FINAL ROAD CONSTRUCTION PLAN
CASTLEBERRY AT TEN OAKS
LOTS 1 - 45, NON-BUILDABLE PRESERVATION PARCELS A, C, D, E & BUILDABLE PRESERVATION PARCEL B

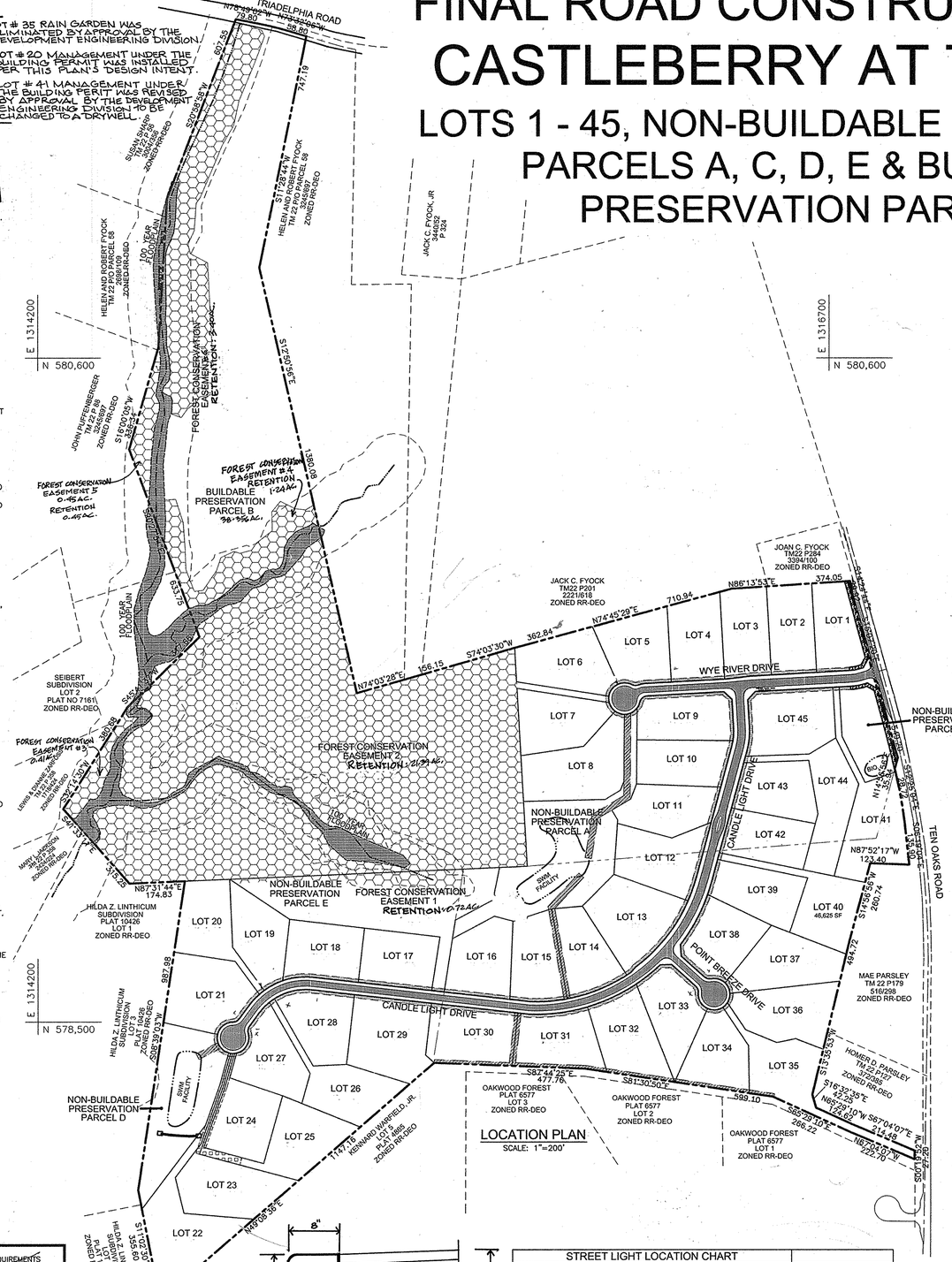
GENERAL NOTES

1. ALL ASPECTS OF THE PROJECT ARE IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
2. DEED REFERENCE: LIBER 5307 FOLIO 448
3. DENSITY TABULATION:
   GROSS AREA OF PROJECT: 99.5779Z AC
   AREA OF 100-YEAR FLOODPLAIN DRAINAGE & UTILITY EASEMENT: 3.55 AC
   AREA OF STEEP SLOPES: 0.27 AC
   NET AREA OF PROJECT: 95.7579Z AC *SEE NOTE 22
   NUMBER OF ENTITIES PERMITTED BY RIGHT : 99.34/ 4.25 = 23
   MAXIMUM RECEIVING YIELD : 99.34/ 2 = 50.
   NUMBER OF BUILDABLE ENTITIES PROPOSED: 45 LOTS AND ONE BUILDABLE PRESERVATION PARCEL
   NUMBER OF DEO UNITS NEEDED: 23
4. THE PROJECT BOUNDARY IS BASED ON A BOUNDARY SURVEY PREPARED BY FREDERICK WARD ASSOCIATES INC., DATED NOVEMBER 2002.
5. THE TOPOGRAPHY SHOWN HEREON IS BASED ON AN AERIAL TOPOGRAPHIC SURVEY PREPARED BY POTOMAC AERIAL SURVEYS.
6. WATER AND SEWER FOR THIS PROJECT WILL BE PRIVATE.
7. STORMWATER MANAGEMENT TO BE PROVIDED FOR THIS DEVELOPMENT BY 2 MICROPOOL EXTENDED DETENTION PONDS AND A BIORETENTION FACILITY. THE STORMWATER MANAGEMENT FACILITIES ARE HAZARD CLASS A.
   REQUIRED FOR LOTS 20, AND 41.♦ FINAL DESIGN WILL BE PROVIDED WITH THE BUILDING PERMIT.
8. THE STORMWATER MANAGEMENT FACILITIES SHALL BE PRIVATELY OWNED AND MAINTAINED.
9. STREAMS SHOWN ONSITE ARE BASED ON A FIELD INVESTIGATION BY ECO-SCIENCE PROFESSIONALS, INC. ON AUGUST 31, 2000.
10. THE FLOODPLAIN SHOWN HEREON IS BASED ON AN "OBVIOUSLY NOT CRITICAL" ANALYSIS PERFORMED BY ROBERT H. VOGEL ENGINEERING, DATED JULY 2004.
11. PERIMETER LANDSCAPING SHALL BE IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL 3. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING SHALL BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF $54,900.00 FOR 177 SHADE TREES AND 48 EVERGREEN TREES.
12. FOREST CONSERVATION REQUIREMENTS PER SECTION 16.1202 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION MANUAL FOR THIS SUBDIVISION WILL BE FULFILLED BY THE RETENTION OF 27.61 AC ONSITE. SURETY IN THE AMOUNT OF $240,539.00 WILL BE PAID WITH THE DEVELOPER'S AGREEMENT.
13. A TRAFFIC STUDY IS NOT REQUIRED FOR THIS PROJECT.
14. STREET LIGHTING WILL BE PROVIDED FOR THIS SITE.
15. THIS PROPERTY IS NOT LOCATED WITHIN THE METROPOLITAN DISTRICT.
16. TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL/CEMETERY LOCATIONS ON SITE.
17. A NOISE STUDY IS NOT REQUIRED FOR THIS DEVELOPMENT.
18. NO CLEARING, GRADING, OR CONSTRUCTION IS PERMITTED WITHIN THE STREAMS OR THEIR BUFFERS AND THE FOREST CONSERVATION EASEMENTS.
19. TREE PROTECTION FENCING WILL BE PROVIDED AT THE LIMITS OF DISTURBANCE WHERE GRADING IS ADJACENT TO ENVIRONMENTAL AREAS.
20. THIS SUBDIVISION COMPLIES WITH THE 4TH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS. IT IS SUBJECT TO THE 4TH EDITION BECAUSE THE SKETCH PLAN WAS SUBMITTED NOVEMBER 15, 2000 AND TO THE 1993 ZONING REGULATIONS BECAUSE IT WAS TECHNICALLY COMPLETE ON FEBRUARY 14, 2001.
21. FOREST STAND DELINEATION PLAN PREPARED BY VOGEL & ASSOCIATES, DATED NOVEMBER 13, 2000.
22. THIS PROJECT IS SUBJECT TO COUNCIL BILL 50-2003. RECIEVING DENSITY SHALL BE BASED ON GROSS ACREAGE RATHER THAN NET ACREAGE.
23. THIS PROPERTY IS ZONED RR-DEO PER THE APRIL 13, 2004 ZONING REGULATIONS.
24. NON-BUILDABLE PRESERVATION PARCEL 'E' IS FOR THE PURPOSE OF FOREST CONSERVATION AND SHALL BE PRIVATELY OWNED AND HAVE HOWARD COUNTY AND THE HOMEOWNERS ASSOCIATION AS ITS EASEMENT HOLDERS. BUILDABLE PRESERVATION PARCEL 'B' IS FOR THE PURPOSE OF A SINGLE RESIDENCE AND FOREST CONSERVATION AND SHALL BE PRIVATELY OWNED AND MAINTAINED AND HAVE HOWARD COUNTY AND THE HOMEOWNERS ASSOCIATION AS ITS EASEMENT HOLDERS. NON-BUILDABLE PRESERVATION PARCELS 'A', 'C' AND 'D' IS FOR THE PURPOSE OF STORMWATER MANAGEMENT AND SHALL BE PRIVATELY OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION AND HAVE HOWARD COUNTY AS ITS EASEMENT HOLDER.
25. THE ENVIRONMENTAL DELINEATION AND REPORT WAS REVIEWED AND ACCEPTED UNDER S-01-11.
26. ALL TRAFFIC CONTROL DEVICES SHOWN ARE AS PER HOWARD COUNTY THE STANDARD DETAIL.
27. EXISTING SEPTIC LOCATIONS ARE BASED ON RECORD PLATS.
28. ALL EXISTING WELLS AND SEPTIC AREAS WITHIN 100' OF THE SITE HAVE BEEN SHOWN TO THE BEST OF OUR KNOWLEDGE.
29. ALL WELLS TO BE DRILLED PRIOR TO SUBMITTAL OF FINAL PLAT FOR SIGNATURE.
30. APPLICATION NO. A514220 PERC LOCATIONS ARE BASED ON PERC TESTING DATED OCTOBER 23, 24, 25 30, 31, NOVEMBER 1, 20, 21, 22, 2000, MAY 17, 18, JULY 15, 2001, APRIL 10, 2002, AUGUST 7, 2002 AND ARE FIELD LOCATED.
31. GROUND WATER APPROPRIATION PERMIT #H02003G001(01)
32. ROAD 'A' CL. STA 0+50- EXISTING WELL TO BE PROPERLY ABANDONED AND SEALED BY LICENSED WELL DRILLER PRIOR TO SUBMITTAL OF RECORD PLAT FOR SIGNATURE
33. LOT #22- EXISTING SEPTIC SYSTEM TO BE PROPERLY ABANDONED PRIOR TO SUBMITTAL OF RECORD PLAT FOR SIGNATURE. PROPOSED WELL TO BE DRILLED AT FURTHEST POINT FROM ABANDONED SEPTIC.
34. LOT #23- EXISTING BARN TO BE REMOVED PRIOR TO SUBMITTAL OF RECORD PLAT FOR SIGNATURE. WELL TO BE SEALED BY LICENSED WELL DRILLER. REMOVE 4"-6" STONE DRIVEWAY/PARKING. NO DISTURBANCE TO OCCUR BELOW 6" DEPTH.
35. LOT #29- EXISTING HOUSE TO REMAIN; EXISTING WELL AND SEPTIC SYSTEM TO BE PROPERLY ABANDONED AND REPLACED PRIOR TO SUBMITTAL OF RECORD PLAT FOR SIGNATURE; EXISTING POOL AND GAZEBO TO BE REMOVED. WELL TO BE SEALED BY LICENSED WELL DRILLER.
36. LOT #34- PROPOSED WELL TO BE DRILLED AT FURTHEST POINT FROM ABANDONED SEPTIC ON LOT 36.
37. LOT #36- EXISTING HOUSE TO REMAIN; EXISTING WELL AND SEPTIC SYSTEM TO BE ABANDONED AND REPLACED PRIOR TO SUBMITTAL OF RECORD PLAT FOR SIGNATURE. WELL TO SEALED BY LICENSED WELL DRILLER. PROPOSED WELL TO DRILL AT FURTHEST POINT FROM ABANDONED SEPTIC.
38. LOT #37- EXISTING STORAGE SHED TO RAZED PRIOR TO SUBMITTAL OF RECORD PLAT FOR SIGNATURE. NO DISTURBANCE TO OCCUR BELOW 6" DEPTH.
39. LOT #41- EXISTING WELL TO PROPERLY ABANDONED PRIOR TO SUBMITTAL OF RECORD PLAT FOR SIGNATURE. WELL TO SEALED BY A LICENSED WELL DRILLER.
40. PARCEL C- EXISTING STRUCTURE AND SEPTIC SYSTEM ON PARCEL C HAVE BEEN REMOVED AND ABANDONED.
41. NON-BUILDABLE PRESERVATION PARCEL D- BARN TO BE REMOVED PRIOR TO SUBMITTAL OF RECORD PLAT FOR SIGNATURE.
42. LOT #45- EXISTING SHED AND GRAPE ARBOR TO BE REMOVED PRIOR TO SUBMITTAL OR RECORD PLAT FOR SIGNATURE.
43. SEPTIC SYSTEMS FOR LOTS 13, 20, 21, AND 23 TO BE INSTALLED PRIOR TO ISSUANCE OF BUILDING PERMIT.
44. THE LOTS SHOWN HEREON COMPLY WITH THE MINIMUM OWNERSHIP WIDTH AND LOT AREA AS REQUIRED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT.
45. ALL SIGN POST 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. A MINIMUM OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
46. IT IS THE DEVELOPERS RESPONSIBILITY TO SCHEDULE THE WELL DRILLING PRIOR TO FINAL PLAT SUBMISSION. IT WILL NOT BE CONSIDERED 'GOVERNMENT DELAY' IF THE WELL DRILLING HOLDS-UP THE HEALTH DEPARTMENT SIGNATURE OF THE RECORD PLAT. IF A WELL SUCCESS RATE IS ACCOMPLISHED AT VARIOUS LOCATIONS WITHIN THE SITE, THE DEVELOPER SHALL HAVE THE OPTION TO REQUEST RELIEF FROM DRILLING THE REMAINING WELLS PRIOR TO PLAT RECORDATION.
47. THIS SITE IS SUBJECT TO CB 50-2003, RECIEVING DENSITY IS BASED ON GROSS ACREAGE RATHER THAN NET ACREAGE.
48. BUILDING RESTRICTION LINES HAVE BEEN SET IN ACCORDANCE WITH THE AMENDED FIFTH EDITION SINCE THAT WILL BE REQUIRED AT THE BUILDING PERMIT STAGE.
49. 95% COMPACTION IN FILL AREAS ARE REQUIRED PER AASHTO T-180.
50. FINANCIAL SURETY FOR THE REQUIRED TOTAL 176 STREET TREES WILL BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN AMOUNT OF $52,800.00.
51. LOT GRADING AND LOCATION OF DOWNSPOUTS ARE BASED ON THE APPROVED PRELIMINARY PLAN AND WILL BE FINALIZED WITH EACH BUILDING PERMIT.
52. APFO AND SCHOOLS WERE PASSED UNDER S-01-011.
53. EXISTING WELL ON LOT 1 HAS BEEN PROPERLY ABANDONED BY A LICENSED WELL DRILLER.

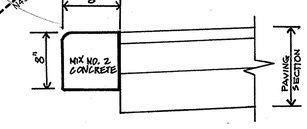
LOT # 35 RAIN GARDEN WAS ELIMINATED BY APPROVAL BY THE DEVELOPMENT ENGINEERING DIVISION.

LOT # 20 MANAGEMENT UNDER THE BUILDING PERMIT WAS INSTALLED PER THIS PLAN'S DESIGN INTENT.

LOT # 41 MANAGEMENT UNDER THE BUILDING PERIT WAS REVISED BY APPROVAL BY THE DEVELOPMENT ENGINEERING DIVISION TO BE CHANGED TO A DRYWELL



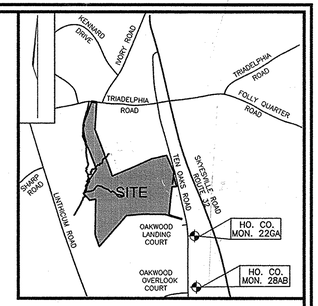
LOCATION PLAN
SCALE: 1"=200'



STANDARD FLUSH CURB
STD DETAIL R.3.01a

STREET LIGHT LOCATION CHART					
SHEET	STREET NAME	STATION	OFFSET	FIXTURE	POLE TYPE
2	WYE RIVER DRIVE	0+50	20' R	150 WATT HPS	
2	WYE RIVER DRIVE	4+82	15' L		VAPOR PREMIER POST-TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE
2	CANDLE LIGHT DRIVE	4+50	21' R	100 WATT HPS	
3	CANDLE LIGHT DRIVE	9+25	17' L		
3	CANDLE LIGHT DRIVE	11+93	13' L		
4	CANDLE LIGHT DRIVE	21+50	13' L		
4	CANDLE LIGHT DRIVE				

NOTE: A MINIMUM OF 20' IS REQUIRED BETWEEN ANY STREET LIGHT AND ANY TREE



VICINITY MAP
SCALE: 1"=2000'

DENSITY EXCHANGE (RE-05-04)		
RECEIVING PARCEL INFORMATION	OWNER: CASTLEBERRY AT TEN OAKS 3675 PARK AVENUE, SUITE 301 ELLICOTT CITY, MARYLAND 21043 7468/577, 6709/398, 7456/487 TAX MAP 10, BLOCK 13, PARCELS 60 & P/O 551 OWNER: HELEN L. FYOCK ROBERT EUGENE FYOCK 4109 TEN OAKS ROAD DAYTON, MARYLAND 21036 5734/253 TAX MAP 22, BLOCK 20; PARCEL 90	
TOTAL AREA OF SUBDIVISION	99.5779Z ACRES	
ALLOWED DENSITY UNITS	99.5779Z/4.25 = 23	
NET ACREAGE OF SUBDIVISION	99.5779Z ACRES	
NUMBER OF UNITS PROPOSED	46 UNITS	
MAXIMUM DEO UNITS ALLOWED	99.5779Z/2 = 49	
DEO DENSITY UNITS TO BE RECEIVED FROM SENDING PARCELS	23 UNITS	
SENDING PARCEL INFORMATION	DORIS FOLLMER HOGG PROPERTY TM 9, GRID 4, PARCEL 120	11 UNITS
SENDING PARCEL INFORMATION	DONALD L. SHAPIRO PROPERTY TM 12, GRID 5, PARCEL 9	10 UNITS
SENDING PARCEL INFORMATION	CHASE AT STONEY BROOK TM 7, GRID 17, PARCEL 133	2 UNITS

SWM- EXISTING CONDITIONS			
D.A.	Q_1 (CFS)	Q_{10} (CFS)	Q_{100}(CFS)
1	1.1	9.6	42.6
2	1.1	15.9	35.0
3	0.6	9.8	21.9
4	1.1	17.4	40.0
5	0.4	4.0	8.2
AREA 6 HAS BEEN REMOVED			
7	0.1	1.6	4.1
8	0.1	2.4	5.8

SWM- DEVELOPED CONDITIONS			
D.A.	Q_1 (CFS)	Q_{10} (CFS)	Q_{100}(CFS)
1	0.45	43.1	104.9
2	0.12	13.9	37.8
3	2.0	12.5	24.3
4	1.6	18.9	39.9
5	1.0	5.5	10.6
AREA 6 HAS BEEN REMOVED			
7	0.7	2.8	8.01
8	0.8	4.1	7.7

BENCHMARKS				
NO.	NORTHING	EASTING	ELEVATION	TYPE
22GA	576646.7890	1316983.4830	590.033	CONCRETE
28AB	574608.7690	1317002.0590	579.642	CONCRETE

MINIMUM LOT SIZE CHART			
LOT NO.	GROSS AREA	PIPESTEM AREA	MINIMUM LOT SIZE
20	42,897 SF	2,570 SF	40,327 SF
22	64,524 SF	5,536 SF	58,988 SF
23	54,307 SF	1,803 SF	52,504 SF
24	43,320 SF	479 SF	42,841 SF
25	51,902 SF	6,738 SF	45,164 SF
26	46,415 SF	5,065 SF	41,350 SF
35	53,911 SF	10,651 SF	40,551 SF
40	46,624 SF	6,369 SF	43,320 SF
41	58,691 SF	6,433 SF	52,258 SF
44	50,257 SF	4,073 SF	46,184 SF

SHEET INDEX	
DESCRIPTION	SHEET NO.
COVER SHEET	1
SITE LAYOUT PLAN	2
SITE LAYOUT PLAN	3
SITE LAYOUT PLAN	4
SITE LAYOUT PLAN	5
SITE LAYOUT PLAN	6
ROAD PROFILES	7
ROAD PROFILES	8
ROAD PROFILES	9
ROAD PROFILES	10
GRADING, SEDIMENT AND EROSION CONTROL PLAN	11
GRADING, SEDIMENT AND EROSION CONTROL PLAN	12
GRADING, SEDIMENT AND EROSION CONTROL PLAN	13
LANDSCAPING AND FOREST CONSERVATION PLAN	14
LANDSCAPING AND FOREST CONSERVATION PLAN	15
LANDSCAPING AND FOREST CONSERVATION PLAN	16
STORMDRAIN PROFILES	17
STORMDRAIN PROFILES	18
STORMWATER MANAGEMENT DETAILS - POND 1	19
STORMWATER MANAGEMENT DETAILS - POND 2	20
STORMWATER MANAGEMENT NOTES	21
STORMWATER MANAGEMENT NOTES	22
SEDIMENT AND EROSION CONTROL DETAILS	23

LEGEND

- USE-IN-COMMON ACCESS EASEMENT
- FOREST CONSERVATION EASEMENT (RETENTION)
- 100 YEAR FLOODPLAIN
- 10' PRIVATE SIGN & FENCE EASEMENT
- AREA DEDICATED TO HOWARD COUNTY FOR RIGHT OF WAY
- PROPOSED PAVING FOR ROAD
- DRAINAGE AND UTILITY EASEMENT
- 10' PUBLIC TREE MAINTENANCE EASEMENT

OWNER

HELEN L. FYOCK
ROBERT E. FYOCK
P.O. BOX 56
GLENELG, MARYLAND

CASTLEBERRY AT TEN OAKS, L.L.C.
3675 PARK AVENUE, SUITE 301
ELLICOTT CITY, MARYLAND 21043
(410) 740-9401

DEVELOPER

CASTLEBERRY AT TEN OAKS, L.L.C.
3675 PARK AVENUE, SUITE 301
ELLICOTT CITY, MARYLAND 21043
(410) 740-9401

NO.	REVISION	DATE
2	ADD SAFETY FENCE BETWEEN POND 1 AND FCE	3.27.09
1	REVISE LANDSCAPE SURETY AMOUNT	4-20-07

COVER SHEET
CASTLEBERRY AT TEN OAKS
LOTS 1 - 45, NON-BUILDABLE PRESERVATION
PARCELS A, C, D, E & BUILDABLE PRESERVATION PARCEL B

TAX MAP 22 GRID 20
5TH ELECTION DISTRICT

PARCEL 60, LOTS 6 & 7 KEN WARFIELD SUBDIVISION, AND P/O PARCEL 90
HOWARD COUNTY, MARYLAND

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

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE #16193

DESIGN BY:	RHV/LJT
DRAWN BY:	LJT
CHECKED BY:	RHV
DATE:	DECEMBER, 2006
SCALE:	AS NOTED
W.O. NO.:	00-85.00

DPZ REF: S-01-11, P-05-04

SHEET 1 OF 23

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 plans and specifications.

P.E. No. 16193
Date: 11/17/14

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 1-10-07

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

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

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3/2/07

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

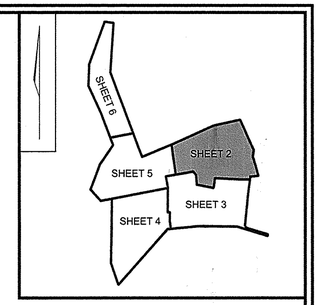
USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE

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

HOWARD SCD — DATE

AS-BUILT 11/17/14

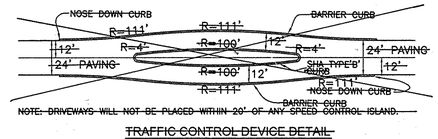
F-06-130



KEY MAP
NOT TO SCALE

LEGEND

- EXISTING 2 FT CONTOUR
- EXISTING 10 FT CONTOUR
- PROPOSED 2 FT CONTOUR
- PROPOSED 10 FT CONTOUR
- SUPER SILT FENCE
- LIMIT OF DISTURBANCE
- EXISTING TREELINE
- PROPOSED TREELINE
- EARTH DIKE
- PROPOSED STREET TREE
- PROPOSED STREET LIGHT FOREST CONSERVATION SIGN LOCATION
- PRIVATE SEPTIC EASEMENT
- PRIVATE WELL AREA
- DRAINAGE AND UTILITY EASEMENT
- FOREST CONSERVATION EASEMENT (RETENTION)
- FOREST CONSERVATION EASEMENT (REFORESTATION)
- 100 YEAR FLOODPLAIN
- 10' PRIVATE SIGN & FENCE EASEMENT
- AREA DEDICATED TO HOWARD COUNTY FOR RIGHT OF WAY
- USE-IN-COMMON ACCESS EASEMENT
- WET LAND
- 10' PUBLIC TREE MAINTENANCE EASEMENT



TRAFFIC CONTROL DEVICE DETAIL
NOT TO SCALE

CURVE TABLE

CURVE	LENGTH	RADIUS	DELTA	TANGENT	CHORD	DISTANCE
C1	34.43	150.00	13°09'08"	17.29	N80°13'55"E	34.36
C2	11.92	30.00	22°45'38"	6.04	S75°25'40"W	11.84
C3	63.74	200.00	18°15'33"	32.14	N05°56'15"E	63.47
C4	741.32	550.00	77°13'33"	439.26	N53°40'48"E	686.46
C5	209.38	200.00	59°58'58"	115.43	S66°28'03"W	199.95

NO.	REVISION	DATE
2.	REMOVE SPEED CONTROL DEVICE CANCLE LIGHT DRIVE	3/20/11

SITE LAYOUT PLAN

CASTLEBERRY AT TEN OAKS

LOTS 1 - 45, NON-BUILDABLE PRESERVATION PARCELS A, C, D, E & BUILDABLE PRESERVATION PARCEL B

TAX MAP 22 GRID 20
5TH ELECTION DISTRICT

PARCEL 60, LOTS 6 & 7 KEN WARFIELD SUBDIVISION, AND P/O PARCEL 90
HOWARD COUNTY, MARYLAND

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FAX: 410.461.8961

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 1-10-07

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 1/11/07
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3/2/07

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS
USDA–NATURAL RESOURCES CONSERVATION SERVICE — DATE
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT
HOWARD SCD — DATE

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — PROFESSIONAL ENGINEER
11/17/14

OWNER
HELEN L. FYOCK
ROBERT E. FYOCK
P.O. BOX 56
GLENELG, MARYLAND

CASTLEBERRY AT TEN OAKS, L.L.C.
3675 PARK AVENUE, SUITE 301
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STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — PROFESSIONAL ENGINEER
11/17/14
ROBERT H. VOGEL, PE #16193

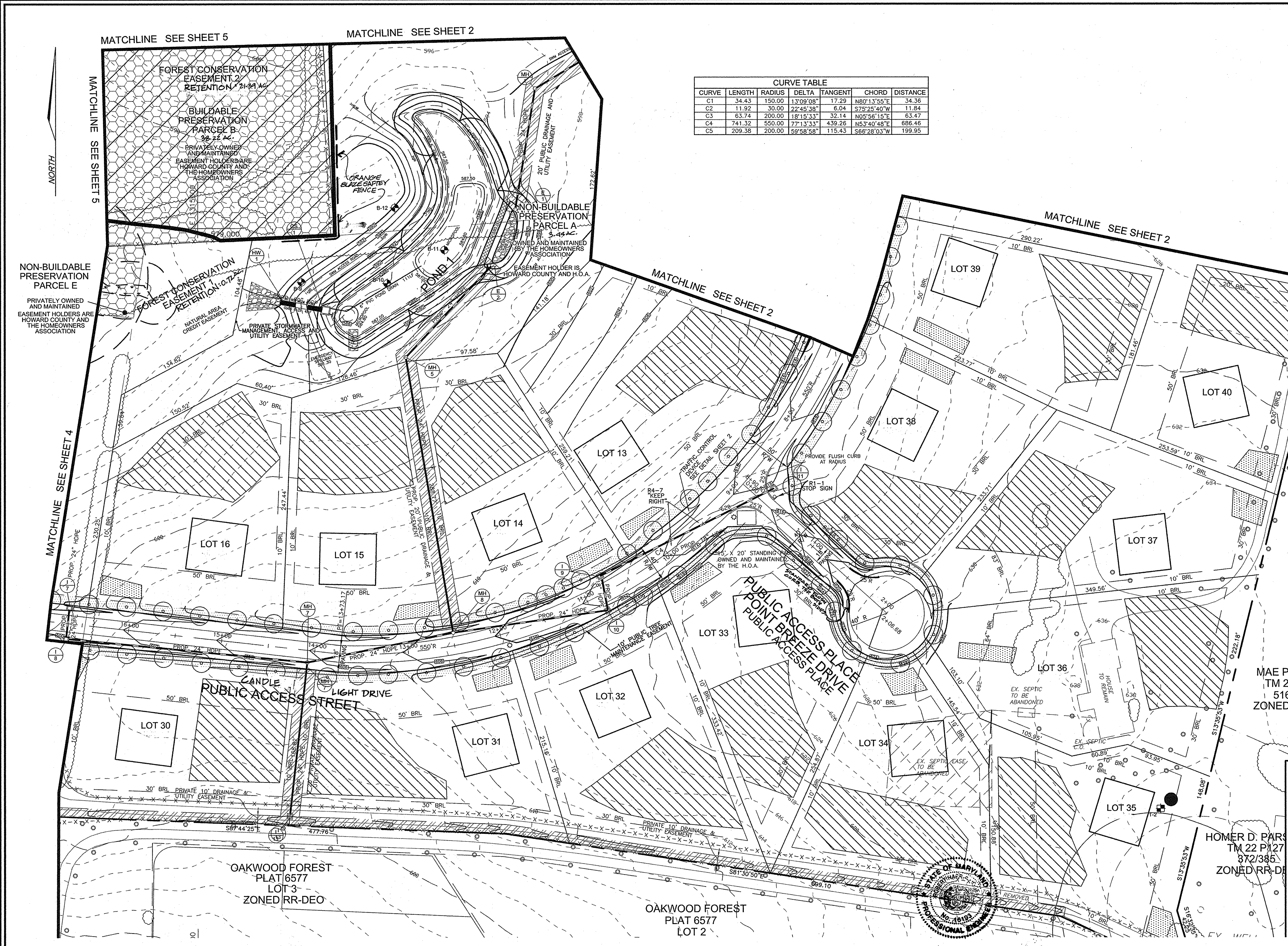
DESIGN BY:	RHV/LJT
DRAWN BY:	LJT
CHECKED BY:	RHV
DATE:	DECEMBER, 2006
SCALE:	1"=50'
W.O. NO.:	00-85.00

DPZ REF:
S-01-11, P-05-04

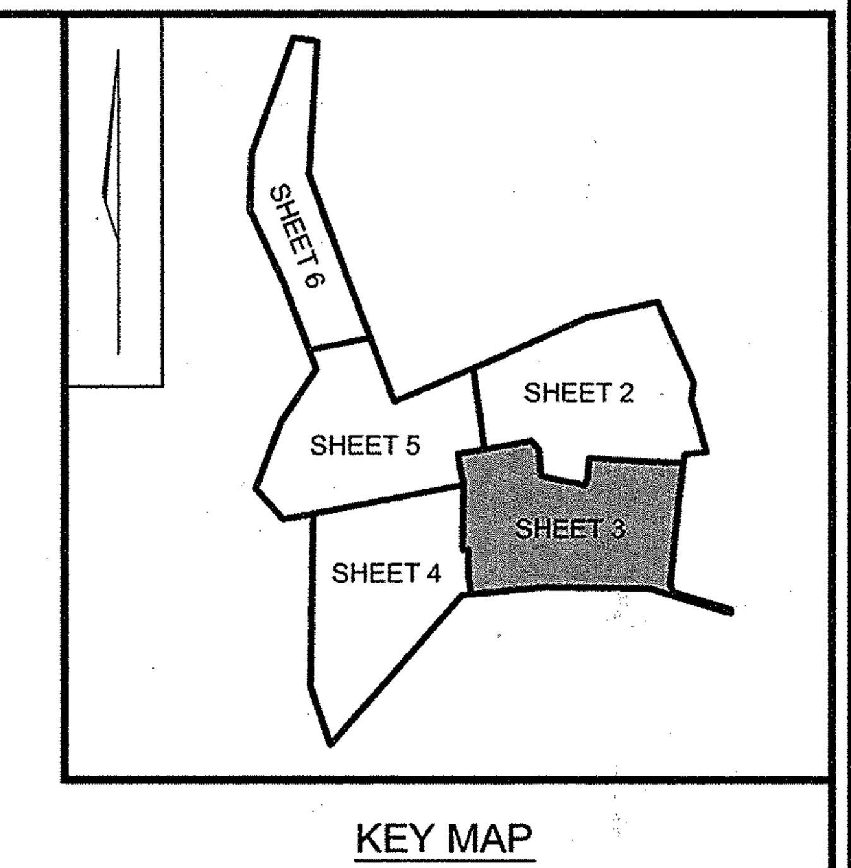
SHEET 2 OF 23

AS-BUILT 11/17/14

F-06-130



CURVE TABLE						
CURVE	LENGTH	RADIUS	DELTA	TANGENT	CHORD	DISTANCE
C1	34.43	150.00	13°09'08"	17.29	N80°13'55"E	34.36
C2	11.92	30.00	22°45'38"	6.04	S75°25'40"W	11.84
C3	63.74	200.00	18°15'33"	32.14	N05°56'15"E	63.47
C4	741.32	550.00	77°13'33"	439.26	N53°40'48"E	686.46
C5	209.38	200.00	59°58'58"	115.43	S66°28'03"W	199.95



KEY MAP
NOT TO SCALE

LEGEND

- 202 EXISTING 2 FT CONTOUR
- 200 EXISTING 10 FT CONTOUR
- 202 PROPOSED 2 FT CONTOUR
- 200 PROPOSED 10 FT CONTOUR
- SSF SUPER SILT FENCE
- LOD LIMIT OF DISTURBANCE
- EXISTING TREELINE
- PROPOSED TREELINE
- EARTH DIKE
- PROPOSED STREET TREE
- FOREST CONSERVATION SIGN LOCATION
- PROPOSED TREE MAINTENANCE EASEMENT
- NO WOODY VEGETATION BUFFER
- PRIVATE SEPTIC EASEMENT
- PRIVATE WELL AREA
- DRAINAGE AND UTILITY EASEMENT
- AREA OF 15 TO 24.9 PERCENT SLOPES
- AREA OF 25 PERCENT OR GREATER SLOPES
- FOREST CONSERVATION EASEMENT (RETENTION)
- 100 YEAR FLOODPLAIN
- WET LAND
- 10' PUBLIC TREE MAINTENANCE EASEMENT

NO.	REVISION	DATE
2	ADD SAFETY FENCE BETWEEN POND 1 AND FCE	3.27.09

SITE LAYOUT PLAN

CASTLEBERRY AT TEN OAKS

LOTS 1 - 45, NON-BUILDABLE PRESERVATION
PARCELS A, C, D, E & BUILDABLE PRESERVATION PARCEL B

TAX MAP 22 GRID 20
5TH ELECTION DISTRICT

PARCEL 60, LOTS 6 & 7 KEN WARFIELD SUBDIVISION, AND P/O PARCEL 90
HOWARD COUNTY, MARYLAND

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[signature] 1-10-07
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[signature] 1/22/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE
[signature] 3/2/07
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS
USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT — DATE
HOWARD SCD — DATE

ENGINEERS CERTIFICATE

"I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."
[signature] 1/2/07
ROBERT H. VOGEL, PE #16193 — DATE

DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."
[signature] 1/2/07
DATE

"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 PLANS AND SPECIFICATIONS."
[signature] 11/17/14
ROBERT H. VOGEL, P.E. #16193 — DATE

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

OWNER

HELEN L. FYOCK
ROBERT E. FYOCK
P.O. BOX 56
GLENELG, MARYLAND

CASTLEBERRY AT TEN OAKS, L.L.C.
3675 PARK AVENUE, SUITE 301
ELLICOTT CITY, MARYLAND 21043
(410) 740-9401

DEVELOPER

CASTLEBERRY AT TEN OAKS, L.L.C.
3675 PARK AVENUE, SUITE 301
ELLICOTT CITY, MARYLAND 21043
(410) 740-9401

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE #16193

DESIGN BY:	RHV/LJT
DRAWN BY:	LJT
CHECKED BY:	RHV
DATE:	DECEMBER, 2006
SCALE:	1"=50'
W.O. NO.:	00-85.00

DPZ REF:
S-01-11, P-05-04

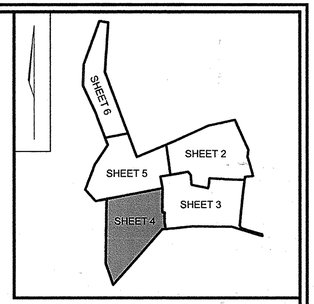
AS-BUILT 11/17/14

F-06-130

LEGEND

- EXISTING 2 FT CONTOUR
- EXISTING 10 FT CONTOUR
- PROPOSED 2 FT CONTOUR
- PROPOSED 10 FT CONTOUR
- SUPER SILT FENCE
- LOD — LIMIT OF DISTURBANCE
- EXISTING TREELINE
- PROPOSED TREELINE
- EARTH DIKE
- PROPOSED STREET TREE
- PROPOSED STREET LIGHT
- FOREST CONSERVATION SIGN LOCATION
- PROPOSED TREE MAINTENANCE EASEMENT
- NO WOODY VEGETATION BUFFER
- PRIVATE SEPTIC EASEMENT
- PRIVATE WELL AREA
- USE-IN-COMMON ACCESS EASEMENT
- AREA OF 15 TO 24.9 PERCENT SLOPES
- AREA OF 25 PERCENT OR GREATER SLOPES
- FOREST CONSERVATION EASEMENT (RETENTION)
- WET LAND
- 100 YEAR FLOODPLAIN
- DRAINAGE AND UTILITY EASEMENT
- 10' PUBLIC TREE MAINTENANCE EASEMENT

CURVE TABLE						
CURVE	LENGTH	RADIUS	DELTA	TANGENT	CHORD	DISTANCE
C1	34.43	150.00	13°09'08"	17.29	N80°13'55"E	34.36
C2	11.92	30.00	22°45'38"	6.04	S75°25'40"W	11.84
C3	63.74	200.00	18°15'33"	32.14	N05°56'15"E	63.47
C4	741.32	550.00	77°13'33"	439.26	N53°40'48"E	686.46
C5	209.38	200.00	59°58'58"	115.43	S66°28'03"W	199.95



KEY MAP
NOT TO SCALE

E 1315100
N 578100

E 1314300
N 578000

E 1315100
N 578000

MATCHLINE SEE SHEET 5

MATCHLINE SEE SHEET 3

HILDA Z. LINTHICUM SUBDIVISION LOT 3 PLAT 10426 ZONED RR-DEO

HILDA Z. LINTHICUM SUBDIVISION LOT 4 PLAT 10426 ZONED RR-DEO

KENNARD WARFIELD, JR. LOT 5 PLAT 4865 ZONED RR-DEO

LOT 17
LOT 18
LOT 19
LOT 20
LOT 21
LOT 22
LOT 23
LOT 24
LOT 25
LOT 26
LOT 27
LOT 28
LOT 29

POND 2

NON-BUILDABLE PRESERVATION PARCEL D
OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION
EASEMENT HOLDER IS HOWARD COUNTY

NON-BUILDABLE PRESERVATION PARCEL E
PRIVATELY OWNED AND MAINTAINED
EASEMENT HOLDERS ARE HOWARD COUNTY AND THE HOMEOWNERS ASSOCIATION

FOREST CONSERVATION EASEMENT RETENTION

CANDLE LIGHT DRIVE PUBLIC ACCESS PLACE

WETLANDS
25' WETLAND BUFFER
100' STREAM BUFFER

20' PUBLIC DRAINAGE AND UTILITY EASEMENT
10' PUBLIC TREE MAINTENANCE EASEMENT
PRIVATE STORMWATER MANAGEMENT ACCESS AND UTILITY EASEMENT
24' PRIVATE USE-IN-COMMON ACCESS EASEMENT FOR LOTS 22-26
SWM ACCESS BOLLARDS
STANDARD FLUSH CURB, TYP. BOTH SIDES
STANDARD FLUSH CURB WITH 25' RADIUS, TYP. BOTH SIDES

EX. WELL
EXIST. BARN
EX. SHED
EX. SEPTIC TO BE ABANDONED
EX. GAZEBO TO BE REMOVED
EX. HOUSE TO BE REMOVED
EX. WELL TO BE SEALED AND ABANDONED
EXIST. STONE DRIVEWAY TO BE REMOVED
EXIST. BARN TO BE REMOVED
EX. HOUSE TO BE REMOVED
EXIST. WATER LINE FROM WELL TO HOUSE
EX. SEPTIC TRENCH

N49°08'36"E 1147.16

NO.	REVISION	DATE

SITE LAYOUT PLAN

CASTLEBERRY AT TEN OAKS

LOTS 1 - 45, NON-BUILDABLE PRESERVATION PARCELS A, C, D, E & BUILDABLE PRESERVATION PARCEL B

TAX MAP 22 GRID 20
5TH ELECTION DISTRICT

PARCEL 60, LOTS 6 & 7 KEN WARFIELD SUBDIVISION, AND P/O PARCEL 90
HOWARD COUNTY, MARYLAND

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APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 1-10-07

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 1/24/07
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/2/07

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS
USDA–NATURAL RESOURCES CONSERVATION SERVICE — DATE
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HOWARD SCD — DATE

11/17/14

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ROBERT E. FYOCK
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DEVELOPER

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STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — PROFESSIONAL ENGINEER
11/17/14
ROBERT H. VOGEL, PE #16193

DESIGN BY:	RHV/LJT
DRAWN BY:	LJT
CHECKED BY:	RHV
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SCALE:	1"=50'
W.O. NO.:	00-85.00

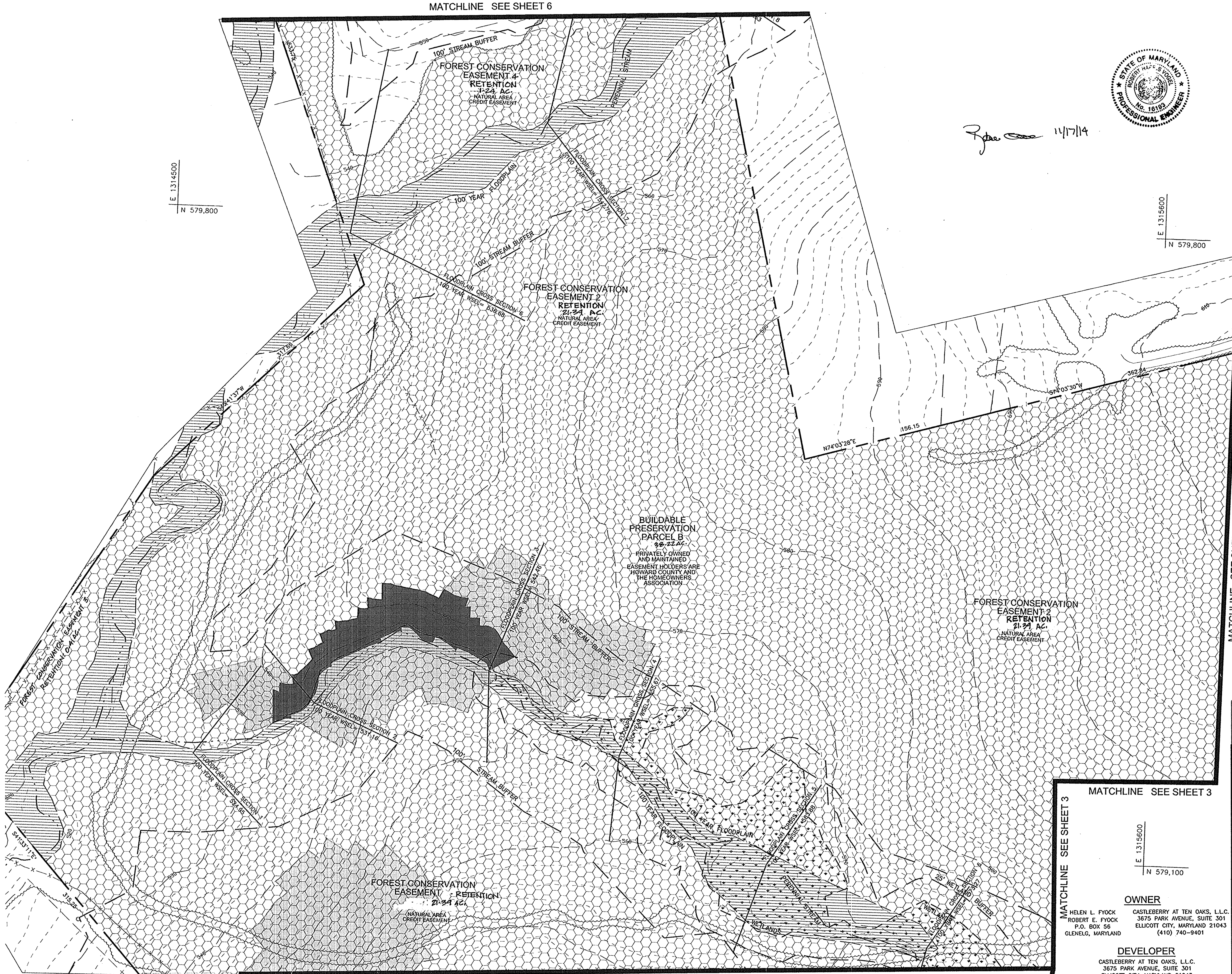
DPZ REF: S-01-11, P-05-04

SHEET 4 OF 23

AS-BUILT 11/17/14

F-06-130

MATCHLINE SEE SHEET 6



MATCHLINE SEE SHEET 2

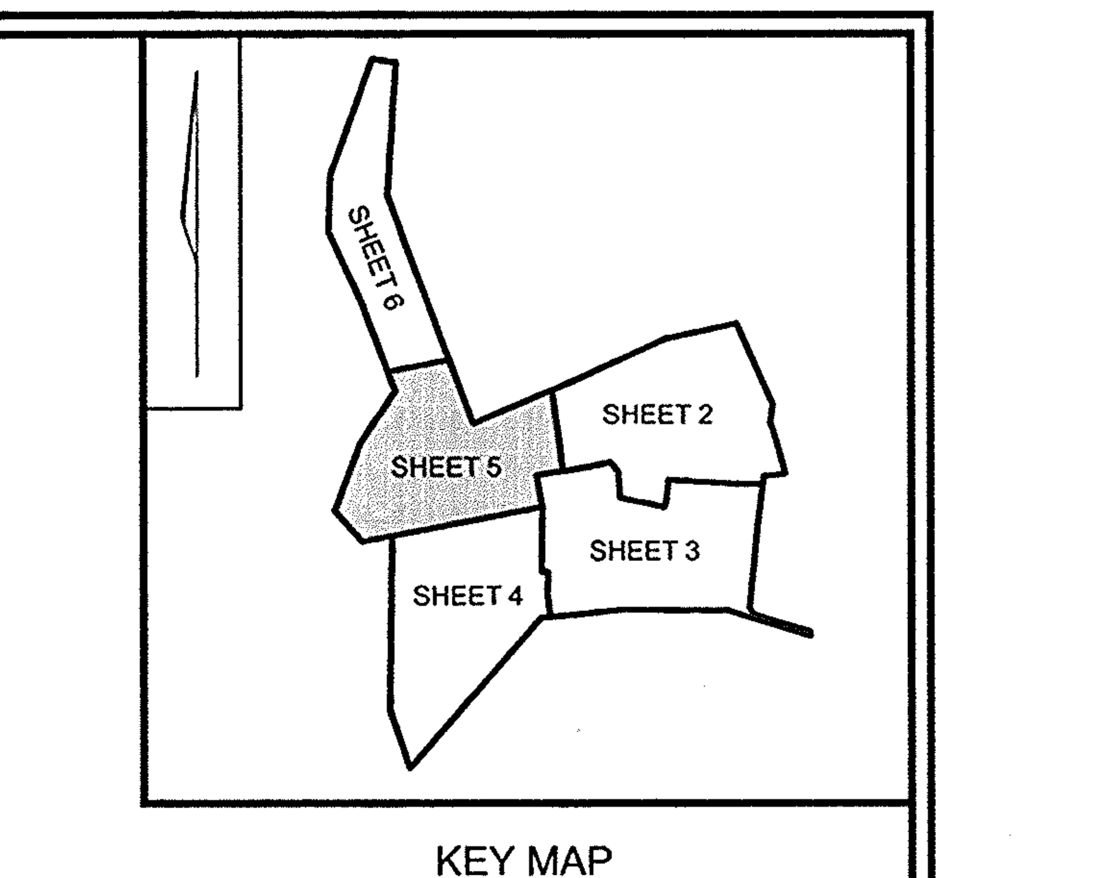
MATCHLINE SEE SHEET 3

MATCHLINE SEE SHEET 3

MATCHLINE SEE SHEET 4

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER

11/17/14



KEY MAP
NOT TO SCALE

LEGEND

Symbol	Description
202	EXISTING 2 FT CONTOUR
200	EXISTING 10 FT CONTOUR
202	PROPOSED 2 FT CONTOUR
200	PROPOSED 10 FT CONTOUR
SSF	SUPER SILT FENCE
LOD	LIMIT OF DISTURBANCE
	EXISTING TREELINE
	PROPOSED TREELINE
	EARTH DIKE
	PROPOSED STREET TREE
	FOREST CONSERVATION SIGN LOCATION
	PROPOSED TREE MAINTENANCE EASEMENT
	NO WOODY VEGETATION BUFFER
	PRIVATE SEPTIC EASEMENT
	PRIVATE WELL AREA
	DRAINAGE AND UTILITY EASEMENT
	AREA OF 15 TO 24.9 PERCENT SLOPES
	AREA OF 25 PERCENT OR GREATER SLOPES
	FOREST CONSERVATION EASEMENT (RETENTION)
	WET LAND
	100 YEAR FLOODPLAIN

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

[signature] 1-10-07
CHIEF, BUREAU OF HIGHWAYS HS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[signature] 1/10/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[signature] 2/2/07
CHIEF, DIVISION OF LAND DEVELOPMENT JA DATE

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE

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

HOWARD SCD DATE

NO.	REVISION	DATE

SITE LAYOUT PLAN

CASTLEBERRY AT TEN OAKS

LOTS 1 - 45, NON-BUILDABLE PRESERVATION
PARCELS A, C, D, E & BUILDABLE PRESERVATION PARCEL B

TAX MAP 22 GRID 20
5TH ELECTION DISTRICT

PARCEL 60, LOTS 6 & 7 KEN WARFIELD SUBDIVISION, AND P/O PARCEL 90
HOWARD COUNTY, MARYLAND

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STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER

ROBERT H. VOGEL, PE #16193

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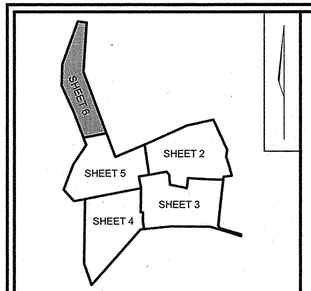
AS-BUILT 11/17/14

F-06-130



KEY MAP
NOT TO SCALE

JOHN PUFFENBERGER
TM 22 P 88
3245/697
ZONED RR-DEO

HELEN AND ROBERT FYOCK
TM 22 P/O PARCEL 58
2698/109
ZONED RR-DEO

SUSAN SHARP
TM 22 P 56
3004/356
ZONED RR-DEO

HELEN AND ROBERT FYOCK
TM 22 P/O PARCEL 58
3245/697
ZONED RR-DEO

TRIADELPHIA ROAD
MINOR COLLECTOR
50' ROW

BUILDABLE PRESERVATION PARCEL B
38.22 ac.
PRIVATELY OWNED AND MAINTAINED
EASEMENT HOLDERS ARE HOWARD COUNTY AND THE HOMEOWNERS ASSOCIATION

FOREST CONSERVATION EASEMENT #5
RETENTION: 0.45 AC.

FOREST CONSERVATION EASEMENT #6
RETENTION: 3.40 AC.

FOREST CONSERVATION EASEMENT #4
RETENTION: 1.24 AC.

FOREST CONSERVATION EASEMENT #1
RETENTION: 1.22 AC.

100' STREAM BUFFER
100' YEAR FLOODPLAIN
PERENNIAL STREAM
NATURAL AREA CREDIT EASEMENT

FLOODPLAIN CROSS SECTION 9
100 YEAR WSEL= 544.51
FLOODPLAIN CROSS SECTION 10
100 YEAR WSEL= 550.25
FLOODPLAIN CROSS SECTION 11
100 YEAR WSEL= 555.74
FLOODPLAIN CROSS SECTION 12
100 YEAR WSEL= 555.74
FLOODPLAIN CROSS SECTION 13
100 YEAR WSEL= 560.74
FLOODPLAIN CROSS SECTION 14
100 YEAR WSEL= 568.49

S16°00'05"W 336.34
S20°56'58"W 607.55
S11°28'44"W 747.19
S 3°05'21"E 1380.08
N22°30'06"W 96.96
R=435.00' L=90.82'

E 1314400 N 580,900
E 1315100 N 581,000
E 1315100 N 580,300

MATCHLINE SEE SHEET 5

LEGEND

- EXISTING 2 FT CONTOUR
- EXISTING 10 FT CONTOUR
- PROPOSED 2 FT CONTOUR
- PROPOSED 10 FT CONTOUR
- SUPER SILT FENCE
- LOD — LIMIT OF DISTURBANCE
- EXISTING TREELINE
- PROPOSED TREELINE
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STATE OF MARYLAND · ROBERT HARRIS VOGEL · No. 16193 · PROFESSIONAL ENGINEER

11/17/14

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 1-10-07

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 1/10/07
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3/2/07

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS
USDA–NATURAL RESOURCES CONSERVATION SERVICE — DATE
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HOWARD SCD — DATE

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ROBERT E. FYOCK
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GLENELG, MARYLAND

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(410) 740–9401

DEVELOPER

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NO.	REVISION	DATE

SITE LAYOUT PLAN

CASTLEBERRY AT TEN OAKS

LOTS 1 - 45, NON-BUILDABLE PRESERVATION
PARCELS A, C, D, E & BUILDABLE PRESERVATION PARCEL B

TAX MAP 22 GRID 20
5TH ELECTION DISTRICT

PARCEL 60, LOTS 6 & 7 KEN WARFIELD SUBDIVISION, AND P/O PARCEL 90
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STATE OF MARYLAND · ROBERT HARRIS VOGEL · No. 16193 · PROFESSIONAL ENGINEER

11/17/14

ROBERT H. VOGEL, PE #16193

DESIGN BY:	RHV/LJT
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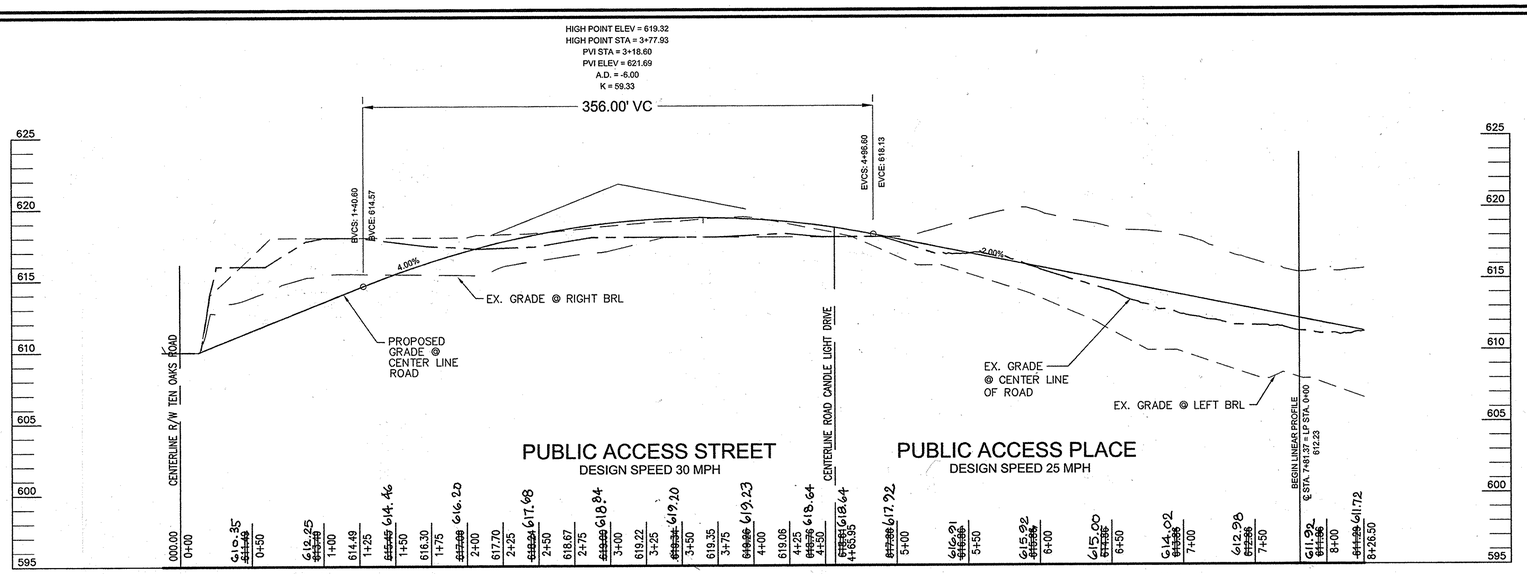
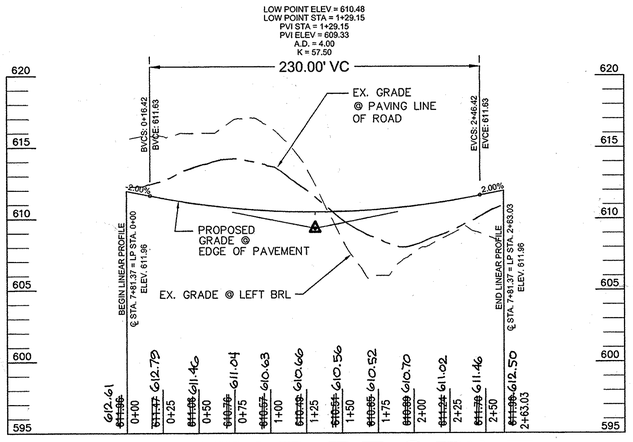
DPZ REF:
S-01-11, P-05-04

SHEET 6 OF 23

AS-BUILT 11/17/14

F-06-130

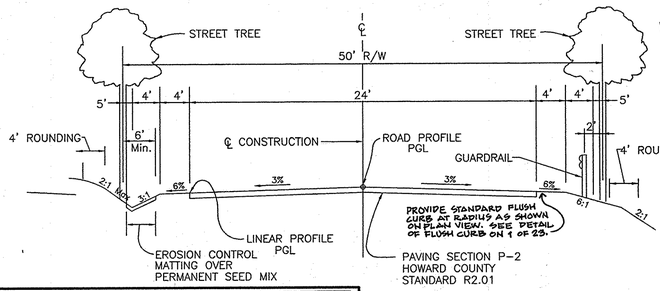




LINEAR PROFILE- WYE RIVER DRIVE

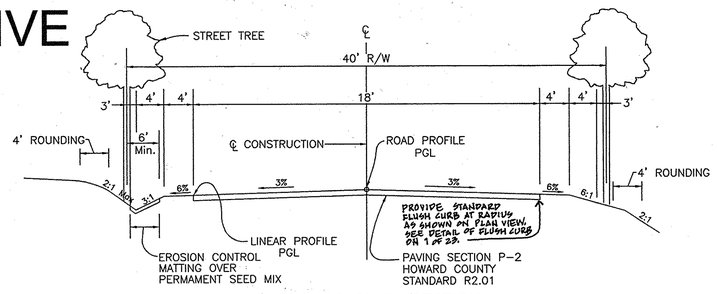
PUBLIC ACCESS PLACE

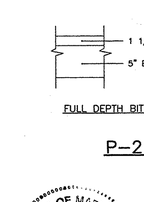
SCALE: HORZ: 1"=50'
VERT: 1"=5'



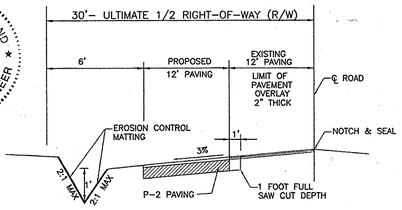
WYE RIVER DRIVE

SCALE: HORZ: 1"=50'
VERT: 1"=5'

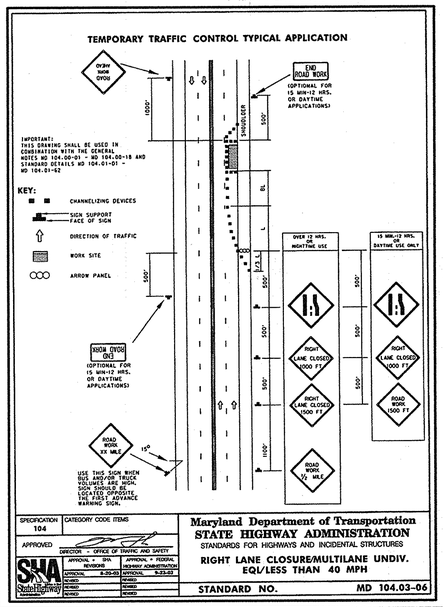




P-2 LIGHT DUTY PAVING SECTION
N.T.S

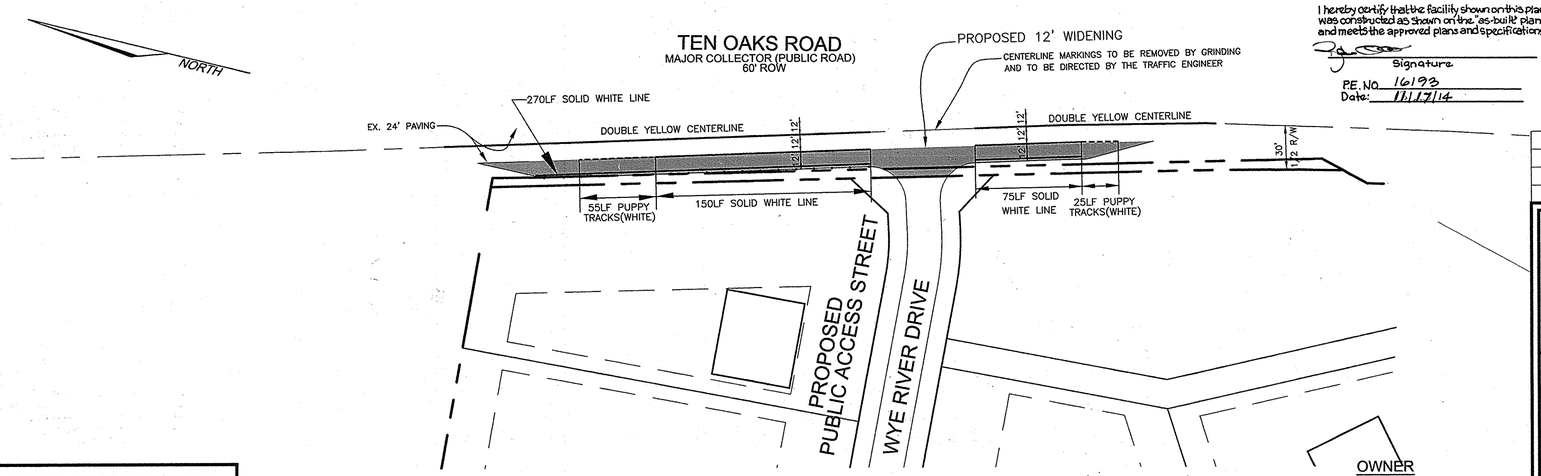


TYPICAL WIDENING SECTION
TEN OAKS ROAD
PROPOSED ROAD WIDENING IMPROVEMENTS(R.10.01)
SECTION NOT TO SCALE



TYPICAL ROADWAY SECTION
CLASSIFICATION : PUBLIC ACCESS STREET
WYE RIVER DRIVE
DESIGN SPEED 30 MPH
CL STA. 0+00 TO CL STA. 4+69.65
NOT TO SCALE

TYPICAL ROADWAY SECTION
CLASSIFICATION : PUBLIC ACCESS PLACE
WYE RIVER DRIVE
DESIGN SPEED 25 MPH
CL STA. 4+69.65 TO CL STA. 8+38.47
NOT TO SCALE



STRIPING AND TRAFFIC MAINTENANCE PLAN
SCALE: 1"=50'

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 plans and specifications.

Signature
P.E. NO. 16193
Date: 11/17/14

NO.	REVISION	DATE

ROAD PROFILES

CASTLEBERRY AT TEN OAKS

LOTS 1 - 45, NON-BUILDABLE PRESERVATION
PARCELS A, C, D, E & BUILDABLE PRESERVATION PARCEL B

TAX MAP 22 GRID 20
5TH ELECTION DISTRICT

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STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — PROFESSIONAL ENGINEER
11/17/14
ROBERT H. VOGEL, PE #16193

DESIGN BY:	RHV/LJT
DRAWN BY:	LJT
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SCALE:	AS NOTED
W.O. NO.:	00-85.00

DPZ REF: S-01-11, P-05-04

SHEET 7 OF 23

OWNER

HELEN L. FYOCK
ROBERT E. FYOCK
P.O. BOX 56
GLENELG, MARYLAND

CASTLEBERRY AT TEN OAKS, L.L.C.
3675 PARK AVENUE, SUITE 301
ELLICOTT CITY, MARYLAND 21043
(410) 740-9401

DEVELOPER

CASTLEBERRY AT TEN OAKS, L.L.C.
3675 PARK AVENUE, SUITE 301
ELLICOTT CITY, MARYLAND 21043
(410) 740-9401

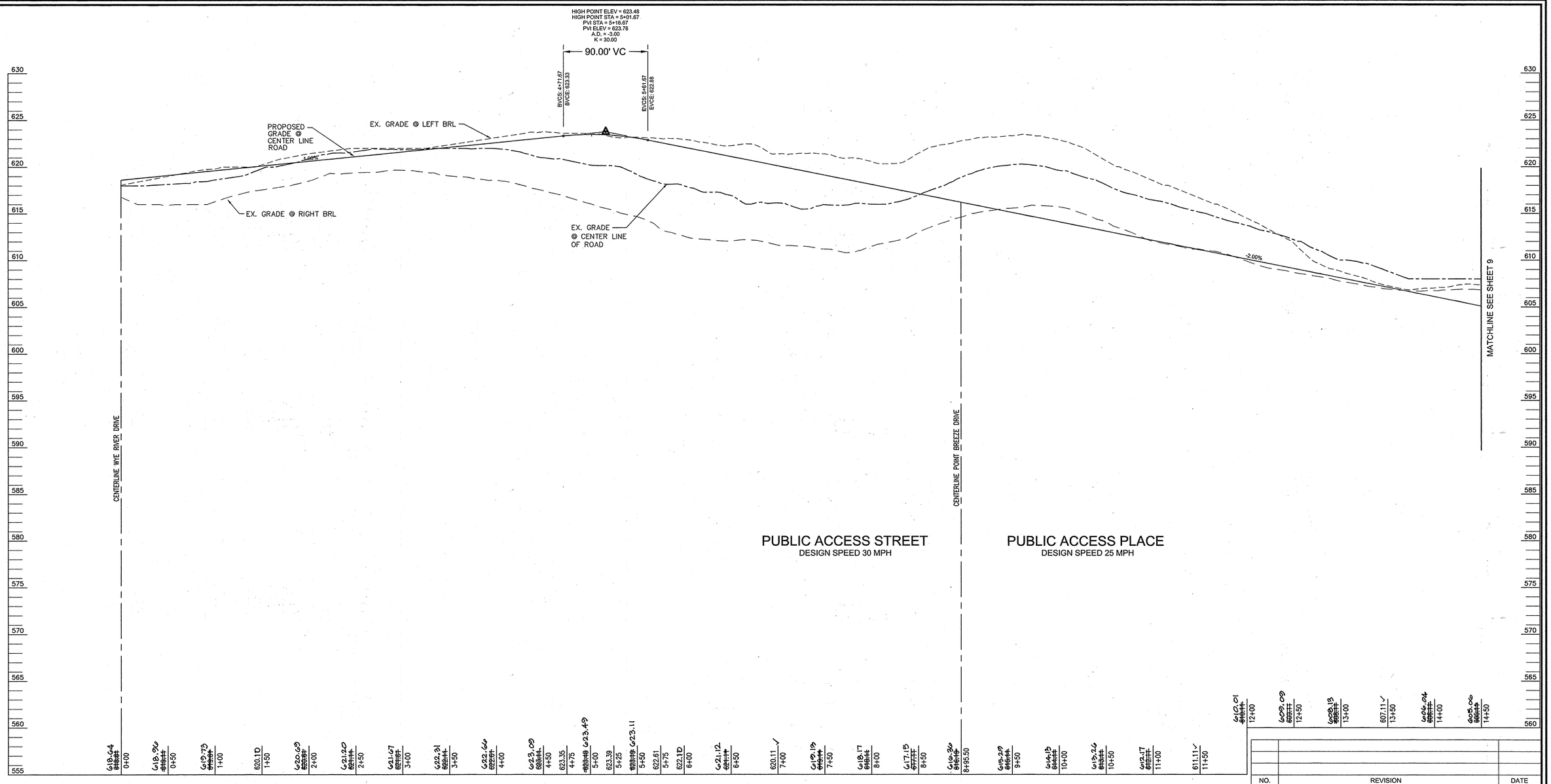
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 1-10-07

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 1/11/07
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/6/07

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS
USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT
HOWARD SCD — DATE

AS-BUILT 11/17/14

F-06-130



NO.	REVISION	DATE

CANDLE LIGHT DRVIE

SCALE: HORZ: 1"=50'

VERT: 1"=5'

STATE OF MARYLAND · ROBERT HARRIS VOGEL · No. 16193 · PROFESSIONAL ENGINEER

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 plans and specifications

Signature

P.E. No. 16193

Date: 11/7/14

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 1-10-07

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 1/4/07

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3/2/07

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

USDA–NATURAL RESOURCES CONSERVATION SERVICE — DATE

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HOWARD SCD — DATE

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ELLICOTT CITY, MARYLAND 21043
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ROAD PROFILES

CASTLEBERRY AT TEN OAKS

LOTS 1 - 45, NON-BUILDABLE PRESERVATION PARCELS A, C, D, E & BUILDABLE PRESERVATION PARCEL B

TAX MAP 22 GRID 20
5TH ELECTION DISTRICT

PARCEL 60, LOTS 6 & 7 KEN WARFIELD SUBDIVISION, AND P/O PARCEL 90
HOWARD COUNTY, MARYLAND

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

STATE OF MARYLAND · ROBERT HARRIS VOGEL · No. 16193 · PROFESSIONAL ENGINEER

ROBERT H. VOGEL, PE #16193

DESIGN BY:	RHV/LJT
DRAWN BY:	LJT
CHECKED BY:	RHV
DATE:	DECEMBER, 2006
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DPZ REF: S-01-11, P-05-04

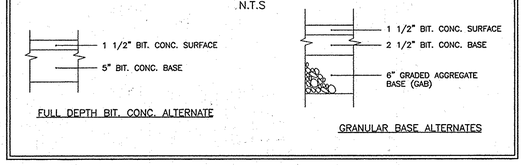
SHEET 8 OF 23

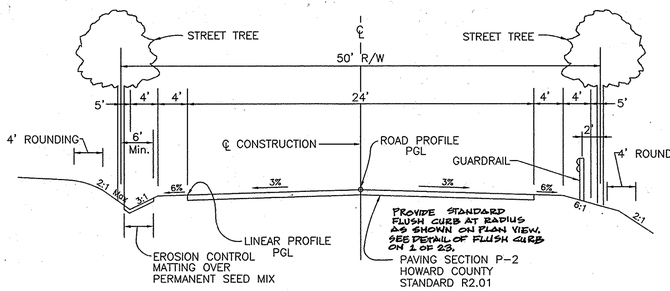
AS-BUILT 11/17/14

F-06-130

P-2 LIGHT DUTY PAVING SECTION

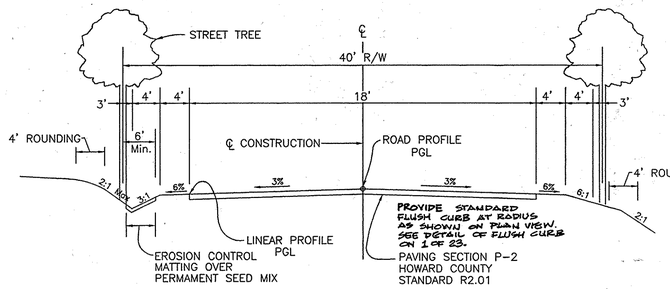
N.T.S





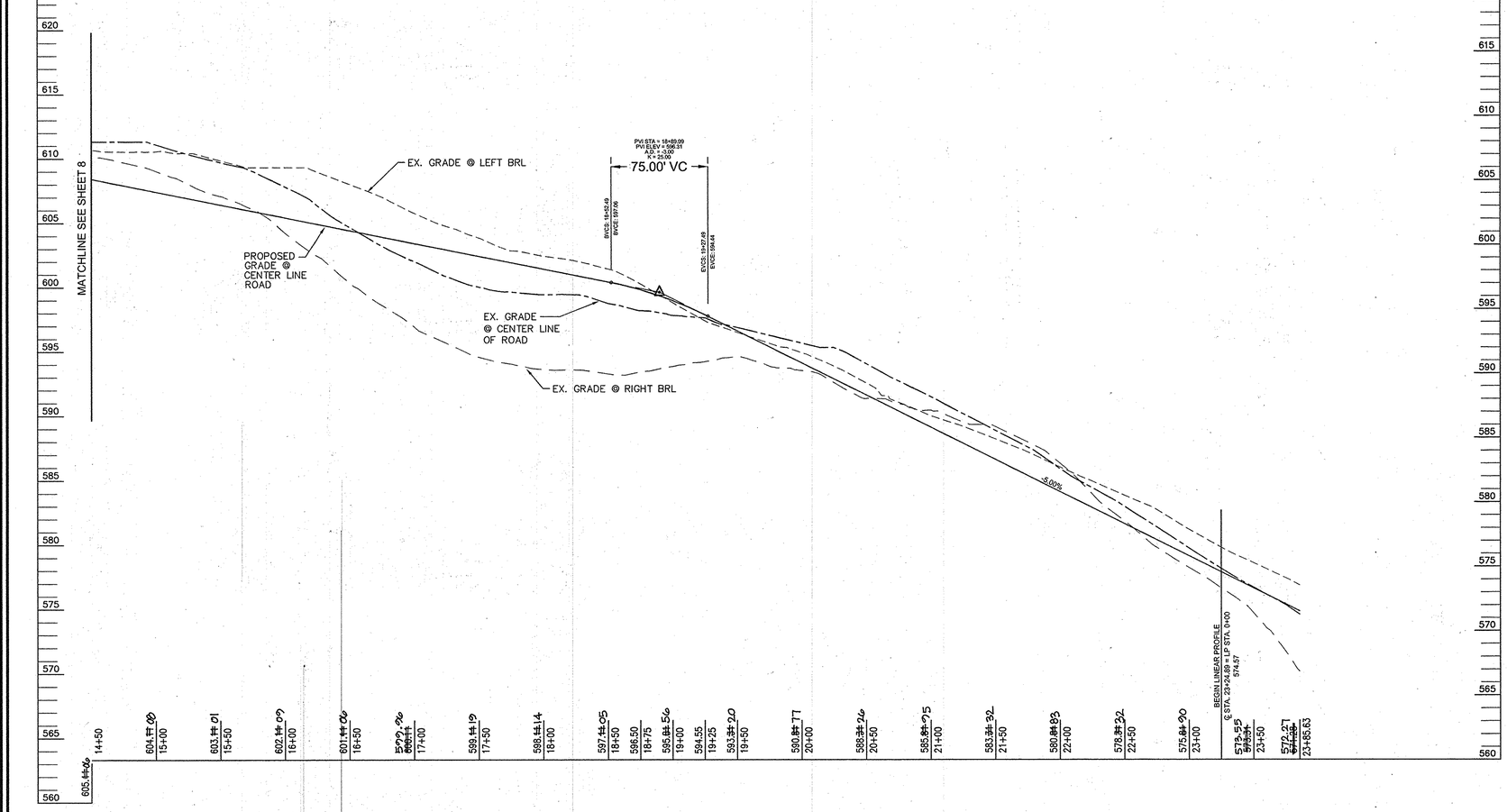
TYPICAL ROADWAY SECTION
CLASSIFICATION : PUBLIC ACCESS STREET
CANDLE LIGHT DRIVE

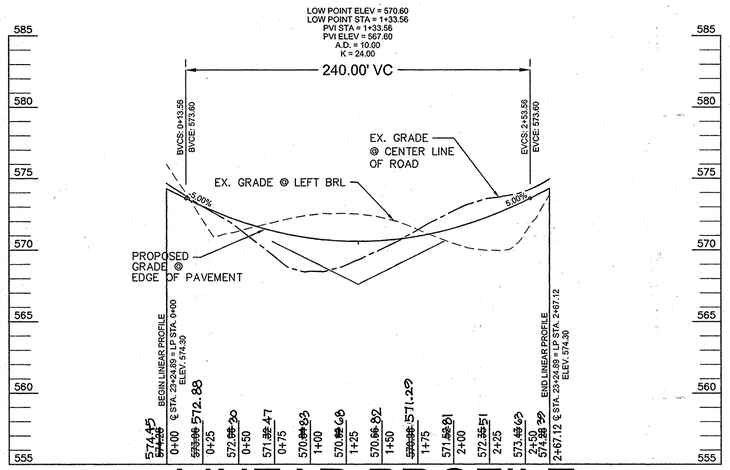
DESIGN SPEED 30 MPH
CL STA. 0+00 TO CL STA. 6+31.86
CL STA. 6+31.86 TO CL STA. 8+95.50 TRANSITION
NOT TO SCALE



TYPICAL ROADWAY SECTION
CLASSIFICATION : PUBLIC ACCESS PLACE
CANDLE LIGHT DRIVE

DESIGN SPEED 25 MPH
CL STA. 13+73.17 TO CL STA. 23+85.63
CL STA. 8+95.50 TO CL STA. 13+73.17 TRANSITION
NOT TO SCALE





LINEAR PROFILE- CANDLE LIGHT DRIVE
PUBLIC ACCESS PLACE

SCALE: HORZ: 1"=50'
VERT: 1"=5'

CANDLE LIGHT DRIVE

SCALE: HORZ: 1"=50'
VERT: 1"=5'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 1-10-07

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 1/4/07

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 1/3/07

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE

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

HOWARD SCD — DATE

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 plans and specifications

Signature

PE NO. 16193
Date: 11/17/14

NO.	REVISION	DATE

OWNER

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ROAD PROFILES

CASTLEBERRY AT TEN OAKS

LOTS 1 - 45, NON-BUILDABLE PRESERVATION
PARCELS A, C, D, E & BUILDABLE PRESERVATION PARCEL B

TAX MAP 22 GRID 20
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PARCEL 60, LOTS 6 & 7 KEN WARFIELD SUBDIVISION, AND P/O PARCEL 90
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ROBERT H. VOGEL, PE #16193

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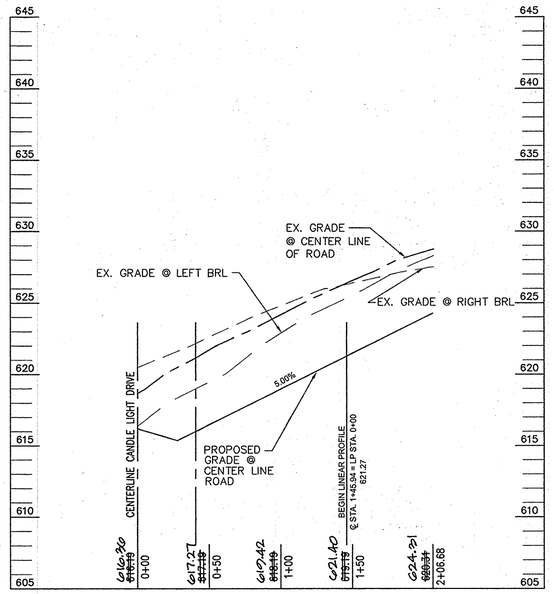
S-01-11, P-05-04

9 SHEET OF 23

AS-BUILT 11/17/14

F-06-130

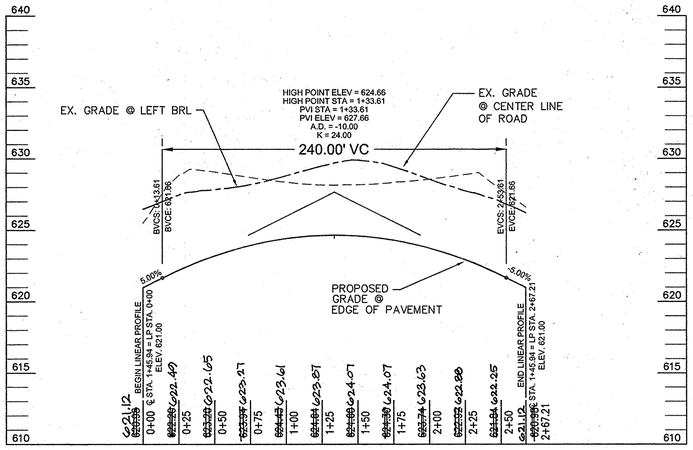


POINT BREEZE DRIVE

PUBLIC ACCESS PLACE

DESIGN SPEED 15 MPH

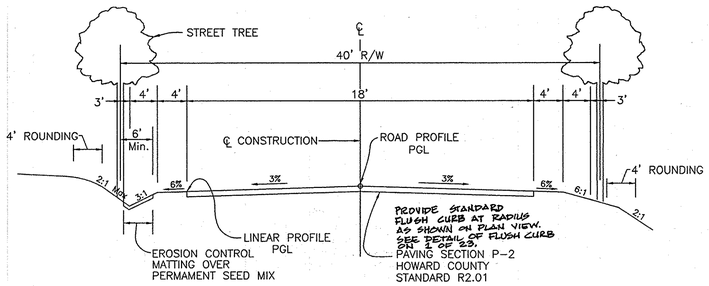
SCALE: HORZ: 1"=50'
VERT: 1"=5'



LINEAR PROFILE- POINT BREEZE DRIVE

PUBLIC ACCESS PLACE

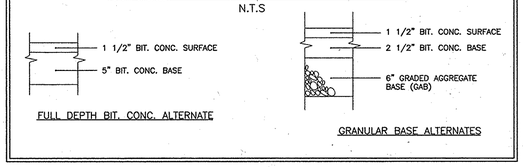
SCALE: HORZ: 1"=50'
VERT: 1"=5'



TYPICAL ROADWAY SECTION
CLASSIFICATION : PUBLIC ACCESS PLACE
POINT BREEZE DRIVE
DESIGN SPEED 15 MPH
NOT TO SCALE

P-2 LIGHT DUTY PAVING SECTION

N.T.S



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 1-10-07

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 1/4/07

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3/2/07

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

USDA–NATURAL RESOURCES CONSERVATION SERVICE — DATE

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

HOWARD SCD — DATE

STATE OF MARYLAND · ROBERT HARRIS VOGEL · No. 16193 · PROFESSIONAL ENGINEER

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 plans and specifications

Signature

PE. NO. 16193
Date: 11/17/14

NO.	REVISION	DATE

ROAD PROFILES

CASTLEBERRY AT TEN OAKS

LOTS 1 - 45, NON-BUILDABLE PRESERVATION
PARCELS A, C, D, E & BUILDABLE PRESERVATION PARCEL B

TAX MAP 22 GRID 20
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PARCEL 60, LOTS 6 & 7 KEN WARFIELD SUBDIVISION, AND P/O PARCEL 90
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ROBERT H. VOGEL, PE #16193

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DPZ REF:
S-01-11, P-05-04

SHEET 10 OF 23

OWNER

HELEN L. FYOCK
ROBERT E. FYOCK
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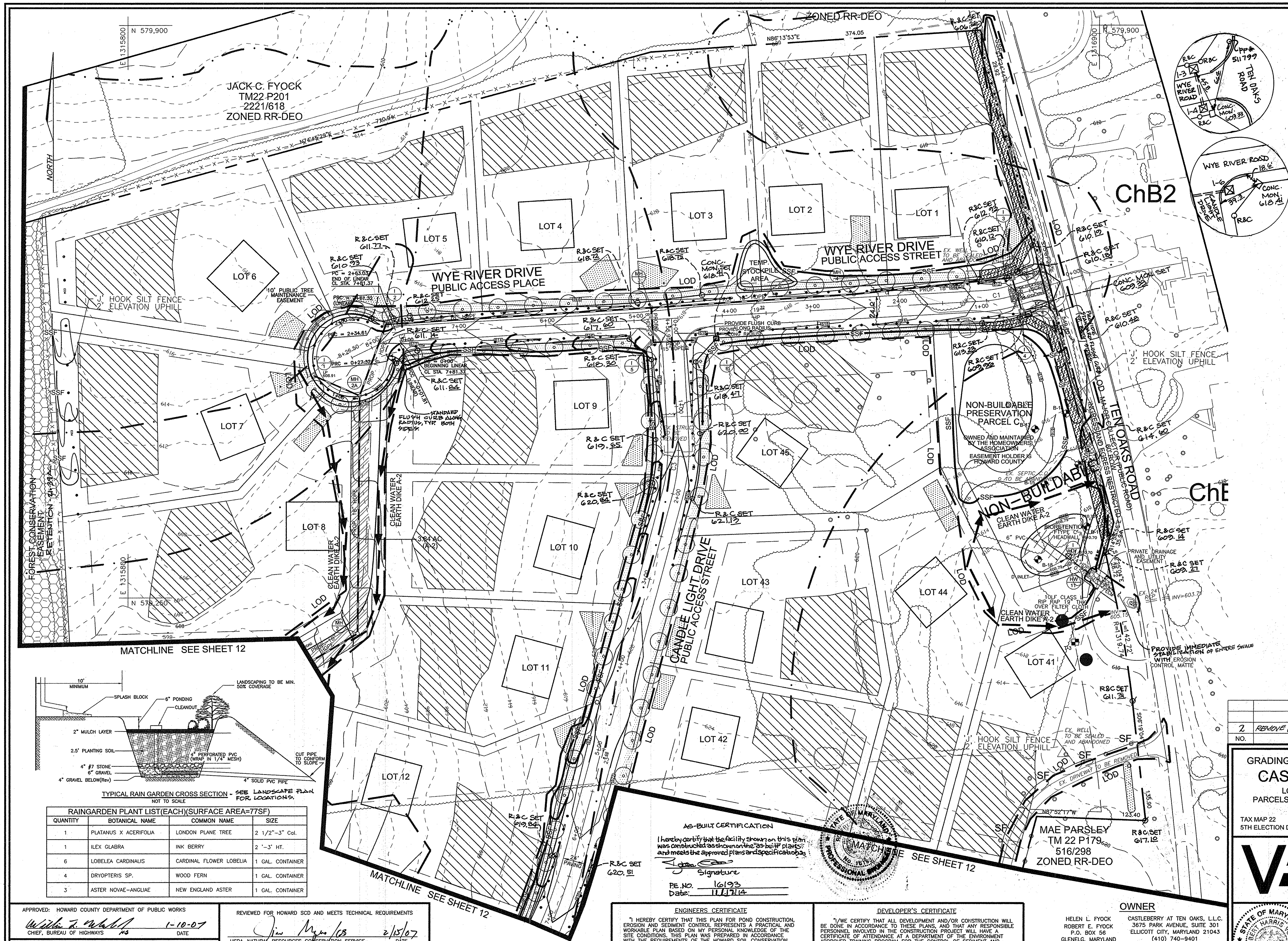
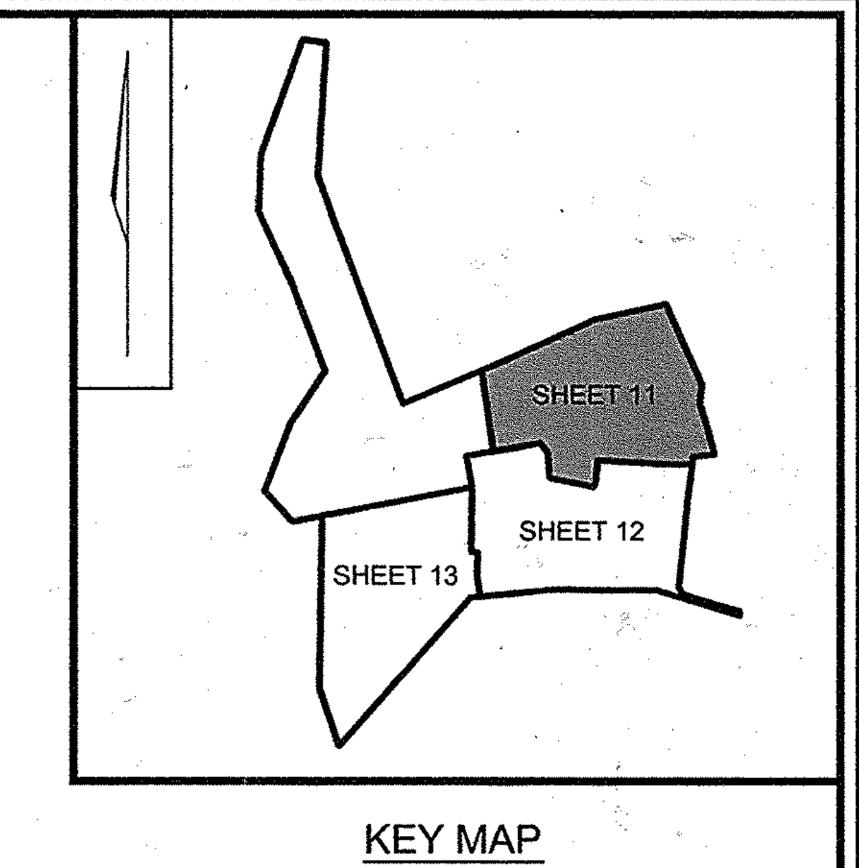
AS-BUILT 11/17/14

F-06-130





KEY MAP
NOT TO SCALE

LEGEND

—202—	EXISTING 2 FT CONTOUR
—200—	EXISTING 10 FT CONTOUR
[202]	PROPOSED 2 FT CONTOUR
[200]	PROPOSED 10 FT CONTOUR
—SSF—	SUPER SILT FENCE
LOD	LIMIT OF DISTURBANCE
	EXISTING TREELINE
	PROPOSED TREELINE
	EARTH DIKE
	PROPOSED STREET TREE
	EROSION CONTROL MATTING
	FOREST CONSERVATION SIGN LOCATION
	PROPOSED TREE MAINTENANCE EASEMENT
	NO WOODY VEGETATION BUFFER
	PRIVATE SEPTIC EASEMENT
	PRIVATE WELL AREA
	USE-IN-COMMON ACCESS EASEMENT
	AREA OF 15 TO 24.9 PERCENT SLOPES
	AREA OF 25 PERCENT OR GREATER SLOPES
	FOREST CONSERVATION EASEMENT (RETENTION)
SCE	STABALIZED CONSTRUCTION ENTRANCE
	100 YEAR FLOODPLAIN
	RAIN GARDEN - SEE SHEET 14 OF 23 TYP. OF 6.
	10' PRIVATE SIGN & FENCE EASEMENT
	AREA DEDICATED TO HOWARD COUNTY FOR RIGHT OF WAY
	DRAINAGE AND UTILITY EASEMENT
	10' PUBLIC TREE MAINTENANCE EASEMENT
ECM	EROSION CONTROL MATTE FOR IMMEDIATE STABILIZATION.

TYPICAL RAIN GARDEN CROSS SECTION - SEE LANDSCAPE PLAN FOR LOCATIONS.
NOT TO SCALE

RAINGARDEN PLANT LIST(EACH)(SURFACE AREA=77SF)			
QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE
1	PLATANUS X ACERIFOLIA	LONDON PLANE TREE	2 1/2"–3" Cal.
1	ILEX GLABRA	INK BERRY	2 '–3' HT.
6	LOBELEA CARDINALIS	CARDINAL FLOWER LOBELIA	1 GAL. CONTAINER
4	DRYOPTERIS SP.	WOOD FERN	1 GAL. CONTAINER
3	ASTER NOVAE–ANGLIAE	NEW ENGLAND ASTER	1 GAL. CONTAINER

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 plans and specifications.

[signature] Signature

P.E. NO. 16193
Date: 11/17/14

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

[signature] 1-10-07
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[signature] 1/24/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

[signature] 3/2/07
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

[signature] 2/15/07
USDA–NATURAL RESOURCES CONSERVATION SERVICE — DATE

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

[signature] 2/15/07
HOWARD SCD — DATE

ENGINEERS CERTIFICATE

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

[signature] 1/2/07
ROBERT H. VOGEL, PE #16193 — DATE

DEVELOPER'S CERTIFICATE

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

Michael Pfau 1/2/07
DATE

OWNER

HELEN L. FYOCK
ROBERT E. FYOCK
P.O. BOX 56
GLENELG, MARYLAND

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DEVELOPER

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(410) 740–9401

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

USDA–NATURAL RESOURCES CONSERVATION SERVICE — DATE

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

HOWARD SCD — DATE

NO.	REVISION	DATE
2	REMOVE CONTROL DEVICE CANDLE LIGHT DRIVE	3/28/11

GRADING, SEDIMENT AND EROSION CONTROL PLAN

CASTLEBERRY AT TEN OAKS

LOTS 1 - 45, NON-BUILDABLE PRESERVATION
PARCELS A, C, D, E & BUILDABLE PRESERVATION PARCEL B

TAX MAP 22 GRID 20
5TH ELECTION DISTRICT

PARCEL 60, LOTS 6 & 7 KEN WARFIELD SUBDIVISION, AND P/O PARCEL 90
HOWARD COUNTY, MARYLAND

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STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE #16193

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DATE:	DECEMBER, 2006
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DPZ REF:
S-01-11, P-05-04

AS-BUILT 11/17/14

F-06-130

MATCHLINE SEE SHEET 11

MATCHLINE A-A THIS SHEET

MATCHLINE SEE SHEET 13

MATCHLINE SEE SHEET 11

MATCHLINE SEE SHEET 11

NORTH

FOREST CONSERVATION EASEMENT 2 RETENTION = 21.39 AC.

BUILDABLE PRESERVATION PARCEL B 38.22 AC. PRIVATELY OWNED AND MAINTAINED EASEMENT HOLDERS ARE HOWARD COUNTY AND THE HOMEOWNERS ASSOCIATION

NON-BUILDABLE PRESERVATION PARCEL A OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION ! EASEMENT HOLDER IS HOWARD COUNTY AND H.O.A.

FOREST CONSERVATION EASEMENT 1 RETENTION: 3.44 AC.

PROVIDE IMMEDIATE STABILIZATION WITH EROSION CONTROL MATING.

PRIVATE STORMWATER MANAGEMENT, ACCESS, AND UTILITY EASEMENT

4.05 AC (A-2) CLEAN WATER EARTH DIKE A-2(2)

2.51 AC (A-2)

5.41 AC (A-2)

4.58 AC (A-2)

5.66 AC (A-2)

ChB2

MICROPOOL EXTENDED DETENTION FACILITY #1
HAZARD CLASS 'A'
PRIVATELY OWNED AND MAINTAINED
10 YR WSEL= 590.19
100 YR WSEL= 591.78
WQv (WET) WSEL= 587.25
CPv WSEL= 590.10

SEDIMENT BASIN 1 DATA
EX. DRAINAGE AREA: 10.36 AC
DEV. DRAINAGE AREA: 10.36 AC
TOTAL STORAGE REQUIRED: 37,296 CF
TOTAL STORAGE PROVIDED: 74,052 CF
WET STORAGE ELEVATION: 584.80–588.20 (3.4')
DRY STORAGE ELEVATION: 588.20–589.70 (1.5')
CREST ELEVATION: 590.10
BOTTOM ELEV: 587.50
CLEANOUT ELEVATION: 587.60
Q_1 PRE = 0.58 CFS
Q_1 POST = 0.57 CFS (ROUTED)

TEN OAKS ROAD

CANDLE LIGHT DR.

POINT BREEZE DRIVE

E 1316800
N 579,100

R&C SET 620.51

LOT 39

LOT 40

LOT 38 44,280 SF

LOT 37

LOT 36

LOT 35

LOT 34

LOT 33

LOT 32

LOT 31

LOT 30

LOT 16

LOT 15

LOT 14

LOT 13

ChA

ChG1C2

EARTH DIKE A-2

CLEAN WATER EARTH DIKE A-2

LOD CLEAN WATER EARTH DIKE A-2

POINT BREEZE DRIVE PUBLIC ACCESS PLACE

R&C SET 617.93 PROVIDE FLUSH CURB AT RADIUS, TYP. BOTH SIDES

R&C SET 615.11

R&C SET 615.32

R&C SET 615.29

R&C SET 615.25

R&C SET 620.32

R&C SET 621.44

R&C SET 621.27

R&C SET 605.78

R&C SET 606.42

CONC. MON. 615.79

CONC. MON. 615.29

R&C SET 615.79

STANDARD CURB INLET WITH BOTH GRATES

'J' HOOK SUPER SILT FENCE 2' ELEVATION UPHILL

'J' HOOK SILT FENCE 2' ELEVATION ON UPHILL

'J' HOOK SILT FENCEY 2' VERTICAL UPHILL

TEMP MOUNTABLE BERM

PROP. 24" HDPE

PROP. PRIVATE 10' DRAINAGE & UTILITY EASEMENT

PUBLIC 20' DRAINAGE & UTILITY EASEMENT

10' PUBLIC TREE MAINTENANCE EASEMENT

EX. DRIVEWAY TO BE REMOVED

EX. SEPTIC TO BE ABANDONED

EX. SEPTIC EASE. TO BE ABANDONED

HOUSE TO REMAIN

EX. WELL

MAE PARSLEY TM 22 P179 516/298 ZONED RR-DEO

HOMER D. PARSLEY TM 22 P127 372/385 ZONED RR-DEO

OAKWOOD FOREST PLAT 6577 LOT 3 ZONED RR-DEO

OAKWOOD FOREST PLAT 6577 LOT 2 ZONED RR-DEO

OAKWOOD FOREST PLAT 6577

SWALE DETAIL BEHIND LOTS 30-35
NOT TO SCALE

PROVIDE EROSION CONTROL MATTING

KEY MAP
NOT TO SCALE

SHEET 11
SHEET 12
SHEET 13

LEGEND

- EXISTING 2 FT CONTOUR
- EXISTING 10 FT CONTOUR
- PROPOSED 2 FT CONTOUR
- PROPOSED 10 FT CONTOUR
- SSF SUPER SILT FENCE
- LOD LIMIT OF DISTURBANCE
- EXISTING TREELINE
- PROPOSED TREELINE
- EARTH DIKE
- PROPOSED STREET TREE
- EROSION CONTROL MATTING
- FOREST CONSERVATION SIGN LOCATION
- PROPOSED TREE MAINTENANCE EASEMENT
- NO WOODY VEGETATION BUFFER
- PRIVATE SEPTIC EASEMENT
- PRIVATE WELL AREA
- USE-IN-COMMON ACCESS EASEMENT
- AREA OF 15 TO 24.9 PERCENT SLOPES
- AREA OF 25 PERCENT OR GREATER SLOPES
- FOREST CONSERVATION EASEMENT (RETENTION)
- WET LAND
- STABALIZED CONSTRUCTION ENTRANCE
- 100 YEAR FLOODPLAIN
- RAIN GARDEN - TYP. OF G.
- DRAINAGE AND UTILITY EASEMENT
- 10' PUBLIC TREE MAINTENANCE EASEMENT
- ECM EROSION CONTROL MATTE FOR IMMEDIATE STABILIZATION

NO.	REVISION	DATE
2	ADD SAFETY FENCE BETWEEN POND 1 AND POE	3-27-09

GRADING, SEDIMENT AND EROSION CONTROL PLAN

CASTLEBERRY AT TEN OAKS

LOTS 1 - 45, NON-BUILDABLE PRESERVATION PARCELS A, C, D, E & BUILDABLE PRESERVATION PARCEL B

TAX MAP 22 GRID 20
5TH ELECTION DISTRICT

PARCEL 60, LOTS 6 & 7 KEN WARFIELD SUBDIVISION, AND P/O PARCEL 90
HOWARD COUNTY, MARYLAND

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 1-10-07

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 1/31/07

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/2/07

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

USDA–NATURAL RESOURCES CONSERVATION SERVICE — DATE 2/15/07

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

HOWARD SCD — DATE 2/15/07

ENGINEERS CERTIFICATE

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

ROBERT H. VOGEL, PE #16193 — DATE 1/2/07

DEVELOPER'S CERTIFICATE

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

DATE 1/2/07

"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 PLANS AND SPECIFICATIONS."

ROBERT H. VOGEL, P.E. #16193 — DATE 11/17/14

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

MATCHLINE OWNER A-A THIS SHEET

HELEN L. FYOCK
ROBERT E. FYOCK
P.O. BOX 56
GLENELG, MARYLAND

CASTLEBERRY AT TEN OAKS, L.L.C.
3675 PARK AVENUE, SUITE 301
ELLICOTT CITY, MARYLAND 21043
(410) 740–9401

DEVELOPER

CASTLEBERRY AT TEN OAKS, L.L.C.
3675 PARK AVENUE, SUITE 301
ELLICOTT CITY, MARYLAND 21043
(410) 740–9401

STATE OF MARYLAND — ROBERT HARRIS VOGEL — NO. 16193 — PROFESSIONAL ENGINEER

ROBERT H. VOGEL, PE #16193

DESIGN BY:	RHV/LJT
DRAWN BY:	LJT
CHECKED BY:	RHV
DATE:	DECEMBER, 2006
SCALE:	1"=50'
W.O. NO.:	00-85.00

DPZ REF: S-01-11; P-05-04

SHEET 12 OF 23

AS-BUILT 11/17/14

F-06-130

LEGEND

- EXISTING 2 FT CONTOUR
- EXISTING 10 FT CONTOUR
- PROPOSED 2 FT CONTOUR
- PROPOSED 10 FT CONTOUR
- SUPER SILT FENCE
- LIMIT OF DISTURBANCE
- EXISTING TREELINE
- PROPOSED TREELINE
- EARTH DIKE
- PROPOSED STREET TREE
- EROSION CONTROL MATTING
- FOREST CONSERVATION SIGN LOCATION
- PROPOSED TREE MAINTENANCE EASEMENT
- NO WOODY VEGETATION BUFFER
- PRIVATE SEPTIC EASEMENT
- PRIVATE WELL AREA
- USE-IN-COMMON ACCESS EASEMENT
- AREA OF 15 TO 24.9 PERCENT SLOPES
- AREA OF 25 PERCENT OR GREATER SLOPES
- FOREST CONSERVATION EASEMENT (RETENTION)
- DRAINAGE AND UTILITY EASEMENT
- STABILIZED CONSTRUCTION ENTRANCE
- 100 YEAR FLOODPLAIN
- RAIN GARDEN
- WET LAND
- 10' PUBLIC TREE MAINTENANCE EASEMENT

MICROPOOL EXTENDED DETENTION FACILITY #2
HAZARD CLASS 'A'
PRIVATELY OWNED AND MAINTAINED
10 YR WSEL= 550.09
100 YR WSEL= 550.65
WQv (WET) WSEL= 548.38
CPv WSEL= 549.31

SEDIMENT BASIN-2 DATA
EX. DRAINAGE AREA: 2.00 AC
DEV. DRAINAGE AREA: 2.00 AC
TOTAL STORAGE REQUIRED: 7,200 CF
TOTAL STORAGE PROVIDED: 32,670 CF
WET STORAGE ELEVATION: 546.00-548.00 (2.0')
DRY STORAGE ELEVATION: 548.00-548.40 (0.40')
CREST ELEVATION: 549.40
BOTTOM ELEV: 548.20
CLEANOUT ELEVATION: 547.00
Q1 PRE= 0.27 CFS
Q1 POST= 0.33 CFS

E 1314300
N 578,600

E 1314300
N 578,000

HILDA Z. LINTHICUM SUBDIVISION LOT 3 PLAT 10426 ZONED RR-DEO

HILDA Z. LINTHICUM SUBDIVISION LOT 4 PLAT 10426 ZONED RR-DEO

LOT 20 · LOT 21 · LOT 19 · LOT 18 · LOT 28 · LOT 27 · LOT 24 · LOT 23 · LOT 22 1.49 AC · LOT 25 · LOT 26 · LOT 29 · LOT 17

POND 2 · POND 1

G1B2 · G1C3 · G1C2 · G1B2

R&C SET 575.32 · R&C SET 576.18 · R&C SET 572.79 · R&C SET 575.43 · R&C SET 587.52 · R&C SET 596.52

EARTH DIKE A-2 · CLEAN WATER EARTH DIKE A-2 · EARTH DIKE A-2

10' PUBLIC TREE MAINTENANCE EASEMENT

FOREST CONSERVATION EASEMENT RETENTION

100' STREAM BUFFER · 25' WETLAND BUFFER · WETLANDS

NON-BUILDABLE PRESERVATION PARCEL E
PRIVATELY OWNED AND MAINTAINED
EASEMENT HOLDERS ARE HOWARD COUNTY AND THE HOMEOWNERS ASSOCIATION

NON-BUILDABLE PRESERVATION PARCEL D
OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION
EASEMENT HOLDER IS HOWARD COUNTY

CANDLE LIGHT DRIVE · PUBLIC ACCESS PLACE

MATCHLINE SEE SHEET 12

E 1315600
N 578,800

'J' HOOK SUPER SILT FENCE 2' VERTICAL UPHILL

'J' HOOK SILT FENCE 2' ELEVATION UPHILL

CLEAN WATER EARTH DIKE A-2 TO DRAIN AWAY FROM FLUSH CURB ALONG RADIUS TO BOTH SIDES

EXIST. STONE DRIVEWAY TO BE REMOVED · EXIST. BARN TO BE REMOVED · EX. HOUSE TO BE REMOVED · EX. SHED TO BE REMOVED · EX. GAZEBO TO BE REMOVED · EX. DECK · EX. HOUSE TO BE REMOVED · EX. WELL TO BE SEALED AND ABANDONED · EX. WELL TO BE SEALED AND ABANDONED · EX. SEPTIC TO BE REMOVED · EXIST. WATER LINE TO BE CUT AND CAPPED · EX. WELL TO BE SEALED AND ABANDONED · EX. FENCE TO BE REMOVED

S49°08'36"E 1147.16

SHEET 11 · SHEET 12 · SHEET 13

KEY MAP
NOT TO SCALE

NO.	REVISION	DATE

GRADING, SEDIMENT AND EROSION CONTROL PLAN
CASTLEBERRY AT TEN OAKS

LOTS 1 - 45, NON-BUILDABLE PRESERVATION PARCELS A, C, D, E & BUILDABLE PRESERVATION PARCEL B

TAX MAP 22 GRID 20
5TH ELECTION DISTRICT

PARCEL 60, LOTS 6 & 7 KEN WARFIELD SUBDIVISION, AND P/O PARCEL 90
HOWARD COUNTY, MARYLAND

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 1-10-07

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 1/17/07
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/2/07

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS
USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE 2/15/07
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT
HOWARD SCD — DATE 2/15/07

ENGINEERS CERTIFICATE
"I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."
ROBERT H. VOGEL, PE #16193 — DATE 1/2/07

DEVELOPER'S CERTIFICATE
"I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."
Michael Flynn — DATE 1/2/07

"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 PLANS AND SPECIFICATIONS."
ROBERT H. VOGEL, P.E. #16193 — DATE 11/17/14
CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ONSITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ONSITE SITE INSPECTION AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERING STANDARDS CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

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STATE OF MARYLAND · ROBERT HARRIS VOGEL · No. 16193 · PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE #16193

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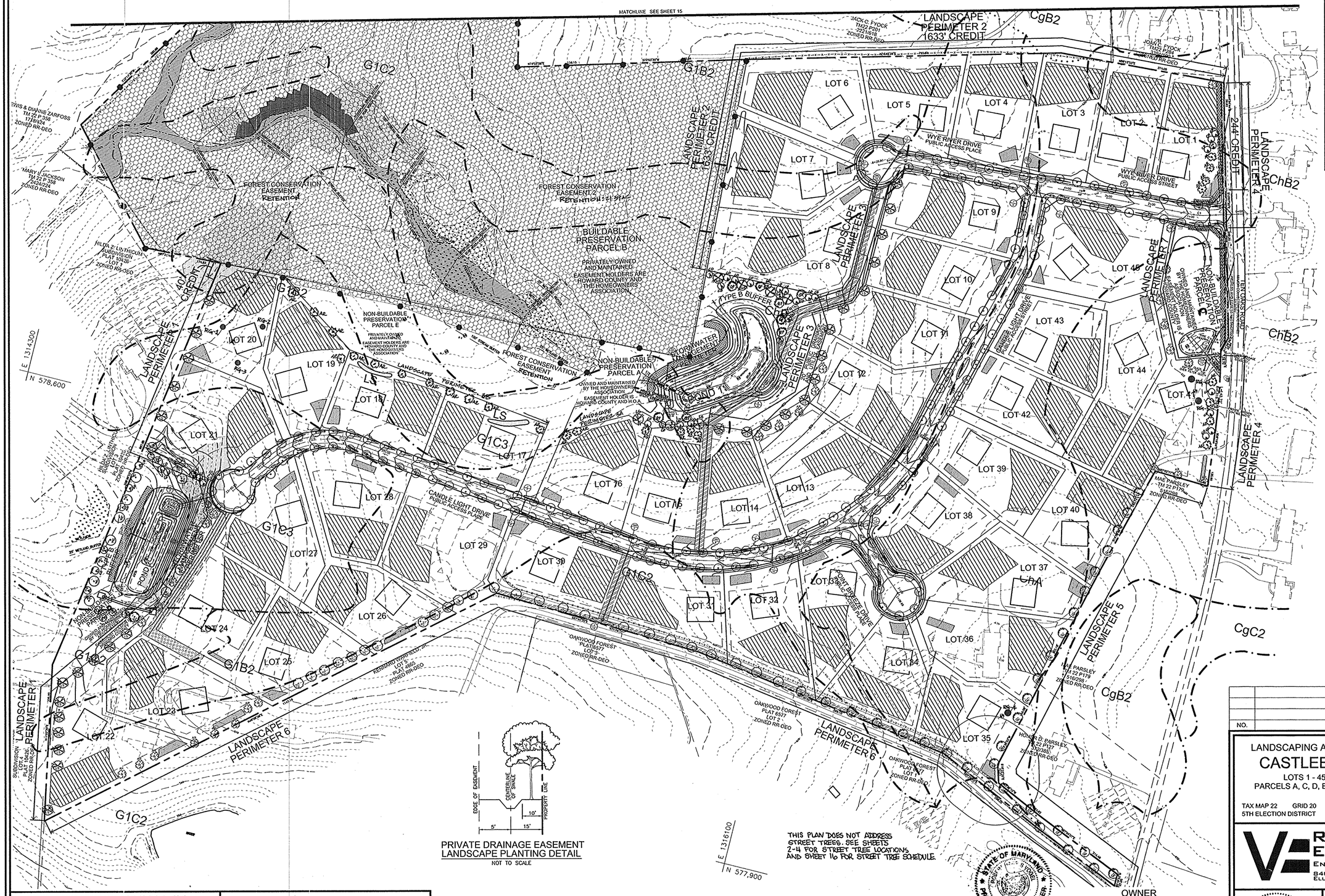
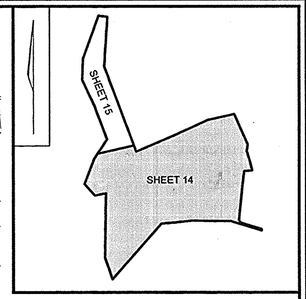
SHEET 13 OF 23

AS-BUILT 11/17/14

F-06-130

MATCHLINE SEE SHEET 15





KEY MAP
NOT TO SCALE

LEGEND

- EXISTING 2 FT CONTOUR
- EXISTING 10 FT CONTOUR
- PROPOSED 2 FT CONTOUR
- PROPOSED 10 FT CONTOUR
- SUPER SILT FENCE
- LIMIT OF DISTURBANCE
- EXISTING TREELINE
- PROPOSED TREELINE
- EARTH DIKE
- PROPOSED STREET TREE
- FOREST CONSERVATION SIGN LOCATION
- PROPOSED TREE MAINTENANCE EASEMENT
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- PRIVATE SEPTIC EASEMENT
- PRIVATE WELL AREA
- USE-IN-COMMON ACCESS EASEMENT
- AREA OF 15 TO 24.9 PERCENT SLOPES
- AREA OF 25 PERCENT OR GREATER SLOPES
- FOREST CONSERVATION EASEMENT (RETENTION)
- WET LAND
- 100 YEAR FLOODPLAIN
- DRAINAGE AND UTILITY EASEMENT

PRIVATE DRAINAGE EASEMENT
LANDSCAPE PLANTING DETAIL
NOT TO SCALE

THIS PLAN DOES NOT ADDRESS STREET TREES. SEE SHEETS 2-4 FOR STREET TREE LOCATIONS AND SHEET 16 FOR STREET TREE SCHEDULE.

NO.	REVISION	DATE

LANDSCAPING AND FOREST CONSERVATION PLAN

CASTLEBERRY AT TEN OAKS

LOTS 1 - 45, NON-BUILDABLE PRESERVATION PARCELS A, C, D, E & BUILDABLE PRESERVATION PARCEL B

TAX MAP 22 GRID 20
5TH ELECTION DISTRICT

PARCEL 60, LOTS 6 & 7 KEN WARFIELD SUBDIVISION, AND P/O PARCEL 90
HOWARD COUNTY, MARYLAND

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APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 1-10-07

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 1/4/07
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/2/07

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS
USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT — DATE
HOWARD SCD — DATE

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	SOIL GROUP
ChA	CHESTER SILT LOAM, 0 TO 3 PERCENT SLOPES	B
ChB2	CHESTER SILT LOAM, 3 TO 8 PERCENT SLOPES	B
GlB2	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	B
GlC2	GLENELG LOAM, 8 TO 15 PERCENT SLOPES	B
GlC3	GLENELG LOAM, 8 TO 15 PERCENT SLOPES	B

NOTE: HOWARD SOIL SURVEY PAGE 17.

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — PROFESSIONAL ENGINEER
11/17/14

OWNER
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ROBERT E. FYOCK
P.O. BOX 56
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DEVELOPER
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12/15/06
LARRY J. THOMPSON
DNR QUALIFIED PROFESSIONAL

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE #16193

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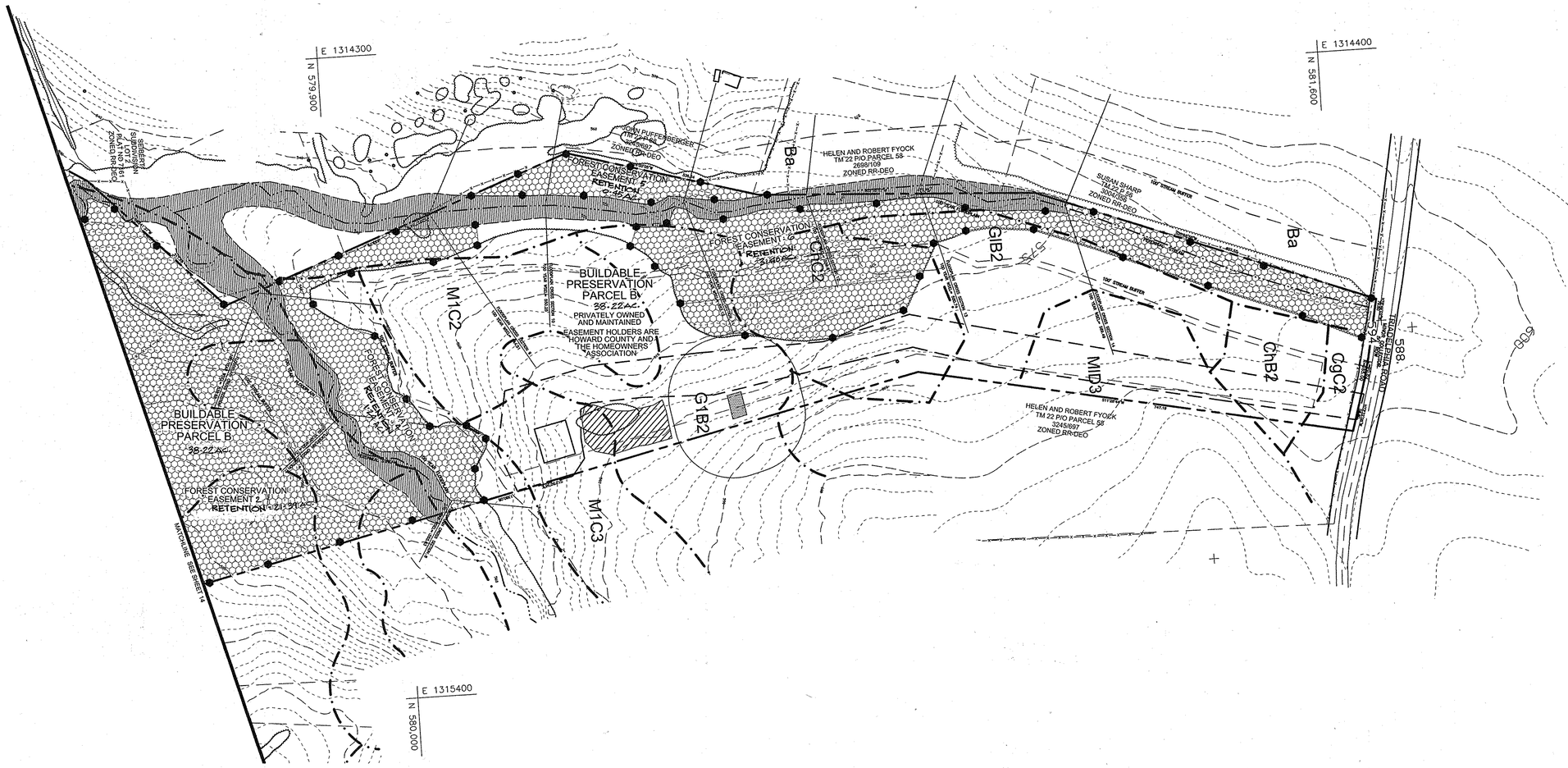
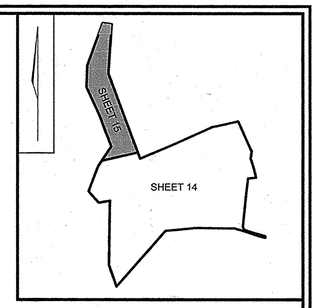
S-01-11, P-05-04

14 SHEET OF 23

AS-BUILT 11/17/14

F-06-130





KEY MAP
NOT TO SCALE

LEGEND

- 202 — EXISTING 2 FT CONTOUR
- 200 — EXISTING 10 FT CONTOUR
- 202 — PROPOSED 2 FT CONTOUR
- 200 — PROPOSED 10 FT CONTOUR
- SSF — SUPER SILT FENCE
- LOD — LIMIT OF DISTURBANCE
- EXISTING TREELINE
- PROPOSED TREELINE
- EARTH DIKE
- PROPOSED STREET TREE
- FOREST CONSERVATION SIGN LOCATION
- PROPOSED TREE MAINTENANCE EASEMENT
- NO WOODY VEGETATION BUFFER
- PRIVATE SEPTIC EASEMENT
- PRIVATE WELL AREA
- USE-IN-COMMON ACCESS EASEMENT
- AREA OF 15 TO 24.9 PERCENT SLOPES
- AREA OF 25 PERCENT OR GREATER SLOPES
- FOREST CONSERVATION EASEMENT (RETENTION)
- WET LAND
- 100 YEAR FLOODPLAIN
- DRAINAGE AND UTILITY EASEMENT

FOREST CONSERVATION WORKSHEET

NET TRACT AREA:

A. TOTAL TRACT AREA	99.58 AC
B. AREA WITHIN 100 YEAR FLOODPLAIN	2.18 AC
C. NET TRACT AREA	97.40 AC

LAND USE CATEGORY

ARA	MDR	IDA	HDR	MPD	CIA
0	1	0	0	0	0

D. AFFORESTATION THRESHOLD	20% X D = 19.48 AC
E. CONSERVATION THRESHOLD	25% X D = 24.35 AC

EXISTING FOREST COVER:

F. EXISTING FOREST COVER (EXCLUDING FLOODPLAIN) =	40.63 AC
G. AREA OF FOREST ABOVE CONSERVATION THRESHOLD =	16.28 AC

BREAK EVEN POINT:

H. BREAK EVEN POINT =	27.61 AC
I. CLEARING PERMITTED WITHOUT MITIGATION =	13.02 AC

PROPOSED FOREST CLEARING:

J. TOTAL AREA OF FOREST TO BE CLEARED =	13.02 AC
K. TOTAL AREA OF FOREST TO BE RETAINED =	27.61 AC

PLANTING REQUIREMENTS:

L. REFORESTATION FOR CLEARING ABOVE CONSERVATION THRESHOLD =	0.00 AC
M. REFORESTATION FOR CLEARING BELOW CONSERVATION THRESHOLD =	0.00 AC
N. CREDIT FOR RETENTION ABOVE CONSERVATION THRESHOLD =	0.00 AC
P. TOTAL REFORESTATION REQUIRED =	0.00 AC
Q. TOTAL AFFORESTATION REQUIRED =	0.00 AC
R. TOTAL PLANTING REQUIRED =	0.00 AC

NOTES

1. FOREST CONSERVATION OBLIGATION WILL BE FULFILLED BY THE RETENTION OF 27.61 ACRES OF FOREST ONSITE.

FOREST CONSERVATION EASEMENT TABLE	
FOREST CONSERVATION EASEMENT 1 RETENTION	0.72 AC.
FOREST CONSERVATION EASEMENT 2 RETENTION	21.39 AC.
FOREST CONSERVATION EASEMENT 3 RETENTION	0.41AC.
FOREST CONSERVATION EASEMENT 4 RETENTION	1.24 AC.
FOREST CONSERVATION EASEMENT 5 RETENTION	0.45 AC.
FOREST CONSERVATION EASEMENT 6 RETENTION	3.40 AC.
TOTAL RETENTION	27.61 AC.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 1-10-07

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 1/10/07

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 1/9/07

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

USDA–NATURAL RESOURCES CONSERVATION SERVICE — DATE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT — DATE 6/27

HOWARD SCD — DATE

SOILS LEGEND		
SYMBOL	NAME / DESCRIPTION	SOIL GROUP
ChA	CHESTER SILT LOAM, 0 TO 3 PERCENT SLOPES	B
ChB2	CHESTER SILT LOAM, 3 TO 8 PERCENT SLOPES	B
GIB2	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	B
GIC2	GLENELG LOAM, 8 TO 15 PERCENT SLOPES	B
GIC3	GLENELG LOAM, 8 TO 15 PERCENT SLOPES	B

NOTE: HOWARD SOIL SURVEY PAGE 17.

11/17/14

STATE OF MARYLAND — ROBERT HARRISON VOGEL — No. 16193 — PROFESSIONAL ENGINEER

OWNER

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ROBERT E. FYOCK
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12/15/06
LARRY V. THOMSON
DULY QUALIFIED PROFESSIONAL

DEVELOPER

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(410) 740-9401

NO.	REVISION	DATE

LANDSCAPING AND FOREST CONSERVATION PLAN

CASTLEBERRY AT TEN OAKS

LOTS 1 - 45, NON-BUILDABLE PRESERVATION PARCELS A, C, D, E & BUILDABLE PRESERVATION PARCEL B

TAX MAP 22 GRID 20
5TH ELECTION DISTRICT

PARCEL 60, LOTS 6 & 7 KEN WARFIELD SUBDIVISION, AND P/O PARCEL 90
HOWARD COUNTY, MARYLAND

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STATE OF MARYLAND — ROBERT HARRISON VOGEL — No. 16193 — PROFESSIONAL ENGINEER

ROBERT H. VOGEL, PE #16193

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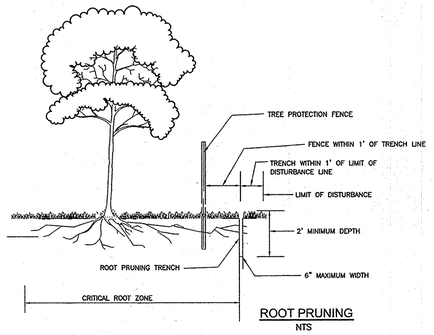
SHEET 15 OF 23

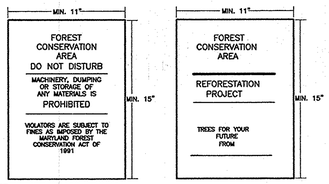
AS-BUILT 11/17/14

F-06-130



ROOT PRUNING
NTS

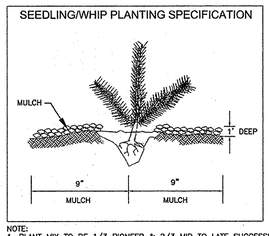
NOTES:
1. RETENTION AREAS TO BE ESTABLISHED AS PART OF THE FOREST CONSERVATION PLAN REVIEW PROCESS.
2. BOUNDARIES OF RETENTION AREAS TO BE STAKED, FLAGGED AND/OR FENCED PRIOR TRENCHING.
3. EXACT LOCATION OF TRENCH SHOULD BE IDENTIFIED.
4. TRENCH SHOULD BE IMMEDIATELY BACKFILLED WITH SOIL REMOVED OR ORGANIC SOIL.
5. ROOTS SHOULD BE CLEANLY CUT USING VIBRATORY KNIFE OR OTHER ACCEPTABLE EQUIPMENT.



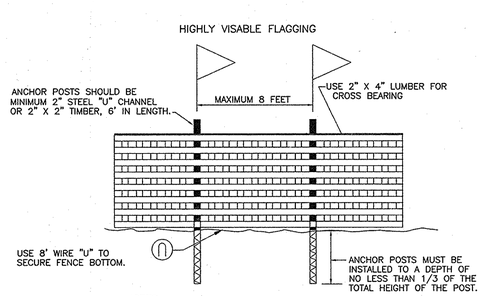
NOTE:
1. BOTTOM OF SIGNS TO BE HIGHER THAN TOP OF TREE PROTECTION FENCE.
2. SIGNS TO BE PLACED AT A MAXIMUM SPACING OF 50–100 FEET. CONDITIONS ON–SITE AFFECTING VISIBILITY MAY WARRANT PLACING SIGNS CLOSER OR FARTHER APART.
3. ATTACHMENT OF SIGNS TO TREES IS PROHIBITED.

SEQUENCE OF CONTRUCTION-FOREST CONSERVATION

1. PRECONSTRUCTION MEETING /SITE WALK WITH CONTRACTORS AND OTHER RESPONSIBLE PARTIES TO DEFINE PROTECTION MEASURES TO BE UTILIZED AND TO POINT OUT PARTICULAR TREES TO BE SAVED.
2. STAKE OUT LIMIT OF DISTURBANCE AND TREE PROTECTION FENCING LOCATIONS.
3. INSTALL TREE PROTECTION FENCING; FENCING TO BE INSPECTED BY THE PROJECT ENGINEER OR THE PROJECT ECOLOGIST AND HOWARD COUNTY PLANNING AND ZONING.
4. PROCEED WITH TREE REMOVAL AND SITE IMPROVEMENTS AS PER APPROVED SEDIMENT CONTROL PLAN – TO BE INSPECTED BY HOWARD COUNTY PLANNING AND ZONING.
5. TEMPORARY TREE PROTECTION DEVICES SHALL BE REMOVED AFTER ALL FINISHED GRADING AND UTILITY CONSTRUCTION HAS OCCURRED AND WITH APPROVAL FROM THE HOWARD COUNTY OFFICE OF PLANNING AND ZONING.



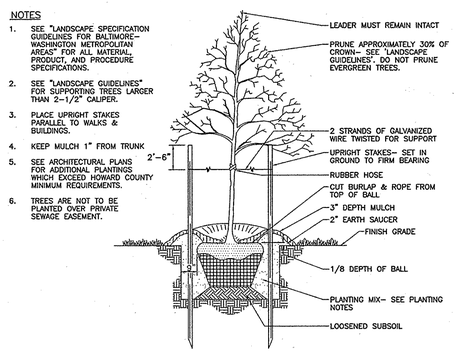
NOTE:
1. PLANT MIX TO BE 1/3 PIONEER & 2/3 MID TO LATE SUCCESSIONAL SPECIES
2. PLANT LARGER STOCK AND EVERGREENS AROUND PERIMETER TO PROTECT INTERIOR SMALLER STOCK
3. WHEN SHRUBS ARE SPECIFIED, PLANT THEM IN CLUSTERS
4. DO NOT PLANT TREES IN A GRID PATTERN



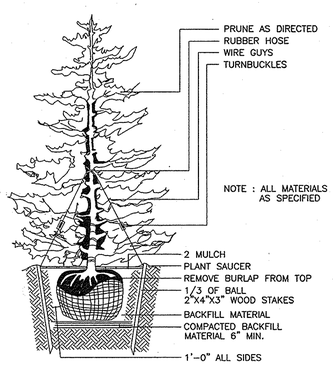
NOTES:
1. FOREST PROTECTION DEVICE ONLY.
2. RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
3. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
4. ROOF DAMAGE SHOULD BE AVOIDED.
5. PROTECTION SIGNAGE SHOULD BE USED.
6. DEVICE SHOULD BE MAINTAINED THROUGHOUT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

BLAZE ORANGE PLASTIC MESH

TYPICAL TREE PROTECTION FENCE DETAIL
NTS



TREE PLANTING AND STAKING
DECIDUOUS TREES UP TO 2–1/2" CALIPER
NOT TO SCALE



TYPICAL EVERGREEN TREE PLANTING DETAIL
NOT TO SCALE

LANDSCAPE SCHEDULE				
KEY	QUAN.	BOTANICAL NAME	SIZE	REM.
LS	40	LIQUIDAMBAR STYRACIFLUA AMERICAN SWEETGUM	2 1/2"–3" Cal.	B & B
QP	40	QUERCUS PALUSTRIS PIN OAK	2 1/2"–3" Cal.	B & B
TC	40	TILIA CORDATA 'GREENSPIRE' LITTLELEAF LINDEN	2 1/2"–3" Cal.	B & B
AR	57	ACER RUBRUM 'OCTOBER GLORY' OCTOBER GLORY RED MAPLE	2 1/2"–3" Cal.	B & B
CO	48	CYPRESS OCYPARIS LEYLANDI LEYLAND CYPRESS	5' – 6' Ht.	B & B

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

SCHEDULE A PERIMETER LANDSCAPE EDGE										
CATEGORY	ADJACENT TO ROADWAYS	ADJACENT TO PERIMETER PROPERTIES								
Perimeter/Frontage Designation Landscape Type	4 B	1 A	2 A	3 A	5 A	6 A	7 A	3A A	3B X	
Linear Feet of Roadway Frontage/Perimeter	634'	1576'	1633'	1088'	1288'	2711'	409'	335'	101'	
Credit for Existing Vegetation (Yes, No, Linear Feet Describe below if needed)	Yes** 244'	Yes* 40'	Yes* 1633'	No	No	No	No	No	No	
Credit for Wall, Fence or Berm (Yes, No, Linear Feet Describe below if needed)	No	No	No	No	No	No	No	No	No	
Number of Plants Required										
Shade Trees	1:50 8	1:60 26	1:60 0	1:60 19	1:60 22	1:60 46	1:60 7	1:60 6	1:60 12	
Evergreen Trees	1:40 10	-	-	-	-	-	-	-	-	
Shrubs	-	-	-	-	-	-	-	-	-	
Number of Plants Provided										
Shade Trees	8	26	0	19	22	46	7	6	12	
Evergreen Trees	10	-	-	-	-	-	-	-	-	
Other Trees (2:1 Substitution)	-	-	-	-	-	-	-	-	-	
Shrubs (10:1 Substitution)	-	-	-	-	-	-	-	-	-	
Describe Plant Substitution Credits Below if needed)										

* Existing Woods to Remain ** Existing Shade Trees and Evergreen Trees to Remain

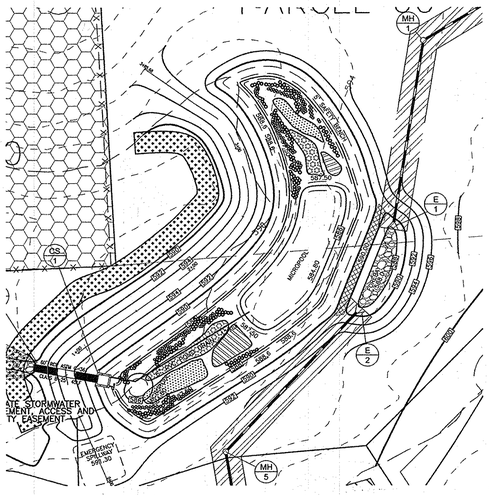
SCHEDULE D : STORMWATER MANAGEMENT AREA LANDSCAPING	
POND #1	
LINEAR FEET OF PERIMETER	816 LF
CREDIT FOR EXISTING VEGETATION (NO, YES AND LINEAR FEET)	N/A
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	N/A
NUMBER OF TREES REQUIRED SHADE TREES EVERGREEN TREES	 17 SHADE TREES 21 EVERGREEN TREES
NUMBER OF TREES PROVIDED SHADE TREES EVERGREEN TREES OTHER TREES (2:1 SUBSTITUTION)	 17 SHADE TREES 21 EVERGREEN TREES 0 TREES (0 SUBSTITUTION TREES)

SCHEDULE D : STORMWATER MANAGEMENT AREA LANDSCAPING	
POND #2	
LINEAR FEET OF PERIMETER	662 LF
CREDIT FOR EXISTING VEGETATION (NO, YES AND LINEAR FEET)	N/A
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	N/A
NUMBER OF TREES REQUIRED SHADE TREES EVERGREEN TREES	 14 SHADE TREES 17 EVERGREEN TREES
NUMBER OF TREES PROVIDED SHADE TREES EVERGREEN TREES OTHER TREES (2:1 SUBSTITUTION)	 14 SHADE TREES 17 EVERGREEN TREES 0 TREES (0 SUBSTITUTION TREES)

STREET TREE SCHEDULE					
KEY	QUAN.	BOTANICAL NAME	SIZE	REM.	ROAD LOCATION
	122	ACER RUBRUM 'OCTOBER GLORY' OCTOBER GLORY RED MAPLE	2 1/2"–3" CAL.	B & B	CANDLE LIGHT DRIVE
⊙	42	QUERCUS PALUSTRIS PIN OAK	2 1/2"–3" CAL.	B & B	WYE RIVER DRIVE
	12	TILIA CORDATA 'GREENSPIRE' LITTLELEAF LINDEN	2 1/2"–3" CAL.	B & B	POINT BREEZE DRIVE

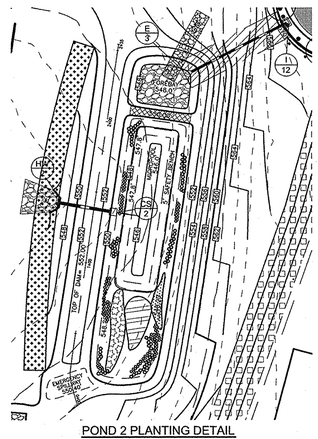
NOTES

1. PERIMETER LANDSCAPING SHALL BE IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL 3. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING SHALL BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF $54,400.00 FOR 177 SHADE TREES AND 48 EVERGREEN TREES.
2. FOREST CONSERVATION REQUIREMENTS PER SECTION 16.1202 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION MANUAL FOR THIS SUBDIVISION WILL BE FULFILLED BY THE RETENTION OF 27.61 AC ONSITE. SURETY IN THE AMOUNT OF $240,539.00 WILL BE PAID WITH THE DEVELOPER'S AGREEMENT.
3. FINANCIAL SURETY FOR THE REQUIRED TOTAL 176 STREET TREES WILL BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN AMOUNT OF $52,800.00.



POND 1 PLANTING DETAIL
SCALE: 1"=50'

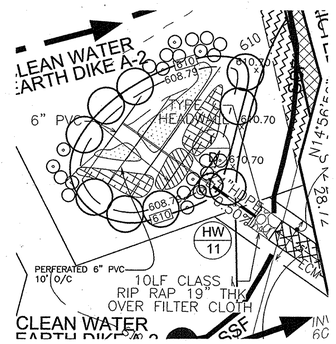
FOR SCHEDULED LANDSCAPING AROUND STORMWATER MANAGEMENT AREA SEE SHEET 14 OF 23.



POND 2 PLANTING DETAIL
SCALE: 1"=50'

EMERGENT PLANTING SCHEDULE POND 1 AND 2				
KEY	QUAN.	BOTANICAL NAME	SIZE	REMARKS
VA	156	Vallisneria americana Wild Celery	plug	2' oc
IP	165	Iris pseudacoris Yellow Water Iris	plug	1.5' oc
IV	165	Iris versicolor Blue Flag (wear gloves)	plug	1.5' oc
SL	33	Sagittaria latifolia Duck Potato (do not plant tubers)	plug	4' oc
CE	81	Cyperus esculentus Yellow Nut Sedge	plug	2' oc
NL	378	Nuphar luteum Spatterdock	plug	1.5' oc
CL	192	Carex lacustris Lake Sedge	plug	2' oc

ADD THREE INCHES OF TOPSOIL TO PLANTING AREA. STABILIZE WITH 40 POUNDS PER ACRE OF A HYDROSEED MIX (WET MIX AND MEADOW MIX) FROM SYLVA NATIVE NURSERY OR EQUAL.
ALL PLANT MATERIALS TO CONFORM TO THE MOST CURRENT AAN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH LCAMW SPECIFICATIONS.



BIO-RETENTION PLANTING DETAIL
SCALE: 1"=30'

BIORETENTION PLANTING SCHEDULE				
KEY	QTY	BOTANICAL NAME/ COMMON NAME	SIZE	ROOT
◯	8	NYSSA SYLVANICA BLACK GUM	1 1/2"–2" CAL	B & B
⊙	10	ILEX VERTICILLATA WINTERBERRY	2'–3' HEIGHT	B & B OR CONT
◯	12	ILEX GLABRA INKBERRY	18"–24" HEIGHT	B & B OR CONT
▨	100	VACCINIUM CORYMBOSUM HIGHBUSH BLUEBERRY	12"–15" HEIGHT	CONT
▨	200	LOBELIA CARDINALIS CARDINAL FLOWER	8"–12" HEIGHT	CONT
⋰	300	LIRIOPE SPICATA CREEPING LILY, TURF	2" POT	18" O/C

LARRY THOMPSON
DNR QUALIFIED PROFESSIONAL
12/15/06

OWNER

HELEN L. FYOCK
ROBERT E. FYOCK
P.O. BOX 56
GLENELG, MARYLAND

DEVELOPER

CASTLEBERRY AT TEN OAKS, L.L.C.
3675 PARK AVENUE, SUITE 301
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(410) 740–9401

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3675 PARK AVENUE, SUITE 301
ELLICOTT CITY, MARYLAND 21043
(410) 740–9401

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 1-10-07

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 1/11/07
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 1/16/07

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS
USDA–NATURAL RESOURCES CONSERVATION SERVICE — DATE
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT
HOWARD SCD — DATE

NO.	REVISION	DATE
1	REVISE LANDSCAPE SURETY AMOUNT	4-20-07

LANDSCAPING AND FOREST CONSERVATION PLAN

CASTLEBERRY AT TEN OAKS

LOTS 1 - 45, NON-BUILDABLE PRESERVATION
PARCELS A, C, D, E & BUILDABLE PRESERVATION PARCEL B

TAX MAP 22 GRID 20
5TH ELECTION DISTRICT

PARCEL 60, LOTS 6 & 7 KEN WARFIELD SUBDIVISION, AND P/O PARCEL 90
HOWARD COUNTY, MARYLAND

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

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE #16193

DESIGN BY:	RHV/LJT
DRAWN BY:	LJT
CHECKED BY:	RHV
DATE:	DECEMBER, 2006
SCALE:	1"=100'
W.O. NO.:	00-85.00

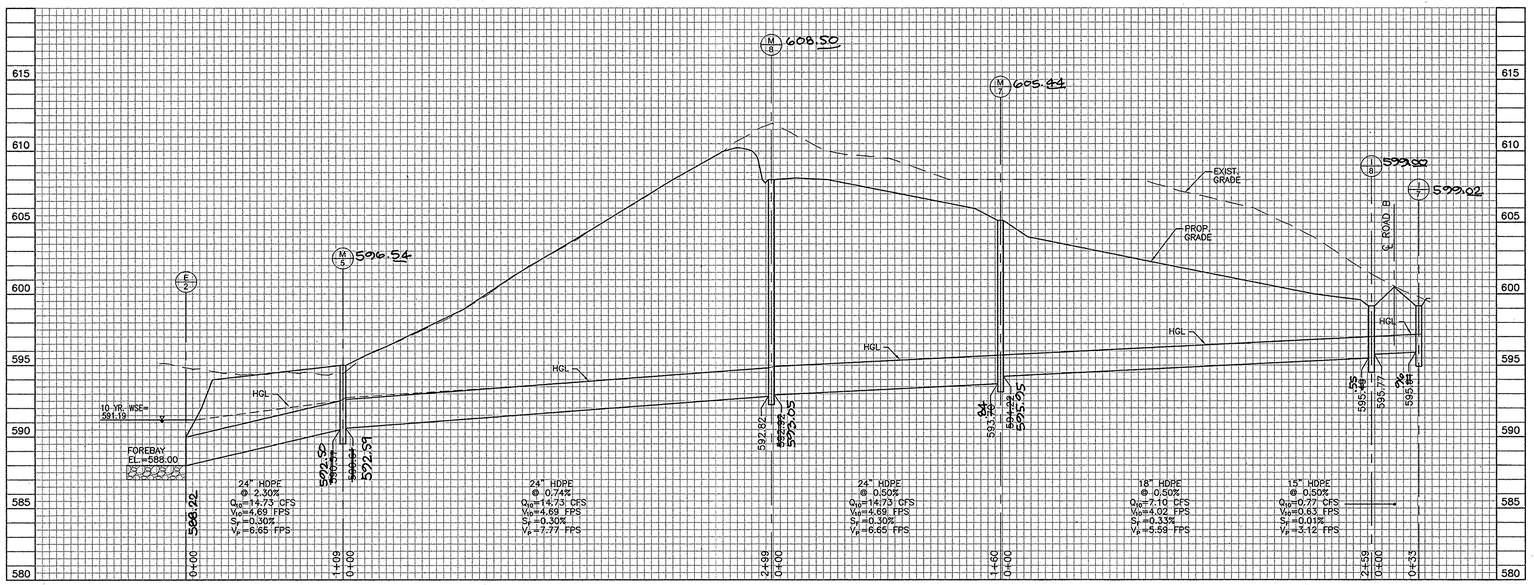
DPZ REF: S-01-11, P-05-04

SHEET 16 OF 23

11/17/14

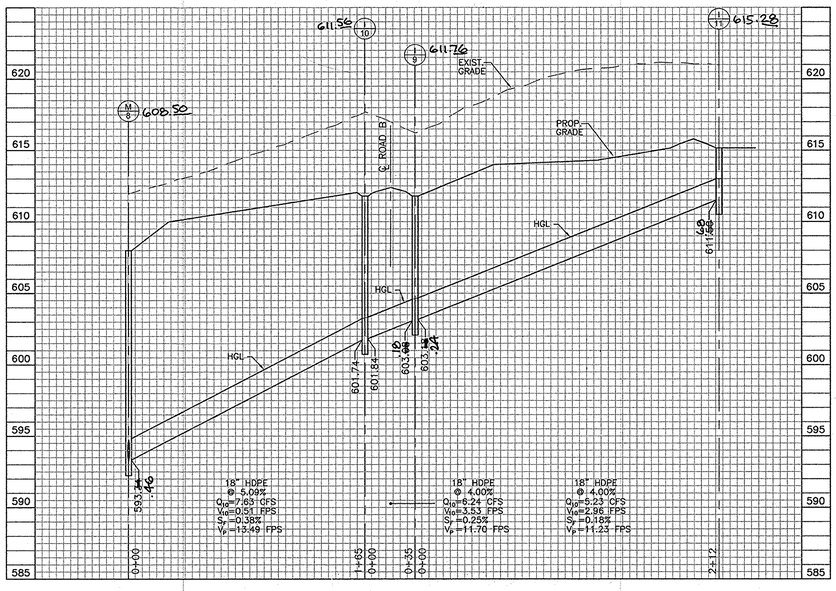
AS-BUILT 11/17/14

F-06-130



STORM DRAIN PROFILE

SCALE: HORZ: 1"=50'
VERT: 1"=5'



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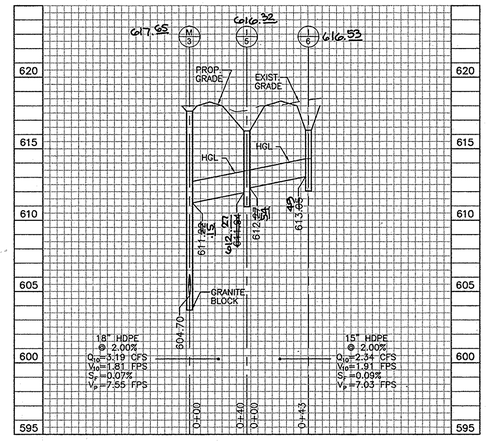

STORM DRAIN PROFILE

SCALE: HORZ: 1"=50'
VERT: 1"=5'

INLET SCHEDULE

NO.	TYPE	LOCATION NORTHING	LOCATION EASTING	TOP ELEV.*	INV. IN	INV. OUT	REMARKS
I-1	STANDARD PRECAST TYPE K	579,502	1,316,010	610.19	——	603.19	SD-4.12
I-2	STANDARD PRECAST TYPE K	579,555	1,316,089	611.77	601.64	601.51	SD-4.12
I-3	STANDARD PRECAST TYPE K	579,609	1,316,799	609.58	602.79	602.26	SD-4.12
I-4	STANDARD PRECAST TYPE K	579,573	1,316,810	609.59	——	606.49	SD-4.12
I-5	STANDARD PRECAST TYPE K	579,538	1,316,393	616.28	612.27	612.27	SD-4.12
I-6	STANDARD PRECAST TYPE K	579,541	1,316,436	616.38	——	613.38	SD-4.12
I-7	STANDARD PRECAST TYPE K	578,592	1,315,460	599.16	——	595.96	SD-4.12
I-8	STANDARD PRECAST TYPE K	578,559	1,315,456	599.16	595.77	595.58	SD-4.12
I-9	STANDARD PRECAST TYPE K	578,623	1,316,029	611.08	603.79	603.08	SD-4.12
I-10	STANDARD PRECAST TYPE K	578,590	1,316,035	611.38	601.84	601.74	SD-4.12
I-11	STANDARD PRECAST TYPE K	578,704	1,316,226	615.78	——	611.98	SD-4.12
I-12	STANDARD PRECAST TYPE K	578,428	1,314,774	598.02	——	592.84	SD-4.12
I-13	STANDARD PRECAST TYPE K	578,368	1,315,695	599.23	——	593.29	SD-4.12

*TOP ELEV.=SLOT OPENING ELEVATION FOR TYPE K INLETS

NOTES
1. FOR TYPE 'K' INLETS IN EXCESS OF 3'-6" OF DEPTH, PROVIDE MANHOLE STEPS FOR ACCESS.

STORM DRAIN MANHOLE SCHEDULE

NO.	TYPE	LOCATION NORTHING	LOCATION EASTING	TOP ELEV.	INV. IN	INV. OUT	REMARKS
M-1	STANDARD 4' PRECAST MANHOLE	579,149	1,315,960	592.70	592.95	592.80	G-5.12
M-2	STANDARD 4' PRECAST MANHOLE	579,209	1,316,059	593.47	593.37	593.27	G-5.12
M-3	STANDARD 4' PRECAST MANHOLE	579,580	1,316,392	617.65	603.92	603.82	G-5.12
M-4	STANDARD 4' PRECAST MANHOLE	579,598	1,316,621	616.45	606.33	606.23	G-5.12
M-5	STANDARD 4' PRECAST MANHOLE	578,861	1,315,821	595.00	592.82	592.72	G-5.12
	M-6 HAS BEEN REMOVED				593.05	592.50	
M-7	STANDARD 4' PRECAST MANHOLE	578,530	1,315,716	605.44	593.79	593.69	G-5.12
M-8	STANDARD 4' PRECAST MANHOLE	578,566	1,315,872	608.50	592.82	592.82	G-5.12
M-2A	STANDARD 4' PRECAST MANHOLE	579,479	1,316,062	610.69	600.34	600.14	G-5.12

600.30

STRUCTURE SCHEDULE

NO.	TYPE	LOCATION NORTHING	LOCATION EASTING	TOP ELEV.	INV. IN	INV. OUT	REMARKS
E-1	18" RCP END SECTION	579,022	1,315,939	——	——	595.50	SD-5.51 & SD-5.52
E-2	24" RCP END SECTION	578,959	1,315,912	——	——	592.72	SD-5.51 & SD-5.52
E-3	18" RCP END SECTION	578,390	1,314,703	——	——	598.09	SD-5.51 & SD-5.52
HW-1	TYPE 'A' HEADWALL	578,304	1,314,596	——	——	583.30	SD-5.11
HW-2	TYPE 'A' HEADWALL	578,921	1,315,682	——	——	594.40	SD-5.11
CS-1	CONTROL STRUCTURE	578,914	1,315,736	——	——	584.97	SEE SWM DETAILS
CS-2	CONTROL STRUCTURE	578,300	1,314,630	——	——	592.85	SEE SWM DETAILS

PIPE SCHEDULE

PIPE SIZE	TYPE	TOTAL LENGTH
15"	HDPE	114
18"	HDPE	2,269
24"	HDPE	568
48"	RCP-ASTM C-361	37
60"	RCP-ASTM C-361	45

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 1-10-07

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

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

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 1/4/07

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE

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

HOWARD SCD — DATE

STATE OF MARYLAND · ROBERT HARRIS VOGEL · No. 16193 · PROFESSIONAL ENGINEER

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 plans and specifications

PE. NO. 16193
Date: 11/17/14

NO.	REVISION	DATE

STORMDRAIN PROFILES

CASTLEBERRY AT TEN OAKS

LOTS 1 - 45, NON-BUILDABLE PRESERVATION
PARCELS A, C, D, E & BUILDABLE PRESERVATION PARCEL B

TAX MAP 22 GRID 20
5TH ELECTION DISTRICT

PARCEL 60, LOTS 6 & 7 KEN WARFIELD SUBDIVISION, AND P/O PARCEL 90
HOWARD COUNTY, MARYLAND

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STATE OF MARYLAND · ROBERT HARRIS VOGEL · No. 16193 · PROFESSIONAL ENGINEER
11/17/14
ROBERT H. VOGEL, PE #16193

DESIGN BY:	RHV/LJT
DRAWN BY:	LJT
CHECKED BY:	RHV
DATE:	DECEMBER, 2006
SCALE:	AS NOTED
W.O. NO.:	00-85.00

DPZ REF:
S-01-11, P-05-04

SHEET 17 OF 23

OWNER

HELEN L. FYOCK
ROBERT E. FYOCK
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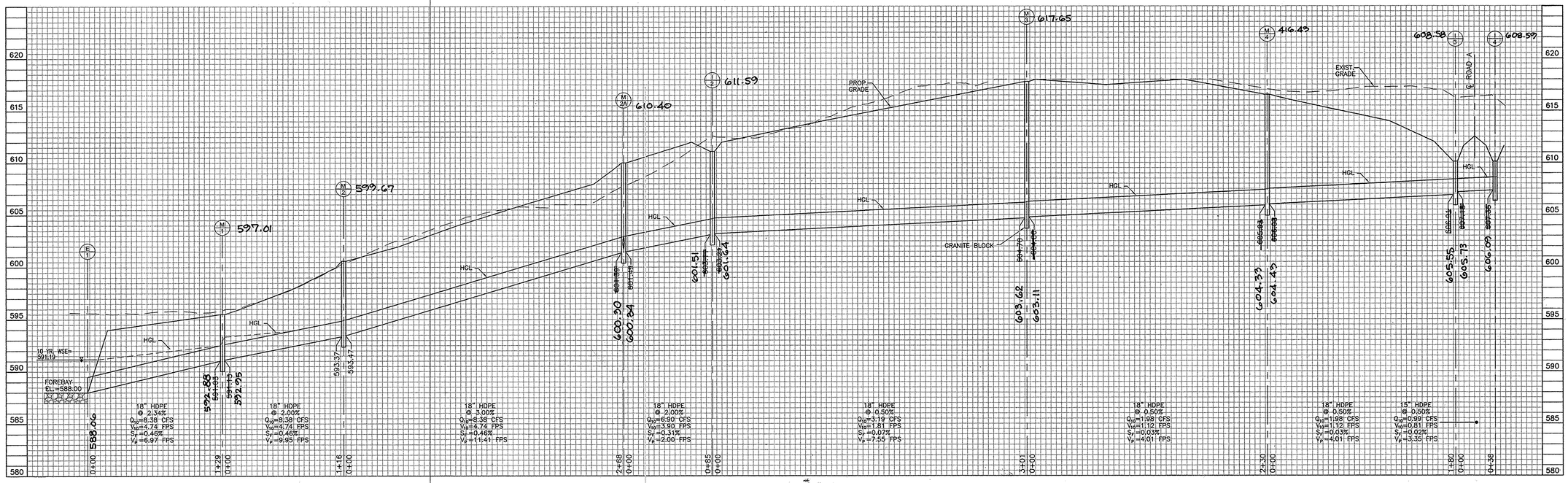
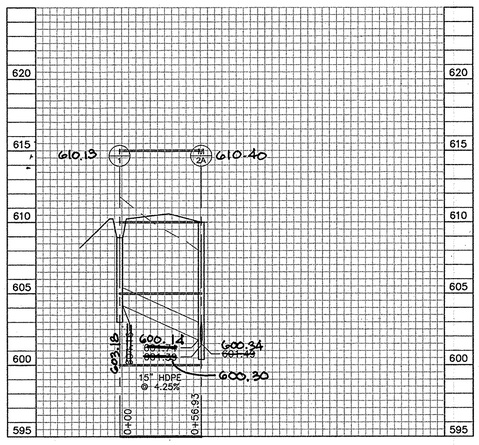
AS-BUILT 11/17/14

F-06-130



STORM DRAIN PROFILE

SCALE: HORZ: 1"=50'
VERT: 1"=5'



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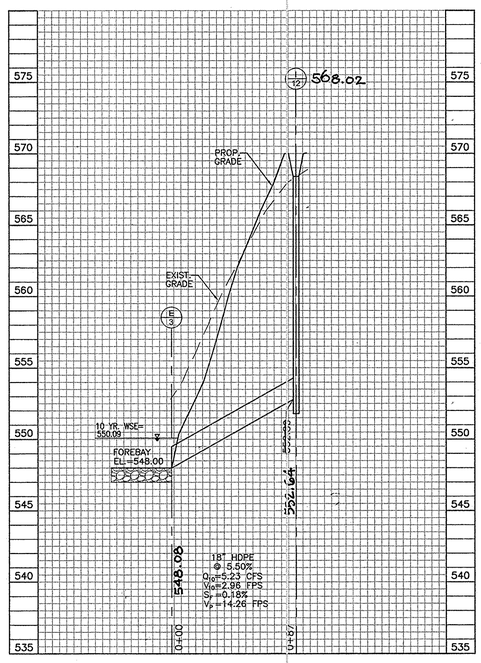

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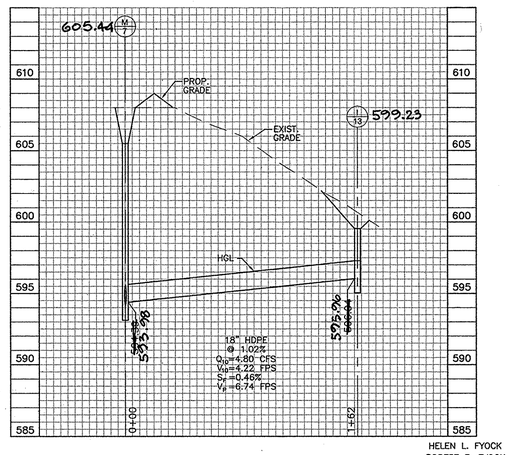

STORM DRAIN PROFILE

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APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 1-10-07

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 1/10/07

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/8/07

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

USDA—NATURAL RESOURCES CONSERVATION SERVICE — DATE

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

HOWARD SCD — DATE

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — PROFESSIONAL ENGINEER

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 plan and specifications

Signature

PE NO 16193

Date: 10/16/14

NO.	REVISION	DATE

STORMDRAIN PROFILES

CASTLEBERRY AT TEN OAKS

LOTS 1 - 45, NON-BUILDABLE PRESERVATION
PARCELS A, C, D, E & BUILDABLE PRESERVATION PARCEL B

TAX MAP 22 GRID 20
5TH ELECTION DISTRICT

PARCEL 60, LOTS 6 & 7 KEN WARFIELD SUBDIVISION, AND P/O PARCEL 90
HOWARD COUNTY, MARYLAND

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

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — PROFESSIONAL ENGINEER

ROBERT H. VOGEL, PE #16193

DESIGN BY:	RHV/LJT
DRAWN BY:	LJT
CHECKED BY:	RHV
DATE:	DECEMBER, 2006
SCALE:	AS NOTED
W.O. NO.:	00-85.00

DPZ REF: S-01-11, P-05-04

SHEET 18 OF 23

OWNER

HELEN L. FYOCK
ROBERT E. FYOCK
P.O. BOX 56
GLENELG, MARYLAND

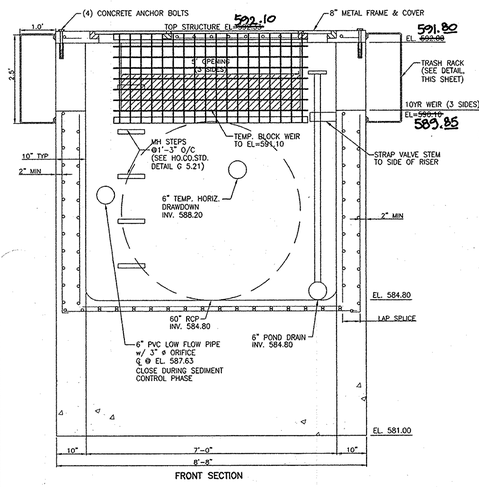
CASTLEBERRY AT TEN OAKS, L.L.C.
3675 PARK AVENUE, SUITE 301
ELLICOTT CITY, MARYLAND 21043
(410) 740-9401

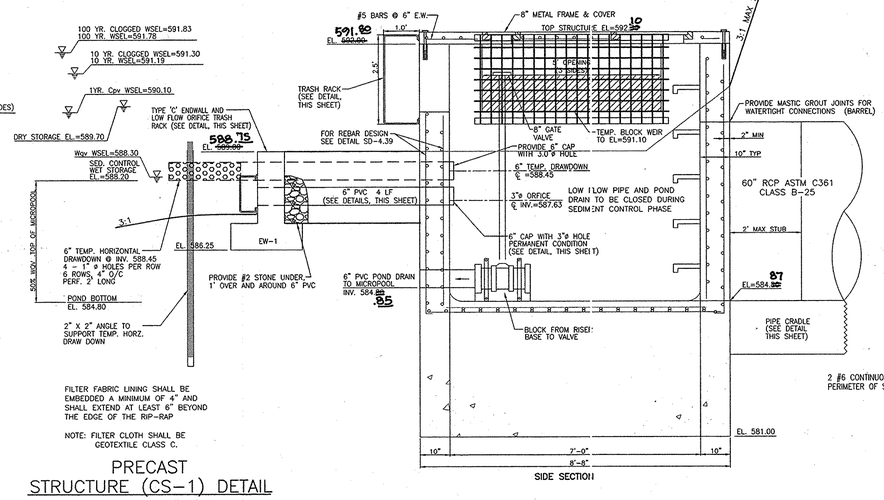
DEVELOPER

CASTLEBERRY AT TEN OAKS, L.L.C.
3675 PARK AVENUE, SUITE 301
ELLICOTT CITY, MARYLAND 21043
(410) 740-9401

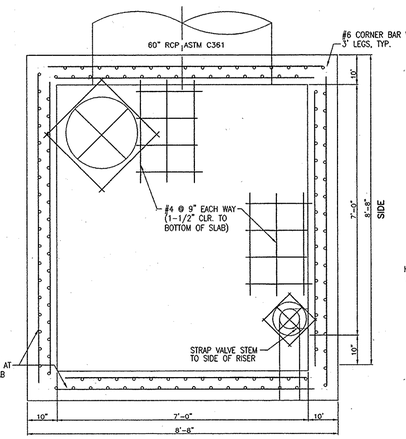
AS-BUILT 11/17/14

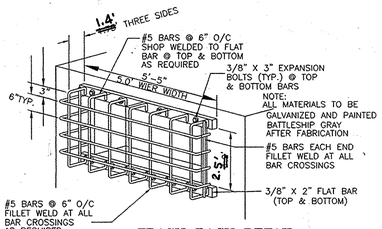
F-06-130



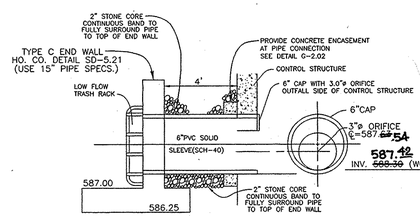


PRECAST
STRUCTURE (CS-1) DETAIL
SCALE: 1/2"=1'

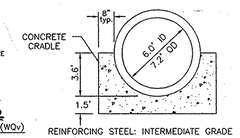




TRASH RACK DETAIL
SIDE VIEW
NOT TO SCALE

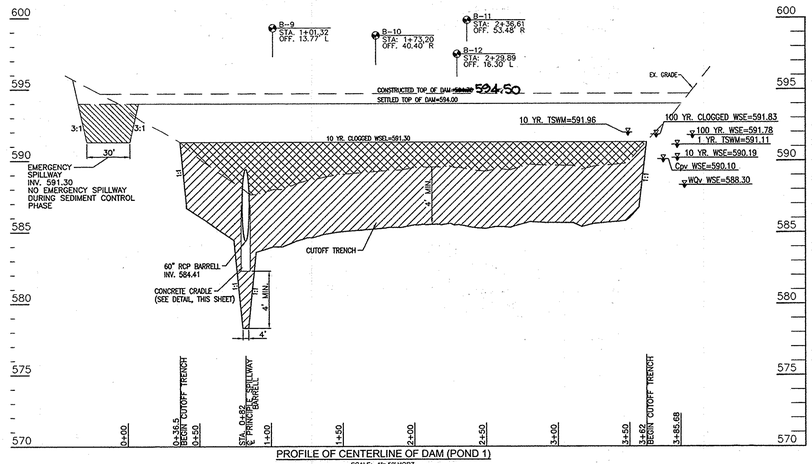


PERMANENT
ORIFICE DETAIL IN CONTROL STRUCTURE
NOT TO SCALE

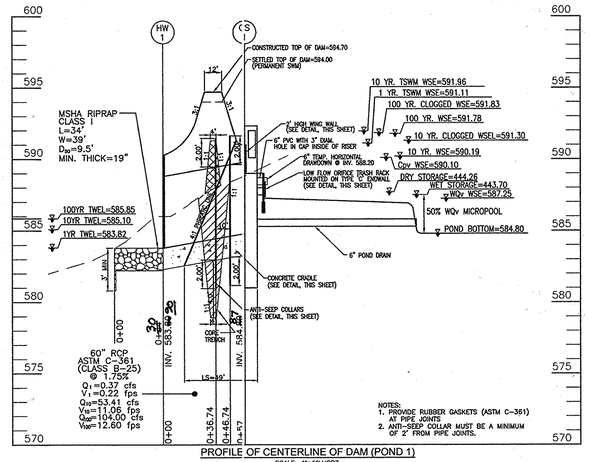


REINFORCING STEEL: INTERMEDIATE GRADE
CONCRETE: CLASS B
fc'=3,500 P.S.I.
fc=1,600 P.S.I.
(REF. TR-46)

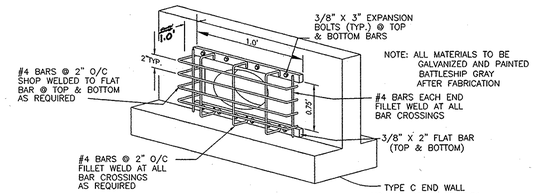
PIPE CRADLE DETAIL
NOT TO SCALE



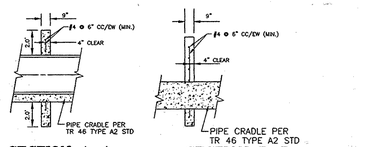
PROFILE OF CENTERLINE OF DAM (POND 1)
SCALE: 1"= 50' HORZ.
1"= 5' VERT.

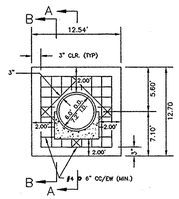


PROFILE OF CENTERLINE OF DAM (POND 1)
SCALE: 1"= 50' HORZ.
1"= 5' VERT.



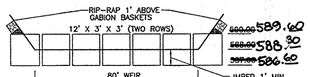
LOW FLOW ORIFICE
TRASH RACK DETAIL
NOT TO SCALE





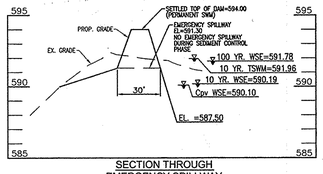
NOTES:
1. ANTI-SEEP COLLARS SHOULD BE PLACED WITHIN THE SATURATION ZONE.
2. ALL ANTI-SEEP COLLARS AND THEIR CONNECTIONS TO THE CONDUIT SHALL BE WATERTIGHT AND MADE OF COMPATIBLE WITH THE CONDUIT.
3. COLLARS DIMENSIONS SHALL EXTEND A MIN. OF 2' IN ALL DIRECTIONS AROUND THE PIPE.
4. ANTI-SEEP COLLARD SHALL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

CONCRETE ANTI-SEEP COLLAR DETAIL
NOT TO SCALE

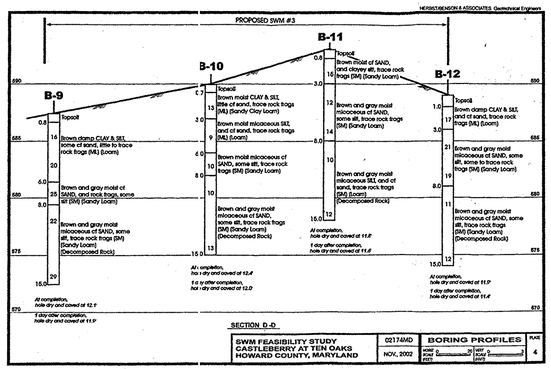


GABION BASKET WEIR DETAIL
NOT TO SCALE

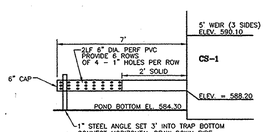
NOTES:
1. ALL WIRE USED IN GABION CONSTRUCTION SHALL BE GALVANIZED AND PLASTIC COATED.
2. FILTER CLOTH SHALL BE PLACED WHEREVER GABIONS COME INTO CONTACT WITH SOIL.
3. STONE FILL SHALL CONSIST OF HARD, DURABLE, CLEAN STONE 4"-8" IN DIAMETER.
4. CONSTRUCTION MATERIALS AND METHODS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
5. RIP-RAP TO BE PLACED BELOW GABION WEIR TO BOTTOM OF FOREBAY.



SECTION THROUGH
EMERGENCY SPILLWAY
SCALE: HORIZONTAL 1"=30'
VERTICAL 1"=5'



SWM FEASIBILITY STUDY CASTLEBERRY AT TEN OAKS HOWARD COUNTY, MARYLAND	02174MD NOV, 2002	BORING PROFILES	SHT 4



ALL PVC SHALL BE ASTM D-3033 SCH. 40

TEMP. SEDIMENT BASIN HORIZONTAL
DRAW-DOWN DEVICE
NOT TO SCALE
REF.: 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL PAGE C-10-29

CONSTRUCTION SPECIFICATIONS
1. THE TOTAL AREA OF THE PERFORATIONS MUST BE GREATER THEN 4 TIMES THE AREA OF THE INTERNAL ORIFICE.
2. THE PERFORATED PORTION OF THE DRAW-DOWN DEVICE SHALL BE WRAPPED WITH 1/2" HARDWARE CLOTH AND GEOTEXTILE FABRIC. THE GEOTEXTILE FABRIC SHALL MEET THE SPECIFICATIONS FOR GEOTEXTILE CLASS E.
3. PROVIDE SUPPORT OF DRAW-DOWN DEVICE TO PREVENT SAGGING AND FLOATATION. AN ACCEPTABLE PREVENTATIVE MEASURE IS TO STAKE BOTH SIDES OF DRAW-DOWN DEVICE WITH 1" STEEL ANGLE, OR 1" x4" SQUARE OR 2" ROUND WOODEN POSTS SET 3' MINIMUM INTO THE GROUND THEN JOINING THEM TO THE DEVICE BY WRAPPING WITH 12 GAUGE MINIMUM WIRE.

NO.	REVISION	DATE

STORMWATER MANAGEMENT DETAILS
POND #1
CASTLEBERRY AT TEN OAKS
LOTS 1 - 45, NON-BUILDABLE PRESERVATION
PARCELS A, C, D, E & BUILDABLE PRESERVATION PARCEL B

TAX MAP 22 GRID 20
5TH ELECTION DISTRICT

PARCEL 60, LOTS 6 & 7 KEN WARFIELD SUBDIVISION, AND P/O PARCEL 90
HOWARD COUNTY, MARYLAND

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 1-10-07

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 1/10/07
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/2/07

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS
USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE 01/15/07

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT
HOWARD SCD — DATE 2/15/07

ENGINEERS CERTIFICATE
"I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."
ROBERT H. VOGEL, PE #16193 — DATE 12/12/06

DEVELOPER'S CERTIFICATE
"I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."
DATE 12/15/06

"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 PLANS AND SPECIFICATIONS."
ROBERT H. VOGEL, P.E. #16193 — DATE 11/12/14
CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ONSITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ONSITE SITE INSPECTION AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERING STANDARDS CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

OWNER
HELEN L. FYOCK
ROBERT E. FYOCK
P.O. BOX 56
GLENELG, MARYLAND

CASTLEBERRY AT TEN OAKS, L.L.C.
3675 PARK AVENUE, SUITE 301
ELLICOTT CITY, MARYLAND 21043
(410) 740-9401

DEVELOPER
CASTLEBERRY AT TEN OAKS, L.L.C.
3675 PARK AVENUE, SUITE 301
ELLICOTT CITY, MARYLAND 21043
(410) 740-9401

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE #16193 — DATE 11/12/14

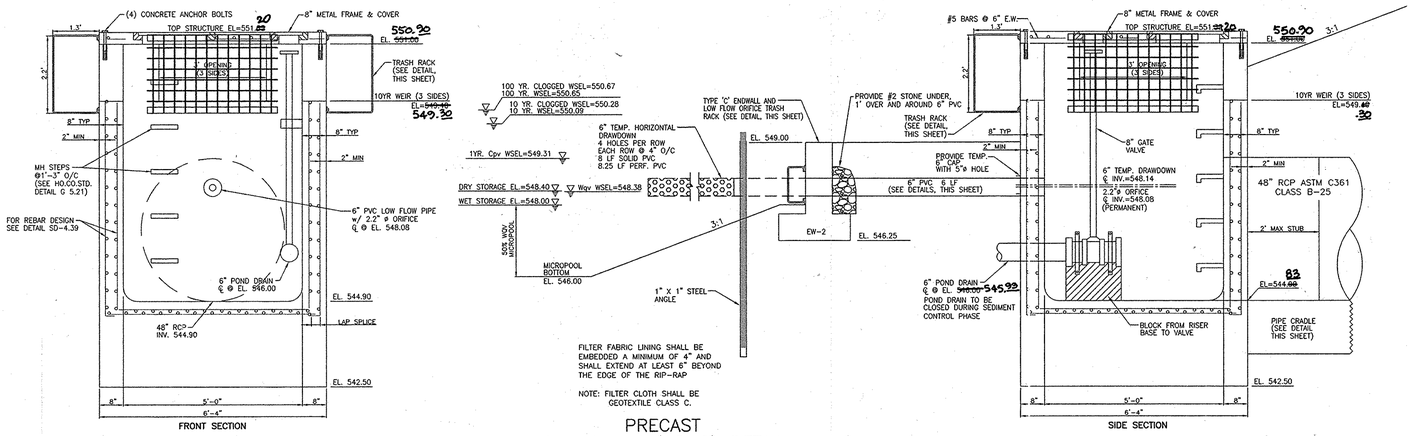
DESIGN BY:	RHV/LJT
DRAWN BY:	LJT
CHECKED BY:	RHV
DATE:	DECEMBER, 2006
SCALE:	AS NOTED
W.O. NO.:	00-85.00

DPZ REF:
S-01-11, P-05-04

19 SHEET OF 23

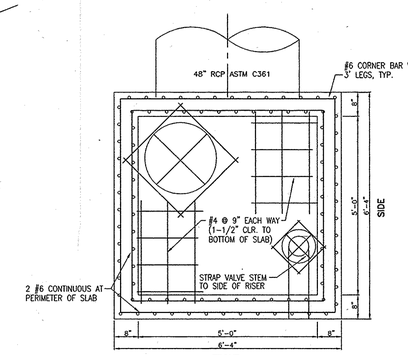
AS-BUILT 11/17/14

F-06-130

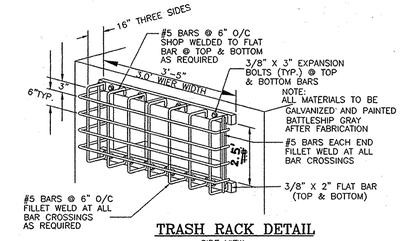


PRECAST STRUCTURE (CS-2) DETAIL

SCALE: 1/2"=1'

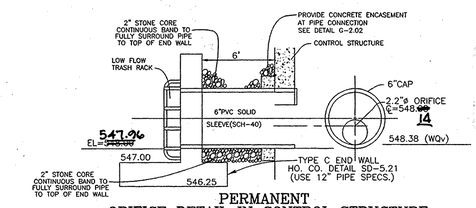


4" TOP SLAB



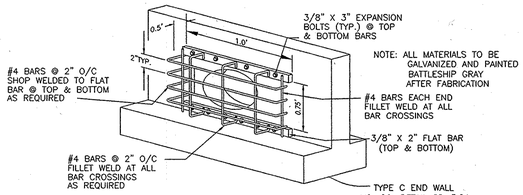
TRASH RACK DETAIL

SIDE VIEW
NOT TO SCALE



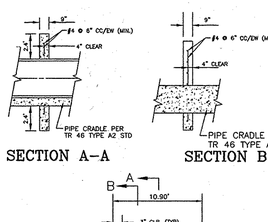
PERMANENT ORIFICE DETAIL IN CONTROL STRUCTURE

NOT TO SCALE



LOW FLOW ORIFICE TRASH RACK DETAIL

NOT TO SCALE



SECTION A-A SECTION B-B

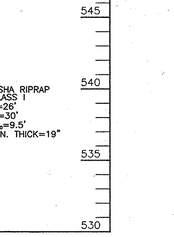
PROFILE OF CENTERLINE OF DAM (POND 2)

SCALE: 1"= 50' HORZ.
1"= 5' VERT.

NOTES:
1. PROVIDE RUBBER GASKETS (ASTM C-361) AT PIPE JOINTS
2. ANTI-SEEP COLLAR MUST BE A MINIMUM OF 2' FROM PIPE JOINTS.

PRINCIPLE SPILLWAY PROFILE (POND 2)

SCALE: 1"= 50' HORZ.
1"= 5' VERT.

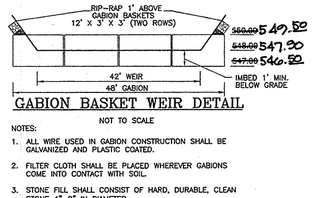


NOTES:

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

CONCRETE ANTI-SEEP COLLAR DETAIL

NOT TO SCALE

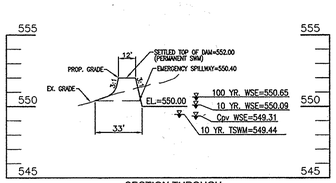


GABION BASKET WEIR DETAIL

NOT TO SCALE

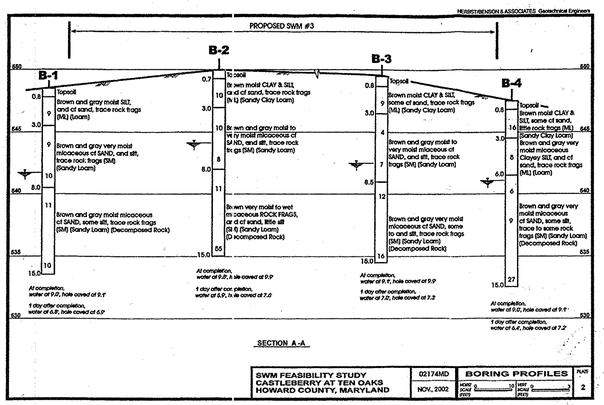
NOTES:

1. ALL WIRE USED IN GABION CONSTRUCTION SHALL BE GALVANIZED AND PLASTIC COATED.
2. FILTER CLOTH SHALL BE PLACED WHEREVER GABIONS COME INTO CONTACT WITH SOIL.
3. STONE FILL SHALL CONSIST OF HARD, DURABLE, CLEAN STONE 4"-8" IN DIAMETER.
4. CONSTRUCTION MATERIALS AND METHODS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
5. RIP-RAP TO BE PLACED BELOW GABION WEIR TO BOTTOM OF FOREBAY.

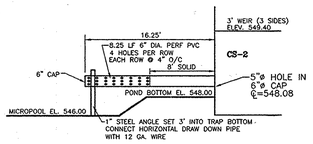


SECTION THROUGH EMERGENCY SPILLWAY

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



SWM FEASIBILITY STUDY	02174MD	BORING PROFILES	PLATE
CASTLEBERRY AT TEN OAKS			
HOWARD COUNTY, MARYLAND	NOV., 2002	HORZ SCALE 1"=50' VERT SCALE 1"=5'	2



TEMP. SEDIMENT BASIN HORIZONTAL DRAW-DOWN DEVICE

NOT TO SCALE
REF.: 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, PAGE C-10-29

CONSTRUCTION SPECIFICATIONS

1. THE TOTAL AREA OF THE PERFORATIONS MUST BE GREATER THEN 4 TIMES THE AREA OF THE INTERNAL ORIFICE. THE PERFORATED PORTION OF THE DRAW-DOWN DEVICE SHALL BE WRAPPED WITH 1/2" HARDWARE CLOTH AND GEOTEXTILE CLASS C. THE GEOTEXTILE FABRIC SHALL MEET THE SPECIFICATIONS FOR GEOTEXTILE CLASS E.
2. PROVIDE SUPPORT OF DRAW-DOWN DEVICE TO PREVENT SAGGING DUE TO FLOATATION. AN ACCEPTABLE PREVENTATIVE MEASURE IS TO STRUCK BOTH SIDES OF DRAW-DOWN DEVICE WITH 1" STEEL ANGLE, 2"x 2" x4" SQUARE OR 2" ROUND WOODEN POSTS SET 3' MINIMUM INTO THE GROUND THEN JOINING THEM TO THE DEVICE BY WRAPPING 12 GAUGE MINIMUM WIRE.

NO.	REVISION	DATE

STORMWATER MANAGEMENT DETAILS
POND #2

CASTLEBERRY AT TEN OAKS

LOTS 1 - 45, NON-BUILDABLE PRESERVATION
PARCELS A, C, D, E & BUILDABLE PRESERVATION PARCEL B

TAX MAP 22 GRID 20
5TH ELECTION DISTRICT

PARCEL 60, LOTS 6 & 7 KEN WARFIELD SUBDIVISION, AND P/O PARCEL 90
HOWARD COUNTY, MARYLAND

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ENGINEERS • SURVEYORS • PLANNERS
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ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 1-10-07

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 1/4/07

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/6/07

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE 2/5/07

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT — DATE (Small Pkgs)

HOWARD SCD — DATE 2/5/07

ENGINEERS CERTIFICATE

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

ROBERT H. VOGEL, PE #16193 — DATE 12/13/06

DEVELOPER'S CERTIFICATE

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

DEVELOPER — DATE 12/14/06

"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 PLANS AND SPECIFICATIONS."

ROBERT H. VOGEL, P.E. #16193 — DATE 11/17/14

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

OWNER

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DESIGN BY:	RHV/LJT
DRAWN BY:	LJT
CHECKED BY:	RHV
DATE:	DECEMBER, 2006
SCALE:	AS NOTED
W.O. NO.:	00-85.00

DPZ REF:
S-01-11, P-05-04

20 SHEET OF 23

AS-BUILT 11/17/14

F-06-130

MARYLAND 378
STORMWATER MANAGEMENT POND CONSTRUCTION SPECIFICATIONS

CONSTRUCTION SPECIFICATIONS

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

Site Preparation

Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped of topsoil. All trees, vegetation, roots and other objectionable material shall be removed. Channel banks and sharp breaks shall be sloped to no steeper than 1:1. All trees shall be cleared and grubbed within 15 feet of the toe of the embankment.

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

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

Earth Fill

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

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

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

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

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

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

Structure Backfill

Backfill adjacent to pipes or structures shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operated closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24" or greater over the structure or pipe.

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

Pipe Conduits

All pipes shall be circular in cross section.

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

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

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

Materials – (Aluminum Pipe) – This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-196 or M-211 with watertight coupling bands or flanges. Aluminum Pipe, when used with flowable fill or when soil and/or water conditions warrant for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt. Hot dip galvanized bolts may be used for connections. The pH of the surrounding soils shall be between 4 and 9.

2. Coupling, bands, anti-seep collars, end sections, etc., must be composed of the same material and coatings as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials at lease 24 mils in thickness.

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

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

Helically corrugated pipe shall have either continuously welded seams or have lock seams with internal caulking or a neoprene bead.

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

5. Backfilling shall conform to "Structure Backfill."

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

Reinforced Concrete Pipe – All of the following criteria shall apply for reinforced concrete pipe:
1. Materials – Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets and shall equal or exceed ASTM C-361.
2. Bedding – Reinforced concrete pipe conduits shall be laid in a concrete bedding/cradle for their entire length. This bedding/cradle shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 50% of its outside diameter with a minimum thickness of 6 inches. Where a concrete cradle is not needed for structural reasons, flowable fill may be used as described in the "Structure Backfill" section of this standard. Gravel bedding is not permitted.
3. Laying pipe – Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 4 feet from the riser.
4. Backfilling shall conform to "Structure Backfill."
5. Other details (anti-seep collars, valves, etc.) shall be shown on the drawings.

Plastic Pipe – The following criteria shall apply for plastic pipe:
1. Materials – PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241. Corrugated High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following: 4" -10" inch pipe shall meet the requirements of AASHTO M252 Type S, and 12" through 24" inch shall meet the requirements of AASHTO M294 Type S.
2. Joints and connections to anti-seep collars shall be completely watertight.
3. Bedding – The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.
4. Backfilling shall conform to "Structure Backfill."
5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

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

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

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

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

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

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

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

POND BOTTOM SOIL CONDITIONS

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

In order to lower the infiltration rate into the sands with gravel, it is recommmended that the sands with gravel be undercut and replaced with a minimum of 12 inches of soils classified as SM per ASTM D-2487 or Sandy Loam per USDA classification. The fill soil should be compacted to at least 95 percent of its maximum dry density per ASTM D-698.

OPERATION, MAINTENANCE AND INSPECTION

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

OPERATION AND MAINTENANCE SCHEDULE FOR STORMWATER MANAGEMENT EXTENDED DETENTION FACILITY

STORMWATER MANAGEMENT FACILITY

ROUTINE MAINTENANCE

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

NON-ROUTINE MAINTENANCE

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

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

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

MATERIALS SPECIFICATIONS FOR BIO-RETENTION

MATERIAL	SPECIFICATION	SIZE	NOTES
PLANTINGS	SPECIFICATION	N/A	PLANTINGS ARE SITE-SPECIFIC
PLANTING SOIL (2.5' TO 4' DEEP)	SAND 35-60% SILT 30-55% CLAY 10-25%	N/A	USDA SOIL TYPES LOAMY SAND, SANDY LOAM OR LOAM
MULCH	SHREDDED HARDWOOD		AGED 6 MONTHS, MINIMUM
PEA GRAVEL DIAPHRAGM AND CURTAIN DRAIN	PEA GRAVEL: ASTM-D-448 ORNAMENTAL STONE: WASHED COBBLES	PEA GRAVEL NO. 6 STONE: 2" TO 5"	
GEOTEXTILE	CLASS "C"-APPARENT OPENING SIZE (ASTM-D-4751), GRAB TENSILE STRENGTH (ASTM-D-4632), PUNCTURE RESISTACE (ASTM-D-4833)	N/A	FOR USE AS NECESSARY BENEATH UNDERDRAINS ONLY
UNDERDRAIN GRAVEL	AASHTO M-43	0.375" TO 0.75"	
UNDERDRAIN PIPING	F 758, TYPE PS 28 OOR AASHTO M-278	4" TO 6" RIGID SCHEDULE 40 PVC OR SDR35	3/8" PERF. @ 6" O.C., 4 HOLES PER ROW: MIN. OF 3" OF. GRAVEL OVER PIPES; NOT NECESSARY UNDERNEATH PIPES
POURED IN PLACE CONCRETE (IF REQUIRED)	MSHA MIX NO. 3; fc=3500 PSI @ 28 DAYS, NORMAL WEIGHT, AIR-ENTRAINED; REINFORCING TO MEET ASTM-615-60	N/A	ON-SITE TESTING OF POURED-IN-PLACE CONCRETE REQUIRED: 28 DAY STRENGTH AND SLUMP TEST; ALL CONCRETE DESIGN (CAST-IN-PLACE OR PRE-CAST) NOT USING PREVIOUSLY APPROVED STATE OR LOCAL STANDARDS REQUIRES DESIGN DRAWINGS SEALED AND APPROVED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF MARYLAND – DESIGN TO INCLUDE MEETING ACI CODE 350.R/89; VERTICAL LOADING (H-10 OR H-20); ALLOWABLE HORIZONTAL LOADING (BASED ON SOIL PRESSURES); AND ANALYSIS OF POTENTIAL CRACKING
SAND (1' DEEP)	AASHTO-M-6 OR ASTM-C-33	0.02" TO 0.04"	SAND SUBSTITUTIONS SUCH AS DIABASE AND GRAYSTONE #10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATED OR DOLOMITIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NO "ROCK DUST" CAN BE USED FOR SAND

Geotechnical Construction Recommendations

Because of silty and clayey fines, the on-site will be sensitive to moisture and disturbance. Construction activities in the presence of excess moisture can lead to softening of the subgrade soils and loss of bearing capacity. Therefore, it will be prudent to schedule earthwork operations during the warmer and drier searsons that typically extend from late spring to early fall. Following periods of percipitation, measures should also be taken to limit site disturbance, especially from rubber-tired heavy construction equipment, and to control and remove surfase water from development areas, including structural and pavement areas. It is advisable to designate haul roads and traffic areas to limit the area of disturbance and to prevent construction traffic from excessively degrading the sensitive subgrade soils, especially moisture sensitive silty and clayey soils.

A firm work survace should be established prior to construction of new fills. Also, the moisture contents of the fill soils at the time of placement should be carefully controlled. These measures are necessary to ensure that the required compaction effort can be achieved without excessive pumping or movement of the fill mass.

Groudwater was encountered in the boring as noted in the Water Level Observations section of the geotechnical report. It is our opinion that the observed groundwater generally should not pose significant problems for the construction of the coundations and floor slabs, but could be encountered during installation of deeper utilities. In addition, it appears that groundwater levels exist at or within a few feet of the proposed bottom level for the stormwater management pond. Therefore, some typ eof groudwater seepage control should be anticipated during installation of the cut-off trench for the stormwater management pond embankment and during installation of various pipe discharge structures. It is anticipated that much of the groundwater likely to be encountered will be manageable with the use of interceptor trenches and localized systems of sumps and pumps. If groundwater conditions are encountered that cannot be adequately controlled using such systems, the Geotechnical Engineer should be consulted.

Surface drainage conditions should be properly maintained during construction. Surface water should be directed away from the construction area, and the work area should be sloped at a grade of 1 or 2 percent to reduce the potential of ponding water and the subsequent saturation of the surface siols. At the end of each work day, the subgrade shoudl be sealed by rolling the surface with a smooth drum roller to minimize infiltration of surface water.

All foundation excavations must be potected to prevent the disturbance of the subgrade materials and to minimize any potential loss of support capacity. Foundation concrete generally should be placed on the same day that foundation excavations are made and approved. Should excavation and placementof foundation concrete during the same day not be practical, we recommend that a concrete mud mat, 2 inches and 3 inches thick, be placed to protect the subgrade soils from moisture changes and disturbance. If protection of the soils is not provided, then undercutting of softened or loosened soils may be necessary prior to the placement of reinforcing steel and foundation concrete. Prior to the placement of any foundation concrete or mud mat, the subgrade soils must be carefully examined and tested by the Geotechnical Engineer to confirm the availablity of the design soil bearing capacity. To minimize disturbance to the subgrade soils during excavation, we recommend that a bucket without scarifying teeth and hand excavation be utilized during the final phases of excavation for the foundations.

Cuts and excavations associated with building and utility excavations may require forming or bracing, slope flattening or other physical measures to control sloughing and/or prevent slope failures. Contractors should be familiar with applicable OSHA requirements to ensure that adequate protection of the excavations and trench walls is provided.

The surface soils will be erodible. Therefore, the contractor should be provide and maintain good erosion and sediment control measures, in accordance with sound engineering practice and current local requirements.

Closing

This report has been prepared to aid in the evaluation of this site and to assist the Design Team with the design and construction of the proposed Kelly's Office/Retail Complex in Ellicott City, Howard County, Maryland. The report scope is limited to this specific project and location described. The project description represents our current understanding of the significant aspects of the proposed improvements relevant to geotechnical considerations for this project.

The analysis and recommendations of this report are, of necessity, based on the information made available to us at the time of the actual writing of the report and the on-site conditions, surface and subsurface, that existed at the time the exploratory borings were drilled. Further assumption has been made that the limited exploratory borings, in relation both to the areal extent of the site and to depth, are representative of subsurface conditions at the site. If subsurface conditions are encountered which differ significantly from this reported herein, this office should be notified immediately so that the analyses and recommendations can be reviewed for validity.

The earthwork and foundation construction operations for the site will be a primary consideration during development of this project. The placement of any new engineered fill will require adequate monitoring during construction to assure that the fill mass is installed properly to avoid future settlements. Therefore, it is recommended that ECS should observe and test all earthwork and other geotechnical-related construction to verify that the work is being performed in accordance with the project plans and specifications. It is also recommended that ECS be allowed to review the project specifications with regard to the earthwork for this site.

We would appreciate the opportunity to continue our involvement on the project during subsequent construction. ECS Mid-Atlantic, LLC would appreciate the opportunity to offer our services.

DEWATERING STRATEGY

Dewatering refers to the act of removing and discharging water from excavated areas on construction sites or from sediment traps or basins on construction sites. Standards and specifications for dewatering practices follow:
These standards apply to removal and discharge of water from any excavated area or sediment trap or basin at any construction site. Given the unique conditions at any particular construction site, any or all of the practices may apply. Regardless of the applicability of the practices listed herein, operators are required to use acceptable procedures for maintenance and dewatering. In all cases, every effort shall be made to eliminate sediment pollution associated with dewatering.
Designers shall specify the preferred procedures for dewatering on plans. In particular, designers should identify procedures for dewatering sediment traps and basins prior to elimination of the last sediment control facility on the site or prior to conversion of sediment control facilities to stormwater management facilities. Recommended procedures shall be consistent with these standards. Atypical site conditions may require innovative dewatering designs. Dewatering measures not referenced in this standard may be used with the consent of the approval authority.

Dewatering of Excavated Areas

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

Approved Practices for Dewatering of Excavated Areas

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

Dewatering of Sediment Traps and Basins

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

Approved Practices for Dewatering of Traps and Basins

1. Removable pumping station.
2. Use of a Sump Pit.
3. Use of a floating suction hose to pump the cleaner water from the top of the pond. As the cleaner water is pumped the suction hose will lower and eventually encounter sediment loden water. When this happens the pumping operation will cease. Provisions shall be made to filter water

APPENDIX B.3. CONSTRUCTION SPECIFICATIONS FOR SAND FILTERS, BIORETENTION AND OPEN CHANNELS
SPECIFICATIONS FOR BIORETENTION

1. MATERIAL SPECIFICATIONS

THE ALLOWABLE MATERIALS TO BE USED IN BIORETENTION AREA ARE DETAILED IN TABLE B.3.2.

2. PLANTING SOIL

THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE BIORETENTION AREA THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.05.

THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:

PH RANGE 5.2 – 7.0
ORGANIC MATTER 1.5 -% 4(BY WEIGHT)
MAGNESIUM 35 LB./AC
PHOSPHORUS (PHOSPHATE – 2P5) 75 LB./AC
POTASSIUM (POTASH – K20) 85 LB./AC
SOLUBLE SALTS NIT TO EXCEED 500 PPM

ALL BIORETENTION AREAS SHALL HAVE A MINIMUM OF ONE TEST. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, PHOSPHORUS, AND POTASSIUM AND ADDITIONAL TEST OF ORGANIC MATTER, AND SOLUBLE SALTS. A TEXTURAL ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOP SOIL WAS EXCAVATED.

SINCE DIFFERENT LAB CALIBRATE THEIR TESTING EQUIPMENT DIFFERENTLY, ALL TESTING RESULTS SHALL COME FROM THE SAME TESTING FACILITY.

SHOULD THE PH FALL OUT OF THE ACCEPTABLE RANGE, IT MAY BE MODIFIED (HIGHER) WITH LIME OR (LOWER) WITH IRON SULFATE PLUS SULFUR.

3. COMPACTION

IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF THE BIORETENTION AREA AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE HOES TO REMOVE ORIGINAL SOIL. IF BIORETENTION AREAS ARE EXCAVATED USING LOADER, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TYPE TIRE. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.

COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO REFRACTURE THE SOIL PROFILE THROUGH THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.

ROTOTILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENION FACILITY BEFORE BACKFILLING THE REQUIRED SAND LAYER. PUMP ANY PONDED WATER BEFORE PREPARING (ROTOTILLING) BASE.

WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE.

WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.

4. PLANT MATERIAL

RECOMMENDED PLANT MATERIAL FOR BIORETENTION AREAS CAN BE FOUND IN APPENDIX A, SECTION A.2.3. OF THE 2000 MARYLAND STORMWATER DESIGN MANUAL.

5. PLANT INSTALLATION

MULCH SHOULD BE PLACED TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED HARDWOOD MUCH IS THE ONLY ACCEPTED MULCH. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDDED MULCH MUST BE WELL AGED (6 TO 12 MONTHS) FOR ACCEPTANCE.

ROOT STOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8TH OF THE BALL IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS.

TREES SHALL BE BRACED USING 2" BY 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL.

GRASSES AND LEGUME SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLUGS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLNTING SPECIFICATIONS.

THE TOPSOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS DEFEATS, OR AT A MINIMUM, IMPEDES THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS OF NITROGEN PER 1000 SQUARE FEET.

6. UNDERDRAINS

UNDERDRAINS ARE TO BE PLACED ON A 3'-0" WIDE SECTION FILTER CLOTH. PIPE IS PLACED NEXT, FOLLOWED BY THE GRAVEL BEDDING. THE ENDS OF UNDERDRAIN PIPES NOT TERMINATING IN AN OBSERVATION WELL SHALL BE CAPPED.

THE MAIN COLLECTOR PIPE FOR UNDERDRAIN SYSTEMS SHALL BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.5%. OBSERVATION WELL AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (ONE MINIMUM PER EVERY 1000 SQUARE FEET OF SURFACE AREA).

7. MISCELLANEOUS

THE BIORETENTION FACILITY MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

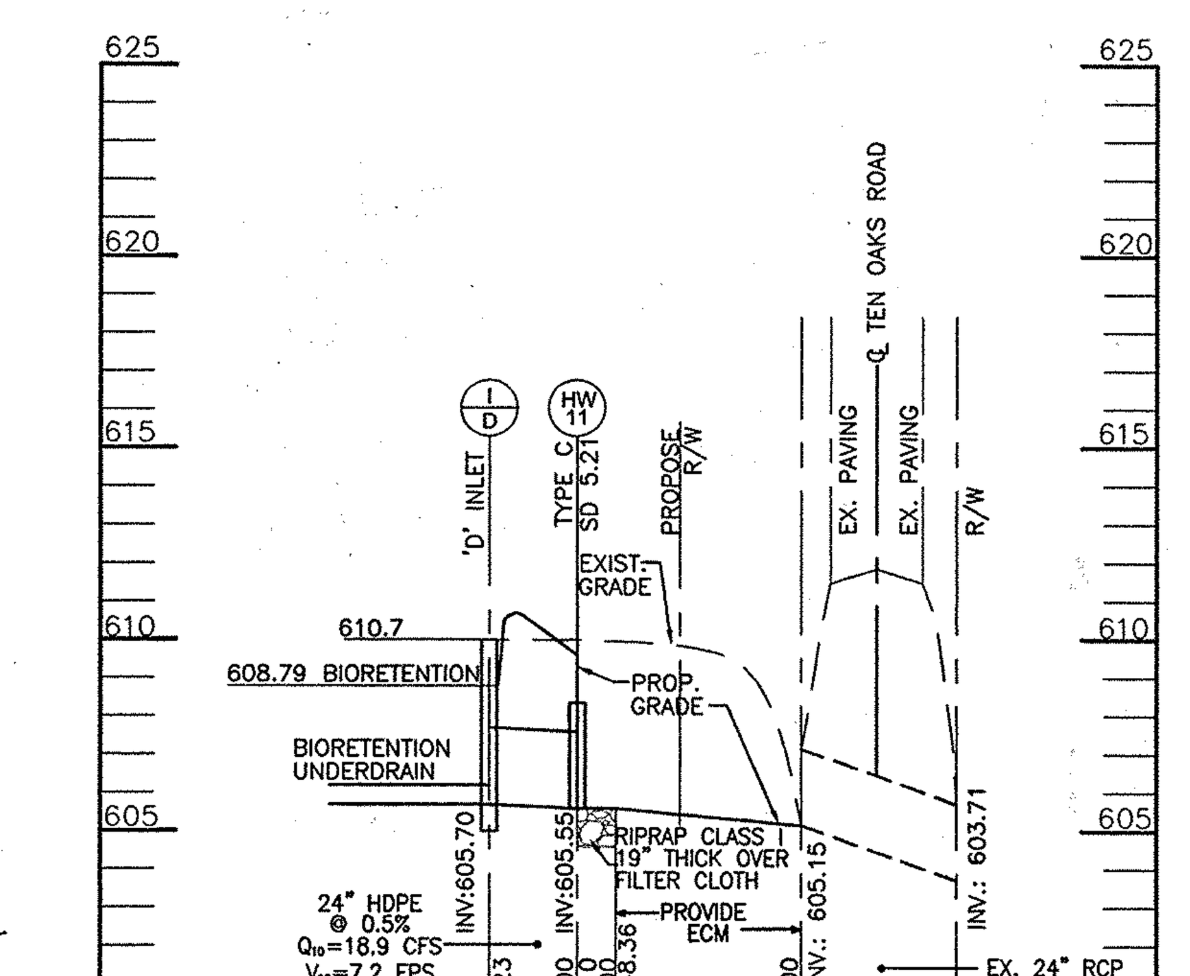
OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREAS

1. ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER IS REQUIRED. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING.

2. SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, TREATMENT OF ALL DEFICIENT STAKES AND WIRES.

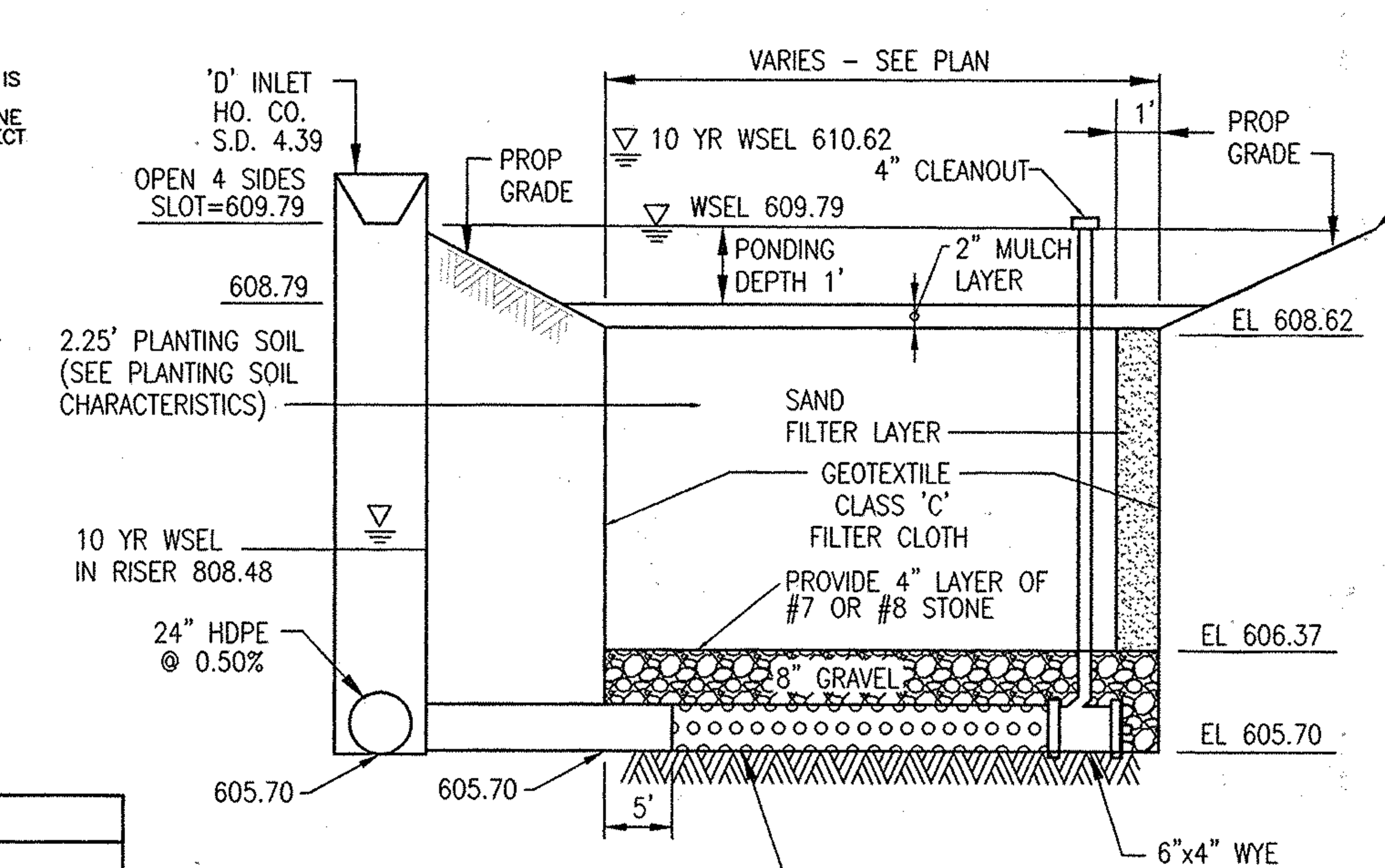
3. MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.

4. SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.



BIORETENTION DRAIN PROFILE

SCALE: HORZ: 1"=50'
VERT: 1"=5'



PERFORATED PIPE TO BE WRAPPED IN 1/4" MESH (4X4) OR SMALLER GALVANIZED HARDWARE CLOTH.

DETAIL – BIORETENTION AREA

NOT TO SCALE

NOTE: FILTER FABRIC IS REQUIRED FOR THE SIDES OF SOIL LAYER. SEAMS SHOULD NOT ALLOW MATERIAL TO WASH THROUGH.

NOTE:
NO GROUND WATER WAS ENCOUNTERED WITHIN 4' OF THE PROPOSED BOTTOM

PIPE SLOPE DRAIN

PIPE SLOPE DRAIN
PIPE SLOPE DRAIN
CONSTRUCTION SPECIFICATIONS – PIPE SLOPE DRAIN
PIPE SLOPE DRAIN

1. THE PIPE SLOPE DRAIN (PSD) SHALL HAVE A SLOPE OF 3 PERCENT OR STEEPER.

2. THE TOP OF THE EARTH DIKE OVER THE INLET PIPE SHALL BE AT LEAST 2 TIMES THE PIPE DIAMETER MEASURED AT THE INVERT OF THE PIPE.
PIPE.
3. FLEXIBLE TUBING IS PREFERRED. HOWEVER, CORRUGATED METAL PIPE OR EQUIVALENT PVC PIPE CAN BE USED. ALL CONNECTIONS SHALL BE WATERTIGHT.
PIPE.
4. A FLARED END SECTION SHALL BE ATTACHED TO THE INLET END OF PIPE WITH A WATERTIGHT CONNECTION. FILTER CLOTH SHALL BE PLACED UNDER THE INLET OF THE PIPE SLOPE DRAIN AND SHALL EXTEND OUT 5' FROM THE INLET. THE FILTER CLOTH SHALL BE "KEYED IN" ON ALL SIDES.
PIPE.
5. THE PIPE SLOPE DRAIN SHALL BE SECURELY ANCHORED TO THE SLOPE BY STAKING AT THE GROMMETS PROVIDED. SPACING FOR ANCHORS SHALL BE AS PROVIDED BY MANUFACTURER'S SPECIFICATION. IN NO CASE SHALL LESS THAN TWO (2) ANCHORS BE PROVIDED, EQUALLY SPACED ALONG THE LENGTH OF PIPE. THESE DETAILS SHOULD BE PROVIDED BY PIPE SUPPLIERS.
PIPE.
PIPE.
6. THE SOIL AROUND AND UNDER THE PIPE AND END SECTION SHALL BE HAND TAMPED IN 4 INCH LIFTS TO THE TOP OF THE EARTH DIKE.

7. ALL PIPE CONNECTIONS SHALL BE WATERTIGHT.

8. WHENEVER POSSIBLE WHERE A PSD DRAINS AN UNSTABILIZED AREA, IT SHALL OUTLET INTO A SEDIMENT TRAP OR BASIN. IF THIS IS NOT POSSIBLE THEN THE SLOPE DRAIN WILL DISCHARGE INTO A STABLE CONVEYENCE THAT LEADS TO A SEDIMENT TRAP OR BASIN. WHEN DISCHARGING INTO A TRAP OR BASIN THE PSD SHALL DISCHARGE AT THE SAME ELEVATION AS THE WET POOL ELEVATION. THE DISCHARGE FROM THE PSD MUST BE AS FAR AWAY FROM THE SEDIMENT CONTROL OUTLET AS POSSIBLE.

9. WHEN THE DRAINAGE AREA IS STABILIZED, THE PSD SHALL DISCHARGE ONTO A STABILIZED AREA AT A NON-EROSIVE VELOCITY.

10. INSPECTION AND ANY REQUIRED MAINTENANCE SHALL BE PERFORMED PERIODICALLY AND AFTER EACH RAIN EVENT.

11. THE INLET MUST BE KEPT OPEN AT ALL TIMES.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE | PAGE B - 5 - 4A | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 4 - PIPE SLOPE DRAIN

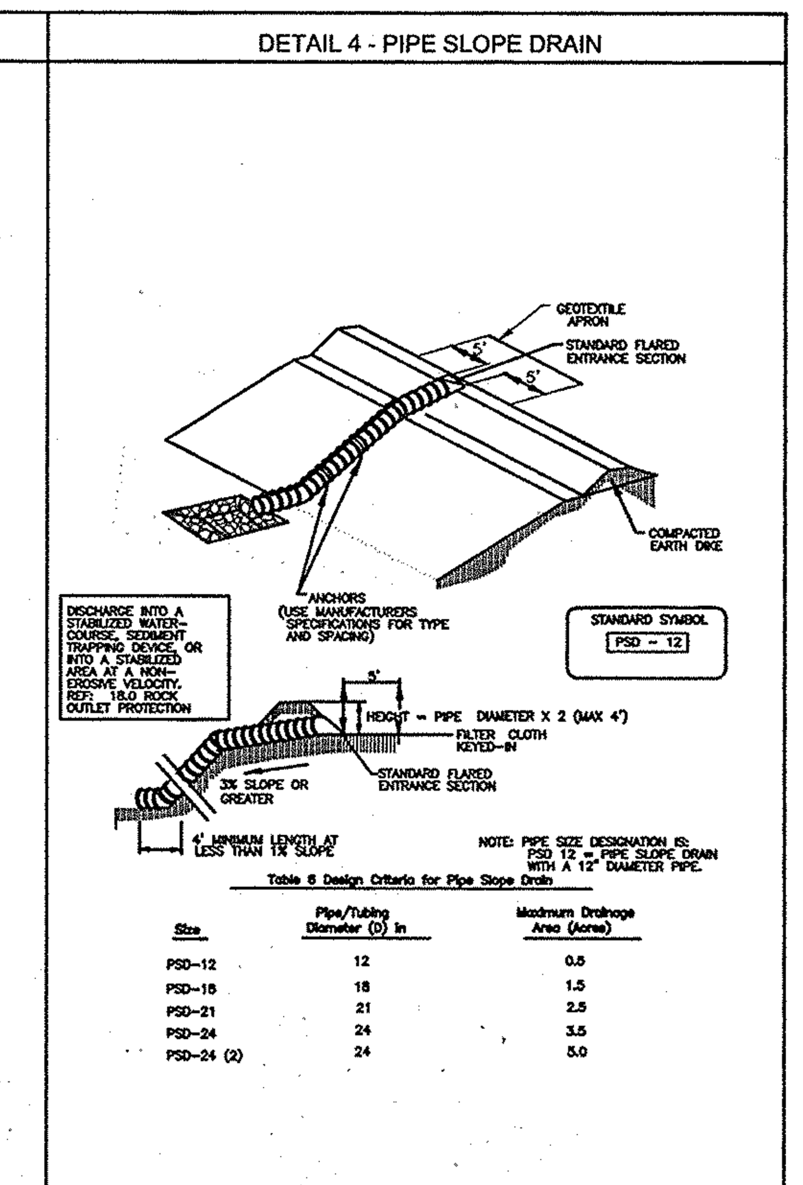


Table 6 Design Criteria for Pipe Slope Drain

Size	Pipe/Tubing Diameter (D) In	Maximum Drainage Area (Acres)
PSD-12	12	0.5
PSD-18	18	1.5
PSD-21	21	2.5
PSD-24	24	3.5
PSD-24 (2)	24	5.0

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE | PAGE B - 5 - 4 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

NO.	REVISION	DATE

STORMWATER MANAGEMENT NOTES

CASTLEBERRY AT TEN OAKS

LOTS 1 - 45, NON-BUILDABLE PRESERVATION
PARCELS A, C, D, E & BUILDABLE PRESERVATION PARCEL B

TAX MAP 22 GRID 20
5TH ELECTION DISTRICT

PARCEL 60, LOTS 6 & 7 KEN WARFIELD SUBDIVISION, AND P/O PARCEL 90
HOWARD COUNTY, MARYLAND

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

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER

ROBERT H. VOGEL, PE #16193

DESIGN BY: RHV/LJT
DRAWN BY: LJT
CHECKED BY: RHV
DATE: DECEMBER, 2006
SCALE: AS NOTED
W.O. NO.: 00-85.00

DPZ REF:
S-01-11, P-05-04

21 SHEET OF 23

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

[signature] 1-10-07
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[signature] 1/24/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

[signature] 2/8/07
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

[signature] 2/15/07
USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE

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

[signature] 2/15/07
HOWARD SCD — DATE

ENGINEERS CERTIFICATE

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

[signature] 12/13/06
ROBERT H. VOGEL, PE #16193 — DATE

DEVELOPER'S CERTIFICATE

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

[signature] 12/13/06
DATE

"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 PLANS AND SPECIFICATIONS."

[signature] 11/17/14
ROBERT H. VOGEL, P.E. #16193 — DATE

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

OWNER

HELEN L. FYOCK
ROBERT E. FYOCK
P.O. BOX 56
GLENELG, MARYLAND

CASTLEBERRY AT TEN OAKS, L.L.C.
3675 PARK AVENUE, SUITE 301
ELLICOTT CITY, MARYLAND 21043
(410) 740-9401

DEVELOPER

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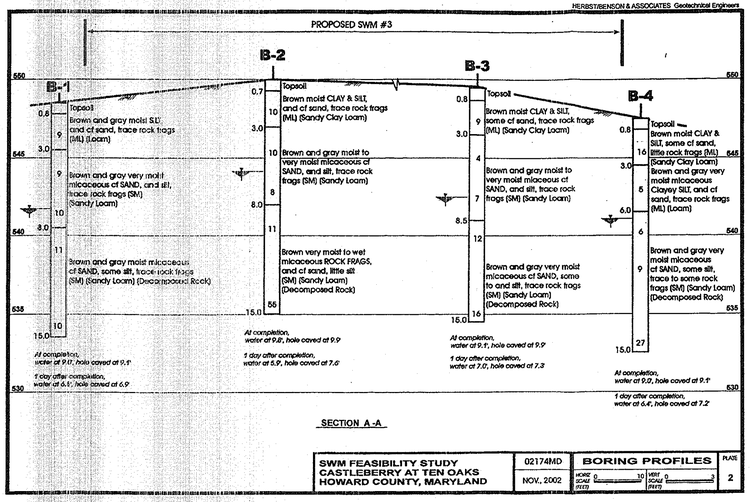
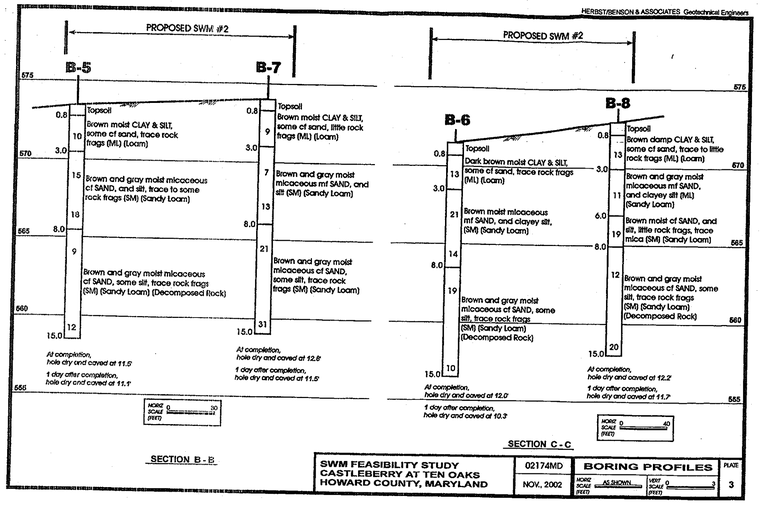
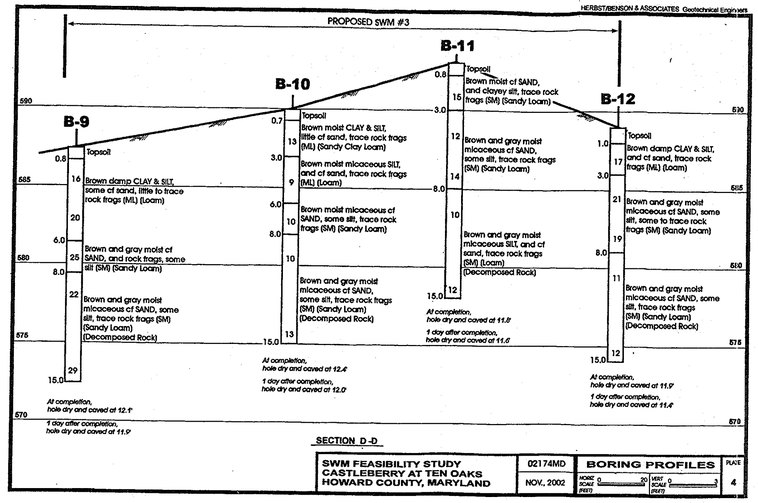
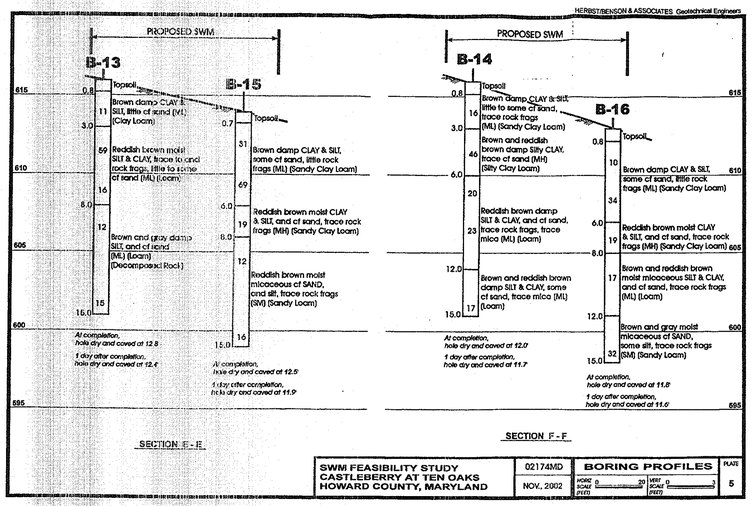
AS-BUILT 11/17/14

F-06-130









STORMWATER MANAGEMENT REQUIREMENTS - POND 1

AREA 29.54 AC.	REQUIREMENT	VOLUME REQUIREMENT WITHOUT CREDITS	CREDITS	VOLUME REQUIREMENT WITH CREDITS	NOTES
1	WATER QUALITY VOLUME (WQ_V)	0.6371 AC. FT.	0.2502 AC. FT.	0.3869 AC. FT.	GRASS CHANNEL INC ADDITIONAL CRITERIA FOR WQv
2	RECHARGE VOLUME (REV)	0.1656 AC. FT. 1.78 AC.	3.08 AC.	——	GRASS CHANNEL ALONG ROAD AND REAR OF LOTS
3	CHANNEL PROTECTION VOLUME (CP_V)	0.7423 AC. FT.	——	0.7423 AC. FT.	Cpv & REMAINING WQv PROVIDED BY MICROPOOL EXT. DET.
4	OVERHEAD FLOOD PROTECTION ($Q_{10}P$)	NA	——	——	
5	EXTREME FLOOD VOLUME ($Q_{100}P$)	NA	——	——	

STORMWATER MANAGEMENT REQUIREMENTS - POND 2

AREA 11.47 AC.	REQUIREMENT	VOLUME REQUIREMENT WITHOUT CREDITS	CREDITS	VOLUME REQUIREMENT WITH CREDITS	NOTES
1	WATER QUALITY VOLUME (WQ_V)	0.2370 AC. FT.	0.0069 AC. FT.	0.1901 AC. FT.	GRASS CHANNEL INC ADDITIONAL CRITERIA FOR WQv
2	RECHARGE VOLUME (REV)	0.0516 AC. FT. 0.6561 AC.	0.7900 AC.	——	GRASS CHANNEL ALONG ROAD
3	CHANNEL PROTECTION VOLUME (CP_V)	0.2882 AC. FT.	NA	0.2882 AC. FT.	CPv AND REMAINING WQv IN MICROPOOL EXTENDED DETENTION
4	OVERHEAD FLOOD PROTECTION ($Q_{10}P$)	NA	——	——	
5	EXTREME FLOOD VOLUME ($Q_{100}P$)	NA	——	——	

STORMWATER MANAGEMENT REQUIREMENTS - BIORETENTION 1 AREA 3

AREA 7.03 AC.	REQUIREMENT	VOLUME REQUIREMENT WITHOUT CREDITS	CREDITS	VOLUME REQUIREMENT WITH CREDITS	NOTES
1	WATER QUALITY VOLUME (WQ_V)	0.1189 AC. FT.	——	0.1189 AC. FT.	BIORETENTION
2	RECHARGE VOLUME (REV)	0.0309 AC. FT.	0.1377 AC. FT.	——	STONE BELOW BIORETENTION ROOFTOP DISCONNECT CREDIT
3	CHANNEL PROTECTION VOLUME (CP_V)	NR	——	——	Q < 2.0 CFS
4	OVERHEAD FLOOD PROTECTION ($Q_{10}P$)	NA	——	——	
5	EXTREME FLOOD VOLUME ($Q_{100}P$)	NA	——	——	

STORMWATER MANAGEMENT REQUIREMENTS - AREA 4

AREA 13.20 AC.	REQUIREMENT	VOLUME REQUIREMENT WITHOUT CREDITS	CREDITS	VOLUME REQUIREMENT WITH CREDITS	NOTES
1	WATER QUALITY VOLUME (WQ_V)	0.0894 AC. FT.*	0.0874 AC. FT.	0	SHEET FLOW TO BUFFER CREDIT RAIN GARDEN
2	RECHARGE VOLUME (REV)	0.0232 AC. FT.* 0.2262 AC.	0.2262 AC.	0	SHEET FLOW TO BUFFER CREDIT RAIN GARDEN
3	CHANNEL PROTECTION VOLUME (CP_V)	NR	——	——	Q < 2.0 CFS
4	OVERHEAD FLOOD PROTECTION ($Q_{10}P$)	NA	——	——	
5	EXTREME FLOOD VOLUME ($Q_{100}P$)	NA	——	——	

*EXCLUDES NATURAL AREA CONSERVATION EASEMENT

STORMWATER MANAGEMENT REQUIREMENTS - AREA 5

AREA 1.24 AC.	REQUIREMENT	VOLUME REQUIREMENT WITHOUT CREDITS	CREDITS	VOLUME REQUIREMENT WITH CREDITS	NOTES
1	WATER QUALITY VOLUME (WQ_V)	0.0238 AC. FT.	——	0	NO DEVELOPMENT AREA
2	RECHARGE VOLUME (REV)	0.0062 AC. FT. 0.0645 AC.	——	0	NO DEVELOPMENT AREA
3	CHANNEL PROTECTION VOLUME (CP_V)	NR	——	——	Q < 2.0 CFS
4	OVERHEAD FLOOD PROTECTION ($Q_{10}P$)	NA	——	——	
5	EXTREME FLOOD VOLUME ($Q_{100}P$)	NA	——	——	

STORMWATER MANAGEMENT REQUIREMENTS - AREA 7

AREA 1.38 AC.	REQUIREMENT	VOLUME REQUIREMENT WITHOUT CREDITS	CREDITS	VOLUME REQUIREMENT WITH CREDITS	NOTES
1	WATER QUALITY VOLUME (WQ_V)	0.0265 AC. FT.	0.0265 AC. FT.	0	ROOFTOP DISCONNECT RAIN GARDEN
2	RECHARGE VOLUME (REV)	0.0069 AC. FT. 0.0718 AC.	0.0718 AC.	0	ROOFTOP DISCONNECT RAIN GARDEN
3	CHANNEL PROTECTION VOLUME (CP_V)	NR	——	——	
4	OVERHEAD FLOOD PROTECTION ($Q_{10}P$)	NA	——	——	
5	EXTREME FLOOD VOLUME ($Q_{100}P$)	NA	——	——	

STORMWATER MANAGEMENT REQUIREMENTS - AREA 8

AREA 1.61 AC.	REQUIREMENT	VOLUME REQUIREMENT WITHOUT CREDITS	CREDITS	VOLUME REQUIREMENT WITH CREDITS	NOTES
1	WATER QUALITY VOLUME (WQ_V)	0.0309 AC. FT.	0.0309 AC. FT.	0	NO IMPERVIOUS IN DRAINAGE AREA
2	RECHARGE VOLUME (REV)	0.0080 AC. FT. 0.0837 AC. FT.	0.0837 AC. FT.	0	NO IMPERVIOUS IN DRAINAGE AREA
3	CHANNEL PROTECTION VOLUME (CP_V)	NR	——	——	
4	OVERHEAD FLOOD PROTECTION ($Q_{10}P$)	NA	——	——	
5	EXTREME FLOOD VOLUME ($Q_{100}P$)	NA	——	——	

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 1-10-07

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 11/4/07
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/2/07

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS
USDA–NATURAL RESOURCES CONSERVATION SERVICE — DATE 2/15/07

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT
HOWARD SCD — DATE 2/15/07

NO.	REVISION	DATE

STORMWATER MANAGEMENT NOTES

CASTLEBERRY AT TEN OAKS

LOTS 1 - 45, NON-BUILDABLE PRESERVATION
PARCELS A, C, D, E & BUILDABLE PRESERVATION PARCEL B

TAX MAP 22 GRID 20
5TH ELECTION DISTRICT

PARCEL 60, LOTS 6 & 7 KEN WARFIELD SUBDIVISION, AND P/O PARCEL 90
HOWARD COUNTY, MARYLAND

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STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE #16193

DESIGN BY: RHV/LJT
DRAWN BY: LJT
CHECKED BY: RHV
DATE: DECEMBER, 2006
SCALE: AS NOTED
W.O. NO.: 00-85.00

DPZ REF: S-01-11, P-05-04

SHEET 22 OF 23

OWNER

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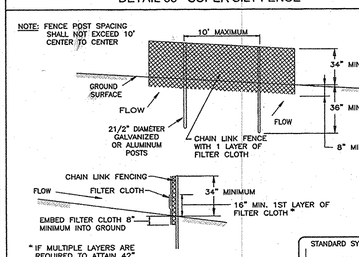
(410) 740-9401

F-06-130

DETAIL 33 - SUPER SILT FENCE



CONSTRUCTION SPECIFICATIONS

1. FENCING SHALL BE 42" IN HEIGHT AND CONSTRUCTED IN ACCORDANCE WITH THE LATEST MARYLAND STATE HIGHWAY DETAILS FOR CHAIN LINK FENCING. THE SPECIFICATION FOR A 6' FENCE SHALL BE USED, SUBSTITUTING 42" FABRIC AND 6' LENGTH POSTS.

2. CHAIN LINK FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIES. THE LOWER TENSION WIRE, BRACE AND TRUSS RODS, DRIVE ANCHORS AND POST CAPS ARE NOT REQUIRED EXCEPT ON THE ENDS OF THE FENCE.

3. FILTER CLOTH SHALL BE FASTENED SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24" AT THE TOP AND MID SECTION.

4. FILTER CLOTH SHALL BE EMBEDDED A MINIMUM OF 8" INTO THE GROUND.

5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6" AND FOLDED.

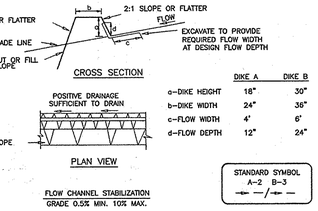
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SILT BUILDUPS REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE, OR WHEN SILT REACHES 50% OF FENCE HEIGHT

7. FILTER CLOTH SHALL BE FASTENED SECURELY TO EACH FENCE POST WITH WIRE TIES OR STAPLES AT TOP AND MID SECTION AND SHALL MEET THE FOLLOWING REQUIREMENTS FOR GEOTEXTILE CLASS F:

TENSILE STRENGTH	50 LBS/IN (MIN.)	TEST: MSMT 509
TENSILE MODULUS	20 LBS/IN (MIN.)	TEST: MSMT 509
FLOW RATE	0.3 GAL/FT /MINUTE (MAX.)	TEST: MSMT 322
FILTERING EFFICIENCY	75% (MIN.)	TEST: MSMT 322

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

DETAIL 1 - EARTH DIKE



1. SEED AND COVER WITH STRAW MULCH.
2. SEED AND COVER WITH EROSION CONTROL MATTING OR LINE WITH SOD.
3. 4" - 7" STONE OR RECYCLED CONCRETE EQUIVALENT PRESSED INTO THE SOIL 7" MINIMUM

CONSTRUCTION SPECIFICATIONS

1. ALL TEMPORARY EARTH DIKES SHALL HAVE UNINTERRUPTED POSITIVE GRADE TO AN OUTLET. SPOT ELEVATIONS MAY BE NECESSARY FOR GRADES LESS THAN 1%.

2. RUNOFF DIVERTED FROM A DISTURBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.

3. RUNOFF DIVERTED FROM AN UNDISTURBED AREA SHALL OUTLET DIRECTLY INTO AN UNDISTURBED, STABILIZED AREA AT A NON-EROSIVE VELOCITY.

4. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONAL MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE DIKE.

5. THE DIKE SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED HEREIN AND BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.

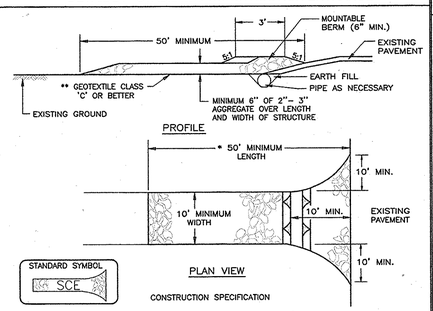
6. FILL SHALL BE COMPACTED BY EARTH MOVING EQUIPMENT.

7. ALL EARTH REMOVED AND NOT NEEDED FOR CONSTRUCTION SHALL BE PLACED SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE DIKE.

8. INSPECTION AND MAINTENANCE MUST BE PROVIDED PERIODICIALLY AND AFTER EACH RAIN EVENT.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE A - 1 - 6	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE

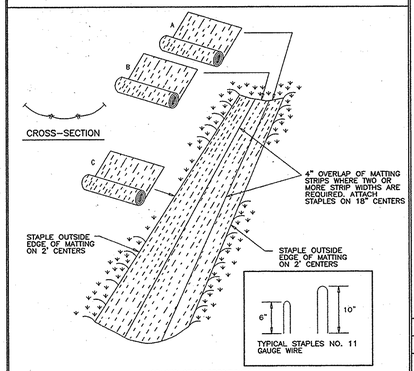


CONSTRUCTION SPECIFICATION

1. LENGTH – MINIMUM OF 50' (* 30' FOR A SINGLE RESIDENCE LOT).
2. WIDTH – 10' MINIMUM, SHOULD BE FLARED AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
3. GEOTEXTILE FABRIC (FILTER CLOTH) SHALL BE PLACED OVER THE EXISTING GROUND PRIOR TO PLACING STONE. ** THE PLAN APPROVAL AUTHORITY MAY NOT REQUIRE SINGLE FAMILY RESIDENCES TO USE GEOTEXTILE.
4. STONE – CRUSHED AGGREGATE (2" TO 3") OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT SHALL BE PLACED AT LEAST 6" DEEP OVER THE LENGTH AND WIDTH OF THE ENTRANCE.
5. SURFACE WATER – ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED THROUGH THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PIPE INSTALLED THROUGH THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROTECTED WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 6" OF STONE OVER THE PIPE. PIPE HAS TO BE SIZED ACCORDING TO THE DRAINAGE. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE WILL NOT BE NECESSARY. PIPE SHOULD BE SIZED ACCORDING TO THE AMOUNT OF RUNOFF TO BE CONVEYED. A 6" MINIMUM WILL BE REQUIRED.
6. LOCATION – A STABILIZED CONSTRUCTION ENTRANCE SHALL BE LOCATED AT EVERY POINT WHERE CONSTRUCTION TRAFFIC ENTERS OR LEAVES A CONSTRUCTION SITE. VEHICLES LEAVING THE SITE MUST TRAVEL OVER THE ENTIRE LENGTH OF THE STABILIZED CONSTRUCTION ENTRANCE.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F - 17 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 30 - EROSION CONTROL MATTING



CONSTRUCTION SPECIFICATIONS

1. KEY-IN THE MATTING BY PLACING THE TOP ENDS OF THE MATTING IN A NARROW TRENCH, 6" IN DEPTH. BACKFILL THE TRENCH AND TAMP FIRMLY TO CONFORM TO THE CHANNEL CROSS-SECTION. SECURE WITH A ROW OF STAPLES ABOUT 4" DOWN SLOPE FROM THE TRENCH. SPACING BETWEEN STAPLES IS 6".

2. STAPLE THE 4" OVERLAP IN THE CHANNEL CENTER USING AN 18" SPACING BETWEEN STAPLES.

3. BEFORE STAPLING THE OUTER EDGES OF THE MATTING, MAKE SURE THE MATTING IS SMOOTH AND IN FIRM CONTACT WITH THE SOIL.

4. STAPLES SHALL BE PLACED 2' APART WITH 4 ROWS FOR EACH STRIP, 2 OUTER ROWS, AND 2 ALTERNATING ROWS DOWN THE CENTER.

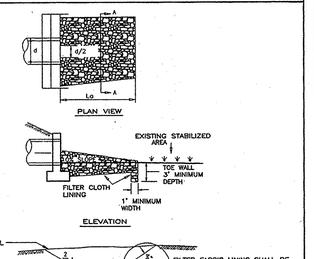
5. WHERE ONE ROLL OF MATTING ENDS AND ANOTHER BEGINS, THE END OF THE TOP STRIP SHALL OVERLAP THE UPPER END OF THE LOWER STRIP BY 4". SHIPLAP FASHION. REINFORCE THE OVERLAP WITH A DOUBLE ROW OF STAPLES SPACED 8" APART IN A STAGGERED PATTERN ON EITHER SIDE.

6. THE DISCHARGE END OF THE MATTING LINER SHOULD BE SIMILARLY SECURED WITH 2 DOUBLE ROWS OF STAPLES.

NOTE: IF FLOW WILL ENTER FROM THE EDGE OF THE MATTING THEN THE AREA EFFECTED BY THE FLOW MUST BE KEYED-IN.

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

DETAIL 27 - ROCK OUTLET PROTECTION III



U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F - 18 - 10	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

ROCK OUTLET PROTECTION

CONSTRUCTION SPECIFICATIONS

1. THE SUBGRADE FOR THE FILTER, RIP-RAP, OR GABION SHALL BE PREPARED TO THE REQUIRED LINES AND GRADES. ANY FILL REQUIRED IN THE SUBGRADE SHALL BE COMPACTED TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.

2. THE ROCK OR GRAVEL SHALL CONFORM TO THE SPECIFIED GRADING LIMITS WHEN INSTALLED RESPECTIVELY IN THE RIP-RAP OR FILTER.

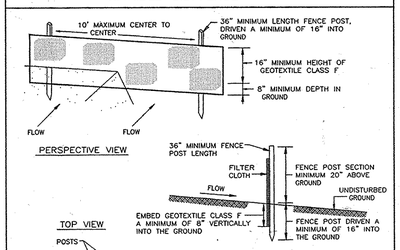
3. GEOTEXTILE SHALL BE PROTECTED FROM PUNCHING, CUTTING, OR TEARING. ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE SHALL BE REPAIRED BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. ALL OVERLAPS WHETHER FOR REPAIRS OR FOR JOINING TWO PIECES OF GEOTEXTILE SHALL BE A MINIMUM OF ONE FOOT.

4. STONE FOR THE RIP-RAP OR GABION OUTLETS MAY BE PLACED BY EQUIPMENT. THEY SHALL BE CONSTRUCTED TO THE FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. THE STONE FOR RIP-RAP OR GABION OUTLETS SHALL BE DELIVERED AND PLACED IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENEOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. RIP-RAP SHALL BE PLACED IN A MANNER TO PREVENT DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE. HAND PLACEMENT WILL BE REQUIRED TO THE EXTENT NECESSARY TO PREVENT DAMAGE TO THE PERMANENT WORKS.

5. THE STONE SHALL BE PLACED SO THAT IT BLENDS IN WITH THE EXISTING GROUND. IF THE STONE IS PLACED TOO HIGH THEN THE FLOW WILL BE FORCED OUT OF THE CHANNEL AND SCOUR ADJACENT TO THE STONE WILL OCCUR.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F - 18 - 8A	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 22 - SILT FENCE



JOINING TWO ADJACENT SILT FENCE SECTIONS

Construction Specifications

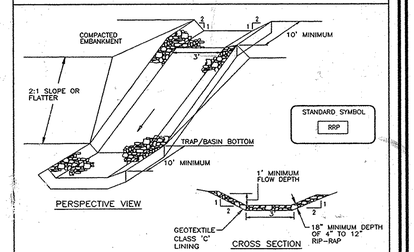
1. Fence posts shall be a minimum of 36" long, driven 16" minimum into the ground. Wood posts shall be 1 1/2" x 1 1/2" square (minimum) cut, or 1 3/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighing not less than 1.00 pound per linear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

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

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

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

DETAIL 5 - RIP-RAP INFLOW PROTECTION



Construction Specifications

1. Rip-rap lined inflow channels shall be 1' in depth, have a trapezoidal cross section with 2:1 or flatter side slopes and 3' (min.) bottom width. The channel shall be lined with 4" to 12" rip- rap to a depth of 18".
2. Filter cloth shall be installed under all rip-rap. Filter cloth shall be Geotextile Class C.
3. Entrance and exit sections shall be installed as shown on the detail section.
4. Rip-rap used for the lining may be recycled for permanent outlet protection if the basin is to be converted to a stormwater management facility.
5. Gabion Inflow Protection may be used in lieu of Rip-rap Inflow Protection.
6. Rip-rap should blend into existing ground.
7. Rip-rap Inflow Protection shall be used where the slope is between 4:1 and 10:1, for slopes flatter than 10:1 use Earth Dike or Temporary Swale lining criteria.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE B - 6 - 2	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

21.0 STANDARDS AND SPECIFICATIONS FOR TOPSOIL

DEFINITION

PLACEMENT OF TOPSOIL OVER A PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION.

PURPOSE

TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETABLE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.

CONDITIONS WHERE PRACTICE APPLIES

I. THIS PRACTICE IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:

A. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.

B. THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.

C. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.

D. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.

II. FOR THE PURPOSE OF THESE STANDARDS AND SPECIFICATIONS, AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN FOR ADEQUATE STABILIZATION. AREAS HAVING SLOPES STEEPER THAN 2:1 SHALL HAVE THE APPROPRIATE STABILIZATION SHOWN ON THE PLANS.

CONSTRUCTION AND MATERIAL SPECIFICATIONS

I. TOPSOIL SALVAGED FROM THE EXISTING SITE MAY BE USED PROVIDED THAT IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA--SCS IN COOPERATION WITH MARYLAND AGRICULTURAL EXPERIMENTAL STATION.

II. TOPSOIL SPECIFICATIONS – SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING:

I. TOPSOIL SHALL BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR A SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. REGARDLESS, TOPSOIL SHALL NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND SHALL CONTAIN LESS THAN 5% BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAT 1 AND 1/2" IN DIAMETER.

II. TOPSOIL MUST BE FREE OF PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACKGRASS, JOHNSONGRASS, NUTSEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.

III. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, GROUND LIMESTONE SHALL BE SPREAD AT THE RATE OF 4-8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL. LIME SHALL BE DISTRIBUTED UNIFORMLY OVER DESIGNATED AREAS AND WORKED INTO THE SOIL IN CONJUNCTION WITH TILLAGE OPERATIONS AS DESCRIBED IN THE FOLLOWING PROCEDURES.

II. FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES:

I. ON SOIL MEETING TOPSOIL SPECIFICATIONS, OBTAIN TEST RESULTS DICTATING FERTILIZER AND LIME AMENDMENTS REQUIRED TO BRING THE SOIL INTO COMPLIANCE WITH THE FOLLOWING:

A. PH FOR TOPSOIL SHALL BE BETWEEN 6.0 AND 7.5. IF THE TESTED SOIL DEMONSTRATES A PH OF LESS THAN 6.0, SUFFICIENT LIME SHALL BE PRESCRIBED TO RAISE THE PH TO 6.5 OR HIGHER.

B. ORGANIC CONTENT OF TOPSOIL SHALL BE NOT LESS THAN 1.5 PERCENT BY WEIGHT.

C. TOPSOIL HAVING SOLUBLE SALT CONTENT GREATER THAN 500 PARTS PER MILLION SHALL NOT BE USED.

D. NO SOD OR SEED SHALL BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.

NOTE: TOPSOILING SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL.

II. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMMENDMENTS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION--SECTION I-VEGETATIVE STABILIZATION METHODS AND MATERIALS.

V. TOPSOIL APPLICATION

I. WHEN TOPSOILING, MAINTAIN NEEDED EROSION AND SEDIMENT CONTROL PRACTICES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, EARTH DIKES, SLOPE SILT FENCE AND SEDIMENT TRAPS AND BASINS.

II. GRADES ON THE AREAS TO BE TOPSOILED, WHICH HAVE BEEN PREVIOUSLY ESTABLISHED, SHALL BE MAINTAINED, ALBEIT 4" – 8" HIGHER IN ELEVATION.

III. TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED IN A 4" – 8" LAYER AND LIGHTLY COMPACTED TO A MINIMUM THICKNESS OF 4". SPREADING SHALL BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS SHALL BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.

IV. TOPSOIL SHALL NOT BE PLACE WHILE THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.

PERMANENT SEEDING NOTES

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

SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULES:

1) PREFERRED--APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS/ 100 SQ.FT.) AND 600 LBS PER ACRE 10-10-10 FERTILIZER (14 LBS/ 1000 SQ.FT.) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL. AT THE TIME OF SEEDING, APPLY 400 LBS. PER ACRE 30-0-0 UREAFORM FERTILIZER (9 LBS/1000 SQ.FT.)
2) ACCEPTABLE--APPLY 2 TONS PER ACRE DOLOMATIC LIMESTONE (92 LBS/ 1000 SQ.FT.) AND APPLY 1000 LBS. PER ACRE 10-10-10- FERTILIZER (23 LBS./1000 SQ.FT.) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL.

SEEDING: FOR THE PERIODS MARCH 1 THRU APRIL 30, AND AUGUST 1 THRU OCTOBER 15, SEED WITH 60 LBS. PER ACRE (1.4 LBS/1000 SQ.FT.) OF KENTUCKY 31 TALL FESCUE. FOR THE PERIOD MAY 1 THRU JULY 31, SEED WITH 60 LBS. KENTUCKY 31 TALL FESCUE PER ACRE AND 2 LBS. PER ACRE (.05 LBS./1000 SQ.FT.) OF WEEPING LOVEGRASS. DURING THE PERIOD OF OCTOBER 16 THRU FEBRUARY 28, PROTECT SITE BY: OPTION (1) 2 TONS PER ACRE WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING. OPTION (2) USE SOD. OPTION (3) SEED WITH 60 LBS/ACRE KENTUCKY 31 TALL FESCUE AND MULCH WITH 2 TONS/ACRE WELL ANCHORED STRAW.

MULCHING: APPLY 1 1/2 TO 2 TONS PER ACRE (70 TO 90 LBS./1000 SQ.FT.) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ.FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GAL/1000 SQ.FT.) FOR ANCHORING.

MAINTENANCE: INSPECT ALL SEEDED AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.

TEMPORARY SEEDING NOTES

SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

SOIL AMENDMENTS: APPLY 600 LBS. PER ACRE 10-10-10 FERTILIZER (14 LBS./1000 SQ.FT).

SEEDING: FOR PERIODS MARCH 1 THRU APRIL 30 AND FROM AUGUST 15 THRU NOVEMBER 15, SEED WITH 2 1/2 BUSHEL PER ACRE OF ANNUAL RYE (3.2 LBS./1000 SQ.FT.) FOR THE PERIOD MAY 1 THRU AUGUST 14, SEED WITH 3 LBS. PER ACRE OF WEEPING LOVEGRASS (.07 LBS./1000 SQ.FT.). FOR THE PERIOD NOVEMBER 1 THRU FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOD.

MULCHING: APPLY 1 1/2 TO 2 TONS PER ACRE (70 TO 90 LBS./1000 SQ.FT.) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ.FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GAL/1000 SQ.FT.) FOR ANCHORING.

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

SEDIMENT CONTROL NOTES

1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSE AND PERMITS SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1855).
2. ALL VEGETATION AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: (A) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN 3:1, (B) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
4. ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 7, HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
5. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING, SOD, TEMPORARY SEEDING, AND MULCHING (SEC. G). TEMPORARY STABILIZATION WITH MULCH ALONE SHALL BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
6. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
7. SITE ANALYSIS :

TOTAL AREA	99.34 AC.
AREA DISTURBED	12.17 AC.
AREA TO BE ROOFED OR PAVED	2.38 AC.
AREA TO BE VEGETATIVELY STABILIZED	9.80 AC.
TOTAL CUT	10,000 CY
TOTAL FILL	10,000 CY
OFFSITE WASTE/BORROW AREA LOCATION	*

8. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
9. ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
10. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
11. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.

* TO BE DETERMINED BY CONTRACTOR, WITH PRE-APPROVAL OF THE SEDIMENT CONTROL INSPECTOR WITH AN APPROVED AND ACTIVE GRADING PERMIT

SEQUENCE OF CONSTRUCTION

		DURATION
1.	OBTAIN GRADING PERMIT.	
2.	NOTIFY HOWARD COUNTY BUREAU OF INSPECTIONS AND PERMITS (313-1880) AT LEAST 24 HOURS BEFORE STARTING ANY WORK.	
3.	C