

# ROAD CONSTRUCTION PLANS

## FRIENDSHIP LAKES, LOTS 5 THRU 15

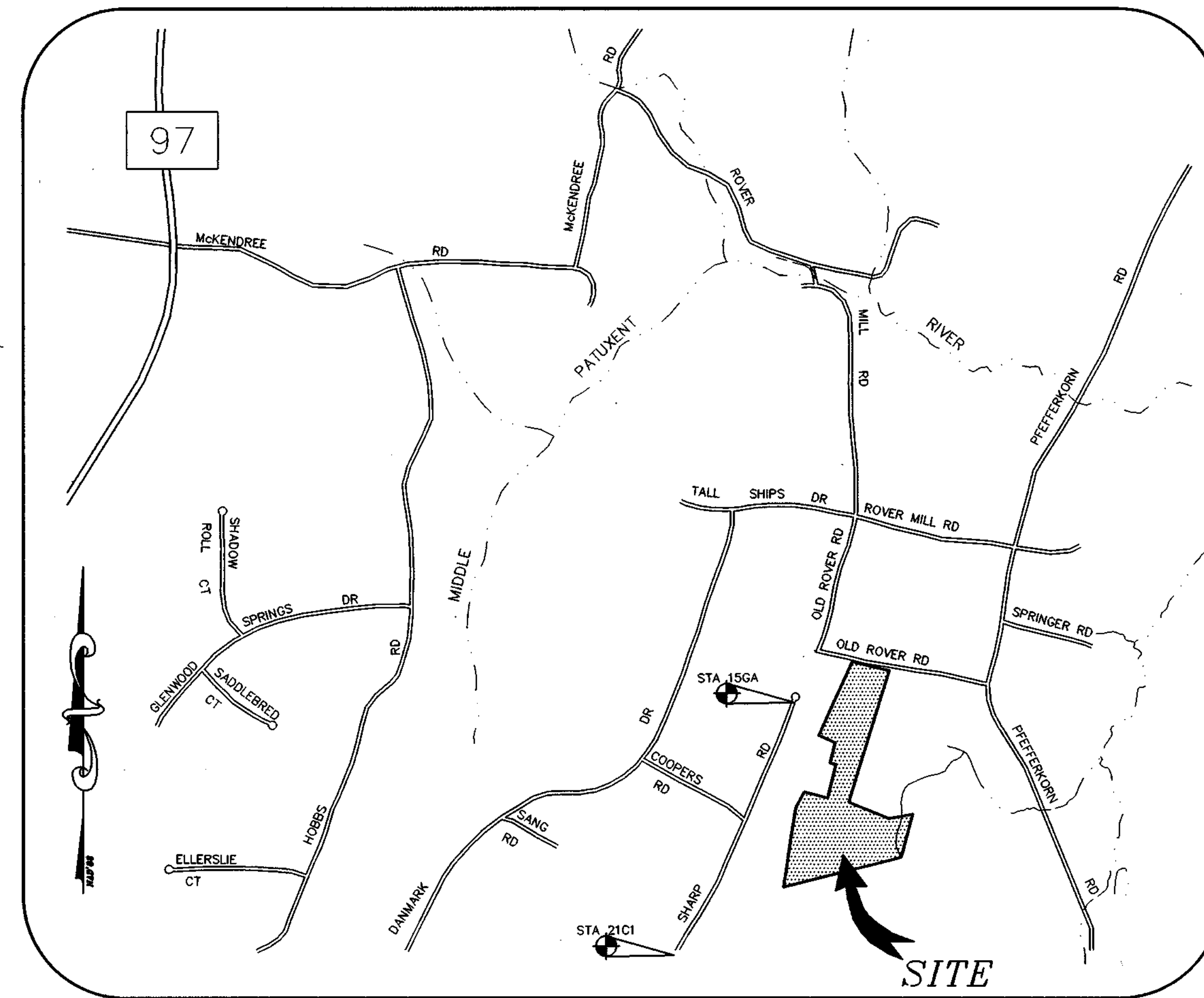
### AND PRESERVATION PARCEL "A" & "B"

#### A RESUBDIVISION OF FRIENDSHIP LAKES, LOTS 1, 2 AND 4

### THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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#### VICINITY MAP

SCALE: 1"=1000'

26. THE FOREST CONSERVATION EASEMENT HAS BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE AND 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.
27. GEOTECHNICAL REPORT BY HILLIS-CARNES ENGINEERING ASSOCIATES, INC. ON MAY 27, 1999.
28. FOREST STAND DELINEATION WAS COMPLETED BY WILDMAN ENVIRONMENTAL SERVICES ON JUNE 2, 1999.
29. LANDSCAPING FOR LOTS 5 THRU 15 IS PROVIDED IN ACCORDANCE WITH A CERTIFIED LANDSCAPE PLAN ON FILE WITH THIS PLAN IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. LANDSCAPE SURETY IN THE AMOUNT OF \$25,850.00 HAS BEEN POSTED AS PART OF THE DEVELOPERS AGREEMENT.
30. SURETY FOR THE 5.65 ACRES OF REFORESTATION IN THE AMOUNT OF \$73,934.20 HAS BEEN POSTED AS PART OF THE DEVELOPERS AGREEMENT.
31. EXISTING POND ON PRESERVATION PARCEL "A" IS TO BE REMOVED. THE CONTRACTOR SHALL FOLLOW THE SPECIAL GUIDELINES FOR REMOVAL AND STABILIZATION OF THE POND (SHEET 6 OF 12)
32. ACCESS TO EXISTING LOT 3 TO BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. PERMANENT ACCESS TO BE PROVIDED VIA PUBLIC ROAD.

#### GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
2. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/CONSTRUCTION INSPECTIONS DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
3. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE (5) DAYS PRIOR TO ANY EXCAVATION WORK:
 

MISS UTILITY	1-800-257-7777
C&P TELEPHONE COMPANY	(410) 725-9976
HOWARD COUNTY BUREAU OF UTILITIES	(410) 313-4900
AT&T CABLE LOCATION DIVISION	(410) 393-3533
BALTIMORE GAS & ELECTRIC	(410) 685-0123
STATE HIGHWAY ADMINISTRATION	(410) 531-5533
HOWARD COUNTY DEPT. OF PUBLIC WORKS/CONSTRUCTION INSPECTION DIVISION	(410) 313-1880
4. PROJECT BACKGROUND:
  - LOCATION: THIRD ELECTION DISTRICT - TAX MAP 15 - PARCEL 175 - BLOCK 19
  - ZONING: RR-DEO
  - DEED REFERENCE: L. 3450 F. 661
  - TOTAL TRACT AREA: 27.70 ACRES ±
  - NUMBER OF PROPOSED LOTS: 12 (12 BUILDABLE)
  - ACREAGE OF PROPOSED LOTS: 10.05 ACRES ± (BUILDABLE)
  - ACREAGE OF PROPOSED PRESERVATION PARCELS: 16.57 ACRES ± (BUILDABLE)
  - AREA OF RIGHT OF WAY: 1.08 ACRES ±
  - DPZ REFERENCE #: F-88-204, SP-99-13
5. TOPOGRAPHIC DATA BASED ON HOWARD COUNTY'S 200 SCALE MAPS FOR OFFSITE AND FIELD RUN BY MILDENBERG, BOENDER & ASSOCIATES, INC. FOR ONSITE IN APRIL 1999.
6. HORIZONTAL AND VERTICAL DATUMS BASED ON (NAD'83) MARYLAND STATE COORDINATE SYSTEM AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS.
 

STA No. 21CA	N 588,897.344	EL. = 613.273
	E 1,311,235.701	
STA No. 15GA	N 591,743.505	EL. = 588.446
	E 1,312,790.715	
7. STREET LIGHTS ARE REQUIRED IN THIS DEVELOPMENT IN ACCORDANCE WITH THE DESIGN MANUAL STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURE AND POLE SELECTED SHALL BE IN ACCORDANCE WITH THE LATEST HOWARD COUNTY DESIGN MANUAL, VOLUME III (1993) AND AS MODIFIED BY "GUIDELINES FOR STREET LIGHTS IN RESIDENTIAL DEVELOPMENTS (JUNE 1993)." THE JUNE 1993 POLICY INCLUDES REGULATIONS FOR LATERAL AND LONGITUDINAL PLACEMENT. A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
8. PRIVATE WATER AND PRIVATE SEWERAGE WILL BE UTILIZED. PUBLIC SHARED SEPTIC TO BE FOR LOT 11 THRU 14 AND PRESERVATION PARCEL "A".
9. SOILS DATA BASED ON HOWARD COUNTY SOIL SURVEY DATED 1968, SHEET 13.
10. STORMWATER MANAGEMENT CONTROL WILL BE PROVIDED BY THE METHOD OF DETENTION FOR QUANTITY & STORMCEPTOR FOR QUALITY. THE FACILITY WILL BE PRIVATELY OWNED & MAINTAINED.
11. NO FLOODPLAIN STUDY IS REQUIRED PER SECTION 16.115(d) OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS. FLOODPLAIN EXISTS ON THE PRESERVATION PARCEL AT A LOCATION NOT CRITICAL TO THE PROPOSED DEVELOPMENT. 100 YEAR FLOODPLAIN AND UTILITY EASEMENT BASED ON F-88-204, PLAT 8239. AREA OF 100 YEAR FLOODPLAIN IS 2.53 ACRES.
12. WETLAND STUDY BY WILDMAN ENVIRONMENTAL SERVICES ON OCTOBER, 1997.
13. TRAFFIC CONTROL DEVICES, MARKINGS, AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
14. COMPACTION IN FILL AREAS TO BE 95% AS DETERMINED PER AASHTO T-180.
15. CONTRACTOR TO VERIFY THE LOCATION OF ALL EXISTING UTILITIES ON SITE PRIOR TO COMMENCING CONSTRUCTION.
16. PROPERTY IS LOCATED WITHIN THE NO PLANNED SERVICE AREA.
17. BASED ON AVAILABLE COUNTY DATA, NO HISTORIC STRUCTURES OR BURIAL GROUNDS EXIST ON SITE.
18. NO STEEP SLOPES EXIST ON-SITE.
19. OPEN SPACE IS NOT REQUIRED PER SUBDIVISION REGULATIONS, SEC. 16.121(o)(2)\*. NO OPEN SPACE IS NEEDED BECAUSE PRESERVATION PARCEL "B" TO BE OWNED BY THE HOME OWNERS ASSOCIATION, MEETS THE ACREAGE REQUIREMENT FOR OPEN SPACE.
20. ALL EXISTING STRUCTURES, DRIVEWAYS AND PAVING TO BE REMOVED AND EXISTING WELL(S) AND SEPTIC SYSTEM(S) TO BE PROPERLY ABANDONED.
21. PRESERVATION PARCEL "A" IS TO BE USED FOR THE PURPOSE OF ONE SINGLE FAMILY DETACHED UNIT AND FOREST CONSERVATION ONLY.
22. NON-BUILDABLE PRESERVATION PARCEL "B" IS TO BE USED FOR THE PURPOSE OF PUBLIC SHARED SEPTIC SYSTEM AND PRIVATELY MAINTAINED STORMWATER MANAGEMENT FACILITY.
23. INSTALL SPEED CONTROL DEVICE PER DETAILS SHOWN ON SHEET 2.
24. A MINIMUM OF TWO (2) PARKING SPACES ARE PROVIDED FOR EACH LOT. NO OFF-STREET PARKING IS REQUIRED.
25. USE-IN-COMMON DRIVEWAY MUST BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING STANDARDS TO ENSURE SAFE VEHICLES FOR LOTS 12 THRU 14 AND PRESERVATION PARCEL "A":
  - A) WIDTH- 12 FEET (14 FEET IF SERVING MORE THAN ONE RESIDENCE)
  - B) SURFACE- 6 INCHES OF COMPACTED CRUSHER RUN BASE WITH TAR AND CHIP COATING.
  - C) GEOMETRY- MAXIMUM 15% GRADE, MAXIMUM 10% CHANGE AND MINIMUM OF 45 FT TURNING RADIUS
  - D) STRUCTURES (CULVERTS/BRIDGES)- CAPABLE OF SUPPORTING 25 GROSS TONS (H25 LOADING)
  - E) DRAINAGE ELEMENTS- CAPABLE OF SAFELY PASSING 100-YEAR FLOOD WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY SURFACE.
  - F) STRUCTURE CLEARANCES- MINIMUM 12 FEET
  - G) MAINTENANCE- SUFFICIENT TO INSURE ALL WEATHER USE.

BY THE DEVELOPER:

"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 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."

*[Signature]* 4/16/01  
SIGNATURE OF DEVELOPER DATE

J. Thomas Seaman  
PRINTED NAME OF DEVELOPER

BY THE ENGINEER:

"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."

*[Signature]* 4/16/01  
SIGNATURE OF ENGINEER DATE

R. TACCA HIKMAT  
PRINTED NAME OF ENGINEER

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

*[Signature]* 5/18/01  
USDA - NATURAL RESOURCES CONSERVATION SERVICE DATE

THESE PLANS FOR SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

*[Signature]* 5/18/01  
HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS  
*[Signature]* 5-1-01  
CHIEF BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*[Signature]* 5/23/01  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*[Signature]* 5/16/01  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



#### OWNER/DEVELOPER

ROVER MILL, LLC  
8808 CENTRE PARK DRIVE, SUITE 209  
COLUMBIA, MARYLAND 21045  
(410) 964 5522

project	99010	date	APR. 2001
illustration	SAAs	engineering	SAAs
scale	AS SHOWN	approval	RH

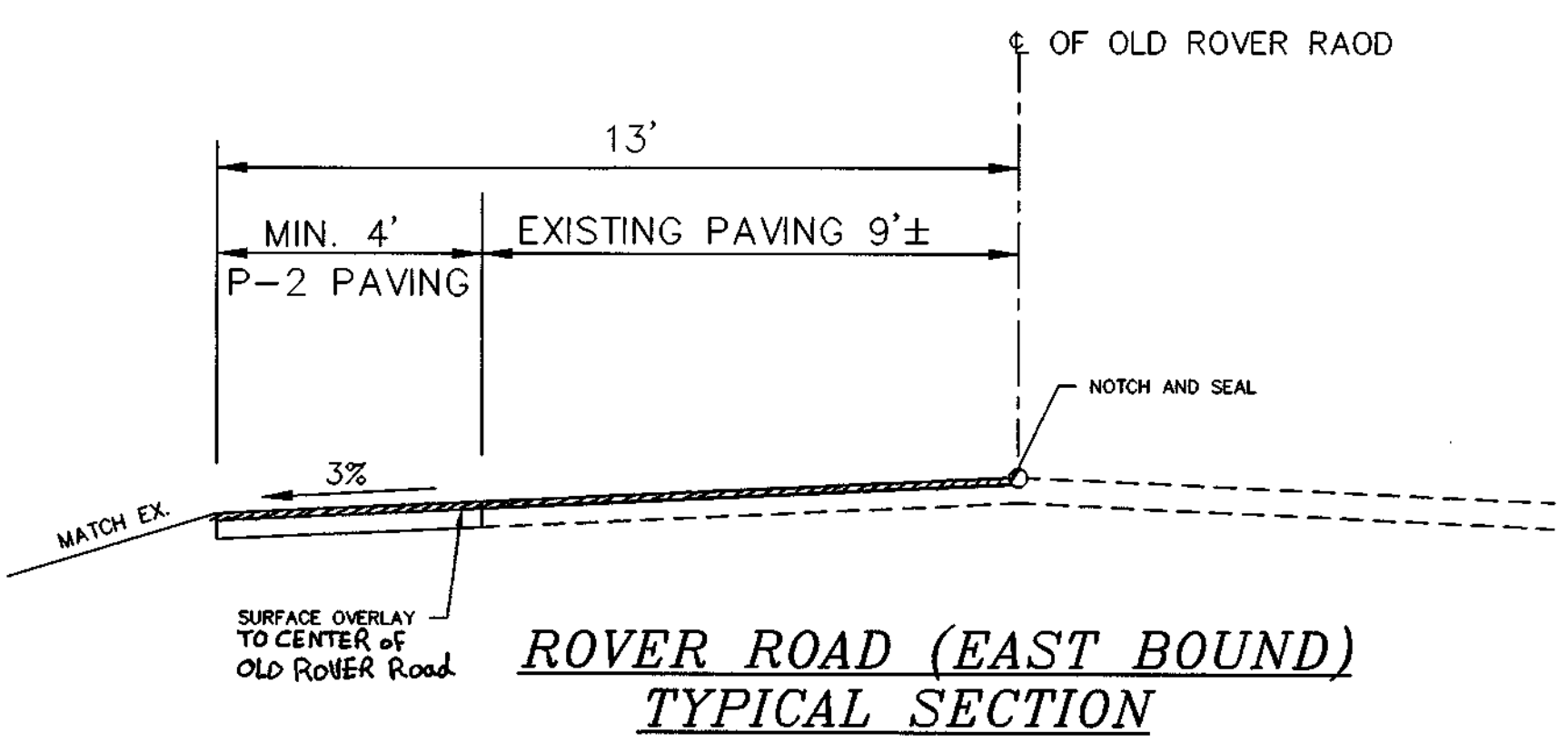
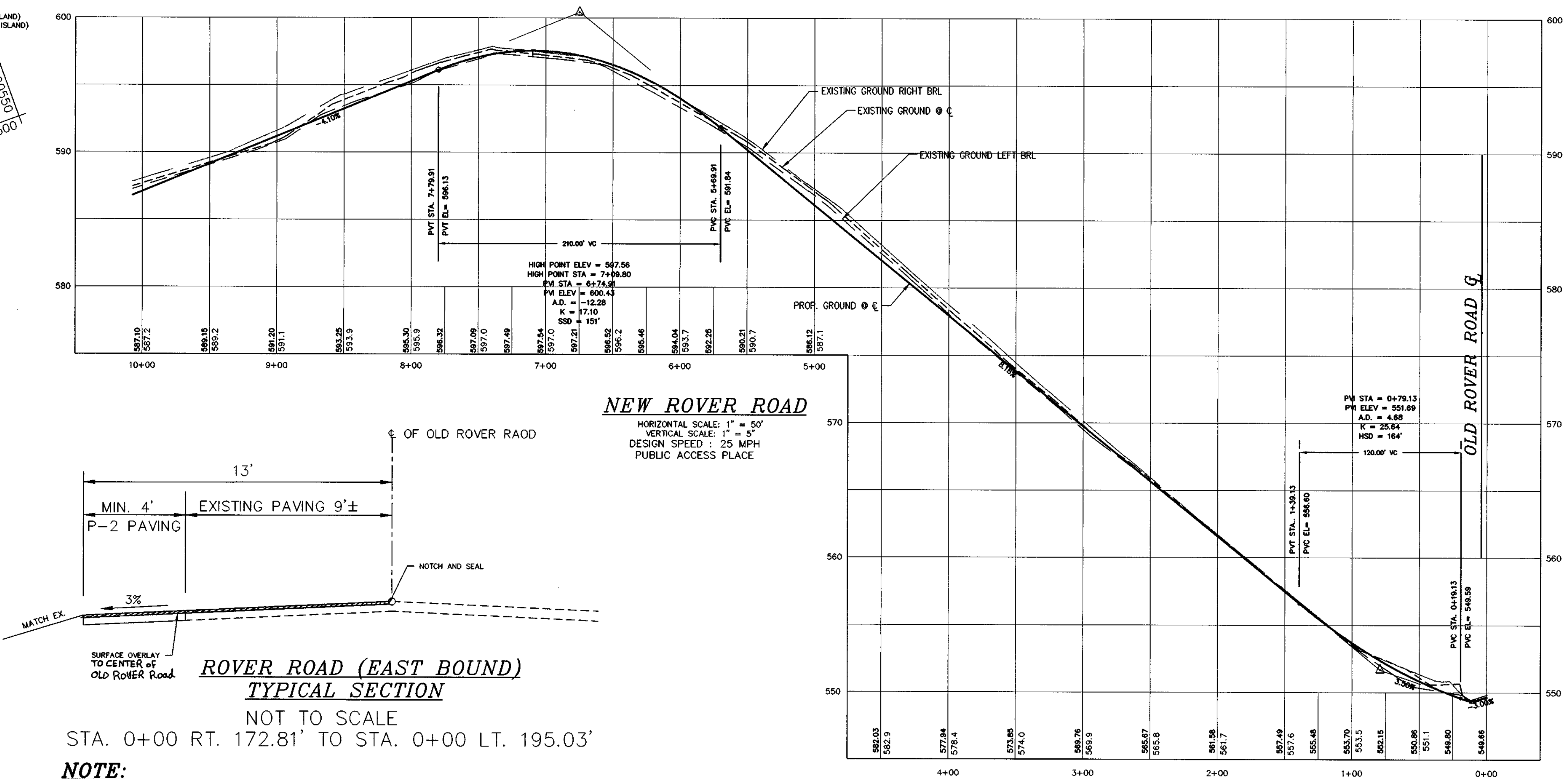
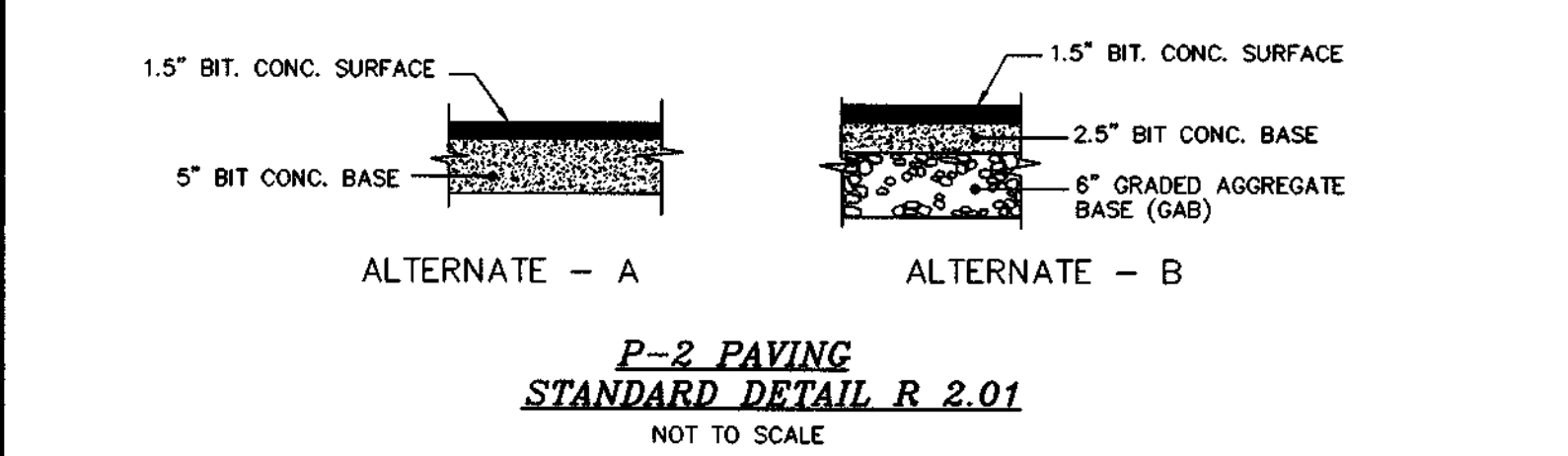
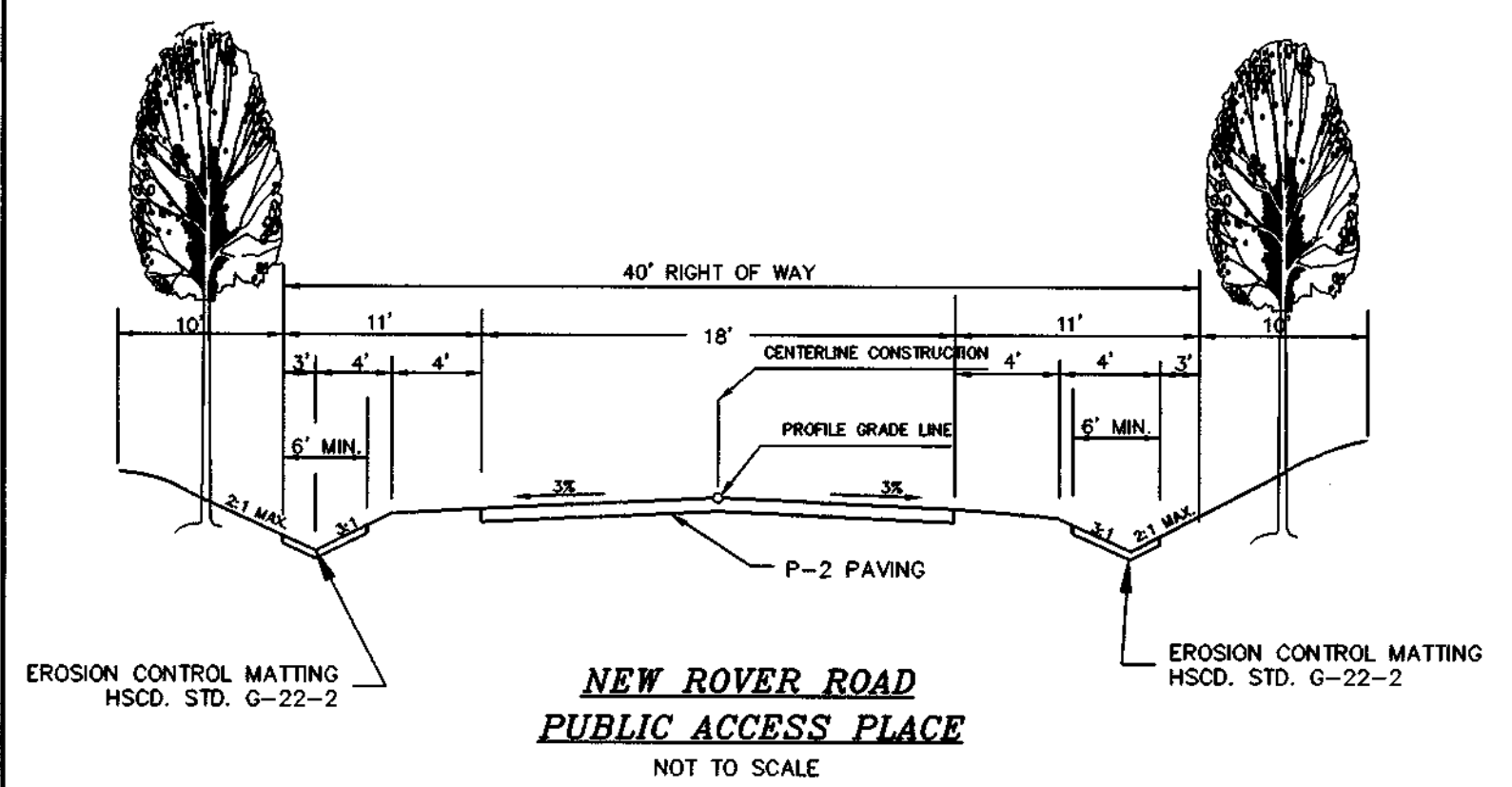
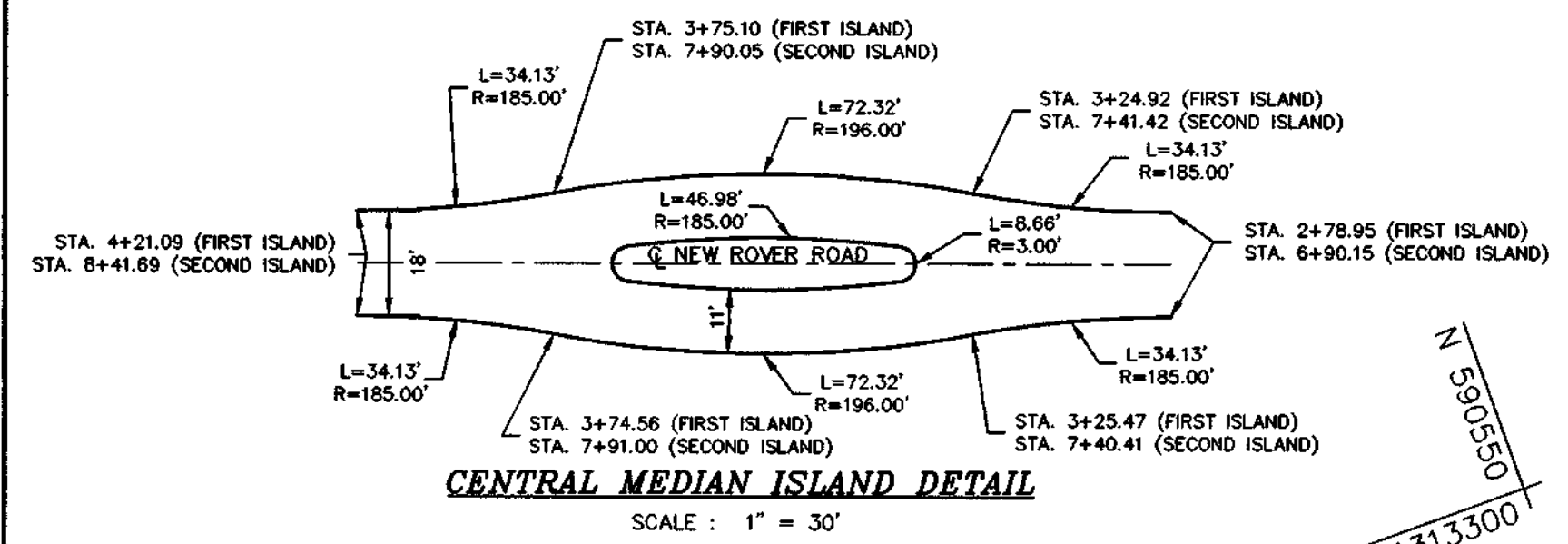
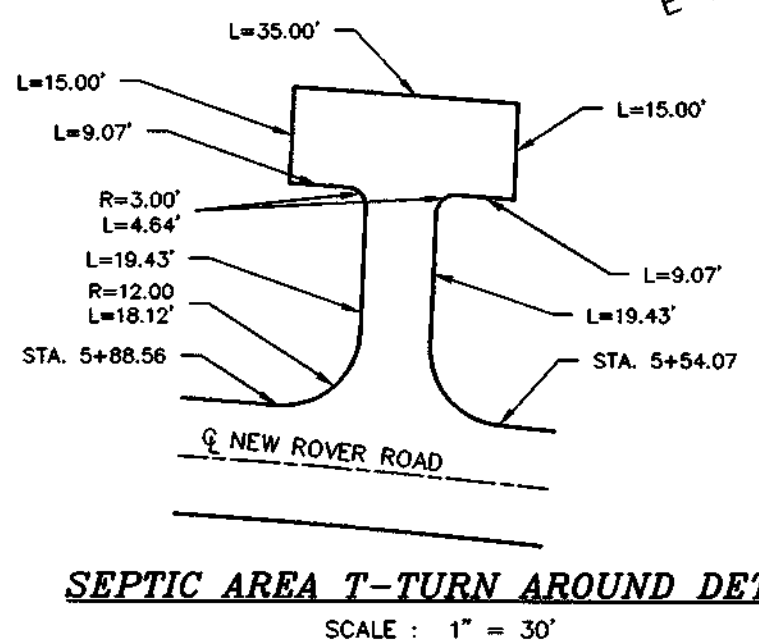
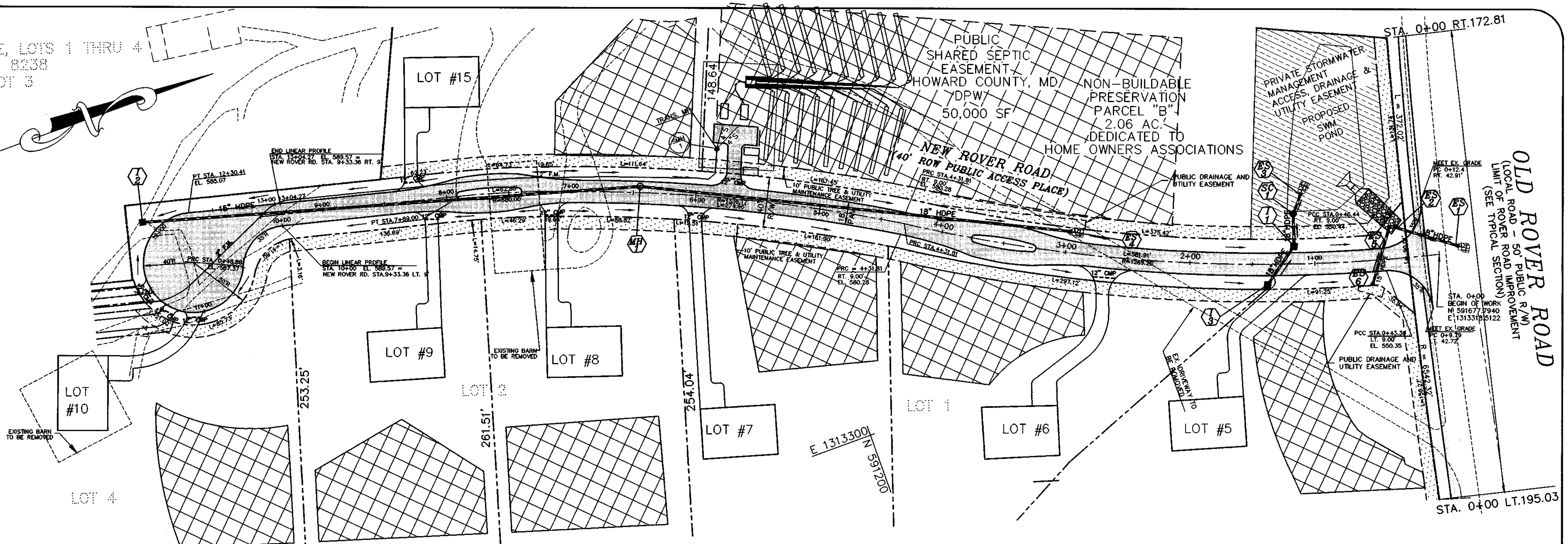
no.	description	date

FRIENDSHIP LAKES, LOTS 6-15, PRESERVATION PARCELS "A" & "B"  
 A RESUBDIVISION OF FRIENDSHIP LAKE, LOTS 1, 2, & 4  
 TAX MAP 15, PARCEL 175  
 HOWARD COUNTY, MARYLAND  
 THIRD ELECTION DISTRICT  
 COVER SHEET

**MILDENBERG, BOENDER & ASSOC., INC.**  
 Engineers Planners Surveyors  
 5972 Dorsey Hall Drive, Suite 202, Pikesville, Maryland 21092  
 (410) 997-0286 Balt. (301) 621-5521 Wash. (410) 997-0288 Pa.



FRIENDSHIP LAKE, LOTS 1 THRU 4  
PLAT 8238  
LOT 3



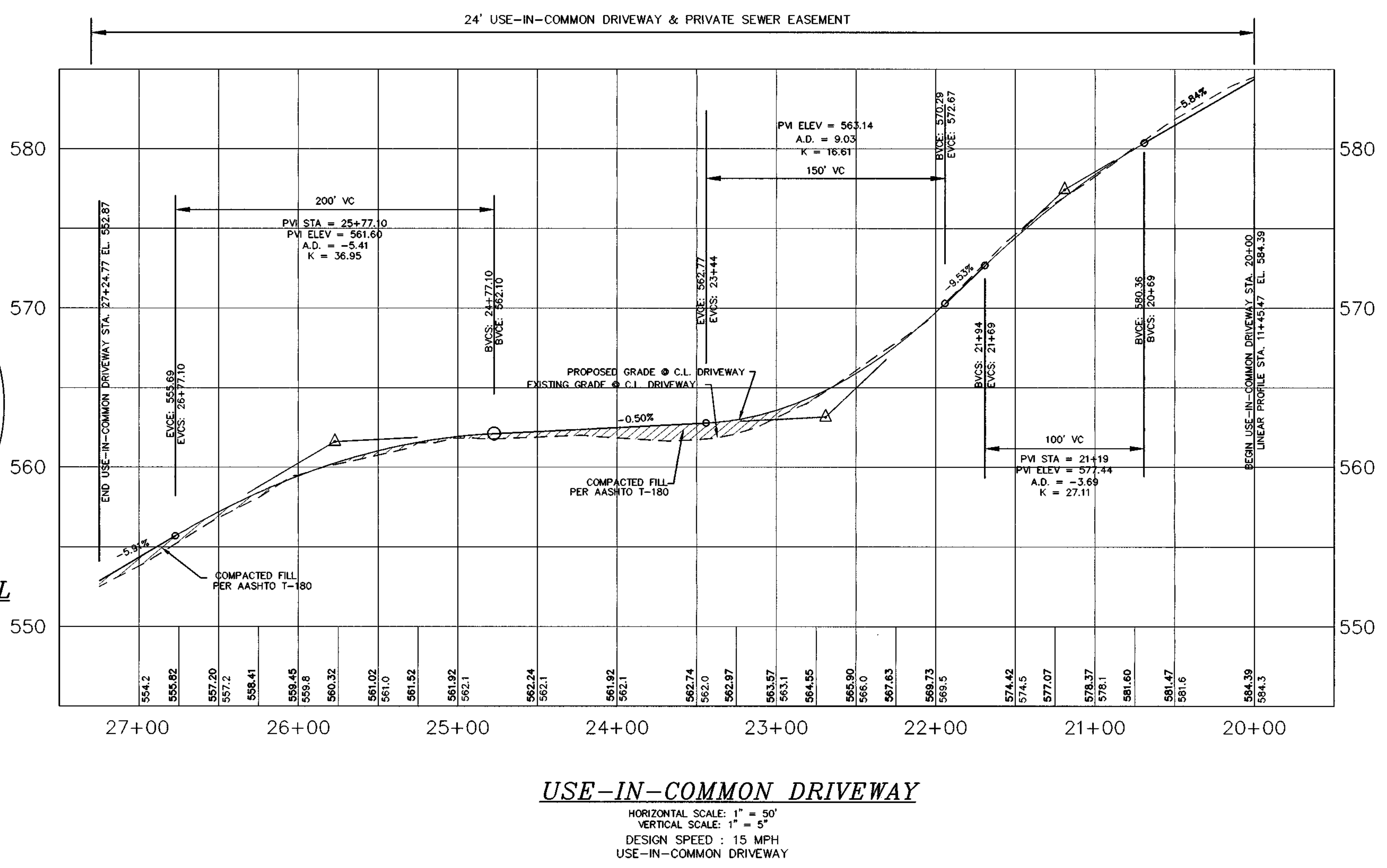
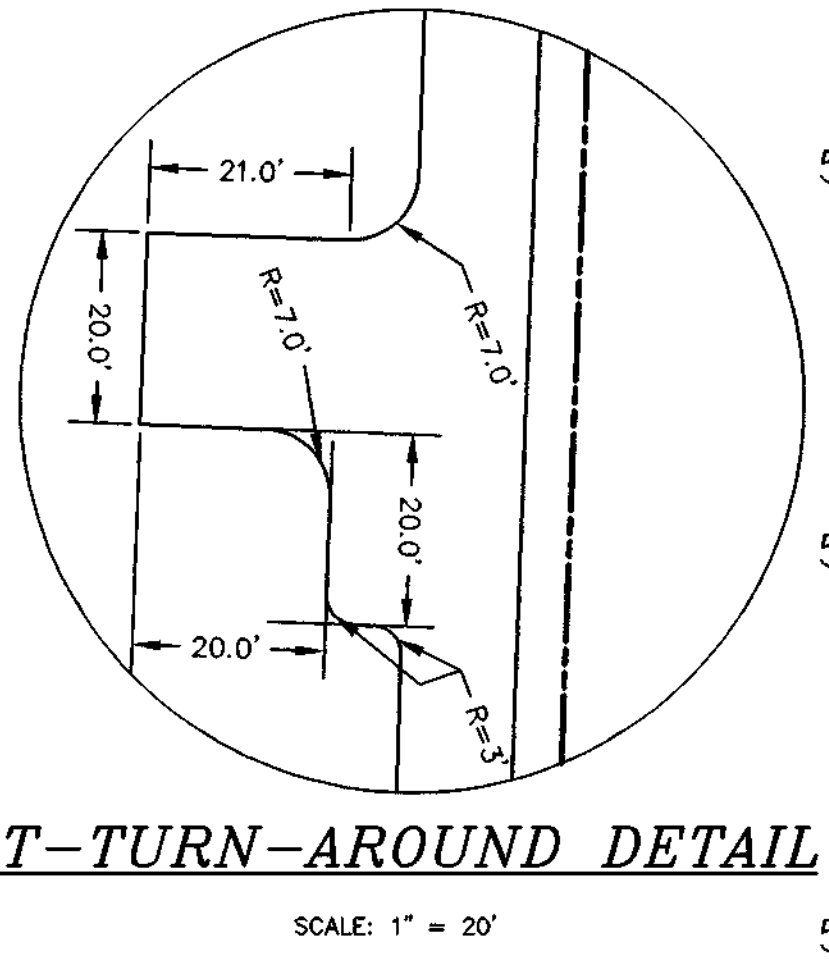
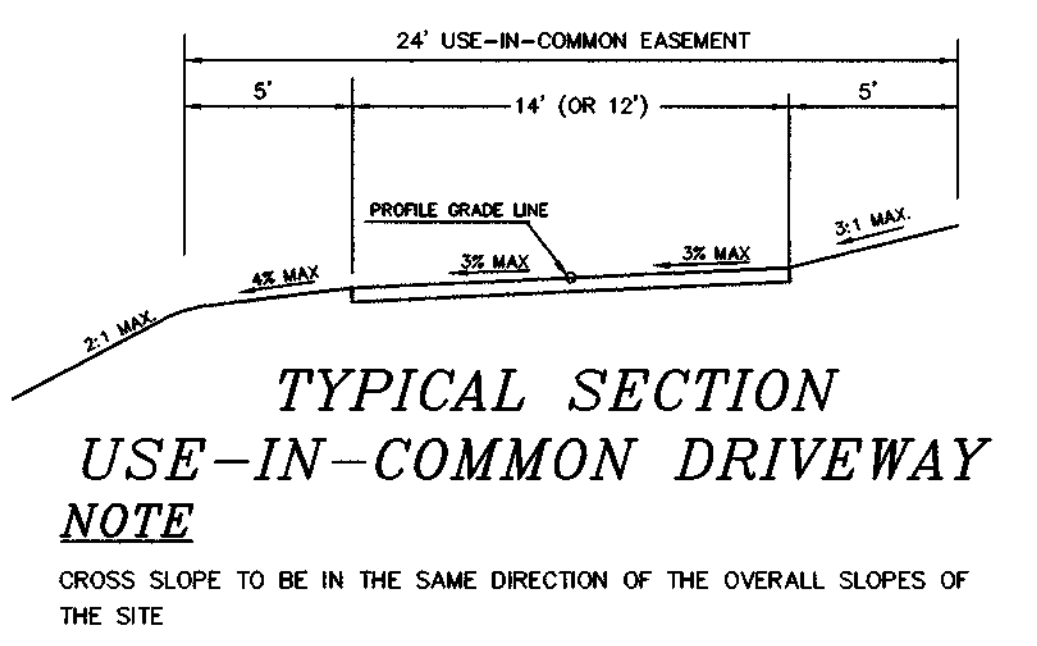
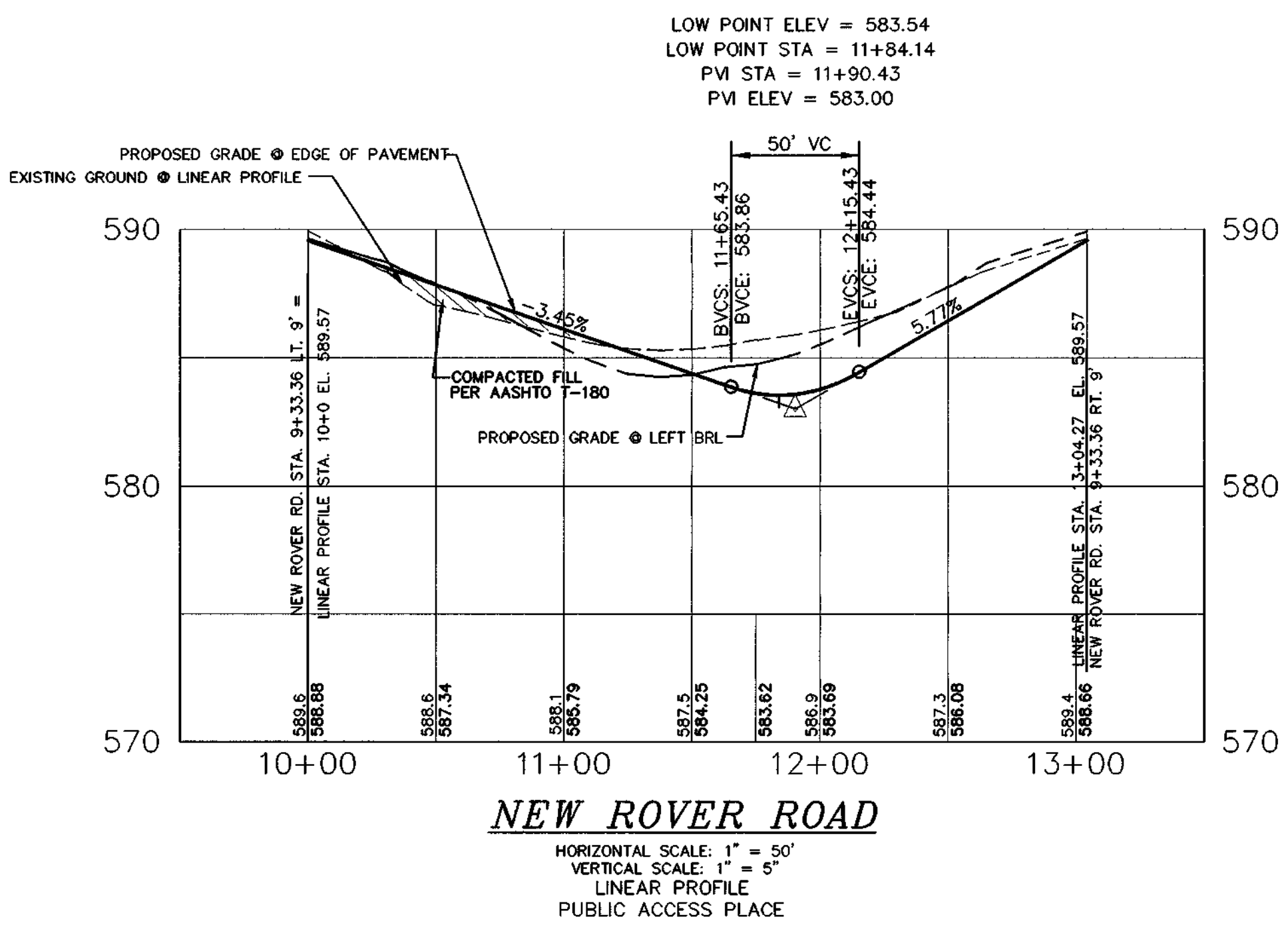
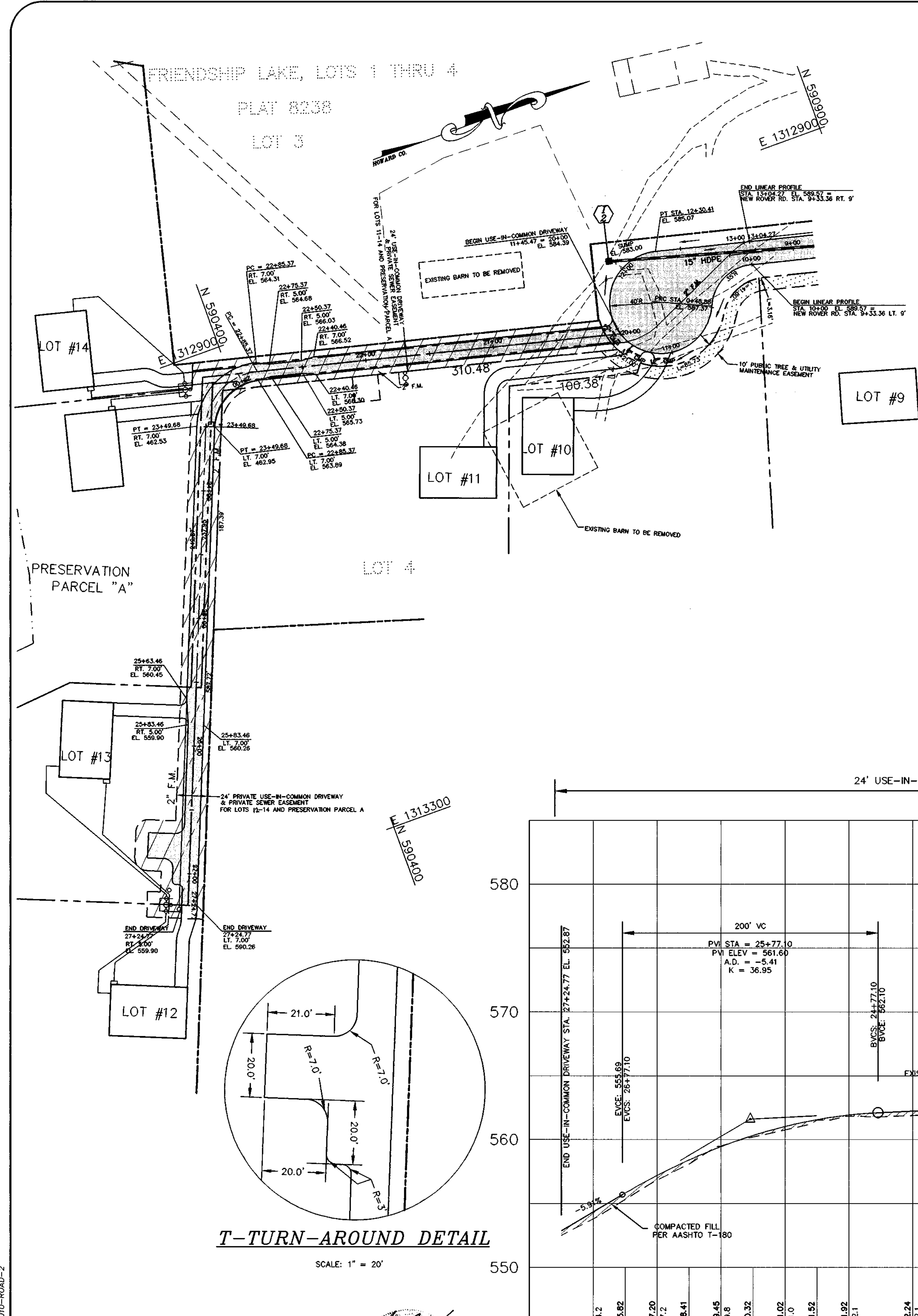
STA. 0+00 RT. 172.81' TO STA. 0+00 LT. 195.03'  
**NOTE:**  
ROAD IMPROVEMENT FOR OLD ROVER ROAD TO BE IN ACCORDANCE WITH HOWARD COUNTY STANDARD DETAIL (R-10.01)

date	APR. 2001
project	99010
illustration	SA
scale	AS SHOWN
approval	SA
revisions	RH

no.	
description	
revisions	
date	

FRIENDSHIP LAKES, LOTS 5-15, PRESERVATION PARCELS "A" & "B"  
A RESUBDIVISION OF FRIENDSHIP LAKE, LOTS 1, 2, & 4  
TAX MAP 15, PARCEL 175  
THIRD ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND  
ROAD PLAN, PROFILES AND SECTIONS

MILDENBERG, BOENDER & ASSOC., INC.  
Engineers Planners Surveyors  
5072 Dorsey Hall Drive, Suite 202, Ellicott City, Maryland 21042  
(410) 987-0236 Fax. (301) 821-5521 Wash. (410) 987-0238 Fax.



APPROVED: DEPARTMENT OF PUBLIC WORKS  
*Charles M. Gault* 5-1-01  
 CHIEF BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*Chris Hamer* 5/23/01  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Michael J. ...* 5/16/01  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

project	99010	date	JAN 2001
illustration	SAA	engineering	SAA
scale	AS SHOWN	approval	RJH

no.	description	revisions	date

FRIENDSHIP LAKES, LOTS 5-15, PRESERVATION PARCELS "A" & "B"  
 A RESUBDIVISION OF FRIENDSHIP LAKE, LOTS 1, 2, & 4  
 TAX MAP 15, PARCEL 175 HOWARD COUNTY, MARYLAND  
 THIRD ELECTION DISTRICT ROAD PLAN, PROFILES AND SECTIONS

**MILDENBERG, BOENDER & ASSOC., INC.**  
 Engineers Planners Surveyors  
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 (410) 997-0296 Balt. (301) 621-5521 Wash. (410) 997-0298 Fax.

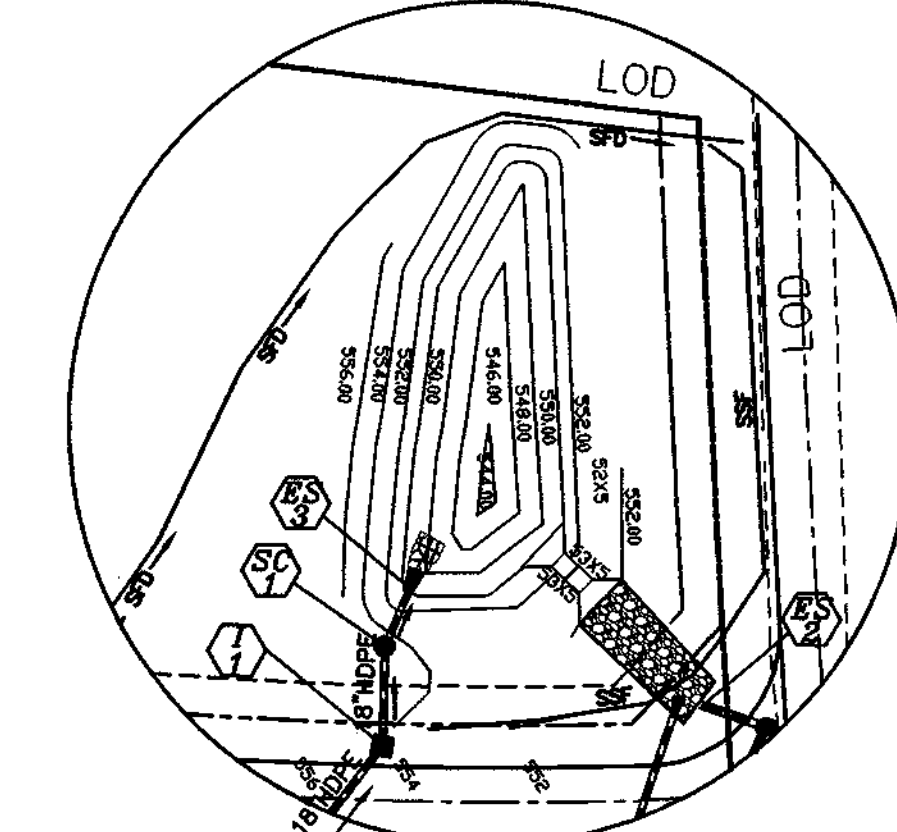




**NOTE:**  
 AREA AROUND ES-1 & ES-2 TO BE IMMEDIATELY STABILIZED WITH SOD AFTER THE CONSTRUCTION OF ES-1 AND ES-2.

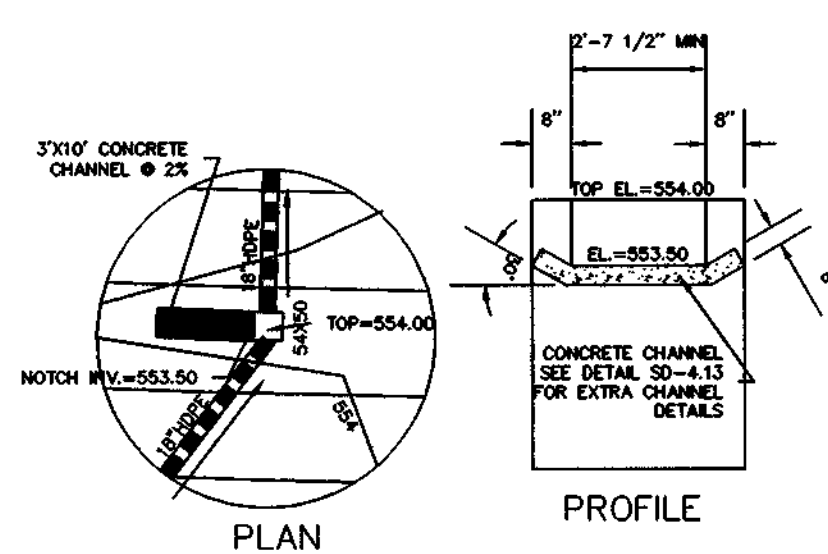


- LEGEND**
- EXISTING SEPTIC AREA.
  - PROPOSED SEPTIC EASEMENT.
  - PROPOSED 10' PUBLIC TREE MAINTENANCE AND UTILITY EASEMENT.
  - EXISTING WELL
  - PROPOSED WELL
  - LIMIT OF DISTURBANCE
  - EARTH DIKE
  - SUPER SILT FENCE
  - SILT FENCE
  - SILT FENCE DIVERSION
  - STABILIZED CONSTRUCTION ENTRANCE
  - LANDSCAPE FENCE



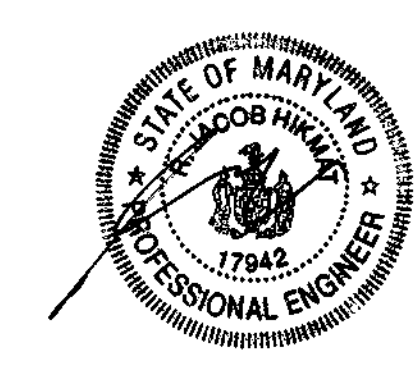
**SEDIMENT TRAP GRADING**  
 SCALE: 1"=50'

**SEDIMENT CONTROL**  
 DRAINAGE AREA - 3.60 ACRES  
 REQUIRED DRY STORAGE - 6,480 CF  
 REQUIRED WET STORAGE - 6,480 CF  
 PROVIDED WET STORAGE - 12,003 CF  
 PROVIDED DRY STORAGE - 6,970 CF  
 WET STORAGE EL. 551.00  
 DRY STORAGE EL. 552.50  
 CLEANOUT EL. 549.50



**I-1 DETAIL**  
 SCALE: 1"=20'

**NOTE:**  
 SEPTIC SYSTEM SHOWN IS FOR ILLUSTRATIVE PURPOSES ONLY FOR DESIGN AND DETAILS REFER TO CONTRACT # 50-3871-D



**DEVELOPER'S CERTIFICATE**  
 I 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 PERSONS ON-SITE INSPECTION BY THE NATURAL RESOURCE CONSERVATION SERVICE.

Signature: *[Signature]* DATE: 4/16/01  
 Printed Name: J. Thomas Scavena

**ENGINEER'S CERTIFICATE**  
 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 NATURAL RESOURCE CONSERVATION SERVICE.

Signature: *[Signature]* DATE: 4/16/01  
 Printed Name: R. JAGS HIKMAT

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS.  
 Signature: *[Signature]* DATE: 5/10/01  
 USDA - NATURAL RESOURCE CONSERVATION SERVICE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
 Signature: *[Signature]* DATE: 5/10/01  
 HOWARD SOIL CONSERVATION DISTRICT

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 Signature: *[Signature]* DATE: 5/10/01  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

Signature: *[Signature]* DATE: 5/23/01  
 CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 Signature: *[Signature]* DATE: 5-1-01  
 CHIEF, BUREAU OF HIGHWAYS

project	99010	date	APR. 2001
illustration	SAA	engineering	SAA
scale	1" = 50'	approval	RH






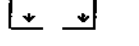


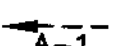
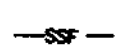
revision	description	date
1	ADD 1-4 & 11-2 TO GRAN. ADD 1-3 DETAIL	05/12/02

**FRIENDSHIP LAKES, LOTS 6-15, PRESERVATION PARCELS "A" & "B"**  
 A RESUBDIVISION OF FRIENDSHIP LAKE, LOTS 1, 2, & 4  
 TAX MAP 15, PARCEL 175  
 HOWARD COUNTY, MARYLAND  
 THIRD ELECTION DISTRICT  
**GRADING, EROSION AND SEDIMENT CONTROL PLAN**

**MILDENBERG, BOENDER & ASSOC., INC.**  
 Engineers Planners Surveyors  
 5072 Dorsey Hall Drive, Suite 202, Riltwood City, Maryland 21042  
 (410) 997-0296, Fax: (301) 621-5521, Wash. (410) 997-0298 Fax.

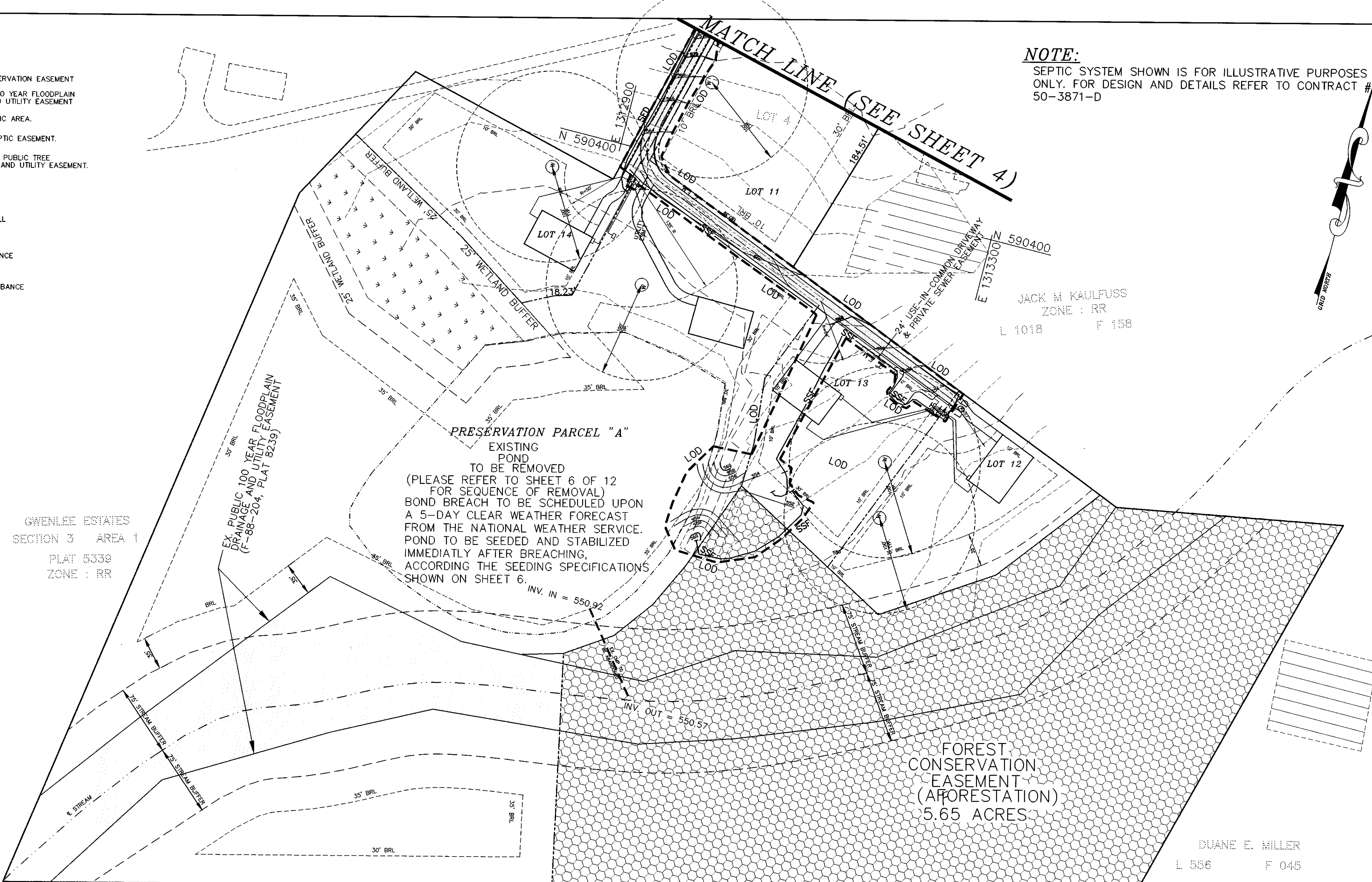


**LEGEND**

-  FOREST CONSERVATION EASEMENT
-  EX. PUBLIC 100 YEAR FLOODPLAIN DRAINAGE AND UTILITY EASEMENT
-  EXISTING SEPTIC AREA.
-  PROPOSED SEPTIC EASEMENT.
-  PROPOSED 10' PUBLIC TREE MAINTENANCE AND UTILITY EASEMENT.
-  WETLANDS
-  EXISTING WELL
-  PROPOSED WELL
-  EARTH DIKE
-  SUPER SILT FENCE
-  SILT FENCE
-  LOD LIMIT OF DISTURBANCE

**NOTE:**

SEPTIC SYSTEM SHOWN IS FOR ILLUSTRATIVE PURPOSES ONLY. FOR DESIGN AND DETAILS REFER TO CONTRACT 50-3871-D



OWENLEE ESTATES  
SECTION 3 AREA 1  
PLAT 5339  
ZONE : RR

PRESERVATION PARCEL "A"  
EXISTING POND  
TO BE REMOVED  
(PLEASE REFER TO SHEET 6 OF 12  
FOR SEQUENCE OF REMOVAL)  
BOND BREACH TO BE SCHEDULED UPON  
A 5-DAY CLEAR WEATHER FORECAST  
FROM THE NATIONAL WEATHER SERVICE.  
POND TO BE SEEDED AND STABILIZED  
IMMEDIATELY AFTER BREACHING,  
ACCORDING THE SEEDING SPECIFICATIONS  
SHOWN ON SHEET 6.

FOREST CONSERVATION  
EASEMENT  
(AFFORESTATION)  
5.65 ACRES

JACK M KAULFUSS  
ZONE : RR  
L 101B F 15B

DUANE E. MILLER  
L 586 F 045  
ZONE : RR

FARNANDIS FARM INC.  
L 717 F 437  
ZONE : RR

BYRD E. SEIBERT  
L 198 F 032  
ZONE : RR

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

*Jim Nguyen* 5/19/01  
USDA - NATURAL RESOURCES CONSERVATION SERVICE DATE

THESE PLANS FOR SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

*John L. Selig* 5/19/01  
HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS  
*Andrew M. Quacker* 5-1-01  
CHIEF BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*Chris Stankovic* 5/22/01  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Mike* 5/16/01  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

**DEVELOPER'S CERTIFICATE**

I 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 NATURAL RESOURCE CONSERVATION SERVICE.

*[Signature]* 4/16/01  
SIGNATURE OF DEVELOPER DATE

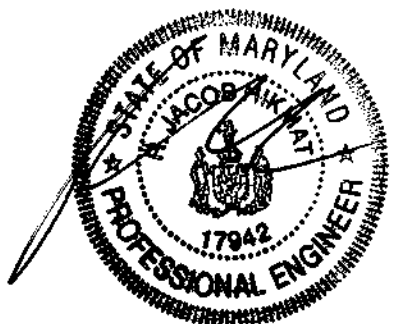
J. Thomas Scaviano  
PRINTED NAME OF DEVELOPER

**ENGINEER'S CERTIFICATE**

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 NATURAL RESOURCE CONSERVATION SERVICE.

*[Signature]* 4/16/01  
SIGNATURE OF ENGINEER DATE

R. JACOB HIKMAT  
PRINTED NAME OF ENGINEER



**NOTE:**  
THIS PLAN IS FOR GRADING & SEDIMENT CONTROL USES ONLY.

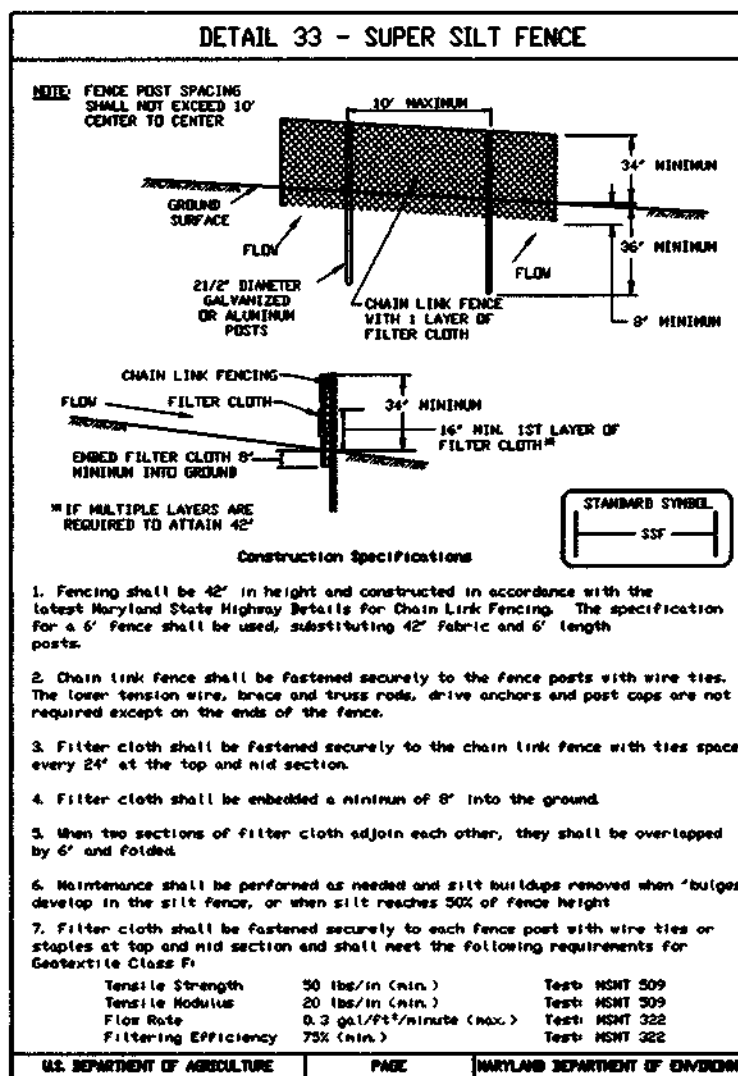
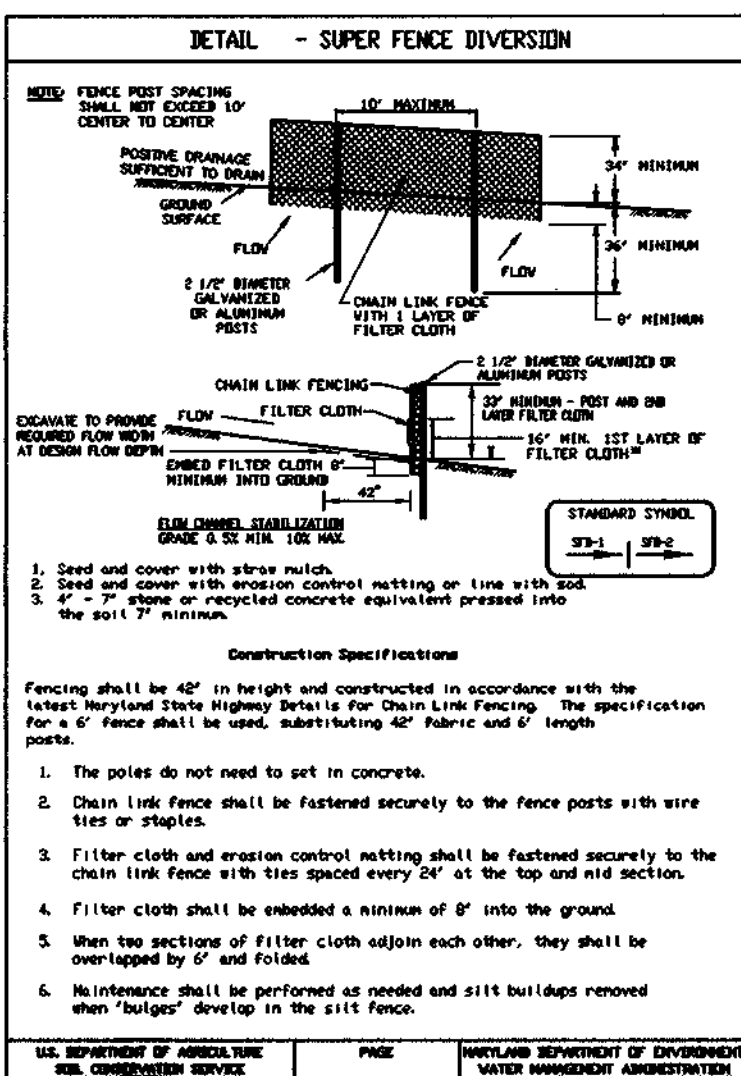
date	APR. 2001	SA	SA	SA	SA
project	99010	illustration	SA	SA	SA
no.		scale	1" = 50'	approval	RJH

date	
description	
revisions	

FRIENDSHIP LAKES, LOTS 5-15, PRESERVATION PARCELS "A" & "B"  
A RESUBDIVISION OF FRIENDSHIP LAKE, LOTS 1, 2, & 4  
TAX MAP 15, PARCEL 175  
THIRD ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND  
GRADING, EROSION AND SEDIMENT CONTROL PLAN

**MILDENBERG, BOENDER & ASSOC., INC.**  
Engineers Planners Surveyors  
5072 Dorsey Hall Drive, Suite 202, Ellicott City, Maryland 21042  
(410) 997-0236 Ext. (301) 627-5521 Wash. (410) 997-0288 Fax





**SUPER SILT FENCE**

**Design Criteria**

Slope	Slope Steepness	Slope Length (Maximum)	Silt Fence Length (Maximum)
0 - 10%	0 - 10:1	Unlimited	Unlimited
10 - 20%	10 - 1:1	200 feet	1,500 feet
20 - 30%	5:1 - 3:1	100 feet	1,000 feet
30 - 50%	3:1 - 2:1	100 feet	500 feet
50% +	2:1 +	50 feet	250 feet

**Construction Specifications (Continued)**

- All temporary SDF dikes shall have unimproved positive grade to an outlet. Spot elevations may be necessary for grade less than 10%.
- 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 1/4" grade and cross section as required to meet the criteria specified herein and be free of both projection 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.

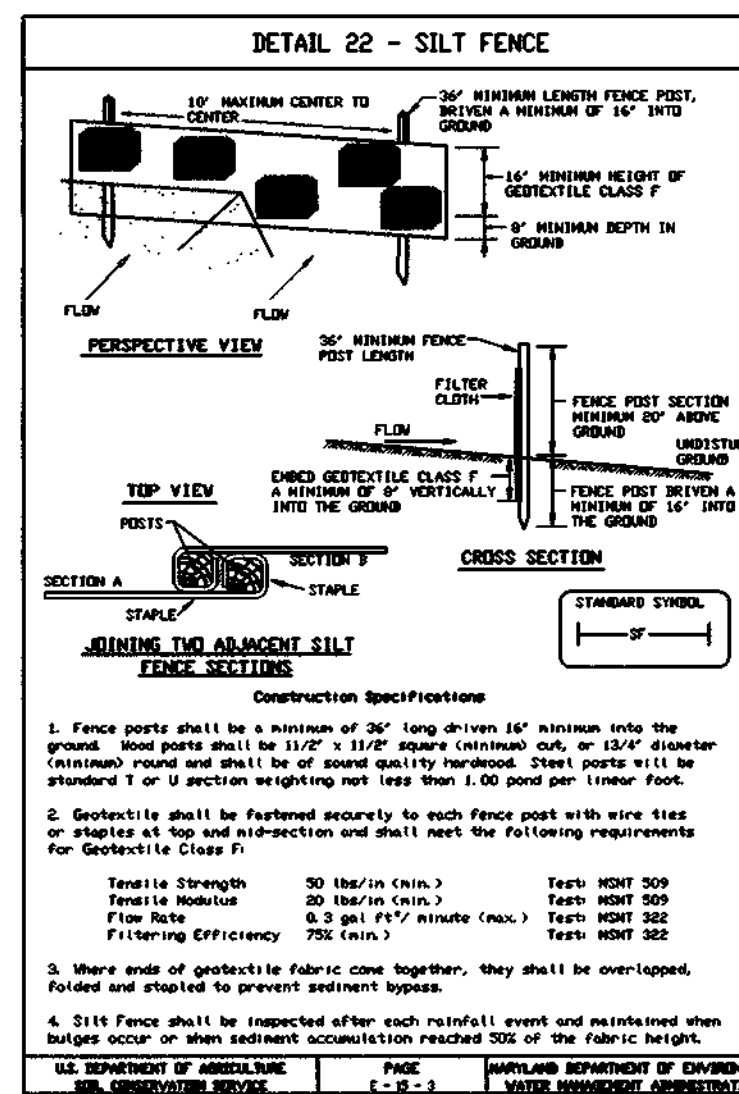
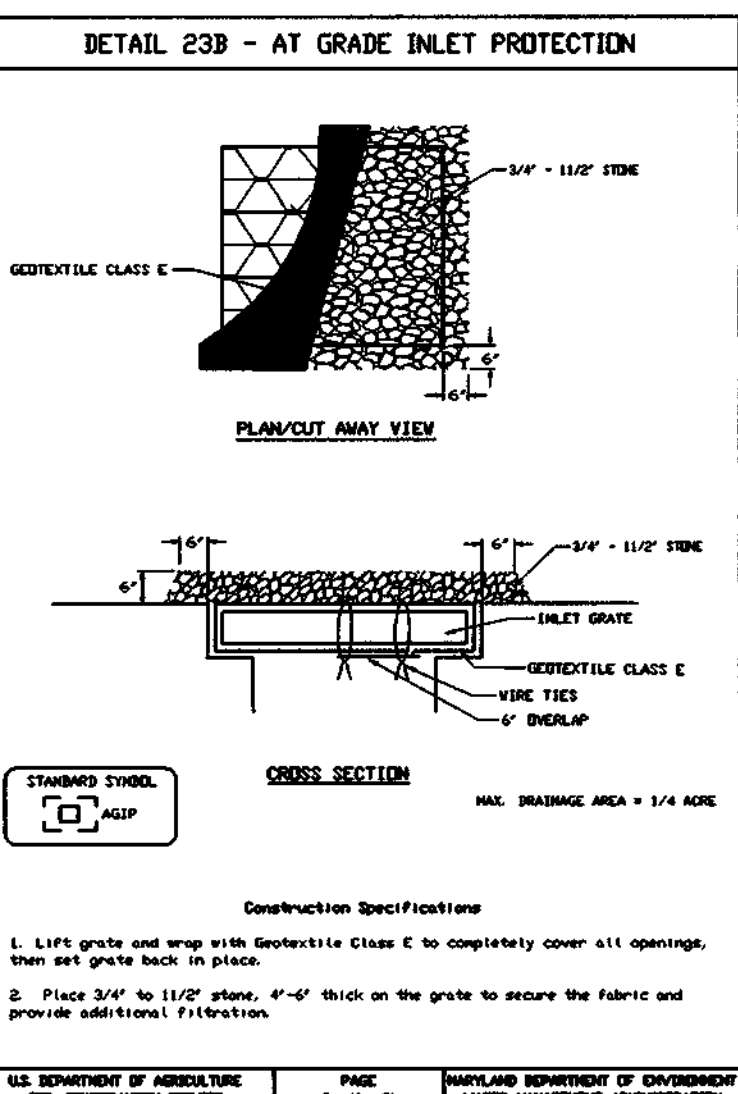
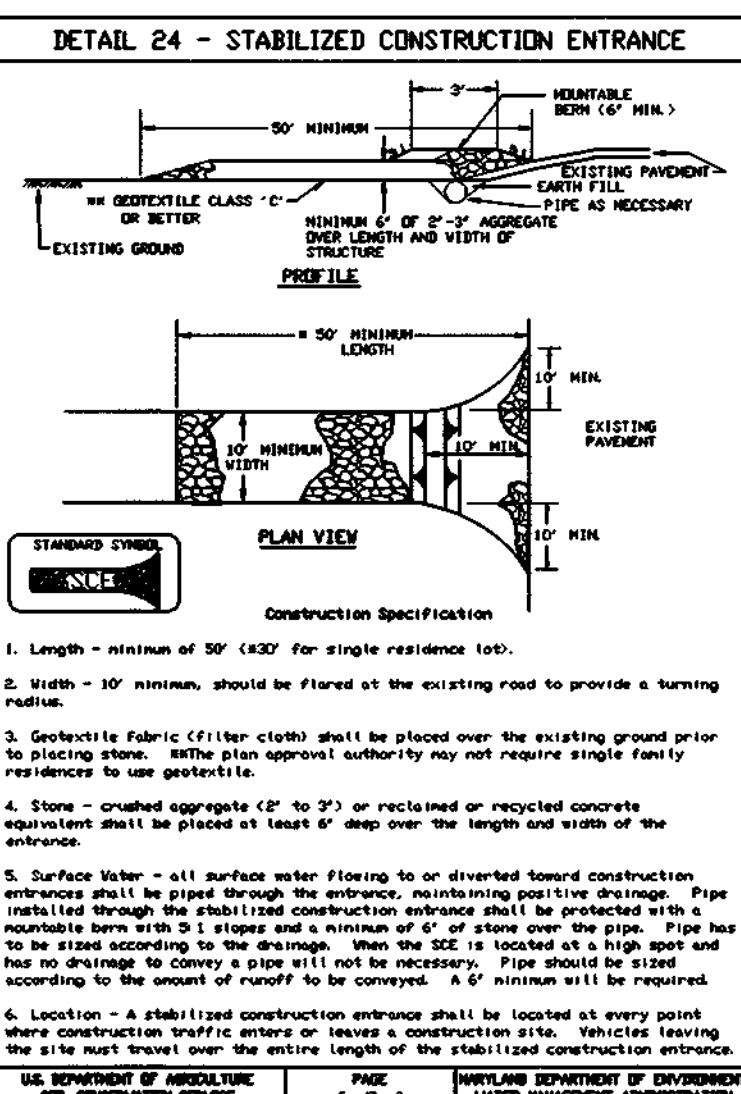
**SUPER FENCE DIVERSION**

**Design Criteria**

Slope	Slope Steepness	Slope Length (Maximum)	Silt Fence Length (Maximum)
0 - 10%	0 - 10:1	Unlimited	Unlimited
10 - 20%	10 - 1:1	200 feet	1,500 feet
20 - 30%	5:1 - 3:1	100 feet	1,000 feet
30 - 50%	3:1 - 2:1	100 feet	500 feet
50% +	2:1 +	50 feet	250 feet

**Construction Specifications (Continued)**

- All temporary SDF dikes shall have unimproved positive grade to an outlet. Spot elevations may be necessary for grade less than 10%.
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**SILT FENCE**

**Silt Fence Design Criteria**

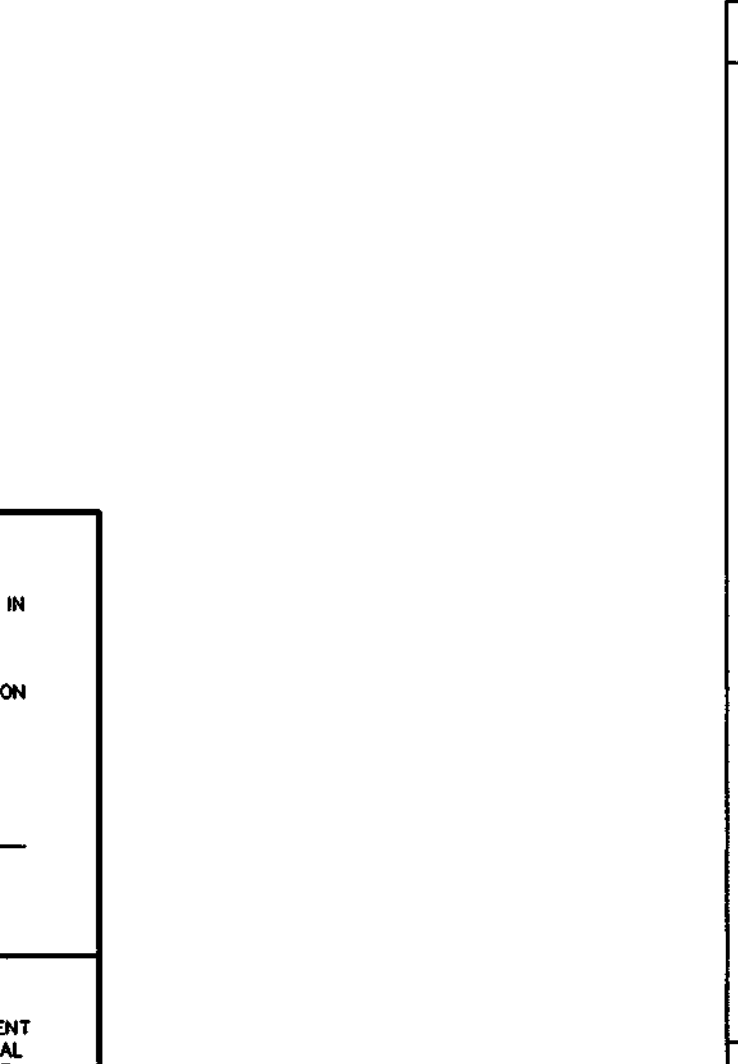
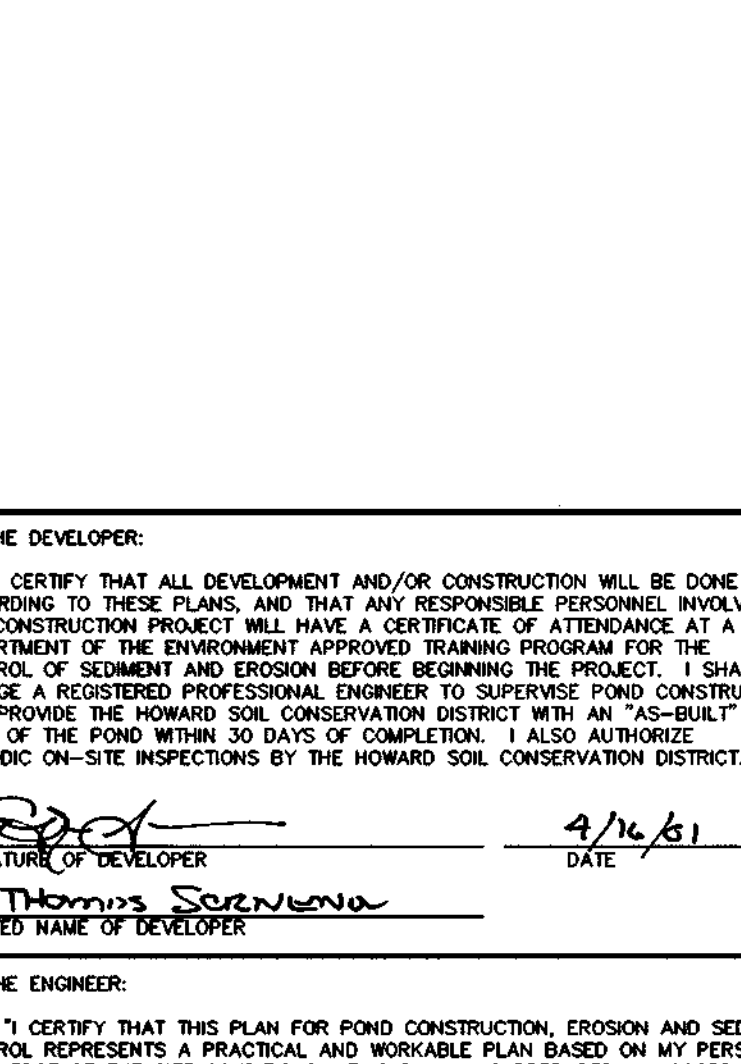
Slope Steepness	Chainlink Slope Length	Silt Fence Length
Flatter than 50:1	Unlimited	Unlimited
50:1 to 10:1	125 feet	1,000 feet
10:1 to 5:1	100 feet	750 feet
5:1 to 3:1	40 feet	500 feet
3:1 to 2:1	40 feet	250 feet
2:1 and steeper	20 feet	125 feet

**Construction Specifications**

- Fence posts shall be a minimum of 30" long driven 18" minimum into the ground. Posts shall be 1 1/2" x 1 1/2" steel pipe, galvanized, or 1 1/2" diameter (nominal round) and shall be of same quality material. Posts shall be 11' standard T or U section weighing not less than 1.00 pound per linear foot.
- Geotextile fabric 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	30 lbs/in. (min.)	Tensile MDT	500
Tensile Modulus	20 lbs/in. (min.)	Tensile MDT	500
Flow Rate	0.2 gal/ft <sup>2</sup> /minute (max.)	Tensile MDT	300
Filtering Efficiency	75% (min.)	Tensile MDT	300

- The three 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 before score or when sediment accumulation reaches 20% of fabric height.

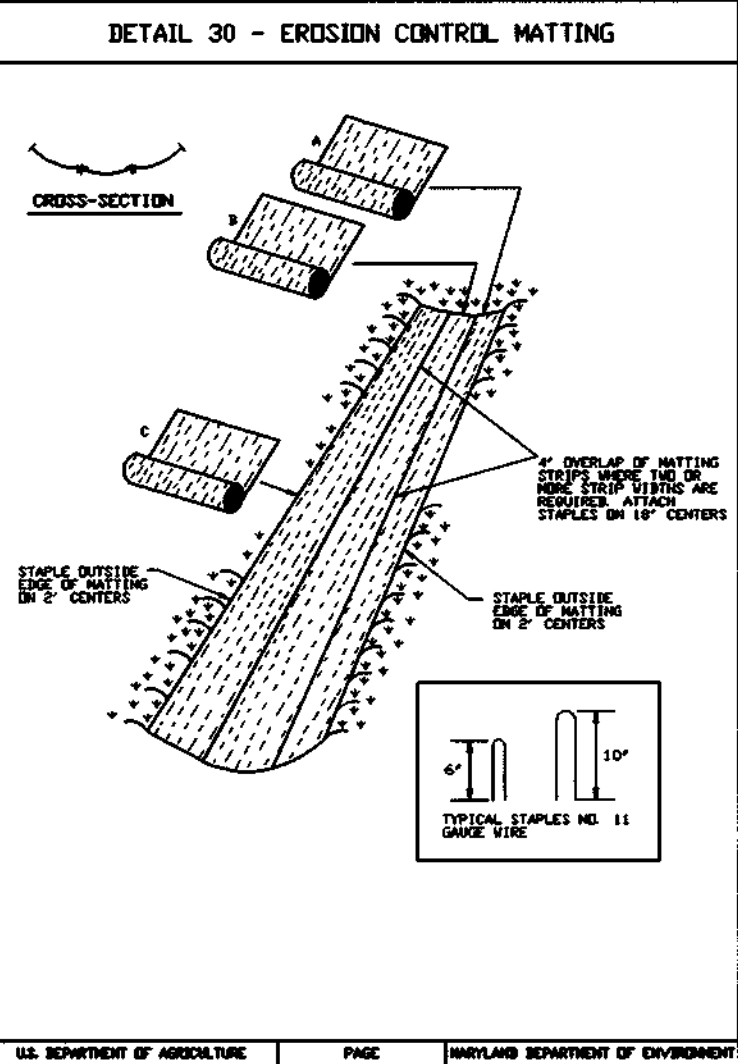


**EROSION CONTROL MATTING**

**Construction Specifications**

- Key in the matting by placing the top ends of the matting in a narrow trench, 6" in depth. Backfill the trench and tamp firmly to conform to the ground construction. Secure with a row of staples about 1' from the edge of the matting. Spacing between staples 18".
- Staple the 6" overlap in the channel center using an 18" spacing between staples.
- Before stapling the outer edge of the matting, make sure the matting is smooth and in firm contact with the soil.
- Staples shall be spaced 12" apart with 4 rows for each strip, 2 outer rows, and 2 alternating rows down the center.
- Where one roll of matting ends and another begins, the end of the top strip shall overlap the outer end of the lower strip by 6", overlap flat, and secure the overlap with a double row of staples spaced 6" apart in a staggered pattern on either side.
- The discharge end of the matting liner should be similarly secured with 2 double rows of staples.

Note: If flow will enter from the edge of the matting then the area affected by the flow must be tapered.



BY THE DEVELOPER:

I, J. Thomas Sorrensen, 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 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.

Signature: J. Thomas Sorrensen DATE: 4/16/01

BY THE ENGINEER:

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.

Signature: R. Jacobs Hilkmatt DATE: 4/16/01

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

Signature: Jim Myers DATE: 5/10/01

THESE PLANS FOR SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Signature: John L. Hill DATE: 5/10/01

APPROVED: DEPARTMENT OF PUBLIC WORKS

Signature: Andrew M. Quack DATE: 5-10-01

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Signature: John L. Hill DATE: 5/29/01

Signature: John L. Hill DATE: 5/11/01

BY THE DEVELOPER:

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**HOWARD SOIL CONSERVATION DISTRICT**

**PERMANENT SEEDING NOTES**

APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LEAVED 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:

- PREFERRED - APPLY 2 TONS PER ACRES DOLOMITIC LIMESTONE (92 LBS./1000 SQ.FT.) AND 600 LBS. PER ACRE 10-10-10 FERTILIZER (14 LBS./1000 SQ.FT.) BEFORE SEEDING. HARROW OR DISK INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 LBS. PER ACRE 30-0-0 USEFORM FERTILIZER (9 LBS./1000 SQ.FT.)
- 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 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 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 (.05 LBS./1000 SQ.FT.) 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 SOO. 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 SQ.FT.) OF UNROTTED SMALL GRASS STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 216 GAL PER ACRE (5 GAL/1000 SQ.FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES 8 FEET OR HIGHER, USE 348 GAL PER ACRE (8 GAL/1000 SQ.FT.) FOR ANCHORING.

MAINTENANCE - INSPECT ALL SEEDING AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.

**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 SQ.FT.)

SEEDING: FOR PERIODS MARCH 1 THRU APRIL 30 AND FROM AUGUST 15 THRU OCTOBER 15, SEED WITH 2-1/2 BUSHEL PER ACRE OF ANNUAL RYE (3.2 LBS./1000 SQ.FT.) FOR THE PERIOD MAY 1 THRU AUGUST 14, SEED WITH 3 LBS. PER ACRE OF WEEPING LOVEGRASS (.07 LBS./1000 SQ.FT.) FOR THE PERIOD NOVEMBER 16 THRU NOVEMBER 28. PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR SOO.

MULCHING: APPLY 1-1/2 TO 2 TONS PER ACRE (70 TO 90 LBS./1000 SQ.FT.) OF UNROTTED WEED FREE SMALL GRASS STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 216 GAL PER ACRE (5 GAL/1000 SQ.FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES 8 FEET OR HIGHER, USE 348 GAL PER ACRE (8 GAL/1000 SQ.FT.) FOR ANCHORING.

REFER TO THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR ADDITIONAL RATES AND METHODS NOT COVERED.

**STANDARD SEDIMENT CONTROL NOTES**

- A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION, (313-1855).
- ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT "MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL", AND REVISIONS THERETO.
- FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: A) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, B) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
- ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 12, OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1991 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, PERMANENT SEEDING (SEC.51), SOO (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.
- 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:	27.74 ACRES
AREA DISTURBED:	4.23 ACRES
AREA TO BE ROOFED OR PAVED:	0.96 ACRES
AREA TO BE VEGETATIVELY STABILIZED:	22.53 ACRES
TOTAL CUT:	5,000 CU. YDS.
TOTAL FILL:	5,000 CU. YDS.

 THESE QUANTITIES ARE FOR PERMIT PURPOSES ONLY. CONTRACTOR IS REQUIRED TO PROVIDE HIS OWN QUANTITY MEASUREMENTS.
- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
- TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH CAN BE BACK FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.

**SEQUENCE OF CONSTRUCTION**

- OBTAIN GRADING PERMIT
- CONSTRUCT STABILIZED CONSTRUCTION ENTRANCES, WITH MOUNTABLE BERM, AT LOCATIONS SHOWN. (1 DAY)
- CONSTRUCT SEDIMENT TRAP/POND (PER DETAIL SHOWN ON SHEET 3) TREE PROTECTION FENCE/SILT FENCES, SUPER SILT FENCES, ES-1 TO ES-2 (THE POND OUTFALL) & EARTH DIKES. (3 DAYS)
- WITH PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR BRING SITE TO GRADE & INSTALL THE PROPOSED STORM DRAINS, STORMCEPTOR & PRIVATE SEWER FORCE MAIN. (15 DAYS)
- CONSTRUCT ROAD & USE-IN-COMMON DRIVEWAY PER TYPICAL SECTIONS AS SHOWN ON PLAN. (15 DAYS)
- DEWATER THE EX. POND BY OPENING THE EX. RISER STRUCTURE AND ALLOWING THE WATER TO FLOW THROUGH THE EX. 10" CMP.
- ABANDON THE 10" CMP BY BLOCKING IT AT THE END AND FILLING IT WITH LOW SLUMP CONCRETE.
- GRADE THE SIDE OF THE POND AS SHOWN ON SHEET 5.
- IMMEDIATELY SEED THE BOTTOM OF THE EX. POND WITH WATER TOLERANT GRASS ( RICE CUT GRASS, BULRUSH GRASS, SEDGES OR EQUIVALENT) AND PROVIDE INFLOW PROTECTION AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR.
- STABILIZE ALL REMAINING DISTURBED AREAS. (3 DAYS)
- WHEN ALL CONTRIBUTING DRAINAGE AREAS TO SEDIMENT CONTROL DEVICES HAVE BEEN STABILIZED AND WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, CONVERT THE SEDIMENT BASIN TO THE PROPOSED STORMWATER MANAGEMENT POND. (3 DAYS)
- CLEAN THE INSTALLED STORMCEPTOR. (1 DAY)
- STABILIZE THE REMAINING DISTURBED AREA. (2 DAYS)
- WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, REMOVE THE REMAINING SEDIMENT CONTROL DEVICES. (1 DAY)

**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, SILTY CLAY LOAM, LOAMY SAND, OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. REGARDLESS, TOPSOIL SHALL NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND SHALL CONTAIN LESS THAN 5% BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1 1/2" IN DIAMETER.
  - TOPSOIL MUST BE FREE OF PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACKGRASS, JOHNSON-SOON GRASS, 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 100-1500 POUNDS PER 1000 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 TOPSOILS 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 CONTENT 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 SOO 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.
    - NOTE: TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL.
    - PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION - SECTION I - VEGETATIVE STABILIZATION METHODS AND MATERIALS.
  - TOPSOIL APPLICATION
    - WHEN TOPSOILING, MAINTAIN NEEDED EROSION AND SEDIMENT CONTROL PRACTICES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, EARTH DIKES, SLOPE SILT FENCE AND SEDIMENT TRAPS AND BASINS.
    - GRADES ON THE AREAS TO BE TOPSOILED, WHICH HAVE BEEN PREVIOUSLY ESTABLISHED, SHALL BE MAINTAINED, ALBERT 4" - 8" HIGHER IN ELEVATION.
    - TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED IN A 4" TO 8" LAYER AND LIGHTLY COMPACTED TO A MINIMUM THICKNESS OF 4". SPREADING SHALL BE PERFORMED IN SUCH A MANNER THAT SOODING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS SHALL BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.
    - TOPSOIL SHALL NOT BE PLACED WHILE THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.
    - ALTERNATIVE FOR PERMANENT SEEDING - INSTEAD OF APPLYING THE FULL AMOUNTS OF LIME AND COMMERCIAL FERTILIZER, COMPOSTED SLUDGE AND AMENDMENTS MAY BE APPLIED AS SPECIFIED BELOW:
      - COMPOSTED SLUDGE MATERIAL FOR USE AS A SOIL CONDITIONER FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES SHALL BE TESTED TO PRESCRIBE AMENDMENTS AND FOR SITES HAVING AREAS UNDER 5 ACRES SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
        - COMPOSTED SLUDGE SHALL BE SUPPLIED BY, OR ORIGINATE FROM, A PERSON OR PERSONS WHO ARE PERMITTED (AT THE TIME OF ACQUISITION OF THE COMPOST) BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT UNDER COMAR 28.04.06.
        - COMPOSTED SLUDGE SHALL CONTAIN AT LEAST 1 PERCENT NITROGEN, 1.5 PERCENT PHOSPHORUS, AND 0.2 PERCENT POTASSIUM AND HAVE A PH OF 7.0 TO 9.0. IF COMPOST DOES NOT MEET THESE REQUIREMENTS, THE APPROPRIATE CONSTITUENTS MUST BE ADDED TO MEET THE REQUIREMENTS PRIOR TO USE.
        - COMPOSTED SLUDGE SHALL BE APPLIED AT A RATE OF 1 TON/1,000 SQUARE FEET.
      - COMPOSTED SLUDGE SHALL BE AMENDED WITH A POTASSIUM FERTILIZER APPLIED AT THE RATE OF 4 LB./1,000 SQUARE FEET, AND 1/3 THE NORMAL LIME APPLICATION RATE.

**GUIDLINES FOR POND REMOVAL AND STABILIZATION.**

- BEFORE ATTEMPTING TO REMOVE ANY BASIN, ALL WATER IN THE BASIN SHALL BE DRAINED BY PHYSICALLY ALTERING THE RISER INVERT ELEVATION TO GRADUALLY LOWER THE WATER LEVEL. THIS MAY BE ACCOMPLISHED BY PUNCHING HOLES IN THE RISER BELOW THE WATER LINE. IN CASES WHERE PHYSICAL DAMAGE TO THE RISER IS UNDESIRABLE OR WHERE PHYSICAL ALTERATION OF THE RISER IS NOT FEASIBLE THE POND SHALL BE PUMPED.
- PRIOR TO COMMENCING WORK ON DAM REMOVAL, A METHOD OF MINIMIZING DOWN S STREAM SEDIMENTATION SHALL BE APPROVED ON SITE BY THE HOWARD SOIL CONSERVATION DISTRICT.
- IN CASES WHERE THE BASIN TO BE REMOVED IS FED BY A STREAM WITH A CONTINUOUS BASE FLOW, MEASURES SHALL BE TAKEN TO DIVERT, RETARD, OR OTHERWISE REDUCE THE EROSION EFFECTS OF THE BASE FLOW DURING REMOVAL OPERATION.
- REMOVE PORTION OF THE EX. DAM AND SPREAD TO CONFORM WITH SURROUNDING CONTOURS.(SEE SHEET 5)

DATE: APR. 2001  
PROJECT: 98010  
ILLUSTRATION: SAA  
SCALE: SAA  
APPROVAL: SAA  
AS SHOWN: RH

DATE: \_\_\_\_\_



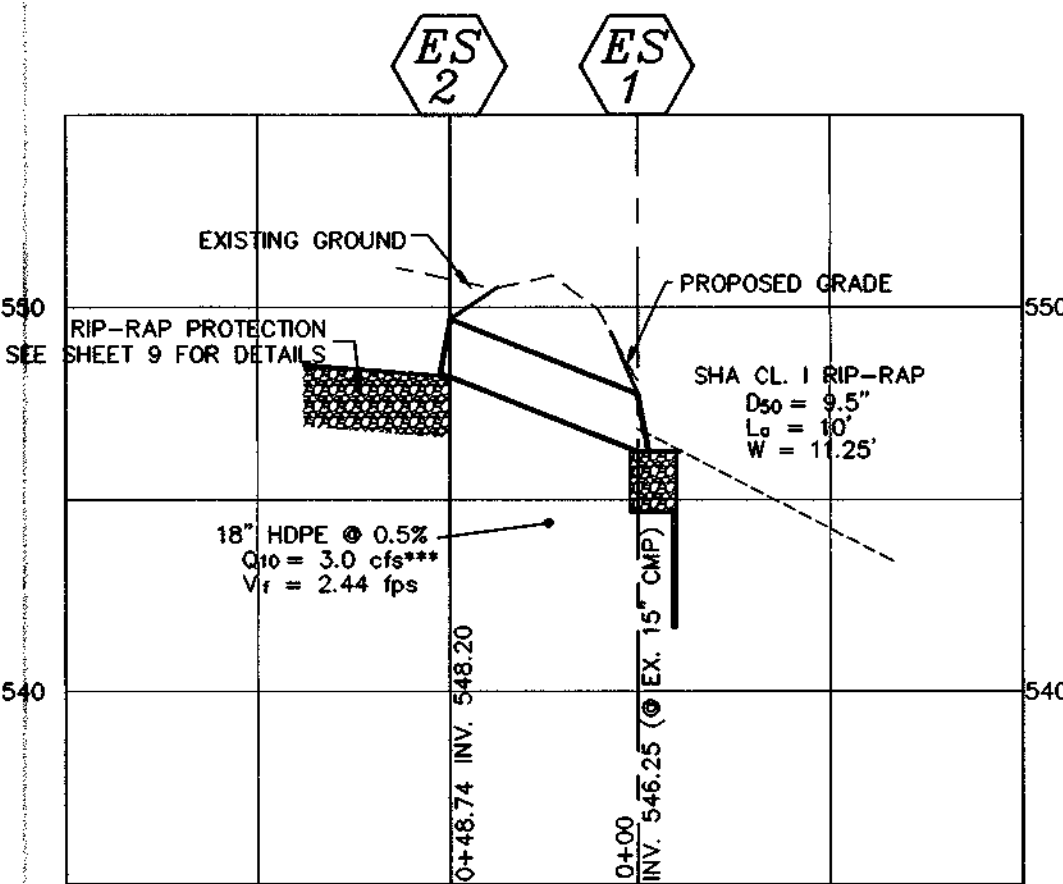
**STRUCTURE SCHEDULE**

NO.	LOCATION	TOP	INV. IN	INV. OUT	COMMENTS
I-1*	N 591570.542 E 1313272.759**	554.00	551.41	551.16	INLET TYPE S (HO. CO. STD SD 4.22) - SUMP (PUBLIC)
I-2*	N 590709.218 E 1312941.533	583.00	---	579.75	INLET TYPE S (HO. CO. STD SD 4.22) - SUMP (PUBLIC)
I-3*	N 591540.370 E 1313294.543	555.00	---	551.60	INLET TYPE S (HO. CO. STD SD 4.22) - SUMP (PUBLIC)
MH1*	N 591094.275 E 1313049.842	596.21	577.59	577.38	STANDARD PRECAST MANHOLE (HO. CO. STD G 5.11) (PUBLIC)
ES1	N 591692.552 E 1313316.119	---	---	546.25	15" # ADS END SECTION (PART No. 1810 NP)( PUBLIC)
ES2	N 591653.242 E 1313287.306	---	---	548.20	15" # ADS END SECTION (PART No. 1810 NP)( PRIVATE)
ES3	N 591589.213 E 1313236.017	---	---	550.81	18" # ADS END SECTION (PART No. 1810 NP)( PUBLIC)
ES4*	N 591646.506 E 1313285.524	---	---	546.50	18" # ADS END SECTION (PART No. 1810 NP)( PUBLIC)
ES5	N 591620.686 E 1313321.259	---	---	548.22	15" # ADS END SECTION (PART No. 1810 NP)( PUBLIC)
ES6	N 591578.741 E 1313248.479	554.02	551.03	550.96	STORMCEPTOR MODEL STC900 (SEE DETAILS)

\* COORDINATES SHOWN INDICATE CENTER OF STRUCTURE.  
 \*\* COORDINATES SHOWN INDICATE APPROXIMATE END OF THE EXISTING 15" CMP AT NORTH SIDE OF OLD ROVER ROAD.

**ADS END SECTION INSTALLATION INSTRUCTIONS**

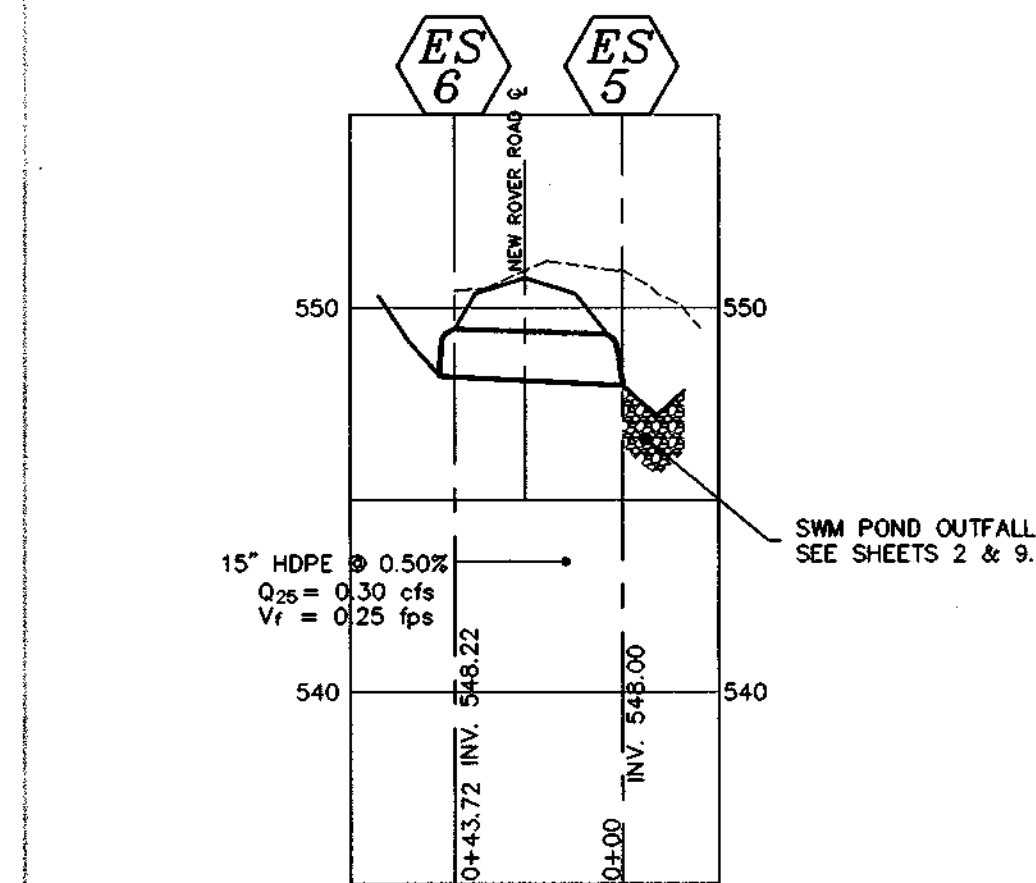
1. SPREAD THE ENDSECTION COLLAR AND PLACE IT OVER THE LAST PIPE CORRUGATION. MAKE SURE THE COLLAR SEATS PROPERLY IN THE CORRUGATION VALLEY.
2. INSERT THREADED ROD THROUGH THE PRE-DRILLED HOLES IN THE END SECTION COLLAR. TIGHTEN WING NUTS.
3. PLACE BANKFILL AROUND THE END SECTION AND OVER THE TOE PLATE. USE CARE DURING COMPACTION ALONG THE SIDES TO PREVENT DISTORTION.



**ES-2 TO ES-1**

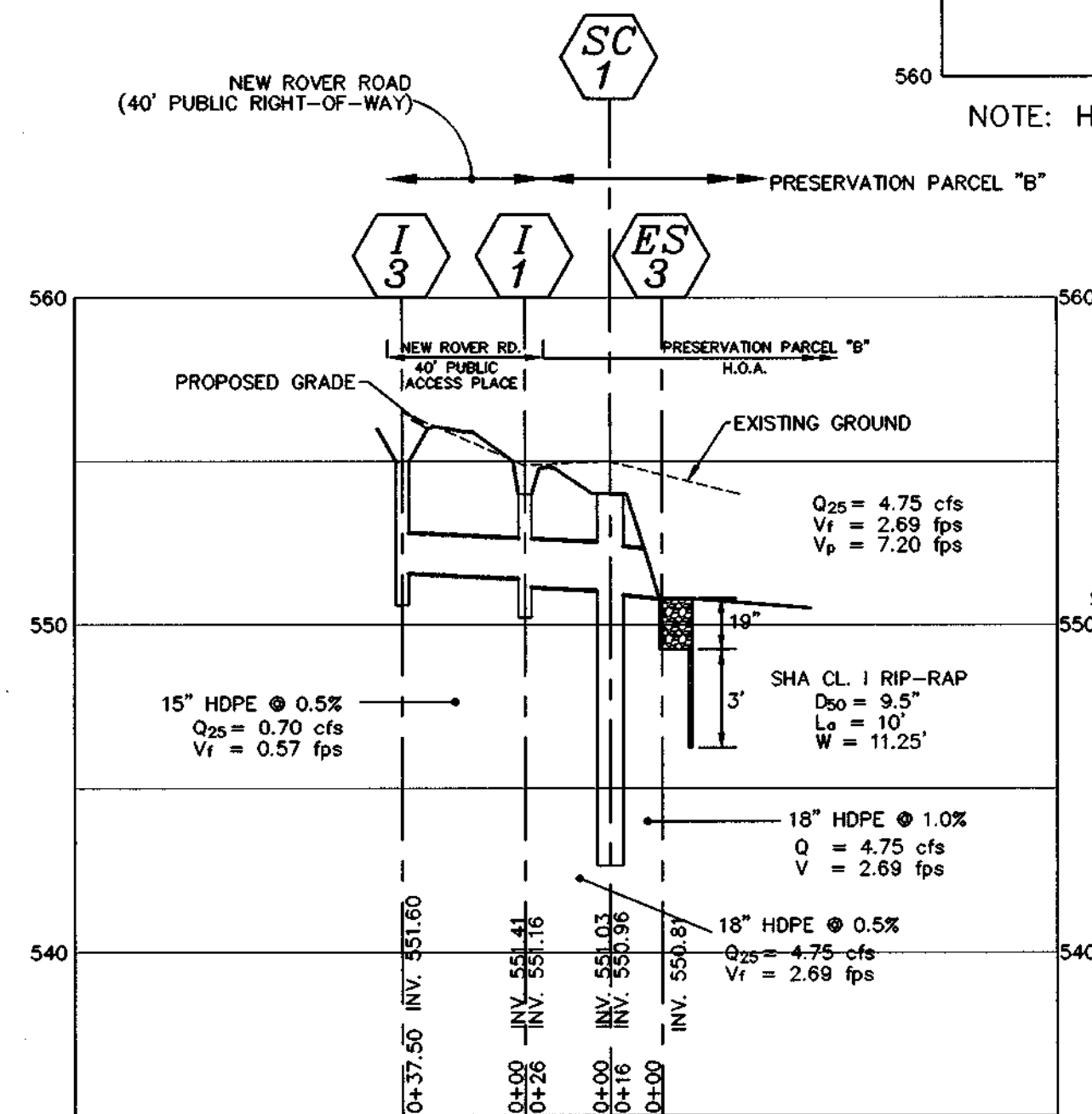
SCALE: 1" = 50' HORIZONTAL  
1" = 5' VERTICAL

\*\*\* THE 10 YEAR STORM DISCHARGE IS PER THE STORMWATER MANAGEMENT REPORT.



**ES-5 TO ES-6**

SCALE: 1" = 50' HORIZONTAL  
1" = 5' VERTICAL

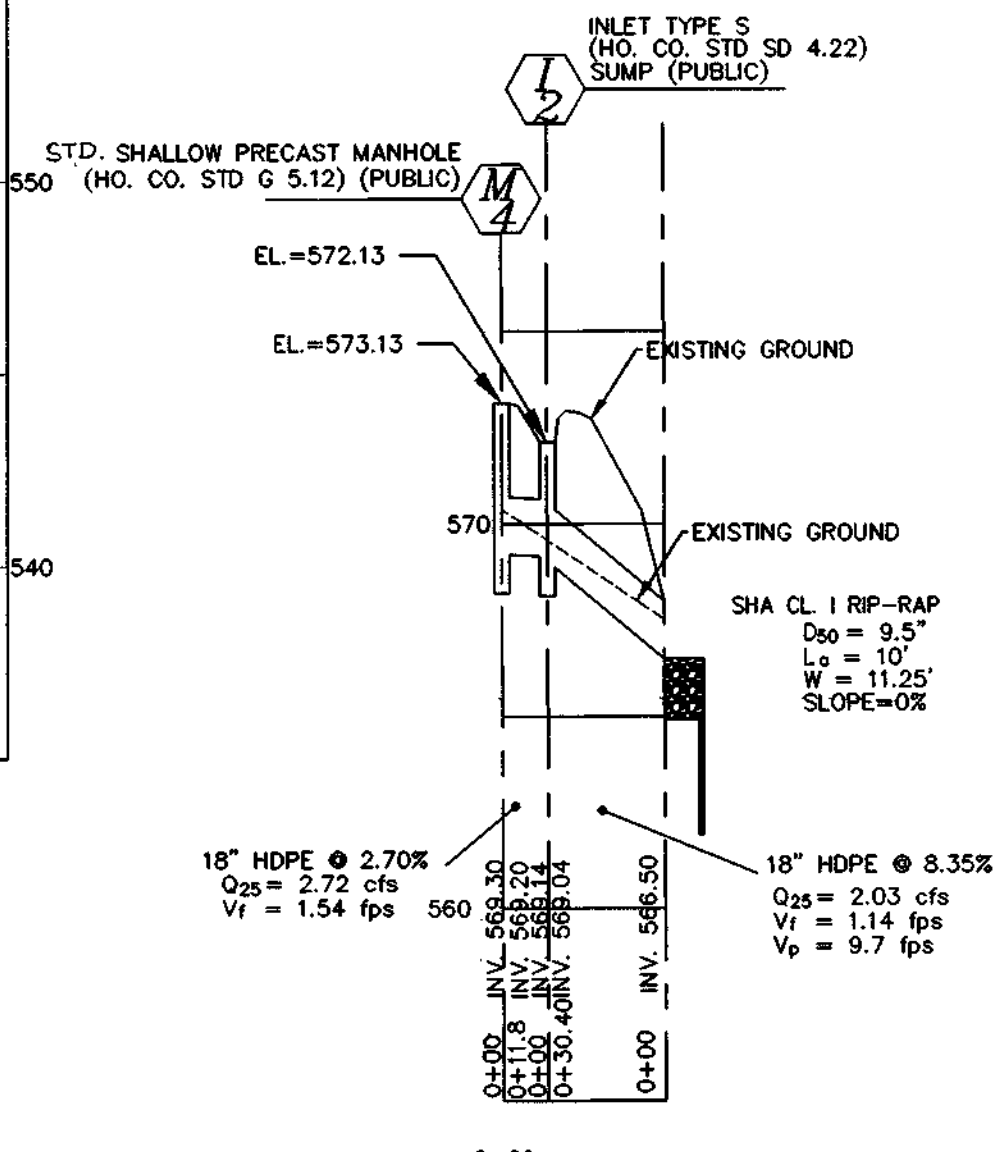


**I-3 TO ES-3**

SCALE: 1" = 50' HORIZONTAL  
1" = 5' VERTICAL

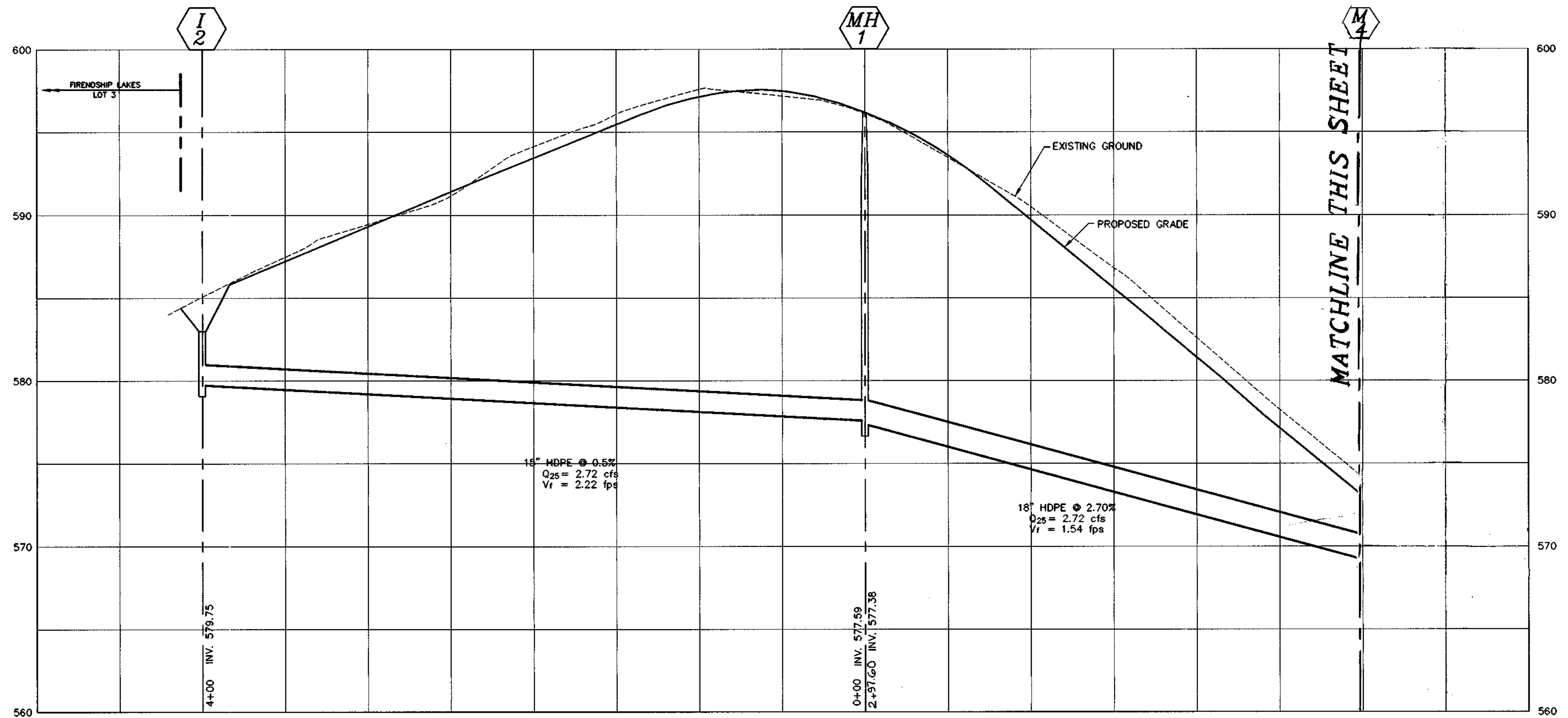
**PIPE SCHEDULE**

	SIZE	LENGTH
PUBLIC	15" HDPE	483'
	18" HDPE	404'
PRIVATE	18" HDPE	31'



**M-4 TO I-2**

SCALE: 1" = 50' HORIZONTAL  
1" = 5' VERTICAL



NOTE: HGL ARE AT CROWN OF ALL STORM DRAINS.

**I-2 TO ES-4**

SCALE: 1" = 50' HORIZONTAL  
1" = 5' VERTICAL

**STORMCEPTOR MANHOLE SC-1**

**CSR** 4800 Landon Road, Springfield, VA 22150 (703) 971-1900

**STC 900** PRECAST CONCRETE STORMCEPTOR

DR. BY: EPOM  
CHK. BY: RCH  
DATE: 12-18-96  
SCALE: NTS  
DWG. # CA-0225-04

**GENERAL NOTES:**

1. STORMCEPTOR SECTIONS SHALL CONFORM TO ASTM C 478, PROFILE SLOTTED JOINTS CONFORMING TO ASTM C 443.
2. MANHOLE STEPS PROVIDED ABOVE INSERT @ 18" O.C. AND SHALL BE COULING POLYPROPYLENE PLASTIC ENCAPSULATED GR. 60 STEEL.
3. MINIMUM CONCRETE STRENGTH FOR 4000 PSI MINIMUM STEEL STRENGTH fy = 60,000 PSI
4. REINFORCEMENT DESIGN SHALL MEET ASTM C 478.
5. FLEXIBLE PIPE CONNECTORS SHALL MEET ASTM C 923.
6. HANDLING:
  - A. ALL RISERS SHALL HAVE 2 EA 1 1/2" HOLES FOR LIFTING.
  - B. 1/2" MIN. OVER FROM SPOT.
  - C. ALL U.S. DUAL BASE SECTIONS FLUTING AND REINFORCERS TO HAVE LEFT HANDS.
7. DESIGNED FOR ACHDIO H-20 LOADING.
8. FIBERGLASS STORMCEPTOR INSERT REVISION DWG. # CA-0225-01

**REV.**      **DESCRIPTION**      **BY:**      **DATE**

**Order Request Form**

**Precast Concrete Stormceptor**

**CONTRACTOR INFORMATION**

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_  
State \_\_\_\_\_  
Zip Code \_\_\_\_\_  
Contact \_\_\_\_\_  
Phone \_\_\_\_\_  
Fax \_\_\_\_\_

**OWNER INFORMATION**

Name \_\_\_\_\_  
Phone \_\_\_\_\_  
Fax \_\_\_\_\_

**IMPERVIOUS DRAINAGE AREA FOR THIS UNIT**

Model	Inlet Size	Manhole Number
900	3600	SC-1
1200	4800	554.02
1800	6000	551.03
2400	7200	550.96

Project Name: FRIENDSHIP LAKES, LOTS 5-15, PRESERVATION PARCELS "A" & "B"  
 Approximate time frame of delivery (weeks) \_\_\_\_\_  
 Delivery Address: Street \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_  
 Designer Company: MILDENBERG, BOENDER & ASSOC., INC.  
 Designer Contact: SAMER A. ALOMER Phone 410-997-0296 Fax \_\_\_\_\_

**PLEASE FILL OUT COMPLETELY AND FAX TO: CSR**

ATTN: ED O'MALLEY FAX: (703)922-3659, PHONE: (703)971-1900  
 FOR TECHNICAL ASSISTANCE PLEASE CALL MIKE BARG, PHONE (703)971-1900

**OPERATION AND MAINTENANCE SCHEDULE FOR STORMCEPTOR WATER QUALITY DEVICE**

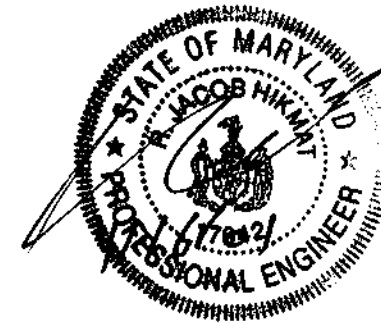
1. STORMCEPTOR WATER QUALITY STRUCTURES WILL REQUIRE PERIODIC INSPECTION AND CLEANING TO MAINTAIN OPERATION AND FUNCTION. OWNERS WILL HAVE THE STORMCEPTOR UNIT INSPECTED YEARLY OR AS REQUIRED BY HOWARD COUNTY. UTILIZING THE STORMCEPTOR INSPECTION/MONITORING FORM. INSPECTIONS CAN BE DONE BY USING A CLEAR PLEXIGLASS TUBE ("SLUDGE JUDGE") TO EXTRACT A WATER COLUMN SAMPLE. WHEN SEDIMENT DEPTHS EXCEED THE SPECIFIED LEVEL (TABLE 6 OF TECHNICAL MANUAL) THEN CLEANING OF THE UNIT IS REQUIRED.
2. STORMCEPTOR WATER QUALITY STRUCTURES MUST BE CHECKED AND CLEANED IMMEDIATELY AFTER PETROLEUM SPILLS. CONTACT APPROPRIATE REGULATORY AGENCIES.
3. MAINTENANCE OF STORMCEPTOR UNITS SHOULD BE DONE BY A VACUUM TRUCK WHICH WILL REMOVE THE WATER, SEDIMENT, DEBRIS, FLOATING HYDROCARBONS AND OTHER MATERIALS IN UNIT. THE PROPER CLEANING AND DISPOSAL OF THE REMOVED MATERIALS AND LIQUID MUST BE FOLLOWED.
4. INLET AND OUTLET PIPES MUST BE CHECKED FOR ANY OBSTRUCTIONS AND IF ANY OBSTRUCTIONS ARE FOUND THEY MUST BE REMOVED. STRUCTURAL PARTS OF THE STORMCEPTOR WILL BE REPAIRED AS NEEDED.
5. OWNER SHALL RETAIN AND MAKE STORMCEPTOR INSPECTION/MONITORING FORMS AVAILABLE TO HOWARD COUNTY OFFICIALS UPON THEIR REQUEST.

STRUCTURE	LOCATION
I-4	NEW ROVER ROAD STA. 3+35.9, 22.8 RT.
M-2	NEW ROVER ROAD STA. 3+47.7, 15.3 RT.
ES-4	NEW ROVER ROAD STA. 3+03.3, 23 RT.

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 Andrew M. Rande 5-1-01  
 CHIEF BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 5/23/01  
 CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: DEPARTMENT OF ENGINEERING  
 [Signature] 5/1/01  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION



date	JAN 2001	approval	SAAS
project	99010	scale	AS SHOWN
illustration	SAAS	description	
revision		revisions	

NO.	ADD L-4 & M-2 TO PROFILE	DATE	5/12/02
1.			

**FRIENDSHIP LAKES, LOTS 5-15, PRESERVATION PARCELS "A" & "B"**  
 A RESUBDIVISION OF FRIENDSHIP LAKE, LOTS 1, 2, & 4  
 TAX MAP 15, PARCEL 176  
 HOWARD COUNTY, MARYLAND  
 THIRD ELECTION DISTRICT  
 STORM DRAIN PROFILES & DETAILS

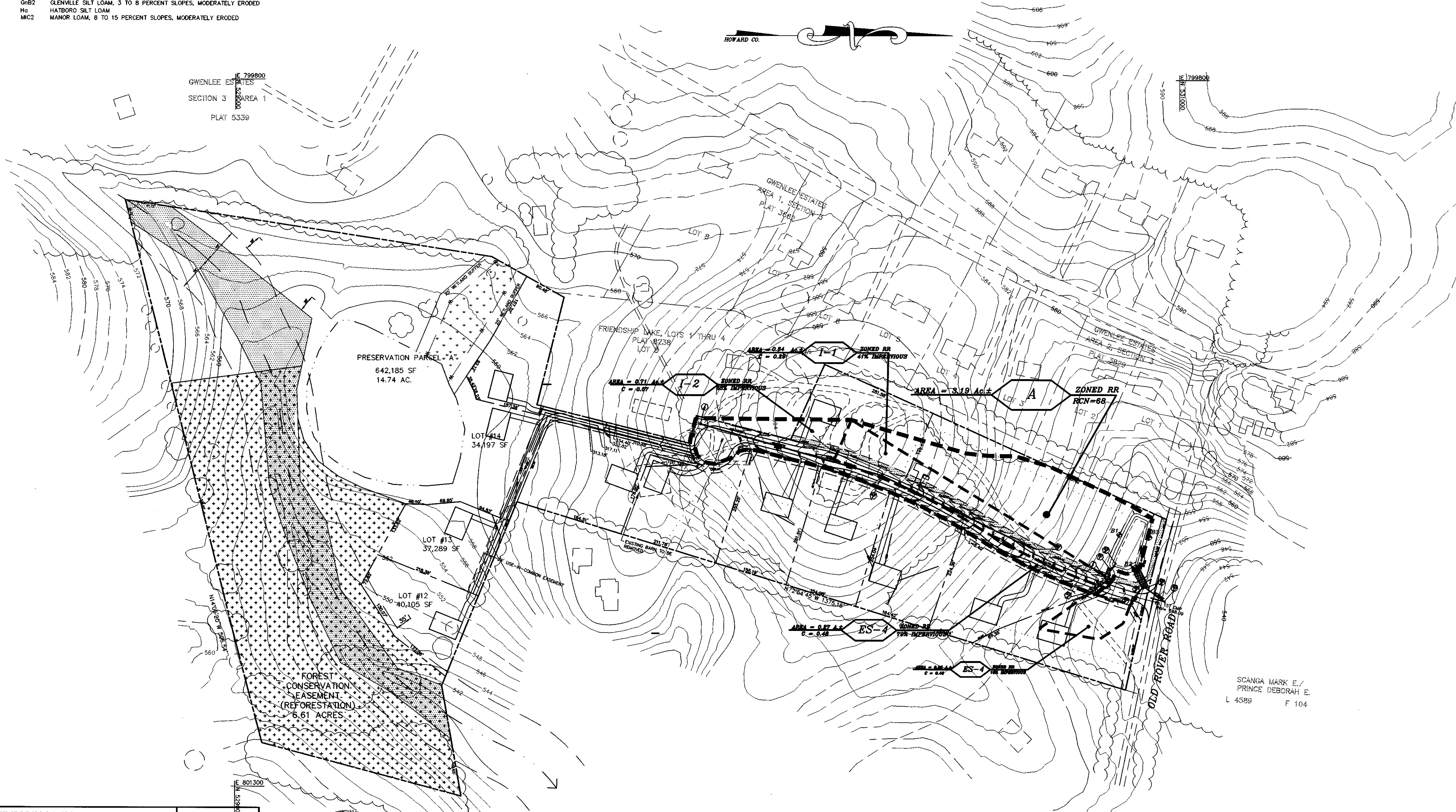
**MILDENBERG, BOENDER & ASSOC., INC.**  
 Engineers Planners Surveyors  
 5072 Dorsey Hall Drive, Suite 202, Ellicott City, Maryland 21042  
 (410) 997-0296 Fax (301) 621-5621 Wash. (410) 997-0298 Fax.



**SOIL LEGEND**

HSG	SYMBOL	NAME
D	Ba	BAILE SILT LOAM
B	ChA	CHESTER SILT LOAM, 0 TO 3 PERCENT SLOPES
B	ChB2	CHESTER SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
B	ChC2	CHESTER SILT LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED
B	CgB2	CHESTER GRAVELLY SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
B	CgC2	CHESTER GRAVELLY SILT LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED
C	ELB2	ELIOAK SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
C	EKC2	ELIOAK SILT LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED
C	EIO3	ELIOAK SILTY CLAY LOAM, 15 TO 25 PERCENT SLOPES, SEVERELY ERODED
C	GnB2	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
D	Hd	HATBORO SILT LOAM
B	MC2	MANOR LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED

**NOTE:**  
THIS PLAN IS FOR THE PURPOSE OF  
DRAINAGE AREA & SOILS MAP ONLY



E 799800  
GWIENLEE ESTATES  
SECTION 3  
AREA 1  
PLAT 5339

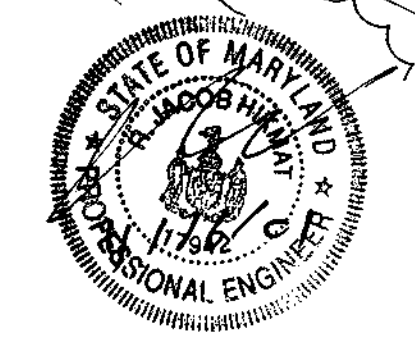
SCANGA MARK E.  
PRINCE DEBORAH E.  
L 4588 F 104

99010.DWG.FINAL.ROAD.DA

APPROVED: DEPARTMENT OF PUBLIC WORKS  
*Andrew M. Dumb* 5-1-01  
CHIEF BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*Condy* 5/23/01  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Mike* 5/11/01  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



Project	99010	date	JAN 2001
Illustration	SA	engineering	
Scale	SA	approval	
AS SHOWN	SA	AS SHOWN	RJH

no.	description	revisions	date

**FRIENDSHIP LAKES, LOTS 5-15, PRESERVATION PARCELS "A" & "B"**  
A RESUBDIVISION OF FRIENDSHIP LAKE, LOTS 1, 2, & 4  
TAX MAP 15, PARCEL 175  
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
DRAINAGE AREA & SOILS MAP

**MILDENBERG, BOENDER & ASSOC., INC.**  
Engineers Planners Surveyors  
5072 Dorsy Hall Drive, Suite 202, Ellicott City, Maryland 21042  
(410) 987-0286 Fax: (301) 627-5521 Wash. (410) 987-0286 Fax







**POND SPECIFICATIONS**

THESE SPECIFICATIONS ARE APPROPRIATE TO ALL PONDS WITHIN THE SCOPE OF THE STANDARD FOR PRACTICE MD-378. ALL REFERENCES TO ASTM AND AASHTO SPECIFICATIONS APPLY TO THE MOST RECENT VERSION.

**SITE PREPARATION**

AREAS DESIGNATED FOR BORROW AREAS, EMBANKMENT, AND STRUCTURAL WORKS SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL. ALL TREES, VEGETATION ROOTS AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED. 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, RUBBISH AND OTHER OBJECTIONABLE MATERIAL UNLESS OTHERWISE DESIGNATED TO THE PLANS. TREES, BRUSH AND STUMPS SHALL BE CUT APPROXIMATELY LEVEL WITH THE GROUND SURFACE. FOR DRY STORMWATER MANAGEMENT PONDS, A MINIMUM OF A 50 FOOT RADIUS AROUND THE INLET STRUCTURE SHALL BE CLEARED.

ALL CLEARED AND GRUBBED MATERIAL SHALL BE DISPOSED OF OUTSIDE AND BELOW THE LIMITS OF THE DAM AND RESERVOIR AS DIRECTED BY THE OWNER OR HIS REPRESENTATIVE. WHEN SPECIFIED, A SUFFICIENT QUANTITY OF TOPSOIL WILL BE STOCKPILED IN A SUITABLE LOCATION FOR USE ON THE EMBANKMENT AND OTHER DESIGNATED AREAS.

**EARTH FILL**

MATERIAL- THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED DESIGNATED BORROW AREAS. IT SHALL BE FREE OF ROOTS, STUMPS, WOOD, RUBBISH, STONES GREATER THAN 6", FROZEN OR OTHER OBJECTIONABLE MATERIALS. FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT AND CUT OFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL. CONSIDERATION MAY BE GIVEN TO THE USE OF OTHER MATERIALS IN THE EMBANKMENT IF DESIGN AND CONSTRUCTION ARE SUPERVISED BY A GEOTECHNICAL ENGINEER.

PLACEMENT- AREAS ON WHICH FILL IS TO BE 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 AND SPREADING EQUIPMENT OVER THE FILL SHALL BE CONTROLLED SO THAT THE ENTIRE SURFACE OF EACH LIFT SHALL BE TRAVELER 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.

WHERE A MINIMUM REQUIRED DENSITY IS SPECIFIED, IT SHALL NOT BE LESS 95% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN +/- 2% OF THE OPTIMUM. EACH LAYER OF FILL SHALL BE COMPACTED AS NECESSARY TO OBTAIN THAT DENSITY, AND IS TO BE CERTIFIED BY THE ENGINEER AT THE TIME OF CONSTRUCTION. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T-99

CUT OFF TRENCH- THE CUT OFF 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 COVERED BY THE EQUIPMENT USED FOR EXCAVATION, WITH THE MINIMUM WIDTH BEING FOUR FEET. THE DEPTH SHALL BE AT LEAST FOUR FEET BELOW EXISTING GRADE OR AS SHOWN ON THE PLANS. THE SIDE SLOPES OF THE TRENCH SHALL BE 1 TO 1 OR FLATTER. THE BACKFILL SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY.

**STRUCTURE BACKFILL**

BACKFILL ADJACENT TO PIPES OR STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL MATERIAL. THE FILL MATERIAL 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 FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE.

**PIPE CONDUITS**

ALL PIPES SHALL BE CIRCULAR IN CROSS SECTION.

CORRUGATED METAL PIPE- ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR CORRUGATED METAL PIPE MATERIALS- (STEEL PIPE)- THIS PIPE AND ITS APPURTENANCES SHALL BE GALVANIZED AND FULLY BITUMINOUS COATED AND SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-190 TYPE A WITH WATER TIGHT COUPLING BANDS. ANY BITUMINOUS COATING DAMAGED OR OTHERWISE REMOVED SHALL BE REPLACED WITH COLD APPLIED BITUMINOUS COATING COMPOUND. STEEL PIPES WITH POLYMERIC COATINGS SHALL HAVE A MINIMUM COATING THICKNESS OF 0.01 INCH (10 MIL) ON BOTH SIDES OF THE PIPE. THE FOLLOWING COATINGS OR AN APPROVED EQUAL MAY BE USED: NEXON, PLASTI-COTE, BLAC-KLAD, AND BETA-KU-LOT. COATED CORRUGATED STEEL PIPE SHALL MEET THE REQUIREMENTS OF AASHTO M-245 AND M-246.

MATERIALS- (ALUMINUM COATED STEEL PIPE)- THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-274 WITH WATER TIGHT COUPLING BANDS OR FLANGES. ANY ALUMINUM COATING DAMAGED OR OTHERWISE REMOVED SHALL BE REPLACED WITH COLD APPLIED BITUMINOUS COATING COMPOUND.

MATERIALS- (ALUMINUM PIPE)- THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-196 OR M-211 WITH WATER TIGHT COUPLING BANDS OR FLANGES. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER. HOT DIP GALVANIZED BOLTS MAY BE USED FOR CONNECTIONS. THE PH OF THE SURROUNDING SOILS SHALL BE BETWEEN 4 AND 9.

2. COUPLING BANDS, ANTI-SEEP COLLARS, END SECTIONS, ETC. MUST BE COMPOSED OF THE SAME MATERIAL AS THE PIPE. METALS MUST BE INSULATED FROM DISSIMILAR MATERIALS WITH USE RUBBER OR PLASTIC INSULATING MATERIALS AT LEAST 24 MILS IN THICKNESS.

3. CONNECTIONS- ALL CONNECTIONS WITH PIPES MUST BE COMPLETELY WATER TIGHT. THE DRAIN PIPE OR BARREL CONNECTION TO THE RISER SHALL BE WELDED ALL AROUND WHEN THE PIPE AND RISER ARE METAL. ANTI-SEEP COLLARS SHALL BE CONNECTED TO THE PIPE IN SUCH A MANNER AS TO BE COMPLETELY WATER TIGHT. DUMPLE BANDS ARE NOT CONSIDERED TO BE WATER TIGHT.

ALL CONNECTIONS SHALL USE A RUBBER OR NEOPRENE GASKET WHEN JOINING PIPE SECTIONS. THE END OF EACH PIPE SHALL BE ROLLED AND ADEQUATE NUMBER OF CONNECTIONS TO ACCOMMODATE THE BAND WIDTH. THE FOLLOWING TYPE CONNECTIONS ARE ACCEPTABLE FOR PIPE LESS THAN 24" IN DIAMETER: FLANGES ON BOTH ENDS OF THE PIPE, A 12" WIDE STANDARD LAP TYPE BAND WITH 12" WIDE BY 3/8" THICK CLOSED CELL CIRCULAR NEOPRENE GASKET, AND A 12" WIDE HUGGER TYPE BAND WITH O-RING GASKETS HAVING MINIMUM DIAMETER OF 1/2" GREATER THAN THE CORRUGATION DEPTH. PIPES 24" IN DIAMETER AND LARGER SHALL BE CONNECTED BY A 24" LONG ANNULAR CORRUGATED BAND USING ROOS AND LOGS. A 12" WIDE HUGGER TYPE BAND WITH 12" WIDE BY 3/8" THICK CLOSED CELL CIRCULAR NEOPRENE GASKET WILL BE INSTALLED ON THE END OF EACH PIPE FOR A TOTAL OF 24"

HELICALLY CORRUGATED PIPE SHALL HAVE EITHER CONTINUOUSLY WELDED SEAMS OR HAVE LOCK SEAMS WITH INTERNAL CAULKING OR A NEOPRENE BEAD.

4. BEDDING- THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.

5. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL"

6. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

REINFORCED CONCRETE PIPE- ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR REINFORCED CONCRETE PIPE:

1. MATERIALS-REINFORCED CONCRETE PIPE SHALL HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS AND SHALL EQUAL OR EXCEED ASTM DESIGNATION C-361.

2. BEDDING- ALL REINFORCED CONCRETE PIPE CONDUITS SHALL BE LAID IN A CONCRETE BEDDING FOR THEIR ENTIRE LENGTH. THIS BEDDING SHALL CONSIST OF HIGH SLUMP CONCRETE PLACED UNDER THE PIPE AND UP THE SIDES OF THE PIPE AT LEAST 10% OF ITS OUTSIDE DIAMETER WITH A MINIMUM THICKNESS OF 3 INCHES, OR AS SHOWN ON THE DRAWINGS.

3. LAYING PIPE- BELL AND SPIGOT PIPE SHALL BE PLACED WITH THE BELL END UPSTREAM. JOINTS SHALL BE MADE IN ACCORDANCE WITH RECOMMENDATIONS OF THE MANUFACTURER OF THE MATERIAL. AFTER THE JOINTS ARE SEALED FOR THE ENTIRE LINE, THE BEDDING SHALL BE PLACED SO THAT ALL SPACES UNDER THE PIPE ARE FILLED. CARE SHALL BE EXERCISED TO PREVENT ANY DEVIATION FROM THE ORIGINAL LINE AND GRADE OF THE PIPE. THE FIRST JOINT MUST BE LOCATED WITHIN 2 FEET FROM THE RISER.

4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL"

5. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

POLYVINYL CHLORIDE (PVC) PIPE- ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR POLYVINYL CHLORIDE (PVC) PIPE:

1. MATERIALS-PVC PIPE SHALL BE PVC-1120 OR PVC-1220 CONFORMING TO ASTM D-1785 OR ASTM D-2241.

2. JOINTS AND CONNECTIONS TO ANTI-SEEP COLLARS SHALL BE COMPLETELY WATER TIGHT.

3. BEDDING- THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.

4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL"

5. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

**CONCRETE**

CONCRETE SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 505.

THE RIPRAP SHALL BE PLACED TO THE REQUIRED THICKNESS IN ONE OPERATION. THE ROCK SHALL BE DELIVERED AND PLACED IN A MANNER THAT WILL INSURE THE RIPRAP IN PLACE SHALL BE REASONABLY HOMOGENEOUS WITH THE LARGER ROCKS UNIFORMLY DISTRIBUTED AND FIRMLY IN CONTACT ONE TO ANOTHER WITH THE SMALLER ROCKS FILLING THE VOIDS BETWEEN THE LARGER ROCKS. FILTER CLOTH SHALL BE REPLACED UNDER ALL RIPRAP AND SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 919.12.7

**CARE OF WATER DURING CONSTRUCTION**

ALL WORK ON THE 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 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 THE REQUIRED EXCAVATIONS AND WILL ALLOW SATISFACTORY PERFORMANCE OF ALL CONSTRUCTION OPERATIONS. DURING THE PLACING AND COMPACTION OF MATERIAL IN REQUIRED EXCAVATIONS, THE WATER LEVEL AT THE LOCATIONS BEING REILLED 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.

**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.

**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.

**SWM POND MAINTENANCE REQUIREMENTS**

**ROUTINE MAINTENANCE**

1. FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHOULD BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE POND IS FUNCTIONING PROPERLY.
2. TOP AND SIDE SLOPES OF THE EMBANKMENT 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.
3. DEBRIS AND LITTER NEXT TO THE OUTLET STRUCTURE SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
4. VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS RIPRAP OUTLET AREA SHALL BE REPAIRED AS SOON AS IT IS NOTICED.

**NON-ROUTINE MAINTENANCE**

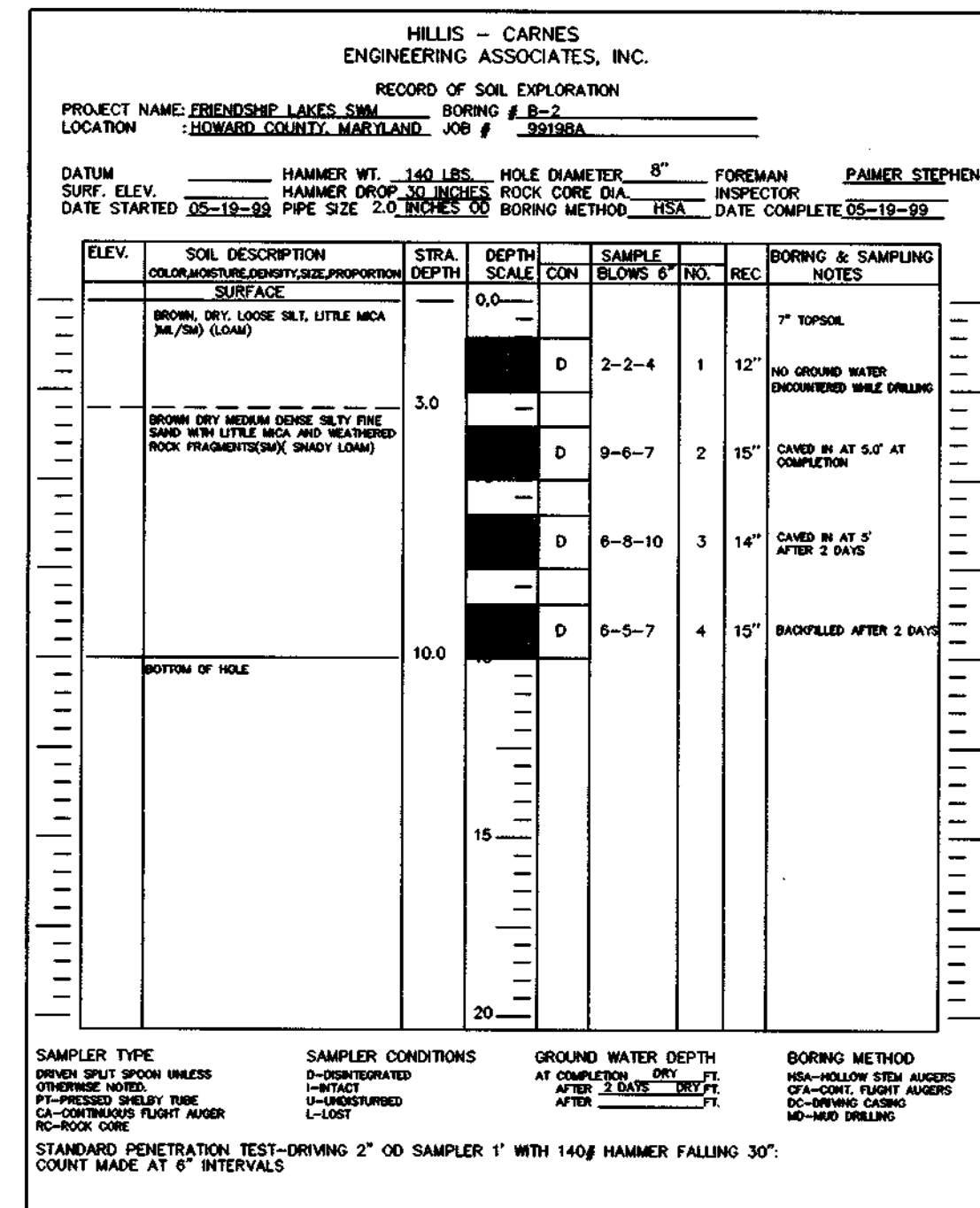
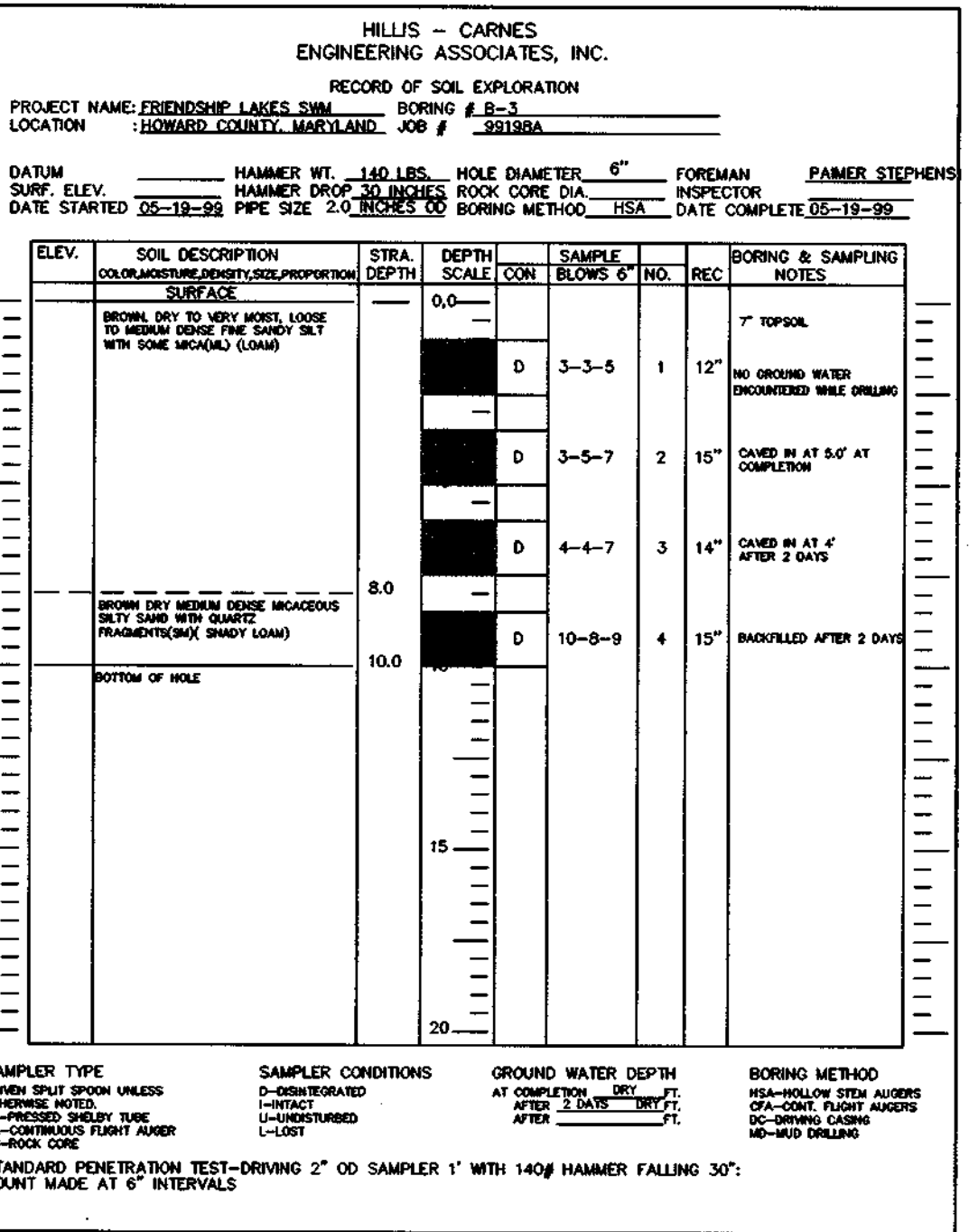
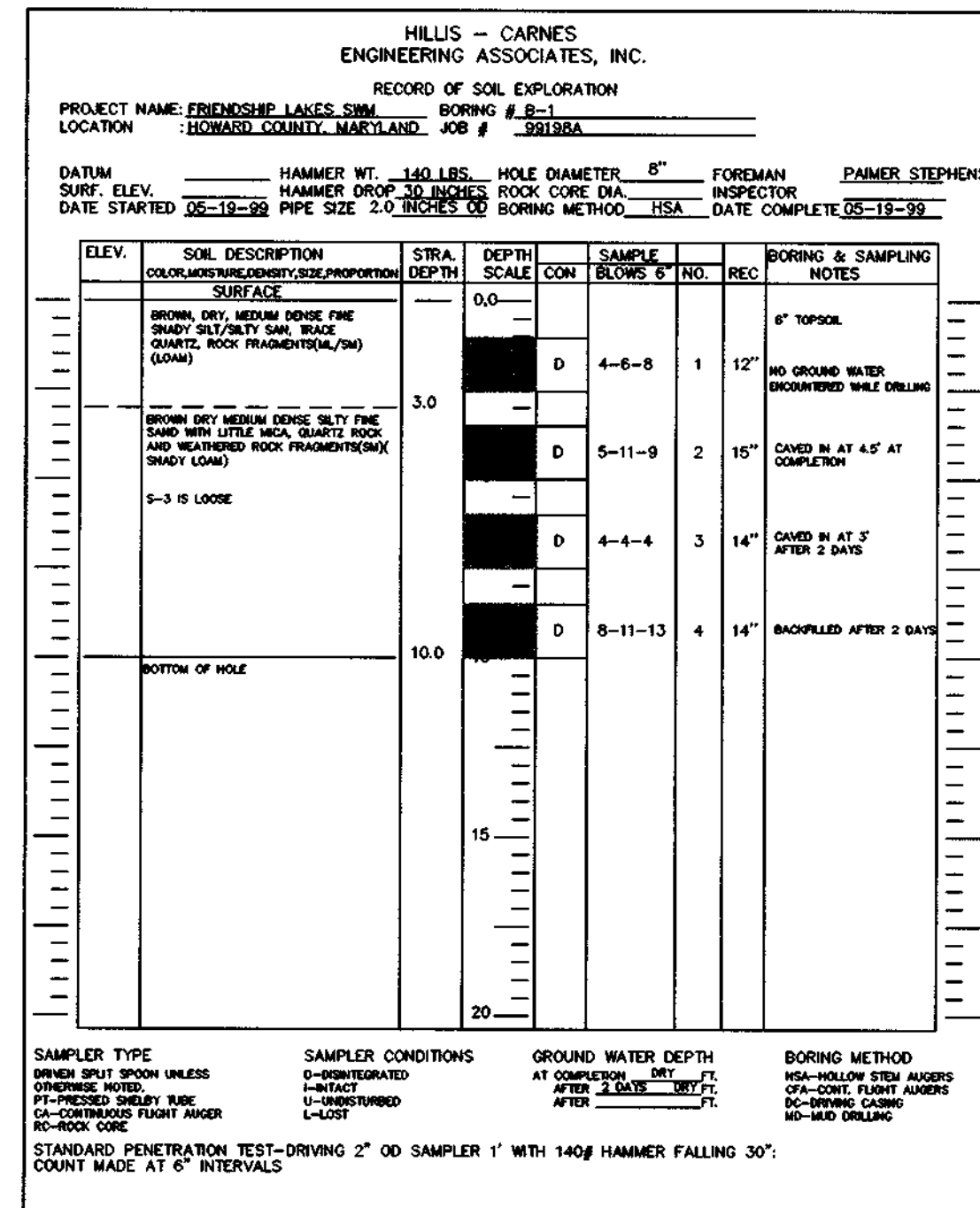
1. STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE RISER, AND THE PIPES SHALL BE REPAIRED UPON THE DETECTION OF ANY DAMAGE. THE COMPONENTS SHOULD BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
2. SEDIMENT SHOULD BE REMOVED WHEN ITS ACCUMULATION SIGNIFICANTLY REDUCES THE DESIGN STORAGE, INTERFERE WITH THE FUNCTION OF THE RISER, WHEN DEEMED NECESSARY BY THE HOWARD COUNTY'S DEPARTMENT OF PUBLIC WORKS.

**OPERATION, MAINTENANCE AND INSPECTION**

INSPECTION OF THE POND(S) SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, SCS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378), THE POND OWNER(S) AND THE HEIRS SUCCESSORS OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND 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.

**GEOTECHNICAL RECOMMENDATIONS**

- a. WITHIN THE EMBANKMENT AREA, STRIP THE TOPSOIL AND ANY SOFT OR OTHERWISE UNSUITABLE MATERIALS TO EXPOSE STABLE, UNDISTURBED NATIVE SOILS.
- b. PROOF ROLL THE STRIPPED SURFACE TO A UNIFORM CONDITION FURTHER CUTTING OUT ANY SOFT OR OTHERWISE UNSUITABLE SPOTS AND REPLACING WITH CONTROLLED FILL.
- c. EXCAVATE THE CUT OFF TRENCH, BACKFILL THE RESULTING EXCAVATION WITH ACCEPTABLE FINE-GRAINED MATERIALS AND CONSTRUCT THE PROPOSED RISER AND OUTFALL PIPE. THE CUT OFF TRENCH, RISER AND OUTFALL PIPE CONSTRUCTION FOR THE SWM POND SHOULD BE COMPLETED IN ACCORDANCE WITH APPROPRIATE COUNTY SPECIFICATIONS. THE SOIL TYPES USED IN THE CUT OFF TRENCH CONSTRUCTION SHOULD BE APPROVED FOR THE INTENDED USAGE.
- d. FILL THE DESIGNATED EMBANKMENT AREA WITH CONTROLLED FILL TO ACHIEVE PLAN GRADE. IT IS RECOMMENDED THAT THE EMBANKMENT BE PROVIDED WITH AN IMPERVIOUS CORE EXTENDING UPWARDS TO THE 100-YEAR RETENTION LEVEL SO THAT THE MORE GRANULAR MATERIALS AVAILABLE ON SITE MAY BE USED IN THE OUTER REGIONS OF THE EMBANKMENT WITH THE MOST POROUS MATERIALS PLACED IN THE DOWNSTREAM CONSTRUCTION. ALL FILL PLACEMENT AND COMPACTION SHALL BE IN ACCORDANCE WITH APPROVED STANDARDS.
- e. WITHIN THE POND BASIN AREA, CUT THE POND TO PLAN GRADE. IT IS NOTED THAT VERY DENSE DISINTEGRATED ROCK WAS ENCOUNTERED ABOVE THE UPPER AND LOWER LIMITS OF THE PLAN POND BOTTOM AT B-9 WITH HARD ROCK ENCOUNTERED NEAR THE LOWER PLAN BOTTOM AT B-9. ACCORDINGLY, IN ORDER TO ACHIEVE THE POND BOTTOM GRADE, PRE-RIPPING COMBINED WITH JACKHAMMERING WILL MOST LIKELY BE REQUIRED IN VARIOUS AREAS TO EXCAVATE THE VERY DENSE DISINTEGRATED TO HARD ROCK MATERIALS. BLASTING WITHIN THE POND AREA IS NOT RECOMMENDED, SINCE STRESS FRACTURES WITHIN THE UNDERLYING ROCK MAY DEVELOP; THEREBY, POSSIBLY DAMAGING THE INTEGRITY OF THE SWM POND.



**DEVELOPER'S CERTIFICATE**  
I CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION OF THIS PROJECT HAVE RECEIVED 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 NATURAL RESOURCE CONSERVATION SERVICE.

DATE: 4/16/01  
SIGNATURE OF DEVELOPER: J. Thomas Scavron

**ENGINEER'S CERTIFICATE**  
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 NATURAL RESOURCE CONSERVATION SERVICE.

DATE: 4/16/01  
SIGNATURE OF ENGINEER: R. JACOB HIKMAT

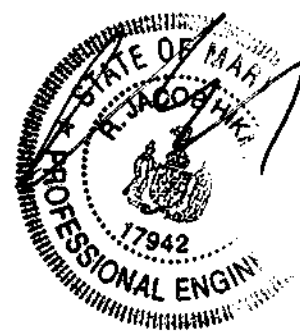
THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS.

DATE: 5/18/01  
USDA - NATURAL RESOURCE CONSERVATION SERVICE

DATE: 5/18/01  
HOWARD SOIL CONSERVATION DISTRICT

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
DATE: 5/16/01  
CHIEF DEVELOPMENT ENGINEERING DIVISION MK

DATE: 5/23/01  
CHIEF, DIVISION OF LAND DEVELOPMENT JH



APPROVED DEPARTMENT OF PUBLIC WORKS  
DATE: 5-1-01  
CHIEF BUREAU OF HIGHWAYS

date	JAN 2001	approval	RJH
project	99010	scale	N.A.
illustration	SA	description	revisions
engineering	SA	no.	date

description	revisions
no.	date

FRIENDSHIP LAKES, LOTS 5-15, PRESERVATION PARCELS "A" & "B"  
A RESUBDIVISION OF FRIENDSHIP LAKE, LOTS 1, 2, & 4  
TAX MAP 15, PARCEL 175  
THIRD ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND  
POND SPECIFICATION & SOIL BORING LOGS

MILDENBERG, BOENDER & ASSOC., INC.  
Engineers Planners Surveyors  
5072 Dorsey Hall Drive, Suite 202, Ellicott City, Maryland 21042  
(410) 997-0296 Fax (301) 621-5521 Wash. (410) 997-0996 Fax



**SCHEDULE A : PERIMETER LANDSCAPED EDGE**

CATEGORY	ADJACENT TO ROADWAYS	ADJACENT TO PERIMETER PROPERTIES
LANDSCAPE TYPE	B (PERIMETER 1)	A (PERIMETERS 2 TO 17)
LINEAR FEET OF PERIMETER	150.28 LF	4700.31 LF
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET)	NO	YES, 700 LF OF EXISTING TREES
CREDIT FOR WALL, FENCE, OR BERM (YES, NO, LINEAR FEET)	NO	NO
NUMBER OF PLANTS REQUIRED		
SHADE TREES	3 SHADE TREES	67 SHADE TREES
EVERGREEN TREES	4 EVERGREEN TREES	0 EVERGREEN TREES
SHRUBS	0 SHRUBS	0 SHRUBS
NUMBER OF PLANTS PROVIDED		
SHADE TREES	3 SHADE TREES	65 SHADE TREES
EVERGREEN TREES	4 EVERGREEN TREES	0 EVERGREEN TREES
OTHER TREES (2:1 SUBSTITUTION)	0 SUBSTITUTION TREES	7 SUBSTITUTION TREES
SHRUBS (10:1 SUBSTITUTION)	0 SHRUBS	0 SHRUBS

PERIMETER	EDGE TYPE	PERIMETER	EDGE TYPE	PERIMETER	EDGE TYPE
PERIMETER 1 SFD SIDE TO ROAD - 150.28 LF 1 SHADE TREE / 50 LF 1 EVERGREEN / 40 LF	B	PERIMETER 7 SFD TO PRES. PARCEL - 234 LF 1 SHADE TREE / 60 LF	A	PERIMETER 14 SFD TO SFD - 206.00 LF 1 SHADE TREE / 60 LF	A
PERIMETER 2 SFD TO SFD - 700 LF EXISTING TREES TO REMAIN	A	PERIMETER 8 SFD TO PRES. PARCEL - 241.03 LF 1 SHADE TREE / 60 LF	A	PERIMETER 15 SFD TO SFD - 175.00 LF 1 SHADE TREE / 60 LF	A
PERIMETER 3 SFD TO SFD - 675.16 LF 1 SHADE TREE / 60 LF	A	PERIMETER 9 SFD TO PRES. PARCEL - 249.44 LF 1 SHADE TREE / 60 LF	A	PERIMETER 16 SFD TO SFD - 251.56 LF 1 SHADE TREE / 60 LF	A
PERIMETER 4 SFD TO SFD - 400.33 LF 1 SHADE TREE / 60 LF	A	PERIMETER 10 SFD TO SFD - 90.46 LF 1 SHADE TREE / 60 LF	A	PERIMETER 17 SFD TO PRES. PARCEL - 148.64 LF 1 SHADE TREE / 60 LF	A
PERIMETER 5 SFD TO PRES. PARCEL - 267.13 LF 1 SHADE TREE / 60 LF	A	PERIMETER 11 SFD TO SFD - 235.73 LF 1 SHADE TREE / 60 LF	A	TOTAL PLANTING OBLIGATION	
PERIMETER 6 SFD TO PRES. PARCEL - 206.47 LF 1 SHADE TREE / 60 LF	A	PERIMETER 12 SFD TO SFD - 338.58 LF 1 SHADE TREE / 60 LF	A	SHADE TREES	70
PERIMETER 13 SFD TO SFD - 60.00 LF 1 SHADE TREE / 60 LF	A			EVERGREEN TREES	4
				SHRUBS	0

NOTE: THIS DRAWING IS TO BE USED FOR LANDSCAPE PLAN PURPOSES ONLY.

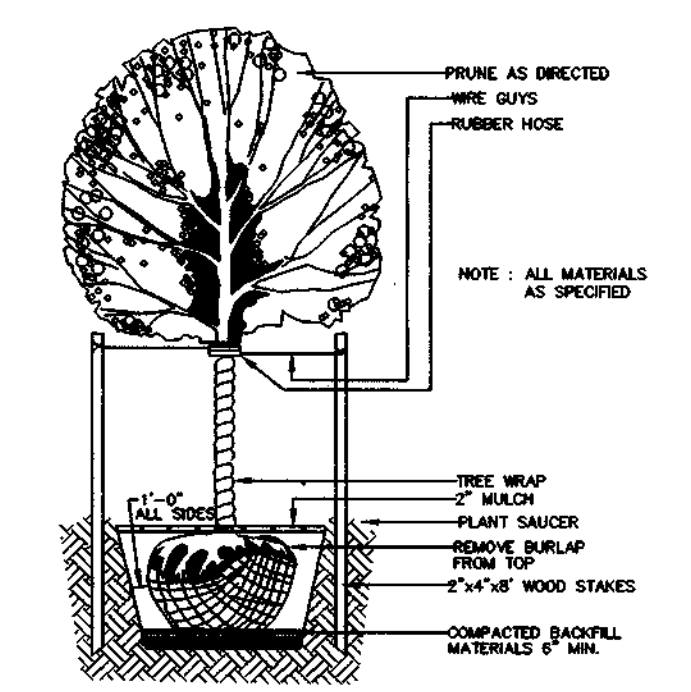
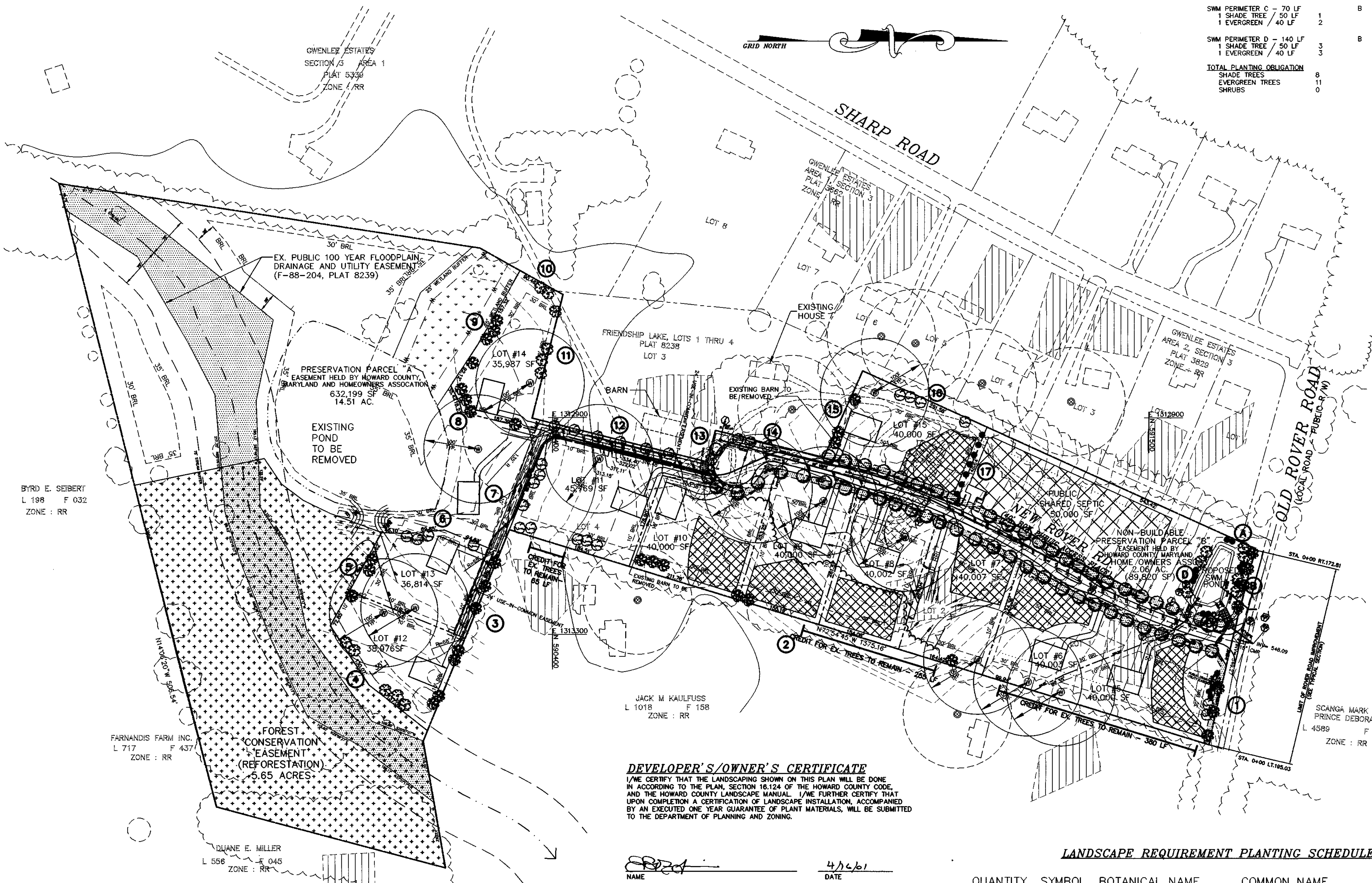
NOTES:  
1. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.  
2. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING, 78 SHADE TREES AND 15 EVERGREENS, HAS BEEN POSTED AS PART OF THE DPW DEVELOPERS AGREEMENT IN THE AMOUNT OF \$25,650.00.

**SWM PERIMETER EDGE TYPE**

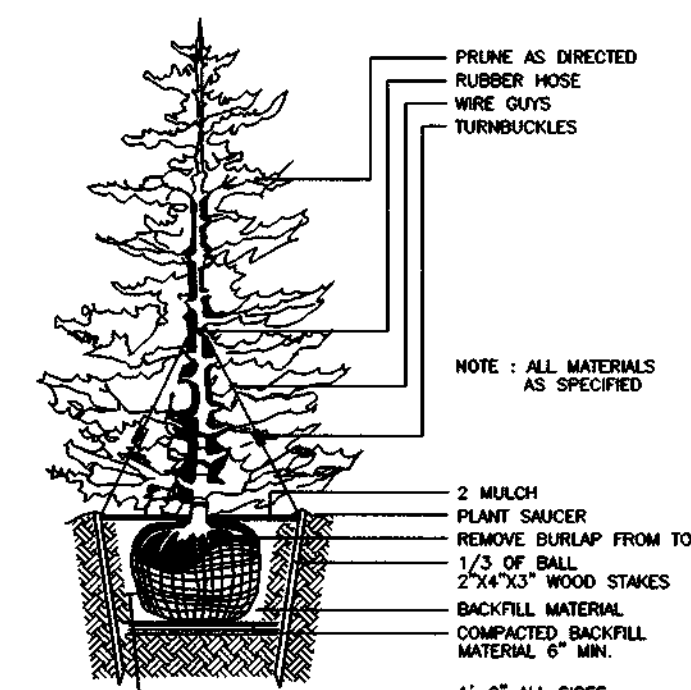
SWM PERIMETER	EDGE TYPE
SWM PERIMETER A - 45 LF 1 SHADE TREE / 50 LF 1 EVERGREEN / 40 LF	B
SWM PERIMETER B - 140 LF 1 SHADE TREE / 50 LF 1 EVERGREEN / 40 LF	B
SWM PERIMETER C - 70 LF 1 SHADE TREE / 50 LF 1 EVERGREEN / 40 LF	B
SWM PERIMETER D - 140 LF 1 SHADE TREE / 50 LF 1 EVERGREEN / 40 LF	B
TOTAL PLANTING OBLIGATION	
SHADE TREES	8
EVERGREEN TREES	11
SHRUBS	0

**SCHEDULE D : STORMWATER MANAGEMENT AREA LANDSCAPING**

LINEAR FEET OF PERIMETER	395 LF
CREDIT FOR EXISTING VEGETATION (NO, YES AND LINEAR FEET)	N/A
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	N/A
NUMBER OF TREES REQUIRED	8 SHADE TREES 11 EVERGREEN TREES
NUMBER OF TREES PROVIDED	8 SHADE TREES 11 EVERGREEN TREES 0 OTHERS (0 SUBSTITUTION TREES)



TYPICAL DECIDUOUS TREE PLANTING DETAIL NOT TO SCALE



TYPICAL EVERGREEN TREE PLANTING DETAIL NOT TO SCALE

**DEVELOPER'S/OWNER'S CERTIFICATE**  
I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE IN ACCORDANCE TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE, AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

NAME: SRZ DATE: 4/14/01

**STREET TREE PLANTING SCHEDULE**

QUANTITY	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE
7	(Symbol)	ACER RUBRUM 'RED SUNSET'	RED SUNSET RED MAPLE	2 1/2" - 3" CAL.
54	(Symbol)	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LITTLELEAF LINDEN	2 1/2" - 3" CAL.
TOTAL				61 STREET TREES

**LANDSCAPE REQUIREMENT PLANTING SCHEDULE**

QUANTITY	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE
22	(Symbol)	PINUS STROBUS OR EQUIVALENT	EASTERN WHITE PINE	6' - 8' HT.
29	(Symbol)	ACER RUBRUM 'RED SUNSET' OR EQUIVALENT	RED SUNSET RED MAPLE	2 1/2" - 3" CAL.
28	(Symbol)	ACER PLATANOIDES OR EQUIVALENT	NORWAY MAPLE	2 1/2" - 3" CAL.
19	(Symbol)	ACER RUBRUM 'OCTOBER GLORY' OR EQUIVALENT	OCTOBER GLORY RED MAPLE	2 1/2" - 3" CAL.
TOTAL				98 TREES (76 SHADE TREES, 22 EVERGREEN TREES)



- LEGEND**
- (Symbol) FOREST CONSERVATION EASEMENT
  - (Symbol) EX. PUBLIC 100 YEAR FLOODPLAIN DRAINAGE AND UTILITY EASEMENT
  - (Symbol) EXISTING SEPTIC AREA
  - (Symbol) PROPOSED SEPTIC EASEMENT
  - (Symbol) PROPOSED 10' PUBLIC TREE MAINTENANCE AND UTILITY EASEMENT
  - (Symbol) WETLANDS
  - (Symbol) EXISTING WELL
  - (Symbol) PROPOSED WELL
  - (Symbol) PERIMETER LANDSCAPE EDGE
  - (Symbol) SPLIT RAIL FENCE

APPROVED: DEPARTMENT OF PUBLIC WORKS  
Charles M. Quack 5/1/01  
CHIEF BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
Conrad Kowitz 5/2/01  
CHIEF, DIVISION OF LAND DEVELOPMENT

John J. ... 5/11/01  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

**STREET TREE CALCULATIONS**  
OLD ROVER ROAD - 282 / 40 = 7  
NEW ROVER ROAD - 2147 / 40 = 54  
TOTAL TREES REQUIRED = 61 TREES  
TOTAL TREES PROVIDED = 61 TREES

date	APR 2001
project	99010
illustration	SA/SID
scale	100'
approval	SID

no.		description	revisions

FRIENDSHIP LAKES, LOTS 6-15, PRESERVATION PARCELS "A" & "B"  
A RESUBDIVISION OF FRIENDSHIP LAKE, LOTS 1, 2, & 4  
TAX MAP 15, PARCEL 175  
THIRD ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND  
LANDSCAPE PLAN

**MILDENBERG, BOENDER & ASSOC., INC.**  
Engineers Planners Surveyors  
5072 Dorsey Hall Drive, State 202, Ellicott City, Maryland 21042  
(410) 997-0296 Fax: (301) 621-5521 Wash.



