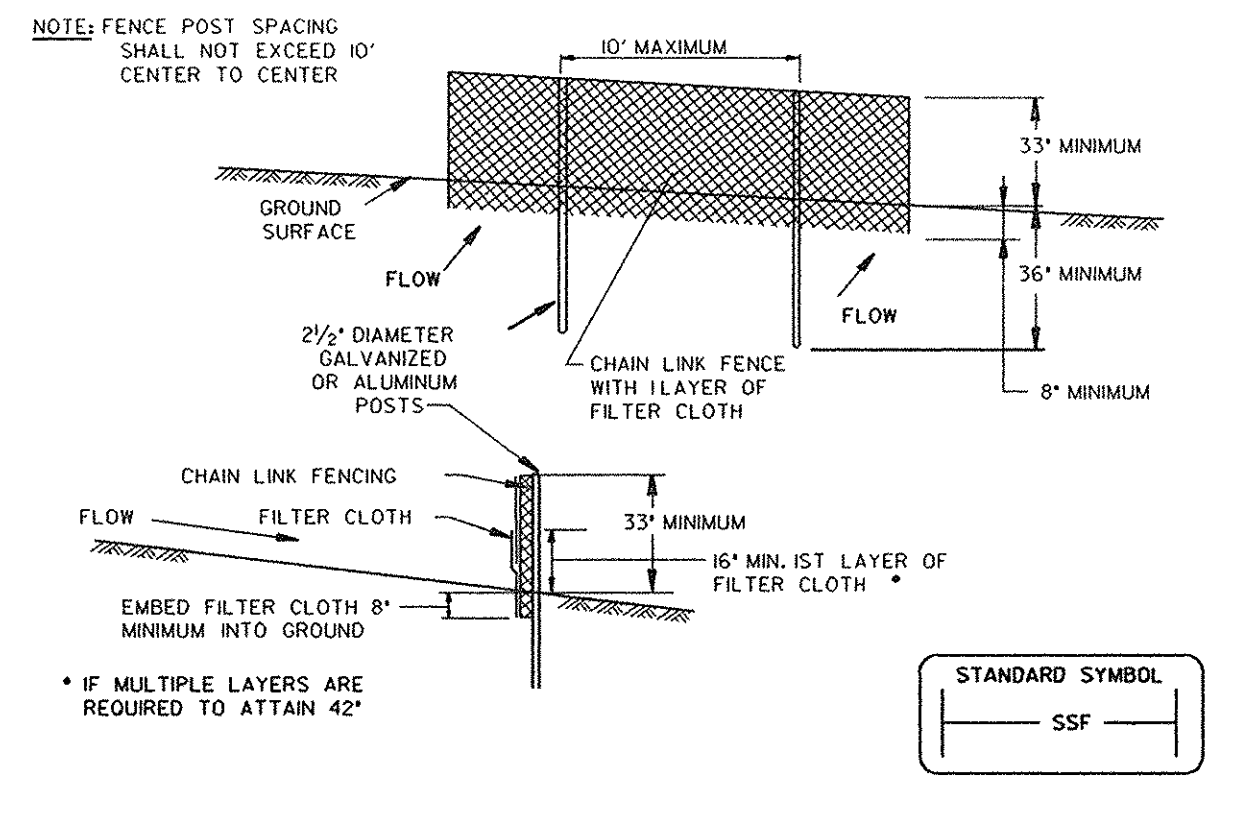
TOTAL AREA OF SITE	104.0 ACRES
AREA DISTURBED	42.0 ACRES
AREA TO BE ROOFED OR PAVED	0.0 ACRES
AREA TO BE VEGETATIVELY STABILIZED	42.0 ACRES
TOTAL CUT	240,000 CUBIC YARDS
TOTAL FILL	240,000 CUBIC YARDS
OFF-SITE WASTE/BORROW AREA LOCATION WASTE = NA	
- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY DPW SEDIMENT CONTROL INSPECTOR.
- ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.



1. Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 1/2" x 1/2" square (minimum cut), or 1 1/2" diameter (minimum round) and shall be of sound quality hardwood. Steel posts will be standard T or U section weighing not less than 1.00 pound per linear foot.

- 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/ft <sup>2</sup> /minute (max.)	Test: MSTM 322
Filtering Efficiency	75% (min.)	Test: MSMT 322
- Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.
- Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.



**Construction Specifications**

- Fencing shall be 42 inches in height and constructed in accordance with the latest Maryland State Highway (SHA) Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length posts.
- The posts do not need to be set in concrete.
- Chain link fence shall be fastened securely to the fence posts with wire ties or staples. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence. The chain link fencing shall be six (6) gauge or heavier.
- Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.
- Filter cloth shall be embedded a minimum of 8" into the ground.
- When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.
- Maintenance shall be performed as needed and silt buildup removed when 'bulges' develop in the silt fence, or when silt reaches 50% of fence height

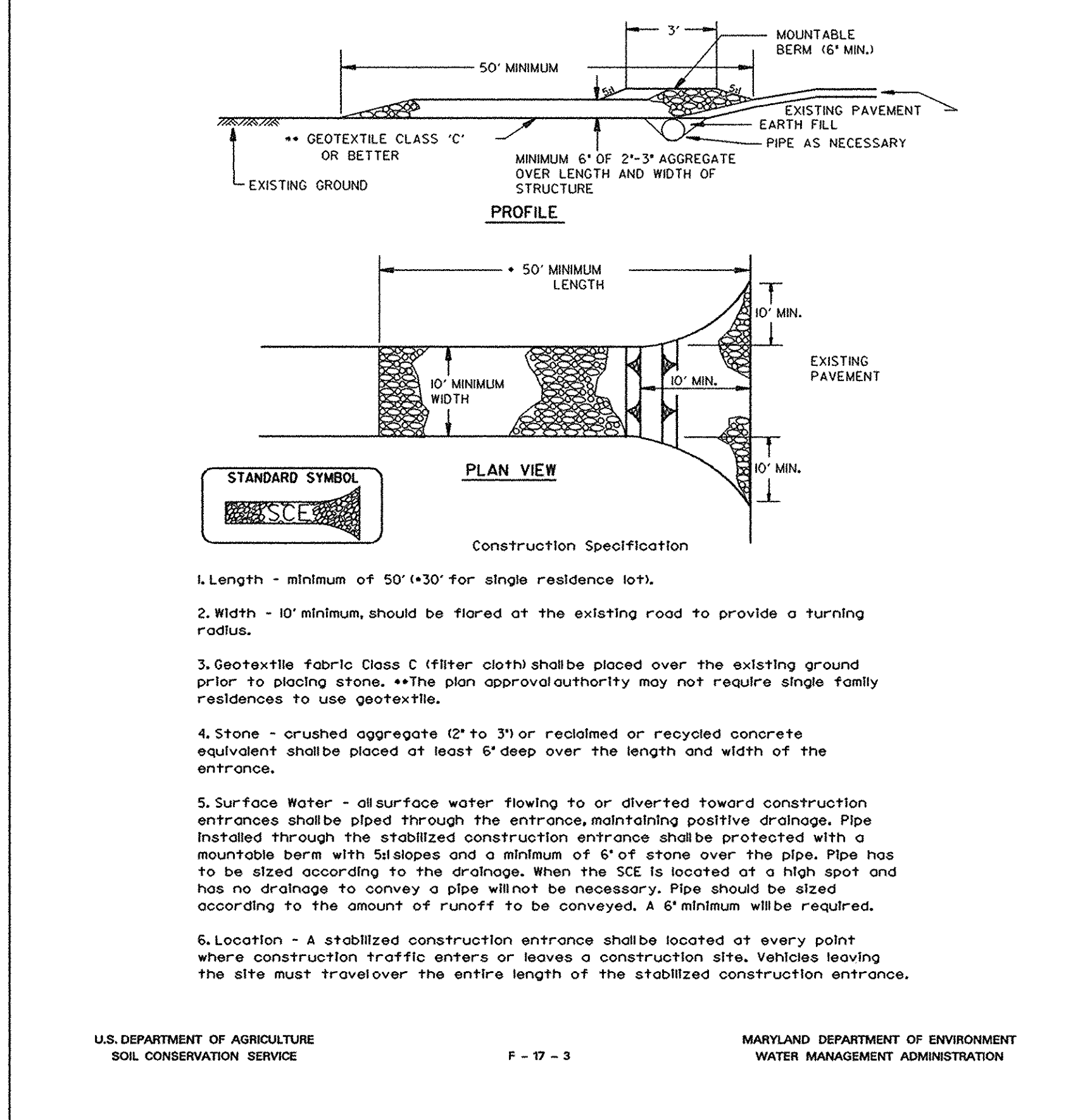
**Earth Dike** Not to Scale

**Howard County Sediment Control General Notes**

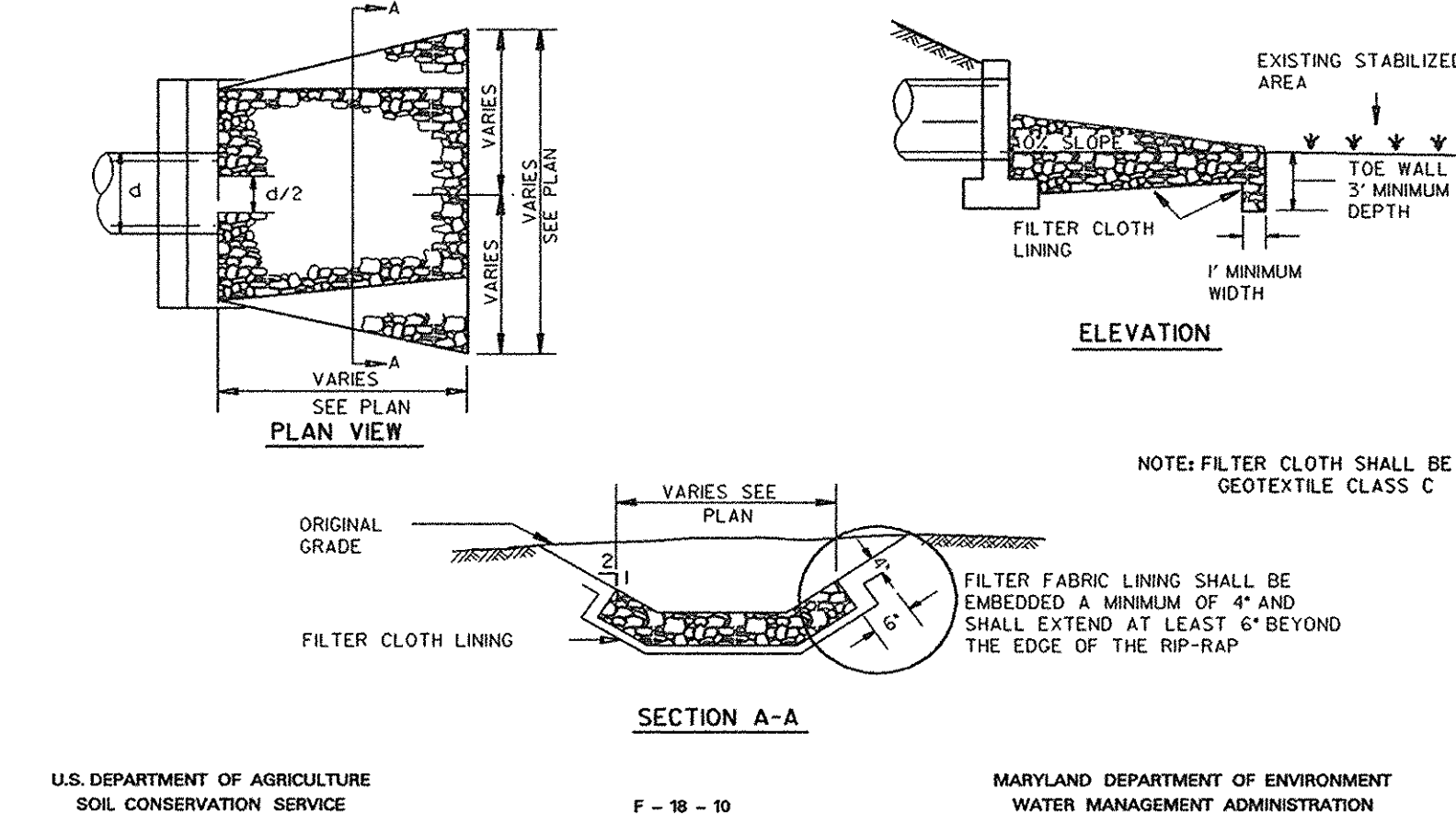
**Silt Fence** Not to Scale

**Super Silt Fence** Not to Scale

**PERMANENT SEEDING NOTES**  
 APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LIVED VEGETATIVE COVER IS NEEDED.  
**SEEDBED PREPARATION:** LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.  
**SOIL AMENDMENTS:** IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULES:  
 1. PREFERRED - APPLY 2 TONS PER ACRES DOLOMITIC LIMESTONE (92 LBS./1000 SO.F.T.) AND 1000 LBS. PER ACRE 10-10-10 FERTILIZER (14 LBS./1000 SO.F.T.) BEFORE SEEDING. HARROW OR DISK INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 LBS. PER ACRE 30-0-0 UREAFORM FERTILIZER (9 LBS./1000 SO.F.T.)  
 2. ACCEPTABLE - APPLY 2 TONS PER ACRES DOLOMITIC LIMESTONE (92 LBS./1000 SO.F.T.) AND 1000 LBS. PER ACRE 10-10-10 FERTILIZER (23 LBS./1000 SO.F.T.) BEFORE SEEDING. HARROW OR DISK INTO UPPER THREE INCHES OF SOIL.  
**SEEDING** - FOR THE PERIODS MARCH 1 THRU APRIL 30, AND AUGUST 1 THRU OCTOBER 15, SEED WITH 60 LBS. PER ACRE (4.4 LBS./1000 SO.F.T.) OF KENTUCKY 31 TALL FESCUE. FOR THE PERIOD MAY 1 THRU JULY 31 SEED WITH 60 LBS. KENTUCKY 31 TALL FESCUE PER ACRE AND 2 LBS. PER ACRE (0.5 LBS./1000 SO.F.T.) OF WEEPING LOVEGRASS. DURING THE PERIOD OF OCTOBER 16 THRU FEBRUARY 28, PROTECT SITE BY OPTION (1) - 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING. OPTION (2) - USE SOD. OPTION (3) - SEED WITH 60 LBS./ACRE KENTUCKY 31 TALL FESCUE AND MULCH WITH 2 TONS/ACRE WELL ANCHORED STRAW.  
**MULCHING** - APPLY 1-1/2 TO 2 TONS PER ACRE (70 TO 90 LBS./1000 SO.F.T.) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATIONS USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL./1000 SO.F.T.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GAL./1000 SO.F.T.) FOR ANCHORING.  
**MAINTENANCE** - INSPECT ALL SEEDING AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDING.  
**TEMPORARY SEEDING NOTES**  
 APPLY TO GRADED OR CLEARED AREAS LIKELY TO BE REDISTURBED WHERE A SHORT-TERM VEGETATIVE COVER IS NEEDED.  
**SEEDBED PREPARATION** - LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.  
**SOIL AMENDMENTS** - APPLY 600 LBS. PER ACRE 10-10-10 FERTILIZER (14 LBS./1000 SO.F.T.)  
**SEEDING** - FOR THE PERIODS MARCH 1 THRU APRIL 30, AND AUGUST 15 OCTOBER 15, SEED WITH 2-1/2 BUSHEL PER ACRE OF ANNUAL RYE (3.2 LBS./1000 SO.F.T.). FOR THE PERIOD MAY 1 THRU AUGUST 14, SEED WITH 3 LBS PER ACRE OF WEEPING LOVEGRASS (0.7 LBS./1000 SO.F.T.). FOR THE PERIOD NOVEMBER 16 THRU FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOD.  
**MULCHING** - APPLY 1-1/2 TO 2 TONS PER ACRE (70 TO 90 LBS./1000 SO.F.T.) OF UNROTTED WEEP FREE SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GAL. PER ACRE (5 GAL./1000 SO.F.T.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES 8 FT. OR HIGHER, USE 348 GAL. PER ACRE (8 GAL./1000 SO.F.T.) FOR ANCHORING.  
 REFER TO THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR ADDITIONAL RATES AND METHODS NOT COVERED.



- Length - minimum of 50' (+30' for single residence lots).
- Width - 10' minimum, should be flared at the existing road to provide a turning radius.
- Geotextile fabric Class C (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.
- Stone - crushed aggregate 12" to 3" or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.
- 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 SEE 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.
- 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.



**Stone Outlet Protection III** NOT TO SCALE

- Construction Specifications**
- The subgrade for the filter, rip-rap, or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.
  - The rock or gravel shall conform to the specified grading limits when installed respectively in the rip-rap or filter.
  - Geotextile class C shall be protected from punching, cutting, or tearing. Any damage other than an occasional snail hole shall be repaired by placing another piece of geotextile over the damaged part or by completely replacing the geotextile. All overlaps whether for repairs or for joining two pieces of geotextile shall be a minimum of one foot.
  - Stone for the rip-rap or gabion outlets may be placed by equipment. They shall be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The stone for rip-rap or gabion outlets shall be delivered and placed in a manner that will ensure that it is reasonably homogeneous with the smaller stones and spalls filling the voids between the larger stones. Rip-rap shall be placed in a manner to prevent damage to the filter blanket or geotextile. Hand placement will be required to the extent necessary to prevent damage to the permanent works.
  - The stone shall be placed so that it blends in with the existing ground. If the stone is placed too high then the flow will be forced out of the channel and scour adjacent to the stone will occur.

**Temporary And Permanent Seeding Notes**

**Stabilized Construction Entrance** Not to Scale

**Stone Outlet Protection Specifications**

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

Signature: *Howard L. Research*  
 Date: *10/1/97*

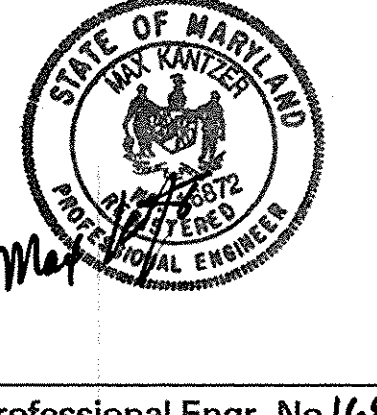
**ENGINEER'S CERTIFICATION:**  
 I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Signature: *Max Kantzer*  
 Date: *10-9-97*

REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS

Signature: *Charles K. Jimenez*  
 Date: *10-20-97*

Signature: *Robert J. Zich*  
 Date: *10/27/97*



APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

Signature: *[Signature]* DATE: *10/29/97*

Signature: *[Signature]* DATE: *10/29/97*

Signature: *[Signature]* DATE: *10/29/97*

Date	No.	Revision Description

**Montpelier Research Park**  
 HOWARD COUNTY MARYLAND

**DMW**  
 Daft • McCune • Walker, Inc.  
 A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

200 East Pennsylvania Avenue  
 Towson, Maryland 21286  
 410 286 3333  
 Fax 286 4705

Subdivision Name: **Montpelier** SECTION: **WARA** LOT/FACILITY: **124, 125 & ROAD BED**

PLAT OR LEASE: **L3891.F505** BLOCK: **17** ZONE: **PEC** TAXING MAP: **41** ELECT. DISTRICT: **5th** CENSUS TRACT: **6051.02**

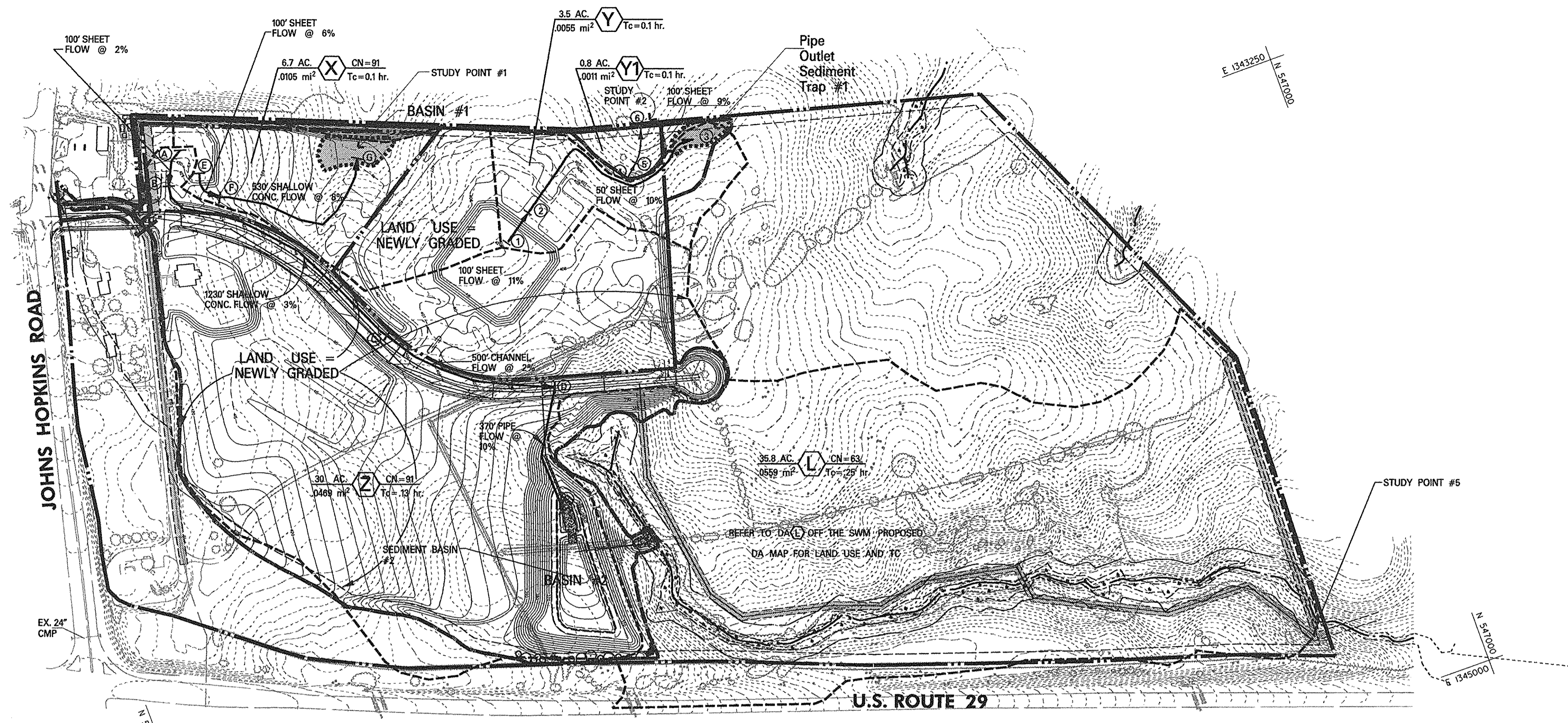
TITLE: **SEDIMENT & EROSION CONTROL DETAILS**

Des By: **ZAL** Scale: **1"=40'** Proj. No. **941715**

Dwn By: **TPC** Date: **10-9-97**

Chk By: **[Signature]** Approved: **[Signature]** **8 OF 18**





**Sediment & Erosion Control D.A. Map (interim conditions)**  
Scale: 1" = 200'

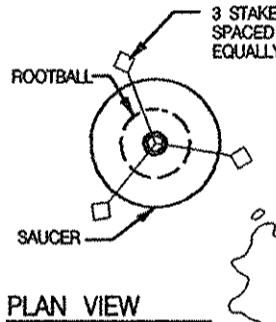
NOTE:  
1. REFER TO THE SWM EXISTING CONDITIONS D.A. MAP ON SHEET 10 FOR EXISTING CONDITIONS INFORMATION.  
2. A LAND USE OF ROW CROPS WAS USED FOR DA 'A' TO ESTABLISH AN EXISTING PEAK FLOW AT STUDY POINT #1 TO REFLECT ACTUAL FIELD CONDITIONS. (SAME D.A. AS ON SHEET 10.)

**Landscape Specifications** SEE SHEET SHEET 5 FOR PLANTING PLAN

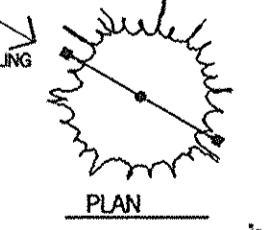
- The contractor shall review engineering plans to become thoroughly familiar with the grading.
- All equipment and tools shall be placed so as not to interfere or hinder the vehicular traffic flow.
- The contractor shall coordinate with the general contractor regarding timing of installation of plant material.
- The contractor shall insure that his work does not interrupt established or projected drainage patterns.
- During planting operations, excess waste materials shall be promptly and frequently removed from the site.
- Call Miss Utility a minimum of three days prior to any excavation. The contractor is advised of the existence of underground utilities on the site. Their exact location shall be verified in the field with the owner or general contractor prior to the commencement of any digging operations. In the event they are uncovered, the contractor shall be held responsible for all damage to utilities and such damage shall not result in any additional expenses to the owner. Any damage to unreported lines shall not be the responsibility of the contractor.
- If utility lines are encountered in excavation of tree pits, other locations for trees shall be made by the contractor without additional compensation. No changes of location shall be made without approval of the landscape architect.
- In the event of variation between quantities shown on the plant list and the plans, the plans shall control. The contractor is responsible for verifying all plant quantities prior to the commencement of work. All discrepancies shall be reported to the landscape architect for clarification prior to bidding. The contractor shall furnish plant material in sizes as specified in the plant list.
- Plants shall be located as shown on the drawings or as designated in the field.
- Plants shall conform to current "American Standards for Nursery Stock" by American Association of Nurserymen (AAN), particularly with regard to size, growth, size of ball, and density of branch structure. Plant material shall be tagged at the source by the landscape architect unless this requirement is specifically waived.
- All plants (B&B or container) shall be properly identified by weather-proof labels securely attached thereto before delivery to project site. Labels shall identify plants by name, species, and size. Labels shall not be removed until the final inspection by the landscape architect or agent in charge.
- Any material and/or work may be rejected by the landscape architect if it does not meet the requirements of the specifications. All rejected materials shall be removed from the site by the contractor.
- No substitutions shall be made without written consent of the owner or landscape architect. The landscape architect or owner shall have the right, at any stage of the operations, to reject any and all work and material which, in his opinion, does not meet the requirements of these plans and specifications.
- The contractor shall be wholly responsible for stability and conditions of all trees and shrubs and shall be legally liable for any damage caused by instability of any plant materials. Staking of all trees shall be done utilizing a method agreed upon by the landscape architect, as indicated on the this sheet.
- Maintenance shall begin after each plant has been installed and shall continue until 90 days after final acceptance by the architect or owner representative. Maintenance includes watering, pruning, weeding, fertilizing, mulching, replacement of sick or dead plants, and any other care necessary for the proper growth of the plant material. The contractor must be able to provide continued maintenance if requested by the owner.
- Upon completion of all landscaping, an acceptance of the work shall be held. The contractor shall notify the landscape architect or owner for scheduling the inspection at least seven (7) days prior to the anticipated inspection date.
- All trees shall be guaranteed for 12 months from the date of acceptance. All shrubs shall be guaranteed for 12 months from the date of acceptance. Replacement plants used shall be guaranteed for an additional 90 days.
- The contractor shall dispose of stumps and major roots of all plants to be removed. Any depressions caused by removal operations shall be refilled with fertile, friable soil placed and compacted so as to reestablish proper grade for new planting and/or lawn areas.
- The contractor shall insure adequate vertical drainage in all plant beds.
- All disturbed areas of the site not planted with shrubs shall be fine graded and seeded.

**Plant List**

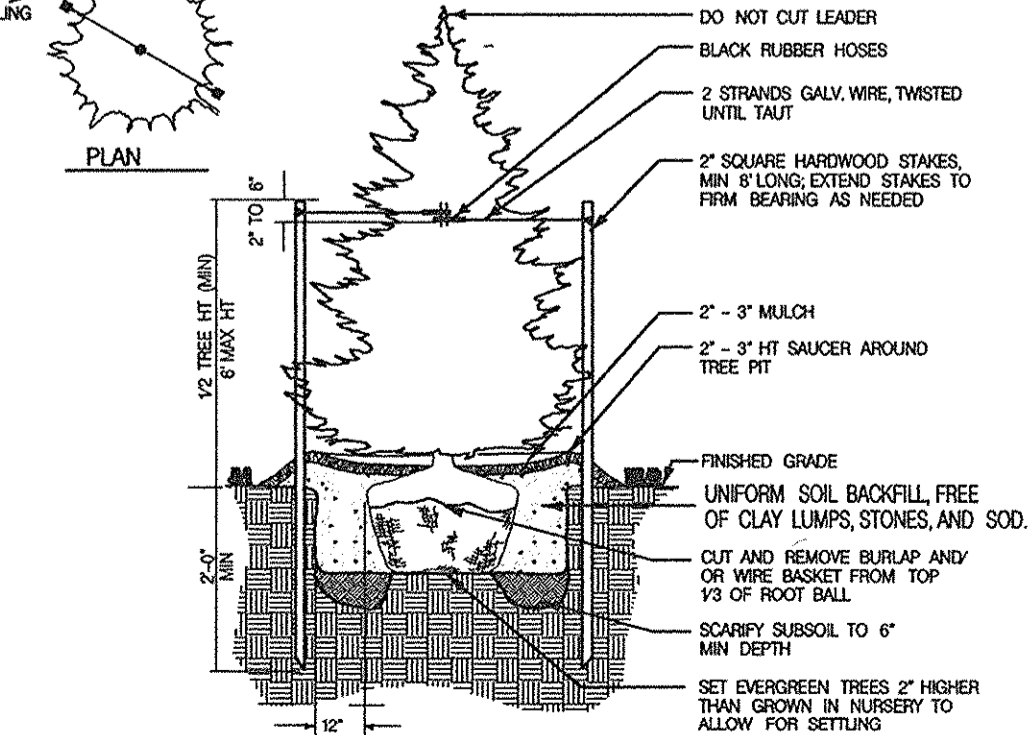
QTY	SYM.	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
<b>TREES</b>					
5	L	Liquidambar styraciflua	American Sweetgum	2 1/2" - 3" CAL. 12-14" HT.	D & B FULL HEAD
9	PS	Pinus strobus	Eastern White Pine	6-8" HT.	D & B UNSHAEKED
<b>SHRUBS</b>					
25	VB	Viburnum prunifolium	Blackhaw Viburnum	3-4" HT.	FULL



**A Tree Planting**  
Not To Scale



**B Evergreen Tree Planting**  
Not To Scale



**Topsoil Specifications**  
FOR SEDIMENT CONTROL /STABILIZATION PURPOSES

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**

- This practice is limited to areas having 2:1 or flatter slopes where:
  - The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
  - 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.
  - The original soil to be vegetated contains material toxic to plant growth.
  - The soil is so acidic that treatment with limestone is not feasible.
- 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.

**Construction and Material Specifications**

- 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 Experimental Station.
- Topsoil Specifications - Soil to be used as topsoil must meet the following:
  - 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 mixture of contrasting textured subsoils and shall contain less than 5% by volume of cinders, stones, slags, coarse fragments, gravel sticks, roots, trash, and other materials larger 1/2 inch in diameter.
  - Topsoil must be free of plants or plant parts such as Bermuda grass, quackgrass, Johnsongrass, nutsedge, poison ivy, thistle, or others as specified.
  - 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 (200-400 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.
- For sites having disturbed areas under 5 acres:
  - 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:
  - On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:
    - 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.
    - Organic contents of topsoil shall be not less than 1.5 percent by weight.
    - Topsoil having soluble salt content greater than 500 parts per million shall not be used.
    - 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 materials.
  - Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials.

**LEGEND**

- | SYMBOL | DESCRIPTION               |
|--------|---------------------------|
|        | DRAINAGE AREA             |
|        | STREAM                    |
|        | EXISTING CONTOURS         |
|        | EXISTING TREES/ TREE LINE |
|        | WETLAND/STREAM BUFFER     |
|        | WETLAND                   |
|        | PROPOSED CONTOURS         |
|        | FLOODPLAIN                |
|        | LIMIT OF DISTURBANCE      |
|        | 20' WIDE UTILITY EASEMENT |
|        | DRAINAGE FLOW LINE        |

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

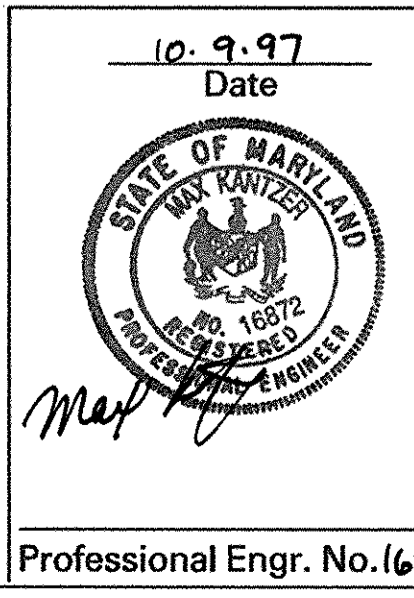
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
*Cindy Hammit*  
CHIEF, DIVISION OF LAND DEVELOPMENT  
*James S. Sater*  
DIRECTOR

10/29/97 DATE  
10/29/97 DATE  
10/29/97 DATE

Date	No.	Revision	Description

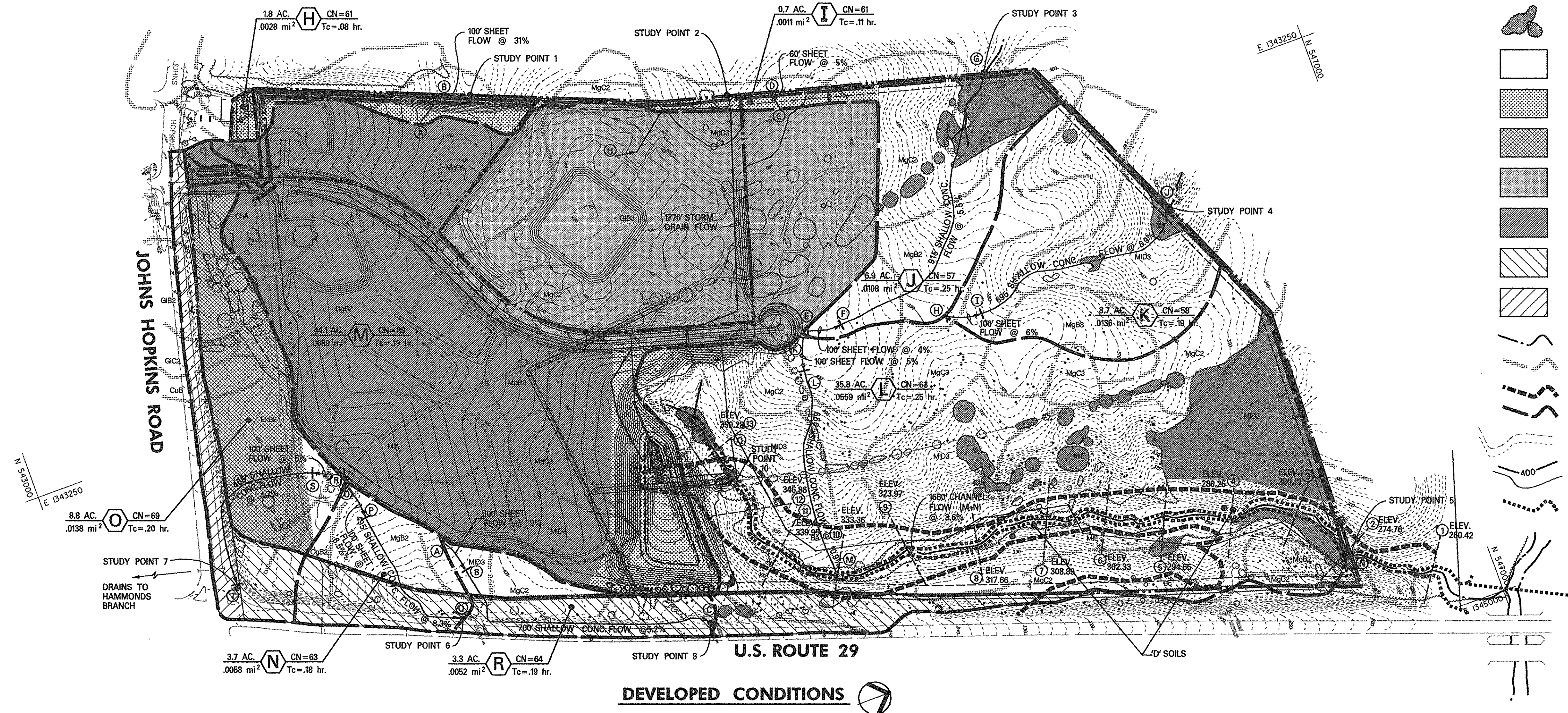
**Montpelier Research Park**  
HOWARD COUNTY MARYLAND  
OWNER/DEVELOPER: HOPKINS ROAD LIMITED PARTNERSHIP  
9030 RED BRANCH ROAD, SUITE 200 COLUMBIA, MD 21045

**DMW**  
Daft McCune Walker, Inc.  
A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals  
200 East Pennsylvania Avenue  
Towson, Maryland 21286  
410 296 3333  
Fax 296 4705



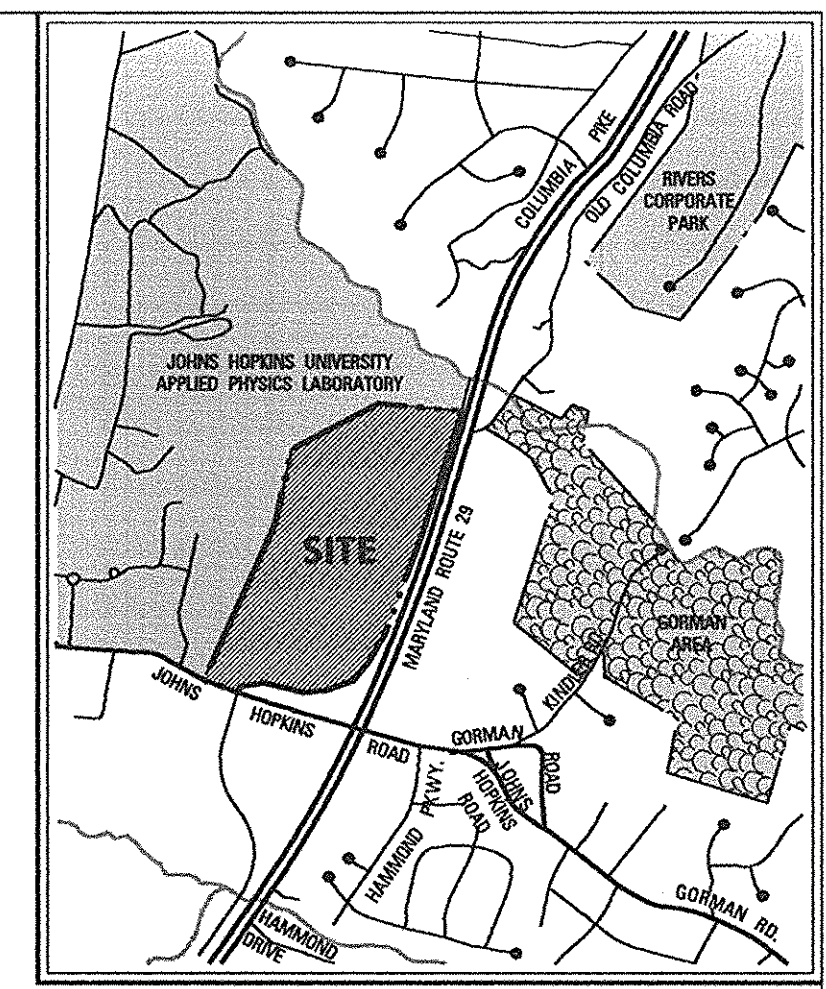
**TITLE DRAINAGE AREA MAP/ LANDSCAPE PLANT LIST, SPECS.**

Des By: ZAL Scale: 1" = 200' Proj. No. 941715  
 Dm By: TPC Date: 10-9-97  
 Chk By: Approved: 9 OF 18

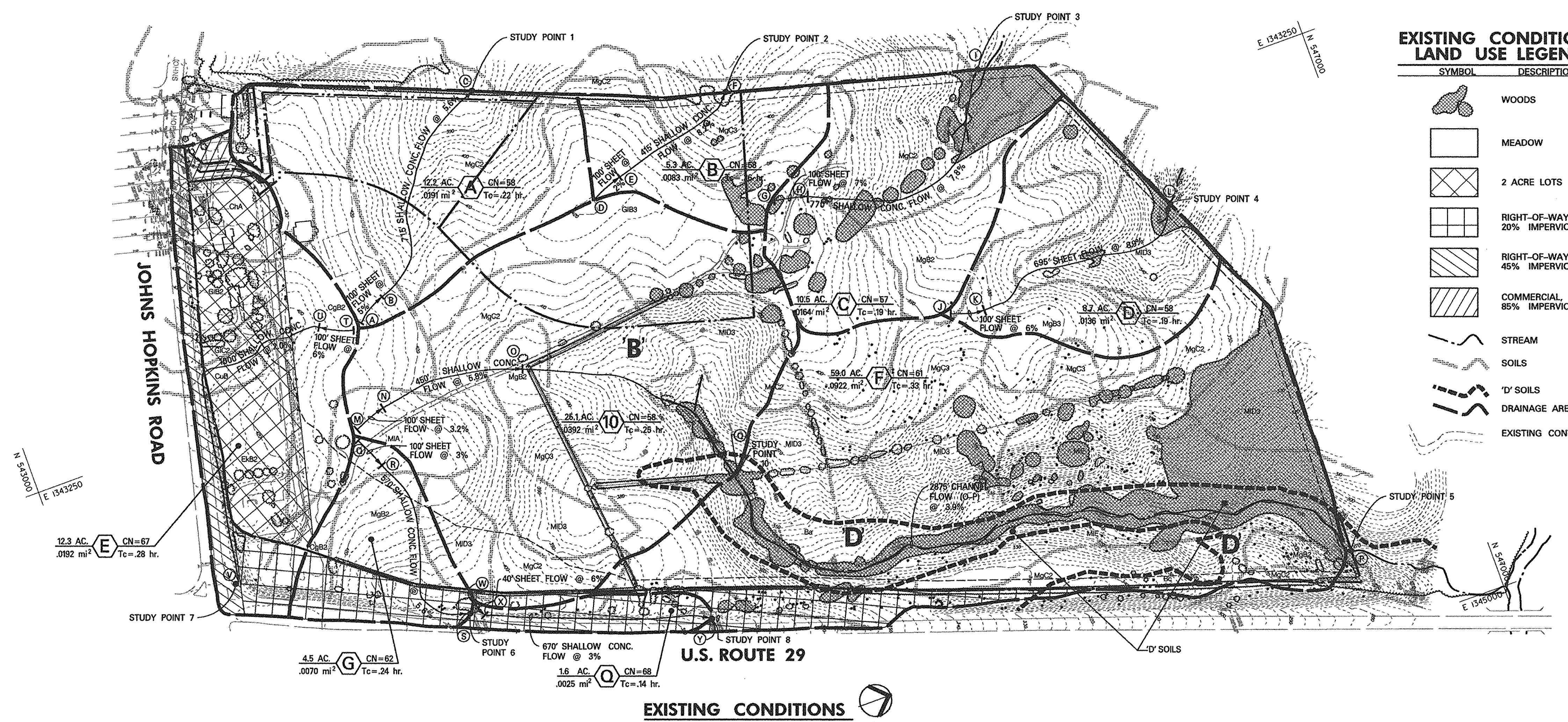


**DEVELOPED CONDITIONS  
LAND USE LEGEND**

- | SYMBOL   | DESCRIPTION                  |
|----------|------------------------------|
| [Symbol] | WOODS                        |
| [Symbol] | MEADOW                       |
| [Symbol] | OPEN SPACE                   |
| [Symbol] | 2 ACRE LOTS                  |
| [Symbol] | 70% IMPERVIOUS               |
| [Symbol] | 90% IMPERVIOUS               |
| [Symbol] | RIGHT-OF-WAY, 20% IMPERVIOUS |
| [Symbol] | RIGHT-OF-WAY, 45% IMPERVIOUS |
| [Symbol] | STREAM                       |
| [Symbol] | SOILS                        |
| [Symbol] | 'D' SOILS                    |
| [Symbol] | DRAINAGE AREA                |
| [Symbol] | EXISTING CONTOURS            |
| [Symbol] | PROPOSED CONTOURS            |
| [Symbol] | FLOOD PLAIN                  |



**LOCATION MAP**  
SCALE: 1" = 2000'



**EXISTING CONDITIONS  
LAND USE LEGEND**

- | SYMBOL   | DESCRIPTION                  |
|----------|------------------------------|
| [Symbol] | WOODS                        |
| [Symbol] | MEADOW                       |
| [Symbol] | 2 ACRE LOTS                  |
| [Symbol] | RIGHT-OF-WAY, 20% IMPERVIOUS |
| [Symbol] | RIGHT-OF-WAY, 45% IMPERVIOUS |
| [Symbol] | COMMERCIAL, 85% IMPERVIOUS   |
| [Symbol] | STREAM                       |
| [Symbol] | SOILS                        |
| [Symbol] | 'D' SOILS                    |
| [Symbol] | DRAINAGE AREA                |
| [Symbol] | EXISTING CONTOURS            |

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

Chief Development Engineering Division: *[Signature]* 10/29/97 DATE

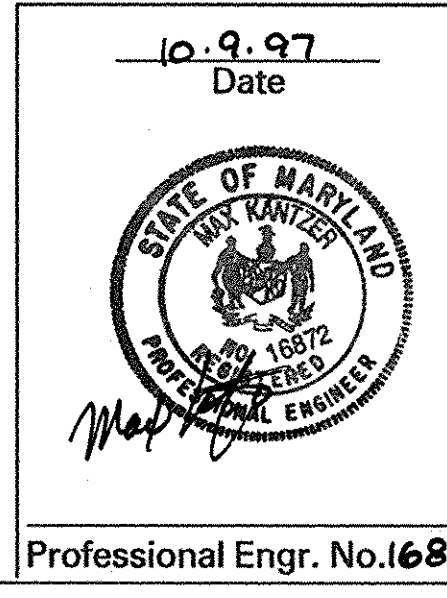
Chief, Division of Land Development: *[Signature]* 10/29/97 DATE

Director: *[Signature]* 10/29/97 DATE

Date	No.	Revision Description

**Montpelier Research Park**  
HOWARD COUNTY MARYLAND  
OWNER/DEVELOPER: HOPKINS ROAD LIMITED PARTNERSHIP  
9030 RED BRANCH ROAD, SUITE 200 COLUMBIA, MD 21045

**DMW**  
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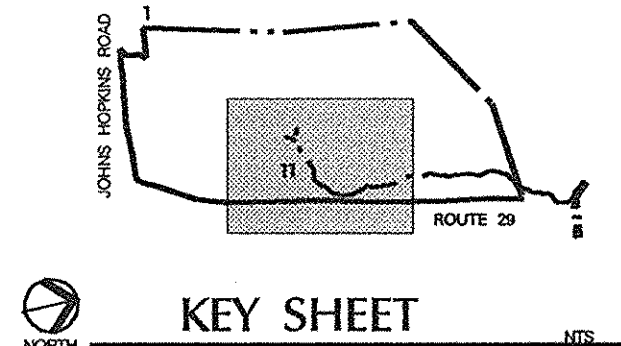


SUBDIVISION NAME: Montpelier	SECTION/AREA: 124, 125, & ROAD BED	LOT/PARCEL #:
PLAT: OR LE L3691,F505	BLOCK: 17	ZONE: PEC
TAXZONE MAP: 41	ELECT. DISTRICT: 5th	CENSUS TRACT:
WATER CODE: E 21	SEWER CODE: 6440000	
TITLE: <b>STORMWATER MANAGEMENT DRAINAGE AREA MAPS</b>		
Des By: ZAL	Scale: 1" = 200'	Proj. No. 941715
Drn By: MSS	Date: 10-9-97	
Chk By:	Approved:	<b>10</b> OF 18

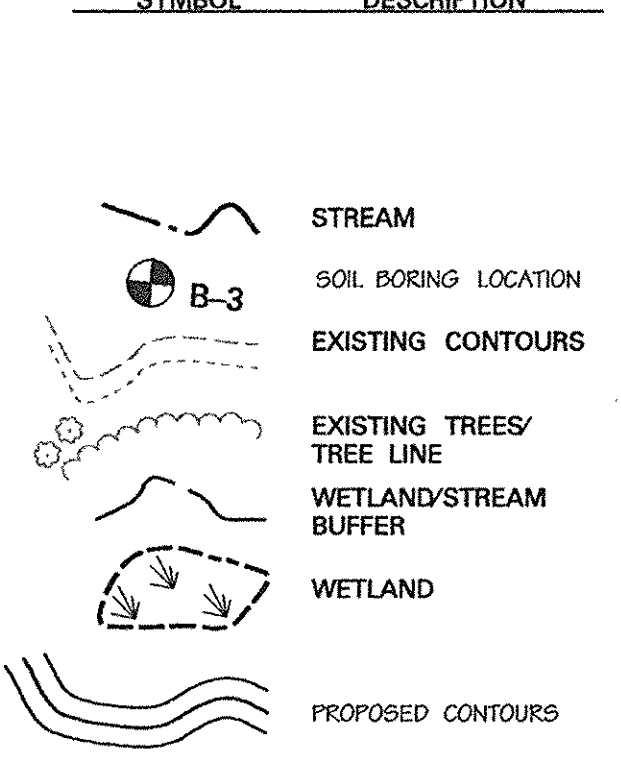
NOTE:  
PRIOR TO STAKEOUT OF S-500, CONTRACTOR  
TO VERIFY CROSS SECTION AND INVERT OF  
STREAM AND NOTIFY ENGINEER IF THERE ARE  
DISCREPANCIES.

IF UNSUITABLE (PERVIOUS) MATERIAL IS ENCOUNTERED AT TIME OF CUT-OFF TRENCH INSTALLATION DEEPER THAN FOUR  
(4) FEET, IT WILL BE NECESSARY TO EXTEND THE CUT-OFF TRENCH DOWN UNTIL SUITABLE MATERIAL IS ENCOUNTERED AS  
DETERMINED BY A GEOTECHNICAL ENGINEER. FILL MATERIAL FOR THE CUT-OFF TRENCH AND IMPERVIOUS CORE 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.

NOTE TO CONTRACTOR:  
CLAY MATERIAL WILL NEED TO BE  
IMPORTED FROM OFFSITE, WITH  
AMPLE TESTING BY THE GEO-  
TECHNICAL ENGINEER.



LEGEND  
SYMBOL DESCRIPTION



- General Notes:
- This facility is privately owned and shall be privately maintained.
  - This facility lies within the Middle Patuxent River watershed.
  - This facility is hazard class A.

INSPECTION SCHEDULE  
Prior notification shall be given to the engineer so that inspections may be made at the following stages:

- Upon completion of excavation to subfoundation and where required, installation of structural supports or reinforcement for structures, including but not limited to:
  - Core trenches for structural embankments
  - Anti-seep collars and anti-seep structures, watertight connectors on pipes, and
  - Trenches for enclosed storm drainage facilities.
- During placement of structural fill, concrete, and installation of piping and catch basins.
- During backfill of foundations and trenches.
- During embankment construction; and
- Upon completion of final grading and establishment of permanent stabilization.

No work shall proceed until engineer inspects and approves the work previously completed.

MAINTENANCE SCHEDULE  
Routine Maintenance

- The facilities shall be inspected annually and after major storms. Inspections should be performed during wet weather to determine if the ponds are functioning properly. The facilities shall be inspected in accordance with the checklist and requirements contained within USDA, NRCS' Standards and Specifications for Ponds' (MD-376). The pond owner(s) and any heirs, successors, or assigns shall be responsible for the safety of the ponds and the continued operation, surveillance, inspection, and maintenance thereof. The pond owner(s) shall promptly notify the Soil Conservation District of any unusual observations that may be indications of distress such as excessive seepage, turbid seepage, sliding or slumping.
- The top and side slopes of the embankments shall be mowed a minimum of two (2) times a year, once in June and once in September. Other side slopes, the bottom of the pond, and maintenance access should be mowed as needed.
- Debris and litter near to the outlet structure shall be removed during regular mowing operations and as needed.
- Visible signs of erosion in the ponds as well as rip rap outlet areas shall be repaired as soon as it is noticed.

Non-Routine Maintenance

- Structural components of the ponds such as the dam, the riser, and the pipes shall be repaired upon the detection of any damage. The components should be inspected during routine maintenance operations.
- Sediment should be removed when its accumulation significantly reduces the design storage, interferes with the function of the riser, when deemed necessary for aesthetic reasons, or when deemed necessary by Howard County's Department(s) of Public Works/Zoning.

GEOTECH RECOMMENDATIONS

- The earthwork operations should be accomplished during the drier seasons, preferably during the summer months, when rainfall is less.
- Construct earth berms or other appropriate features along the top of any newly created or existing slope, where possible, to control surface run-off and minimize the formation of gullies down the face of the slope until slope stabilization is achieved.
- Immediately after final grading, the slopes should be seeded, fertilized and covered with an appropriate mulch and binder.
- Periodic examination of the slope areas during and after construction to locate and regrade any slope areas subjected to scouring from excessive surface run-off.

DESIGN FLOW SUMMARY

Pond 1	2-Year	10-Year	100-Year
Proposed Inflow (cfs)	108.51	199.17	299.01
Allowable Release (cfs)	N/A	N/A	N/A
Proposed Outflow (cfs)	1.93	13.78	71.92
Water Surface Elevation (ft)	370.43	372.38	374.02
Storage Provided (AC - ft)	5.33	8.57	11.45

Retention, Wet Pond

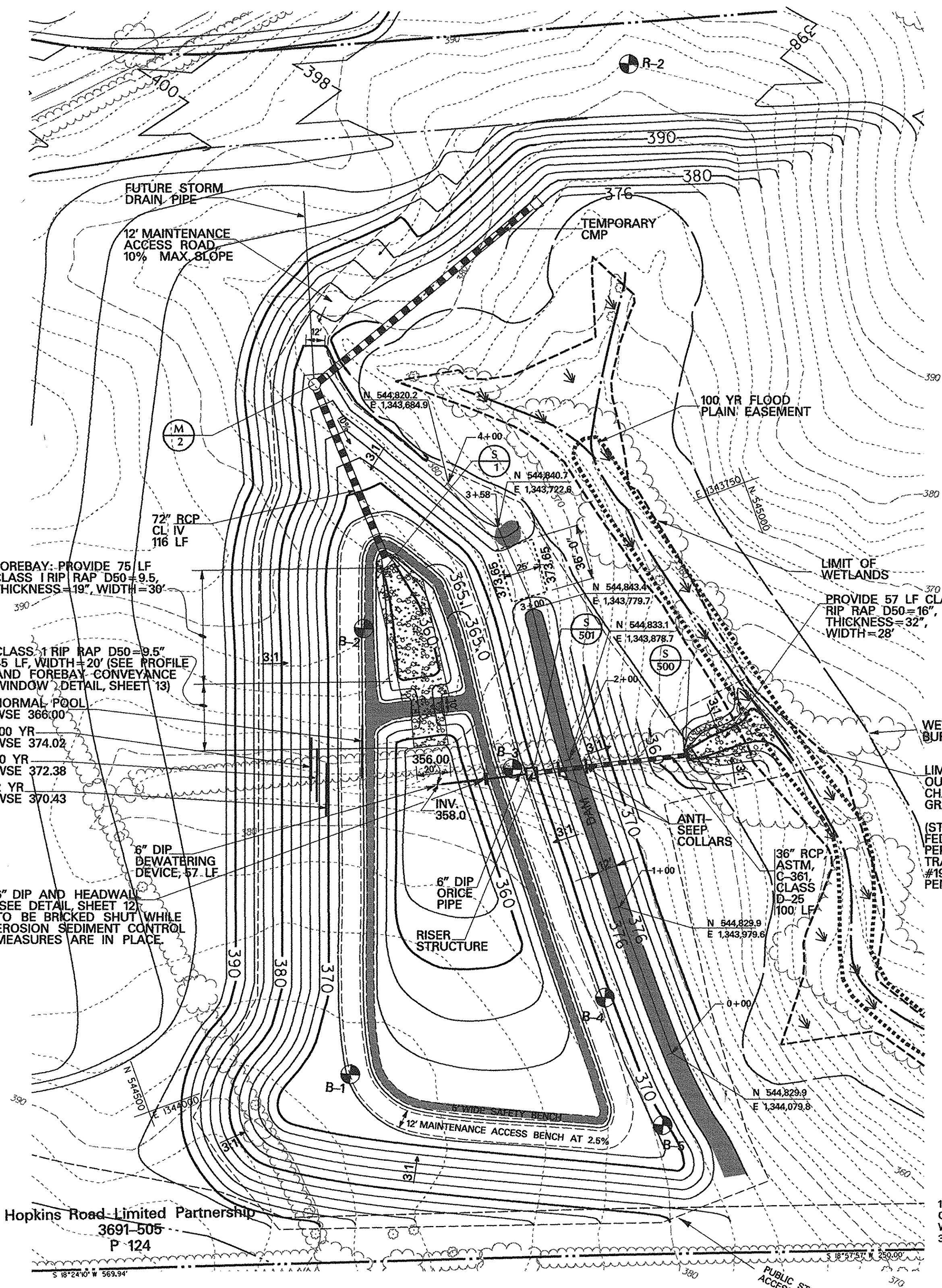
Structure Type	Retention, Wet Pond
Structure Classification	Urban
Structure Location	A
Watershed Area to Facility (Ac.)	44.1
Maximum Height of Fill (ft)	10.0
Minimum Top of Dam Wash (ft)	12
Freeboard Provided (ft)	2.08

Study Point 5

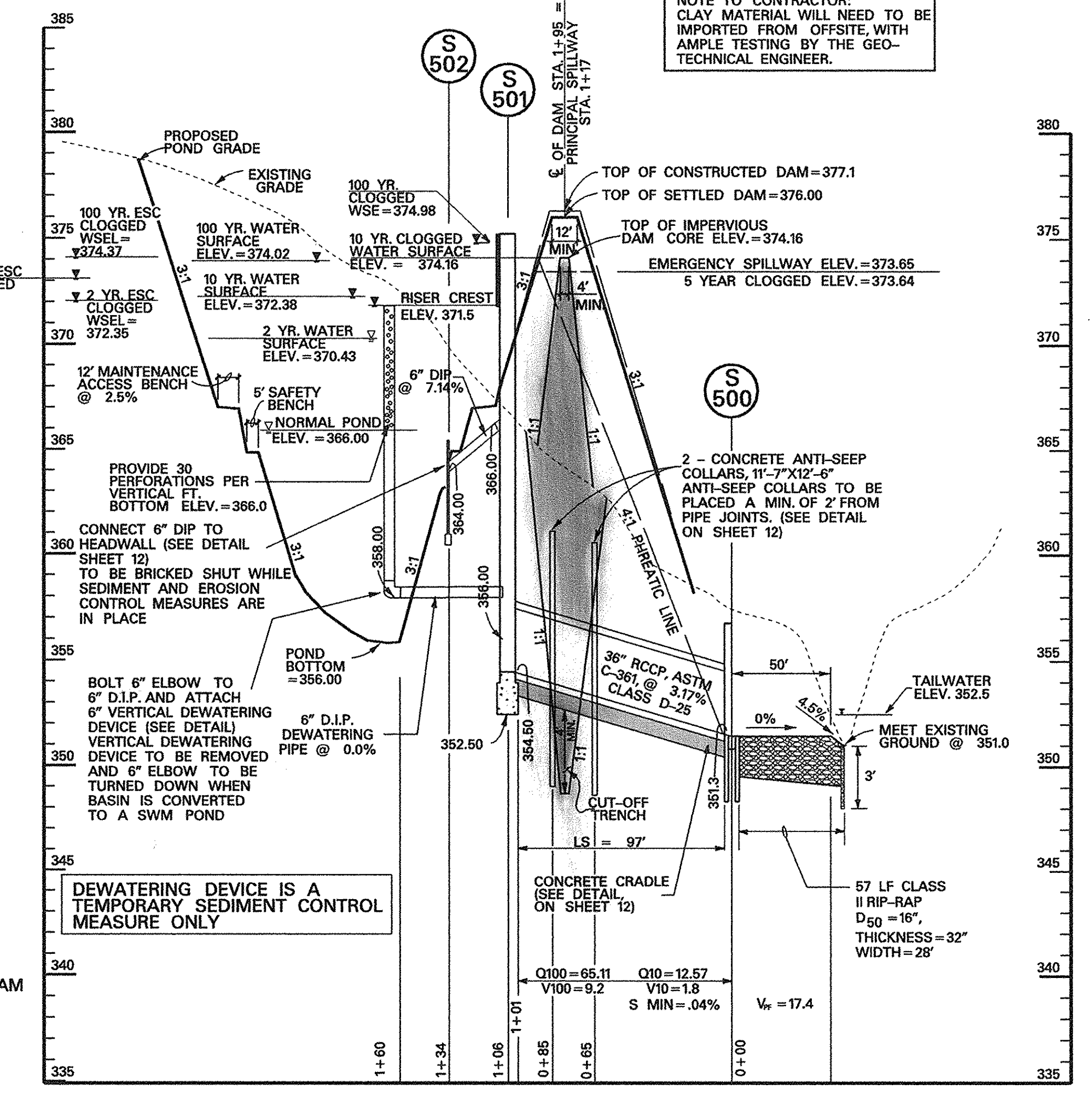
	2-Year	10-Year
Existing Peak (cfs)	19.46	82.37
Proposed Peak (cfs)	17.92	64.76

Study Point 10

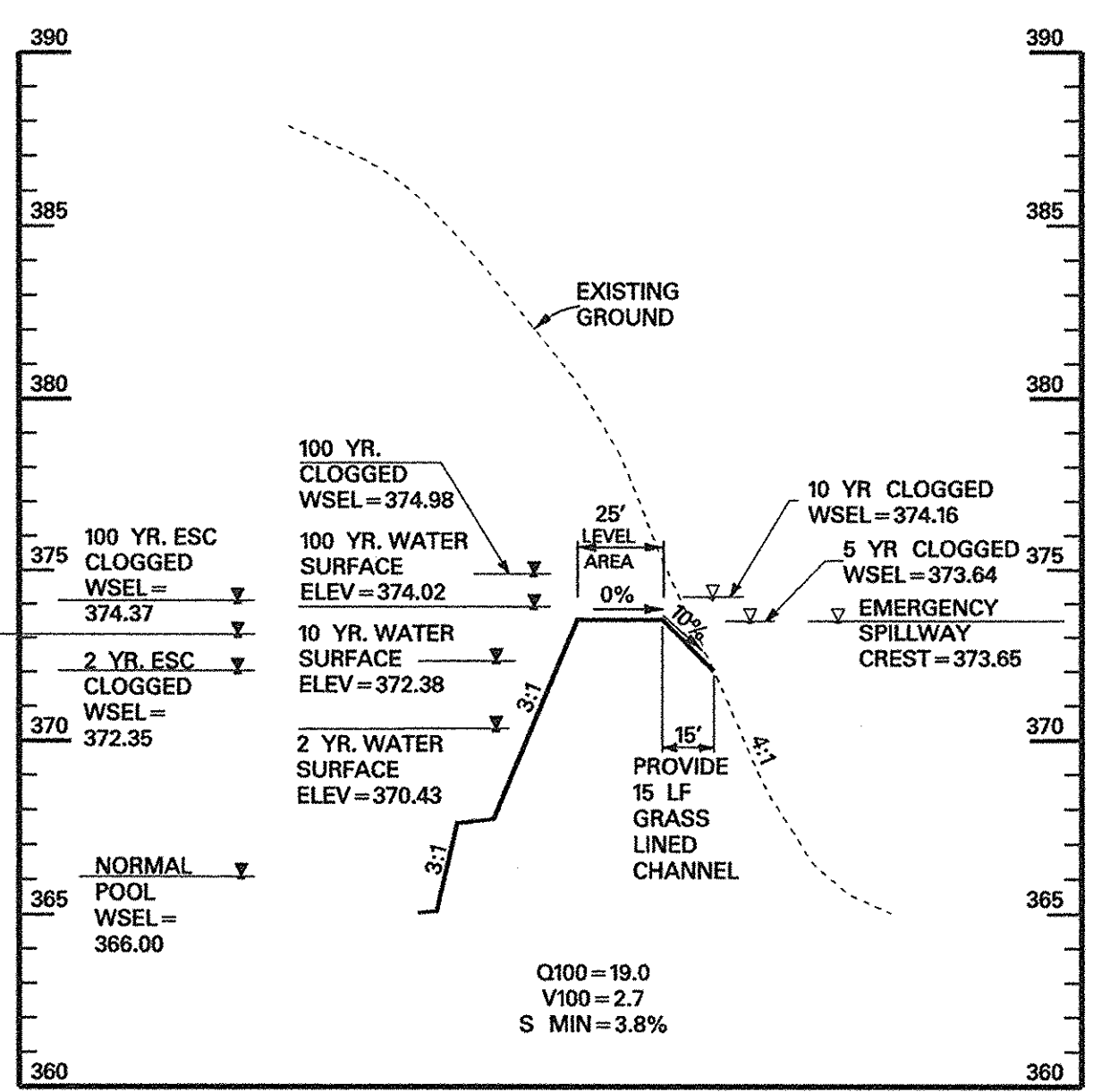
	D.A.	RCN	Tc	2-Year	10-Year
Existing Peak (cfs)	25.1	58	25	4.25	33.52
Proposed Peak (cfs)	44.1	68	19	1.93	13.78



Storm Water Management Pond #1 & SEC BASIN #2 SCALE: 1" = 50'



PRINCIPAL SPILLWAY - PROFILE Scale: Horiz. = 1" = 50' Vert. = 1" = 5'



PROFILE ALONG CL OF EMERGENCY SPILLWAY Scale: Horiz. 1" = 50' Vert. 1" = 5'

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
Cindy Hamilton  
CHIEF, DIVISION OF LAND DEVELOPMENT  
Director

Date	No.	Revision Description
10/29/97	1	
10/29/97	2	
10/29/97	3	

Montpelier Research Park  
HOWARD COUNTY MARYLAND  
OWNER/DEVELOPER: HOPKINS ROAD LIMITED PARTNERSHIP  
9030 RED BRANCH ROAD, SUITE 200 COLUMBIA, MD 21045

DMW  
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A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals  
200 East Pennsylvania Avenue  
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410 296 3333  
Fax 296 4705

10-9-97  
Date  
Professional Engr. No. 16872

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.  
Cynthia K. Simon 10/29/97  
USDA/NATURAL RESOURCES CONSERVATION SERVICE

DEVELOPERS CERTIFICATE:  
I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I/WE ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.  
Howard Karmeli 10/29/97

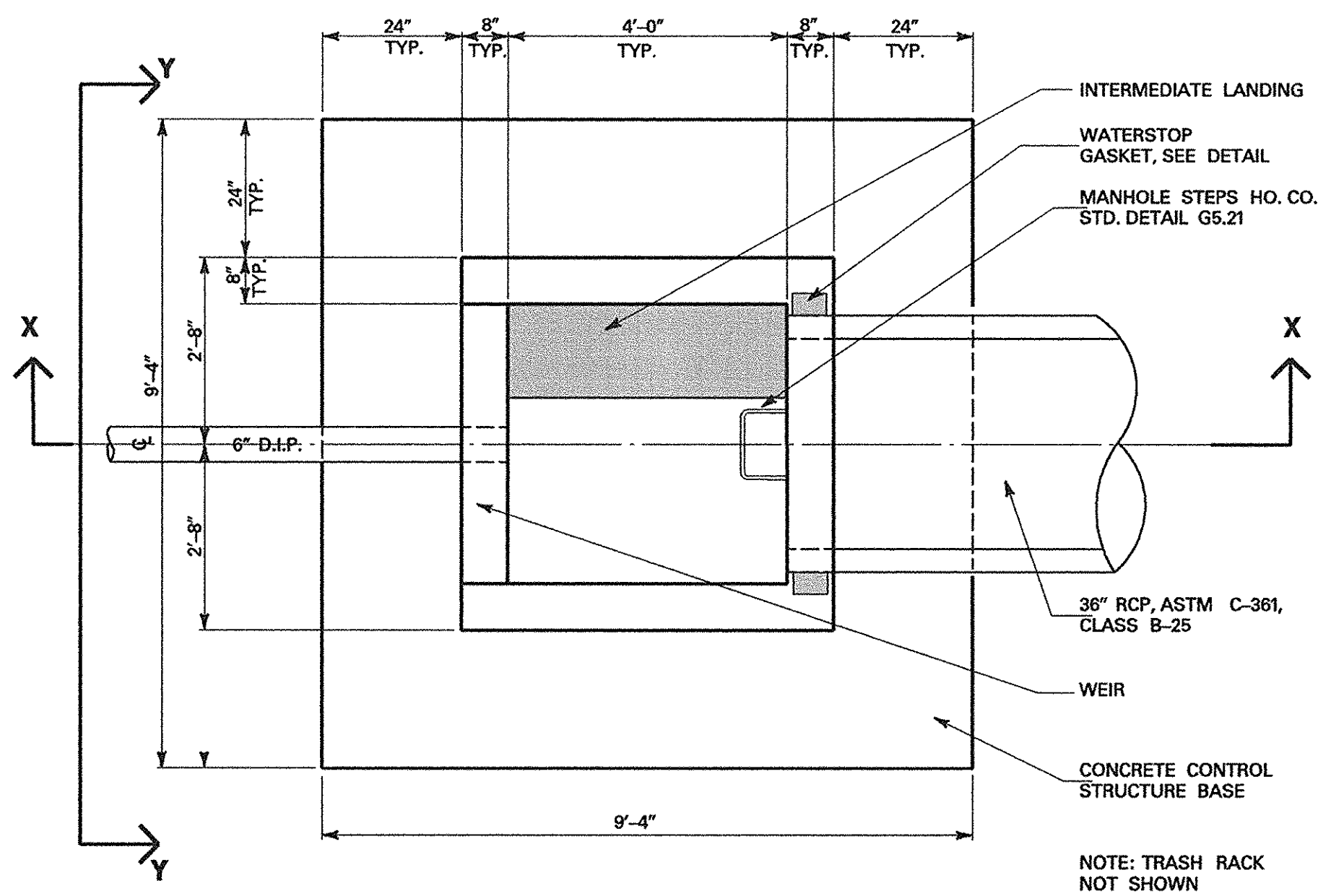
ENGINEERS CERTIFICATE:  
I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.  
Max Kantzer 10-9-97

TREE RETENTION/PROTECTION AREAS WILL BE DELINEATED WITH FENCING AND/OR TEMPORARY SIGNAGE AS APPROPRIATE (SEE TREE PROTECTION FENCE AND TEMPORARY SIGNAGE DETAILS) PRIOR TO THE INSTALLATION OF SEDIMENT & EROSION CONTROL DEVICES OR THE BEGINNING OF ANY CONSTRUCTION ACTIVITY. FENCINGS SHALL NOT BE CONSIDERED INSTALLED CORRECTLY UNTIL REVIEWED BY A LANDSCAPE ARCHITECT OR QUALIFIED NATURAL RESOURCE PROFESSIONAL FAMILIAR WITH THE PLAN. ATTACHMENT OF SIGNS TO TREES IS PROHIBITED. ROOT PRUNING WILL BE PERFORMED AS SPECIFIED ON THIS PLAN (SEE ROOT PRUNING DETAIL).

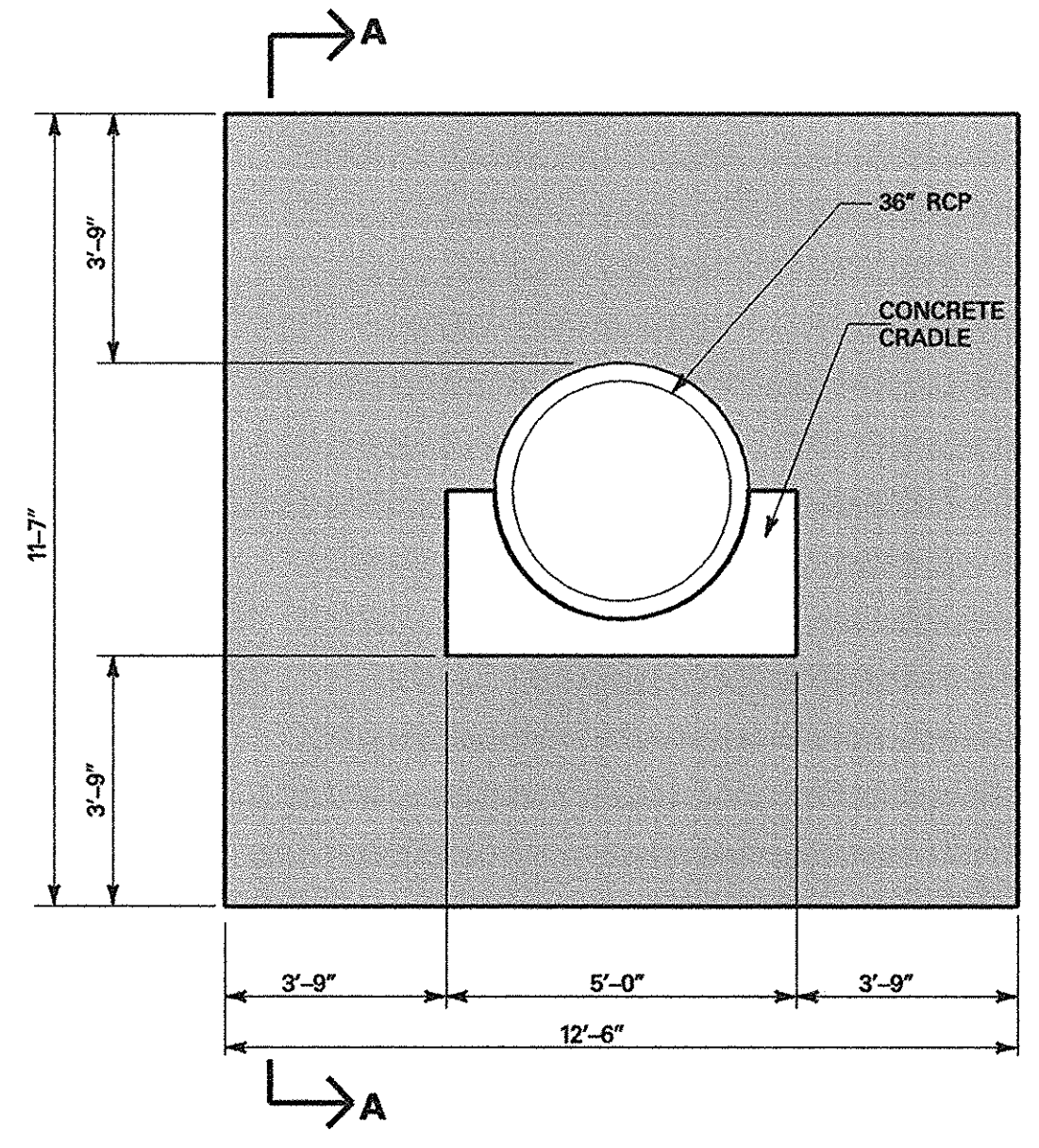
THE FOREST CONSERVATION EASEMENT HAS BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16-100 OF THE HOWARD COUNTY CODE FOR FOREST CONSERVATION ACT. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT. HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.

Note:  
Trees, shrubs and other woody vegetation not allowed within twenty (20) feet of any portion of the embankment.

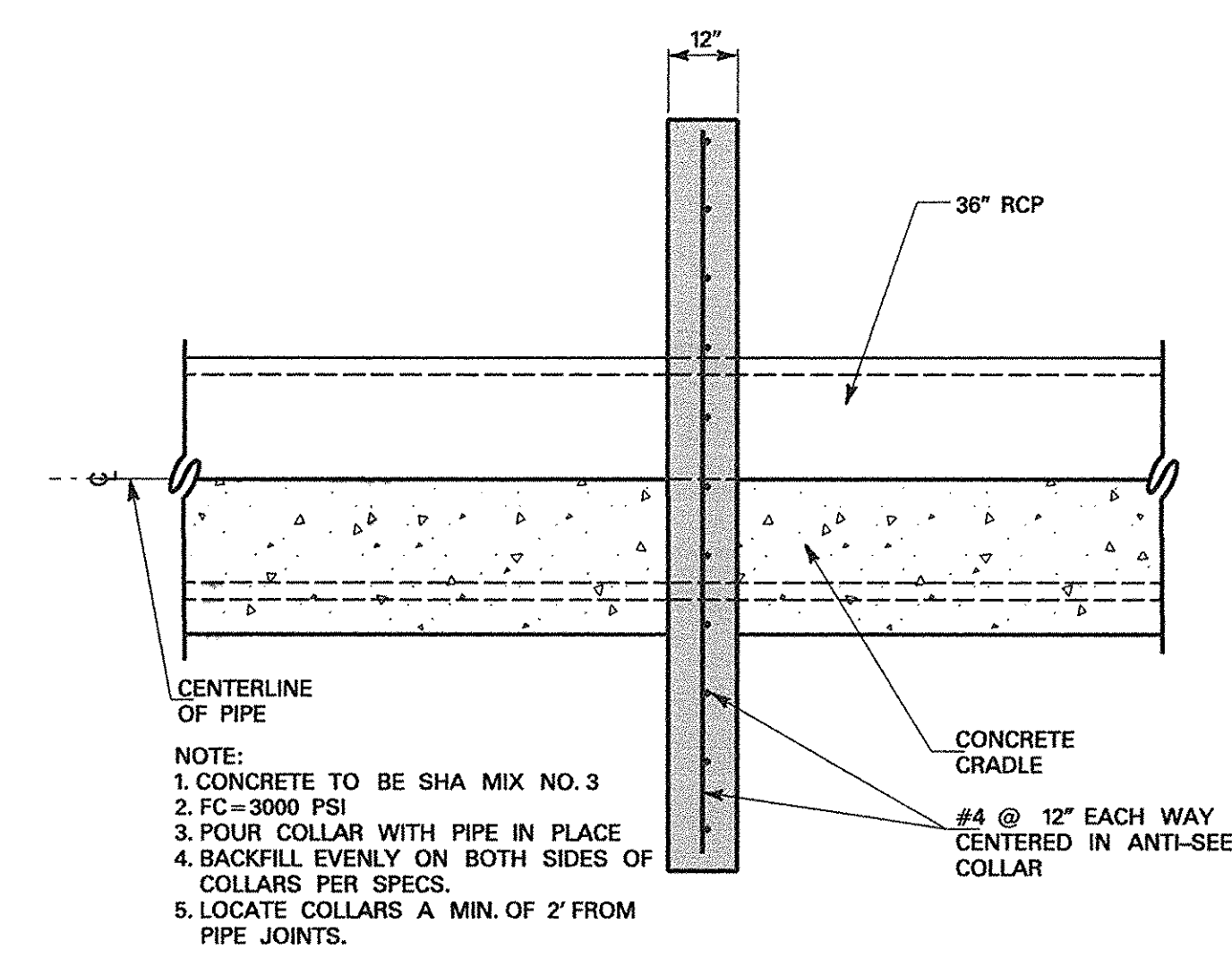
TITLE  
STORM WATER MANAGEMENT PLAN & NOTES  
Des By: ZAL Scale: 1" = 50' Proj. No. 941715  
Dwn By: TPC, MSS Date: 10-9-97  
Chk By: Approved: 11 OF 18



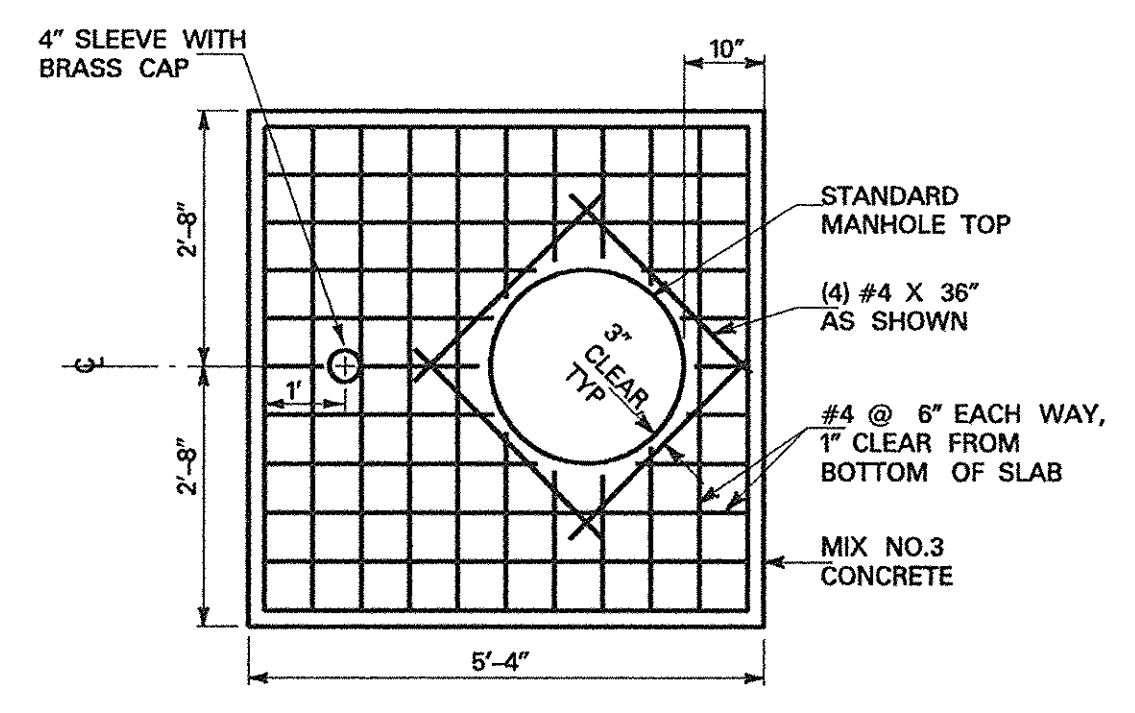
**A Riser Structure - Plan with Top Slab Removed**  
 Scale: 12" = 1'-0"



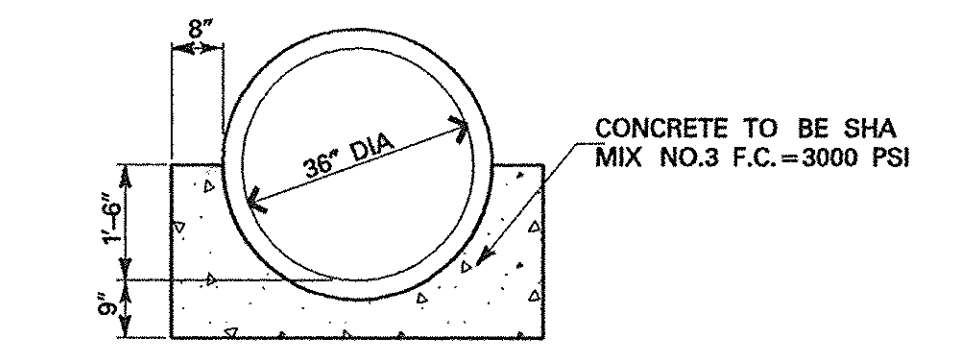
**D Anti-Seep Collar - Elevation**  
 Not to Scale



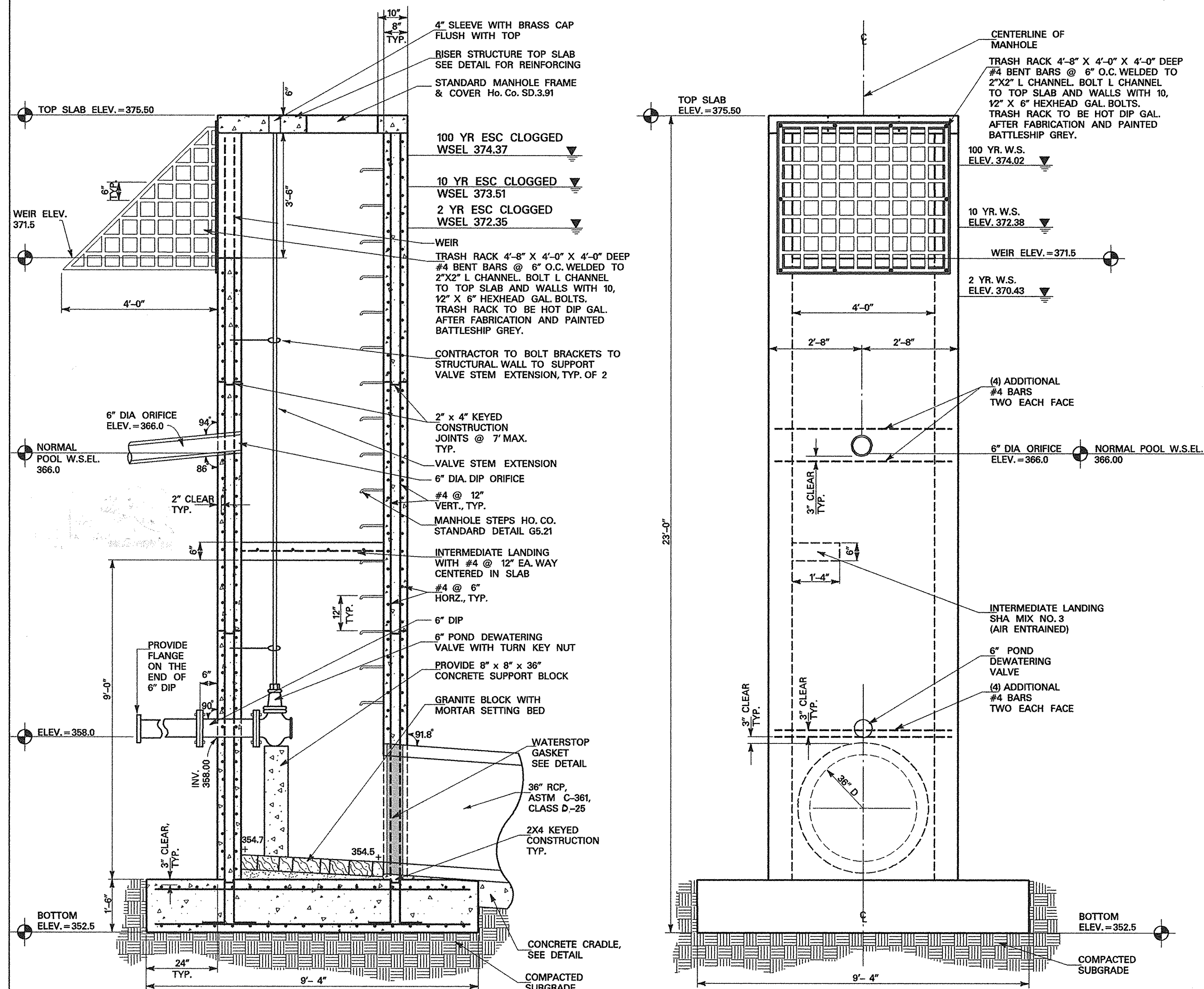
**E Anti-Seep Collar - Section A-A**  
 Not to Scale



**H Riser Structure - Top Slab**  
 Scale: 12" = 1'-0"

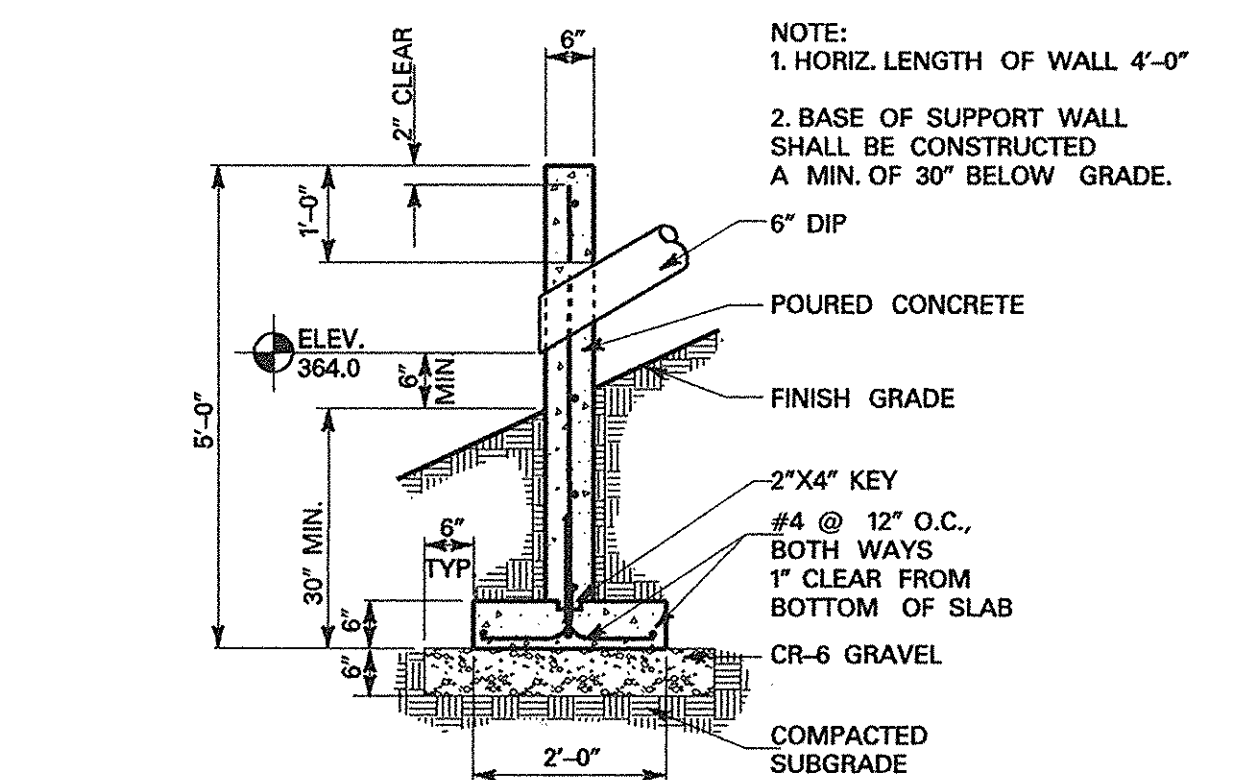


**I A-2 Cradle**  
 Not to Scale



**B Riser Structure - Section X-X**  
 Scale: 12" = 1'-0"

**C Riser Structure - Section Y-Y**  
 Scale: 12" = 1'-0"



**F Head Wall for 6" DIP Orifice Pipe**  
 Scale: 12" = 1'-0"

**DEVELOPERS CERTIFICATE:**  
 I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I/WE SHALL EMPLOY A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I/WE ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

**ENGINEERS CERTIFICATE:**  
 I/CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THE PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTICED THE DEVELOPER THAT HE/SHE MUST EMPLOY A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

APPROVED: *Howard L. Rensch* 10/21/97 DATE  
 SIGNATURE OF DEVELOPER PRINT NAME BELOW SIGNATURE

APPROVED: *Max Kautzer* 10-9-97 DATE  
 SIGNATURE OF ENGINEER PRINT NAME BELOW SIGNATURE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

*[Signature]* 10/29/97 DATE  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

*[Signature]* 10/29/97 DATE  
 CHIEF, DIVISION OF LAND DEVELOPMENT

*[Signature]* 10/29/97 DATE  
 DIRECTOR

Date	No.	Revision Description

**Montpelier Research Park**  
 HOWARD COUNTY MARYLAND

**DMW**  
 Daft - McCune - Walker, Inc.  
 A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals  
 200 East Pennsylvania Avenue  
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 410 296 3333  
 Fax 296 4705

SUBDIVISION NAME	SECTION/AREA	LOTPARCEL #
Montpelier	124, 125, & ROAD BED	
PLAT # OR L.P. BLOCK # ZONE	TAXZONE MAP	ELECT. DISTRICT
L3691, F505 17 PEC	41	5th
WATER CODE	SEWER CODE	CENSUS TRACT
E 21	6440000	605102

TITLE: **STORM WATER MANAGEMENT NOTES & DETAILS**

Des By: ZAL Date: As Shown Proj. No. 941715  
 Dwn By: TPC Date: 10-9-97  
 Chk By: MM Approved: **12** OF 18



STORMWATER MANAGEMENT POND

GENERAL CONSTRUCTION SPECIFICATIONS

1. GENERAL

All stormwater management facilities shall be constructed in accordance with Baltimore County's "Standard Specifications and Details for Construction (1985)" and the S.C.S. Maryland "Standards and Specifications for Ponds" (MD-378, 1992).

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

2. 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. Channel 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.

3. EARTH FILL

MATERIAL. The fill material shall be taken from approved designated borrow area. 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 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 the equipment or compaction shall be achieved by a minimum of four complete passes of a sheepfoot, 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.

All compaction is to be not less than 95 percent of the maximum dry density as determined by AASHTO Specification T-99 (Standard Proctor) with a moisture content within 2 percent of 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.

CUTOFF TRENCH AND IMPERVIOUS CORE. 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 4 feet below existing grade or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The top width of the impervious core shall be 4 feet minimum. The height of the core shall be as shown on the plans. The side slopes of the core 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 AND CUT-OFF TRENCH CONSTRUCTION

The site should be stripped of topsoil and any other unsuitable materials from the embankment or structure area in accordance with Soil Conservation Guidelines. After stripping operations have been completed, the exposed subgrade materials should be proffiled with a loaded dump truck or similar equipment in the presence of a geotechnical engineer or his representative as indicated in Section 5.1. For areas that are not accessible to a dump truck, the exposed materials should be observed and tested by a geotechnical engineer or his representative utilizing a Dynamic Cone Penetrometer. Any excessively soft or loose materials identified by proffiling or penetrometer testing should be excavated to suitable firm soil, and then grades re-established by backfilling with suitable soil.

A representative of the Geotechnical Engineer should be present to monitor placement and compaction of fill for the embankment and cut-off trench. In accordance with Maryland Soil Conservation Specification 378, soils considered suitable for the center of the embankment and cut-off trench shall conform to Unified Soil Classification GC, SC, CH, or CL. A review of the site borings did not indicate core or cut-off trench materials in the cut areas of the site. All fill materials must be placed and compacted in accordance with MD SCS 378 specifications.

4. 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 4 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 4 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 inches or greater over the structure or pipe.

5. REMOVAL AND REPLACEMENT OF DEFECTIVE FILL

Fill placed at densities lower than specified minimum density or at moisture contents outside the specified acceptable range of moisture content or otherwise not conforming to the requirements of the specifications shall be reworked to meet the requirements or removed and replaced by acceptable fill. The bottoms of such excavations shall be finished flat or gently curving and at the sides of such excavations the adjacent sound fill shall be trimmed to a slope not steeper than 3 feet horizontally to 1 foot vertically extending from the bottom of the excavation to the fill surface.

6. PIPE CONDUITS

All pipes shall be circular in cross section. All perforated pipe shall have a minimum of 3.31 square inches of opening per square foot of pipe surface (ex. 30 3/8 inch holes per square foot). Perforations are to be uniformly spaced around the full periphery of the pipe. Any holes blocked or partially blocked by bituminous coating shall be opened prior to installation.

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 Designation C-361.

2. Cradle - All reinforced concrete pipe conduits shall be laid in a concrete cradle for their entire length. This cradle shall consist of high stump concrete placed under the pipe and up the sides of the pipe at least 50 percent of its outside diameter with a minimum thickness of 6 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 cradle 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 "Structural Backfill".

5. Connections - All connections (to anti-seep collars, riser, etc.) shall be watertight.

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

7. CAST-IN-PLACE CONCRETE STRUCTURES

1. Specifications: Maryland Department of Transportation, State Highway Administration (SHA) "Standard Specifications for Construction and Materials", October, 1993 edition, for materials and construction, including all interim specifications.

AASHTO "Standard Specifications for Highway Bridges", dated 1989, for design, including all interim specifications. Concrete design by the "Service Load Design Method".

2. Concrete: Shall meet the requirements of SHA Sections 414 and 902, Mix No. 3.

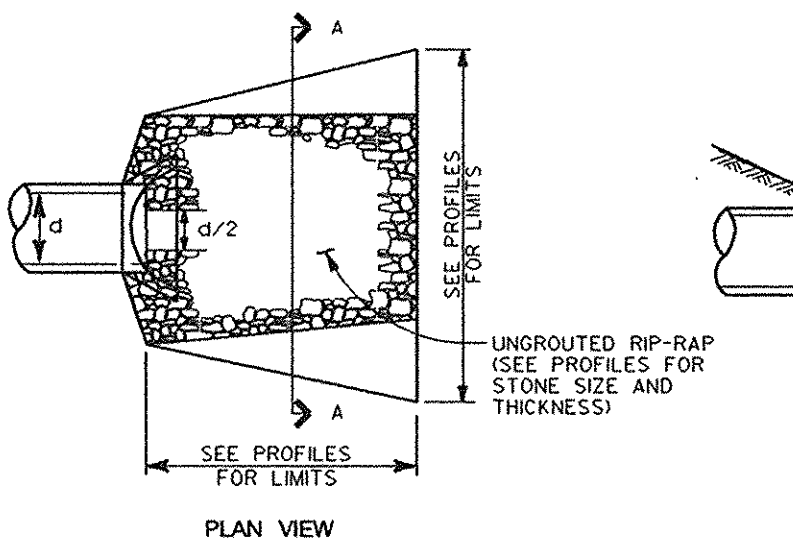
Contractor shall add color mix at plant in accordance with manufacturers recommendation "C-12 Messa Beige" as manufactured by L. M. Scofield Company (213) 723-8285.

Contractor shall supply mix design for approval prior to application. Load and mix tickets shall be supplied for each truck delivery. No partial field mixes shall be allowed.

All concrete shall attain a minimum compressive strength of 3,500 PSI at 28 days. Design  $f_c = 1,200$  PSI.

All exposed edges shall be chamfered 3/4" x 3/4". All construction keys are shown nominal size.

3. Reinforcing Steel: Reinforcing steel shall conform to ASTM A-615, Grade 60. Where not indicated, bar lap splices shall be in accordance with AASHTO specifications. The minimum concrete cover shall be 2 inches unless otherwise noted. Design  $f_s = 24,000$  PSI.



A Stone Outlet Protection III Not to Scale

4. Foundation: Presumed soil bearing capacity = 2,500 PSF. The Engineer must approve all foundations prior to concrete placement. If unsuitable material is encountered, the material shall be undercut and backfilled with structural backfill.

8. 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 901.02.

The rip-rap shall be placed to the required thickness in one operation. The rock shall be delivered and placed in a manner that will insure the rip-rap 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 rip-rap and shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 921.09.

9. 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 to sumps from which the water shall be pumped.

10. STABILIZATION

All borrow areas shall be graded to provide proper drainage and left in a slightly 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.

11. 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 to be employed during the construction process.

12. RECOMMENDED ADDITIONAL SERVICES

Additional soil and foundation engineering, testing, and consulting services recommended for this project are summarized below:

Site Preparation and Proffiling: A Geotechnical Engineer or experienced Soils Inspector should inspect the site after it has been stripped and excavated. The inspector should determine if any undercutting or in-place densification is necessary to prepare a subgrade for fill placement.

13. SEE SHEET 7 FOR TOPSOIL SPECIFICATIONS.

14. SEE SHEET 8 FOR PERMANENT AND TEMPORARY SEEDING SPECIFICATIONS.

15. CONTRACTOR SHALL IMPORT CLAY MATERIAL FROM OFFSITE, WITH AMPLE TESTING BY THE GEOTECHNICAL ENGINEER.

Construction Specifications

1. The subgrade for the filter, rip-rap, or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.

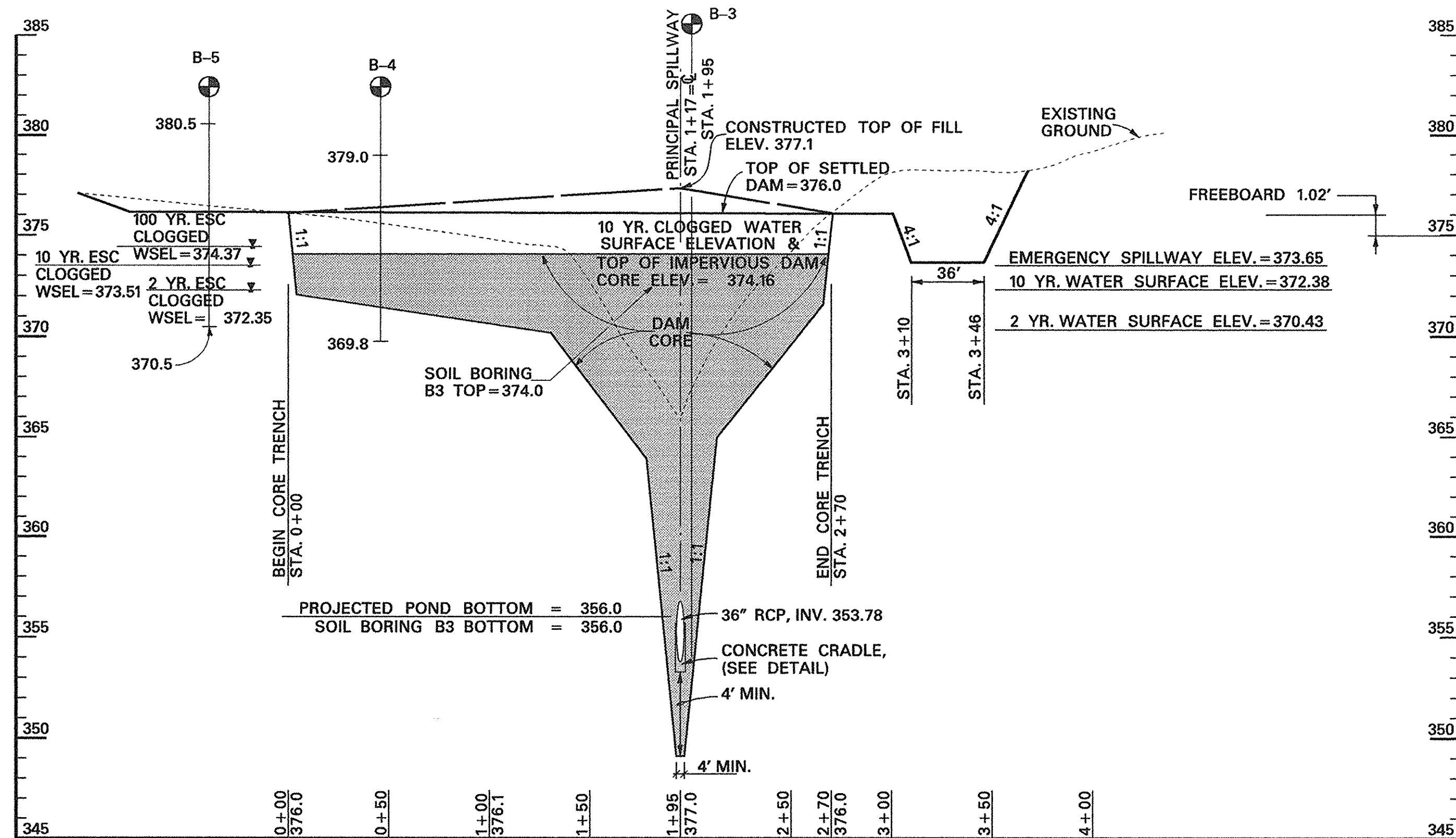
2. The rock or gravel shall conform to the specified grading limits when installed respectively in the rip-rap or filter.

3. Geotextile class C shall be protected from punching, cutting, or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of geotextile over the damaged part or by completely replacing the geotextile. All overlaps whether for repairs or for joining two pieces of geotextile shall be a minimum of one foot.

4. Stone for the rip-rap or gabion outlets may be placed by equipment. They shall be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The stone for rip-rap or gabion outlets shall be delivered and placed in a manner that will ensure that it is reasonably homogeneous with the smaller stones and spalls filling the voids between the larger stones. Rip-rap shall be placed in a manner to prevent damage to the filter blanket or geotextile. Hand placement will be required to the extent necessary to prevent damage to the permanent works.

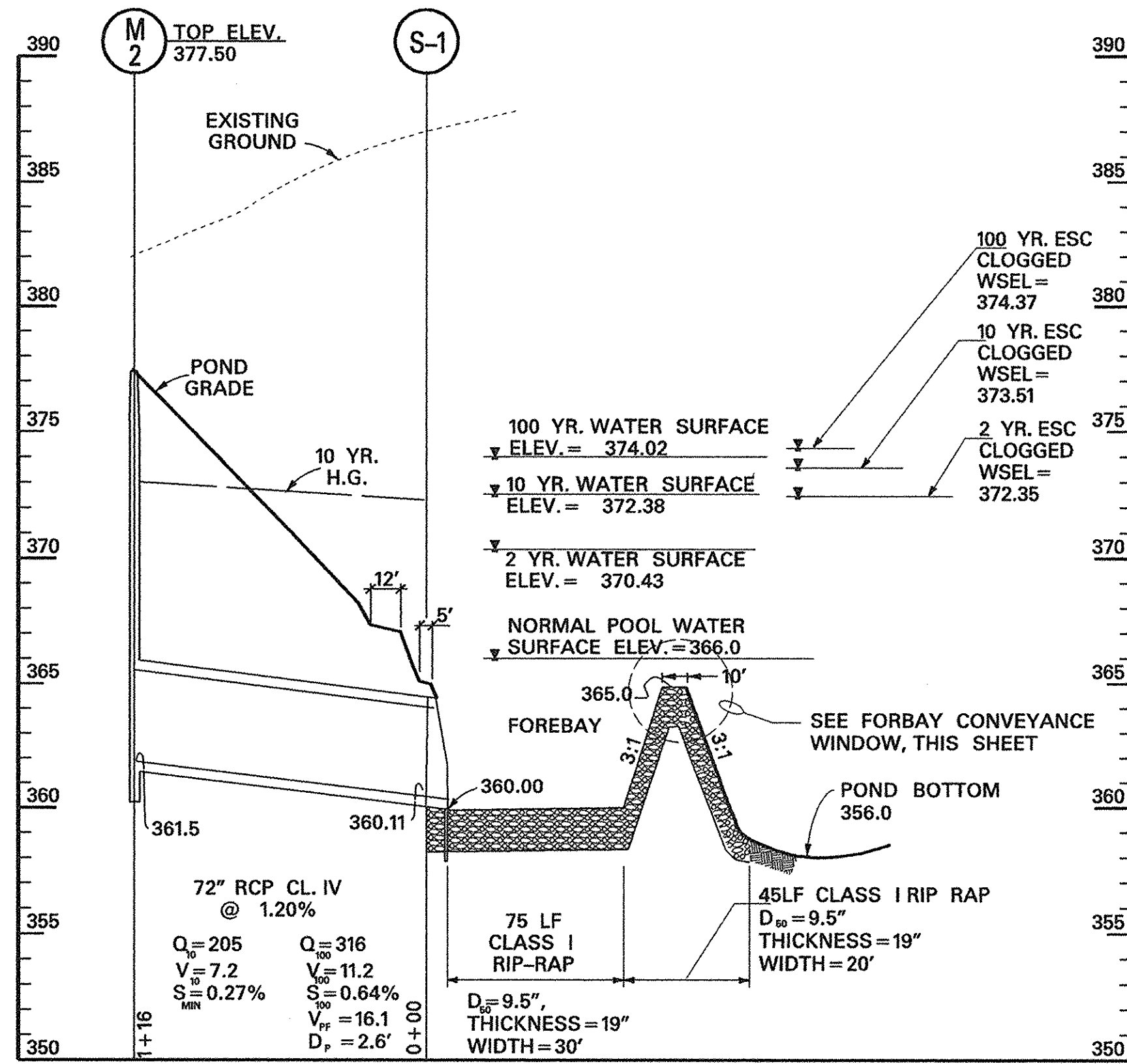
5. The stone shall be placed so that it blends in with the existing ground. If the stone is placed too high then the flow will be forced out of the channel and scour adjacent to the stone will occur.

Stone Outlet Protection Specifications



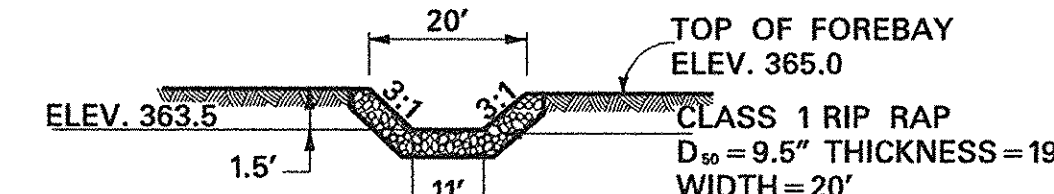
B Profile Along C of Dam

Scale: Horiz. 1" = 50' Vert. 1" = 5'



C Storm Drain Profile

Scale: Horiz. 1" = 50' Vert. 1" = 5'



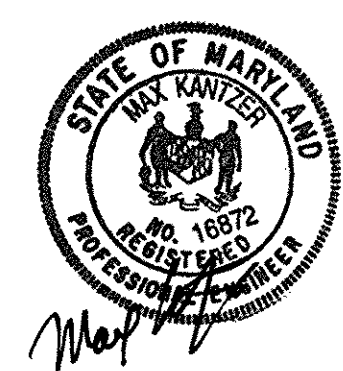
Forebay Conveyance Window for Structure S-1

Not to Scale

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
CHIEF, DIVISION OF LAND DEVELOPMENT  
DIRECTOR

Montpelier Research Park  
HOWARD COUNTY MARYLAND

DMW  
Daft · McCune · Walker, Inc.  
A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals



THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.  
C. J. ... 10-29-97  
DATE

DEVELOPERS CERTIFICATE:  
I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I/SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I/ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.  
SIGNATURE OF DEVELOPER: Harold L. ... DATE: 10/29/97

ENGINEERS CERTIFICATE:  
I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND REASONABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTICED THE REVISIONS THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.  
SIGNATURE OF ENGINEER: Max Kautzer DATE: 10-9-97

STRUCTURE SCHEDULE

NO.	TYPE	SIZE	INV. IN	INV. OUT	TOP ELEV.	REMARKS	LOCATION CENTER OF STRUCTURE
M-2	PRECAST MANHOLE	96" DIA.	361.50	361.50	377.50	SHA STANDARD NUMBER MD-384.09	1343956.8 544761.1
S-1	CONCRETE END SECTION	72"	360.11	360.00	---	HOWARD CO. STD. DETAIL SD 5.51	1343718.8 544766.0
S-501	RISER STRUCT. (SEE DETAILS)	---	---	---	---	SEE DETAIL SHEET 12	1343879.5 544807.2
S-502	HEADWALL SUPPORT DETAIL FOR 6" D.I.P.	---	364.00	---	365.5	SEE DETAIL SHEET 12	1343872.5 544778.1
S-500	TYPE 'A' HEADWALL FOR 36" PIPE	---	351.30	---	355.8	HOWARD CO. STD. DETAIL SD 5.11	1343802.6 544905.7

DATE: 10-9-97  
TITLE: STORM WATER MANAGEMENT DETAILS  
Des By: ZAL Scale: As Shown Proj. No. 941715  
Dwn By: TPC, MSS Date: 10-9-97  
Chk By: Approved: 13 OF 18

ELEV.	SOIL DESCRIPTION	STR. DEPTH	DEPTH SCALE	CON.	BLOWS 6"	NO.	REC.	BORING & SAMPLING NOTES
38.5	SURFACE	0.0						
38.2	Brown, very moist, soil, some mica, little fine sand, trace fine roots (ML)	1.5		D	1-2-2	1	17"	Topsoil
37.8	Orange brown, very moist, very loose, micaceous silty/sandy sand (ML/SM)	4.0		D	2-3-3	2	17"	No groundwater encountered while drilling
37.5	Greenish brown, moist to dry, loose to medium dense, micaceous silty sand (SM)	5		D	5-5-5	3	18"	Caved in to 17.7' at Completion
37.2		10		D	3-3-5	4	16"	Backfilled at Completion
36.8		15		D	11-9-10	5	18"	Surface elevation estimated from site plan
36.5	White and brown, wet, very dense, micaceous silty fine to medium sand (SM)	20		D	25-504"	6	6'	

ELEV.	SOIL DESCRIPTION	STR. DEPTH	DEPTH SCALE	CON.	BLOWS 6"	NO.	REC.	BORING & SAMPLING NOTES
35.5	SURFACE	0.0						
35.2	White and brown, wet, very dense, micaceous silty fine to medium sand (SM)	20.0		D	506"	7	2'	
35.0	Gray, dry, very dense, micaceous fine sand, little silty with decomposing rock fragments (SM) (decomposed rock)	25.0		D	506"	7	5'	
34.8		28.5		D	504"	8	1"	
34.5		30.0		D				Bottom of Hole at 28.6'
34.2		35.0		D				
34.0		40.0		D				

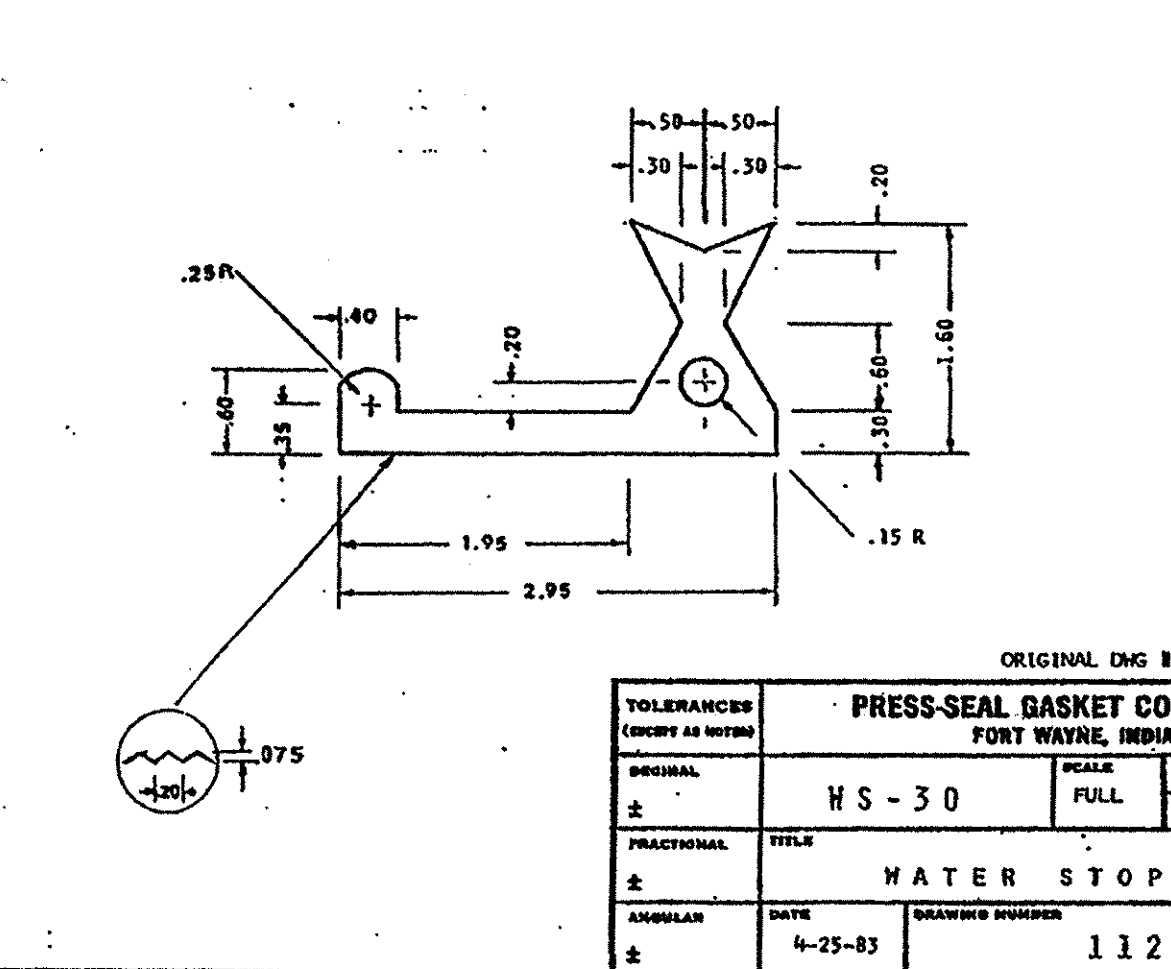
ELEV.	SOIL DESCRIPTION	STR. DEPTH	DEPTH SCALE	CON.	BLOWS 6"	NO.	REC.	BORING & SAMPLING NOTES
37.8	SURFACE	0.0						
37.5	Brown to reddish brown, very moist, very loose to loose, micaceous silty, trace fine roots and sand (ML) (ML)	1.0		D	2-2-2	1	17"	Topsoil
37.2	Brown to greenish brown, very moist to dry, loose to medium dense, micaceous silty sand (SM)	5		D	3-3-4	2	17"	No groundwater encountered while drilling
36.8		10		D	6-5-4	3	16"	Caved in to 12.5' at Completion
36.5		15		D	5-9-10	4	16"	Backfilled at Completion
36.2	Greenish brown, dry, very dense to dense, micaceous silty sand (SM) (decomposed rock)	15		D	18-506"	5	12"	Surface elevation estimated from site plan
35.8		20		D	11-13-25	6	14"	
35.5		25		D				Bottom of Hole at 20.7'

ELEV.	SOIL DESCRIPTION	STR. DEPTH	DEPTH SCALE	CON.	BLOWS 6"	NO.	REC.	BORING & SAMPLING NOTES
37.8	SURFACE	0.0						
37.5	Brown, very moist, soil, some mica, little fine sand, trace fine roots (ML)	1		D	1-1-3	1	16"	7" Topsoil
37.2	Brown, greenish brown, moist to dry, medium dense to dense, micaceous silty sand (SM)	5		D	2-5-7	2	16"	No groundwater encountered while drilling
36.8		10		D	8-12-15	3	17"	Backfilled at Completion
36.5		15		D	7-12-18	4	17"	Surface elevation estimated from site plan
36.2	Greenish brown, moist, medium dense, micaceous silty sand, with decomposing rock fragments & quartz (SM)	10.0		D	9-13-15	4	17"	Backfilled at Completion
35.8	Greenish brown, dry, very dense, micaceous silty sand (SM) (decomposed rock)	20		D	506"	6	5'	

ELEV.	SOIL DESCRIPTION	STR. DEPTH	DEPTH SCALE	CON.	BLOWS 6"	NO.	REC.	BORING & SAMPLING NOTES
35.5	SURFACE	0.0						
35.2	Greenish brown, dry, very dense, micaceous silty sand (SM) (decomposed rock)	20.0		D	506"	7	5'	
35.0		28.8		D	504"	8	4"	
34.8		30.0		D				Bottom of Hole at 28.6'
34.5		35.0		D				
34.0		40.0		D				

ELEV.	SOIL DESCRIPTION	STR. DEPTH	DEPTH SCALE	CON.	BLOWS 6"	NO.	REC.	BORING & SAMPLING NOTES
37.8	SURFACE	0.0						
37.5	Brown to reddish brown, very moist, very loose to loose, micaceous silty, trace fine roots and sand (ML) (ML)	1.0		D	2-2-2	1	14"	5" Topsoil
37.2	Brown to greenish brown, very moist to dry, loose to medium dense, micaceous silty sand (SM)	5.5		D	2-2-5	2	17"	No groundwater encountered while drilling
36.8		10		D	3-4-4	3	16"	Caved in to 8.7' at Completion
36.5		15		D	3-502"	4	6"	Backfilled at Completion
36.2	Refusal on boulder at 9.2'	10		D				Surface elevation estimated from site plan
35.8		20		D				
35.5		25		D				
35.2		30		D				
35.0		35		D				
34.8		40		D				

ELEV.	SOIL DESCRIPTION	STR. DEPTH	DEPTH SCALE	CON.	BLOWS 6"	NO.	REC.	BORING & SAMPLING NOTES
35.5	SURFACE	0.0						
35.2	Brown to reddish brown, very moist to moist, very loose to loose, micaceous silty, some fine sand (ML)	1		D	1-2-2	1	16"	7" Topsoil
34.8		5		D	3-4-6	2	16"	No groundwater encountered while drilling
34.5		10		D	3-3-4	3	16"	Caved in to 8.6' at Completion
34.2		15		D	9-13-15	4	17"	Backfilled at Completion
34.0		20		D				Surface elevation estimated from site plan



### WS-30

WS-30 WATER STOP GASKET WITH TAKE-OFF CLAMP

NOTE: PRECAST RISER STRUCTURE WITH NON-SINK PATCHING COMPOUND IS NOT PERMITTED FOR USE IN BALTIMORE COUNTY. THIS WATER STOP MUST BE CAST IN-PLACE WITH THE RISER.

(OR EQUIVALENT)

#### WATER STOP DETAIL

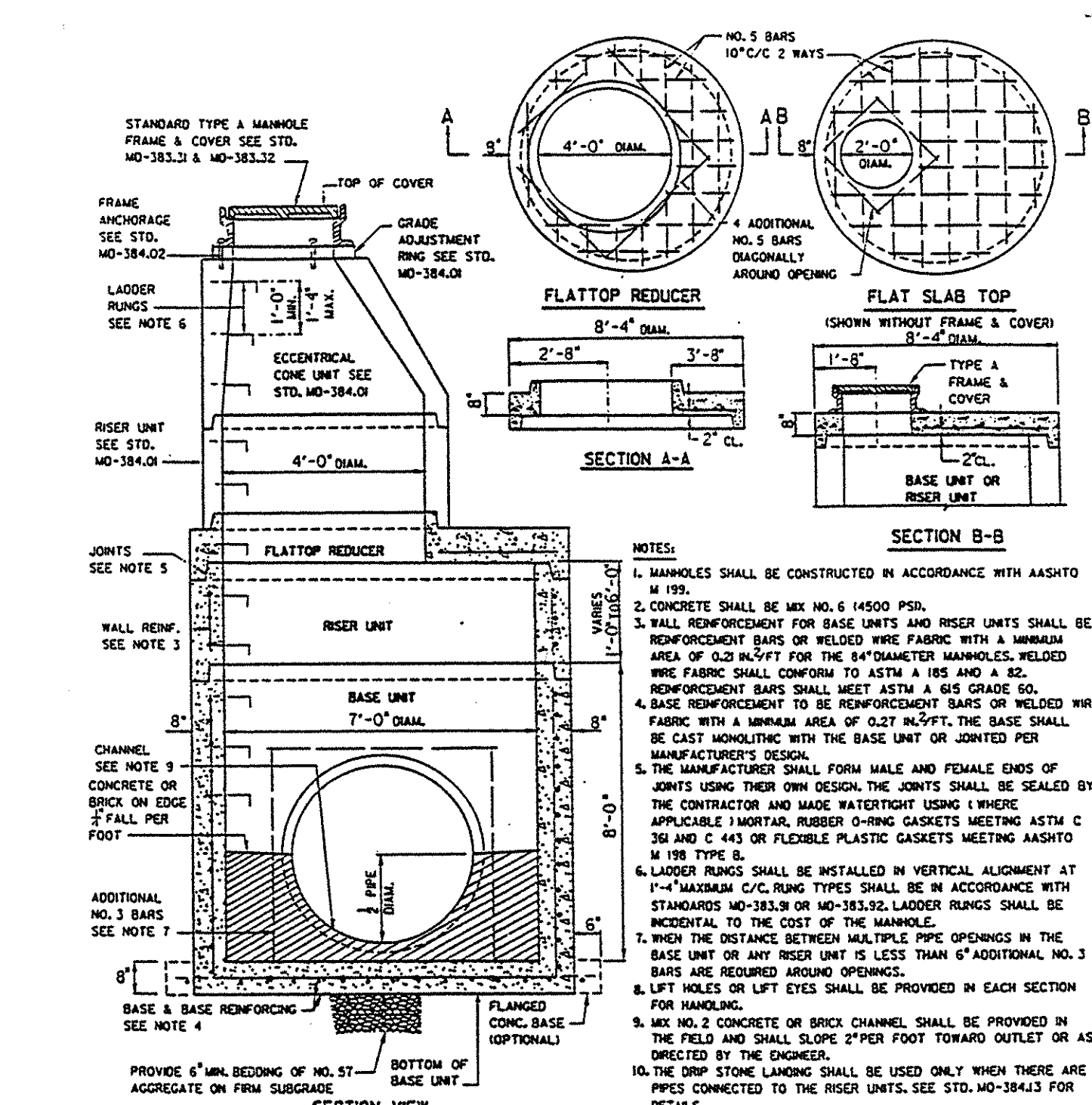
NOT TO SCALE

**DEVELOPER'S CERTIFICATION:**  
 I, the undersigned, hereby certify that all development and construction will be done in accordance with this plan and that any responsible persons involved in the construction project will have a certificate of attendance in the Department of the Environment approved training program for the continuing education and erosion before beginning the project. ALSO AUTHORIZED PERSON ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

DATE: 10/21/97  
 SIGNATURE OF DEVELOPER: [Signature]  
 PRINT NAME BELOW SIGNATURE: David L. Renard

**ENGINEERS CERTIFICATE:**  
 I, the undersigned, hereby certify that this plan for pond construction, erosion and sediment control, represents a practical and feasible plan based on my professional knowledge of the site conditions. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE ADVISED THE DEVELOPER OF THE CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

DATE: 10/21/97  
 SIGNATURE OF ENGINEER: [Signature]  
 PRINT NAME BELOW SIGNATURE: Max Kantzer  
 PLAN NUMBER: 10/21/97



APPROVED: [Signature]  
 APPROVAL: STATE HIGHWAY ADMINISTRATION  
 APPROVAL: FEDERAL HIGHWAY ADMINISTRATION  
 APPROVAL: COUNTY DEPT. OF PLANNING & ZONING  
 APPROVAL: BALTIMORE COUNTY DEPT. OF PLANNING & ZONING

**Maryland Department of Transportation**  
 STATE HIGHWAY ADMINISTRATION  
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES  
 84" DIAMETER PRECAST MANHOLE  
 FOR 54" & 60" PIPES  
 STANDARD NO. MD-384.07

**STANDARD TYPE MANHOLE**  
 FRAME & COVER SEE STD. MD-384.02  
 TOP OF COVER  
 GRADE ADJUSTMENT RING SEE STD. MD-384.04  
 FLATTOP REDUCER  
 SECTION A-A  
 SECTION B-B  
 NOTES:  
 1. MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH ASHTO M 195.  
 2. CONCRETE SHALL BE MIX NO. 6 14500 PSI.  
 3. WALL REINFORCEMENT FOR BASE UNITS AND RISER UNITS SHALL BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.24 SQ.FT. FOR THE 4' DIAMETER MANHOLES. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 AND A 65.  
 4. BASE REINFORCEMENT TO BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.27 SQ.FT. THE BASE SHALL BE CAST MONOLITHIC WITH THE BASE UNIT OR JOINTED PER MANUFACTURER'S DESIGN.  
 5. THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN. THE JOINTS SHALL BE SEALED BY THE CONTRACTOR AND MADE WATER TIGHT USING WHERE APPLICABLE MORTAR, RUBBER O-RING CASSETS MEETING ASTM C 36 AND C 443 OR FLEXIBLE PLASTIC CASSETS MEETING ASTM M 198 TYPE B.  
 6. LADDER RUNGS SHALL BE INSTALLED IN VERTICAL ALIGNMENT AT 1'-4" MAXIMUM C/C. RUNG TYPES SHALL BE IN ACCORDANCE WITH STANDARDS MD-383.03 OR MD-383.02. LADDER RINGS SHALL BE INCIDENTAL TO THE COST OF THE MANHOLE.  
 7. WHEN THE DISTANCE BETWEEN MULTIPLE PIPE OPENINGS IN THE BASE UNIT OR RISER UNIT IS LESS THAN 6" ADDITIONAL NO. 3 BARS ARE REQUIRED AROUND OPENINGS.  
 8. LEFT HOLES OR LEFT EYES SHALL BE PROVIDED IN EACH SECTION FOR HANDING.  
 9. MIX NO. 2 CONCRETE OR BRICK CHANNEL SHALL BE PROVIDED IN THE FIELD AND SHALL SLOPE 2" PER FOOT TOWARD OUTLET OR AS DIRECTED BY THE ENGINEER.  
 10. THE DRIP STONE LANDING SHALL BE USED ONLY WHEN THERE ARE PIPES CONNECTED TO THE RISER UNITS. SEE STD. MD-384.01 FOR DETAILS.  
 11. MINIMUM DEPTH PAYMENT PER EACH SHALL BE 10'-3" MEASURED FROM THE BOTTOM OF THE BASE UNIT TO THE TOP OF THE MANHOLE COVER. VERTICAL DEPTH PAYMENT PER LINEAR FOOT SHALL INCLUDE ALL OPENING IN EXCESS OF 10'-3" OF THE COST OF THE DRIP STONE LANDING, NO. 57 AGGREGATE, GROUT, SEALANT, AND ALL NECESSARY APPURTENANCES SHALL BE INCIDENTAL TO THE PRICE BID.

APPROVED: [Signature]  
 APPROVAL: STATE HIGHWAY ADMINISTRATION  
 APPROVAL: FEDERAL HIGHWAY ADMINISTRATION  
 APPROVAL: COUNTY DEPT. OF PLANNING & ZONING  
 APPROVAL: BALTIMORE COUNTY DEPT. OF PLANNING & ZONING

**Maryland Department of Transportation**  
 STATE HIGHWAY ADMINISTRATION  
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES  
 96" DIAMETER PRECAST MANHOLE  
 FOR 72" PIPES  
 STANDARD NO. MD-384.09

10/21/97

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 [Signature]  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DIRECTOR

DATE: 10/21/97  
 DATE: 10/21/97  
 DATE: 10/21/97

**Montpelier Business Park**  
 HOWARD COUNTY MARYLAND

**DMW**  
 Dak & McCune Walker, Inc.  
 A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals  
 200 East Pennsylvania Avenue  
 Towson, Maryland 21288  
 410 296 3333  
 410 296 4705

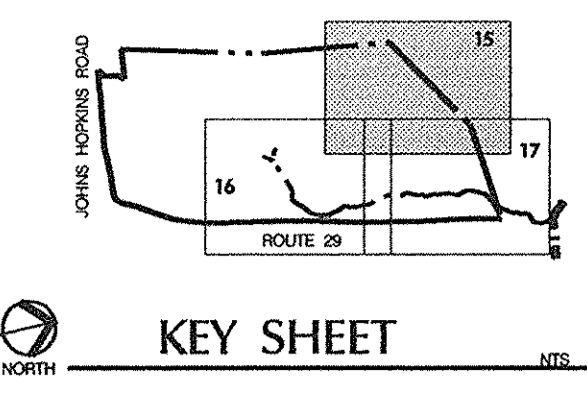
REVISION DESCRIPTION

Date	No.	Revision Description

**STORM WATER MANAGEMENT DETAILS**

DESIGNER: ZAL	SCALE: 1/4" = 1'-0"	PROJECT NO.: 947175
DRYING: TPC	DATE: 10-9-97	
CHK BY: [Signature]	APPROVED: [Signature]	14 OF 18

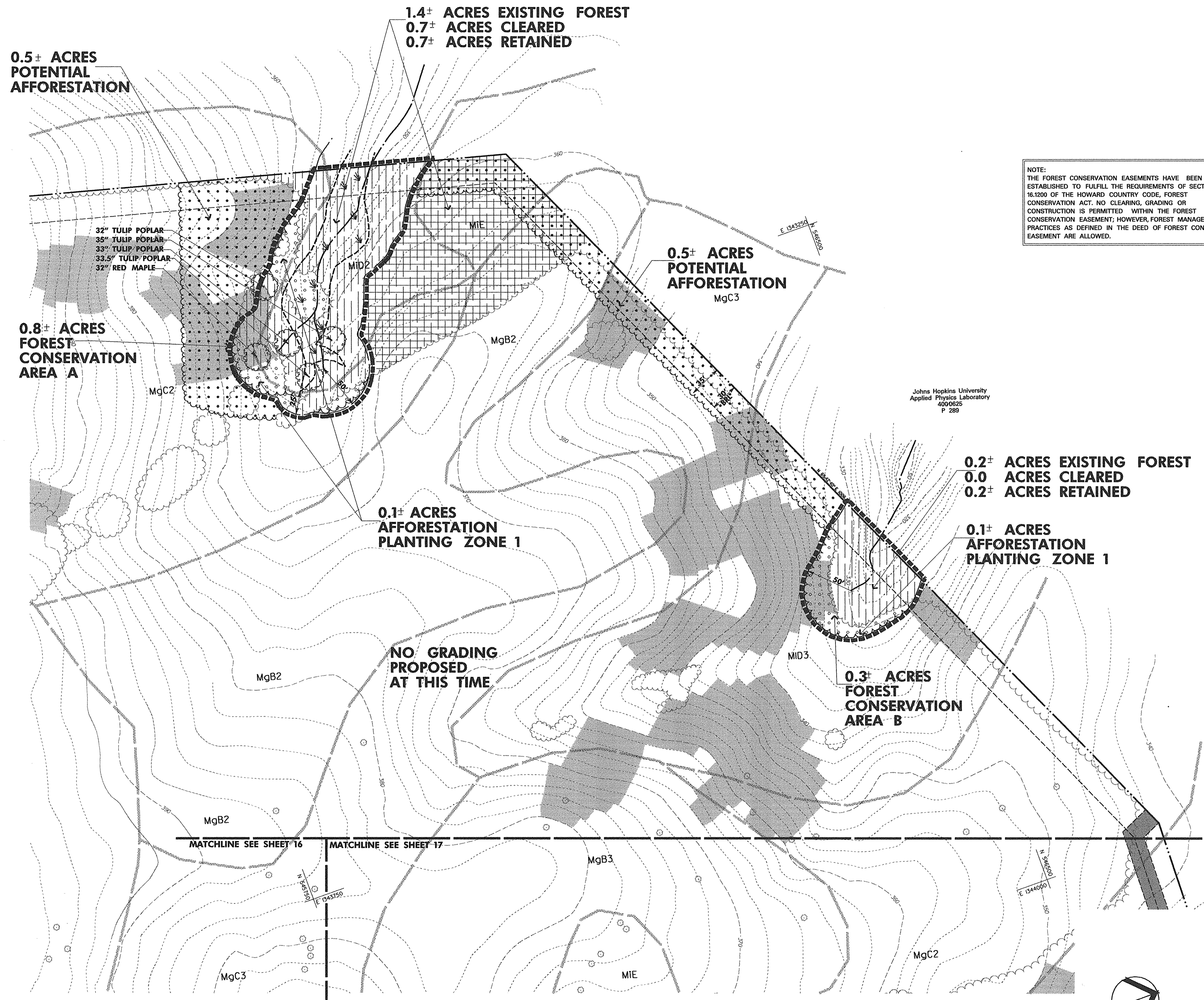
Professional Engr. No. 16872



**LEGEND**

SYMBOL	DESCRIPTION
[Dark Gray Box]	SLOPES = >25%
[Medium Gray Box]	SLOPE = 15%-25%
[Blue Line]	STREAM
[Dotted Area]	SOILS
[Dashed Line]	EXISTING CONTOURS
[Dotted Circle]	APPROX. LOCATION SPECIMEN TREE
[Dotted Line]	EXISTING TREES/TREE LINE
[Wavy Line]	WETLAND/STREAM BUFFER
[Wavy Line]	WETLAND
[Dashed Line]	PROPOSED CONTOURS
[Dotted Line]	FLOODPLAIN
[Dashed Line]	LIMIT OF DISTURBANCE
[Dashed Line]	FOREST CONSERVATION EASEMENT
[Dashed Line]	20' WIDE UTILITY EASEMENT
[Cross-hatched Area]	FOREST TO BE CLEARED
[Dotted Area]	EXISTING FOREST TO BE RETAINED
[Dotted Area]	AFFORESTATION
[Dotted Area]	POTENTIAL AFFORESTATION
[Dashed Line]	FOREST PROTECTION FENCE

NOTE:  
THE FOREST CONSERVATION EASEMENTS HAVE BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE, FOREST CONSERVATION ACT. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT; HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.



Johns Hopkins University  
Applied Physics Laboratory  
4000625  
P 289

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	10/29/97
DATE	TC
CHIEF, DIVISION OF LAND DEVELOPMENT	10/29/97
DATE	TC
DIRECTOR	10/29/97
DATE	

Date	No.	Revision Description

**Montpelier**  
**Research Park**  
HOWARD COUNTY MARYLAND  
OWNER/DEVELOPER: HOPKINS ROAD LIMITED PARTNERSHIP  
9030 RED BRANCH ROAD, SUITE 200 COLUMBIA, MD 21045

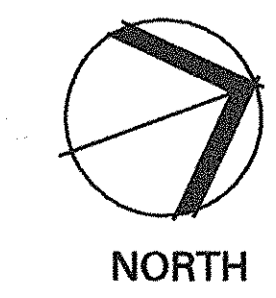
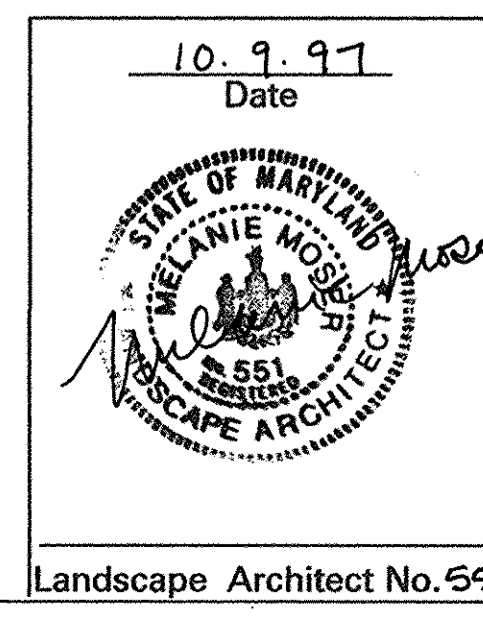
**DMW**  
Daft · McCune · Walker, Inc.  
A Team of Land Planners,  
Landscape Architects,  
Engineers, Surveyors &  
Environmental Professionals

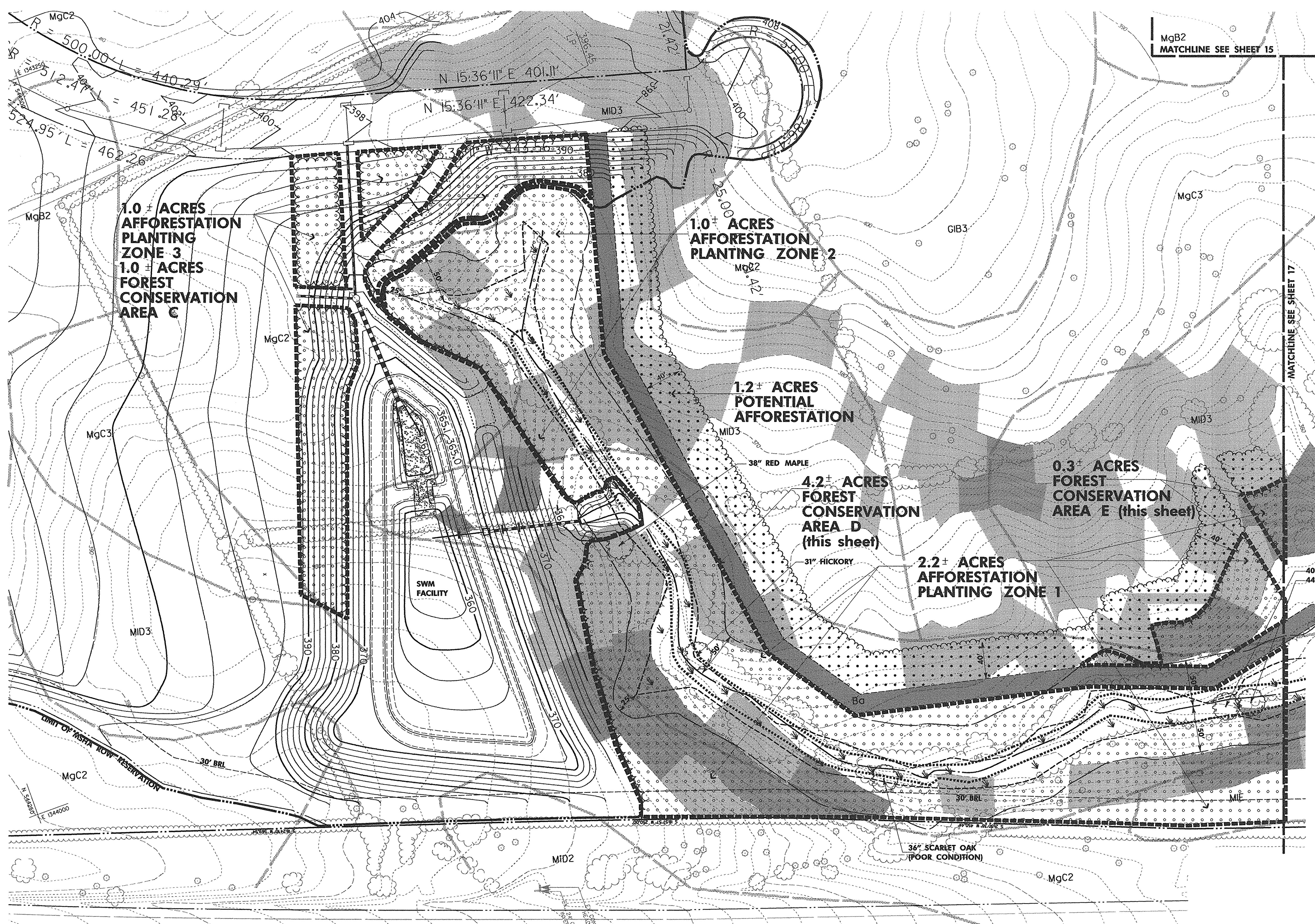
200 East Pennsylvania Avenue  
Towson, Maryland 21286  
410 296 3333  
Fax 296 4705

SUBDIVISION NAME Montpelier	SECTION/AREA	LOT/PARCEL # 124.125, & ROAD BED
PLAT OR REF. L3691, F505	BLOCK # ZONE 17 PEC	ELECT. DISTRICT 41 5th
WATER CODE E 21	SEWER CODE 6440000	CENSUS TRACT 6051.02

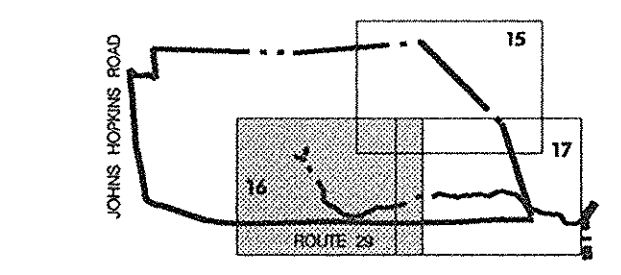
TITLE  
**NW FOREST CONSERVATION AFFORESTATION PLAN**

Des By: JAR	Scale: 1" = 50'	Proj. No. 941715
Drn By: TPC	Date: 10-9-97	
Chk By:	Approved:	<b>15</b> OF 18





MgB2  
MATCHLINE SEE SHEET 15



KEY SHEET

**LEGEND**

SYMBOL	DESCRIPTION
[Dark Gray Box]	SLOPES = > 25%
[Medium Gray Box]	SLOPE = 15%-25%
[Wavy Line]	STREAM
[Dotted Area]	SOILS
[Dashed Line]	EXISTING CONTOURS
[Circle]	APPROX. LOCATION SPECIMEN TREE
[Dotted Circle]	EXISTING TREES/TREE LINE
[Wavy Line with Dotted Area]	WETLAND/STREAM BUFFER
[Wavy Line]	WETLAND
[Dashed Line]	PROPOSED CONTOURS
[Dotted Area]	FLOODPLAIN
[Dashed Line]	LIMIT OF DISTURBANCE
[Dotted Area]	FOREST CONSERVATION EASEMENT
[Dotted Area]	20' WIDE UTILITY EASEMENT
[Cross-hatched Area]	FOREST TO BE CLEARED
[Dotted Area]	EXISTING FOREST TO BE RETAINED
[Dotted Area]	AFFORESTATION
[Dotted Area]	POTENTIAL AFFORESTATION
[Dashed Line]	FOREST PROTECTION FENCE

1.0 ± ACRES  
AFFORESTATION  
PLANTING  
ZONE 3  
1.0 ± ACRES  
FOREST  
CONSERVATION  
AREA C

1.0 ± ACRES  
AFFORESTATION  
PLANTING ZONE 2

1.2 ± ACRES  
POTENTIAL  
AFFORESTATION

4.2 ± ACRES  
FOREST  
CONSERVATION  
AREA D  
(this sheet)

0.3 ± ACRES  
FOREST  
CONSERVATION  
AREA E (this sheet)

2.2 ± ACRES  
AFFORESTATION  
PLANTING ZONE 1

SWM FACILITY

38" RED MAPLE

31" HICKORY

40" TULIP POPLAR  
44" TULIP POPLAR

36" SCARLET OAK  
(POOR CONDITION)

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	10/29/97
CHIEF, DIVISION OF LAND DEVELOPMENT	10/29/97
DIRECTOR	10/29/97

Date	No.	Revision Description

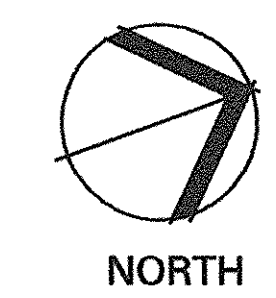
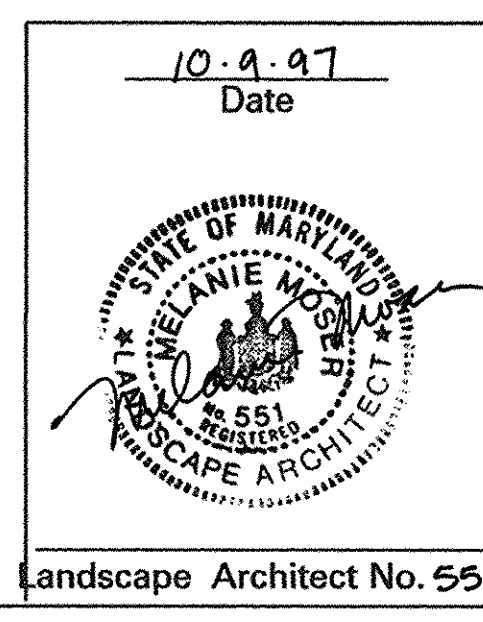
**Montpelier**  
**Research Park**  
HOWARD COUNTY MARYLAND  
OWNER/DEVELOPER: HOPKINS ROAD LIMITED PARTNERSHIP  
9030 RED BRANCH ROAD, SUITE 200 COLUMBIA, MD 21045

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200 East Pennsylvania Avenue  
Towson, Maryland 21286  
410 286 3333  
Fax 286 4705

SUBDIVISION NAME Montpelier	SECTION/AREA 124.126 & ROAD BED	LOT/PARCEL # 6051.02
PLAT # OR LA # L3691.F505	ZONE 17	PRECEDENCE 41
WATER CODE E 21	SEWER CODE 6440000	

TITLE  
**SE FOREST CONSERVATION/AFFORESTATION PLAN**

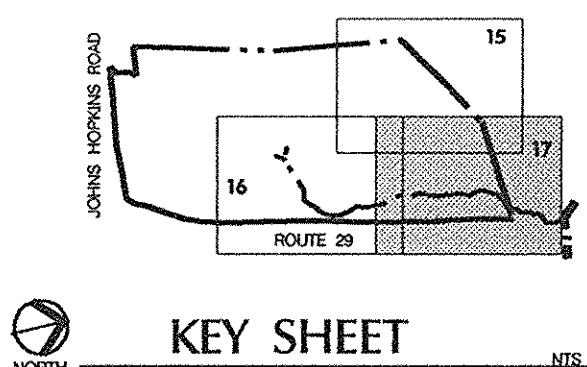
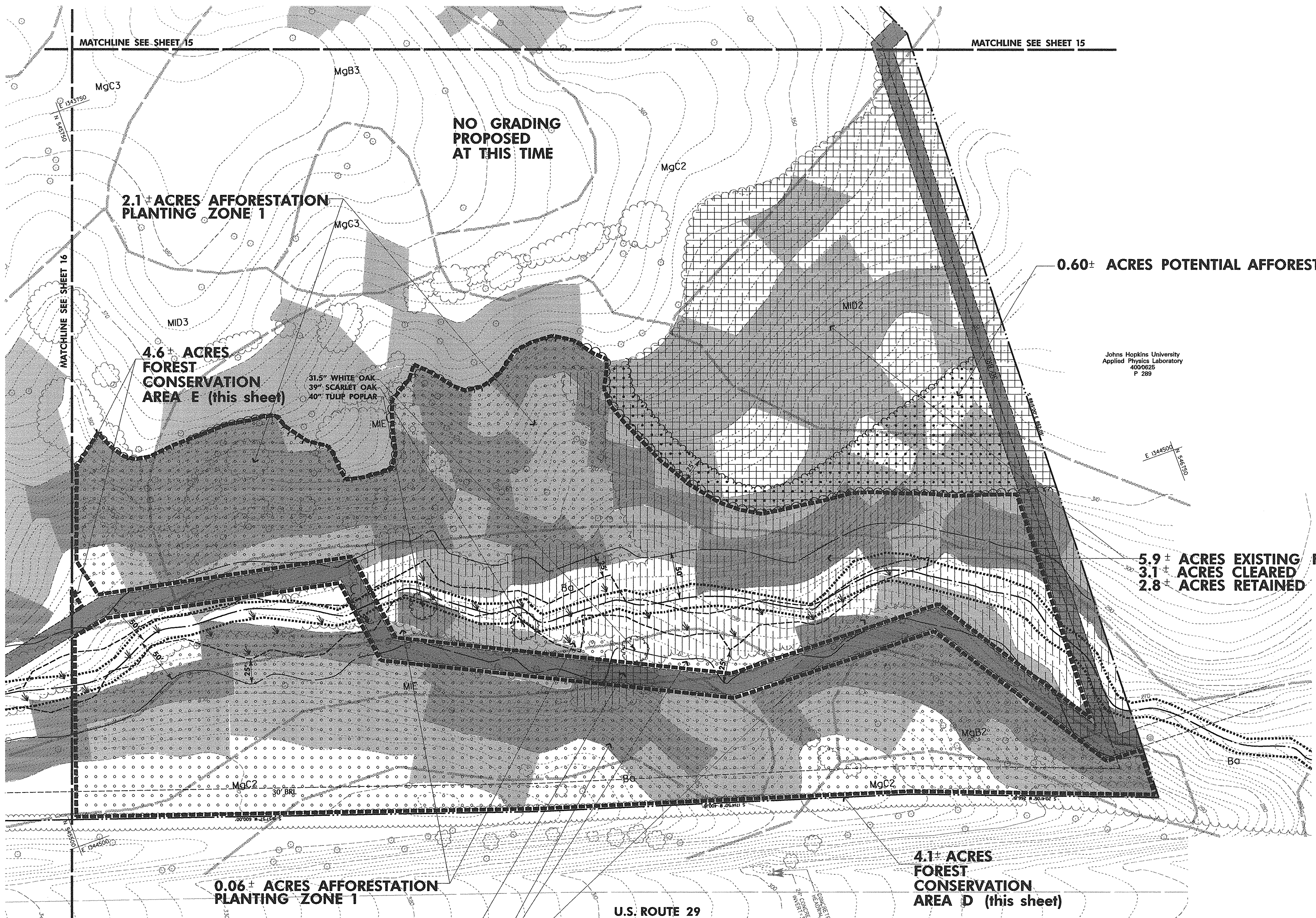
Des By: JAR	Scale: 1" = 50'	Proj. No. 941715
Drn By: TPC	Date: 10-9-97	
Chk By:	Approved:	16 OF 18



NORTH

Landscape Architect No. 551





**LEGEND**

SYMBOL	DESCRIPTION
[Dark Gray Box]	SLOPES = >25%
[Medium Gray Box]	SLOPE = 15%-25%
[Wavy Line]	STREAM
[Dotted Area]	SOILS
[Dashed Line]	EXISTING CONTOURS
[Circle]	APPROX. LOCATION SPECIMEN TREE
[Cloud-like Shape]	EXISTING TREES/TREE LINE
[Wavy Line with Dots]	WETLAND/STREAM BUFFER
[Wavy Line]	WETLAND
[Dashed Line]	PROPOSED CONTOURS
[Dotted Area]	FLOODPLAIN
[Dashed Line]	LIMIT OF DISTURBANCE
[Dashed Line]	FOREST CONSERVATION EASEMENT
[Dashed Line]	20' WIDE UTILITY EASEMENT
[Cross-hatch Pattern]	FOREST TO BE CLEARED
[Dotted Pattern]	EXISTING FOREST TO BE RETAINED
[Cloud-like Shape]	AFFORESTATION
[Dotted Pattern]	POTENTIAL AFFORESTATION
[Dashed Line]	FOREST PROTECTION FENCE

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APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	10/29/97
CHIEF, DIVISION OF LAND DEVELOPMENT	10/29/97
DIRECTOR	10/29/97

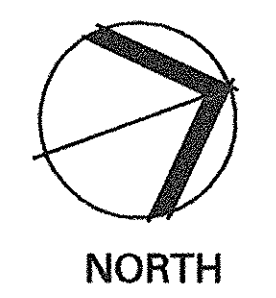
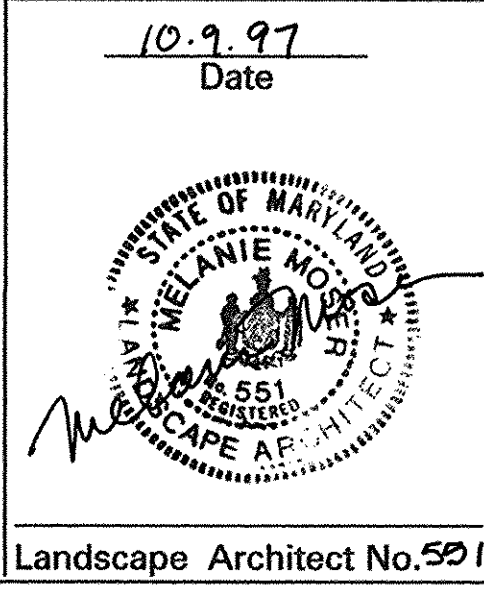
Date	No.	Revision Description

**Montpelier**  
**Research Park**  
HOWARD COUNTY MARYLAND  
OWNER/DEVELOPER: HOPKINS ROAD LIMITED PARTNERSHIP  
9030 RED BRANCH ROAD, SUITE 200 COLUMBIA, MD 21045

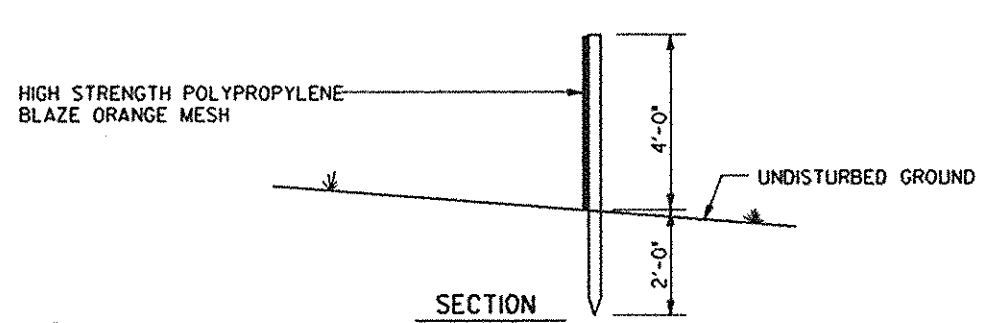
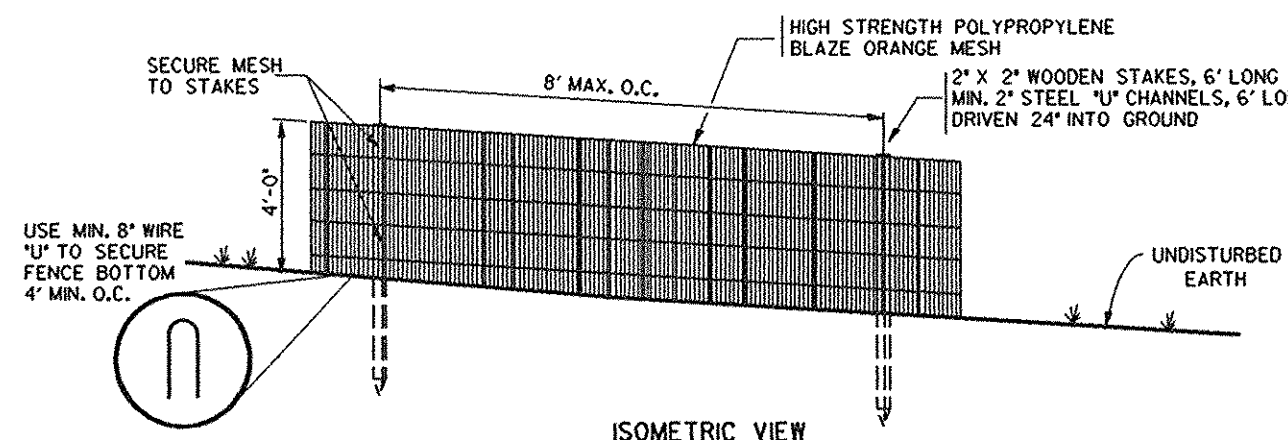
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SUBDIVISION NAME	Montpelier	SECTION/AREA	124.125, & ROAD BED
PLAT OR L.P. BLOCK #/ZONE	L3691.P505 17 PEC	FAZONNE MAP	41
WATER CODE	E 21	SEWER CODE	6440000
CENSUS TRACT	6051.02		

TITLE	NE FOREST CONSERVATION/AFFORESTATION PLAN		
Des By:	JAR	Scale: 1" = 50'	Proj. No. 941715
Drn By:	TPC	Date: 10-9-97	17 OF 18
Chk By:	Approved:		



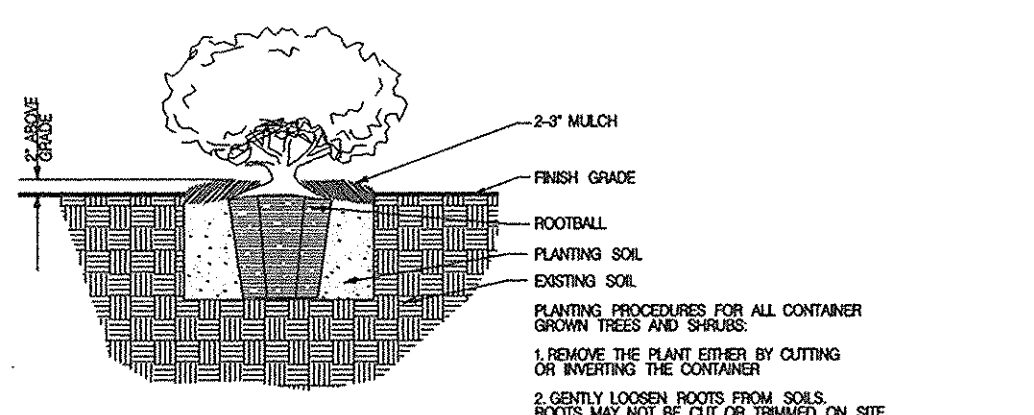
Landscape Architect No. 501



- NOTES:
- THIS DETAIL IS FOR FOREST PROTECTION DEVICE ONLY
  - FOREST RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS
  - BOUNDARIES OF FOREST RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING THE DEVICE
  - ROOT DAMAGE SHALL BE AVOIDED
  - PROTECTION SIGNAGE MAY ALSO BE USED
  - FOREST PROTECTION FENCE SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION

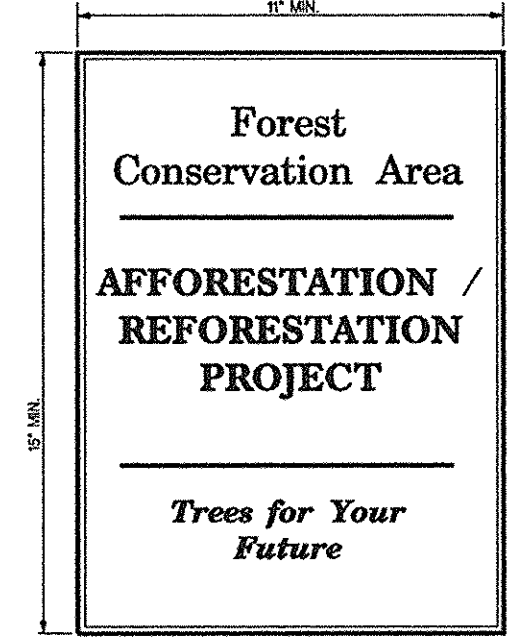
### Forest Protection Fence

Not To Scale



### Planting of Container Grown Material

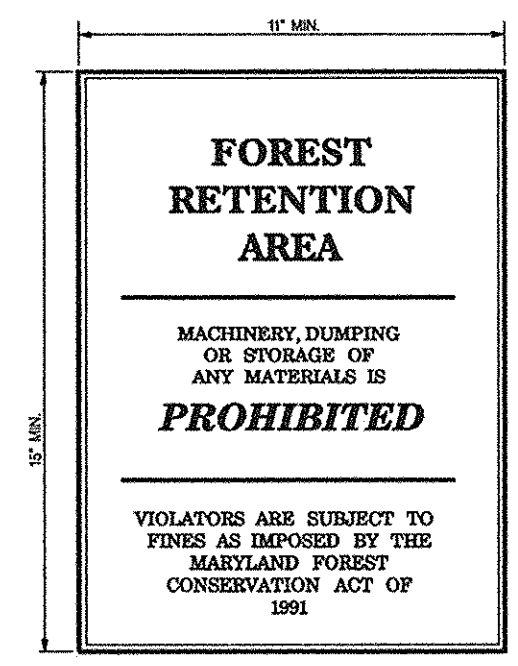
Not To Scale



SIGNS TO BE PLACED ON METAL POSTS 4" ABOVE FINISH GRADE PRIOR TO PLANTING. PLACE SIGNS EVERY 10' AROUND PERIMETER OF FOREST RETENTION AREA.

### Permanent Signage

Not To Scale



SIGNS TO BE PLACED ON METAL POSTS 4" ABOVE FINISH GRADE PRIOR TO PLANTING. PLACE SIGNS EVERY 10' AROUND PERIMETER OF FOREST RETENTION AREA.

### Temporary Signage

Not To Scale

### GOALS & OBJECTIVES

Development of the Montpelier site under the current Forest Conservation Act requires the reforestation of approximately 14.4 acres. Approximately 10.4 acres of afforestation/reforestation will occur on site. Potentially 2.8 acres of additional afforestation/reforestation is available on site. The remaining 1.2 acres will be satisfied by tree in-lieu payment at a rate of \$0.50 per square foot of forest owed, or \$15,682.00.

A portion of the forest conservation mitigation requirements have been fulfilled by the forest conservation plan for this project. With any further subdivision or site development plans, the remaining obligations must be satisfied.

The objective of afforestation/reforestation at Montpelier is to establish a fast growing hardwood forest which mirrors the species composition of the surrounding existing forests. Initially, exotic invasive plant material will be removed from the afforestation/reforestation area prior to any planting. (Then the soil will be stabilized with a warm season grass (annua/rye).) Within two years post-construction stabilization, young container grown stock will be installed, as studies indicate significantly higher survival rates for such plants. Afforestation/reforestation plantings will be established adjacent to the stream, wetland, and floodplain resources in an effort to augment the existing vegetation thereby increasing the functional value of subject areas and providing a higher level of buffering protection to adjacent water resources. A portion of the plantings will be established in the storm water management facility to provide shade and improve water quality. A Forest Conservation Easement will be placed on portions of the existing forest to remain on site afforestation/reforestation areas.

**FOREST RETENTION**  
The retention/Soil Protection areas will be delineated with temporary signage as appropriate. See Temporary Signage Detail prior to the beginning of any construction activity. Attachment of signs to trees is prohibited.  
Forest protection fencing and retention area signage to be installed during later phases of construction where grading has not been indicated.

**PRECONSTRUCTION MEETING/CONSTRUCTION PERIOD PRACTICES**  
Before construction begins, a required preconstruction meeting shall be held. The principle contractor, engineer, Howard County Inspectors and a qualified forest professional familiar with the plan shall be present. All items pertaining to forest retention, tree preservation, and construction period practices shall be discussed.  
Any changes to the plan due to on-site conditions must be approved by the Howard County Department of Planning and Zoning.  
No grading, excavation, utility placement, sediment and erosion control activities, or vehicular traffic will occur within forest retention areas.  
Storage of equipment and materials shall not be permitted in the forest retention areas.  
There will be no burial or disposal of discarded material on-site within the retention area.  
Temporary structures including, but not limited to construction trailers, sanitary facilities, etc. shall not be placed within the forest retention areas.  
Employee parking shall not be permitted in the forest retention areas.

**POST CONSTRUCTION MANAGEMENT/MAINTENANCE BY CONTRACTOR**  
All dead trees or tree limbs which pose an immediate safety hazard will be felled. Trees dropped within the forest retention area will not be removed. All temporary forest protection structures will be removed after construction and permanent signage will be placed where indicated on the plan.  
A 2-year Contractor's Maintenance and Monitoring Period shall begin at mobilization. Severely fire percent survivorship must be guaranteed for this period. The site shall be inspected at the end of the two year period to ascertain survivorship and provide for replacement if necessary.  
The Contractor's maintenance of new planting shall consist of watering, weeding, and mulching as necessary to insure survival.  
Contractor shall protect planting areas and plants at all times against damage of all kinds for duration of maintenance period. Maintenance includes temporary protection barriers and signs as required for protection. If any plants become damaged or injured, because sufficient protection was not provided, treat or replace as directed by Landscape Architect at no additional cost to Owner.

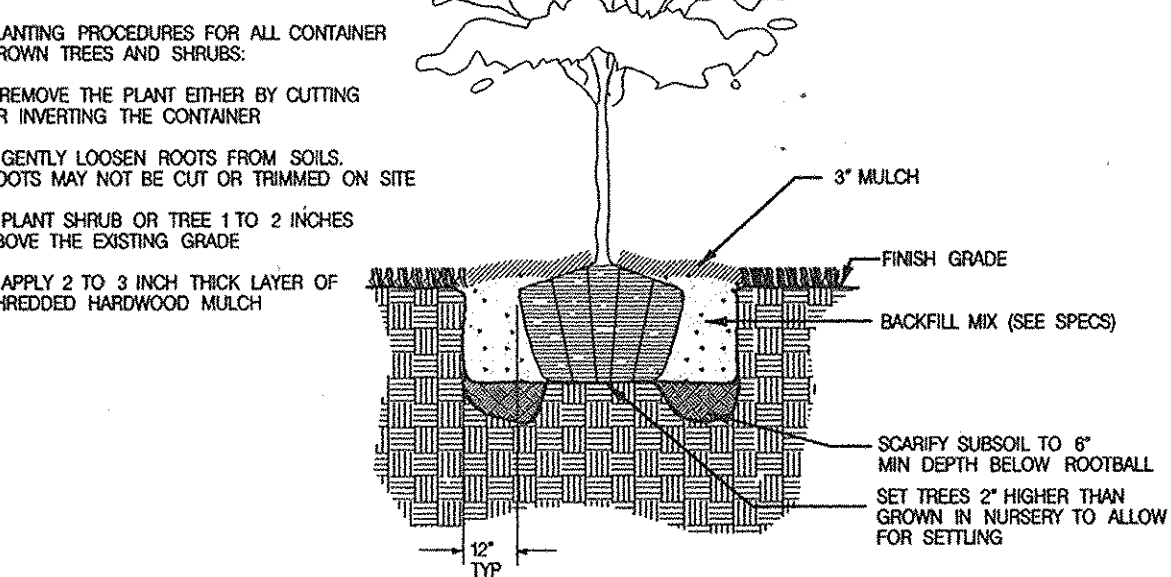
ALL FOREST RETENTION & AFFORESTATION AREAS SHOWN ON THIS PLAN TO BE PLACED IN FOREST CONSERVATION EASEMENT (POTENTIAL AFFORESTATION AREA NOT INCLUDED)

### STANDARDS AND SPECIFICATIONS FOR PLANTING

- PLANT MATERIAL SELECTION**  
A. Nursery grown plant materials greater than 1" caliper should meet or exceed the requirements of the American Nurserymen Specifications. I.e. should be typical of the species and variety have a normal habit of growth, be first quality, sound, vigorous, well-branched, have healthy, well-furnished root systems, and be free of disease, insect pests and mechanical injuries.  
B. Planting stock less than 1" caliper should meet the following standards:  
Seedlings/shrubs:  
Hardwoods - 1/4" to 1/2" caliper with roots not less than 8" long  
Shrubs - 1/8" to 1/2" caliper with 8" root system.
- PLANTING SITE PREPARATION**  
Soils shall not be disturbed outside the area necessary for planting individual specimens and the removal of exotic invasive plant material. These areas should be stabilized as shown on the temporary seeding notes on sheet 8.
- PLANTING PERIOD**  
All material shall be planted between September 15 and May 31. Material shall not be installed when ground is frozen.
- PLANT MATERIAL STORAGE**  
Plants should be planted within 24 hours of delivery if possible. Plant material which are left unplanted for more than 24 hours shall be protected from direct sun and weather and kept moist. Nursery stock should not be left unplanted for more than two weeks.
- 60N-SITE INSPECTION**  
Prior to planting, planting stock shall be inspected by the landscape architect or other qualified professional familiar with this plan. Plant material not conforming to standard nurseryman specifications for size, form, vigor, roots, trunk wounds, insects and disease should be rejected.
- 60PSOIL FOR PLANTING SOIL**  
A. On-site material or imported from same source as topsoil used on site for finish grading.  
1. Uniform composition, free of subsoil, clay lumps, stones, stumps, roots or similar objects larger than 1 inch.  
2. Topsoil must be free of plants or plant parts of bermudagrass, quackgrass, Johnsongrass, nutgrass, poison ivy, Canada thistle, or others as specified.  
3. All topsoil shall be tested by a recognized laboratory for pH and soluble salts. A pH of 4.5 to 7.5 is required. Soluble salts shall not be higher than 500 parts per million.
- 7. ADDITIVE FOR BACKFILL MIX**  
A. Wood Residuals:  
1. Source shall be well composted, not chemically treated.  
2. Physical properties - grading:  
U.S. Sieve Dry Weight Percent Passing:  
3/8" 100  
1/2" 90 - 100  
No. 10 70 - 100  
No. 20 0 - 90  
3. Organic content by ash analysis: 90 - 100 percent dry weight  
4. Chemistry:  
Biomass:  
a. Saturation Extract Conductivity (EC) NI - 3.5  
b. Reaction (pH) 3.0 - 5.5  
5. Salinity: Maximum saturation extract conductivity 10 millimhos per cm at 25 degrees centigrade.
- B. Sand**  
1. Physical Properties - Grading:  
U.S. Sieve Dry Weight Percent Passing:  
No. 4 100  
No. 10 95 - 100  
No. 18 90 - 100  
No. 35 65 - 100  
No. 60 0 - 90  
No. 140 0 - 90  
No. 270 0 - 7  
2. Chemistry:  
Saturation Extract Conductivity (EC) NI - 3.0  
Sodium Absorption Ratio (SAR) NI - 6.0  
Boron - ppm in saturation extract solution NI - 1.0  
Reaction (pH) 6.0 - 7.5  
Available calcium - sodium acetate extractable - ppm NI - 2000  
dry weight
- C. Triple Superphosphate:** Commercial product containing 19 to 20 percent available phosphoric acid.

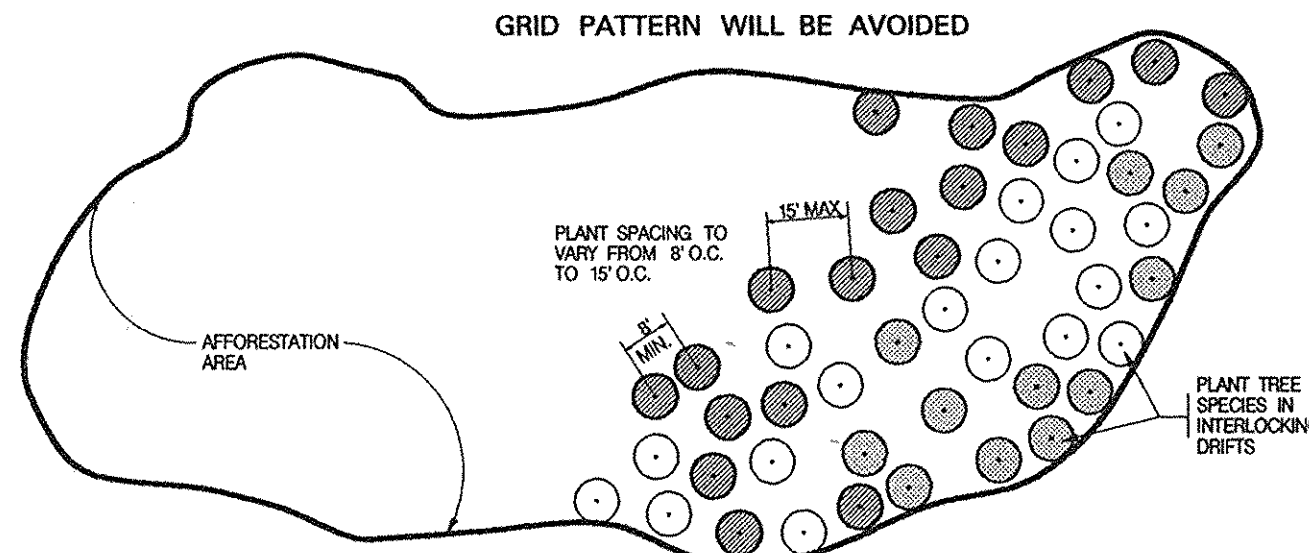
### Forest Conservation Worksheet

<b>1. BASIC SITE DATA</b>	
Gross Site Area	104.0 Acres
Area within 100 year floodplain	1.2 Acres
Area within MSHA row reservation	7.5 Acres
Net tract area	95.3 Acres
Land use category (R-RLD, R-RMD, R-S, C/O, I)	PEC
<b>2. INFORMATION FOR CALCULATIONS</b>	
a. Net tract area	95.3 Acres
b. Reforestation threshold 15% x A	14.3 Acres
c. Afforestation threshold 15% x A	14.3 Acres
d. Existing forest on net tract area	7.5 Acres
e. Forest areas to be cleared	3.8 Acres
f. Forest areas to be retained	3.7 Acres
<b>3. DETERMINING REQUIREMENTS: AFFORESTATION OR REFORESTATION</b>	
AFFORESTATION: If existing forest areas are less than the afforestation minimum (if D is less than C), afforestation requirements apply.	
<b>4. AFFORESTATION CALCULATIONS</b>	
a. Net tract area	95.3 Acres
b. Afforestation minimum 15% x A	14.3 Acres
c. Existing forest on net tract area	7.5 Acres
d. Forest areas to be cleared	3.8 Acres
e. Forest areas to be retained	3.7 Acres
Clearing below the Minimum	
If existing forests are less than the afforestation minimum (if D is less than C) and clearing is proposed, the following calculations apply:	
Afforestation for unafforested areas below minimum C-D	6.8 Acres
afforestation for clearing below minimum Ex2	7.6 Acres
Total afforestation required C-D + Ex2	14.4 Acres
Afforestation requires the total forest area to be equal to the minimum and it requires compensation for clearing.	



### Typical Tree Planting (For container grown)

Not To Scale



### Planting Design Schematic

Not To Scale

10. LAYOUT AND EXCAVATION OF PLANTING AREAS  
A. Plants shall be placed in each zone at random locations shown at spacing as indicated on the plan.  
B. The Landscape Architect or qualified professional will check location of plants in the field and shall adjust to exact position before planting begins.  
C. Subsoil shall not be worked when moisture content is so great that excessive compaction will occur, nor when it is so dry that clods will not readily break. Water shall be applied, if necessary, to bring soil to an optimum moisture content before tilling and planting.  
D. Tree pits shall not be excavated more than 24 hours in advance of planting operation. Tree pits shall be excavated to the following dimensions:
- | Excavation for | Width        | Depth       |
|----------------|--------------|-------------|
| Canopied Trees | Can + 12 in. | Can + 4 in. |
| B&B Trees      | B&B + 12 in. | B&B + 4 in. |
- E. Excavate shrub pits to the following depths:
- | Excavation for | Width               | Depth                             |
|----------------|---------------------|-----------------------------------|
| Shrubs         | Ball or Can + 8 in. | Can + 4 in., not less than 12 in. |

11. PREPARING PLANT MATERIALS FOR PLANTING  
A. Container stock shall be removed carefully after cans have been cut on two sides with approved cutter. Do not use spade to cut cans. Do not lift or handle container plants by tops, stems or trunks at any time.  
B. Do not end or handle any plant with wire or rope at any time so as to damage bark or break branches. Lift and handle plants only from bottom of can.  
C. Balled and burlapped (B&B) plants shall have firm balls of earth. Plants moved with a ball that is cracked or broken before or during planting operations. B&B material shall be dug only when dormant. Pre-dug stored B&B material shall be inspected and approved at the storage site.  
D. Do not force roots for bare rooted trees into excavated pits - custom dig pits to receive roots without deformation.
12. MIXING  
A. Mix soil base, amendments and chemical additives by mechanical means.  
B. Soil and sand bases shall be completely pulverized and free of lumps or aggregated material. Moisture content of base materials shall not be such that chemical granular or pelletized additives become dissolved during the mixing process.  
C. Mix media in quantities of not less than 200 cubic yards or mix total quantity required if less than 50 cubic yards. The Contractor shall be responsible for continuity between batches.  
D. Contaminating backfill mix with unlined soil in backfill mixing lots shall be avoided.

13. INSTALLATION OF CONTAINERIZED PLANT MATERIAL  
A. Scarify the walls and bottom of all plant pits immediately prior to the placement of plant and backfill mix. The Contractor shall remove all glazing of soil caused by an auger or mechanical hole digger.  
B. Place B&B plants carefully in the prepared planting pit. Do not disturb root ball or unroll wire or rope until backfill settlement is complete and tree is staked, if applicable. Fill planting pit by backing each 8 inches of backfill for balls greater than 24 inch diameter. Fill plant pits with soil mix to depth to receive plant root ball, so that top of ball is 2 inches above finished grade. Wrap trunks with double layer of tree wrap.  
C. Wells around trees and shrubs: after planting is complete, form a soil well 3 inches high around each plant, extending to the outer limit of the plant pit in accordance with planting details shown on the drawings.  
D. Smooth planted areas to conform to specified grades after full settlement as occurred. Contractor shall bear final responsibility for proper surface drainage of planted areas. Any discrepancy in the drawings or specifications, obstructions on the site, or prior work done by another party, which Contractor feels produces establishing proper drainage shall be brought to the attention of the Landscape Architect in writing.  
E. Water all plants immediately again after planting.  
F. Spread mulch in required areas to the compacted depth of 2 inches.

**GUARANTEE:**  
A MINIMUM SURVIVAL RATE OF 75% IS TO BE GUARANTEED BY THE DEVELOPER AT THE END OF THE TWO YEAR MAINTENANCE PERIOD.

### Reforestation Planting Forest Conservation Chart

Species	Size	Spacing	Quantity
<b>ZONE 1 (strip zones)</b>			
Acer rubrum	24" white /Cont	8'-11' min	200
Fraxinus americana	24" white /Cont	8'-11' min	200
Quercus alba	24" white /Cont	8'-11' min	200
Ampelodesmos	24" white /Cont	8'-11' min	200
Liquidambar styraciflua	24" white /Cont	8'-11' min	200
Juglans nigra	24" white /Cont	8'-11' min	200
Quercus coccinea	24" white /Cont	8'-11' min	200
Sassafras albidum	24" white /Cont	8'-11' min	200
Viburnum prunifolium	24" white /Cont	8'-11' min	200
Lindera benzoin	24" white /Cont	8'-11' min	200
Hamelis virginiana	24" white /Cont	8'-11' min	200
Viburnum acerifolium	24" white /Cont	8'-11' min	200
		Total	2800
<b>ZONE 2 (landfill)</b>			
Quercus alba	24" white /Cont	8'-11' min	20
Acer rubrum	24" white /Cont	8'-11' min	30
Salix nigra	24" white /Cont	8'-11' min	30
Magnolia virginiana	24" white /Cont	8'-11' min	35
Liquidambar styraciflua	24" white /Cont	8'-11' min	35
Betula nigra	24" white /Cont	8'-11' min	35
Vaccinium corymbosum	24" white /Cont	8'-11' min	65
Viburnum dentatum	24" white /Cont	8'-11' min	65
		Total	315
<b>ZONE 3 (pond road)</b>			
Acer rubrum	1" cal/cont	8'-11' min	30
Fraxinus americana	1" cal/cont	8'-11' min	30
Fraxinus pennsylvanica	1" cal/cont	8'-11' min	30
Juglans nigra	1" cal/cont	8'-11' min	30
Carpinus canadensis	1" cal/cont	8'-11' min	30
Lindera benzoin	24" white /Cont	8'-11' min	80
Hamelis virginiana	24" white /Cont	8'-11' min	80
		Total	300

7.5± ACRES EXISTING FOREST  
3.8± ACRES TO BE CLEARED  
3.7± ACRES TO BE RETAINED  
14.4± ACRES AFFORESTATION/REFORESTATION REQUIRED  
10.4± ACRES AFFORESTATION/REFORESTATION ON SITE  
2.8± ACRES POTENTIAL AFFORESTATION/REFORESTATION  
1.2± ACRES FEE IN-LIEU  
15.3± ACRES FOREST CONSERVATION EASEMENT  
4.2± ACRES AREA A  
3.2± ACRES AREA B  
1.0± ACRES AREA C  
8.3± ACRES AREA D  
4.9± ACRES AREA E

- NOTE:
- THE PRECISE LOCATION OF PLANT MASSINGS WILL BE LOCATED IN THE FIELD BY LANDSCAPE ARCHITECT.
  - GRID PATTERNS WILL BE AVOIDED
  - IF EXOTIC INVASIVE PLANT MATERIAL IS REMOVED WITHIN THE STREAM BUFFER, THE AREA SHOULD BE STABILIZED AS NOTED.
  - PLANT MATERIAL MAY BE GROUPED IN CLUSTERS OF NO MORE THAN 5 TO 7 WHIPS OF THE SAME PLANT. PLANTS WILL BE INSTALLED IN A RANDOM FASHION.

### Conditions and Management Practices for Working in Nontidal Wetlands and Buffers

- REMOVE EXCAVATED MATERIAL, CONSTRUCTION MATERIAL OR DEBRIS TO AN UPLAND DISPOSAL AREA OUTSIDE OF ANY WATERWAY, FLOODPLAIN, NONTIDAL WETLAND, OR BUFFER;
- IF BACKFILL IS OBTAINED, USE CLEAN MATERIAL FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE.
- PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF THE NONTIDAL WETLAND;
- MAINTAIN THE HYDROLOGIC REGIME OF NONTIDAL WETLANDS OUTSIDE THE LIMITS OF DISTURBANCE.
- RECTIFY ANY NONTIDAL WETLANDS AND BUFFERS TEMPORARILY IMPACTED BY THE PERMITTED ACTIVITY. ALL STABILIZATION IN THE WETLAND AND BUFFER SHALL BE OF THE FOLLOWING RECOMMENDED SPECIES: ANNUAL RYEGRASS (Lolium multiflorum), MILLET (Sporobolus indicus), OATS (Avena sp.) AND/OR RYE (Secale cereale). OTHER NON-PERSISTENT VEGETATION MAY BE ACCEPTABLE, BUT MUST BE APPROVED BY THE NONTIDAL WETLANDS AND WATERWAYS DIVISION, KENTUCKY 31 FESCUE SHALL NOT BE UTILIZED IN THE WETLAND OR BUFFER. ALL TEMPORARY FILLS SHALL BE REMOVED IN THEIR ENTIRETY ON OR BEFORE THE COMPLETION OF CONSTRUCTION.
- TO PROTECT IMPORTANT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM AS FOLLOWS:  
USE IN WATERS: IN-STREAM WORK MAY NOT BE CONDUCTED DURING THE PERIOD MARCH 1 - JUNE 15 INCLUSIVE, DURING ANY YEAR.
- NO REMOVAL OF VEGETATION, GRADING, FILLING, DRAINING, OR OTHER ALTERATION OF THE NONTIDAL WETLANDS OR BUFFER OUTSIDE THE LIMITS OF DISTURBANCE SHALL OCCUR WITHOUT WRITTEN AUTHORIZATION FROM THE WATER MANAGEMENT ADMINISTRATION.

10.9.97  
Date

LANDSCAPE ARCHITECT

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION  
10/29/97 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT  
10/29/97 DATE

DIRECTOR  
10/29/97 DATE

Date	No.	Revision	Description

**Montpelier Research Park**  
HOWARD COUNTY MARYLAND

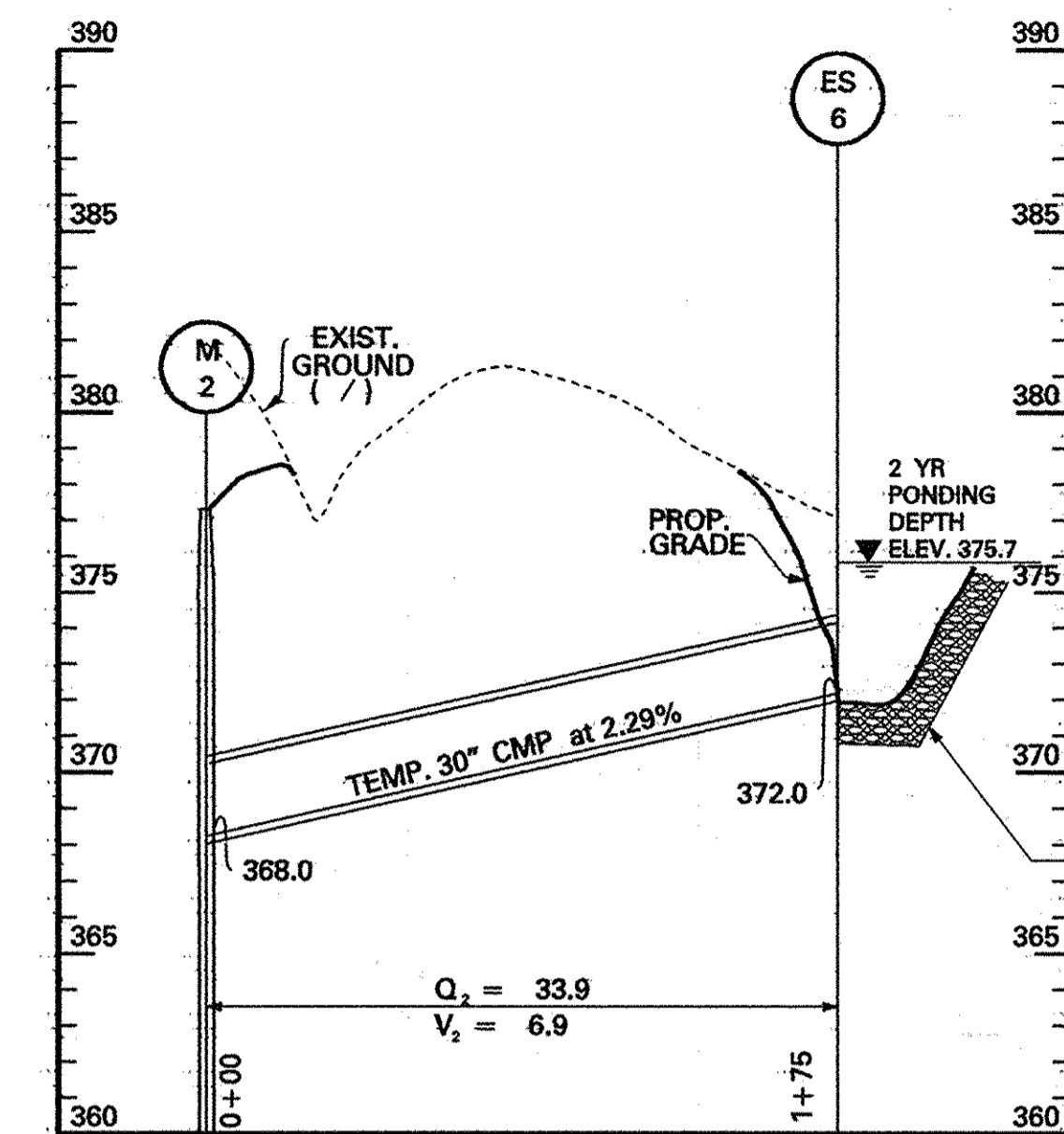
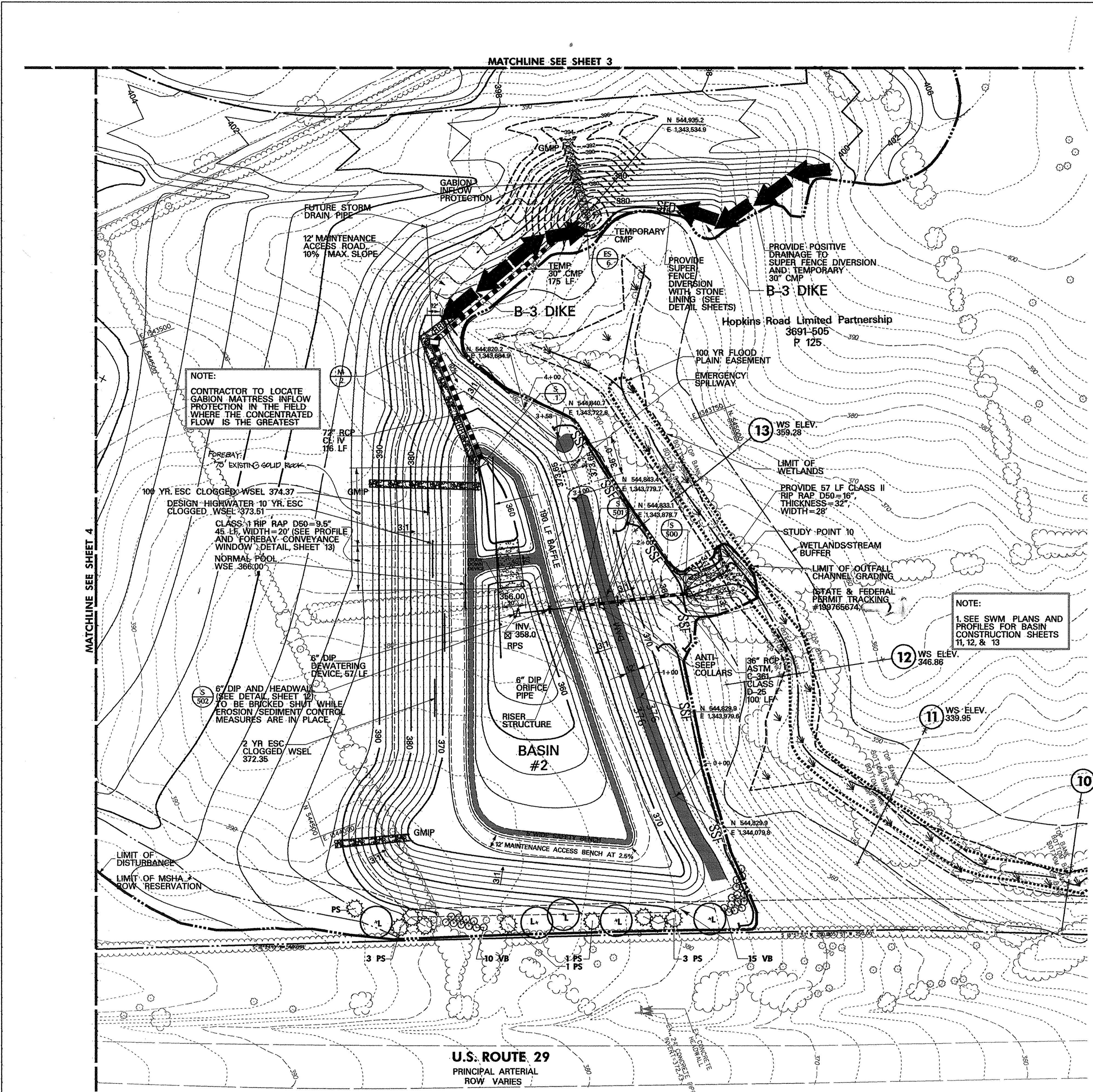
**DMW**  
Daft · McCune · Walker, Inc.  
A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals  
200 East Pennsylvania Avenue  
Towson, Maryland 21286  
410 296 3333  
Fax 296 4705

SUBDIVISION NAME Montpelier	SECTION/AREA	LOTFACILITY # L3501.F505	ELECT. DISTRICT 5th	CENSUS TRACT 6051.02
PLANT OR L.P. BLOCK # 17	PERMIT CODE E 21	SEWER CODE 64400000		

TITLE  
**FOREST CONSERVATION AFFORESTATION DETAILS & NOTES**

Des By: JAR	Scale:	Proj. No. 941715
Drn By: TPC	Date: 10-9-97	18 OF 18
Chk By:	Approved:	

Landscape Architect No. 551



**Temporary S&E Pipe Profile**  
Scale: Hoz. 1" = 50'  
Vert. 1" = 5'

BASIN #2 TABLE		BASIN #2	
BASIN NUMBER	2	DESIGN FLOW SUMMARY	
EXISTING DRAINAGE AREA AC.	NA	POND 1/BASIN 2 / STUDY PT. 10	2-YEAR
INTERIM DRAINAGE AREA AC.	NA	PROPOSED INFLOW (CFS)	90.72
PROPOSED DRAINAGE AREA AC.	30	ALLOWABLE RELEASE (CFS)	6.25
		PROPOSED OUTFLOW (CFS)	1.70
STORAGE REQUIRED C.F.	WET 54,000	WATER SURFACE ELEVATION (FT)	369.50
	DRY 54,000	STORAGE PROVIDED (AC - FT)	3.59
	TOTAL 108,000		
STORAGE PROVIDED C.F.	WET 199,069	STUDY POINT 5	2-YEAR
	DRY 313,196	EXISTING PEAK (CFS)	18.46
	TOTAL 512,265	PROPOSED PEAK (CFS)	18.43
EXISTING GROUND ELEV.	368.00		
TOP EMBANKMENT ELEV.	376.00		
RISER CREST ELEV.	371.50		
WET STORAGE /OUTLET ELEV.	366.00		
CLEANOUT ELEV.	361.00		
BOTTOM ELEV.	358.00		
Q INTO BASIN C.F.S. 10 yr. (10 YR CLOGGED)	129.70		
Q OUT BARREL C.F.S. 10 yr. (10 YR CLOGGED)	25.84		
	WET 12.0		
	DRY 7.5		
	TOTAL 19.5		
DESIGN HIGHWATER (10-YR. CLOGGED)	373.51		
FREEBOARD PROVIDED	2.49'		
BASIN SIDE SLOPES	3 : 1		
BARREL DIAMETER	36"		
RISER INSIDE DIMENSIONS	4' SQ.		
WET STORAGE ZONE ELEV.	366.00 - 366.00		
DRY STORAGE ZONE ELEV.	366.00 - 371.50		
BOTTOM DIMENSION	NA		
DIMENSION FROM CLEANOUT ELEV. TO RISER TOP	14.5'		
START PERFORATIONS AT ELEV.	366		

**KEY SHEET**

**LEGEND**

SYMBOL	DESCRIPTION
(Solid line)	PROPOSED CONTOURS
(Dashed line)	PROPOSED INTERMEDIATE CONTOURS
(Wavy line)	STREAM
(Line with 'RIP')	RIP RAP INFLOW PROTECTION (RRP)
(Dotted line)	EXISTING CONTOURS
(Line with trees)	EXISTING TREES / TREE LINE
(Line with wavy)	WETLAND / STREAM BUFFER
(Line with wavy)	WETLAND
(Line with '60')	TEMPORARY CONTOUR
(Line with 'SF')	SILT FENCE
(Line with 'SUPER')	SUPER SILT FENCE
(Line with 'A-2')	A-2 DIKE
(Line with 'LIMIT')	LIMIT OF DISTURBANCE
(Line with 'RPS')	REMOVABLE PUMPING STATION (RPS)
(Line with 'GIMP')	GABION INFLOW PROTECTION (GIMP)
(Line with 'LIMIT')	LIMIT OF MSHA ROW RESERV. BAFFLE
(Line with 'ENTRANCE')	STABILIZED CONSTRUCTION ENTRANCE
(Line with 'PROPOSED')	PROPOSED TREES, & SHRUBS
(Line with 'DRAW')	VERTICAL DRAWDOWN DEVICE

**Conditions and Management Practices for Working in Nontidal Wetlands and Buffers**

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USE 1 WATERS. IN-STREAM WORK MAY NOT BE CONDUCTED DURING THE PERIOD MARCH 1 - JUNE 15 INCLUSIVE, DURING ANY YEAR.
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APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

*Mr. Damann* 5/8/98  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE

*Richard Reed* 5/15/98  
CHIEF, DIVISION OF LAND DEVELOPMENT  
DATE

*Paul Smith* 5/19/98  
DIRECTOR  
DATE

Date	No.	Revision Description
10-21-98	1	REVISED FOREBAY AND STRUCTURE MP.

**Montpelier Research Park**  
HOWARD COUNTY MARYLAND  
OWNER/DEVELOPER: HOPKINS ROAD LIMITED PARTNERSHIP  
9030 RED BRANCH ROAD, SUITE 200 COLUMBIA, MD 21045

**DMW**  
Daf, McCune, Walker, Inc.  
A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals  
200 East Pennsylvania Avenue  
Towson, Maryland 21286  
410 286 3333  
Fax 286 4705

SUBDIVISION NAME: Montpelier SECTION/AREA: 124.125 & ROAD BED  
PLAN OR 1/2" BLOCK #1 ZONE: L3691.F505 17 PEC TAXZONE MAP: 41 ELECT. DISTRICT: 5th CENSUS TRACT: 6051.02  
WATER CODE: E 21 SEWER CODE: 6440000

TITLE: REVISED NE SITE GRADING & SEDIMENT & EROSION CONTROL  
Des By: ZAL Scale: 1" = 50' Proj. No. 941715  
Dwn By: TPC, MSS Date: 3-4-98  
Chk By: MM Approved: 5 OF 18

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

*Carol Simons* 5/7/98  
DISTRICT ENGINEER

**DEVELOPERS CERTIFICATE:**  
I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE. I/WE AGREE TO THE REQUIREMENTS OF THE PROJECT. I/WE ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I/WE ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

*Howard L. Resneck* 4/29/98  
DATE

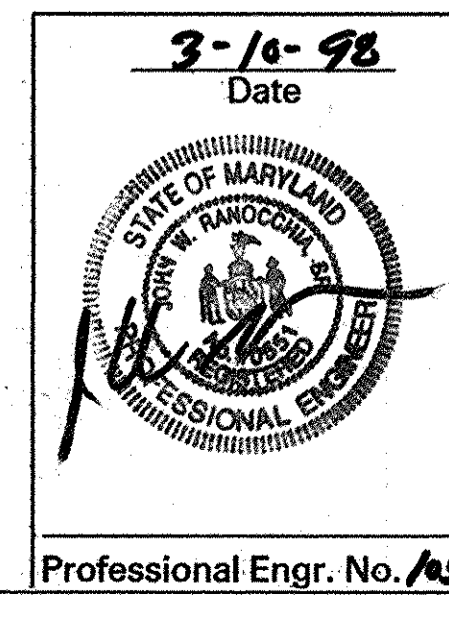
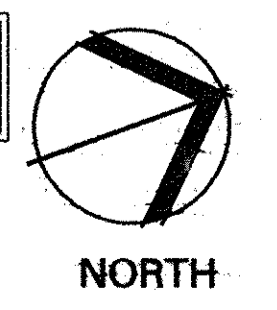
**ENGINEERS CERTIFICATE:**  
I/WE CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN AND ANY PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT, I/WE NOTIFIED THE DEVELOPER THAT WE WOULD ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

*John W. Rannoch* 3/10/98  
DATE

**NOTE:**

- SEE SHEET 9 FOR LANDSCAPE DETAILS, SPECIFICATION & PLANT LIST.
- PLANT LOCATIONS MAY BE FIELD ADJUSTED TO MAINTAIN SIGHT LINE TO SOUTH SIDE.
- REQUIREMENT - SWM PLANTING-TYPE B 350 LF=7 SHADE TREES, 9 EVERGREEN PROVIDED: 5 SHADE TREES, 9 EVERGREEN, 25 SHRUBS (SUBSTITUTE 25 SHRUBS FOR 2 SHADE TREES).
- ALL REQUIRED PLANTINGS ARE BONDED AS PART OF THE DEVELOPERS AGREEMENT.

NOTE: THIS PLAN SUPERSEDES SDP-98-01, APPROVED 10-29-97.



NOTE:  
PRIOR TO STAKEOUT OF S-500, CONTRACTOR TO VERIFY CROSS SECTION AND INVERT OF STREAM AND NOTIFY ENGINEER IF THERE ARE DISCREPANCIES.

IF UNSATURATED (PERVIOUS) MATERIAL IS ENCOUNTERED AT TIME OF CUT-OFF TRENCH INSTALLATION DEEPER THAN FOUR (4) FEET IT WILL BE NECESSARY TO EXTEND THE CUT-OFF TRENCH DOWN UNTIL SUITABLE MATERIAL IS ENCOUNTERED AS DETERMINED BY A GEOTECHNICAL ENGINEER. FILL MATERIAL FOR THE CUT-OFF TRENCH AND IMPERVIOUS CORE 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.

NOTE TO CONTRACTOR:  
CLAY MATERIAL WILL NEED TO BE IMPORTED FROM OFFSITE, WITH AMPLE TESTING BY THE GEOTECHNICAL ENGINEER.

- General Notes:
1. This facility is privately owned and shall be privately maintained.
  2. This facility lies within the Middle Patuxent River watershed.
  3. This facility is hazard class A.

**INSPECTION SCHEDULE**  
Prior notification shall be given to the engineer so that inspections may be made at the following stages:

1. Upon completion of excavation to subfoundation and where required, installation of structural supports or reinforcement for structures, including but not limited to:
  - a) Core trenches for structural embankments
  - b) Inlet-outlet structures and anti-seep structures, watertight connectors on pipes; and
  - c) Trenches for enclosed storm drainage facilities.
2. During placement of structural fill, concrete, and installation of piping and catch basins;
3. During backfill of foundations and trenches;
4. During embankment construction; and
5. Upon completion of final grading and establishment of permanent stabilization.

No work shall proceed until engineer inspects and approves the work previously completed.

**MAINTENANCE SCHEDULE**  
Routine Maintenance

1. The facilities shall be inspected annually and after major storms. Inspections should be performed during wet weather to determine if the ponds are functioning properly. The facilities shall be inspected in accordance with the checklist and requirements contained within USDA, NRCS "Standards and Specifications for Ponds" (MD-378). The pond owner(s) and any heirs, successors, or assigns shall be responsible for the safety of the ponds and the continued operation, surveillance, inspection, and maintenance thereof. The pond owner(s) shall promptly notify the Soil Conservation District of any unusual observations that may be indicators of distress such as excessive seepage, turbid seepage, sliding or slumping.
2. The top and side slopes of the embankments shall be mowed a minimum of two (2) times a year once in June and once in September. Other side slopes, the bottom of the pond, and maintenance areas should be mowed as needed.
3. Debris and litter near the outlet structure shall be removed during regular mowing operations and as needed.
4. Visible signs of erosion in the ponds as well as rip rap outlet areas shall be repaired as soon as it is noted.

Non-Routine Maintenance

1. Structural components of the ponds such as the dam, the riser, and the pipes shall be repaired upon the detection of any damage. The components should be inspected during routine maintenance operations.
2. Sediment should be removed when its accumulation significantly reduces the design storage, interferes with the function of the riser, when deemed necessary for aesthetic reasons, or when deemed necessary by Howard County's Department(s) of Public Works/Zoning.

**GEOTECH RECOMMENDATIONS**

1. The earthwork operations should be accomplished during the drier seasons, preferably during the summer months, when rainfalls less.
2. Construct earth berms or other appropriate features along the top of any newly created or existing slope, where possible, to control surface run-off and minimize the formation of gullies down the face of the slope until slope stabilization is achieved.
3. Immediately after final grading, the slopes should be seeded, fertilized and covered with an appropriate mulch and binder.
4. Periodic examination of the slope areas during and after construction to locate and regrade any slope areas subjected to scouring from excessive surface run-off.

**DESIGN FLOW SUMMARY**

Pond #	2-Year	10-Year	100-Year
Proposed Inflow (cfs)	112.27	206.11	309.45
Available Release (cfs)	N/A	N/A	N/A
Proposed Outflow (cfs)	197	15.52	84.63
Water Surface Elevation (ft)	370.57	372.47	374.12
Storage Provided (AC - ft)	5.33	8.57	11.45

Retention, Wet Pond

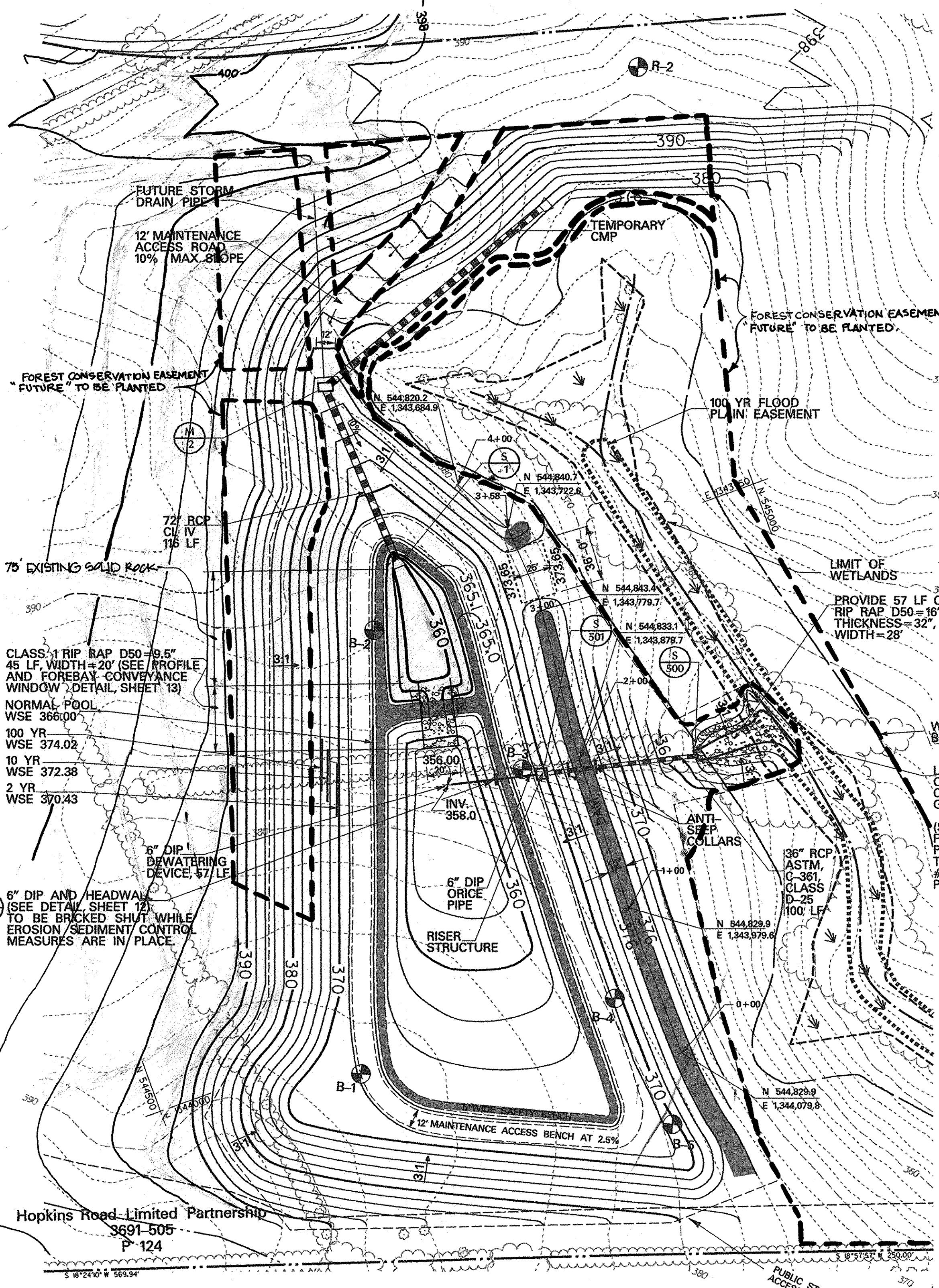
Structure Type	A
Structure Classification	Urban
Watershed Area to Facility (Ac)	42.6
Maximum Height of FR (ft)	10.0
Minimum Top of Dam Width (ft)	12
Freeboard Provided (ft)	2.08

**Study Point 5**

	2-Year	10-Year
Existing Peak (cfs)	18.46	82.37
Proposed Peak (cfs)	18.44	65.12

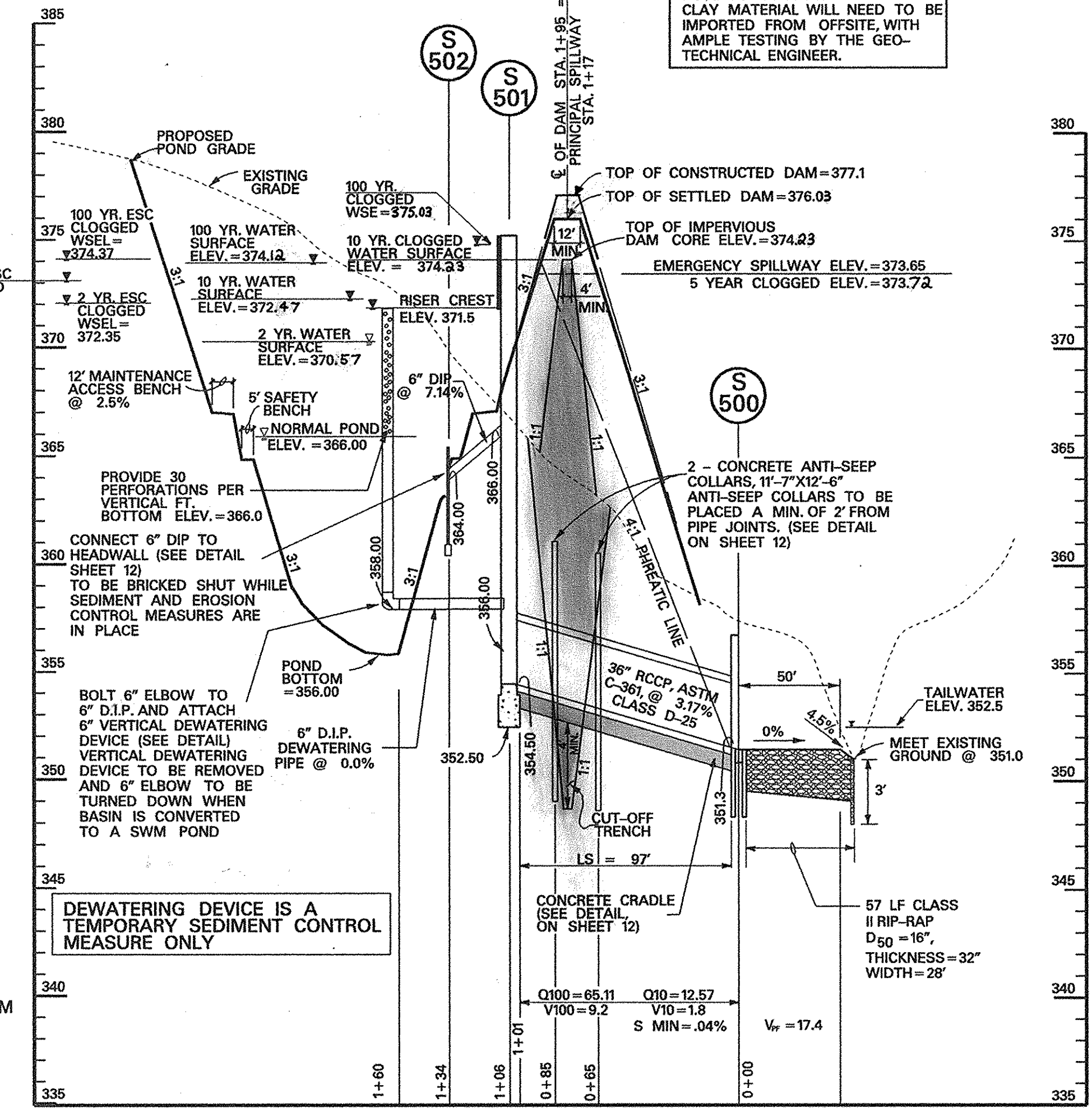
**Study Point 10**

	D.A.	RCN	Tc	2-Year	10-Year
Existing Peak (cfs)	25.1	58	25	6.25	33.12
Proposed Peak (cfs)	44.1	68	19	1.87	15.52



Storm Water Management Pond #1 & SEC BASIN #2

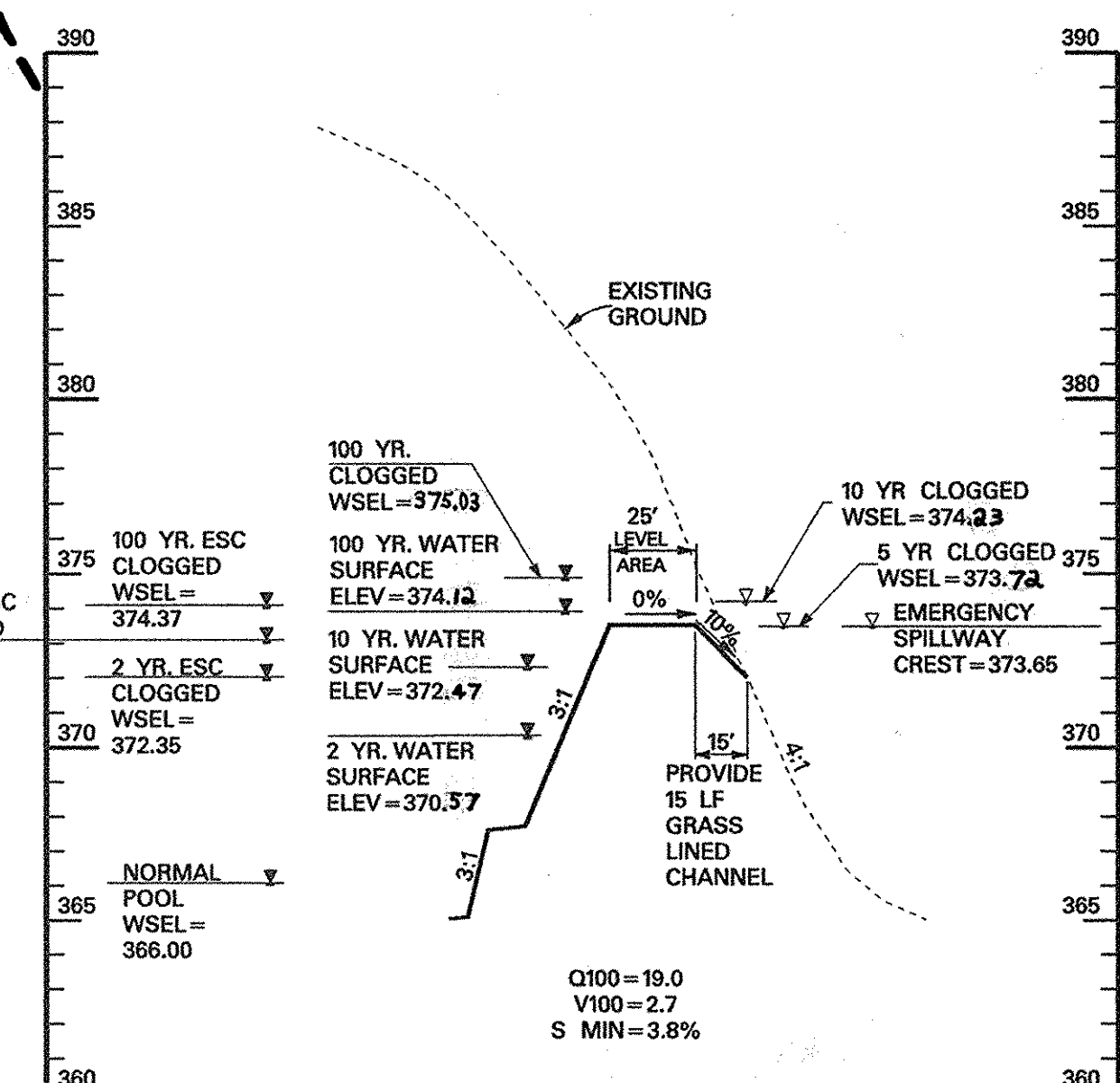
SCALE: 1" = 50'



PRINCIPAL SPILLWAY - PROFILE

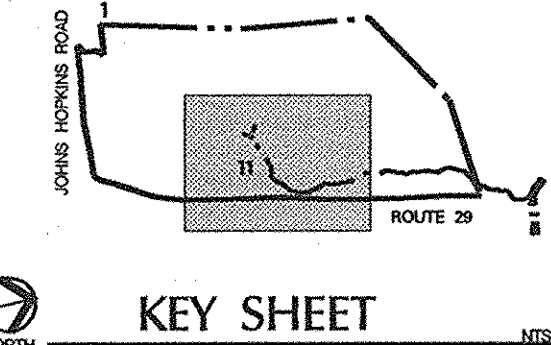
Scale: Horiz. = 1" = 50'  
Vert. = 1" = 5'

SWM POND #1 & SEC BASIN #2



PROFILE ALONG C OF EMERGENCY SPILLWAY

Scale: Horiz. 1" = 50'  
Vert. 1" = 5'



**LEGEND**

SYMBOL	DESCRIPTION
(---)	FOREST CONSERVATION EASEMENT
(---)	STREAM
(●)	SOIL BORING LOCATION
(---)	EXISTING CONTOURS
(---)	EXISTING TREES/ TREE LINE
(---)	WETLAND/STREAM BUFFER
(---)	WETLAND
(---)	PROPOSED CONTOURS

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION *10/29/97* DATE

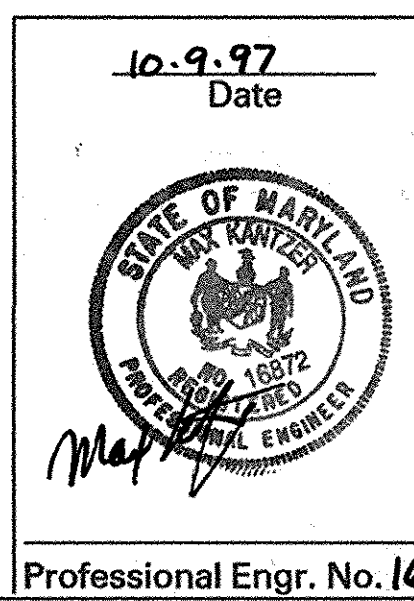
CHIEF, DIVISION OF LAND DEVELOPMENT *10/29/97* DATE

DIRECTOR *10/29/97* DATE

Date	No.	Revision Description
10-21-97	2	REVISED PAVED & STRUCTURE M-2.
3-4-98	1	REVISED WSE & GRADING

**Montpelier Research Park**  
HOWARD COUNTY MARYLAND  
OWNER/DEVELOPER: HOPKINS ROAD LIMITED PARTNERSHIP  
9030 RED BRANCH ROAD, SUITE 200 COLUMBIA, MD 21046

**DMW**  
Daft McCune Walker, Inc.  
A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals  
200 East Pennsylvania Avenue  
Towson, Maryland 21286  
410 296 3833  
Fax 296 4705



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

*Charles K. Sumner* 10-29-97  
U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE DATE

*Max Kantzor* 10/27/97  
APPROVED FOR HOWARD SOIL CONSERVATION DISTRICT DATE

**DEVELOPERS CERTIFICATE:**  
I, THE DEVELOPER, HEREBY CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION OF THE PROJECT SHALL BE TRAINED AND SUPERVISED BY A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

*Howard Karmach* 10/21/97  
SIGNATURE OF DEVELOPER PRINT NAME BELOW SIGNATURE DATE

**ENGINEERS CERTIFICATE:**  
I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

*Max Kantzor* 10-9-97  
SIGNATURE OF ENGINEER PRINT NAME BELOW SIGNATURE DATE

TREE RETENTION/PROTECTION AREAS WILL BE DELINEATED WITH FENCING AND/OR TEMPORARY SIGNAGE AS APPROPRIATE (SEE TREE PROTECTION FENCE AND TEMPORARY SIGNAGE DETAILS) PRIOR TO THE INSTALLATION OF SEDIMENT & EROSION CONTROL DEVICES OR THE BEGINNING OF ANY CONSTRUCTION ACTIVITY. FENCING SHALL NOT BE CONSIDERED INSTALLED CORRECTLY UNTIL REVIEWED BY A LANDSCAPE ARCHITECT OR QUALIFIED NATURAL RESOURCE PROFESSIONAL FAMILIAR WITH THE PLAN ATTACHMENT OF SIGNS TO TREES IS PROHIBITED. ROOT PRUNING WILL BE PERFORMED AS SPECIFIED ON THIS PLAN (SEE ROOT PRUNING DETAIL).

THE FOREST CONSERVATION EASEMENT HAS BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1500 OF THE HOWARD COUNTY CODE FOR FOREST CONSERVATION ACT. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT; HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.

Note:  
Trees, shrubs and other woody vegetation not allowed within twenty (20) feet of any portion of the embankment.

Professional Engr. No. 16872

10-9-97 Date

Scale: 1" = 50'

Proj. No. 941715

Date: 10-9-97

Approved: 11 OF 18

**STORMWATER MANAGEMENT POND**

**GENERAL CONSTRUCTION SPECIFICATIONS**

1. GENERAL  
All stormwater management facilities shall be constructed in accordance with Baltimore County's "Standard Specifications and Details for Construction (1985)" and the S.C.S. Maryland "Standards and Specifications for Ponds" (MD-378, 1992).

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

2. 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. Channel 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.

**3. EARTH FILL**

MATERIAL: The fill material shall be taken from approved designated borrow area. 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 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 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 if formed into a ball it will not crumble yet not be so wet that water can be squeezed out.

All compaction is to be not less than 95 percent of the maximum dry density as determined by AASHTO Specification T-99 (Standard Proctor) with a moisture content within 2 percent of 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.

CUTOFF TRENCH AND IMPERVIOUS CORE: 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 4 feet below existing grade or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The top width of the impervious core shall be 4 feet minimum. The height of the core shall be as shown on the plans. The side slopes of the core 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 AND CUT-OFF TRENCH CONSTRUCTION**

The site should be stripped of topsoil and any other unsuitable materials from the embankment or structure area in accordance with Soil Conservation Guidelines. After stripping operations have been completed, the exposed subgrade materials should be proofrolled with a loaded dump truck or similar equipment in the presence of a geotechnical engineer or his representative as indicated in Section 5.1. For areas that are not accessible to a dump truck, the exposed materials should be observed and tested by a geotechnical engineer or his representative utilizing a Dynamic Cone Penetrometer. Any excessively soft or loose materials identified by proofrolling or penetrometer testing should be excavated to suitable firm soil, and then grades re-established by backfilling with suitable soil.

A representative of the Geotechnical Engineer should be present to monitor placement and compaction of fill for the embankment and cut-off trench. In accordance with Maryland Soil Conservation Specification 378, soils considered suitable for the center of the embankment and cut-off trench shall conform to Unified Soil Classification GC, SC, CH, or CL. A review of the site borings did not indicate core or cut-off trench materials in the cut areas of the site. All fill materials must be placed and compacted in accordance with MD SCS 378 specifications.

4. 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 4 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 4 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 inches or greater over the structure or pipe.

5. REMOVAL AND REPLACEMENT OF DEFECTIVE FILL  
Fill placed at densities lower than specified minimum density or at moisture contents outside the specified acceptable range of moisture content or otherwise not conforming to the requirements of the specifications shall be reworked to meet the requirements or removed and replaced by acceptable fill. The bottoms of such excavations shall be finished flat or gently curving and at the sides of such excavations the adjacent soil fill shall be trimmed to a slope not steeper than 3 feet horizontally to 1 foot vertically extending from the bottom of the excavation to the fill surface.

6. PIPE CONDUITS  
All pipes shall be circular in cross section. All perforated pipe shall have a minimum of 3.21 square inches of opening per square foot of pipe surface (ex. 30 3/8 inch holes per square foot). Perforations are to be uniformly spaced around the full periphery of the pipe. Any holes blocked or partially blocked by bituminous coating shall be opened prior to installation.

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 Designation C-361.

2. Cradle - All reinforced concrete pipe conduits shall be laid in a concrete cradle for their entire length. This cradle shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 50 percent of its outside diameter with a minimum thickness of 6 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 cradle 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 "Structural Backfill".

5. Connections - All connections (to anti-seep collars, riser, etc.) shall be watertight.

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

**7. CAST-IN-PLACE CONCRETE STRUCTURES**

1. Specifications: Maryland Department of Transportation, State Highway Administration (SHA) "Standard Specifications for Construction and Materials", October, 1993 edition, for materials and construction, including all interim specifications.

AASHTO "Standard Specifications for Highway Bridges", dated 1989, for design, including all interim specifications. Concrete design by the "Service Load Design Method".

2. Concrete: Shall meet the requirements of SHA Sections 414 and 902, Mix No. 3.

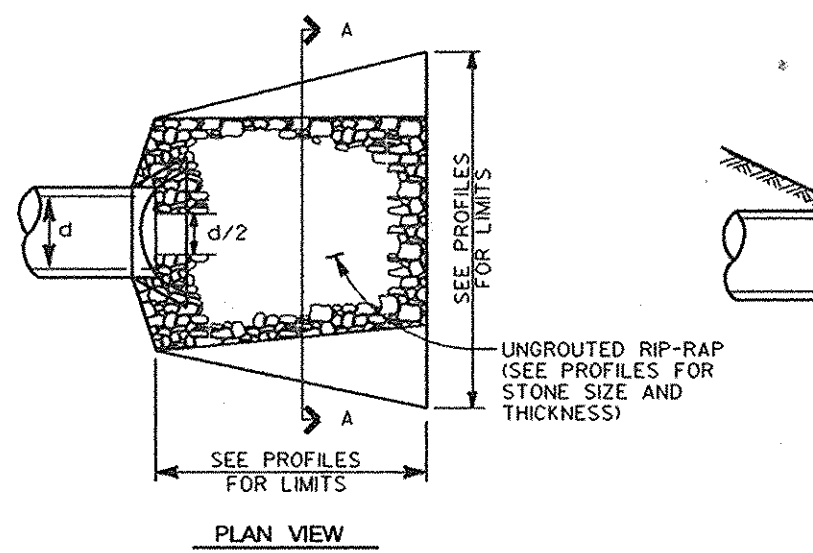
Contractor shall add color mix at plant in accordance with manufacturer's recommendation "C-12 Messis Beige" as manufactured by L. M. Scofield Company (213) 723-5265.

Contractor shall supply mix design for approval prior to application. Load and mix tickets shall be supplied for each truck delivery. No partial mix mixes shall be allowed.

All concrete shall attain a minimum compressive strength of 3,500 PSI at 28 days. Design  $f_c = 1,200$  PSI.

All exposed edges shall be chamfered 3/4" x 3/4". All construction keys are shown nominal size.

3. Reinforcing Steel: Reinforcing steel shall conform to ASTM A-615, Grade 60. Where not indicated, bar lap splices shall be in accordance with AASHTO specifications. The minimum concrete cover shall be 2 inches unless otherwise noted. Design  $f_s = 24,000$  PSI.



**A Stone Outlet Protection III**  
Not to Scale

4. Foundation: Presumed soil bearing capacity = 2,500 PSF. The engineer must approve all foundations prior to concrete placement. If unsuitable material is encountered, the material shall be undercut and backfilled with structural backfill.

8. 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 901.02.

The rip-rap shall be placed to the required thickness in one operation. The rock shall be delivered and placed in a manner that will insure the rip-rap 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 rip-rap and shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 921.09.

9. 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.

10. STABILIZATION  
All borrow areas shall be graded to provide proper drainage and left in a borrow condition. All exposed surfaces of the embankment, spillway, spoilbank, 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.

11. 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 to be employed during the construction process.

12. RECOMMENDED ADDITIONAL SERVICES  
Additional soil and foundation engineering, testing, and consulting services recommended for this project are summarized below:

Site Preparation and Proofrolling: A Geotechnical Engineer or experienced Soils Inspector should inspect the site after it has been stripped and excavated. The inspector should determine if any undercutting or in-place densification is necessary to prepare a subgrade for fill placement.

Fill Placement and Compaction: A Geotechnical Engineer or experienced Soils Inspector should witness any required filling operations and should take sufficient in-place density tests to verify that the specified degree of fill compaction is achieved. He should observe and approve borrow materials used and should determine if their existing moisture contents are suitable.

13. SEE SHEET 9 FOR TOPSOIL SPECIFICATIONS.

14. SEE SHEET 8 FOR PERMANENT AND TEMPORARY SEEDING SPECIFICATIONS.

15. CONTRACTOR SHALL IMPORT CLAY MATERIAL FROM OFFSITE, WITH AMPLE TESTING BY THE GEOTECHNICAL ENGINEER.

- Construction Specifications**
- The subgrade for the filter, rip-rap, or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.
  - The rock or gravel shall conform to the specified grading limits when installed respectively in the rip-rap or filter.
  - Geotextile class C shall be protected from punching, cutting, or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of geotextile over the damaged part or by completely replacing the geotextile. All overlaps whether for repairs or for joining two pieces of geotextile shall be a minimum of one foot.
  - Stone for the rip-rap or gabion outlets may be placed by equipment. They shall be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The stone for rip-rap or gabion outlets shall be delivered and placed in a manner that will ensure that it is reasonably homogeneous with the smaller stones and spalls filling the voids between the larger stones. Rip-rap shall be placed in a manner to prevent damage to the filter blanket or geotextile. Hand placement will be required to the extent necessary to prevent damage to the permanent works.
  - The stone shall be placed so that it blends in with the existing ground. If the stone is placed too high then the flow will be forced out of the channel and scour adjacent to the stone will occur.

**Stone Outlet Protection Specifications**

**ENGINEERS CERTIFICATE:**  
I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTICED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Signature: *Max Kantzer*  
Date: 10-9-97

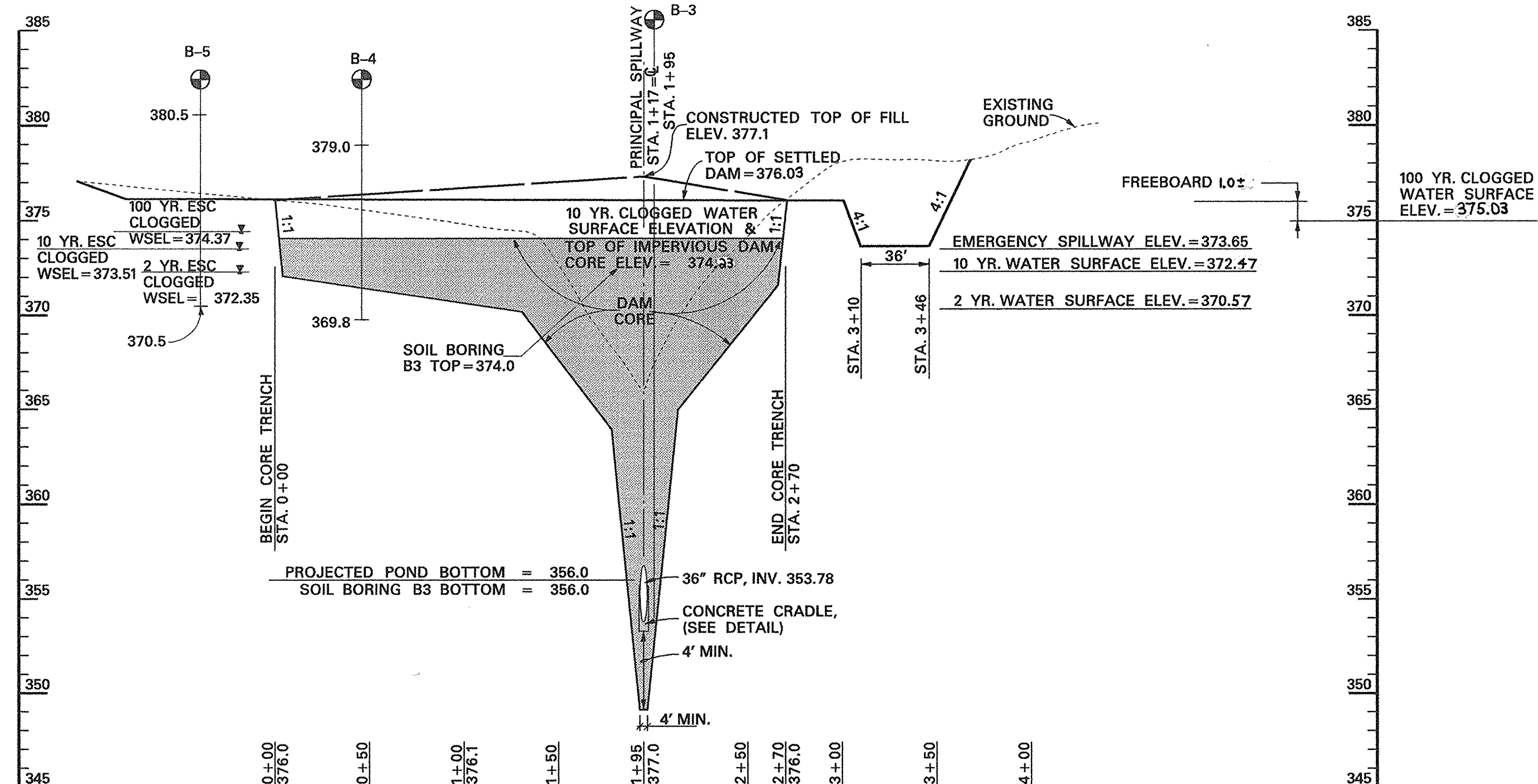
**DEVELOPERS CERTIFICATE:**  
I/WE CERTIFY THAT THE DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I/WE SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Signature: *Wood L. Rebeck*  
Date: 10/1/97

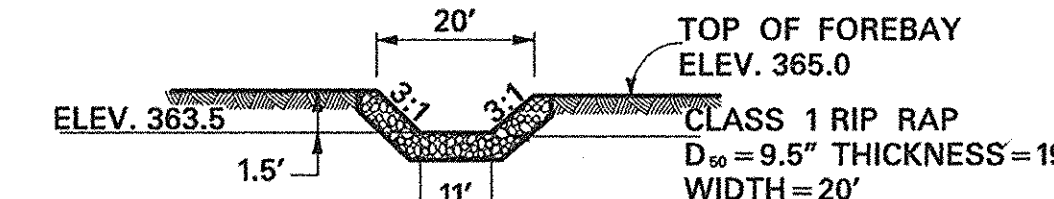
THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

Signature: *Charles J. Swanson*  
Date: 10-29-97

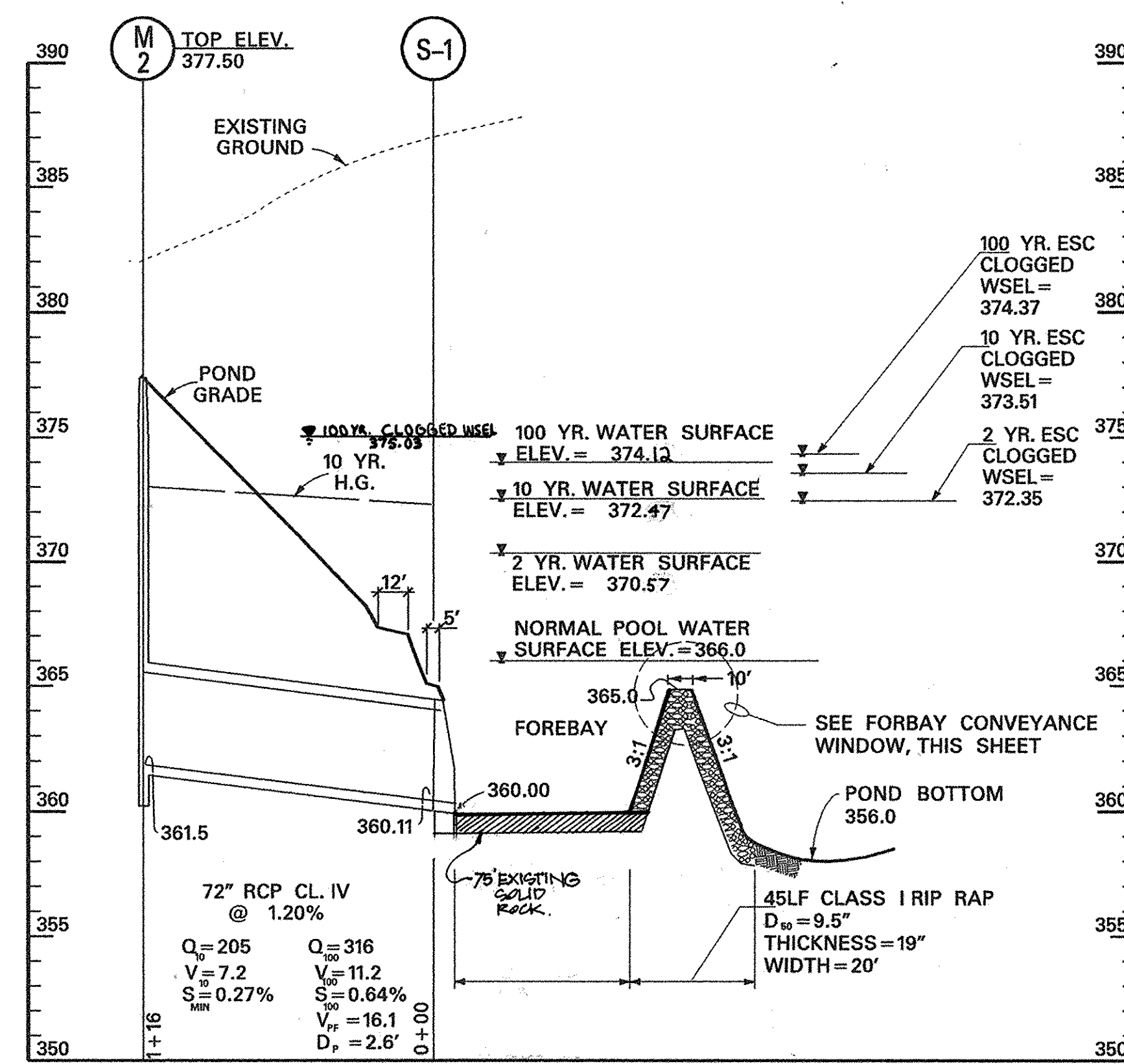
Signature: *Robert J. Zide*  
Date: 11/21/97



**B Profile Along C of Dam**  
Scale: Horiz. 1"=50'  
Vert. 1"=5'



**Forebay Conveyance Window for Structure S-1**  
Not to Scale



**C Storm Drain Profile**  
Scale: Horiz. 1"=50'  
Vert. 1"=5'

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

Signature: *10/29/97*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
Signature: *10/29/97*  
CHIEF, DIVISION OF LAND DEVELOPMENT  
Signature: *10/29/97*  
DIRECTOR

Date	No.	Revision Description
10-21-97	1	REVISED STRUCTURE SCHEDULE AND FOREBAY.
3-4-98	1	REVISED WSE

**Montpelier Research Park**  
HOWARD COUNTY MARYLAND

**DMW**  
Daft McCune Walker, Inc.  
A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

200 East Pennsylvania Avenue  
Towson, Maryland 21286  
410 296 3333  
Fax 296 4706

SUBDIVISION NAME: Montpelier	SECTION AREA	LOT/PANEL: 124,125, & ROAD BED
PLAT OR REF. BLOCK #/ZONE: L3891/FS05	TAXING MAP #/ELECT. DISTRICT: A1 5th	CENSUS TRACT: 6051.02
WATER CODE: E 21	SEWER CODE: 6440000	

**STORM WATER MANAGEMENT DETAILS**

Des By: ZAL Scale: As Shown Proj. No. 941715  
Dm By: TPC, MSS Date: 10-9-97  
Chk By: Approved: 13 OF 18

