

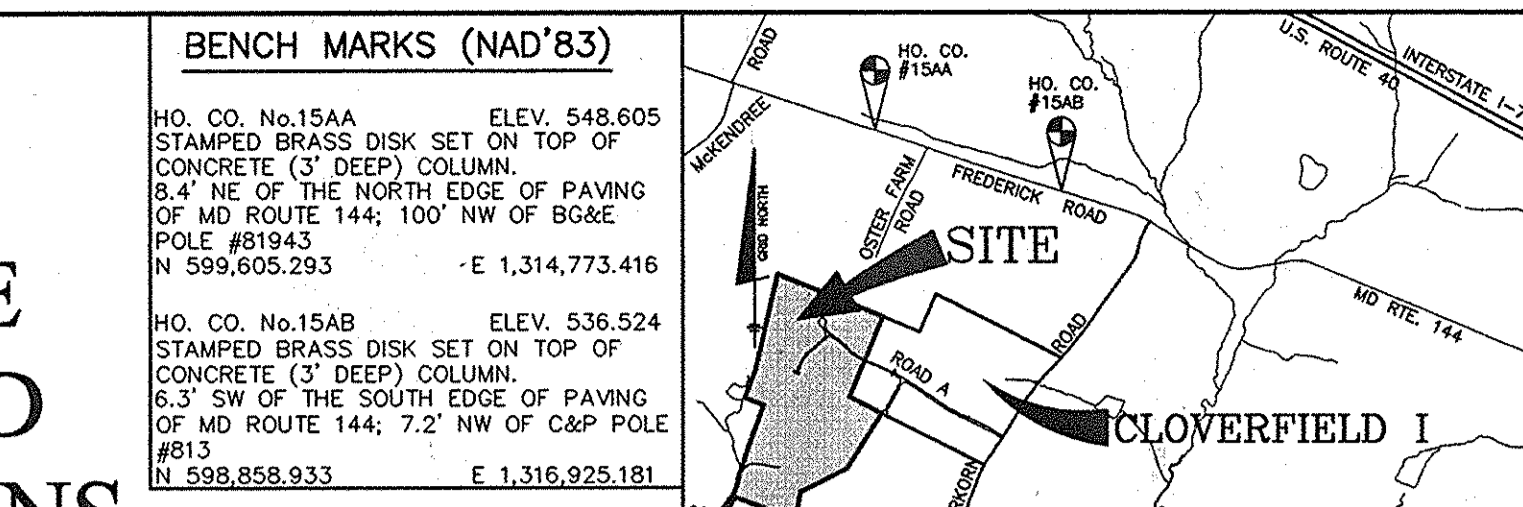
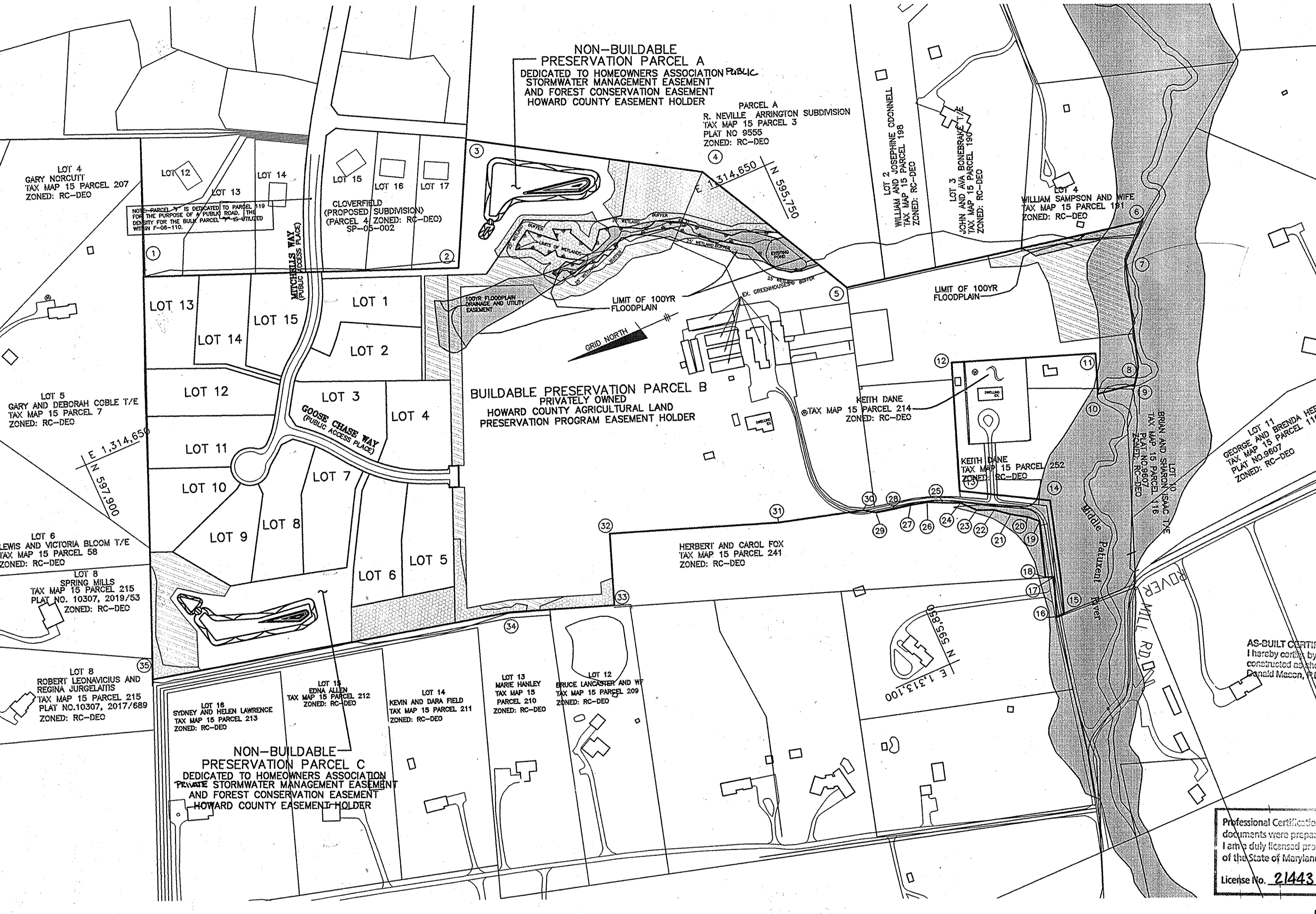
SHEET INDEX	
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3	ROAD PLAN, PROFILE AND DETAILS
4	FILLET PROFILES AND SWM BORINGS
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# CLOVERFIELD SECTION II

## LOTS 1 THRU 15, NON-BUILDABLE PRESERVATION PARCELS "A" AND "C", AND BUILDABLE PRESERVATION PARCEL "B", A RESUBDIVISION OF NON-BUILDABLE BULK PARCEL "F" AND PARCEL 119 ROADS, STORMWATER MANAGEMENT AND STORM DRAIN CONSTRUCTION PLANS

### GENERAL NOTES

- THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS.
- THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD SURVEY WITH 2'-FOOT CONTOUR INTERVALS PREPARED BY BENCHMARK ENGINEERING, INC. ON OR ABOUT FEBRUARY 2005.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM, HOWARD COUNTY MONUMENT NOS. 154A AND 154B WERE USED FOR THIS PROJECT.
- WATER IS PRIVATE.
- SEWER IS PRIVATE.
- STORM WATER MANAGEMENT SHALL BE PROVIDED BY TWO (2) EXTENDED DETENTION PONDS WITH MICRO-PONDS AND GRASSED SWALES. STORMWATER MANAGEMENT FACILITY #1 SHALL BE PRIVATELY OWNED AND JOINTLY MAINTAINED BY THE HOMEOWNERS ASSOCIATION AND HOWARD COUNTY. STORMWATER MANAGEMENT FACILITY #2 SHALL BE PRIVATELY OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION.
- EXISTING UTILITIES ARE BASED UPON FIELD SURVEY LOCATIONS.
- THIS IS A FLOODPLAIN ON THIS SITE LOCATED ALONG THE EASTERN AND SOUTHERN BOUNDARIES. THE FLOODPLAIN STUDY FOR THIS PROJECT WAS PREPARED BY BENCHMARK ENGINEERING, INC. DATED JULY 2005. THE FLOODPLAIN ALONG THE SOUTHERN BOUNDARY HAS BEEN SHOWN BASED ON THE MIDDLE PATUXENT RIVER DRAINAGE STUDY CAPITAL PROJECT NO. D-1028.
- THE WETLANDS DELINEATION FOR THIS PROJECT WAS PREPARED BY ECO-SCIENCE PROFESSIONALS, INC. IN JULY 2005.
- A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT.
- THE GEOTECHNICAL REPORT FOR THIS PROJECT WAS PREPARED BY HILLIS CARNES ENGINEERING ASSOCIATES, INC. DATED JULY 12, 2005.
- THIS SUBJECT PROPERTY IS ZONED RC-DEO PER THE 2/22/04 COMPREHENSIVE ZONING PLAN AND COMP. LITE ZONING AMENDMENTS EFFECTIVE JULY 28, 2005.
- TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO BURIAL GROUNDS OR CEMETERIES LOCATED ON THIS SITE.
- THERE SHALL BE NO DISTURBANCE WITHIN THE 100-YR FLOODPLAIN, WETLANDS, STREAMS, THEIR BUFFERS OR STEEP SLOPES THAT ARE AT LEAST 20,000 S.F. UNLESS APPROVED BY THE DEPARTMENT OF PLANNING AND ZONING.
- BOUNDARY IS BASED ON A FIELD RGN MONUMENTED BOUNDARY SURVEY PERFORMED DURING FEBRUARY, 2005 BY BENCHMARK ENGINEERING INC.
- FOREST STAND DELINEATION WAS PREPARED BY ECO-SCIENCE PROFESSIONALS IN JULY, 2005.
- THIS PROJECT IS NOT LOCATED WITHIN THE METROPOLITAN DISTRICT.
- THIS PROJECT IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS OF HOWARD COUNTY, BILL NO. 45-2003 AND THE ZONING REGULATIONS AS AMENDED BY COUNCIL BILL NO. 75-2003. DEVELOPMENT OR CONSTRUCTION ON THESE LOTS MUST COMPLY WITH SETBACK AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF THE BUILDING OR GRADING PERMIT APPLICATION.
- AS REQUIRED BY THE STATE DEPARTMENT OF THE ENVIRONMENT FOR INDIVIDUAL THIS AREA DESIGNATES A PRIVATE SEWERAGE EASEMENT OF 10,000 SQUARE FEET SEWERAGE DISPOSAL. IMPROVEMENTS OF ANY NATURE IN THIS AREA IS RESTRICTED UNTIL PUBLIC SEWER IS IN PLACE. THIS EASEMENT SHALL BECOME A PUBLIC UTILITY CONNECTION TO A PUBLIC SEWER SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE THE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE SEWERAGE EASEMENT. REPRODUCTION OF A MODIFIED SEWERAGE EASEMENT PLAT SHALL NOT BE NECESSARY.
- THE PURPOSE OF THE PRESERVATION PARCELS AND THE JUSTIFICATION FOR THE DESIGN OF THE CLUSTER SUBDIVISION IS AS FOLLOWS:  
PRESERVATION PARCEL "A" IS PROPOSED AS NON-BUILDABLE PARCEL THAT SHALL INCLUDE BUT NOT BE LIMITED TO STORM DRAINS, UTILITY EASEMENTS, FOREST CONSERVATION EASEMENTS AND STORM WATER MANAGEMENT. IT WILL BE OWNED BY THE HOMEOWNERS ASSOCIATION. IT IS ENCOMPASSED BY AN EASEMENT AGREEMENT WITH HOWARD COUNTY. THIS AGREEMENT PROHIBITS FURTHER SUBDIVISION OF THE PARCEL, OUTLINES THE MAINTENANCE RESPONSIBILITIES OF ITS OWNER AND ENUMERATES THE USES PERMITTED ON THE PROPERTY.  
PRESERVATION PARCEL "B" IS PROPOSED AS A BUILDABLE PARCEL ONE (1) HOUSING ALLOCATION ALLOWING ONE (1) BUILDABLE UNIT. THIS PARCEL SHALL INCLUDE BUT NOT BE LIMITED TO FOREST CONSERVATION EASEMENTS. IT WILL BE PRIVATELY OWNED. IT IS ENCOMPASSED BY AN EASEMENT AGREEMENT WITH HOWARD COUNTY AGRICULTURAL LAND PRESERVATION PROGRAM AND PRESERVATION PROGRAM. THIS AGREEMENT PROHIBITS FURTHER SUBDIVISION OF THE PARCEL, OUTLINES THE MAINTENANCE RESPONSIBILITIES OF ITS OWNER AND ENUMERATES THE USES PERMITTED ON THE PROPERTY.  
PRESERVATION PARCEL "C" IS PROPOSED AS NON-BUILDABLE PARCEL THAT SHALL INCLUDE BUT NOT BE LIMITED TO STORM DRAINS, UTILITY EASEMENTS, FOREST CONSERVATION EASEMENTS AND STORM WATER MANAGEMENT. IT WILL BE OWNED BY THE HOMEOWNERS ASSOCIATION. IT IS ENCOMPASSED BY AN EASEMENT AGREEMENT WITH HOWARD COUNTY. THIS AGREEMENT PROHIBITS FURTHER SUBDIVISION OF THE PARCEL, OUTLINES THE MAINTENANCE RESPONSIBILITIES OF ITS OWNER AND ENUMERATES THE USES PERMITTED ON THE PROPERTY.
- THE FOREST CONSERVATION ACT OBLIGATION FOR THIS PROJECT IS 8.93 ACRES (1.19 ACRES RETENTION + 7.74 ACRES RESTORATION). THE FOREST CONSERVATION OBLIGATION WILL BE MET BY 1.19 ACRES OF ON-SITE RETENTION, AND THE RESTORATION OBLIGATION WILL BE MET BY 2.48 ACRES OF RETENTION CREDITED AS 2 TO 1 FOR 1.24 ACRES OF RESTORATION LOCATED ON PRESERVATION PARCEL B CONSIDERED AS OFF-SITE. PARCEL B WAS EXCLUDED FROM THE FOREST NET TRACT CALCULATION FOR THIS PROJECT BECAUSE OF NO CHANGE IN USE, 1.36 ACRES OF RESTORATION ON-SITE, 3.41 ACRES OF RESTORATION OFF-SITE LOCATED ON PRESERVATION PARCEL B, AND 1.73 ACRES OF RESTORATION LOCATED AT THE EDGEWOOD FARM FOREST MITIGATION BANK. PER 108, PLAT #19258-19251. THE FOREST CONSERVATION SURETY FOR 1.19 ACRES OF RETENTION IS \$10,367.00 AND FOR 6.10 ACRES OF RESTORATION (7.74-1.73 ACRES AT EDGEWOOD FARM BANK) IS \$130,898.00 FOR A TOTAL FOREST SURETY AMOUNT OF \$141,265.00.
- FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DPW DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$30,450.00, (\$23,100.00 FOR 77 SHADE TREES AND \$7,350.00 FOR 49 EVERGREENS).
- WELLS SHALL BE PLACED AT THE FURTHEST PORTION OF THE WELL BOX. MAINTAIN 15' OF SEPARATION FROM ROADS AND R/W.
- WELLS SHALL BE DRILLED BY A CERTIFIED WELL DRILLER PRIOR TO RECORD PLAT SUBMISSION FOR SIGNATURE PER HOWARD COUNTY HEALTH DEPARTMENT REQUIREMENTS. IT WILL NOT BE CONSIDERED TO BE GOVERNMENTAL DELAY IF THE WELLS ARE NOT COMPLETED PRIOR TO THE SUBMISSION'S MILESTONE DATE.
- THE LOTS SHOWN HEREON COMPLY WITH THE MINIMUM OWNERSHIP WIDTH AND LOT AREA AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT.
- DRIVEWAYS SHALL BE PROVIDED PRIOR TO ISSUANCE OF A USE AND OCCUPANCY PERMIT FOR ANY NEW DWELLINGS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:  
A) WIDTH - 12' (14' SERVING MORE THAN ONE RESIDENCE).  
B) SURFACE - 6" OF COMPACT CRUSHER RUN BASE WITH TAR AND CHIP COATING.  
C) GEOMETRY - MAX. 15% GRADE, MAX. 10% GRADE CHANGE & MIN. 45' TURNING RADIUS.  
D) STRUCTURES (CULVERTS/BRIDGES) - CAPABLE OF SUPPORTING 25 GROSS TONS (H25 LOAD).  
E) DRAINAGE ELEMENTS - PASSING 100 YEAR FLOOD PLAN WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY.  
F) STRUCTURE CLEARANCE - MINIMUM 12 FEET.  
G) MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE.
- GROUNDWATER APPROPRIATION PERMIT #H02007003 ISSUED BY MDE ON APRIL 1, 2007
- THE TRAFFIC STUDY FOR THIS PROJECT WAS PREPARED BY THE TRAFFIC GROUP, INC. IN NOVEMBER, 2004.
- ALL DRIVEWAY CULVERTS SHALL BE 15" CMP OR EQUIVALENT EQUIPMENT.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS, BUREAU OF ENGINEERING AND CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNAGE SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
- ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL PERFORATED, SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
- 95% COMPACTION SHALL BE USED IN APPROPRIATE FILL AREAS IN ACCORDANCE WITH AASHTO T-180 SPECIFICATIONS.
- THE DISTURBANCE TO THE 100-YEAR FLOODPLAIN, STREAM AND STREAM BUFFER ON THE EASTERN PORTION OF THE SITE HAS BEEN DEEMED NECESSARY BY THE SOIL CONSERVATION DISTRICT TO PROVIDE A NON-EROSIVE OUTFALL FOR THE STORM WATER MANAGEMENT. THE EXISTING STREAM DOES NOT PRESENT A POSSIBLE DISCHARGE POINT THAT WOULD EXPERIENCE A 10% SLOPE OR LESS BEFORE ENTERING THE STREAM. A JOINT FEDERAL/STATE APPLICATION FOR THE ALTERATION OF ANY FLOODPLAIN, WATERWAY, TIDAL OR NON-TIDAL WETLAND IN MARYLAND HAS BEEN SUBMITTED (TRACKING NO. 200706047-2008)
- THE FOREST CONSERVATION EASEMENT HAS BEEN PROVIDED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION MANUAL. 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.
- THE FOLLOWING DPZ FILE REFERENCES: SP-06-01, F-06-110



**AS-BUILT NOTES:**  
 1) HORIZONTAL DATUM FOR THIS AS-BUILT IS BASED ON THE MARYLAND STATE REFERENCE SYSTEM NAD 83/AD 91 AS PROJECTED FROM HO. CO. GEODETIC CONTROL STATIONS 154A AND 154B. VERTICAL DATUM FOR THIS AS-BUILT IS NORTH AMERICAN VERTICAL DATUM NGVD 29 AS PROJECTED FROM THE ABOVE MENTIONED HOWARD COUNTY GEODETIC CONTROL STATIONS.  
 2) THE INSTRUMENTS USED IN PERFORMING THE AS-BUILT WERE A 6" TOTAL STATION AND PRISM AND LIT-GPS.  
 3) THIS AS-BUILT WAS PERFORMED BY BENCHMARK ENGINEERING, INC.

**VICINITY MAP**  
 SCALE: 1" = 2000'  
 ADC HOWARD COUNTY MAP #9, G-2; H2 AND G-3; H-3

SITE ANALYSIS DATA CHART	
GENERAL SITE DATA	
1.) PRESENT ZONING:	RC-DEO
2.) APPLICABLE DPZ FILE REFERENCES:	SP-06-001
3.) PROPOSED USE OF SITE:	RESIDENTIAL
4.) PROPOSED WATER AND SEWER SYSTEMS:	PRIVATE
AREA TABULATION	
1.) GROSS TRACT AREA (AREA OF BULK PARCEL "F" FROM F-06-110) (NOT COUNTED TOWARDS NET TRACT AREA)	61,066.4 AC.
2.) AREA WITHIN 100-YEAR FLOODPLAIN (PARCEL A)	3.41 AC.
3.) TOTAL AREA OF 25% OR GREATER STEEP SLOPES	0.14 AC.
4.) NET TRACT AREA	57,175.4 AC.
LIMIT OF DISTURBANCE	
1 UNIT PER 4.25 GROSS ACRES	14
1 UNIT PER 2 NET ACRES (MAX)	28
LIMIT OF WETLANDS	
1.) TOTAL AREA OF NON-BUILDABLE PRESERVATION PARCELS (PARCEL A & C)	35,688.4 AC.
2.) TOTAL AREA OF BUILDABLE PRESERVATION PARCEL (PARCEL B)	0.14 AC.
3.) TOTAL AREA OF NON-BUILDABLE BULK PARCELS	N/A
4.) TOTAL AREA OF BUILDABLE BULK PARCELS	N/A
5.) TOTAL AREA OF ROAD RIGHT-OF-WAY (INCLUDES AREA OF BULK PARCEL "F")	1,614.4 AC.
6.) OPEN SPACE ON-TOTAL SITE	N/A
7.) AREA OF RECREATIONAL OPEN SPACE REQUIRED	N/A

LEGEND	
EXISTING CONTOURS	999
PROPOSED CONTOURS	999
EXISTING WOODS LINE	
EXISTING STRUCTURE	
PROPOSED STRUCTURE	
SLOPES 15% TO 24.9%	
LIMIT OF DISTURBANCE	
STABILIZED CONSTRUCTION ENTRANCE	
SILT FENCE	
SUPER S-LT FENCE	
CL. STREAM	
LIMIT OF WETLANDS	
LIMIT OF SUBMISSION	
PROPOSED FOREST RESTORATION EASEMENT	
PROPOSED FOREST CONSERVATION EASEMENT	
NO WOODY BUFFER REMOVE ALL WOODY VEGETATION LESS THAN 8" CALIBER	

**AS-BUILT CERTIFICATION**  
 I hereby certify that the facilities shown on this plan were constructed as shown on this AS-BUILT plan.  
 Daniel Maccon, P.E. No. 21443 Date 1-20-15  
 PROFESSIONAL ENGINEER  
 STATE OF MARYLAND  
 PROFESSIONAL ENGINEER

DENSITY EXCHANGE CHART	
GROSS AREA	60.72 AC.± (DOES NOT INCLUDE THE RESUBDIVISION OF BULK PARCEL "F")
100-YEAR FLOODPLAIN & STEEP SLOPE AREA	3.55 AC.±
NET TRACT AREA	57.17 AC.±
DWELLING UNITS ALLOWED (as matter of right)	60.72 AC.± @ 1 DU per 4.25 GROSS ACRES = 14
MAXIMUM DWELLING UNITS ALLOWED W/ CEO'S	57.17 AC.± @ 1 DU per 2.00 NET ACRES = 28
PROPOSED DWELLING UNITS	15 ± 1 EXISTING UNIT = 16
NUMBER OF CEO UNITS TO BE RECEIVED	16 - 14 (base density) = 2
SENDING PARCEL INFORMATION	
MWB PROPERTIES, LLC. PARCEL 102 TAX MAP 7, GRID 12	

### PLAN VIEW

SCALE: 1" = 200'

### SUMMARY OF GENERAL STORAGE REQUIREMENTS DRAINAGE AREA #2

Step	Requirement	Volume Required (ac-ft)	Notes
1.	Water Quality Volume (WQv)	Sub 1 = N/A Sub 2 = 0.1026 ac-ft (or 4467.43cf)	0.1026 ac-ft provided within a micro-pool extended detention facility
2.	Recharge Volume (Rev)	Sub 1 = N/A Sub 2 = 0.0267 ac-ft (or 0.2785 acres)	Rev provided within grassed swales along roadway.
3.	Channel Protection Volume (Cpv)	0.6026 ac-ft	Provided within a micro-pool extended detention facility
4.	Overbank Flood Protection Volume (Op)	N/A	Not required
5.	Extreme Flood Volume (EQ)	N/A	Not required

### SUMMARY OF GENERAL STORAGE REQUIREMENTS DRAINAGE AREA #3

Step	Requirement	Volume Required (ac-ft)	Notes
1.	Water Quality Volume (WQv)	N/A	No new disturbance or impervious swales along roadway.
2.	Recharge Volume (Rev)	N/A	No new disturbance or impervious swales along roadway.
3.	Channel Protection Volume (Cpv)	N/A	CPv controlled at facility for drainage area #2
4.	Overbank Flood Protection Volume (Op)	N/A	Not required
5.	Extreme Flood Volume (EQ)	N/A	Not required

MINIMUM LOT SIZE CHART			
LOT NO.	GROSS AREA	PIPESTEM AREA	MINIMUM LOT SIZE
13	45,428	3,088	40,340
14	40,879	1,287	39,592

SWM FACILITY #1		
STORAGE	STORAGE	ELEVATION
WQv	520.61	
Cpv	521.71	
100 YR	523.28	

SWM FACILITY #2		
STORAGE	STORAGE	ELEVATION
WQv	538.25	
Cpv	540.13	
100 YR	541.69	

### SUMMARY DISCHARGE SWM DISCHARGE SUMMARY TABLES

STUDY POINTS (DRAINAGE AREAS)	EXISTING DISCHARGE (CFS)			DEVELOPED DISCHARGE (CFS)		
	1 YR	10 YR	100 YR	1 YR	10 YR	100 YR
#1 (1)	6.8	65.4	132.9	5.2	48.5	126.6
#2 (2)	7.1	50.0	96.9	0.7	40.3	92.4
#3 (2 & 3)	32.5	200.8	380.4	26.0	185.6	376.9

### SUMMARY OF GENERAL STORAGE REQUIREMENTS DRAINAGE AREA #1

Step	Requirement	Volume Required (ac-ft)	Notes
1.	Water Quality Volume (WQv)	Sub 1 = N/A Sub 2 = 0.3582 ac-ft (or 15,604.1 cfs)	0.3582 ac-ft provided within a micro-pool extended detention facility
2.	Recharge Volume (Rev)	Sub 1 = N/A Sub 2 = 0.0931 ac-ft (or 1.0266 acres)	Rev provided within grassed swales along roadway.
3.	Channel Protection Volume (Cpv)	0.6211 ac-ft (or 27,055.53 acres)	0.6211 ac-ft provided within a micro-pool extended detention facility
4.	Overbank Flood Protection Volume (Op)	N/A	Not required
5.	Extreme Flood Volume (EQ)	N/A	Not required

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 [Signature] 10-29-07  
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 11/10/07  
 CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: DEVELOPMENT ENGINEERING DIVISION  
 [Signature] 11/10/07  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

**BENCHMARK ENGINEERING, INC.**  
 ENGINEERS • LAND SURVEYORS • PLANNERS  
 8480 BALTIMORE NATIONAL PIKE # SUITE 418  
 ELLICOTT CITY, MARYLAND 21043  
 PHONE: 410-485-6105 FAX: 410-485-8644  
 WWW.BE-ONLINEENGINEERING.COM

STATE OF MARYLAND  
 BOARD OF PROFESSIONAL ENGINEERS  
 [Signature] 9/16/2007  
 PROFESSIONAL ENGINEER  
 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. 28559, Expiration Date: 7-22-2009

OWNER/DEVELOPER: SPRING MILL, LLC  
 P.O. BOX 417  
 ELLICOTT CITY, MD 21041  
 410-485-4244

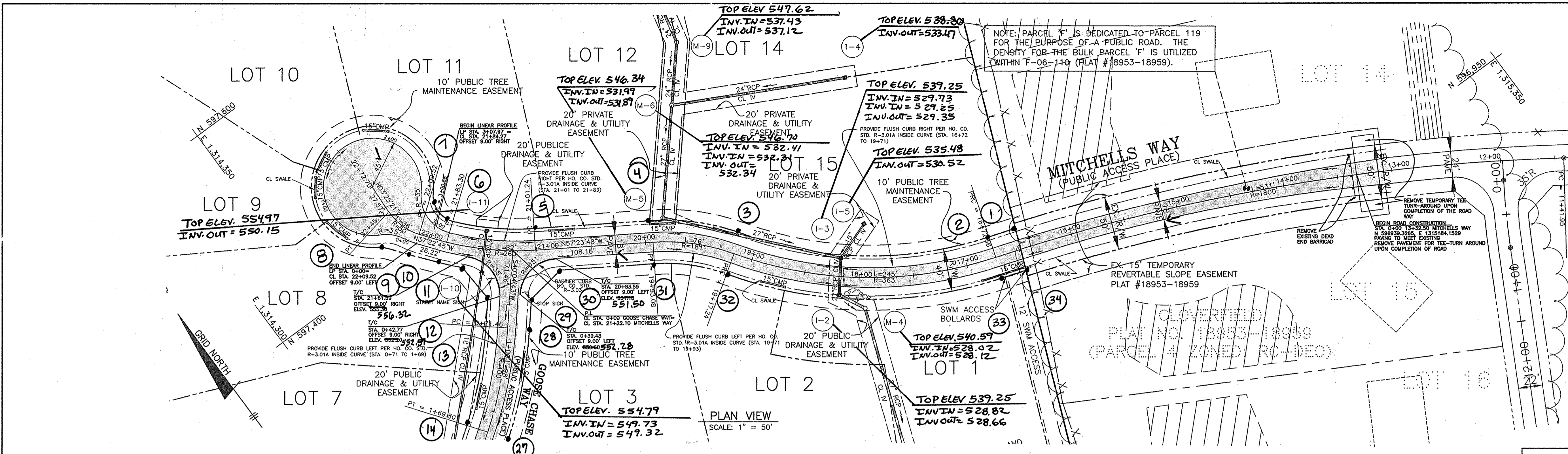
PROJECT: CLOVERFIELD-SECTION II  
 LOTS 1 THRU 15, NON-BUILDABLE PRESERVATION PARCELS "A" AND "C", AND BUILDABLE PRESERVATION PARCEL "B", A RESUBDIVISION OF NON-BUILDABLE BULK PARCEL "F" AND PARCEL 119

LOCATION: TAX MAP -15 GRIDS-7&8 PARCEL-119  
 3rd ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

TITLE SHEET  
 ROADS, STORMWATER MANAGEMENT AND STORM DRAIN CONSTRUCTION PLANS

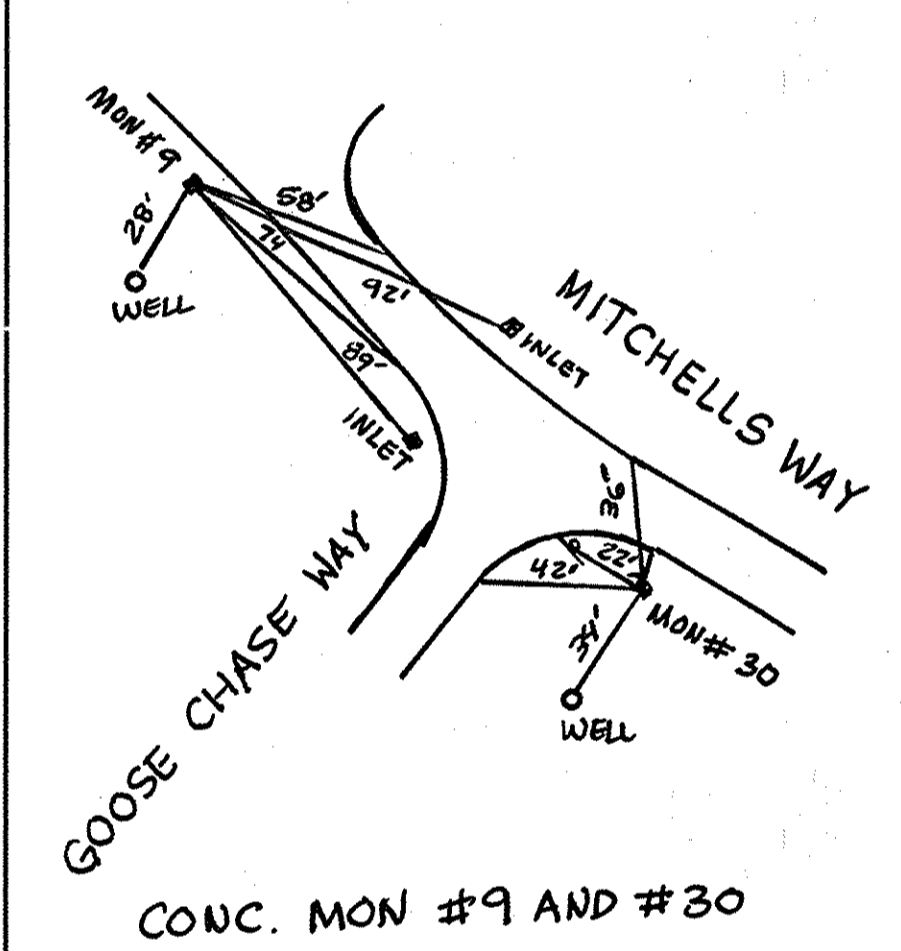
DATE: NOVEMBER 2006  
 OCTOBER 2007 PROJECT NO. 1649

DESIGN: BFC DRAFT: BFC CHECK: DAM SCALE: AS SHOWN SHEET 1 OF 17



**RIGHT OF WAY ELEVATION CHART NAD 83**

R/W PT. NO.	DESCRIPTION	ELEVATION	R/W PT. NO.	DESCRIPTION	ELEVATION
1	REBAR # CAP	554.93	18	REBAR # CAP	550.76
2	REBAR # CAP	543.27	19	REBAR # CAP	551.31
3	REBAR # CAP	540.83	20	REBAR # CAP	552.62
4	REBAR # CAP	546.18	21	REBAR # CAP	550.29
5	REBAR # CAP	552.27	22	REBAR # CAP	549.87
6	REBAR # CAP	557.05	23	REBAR # CAP	547.84
7	REBAR # CAP	551.16	24	REBAR # CAP	547.97
8	REBAR # CAP	541.18	25	REBAR # CAP	547.97
9	CONC. MON	550.33	26	REBAR # CAP	547.87
10	REBAR # CAP	556.70	27	REBAR # CAP	545.20
11	REBAR # CAP	553.73	28	REBAR # CAP	550.87
12	REBAR # CAP	552.72	29	REBAR # CAP	550.65
13	REBAR # CAP	551.22	30	CONC. MON	550.71
14	REBAR # CAP	546.39	31	REBAR # CAP	549.87
15	REBAR # CAP	554.79	32	REBAR # CAP	541.63
16	REBAR # CAP	548.04	33	REBAR # CAP	544.11
17	REBAR # CAP	550.39	34	REBAR # CAP	545.13



AS-BUILT CERTIFICATION  
I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this AS-BUILT plan.  
Donald Mason, P.E. No. 21443 Date 1-20-15

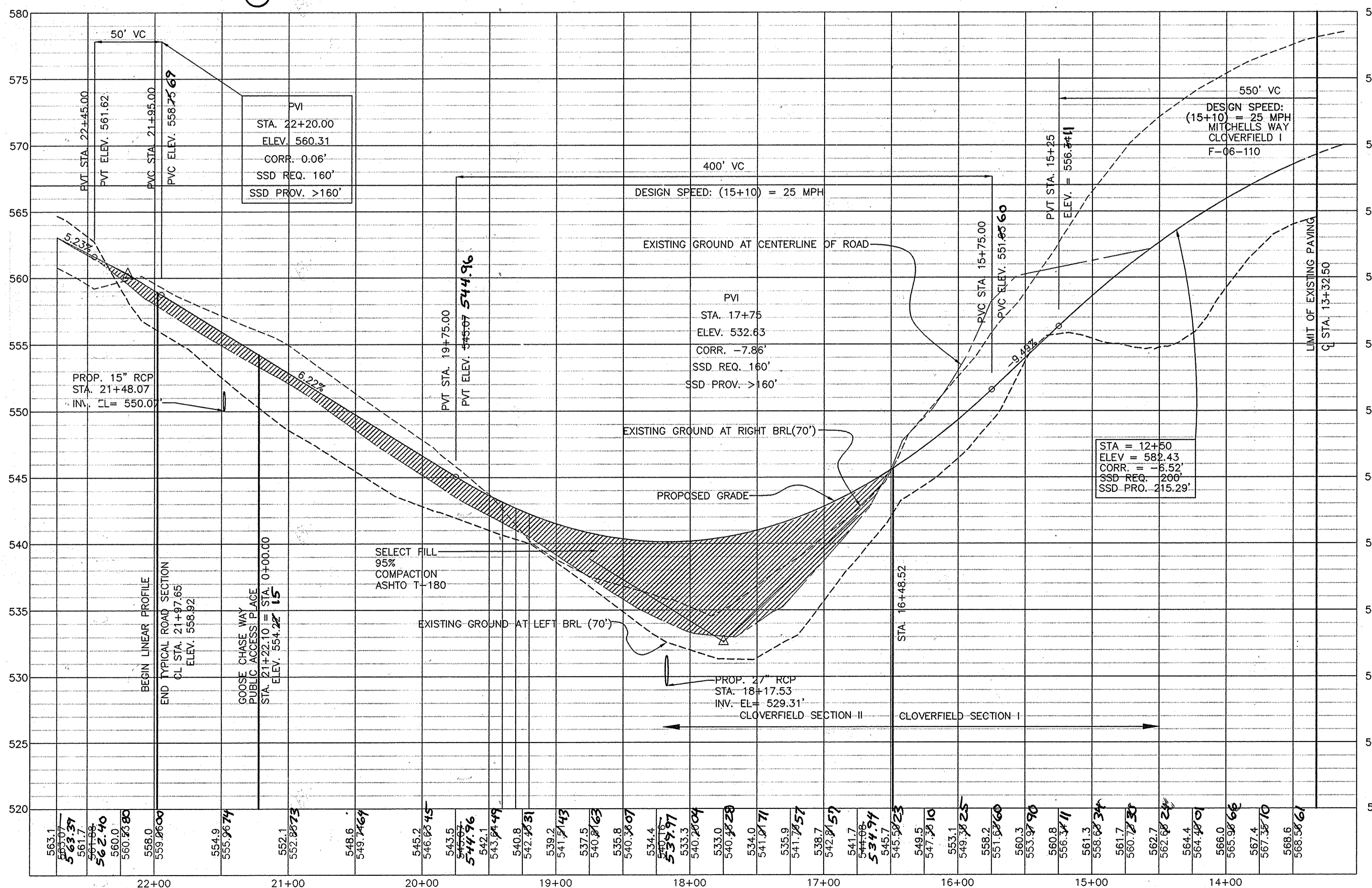


Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.  
License No. 21443 Expiration Date: 12-21-16

APPROVED: DEPARTMENT OF PUBLIC WORKS  
*William A. M... 10-29-07*  
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*Quincy... 11/1/07*  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*... 11/1/07*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



**CENTERLINE CONTROL DATA**

STREET NAME	STATION	NORTH	EAST
MITCHELLS WAY	BEGIN=13+32.50	596938.88	1315183.91
	PRC=16+72.56	597074.22	1314872.53
	PRC=19+17.24	597219.71	1314681.57
	PT=19+93.08	597272.58	1314627.97
	PC=21+01.24	597330.86	1314536.85
	PT=21+83.30	597385.13	1314475.76
	PC=22+09.52	597405.96	1314459.84
	PT=22+45.13	597439.30	1314449.66
	END=22+72.70	597466.83	1314451.31

**CENTER LINE CURVE DATA**

STREET NAME	STATION	RADIUS	LENGTH	DELTA	TANGENT	CHORD
MITCHELLS WAY	STA. 11+41.85 TO 16+72.56	1800.00'	530.61'	16°53'24"	267.24'	N63°33'41"W 528.69'
	STA. 16+72.56 TO 19+17.24	363.00'	244.67'	38°37'09"	127.19'	N52°41'49"W 240.07'
	STA. 19+17.24 TO 19+93.08	181.00'	75.85'	24°00'17"	38.49'	N45°23'31"W 75.29'
	STA. 21+01.29 TO 21+83.34	259.78'	259.78'	18°05'52"	41.37'	N48°23'07"W 81.72'
STA. 22+09.52 TO 22+45.13	50.00'	35.61'	40°48'06"	18.60'	N16°58'42"W 34.86'	

\* - CURVE WITHIN CUL-DE-SAC AND THEREFORE MINIMUM CURVE REQUIREMENT DOES NOT APPLY.

**SIGN POSTS:**  
ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE SLEEVE (12 GAUGE) - 3' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.

NO. DATE REVISION

**BENCHMARK ENGINEERING, INC.**  
ENGINEERS • LAND SURVEYORS • PLANNERS  
8480 BALTIMORE NATIONAL PIKE SUITE 418  
ELLICOTT CITY, MARYLAND 21043  
PHONE: 410-465-6105 FAX: 410-465-6644  
WWW.BE-CIVILENGINEERING.COM

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. 2859, Expiration Date: 7-22-2009.

OWNER/DEVELOPER: **SPRING MILL, LLC**  
P.O. BOX 417  
ELLICOTT CITY, MD 21041  
410-465-4544

PROJECT: **CLOVERFIELD-SECTION II**  
LOTS 1 THRU 15, NON-BUILDABLE PRESERVATION PARCELS "A" AND "C", AND BUILDABLE PRESERVATION PARCEL "B". A RESUBDIVISION OF NON-BUILDABLE BULK PARCEL "F" AND PARCEL 119

LOCATION: TAX MAP-15 GRID-7 PARCEL-119  
3rd ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

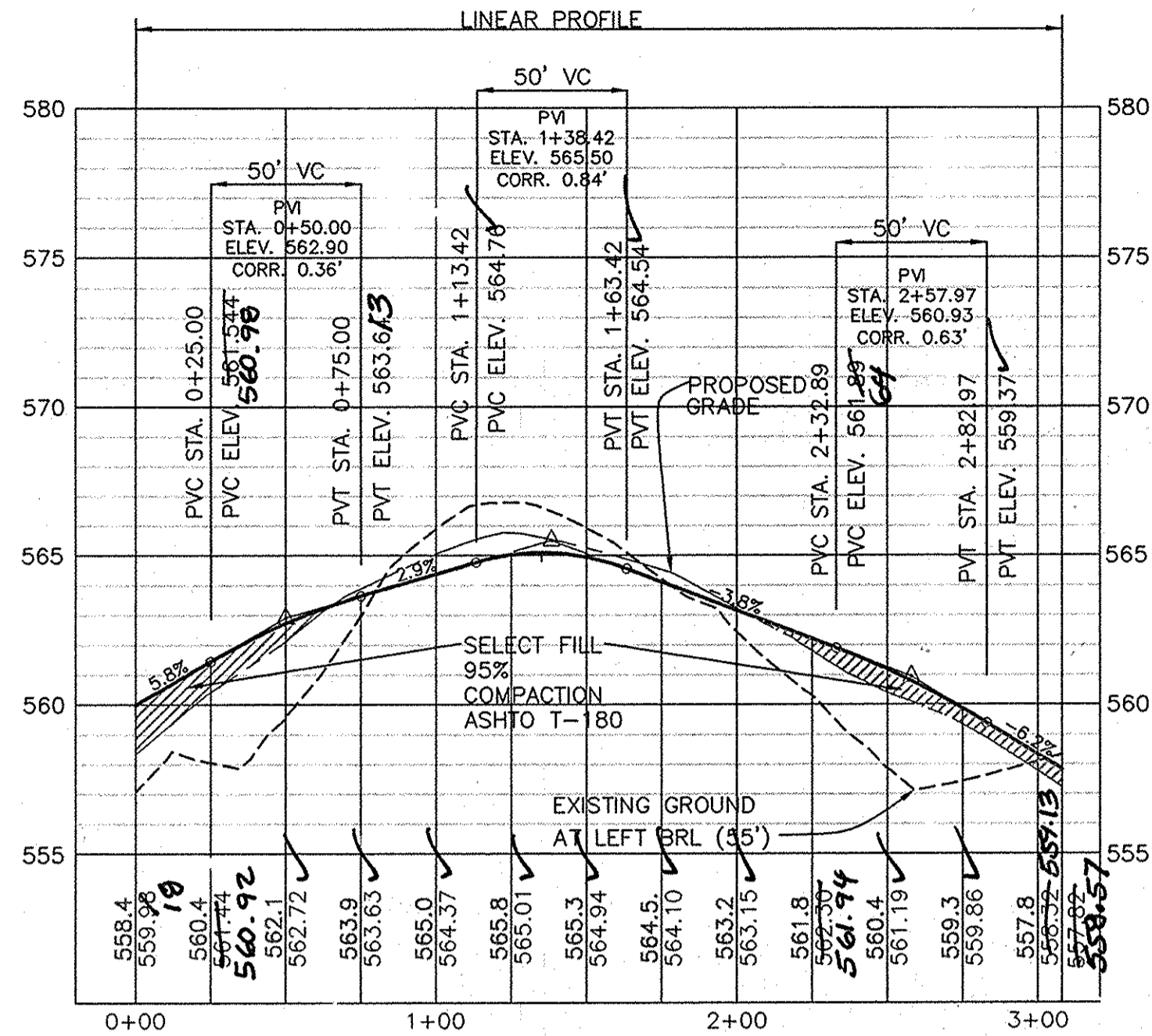
TITLE: **ROAD PLAN AND PROFILE**  
ROADS, STORMWATER MANAGEMENT AND STORM DRAIN CONSTRUCTION PLANS

DATE: NOVEMBER, 2006  
OCTOBER, 2007

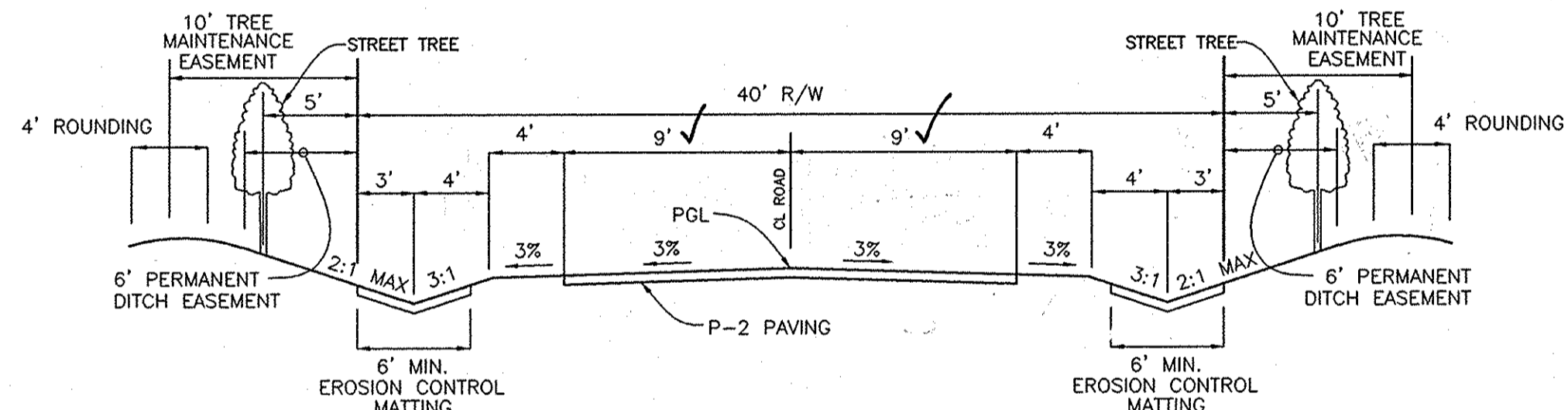
PROJECT NO. 1649

DESIGN: DBT DRAFT: DLF CHECK: DAM SCALE: AS SHOWN SHEET 2 OF 17

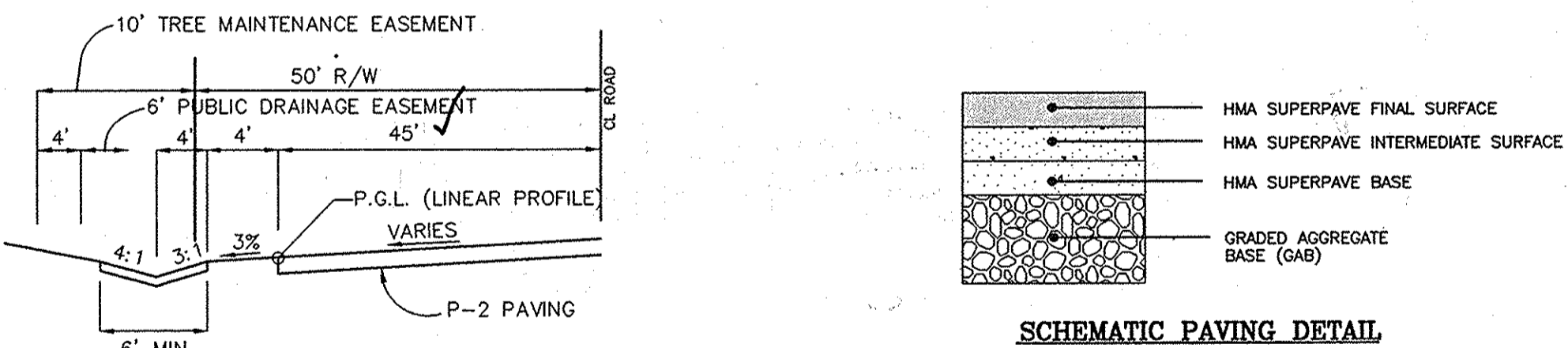
**MITCHELLS WAY**  
PUBLIC ACCESS PLACE (STA. 13+32.50 TO 22+45.17)  
SCALE: 1"=50' HORIZ., 1"=5' VERT.



**MITCHELLS WAY  
CUL-DE-SAC**  
(STA. 0+0.00 TO 3+07.97)  
SCALE: 1"=50' HORIZ., 1"=5' VERT.



**TYPICAL ROADWAY SECTION  
MITCHELLS WAY AND GOOSE CHASE WAY**  
PUBLIC ACCESS PLACE (MAX. 200 ADT)  
DESIGN SPEED: (15+5)=20 MPH  
MITCHELLS WAY - STA. 13+30 TO 21+84  
GOOSE CHASE WAY - STA. 0+00 TO 5+17  
NOT TO SCALE



**SCHEMATIC PAVING DETAIL**  
NOT TO SCALE

**TYPICAL ROADWAY SECTION  
AT CUL-DE-SAC  
LINEAR PROFILE  
NOT TO SCALE**

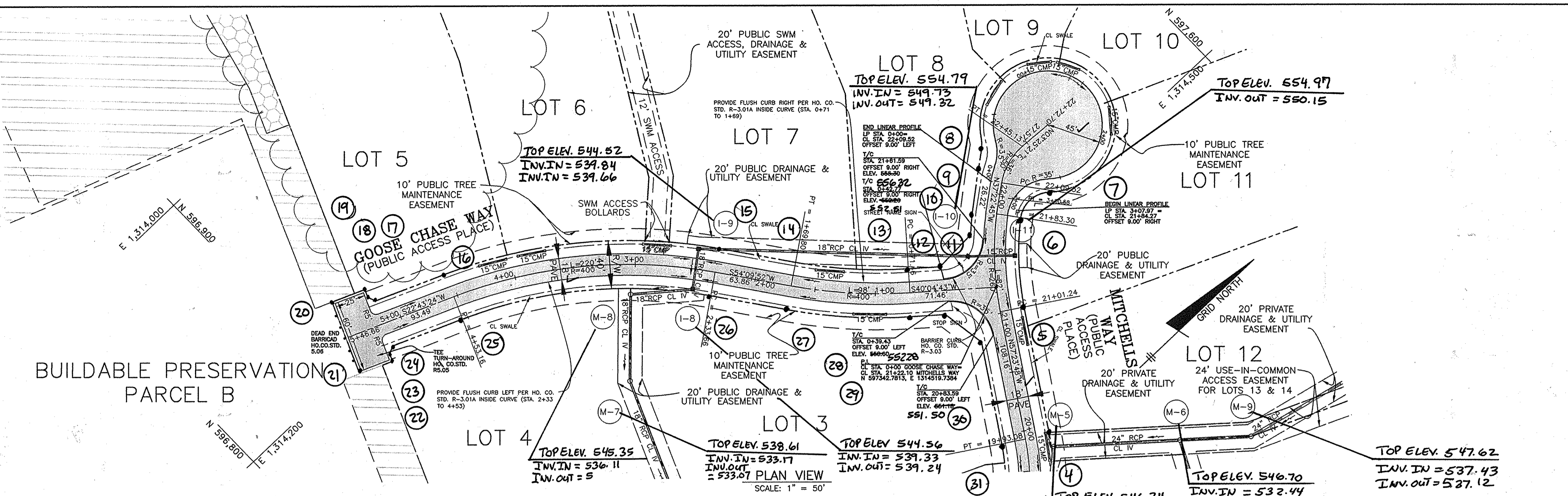
P-2	PARKING DRIVE ASILES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY LOCAL ACCESS STREET CUL-DE-SAC RESIDENTIAL	HMA SUPERPAVE FINAL SURFACE				
		1.5	1.5	1.5	1.5	1.5
P-3	PARKING DRIVE ASILES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY LOCAL ACCESS STREET CUL-DE-SAC RESIDENTIAL	HMA SUPERPAVE INTERMEDIATE SURFACE				
		1.0	1.0	1.0	1.0	1.0
P-3	PARKING DRIVE ASILES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY LOCAL ACCESS STREET CUL-DE-SAC RESIDENTIAL	HMA SUPERPAVE BASE				
		2.0	2.0	2.0	2.0	2.0
P-3	PARKING DRIVE ASILES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY LOCAL ACCESS STREET CUL-DE-SAC RESIDENTIAL	GRADED AGGREGATE BASE (GAB)				
		3.0	3.0	3.0	3.0	3.0
P-3	PARKING DRIVE ASILES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY LOCAL ACCESS STREET CUL-DE-SAC RESIDENTIAL	HMA SUPERPAVE FINAL SURFACE				
		1.5	1.5	1.5	1.5	1.5
P-3	PARKING DRIVE ASILES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY LOCAL ACCESS STREET CUL-DE-SAC RESIDENTIAL	HMA SUPERPAVE INTERMEDIATE SURFACE				
		1.0	1.0	1.0	1.0	1.0
P-3	PARKING DRIVE ASILES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY LOCAL ACCESS STREET CUL-DE-SAC RESIDENTIAL	HMA SUPERPAVE BASE				
		2.0	2.0	2.0	2.0	2.0
P-3	PARKING DRIVE ASILES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY LOCAL ACCESS STREET CUL-DE-SAC RESIDENTIAL	GRADED AGGREGATE BASE (GAB)				
		3.0	3.0	3.0	3.0	3.0

**PAVING SPECIFICATIONS (HO.CO. STD R-2.01)**

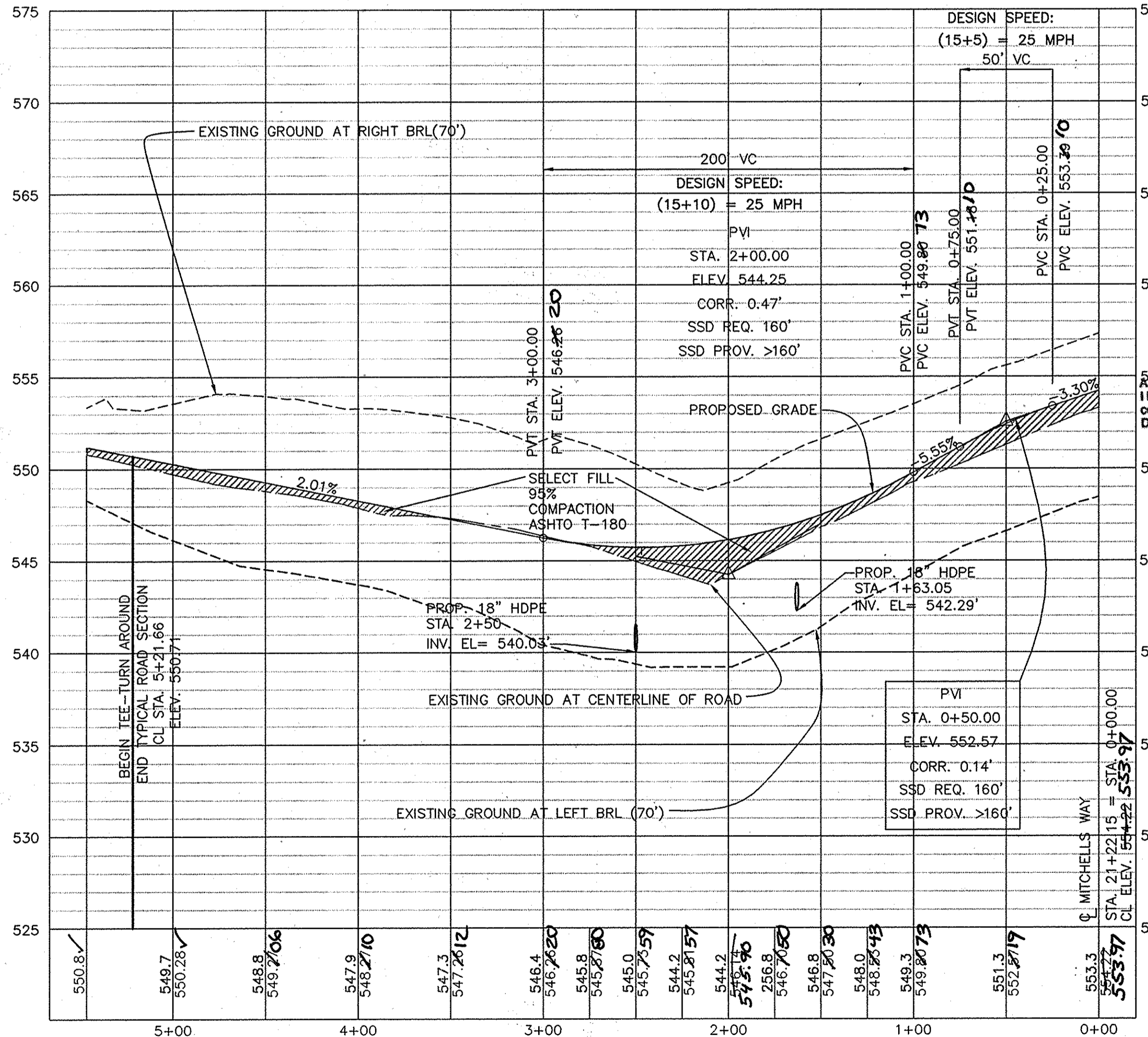
APPROVED: DEPARTMENT OF PUBLIC WORKS  
*William J. ...* 10-29-07  
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*...* 11/1/07  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

APPROVED: DEPARTMENT OF ENGINEERING DIVISION  
*...* 11/1/07  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



**BUILDABLE PRESERVATION  
PARCEL B**



**GOOSE CHASE WAY**  
PUBLIC ACCESS PLACE (STA. 0+0.00 TO 5+46.66)  
SCALE: 1"=50' HORIZ., 1"=5' VERT.

**CENTER LINE CURVE DATA**

STREET NAME	STATION	RADIUS	LENGTH	TANGENT	CHORD
GOOSE CHASE WAY	STA. 0+71.80 TO 1+69.80	1480.00'	980.36'	16°05'09"	202.02'
	STA. 2+33.66 TO 4+53.16	400.00'	219.50'	31°26'28"	112.59'

\* - CURVE WITHIN CUL-DE-SAC AND THEREFORE MINIMUM CURVE REQUIREMENT DOES NOT APPLY.

**CENTERLINE CONTROL DATA**

STREET NAME	STATION	NORTH	EAST
GOOSE CHASE WAY	BEGIN=0+00.00	597342.78	1314519.74
	PC=0+71.46	597288.10	1314473.73
	PT=1+69.80	597221.36	1314401.85
	PC=2+33.60	597183.97	1314350.07
	PT=4+53.16	597014.20	1314215.31
	END=5+42.66	596927.96	1314179.19

**AS-BUILT CERTIFICATION**  
I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this AS-BUILT plan.  
Donald Mason, P.E. No. 21443 Date 1-20-15



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. 21443 Expiration Date: 12-21-16

**SIGN POSTS:**  
ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE SLEEVE (12 GAUGE) - 3' LONG, A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.

NO.	DATE	REVISION

**BENCHMARK ENGINEERING, INC.**  
ENGINEERS • LAND SURVEYORS • PLANNERS  
8480 BALTIMORE NATIONAL PIKE • SUITE 418  
ELLCOTT CITY, MARYLAND 21043  
PHONE: 410-465-6105 FAX: 410-465-6644  
WWW.BE-CVLENGINEERING.COM

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. 28559, Expiration Date: 7-22-2009.

OWNER/DEVELOPER: **SPRING MILL, LLC**  
P.O. BOX 417  
ELLCOTT CITY, MD 21041  
410-465-4544

PROJECT: **CLOVERFIELD-SECTION II**  
LOTS 1 THRU 15, NON-BUILDABLE PRESERVATION PARCELS "A" AND "C", AND BUILDABLE PRESERVATION PARCEL "B", A RESUBDIVISION OF NON-BUILDABLE BULK PARCEL "F" AND PARCEL 119

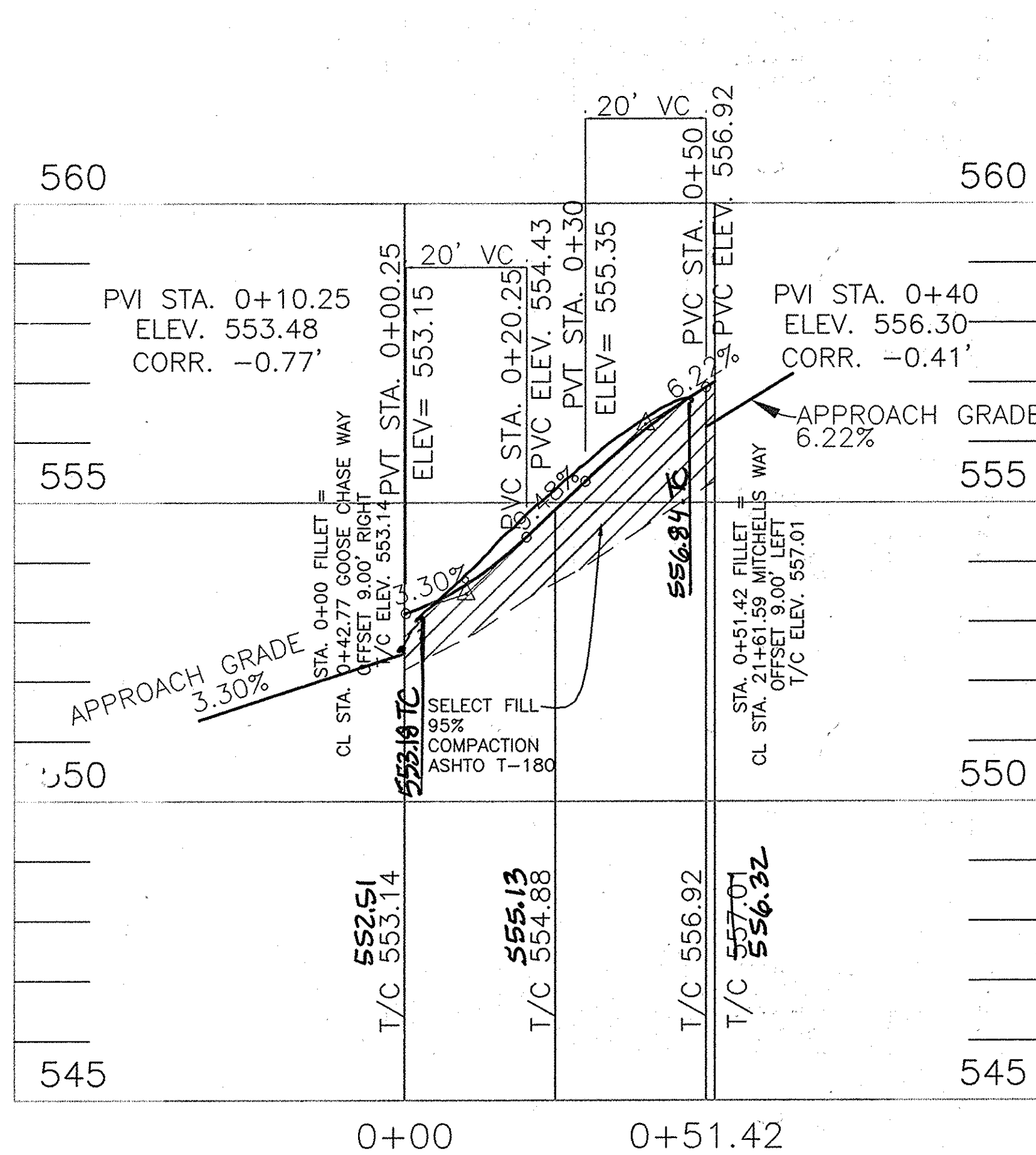
LOCATION: TAX MAP-15 GRID-7 PARCEL-119  
3rd ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

TITLE: **ROAD PLAN, PROFILE AND DETAILS**  
ROADS, STORMWATER MANAGEMENT AND STORM DRAIN CONSTRUCTION PLANS

DATE: NOVEMBER, 2006  
OCTOBER, 2007

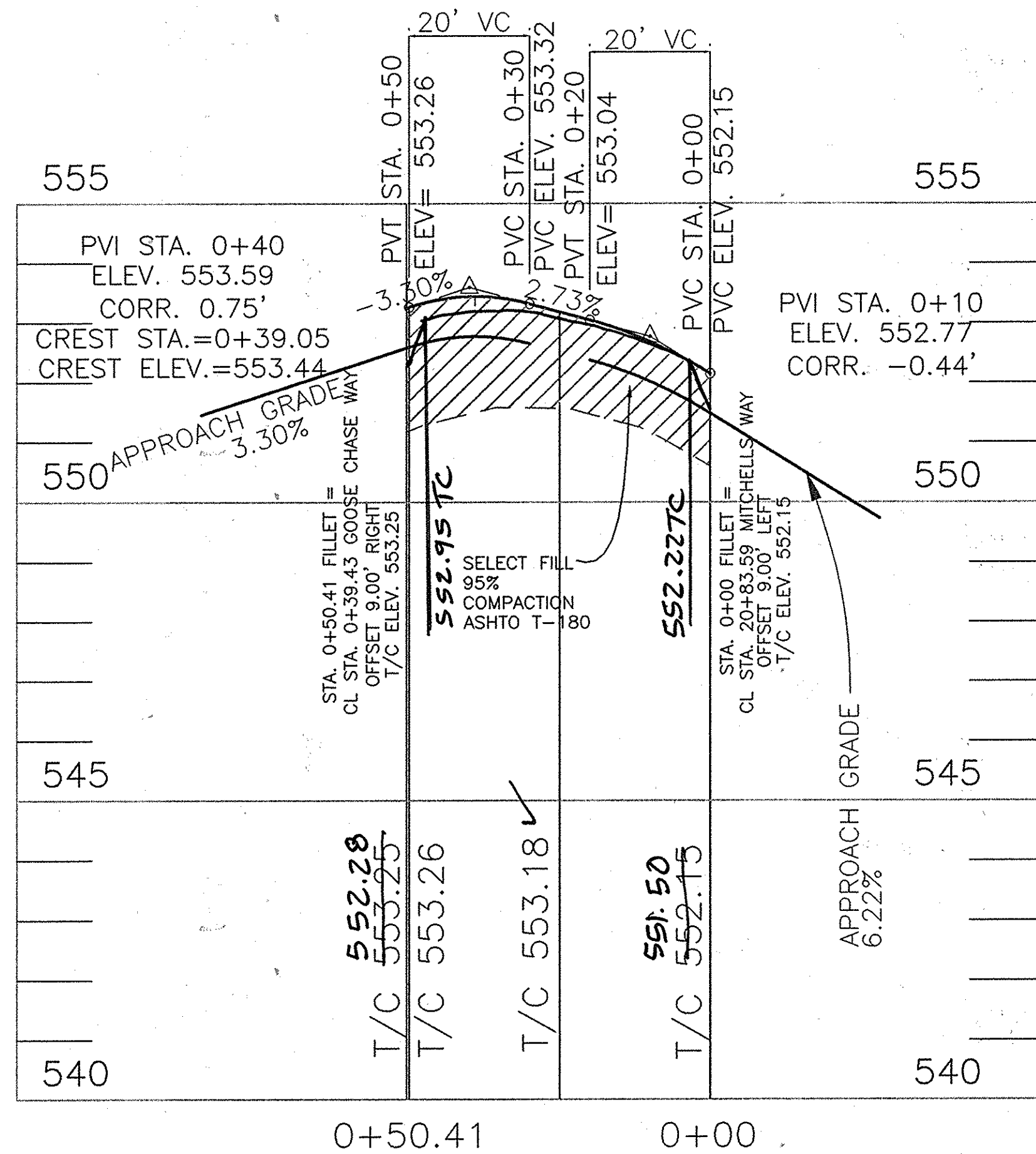
PROJECT NO. 1649

DESIGN: BFC DRAFT: BFC CHECK: DAM SCALE: AS SHOWN SHEET 3 OF 17



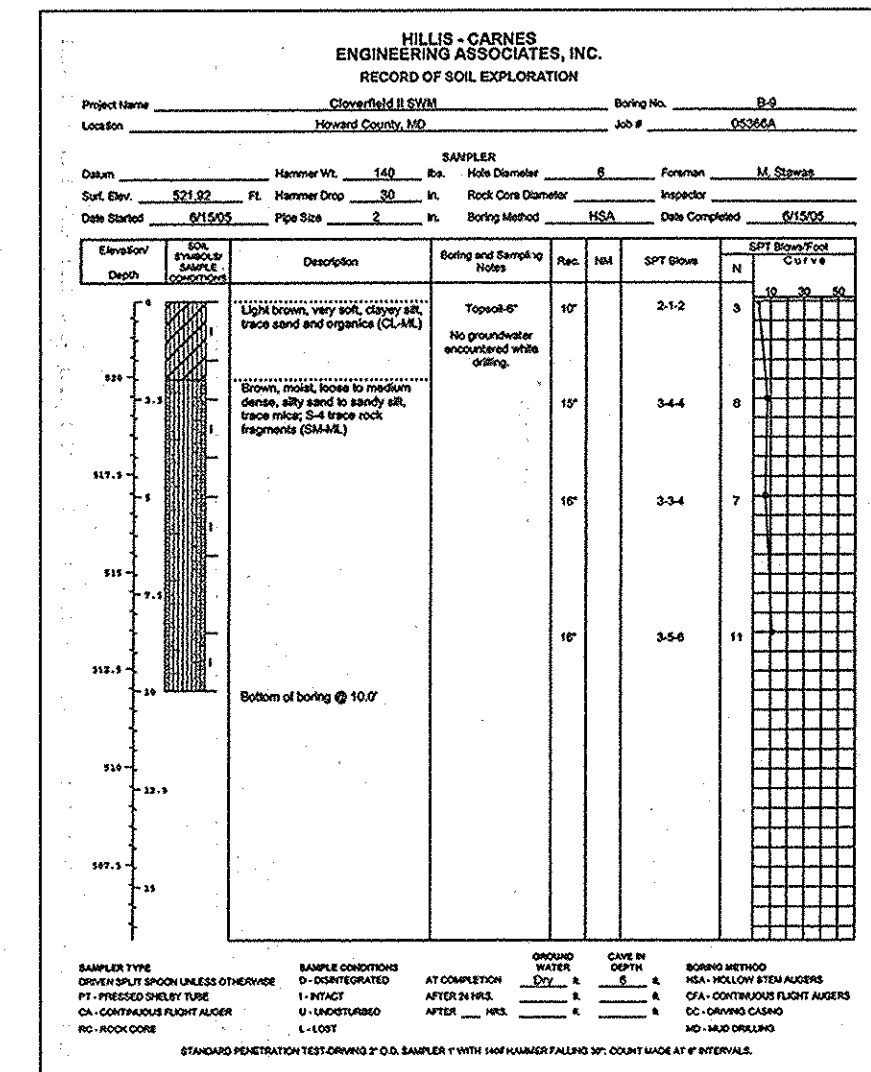
FILLET PROFILE - WEST CORNER  
MITCHELLS WAY/GOOSE CHASE WAY

SCALE: 1"=20' HORIZ., 1"=2' VERT.

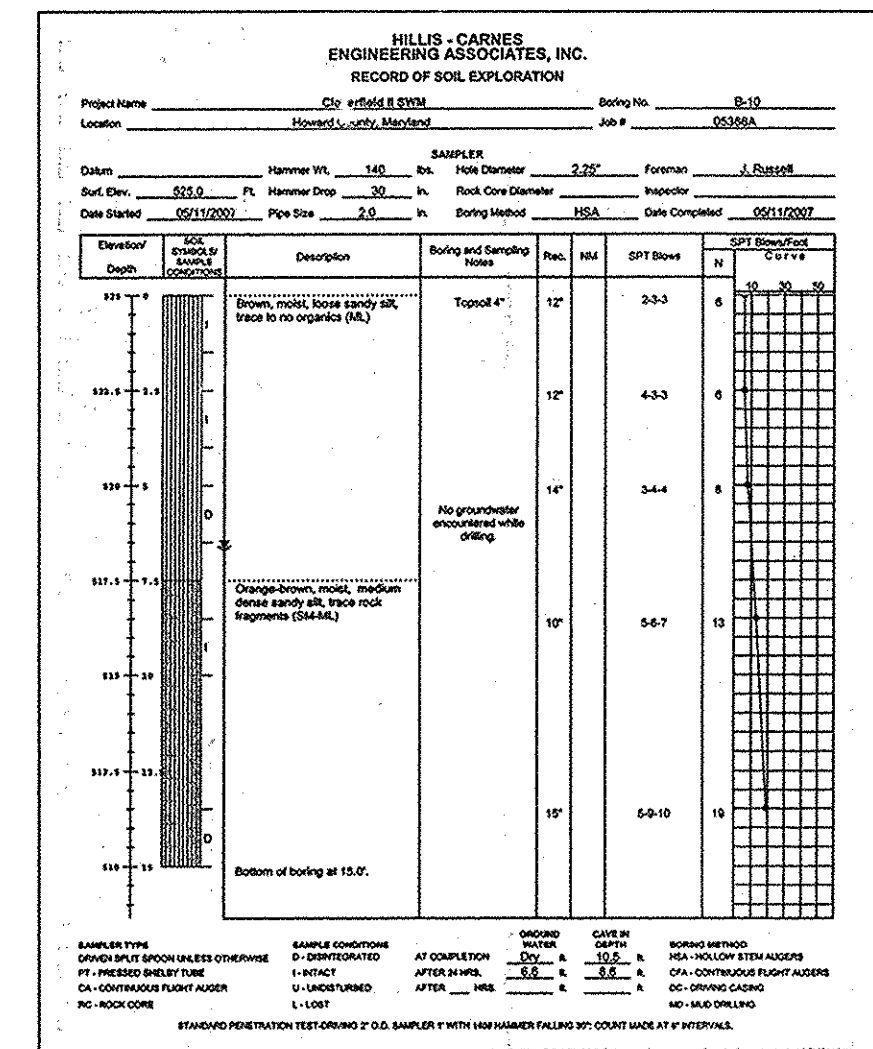


FILLET PROFILE - EAST CORNER  
MITCHELLS WAY/GOOSE CHASE WAY

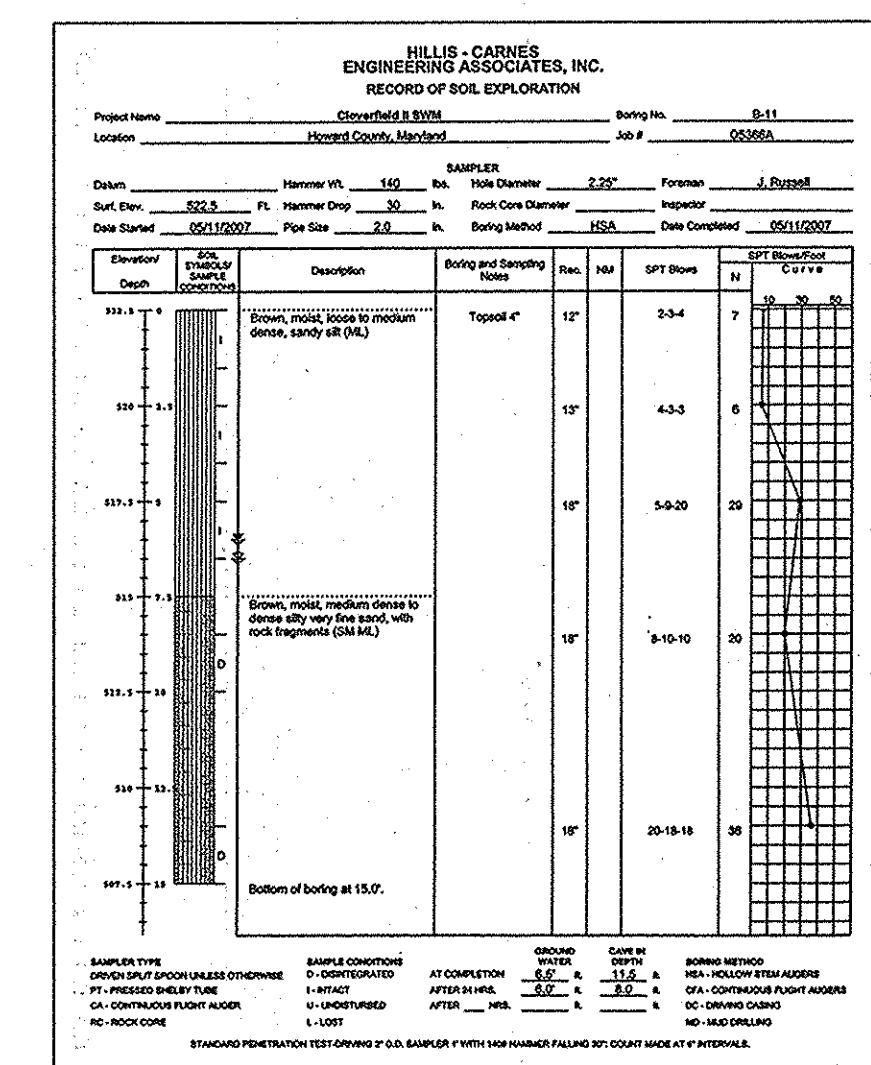
SCALE: 1"=20' HORIZ., 1"=2' VERT.



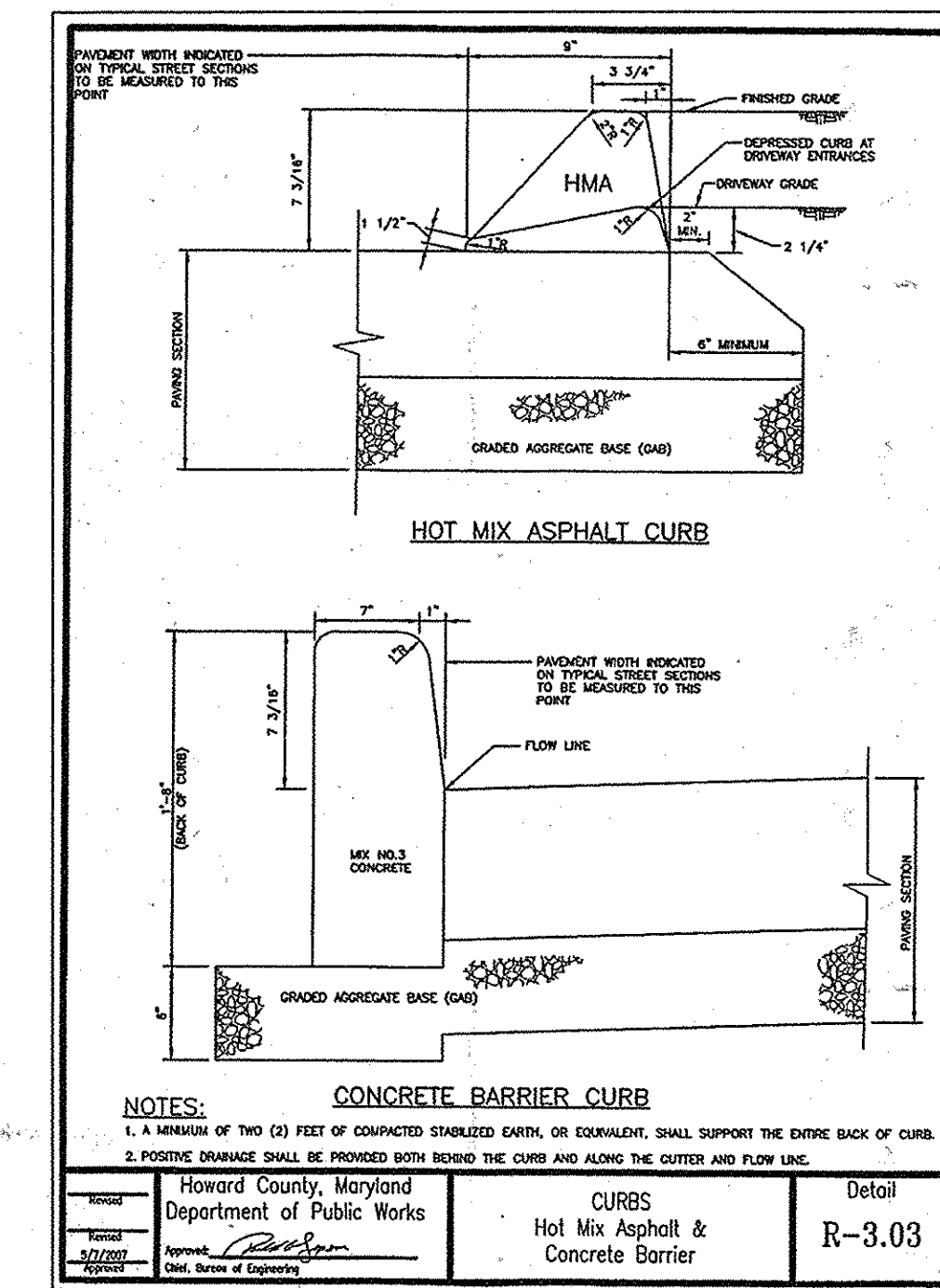
B-9



B-10

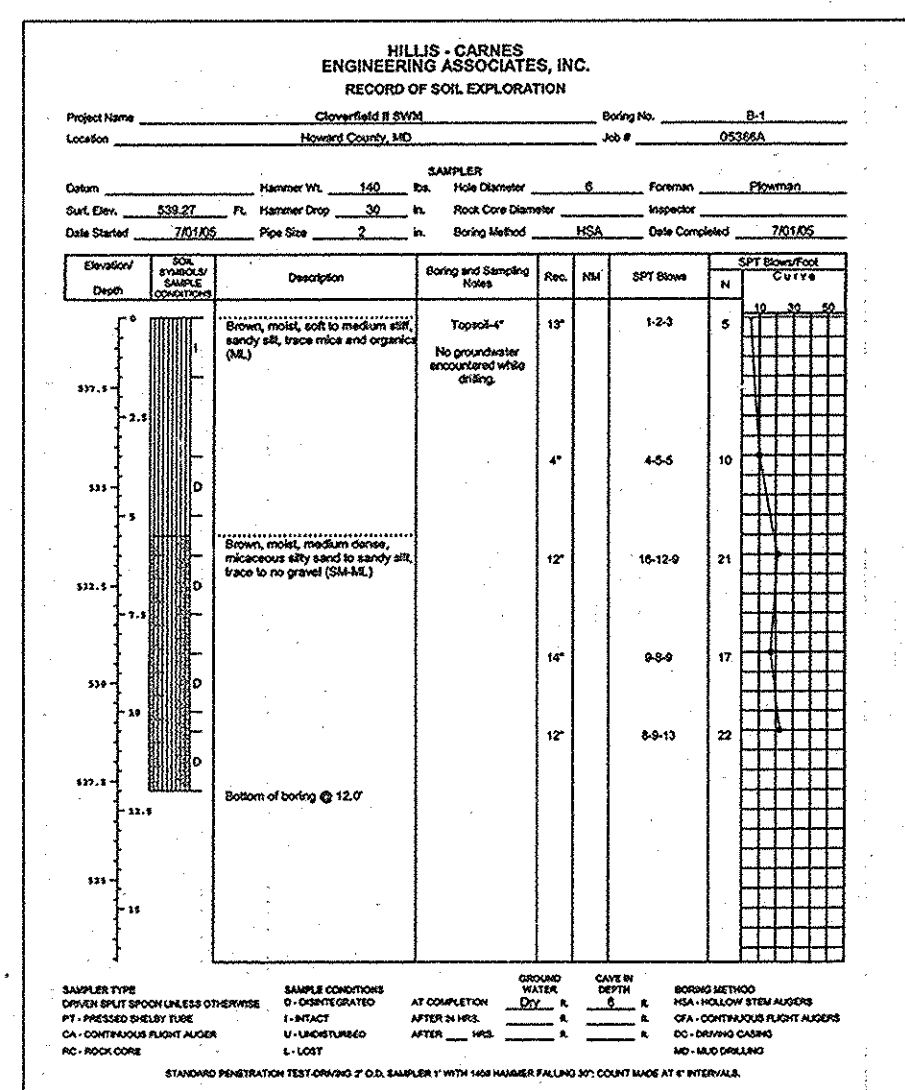


B-11

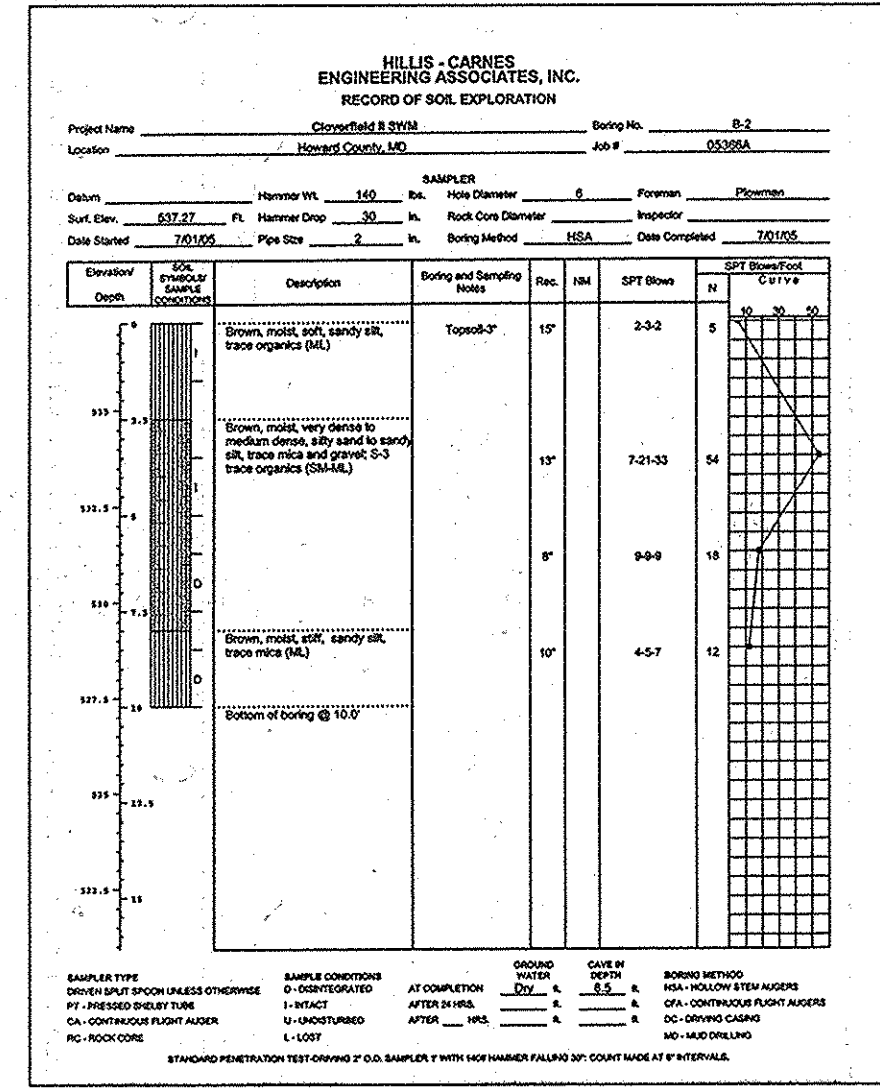


NOTES:  
1. A MINIMUM OF TWO (2) FEET OF COMPACTED GRANULAR DIRT, OR EQUIVALENT, SHALL SUPPORT THE ENTIRE BACK OF CURB.  
2. POSITIVE DRAINAGE SHALL BE PROVIDED BOTH BEHIND THE CURB AND ALONG THE OUTER AND FLOW LINE.

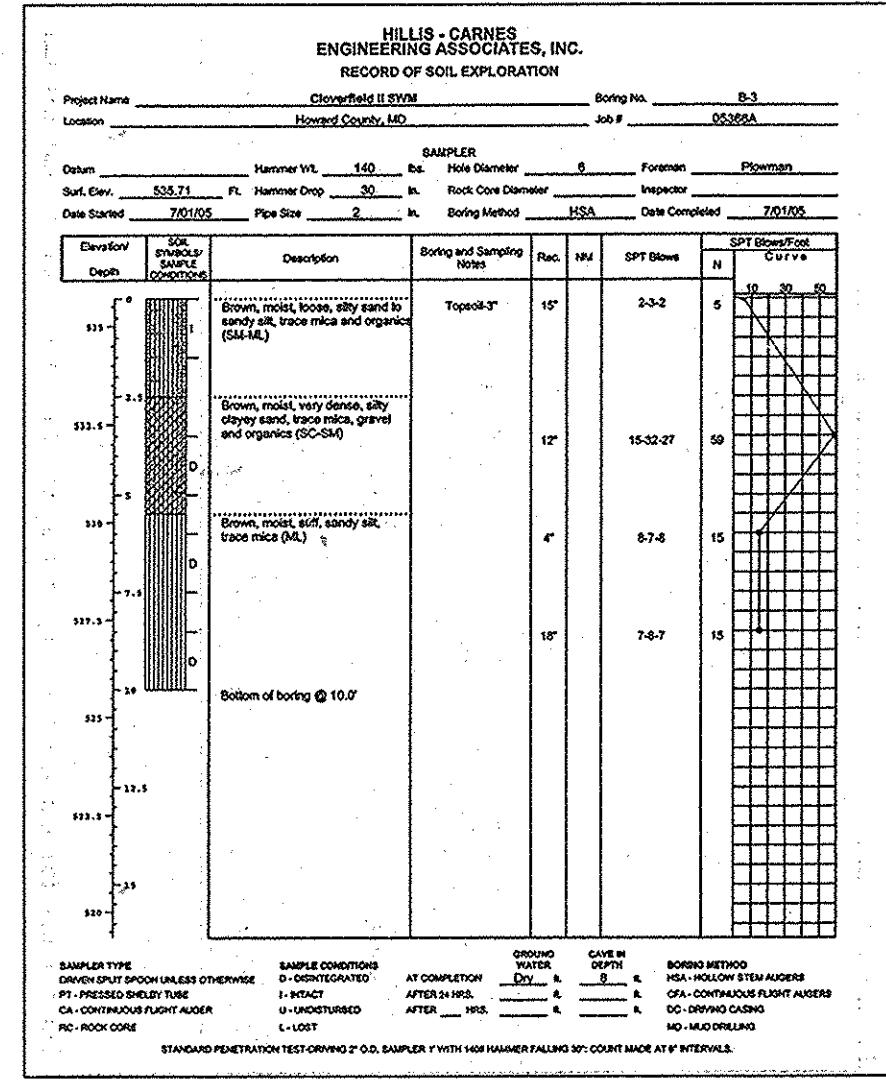
Howard County, Maryland  
Department of Public Works  
CURBS  
Hot Mix Asphalt &  
Concrete Barrier  
Detail  
R-3.03



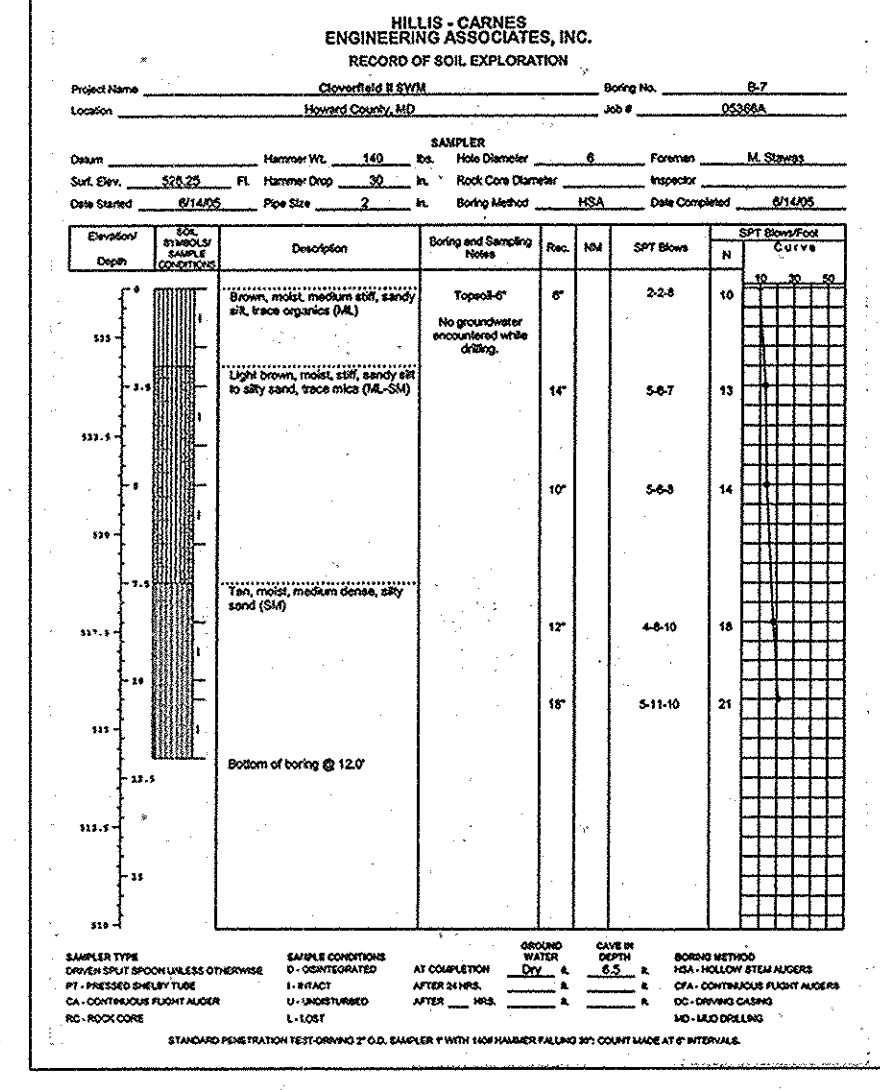
B-1



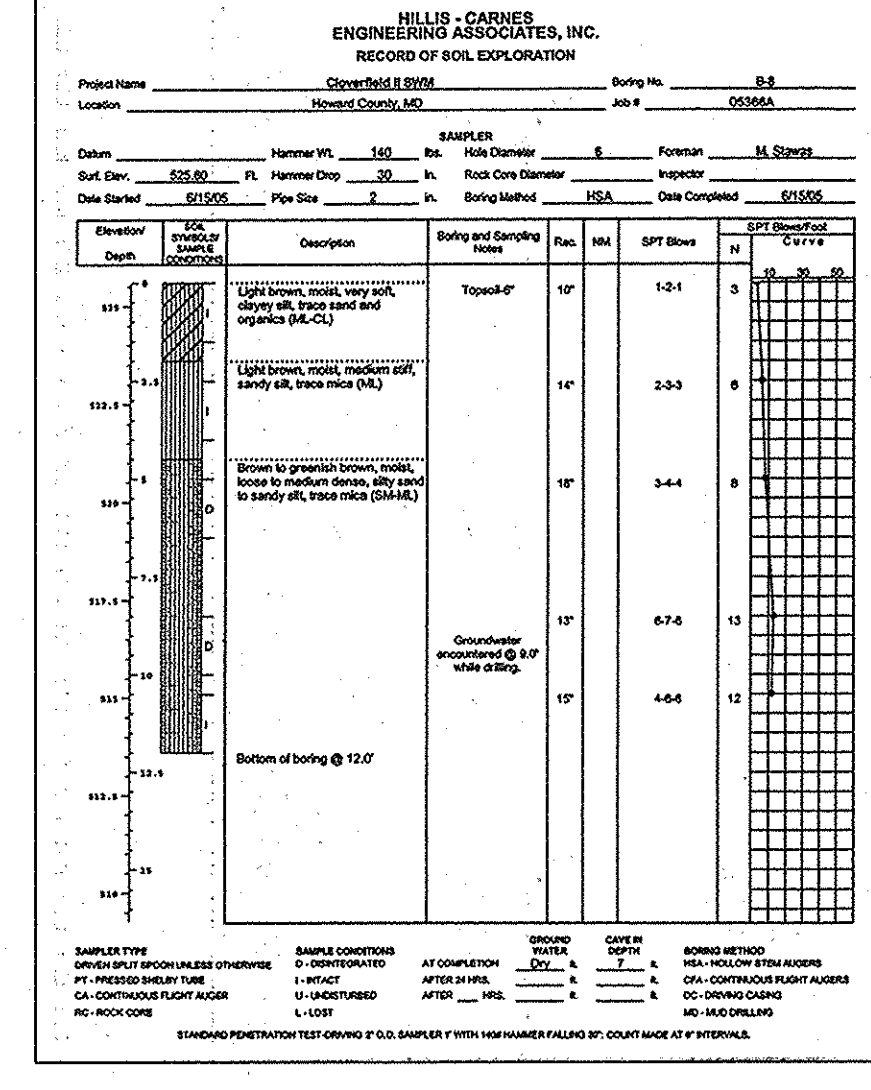
B-2



B-3



B-7



B-8

APPROVED: DEPARTMENT OF PUBLIC WORKS  
*William J. ...*  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE: 10-29-07  
 APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*... ..*  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 11/10/07  
*... ..*  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 11/10/07

AS-BUILT CERTIFICATION  
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 Donald Mason, P.E. No. 21443 Date 1-20-15

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. 21443, Expiration Date: 12-21-16



NO.	DATE	REVISION

**BENCHMARK**  
ENGINEERS • LAND SURVEYORS • PLANNERS

**ENGINEERING, INC.**

840 BALTIMORE NATIONAL PIKE • SUITE 418 • ELLICOTT CITY, MARYLAND 21043  
 PHONE: 410-465-6105 FAX: 410-465-6644  
 www.bei-civilengineering.com

9/16/2007  
 PROFESSIONAL ENGINEER  
 STATE OF MARYLAND  
 REGISTERED PROFESSIONAL ENGINEER  
 LICENSE NO. 28559  
 EXPIRES 7-22-2009

OWNER/DEVELOPER: SPRING MILL, LLC  
 P.O. BOX 417  
 ELLICOTT CITY, MD 21041  
 410-465-4544

PROJECT: CLOVERFIELD - SECTION II  
 LOTS 1 THRU 15, NON-BUILDABLE PRESERVATION PARCELS "A" AND "C", AND BUILDABLE PRESERVATION PARCEL "B", A RESUBDIVISION OF NON-BUILDABLE BULK PARCEL "F" AND PARCEL 119

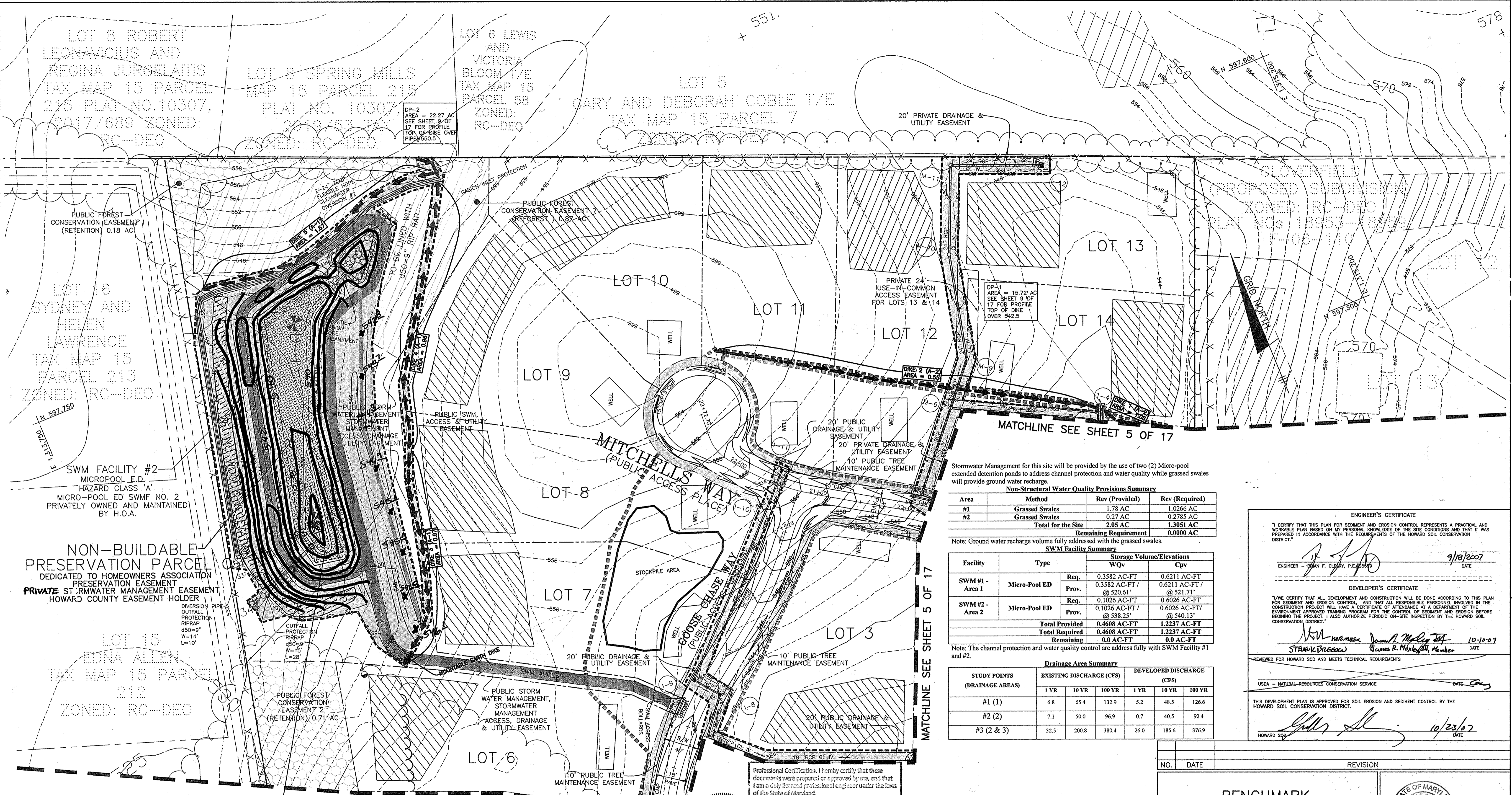
LOCATION: TAX MAP-15 GRID-7 PARCEL-119  
 3rd ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

TITLE: FILLET PROFILES AND SWM BORINGS  
 ROADS, STORMWATER MANAGEMENT AND STORM DRAIN CONSTRUCTION PLANS

DATE: NOVEMBER 2005  
 OCTOBER, 2007 PROJECT NO. 1649

Design: BFC Draft: BFC SCALE: 1" = 100' DRAWING 4 OF 17





LOT 8 ROBERT LEONAVICUS AND REGINA JURKELAITIS TAX MAP 15 PARCEL 215 PLAT NO. 10307, 2017/689 ZONED: RC-DEC

LOT 9 SPRING MILLS MAP 15 PARCEL 215 PLAT NO. 10307, 2017/689 ZONED: RC-DEC

LOT 6 LEWIS AND VICTORIA BLOOM 1/2 TAX MAP 15 PARCEL 58 ZONED: RC-DEC

LOT 5 GARY AND DEBORAH COBLE 1/2 TAX MAP 15 PARCEL 7 ZONED: RC-DEC

LOT 6 SYDNEY AND HELEN LAWRENCE TAX MAP 15 PARCEL 213 ZONED: RC-DEC

NON-BUILDABLE PRESERVATION PARCEL DEDICATED TO HOMEOWNERS ASSOCIATION PRESERVATION EASEMENT PRIVATE STORMWATER MANAGEMENT EASEMENT HOWARD COUNTY EASEMENT HOLDER

LOT 15 EDNA ALLEN TAX MAP 15 PARCEL 212 ZONED: RC-DEC

PUBLIC FOREST CONSERVATION EASEMENT 2 (RETENTION) 0.71 AC

TEMPORARY BASIN #2  
 D.A. = 1.6 AC  
 WET STORAGE ELEVATION = 538.00  
 DRY STORAGE ELEVATION = 538.44  
 DEPTH = 9' TOP OF EMBANKMENT  
 REQ. AND PROVIDED WET VOL. = 2,880± C.F.  
 REQ. AND PROVIDED DRY VOL. = 5,760± C.F.  
 RISER BARREL SIZE = 42" DIA  
 OUTFALL LENGTH = 68'  
 EMBANKMENT ELEV. = 544.00  
 CLEANOUT ELEV. = 536.93

**AS-BUILT CERTIFICATION**  
 I HEREBY CERTIFY THAT THE FACILITIES SHOWN ON THIS PLAN WERE CONSTRUCTED AS SHOWN ON THE AS-BUILT PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS.  
 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. 21443 Expiration Date: 12-21-16

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 [Signature] 10-29-07  
 CHIEF, BUREAU OF HIGHWAYS  
 APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 11/10  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 [Signature] 11/10  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

Non-Structural Water Quality Provisions Summary

Area	Method	Rev (Provided)	Rev (Required)
#1	Grassed Swales	1.78 AC	1.0266 AC
#2	Grassed Swales	0.27 AC	0.2785 AC
<b>Total for the Site</b>		<b>2.05 AC</b>	<b>1.3051 AC</b>
		<b>Remaining Requirement</b>	<b>0.0000 AC</b>

SWM Facility Summary

Facility	Type	Storage Volume/Elevations	
		WQv	Cpv
SWM #1 - Area 1	Micro-Pool ED	Req. 0.3582 AC-FT / @ 520.61'	0.6211 AC-FT
		Prov. 0.3582 AC-FT / @ 520.61'	0.6211 AC-FT
SWM #2 - Area 2	Micro-Pool ED	Req. 0.1026 AC-FT / @ 538.25'	0.6026 AC-FT
		Prov. 0.1026 AC-FT / @ 538.25'	0.6026 AC-FT
<b>Total Provided</b>		<b>0.4608 AC-FT</b>	<b>1.2237 AC-FT</b>
<b>Total Required</b>		<b>0.4608 AC-FT</b>	<b>1.2237 AC-FT</b>
		<b>Remaining</b>	<b>0.0 AC-FT</b>

Drainage Area Summary

STUDY POINTS (DRAINAGE AREAS)	EXISTING DISCHARGE (CFS)			DEVELOPED DISCHARGE (CFS)		
	1 YR	10 YR	100 YR	1 YR	10 YR	100 YR
#1 (1)	6.8	65.4	132.9	5.2	48.5	126.6
#2 (2)	7.1	50.0	96.9	0.7	40.5	92.4
#3 (2 & 3)	32.5	200.8	380.4	26.0	185.6	376.9

ENGINEER'S CERTIFICATE  
 I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.  
 ENGINEER - BRIAN F. CLEARY, P.E. [Signature] 9/18/2007  
 DEVELOPER'S CERTIFICATE  
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.  
 [Signatures] 10-10-07  
 REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS  
 USA - NATURAL RESOURCES CONSERVATION SERVICE  
 THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
 [Signature] 10/23/07

- LEGEND**
- EXISTING CONTOURS: --- 999 ---
  - PROPOSED CONTOURS: - - - 999 - - -
  - EXISTING WOODS LINE: [Symbol]
  - EXISTING STRUCTURE: [Symbol]
  - EROSION CONTROL MATTING: [Symbol]
  - SLOPES 15% TO 24.9%: [Symbol]
  - SLOPES 25% OR GREATER: [Symbol]
  - LIMIT OF DISTURBANCE PHASE I (SHADED): [Symbol]
  - LIMIT OF DISTURBANCE PHASE II: [Symbol]
  - STABILIZED CONSTRUCTION ENTRANCE: [Symbol]
  - SILT FENCE: [Symbol]
  - SUPER SILT FENCE: [Symbol]
  - CL. STREAM: [Symbol]
  - LIMIT OF WETLANDS: [Symbol]
  - LIMIT OF SUBMISSION: [Symbol]
  - PROPOSED FOREST CONSERVATION EASEMENT RETENTION: [Symbol]
  - PROPOSED FOREST CONSERVATION EASEMENT REFORESTATION: [Symbol]
  - NO WOODY BUFFER REMOVE ALL WOODY VEGETATION LESS THAN 8" CALIBER: [Symbol]

NO. DATE REVISION

**BENCHMARK ENGINEERING, INC.**  
 8480 BALTIMORE NATIONAL PIKE • SUITE 418 • ELLICOTT CITY, MARYLAND 21043  
 PHONE: 410-465-6105 FAX: 410-465-6644  
 www.benchmark-engineering.com

STATE OF MARYLAND PROFESSIONAL ENGINEER [Signature] 9/18/2007

OWNER/DEVELOPER: SPRING MILL, LLC P.O. BOX 417 ELLICOTT CITY, MD 21041 410-465-4244

PROJECT: CLOVERFIELD-SECTION II LOTS 1 THRU 15, NON-BUILDABLE PRESERVATION PARCELS "A" AND "C", AND BUILDABLE PRESERVATION PARCEL "B", A RESUBDIVISION OF NON-BUILDABLE BULK PARCEL "E" AND PARCEL 119

LOCATION: TAX MAP-15 GRID-7 PARCEL-119 3RD ELECTION DISTRICT HOWARD COUNTY, MARYLAND

TITLE: GRADING AND SEDIMENT AND EROSION CONTROL ROADS, STORMWATER MANAGEMENT AND STORM DRAIN CONSTRUCTION PLANS

DATE: NOVEMBER, 2006 PROJECT NO. 1649  
 OCTOBER, 2007

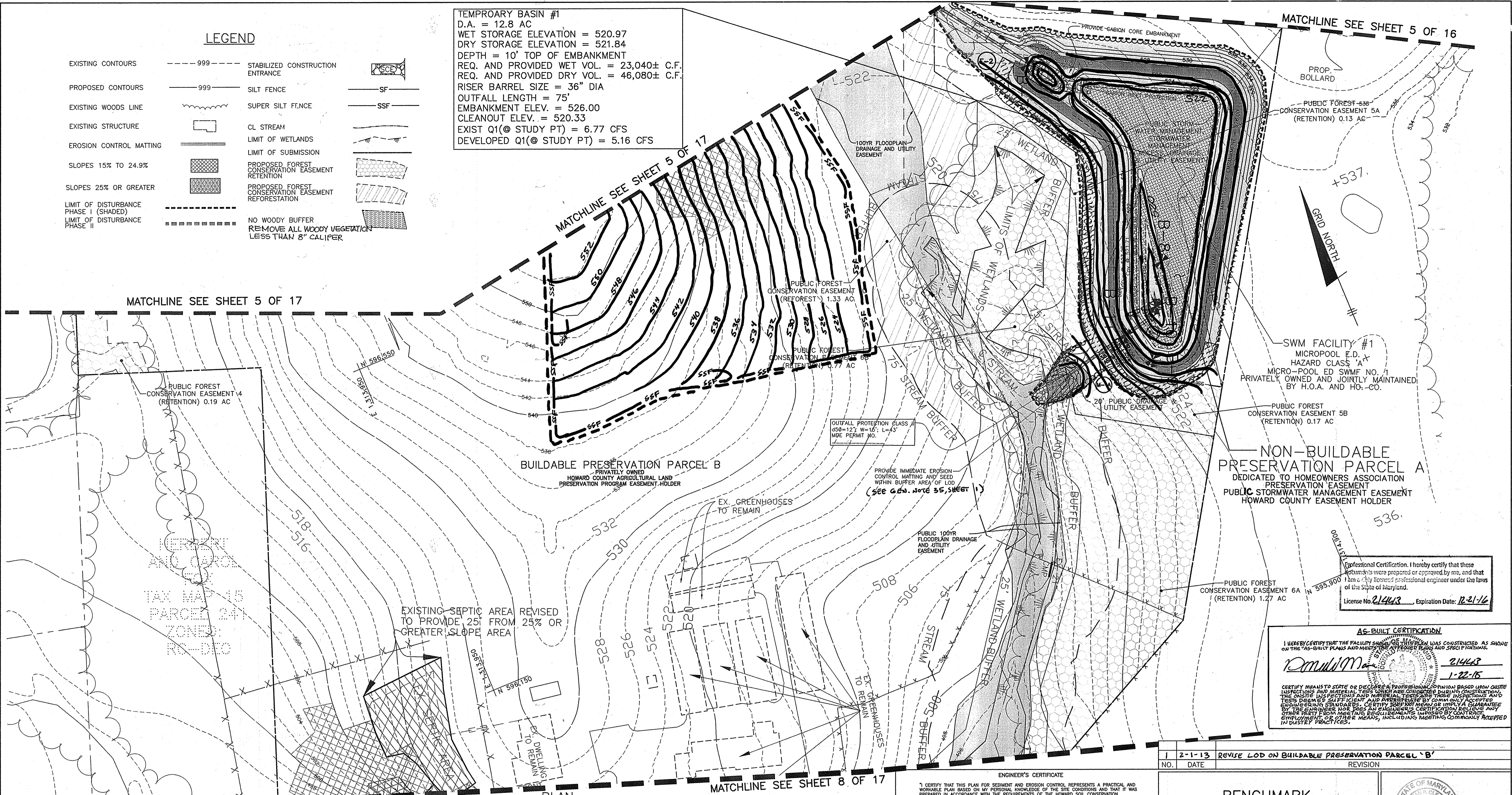
SCALE: 1" = 50' DRAWING 6 OF 17

Design: BFC Draft: BFC

**LEGEND**

- EXISTING CONTOURS --- 999 --- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CONTOURS --- 999 --- SILT FENCE
- EXISTING WOODS LINE --- SUPER SILT FENCE
- EXISTING STRUCTURE --- CL STREAM
- EROSION CONTROL MATTING --- LIMIT OF WETLANDS
- SLOPES 15% TO 24.9% --- PROPOSED FOREST CONSERVATION EASEMENT RETENTION
- SLOPES 25% OR GREATER --- PROPOSED FOREST CONSERVATION EASEMENT REFORESTATION
- LIMIT OF DISTURBANCE PHASE I (SHADED) --- NO WOODY BUFFER REMOVE ALL WOODY VEGETATION LESS THAN 8" CALIPER
- LIMIT OF DISTURBANCE PHASE II ---

**TEMPORARY BASIN #1**  
 D.A. = 12.8 AC  
 WET STORAGE ELEVATION = 520.97  
 DRY STORAGE ELEVATION = 521.84  
 DEPTH = 10' TOP OF EMBANKMENT  
 REQ. AND PROVIDED WET VOL. = 23,040± C.F.  
 REQ. AND PROVIDED DRY VOL. = 46,080± C.F.  
 RISER BARREL SIZE = 36" DIA  
 OUTFALL LENGTH = 75'  
 EMBANKMENT ELEV. = 526.00  
 CLEANOUT ELEV. = 520.33  
 EXIST Q1@ STUDY PT) = 6.77 CFS  
 DEVELOPED Q1@ STUDY PT) = 5.16 CFS



MATCHLINE SEE SHEET 8 OF 17

PLAN  
 SCALE: 1" = 50'

Stormwater Management for this site will be provided by the use of two (2) Micro-pool extended detention ponds to address channel protection and water quality while grassed swales will provide ground water recharge.

**Non-Structural Water Quality Provisions Summary**

Area	Method	Rev (Provided)	Rev (Required)
#1	Grassed Swales	1.78 AC	1.0266 AC
#2	Grassed Swales	0.27 AC	0.2785 AC
<b>Total for the Site</b>		<b>2.05 AC</b>	<b>1.3051 AC</b>
		<b>Remaining Requirement</b>	<b>0.0000 AC</b>

Note: Ground water recharge volume fully addressed with the grassed swales.

**Drainage Area Summary**

STUDY POINTS (DRAINAGE AREAS)	EXISTING DISCHARGE (CFS)			DEVELOPED DISCHARGE (CFS)		
	1 YR	10 YR	100 YR	1 YR	10 YR	100 YR
#1 (1)	6.8	65.4	132.9	5.2	48.5	126.6
#2 (2)	7.1	50.0	96.9	0.7	40.5	92.4
#3 (2 & 3)	32.5	200.8	380.4	26.0	185.6	376.9

**SWM Facility Summary**

Facility	Type	Storage Volume/Elevations	
		WQv	Cpv
SWM #1 - Area 1	Micro-Pool ED	Req.	0.3582 AC-FT / 0.6211 AC-FT
		Prov.	@ 520.61' / @ 521.71'
SWM #2 - Area 2	Micro-Pool ED	Req.	0.1026 AC-FT / 0.6026 AC-FT
		Prov.	@ 538.25' / @ 540.13'
<b>Total Provided</b>		<b>0.4608 AC-FT</b>	<b>1.2237 AC-FT</b>
<b>Total Required</b>		<b>0.4608 AC-FT</b>	<b>1.2237 AC-FT</b>
<b>Remaining</b>		<b>0.0 AC-FT</b>	<b>0.0 AC-FT</b>

Note: The channel protection and water quality control are address fully with SWM Facility #1 and #2.

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 With 2 modifications  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE: 10-29-07

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 11/1/07

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 11/1/07

**ENGINEER'S CERTIFICATE**  
 I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.  
 ENGINEER - BRIAN F. CLEARY, P.E. #22559  
 DATE: 9/18/2007

**DEVELOPER'S CERTIFICATE**  
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.  
 MEMBER James R. Moley, III  
 DATE: 10-10-07

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS  
 USDA - NATURAL RESOURCES CONSERVATION SERVICE  
 DATE: 10/23/07

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

**BENCHMARK ENGINEERING, INC.**  
 8480 BALTIMORE NATIONAL PIKE • SUITE 418 • ELLICOTT CITY, MARYLAND 21043  
 PHONE: 410-465-8105 FAX: 410-465-8644  
 www.benchmarkengineering.com

**OWNER/DEVELOPER:** SPRING MILL, LLC  
 P.O. BOX 417  
 ELLICOTT CITY, MD 21041  
 410-465-4244

**PROJECT:** CLOVERFIELD-SECTION II  
 LOTS 1 THRU 15, NON-BUILDABLE PRESERVATION PARCELS "A" AND "C", AND BUILDABLE PRESERVATION PARCEL "B", A RESUBDIVISION OF NON-BUILDABLE BULK PARCEL "B" AND PARCEL 119

**LOCATION:** TAX MAP-15 GRID-7 PARCEL-119  
 HOWARD COUNTY, MARYLAND

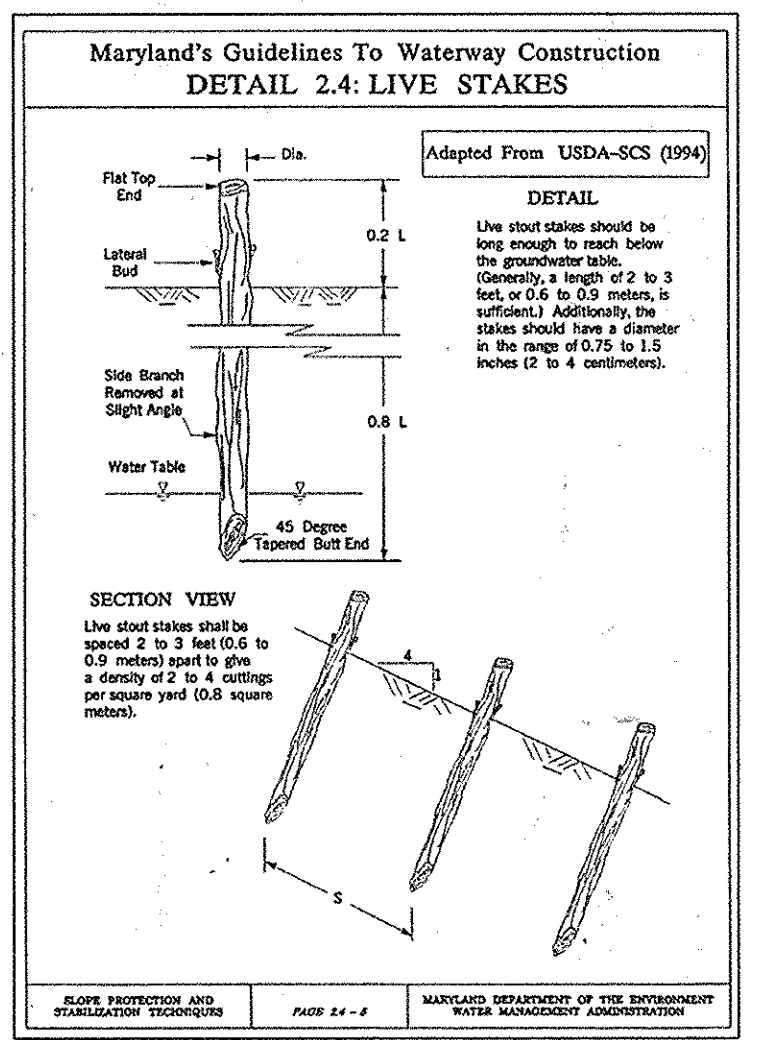
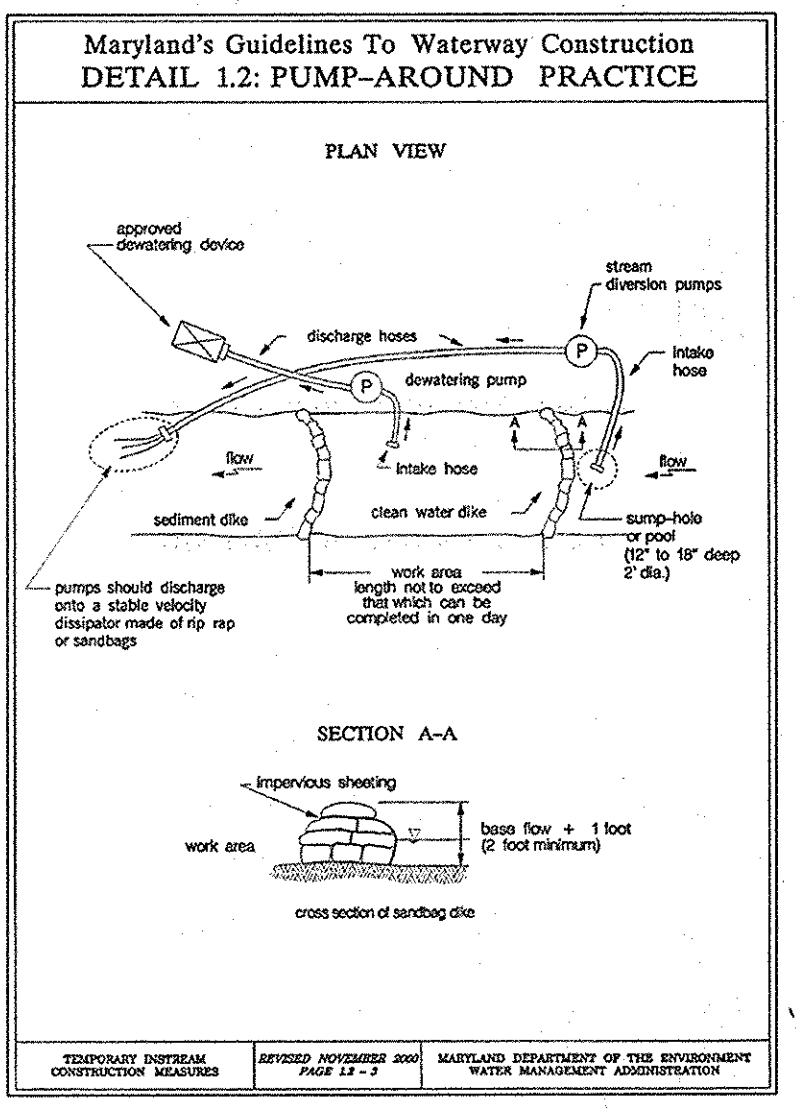
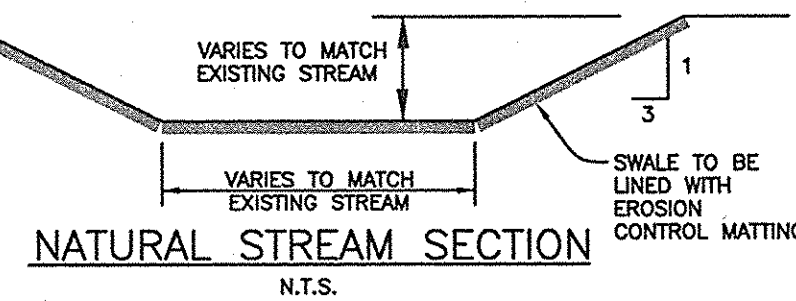
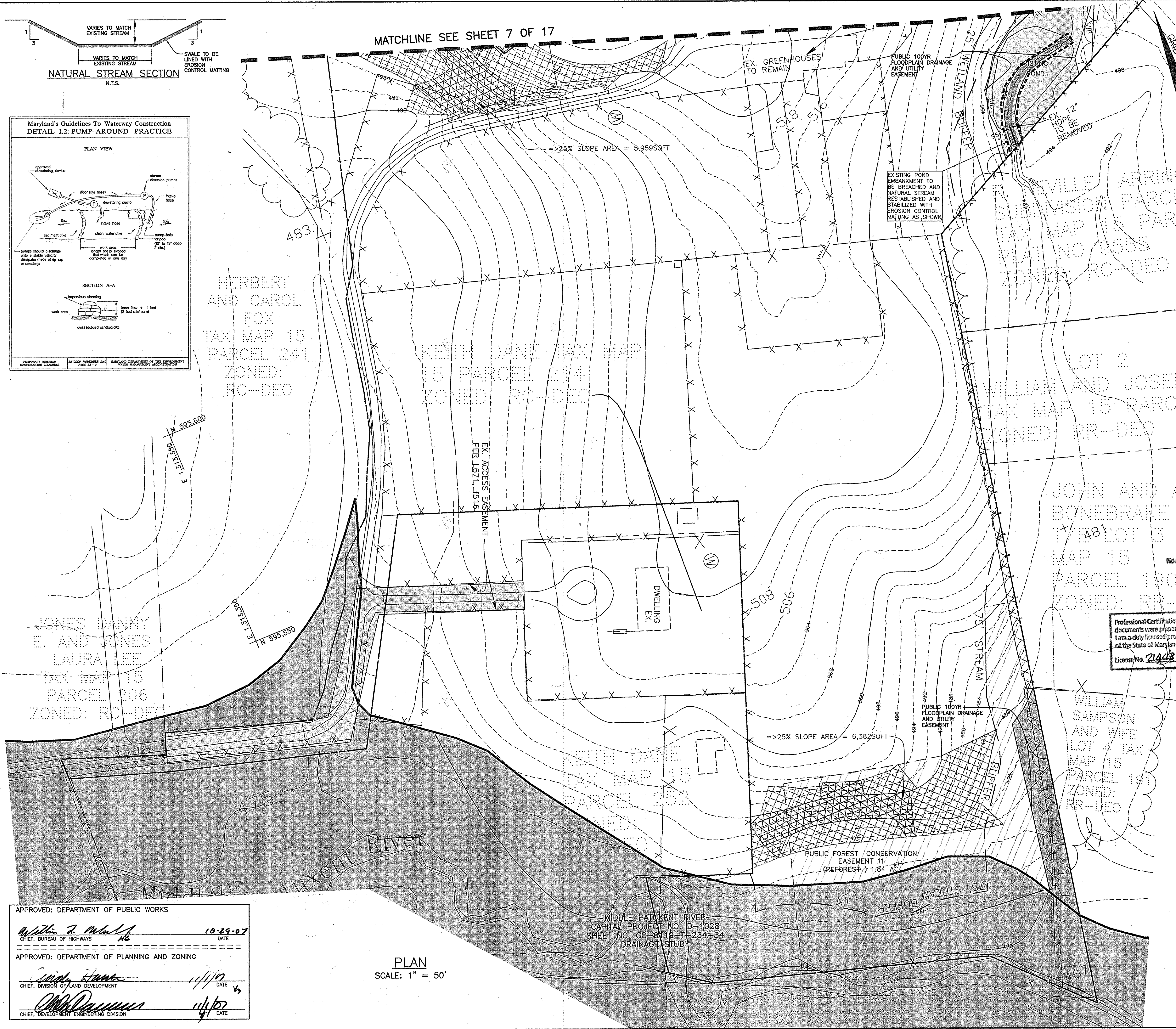
**TITLE:** GRADING AND SEDIMENT AND EROSION CONTROL  
 ROADS, STORMWATER MANAGEMENT AND STORM DRAIN CONSTRUCTION PLANS

**DATE:** NOVEMBER, 2006  
 OCTOBER, 2007

**PROJECT NO.:** 1649  
**CONSTRUCTION DISTRICT:**

**Design:** BFC **Draft:** BFC **SCALE:** 1" = 50' **DRAWING:** 7 OF 17

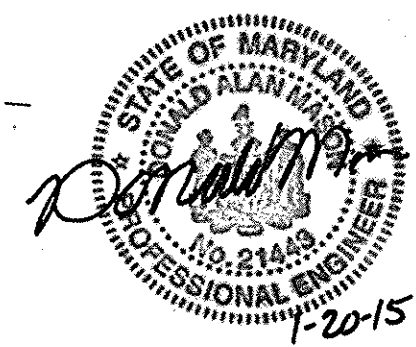
**AG-BUILT CERTIFICATION**  
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS ALL SPECIFICATIONS AND STANDARDS.  
 Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.  
 License No. 21443 Expiration Date: 12-31-16



**MOWC 2.4 LIVE STAKES**  
 SLOPE PROTECTION AND STABILIZATION TECHNIQUES MARYLAND DEPARTMENT OF THE ENVIRONMENT  
 WATERWAY CONSTRUCTION GUIDELINES  
 REVISED NOVEMBER 2000  
 PAGE 24-1  
**MATERIAL SPECIFICATIONS**  
 When choosing and preparing woody material for live stakes, the following guidelines should be followed:  
 - Live stakes should be cut from fresh, green, healthy, dormant parent plants which are adapted to the conditions wherever possible. Commonly used woody plants for this purpose include willow, poplar, and alder since they are versatile and have high growth rates and sturdy habit. Bonus root systems, and high transition rates, especially when in leaf. A partial listing of woody plants recommended by the United States Department of Agriculture's Soil Conservation Service is presented in Table 2.4-1.  
 - Live stakes should have a diameter between 0.75 and 1.0 inches (2 to 4 centimeters) and should be long enough to reach below the groundwater table so that a strong root system can quickly develop. At least 1 foot (30 centimeters) should be exposed to sunlight. Live woody poles with diameters up to 1.5 inches (3.8 centimeters) and lengths ranging from 4 to 8 feet (1.2 to 2.4 meters) may also be used at the discretion of the project manager.  
 - Live stakes should be kept covered and moist at all times and should be placed in cold storage if more than a few hours elapse between the cutting and replanting times.  
**INSTALLATION GUIDELINES**  
 Live stake installation should proceed as follows (refer to Detail 2.4):  
 1. Live stake rooting areas should be soaked in brackish water for 24 to 48 hours just prior to installation.  
 2. While keeping the back of the live stakes intact, the side branches should be cleanly removed, the basal ends angled for easy insertion, and the tops cut square.  
 3. The cuttings should be inserted with the angled basal end down and back oriented up at a minimum angle of 10 degrees to the horizontal so that rooting will not be restricted. All stakes should be positioned above the normal baseflow level. Project planners may need to study or apply chosen vegetation reference maps for further guidance when installing live stakes.  
 - In soft soils, the stakes can be inserted perpendicularly into the slope using a dead blow hammer, if hard soils, however, a steel rod should be employed to create a pilot hole before the stakes are planted.  
 - Twenty percent of the live stakes, and a minimum of two lateral stakes, should be exposed above the slope and grow, both should readily grow.  
 - Silt or otherwise damaged stakes should be discarded.  
 4. After the stakes have been inserted into the ground, soil should be tamped firmly around their bases to encourage root growth.  
 5. Successive stakes should be arranged in a triangular configuration and spaced a distance of 2 to 3 feet (0.6 to 0.9 meters) apart, allowing for a typical density of 2 to 4 cuttings per square yard (0.9 square meter). Willow poles require additional room for growth and propagation and should be planted at 3 to 4-foot (1 to 1.2 meter) intervals. When inserted in groups, the stakes should be spaced 12 to 18 inches (30 to 46 centimeters) apart to form chevron-like rows that point downstream.  
 6. Unusable slope lines should be reinforced against scouring and undercutting using live fascines or rock fill to give the live stakes the best opportunity to root and grow.

**ENGINEER'S CERTIFICATE**  
 I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.  
 ENGINEER - Brian F. Cleary, P.E. #28559 DATE 10/10/07  
**DEVELOPER'S CERTIFICATE**  
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.  
James R. Moxley III, Member #28559 DATE 10/23/07  
Stefan J. Steenka, Member #28559 DATE 10/23/07  
 REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS  
 USDA - NATURAL RESOURCES CONSERVATION SERVICE DATE 10/23/07  
 THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
[Signature] DATE 10/23/07  
 HOWARD SCD

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. 21443 Expiration Date: 12-21-16



APPROVED: DEPARTMENT OF PUBLIC WORKS  
William R. Moxley III 10-29-07  
 CHIEF, BUREAU OF HIGHWAYS DATE  
 APPROVED: DEPARTMENT OF PLANNING AND ZONING  
[Signature] 11/10  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE  
[Signature] 11/10  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

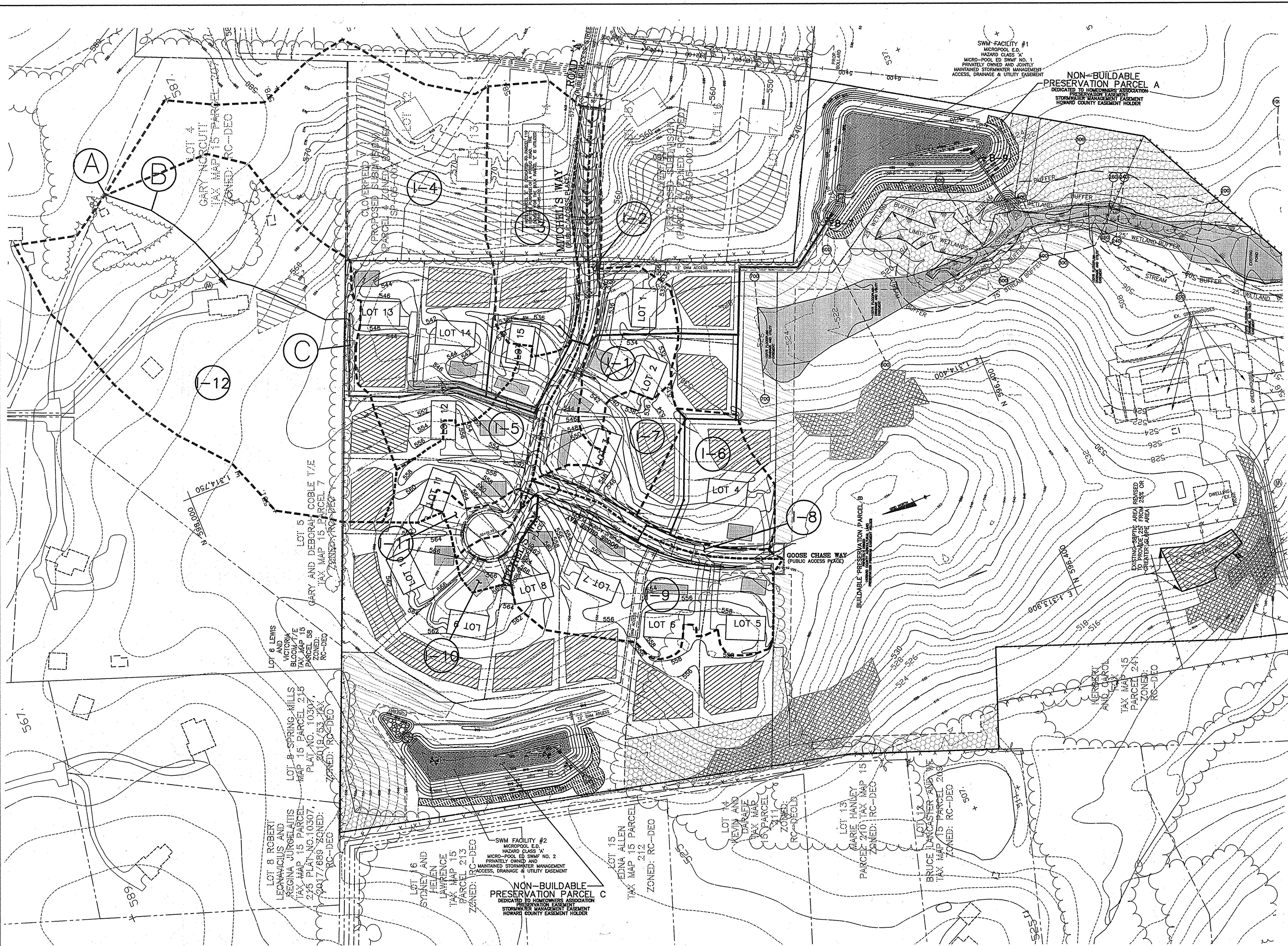
PLAN  
 SCALE: 1" = 50'

MIDDLE PATUXENT RIVER  
 CAPITAL PROJECT NO. D-1028  
 SHEET NO. GC-8419-T-234-34  
 DRAINAGE STUDY

NO.	DATE	REVISION
<b>BENCHMARK</b>		
ENGINEERS • LAND SURVEYORS • PLANNERS		
<b>ENGINEERING, INC.</b>		
8480 BALTIMORE NATIONAL PIKE • SUITE 418 • ELLICOTT CITY, MARYLAND 21043 PHONE: 410-465-6105 FAX: 410-465-6644 www.bei-civilengineering.com		
OWNER/DEVELOPER:		PROJECT: <b>CLOVERFIELD-SECTION II</b> LOTS 1 THRU 15, NON-BUILDABLE PRESERVATION PARCELS "A" AND "C", AND BUILDABLE PRESERVATION PARCEL "B", A RESUBDIVISION OF NON-BUILDABLE BULK PARCEL "F" AND PARCEL 119
LOCATION:		TAX MAP-15 GRID-7 BARCEL-119 3rd ELECTION DISTRICT HOWARD COUNTY, MARYLAND
TITLE:		GRADING AND SEDIMENT AND EROSION CONTROL ROADS, STORMWATER MANAGEMENT AND STORM DRAIN CONSTRUCTION PLANS
DATE:	NOVEMBER, 2006 OCTOBER, 2007	PROJECT NO. 1649
Design:	BFC	Draft: BFC
SCALE:	1" = 50'	DRAWING 8 OF 17







**LEGEND**

EXISTING CONTOURS	--- 999 ---
PROPOSED CONTOURS	— 999 —
EXISTING WOODS LINE	~~~~~
EXISTING STRUCTURE	[ ]
PROPOSED STRUCTURE	[ ]
SLOPES 15% TO 24.9%	[Hatched]
LIMIT OF DISTURBANCE	- - - - -
STABILIZED CONSTRUCTION ENTRANCE	[Symbol]
SILT FENCE	SF
SUPER SILT FENCE	SSF
CL STREAM	[Symbol]
LIMIT OF WETLANDS	[Symbol]
LIMIT OF SUBMISSION	[Symbol]
PROPOSED FOREST RESTORATION EASEMENT	[Symbol]
PROPOSED FOREST RESTORATION EASEMENT (FORESTATION)	[Symbol]
NO WOODY BUFFER	[Symbol]

**STORM DRAINAGE AREA DATA**  
NOTE: B SOIL TYPE ONLY

(1-1)	AREA = 1.02 AC	(1-1)	ZONE = RC-DEO
	"C" FACTOR = 0.21		IMPERVIOUS = 20%
(1-2)	AREA = 0.67 AC	(1-2)	ZONE = RC-DEO
	"C" FACTOR = 0.65		IMPERVIOUS = 67%
(1-3)	AREA = 1.62 AC	(1-4)	ZONE = RC-DEO
	"C" FACTOR = 0.40		IMPERVIOUS = 20%
(1-4)	AREA = 6.90 AC	(1-3)	ZONE = RC-DEO
	"C" FACTOR = 0.21		IMPERVIOUS = 20%
(1-5)	AREA = 2.20 AC	(1-5)	ZONE = RC-DEO
	"C" FACTOR = 0.21		IMPERVIOUS = 20%
(1-6)	AREA = 1.27 AC	(1-6)	ZONE = RC-DEO
	"C" FACTOR = 0.21		IMPERVIOUS = 20%
(1-7)	AREA = 0.79 AC	(1-7)	ZONE = RC-DEO
	"C" FACTOR = 0.21		IMPERVIOUS = 20%
(1-8)	AREA = 0.24 AC	(1-8)	ZONE = RC-DEO
	"C" FACTOR = 0.96		IMPERVIOUS = 100%
(1-9)	AREA = 2.75 AC	(1-9)	ZONE = RC-DEO
	"C" FACTOR = 0.29		IMPERVIOUS = 28%
(1-10)	AREA = 0.31 AC	(1-10)	ZONE = RC-DEO
	"C" FACTOR = 0.48		IMPERVIOUS = 49%
(1-11)	AREA = 0.29 AC	(1-11)	ZONE = RC-DEO
	"C" FACTOR = 0.55		IMPERVIOUS = 57%
(1-12)	AREA = 7.71 AC	(1-12)	ZONE = RC-DEO
	"C" FACTOR = 0.21		IMPERVIOUS = 20%

**SOILS LEGEND**

MAP SYMBOL	SOIL GROUP	SOIL TYPE
Ch2	B	CHESTER SILT LOAM, 0 TO 3 PERCENT SLOPES
Cg2	B	CHESTER GRAVELLY SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
Cg2C	B	CHESTER GRAVELLY SILT LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED
ChA	B	CHESTER SILT LOAM, 0 TO 3 PERCENT SLOPES
ChB2	B	CHESTER SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
ChC2	B	CHESTER SILT LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED
ChD2	B	CHESTER SILT LOAM, 15 TO 25 PERCENT SLOPES, MODERATELY ERODED
Ch	B	COMUS SILT LOAM
Ed2C	C	ELIJAH SILT LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED
Ed2B	B	ELIJAH SILT LOAM, 15 TO 25 PERCENT SLOPES, MODERATELY ERODED
Gd2	B	GLENELO LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED
Gd2B	B	GLENELO LOAM, 15 TO 25 PERCENT SLOPES, MODERATELY ERODED
Gd2C	C	GLENELO LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED
Hd	D	HATBORO SILT LOAM
Mg2B	B	MANOR GRAVELLY LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
Mg2C	B	MANOR GRAVELLY LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED
M2B	B	MANOR LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
M2C	B	MANOR LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED
M2D	B	MANOR LOAM, 15 TO 25 PERCENT SLOPES, MODERATELY ERODED
M2S	B	MANOR LOAM, 15 TO 25 PERCENT SLOPES, SEVERELY ERODED

\* INDICATES HYDRIC SOILS  
TAKEN FROM SOILS SURVEY, ISSUED JULY 1988, MAP NO. 7

**STORM DRAINAGE AREA MAP**  
SCALE: 1" = 100'

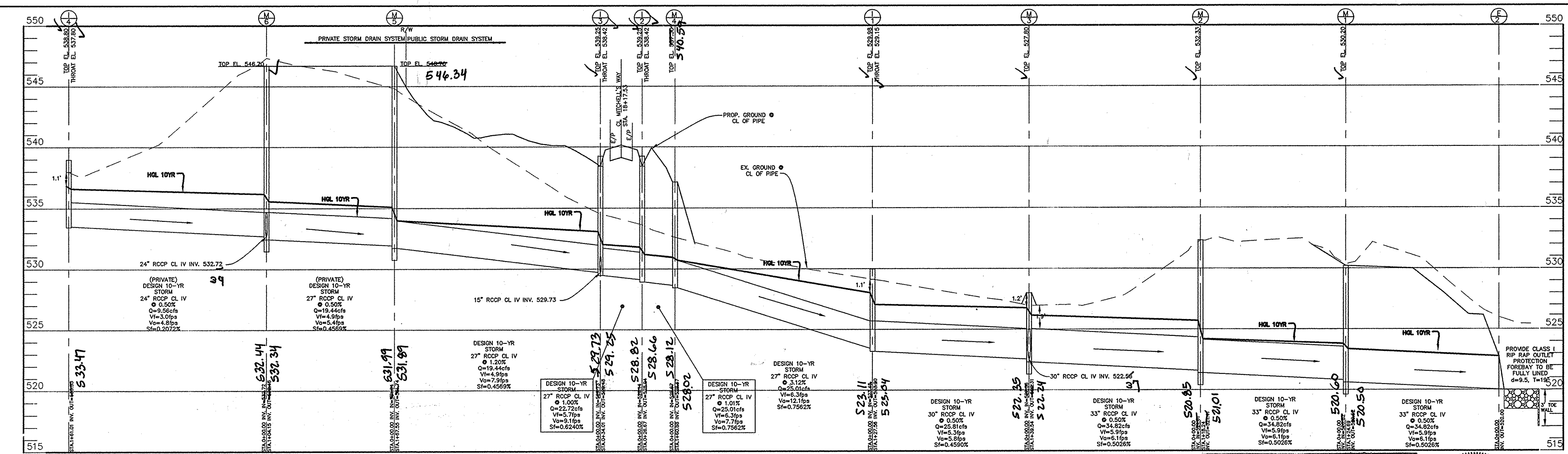
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.  
License No. 21443, Expiration Date: 12-21-16

APPROVED: DEPARTMENT OF PUBLIC WORKS  
[Signature] 10-29-07  
CHIEF, BUREAU OF HIGHWAYS

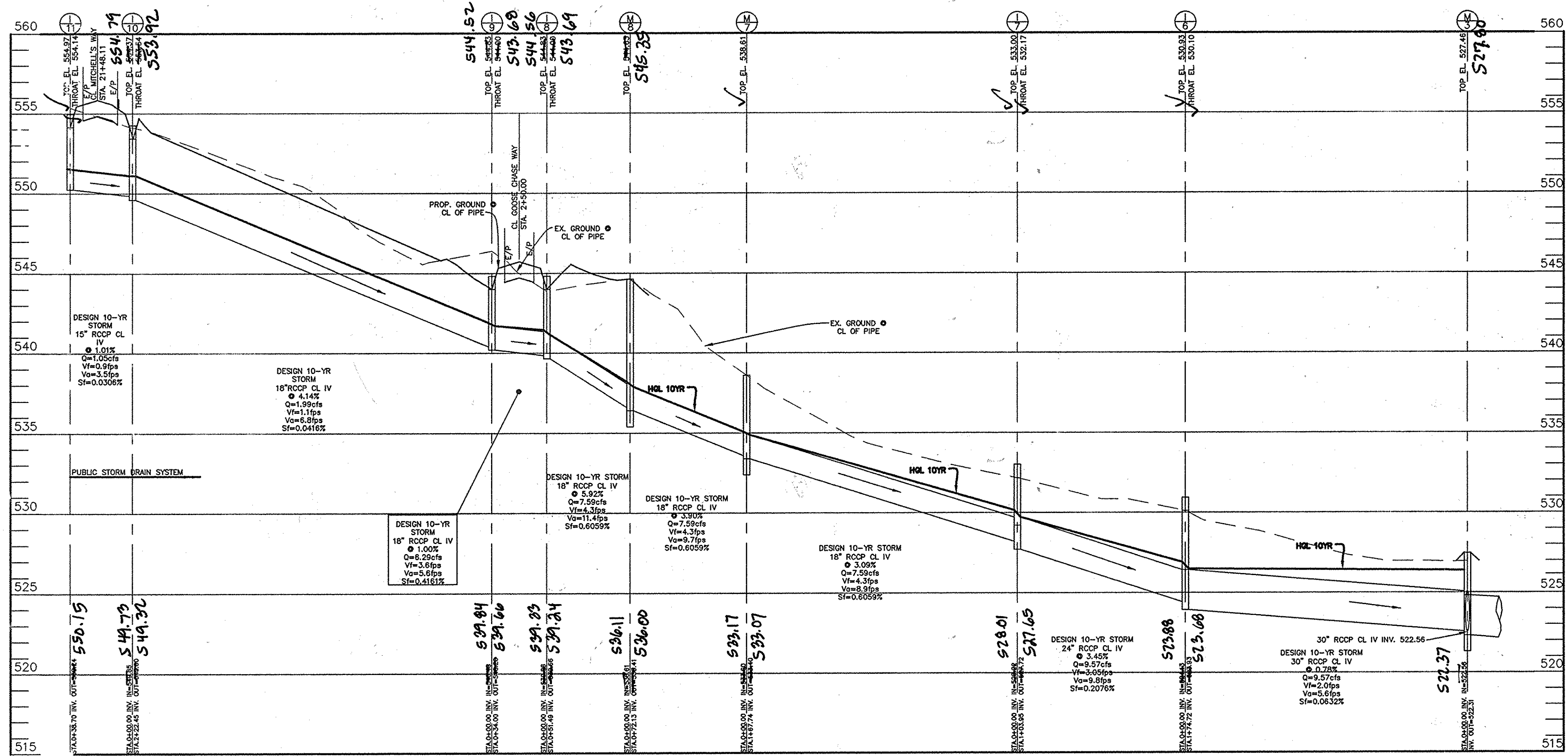
APPROVED: DEPARTMENT OF PLANNING AND ZONING  
[Signature] 11/1/07  
CHIEF, DIVISION OF LAND DEVELOPMENT

CHIEF, DEVELOPMENT ENGINEERING DIVISION  
[Signature] 11/1/07

NO.	DATE	REVISION
<b>BENCHMARK</b> ENGINEERS • LAND SURVEYORS • PLANNERS <b>ENGINEERING, INC.</b> 8480 BALTIMORE NATIONAL PIKE • SUITE 418 • ELLICOTT CITY, MARYLAND 21043 PHONE: 410-465-6105 FAX: 410-465-6644 www.bei-civilengineering.com		
OWNER/DEVELOPER: SPRING MILL, LLC P.O. BOX 417 ELLICOTT CITY, MD 21041 410-465-4244		
PROJECT: CLOVERFIELD-SECTION II LOTS 1 THRU 15, NON-BUILDABLE PRESERVATION PARCELS "A" AND "C", AND BUILDABLE PRESERVATION PARCEL "B", A RESUBDIVISION OF NON-BUILDABLE BULK PARCEL "F" AND PARCEL 119		
LOCATION: TAX MAP-15 GRID-7 PARCEL-119 3rd ELECTION DISTRICT HOWARD COUNTY, MARYLAND		
TITLE: STORM DRAINAGE AREA MAP ROADS, STORMWATER MANAGEMENT AND STORM DRAIN CONSTRUCTION PLANS		
DATE:	NOVEMBER, 2006 OCTOBER, 2007	PROJECT NO. 1649
Design:	BFC	Draft: BFC
SCALE:	1" = 100'	DRAWING 10 OF 16



STORM DRAIN PROFILE - E-2 TO I-4  
SCALE: HORIZONTAL 1"=50', VERTICAL 1"=5'

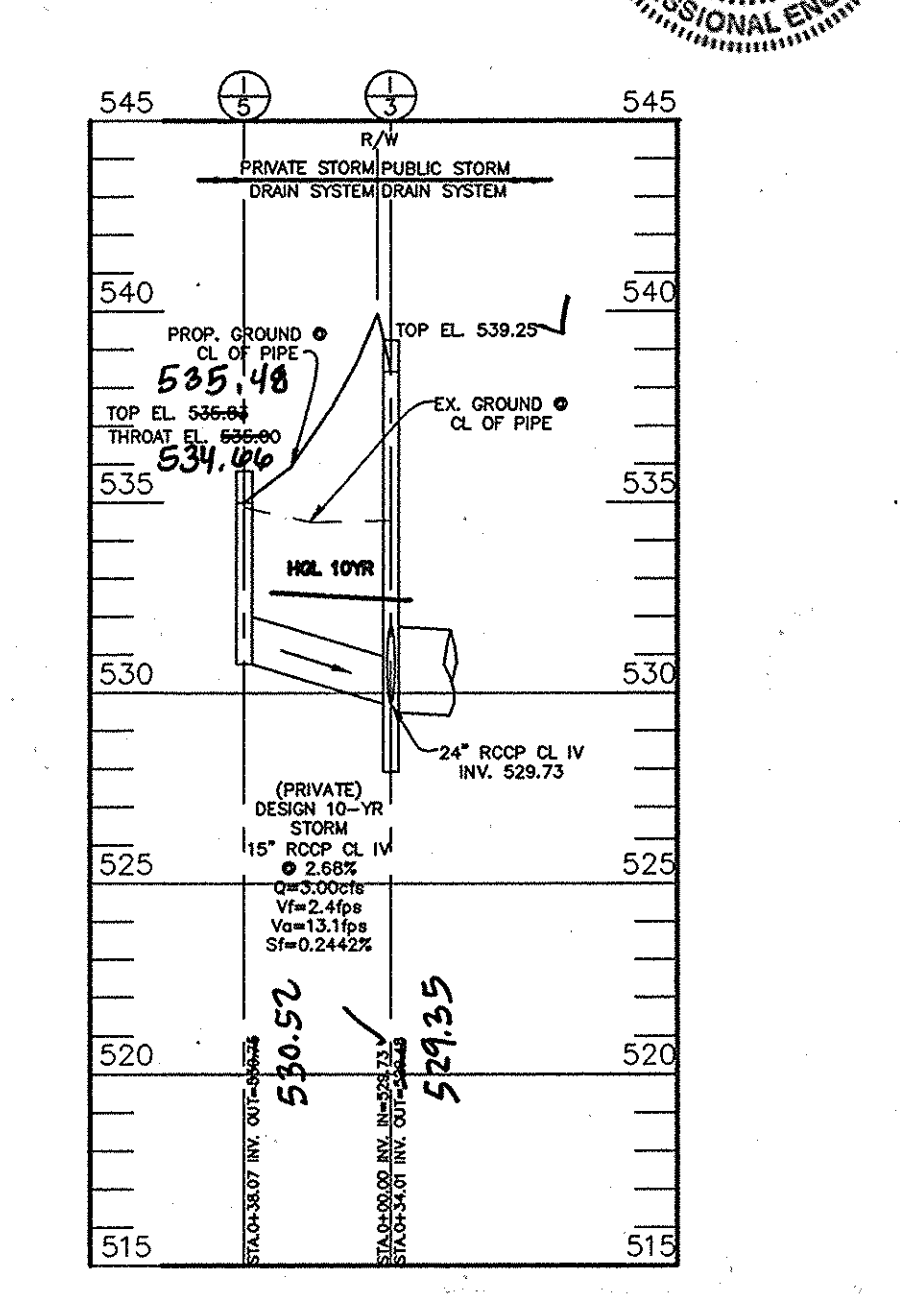


STORM DRAIN PROFILE - M-3 TO I-11  
SCALE: HORIZONTAL 1"=50', VERTICAL 1"=5'

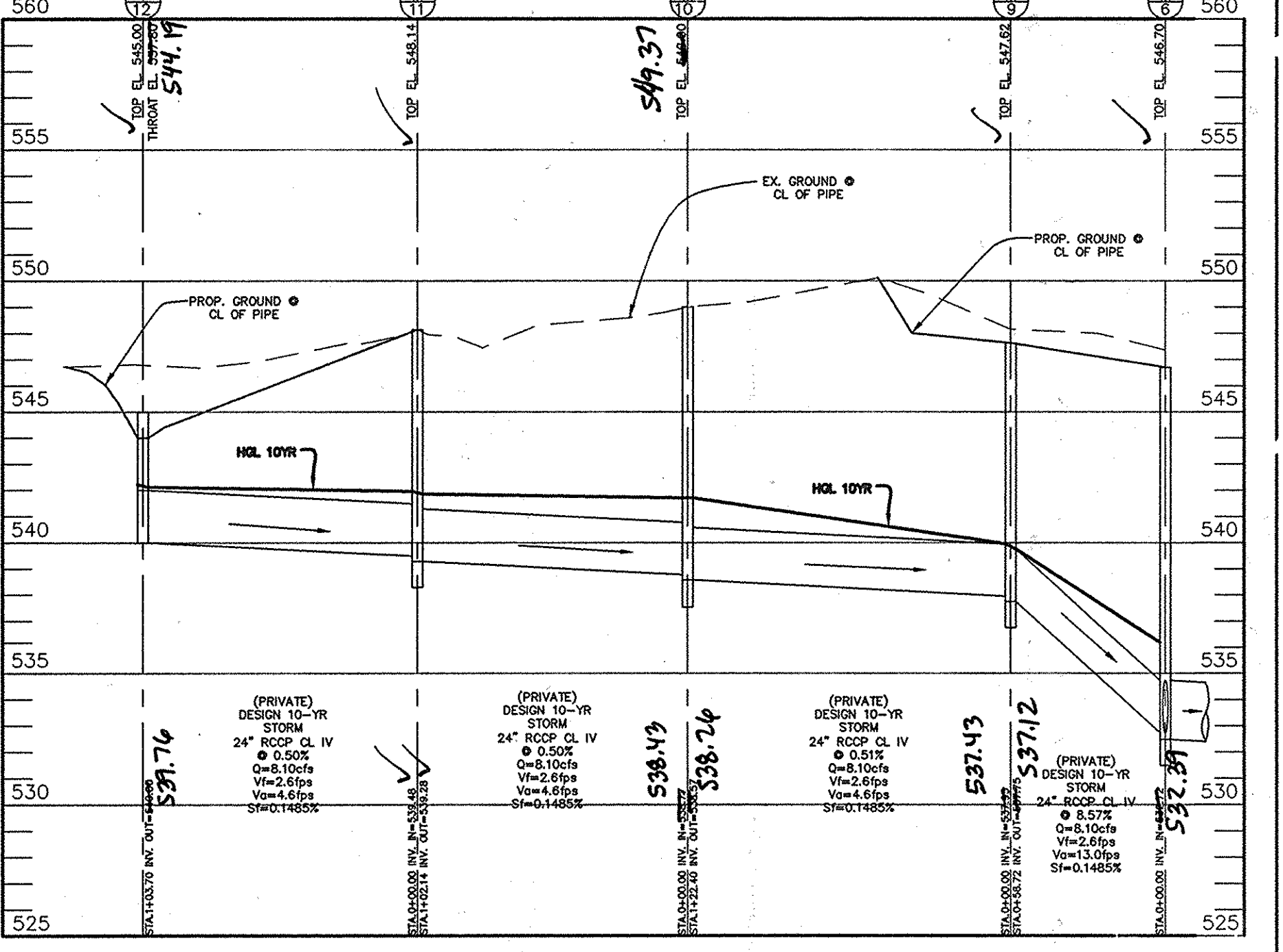
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.  
License No. 21443, Expiration Date: 12-21-16



AS-BUILT CERTIFICATION  
I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this AS-BUILT plan.  
Date 1-20-15



STORM DRAIN PROFILE  
I-5 TO I-2  
SCALE: VERTICAL 1"=5', HORIZONTAL 1"=50'



STORM DRAIN PROFILE - M-6 TO I-12  
SCALE: HORIZONTAL 1"=50', VERTICAL 1"=5'

PIPE SCHEDULE (PUBLIC)

TYPE & CLASS	SIZE	LENGTH
RCCP CL IV	33"	384'
RCCP CL IV	30"	303'
RCCP CL IV	27"	390'
RCCP CL IV	24"	104'
RCCP CL IV	18"	450'
RCCP CL IV	15"	39'

RCP = REINFORCED CONCRETE PIPE

CONTROL STRUCTURES

NO.	TYPE	LOCATION	INV. IN	INV. OUT	TOP ELEV.	HO. CO. STD.
S-1	CONTROL STRUCTURE	N 596,257.23 E 1,314,807.21	-	-	514.17	SEE SHEET 15
S-2	CONTROL STRUCTURE	N 597,498.01 E 1,313,983.11	-	-	534.35	SEE SHEET 15

STRUCTURE SCHEDULE

STORM INLETS						
NO.	TYPE	LOCATION	INV. IN	INV. OUT	TOP ELEV.	HO. CO. STD.
I-1	D INLET	N 596,957.41 E 1,314,691.22	523.677	523.204	529.98	D-4.10 (1 SIDE) PUBLIC
I-2	D INLET	CL STA. 18+16.97 LEFT 17.00 (MITCHELL'S WAY)	529.145	528.946	539.25	D-4.10 (2 SIDE) PUBLIC
I-3	D INLET	CL STA. 18+18.14 RIGHT 17.00 (MITCHELL'S WAY)	529.737	529.467	539.25	D-4.10 (2 SIDE) PUBLIC
I-4	D INLET	N 597,290.31 E 1,314,859.81	-	533.627	538.80	D-4.10 (3 SIDE) PRIVATE
I-5	D INLET	N 597,171.14 E 1,314,793.96	-	530.285	535.83	D-4.10 (2 SIDE) PRIVATE
I-6	D INLET	N 596,910.18 E 1,314,480.13	523.88	523.93	530.93	D-4.10 (1 SIDE) PUBLIC
I-7	D INLET	N 597,005.53 E 1,314,521.48	528.220	527.865	533.00	D-4.10 (1 SIDE) PUBLIC
I-8	D INLET	CL STA. 2+50.00 LEFT 17.00 (GOOSE CHASE WAY)	539.843	539.647	544.856	D-4.10 (1 SIDE) PUBLIC
I-9	D INLET	CL STA. 2+50.00 RIGHT 17.00 (GOOSE CHASE WAY)	540.057	540.057	544.856	D-4.10 (3 SIDE) PUBLIC
I-10	D INLET	CL STA. 21+48.11 LEFT 21.75 (MITCHELL'S WAY)	549.827	549.827	554.377	D-4.10 (1 SIDE) PUBLIC
I-11	D INLET	CL STA. 21+48.10 RIGHT 17.00 (MITCHELL'S WAY)	-	550.241	554.917	D-4.10 (1 SIDE) PUBLIC
I-12	D INLET	N 597,581.64 E 1,314,919.19	-	545.001	545.001	D-4.10 (4 SIDE) PRIVATE

THE D INLET IS PER THE HOWARD COUNTY STANDARD REFERENCED. PLEASE SEE THIS SHEET FOR ADDITIONAL DETAIL INFORMATION FOR FLOW THROUGH CONDITION

STORM MANHOLES

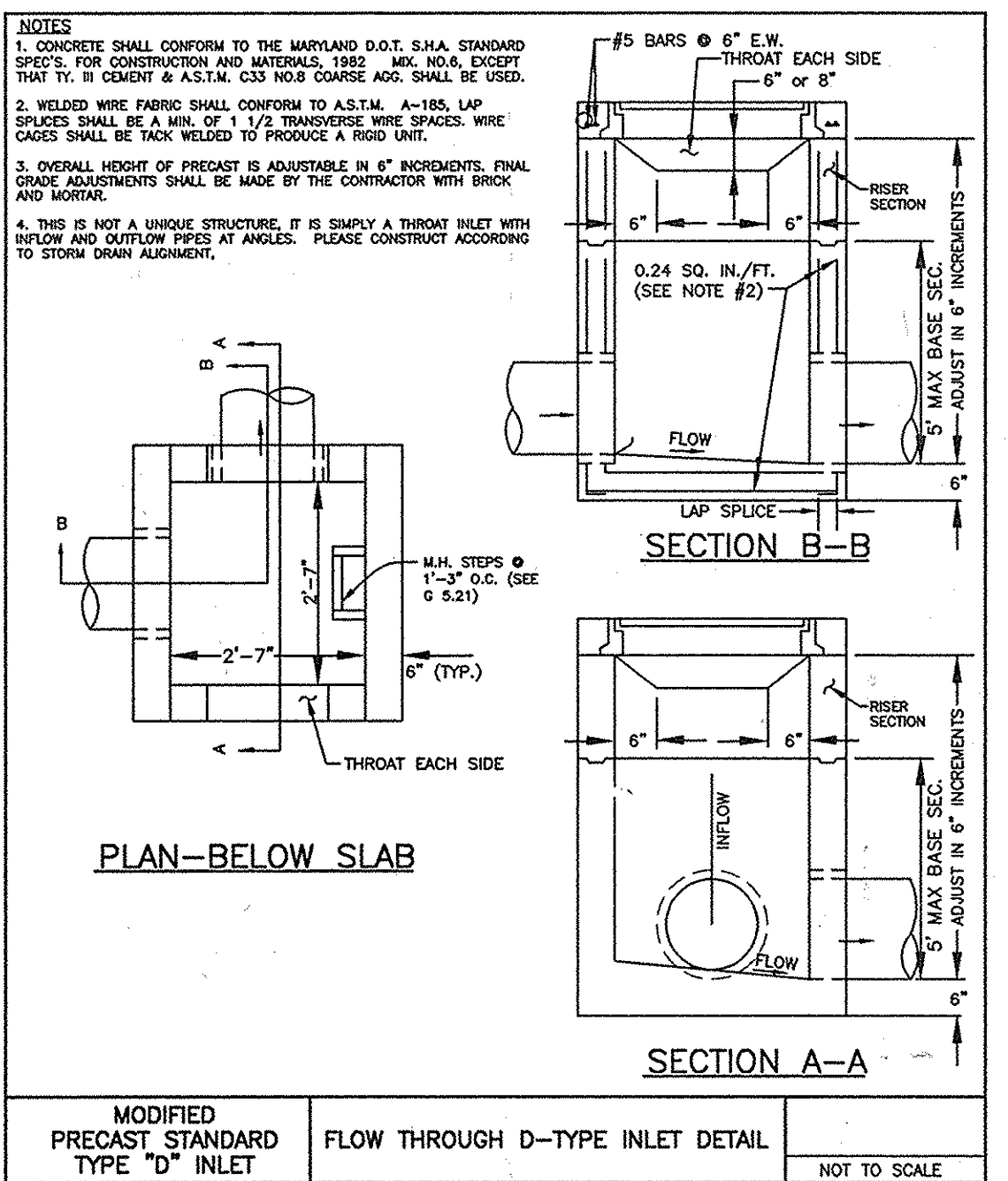
NO.	TYPE	LOCATION	INV. IN	INV. OUT	TOP ELEV.	HO. CO. STD.
M-1	5'-0" MANHOLE	N 596,675.77 E 1,314,723.35	520.826	520.826	530.20	G - 5.13 PUBLIC
M-1A	5'-0" MANHOLE	N 596,240.94 E 1,314,733.88	511.04	503.68	540.71	G - 5.13 PUBLIC
M-2	5'-0" MANHOLE	N 596,785.08 E 1,314,768.43	520.85	521.61	531.61	G - 5.13 PUBLIC
M-3	5'-0" MANHOLE	N 596,840.43 E 1,314,640.34	522.372	527.80	537.13	G - 5.12 PUBLIC
M-4	5'-0" MANHOLE	N 597,107.85 E 1,314,748.24	528.677	528.408	537.30	G - 5.13 PUBLIC
M-5	5'-0" MANHOLE	N 597,285.27 E 1,314,648.57	531.94	546.28	546.28	G - 5.13 PRIVATE
M-6	5'-0" MANHOLE	N 597,364.06 E 1,314,716.68	532.532	532.46	546.70	G - 5.13 PRIVATE
M-7	4'-0" MANHOLE	N 597,070.57 E 1,314,366.86	533.807	533.46	538.61	G - 5.12 PUBLIC
M-8	4'-0" MANHOLE	N 597,120.78 E 1,314,315.09	536.611	536.408	544.856	G - 5.12 PUBLIC
M-9	4'-0" MANHOLE	N 597,408.48 E 1,314,755.09	537.849	537.871	537.871	G - 5.12 PRIVATE
M-10	4'-0" MANHOLE	N 597,527.70 E 1,314,782.79	538.292	538.276	548.807	G - 5.12 PRIVATE
M-11	4'-0" MANHOLE	N 597,621.41 E 1,314,823.42	539.48	539.28	548.14	G - 5.12 PRIVATE

END SECTIONS

NO.	TYPE	LOCATION	INV. IN	INV. OUT	TOP ELEV.	HO. CO. STD.
E-1	CONCRETE END SECTION	N 596,232.83 E 1,314,696.82	-	503.28	-	D-5.41 & D-5.42 PUBLIC
E-2	CONCRETE END SECTION	N 596,574.02 E 1,314,795.43	-	520.00	-	D-5.41 & D-5.42 PUBLIC
E-3	CONCRETE END SECTION	N 597,475.07 E 1,313,928.61	-	534.00	-	D-5.41 & D-5.42 PUBLIC

1) STRUCTURE ELEVATION AND LOCATION FOR MANHOLES IS AT THE TOP AND CENTER OF RIM.  
2) STRUCTURE ELEVATION AND LOCATION FOR CURB INLETS IS AT THE TOP OF CURB AT MIDPOINT OF THE INLET AT THE FACE.  
3) STRUCTURE ELEVATION AND LOCATION FOR TYPE "D" AND "WR" INLETS IS AT THE TOP OF SLAB/GRADE AT CENTER OF THE INLET.  
4) PRECAST STRUCTURES MEETING HS-20 LOADING MAY BE USED.  
5) ALL STORM DRAINS SHALL BE REINFORCED CONCRETE PIPE (CLASS IV) UNLESS OTHERWISE NOTED.  
6) STRUCTURE ELEVATION AND LOCATION FOR END SECTION IS AT THE INVERT WHERE PIPE JOINS END SECTION

\* TYPE D INLET WITH 8" OPENING DEPTH



MODIFIED PRECAST STANDARD TYPE "D" INLET  
FLOW THROUGH D-TYPE INLET DETAIL  
NOT TO SCALE

APPROVED: DEPARTMENT OF PUBLIC WORKS  
*William J. ...* 10-29-07  
CHIEF, BUREAU OF HIGHWAYS  
APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*Candy ...* 11/1/07  
CHIEF, DIVISION OF LAND DEVELOPMENT  
*...* 11/1/07  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

BENCHMARK ENGINEERING, INC.  
8480 BALTIMORE NATIONAL PIKE • SUITE 418 • ELLICOTT CITY, MARYLAND 21043  
PHONE: 410-465-6105 FAX: 410-465-6844  
www.bch-engineering.com

STATE OF MARYLAND  
BARRY F. CLEARY  
REGISTERED PROFESSIONAL ENGINEER  
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. 28559, Expiration Date: 7-22-2009.

OWNER: SPRING MILL, LLC  
P.O. BOX 417  
ELLICOTT CITY, MD 21041  
410-465-4244

PROJECT: CLOVERFIELD-SECTION II  
LOTS 1 THRU 15, NON-BUILDABLE PRESERVATION PARCELS "A" AND "C", AND BUILDABLE PRESERVATION PARCEL "B", A RESUBDIVISION OF NON-BUILDABLE BULK PARCEL "M" AND PARCEL 119

LOCATION: TAX MAP-15 GRID-7 PARCEL-119  
3rd ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

TITLE: STORMDRAIN PROFILES AND SCHEDULE  
ROADS, STORMWATER MANAGEMENT AND STORM DRAIN CONSTRUCTION PLANS

DATE: NOVEMBER, 2006  
OCTOBER, 2007  
PROJECT NO. 1649

Design: BFC Draft: BFC SCALE: AS SHOWN DRAWING 11 OF 17

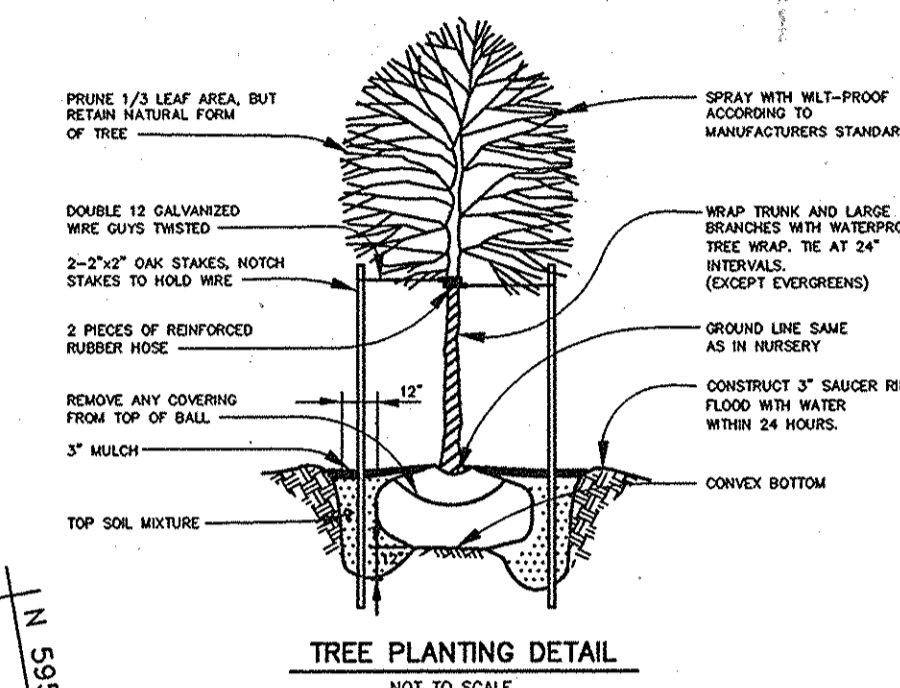
LEGEND

- EXISTING TREELINE
- PROPOSED TREELINE
- CL. STREAM
- LIMIT OF WETLANDS
- LIMIT OF SUBMISSION
- PROPOSED FOREST CONSERVATION EASEMENT
- LANDSCAPE PERIMETER DESIGNATION
- STREET TREES
- NO WOODY BUFFER

CATEGORY	SCHEDULE A PERIMETER LANDSCAPE EDGE		
	ADJ. TO PERIMETER PROP.	ADJ. TO PERIMETER PROP.	ADJ. TO PERIMETER PROP.
LANDSCAPE TYPE	A	A	A
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	1274'	592'	931'
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO	YES 592'	NO
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO	NO	NO
NUMBER OF PLANTS REQUIRED	1274'	-	931'
SHADE TREES	22	-	16
EVERGREEN TREES	-	-	-
OTHER TREES (2:1 SUBSTITUTE) SHRUBS	-	-	-

	SCHEDULE D SWM PERIMETER LANDSCAPING	
	SWMF 1	SWMF 2
LINEAR FEET OF PERIMETER	1174'	1467'
LINEAR FEET OF EXISTING WOODS LINE	579'	132'
LINEAR FEET OF REQUIRED PLANTING	595'	1335'
BUFFER TYPE	"B"	"B"
CREDIT FOR EXISTING VEGETATION (NO, YES AND %) (DESCRIBE BELOW IF NEEDED)	YES, 49%	YES, 9%
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	NO	NO
NUMBER OF TREES REQUIRED		
SHADE TREES	12	27
EVERGREEN TREES	15	34
NUMBER OF TREES PROVIDED		
SHADE TREES	12	27
EVERGREEN TREES	15	34

STREET TREE SCHEDULE			
ROAD NAME	PERIMETER	TREES REQ.	TREES PROV.
MITCHELLS WAY	2103'	53	53
GOOSE CHASE WAY	970'	25	25
TOTAL			



LANDSCAPE NOTES:

- TREES SHOULD BE PLANTED A MINIMUM OF 6 FEET FROM THE EDGE OF PAVING AND MUST BE A MINIMUM OF 5 FEET FROM ANY STORM DRAIN.
- TREES MUST BE PLANTED A MINIMUM OF 5 FEET FROM AN OPEN SPACE ACCESS STRIP AND 10 FEET FROM A DRIVEWAY.
- SEE TREE PLANTING DETAIL - THIS SHEET.
- THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL.
- AT THE TIME OF INSTALLMENT, ALL SHRUBS AND OTHER PLANTINGS HEREWITH LISTED AND APPROVED FOR THIS SITE, SHALL BE OF THE PROPER HEIGHT REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATION OF REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THIS APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO APPLICABLE PLANS AND CERTIFICATIONS.
- THE OWNER, TENANTS AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING INCLUDING BOTH PLANT MATERIALS AND BERMS, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.
- FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DRW DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$30,450.00. (\$23,100.00 FOR 77 SHADE TREES AND \$7,350.00 FOR 49 EVERGREENS)

PUBLIC STREET TREE PLANTING LIST			
SYMBOL	QUANTITY	NAME	REMARKS
	11	PLATANUS X ACERFOLIO (Bloodgood Plane)	2 1/2" MIN. CAL. B&B FULL HEAD
	25	ACER RUBRUM (October Glory Red Maple)	2 1/2" MIN. CAL. B&B FULL HEAD
	42	ACER SACCHARINUM (Green Mountain Sugar Maple)	2 1/2" MIN. CAL. B&B FULL HEAD

STREET TREES TO BE PROVIDED BY THE DEVELOPER

LANDSCAPE PLANTING LIST				
SYMBOL	QUANTITY	NAME	REMARKS	DESCRIPTION
	38	QUERCUS RUBRA (Red Oak)	2-1/2" - 3" col.	SHADE TREES ALONG PERIMETER TO BE PROVIDED BY THE DEVELOPER
	49	PINUS STROBUS (Eastern White Pine)	6' - 8' ht.	EVERGREEN TREES ALONG PERIMETER AND SWM FACILITIES TO BE PROVIDED BY THE DEVELOPER
	39	TILIA CORDATA (Greenspire Littleleaf Linden)	2-1/2" - 3" col.	SHADE TREES ALONG SWM FACILITIES TO BE PROVIDED BY THE DEVELOPER

No As-Built Information is required on this sheet

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. 212443 Expiration Date: 12-21-16



E 1,313,800  
N 596,700

PLAN VIEW  
SCALE: 1" = 100'

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 OF A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE-YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.  
James R. Moxley III  
STEVEN STRUBB  
10-10-07 DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS  
Walter F. ... 10-29-07  
APPROVED: DEPARTMENT OF PLANNING AND ZONING  
Cindy ... 11/1/07  
11/1/07 DATE

BENCHMARK ENGINEERING, INC.  
8480 BALTIMORE NATIONAL PIKE & SUITE 418  
ELLICOTT CITY, MARYLAND 21043  
PHONE: 410-465-8105 FAX: 410-465-6644  
WWW.BE-CIVILENGINEERING.COM

STATE OF MARYLAND PROFESSIONAL ENGINEER  
9/10/2007

OWNER/DEVELOPER: SPRING MILL, LLC  
P.O. BOX 417  
ELLICOTT CITY, MD 21041  
410-465-4244

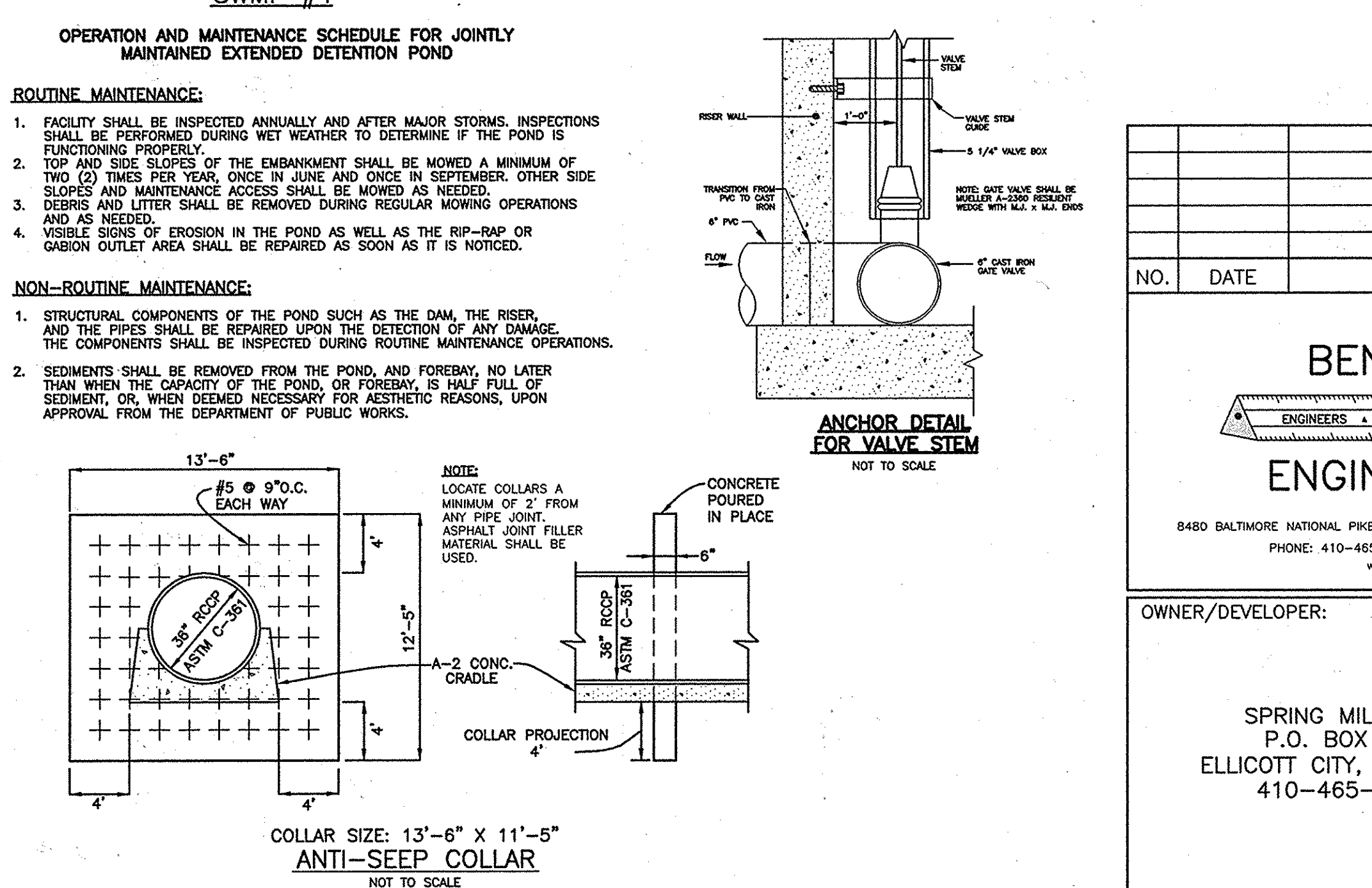
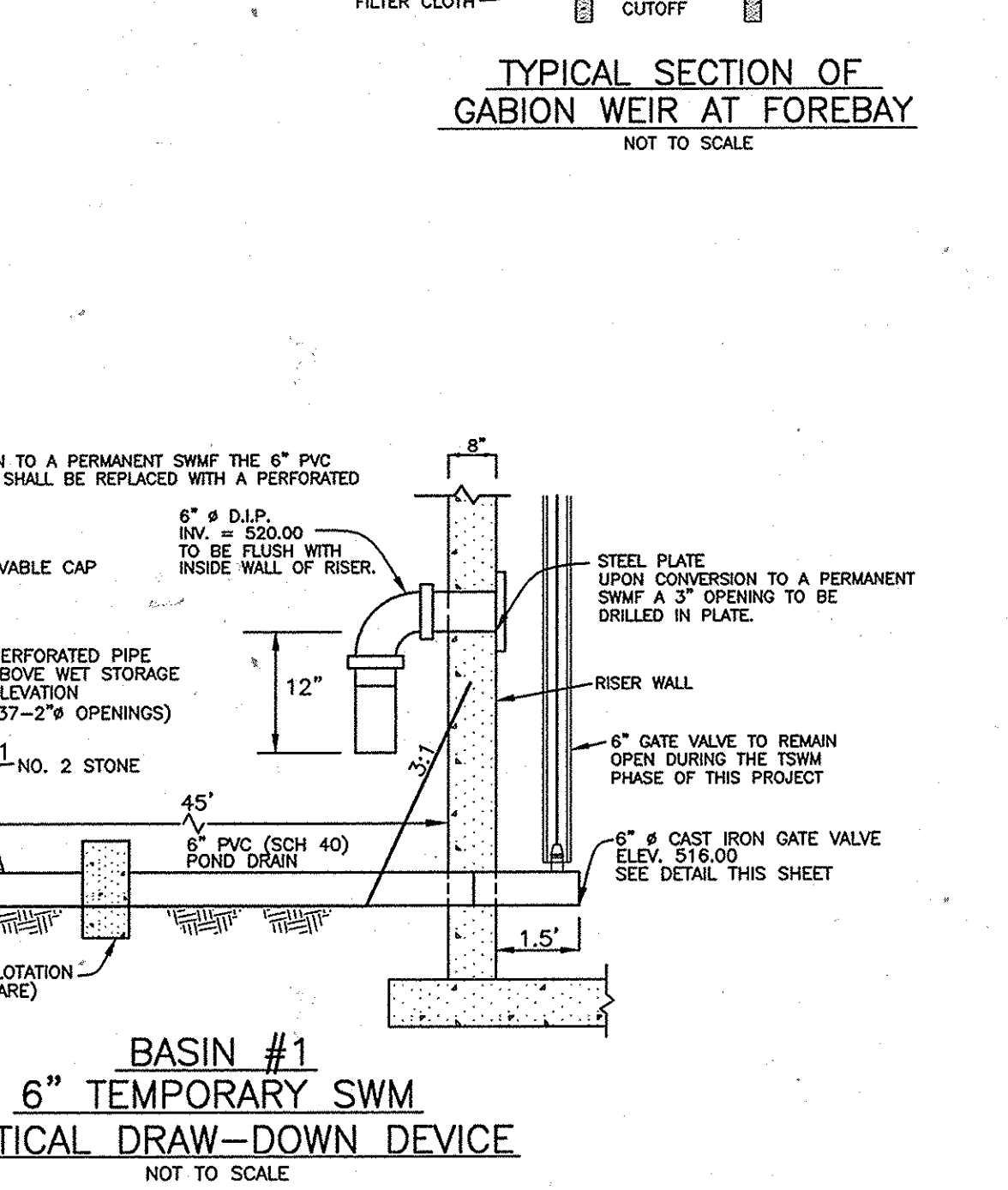
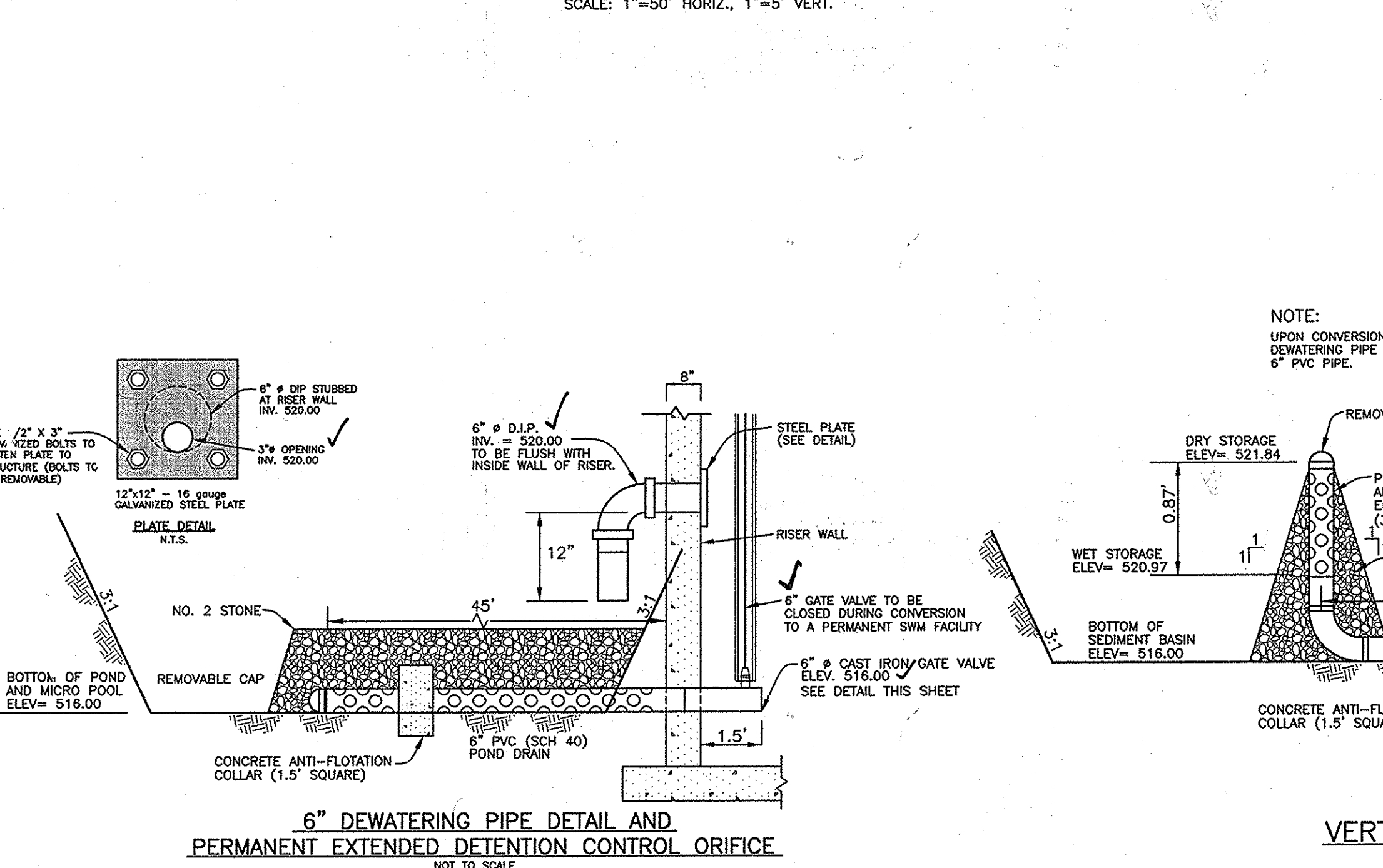
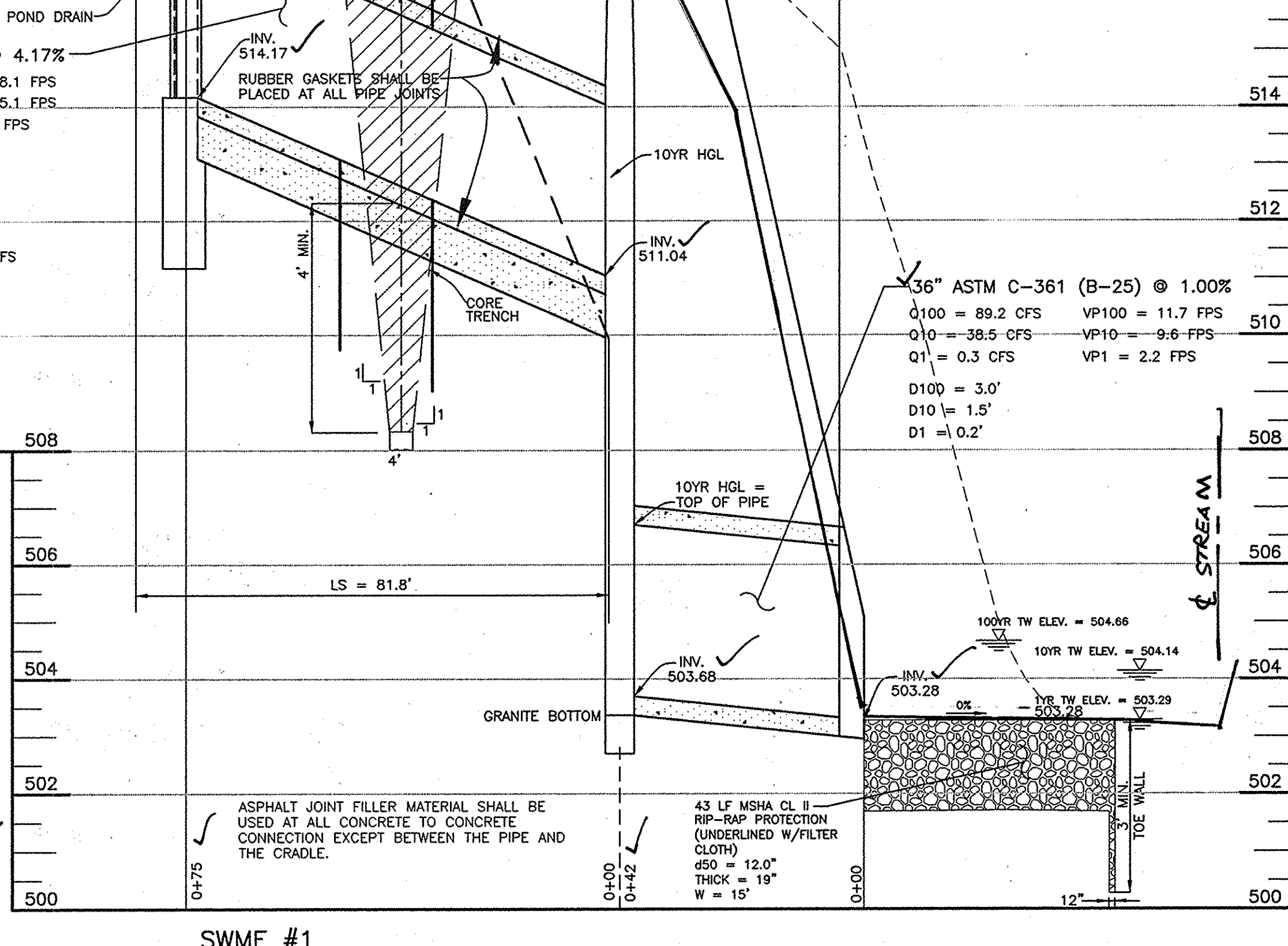
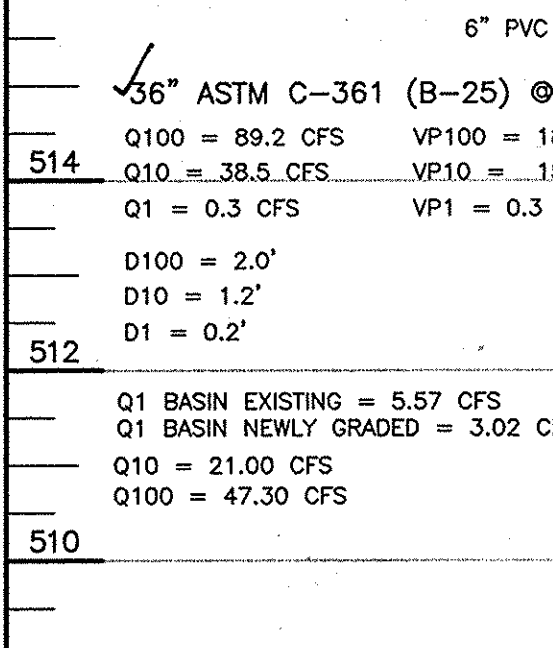
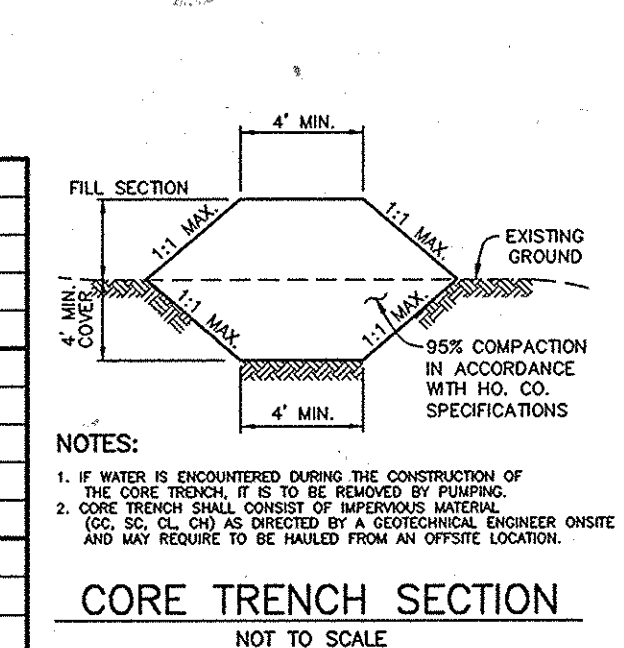
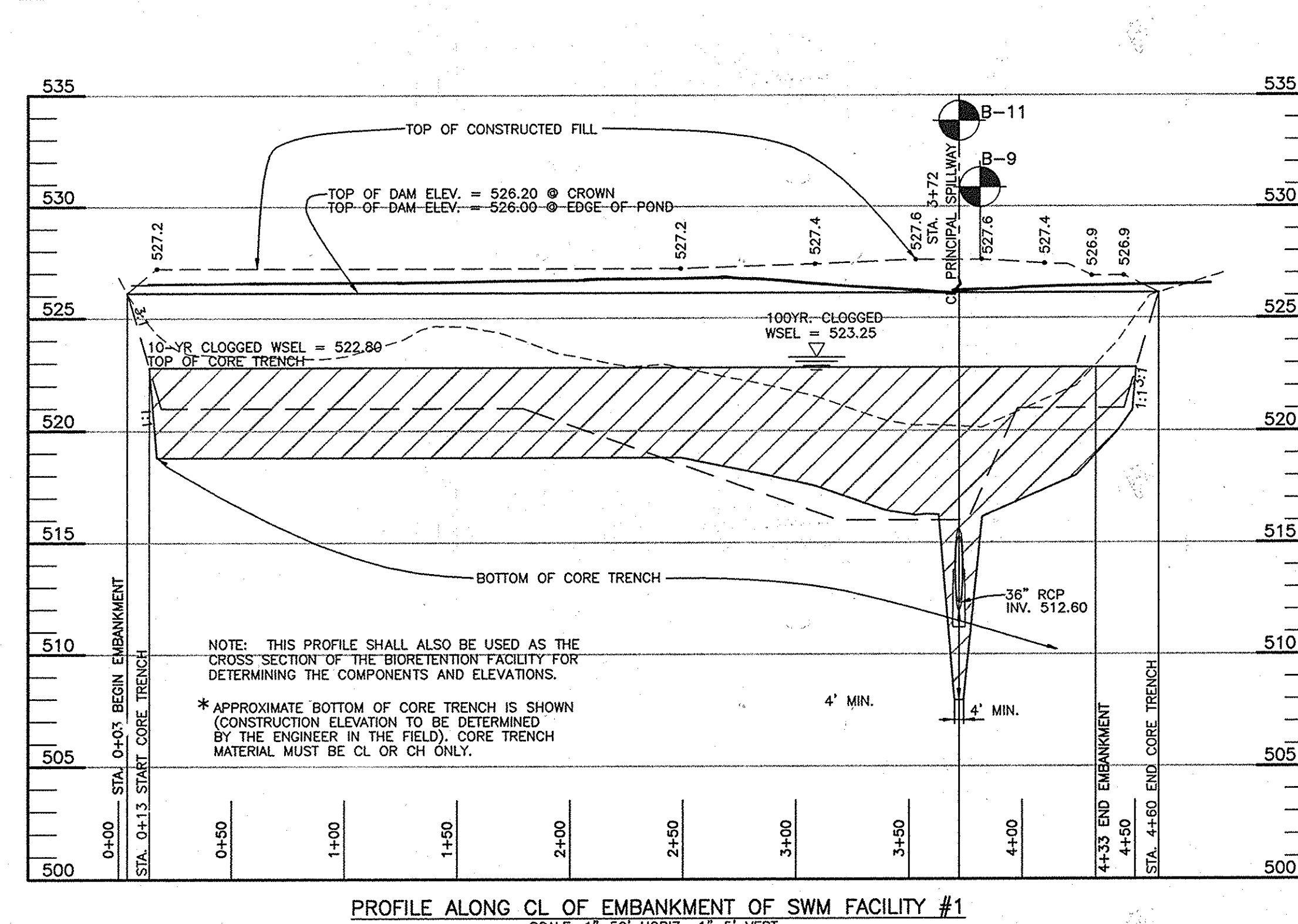
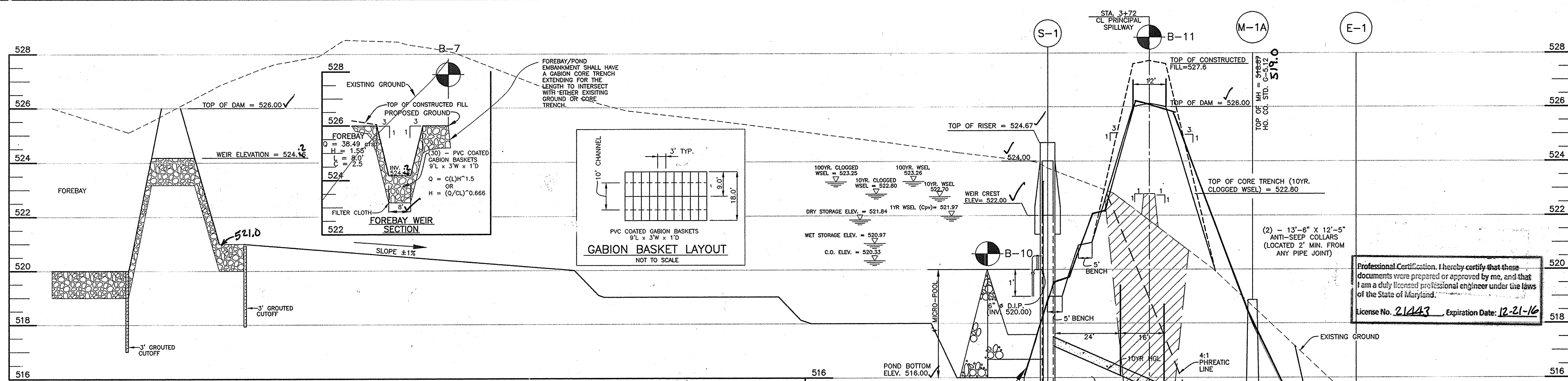
PROJECT: CLOVERFIELD-SECTION II  
LOTS 1 THRU 15, NON-BUILDABLE PRESERVATION PARCELS "A" AND "C", AND BUILDABLE PRESERVATION PARCEL "B", A RESUBDIVISION OF NON-BUILDABLE BULK PARCEL "P" AND PARCEL 119

LOCATION: TAX MAP-15 GRID-7 PARCEL-119  
3rd ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

TITLE: LANDSCAPE AND STREET TREE PLAN  
ROADS, STORMWATER MANAGEMENT AND STORM DRAIN CONSTRUCTION PLANS

DATE: NOVEMBER, 2006  
OCTOBER, 2007 PROJECT NO. 1649

SCALE: AS SHOWN SHEET 12 OF 17



**GEOTECHNICAL ENGINEER RECOMMENDATIONS:**

EMBANKMENT AND CUT-OFF TRENCH CONSTRUCTION

THE AREAS OF THE PROPOSED SWM 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 PROFFROLLED 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 EXPOSED MATERIALS SHOULD BE OBSERVED AND TESTED BY A GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE UTILIZING A DYNAMIC CONE PENETROMETER. ANY EXCESSIVELY SOFT OR LOOSE MATERIALS IDENTIFIED BY PROFFROLLING OR 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 CUTOFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, 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.

**AS-BUILT CERTIFICATION**

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

*Donald M. ...* License No. 21443, Expiration Date: 12-21-16

**BY THE DEVELOPER:**

*Steve K. Brown* DEVELOPER

**BY THE ENGINEER:**

*James R. Marley, III* ENGINEER

DATE: 10-29-07

APPROVED: DEPARTMENT OF PUBLIC WORKS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

**BENCHMARK ENGINEERING, INC.**

8480 BALTIMORE NATIONAL PIKE • SUITE 418 • ELLICOTT CITY, MARYLAND 21043  
PHONE: 410-465-6105 FAX: 410-465-6844  
www.benchmark-engineering.com

NO. DATE REVISION

OWNER/DEVELOPER: SPRING MILL, LLC  
P.O. BOX 417  
ELLICOTT CITY, MD 21041  
410-465-4244

PROJECT: CLOVERFIELD - SECTION II  
LOTS 1 THRU 15, NON-BUILDABLE PRESERVATION PARCELS "A" AND "C", AND BUILDABLE PRESERVATION PARCEL "B", A RESUBDIVISION OF NON-BUILDABLE BULK PARCEL "E" AND PARCEL 119

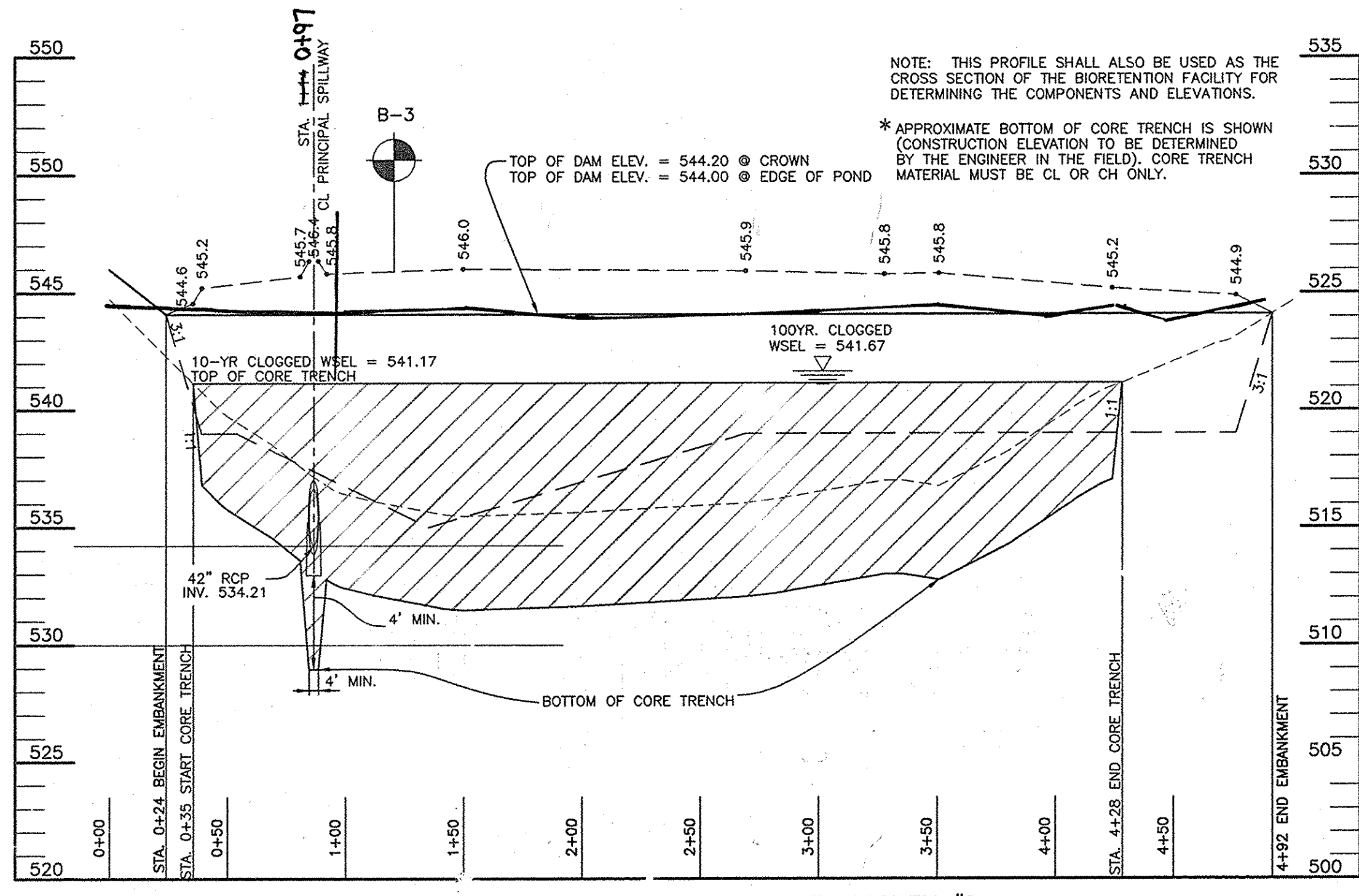
LOCATION: TAX MAP-15, GRID-7 PARCEL-119  
HOWARD COUNTY, MARYLAND

TITLE: STORMWATER MANAGEMENT FACILITY #1  
DETAILS AND NOTES  
ROADS, STORMWATER MANAGEMENT AND STORM DRAIN CONSTRUCTION PLANS

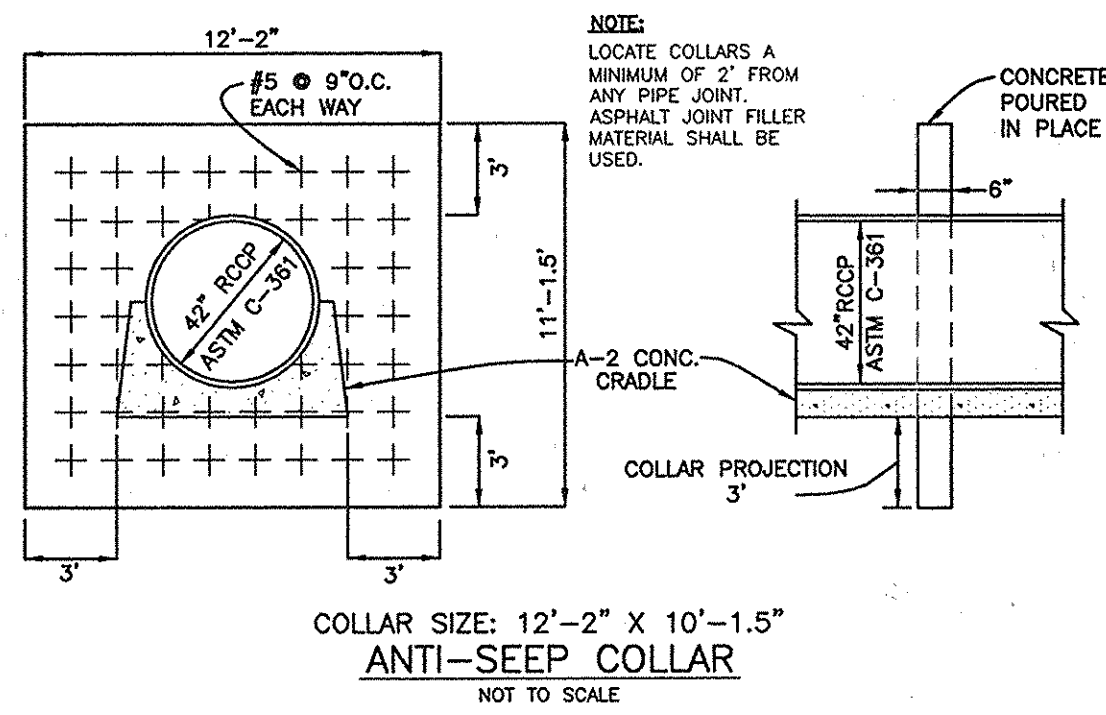
DATE: NOVEMBER 2006  
OCTOBER 2007 PROJECT NO. 1649

Design: BFC Draft: BFC SCALE: AS SHOWN DRAWING 13 OF 17

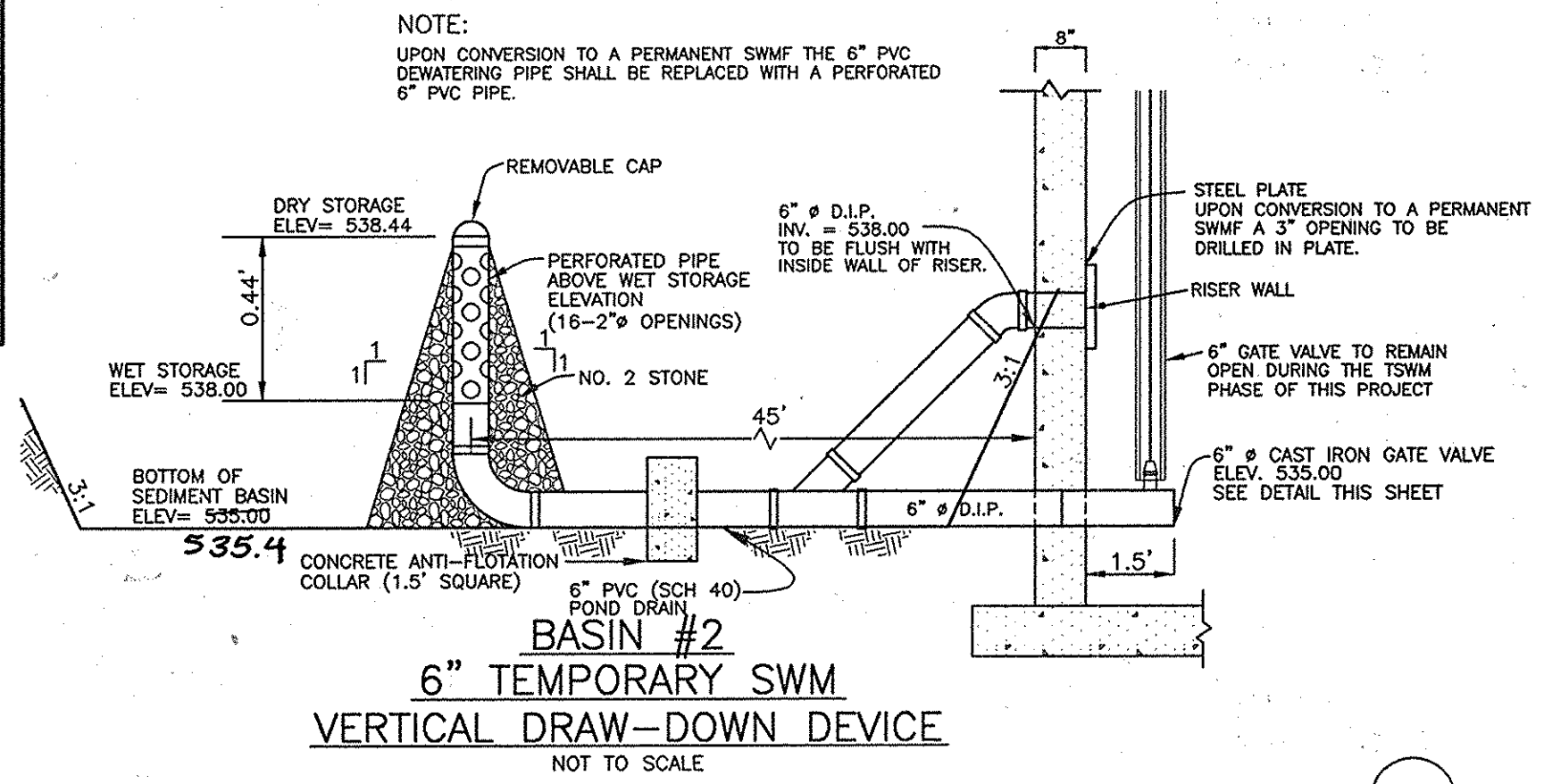
AS-BUILT F-09-091



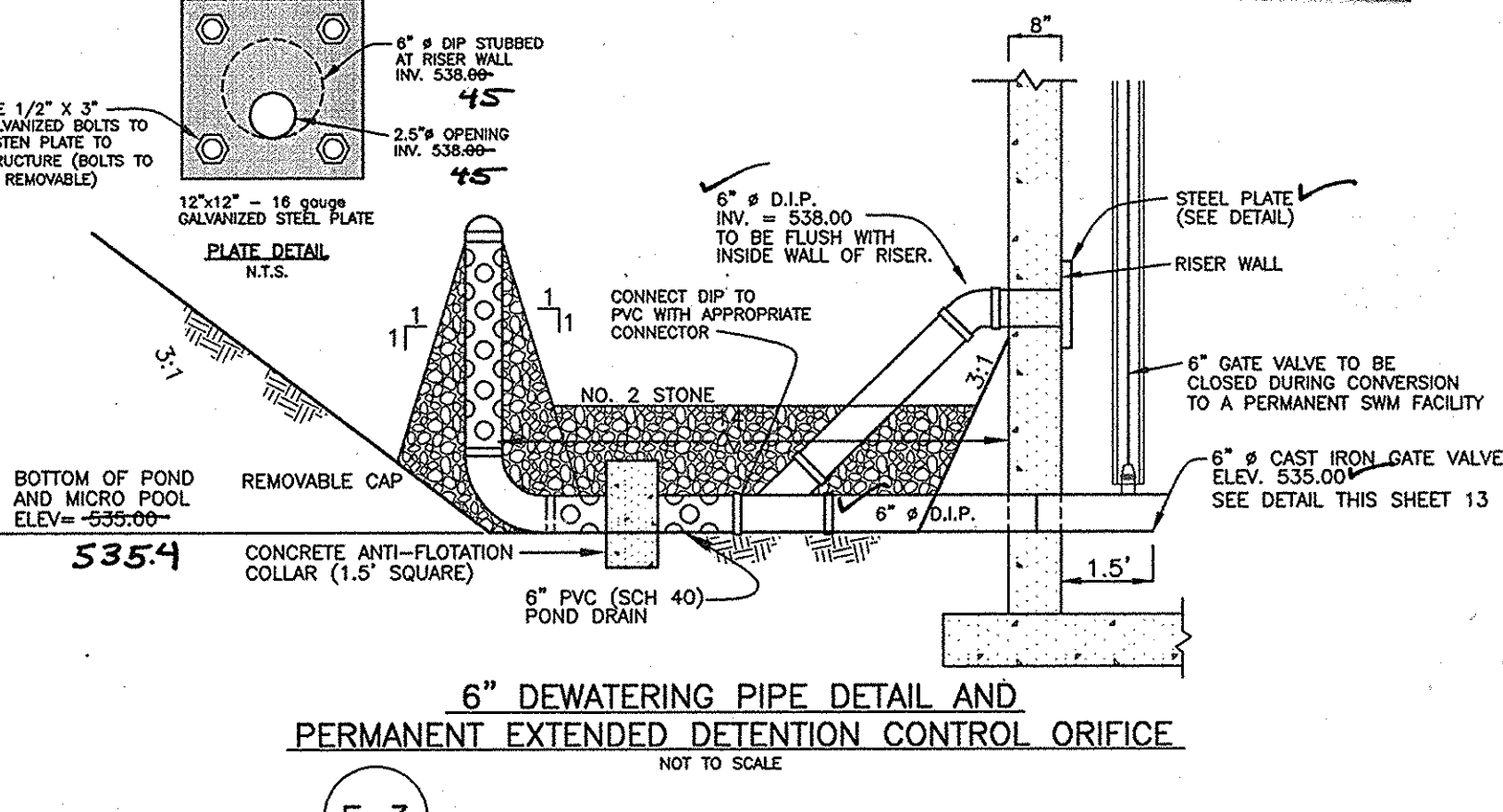
PROFILE ALONG CL OF EMBANKMENT OF SWM FACILITY #2  
SCALE: 1"=50' HORIZ., 1"=5' VERT.



COLLAR SIZE: 12'-2" X 10'-1.5"  
ANTI-SEEP COLLAR  
NOT TO SCALE



6" TEMPORARY SWM  
VERTICAL DRAW-DOWN DEVICE  
NOT TO SCALE



6" DEWATERING PIPE DETAIL AND  
PERMANENT EXTENDED DETENTION CONTROL ORIFICE  
NOT TO SCALE

SWMF #2

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY MAINTAINED EXTENDED DETENTION POND

- ROUTINE MAINTENANCE:**
- FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHALL BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE POND IS FUNCTIONING PROPERLY.
  - TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES PER YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHALL BE MOWED AS NEEDED.
  - DEBRIS AND LITTER SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
  - VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS THE RIP-RAP OR GABION OUTLET AREA SHALL BE REPAIRED AS SOON AS IT IS NOTICED.
- NON-ROUTINE MAINTENANCE:**
- STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE RISER, AND THE PIPES SHALL BE REPAIRED UPON THE DETECTION OF ANY DAMAGE. THE COMPONENTS SHALL BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
  - SEDIMENTS SHALL BE REMOVED FROM THE POND, AND FOREBAY, NO LATER THAN WHEN THE CAPACITY OF THE POND, OR FOREBAY, IS HALF FULL OF SEDIMENT, OR, WHEN DEEMED NECESSARY FOR AESTHETIC REASONS, UPON APPROVAL FROM THE DEPARTMENT OF PUBLIC WORKS.

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. 21443 Expiration Date: 12-21-16

GEOTECHNICAL ENGINEER RECOMMENDATIONS:

EMBANKMENT AND CUT-OFF TRENCH CONSTRUCTION

THE AREAS OF THE PROPOSED SWM 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 EXPOSED MATERIALS SHOULD BE OBSERVED AND TESTED BY A GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE UTILIZING A DYNAMIC CONE PENETROMETER. ANY EXCESSIVELY SOFT OR LOOSE MATERIALS IDENTIFIED BY PROFFROLLING OR 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 CUTOFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, 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.

AS-BUILT CERTIFICATION

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

Donal M. [Signature] License No. 21443 Expiration Date: 1-20-15

CERTIFY MEANS TO STATE OR DECLARE PROFESSIONAL OPINION BASED UPON ON-SITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED IN ACCORDANCE WITH THE ON-SITE INSPECTIONS AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS WHICH ARE CONDUCTED BY THE ENGINEER OR HIS REPRESENTATIVE UTILIZING A DYNAMIC CONE PENETROMETER. ANY EXCESSIVELY SOFT OR LOOSE MATERIALS IDENTIFIED BY PROFFROLLING OR PENETROMETER TESTING SHOULD BE EXCAVATED TO SUITABLE FIRM SOIL, AND THEN GRADES RE-ESTABLISHED BY BACKFILLING WITH SUITABLE SOIL.

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

DEVELOPER: [Signatures] DATE: 10-10-07

BY THE ENGINEER:  
I/WE 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 NOTICED 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.

ENGINEER: [Signature] DATE: 9/18/2007

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

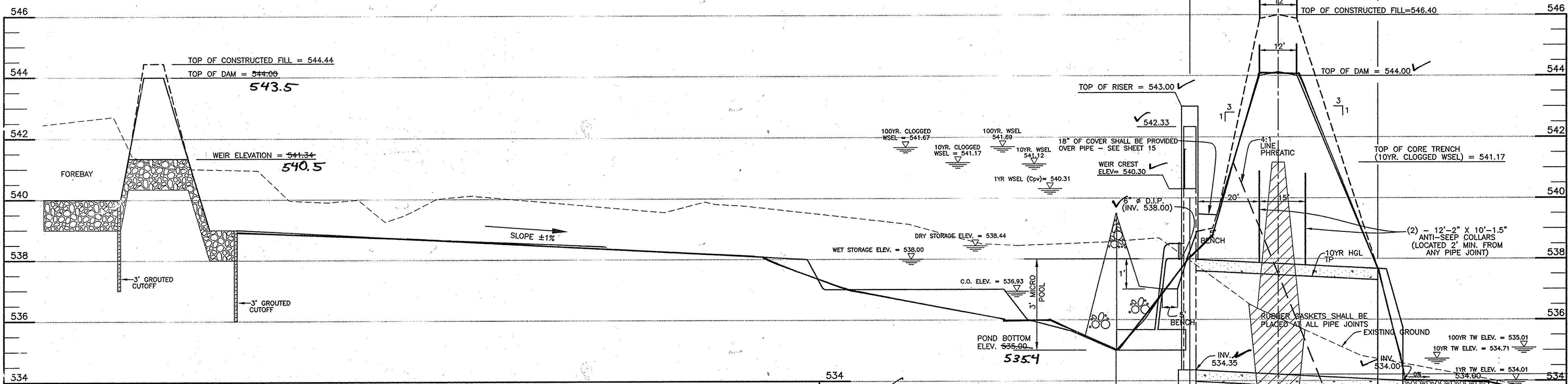
USDA - NATURAL RESOURCES CONSERVATION SERVICE [Signature] DATE: 10/23/07

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

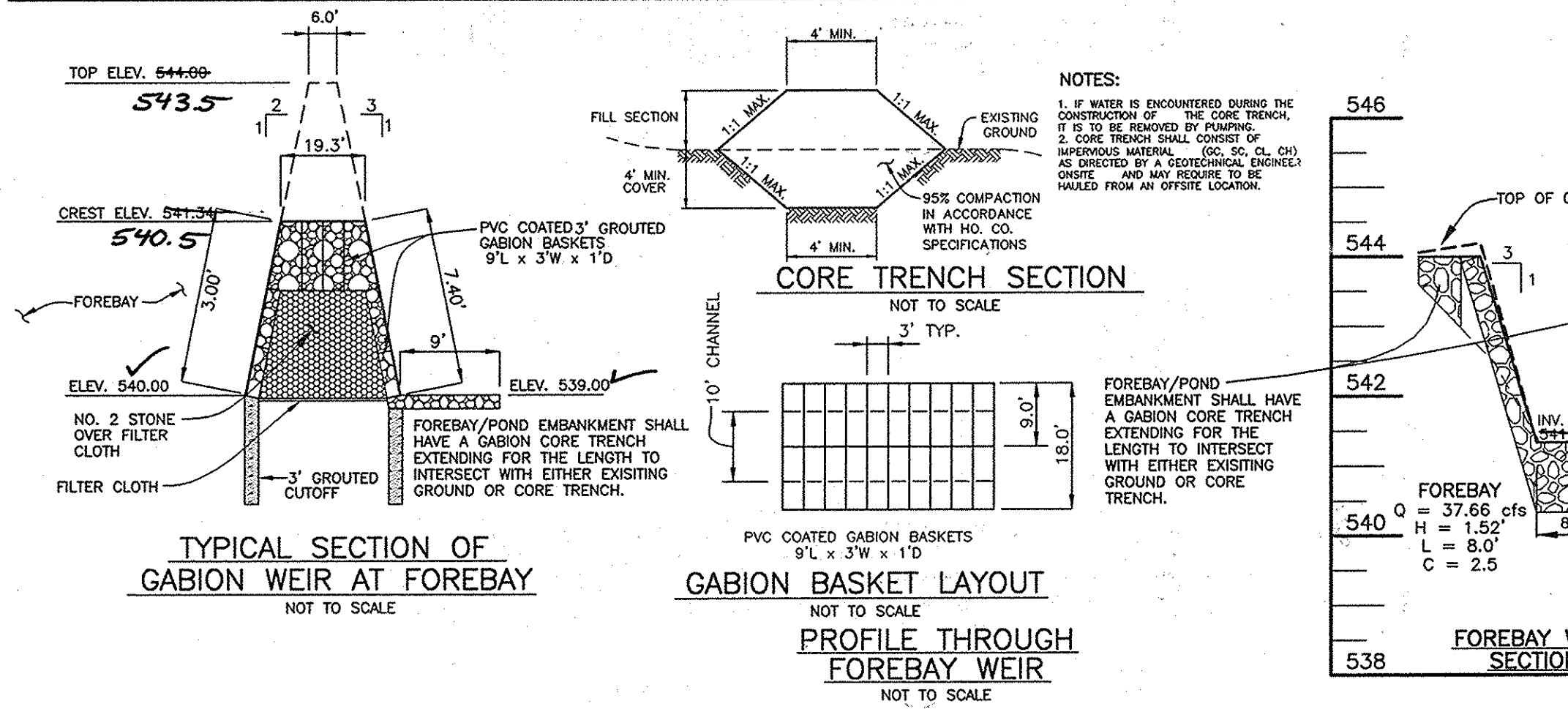
APPROVED: DEPARTMENT OF PUBLIC WORKS  
[Signature] DATE: 10-29-07

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
[Signature] DATE: 11/1/07

[Signature] DATE: 4/1/08



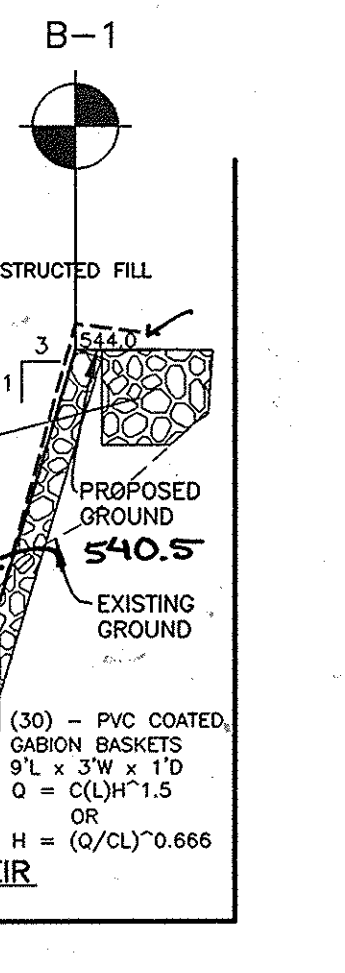
SECTION THRU PRINCIPAL SPILLWAY - SWM #2  
SCALE: 1"=20' HORIZ., 1"=2' VERT.



TYPICAL SECTION OF  
GABION WEIR AT FOREBAY  
NOT TO SCALE

GABION BASKET LAYOUT  
NOT TO SCALE

PROFILE THROUGH  
FOREBAY WEIR  
NOT TO SCALE



FOREBAY WEIR  
SECTION

42" ASTM C-361 (B-25) @ 0.50%

Q100 = 82.7 CFS	VP100 = 9.7 FPS
Q10 = 37.7 CFS	VP10 = 7.9 FPS
Q1 = 0.3 CFS	VP1 = 0.2 FPS
D100 = 2.9'	
D10 = 1.7'	
D1 = 0.02'	

Q1 BASIN EXISTING = 0.81 CFS  
Q1 BASIN NEWLY GRADED = 0.26 CFS  
Q1 = 0.80 CFS  
Q10 = 18.49 CFS

NO.	DATE	REVISION

**BENCHMARK ENGINEERING, INC.**  
8480 BALTIMORE NATIONAL PIKE • SUITE 418 • ELLICOTT CITY, MARYLAND 21043  
PHONE: 410-465-6105 FAX: 410-465-6644  
www.benchmarkengineering.com

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. 28559, Expiration Date: 7-22-2009

9/18/2007

OWNER/DEVELOPER: SPRING MILL, LLC  
P.O. BOX 417  
ELLICOTT CITY, MD 21041  
410-465-4244

PROJECT: CLOVERFIELD-SECTION II  
LOTS 1 THRU 15, NON-BUILDABLE PRESERVATION PARCELS "A" AND "C", AND BUILDABLE PRESERVATION PARCEL "B", A RESUBDIVISION OF NON-BUILDABLE BULK PARCEL "F" AND PARCEL 119

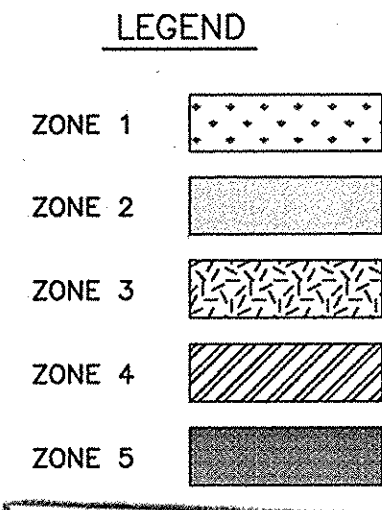
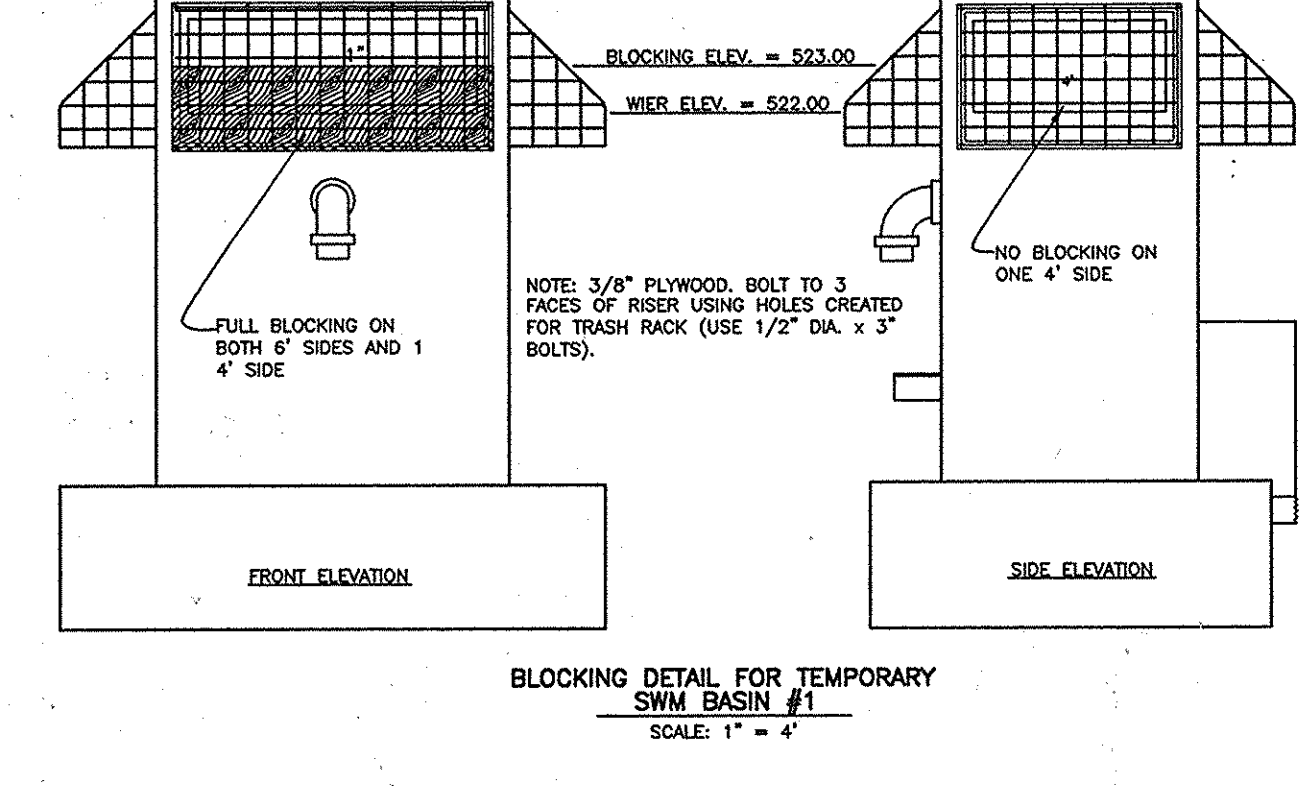
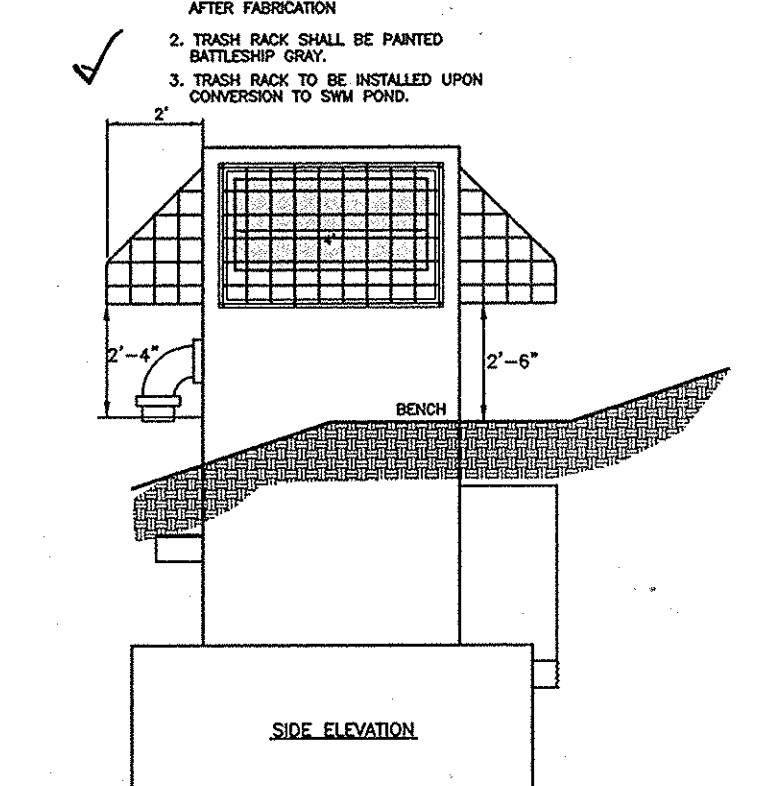
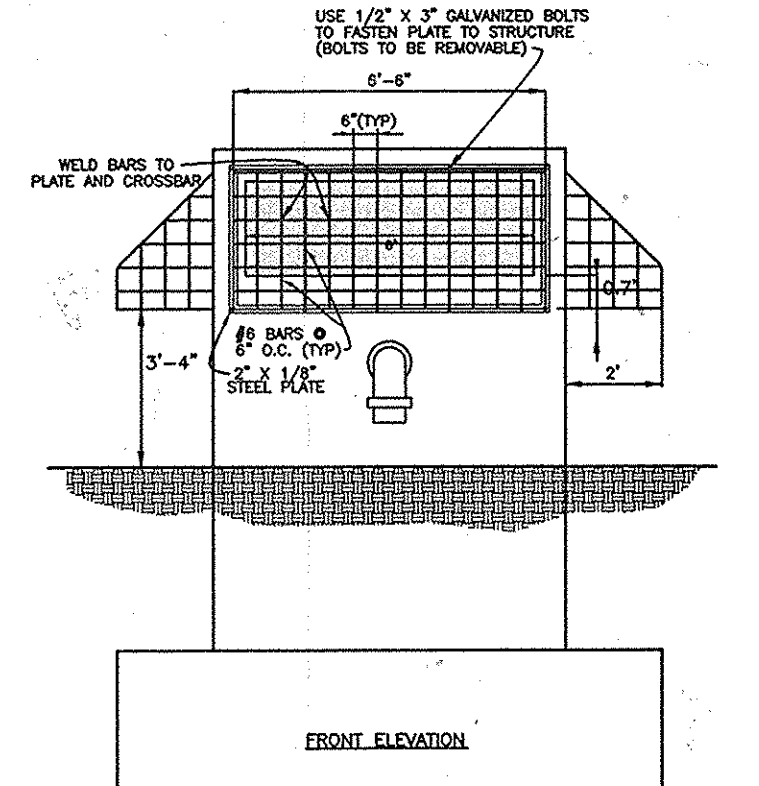
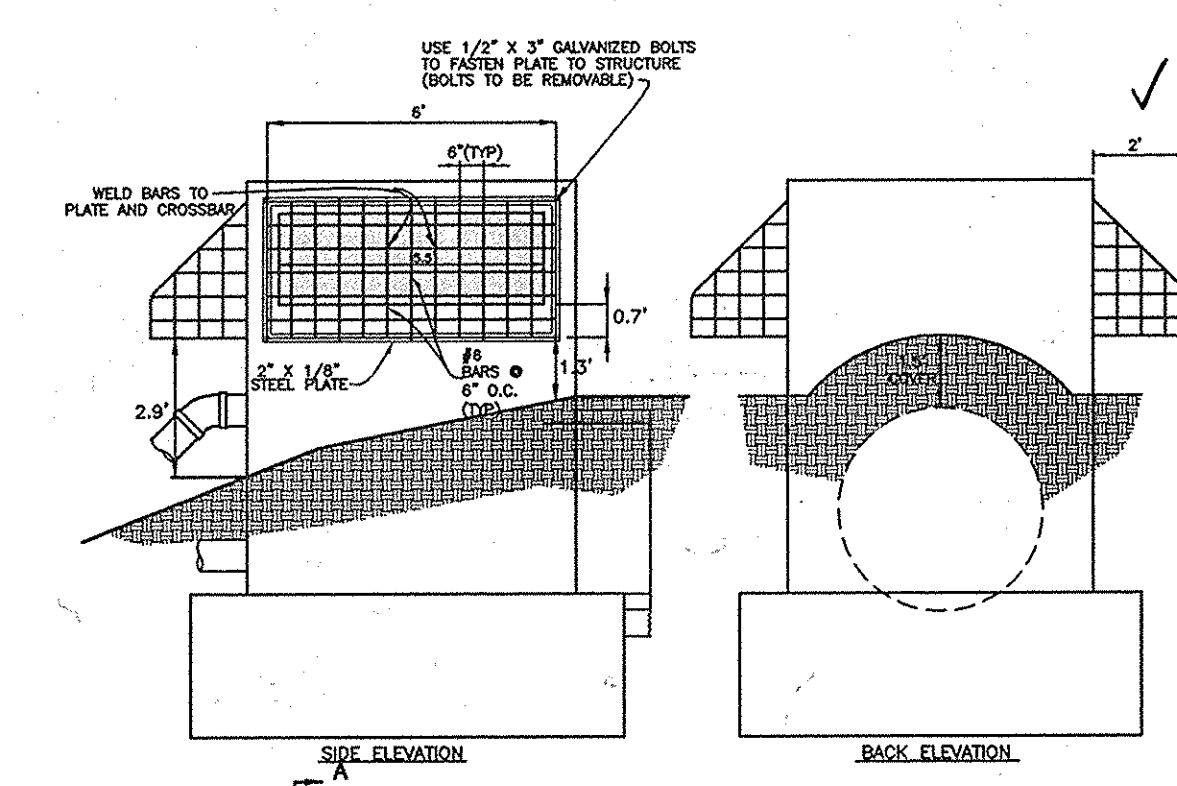
LOCATION: TAX MAP-15 GRID-7 PARCEL-119  
3rd ELEC. DISTRICT  
HOWARD COUNTY, MARYLAND

TITLE: STORMWATER MANAGEMENT FACILITY #2  
DETAILS AND NOTES  
CONSTRUCTION PLANS

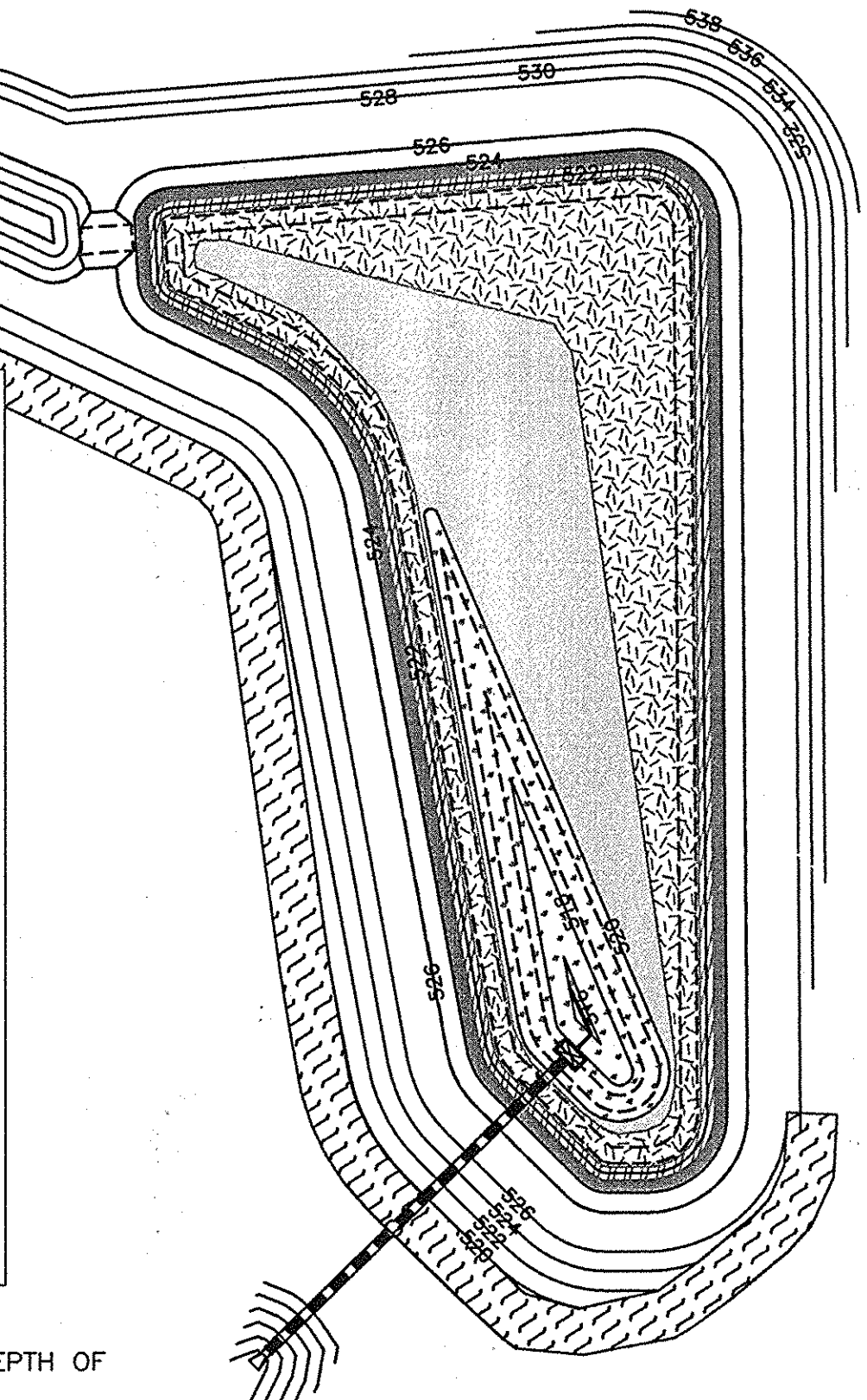
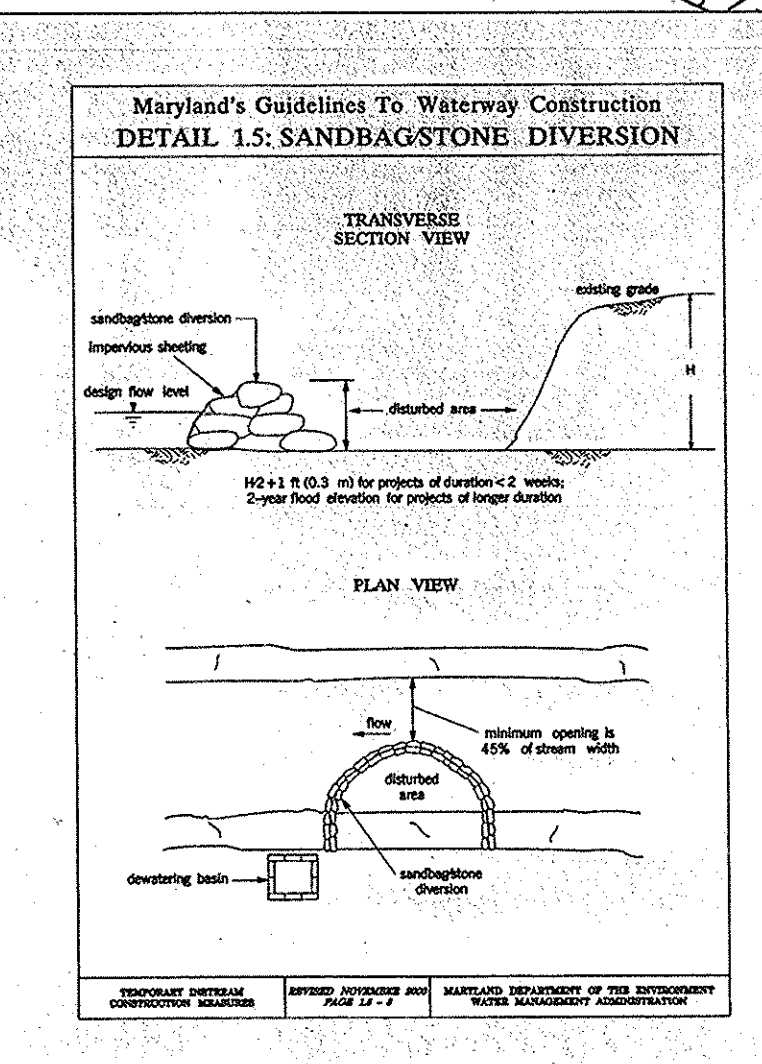
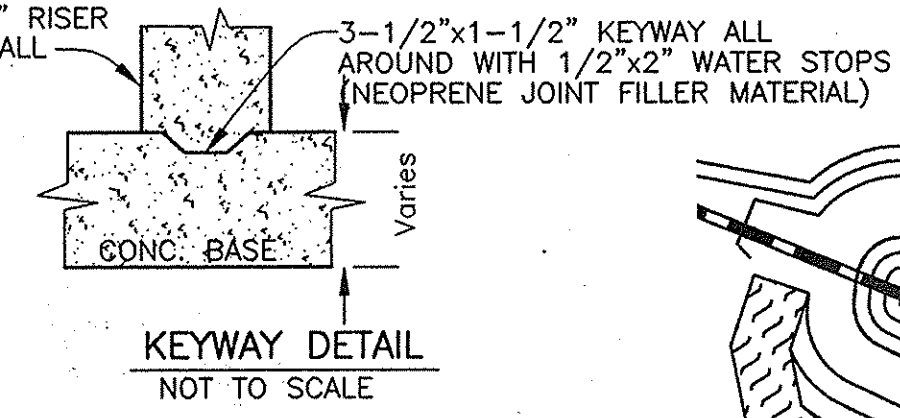
DATE: NOVEMBER 2006  
OCTOBER 2007 PROJECT NO. 1649

Design: BFC Draft: BFC SCALE: AS SHOWN DRAWING 14 OF 17

- NOTES:
- TRASH RACK SHALL BE GALVANIZED AFTER FABRICATION.
  - TRASH RACK SHALL BE PAINTED AFTER FABRICATION.
  - TRASH RACK TO BE INSTALLED UPON CONVERSION TO SWM POND.



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. 21443, Expiration Date: 12-21-16



- NOTES:
- LOOSEN SOIL IN PLANTING ZONES TO A DEPTH OF THREE TO FIVE INCHES BEFORE PLANTING.
  - PLANTING HOLES TO HAVE A DIAMETER 6" GREATER THAN THE ROOT BALL BEING PLANTED IN THEM.
  - NO WOODY VEGETATION IS PERMITTED WITHIN 15' OF THE TOE OF SLOPE OR 25' OF THE SPILLWAY.

SWMF#1 - PLANTING DETAIL  
 SCALE: 1" = 50'

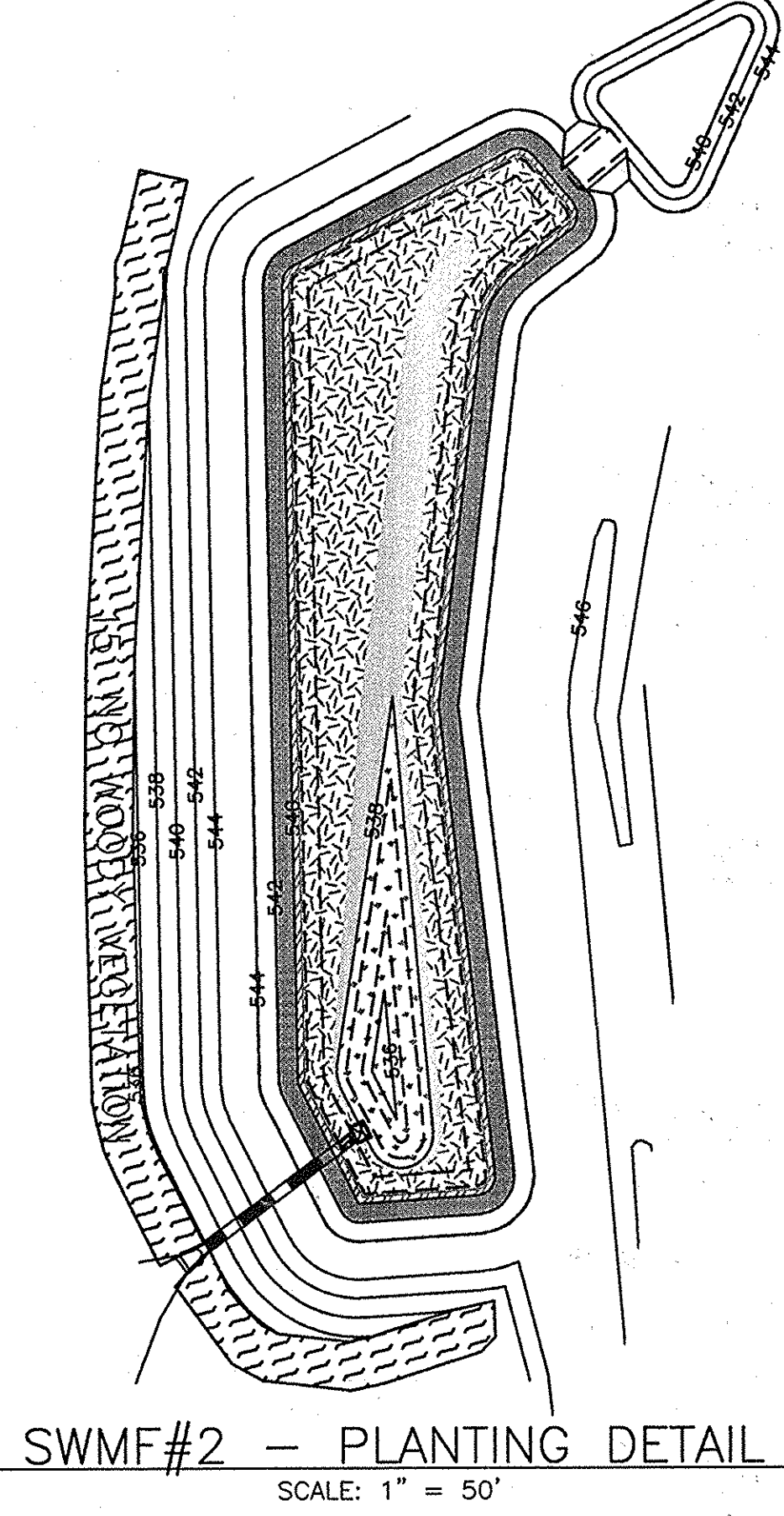
PLANTING SCHEDULE FOR EXTENDED DETENTION FACILITY #1

ZONE	AREA (SF)	ELEVATION RANGE	PLANT MIX
1	4,426	516.0 - 520.0	100% WATER LILLY
2	9,206	520.0 - 520.6	50% BROAD WATER WEED 25% DUCK POTATO 25% ARROW ARUM
3	12,571	520.6 - 521.6	50% CUTGRASS, RICE 50% SWITCHGRASS
4	3,395	521.6 - 522.7	50% LOVEGRASS-MEADOW 25% VIOLETS, COMMON BLUE 25% CONEFLOWER, CUT-LEAF
5	3,327	522.7 - 524.0	75% WITCHGRASS, NEEDLE-LEAF 25% CONEFLOWER, SWEET
6	0 SF	N/A	N/A

PLANTING SCHEDULE FOR EXTENDED DETENTION FACILITY #2

ZONE	AREA (SF)	ELEVATION RANGE	PLANT MIX
1	2,329	535.0 - 538.0	100% WATER LILLY
2	2,579	538.0 - 538.3	50% BROAD WATER WEED 25% DUCK POTATO 25% ARROW ARUM
3	10,857	538.3 - 540.3	50% CUTGRASS, RICE 50% SWITCHGRASS
4	1,797	540.3 - 541.1	50% LOVEGRASS-MEADOW 25% VIOLETS, COMMON BLUE 25% CONEFLOWER, CUT-LEAF
5	4,437	541.1 - 542.0	75% WITCHGRASS, NEEDLE-LEAF 25% CONEFLOWER, SWEET
6	0 SF	N/A	N/A

ALL PLANTINGS TO BE QUART BULBS AND SPACED AT 3' O.C.



SWMF#2 - PLANTING DETAIL  
 SCALE: 1" = 50'

GEOTECHNICAL ENGINEER RECOMMENDATIONS:

EMBANKMENT AND CUT-OFF TRENCH CONSTRUCTION

THE AREAS OF THE PROPOSED SWM 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 EXPOSED MATERIALS SHOULD BE OBSERVED AND TESTED BY A GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE UTILIZING A DYNAMIC CONE PENETROMETER. ANY EXCESSIVELY SOFT OR LOOSE MATERIALS IDENTIFIED BY PROFFROLLING OR 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 CUTOFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, 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(M) 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.

AS-BUILT CERTIFICATION

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THESE PLANS WAS CONSTRUCTED AS SHOWN ON THE AS-BUILT PLANS AND MEETS THE APPROVED AS-BUILT PLANS.

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. 21443, Expiration Date: 12-21-16

BY THE DEVELOPER:  
 DEVELOPER: [Signature] DATE: 10-10-07

BY THE ENGINEER:  
 ENGINEER: [Signature] DATE: 9/18/07

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

USDA - NATURAL RESOURCES CONSERVATION SERVICE DATE: 10/23/07

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

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 DATE: 10-29-07

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 DATE: 11/1/07

CHIEF, DIVISION OF LAND DEVELOPMENT DATE: 11/1/07

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 11/1/07

CHIEF, DIVISION OF LAND DEVELOPMENT DATE: 11/1/07

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 11/1/07

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CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 11/1/07

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 11/1/07

CONSTRUCTION SPECIFICATIONS

These specifications are appropriate to all ponds within the scope of the Standard for practice MD-378. All references to ASTM and MSMT specifications apply to the most recent version.

Site Preparation

Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped to topsoil. All trees, vegetation, rocks and other objectionable material shall be removed. Churned 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, 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 streamwater 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 shall be stored in a suitable location for use on the embankment and other designated areas.

Fill

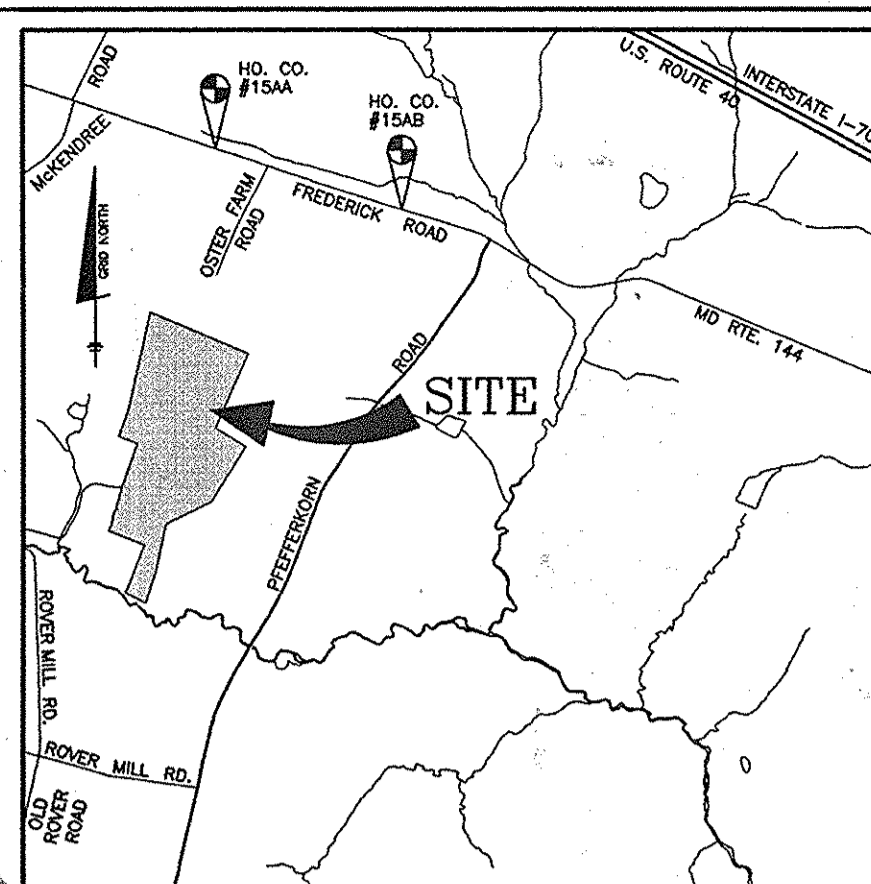
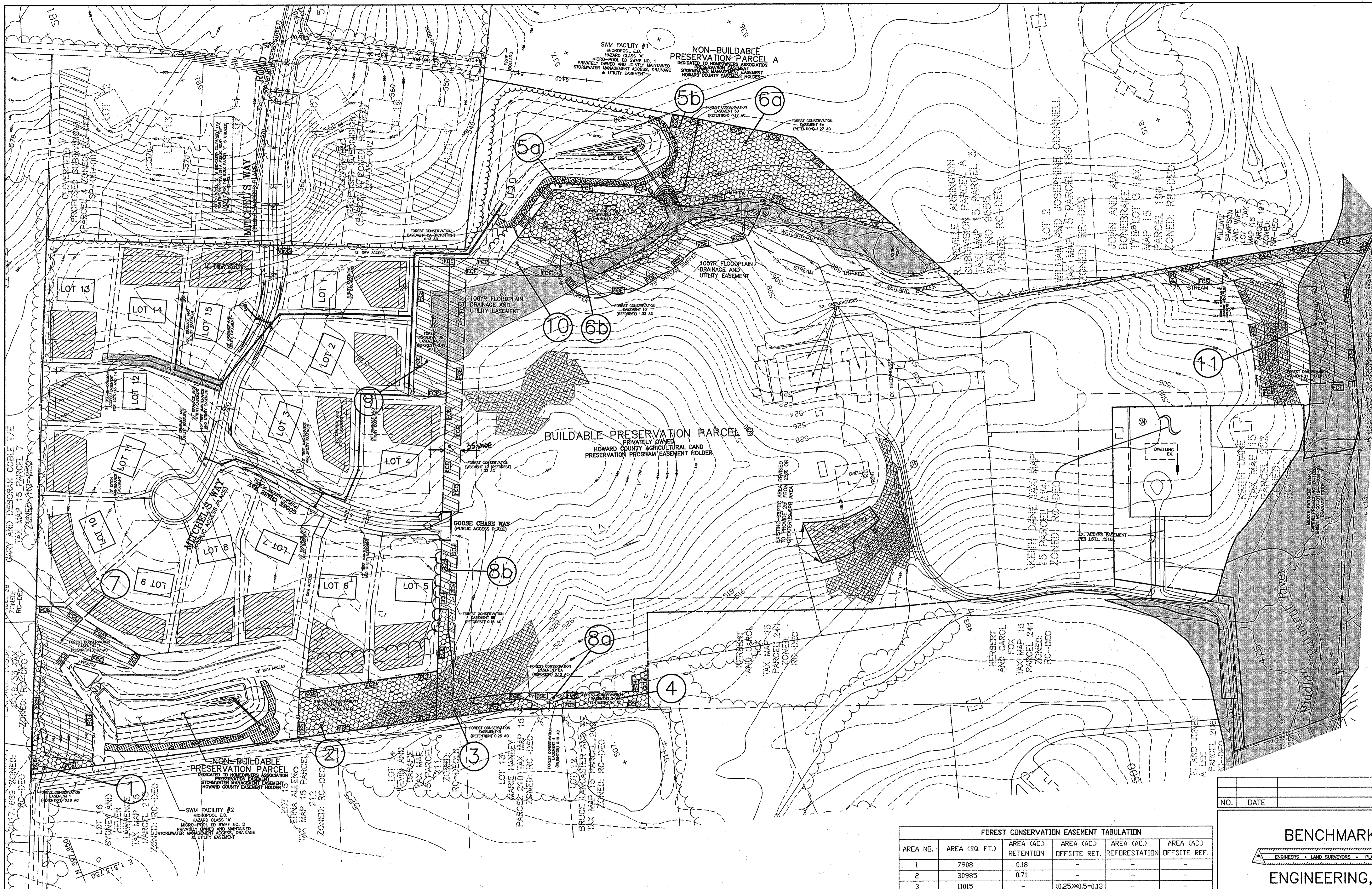
Material - The fill material shall be taken from approved designated borrow areas. It shall consist of sand, silt, clay, or loam, with a maximum of 15% fines and a minimum of 85% passing the #200 sieve. Consideration may be given to the use of other materials in the embankment provided they are approved by the geotechnical engineer. Each layer of fill shall be compacted as necessary to obtain that density, and it shall be certified by the Engineer at the time of construction. All compaction to be determined by MSMT Method T-99 (Standard Proctor).

Cut-off Trench - The cutoff trench shall be excavated into impervious material along or parallel to the exterior of the embankment as shown on the plans. The bottom width of the trench shall be governed by the equipment used for excavation, with the minimum width of the side slopes shall be 1 to 1. The trench shall be at least four feet below existing grade or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability. 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 inside the structure shall be placed in vertical layers not to exceed four inches in thickness, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over 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.

11/1/07



**SITE VICINITY MAP**  
SCALE: 1" = 2000'

**LEGEND**

- EXISTING CONTOURS --- 999 ---
- PROPOSED CONTOURS --- 999 ---
- EXISTING WOODS LINE [Symbol]
- EXISTING STRUCTURE [Symbol]
- PROPOSED STRUCTURE [Symbol]
- SLOPES 15% TO 24.9% [Symbol]
- LIMIT OF DISTURBANCE [Symbol]
- STABILIZED CONSTRUCTION ENTRANCE [Symbol]
- SILT FENCE [Symbol]
- SUPER SILT FENCE [Symbol]
- CL STREAM [Symbol]
- LIMIT OF WETLANDS [Symbol]
- LIMIT OF SUBMISSION [Symbol]
- PROPOSED FOREST CONSERVATION EASEMENT RETENTION [Symbol]
- PROPOSED FOREST CONSERVATION EASEMENT REFORESTATION [Symbol]
- NO WOODY BUFFER [Symbol]
- TREE PROTECTION FENCE [Symbol]
- FOREST CONSERVATION EASEMENT [Symbol]

No As-Built information is required on this sheet



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. 21443. Expiration Date: 12-21-16

**PLAN VIEW**  
SCALE: 1" = 100'

APPROVED: DEPARTMENT OF PUBLIC WORKS  
*[Signature]* 10-29-07  
CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*[Signature]* 11/1/07  
CHIEF, DIVISION OF LAND DEVELOPMENT

*[Signature]* 11/1/07  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

**Eco-Science Professionals, Inc.**  
CONSULTING ECOLOGISTS

MD DNR Qualified Professional  
USACOE Wetland Designer  
Certification No. 000004423  
*[Signature]*  
John P. Casato

P.O. Box 5006 Glen Arm, MD 21057 (410) 592-6752

FOREST CONSERVATION EASEMENT TABULATION					
AREA NO.	AREA (SQ. FT.)	AREA (AC.) RETENTION	AREA (AC.) OFFSITE RET.	AREA (AC.) REFORESTATION	AREA (AC.) OFFSITE REF.
1	7908	0.18	-	-	-
2	30985	0.71	-	-	-
3	11015	-	(0.25)*0.5=0.13	-	-
4	8074	-	(0.19)*0.5=0.09	-	-
5a	5806	0.13	-	-	-
5b	7221	0.17	-	-	-
6a	55345	-	(1.27)*0.5=0.63	-	-
6b	33544	-	(0.77)*0.5=0.39	-	-
7	37717	-	-	0.87	-
8a	4349	-	-	-	0.10
8b	6618	-	-	-	0.15
9	21163	-	-	0.49	-
10	57775	-	-	-	1.33
11	80000	-	-	-	1.84
TOTAL	367,520	1.19	(2.48) 1.24	1.36	3.41

NOTE: OFFSITE REFERS TO THOSE EASEMENTS INDICATED WITHIN PRESERVATION PARCEL B.

NO.	DATE	REVISION

**BENCHMARK ENGINEERING, INC.**

840 BALTIMORE NATIONAL PIKE • SUITE 418 • ELLICOTT CITY, MARYLAND 21043  
PHONE: 410-465-6106 FAX: 410-465-6644  
www.benchmark-engineering.com

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. 28559, Expiration Date: 7-22-2009

OWNER/DEVELOPER: **SPRING MILL, LLC**  
P.O. BOX 417  
ELLICOTT CITY, MD 21041  
410-465-4244

PROJECT: **CLOVERFIELD-SECTION II**  
LOTS 1 THRU 15, NON-BUILDABLE PRESERVATION PARCELS "A" AND "C", AND BUILDABLE PRESERVATION PARCEL "B", A RESUBDIVISION OF NON-BUILDABLE BULK PARCEL "F" AND PARCEL 119

LOCATION: TAX MAP-15 GRID-7 PARCEL-119  
HOWARD COUNTY, MARYLAND

TITLE: **FOREST CONSERVATION PLAN**  
ROADS, STORMWATER MANAGEMENT AND STORM DRAIN CONSTRUCTION PLANS

DATE: NOVEMBER 2006  
OCTOBER, 2007

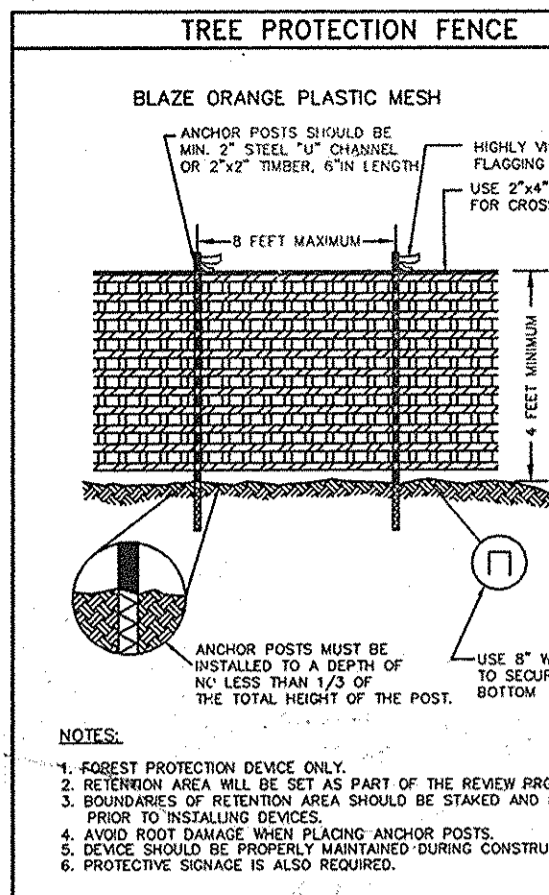
PROJECT NO. 1649  
DRAWING 16 OF 17

Design: BFC Draft: BFC



**PLANTING/SOIL SPECIFICATIONS**

- PLANTING OF NURSERY STOCK SHALL TAKE PLACE BETWEEN MARCH 15TH AND APRIL 30TH. CORNER STAKES SHALL BE PLANTED BETWEEN SEPTEMBER 1ST AND OCTOBER 31ST.
- PLANTING SHALL BE DONE ON A SCHEDULED BASIS. DISTURBED AREAS SHALL BE REPAIRED BY SITE GRADING TO ASSURE A SUITABLE PLANTING AREA. DISTURBED AREAS SHALL BE IMPACTED BY SITE GRADING SHALL HAVE NO ADDITIONAL TOPSOIL INSTALLED.
- ALL NURSERY PLANTING STOCK SHALL HAVE THEIR ROOT SYSTEMS DIPPED INTO AN ANTI-DESICCANT GEL PRIOR TO PLANTING.
- PLANTS SHALL BE INSTALLED SO THAT THE TOP OF ROOT MASS IS LEVEL WITH THE TOP OF EXISTING GRADE. BACKFILL IN THE PLANTING PIT SHALL CONSIST OF 3 PARTS EXISTING SOIL TO 1 PART FINE FINES OR EQUIVALENT.
- FERTILIZER SHALL CONSIST OF AGRIFORM 22-8-2, OR EQUIVALENT, APPLIED AS PER MANUFACTURER'S SPECIFICATIONS.
- A TWO (2) INCH LAYER OF HARDWOOD MULCH SHALL BE PLACED OVER THE ROOT AREA OF ALL PLANTS.
- PLANTING SHALL BE TRANSPORTED TO THE SITE IN A TARPED OR COVERED TRUCK. PLANTS SHALL BE KEPT MOIST PRIOR TO PLANTING.
- ALL NURSERY EQUIPMENT ASSOCIATED WITH THE PLANTING OPERATION SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR.



**PLANTING NOTES:**

Planting density based on 700 planting units per acre. 2" caliper trees = 7 planting units, 1" caliper trees = 3.5 planting units, whips with shelter = 2 planting units.

\*\* - These species should not be planted within the wetland limits.

1" caliper trees should be staggered along the outer perimeter of the planting area to serve as demarcation of the boundary. The trees should be no closer than 15 foot spacing.

Planting shall be made in a curvilinear fashion along contour. The planting should avoid a grid appearance but should be spaced to facilitate maintenance.

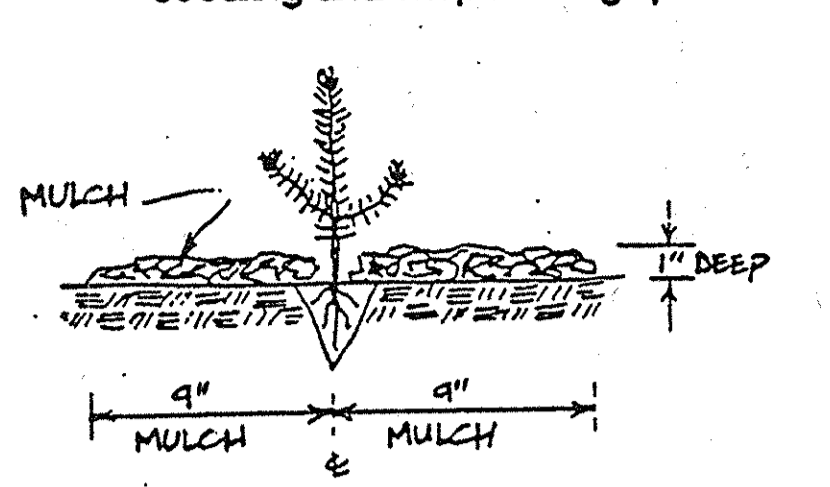
Multiflora rose/heavy brush removal/control may be required prior to installation of planting.

All whips are required to be installed with tree shelters per Howard County FCA requirements.

**MULTIFLORA ROSE CONTROL NOTE**

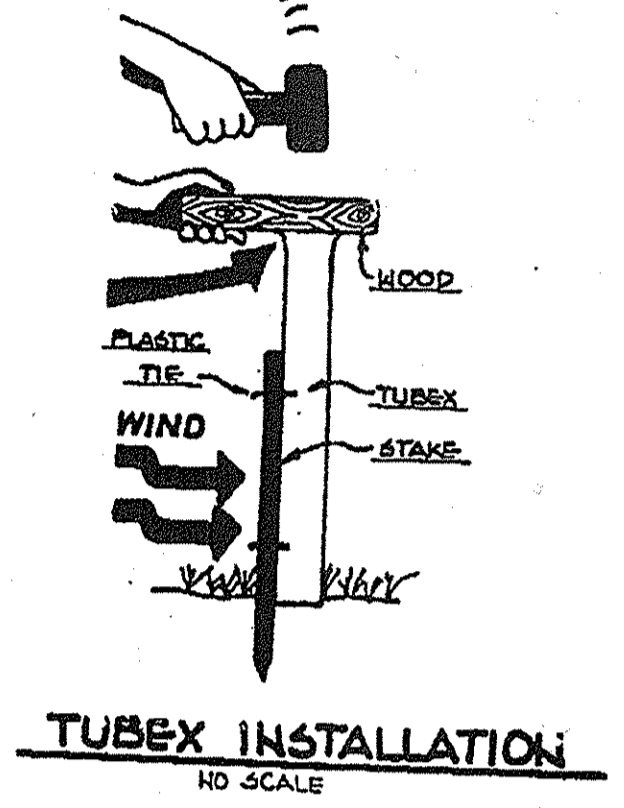
MULTIFLORA ROSE IS PREVALENT IN CERTAIN AREAS TO BE PLANTED. PRIOR TO PLANTING ALL MULTIFLORA ROSE SHOULD BE REMOVED. REMOVAL OF THE ROSE MAY BE PERFORMED WITH MOWING AND HERBICIDE TREATMENTS. PHYSICAL REMOVAL OF ALL TOP GROWTH FOLLOWED BY A PERIODIC HERBICIDE TREATMENT OF STUMP SPROUTS IS RECOMMENDED. NATIVE TREE AND SHRUB SPECIES OCCURRING WITHIN THE ROSE THICKETS SHOULD BE RETAINED WHEREVER POSSIBLE. HERBICIDE TREATMENTS SHALL OCCUR ON 2 MONTH INTERVALS DURING THE FIRST GROWING SEASON AND ONCE EACH IN THE SPRING AND FALL FOR SUBSEQUENT YEARS. HERBICIDE USED SHALL BE MADE SPECIFICALLY TO ADDRESS WOODY PLANT MATERIAL AND SHALL BE APPLIED AS PER MANUFACTURER'S SPECIFICATIONS. CARE SHOULD BE TAKEN NOT TO SPRAY PLANTED TREES OR NATURALLY OCCURRING NATIVE TREE/SHRUB SEEDLINGS. IT IS RECOMMENDED THAT INITIATION OF ROSE REMOVAL BEGIN AT LEAST SIX MONTHS PRIOR TO PLANTING.

**Seeding and Whip Planting Specification**



**Tree Shelter/Tubex Installation Guide**

- Slide tree shelter, collar side up, over seedling or tree. Long branches should be bundled into tube. Branches which do not fit into tube may be pruned.
  - The shelter should be worked in a circular motion to insure that the bottom edge of the shelter is buried one inch into the ground.
  - Slide a hardwood stake, PVC pipe or other stake miter through the black tie straps on the tube or in line with the holes for the ties and drive stake into ground at least 5 inches. Stake and tube should be installed as straight as possible.
  - Attach ties from tube to stake.
  - Install protective bird netting over top of tree shelter, optional.
- Maintenance of Tree Shelter/Tubes**  
Each year the tube should be inspected to insure that tubes and stakes are in good condition. The tubes should be cleared of vegetation that is growing in the tube and any rodent nesting material. Care should be taken to avoid wasp nests which sometime are constructed in the tubes. Bird nesting should be removed when the tree is about to emerge from the shelter. Tube and stake shall be removed once tree has emerged from tube and reached a size sufficient to withstand deer rubs, generally 1-2 inches dbh, or at the end of the maintenance period.



**FCE #9 - 0.49 acres**

Planting units Required: 343  
Planting units Provided: 343.5

Qty	Species	Size	Spacing	Total FCA Units
5	Acer rubrum - Red maple	1" cal.	15' o.c.	59.5
4	Liriodendron tulipifera - Tulip poplar **	1" cal.	15' o.c.	
4	Platanus occidentalis - Sycamore	1" cal.	15' o.c.	
4	Quercus alba - White oak **	1" cal.	15' o.c.	
Total 1" caliper trees x 3.5 units/tree = FCA unit credit				
15	Acer rubrum - Red maple	2-3' whip	11' o.c.	59.5
5	Diospyros virginiana - Persimmon **	2-3' whip	11' o.c.	
30	Liriodendron tulipifera - Tulip poplar **	2-3' whip	11' o.c.	59.5
12	Nyssa sylvatica - Black gum	2-3' whip	11' o.c.	
15	Platanus occidentalis - Sycamore	2-3' whip	11' o.c.	59.5
15	Prunus serotina - Black cherry **	2-3' whip	11' o.c.	
20	Quercus alba - White oak	2-3' whip	11' o.c.	59.5
10	Ulmus rubra - Slippery Elm	2-3' whip	11' o.c.	
25	Viburnum prunifolium - Blackhaw **	2-3' whip	11' o.c.	59.5
Total whip plantings x 2 units/tree = FCA unit credit				
275				609.5
Total Unit Credit				609.5

**FCE #10 - 1.33 acres**

Planting units Required: 931  
Planting units Provided: 931

Qty	Species	Size	Spacing	Total FCA Units
5	Acer rubrum - Red maple	1" cal.	15' o.c.	91
8	Liriodendron tulipifera - Tulip poplar **	1" cal.	15' o.c.	
5	Platanus occidentalis - Sycamore	1" cal.	15' o.c.	
8	Quercus alba - White oak **	1" cal.	15' o.c.	
Total 1" caliper trees x 3.5 units/tree = FCA unit credit				
80	Acer rubrum - Red maple	2-3' whip	11' o.c.	840
30	Diospyros virginiana - Persimmon **	2-3' whip	11' o.c.	
100	Liriodendron tulipifera - Tulip poplar **	2-3' whip	11' o.c.	840
45	Nyssa sylvatica - Black gum	2-3' whip	11' o.c.	
45	Platanus occidentalis - Sycamore	2-3' whip	11' o.c.	840
50	Prunus serotina - Black cherry **	2-3' whip	11' o.c.	
20	Quercus alba - White oak	2-3' whip	11' o.c.	840
20	Ulmus rubra - Slippery Elm	2-3' whip	11' o.c.	
30	Viburnum prunifolium - Blackhaw **	2-3' whip	11' o.c.	840
Total whip plantings x 2 units/tree = FCA unit credit				
425				931
Total Unit Credit				931

**FCE #11 - 1.84 acres**

Planting units Required: 1288  
Planting units Provided: 1291

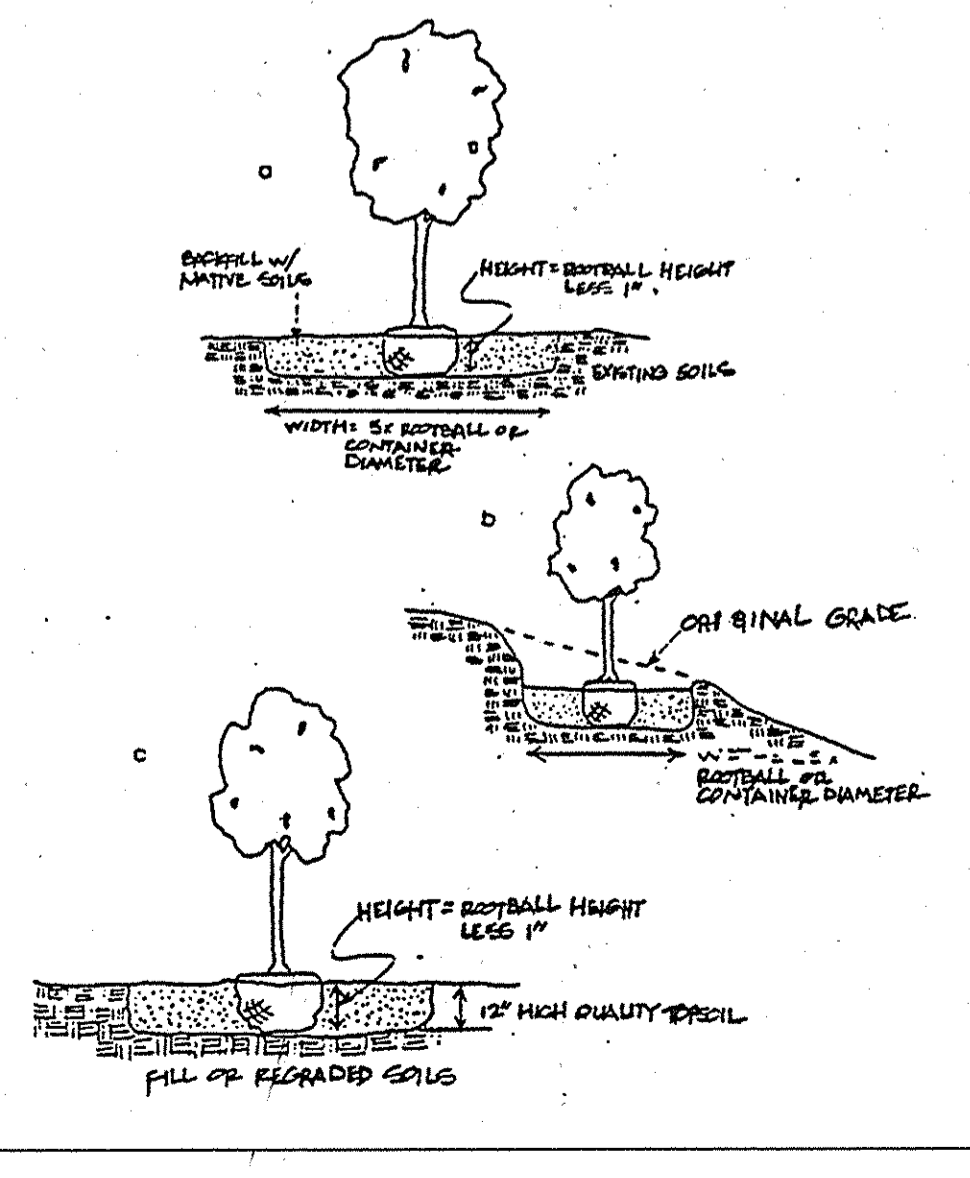
Qty	Species	Size	Spacing	Total FCA Units
14	Acer rubrum - Red maple	1" cal.	15' o.c.	161
11	Liriodendron tulipifera - Tulip poplar **	1" cal.	15' o.c.	
11	Platanus occidentalis - Sycamore	1" cal.	15' o.c.	
10	Quercus alba - White oak **	1" cal.	15' o.c.	
Total 1" caliper trees x 3.5 units/tree = FCA unit credit				
110	Acer rubrum - Red maple	2-3' whip	11' o.c.	1130
30	Diospyros virginiana - Persimmon **	2-3' whip	11' o.c.	
55	Liriodendron tulipifera - Tulip poplar **	2-3' whip	11' o.c.	1130
80	Nyssa sylvatica - Black gum	2-3' whip	11' o.c.	
110	Platanus occidentalis - Sycamore	2-3' whip	11' o.c.	1130
30	Prunus serotina - Black cherry **	2-3' whip	11' o.c.	
50	Quercus alba - White oak	2-3' whip	11' o.c.	1130
55	Ulmus rubra - Slippery Elm	2-3' whip	11' o.c.	
45	Viburnum prunifolium - Blackhaw **	2-3' whip	11' o.c.	1130
Total whip plantings x 2 units/tree = FCA unit credit				
565				1291
Total Unit Credit				1291

No As-Built information is required on this sheet



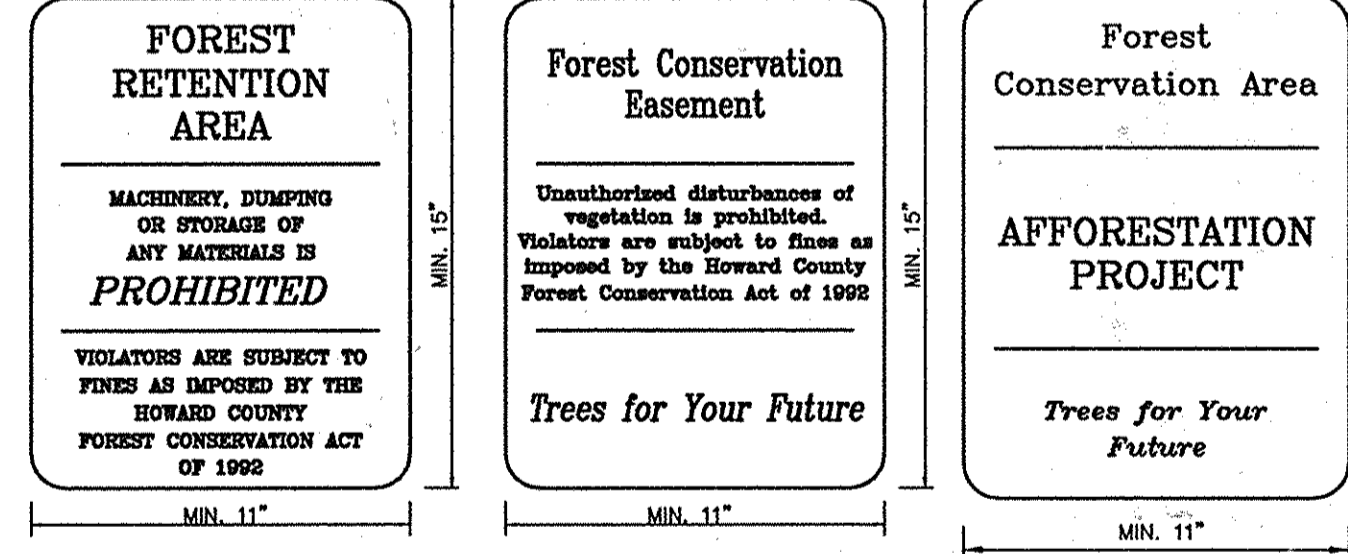
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.  
License No. 21443 Expiration Date: 12-21-14

**Planting Specifications:**  
Container Grown and Balled and Burlapped Stock



NOTE:  
THIS SUBDIVISION PLAN IS USING "RURAL CLUSTER OPTION C" OF APPENDIX "L" OF THE FOREST CONSERVATION MANUAL BY INCLUDING ALL THE AREAS OF LAND USE CHANGE, EXCEPT EXCLUDING PRESERVATION PARCEL "B" (NO CHANGE IN USE).  
\* - 60.72 ACRES REPRESENTS THE TOTAL PROJECT AREA OF 61.06 ACRES MINUS THE 0.34 ACRES RESUBDIVIDED FROM F-06-110 (BULK PARCEL "F")

NO. DATE REVISION



**SIGNAGE**  
NOT TO SCALE

NO.	DATE	REVISION

**BENCHMARK ENGINEERING, INC.**  
ENGINEERS • LAND SURVEYORS • PLANNERS

8450 BALTIMORE NATIONAL PIKE • SUITE 418 • ELLICOTT CITY, MARYLAND 21043  
PHONE: 410-465-8105 FAX: 410-465-6644  
www.bei-civilengineering.com

**OWNER:** SPRING MILL, LLC  
P.O. BOX 417  
ELlicOTT CITY, MD 21041  
410-465-4244

**PROJECT:** CLOVERFIELD-SECTION II  
LOTS 1 THRU 15, NON-BUILDABLE PRESERVATION PARCELS "A" AND "C", AND BUILDABLE PRESERVATION PARCEL "B", A RESUBDIVISION OF NON-BUILDABLE BULK PARCEL "F" AND PARCEL 119

**LOCATION:** TAX MAP-15 GRID-7 PARCEL-119  
3rd ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

**TITLE:** FOREST CONSERVATION NOTES AND DETAILS  
ROADS, STORMWATER MANAGEMENT AND STORM DRAIN CONSTRUCTION PLANS

**DATE:** NOVEMBER, 2006  
OCTOBER, 2007

**PROJECT NO.:** 1649

**SCALE:** AS SHOWN

**DRAWING NO. OF 17:** OF 17

**FCP NOTES:**

- ANY FOREST CONSERVATION EASEMENT (FCE) AREA SHOWN HEREON IS SUBJECT TO PROTECTIVE COVENANTS WHICH MAY BE FOUND IN THE LAND RECORDS OF HOWARD COUNTY WHICH RESTRICT THE DISTURBANCE AND USE OF THESE AREAS.
- THE FOREST CONSERVATION EASEMENTS HAVE BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 161220 OF THE HOWARD COUNTY CODE, FOREST CONSERVATION ACT. NO CLEARING, GRADING, OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENTS; HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.
- LIMITS OF DISTURBANCE SHALL BE RESTRICTED TO AREAS OUTSIDE THE LIMIT OF TEMPORARY FENCING OR THE FCE BOUNDARY, WHICHEVER IS GREATER.
- THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST CONSERVATION EASEMENT, EXCEPT AS PERMITTED BY HOWARD COUNTY DPZ.
- NO STOCKPILES, PARKING AREAS, EQUIPMENT CLEANING AREAS, ETC. SHALL OCCUR WITHIN AREAS DESIGNATED AS FOREST CONSERVATION EASEMENTS.
- TEMPORARY FENCING SHALL BE USED TO PROTECT FOREST RESOURCES DURING CONSTRUCTION. THE FENCING SHALL BE PLACED ALONG ALL FCE BOUNDARIES WHICH OCCUR WITHIN 15 FEET OF THE PROPOSED LIMITS OF DISTURBANCE.
- PERMANENT SIGN. E SHALL BE PLACED 50-100' APART ALONG THE BOUNDARIES OF ALL AREAS INCLUDED IN FOREST CONSERVATION EASEMENTS.
- THE FOREST CONSERVATION ACT OBLIGATION FOR THIS PROJECT IS 8.93 ACRES (1.19 ACRES RETENTION + 7.74 ACRES REFORESTATION). THE FOREST CONSERVATION OBLIGATION WILL BE MET BY 1.19 ACRES OF ONSITE RETENTION, AND THE REFORESTATION OBLIGATION WILL BE MET BY 2.48 ACRES OF RETENTION CREATED AS 2 TO 1 FOR 1.24 ACRES OF REFORESTATION LOCATED ON PRESERVATION PARCEL B CONSIDERED AS OFF-SITE (PARCEL B WAS EXCLUDED FROM THE FOREST NET TRACT CALCULATION FOR THIS PROJECT BECAUSE OF NO CHANGE IN USE), 1.36 ACRES OF REFORESTATION ON-SITE, 3.41 ACRES OF REFORESTATION OFF-SITE LOCATED ON PRESERVATION PARCEL B, AND 1.73 ACRES OF REFORESTATION LOCATED AT THE EDGEWOOD FARM FOREST MITIGATION BANK, F-06-108, PLAT #19255-19261. THE FOREST CONSERVATION SURETY FOR 1.19 ACRES OF RETENTION IS \$10,367.00 AND FOR 6.10 ACRES OF REFORESTATION (7.74-1.73 ACRES AT EDGEWOOD FARM BANK) IS \$130,898.00 FOR A TOTAL FOREST SURETY AMOUNT OF \$141,265.00.
- THE FOREST CONSERVATION ACT REQUIREMENTS OF BUILDABLE PRESERVATION PARCEL B HAVE NOT BEEN ADDRESSED BY THIS PLAN. SHOULD AN ACTIVITY REQUIRE COMPLIANCE WITH THE FCA BE PURSUED ON BUILDABLE PRESERVATION PARCEL B, THIS WOULD REQUIRE INDIVIDUAL FCA PROCESSING AND MAY INCUR AN ADDITIONAL FCA OBLIGATION.

SITE DATA		
GROSS AREA:	60.72	
100 YEAR FLOODPLAIN:	0.11	
AGRICULTURAL PRODUCTION AREA:	35.68	
NET TRACT AREA:	24.93	
EXISTING FOREST (EXCLUDING PARCEL B):	5.06	
AFFORESTATION THRESHOLD 4.99		
REFORESTATION THRESHOLD 6.23		
CLEARING PROPOSED 3.87		
PROPOSED FOREST RETENTION 1.19		
REFORESTATION REQUIRED 7.74		
ONSITE REFORESTATION PROPOSED 1.36		
OFFSITE (PARCEL B) REFORESTATION PROP. 3.41		
OFFSITE (F-06-108) REFORESTATION PROP. 1.73		
OFFSITE (PARCEL B) RETENTION PROP. 1.24		
1:1 RATIO = 2.48/2		
TOTAL 7.74		

\* FOREST CONSERVATION EASEMENT BEARING AND DISTANCE DESCRIPTIONS ARE PROVIDED ON THE FINAL PLAN.

AREA NO.	AREA (SQ. FT.)	AREA (AC.) RETENTION	AREA (AC.) OFFSITE RET.	AREA (AC.) REFORESTATION	AREA (AC.) OFFSITE REF.
1	7908	0.18	-	-	-
2	30985	0.71	-	-	-
3	11015	-	(0.25)*0.5=0.13	-	-
4	8074	-	(0.19)*0.5=0.09	-	-
5a	5806	0.13	-	-	-
5b	7221	0.17	-	-	-
6a	55345	-	(1.27)*0.5=0.63	-	-
6b	33544	-	(0.77)*0.5=0.39	-	-
7	37717	-	-	0.87	-
8a	4349	-	-	-	0.10
8b	6618	-	-	-	0.15
9	21163	-	-	0.49	-
10	57775	-	-	-	1.33
11	8000	-	-	-	1.84
TOTAL	<b>367,520</b>	1.19	(2.48)	1.24	1.36

NOTE: OFFSITE REFERS TO THOSE EASEMENTS INDICATED WITHIN PRESERVATION PARCEL B.

APPROVED: DEPARTMENT OF PUBLIC WORKS

*M. J. ...*  
CHIEF, BUREAU OF HIGHWAYS  
DATE: 10-25-07

APPROVED: DEPARTMENT OF PLANNING AND ZONING

*C. ...*  
CHIEF, DIVISION OF LAND DEVELOPMENT  
DATE: 11/10  
*M. ...*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE: 11/10

**Eco-Scientific, Inc.**  
CONSULTING ECOLOGISTS

MD DNR Qualified Professional  
USACOE Wetland Delinator  
Certification # WDCP53MD061004403

John P. Canoles

P.O. Box 5006 Glen Arm, MD 21057 (410) 592-6752