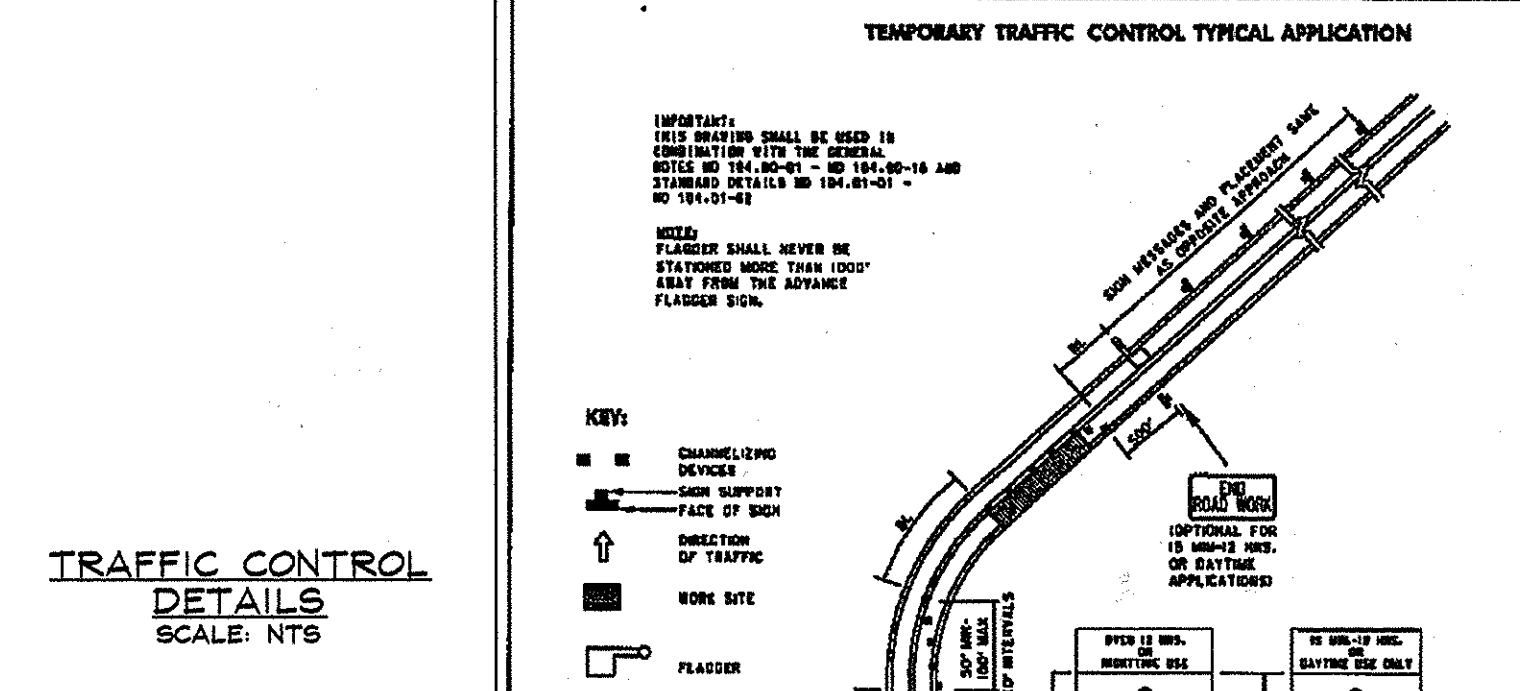
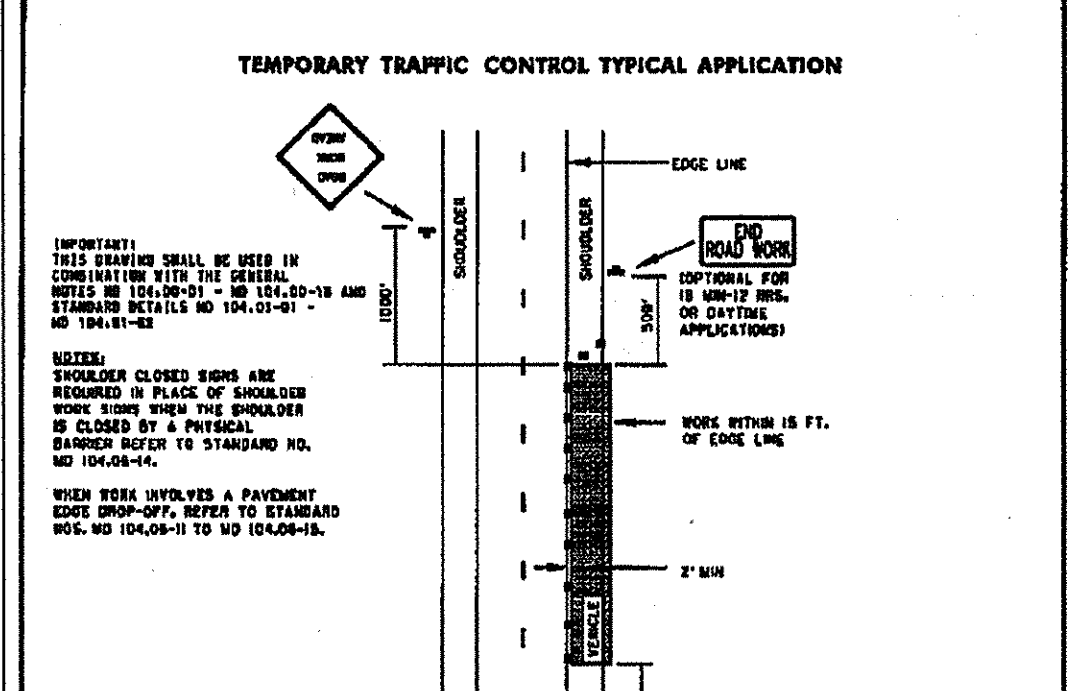


DRIVENWAY CULVERT CHART

LOT #	CULVERT SIZE & TYPE
COPPON DRIVE LOTS 1-3	12" HDPE-14LF
4	12" HDPE-14LF
COPPON DRIVE LOTS 4-7	12" HDPE-14LF
8	12" HDPE-14LF
9	12" HDPE-14LF
10	12" HDPE-14LF
11	12" HDPE-14LF
12	12" HDPE-14LF
13	12" HDPE-14LF
14	12" HDPE-14LF
15	12" HDPE-14LF
16	12" HDPE-14LF
17	12" HDPE-14LF

NOTE: CULVERT LOCATION AND SIZE TO BE DETERMINED AT BUILDING PERMIT.



Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
SHOULDER WORK / 2-LANE, 2-WAY
GREATER THAN 40 MPH
STANDARD NO. MD 104.02-01

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
FLAGGING OPERATION / 2-LANE, 2-WAY
GREATER THAN 40 MPH
STANDARD NO. MD 104.02-09

CENTERLINE ROAD CURVE DATA

ROAD NAME	STATION TO STATION	RADIUS	DELTA	LENGTH	TANGENT	CHORD/DISTANCE
MILL CREEK ROAD	1+02.85 TO 3+91.82	350.00'	47°18'18"	288.87'	153.29'	N 04°00'57" E / 280.83'
MILL CREEK ROAD	8+75.56 TO 16+68.90	345.00'	131°45'13"	793.34'	770.41'	N 46°14'25" E / 629.74'

DRAWING LEGEND

- 652 EXISTING MINOR CONTOUR (2' INTERVAL)
- 650 EXISTING MAJOR CONTOUR (10' INTERVAL)
- ADJACENT PROPERTY LINE
- EXISTING PROPERTY BOUNDARY
- EX. ROAD / EDGE OF PAVING
- EX. OVERHEAD ELECTRIC & UTILITY POLES
- PROPOSED MAJOR CONTOUR (2' INTERVAL)
- PROPOSED MINOR CONTOUR (10' INTERVAL)
- EX. BUILDING
- PROPOSED BUILDING
- PROPOSED SPOT ELEVATION & FLOW
- LIMIT OF DISTURBANCE
- PROPOSED SILT FENCE
- PROPOSED SUPER SILT FENCE
- STREET TREES

3/25/10
DATE

Professional Engineer
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 25420. Expiration Date: 3/25/2019.

STATE OF MARYLAND
PROFESSIONAL ENGINEER
1/6/10
MAYOR

PROFESSIONAL ENGINEER NO. 25420

DATA SOURCES:
EX. TOPOGRAPHY: SHOWN PER AERIAL SURVEY BY VIRGINIA RESOURCE MAPPING, DATE OF CAPTURE: 18 APRIL 2008. EX. 2011 MARYLAND COUNTY SOIL SURVEY: EX. 2011 MARYLAND COUNTY SOIL SURVEY, DATE OF CAPTURE: 2008. EX. OFF-PROPERTY WELL AND SEPTIC LOCATION WITHIN PROJECT AREA: APPROXIMATELY FROM HOWARD COUNTY HEALTH DEPARTMENT RECORDS AND FIELD INVESTIGATION BY DENARIO DESIGN CONSULTANTS, INC. ON MARCH 10, 2009.

DeMario Design Consultants, Inc.
192 East Main Street
Westminster, MD 21157
http://www.demariodesign.com

Phone: (410) 386-0560
Fax: (410) 386-0564
eMail: ddc@demariodesign.com

OWNER: VICTORIA & MICHAEL EGAN
51 GLENITE COURT
PORTLAND, CT 06480

DEVELOPER: KOCH HOMES, INC.
2661 RIVA ROAD, STE 220
ANNAPOLIS, MD 21401

SITE ADDRESS: ANNAPOLIS ROCK ROAD
WOODBINE, MD 21797

FINAL ROAD CONSTRUCTION PLANS FOR
MILL CREEK SUBDIVISION
LOTS 1-17, BUILDABLE PARCEL A &
NON-BUILDABLE PRESERVATION PARCELS B, C & D
FINAL ROAD AND M.O.T. PLAN
MILL CREEK ROAD
4th ELECTION DISTRICT HOWARD COUNTY, MD

REVISIONS

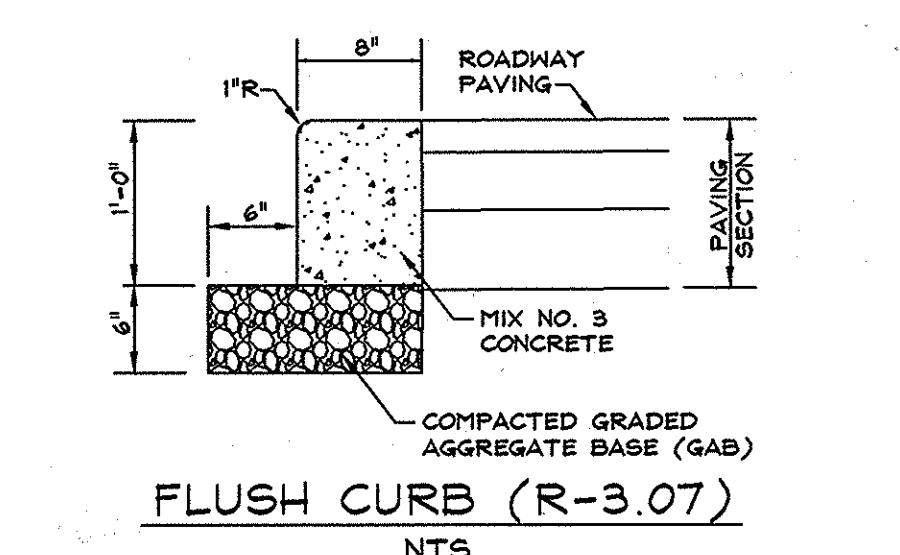
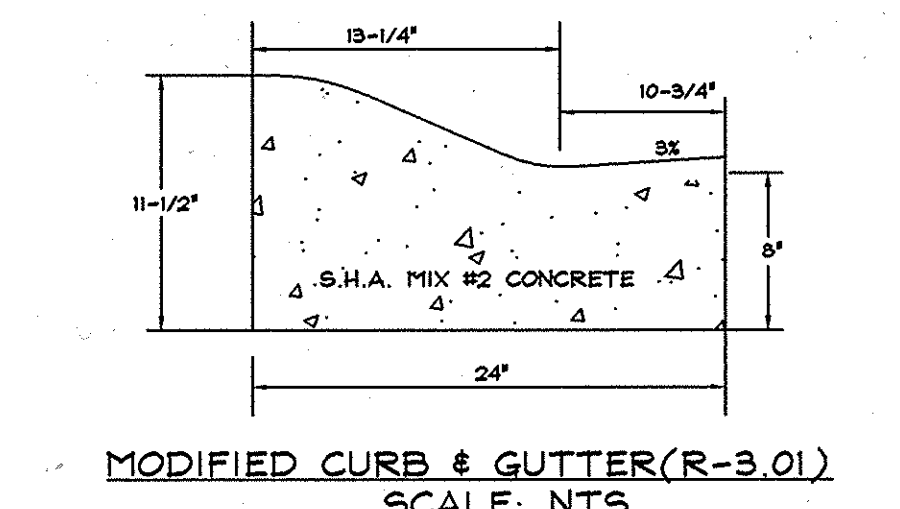
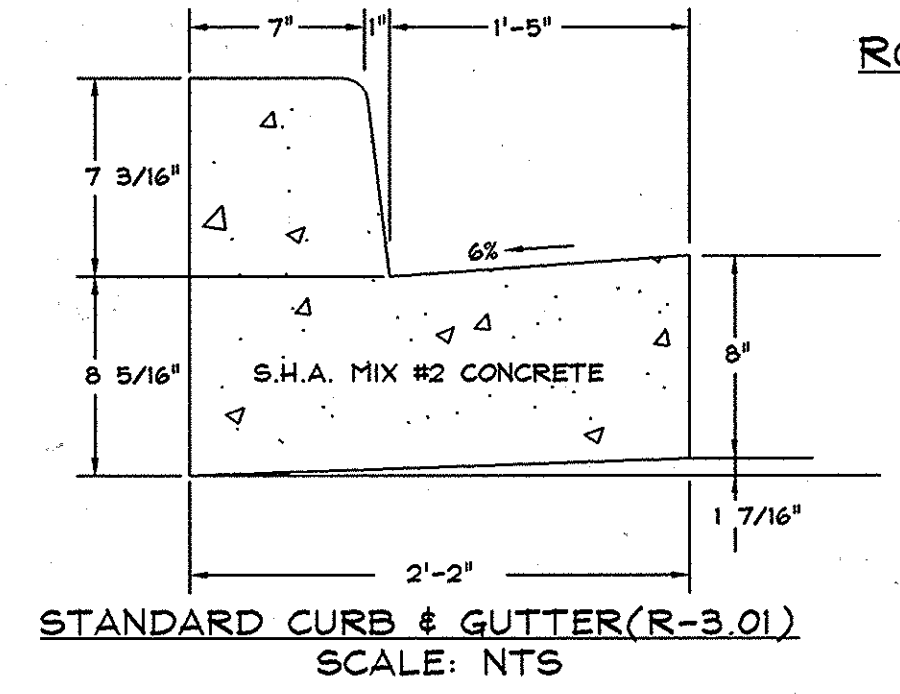
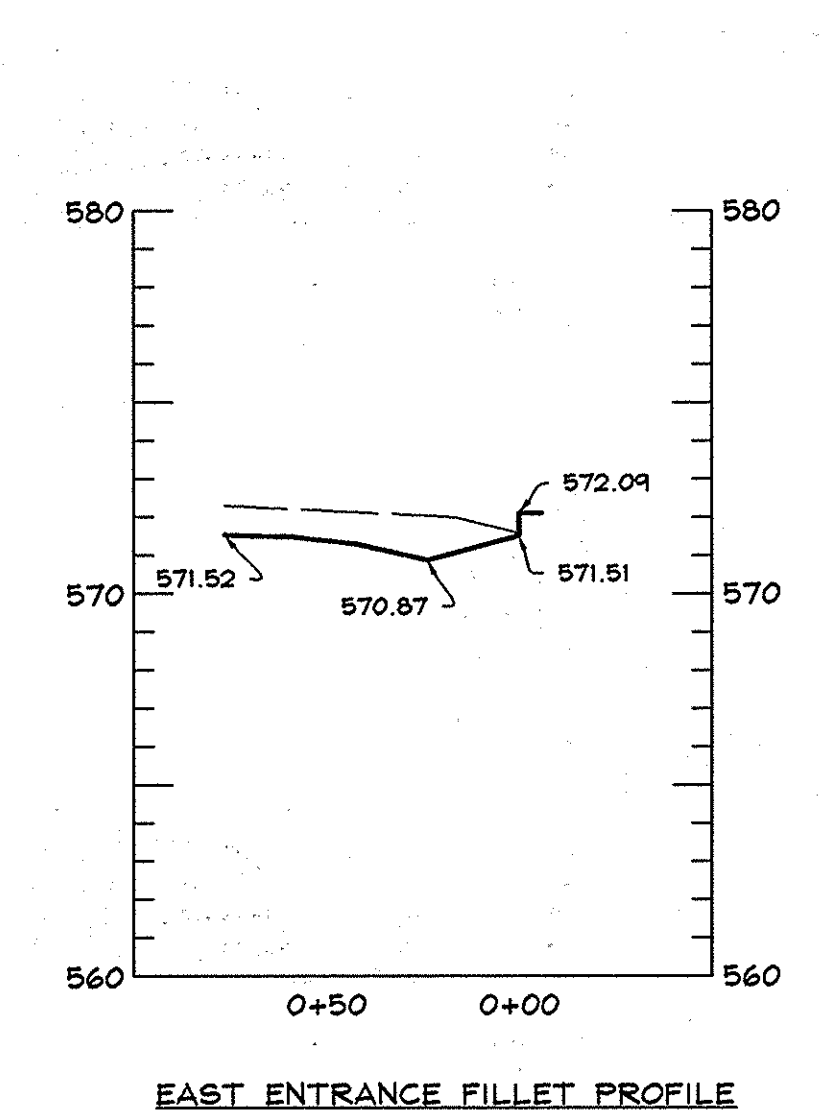
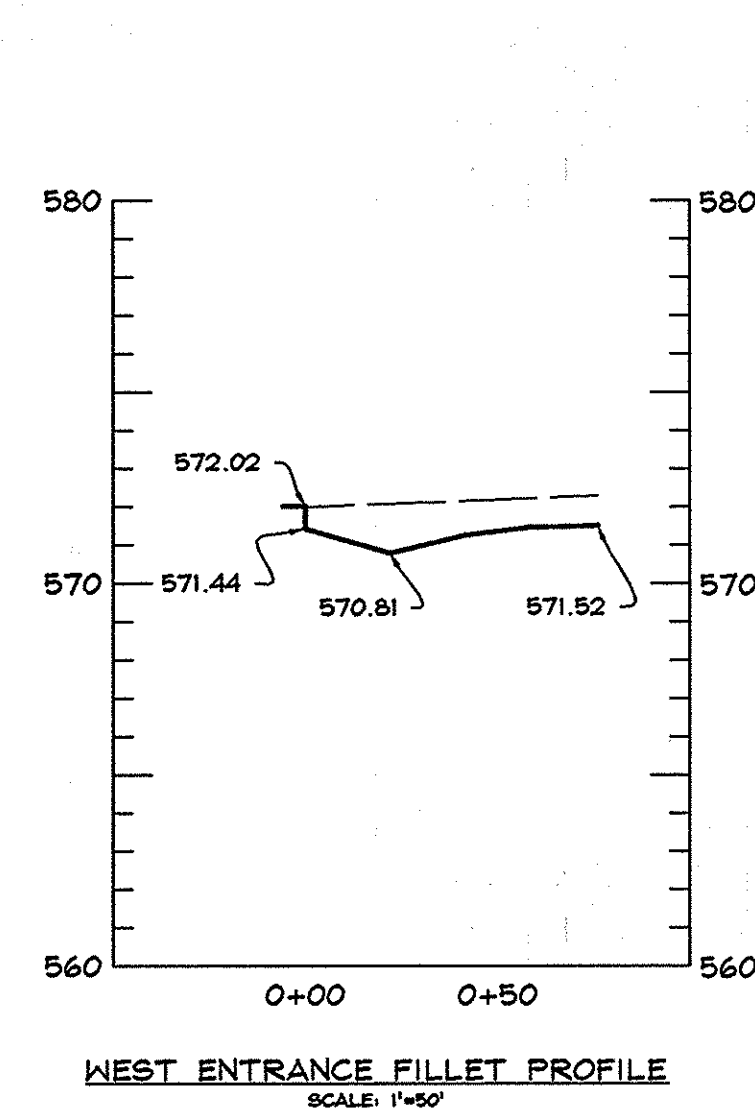
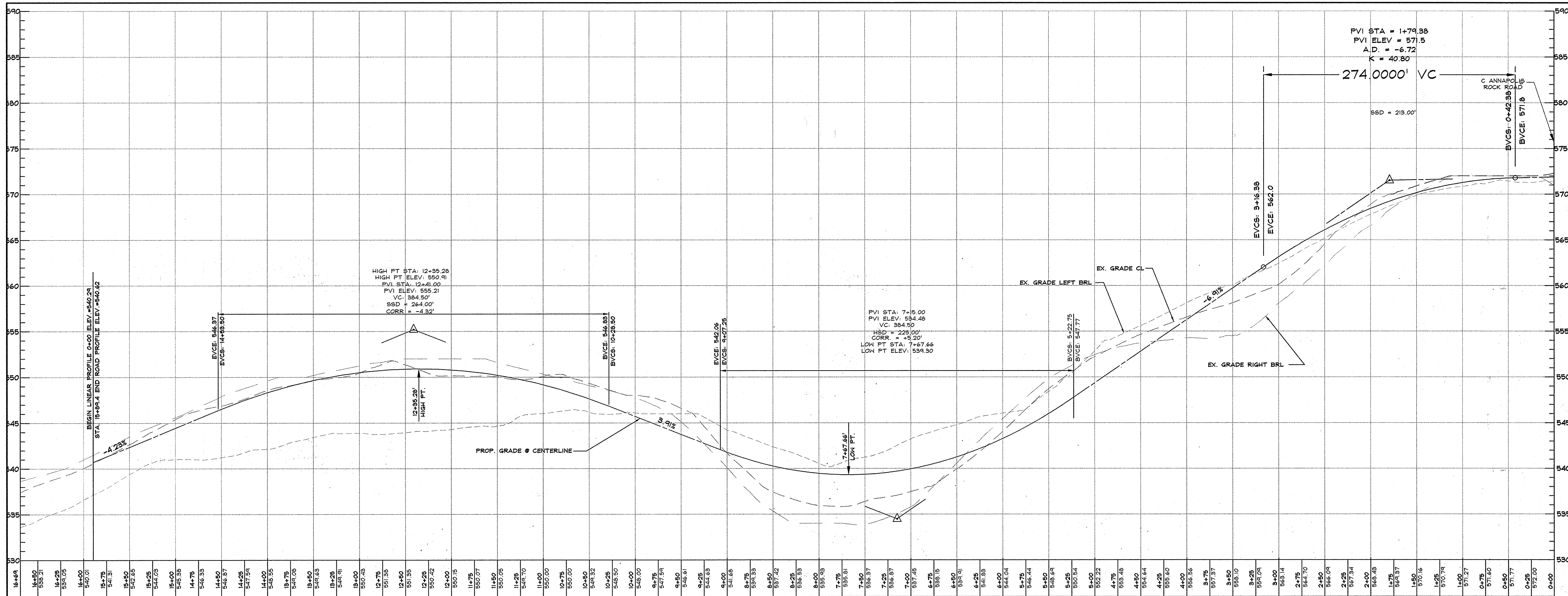
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TAX ACC. #:	DRN. BY: SDS			
TAX MAP: 19	CHK. BY: JCO			
BLOCK / GRID: 6	DATE: 8/31/10			
PARCEL #:	DDC JOB#: 05021.3			
ZONE / USE: RC-DEO	SHEET NUMBER:			
DWG. SCALE: 1"=50'	2 of 20			

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
10-8-10
DATE

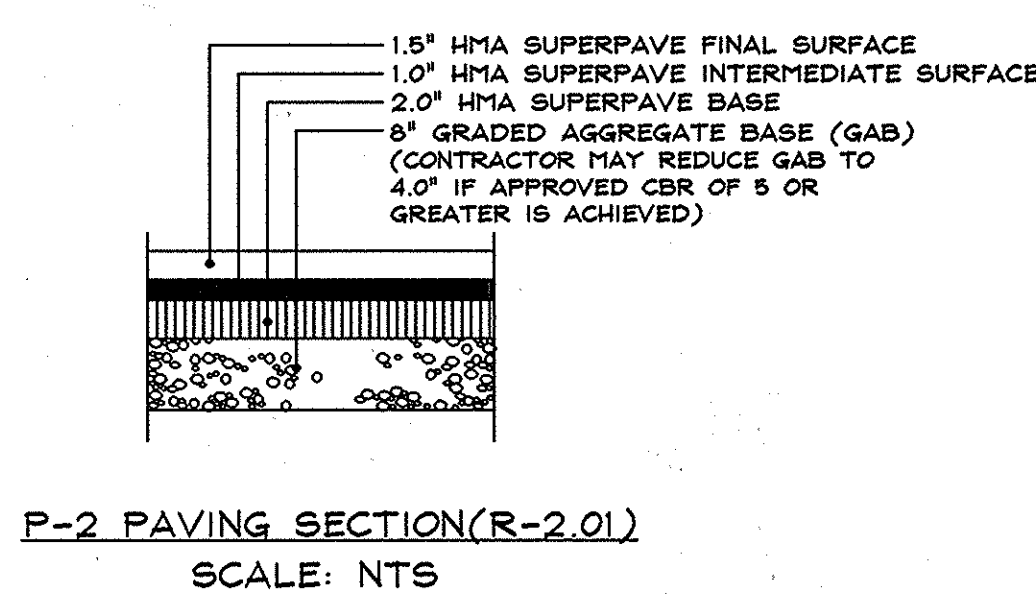
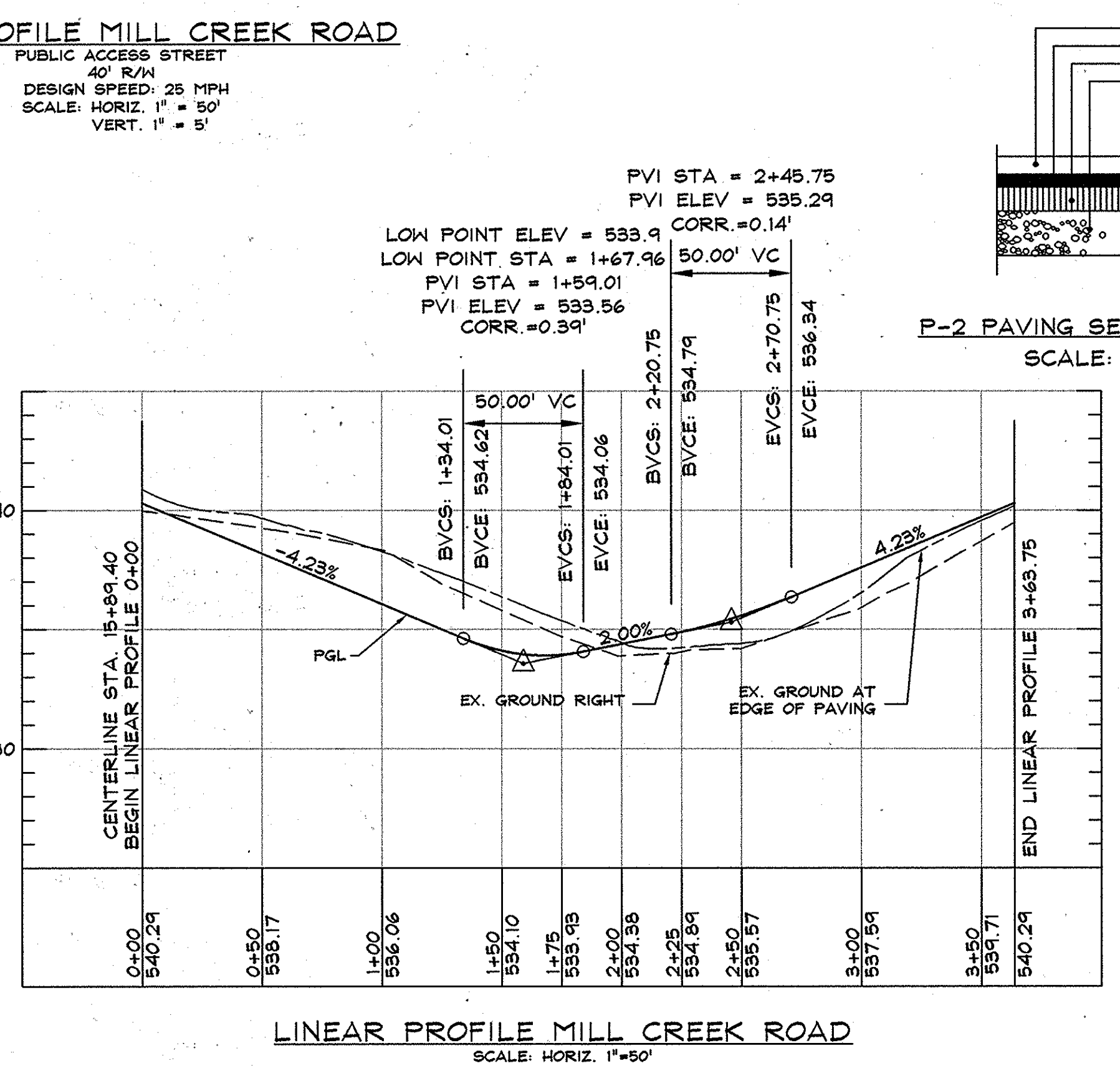
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
12/20/10
DATE

10/14/10
DATE

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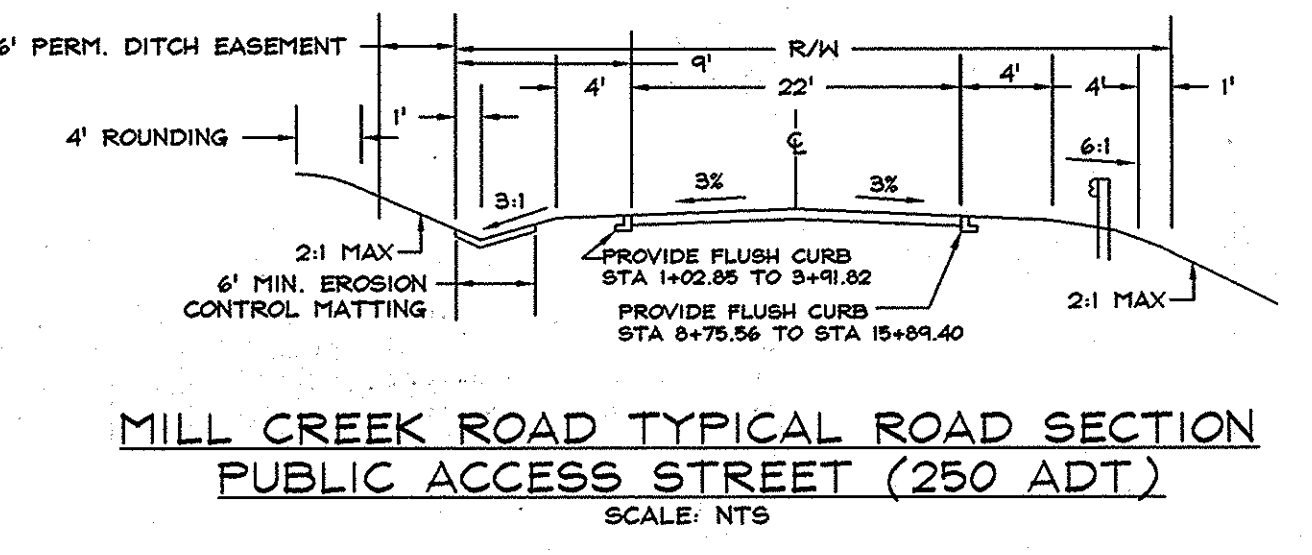
ROAD PROFILE MILL CREEK ROAD
PUBLIC ACCESS STREET
40' R/W
DESIGN SPEED: 25 MPH
SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
Matthew DeLoach 10-8-10
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.
Walter Sturdevant 12/10/10
CHIEF DIVISION OF LAND DEVELOPMENT

John DeMarco 10/14/10
CHIEF, DEVELOPMENT ENGINEERING DIVISION



3/25/10
DATE

Professional Engineer No. 25420
MARK R. THAYER

DeMario Design Consultants, Inc.
192 East Main Street
Westminster, MD 21157
http://www.demariodesign.us
Phone: (410) 386-0560
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OWNER: VICTORIA & MICHAEL EGAN
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PORTLAND, CT 06460

DEVELOPER: KOCH HOMES, INC.
c/o BILL DODD
2851 RIVA ROAD, STE 220
ANNAPOLIS, MD 21401

SITE ADDRESS: ANNAPOLIS ROCK ROAD
WOODBINE, MD 21797

FINAL ROAD CONSTRUCTION PLANS
MILL CREEK SUBDIVISION
LOTS 1-17, BUILDABLE PARCEL A &
NON-BUILDABLE PRESERVATION PARCELS B, C & D
ROAD PLAN PROFILE
MILL CREEK ROAD

4th ELECTION DISTRICT HOWARD COUNTY, MD

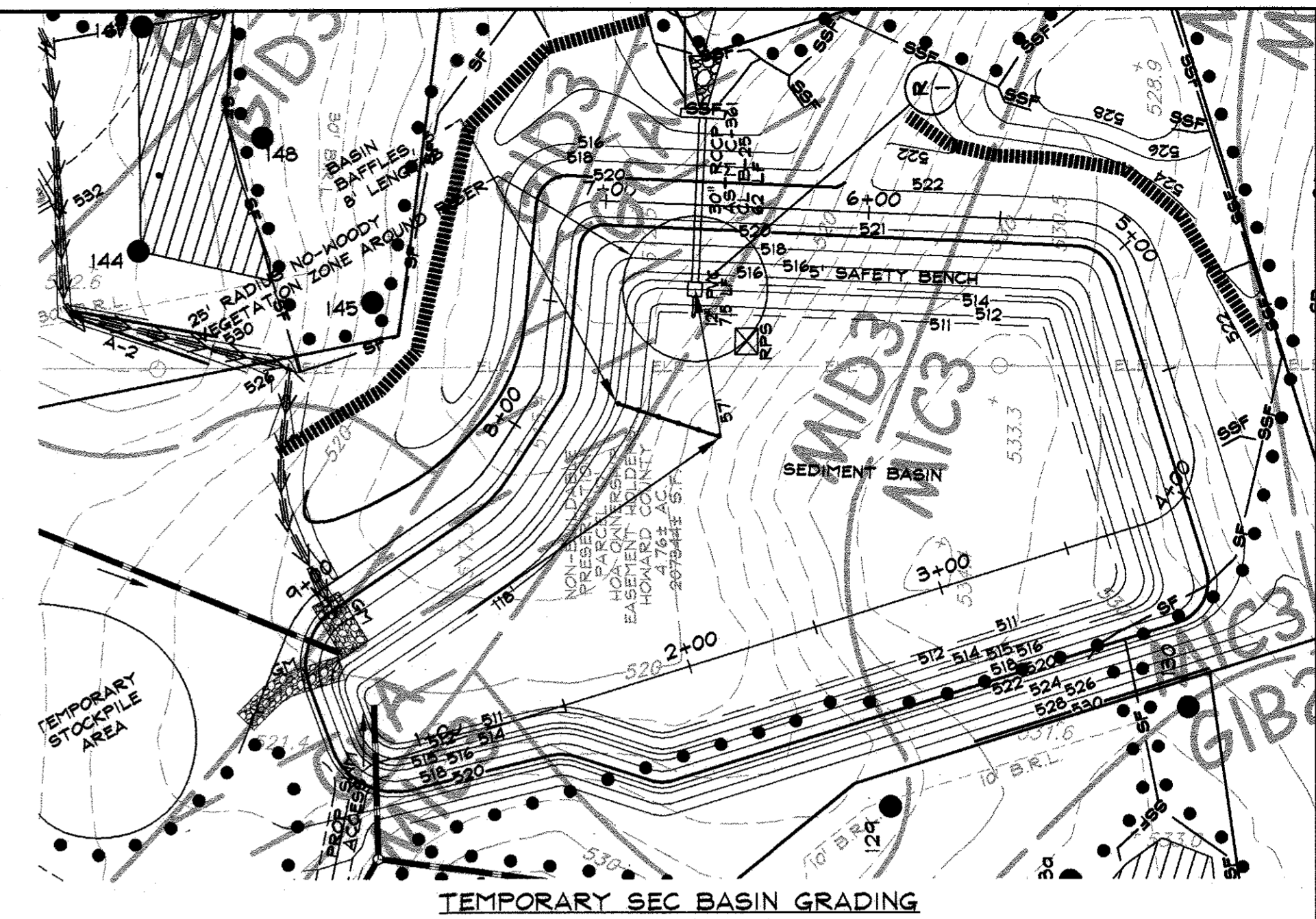
NO.	DESCRIPTION OF CHANGES	DRN.	REV.	DATE

CO. FILE #	DES. BY: JCO
TAX ACC. #: 04-319583	DRN. BY: SDS
TAX MAP: 19	CHK. BY: SDS
BLOCK / GRID: 6	DATE: 3/25/10
PARCEL #: 12	DDC JOB#: 05021.3
ZONE / USE: RC-DEO	SHEET NUMBER:
DWG. SCALE: 1"=50'	3 of 20

**MATCHLINE
SEE SHEET 5**

**MATCHLINE 5
SEE SHEET 5**

BASIN TABLE	
BASIN TYPE	
EXISTING DRAINAGE AREA ACRES	14.88
INTERIM DRAINAGE AREA ACRES	18.08
PROPOSED DRAINAGE AREA ACRES	21.08
STORAGE REQUIRED (CUBIC FEET):	
NET	37,854
DRY	37,854
TOTAL	75,708
STORAGE PROVIDED (CUBIC FEET):	
NET	38,173
DRY	42,364
TOTAL	80,537
EXISTING GROUND ELEVATION	
TOP EMBANKMENT ELEVATION	513.0
WEIR CREST ELEVATION	517.80
DRY STORAGE ELEVATION	518.20
NET STORAGE ELEVATION	514.00
CLEANOUT ELEVATION	513.00
BOTTOM ELEVATION	511.00
DEPTH OF CHANNEL (c)	N/A
OUTLET WIDTH (b)	N/A
BOTTOM DIMENSION	200x100
BASIN SIDE SLOPES	
C/O	2.0
WET	3.0
DRY	5.2
BASIN DEPTH	
BARREL DIAMETER	30"
RIBER DIMENSIONS (PER SIDE)	
NET STORAGE ZONE ELEVATION	510.840
DRY STORAGE ZONE ELEVATION	510.916
1-YR DISCHARGE, EXISTING (cfs)	1.1
1-YR DISCHARGE, PROPOSED (cfs)	0.7
1-YR DISCHARGE, ULTIMATE(SM) (cfs)	0.3



NOTE:
FOR FULL VIEW OF TEMPORARY SEC BASIN AREA SEE SHEET 5 OF 20.

DRAWING LEGEND	
682	EXISTING MINOR CONTOUR (2' INTERVAL)
680	EXISTING MAJOR CONTOUR (10' INTERVAL)
N 082°45'45" W 120.00'	EXISTING PROPERTY BOUNDARY
EX. ROAD / EDGE OF PAVING	EXISTING ROAD / EDGE OF PAVING
EX. SENER LINE & MANHOLES, CLEAN-OUTS	EXISTING SENER LINE & MANHOLES, CLEAN-OUTS
EX. OVERHEAD ELECTRIC & UTILITY POLES	EXISTING OVERHEAD ELECTRIC & UTILITY POLES
682	PROPOSED MINOR CONTOUR (2' INTERVAL)
680	PROPOSED MAJOR CONTOUR (10' INTERVAL)
PROP. STANDARD CURB & GUTTER / PROP. REVERSE CURB & GUTTER	PROPOSED STANDARD CURB & GUTTER / PROP. REVERSE CURB & GUTTER
PROP. MOUNTABLE CURB & GUTTER / PROP. REVERSE MOUNTABLE CURB & GUTTER	PROPOSED MOUNTABLE CURB & GUTTER / PROP. REVERSE MOUNTABLE CURB & GUTTER
PROP. PRIVATE ROAD/DRIVE CENTERLINE	PROPOSED PRIVATE ROAD/DRIVE CENTERLINE
EX. BUILDING	EXISTING BUILDING
PROPOSED HOUSE	PROPOSED HOUSE
PROPOSED SPOT ELEVATION & FLOW ARROW	PROPOSED SPOT ELEVATION & FLOW ARROW
EXISTING TREELINE	EXISTING TREELINE
EXISTING SHRUB/BURSH LINE	EXISTING SHRUB/BURSH LINE
PROP. 18" D. INLET / PROP. 18" D. INLET	PROPOSED 18" D. INLET / PROP. 18" D. INLET
PROP. 18" D. INLET / PROP. 18" D. INLET	PROPOSED 18" D. INLET / PROP. 18" D. INLET
PROP. 6" W. HYDRANT	PROPOSED 6" W. HYDRANT
SF / SSF	SILT FENCE / SUPER SILT FENCE
EROSION CONTROL MATTING	EROSION CONTROL MATTING
TEMPORARY SHALE	TEMPORARY SHALE
PROPOSED TREELINE	PROPOSED TREELINE
PROPOSED LIMIT OF DISTURBANCE	PROPOSED LIMIT OF DISTURBANCE
STABILIZED CONSTRUCTION ENTRANCE	STABILIZED CONSTRUCTION ENTRANCE
EXISTING TREES	EXISTING TREES
PROP. ORNAMENTAL TREE / PROP. SHADE TREE / PROP. EVERGREEN TREE	PROPOSED ORNAMENTAL TREE / PROP. SHADE TREE / PROP. EVERGREEN TREE
GM	GABION INFLOW PROTECTION
SEPTIC TO BE INSTALLED IN THIS DESIGN	SEPTIC TO BE INSTALLED IN THIS DESIGN
NON-BUILDABLE PRESERVATION	NON-BUILDABLE PRESERVATION
PROP. WELL AREA	PROP. WELL AREA

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
With 2 sheets 10-8-10
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.
Kit Shaloup 12/20/10
CHIEF DIVISION OF LAND DEVELOPMENT

John Danner 10/16/10
CHIEF DEVELOPMENT ENGINEERING DIVISION

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

[Signature] 10/6/10
DEVELOPER

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

[Signature] 10/19/10
HOWARD SOIL CONSERVATION DISTRICT

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

[Signature] 10/6/10
ENGINEER

ANNAPOLIS ROCK ROAD
HOWARD COUNTY LOCAL ROAD & SCENIC ROAD, 50' R.O.W.

STATE OF MARYLAND DEPARTMENT OF FOREST AND PARKS
MAP 19, GRID 6, PARCEL 17
ANNAPOLIS ROCK ROAD
LIBER 483 FOLIO 297
ZONE: RC

DeMario Design Consultants, Inc.
192 East Main Street
Westminster, MD 21157
http://www.demariodesign.us

Phone: (410) 386-0580
Fax: (410) 386-0564
eMail: ddc@demariodesign.us

OWNER: VICTORIA & MICHAEL EGAN
51 GILLETTE COURT
PORTLAND, CT 06480

DEVELOPER: KOCH HOMES, INC.
c/o BILL DODD
2881 RIVA ROAD, STE 220
ANNAPOLIS, MD 21401

SITE ADDRESS:
ANNAPOLIS ROCK ROAD
WOODBINE, MD 21797

FINAL ROAD CONSTRUCTION PLANS FOR
MILL CREEK SUBDIVISION
LOTS 1-17, BUILDABLE PARCEL A & C
NON-BUILDABLE PRESERVATION PARCELS B, C & D
GRADING & SEDIMENT CONTROL PLAN
4th ELECTION DISTRICT HOWARD COUNTY, MD

REVISIONS				
NO.	DESCRIPTION OF CHANGES	DRN	REV	DATE
CO. FILE #	DES. BY: JCO/CTS			
TAX ACC. # 04-319583	DRN. BY: SDS/CTS			
TAX MAP: 19	CHK. BY: JCO/MRT			
BLOCK / GRID: 6	DATE: 8/31/10			
PARCEL # 12	DDC JOB#: 05021.3			
ZONE / USE: RC-DEO	SHEET NUMBER:			
DWG. SCALE: 1"=50'	4 of 20			

3/25/10
DATE

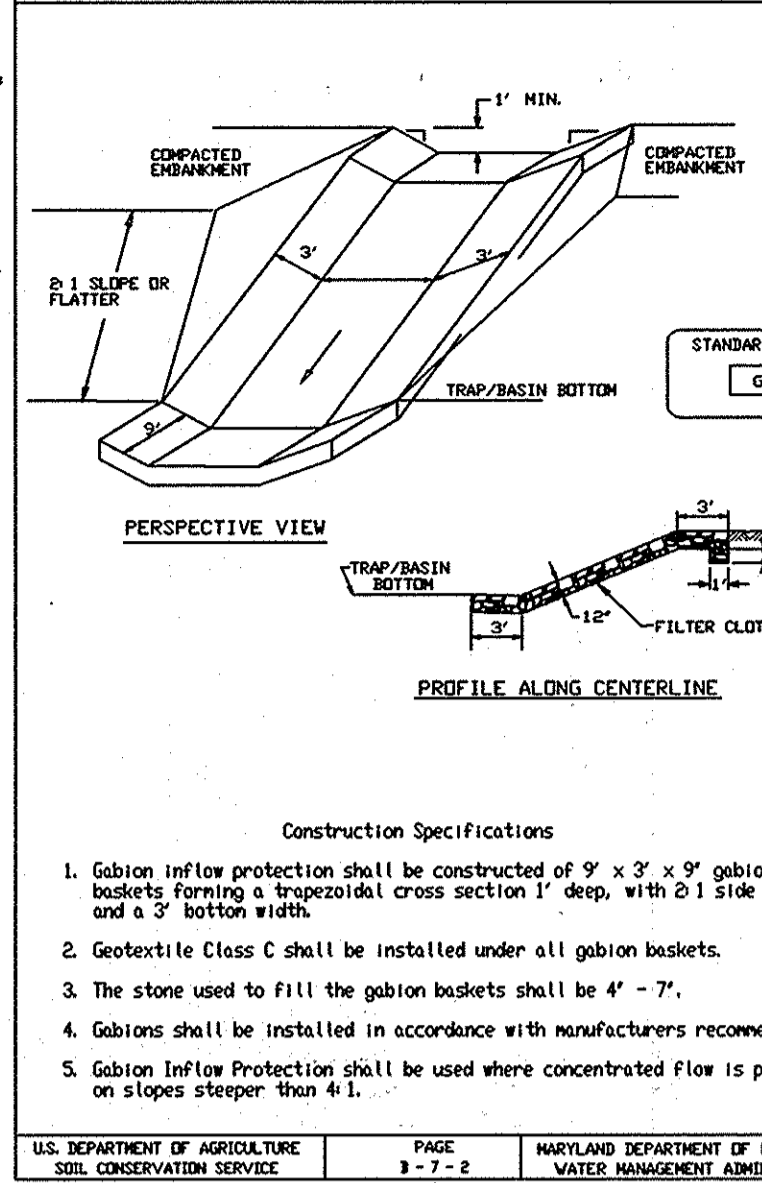
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 25420, EXPIRES 07/22/2015.

STATE OF MARYLAND
MARK R. THAYER
PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER NO. 25420

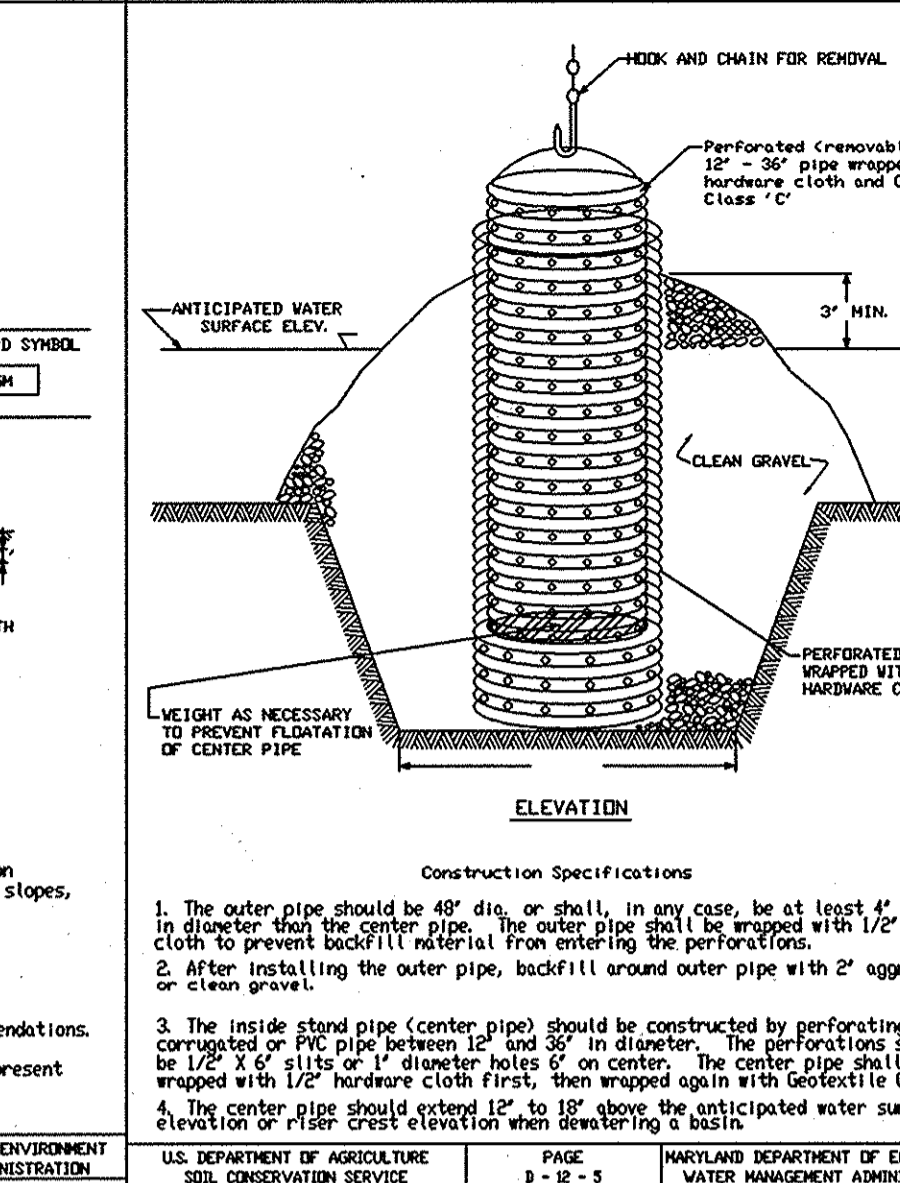
SEDIMENT CONTROL GENERAL NOTES

- A minimum of 48 hours notice must be given to the Howard County Department of Inspections, and permits, sediment control division prior to the start of any construction (410-313-9095).
- All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the most current Maryland Standards and Specifications for Soil Erosion and Sediment Control.
- Following initial soil disturbance or re-disturbance, permanent or temporary stabilization shall be completed within:
 - Seven calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes steeper than 3:1.
 - Fourteen days for all other areas of graded areas on the project site.
- All sediment traps/basins shown must be fenced and warning signs posted around their perimeter in accordance with vol. 1, chapter 12, of the "Howard County Design Manual", storm drainage.
- All disturbed areas must be stabilized within the time period specified above in accordance with the "1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control" for permanent seedings (sec. 5.2), sods (sec. 5.4), temporary seedings (sec. 5.5), and mulching (sec. 5.6). Temporary stabilization with mulch alone can only be done when recommended seeding dates.
- do not allow for proper germination and establishment of grasses. All sediment control devices are to remain in place and are to be maintained in operative condition until permanent stabilization has been obtained from the Howard County Inspector.
- Site Analysis:
 - Total area of site = 57.57 acres
 - Area disturbed = 22.09 acres
 - Area to be roofed or paved = 3.49 acres
 - Area to be vegetatively stabilized = 19.34 acres
 - Total cut = 17,000 +/- cu yd
 - Total fill = 28,000 +/- cu yd
 - Waste/borrow area = 9,000 +/- cu yd
 (Location to be determined by contractor. Location point must have open grading permit.)
- Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
- Additional sediment controls must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
- On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection activities may not be undertaken until the initial approval by the inspection agency is made.
- Trenches for the construction of utilities limited to three pipe lengths or less which shall be backfilled and stabilized.
- The contractor shall inspect and provide necessary maintenance on the sediment and erosion control devices and structures on the plan. The inspection shall be on a daily basis and after each rainfall.

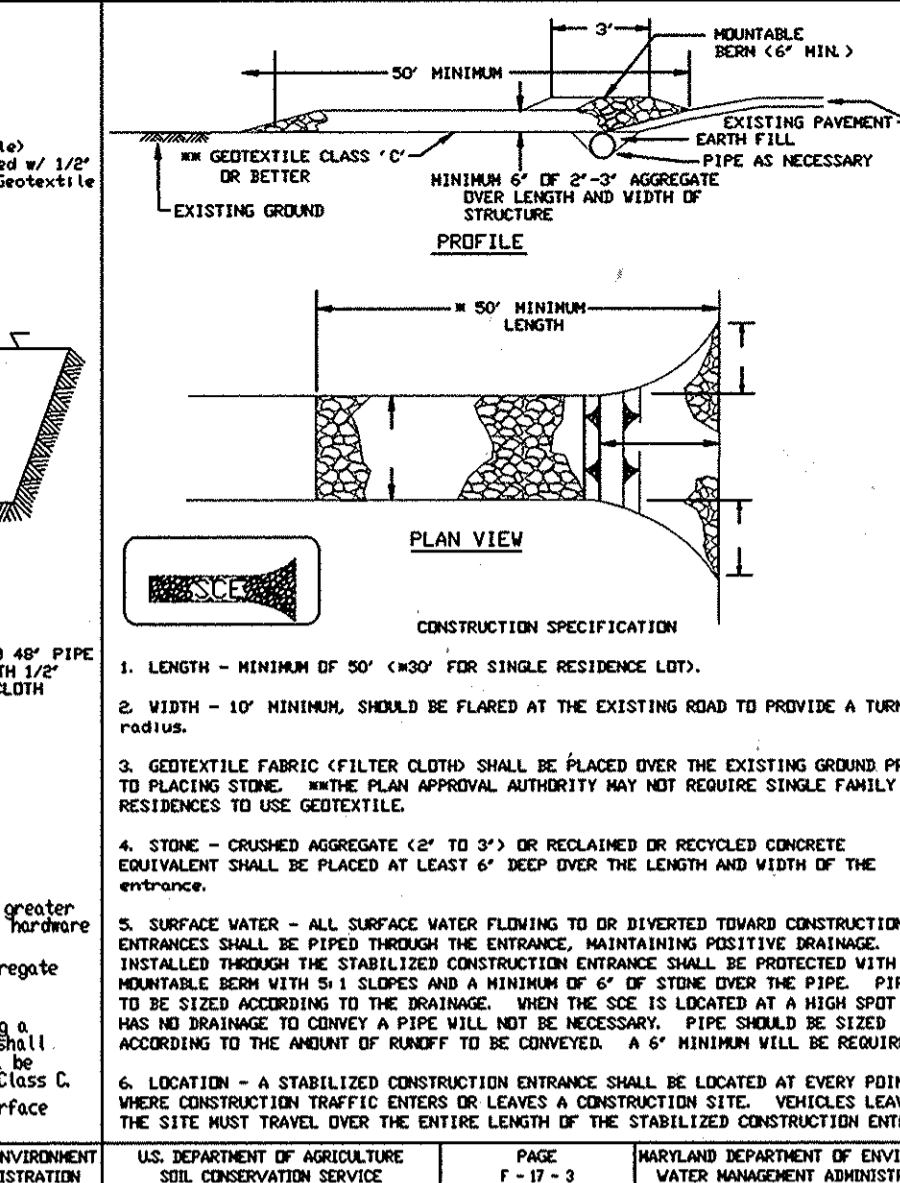
DETAIL 6 - GABION INFLOW PROTECTION



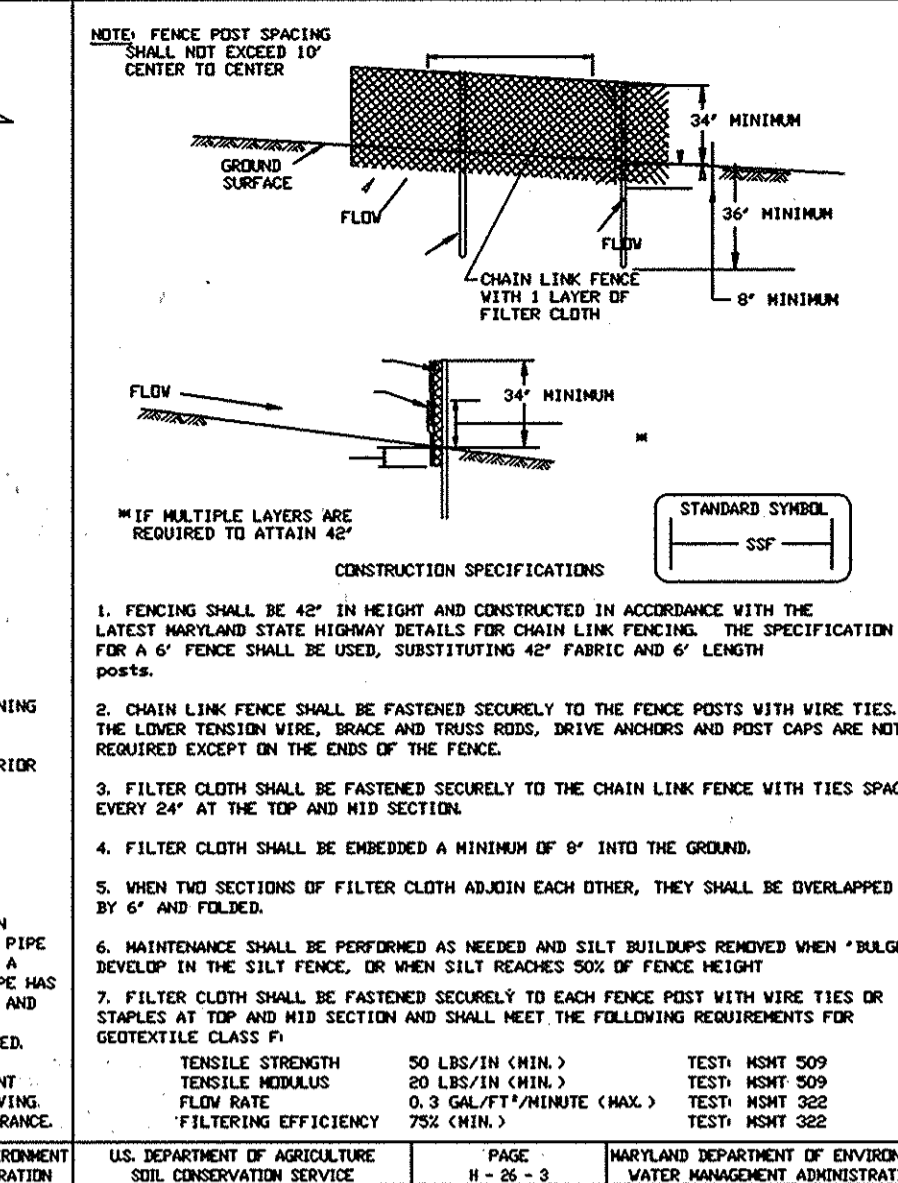
DETAIL 20A - REMOVABLE PUMPING STATION



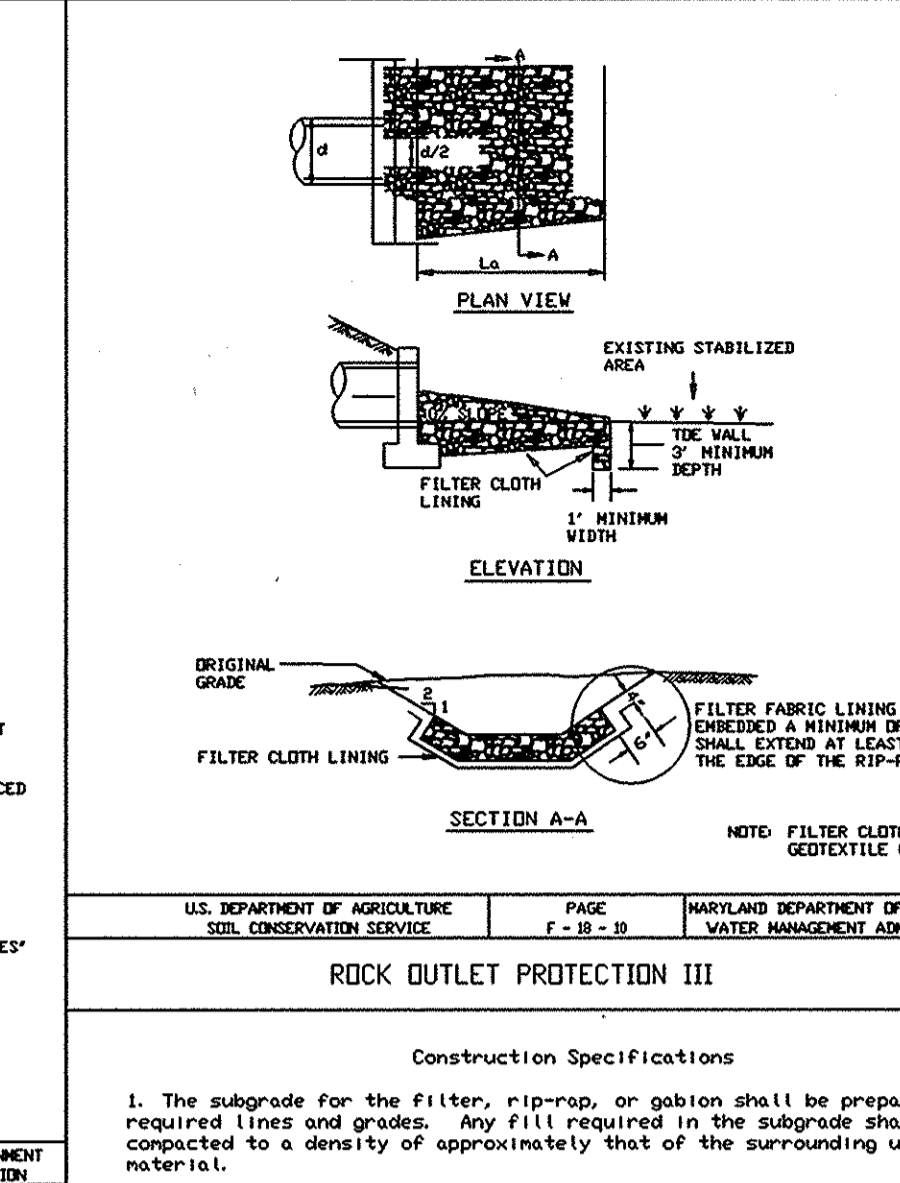
DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



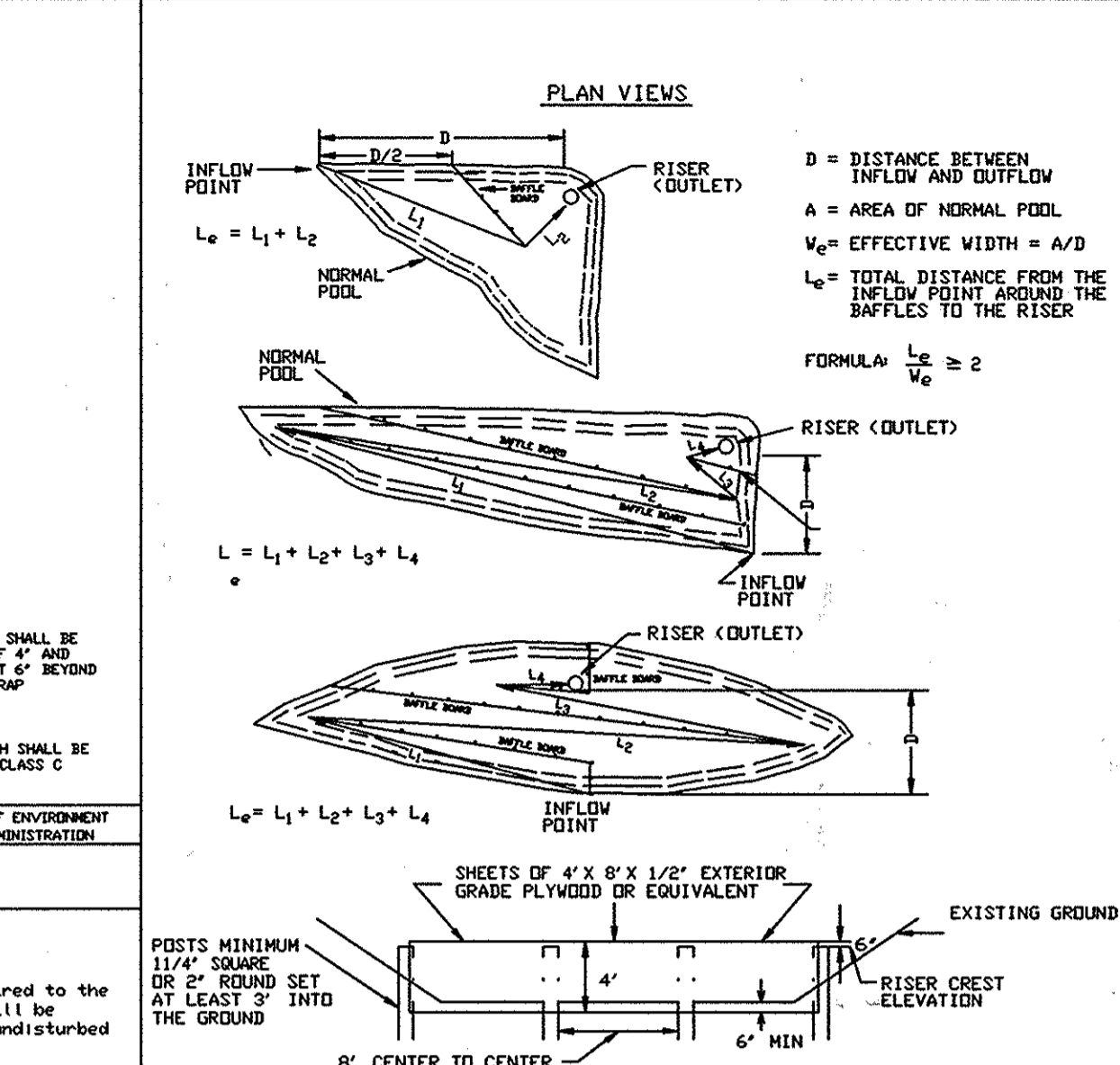
DETAIL 33 - SUPER SILT FENCE



DETAIL 27 - ROCK OUTLET PROTECTION III



DETAIL 18 - SEDIMENT BASIN BAFFLES



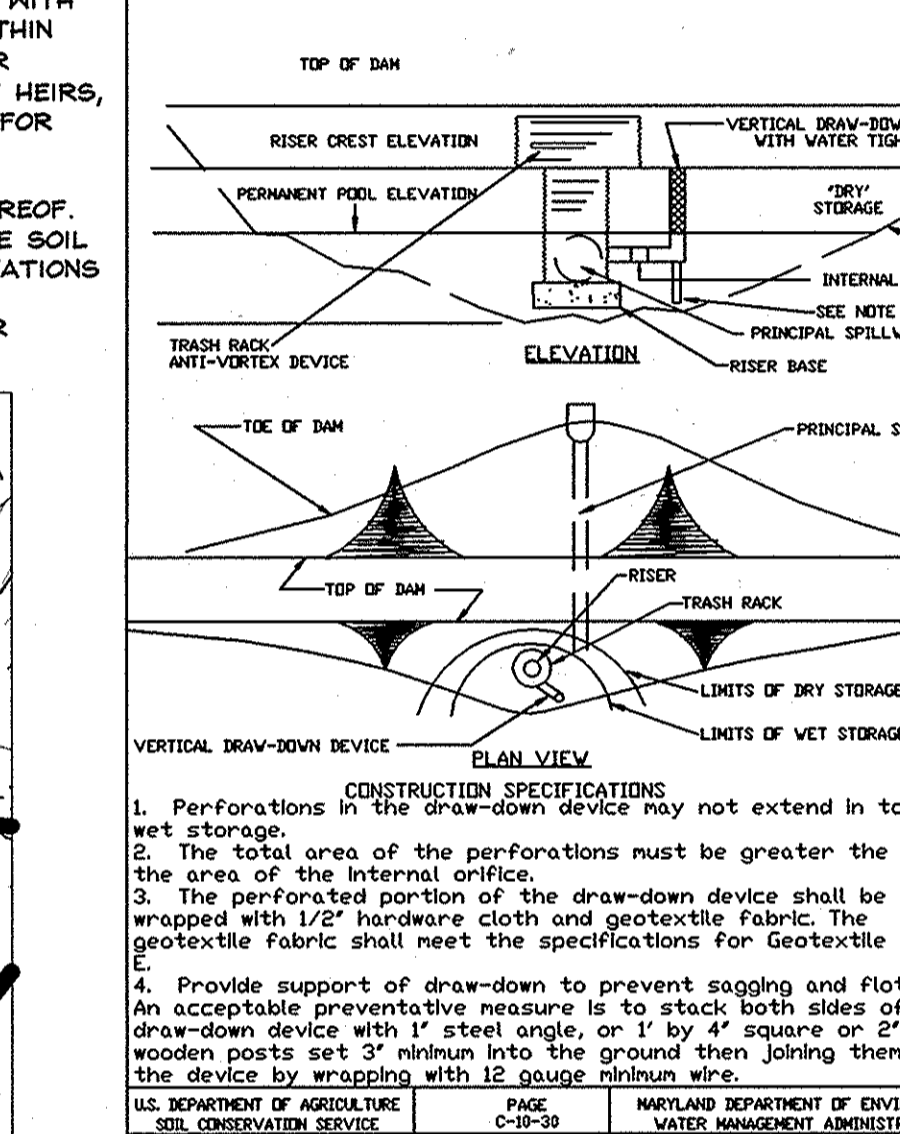
DRAWING LEGEND

- PROPOSED LIMIT OF DISTURBANCE
- EXISTING TREELINE
- STREAM BUFFER
- WETLANDS BUFFER
- WETLANDS
- RECONSTRUCTED STREAM

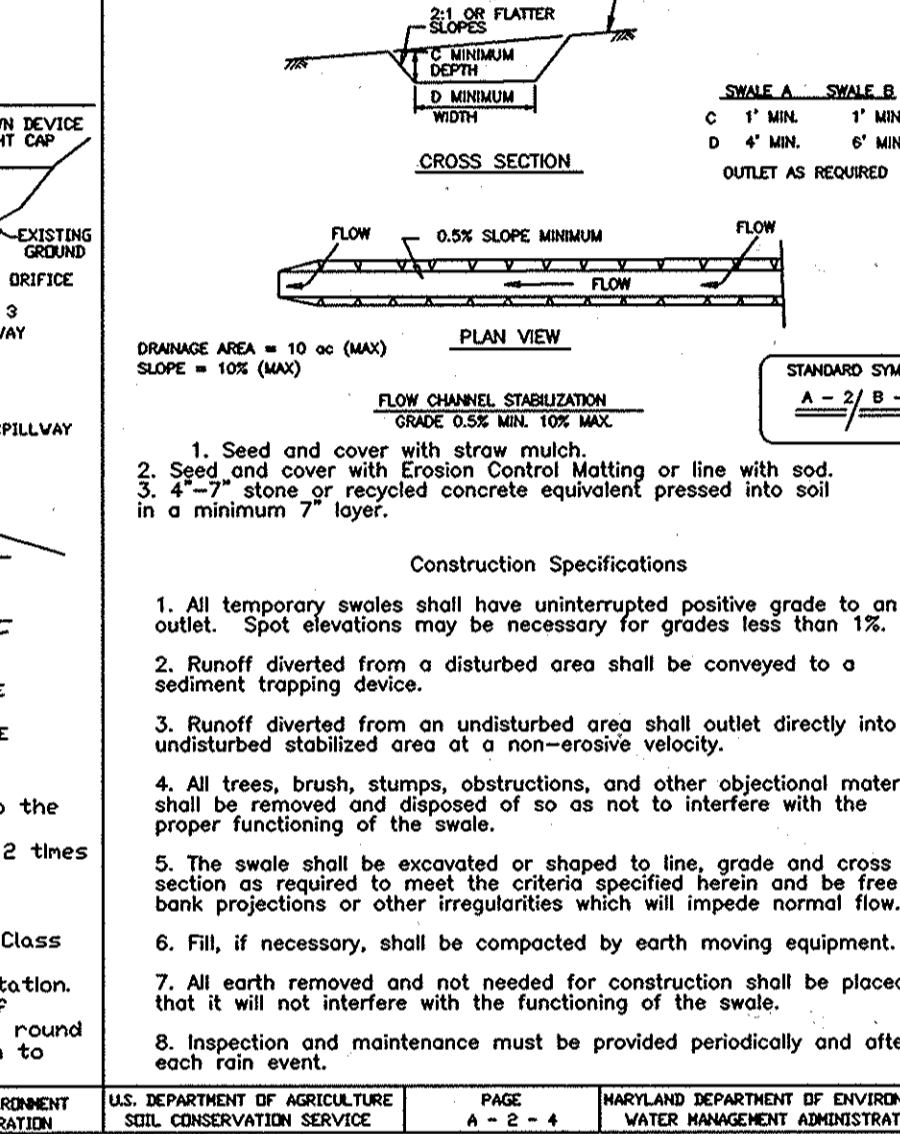
OPERATION, MAINTENANCE AND INSPECTION

INSPECTION OF THE POND(S) SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, NRCS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378). THE POND OWNER(S) AND ANY HEIRS, SUCCESSORS OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND AND THE CONTINUED OPERATION, SURVEILLANCE, INSPECTION AND MAINTENANCE THEREOF. THE POND OWNER(S) SHALL PROMPTLY NOTIFY THE SOIL CONSERVATION DISTRICT OF ANY UNUSUAL OBSERVATIONS THAT MAY BE INDICATIONS OF DISTRESS SUCH AS EXCESSIVE SEEPAGE, TURBID SEEPAGE, SLIDING OR BULGING.

BASIN DRAWDOWN SCHEMATIC VERTICAL DRAW-DOWN DEVICE



DETAIL 2 - TEMPORARY SWALE



DUST CONTROL

Controlling dust blowing and movement on construction sites and roads.

DEFINITION
PURPOSE: To prevent blowing and movement of dust from exposed soil surfaces, reduce on and off-site dust, health hazards, and improve traffic safety.

CONDITIONS WHERE PRACTICE APPLIES
This practice is applicable to areas subject to dust blowing and movement where on and off-site damage is likely without treatment.

TEMPORARY METHODS

- Mulches - See standards for vegetative stabilization with mulches only. Mulch should be crimped or tacked to prevent blowing.
- Vegetative Cover - See standards for temporary vegetative cover.
- Tillage - To roughen surface and bring clods to the surface. This is an emergency measure which should be used before soil blowing starts. Begin plowing an upwind side of site. Chisel-till plows spaced 12' apart, spring-toothed harrows, and similar plows are examples of equipment which may produce the desired effect.
- Irrigation - This is generally done as an emergency treatment. Site is sprinkled with water until the surface is moist. Repeat as needed. At no time should the site be irrigated to the point that runoff begins to flow.
- Barriers - Solid board fences, all fences, snow fences, burlap fences, straw bales, or similar material can be used to control or curtail soil blowing. Barriers placed at right angles to prevailing currents at intervals of about 10 times their height are effective in controlling soil blowing.
- Calcium Chloride - Apply at rates that will keep surface moist. May need retreating.

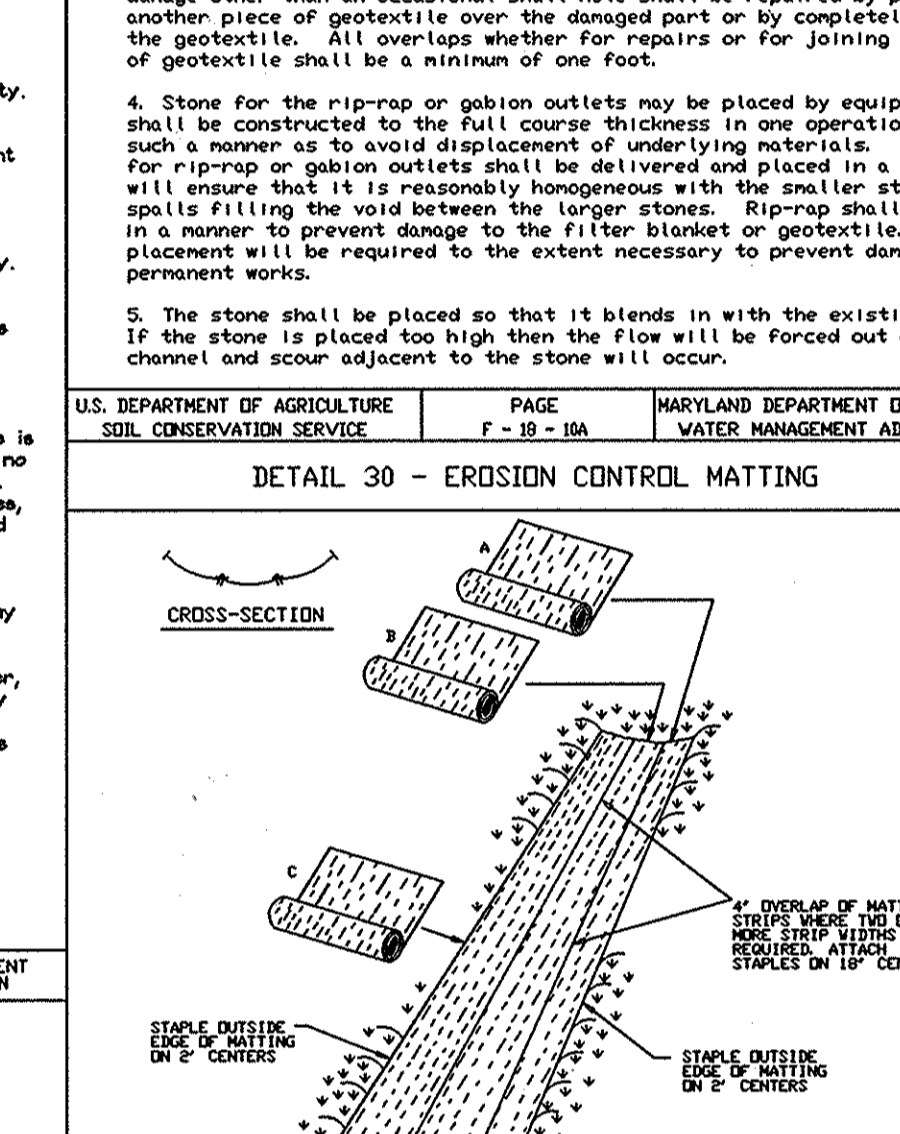
PERMANENT METHODS

- Vegetation - See standards for permanent vegetative cover, and permanent stabilization with sod. Existing trees or large shrubs may afford valuable protection if left in place.
- Topsoil - Covering with less erosive soil materials. See standards for topsoiling.
- Stone - Cover surface with crushed stone or coarse gravel.

REFERENCES

- Agriculture Handbook 546. Wind Erosion Forces in the United States and Their Control.
- Agriculture Information Bulletin 354. How to Control Wind Erosion, USDA-ARS.

DETAIL 30 - EROSION CONTROL MATTING



OPERATION AND MAINTENANCE SCHEDULE FOR STORMWATER MANAGEMENT DETENTION FACILITY

H.O.A. STORMWATER MANAGEMENT FACILITY ROUTINE MAINTENANCE

- FACILITY WILL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHOULD BE PERFORMED DURING WET WEATHER TO DETERMINE IF FUNCTIONING PROPERLY.
- TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES A YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHOULD BE MOWED AS NEEDED.
- DEBRIS AND LITTER NEXT TO THE OUTLET STRUCTURE SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
- VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS RIPRAP OUTLET AREAS SHALL BE REPAIRED AS SOON AS IT IS NOTICED.

HOWARD COUNTY NON-ROUTINE MAINTENANCE

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

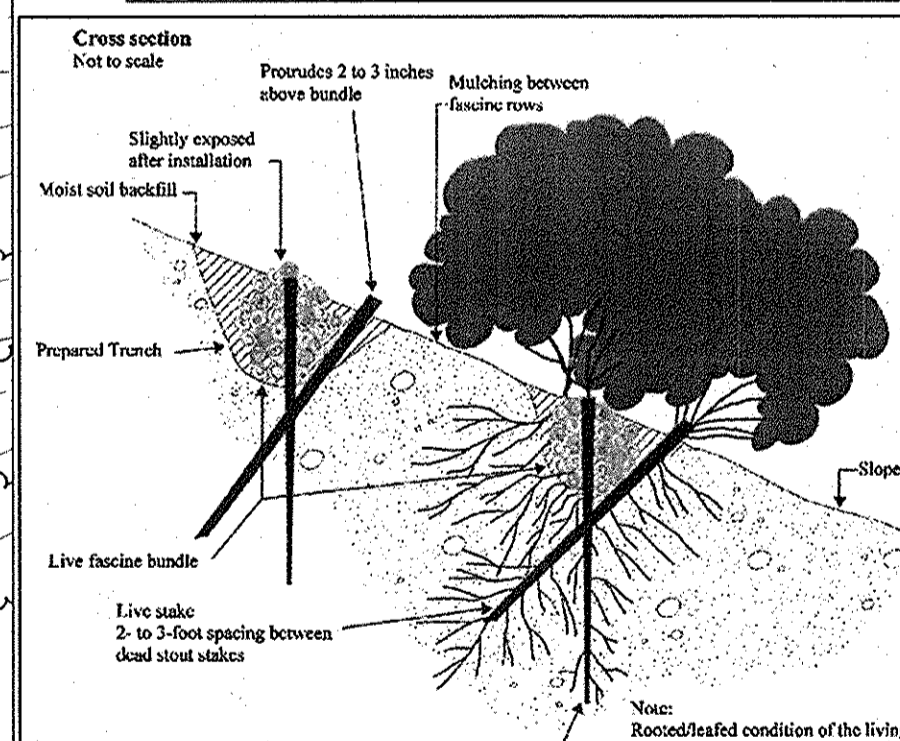
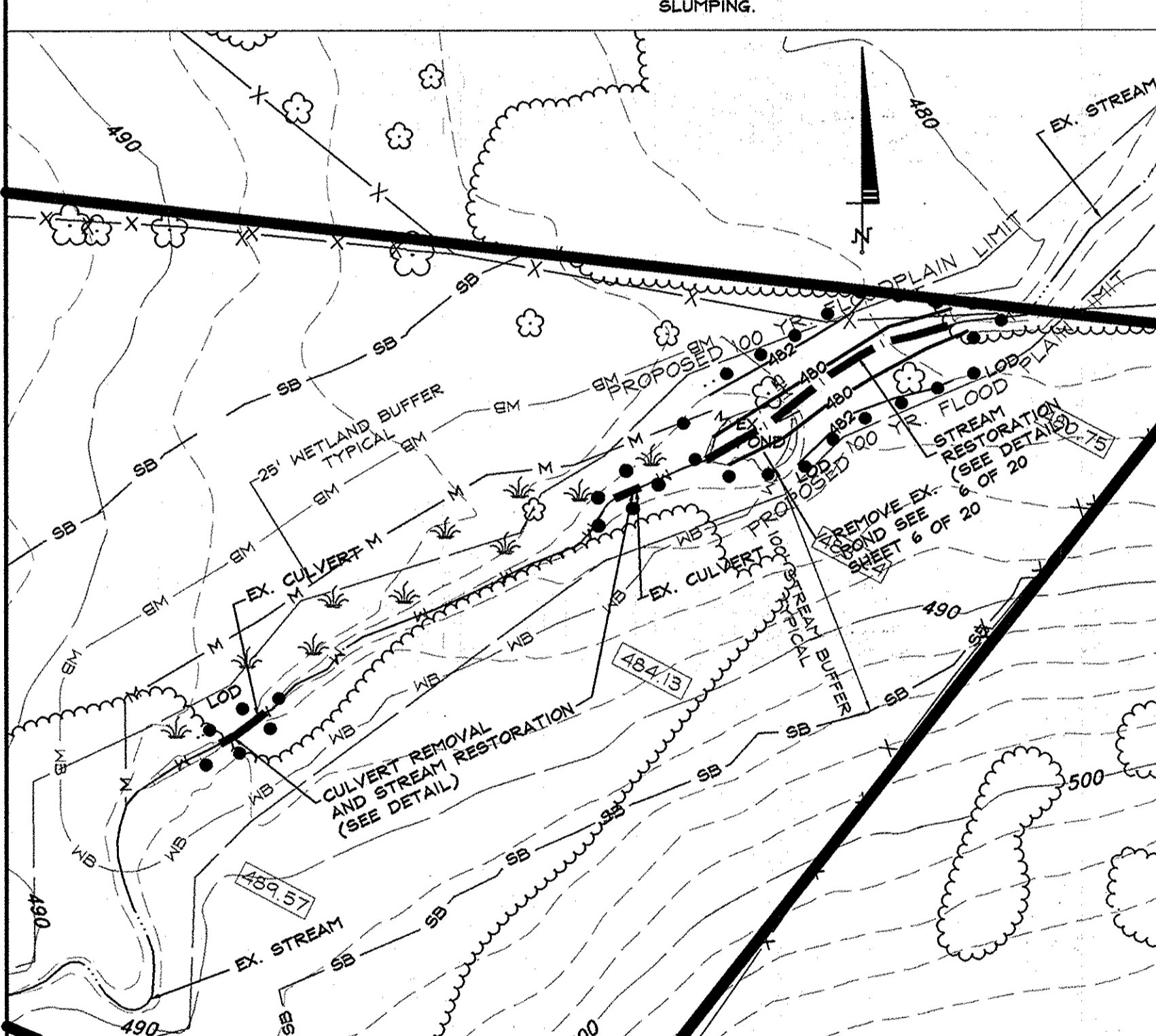
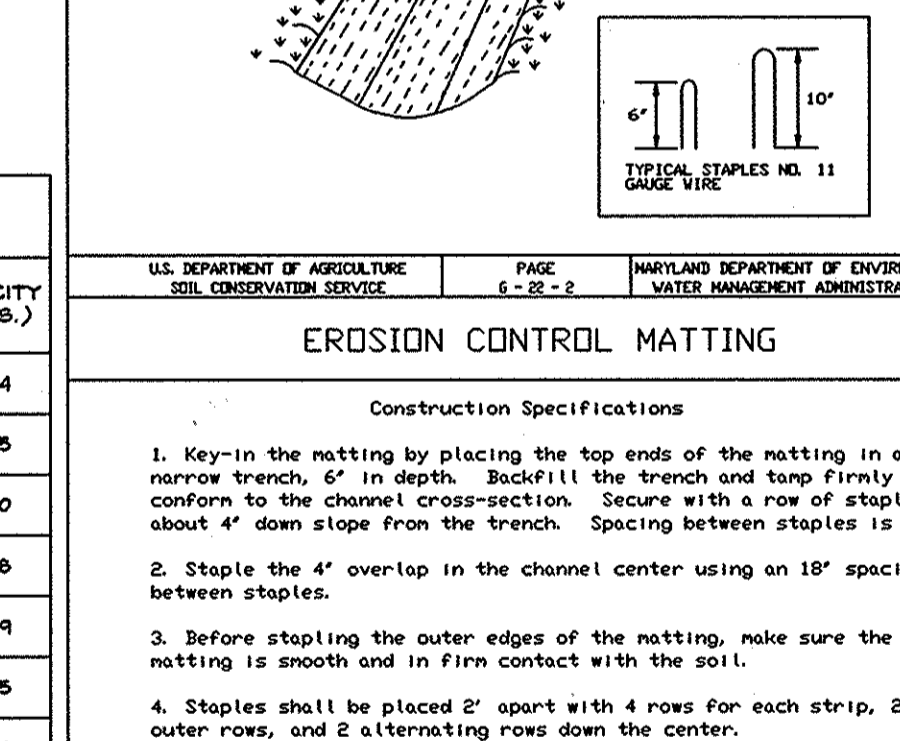


Table PESC-04-1
Live Fascine Installation Guidelines

Slope (H:V)	Slope distance Between trenches (ft)	Maximum slope length (ft)
1:1 to 1.5:1	3 - 4 (0.94 - 1.26 m)	15 (4.7 m)
1.5:1 to 2:1	4 - 5 (1.20 - 1.57 m)	20 (6.3 m)
2:1 to 2.5:1	5 - 6 (1.52 - 1.83 m)	30 (9.4 m)
2.5:1 to 3:1	6 - 8 (1.83 - 2.51 m)	40 (12.6 m)
3:1 to 4:1	8 - 9 (2.51 - 2.83 m)	50 (15.7 m)
4:1 to 5:1	9 - 10 (2.83 - 3.14 m)	60 (18.9 m)

V'-DITCH GRASS CHANNEL INFORMATION

LOCATION	CHANNEL WIDTH (ft)	SIDE SLOPES (H:V)	DEPTH (IN FEET)	VELOCITY (F.P.S.)
RIGHT SIDE STA. 0+00 TO STA. 4+37.65	4.80	2	0.06	0.27
LEFT SIDE STA. 0+00 TO STA. 4+37.65	5.34	3	0.10	0.55
RIGHT SIDE STA. 4+37.65 TO STA. 6+40.12	5.94	3	0.06	0.20
LEFT SIDE STA. 4+37.65 TO STA. 6+40.12	5.83	3	0.05	0.14
RIGHT SIDE STA. 6+40.12 TO STA. 7+47.44	3.74	3	0.11	0.27
LEFT SIDE STA. 6+40.12 TO STA. 7+47.44	3.6	3	0.19	0.34
RIGHT SIDE STA. 7+47.44 TO STA. 15+55.54	3.84	3	0.09	0.26
LEFT SIDE STA. 7+47.44 TO STA. 15+55.54	3.84	3	0.09	0.26
RIGHT SIDE STA. 15+55.54 TO STA. 15+55.54	2.95	3	0.09	0.26
LEFT SIDE STA. 15+55.54 TO STA. 15+55.54	2.95	3	0.09	0.26



DATA SOURCES:

Topography - from AERIAL SURVEY BY VIRGINIA RESOURCES, DATE OF SURVEY 2005. ELEVATION INFORMATION IS FROM HOWARD COUNTY FIELD INVESTIGATION AND FIELD MEASUREMENTS. LOCATION OF PROPERTY LINE APPROXIMATED FROM HOWARD COUNTY HEALTH DEPARTMENT RECORDS AND FIELD INVESTIGATION BY DEMARIO DESIGN CONSULTANTS, INC. ON MARCH 10, 2008.

DeMario Design Consultants, Inc.

192 East Main Street
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eMail: dcd@demariodesign.us

OWNER:
VICTORIA & MICHAEL EGAN
51 GLETTIE COURT
PORTLAND, CT 06480

DEVELOPER:
KOOCH HOMES, INC.
60 BILL DODD
2681 RIVA ROAD, STE 220
ANNAPOLIS, MD 21401

SITE ADDRESS:
ANNAPOLIS ROCK ROAD
WOODBINE, MD 21797

FINAL ROAD CONSTRUCTION PLANS FOR MILL CREEK SUBDIVISION LOTS 1-17, BUILDABLE PARCELS A & NON-BUILDABLE PRESERVATION PARCELS B, C & D

SEDIMENT & EROSION CONTROL DETAILS

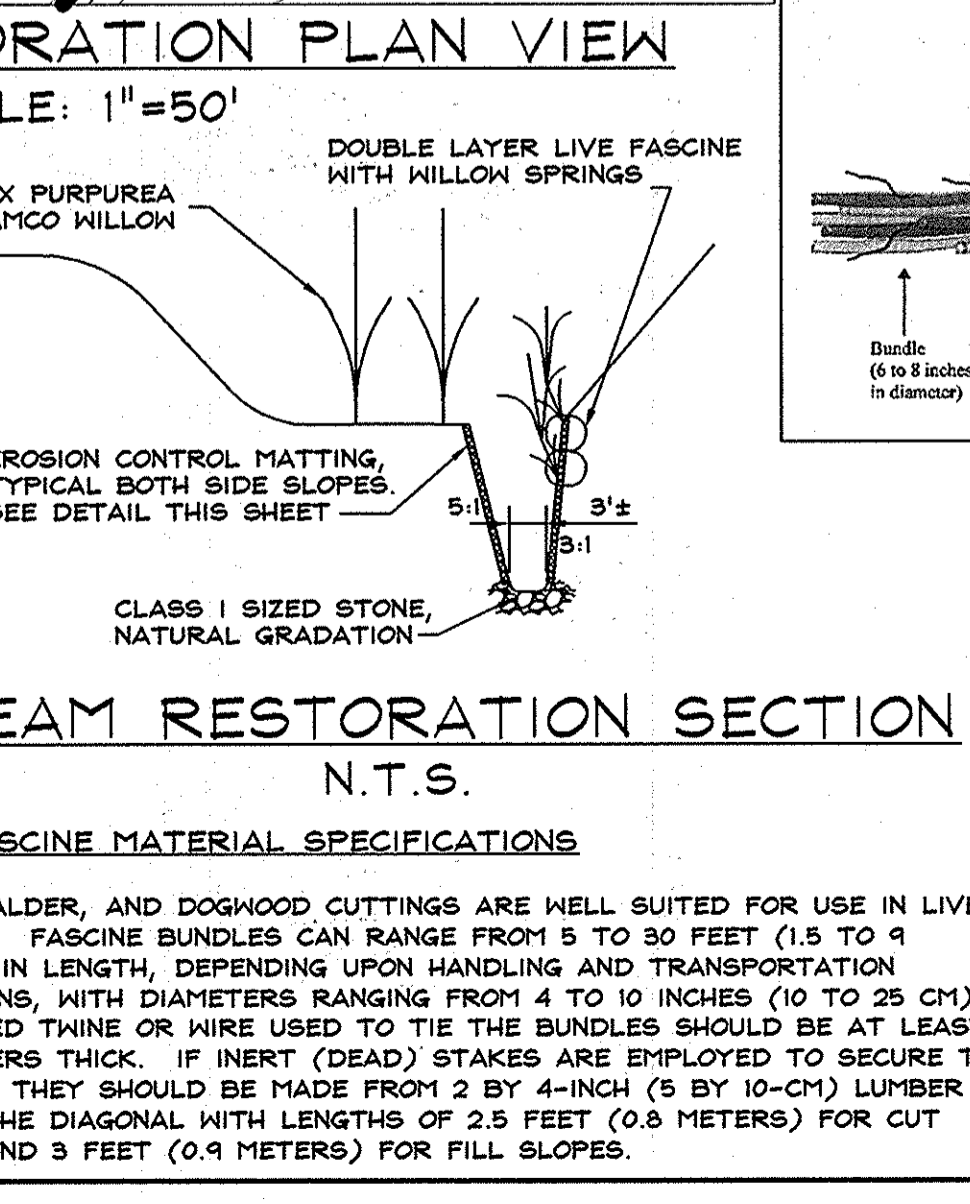
4th ELECTION DISTRICT HOWARD COUNTY, MD

REVISIONS

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.



LIVE FASCINE INSTALLATION GUIDELINES

LIVE FASCINE CONSTRUCTION SHOULD OCCUR DURING THE DORMANCY PERIOD, USUALLY LATE FALL TO EARLY SPRING, WITH BUNDLE PREPARATION PROCEEDING AS FOLLOWS:

THE GROWING TIPS OF ALL BRANCHES SHOULD BE ORIENTED DOWNSTREAM IN THE SAME DIRECTION, AND BUNDLES SHOULD BE TIED EVERY 12 TO 18 INCHES (30 TO 45 CM) ALONG THEIR LENGTHS.

THE INITIAL ROW OF BUNDLES SHOULD BE POSITIONED AT THE HEIGHT OF THE NORMAL SUMMER WATER LEVEL SUCH THAT ONE HALF TO TWO THIRDS OF THE BUNDLE IS SUBMERGED. THESE TOP BUNDLES SHOULD BE PROTECTED FROM WASHOUT BY POSITIONING THEM ON BRUSH LAYERS EXTENDING 20 TO 31 INCHES (50 TO 80 CM) INTO THE STREAM. PROJECT PLANNERS MAY NEED TO STUDY AN APTLY CHOSEN VEGETATED REFERENCE REACH FOR FURTHER GUIDANCE WHEN INSTALLING LIVE FASCINES.

ALL BUNDLES SHOULD BE ANCHORED IN TRENCHES DUG TO A DEPTH AT LEAST ONE-HALF THE BUNDLE DIAMETER. INERT STAKES SHOULD BE DRIVEN EVERY 10 TO 30 INCHES (25 TO 75 CM) THROUGH AND BELOW THE LENGTHS OF THE FASCINES WITH EXTRA STAKES USED AT BUNDLE OVERLAPS. THE LENGTH OF OVERLAP SHOULD BE APPROXIMATELY 1 TO 3 FEET (0.3 TO 0.9 METERS). LIVE STAKES CAN BE EMPLOYED ON THE DOWN SLOPE SIDE OF THE FASCINE ROINS OR THROUGH THE BUNDLES WITH THE TOPS OF THE STAKES EXTENDING 2 TO 3 INCHES (5 TO 8 CM) ABOVE THE BUNDLE TOPS. SOIL SHOULD BE TAMPED INTO AND ALONG THE SIDES OF THE BUNDLES, LEAVING THE TOP 2 INCHES (5 CM) EXPOSED TO PROMOTE GROWTH.

DEAD STAKE DETAIL

NOT TO SCALE

SEE: <http://el.erdc.usace.army.mil/eipub/pdf/w31.pdf>

LIVE FASCINE INSTALLATION GUIDELINES CONT'

ADDITIONAL FASCINE ROWS SHOULD BE INSTALLED UP THE SLOPE AT PREDETERMINED INTERVALS. IF THE SLOPE IS DRY A MAJORITY OF THE TIME, BUNDLES SHOULD BE ARRANGED PARALLEL TO THE CONTOUR ACCORDING TO TABLE PESC-04-1.

STRAW OR MULCHING MATERIAL SHOULD BE SPREAD BETWEEN THE FASCINE ROWS IN SLOPES FLATTER THAN 1.5:1, AND JUTE OR COIR FABRIC SHOULD BE USED ON SLOPES GREATER THAN 1.5:1 TO CONTROL EROSION UNTIL THE FASCINE ROWS AND SUPPORTING VEGETATION BECOME ESTABLISHED.

BY THE DEVELOPER:

I HEREBY CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A 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.

4/2/10

EROSION CONTROL MATTING

Construction Specifications

- Key-in the matting by placing the top ends of the matting in a narrow trench, 6" in depth. Backfill the trench and compact to conform to the natural cross-section. Secure with a row of staples about 4" down slope from the trench. Spacing between staples is 6".
- Staple the 4" overlap in the channel center using an 18" spacing between staples.
- Before stapling the outer edges of the matting, make sure the matting is smooth and in firm contact with the soil.
- Staples shall be placed 2' apart with 4 rows for each strip, 2 corner rows, and 2 a terminating row down the center.
- 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.
- The discharge end of the matting liner should be similarly secured with 2 double rows of staples.

NOTE: If flow will enter from the edge of the matting then the area affected by the flow must be key-in.

OPERATION AND MAINTENANCE SCHEDULE FOR GRASS CHANNELS

- GRASS CHANNEL ROUTINE MAINTENANCE
- GRASS CHANNELS ARE TO BE MOWED AS PART OF REGULAR ROUTINE MAINTENANCE.
- GRASS CHANNELS ARE NOT TO BE BLOCKED OR DAMMED AT ANY TIME FOR ANY REASON.
- DEBRIS AND LITTER IN THE CHANNELS SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
- VISIBLE SIGNS OF EROSION SHALL BE REPAIRED AS SOON AS IT IS NOTICED.

3/25/10

DATE

PROFESSIONAL ENGINEER NO. 25420

MARK R. THAYER

3-30-2010

DATE

DEVELOPER

NO. DESCRIPTION OF CHANGES DRN. REV. DATE

CO. FILE # DES. BY: JCO/CTS

TAX ACC. # 04-319583 DRN. BY: SDS/CTS

TAX MAP: 19 CHK. BY: JCOMRT

BLOCK / GRID: 6 DATE: 3/25/10

PARCEL # 12 DDC JOB# 05021.3

DWG. / USE: RC-DEO SHEET NUMBER:

ZONE / SCALE: AS SHOWN

6 of 20

F-08-079

TABLE 25: PERMANENT SEEDING FOR LOW MAINTENANCE AREAS
HARDINESS ZONE 6b

MIX	SEED MIX USE CERTIFIED MATERIAL IF AVAILABLE	PLANTING LBS/AC. 1000 SF	SITE CONDITIONS	USDA HARDINESS ZONES	3/1-5/15	3/15-5/16	5/16-8/14	8/14-7/31	8/1-10/1	10/1-8/15	8/15-11/15	
1	TALL FESCUE (75%) CANADA BLUEGRASS (10%) KENTUCKY BLUEGRASS (10%) REDTOP (5%)	150	3.4	MOIST TO DRY	6b	X	X	X	X	X	X	A
2	KENTUCKY BLUEGRASS (50%) CREEPING RED FESCUE OR HARD FESCUE (40%) REDTOP (10%)	150	3.4	MOIST TO MODERATELY DRY	6b	X	X	X	X	X	X	B
3	TALL FESCUE (85%) PERENNIAL RYEGRASS (10%) KENTUCKY BLUEGRASS (5%)	125	2.9	MOIST TO DRY	6b	X	X	X	X	X	X	C
4	RED FESCUE OR CHEWING FESCUE (80%) PERENNIAL RYEGRASS (20%)	60	.92	MOIST TO DRY	6b	X	X	X	X	X	X	D
5	TALL FESCUE (85%) OR PERENNIAL RYEGRASS (50%) PLUS CROWNVECH OR FLATPEA	110	2.5	MOIST TO DRY	6b	X	X	X	X	X	X	E
6	WEEPING LOVEGRASS (17%) SERECIA LESPEDEZA (83%)	4	.09	DRY TO VERY DRY	6b	X	X	X	X	X	X	F
7	TALL FESCUE (83%) WEEPING LOVEGRASS (2%) SERECIA LESPEDEZA (15%)	110	2.5	DRY TO VERY DRY	6b	X	X	X	X	X	X	G
8	REEDY CANARYGRASS (75%) REDTOP (6%) PLUS BIRDSFOOT TREFLOIL (19%)	40	.92	WET TO MODERATELY DRY	6b	X	X	X	X	X	X	H
9	TALL FESCUE (86%) POA TRIVIALIS (7%) BIRDSFOOT TREFLOIL (7%)	125	2.9	WET TO MODERATELY DRY	6b	X	X	X	X	X	X	I
10	TALL FESCUE (80%) HARD FESCUE (20%)	120	3.4	WET TO DRY	6b	X	X	X	X	X	X	J
11	HARD FESCUE (100%)	.75	3.4	MOIST TO DRY	6b	X	X	X	X	X	X	K

- NOTES:
- A/ USED BY SHA ON SLOPED AREAS. ADD A LEGUME FOR SLOPES > THAN 3:1
 - B/ USED IN MEDIAN AREAS BY SHA. SHADE TOLERANT
 - C/ POPULAR MIX - PRODUCES PERMANENT GROUNDCOVER QUICKLY. BLUEGRASS QUICKENS STAND.
 - D/ BEST USE ON SHADY SLOPES NOT ON POORLY DRAINED CLAYS.
 - E/ USE ON LOW MAINTENANCE, STEEP SLOPES. USE TALL FESCUE IN DRAUGHT CONDITIONS. CROWN VETCH BEST FOR 5b, 6a, 6b.
 - F/ SUITABLE FOR SEEDING IN MIDSUMMER.
 - G/ WEEPING LOVEGRASS MAY BE SEEDING WITH TALL FESCUE IN MID-SUMMER. SERECIA LESPEDEZA IS BEST SUITED FOR ZONES 7a & 7b.
 - H/ USE ON POORLY DRAINED SOILS - DITCHES OR WATERWAYS. BIRDSFOOT TREFLOIL IS BEST FOR ZONES 5a, 6a ABOVE 2,000 FT.
 - I/ USE IN AREAS OF MOIST SHADE. POA TRIVIALIS THRIVES IN WET SHADY AREAS.
 - J/ TALL FESCUE MAY BE SEEDING ALONE. THE HARD FESCUE PROVIDES BETTER SHADE TOLERANCE AND PRODUCES A BETTER STAND.
 - K/ LOW FERTILITY GRASS. REQUIRES INFREQUENT MOWING. GOOD COMPANION FOR WILDFLOWERS.

TABLE 26 TEMPORARY SEEDING RATES, DEPTHS, AND DATES (HARDINESS ZONE 6b)

SPECIES	MINIMUM SEEDING RATES		PLANTING DEPTH	6b		BY
	PER ACRE	LBS/1000 SO.FT.		INCHES	3/1-5/15	
CHOOSE ONE:						
BARLEY	122 lbs	2.80	1-2	X	X	10/15
QUATS	96 lbs	2.21	2	X	X	X
RYE	140 lbs	3.22	1-2	X	X	X
BARLEY OR RYE PLUS FOXTAIL MILLET	150 lbs	3.45	1	X	X	10/15
WEEPING LOVEGRASS	4 lbs	.09	1/4-1/2	X	X	X
ANNUAL RYEGRASS	50 lbs	1.15	1/4-1/2	X	X	11/1
MILLET	50 lbs	1.15	1/2	X	X	X

Note: Select one or more of the species or mixtures listed on Table 26 for the appropriate plant hardness zone.

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

[Signature] 4/11/10
ENGINEER DATE

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

[Signature] 3-30-2010
DEVELOPER DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
[Signature] 10-8-10
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.
[Signature] 10/14/10
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL, MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
[Signature] 10/19/10
HOWARD SOIL CONSERVATION DISTRICT DATE

20.0 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION
SECTION I - VEGETATIVE STABILIZATION METHODS AND MATERIALS

- A. Site Preparation
- Install erosion and sediment control structures (either temporary or permanent) such as diversions, grade stabilization structures, berms, waterways, or sediment control basins.
 - Perform all grading operations at right angles to the slope. Final grading and shaping is not usually necessary for temporary erosion control.
 - Schedule required soil test to determine soil amendment composition and application rates for sites having disturbed area over 5 acres.
- B. Soil Amendments (Fertilizer and Lime Specifications)
- Soil test must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas over 5 acres. Soil analysis may be performed by the University of Maryland or a recognized commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analysis.
 - Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by approved equipment. Manure may be substituted for fertilizer with prior approval from the appropriate authority. Fertilizer shall only be delivered to the site fully labeled according to the applicable state fertilizer laws and shall bear the name, trade name or trademark and warranties of the producer.
 - Lime materials shall be ground limestone (hydrated or burnt lime may be substituted) which contains at least 80% total calcium oxide plus magnesium oxide. Limestone shall be ground to such fineness that at least 50% will pass through a #100 mesh sieve and 88 - 100% will pass through a #20 mesh sieve.
 - Incorporate lime and fertilizer into the top 3 - 5" of soil by disking or other suitable means.
- C. Seeded Preparation
- Temporary Seeding
 - Seeded preparation shall consist of loosening soil to a depth of 3" to 5" by means of suitable agricultural or construction equipment, such as disc harrows or chain plows or rippers mounted on construction equipment. After the soil is loosened, it should not be rolled or dragged smooth but left in the roughened condition. Sloped areas (greater than 3:1) should be tracked leaving the surface in an irregular condition with ridges running parallel to the contour of the slope.
 - Apply fertilizer and lime as prescribed on the plans.
 - Incorporate lime and fertilizer into the top 3 - 5" of soil by disking or other suitable means.
 - Permanent Seeding
 - Minimum soil conditions required for permanent vegetative establishment:
 - Soil pH shall be between 6.0 and 7.0
 - Soluble salts shall be less than 500 parts per million (ppm).
 - The soil shall contain less than 40% clay but enough fine grained material (30% silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception is if loess or sercia lespezea is to be planted, then a sandy soil (< 30% silt plus clay) with the exception noted above.
 - Soil shall contain 1.5% minimum organic matter by weight.
 - Soil must contain sufficient pore space to permit adequate root penetration.
 - If these conditions cannot be met by the soils on site, adding topsoil is required in accordance with Section 21.0 Standard and Specification for Topsoil.
 - Areas previously graded in conformance with the drawings shall be maintained in a true and even grade, then scarified or otherwise loosened to a depth of 3 - 5" to permit bonding of the topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil from sliding down a slope.
 - Apply soil amendments as per soil test or as included on the plans.
 - Mix soil amendments into the top 3 - 5" of topsoil by disking or other suitable means. Lawn areas should be raked to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Where site conditions will not permit normal seeded preparation, loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface. Steep slopes (steeper than 3:1) should be tracked by a roller leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. The top 1 - 3" of soil should be loose and friable. Seeded loosening may not be necessary on newly disturbed areas.
- D. Seed Specifications
- All seed must meet the requirements of the Maryland State Seed Law. All seed shall be subjected to a germination test. All seed used shall have been tested within the 6 months immediately preceding the date of sowing such material on this job. Note: Seed tags shall be made available to the inspector to verify type and rate of seed used.
 - Inoculant - The inoculant for treating legume seed in the seed mixtures shall be a pure culture of nitrogen-fixing bacteria prepared specifically for the species. Inoculants shall not be used later than 30 days before the seed is sown. Add fresh inoculant as directed on package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75-80 F. can weaken bacteria and make the inoculant less effective.
- E. Methods of Seeding
- Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer), broadcast or drop seeder, or a cultipacker seeder.
 - If fertilizer is being applied at the time of seeding, the application rates amounts will not exceed the following: Nitrogen, maximum of 100 lbs. per acre total of soluble nitrogen; P2O5 (phosphorus); 200 lbs/acre; K2O (potassium); 200 lbs/acre.
 - Lime - use only ground agricultural limestone. (Up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding.
 - Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.
 - Dry Seeding: This includes use of conventional drop or broadcast spreaders.
 - Seed spread dry shall be incorporated into the subsoil at the rates prescribed on the Temporary or Permanent Seeding Summaries or Tables 25 or 26. The seeded area shall then be rolled with a weighted roller to provide good seed soil contact.
 - Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.
 - Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
 - Cultipacker seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seeded must be firm after planting.
 - Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.
- F. Mulch Specifications (In order of preference)
- Straw shall consist of thoroughly threshed wheat, rye or oat straw, reasonably bright in color and shall not be musty, rippled, caked, cycled, or excessively dusty and shall be free of noxious weed seeds as specified in the Maryland Seed Law.
 - Wood Cellulose Fiber Mulch (WCFFM)
 - WCFFM shall consist of specially prepared wood cellulose processed into a uniform fibrous physical state.
 - WCFFM shall be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
 - WCFFM, including dye, shall contain no germination or growth inhibiting factors.
 - WCFFM materials shall be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material shall form a blotter-like ground cover, on application, having moisture absorption and persorption properties and shall cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedings.
 - WCFFM material shall contain no elements or compounds at concentration levels that will be phytotoxic.
 - WCFFM must conform to the following physical requirements: fiber length to approximately 10 mm, diameter approximately from 4.0 to 6.5, ash content of 1.6% maximum and water holding capacity of 40% minimum.
- Note: Only sterile straw mulch should be used in areas where one species of grass is desired.
- G. Mulching Seeded Areas - Mulch shall be applied to all seeded areas immediately after seeding.
- If grading is completed outside of the seeding season, mulch alone shall be applied as prescribed in this section and maintained until the seeding season returns and seeding can be performed in accordance with these specifications.
 - When straw mulch is used, it shall be spread over all seeded areas at the rate of 2 cubic yards/acre. Mulch shall be applied to a uniform loose depth of between 1" and 2". Mulch applied shall achieve a uniform distribution and depth so that the soil surface is not exposed. If a mulch anchoring soil is to be used, the rate should be increased to 2.5 tons/acre.
 - Wood cellulose fiber used as a mulch shall be applied at a net dry weight of 1,500 lbs. per acre. The wood cellulose fiber shall be mixed with water, and the mixture shall contain a maximum of 50 lbs. of wood cellulose fiber per 100 gallons of water.
- H. Securing Straw Mulch (Mulch Anchoring): Mulch anchoring shall be performed immediately following mulch application to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon size of area and erosion hazard:
- A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of two (2) inches. This practice is most effective on large areas, but is limited to flatland areas where the equipment can operate safely. If used on sloping land, this practice should be used on the contour if possible.
 - Wood cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 pounds/acre. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
 - Application of liquid binders should be acrylic at the edges where wind catches mulch, such as in valleys or on crests of ridges, where the subsoil is excessively dry or where binder application. Synthetic binders - such as Acrylic DLR (Agra-Tack), DCA-70, Petrosol, Terra Tack II, Terra Tack AR or other approved equal may be used at rates recommended by the manufacturer to anchor mulch.
 - Lightweight plastic netting may be stapled over the mulch according to manufacturer's recommendations. Netting is usually available in rolls 4' to 15' feet wide and 300 to 3,000 feet long.
- I. Incremental Stabilization -- Cut Slopes -- See G-20-6
J. Incremental Stabilization -- Fill Slopes -- See G-20-7

SECTION II, III - SEE TABLES AT LEFT
SECTION IV - SOD - NON-APPLICABLE
SECTION V - TURFGRASS ESTABLISHMENT

- Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium high level of maintenance. Areas to receive seed shall be tilled by disking or other approved methods to a depth of 2 to 4 inches and raked to prepare a proper seedbed. Stones and debris over 1 1/2 inches in diameter shall be removed. The resulting seedbed should be in such condition that future mowing of grasses will pose no difficulty.
- Note: Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line.
- A. Turfgrass Mixtures
- Kentucky Bluegrass - Full sun mixture - For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and eastern shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rates: 2.0 pounds/1000 square feet. A minimum of three bluegrass cultivars should be chosen ranging from a minimum of 10% to a maximum of 90% of the mixture by weight.
 - Kentucky Bluegrass/Perennial Rye - Full sun mixture - For use in full sun areas where rapid establishment is necessary and when turf mixture medium to intensive management. Certified Perennial Rye/Certified Kentucky Bluegrass Seeding rate: 2 pounds mixture/1000 square feet. A minimum of 3 Kentucky Bluegrass Cultivars must be chosen, with each cultivar ranging from 10% to 35% of the mixture by weight.
 - Tall Fescue/Kentucky Bluegrass - Full sun mixture - For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes: certified Kentucky Bluegrass - 100%, certified Kentucky Bluegrass Cultivars 0 - 5%. Seeding rate: 5 to 8 lb/1000 sq. ft. One or more cultivars may be blended.
 - Kentucky Bluegrass/Fine Fescue - Shade Mixture - For use in areas with shade in bluegrass lawns. For evenly quality, intensively managed turf area. Mixture includes: certified Kentucky Bluegrass Cultivars 50-40% and certified Fine Fescue and 60-70%. Seeding rate: 1 1/2 to 3 lb/1000 square feet. A minimum of 3 Kentucky Bluegrass cultivars must be chosen, with each cultivar ranging from a minimum of 10% to a maximum of 35% of the mixture by weight.
- Note: Turfgrass varieties should be selected from those listed in the most current University of Maryland Publication, Agronomy Mimeo #77, "Turfgrass Cultural Recommendations for Maryland".
- B. Ideal times of seeding:
- Western MD: March 15 - June 1, August 1 - October 1 (Hardiness Zones - 5b, 6a)
Central MD: March 15 - August 15, October 15 - February 15 (Hardiness Zones - 6a, 6b)
Southern MD, Eastern Shore: March 1 - May 15, August 15 - October 15 (Hardiness Zones - 7a, 7b)
- C. Irrigation
- If soil moisture is deficient, supply new seedlings with adequate water for plant growth (1/2" - 1" every 3 to 4 days depending on high humidity) until they are firmly established. This is especially true when seedlings are made late in the planting season, in abnormally dry or hot seasons, or in adverse sites.
- D. Repairs and Maintenance
- Inspect all seeded areas for failures and make necessary repairs, replacements, and reseeding within the planting season.
- Once the vegetation is established, the site shall have 95% groundcover to be considered adequately stabilized.
 - If the stand provides less than 40% ground coverage, reestablish following original lime, fertilizer, seeded preparation and seeding recommendations.
 - If the stand provides between 40% and 94% ground coverage, overseeding and fertilizing using half of the rates originally applied may be necessary.
- iv. Maintenance fertilizer rates for permanent seedings are shown in Table 24. For lawns and other medium high maintenance turfgrass areas, refer to the University of Maryland publication "Lawn Care in Maryland" Bulletin No. 171.

21.0 STANDARDS & SPECIFICATIONS FOR TOPSOIL

- Definition - Placement of topsoil over a prepared subsoil prior to establishment of permanent vegetation.
- Purpose - To provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.
- Conditions Where Practice Applies
- I. This practice is limited to areas having 2:1 or flatter slopes where:
- The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
 - The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
 - The original soil to be vegetated contains material toxic to plant growth.
 - The soil is so acidic that treatment with limestone is not feasible.
- 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 or by-passed to be used 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:
- Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Regardless, topsoil shall not be a mixture of contrasting textured subsoils and shall contain less than 5% by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1 1/2" in diameter.
 - Topsoil must be free of plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.
 - Where the subsoil is either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate of 4-8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil. Lime shall be distributed evenly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.
- III. For sites having disturbed areas over 5 acres:
- On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:
 - pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.
 - Organic content of topsoil shall be not less than 1.5 percent by weight.
 - Topsoil having soluble salt content greater than 500 parts per million shall not be used.
 - No sod or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phytotoxic.
 - 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.
 - Vegetate topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials.
- V. Topsoil Application
- When topsoiling, maintain needed erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Slope Silt Fence and Sediment Traps and Basins.
 - Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4"-8" higher in elevation.
 - 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 sod 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 erosion-prone pockets.
 - Topsoil shall not be placed while the topsoil or subsoil is in a frozen or muddy condition, unless the subsoil is excessively dry or in a condition that may otherwise be detrimental to proper grading and seeded preparation.
- VI. Alternative for Permanent Seeding - Instead of applying the full amounts of lime and commercial fertilizer, composted sludge and amendments may be applied as specified below:
- Composted Sludge Material for use as a soil conditioner for sites having disturbed areas over 5 acres shall be tested to prescribe amendments and for sites having disturbed areas under 5 acres shall conform to the following requirements:

21.0 STANDARDS & SPECIFICATIONS FOR TOPSOIL

- Definition - Placement of topsoil over a prepared subsoil prior to establishment of permanent vegetation.
- Purpose - To provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.
- Composted sludge shall be supplied by, or originate from, a person or persons that are permitted (at the time of acquisition of the compost) by the Maryland Department of the Environment under COMAR 26.04.06.
 - Composted sludge shall contain at least 1 percent nitrogen, 1.5 percent available phosphorus and 0.2 percent potassium and have a pH to 5.0. If compost does not meet these requirements, the appropriate constituents must be added to meet the requirements prior to use.
 - Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.
- ii. Composted sludge shall be amended with a potassium fertilizer applied at the rate of 4 lb/1,000 square feet, and 1/3 the normal lime application rate.
- References: Guideline Specifications, Soil Preparation and Sowing, MD-V A, Pub. #1, Cooperative Extension Service, University of Maryland and Virginia Polytechnic Institute, Revised 1973.

SEQUENCE OF CONSTRUCTION

- OBTAIN A GRADING PERMIT. (1 DAY)
- NOTIFY "MISS UTILITY" AT LEAST 48 HOURS BEFORE BEGINNING ANY WORK AT 1-800-281-7777. NOTIFY THE HOWARD COUNTY OFFICE OF CONSTRUCTION/INSPECTION DIVISION AT 410-313-1870 AT LEAST 24 HOURS BEFORE STARTING ANY WORK. (2 DAYS)
- INSTALL STABILIZED CONSTRUCTION ENTRANCE. (1 DAY)
- INSTALL PERIMETER SILT FENCE AND SUPER SILT FENCE (3 DAYS)
- WITH SEDIMENT CONTROL DEVICES INSTALLED AND WITH SEDIMENT CONTROL INSPECTOR'S APPROVAL, INSTALL BASIN. (1 WEEK)
- PERFORM STREAM RESTORATION/REMOVAL OF EXISTING POND, REGRADE STREAM, PLACEMENT OF STONE AND ECM, ETC. WITH SAME-DAY STABILIZATION. (5 DAYS)
- INSTALL TEMPORARY SHALE THAT LEADS TO BASIN. (1 DAY)
- WITH PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR, CLEAR AND GRADE THE SITE. DUST CONTROL WILL BE PROVIDED FOR ALL DISTURBED AREAS. REFER TO "1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL", PG H-30-1, FOR ACCEPTABLE METHODS AND SPECIFICATIONS FOR DUST CONTROL(ONGOING)
- FINE GRADE AREA FOR THE NEW ROAD AND INSTALL STORMDRAINS. (4 WEEKS)
- PAVE ROAD. (2 WEEKS)
- FINE GRADE SITE AND STABILIZE ALL DISTURBED AREAS. (2 WEEKS)
- INSTALL SITE LANDSCAPING & TREES. (2 WEEKS)
- WITH ALL DISTURBED AREAS STABILIZED, FLUSH STORM DRAIN SYSTEM, THEN WITH THE SEDIMENT CONTROL INSPECTOR'S APPROVAL CONVERT TBM1 (SEDIMENT BASIN) TO FINAL (SWM POND) AND REMOVE SEDIMENT CONTROL DEVICES. (1 WEEK)
- CONDUCT "AS-BUILT" SURVEY OF THE SWM FACILITY. CONTRACTOR SHALL REMOVE ALL OLD AND NEW JUNK, TRASH, DEBRIS, PIPES AND OTHER NON-NATURAL MATERIALS FROM THE FOREST CONSERVATION, OPEN SPACE, FLOODPLAIN, STREAMS, WETLANDS AND THEIR BUFFERS. NOTIFY HOWARD COUNTY OFFICE OF INSPECTIONS AND PERMITS FOR A FINAL INSPECTION OF THE COMPLETED SITE. (2 DAYS)

DATA SOURCES:
BY TOPOGRAPHY SHOWN PER AERIAL SURVEY BY VIRGINIA RESOURCE MAPPING, DATE OF ACQUISITION IS SPRING 2006. EX. SOIL INFORMATION SHOWN PER HOWARD COUNTY SOIL SURVEY, 1985. HIGHWAY RIGHT-OF-WAY LINE AND SEPTIC LOCATIONS WITHIN 10% OF PROPERTY LINE APPROXIMATED FROM HOWARD COUNTY HIGHWAY RIGHT-OF-WAY LINE AND FIELD INVESTIGATION BY DEMARIO DESIGN CONSULTANTS, INC. ON MARCH 10, 2008

DeMario Design Consultants, Inc.
192 East Main Street Westminister, MD 21157
Phone: (410) 386-0560 Fax: (410) 386-0564
http://www.demariodesign.us eMail: ddc@demariodesign.us

OWNER: VICTORIA & MICHAEL EGAN
2681 RIVA ROAD, STE 220 ANNAPOLIS, MD 21401

DEVELOPER: KOCH HOMES, INC.
2681 RIVA ROAD, STE 220 ANNAPOLIS, MD 21401

SITE ADDRESS: ANNAPOLIS ROCK ROAD WOODBINE, MD 21797

FINAL ROAD CONSTRUCTION PLANS
FOR
MILL CREEK SUBDIVISION
LOTS 1-17, BUILDABLE PARCEL A & NON-BUILDABLE PRESERVATION PARCELS B,C & D

SEDIMENT & EROSION CONTROL NOTES

4th ELECTION DISTRICT HOWARD COUNTY, MD

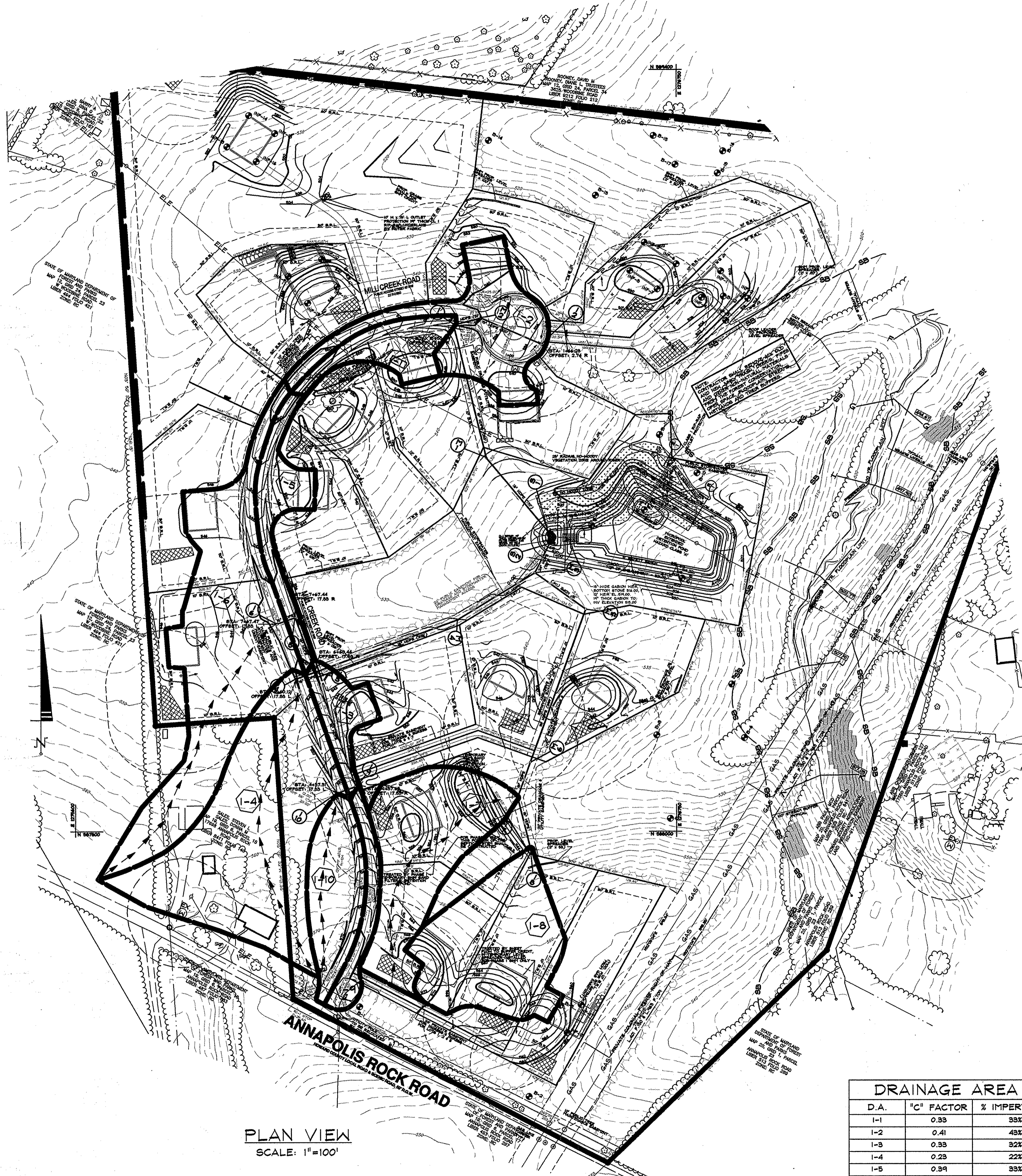
NO.	DESCRIPTION OF CHANGES	DRN.	REV.	DATE
CO. FILE #	DES. BY: JCO/CTS			
TAX ACC. # 04-319583	DRN. BY: SDS/CTS			
TAX MAP: 19	CHK. BY: JCO/MRT			
BLOCK / GRID: 6	DATE: 3/25/10			
PARCEL # 12	DDC JOB# 05021.3			
DWG. / USE: RC-DEO	SHEET NUMBER:			
ZONE / SCALE: N/A				

3/25/10
DATE

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed Professional Engineer under the laws of the State of Maryland, License No. 25420.

MARK R. THAYER
PROFESSIONAL ENGINEER NO. 25420

F-08-079



SOILS CHART			
CODE	NAME	HYDRIC (Y/N/INCL.)	K VALUE
Ba	BAILE SILT LOAM	Y	0.43
ChB2	CHESTER SILT LOAM, 3%-8% SLOPES, MODERATELY ERODED	N	0.32
GIB2	GLENELG LOAM, 3%-8% SLOPES, MODERATELY ERODED	N	0.32
GIC2	GLENELG LOAM, 8%-15% SLOPES, MODERATELY ERODED	N	0.32
GIC3	GLENELG LOAM, 8%-15% SLOPES, SEVERELY ERODED	N	0.32
GID3	GLENELG LOAM, 15%-25% SLOPES, MODERATELY ERODED	N	0.32
GnA	GLENVILLE SILT LOAM, 0%-3% SLOPES	N	0.32
GnB2	GLENVILLE SILT LOAM, 3%-8% SLOPES, MODERATELY ERODED	N	0.32
MIB2	MANOR LOAM, 3%-8% SLOPES, MODERATELY ERODED	N	0.37
MIC2	MANOR LOAM, 8%-15% SLOPES, MODERATELY ERODED	N	0.37
MIC3	GLENELG LOAM, 8%-15% SLOPES, SEVERELY ERODED	N	0.37
MID2	MANOR LOAM, 15%-25% SLOPES, MODERATELY ERODED	N	0.37
MID3	MANOR LOAM, 15%-25% SLOPES, SEVERELY ERODED	N	0.37

DRAWING LEGEND	
---	EXISTING MINOR CONTOUR (2' INTERVAL)
---	EXISTING MAJOR CONTOUR (10' INTERVAL)
---	ADJACENT PROPERTY LINE
---	EXISTING PROPERTY BOUNDARY
---	SOIL DELINEATION LINE
---	EX. ROAD / EDGE OF PAVING
---	EX. OVERHEAD ELECTRIC & UTILITY POLES
---	EX. BUILDING
---	EXISTING TREELINE
---	EXISTING SHRUB/BRUSH LINE
---	EXISTING TREES
---	STEEP SLOPES (25%+)
---	STEEP SLOPES (15%-24.9%)
---	25' WETLAND BUFFER LIMIT
---	APPROXIMATE WETLAND LIMIT
---	EX. WELL AND 100' BUFFER
---	100' STREAM BUFFER
---	EX. SRA PER FIELD INVESTIGATION AND/OR HEALTH DEPARTMENT RECORDS
---	SEMI-CRITICAL TREE & ASSOCIATED CRITICAL ROOT ZONE
---	NON-WOODY VEGETATION LIMITS
---	PROP. WELL AREAS

DATA SOURCES:
 ELEVATION SHOWN PER AERIAL SURVEY BY VIRGINIA
 PHOTOGRAMMETRY, DATE OF CAPTURE APRIL 2005. EX-
 POSITIVE INFORMATION FROM HOWARD COUNTY SOIL SURVEY
 AND STATE LOCATION SHOWN PER FIELD
 INVESTIGATION BY MAR-LIN ENVIRONMENTAL, INC. IN AUGUST
 2005. EX-POSITIVE WELL AND SEPTIC LOCATION WITHIN
 100' OF PROPERTY LINE APPROXIMATED FROM HOWARD COUNTY
 HEALTH DEPARTMENT RECORDS AND FIELD INVESTIGATION BY
 DEMARIO DESIGN CONSULTANTS, INC. ON MARCH 10, 2005.

DeMario Design Consultants, Inc.
 192 East Main Street Phone: (410) 386-0580
 Westminster, MD 21157 Fax: (410) 386-0564
 http://www.demariodesign.us eMail: ddc@demariodesign.us

OWNER:
 VICTORIA & MICHAEL EGAN
 51 GLETTIE COURT
 PORTLAND, CT 06480

DEVELOPER:
 KOCH HOMES, INC.
 c/o BILL DODD
 2661 RIVA ROAD, STE 220
 ANNAPOLIS, MD 21401

SITE ADDRESS:
 ANNAPOLIS ROCK ROAD
 WOODBINE, MD 21797

FINAL ROAD CONSTRUCTION PLANS
 FOR
 MILL CREEK SUBDIVISION
 LOTS 1-17, BUILDABLE PARCELS A &
 NON-BUILDABLE PRESERVATION PARCELS B, C & D
STORM DRAIN DRAINAGE AREA MAP
 4th ELECTION DISTRICT HOWARD COUNTY, MD

DRAINAGE AREA COMPS			
D.A.	"C" FACTOR	% IMPERVIOUS	ACRES
1-1	0.33	33%	0.43
1-2	0.41	43%	1.06
1-3	0.33	32%	0.33
1-4	0.23	22%	2.47
1-5	0.39	33%	0.48
1-6	0.25	24%	2.32
1-7	0.21	20%	1.34
1-8	0.21	20%	1.38
1-9	0.43	43%	0.28
1-10	0.30	29%	0.67

3/25/10
 DATE

Professional Certification:
 I hereby certify that these documents were prepared or
 approved by me, and that I am a duly licensed professional
 engineer under the laws of the State of Maryland, License
 No. 25420, expiring 07/01/2015.

MARK R. THAYER
 PROFESSIONAL ENGINEER
 PROFESSIONAL ENGINEER NO. 25420

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
[Signature] 10-8-10
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.
[Signature] 10/22/10
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

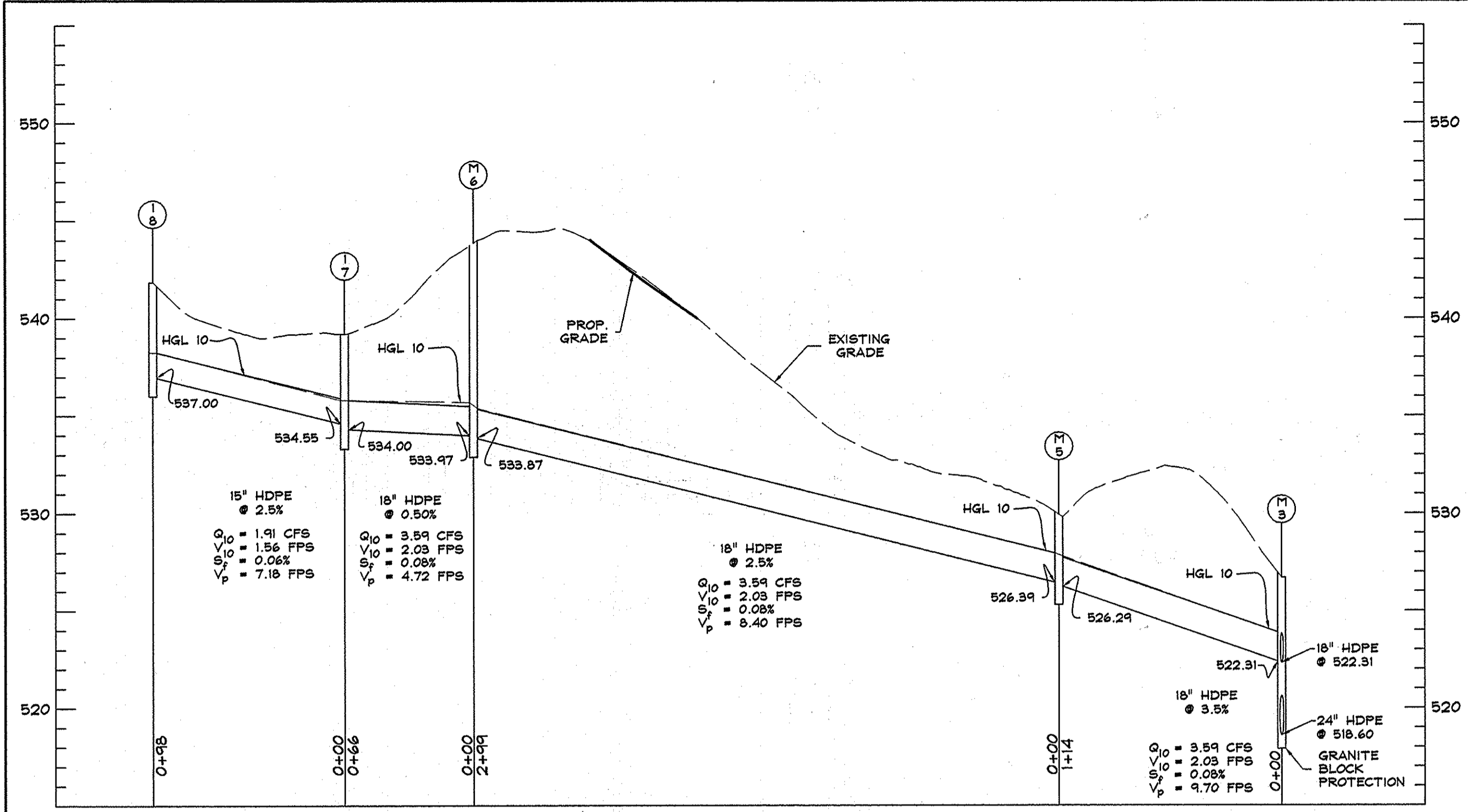
[Signature] 10/14/10
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

PLAN VIEW
 SCALE: 1"=100'

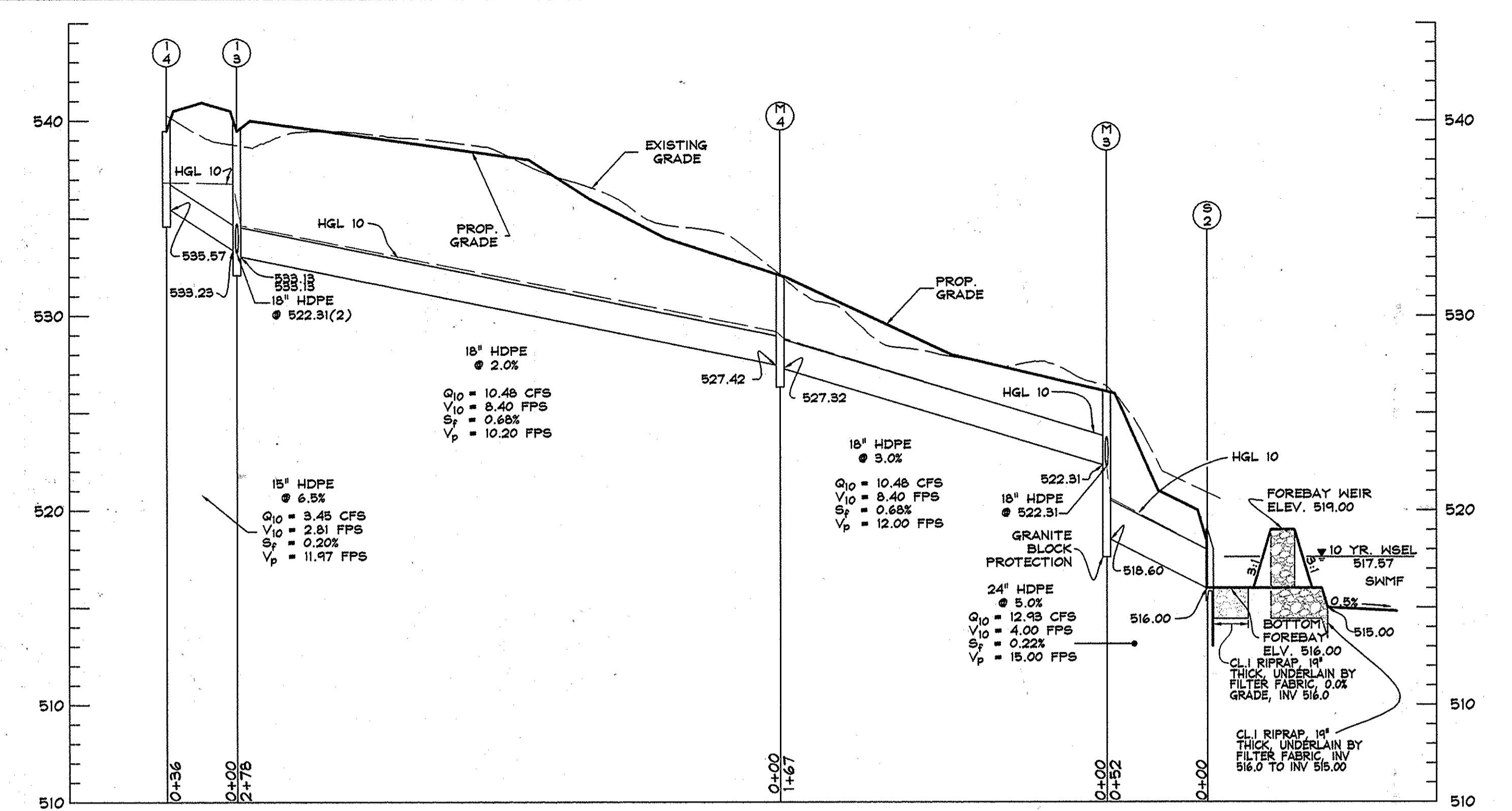
REVISIONS			
NO.	DESCRIPTION OF CHANGES	DRN.	REV. DATE

CO. FILE #	DES. BY: JCO
TAX ACC. # 04-319583	DRN. BY: SDS
TAX MAP: 19	CHK. BY: JCO
BLOCK / GRID: 6	DATE: 8/31/10
PARCEL # 12	DDC JOB#: 05021.3
ZONE / USE: RC-DEO	SHEET NUMBER:
DWG. SCALE: 1"=100'	8 of 20

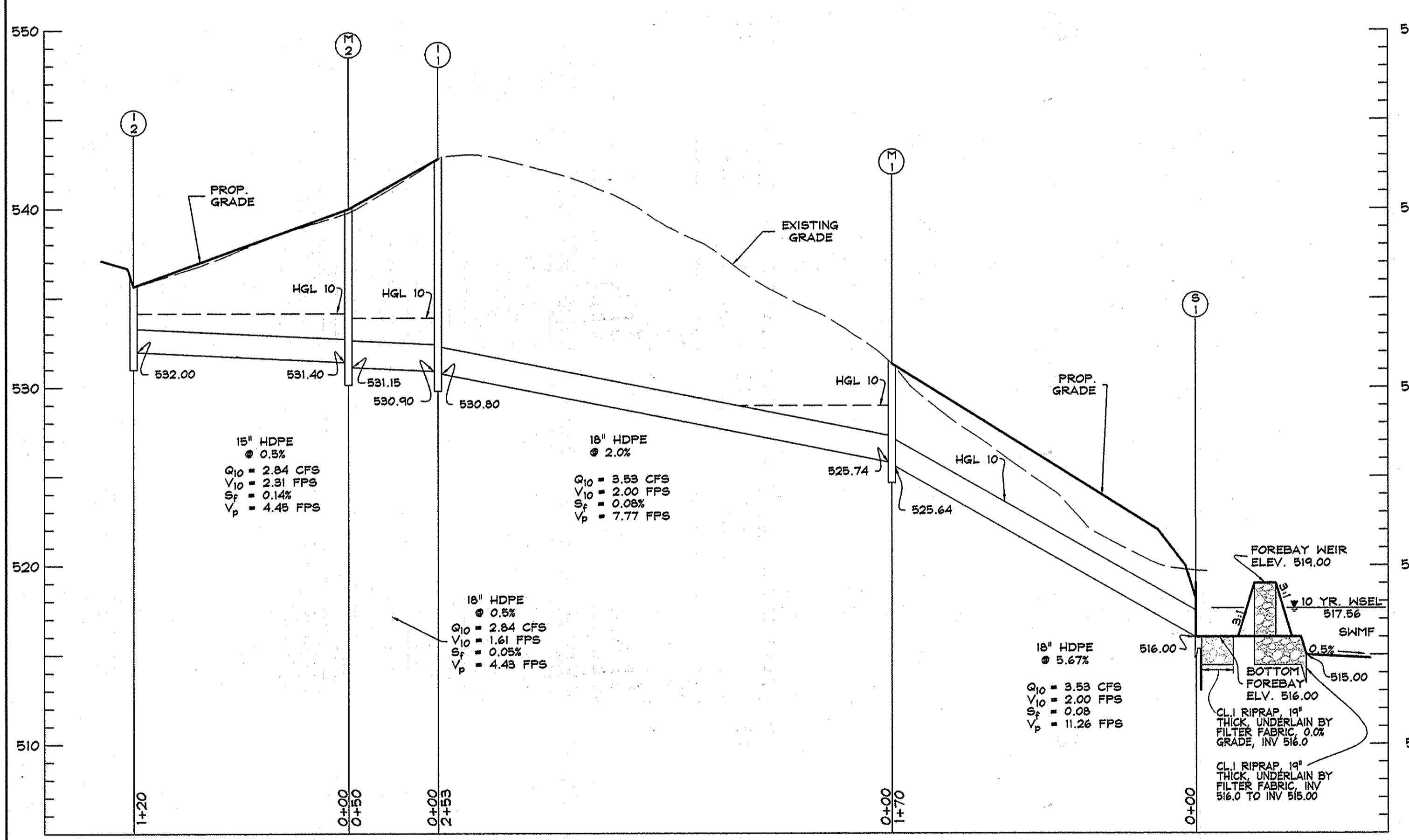
F-08-079



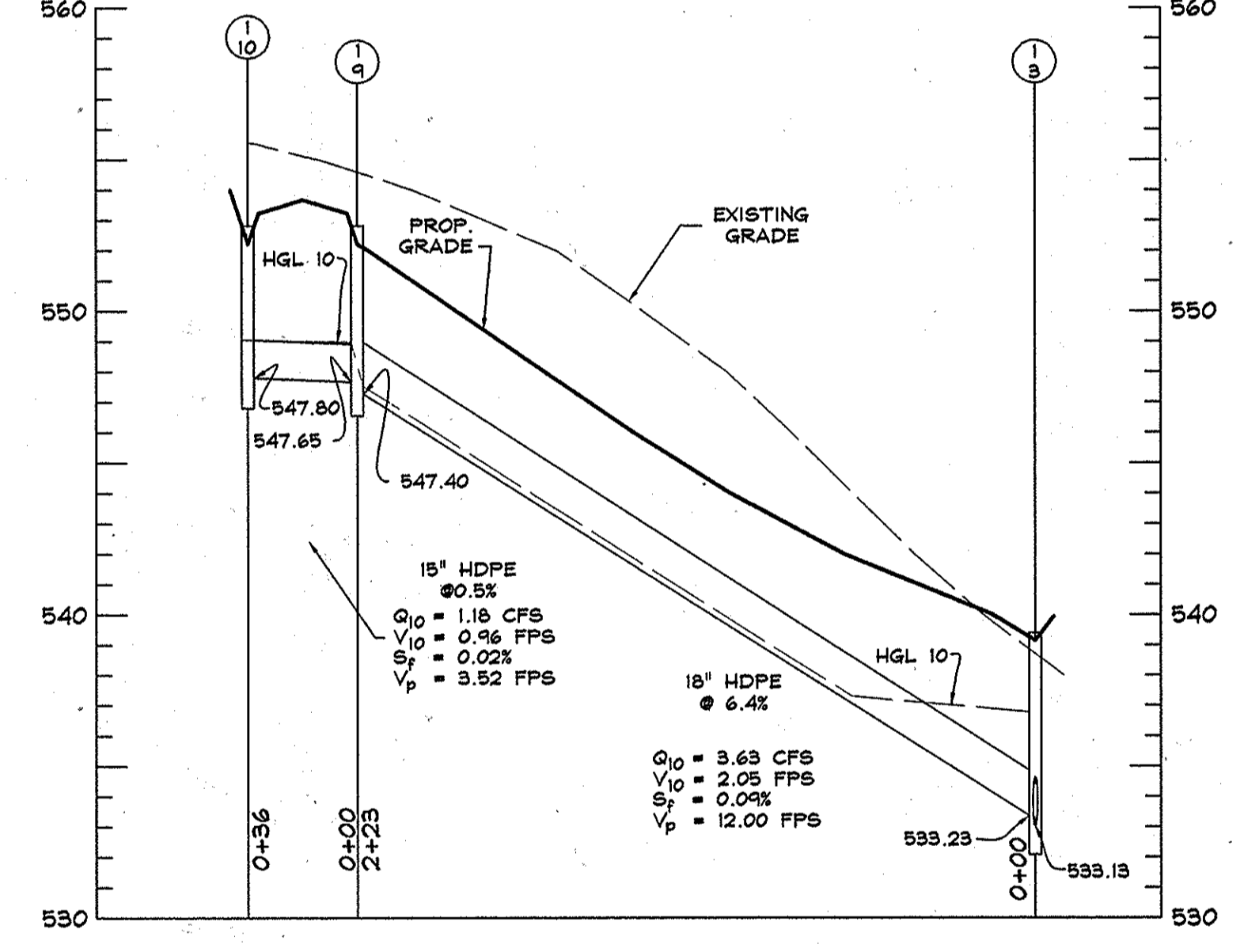
STORM DRAIN PROFILE
SCALE: HORI. 1"=50'
VERT. 1"=5'



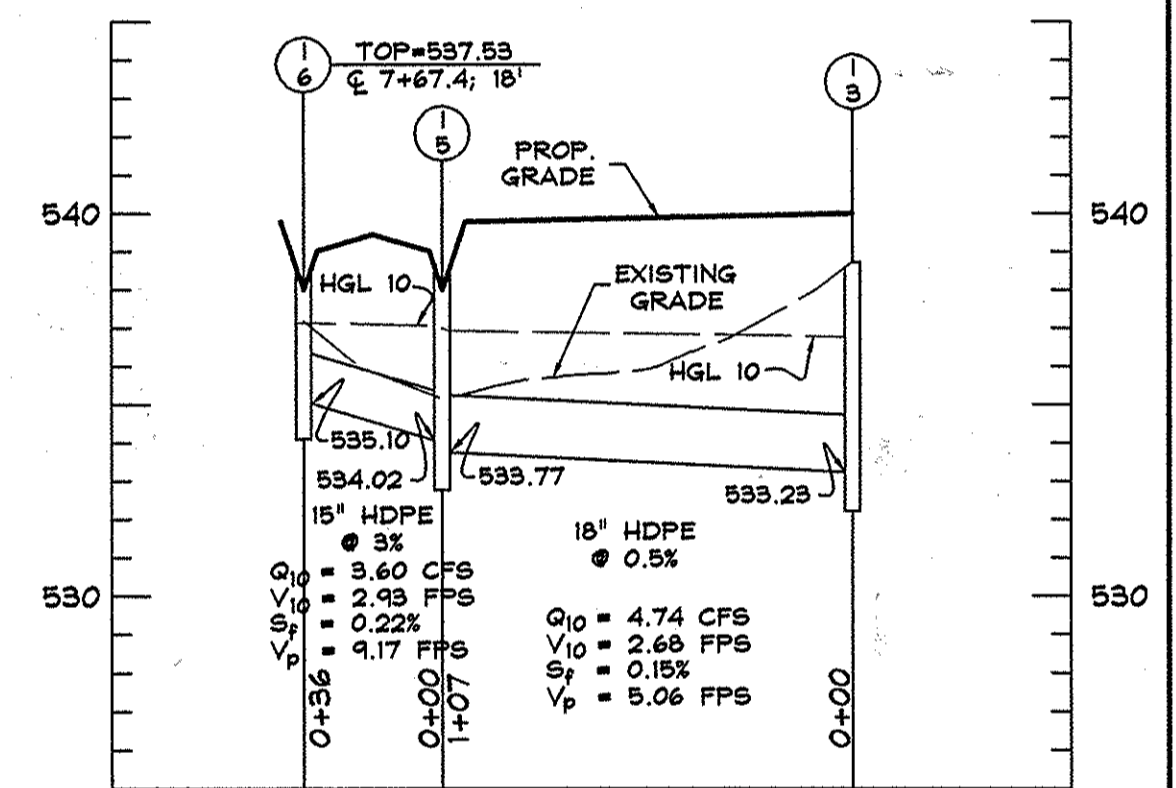
STORM DRAIN PROFILE
SECTION C-C
SCALE: HORI. 1"=50'
VERT. 1"=5'



STORM DRAIN PROFILE
SECTION C-C
SCALE: HORI. 1"=50'
VERT. 1"=5'



STORM DRAIN PROFILE
SCALE: HORI. 1"=50'
VERT. 1"=5'



STORM DRAIN PROFILE
SCALE: HORI. 1"=50'
VERT. 1"=5'

STORM DRAIN STRUCTURE SCHEDULE						
NO.	TYPE	DETAIL	INV. IN	INV. OUT	RIM ELEVATION	LOCATION
I-1	TYPE K INLET	D-4.12	530.90	530.80	538.24	STA. 15+55.59 - 19', RT
I-2	TYPE K INLET	D-4.12	-	532.00	535.00	LINEAR STA. 1+67.96', 2.7' RT
I-3	TYPE K INLET	D-4.12	533.23(3)	533.15	539.15	L C STA. 6+60.42 - 19', RT
I-4	TYPE K INLET	D-4.12	535.57	535.57	537.52	L C STA. 6+60.42 - 19', RT
I-5	TYPE K INLET	D-4.12	534.02	533.77	537.52	L C STA. 7+67.29 - 19', RT
I-6	TYPE K INLET	D-4.12	-	535.10	537.50	L C STA. 7+67.29 - 19', LT
I-7	TYPE K INLET	D-4.12	534.55	534.00	535.40	N 558065.20 E 1276459.20
I-8	TYPE K INLET	D-4.12	-	537.00	549.70	N 537949.55 E 1276481.56
I-9	TYPE K INLET	D-4.12	547.65	547.70	552.19	L C STA. 4+37.49 - 19', RT
I-10	TYPE K INLET	D-4.12	-	547.80	552.19	L C STA. 4+37.49 - 19', LT
M-1	4" PRECAST MANHOLE	G-5.12	525.74	525.64	531.50	N 558665.50 E 1276401.95
M-2	4" PRECAST MANHOLE	G-5.12	531.40	531.15	540.00	STA. 16+05.15 @ C
M-3	4" PRECAST MANHOLE	G-5.12	522.31	518.60	526.50	N 558475.74 E 1276491.05
M-4	4" PRECAST MANHOLE	G-5.12	527.42	527.32	532.20	N 558359.03 E 1276498.54
M-5	4" PRECAST MANHOLE	G-5.12	526.39	526.29	529.60	N 558405.87 E 1276553.67
M-6	4" PRECAST MANHOLE	G-5.12	540.55/539.97	535.87	544.00	N 558127.56 E 1276482.33
S-1	18" CONC. END SECTION	D-5.51	516.00	516.00	517.50	N 558551.71 E 1276514.67
S-2	24" CONC. END SECTION	D-5.51	516.00	516.00	518.00	N 558523.01 E 1276517.12
R-1	CONC. RISER	SEE DETAIL	-	-	-	N 558616.54 E 1276702.36
E-1	30" CONC. END SECTION	D-5.51	-	510.25	512.75	N 558616.54 E 1276702.37

* TOP ELEVATIONS FOR A-10 INLETS ARE TOP OF CURB FOR TYPE K INLETS THROAT ELEVATION.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
Walter D. Smith 10-8-10
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.
Walter D. Smith 10/14/10
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

PIPE SCHEDULE		
SIZE (IN.)	CATEGORY	LINEAR (FT.)
15	HDPE	326'
18	HDPE	1727'
24	HDPE	52'
30	DSTM C-361	54'

DeMario Design Consultants, Inc.
 192 East Main Street
 Westminster, MD 21157
 Phone: (410) 388-0580
 Fax: (410) 388-0564
 http://www.demariodesign.us
 eMail: ddc@demariodesign.us

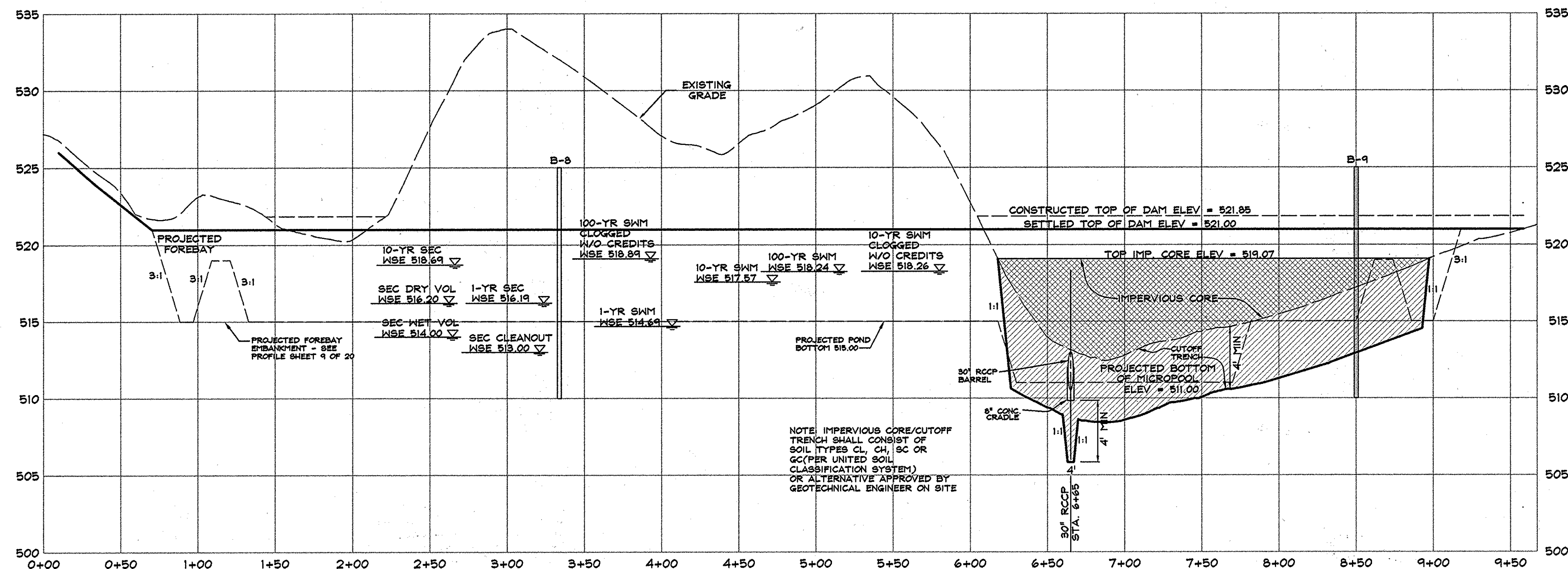
OWNER: VICTORIA & MICHAEL EGAN
 51 GILLETTE COURT
 PORTLAND, CT 06480
 DEVELOPER: KOCH HOMES, INC.
 c/o BILL DODD
 2681 RIVA ROAD, STE 220
 ANNAPOLIS, MD 21401

FINAL ROAD CONSTRUCTION PLANS FOR
 MILL CREEK SUBDIVISION
 LOTS 1-17, BUILDABLE PARCEL A &
 NON-BUILDABLE PRESERVATION PARCELS B, C & D
STORM DRAIN PROFILES
 4th ELECTION DISTRICT HOWARD COUNTY, MD

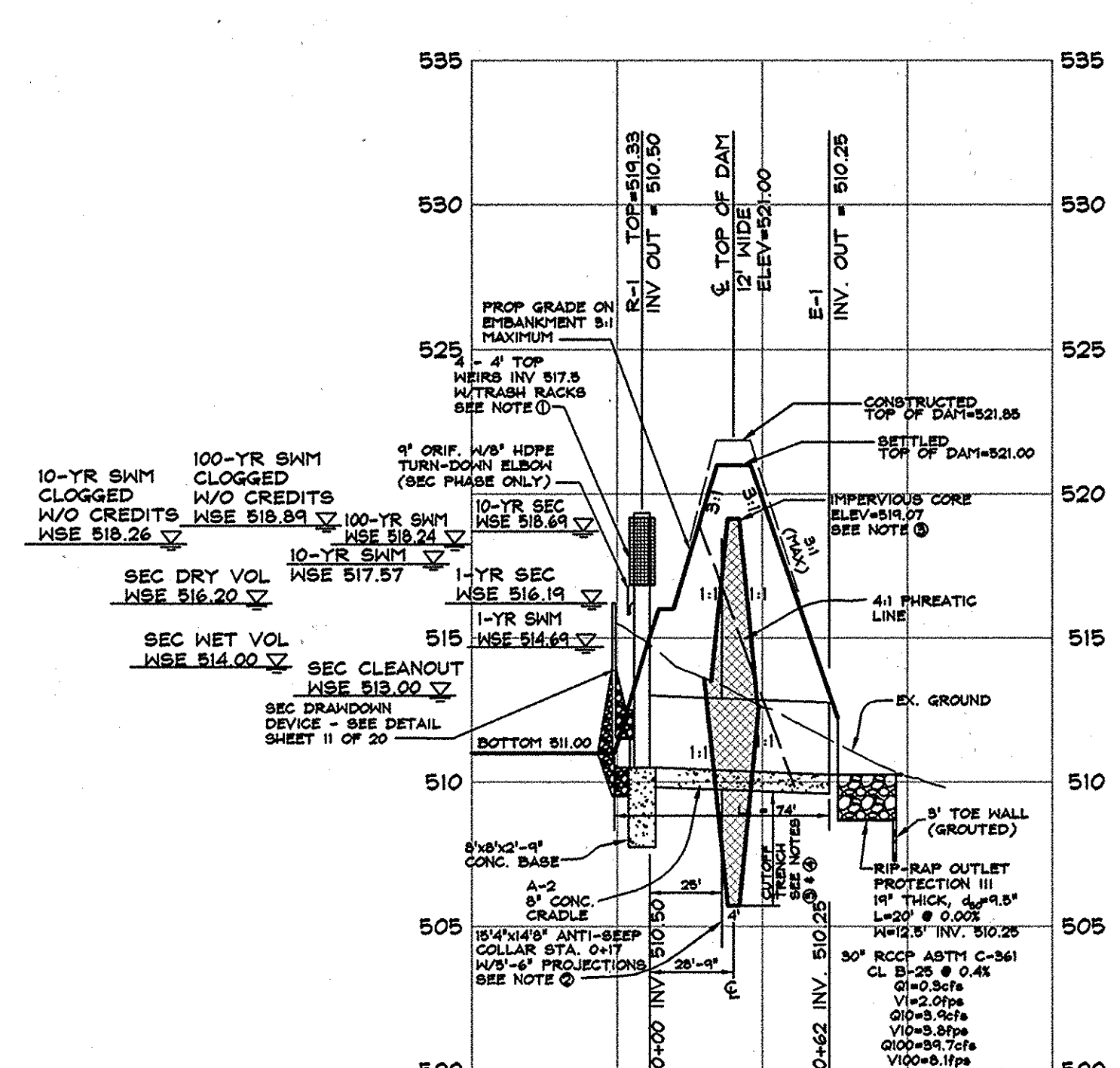
3/25/10
 DATE
 I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 2550, EXPIRES 03/25/2013.
 PROFESSIONAL ENGINEER
 MARK R. THAYER
 PROFESSIONAL ENGINEER NO. 25420

REVISIONS		
NO.	DESCRIPTION OF CHANGES	DRN. REV. DATE
CO. FILE #	DES. BY: JCO	
TAX ACC. #: 04-319583	DRN. BY: SDS	
TAX MAP: 19	CHK. BY: JCO	
BLOCK / GRID: 6	DATE: 8/31/10	
PARCEL #: 12	DDC JOB#: 05021.3	
ZONE / USE: RC-DEO	SHEET NUMBER:	
DWG. SCALE: AS SHOWN	9 of 20	

F-08-079

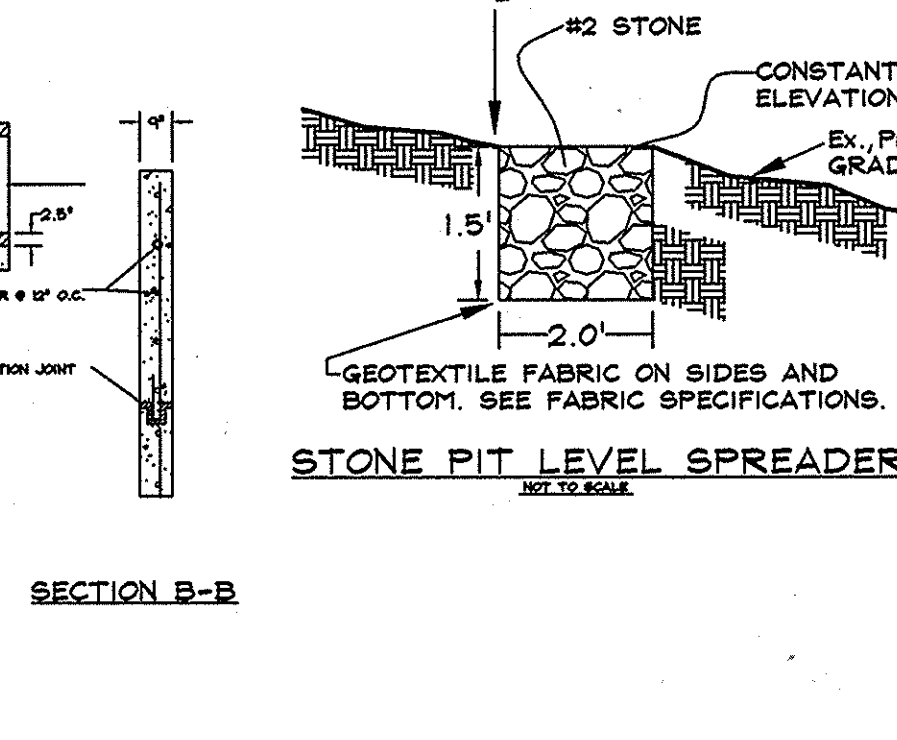
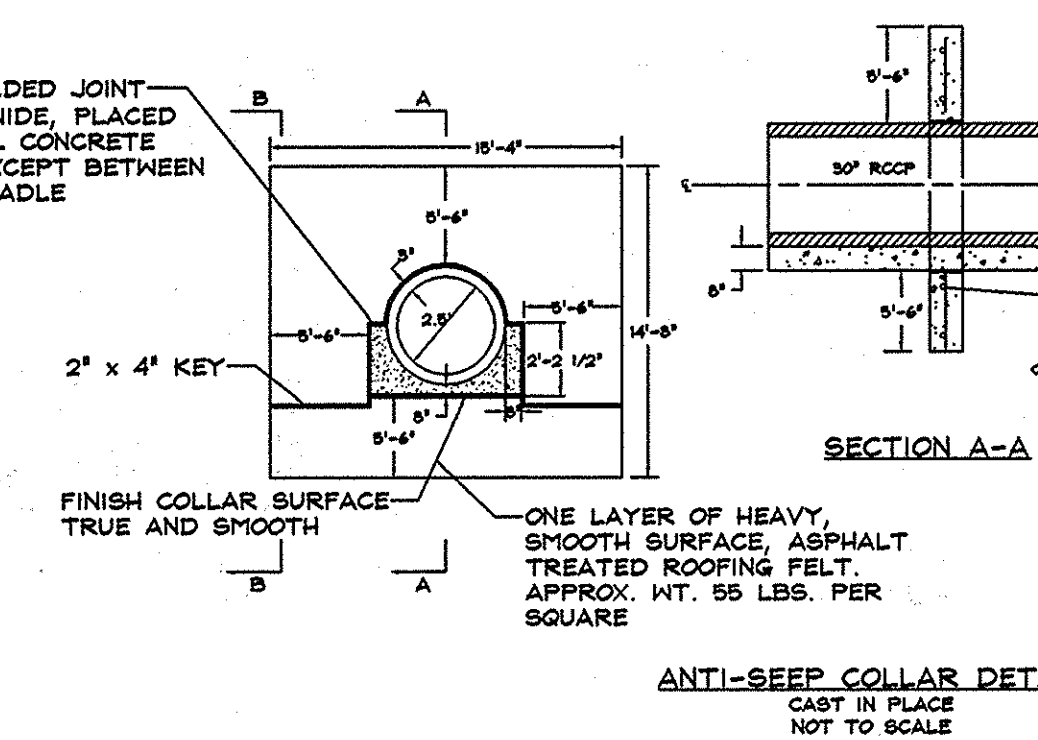
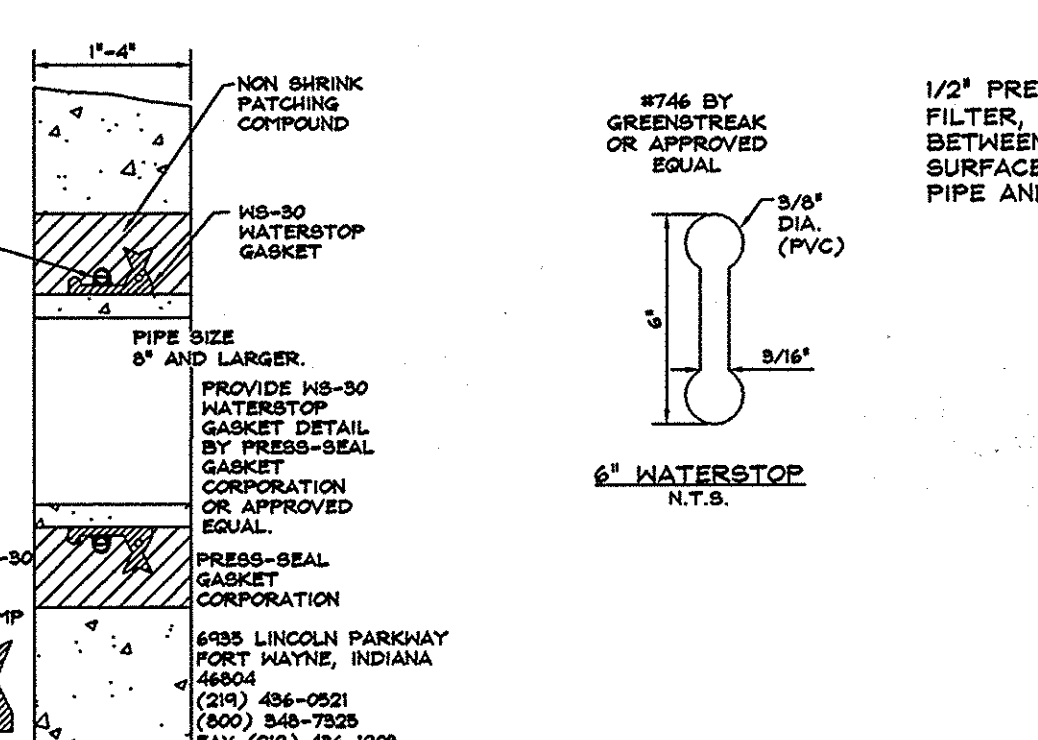


SECTION ALONG TOP OF EMBANKMENT
SCALE: HOR. 1"=50'
VERT. 1"=5'



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

- 1) PRECAST RISER IS AN ACCEPTABLE ALTERNATIVE TO THE CAST-IN-PLACE RISER SHOWN PROVIDED:
- 2) SHOP DRAWINGS WITH SUPPORTING STRUCTURAL COMPUTATIONS (SIGNED AND SEALED BY A MARYLAND REGISTERED PROFESSIONAL ENGINEER) MEETING ASTM REQUIREMENTS FOR PRE-CAST STRUCTURES MUST BE SUBMITTED TO THE ENGINEER, AND THE APPROVING AGENCY (HOWARD COUNTY DEPRM) FOR APPROVAL PRIOR TO FABRICATION.
- 3) IF ANY STRUCTURE DIMENSIONS VARY FROM WHAT WAS ORIGINALLY REVIEWED/ APPROVED, THEN THE HYDRAULICS, FLOTATION AND STRUCTURAL INTEGRITY WILL HAVE TO BE RE-ANALYZED.
- 4) ALL JOINTS AND CONNECTIONS ARE WATER-TIGHT. METHOD FOR ACHIEVING A WATER-TIGHT SEAL BETWEEN THE RISER STRUCTURE AND ALL CONDUITS (I.E. BARREL, LOW FLOW PIPES) SHALL BE APPROVED BY THE ENGINEER IN CHARGE AND HOWARD COUNTY DEPRM PRIOR TO FABRICATION. (SEE SHEET 10 OF 20 FOR COLLAR SEAL DETAIL).
- 5) ANTI-SEEP COLLAR SHALL BE NO CLOSER THAN 2 FEET FROM THE NEAREST PIPE JOINT.
- 6) SOILS TO BE USED FOR CUT-OFF TRENCH AND IMPERVIOUS CORE SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION CL, SC, CH, OR GC. IF NO SUITABLE MATERIAL CAN BE FOUND ON SITE, SOILS CONFORMING TO UNIFIED SOIL CLASSIFICATION CL, SC, CH, OR GC SHALL BE OBTAINED OFFSITE AND SHALL BE VERIFIED BY A MARYLAND REGISTERED PROFESSIONAL GEOTECHNICAL ENGINEER.
- 7) ACTUAL LENGTH AND DEPTH OF CUT-OFF TRENCH TO BE DETERMINED BY GEOTECHNICAL ENGINEER IN FIELD.



CONSTRUCTION SPECIFICATIONS

1. **General**
All construction shall be in accordance with the Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 510, Class B2 Non-overflow. All references to ASTM and AASHTO specifications apply to the most recent edition.

2. **Site Preparation**
Areas designated for borrow, embankment, and structure works shall be cleared, grubbed and graded to topsoil. All trees, vegetation, stumps and other objectionable material shall be removed. Channel banks and sharp knolls shall be sloped to no steeper than 1:1. All trees shall be stumped and grubbed within 15 feet of the toe of the embankment.

3. **Soil**
Soils to be used for embankment, structure works and for the impervious core shall be tested and classified in accordance with the Unified Soil Classification System (USCS) and the AASHTO Soil Classification System. The impervious core shall be composed of soil types CL, CH, SC, or CC (per United Soil Classification System) or an alternative approved by a geotechnical engineer on site.

4. **Structure Details**
The fill material shall be placed in layers not exceeding 12 inches in thickness and compacted to a minimum of 95% relative compaction. The fill material shall be tested and classified in accordance with the Unified Soil Classification System (USCS) and the AASHTO Soil Classification System. The impervious core shall be composed of soil types CL, CH, SC, or CC (per United Soil Classification System) or an alternative approved by a geotechnical engineer on site.

5. **Backfilling**
Backfilling shall conform to the requirements of the Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 510, Class B2 Non-overflow.

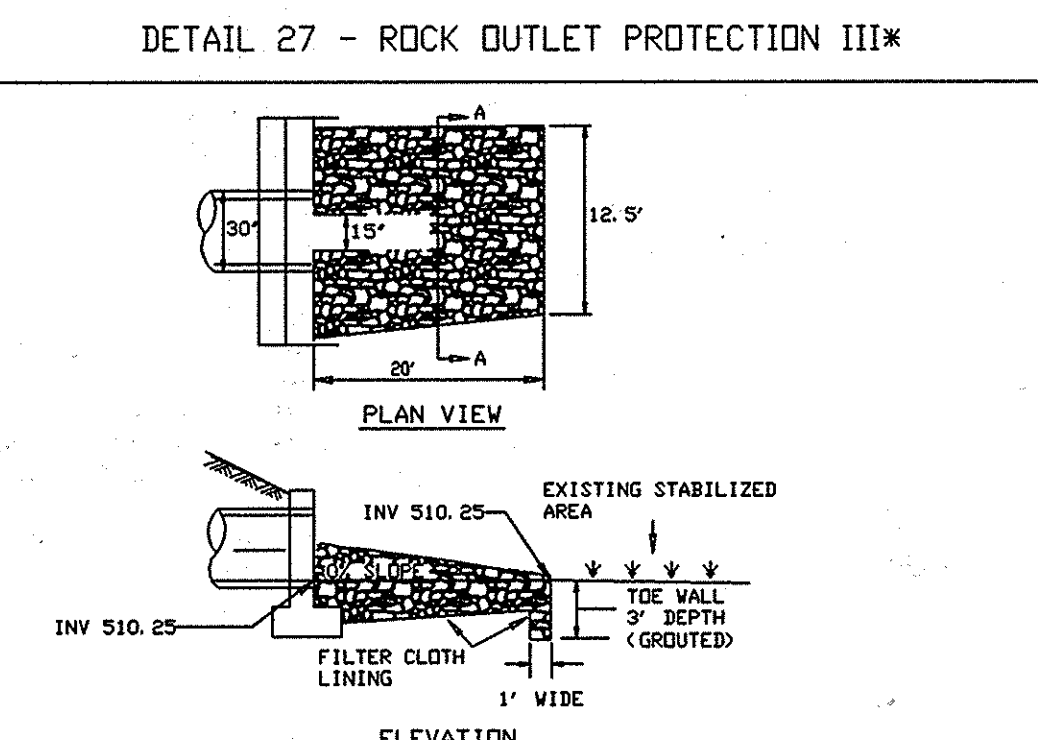
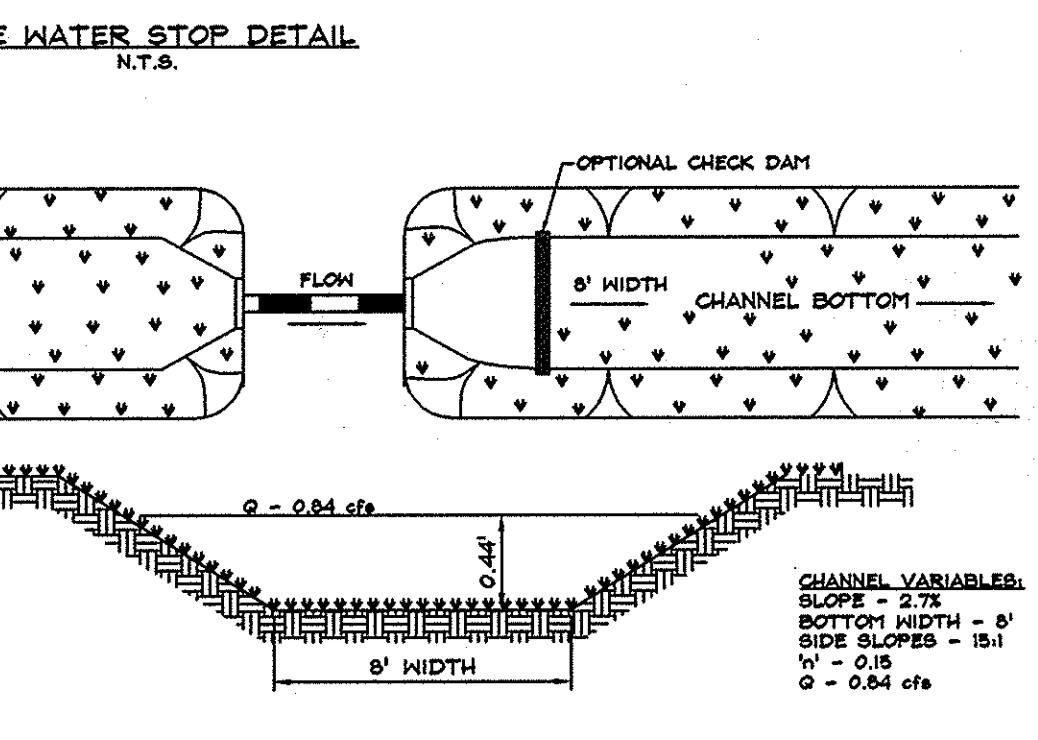
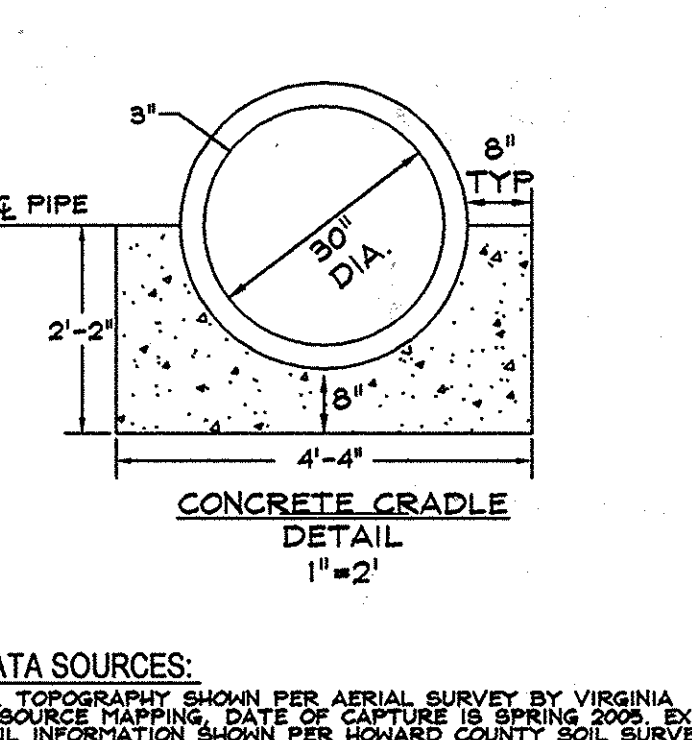
6. **Other Details**
Other details (anti-seep collars, valves, etc.) shall be shown on the drawings.

7. **Construction Inspection**
The construction of the spillway and embankment shall be inspected and approved by the Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 510, Class B2 Non-overflow.

8. **Construction Inspection**
The construction of the spillway and embankment shall be inspected and approved by the Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 510, Class B2 Non-overflow.

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10. **Construction Inspection**
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CONSTRUCTION SPECIFICATIONS

1. The subgrade for the filter, rip-rap, or gabion shall be prepared to the required level 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 puncturing, cutting, or tearing. Any damage other than an occasional small hole shall be repaired by the contractor. Another piece of geotextile over the damaged part or by completely replacing the geotextile with a new piece. For overlapping pieces, 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 replace filling the void 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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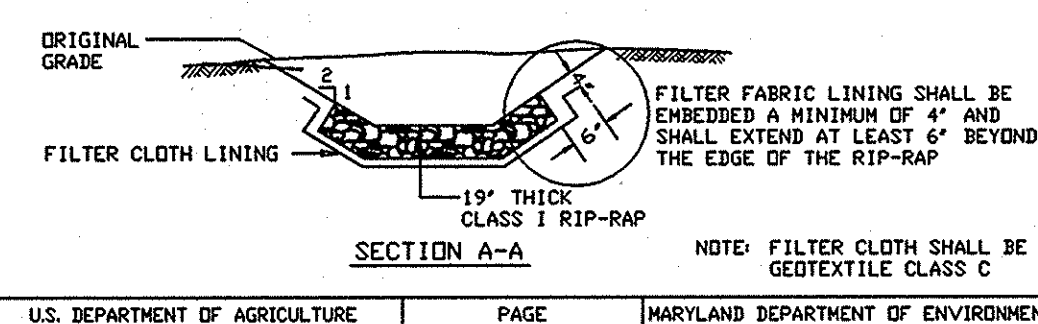
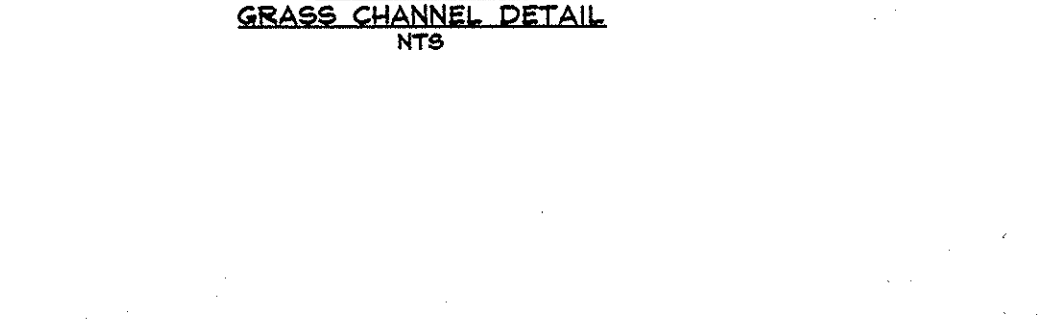
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APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
DATE: 10-9-10

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
DATE: 12/20/10

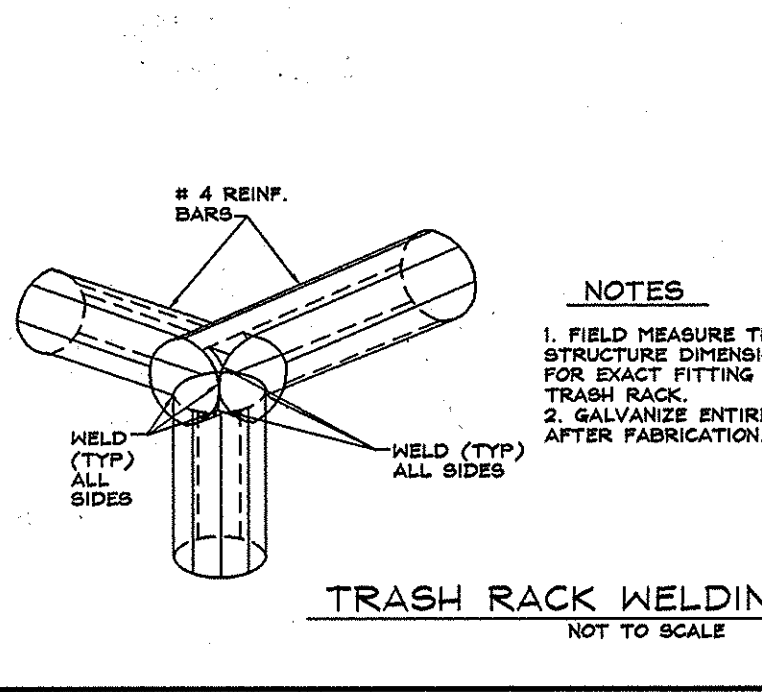
APPROVED: HOWARD COUNTY DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES
DATE: 10/19/10

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

DATE: 9-9-10

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

DATE: 10/17/10



NOTES

1. NO RUST SHALL BE PERMITTED ON REBAR SURFACES TO BE WELDED.

2. TRASH RACK SHALL BE WELDED TO THE REBAR USING TIG WELDING INTERSECTIONS.

3. 3/4" X 4" STAINLESS STEEL BOLT (TYP.) ASTM A307 SHALL BE USED FOR FABRICATION IN ACCORDANCE WITH ASTM A307, THEN PAINTED BLACK EPOXY GRAU.

4. ALL WELDED CONNECTIONS SHALL BE HOT DIPPED GALVANIZED AND SHOP FABRICATED.

5. EXPOSED CONCRETE CORNERS MUST BE PROTECTED WITH 1/2" MINIMUM COVER FOR RE-BARS IN 2" AT WALLS AND 5" AT BOTTOM.

DATE: 8/31/10

Professional Certification:
I hereby certify that these documents were prepared or approved by me in accordance with the laws of the State of Maryland, License No. 25420.

MARK R. THAYER
REGISTERED PROFESSIONAL ENGINEER NO. 25420

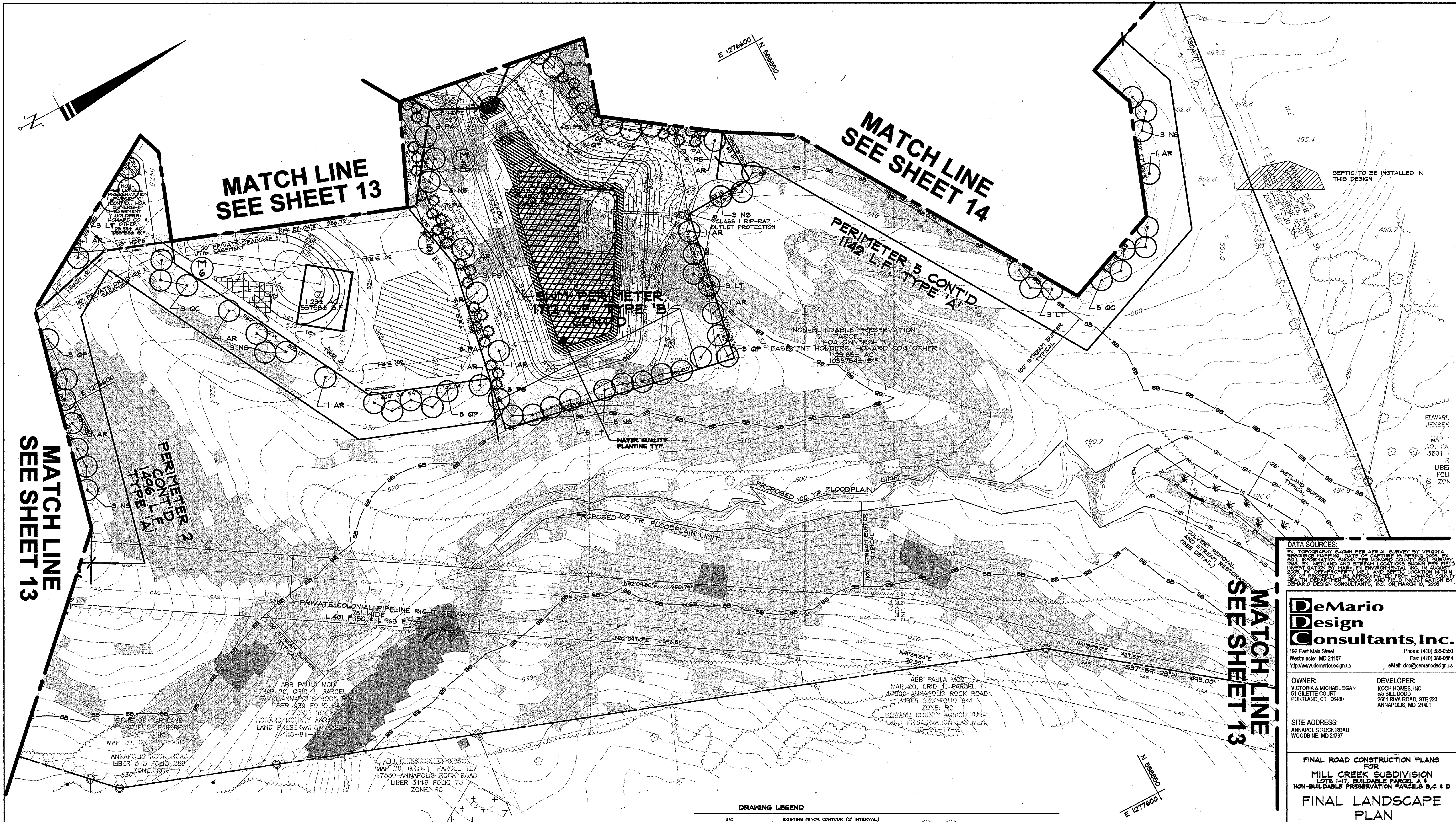
FINAL ROAD CONSTRUCTION PLANS FOR MILL CREEK SUBDIVISION LOTS 1-17, BUILDABLE PARCELS A & NON-BUILDABLE PRESERVATION PARCELS B, C & D

STORM WATER MANAGEMENT DETAILS

4th ELECTION DISTRICT HOWARD COUNTY, MD

NO.	DESCRIPTION OF CHANGES	DRN.	REV.	DATE
CO. FILE #	DES. BY: MRT/CTS			
TAX ACC. # 04-319583	DRN. BY: SDS/CTS			
TAX MAP: 19	CHK. BY: JCO/MRT			
BLOCK / GRID: 6	DATE: 8/31/10			
PARCEL # 12	DOC JOB#: 05021.3			
ZONE / USE: RC-DEO	SHEET NUMBER:			
DWG. SCALE: AS SHOWN	10 of 20			

F-08-079



MATCH LINE
SEE SHEET 13

MATCH LINE
SEE SHEET 13

MATCH LINE
SEE SHEET 14

MATCH LINE
SEE SHEET 13

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
W. P. Smith 10-8-10
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.
V. T. Sheehan 12/20/10
CHIEF DIVISION OF LAND DEVELOPMENT

M. J. Stine 9/10/10
CHIEF DEVELOPMENT ENGINEERING DIVISION

**SCHEDULE D
STORMWATER MANAGEMENT AREA LANDSCAPING**

LINEAR FEET OF PERIMETER	1712 LF.
NUMBER OF PLANTS REQUIRED	
SHADE TREES	34
EVERGREEN TREES	43
CREDIT FOR EXISTING VEGETATION (DESCRIBE BELOW IF NEEDED)	N/A
CREDIT FOR BERM (DESCRIBE BELOW IF NEEDED)	N/A
NUMBER OF PLANTS PROVIDED	
SHADE TREES	34
EVERGREEN TREES	43
OTHER TREES (2:1 SUBSTITUTION)	0
(DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)	

WATER QUALITY PLANTING LEGEND

ZONE 'B' WATER QUALITY PLANTING

ZONE 'A' WATER QUALITY PLANTING

NOTE: SEE SHEET 16 OF 20 FOR WATER QUALITY PLANT LIST.

DRAWING LEGEND

	EXISTING MINOR CONTOUR (2' INTERVAL)		EXISTING TREES
	EXISTING MAJOR CONTOUR (10' INTERVAL)		PROPOSED ORNAMENTAL TREE
	ADJACENT PROPERTY LINE		PROPOSED EVERGREEN TREE
	EXISTING PROPERTY BOUNDARY		EXISTING TREELINE
	EX. ROAD / EDGE OF PAVING		EXISTING SHRUB/BRUSH LINE
	EX. BARRIER LINE & MANHOLES, CLEAN-OUTS		10' NO WOODY ZONE
	EX. OVERHEAD ELECTRIC & UTILITY POLES		EXISTING WETLANDS
	PROPOSED MINOR CONTOUR (2' INTERVAL)		STEEP SLOPES (25%+)
	PROPOSED MAJOR CONTOUR (10' INTERVAL)		STEEP SLOPES (18%-24.9%)
	PROP. STANDARD CURB & GUTTER /		SEPTIC TO BE INSTALLED IN THIS DESIGN
	PROP. REVERSE CURB & GUTTER /		
	PROP. REVERSE MOUNTAIN CURB & GUTTER		
	PROPOSED PRIVATE ROAD/DRIVE CENTERLINE		
	EX. BUILDING		
	PROPOSED BUILDING EXPANSION		
	PROPOSED SPOT ELEVATION & FLOW ARROW		
	10' WETLANDS BUFFER		
	TPF		

3/25/10
DATE

ANDREW J. STINE
LANDSCAPE ARCHITECT NO. 3222

DeMario Design Consultants, Inc.
192 East Main Street
Westminster, MD 21157
http://www.demariodesign.us
Phone: (410) 386-0560
Fax: (410) 386-0564
eMail: ddc@demariodesign.us

OWNER: VICTORIA & MICHAEL EGAN
51 GLEETE COURT
PORTLAND, CT 06480

DEVELOPER: KOCH HOMES, INC.
60 BILL DODD
2881 RIVA ROAD, STE 220
ANNAPOLIS, MD 21401

SITE ADDRESS: ANNAPOLIS ROCK ROAD
WOODBINE, MD 21787

FINAL ROAD CONSTRUCTION PLANS FOR MILL CREEK SUBDIVISION LOTS 1-17, BUILDABLE PARCEL & NON-BUILDABLE PRESERVATION PARCELS B, C & D

FINAL LANDSCAPE PLAN

4th ELECTION DISTRICT HOWARD COUNTY, MD

NO.	DESCRIPTION OF CHANGES	DRN.	REV.	DATE

CO. FILE #:	DES. BY: CVL
TAX ACC. #: 04-319583	DRN. BY: CVL
TAX MAP: 19	CHK. BY: AJS
BLOCK / GRID: 6	DATE: 8/31/10
PARCEL #: 12	DDC JOB#: 05021.3
ZONE / USE: RC-DEO	SHEET NUMBER:
DWG. SCALE: 1"=50'	15 of 20

F-08-079

SLD 105021.3 - Egan Firm Plans/Drawings/Title Block Road Plans/105021.3.dwg, 9/27/2010 8:14:24 AM, AutoCAD (landscape).dws

WOODBINE ROAD
MD. RTE. 94
HOWARD COUNTY THOR COLLECTOR

FOREST CONSERVATION EASEMENT 'D' CONT'D.
15.790± AC. TOTAL
0.487± AC. CREDIT FOR LANDSCAPE MATERIAL
6.988± AC. REFORESTATION
4.067± AC. AFFORESTATION
3.605± AC. RETENTION
0.983± AC. FLOODPLAIN
NOTE: 0.29± AC. FLOODPLAIN TO BE AFFORESTED, NO CREDIT TAKEN FOR 0.693 AC. OF FOREST RETAINED IN FLOODPLAIN.

MATCH LINE
SEE SHEET 19

MATCH LINE
SEE SHEET 17

FOREST CONSERVATION LEGEND

- FOREST CONSERVATION EASEMENT LIMIT LINE
- ▨ FOREST CONSERVATION EASEMENT
- ▧ FLOODPLAIN
- ▩ AFFORESTATION
- REFORESTATION (FUTURE BANK)

FOREST BANK TRACKING RECORD

Development Plan Name	Ho. Co. File No.	Acres Used	Acres Remaining
Beginning Balance			10.698 Ac.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

[Signature] 12/20/10
CHIEF DIVISION OF LAND DEVELOPMENT

[Signature] 10/14/10
CHIEF DEVELOPMENT ENGINEERING DIVISION

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

[Signature] 10-8-10
CHIEF, BUREAU OF HIGHWAYS

SPECIMEN TREE CHART

NUMBER	DBH	COMMON NAME/SCIENTIFIC NAME	CONDITION	REMAIN
1	47"	WHITE OAK/QUERCUS ALBA	FAIR	NO
2	35"	SILVER MAPLE/ACER SACCHARINUM	POOR	NO
3	32"	SILVER MAPLE/ACER SACCHARINUM	POOR	NO

FOREST CONSERVATION EASEMENT 'A' CONT'D.
1.284± AC. TOTAL
0.156± AC. CREDIT FOR LANDSCAPE MATERIAL
1.128± AC. REFORESTATION

DATA SOURCES:
ELEVATION DATA FROM AERIAL SURVEY BY VIRGINIA RESOURCE PARTNERS, DATE OF CAPTURE IS SPRING 2005. EXISTING UTILITIES AND EASEMENT LOCATIONS FROM FIELD INVESTIGATION BY DARRIN R. ENVIRONMENTAL IN AUGUST 2009. EXISTING PROPERTY LINES AND SETBACK LOCATIONS WITHIN 100' OF PROPERTY LINE APPROXIMATED FROM HOWARD COUNTY HEALTH DEPARTMENT RECORDS AND FIELD INVESTIGATION BY DEMARIO DESIGN CONSULTANTS, INC. ON MARCH 10, 2009.

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192 East Main Street
Westminster, MD 21157
http://www.demariodesign.com

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Fax: (410) 386-0564
eMail: ddo@demariodesign.com

OWNER:
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51 GLETTIE COURT
PORTLAND, CT 06480

DEVELOPER:
KOCH HOMES, INC.
c/o BILL DODD
2861 RIVA ROAD, STE 220
ANNAPOLIS, MD 21401

SITE ADDRESS:
ANNAPOLIS ROCK ROAD
WOODBINE, MD 21797

FINAL ROAD CONSTRUCTION PLANS
FOR
MILL CREEK SUBDIVISION
LOTS 1-17, BUILDABLE PARCELS A &
NON-BUILDABLE PRESERVATION PARCELS B, C & D


FINAL FOREST CONSERVATION PLAN

4th ELECTION DISTRICT HOWARD COUNTY, MD

REVISIONS

NO.	DESCRIPTION OF CHANGES	DRN.	REV.	DATE

3/25/10
DATE



ANDREW J. STINE
LANDSCAPE ARCHITECT NO. 3222

