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

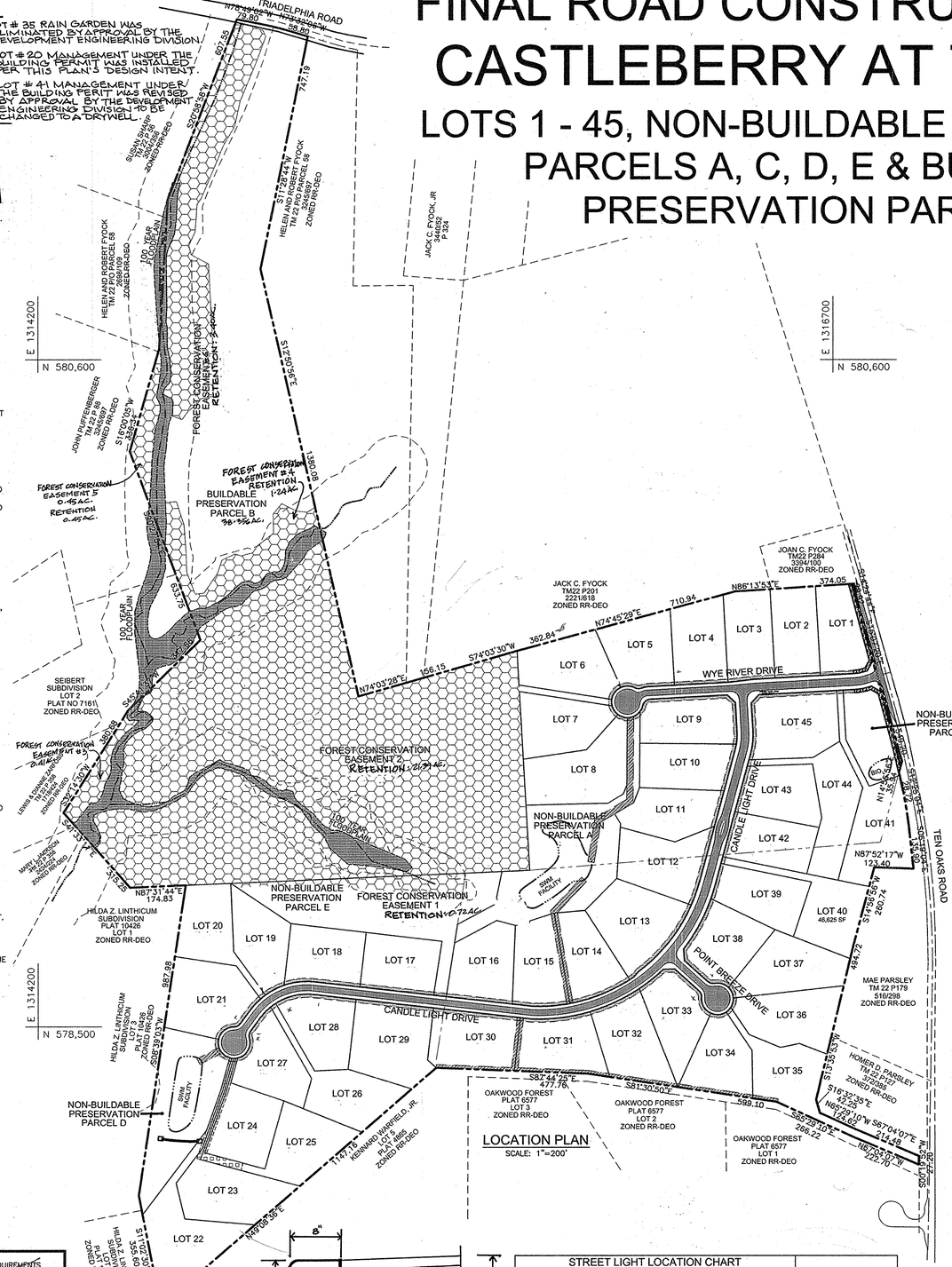
GENERAL NOTES

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: 99.5779± AC
   AREA OF 100-YEAR FLOODPLAIN DRAINAGE & UTILITY EASEMENT: 3.55 AC
   AREA OF STEEP SLOPES: 0.27 AC
   NET AREA OF PROJECT: 95.7579± 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 ISSUANCE OF BUILDING PERMIT.
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.

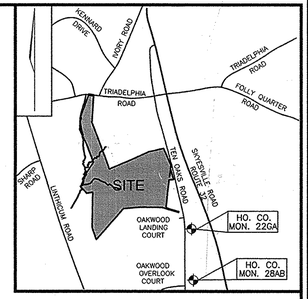
LOT # 35 RAIN GARDEN WAS ELIMINATED BY APPROVAL BY THE DEVELOPMENT ENGINEERING DIVISION.

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'



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 5794/253 TAX MAP 22, BLOCK 20; PARCEL 90
TOTAL AREA OF SUBDIVISION	99.5779± ACRES
ALLOWED DENSITY UNITS	99.5779±/4.25 = 23
NET ACREAGE OF SUBDIVISION	99.5579± ACRES
NUMBER OF UNITS PROPOSED	46 UNITS
MAXIMUM DEO UNITS ALLOWED	99.5779±/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
28	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

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3675 PARK AVENUE, SUITE 301
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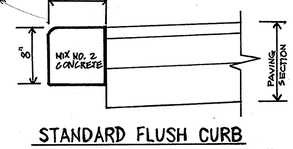


STANDARD FLUSH CURB
STD DETAIL R.3.01a

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

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

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

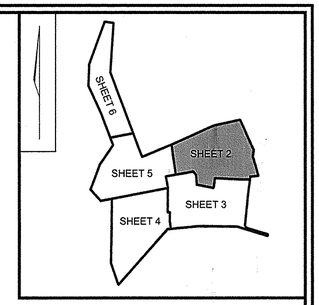
DESIGN BY:	RHV/LJT
DRAWN BY:	LJT
CHECKED BY:	RHV
DATE:	DECEMBER, 2006
SCALE:	AS NOTED
W.O. NO.:	00-85.00

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

SHEET 1 OF 23

AS-BUILT 11/17/14

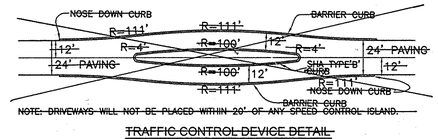
F-06-130



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



NOTE: DRIVEWAYS WILL NOT BE PLACED WITHIN 20' OF ANY SPEED CONTROL ISLAND.

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 CANDLE 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

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 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

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
ROBERT H. VOGEL, PE #16193

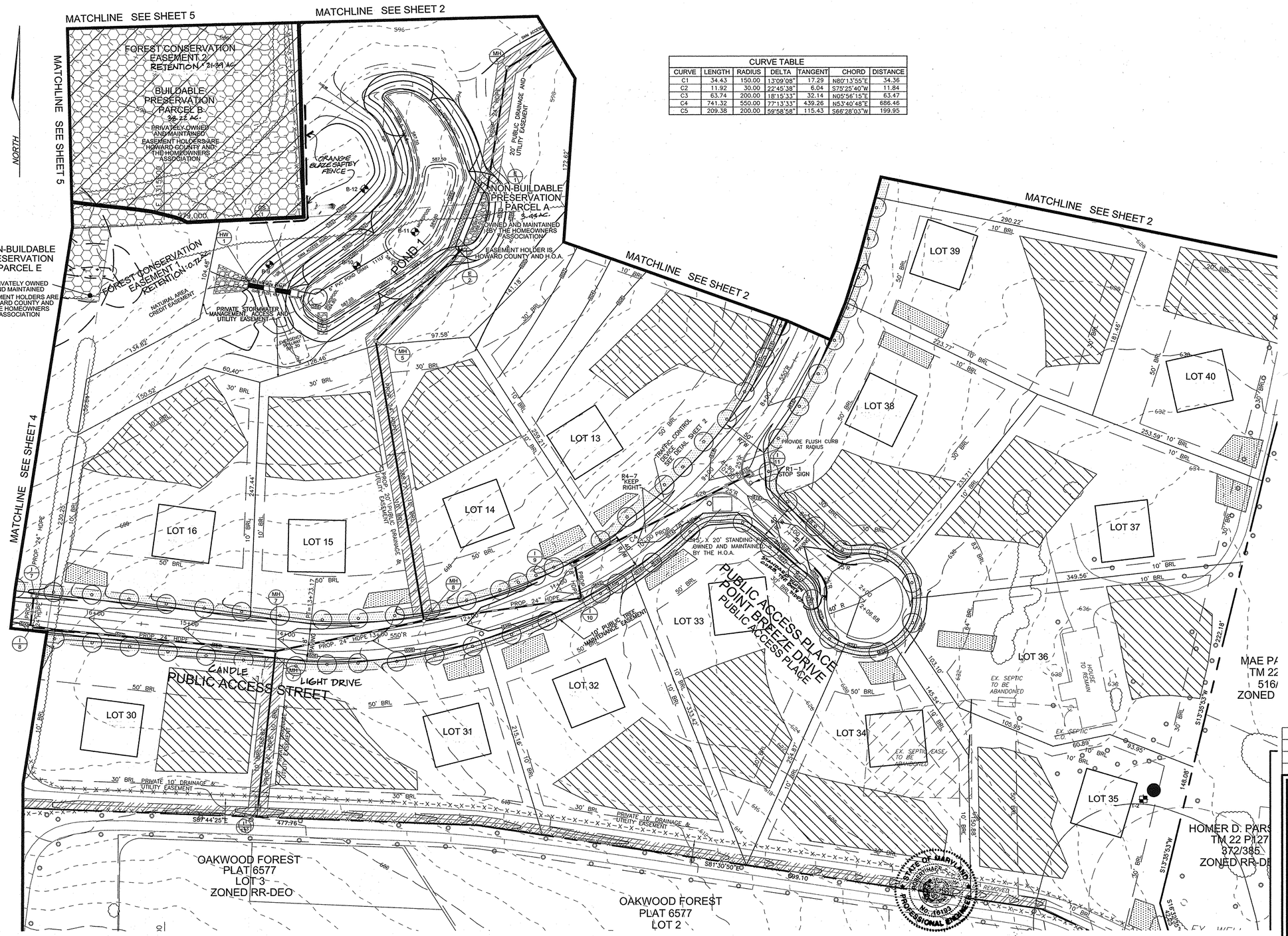
DESIGN BY:	RHV/LJT
DRAWN BY:	LJT
CHECKED BY:	RHV
DATE:	DECEMBER, 2006
SCALE:	1"=50'
W.O. NO.:	00-85.00

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

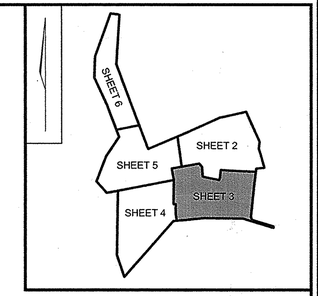
SHEET 2 OF 23

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

- 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
- 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 POE	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
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

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.

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
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 3 OF 23

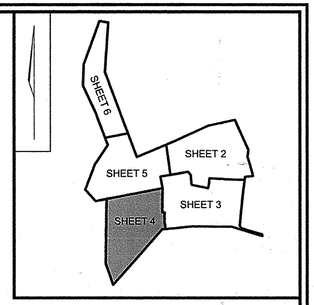
AS-BUILT 11/17/14

F-06-130

LEGEND

- EXISTING 2 FT CONTOUR
- EXISTING 10 FT CONTOUR
- PROPOSED 2 FT CONTOUR
- PROPOSED 10 FT CONTOUR
- SUPER SILT FENCE
- 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

NORTH

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

MATCHLINE SEE SHEET 5

MATCHLINE SEE SHEET 3

CANDLE LIGHT DRIVE PUBLIC ACCESS PLACE

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
NATURAL AREA CREDIT EASEMENT

WETLANDS
25' WETLAND BUFFER
100' STREAM BUFFER

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

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

N49°08'36"E 1147.16

S11°09'39"E 356.80

S08°39'03"W 987.98

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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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 1/24/17
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/3/17

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

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3675 PARK AVENUE, SUITE 301
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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
DATE:	DECEMBER, 2006
SCALE:	1"=50'
W.O. NO.:	00-85.00

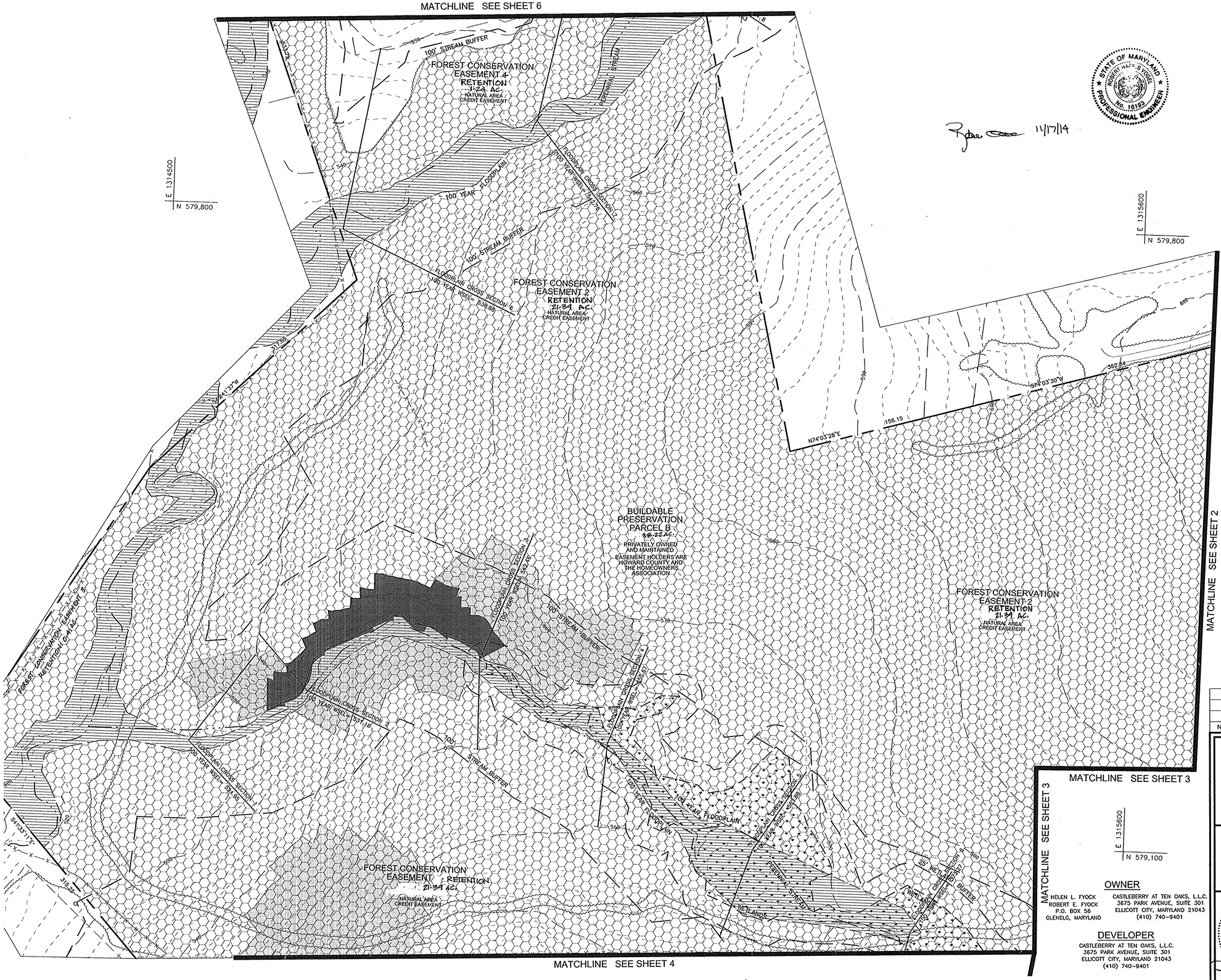
DPZ REF: S-01-11, P-05-04

SHEET 4 OF 23

AS-BUILT 11/17/14

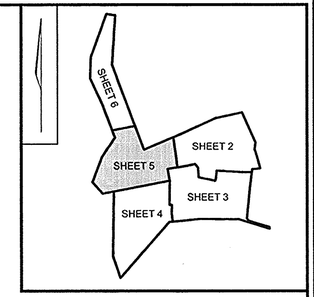
F-06-130

MATCHLINE SEE SHEET 6



STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER

Robert H. Vogel 11/7/14



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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- 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

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

HOWARD SCD — DATE

NO.	REVISION	DATE

E 1315600
N 579,100

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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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

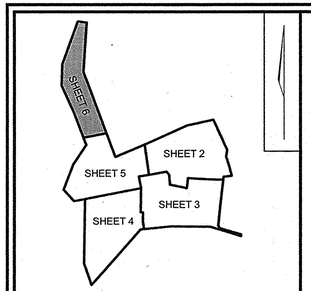
DESIGN BY:	RHV/LJT
DRAWN BY:	LJT
CHECKED BY:	RHV
DATE:	DECEMBER, 2006
SCALE:	1"=50'
W.O. NO.:	00-85.00

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

SHEET 5 OF 23

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

FOREST CONSERVATION EASEMENT #5
RETENTION: 0.45AC.

FOREST CONSERVATION EASEMENT #6
RETENTION: 3.40AC.

FOREST CONSERVATION EASEMENT #4
RETENTION: 1.24AC.

FOREST CONSERVATION EASEMENT #1
RETENTION: 1.52AC.

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

100' STREAM BUFFER
PERENNIAL STREAM
100' YEAR FLOODPLAIN
NATURAL AREA CREDIT EASEMENT
FLOODPLAIN CROSS SECTION 10
100 YEAR WSEL= 550.25'
FLOODPLAIN CROSS SECTION 11
100 YEAR WSEL= 560.74'
FLOODPLAIN CROSS SECTION 12
100 YEAR WSEL= 558.94'
FLOODPLAIN CROSS SECTION 13
100 YEAR WSEL= 560.74'
FLOODPLAIN CROSS SECTION 14
100 YEAR WSEL= 558.49'
FLOODPLAIN CROSS SECTION 9
100 YEAR WSEL= 544.51'
FLOODPLAIN CROSS SECTION 8
100 YEAR WSEL= 544.51'

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

S16°00'05"W 336.34
S20°56'58"W 607.55
S11°28'44"W 747.19
S16°18'11"W 410.75
S 3°05'21"E 1380.08

30' BRL
75' BRL
25' BRL
50' BRL
45' BRL
35' BRL

MATCHLINE SEE SHEET 5

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
	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
	100 YEAR FLOODPLAIN

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

OWNER

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ROBERT E. FYOCK
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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
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

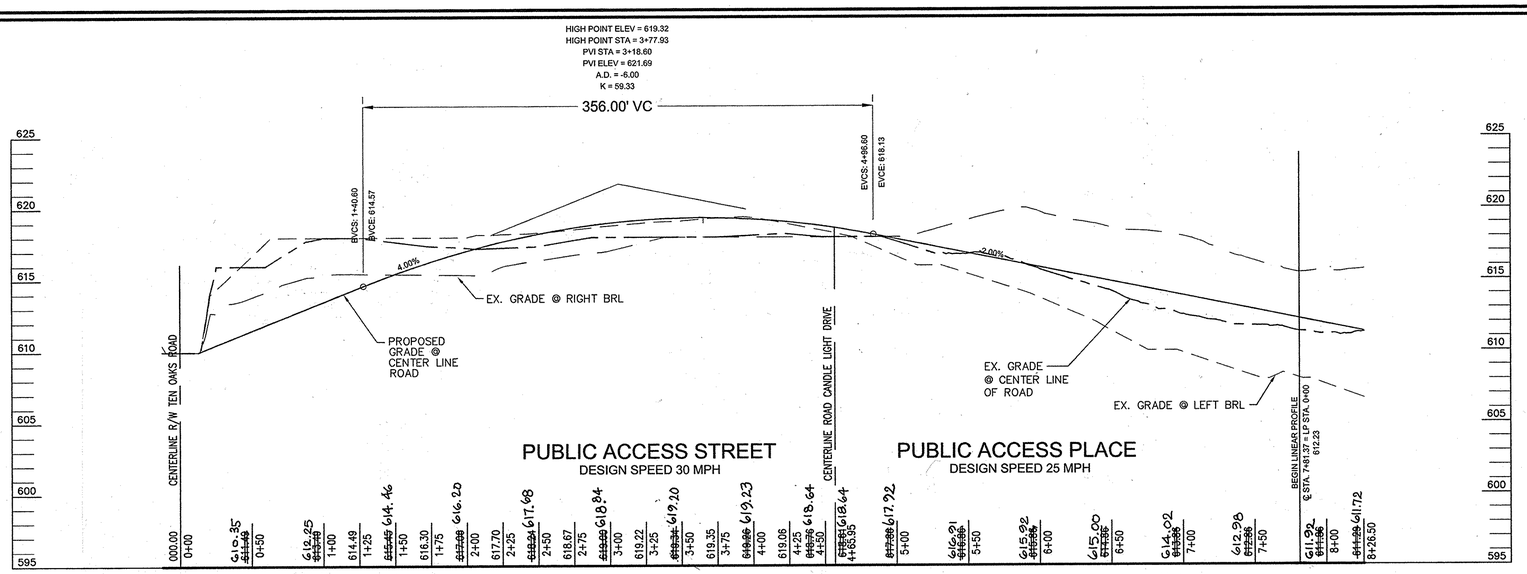
DESIGN BY:	RHV/LJT
DRAWN BY:	LJT
CHECKED BY:	RHV
DATE:	DECEMBER, 2006
SCALE:	1"=50'
W.O. NO.:	00-85.00

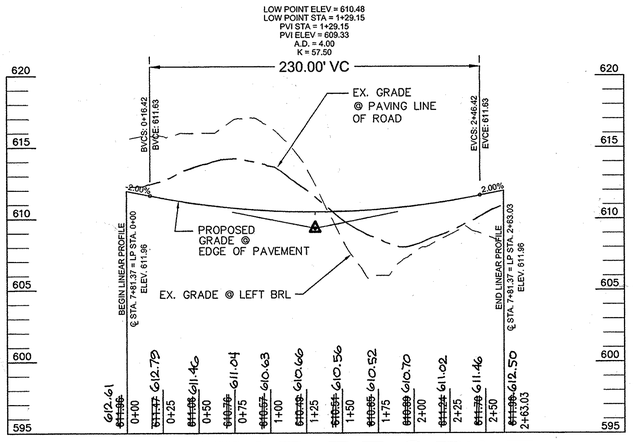
DPZ REF:
S-01-11, P-05-04

SHEET 6 OF 23

AS-BUILT 11/17/14

F-06-130

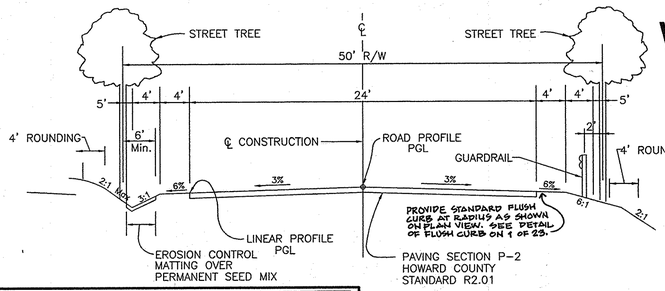




LINEAR PROFILE- WYE RIVER DRIVE

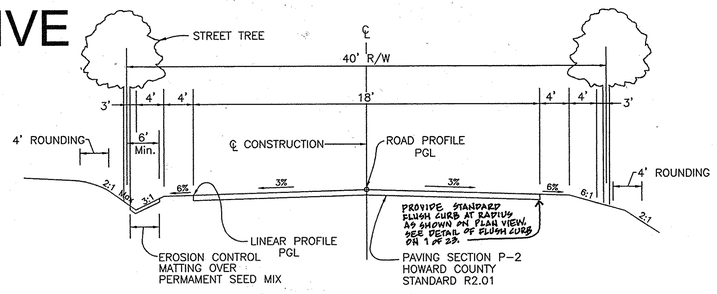
PUBLIC ACCESS PLACE

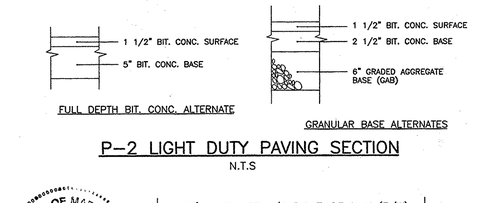
SCALE: HORZ: 1"=50'
VERT: 1"=5'



WYE RIVER DRIVE

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





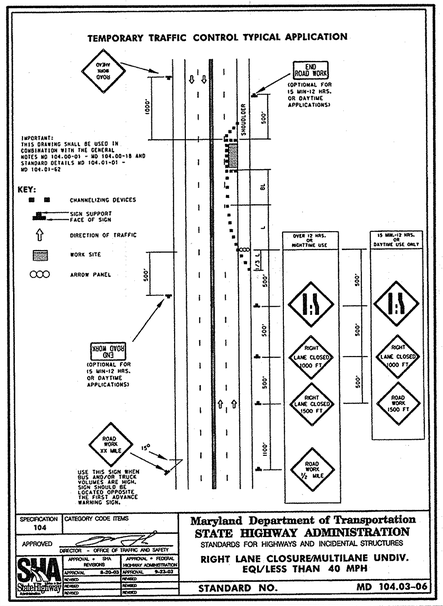
P-2 LIGHT DUTY PAVING SECTION
N.T.S

TYPICAL 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

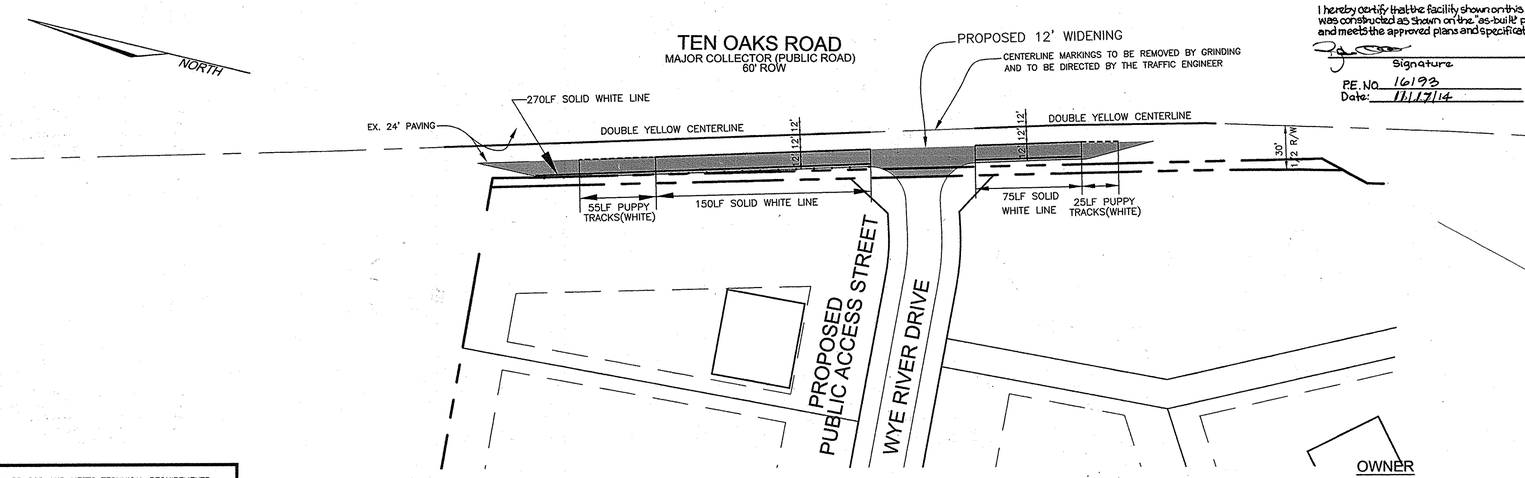
TYPICAL ROADWAY SECTION CLASSIFICATION : PUBLIC ACCESS PLACE

WYE RIVER DRIVE
DESIGN SPEED 25 MPH
CL STA. 4+69.65 TO CL STA. 8+38.47
NOT TO SCALE

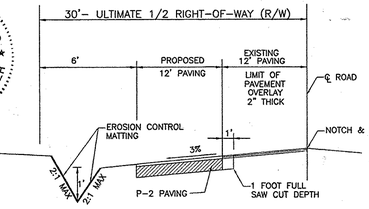


SPECIFICATION 104	CATEGORY CODE ITEMS
APPROVED	DIRECTOR - OFFICE OF TRAFFIC AND SAFETY
APPROVAL + DATE REVISIONS	APPROVAL + FEDERAL HIGHWAY ADMINISTRATION
DIVISION: 6.30.06	DATE: 9.23.02

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
RIGHT LANE CLOSURE/MULTILANE UNDIV. EQL/LESS THAN 40 MPH
STANDARD NO. MD 104.03-06



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



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

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

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

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

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

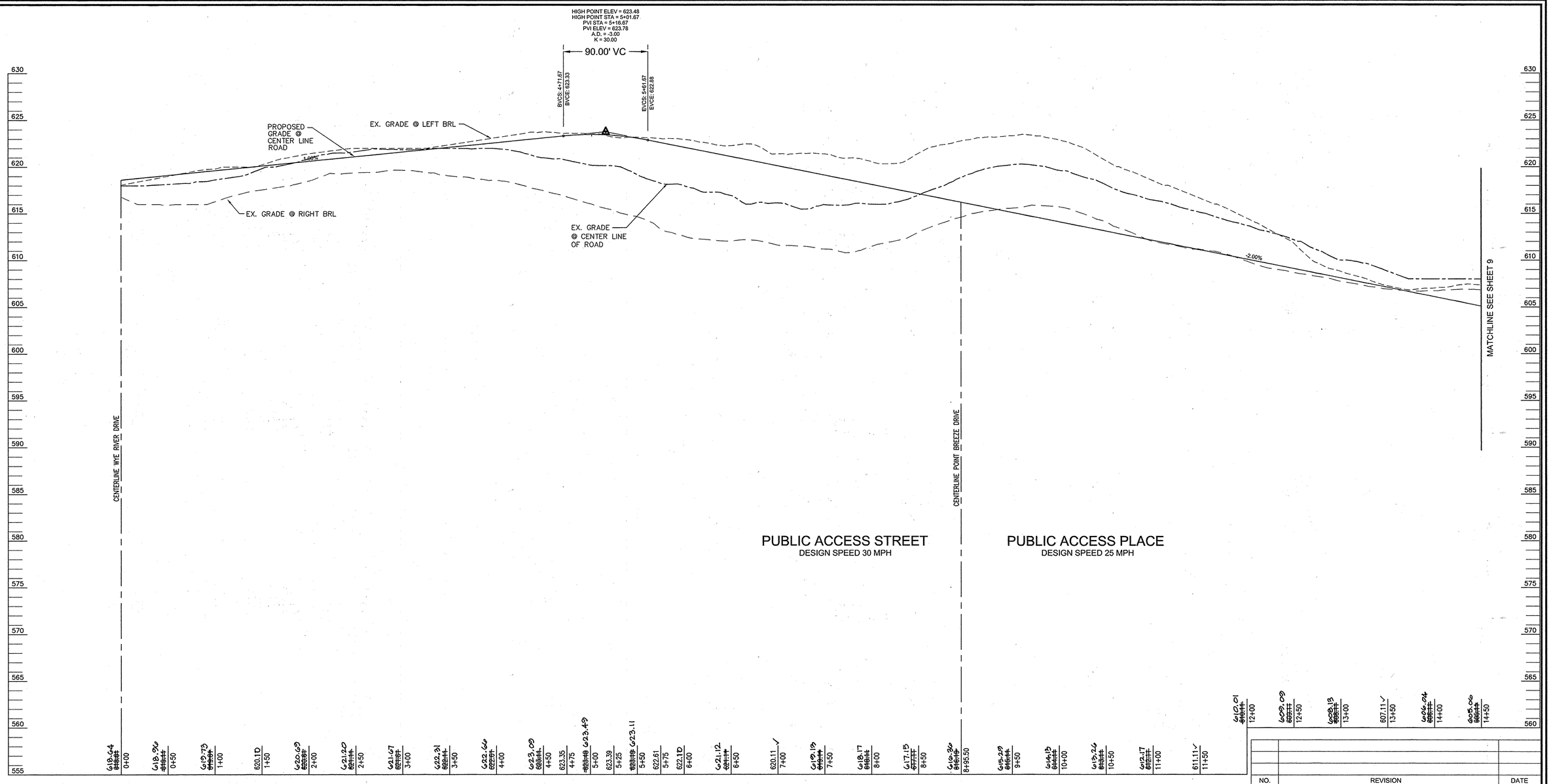
STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE #16193

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

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

SHEET 7 OF 23

AS-BUILT 11/17/14 F-06-130



NO.	REVISION	DATE

CANDLE LIGHT DRVIE

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 3/2/07

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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

P.E. No. 16193

Date: 11/7/14

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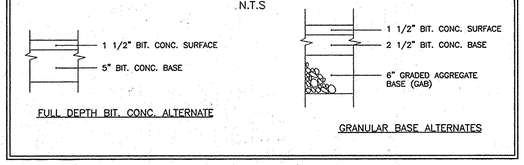
SHEET 8 OF 23

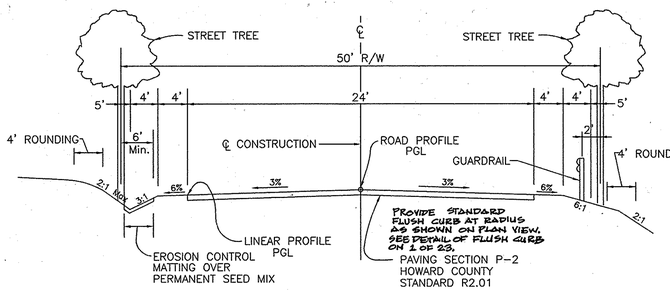
AS-BUILT 11/17/14

F-06-130

P-2 LIGHT DUTY PAVING SECTION

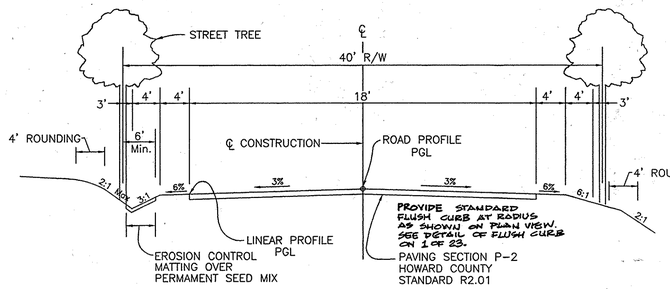
N.T.S





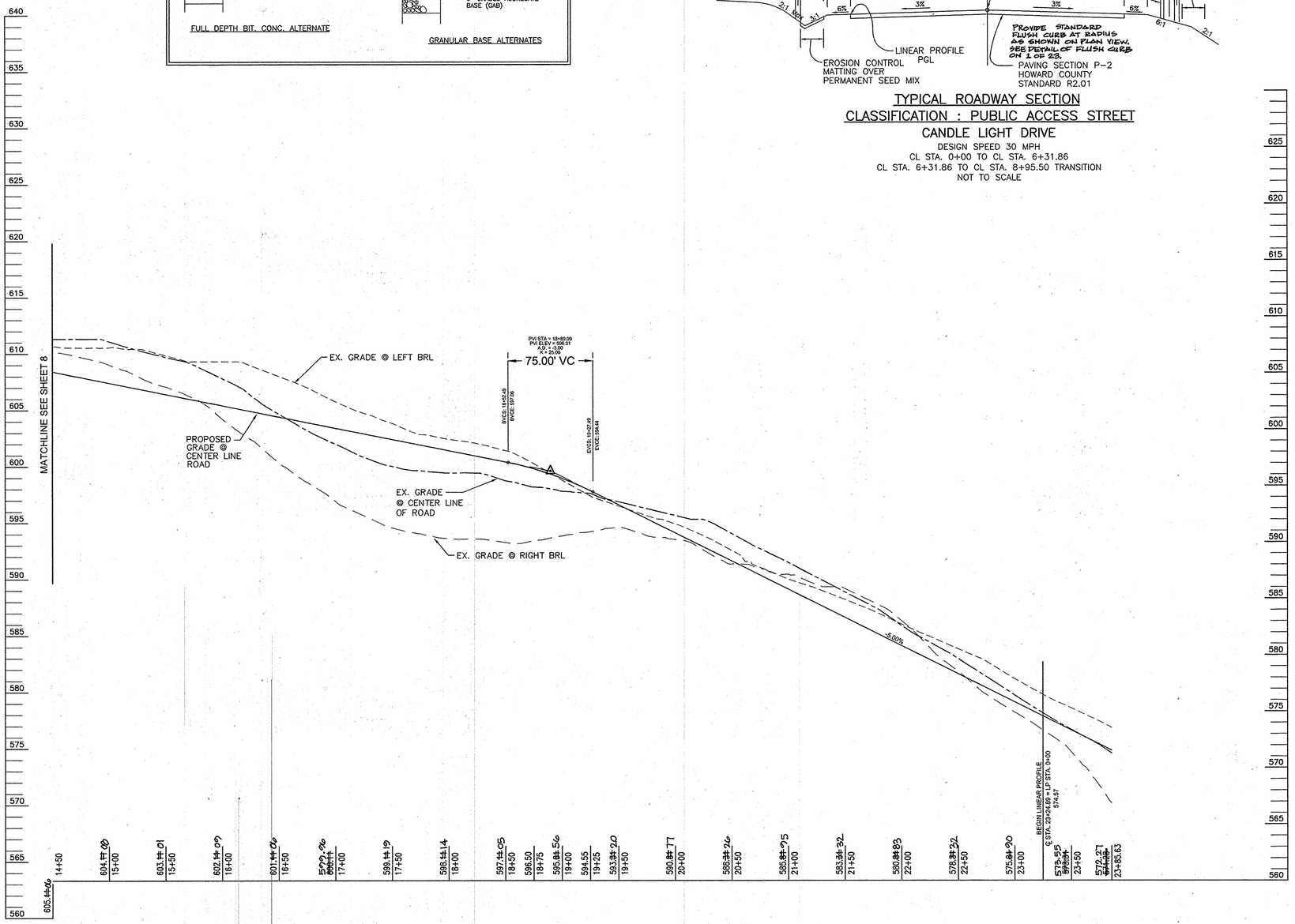
TYPICAL ROADWAY SECTION
CLASSIFICATION : PUBLIC ACCESS STREET
CANDLE LIGHT DRIVE

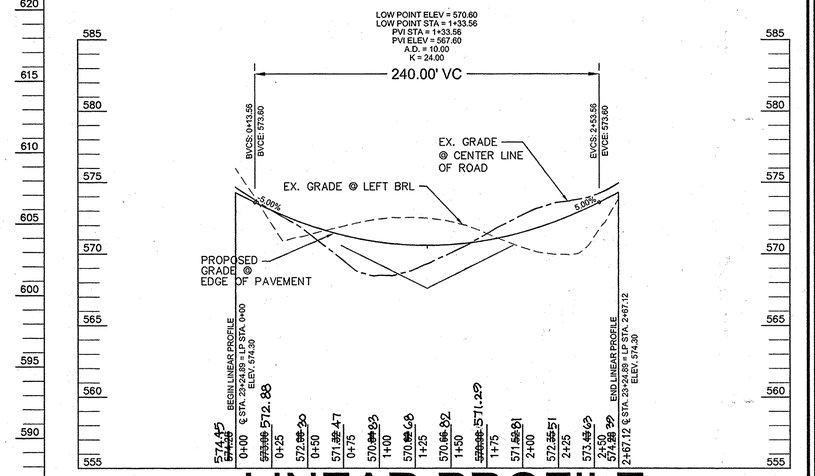
DESIGN SPEED 30 MPH
CL STA. 0+00 TO CL STA. 6+31.86
CL STA. 6+31.86 TO CL STA. 8+95.50 TRANSITION
NOT TO SCALE



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

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

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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ROBERT H. VOGEL, PE #16193

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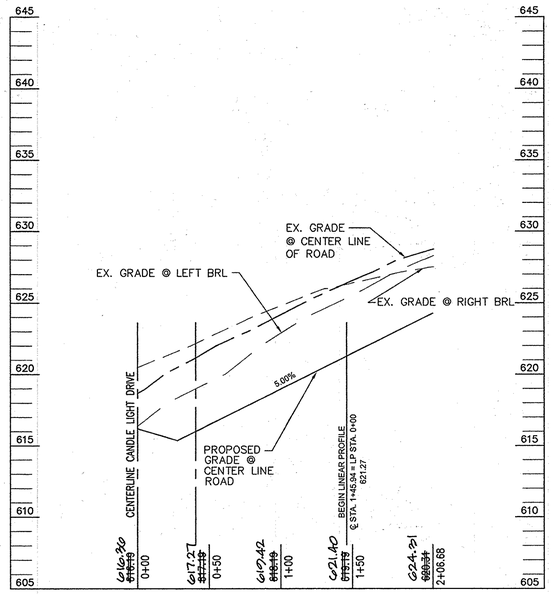
DPZ REF:
S-01-11, P-05-04

9 SHEET OF 23

AS-BUILT 11/17/14

F-06-130

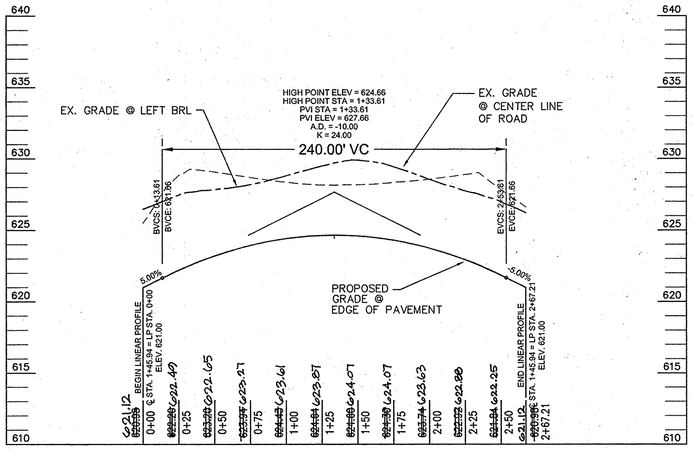


POINT BREEZE DRIVE

PUBLIC ACCESS PLACE

DESIGN SPEED 15 MPH

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



LINEAR PROFILE- POINT BREEZE DRIVE

PUBLIC ACCESS PLACE

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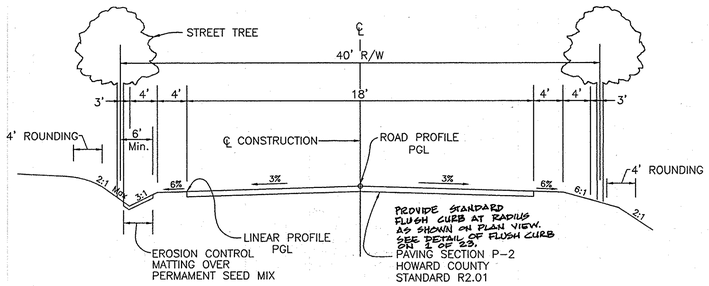
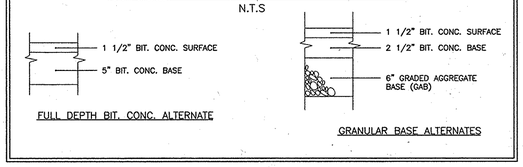
VERT: 1"=5'



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



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

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

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USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE

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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
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TAX MAP 22 GRID 20
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DPZ REF:
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10 SHEET OF 23

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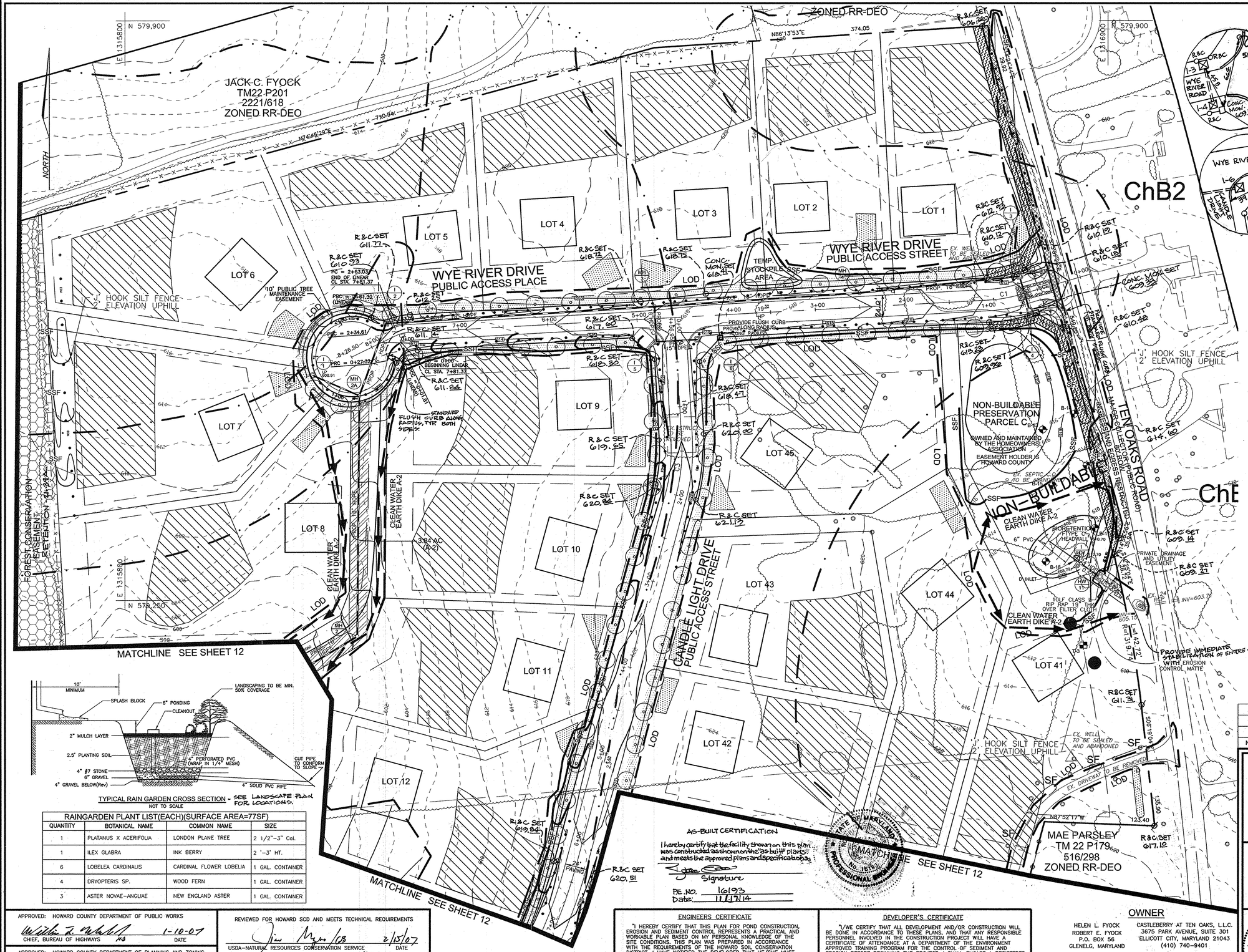
AS-BUILT 11/17/14

F-06-130


JACK C. FYOCK
TM22 P201
2221/618
ZONED RR-DEO
ZONED RR-DEO
N 579,900
E 1315800
N 579,250
E 1315800
N 579,900
E 1316900
NORTH
N86°13'53"E 374.05
N47°45'29"E 750.54'
LOT 1
LOT 2
LOT 3
LOT 4
LOT 5
LOT 6
LOT 7
LOT 8
LOT 9
LOT 10
LOT 11
LOT 12
LOT 41
LOT 42
LOT 43
LOT 44
LOT 45
WYE RIVER DRIVE
PUBLIC ACCESS PLACE
WYE RIVER DRIVE
PUBLIC ACCESS STREET
CANDLE LIGHT DRIVE
PUBLIC ACCESS STREET
TEN OAKS ROAD
(PUBLIC ROAD)
ChB2
ChE
NON-BUILDABLE PRESERVATION PARCEL C
OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION
EASEMENT HOLDER IS HOWARD COUNTY
NON-BUILDABLE PRESERVATION PARCEL B
MAE PARSLEY
TM 22 P179
516/298
ZONED RR-DEO
3.84 AC (A-2)
10' PUBLIC TREE MAINTENANCE EASEMENT
FOREST CONSERVATION EASEMENT (RETENTION)
"J" HOOK SILT FENCE
2' ELEVATION UPHILL
TEMP. STOCKPILE AREA
PROVIDE FLUSH CURB ALONG RADIUS
STANDARD FLUSH CURB ALONG RADIUS, TYP. BOTH SIDES
BEGINNING LINEAR CL STA. 7+81.37
END OF LINEAR CL STA. 7+81.37
PC = 2+63.03
PRC (LINEAR) = 2+81.32
PRC = 2+34.61
PRC = 0+27.32
R=26.50'
CLEAN WATER EARTH DIKE A-2
CLEAN WATER EARTH DIKE A-2 (TYP.)
BIORETENTION TYPE C-1 W/ HEADWALL
6" PVC
PRIVATE DRAINAGE AND UTILITY EASEMENT
D INLET
TOLF CLASS II RIP RAP 19" THK OVER FILTER CLOTH
PROVIDE IMMEDIATE STABILIZATION OF ENTIRE SWALE WITH EROSION CONTROL MATTE
EX. WELL TO BE SEALED AND ABANDONED
EX. SEPTIC TO BE REMOVED
EX. DRIVEWAY TO BE REMOVED
EX. 24" CMP
INV=603.7
INV=605.15
R=142.72'
L=319.74'
S56°19'04"W
135.90'
123.40'
N87°52'17"W
R&C SET 606.26
R&C SET 611.77
R&C SET 610.23
R&C SET 612.25
R&C SET 611.15
R&C SET 611.66
R&C SET 618.72
R&C SET 618.15
CONC. MON. SET 618.41
R&C SET 617.65
R&C SET 618.32
R&C SET 618.47
R&C SET 620.32
R&C SET 619.85
R&C SET 620.84
R&C SET 621.13
R&C SET 619.84
R&C SET 620.51
R&C SET 612.92
R&C SET 610.12
R&C SET 610.18
R&C SET 610.48
CONC. MON. SET 609.33
R&C SET 613.29
R&C SET 609.38
R&C SET 614.60
R&C SET 609.14
R&C SET 609.27
R&C SET 611.31
R&C SET 617.12
MATCHLINE SEE SHEET 12
MATCHLINE SEE SHEET 12
MATCHLINE SEE SHEET 12
PROP. 18" RCP
PROP. 24" RCP
PROP. 15" RCP
PROP. 12" RCP
PROP. 8" SSCO
PROP. 4" SSCO
PROP. 6" SSCO

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.

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

CONC. MON. 615.79

R&C

E 1316800

N 579,100

SHEET 11

SHEET 12

SHEET 13

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
- 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
- EROSION CONTROL MATTE FOR IMMEDIATE STABILIZATION

SWALE DETAIL BEHIND LOTS 30-35
NOT TO SCALE

PROVIDE EROSION CONTROL MATTING

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

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 1/9/07
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3/2/07

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."
DEVELOPER — 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 A-A THIS SHEET

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

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

KEY MAP
NOT TO SCALE
SHEET 11
SHEET 12
SHEET 13

MATCHLINE SEE SHEET 12

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

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 1/17/07
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.

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

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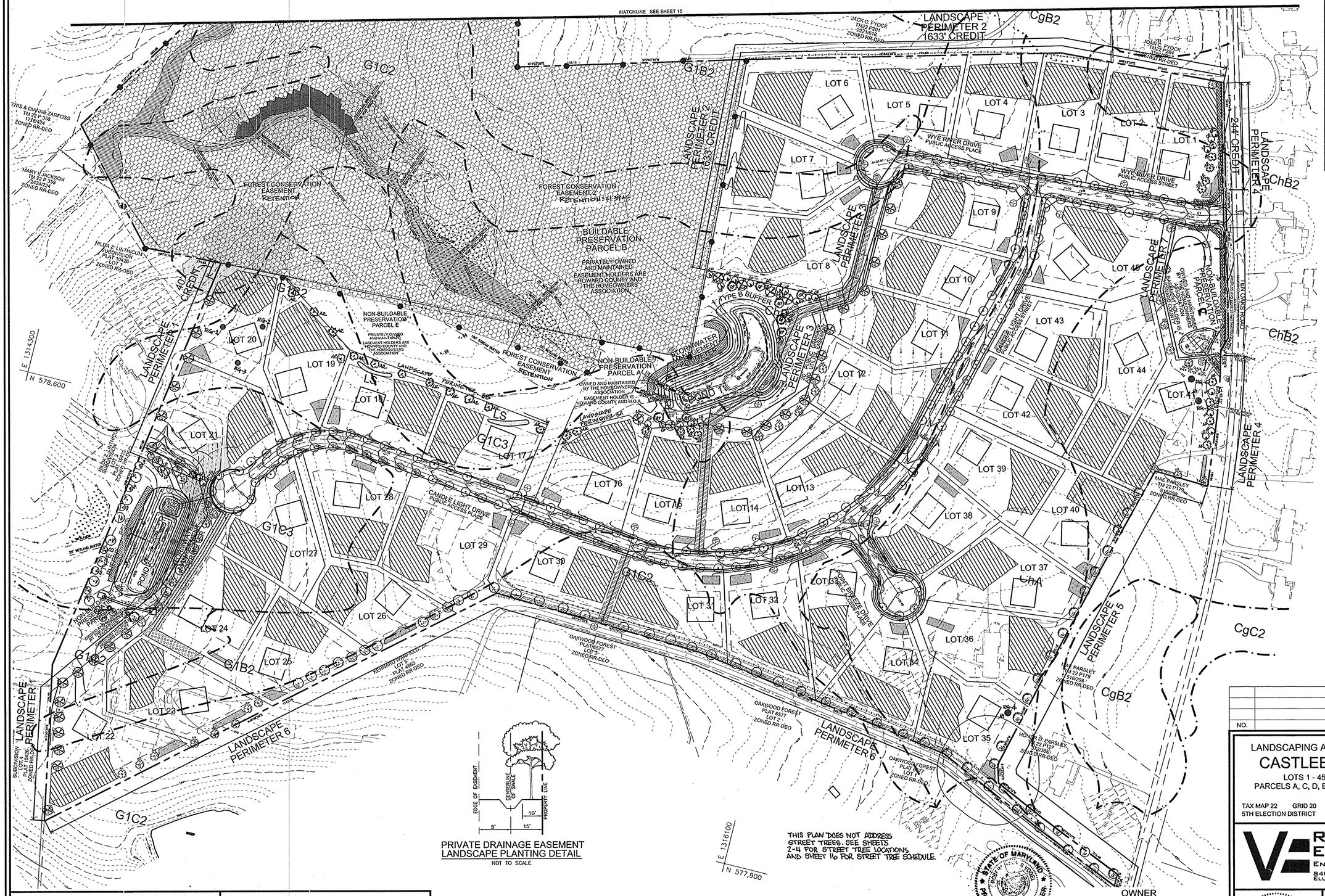
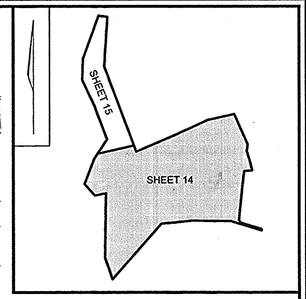
SHEET 13 OF 23

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
- 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

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

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USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE
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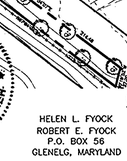
HOWARD SCD — DATE

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.

11/17/14



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ELLICOTT CITY, MARYLAND 21043
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12/15/06

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

LARRY J. THOMPSON
DNR QUALIFIED PROFESSIONAL

ROBERT H. VOGEL, PE #16193

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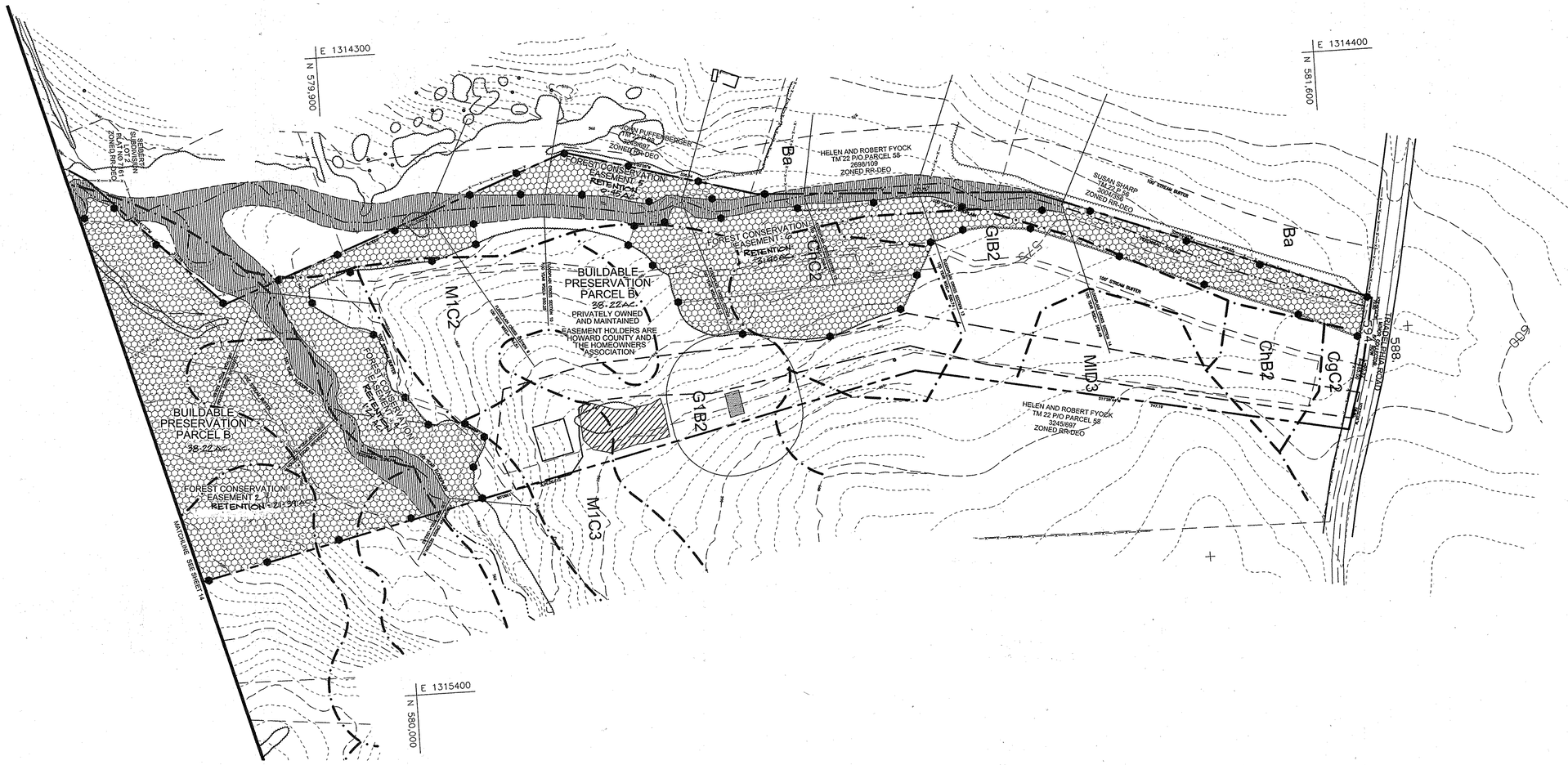
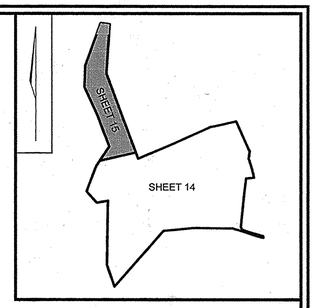
14 SHEET OF 23

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 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 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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12/15/06

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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

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

TAX MAP 22 GRID 20
5TH ELECTION DISTRICT

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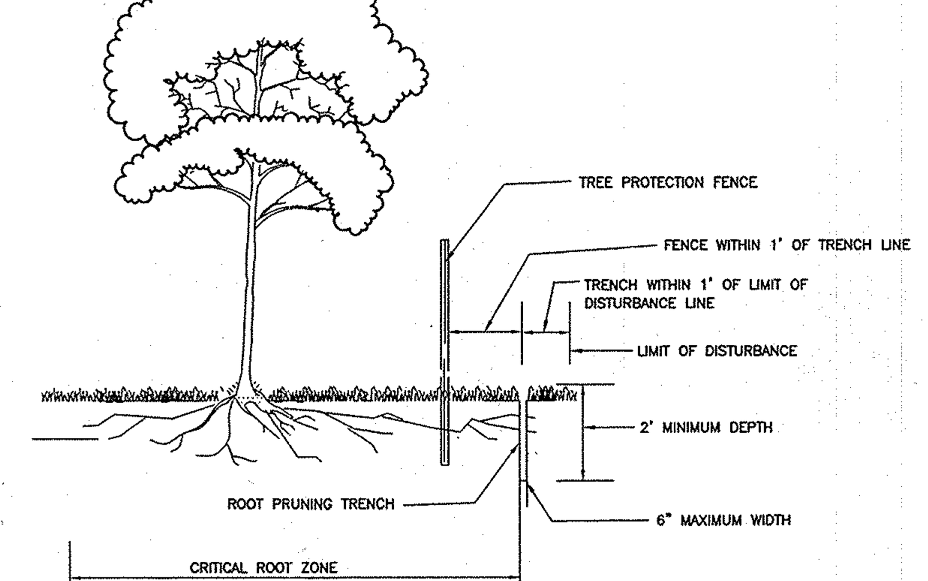
SHEET 15 OF 23

AS-BUILT 11/17/14

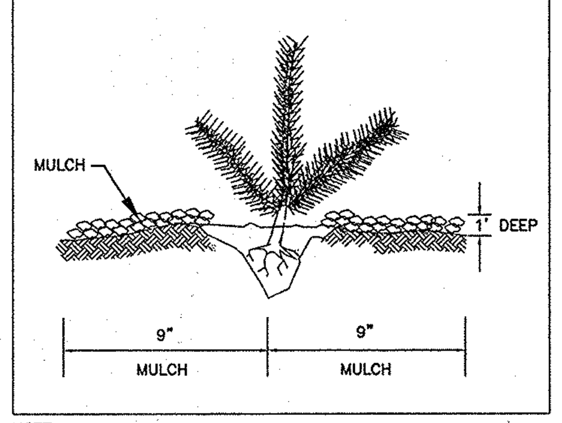
F-06-130



ROOT PRUNING
NTS

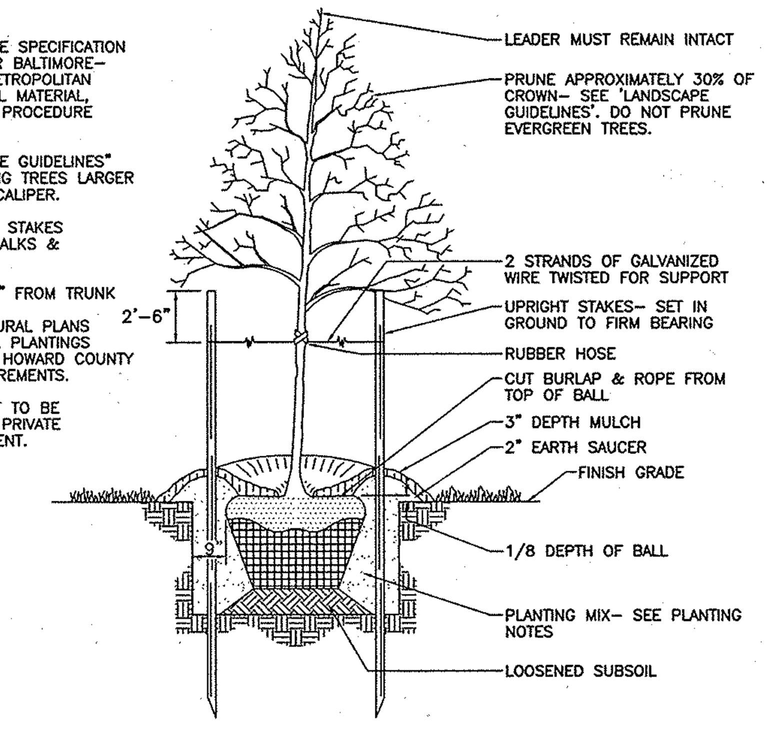
NOTES:
1. RETENTION AREAS TO BE ESTABLISHED AS PART OF THE FOREST CONSERVATION PLAN REVIEW PROCESS.
2. BOUNDARIES OF RETENTION AREAS TO BE STAKED, FLAGGED AND/OR FENCED PRIOR TRENCHING.
3. EXACT LOCATION OF TRENCH SHOULD BE IDENTIFIED.
4. TRENCH SHOULD BE IMMEDIATELY BACKFILLED WITH SOIL REMOVED OR ORGANIC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

SEEDLING/WHIP PLANTING SPECIFICATION

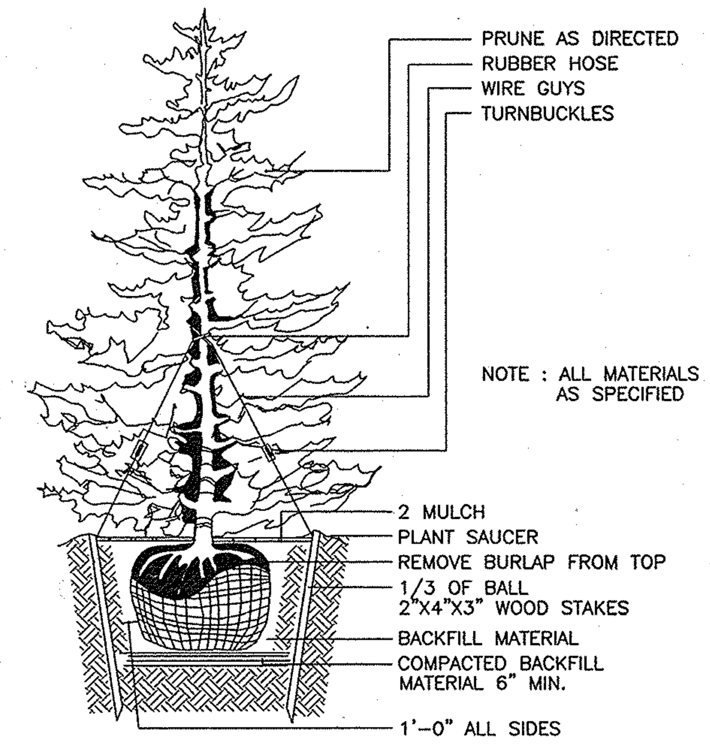


NOTE:
1. PLANT MIX TO BE 1/3 PIONEER & 2/3 MID TO LATE SUCCESSIONAL SPECIES
2. PLANT LARGER STOCK AND EVERGREENS AROUND PERIMETER TO PROTECT INTERIOR SMALLER STOCK
3. WHEN SHRUBS ARE SPECIFIED, PLANT THEM IN CLUSTERS
4. DO NOT PLANT TREES IN A GRID PATTERN

NOTES
1. SEE "LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE-WASHINGTON METROPOLITAN AREAS" FOR ALL MATERIAL, PRODUCT, AND PROCEDURE SPECIFICATIONS.
2. SEE "LANDSCAPE GUIDELINES" FOR SUPPORTING TREES LARGER THAN 2-1/2" CALIPER.
3. PLACE UPRIGHT STAKES PARALLEL TO WALKS & BUILDINGS.
4. KEEP MULCH 1" FROM TRUNK
5. SEE ARCHITECTURAL PLANS FOR ADDITIONAL PLANTINGS WHICH EXCEED HOWARD COUNTY MINIMUM REQUIREMENTS.
6. TREES ARE NOT TO BE PLANTED OVER PRIVATE SEWAGE EASEMENT.



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

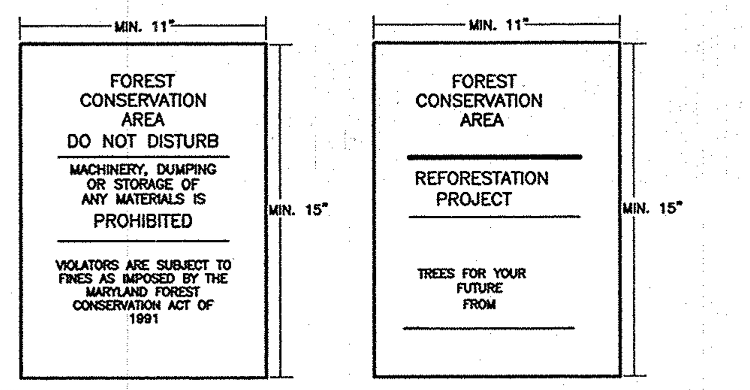
KEY	QUAN.	BOTANICAL NAME	SIZE	REM.
LS	40	LIQUIDAMBAR STYRACIFLUA AMERICAN SWEETGUM	2 1/2"-3" Cal.	B & B
QP	40	QUERCUS PALUSTRIS PIN OAK	2 1/2"-3" Cal.	B & B
TC	40	TILIA CORDATA 'GREENSPIRE' LITTLELEAF LINDEN	2 1/2"-3" Cal.	B & B
AR	57	ACER RUBRUM 'OCTOBER GLORY' OCTOBER GLORY RED MAPLE	2 1/2"-3" Cal.	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 A
Linear Feet of Roadway Frontage/Perimeter	634'	1576'	1633'	1086'	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 Evergreen Trees Shrubs	1:50 8 1:40 10 -	1:60 26 - -	1:60 0 - -	1:60 19 - -	1:60 22 - -	1:60 46 - -	1:60 7 - -	1:60 6 - -	1:60 12 - -
Number of Plants Provided Shade Trees Evergreen Trees Other Trees (2:1 Substitution) Shrubs (10:1 Substitution) Describe Plant Substitution Credits Below if needed)	8 10 - -	26 - - -	0 - - -	19 - - -	22 - - -	46 - - -	7 - - -	6 - - -	12 - - -

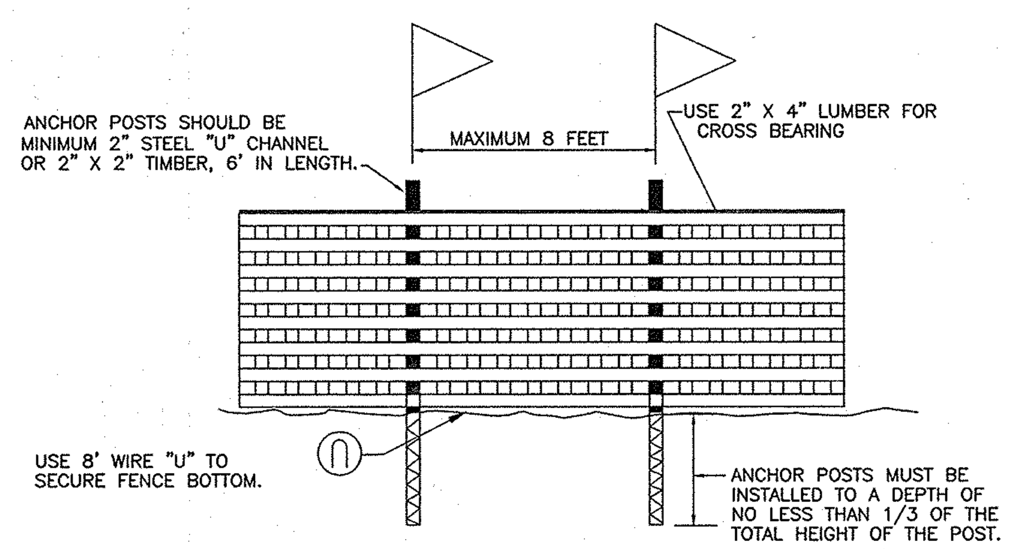
* Existing Woods to Remain ** Existing Shade Trees and Evergreen Trees to Remain



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 LIMITS 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 OCCURED AND WITH APPROVAL FROM THE HOWARD COUNTY OFFICE OF PLANNING AND ZONING.



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

POND #1	SCHEDULE D : STORMWATER MANAGEMENT AREA LANDSCAPING
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)

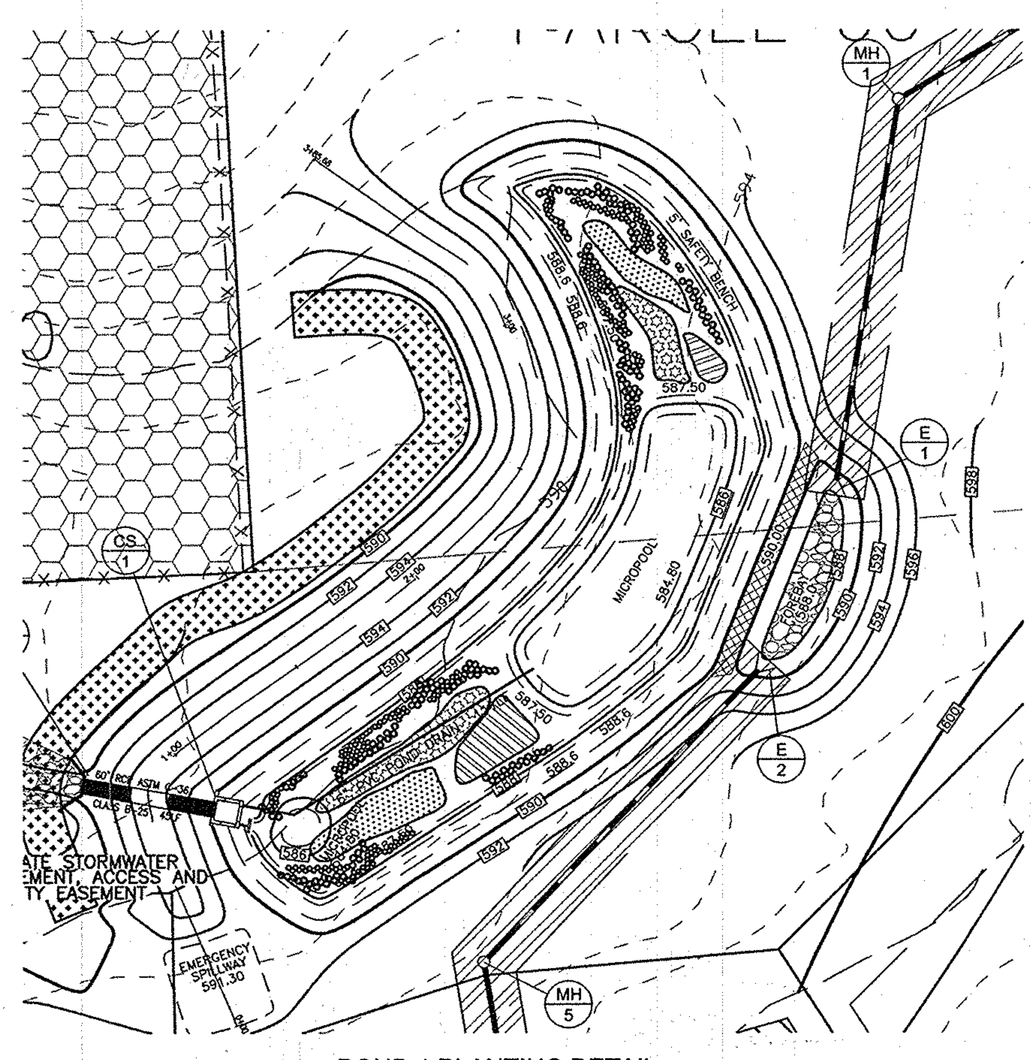
POND #2	SCHEDULE D : STORMWATER MANAGEMENT AREA LANDSCAPING
LINEAR FEET OF PERIMETER	662 LF
CREDIT FOR EXISTING VEGETATION (NO, YES AND LINEAR FEET)	N/A
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	N/A
NUMBER OF TREES REQUIRED SHADE TREES EVERGREEN TREES	14 SHADE TREES 17 EVERGREEN TREES
NUMBER OF TREES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

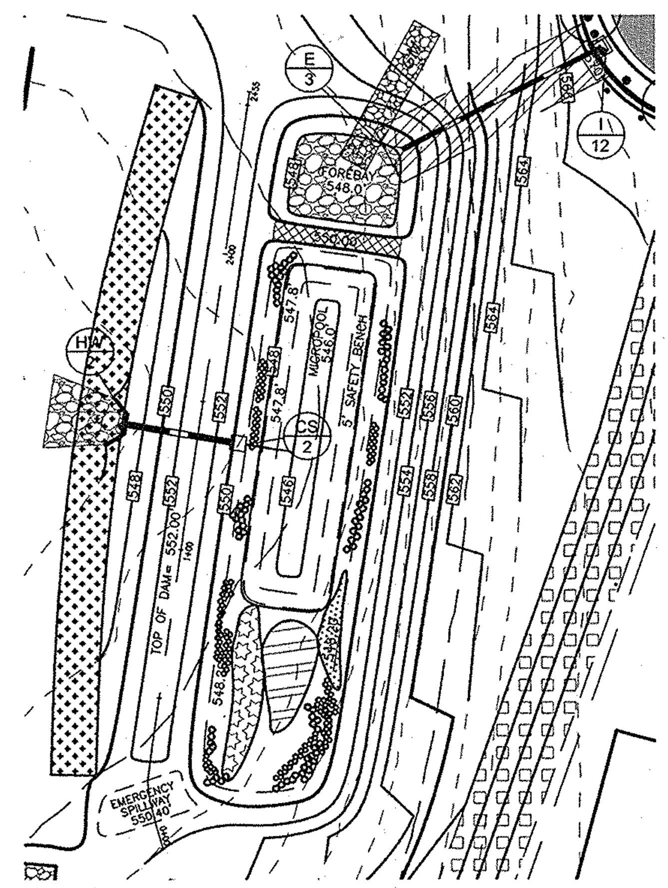
NOTES

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 $54,900.00 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.



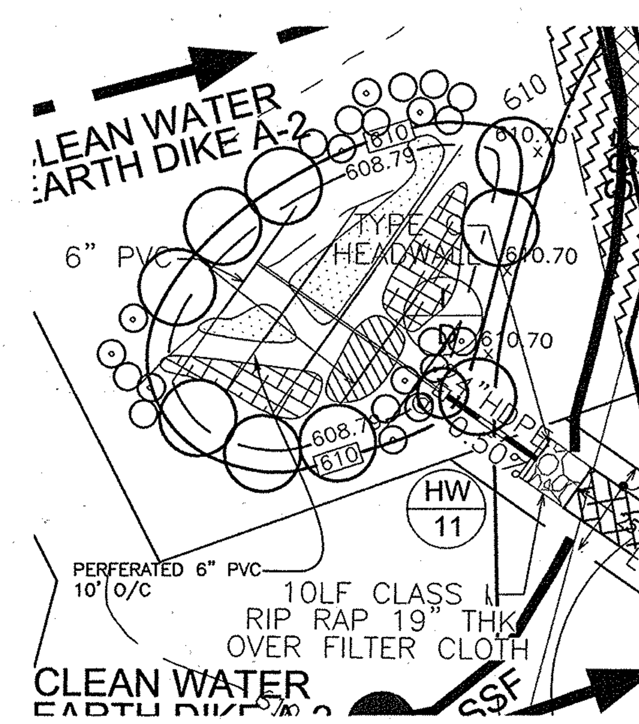
POND 1 PLANTING DETAIL
SCALE: 1"=50'

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



POND 2 PLANTING DETAIL
SCALE: 1"=50'

11/17/14



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

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 Flog (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.

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

12/15/06
LARRY J. THOMPSON
DNR QUALIFIED PROFESSIONAL

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

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

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
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

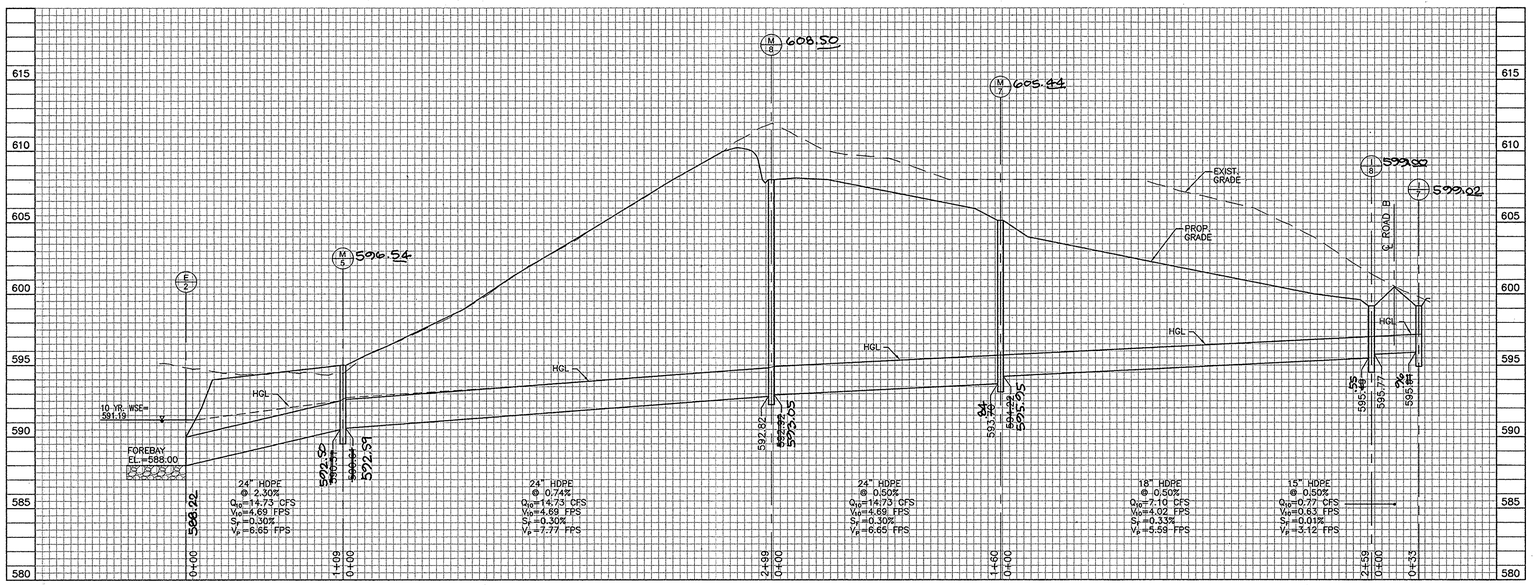
DESIGN BY: RHV/LJT
DRAWN BY: LJT
CHECKED BY: RHV
DATE: DECEMBER, 2006
SCALE: 1"=100'
W.O. NO.: 00-85.00

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

16 SHEET OF 23

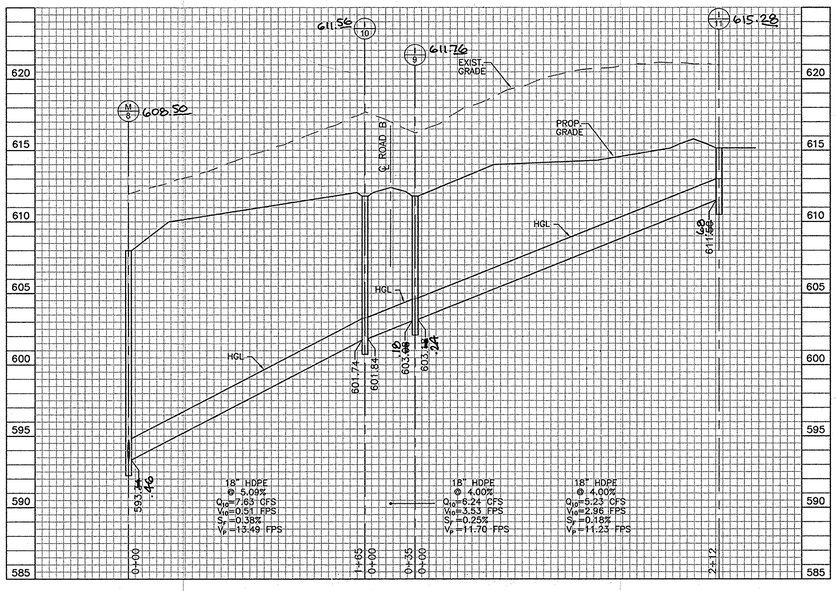
AS-BUILT 11/17/14

F-06-130



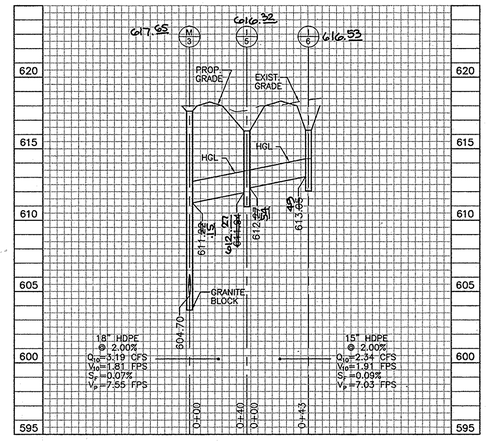
STORM DRAIN PROFILE

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



STORM DRAIN PROFILE

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



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	600.19 / 600.54	——	593.19 / 593.54	SD-4.12
I-2	STANDARD PRECAST TYPE K	579,555	1,316,089	611.77 / 611.92	601.64 / 601.79	601.51 / 601.66	SD-4.12
I-3	STANDARD PRECAST TYPE K	579,609	1,316,799	608.38 / 608.53	602.79 / 602.94	602.26 / 602.41	SD-4.12
I-4	STANDARD PRECAST TYPE K	579,573	1,316,810	602.59 / 602.74	——	596.49 / 596.64	SD-4.12
I-5	STANDARD PRECAST TYPE K	579,538	1,316,393	616.28 / 616.43	612.27	612.27 / 611.64	SD-4.12
I-6	STANDARD PRECAST TYPE K	579,541	1,316,436	616.38 / 616.53	——	613.38 / 613.53	SD-4.12
I-7	STANDARD PRECAST TYPE K	578,592	1,315,460	599.16 / 599.31	——	595.96 / 596.11	SD-4.12
I-8	STANDARD PRECAST TYPE K	578,559	1,315,456	599.16 / 599.31	595.77	595.36 / 595.51	SD-4.12
I-9	STANDARD PRECAST TYPE K	578,623	1,316,029	611.08 / 611.23	603.73	603.08 / 603.23	SD-4.12
I-10	STANDARD PRECAST TYPE K	578,590	1,316,035	611.38 / 611.53	601.84	601.74	SD-4.12
I-11	STANDARD PRECAST TYPE K	578,704	1,316,226	615.78 / 615.93	——	611.98 / 612.13	SD-4.12
I-12	STANDARD PRECAST TYPE K	578,428	1,314,774	608.02 / 608.17	——	552.84 / 552.99	SD-4.12
I-13	STANDARD PRECAST TYPE K	578,368	1,315,695	599.73 / 599.88	——	593.29 / 593.44	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	597.00 / 596.85	592.95 / 593.10	592.80 / 592.95	G-5.12
M-2	STANDARD 4' PRECAST MANHOLE	579,209	1,316,059	599.67 / 600.00	593.47	593.37	G-5.12
M-3	STANDARD 4' PRECAST MANHOLE	579,580	1,316,392	617.85	611.10 / 611.25	603.60 / 603.75	G-5.12
M-4	STANDARD 4' PRECAST MANHOLE	579,598	1,316,621	610.45	604.43 / 604.58	604.33 / 604.48	G-5.12
M-5	STANDARD 4' PRECAST MANHOLE	578,861	1,315,821	595.00	589.61 / 589.76	589.41 / 589.56	G-5.12
	M-6 HAS BEEN REMOVED				593.05 / 593.20	592.50	
M-7	STANDARD 4' PRECAST MANHOLE	578,530	1,315,716	605.44	594.22 / 594.37	593.79 / 593.94	G-5.12
M-8	STANDARD 4' PRECAST MANHOLE	578,566	1,315,872	608.38	593.36 / 593.51	592.82	G-5.12
M-2A	STANDARD 4' PRECAST MANHOLE	579,479	1,316,062	610.69	601.13 / 601.28	600.14 / 600.29	G-5.12

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 / 595.00	SD-5.51 & SD-5.52
E-2	24" RCP END SECTION	578,959	1,315,912	——	——	588.22 / 588.00	SD-5.51 & SD-5.52
E-3	18" RCP END SECTION	578,390	1,314,703	——	——	595.08 / 595.00	SD-5.51 & SD-5.52
HW-1	TYPE 'A' HEADWALL	578,304	1,314,596	——	——	583.30 / 583.20	SD-5.11
HW-2	TYPE 'A' HEADWALL	578,921	1,315,682	——	——	544.42 / 544.00	SD-5.11
CS-1	CONTROL STRUCTURE	578,914	1,315,736	——	——	584.97 / 584.87	SEE SWM DETAILS
CS-2	CONTROL STRUCTURE	578,300	1,314,630	——	——	542.85 / 542.85	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 1/9/07

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

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

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

ROBERT H. VOGEL, PE #16193

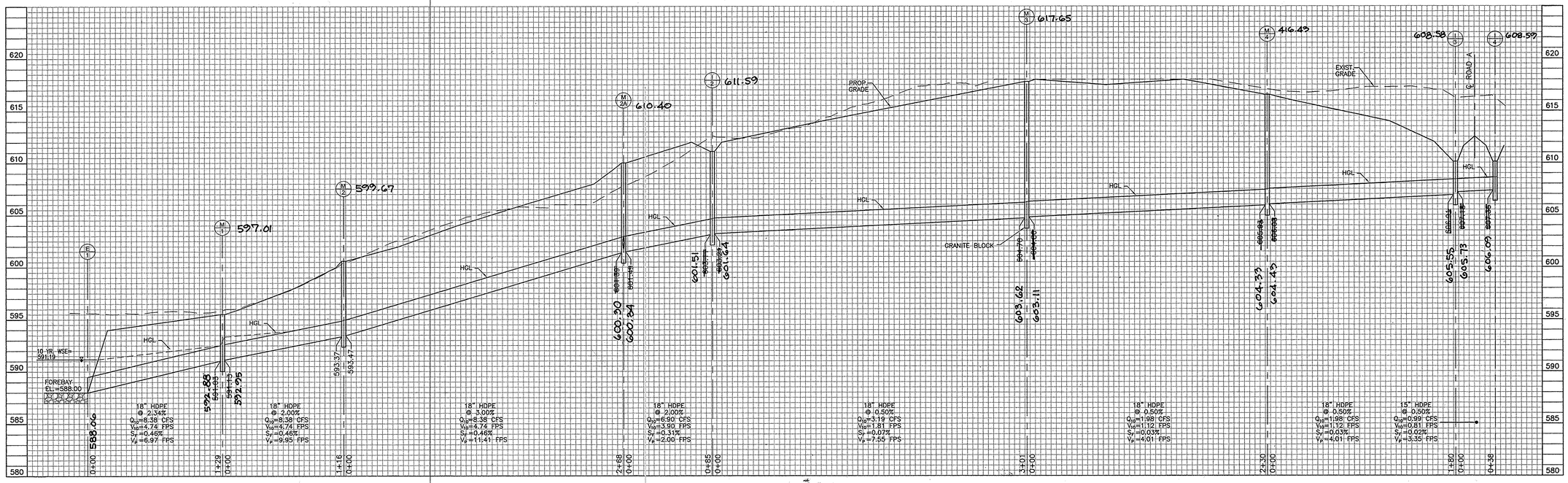
DESIGN BY:	RHV/LJT
DRAWN BY:	LJT
CHECKED BY:	RHV
DATE:	DECEMBER, 2006
SCALE:	AS NOTED
W.O. NO.:	00-85.00

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

SHEET 17 OF 23

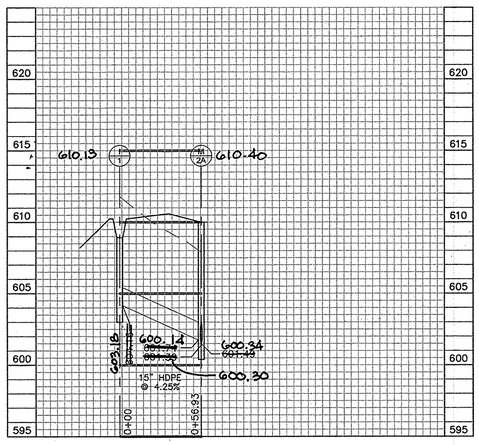
AS-BUILT 11/17/14

F-06-130



STORM DRAIN PROFILE

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



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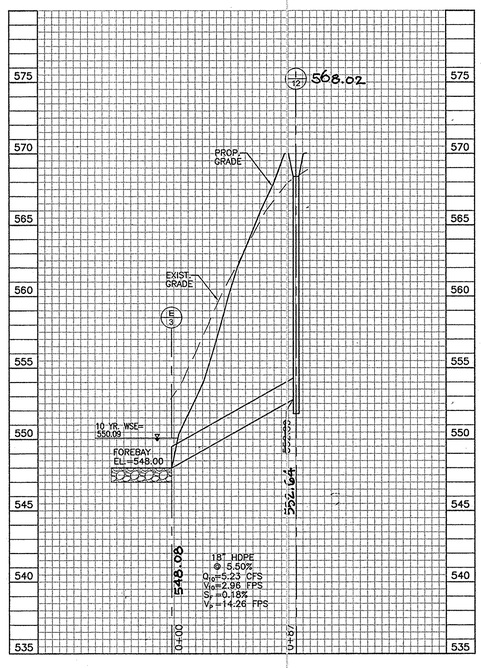

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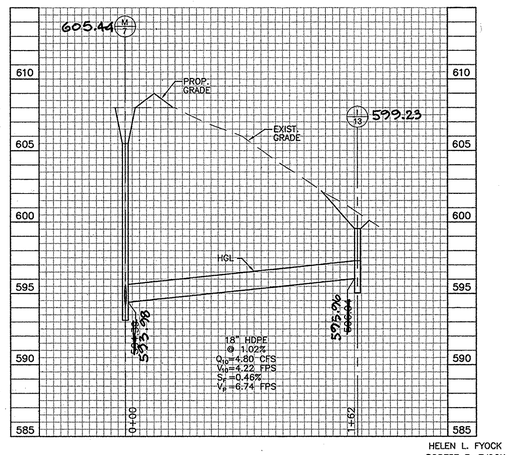

STORM DRAIN PROFILE

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 1/11/07

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3/8/07

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 — DATE

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

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

TAX MAP 22 GRID 20
5TH ELECTION DISTRICT

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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

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

OWNER

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ELLICOTT CITY, MARYLAND 21043
(410) 740-9401

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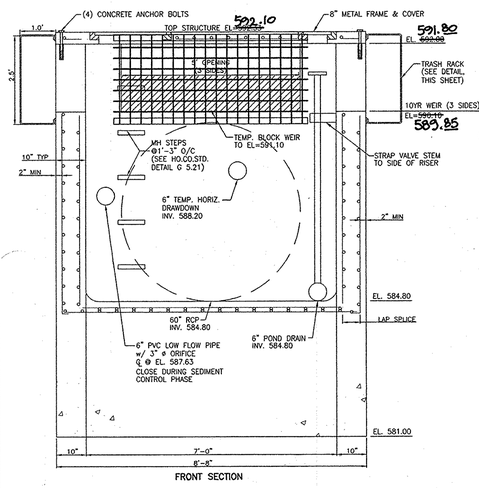
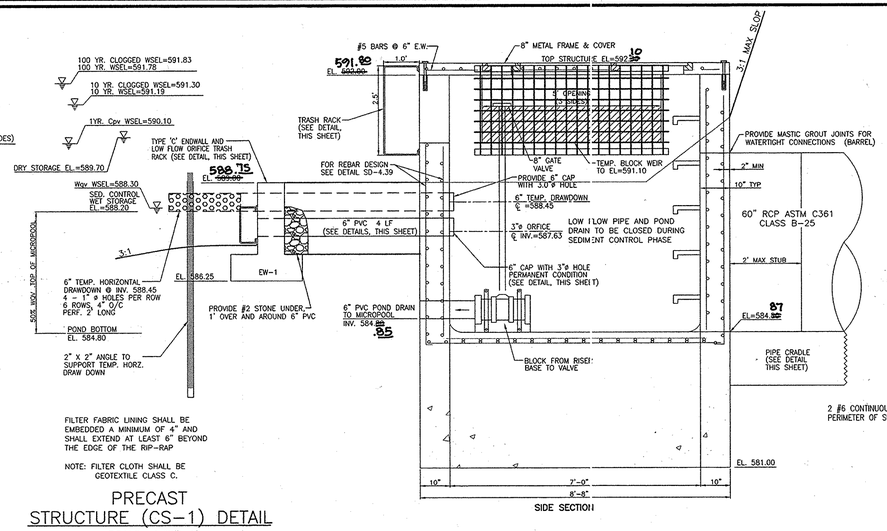
AS-BUILT 11/17/14

F-06-130

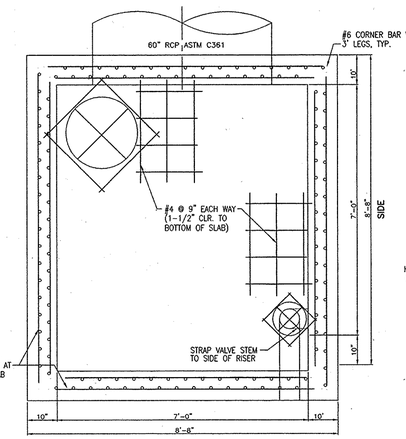


FRONT SECTION

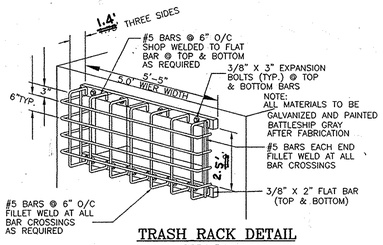


PRECAST
STRUCTURE (CS-1) DETAIL
SCALE: 1/2"=1'

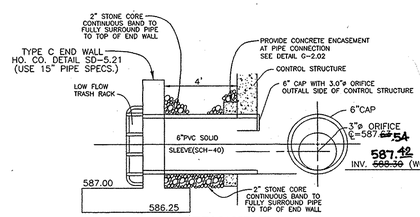
SIDE SECTION



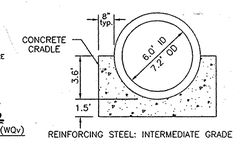
FRONT
4" TOP SLAB



TRASH RACK DETAIL
SIDE VIEW
NOT TO SCALE

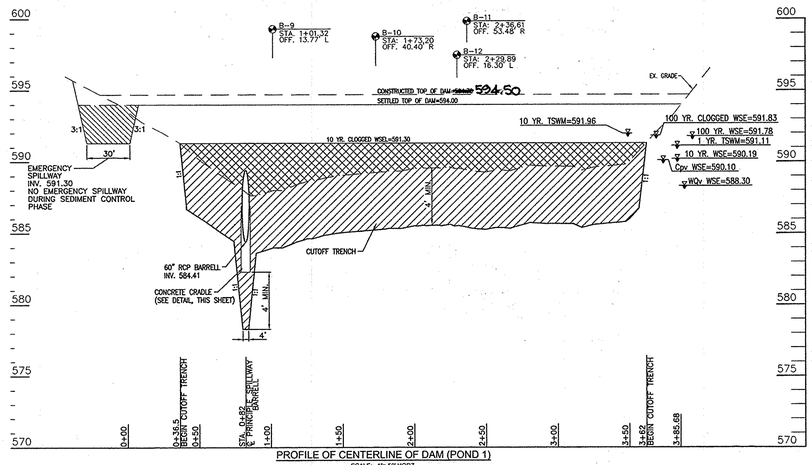


PERMANENT
ORIFICE DETAIL IN CONTROL STRUCTURE
NOT TO SCALE

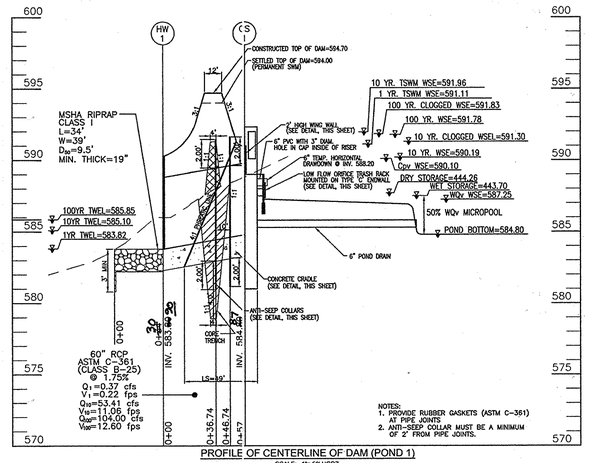


REINFORCING STEEL: INTERMEDIATE GRADE
CONCRETE: CLASS B
fc'=3,500 P.S.I.
fc=1,600 P.S.I.
(REF. TR-46)

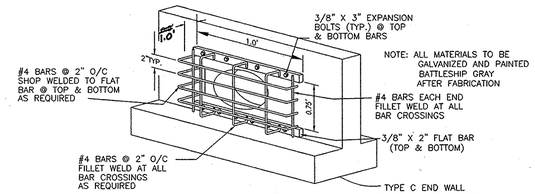
PIPE CRADLE DETAIL
NOT TO SCALE



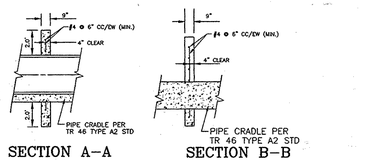
PROFILE OF CENTERLINE OF DAM (POND 1)
SCALE: 1"= 50' HORZ.
1"= 5' VERT.

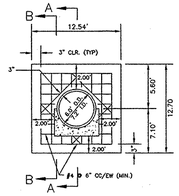


PROFILE OF CENTERLINE OF DAM (POND 1)
SCALE: 1"= 50' HORZ.
1"= 5' VERT.



LOW FLOW ORIFICE
TRASH RACK DETAIL
NOT TO SCALE

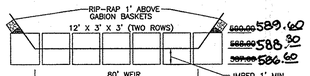




NOTES:

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.

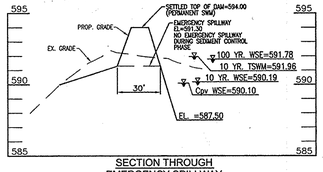
CONCRETE ANTI-SEEP COLLAR DETAIL
NOT TO SCALE



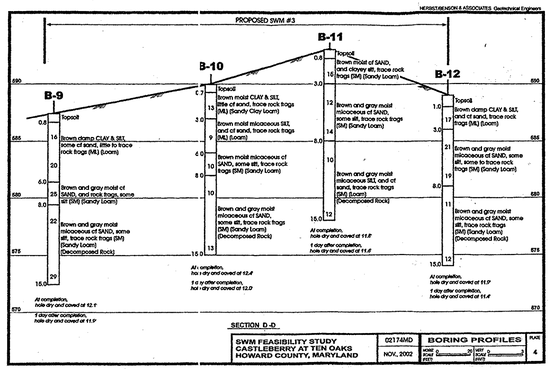
GABION BASKET WEIR DETAIL
NOT TO SCALE

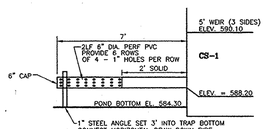
NOTES:

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"=50'
VERTICAL 1"=5'





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 1/30/07
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 11/17/14

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

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

ROBERT H. VOGEL, PE #16193

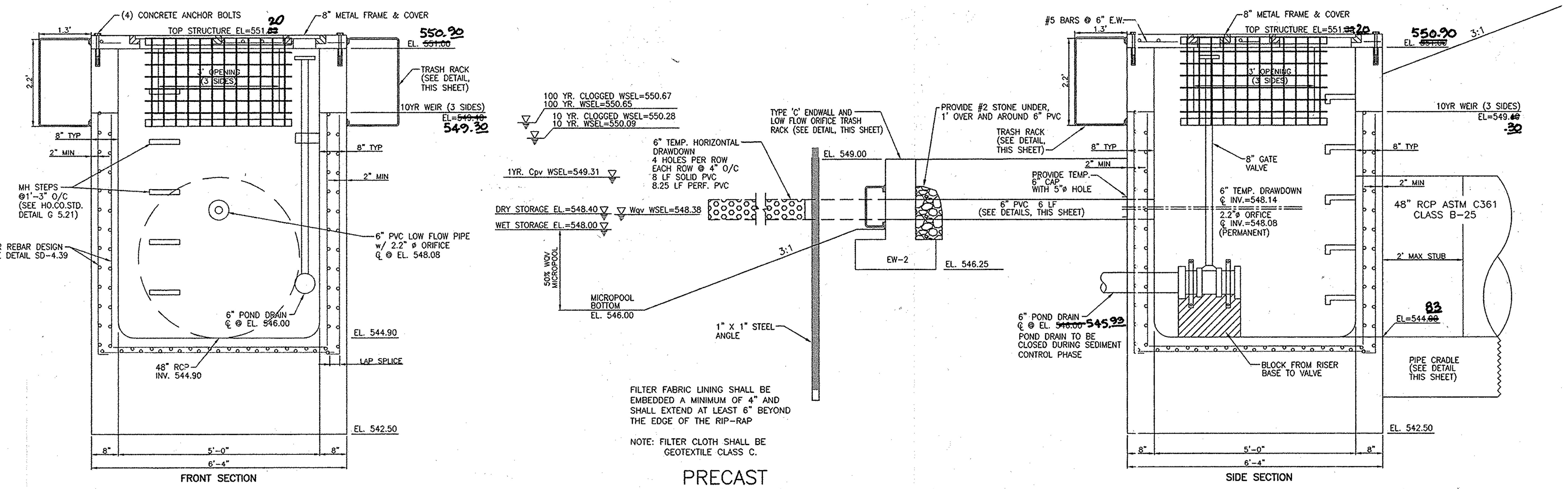
DESIGN BY:	RHV/LJT
DRAWN BY:	LJT
CHECKED BY:	RHV
DATE:	DECEMBER, 2006
SCALE:	AS NOTED
W.O. NO.:	00-85.00

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

SHEET 19 OF 23

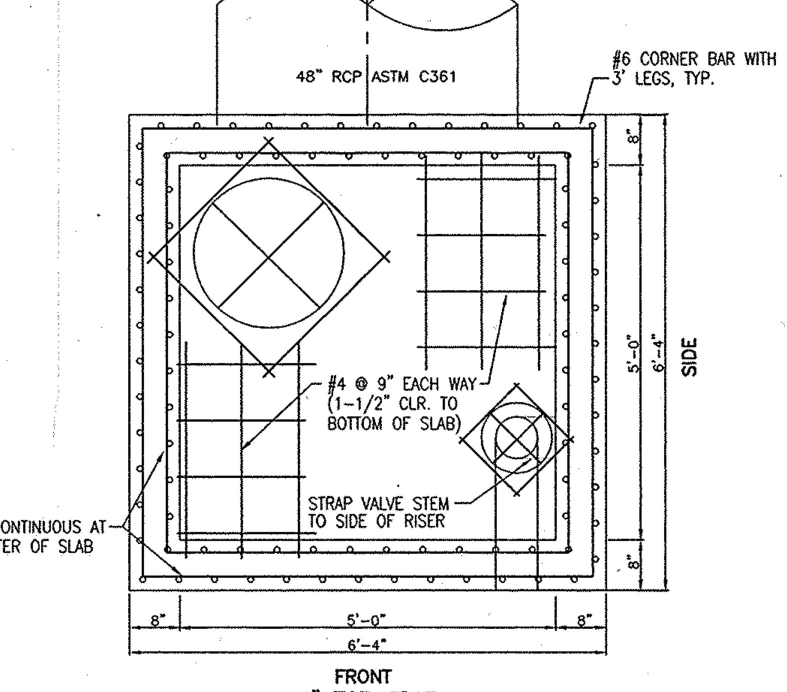
AS-BUILT 11/17/14

F-06-130

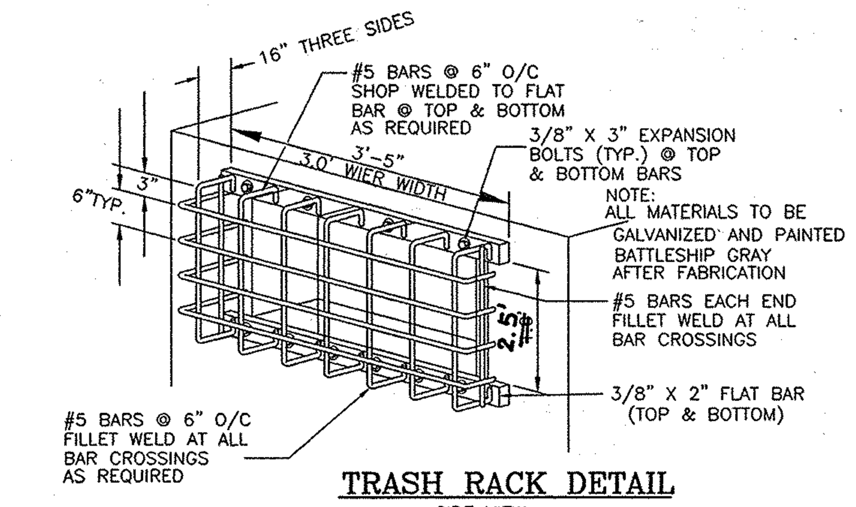


PRECAST STRUCTURE (CS-2) DETAIL

SCALE: 1/2"=1'

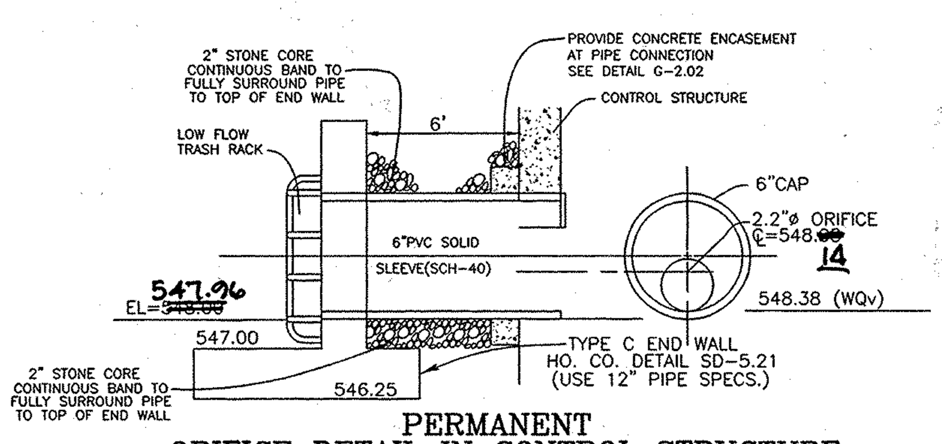


FRONT
4" TOP SLAB



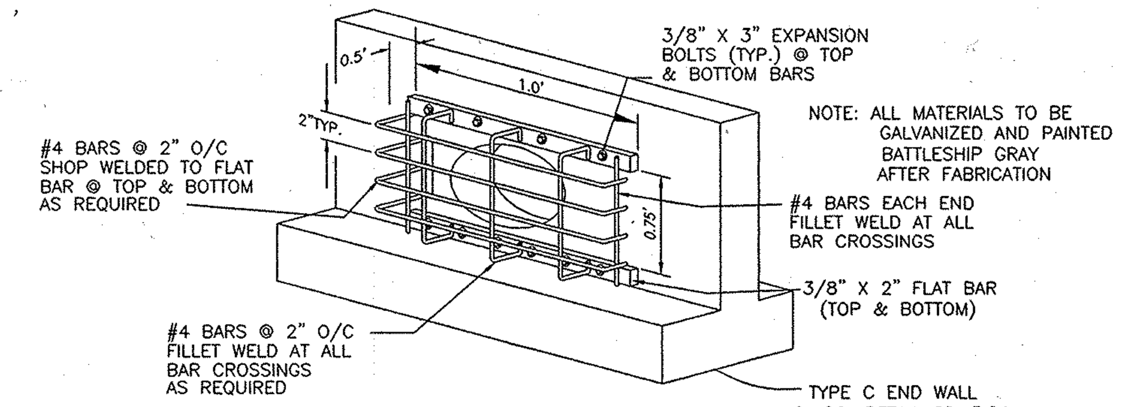
TRASH RACK DETAIL

SIDE VIEW
NOT TO SCALE



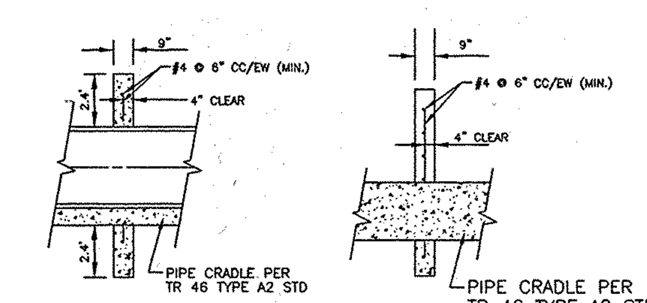
PERMANENT ORIFICE DETAIL IN CONTROL STRUCTURE

NOT TO SCALE

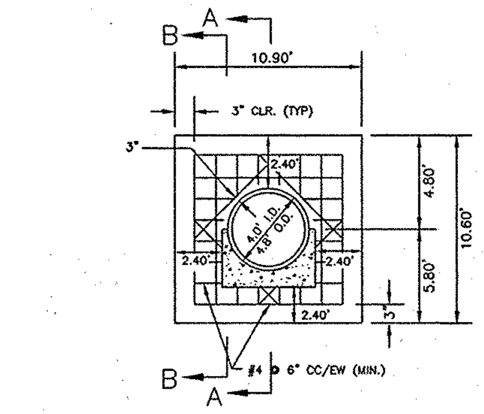


LOW FLOW ORIFICE TRASH RACK DETAIL

NOT TO SCALE



SECTION A-A SECTION B-B

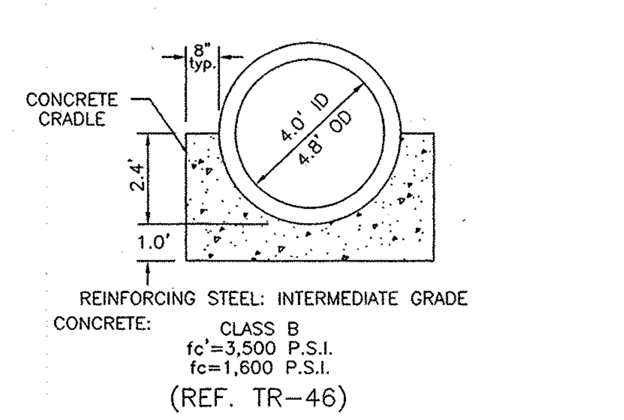


NOTES:

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

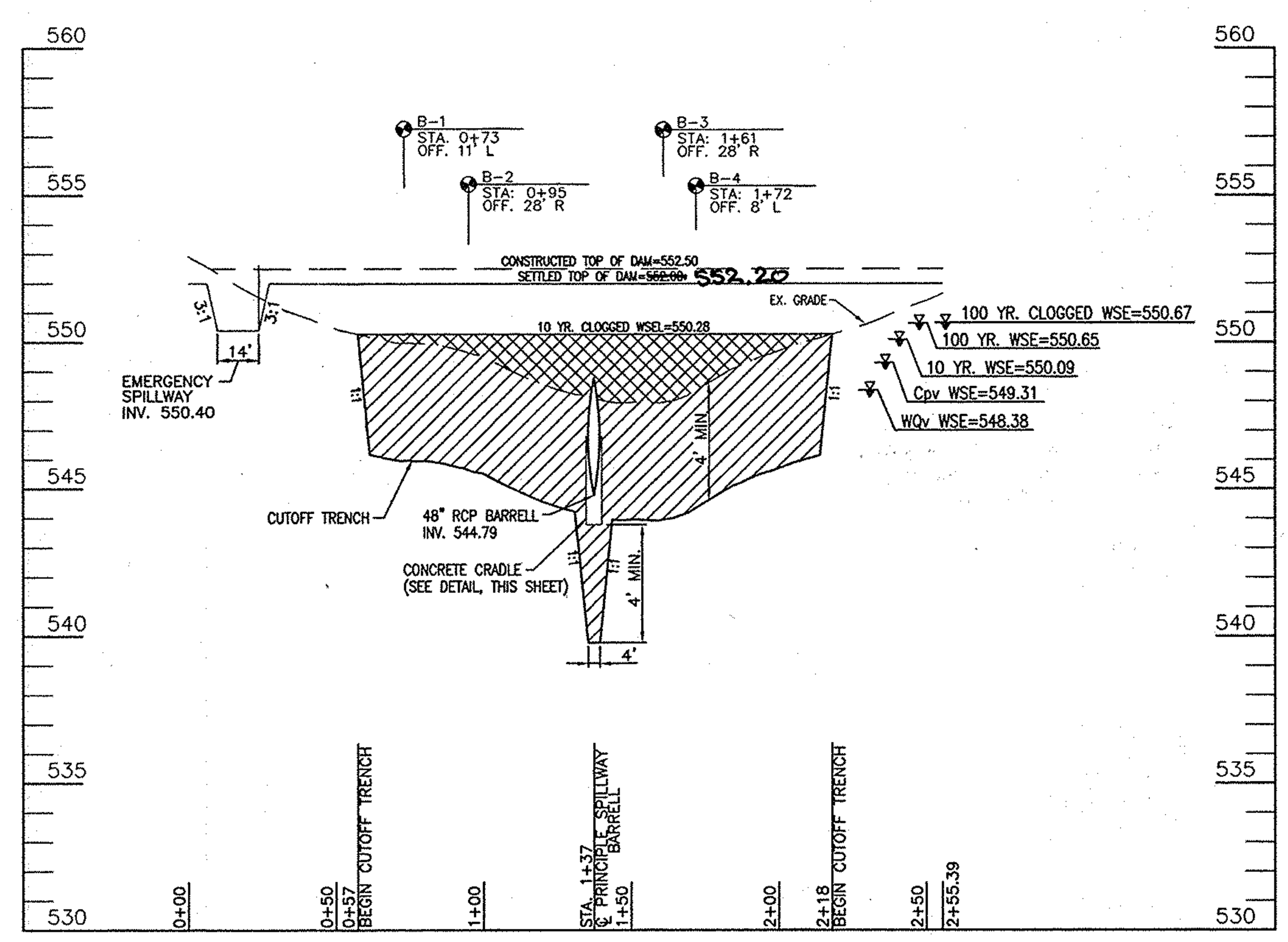
NOT TO SCALE



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

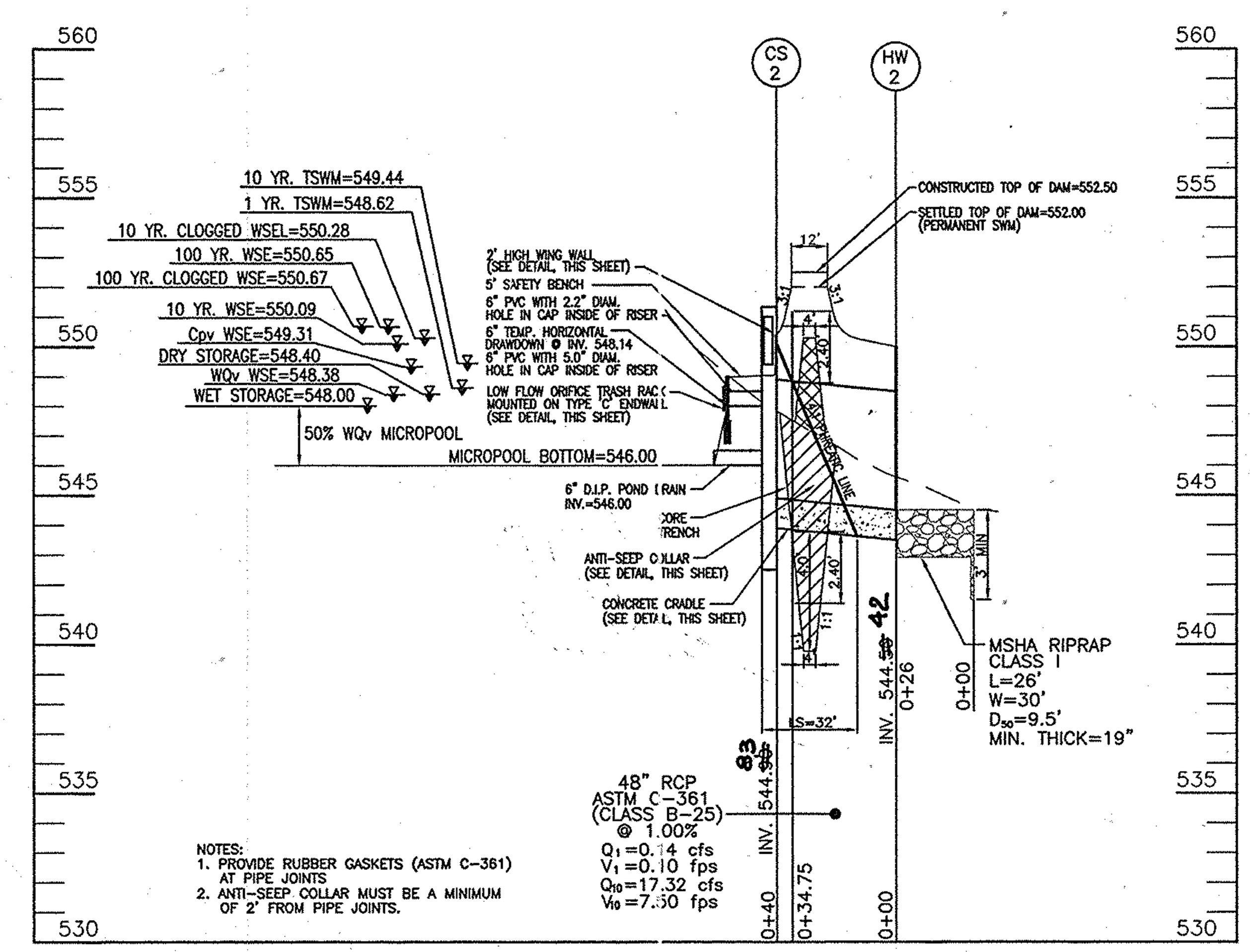
PIPE CRADLE DETAIL (TYPE A-2)

NOT TO SCALE



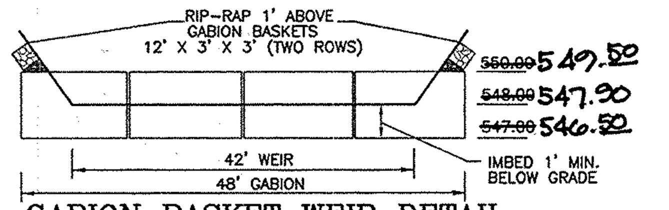
PROFILE OF CENTERLINE OF DAM (POND 2)

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



PRINCIPLE SPILLWAY PROFILE (POND 2)

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

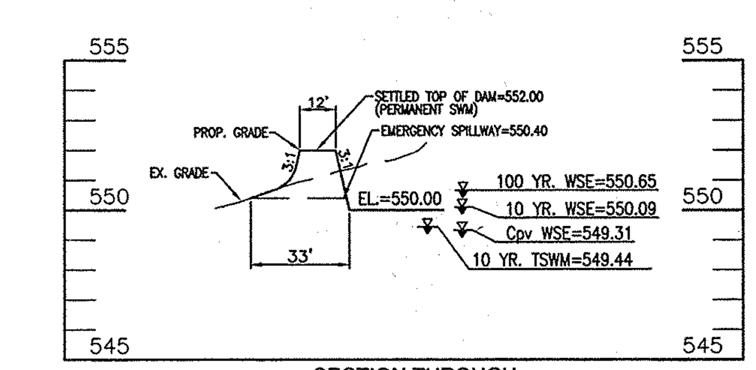


GABION BASKET WEIR DETAIL

NOT TO SCALE

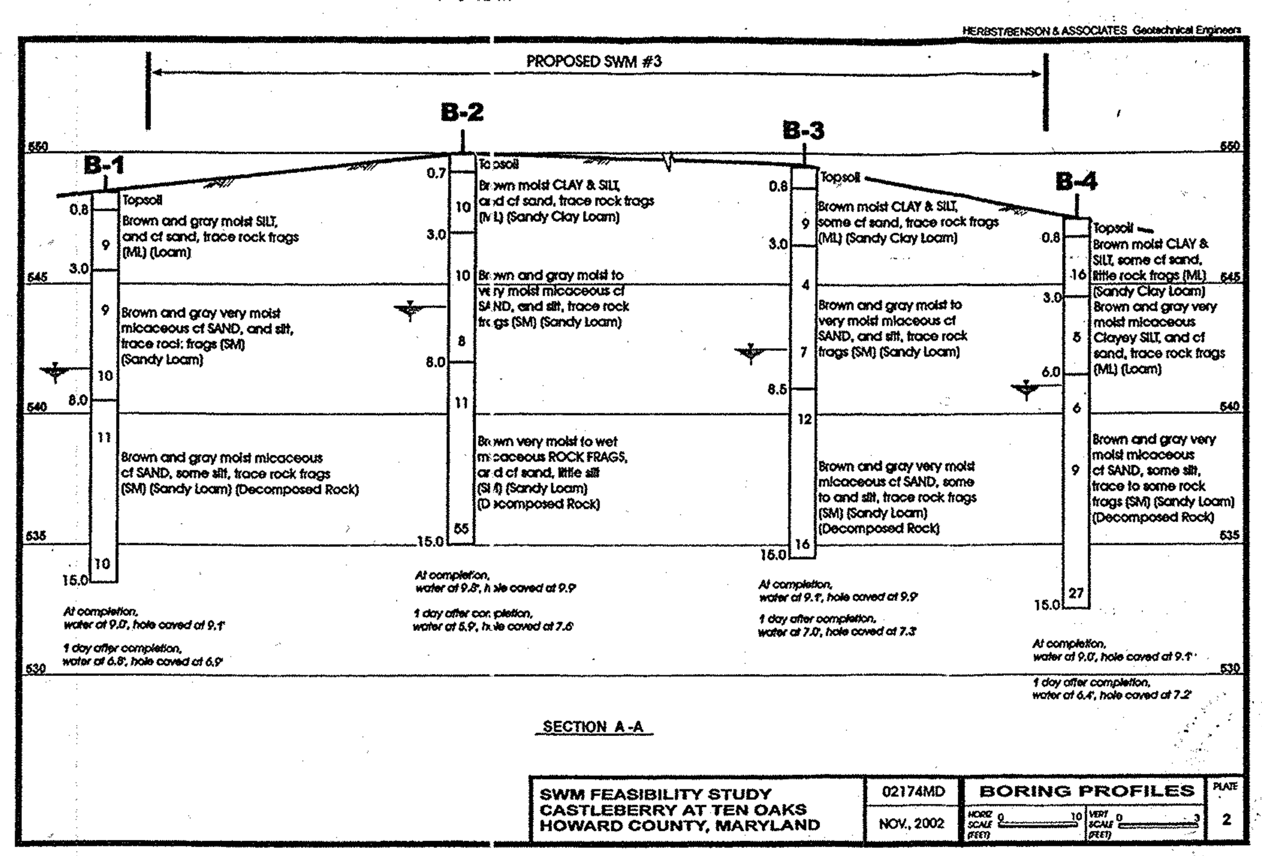
NOTES:

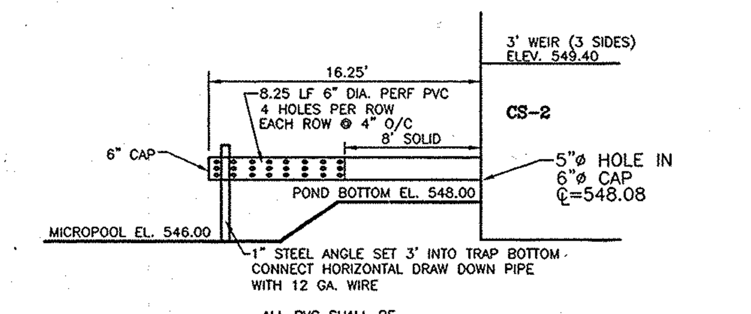
1. ALL WIRE USED IN GABION CONSTRUCTION SHALL BE GALVANIZED AND PLASTIC COATED.
2. FILTER CLOTH SHALL BE PLACED WHEREVER GABIONS COME INTO CONTACT WITH SOIL.
3. STONE FILL SHALL CONSIST OF HARD, DURABLE, CLEAN STONE 4"-8" IN DIAMETER.
4. CONSTRUCTION MATERIALS AND METHODS SHALL BE IN ACCORDANCE WITH 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'





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.

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

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

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 1/24/07

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

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

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

THIS DEVELOPMENT PLAN IS APPROVED FOR SMALL POND 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 12/13/06

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 11/17/14

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

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:	AS NOTED
W.O. NO.:	00-85.00

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

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.

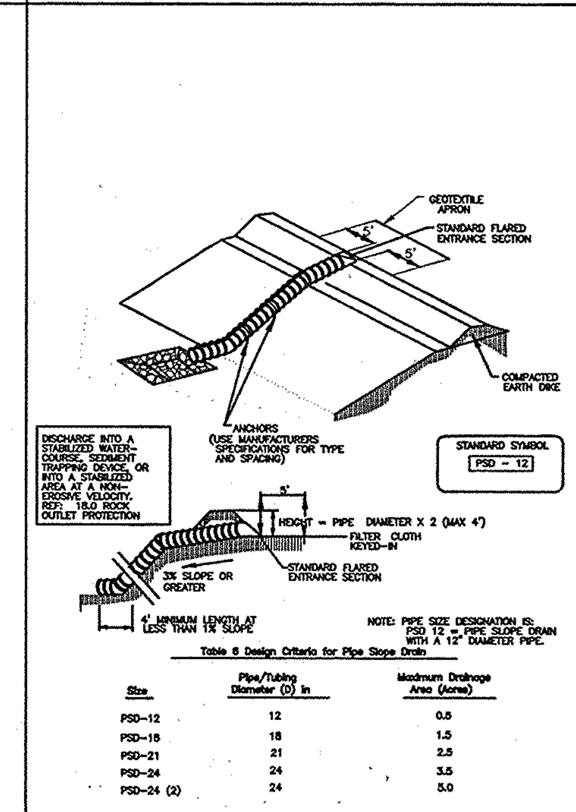
Approved Practices for Dewatering of Traps and Basins

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 laden water. When this happens the pumping operation will cease. Provisions shall be made to filter water

PIPE SLOPE DRAIN	DETAIL 4 - 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	U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE B - 5 - 4	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

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.

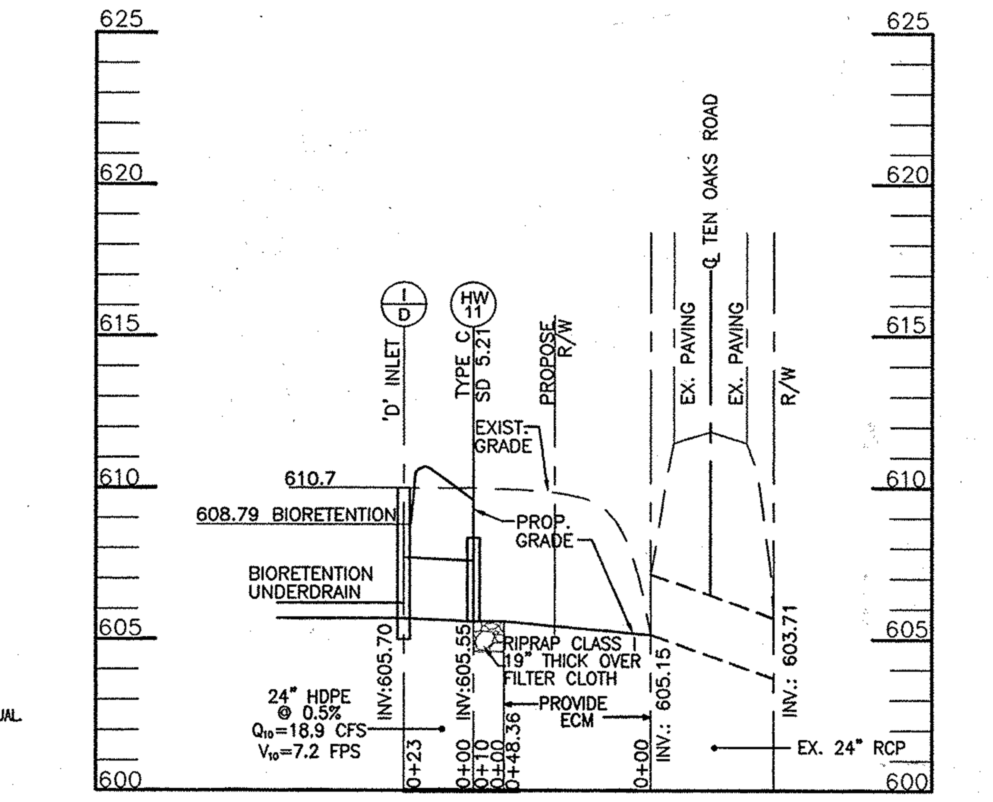
THE MAIN COLLECTOR PIPE FOR UNDERDRAIN SYSTEMS SHALL BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.5%. OBSERVATION WELL AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (ONE MINIMUM PER EVERY 1000 SQUARE FEET OF SURFACE AREA).

7. MISCELLANEOUS

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

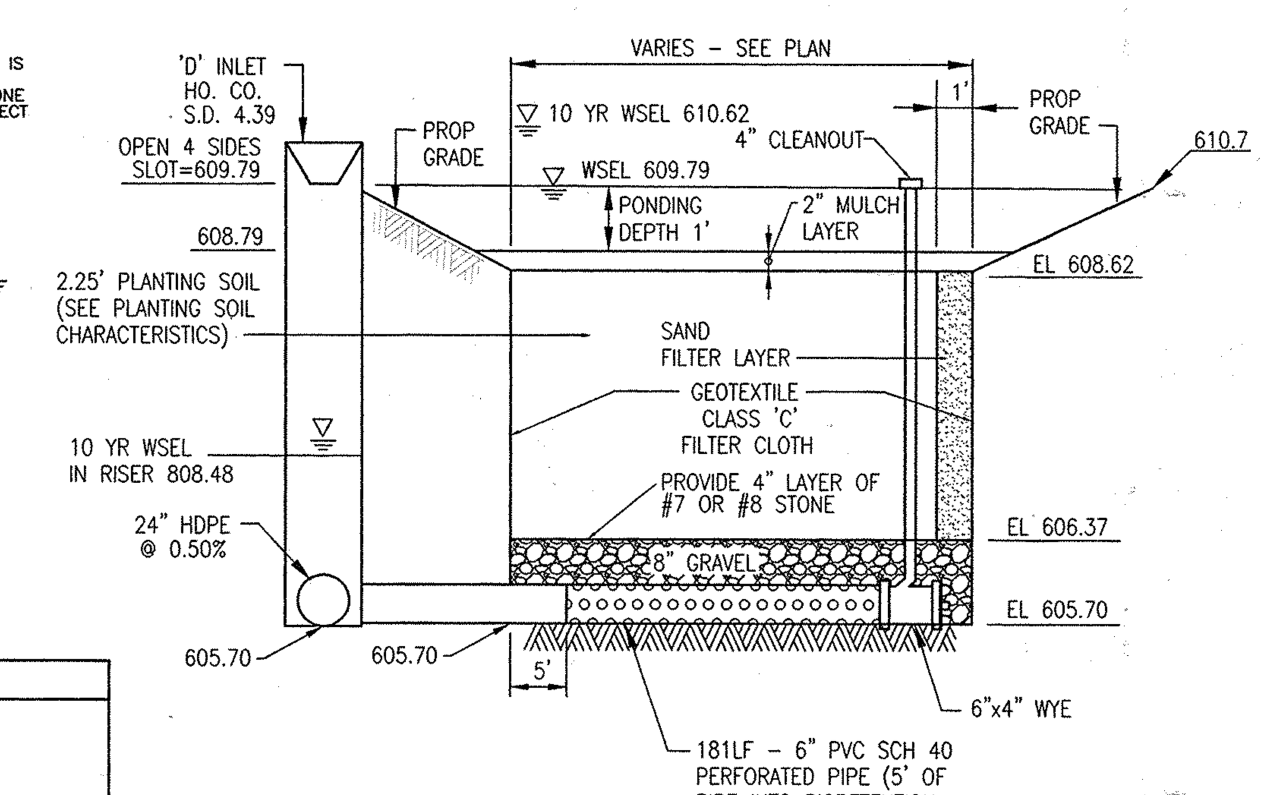
OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREAS

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'



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

NO.	REVISION	DATE

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 2/15/07

THIS DEVELOPMENT PLAN IS APPROVED FOR SMALL POND 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 12/13/06

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 12/13/06

"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."

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

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

ROBERT H. VOGEL, PE #16193

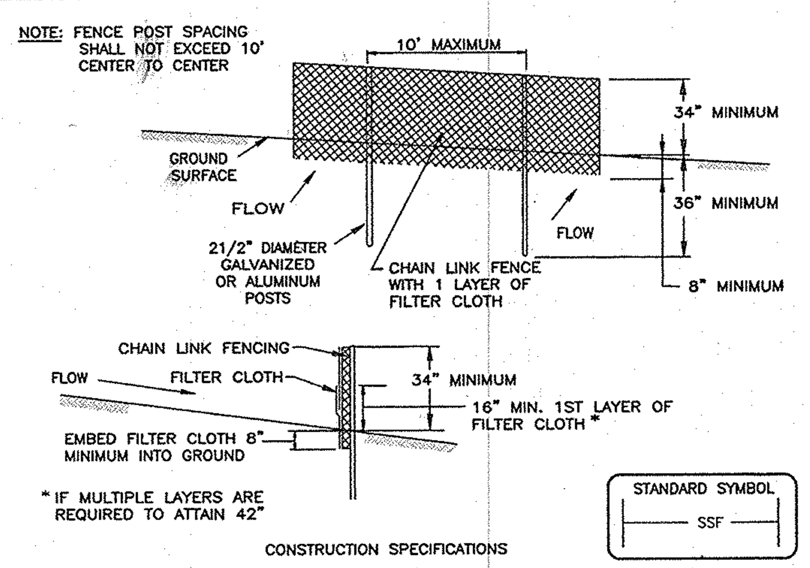
DESIGN BY:	RHV/LJT
DRAWN BY:	LJT
CHECKED BY:	RHV
DATE:	DECEMBER, 2006
SCALE:	AS NOTED
W.O. NO.:	00-85.00

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

AS-BUILT 11/17/14

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/FT² /MINUTE (MAX.)	TEST: MSMT 322
FILTERING EFFICIENCY	75% (MIN.)	TEST: MSMT 322

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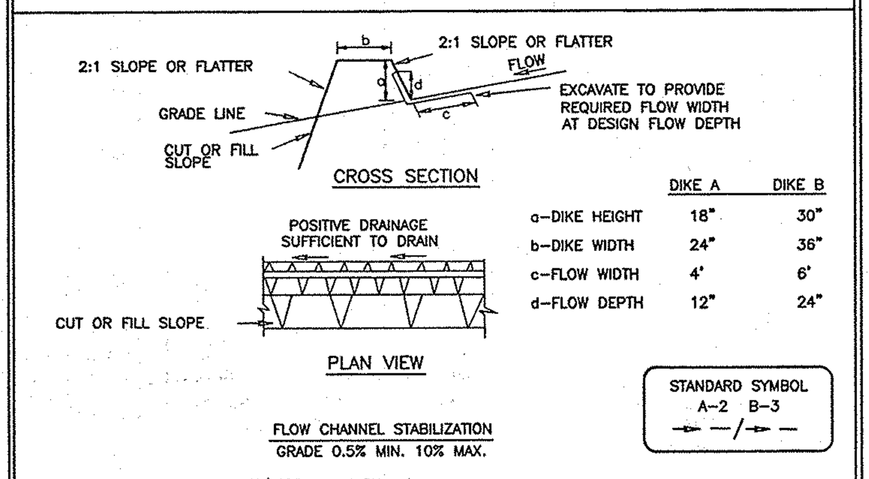
DETAIL 1 - EARTH DIKE



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

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

CONSTRUCTION SPECIFICATIONS

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

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

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

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

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

6. FILL SHALL BE COMPACTED BY EARTH MOVING EQUIPMENT.

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

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

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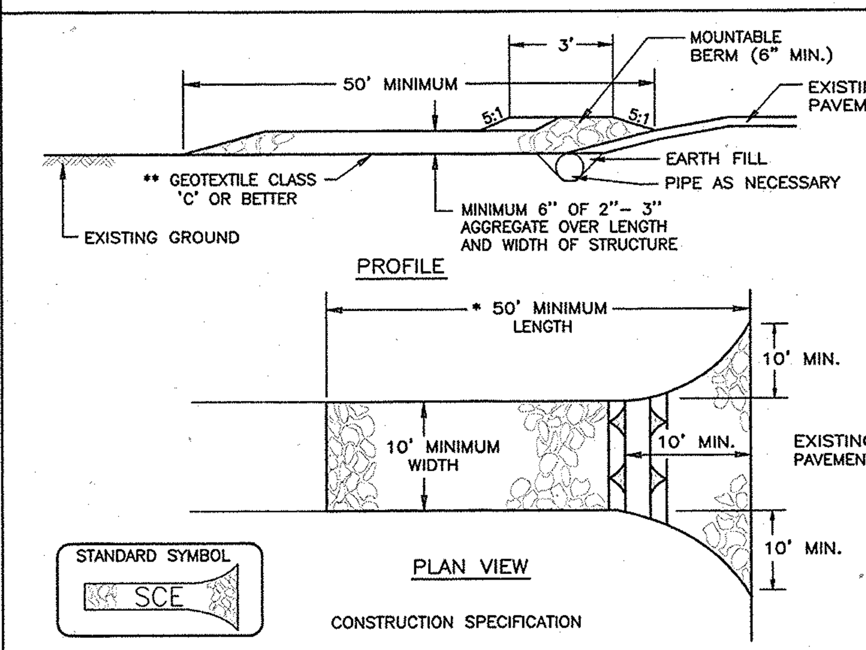
DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



CONSTRUCTION SPECIFICATION

1. LENGTH - MINIMUM OF 50' (* 30' FOR A SINGLE RESIDENCE LOT).

2. WIDTH - 10' MINIMUM, SHOULD BE FLARED AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.

3. GEOTEXTILE FABRIC (FILTER CLOTH) SHALL BE PLACED OVER THE EXISTING GROUND PRIOR TO PLACING STONE. ** THE PLAN APPROVAL AUTHORITY MAY NOT REQUIRE SINGLE FAMILY RESIDENCES TO USE GEOTEXTILE.

4. STONE - CRUSHED AGGREGATE (2" TO 3") OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT SHALL BE PLACED AT LEAST 6" DEEP OVER THE LENGTH AND WIDTH OF THE ENTRANCE.

5. SURFACE WATER - ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED THROUGH THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PIPE INSTALLED THROUGH THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROTECTED WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 6" OF STONE OVER THE PIPE. PIPE HAS TO BE SIZED ACCORDING TO THE DRAINAGE. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE WILL NOT BE NECESSARY. PIPE SHOULD BE SIZED ACCORDING TO THE AMOUNT OF RUNOFF TO BE CONVEYED. A 6" MINIMUM WILL BE REQUIRED.

6. LOCATION - A STABILIZED CONSTRUCTION ENTRANCE SHALL BE LOCATED AT EVERY POINT WHERE CONSTRUCTION TRAFFIC ENTERS OR LEAVES A CONSTRUCTION SITE. VEHICLES LEAVING THE SITE MUST TRAVEL OVER THE ENTIRE LENGTH OF THE STABILIZED CONSTRUCTION ENTRANCE.

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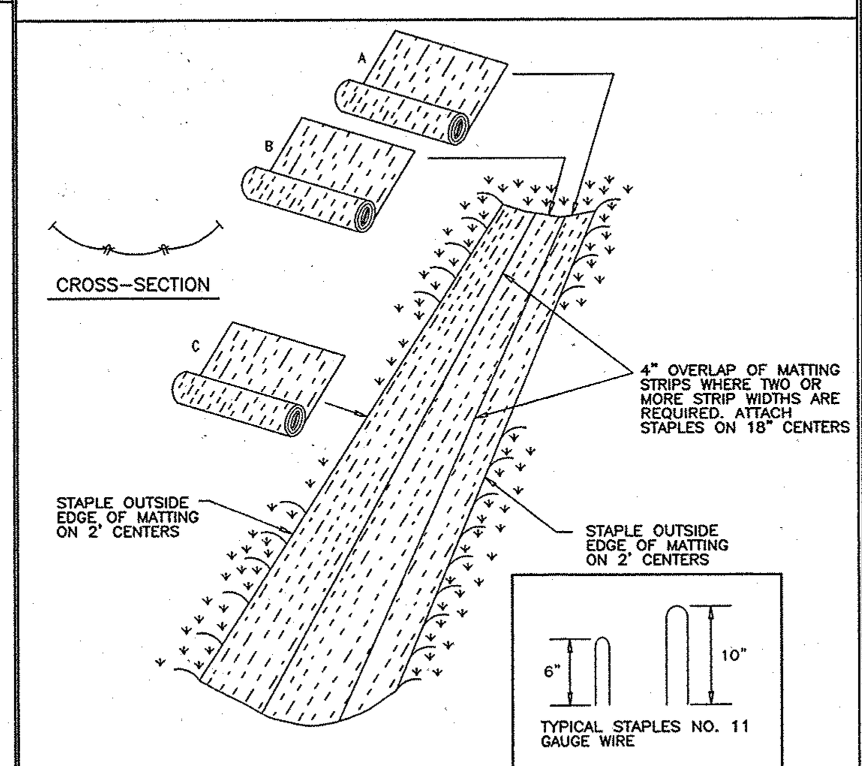
DETAIL 30 - EROSION CONTROL MATTING



CONSTRUCTION SPECIFICATIONS

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

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

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

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

5. WHERE ONE ROLL OF MATTING ENDS AND ANOTHER BEGINS, THE END OF THE TOP STRIP SHALL OVERLAP THE UPPER END OF THE LOWER STRIP BY 4", SHIPLAP FASHION. REINFORCE THE OVERLAP WITH A DOUBLE ROW OF STAPLES SPACED 6" APART IN A STAGGERED PATTERN ON EITHER SIDE.

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

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

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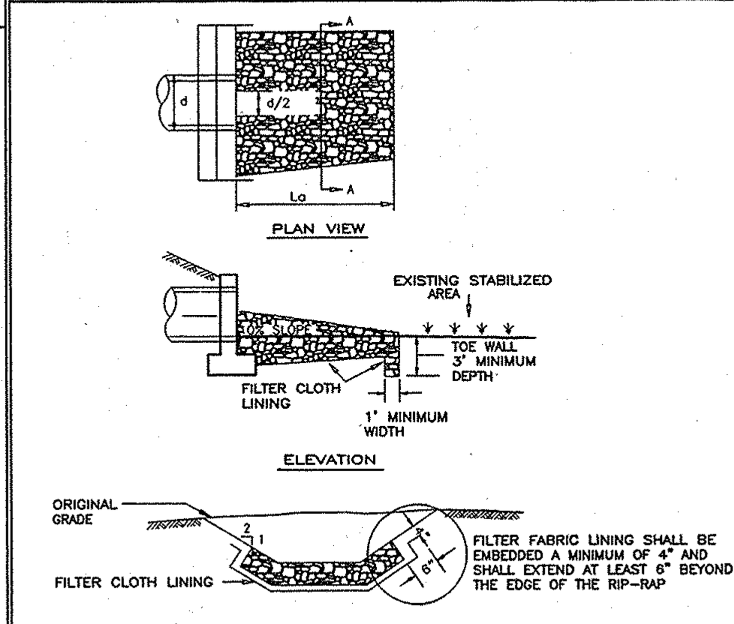
DETAIL 27 - ROCK OUTLET PROTECTION III



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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.

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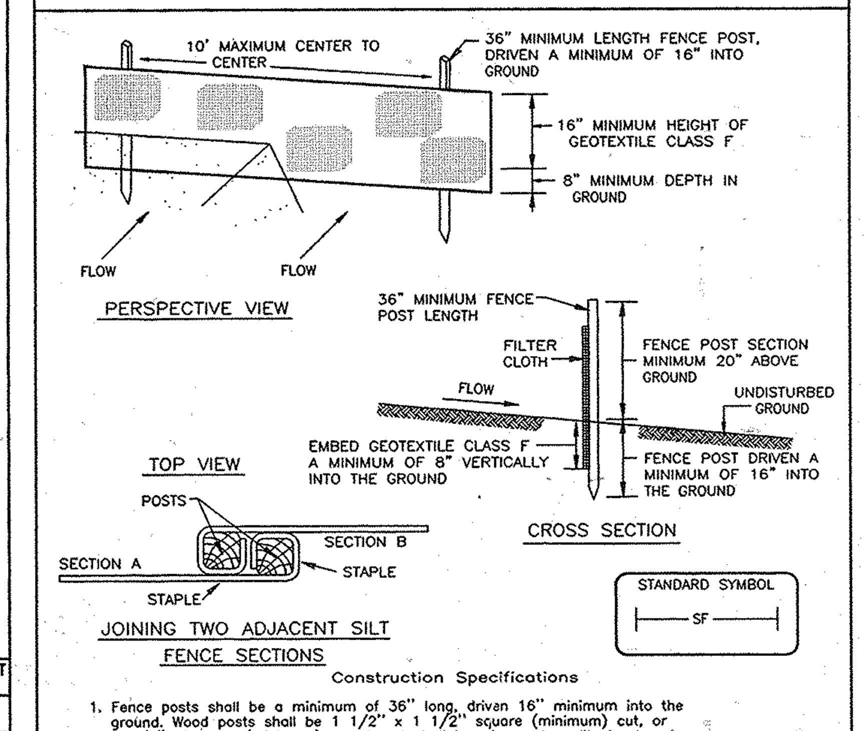
DETAIL 22 - SILT FENCE



Construction Specifications

1. Fence posts shall be a minimum of 36" long, driven 16" minimum into the ground. Wood posts shall be 1 1/2" x 1 1/2" square (minimum) cut, or 1 3/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighing not less than 1.00 pound per linear foot.

2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

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

3. Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.

4. Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reaches 50% of the fabric height.

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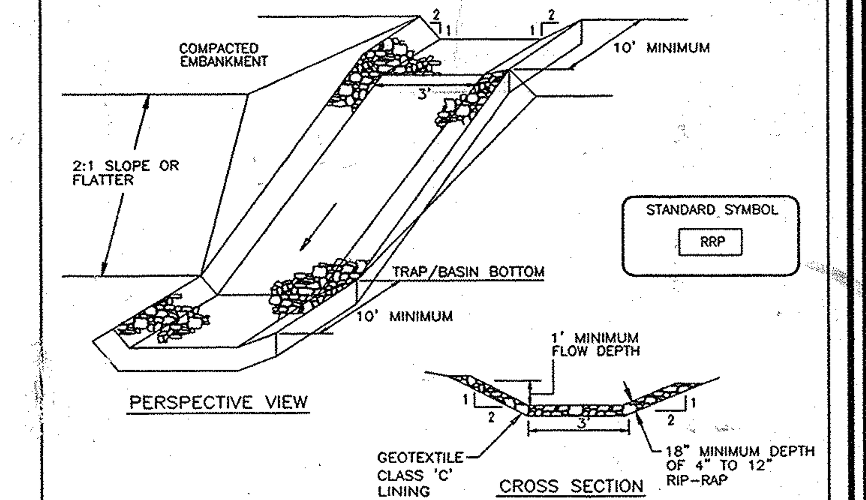
DETAIL 5 - RIP-RAP INFLOW PROTECTION



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.

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21.0 STANDARDS AND SPECIFICATIONS FOR TOPSOIL

DEFINITION

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

PURPOSE

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

CONDITIONS WHERE PRACTICE APPLIES

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

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

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

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

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

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

CONSTRUCTION AND MATERIAL SPECIFICATIONS

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

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

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

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

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

II. FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES:

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

III. FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES:

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

A. PH FOR TOPSOIL SHALL BE BETWEEN 6.0 AND 7.5. IF THE TESTED SOIL DEMONSTRATES A PH OF LESS THAN 6.0, SUFFICIENT LIME SHALL BE PRESCRIBED TO RAISE THE PH TO 6.5 OR HIGHER.
B. ORGANIC CONTENT OF TOPSOIL SHALL BE NOT LESS THAN 1.5 PERCENT BY WEIGHT.
C. TOPSOIL HAVING SOLUBLE SALT CONTENT GREATER THAN 500 PARTS PER MILLION SHALL NOT BE USED.
D. NO SOD OR SEED SHALL BE PLACED ON SOIL SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.

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

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

V. TOPSOIL APPLICATION

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

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

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

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

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	2.28 AC.
AREA TO BE VEGETATIVELY STABILIZED	9.89 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

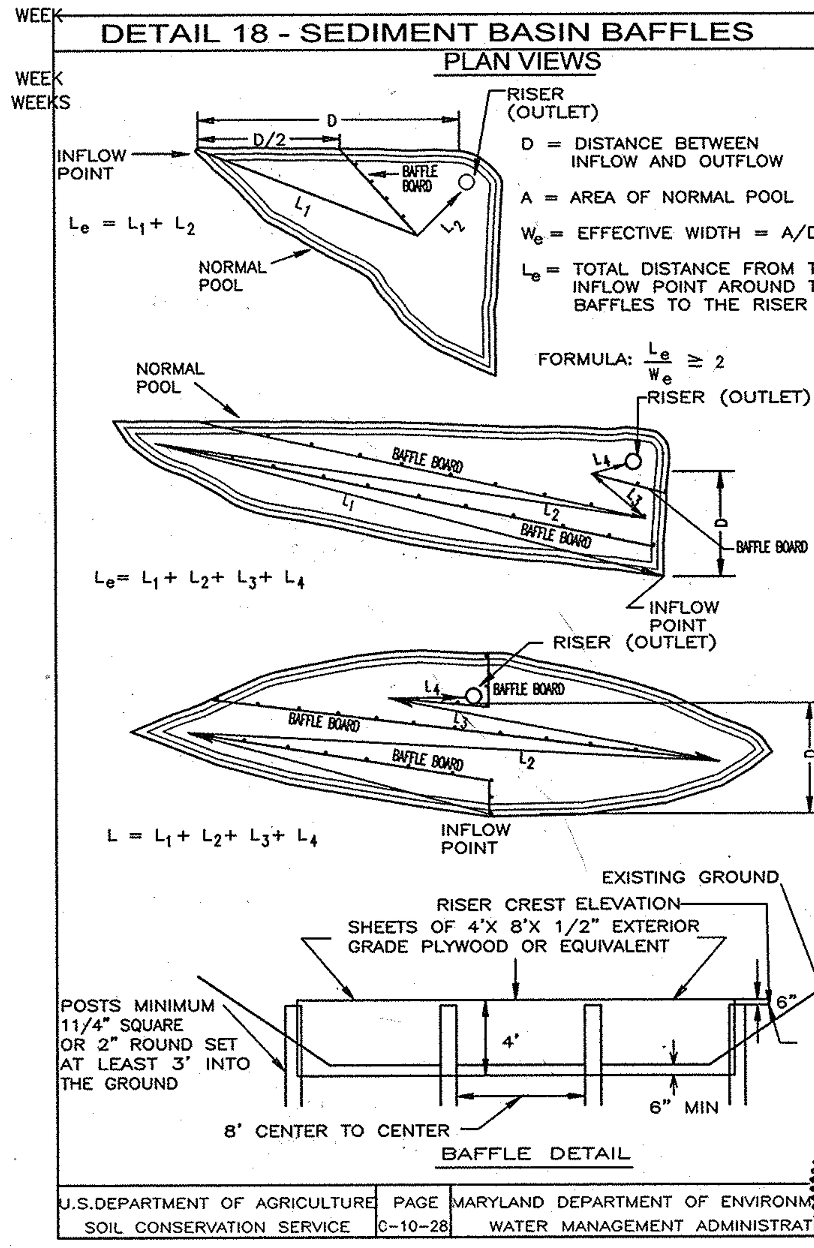
SEQUENCE OF CONSTRUCTION	DURATION
1. OBTAIN GRADING PERMIT.	
2. NOTIFY HOWARD COUNTY BUREAU OF INSPECTIONS AND PERMITS (313-1880) AT LEAST 24 HOURS BEFORE STARTING ANY WORK.	
3. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE	1 DAY
4. INSTALL SUPER SILT FENCE AND ORANGE BLAZE SAFETY FENCE BETWEEN POND 1 AND FCE	1 WEEK
5. INSTALL CLEANWATER EARTH DIKES	5 DAYS
6. CONSTRUCT STORMWATER MANAGEMENT FACILITY (SEDIMENT BASIN) AND INSTALL EARTH DIKES. (ALL STRUCTURES AND SUPPLIES FOR PONDS MUST BE ON-SITE, AND PERMISSION FROM THE INSPECTOR IS GRANTED, BEFORE PROCEEDING).	3 WEEKS
7. AFTER OBTAINING PERMISSION FROM SEDIMENT CONTROL INSPECTOR TO PROCEED ROUGH GRADE TO LOD.	2 WEEKS
8. BEGIN CONSTRUCTION STORM DRAIN SYSTEM.	3 WEEKS
9. GRADE ROAD TO SUB-BASE	5 DAYS
10. WITH ROAD GRADED TO SUB-BASE BEGIN ROAD PAVING.	6 WEEK
11. FINE GRADE SITE IN CONFORMANCE WITH PLAN.	2 DAYS
12. WITH INSPECTOR APPROVAL AND FINAL ROAD PAVING COMPLETE STABILIZE ANY REMAINING DISTURBED AREAS	3 DAYS
13. CONVERT SEDIMENT BASIN TO FINAL STORMWATER MANAGEMENT FACILITY, PROVIDE CLEAR WATER DIKE AND CONSTRUCT BIO-RETENTION FACILITY	2 WEEK
14. REMOVE ALL NEW AND OLD JUNK, TRASH, DEBRIS AND OTHER MAN-MADE OBJECTS FROM THE ENTIRE FOREST CONSERVATION EASEMENT, FLOODPLAIN, WETLANDS, STREAMS AND THEIR BUFFERS.	1 WEEK
15. WITH APPROVAL OF SEDIMENT CONTROL INSPECTOR REMOVE SEDIMENT CONTROL MEASURES.	1 WEEK
TOTAL	21 WEEKS
16. INSTALL STREET TREES AND ALL LANDSCAPING	

NOTES

DURING GRADING AND AFTER EACH RAINFALL, THE CONTRACTOR SHALL INSPECT AND PROVIDE THE NECESSARY MAINTENANCE ON THE SEDIMENT AND EROSION CONTROL MEASURES SHOWN HEREON.

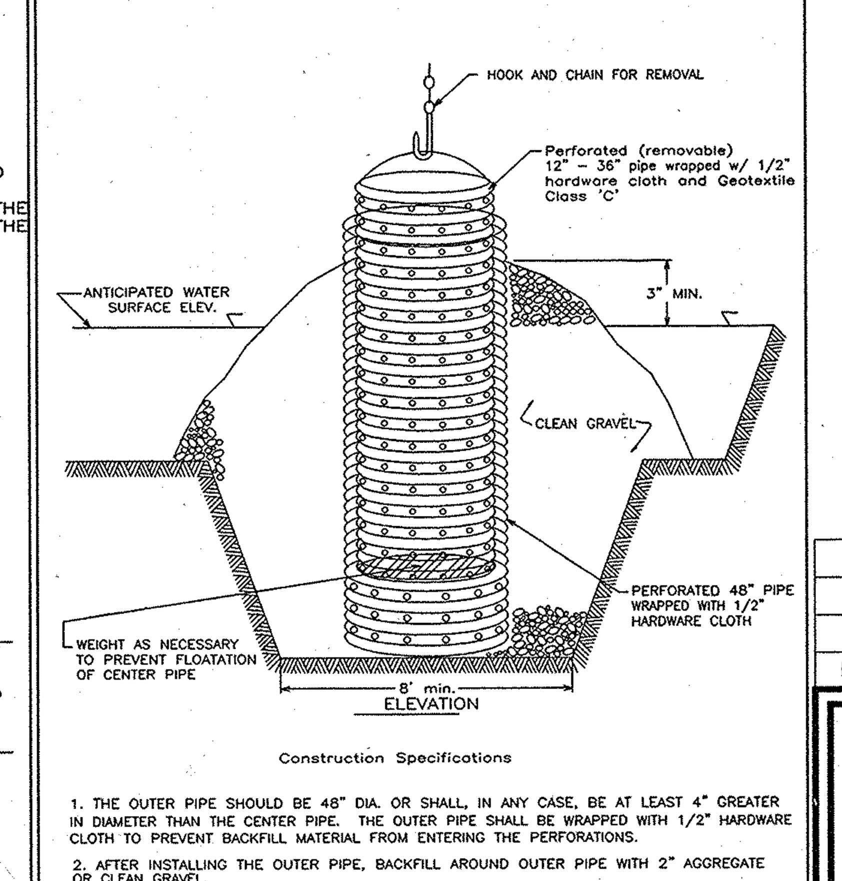
FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLIED WITH:
A. 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, SWALES, DITCH PERIMETER SLOPES SLOPES AND ALL SLOPES GREATER THAN 3:1.
B. 14 CALENDAR DAYS FOR ALL OTHER DISTURBED AREAS.

DETAIL 18 - SEDIMENT BASIN BAFFLES



U.S.DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE C-10-28	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 20A - REMOVABLE PUMPING STATION



Construction Specifications

1. THE OUTER PIPE SHOULD BE 48" DIA. OR SHALL, IN ANY CASE, BE AT LEAST 4" GREATER IN DIAMETER THAN THE CENTER PIPE. THE OUTER PIPE SHALL BE WRAPPED WITH 1/2" HARDWARE CLOTH TO PREVENT BACKFILL MATERIAL FROM ENTERING THE PERFORATIONS.

2. AFTER INSTALLING THE OUTER PIPE, BACKFILL AROUND OUTER PIPE WITH 2" AGGREGATE OR CLEAN GRAVEL.

3. THE INSIDE STAND PIPE (CENTER PIPE) SHOULD BE CONSTRUCTED BY PERFORATING A CORRUGATED OR PVC PIPE BETWEEN 12" AND 36" IN DIAMETER. THE PERFORATIONS SHALL BE 1/2" X 6" SLITS OR 1" DIAMETER HOLES 6" ON CENTER. THE CENTER PIPE SHALL BE WRAPPED WITH 1/2" HARDWARE CLOTH FIRST, THEN WRAPPED AGAIN WITH GEOTEXTILE CLASS C.

4. THE CENTER PIPE SHOULD EXTEND 12" TO 18" ABOVE THE ANTICIPATED WATER SURFACE ELEVATION OR RISER CREST ELEVATION WHEN DEWATERING A BASIN.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE D - 12 - 4	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER

NO.	REVISION	DATE
2	REVISE SEQUENCE OF CONSTRUCTION ITEM 4 TO ADD ORANGE BLAZE SAFETY FENCE BETWEEN POND 1 AND FCE	3.27.09

SEDIMENT AND EROSION CONTROL DETAILS
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

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
[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 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] 12/15/06
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.

STATE OF MARYLAND ROBERT HARRIS VOGEL PROFESSIONAL ENGINEER 12/13/06
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 23 OF 23

AS-BUILT 11/17/14

F-06-130

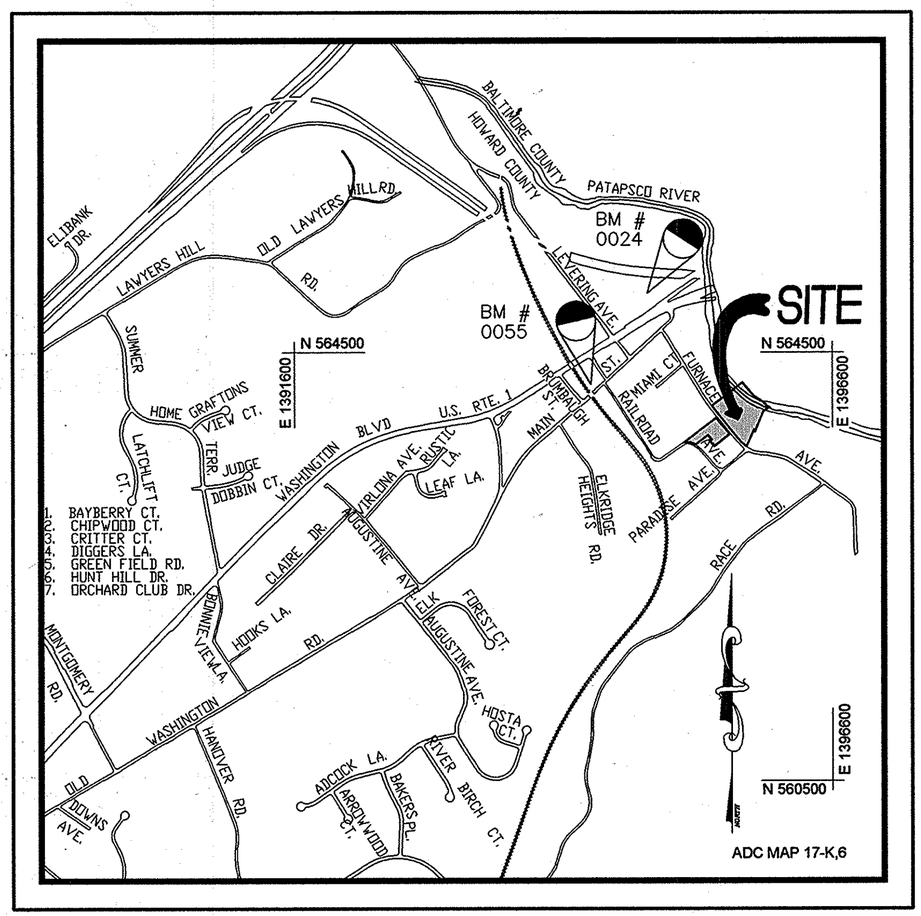
COORDINATE LIST					
NO.	NORTH	EAST	NO.	NORTH	EAST
1002	563621.713	1395501.170	1054	564185.489	1395849.743
1003	563676.665	1395458.596	1055	564255.403	1395802.098
1004	563689.701	1395474.980	1060	564014.465	1395485.523
1005	563726.597	1395441.950	1061	563951.602	1395533.218
1042	564158.544	1395814.342	1062	563768.071	1395680.392
1043	564096.764	1395863.578	1063	563676.868	1395758.840
1044	564035.528	1395956.889	1064	563638.901	1395800.823
1045	563996.727	1395990.202	1065	563726.694	1395636.672
1046	563987.181	1396011.128	1066	563730.535	1395633.583
1047	563948.005	1395953.117	1067	563886.583	1395508.449
1048	563835.053	1395905.025	1068	563679.263	1395256.176
1049	563764.334	1395874.975	1069	563663.819	1395309.664
1050	563778.496	1395864.814	1070	563646.530	1395337.902

LINE TABLE FOR FOREST CONSERVATION EASEMENT		
LINE	BEARING	DISTANCE
FC1	S38°58'14"E	62.36'
FC2	S24°29'31"E	34.79'
FC3	S47°27'54"E	36.38'
FC4	S39°30'58"E	38.45'
FC5	S46°58'24"E	21.03'
FC6	S40°26'11"E	22.59'
FC7	S38°10'31"E	11.53'
FC8	N51°55'46"E	79.45'
FC9	S38°35'38"E	20.00'
FC10	S51°55'46"W	78.99'
FC11	S38°03'16"E	115.87'
TOTAL AREA 30,653 SF. OR 0.704 AC.		

LINE TABLE FOR FLOODPLAIN EASEMENT		
LINE	BEARING	DISTANCE
FP1	S53°14'26"E	70.20'
FP2	S31°08'53"E	14.37'
FP3	S39°04'40"E	39.34'
FP4	S63°05'17"E	27.29'
FP5	S50°25'10"E	13.44'
FP6	S17°08'54"E	20.68'
FP7	S52°40'26"E	25.99'
FP8	S39°07'35"E	32.86'
FP9	S35°15'33"E	30.23'
FP10	S34°51'14"E	18.89'
FP11	S38°08'50"E	35.76'
FP12	S54°05'17"E	15.93'
TOTAL AREA 18,724 SF. OR 0.430 AC.		

LINE TABLE FOR WETLANDS		
LINE	BEARING	DISTANCE
WL1	N20°59'55"W	28.77'
WL2	N39°56'01"W	43.52'
WL3	N19°40'55"W	14.06'
WL4	N19°40'55"W	3.46'
WL5	N55°04'20"W	3.94'
WL6	S41°37'52"E	18.85'
WL7	S37°49'50"E	17.29'
WL8	S37°58'27"E	48.03'
WL9	S38°22'04"E	22.90'
WL10	S38°22'04"E	9.27'
WL11	S38°53'13"E	33.25'
TOTAL AREA 6,352 SF. OR 0.146 AC.		

NOTE: DEVELOPER RESERVES UNTO ITSELF, ITS SUCCESSORS AND ASSIGNS, ALL EASEMENTS SHOWN ON THIS PLAT FOR WATER, SEWER, STORM DRAINAGE, OTHER PUBLIC UTILITIES, AND FOREST CONSERVATION (DESIGNATED AS "FOREST CONSERVATION AREA"), LOCATED IN, OVER AND THROUGH PARCELS 'A' AND 'B', OR PORTIONS THEREOF, AND SHOWN ON THIS PLAT AS THE FOREST CONSERVATION AREA. ANY AND ALL CONVEYANCES OF AFORESAID PARCELS SHALL BE SUBJECT TO THE EASEMENTS HEREIN RESERVED, WHETHER OR NOT EXPRESSLY STATED IN THE DEED(S) CONVEYING SAID PARCEL(S). DEVELOPER SHALL EXECUTE AND DELIVER A DEED(S) FOR THE EASEMENTS HEREIN RESERVED TO HOWARD COUNTY, WITH A METES AND BOUNDS DESCRIPTION OF THE FOREST CONSERVATION AREA. UPON COMPLETION OF THE PUBLIC UTILITIES AND THEIR ACCEPTANCE BY HOWARD COUNTY, AND, IN CASE OF A FOREST CONSERVATION EASEMENT(S), UPON COMPLETION OF DEVELOPER'S OBLIGATION UNDER THE FOREST CONSERVATION INSTALLATION AND MAINTENANCE AGREEMENT EXECUTED BY THE DEVELOPER AND THE COUNTY, AND THE RELEASE OF THE DEVELOPER'S SURETY POSTED WITH SAID AGREEMENT, THE COUNTY SHALL ACCEPT THE EASEMENTS AND RECORD THE DEED(S) OF EASEMENT IN THE LAND RECORDS OF HOWARD COUNTY.



VICINITY MAP

SCALE: 1" = 1000'

OWNERS:

THOMAS A. PALACOROLLA
BARBARA J. PALACOROLLA
5673 FURNACE AVENUE
ELKRIDGE, MD 21075
410-796-7676

LT PROPERTIES, LLC
C/O THOMAS A. PALACOROLLA
5673 FURNACE AVENUE
ELKRIDGE, MD 21075
410-796-7676

PLANS FOR THE PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS HAVE BEEN APPROVED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT AND THESE FACILITIES WILL BE AVAILABLE TO ALL LOTS OFFERED FOR SALE

OWNER:
LT PROPERTIES, LLC
THOMAS A. PALACOROLLA, MEMBER — DATE 9/24/14

OWNER:
BARBARA J. PALACOROLLA — DATE 9/24/14

THE REQUIREMENTS OF 03-108, THE REAL PROPERTY ARTICLE, ANNOTATED CODE OF MARYLAND, 1988 REPLACEMENT VOLUME (AS SUPPLEMENTED) AS FAR AS THEY RELATE TO THE MAKING OF THIS PLAT AND THE SETTING OF MARKERS, HAVE BEEN COMPLIED WITH.

SURVEYOR
LARRY J. DREHOFF
PROFESSIONAL LAND SURVEYOR #21597 — DATE 9/25/14

OWNER
LT PROPERTIES, LLC
THOMAS A. PALACOROLLA, MEMBER — DATE 9/24/14

OWNER
BARBARA J. PALACOROLLA — DATE 9/24/14

AREA TABULATION

TOTAL NUMBER OF BUILDABLE PARCELS TO BE RECORDED	2
TOTAL NUMBER OF OPEN SPACE LOTS TO BE RECORDED	0
TOTAL NUMBER OF PARCELS TO BE RECORDED	2
TOTAL AREA OF 100 YEAR FLOOD PLAIN	0.430 Ac
TOTAL AREA OF BUILDABLE PARCELS TO BE RECORDED	4.488 Ac.
TOTAL AREA OF OPEN SPACE LOTS TO BE RECORDED	0.000 Ac.
TOTAL AREA OF PARCELS TO BE RECORDED	4.488 Ac.
TOTAL AREA OF ROADWAY TO BE RECORDED	0.000 Ac.
TOTAL AREA TO BE RECORDED	4.488 Ac.

GENERAL NOTES

1. THE SUBJECT PROPERTY IS ZONED CAC-CLI PER THE 2/02/04 COMPREHENSIVE ZONING PLAN AND REGULATION AMENDMENTS EFFECTIVE 7/26/06.
2. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS, STREAM(S), OR THEIR REQUIRED BUFFERS, FLOODPLAIN AND FOREST CONSERVATION EASEMENT AREAS.
3. SEE DEPARTMENT OF PLANNING AND ZONING FILE NUMBERS: SDP-08-109, WP-09-52, BA-08-54V AND AA-08-22.
   WP-09-52 IS A WAIVER REQUEST TO WAIVE SECTION 16.116(a)(2)(II) OF THE SUBDIVISION REGULATIONS TO ALLOW GRADING, REMOVAL OF VEGETATIVE COVER AND TREES, PAVING AND NEW STRUCTURES WITHIN THE REQUIRED 75' PERENNIAL STREAM BANK BUFFER FOR A PROPOSED PEDESTRIAN WALKWAY AND SEATING AMENITY AREA FOR THE SUBJECT "CAC" ZONED DEVELOPMENT WAS APPROVED ON JANUARY 5, 2009 WITH THE FOLLOWING CONDITIONS:
   THE WAIVER PETITION APPROVAL PERTAINS ONLY TO THE LIMIT OF DISTURBANCE LOCATED WITHIN THE 75' STREAM BANK BUFFER FOR THE PEDESTRIAN WALKWAY AND SEATING AREA AS SHOWN ON THE WAIVER PETITION PLAN EXHIBIT AND REVISED SITE DEVELOPMENT PLAN, SDP-08-109 SUBMITTED ON DECEMBER 11, 2008. THE LIMIT OF DISTURBANCE SHALL BE THE MINIMUM NECESSARY FOR THE PROPOSED SITE IMPROVEMENTS. THE LIMITS OF STREAM BUFFER DISTURBANCE TO INSTALL THE UNDERLYING SWM OUTFALL PIPE AND CHANNEL WAS PREVIOUSLY APPROVED BY SCD AND DPZ AS AN ESSENTIAL DISTURBANCE IN ACCORDANCE WITH SECTION 16.116(c) OF THE REGULATIONS.
   BA-08-54V ASKED TO BE ALLOWED TO PARK AND CONSTRUCT A SIDEWALK WITH OTHER USES WITHIN 30' OF A R-12 DISTRICT WAS GRANTED APPROVAL ON FEBRUARY 16, 2009 SUBJECT TO THE FOLLOWING:
   A. THE VARIANCES WILL APPLY ONLY TO THE USES BEING REQUESTED AND NOT TO ANY NEW STRUCTURES, USES, OR CHANGE IN USES ON THE SUBJECT PROPERTY, TO ANY ADDITIONS THERETO, OR TO THE ADDITIONAL (ONE) PARKING SPACE SHOWN ON PETITIONER'S EXHIBIT 1.
   B. THE PETITIONER SHALL CONSULT WITH THE DEPARTMENT OF PLANNING AND ZONING AT THE SITE DEVELOPMENT PHASE TO DETERMINE THE LANDSCAPE BUFFERING AND/OR TYPE OF FENCE APPROPRIATE ALONG THE LOT LINE WHERE THE SIDEWALK WILL BE INSTALLED.
   C. THE PETITIONER SHALL OBTAIN THE REQUIRED PERMITS CONFORMING TO THE PLANS FOR WHICH THIS VARIANCE IS GRANTED WITHIN FOUR (4) YEARS, AND SUBSTANTIAL CONSTRUCTION SHALL BE COMPLETED WITHIN FIVE (5) YEARS OF THE DATE OF THIS DECISION AND ORDER.
   AA-08-22 HEARING TO ALLOW A HEIGHT ADJUSTMENT IN EXCESS OF 40' TO 47'-3" FOR BLDG'S. A-1, A-2 AND A-3 WAS HELD ON 12/09/08 WAS APPROVED ON 12/16/08.
4. ALL COORDINATES ARE BASED ON THE MARYLAND STATE GRID SYSTEM; ORIGIN OF THE COORDINATE VALUES ARE FROM HOWARD COUNTY, BENCHMARKS NO. 0024 (N 565065.4512, E 1395212.1044) AND NO. 0055 (N 564363.703, E 1394202.3634). (NAD 83)
5. THIS PLAT IS BASED ON A FIELD RUN MONUMENTED BOUNDARY SURVEY PERFORMED ON OR ABOUT JANUARY, 2008 BY MARKS & ASSOCIATES, LLC.
6. THIS SUBDIVISION IS SUBJECT TO SECTION 18.122B OF THE HOWARD COUNTY CODE. PUBLIC WATER AND PUBLIC SEWER SERVICE HAS BEEN GRANTED UNDER THE TERMS AND PROVISIONS, THEREOF, PUBLIC WATER AND PUBLIC SEWER DEVELOPERS AGREEMENT NO. 14-4581-D AND PSWM DEVELOPERS AGREEMENT NO. SDP-08-109 ARE ASSOCIATED WITH SDP-08-109 AND SHALL BE EXECUTED PRIOR TO ITS APPROVAL.
7. □ INDICATES 4" X 4" CONCRETE MONUMENT TO BE SET.
   ○ INDICATES REBAR AND CAP.
8. STORMWATER MANAGEMENT AND WATER QUALITY REQUIREMENTS FOR THIS PROPERTY WERE PROVIDED UNDER SDP 08-109.
9. EL.=29.5 INDICATES 100 YEAR FLOODPLAIN ELEVATION PER EXISTING FLOODPLAIN EASEMENT (L.11974,F.401)
10. ALL LANDSCAPING ISSUES WILL BE ADDRESSED AT THE SITE DEVELOPMENT PLAN STAGE (SDP-08-109).
11. TORMWATER MANAGEMENT FACILITIES WILL BE REQUIRED ON THE PARCELS SHOWN ON THIS PLAT IN ACCORDANCE WITH THE DESIGN MANUALS. PRIOR TO SIGNATURE APPROVAL OF THE SITE DEVELOPMENT PLAN, THE DEVELOPER WILL BE REQUIRED TO EXECUTE THE DEVELOPER'S AGREEMENT FOR THE CONSTRUCTION OF THE STORMWATER MANAGEMENT FACILITY AND A MAINTENANCE AGREEMENT (SDP-08-109).
12. FEMA MAP #24027C0180D SHOWS A 100 YEAR FLOODPLAIN ELEVATION OF 27 TO 28 MORE OR LESS DATED 11-06-13.
13. WETLANDS DO EXIST ON SITE AS PER WETLAND CERTIFICATION LETTER FROM TIMOTHY PRIGG, RLA#1000, DATED SEPTEMBER, 2008. APPLICATION FOR LETTER OF EXEMPTION BASED ON THE LIMITED NATURE OF THE DISTURBANCE. SEE PERMIT TRACKING NUMBER 200960379.
14. THE FOREST CONSERVATION EASEMENT HAS BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 1200 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION ACT. NO CLEARING, GRADING, OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT, HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.
15. ALL FIVE (5) OF THE EXISTING HOUSES INCLUDING THE TWO (2) REMAINING HISTORIC HOUSES IDENTIFIED AS HO-518 AND TWO (2) COMMERCIAL STRUCTURES LOCATED WITHIN PARCELS 'A' AND 'B' WILL BE REMOVED UNDER THE PROCESSING OF SDP-08-109.
16. THE PROPERTY IS LISTED IN THE HOWARD COUNTY HISTORIC SITES INVENTORY AS HO-518 & HO-784. THE PLANS WERE REVIEWED BY THE HISTORIC DISTRICT COMMISSION ON JUNE 5, 2008 AND ITS FINDINGS ARE AS FOLLOWS:
   A. NO REQUIREMENTS WERE REPRESENTED BY THE HDC.
17. THERE ARE NO BURIAL OR CEMETERY SITES LOCATED ON THE SUBJECT PROPERTY.
18. THIS FINAL PLAT IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS PER COUNCIL BILL NO. 75-2003. DEVELOPMENT OR CONSTRUCTION ON THIS PROPERTY MUST COMPLY WITH SETBACK AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF THE SITE DEVELOPMENT PLAN, WAIVER PETITION APPLICATION OR BUILDING/GRADING PERMIT APPLICATIONS.
19. DEVELOPER SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE PUBLIC RIGHT-OF-WAY.
20. THIS SITE IS LOCATED WITHIN THE BWI AIRPORT ZONING DISTRICT. THE MAA HAS REVIEWED THE AIRPORT ZONING PERMIT AND ON SEPTEMBER 2, 2008 APPROVED THIS PROJECT. THIS SITE IS NOT EXPECTED TO PRESENT HAZARDS TO THE AIRSPACE SURROUNDING BWI.
21. ALL AREAS ARE LISTED ARE MORE OR LESS.

(FOR CONTINUATION SEE SHEET 2 OF 2)

THE PURPOSE OF THIS PLAT IS TO REVISE THE 20' PUBLIC WATER AND UTILITY EASEMENTS ON PARCELS 'A' AND 'B' TO AGREE WITH THE LATEST WATER MAIN CHANGES TO THE SDP-08-109 AND UPDATE GENERAL NOTE #12 TO ADDRESS THE CURRENT FEMA INFORMATION.

PHOENIX ENGINEERING, INC.
309 INTERNATIONAL CIRCLE
SUITE 130
HUNT VALLEY, MARYLAND 21030
PHONE: 410-329-1150
FAX: 410-329-1110
WWW.PHOENIX-ENG.COM

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS
HOWARD COUNTY HEALTH DEPARTMENT

COUNTY HEALTH OFFICER — DATE 11/14/2014

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 11/21/14

DIRECTOR — DATE 11/25/14

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THAT THE FINAL PLAT SHOWN HEREIN IS CORRECT; THAT IT IS ALL OF THE LANDS CONVEYED BY THE ESTATE OF SOPHIE A. YADLICK TO THOMAS A. PALACOROLLA AND BARBARA J. PALACOROLLA BY DEED DATED MARCH 28, 1991 AND RECORDED AMONG THE LAND RECORDS OF HOWARD COUNTY, MARYLAND, IN LIBER 2316 AT FOLIO 182, AND ALL THE LANDS CONVEYED BY THE ESTATE OF SOPHIE A. YADLICK TO THOMAS A. PALACOROLLA AND BARBARA J. PALACOROLLA BY DEED DATED MARCH 28, 1991 AND RECORDED AMONG THE AFORESAID LAND RECORDS IN LIBER 2316 AT FOLIO 185 AND ALL THE LAND CONVEYED BY DARLENE SMITH GERBEN TO THOMAS A. PALACOROLLA AND BARBARA J. PALACOROLLA BY DEED DATED JUNE 20, 2002 AND RECORDED AMONG THE AFORESAID LAND RECORDS IN LIBER 6240 AT FOLIO 666, AND ALL THE LANDS CONVEYED BY RICHARD N. HODGES TO LT PROPERTIES, LLC BY DEED DATED JANUARY 11, 2007 AND RECORDED AMONG THE AFORESAID LAND RECORDS IN LIBER 10467 AT FOLIO 564, AND ALL THE LANDS CONVEYED BY THE ESTATE OF SOPHIE A. YADLICK TO THOMAS A. PALACOROLLA AND BARBARA J. PALACOROLLA BY DEED DATED MARCH 28, 1991 AND RECORDED AMONG THE AFORESAID LAND RECORDS IN LIBER 2316 AT FOLIO 176, AND ALL THE LAND CONVEYED BY THE ESTATE OF SOPHIE A. YADLICK TO THOMAS A. PALACOROLLA AND BARBARA J. PALACOROLLA BY DEED DATED MARCH 28, 1991 AND RECORDED AMONG THE AFORESAID LAND RECORDS IN LIBER 2316 AT FOLIO 179, AND ALL THE LANDS CONVEYED BY DONALD E. FUNK AND CHARLOTTE C. FUNK TO THOMAS A. PALACOROLLA AND BARBARA J. PALACOROLLA BY DEED DATED FEBRUARY 2, 1983 AND RECORDED AMONG THE AFORESAID LAND RECORDS IN LIBER 1141 AT FOLIO 671, AND THAT ALL MONUMENTS ARE IN PLACE OR WILL BE IN PLACE AS SHOWN IN ACCORDANCE WITH THE ANNOTATED CODE OF MARYLAND, AS AMENDED.

PROFESSIONAL LAND SURVEYOR No. 21597

9/25/14 — DATE
LARRY J. DREHOFF PROFESSIONAL LAND SURVEYOR
REGISTRATION NO. 21597 EXP. DATE 01/18/2015
PHOENIX ENGINEERING INC.
309 INTERNATIONAL CIRCLE, SUITE #130
HUNT VALLEY, MARYLAND 21030
410-329-1150

OWNER'S CERTIFICATE

WE, THOMAS A. PALACOROLLA, BARBARA J. PALACOROLLA AND LT PROPERTIES, LLC THOMAS A. PALACOROLLA, MEMBER OWNERS OF THE PROPERTY SHOWN AND DESCRIBED HEREON, HEREBY ADOPT THIS FINAL PLAN OF CONSOLIDATION, AND IN CONSIDERATION OF THE APPROVAL OF THIS FINAL PLAT BY THE DEPARTMENT OF PLANNING AND ZONING, ESTABLISH THE MINIMUM BUILDING RESTRICTION LINES AND GRANT UNTO HOWARD COUNTY, MARYLAND ITS SUCCESSORS AND ASSIGNS; 1) THE RIGHT TO LAY, CONSTRUCT AND MAINTAIN SEWER, DRAINS, WATER PIPES AND OTHER MUNICIPAL UTILITIES AND SERVICES IN AND UNDER ALL ROADS OR STREET RIGHT-OF-WAYS 2) THE RIGHT TO REQUIRE DEDICATION FOR PUBLIC USE OF THE BEDS OF THE STREETS AND/OR ROADS, THE FLOOD PLAINS AND OPEN SPACE WHERE APPLICABLE AND FOR GOOD AND VALUABLE CONSIDERATION, HEREBY GRANT THE RIGHT AND OPTION TO HOWARD COUNTY TO ACQUIRE THE FEE SIMPLE TITLE TO THE BEDS OF THE STREETS AND/OR ROADS AND FLOOD PLAINS, STORM DRAINAGE FACILITIES AND OPEN SPACE WHERE APPLICABLE; 3) THE RIGHT TO REQUIRE DEDICATION OF WATERWAYS AND DRAINAGE EASEMENTS FOR THE SPECIFIC PURPOSE OF THEIR CONSTRUCTION, REPAIR AND MAINTENANCE; 4) THAT NO BUILDING OR SIMILAR STRUCTURE OF ANY KIND SHALL BE ERECTED ON OR OVER THE SAID RIGHT-OF-WAY.

WITNESS MY HAND THIS 24 DAY OF September, 2014

LT PROPERTIES, LLC
THOMAS A. PALACOROLLA, MEMBER

THOMAS A. PALACOROLLA

BARBARA J. PALACOROLLA

RECORDED AS PLAT NUMBER _____
ON _____, 2014, AMONG THE LAND RECORDS OF HOWARD COUNTY, MARYLAND

REVISION PLAT
RIVERWATCH
BUILDABLE PARCELS A & B

A RESUBDIVISION OF SHINNAMON SUBDIVISION
(PLAT BOOK W.W.L.C.91, FOLIO 535)
LOTS 1 THRU 3 AND A PART OF LOTS 4 THRU 7

A CONSOLIDATION OF PARCELS 623, 624 AND 625 AND PARCELS 420, 421, 422, AND 620.

TAX MAP 38 GRID NO.4 PARCELS: 420, 421, 422, 620, 623, 624, 625
ZONED: CAC-CLI 1ST ELECTION DISTRICT OF HOWARD COUNTY, MARYLAND
SCALE: 1"=1,000' DATE: SEPTEMBER, 2014 SHEET 1 OF 2

F-15-042