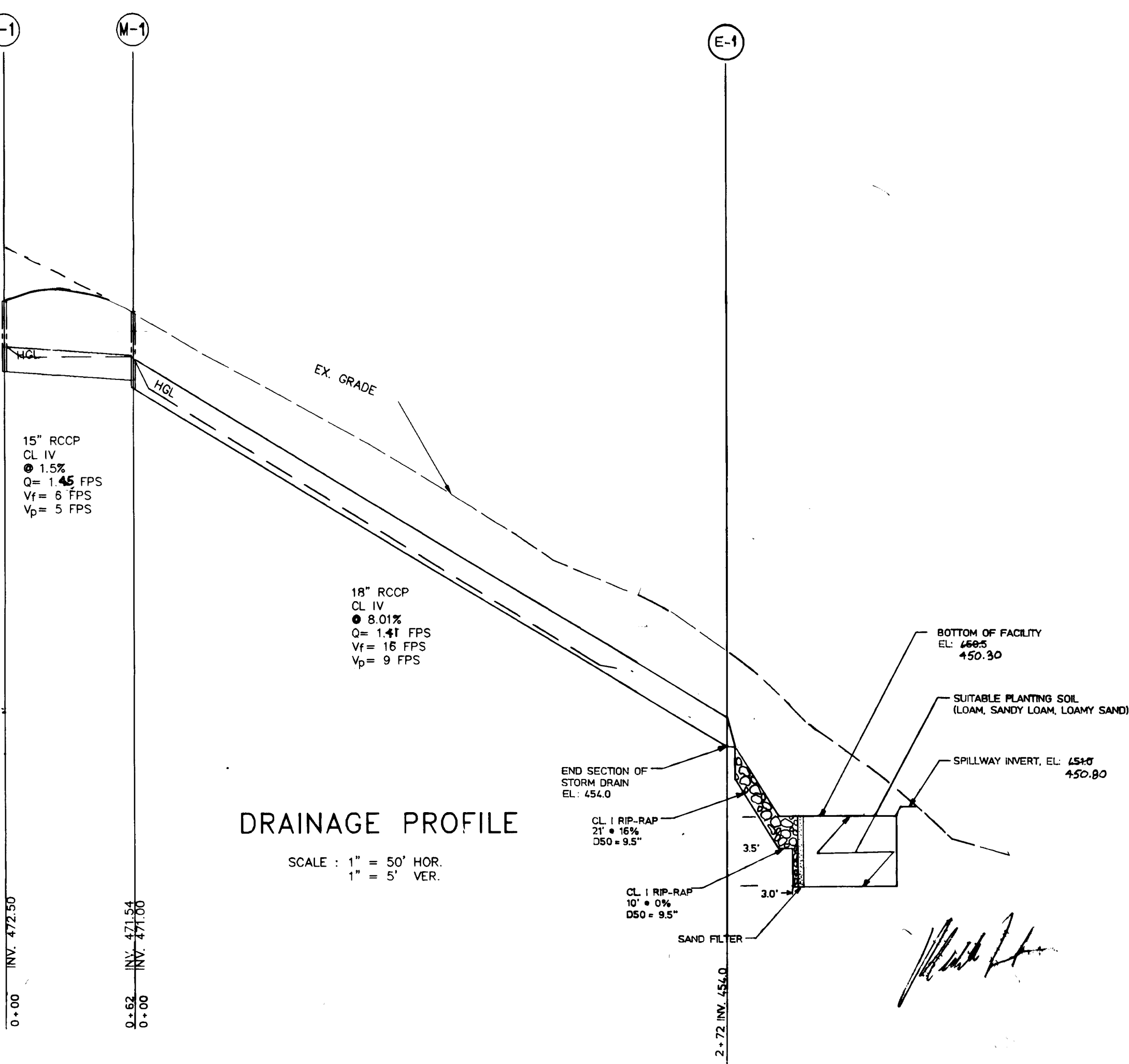
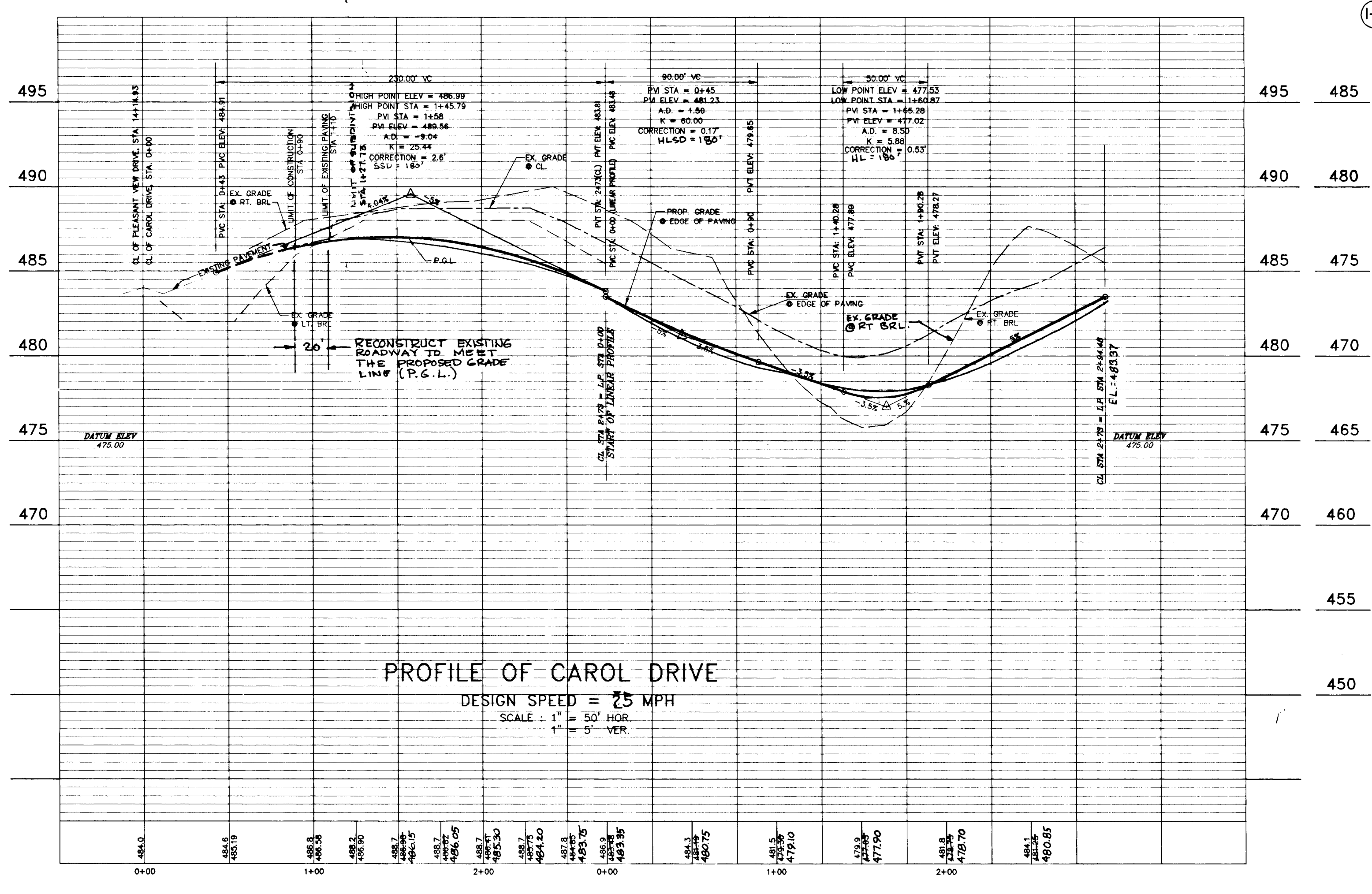


STRUCTURE SCHEDULE						
NUMBER	TYPE	INVERT IN	INVERT OUT	TOP EL.	REMARKS	LOCATION
I-1	K-INLET		472.50	475.85 (THROAT) 477.10 (TOP)	HOWARD CO. SD 4-02	10' RT OF L.P. STA. 1+60.87
M-1	STD. MH	471.54	471.00	476.00	HOWARD COUNTY G. 504	N553235.274, E1330144.834
E-2	CONCRETE END SECTION	454.00		456.50	HOWARD COUNTY G. 521	N551763.8, E1330133.4
S-1	SEE PLAN		451.00			N551827, E1330006

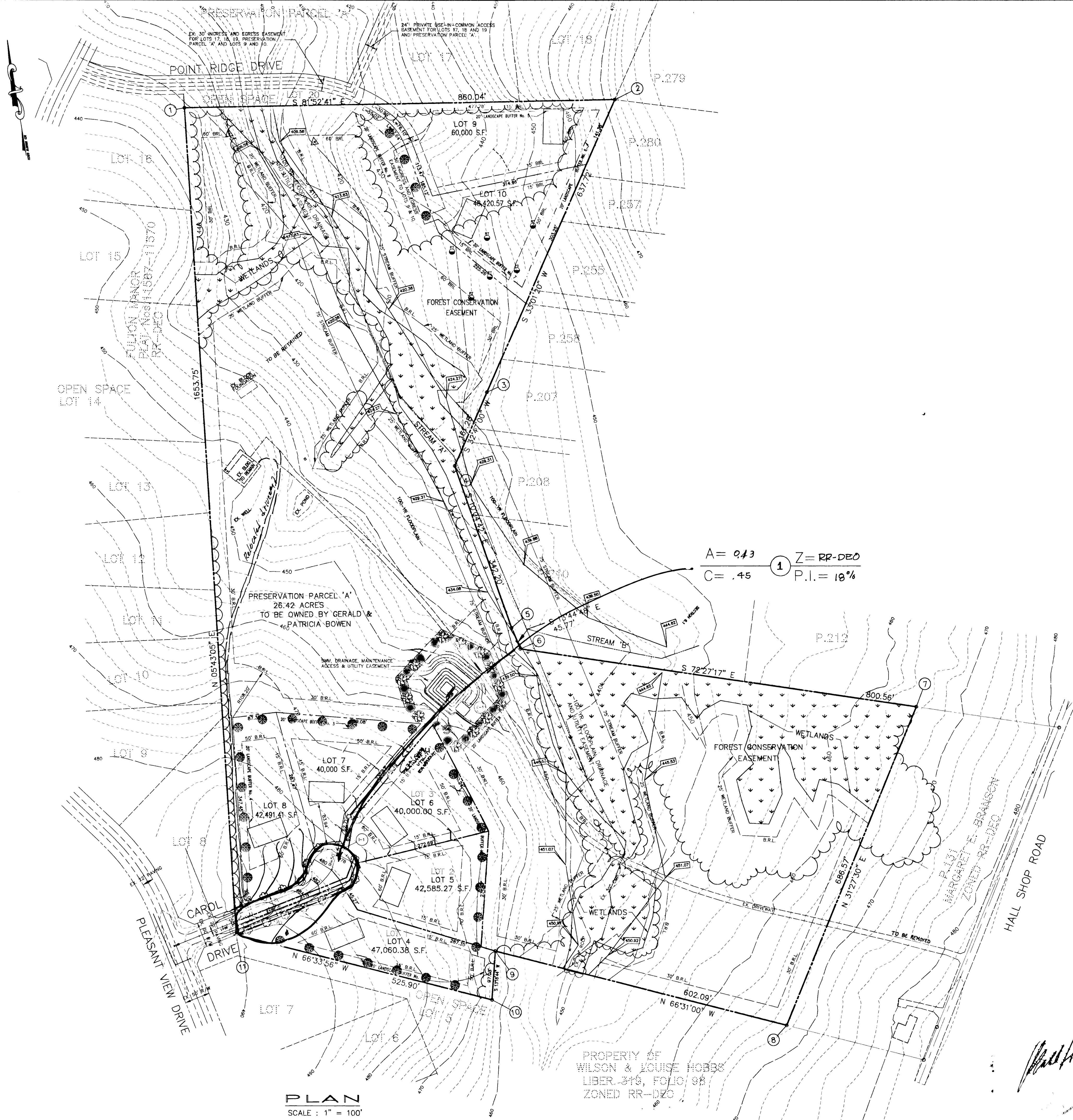
PLANT SCHEDULE					
SYMBOL	LOCATION	BOTANICAL NAME	COMMON NAME	QUANTITY	SIZE
☼	CAROL DRIVE	ACER RUBRUM "OCTOBER GLORY"	"OCTOBER GLORY" RED MAPLE	15	2 1/2" CAL.



ADDITION OF BIORETENTION FACILITY AND ASSOCIATED REVISIONS 4-8-97

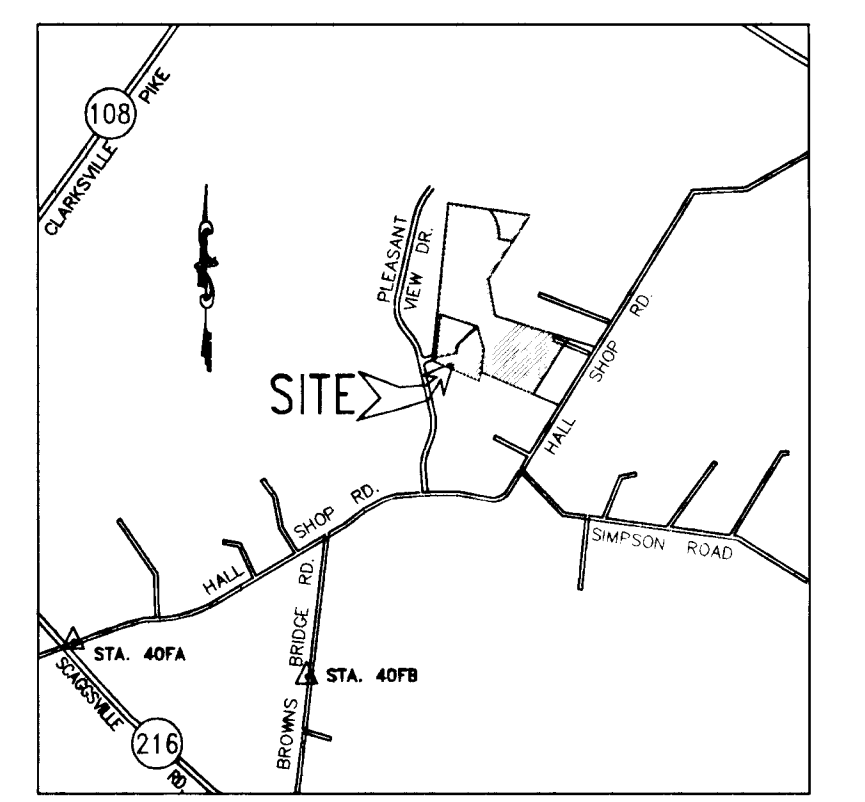
NO.	4-7-97	REVISE SWM POND TO BIORETENTION FACILITY	REVISION
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING			
 CHIEF, DIVISION OF LAND DEVELOPMENT AND RESEARCH			
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS			
 CHIEF, BUREAU OF HIGHWAYS			
PROJECT: FULTON MANOR EAST			
LOTS 4 THRU 10 & PRESERVATION PARCEL "A"			
LOCATION: TAX MAP 40&41, PARCEL 455			
5TH ELECTION DISTRICT			
HOWARD COUNTY, MARYLAND			
TITLE: PLAN AND PROFILES			
OWNER: GERALD & PATRICIA BOWEN			
c/o LAND DESIGN & DEVELOPMENT INC.			
10805 HICKORY RIDGE RD.			
COLUMBIA, MD. 21044			
DEVELOPER: LAND DESIGN & DEVELOPMENT INC.			
10805 HICKORY RIDGE RD.			
COLUMBIA, MD. 21044			
DESIGNED: JER	CHECKED: DTA	DATE: 6-4-96	PROJ. NO.:
DRAWN: AVG	APPROVED: MLL	SCALE: 1" = 50'	SHEET 2 OF 7

1710



$$A = 0.43 \quad Z = RP-DEO$$

$$C = .45 \quad P.I. = 18\%$$



FOR DRAINAGE AREA PURPOSES ONLY



ADDITION OF BIORETENTION FACILITY AND ASSOCIATED REVISIONS



- LEGEND :
- BAD HOLES
 - PERC HOLES
 - TEST PITS
 - EX. GRADE
 - PROP. GRADE
 - WETLAND
 - 25% SLOPE
 - 100 YR FLOODPLAIN
 - SEPTIC
 - EX. TREE LINE
 - WELLS

APPROVED : HOWARD COUNTY DEPARTMENT PUBLIC WORKS	
<i>Richard M. Sandoz</i>	11-18-96
CHIEF, BUREAU OF HIGHWAYS	DATE
APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING	
<i>Richard Blood</i>	11/22/16
CHIEF, DIVISION AND LAND DEVELOPMENT AND RESEARCH	DATE
APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING	
<i>[Signature]</i>	11/20/16
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE
NO.	DATE
1	4-7-97
	REVISE SWM POND TO BIORETENTION FACILITY
	REVISION
PROJECT :	
FULTON MANOR EAST	
LOTS 4 THRU 10 & PRESERVATION PARCEL 'A'	
A RESUBDIVISION OF LOTS 1, 2, & 3	
OF FULTON MANOR EAST AND THE BOWEN PROPERTY	
LOCATION :	
TAX MAP 40 & 41, PARCEL 455	
5TH ELECTION DISTRICT	
HOWARD COUNTY, MARYLAND	
TITLE :	
DRAINAGE AREA MAP	
OWNER :	
GERALD & PATRICIA BOWEN	
c/o LAND DESIGN & DEVELOPMENT INC.	
10805 HICKORY RIDGE RD.	
COLUMBIA, MARYLAND 21014	
DEVELOPER :	
LAND DESIGN & DEVELOPMENT INC.	
10805 HICKORY RIDGE RD.	
COLUMBIA, MD. 21014	
CONSULTING ENGINEERS	
8307 MAIN ST., HISTORIC ELLICOTT CITY, MD	
TEL. 410-485-0400 FAX 410-485-0489	
DESIGNED: JCS	CHECKED: JER
DATE: 07-26-96	PROJ. NO.:
DRAWN: AVG	APPROVED: MLL
SCALE: 1" = 100'	SHEET 3 OF 7

PLAN
SCALE : 1" = 100'

PROPERTY OF
WILSON & LOUISE HOBBS
LIBER 346, FOLIO 98
ZONED RR-DZO

C:\p000001\1770

**SCHEDULE A
PERIMETER LANDSCAPE EDGE**

Category	Adjacent to Roadways	Adjacent to Perimeter Properties
Landscape Type	B	A
Linear Feet of Roadway Frontage/Perimeter	0	520.64 101.37 125.41 17.17
Credit for Existing Vegetation (Yes, No, Linear Feet) (Describe below if needed)	0	0 0 0 0 0 0 0 0 0 0
Credit for Wall, Fence or Berm (Yes, No, Linear Feet) (Describe below if needed)	0	0 0 0 0 0 0 0 0 0 0
Number of Plants Required		
Shade Trees	0	8 1 7 6 4 1 7 6
Evergreen Trees	0	0 0 0 0 0 0 0 0
Shrubs	0	0 0 0 0 0 0 0 0
Number of Plants Provided		
Shade Trees	0	8 0 5 6 6 4 0 0
Evergreen Trees	0	0 0 0 0 0 0 0 0

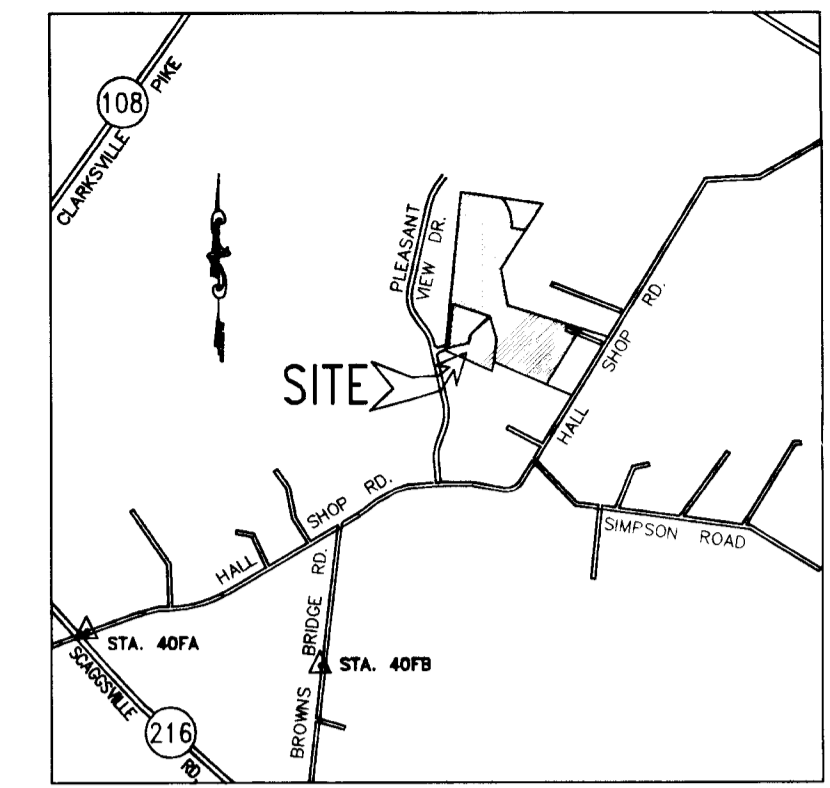
PLANT SCHEDULE

SYMBOL	LOCATION	BOTANICAL NAME	COMMON NAME	QUANTITY	SIZE
●	PERIMETER	<i>Quercus Rubra</i> Red Oak	RED OAK	23	2 1/2 CAL.
○	SWM FACILITY	SEE PLAN & DETAILS STORMWATER MANAGEMENT FACILITY			
○	SWM FACILITY	SEE PLAN & DETAILS STORMWATER MANAGEMENT FACILITY			

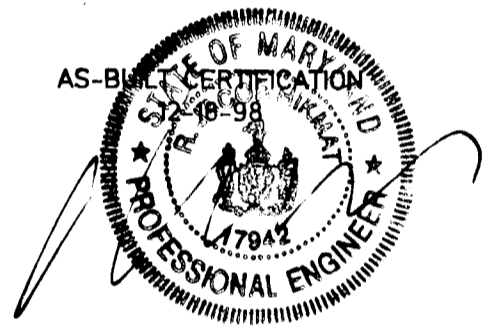
NOTE:
1. THIS PLANTING PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.1214 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL.

NOTE: LANDSCAPE SURETY
A SURETY IN THE AMOUNT OF \$ 7800
WILL BE INCLUDED IN THE DEVELOPER AGREEMENT

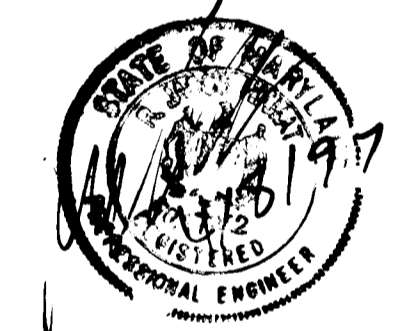
- LEGEND :**
- BAD HOLES
 - PERC HOLES
 - TEST PITS
 - EX. GRADE
 - PROP. GRADE
 - WETLAND
 - 25% SLOPE
 - 100 YR FLOODPLAIN
 - SEPTIC
 - EX. TREE LINE
 - WELLS



VICINITY MAP
SCALE 1" = 2000'



ADDITION OF BIORETENTION FACILITY AND ASSOCIATED REVISIONS
4-8-97



APPROVED : HOWARD COUNTY DEPARTMENT PUBLIC WORKS
Andrew M. Danek 11-18-96
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Richard Blood 11/18/96
CHIEF, DIVISION AND LAND DEVELOPMENT AND RESEARCH DATE

APPROVED : *[Signature]* 11/18/96
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

NO.	DATE	REVISION
1	4-8-97	REVISE SWM POND TO BIORETENTION FACILITY
		REVISION

PROJECT : **FULTON MANOR EAST**
LOTS 4 THRU 10 & PRESERVATION PARCEL 'A'
A RESUBDIVISION OF LOTS 1, 2, & 3
OF FULTON MANOR EAST AND THE BOWEN PROPERTY

LOCATION : TAX MAP 40 & 41, PARCEL 465
5TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE : **GRADING PLAN & LANDSCAPING PLAN**

OWNER : GERALD & PATRICIA BOWEN
c/o LAND DESIGN & DEVELOPMENT INC.
10805 HICKORY RIDGE RD.
COLUMBIA, MARYLAND 21014

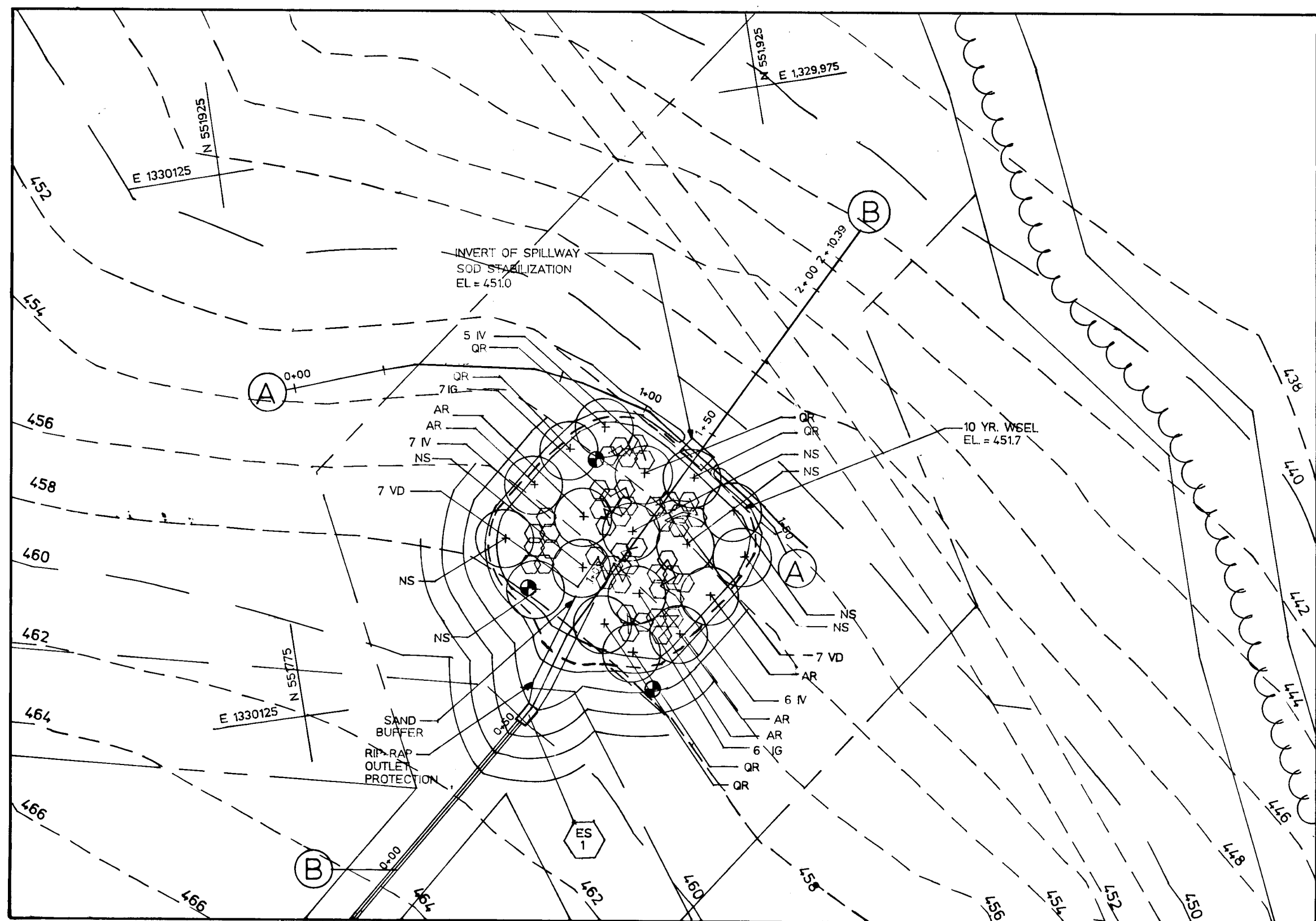
DEVELOPER : LAND DESIGN & DEVELOPMENT INC.
10805 HICKORY RIDGE RD.
COLUMBIA, MD. 21044

CONSULTING ENGINEERS : **Victoria Engineering Inc.**
6307 MAIN ST., HISTORIC ELLCOTT CITY, MD.
TEL: 410-485-0400 FAX: 410-485-0499

DESIGNED: JCS | CHECKED: JER | DATE: 07-26-96 | PROJ. NO.:
DRAWN: AVG | APPROVED: MLL | SCALE: 1" = 100' | SHEET 4 OF 7

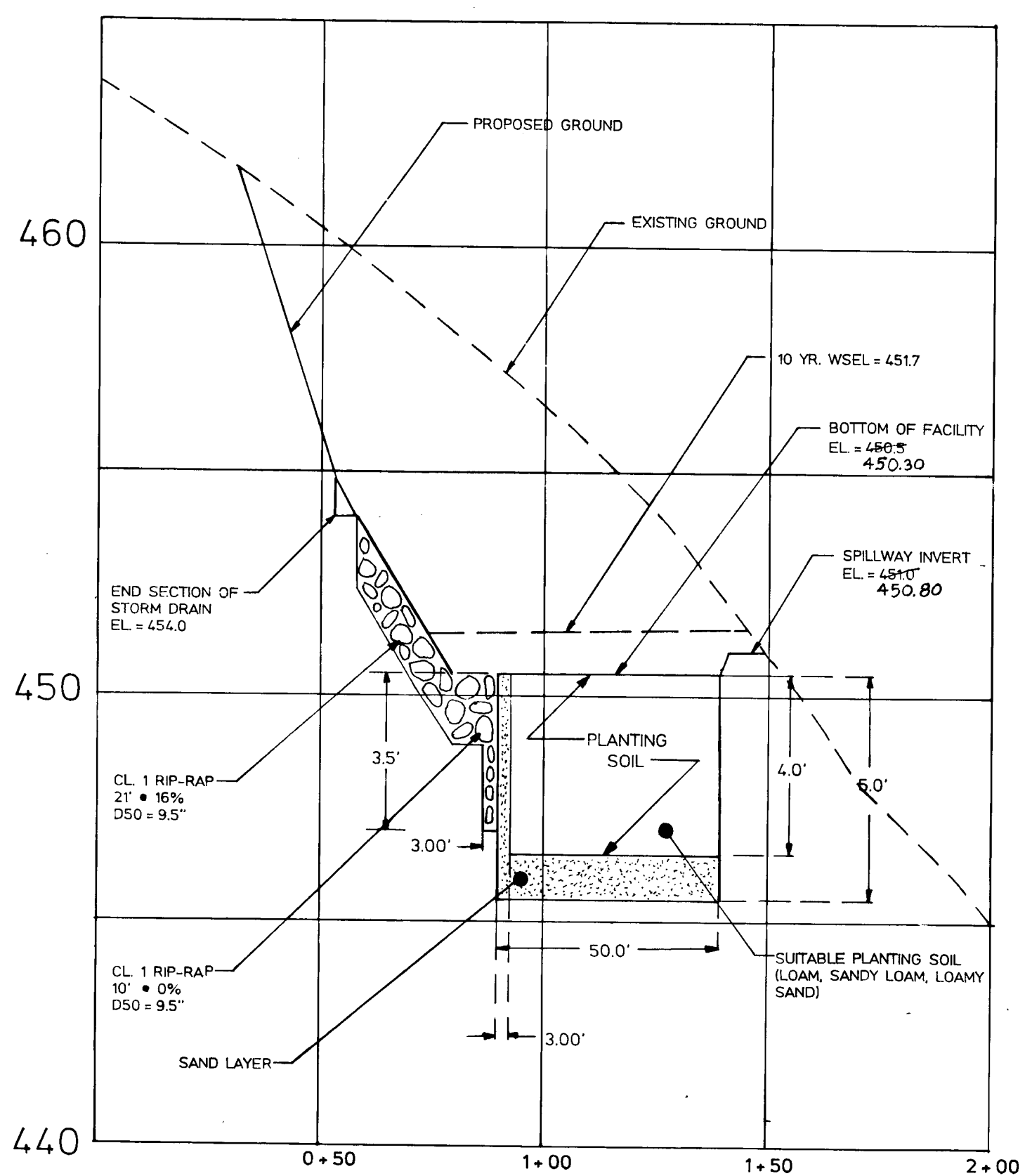
PLAN
SCALE : 1" = 100'

1710



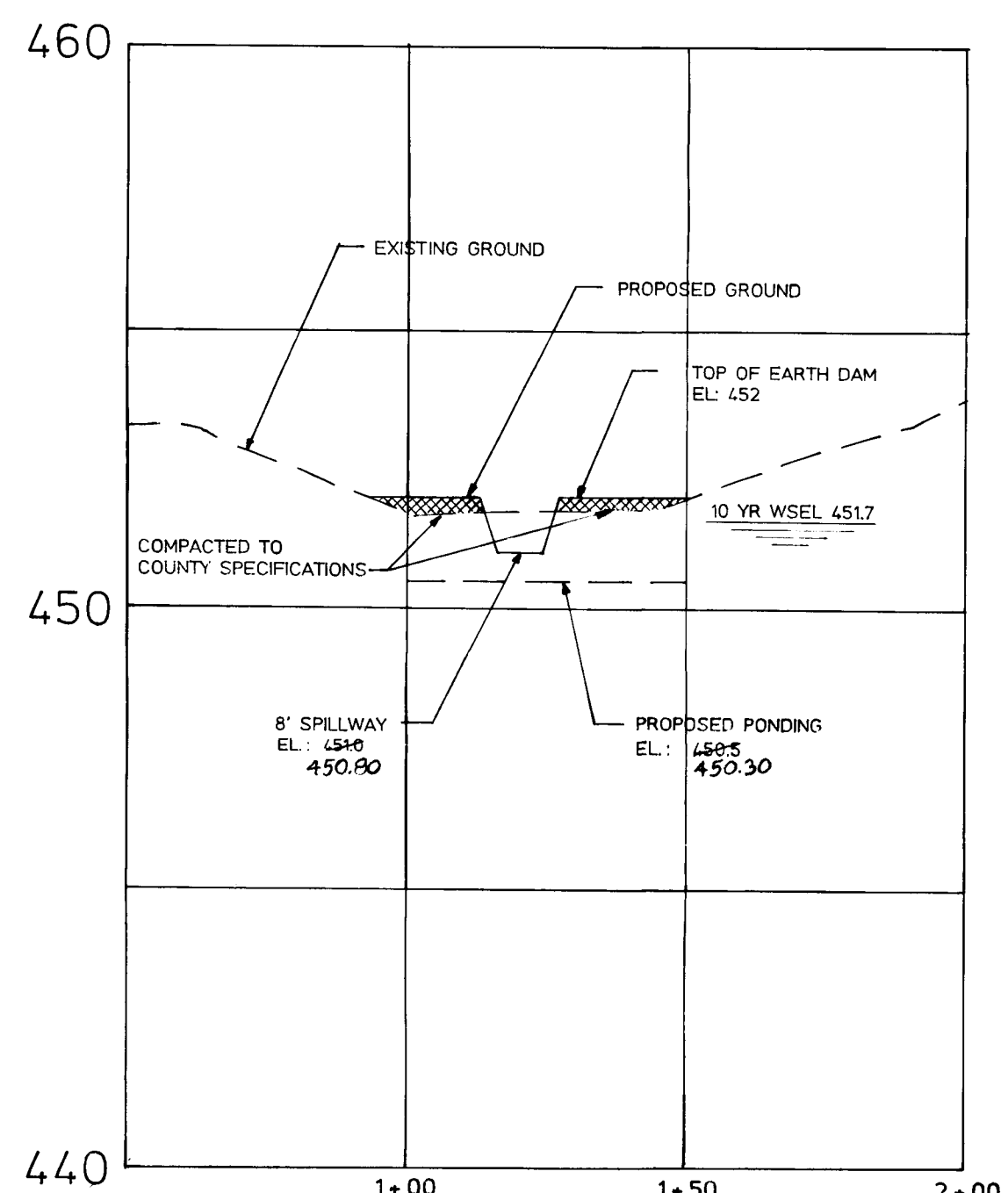
BIORETENTION FACILITY

SCALE = 1" = 30'



PROFILE THROUGH BIORETENTION FACILITY

SCALE: HOR: 1" = 30'
VER: 1" = 3'



PROFILE FOR SPILLWAY

SCALE: HOR: 1" = 30'
VER: 1" = 3'

BIORETENTION AREA PLANTING SCHEDULE

QUANTITY	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE
7	NS	NYSSA SYLVATICA	BLACK GUM	2 1/2" - 3" CAL
5	AR	RED SUNSET RED MAPLE	ACER RUBRUM 'RED SUNSET'	2 1/2" - 3" CAL
6	QR	QUERCUS RUBRA	RED OAK	2 1/2" - 3" CAL
21	VD	VIBURNUM DENTATUM	ARROWWOOD	2.5' - 3' HT.
18	IV	ILEX VERTICILLATA	WINTERHERRY	2.5' - 3' HT.
13	IG	ILEX GLABRA	INKBERRY	2.5' - 3' HT.

TOTAL
70 TREES & SHRUBS (35 TREES, 105 SHRUBS)

PLANT MATERIAL GUIDELINES

BALLED & BURLAPPED AND CONTAINERIZED TREES AND SHRUBS SHOULD BE PLANTED BETWEEN MARCH 15 AND JUNE 30 OR SEPTEMBER 15 AND NOVEMBER 15 AS SPECIFIED ON THE ROAD PLAN DRAWINGS. GROUNDCOVERS FOLLOW TREE AND SHRUB PLANTING DATES. GRASSES AND LEGUMES SHOULD BE PLANTED IN THE SPRING.

FOR ALL PLANT INSTALLATION, THE CONTRACTOR SHALL PROVIDE A ONE (1) YEAR 80% CARE AND REPLACEMENT WARRANTY. THE WARRANTY SHALL BEGIN AFTER INSPECTION AND APPROVAL OF THE COMPLETE INSTALLATION OF ALL PLANT MATERIAL AND CONTINUE FOR (1) YEAR. REPLACEMENT OF PLANT MATERIAL SHALL CONFORM TO THE SPECIFICATIONS SET FORTH IN THE MAINTENANCE SCHEDULE.

INSTALLATION & MAINTENANCE SCHEDULE

SOILS:
PROVIDE A MINIMUM OF FOUR (4) FEET OF PLANTING SOIL WITH A ONE (1) FOOT SAND LAYER BENEATH. SUITABLE PLANTING SOILS HAVE A SANDY LOAM, LOAM SAND, OR LOAM TEXTURE.

INSPECT AND REPAIR EROSION MONTHLY.

ORGANIC LAYER:

ONCE TREES AND SHRUBS HAVE BEEN INSTALLED, THE MULCH MAY BE ADDED. ANY GROUNDCOVERS SPECIFIED AS PLUGS MAY BE INSTALLED ONCE THE MULCH HAS BEEN LAID DOWN. GROUNDCOVERS ESTABLISHED BY SEEDING AND/OR CONSISTING OF GRASSES SHOULD NOT BE LOGGED WITH A MULCH LAYER.

SINCE THESE PLANT COMMUNITIES ARE WITHIN AN URBAN LOCATION, THE ORGANIC LAYER TENDS TO BECOME VERY ALKALINE DUE TO PRECIPITATION AND RUNOFF. ONLY TWICE A YEAR. TESTING OF PH OF THE ORGANIC LAYER SHALL BE DONE TO DETERMINE THE AMOUNT OF LIMESTONE REQUIRED TO TREAT THE PLANTING SOIL.

ANNUAL SOIL TESTING SHOULD BE CONDUCTED TO DETECT AND PREVENT THE ACCUMULATION OF TOXINS AND HEAVY METALS.

ONCE A YEAR IN THE SPRING BY HAND, REMOVE PREVIOUS MULCH LAYER AND APPLY NEW MULCH LAYER IF NEEDED.

WHENEVER NEEDED, REMULCH ANY VOID AREAS BY HAND.

PLANT MATERIAL:

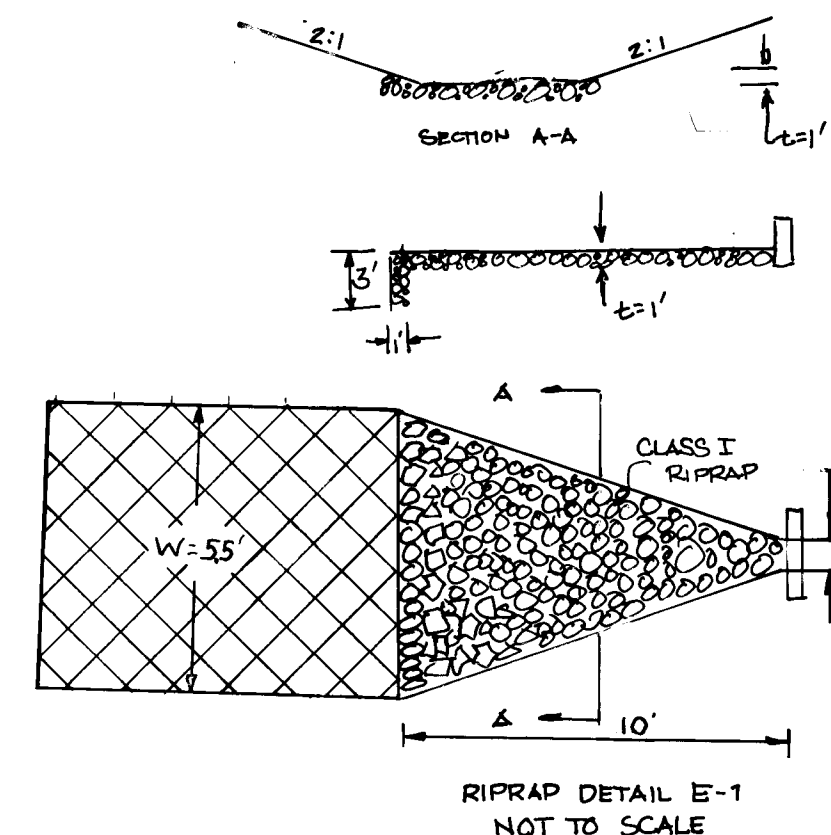
ONCE PLANTING HAS BEEN COMPLETED, PLANT MATERIAL SHOULD BE WATERED BY HAND AT THE END OF EACH LAY FOR FOURTEEN CONSECUTIVE DAYS.

ANNUAL MAINTENANCE WILL BE REQUIRED FOR ALL PLANT MATERIAL. INSPECTION OF ALL VEGETATION SHALL OCCUR TWICE A YEAR. PLANT MATERIAL MAINTENANCE AND UPKEEP SHALL INCLUDE ADDRESSING PROBLEMS ASSOCIATED WITH DISEASE OR INSECT INFESTATIONS AND ANY NECESSARY PRUNING AS WELL AS REPLACEMENT OF DEAD PLANT MATERIAL.

DEAD PLANT MATERIAL SHALL BE REPLACED BETWEEN MARCH 15 AND APRIL 30 OR OCTOBER 1 AND NOVEMBER 30.

DEPENDENT ON THE TYPE OF INSECT AND DISEASE INFESTATION, DISEASED TREES AND SHRUBS SHOULD BE TREATED BY HAND AT VARIOUS TIMES DURING THE YEAR.

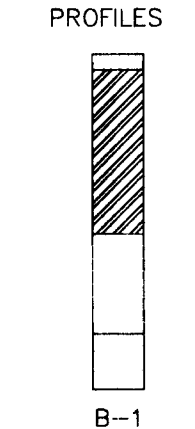
WHENEVER NEEDED, DEFICIENT STAKES AND WIRES SHOULD BE REPLACED BY HAND. ONCE A YEAR, ONLY IN THE SPRING, STAKES SHOULD BE REPLACED.



SUMMARY TABLE

1. DRAINAGE AREA = 2.9 ACRES	
2. DESIGN CRITERIA	
STORM FREQUENCY	ALLOWABLE RELEASE, cfs
2 YR.	3.31 cfs
10 YR.	8.84 cfs
100 YR.	15.83 cfs
3. POND STORAGE	
STORM	ACTUAL DISCHARGE
2 YR.	2.1 cfs
10 YR.	7.9 cfs
100 YR.	12.9 cfs
ELEVATION	STORAGE
4517 ft.	0.06 ACRE-FT
4515 ft.	0.09 ACRE-FT
4513 ft.	0.11 ACRE-FT

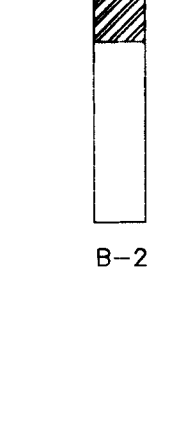
SOIL BORING PROFILES



Datum	MD STATE	Hammer Wt.	N.A.	Hole Diameter	
Surf. Elev.	454.0	Hammer Drop	N.A.	Rock Core Dia.	
Date Started		Pipe Size	N.A.	Boring Method	

SOIL DESCRIPTION	STRA. DEPTH	DEPTH SCALE	CON	SAMPLE Blows/6"	NO.	REC.	BORING & SAMPLING NOTES
Topsoil	0.0'	0.0'					Topsoil: ±0.8 ft.
Brown moist micaceous clay & silt, little sand	3.0'	3.0'					
USC: Mf USCA: SANDY CLAY LOAM							
Dark gray-brown moist of sand, some silt	5.0'	5.0'					
USC: Sm USCA: SANDY LOAM							
Black damp rock frags. and of sand, little silt	8.0'	8.0'					
USC: Ss USCA: (VERY DENSE DISINTEGRATED ROCK)							
Brown moist of sand, and silt, trace rock frags	12.5'	12.5'					3 days after completion, hole dry and covered @ 10.7'
USC: Ss USCA: (DENSE DISINTEGRATED ROCK)							

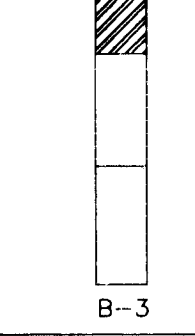
SOIL BORING PROFILES



Datum	MD STATE	Hammer Wt.	N.A.	Hole Diameter	
Surf. Elev.	457.5	Hammer Drop	N.A.	Rock Core Dia.	
Date Started		Pipe Size	N.A.	Boring Method	

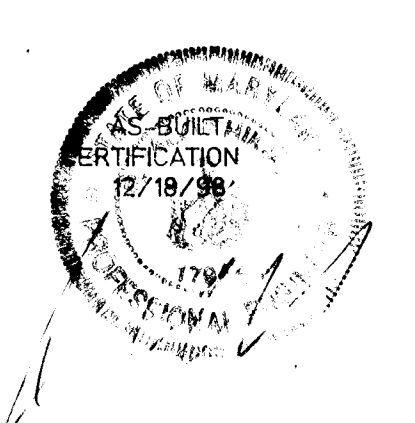
SOIL DESCRIPTION	STRA. DEPTH	DEPTH SCALE	CON	SAMPLE Blows/6"	NO.	REC.	BORING & SAMPLING NOTES
Topsoil	0.8'	0.0'					Topsoil: ±0.8 ft.
Brown moist micaceous clay & silt, little sand	3.0'	3.0'					
USC: Mf USCA: CLAY LOAM							
Dark gray-brown moist of sand, some clay silt, little to some rock frags. trace mica	5.0'	5.0'					
USC: Sm USCA: SANDY LOAM							
Gray-brown moist rock frags. and of sand, little silt	11.5'	11.5'					Rig refused @ 11.1', 3 days after completion, hole dry and covered @ 8.7'
USC: Ss USCA: (VERY DENSE DISINTEGRATED ROCK)							

SOIL BORING PROFILES



Datum	MD STATE	Hammer Wt.	N.A.	Hole Diameter	
Surf. Elev.	458.0	Hammer Drop	N.A.	Rock Core Dia.	
Date Started		Pipe Size	N.A.	Boring Method	

SOIL DESCRIPTION	STRA. DEPTH	DEPTH SCALE	CON	SAMPLE Blows/6"	NO.	REC.	BORING & SAMPLING NOTES
Topsoil	0.4'	0.0'					Topsoil: ±0.4 ft.
Brown moist clay & silt, and of sand	3.0'	3.0'					
USC: Mf USCA: SANDY CLAY LOAM							
Dark gray-brown moist of sand, some clay silt, little to some rock frags. trace mica	8.0'	8.0'					
USC: Sm USCA: SANDY LOAM							
Black damp rock frags. some of sand, little silt	13.3'	13.3'					Rig refused @ 13.3', 3 days after completion, hole dry and covered @ 9.7'
USC: Ss USCA: (VERY DENSE DISINTEGRATED ROCK)							



ADDITION OF BIORETENTION FACILITY AND ASSOCIATED REVISIONS
2-8-98



These plans have been reviewed for the Howard Soil Conservation District and meet the technical requirements for the Small Pond Construction, Soil Erosion and Sediment Control.

APPROVED: HOWARD COUNTY DEPARTMENT PUBLIC WORKS
Andrew M. Peneke 11-18-96
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Richard B. Bland 11/29/96
CHIEF, DIVISION AND LAND DEVELOPMENT AND RESEARCH

ENGINEER'S CERTIFICATE
I certify that this plan for pond construction, erosion and sediment control represents a practical and workable plan based on my 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.

DEVELOPER'S/BUILDER'S CERTIFICATE
I/We certify that all development and/or construction will be done according to these plans, and that any responsible 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 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 the Howard Soil Conservation District with an "as-built" plan of the pond within 30 days of completion.

PROJECT: FULTON MANOR EAST
LOTS 4 THRU 10 & PRESERVATION PARCEL 'A'
A RESUBDIVISION OF LOTS 1, 2, & 3
OF FULTON MANOR EAST AND THE BOWEN PROPERTY

LOCATION: TAX MAP 40 & 41, PARCEL 455
5TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: PLAN & DETAILS
STORMWATER MANAGEMENT FACILITY

OWNER: GERALD & PATRICIA BOWEN
c/o LAND DESIGN & DEVELOPMENT INC.
10805 HICKORY RIDGE ROAD
COLUMBIA, MARYLAND 21044

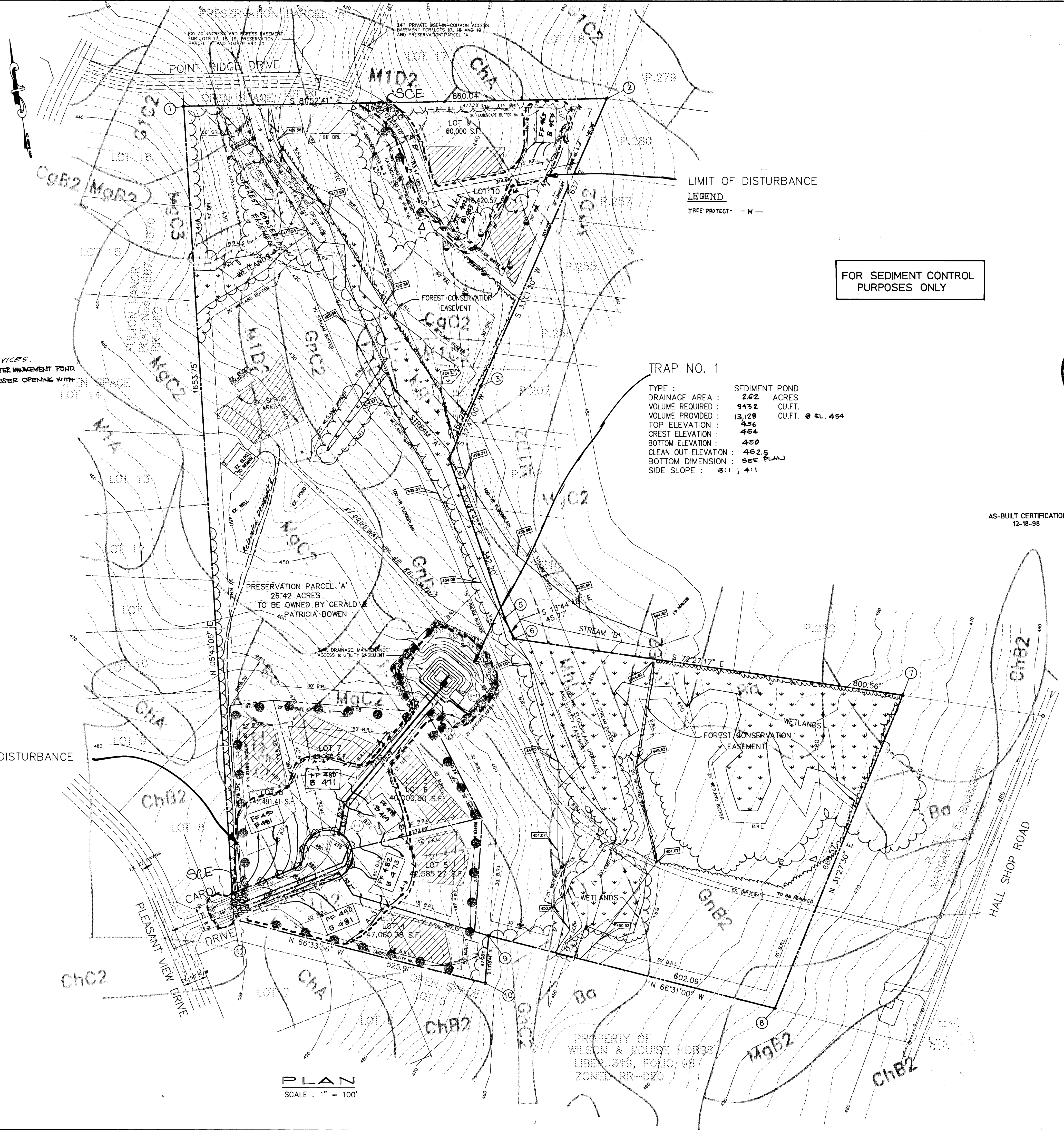
DEVELOPER: LAND DESIGN & DEVELOPMENT INC.
10805 HICKORY RIDGE RD.
COLUMBIA, MD. 21044

DESIGN: AVG
DRAWN: DTA
APPROVED: MLL

DATE: 07-23-96
SCALE: AS SHOWN SHEET 5 OF 7

FORIA Engineering Inc.
CONSULTING ENGINEERS
8307 MAIN ST., HISTORIC ELLICOTT CITY, MD.
TEL. 410-485-0400 FAX 410-485-0489

1710



SEQUENCE OF CONSTRUCTION

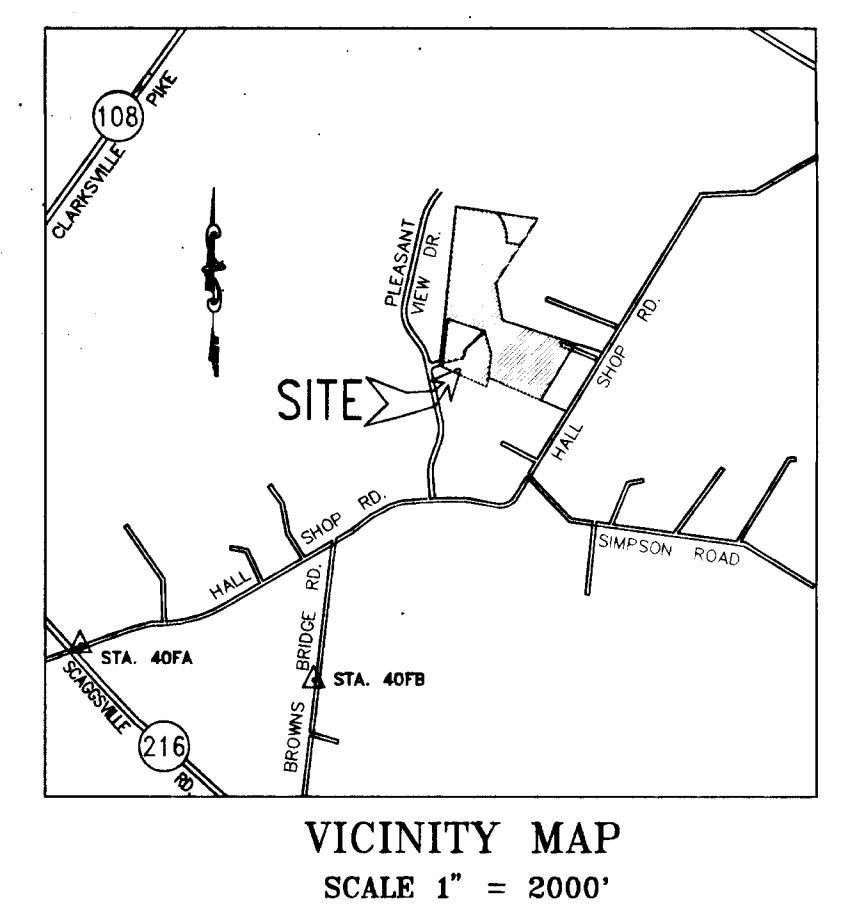
1. OBTAIN GRADING PERMIT. 2. INSTALL TREE PROTECTION DEVICES.
3. INSTALL ALL SEDIMENT CONTROL MEASURES SHOWN ON THIS PLAN INCLUDING STORMWATER MANAGEMENT POND.
4. CONSTRUCT EMERGENCY SPILLWAY TO ELEVATION 486 (TEMPORARY). b) BLOCK RISER OPENING WITH 3'x3.5'x 1/4" METAL PLATE. c) DO NOT INSTALL CAP FOR DEWATERING DEVICE.
5. CONSTRUCT ROADS AND DRAINAGE SYSTEMS. STABILIZE ALL DISTURBED AREAS.
6. REMOVE ALL SEDIMENT CONTROL MEASURES (EXCLUDING POND) UPON APPROVAL FROM HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

- LEGEND :
- BAD HOLES
 - PERC HOLES
 - TEST PITS
 - EX. GRADE
 - PROP. GRADE
 - WETLAND
 - 25% SLOPE
 - 100 YR FLOODPLAIN
 - SEPTIC
 - EX. TREE LINE
 - WELLS
 - DIKE
 - SILT FENCE
 - BLAZE ORANGE
 - TREE PROTECTION
 - STONE CONSTRUCTION ENTRANCE

LIMIT OF DISTURBANCE
 LEGEND
 TREE PROTECT - W -

FOR SEDIMENT CONTROL PURPOSES ONLY

TRAP NO. 1
 TYPE :
 DRAINAGE AREA : 2.62 ACRES
 VOLUME REQUIRED : 9432 CU.FT.
 VOLUME PROVIDED : 13,120 CU.FT. @ EL. 454
 TOP ELEVATION : 456
 CREST ELEVATION : 454
 BOTTOM ELEVATION : 450
 CLEAN OUT ELEVATION : 452.5
 BOTTOM DIMENSION : SEE PLAN
 SIDE SLOPE : 3:1, 4:1



ADDITION OF BIORETENTION FACILITY AND ASSOCIATED REVISIONS 4-8-97

These plans have been reviewed for the Howard Soil Conservation District and meet the technical requirements for the Small Pond Construction, Soil Erosion and Sediment Control.

Robert W. Ziehm 11/3/96
 Robert W. Ziehm, License No. 115791
 Howard Soil Conservation District

AS-BUILT CERTIFICATION 12-18-98

ENGINEER'S CERTIFICATE

I certify that this plan for pond construction, erosion and sediment control represents a practical and workable plan based on my 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. I also authorize periodic on-site inspections by the Howard Soil Conservation District.

Robert W. Ziehm 11/3/96
 Robert W. Ziehm, License No. 115791
 Howard Soil Conservation District

DEVELOPER'S/BUILDER'S CERTIFICATE

I/We certify that all development and/or construction will be done according to these plans, and that any responsible 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 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.

 BUILDER/DEVELOPER DATE

APPROVED: HOWARD COUNTY DEPARTMENT PUBLIC WORKS

Richard M. Daulton 11/18/96
 Richard M. Daulton, License No. 44
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Richard Blood 11/22/96
 Richard Blood, License No. 115791
 CHIEF, DIVISION OF LAND DEVELOPMENT AND RESEARCH

APPROVED: HOWARD COUNTY DEPARTMENT OF ENGINEERING

Robert W. Ziehm 11/18/96
 Robert W. Ziehm, License No. 115791
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

NO.	DATE	REVISION
1	4-7-97	REVISE SWM POND TO BIORETENTION FACILITY
PROJECT :		
FULTON MANOR EAST		
LOTS 4 THRU 10 & PRESERVATION PARCEL 'A'		
A RESUBDIVISION OF LOTS 1, 2, & 3 OF FULTON MANOR EAST AND THE BOWEN PROPERTY		
LOCATION :		
TAX MAP 40 & 41, PARCEL 455		
5TH ELECTION DISTRICT		
HOWARD COUNTY, MARYLAND		
TITLE :		
SEDIMENT CONTROL PLAN & SOILS MAP		
OWNER :		
GERALD & PATRICIA BOWEN		
c/o LAND DESIGN & DEVELOPMENT INC.		
10805 HICKORY RIDGE ROAD		
COLUMBIA, MARYLAND 21014		
DEVELOPER :		
LAND DESIGN & DEVELOPMENT INC.		
10805 HICKORY RIDGE RD.		
COLUMBIA, MD. 21014		
CONSULTING ENGINEERS		
8307 MAIN ST., HISTORIC ELICOTT CITY, MD.		
TEL: 410-485-0400 FAX: 410-485-0489		
DESIGNED: JCS CHECKED: JER DATE: 07-26-96 PROJ. NO.:		
DRAWN: AVG APPROVED: MLL SCALE: 1"=100' SHEET 6 OF 7		

PLAN
 SCALE: 1" = 100'

I. SEDIMENT CONTROL NOTES:

PERMANENT SEEDING NOTES

Apply to graded or cleared areas not subject to immediate further disturbance where a permanent long-lived vegetative cover is needed.

Seeded Preparation: Loosen upper three inches of soil by raking, disking or other acceptable means before seeding, unless previously loosened.

Soil Amendments: In lieu of soil test recommendations, use 1) Preferred - apply 2 tons per acre dolomitic limestone (92 lbs/1000 square feet) and 500 lbs per acre 10-10-10 fertilizer (14 lbs/1000 sq ft) before seeding/harrow or disc into upper three inches of soil, at time of seeding, apply 4000 lbs per acre 30-0-0 ureamform fertilizer (14 lbs/1000 sq ft).

2) Acceptable - apply 2 tons per acre dolomitic limestone (92 lbs/1000 sq ft) and 1000 lbs per acre 10-10-10 fertilizer (23 lbs/1000 sq ft) before seeding/harrow or disc into upper three inches of soil, at time of seeding, apply 4000 lbs per acre 30-0-0 ureamform fertilizer (14 lbs/1000 sq ft).

Seeding - For periods March 1 thru April 30, and August 1 thru October 15, seed with 60 lbs per acre (1.4 lbs/1000 sq ft) 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 sq ft) of weeping lovegrass during the period of October 16 thru November 15, seed with 2 1/2 bushels per acre of annual ryegrass (3.2 lbs/1000 sq ft) for the period May 1 thru August 14, seed with 3 lbs per acre of weeping lovegrass (0.75 lbs/1000 sq ft).

Mulching - Apply 1 1/2 to 2 tons per acre (70 to 90 lbs/1000 sq ft) of unrotted small grain straw immediately after seeding, anchor mulch immediately after application using mulch anchoring tool or 218 gallons per acre (5 gal/1000 sq ft) of emulsified asphalt on slopes 8 ft or higher, use 348 gallons per acre (8 gal/1000 sq ft) for anchoring.

Maintenance - Inspect all seeded areas and make needed repairs, replacements and temporary seeding notes as follows: 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.

TEMPORARY SEEDING NOTES

Apply to graded or cleared areas likely to be re-disturbed where a short-term vegetative cover is needed.

Seeded Preparation: Loosen upper three inches of soil by raking, disking or other acceptable means before seeding, unless previously loosened.

Soil Amendments: Apply 500 lbs per acre 10-10-10 fertilizer (14 lbs/1000 sq ft).

Seeding - For periods March 1 thru April 30 and August 1 thru November 15, seed with 2 1/2 bushels per acre of annual ryegrass (3.2 lbs/1000 sq ft) for the period May 1 thru August 14, seed with 3 lbs per acre of weeping lovegrass (0.75 lbs/1000 sq ft).

Mulching - Apply 1 1/2 to 2 tons per acre (70 to 90 lbs/1000 sq ft) of unrotted small grain straw immediately after seeding, anchor mulch immediately after application using mulch anchoring tool or 218 gal per acre (5 gal/1000 sq ft) of emulsified asphalt on slopes 8 ft or higher, use 348 gal per acre (8 gal/1000 sq ft) for anchoring.

Maintenance - Inspect all seeded areas and make needed repairs, replacements and temporary seeding notes as follows: 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.

STANDARD AND SPECIFICATION FOR VEGETATIVE STABILIZATION WITH SOD

1. Class of turfgrass sod shall be Maryland Vt virginia state certified, or Maryland or Virginia state approved sod.

2. Sod shall be machine cut to a uniform soil thickness of 3/4 inch, plus or minus 1/4 inch, at the time of cutting, measurement for thickness shall exclude top growth and thatch.

3. Standard size sections of sod shall be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.

4. Individual pieces of sod shall be cut to the suppliers' width and length and not to order. Widths and lengths shall be 5 percent broken pods and torn or uneven ends will not be acceptable.

5. Sod shall not be harvested or transported when moisture content (excessively dry or wet) may adversely affect its survival.

6. Sod shall be harvested, delivered and installed within a period of 36 hours after cut and transported within this period shall be inspected and approved prior to its installation.

SITE PREPARATION

Fertilizer and lime application rates shall be determined by soil tests. Under unusual circumstances where there is insufficient time for a complete soil test, fertilizer and lime materials may be applied in amounts shown under B, below.

a. Prior to Seeding, the surface shall be cleared of all trash, debris, and of all roots, brush, wire, grade stakes, and other objects that would interfere with planting, fertilizing or maintenance operations.

b. Where the soil is acid or composed of heavy clays, ground limestone shall be spread at the rate of 2 tons/acre or 100 pounds per 1,000 square feet, in all soils 1,000 pounds per acre or 25 pounds per 1,000 square feet 10-10-10 fertilizer or equivalent shall be uniformly applied and mixed into the top 3 inches of soil with the required lime.

c. All areas receiving sod shall be uniformly fine graded, harrowed and poked smooth shall be scarified prior to placement of sod.

STANDARD SEDIMENT CONTROL NOTES:

1) A minimum of 48 hours notice must be given to the Howard County Office of Inspection and Permits prior to the start of any construction. (313-1855)

2) All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 1983 Maryland Standards and Specifications for Soil Erosion and Sediment Control.

3) Following initial soil disturbance or disturbance, permanent or temporary stabilization shall be completed within: a) 7 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1, b) 14 days as to all other disturbed or graded areas on the project site.

4) All sediment traps/basins shown must be fenced and warning signs posted around their perimeter in accordance with vol. 1, chapter 12, of the Howard County Design Manual, Storm Drainage.

5) All disturbed areas must be stabilized within the time period specified above in accordance with the 1983 Maryland standards and specifications for soil erosion and sediment control for permanent seedings (sec. 51) sod (sec. 54), temporary seeding (sec. 50) and mulching (sec. 52), temporary stabilization with mulch alone can only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.

6) 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.

7) Site analysis: total area of site 34.18 acres, area disturbed 4.30 acres, area to be roofed or paved 0.64 acres, area to be vegetatively stabilized 3.66 acres, total cut 1000 cu. yds, total fill 1000 cu. yds, offsite waste/borrow area location n/a.

8) Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.

9) Additional sediment controls must be provided, if deemed necessary by the Howard County DPW Sediment Control Inspector.

10) On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading, other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.

General Notes

1) Refer to 1983 Maryland Standards and Specifications for soil erosion and sediment control for standards and detailed specifications of each practice specified herein.

2) With the approval of the sediment control inspector, minor field adjustments can and will be made to insure the proper fit of sediment control structures. The drain pipe or barrel connection to the riser shall be welded all around when the pipe and riser are metal. Anti-seep collars shall be connected to the pipe in such manner as to be completely watertight. Simple bands are not considered to be watertight.

3) At the end of each working day, all sediment control practices will be inspected and left in operational condition.

4) Following initial soil disturbance or disturbance, permanent or temporary stabilization shall be completed within: a) seven calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes greater than 3:1 horizontal to 1 vertical (3:1) and b) fourteen days as to all other disturbed or graded areas on the project site.

5) Any change to the grading proposed on this plan requires re-submission to county soil conservation district for approval.

6) Dust control will be provided for all disturbed areas. Refer to 1983 Maryland Standards and Specifications for soil erosion and sediment control, pp 52.01 and 52.02 for acceptable methods and specifications for dust control.

7) Any variation from the sequence of operations stated on this plan requires the approval of the sediment control inspector and the county soil conservation district prior to the initiation of the change.

8) Excess cut or borrow material shall go to or come from, respectively, a site with an approved sediment control plan.

9) The following item may be used as applicable: Any variation from the sequence of operations stated on this plan requires the approval of the sediment control inspector and the county soil conservation district prior to the initiation of the change.

10) Excess cut or borrow material shall go to or come from, respectively, a site with an approved sediment control plan.

11) Refer to "Maryland's guidelines to waterworks construction" by the Water Resources Administration (WRA), dated January, 1986 for standard details and detailed specifications of each practice specified herein for waterworks construction.

12) All dikes shall be compacted by earth-moving equipment.

13) All dikes shall have positive drainage to an outlet. If desired to facilitate crossing by construction traffic.

14) Field location should be adjusted as needed to utilize a stabilized area outlet.

15) Earth dikes shall have an outlet that functions with a minimum of erosion, runoff shall be conveyed to a sediment trapping device such as a sediment trap or sediment basin where either the dike channel or the drainage area above the dike are not adequately stabilized.

16) Stabilization shall be (a) in accordance with standard specifications for seed and straw mulch or straw mulch if not in seeding season, (b) flow channel as per the chart below.

II. GENERAL NOTES FOR PONDS:

SITE PREPARATION:

Area under the borrow areas, embankment, and structural works shall be cleared, grubbed and the top soil stripped to remove all trees, vegetation, roots or the other objectionable material. Channel banks and slope breaks shall be sloped to no steeper than 1:1.

Areas covered by the pond or reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable materials unless otherwise designated on the plans. Trees, brush, and stumps shall be cut approximately level with the ground surface.

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

EARTH FILL

The fill material shall be taken from approved designated borrow area or areas. It shall be free of roots, stumps, wood, rubbish, over-size stones, cinders or other objectionable materials. The embankment shall be constructed to an elevation which provides for anticipated settlement to the design elevation. The fill height along the length of the embankment shall be increased above the design elevation (including freeboard) as shown on the plans.

Placement: Area on which fill is to be placed shall be scarified prior to placement of the fill. Material shall be placed in 8-inch maximum thickness (before compaction) layers which shall be continuous over the entire length of the fill. The most porous material shall be placed in the downstream portions of 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 third track of the equipment. Compaction shall be achieved by drumming with four complete passes of a sheepsfoot, rubber tire or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction can 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.

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

Cut-off Trench

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

STRUCTURE BACKFILL

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

PIPE CONDUITS

All pipes shall be circular in cross section. Corrugated metal pipe - This pipe and its appurtenances shall be galvanized and fully bituminous coated and shall conform to the requirements of ASHTO Specification M-274 type A with water tight coupling bands. Any bituminous coating damaged or otherwise removed shall be placed with cold applied bituminous coating compound. Steel pipes with polymeric coating and its appurtenances shall conform to the requirements of ASHTO Specification M-274 type A with water tight coupling bands. Any bituminous coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound.

Materials - (Aluminum Pipe) - This pipe and its appurtenances shall conform to the requirements of ASHTO Specification M-196 or M-211 with watertight coupling bands or flanges. Aluminum surfaces that are to be in contact with concrete shall be pointed with one coat of zinc chromate primer. Hot dip galvanizing bolts should not be used for connections of the girding bolts shall be between 4 and 9.

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