GENERAL NOTES

1. This plan is subject to compliance with the 4th Edition of the Howard County Subdivision Regulations and the recently amended Howard County Zoning Regulations pursuant to Council Bill 50-2001.
2. Subject property zoned RR-DEO per 10/18/93 Comprehensive Zoning Plan.
3. Private water and sewer will be used within this site.
4. Total area of property = 30.543 ac.±
5. Area of proposed public R/W: 2.687 ac.±
6. Number of proposed buildable lots: 11
   Area of proposed buildable lots: 11.486 ac.±
7. Number of proposed non-buildable preservation parcels: 1
   Area of proposed non-buildable preservation parcels: 2.49 ac.±
8. Number of proposed buildable preservation parcels: 1
   Area of proposed buildable preservation parcels: 13.98 ac.±
9. Density calculations:
   a.) Number of lots based on own density:
   30.543ac / 4.25 = 7.18, therefore 7 units
   b.) Net Tract Area:
   30.543ac - 4.34ac(100 yr. floodplain) - 0.67ac(slopes 25% or greater) = 25.53ac
   c.) Maximum number of lots allowed based on DEO option:
   25.53ac / 2 = 12.76 = 12 units
   d.) Total number of DEO units required:
   12 - 7 = 5 units
10. Open space requirements:
    a.) Minimum open space required =
    30.543ac x 5% = 1.527 ac.
    b.) Non-buildable preservation parcel 'B' will be owned and maintained by the H.O.A. and will contain the Stormwater Management Facility. This Non-buildable preservation parcel will satisfy the open space requirements; Total area= 2.49 Ac.±.
11. The lots shown hereon comply with the minimum ownership, width and lot area as required by the Maryland State Department of the Environment.
12. [hatched symbol] This area designates a private sewage easement of at least 10,000 square feet (or 10,000 square feet per lot for shared drain fields associated with a shared sewage disposal facility) as required by the Maryland State Department of the Environment for individual sewage disposal (COMAR 26.04.03). Improvements of any nature in this area are restricted until public sewage is available. These easements shall become null and void upon connection to a public sewage system. The County Health Officer shall have the authority to grant variances for encroachments into the private sewage easement. Recordation of a modified sewage easement shall not be necessary.
13. All wells and septic fields within 100' of property's boundary have been shown where pertinent.
14. The septic fields are located on soil types ChC2, Cs, MgC2, MIB2, MID2 and MID3 as per the soil survey of Howard County, Soils Map #14.
15. All percolation test holes and their elevations have been field located by C.B. Miller and Associates, registered land surveyor.
16. On-site topography based on a Field Run Topographic Survey prepared by C.B. Miller & Associates in August, 2001 with two foot contours(one foot contours are provided in the septic area for Preservation Parcel 'A'). Off-site and non-critical topography based on Howard County 1993 Aerial Topographic Surveys with five foot contours.
17. The septic field proposed for the Sand Mound system on Preservation Parcel 'A' is located on areas with slopes less than 12%. The septic area for Preservation Parcel 'A' is suitable for Sand Mound type systems only.
18. All wells to be drilled prior to submittal of record plat for signature.
19. Groundwater appropriations permit to be obtained prior to submittal of record plat for signature.
20. Existing house on Lot 1 to remain. No new buildings, extensions or additions to the existing dwelling(s) are to be constructed at a distance less than the Zoning Regulations require.
21. Existing well and septic system on Lot 1 to be properly abandoned and replaced prior to submittal of record plat for signature.
22. A.P.F.O. traffic study prepared by Street Traffic Studies, approved under S-01-29 on 6/19/01.
23. Wetlands delineation and report and Forest Stand delineation prepared by Exploration Research Inc. approved under S-01-29 on 6/19/01.
24. The project is not within the metropolitan district.
25. Previous Howard County file numbers: S-01-29, P-02-07
26. The project is in conformance with the latest Howard County Standards unless waivers have been approved.
27. The coordinates shown hereon are based upon the Howard County Geodetic Control which is based on the Maryland State Plane Coordinate system. Howard County monument numbers 15CA and 15FA were used for this project.
28. S.W.M. for CPv and WQv is provided in a Micro Pool Extended Detention facility and REv will be provided for in grass swales. The facility will be privately owned with joint maintenance by the H.O.A. and Howard County.
29. No clearing, grading or construction is permitted within wetlands, streams or their buffers and forest conservation easement areas.
30. The floodplain study for this project prepared by FSH Associates in October, 2001.
31. The noise study for this project was prepared by Staiano Engineering Inc. in October, 2001.
32. The geotechnical report for this project was prepared by Herbst, Benson and Associates dated January, 2002.
33. For flag or pipestem lots, refuse collection, snow removal and road maintenance are provided to the junction of the flag or pipestem and road right-of-way line and not to the pipestem lot driveway.
34. This plan complies with the requirements of Section 16.1200 of the Howard County Code for Forest Conservation by retention of 5.12 ac. of existing forest on Preservation Parcel 'A' and afforestation of 0.12 ac. on Preservation Parcel 'B'.
35. Financial Surety for the required landscaping will be provided as part of the Developer's Agreement in the amount of $37,500.00 (for 106 shade trees @ $300.00 each and 38 evergreen trees @ $150.00 each).
36. The Contractor shall notify the following utility companies or agencies at least five(5) working days before starting work shown on these plans:

State Highway Administration	410.531.5533
BGE(Contractor Services)	410.850.4620
BGE(Underground Damage Control)	410.787.9068
Miss Utility	1.800.257.7777
Colonial Pipeline Company	410.795.1390
Howard County, Dept. of Public Works, Bureau of Utilities	410.313.4900
Howard County Health Department	410.313.2640
AT&T	1.800.252.1133
Verizon	1.800.743.0033/410.224.9210
Howard County Construction Inspection Division	410.313.1880

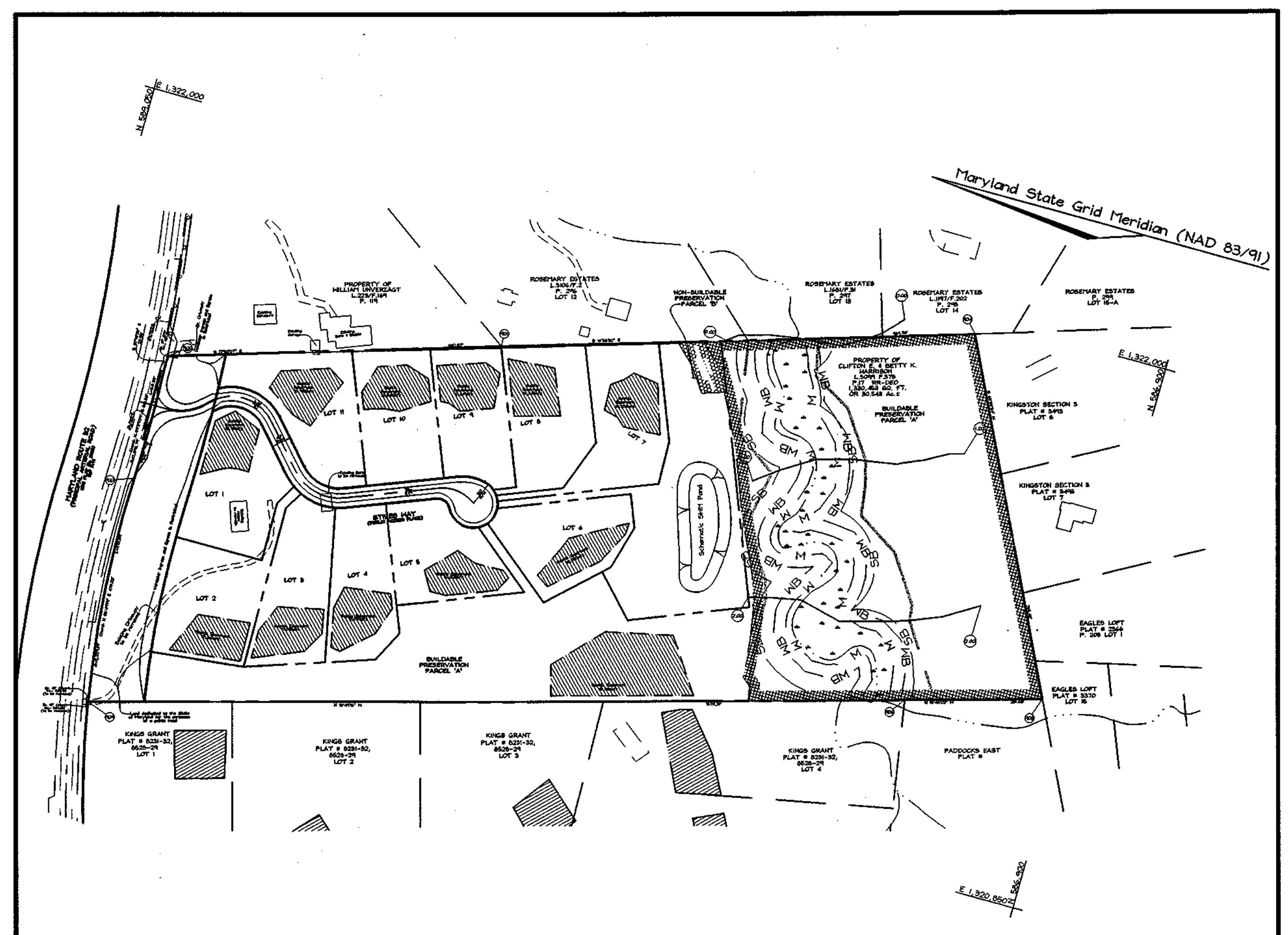
37. FINANCIAL SURETY FOR FOREST CONSERVATION IN THE AMOUNT OF $85,029.10 WILL BE PROVIDED AS PART OF THE DEVELOPER'S AGREEMENT.

ROAD CONSTRUCTION PLAN

TWIN PINES

LOTS 1 THRU 11, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCEL 'B'

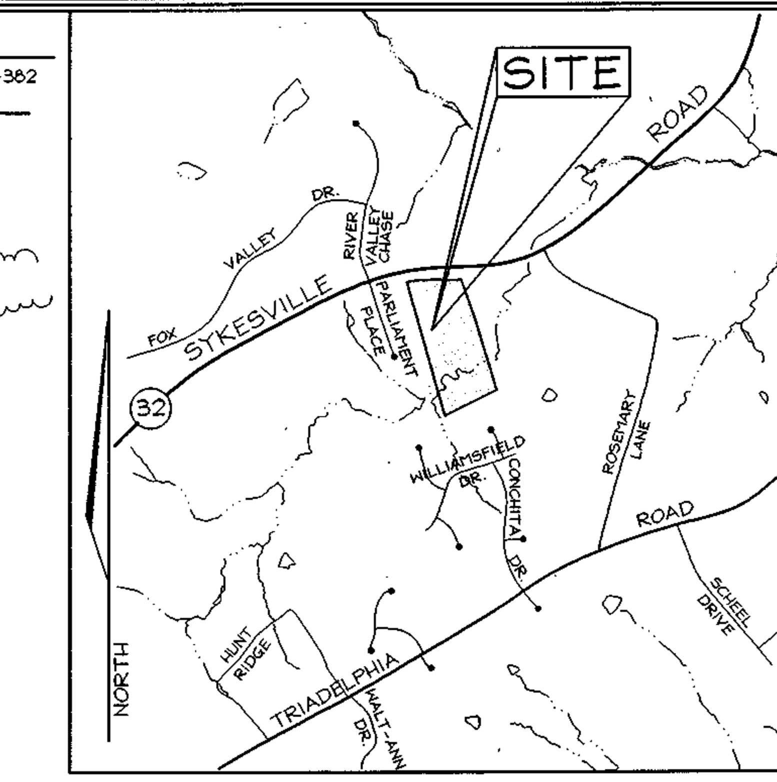
HOWARD COUNTY, MARYLAND



LOCATION MAP
SCALE: 1"=200'

LEGEND

Existing Contour	-------------382
Proposed Contour	(82)
Direction of Flow	←
Existing Spot Elevation	382.3
Proposed Spot Elevation	+82[53]
Existing Trees	
Proposed Septic Easement	
Existing Septic Easement	
15-24.99% Slopes	
25-50% Slopes	
Wetalnds	
Use-In_Common Access Easement	
Existing Dry Well	DW



VICINITY MAP
SCALE:1=2000'

BENCHMARKS

Sta.	15CA	N 182,533.6973	E 404,139.3307	El.: 157.3223 (meters)
		N 598,862.638	E 1,325,913.787	El.: 516.148 (feet)
Sta.	15FA	N 181,632.8032	E 404,052.1342	El.: 148.4227 (meters)
		N 595,906.955	E 1,325,627.710	El.: 486.950 (feet)

SHEET INDEX

DESCRIPTION	SHEET No.
Cover Sheet	1 of 14
Road Plan and Profile	2 of 14
Sediment and Erosion Control and Grading Plan	3 of 14
Sediment and Erosion Control and Grading Plan	4 of 14
Traffic Control Plan, S.E.C. and Miscellaneous Details	5 of 14
Storm Drain Drainage Area Map	6 of 14
Storm Drain Profiles	7 of 14
Stormwater Management Notes and Details	8 of 14
Entrance Plan and Details	9 of 14
Landscape Plan	10 of 14
Landscape Plan	11 of 14
Forest Conservation Plan	12 of 14
Forest Conservation Plan	13 of 14
Forest Mitigation Plan	14 of 14

CENTERLINE ROAD CURVE DATA

CURVE No.	RADIUS	LENGTH	DELTA	CHORD BEARING	CHORD LENGTH
C1	100.00	82.71	47°23'31"	N24°53'37"W	80.38
C2	90.00	152.07	96°48'28"	N00°11'08"W	134.61
C3	100.00	122.17	70°00'00"	N13°13'06"E	114.72
C4	75.00	70.00	53°28'34"	N04°57'23"E	67.49

ROAD CLASSIFICATION

ROAD NAME	CLASSIFICATION	R/W
Stiles Way	Public Access Place	40'

MINIMUM LOT SIZE CHART

LOT NUMBER	GROSS AREA (sf)	PIPESTEM AREA (sf)	MINIMUM LOT SIZE
2	49,371.61±	3,299.20±	46,072.41±
7	48,836.55±	1,635.58±	47,200.97±
8	48,304.03±	527.97±	47,776.06±

U.S. EQUIVALENT COORDINATE TABLE

POINT	NORTHING	EASTING
900	588,872.0122	1,321,476.8887
901	588,222.8312	1,321,682.0134
904	587,295.3194	1,321,965.1479
905	586,958.4962	1,321,277.8243
906	587,229.6250	1,321,201.4400
909	588,836.5648	1,320,746.0805
910	588,870.8096	1,321,214.8501

STREET LIGHT TABLE

STREET NAME	STATION	OFFSET	FIXTURE
Stiles Way	0+46	80' RT.	250-Watt 30' pole with 12' arm

OWNER
Clifton E. & Betty K. Harrison
P.O. Box 287
West Friendship, Maryland 21794

DEVELOPER
Heritage Land Development
3060 Washington Road, Suite 220
Glenwood, Maryland 21738
Tel.: (410)489-7900 Fax: (410)489-4754

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Cindy Hamilton 3/25/03
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[signature] 3/12/03
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

[signature] 3-7-03
CHIEF, BUREAU OF HIGHWAYS HS DATE

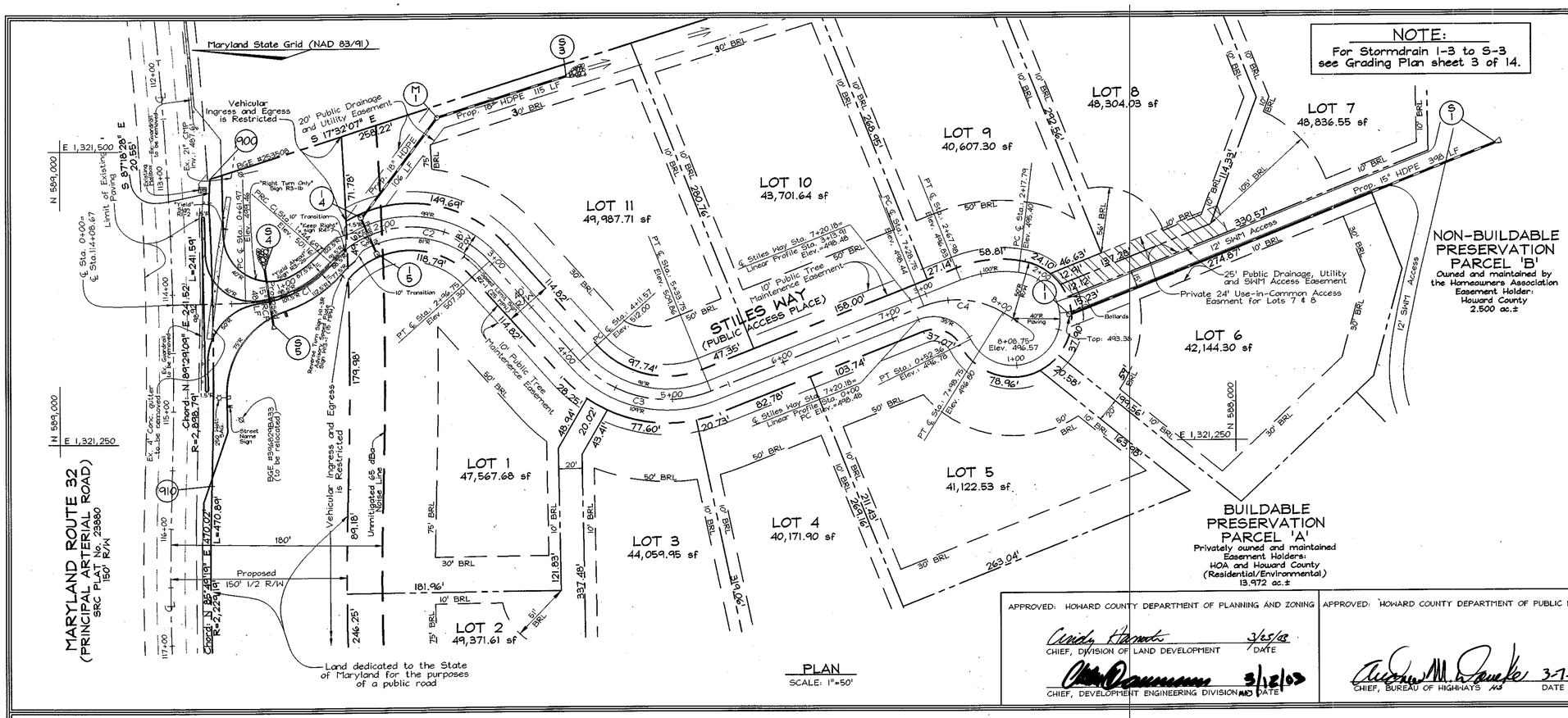
COVER SHEET
TWIN PINES
LOTS 1 THRU 11, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCEL 'B'
TAX MAP 22, GRIDS 3 & 8 PARCEL 17
3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND

STATE OF MARYLAND — ZACHARIA YOSEF FISCH — 22418 — PROFESSIONAL ENGINEER
Zacharia Y. Fisch

FSH Associates
Engineers Planners Surveyors
8318 Forrest Street Ellicott City, MD 21043
Tel:410-750-2251 Fax: 410-750-7350
E-mail: FSHAssociates@cs.com

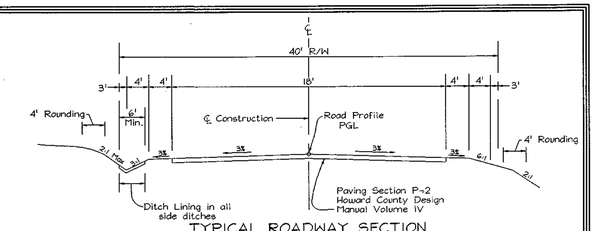
DESIGN BY: PS/KO
DRAWN BY: PS/KO
CHECKED BY: ZYF
SCALE: As Shown
DATE: Feb. 10, 2003
W.O. No.: 3048
SHEET No. 1 OF 14

F-03-018

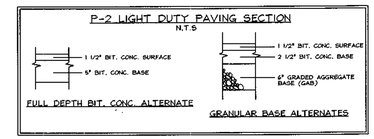


PLAN
SCALE: 1"=50'

NOTE:
For Stormdrain 1-3 to S-3 see Grading Plan sheet 3 of 14.



TYPICAL ROADWAY SECTION
CLASSIFICATION : PUBLIC ACCESS PLACE
HOWARD COUNTY STANDARD FIGURE 2.09b
DESIGN SPEED 25 MPH
NOT TO SCALE



NOTE: Existing soils conditions and bearing capacity test results may require modifications to the paving sections.

OWNER
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3060 Washington Road, Suite 220
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Tel.: (410)489-7900 Fax: (410)489-4754

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3/25/03

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 3/26/03

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS — DATE 3-7-03

ROAD PLAN AND PROFILE
STILES WAY
TWIN PINES

LOTS 1 THRU 11, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCEL 'B'

TAX MAP 22, GRIDS 3 & 8 — PARCEL 17
3RD ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

STATE OF MARYLAND — ZACHARY YOSEF TSCH — 22418 — PROFESSIONAL ENGINEER

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8318 Forrest Street Ellicott City, MD 21043
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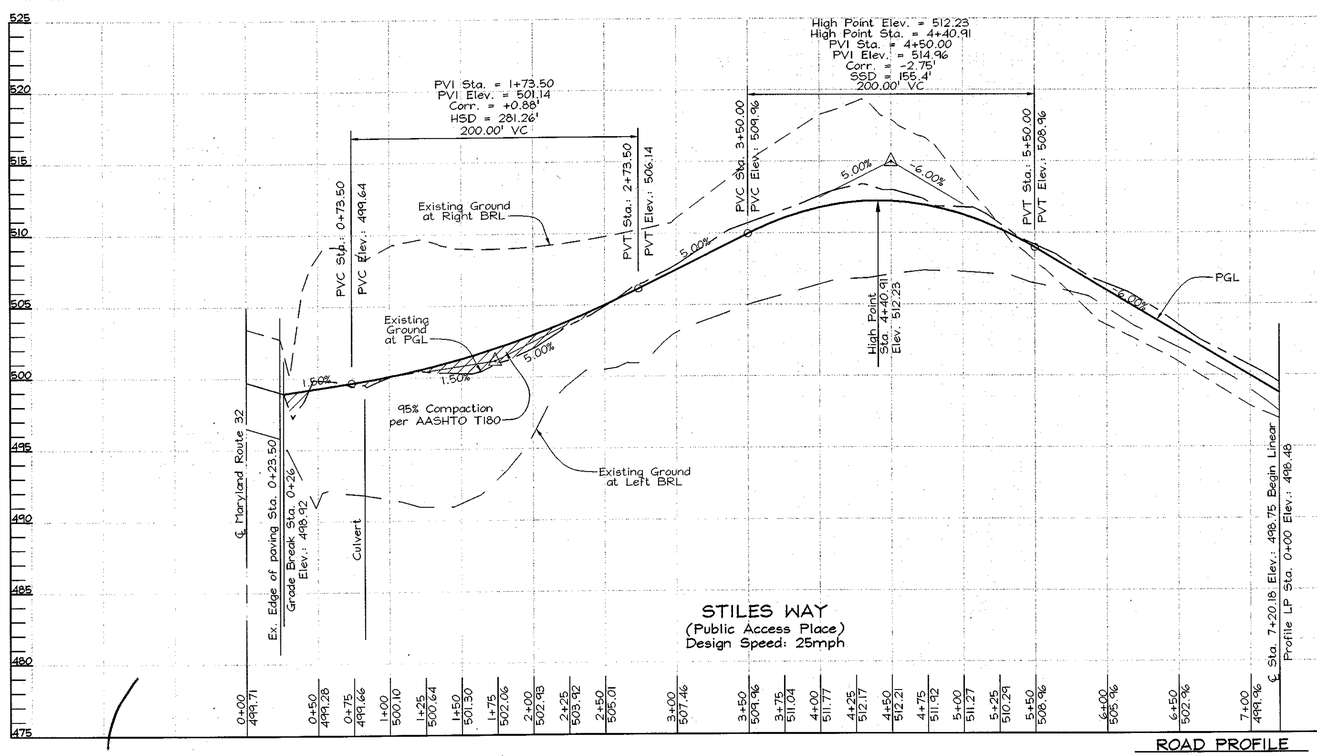
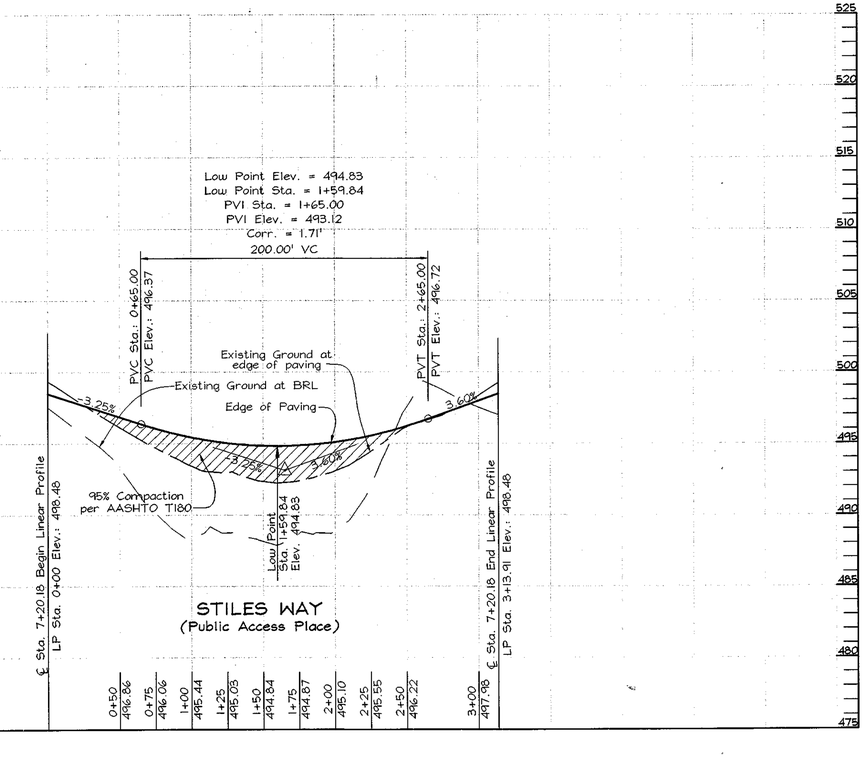
E-mail: FSHAssociates@cs.com

DESIGN BY:	PS/KO
DRAWN BY:	PS/KO
CHECKED BY:	ZYF
SCALE:	As Shown
DATE:	Feb. 10, 2003
W.O. No.:	3048
SHEET No.	2 OF 14



STILES WAY
(Public Access Place)
Design Speed: 25mph

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

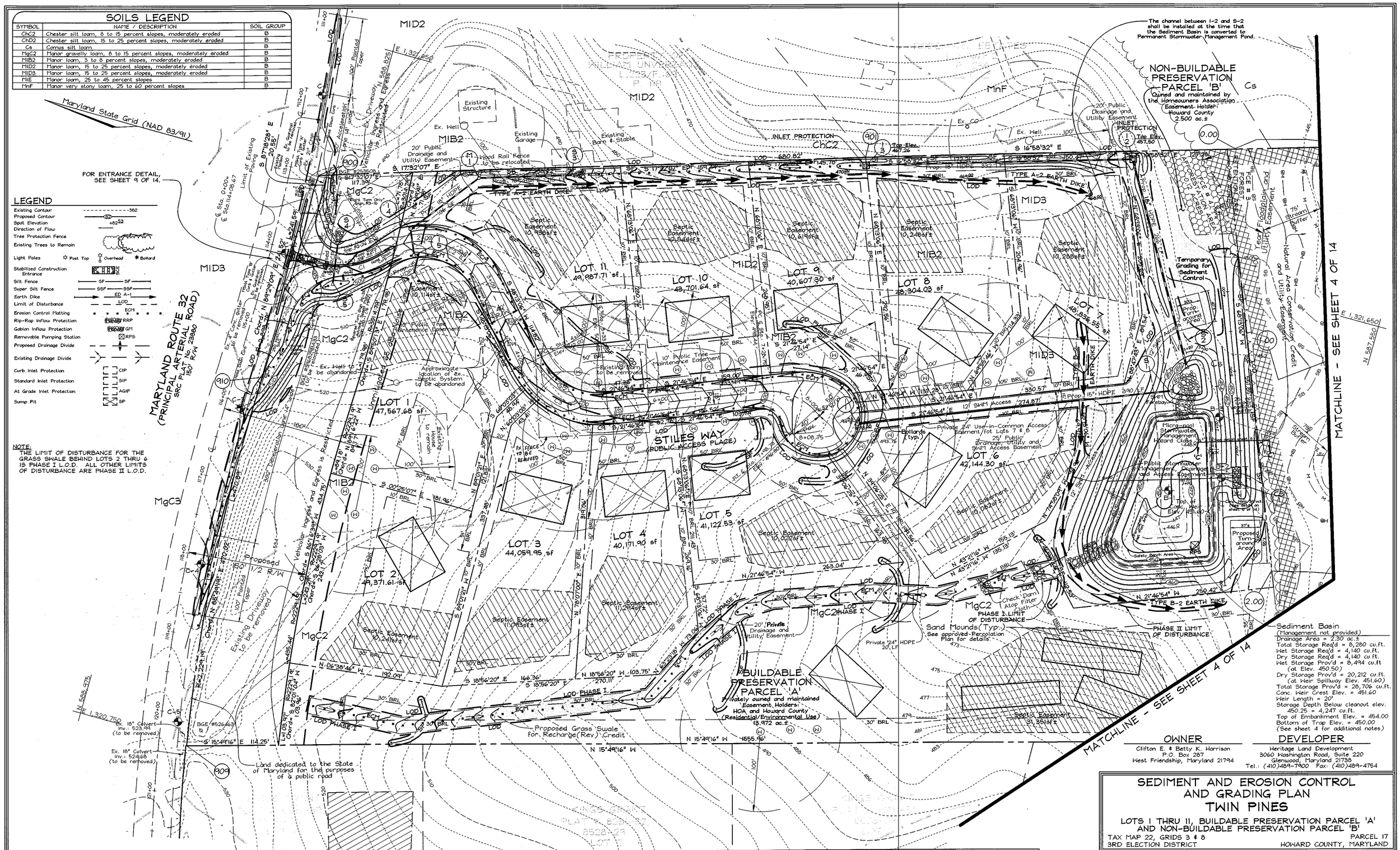


STILES WAY
(Public Access Place)

F-03-018

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	SOIL GROUP
ChC2	Chester silt loam, 8 to 15 percent slopes, moderately eroded	B
ChD2	Chester silt loam, 15 to 25 percent slopes, moderately eroded	B
Cs	Comus silt loam	B
MgC2	Manor gravelly loam, 8 to 15 percent slopes, moderately eroded	B
MlB2	Manor loam, 3 to 8 percent slopes, moderately eroded	B
MlD2	Manor loam, 15 to 25 percent slopes, moderately eroded	B
MlD3	Manor loam, 15 to 25 percent slopes, moderately eroded	B
MlE	Manor loam, 25 to 45 percent slopes	B
MnF	Manor very stony loam, 25 to 60 percent slopes	B



NOTE:
THE LIMIT OF DISTURBANCE FOR THE GRASS SWALE BEHIND LOTS 2 THRU 6 IS PHASE I L.O.D. ALL OTHER LIMITS OF DISTURBANCE ARE PHASE II L.O.D.

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SEDIMENT AND EROSION CONTROL AND GRADING PLAN
TWIN PINES

LOTS 1 THRU 11, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCEL 'B'

TAX MAP 22, GRIDS 3 & 8 — PARCEL 17
3RD ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Cindy Hanuta — 3/25/03
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

3/25/03
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

3-7-03
CHIEF, BUREAU OF HIGHWAYS — DATE

DEVELOPER'S CERTIFICATE

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

Timothy W. Feaga — 2-11-03
SIGNATURE OF DEVELOPER — DATE
Timothy W. Feaga

ENGINEERS CERTIFICATE

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

Zacharia Y. Fisch — 2-11-03
SIGNATURE OF ENGINEER — DATE
ZACHARIA Y. FISCH

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

Jim Myers — 2/26/03
USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE

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

John R. Robertson — 2/26/03
HOWARD SOIL CONSERVATION DISTRICT — DATE

STATE OF MARYLAND — ZACHARIA YOSEF FISCH — 22418 — PROFESSIONAL ENGINEER

FSH Associates
Engineers Planners Surveyors
8318 Forrest Street Ellicott City, MD 21043
Tel:410-750-2251 Fax: 410-750-7350
E-mail: FSHAssociates@cs.com

DESIGN BY: PS/KO
DRAWN BY: PS/KO
CHECKED BY: ZYF
SCALE: 1"=50'
DATE: Feb. 10, 2003
W.O. No.: 3048
SHEET No. 3 OF 14

F-03-018

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	SOIL GROUP
ChC2	Chester silt loam, 8 to 15 percent slopes, moderately eroded	B
ChD2	Chester silt loam, 15 to 25 percent slopes, moderately eroded	B
Ce	Canvus silt loam	B
MgC2	Manor gravelly loam, 8 to 15 percent slopes, moderately eroded	B
MlB2	Manor loam, 3 to 8 percent slopes, moderately eroded	B
MlD2	Manor loam, 15 to 25 percent slopes, moderately eroded	B
MlD3	Manor loam, 15 to 25 percent slopes, moderately eroded	B
MlE	Manor loam, 25 to 45 percent slopes	B
MnF	Manor very stony loam, 25 to 60 percent slopes	B

Sediment Basin Notes:

While the SWM facility functions as a sediment basin, the following items need to be done:

1. The rip-rap at S-1, S-2 and forebay spillway will not be installed.
2. The SWM facility access drive will not be completely graded out due to the interference with sediment control measures.
3. The swale from I-2 to the forebay will not be constructed. The temporary grading around the forebay as shown on the plans will be constructed instead.
4. The WQv 2.3" diameter low flow orifice will be temporarily clogged. See weir structure detail on the plans.
5. The rip-rap inlow channel and a portion of the western pond edge shall not be constructed until sediment control measures are removed.
6. The SWM facility wetpool area will not be graded..

OWNER	DEVELOPER
Clifton E. & Betty K. Harrison P.O. Box 287 West Friendship, Maryland 21794	Heritage Land Development 3060 Washington Road, Suite 220 Glenwood, Maryland 21738 Tel.: (410)489-7900 Fax: (410)489-4754

SEDIMENT AND EROSION CONTROL AND GRADING PLAN
TWIN PINES

LOTS 1 THRU 11, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCEL 'B'

TAX MAP 22, GRIDS 3 & 8 — PARCEL 17

3RD ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Cindy Hanson — 3/25/03
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

3/12/03
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

3-7-03
CHIEF, BUREAU OF HIGHWAYS — DATE

DEVELOPER'S CERTIFICATE

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

2-11-03
SIGNATURE OF DEVELOPER — DATE
Timothy W. Feaga

ENGINEERS CERTIFICATE

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

Zacharia Y. Fisch — 2-11-03
SIGNATURE OF ENGINEER — DATE
ZACHARIA Y. FISCH

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

Jim Myers — 2/26/03
U.S.D.A.-NATURAL RESOURCES CONSERVATION SERVICE — DATE

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

John R. Robertson — 2/26/03
HOWARD SOIL CONSERVATION DISTRICT — DATE

STATE OF MARYLAND — ZACHARIA YOSEF FISCH — 22418 — PROFESSIONAL ENGINEER

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SHEET No.	4 OF 14

F-03-018

21.0 STANDARDS 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 vegetable growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.

Conditions Where Practice Applies

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

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

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

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

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

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

Construction and Material Specifications

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

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

i. Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if recommended by an agronomist or a 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 that 1 and 1/2" in diameter.

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

iii. Where the subsoil is either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate of 4-8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil. Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.

II. For sites having disturbed areas under 5 acres:

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

iii. For sites having disturbed areas over 5 acres:
i. On soil meeting topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:
a. pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.
b. Organic content of topsoil shall be not less than 1.5 percent by weight.
c. Topsoil having soluble salt content greater than 500 parts per million shall not be used.
d. No sod or seed shall be placed on soil 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.
ii. Place topsoil (if required) and apply soil ammendments specified in 20.0 Vegetative Stabilization-Section I-Vegetative Stabilization Methods and Materials.

V. Topsoil Application

i. 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.

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

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

iv. Topsoil shall not be place 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.

PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LIVED VEGETATIVE COVER IS NEEDED.

SEEDBED PREPARATION: Loosen upper three inches of soil by raking, discing or other acceptable means before seeding, if not previously loosened.

SOIL AMENDMENTS: In lieu of soil test recommendations, use one of the following schedules:

1) Preferred-Apply 2 tons per acre dolomitic limestone (92 lbs/100 sq.ft.) and 600 lbs per acre 10-10-10 fertilizer (14 lbs./1000 sq.ft.) before seeding. Harrow or disc into upper three inches of soil. At the time of seeding, apply 400 lbs. per acre 30-0-0 ureaform fertilizer (9 lbs/1000 sq.ft.)

2) Acceptable-Apply 2 tons per acre dolomatic limestone (92 lbs/1000 sq.ft.) and apply 1000 lbs. per acre 10-10-10- fertilizer (23 lbs./1000 sq.ft.) before seeding. Harrow or disc 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 Turf Type Tall Fescue. For the period May 1 thru July 31, seed with 60 lbs. Turf Type 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 well anchored straw mulch and seed as soon as possible in the spring. Option (2) Use sod. Option (3) Seed with 60 lbs/acre Kentucky 31 Tall Fescue and mulch with 2 tons/acre well anchored straw.

MULCHING: Apply 1 1/2 to 2 tons per acre (70 to 90 lbs/1000 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 flat areas. On slopes 8 feet 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 reseedings.

TEMPORARY SEEDING NOTES

SEEDBED PREPARATION: Loosen upper three inches of soil by raking, discing 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 November 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 1 thru February 28, protect site by applying 2 tons per acre of well anchored straw mulch and seed as soon as possible in the spring, or use sod.

MULCHING: Apply 1 1/2 to 2 tons per acre (70 to 90 lbs./1000 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 flat areas. On slopes 8 feet or higher, use 348 gallons per acre (8 gal/1000 sq.ft.) for anchoring.

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

SEDIMENT CONTROL NOTES

1. A minimum of 48 hours notice must be given to the Howard County Department of Inspection, License and Permits Sediment Control Division prior to the start of any construction (313-1855).
2. All vegetation and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL and revisions thereto.
3. 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.
4. All sediment traps/basins shown must be fenced and warning signs posted around their perimeter in accordance with Vol. 1, Chapter 7, HOWARD COUNTY DESIGN MANUAL, Storm Drainage.
5. All disturbed areas must be stabilized within the time period specified above in accordance with the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seeding, sod, temporary seeding, and mulching (Sec. G). Temporary stabilization with mulch alone shall 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 :

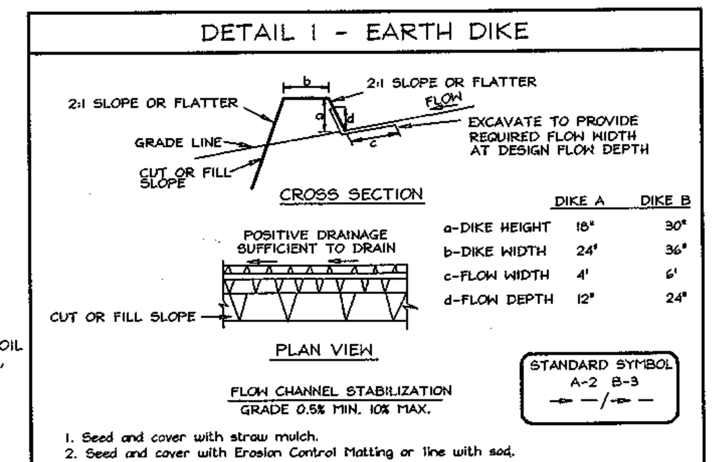
Total Area	30.543 Acres
Area Disturbed	5.58 Acres
Area to be roofed or paved	0.47 Acres
Area to be vegetatively stabilized	5.11 Acres
Total Cut	8,000 CY **
Total Fill	8,000 CY **
Offsite waste/borrow area location	*

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 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.
11. Trenches for the construction of utilities is limited to three pipe lengths or that which shall be back-filled and stabilized within one working day, whichever is shorter.

* To be determined by contractor, with pre-approval of the Sediment Control Inspector with an approved and active grading permit

**Total cut and fill quantities are for permit purposes only. Contractor to verify earthwork quantities.

DETAIL 1 - EARTH DIKE



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

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

Construction Specifications

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

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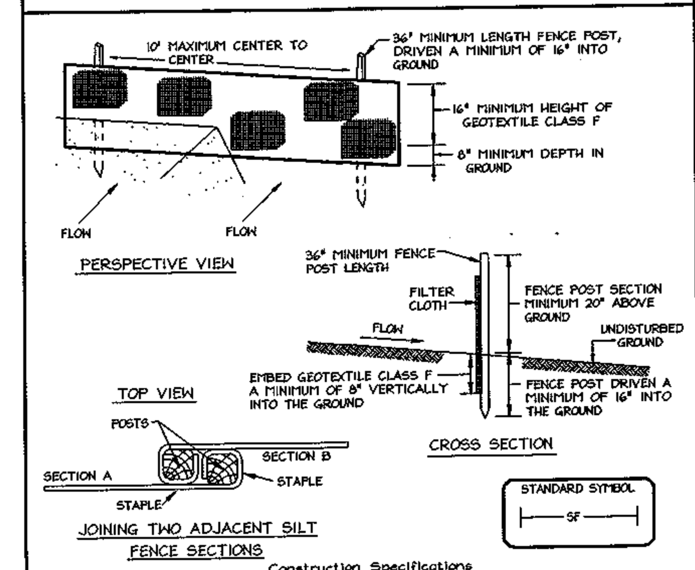
DETAIL 22 - SILT FENCE



Construction Specifications

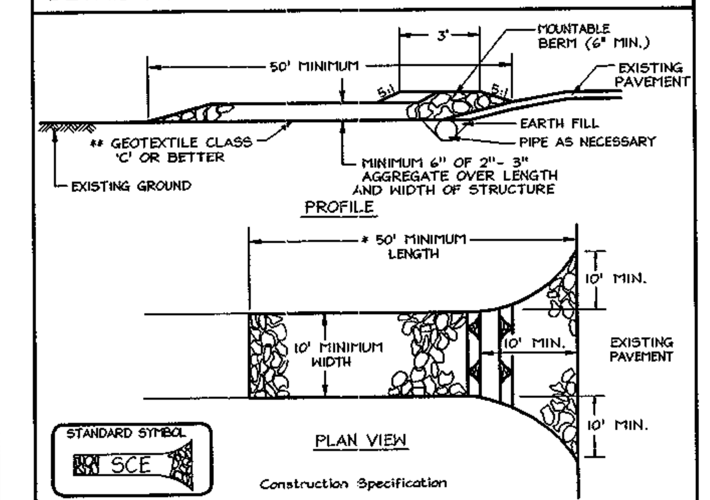
1. Fence posts shall be a minimum of 36" long, driven 16" minimum into the ground. Wood posts shall be 1 1/2" x 1 1/2" square (minimum) cut, or 1 3/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighing not less than 1.00 pound per linear foot.
2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

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

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

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE E - 15 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



Construction Specification

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

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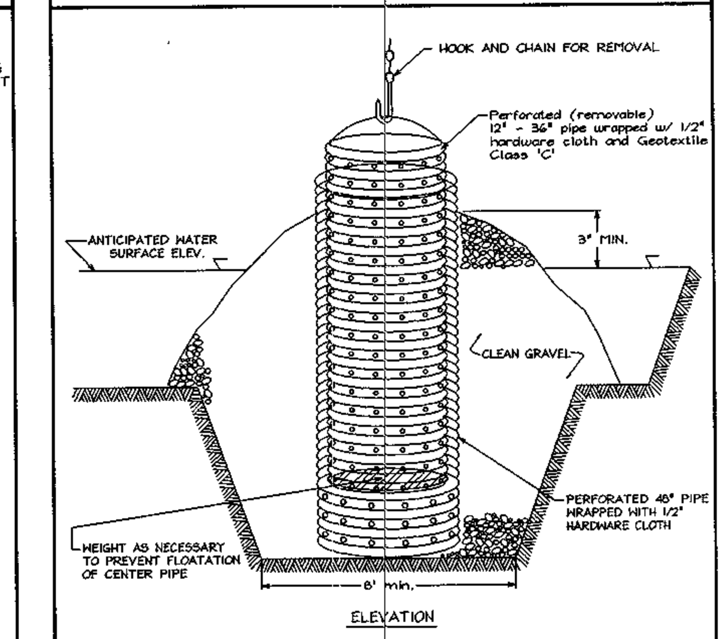
DETAIL 20A - REMOVABLE PUMPING STATION



Construction Specifications

1. The outer pipe should be 48" dia. or shall, in any case, be at least 4" greater in diameter than the center pipe. The outer pipe shall be wrapped with 1/2" hardware cloth to prevent backfill material from entering the perforations.
2. After installing the outer pipe, backfill around outer pipe with 2" aggregate or clean gravel.
3. The inside stand pipe (center pipe) should be constructed by perforating a corrugated or PVC pipe between 12" and 36" in diameter. The perforations shall be 1/2" X 6" slits or 1" diameter holes 6" on center. The center pipe shall be wrapped with 1/2" hardware cloth first, then wrapped again with Geotextile Class C.
4. The center pipe should extend 12" to 18" above the anticipated water surface elevation or riser crest elevation when dewatering a basin.

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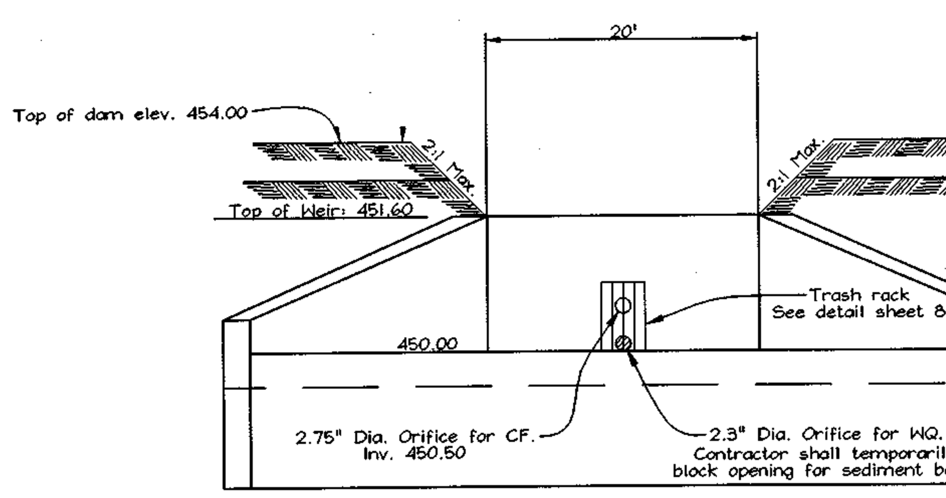


Note: See sheet 8 for weir structure details.

Detail of Weir Structure Modifiactions for Sediment Basin
Not to Scale

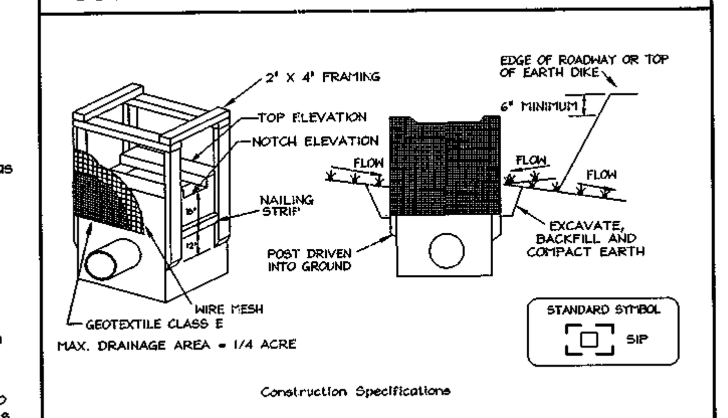
SEQUENCE OF CONSTRUCTION

1. Obtain Grading permit.
2. Clear for and install all sediment controls within Phase I L.O.D.- four (4) silt fence strips, including SCE. (1 day)
3. With the permission of the sediment control inspector grade swale, install private driveway culvert, install proposed check dams, install soil stabilization matting within swale and stabilize all disturbed areas with seed and mulch. (2 days)
4. With the permission of the sediment control inspector remove all sediment control measures within Phase I L.O.D. (1/2 day)
5. Clear for and install the two (2) earth dikes, the sediment basin per SWM facility details(see required modifications to the SWM facility for the sediment basin on the sediment control plans), and install removeable pumping station. (2 weeks)
6. Clear for and install all remaining sediment control measures within Phase II L.O.D. - silt fence and inlet protection (I-2 & I-3 only). (1 day)
7. With the permission of the sediment control inspector grade road to subgrade and install soil stabilization matting within all road channels, install storm drains, grade the swale along the eastern property line, install soil stabilization matting within swale and seed and mulch all disturbed areas. (2 weeks)
8. Pave roads and provide final stabilization to all disturbed areas and flush storm drain system. (1 week)
9. Convert the sediment basin to the SWM facility by removing the RPS, unclogging the WQv 2.3" dia. low flow orifice, installing all riprap protection, grading all inflow swales with soil stabilization matting within the swales, and grading out the SWM wet-pool area. Stabilize all remaining disturbed areas with seed and mulch. (2 weeks)
10. With permission of the sediment control inspector, remove all sediment control measures and stabilize all remaining disturbed areas.

* See sheet 3 of 14 for installation of channel between I-2 and S-2.

Note: Any grading associated with the entrance to the project will be immediately stabilized with sod at the direction of the Sediment Control Inspector.

DETAIL 23A - STANDARD INLET PROTECTION



MAX. DRAINAGE AREA = 1/4 ACRE

Construction Specifications

1. Excavate completely around the inlet to a depth of 18" below the notch elevation.
2. Drive the 2" x 4" construction grade lumber posts 1' into the ground at each corner of the inlet. Place nail strips between the posts on the ends of the inlet. Assemble the top portion of the 2" x 4" frame using the overlap joint shown on Detail 23A. The top of the frame (weir) must be 6" below adjacent roadways where flooding and safety issues may arise.
3. Stretch the 1/2" x 1/2" wire mesh tightly around the frame and fasten securely. The ends must meet and overlap at a post.
4. Stretch the Geotextile Class E tightly over the wire mesh with the geotixtile extending from the top of the frame to 18" below the inlet notch elevation. Fasten the geotextile firmly to the frame. The ends of the geotextile must meet at a post, be overlapped and folded, then fastened down.
5. Backfill around the inlet in compacted 6" layers until the layer of earth is level with the notch elevation on the ends and top elevation on the sides.
6. If the inlet is not in a sump, construct a compacted earth dike across the ditch line directly below it. The top of the earth dike should be at least 6" higher than the top of the frame.
7. The structure must be inspected periodically and after each rain and the geotextile replaced when it becomes clogged.

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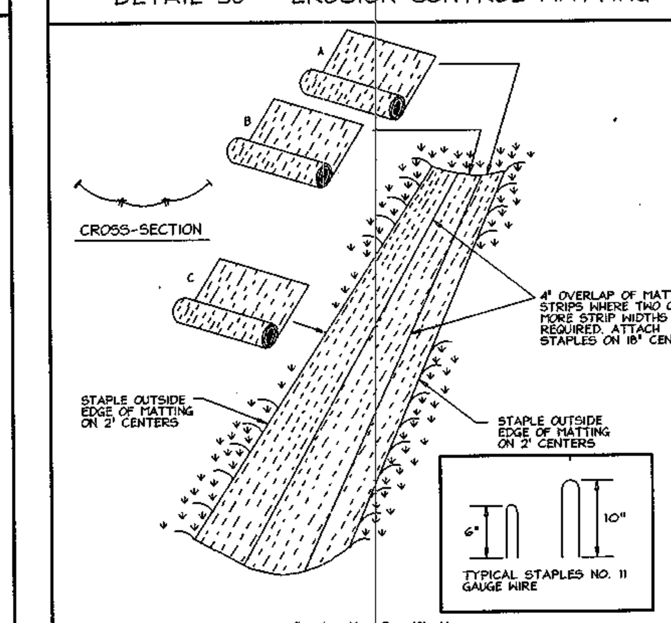
DETAIL 30 - EROSION CONTROL MATTING

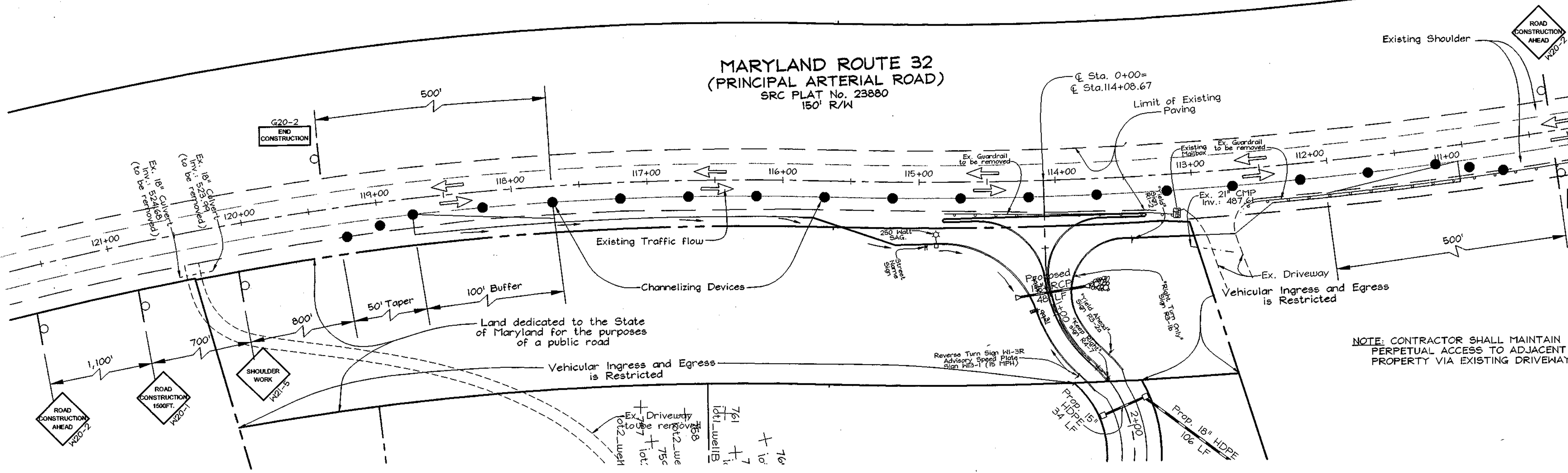


Construction Specifications

1. 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 channel cross-section. Secure with a row of staples about 4" down slope from the trench. Spacing between staples is 6".
2. Staple the 4" overlap in the channel center using an 18" spacing between staples.
3. Before stapling the outer edges of the matting, make sure the matting is smooth and in firm contact with the soil.
4. Staples shall be placed 2' apart with 4 rows for each strip, 2 outer rows, and 2 alternating rows down the center.
5. Where one roll of matting ends and another begins, the end of the top strip shall overlap the upper end of the lower strip by 4", shiplap fashion. Reinforce the overlap with a double row of staples spaced 6" apart in a staggered pattern on either side.
6. 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 effected by the flow must be keyed-in.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE G - 22 - 2	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



TRAFFIC CONTROL PLAN

SCALE: 1"=50'

NOTE: CONTRACTOR SHALL MAINTAIN PERPETUAL ACCESS TO ADJACENT PROPERTY VIA EXISTING DRIVEWAY.

OWNER
Clifton E. & Betty K. Harrison
P.O. Box 287
West Friendship, Maryland 21794

DEVELOPER
Heritage Land Development
3060 Washington Road, Suite 220
Glenwood, Maryland 21738
Tel.: (410)489-7900 Fax: (410)489-4754

TRAFFIC CONTROL PLAN, SEDIMENT AND EROSION CONTROL AND MISCELLANEOUS DETAILS
TWIN PINES

LOTS 1 THRU 11, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCEL 'B'

TAX MAP 22, GRIDS 3 & 8 — PARCEL 17
3RD ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

STATE OF MARYLAND — ZACHARIA YOSEF FISCH — 22418 — PROFESSIONAL ENGINEER

FSH Associates
Engineers Planners Surveyors
8318 Forrest Street Ellicott City, MD 21043
Tel:410-750-2251 Fax: 410-750-7350
E-mail: FSHAssociates@cs.com

DESIGN BY: PS/KO
DRAWN BY: PS/KO
CHECKED BY: ZYF
SCALE: As Shown
DATE: Feb. 10, 2003
W.O. No.: 3048
SHEET No. 5 OF 14

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3/25/03

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 3/12/03

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS — DATE 3-7-03

DEVELOPER'S CERTIFICATE

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

SIGNATURE OF DEVELOPER — DATE 2-11-03
TIMOTHY W. FEAGA

ENGINEERS CERTIFICATE

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

SIGNATURE OF ENGINEER — DATE 2-11-03
ZACHARIA Y. FISCH

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

USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE 2/26/03

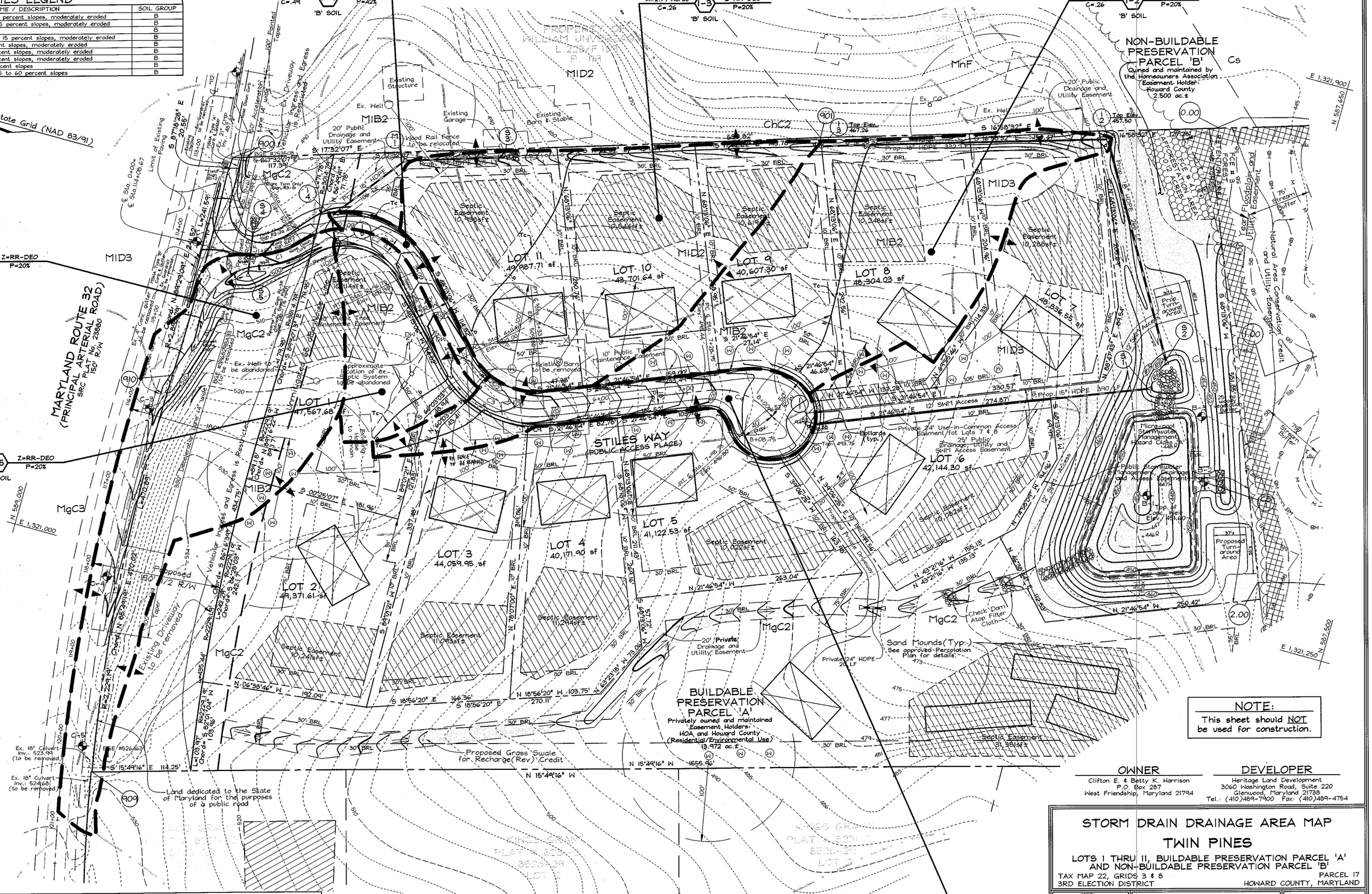
THESE PLANS FOR SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT — DATE 2/26/03

F-03-018

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	SOIL GROUP
ChC2	Chester silt loam, 8 to 15 percent slopes, moderately eroded	B
ChD2	Chester silt loam, 15 to 25 percent slopes, moderately eroded	B
Cs	Comus silt loam	B
MgC2	Manor gravelly loam, 8 to 15 percent slopes, moderately eroded	B
MIB2	Manor loam, 3 to 8 percent slopes, moderately eroded	B
MID2	Manor loam, 15 to 25 percent slopes, moderately eroded	B
MID3	Manor loam, 15 to 25 percent slopes, moderately eroded	B
MIE	Manor loam, 25 to 45 percent slopes	B
MnF	Manor very stony loam, 25 to 60 percent slopes	B



NOTE:
This sheet should NOT be used for construction.

OWNER
Clifton E. & Betty K. Harrison
P.O. Box 287
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DEVELOPER
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Tel.: (410)489-7900 Fax: (410)489-4754

STORM DRAIN DRAINAGE AREA MAP
TWIN PINES

LOTS 1 THRU 11, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCEL 'B'

TAX MAP 22, GRIDS 3 & 8 — PARCEL 17
3RD ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Cindy Hanuth 3/25/03
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

3/12/03
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

3-7-03
CHIEF, BUREAU OF HIGHWAYS DATE

STATE OF MARYLAND — ZACHARIA YOSEF FISCH — 22418 — PROFESSIONAL ENGINEER

FSH Associates
Engineers Planners Surveyors
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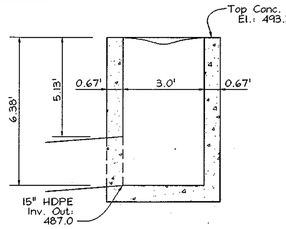
Tel:410-750-2251 Fax: 410-750-7350
E-mail: FSHAssociates@cs.com

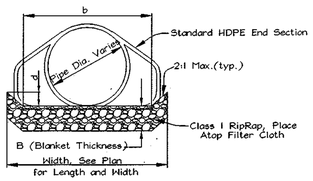
DESIGN BY:	PS/KO
DRAWN BY:	PS/KO
CHECKED BY:	ZYF
SCALE:	1"=50'
DATE:	Feb. 10, 2003
W.O. No.:	3048
SHEET No.	6 OF 14

F-03-018



Detail Inlet 1-1

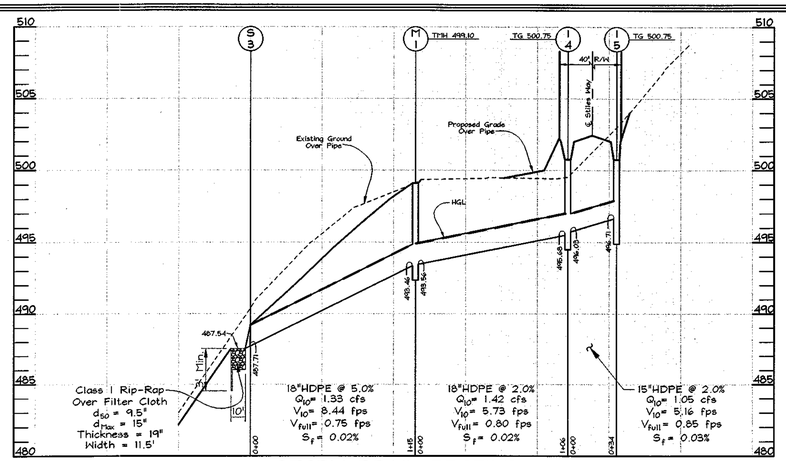
No Scale



TYP. OUTFALL DETAIL

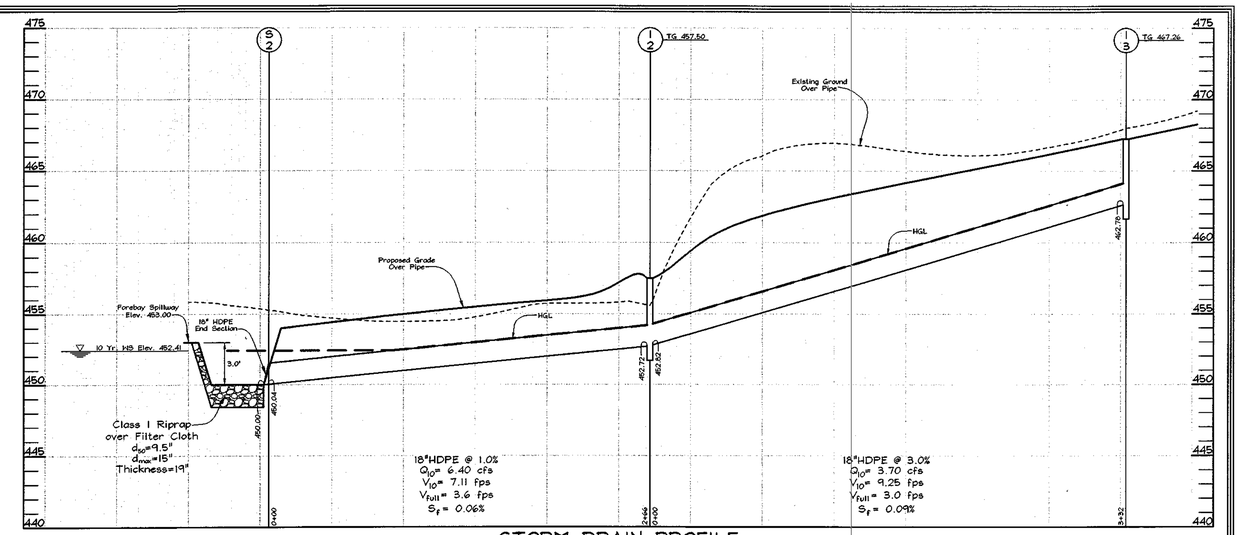
Not to Scale

Structure	Q(c.f.s.)	S	n	b	d	d_{max}	d_{50}	B(Blanket Thickness)
S-3	1.33 c.f.s.	0.5%	0.04	4.0'	0.28'	15"	9.5"	19"
S-4	3.96 c.f.s.	0.5%	0.04	3.5'	0.63'	15"	9.5"	19"



STORM DRAIN PROFILE

Scale: Horizontal- 1"=50'
Vertical-1"=5'



STORM DRAIN PROFILE

Scale: Horizontal- 1"=50'
Vertical-1"=5'

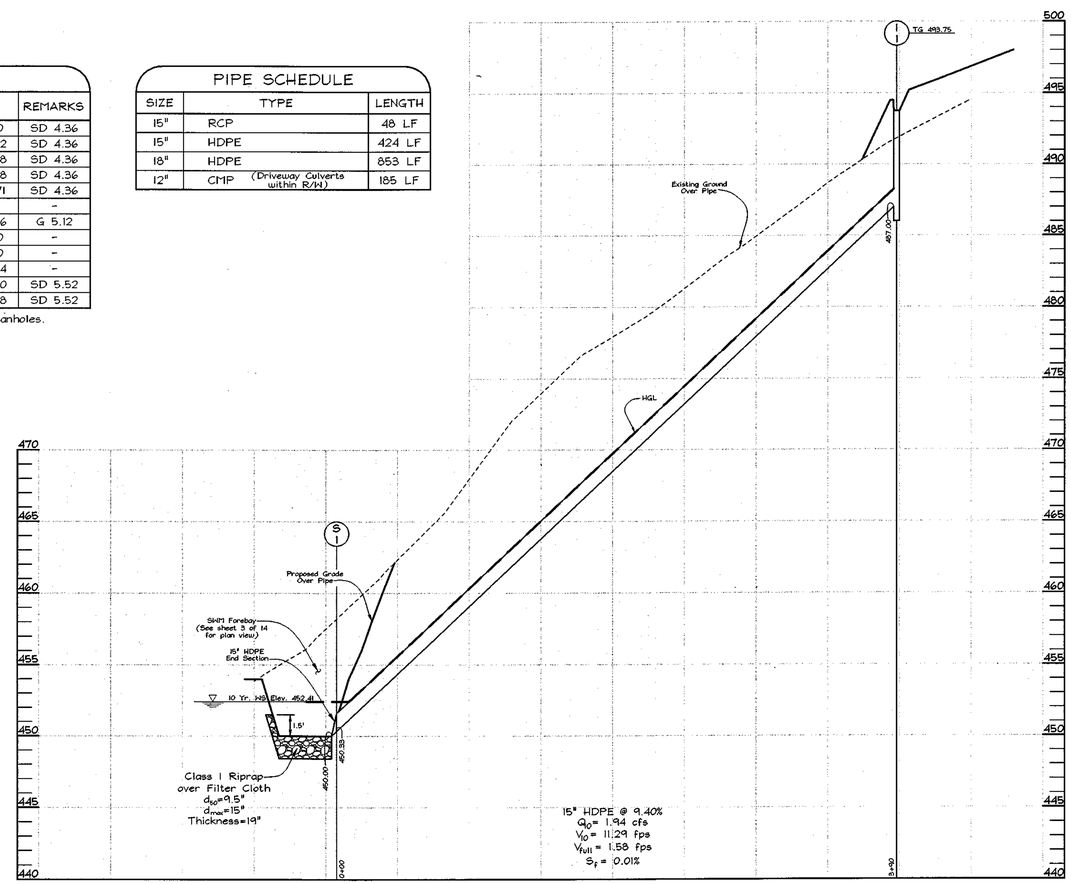
STRUCTURE SCHEDULE

NO.	TYPE	LOCATION STATION	OFFSET	NORTHING	EASTING	TOP ELEV.	INV. IN	INV. OUT	REMARKS
I-1	Precast Open End Grate	(LP) 1+62.85	8.0' RT.	588,141.54	1,321,358.10	493.38'	-	487.0	SD 4.36
I-2	Precast Open End Grate	-	-	587,901.65	1,321,769.58	457.50	452.82	452.72	SD 4.36
I-3	Precast Open End Grate	-	-	588,219.23	1,321,672.54	467.26	-	462.78	SD 4.36
I-4	Precast Open End Grate	(CL) 1+84.51	17.0' LF.	588,743.73	1,321,443.41	500.67	496.03	495.68	SD 4.36
I-5	Precast Open End Grate	(CL) 1+84.75	17.0' RT.	588,730.14	1,321,412.24	500.67	-	496.71	SD 4.36
I-6	MSHA COG/COS Opening Inlet	(CL) 0+92.00	12.5' RT.	588,808.50	1,321,364.02	500.14	499.31	-	-
M-1	Precast Manhole (4')	-	-	588,678.74	1,321,527.47	499.10	493.56	493.46	G 5.12
S-1	15" HDPE End Section	-	-	587,779.16	1,321,502.26	-	450.33	450.0	-
S-2	18" HDPE End Section	-	-	587,768.11	1,321,539.53	-	450.04	450.0	-
S-3	18" HDPE End Section	-	-	588,569.04	1,321,562.13	-	487.71	487.54	-
S-4	15" RCP End Section	(CL) 0+85.18	26.72' LF.	588,825.67	1,321,399.82	-	494.40	494.30	SD 5.52
S-5	15" RCP End Section	(CL) 0+81.25	21.5' RT.	588,818.25	1,321,352.03	-	495.99	495.88	SD 5.52

NOTES: 1. Top elevations are to the top of concrete inlet for all inlets, and center top of manhole cover for precast manholes.
2. For I-6, inv. out to be determined in field.

PIPE SCHEDULE

SIZE	TYPE	LENGTH
15"	RCP	48 LF
15"	HDPE	424 LF
18"	HDPE	853 LF
12"	CMP (Driveway Culverts within R/W)	185 LF



STORM DRAIN PROFILE

Scale: Horizontal- 1"=50'
Vertical-1"=5'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

3/25/03
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

3/27/03
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

3-7-03
CHIEF, BUREAU OF HIGHWAYS DATE

OWNER

Clifton E. & Betty K. Harrison
P.O. Box 287
West Friendship, Maryland 21794

DEVELOPER

Heritage Land Development
3060 Washington Road, Suite 220
Glenwood, Maryland 21738
Tel.: (410)489-7900 Fax: (410)489-4754

STORM DRAIN PROFILES
TWIN PINES

LOTS 1 THRU 11, BUILDABLE PRESERVATION PARCEL 'A'
AND NON-BUILDABLE PRESERVATION PARCEL 'B'

TAX MAP 22, GRIDS 3 & 8 PARCEL 17
3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND

STATE OF MARYLAND
ZACHARY YOSEF FISCH
22418
PROFESSIONAL ENGINEER

FSH Associates
Engineers Planners Surveyors
6318 Forrest Street Ellicott City, MD 21043
Tel:410-750-2251 Fax: 410-750-7350
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DESIGN BY: PS/KO
DRAWN BY: PS/KO
CHECKED BY: ZYF
SCALE: As Shown
DATE: Feb. 10, 2003
W.O. No.: 3048
SHEET No. 7 OF 14

F-03-018

MARYLAND 378
STORMWATER MANAGEMENT POND CONSTRUCTION SPECIFICATIONS
CONSTRUCTION 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. All trees shall be cleared and grubbed within 15 feet of the tow of the embankment.

Areas to be covered by the reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush, and stumps shall be cut approximately level with the ground surface. For dry stormwater management ponds, a minimum of a 25-foot radius around the inlet structure shall be cleared.

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

Earth Fill

Material - The fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, wood, rubbish, stones greater than 6", frozen or other objectionable materials. Fill material for the center of the embankment, and cut off trench shall conform to Unified Soil Classification GC, SC, CH, or CL and must have at least 30% passing the #200 sieve. Consideration may be given to the use of other materials in the embankment if designed by a geotechnical engineer. Such special designs must have construction supervised by a geotechnical engineer. Materials used in the outer shell of the embankment must have the capability to support vegetation of the quality required to prevent erosion of the embankment.

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

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

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

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

Embankment Core - The core shall be parallel to the centerline of the embankment as shown on the plans. The top width of the core shall be a minimum of four feet. The height shall extend up to at least the 10 year water elevation or as shown on the plans. The side slopes shall be 1 to 1 or flatter. The core shall be compacted with construction

Structure Backfill

Backfill adjacent to pipes or structures shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operated 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.

Structure backfill may be flowable fill meeting the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 313 as modified. The mixture shall have a 100-200 psi; 28 day unconfined compressive strength. The flowable fill shall have a minimum pH of 4.0 and a minimum resistivity of 2,000 ohm-cm. Material shall be placed such that minimum of 6" (measured perpendicular to the outside of the pipe) of flowable fill shall be under (bedding), over and, on the sides of the pipe. It only needs to extend up to the spring line for rigid conduits. Average slump of the fill shall be 7" to assure flowability of the material. Adequate measures shall be taken (sand bags, etc.) to prevent floating the pipe. When using flowable fill, all metal pipe shall be bituminous coated. Any adjoining soil fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material shall completely fill all voids adjacent to the flowable fill zone. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of the structure. Under no circumstances shall equipment be driven over any part of a structure or pipe unless there is a compacted fill of 24" or greater over the structure or pipe. Backfill (flowable fill)zone shall be of the type and quality conforming to that specified for the core of the embankment or other embankment materials.

Pipe Conduits

All pipes shall be circular in cross section.

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

1. Materials - (Polymer Coated steel pipe)- Steel pipes with polymeric coating shall have a minimum coating thickness of 0.01 inch (10 mil) on both sides of the pipe. This pipe and its appurtenances shall conform to the requirements of AASHTO Specifications M-245 & M-246 with watertight coupling bands or flanges.

Materials - (Aluminum Coated Steel Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-274 with watertight coupling bands or flanges. Aluminum Coated Steel Pipe, when used with flowable fill or when soil and/or water conditions warrant the need for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Any aluminum coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt.

Materials - (Aluminum Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-196 or M-211 with watertight coupling bands or flanges. Aluminum Pipe, when used with flowable fill or when soil and/or water conditions warrant for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt. 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, and sections, etc., must be composed of the same material and coatings as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials at lease 24 mils in thickness.

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

All connections shall use a rubber or neoprene gasket when joining pipe sections. The end of each pipe shall be re-rolled an adequate number of corrugations to accommodate the bandwidth. The following type connections are acceptable for pipes less than 24 inches diameter: flanges on both ends of the pipe with a circular 3/8 inch thick closed cell circular neoprene gasket; and a 12-inch wide hugger type band with o-ring gaskets having a minimum diameter of 1/2 inch greater than the corrugation depth. Pipes 24 inches in diameter and larger shall be connected by a 24 inch long annular corrugated band using a minimum of 4(four) rods and lugs, 2 on each connecting pipe end. A 24-inch wide by 3/8-inch thick closed cell circular neoprene gasket will be installed with 12 inches on the end of each pipe. Flanged joints with 3/8"inch closed cell gaskets the full width of the flange is also acceptable.

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 PipeAll of the following criteria shall apply for reinforced concrete pipe:

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

2. Bedding - Reinforced concrete pipe conduits shall be laid in a concrete bedding/cradle for their entire length. This bedding/cradle shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 50% of its outside diameter with a minimum thickness of 6 inches. Where a concrete cradle is not needed for structural reasons, flowable fill may be used as described in the "Structure Backfill" section of this standard. Gravel bedding is not permitted.

3. Laying pipe - Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 4 feet from the riser.

4. Backfilling shall conform to "Structure Backfill".

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

Plastic PipeThe following criteria shall apply for plastic pipe:

1. Materials - PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241. Corrugated High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following: 4" -10" inch pipe shall meet the requirements of AASHTO M252 Type S, and 12" through 24" inch shall meet the requirements of AASHTO M294 Type S.

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

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

4. Backfilling shall conform to "Structure Backfill".

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

Drainage Diaphragms - When a drainage diaphragm is used, a registered professional engineer will supervise the design and construction inspection.

Concrete

Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 414, Mix No. 3.

Rock Riprap

Rock riprap shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction Materials, Section 311.

Geotexile shall be placed under all riprap and shall meet requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 921.09, Class C.

Care of Water during Construction

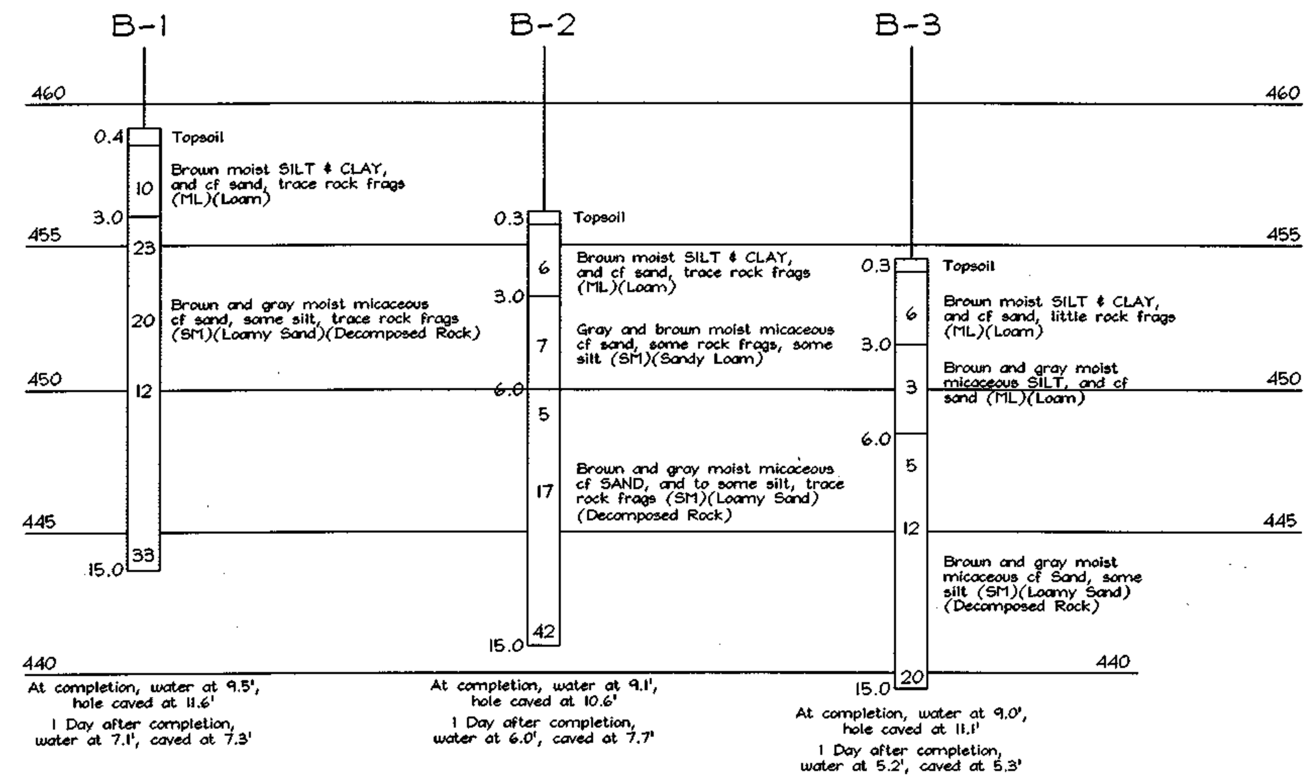
All work on permanent structures shall be carried out in areas free from water. The Contractor shall construct and maintain all temporary dikes, levees, cofferdams, drainage channels, and stream diversions necessary to protect to be occupied by the permanent works. The contractor shall also furnish,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

Stabilization

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

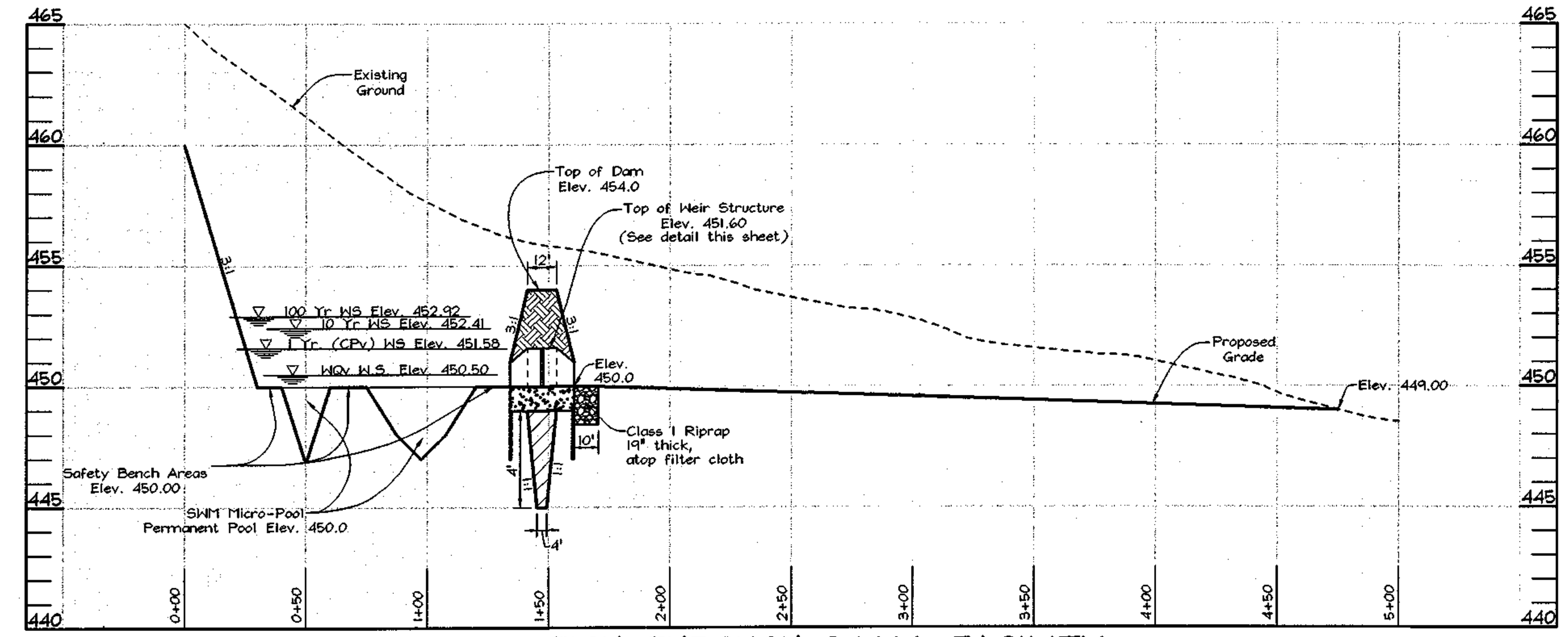
Erosion and Sediment Control

Construction operations will be carried out in such a manner that erosion will be controlled and water and air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures.



S.W.M. BORING PROFILES

NOT TO SCALE



SECTION THROUGH S.W.M. FACILITY

Scale: Horizontal- 1"=50'
Vertical-1"=5'

OPERATION AND MAINTENANCE SCHEDULE FOR STORMWATER MANAGEMENT DETENTION FACILITY

STORMWATER MANAGEMENT FACILITY
ROUTINE MAINTENANCE BY H.O.A.

1. FACILITY WILL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHOULD BE PERFORMED DURING WET WEATHER TO DETERMINE 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 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 AREAS SHALL BE REPAIRED AS SOON AS IT IS NOTICED.

NON-ROUTINE MAINTENANCE BY HOWARD COUNTY

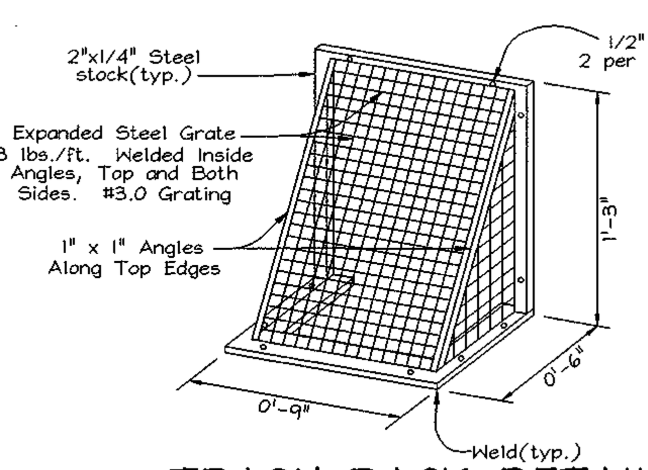
1. STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE RISER, AND THE PIPES SHALL BE REPAIRED UPON DETECTION OF ANY DAMAGE. THE COMPONENTS SHOULD BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
2. SEDIMENT SHOULD BE REMOVED WHEN ITS ACCUMULATION SIGNIFICANTLY REDUCES THE DESIGN STORAGE, INTERFERE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

POND SUMMARY	1 YEAR	10 YEAR	100 YEAR	WQ	Recharge Obligation
Flow Into Pond	5.83 cfs	53.14 cfs	102.43 cfs	WQv Req'd: 0.40ac.ft	Rev Req'd: 6,621 f³
Flow Out of Pond	0.19 cfs	46.19 cfs	94.60 cfs	Wat.Vol.Prov'd: 0.38ac.ft	Rev Prov'd: N/A*
WS Elevation	451.58	452.41	452.92	Ext.Det.Vol.Prov'd: 0.21ac.ft	Rea Req'd: 1.10 Ac
Storage Volume	0.48ac.ft**	0.38ac.ft***	0.64ac.ft***	Total WQv Prov'd: 0.59 ac.ft	Rea Prov'd.: 1.21 Ac

* Recharge treated through Grass Channel Credit.
** Assuming a clogged WQv orifice.
*** Assuming clogged WQv and CPv orifices.

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 ANY 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.



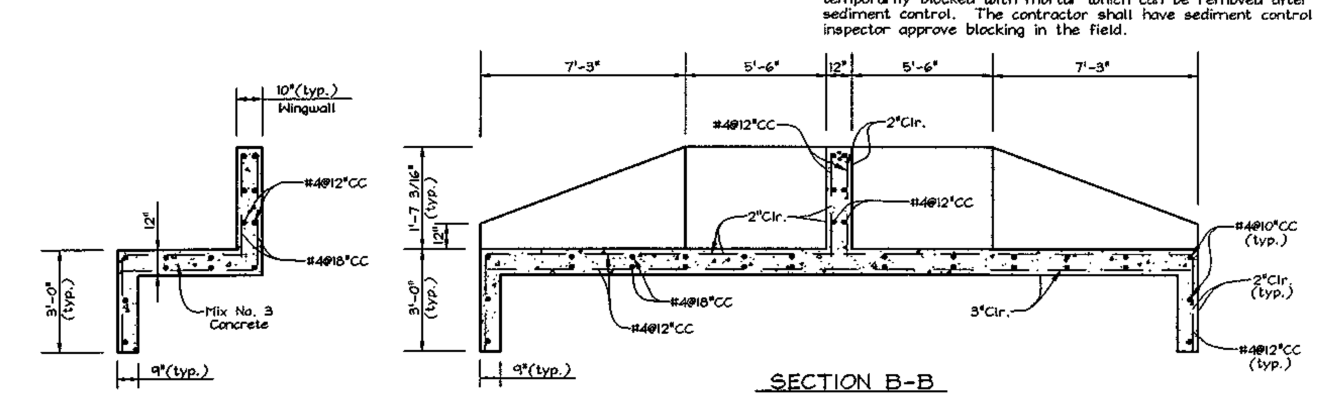
TRASH RACK DETAIL

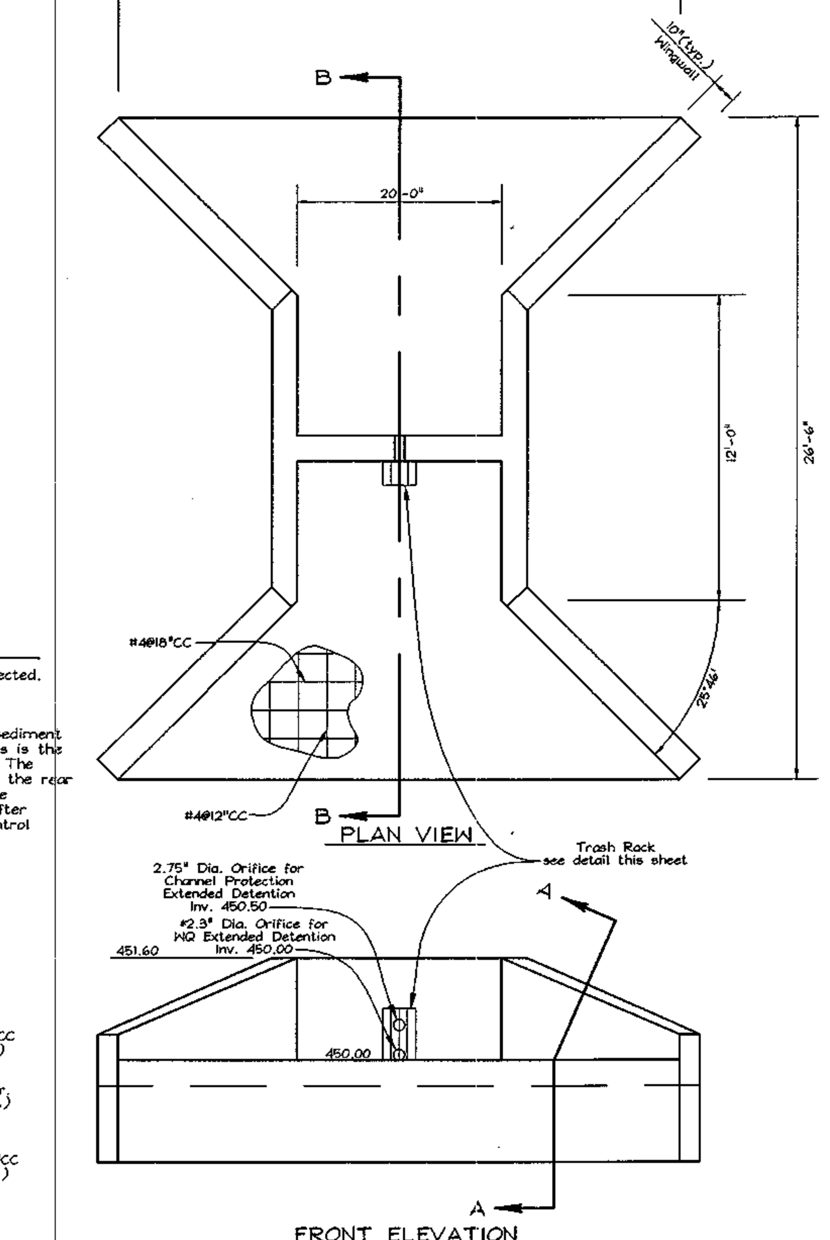
NOT TO SCALE

NOTES:
1. Steel to conform to ASTM A-36.
2. All surfaces to be coated with ZRC cold galvanizing compound after welding.
3. Trash rack to be fastened to the concrete with 1/2" masonry anchors. Trash rack to be removeable.

NOTES:
1. All exposed edges to have a 3/4"x3/4" chamfer or as directed.
2. Concrete shall be SHA mix #3(fc=3500 psi @ 28 days)
3. Reinforcing steel shall be ASTM A-615 grade 60.

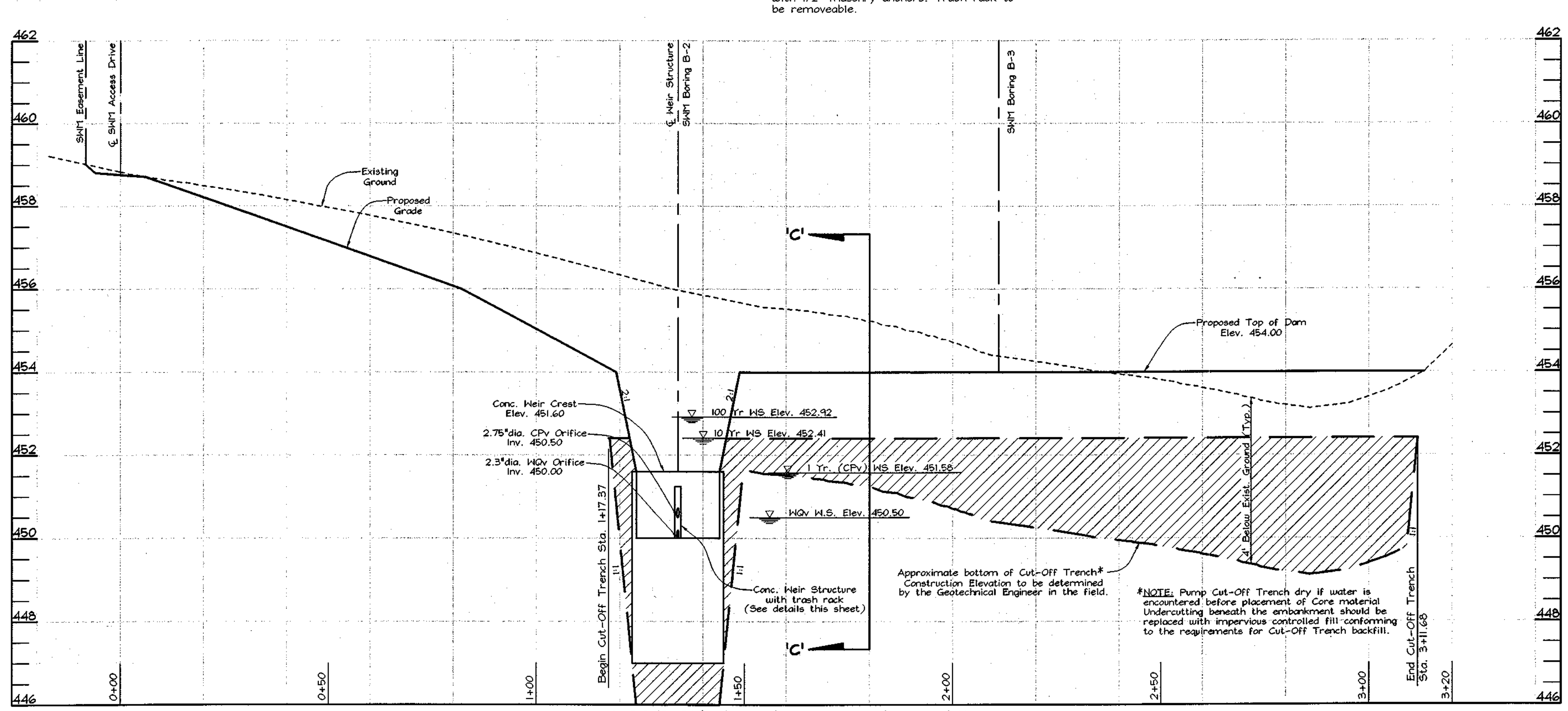
* For sediment control the SWM facility will function as a sediment basin with slight modifications. One of these modifications is the temporary blocking of the WQv 2.3"dia. low flow orifice. The contractor can accomplish this by placing an object within the rear opening to temporarily block opening or the opening can be temporarily blocked with mortar which can be removed after sediment control. The contractor shall have sediment control inspector approve blocking in the field.





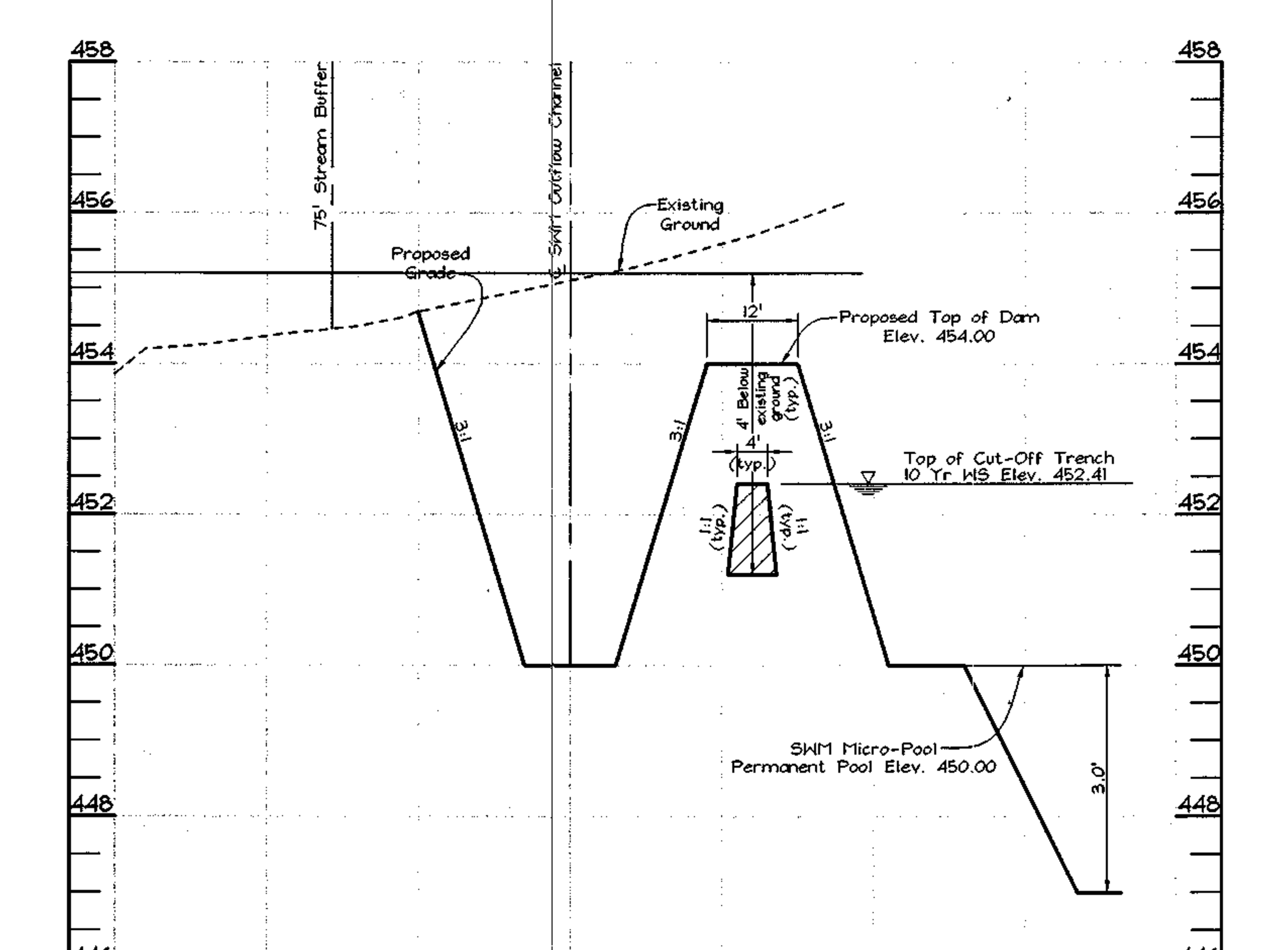
CS-1 WEIR CONTROL STRUCTURE

NOT TO SCALE



SECTION ALONG EMBANKMENT

Scale: Horizontal- 1"=20'
Vertical-1"=2'



SECTION C-C

Scale: Horizontal- 1"=20'
Vertical-1"=2'

OWNER
Clifton E. & Betty K. Harrison
P.O. Box 287
West Friendship, Maryland 21794

DEVELOPER
Heritage Land Development
3060 Washington Road, Suite 220
Glenwood, Maryland 21738
Tel.: (410)489-7900 Fax: (410)489-4754

STORMWATER MANAGEMENT NOTES AND DETAILS TWIN PINES

LOTS 1 THRU 11, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCEL 'B'
TAX MAP 22, GRIDS 3 & 8 — PARCEL 17
3RD ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

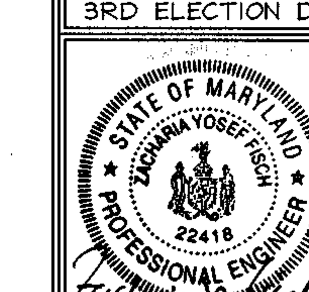
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Cindy Hamilton 3/25/03
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE
3/12/03
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
3-7-03
CHIEF, BUREAU OF HIGHWAYS — DATE

DEVELOPER'S CERTIFICATE
"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.
2-11-03
SIGNATURE OF DEVELOPER — DATE
Timothy W. Feaga

ENGINEERS CERTIFICATE
"I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
Zacharia Y. Fisch 2-11-03
SIGNATURE OF ENGINEER — DATE
ZACHARIA Y. FISCH

THESE PLANS HAVE BEEN REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SOIL EROSION AND SEDIMENT CONTROL.
Jim Myers 2/26/03
USDA NATURAL RESOURCES CONSERVATION SERVICE — DATE
THESE PLANS FOR SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
John R. Robertson 2/26/03
HOWARD SOIL CONSERVATION DISTRICT — DATE

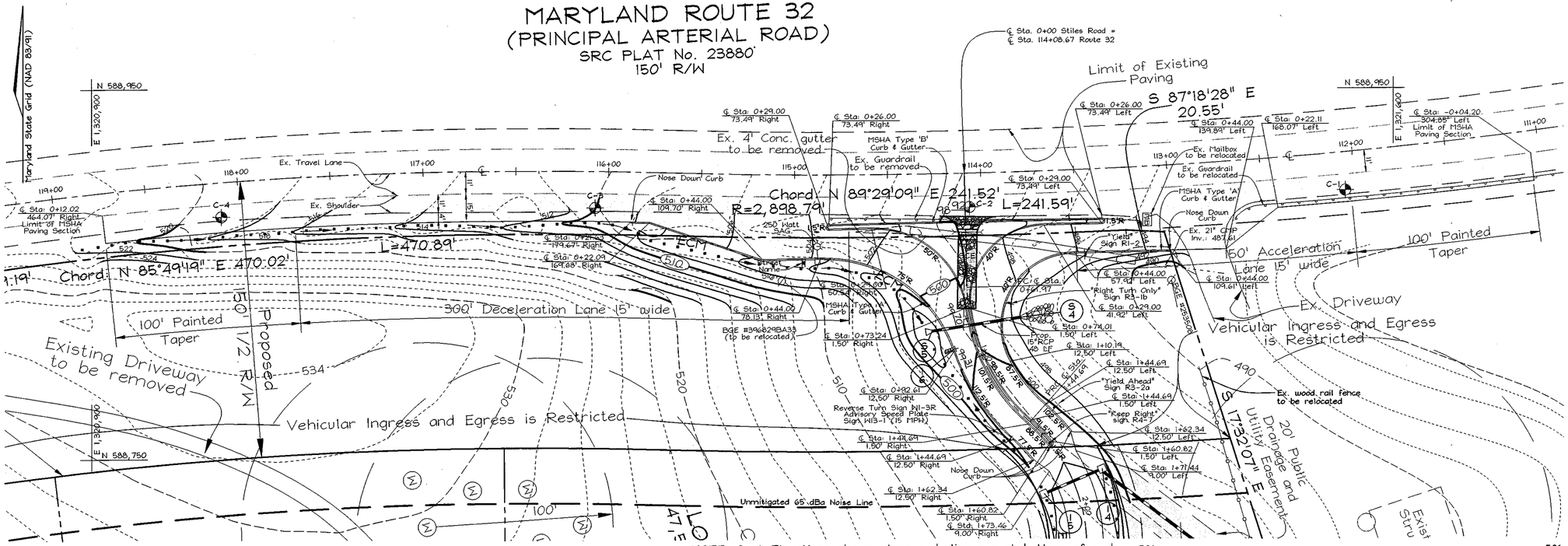


FSH Associates
Engineers Planners Surveyors
8318 Forrest Street Ellicott City, MD 21043
Tel:410-750-2251 Fax: 410-750-7350
E-mail: FSHAssociates@cs.com

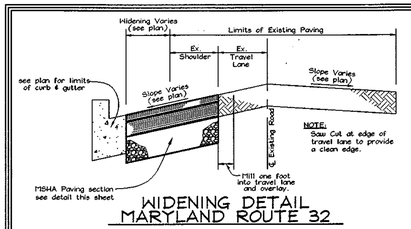
DESIGN BY: PS/KO
DRAWN BY: PS/KO
CHECKED BY: ZYF
SCALE: As Shown
DATE: Feb. 10, 2003
W.O. No.: 3048
SHEET No. 8 OF 14

F-03-018

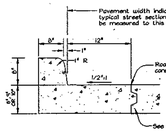
MARYLAND ROUTE 32
(PRINCIPAL ARTERIAL ROAD)
SRC PLAT No. 23880
150' R/W



NOTE: Spot Elevations shown along curb line are at bottom of curb.

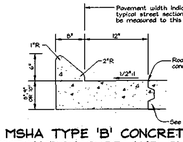


WIDENING DETAIL
MARYLAND ROUTE 32
NOT TO SCALE



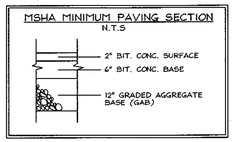
MSHA TYPE 'A' CONCRETE COMBINATION CURB AND GUTTER
MD. NO. 620.02
NOT TO SCALE

NOTES:
1. Slope gutter pan 1/2" per foot toward flow line on all roadways including superelevated sections. Except interchange ramps.
2. Provide key and longitudinal tie bar as required.
3. Maximum joint spacing for concrete curb and gutter is 10'.



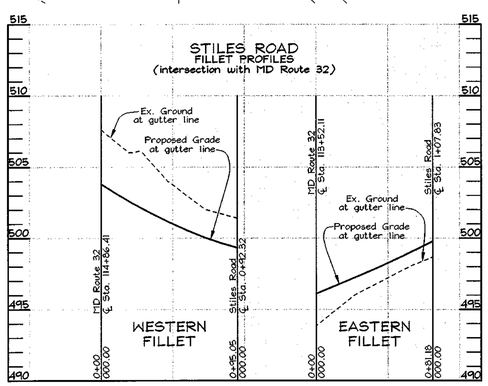
MSHA TYPE 'B' CONCRETE COMBINATION CURB AND GUTTER
MD. NO. 620.02
NOT TO SCALE

NOTES:
1. Slope gutter pan 1/2" per foot toward flow line on all roadways including superelevated sections. Except interchange ramps.
2. Provide key and longitudinal tie bar as required.
3. Maximum joint spacing for concrete curb and gutter is 10'.



ROUTE 32 WIDENING CORE BORING DATA

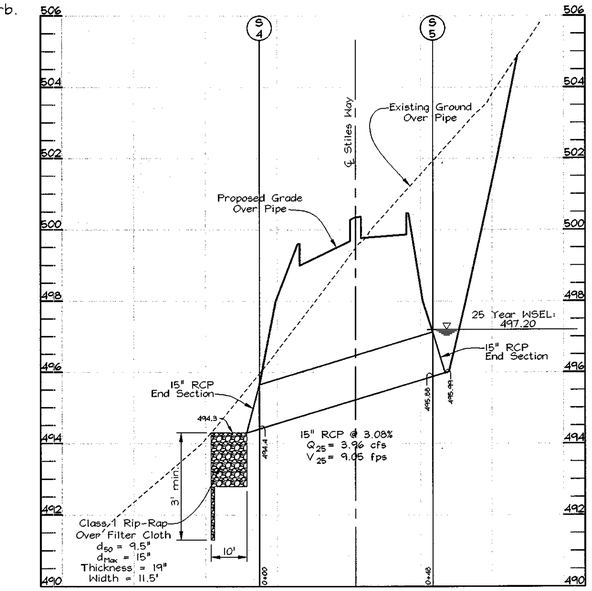
Boring Number	Hot Mix Asphalt Thickness	Crushed Stone Base Thickness	Soil Subgrade SPT Value	Soil Subgrade Description
C-1	8"	6"	12	Brown and gray moist cf SAND, and clayey silt, trace to little rock frags, trace mica (Fill)
C-2	5"	4"	21	Brown and gray moist cf SAND, some rock frags, some clayey silt, trace mica (Fill)
C-3	7"	5"	24	Brown, reddish brown and gray moist micaceous cf Sand, some silt, trace rock frags (Decomposed Rock)
C-4	6"	6"	10	Brown, reddish brown and gray moist micaceous mf SAND and silt (Decomposed Rock)
C-5	6.5"	5.5"	21	Brown, reddish brown and gray moist micaceous cf SAND, some silt, trace rock frags (Decomposed Rock)



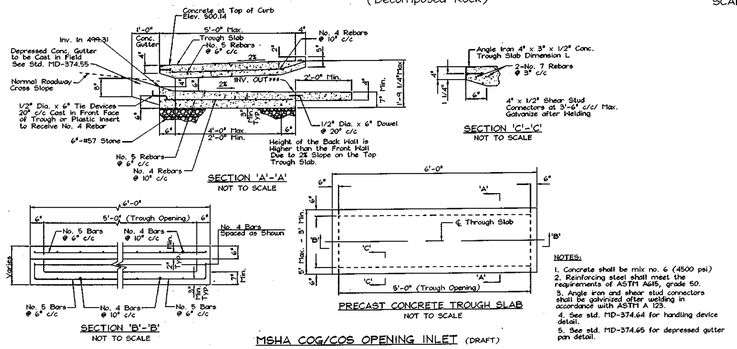
STILES ROAD FILLET PROFILE
SCALE- HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

ENTRANCE DETAIL
Scale: 1"=30'

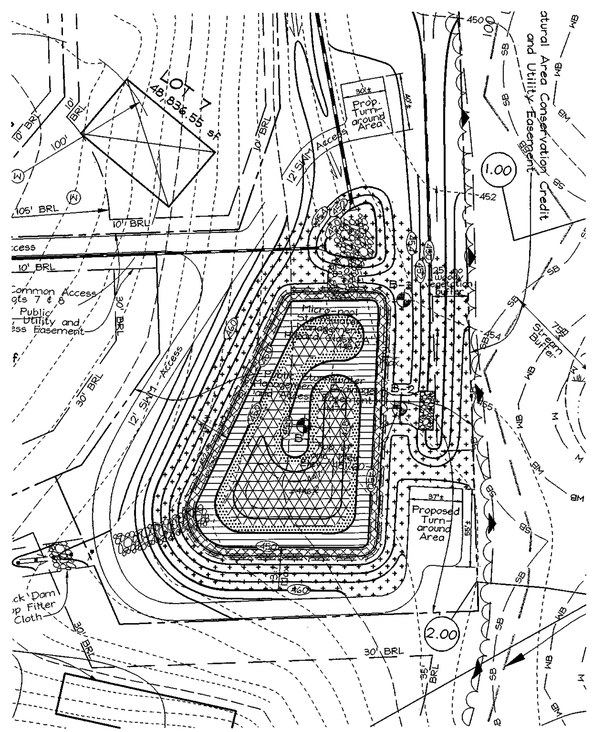
Denotes MSHA Paving Section



ENTRANCE CULVERT PROFILE
Scale: Horizontal- 1"=20'
Vertical-1"=2'



NOTES:
1. Concrete shall be mix no. 6 (4500 psi)
2. Reinforcing steel shall meet the requirements of ASTM A615, grade 60.
3. Angle iron and shear stud connectors shall be galvanized after welding in accordance with ASTM A 123.
4. See std. MD-374.64 for handling device detail.
5. See std. MD-374.65 for depressed gutter pan detail.



POND LANDSCAPING DETAIL
SCALE: 1"=50'

- Zone 1 (446.00 to 449.00)
- Zone 2 (449.00 to 450.00)
- Zone 3 (450.00 to 450.50)
- Zone 4 (450.50 to 452.92)
- Zone 5 (452.92 to "as shown")

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APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3/25/03

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 3/13/03

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS — DATE 3-7-03

ENTRANCE PLAN AND DETAILS AND POND LANDSCAPING DETAIL
TWIN PINES
LOTS 1 THRU 11, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCEL 'B'

TAX MAP 22, GRIDS 3 & 8 — PARCEL 17
3RD ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

STATE OF MARYLAND — JOSHUA YOSEF FISCH — 22418 — PROFESSIONAL ENGINEER

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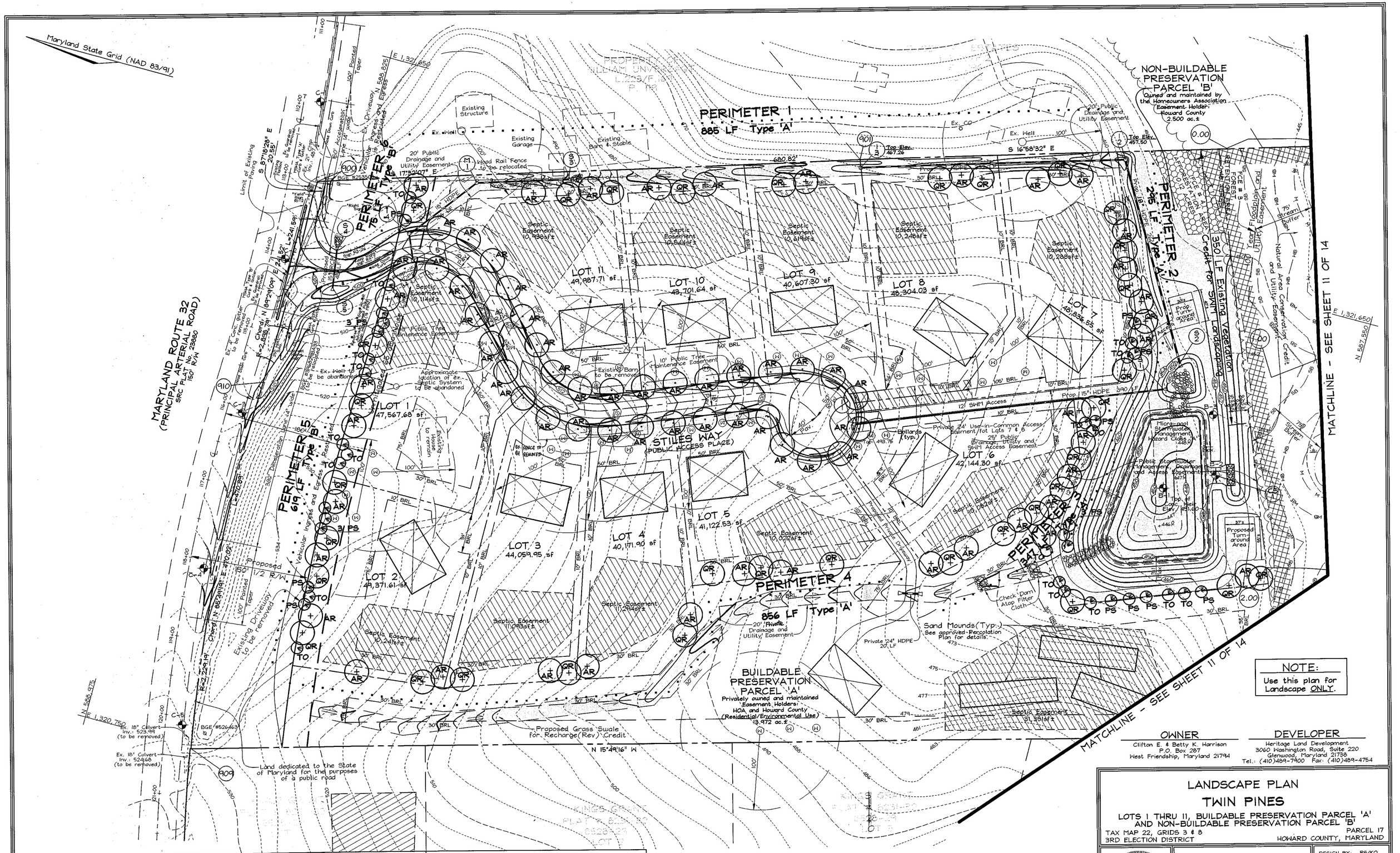
CHECKED BY:	ZYF
SCALE:	As Shown
DATE:	Feb. 10, 2003
W.O. No.:	3048
SHEET No.	9 OF 14

F-03-018



NOTE:
Use this plan for Landscape ONLY.

OWNER	DEVELOPER
Clifton E. & Betty K. Harrison P.O. Box 287 West Friendship, Maryland 21794	Heritage Land Development 3060 Washington Road, Suite 220 Glenwood, Maryland 21738 Tel.: (410)489-7900 Fax: (410)489-4754

LANDSCAPE PLAN
TWIN PINES

LOTS 1 THRU 11, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCEL 'B'

TAX MAP 22, GRIDS 3 & 8 — PARCEL 17
3RD ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Cindy Harrison — 3/25/10
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

Chris Drauman — 3/25/10
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

3-7-03
CHIEF, BUREAU OF HIGHWAYS — DATE

DEVELOPER'S BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING 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(1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

SIGNATURE OF DEVELOPER — DATE
Timothy W. Feaga

NOTE: SEE SHEET 11 OF 14 FOR LANDSCAPING NOTES AND DETAILS.

STATE OF MARYLAND — ZACHARY YOST FEAGA — 22418 — PROFESSIONAL ENGINEER

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SHEET No.	10 OF 14

F-03-018

TYPICAL EVERGREEN TREE PLANTING DETAIL

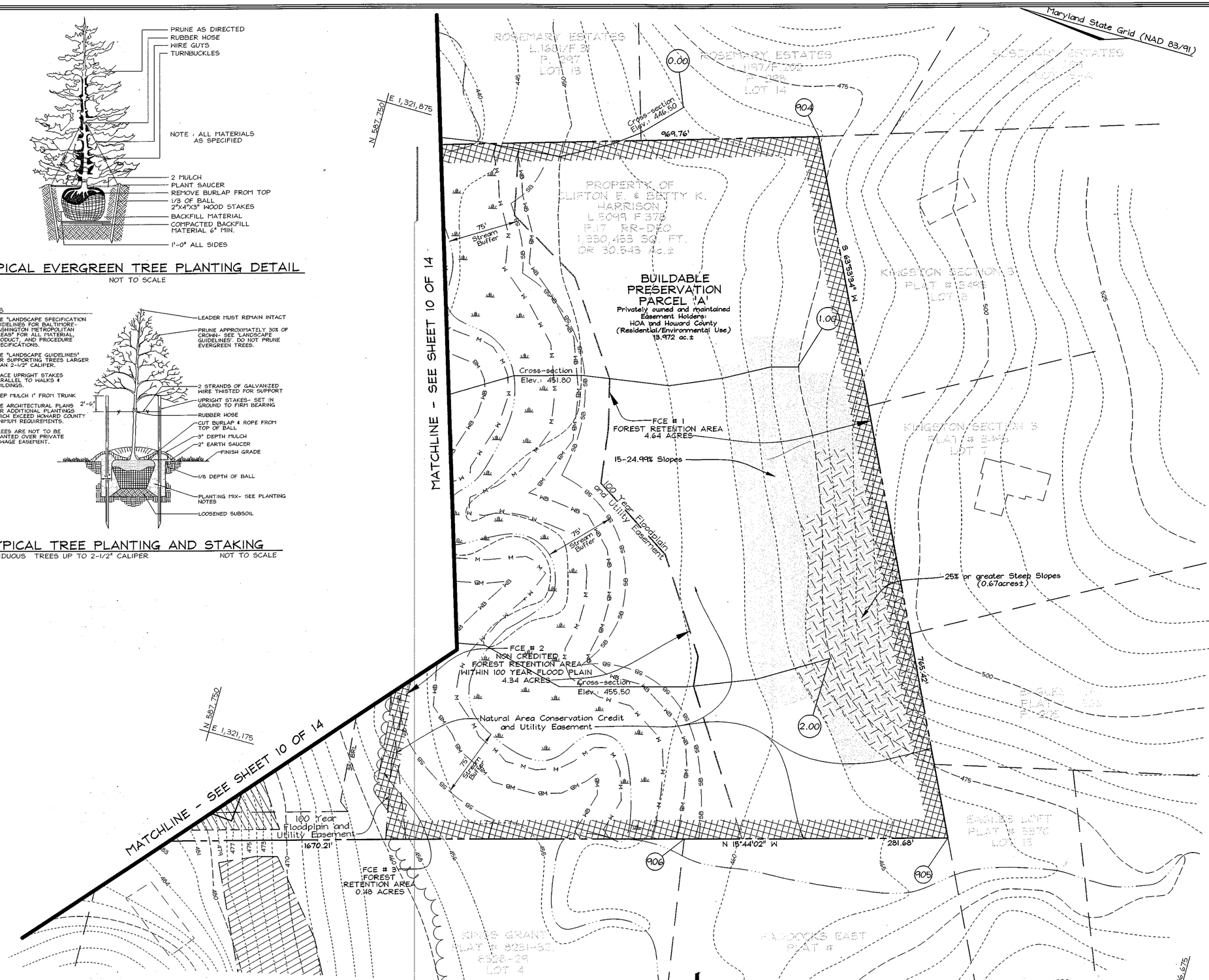
NOT TO SCALE

NOTES

1. SEE "LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE-WASHINGTON METROPOLITAN AREAS" FOR ALL MATERIAL, PRODUCT, AND PROCEDURE SPECIFICATIONS.
2. SEE "LANDSCAPE GUIDELINES" FOR SUPPORTING TREES LARGER THAN 2-1/2" CALIPER.
3. PLACE UPRIGHT STAKES PARALLEL TO WALKS & BUILDINGS.
4. KEEP MULCH 1" FROM TRUNK
5. SEE ARCHITECTURAL PLANS FOR ADDITIONAL PLANTINGS WHICH EXCEED HOWARD COUNTY MINIMUM REQUIREMENTS.
6. TREES ARE NOT TO BE PLANTED OVER PRIVATE SEWAGE EASEMENT.

TYPICAL TREE PLANTING AND STAKING

DECIDUOUS TREES UP TO 2-1/2" CALIPER — NOT TO SCALE



SCHEDULE A
PERIMETER LANDSCAPE EDGE

CATEGORY	ADJACENT TO ROADWAYS			ADJACENT TO PERIMETER PROPERTIES				
Perimeter/Frontage Designation	5	6		1	2	3	4	
Landscape Type	B	B		A	A	A	A	
Linear Feet of Roadway Frontage/Perimeter	619	75		885	295	347	856	
Credit for Existing Vegetation (Yes, No, Linear Feet Describe below if needed)	No	No		No	No	No	No	
Credit for Wall, Fence or Berm (Yes, No, Linear Feet Describe below if needed)	No	No		No	No	No	No	
Number of Plants Required								
Shade Trees	1:50 12	1:50 2		1:60 15	1:60 5	1:60 6	1:60 14	
Evergreen Trees	1:40 16	1:40 2		-	-	-	-	
Shrubs	-	-		-	-	-	-	
Number of Plants Provided								
Shade Trees	12	2		15	5	6	14	
Evergreen Trees	16	2		-	-	-	-	
Other Trees (2:1 Substitution)	-	-		-	-	-	-	
Shrubs (10:1 Substitution)	-	-		-	-	-	-	
(Describe Plant Substitution Credits Below if needed)								

SCHEDULE D : STORMWATER MANAGEMENT AREA LANDSCAPING

Linear Feet of Perimeter	1145lf
Credit for Existing Vegetation (No, Yes and Linear Feet)	Yes, #350lf
Credit for other Landscaping (No, Yes and %)	N/A
Number of Trees Required Shade Trees Evergreen Trees	 16 Shade Trees 20 Evergreen Trees
Number of Trees Provided Shade Trees Evergreen Trees Other Trees(2:1 Substitution)	 16 Shade Trees 20 Evergreen Trees 0 Trees(0 Substition Trees)

350' facing the Environmental Conservation Area to the south, whose existing trees are proposed to remain.

LANDSCAPE SCHEDULE

KEY	QUAN.	BOTANICAL NAME	SIZE	NOTE
AR	36	Acer rubrum, Shade Trees (Street Trees) 'October Glory Red Maple'	2 1/2"-3" Cal.	B & B
AR	35	Acer rubrum (Shade Trees) 'October Glory Red Maple'	2 1/2"-3" Cal.	B & B
QR	35	Quercus rubra (Shade Trees) 'Red Oak'	2 1/2"-3" Cal.	B & B
PS	19	Pinus strobus 'Eastern White Pine'	6'-8' Ht.	B & B
TO	19	Thuja occidentalis 'Nigra' 'Dark American Arborvitae'	5'-6' Ht.	B & B

NOTES:

1. At the time of plant installation, all shrubs and trees listed and approved on the Landscape Plan shall comply with the proper height requirements in accordance with the Howard County Landscape Manual. In addition, no substitutions or relocations of the required plantings may be made without prior review and approval from the Department of Planning and Zoning. Any deviation from the approved Landscape Plan may result in denial or delay in the release of Landscape Surety until such time as all required materials are planted and/or revision are made to the applicable plans.
2. See General Note 35 on sheet 1 for Financial Surety amounts.

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APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3/25/03

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 3/12/03

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS — DATE 3-7-03

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SIGNATURE OF DEVELOPER — DATE 2-11-03
Timothy W. Feaga

LANDSCAPE PLAN
TWIN PINES

LOTS 1 THRU 11, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCEL 'B'

TAX MAP 22, GRIDS 3 & 8 — PARCEL 17
3RD ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

STATE OF MARYLAND — YOSHIHAYA YOSEFTISCH — 22418 — PROFESSIONAL ENGINEER

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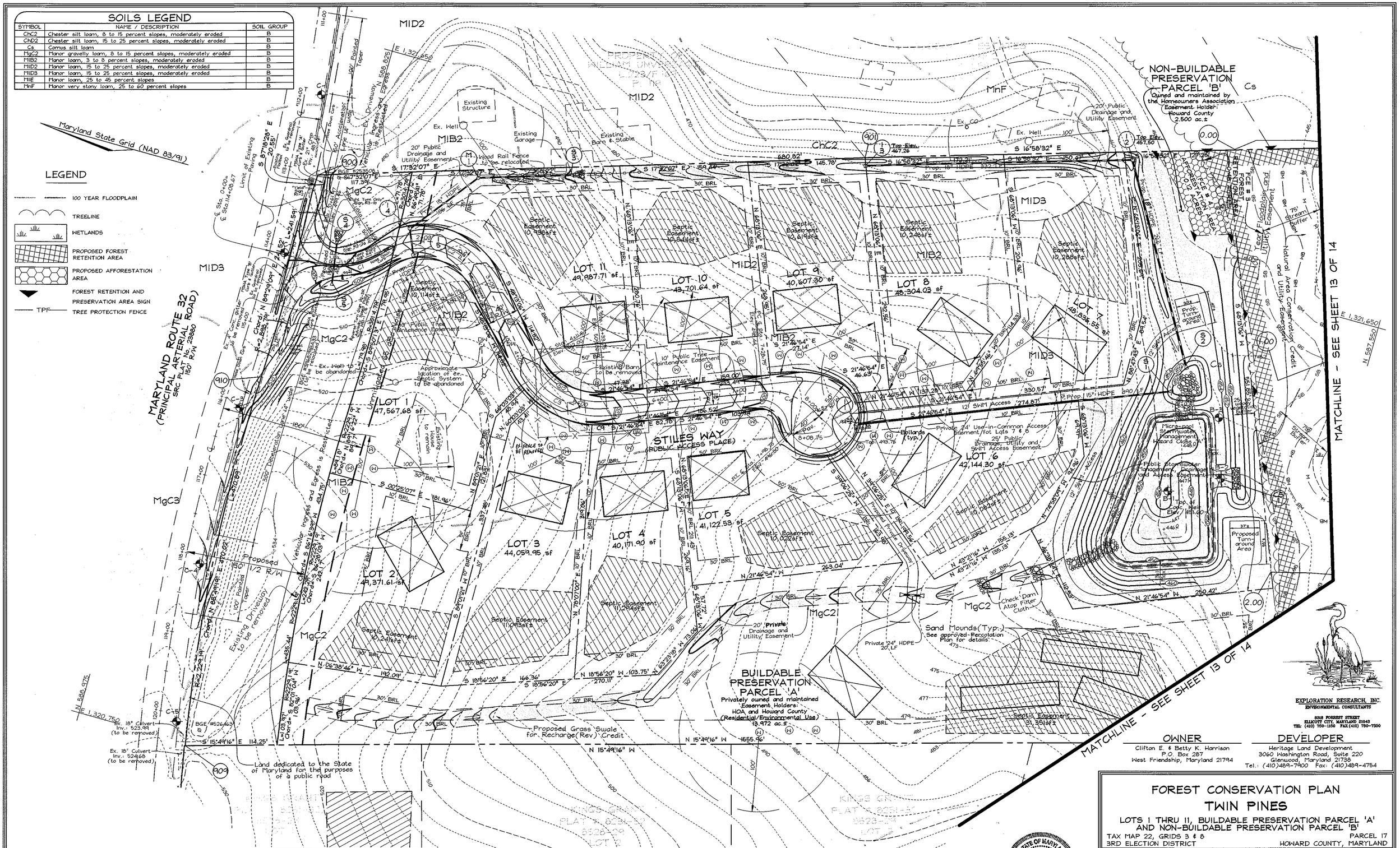
W.O. No.: 3048
SHEET No. 11 OF 14

F-03-018

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	SOIL GROUP
ChC2	Chester silt loam, 8 to 15 percent slopes, moderately eroded	B
ChD2	Chester silt loam, 15 to 25 percent slopes, moderately eroded	B
Cs	Comus silt loam	B
MgC2	Manor gravelly loam, 8 to 15 percent slopes, moderately eroded	B
MIB2	Manor loam, 3 to 8 percent slopes, moderately eroded	B
MID2	Manor loam, 15 to 25 percent slopes, moderately eroded	B
MID3	Manor loam, 15 to 25 percent slopes, moderately eroded	B
MIE	Manor loam, 25 to 45 percent slopes	B
MnF	Manor very stony loam, 25 to 60 percent slopes	B



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FOREST CONSERVATION PLAN
TWIN PINES

LOTS 1 THRU 11, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCEL 'B'

TAX MAP 22, GRIDS 3 & 8 — PARCEL 17
3RD ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3/25/03

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 3/14/03

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS — DATE 3-7-03

STATE OF MARYLAND — STEPHEN L. HUBER — No. 363 — REGISTERED PROFESSIONAL FORESTER

STATE OF MARYLAND — ZACHARIA YOSEF FISCH — 22418 — PROFESSIONAL ENGINEER

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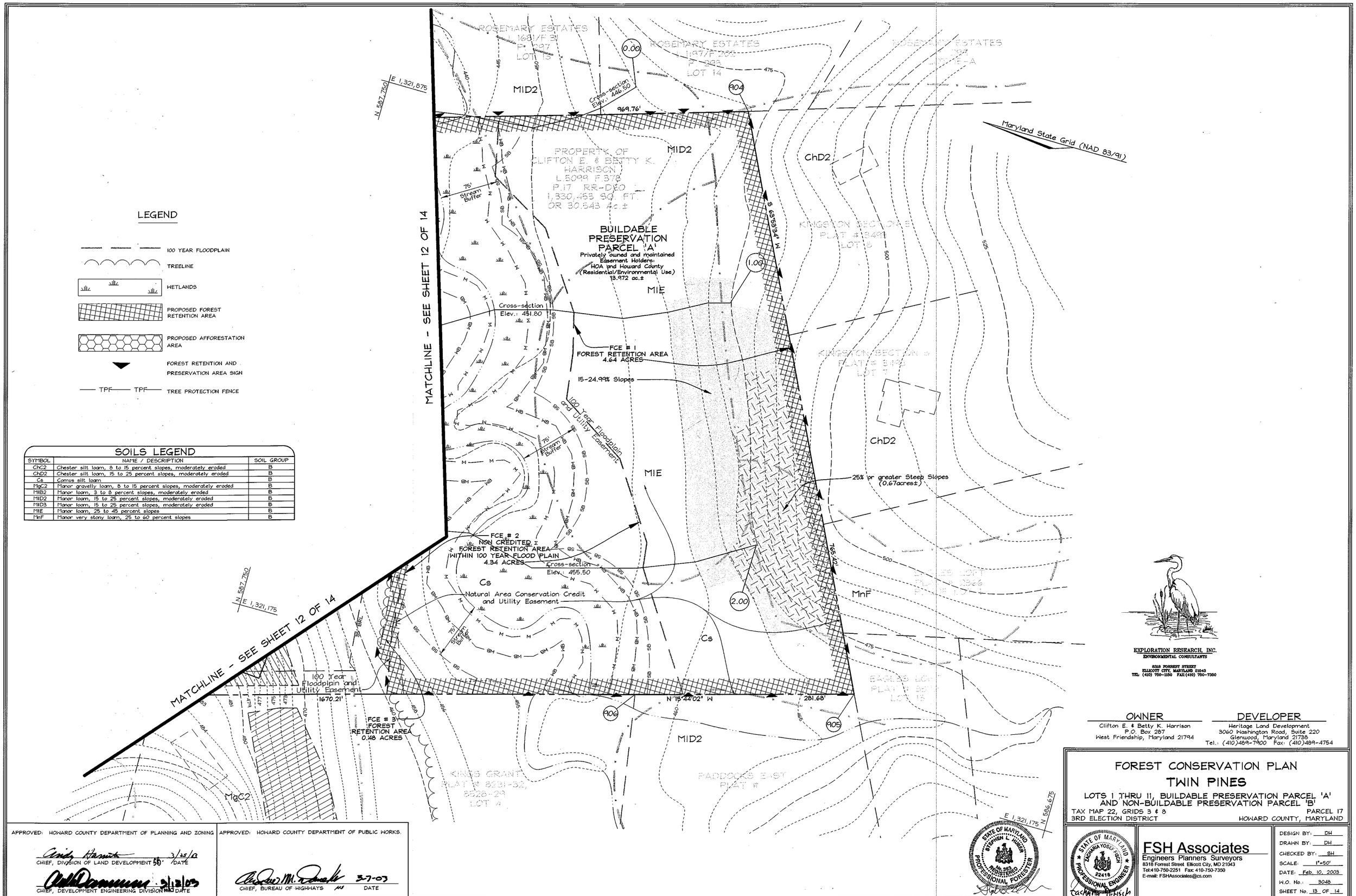

LEGEND

- 100 YEAR FLOODPLAIN
- TREELINE
- WETLANDS
- PROPOSED FOREST RETENTION AREA
- PROPOSED AFFORESTATION AREA
- FOREST RETENTION AND PRESERVATION AREA SIGN
- TPF — TPF — TREE PROTECTION FENCE

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	SOIL GROUP
ChC2	Chester silt loam, 8 to 15 percent slopes, moderately eroded	B
ChD2	Chester silt loam, 15 to 25 percent slopes, moderately eroded	B
Cs	Comus silt loam	B
MgC2	Manor gravelly loam, 8 to 15 percent slopes, moderately eroded	B
MIB2	Manor loam, 3 to 8 percent slopes, moderately eroded	B
MID2	Manor loam, 15 to 25 percent slopes, moderately eroded	B
MID3	Manor loam, 15 to 25 percent slopes, moderately eroded	B
MIE	Manor loam, 25 to 45 percent slopes	B
MnF	Manor very stony loam, 25 to 60 percent slopes	B

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FOREST CONSERVATION PLAN
TWIN PINES

LOTS 1 THRU 11, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCEL 'B'

TAX MAP 22, GRIDS 3 & 8 — PARCEL 17
3RD ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3/25/03

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 3/12/03

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS — DATE 3-7-03

STATE OF MARYLAND — STEPHEN L. HUBER — No. 363 — REGISTERED PROFESSIONAL FORESTER

STATE OF MARYLAND — ZACHARIA YOSEF FISCH — 22418 — PROFESSIONAL ENGINEER

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SHEET No. 13 OF 14

F-03-018

FOREST CONSERVATION NARRATIVE

This Forest Conservation Plan was prepared in accordance with the Howard County Forest Conservation Manual.

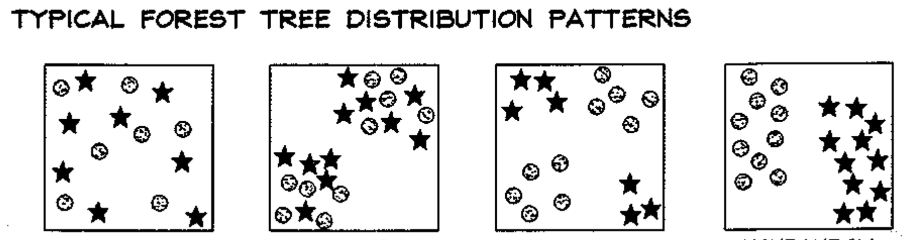
Option "B" for Cluster Subdivisions will be utilized wherein the entire preservation parcel will be included in the calculations. The existing site consists of 30.543 acres with approximately 4.34 acres of floodplain. There are a total of 5.12 acres of existing forest on the net tract area. A large portion of the forest on site is located within the floodplain. The afforestation requirement is .12 acres. Onsite afforestation will be utilized, adjacent to the existing forest and within the proposed Forest Conservation. Easement. The Forest Conservation Easement includes 9.46 acres of forest retention and .12 acres of afforestation. This reforestation area total includes 4.34 acres of non credited forest contained within the floodplain.

The 0.12 acre afforestation area FCE-4 is primarily abandond crop land. This area will be planted with 350 stems/acre, containerized seedlings.

FOREST CONSERVATION WORKSHEET

Net Tract Area	Acres
A. Total Tract Area	30.543
B. Area Within 100 Year Floodplain	4.34
C. Other deductions	0
D. Net Tract Area	26.203
Zoning Use Category: RESIDENTIAL-RURAL MEDIUM DENSITY	
Land Use Category	
E. Afforestation Minimum (20 % x D)	5.24
F. Conservation Threshold (25 % x D)	6.55
Existing Forest Cover	
G. Existing Forest on Net Tract Area	5.12
H. Forest Area Above Afforestation Threshold	0
I. Forest Area Above Conservation Threshold	0
Breakeven Point	
J. Forest Retention Above Threshold with no Mitigation	6.55
K. Clearing Permitted without Mitigation	0
Proposed Forest Clearing	
L. Forest Areas to be Cleared	0
M. Forest Areas to be Retained	5.12
Planting Requirements	
N. Reforestation for Clearing Above Threshold	0
P. Reforestation for Clearing Below the Threshold	0
Q. Credit for Retention Above Conservation Threshold	0
R. Total Reforestation Required	0
S. Total Afforestation Required	.12
T. Total Reforestation and Afforestation Requirement	.12

TYPICAL FOREST TREE DISTRIBUTION PATTERNS



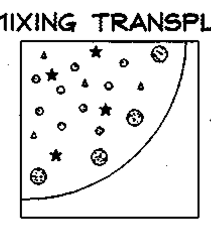
NOTE:
Naturally occurring populations of trees tend to be found in informal groupings. A cluster of trees is really a mosaic of different species groups. The objective of an affoerestation/ reforestation plan is to select the appropriate species and distribution pattern for a chose site that mimic natural patterns.
source: prince Georges County woodland Conservation Manual.

AGGREGATE DISTRIBUTION DRIFT

NOTE:
When used, plant cluster type groupings that taper or feather out along the edges. Clusters often appear as elongated of tear drop shapes.

Source: EQR, Inc.

MIXING TRANSPLANT STOCK



Locate larger trees (B&B or container grown) or transplant stock at the perimeter of reforestation/ afforestation planting of whips, seedling grown stock.
Protective fencing
Smaller Stock

Source: Adapted from Forest Conservation Manual, 1991.

PLANTING DISTRIBUTION PATTERNS — FIGURE 3.8.2

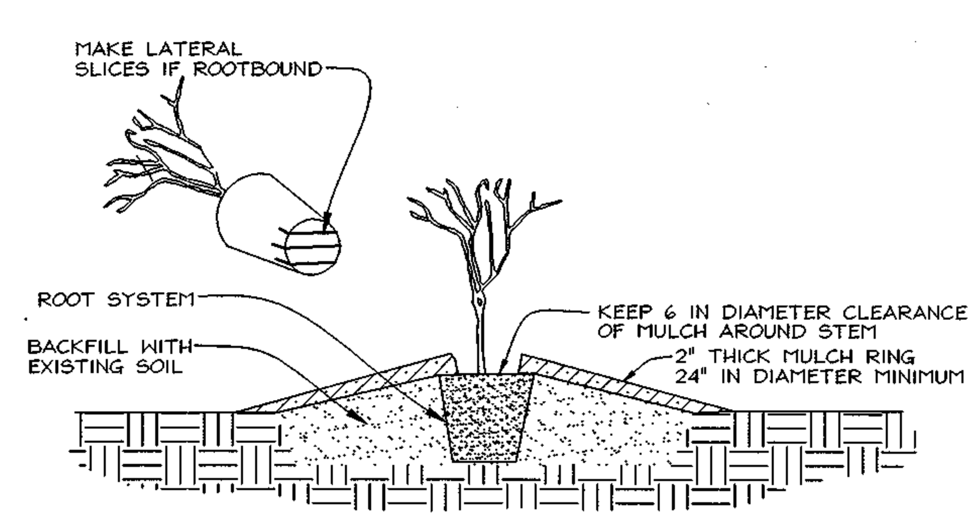
AFFORESTATION AREA 0.12 Ac

Qty	Botanical Name	Common Name	Min. Size	Spacing	NOTES
11	Acer rubrum	Red Maple	WHIP 2-3'	11' o.c.	CONTAINER
11	Liquidambar styraciflua	Sweet Gum	WHIP 2-3'	11' o.c.	CONTAINER
11	Fraxinus pennsylvanica	Green Ash	WHIP 2-3'	11' o.c.	CONTAINER
11	Platanus Occidentalis	Sycamore	WHIP 2-3'	11' o.c.	CONTAINER

FOREST CONSERVATION EASEMENT TABLE

EASEMENT #	ACREAGE	EASEMENT TYPE
1	4.64 AC	FOREST RETENTION
2	4.34 AC	FOREST RETENTION
3	0.48 AC	FOREST RETENTION
4	0.12 AC	AFFORESTATION
	9.46 AC RETENTION	
	.12 AC AFFORESTATION	
TOTAL	9.58 AC	

SURETY: 9.46 AC RETENTION @ $0.20 / sf = $82,415.50
.12 AC AFFORESTATION @ $0.50 / sf = $2,613.60
TOTAL = $85,029.10



CONTAINER PLANTING
NOT TO SCALE

PLANTING PROCEDURE FOR CONTAINER GROWN PLANTS

1. REMOVE THE PLANT EITHER BY CUTTING OR INVERTING THE CONTAINER
2. USE A KNIFE TO CUT THROUGH BOTTOM HALF OF THE ROOT BALL.
3. PLANT SHRUBS ON FORMED UP MOUNDS 4" ABOVE THE EXISTING GRADE WHEN HIGH WATER TABLE CONDITIONS EXIST,OTHERWISE PLANT FLUSH WITH EXISTING GRADE.
4. PLANTING HOLE TO BE 2-3 TIMES THE DIAMETER OF THE CONTIANER.
5. INSERT FERTILIZER TABLET, BACKFILL 2/3 OF THE ROOT BALL AND WATER.
6. AFTER WATER PERCOLATES, BACKFILL HOLE TO TOP OF ROOT BALL AND GENTLY TAMP SOIL TO FIRM CONTACT WITH PLANT.
7. APPLY MULCH RING AROUND PLANT KEEPING A 6 IN CLEARANCE FROM STEM.

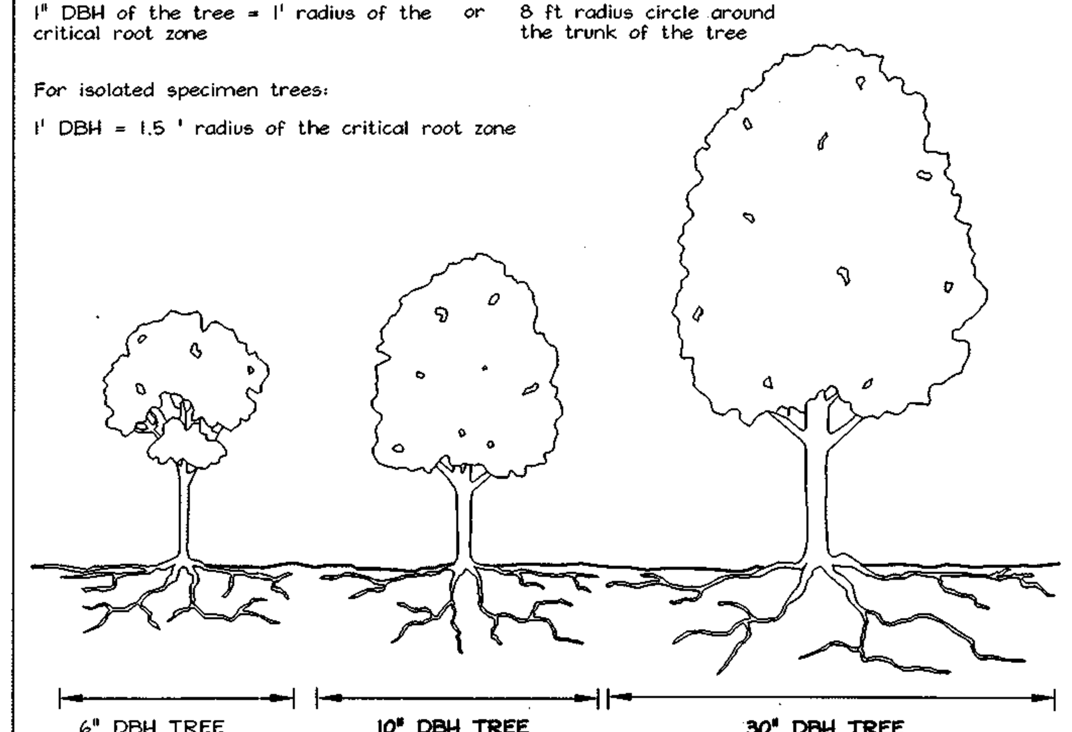
CRITICAL ROOT ZONE

For the edge of large areas, use the greater of the two choices bellow:

1" DBH of the tree = 1' radius of the critical root zone — or — 8 ft radius circle around the trunk of the tree

For isolated specimen trees:

1' DBH = 1.5 ' radius of the critical root zone



AFFORESTATION AREA MONITORING NOTES

1. Monthly visits during the first growing season are to assess the success of the plantings and to determine if supplemental watering, pest control or other actions are necessary. Early spring visits will document winter kill and autumn visits will document summer kill.

2. The minimum survival rate shall be 75% of the total number of trees planted per acre at the end of the two year maintenance period. Wild tree seedlings from natural regeneration on the planting site may be counted up to 50% toward the total survival number if they are healthy native species at least 12 inches tall.

3. Survival will be determined by a stratified random sampling of the plantings. The species composition of the sample population should be proportionate to the amount of each species in the entire planting to be sampled.

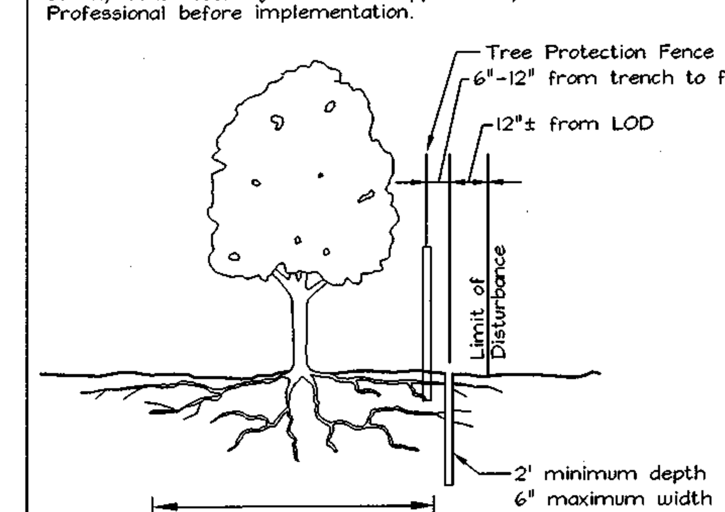
4. Effective monitoring will assess plant survivability during the first growing season and make recommendations for reinforcement plantings if required at that time.

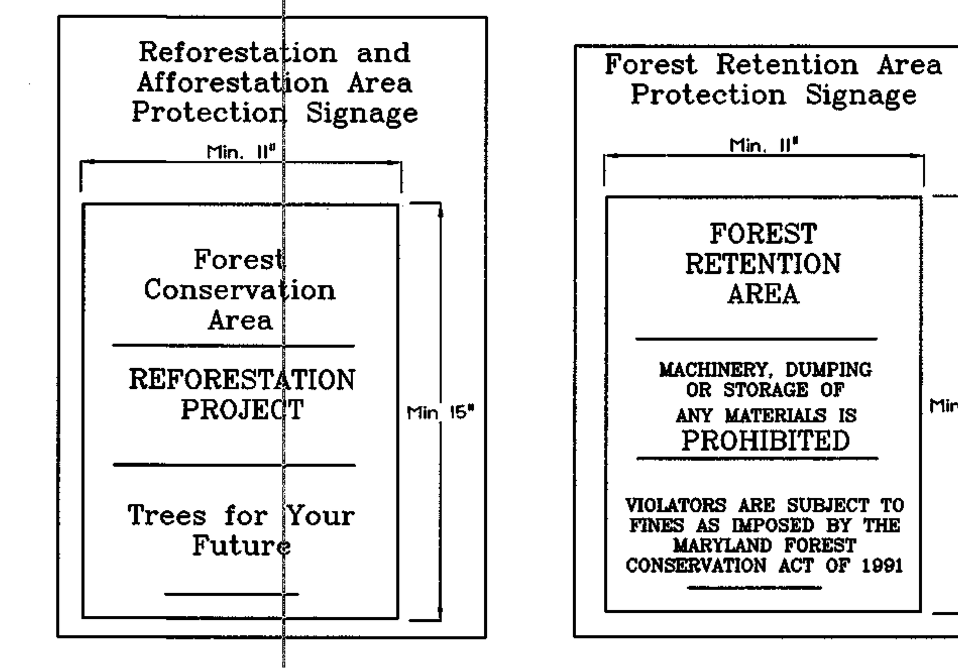
AFFORESTATION PLANTING NOTES

1. Afforestation areas may be planted as soon as reasonable to do so. Late winter- early spring plantings are preferred. Earliest planting dates will vary from year to year but planting may generally begin as soon as the ground is no longer frozen. Alternate planting dates may be considered as condition warrants.
2. Soil amendments and fertilization recommendations will be made based upon the results of soil analysis for nitrogen, phosphorus, potassium, organic matter content and pH. If required, fertilizer will be provided using a slow release, soluble 16-8-16 analysis designed to last 5-8 years contained in polyethylene perforated bags such as manufactured by ADCO Works, P.O. Box 310 Hollins, N.Y. 11423 or approved equal.
3. Plant materials will be planted in accordance with the Planting Distribution Diagram, Planting Details and plant schedule.
4. Plant material shall be nursery grown and inspected prior to planting. Plants not conforming to the American Standard for Nursery Stock specifications for size, form, vigor, or roots, or due to trunk wounds, breakage, desiccation, insect or disease must be replaced.
5. Planting stock must be protected from desiccation at all times prior to planting. Materials held for planting shall be moistened and placed in cool shaded areas until ready for placement.
6. Newly planted trees may require watering at least once per week during the first growing season depending on rainfall in order to get established. The initial planting operation should allow for watering during installation to completely soak backfill material.
7. Mulch shall be applied in accordance with the diagram provided and shall consist of composted, shredded hardwood bark mulch, free of wood alcohol.
8. All stock to be container grown with deer repellant tablets in growing medium, such as "repellex".
9. Spray all trees with deer repellant immediately after planting and apply as necessary during warrant period.

ROOT PRUNING

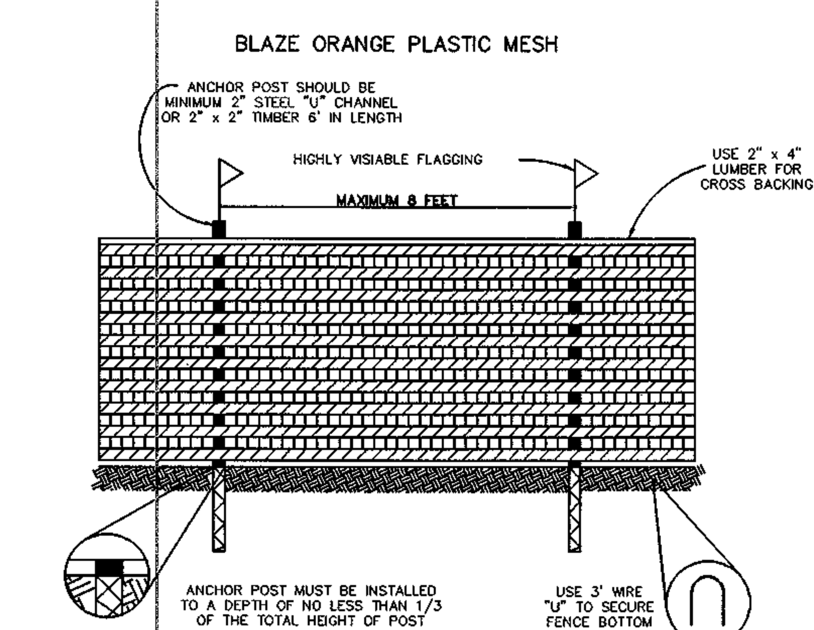
1. Retention areas shall be set prior to construction
2. Boundaries of retention areas shall be flagged, and location of trench shall be specified by ERI Qualified Professional.
3. Roots shall be cut cleanly with root pruning equipment. Where roots >1" are found, trenching shall be done by air spade or hand tools. Roots >1" shall be cut with a hand saw.
4. Trench shall be immediately backfilled with soil removed or high organic content soil.
5. Any other techniques shall be approved by the ERI Qualified Professional before implementation.





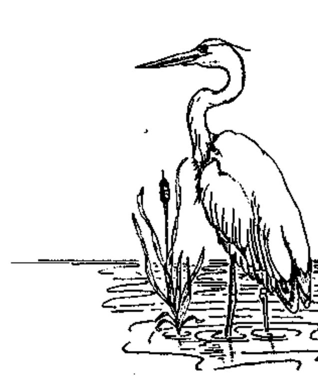
SIGN DETAIL: PERMANENT SIGN

SIGNAGE NOTE: ALL TREE PROTECTION SIGNS SHALL BE PLACED ON ALUMINUM POSTS OR PRESSURE TREATED WOOD POLES. NO ATTACHMENT OF SIGNS TO TREES IS PERMITTED.



NOTES:
1. FOREST PROTECTION DEVICE ONLY.
2. RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
3. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
4. ROOT DAMAGE SHOULD BE AVOIDED.
5. PROTECTIVE SIGNAGE MAY ALSO BE USED.
6. DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION.

TREE PROTECTION DETAIL
NOT TO SCALE



EXPLORATION RESEARCH, INC.
ENVIRONMENTAL CONSULTANTS
8318 FORREST STREET
ELLICOTT CITY, MARYLAND 21043
TEL: (410) 750-1150 FAX (410) 750-7350

OWNER
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West Friendship, Maryland 21794

DEVELOPER
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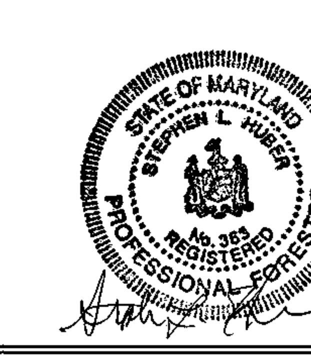
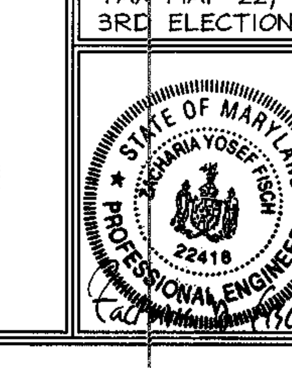
FOREST CONSERVATION NOTES AND DETAILS
TWIN PINES

LOTS 1 THRU 11, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCEL 'B'
TAX MAP 22, GRIDS 3 & 8 — PARCEL 17
3RD ELECTION DISTRICT — HOWARD COUNTY, MARYLAND





FSH Associates
Engineers Planners Surveyors
8318 Forrest Street Ellicott City, MD 21043
Tel:410-750-2251 Fax: 410-750-7350
E-mail: FSHAssociates@cs.com

DESIGN BY:	DH
DRAWN BY:	DH
CHECKED BY:	SH
SCALE:	As Shown
DATE:	Feb. 10, 2003
W.O. No.:	3048
SHEET No.	14 OF 14

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[signature] 3/25/03
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[signature] 3/13/03
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

[signature] 3-7-03
CHIEF, BUREAU OF HIGHWAYS DATE

F-03-018

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	SOIL GROUP
ChC2	Chester silt loam, 8 to 15 percent slopes, moderately eroded	B
ChD2	Chester silt loam, 15 to 25 percent slopes, moderately eroded	B
Cs	Comus silt loam	B
MgC2	Manor gravelly loam, 8 to 15 percent slopes, moderately eroded	B
MlB2	Manor loam, 3 to 8 percent slopes, moderately eroded	B
MlD2	Manor loam, 15 to 25 percent slopes, moderately eroded	B
MlD3	Manor loam, 15 to 25 percent slopes, moderately eroded	B
MlE	Manor loam, 25 to 45 percent slopes	B
MnF	Manor very stony loam, 25 to 60 percent slopes	B

Maryland State Grid (NAD 83/91)

FOR ENTRANCE DETAIL, SEE SHEET 9 OF 14.

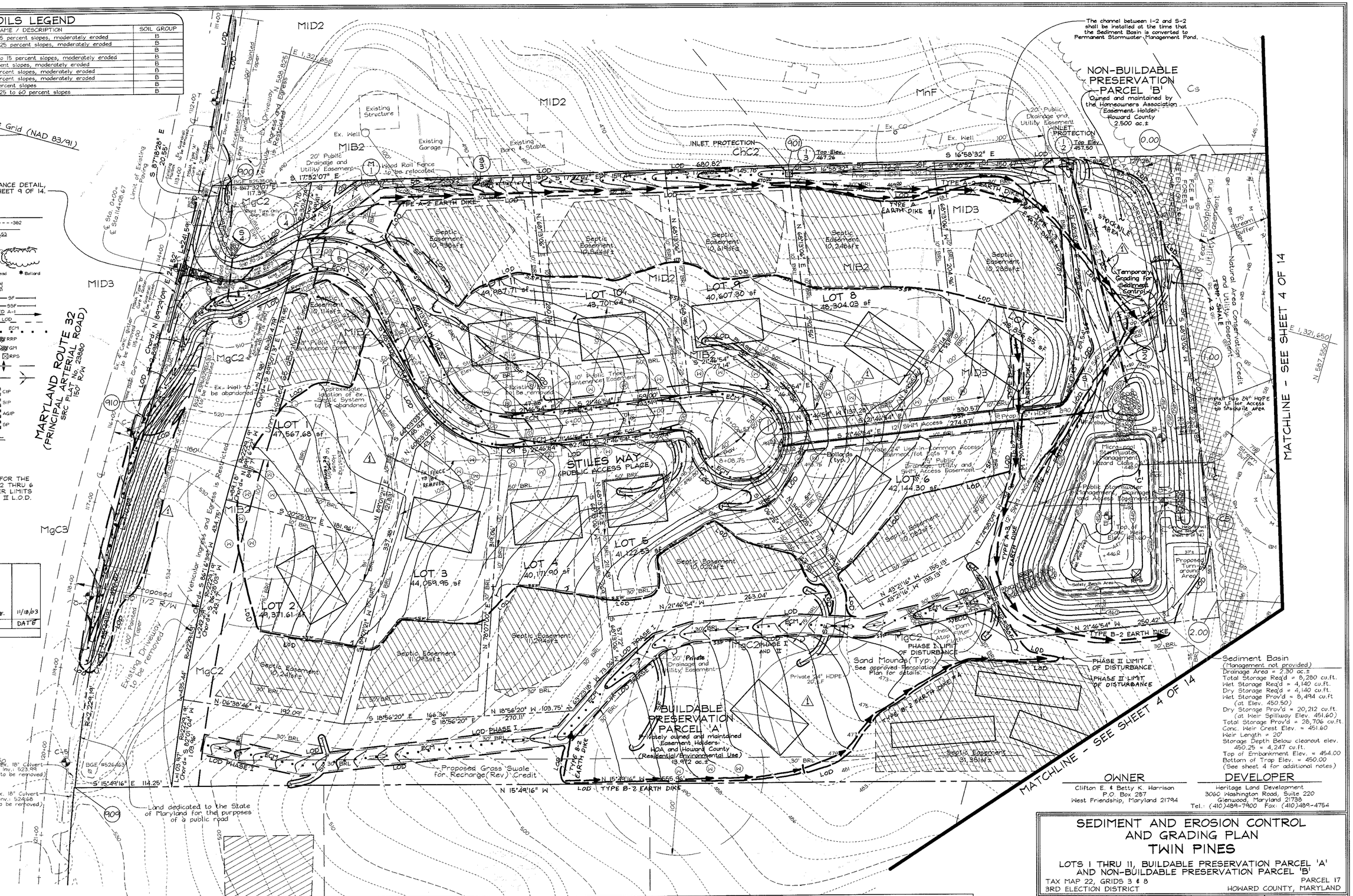
LEGEND

Existing Contour — 382
Proposed Contour — 382
Spot Elevation — +82.52
Direction of Flow
Tree Protection Fence
Existing Trees to Remain
Light Poles — Post Top, Overhead, Bollard
Stabilized Construction Entrance — SCE
Silt Fence — SF
Super Silt Fence — SSF
Earth Dike — ED A-1
Limit of Disturbance — LOD
Erosion Control Matting — ECM
Rip-Rap Inflow Protection — RRP
Gabion Inflow Protection — GM
Removable Pumping Station — RPS
Proposed Drainage Divide
Existing Drainage Divide
Curb Inlet Protection — CIP
Standard Inlet Protection — SIP
At Grade Inlet Protection — AGIP
Sump Pit — SP
Temporary Swale

NOTE:
THE LIMIT OF DISTURBANCE FOR THE GRASS SWALE BEHIND LOTS 2 THRU 6 IS PHASE I L.O.D. ALL OTHER LIMITS OF DISTURBANCE ARE PHASE II L.O.D.

No.	DESCRIPTION	DATE
4	REVISE LIMITS OF DISTURBANCE, SEDIMENT CONTROLS, MASS GRADE SITE.	11/18/03

REVISIONS



Sediment Basin
(Management not provided)
Drainage Area = 2.30 ac.±
Total Storage Req'd = 8,280 cu.ft.
Wet Storage Req'd = 4,140 cu.ft.
Dry Storage Req'd = 4,140 cu.ft.
Wet Storage Prov'd = 8,494 cu.ft (at Elev. 450.50)
Dry Storage Prov'd = 20,212 cu.ft. (at Weir Spillway Elev. 451.60)
Total Storage Prov'd = 28,706 cu.ft.
Conc. Weir Crest Elev. = 451.60
Weir Length = 20'
Storage Depth Below cleanout elev. 450.25 = 4,247 cu.ft.
Top of Embankment Elev. = 454.00
Bottom of Trap Elev. = 450.00
(See sheet 4 for additional notes)

OWNER
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SEDIMENT AND EROSION CONTROL AND GRADING PLAN
TWIN PINES

LOTS 1 THRU 11, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCEL 'B'
TAX MAP 22, GRIDS 3 & 8 — PARCEL 17
3RD ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Cindy Hanuta — 3/25/03
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE
3/18/03
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
3-7-03
CHIEF, BUREAU OF HIGHWAYS — DATE

DEVELOPER'S CERTIFICATE
"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.
2-11-03
SIGNATURE OF DEVELOPER — DATE
Timothy W. Feaga

ENGINEERS CERTIFICATE
"I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
2-11-03
SIGNATURE OF ENGINEER — DATE
ZACHARIA Y. FISCH

THESE PLANS HAVE BEEN REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SOIL EROSION AND SEDIMENT CONTROL.
2/26/03
USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE
THESE PLANS FOR SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
2/26/03
HOWARD SOIL CONSERVATION DISTRICT — DATE

STATE OF MARYLAND — ZACHARIA Y. FISCH — No. 22418 — PROFESSIONAL ENGINEER

FSH Associates
Engineers Planners Surveyors
8318 Forrest Street Ellicott City, MD 21043
Tel:410-750-2281 Fax: 410-750-7350
E-mail: FSHAssociates@cs.com

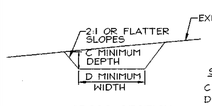
DESIGN BY: PS/KO
DRAWN BY: PS/KO
CHECKED BY: ZYF
SCALE: 1"=50'
DATE: Feb 10, 2003
W.O. No.: 3048
SHEET No: 3 OF 14

F-03-018

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	SOIL GROUP
ChC2	Chester silt loam, 8 to 15 percent slopes, moderately eroded	B
ChD2	Chester silt loam, 15 to 25 percent slopes, moderately eroded	B
Cs	Comus silt loam	B
MgC2	Manor gravelly loam, 8 to 15 percent slopes, moderately eroded	B
MIB2	Manor loam, 3 to 8 percent slopes, moderately eroded	B
MID2	Manor loam, 15 to 25 percent slopes, moderately eroded	B
MID3	Manor loam, 15 to 25 percent slopes, moderately eroded	B
MIE	Manor loam, 25 to 45 percent slopes	B
MnF	Manor very stony loam, 25 to 60 percent slopes	B

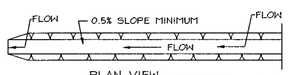
DETAIL 2 - TEMPORARY SWALE



	SWALE A	SWALE B
C	1' MIN.	1' MIN.
D	4' MIN.	6' MIN.

OUTLET AS REQUIRED

CROSS SECTION



PLAN VIEW

DRAINAGE AREA = 10 AC. (MAX)
SLOPE = 10% (MAX)

STANDARD SYMBOL
A - 2 / B - 3

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

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

Construction Specifications

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

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

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

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

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

6. Fill, if necessary, shall be compacted by earth moving equipment.

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

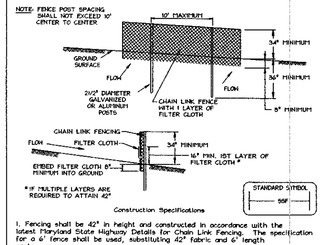
8. Inspection and maintenance must be provided periodically and after each rain event.

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

1

DETAIL 33 - SUPER SILT FENCE

NOTE: FENCE POST SPACING SHALL NOT EXCEED 10' CENTER TO CENTER



Construction Specifications

1. Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length posts.

2. Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.

3. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.

4. Filter cloth shall be embedded a minimum of 8" into the ground.

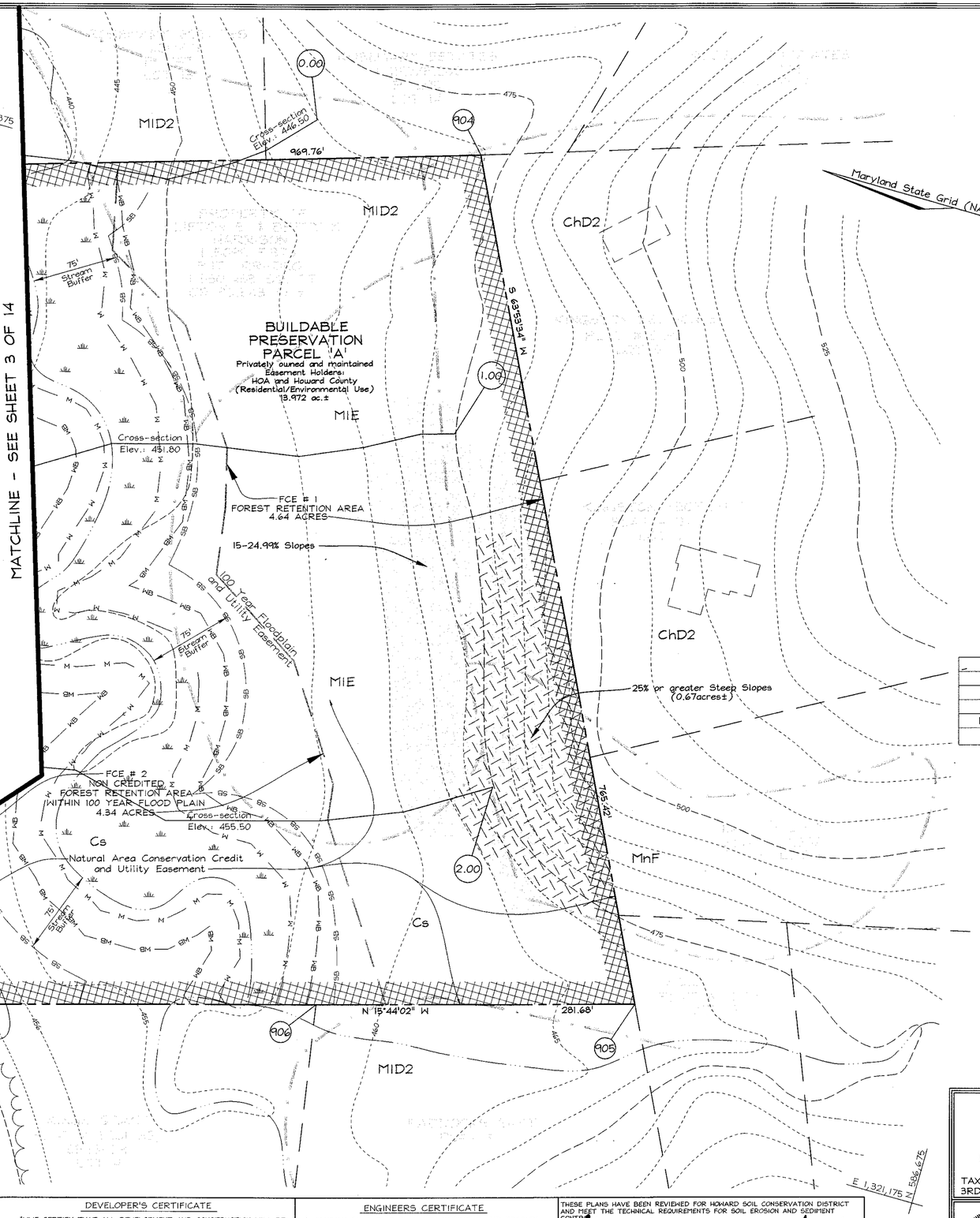
5. When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.

6. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height.

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

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

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE H - 26 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



No.	Description	Date
1	Added SUPER SILT FENCE DETAIL	11.18.03
1	Added Temporary Swale Detail	11.18.03

REVISIONS

Sediment Basin Notes:

While the SWM facility functions as a sediment basin, the following items need to be done:

1. The rip-rap at S-1, S-2 and forebay spillway will not be installed.
2. The SWM facility access drive will not be completely graded out due to the interference with sediment control measures.
3. The swale from I-2 to the forebay will not be constructed. The temporary grading around the forebay as shown on the plans will be constructed instead.
4. The WQv 2.3" diameter low flow orifice will be temporarily clogged. See weir structure detail on the plans.
5. The rip-rap inlow channel and a portion of the western pond edge shall not be constructed until sediment control measures are removed.
6. The SWM facility wetpool area will not be graded.

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SEDIMENT AND EROSION CONTROL AND GRADING PLAN
TWIN PINES

LOTS 1 THRU 11, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCEL 'B'

TAX MAP 22, GRIDS 3 & 8 — PARCEL 17
3RD ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Cindy Hanson — 3/25/03
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

3/12/03
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

3-7-03
CHIEF, BUREAU OF HIGHWAYS — DATE

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2-11-03
SIGNATURE OF DEVELOPER — DATE
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Zachariah Y. Fisch — 2-11-03
SIGNATURE OF ENGINEER — DATE
ZACHARIA Y. FISCH

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2/26/03
USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE

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2/26/03
HOWARD SOIL CONSERVATION DISTRICT — DATE

STATE OF MARYLAND — ZACHARIA YOSEF FISCH — 22418 — PROFESSIONAL ENGINEER
Z. Y. Fisch

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E-mail: FSHAssociates@cs.com

DESIGN BY:	PS/KO
DRAWN BY:	PS/KO
CHECKED BY:	ZYF
SCALE:	1"=50'
DATE:	Feb. 10, 2003
W.O. No.:	3048
SHEET No.	4 OF 14

F-03-018

21.0 STANDARDS 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 vegetable growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.

Conditions Where Practice Applies

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

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

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

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

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

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

Construction and Material Specifications

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

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

i. Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if recommended by an agronomist or a 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 that 1 and 1/2" in diameter.

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

iii. Where the subsoil is either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate of 4-8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil. Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.

II. For sites having disturbed areas under 5 acres:

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

iii. For sites having disturbed areas over 5 acres:
i. On soil meeting topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:
a. pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.
b. Organic content of topsoil shall be not less than 1.5 percent by weight.
c. Topsoil having soluble salt content greater than 500 parts per million shall not be used.
d. No sod or seed shall be placed on soil 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.
ii. Place topsoil (if required) and apply soil ammendments specified in 20.0 Vegetative Stabilization-Section I-Vegetative Stabilization Methods and Materials.

V. Topsoil Application

i. 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.

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

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

iv. Topsoil shall not be place 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.

PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LIVED VEGETATIVE COVER IS NEEDED.

SEEDBED PREPARATION: Loosen upper three inches of soil by raking, discing or other acceptable means before seeding, if not previously loosened.

SOIL AMENDMENTS: In lieu of soil test recommendations, use one of the following schedules:

1) Preferred-Apply 2 tons per acre dolomitic limestone (92 lbs/100 sq.ft.) and 600 lbs per acre 10-10-10 fertilizer (14 lbs./1000 sq.ft.) before seeding. Harrow or disc into upper three inches of soil. At the time of seeding, apply 400 lbs. per acre 30-0-0 ureaform fertilizer (9 lbs/1000 sq.ft.)

2) Acceptable-Apply 2 tons per acre dolomitic limestone (92 lbs/1000 sq.ft.) and apply 1000 lbs. per acre 10-10-10- fertilizer (23 lbs./1000 sq.ft.) before seeding. Harrow or disc 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 Turf Type Tall Fescue. For the period May 1 thru July 31, seed with 60 lbs. Turf Type 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 well anchored straw mulch and seed as soon as possible in the spring. Option (2) Use sod. Option (3) Seed with 60 lbs/acre Kentucky 31 Tall Fescue and mulch with 2 tons/acre well anchored straw.

MULCHING: Apply 1 1/2 to 2 tons per acre (70 to 90 lbs/1000 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 flat areas. On slopes 8 feet 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 reseedings.

TEMPORARY SEEDING NOTES

SEEDBED PREPARATION: Loosen upper three inches of soil by raking, discing 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 November 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 1 thru February 28, protect site by applying 2 tons per acre of well anchored straw mulch and seed as soon as possible in the spring, or use sod.

MULCHING: Apply 1 1/2 to 2 tons per acre (70 to 90 lbs./1000 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 flat areas. On slopes 8 feet or higher, use 348 gallons per acre (8 gal/1000 sq.ft.) for anchoring.

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

SEQUENCE OF CONSTRUCTION ⚠1

1. Obtain Grading permit.
2. Clear for and install all sediment controls within Phase I L.O.D. - three (3) Silt Fence strips, Super Silt Fence at bottom of Swale including SCE. (1 day)
3. With the permission of the sediment control inspector grade swale, install private driveway culvert, install proposed check dams, install soil stabilization matting within swale and stabilize all disturbed areas with seed and mulch. (2 days)
4. Clear for and install the four (4) earth dikes, temp 24 Inch Culverts, temp. swale, the sediment basin per SWM facility details (see required modifications to the SWM facility for the sediment basin on the sediment control plans), and install removeable pumping station. (2 weeks)
5. Clear for and install all remaining sediment control measures within Phase II L.O.D. - Including Super Silt Fence and Silt Fence. (1 day)
6. With the permission of the sediment control inspector grade road and lots to subgrade and install soil stabilization mattingwithin all road channels, install storm drains, install S-2 to I-2, immediately repair dikes and apply seed and mulch to stabilize grade the swale along the eastern property line, install inlet protection to I-2 & 3, install soil stabilization matting within swale and seed and mulch all disturbed areas. (2 weeks)
7. Pave roads and provide final stabilization to all disturbed areas and flush storm drain system. (1 week)
8. Convert the sediment basin to the SWM facility by removing the RPS, unclogging the WQv 2.3" dia. low flow orifice, installing all riprap protection remove earth dikes 1 thru 3, 24 inch culverts, and temporary swale grading all inflow swales with soil stabilization matting within the swale, and grading out the SWM wet-pool area. Fine grade and stabilize all remaining disturbed areas with seed and mulch. (2 weeks)
9. With permission of the sediment control inspector, remove all remaining sediment control measures and stabilize all remaining disturbed areas.

* See sheet 3 of 14 for installation of channel between I-2 and S-2.

Note: Any grading associated with the entrance to the project will be immediately stabilized with sod at the direction of the Sediment Control Inspector.

SEDIMENT CONTROL NOTES

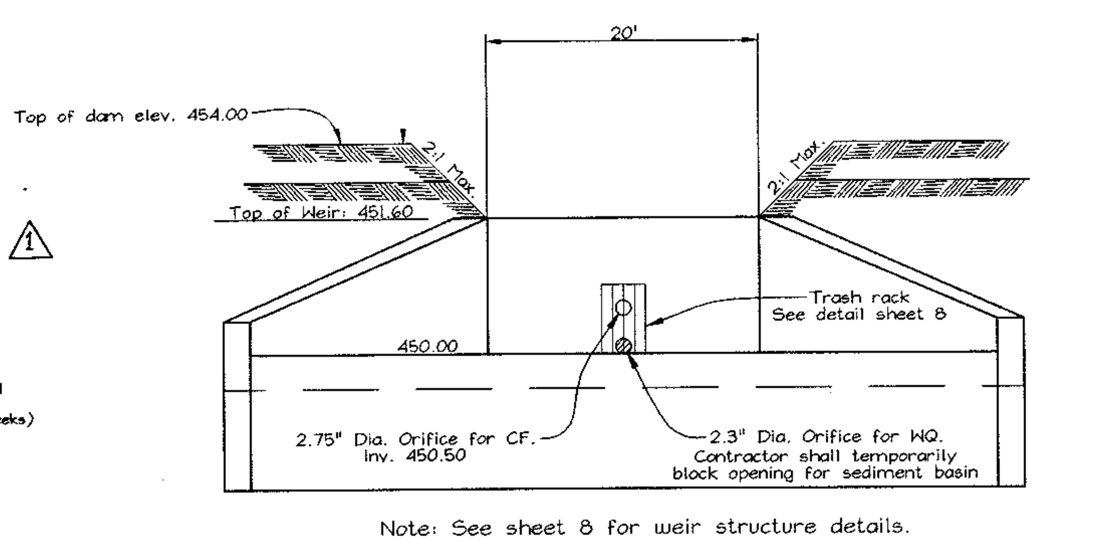
1. A minimum of 48 hours notice must be given to the Howard County Department of Inspection, License and Permits Sediment Control Division prior to the start of any construction (313-1855).
2. All vegetation and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. and revisions thereto.
3. 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.
4. All sediment traps/basins shown must be fenced and warning signs posted around their perimeter in accordance with Vol. 1, Chapter 7, HOWARD COUNTY DESIGN MANUAL, Storm Drainage.
5. All disturbed areas must be stabilized within the time period specified above in accordance with the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seeding, sod, temporary seeding, and mulching (Sec. G). Temporary stabilization with mulch alone shall 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 : ⚠1

Total Area	30.543 Acres
Area Disturbed	13.13 ~~5.56~~ Acres
Area to be roofed or paved	0.47 Acres
Area to be vegetatively stabilized	12.66 ~~5.1~~ Acres
Total Cut	8,000 CY **
Total Fill	8,000 CY **
Offsite waste/borrow area location	*

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 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.
11. Trenches for the construction of utilities is limited to three pipe lengths or that which shall be back-filled and stabilized within one working day, whichever is shorter.

* To be determined by contractor, with pre-approval of the Sediment Control Inspector with an approved and active grading permit

**Total cut and fill quantities are for permit purposes only. Contractor to verify earthwork quantities.

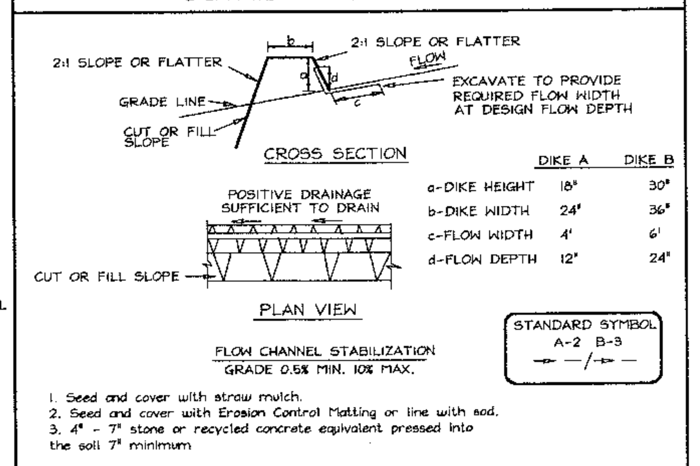


Note: See sheet 8 for weir structure details.

Detail of Weir Structure Modifiactions for Sediment Basin

Not to Scale

DETAIL 1 - EARTH DIKE



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

STANDARD SYMBOL A-2 B-3

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

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

Construction Specifications

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

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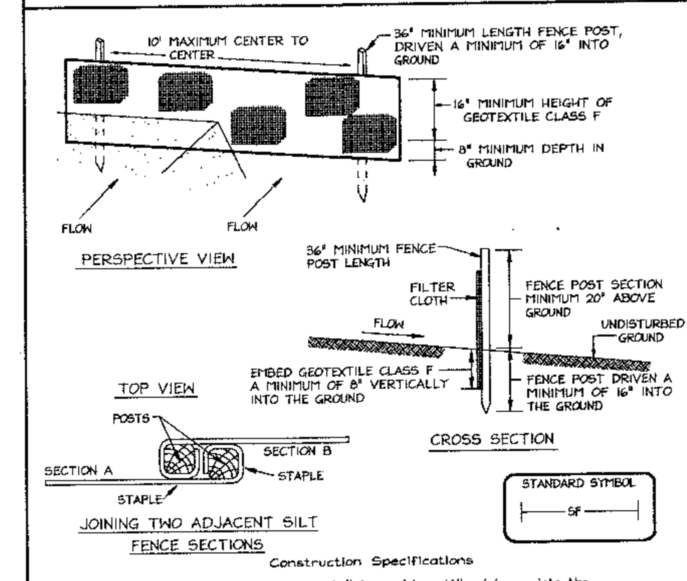
DETAIL 22 - SILT FENCE



Construction Specifications

1. Fence posts shall be a minimum of 36" long, driven 16" minimum into the ground. Wood posts shall be 1 1/2" x 1 1/2" square (minimum) cut, or 1 3/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighing not less than 1.00 pound per linear foot.
2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

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

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

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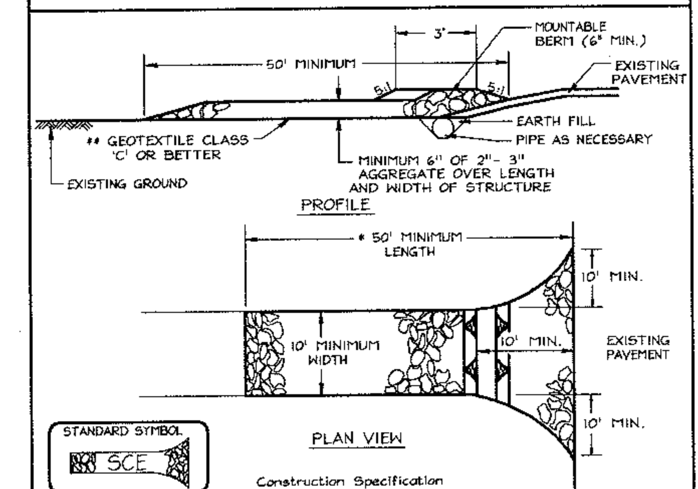
DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



Construction Specification

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

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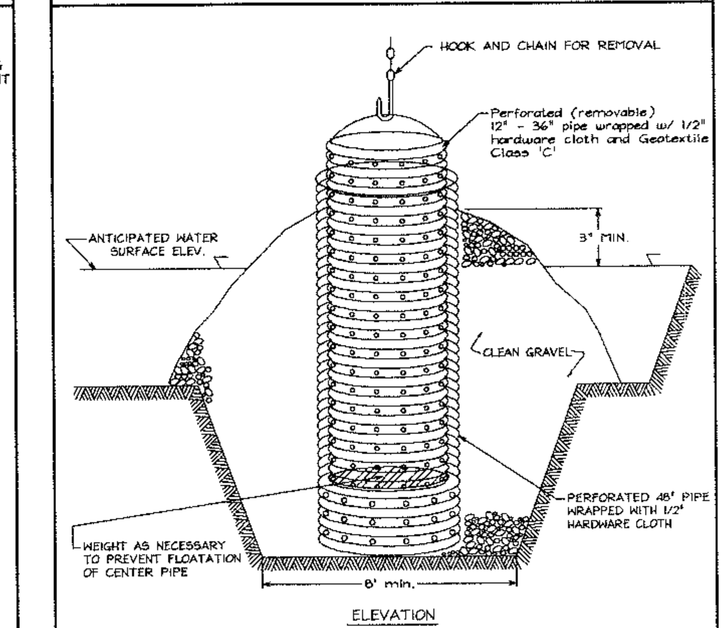
DETAIL 20A - REMOVABLE PUMPING STATION



Construction Specifications

1. The outer pipe should be 48" dia. or shall, in any case, be at least 4" greater in diameter than the center pipe. The outer pipe shall be wrapped with 1/2" hardware cloth to prevent backfill material from entering the perforations.
2. After installing the outer pipe, backfill around outer pipe with 2" aggregate or clean gravel.
3. The inside stand pipe (center pipe) should be constructed by perforating a corrugated or PVC pipe between 12" and 36" in diameter. The perforations shall be 1/2" X 6" slits or 1" diameter holes 6" on center. The center pipe shall be wrapped with 1/2" hardware cloth first, then wrapped again with Geotextile Class C.
4. The center pipe should extend 12" to 18" above the anticipated water surface elevation or riser crest elevation when dewatering a basin.

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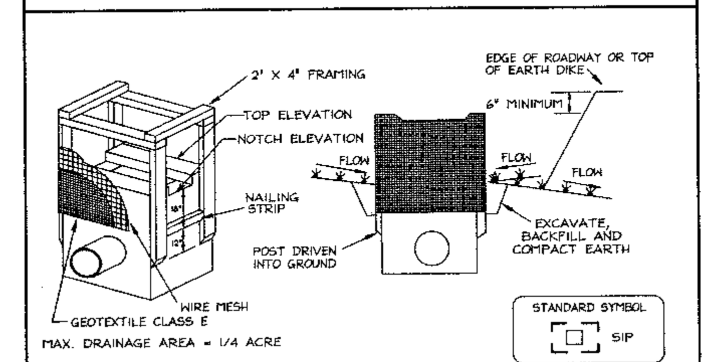
~~SEQUENCE OF CONSTRUCTION~~

1. ~~Obtain Grading permit.~~
2. ~~Clear for and install all sediment controls within Phase I L.O.D.- four (4) silt fence strips, including SCE. (1 day)~~
3. ~~With the permission of the sediment control inspector grade swale, install private driveway culvert, install proposed check dams, install soil stabilization matting within swale and stabilize all disturbed areas with seed and mulch. (2 days)~~
4. ~~With the permission of the sediment control inspector remove all sediment control measures within Phase I L.O.D. (1/2 day)~~
5. ~~Clear for and install the two (2) earth dikes, the sediment basin per SWM facility details(see required modifications to the SWM facility for the sediment basin on the sediment control plans), and install removeable pumping station. (2 weeks)~~
6. ~~Clear for and install all remaining sediment control measures within Phase II L.O.D. - silt fence and inlet protection (I-2 & I-3 only). (1 day)~~
7. ~~With the permission of the sediment control inspector grade road to subgrade and install soil stabilization matting within all road channels, install storm drains, grade the swale along the eastern property line, install soil stabilization matting within swale and seed and mulch all disturbed areas. (2 weeks)~~
8. ~~Pave roads and provide final stabilization to all disturbed areas and flush storm drain system. (1 week)~~
9. ~~Convert the sediment basin to the SWM facility by removing the RPS, unclogging the WQv 2.3" dia. low flow orifice, installing all riprap protection, grading all inflow swales with soil stabilization matting within the swales, and grading out the SWM wet-pool area. Stabilize all remaining disturbed areas with seed and mulch. (2 weeks)~~
10. ~~With permission of the sediment control inspector, remove all sediment control measures and stabilize all remaining disturbed areas.~~

~~* See sheet 3 of 14 for installation of channel between I-2 and S-2.~~

~~Note: Any grading associated with the entrance to the project will be immediately stabilized with sod at the direction of the Sediment Control Inspector.~~

DETAIL 23A - STANDARD INLET PROTECTION



MAX. DRAINAGE AREA = 1/4 ACRE

Construction Specifications

1. Excavate completely around the inlet to a depth of 18" below the notch elevation.
2. Drive the 2" x 4" construction grade lumber posts 1' into the ground at each corner of the inlet. Place nail strips between the posts on the ends of the inlet. Assemble the top portion of the 2" x 4" frame using the overlap joint shown on Detail 23A. The top of the frame (weir) must be 6" below adjacent roadways where flooding and safety issues may arise.
3. Stretch the 1/2" x 1/2" wire mesh tightly around the frame and fasten securely. The ends must meet and overlap at a post.
4. Stretch the Geotextile Class E tightly over the wire mesh with the geotixtile extending from the top of the frame to 18" below the inlet notch elevation. Fasten the geotextile firmly to the frame. The ends of the geotextile must meet at a post, be overlapped and folded, then fastened down.
5. Backfill around the inlet in compacted 6" layers until the layer of earth is level with the notch elevation on the ends and top elevation on the sides.
6. If the inlet is not in a sump, construct a compacted earth dike across the ditch line directly below it. The top of the earth dike should be at least 6" higher than the top of the frame.
7. The structure must be inspected periodically and after each rain and the geotextile replaced when it becomes clogged.

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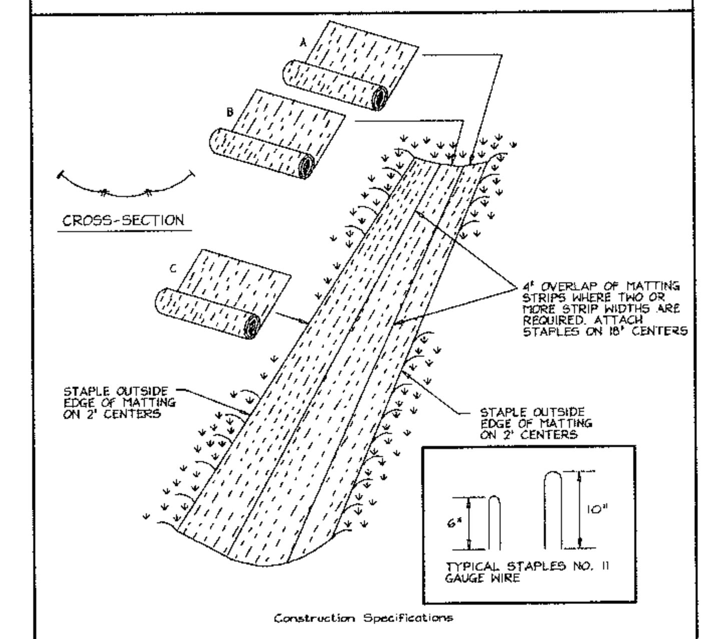
DETAIL 30 - EROSION CONTROL MATTING

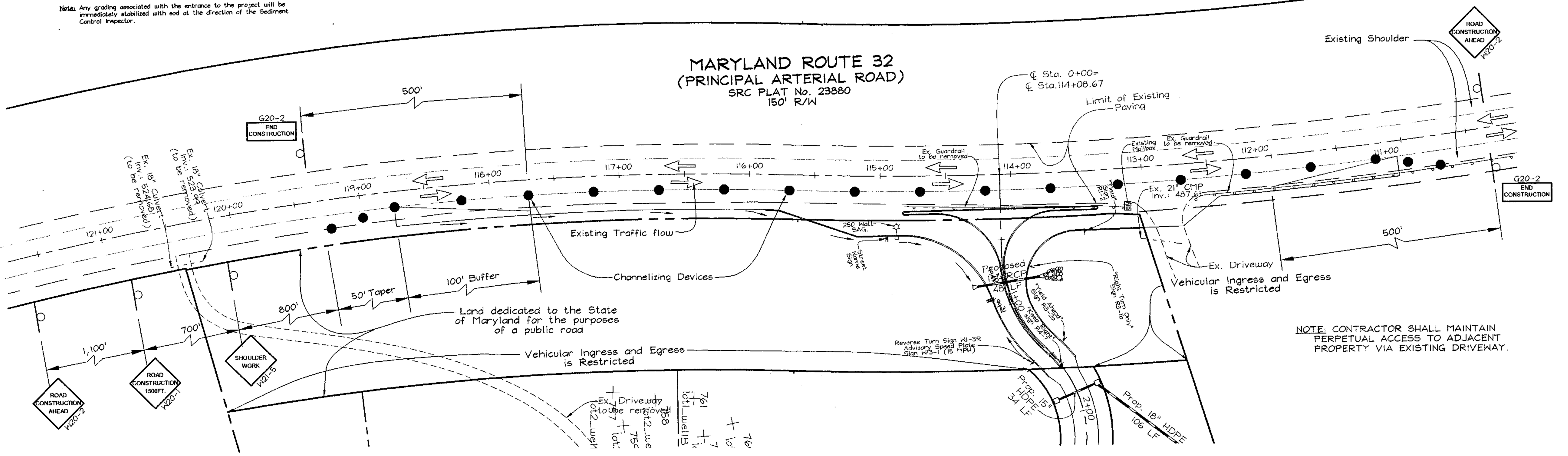


Construction Specifications

1. 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 channel cross-section. Secure with a row of staples about 4" down slope from the trench. Spacing between staples is 6".
2. Staple the 4" overlap in the channel center using an 18" spacing between staples.
3. Before stapling the outer edges of the matting, make sure the matting is smooth and in firm contact with the soil.
4. Staples shall be placed 2' apart with 4 rows for each strip, 2 outer rows, and 2 alternating rows down the center.
5. Where one roll of matting ends and another begins, the end of the top strip shall overlap the upper end of the lower strip by 4", shiplap fashion. Reinforce the overlap with a double row of staples spaced 6" apart in a staggered pattern on either side.
6. 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 effected by the flow must be keyed-in.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE G - 22 - 2	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



TRAFFIC CONTROL PLAN

SCALE: 1"=50'

NOTE: CONTRACTOR SHALL MAINTAIN PERPETUAL ACCESS TO ADJACENT PROPERTY VIA EXISTING DRIVEWAY.

⚠1	Revised Site Analysis Note #7	11.18.03
⚠1	Revised Sequence of Const.	11.18.03
No.	Description	Date
REVISIONS		

OWNER
Clifton E. & Betty K. Harrison
P.O. Box 287
West Friendship, Maryland 21794

DEVELOPER
Heritage Land Development
3060 Washington Road, Suite 220
Glenwood, Maryland 21738
Tel.: (410)489-7900 Fax: (410)489-4754

TRAFFIC CONTROL PLAN, SEDIMENT AND EROSION CONTROL AND MISCELLANEOUS DETAILS
TWIN PINES

LOTS 1 THRU 11, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCEL 'B'

TAX MAP 22, GRIDS 3 & 8 — PARCEL 17
3RD ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Cindy Hamilton 3/25/03
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

[signature] 3/12/03
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

[signature] 3-7-03
CHIEF, BUREAU OF HIGHWAYS — DATE

DEVELOPER'S CERTIFICATE

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

Timothy W. Feaga 2-11-03
SIGNATURE OF DEVELOPER — DATE
TIMOTHY W. FEAGA

ENGINEERS CERTIFICATE

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

Zacharia Y. Fisch 2-11-03
SIGNATURE OF ENGINEER — DATE
ZACHARIA Y. FISCH

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

Jim Myers 2/26/03
USDA-NATURAL RESOURCE CONSERVATION — DATE

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

John R. Robertson 2/26/03
HOWARD SOIL CONSERVATION DISTRICT — DATE

STATE OF MARYLAND — ZACHARIA YOSEF FISCH — 22418 — PROFESSIONAL ENGINEER

FSH Associates
Engineers Planners Surveyors
8318 Forrest Street Ellicott City, MD 21043
Tel:410-750-2251 Fax: 410-750-7350
E-mail: FSHAssociates@cs.com

DESIGN BY:	PS/KO
DRAWN BY:	PS/KO
CHECKED BY:	ZYF
SCALE:	As Shown
DATE:	Feb. 10, 2003
W.O. No.:	3048
SHEET No.	5 OF 14

F-03-018