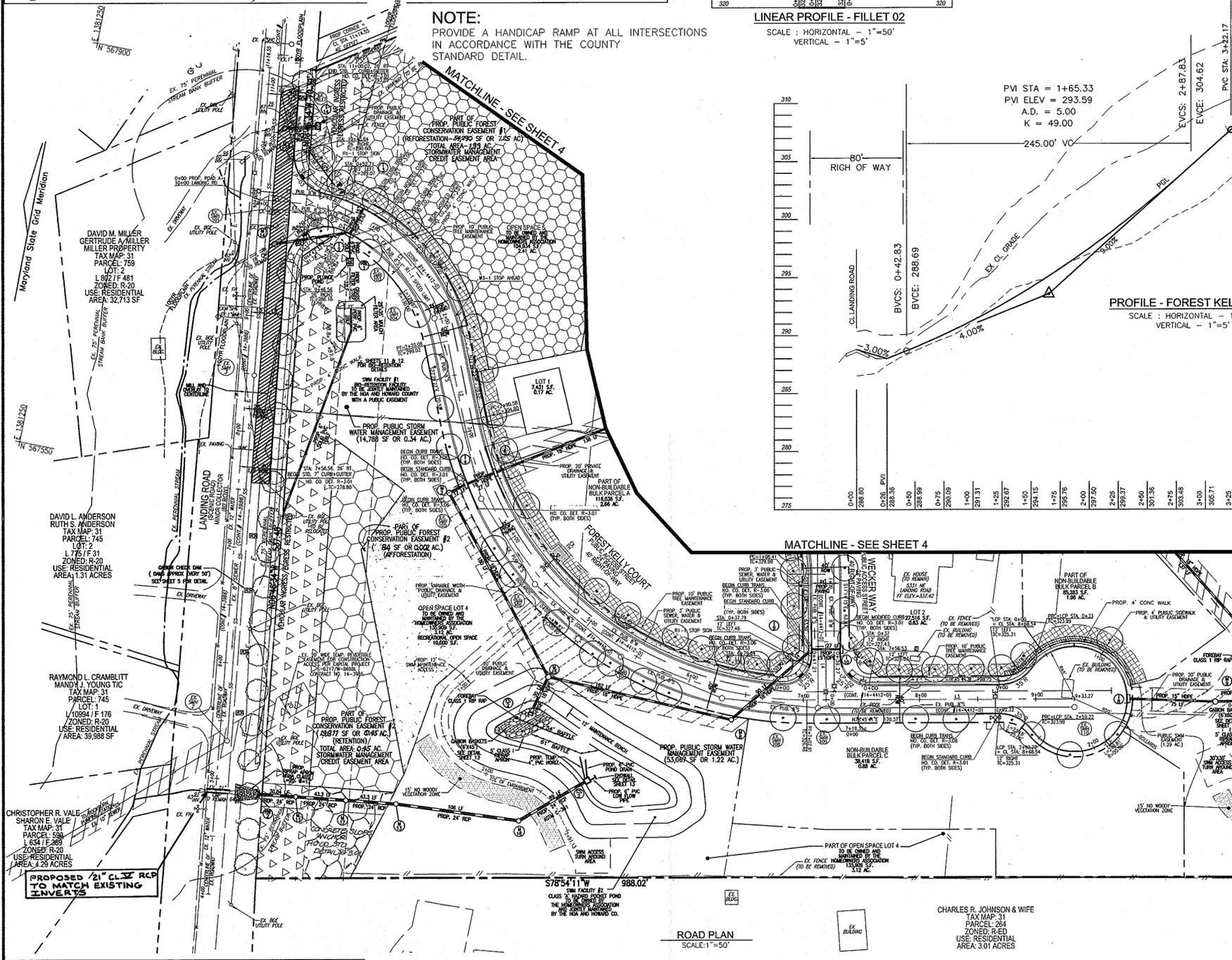
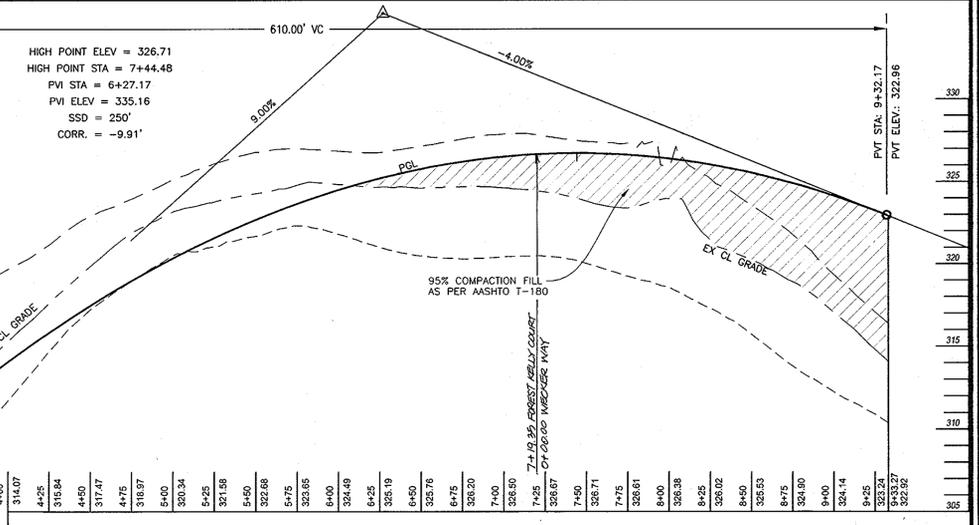
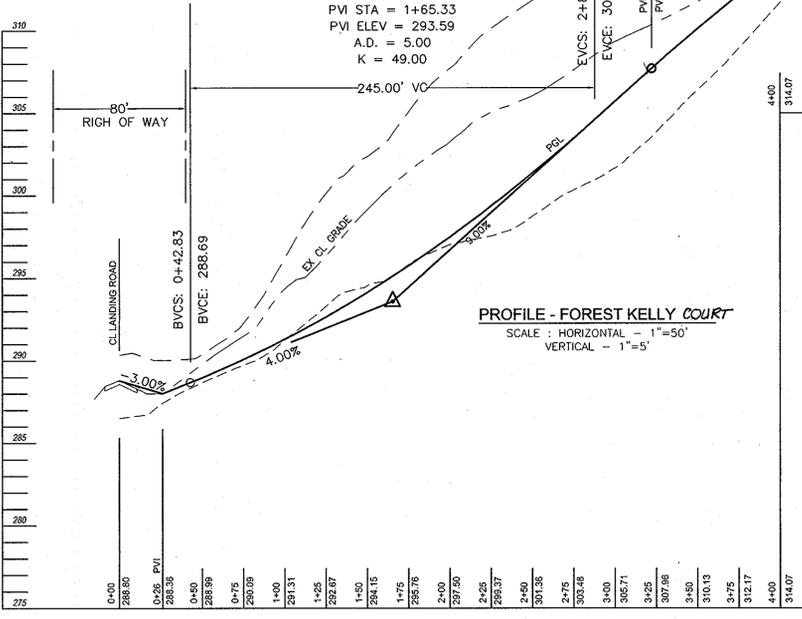
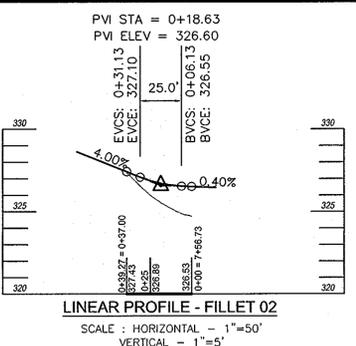
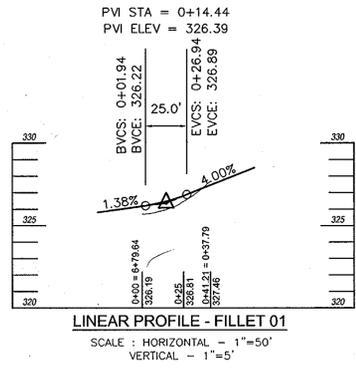


LEGEND	
	RIGHT-OF-WAY
	BOUNDARY LINE
	ADJACENT BOUNDARY LINE
	EXISTING CENTERLINE STREAM
	EXISTING STREAM BANK BUFFER
	EXISTING WETLANDS BUFFER
	EXISTING TREELINE
	EXISTING UTILITY POLE
	EXISTING SIGN
	EXISTING WATER LINE
	EXISTING SEWER LINE
	EXISTING GAS LINE
	EXISTING OVERHEAD LINES
	EXISTING FENCE LINE
	EXISTING 2FT. CONTOUR
	EXISTING 10' CONTOUR
	EXISTING CURB LINE
	EXISTING EDGE OF PAVING
	EXISTING LIGHT POLE
	EXISTING MANHOLE
	EXISTING SANITARY CLEANOUT
	EXISTING FIRE HYDRANT
	PROP. PUBLIC TREE MAINTENANCE EASEMENT
	PROP. PRIVATE DRAINAGE AND UTILITY EASEMENT
	PROP. PUBLIC STORM DRAIN INLET
	PROP. STORM DRAIN INLET
	PROP. SIDEWALK
	PROP. TREE LINE
	PROP. CURB
	PROPOSED SIGN
	PROPOSED LIGHT POLE
	PROP. CURB TRANSITION
	100 YEAR FLOODPLAIN
	PROP. PUBLIC STORM WATER MANAGEMENT EASEMENT
	PROP. PRIVATE ACCESS EASEMENT FOR THE USE OF FUTURE LOTS
	PROP. PUBLIC STORM WATER AND UTILITY EASEMENT
	PROP. PRIVATE ACCESS EASEMENT FOR GEELHAAR PROPERTY LOT 2
	PROP. PAVEMENT WIDENING AREA

NOTE:
PROVIDE A HANDICAP RAMP AT ALL INTERSECTIONS IN ACCORDANCE WITH THE COUNTY STANDARD DETAIL.



ROAD PLAN
SCALE: 1"=50'



APPROVED: DEPARTMENT OF PUBLIC WORKS
William R. ... DATE: 5-17-10
CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Paul S. ... DATE: 6/10/10
CHIEF, DIVISION OF LAND DEVELOPMENT

William ... DATE: 6/10/10
CHIEF, DEVELOPMENT ENGINEERING DIVISION

OWNERS
PARCEL 749, LOTS 3 & 4
JERICHO, LLC
DONALD REULER
5331 LANDING RD.
ELK RIDGE, MARYLAND
21075-5717

PARCEL 619, LOT 1
HARRY F. GEELHAAR, JR.
5301 LANDING RD.
ELK RIDGE, MARYLAND
21075-5717

DEVELOPER
LAND DESIGN & DEVELOPMENT, INC.
5300 DORSEY HALL DRIVE
ELLCOTT CITY, MARYLAND 21042
(443) 367-0422

NO.	REVISION	DATE
1	REVISE FOREST CONSERVATION AREAS	11/15/13

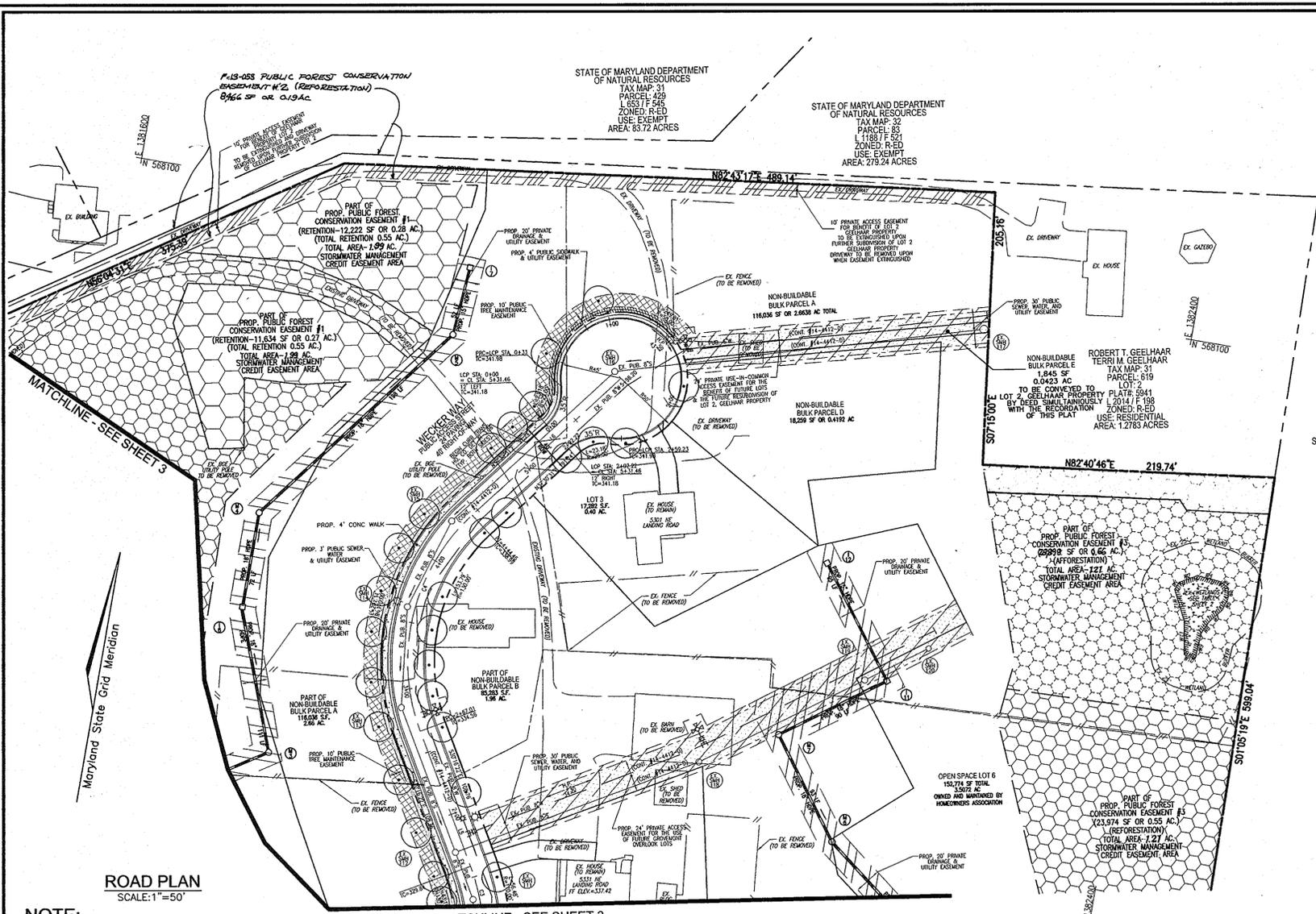
FINAL ROAD CONSTRUCTION PLAN
GROVEMONT OVERLOOK-PHASE I
FINAL ROAD CONSTRUCTION PLAN

LOTS 1-3, OPEN SPACE LOTS 4-6 & NON-BUILDABLE BULK PARCELS A, B, C, D, & E
A RESUBDIVISION OF LOTS 3 & 4 OF THE LEGAL PROPERTY, PLAT 4857 (F-81-87) &
A RESUBDIVISION OF LOT 1 OF THE GEELHAAR PROPERTY, PLAT 5941 (F-84-214)

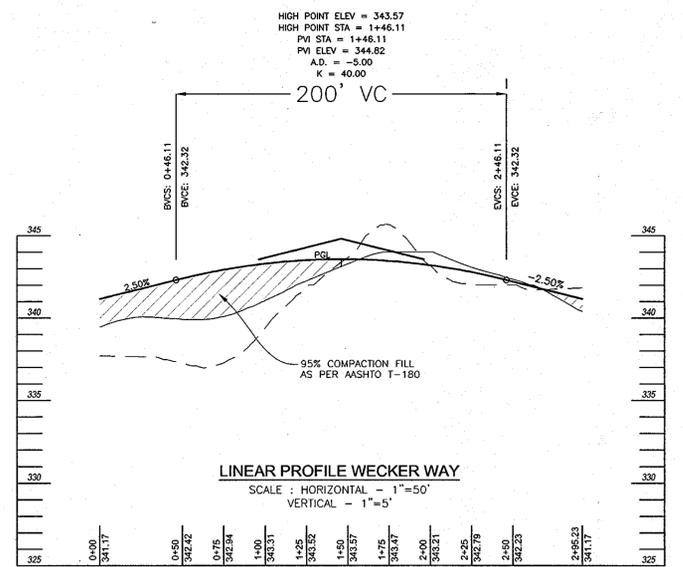
TAX MAP 31 BLOCK 24 PARCELS 749' & P/O 619'
1ST ELECTION DISTRICT ZONED R-ED HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET ELLCOTT CITY, MD 21043 TEL: 410.461.7666 FAX: 410.461.8961

	DESIGN BY: RHW	PROFESSIONAL CERTIFICATE 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. 16193, EXPIRATION DATE: 08-27-2014.
	DRAWN BY: JMR/JAR	
	CHECKED BY: RHW	
	DATE: JANUARY 2010	
SCALE: AS SHOWN	W.O. NO.: 04-57	3 SHEET OF 16



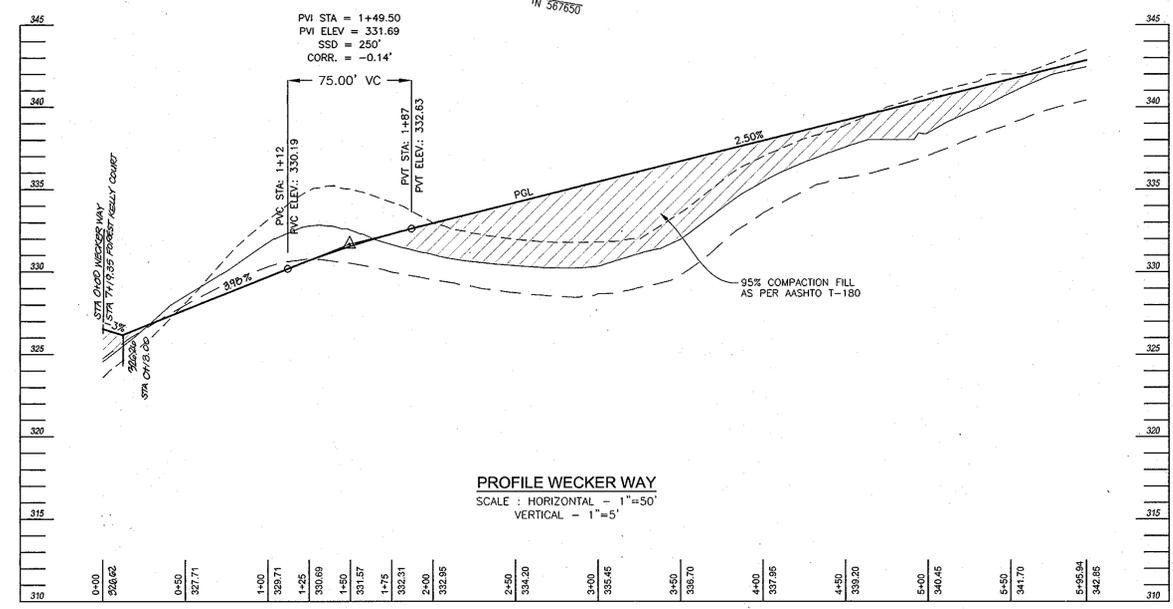
STATE OF MARYLAND DEPARTMENT OF NATURAL RESOURCES
 TAX MAP 32
 PARCEL 85
 L 11887 F 521
 ZONED R-ED
 USE: EXEMPT
 AREA: 279.24 ACRES



LEGEND	
--- RIGHT-OF-WAY	--- EXISTING TREES
--- BOUNDARY LINE	--- EXISTING 20' TEMPORARY REVERSIBLE EASEMENT FOR CONSTRUCTION ACCESS FOR FACTORY SUBJECT TO CONTRACT NUMBER 14-2008
--- ADJACENT BOUNDARY LINE	--- EXISTING 20' PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
--- EXISTING CENTERLINE STREAM	--- EXISTING 20' PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
--- EXISTING STREAM BANK BUFFER	--- EXISTING 20' PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
--- EXISTING TRENCH	--- EXISTING 20' PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
--- EXISTING UTILITY POLE	--- EXISTING 20' PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
--- EXISTING SIGN	--- EXISTING 20' PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
--- EXISTING WATER LINE	--- EXISTING 20' PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
--- EXISTING SEWER LINE	--- EXISTING 20' PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
--- EXISTING GAS LINE	--- EXISTING 20' PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
--- EXISTING OVERHEAD LINES	--- EXISTING 20' PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
--- EXISTING FENCE LINE	--- EXISTING 20' PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
--- EXISTING 2FT. CONTOUR	--- EXISTING 20' PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
--- EXISTING 10' CONTOUR	--- EXISTING 20' PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
--- EXISTING CURB LINE	--- EXISTING 20' PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
--- EXISTING EDGE OF PAVING	--- EXISTING 20' PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
--- EXISTING LIGHT POLE	--- EXISTING 20' PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
--- EXISTING MAILBOX	--- EXISTING 20' PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
--- EXISTING SANITARY CLEANOUT	--- EXISTING 20' PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
--- EXISTING FIRE HYDRANT	--- EXISTING 20' PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
--- EXISTING BALTIMORE GAS AND ELECTRIC ZONE (GREEN AND YELLOW)	--- EXISTING 20' PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
--- PROP. 10' PUBLIC TREE MAINTENANCE EASEMENT	--- PROP. STORM DRAIN
--- PROP. PRIVATE DRAINAGE AND UTILITY EASEMENT	--- PROP. SIDEWALK
--- PROP. PUBLIC 4' SIDEWALK AND UTILITY EASEMENT	--- PROP. STORM DRAIN INLET
--- PROP. 24' PRIVATE ACCESS EASEMENT FOR THE USE OF FUTURE LOTS	--- PROP. TREE LINE
--- PROP. 30' PUBLIC SEWER, WATER AND UTILITY EASEMENT	--- PROP. CURB
--- PROP. 3' PUBLIC WATER, AND UTILITY EASEMENT	--- PROPOSED SIGN
--- PROP. 10' PRIVATE ACCESS EASEMENT FOR LOT 2	--- PROPOSED LIGHT POLE
--- PROP. PAVEMENT WIDENING AREA	--- PROP. CURB TRANSITION
	--- 100 YEAR FLOODPLAIN

ROAD PLAN
 SCALE: 1"=50'

NOTE:
 PROVIDE A HANDICAP RAMP AT ALL INTERSECTIONS IN ACCORDANCE WITH THE COUNTY STANDARD DETAIL.



OWNERS
 PARCEL 749, LOTS 3 & 4
 JERICHO, LLC
 DONALD REUWER
 5331 LANDING RD.
 ELK RIDGE, MARYLAND
 21075-5717
 HARRY F. GEELHAAR, JR.
 5301 LANDING RD.
 ELK RIDGE, MARYLAND
 21075-5717
 DEVELOPER
 LAND DESIGN & DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE
 SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (410) 367-0422

APPROVED: DEPARTMENT OF PUBLIC WORKS
 DATE: 5-17-10
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: DEPARTMENT OF PLANNING AND ZONING
 DATE: 6/10/10
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 6/10/10
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

NO.	REVISION	DATE
1	REVISE FOREST CONSERVATION AREAS	1/15/13

FINAL ROAD CONSTRUCTION PLAN
 GROVEMONT OVERLOOK-PHASE I
 FINAL ROAD CONSTRUCTION PLAN

LOTS 1-3, OPEN SPACE LOTS 4-6 & NON-BUILDABLE BULK PARCELS A, B, C, D, & E
 A RESUBDIVISION OF LOTS 3 & 4 OF THE LEGAL PROPERTY, PLAT 4857 (F-81-87) &
 A RESUBDIVISION OF LOT 1 OF THE GEELHAAR PROPERTY, PLAT 5941 (F-84-214)

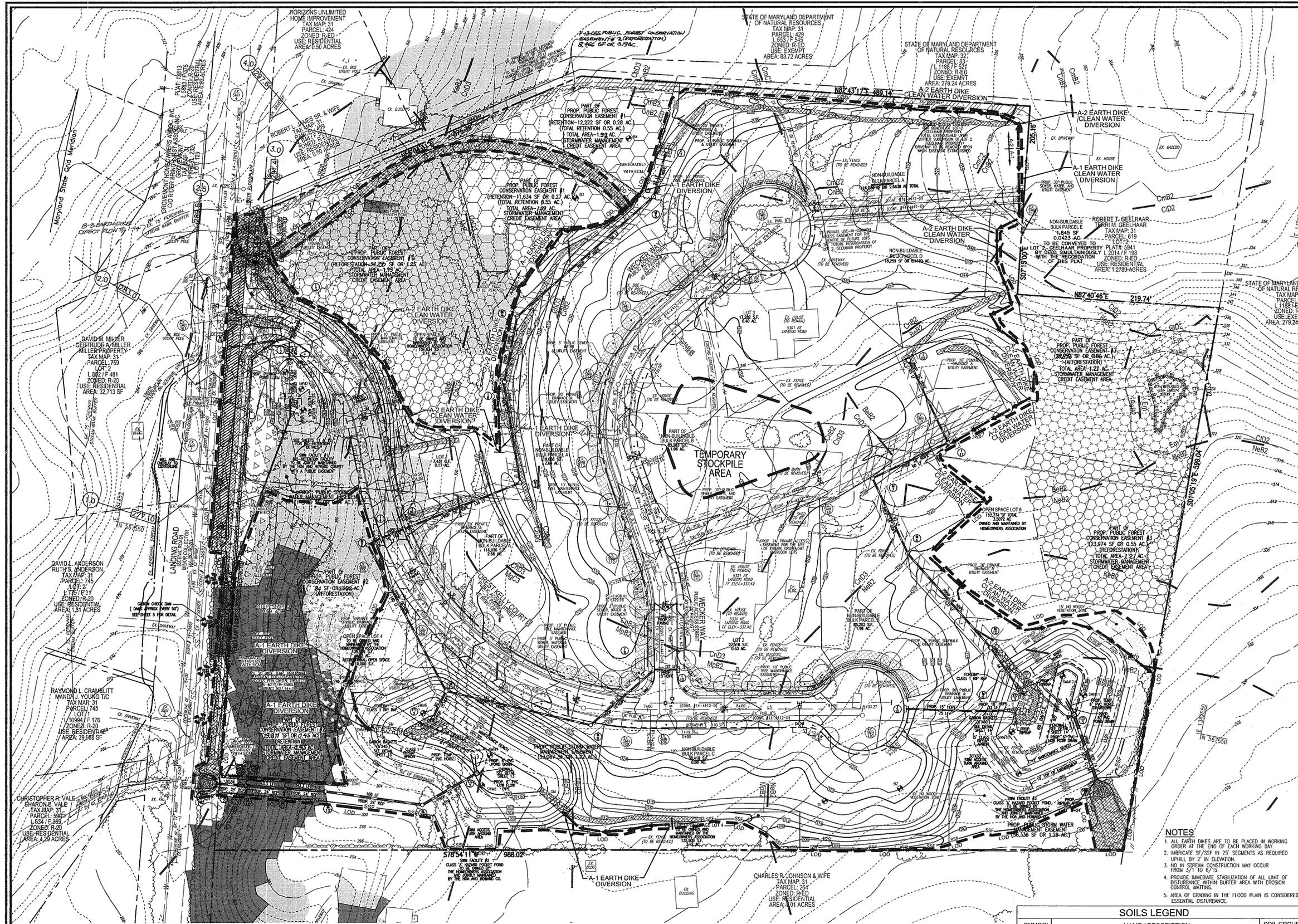
TAX MAP 31 BLOCK 24 PARCELS 749' & P/O '619'
 1ST ELECTION DISTRICT ZONED R-ED HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 8407 MAIN STREET TEL: 410.461.7666
 ELLICOTT CITY, MD 21043 FAX: 410.461.8961

PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2016

DESIGN BY: RHW
 DRAWN BY: JMB/JAR
 CHECKED BY: RHW
 DATE: JANUARY 2010
 SCALE: AS SHOWN
 W.O. NO.: 04-57

4 SHEET OF 16



LEGEND

	RIGHT-OF-WAY		PROPOSED EARTH DIKE
	BOUNDARY LINE		PROPOSED STORM DRAIN
	ADJACENT BOUNDARY LINE		PROPOSED STORM DRAIN INLET
	EXISTING CENTERLINE STREAM		PROPOSED SILT FENCE
	EXISTING STREAM BANK BUFFER		PROPOSED SUPER SILT FENCE
	EXISTING WETLANDS BUFFER		PROPOSED LIMIT OF DISTURBANCE
	EXISTING TREELINE		PROPOSED EROSION CONTROL MATTING
	EXISTING UTILITY POLE		PROPOSED CURB INLET PROTECTION
	EXISTING SIGN		PROPOSED AT-GRADE INLET PROTECTION
	EXISTING WATER LINE		PROPOSED EARTH DIKE
	EXISTING SEWER LINE		AREA OF 25 PERCENT OR GREATER SLOPES
	EXISTING GAS LINE		PROPOSED SIGN
	EXISTING OVERHEAD LINES		PROPOSED LIGHT POLE
	EXISTING FENCE LINE		
	EXISTING 2FT CONTOUR		
	EXISTING CURB LINE		
	EXISTING EDGE OF PAVING		
	EXISTING LIGHT POLE		
	EXISTING MAILBOX		
	EXISTING SANITARY CLEANOUT		
	EXISTING FIRE HYDRANT		
	EXISTING TREES		

SWMF NO. 2

TRAP TYPE: BASIN
 EX. DRAINAGE AREA: 1.95 AC
 PROP. DRAINAGE AREA: 5.10 AC
 TOTAL WET STORAGE ROD: 9,180 CF
 TOTAL DRY STORAGE ROD: 9,180 CF
 TOTAL STORAGE REQUIRED: 18,360 CF
 TOTAL WET STORAGE PRVD: 15,464 CF
 TOTAL DRY STORAGE PRVD: 15,464 CF
 TOTAL STORAGE PROVIDED: 30,928 CF
 BOTTOM ELEV: 296.35
 CREST ELEVATION: 302.90
 WET STORAGE ELEVATION: 296.35-300.80
 DRY STORAGE ELEVATION: 300.80-302.90
 TOTAL STORAGE DEPTH: 7.25'
 TOP OF EMBANKMENT: 306.00
 CLEANOUT ELEVATION: 299.50
 SIDE SLOPES: 3:1
 EMERGENCY SPILLWAY: N/A
 Q1 (EX.): 0.60 CFS
 Q1 (BASIN): 0.57 CFS
 1 YR TSMW WSEL = 302.77
 10 YR TSMW WSEL = 303.60

BAFFLES:
 NORMAL POOL AREA = 5239 SQFT
 EFFECTIVE WIDTH = 73'
 EFFECTIVE LENGTH = 147'

SWMF NO. 3

TRAP TYPE: BASIN
 EX. DRAINAGE AREA: 3.33 AC
 PROP. DRAINAGE AREA: 8.88 AC
 TOTAL WET STORAGE ROD: 10,620 CF
 TOTAL DRY STORAGE ROD: 10,620 CF
 TOTAL STORAGE REQUIRED: 21,240 CF
 TOTAL WET STORAGE PRVD: 17,071 CF
 TOTAL DRY STORAGE PRVD: 17,071 CF
 TOTAL STORAGE PROVIDED: 34,142 CF
 BOTTOM ELEV: 299.50
 CREST ELEVATION: 305.90
 WET STORAGE ELEVATION: 299.50-303.70
 DRY STORAGE ELEVATION: 303.70-305.90
 TOTAL STORAGE DEPTH: 6.40'
 TOP OF EMBANKMENT: 309.00
 CLEANOUT ELEVATION: 302.60
 SIDE SLOPES: 3:1
 EMERGENCY SPILLWAY: N/A
 Q1 (EX.): 0.87 CFS
 Q1 (BASIN): 0.82 CFS
 1 YR TSMW WSEL = 305.80
 10 YR TSMW WSEL = 306.62

BAFFLES:
 NORMAL POOL AREA = 5785 SQFT
 EFFECTIVE WIDTH = 102'
 EFFECTIVE LENGTH = 230'

OWNERS

PARCEL 749, LOTS 3 & 4
 JERICO, LLC
 5331 LANDING RD.
 ELK RIDGE, MARYLAND
 21075-5717

PARCEL 619, LOT 2
 HARRY F. GEELHAAR, JR.
 5301 LANDING RD.
 ELK RIDGE, MARYLAND
 21075-5717

DEVELOPER

LAND DESIGN & DEVELOPMENT, INC.
 5320 DORSET HULL DRIVE
 SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 ATTN: DONALD R. BEUWER
 (410) 480-9105

NO.	REVISION	DATE
1	REVISED FOREST CONSERVATION AREAS	1/15/13

FINAL ROAD CONSTRUCTION PLAN
GROVEMONT OVERLOOK-PHASE I
GRADING AND SEDIMENT & EROSION CONTROL PLAN

LOTS 1-3, OPEN SPACE LOTS 4-6 & NON-BUILDABLE BULK PARCELS A, B, C, D, & E
 A RESUBDIVISION OF LOTS 3 & 4 OF THE LEGAL PROPERTY, PLAT 4857 (F-81-87) &
 A RESUBDIVISION OF LOT 1 OF THE GEELHAAR PROPERTY, PLAT 5941 (F-84-214)

TAX MAP 31 BLOCK 24 PARCELS 749' & P/O 619'
 1ST ELECTION DISTRICT ZONED R-ED HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 8407 MAIN STREET ELLICOTT CITY, MD 21043 TEL: 410-461-7666 FAX: 410-461-1811

PROFESSIONAL CERTIFICATE
 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. 16193 EXPIRATION DATE: 09-27-2014

DESIGN BY: RHM
 DRAWN BY: JMR/JAR
 CHECKED BY: RHM
 DATE: JANUARY 2010
 SCALE: AS SHOWN
 W.O. NO.: 04-57

6 SHEET OF 16

GRADING & SEDIMENT CONTROL PLAN

SCALE: 1"=50'

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	SOIL GROUP
BeB2	Beltville silt loam, 1 to 5 percent slopes, moderately eroded	C
CID2	Chillum gravelly loam, 10 to 15 percent slopes, moderately eroded	B
CmB2	Chillum silt loam, 1 to 5 percent slopes, moderately eroded	B
CmC2	Chillum silt loam, 10 to 15 percent slopes, moderately eroded	B
CnB2	Chillum-Fairfax loams, 1 to 5 percent slopes, moderately eroded	B
CnD3	Chillum-Fairfax loams, 5 to 15 percent slopes, severely eroded	B
Em	Elkton silt loam	C/D
luB	luka loam, local alluvium, 1 to 5 percent slopes	C
KeB2	Kelly silt loam, 3 to 8 percent slopes, moderately eroded	D
MmC3	Menor gravelly loam, 8 to 15 percent slopes, moderately eroded	B
MpB2	Montalto silt loam, 3 to 8 percent slopes, moderately eroded	C
MpE	Montalto and Relay soils, 15 to 45 percent slopes	C
NeB2	Neshaminy silt loam, 3 to 8 percent slopes, moderately eroded	B

HOWARD COUNTY SOILS MAPS NO. 21 & 26

APPROVED: DEPARTMENT OF PUBLIC WORKS
 DATE: 5-17-10
 APPROVED: DEPARTMENT OF PLANNING AND ZONING
 DATE: 6/10/10

BY THE DEVELOPER:
 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.

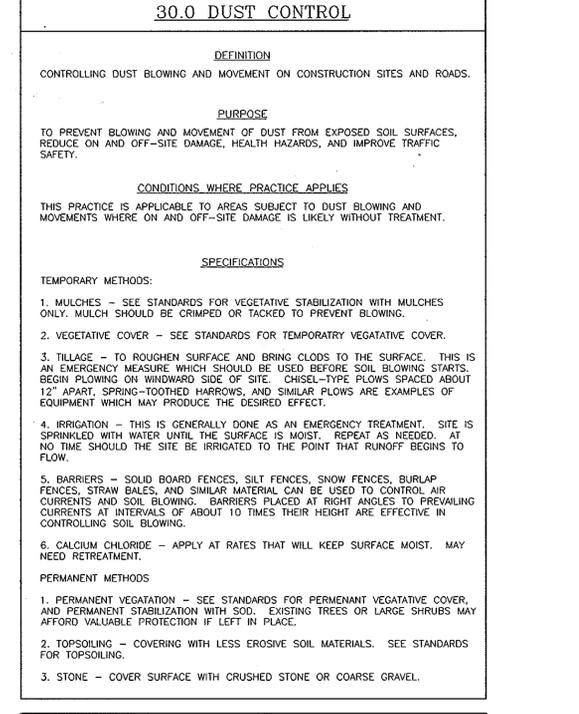
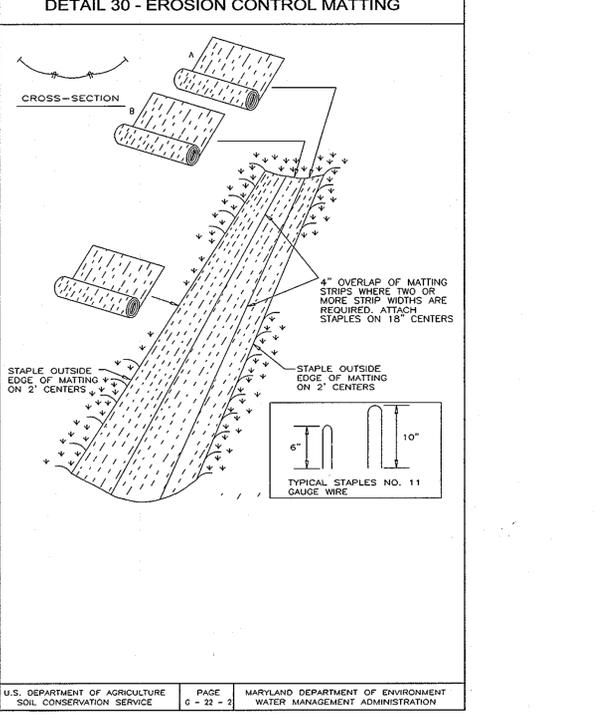
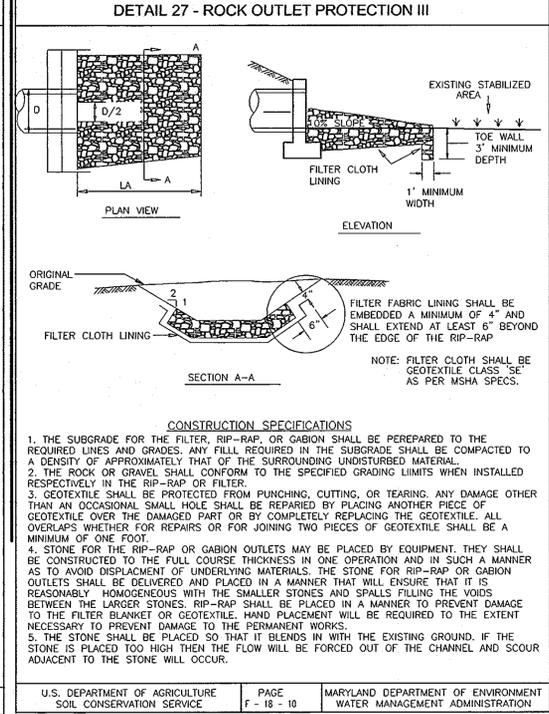
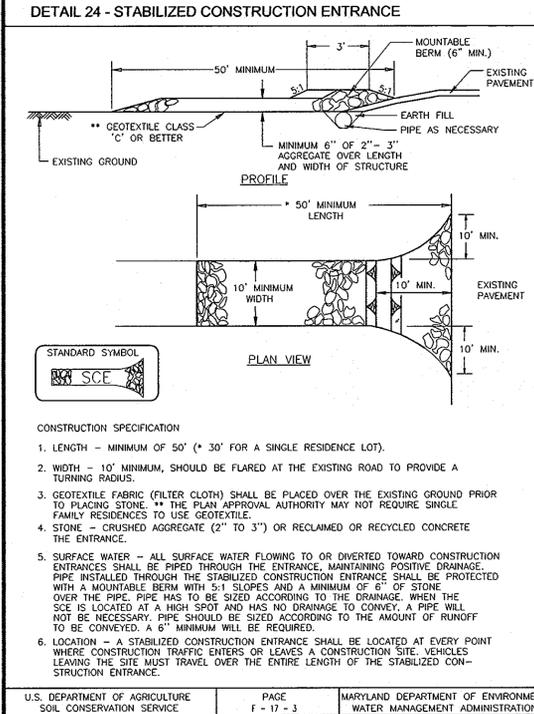
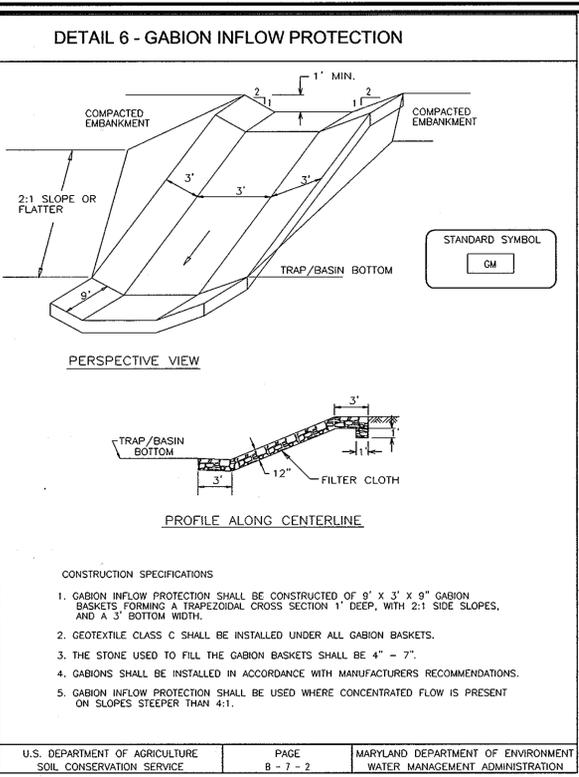
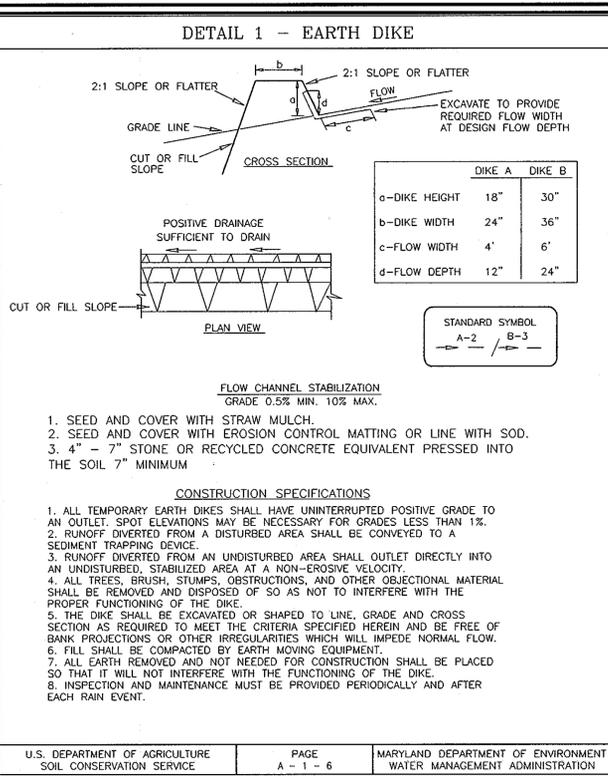
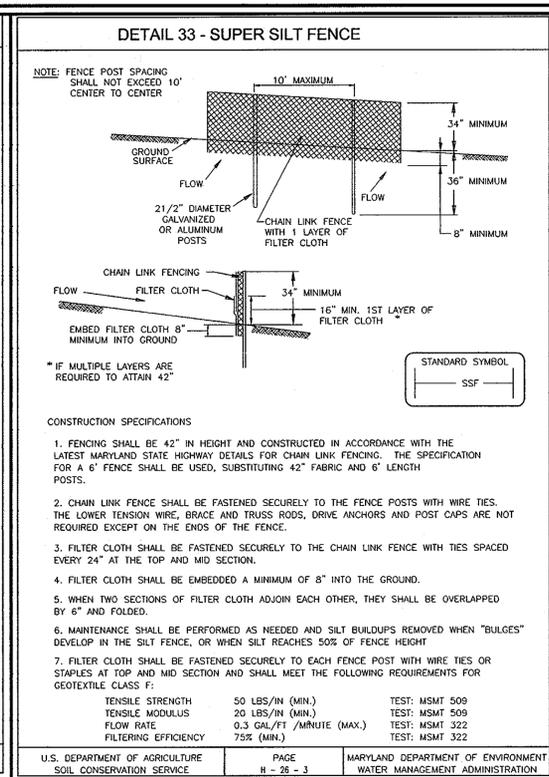
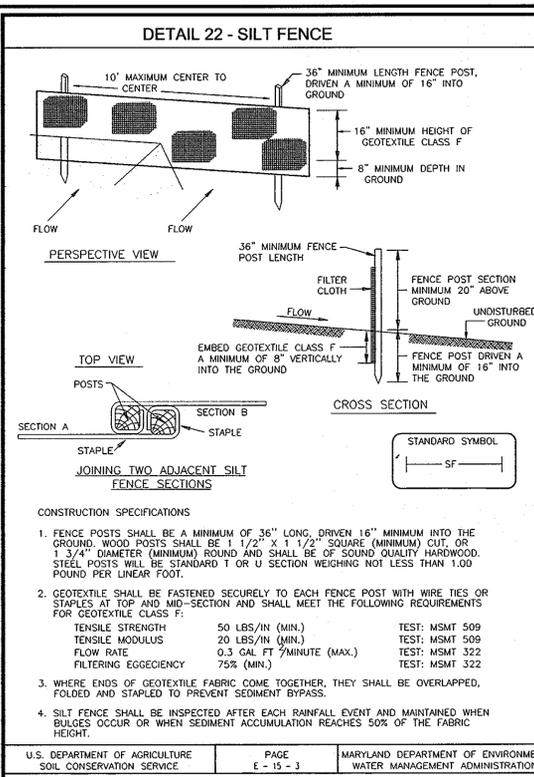
SIGNATURE OF DEVELOPER: [Signature] DATE: 3/5/10

BY THE ENGINEER:
 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: [Signature] DATE: 3/5/10

THIS DEVELOPMENT PLAN IS APPROVED FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD S.C.D. DATE: 3/5/10



SEQUENCE OF CONSTRUCTION		DURATION
PHASE I		
1. OBTAIN GRADING PERMIT. NOTIFY HOWARD COUNTY BUREAU OF INSPECTIONS AND PERMITS (313-1880) AT LEAST 24 HOURS BEFORE STARTING ANY WORK. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE.		1 DAY
2. INSTALL TREE PROTECTION FENCE AS SHOWN ON PLAN.		3 DAYS
3. CLEAR AND GRUB AS NECESSARY TO INSTALL CLEAN WATER DIKE AND SUPER-SILT FENCE ASSOCIATED WITH THE POND/BASIN. POND/BASIN #2 AND EROSION CONTROL BARRIERS SHOWN ON PLAN. CONSTRUCT STORM DRAIN HW-2 TO M-16 AND FS-2 TO T-6.		1 WEEK
4. WITH PERMISSION FROM SEDIMENT CONTROL INSPECTOR CONSTRUCT POND/BASIN #1 AND POND/BASIN #2 (ALL MATERIAL FOR POND/BASIN CONSTRUCTION MUST BE ON-SITE, AND PERMISSION FROM THE INSPECTOR GRANTED), BEFORE PROCEEDING. UPON COMPLETION, AND WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, CONSTRUCT ASSOCIATED EARTH DIKES TO DIRECT DRAINAGE TOWARDS BASINS.		3 WEEK
5. CONSTRUCT BALANCE OF EARTH DIKES AND DIRECT DRAINAGE TOWARDS INLETS.		1 WEEK
6. CONSTRUCT SD FROM I-14 TO M-12. STABILIZE AREA WITH ECM AND DIRECT OFFSITE DRAINAGE TOWARDS INLET I-14.		1 WEEK
7. PROVIDE DUST CONTROL WHERE NEEDED.		
PHASE II		
8. WITH WRITTEN PERMISSION FROM THE INSPECTOR, CLEAR GRUB AND GRADE THE REMAINDER OF SITE.		8 WEEKS
9. WITH WRITTEN PERMISSION OF THE INSPECTOR CONSTRUCT REMAINDER OF STORM DRAIN AND BEGIN CONSTRUCTION OF WATER AND SEWER SYSTEM.		4 WEEKS
10. GRADE ROADS TO SUB-BASE AND APPLY DUST CONTROL SPECIFICATIONS.		3 WEEKS
11. WITH ROAD GRADED TO SUB-BASE BEGIN CURB AND GUTTER CONSTRUCTION AND ROAD PAVING.		4 WEEKS
12. FINE GRADE SITE IN CONFORMANCE WITH PLAN.		2 WEEKS
13. WITH INSPECTOR APPROVAL AND FINAL ROAD PAVING COMPLETE STABILIZE ANY REMAINING DISTURBED AREAS.		2 WEEKS
14. WITH WRITTEN PERMISSION FROM THE INSPECTOR, CONVERT SEDIMENT BASINS TO FINAL STORMWATER MANAGEMENT FACILITIES AND REMOVE SEDIMENT CONTROL MEASURES.		2 DAYS
15. REMOVE ALL NEW AND OLD JUNK, TRASH, DEBRIS AND OTHER MAN-MADE OBJECTS FROM THE ENTIRE FOREST CONSERVATION EASEMENT, FLOODPLAIN, WETLANDS, STREAMS AND THEIR BUFFERS.		
	TOTAL	32 WEEKS

APPROVED: DEPARTMENT OF PUBLIC WORKS
 _____ DATE 5-17-10
 CHIEF, BUREAU OF HIGHWAYS

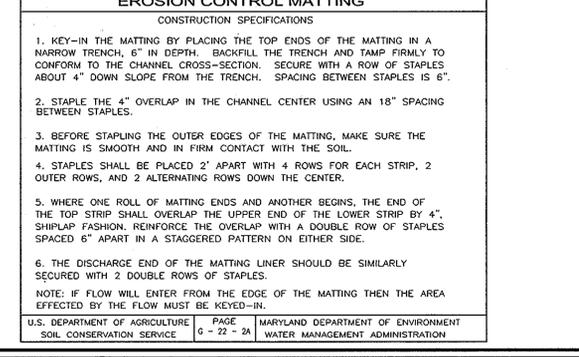
APPROVED: DEPARTMENT OF PLANNING AND ZONING
 _____ DATE 6/10/10
 CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
 _____ DATE 6/10/10
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

BY THE DEVELOPER:
 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.
 _____ DATE 3/31/10
 SIGNATURE OF DEVELOPER

BY THE ENGINEER:
 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.
 _____ DATE 3/31/10
 SIGNATURE OF ENGINEER

THIS DEVELOPMENT PLAN IS APPROVED FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
 _____ DATE 3/31/10
 HOWARD S.C.D.



OWNERS
 PARCEL 749, LOTS 3 & 4
 JERRICO, LLC
 5331 LANDING RD.
 ELKDRIDGE, MARYLAND
 21075-5717

DEVELOPER
 LAND DESIGN & DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE
 SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (443) 367-0422

FINAL ROAD CONSTRUCTION PLAN
GROVEMONT OVERLOOK-PHASE I
SEDIMENT & EROSION CONTROL DETAILS

LOTS 1-3, OPEN SPACE LOTS 4 & 6 & NON-BUILDABLE BULK PARCELS A, B, C, D, & E
 A RESUBDIVISION OF LOTS 3 & 4 OF THE LEGAL PROPERTY, PLAT 4857 (F-81-87) &
 A RESUBDIVISION OF LOT 1 OF THE GEEHHAAR PROPERTY, PLAT 5941 (F-84-214)

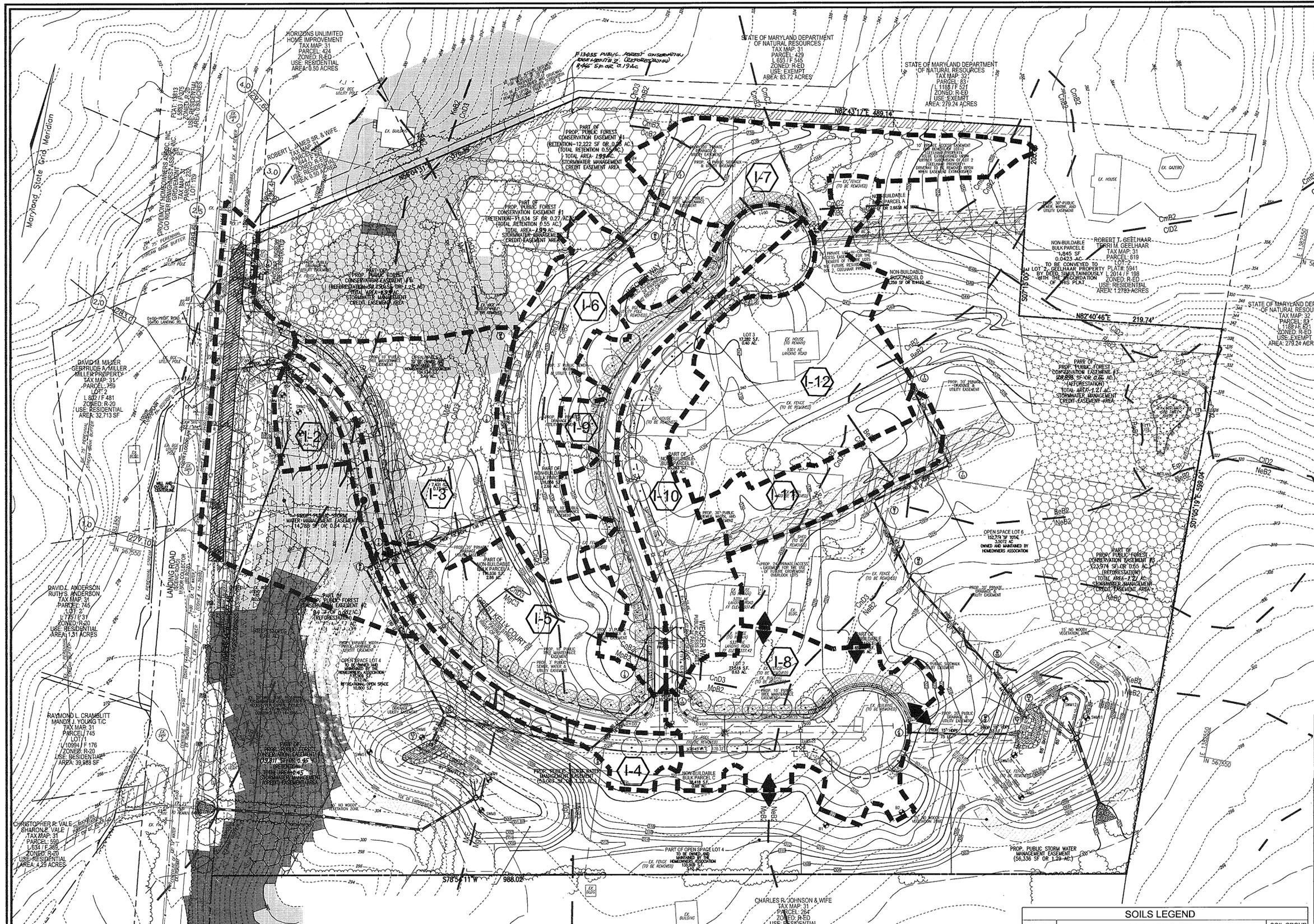
TAX MAP 31 BLOCK 24 PARCELS 749' & P/O 619'
 1ST ELECTION DISTRICT ZONED R-ED HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 8407 MAIN STREET TEL: 410.461.7866
 ELLICOTT CITY, MD 21043 FAX: 410.461.8966

PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A REPLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 08-27-2010

DESIGN BY: RHW
 DRAWN BY: JMR/JAR
 CHECKED BY: RHW
 DATE: JANUARY 2010
 SCALE: AS SHOWN
 W.O. NO.: 04-57

7 SHEET OF 16



LEGEND

---	RIGHT-OF-WAY	---	PROPOSED DRAINAGE AREA
---	BOUNDARY LINE	---	EXISTING 20' TEMPORARY EASEMENT FOR CONSTRUCTION
---	ADJACENT BOUNDARY LINE	---	EXISTING 10' TEMPORARY EASEMENT FOR CONSTRUCTION
---	EXISTING CENTERLINE STREAM	---	EXISTING 5' PUBLIC FOREST CONSERVATION EASEMENT
---	EXISTING STREAM BANK BUFFER	---	PROPOSED PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
---	EXISTING WETLANDS BUFFER	---	PROPOSED PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
---	EXISTING TRENCH	---	PROPOSED PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
---	EXISTING UTILITY POLE	---	PROPOSED PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
---	EXISTING WATER LINE	---	PROPOSED PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
---	EXISTING SEWER LINE	---	PROPOSED PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
---	EXISTING GAS LINE	---	PROPOSED PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
---	EXISTING OVERHEAD LINES	---	PROPOSED PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
---	EXISTING FENCE LINE	---	PROPOSED PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
---	EXISTING 2FT. CONTOUR	---	PROPOSED PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
---	EXISTING 10' CONTOUR	---	PROPOSED PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
---	EXISTING CURB LINE	---	PROPOSED PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
---	EXISTING EDGE OF PAVING	---	PROPOSED PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
---	EXISTING LIGHT POLE	---	PROPOSED PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
---	EXISTING MAILBOX	---	PROPOSED PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
---	EXISTING SANITARY CLEANOUT	---	PROPOSED PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
---	EXISTING FIRE HYDRANT	---	PROPOSED PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
---	EXISTING TREES	---	PROPOSED PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)

DRAINAGE AREA TABULATIONS

NO.	AREA	'C'	% IMP.	SOIL TYPE	ZONE
1-2	0.11 AC.	0.86	100%	C	R-ED
1-3	0.88 AC.	0.29	11%	C	R-ED
1-4	0.26 AC.	0.75	83%	B & C	R-ED
1-5	0.79 AC.	0.44	24%	B & C	R-ED
1-6	0.76 AC.	0.31	-	B & C	R-ED
1-7	0.68 AC.	0.29	-	B	R-ED
1-8	0.94 AC.	0.47	29%	B & C	R-ED
1-9	0.66 AC.	0.57	47%	B	R-ED
1-10	0.72 AC.	0.48	31%	B	R-ED
1-11	0.37 AC.	0.29	-	B	R-ED
1-12	1.09 AC.	0.31	-	B	R-ED
1-14	43.4 AC.	-	-	-	R-ED

OWNERS	OWNERS	DEVELOPER
PARCEL '619', LOT 2 HARRY F. GEELHAAR, JR. 5331 LANDING RD. ELK RIDGE, MARYLAND 21075-5717	PARCEL '749', LOTS 3 & 4 JERICHO, LLC DONALD REUVER 5331 LANDING RD. ELK RIDGE, MARYLAND 21075-5717	5300 DORSEY HALL DRIVE SUITE 102 ELICOTT CITY, MARYLAND 21042 ATTN: DONALD R. REUVER (410) 480-9105

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	SOIL GROUP
BcB2	Beltville silt loam, 1 to 5 percent slopes, moderately eroded	C
CID2	Chillum gravelly loam, 10 to 15 percent slopes, moderately eroded	B
CmB2	Chillum silt loam, 1 to 5 percent slopes, moderately eroded	B
CmC2	Chillum silt loam, 10 to 15 percent slopes, moderately eroded	B
CnB2	Chillum-Fairfax loams, 1 to 5 percent slopes, moderately eroded	B
CnD3	Chillum-Fairfax loams, 5 to 15 percent slopes, severely eroded	B
Em	Elkton silt loam	C/D
luB	luke loam, local alluvium, 1 to 5 percent slopes	C
KeB2	Kelly silt loam, 3 to 8 percent slopes, moderately eroded	D
MgC3	Manor gravelly loam, 8 to 15 percent slopes, moderately eroded	B
MpB2	Montalto silt loam, 3 to 8 percent slopes, moderately eroded	C
MrE	Montalto and Relay soils, 15 to 45 percent slopes	C
NeB2	Neshaminy silt loam, 3 to 8 percent slopes, moderately eroded	B

HOWARD COUNTY SOILS MAPS NO. 21 & 26

NO.	REVISION	DATE
1	REVISE FOREST CONSERVATION AREAS	1/15/13

**FINAL ROAD CONSTRUCTION PLAN
GROVEMONT OVERLOOK-PHASE I
STORM DRAIN DRAINAGE AREA MAP**

LOTS 1-3, OPEN SPACE LOTS 4-6 & NON-BUILDABLE BULK PARCELS A, B, C, D, & E
A RESUBDIVISION OF LOTS 3 & 4 OF THE LEGAL PROPERTY, PLAT 4857 (F-81-87) &
A RESUBDIVISION OF LOT 1 OF THE GEELHAAR PROPERTY, PLAT 5941 (F-84-214)

TAX MAP 31 BLOCK 24 ZONED R-ED PARCELS '749' & P/O '619'
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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EXPIRATION DATE: 08-27-2014.

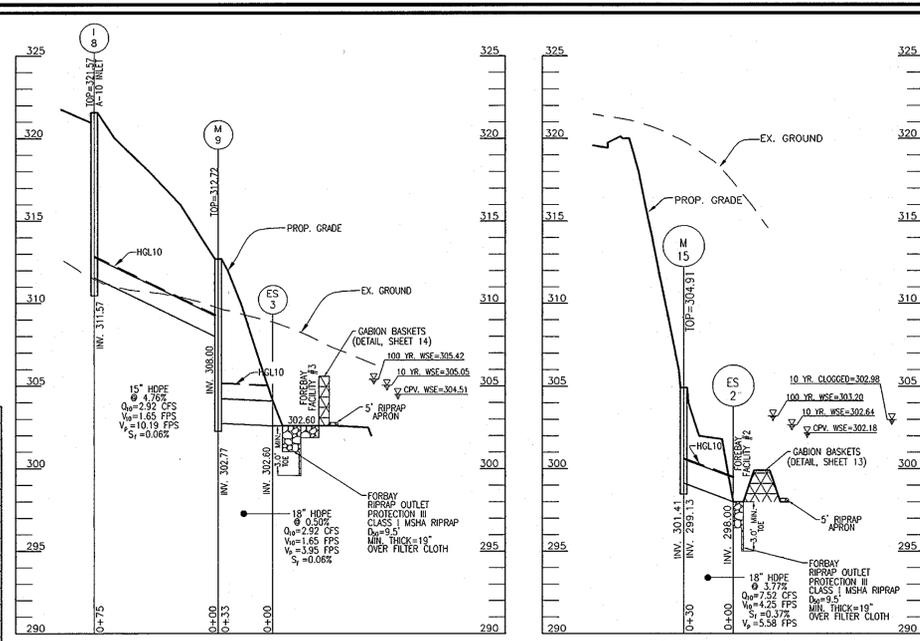
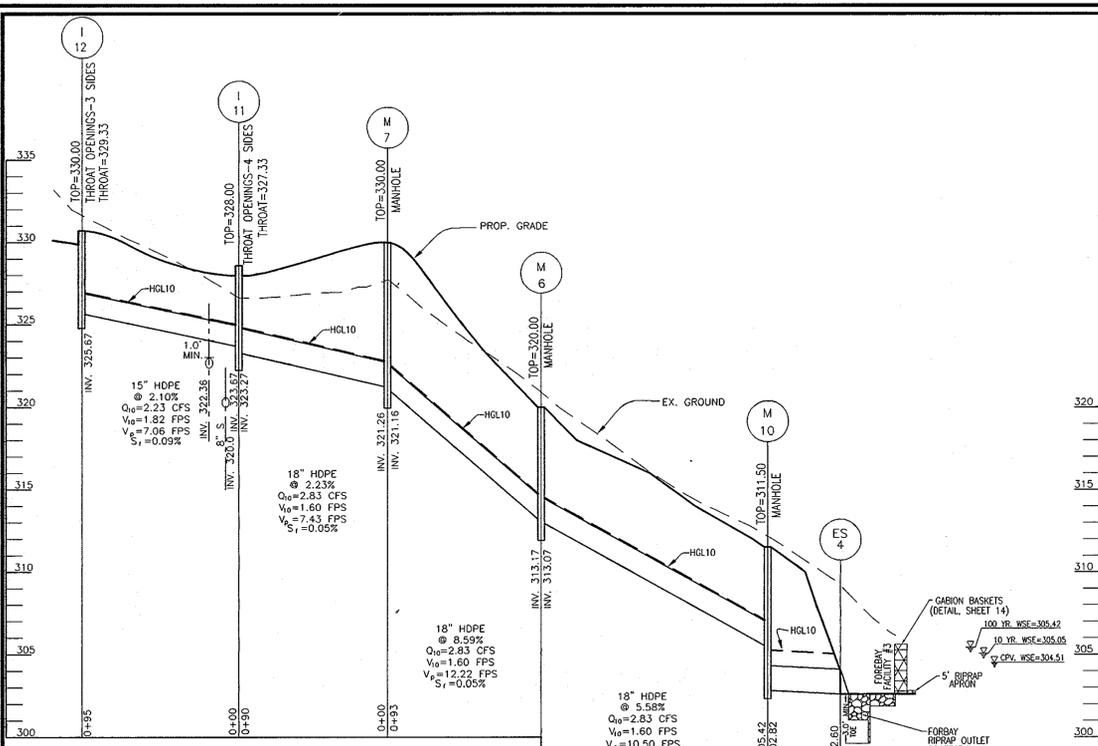
DESIGN BY: RHW
DRAWN BY: JMB/JAR
CHECKED BY: RHW
DATE: JANUARY 2010
SCALE: AS SHOWN
W.O. NO.: 04-57

9 SHEET OF 16

APPROVED: DEPARTMENT OF PUBLIC WORKS
Walter J. Mallon 5-17-10
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Vest Slade Linder 6/10/10
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Robert H. Vogel 6/10/10
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



STORM DRAIN MANHOLE SCHEDULE						
NO.	TYPE	LOCATION	TOP ELEV.	INV. IN	INV. OUT	COMMENTS
M-2	STANDARD 4' MANHOLE PRECAST	N 56757.37 E 1381621.38	307.10	302.60	302.10	HO. CO. DETAIL G-5-12
M-3	STANDARD 4' MANHOLE PRECAST	N 567675.49 E 1381770.83	323.00	315.29	315.19	HO. CO. DETAIL G-5-12
M-4	STANDARD 4' MANHOLE PRECAST	N 567852.10 E 1381732.85	326.00	318.83	318.73	HO. CO. DETAIL G-5-12
M-5	STANDARD 4' MANHOLE PRECAST	N 568008.94 E 1381853.23	331.00	325.26	325.01	HO. CO. DETAIL G-5-12
M-6	STANDARD 4' MANHOLE PRECAST	N 567681.32 E 1382199.11	320.00	313.17	313.07	HO. CO. DETAIL G-5-12
M-7	STANDARD 4' MANHOLE PRECAST	N 567754.13 E 1382145.71	330.00	323.28	323.18	HO. CO. DETAIL G-5-12
M-8	STANDARD 4' MANHOLE PRECAST	N 567431.85 E 1381896.90	325.80	319.49	319.49	HO. CO. DETAIL G-5-12
M-9	STANDARD 4' MANHOLE PRECAST	N 567526.62 E 1382302.70	312.72	308.00	307.77	HO. CO. DETAIL G-5-12
M-10	STANDARD 4' MANHOLE PRECAST	N 567597.91 E 1382307.36	311.50	305.42	305.22	HO. CO. DETAIL G-5-12
M-11	STANDARD 4' MANHOLE PRECAST	N 567294.94 E 1381541.71	276.00	284.88	284.78	HO. CO. DETAIL G-5-12
M-12	STANDARD 4' MANHOLE PRECAST	N 567858.84 E 1381422.24	291.26	287.00	287.00	REMOVE EXISTING INLET AND REPAIR CONSTRUCT OVER AND CONNECT TO EX. 18" RCP
M-13	STANDARD 4' MANHOLE PRECAST	N 567305.27 E 1381622.70	300.00	291.67	291.57	HO. CO. DETAIL G-5-12
M-14	STANDARD 4' MANHOLE PRECAST	N 567759.23 E 1381432.76	286.48	283.25	283.15	HO. CO. DETAIL G-5-12 - SHALLOW MANHOLE
M-15	STANDARD 4' MANHOLE PRECAST	N 567437.77 E 1381735.27	304.91	3.013	299.13	HO. CO. DETAIL G-5-12 - SHALLOW MANHOLE CONSTRUCT OVER AND CONNECT TO EX. 18" RCP
M-16	STANDARD 4' MANHOLE PRECAST	N 567311.14 E 1381733.89	303.00	295.66	295.56	HO. CO. DETAIL G-5-12

INLET SCHEDULE						
NO.	TYPE	LOCATION	TOP ELEV.	INV. IN	INV. OUT	COMMENTS
I-2	TYPE 'A-10' INLET	CL ROAD 'A' STA 0+86.13 12' RT	290.54	287.20	290.53	HO. CO. DETAIL D-4-03 - FLOW SPLITTER
I-3	TYPE 'A-10' INLET	CL ROAD 'A' STA 0+86.13 12' LT	290.54	287.40	290.52	HO. CO. DETAIL D-4-03
I-4	TYPE 'A-10' INLET	CL ROAD 'A' STA 3+42.05 12' RT	309.58	305.15	308.98	HO. CO. DETAIL D-4-03
I-5	TYPE 'A-10' INLET	CL ROAD 'A' STA 3+41.67 12' LT	309.58	305.50	308.98	HO. CO. DETAIL D-4-03
I-6	TYPE 'D' INLET	N 567780.08 E 1381732.71	322.00	315.83	321.33	HO. CO. DETAIL D-4-10
I-7	TYPE 'D' INLET	N 568060.95 E 1381857.20	332.00	327.20	331.33	HO. CO. DETAIL D-4-10
I-8	TYPE 'A-10' INLET	LINEAR PROFILE ROAD 'A' STA 1+46.11	317.57	311.57	320.97	HO. CO. DETAIL D-4-03
I-9	TYPE 'A-10' INLET	CL ROAD 'B' STA 0+43.48 12' LT	327.69	323.06	327.69	HO. CO. DETAIL D-4-03
I-10	TYPE 'A-10' INLET	CL ROAD 'B' STA 0+43.48 12' RT	327.69	323.17	327.69	HO. CO. DETAIL D-4-03
I-11	TYPE 'D' INLET	N 567807.77 E 1382218.96	328.00	323.67	327.33	HO. CO. DETAIL D-4-10 - THROAT ON FOUR SIDES
I-12	TYPE 'D' INLET	N 567887.51 E 1382199.58	330.00	325.67	329.33	HO. CO. DETAIL D-4-10 - THROAT ON THREE SIDES
I-14	TYPE 'X' INLET	N 567866.31 E 1381449.98	290.35	287.40	289.85	HO. CO. DETAIL D-4-12 - L=5'

TOP ELEVATION IS CL OF INLET AT TOP OF CURB FOR TYPE 'A' INLETS AND TOP OF SLAB FOR 'D' INLETS

STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'

STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'

STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
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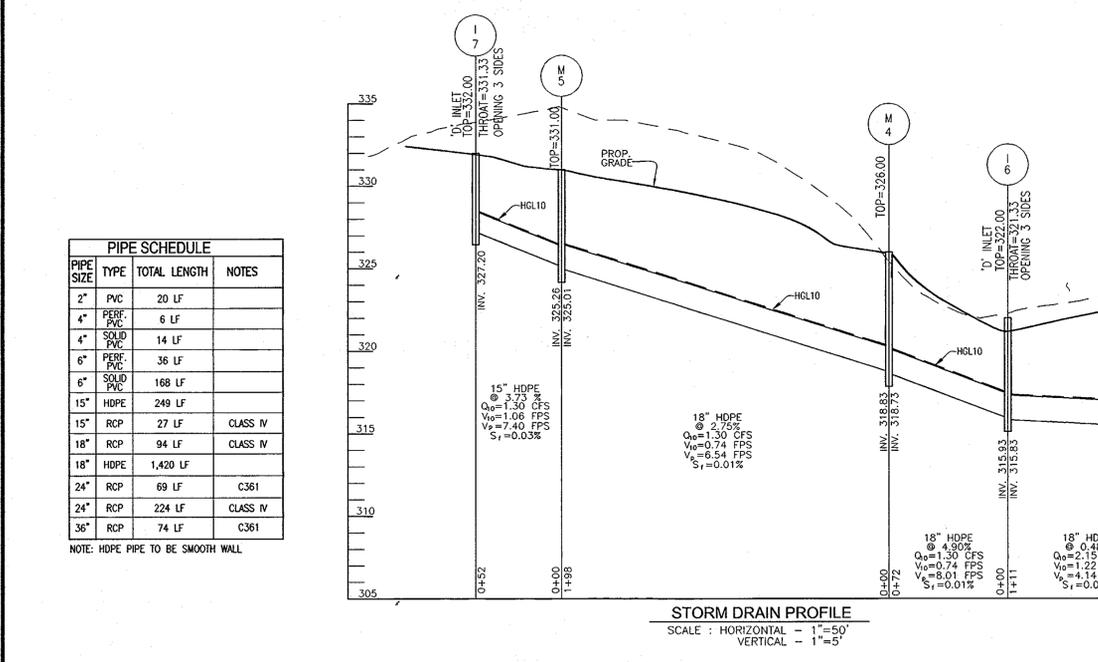
STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'

STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'

STRUCTURE SCHEDULE						
NO.	TYPE	LOCATION	TOP ELEV.	INV. IN	INV. OUT	COMMENTS
CS-2	CONTROL STRUCTURE	N 567356.46 E 1381785.20	304.13	300.00	300.00	SEE DETAILS SHEET 13
CS-3	CONTROL STRUCTURE	N 567543.66 E 1382410.41	307.13	303.00	303.00	SEE DETAILS SHEET 14
ES-2	18" END SECTION	N 567408.62 E 1381727.55	299.50	298.00	298.00	HOPE PIPE
ES-3	18" END SECTION	N 567533.66 E 1382334.70	304.10	302.60	302.60	HOPE PIPE
ES-4	18" END SECTION	N 567566.96 E 1382330.25	304.10	302.60	302.60	HOPE PIPE
HW-1	TYPE 'C' HEADWALL-12"	N 567758.96 E 1381498.90	289.04	288.54	288.54	HO. CO. DETAIL D-5-21 - 12"
HW-2	TYPE 'X' HEADWALL-24"	N 567291.15 E 1381510.47	289.13	284.63	284.63	HO. CO. DETAIL D-5-11 - 24"
HW-3	TYPE 'X' HEADWALL-36"	N 567479.55 E 1382447.69	303.50	299.00	299.00	HO. CO. DETAIL D-5-11 - 36"

PIPE SCHEDULE			
PIPE SIZE	TYPE	TOTAL LENGTH	NOTES
2"	PVC	20 LF	
4"	PERF. PVC	6 LF	
4"	SOLID PVC	14 LF	
6"	PERF. PVC	36 LF	
6"	SOLID PVC	168 LF	
15"	HDPE	249 LF	CLASS IV
15"	RCP	27 LF	CLASS IV
18"	RCP	94 LF	CLASS IV
18"	HDPE	1,420 LF	
24"	RCP	69 LF	C361
24"	RCP	224 LF	CLASS IV
36"	RCP	74 LF	C361

NOTE: HDPE PIPE TO BE SMOOTH WALL



STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'

STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'

STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
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STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'

APPROVED: DEPARTMENT OF PUBLIC WORKS
DATE: 5-17-10
APPROVED: DEPARTMENT OF PLANNING AND ZONING
DATE: 6/10/10

BY THE DEVELOPER:
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.

BY THE ENGINEER:
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.

THIS DEVELOPMENT PLAN IS APPROVED FOR SMALL POND CONSTRUCTION; SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

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NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN
GROVEMONT OVERLOOK-PHASE I
STORM DRAIN PROFILES

LOTS 1-3, OPEN SPACE LOTS 4-6 & NON-BUILDABLE BULK PARCELS A, B, C, D, & E
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1ST ELECTION DISTRICT ZONED R-ED HOWARD COUNTY, MARYLAND

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DESIGN BY: RHW
DRAWN BY: JMR/JAR
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DATE: JANUARY 2010
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W.O. NO.: 04-57

10 SHEET OF 16

**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 ASHTO 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 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 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 ASHTO 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 or other man on the plans. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24" or greater over the structure or pipe.

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. In addition, the core shall be placed concurrently with the outer shell of the embankment.

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 operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24" or greater over the structure or pipe.

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 2000 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 flooding 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 a 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:

- 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 ASHTO 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 ASHTO 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 ASHTO 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.

**OPERATION AND MAINTENANCE SCHEDULE FOR
STORMWATER MANAGEMENT
EXTENDED DETENTION FACILITY**

- STORMWATER MANAGEMENT FACILITY
- ROUTINE MAINTENANCE (HOA)
- FACILITY WILL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHOULD BE PERFORMED DURING WET WEATHER TO DETERMINE IF IT IS 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.
- NON-ROUTINE MAINTENANCE (HOWARD COUNTY)
- STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE RISER, AND THE PIPES SHALL BE REPAIRED UPON DETERMINATION OF ANY DAMAGE. THE COMPONENTS SHOULD 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.

POND BOTTOM SOIL CONDITIONS

If broken rock fragments are encountered at finished pond bottom, under cut a minimum of 12" below basin grade and to a horizontal distance of at least 18" beyond each edge of the broken rock and backfill with fine-grained ML or CL soils compacted to a firm condition. This procedure should be performed under the supervision of the project Geotechnical Engineer.

OPERATION, MAINTENANCE AND INSPECTION

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

**OPERATION AND MAINTENANCE SCHEDULE
FOR PRIVATELY OWNED AND MAINTAINED
STORMWATER INFILTRATION TRENCHES**

- THE MONITORING WELLS AND STRUCTURES SHALL BE INSPECTED ON A QUARTERLY BASIS AND AFTER EVERY LARGE STORM EVENT.
- WATER LEVELS AND SEDIMENT BUILD UP IN THE MONITORING WELLS SHALL BE RECORDED OVER A PERIOD OF SEVERAL DAYS TO INSURE TRENCH DRAINAGE.
- A LOGBOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
- WHEN THE FACILITY BECOMES CLOGGED SO THAT IT DOES NOT DRAIN DOWN WITHIN THE 24 HOUR TIME PERIOD, CORRECTIVE ACTION SHALL BE TAKEN.
- THE MAINTENANCE LOGBOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.
- ONCE THE PERFORMANCE CHARACTERISTICS OF THE INFILTRATION FACILITY HAVE BEEN VERIFIED, THE MONITORING SCHEDULE CAN BE REDUCED TO AN ANNUAL BASIS UNLESS THE PERFORMANCE DATA INDICATES THAT A MORE FREQUENT SCHEDULE IS REQUIRED.

DEWATERING STRATEGY

Dewatering refers to the act of removing and discharging water from excavated areas on construction sites or from sediment traps or basins on construction sites. Standards and specifications for dewatering practices follow:

These standards apply to removal and discharge of water from any excavated area or sediment trap or basin of any construction site. Given the unique conditions of any particular construction site, any or all of the practices may apply. Regardless of the applicability of the practices listed herein, operators are required to use acceptable procedures for maintenance and dewatering. In all cases, every effort shall be made to eliminate sediment pollution associated with dewatering.

Designers shall specify the preferred procedures for dewatering on plans. In particular, designers should identify procedures for dewatering sediment traps and basins prior to installation of the last sediment control facility on the site or prior to construction of sediment control facilities for stormwater management facilities. Recommended procedures shall be consistent with these standards. Atypical site conditions may require innovative dewatering designs. Dewatering measures not referenced in this standard may be used with the consent of the approval authority.

Dewatering of Excavated Areas

- Designers shall specify on plans, and in sequences of construction included on plans, practices for dewatering of excavated areas. Plan reviewers shall check to see that procedures for dewatering are included on plans.
- In all cases, water removed from excavated areas shall be discharged such that it shall pass through a sediment control device prior to entering receiving waters. Sediment control devices include sediment traps and basins, in addition to the practices in this section.

Approved Practices for Dewatering of Excavated Areas

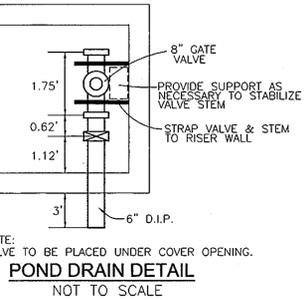
- Pumping of water to an existing sediment basin or trap in which the entire volume of water from the area to be dewatered can be contained without discharge to receiving waters.
- Pumping of water to an existing sediment basin or trap such that the entire volume of water from the area to be dewatered can be managed without exceeding the design volume of the sediment control structure.
- Removable Pumping Station? Standards and specifications for Removable Pumping Station are on Detail 20A.
- Use of a Sump Pit: Standards and specifications for a sump pit are on Detail 20B.
- Sediment Trap: Standards and specifications for a sump pit are on Detail 21.

Dewatering of Sediment Traps and Basins

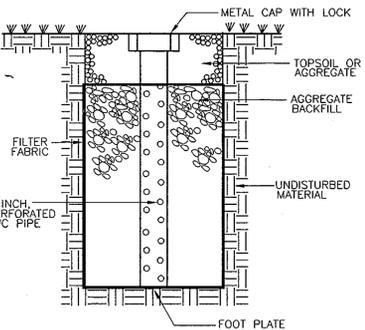
Designers shall specify on plans, and in sequences of construction included on plans, the practices for dewatering of traps and basins. Plan reviewers shall check to see that procedures for dewatering to be used are included on plans. In all cases, water removed from traps and basins shall be discharged so that it passes through a sediment control device prior to entering receiving waters.

Approved Practices for Dewatering of Traps and Basins

- Removable pumping station.
- Use of a Sump Pit.
- Use of a floating suction hose to pump the clearer water from the top of the pond. As the clearer water is pumped the suction hose will lower and eventually excavate the bottom water. When this happens the pumping operation will cease. Provisions shall be made to filter water.



NOTE: VALVE TO BE PLACED UNDER COVER OPENING.
POND DRAIN DETAIL
NOT TO SCALE



OBSERVATION WELL DETAIL
NOT TO SCALE

Cpv SUMMARY TABLES
SUMMARY TABLE AREA A (SITE)

DA. A	REQUIREMENT	VOLUME REQUIREMENT W/O CREDITS	CREDITS	VOLUME REQUIREMENT AFTER CREDITS	NOTES
1.96AC	CHANNEL PROTECTION VOLUME CPV	6538 CF	N/A	0	POCKET POND
2	OVERHEAD FLOOD PROTECTION, Q10P	N/A	N/A	N/A	
3	EXTREME FLOOD VOLUME, Q100P	N/A	N/A	N/A	

NOTE: Cpv + Wqv PROVIDED IN POCKET POND. Rev PROVIDED IN GRAVEL TRENCH DRAINAGE AREA 'A' INCLUDES POSSIBLE FUTURE PARKING LOT EXPANSION.

SUMMARY TABLE AREA A1 (SITE)

DA. A1	REQUIREMENT	VOLUME REQUIREMENT W/O CREDITS	CREDITS	VOLUME REQUIREMENT AFTER CREDITS	NOTES
0.45AC	CHANNEL PROTECTION VOLUME CPV	N/A	N/A	N/A	Q < 2.0 CFS (0.1 CFS)
1	CHANNEL PROTECTION VOLUME CPV	N/A	N/A	N/A	
2	OVERHEAD FLOOD PROTECTION, Q10P	N/A	N/A	N/A	
3	EXTREME FLOOD VOLUME, Q100P	N/A	N/A	N/A	

NOTE: NO IMPERVIOUS DRAINAGE AREA. NO WQV, Rev OR Cpv PROVIDED.

SUMMARY TABLE AREA B (SITE)

DA. B	REQUIREMENT	VOLUME REQUIREMENT W/O CREDITS	CREDITS	VOLUME REQUIREMENT	NOTES
5.28AC	CHANNEL PROTECTION VOLUME CPV	10023 CF	0	10023	POCKET POND
1	CHANNEL PROTECTION VOLUME CPV	N/A	N/A	N/A	
2	OVERHEAD FLOOD PROTECTION, Q10P	N/A	N/A	N/A	
3	EXTREME FLOOD VOLUME, Q100P	N/A	N/A	N/A	

NOTE: Cpv + WQv PROVIDED IN POCKET POND. Rev PROVIDED IN GRAVEL TRENCH

SUMMARY TABLE AREA B1 (SITE)

DA. B1	REQUIREMENT	VOLUME REQUIREMENT	CREDITS	VOLUME REQUIREMENT	NOTES
1.03AC	CHANNEL PROTECTION VOLUME CPV	N/A	N/A	N/A	Q < 2.0 CFS (0.40 CFS)
1	CHANNEL PROTECTION VOLUME CPV	N/A	N/A	N/A	
2	OVERHEAD FLOOD PROTECTION, Q10P	N/A	N/A	N/A	
3	EXTREME FLOOD VOLUME, Q100P	N/A	N/A	N/A	

NOTE: NO IMPERVIOUS DRAINAGE AREA. NO WQV, Rev OR Cpv PROVIDED.

SUMMARY TABLE AREA C (SITE)

DA. C	REQUIREMENT	VOLUME REQUIREMENT W/O CREDITS	CREDITS	VOLUME REQUIREMENT	NOTES
0.41AC	CHANNEL PROTECTION VOLUME CPV	N/A	N/A	N/A	Q < 2.0 CFS (0.07 CFS)
1	CHANNEL PROTECTION VOLUME CPV	N/A	N/A	N/A	
2	OVERHEAD FLOOD PROTECTION, Q10P	N/A	N/A	N/A	
3	EXTREME FLOOD VOLUME, Q100P	N/A	N/A	N/A	

NOTE: NO IMPERVIOUS DRAINAGE AREA. NO WQV, Rev OR Cpv PROVIDED.

WQv & Rev SUMMARY TABLES
SUMMARY TABLE AREA A (SITE)

DA. A	REQUIREMENT	VOLUME REQUIREMENT W/O CREDITS	CREDITS	VOLUME REQUIREMENT AFTER CREDITS	NOTES
2.41AC	WATER QUALITY VOLUME WQV	4256 CF	0	4256 CF	50% IN MICROPOOL 50% IN Cpv
1	WATER QUALITY VOLUME WQV	4256 CF	0	4256 CF	
2	RECHARGE VOLUME REV	902 CF	0	902 CF	GRAVEL TRENCH

NOTE: Cpv + WQV PROVIDED IN POCKET POND. Rev PROVIDED IN GRAVEL TRENCH DRAINAGE AREA 'A' INCLUDES POSSIBLE FUTURE PARKING LOT EXPANSION.

SUMMARY TABLE AREA B (SITE)

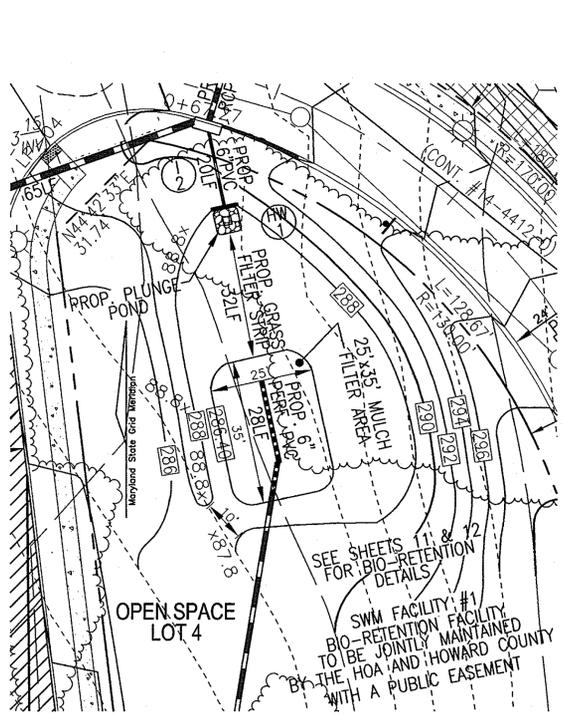
DA. B	REQUIREMENT	VOLUME REQUIREMENT W/O CREDITS	CREDITS	VOLUME REQUIREMENT AFTER CREDITS	NOTES
7.09AC	WATER QUALITY VOLUME WQV	8467 CF	0	8467 CF	50% IN MICROPOOL 50% IN Cpv
1	WATER QUALITY VOLUME WQV	8467 CF	0	8467 CF	
2	RECHARGE VOLUME REV	2087 CF	0	2087 CF	GRAVEL TRENCH

NOTE: Cpv + WQV PROVIDED IN POCKET POND. Rev PROVIDED IN GRAVEL TRENCH

SUMMARY TABLE AREA C (SITE)

DA. C	REQUIREMENT	VOLUME REQUIREMENT W/O CREDITS	CREDITS	VOLUME REQUIREMENT AFTER CREDITS	NOTES
0.41AC	WATER QUALITY VOLUME WQV	74 CF	0	74 CF	NO IMPERVIOUS
1	WATER QUALITY VOLUME WQV	74 CF	0	74 CF	
2	RECHARGE VOLUME REV	0	0	0	NO IMPERVIOUS

NOTE: NO IMPERVIOUS DRAINAGE AREA. NO WQV, Rev OR Cpv PROVIDED.



BIORETENTION DETAIL
SWM FACILITY #1
SCALE: 1"=20'

OWNERS
PARCEL 7749, LOTS 3 & 4
JERICHO, LLC
DONALD REUWER
5331 LANDING RD.
ELK RIDGE, MARYLAND
21075-5717
PARCEL '619', LOT 1
HARRY F. GEELHAAR, JR.
5301 LANDING RD.
ELK RIDGE, MARYLAND
21075-5717
DEVELOPER
LAND DESIGN & DEVELOPMENT, INC.
5300 DORSEY HALL DRIVE
SUITE 102
ELLICOTT CITY, MARYLAND 21042
(443) 367-0422

NO.	REVISION	DATE

**FINAL ROAD CONSTRUCTION PLAN
GROVEMONT OVERLOOK-PHASE I
STORMWATER MANAGEMENT NOTES AND DETAILS**

LOTS 1-3, OPEN SPACE LOTS 4-6 & NON-BUILDABLE BULK PARCELS A, B, C, D, & E
A RESUBDIVISION OF LOTS 3 & 4 OF THE LEGAL PROPERTY, PLAT 4857 (F-81-87) &
A RESUBDIVISION OF LOT 1 OF THE GEELHAAR PROPERTY, PLAT 5941 (F-84-214)

TAX MAP 31, BLOCK 24 PARCELS '749' & P/O '619'
1ST ELECTION DISTRICT ZONED R-ED HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET, SUITE 1043 ELLICOTT CITY, MD 21043
TEL: 410-481-7666 FAX: 410-481-1811

PROFESSIONAL CERTIFICATE
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. 16193
EXPIRATION DATE: 09-27-2010

DESIGN BY: RHW
DRAWN BY: JMW/JAR
CHECKED BY: RHW
DATE: JANUARY 2010
SCALE: AS SHOWN
W.O. NO.: 04-67

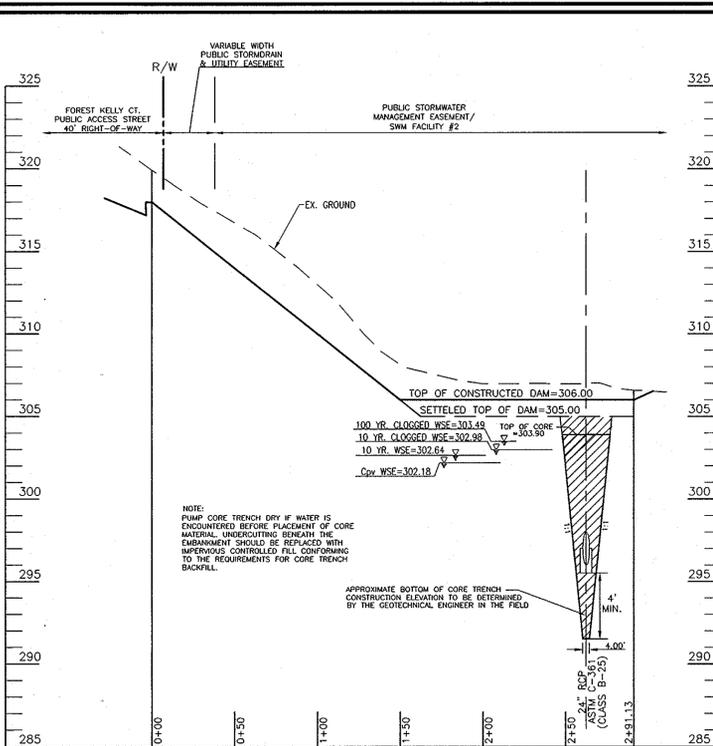
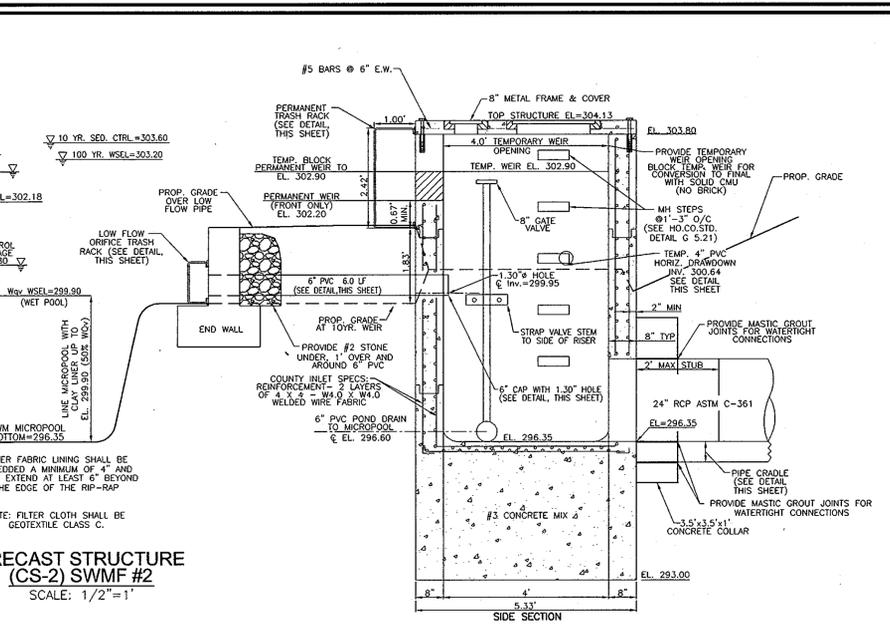
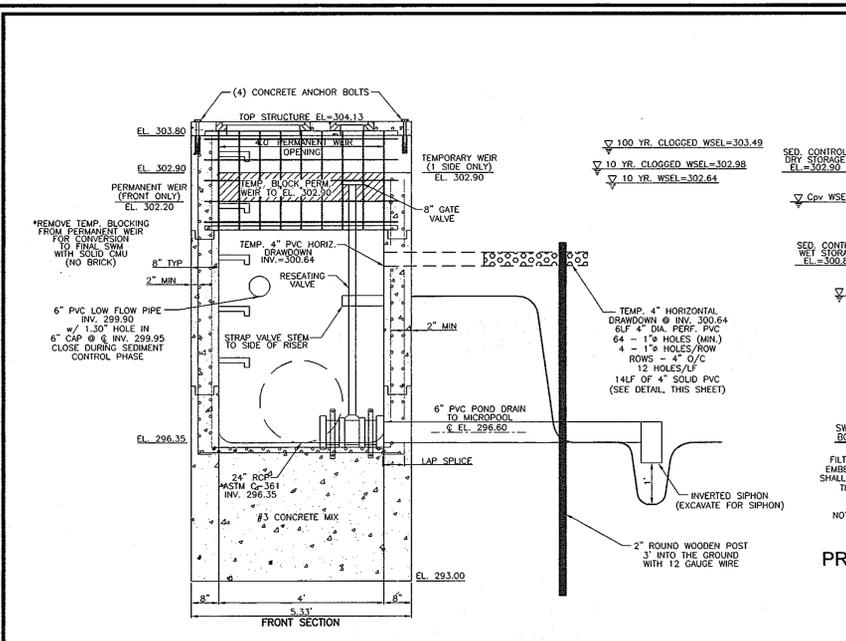
12 SHEET OF 16

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS DATE: 5-17-10
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT DATE: 6/14/10
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 6/10/10

BY THE DEVELOPER:
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 BEGINS BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE CONSTRUCTION AND PROVIDE THE HOWARD COUNTY SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.
SIGNATURE OF DEVELOPER DATE: 3/4/10

BY THE ENGINEER:
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 COUNTY SOIL CONSERVATION DISTRICT. I HAVE NOTICED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD COUNTY SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.
SIGNATURE OF ENGINEER DATE: 3/4/10

THIS DEVELOPMENT PLAN IS APPROVED FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.
HOWARD S.C.D. DATE: 5/5/10



EMBANKMENT AND CUT-OFF TRENCH CONSTRUCTION

AREAS OF SWM POND FACILITIES SHOULD BE STRIPPED OF TOPSOIL AND ANY OTHER UNSUITABLE MATERIALS FROM THE EMBANKMENT OR STRUCTURE AREAS IN ACCORDANCE WITH SOIL CONSERVATION GUIDELINES. AFTER STRIPPING OPERATIONS HAVE BEEN COMPLETED, THE EXPOSED SUBGRADE MATERIALS SHOULD BE PROTECTED WITH A LOADED DUMP TRUCK OR SIMILAR EQUIPMENT IN THE PRESENCE OF A GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE. FOR AREAS THAT ARE NOT ACCESSIBLE TO A DUMP TRUCK, THE EXPOSING MATERIALS SHOULD BE OBSERVED AND TESTED BY A GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE UTILIZING A DYNAMIC CONE PENETROMETER TESTING SHOULD BE EXCAVATED TO SUITABLE FIRM SOIL, AND THEN GRADES RE-ESTABLISHED BY BACKFILLING WITH SUITABLE SOIL.

A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER SHOULD BE PRESENT TO MONITOR PLACEMENT AND COMPACTION OF FILL FOR THE EMBANKMENT AND CUT-OFF TRENCH IN ACCORDANCE WITH NRCS-MD CODE NO. 378 POND STANDARDS / SPECIFICATIONS. SOILS CONSIDERED SUITABLE FOR THE CENTER OF EMBANKMENT AND CUT-OFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION CC, SC, CH, OR CL AND MUST HAVE AT LEAST 30% PASSING THE #200 SIEVE.

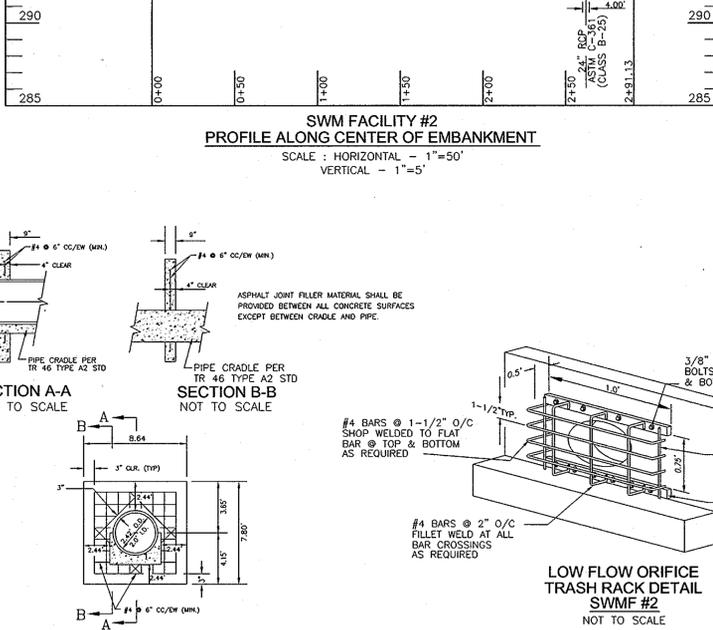
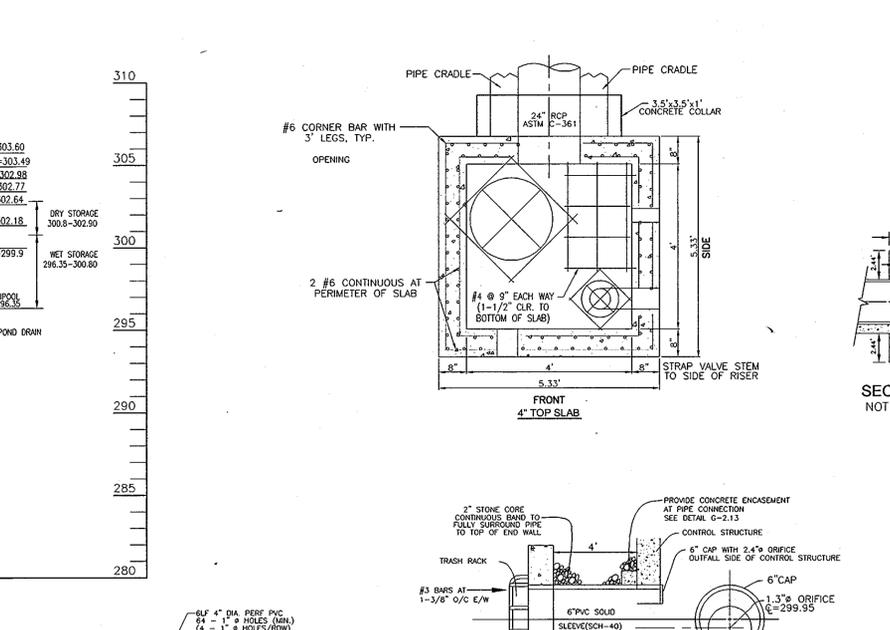
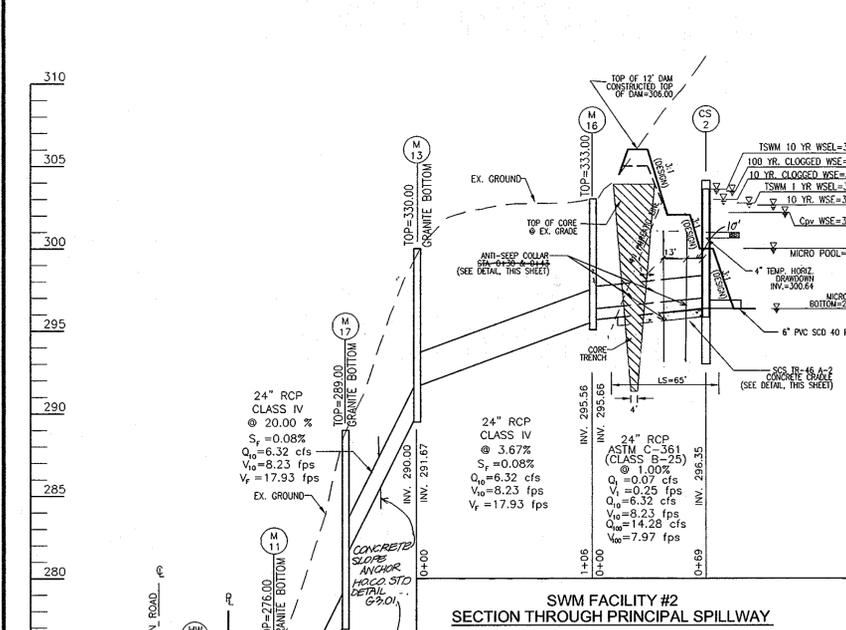
IT IS OUR PROFESSIONAL OPINION THAT IN ADDITION TO THE SOIL MATERIALS DESCRIBED ABOVE A FINE-GRAINED SOIL, INCLUDING SILT (ML) WITH A PLASTICITY INDEX OF 10 OR MORE CAN BE UTILIZED FOR THE CENTER OF THE EMBANKMENT AND CORE TRENCH. ALL FILL MATERIALS MUST BE PLACED AND COMPACTED IN ACCORDANCE WITH NRCS-MD CODE NO. 378 SPECIFICATIONS.

REMARKS

THE EVALUATIONS CONTAINED IN THIS REPORT ARE BASED ON OUR UNDERSTANDING OF THE PROPOSED CONSTRUCTION, THE DATA OBTAINED FROM OUR FIELD EXPLORATION, AND OUR EXPERIENCE WITH THE SOILS AND SUBSURFACE CONDITIONS IN THIS AREA. IF THERE ARE ANY CHANGES TO THE PROJECT CHARACTERISTICS, THIS OFFICE SHOULD BE ADVISED SO THAT THE EVALUATIONS MADE IN THIS REPORT MAY BE RE-EVALUATED.

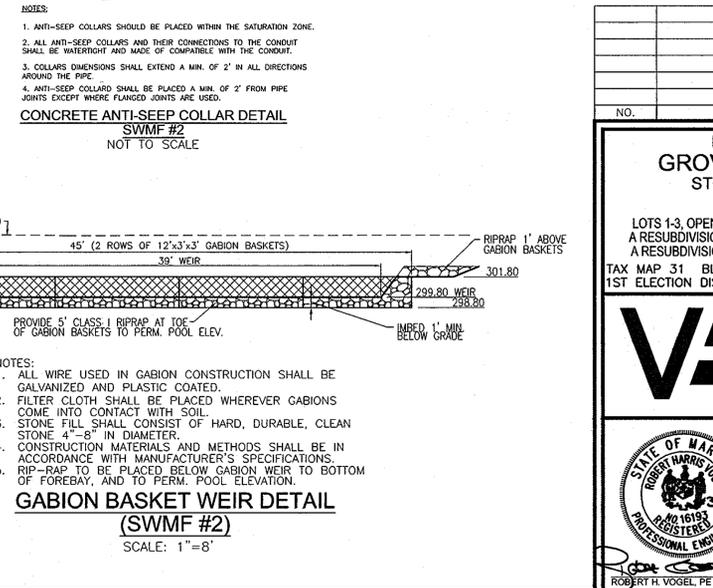
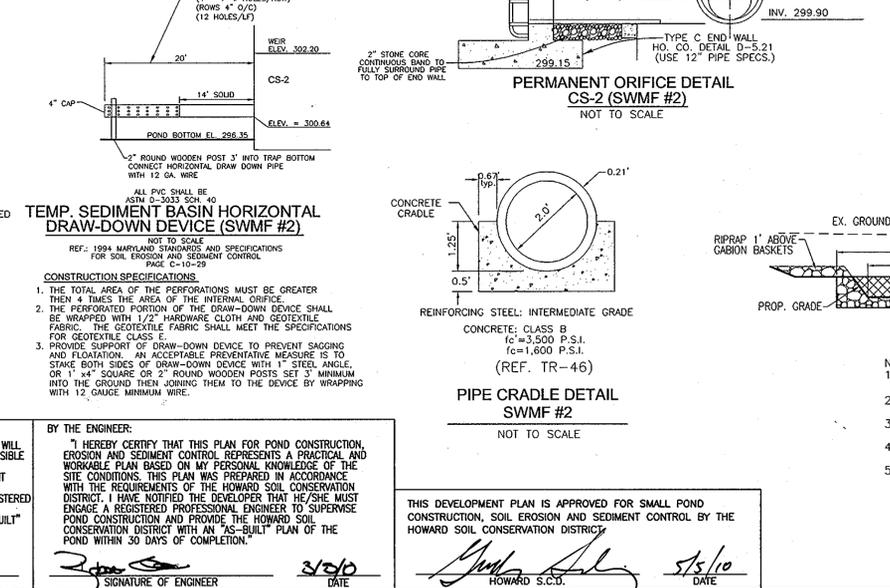
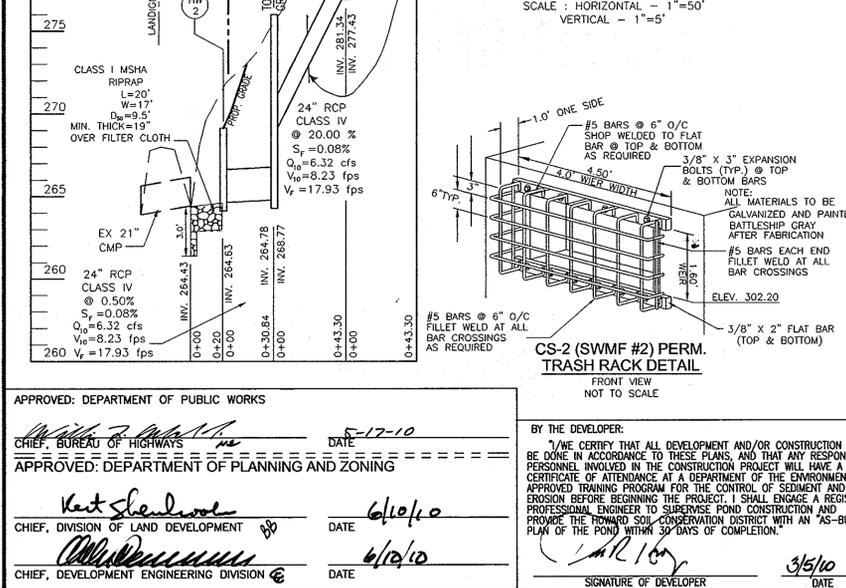
THE READER IS REFERRED TO THE RECORDS OF SOIL EXPLORATION IN THE APPENDIX FOR DETAILS RELATED TO THE SUBSURFACE CONDITIONS ENCOUNTERED IN THE BORINGS. IT SHOULD BE NOTED THAT STRATIFICATION LINES SHOWN ON THE RECORDS OF SOIL EXPLORATION REPRESENT APPROXIMATE TRANSITIONS BETWEEN MATERIAL TYPES. IN-SITU STRATA CHANGES COULD OCCUR GRADUALLY OR AT SLIGHTLY DIFFERENT LEVELS. ALSO, IT SHOULD BE NOTED THAT THE SOIL BORINGS DEPICT CONDITIONS AT THE PARTICULAR LOCATIONS AND AT THE PARTICULAR TIMES INDICATED. SOME CONDITIONS, PARTICULARLY GROUNDWATER CONDITIONS, COULD CHANGE WITH TIME.

WE APPRECIATE HAVING BEEN OF SERVICE TO YOU IN THE EXPLORATION OF THIS PROJECT AND WE ARE PLEASED TO ASSIST YOU DURING THE CONSTRUCTION PHASE AS WELL AS IF YOU HAVE ANY QUESTIONS CONCERNING THE CONTENTS OF THIS REPORT OR ANY OF OUR CONSULTING, DESIGN, TESTING, AND INSPECTION SERVICES, PLEASE CONTACT THIS OFFICE.



OWNERS
PARCEL 749, LOTS 3 & 4
JEFFRICO, LLC
5331 LANDING RD.
ELKDRIDGE, MARYLAND
21075-5717

DEVELOPER
LAND DESIGN & DEVELOPMENT, INC.
5300 DORSEY HALL DRIVE
SUITE 102
ELLCOTT CITY, MARYLAND 21042
(443) 367-0422



**FINAL ROAD CONSTRUCTION PLAN
GROVEMONT OVERLOOK-PHASE I
STORMWATER MANAGEMENT DETAILS
SWMF #2**

LOTS 1-3, OPEN SPACE LOTS 4-6 & NON-BUILDABLE BULK PARCELS A, B, C, D, & E
A RESUBDIVISION OF LOTS 3 & 4 OF THE LEGAL PROPERTY, PLAT 4857 (F-81-87) &
A RESUBDIVISION OF LOT 1 OF THE GEEHAR PROPERTY, PLAT 5941 (F-84-214)

TAX MAP 31 BLOCK 24 PARCELS 749' & P/O 619'
1ST ELECTION DISTRICT ZONED R-ED HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL
ENGINEERING, INC.**
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET TEL: 410.461.7966
ELLCOTT CITY, MD 21043 FAX: 410.461.8911

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS
WERE PREPARED OR APPROVED BY ME, AND
THAT I AM A FULLY LICENSED PROFESSIONAL
ENGINEER UNDER THE LAWS OF THE STATE
OF MARYLAND, LICENSE NO. 16183
EXPIRATION DATE: 06-27-2010

DESIGN BY: RHW
DRAWN BY: JMB/JAR
CHECKED BY: RHW
DATE: JANUARY 2010
SCALE: AS SHOWN
W.O. NO.: 04-57

13 SHEET OF 16

APPROVED: DEPARTMENT OF PUBLIC WORKS
DATE: 5-17-10

APPROVED: DEPARTMENT OF PLANNING AND ZONING
DATE: 6/10/10

CHIEF, DIVISION OF LAND DEVELOPMENT
DATE: 6/10/10

CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 6/10/10

BY THE DEVELOPER:
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.

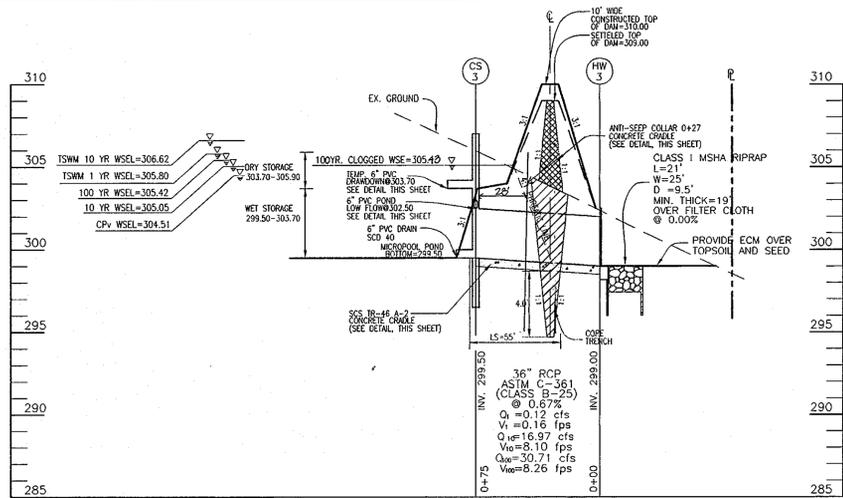
SIGNATURE OF DEVELOPER: [Signature]
DATE: 3/5/10

BY THE ENGINEER:
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.

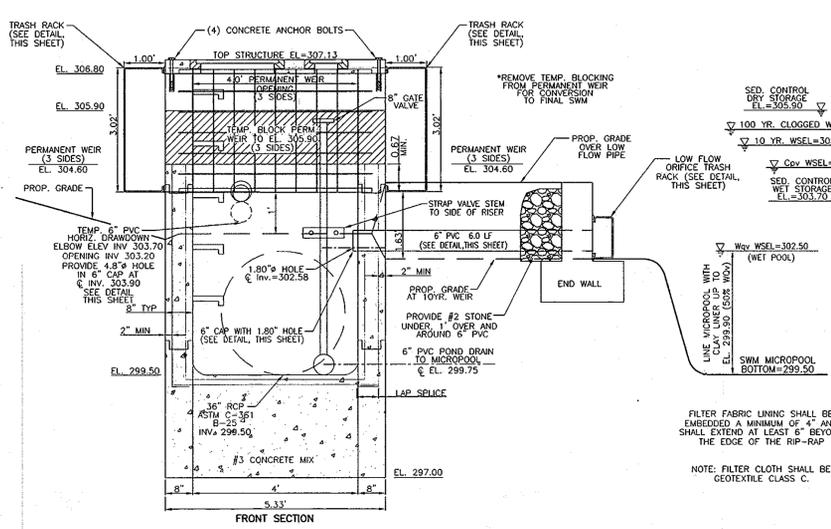
SIGNATURE OF ENGINEER: [Signature]
DATE: 3/5/10

THIS DEVELOPMENT PLAN IS APPROVED FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

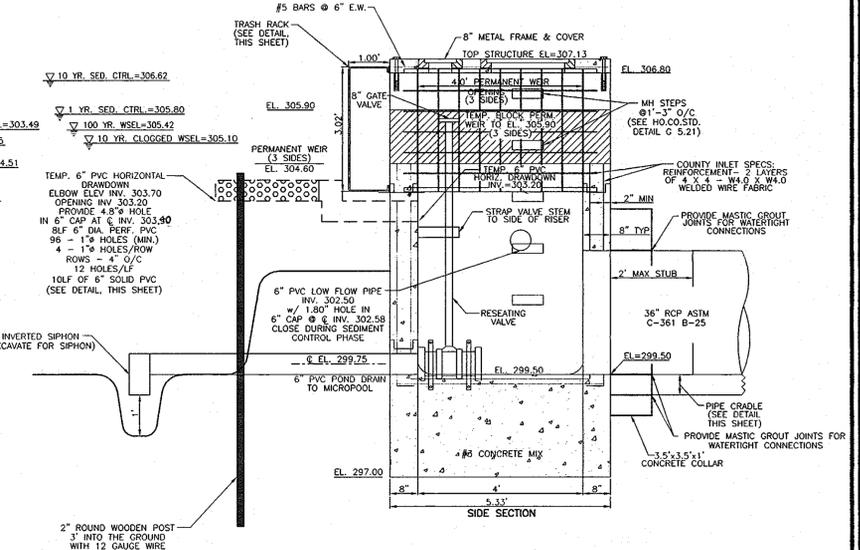
HOWARD S.C.D.
DATE: 3/5/10



**SWM FACILITY #3
SECTION THROUGH PRINCIPAL SPILLWAY**
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'

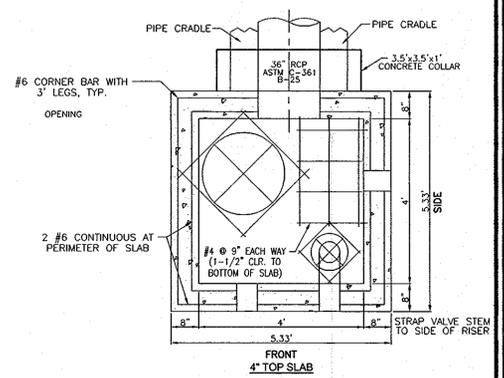
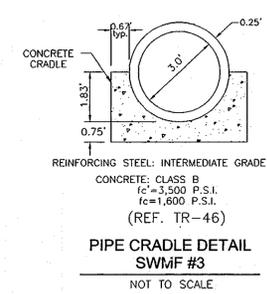


FRONT SECTION

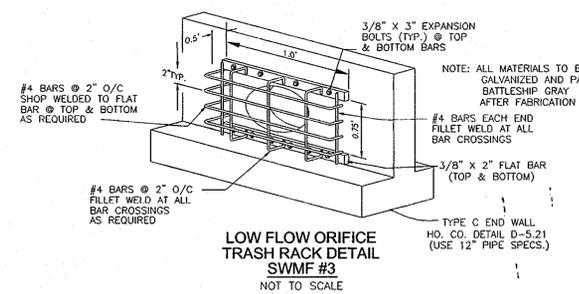


SIDE SECTION

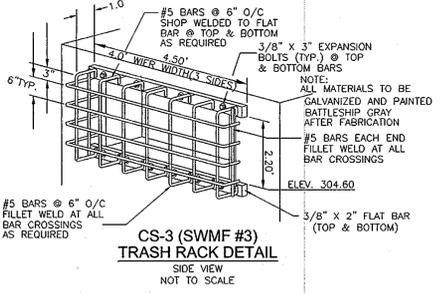
PRECAST STRUCTURE (CS-3) SWMF #3
SCALE: 1/2"=1'



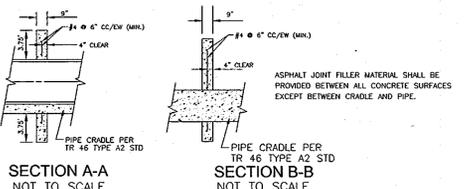
PRECAST STRUCTURE (CS-3) SWMF #3
SCALE: 1/2"=1'



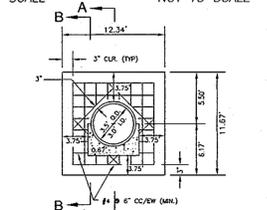
LOW FLOW ORIFICE TRASH RACK DETAIL SWMF #3
NOT TO SCALE



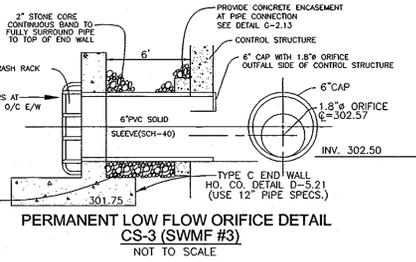
CS-3 (SWMF #3) TRASH RACK DETAIL
SIDE VIEW NOT TO SCALE



SECTION A-A NOT TO SCALE
SECTION B-B NOT TO SCALE

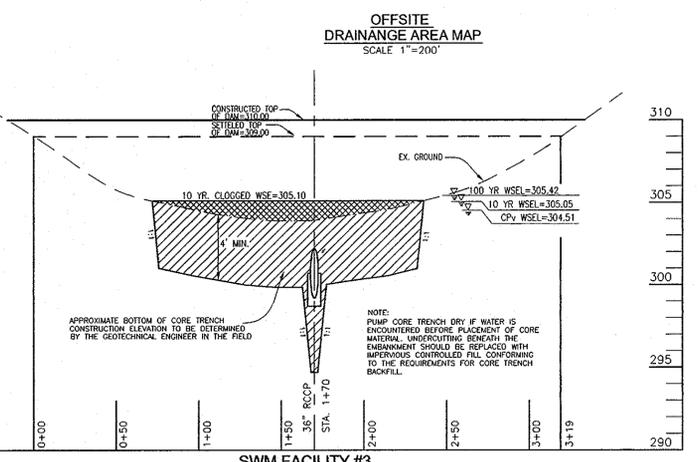


CONCRETE ANTI-SEEP COLLAR DETAIL SWMF #3
NOT TO SCALE

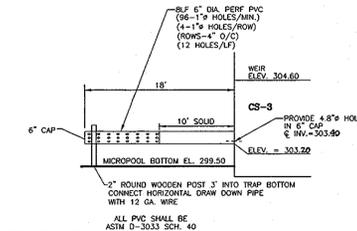


PERMANENT LOW FLOW ORIFICE DETAIL CS-3 (SWMF #3)
NOT TO SCALE

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

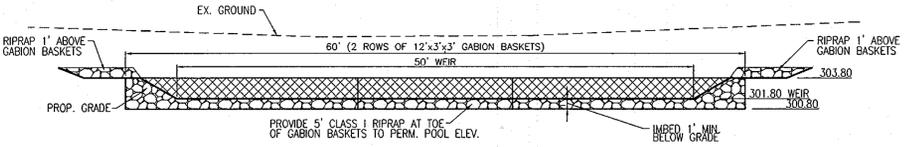


OFFSITE DRAINAGE AREA MAP
SCALE: 1"=200'



TEMP. SEDIMENT BASIN HORIZONTAL DRAW-DOWN DEVICE (SWMF #3)
NOT TO SCALE

- CONSTRUCTION SPECIFICATIONS:**
- THE TOTAL AREA OF THE PERFORATIONS MUST BE GREATER THAN 4 TIMES THE AREA OF THE INTERNAL ORIFICE.
 - THE PERFORATED PORTION OF THE DRAW-DOWN DEVICE SHALL BE WRAPPED WITH 1/2\"/>
 - PROVIDE SUPPORT OF DRAW-DOWN DEVICE TO PREVENT SAGGING AND FLOATION. AN ACCEPTABLE PREVENTATIVE MEASURE IS TO STAKE BOTH SIDES OF DRAW-DOWN DEVICE WITH 1\"/>



GABION BASKET WEIR DETAIL (SWMF #3)
SCALE: 1"=8'

- NOTES:**
- ALL WIRE USED IN GABION CONSTRUCTION SHALL BE GALVANIZED AND PLASTIC COATED.
 - FILTER CLOTH SHALL BE PLACED WHEREVER GABIONS COME INTO CONTACT WITH SOIL.
 - STONE FILL SHALL CONSIST OF HARD, DURABLE, CLEAN STONE 4\"/>
 - CONSTRUCTION MATERIALS AND METHODS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
 - RIP-RAP TO BE PLACED BELOW GABION WEIR TO BOTTOM OF FOREBAY, AND TO PERM. POOL ELEVATION.

OWNERS
PARCEL 749', LOTS 3 & 4
JERICHO, LLC
5331 LANDING RD.
ELKRDGE, MARYLAND
21075-5717

DEVELOPER
LAND DESIGN & DEVELOPMENT, INC.
5300 DORSEY HALL DRIVE
SUITE 102
ELLCOTT CITY, MARYLAND 21042
(410) 367-0422

NO.	REVISION	DATE

**FINAL ROAD CONSTRUCTION PLAN
GROVEMONT OVERLOOK-PHASE I
STORMWATER MANAGEMENT DETAILS & NOTES
SWMF #3**

LOTS 1-3, OPEN SPACE LOTS 4-6 & NON-BUILDABLE BULK PARCELS A, B, C, D, & E
A RESUBDIVISION OF LOTS 3 & 4 OF THE LEGAL PROPERTY, PLAT 4857 (F-81-87) &
A RESUBDIVISION OF LOT 1 OF THE GEEHHAAR PROPERTY, PLAT 5941 (F-84-214)

TAX MAP 31 BLOCK 24 PARCELS 749' & P/O 619'
1ST ELECTION DISTRICT ZONED R-ED HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL
ENGINEERING, INC.**
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLCOTT CITY, MD 21043
TEL: 410.481.8966
FAX: 410.481.8967

PROFESSIONAL CERTIFICATE
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. 16193
EXPIRATION DATE: 09-29-2010

DESIGN BY: RHW
DRAWN BY: JMR/JAR
CHECKED BY: RHW
DATE: JANUARY 2010
SCALE: AS SHOWN
W.O. NO.: 04-57

14 SHEET OF 16

APPROVED: DEPARTMENT OF PUBLIC WORKS
DATE: 5-17-10

APPROVED: DEPARTMENT OF PLANNING AND ZONING
DATE: 6/10/10

APPROVED: DEPARTMENT OF LAND DEVELOPMENT
DATE: 6/10/10

APPROVED: DEPARTMENT OF DEVELOPMENT ENGINEERING DIVISION
DATE: 6/10/10

BY THE DEVELOPER:
I HEREBY 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.

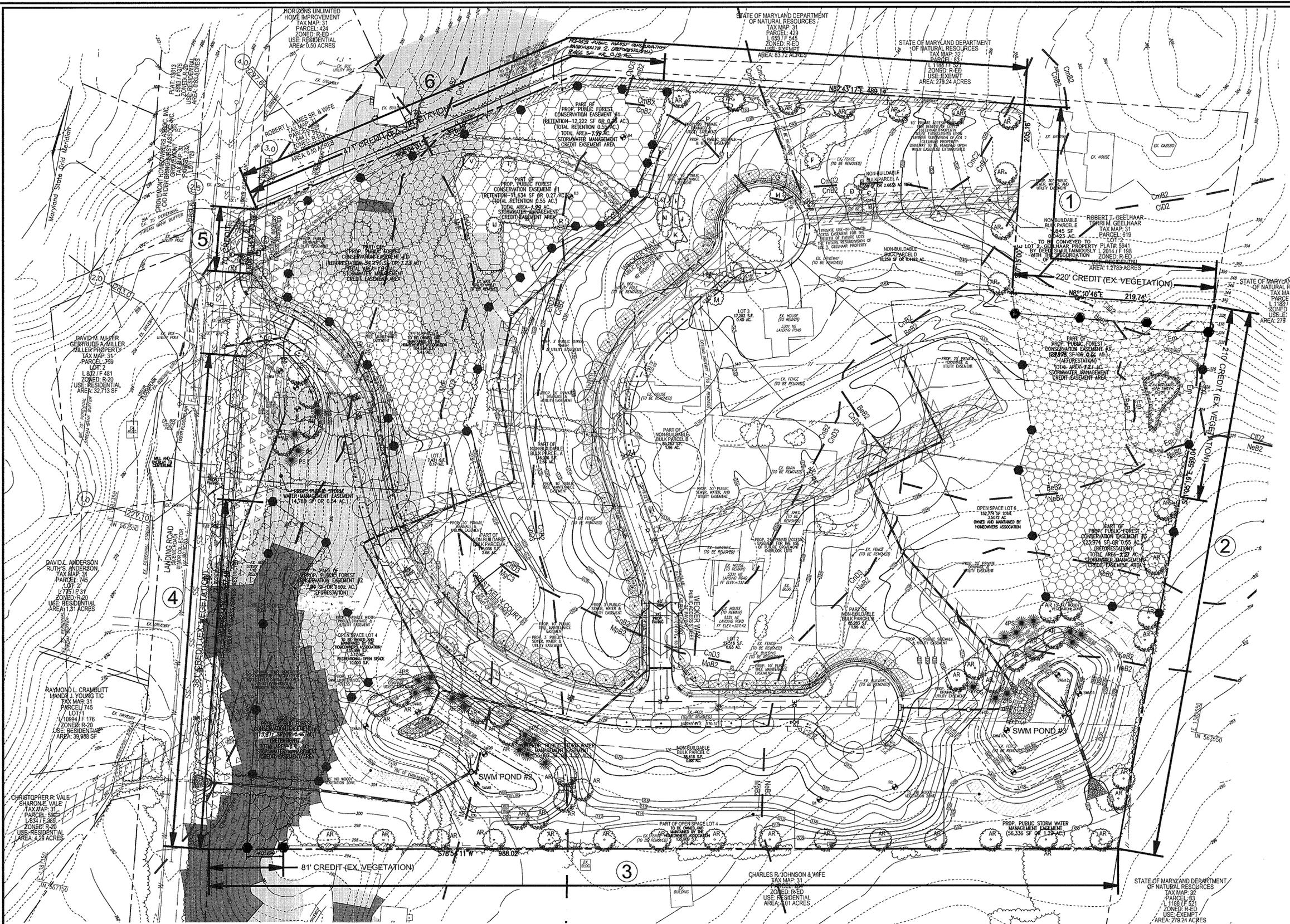
DATE: 5/5/10

BY THE ENGINEER:
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.

DATE: 5/5/10

THIS DEVELOPMENT PLAN IS APPROVED FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

DATE: 5/5/10



LEGEND

RIGHT-OF-WAY	PROF. PUBLIC 4" SIDEWALK AND UTILITY EASEMENT
BOUNDARY LINE	PROF. 24" PRIVATE ACCESS EASEMENT FOR THE USE OF PUBLIC LOTS
ADJACENT BOUNDARY LINE	PROF. 30" PUBLIC SEWER WATER AND UTILITY EASEMENT
EXISTING STREAM BANK BUFFER	PROF. 10" PRIVATE ACCESS EASEMENT FOR BENEFIT OF GEEHAR PROPERTY LOT 2
EXISTING WETLANDS BUFFER	PROF. PAVEMENT WIDENING AREA
EXISTING TIELINE	PROF. BALTIMORE GAS AND ELECTRIC ZONE
EXISTING UTILITY POLE	PROF. STORM DRAIN
EXISTING SKIN	PROF. STORM DRAIN INLET
EXISTING WATER LINE	PROF. SIDEWALK
EXISTING SEWER LINE	PROF. TREELINE
EXISTING GAS LINE	PROF. CURB
EXISTING OVERHEAD LINES	EXISTING SOILS
EXISTING FENCE LINE	PROF. 10' CONTOUR
EXISTING 2FT. CONTOUR	PROF. 20' CONTOUR
EXISTING 10' CONTOUR	PROF. SPOT ELEVATION
EXISTING CURB LINE	AREA OF 15 TO 24.9 PERCENT SLOPES
EXISTING EDGE OF PAWING	AREA 25 PERCENT OR GREATER SLOPES
EXISTING LIGHT POLE	PROF. SHRUBS
EXISTING SANITARY CLEANOUT	PROF. SHADE TREES
EXISTING FIRE HYDRANT	PROF. EVERGREEN TREES
EXISTING TREES	PROF. LANDSCAPE BUFFER
EXISTING 20' TEMPORARY REVERTIBLE EASEMENT FOR CONSTRUCTION CONTRACT NUMBER 14-2008	FOREST CONSERVATION SIGNS
PROF. PUBLIC FOREST CONSERVATION EASEMENT	
PROF. PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)	
PROF. PUBLIC STORMWATER MANAGEMENT EASEMENT	
PROF. PUBLIC DRAINAGE AND UTILITY EASEMENT	
PROF. 10' PUBLIC TREE MAINTENANCE EASEMENT	
PROF. PRIVATE DRAINAGE AND UTILITY EASEMENT	
PUBLIC 100 YEAR FLOODPLAIN DRAINAGE & UTILITY EASEMENT	

OWNERS
 PARCEL 749, LOTS 3 & 4
 JERICO, LLC
 DONALD RELUWER
 5331 LANDING RD.
 ELK RIDGE, MARYLAND
 21075-5717
 HARRY F. GEEHAR, JR.
 5301 LANDING RD.
 ELK RIDGE, MARYLAND
 21075-5717

DEVELOPER
 LAND DESIGN & DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE
 SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (410) 367-0422

NO.	REVISION	DATE
1	REVISE FOREST CONSERVATION AREAS	1/15/13

**FINAL ROAD CONSTRUCTION PLAN
 GROVEMONT OVERLOOK-PHASE I
 LANDSCAPE & FOREST CONSERVATION PLAN**

LOTS 1-3, OPEN SPACE LOTS 4-6 & NON-BUILDABLE BULK PARCELS A, B, C, D, & E
 A RESUBDIVISION OF LOTS 3 & 4 OF THE LEGAL PROPERTY, PLAT 4857 (F-81-87) &
 A RESUBDIVISION OF LOT 1 OF THE GEEHAR PROPERTY, PLAT 5941 (F-84-214)

TAX MAP 31 BLOCK 24 PARCELS 749 & P/O 619
 1ST ELECTION DISTRICT ZONED R-ED HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 8407 MAIN STREET
 ELLICOTT CITY, MD 21043 TEL: 410-481-7666

PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16183 EXPIRATION DATE: 09-27-2016.

DESIGN BY: RHW
 DRAWN BY: JMR/JAR
 CHECKED BY: RHW
 DATE: JANUARY 2010
 SCALE: AS SHOWN
 W.O. NO.: 04-57

15 SHEET OF 16

SPECIMEN TREES

NO.	TYPE	SIZE	TO BE RETAINED	CONDITION	NO.	TYPE	SIZE	TO BE RETAINED	CONDITION
A	TULIP POPLAR	50" dbh	N	FAIR	L	TULIP POPLAR	30" dbh	N	FAIR
B	TULIP POPLAR	38" dbh	N	FAIR	M	CHESTNUT OAK	38" dbh	N	FAIR
C	TULIP POPLAR	30" dbh	N	FAIR	N	TULIP POPLAR	30" dbh	N	FAIR
D	TULIP POPLAR	30" dbh	N	FAIR	O	TULIP POPLAR	30" dbh	N	FAIR
E	TULIP POPLAR	34" dbh	N	FAIR	P	TULIP POPLAR	30" dbh	N	FAIR
F	TULIP POPLAR	42" dbh	N	FAIR	Q	TULIP POPLAR	34" dbh	N	FAIR
G	TULIP POPLAR	32" dbh	N	FAIR	R	TULIP POPLAR	30" dbh	N	FAIR
H	CHESTNUT OAK	30" dbh	N	FAIR	S	BLACK OAK	30" dbh	N	FAIR
I	TULIP POPLAR	30" dbh	N	FAIR	T	BLACK OAK	32" dbh	Y	FAIR
J	AMERICAN BEECH	32" dbh	N	FAIR	U	CHESTNUT OAK	36" dbh	Y	FAIR
K	CHESTNUT OAK	34" dbh	N	FAIR	V	TULIP POPLAR	32" dbh	Y	FAIR

APPROVED: DEPARTMENT OF PUBLIC WORKS
 DATE: 5-12-10

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 DATE: 6/10/10

CHIEF, DIVISION OF LAND DEVELOPMENT
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

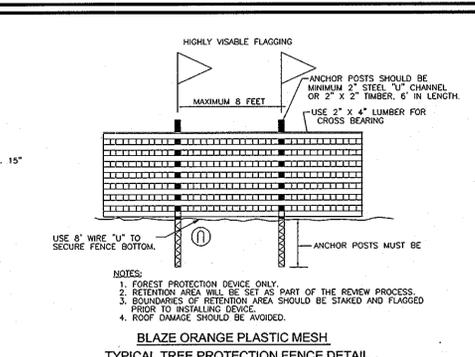
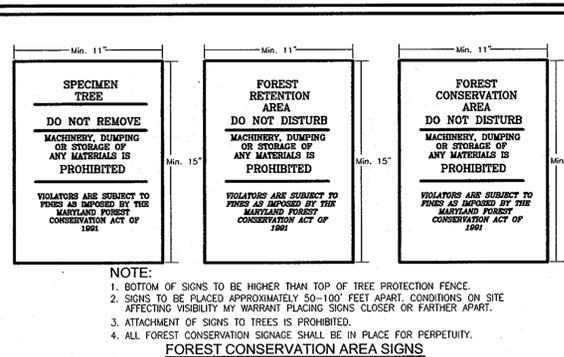
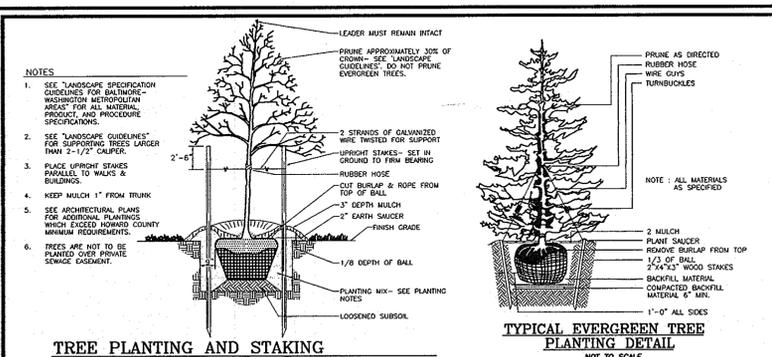
DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

DATE: 6/10/10
 DATE: 3/5/10

SIGNATURE OF DEVELOPER
 LAND DESIGN & DEVELOPMENT, INC.

PLAN VIEW
 SCALE: 1"=50'



SCHEDULE A PERIMETER LANDSCAPE EDGE ADJACENT TO ROADSWAYS AND PERIMETER PROPERTIES

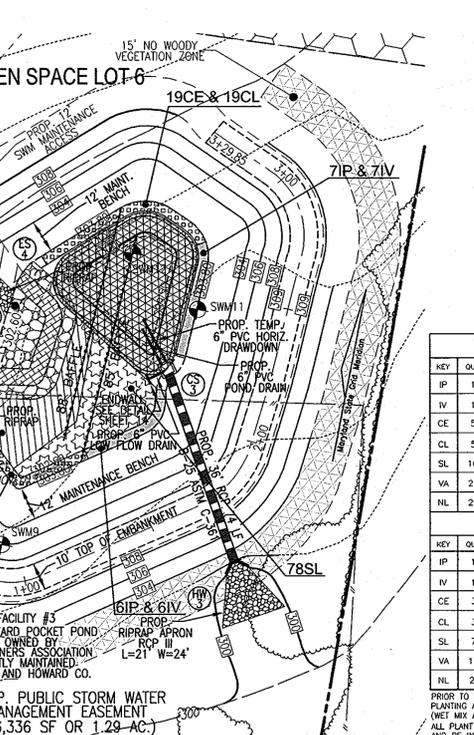
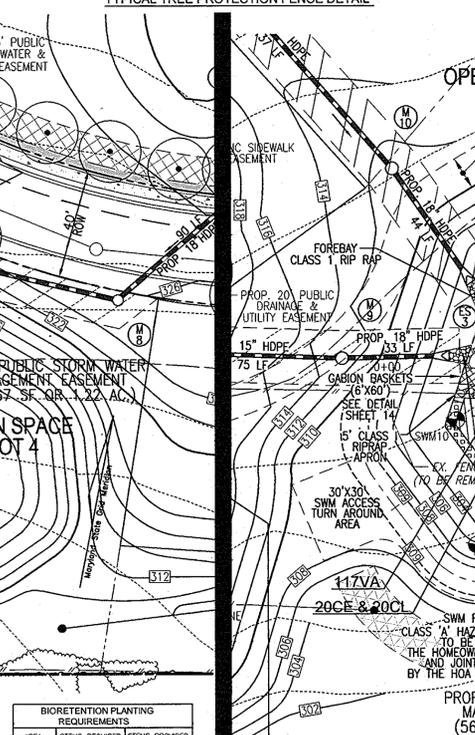
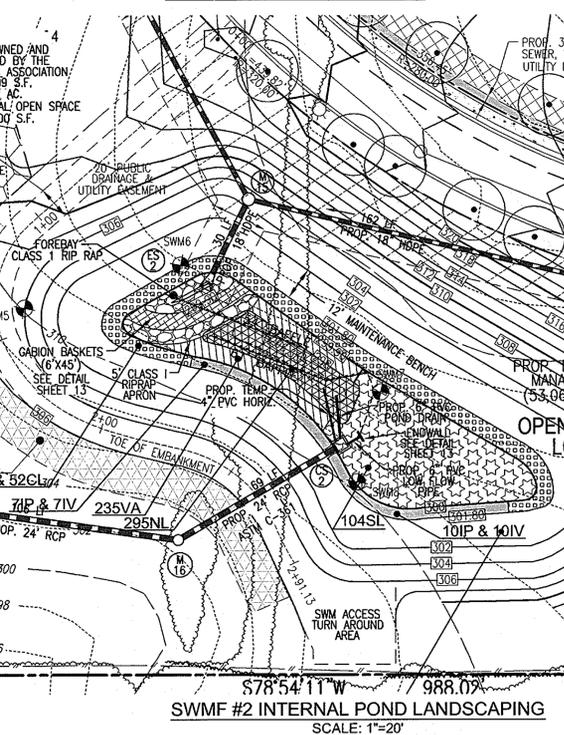
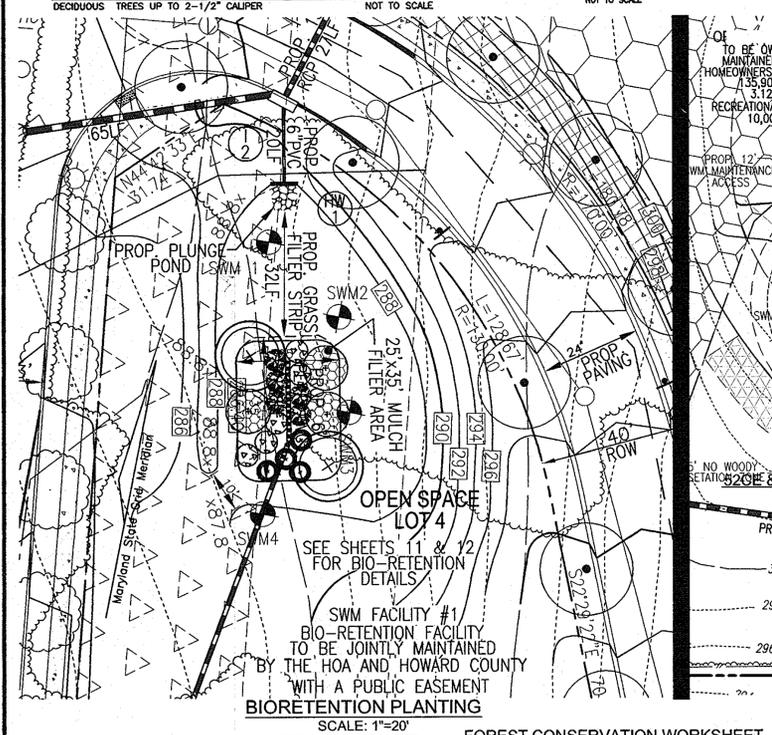
CATEGORY	1	2	3	4	5	6	TOTAL
PERIMETER FRONTAGE DESIGNATION	1	2	3	4	5	6	
LANDSCAPE TYPE	1	2	3	4	5	6	
LINEAR FEET OF ROADWAY FRONTAGE PERIMETER	425	599	968	537	70	865	
CREDIT FOR EXISTING VEGETATION (YES, NO LINEAR FEET DESCRIBE BELOW IF NEEDED)	220	210	81	381	NO	471	
CREDIT FOR WALL, FENCE OR BERM (YES, NO LINEAR FEET DESCRIBE BELOW IF NEEDED)	NO	NO	NO	NO	NO	NO	
NUMBER OF PLANTS REQUIRED	285	389	907	156	-	394	
SHADE TREES	100.3	150.6	180.15	150.4	-	150.7	35
EVERGREEN TREES	-	-	-	-	-	-	4
SHRUBS	-	-	-	-	-	-	-
NUMBER OF PLANTS PROVIDED	3	6	15	4	-	7	35
SHADE TREES	-	-	-	-	-	-	-
EVERGREEN TREES	-	-	-	-	-	-	-
OTHER TREES (2-1 SUBSTITUTION)	-	-	-	-	-	-	-
SHRUBS (10-1 SUBSTITUTION)	-	-	-	-	-	-	-
DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED	-	-	-	-	-	-	-

LANDSCAPE SCHEDULE NOTE:

- ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HED PLANTING SPECIFICATIONS.
- CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
- FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
- CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.

GENERAL NOTES:

- THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 16.124(A)(1) OF THE SUBDIVISION REGULATIONS AND THE LANDSCAPE MANUAL. FINANCIAL SURETY IN THE AMOUNT OF \$30,600.00 HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT FOR THE REQUIRED 102 STREET TREES.
- THE OWNER, TENANT AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REDUCED LANDSCAPING, PLANT MATERIALS, BERM, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONFORMANCE WITH THE HED REGULATIONS. ALL REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPLACED OR REPAIRED.
- NO CLEARING OF EXISTING VEGETATION IS PERMITTED WITHIN THE LANDSCAPE EDGE FOR WHICH CREDIT IS BEING TAKEN; HOWEVER, LANDSCAPE MAINTENANCE IS AUTHORIZED.
- AT THE TIME OF INSTALLMENT, ALL SHRUBS AND OTHER PLANTINGS LISTED HERewith SHALL BE APPROVED BY THE DEPARTMENT OF PLANNING AND ZONING. NO SUBSTITUTIONS OR RELOCATION OF REQUIRED PLANTINGS MAY BE MADE WITHOUT THE APPROVAL OF THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THIS APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OF THE DEVELOPER'S SURETY FOR THE LANDSCAPE PLAN UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO APPLICABLE PLANS AND CERTIFICATES.
- THERE IS 0.106AC 100YR FLOODPLAIN ON SITE.
- WETLANDS ARE LOCATED ON SITE IN ACCORDANCE WITH DELINEATION PREPARED BY ECO-SCIENCE PROFESSIONALS, INC., DATED DECEMBER 2005.
- NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURE SHALL BE PERMITTED WITHIN THE WETLANDS, WETLANDS BUFFER, STREAM BANK BUFFER OR FOREST CONSERVATION EASEMENTS.
- FOREST CONSERVATION REQUIREMENTS ARE PER SECTION 16.1202 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION MANUAL. FOREST CONSERVATION OBLIGATIONS FOR THIS PROJECT SHALL BE FULFILLED IN ACCORDANCE WITH SECTION 16.1202 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION MANUAL BY THE RETENTION OF 0.90 ACRES OF EXISTING FOREST AND BY PLANTING OF 2.00 ACRES OF REFORESTATION AND 0.78 ACRES OF AFFORESTATION. TOTAL SURETY IN THE AMOUNT OF \$68,389.00 RETENTION: (0.90 AC.) 39,400 SF x 0.20 = \$7,880.00 AFFORESTATION: (0.78 AC.) 33,976.00 SF x 0.50 = \$16,988.00 TOTAL SURETY = \$24,868.00. SURETY FOR 102 STREET TREES = \$41,520.00 SHALL BE POSTED WITH THE DEVELOPER'S AGREEMENT FOR THIS FINAL PLAN F-09-122.



HERBACEOUS LANDSCAPE SCHEDULE

KEY	QUAN.	BOTANICAL NAME	SIZE	REMARKS
IP 17	17	IRIS PSEUDOCARIS	1.5' OC	PLUG
IV 17	17	IRIS VESICOLOR	1.5' OC	PLUG
CE 52	52	CYPERUS ESCULENTUS	2' OC	PLUG
CL 52	52	CAREX LACINSTRIS	2' OC	PLUG
SL 104	104	SAGITTARIA LATIFOLIA	4' OC	PLUG
VA 235	235	VALLISNERIA AMERICANA	2' OC	PLUG
NL 295	295	NURPHAR LUTEUM	1.5' OC	PLUG

SWM #2 DEEP STORMWATER POND HERBACEOUS LANDSCAPE SCHEDULE

KEY	QUAN.	BOTANICAL NAME	SIZE	REMARKS
IP 13	13	IRIS PSEUDOCARIS	1.5' OC	PLUG
IV 13	13	IRIS VESICOLOR	1.5' OC	PLUG
CE 39	39	CYPERUS ESCULENTUS	2' OC	PLUG
CL 39	39	CAREX LACINSTRIS	2' OC	PLUG
SL 78	78	SAGITTARIA LATIFOLIA	4' OC	PLUG
VA 177	177	VALLISNERIA AMERICANA	2' OC	PLUG
NL 221	221	NURPHAR LUTEUM	1.5' OC	PLUG

OWNER'S
DONALD REUMER
5331 LANDING RD.
ELKDRIDGE, MARYLAND
21075-5711

DEVELOPER
LAND DESIGN & DEVELOPMENT, INC.
5300 DORSEY HILL DRIVE
ELLCOTT CITY, MARYLAND 21042
(443) 367-0422

AFFORESTATION AND REFORESTATION PLANT SCHEDULE

FOREST CONSERVATION WORKSHEET

EASEMENT #1: 1.23 AC. (REFORESTATION) @ 200 TREES/AC. = 246 TREES

QTY.	BOTANICAL NAME	SIZE	SPACING
50	ACER RUBRUM	1" CAL.	15' x 15'
50	PLATANUS x ACERIFOLIA 'BLOODGOOD'	1" CAL.	15' x 15'
49	CIRCS CANADENSIS	1" CAL.	15' x 15'
49	POPULUS GRANDIDENTATA	1" CAL.	15' x 15'
49	QUERCUS RUBRA	1" CAL.	15' x 15'
49	RED OAK	1" CAL.	15' x 15'

EASEMENT #2: 0.22 AC. (REFORESTATION) @ 200 TREES/AC. = 44 TREES

QTY.	BOTANICAL NAME	SIZE	SPACING
8	ACER RUBRUM	1" CAL.	15' x 15'
9	PLATANUS x ACERIFOLIA 'BLOODGOOD'	1" CAL.	15' x 15'
9	CIRCS CANADENSIS	1" CAL.	15' x 15'
9	POPULUS GRANDIDENTATA	1" CAL.	15' x 15'
9	QUERCUS RUBRA	1" CAL.	15' x 15'
9	RED OAK	1" CAL.	15' x 15'

EASEMENT #3: 1.33 AC. (AFFOR. & REFOR.) @ 200 TREES/AC. = 266 TREES

QTY.	BOTANICAL NAME	SIZE	SPACING
54	ACER RUBRUM	1" CAL.	15' x 15'
53	PLATANUS x ACERIFOLIA 'BLOODGOOD'	1" CAL.	15' x 15'
53	CIRCS CANADENSIS	1" CAL.	15' x 15'
53	POPULUS GRANDIDENTATA	1" CAL.	15' x 15'
53	QUERCUS RUBRA	1" CAL.	15' x 15'
53	RED OAK	1" CAL.	15' x 15'

SEQUENCE OF CONSTRUCTION-FOREST CONSERVATION

- PRE-CONSTRUCTION MEETING WITH CONTRACTORS AND OTHER RESPONSIBLE PARTIES TO DEFINE PROTECTION MEASURES TO BE UTILIZED AND TO POINT OUT PARTICULAR TREES TO BE SAVED.
- STAKE OUT LIMITS OF DISTURBANCE AND TREE PROTECTION FENCING LOCATIONS.
- INSTALL TREE PROTECTION FENCING TO BE INSPECTED BY THE PROJECT ENGINEER OR THE PROJECT ECOLOGIST AND HOWARD COUNTY PLANNING AND ZONING.
- PROCEED WITH TREE REMOVAL AND SITE IMPROVEMENTS AS PER APPROVED SEWAGE CONTROL PLAN - TO BE INSPECTED BY HOWARD COUNTY PLANNING AND ZONING.
- TEMPORARY TREE PROTECTION DEVICES SHALL BE REMOVED AFTER ALL FINISHED GRADING AND UTILITY CONSTRUCTION HAS OCCURRED AND WITH APPROVAL FROM THE HOWARD COUNTY OFFICE OF PLANNING AND ZONING.

FOREST RETENTION AREAS AND NOTES

- THE WETLANDS AND WETLAND BUFFERS ARE LOCATED ON AN OPEN SPACE LOT.
- NO RARE, THREATENED OR ENDANGERED SPECIES WERE OBSERVED ON THIS SITE.
- FORESTED AREAS ADJACENT TO FLOODPLAINS AND STREAM BUFFERS ARE SUBSTANTIALLY RETAINED IN OPEN SPACE LOTS.
- CHANGES IN GRADING AND RUNOFF WITHIN CONSTRUCTION/INSTALLATION AREAS WILL NOT ADVERSELY AFFECT THE SOILS WITHIN THE FOREST RETENTION AREAS. SEDIMENT CONTROL MEASURES WILL REDIRECT CONCENTRATED FLOW RUNOFF TO STORMWATER MANAGEMENT FACILITIES, RETAIN SEDIMENT WITHIN THE CONSTRUCTION SITE, AND/OR REDIRECT CLEAN WATER AWAY FROM CONSTRUCTION AREAS.
- THE FOREST CONSERVATION EASEMENT HAS BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT, HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.

CONSTRUCTION PERIOD PROTECTION AND MANAGEMENT NOTES FOR FOREST CONSERVATION

PRE-CONSTRUCTION PHASE

- INSTALL BLAZE ORANGE FENCE AND RETENTION SIGNS BEFORE CONSTRUCTION BEGINS.
- FENCING SHALL BE MAINTAINED IN GOOD CONDITION AND PROMPTLY REPAIRED OR RESTORED AS THE SITUATION WARRANTS.
- A QUALIFIED TREE CARE EXPERT SHALL DETERMINE IF ROOT PRUNING IS REQUIRED ALONG THE LIMIT OF DISTURBANCE. ROOT PRUNING TREES AS REQUIRED. WATER ANY ROOT-PRUNED TREES IMMEDIATELY AFTER ROOT-PRUNING AND MONITOR FOR SIGNS OF STRESS DURING CONSTRUCTION.

CONSTRUCTION PHASE

- NO DISTURBANCE OR DUMPING IS ALLOWED INSIDE THE TREE RETENTION AREA.
- NO EQUIPMENT SHALL BE OPERATED INSIDE THE TREE RETENTION AREA INCLUDING TREE CANOPIES.
- IN THE EVENT OF DROUGHT THE PROTECTED TREES SHALL BE MONITORED FOR SIGNS OF STRESS AND WATERED AS NEEDED.

POST-CONSTRUCTION PHASE

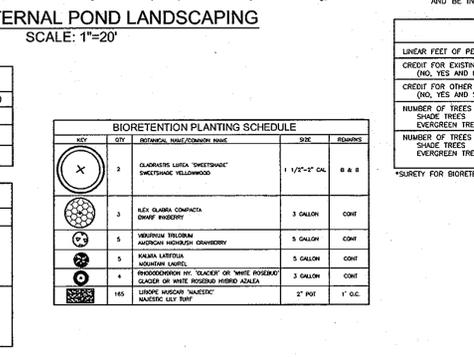
- AT THE DIRECTION OF A QUALIFIED TREE CARE EXPERT, DAMAGES TO RETAINED TREES SHALL BE REPAIRED BY THE CONTRACTOR.
- EROSION REMOVAL AND STABILIZATION SHALL BE AS PER THE SEDIMENT AND EROSION CONTROL PLAN.
- DO NOT REMOVE SIGNS.

STREET TREE CALCULATIONS

STREET NAME	LINEAR FEET	NO. REQUIRED	NO. PROVIDED
FOREST KELLY COURT	1892/40	47	48
WECKER WAY	1348/40	34	33
LANDING ROAD	607/30	21	21

STREET TREE PLANTING SCHEDULE

KEY	QUAN.	BOTANICAL NAME	SIZE	REM.
○	81	ACER RUBRUM 'OCTOBER GLORY'	2 1/2"-3" CAL.	B & B
○	21	ACER GRiseum	2 1/2"-3" CAL.	B & B



SCHEDULE B: STORMWATER MANAGEMENT AREA LANDSCAPING

LINEAR FEET OF PERIMETER	508 LF (SWMF 2)	388 LF (SWMF 3)
CREDIT FOR EXISTING VEGETATION (NO, YES AND LINEAR FEET)	NO	NO
CREDIT FOR OTHER LANDSCAPING (NO, YES AND X)	NO	NO
NUMBER OF TREES REQUIRED	(8 BUFFER) 13 EVERGREEN TREES (8 BUFFER) 13 EVERGREEN TREES	(8 BUFFER) 13 EVERGREEN TREES (8 BUFFER) 13 EVERGREEN TREES
NUMBER OF TREES PROVIDED	(8 BUFFER) 13 EVERGREEN TREES (8 BUFFER) 13 EVERGREEN TREES	(8 BUFFER) 13 EVERGREEN TREES (8 BUFFER) 13 EVERGREEN TREES

FINAL ROAD CONSTRUCTION PLAN GROVEMONT OVERLOOK-PHASE I LANDSCAPE & FOREST CONSERVATION NOTES AND DETAILS

LOTS 1-3, OPEN SPACE LOTS 4-6 & NON-BUILDABLE BULK PARCELS A, B, C, D, & E A RESUBDIVISION OF LOTS 3 & 4 OF THE LEGAL PROPERTY, PLAT 487 (F-81-87) & A RESUBDIVISION OF LOT 1 OF THE GEELEHAAR PROPERTY, PLAT 594 (F-84-214)

TAX MAP 31 BLOCK 24 PARCELS '749' & P/O '619'
1ST ELECTION DISTRICT ZONED R-ED HOWARD COUNTY, MARYLAND

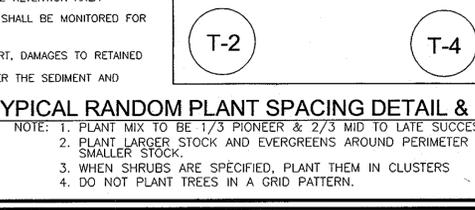
APPROVED: DEPARTMENT OF PUBLIC WORKS
APPROVED: DEPARTMENT OF PLANNING AND ZONING

DATE: 5/17/10
DATE: 6/10/10
DATE: 6/10/10

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE CERTIFY THAT UPON COMPLETION, A CERTIFICATE OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

DATE: 3/10/10



SHRUB PLANTING DETAIL

BACKFILL WITH TOPSOIL AND PEAT MOSS, 3:1 RATIO. BACKFILL IN 6" LIFTS

3" MULCH

6" MIN. EQUAL TO TWICE BALL DIA.

6" FOR PLANTS UP TO 4' HEIGHT MIN. 8" FOR PLANTS OVER 4' HEIGHT MIN.

DENSITY CHART

SIZE	QTY. PER ACRE	AVERAGE SPACING
2" CALIPER	100	20'x20'
1" CALIPER	200	15'x15'
WHIPS	350	11'x11'
SEEDLINGS	700	8'x8'

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS

8407 MAIN STREET
ELLCOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

DESIGN BY: RHY
DRAWN BY: JMB/AR
CHECKED BY: RHY
DATE: JANUARY 2010
SCALE: AS SHOWN
W.O. NO.: 04-57

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16183 EXPIRATION DATE: 09-27-2014.

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