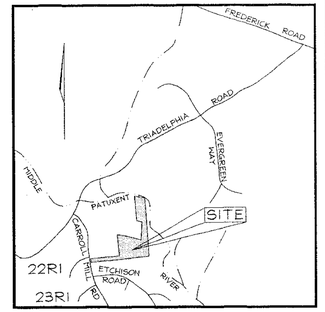
SHEET INDEX	
1	COVER SHEET
2	ROAD CONSTRUCTION PLAN
3	ROAD PROFILES
4	GRADING & SEDIMENT CONTROL AND LANDSCAPE PLAN
5	STORM DRAIN DRAINAGE AREA MAP AND SOILS MAP
6	SEDIMENT CONTROL AND STORMWATER MANAGEMENT NOTES AND DETAILS
7	STORM DRAIN AND STORMWATER MANAGEMENT PROFILES
8	FOREST CONSERVATION PLAN

EAGLE RIDGE
LOTS 1 THRU 7 AND
PRESERVATION PARCELS A & B
FINAL ROAD CONSTRUCTION PLANS
HOWARD COUNTY, MARYLAND

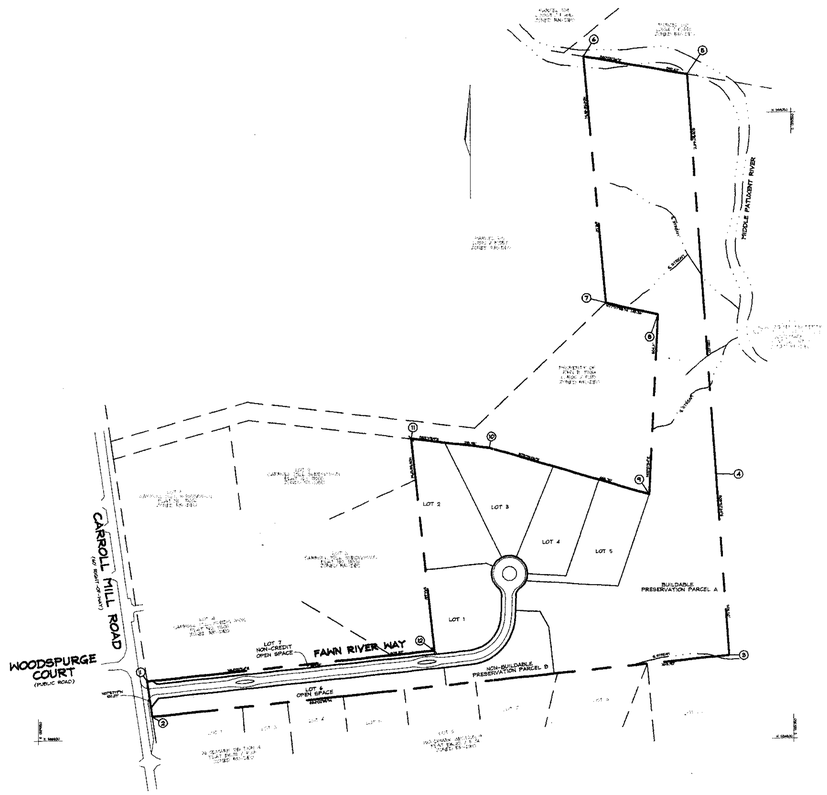
BENCHMARKS

Benchmark No. 1 : 22RI
N 584,643.362
E 1,330,331.235
Elev. : 404.511

Benchmark No. 2 : 23RI
N 583,336.053
E 1,331,824.747
Elev. : 366.978



VICINITY MAP
SCALE: 1"=2000'



PLAN
SCALE: 1"=200'

GENERAL NOTES

1. ALL ASPECTS OF THE PROJECT ARE IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
2. DEED REFERENCE: L.4528 / F.116
3. DENSITY:
   NUMBER OF ENTITIES PERMITTED BY RIGHT : 4(18.74AC./4.25=4)
   NUMBER OF BUILDABLE ENTITIES PROPOSED:6(5 CLUSTER LOTS PLUS 1 BUILDABLE PRESERVATION PARCEL)
   NUMBER OF DEO'S REQUIRES: 2(6 PROPOSED MINUS 4 BY-RIGHT=2)
   SENDING PARCEL : BUGLER PROPERTY, TAX MAP 6 , PARCEL 92, BLOCK 15
4. THE PROJECT BOUNDARY IS BASED ON A BOUNDARY SURVEY PERFORMED BY VOGEL & ASSOCIATES, INC. DATED NOVEMBER, 1998.
5. THE TOPOGRAPHY SHOWN HEREON IS BASED ON HOWARD COUNTY AERIAL PHOTOGRAMETRIC MAP AND A FIELD RUN SURVEY PERFORMED BY VOGEL & ASSOCIATES, INC. DATED NOVEMBER, 1998.
6. COORDINATE DATUM IS BASED ON THE MARYLAND COORDINATE SYSTEM (NAD 83) AS PROJECTED BY THE FOLLOWING HO.CO. GEODETIC CONTROL STATIONS: 22RI & 23RI
7. WATER AND SEWER FOR THIS PROJECT WILL BE PRIVATE.
8. STORMWATER MANAGEMENT (2 YR AND 10 YR) TO BE PROVIDED FOR THE PROPOSED ROAD ONLY. WATER QUALITY TO BE PROVIDED BY EXTENDED DETENTION.
9. WETLANDS AND STREAMS SHOWN ONSITE ARE BASED ON A FIELD INVESTIGATION PERFORMED BY WILDMAN ENVIRONMENTAL SERVICES DATED JANUARY, 1999.
10. FLOODPLAIN SHOWN ONSITE IS BASED ON HOWARD COUNTY FLOODPLAIN STUDY 32-37, MIDDLE PATUXENT RIVER.
11. FOREST STAND DELINEATION PLAN PREPARED BY WILDMAN ENVIRONMENTAL SERVICES DATED JANUARY, 1999.
12. APFO TRAFFIC STUDY PREPARED BY LEE CUNNINGHAN DATED DECEMBER, 1998 AND APPROVED UNDER S-99-13.
13. THERE ARE NO STEEP SLOPES ONSITE.
14. A NOISE STUDY IS NOT REQUIRED FOR THIS SITE.
15. ALL LANDSCAPING REQUIREMENTS AS SET FORTH IN THE LANDSCAPE MANUAL SHALL BE COMPLIED WITH. FINANCIAL SURETY FOR THE 71 PERIMETER TREES ($14,550.00) WILL BE PART OF THE DEVELOPER'S AGREEMENT.
16. THE FOREST CONSERVATION OBLIGATIONS INCURRED BY THIS SUBDIVISION HAVE BEEN MET BY THE CREATION OF 5.15 AC. OF FOREST CONSERVATION EASEMENT AND 0.83 AC. OF FEE-IN-LIEU ($10,898.00) SURETY FOR THE 5.15AC. OF RETENTION IS $22,430.00.
    Total Forest Cons. Surety = $33,279.00
17. STREET LIGHTING IS NOT REQUIRED FOR THIS SITE.
18. SEDIMENT AND EROSION CONTROL WILL BE PROVIDED FOR THIS SITE.
19. THIS PROPERTY IS NOT WITHIN THE METROPOLITAN DISTRICT.
20. TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL/CEMETARY LOCATIONS ON SITE.
21. PRIVATE SEWERAGE EASEMENTS OF 10,000 SQUARE FEET AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT FOR INDIVIDUAL SEWAGE DISPOSAL ARE SHOWN ON THIS PLAN (SEE LEGEND). IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWERAGE IS AVAILABLE. THESE EASEMENTS SHALL BECOME NULL AND VOID UPON CONNECTION TO A PUBLIC SEWERAGE SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE THE AUTHORITY TO GRANT VARIANCES FOR ENCROACHMENTS INTO THE PRIVATE SEWERAGE EASEMENT. RECORDATION OF A MODIFIED EASEMENT SHALL NOT BE NECESSARY.
22. THE EASEMENT HOLDER FOR PRIVATELY OWNED PRESERVATION PARCELS A WILL BE A HOMEOWNERS ASSOCIATION AND HOWARD COUNTY. THE EASEMENT HOLDER FOR THE HOMEOWNERS ASSOCIATION OWNED PRESERVATION PARCEL B WILL BE HOWARD COUNTY.
23. OPEN SPACE LOTS 6 & 7 ARE TO BE OWNED AND MAINTAINED BY HOMEOWNERS ASSOCIATION.
24. STORMWATER MANAGEMENT SOIL BORINGS FOR THIS SITE ARE BASED ON A GEOTECHNICAL ANALYSIS PROVIDED BY HERBST, BENSON AND ASSOCIATES, DATED MAY, 1999.
25. ALL WELLS TO BE DRILLED PRIOR TO RECORD PLAT SUBMITTAL.
26. THIS PLAN IS SUBJECT TO WP-00-76, APPROVED MARCH 6, 2000 TO SECTION 16.119(e)(5), TO REDUCE THE TRUNCATION AT THE INTERSECTION OF FAWN RIVER WAY AND CARROLL MILL ROAD.
27. Street Tree surety = $18900.00 (63 x $300)

SITE DATA

LOCATION: TAX MAP 22 & 23 BLOCK 6 & 1 PARCELS 553
3RD ELECTION DISTRICT
EXISTING ZONING: RR-DEO
GROSS AREA OF PROJECT: 18.74 AC.
AREA OF PROPOSED LOTS: 5.37 AC.
AREA OF PROPOSED PRESERVATION PARCEL A : 10.39 AC.
AREA OF PROPOSED NON-BUILDABLE PRESERVATION PARCEL B : 0.75 AC.
AREA OF PROPOSED ROAD: 1.25 AC.
AREA OF CREDITED OPEN SPACE : 0.937 AC.(5%)
AREA OF NON-CREDITED OPEN SPACE : 0.18 AC.
OPEN SPACE REQUIRED: 5% (0.937 AC.)
NUMBER OF LOTS/PARCELS PROPOSED: 5 + 2 PRESERVATION PARCELS

NO.	REVISION	DATE

OWNER/DEVELOPER
NORTHRIDGE DEVELOPMENT
14045 GARED DRIVE
GLENWOOD, MARYLAND 21738

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS — DATE 5/25/00

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT JA — DATE 5/30/00

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5/26/00

TITLE SHEET

EAGLE RIDGE

TAX MAP #22 & 23 BLOCK No. 6 PARCEL #553
3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
Reference No. : S-99-13, P-00-01

VOGEL & ASSOCIATES
ENGINEERS SURVEYORS PLANNERS
3691 Park Avenue, Suite 101 • Ellicott City,Maryland 21043
Tel 410.461.5826 Fax 410.465.3966

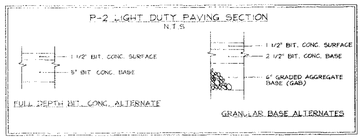
STATE OF MARYLAND — ROBERT HARRIS VOGEL — NO. 11613 — REGISTERED — PROFESSIONAL ENGINEER — 5/12/00
ROBERT H. VOGEL P.E. #11613

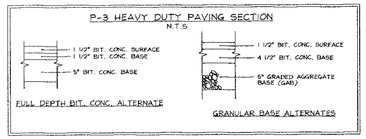
DESIGN BY: J.C.O.
DRAWN BY: J.C.O.
CHECKED BY: R.H.V.
DATE: DEC., 1999
SCALE: AS SHOWN
W.O. NO.: 97-77

SHEET 1 OF 8

C:\Land Projects\98-063\dwg\1009st dwg-cc 5.1.00

F.00-84





CURVE TABLE

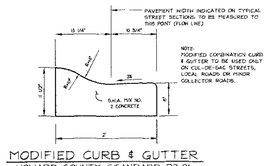
CURVE	LENGTH	RADIUS	TANGENT	CHORD	BEARING	DELTA
Curve 1	171.93	120.00	104.78	157.30	N49°06'38"E	82°05'47"

MINIMUM LOT SIZE CHART

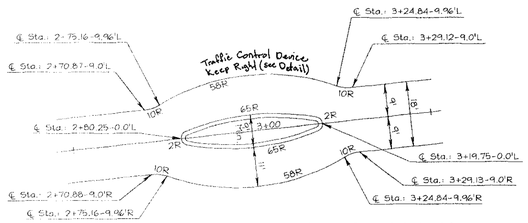
Lot No.	Gross Area (SF)	Pipe Stem Area (SF)	Net Lot Area (SF)
6	43,901 SF	243.09 SF	41,737.16 SF

STREET TREE CALCULATIONS

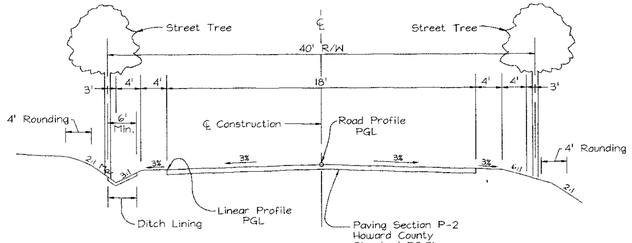
Street Name	Linear Feet	Required Trees	Provided Trees
Fawn River Way	2,503/40	63	63



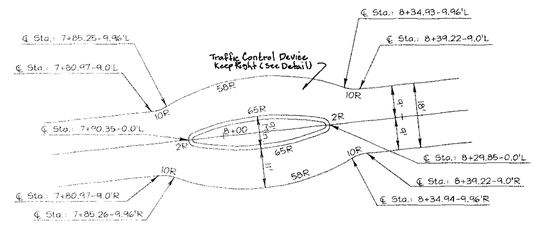
MODIFIED CURB & GUTTER
HOWARD COUNTY STANDARD R3.01
NOT TO SCALE



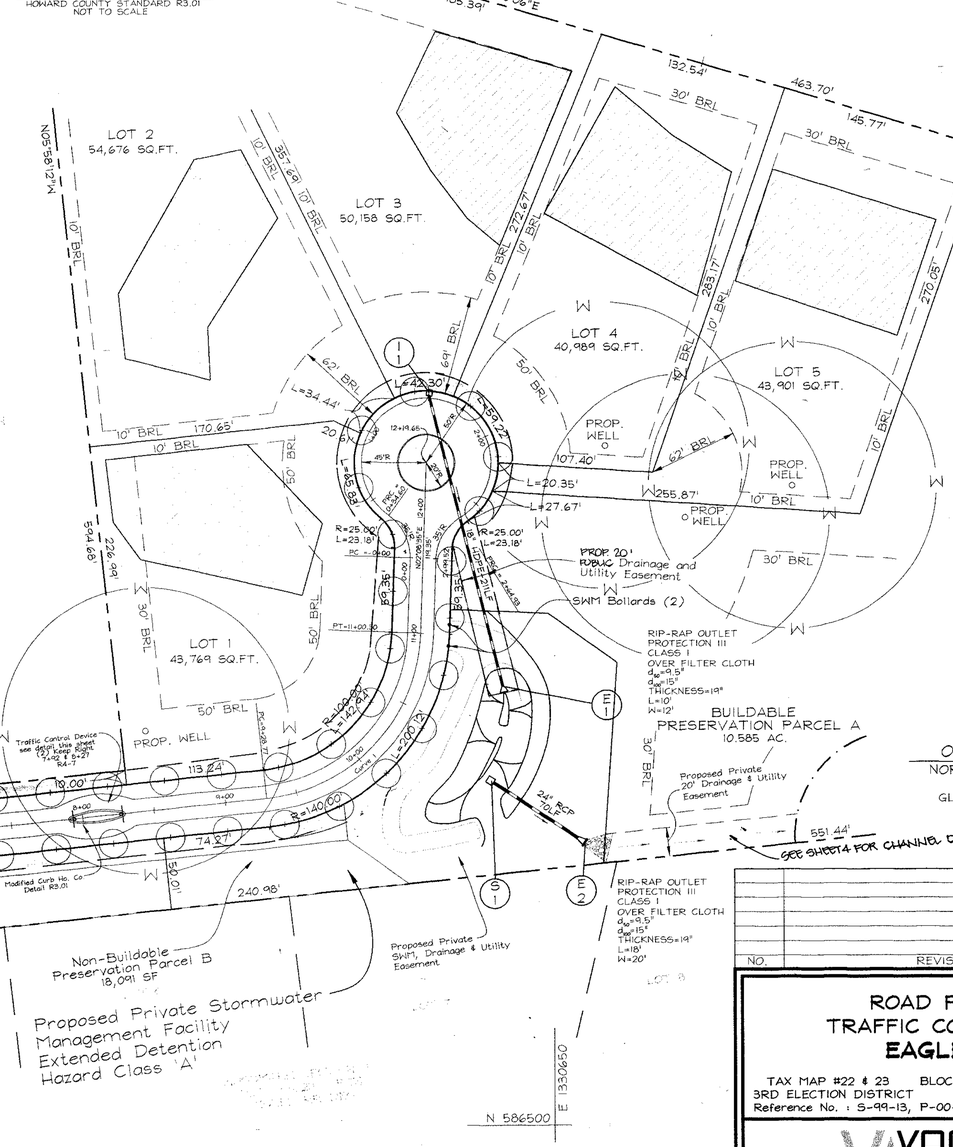
TRAFFIC CONTROL DEVICE AT STATION 3+00
SCALE: 1"=20'

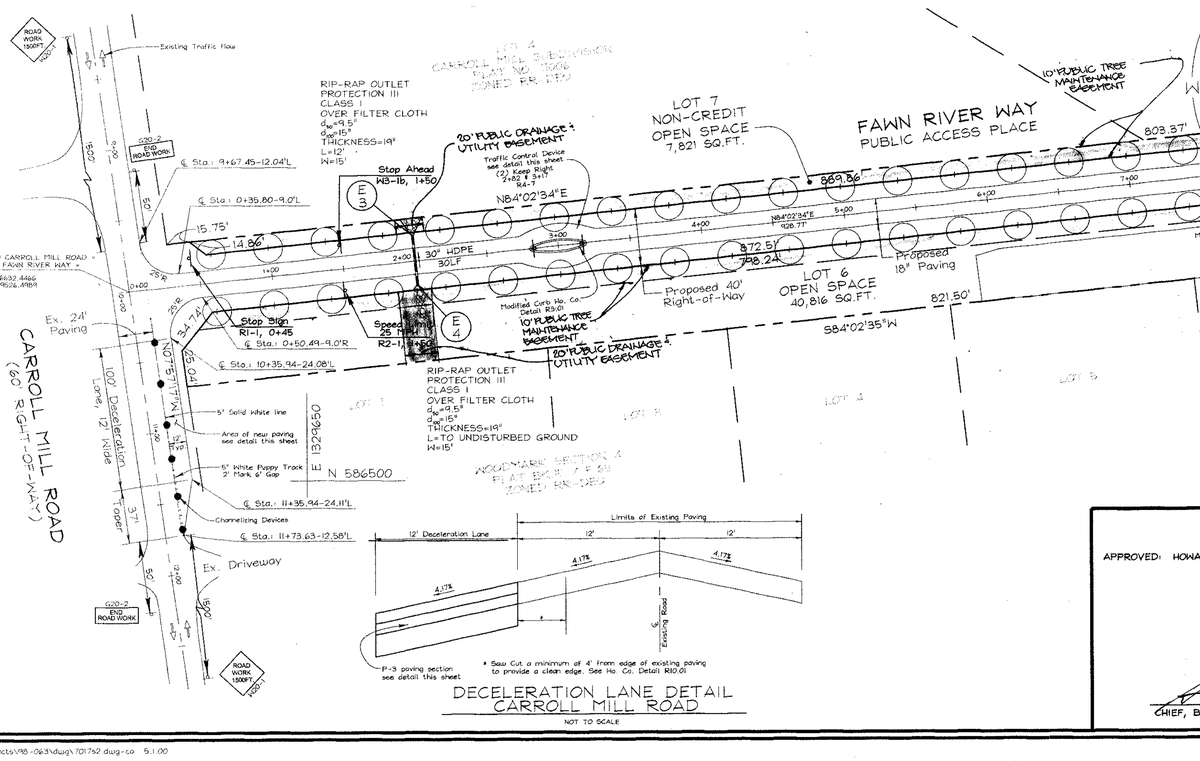


TYPICAL ROADWAY SECTION
CLASSIFICATION : PULIC ACCESS PLACE
HOWARD COUNTY STANDARD FIGURE 2.09b
DESIGN SPEED 25 MPH
NOT TO SCALE



TRAFFIC CONTROL DEVICE AT STATION 8+00
SCALE: 1"=20'





DECELERATION LANE DETAIL
CARROLL MILL ROAD
NOT TO SCALE

NO.	REVISION	DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 5/30/00

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5/30/00

ROAD PLAN AND TRAFFIC CONTROL PLAN
EAGLE RIDGE

TAX MAP #22 & 23 BLOCK No. 6 PARCEL #553
3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
Reference No. : S-99-13, P-00-01

VOGEL & ASSOCIATES
ENGINEERS·SURVEYORS·PLANNERS
3691 Park Avenue, Suite 101 • Ellicott City, Maryland 21043
Tel 410.461.5828 Fax 410.465.3866

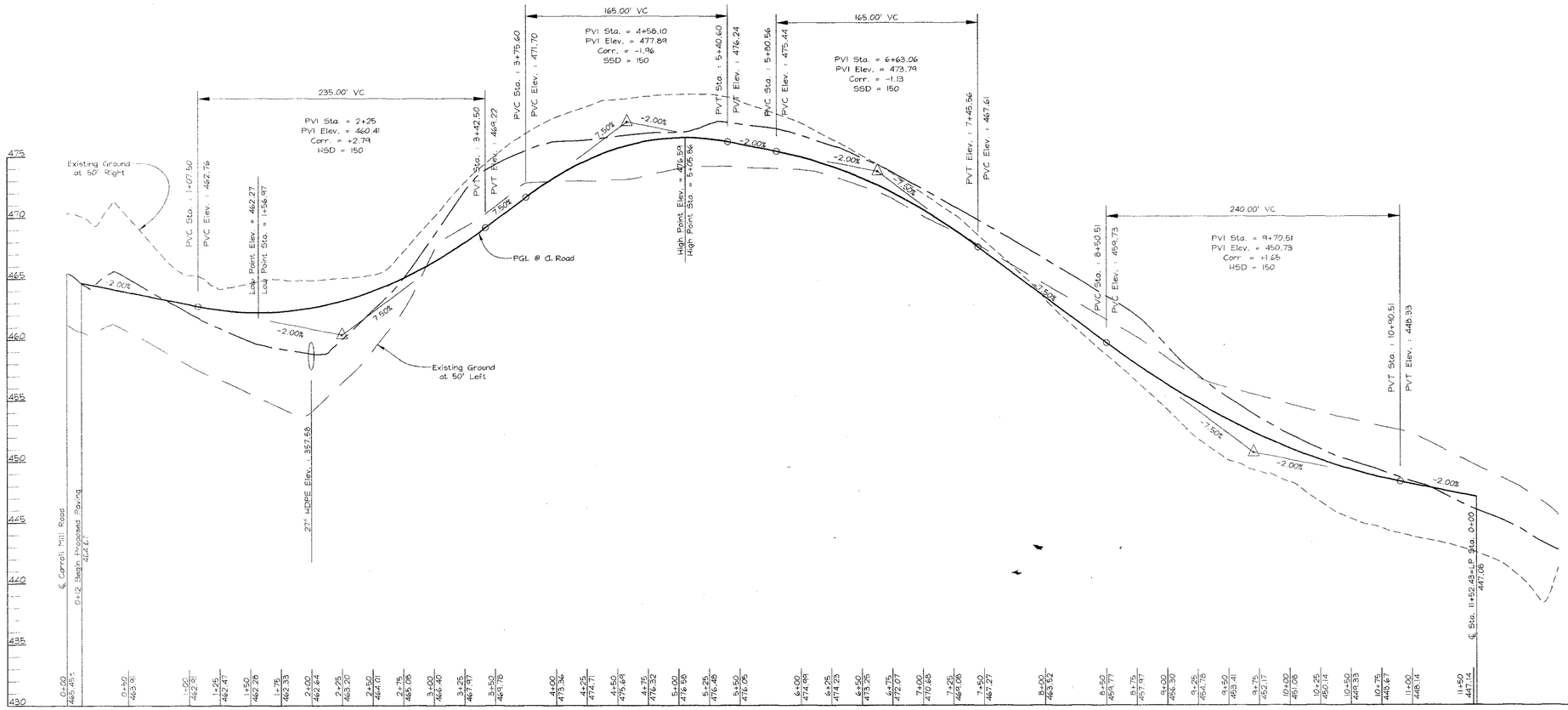
STATE OF MARYLAND — ROBERT H. VOGEL — No. 10193 — REGISTERED PROFESSIONAL ENGINEER — 5/2/00
ROBERT H. VOGEL, PE No. 10193

DESIGN BY: PS
DRAWN BY: PS
CHECKED BY: JCO
DATE: May 1, 2000
SCALE: 1"=50'
W.O. NO.: 98-063

SHEET 2 OF 8

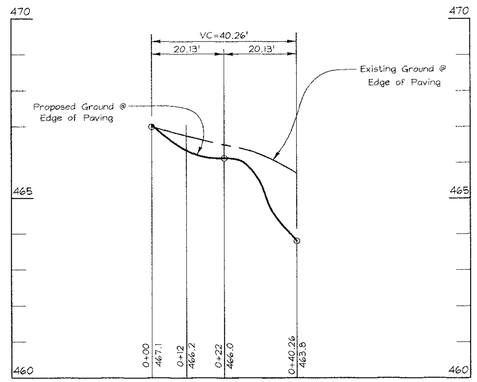
C:\Land Projects\98-063\dwg\701752 dwg-co 5.1.00

F-00-84



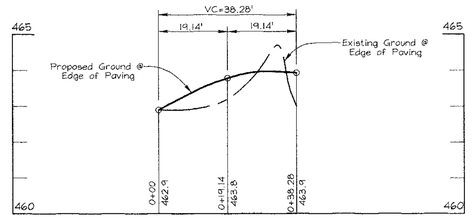
ROAD PROFILE
FAWN RIVER WAY
PUBLIC ACCESS PLACE
DESIGN SPEED-25MPH

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



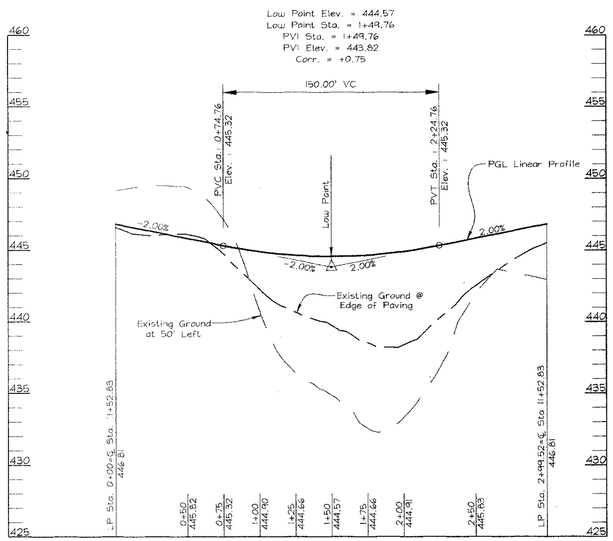
ENTRANCE FILLET PROFILE

SCALE : HORIZONTAL - 1"=20'
VERTICAL - 1"=2'



EXIT FILLET PROFILE

SCALE : HORIZONTAL - 1"=20'
VERTICAL - 1"=2'



LINEAR PROFILE
FAWN RIVER WAY
PUBLIC ACCESS PLACE

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

OWNER/DEVELOPER
NORTHRIDGE DEVELOPMENT
14045 GARED DRIVE
GLENWOOD, MARYLAND 21738

NO.	REVISION	DATE

ROAD PROFILES
EAGLE RIDGE

TAX MAP #22 & 23 — PARCEL #553
3RD ELECTION DISTRICT — HOWARD COUNTY, MARYLAND
Reference No. : S-99-13, P-00-01

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS — DATE 5/24/00

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

n/Richard B Lloyd — CHIEF, DIVISION OF LAND DEVELOPMENT JA — DATE 5/30/00

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5/26/00

VOGEL & ASSOCIATES
ENGINEERS·SURVEYORS·PLANNERS
3691 Park Avenue, Suite 101 • Ellicott City,Maryland 21043
Tel 410.461.5828 Fax 410.465.3966

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16195 — REGISTERED PROFESSIONAL ENGINEER — 5/2/00

ROBERT H. VOGEL, PE No.16195

DESIGN BY:	PS
DRAWN BY:	PS
CHECKED BY:	JCO
DATE:	May 1, 2000
SCALE:	As Shown
W.O. NO.:	98-063

SHEET 3 OF 8

C:\Land Projects\98-063\dwg\301851.dwg-co 5.1.00

F.00.81

SCHEDULE D : STORMWATER MANAGEMENT AREA LANDSCAPING		
LINEAR FEET OF PERIMETER	622LF POND	280LF RIP-RAP CHANNEL
CREDIT FOR EXISTING VEGETATION (NO, YES AND LINEAR FEET)	NO	NO
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	N/A	N/A
NUMBER OF TREES REQUIRED SHADE TREES 1:50 EVERGREEN TREES 1:40	12 15	5 6
NUMBER OF TREES PROVIDED SHADE TREES EVERGREEN TREES OTHER TREES (2:1 SUBSTITUTION)	12 15	110 *

* SUBSTITUTE 110 SHRUBS @ 10:1

SCHEDULE A
PERIMETER LANDSCAPE EDGE

CATEGORY	ADJACENT TO ROADWAYS			ADJACENT TO PERIMETER PROPERTIES				
				1 A	2 A	3 A	4 A	5 A
Perimeter/Frontage Designation Landscape Type								
Linear Feet of Roadway Frontage/Perimeter				595'	685'	549'	825'	780'
Credit for Existing Vegetation (Yes, No, Linear Feet Describe below if needed)				*Yes 595'	*Yes 685'	*Yes 439'	*Yes 455'	NO
Credit for Wall, Fence or Berm (Yes, No, Linear Feet Describe below if needed)				No	No	No	No	No
Number of Plants Required Shade Trees Evergreen Trees Shrubs				1:60 10 - -	1:60 11 - -	1:60 9 - -	1:60 6 - -	1:60 13 - -
Number of Plants Provided Shade Trees Evergreen Trees Other Trees (2:1 Substitution) Shrubs (10:1 Substitution) Describe Plant Substitution Credits Below if needed)				- - - -	- - - -	2 - - -	6 - - -	13 - - -

* Existing Woods to Remain (MIN. OF 20')

NOTES:

THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPE TREES HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF $14,550.00 (shade = 38 x $300 = $11,400.00 + evergreen = 21 x $150 = $3,150.00)
THE SURETY FOR THE 63 STREET TREES ALONG THE PUBLIC RIGHT-OF-WAY OF FAWN RIVER WAY ARE TO BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT. (63 x $300 = $18,900.00)

"AS-BUILT" CERTIFICATION

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS APPROVED PLANS AND SPECIFICATIONS.

ROBERT H. VOGEL, P.E. NO. 16193 — DATE

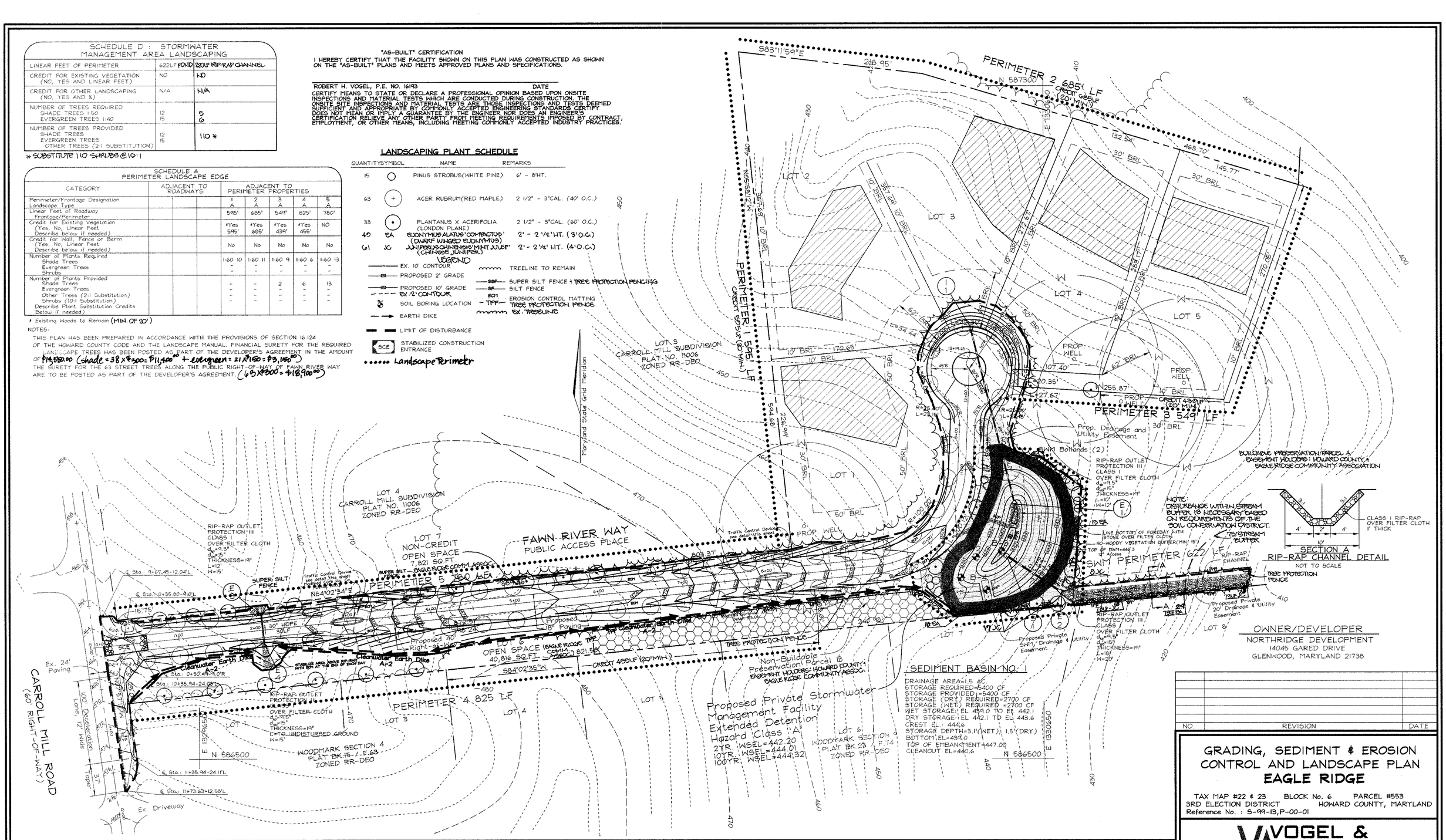
CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ONSITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ONSITE SITE INSPECTIONS AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERING STANDARDS CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

LANDSCAPING PLANT SCHEDULE

QUANTITY	SYMBOL	NAME	REMARKS
15		PINUS STROBUS (WHITE PINE)	6' - 8' HT.
63		ACER RUBRUM (RED MAPLE)	2 1/2" - 3" CAL. (40' O.C.)
33		PLANTANUS X ACERIFOLIA (LONDON PLANE)	2 1/2" - 3" CAL. (60' O.C.)
45	EA	EUONYMUS ALATUS 'COMPACTUS' (DWARF WINGED EUONYMUS)	2' - 2 1/2' HT. (3' O.C.)
61	JC	JUNIPERUS CHINENSIS 'MINT JULEP' (CHINESE JUNIPER)	2' - 2 1/2' HT. (4' O.C.)

LEGEND

- EX. 10' CONTOUR
- PROPOSED 2' GRADE
- PROPOSED 10' GRADE / EX. 2' CONTOUR
- SOIL BORING LOCATION
- EARTH DIKE
- LIMIT OF DISTURBANCE
- STABILIZED CONSTRUCTION ENTRANCE (SCE)
- TREELINE TO REMAIN
- SSF — SUPER SILT FENCE & TREE PROTECTION FENCING
- SF — SILT FENCE
- ECM — EROSION CONTROL MATTING
- TPF — TREE PROTECTION FENCE
- EX. TREELINE
- Landscape Perimeter



NO.	REVISION	DATE

GRADING, SEDIMENT & EROSION CONTROL AND LANDSCAPE PLAN
EAGLE RIDGE

TAX MAP #22 & 23 BLOCK No. 6 PARCEL #553
3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
Reference No. : S-99-13, P-00-01

VOGEL & ASSOCIATES
ENGINEERS SURVEYORS PLANNERS
3691 Park Avenue, Suite 101 • Ellicott City, Maryland 21043
Tel 410.461.5828 Fax 410.465.3666

OWNER/DEVELOPER
NORTHRIDGE DEVELOPMENT
14045 GARED DRIVE
GLENWOOD, MARYLAND 21738

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

USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE 5/11/00

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 5/11/00

ENGINEERS CERTIFICATE

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

SIGNATURE OF ENGINEER — DATE 5/2/00
ROBERT H. VOGEL

DEVELOPER'S CERTIFICATE

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

SIGNATURE OF DEVELOPER — DATE 5-1-00

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS — DATE 5/10/00

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

A/CHIEF, DIVISION OF LAND DEVELOPMENT JA — DATE 5/30/00

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5/10/00

STATE OF MARYLAND — ROBERT HARRIS VOGEL — NO. 16193 — REGISTERED PROFESSIONAL ENGINEER — 5/2/00
ROBERT H. VOGEL, P.E. NO. 16193

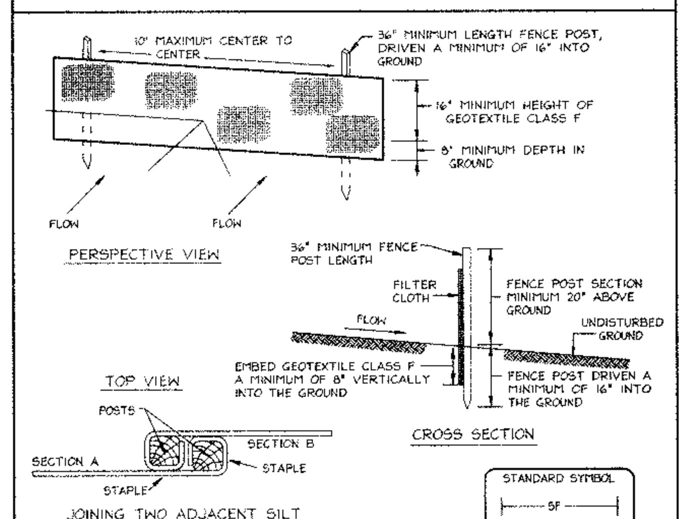
DESIGN BY: PS
DRAWN BY: PS
CHECKED BY: JCO
DATE: April 28, 2000
SCALE: 1"=50'
W.O. NO.: 98-063

4 SHEET OF 8

C:\Land Projects\98-063\dwg\702654.dwg - co 4.28.00

F-00-84

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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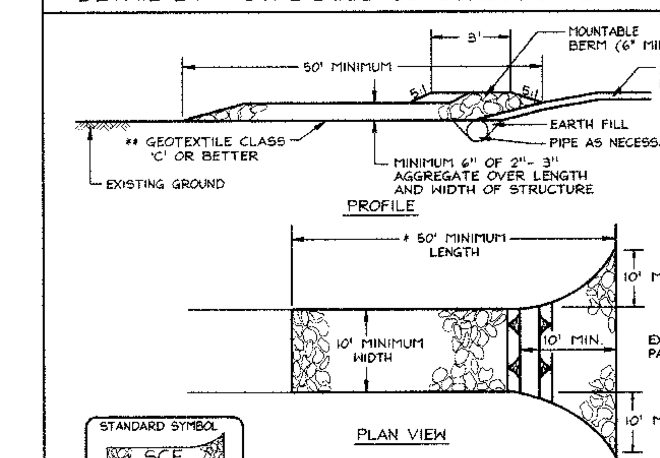
DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



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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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 toe of the embankment.

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

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

Earth Fill

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

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

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

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

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

Embankment Core The core shall be parallel to the centerline of the embankment as shown on the plans. The top width of the core shall be a minimum of four feet. The height shall extend up to at least the 10 year water elevation or as shown on the plans. The side slopes shall be 1 to 1 or flatter. The core shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability.

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, end 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 least 24 mils in thickness.

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

All connections shall use a rubber or neoprene gasket when joining pipe sections. The end of each pipe shall be re-rolled 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 Pipe- All of the following criteria shall apply for reinforced concrete pipe:

1. Materials - Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets and shall equal or exceed ASTM C-361.
2. Bedding - 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 Pipe- The following criteria shall apply for plastic pipe:

1. Materials - PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241. Corrugated High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following: 4" -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.

Geotextile 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. 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.

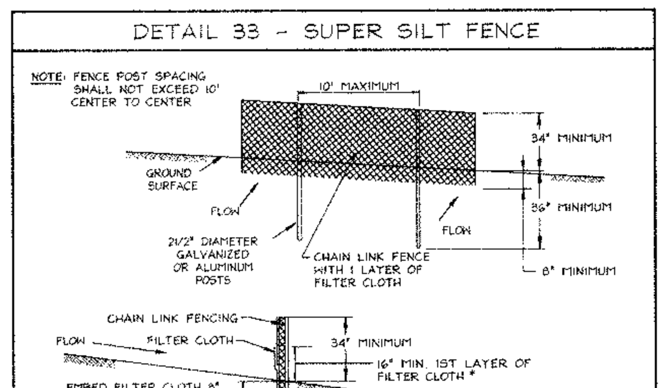
Stabilization

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.

DETAIL 33 - SUPER SILT FENCE



Construction Specifications

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

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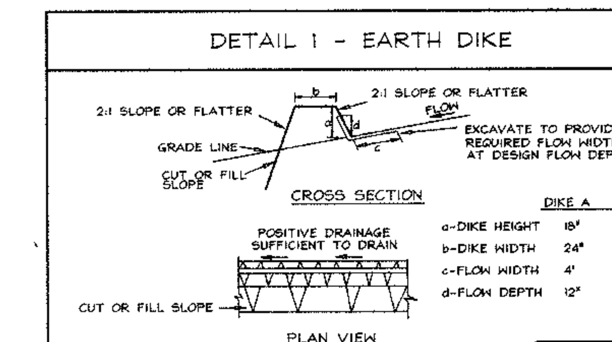
DETAIL 1 - EARTH DIKE



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

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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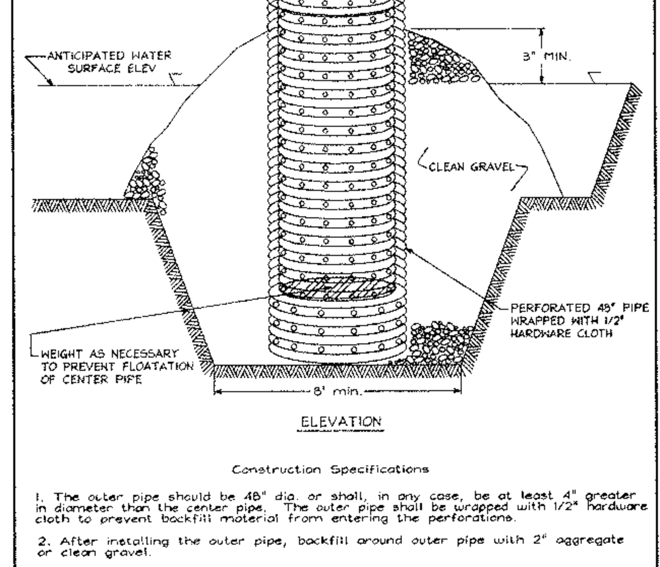
DETAIL 20A - REMOVABLE PUMPING STATION



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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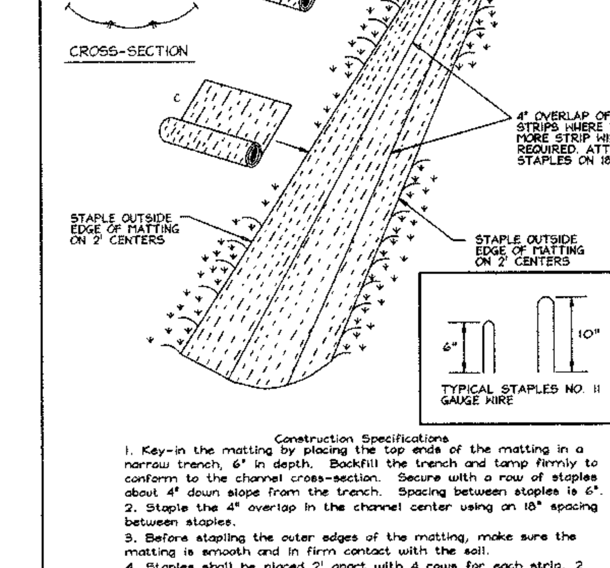
DETAIL 30 - EROSION CONTROL MATTING



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.

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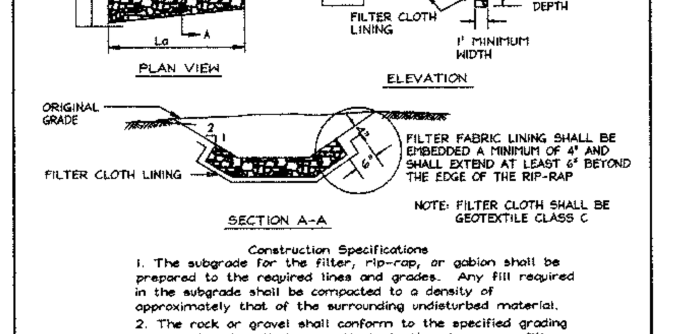
DETAIL 27 - ROCK OUTLET PROTECTION III



Construction Specifications

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

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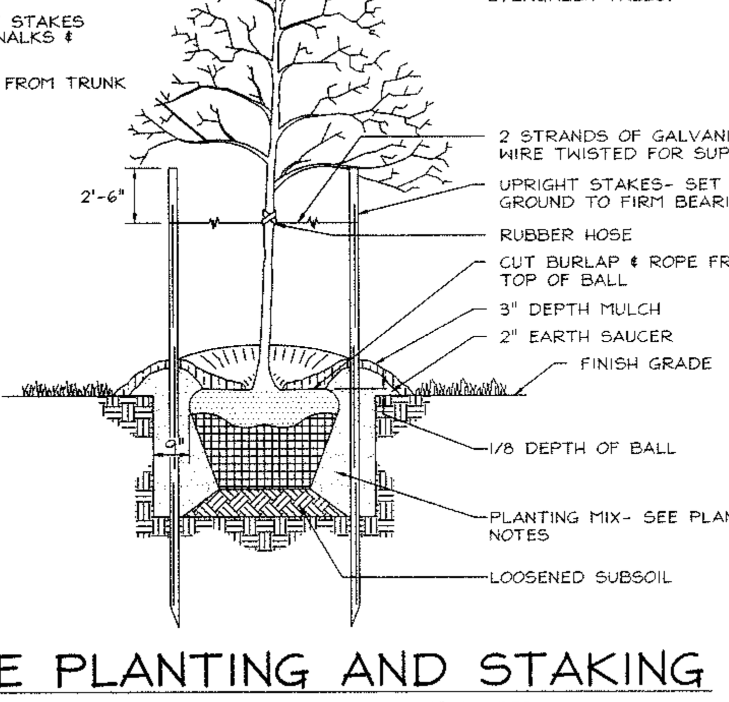
TREE PLANTING AND STAKING

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



TREE PLANTING AND STAKING
DECIDUOUS AND EVERGREEN TREES UP TO 2-1/2" CALIPER

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 Kentucky 31 Tall Fescue. For the period May 1 thru July 31, seed with 60 lbs. Kentucky 31 Tall Fescue per acre and 2 lbs. per acre (.05 lbs./1000 sq.ft.) of weeping lovegrass. During the period of October 16 thru February 28, protect site by: Option (1) 2 tons per acre 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.

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.

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. I, 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	18.74 Acres
Area Disturbed	2.78Acres
Area to be roofed or paved	0.72 Acres
Area to be vegetatively stabilized	2.06 Acres
Total Cut	2418 CY
Total Fill	2746 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

SEQUENCE OF CONSTRUCTION

1. Obtain grading permit.
2. Notify Howard County Bureau Of Inspections and Permits (410-313-1880) at least 24 hours before starting any work.
3. Install Tree Protection Fencing.............. 3 day
4. Construct Stabilized Construction Entrance.............. 1 day
5. Install 27" RCCP culvert and stabilize immediately.............. 3 days
6. With culvert area stabilized and with sediment control inspectors approval install sediment control devices(silt fence, super silt fence, earth dikes & sediemnt basin).............. 3 days
7. With sediment conrtol inspectors approval clear and grub remaining site and rough grade area for road construction.............. 2 weeks
8. Construct road paving and install street trees.............. 1 week
9. With road paving complete and with sediment control inspector approval, convert sediment basin to final stormwater management by removing weir blocking and remove temp. dewatering pipe and install WQ stand pipe with perforations.............. 4 days
10. Install perimeter landscaping.............. 3 days
11. During grading and after each rainfall, the contractor shall inspect and provide the necessary maintenance on the sediment and erosion control measures shown hereon.
12. Upon stabilization of all disturbed areas and with the approval of the sediment control inspector, remove all sediment control devices.

OWNER/DEVELOPER
NORTHRIDGE DEVELOPMENT
14045 GARED DRIVE
GLENWOOD, MARYLAND 21738

NO.	REVISION	DATE

SEDIMENT AND EROSION CONTROL DETAILS
EAGLE RIDGE

TAX MAP #22 & 23 BLOCK No. 6 PARCEL #553
3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
Reference No. : S-99-13, P-00-01

VOGEL & ASSOCIATES
ENGINEERS·SURVEYORS·PLANNERS
3691 Park Avenue, Suite 101 • Ellicott City,Maryland 21043
Tel 410.461.5828 Fax 410.465.3966

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No.16193 — REGISTERED PROFESSIONAL ENGINEER — 5/12/00
ROBERT H. VOGEL, PE No.16193

DESIGN BY: PS
DRAWN BY: PS
CHECKED BY: JCO
DATE: April 28, 2000
SCALE: As Shown
W.O. NO.: 98-063

5 SHEET OF 8

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

[signature] /65. 5/11/00
USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE

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

[signature] 5/11/00
HOWARD SOIL CONSERVATION DISTRICT DATE

ENGINEERS CERTIFICATE

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

[signature] 5/12/00
SIGNATURE OF ENGINEER DATE
ROBERT H. VOGEL

DEVELOPER'S CERTIFICATE

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

[signature] 5-1-00
SIGNATURE OF DEVELOPER DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

[signature] 5/23/00
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[signature] 5/30/00
CHIEF, DIVISION OF LAND DEVELOPMENT JA DATE

[signature] 5/24/00
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

C:\Land Projects\98-063\dwg\702955 dwg-co 4.28.00

F.00.84

SOILS LEGEND

SYMBOL	NAME - DESCRIPTION	TYPE
Ce	CODUS SILT LOAM	B
DeB2	DELANCO SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED	C
GlB2	GLENELG LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED	B
Ha	HATBORO SILT LOAM	D
MgB2	MANOR GRAVELLY LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED	B
MgC2	MANOR GRAVELLY LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED	B
MlB2	MANOR LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED	B
MlC2	MANOR LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED	B
MlD2	MANOR LOAM, 15 TO 25 PERCENT SLOPES, MODERATELY ERODED	B
Mo	MIXED ALLUVIAL LAND	B

A=1.43 ACRES
C=.47
Z=RR-DEO
P=41.2%
'B' SOIL = 100%

N 587350
E 1330650
S73°25'06"E 185.39'
132.52'
463.70'
145.77'
30' BRL
270.05'
233.17'
N 586500
E 1329650
N 586500
E 1330650
N16°56'12"W 362.63'
N18°02'34"E 809.37'
S84°02'55"W 801.58'
LOT 2 54,676 SQ.FT.
LOT 3 50,156 SQ.FT.
LOT 4 40,984 SQ.FT.
LOT 5 43,901 SQ.FT.
LOT 6 OPEN SPACE 40,816 SQ.FT.
LOT 7 NON-CREDIT OPEN SPACE 7,821 SQ.FT.
LOT 8 43,789 SQ.FT.
FAWN RIVER WAY PUBLIC ACCESS PLACE
BUILDABLE PRESERVATION PARCEL A 10.585 AC.
Non-Buildable Preservation Parcel B 18,021 SF
Proposed Private Stormwater Management Facility Extended Detention Hazard Class 'A'
PROP. WELL
Prop. Drainage and Utility Easement
Proposed Private Storm Drainage & Utility Easement
Proposed Private 20' Drainage & Utility Easement
SHM Bollards (2)
Traffic Control Device see detail sheet 2 of 7
Modified Curb Inlet Detail RA-01
Proposed 40' Right-of-Way
Proposed 18" Paving
30" HDPE 30LF
Inverse Curb Detail RA-01
MARK SECTION A ELDERSLEE ZONED R-ED
MILL SUBDIVISION RECORDED AS PLAT NO. 1043 ZONED RR-DEO
Maryland State Grid Meridian
CARROLL MILL ROAD (60' RIGHT-OF-WAY)
Ex. 24' Paving
Lane, 12' Wide
100' Deceleration
Taper
Ex. Driveway
℄ Sta.: 9+67.45-12.04'L
℄ Sta.: 0+35.80-9.0'L
℄ Sta.: 0+50.49-9.0'R
℄ Sta.: 10+35.94-24.08'L
℄ Sta.: 11+35.94-24.11'L
℄ Sta.: 11+73.63+12.58'L
MlD2
MgC2
Mo
DeB2
MlC2

NO.	REVISION	DATE

STORM DRAIN DRAINAGE AREA MAP AND SOILS MAP
EAGLE RIDGE

TAX MAP #22 & 23 BLOCK No. 6 PARCEL #553
3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
Reference No. : S-99-13

OWNER/DEVELOPER
NORTHRIDGE DEVELOPMENT
14045 GARED DRIVE
GLENWOOD, MARYLAND 21738

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 5/30/00

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT JA — DATE 5/30/00

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5/24/00

VOGEL & ASSOCIATES
ENGINEERS · SURVEYORS · PLANNERS
3691 Park Avenue, Suite 101 • Ellicott City, Maryland 21043
Tel 410.461.5828 Fax 410.465.3966

STATE OF MARYLAND — ROBERT HARRIS VOGEL — 5/24/00 — 10215 — REGISTERED PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE No. 10215

DESIGN BY: PS
DRAWN BY: PS
CHECKED BY: JCO
DATE: May 1, 2000
SCALE: 1"=50'
W.O. NO.: 98-063

SHEET 6 OF 8

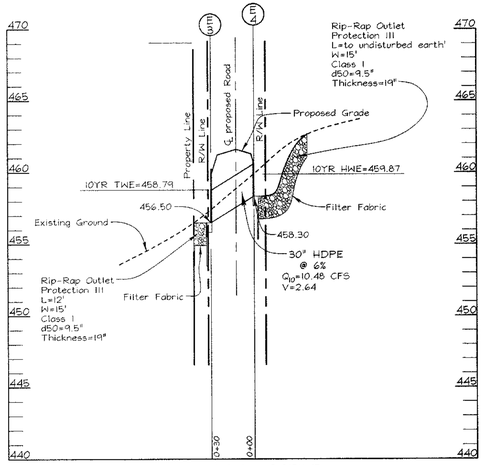
F.00-84

C:\Land Projects\98-063\dwg\7025s6.dwg-co 5.1.00

PIPE SUMMARY		
SIZE	TYPE	LENGTH
27"	HDPE	30 LF
24"	RCCP ASTM C-361, CLASS B-25	70 LF
18"	HDPE	211 LF

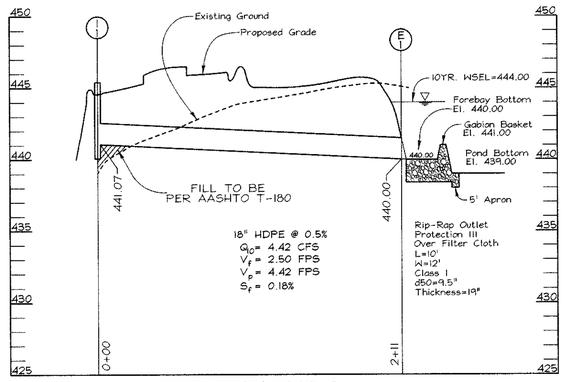
STRUCTURE SCHEDULE						
NO.	TYPE	LOCATION	TOP ELEV.	INV. IN	INV. OUT	REMARKS
I-1	TYPE 'D' INLET	N587,011.54 E1,330,564.47	*444.57	-	441.07	SD 4.39
E-1	18" END SECTION	N586,806.61 E1,330,614.70	441.50	-	440.00	ADS-N 12
E-2	24" END SECTION	N586,697.28 E1,330,671.54	438.00	-	436.00	SD 5.52
E-3	27" END SECTION	N586,671.11 E1,329,723.55	458.75	-	456.50	SD 5.21
E-4	27" END SECTION	N586,636.30 E1,329,727.18	460.55	-	458.30	SD 5.21
S-1	CONCERTE CONTROL STRUCTURE	N586,740.97 E1,330,606.02	446.30	-	438.80	See Detail

*-TOP ELEVATIONS TO TYPE 'D' INLET IS TO THE THROAT OPENINGS



CULVERT PROFILE

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



STORM DRAIN PROFILE

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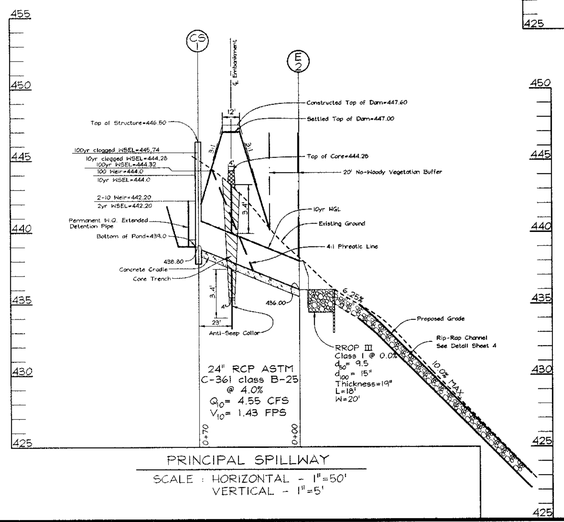
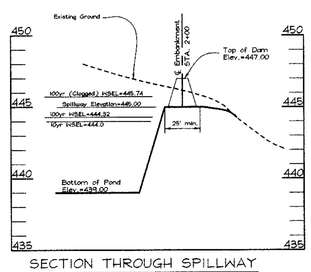
VERTICAL - 1"=5'



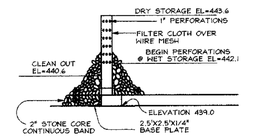
PRINCIPAL SPILLWAY

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



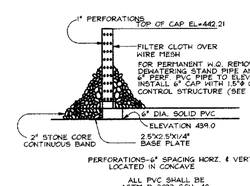
SECTION THROUGH SPILLWAY

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



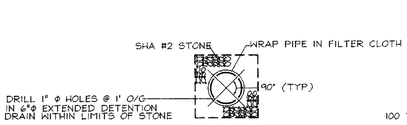
SEDIMENT BASIN DEWATERING DEVICE I WITH 6" PERFORATED RISER

NOT TO SCALE



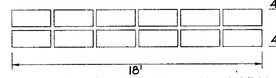
PERMANENT W.Q. EXTENDED DETENTION PIPE DETAIL

NOT TO SCALE



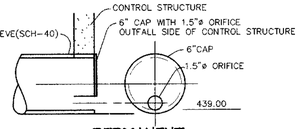
6" PERFORATED PIPE SECTION

NOT TO SCALE



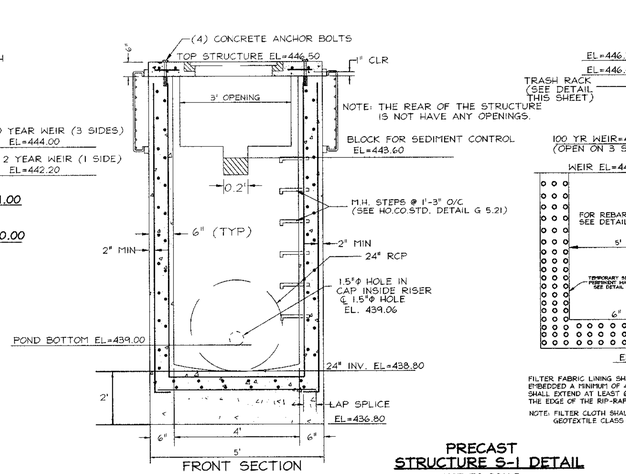
GABION BASKET WEIR DETAIL

NTS



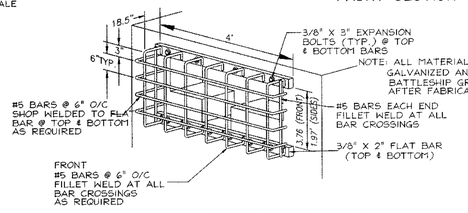
PERMANENT ORIFICE DETAIL IN CONTROL STRUCTURE

NOT TO SCALE



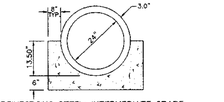
PRECAST STRUCTURE S-1 DETAIL

NOT TO SCALE



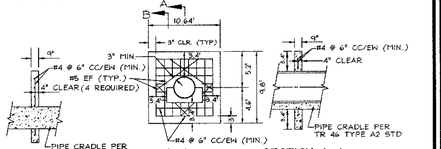
TRASH RACK DETAIL

NOT TO SCALE



(REF. TR-46)
A2 PIPE CRADLE DETAIL

NOT TO SCALE



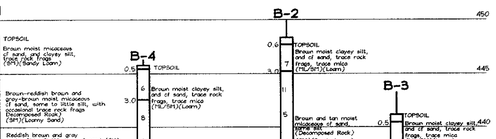
NOT TO SCALE

ASPHALT JOINT FILLER MATERIAL SHALL BE PROVIDED BETWEEN ALL CONCRETE SURFACES EXCEPT BETWEEN CRADLE AND PIPE.

NOTES:
1. ANTI-SEEP COLLARS SHOULD BE PLACED WITHIN THE SATURATION ZONE.
2. ALL ANTI-SEEP COLLARS AND THEIR CONNECTIONS TO THE CONDUIT SHALL BE WATERTIGHT AND MADE OF COMPATIBLE WITH THE CONDUIT.
3. COLLAR DIMENSIONS SHALL EXTEND A MIN. OF 2' IN ALL DIRECTIONS AROUND THE PIPE.
4. ANTI-SEEP COLLARS SHALL BE PLACED A MIN. OF 2' FROM PIPE JOINTS EXCEPT WHERE FLANGED JOINTS ARE USED.

CONCRETE ANTI-SEEP COLLAR DETAIL

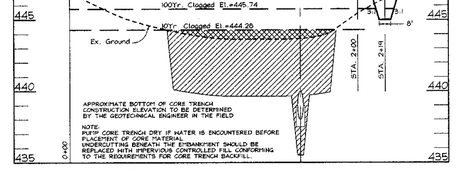
NOT TO SCALE



NOTE: BORINGS ARE BASES ON A GEOTECHNICAL ANALYSIS PREFORMED BY HERPST/BENSON & ASSOCIATES.

BORING LOG

NOT TO SCALE



SECTION ALONG EMBANKMENT

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

OPERATION AND MAINTENANCE SCHEDULE FOR STORMWATER MANAGEMENT DETENTION FACILITY

STORMWATER MANAGEMENT FACILITY

ROUTINE MAINTENANCE

1. FACILITY WILL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHOULD BE PERFORMED DURING WET WEATHER TO DETERMINE IF FUNCTIONING PROPERLY.
2. POND EMBANKMENT 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

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

	2 YEAR	10 YEAR	100 YEAR
FLOW INTO POND	2.30 c.f.s.	4.99 c.f.s.	9.12 c.f.s.
FLOW OUT OF POND	0.43 c.f.s.	1.66 c.f.s.	7.18 c.f.s.
W.S. ELEVATION	442.20	444.01	444.32
STORAGE VOLUME	0.07 AC. FT.	0.14 AC. FT.	0.16 AC. FT.

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' (TR-378.) THE POND OWNER(S) AND ANY HEIRS, SUCCESSORS, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY, OPERATION 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.

OWNER/DEVELOPER
NORTHRIDGE DEVELOPMENT
14045 GARED DRIVE
GLENWOOD, MARYLAND 21738

"AS-BUILT" CERTIFICATION

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS APPROVED PLANS AND SPECIFICATIONS.

ROBERT H. VOGEL, P.E. NO. 16193 — DATE

CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ONSITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ONSITE SITE INSPECTIONS AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERING STANDARDS. CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

NO	REVISION	DATE

STORMWATER MANAGEMENT DETAILS & NOTES
EAGLE RIDGE

TAX MAP #22 & 23 BLOCK No. 6 PARCEL #553
3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
Reference No. : S-99-13, P-00-01

VOGEL & ASSOCIATES
ENGINEERS·SURVEYORS·PLANNERS
3691 Park Avenue, Suite 101 • Ellicott City,Maryland 21043
Tel 410.461.5828 Fax 410.465.3666

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

USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE 5/10/00

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 5/11/00

ENGINEERS CERTIFICATE

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

SIGNATURE OF ENGINEER — DATE 5/4/00
ROBERT H. VOGEL

DEVELOPER'S CERTIFICATE

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

SIGNATURE OF DEVELOPER — DATE 5-1-00

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS — DATE 5/8/00

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 5/10/00

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5/9/00

STATE OF MARYLAND — ROBERT HARRIS VOGEL — 16193 — REGISTERED PROFESSIONAL ENGINEER — 5/2/00
ROBERT H. VOGEL, PE No.16193

DESIGN BY:	JCO
DRAWN BY:	JCO/PS
CHECKED BY:	RHV
DATE:	April 28, 2000
SCALE:	As Shown
W.O. NO.:	98-063

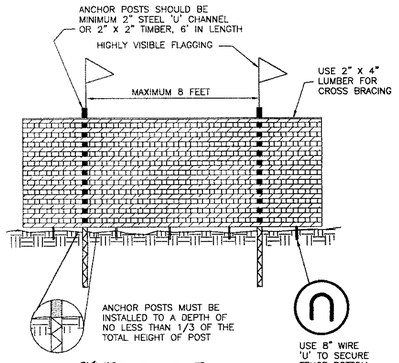
SHEET 7 OF 8

C:\Land Projects\98-063\dwg\30SDsl.dwg-co 4.28.00

F.00.84

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	TYPE
Cs	COMUS SILT LOAM	B
DeB2	DELANCO SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED	C
GlB2	GLENELG LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED	B
Ha	HATBORO SILT LOAM	D
MgB2	MANOR GRAVELLY LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED	B
MgC2	MANOR GRAVELLY LOAM, 8 TO 15 PERCENT SLOPES, MODEDATELY ERODED	B
MlB2	MANOR LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED	B
MlC2	MANOR LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED	B
MlD2	MANOR LOAM, 15 TO 25 PERCENT SLOPES, MODERATELY ERODED	B
Mo	MIXED ALLUVIAL LAND	B

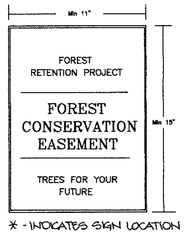


NOTES:
1. FOREST PROTECTION DEVICE ONLY.
2. RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
3. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
4. ROOT DAMAGE SHOULD BE AVOIDED.
5. PROTECTIVE SIGNAGE MAY ALSO BE USED.
6. DEVICE SHOULD BE MAINTAINED THROUGHOUT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

PROTECTIVE FENCE DETAIL

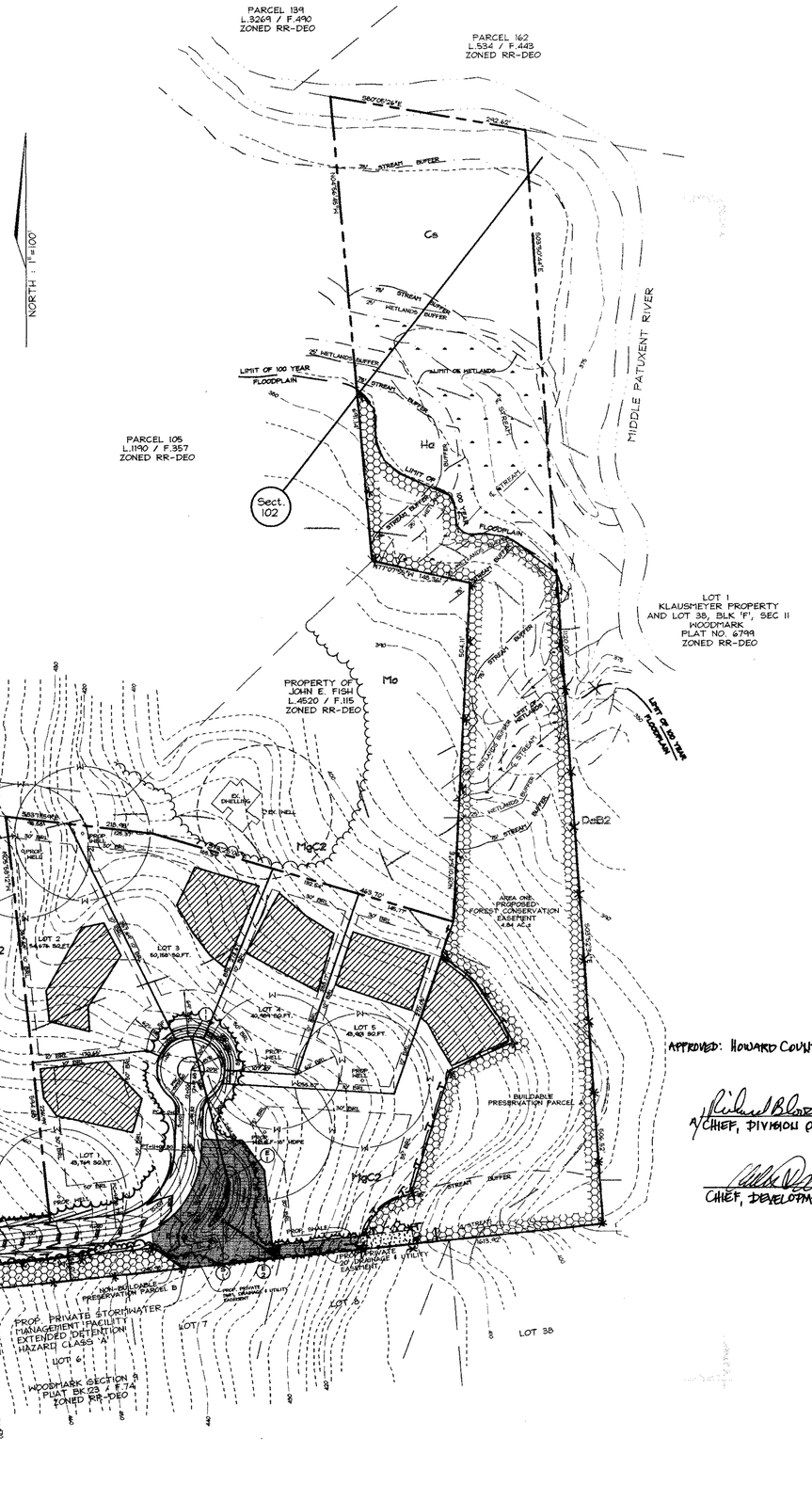
BLAZE ORANGE PLASTIC MESH

NO SCALE



SIGNAGE DETAIL

NOT TO SCALE



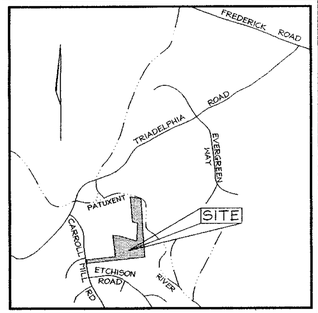
LEGEND

Existing Contour ----------382
Proposed Contour ——— 382
Spot Elevation +82.53
Direction of Flow ←
Existing Trees to Remain

BENCHMARKS

Benchmark No. 1 : 22RI
N 584,643.362
E 1,330,331.235
Elev. : 404.511

Benchmark No. 2 : 23RI
N 583,336.053
E 1,331,824.747
Elev. : 366.978



VICINITY MAP

SCALE: 1"=2000'

SITE DATA

LOCATION: TAX MAP 22 & 23 BLOCK 6 & 1 PARCELS 553
3RD ELECTION DISTRICT
EXISTING ZONING: RR-DEO
GROSS AREA OF PROJECT: 18.74 AC.
AREA OF PROPOSED LOTS: 5.37 AC.
AREA OF PROPOSED PRESERVATION PARCEL A : 10.33 AC.
AREA OF PROPOSED NON-BUILDABLE PRESERVATION PARCEL B : 0.0.69 AC.
AREA OF PROPOSED ROAD: 1.25 AC.
AREA OF CREDITED OPEN SPACE : 0.987 AC.(5%)
AREA OF NON-CREDITED OPEN SPACE : 0.18 AC.
OPEN SPACE REQUIRED: 5% (0.987 AC.)
NUMBER OF LOTS/PARCELS PROPOSED: 5 + 2 PRESERVATION PARCELS

I. BASIC SITE DATA

GROSS SITE AREA	18.74 Ac.±
AREA WITHIN 100 YEAR FLOODPLAIN	3.71 Ac.±
AREA WITHIN AGRICULTURE OR PRESERVATION PARCEL	N/A
NET TRACT AREA	15.03 Ac.±
ZONING	RR-DEO

II. INFORMATION FOR CALCULATIONS

A. NET TRACT AREA	15.03 Ac.±
B. FOREST CONSERVATION THRESHOLD (FCT) (25%xA)	3.75 Ac.±
C. AFFORESTATION THRESHOLD (20%xA)	3.00 Ac.±
D. EXISTING FOREST ON NET TRACT AREA	14.19 Ac.±
E. EXISTING FOREST ABOVE FCT	10.44 Ac.±
F. BREAK EVEN POINT (the amount of forest to be retained w/o mitigation) : {(E x 0.2) + B}	5.84 Ac.±
G. FOREST TO BE RETAINED	5.15 Ac.±
H. FOREST TO BE CLEARED AND/OR NOT IN AN EASEMENT	8.95 Ac.±

III. REFORTESTATION CALCULATIONS

A. NET TRACT AREA	15.03 Ac.±
B. FOREST CONSERVATION THRESHOLD (FCT) (25%xA)	3.75 Ac.±
C. EXISTING FOREST ON NET TRACT AREA	14.19 Ac.±
D. FOREST ABOVE FCT	10.44 Ac.±
E. FOREST AREAS TO BE CLEARED AND/OR NOT IN EASEMENT	8.95 Ac.±
F. FOREST AREAS TO BE RETAINED IN EASEMENT	5.15 Ac.±
G. FOREST AREAS CLEARED ABOVE FCT	8.95 Ac.±
H. FOREST AREAS CLEARED BELOW FCT	0.00 Ac.±
I. FOREST AREAS RETAINED ABOVE FCT	1.49 Ac.±
J. REFORESTATION FOR CLEARING ABOVE FCT (G x 1/4)	2.23 Ac.±
K. CREDIT FOR FOREST RETAINED ABOVE FCT (K)	1.49 Ac.±
L. TOTAL REFORESTATION REQUIRED (G x 1/4) - K	0.89 Ac.±

F-1-U : $10,846.00 (36,154 s.f. x $0.30)
Retention: 22,438.00 (5.15 ac. x $0.10/s.f.)
Total = $33,279.00

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Richard Blood 5/30/00
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

5/18/00
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

OWNER/DEVELOPER
NORTHRIDGE DEVELOPMENT
14045 GARED DRIVE
GLENWOOD, MARYLAND 21738

WILDMAN
ENVIRONMENTAL SERVICES
8444 FREDERICK ROAD
ELLICOTT CITY, MD 21043
PHONE: (410) 313-9999

11/1/99
QUALIFIED PROFESSIONAL DATE

FOREST CONSERVATION PLAN
EAGLE RIDGE

TAX MAP #22 & 23 BLOCK No. 6 PARCEL #553
3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
Reference No. : S-99-13

VOGEL & ASSOCIATES
ENGINEERS · SURVEYORS · PLANNERS
3691 Park Avenue, Suite 101 • Ellicott City, Maryland 21043
Tel 410.461.5828 Fax 410.465.3666

DESIGN BY: RBW
DRAWN BY: JEP
CHECKED BY: WES
DATE: Sept. 14, 1999
SCALE: 1"=50'
W.O. NO.: 98-063

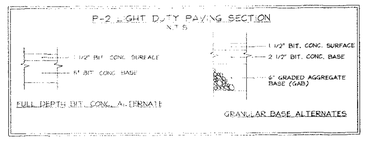
ROBERT H. VOGEL, PE No.16745

SHEET 8 OF 8

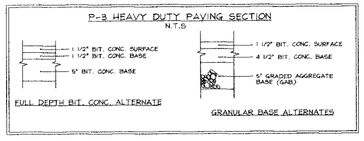
F-00-84

CADDrawings\Eagle Ridge\00284s2.dwg-pp 01.14.99

P-2 LIGHT DUTY PAVING SECTION
N.T.S.



P-3 HEAVY DUTY PAVING SECTION
N.T.S.



CURVE TABLE

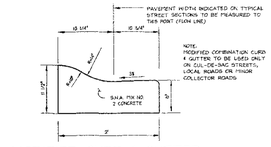
CURVE	LENGTH	RADIUS	TANGENT	CHORD	BEARING	DELTA
Curve 1	171.53	120.00	104.23	157.30	N48°05'39"E	81°53'57"

MINIMUM LOT SIZE CHART

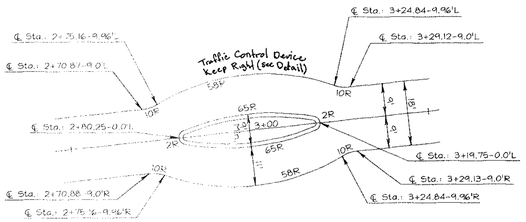
Lot No.	Gross Area (SF)	Pipe Stem Area (SF)	Net Lot Area (SF)
5	43,901 SF	2453.09 SF	41,737.91 SF

STREET TREE CALCULATIONS

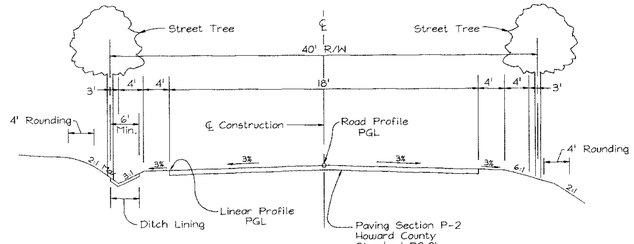
Street Name	Linear Feet	Required Trees	Provided Trees
Fawn River Way	2,503/40	63	63



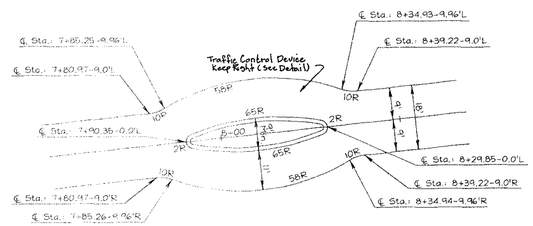
MODIFIED CURB & GUTTER
HOWARD COUNTY STANDARD R3.01
NOT TO SCALE



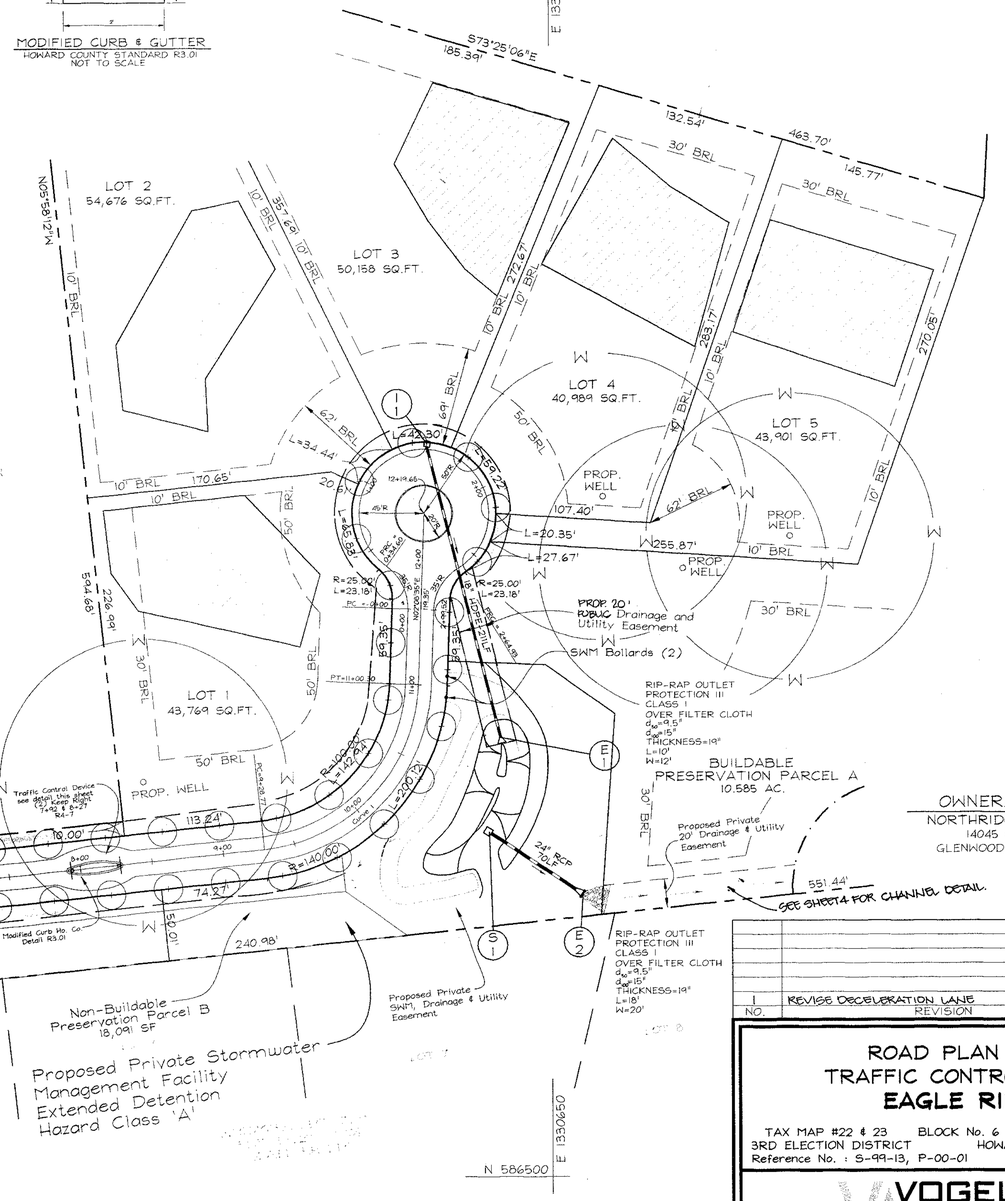
TRAFFIC CONTROL DEVICE AT STATION 3+00
SCALE:1"=20'

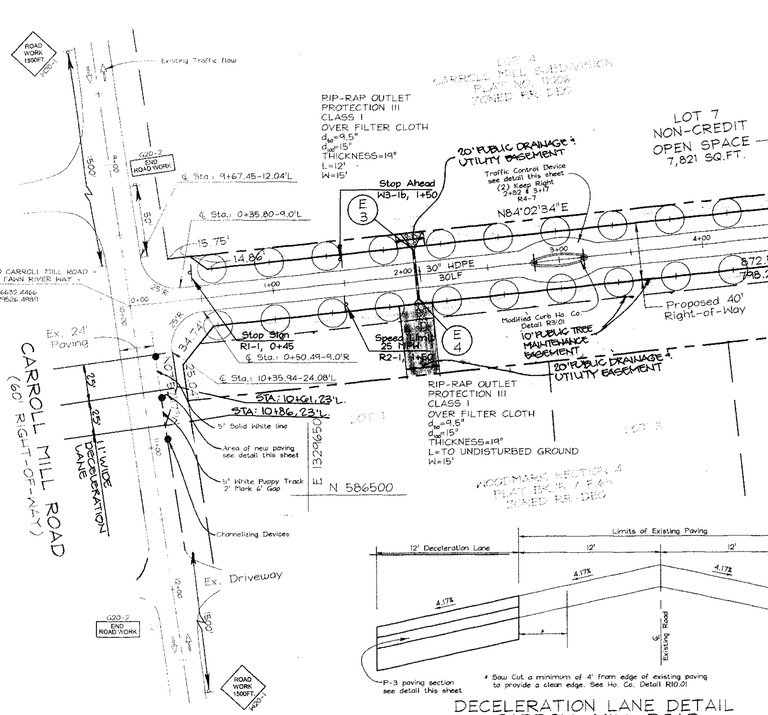


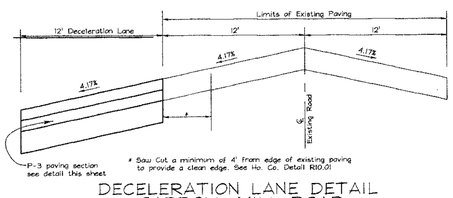
TYPICAL ROADWAY SECTION
CLASSIFICATION : PULIC ACCESS PLACE
HOWARD COUNTY STANDARD FIGURE 2.09b
DESIGN SPEED 25 MPH
NOT TO SCALE



TRAFFIC CONTROL DEVICE AT STATION 8+00
SCALE:1"=20'







DECELERATION LANE DETAIL
CARROLL MILL ROAD
NOT TO SCALE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS — DATE 5/23/00

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 5/30/00

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5/18/00

NO.	REVISION	DATE
1	REVISE DECELERATION LANE	9/27/00

ROAD PLAN AND TRAFFIC CONTROL PLAN
EAGLE RIDGE

TAX MAP #22 & 23 BLOCK No. 6 PARCEL #553
3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
Reference No. : S-99-13, P-00-01

VOGEL & ASSOCIATES
ENGINEERS • SURVEYORS • PLANNERS
3691 Park Avenue, Suite 101 • Ellicott City, Maryland 21043
Tel 410.461.5828 Fax 410.465.3966

STATE OF MARYLAND — ROBERT H. VOGEL — No. 16193 — REGISTERED PROFESSIONAL ENGINEER — 5/1/00
ROBERT H. VOGEL, PE No. 16193

DESIGN BY: PS
DRAWN BY: PS
CHECKED BY: JCO
DATE: May 1, 2000
SCALE: 1"=50'
W.O. NO.: 98-063

SHEET 2 OF 8

C:\Land Projects\98-063\dwg\701782.dwg-co 5:00

F-00-84

SCHEDULE D : STORMWATER MANAGEMENT AREA LANDSCAPING		
LINEAR FEET OF PERIMETER	622'LF POND	220LF RIP-RAP CHANNEL
CREDIT FOR EXISTING VEGETATION (NO, YES AND LINEAR FEET)	NO	NO
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	N/A	N/A
NUMBER OF TREES REQUIRED SHADE TREES 1:50 EVERGREEN TREES 1:40	12 15	5 6
NUMBER OF TREES PROVIDED SHADE TREES EVERGREEN TREES OTHER TREES (2:1 SUBSTITUTION)	12 15	110 *

* SUBSTITUTE 110 SHRUBS @ 10:1

SCHEDULE A PERIMETER LANDSCAPE EDGE										
CATEGORY	ADJACENT TO ROADWAYS			ADJACENT TO PERIMETER PROPERTIES						
Perimeter/Frontage Designation				1	2	3	4	5		
Landscape Type				A	A	A	A	A		
Linear Feet of Roadway Frontage/Perimeter				595'	685'	549'	825'	780'		
Credit for Existing Vegetation (Yes, No, Linear Feet Describe below if needed)				*Yes 595'	*Yes 685'	*Yes 439'	*Yes 455'	NO		
Credit for Wall, Fence or Berm (Yes, No, Linear Feet Describe below if needed)				No	No	No	No	No		
Number of Plants Required Shade Trees Evergreen Trees Shrubs				1:60 10 - -	1:60 11 - -	1:60 9 - -	1:60 6 - -	1:60 13 - -		
Number of Plants Provided Shade Trees Evergreen Trees Other Trees (2:1 Substitution) Shrubs (10:1 Substitution) Describe Plant Substitution Credits Below if needed)				- - - -	- - - -	2 - - -	6 - - -	13 - - -		

* Existing Woods to Remain (MIN. OF 20')

NOTES:

THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPE TREES HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF $14,550.00 (shade = 38 x $300 = $11,400.00 + evergreen = 21 x $150 = $3,150.00) THE SURETY FOR THE 63 STREET TREES ALONG THE PUBLIC RIGHT-OF-WAY OF FAWN RIVER WAY ARE TO BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT (63 x $300 = $18,900.00)

"AS-BUILT" CERTIFICATION

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS APPROVED PLANS AND SPECIFICATIONS.

ROBERT H. VOGEL, P.E. NO. 16193 — DATE

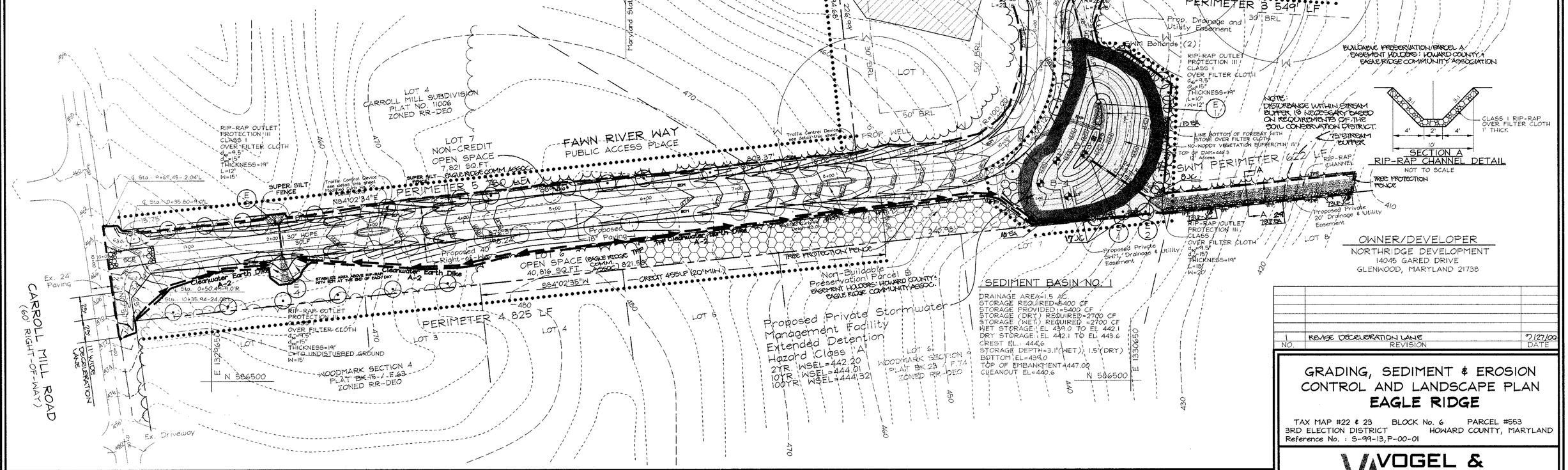
CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ONSITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ONSITE SITE INSPECTIONS AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERING STANDARDS. CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

LANDSCAPING PLANT SCHEDULE

QUANTITY	SYMBOL	NAME	REMARKS
15	○	PINUS STROBUS (WHITE PINE)	6' - 8' HT.
63	+	ACER RUBRUM (RED MAPLE)	2 1/2" - 3" CAL. (40' O.C.)
33	⊙	PLANTANUS X ACERIFOLIA (LONDON PLANE)	2 1/2" - 3" CAL. (60' O.C.)
40	EA	EUONYMUS ALATUS 'COMPACTUS' (DWARF WINGED EUONYMUS)	2' - 2 1/2' HT. (3' O.C.)
61	JC	JUNIPERUS CHINENSIS 'MINT JULEP' (CHINESE JUNIPER)	2' - 2 1/2' HT. (4' O.C.)

LEGEND

- EX. 10' CONTOUR
- PROPOSED 2' GRADE
- PROPOSED 10' GRADE
- EX. 2' CONTOUR
- SOIL BORING LOCATION
- EARTH DIKE
- LIMIT OF DISTURBANCE
- STABILIZED CONSTRUCTION ENTRANCE
- TREELINE TO REMAIN
- SSF — SUPER SILT FENCE & TREE PROTECTION FENCING
- SF — SILT FENCE
- ECM — EROSION CONTROL MATTING
- TPF — TREE PROTECTION FENCE
- EX. TREELINE
- ..... Landscape Perimeter



OWNER/DEVELOPER
NORTHRIDGE DEVELOPMENT
14045 GARED DRIVE
GLENWOOD, MARYLAND 21738

NO.	REVISION	DATE
1	REVISE DECELERATION LANE	7/27/00

GRADING, SEDIMENT & EROSION CONTROL AND LANDSCAPE PLAN
EAGLE RIDGE

TAX MAP #22 & 23 BLOCK No. 6 PARCEL #553
3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
Reference No. : S-99-13, P-00-01

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

USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE 5/11/00

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 5/11/00

ENGINEERS CERTIFICATE

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

SIGNATURE OF ENGINEER ROBERT H. VOGEL — DATE 5/2/00

DEVELOPER'S CERTIFICATE

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

SIGNATURE OF DEVELOPER — DATE 5-1-00

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS — DATE 5/30/00

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

A/CHIEF, DIVISION OF LAND DEVELOPMENT JA — DATE 5/30/00

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5/30/00

STATE OF MARYLAND — ROBERT HARRIS VOGEL — NO. 16193 — REGISTERED PROFESSIONAL ENGINEER — 5/1/00

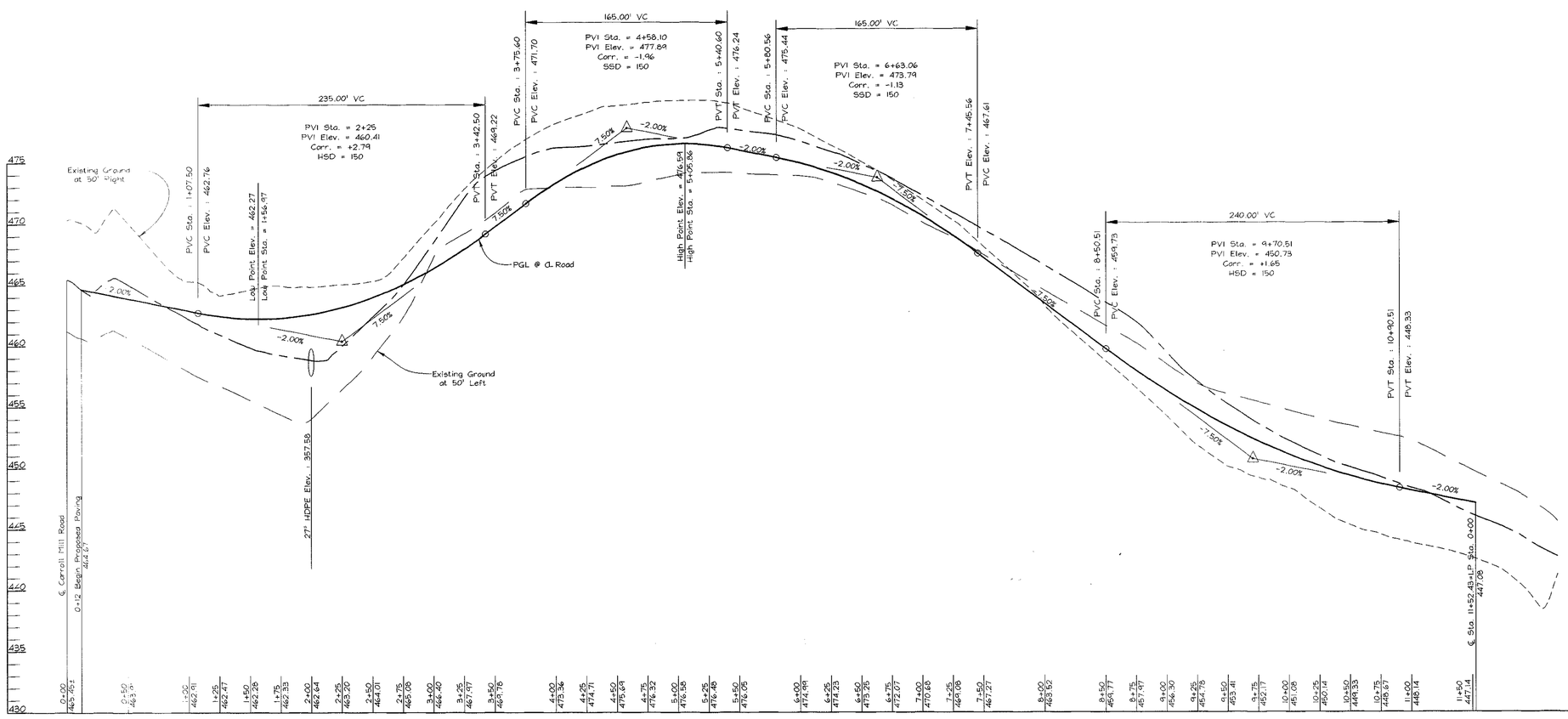
ROBERT H. VOGEL, PE No. 16193

DESIGN BY:	PS
DRAWN BY:	PS
CHECKED BY:	JCO
DATE:	April 28, 2000
SCALE:	1"=50'
W.O. NO.:	98-063

SHEET 4 OF 8

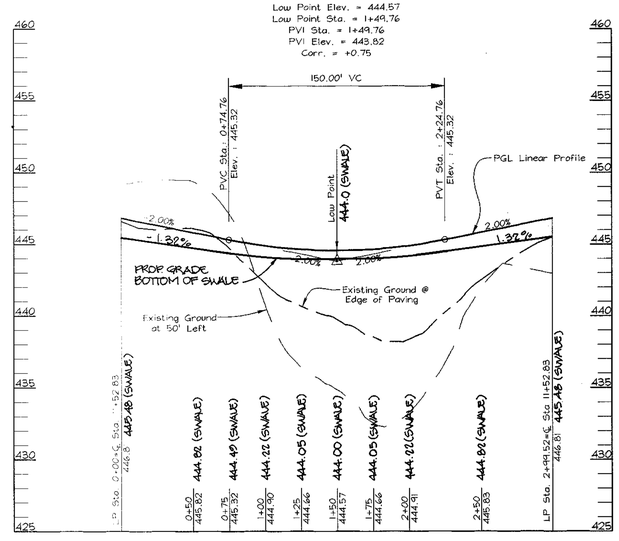
C:\Land Projects\98-063\dwg\702654.dwg-cc 4.28.00

F-00-84



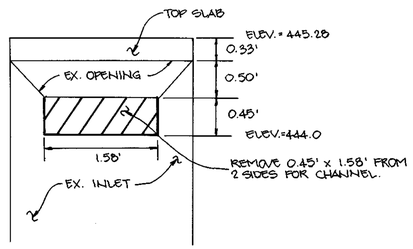
ROAD PROFILE
FAWN RIVER WAY
PUBLIC ACCESS PLACE
DESIGN SPEED-25MPH

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



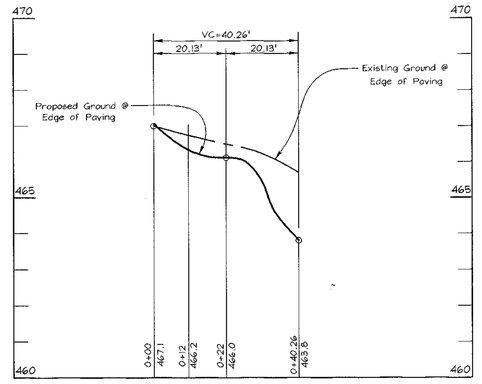
LINEAR PROFILE
FAWN RIVER WAY
PUBLIC ACCESS PLACE

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



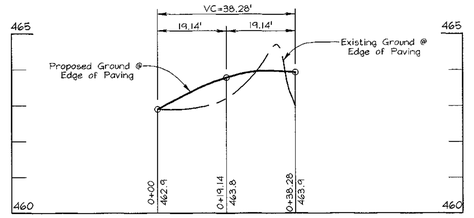
DETAIL OF INLET I-1
TYPE 'D' MODIFIED

NOT TO SCALE



ENTRANCE FILLET PROFILE

SCALE : HORIZONTAL - 1"=20'
VERTICAL - 1"=2'



EXIT FILLET PROFILE

SCALE : HORIZONTAL - 1"=20'
VERTICAL - 1"=2'

OWNER/DEVELOPER
NORTHRIDGE DEVELOPMENT
14045 GARED DRIVE
GLENWOOD, MARYLAND 21738

NO.	REVISION	DATE
2	REVISE GRADES IN CUL-DE-SAC, MODIFY INLET OPENING	3/20/01

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS — DATE 5/30/00

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT JA — DATE 5/30/00

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5/26/00

ROAD PROFILES
EAGLE RIDGE

TAX MAP #22 & 23 — PARCEL #553
3RD ELECTION DISTRICT — HOWARD COUNTY, MARYLAND
Reference No. : S-99-13, P-00-01

VOGEL & ASSOCIATES
ENGINEERS · SURVEYORS · PLANNERS
3691 Park Avenue, Suite 101 • Ellicott City, Maryland 21043
Tel 410.461.5828 Fax 410.465.3966

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16185 — REGISTERED PROFESSIONAL ENGINEER — 5/2/00
ROBERT H. VOGEL, PE No.16185

DESIGN BY: PS
DRAWN BY: PS
CHECKED BY: JCO
DATE: May 1, 2000
SCALE: As Shown
W.O. NO.: 98-063

SHEET 3 OF 8

C:\Land Projects\98-063\dwg\301881.dwg, co 5, 00

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