FINAL ROAD CONSTRUCTION PLAN

CLAREMONT OVERLOOK

PHASE I

LOTS 1-6, OPEN SPACE LOTS 50-57 AND NON-BUILDABLE BULK PARCELS A - I

HOWARD COUNTY, MARYLAND

GENERAL NOTES

1. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK.
2. THE CONTRACTOR IS TO NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE DAYS BEFORE STARTING WORK ON THESE DRAWINGS:

MISS UTILITY	1-800-257-7777
BELL ATLANTIC TELEPHONE CO:	725-9976
HOWARD COUNTY BUREAU OF UTILITIES:	313-2366
VERIZON CABLE LOCATION DIVISION:	393-3553
B.G.&E. CO. CONTRACTOR SERVICES:	850-4620
B.G.&E. CO. UNDERGROUND DAMAGE CONTROL:	787-4620
STATE HIGHWAY ADMINISTRATION:	531-5533

3. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/ CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO START OF WORK.
4. ANY DAMAGE TO PUBLIC RIGHTS-OF-WAY, PAVING, OR EXISTING UTILITIES WILL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
5. EXISTING UTILITIES LOCATED FROM ROAD CONSTRUCTION PLANS AND AVAILABLE RECORD DRAWINGS. APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN FOR THE CONTRACTORS INFORMATION. CONTRACTOR SHALL LOCATE EXISTING UTILITIES WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE. LOT 6 CURRENTLY HAS A WELL AND SEPTIC SYSTEM. THE WELL AND SEPTIC SYSTEM WILL BE PROPERLY ABANDONED AND THE DWELLING WILL BE CONNECTED TO PUBLIC WATER AND SEWER WITHIN 90 DAYS OF AVAILABILITY.
6. TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
7. IN ACCORDANCE WITH SECTION 128 OF THE HOWARD COUNTY ZONING REGULATIONS, BAY WINDOWS, CHIMNEYS, OR EXTERIOR STAIRWAYS NOT MORE THAN 16 FEET IN WIDTH MAY PROJECT NOT MORE THAN 4 FEET INTO ANY SETBACKS. PORCHES OR DECKS, OPEN OR ENCLOSED MAY PROJECT NOT MORE THAN 10 FEET INTO THE FRONT OR REAR YARD SETBACK.
8. DRIVEWAYS SHALL BE PROVIDED PRIOR TO RESIDENTIAL OCCUPANCY TO INSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:
   A) WIDTH - 14 FEET (16 FEET IF SERVING MORE THAN ONE RESIDENCE)
   B) SURFACE - 6 INCHES OF COMPACTED CRUSHER RUN BASE WITH TAR AND CHIP COATING
   C) GEOMETRY - MAXIMUM 15% GRADE, MAXIMUM 10% GRADE CHANGE, AND MINIMUM 45 FOOT TURNING RADIUS
   D) STRUCTURES (CULVERTS/BRIDGES) - MUST SUPPORT 25 GROSS TON LOADING (H25 LOADING)
   E) DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOOD EVENTS WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY SURFACE
   F) STRUCTURE CLEARANCES - MINIMUM 12 FEET
   G) MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE
9. ALL ASPECTS OF THE PROJECT ARE IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
10. DEED REFERENCE: LIBER 5307 FOLIO 448
11. DENSITY TABULATION: GROSS AREA OF PROJECT: 43.34 AC ± AREA OF 100-YEAR FLOODPLAIN DRAINAGE & UTILITY EASEMENT: N/A AREA OF STEEP SLOPES: 18.32 AC NET AREA OF PROJECT: 25.02 AC DWELLING UNITS PER NET ACRE ALLOWED: 2 X 25.02 AC = 50 UNITS DWELLING UNITS PROPOSED: 50 SINGLE FAMILY UNITS
12. THE PROJECT BOUNDARY IS BASED ON A BOUNDARY SURVEY PREPARED BY FREDERICK WARD ASSOCIATES INC., DATED NOVEMBER 2002.
13. THE TOPOGRAPHY SHOWN HEREON IS BASED ON AN AERIAL TOPOGRAPHIC SURVEY PREPARED BY POTOMAC AERIAL SURVEYS, DATED MARCH 2003.
14. WATER AND SEWER FOR THIS PROJECT WILL BE PUBLIC. WATER WILL PROVIDED THROUGH CONTRACT NO. 14-3208. SEWER WILL BE PROVIDED THROUGH CONTRACT NO. 86-S.
15. STORM WATER MANAGEMENT TO BE PROVIDED FOR THIS DEVELOPMENT BY 3 POCKET PONDS ON OPEN SPACE LOTS OWNED AND MAINTAINED BY HOA. OPENSPACE LOT 53, (SWM POND 1), OPENSPACE LOT 55 (SWM POND 2), & OPENSPACE LOT 56 (SWM POND 3) PROVIDED FOR THE REQUIRED Cpv AND Wqv. DRY WELLS, GRASS SWALES AND INFILTRATING DRY WELLS ARE PROVIDED FOR THE REQUIRED Rev. THE STORMWATER MANAGEMENT FACILITIES ARE HAZARD A. POND 3 ALSO PROVIDES Qp AND Qf MANAGEMENT.
16. THE PROPOSED DRAINAGE SWALE BEHIND FUTURE PHASE LOTS AND DRYWELL ON FUTURE LOTS LOCATIONS AND SIZES OF DRYWELLS TO BE DETERMINED AND FINANCIAL SURETY WILL BE PROVIDED UNDER SITE DEVELOPMENT PLAN.
17. THIS SITE IS NOT LOCATED IN A HISTORIC DISTRICT.
18. STREAMS SHOWN ONSITE ARE BASED ON A FIELD INVESTIGATION PREPARED BY FREDERICK WARD ASSOCIATES, INC., DATED AUGUST 2002.
19. THERE ~~ARE~~ NO 100-YEAR FLOODPLAIN LOCATED ON THIS SITE.
20. FOREST CONSERVATION PLAN PREPARED BY FREDERICK WARD ASSOCIATES, INC., DATED JULY 2003.
21. THE PROJECT COMPLIES WITH THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE WITH THE RETENTION OF 0.00 ACRES EASEMENT FOR THIS SITE. FOREST CONSERVATION SURETY IN THE AMOUNT OF $160,126.56 HAS BEEN POSTED WITH THE DEVELOPER'S AGREEMENT FOR THIS FINAL PLAN. F-08-63.
22. A TRAFFIC STUDY IS NOT REQUIRED FOR THIS SITE.
23. PERIMETER AND SWM LANDSCAPING AND TRASH PAD SCREENING IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL SHALL BE PROVIDED AS SHOWN ON THE LANDSCAPE PLAN SHEET OF THE ROAD CONSTRUCTION DRAWINGS FOR THIS SITE SURETY SHALL BE PROVIDED WITH THE DEVELOPERS AGREEMENT FOR THIS FINAL PLAN, F-08-63 IN THE AMOUNT OF $16,230.00.
24. THIS PROPERTY IS WITHIN THE METROPOLITAN DISTRICT.
25. TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL/CEMETERY LOCATIONS ON SITE.
26. STREET TREES ARE PROVIDED, AS shown.
27. A NOISE STUDY IS NOT REQUIRED FOR THIS DEVELOPMENT.
28. NO CLEARING, GRADING, OR CONSTRUCTION IS PERMITTED WITHIN THE STREAMS OR THEIR BUFFERS AND THE FOREST CONSERVATION EASEMENTS.
29. FUTURE PHASED PIPESTEM LOTS WILL UTILIZE A USE-IN-COMMON DRIVEWAY. HOWARD COUNTY STANDARD DETAIL NO. R-6.06 WILL BE UTILIZED FOR THE ENTRANCE AT THE INTERSECTION OF THE PUBLIC ROAD.
30. REFUSE COLLECTION, SNOW REMOVAL, AND MAINTENANCE FOR FUTURE PHASED PIPESTEM LOTS SHALL BE PROVIDED AT THE JUNCTION OF THE PRIVATE USE-IN-COMMON ACCESS EASEMENT AND THE RIGHT-OF-WAY OF CLAREMONT DRIVE.
31. LAWYERS HILL ROAD IS A SCENIC ROAD.
32. TREE PROTECTION FENCING WILL BE PROVIDED AT THE LIMITS OF DISTURBANCE WHERE GRADING IS ADJACENT TO ENVIRONMENTAL AREAS.
33. EXISTING STRUCTURES ON LOT 6 ARE TO REMAIN. NO ADDITIONS OR EXPANSIONS ARE ALLOWED UNLESS IN COMPLIANCE WITH THE APPLICABLE ZONING REGULATIONS. EXISTING STRUCTURES ON OPEN SPACE LOT 50 WILL BE REMOVED PRIOR TO RECORDATION OF THE PLAT.
34. THIS SUBDIVISION COMPLIES WITH THE AMENDED 5TH EDITION OF THE SUBDIVISION AND ZONING REGULATIONS (CB-45-2003) AND THE ZONING REGULATIONS, AS AMENDED BY COUNCIL BILL 75-2003.
35. OPEN SPACE LOTS 50 TO BE DEDICATED TO THE DEPARTMENT OF RECREATION AND PARKS. OPEN SPACE LOT 51-55 TO BE DEDICATED TO THE HOME OWNER ASSOCIATION. AND NON-BUILDABLE PARCEL 'E' TO BE CONVEYED TO THE DEPARTMENT OF PUBLIC WORKS FOR USE AS A FUTURE PUBLIC ROAD RIGHT OF WAY OR ACCESS DRIVEWAY FOR PARCELS 42 AND 45.
36. PRIOR TO OR AT THE TIME OF RECORD PLAT REVIEW, THE APPLICANT IS REQUESTED TO SUBMIT DOCUMENTATION OF THE LOCATIONS OF EXISTING WELLS AND SEPTIC SYSTEMS ON THE PROPERTY, A SCHEDULE FOR ABANDONMENT/SEALING OF SAME, AND CONFIRMATION OF THE NATURE/USE OF THE STRUCTURE ADJACENT TO WASHINGTON BLVD.
37. THE EXISTING HOUSE, LOCATED ON LOT 6, IS LISTED AS HO-798 IN THE HOWARD COUNTY HISTORICAL INVENTORY. 32.
38. INGRESS AND EGRESS IS RESTRICTED ALONG WASHINGTON BOULVARD.
39. FOR STORMWATER MANAGEMENT PURPOSES, OPEN SPACE IMPROVEMENTS ARE PERMITTED ON RECREATIONAL OPEN SPACE ONLY.
40. THE HOMEOWNERS ASSOCIATION DOCUMENTS TO BE RECORDED WITH THE MARYLAND STATE DEPARTMENT OF ASSESSMENTS AND TAXATION PRIOR TO RECORDATION OF THE FINAL PLAT.

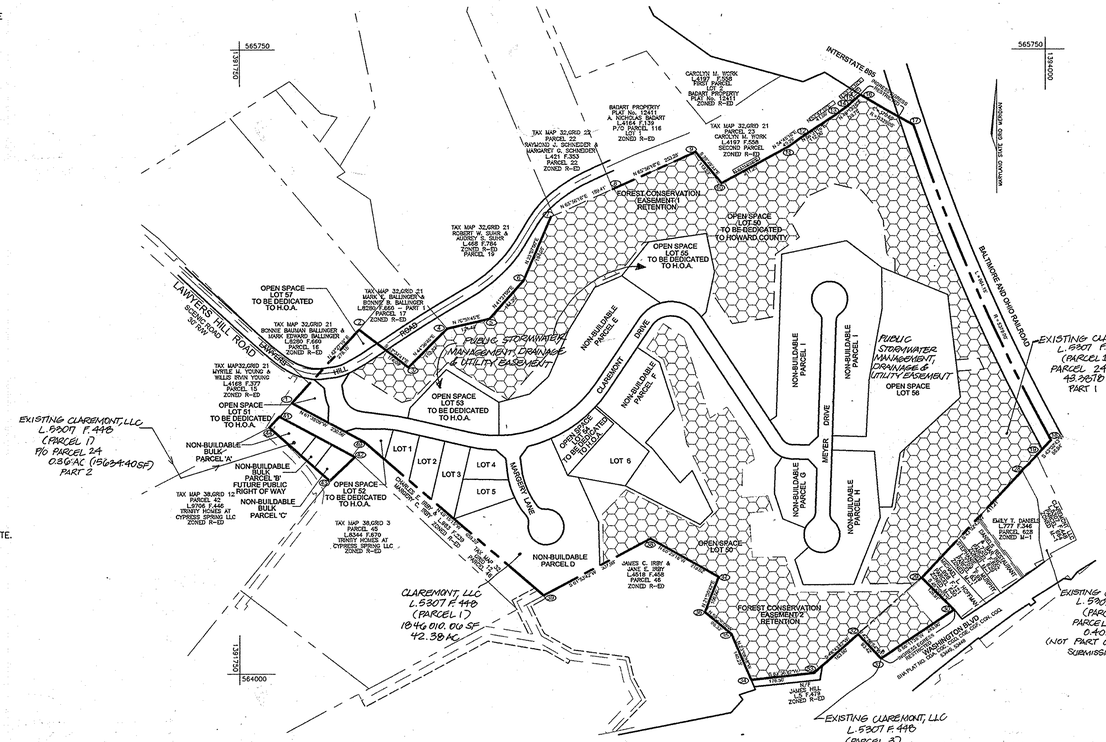
APPROVED: DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 11-24-08

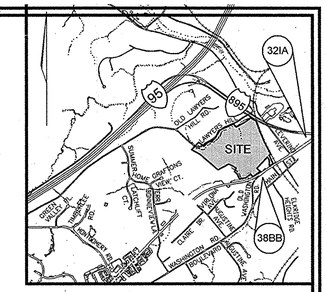
APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development — Date 12/10/08

Chief, Development Engineering Division — Date 11/25/08



LOCATION PLAN
SCALE: 1"=200'



VICINITY MAP
SCALE: 1"=2000'
ADC COORDINATES: 17 H5 & J6

BENCHMARKS			
NO.	NORTHING	EASTING	ELEVATION
32IA	565,065.463'	1,395,212.248	27.696'
38BB	564,007.646'	1,393,649.975	27.696'

MILESTONE CHART

THE DEPARTMENT OF PLANNING AND ZONING'S SP-04-001 LETTER DATED 08/03/07 GRANTED TENTATIVE ALLOCATIONS FOR THIS SUBDIVISION IN ACCORDANCE WITH THE FOLLOWING ALLOCATION SCHEDULE AND MILESTONES:

PHASE	NO. TENTATIVE ALLOCATIONS	ALLOCATION YEAR	FINAL PLAN SUBMISSION MILESTONES
PHASE I	5	2010	BY DECEMBER 3, 2007
PHASE II	0	2011	N/A *
PHASE III	43	2012	BETWEEN JULY 1, 2009 & NOVEMBER 1, 2009

* NOTE: HOUSING UNIT ALLOCATION ARE NOT AVAILABLE FOR ALLOCATION YEAR 2011. THIS STATUS MAY BE ALTERED FOLLOWING THE ROLLING AVERAGE COMPUTATIONS. IT WILL BE NOTIFIED IN WRITING OF ANY STATUS CHANGE.

NOTES:

ALL UTILITIES, ROADS, INFRASTRUCTURE TO BE CONSTRUCTED INITIALLY. ONLY CONSTRUCTION TO REMIAN FOR FUTURE PHASES ARE THE SINGLE FAMILY UNIT STRUCUTURES ON THE FUTURE LOTS.
FOR PHASE III: A RED-LINE REVISION TO THIS PLAN MUST BE SUBMITTED TO THE DPZ BETWEEN 07/01/09 AND 11/01/09, OR THIS PROJECT WILL LOSE THE 43 PHASE III HOUSING UNIT ALLOCATIONS.

TWO (1) CREDIT HOUSING UNIT ALLOCATIONS ARE RECOGNIZED FOR THIS DEVELOPMENT FOR THE ONE (1) PROPERTY WITH HOUSE THAT WAS SUBDIVIDED TO CREATE IT.

SITE DATA

LOCATION: TAX MAP 32 AND 38, GRID 21, PARCELS 632 AND Part of 24
1ST ELECTION DISTRICT
EXISTING ZONING: R-ED
GROSS AREA OF PROJECT: 43.34±
AREA OF 100-YEAR FLOODPLAIN DRAINAGE & UTILITY EASEMENT: N/A
AREA OF STEEP SLOPES: 18.32 AC
NET AREA OF PROJECT: 25.02 AC
TOTAL BUILDABLE LOTS AND/OR PARCELS (PHASE #1)= 5 + 1 EXISTING LOT 53
TOTAL AREA OF PROPOSED BUILDABLE LOTS: 10.875 AC± ALL PHASES
TOTAL AREA OF NON-BUILDABLE PARCELS: 0.36 AC. ALL PHASES
AREA OF OPEN SPACE REQUIRED: 50% x 43.34 AC = 21.67 AC.
AREA OF OPEN SPACE PROVIDED: 28.88 AC.
AREA OF RECREATIONAL OPEN SPACE REQUIRED: 300 SF X 49 LOTS = 14,700 SF
AREA OF RECREATIONAL OPEN SPACE PROVIDED: 15,206 SF
AREA OF PROPOSED RIGHT-OF-WAY: 3.22 AC.
(INCLUDING NON-BUILDABLE BULK PARCEL B)
NUMBER OF LOTS/PARCELS ALLOWED (2 PER NET ACRE): 50 BUILDABLE LOTS
NUMBER OF LOTS/PARCELS PROPOSED: 49 BUILDABLE LOTS (INCLUDING EXISTING)
PHASE I - 5 + 1 EXISTING LOT = 6
PHASE II - 0
PHASE III - 43
TOTAL APPROXIMATE LIMIT OF DISTURBANCE: 19.33 AC± ALL PHASES
AREA OF PROPOSED LOTS (PHASE I) = 1.82 AC.
AREA OF NON-BUILDABLE PARCELS (PHASE I) = 9.92 AC.

BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAIN

1) NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN THE WETLANDS OR BUFFER.
2) PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF THE NONTIDAL WETLAND.
3) DO NOT USE THE EXCAVATED MATERIAL AS BACKFILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL OR ANY OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACKFILL IS REQUIRED, USE CLEAN MATERIAL FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL OR ANY OTHER DELETERIOUS SUBSTANCE.
4) PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO THE NONTIDAL WETLANDS OR BUFFER.
5) REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NONTIDAL WETLANDS IN EXCESS OF NONTIDAL WETLANDS LOST UNDER THE ORIGINAL STRUCTURE OR FILL.
6) RECTIFY ANY NONTIDAL WETLANDS TEMPORARILY IMPACTED BY ANY CONSTRUCTION.

7) ALL STABILIZATION IN THE WETLAND AND BUFFER SHALL BE OF THE FOLLOWING RECOMMENDED SPECIES: ANNUAL RYEGRASS (LOLIUM MULTIFLORUM), MILLET (SETARIA ITALICA), BARLEY (HORDEUM SP.), OATS (UNIOLA SP.), AND/OR RYE (SECALE CEREALE). THESE SPECIES WILL ALLOW FOR THE STABILIZATION OF THE SITE WHILE ALSO ALLOWING FOR THE VOLUNTARY REVEGETATION OF NATURAL WETLAND SPECIES. OTHER NON-PERSISTENT VEGETATION MAY BE ACCEPTABLE, BUT MUST BE APPROVED BY THE DIVISION. KENTUCKY 33 FESCUE SHALL NOT BE UTILIZED IN THE WETLAND OR BUFFER AREAS. THE AREA SHOULD BE SEEDED AND MULCHED TO REDUCE EROSION AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.

8) AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST CONSTRUCTION GRADES AND ELEVATIONS OF NONTIDAL WETLANDS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS.

9) TO PROTECT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM. USE I WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.

10) STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.

11) CULVERTS SHALL BE CONSTRUCTED AND ANY RIPRAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER.

OWNER/DEVELOPER

CLAREMONT L.L.C.
11046 DORSCH FARM ROAD
ELLICOTT CITY, MARYLAND 21042
(410) 730-4556

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RETAINING WALLS DETAILS	27 OF 27

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2010.

NO.	REVISION	DATE
1	ADD STORMWATER MANAGEMENT EASEMENT AND REVISE GRADING ON OPEN SPACE LOT 54.	12/16/09

41. A USE-IN-COMMON MAINTENANCE AGREEMENT FOR LOT#6 AND NON-BUILDABLE BULK PARCEL F SHALL BE RECORDED SIMULTANEOUSLY WITH THE PLAT IN LAND RECORDS OFFICE OF HOWARD COUNTY, MD.
42. A MINIMUM OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
43. 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 RUBE SLEEVE (12 GUAGE-3' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
44. A MDE WETLAND PERMIT IS REQUIRED FOR THE DISTURBANCE SHOWN ON THIS PLAN. MDE TRACKING #200862474 NO IN-STREAM CONSTRUCTION MAY OCCUR FROM 03/01 TO 06/15.

COORDINATE TABLE					
NO.	NORTHING	EASTING	NO.	NORTHING	EASTING
1	564760.14	1391895.57	28	564568.62	1393934.33
2	564965.36	1392083.32	29	564268.11	1393653.65
3	564859.56	1392221.58	30	564178.89	1393743.91
4	564968.38	1392328.92	31	564042.08	1393475.89
5	564995.70	1392447.30	32	564110.42	1393475.89
6	565103.50	1392543.07	33	564002.31	1393352.71
7	565281.98	1392619.26	34	563982.67	1393177.30
8	565359.21	1392792.21	35	564111.64	1393122.19
9	565462.48	1393023.48	36	564172.93	1393047.87
10	565375.52	1393096.00	37	564271.54	1393086.74
11	565476.96	1393281.31	38	564379.43	1392896.14
12	565505.34	1393321.56	39	564220.21	1392598.01
13	565567.12	1393414.97	40	564650.60	1392098.45
14	565591.35	1393448.05	41	564722.27	1391860.92
15	565617.84	1393477.69	42	564608.70	1392071.26
16	565622.65	1393483.90	43	564542.47	1393996.62
17	565537.81	1393631.88	44	564691.44	1391832.72
18	564654.09	1394014.15			
19	564612.47	1393975.28			

NO AS-BUILT INFORMATION THIS SHEET.

FINAL ROAD CONSTRUCTION PLAN
COVER SHEET
CLAREMONT OVERLOOK
LOTS 1 - 6, OPEN SPACE LOTS 50-57
AND NON - BUILDABLE BULK PARCELS A -I

TAX MAP 32 GRID 21 — PARCELS 632 AND 24
1ST ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

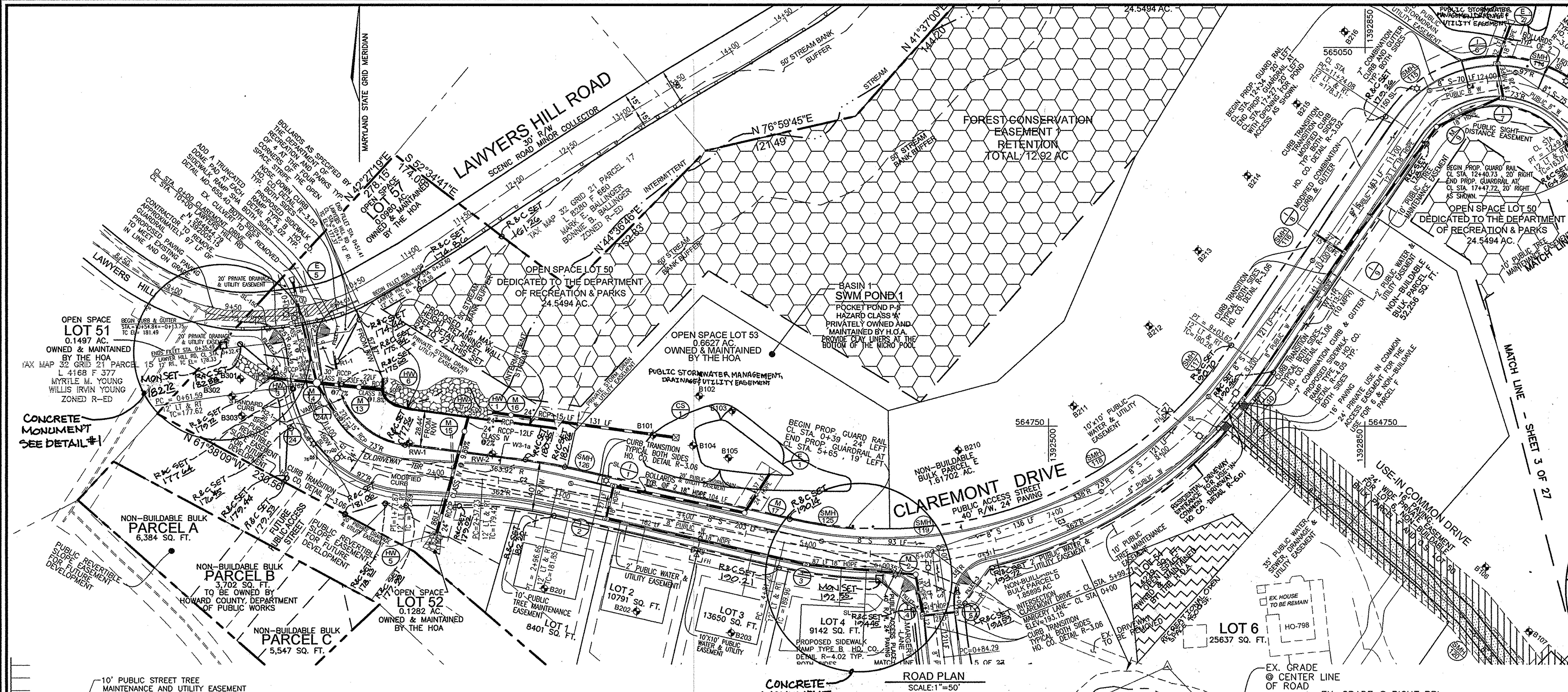
ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET, ELLICOTT CITY, MD 21043
TEL: 410.461.7666 FAX: 410.461.8961

STATE OF MARYLAND — ROBERT HARRIS VOGEL — NO. 16193 — REGISTERED PROFESSIONAL ENGINEER — 9/27/10
ROBERT H. VOGEL, PE No.16193

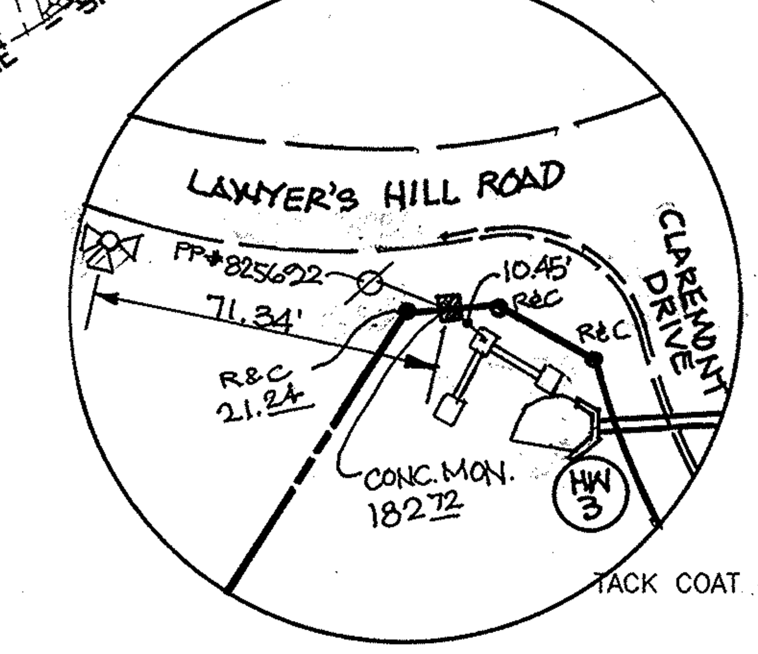
DESIGN BY:	RHV/RJ
DRAWN BY:	RJ
CHECKED BY:	RHV
DATE:	SEPTEMBER 2008
SCALE:	AS SHOWN
W.O. NO.:	02-68.00

SHEET 1 OF 27

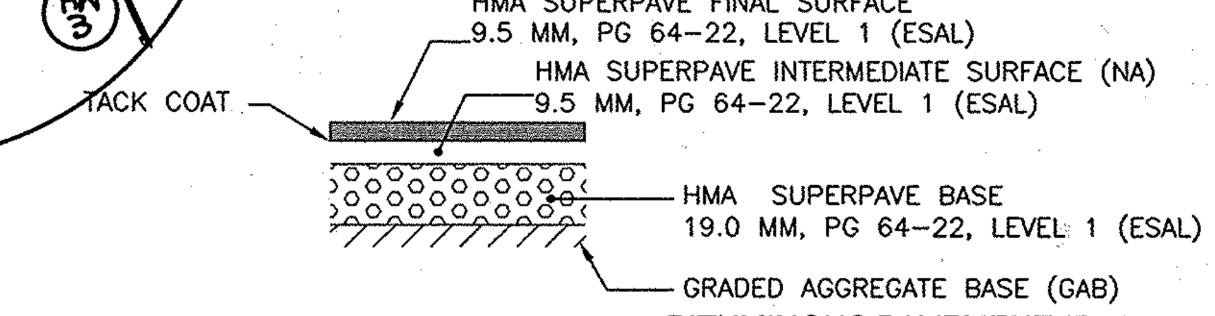
F-08-63



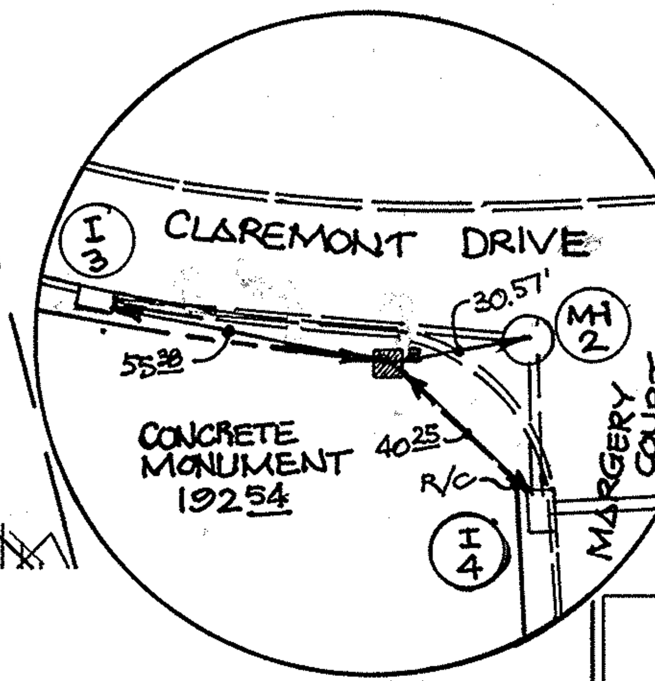
MODIFIED CURB & GUTTER
HOWARD COUNTY STANDARD R3.01
NOT TO SCALE



DETAIL #1

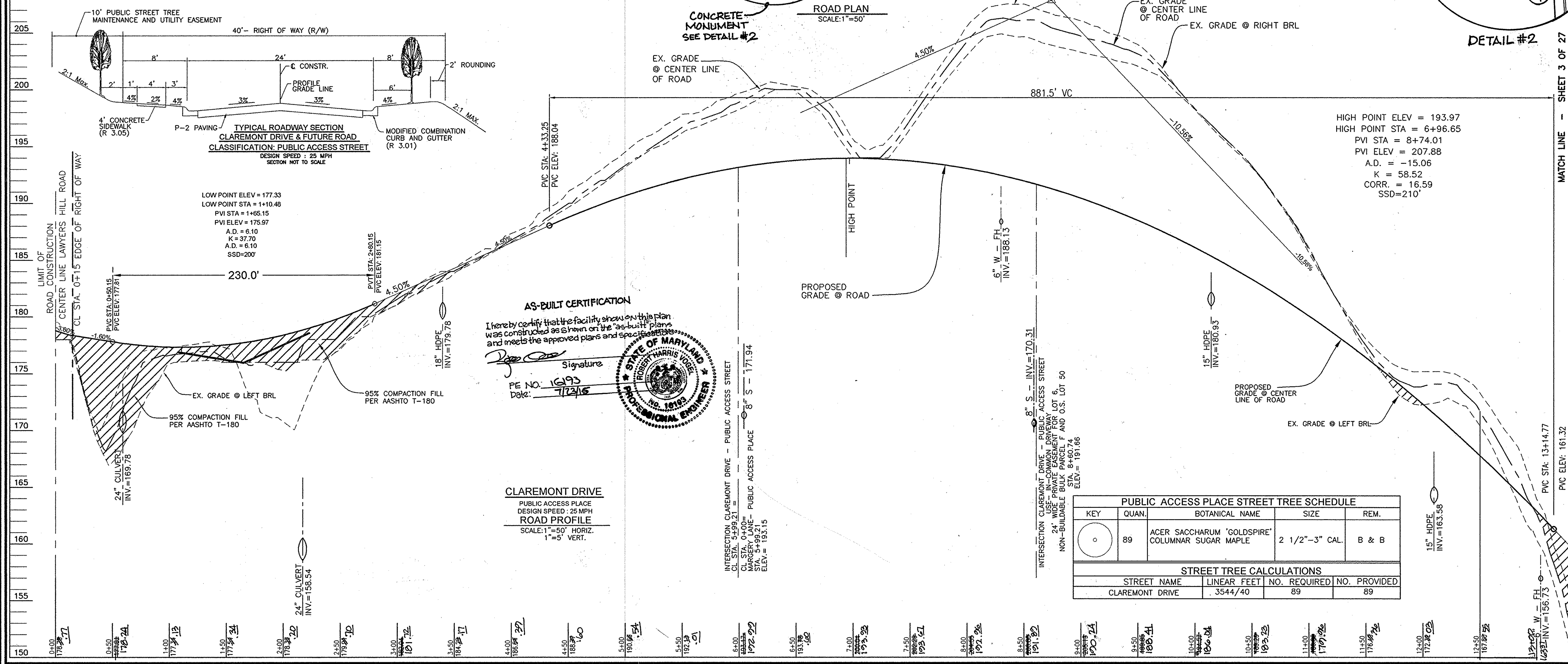


BITUMINOUS PAVEMENT (P-1)
R-2.01
PROJECT GEOTECH ENGINEER TO CONFIRM PAVING SECTIONS PRIOR TO CONSTRUCTION



DETAIL #2

OWNER/DEVELOPER
CLAREMONT L.L.C.
11046 DORSCH FARM ROAD
ELLICOTT CITY, MARYLAND 21042
(410) 730-4556



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: 7/13/15

PUBLIC ACCESS PLACE STREET TREE SCHEDULE				
KEY	QUAN.	BOTANICAL NAME	SIZE	REM.
	89	ACER SACCHARUM 'GOLDSPIRE' COLUMNAR SUGAR MAPLE	2 1/2"-3" CAL.	B & B

STREET TREE CALCULATIONS			
STREET NAME	LINEAR FEET	NO. REQUIRED	NO. PROVIDED
CLAREMONT DRIVE	3544/40	89	89

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2010."

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 11-24-08

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/10/09
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 11/25/08

NO.	REVISION	DATE
1	ADD PUBLIC STORMWATER MANAGEMENT, DRAINAGE & UTILITY EASEMENT LABELS AND ADD GRADING & REVISED REC. O.S. PER WP-09-223.	11/16/09

FINAL ROAD CONSTRUCTION PLAN
ROAD CONSTRUCTION PLAN & DETAILS
CLAREMONT OVERLOOK
LOTS 1 - 6, OPEN SPACE LOTS 50-57
AND NON - BUILDABLE BULK PARCELS A - I

TAX MAP 32 GRID 21 — PARCELS 632 AND 24
1ST ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

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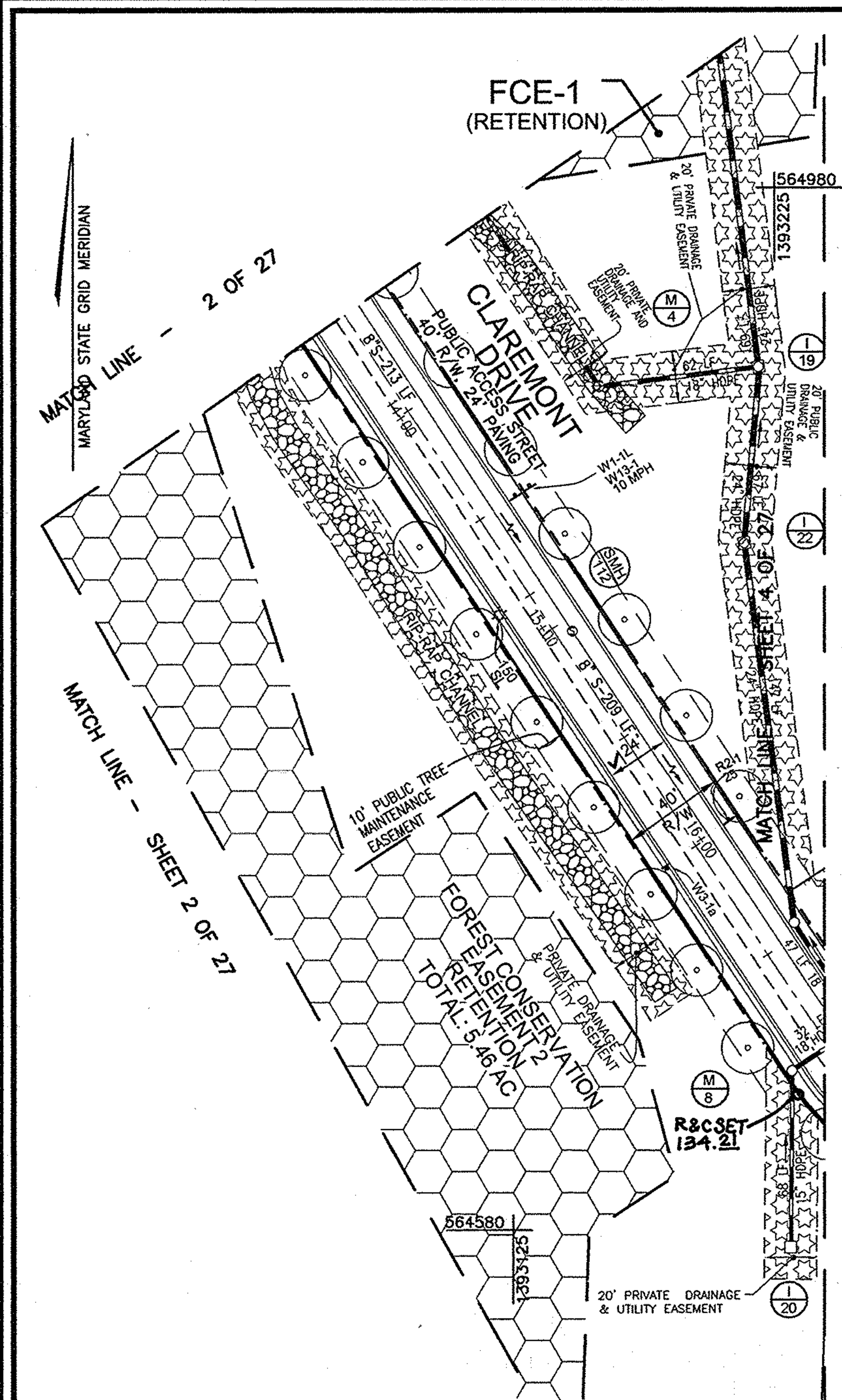
W.O. NO.:	02-68.00

ROBERT H. VOGEL, PE No.16193

AS-BUILT 06/24/15

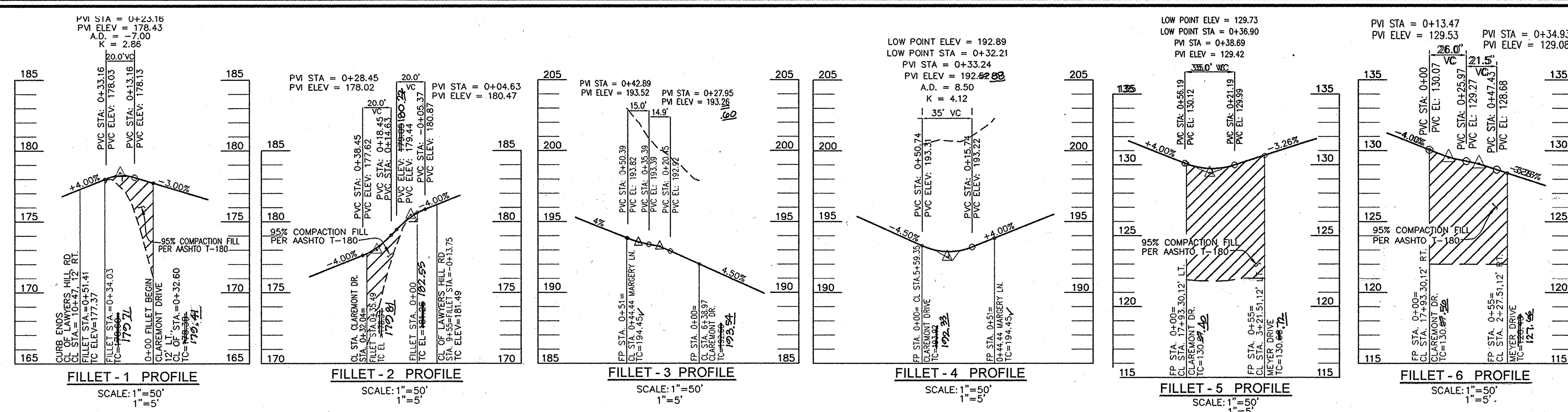
F-08-63

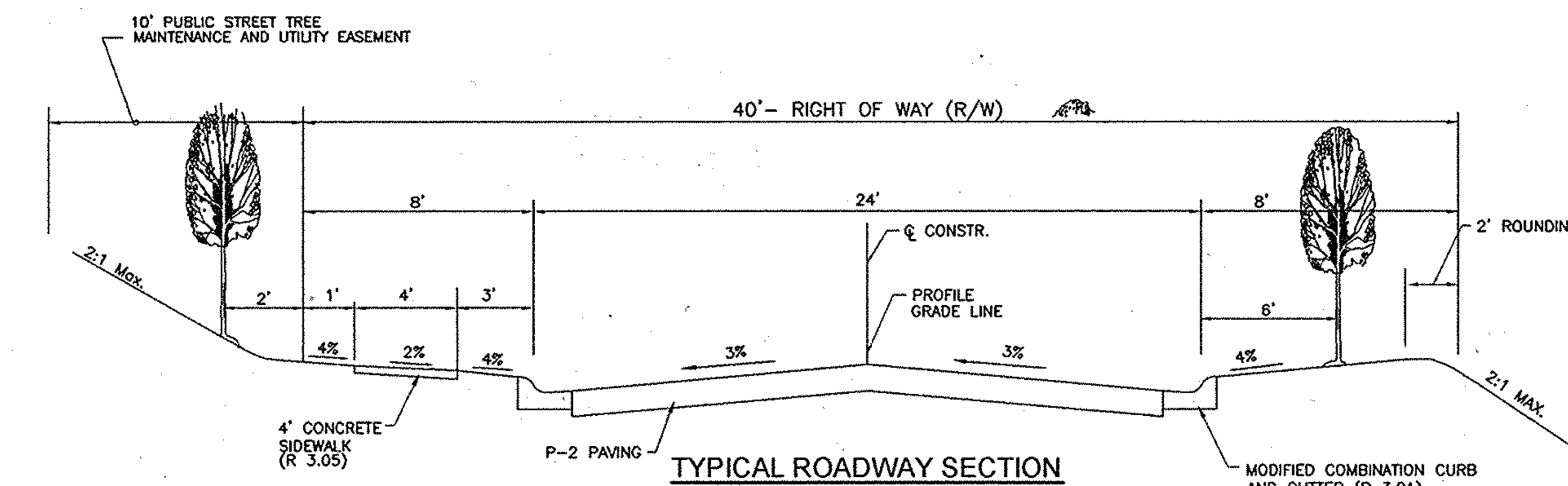


ROAD PLAN
SCALE: 1"=50'

LEGEND

- PROPOSED STREET TREE
- PUBLIC TREE MAINTENANCE EASEMENT
- PERMANENT RIP-RAP CHANNEL
- RECREATIONAL OPEN SPACE
- FOREST CONSERVATION EASEMENT
- 20' PUBLIC STORMDRAIN & UTILITY EASEMENT
- 20' PRIVATE DRAINAGE & UTILITY EASEMENT
- STREET LIGHT





TYPICAL ROADWAY SECTION
CLAREMONT DRIVE & FUTURE ROAD
CLASSIFICATION: PUBLIC ACCESS STREET
DESIGN SPEED : 25 MPH
SECTION NOT TO SCALE

STREET LIGHT LOCATION CHART			
STREET NAME	STATION	OFFSET	FIXTURE/POLE TYPE
CLAREMONT DRIVE	0+13	25' RT.	150-WATT PREMIER POST-TOP FIXTURE
CLAREMONT DRIVE	1+05	14' RT.	150-WATT PREMIER POST-TOP FIXTURE
CLAREMONT DRIVE	3+33	16' LT.	100-WATT PREMIER POST-TOP FIXTURE
CLAREMONT DRIVE	5+69.5	16' RT.	100-WATT PREMIER POST-TOP FIXTURE
CLAREMONT DRIVE	8+46	14' RT.	100-WATT PREMIER POST-TOP FIXTURE
CLAREMONT DRIVE	11+50	16' LT.	150-WATT PREMIER POST-TOP FIXTURE
CLAREMONT DRIVE	12+56	16' LT.	150-WATT PREMIER POST-TOP FIXTURE
CLAREMONT DRIVE	15+00	14' RT.	150-WATT PREMIER POST-TOP FIXTURE
CLAREMONT DRIVE	17+13	16.7' RT.	150-WATT PREMIER POST-TOP FIXTURE
MEYER DRIVE CUL-DE-SAC LINEAR PROFILE	0+96	10' RT.	100-WATT PREMIER POST-TOP FIXTURE
MEYER DRIVE	5+50	17' RT.	100-WATT PREMIER POST-TOP FIXTURE
MEYER DRIVE	3+11	15.8' RT.	100-WATT PREMIER POST-TOP FIXTURE
MEYER DRIVE CUL-DE-SAC LINEAR PROFILE	1+57	10' RT.	100-WATT PREMIER POST-TOP FIXTURE
MARGERY LANE- IN THE BACK OF THE CUL-DE-SAC (LOCATIONS AS SHOWN ON PLAN).			

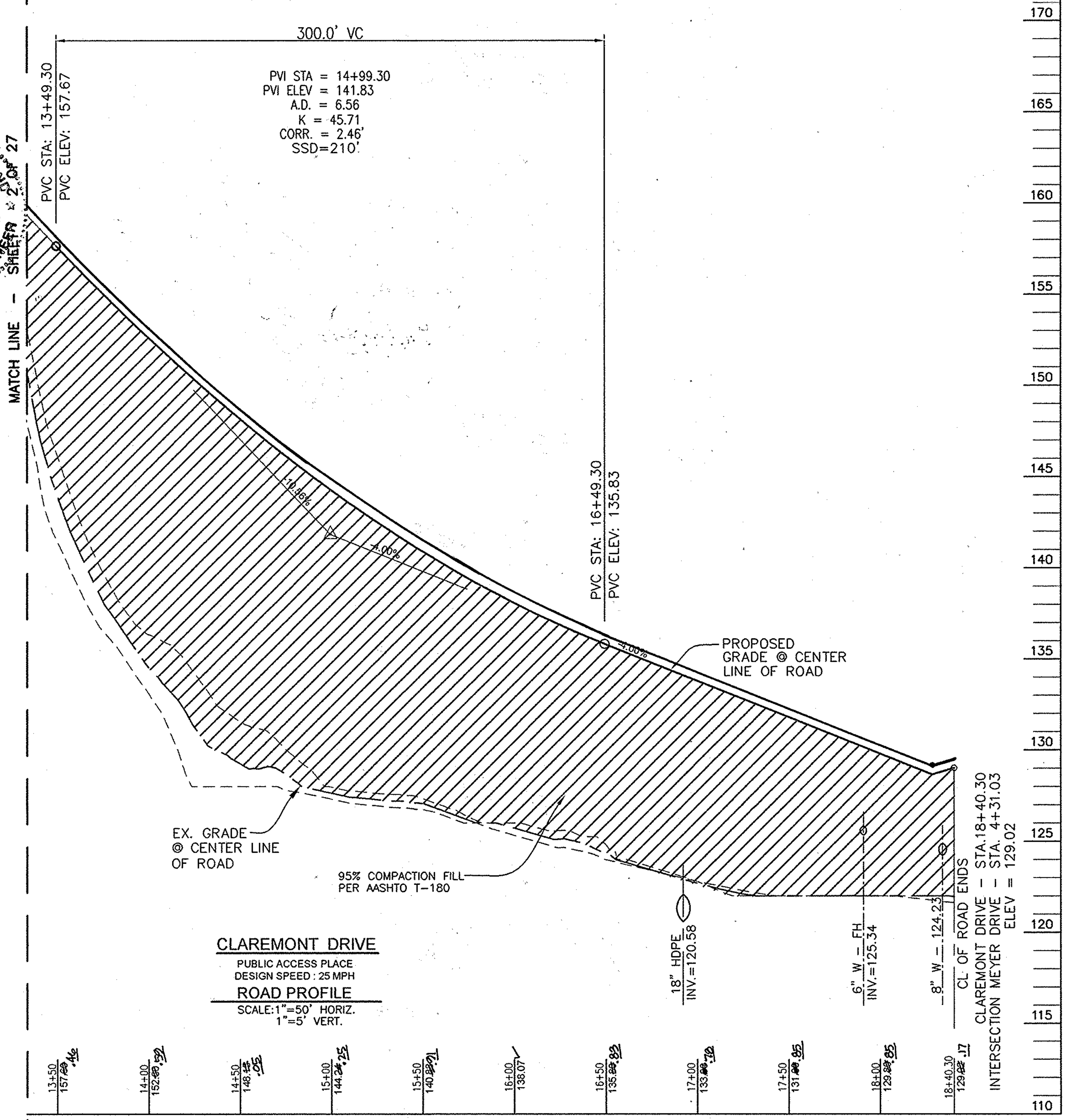
SIGNAGE LOCATION CHART			
STREET NAME	STATION	OFFSET	FIXTURE/POLE TYPE
CLAREMONT DRIVE MARGERY LANE CLAREMONT DRIVE	0+30 0+47 17+99	17' LEFT 14' RIGHT 14.5' RIGHT	R1-1 "STOP"
USE-IN-COMMON DRIVE	AS SHOWN		
CLAREMONT DRIVE CLAREMONT DRIVE	0+87 16+00	22' RIGHT 17' LEFT	R2-1 "SPEED LIMIT 25 MPH"
CLAREMONT DRIVE CLAREMONT DRIVE	6+25 16+00	16' LEFT 17' RIGHT	W3-1a "STOP AHEAD"
CLAREMONT DRIVE	8+08	15' RIGHT	D3 *ST. NAME SIGN ASSEMBLY
CLAREMONT DRIVE CLAREMONT DRIVE	8+80 6+10	23' RIGHT 34' RIGHT	STREET NUMBER SIGN "#### TIBER FALLS ROAD"
CLAREMONT DRIVE	9+50	20.5' RIGHT	W1-1R SHARP RIGHT TURN W13-1 "10 MPH"
CLAREMONT DRIVE	14+50	17' LEFT	W1-1L SHARP LEFT TURN W13-1 "10 MPH"

*STREET NAME SIGNS SHALL BE FABRICATED BY HOWARD COUNTY

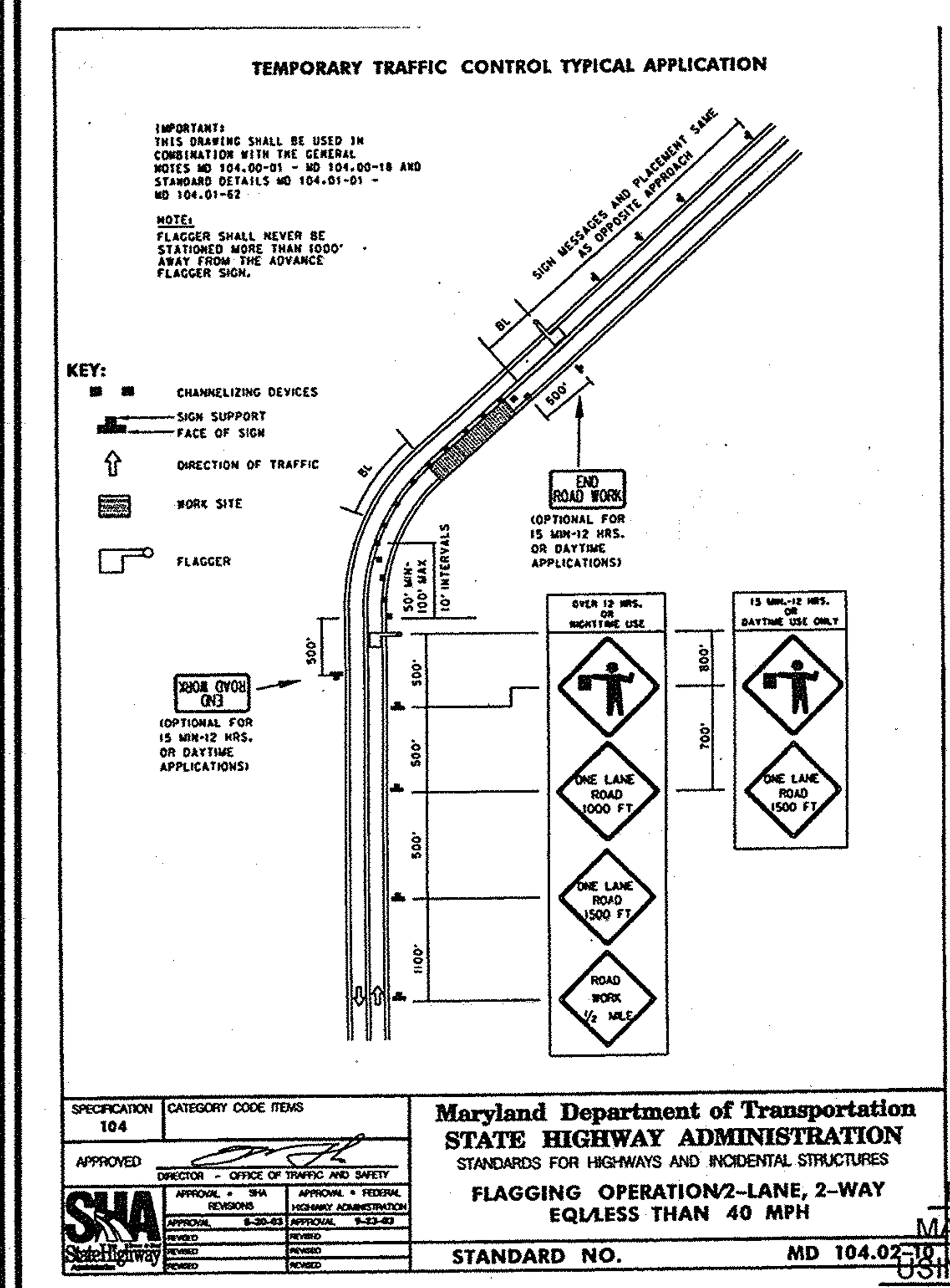
AS-BUILT CERTIFICATION

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: 7/23/15

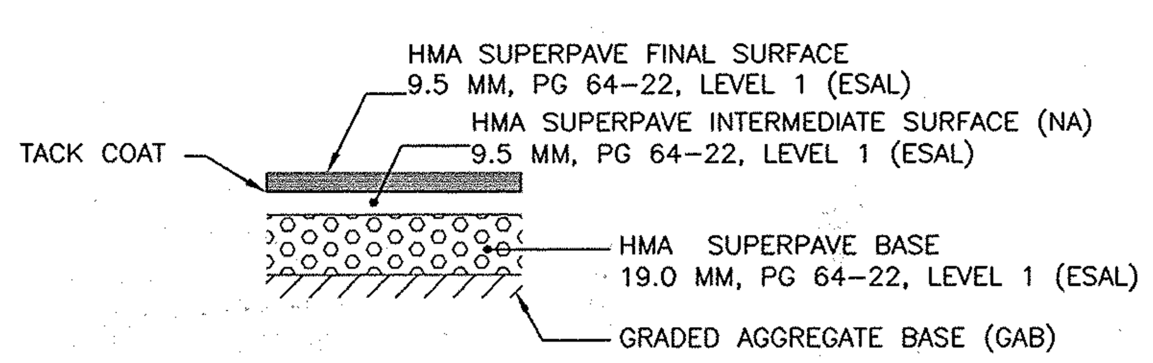


CLAREMONT DRIVE
PUBLIC ACCESS PLACE
DESIGN SPEED : 25 MPH
ROAD PROFILE
SCALE: 1"=50' HORIZ. 1"=5' VERT.

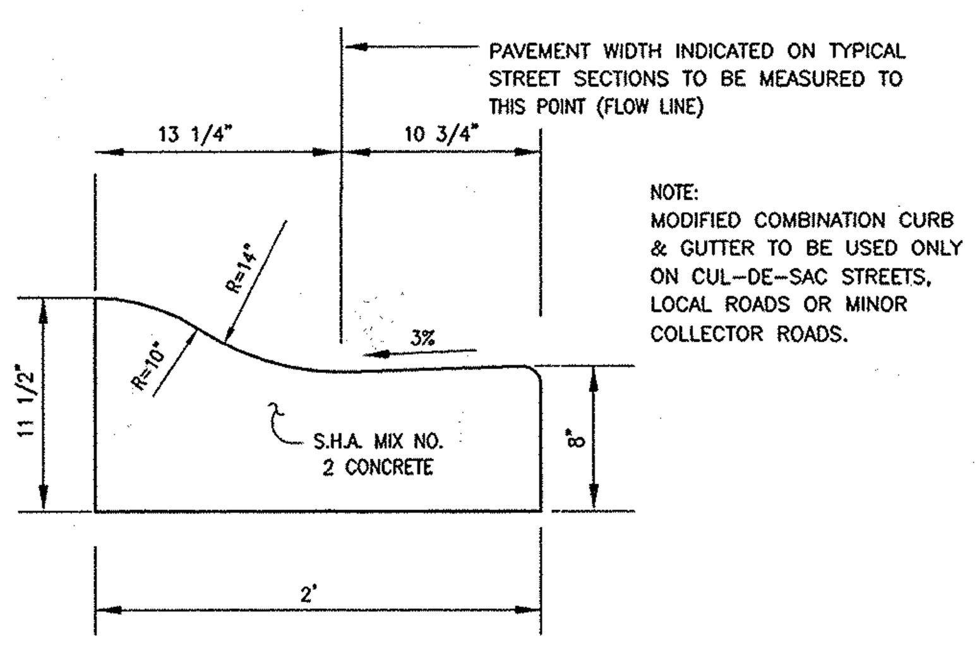


SPECIFICATION 104	Maryland Department of Transportation STATE HIGHWAY ADMINISTRATION STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
APPROVED / DIRECTOR - OFFICE OF TRAFFIC AND SAFETY	FLAGGING OPERATION/2-LANE, 2-WAY EQ/LESS THAN 40 MPH
	STANDARD NO. MD 104.02-10

PAVEMENT MARKING & MAINTAINANCE OF TRAFFIC USING REVISED SHA DETAILS
NOT TO SCALE



BITUMINOUS PAVEMENT (P-2)
R-2.01
PROJECT GEOTECH ENGINEER TO CONFIRM PAVING SECTIONS PRIOR TO CONSTRUCTION



NOTE:
MODIFIED COMBINATION CURB & GUTTER TO BE USED ONLY ON CUL-DE-SAC STREETS, LOCAL ROADS OR MINOR COLLECTOR ROADS.

MODIFIED CURB & GUTTER
HOWARD COUNTY STANDARD R3.01
NOT TO SCALE

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 11-24-08

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/10/09

CHIEF, DEVELOPMENT ENGINEERING DIVISION J.P. — DATE 11/25/08

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2010."

OWNER/DEVELOPER

CLAREMONT L.L.C.
11046 DORSCH FARM ROAD
ELLICOTT CITY, MARYLAND 21042
(410) 730-4556

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN
ROAD CONSTRUCTION PLAN AND DETAILS
CLAREMONT OVERLOOK
LOTS 1 - 6, OPEN SPACE LOTS 50-57
AND NON - BUILDABLE BULK PARCELS A - I

TAX MAP 32 GRID 21 — PARCELS 632 AND 24
1ST ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

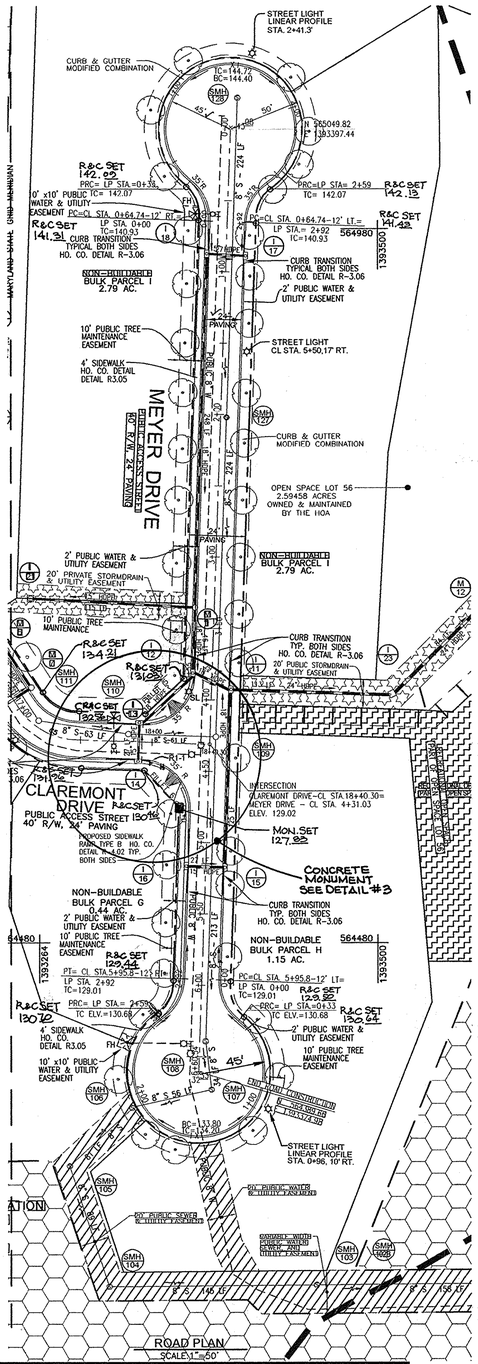
ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

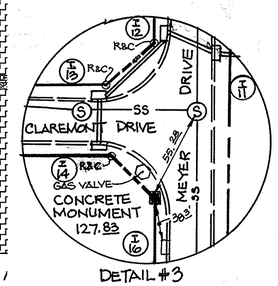
ROBERT H. VOGEL, PE No.16193

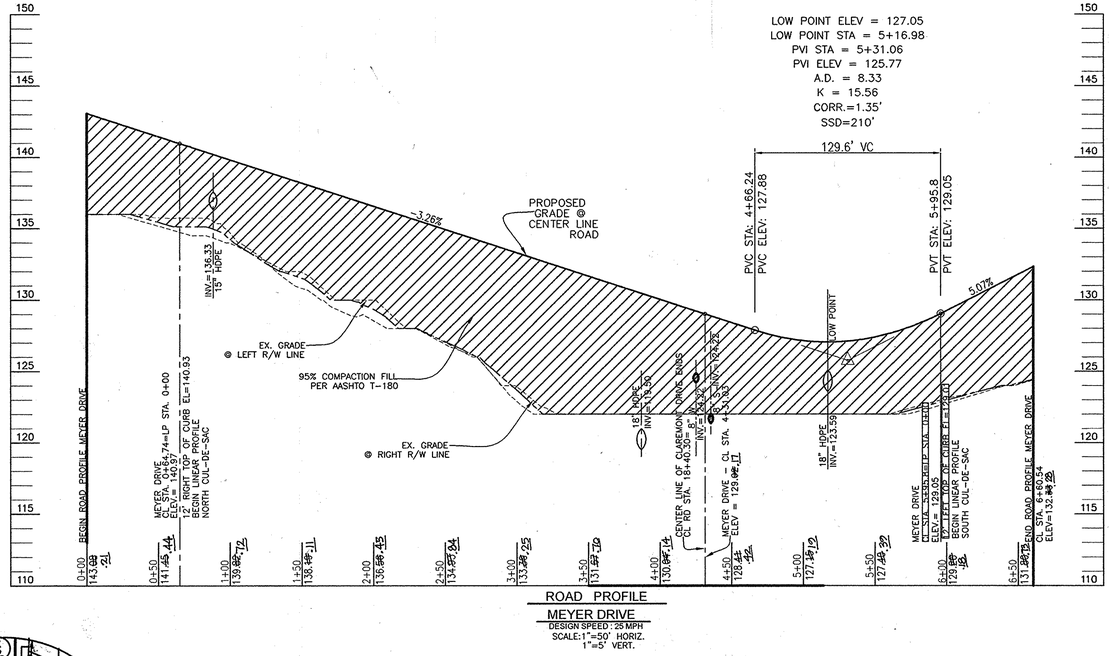
DESIGN BY: RHV/RJ
DRAWN BY: RJ
CHECKED BY: RHV
DATE: SEPTEMBER 2008
SCALE: AS SHOWN
W.O. NO.: 02-68.00

AS-BUILT 06/24/15

F-08-63



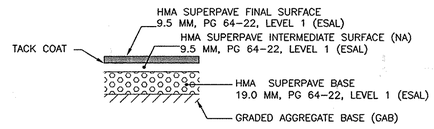




ROAD PROFILE
MEYER DRIVE
DESIGN SPEED : 25 MPH
SCALE: 1"=50' HORIZ.
1"=5' VERT.

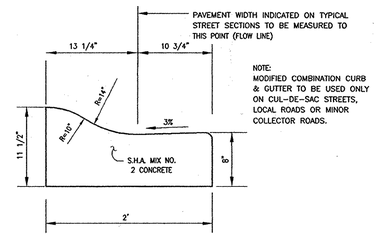
PUBLIC ACCESS PLACE STREET TREE SCHEDULE				
KEY	QUAN.	BOTANICAL NAME	SIZE	REM.
	40	ACER SACCHARUM 'GOLDSPIRE' COLUMNAR SUGAR MAPLE	2 1/2"-3" CAL.	B & B

STREET TREE CALCULATIONS			
STREET NAME	LINEAR FEET	NO. REQUIRED	NO. PROVIDED
MEYER DRIVE	1583/40	40	40



BITUMINOUS PAVEMENT (P-2)
R-2.01

PROJECT GEOTECH ENGINEER TO CONFIRM PAVING SECTIONS PRIOR TO CONSTRUCTION



MODIFIED CURB & GUTTER
HOWARD COUNTY STANDARD R3.01
NOT TO SCALE

HIGH POINT ELEV = 144.72
HIGH POINT STA = 1+46.11
PVI STA = 1+46.11
PVI ELEV = 145.69
A.D. = -6.52
K = 18.40
CORR. = 0.978'
120.0' VC
PVC STA: 0+86.11
PVC ELEV: 143.74
PVT STA: 2+06.11
PVT ELEV: 143.74
PROPOSED GRADE @ TOP OF CURB
EX. GRADE @ TOP OF CURB
3.26%
HIGH POINT
MEYER DRIVE STA. 0+64.74=CL STA. 0+64.74 ELEV.= 140.97
12" RIGHT TOP OF CURB ELEV.=140.93
12" RCP
NORTH CUL-DE-SAC
MEYER DRIVE STA. 2+92.22=CL STA. 0+64.74 ELEV.= 140.97
12" LEFT TOP OF CURB ELEV.=140.93
12" RCP
SOUTH CUL-DE-SAC
0+00
0+50
1+00
1+50
2+00
2+50
2+92.22

CUL-DE-SAC PROFILE - NORTH
MEYER DRIVE
SCALE: 1"=50' HORIZ.
1"=5' VERT.

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.

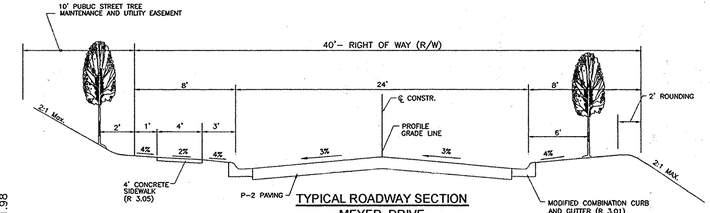
Signature

PE NO. 16193
Date: 7/24/15

STATE OF MARYLAND
ROBERT HARRIS VOGEL
No. 16193
PROFESSIONAL ENGINEER

HIGH POINT ELEV = 134.20
HIGH POINT STA = 1+46.12
PVI STA = 1+46.12
PVI ELEV = 136.42
A.D. = -10.14
K = 17.26
CPRR. = 2.21'
175.0' VC
PVT STA: 2+33.62
PVT ELEV: 131.98
PVC STA: 0+58.62
PVC ELEV: 131.98
-5.07%
5.07%
HIGH POINT
MEYER DRIVE STA. 2+92=CL STA. 0+95.8 ELEV.= 129.05
12" LEFT TOP OF CURB ELEV.=129.01
18" RCP
SOUTH CUL-DE-SAC
MEYER DRIVE LP STA. 0+00=CL STA. 0+95.8 ELEV.= 129.05
12" RIGHT TOP OF CURB ELEV.=129.01
18" RCP
SOUTH CUL-DE-SAC
2+92
2+50
2+00
1+50
1+00
0+50
0+00

CUL-DE-SAC - PROFILE- SOUTH
MEYER DRIVE
SCALE: 1"=50' HORIZ.
1"=5' VERT.



TYPICAL ROADWAY SECTION
MEYER DRIVE
CLASSIFICATION: PUBLIC ACCESS STREET
DESIGN SPEED : 25 MPH
SECTION NOT TO SCALE

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 11-24-08

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/10/09

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 11/25/08

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OWNER/DEVELOPER

CLAREMONT L.L.C.
11046 DORSCH FARM ROAD
ELLICOTT CITY, MARYLAND 21042
(410) 730-4556

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN
ROAD CONSTRUCTION PLAN AND DETAILS

CLAREMONT OVERLOOK

LOTS 1 - 6, OPEN SPACE LOTS 50-57
AND NON - BUILDABLE BULK PARCELS A -I

TAX MAP 32 GRID 21 — PARCELS 632 AND 24
1ST ELECTION DISTRICT — 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

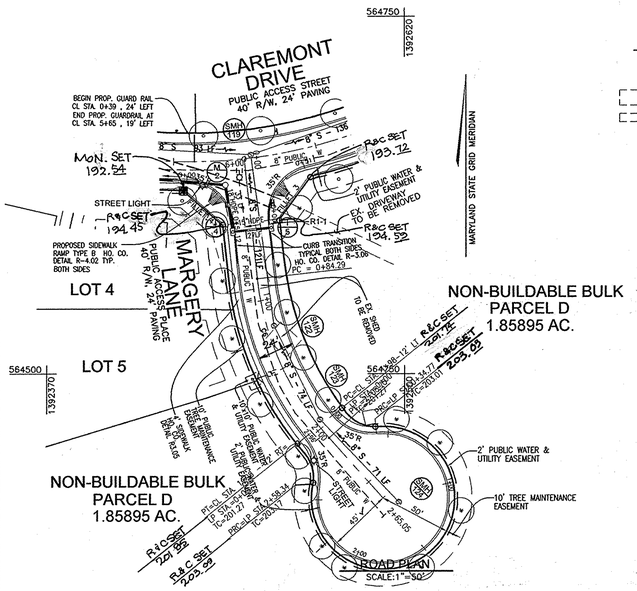
STATE OF MARYLAND
ROBERT HARRIS VOGEL
No. 16193
PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE No.16193

DESIGN BY:	RHV/RJ
DRAWN BY:	RJ
CHECKED BY:	RHV
DATE:	SEPTEMBER 2008
SCALE:	AS SHOWN
W.O. NO.:	02-68.00

SHEET 4 OF 27

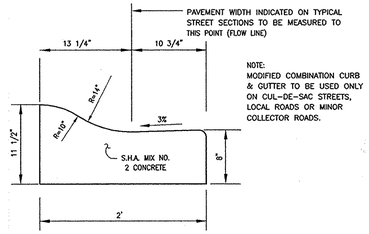
AS-BUILT 06/24/15

F-08-63



LEGEND

- PROPOSED STREET TREE
- PUBLIC TREE MAINTENANCE EASEMENT
- 2' PUBLIC WATER & UTILITY EASEMENT
- STREET LIGHT



NOTE:
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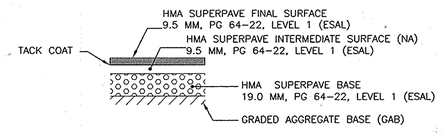
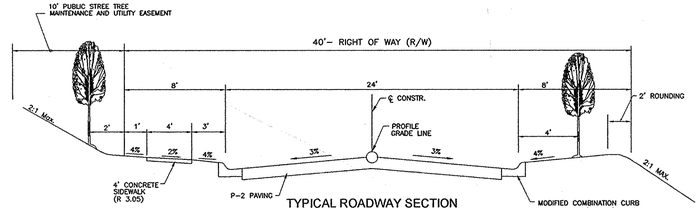
MODIFIED CURB & GUTTER
HOWARD COUNTY STANDARD R3.01
NOT TO SCALE



BITUMINOUS PAVEMENT (P-2)
R-2.01
PROJECT GEOTECH ENGINEER TO CONFIRM PAVING SECTIONS PRIOR TO CONSTRUCTION



TYPICAL ROADWAY SECTION
MARGERY LANE
CLASSIFICATION: PUBLIC ACCESS PLACE
DESIGN SPEED : 15 MPH
SECTION NOT TO SCALE

PUBLIC ACCESS PLACE STREET TREE SCHEDULE

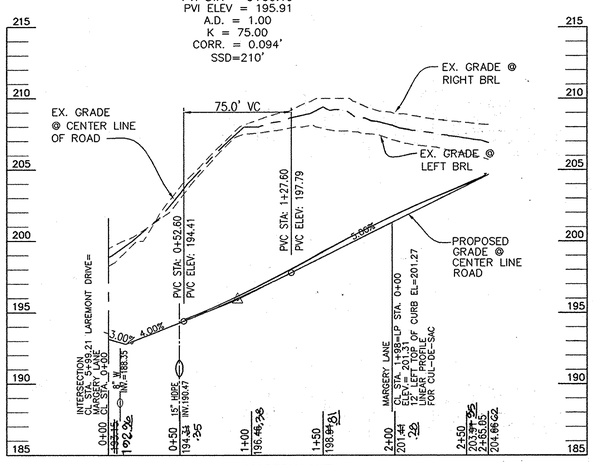
KEY	QUAN.	BOTANICAL NAME	SIZE	REM.
	17	KOUSA DOGWOOD CORNUS KOUSA (GROWTH HEIGHT=25')	2 1/2"-3" CAL.	B & B

STREET TREE CALCULATIONS

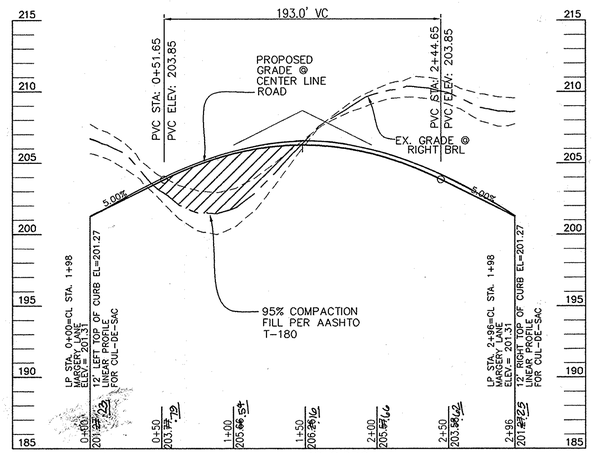
STREET NAME	LINEAR FEET	NO. REQUIRED	NO. PROVIDED
MARGERY LANE	690/40	17	17

HIGH POINT ELEV = 206.26
HIGH POINT STA = 1+48.15
PVI STA = 1+48.15
PVI ELEV = 208.68
A.D. = -10.00
CORR. = 2.41'

PVI STA = 0+90.10
PVI ELEV = 195.91
A.D. = 1.00
K = 75.00
CORR. = 0.094'
SSD=210'



MAGERY LANE
SCALE:1"=50' HORIZ.
1"=5' VERT.



ROAD PROFILE
SCALE:1"=50' HORIZ.
1"=5' VERT.

OWNER/DEVELOPER

CLAREMONT L.L.C.
11046 DORSCH FARM ROAD
ELLICOTT CITY, MARYLAND 21042
(410) 730-4556

NO.	REVISION	DATE

AS-BUILT CERTIFICATION

I hereby certify that the facility shown on this plan was constructed as shown on the as-built survey and meets the approved plans and specifications.

Signature

PE NO. 16193
Date: 7/23/15

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 11-24-08

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/10/09

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 11/25/08

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2010."

FINAL ROAD CONSTRUCTION PLAN
ROAD CONSTRUCTION PLAN AND DETAILS

CLAREMONT OVERLOOK

LOTS 1 - 6, OPEN SPACE LOTS 50-57
AND NON - BUILDABLE BULK PARCELS A -I

TAX MAP 32 GRID 21 — PARCELS 632 AND 24
1ST ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

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

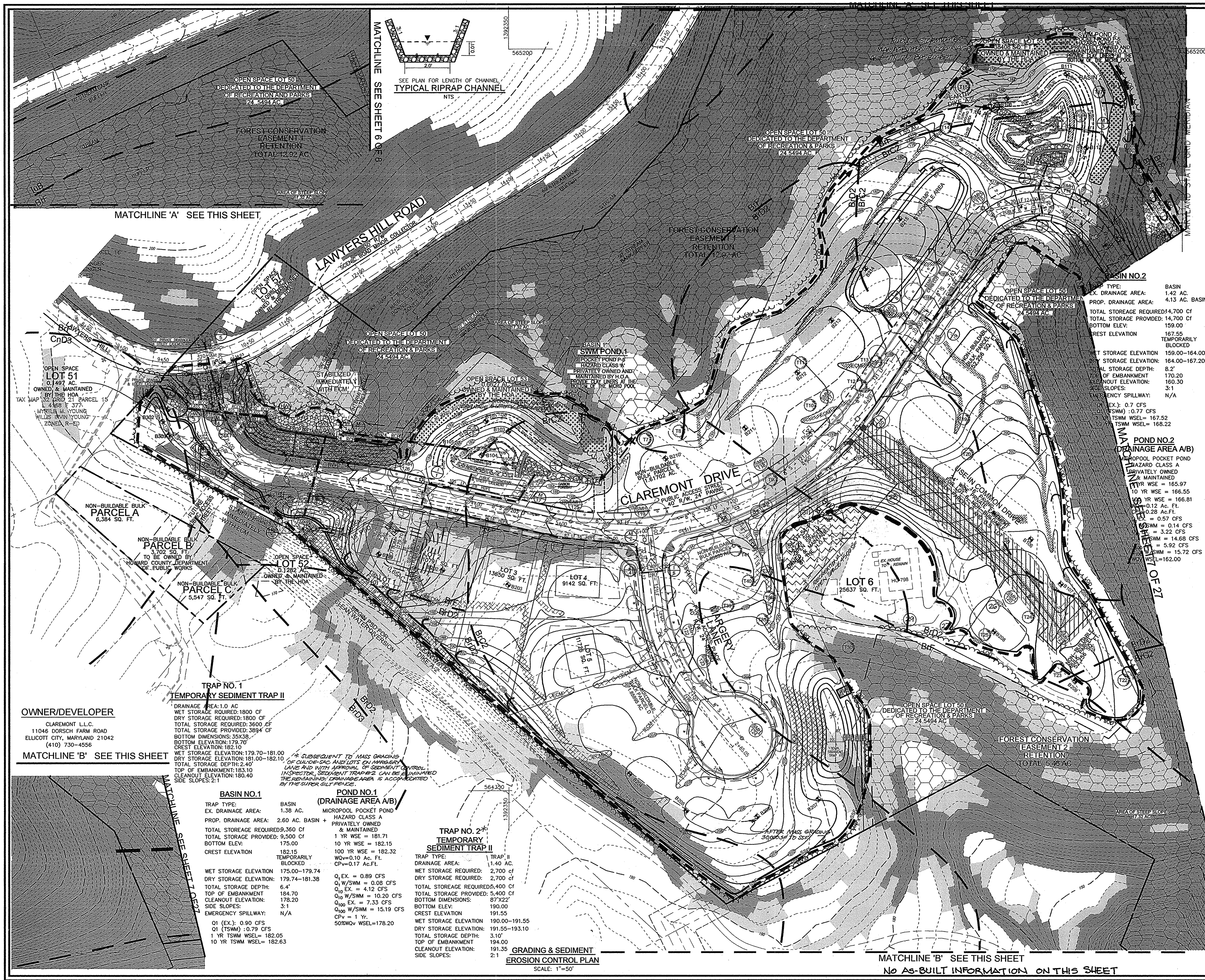
STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE No.16193

DESIGN BY: RHV/RJ
DRAWN BY: RJ
CHECKED BY: RHV
DATE: SEPTEMBER 2008
SCALE: AS SHOWN
W.O. NO.: 02-68.00

SHEET 5 OF 27

AS-BUILT 06/24/15

F-08-63



NOTE:
SEDIMENT BASINS AND TRAPS ARE PROPOSED FOR SEDIMENT AND EROSION CONTROL DURING CONSTRUCTION.

SEDIMENT TRAPS AND BASINS MUST BE DRAINED COMPLETELY THROUGH A FILTERING DEVICE TO A CLEAR WATER OUTFALL WITHIN 24 HOURS FOLLOWING ANY RAINFALL EVENT.

APPROVED: DEPARTMENT OF PUBLIC WORKS

[signature] Chief, Bureau of Highways — Date 11-24-08

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[signature] Chief, Division of Land Development — Date 2/10/09

[signature] Chief, Development Engineering Division J.P. — Date 11/25/08

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

[signature] HOWARD SOIL CONSERVATION DISTRICT — DATE 11/5/08

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2010."

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] SIGNATURE OF ENGINEER ROBERT H. VOGEL — DATE 10/23/08

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] SIGNATURE OF DEVELOPER — DATE 10/24/2008

LEGEND

- EXISTING 2 FT CONTOUR
- EXISTING 10 FT CONTOUR
- PROPOSED 2 FT CONTOUR
- PROPOSED 10 FT CONTOUR
- SUPER SILT FENCE
- SOIL DIVIDE
- LIMIT OF DISTURBANCE
- EXISTING TREELINE
- PROPOSED TREELINE
- EARTH DIKE
- PROPOSED STREET TREE
- SPECIMEN TREE
- EROSION CONTROL MATTING
- PROPOSED TREE MAINTENANCE EASEMENT
- TREE PROTECTION FENCE
- NO WOODY VEGETATION BUFFER
- RECREATIONAL OPEN SPACE
- PUBLIC WATER, SEWER, AND UTILITY EASEMENT
- PRIVATE WATER, SEWER, AND UTILITY EASEMENT
- USE-IN-COMMON ACCESS EASEMENT
- AREA OF 15 TO 24.9 PERCENT SLOPES
- AREA OF 25 PERCENT OR GREATER SLOPES
- FOREST CONSERVATION EASEMENT (RETENTION)
- STABALIZED CONSTRUCTION ENTRANCE
- RIP-RAP CHANNEL

NO.	REVISION	DATE
2	ELIMINATE SEDIMENT TRAP #2	11/4/10
1	ADD STORMWATER MANAGEMENT EASEMENT AND REVISE GRADING ON OPEN SPACE LOT 54	11/16/09

BASIN NO.2

TRAP TYPE:	BASIN
EX. DRAINAGE AREA:	1.42 AC.
PROP. DRAINAGE AREA:	4.13 AC. BASIN +
TOTAL STOREAGE REQUIRED:	14,700 Cf
TOTAL STORAGE PROVIDED:	14,700 Cf
BOTTOM ELEV:	159.00
CREST ELEVATION	167.55 TEMPORARILY BLOCKED
WET STORAGE ELEVATION	159.00–164.00
DRY STORAGE ELEVATION:	164.00–167.20
TOTAL STORAGE DEPTH:	8.2'
TOP OF EMBANKMENT	170.20
CLEANOUT ELEVATION:	160.30
SIDE SLOPES:	3:1
EMERGENCY SPILLWAY:	N/A

Q1 (EX.): 0.7 CFS
Q1 (TSWM) :0.77 CFS
1 YR TSWM WSEL= 167.52
10 YR TSWM WSEL= 168.22

POND NO.2
(DRAINAGE AREA A/B)

MICROPOOL POCKET POND
HAZARD CLASS A
PRIVATELY OWNED
& MAINTAINED
1 YR WSE = 165.97
10 YR WSE = 166.55
100 YR WSE = 166.81
WQv=0.12 Ac. Ft.
CPv=0.28 Ac.Ft.
Q_1 EX. = 0.57 CFS
Q_1 W/SWM = 0.14 CFS
Q_{10} EX. = 3.22 CFS
Q_{10} W/SWM = 14.68 CFS
Q_{100} EX. = 5.92 CFS
Q_{100} W/SWM = 15.72 CFS
WQv WSEL=162.00

OWNER/DEVELOPER

CLAREMONT L.L.C.
11046 DORSCH FARM ROAD
ELLICOTT CITY, MARYLAND 21042
(410) 730-4556

MATCHLINE 'B' SEE THIS SHEET

TRAP NO. 1
TEMPORARY SEDIMENT TRAP II

DRAINAGE AREA: 1.0 AC
WET STORAGE RQUIRED: 1800 CF
DRY STORAGE REQUIRED: 1800 CF
TOTAL STORAGE REQUIRED: 3600 CF
TOTAL STORAGE PROVIDED: 3894 CF
BOTTOM DIMENSIONS: 35X38
BOTTOM ELEVATION: 179.70
CREST ELEVATION: 182.10
WET STORAGE ELEVATION: 179.70-181.00
DRY STORAGE ELEVATION: 181.00-182.10
TOTAL STORAGE DEPTH: 2.40'
TOP OF EMBANKMENT: 183.10
CLEANOUT ELEVATION: 180.40
SIDE SLOPES: 2:1

* SUBSEQUENT TO MASS GRADING OF CUL-DE-SAC AND LOTS ON MARGERY LANE AND WITH APPROVAL OF SEDIMENT CONTROL INSPECTOR, SEDIMENT TRAP #2 CAN BE ELIMINATED THE REMAINING DRAINAGE AREA IS ACCOMODATED BY THE SUPER SILT FENCE.

BASIN NO.1

TRAP TYPE:	BASIN
EX. DRAINAGE AREA:	1.38 AC.
PROP. DRAINAGE AREA:	2.60 AC. BASIN +
TOTAL STOREAGE REQUIRED:	9,360 Cf
TOTAL STORAGE PROVIDED:	9,500 Cf
BOTTOM ELEV:	175.00
CREST ELEVATION	182.15 TEMPORARILY BLOCKED
WET STORAGE ELEVATION	175.00–179.74
DRY STORAGE ELEVATION:	179.74–181.38
TOTAL STORAGE DEPTH:	6.4'
TOP OF EMBANKMENT	184.70
CLEANOUT ELEVATION:	178.20
SIDE SLOPES:	3:1
EMERGENCY SPILLWAY:	N/A

Q1 (EX.): 0.90 CFS
Q1 (TSWM) :0.79 CFS
1 YR TSWM WSEL= 182.05
10 YR TSWM WSEL= 182.63

POND NO.1
(DRAINAGE AREA A/B)

MICROPOOL POCKET POND
HAZARD CLASS A
PRIVATELY OWNED
& MAINTAINED
1 YR WSE = 181.71
10 YR WSE = 182.15
100 YR WSE = 182.32
WQv=0.10 Ac. Ft.
CPv=0.17 Ac.Ft.
Q_1 EX. = 0.89 CFS
Q_1 W/SWM = 0.08 CFS
Q_{10} EX. = 4.12 CFS
Q_{10} W/SWM = 10.20 CFS
Q_{100} EX. = 7.33 CFS
Q_{100} W/SWM = 15.19 CFS
CPv = 1 Yr.
50%WQv WSEL=178.20

TRAP NO. 2*
TEMPORARY SEDIMENT TRAP II

TRAP TYPE:	TRAP II
DRAINAGE AREA:	1.40 AC.
WET STORAGE REQUIRED:	2,700 cf
DRY STORAGE REQUIRED:	2,700 cf
TOTAL STOREAGE REQUIRED:	5,400 Cf
TOTAL STORAGE PROVIDED:	5,400 Cf
BOTTOM DIMENSIONS:	87'X22'
BOTTOM ELEV:	190.00
CREST ELEVATION	191.55
WET STORAGE ELEVATION	190.00–191.55
DRY STORAGE ELEVATION:	191.55–193.10
TOTAL STORAGE DEPTH:	3.10'
TOP OF EMBANKMENT	194.00
CLEANOUT ELEVATION:	191.35
SIDE SLOPES:	2:1

MATCHLINE 'B' SEE THIS SHEET
NO AS-BUILT INFORMATION ON THIS SHEET

FINAL ROAD CONSTRUCTION PLAN
GRADING AND SEDIMENT EROSION CONTROL PLAN
CLAREMONT OVERLOOK

LOTS 1 - 6, OPEN SPACE LOTS 50-57
AND NON - BUILDABLE BULK PARCELS A - I

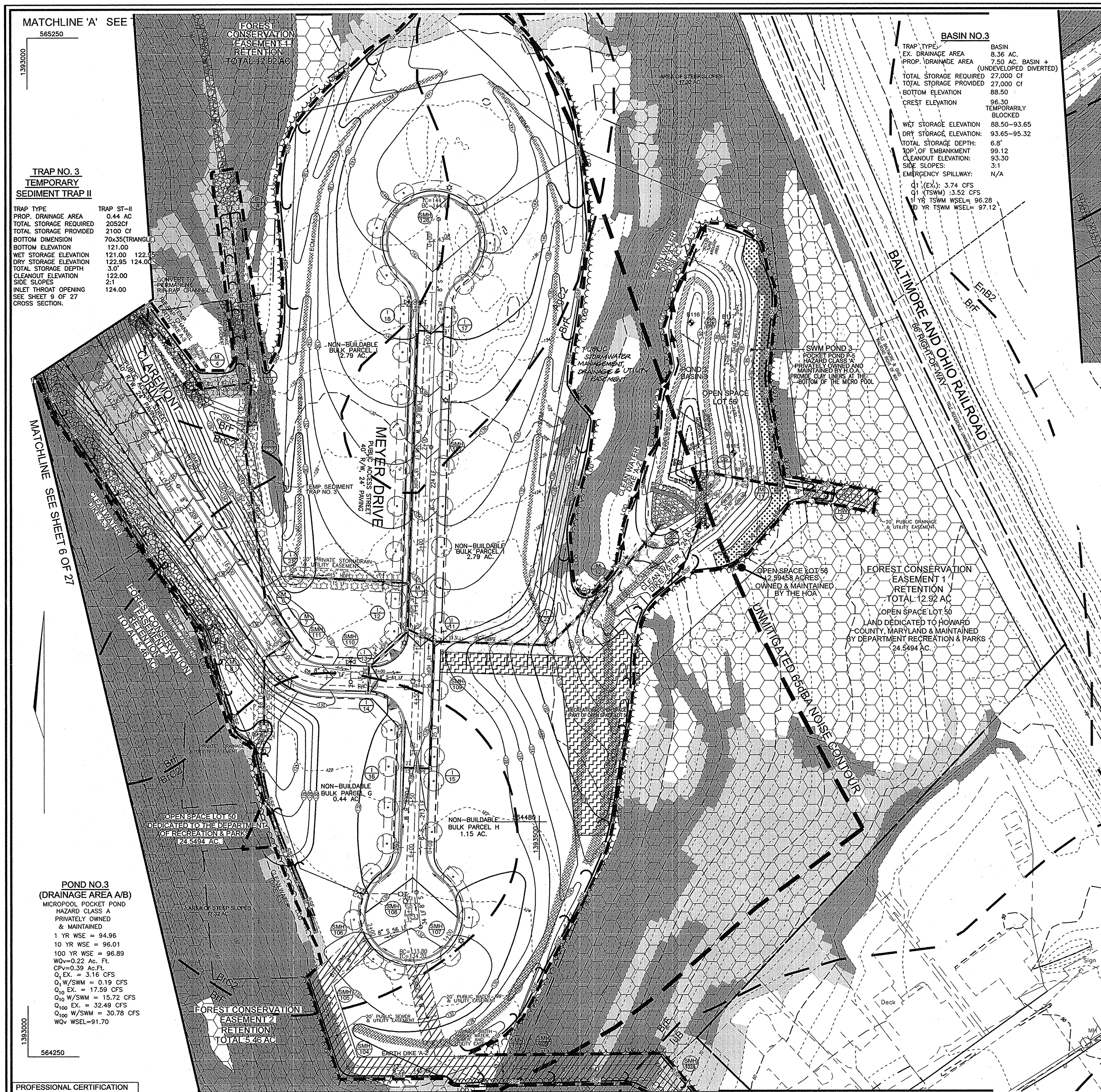
TAX MAP 32 GRID 21 — PARCELS 632 AND 242
1ST ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

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 No.16193

DESIGN BY:	RHV/RJ
DRAWN BY:	RJ
CHECKED BY:	RHV
DATE:	SEPTEMBER 2008
SCALE:	AS SHOWN
W.O. NO.:	02-68.00

AS-BUILT 06/24/15 F-08-63


MATCHLINE 'A' SEE THIS SHEET
565250
1393000
FOREST CONSERVATION EASEMENT 1 - RETENTION TOTAL 12.92 AC
MEYER DRIVE
PUBLIC ACCESS STREET
NON-BUILDABLE BULK PARCEL I 2.79 AC.
NON-BUILDABLE BULK PARCEL J 2.79 AC.
NON-BUILDABLE BULK PARCEL G 0.44 AC.
NON-BUILDABLE BULK PARCEL H 1.15 AC.
TEMP. SEDIMENT TRAP NO. 3
CLAREMONT DRIVE
SWM POND 3
POND 3 BASIN
OPEN SPACE LOT 56
OPEN SPACE LOT 56 12.59458 ACRES OWNED & MAINTAINED BY THE HOA
OPEN SPACE LOT 50 LAND DEDICATED TO HOWARD COUNTY, MARYLAND & MAINTAINED BY DEPARTMENT RECREATION & PARKS 24.5494 AC.
OPEN SPACE LOT 50 DEDICATED TO THE DEPARTMENT OF RECREATION & PARKS 24.5494 AC.
UNMITIGATED 65dBA NOISE CONTOUR
BALTIMORE AND OHIO RAILROAD
66' RIGHT-OF-WAY
FOREST CONSERVATION EASEMENT 2 RETENTION TOTAL 5.46 AC
MATCHLINE SEE SHEET 6 OF 27
EARTH DIKE 'A-2'
564250
1393000
MATCHLINE 'B' SEE THIS SHEET

TRAP NO. 3
TEMPORARY SEDIMENT TRAP II

TRAP TYPE	TRAP ST-II
PROP. DRAINAGE AREA	0.44 AC
TOTAL STORAGE REQUIRED	2052Cf
TOTAL STORAGE PROVIDED	2100 Cf
BOTTOM DIMENSION	70x35(TRIANGLE)
BOTTOM ELEVATION	121.00
WET STORAGE ELEVATION	121.00 122.95
DRY STORAGE ELEVATION	122.95 124.00
TOTAL STORAGE DEPTH	3.0'
CLEANOUT ELEVATION	122.00
SIDE SLOPES	2:1
INLET THROAT OPENING	124.00

SEE SHEET 9 OF 27 CROSS SECTION.

BASIN NO.3

TRAP TYPE	BASIN
EX. DRAINAGE AREA	8.36 AC.
PROP. DRAINAGE AREA	7.50 AC. BASIN + (UNDEVELOPED DIVERTED)
TOTAL STORAGE REQUIRED	27,000 Cf
TOTAL STORAGE PROVIDED	27,000 Cf
BOTTOM ELEVATION	88.50
CREST ELEVATION	96.30 TEMPORARILY BLOCKED
WET STORAGE ELEVATION	88.50–93.65
DRY STORAGE ELEVATION:	93.65–95.32
TOTAL STORAGE DEPTH:	6.8'
TOP OF EMBANKMENT	99.12
CLEANOUT ELEVATION:	93.30
SIDE SLOPES:	3:1
EMERGENCY SPILLWAY:	N/A

Q1 (EX.): 3.74 CFS
Q1 (TSWM) :3.52 CFS
1 YR TSWM WSEL= 96.28
10 YR TSWM WSEL= 97.12

POND NO.3
(DRAINAGE AREA A/B)

MICROPOOL POCKET POND
HAZARD CLASS A
PRIVATELY OWNED
& MAINTAINED

1 YR WSE = 94.96
10 YR WSE = 96.01
100 YR WSE = 96.89
WQv=0.22 Ac. Ft.
CPv=0.39 Ac.Ft.
Q_1 EX. = 3.16 CFS
Q_1 W/SWM = 0.19 CFS
Q_{10} EX. = 17.59 CFS
Q_{10} W/SWM = 15.72 CFS
Q_{100} EX. = 32.49 CFS
Q_{100} W/SWM = 30.78 CFS
WQv WSEL=91.70

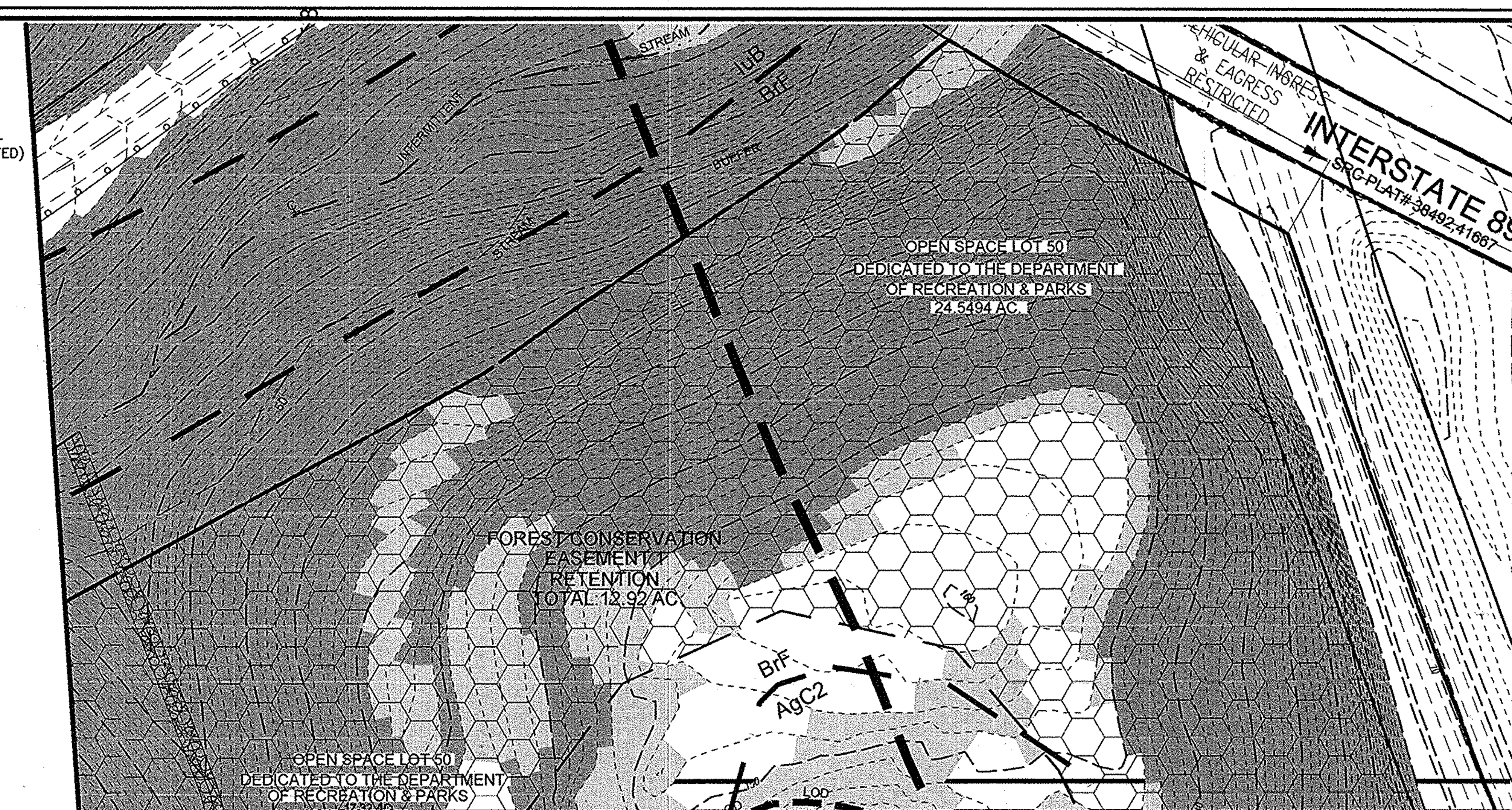
PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2010."

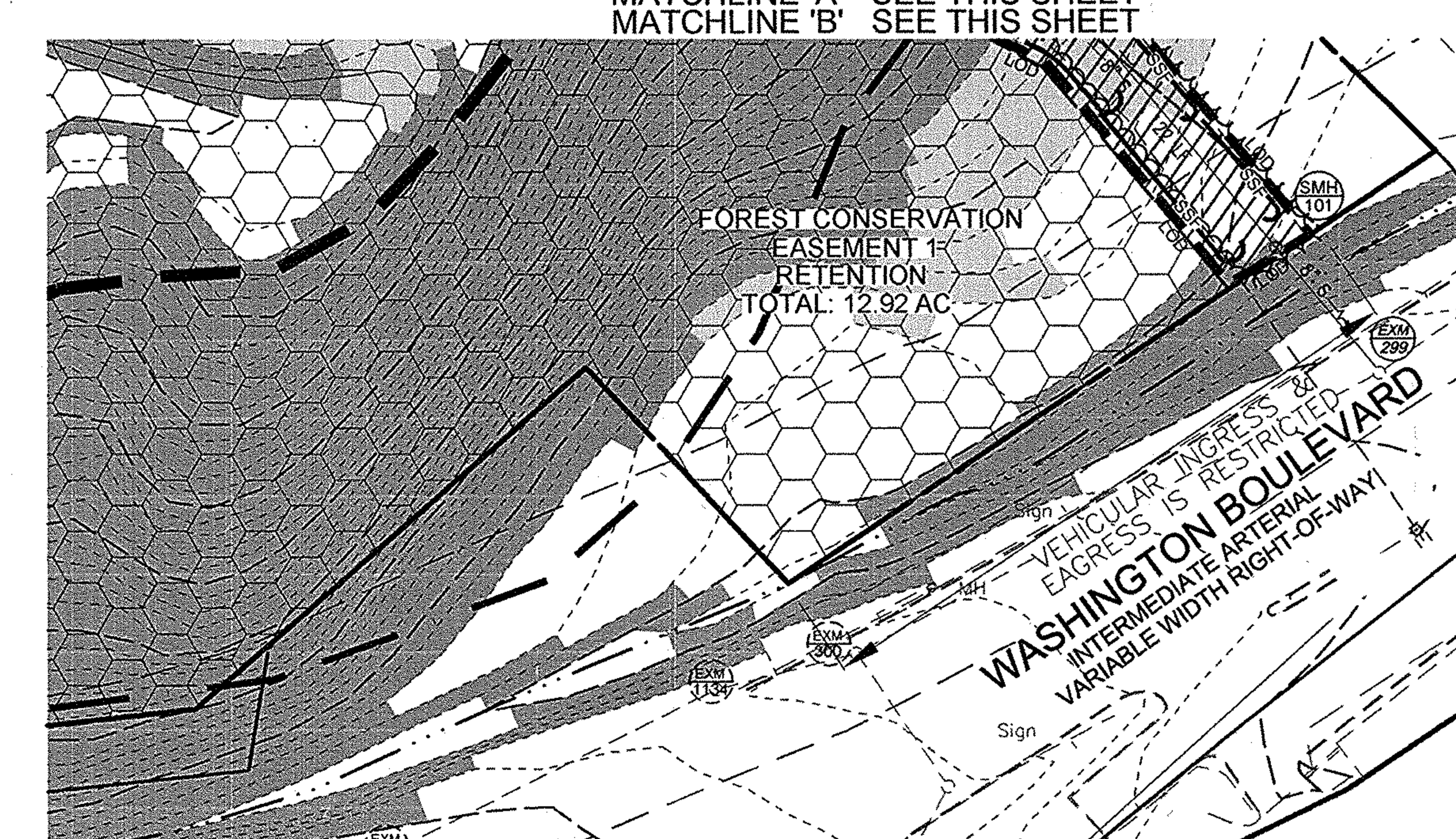
GRADING & SEDIMENT EROSION CONTROL PLAN
SCALE: 1"=50'

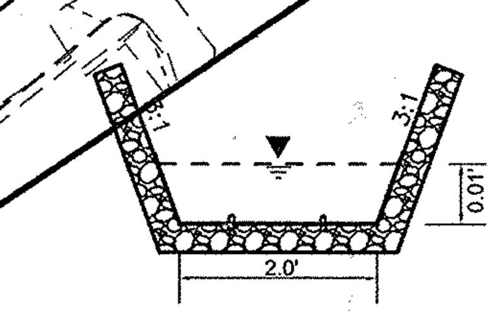
MATCHLINE 'B' SEE THIS SHEET

NO AS-BUILT INFORMATION ON THIS SHEET


INTERSTATE 895
VEHICULAR INGRESS & EGRESS RESTRICTED
OPEN SPACE LOT 50 DEDICATED TO THE DEPARTMENT OF RECREATION & PARKS 24.5494 AC.
FOREST CONSERVATION EASEMENT 1 RETENTION TOTAL 12.92 AC
BrF
AgC2
OPEN SPACE LOT 50 DEDICATED TO THE DEPARTMENT OF RECREATION & PARKS

MATCHLINE 'A' SEE THIS SHEET
MATCHLINE 'B' SEE THIS SHEET





SEE PLAN FOR LENGTH OF CHANNEL
TYPICAL RIPRAP CHANNEL
NTS

LEGEND

Symbol	Description
---202---	EXISTING 2 FT CONTOUR
--200--	EXISTING 10 FT CONTOUR
(202)	PROPOSED 2 FT CONTOUR
(200)	PROPOSED 10 FT CONTOUR
SSF	SUPER SILT FENCE
LOD	LIMIT OF DISTURBANCE
	EXISTING TREELINE
	PROPOSED TREELINE
	EARTH DIKE
	SOIL DIVIDE
	PROPOSED STREET TREE
	TREE PROTECTION FENCE
ECM	EROSION CONTROL MATTING
	PROPOSED TREE MAINTENANCE EASEMENT
	NO WOODY VEGETATION BUFFER
	RECREATIONAL OPEN SPACE
	PUBLIC WATER, SEWER, AND UTILITY EASEMENT
	PRIVATE WATER, SEWER, AND UTILITY EASEMENT
	USE-IN-COMMON ACCESS EASEMENT
	AREA OF 15 TO 24.9 PERCENT SLOPES
	AREA OF 25 PERCENT OR GREATER SLOPES
	FOREST CONSERVATION EASEMENT (RETENTION)
SCE	STABALIZED CONSTRUCTION ENTRANCE
	RIP-RAP CHANNEL

NOTE:
SEDIMENT BASINS AND TRAPS ARE PROPOSED FOR SEDIMENT AND EROSION CONTROL DURING CONSTRUCTION.

SEDIMENT TRAPS AND BASINS MUST BE DRAINED COMPLETELY THROUGH A FILTERING DEVICE TO A CLEAR WATER OUTFALL WITHIN 24 HOURS FOLLOWING ANY RAINFALL EVENT.

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] 10/24/2008
SIGNATURE OF DEVELOPER — DATE

NO.	REVISION	DATE
1	ADD STORMWATER MANAGEMENT EASEMENT AND REVISE GRADING ON OPEN SPACE LOT 54	12/18/09

APPROVED: DEPARTMENT OF PUBLIC WORKS

[signature] 11-24-08
Chief, Bureau of Highways — Date

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[signature] 2/10/09
Chief, Division of Land Development — Date

[signature] J.P. 11/25/08
Chief, Development Engineering Division — Date

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

[signature] 11/5/08
HOWARD S.C.D. — 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] 10/23/08
SIGNATURE OF ENGINEER ROBERT H. VOGEL — DATE

OWNER/DEVELOPER
CLAREMONT L.L.C.
11046 DORSCH FARM ROAD
ELLICOTT CITY, MARYLAND 21042
(410) 730-4556

FINAL ROAD CONSTRUCTION PLAN
GRADING AND SEDIMENT EROSION CONTROL PLAN
CLAREMONT OVERLOOK
LOTS 1 - 6, OPEN SPACE LOTS 50-57
AND NON - BUILDABLE BULK PARCELS A - I

TAX MAP 32 GRID 21 — PARCELS 632 AND 24
1st ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

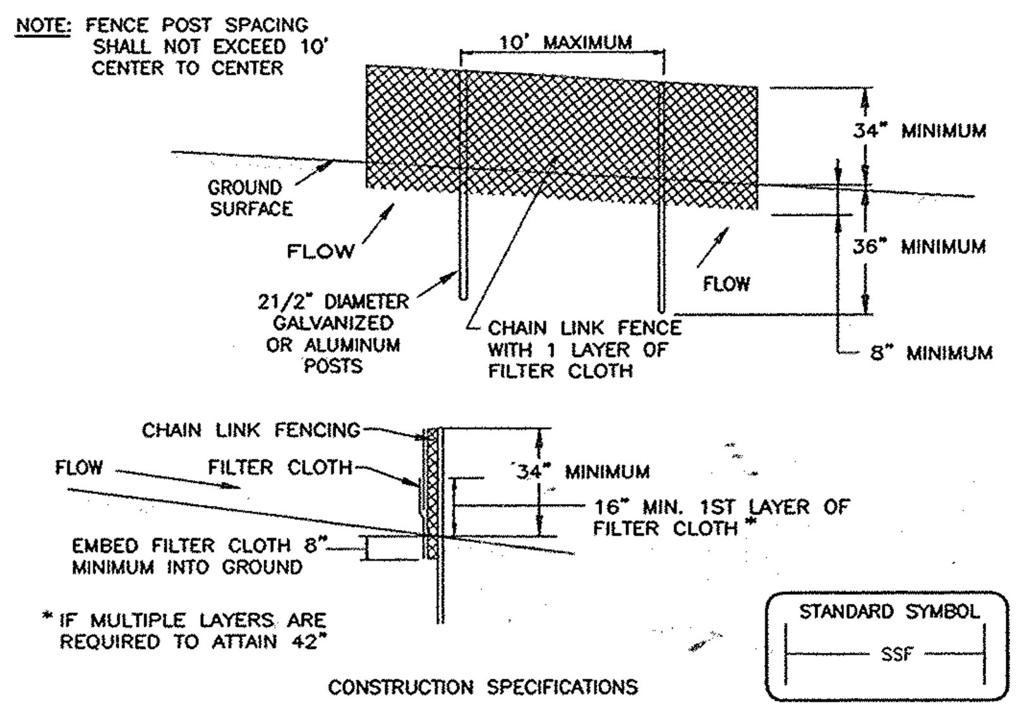
ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET ELLICOTT CITY, MD 21043
TEL: 410.461.7666 FAX: 410.461.8961

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — PROFESSIONAL ENGINEER — 10/23/08
ROBERT H. VOGEL, PE No.16193

DESIGN BY:	RHV/RJ
DRAWN BY:	RJ
CHECKED BY:	RHV
DATE:	SEPTEMBER 2008
SCALE:	AS SHOWN
W.O. NO.:	02-68.00

AS-BUILT 06/24/15 F-08-63

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.

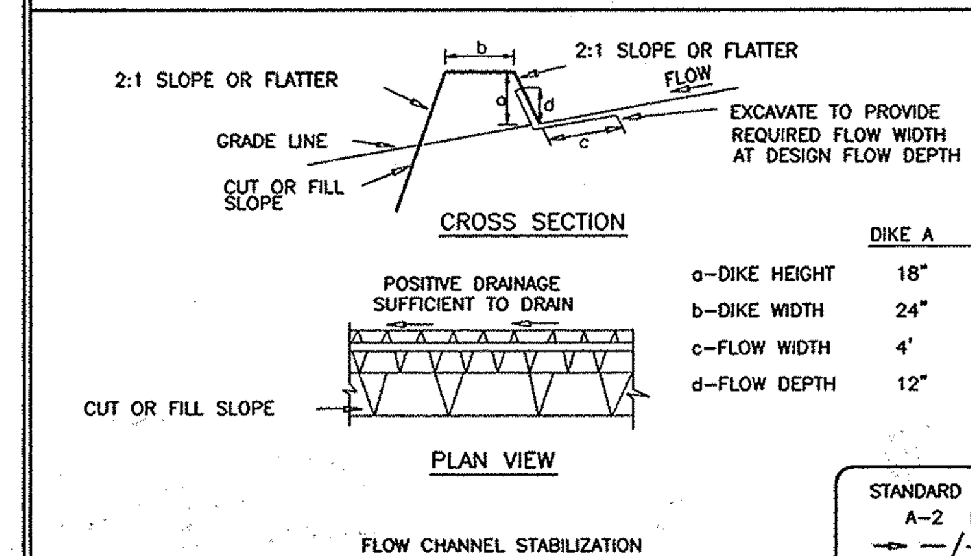
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SILT BUILDUPS REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE, OR WHEN SILT REACHES 50% OF FENCE HEIGHT

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

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

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.

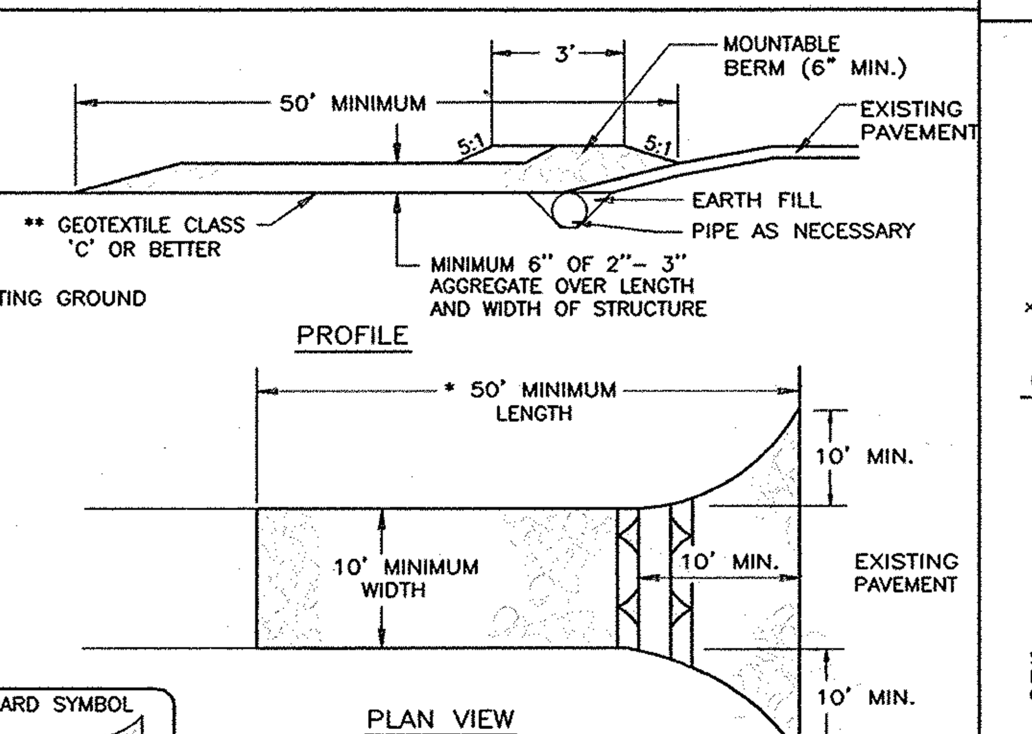
6. FILL SHALL BE COMPACTED BY EARTH MOVING EQUIPMENT.

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.

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

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



CONSTRUCTION SPECIFICATION

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

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

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

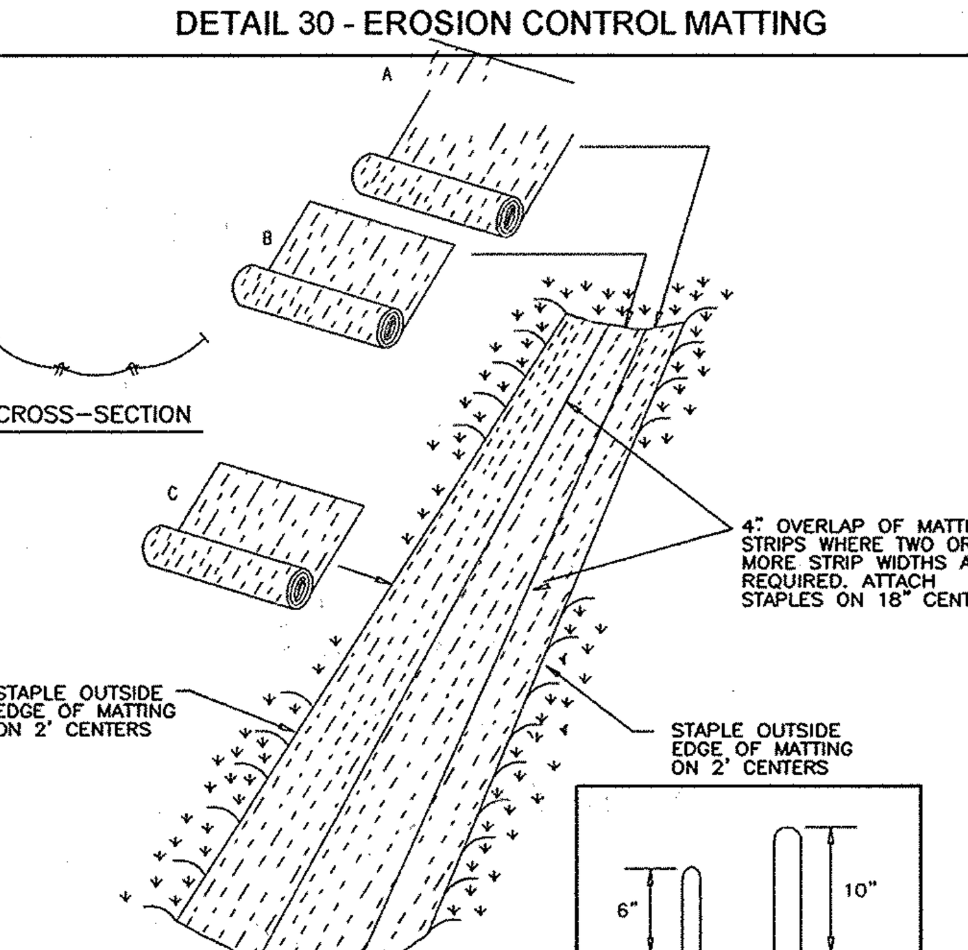
4. STONE - CRUSHED AGGREGATE (2" TO 3") OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT SHALL BE PLACED AT LEAST 6" DEEP OVER THE LENGTH AND WIDTH OF THE ENTRANCE.

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

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

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

DETAIL 30 - EROSION CONTROL MATTING



CONSTRUCTION SPECIFICATIONS

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

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

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

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

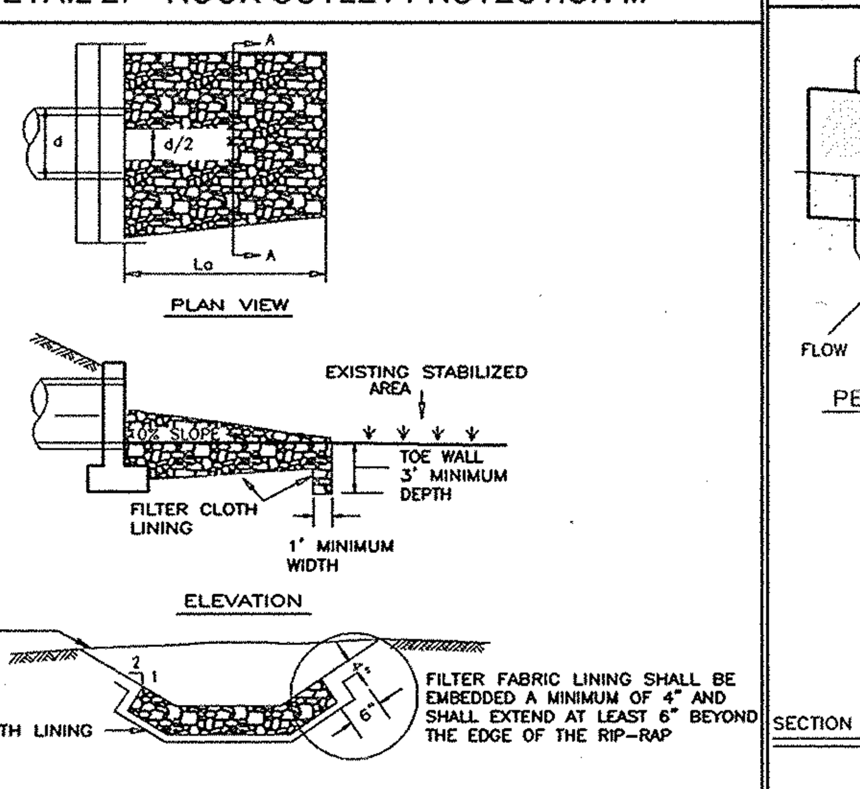
5. WHERE ONE ROLL OF MATTING ENDS AND ANOTHER BEGINS, THE END OF THE TOP STRIP SHALL OVERLAP THE UPPER END OF THE LOWER STRIP BY 4", SHIPLAP FASHION. REINFORCE THE OVERLAP WITH A DOUBLE ROW OF STAPLES SPACED 6" APART IN A STAGGERED PATTERN ON EITHER SIDE.

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.

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

DETAIL 27 - ROCK OUTLET PROTECTION III



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

ROCK OUTLET PROTECTION

CONSTRUCTION SPECIFICATIONS

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

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

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

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

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

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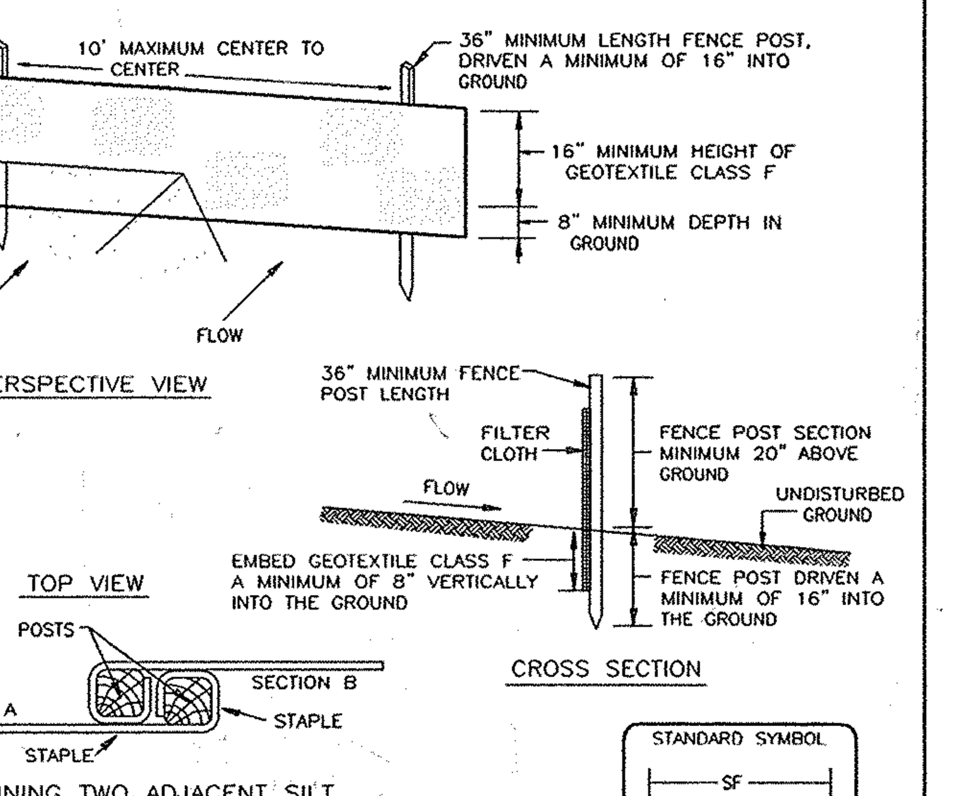
DETAIL 22 - SILT FENCE



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 ²/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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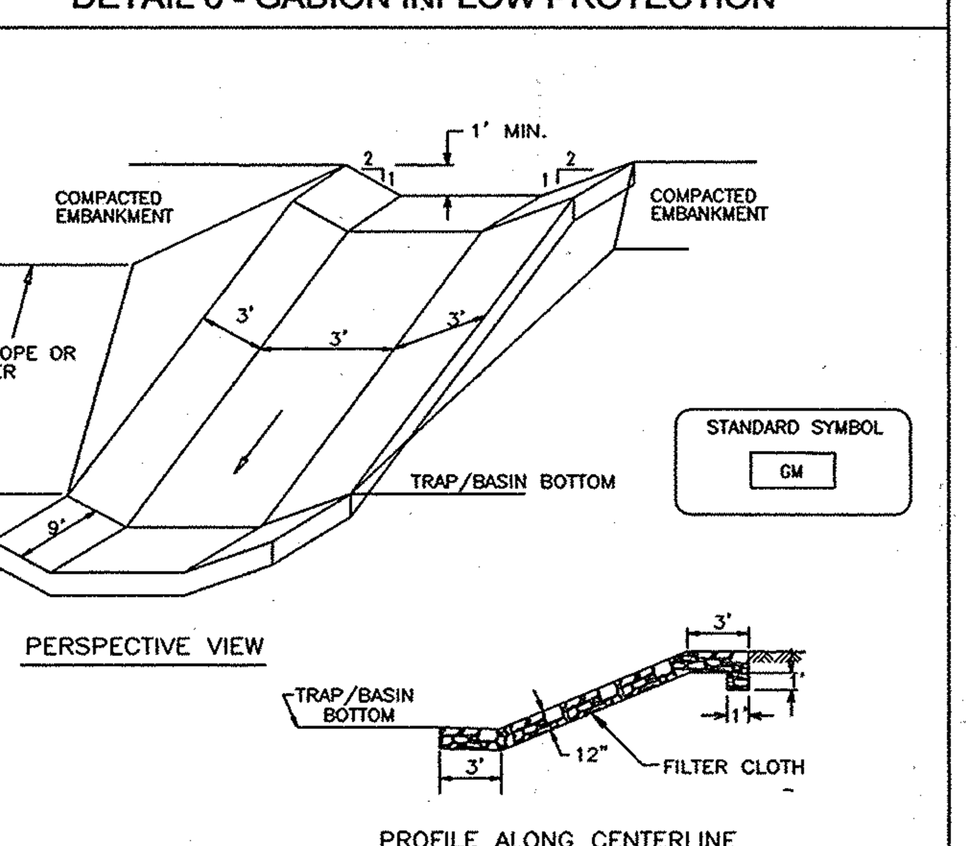
DETAIL 6 - GABION INFLOW PROTECTION



CONSTRUCTION SPECIFICATIONS

1. GABION INFLOW PROTECTION SHALL BE CONSTRUCTED OF 9' X 3' X 9" GABION BASKETS FORMING A TRAPEZOIDAL CROSS SECTION 1' DEEP, WITH 2:1 SIDE SLOPES, AND A 3' BOTTOM WIDTH.

2. GEOTEXTILE CLASS C SHALL BE INSTALLED UNDER ALL GABION BASKETS.

3. THE STONE USED TO FILL THE GABION BASKETS SHALL BE 4" - 7".

4. GABIONS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

5. GABION INFLOW PROTECTION SHALL BE USED WHERE CONCENTRATED FLOW IS PRESENT ON SLOPES STEEPER THAN 4:1.

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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 DEPT. 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 NET TRACT AREA	43.34 AC.
AREA DISTURBED (ALL PHASES)	19.33 AC.
AREA TO BE ROOFED OR PAVED	1.97 AC.
AREA TO BE VEGETATIVELY STABILIZED	17.36 AC.
TOTAL CUT	86,917 CY
TOTAL FILL	86,917 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. SHORTER.
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

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

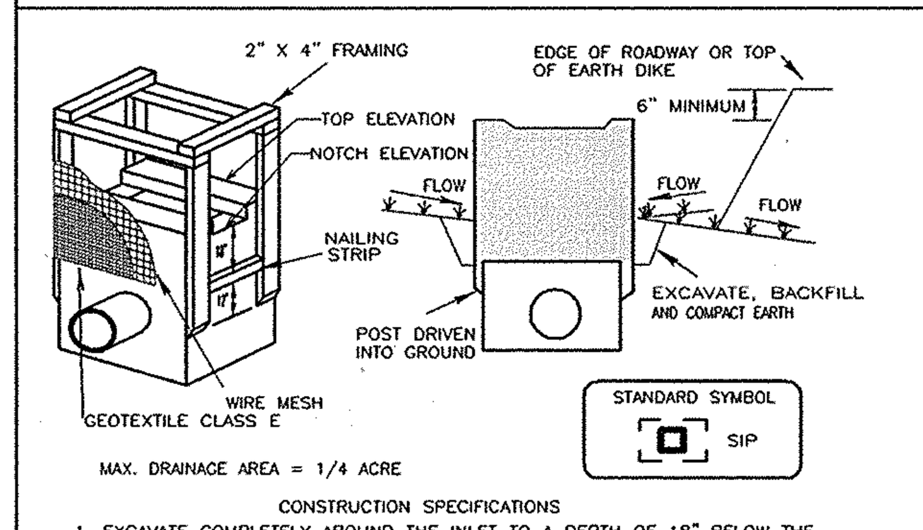
8A. SUBSEQUENT TO MASS GRADING OF CUL-DE-SAC AND LOTS ON MARGERY LANE AND WITH APPROVAL OF SEDIMENT CONTROL INSPECTOR ELIMINATE SEDIMENT TRAP #2.

SEQUENCE OF CONSTRUCTION — DURATION

1. OBTAIN GRADING PERMIT. MDE PERMIT NO. (APPLICATION TRACKING NUMBER 200862474) STREAM CLOSURE CLASS A. IN STREAM CONSTRUCTION MAY NOT OCCUR BETWEEN 3/1 AND 6/15.
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. WHEN CONTRIBUTING AREAS ARE FULLY STABILIZED AND A 5-DAY CLEAR WEATHER (NO PRECIPITATION) FORECAST FROM THE NWS IS OBTAINED, WITH INSPECTOR'S APPROVAL, UPON INSTALLATION OF CONTROLS AS SHOWN ON THE PLAN, CONSTRUCT CULVERTS AND HEADWALLS/RETAINING WALLS. (HW3 TO HW6, E5 TO MH14, HW5 TO HW7) STABILIZED WITH ECM TO COVER LIMIT OF DISTURBANCE WITHIN 20' OF CITED STRUCTURES.
   AFTER CULVERTS ARE INSTALLED, GRADE IS PERMANENTLY STABILIZED WITHIN 20' OF CULVERTS, SECURE PERMISSION FROM INSPECTOR TO PROCEED. . . . . 3 WEEKS
5. INSTALL CLEANWATER EARTH DIKES AND RELATED SWALES, BERMS AND SILT FENCE AS NEEDED FOR THE THE CONSTRUCTION OF BYPASS STORM DRAIN SYSTEM FROM 1-20 TO E-4 FOR OFFSITE DRAINAGE RUNOFF. STABILIZE IMMEDIATELY WITH ECM. . . . . 1 DAY
6. INSTALL TREE PROTECTION DEVICES, SILT FENCE, EARTH DIKES, SUPER SILT FENCE, AND ALL REMAINING PERIMETER CONTROLS. . 2 WEEKS
7. 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
8. AFTER OBTAINING PERMISSION FROM SEDIMENT CONTROL INSPECTOR TO PROCEED ROUGH GRADE TO LOD. USE DUST CONTROL SPECIFICATIONS. . . . . 1 WEEK
   (SEE NOTE 8A. LEFT)
9. BEGIN CONSTRUCTION STORM DRAIN SYSTEM. . . . . 2 WEEKS
10. BEGIN CONSTRUCTION OF WATER & SEWER SYSTEM. . . . . 3 WEEKS
11. GRADE ROAD TO SUB-BASE . . . . 6 WEEKS
12. WITH PERMISSION OF THE INSPECTOR, STABILIZE DISTURBED AREA. 1 DAYS
13. WITH ROAD GRADED TO SUB-BASE BEGIN ROAD PAVING. . . . . . 1 WEEK
14. FINE GRADE SITE IN CONFORMANCE WITH PLAN. . . . . 2 DAYS
15. WITH INSPECTOR APPROVAL AND FINAL ROAD PAVING COMPLETE STABILIZE ANY REMAINING DISTURBED AREAS AND CLOSE CURB CUTS. . . . . 3 WEEKS
16. ALL BASINS AND TRAPS ARE TO REMAIN UNTIL CONTRIBUTING DRAINAGE AREAS ARE STABILIZED OR CONSTRUCTION FOR ALL PHASES INCLUDING DWELLING UNITS ARE CONSTRUCTED. . . . 2 DAYS
17. INSTALL STREET TREES AND ALL LANDSCAPING . . . . 1 WEEK
18. WITH FULL PERMANENT STABILIZATION OF CONTRIBUTING DRAINAGE AREA, AND PERMISSION FROM THE INSPECTOR. CONVERT SEDIMENT BASINS TO FINAL STORMWATER MANAGEMENT FACILITIES AND REMOVE SEDIMENT CONTROL MEASURES. . . . . . 2 WEEKS
19. REMOVE ALL NEW AND OLD JUNK, TRASH, DEBRIS AND OTHER MAN-MADE OBJECTS FROM THE ENTIRE FOREST CONSERVATION EASEMENT, WETLANDS, STREAMS AND THEIR BUFFERS. . . . . . . 1 WEEK

TOTAL 26 WEEKS

DETAIL 23A - STANDARD INLET PROTECTION



MAX. DRAINAGE AREA = 1/4 ACRE

CONSTRUCTION SPECIFICATIONS

1. EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18" BELOW THE NOTCH ELEVATION.

2. DRIVE THE 2" X 4" CONSTRUCTION GRADE LUMBER POSTS 1' INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE NAIL STRIPS BETWEEN THE POSTS ON THE ENDS OF THE INLET. ASSEMBLE THE TOP PORTION OF THE 2" X 4" FRAME USING THE OVERLAP JOINT SHOWN ON DETAIL 23A. THE TOP OF THE FRAME (WEIR) MUST BE 6" BELOW ADJACENT ROADWAYS WHERE FLOODING AND SAFETY ISSUES MAY ARISE.

3. STRETCH THE 1/2" X 1/2" WIRE MESH TIGHTLY AROUND THE FRAME AND FASTEN SECURELY. THE ENDS MUST MEET AND OVERLAP AT A POST.

4. STRETCH THE GEOTEXTILE CLASS E TIGHTLY OVER THE WIRE MESH WITH THE GEOTIXTILE EXTENDING FROM THE TOP OF THE FRAME TO 18" BELOW THE INLET NOTCH ELEVATION. FASTEN THE GEOTEXTILE FIRMLY TO THE FRAME. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLAPPED AND FOLDED, THEN FASTENED DOWN.

5. BACKFILL AROUND THE INLET IN COMPACTED 6" LAYERS UNTIL THE LAYER OF EARTH IS LEVEL WITH THE NOTCH ELEVATION ON THE ENDS AND TOP ELEVATION ON THE SIDES.

6. IF THE INLET IS NOT IN A SUMP, CONSTRUCT A COMPACTED EARTH DIKE ACROSS THE DITCH LINE DIRECTLY BELOW IT. THE TOP OF THE EARTH DIKE SHOULD BE AT LEAST 6" HIGHER THAN THE TOP OF THE FRAME.

7. THE STRUCTURE MUST BE INSPECTED PERIODICALLY AND AFTER EACH RAIN AND THE GEOTEXTILE REPLACED WHEN IT BECOMES CLOGGED.

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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.

OWNER/DEVELOPER

CLAREMONT L.L.C.
11046 DORSCH FARM ROAD
ELLICOTT CITY, MARYLAND 21042
(410) 730-4556

NO.	REVISION	DATE
2	ELIMINATE SEDIMENT TRAP NO. 2	11/4/10

APPROVED: DEPARTMENT OF PUBLIC WORKS

[signature] 11-24-08
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[signature] 2/10/09
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

[signature] 11/25/08
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2010."

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

[signature] 11/5/08
HOWARD SOIL CONSERVATION DISTRICT — DATE

DEVELOPER'S CERTIFICATE

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

[signature] 10/24/2008
SIGNATURE OF DEVELOPER — DATE

ENGINEER'S CERTIFICATE

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

[signature] 10/23/08
SIGNATURE OF ENGINEER ROBERT H. VOGEL — DATE

NO AS-BUILT INFORMATION ON THIS SHEET

FINAL ROAD CONSTRUCTION PLAN
SEDIMENT & EROSION CONTROL DETAILS
CLAREMONT OVERLOOK
LOTS 1 - 6, OPEN SPACE LOTS 50-57 AND NON - BUILDABLE BULK PARCELS A - I

TAX MAP 32 GRID 21 — PARCELS 632 AND 24
1ST ELECTION DISTRICT — 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

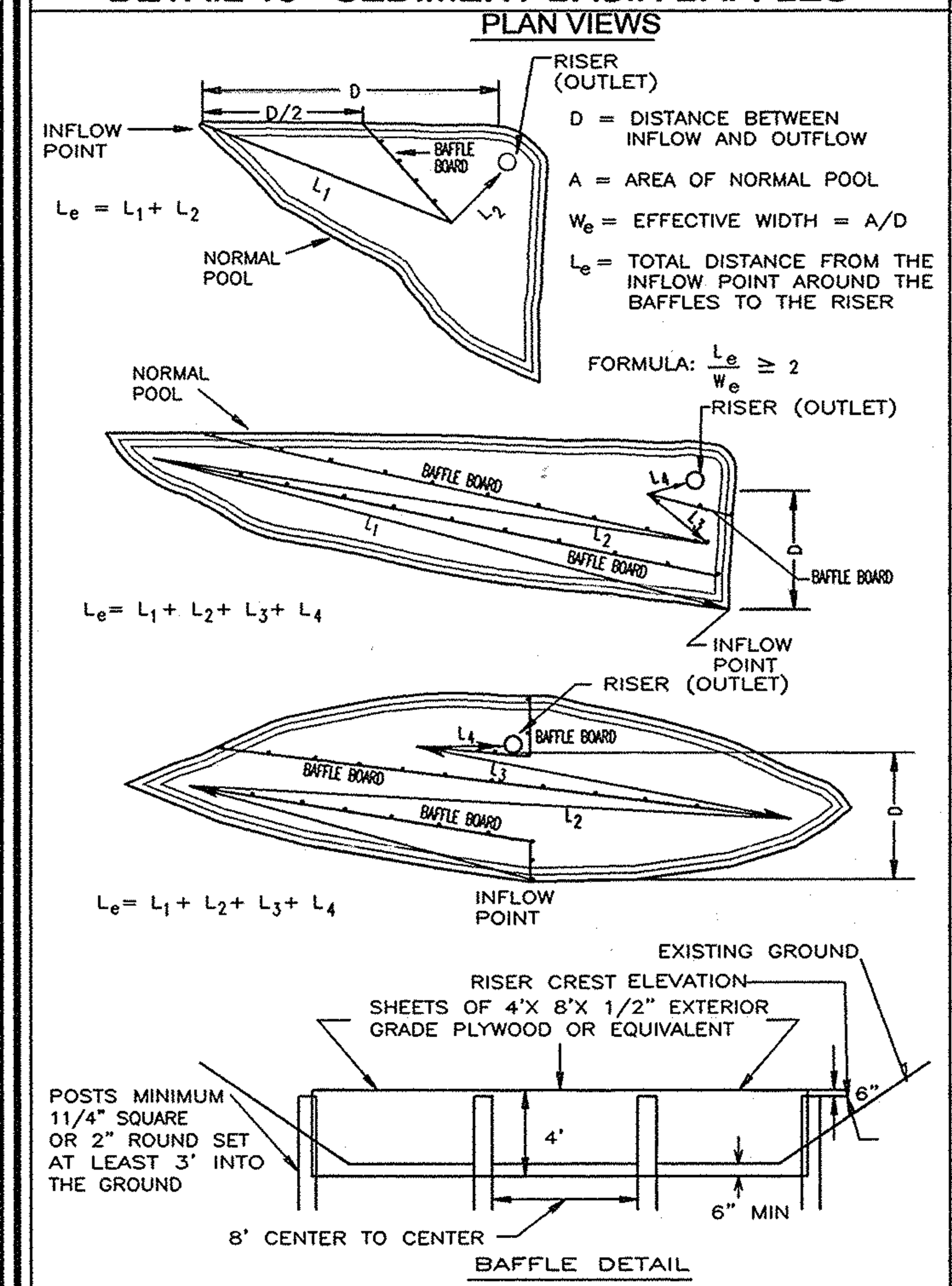
STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE No.16193

DESIGN BY:	RHV/RJ
DRAWN BY:	RJ
CHECKED BY:	RHV
DATE:	SEPTEMBER 2008
SCALE:	AS SHOWN
W.O. NO.:	02-68.00

AS-BUILT 06/24/15

F-08-63

DETAIL 18 - SEDIMENT BASIN BAFFLES

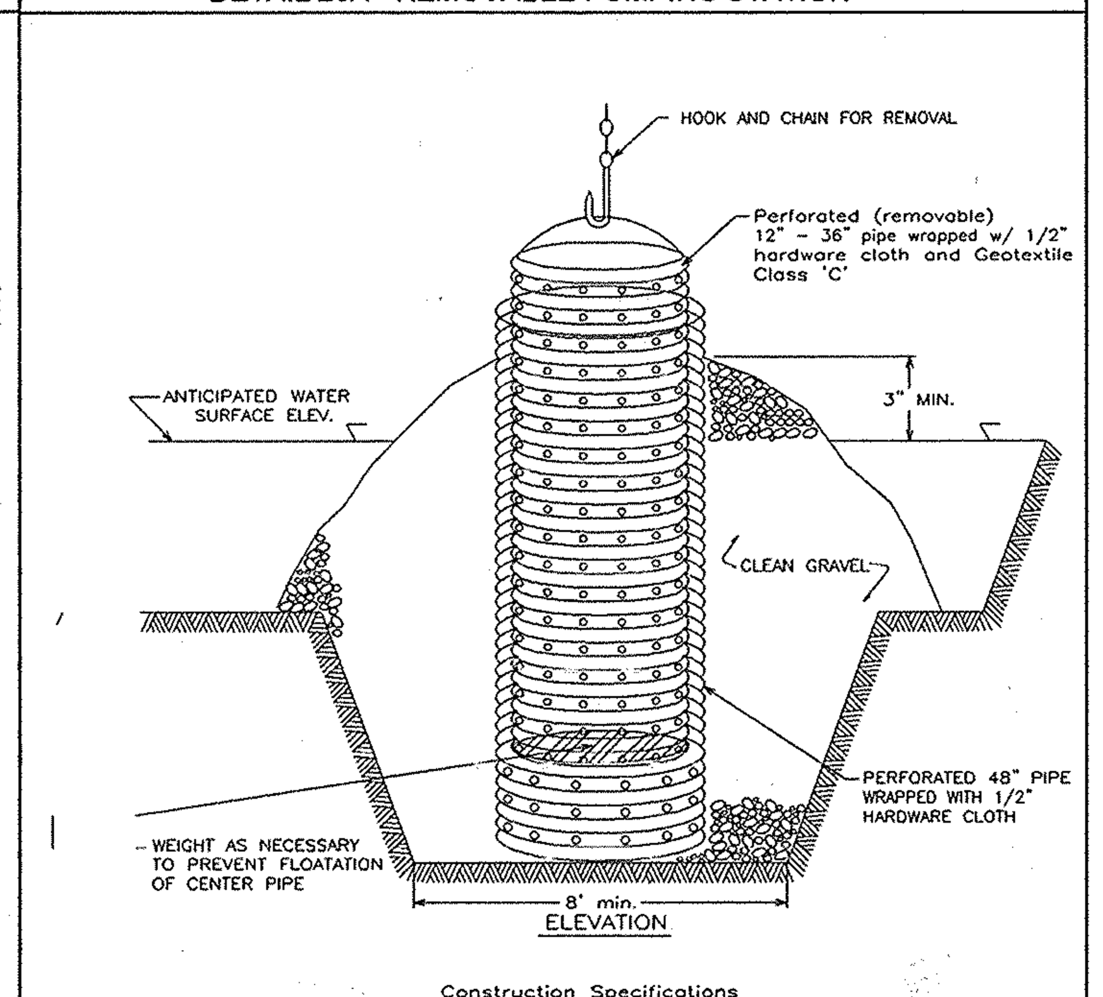


U.S.DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE C - 10 - 28	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

LEGEND

20' PUBLIC DRAINAGE & UTILITY EASEMENT	TREE PROTECTION FENCE
20' PUBLIC STORMDRAIN & UTILITY EASEMENT / 20' PRIVATE DRAINAGE & UTILITY EASEMENT	SPECIMEN TREE
NO WOODY VEGETATION BUFFER	5' SAFETY BENCH IN POND 3 & POND 2
FOREST CONSERVATION EASEMENT	5' STONE SAFETY BENCH IN POND 1
EXISTING 2 FT CONTOUR	PROPOSED STREET TREE
EXISTING 10 FT CONTOUR	BAFFLES
PROPOSED 2 FT CONTOUR	STREET LIGHT
PROPOSED 10 FT CONTOUR	

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

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.

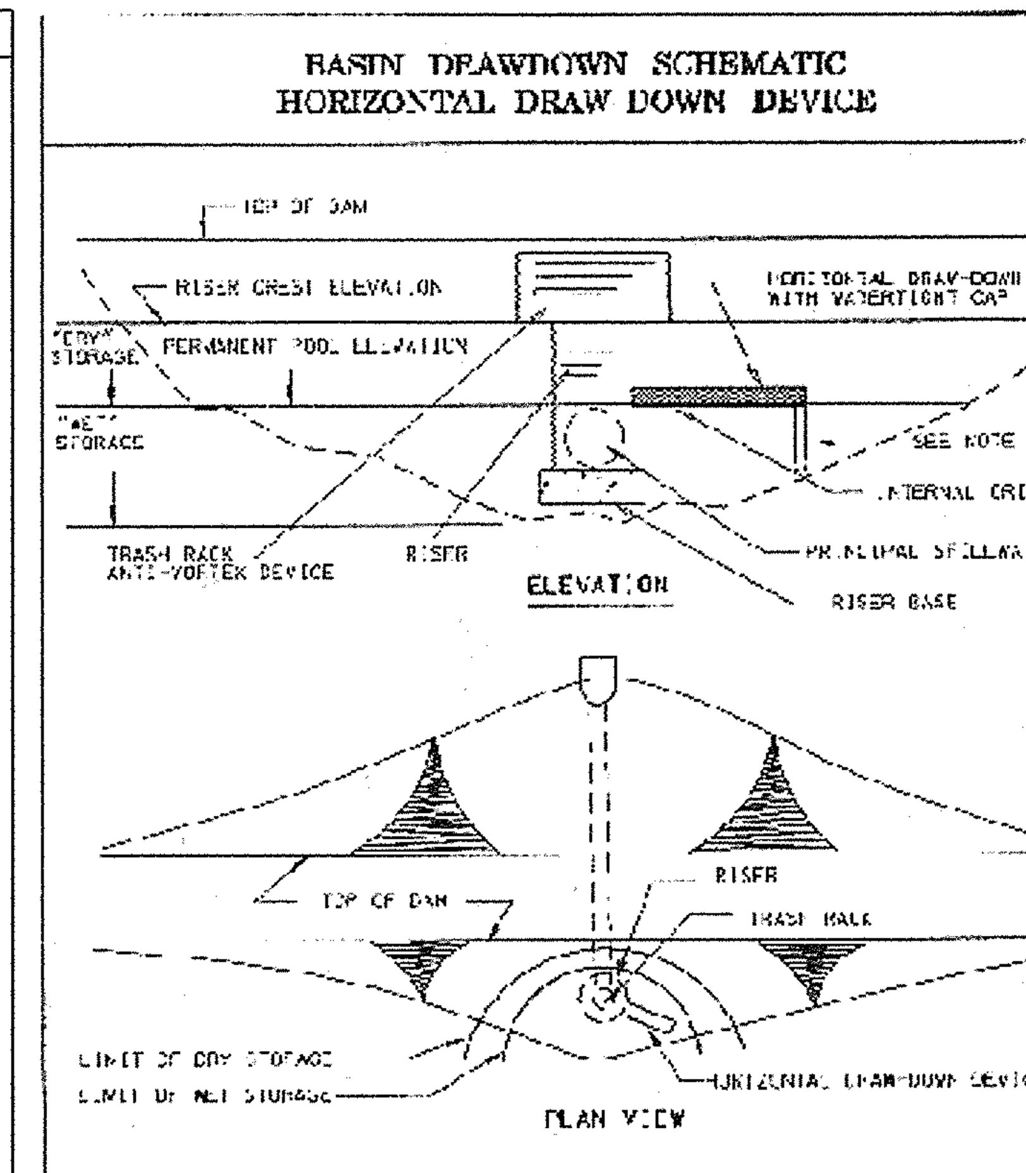
DEWATERING OF SEDIMENT TRAPS AND BASINS

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

BASIN DRAWDOWN SCHEMATIC HORIZONTAL DRAW DOWN DEVICE



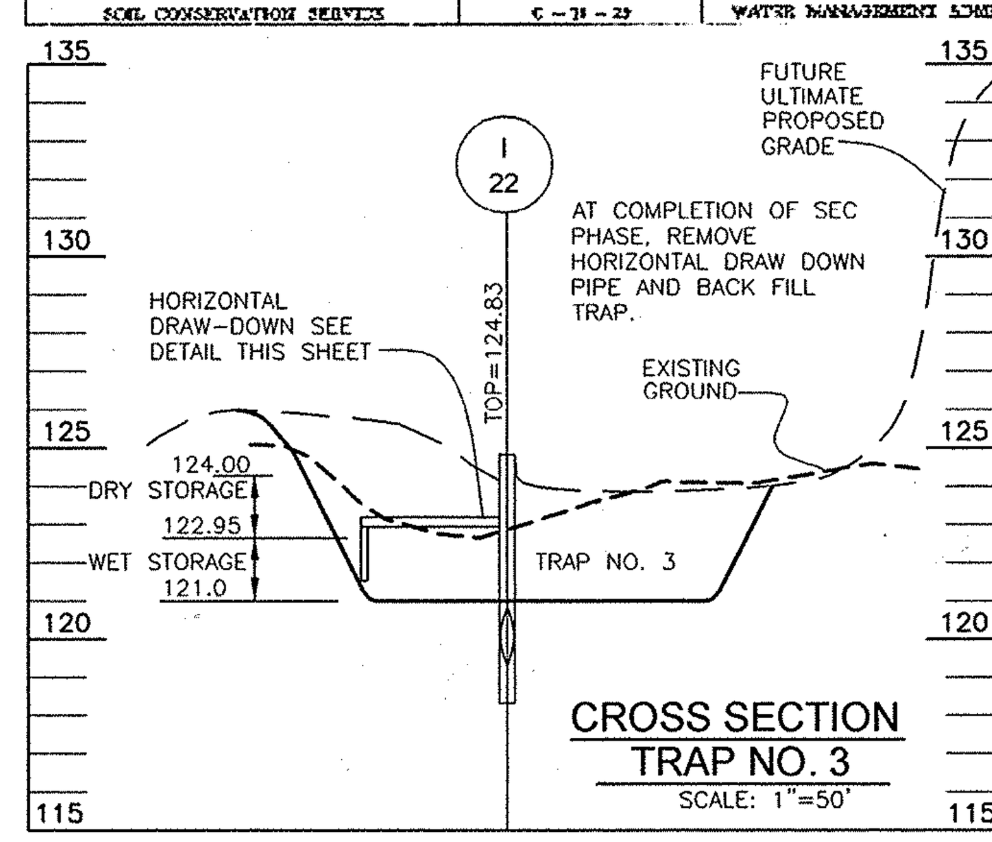
Construction Specifications

1. The total area of the perforations must be greater than 2 times the area of the internal orifice.

2. The perforated portion of the draw-down device shall be wrapped with 1/4" hardware cloth and geotextile fabric. The geotextile fabric shall meet the specifications for Geotextile Class E.

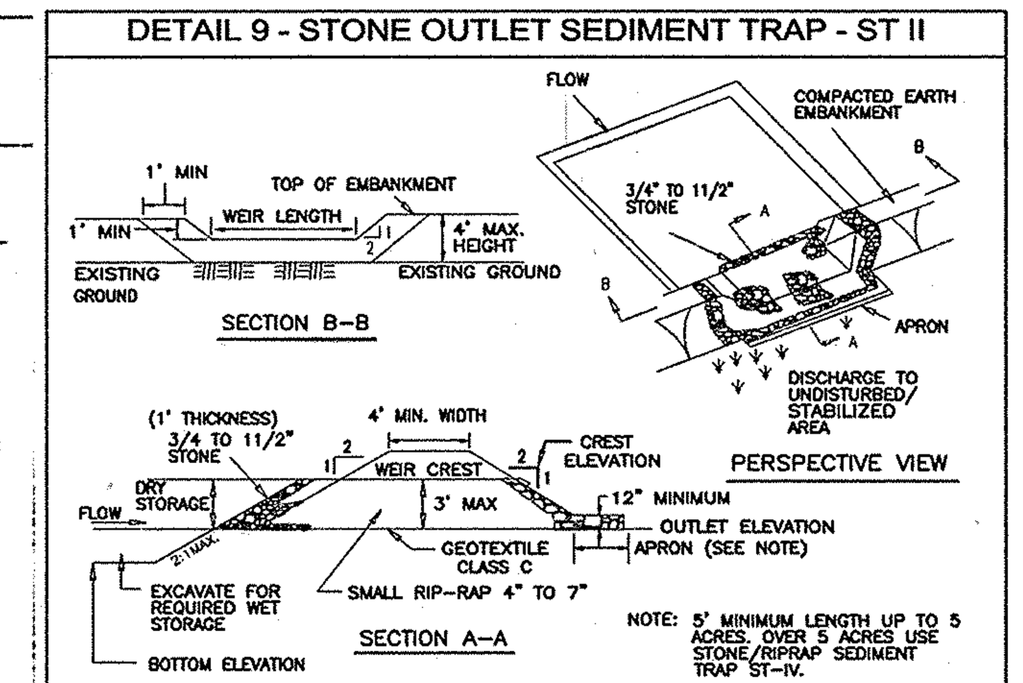
3. Provide support of draw-down device to prevent sagging and floatation. An acceptable preventative measure is to stake both sides of draw down device with 1" steel angle, or 1" by 4" square or 2" round wooden posts set 3' minimum into the ground then joining them to the device by wrapping with 12 gauge minimum wire.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE C - 31 - 23	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



CROSS SECTION
TRAP NO. 3
SCALE: 1"=50'

DETAIL 9 - STONE OUTLET SEDIMENT TRAP - ST II



Construction Specifications

1. AREA UNDER EMBANKMENT SHALL BE CLEARED, GRUBBED AND STRIPPED OF ANY VEGETATION AND ROOT MAT. THE POOL AREA SHALL BE CLEARED.

2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS AND OTHER WOODY VEGETATION AS WELL AS OVERSIZED STONES, ROCKS, ORGANIC MATERIAL OR OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHALL BE COMPACTED BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.

3. ALL CUT AND FILL SLOPES SHALL BE 2:1 OR FLATTER.

4. THE STONE USED IN THE OUTLET SHALL BE SMALL RIP-RAP 4" TO 7" IN SIZE WITH A 1' THICK LAYER OF 3/4" TO 11/2" WASHED AGGREGATE PLACED ON THE UPSTREAM FACE OF THE OUTLET. STONE FACING SHALL BE AS NECESSARY TO PREVENT CLOGGING. GEOTEXTILE CLASS C MAY BE SUBSTITUTED FOR THE STONE FACING BY PLACING IT ON THE INSIDE FACE OF THE STONE OUTLET.

5. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ONE HALF OF THE WET STORAGE DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE C - 9 - 10	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

STONE OUTLET SEDIMENT TRAP - ST II

6. THE STRUCTURE SHALL BE INSPECTED PERIODICALLY AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.

7. CONSTRUCTION OF TRAPS SHALL CARRIED OUT IN SUCH A MANNER THAT SEDIMENT POLLUTION IS ABATED. ONCE CONSTRUCTED, THE TOP AND OUTSIDE FACE OF THE EMBANKMENT SHALL BE STABILIZED WITH SEED AND MULCH. POINTS OF CONCENTRATION INFLOW SHALL BE PROTECTED IN ACCORDANCE WITH GRADE STABILIZATION STRUCTURE CRITERIA. THE REMAINDER OF THE INTERIOR SLOPES SHOULD BE STABILIZED (ONE TIME) WITH SEED AND MULCH UPON TRAP COMPLETION AND MONITORED AND MAINTAINED EROSION FREE DURING THE LIFE OF THE TRAP.

8. THE STRUCTURE SHALL BE DEWATERED BY APPROVED METHODS, REMOVED AND THE AREA STABILIZED WHEN THE DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

9. REFER TO SECTION D FOR SPECIFICATIONS CONCERNING TRAP DEWATERING.

10. MINIMUM TRAP DEPTH SHALL BE MEASURED FROM WEIR ELEVATION.

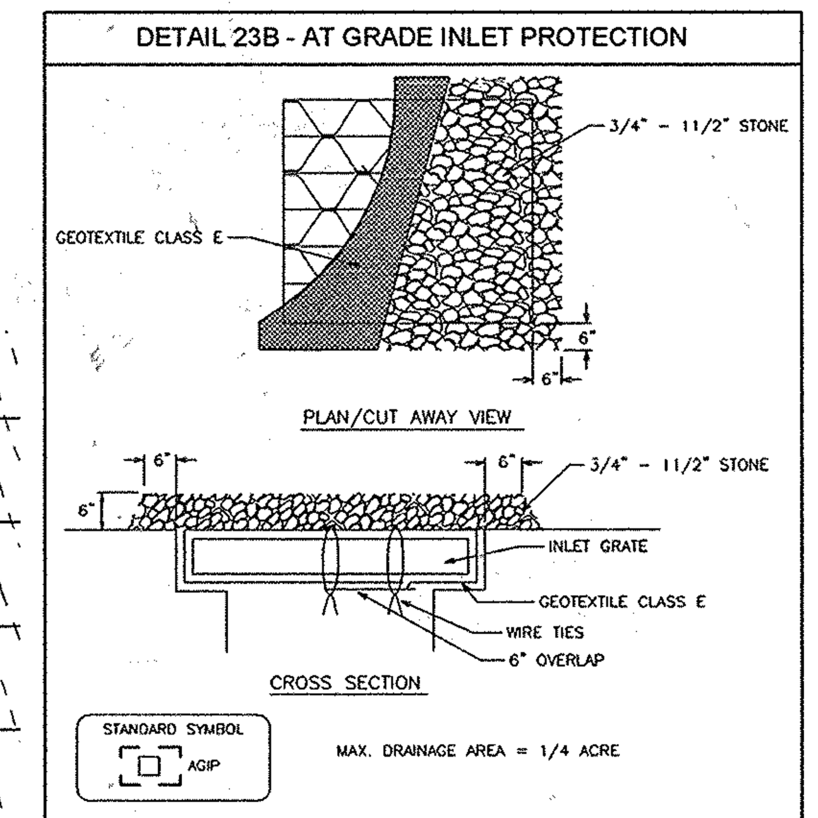
11. THE ELEVATION OF THE TOP OF ANY DIKE DIRECTING WATER INTO THE TRAP MUST EQUAL OR EXCEED THE ELEVATION OF THE TRAP EMBANKMENT.

12. GEOTEXTILE CLASS C SHALL BE PLACED OVER THE BOTTOM AND SIDES OF THE OUTLET CHANNEL PRIOR TO THE PLACEMENT OF STONE. SECTIONS OF FILTER CLOTH MUST OVERLAP AT LEAST 1' WITH THE SECTION NEAREST THE ENTRANCE PLACED ON TOP. THE FILTER CLOTH SHALL BE EMBEDDED AT LEAST 6" INTO EXISTING GROUND AT THE ENTRANCE OF THE OUTLET CHANNEL.

13. OUTLET-AN OUTLET SHALL BE PROVIDED, INCLUDING A MEANS OF CONVEYING THE DISCHARGE IN AN EROSION FREE MANNER TO AN EXISTING STABLE CHANNEL.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE C - 9 - 10A	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 23B - AT GRADE INLET PROTECTION

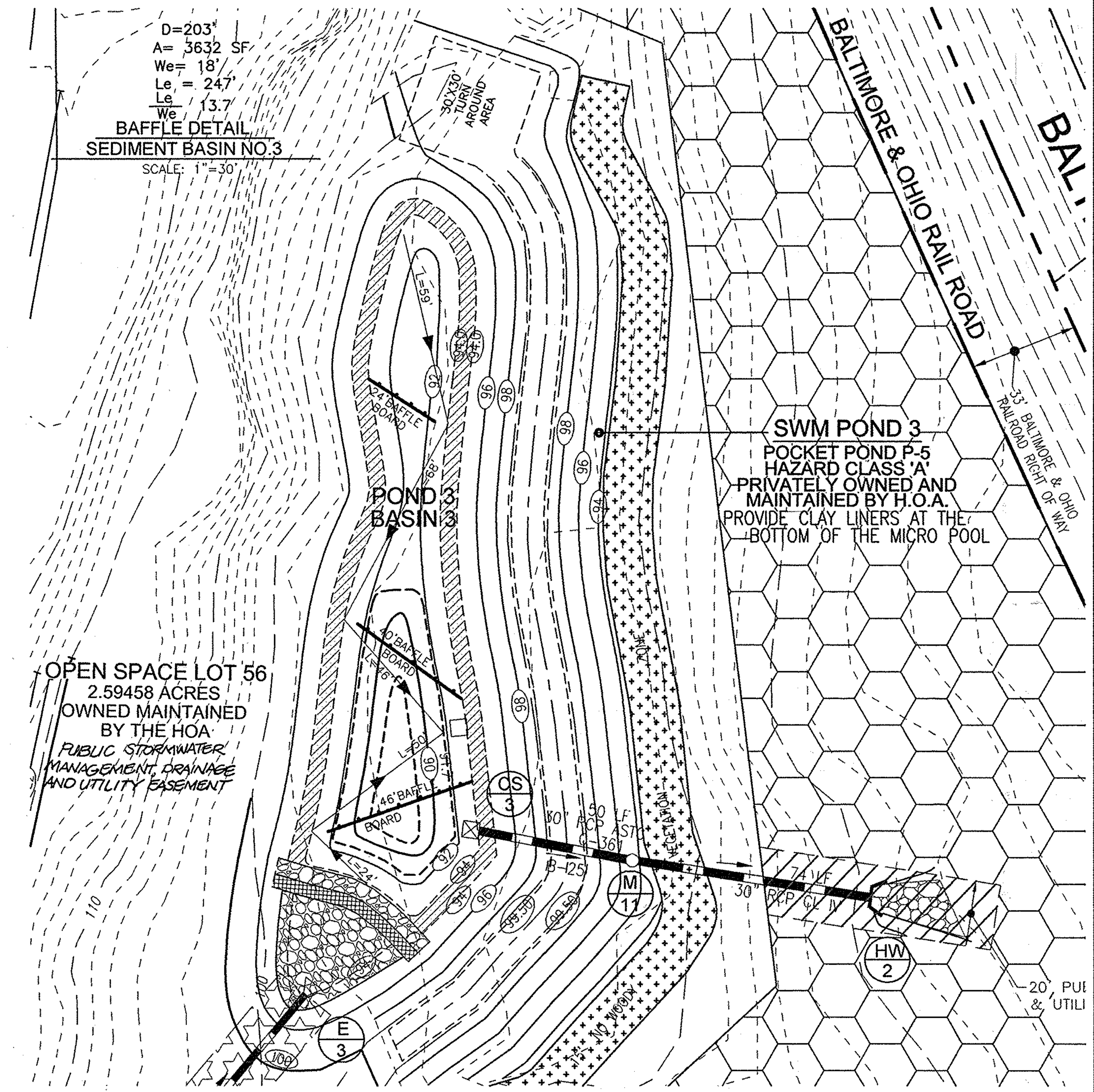


CONSTRUCTION SPECIFICATIONS

1. LIFT GRATE AND WRAP WITH GEOTEXTILE CLASS E TO COMPLETELY COVER ALL OPENINGS, THEN SET GRATE BACK IN PLACE.

2. PLACE 3/4" TO 11/2" STONE, 4"-6" THICK ON THE GRATE TO SECURE THE FABRIC AND PROVIDE ADDITIONAL FILTRATION.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE E - 16 - 5A	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



D=203'
A= 3632 SF
We= 18'
Le = 247'
Le/We 13.7
BAFFLE DETAIL
SEDIMENT BASIN NO.3
SCALE: 1"=30'

30.0 DUST CONTROL

Definition

Controlling dust blowing and movement on construction sites and roads.

Purpose

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

Conditions Where Practice Applies

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

Specifications

Temporary Methods

1. Mulches - See standards for vegetative stabilization with mulches only. Mulch should be crimped or tacked to prevent blowing.

2. Vegetative Cover - See standards for temporary vegetative cover.

3. Tillage - To roughen surface and bring clods to the surface. This is an emergency measure which should be used before soil blowing starts. Begin plowing on windward side of site. Chisel-type plows spaced about 12" apart, spring-toothed harrows, and similar plows are examples of equipment which may produce the desired effect.

4. Irrigation - This is generally done as an emergency treatment. Site is sprinkled with water until the surface is moist. Repeat as needed. At no time should the site be irrigated to the point that runoff begins to flow.

5. Barriers - Solid board fences, silt fences, snow fences, burlap fences, straw bales, and similar material can be used to control air currents and soil blowing. Barriers placed at right angles to prevailing currents at intervals of about 10 times their height are effective in controlling soil blowing.

6. Calcium Chloride - Apply at rates that will keep surface moist. May need retreatment.

Permanent Methods

1. Permanent Vegetation - See standards for permanent vegetative cover, and permanent stabilization with sod. Existing trees or large shrubs may afford valuable protection if left in place.

2. Topsoiling - Covering with less erosive soil materials. See standards for topsoiling.

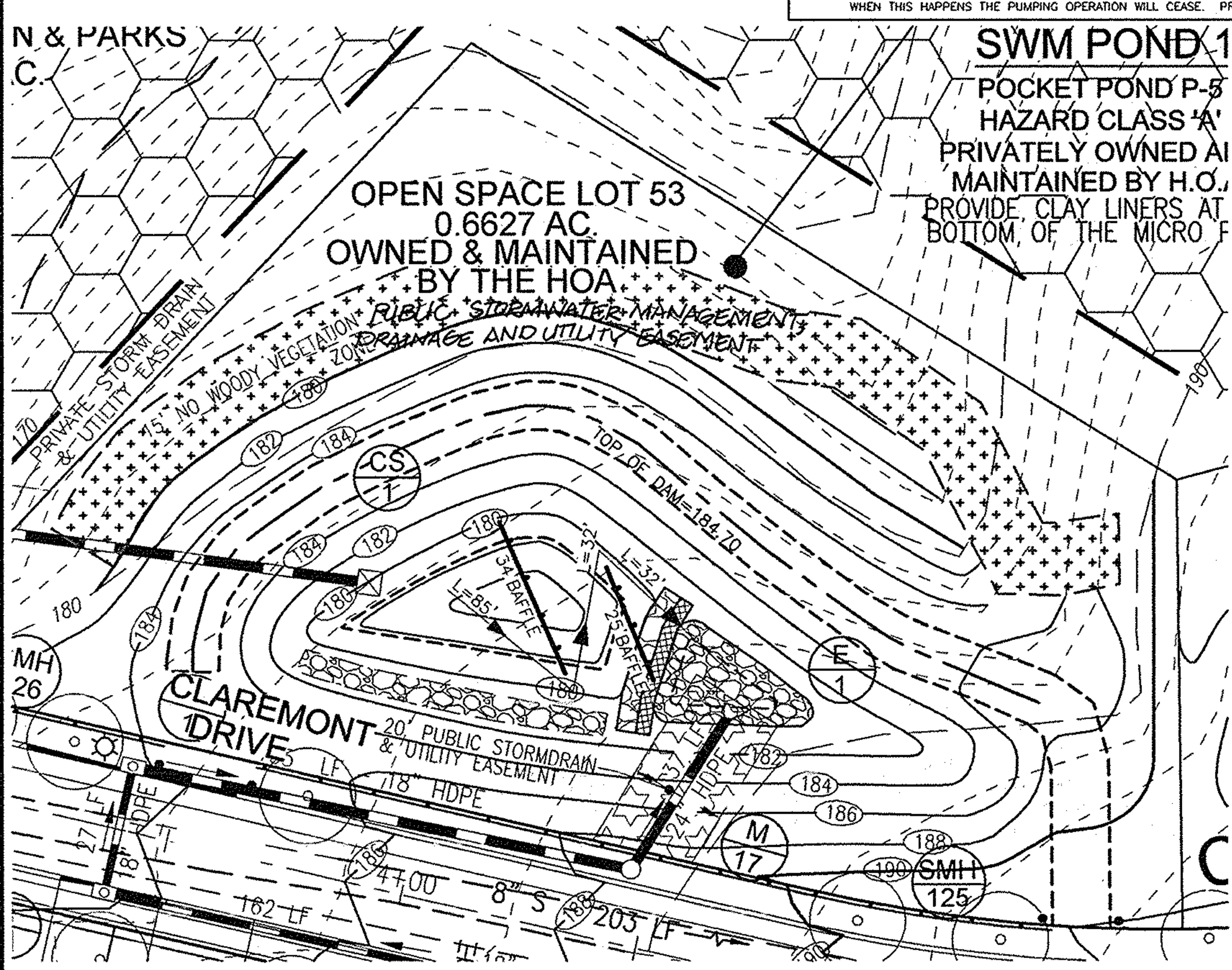
3. Stone - Cover surface with crushed stone or coarse gravel.

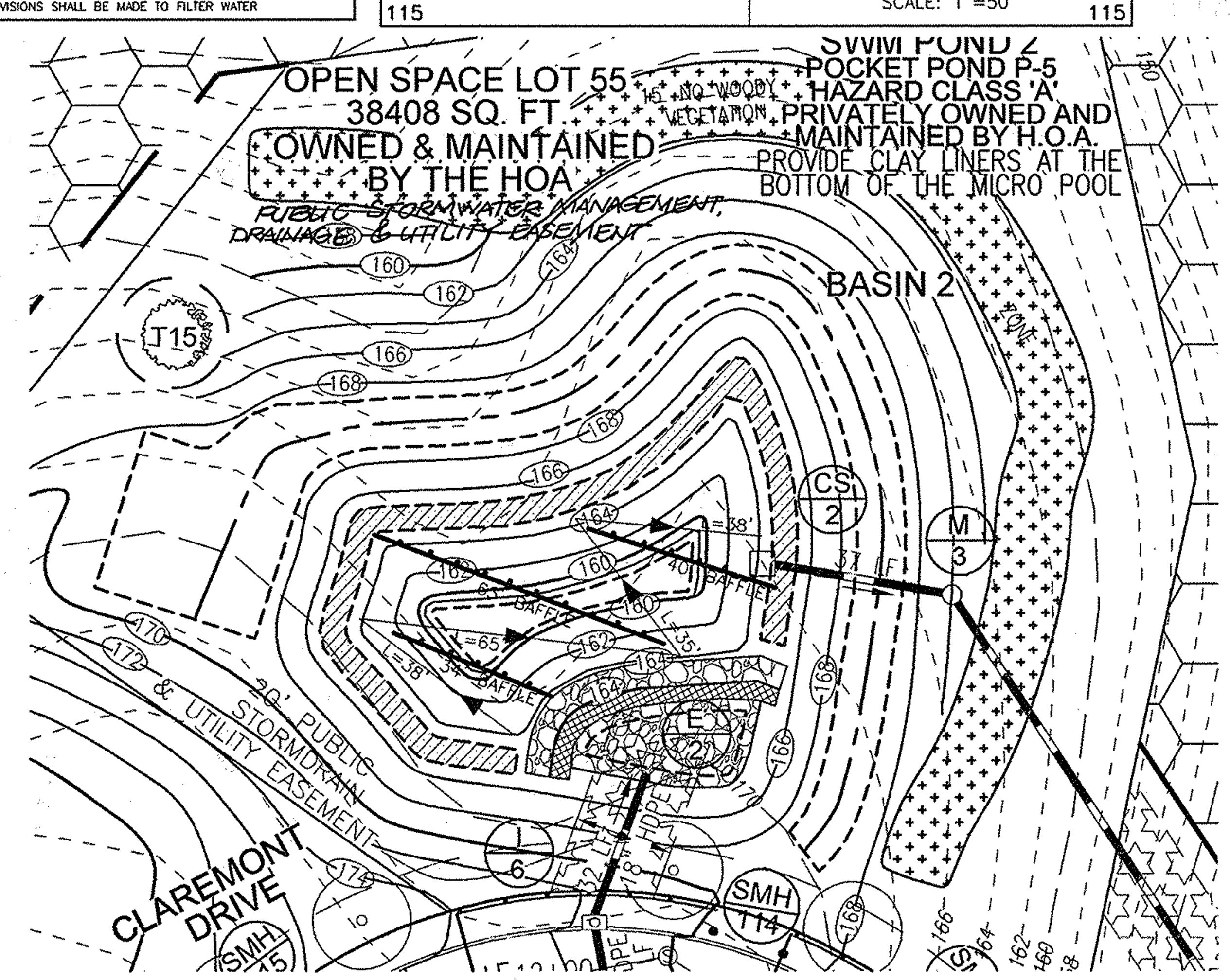
References

1. Agriculture Handbook 346. Wind Erosion Forces in the United States and Their Use in Predicting Soil Loss.

2. Agriculture Information Bulletin 354. How to Control Wind Erosion, USDA-ARS.

H-30-1





D=32'
A= 2816 SF
We= 88'
Le = 176'
Le/We 2
BAFFLE DETAIL
SEDIMENT BASIN NO. 2
SCALE: 1"=30'

D=60'
A= 1545 SF
We= 26'
Le = 149'
Le/We 5.7
BAFFLE DETAIL
SEDIMENT BASIN NO. 1
SCALE: 1"=30'

APPROVED: DEPARTMENT OF PUBLIC WORKS

[signature] 11-24-08
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[signature] 2/10/09
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[signature] 11/25/08
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

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

[signature] 11/5/08
HOWARD SOIL CONSERVATION DISTRICT DATE

DEVELOPER'S CERTIFICATE

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

[signature] 10/24/2008
SIGNATURE OF DEVELOPER DATE

ENGINEER'S CERTIFICATE

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

[signature] 10/23/08
SIGNATURE OF ENGINEER DATE
ROBERT H. VOGEL

NO AS-BUILT INFORMATION ON THIS SHEET.

OWNER/DEVELOPER

CLAREMONT L.L.C.
11046 DORSCH FARM ROAD
ELLICOTT CITY, MARYLAND 21042
(410) 730-4556

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2010."

NO.	REVISION	DATE
1	ADD STORMWATER MANAGEMENT EASEMENT AND REVISE GRADING ON OPEN SPACE LOT 54	12/18/09

FINAL ROAD CONSTRUCTION PLAN
SEDIMENT & EROSION CONTROL DETAILS
CLAREMONT OVERLOOK
LOTS 1 - 6, OPEN SPACE LOTS 50-57
AND NON - BUILDABLE BULK PARCELS A - I

TAX MAP 32 GRID 21 PARCELS 632 AND 24
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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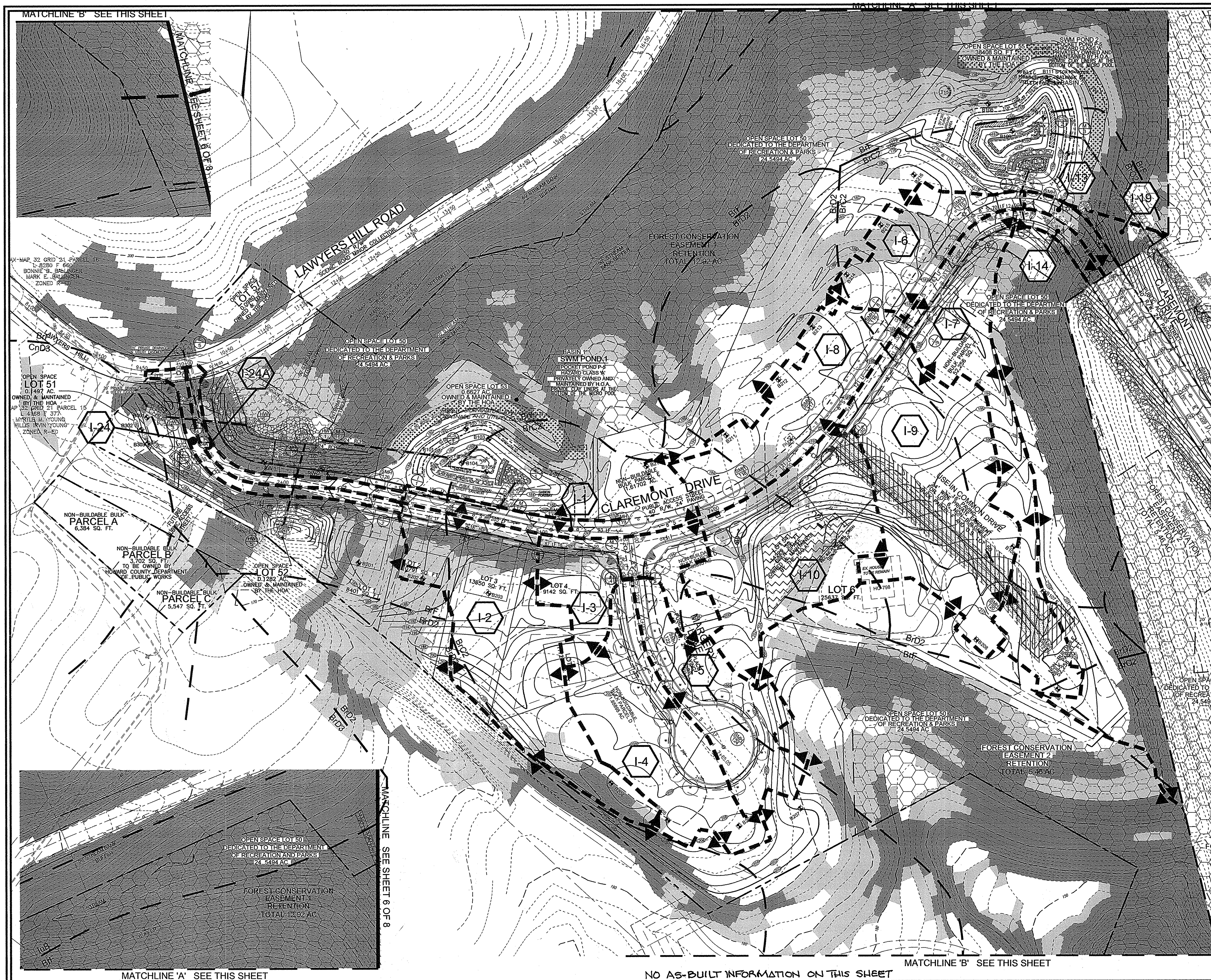
TEL: 410.461.7666 FAX: 410.461.8961

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

DESIGN BY:	RHV/RJ
DRAWN BY:	RJ
CHECKED BY:	RHV
DATE:	SEPTEMBER 2008
SCALE:	AS SHOWN
W.O. NO.:	02-68.00

AS-BUILT 06/24/15

F-08-63



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
- SPECIMEN TREE
- EROSION CONTROL MATTING
- PROPOSED TREE MAINTENANCE EASEMENT
- NO WOODY VEGETATION BUFFER
- RECREATIONAL OPEN SPACE
- PUBLIC WATER, SEWER, AND UTILITY EASEMENT
- PRIVATE WATER, SEWER, AND UTILITY EASEMENT
- USE-IN-COMMON ACCESS EASEMENT
- AREA OF 15 TO 24.9 PERCENT SLOPES
- AREA OF 25 PERCENT OR GREATER SLOPES
- FOREST CONSERVATION EASEMENT (RETENTION)
- STABALIZED CONSTRUCTION ENTRANCE
- RIP-RAP CHANNEL

DRAINAGE AREA TABULATION

NO.	AREA	'C'	% IMP.	SOIL	ZONE
I-1	0.31 AC	0.48	45	C	R-ED
I-2	0.85 AC	0.40	42	C	R-ED
I-3	0.41 AC	0.48	46	C	R-ED
I-4	0.60 AC	0.41	12	C	R-ED
I-5	0.49 AC	0.41	14	C	R-ED
I-6	0.33 AC	0.43	44	C	R-ED
I-7	0.66 AC	0.43	46	C	R-ED
I-8	0.52 AC	0.45	44	C	R-ED
I-9	1.06 AC	0.42	45	C	R-ED
I-10	0.78 AC	0.39	41	C	R-ED
I-11	0.53 AC	0.40	44	B AND C	R-ED
I-12	0.54 AC	0.45	49	B AND C	R-ED
I-13	0.26 AC	0.63	62	C	R-ED
I-14	0.27 AC	0.76	81	C	R-ED
I-15	0.75 AC	0.44	48	C	R-ED
I-16	1.70 AC	0.33	27	C	R-ED
I-17	0.48 AC	0.45	50	B AND C	R-ED
I-18	0.36 AC	0.51	54	B AND C	R-ED
I-19	1.05 AC	0.36	0	C	R-ED
I-20	2.79 AC	0.20	0	C	R-ED
I-21	0.92 AC	0.51	0	B AND C	R-ED
I-22	0.54 AC	0.36	0	C	R-ED
I-23	0.52 AC	0.45	0	B AND C	R-ED
I-24	1.70 AC	0.86	100	C	R-ED
I-24A	1.70 AC	0.86	100	C	R-ED

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	GROUP
AgC2	AURA GRAVELLY LOAM, 5 TO 10 PERCENT SLOPES, MODERATELY ERODED	B
BrC2	BRANDYWINE LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED	C
BrC3	BRANDYWINE LOAM, 8 TO 15 PERCENT SLOPES, SEVERELY ERODED	C
BrD2	BRANDYWINE LOAM, 15 TO 25 PERCENT SLOPES, MODERATELY ERODED	C
BrD3	BRANDYWINE LOAM, 15 TO 25 PERCENT SLOPES, SEVERELY ERODED	C
BrF	BRANDYWINE LOAM, 25 TO 60 PERCENT SLOPES, NORTH & SOUTH ASPECTS	C
CnD3	CHILLUM-FAIRFAX LOAMS, 5 TO 15 PERCENT SLOPES, SEVERELY ERODED	B
IuB	IUKA LOAM, LOCAL ALLUVIUM, 1 TO 5 PERCENT SLOPES	C

OWNER/DEVELOPER

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APPROVED: DEPARTMENT OF PUBLIC WORKS

[signature] 11-24-08
Chief, Bureau of Highways — Date

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[signature] 2/10/09
Chief, Division of Land Development — Date

[signature] 4/25/08
Chief, Development Engineering Division — Date

NO.	REVISION	DATE
1	ADD PUBLIC STORMWATER MANAGEMENT, DRAINAGE & UTILITY EASEMENT LABELS AND ADD GRADING & REVISED REC. O.S. PER WP-09-223.	11/16/09

FINAL ROAD CONSTRUCTION PLAN
STORM DRAIN DRAINAGE AREA MAP
CLAREMONT OVERLOOK
LOTS 1 - 6, OPEN SPACE LOTS 50-57
AND NON - BUILDABLE BULK PARCELS A - I

TAX MAP 32 GRID 21 — PARCELS 632 AND 24
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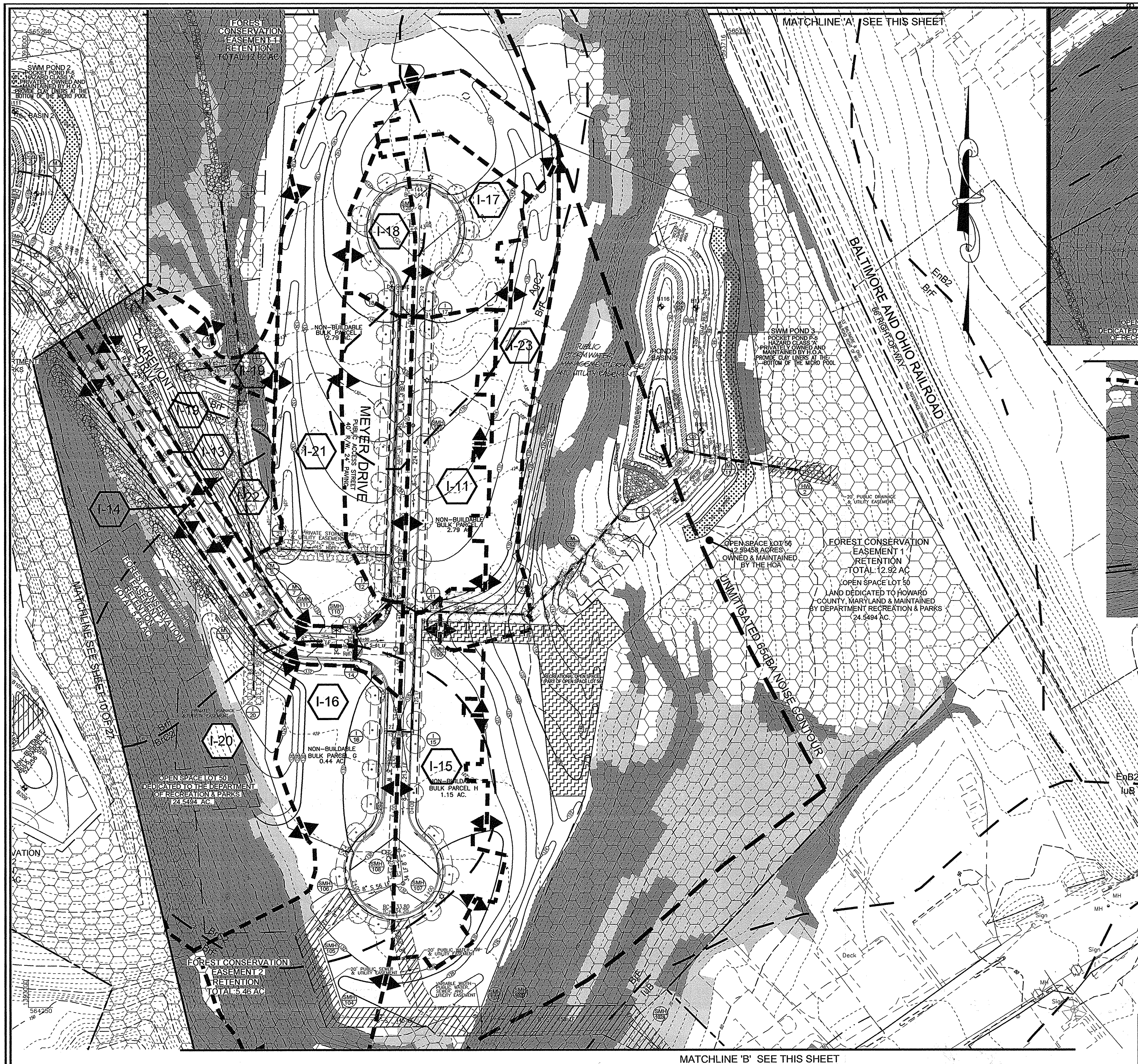
STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE No.16193

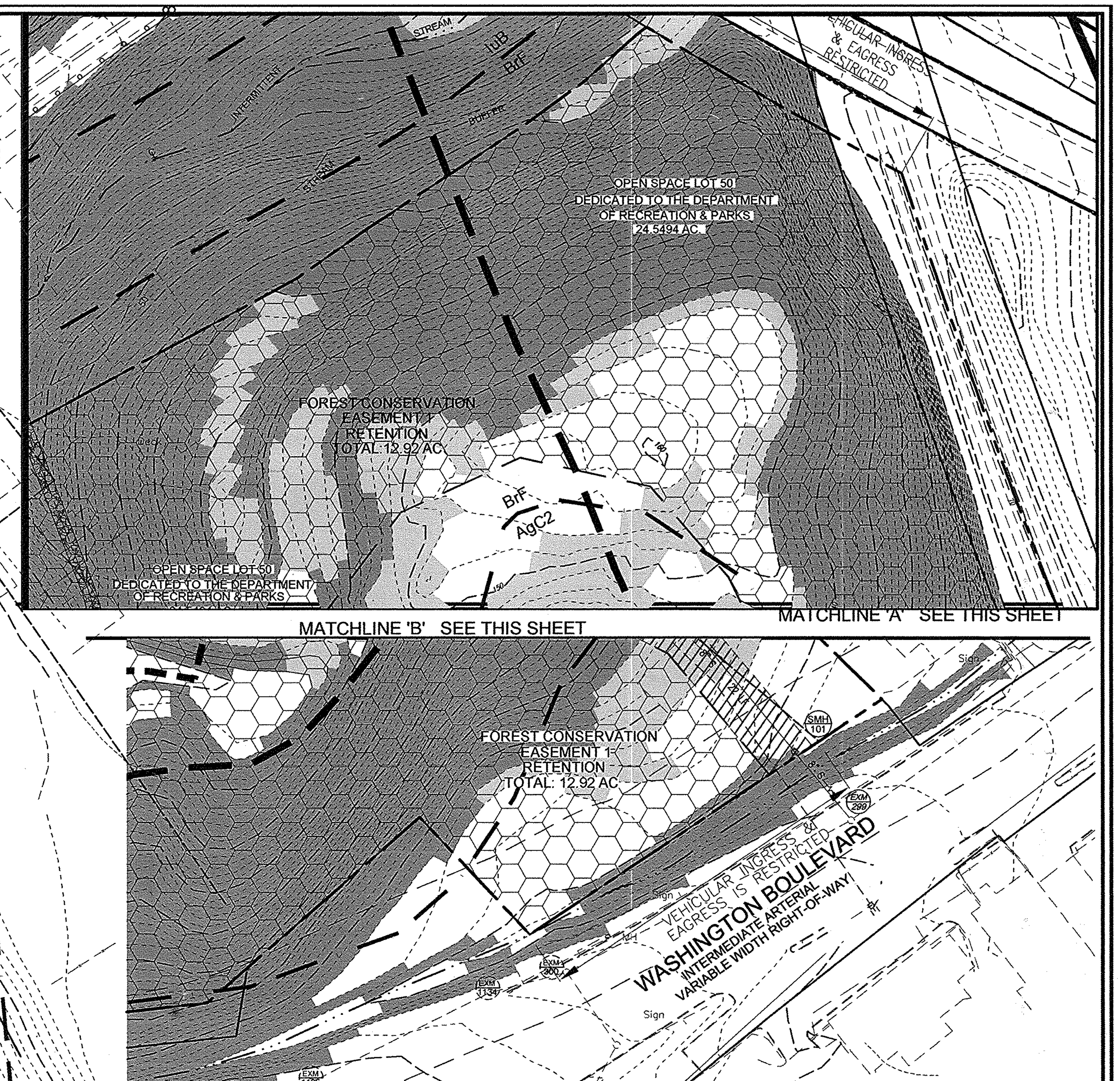
DESIGN BY:	RHV/RJ
DRAWN BY:	RJ
CHECKED BY:	RHV
DATE:	SEPTEMBER 2008
SCALE:	AS SHOWN
W.O. NO.:	02-68.00

AS-BUILT 06/24/15

F-08-63



MATCHLINE 'A' SEE THIS SHEET
FOREST CONSERVATION EASEMENT 1 RETENTION TOTAL 12.92 AC
SWM POND 2
BASIN 2
CLAREMONT DRIVE
MEYER DRIVE
I-18
I-17
I-23
I-19
I-13
I-21
I-11
I-22
I-14
I-16
I-20
I-15
NON-BUILDABLE BULK PARCEL G 0.44 AC.
NON-BUILDABLE BULK PARCEL H 1.15 AC.
NON-BUILDABLE BULK PARCEL I 2.79 AC.
SWM POND 3
BALTIMORE AND OHIO RAILROAD
66' RIGHT-OF-WAY
OPEN SPACE LOT 56 2.99458 ACRES OWNED & MAINTAINED BY THE HOA
FOREST CONSERVATION EASEMENT 1 RETENTION TOTAL 12.92 AC
OPEN SPACE LOT 50 LAND DEDICATED TO HOWARD COUNTY, MARYLAND & MAINTAINED BY DEPARTMENT RECREATION & PARKS 24.5494 AC.
UNMITIGATED 65dBA NOISE CONTOUR
MATCHLINE SEE SHEET 10 OF 27
OPEN SPACE LOT 50 DEDICATED TO THE DEPARTMENT OF RECREATION & PARKS 24.5494 AC.
FOREST CONSERVATION EASEMENT 2 RETENTION TOTAL 5.46 AC
EnB2
IuB
BrF
AgC2
MATCHLINE 'B' SEE THIS SHEET



VEHICULAR INGRESS & EGRESS RESTRICTED
OPEN SPACE LOT 50 DEDICATED TO THE DEPARTMENT OF RECREATION & PARKS 24.5494 AC
FOREST CONSERVATION EASEMENT 1 RETENTION TOTAL 12.92 AC
BrF
AgC2
MATCHLINE 'A' SEE THIS SHEET
MATCHLINE 'B' SEE THIS SHEET
WASHINGTON BOULEVARD
INTERMEDIATE ARTERIAL
VARIABLE WIDTH RIGHT-OF-WAY

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
ECM	EROSION CONTROL MATTING
	PROPOSED TREE MAINTENANCE EASEMENT
	NO WOODY VEGETATION BUFFER
	RECREATIONAL OPEN SPACE
	PUBLIC WATER, SEWER, AND UTILITY EASEMENT
	PRIVATE WATER, SEWER, AND UTILITY EASEMENT
	USE-IN-COMMON ACCESS EASEMENT
	AREA OF 15 TO 24.9 PERCENT SLOPES
	AREA OF 25 PERCENT OR GREATER SLOPES
	FOREST CONSERVATION EASEMENT (RETENTION)
SCE	STABALIZED CONSTRUCTION ENTRANCE
	RIP-RAP CHANNEL

APPROVED: DEPARTMENT OF PUBLIC WORKS

[signature] 11-24-08
Chief, Bureau of Highways — Date

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[signature] 2/10/09
Chief, Division of Land Development — Date

[signature] 11/25/08
Chief, Development Engineering Division J.P. — Date

NO.	REVISION	DATE
1	ADD STORMWATER MANAGEMENT EASEMENT AND REVISE GRADING ON OPEN SPACE LOT 54	12/18/09

FINAL ROAD CONSTRUCTION PLAN
STORM DRAIN DRAINAGE AREA MAP
CLAREMONT OVERLOOK
LOTS 1 - 6, OPEN SPACE LOTS 50-57
AND NON - BUILDABLE BULK PARCELS A - I

TAX MAP 32 GRID 21 PARCELS 632 AND 24
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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ENGINEERS • SURVEYORS • PLANNERS
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OWNER/DEVELOPER

CLAREMONT L.L.C.
11046 DORSCH FARM ROAD
ELLICOTT CITY, MARYLAND 21042
(410) 730-4556

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2010."

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

DESIGN BY:	RHV/RJ
DRAWN BY:	RJ
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DATE:	SEPTEMBER 2008
SCALE:	AS SHOWN
W.O. NO.:	02-68.00

NO AS-BUILT INFORMATION ON THIS SHEET

AS-BUILT 06/24/15

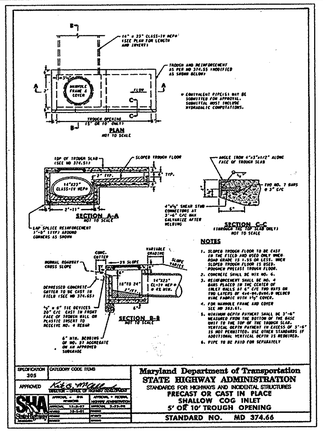
F-08-63

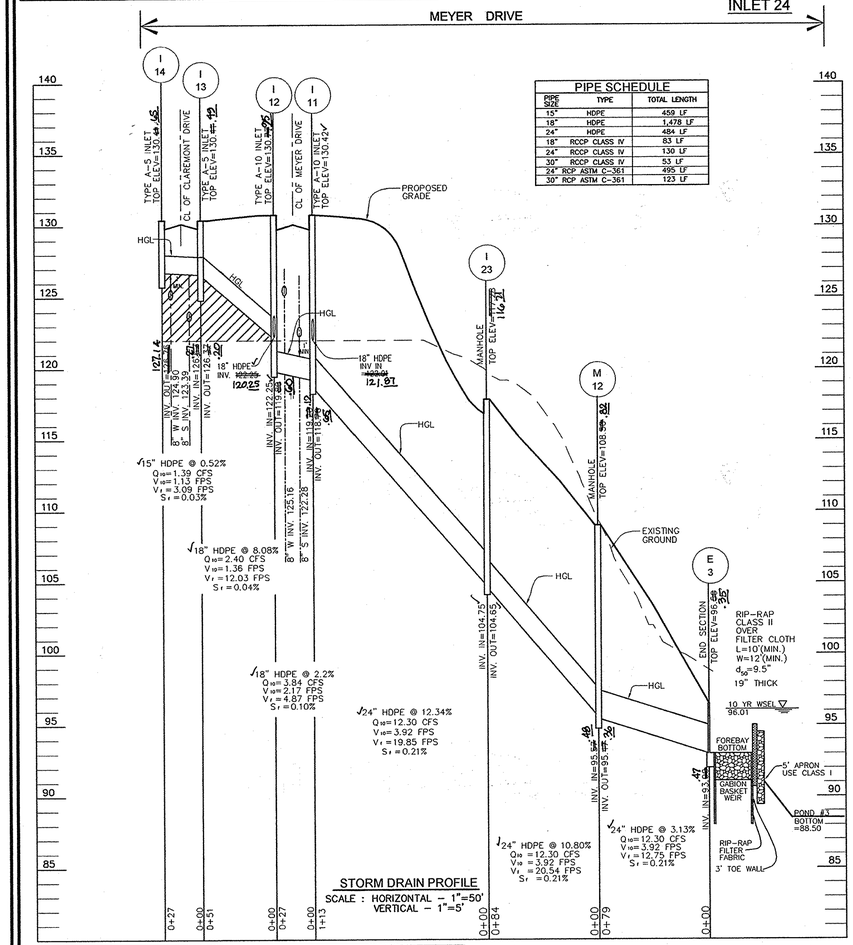
STORM DRAIN MANHOLE SCHEDULE

NO.	TYPE	LOCATION	TOP ELEV.	INV. IN	INV. OUT	REMARKS
M-1	STANDARD 4' PRECAST MANHOLE	MEYER DRIVE CL STA. 3+69.74, 13.50' LT.	132.26	124.55 124.55	124.45	G-5.12
M-2	STANDARD 4' PRECAST MANHOLE	CL OF CLAREMONT DRIVE, STA. 5+84.80, 17.04' RT.	192.50	188.39	188.29	G-5.12
M-3	STANDARD 4' PRECAST MANHOLE	N 565103.74 E 1393026.68	166.50	158.60	158.50	G-5.12
M-4	STANDARD 4' PRECAST MANHOLE	N 564903.96 E 1393157.79	129.00	119.00	118.90	G-5.12
M-5	STANDARD 4' PRECAST MANHOLE	CL OF CLAREMONT DRIVE, STA. 16+45.25, 15.03' LT.	136.33	120.16	120.06	G-5.12
M-7	STANDARD 4' PRECAST MANHOLE	CL OF CLAREMONT DRIVE, STA. 16+92.28, 15.21' LT.	134.55	120.50	120.40	G-5.12
M-8	STANDARD 4' PRECAST MANHOLE	CL OF CLAREMONT DRIVE, STA. 16+92.33, 16.73' RT.	134.55	120.91	120.66	G-5.12
M-9	STANDARD 4' PRECAST MANHOLE	CL OF CLAREMONT DRIVE, STA. 11+41.40, 17.02' RT.	177.34	173.12	173.02	G-5.12
M-11	STANDARD 4' PRECAST MANHOLE	N 564812.74, E 1393718.31	94.00	86.0	76.60	G-5.12
M-12	STANDARD 4' PRECAST MANHOLE	N 564712.97, E 1393569.69	108.50	95.57	95.47	G-5.12
M-13	STANDARD 4' PRECAST MANHOLE	N 564780.97, E 1392054.98	169.00	163.61	160.40	G-5.12
M-14	STANDARD 6' PRECAST MANHOLE	CL OF CLAREMONT DRIVE, STA. 0+62.03, 7.68' LT.	177.40	168.92 168.42	166.15	G-5.12
M-15	STANDARD 4' PRECAST MANHOLE	N 564746.01, E 1392138.26	171.00	156.09	154.24	G-5.12
M-16	STANDARD 4' PRECAST MANHOLE	N 564758.92, E 1392175.04	160.00	156.00	153.50	G-5.12
M-17	STANDARD 4' PRECAST MANHOLE	CL OF CLAREMONT DRIVE, STA. 4+45.41, 15.90' LT.	188.58	179.09	178.59	G-5.12

STRUCTURE SCHEDULE

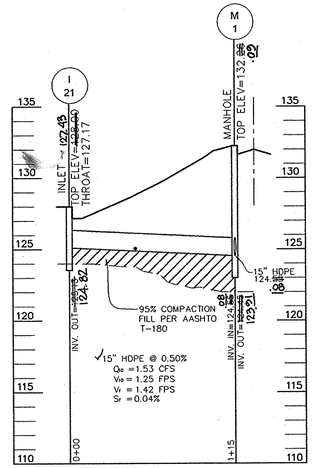
NO.	SIZE	TYPE	LOCATION NORTHING	LOCATION EASTING	TOP ELEV.	INV. IN	INV. OUT	REMARKS
HW-1	–	TYPE 'A' HEADWALL	N 564760.92	E 1392160.16	156.50	153.00	–	D-5.11
HW-2	–	TYPE 'A' HEADWALL	N 564801.72	E 1393790.85	79.50	75.50	–	D-5.11
HW-3	–	TYPE 'A' HEADWALL	N 564788.70	E 1391983.97	178.50	–	175.00	D-5.11
HW-5	–	TYPE 'A' HEADWALL	N 564665.65	E 1392116.50	167.50	–	164.00	D-5.11
HW-6	–	TYPE 'A' HEADWALL	N 564778.83	E 1392074.86	164.40	160.04	–	D-5.11
HW-7	–	TYPE 'A' HEADWALL	N 564757.62	E 1392141.41	157.50	154.00	–	D-5.11
E-1	24"	TYPE 'C' ENDWALL	N 564712.47	E 1392379.58	181.89	178.39	–	D-5.21
E-2	24"	TYPE 'C' ENDWALL	N 565067.40	E 1392964.78	168.75	163.25	–	D-5.21
E-3	24"	TYPE 'C' ENDWALL	N 564771.93	E 1393618.93	96.50	93.00	–	D-5.21
E-4	24"	TYPE 'C' ENDWALL	N 565079.18	E 1393198.23	120.30	117.55	–	D-5.21
E-5	18"	TYPE 'A' HEADWALL	N 564864.64	E 1392002.73	176.05	–	173.80	D-5.21

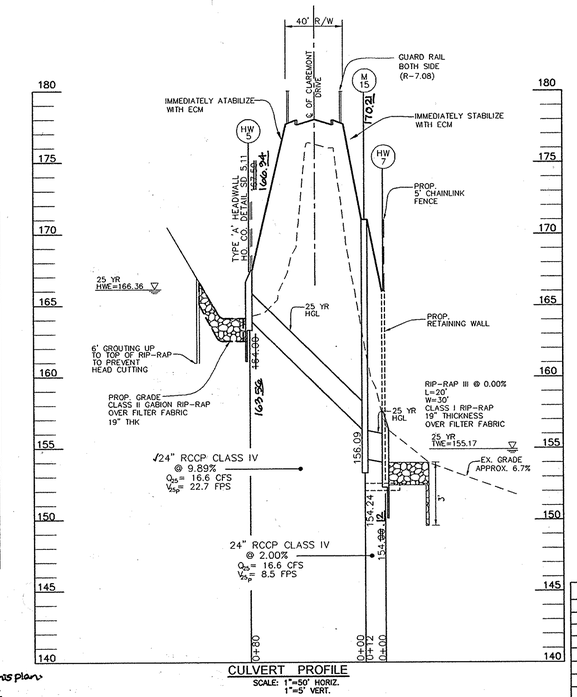




PIPE SCHEDULE

PIPE SIZE	TYPE	TOTAL LENGTH
15"	HDPE	459 LF
18"	HDPE	1,478 LF
24"	HDPE	484 LF
18"	RCCP CLASS IV	83 LF
24"	RCCP CLASS IV	130 LF
30"	RCCP CLASS IV	53 LF
24"	RCP ASTM C-361	495 LF
30"	RCP ASTM C-361	123 LF





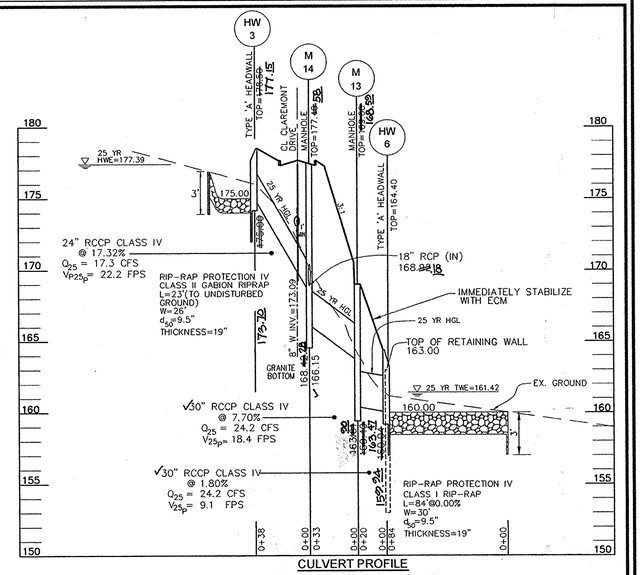
AS-BUILT CERTIFICATION

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

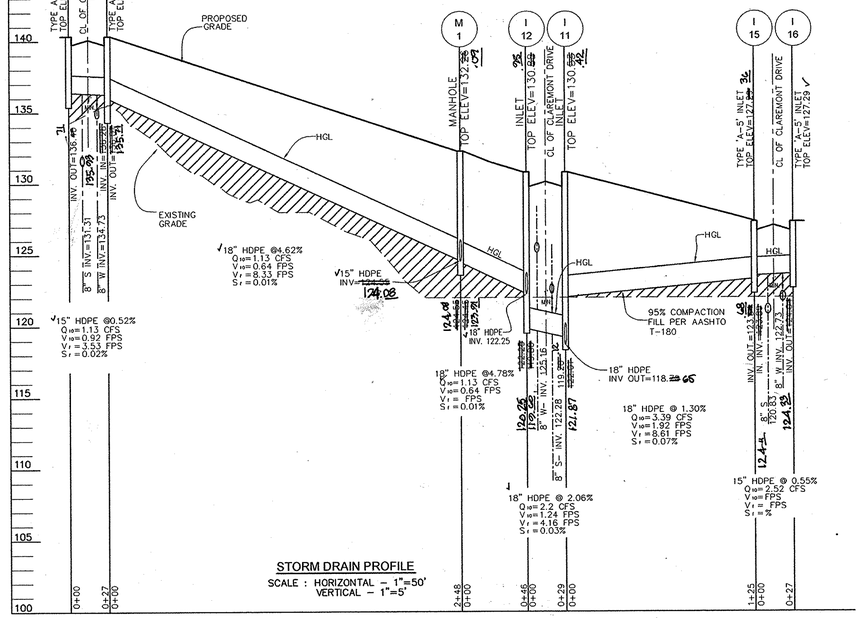
Date: 7/23/15

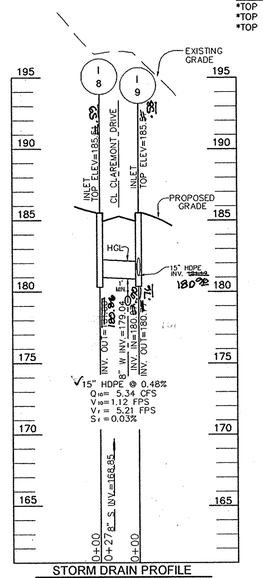


INLET SCHEDULE

NO.	TYPE	LOCATION	TOP	INV.IN	INV.OUT	REMARKS
I-1	TYPE 'A-10' INLET	CL OF CLAREMONT DRIVE, STA. 3+39.60, 12' LT.	184.06	179.72	179.62	SD4.41
I-2	TYPE 'A-10' INLET	CL OF CLAREMONT DRIVE, STA. 3+39.66, 12' RT.	184.06	179.95	179.85	SD4.41
I-3	TYPE 'A-5' INLET	CL OF CLAREMONT DRIVE, STA. 5+01.37, 12' RT.	190.95	186.40	186.30	SD4.41
I-4	TYPE 'A-10' INLET	CL OF MARGERY LANE, STA. 0+49.82, 12' RT.	194.53	190.40	189.95	SD4.41
I-5	TYPE 'A-10' INLET	CL OF MARGERY LANE, STA. 0+49.82, 12' LT.	194.53	–	190.54	SD4.41
I-6	TYPE 'A-10' INLET	CL OF CLAREMONT DRIVE, STA. 12+07.43, 12' LT.	171.91	163.51	163.41	SD4.41
I-7	TYPE 'A-10' INLET	CL OF CLAREMONT DRIVE, STA. 12+12.96, 12' RT.	171.43	163.75	163.65	SD4.41
I-8	TYPE 'A-10' INLET	CL OF CLAREMONT DRIVE, STA. 10+14.24, 12' LT.	185.51	–	181.00	SD4.41
I-9	TYPE 'A-10' INLET	CL OF CLAREMONT DRIVE, STA. 10+14.24, 12' RT.	185.51	15"HDPE–181.12 15"HDPE–180.87	180.77	SD4.41
I-10	TYPE 'A-10' INLET	CL OF CLAREMONT DRIVE, STA. 8+74.76, 12' RT.	191.49	–	187.24	SD4.41
I-11	TYPE 'A-10' INLET	CL OF MEYER DRIVE, STA. 3+92.21, 12' RT.	130.53	18"HDPE–122.01 18"HDPE–119.20	118.70	SD4.41
I-12	TYPE 'A-10' INLET	CL OF MEYER DRIVE, STA. 3+81.53, 12' LT.	130.88	18"HDPE–122.25 18"HDPE–122.25	119.80	SD4.41
I-13	TYPE 'A-5' INLET	CL OF CLAREMONT DRIVE, STA. 17+90.80, 12' LT.	130.41	126.62	126.37	SD4.40
I-14	TYPE 'A-5' INLET	CL OF CLAREMONT DRIVE, STA. 17+90.80, 12' RT.	130.41	–	126.76	SD4.40
I-15	TYPE 'A-5' INLET	CL OF MEYER DRIVE, STA. 5+16.98 12' LT.	127.29	124.49	124.24	SD4.40
I-16	TYPE 'A-5' INLET	CL OF MEYER DRIVE, STA. 5+16.98, 12' RT.	127.29	–	124.63	SD4.40
I-17	TYPE 'A-5' INLET	CL OF MEYER DRIVE, STA. 0+88.04, 12' RT.	140.45	–	136.40	SD4.40
I-18	TYPE 'A-5' INLET	CL OF MEYER DRIVE, STA. 0+88.04, 12' LT.	140.45	136.26	136.01	SD4.40
I-19	TYPE 'D' INLET	THROAT OPENING=125.17 N 564911.43 E 1393218.79	126.00	24" HDPE–118.49 18" HDPE–118.89	118.39	SD4.11
I-20	TYPE 'D' INLET	THROAT OPENING=123.17 N 564573.27 E 1393231.01	124.00	–	121.25	SD4.11
I-21	TYPE 'D' INLET	THROAT OPENING=127.17 N 564721.10 E 1393257.71	128.00	–	125.13	SD4.11
I-22	TYPE 'D' INLET	THROAT OPENING=124.00 N 564845.13 E 1393213.57	124.83	119.33	119.23	SD4.11
I-23	TYPE 'D' INLET	THROAT OPENING=116.45 N 564653.66 E 1393510.12	117.28	104.75	104.65	SD4.11
I-24	10' SHALLOW COG INLET	THROAT OPENING=176.97 CL OF CLAREMONT DRIVE, STA. 0+95.13, 12'RT.	177.57	(SEE THIS DETAIL SHEET) MD. 374.66		
I-24A	TYPE 'A-5' INLET	CL OF CLAREMONT DRIVE, STA 09+55, 12' LT.	177.59	–	168.34	SD4.40

NOTES
*TOP ELEV.=TOP OF THE CURB AT CENTER OF THE INLET FOR A-5 & A-10 INLET.
*TOP ELEV.=TOP OF THE FRAME & COVER FOR TYPE D INLET.
*TOP ELEV.=TOP OF THE CURB AT CENTER OF THE INLET FOR TYPE S INLET.





NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN
STORM DRAIN PROFILES
CLAREMONT OVERLOOK
LOTS 1 - 6, OPEN SPACE LOTS 50-57
AND NON - BUILDABLE BULK PARCELS A -I

TAX MAP 32 GRID 21 PARCELS 632 AND 24
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

DESIGN BY: RHV/RJ
DRAWN BY: RJ
CHECKED BY: RHV
DATE: SEPTEMBER 2008
SCALE: AS SHOWN
W.O. NO.: 02-68.00

SHEET 12 OF 27

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 11-24-08

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/10/09

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 11/25/08

OWNER/DEVELOPER
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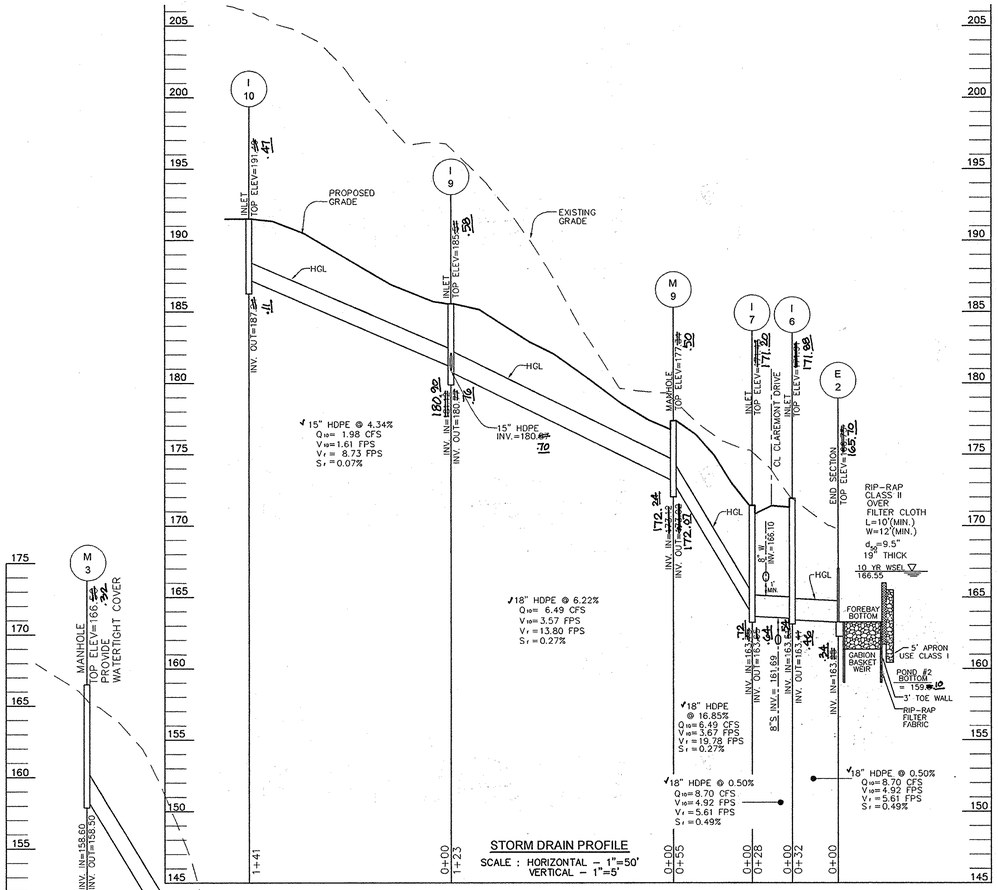

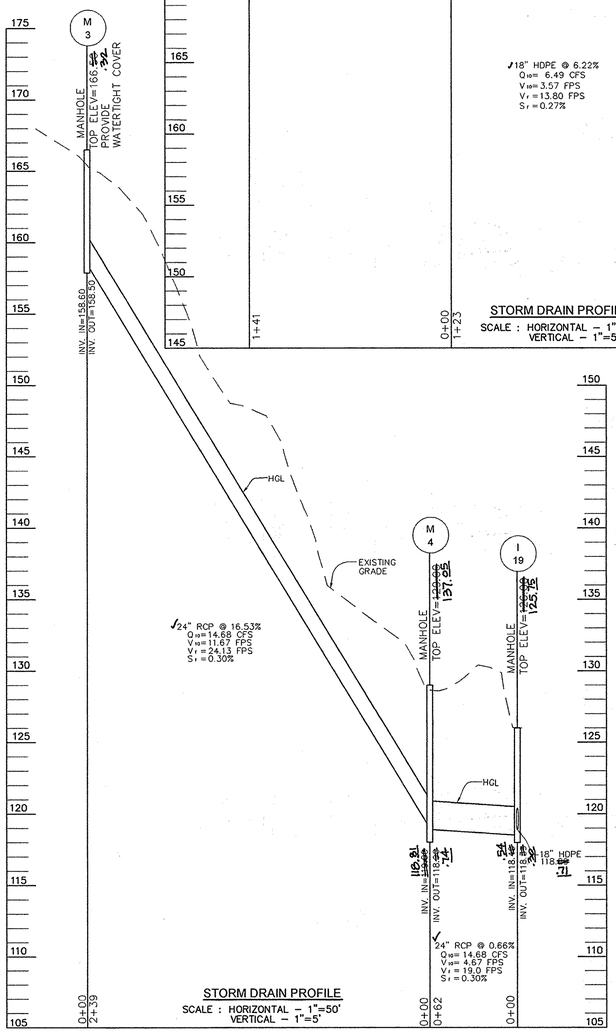

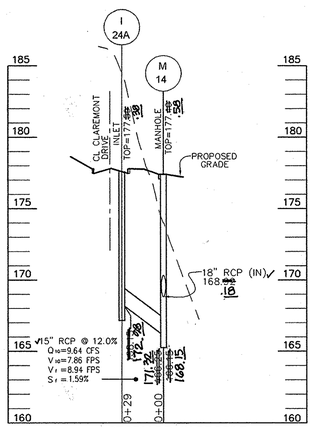

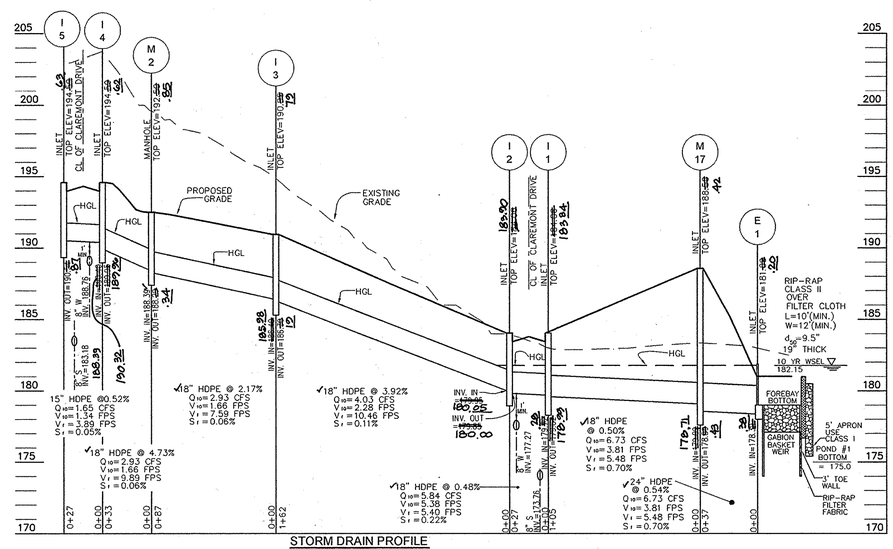

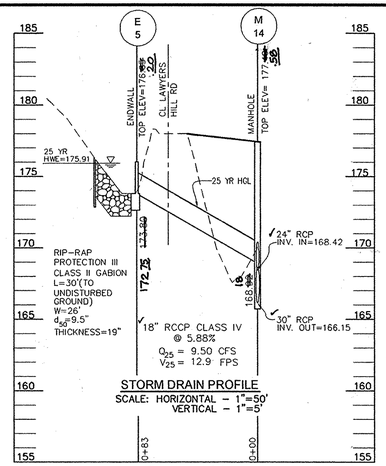

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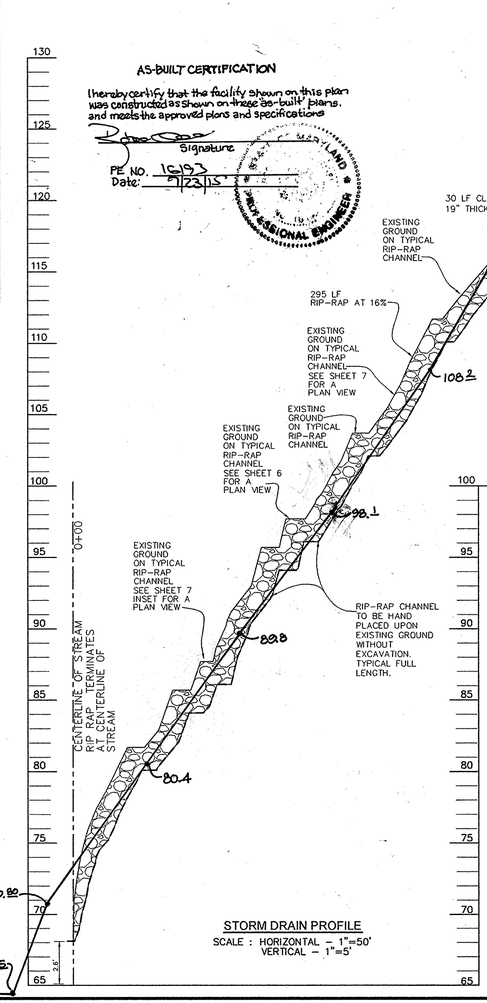
Signature

PE NO. 16193
Date: 2/23/15

ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER



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CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 11/25/08

FINAL ROAD CONSTRUCTION PLAN
STORM DRAIN PROFILES
CLAREMONT OVERLOOK

LOTS 1 - 6, OPEN SPACE LOTS 50-57
AND NON - BUILDABLE BULK PARCELS A -I

TAX MAP 32 GRID 21 — PARCELS 632 AND 24
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DESIGN BY:	RHV/RJ
DRAWN BY:	RJ
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DATE:	SEPTEMBER 2008
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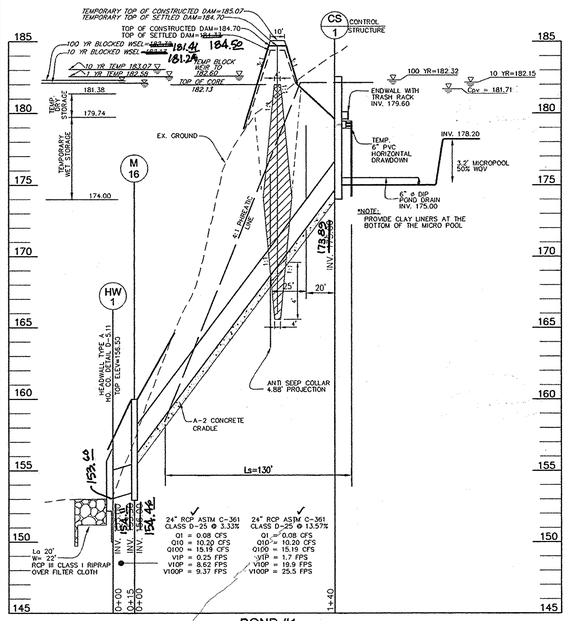
W.O. NO.:	02-68.00

SHEET 13 OF 27

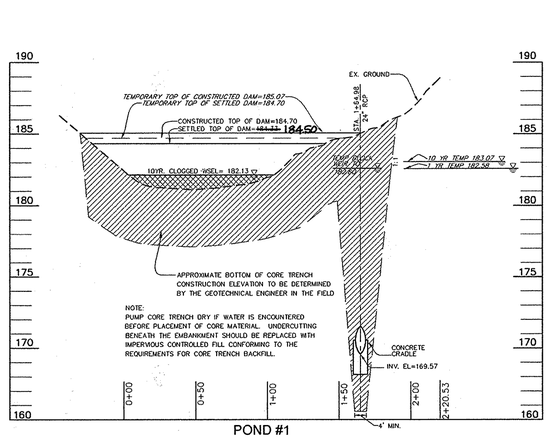
AS-BUILT 06/24/15

F-08-63



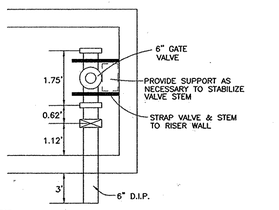
POND #1
SECTION THROUGH PRINCIPAL SPILLWAY

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



POND #1
PROFILE ALONG CENTERLINE EMBANKMENT

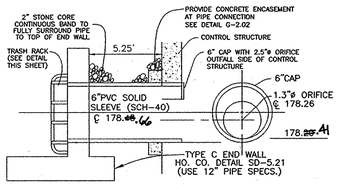
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



NOTE:
VALVE TO BE PLACED UNDER COVER OPENING.

POND DRAIN DETAIL

NOT TO SCALE



PERMANENT LOW FLOW
ORIFICE DETAIL IN CONTROL STRUCTURE

NOT TO SCALE

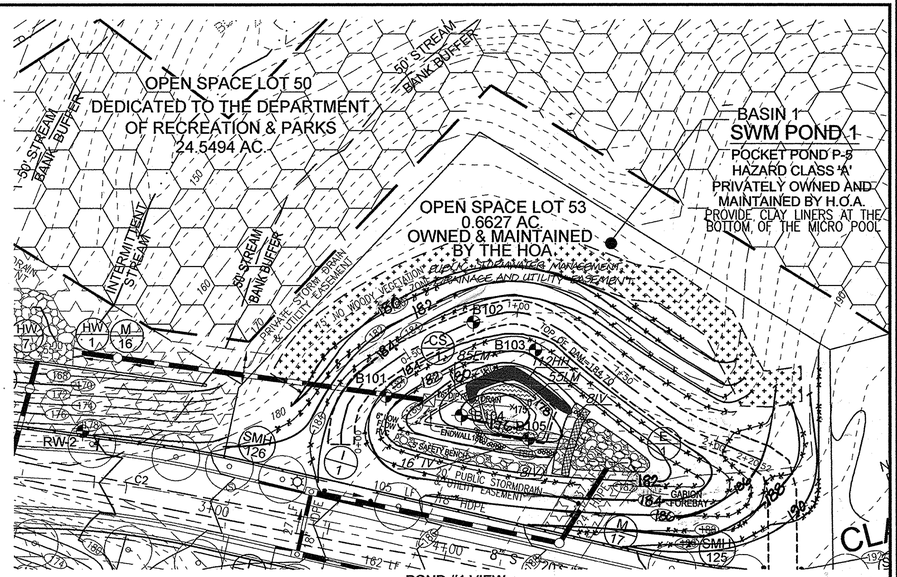
AS-BUILT CERTIFICATION

I hereby certify that the facility shown on this plan was constructed as shown on the "as-built" drawings and meets the approved plans and specifications.

Signature

PE NO: 16193
Date: 7/23/15

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER

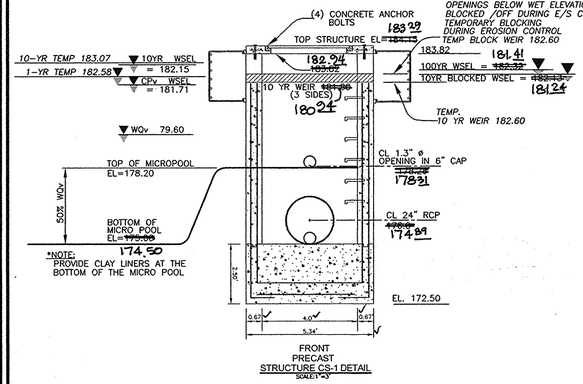


POND #1 VIEW

SCALE: 1"=30'

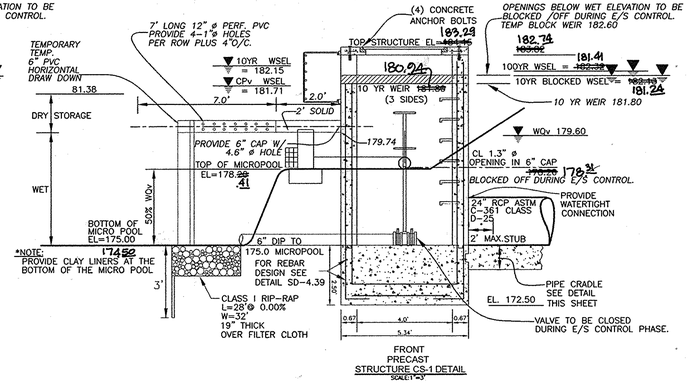
STORMWATER POND HERBACEOUS LANDSCAPE SCHEDULE				
KEY	QUAN.	BOTANICAL NAME	SIZE	REMARKS
EM	85	Eupatorium maculatum Joe-Pye Weed	2' oc	plug
HS	45	Hosta Spp. Plantain Lily	2' oc	plug
HH	112	Hedero helix English Ivy	2' oc	plug
LM	55	Liriope muscari Blue Lily-turf	2' oc	plug
IV	24	Iris versicolor Blue Flag	2' oc	plug

REMOVE BAFFLE BOARDS PRIOR TO INSTALLATION OF PLANT MATERIALS. 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.



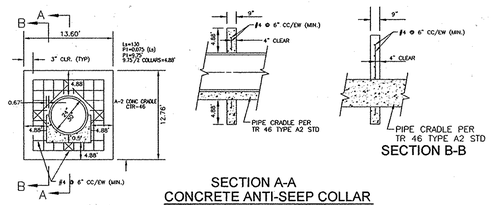
FRONT
PRECAST
STRUCTURE CS-1 DETAIL

SCALE(1"=3')



FRONT
PRECAST
STRUCTURE CS-1 DETAIL

SCALE(1"=3')



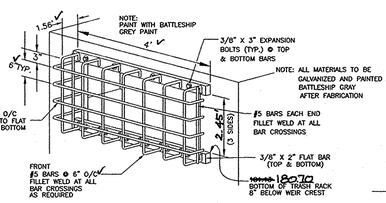
LEGEND

- 20' PUBLIC DRAINAGE & UTILITY EASEMENT
- 20' PUBLIC STORMDRAIN & UTILITY EASEMENT
- 20' PRIVATE DRAINAGE & UTILITY EASEMENT
- NO WOODY VEGETATION BUFFER
- FOREST CONSERVATION EASEMENT
- 202 EXISTING 2 FT CONTOUR
- 200 EXISTING 10 FT CONTOUR
- 202 PROPOSED 2 FT CONTOUR
- 200 PROPOSED 10 FT CONTOUR
- TREE PROTECTION FENCE
- T205 SPECIMEN TREE
- PROPOSED STREET TREE
- STREET LIGHT

PROFESSIONAL CERTIFICATION

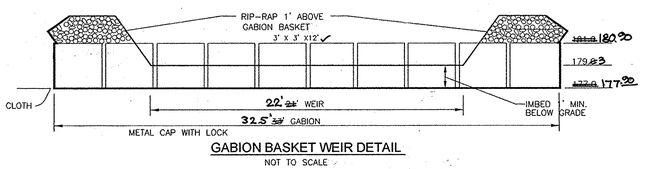
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2010."

NO.	REVISION	DATE
1	ADD STORMWATER MANAGEMENT EASEMENT AND REVISE GRADING ON LOT 54	12/18/09



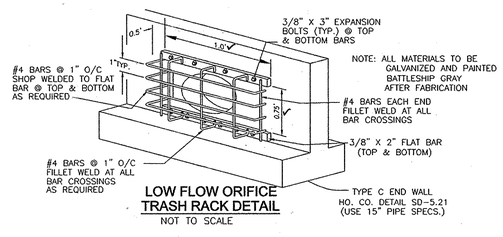
WEIR TRASH RACK DETAIL

NOT TO SCALE



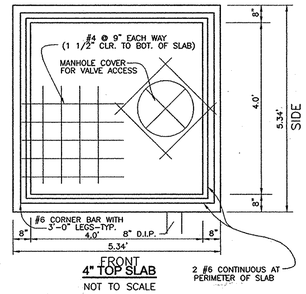
GABION BASKET WEIR DETAIL

NOT TO SCALE



LOW FLOW ORIFICE
TRASH RACK DETAIL

NOT TO SCALE



4" TOP SLAB

NOT TO SCALE

2 #6 CONTINUOUS AT PERIMETER OF SLAB

FINAL ROAD CONSTRUCTION PLAN
STORMWATER MANAGEMENT DETAILS - POND-1

CLAREMONT OVERLOOK

LOTS 1 - 6, OPEN SPACE LOTS 50-57
AND NON - BUILDABLE BULK PARCELS A -I

TAX MAP 32 GRID 21 PARCELS 832 AND ~~24~~ 875
~~19~~ 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 11-24-08

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/10/09

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 11/5/08

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 11/5/08

DEVELOPER'S CERTIFICATE

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

SIGNATURE OF DEVELOPER — DATE 10/24/2008

ENGINEER'S CERTIFICATE

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

SIGNATURE OF ENGINEER
ROBERT H. VOGEL — DATE 10/23/08

OWNER/DEVELOPER

CLAREMONT L.L.C.
11046 DORSCH FARM ROAD
ELLICOTT CITY, MARYLAND 21042
(410) 730-4556

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

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER

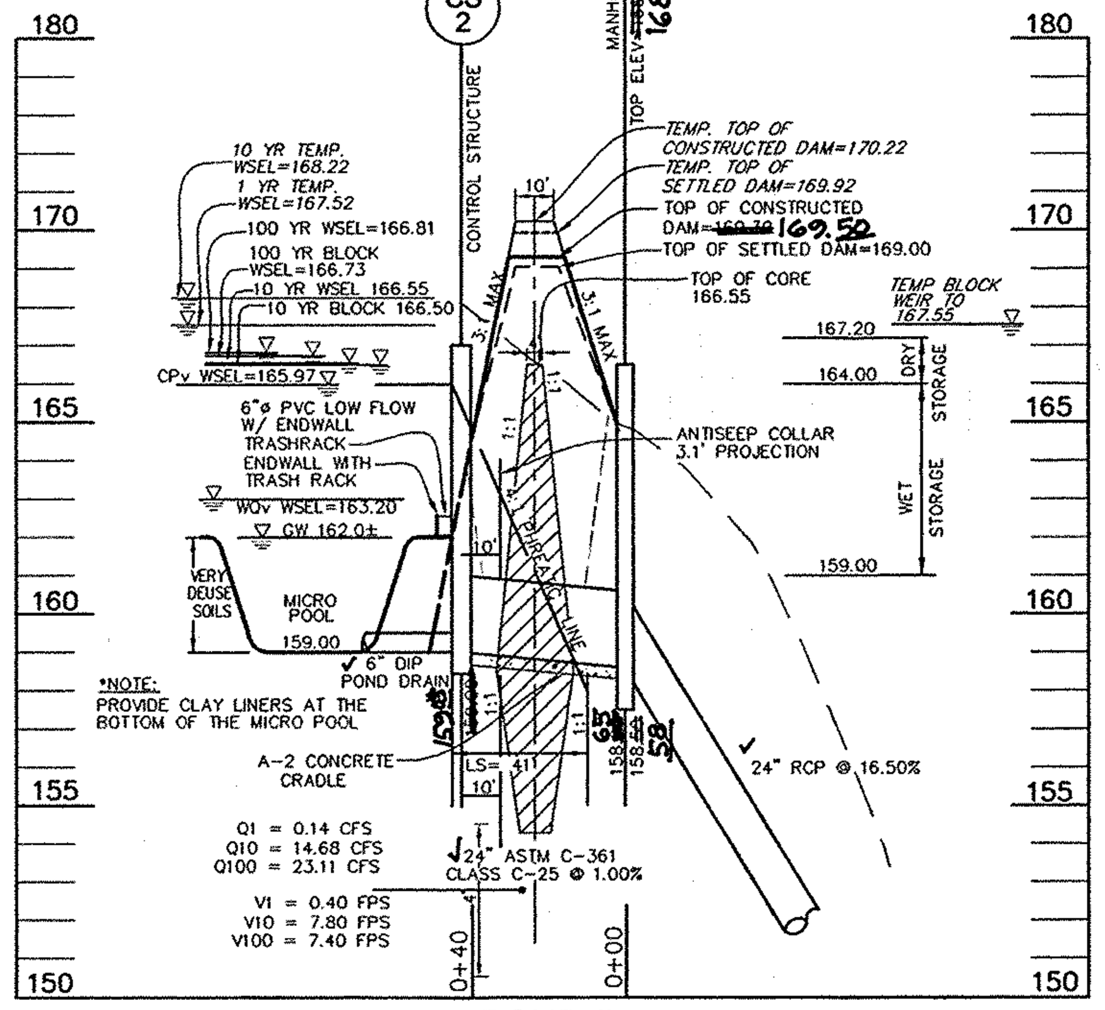
ROBERT H. VOGEL, PE No.16193

DESIGN BY:	RHV/RJ
DRAWN BY:	RJ
CHECKED BY:	RHV
DATE:	SEPTEMBER 2008
SCALE:	AS SHOWN
W.O. NO.:	02-68.00

SHEET 14 OF 27

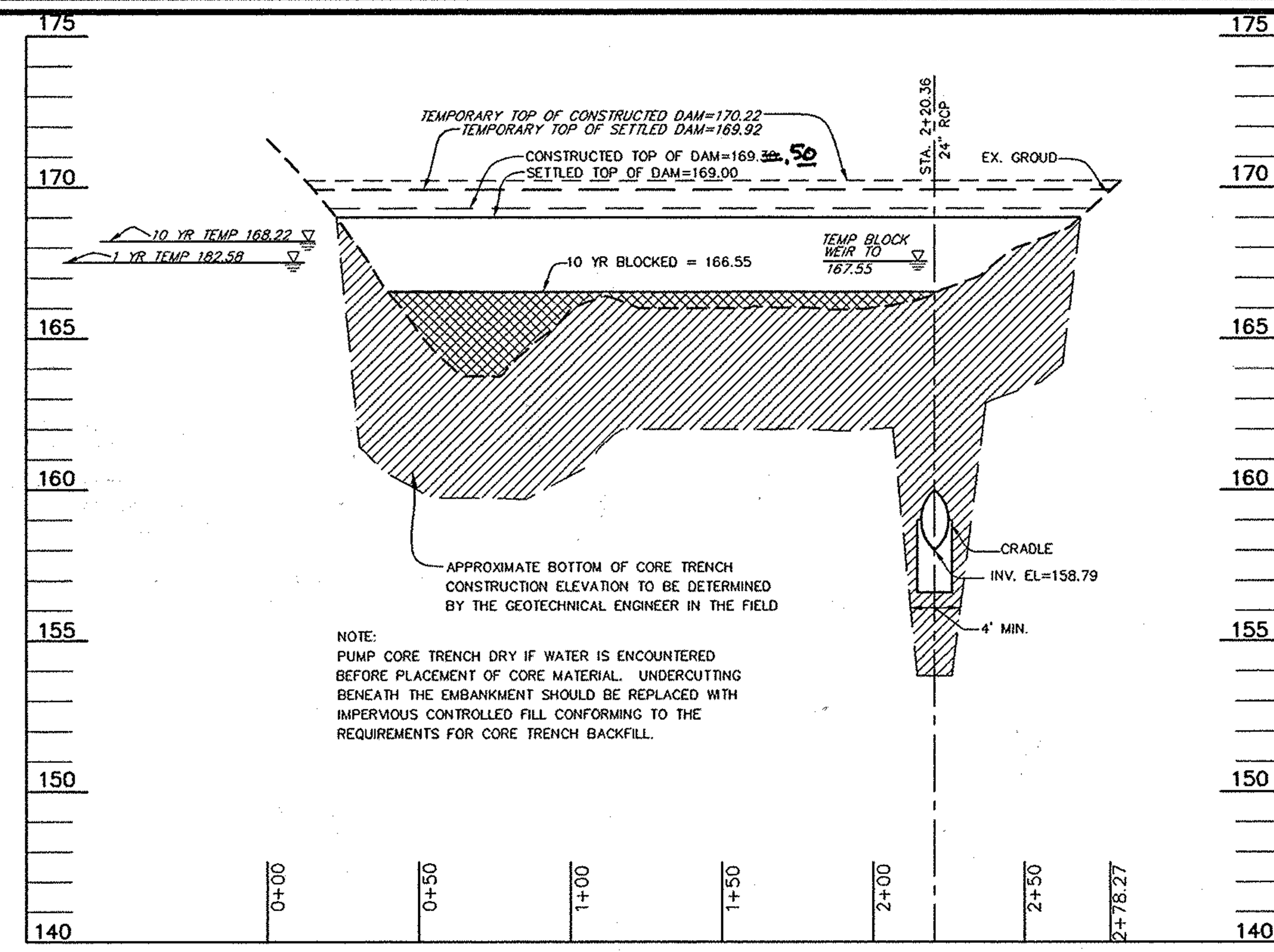
AS-BUILT 06/24/15.

F-08-63



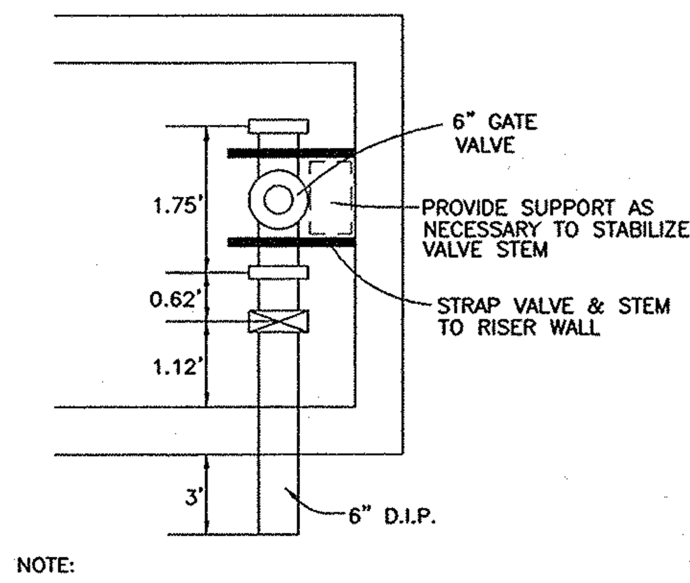
POND #2
SECTION THROUGH PRINCIPAL SPILLWAY

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



POND #2
PROFILE ALONG CENTERLINE EMBANKMENT

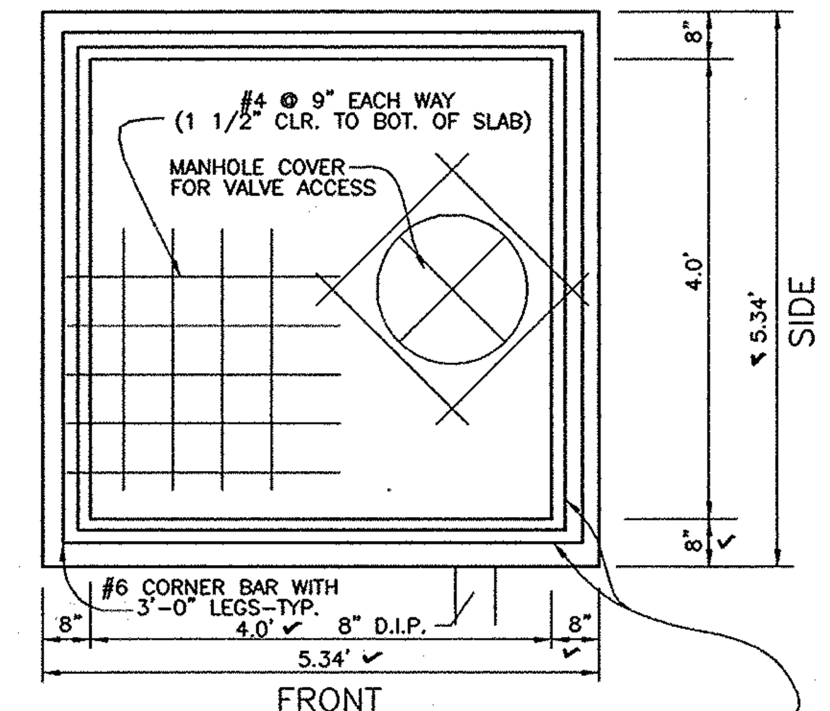
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



NOTE:
VALVE TO BE PLACED UNDER COVER OPENING.

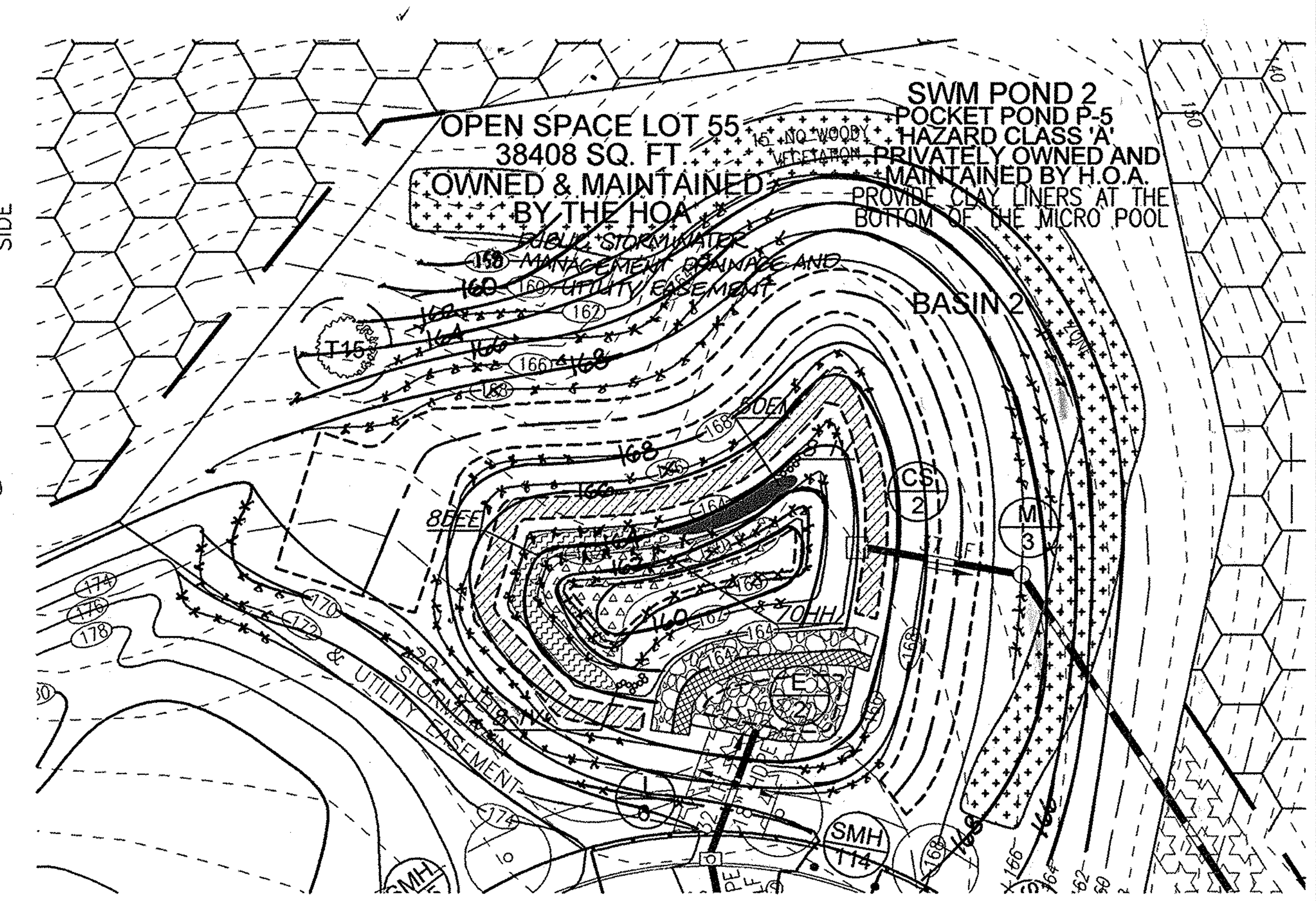
POND DRAIN DETAIL

NOT TO SCALE



4" TOP SLAB

NOT TO SCALE



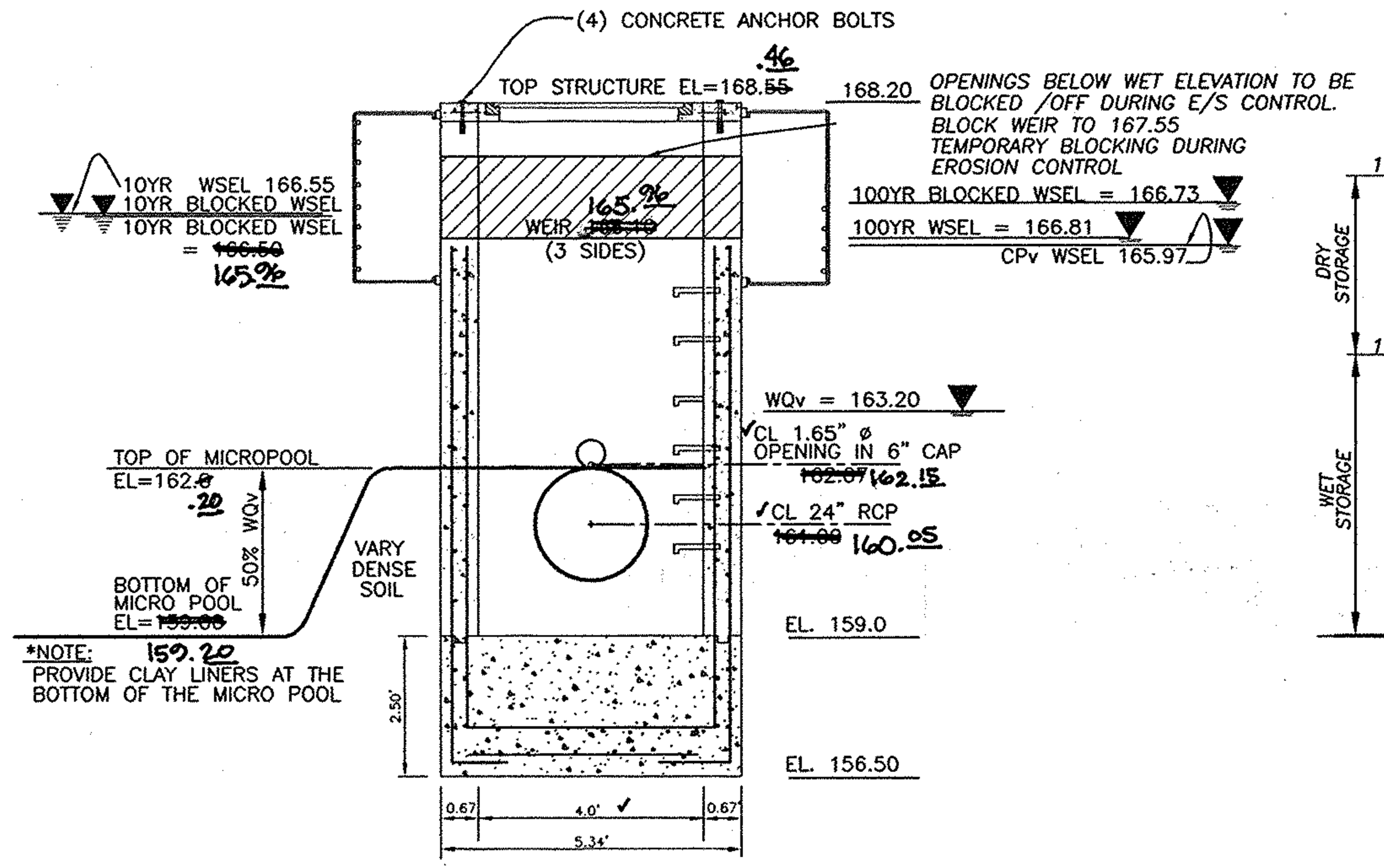
POND #2

STORMWATER POND HERBACEOUS LANDSCAPE SCHEDULE				
KEY	QUAN.	BOTANICAL NAME	SIZE	REMARKS
EM	50	Eupatorium maculatum Joe-Pye Weed	2' oc	plug
HS	112	Hosta Spp. Plantain Lily	2' oc	plug
HH	85	Hedera helix English Ivy	2' oc	plug
EE	16	Liriope muscari Blue Lily-turf	2' oc	plug

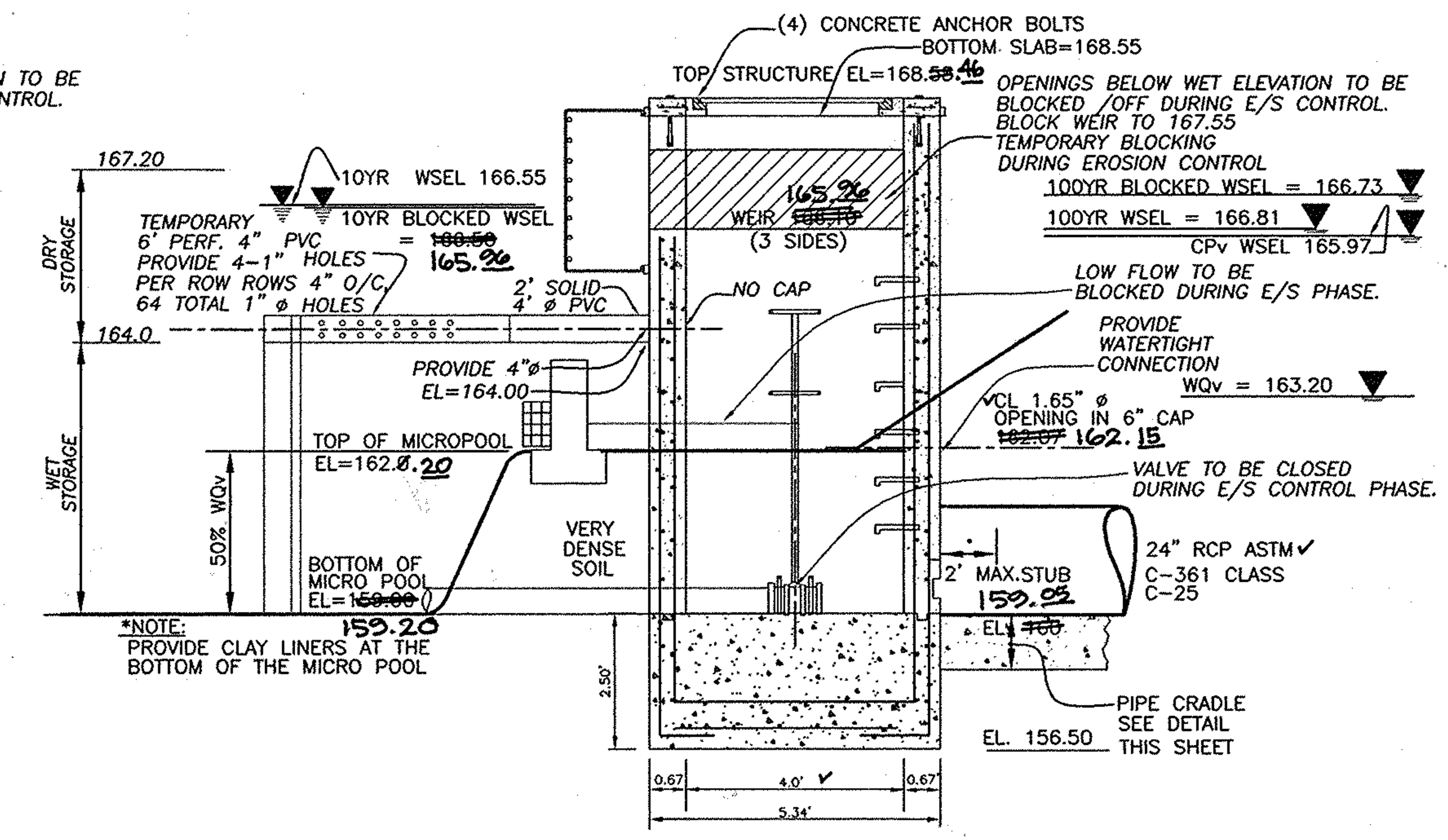
REMOVE BAFFLE BOARDS PRIOR TO INSTALLATION OF PLANT MATERIALS. ADD THREE INCHES OF TOPSOIL TO PLANTING AREA. STABILIZE WITH 40 POUNDS PER ACRE OF A HYDROSEED MIX (WET MIX AND MEADOW MIX) FROM SYLVA NATIVE NURSERY OR EQUAL. ALL PLANT MATERIALS TO CONFORM TO THE MOST CURRENT AAN SPECIFICATIONS AND BE INSTALLED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

LEGEND

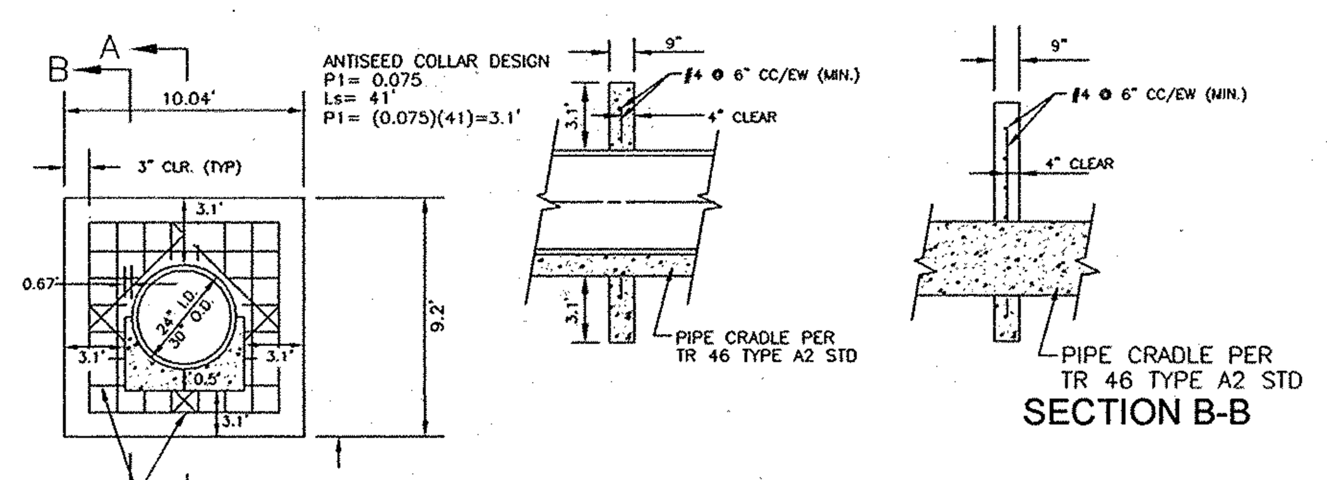
- 20' PUBLIC DRAINAGE & UTILITY EASEMENT
- 20' PUBLIC STORMDRAIN & UTILITY EASEMENT
- 20' PRIVATE DRAINAGE & UTILITY EASEMENT
- NO WOODY VEGETATION BUFFER
- FOREST CONSERVATION EASEMENT
- EXISTING 2 FT CONTOUR
- EXISTING 10 FT CONTOUR
- PROPOSED 2 FT CONTOUR
- PROPOSED 10 FT CONTOUR
- TREE PROTECTION FENCE
- SPECIMEN TREE
- PROPOSED STREET TREE
- STREET LIGHT



FRONT
PRECAST
STRUCTURE CS-2 DETAIL
SCALE:1"=3'

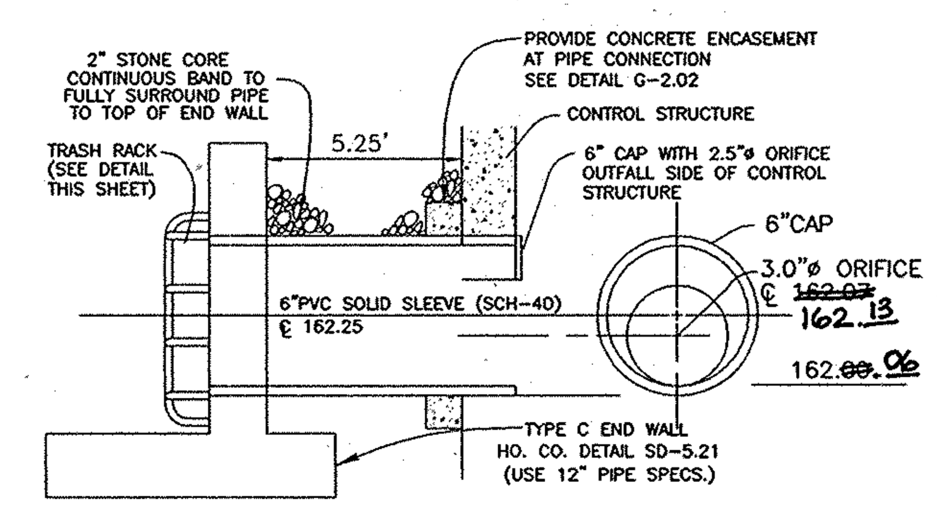


FRONT
PRECAST
STRUCTURE CS-2 DETAIL
SCALE:1"=3'

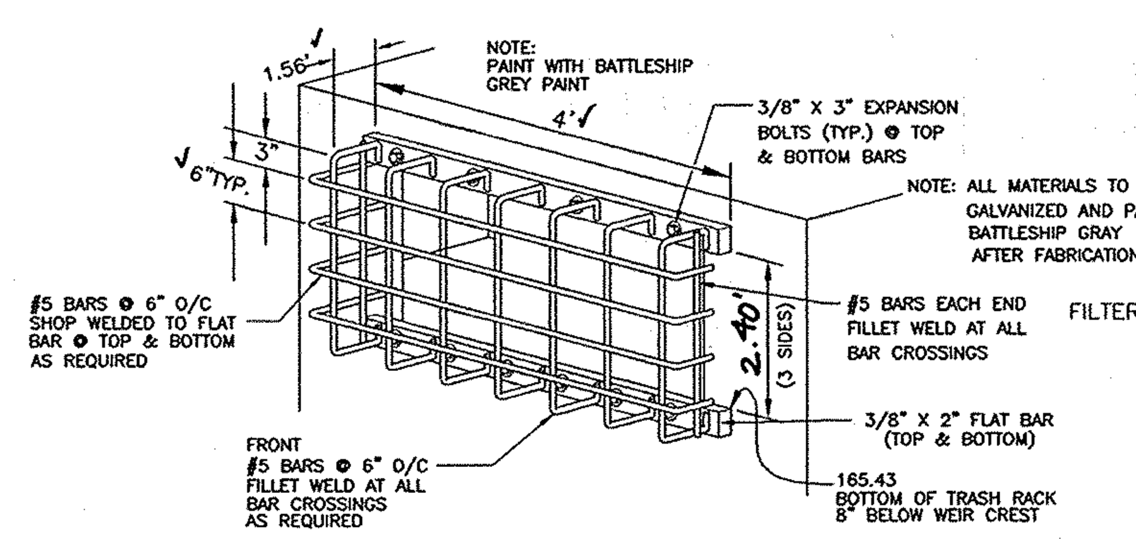


SECTION A-A
CONCRETE ANTI-SEEP COLLAR
NOT TO SCALE

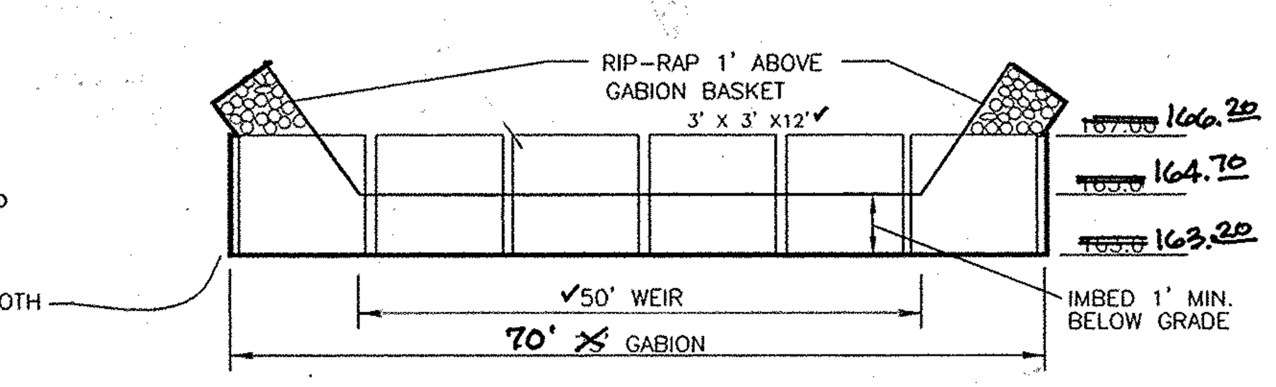
SECTION B-B



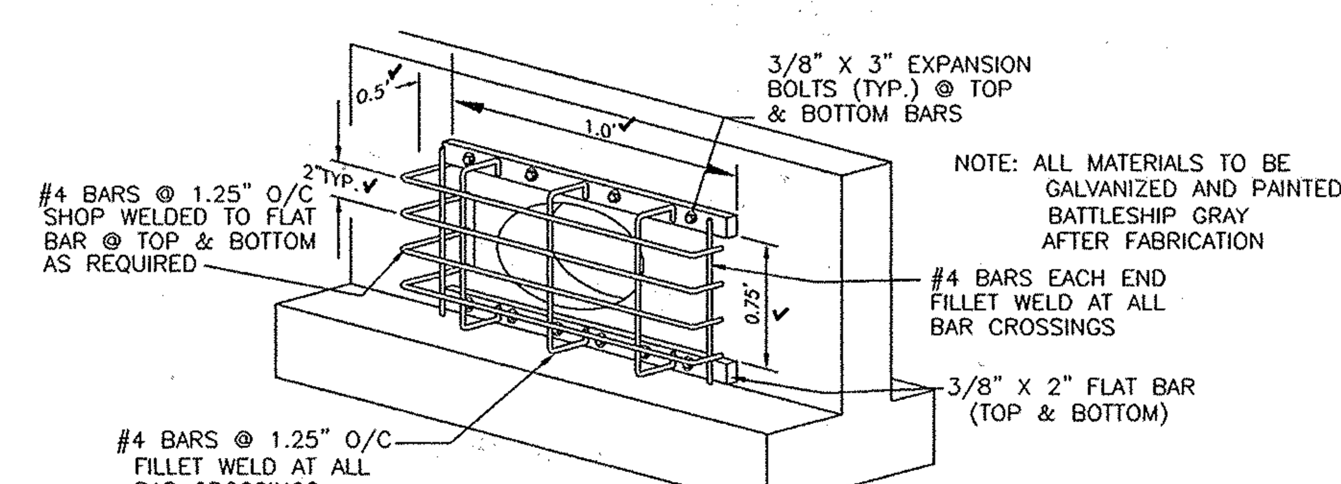
PERMANENT LOW FLOW
ORIFICE DETAIL IN CONTROL STRUCTURE
NOT TO SCALE



WEIR TRASH RACK DETAIL
NOT TO SCALE



GABION BASKET WEIR DETAIL
NOT TO SCALE



LOW FLOW ORIFICE
TRASH RACK DETAIL
NOT TO SCALE

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2010."

NO.	REVISION	DATE
1	ADD STORMWATER MANAGEMENT EASEMENT AND REVISE GRADING ON OPEN SPACE LOT 54	12/18/09

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: 7/23/15

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 11-24-08

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/10/09

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 11/25/08

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 11/5/08

DEVELOPER'S CERTIFICATE

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

SIGNATURE OF DEVELOPER — DATE 10/24/2008

ENGINEER'S CERTIFICATE

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

SIGNATURE OF ENGINEER
ROBERT H. VOGEL — DATE 10/23/08

OWNER/DEVELOPER

CLAREMONT L.L.C.
11046 DORSCH FARM ROAD
ELLICOTT CITY, MARYLAND 21042
(410) 730-4556

FINAL ROAD CONSTRUCTION PLAN
STORMWATER MANAGEMENT DETAILS - POND 2
CLAREMONT OVERLOOK
LOTS 1 - 6, OPEN SPACE LOTS 50-57
AND NON - BUILDABLE BULK PARCELS A - I

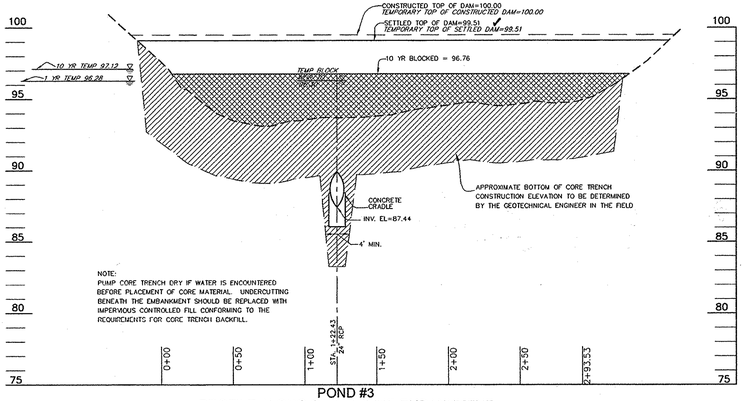
TAX MAP 32 GRID 21 — PARCELS 632 AND 24
1ST ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

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

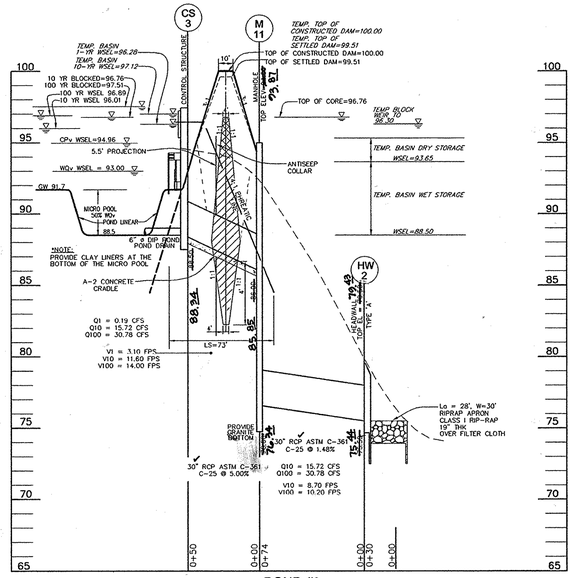
ROBERT H. VOGEL, PE No.16193

DESIGN BY:	RHV/RJ
DRAWN BY:	RJ
CHECKED BY:	RHV
DATE:	SEPTEMBER 2008
SCALE:	AS SHOWN
W.O. NO.:	02-68.00

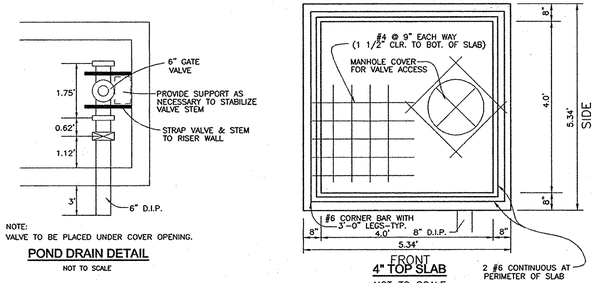
F-08-63



POND #3
PROFILE ALONG CENTERLINE EMBANKMENT
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'

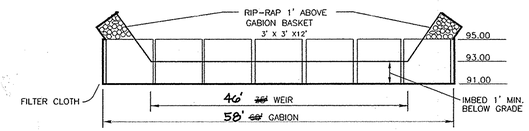


POND #3
SECTION THROUGH PRINCIPAL SPILLWAY
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'

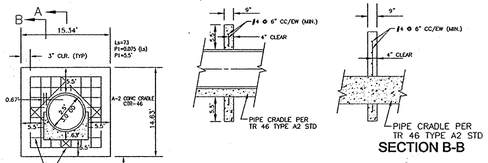


POND DRAIN DETAIL
NOT TO SCALE

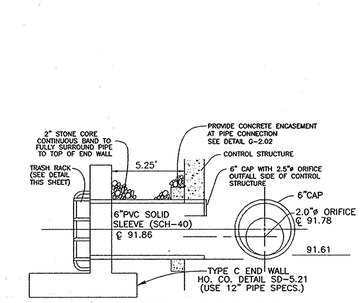
4" TOP SLAB
NOT TO SCALE



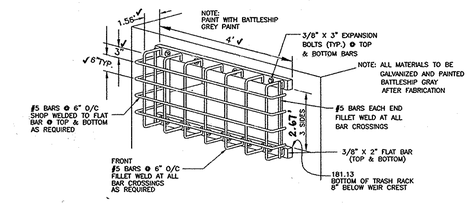
GABION BASKET WEIR DETAIL
NOT TO SCALE



SECTION A-A
CONCRETE ANTI-SEEP COLLAR
NOT TO SCALE



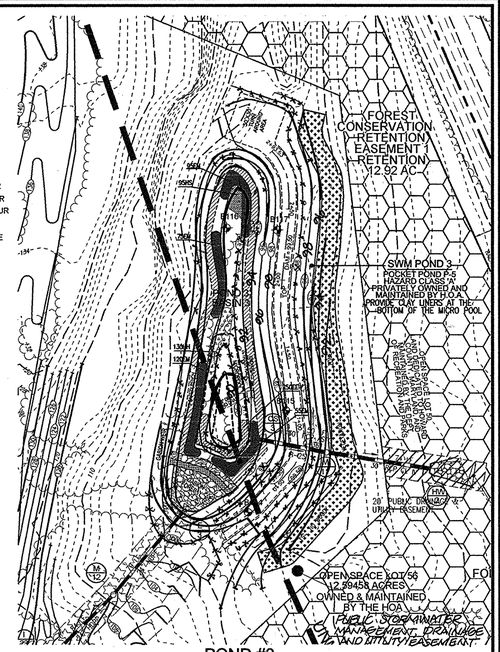
PERMANENT LOW FLOW
ORIFICE DETAIL IN CONTROL STRUCTURE
NOT TO SCALE



WEIR TRASH RACK DETAIL
NOT TO SCALE

LEGEND

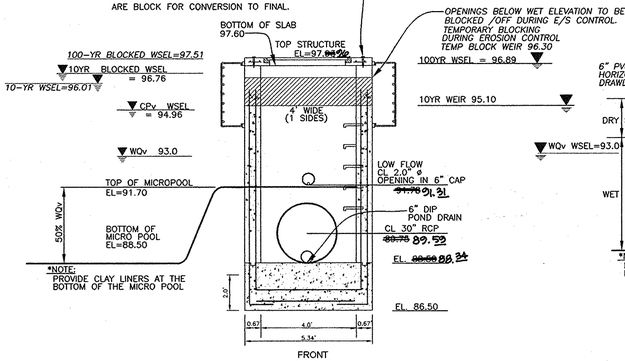
- 20' PUBLIC DRAINAGE & UTILITY EASEMENT
- 20' PUBLIC STORMDRAIN & UTILITY EASEMENT
- 20' PRIVATE DRAINAGE & UTILITY EASEMENT
- NO WOODY VEGETATION BUFFER
- FOREST CONSERVATION EASEMENT
- EXISTING 2 FT CONTOUR
- EXISTING 10 FT CONTOUR
- PROPOSED 2 FT CONTOUR
- PROPOSED 10 FT CONTOUR
- TREE PROTECTION FENCE
- SPECIMEN TREE
- PROPOSED STREET TREE
- STREET LIGHT
- 5' SAFETY BENCH IN POND 3 & POND 2

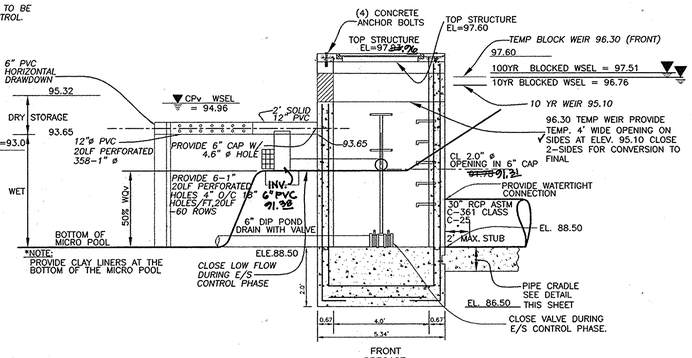


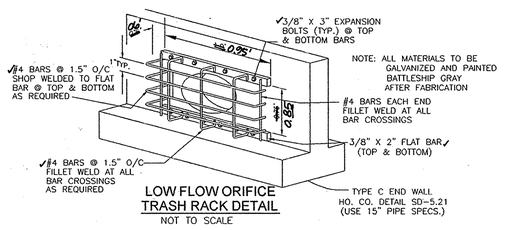
POND #3

STORMWATER POND HERBACEOUS LANDSCAPE SCHEDULE				
KEY	QUAN.	BOTANICAL NAME	SIZE	REMARKS
EM	345	Eupatorium maculatum Joe-Pye Weed	2' oc	plug
HS	95	Hosta Spp. Plantain Lily	2' oc	plug
HH	100	Hedera helix English Ivy	2' oc	plug
LM	250	Liriope muscari Blue Lily-turf	2' oc	plug

REMOVE BAFFLE BOARDS PRIOR TO INSTALLATION OF PLANT MATERIALS. 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.







LOW FLOW ORIFICE
TRASH RACK DETAIL
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

PE NO: 16193
Date: 12/3/15

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 11-24-08

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/10/09

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 11/25/08

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 11/5/08

DEVELOPER'S CERTIFICATE

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

SIGNATURE OF DEVELOPER — DATE 10/24/2008

ENGINEER'S CERTIFICATE

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

SIGNATURE OF ENGINEER ROBERT H. VOGEL — DATE 10/24/08

OWNER/DEVELOPER

CLAREMONT L.L.C.
11046 DORSCH FARM ROAD
ELLICOTT CITY, MARYLAND 21042
(410) 730-4556

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2010."

NO.	REVISION	DATE
1	ADD STORMWATER MANAGEMENT EASEMENT AND REVISE GRADING ON OPEN SPACE LOT 54	12/18/09

FINAL ROAD CONSTRUCTION PLAN
STORMWATER MANAGEMENT DETAILS - POND-3

CLAREMONT OVERLOOK

LOTS 1 - 6, OPEN SPACE LOTS 50-57
AND NON - BUILDABLE BULK PARCELS A -I

TAX MAP 32 GRID 21 — PARCELS 632 AND 24
19TH ELECTION DISTRICT — 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 10/24/08
ROBERT H. VOGEL, PE No.16193

DESIGN BY: RHV/RJ
DRAWN BY: RJ
CHECKED BY: RHV
DATE: SEPTEMBER 2008
SCALE: AS SHOWN
W.O. NO.: 02-68.00

16 SHEET OF 27

AS-BUILT 06/24/15

F-08-63

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 TOW 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.

COMPACTIONTHE 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 TRENCHTHE 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 CORETHE 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 CURRENTLY WITH THE OUTER SHELL OF 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 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.

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.

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 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 PIPETHE 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

EVALUATIONS

BASED ON THE STATE OF MARYLAND'S "2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUMES I & II, INFILTRATION BASINS AND TRENCHES ARE NOT ACCEPTABLE PRACTICES WHEN INFILTRATION RATES OF LESS THAN 0.52 INCHES PER HOUR ARE OBTAINED. ALSO, THE BOTTOMS OF THE FACILITIES SHOULD BE LOCATED A MINIMUM OF 4 FT. ABOVE THE SEASONALLY HIGH WATER TABLE AND/OR BEDROCK.

BASED ON THE GROUNDWATER CONDITIONS ENCOUNTERED, THE PRESENCE OF DENSE AND DECOMPOSED ROCK MATERIALS, THE ABOVE-OUTLINED CRITERIA, AND EXPERIENCE WITH INFILTRATION STRUCTURES IN THE PROJECT AREA, IT IS OUT OPINION THAT INFILTRATION METHODS OF STORMWATER MANAGEMENT WILL NOT BE FEASIBLE AT THE PROPOSED SWM POND LOCATIONS.

EMBANKMENT AND CUT-OFF CONSTRUCTION

THE AREAS OF THE PROPOSED SWM PONDS SHOULD BE STRIPPED OF TOPSOIL AND ANY OTHER UNSUITABLE MATERIALS FROM THE EMBANKMENT OR STRUCTURE AREA IN ACCORDANCE WITH SOIL CONSERVATION GUIDELINES. AFTER STRIPPING OPERATIONS HAVE BEEN COMPLETED, THE EXPOSED SUBGRADE MATERIALS SHOULD BE PROOFROLLED WITH A LOADED DUMP TRUCK OR SIMILAR EQUIPMENT IN THE PRESENCE OF A GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE. FOR AREAS THAT ARE NOT ACCESSIBLE TO A DUMP TRUCK, THE EXPOSED MATERIALS SHOULD BE OBSERVED AND TESTED BY A GEOTECHNICAL ENGINEER OF HIS REPRESENTATIVE UTILIZING A DYNAMIC COME PENETROMETER. ANY EXCESSIVELY SOFT OR LOOSE MATERIALS IDENTIFIED BY PROOFROLLING OR PENETROMETER TESTING SHOULD BE EXCAVATED TO SUITABLE FIRM SOIL, AND THEN GRADES RE-ESTABLISHED BY BACK FILLING WITH SUITABLE SOIL.

A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER SHOULD BE PRESENT TO MONITOR PLACEMENT AND COMPACTION OF FILL FOR THE EMBANKMENT AND CUT-OFF TRENCH. IN ACCORDANCE WITH THE MARYLAND SOIL CONSERVATION SPECIFICATIONS 378 SOILS CONSIDERED SUITABLE FOR THE CENTER OF EMBANKMENT AND CUT-OFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL.

IT IS OUR PROFESSIONAL OPINION THAT IN ADDITION TO THE SOIL MATERIALS DESCRIBED ABOVE A FINE-GRAINED SOIL, INCLUDING SILT (ML) WITH A PLASTICITY INDEX OF 10 OR MORE CAN BE UTILIZED FOR THE CENTER OF THE EMBANKMENT AND CORE TRENCH. EXPLORATION WITH TEST PITS AND LABORATORY TESTING CAN BE CONDUCTED PRIOR TO CONSTRUCTION TO IDENTIFY AND QUANTIFY POTENTIAL BORROW AREAS FOR CORE TRENCH MATERIAL. ALL FILL MATERIALS MUST BE PLACED AND COMPACTED IN ACCORDANCE WITH MD SCS 378 SPECIFICATIONS.

BASIN AND SPILLWAY EXCAVATION

BASED ON THE REFUSAL DEPTHS ENCOUNTERED IN POND 2, IT IS RECOMMENDED THAT TEST PITS BE PERFORMED WITH AN EXCAVATOR PRIOR TO CONSTRUCTION TO DETERMINE IF ROCK WITHIN THE BASIN AREA AS WELL AS ALONG THE PRINCIPAL SPILLWAY WILL REQUIRE BLASTING. SHOULD IT BE DETERMINED THAT THE ROCK WITHIN THE BASIN AREAS WILL REQUIRE BLASTING, IT IS RECOMMENDED THAT THESE OPERATIONS WITHIN 75 FT. OF THE RISER AND PRINCIPAL SPILLWAY STRUCTURE BE PERFORMED PRIOR TO CONSTRUCTION OF THE PRINCIPAL SPILLWAY AND RISER STRUCTURE.

REMARKS

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

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

IT IS CONSIDERED ESSENTIAL THAT AN HCEA REPRESENTATIVE BE ON-SITE TO MONITOR, INSPECT, AND TEST ALL FACETS OF CONSTRUCTION OF THE SWM FACILITY IN ORDER TO VERIFY THAT OPERATIONS ARE PERFORMED CONSISTENT TO THE PROPOSED PLANS PROVIDED BY THE CIVIL ENGINEER AND RECOMMENDATIONS MADE BY HCEA.

OPERATION, MAINTENANCE AND INSPECTION

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

OPERATION AND MAINTENANCE SCHEDULE FOR STORMWATER MANAGEMENT DETENTION FACILITY

STORMWATER MANAGEMENT FACILITY
ROUTINE MAINTENANCE BY HOA

1. FACILITY AND UNDERGROUND STONE TRENCH RESERVOIRS 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.

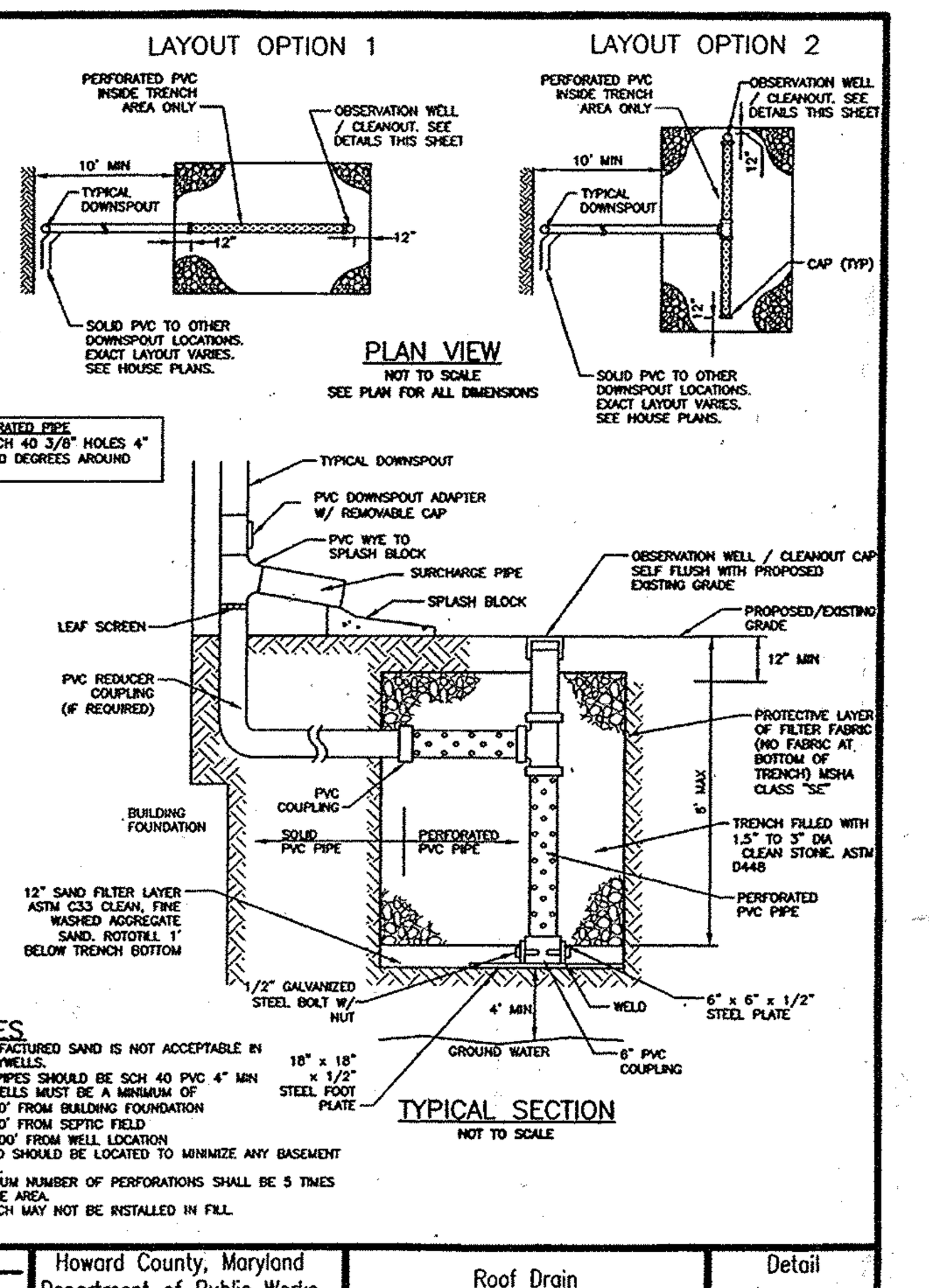
4. VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS RIPRAP OUTLET AREAS SHALL BE REPAIRED AS SOON AS IT IS NOTICED.

NON-ROUTINE MAINTENANCE BY HOA

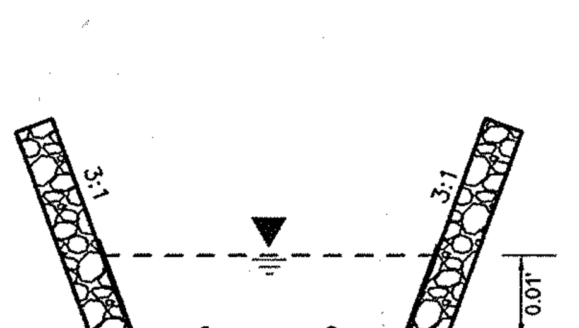
1. STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE RISER, AND THE PIPES SHALL BE REPAIRED UPON DETECTION OF ANY DAMAGE. THE COMPONENTS SHOULD BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.

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.

DRYWELL ON FUTURE LOTS



LOCATIONS AND SIZES OF DRYWELLS TO BE DETERMINED BY SITE DEVELOPMENT PLAN FINANCIAL SURETY WILL BE PROVIDED UNDER SITE DEVELOPMENT PLAN.



SEE PLAN FOR LENGTH OF CHANNEL

TYPICAL RIPRAP CHANNEL

NTS

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2010."

NO.	REVISION	DATE
	NOT TO SCALE	

APPROVED: DEPARTMENT OF PUBLIC WORKS

[signature] 11-24-08
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[signature] 2/10/09
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

[signature] 4/25/08
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

OWNER/DEVELOPER

CLAREMONT L.L.C.
11046 DORSCH FARM ROAD
ELLICOTT CITY, MARYLAND 21042
(410) 730-4556

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

[signature] 11/5/08
HOWARD SOIL CONSERVATION DISTRICT — DATE

DEVELOPER'S CERTIFICATE

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

[signature] 10/24/2008
SIGNATURE OF DEVELOPER — DATE

ENGINEER'S CERTIFICATE

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

[signature] 10/23/08
SIGNATURE OF ENGINEER — DATE
ROBERT H. VOGEL

NO AS-BUILT INFORMATION ON THIS SHEET

FINAL ROAD CONSTRUCTION PLAN
STORMWATER MANAGEMENT DETAILS & NOTES

CLAREMONT OVERLOOK

LOTS 1 - 6, OPEN SPACE LOTS 50-57
AND NON - BUILDABLE BULK PARCELS A - I

TAX MAP 32 GRID 21 — PARCELS 632 AND 24
1ST ELECTION DISTRICT — 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 No.16193

DESIGN BY: RHV/RJ
DRAWN BY: RJ
CHECKED BY: RHV
DATE: SEPTEMBER 2008
SCALE: AS SHOWN
W.O. NO.: 02-68.00

AS-BUILT 06/24/15

F-08-63

~~BORING RESULTS FOR STORM WATER FACILITIES 1 & 2 AND~~ ~~BORING RESULTS FOR LOTS 1 TO 10 AND LOT 20 TO 26 DRYWELLS~~

DRILL HOLE LOG
BORING NO.: B-101

PROJECT: Claremont Overlook
CLIENT: Alan Meyer
LOCATION: See Boring Plan
DRILLER: Diamond Drilling, Inc.
DRILL RIG: ATV
DEPTH TO WATER> AT COMPLETION: Dry
DEPTH TO CAVING> AT COMPLETION: 4.1'
PROJECT NO.: 03033
DATE: 03/24/03
ELEVATION: 181.08'
LOGGED BY: mec
AFTER 24 HOURS: Dry.
AFTER 24 HOURS: 3.0'

ELEVATION/ DEPTH	USCS	Description	MoS	DEPTH	N	CURVE
0	SM	Moist Brown and Tan dense to very dense f-m Sandy Loam (SM) w/trace rock fragments	13	1'-2'6"	48	
				2'6"-5'	39	
			10	5'-7'6"	52	
7.5		Bottom of Boring 7.5'				

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Marshall Engineering, Inc.

DRILL HOLE LOG
BORING NO.: B-102

PROJECT: Claremont Overlook
CLIENT: Alan Meyer
LOCATION: See Boring Plan
DRILLER: Diamond Drilling, Inc.
DRILL RIG: ATV
DEPTH TO WATER> AT COMPLETION: Dry
DEPTH TO CAVING> AT COMPLETION: 5.1'
PROJECT NO.: 03033
DATE: 03/24/03
ELEVATION: 181.42'
LOGGED BY: mec
AFTER 24 HOURS: Dry.
AFTER 24 HOURS: 3.4'

ELEVATION/ DEPTH	USCS	Description	MoS	DEPTH	N	CURVE
0	SC-SM	Moist to Very Moist Brown medium dense to dense f-m Sandy Loam (SC-SM)	20	1'-2'6"	11	
6.0				2'6"-5'	37	
7.5	SM	Moist Brown and Tan very dense f-m Sandy Loam (SM) w/weathered rock fragments	11	5'-7'6"	98	
		Bottom of Boring 7.5'				

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Marshall Engineering, Inc.

DRILL HOLE LOG
BORING NO.: B-103

PROJECT: Claremont Overlook
CLIENT: Alan Meyer
LOCATION: See Boring Plan
DRILLER: Diamond Drilling, Inc.
DRILL RIG: ATV
DEPTH TO WATER> AT COMPLETION: Dry
DEPTH TO CAVING> AT COMPLETION: 5.5'
PROJECT NO.: 03033
DATE: 03/24/03
ELEVATION: 182.79'
LOGGED BY: mec
AFTER 24 HOURS: Dry.
AFTER 24 HOURS: 5.6'

ELEVATION/ DEPTH	USCS	Description	MoS	DEPTH	N	CURVE
0	SM	Moist Brown and Tan very dense f-m Sandy Loam (SM)	10	1'-2'6"	70	
3.5		- [weathered rock] below 3.5'				
7.2		Bottom of Boring 7.2'				

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Marshall Engineering, Inc.

DRILL HOLE LOG
BORING NO.: B-104

PROJECT: Claremont Overlook
CLIENT: Alan Meyer
LOCATION: See Boring Plan
DRILLER: Diamond Drilling, Inc.
DRILL RIG: ATV
DEPTH TO WATER> AT COMPLETION: Dry
DEPTH TO CAVING> AT COMPLETION: 8.5'
PROJECT NO.: 03033
DATE: 03/24/03
ELEVATION: 183.61'
LOGGED BY: mec
AFTER 24 HOURS: Dry.
AFTER 24 HOURS: 6.7'

ELEVATION/ DEPTH	USCS	Description	MoS	DEPTH	N	CURVE
0	SW	Moist Brown and Tan loose to medium dense f-m Sandy Loam (SW) w/ weathered rock fragments		0'-2'	9	
3.0		- [weathered rock] below 3.0'	23	2'-4'	11	
	SW	Moist Tan and Brown, very dense Loamy Sand (SW) w/ weathered rock fragments		4'-6'	52	
9.9		- [weathered rock] below 9'	11	6'-8'	87	
		Bottom of Boring 9.9'		8'-9'10"	99+	

Note:
To perform infiltration test, advanced HSA to 8.0' and installed PVC pipe at location 10'S from this boring. Sealed around annulus space at bottom with bentonite pellets and water. Removed HSA.

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Marshall Engineering, Inc.

DRILL HOLE LOG
BORING NO.: B-105

PROJECT: Claremont Overlook
CLIENT: Alan Meyer
LOCATION: See Boring Plan
DRILLER: Diamond Drilling, Inc.
DRILL RIG: ATV
DEPTH TO WATER> AT COMPLETION: Dry
DEPTH TO CAVING> AT COMPLETION: 4.5'
PROJECT NO.: 03033
DATE: 03/24/03
ELEVATION: 186.27'
LOGGED BY: mec
AFTER 24 HOURS: Dry
AFTER 24 HOURS: 4.5'

ELEVATION/ DEPTH	USCS	Description	MoS	DEPTH	N	CURVE
0	ML	Very Moist Brown, medium stiff Loam (ML) w/trace rock fragments		0'-2'	8	
3.0	SM		24	2'-4'	40	
		Moist Tan and Brown dense Loamy Sand (SM) [weathered rock]		4'-6'	50	
9.0			3	6'-9'4"	99+	
		Bottom of Boring 9'		8'-9'5"	99+	

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Marshall Engineering, Inc.

DRILL HOLE LOG
BORING NO.: B-106

PROJECT: Claremont Overlook
CLIENT: Alan Meyer
LOCATION: See Boring Plan
DRILLER: Diamond Drilling, Inc.
DRILL RIG: ATV
DEPTH TO WATER> AT COMPLETION: Dry.
DEPTH TO CAVING> AT COMPLETION: 4.0'
PROJECT NO.: 03033
DATE: 03/25/03
ELEVATION: 162.57'
LOGGED BY: mec
AFTER 24 HOURS: Dry.
AFTER 24 HOURS: 3.9'

ELEVATION/ DEPTH	USCS	Description	MoS	DEPTH	N	CURVE
0	SM-ML	Very Moist Brown very loose/soft Loam (SM-ML)	21	1'-2'6"	4	
3.0	SC-SM	Moist Brown and Tan very dense f-m Sandy Loam (SC-SM) w/weathered rock		2'6"-5'	52	
5.5	SM	Moist Light Brown very dense Sandy Loam (SM) [weathered rock]	8	5'-7'6"	99+	
7.5		Bottom of Boring 7.5'				

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Marshall Engineering, Inc.

DRILL HOLE LOG
BORING NO.: B-109

PROJECT: Claremont Overlook
CLIENT: Alan Meyer
LOCATION: See Boring Plan
DRILLER: Diamond Drilling, Inc.
DRILL RIG: ATV
DEPTH TO WATER> AT COMPLETION: Dry
DEPTH TO CAVING> AT COMPLETION: 3.9'
PROJECT NO.: 03033
DATE: 03/25/03
ELEVATION: 165.44'
LOGGED BY: mec
AFTER 24 HOURS: 3.2'
AFTER 24 HOURS: 4.1'

ELEVATION/ DEPTH	USCS	Description	MoS	DEPTH	N	CURVE
0	SM	Very Moist Brown very loose fine Sandy Loam (SM) w/ trace organics and gravel		0'-2'	3	
3.0	SC-SM	Very Moist Brown and Tan loose Sandy Loam (SC-SM) w/trace gravel	23	2'-4'	7	
4.0		Moist Brown and Tan very dense f-m Sandy Loam (SM) [weathered rock]		4'-4'10"	99+	
6.5		Bottom of Boring 6.5' due to auger refusal	2	6'-6'5"	99+	

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Marshall Engineering, Inc.

DRILL HOLE LOG
BORING NO.: B-110

PROJECT: Claremont Overlook
CLIENT: Alan Meyer
LOCATION: See Boring Plan
DRILLER: Diamond Drilling, Inc.
DRILL RIG: ATV
DEPTH TO WATER> AT COMPLETION: Dry
DEPTH TO CAVING> AT COMPLETION: 4.9'
PROJECT NO.: 03033
DATE: 03/25/03
ELEVATION: ~67.54'
LOGGED BY: mec
AFTER 24 HOURS: Dry
AFTER 24 HOURS: 4.8'

ELEVATION/ DEPTH	USCS	Description	MoS	DEPTH	N	CURVE
0	SC-SM	Moist Brown and Tan loose f-m Sandy Loam (SC-SM) w/trace gravel		0'-2'	10	
2.5	SM	Moist Brown and Tan very dense f-m Loamy Sand (SM) [weathered rock]	7	2'-4'	68	
9.5				4'-6'	144	
		Bottom of Boring 9' due to auger refusal	4	6'-7'5"	99+	
				8'-8'2"	99+	

Note:
To perform infiltration test, advanced HSA to 8.0' and installed PVC pipe at location 10'S from this boring. Sealed around annulus space at bottom with bentonite pellets and water. Removed HSA.

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Marshall Engineering, Inc.

DRILL HOLE LOG
BORING NO.: B-111

PROJECT: Claremont Overlook
CLIENT: Alan Meyer
LOCATION: See Boring Plan
DRILLER: Diamond Drilling, Inc.
DRILL RIG: ATV
DEPTH TO WATER> AT COMPLETION: Dry
DEPTH TO CAVING> AT COMPLETION: 3.5'
PROJECT NO.: 03033
DATE: 03/26/03
ELEVATION: 166.42'
LOGGED BY: mec
AFTER 24 HOURS: Dry.
AFTER 24 HOURS: 3.1'

ELEVATION/ DEPTH	USCS	Description	MoS	DEPTH	N	CURVE
0	SM-ML	Moist Brown, very loose/soft Loam (SM-ML) w/gravel	17	1'-2'6"	4	
2.0	SM	Moist Light Brown very dense f-m Sandy Sand (SM) [weathered rock]		2'6"-5'11"	99+	
7.5		Bottom of Boring 7.5'	4	6'-6'3"	99+	

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Marshall Engineering, Inc.

DRILL HOLE LOG
BORING NO.: B-112

PROJECT: Claremont Overlook
CLIENT: Alan Meyer
LOCATION: See Boring Plan
DRILLER: Diamond Drilling, Inc.
DRILL RIG: ATV
DEPTH TO WATER> AT COMPLETION: Dry
DEPTH TO CAVING> AT COMPLETION: 4.4'
PROJECT NO.: 03033
DATE: 03/26/03
ELEVATION: 166.44'
LOGGED BY: mec
AFTER 24 HOURS: Dry
AFTER 24 HOURS: 4.3'

ELEVATION/ DEPTH	USCS	Description	MoS	DEPTH	N	CURVE
0	SC-SM	Very Moist Brown loose f-m Sandy Loam (SC-SM) to Sandy Clay Loam (SC) w/ trace gravel	21	1'-2'6"	7	
4.0		Moist Brown and Tan dense f-m Sandy Loam (SM) w/ gravel		2'6"-5'	30	
7.5	SM	- very dense w/weathered rock fragments below 5.0'	11	6'-8'3"	82	
		Bottom of Boring 7.5'				

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Marshall Engineering, Inc.

DRILL HOLE LOG
BORING NO.: B-113

PROJECT: Claremont Overlook
CLIENT: Alan Meyer
LOCATION: See Boring Plan
DRILLER: Diamond Drilling, Inc.
DRILL RIG: ATV
DEPTH TO WATER> AT COMPLETION: Dry
DEPTH TO CAVING> AT COMPLETION: 5.5'
PROJECT NO.: 03033
DATE: 03/26/03
ELEVATION: 96.14'
LOGGED BY: mec
AFTER 24 HOURS: Dry
AFTER 24 HOURS: 3.2'

ELEVATION/ DEPTH	USCS	Description	MoS	DEPTH	N	CURVE
0	SM	Moist Brown dense to very dense f-c Loamy Sand (SM) w/weathered rock fragments		0'-2'	30	
3.0		- less below 2'	8	2'-4'	26	
		- [weathered rock] below 4'		4'-6'	83	
7.5			6	6'-8'	39	
10.2		Bottom of Boring 10'		8'-10'	83	

Note:
To perform infiltration test, advanced HSA to 8.0' and installed PVC pipe at location 10'S from this boring. Sealed around annulus space at bottom with bentonite pellets and water. Removed HSA.

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Marshall Engineering, Inc.

DRILL HOLE LOG
BORING NO.: B-114

PROJECT: Claremont Overlook
CLIENT: Alan Meyer
LOCATION: See Boring Plan
DRILLER: Diamond Drilling, Inc.
DRILL RIG: ATV
DEPTH TO WATER> AT COMPLETION: Dry
DEPTH TO CAVING> AT COMPLETION: 8.0'
PROJECT NO.: 03033
DATE: 03/26/03
ELEVATION: 96.81'
LOGGED BY: mec
AFTER 24 HOURS: Dry.
AFTER 24 HOURS: 6.0'

ELEVATION/ DEPTH	USCS	Description	MoS	DEPTH	N	CURVE
0	SM	Moist Brown and Tan medium dense to dense f-c Loamy Sand (SM) w/ weathered rock fragments	7	1'-2'6"	25	
				2'6"-5'	30	
7.5		Bottom of Boring 7.5'	8	6'-8'8"	38	

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Marshall Engineering, Inc.

DRILL HOLE LOG
BORING NO.: B-115

PROJECT: Claremont Overlook
CLIENT: Alan Meyer
LOCATION: See Boring Plan
DRILLER: Diamond Drilling, Inc.
DRILL RIG: ATV
DEPTH TO WATER> AT COMPLETION: Dry.
DEPTH TO CAVING> AT COMPLETION: 2.0'
PROJECT NO.: 03033
DATE: 03/18/03
ELEVATION: 95.19'
LOGGED BY: mec
AFTER 24 HOURS: Dry.
AFTER 24 HOURS: 1.8'

ELEVATION/ DEPTH	USCS	Description	MoS	DEPTH	N	CURVE
0	SM-ML	Moist Brown, medium dense/ stiff Loam (SM-ML) w/trace gravel		1'-2'6"	12	
3.0	SC	Very Moist Brown loose to medium dense f-m Sandy Clay Loam (SM) w/trace gravel		2'6"-5'	7	
5.5				5'-7'6"	12	
7.5		Bottom of Boring 7.5'				

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Marshall Engineering, Inc.

DRILL HOLE LOG
BORING NO.: B-116

PROJECT: Claremont Overlook
CLIENT: Alan Meyer
LOCATION: See Boring Plan
DRILLER: Diamond Drilling, Inc.
DRILL RIG: ATV
DEPTH TO WATER> AT COMPLETION: Dry
DEPTH TO CAVING> AT COMPLETION: 5.1'
PROJECT NO.: 03033
DATE: 03/26/03
ELEVATION: 96.50'
LOGGED BY: mec
AFTER 24 HOURS: Dry.
AFTER 24 HOURS: 5.5'

ELEVATION/ DEPTH	USCS	Description	MoS	DEPTH	N	CURVE
0	SM	Moist Brown and Tan medium dense f-m Sandy Loam (SM) w/trace fragments		0'-2'	25	
		- very dense below 2'		2'-4'	35	
				4'-6'	80	
		- [weathered rock] below 6'	6	6'-8'	36	
10.2		Bottom of Boring 10'		8'-10'	74	

Note:
To perform infiltration test, advanced HSA to 8.0' and installed PVC pipe at location 10'S from this boring. Sealed around annulus space at bottom with bentonite pellets and water. Removed HSA.

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Marshall Engineering, Inc.

DRILL HOLE LOG
BORING NO.: B-117

PROJECT: Claremont Overlook
CLIENT: Alan Meyer
LOCATION: See Boring Plan
DRILLER: Diamond Drilling, Inc.
DRILL RIG: ATV
DEPTH TO WATER> AT COMPLETION: Dry.
DEPTH TO CAVING> AT COMPLETION: 4.3'
PROJECT NO.: 03033
DATE: 03/18/03
ELEVATION: 95.0'
LOGGED BY: mec
AFTER 24 HOURS: Dry.
AFTER 24 HOURS: 4.1'

ELEVATION/ DEPTH	USCS	Description	MoS	DEPTH	N	CURVE
0	SM	Moist Brown, medium dense f-m Sandy Loam (SM) w/ trace gravel		1'-2'6"	15	
		- w/Sandy Clay Loam (SC) layers from 0'-2'		2'6"-5'	25	
		- light brown dense below 5'		5'-7'6"	27	
7.0		- w/rock fragments below 7'				
		Bottom of Boring 7.0'				

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Marshall Engineering, Inc.

DRILL HOLE LOG
BORING NO.: B-201

PROJECT: Claremont Overlook
CLIENT: Alan Meyer
LOCATION: See Boring Plan
DRILLER: Diamond Drilling, Inc.
DRILL RIG: ATV
DEPTH TO WATER> AT COMPLETION: Dry
DEPTH TO CAVING> AT COMPLETION: 6.9'
PROJECT NO.: 03033
DATE: 03/18/03
ELEVATION: 180.24'
LOGGED BY: mec
AFTER 24 HOURS: Dry
AFTER 24 HOURS: 6.9'

ELEVATION/ DEPTH	USCS	Description	MoS	DEPTH	N	CURVE
0	SC-SM	Moist Brown loose f-m Sandy Loam (SC-SM)	20	0'-2'	6	
2.0	SM	Moist Brown dense f-m Sandy Loam (SM) w/ weathered rock fragments	12	2'-4'	28	
		- very dense w/very thin Loam (ML) layers below 8'		4'-6'	47	
8.0				6'-8'11"	99+	
	SM	Moist Brown and Tan dense f-m Sandy Loam (SM) [weathered rock]	10	8'-9'0"	39	
11.0		- very dense below 10'		10'-10'11"	99+	
		Bottom of Boring 11'				

Note:
To perform infiltration test, advanced HSA to 8.0' and installed PVC pipe at location 10'S from this boring. Sealed around annulus space at bottom with bentonite pellets and water. Removed HSA.

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Marshall Engineering, Inc.

DRILL HOLE LOG
BORING NO.: B-202

PROJECT: Claremont Overlook
CLIENT: Alan Meyer
LOCATION: See Boring Plan
DRILLER: Diamond Drilling, Inc.
DRILL RIG: ATV
DEPTH TO WATER> AT COMPLETION: Dry
DEPTH TO CAVING> AT COMPLETION: 12.0'
PROJECT NO.: 03033
DATE: 03/18/03
ELEVATION: 196.58'
LOGGED BY: mec
AFTER 24 HOURS: Dry
AFTER 24 HOURS: 11.9'

ELEVATION/ DEPTH	USCS	Description	MoS	DEPTH	N	CURVE
0	SC	Very Moist Brown, very loose f-m Sandy Clay Loam (SC) w/trace gravel	13	0'-2'	4	
		- dense below 2'		2'-4'	38	
6.0	SC-SM	Moist to Very Moist Brown medium dense f-m Sandy Loam (SC-SM) w/trace weathered rock fragments	10	4'-6'	35	
10.0				6'-8'	21	
	SM	- brown and tan below 8'	19	8'-9'0"	21	
12.0		Moist Brown and Tan very dense f-m Loamy Sand (SM) w/weathered rock fragments		10'-12'	33	
		Bottom of Boring 12'				

Note:
To perform infiltration test, advanced HSA to 10.0' and installed PVC pipe at location 10'S from this boring. Sealed around annulus space at bottom with bentonite pellets and water. Removed HSA.

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Marshall Engineering, Inc.

DRILL HOLE LOG
BORING NO.: B-203

PROJECT: Claremont Overlook
CLIENT: Alan Meyer
LOCATION: See Boring Plan
DRILLER: Diamond Drilling, Inc.
DRILL RIG: ATV
DEPTH TO WATER> AT COMPLETION: Dry
DEPTH TO CAVING> AT COMPLETION: 12.0'
PROJECT NO.: 03033
DATE: 03/18/03
ELEVATION: 206.11'
LOGGED BY: mec
AFTER 24 HOURS: Dry
AFTER 24 HOURS: 12.0'

ELEVATION/ DEPTH	USCS	Description	MoS	DEPTH	N	CURVE
0	SM-ML	Very Moist Brown, very loose/soft Loam (SM-ML) w/ trace gravel	29	0'-2'	4	
2.5	SC	Moist Brown dense f-m Sandy Clay Loam (SC) w/ weathered rock	24	2'-4'	25	
4.0	SC-SM	Very Moist Brown and Tan dense to medium dense fine Sandy Loam (SM) w/trace weathered rock		4'-6'	31	
	SM	- light gray [weathered rock] below 8'	7	6'-8'	17	
9.0		- very dense w/thin Sandy Clay Loam (SC) layers below 10'		8'-10'	34	
12.0		Bottom of Boring 12'		10'-12'	78	

Note:
To perform infiltration test, advanced HSA to 8.0' and installed PVC pipe at location 10'S from this boring. Sealed around annulus space at bottom with bentonite pellets and water. Removed HSA.

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Marshall Engineering, Inc.

DRILL HOLE LOG
BORING NO.: B-204

PROJECT: Claremont Overlook
CLIENT: Alan Meyer
LOCATION: See Boring Plan
DRILLER: Diamond Drilling, Inc.
DRILL RIG: ATV
DEPTH TO WATER> AT COMPLETION: Dry
DEPTH TO CAVING> AT COMPLETION: 12.0'
PROJECT NO.: 03033
DATE: 03/17/03
ELEVATION: 209.73'
LOGGED BY: mec
AFTER 24 HOURS: Dry
AFTER 24 HOURS: 12.0'

ELEVATION/ DEPTH	USCS	Description	MoS	DEPTH	N	CURVE
0	SC-CL	Moist to Very Moist Brown very loose/soft f-m Sandy Clay (SC-CL)	22	0'-2'	4	
4.0		- medium dense/very stiff below 2'		2'-4'	20	
	SC-SM	Moist Brown and Tan dense to medium dense f-m Sandy Loam (SC-SM)	33	4'-6'	31	
8.0				6'-8'	21	
	SM	Moist Brown, Tan and Gray medium dense f-m Sandy Loam (SM) w/weathered rock fragments	20	8'-10'	14	
13.0		- gray below 10'		10'-12'	15	
		Bottom of Boring 12'				

Note:
To perform infiltration test, advanced HSA to 8.0' and installed PVC pipe at location 10'S from this boring. Sealed around annulus space at bottom with bentonite pellets and water. Removed HSA.

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Marshall Engineering, Inc.

DRILL HOLE LOG
BORING NO.: B-205

PROJECT: Claremont Overlook
CLIENT: Alan Meyer
LOCATION: See Boring Plan
DRILLER: Diamond Drilling, Inc.
DRILL RIG: ATV
DEPTH TO WATER> AT COMPLETION: Dry
DEPTH TO CAVING> AT COMPLETION: 12.0'
PROJECT NO.: 03033
DATE: 03/18/03
ELEVATION: 209.95'
LOGGED BY: mec
AFTER 24 HOURS: Dry
AFTER 24 HOURS: 11.8'

ELEVATION/ DEPTH	USCS	Description	MoS	DEPTH	N	CURVE
0	SC-CL	Moist Brown medium dense/ stiff Sandy Clay (SC-CL) w/ trace gravel	29	0'-2'	11	
2.5	SM-ML	Moist to Very Moist Brown medium dense/ very stiff Loam (SM-ML)	24	2'-4'	20	
4.0	SC-SM	Moist to Very Moist Brown medium dense f-m Sandy Loam (SC-SM)		4'-6'	17	
	SM	Moist Brown and Tan medium dense f-m Sandy Loam (SM) w/weathered rock	17	6'-8'	14	
12.0				8'-10'	19	
		Bottom of Boring 12'		10'-12'	17	

Note:
To perform infiltration test, advanced HSA to 7.0' and installed PVC pipe at location 10'S from this boring. Sealed around annulus space at bottom with bentonite pellets and water. Removed HSA.

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Marshall Engineering, Inc.

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 11-24-08

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3/19/09

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 11/25/08

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2010."

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 11/5/08

DEVELOPER'S CERTIFICATE

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

SIGNATURE OF DEVELOPER — DATE 10/24/2008

NO AS-BUILT INFORMATION ON THIS SHEET.

ENGINEER'S CERTIFICATE

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

SIGNATURE OF ENGINEER
ROBERT H. VOGEL — DATE 10/24/08

OWNER/DEVELOPER

CLAREMONT L.L.C.
11046 DORSCH FARM ROAD
ELLICOTT CITY, MARYLAND 21042
(410) 730-4556

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN
BORING RESULTS

CLAREMONT OVERLOOK

LOTS 1 - 6, OPEN SPACE LOTS 50-57
AND NON - BUILDABLE BULK PARCELS A - I

TAX MAP 32 GRID 21 — PARCELS 632 AND 24
1ST ELECTION DISTRICT — 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 No.16193

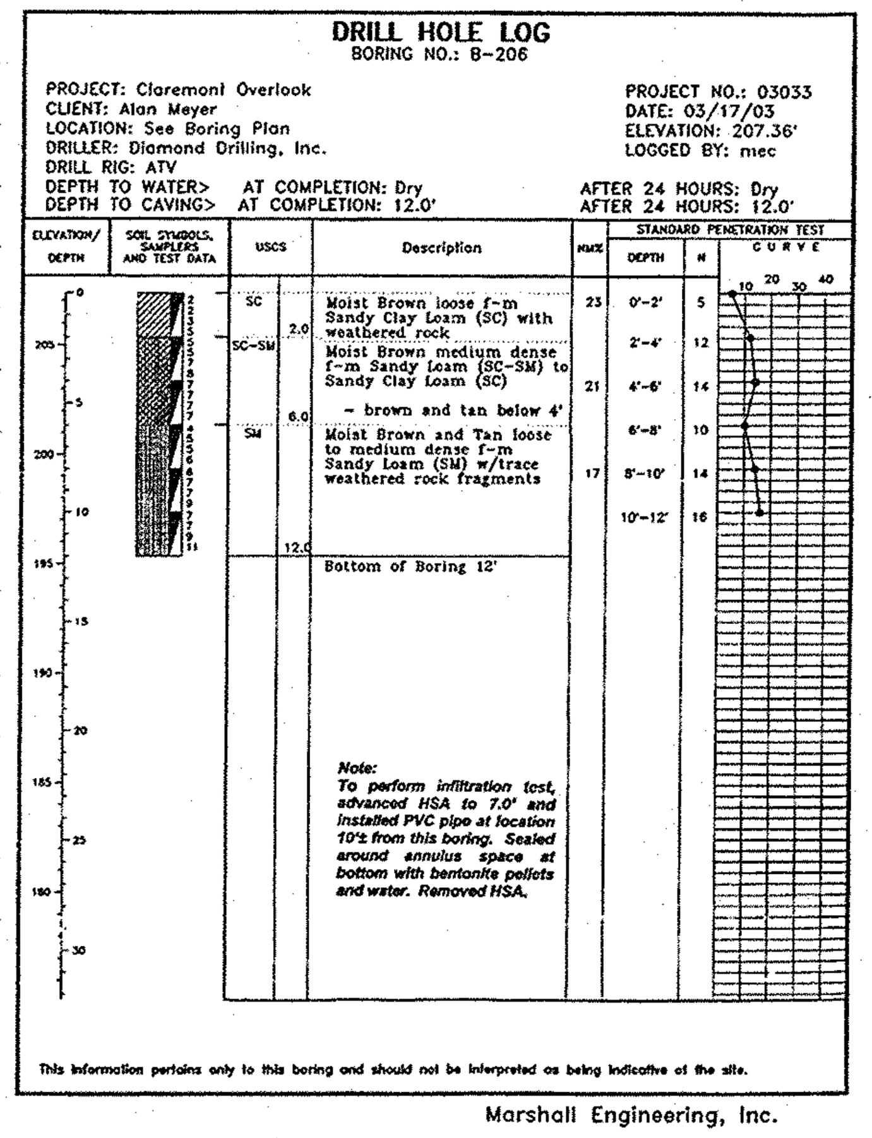
DESIGN BY:	RHV/RJ
DRAWN BY:	RJ
CHECKED BY:	RHV
DATE:	SEPTEMBER 2008
SCALE:	AS SHOWN
W.O. NO.:	02-68.00

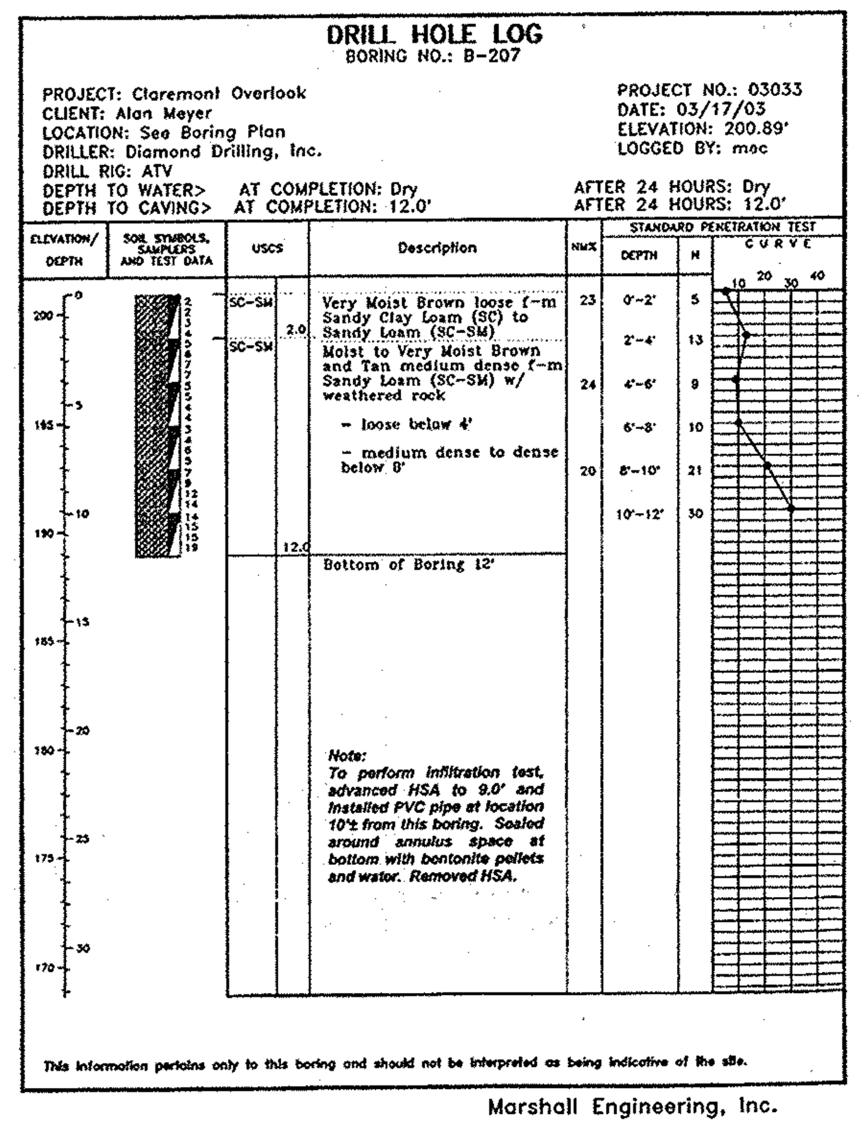
18 SHEET OF 27

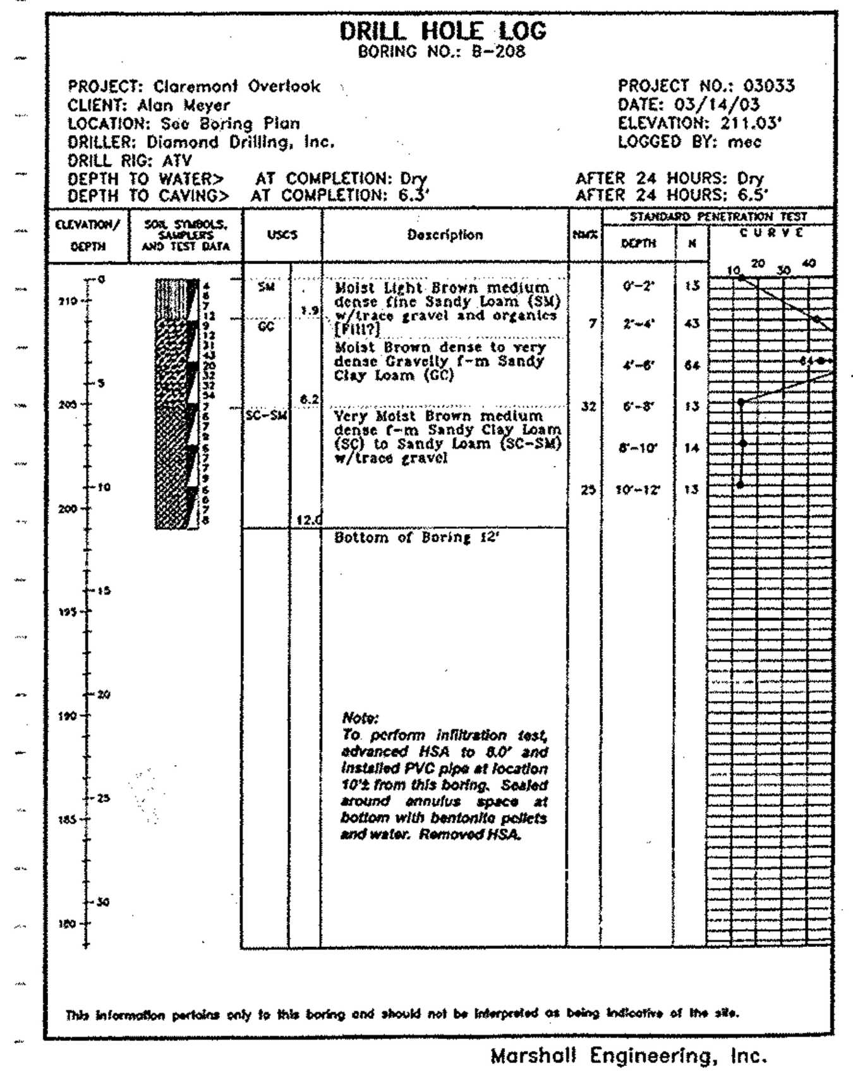
AS-BUILT 06/24/15

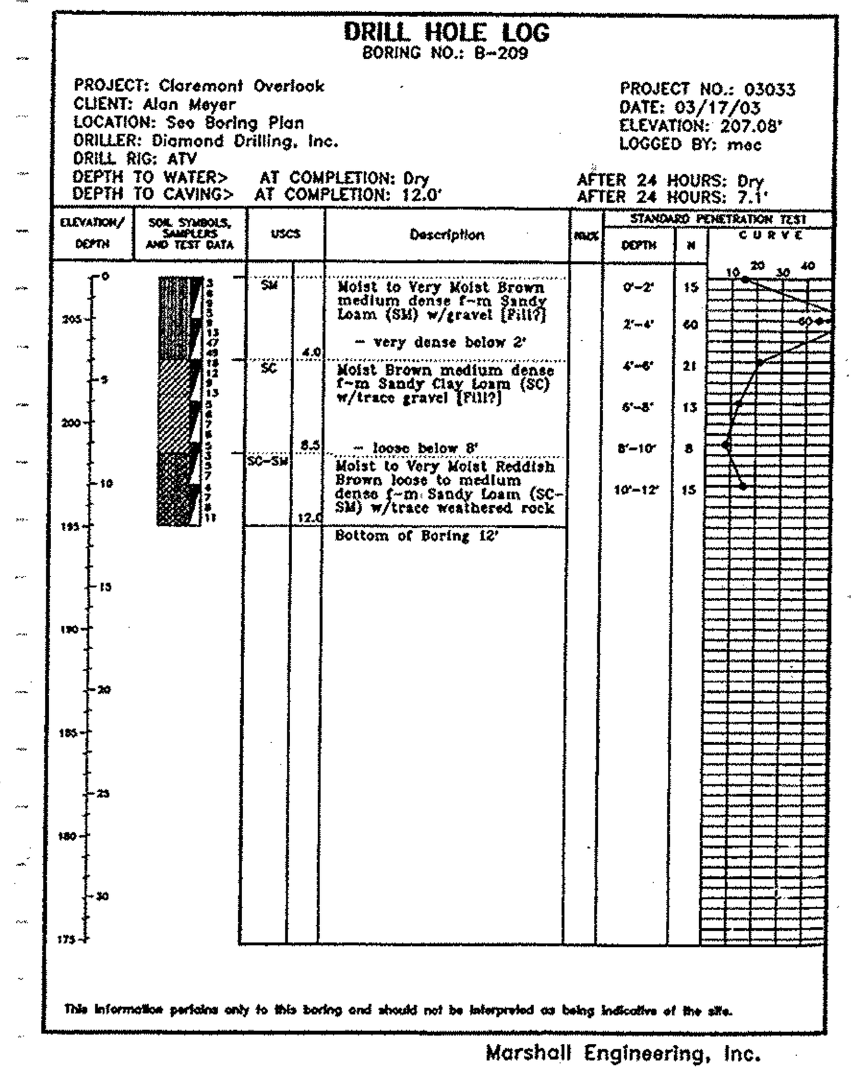
F-08-63

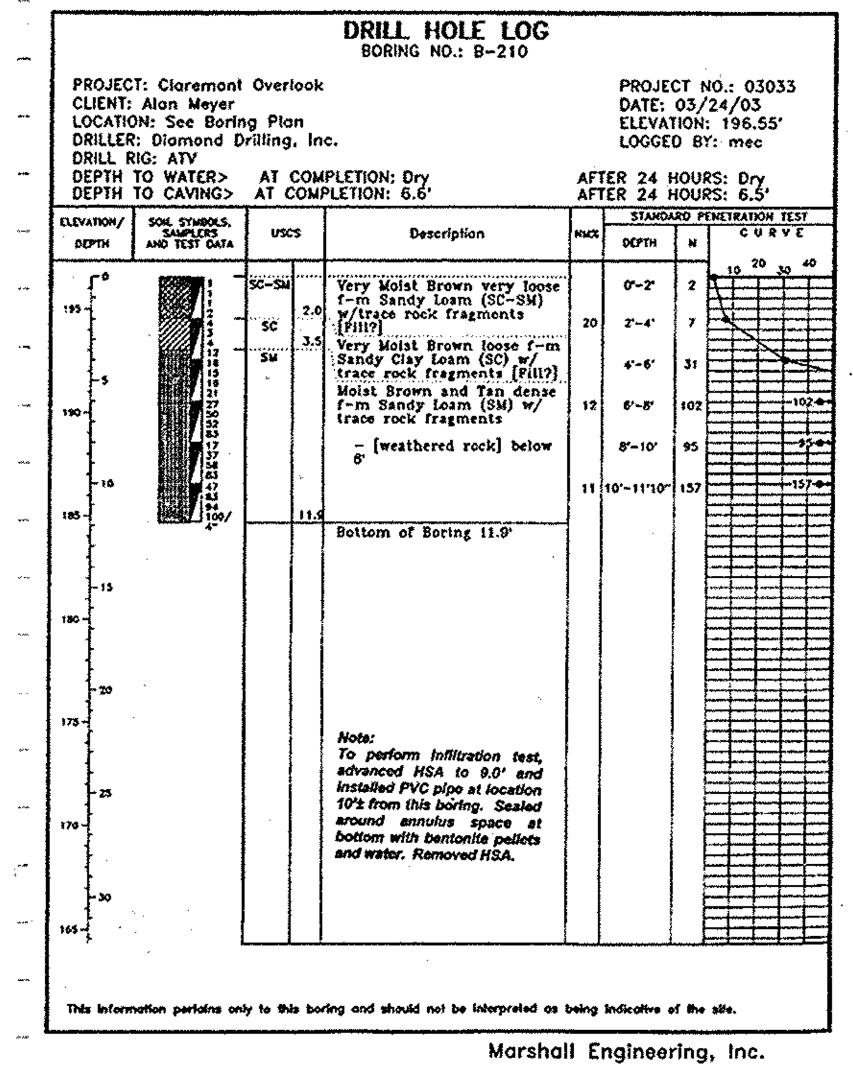
BORING RESULTS FOR STORM WATER FACILITIES 3 & PRETREATMENT AREA

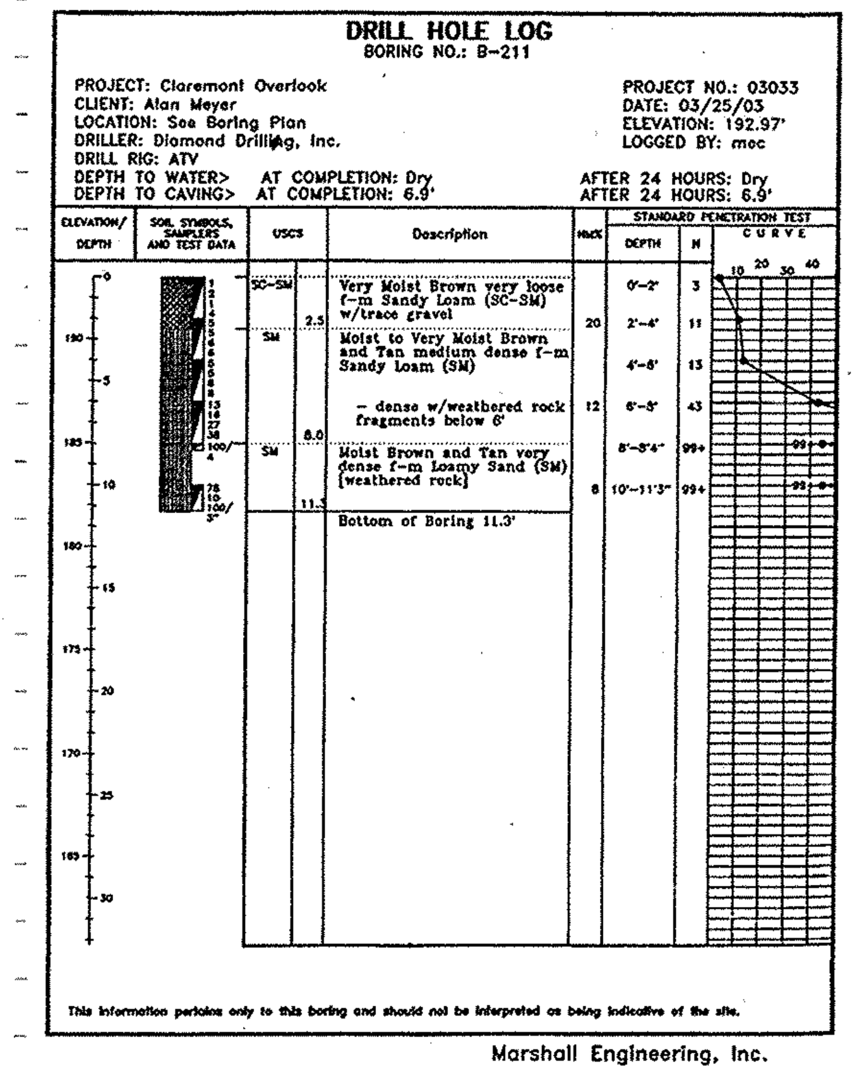


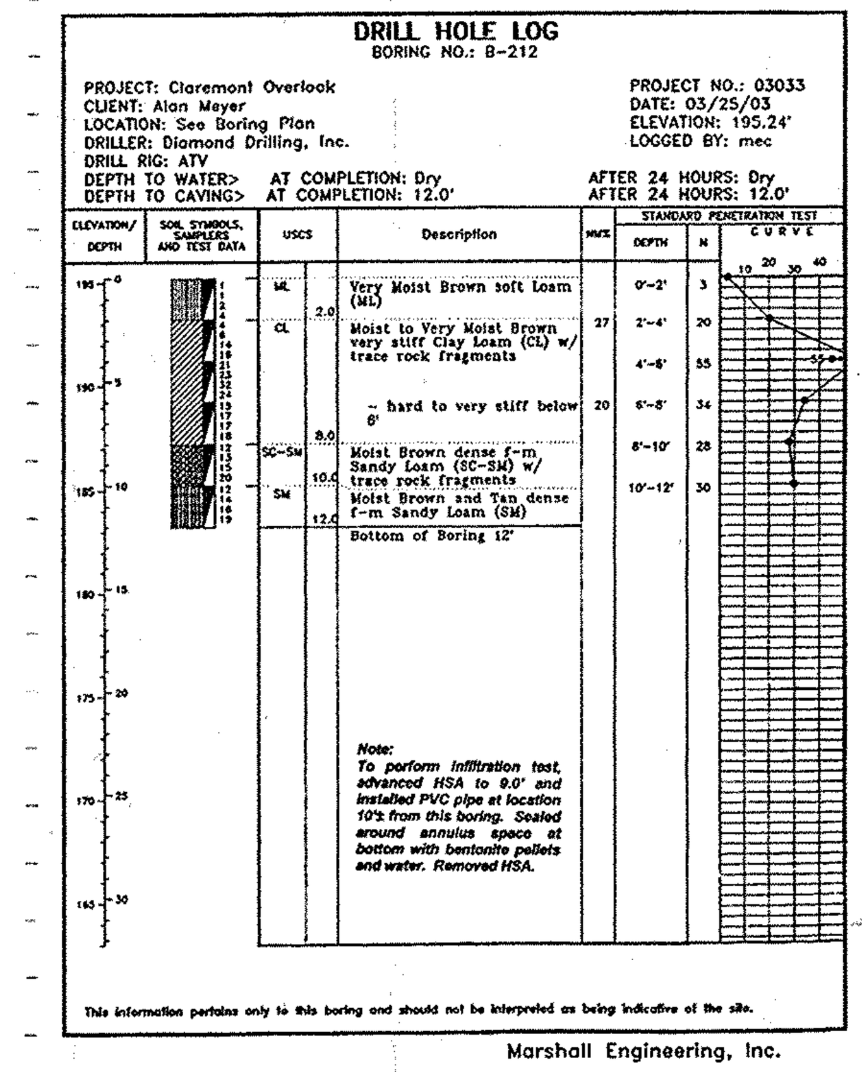


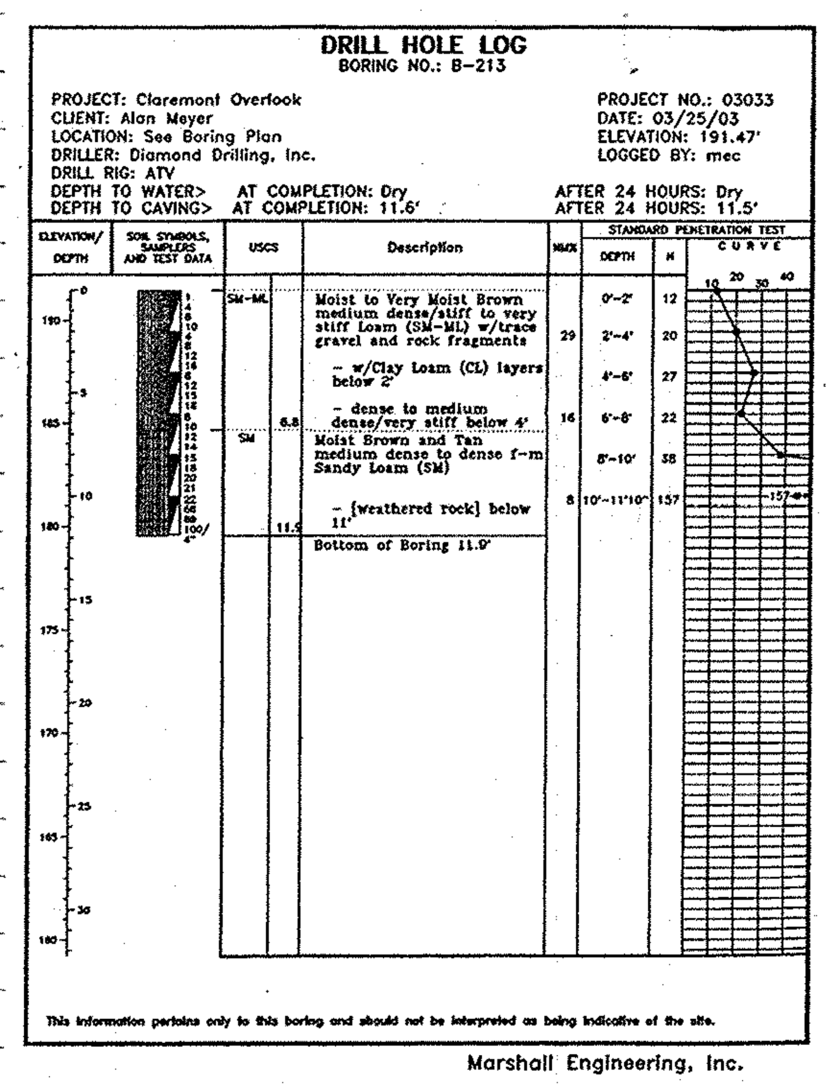


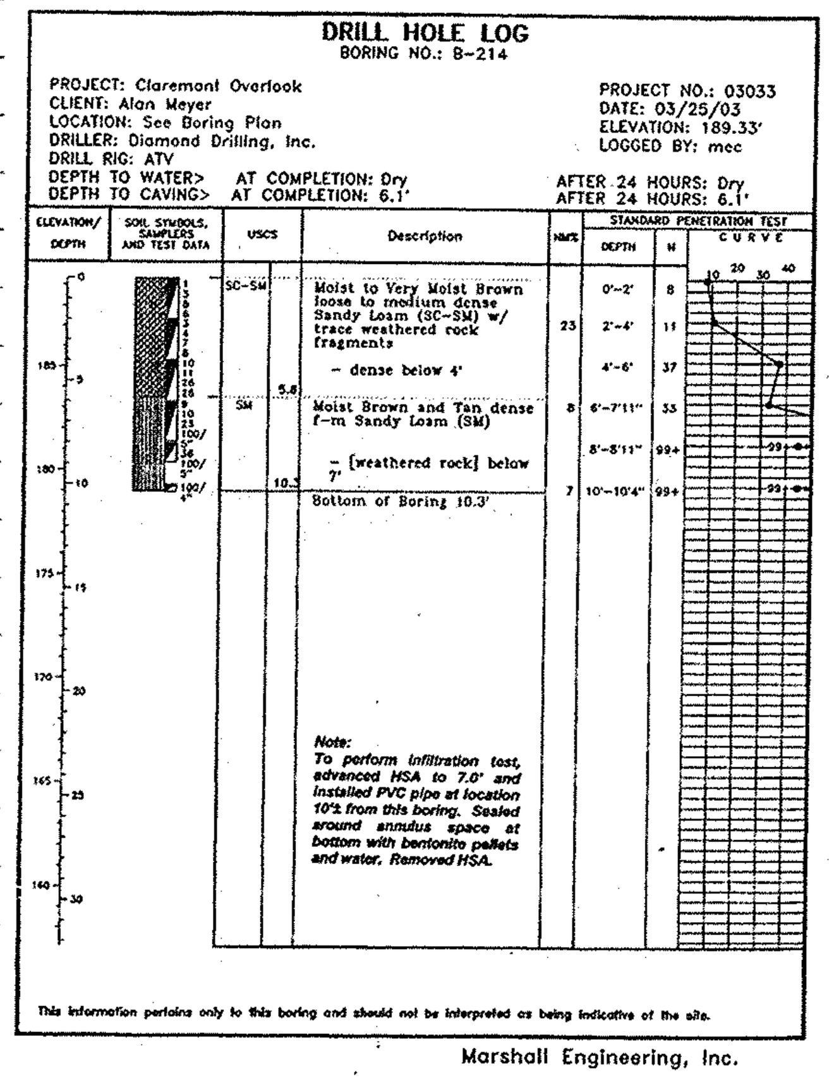


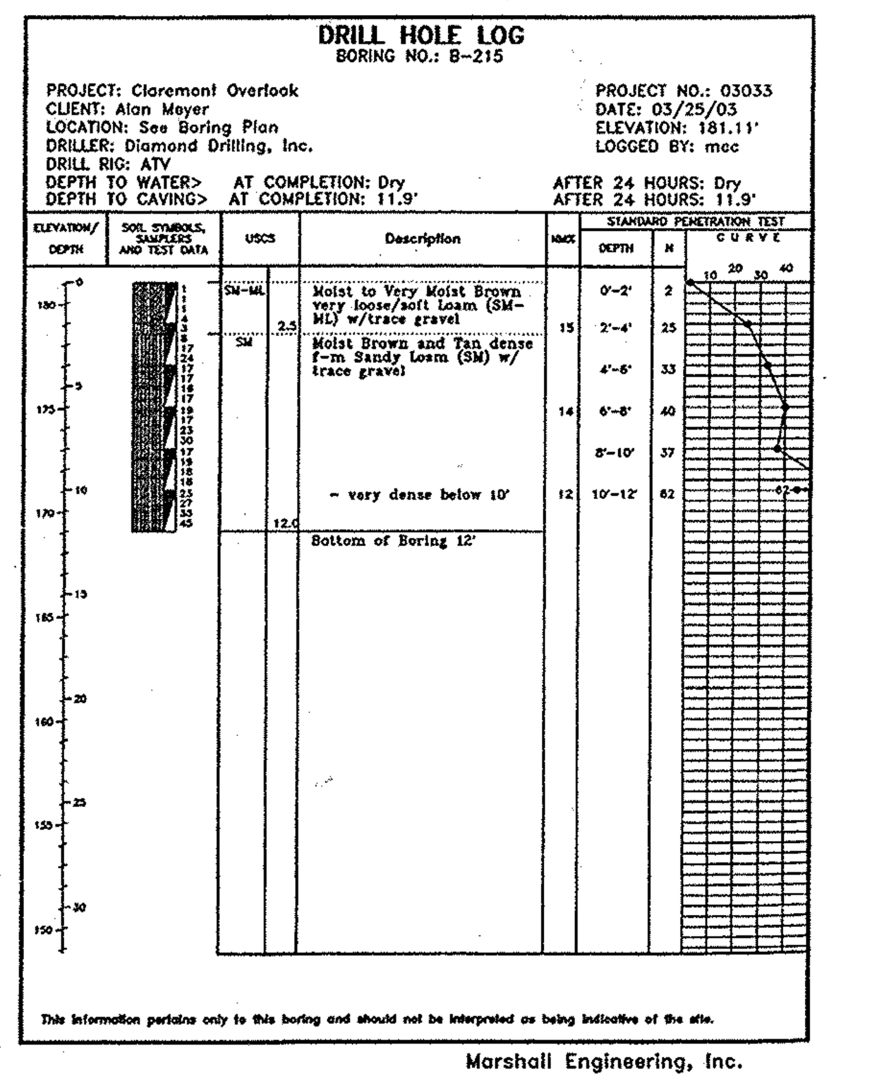


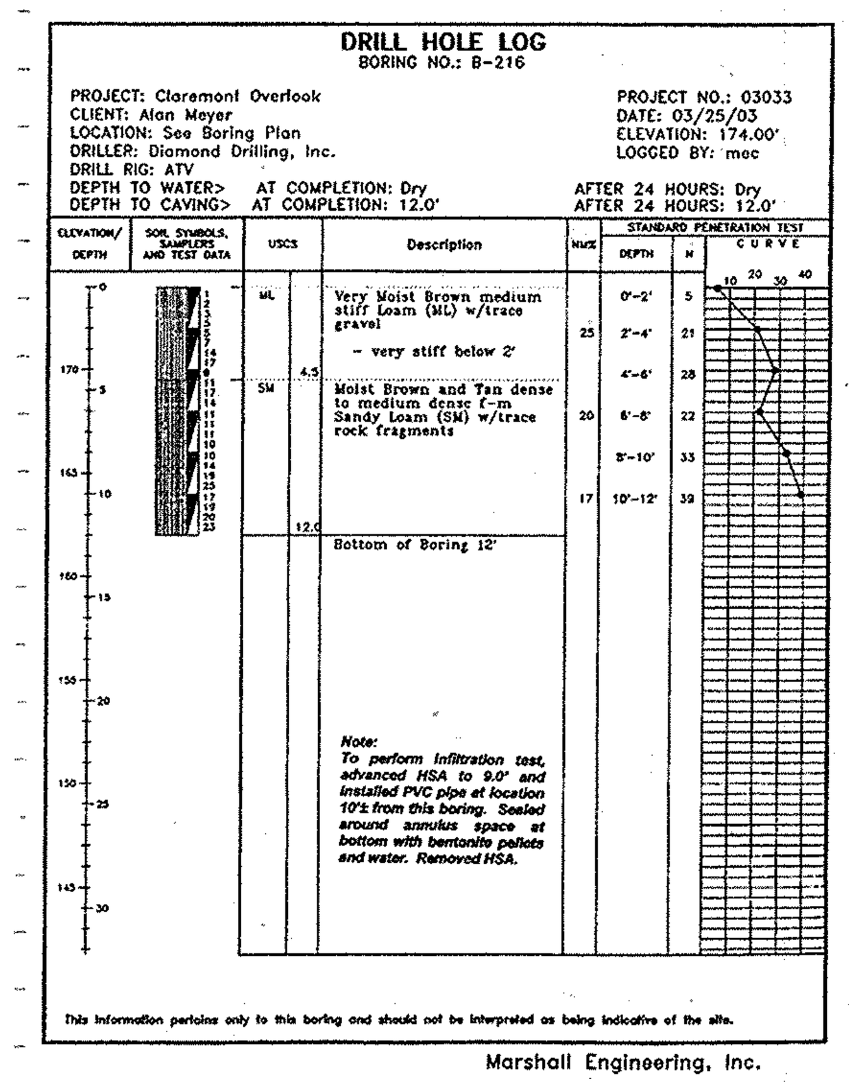


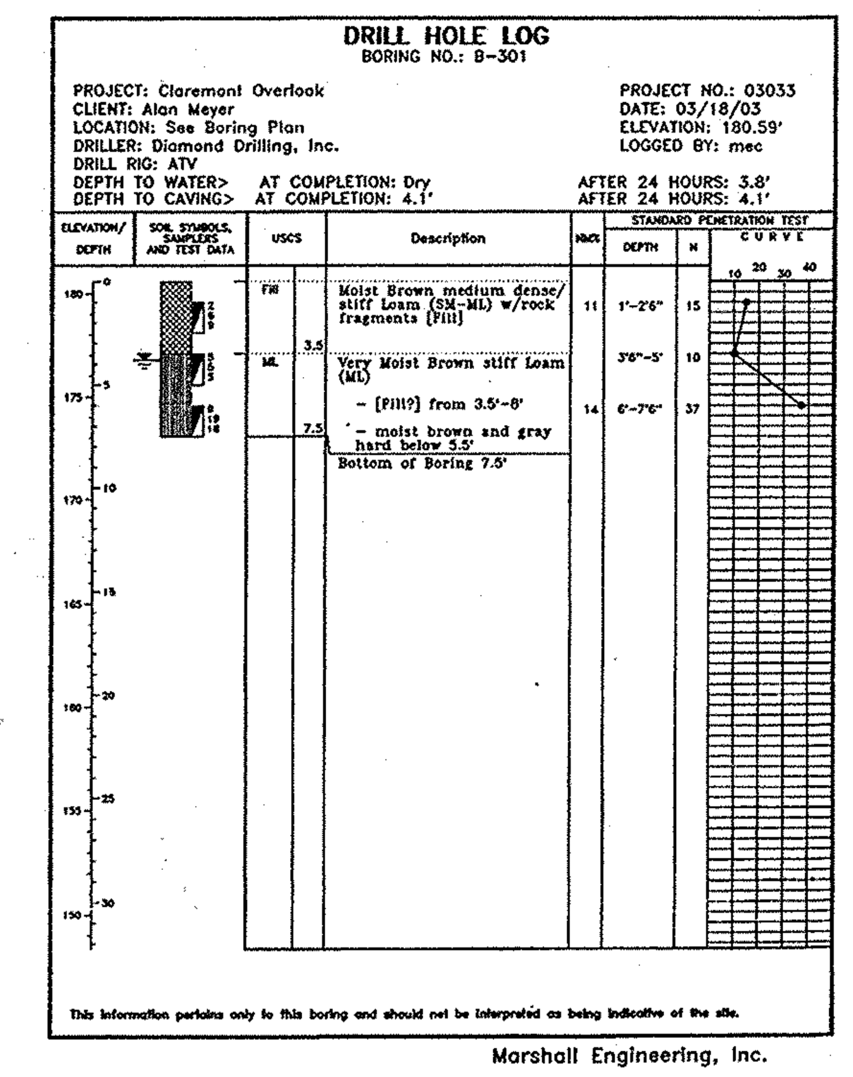


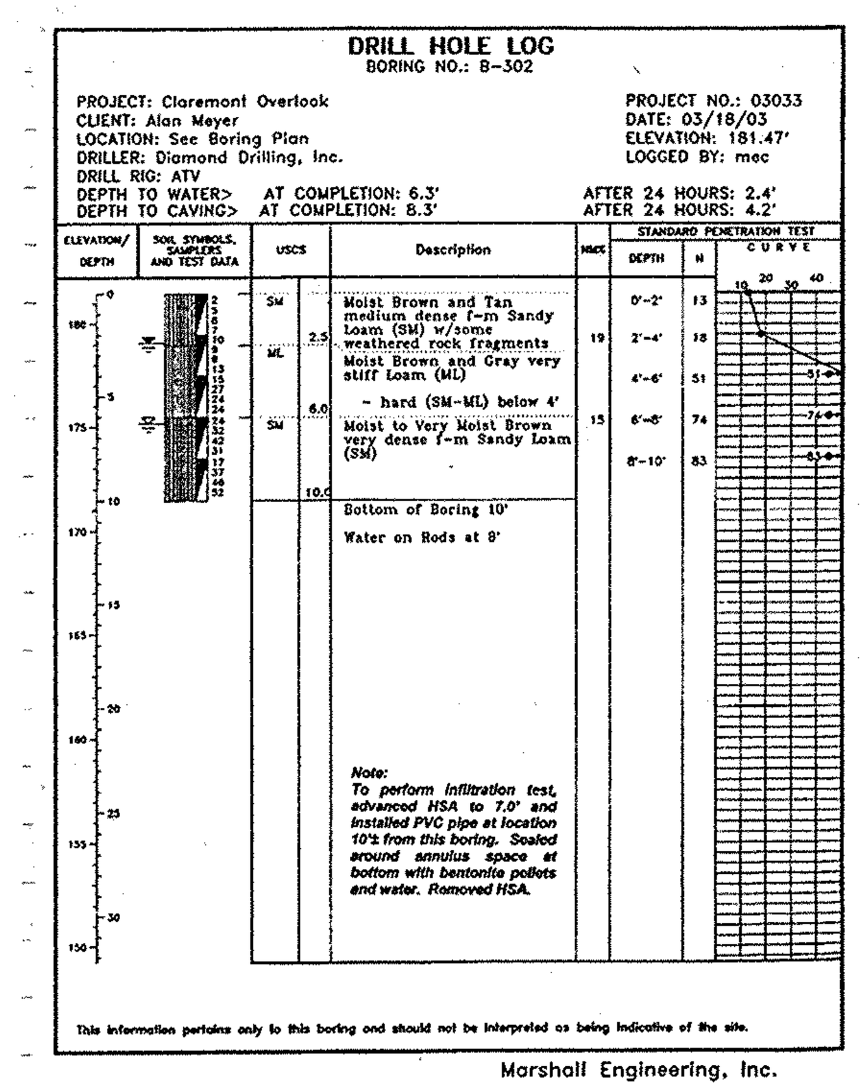


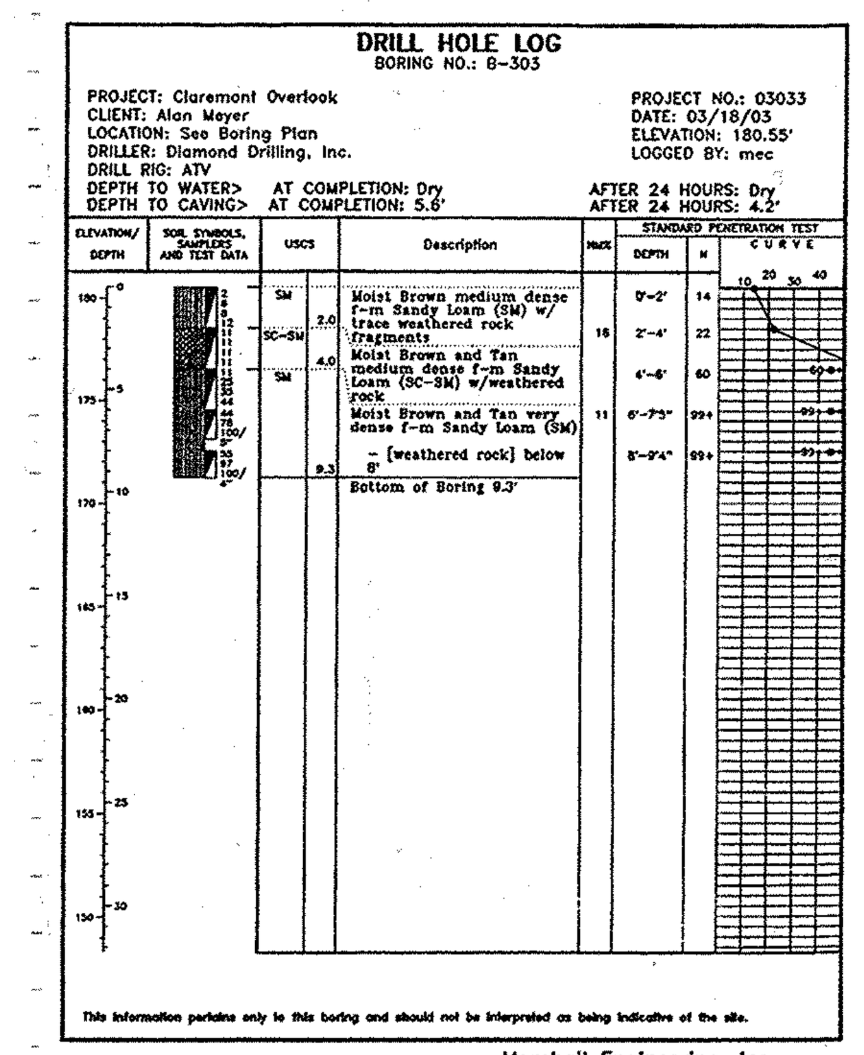












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MEI Job No. 03033
May 1, 2003

A geotechnical engineer should inspect all infiltration structure excavations to compare the subsurface conditions with those encountered in the borings and used for design. If conditions are not the same, changes may be necessary.

SWM Ponds

Concerning construction of the SWM ponds, most of the soils that will be excavated are not suitable materials for use in clay core and embankment construction. It will, therefore, probably be necessary to obtain suitable soils of SC-CL classification for this use from an off-site source. The subsurface profile is in suitable condition to support the embankments without stability problems.

DRY SWALE
- DRY SWALE

It is noted that groundwater was encountered in Borings B-301 and B-302 at depths of 3.8 and 2.4 feet, respectively.

Retaining Wall

The subsurface profile in the area of the retaining wall indicates fill to depths of 6 to 17 feet or more at the boring locations. That fill was apparently placed to establish the exising drive through that area. It classifies as Silty to Clayey fine to medium Sand (SC-SM) with trace of gravel, weathered rock fragments and organics and is probably local material for the immediate area. It is generally medium dense in condition based on the "N" values. It was probably

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May 1, 2003

compacted by the movement of equipment when it was placed but probably was not placed under controlled conditions. It has probably been in place for over 50 years and should be relatively stable and in suitable condition to support a standard retaining wall spread footing. It is recommended that the foundation be designed for a net bearing capacity of 1500 psf. The footing should be at least 2.5 feet below the exterior grade for frost protection and stability purposes. In addition, for slope stability reasons, the depth of the footing should be enough that a projected line extending out and down from the outside edge of the footing does not intersect the slope of the existing ground. The base of the foundation excavation should be inspected by a geotechnical engineer prior to placement of reinforcing steel and concrete to confirm bearing capacity. The foundation design should be reviewed by this office for compliance with these recommendations.

If you have any questions concerning this report, please feel free to contact this office.

Very truly yours,
MARSHALL ENGINEERING, INC.

John P. Marshall, P. E.
President
JPM:mec
Copies: Client – Mail (1)
Frederick Ward Associates, Inc. – Mail (2)

STATE OF MARYLAND JOHN P. MARSHALL No. 8203 REGISTERED PROFESSIONAL ENGINEER

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Claremont Overlook
MEI Job No. 03033
May 1, 2003

Boring:	Depth	Description	Infiltration Potential*
B-302	0' – 2.5'	Sandy Loam	Slow
	2.5' – 6'	Loam	Poor
	6' – 10'	Sandy Loam (dense) Water at 2.4'	Poor
B-303	0' – 4'	Sandy Loam	Slow
	4' – 6'	Sandy Loam (dense)	Poor
	6' – 9.3'	Sandy Loam (very dense weathered rock)	Slow

* Relative permeability ratings based on charts in DNR publications

Poor = not considered suitable for infiltration (can be due to thin layers)
Slow = probably suitable but slow (Prel. I = 1.0 in./hr.)
Good = probably suitable (Prel. I = 2.5 in./hr.)

** Set pipe in this stratum and performed infiltration test

The permeability classification and preliminary infiltration rates "I" given above are arbitrary and based solely on information from DNR publications which relate infiltration rates to soil classification based on the USDA Textural Triangle. Concerning actual measured infiltration rates, reference is made to the Infiltration Test Summary in Appendix J.

CONCLUSIONS & RECOMMENDATIONS

Infiltration

It is concluded from this investigation that the subsurface conditions below some surface deposits are generally suitable for the use of infiltration for SWM design. As can be seen by review of the field infiltration test results, the measured infiltration rate was very consistent at all

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May 1, 2003

19 locations, ranging from 1 to 4 inches per hour with most either 2 or 3 inches per hour. Based on these results, a conservative design infiltration rate, "I", of 1.0 inches per hour is recommended at the locations and depths tabulated below.

Area	Location	Depth
Upper Subdivision	B-201	8' – 11'
	B-202	6' – 12'
	B-203	4' – 12'
	B-204	4' – 12'
	B-205	4' – 12'
	B-206	6' – 12'
	B-207	2' – 12'
	B-208	8' – 12'
	B-209	9' – 12'
	B-210	4' – 11'
	B-211	2' – 11'
	B-212	8' – 12'
	B-213	7' – 11'
	B-214	2' – 10'
	B-215	3' – 12'
	B-216	4' – 12'
SWM Pond #1	B-104	3' – 9'
	B-105	3' – 9'
Out Parcel	B-106	10' – 20'
	B -107	10' – 12'
SWM Pond #2	B-109	2' – 6'
	B-110	2' – 9'
SWM Pond #3	B-113	2' – 10'
	B-116'	2' – 10'
Bioretention Area	B-302	6' – 10' (Water at 2.4')
	B-303	2' – 9'

DRY SWALE

APPROVED: DEPARTMENT OF PUBLIC WORKS

11-24-08
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

2/10/09
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

11/25/08
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2010."

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

11/5/08
HOWARD SOIL CONSERVATION DISTRICT — DATE

DEVELOPER'S CERTIFICATE

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

10/24/2008
SIGNATURE OF DEVELOPER — DATE

ENGINEER'S CERTIFICATE

"I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION AND SEDIMENT AND EROSION CONTROL REPRESENTS A PROCTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. 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."

10/23/08
SIGNATURE OF ENGINEER — DATE
ROBERT H. VOGEL

NO AS-BUILT INFORMATION ON THIS SHEET.

OWNER/DEVELOPER

CLAREMONT L.L.C.
11046 DORSCH FARM ROAD
ELLICOTT CITY, MARYLAND 21042
(410) 730-4556

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN
BORING RESULTS

CLAREMONT OVERLOOK

LOTS 1 - 6, OPEN SPACE LOTS 50-57
AND NON - BUILDABLE BULK PARCELS A - I

TAX MAP 32 GRID 21 — PARCELS 632 AND 24
1ST ELECTION DISTRICT — 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 10/23/08
ROBERT H. VOGEL, PE No.16193

DESIGN BY: RHV/RJ
DRAWN BY: RJ
CHECKED BY: RHV
DATE: SEPTEMBER 2008
SCALE: AS SHOWN
W.O. NO.: 02-68.00

AS-BUILT 06/24/15

F-08-63

AASCD/MAA VEGETATIVE ESTABLISHMENT DETAILS AND SPECIFICATIONS FOR THE PROJECT WITHIN 4 MILES OF BWI AIRPORT

AASCD/MAA
VEGETATIVE ESTABLISHMENT
DETAILS AND SPECIFICATIONS FOR PROJECTS WITHIN
4 MILES OF THE BWI AIRPORT
July 1, 2004

References to TTEM #s noted below are found in Maryland Aviation Administration's most recent Specifications for Performing Landscaping Activities for the Maryland Aviation Administration dated May 2001

SOIL TESTS

1. Following initial soil disturbances or re-disturbance, permanent or temporary stabilization shall be completed within seven calendar days for the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes greater than 3 horizontal to 1 vertical (3:1) and fourteen days for all other disturbed or graded areas on the project site.
2. Occurrence of acid-sulfate soils (grayish black color) will require covering with a minimum of 12 inches of clean soil with 6 inches minimum capping of top soil. No stockpiling of material is allowed. If needed, soil tests should be done before and after a 6-week incubation period to allow oxidation of sulfates.
3. **The minimum soil conditions required for permanent vegetative establishment are:**
   a. **Soil pH shall be between 6.0 and 7.0.**
   b. **Soluble salts shall be less than 500 parts per million (ppm).**
   c. **The soil shall contain less than 40% clay but enough fine grained material (> 30% silt plus clay) to provide the capacity to hold a moderate amount of moisture.**
   d. **Soil shall contain 1.5% minimum organic matter by weight.**
   e. **Soil must contain sufficient pore space to permit adequate root penetration.**
   f. **If these conditions cannot be met by soils on site, adding topsoil is required in accordance ITEM 901 or amendments made as recommended by a certified agronomist.**

SEEDING

ITEM 903 SEEDING

DESCRIPTION

903-1.1 GENERAL. This item provides specifications for seeding of areas as designated on plans or as directed by the MAA Engineer. The species, mixtures, and methods of application provided in this item have been designed to reduce the attractiveness of airport grounds to wildlife. Only MAA-approved species, mixtures, and rates of application provided in this item may be used to establish vegetation. All activities associated with seeding including soil preparation, seed application, fertilization, and maintenance shall also conform to these approved standards.

MATERIALS

903-2.1 SEED. All seed shall comply with the Maryland Seed Law (Agricultural Article of the Annotated Code of Maryland). Only MAA-approved species, mixtures, and rates of application provided in this item have been designed to establish vegetation. Seed will be sampled and tested by an inspector from the Turf and Seed Section, Maryland Department of Agriculture (MDA), Annapolis, Maryland. All lawn and turf seed and mixtures shall be free from the following state-listed restricted noxious weeds:

corn cockle (*Agrostemma githago*),
bentgrass (*Agrostis* spp.)[1],
rothy (*Agrostis gigantea*)[1],
wild onion (*Allium canadense*),
wild garlic (*Allium vineale*),
bindweed (*Calstegia* spp.),
dodder (*Cuscuta* spp.),
Bermuda grass (*Cynodon dactylon*),
orchardgrass (*Dactylis glomerata*),
tall fescue (*Festuca arundinacea*)
meadow fescue (*Festuca pratensis*)[1],
velvetgrass (*Holcus lanatus*),
annual bluegrass (*Poa annua*),
rough bluegrass (*Poa trivialis*)[1],
timothy (*Phleum pratense*), and
Johnson grass (*Sorgum halepense*).

Restricted noxious-weed seed may not exceed 0.5 percent by weight of any seed mixture. In addition, all seeds sold in Maryland shall be free from the following listed prohibited noxious weeds: balloonvine (*Cardiospermum halicacabum*), quackgrass (*Elytrigia repens*), sicklepod (*Senna obtusifolia*), sorghum (*Sorghum* spp.), Canada thistle (*Cirsium arvense*), plumeless thistle (*Carduus* spp.-includes musk thistle and curled thistle), and serrated tussock (*Nassella trichotoma*).

[1] These species may be included as a labeled component of a mixture when each is present in excess of five percent of the mixture by weight.

Seed shall be furnished in standard containers with the seed name, lot number, net weight, percentages of purity, germination rate and hard seed, and percentage of maximum weed seed content clearly marked. All seed containers shall be tagged with a MDA supervised mix program seed tag.

903-2.1.3 MIXTURES AND APPLICATION RATES. Only seed mixtures and application rates described in this item may be used unless otherwise approved by the MAA Engineer. Seed mixtures shall meet criteria detailed in Paragraph 903-2.1.2. Seed mixtures have been formulated to minimize the attractiveness of areas to wildlife of common landscape scenarios. The appropriate seed mixture for application will be designated based on environmental conditions and may very from site to site. All planting rates listed are in pounds of Pure Live Seed (PLS) per acre.

Seed mixtures, application scenarios, and rates *for permanent cool-season grasses* are as follows:

a. Seed Mixture No. 1 - relatively flat areas (grade less than 4:1) subject to normal
   conditions and regular mowing (Application rate = 234 lbs PLS/acre);
b. Seed Mixture No. 2 - sloped areas (grade greater than 4:1) not subject to regular
   mowing (Application rate = 115 lbs PLS/acre); and
c. Seed Mixture No. 3 - wetlands and their associated buffer zones (Application rate =
   131 lbs PLS/acre).

Seed Mixture No. 1: Relatively flat areas regularly mowed and exposed to normal conditions (Application rate = 234 lbs PLS/acre)

Seed	Rate of Application (lbs of LS/acre)
85% Certified Turf-Type Tall Fescue	192
10% Certified Kentucky Bluegrass	28
5% Perennial Ryegrass	14
Supplemental Seed	
Annual Ryegrass	25

APPROVED PLANT SPECIES

MAA SEED MIXTURES

	Purity* Not Less than %	Minimum % Germination*	Pure Live Seed Factor
Certified Turf-Type Tall Fescue (*Festuca arundinacea*)	98	90	1.13
Certified Kentucky Bluegrass (*Poa pratensis*)	90	80	1.39
Hard Fescue (*Festuca longifolia*)	98	90	1.13
Chewings Red Fescue (*Festuca rubra commutata*)	98	90	1.13
Annual Ryegrass (*Lolium multiflorum*)	95	85	1.24
Perennial Ryegrass (*Lolium perenne*)	90	80	1.39
Fowl Meadow Grass (*Poa palustris*)	90	80	1.39
Little Bluestem (*Andropogon scoparius*)	62	94	1.71

*The percentage weight of pure seed present shall be free of any agriculture seeds, inert matter, and other seeds distinguishable by their appearance.
* The percentage of germination shall be actual sprouts and shall not include hard seeds unless specifically permitted by the MAA Engineer.

903-2.1.2 PURITY. All seed shall be free of all state-designated noxious weeds listed in Paragraph 2.1.1 and conform to MAA specifications. To ensure compliance, MAA requires sampling and testing of seed by the Turf and Seed Section, Maryland Department of Agriculture (MDA). The Contractor shall furnish the MAA Engineer with duplicate signed copies of a statement by the Turf and Seed Section certifying that each lot of seed has been laboratory tested within six months of date of delivery. This statement shall include the following information:

- name and address of laboratory,
- date of test,
- lot number,
- the results of tests as to name, percentages of purity and of germination,
- percentage of weed content for the seed furnished,
- and, in the case of a mixture, the proportions of each kind of seed.

Seed Mixture No. 2: Sloped areas not subject to regular mowing (Application rate = 115 lbs PLS/acre)

Seed	Rate of Application (lbs of PLS/acre)
75% Hard Fescue	85
20% Chewings Fescue	23
5% Kentucky Bluegrass	7
Supplemental Seed	
Redtop	3

Seed Mixture No. 3 - Wetland areas and their associated buffer zones (Application rate = 131 lbs PLS/acre)

Seed	Rate of Application (lbs of PLS/acre)
60% Fowl Meadow Grass	83
30% Chewings Fescue	34
10% Perennial Ryegrass	14
Supplemental Seed	
Redtop	3

903-2.1.4 SEEDING SEASONS. Application of seed and seed mixtures shall occur within a specified seeding season unless otherwise approved by the MAA Engineer. No seed or seed mixtures are to be applied on frozen ground or when the temperature is at or below 35 degrees Farenheit (7.2 degrees Centigrade). Under these conditions, a layer of mulch will be applied in accordance with Item 905, Mulching, to stabilize the site, and permanent seeding should occur in the subsequent seeding season. Seed application may occur during the seeding season dates listed below. Seeding performed after October 20 should be a temporary cover of annual ryegrass and followed by overseeding of the appropriate seed mixture during the spring seeding season.

SEEDING SEASONS	
Permanent Cool-Season Grasses	March 1 to April 20 and August 1 to October 20, inclusive
Temporary Cover of Annual Rye/Redtop	March 1 to April 30 and August 1 to November 30, inclusive
Temporary Cover of Warm-Season Grasses (*Little Bluestem only*)	May 1 to July 31, inclusive. Rate of application should be 13.6 lbs. PLS per acre.

Seeding seasons are based on typical years and can be subject to variation, which may be modified by the MAA Engineer based on seasonal trends.

If the time required to complete any of the operations necessary under this item, within the specified planting season or any authorized extensions thereof, extends beyond the Contract period, then such time will be charged against the Contract time, and liquidated damages will be enforced with respect to this portion of work.

903-2.2 LIME. Lime shall consist of ground limestone and contain at least 85 percent total carbonates. Lime shall be ground to a fineness so that at least 90 percent will pass through a No. 20 mesh sieve and 50 percent will pass through a No. 100 mesh sieve. Dolomitic lime or a high magnesium lime shall contain at least 10 percent magnesium oxide. Lime shall be applied by approved methods detailed in Section 903-3.3 of this item. The rate of application will be based on results of soil tests.

903-2.3 FERTILIZER. Fertilizer shall be standard commercial fertilizer (supplied separately or in mixtures) and meet the requirements of applicable state and federal laws (O-F-241) as well as standards of the Association of Official Agricultural Chemists. Nitrogen-Phosphorus-Potassium (N-P-K) concentrations shall be determined from analysis of soil samples *(Approved fertilizer rate: 21 pounds of 10-10-10 per 1,000 square feet.)* Methods of fertilizer application shall conform to standards described in Section 903-3.3 of this item. Fertilizer shall be furnished in standard containers that are clearly labeled with name, weight, and guaranteed analysis of the contents (percentage of total nitrogen, available phosphoric acid, and water-soluble potash). Mixed fertilizers shall not contain any hydrated lime or cyanamide compounds. Fertilizers failing to meet the specified analysis may be approved by the MAA Engineer, providing sufficient materials are applied to conform with the specified nutrients per unit of measure without additional cost to MAA.

The fertilizers may be supplied in the following forms:

a. A dry, free-flowing fertilizer suitable for application by a common fertilizer spreader;

b. A finely ground fertilizer soluble in water, suitable for application by power sprayers; or

c. A granular or pellet form suitable for application by blower equipment.

The rate of application will be based on results of soil tests performed by the University of Maryland Soil Testing Laboratory. By law, persons applying fertilizer to State-owned land shall follow the recommendations of the University of Maryland as set forth in the "Plant Nutrient Recommendations Based on Soil Tests for Turf Maintenance" and the "Plant Nutrient Recommendations Based on Soil Tests for Sod Production" (see Appendix B). Application of the fertilizer shall be in a manner that is consistent with the recommendations of the University of Maryland Cooperative Extension.

CONSTRUCTION METHODS AND EQUIPMENT

903-3.1 GENERAL. This section provides approved methods for the application of and includes standards for seedbed preparation, methods of application, and equipment to be used during the process. Lime and fertilizer shall be applied to seeded areas before the seed is spread. The mixture of seed will be determined for sites based on environmental conditions as described in Paragraph 903-2.1.3.

903-3.2 ADVANCE PREPARATION. Areas designated for seeding shall be properly prepared in advance of seed application. The area shall be tilled and graded prior to application of lime and fertilizer, and the surface area shall be cleared of any stones larger than 1 inch in diameter, sticks, stumps, and other debris that might interfere with sowing of seed, growth of grasses, or subsequent maintenance of grass-covered areas. Damage caused by erosion or other forces that occur after the completion of grading shall be repaired prior to the application of fertilizer and lime. The Contractor will repair such damage, which may include filling gullies, smoothing irregularities, and repairing other incidental damage before beginning the application of fertilizer and ground limestone.

If an area to be seeded is sparsely sodded, weedy, barren and unworked, or packed and hard, all grass and weeds shall first be cut or otherwise satisfactorily disposed of, and the soil then scarified or otherwise loosened to a depth not less than 5 inches (125 mm). Clods shall be broken and the top 3 inches (75 mm) of soil shall be worked into a satisfactory condition by disking or by use of cultipackers, rollers, drags, harrows, or other appropriate means.

An area to be seeded shall be considered a satisfactory seedbed (without requiring additional treatment) if it has recently been thoroughly loosened and worked to a depth of not less than 5 inches; the top 3 inches of soil is loose, friable, and is reasonably free from large clods, rocks, large roots, or other undesirable matter; appropriate amounts of fertilizer and lime have been added; and, if it has been shaped to the required grade immediately prior to seeding. For slope areas steeper than 3:1 (three horizontal to one vertical), the subsoil shall be loose to a depth of 1 inch.

After completion of tilling and grading, lime and fertilizer shall be applied within 48 hours according to the specified rate (Paragraphs 903-2.2 and 2.3) and methods

(Paragraphs 903-3.3.1 and 903-3.3.2) approved by MAA. The seeding mixture shall be applied within 48 hours after application of lime and fertilizer. To firm the seeded areas, cultipacking shall occur immediately after seeding.

903-3.3 METHODS OF APPLICATION. Lime, fertilizer, and seed mixes shall be applied by either the dry or wet application methods that have been approved by MAA and are detailed below.

903-3.3.1 DRY APPLICATION METHOD

a. Liming. If soil test results indicate that lime is needed, the following procedures will be used: following advance preparation of the seedbed, lime shall be applied prior to the application of any fertilizer or seed and only on seedbeds that have been prepared as described in paragraph 903-3.2. The lime shall be uniformly spread and worked into the top 2 inches of soil, after which the seedbed shall be properly graded again.

b. Fertilizing. Following advance preparations (and liming if necessary), fertilizer shall be spread uniformly at the specified rate to provide no less than the minimum quantity stated in Paragraph 903-2.3.

c. Seeding. Seed mixtures shall be sown immediately after fertilization of the seedbed. The fertilizer and seed shall be lightly raked to a depth of 1 inch for newly graded and disturbed areas.

d. Rolling. After the seed has been properly covered, the seedbed shall be immediately compacted using a cultipacker or an approved lawnroller.

903-3.3.2 WET APPLICATION METHOD/HYDROSEEDING

a. General. The Contractor may elect to apply seed and fertilizer as per Paragrapha c and d of this section in the form of an aqueous mixture by spraying over the previously prepared seedbed using methods and equipment approved by MAA. The rates of application shall be as specified in Paragraphs 903-2.1 through 903-2.3.

b. Spraying Equipment. The spraying equipment shall have a container or water tank equipped with a liquid level gauge capable of reading increments of 50 gallons or less over the entire range of the tank capacity. The liquid level gauge shall be mounted so as to be visible to the nozzle operator at all times. The container or tank shall also be equipped with a mechanical power-driven agitator capable of keeping all the solids in the mixture in complete suspension at all times until used.

The spraying equipment shall also include a pressure pump capable of delivering 100 gallons per minute at a pressure of 100 pounds per square inch. The

pressure pump assemblage shall be configured to allow the mixture to flow through the tank when not being sprayed from the nozzle. All pump passages and pipelines shall have the capacity of providing clearance for 5/8-inch solids. The power unit for the pump and agitator shall have controls mounted so as to be accessible to the nozzle operator. A pressure gauge shall be connected to and mounted immediately behind the nozzle.

The nozzle pipe shall be mounted on an elevated supporting stand in such a manner that it can be rotated through 360 degrees horizontally and inclined vertically from at least 20 degrees below to at least 60 degrees above the horizontal. There shall be a quick-acting, three-way control valve connecting the recirculating line to the nozzle pipe and mounted so that the nozzle operator can control and regulate the amount of flow of mixture to be supplied so that mixtures may be properly sprayed over a distance varying from 20 feet to 100 feet. One shall be a close-range ribbon nozzle, one a medium-range ribbon nozzle, and one a long-range jet nozzle. For ease of removal and cleaning, all nozzles shall be connected to the nozzle pipe by means of quick-release couplings. In order to reach areas inaccessible to the regular equipment, an extension hose at least 50 feet in length shall be provided to which the nozzles may be connected.

c. Mixtures. Lime shall be applied separately in the quantity specified, prior to the fertilizing and seeding operations. Lime should be added to and mixed with water at a concentration not to exceed 220 pounds of lime for every 100 gallons of water. After lime has been applied, the tank should be emptied and rinsed with fresh water. Seed and fertilizer shall be mixed together in the relative proportions specified, but the resulting concentration should not exceed 220 pounds of mixture per 100 gallons of water and should be applied within 30 minutes to prevent fertilizer burn of the seeds.

All water used shall be obtained from fresh water sources and shall be free from injurious chemicals and other toxic substances harmful to plant life. Brackish water shall not be used at any time. The Contractor shall identify all sources of water to the MAA Engineer at least two weeks prior to use. The Engineer may take samples of the water at the source or from the tank at any time and have a laboratory test the samples for chemical and saline content. The Contractor shall not use any water from any source that is disapproved by the Engineer following such tests.

All mixtures shall be constantly agitated from the time they are mixed until they are finally applied to the seedbed. All such mixtures shall be used within 30 minutes from the time they were mixed or they shall be wasted and disposed of at a location acceptable to the Engineer.

d. Spraying. Lime shall be sprayed upon previously prepared seedbeds on which the lime, if required, shall have been worked in already. The mixtures

shall be applied using a high-pressure spray which shall always be directed upward into the air so that the mixture will fall to the ground in a uniform spray. Nozzles or sprays shall never be directed toward the ground in such a manner that might produce erosion or runoff. Particular care shall be exercised to ensure that the application is made uniformly, at the prescribed rate, and to guard against misses and overlapped areas. Predetermined quantities of the mixture shall be used in accordance with specifications to cover specified sections of known areas. To checks the rate and uniformity of application, the applicator will observe the degree of wetting of the ground or distribute test sheets of paper or pans over the area at intervals and observe the quantity of material deposited thereon.

On surfaces that are to be mulched as indicated by the plans or designated by the MAA Engineer, seed and fertilizer may be applied by the spray method need not be raked into the soil or rolled. However, on surfaces on which mulch is not to be used, the raking and rolling operations will be required after the soil has dried.

903-3.4 MAINTENANCE OF SEEDED AREAS. The contractor shall protect seeded areas against traffic or other use by warning signs or barricades, as approved by the Engineer. Surfaces gulled or otherwise damaged following seeding shall be repaired by regrading and reseeding as directed. The Contractor shall mow, water as directed, and otherwise maintain seeded areas in a satisfactory condition until final inspection and acceptance of the work.

When either the dry or wet application method outlined above is used for work performed out of season, the Contractor will be required to establish a good stand of grass of uniform color and density to the satisfaction of the Engineer. If at the time when the contract has been otherwise completed it is not possible to make an adequate determination of the color, density, and uniformity of such stand of grass, payment for the unaccepted portions of the areas seeded out of season will be withheld until such time as these requirements have been met.

MULCHING

Mulch shall be applied to all seeded areas immediately after seeding. During the time periods when seeding is not permitted, mulch shall be applied immediately after grading.

Mulch shall be applied as per ITEM 905.

TEMPORARY SEEDING

Lime:	100 pounds of dolomitic limestone per 1,000 square feet.
Fertilizer:	15 pounds of 10-10-10 per 1,000 square feet.
Seed:	Per ITEM 903
Mulch:	Mulch shall be applied as per ITEM 905.

FILL

No fills may be placed on frozen ground. All fill to be placed in approximately horizontal layers, each layer having a loose thickness of not more than 8 inches. All fill in roadways and parking areas is to be classified Type 2 as per Anne Arundel County Code – Article 21, Section 2-308, and compacted to 90% density; compaction to be determined by ASTM D-1557-66T (Modified Proctor). Any fill within the building area is to be compacted to a minimum of 95% density as determined by methods previously mentioned. Fills for pond embankments shall be compacted as per MD-378 Construction Specifications. All other fills shall be compacted sufficiently so as to be stable and prevent erosion and slippage.

SODDING

Installation of sod should follow permanent seeding dates. Seedbed preparation for sod shall be as noted above. Lime and fertilizer per permanent seeding specifications and lightly irrigate soil prior to laying sod. Sod is to be laid on the contour with all ends tightly abutting. Joints are to be staggered between rows. Water and roll or tamp sod to insure positive root contact with the soil. All slopes steeper than 3:1, as shown, are to be permanently sodded or protected with an approved erosion control netting. Additional watering for establishment may be required. Sod is not to be installed on frozen ground. Sod shall not be transplanted when moisture content (dry or wet) and/or extreme temperature may adversely affect its survival. In the absence of adequate rainfall, irrigation should be performed to ensure establishment of sod.

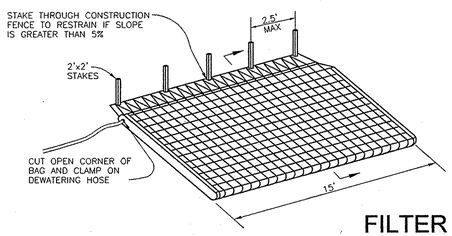
Install sod as per ITEM 904.

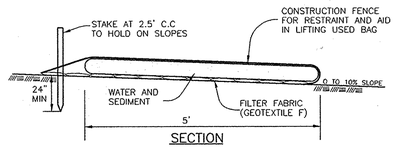
MINING OPERATIONS

Sediment control plans for mining operations must include the following seeding dates and mixtures:

For seeding dates of: February 1 through April 30 and August 15 through October 31, use seed mixture of tall fescue at the rate of 2 pounds per 1,000 square feet and red top at the minimum rate of 0.5 pounds per 1,000 square feet.

NOTE: Use of this information does not preclude meeting all of the requirements of the current Maryland Standards and Specifications for Soil Erosion and Sediment Control.





FILTER BAG DETAIL

(NOT TO SCALE)

AASCD/MAA NOTES

THE PROPOSED PROJECT IS LOCATED IN HOWARD COUNTY, MARYLAND ON TAX MAP 32, BLOCK 21, PARCEL 632. THE PROPOSED PROJECT IS LOCATED NEAR THE BALTIMORE /WASHINTON INTERNATIONAL THURGOOD MARSHALL AIRPORT (BWI), APPROXIMATELY 14,000 FEET NORTH OF RUNWAY 15R-33L.

1. SEDIMENT BASINS AND TRAPS ARE PROPOSED FOR SEDIMENT AND EROSION CONTROL DURING CONSTRUCTION.
2. SEDIMENT TRAPS AND BASINS MUST BE DRAINED COMPLETELY THROUGH A FILTERING DEVICE TO A CLEAR WATER OUTFALL WITHIN 24 HOURS FOLLOWING ANY RAINFALL EVENT.
3. LANDSCAPING & STORM WATER POND LANDSCAPING ON SITE:

   ANY DEVIATION TO PLANT SPECIES AND VEGETATION USED ON THESE PLANS NEED APPROVAL FROM AASCD/MAA. THE PLANT SPECIES USED ON THIS SITE ARE TO AVOID ITS POTENTIAL TO ATTRACT WILDLIFE THAT COULD POSE STRIKE HAZARD TO AIRCRAFT.
4. BWI AIRPORT NOISE ZONE:

   THE SITE FOR THIS PROJECT IS LOCATED OUTSIDE THE BOUNDARIES OF THE AIRPORT NOISE ZONE.
5. THE ALLOWABLE HEIGHT FOR ANY PERMANENT OR TEMPORARY STRUCTURES TALLER THAN 277 FEET ABOVE MEAN SEA LEVEL NEED OBSTRUCTION ANALYSIS REVIEW AND PERMIT FOR THE AIRPORT ZONE.
6. THE STORM WATER MANAGEMENT FACILITIES WITHIN 10,000 FEET OF ACTIVE RUNWAYS OR WITHIN 5 MILES OF AN APPROACH SURFACE MUST DRAIN WITHIN 24 HOURS FOLLOWING . THE 1 OR 2 YEAR STORM EVENTS AND WITHIN 48 HOURS FOLLOWING. THE 10 OR 100 YEAR STORM

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/10/09

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 11/25/08

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2010."

OWNER/DEVELOPER

CLAREMONT L.L.C.
11046 DORSCH FARM ROAD
ELLICOTT CITY, MARYLAND 21042
(410) 730-4556

NO AS-BUILT INFORMATION ON THIS SHEET.

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN
AASCD/MAA NOTES & DETAILS

CLAREMONT OVERLOOK

LOTS 1 - 6, OPEN SPACE LOTS 50-57
AND NON - BUILDABLE BULK PARCELS A -I

TAX MAP 32 GRID 21 — PARCELS 632 AND 24
1ST ELECTION DISTRICT — 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 No.16193

DESIGN BY:	RHV/RJ
DRAWN BY:	RJ
CHECKED BY:	RHV
DATE:	SEPTEMBER 2008
SCALE:	AS SHOWN
W.O. NO.:	02-68.00

SHEET 20 OF 27

AS BUILT 06/24/15

F-08-63

MATCHLINE 'A' SEE THIS SHEET

MATCHLINE 'B' SEE THIS SHEET

MATCHLINE SEE SHEET 22 OF 27

MATCHLINE SEE SHEET 22 OF 27

MATCHLINE 'B' SEE THIS SHEET

NO AS-BUILT INFORMATION ON THIS SHEET

AS-BUILT 06/24/15

F-08-63

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	GROUP
AgC2	AURA GRAVELLY LOAM, 5 TO 10 PERCENT SLOPES, MODERATELY ERODED	B
BrC2	BRANDYWINE LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED	C
BrC3	BRANDYWINE LOAM, 8 TO 15 PERCENT SLOPES, SEVERELY ERODED	C
BrD2	BRANDYWINE LOAM, 15 TO 25 PERCENT SLOPES, MODERATELY ERODED	C
BrD3	BRANDYWINE LOAM, 15 TO 25 PERCENT SLOPES, SEVERELY ERODED	C
BrF	BRANDYWINE LOAM, 25 TO 60 PERCENT SLOPES, NORTH & SOUTH ASPECTS	C
CnD3	CHILLUM-FAIRFAX LOAMS, 5 TO 15 PERCENT SLOPES, SEVERELY ERODED	B
IuB	IUKA LOAM, LOCAL ALLUVIUM, 1 TO 5 PERCENT SLOPES	C

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
- PROPOSED STREET TREE
- T25 — SPECIMEN TREE
- PROPOSED TREE MAINTENANCE EASEMENT
- NO WOODY VEGETATION BUFFER
- RECREATIONAL OPEN SPACE
- PUBLIC WATER, SEWER, AND UTILITY EASEMENT
- PRIVATE WATER, SEWER, AND UTILITY EASEMENT
- USE-IN-COMMON ACCESS EASEMENT
- AREA OF 15 TO 24.9 PERCENT SLOPES
- AREA OF 24.9 PERCENT OR GREATER SLOPES
- FOREST CONSERVATION EASEMENT (RETENTION)

SPECIMEN TREE CHART

NO.	SIZE	TYPE	ACTION	NO.	SIZE	TYPE	ACTION
T1	42" DBH	TULIP POPLAR	REMOVE	T22	35" DBH	TULIP POPLAR	REMOVE
T2	39" DBH	TULIP POPLAR	REMOVE	T23	32" DBH	TULIP POPLAR	REMOVE
T3	30" DBH	TULIP POPLAR	REMOVE	T24	30" DBH	CHESTNUT OAK	REMOVE
T4	30" DBH	TULIP POPLAR	REMOVE	T25	30" DBH	CHESTNUT OAK	REMOVE
T5	52" DBH (2X)	TULIP POPLAR	REMOVE	T26	48" DBH	WHITE OAK	RETAIN
T6	30" DBH	TULIP POPLAR	REMOVE	T27	32" DBH	CHESTNUT OAK	RETAIN
T7	42" DBH	TULIP POPLAR	REMOVE	T28	50" DBH	WHITE OAK	RETAIN
T8	30" DBH	TULIP POPLAR	REMOVE	T29	42" DBH	CHESTNUT OAK	RETAIN
T9	33" DBH	CHESTNUT OAK	REMOVE	T30	34" DBH	CHESTNUT OAK	RETAIN
T10	30" DBH	CHESTNUT OAK	REMOVE	T31	36" DBH	CHESTNUT OAK	RETAIN
T11	30" DBH	CHESTNUT OAK	REMOVE	T32	60" DBH	WHITE OAK	RETAIN
T12	30" DBH	CHESTNUT OAK	REMOVE	T33	30" DBH	CHESTNUT OAK	RETAIN
T13	30" DBH	CHESTNUT OAK	REMOVE	T34	30" DBH	CHESTNUT OAK	RETAIN
T14	38" DBH	CHESTNUT OAK	REMOVE	T35	38" DBH	CHESTNUT OAK	REMOVE
T15	36" DBH	CHESTNUT OAK	REMOVE	T36	30" DBH	CHESTNUT OAK	REMOVE
T16	42" DBH	CHESTNUT OAK	REMOVE	T37	30" DBH	CHESTNUT OAK	REMOVE
T17	39" DBH	TULIP POPLAR	REMOVE	T38	30" DBH	CHESTNUT OAK	REMOVE
T18	39" DBH	CHESTNUT OAK	REMOVE	T39	33" DBH	CHESTNUT OAK	REMOVE
T19	39" DBH	CHESTNUT OAK	REMOVE	T40	30" DBH	CHESTNUT OAK	REMOVE
T20	30" DBH	CHESTNUT OAK	REMOVE	T41	38" DBH	CHESTNUT OAK	REMOVE
T21	42" DBH (2X)	TULIP POPLAR	REMOVE				

DEVELOPER'S LANDSCAPE CERTIFICATE

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

DEVELOPER'S NAME: _____ 10/24/2008

NO.	REVISION	DATE
1	ADD PUBLIC STORMWATER MANAGEMENT, DRAINAGE & UTILITY EASEMENT LABELS	11/16/09
	AND ADD GRADING & REVISED REC. O.S. PER WP-09-223.	

TRASH PAD PLANTING DETAIL

NOT TO SCALE

APPROVED: DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 11-24-08

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development — Date 2/10/09

Chief, Development Engineering Division — Date 4/25/08

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2010."

ROMA JOSHI
DNR-QUALIFIED PROFESSIONAL

FINAL ROAD CONSTRUCTION PLAN
FOREST CONSERVATION AND LANDSCAPING PLAN
CLAREMONT OVERLOOK
LOTS 1 - 6, OPEN SPACE LOTS 50-57
AND NON - BUILDABLE BULK PARCELS A - I

TAX MAP 32 GRID 21 — PARCELS 632 AND 24
1ST ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

OWNER/DEVELOPER
CLAREMONT L.L.C.
6046 DORSCH FARM ROAD
ELLICOTT CITY, MARYLAND 21042
(410) 730-4556

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

DESIGN BY:	RHV/RJ
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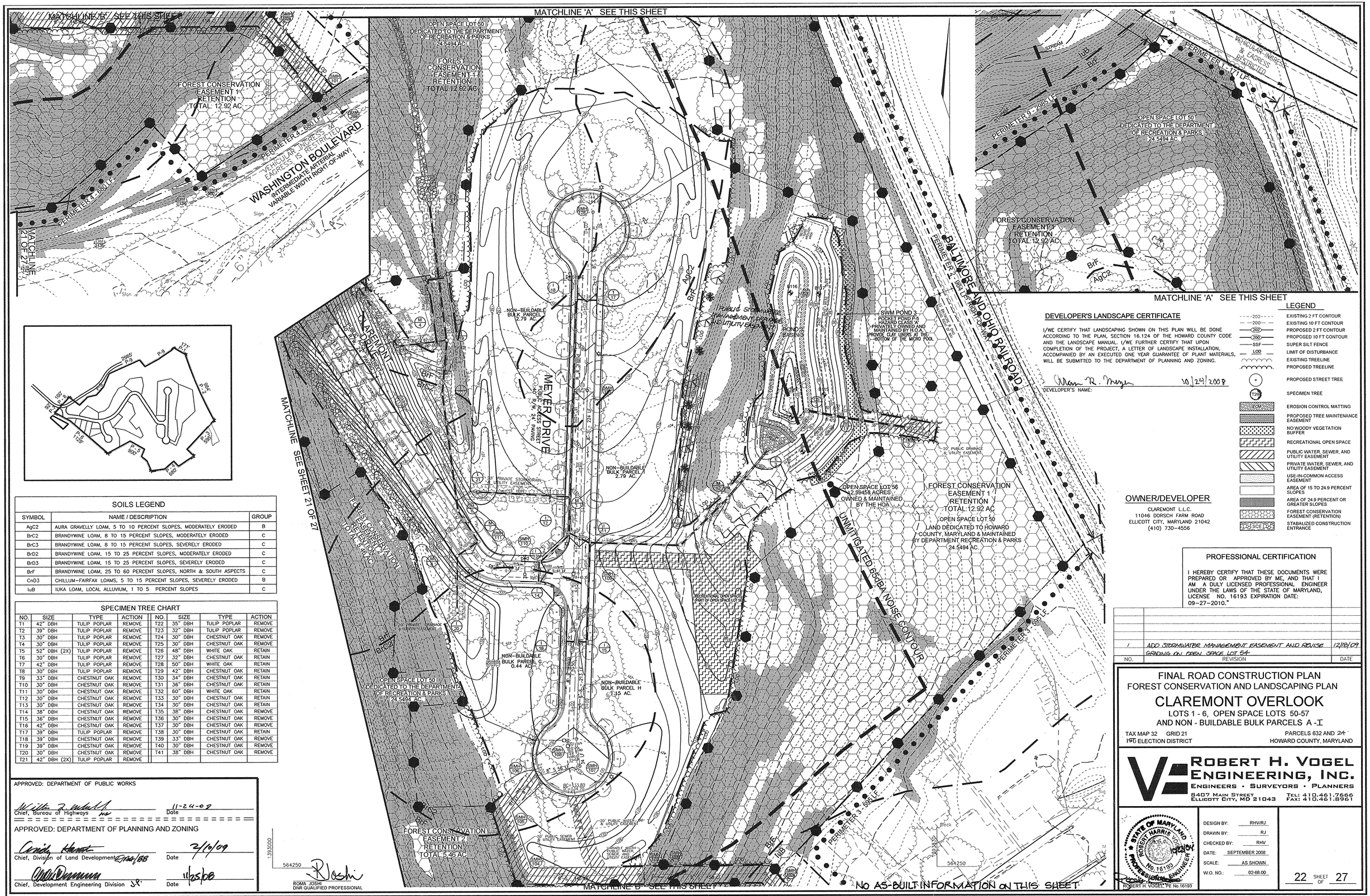
21 SHEET OF 27



SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	GROUP
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BrC2	BRANDYWINE LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED	C
BrC3	BRANDYWINE LOAM, 8 TO 15 PERCENT SLOPES, SEVERELY ERODED	C
BrD2	BRANDYWINE LOAM, 15 TO 25 PERCENT SLOPES, MODERATELY ERODED	C
BrD3	BRANDYWINE LOAM, 15 TO 25 PERCENT SLOPES, SEVERELY ERODED	C
BrF	BRANDYWINE LOAM, 25 TO 60 PERCENT SLOPES, NORTH & SOUTH ASPECTS	C
CnD3	CHILLUM-FAIRFAX LOAMS, 5 TO 15 PERCENT SLOPES, SEVERELY ERODED	B
IuB	IUKA LOAM, LOCAL ALLUVIUM, 1 TO 5 PERCENT SLOPES	C

SPECIMEN TREE CHART

NO.	SIZE	TYPE	ACTION	NO.	SIZE	TYPE	ACTION
T1	42" DBH	TULIP POPLAR	REMOVE	T22	35" DBH	TULIP POPLAR	REMOVE
T2	39" DBH	TULIP POPLAR	REMOVE	T23	32" DBH	TULIP POPLAR	REMOVE
T3	30" DBH	TULIP POPLAR	REMOVE	T24	30" DBH	CHESTNUT OAK	REMOVE
T4	30" DBH	TULIP POPLAR	REMOVE	T25	30" DBH	CHESTNUT OAK	REMOVE
T5	52" DBH (2X)	TULIP POPLAR	REMOVE	T26	48" DBH	WHITE OAK	RETAIN
T6	30" DBH	TULIP POPLAR	REMOVE	T27	32" DBH	CHESTNUT OAK	RETAIN
T7	42" DBH	TULIP POPLAR	REMOVE	T28	50" DBH	WHITE OAK	RETAIN
T8	30" DBH	TULIP POPLAR	REMOVE	T29	42" DBH	CHESTNUT OAK	RETAIN
T9	33" DBH	CHESTNUT OAK	REMOVE	T30	34" DBH	CHESTNUT OAK	RETAIN
T10	30" DBH	CHESTNUT OAK	REMOVE	T31	36" DBH	CHESTNUT OAK	RETAIN
T11	30" DBH	CHESTNUT OAK	REMOVE	T32	60" DBH	WHITE OAK	RETAIN
T12	30" DBH	CHESTNUT OAK	REMOVE	T33	30" DBH	CHESTNUT OAK	RETAIN
T13	30" DBH	CHESTNUT OAK	REMOVE	T34	30" DBH	CHESTNUT OAK	RETAIN
T14	38" DBH	CHESTNUT OAK	REMOVE	T35	38" DBH	CHESTNUT OAK	REMOVE
T15	36" DBH	CHESTNUT OAK	REMOVE	T36	30" DBH	CHESTNUT OAK	REMOVE
T16	42" DBH	CHESTNUT OAK	REMOVE	T37	30" DBH	CHESTNUT OAK	REMOVE
T17	39" DBH	TULIP POPLAR	REMOVE	T38	30" DBH	CHESTNUT OAK	RETAIN
T18	39" DBH	CHESTNUT OAK	REMOVE	T39	33" DBH	CHESTNUT OAK	REMOVE
T19	39" DBH	CHESTNUT OAK	REMOVE	T40	30" DBH	CHESTNUT OAK	REMOVE
T20	30" DBH	CHESTNUT OAK	REMOVE	T41	38" DBH	CHESTNUT OAK	REMOVE
T21	42" DBH (2X)	TULIP POPLAR	REMOVE				

APPROVED: DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 11-24-09

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development — Date 2/6/09

Chief, Development Engineering Division — Date 11/25/08

DEVELOPER'S LANDSCAPE CERTIFICATE

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

DEVELOPER'S NAME: — 10/29/2008

LEGEND

- EXISTING 2 FT CONTOUR
- EXISTING 10 FT CONTOUR
- PROPOSED 2 FT CONTOUR
- PROPOSED 10 FT CONTOUR
- SSF — SUPER SILT FENCE
- LOD — LIMIT OF DISTURBANCE
- EXISTING TREELINE
- PROPOSED TREELINE
- PROPOSED STREET TREE
- T29 — SPECIMEN TREE
- EROSION CONTROL MATTING
- PROPOSED TREE MAINTENANCE EASEMENT
- NO WOODY VEGETATION BUFFER
- RECREATIONAL OPEN SPACE
- PUBLIC WATER, SEWER, AND UTILITY EASEMENT
- PRIVATE WATER, SEWER, AND UTILITY EASEMENT
- USE-IN-COMMON ACCESS EASEMENT
- AREA OF 15 TO 24.9 PERCENT SLOPES
- AREA OF 24.9 PERCENT OR GREATER SLOPES
- FOREST CONSERVATION EASEMENT (RETENTION)
- STABALIZED CONSTRUCTION ENTRANCE

OWNER/DEVELOPER

CLAREMONT L.L.C.
11046 DORSCH FARM ROAD
ELLICOTT CITY, MARYLAND 21042
(410) 730-4556

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2010."

NO.	REVISION	DATE
1	ADD STORMWATER MANAGEMENT EASEMENT AND REVISE GRADING ON OPEN SPACE LOT 54	12/18/09

FINAL ROAD CONSTRUCTION PLAN
FOREST CONSERVATION AND LANDSCAPING PLAN
CLAREMONT OVERLOOK
LOTS 1 - 6, OPEN SPACE LOTS 50-57
AND NON - BUILDABLE BULK PARCELS A-I

TAX MAP 32 GRID 21 — PARCELS 632 AND 24
1ST ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET, ELLICOTT CITY, MD 21043
TEL: 410.461.7666 FAX: 410.461.5961

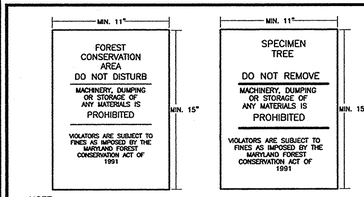
STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — PROFESSIONAL ENGINEER
ROBERT H. VOGEL PE No 16193

DESIGN BY:	RHV/RJ
DRAWN BY:	RJ
CHECKED BY:	RHV
DATE:	SEPTEMBER 2008
SCALE:	AS SHOWN
W.O. NO.:	02-68.00

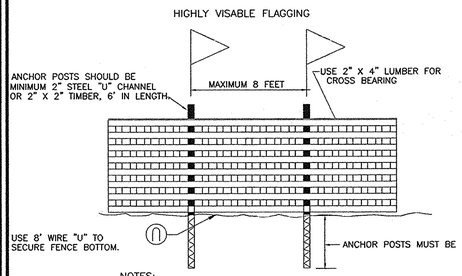
22 SHEET OF 27

AS-BUILT 06/24/15

F-08-63

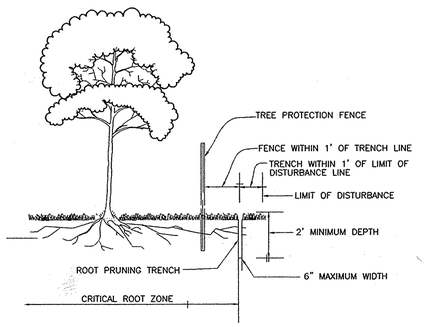


NOTE:
1. BOTTOM OF SIGNS TO BE HIGHER THAN TOP OF TREE PROTECTION FENCE.
2. SIGNS TO BE PLACED AT A MAXIMUM SPACING OF 50–100 FEET. CONDITIONS ON–SITE AFFECTING VISIBILITY MAY WARRANT PLACING SIGNS CLOSER OR FARTHER APART.
3. ATTACHMENT OF SIGNS TO TREES IS PROHIBITED.



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.

BLAZE ORANGE PLASTIC MESH TYPICAL TREE PROTECTION FENCE DETAIL



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.

ROOT PRUNING
NTS

FOREST CONSERVATION EASEMENT TABLE TOTAL RETENTION: 18.377 AC. TOTAL FOREST CONSERVATION EASEMENT: 18.377 AC.			
FOREST CONSERVATION EASEMENT 1		FOREST CONSERVATION EASEMENT 2	
RETENTION AREA	12.86290 AC.	RETENTION AREA	5.51411 AC.

APPROVED: DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 11-24-08

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development — Date 11/6/09

Chief, Development Engineering Division — Date 11/25/08

HOWARD COUNTY FOREST CONSERVATION WORKSHEET

ZONED: R-ED
NET TRACT AREA:

A. TOTAL TRACT AREA	43.34 AC
B. AREA WITHIN 100 YEAR FLOODPLAIN	0.00 AC
C. AREA TO REMAIN IN AGRICULTURAL PRODUCTION	0.00 AC
D. NET TRACT AREA	43.34 AC

LAND USE CATEGORY (FROM TABLE 3.2.1, PAGE 40, MANUAL)

INPUT THE NUMBER "1" UNDER THE APPROPIATE LAND USE ZONING, AND LIMIT TO ONLY ONE ENTRY.

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

E. AFFOREST THRESHOLD	15% X D =	6.50 AC
F. CONSERVATION THRESHOLD	20% X D =	8.67 AC

EXISTING FOREST COVER:

G. EXISTING FOREST COVER (EXCLUDING FLOODPLAIN)	=	31.65 AC
H. AREA OF FOREST ABOVE AFFORESTATION THRESHOLD	=	26.15 AC
I. AREA OF FOREST ABOVE CONSERVATION THRESHOLD	=	22.92 AC

BREAK EVEN POINT:

J. FOREST RETENTION WITH NO MITIGATION REQUIRED	=	13.24 AC
K. CLEARING PERMITTED WITHOUT MITIGATION	=	18.37 AC

PROPOSED FOREST CLEARING:

L. TOTAL AREA OF FOREST TO BE CLEARED	=	13.25 AC
M. TOTAL AREA OF FOREST TO BE RETAINED	=	18.40 AC

PLANTING REQUIREMENTS:

N. REFORESTATION FOR CLEARING ABOVE CONSERVATION THRESHOLD	=	3.31 AC
P. REFORESTATION FOR CLEARING BELOW CONSERVATION THRESHOLD	=	0.00 AC
Q. CREDIT FOR RETENTION ABOVE CONSERVATION THRESHOLD	=	9.73 AC
R. TOTAL REFORESTATION REQUIRED	=	0.00 AC
S. TOTAL AFFORESTATION REQUIRED	=	0.00 AC
T. TOTAL REFORESTATION AND AFFORESTATION REQUIRED	=	0.00 AC

TOTAL FOREST RETENTION= 18.38 AC

FOREST CONSERVATION EASEMENTS HAVE BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY FOREST CONSERVATION MANUAL. NO CLEARING, GRADING OF CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENTS. HOWEVER FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED ARE ALLOWED.

TOTAL FOREST CONSERVATION OBLIGATION FOR CLAREMONT OVERLOOK TO BE FULFILLED BY ON–SITE RETENTION OF 18.38 AC.

BOND FOR 18.38 AC. (800,632.8 X 0.20 = $160,126.56)
TOTAL FINANCIAL SURETY OBLIGATION IS $160,126.56

SURETY FOR REQUIRED FOREST CONSERVATION OBLIGATION SHALL BE POSTED WITH THE DEVELOPER'S AGREEMENT FOR THIS FINAL PLAN, F–08–63.

FOREST RETENTION AREAS AND NOTES

1. NO RARE, THREATENED OR ENDANGERED SPECIES WERE OBSERVED ON THIS SITE.
2. THERE ARE NO ISOLATED FOREST STANDS ON THIS SITE.
3. CHANGES IN GRADING AND RUNOFF WITHIN CONSTRUCTION/INSTALLATION AREAS WILL NOT ADVERSELY AFFECT THE SOILS WITHIN THE FOREST RETENTION AREA. SEDIMENT CONTROL MEASURES WILL REDIRECT CONCENTRATED FLOW RUNOFF TO STORMWATER MANAGEMENT FACILITIES, RETAIN SEDIMENT WITHIN THE CONSTRUCTION SITE, AND/OR REDIRECT CLEAN WATER AWAY FROM CONSTRUCTION AREAS.
4. THE FOREST CONSERVATION EASEMENT HAS BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT, HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.

FOREST PROTECTION NOTES

PRE-CONSTRUCTION ACTIVITES

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

CONSTRUCTION PHASE

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

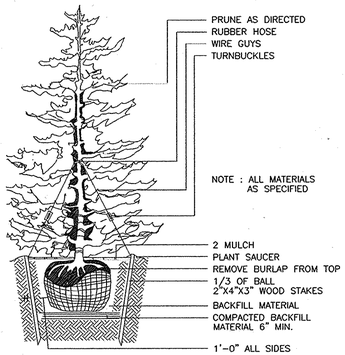
POST-CONSTRUCTION ACTIVITIES

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

SEQUENCE OF CONTRUCTION-FOREST CONSERVATION

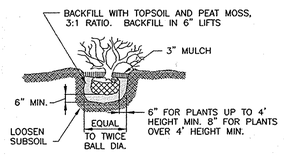
1. PRECONSTRUCTION MEETING /SITE WALK WITH CONTRACTORS AND OTHER RESPONSIBLE PARTIES TO DEFINE PROTECTION MEASURES TO BE UTILIZED AND TO POINT OUT PARTICULAR TREES TO BE SAVED.
2. STAKE OUT LIMITS OF DISTURBANCE AND TREE PROTECTION FENCING LOCATIONS.
3. INSTALL TREE PROTECTION FENCING: FENCING TO BE 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 OCCURRED AND WITH APPROVAL FROM THE HOWARD COUNTY OFFICE OF PLANNING AND ZONING.

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09–27–2010."

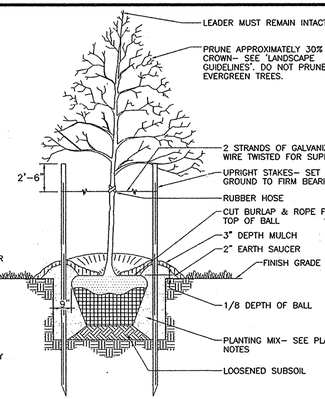


TYPICAL EVERGREEN TREE PLANTING DETAIL
NOT TO SCALE

TRASH PAD LANDSCAPING				
SYM.	QTY.	DESCRIPTION	SIZE	REM.
	6	DWARF JAPANESE YEW	3'–4' HT	B & B



SHRUB PLANTING DETAIL
NOT TO SCALE



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

PLANTING SCHEDULE FOR STREET TREES (PUBLIC)				
QUAN.	QUAN.	BOTANICAL NAME	SIZE	REM.
	89	ACER RUBRUM RED MAPLE (SEEDLESS CULTIVARS SUCH AS 'CELZAM' 'KARPICK', AND 'SOMERSET' ONLY	2 1/2"–3" Cal.	B & B
	40	ACER X FREEMANI FREEMAN MAPLE (SEEDLESS CULTIVARS SUCH AS 'AUTUMN BLAZE', 'CELEBRATION', 'MARMO' AND 'SCARLET SENTINEL' ONLY	2 1/2"–3" Cal.	B & B
	17	ACER CAMPESTRE HEDGE MAPLE	2 1/2"–3" Cal.	B & B
PLANTING SCHEDULE FOR STREET TREES (PRIVATE)				
	17	PRUNUS SERRULATA KWANZAN KWANZAN CHERRY (GROWTH HEIGHT=25')	2 1/2"–3" Cal.	B & B

LANDSCAPE SCHEDULE FOR PERIMETER & SCHEDULE D LANDSCAPING				
	QUAN.	BOTANICAL NAME	SIZE	REM.
	24	CARPINUS BETULUS 'FASTIGIATA' UPRIGHT EUROPEAN HORNBEAM	2 1/2"–3" Cal.	B & B
	18	TILIA CORDATA 'GREENSPIRE'/GREENSPIRE LITTLELEAF LINDEN (SHADE TREE)	2 1/2"–3" Cal.	B & B
	10	PINUS STROBUS EASTERN WHITE PINE (EVERGREEN TREEES)	6'–8' Ht.	B & B

GENERAL NOTES

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 CERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING
3. FINAL LOCATION OF PLAN 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.

FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING PROVIDED PER THE LANDSCAPE MANUAL HAS BEEN POSTED WITH THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF $18,230.00 FOR THE REQUIRED 42 SHADE TREES AND THE REQUIRED 23 EVERGREEN TREES AND 6 SHRUBS.

DEVELOPER'S LANDSCAPE CERTIFICATE

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

DEVELOPER'S NAME: — 10/29/2008

DNR QUALIFIED FOREST PROFESSIONAL
ROMA JOSHI

OWNER/DEVELOPER
CLAREMONT L.L.C.
11046 DORSCH FARM ROAD
ELLICOTT CITY, MARYLAND 21042
(410) 730–4556

SCHEDULE A PERIMETER LANDSCAPE EDGE												
CATEGORY		ADJACENT TO ROADWAYS				ADJACENT TO PERIMETER PROPERTIES						TOTAL
PERIMETER/FRONTAGE DESIGNATION LANDSCAPE TYPE	TRASH PAD	1 B	2 B	4 B	8 A	3 A	5 A	6 A	7 A	9 A		
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	4'X10'	171'	964'	680'	160'	595'	900'	1129'	92'	2985'		
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	–	Yes* 171'	Yes* 964'	Yes* 680'	Yes* 85'	Yes* 595'	Yes* 722'	No	No	Yes* 2985'		
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					75'		178'		92'			
SHADE TREES	–	1:50 0	1:50 0	1:50 0	1:40 1	1:50 0	1:60 3	1:60 19	1:60 2	1:60 0	24	
EVERGREEN TREES	–	1:40 0	1:40 0	1:40 0	–	1:40 0	–	–	–	–	0	
SHRUBS	6	–	–	–	–	–	–	–	–	–		
NUMBER OF PLANTS PROVIDED												
SHADE TREES	–	0	0	0	0	0	3	19	2	0	24	
EVERGREEN TREES	–	0	0	0	–	0	–	–	–	–	0	
OTHER TREES (2:1 SUBSTITUTION)	–	–	–	–	–	–	–	–	–	–		
SHRUBS (10:1 SUBSTITUTION)	6	–	–	–	–	–	–	–	–	–	6	
DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)												

* EXISTING WOODS TO REMAIN

SCHEDULE D : STORMWATER MANAGEMENT AREA LANDSCAPING POND #1	
LINEAR FEET OF PERIMETER	703LF
CREDIT FOR EXISTING VEGETATION (NO, YES AND LINEAR FEET)	YES, 360LF EX. WOODS TO REMAIN
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	N/A
NUMBER OF TREES REQUIRED SHADE TREES EVERGREEN TREES	(397LF) 8 SHADE TREES 10 EVERGREEN TREES
NUMBER OF TREES PROVIDED SHADE TREES EVERGREEN TREES OTHER TREES (2:1 SUBSTITUTION)	8 SHADE TREES 10 EVERGREEN TREES 0 TREES (0 SUBSTITUTION TREES)

SCHEDULE D : STORMWATER MANAGEMENT AREA LANDSCAPING POND #2	
LINEAR FEET OF PERIMETER	790LF
CREDIT FOR EXISTING VEGETATION (NO, YES AND LINEAR FEET)	YES, 486 LF EX. WOODS TO REMAIN
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	N/A
NUMBER OF TREES REQUIRED SHADE TREES EVERGREEN TREES	(304LF) 6 SHADE TREES 8 EVERGREEN TREES
NUMBER OF TREES PROVIDED SHADE TREES EVERGREEN TREES OTHER TREES (2:1 SUBSTITUTION)	6 SHADE TREES 8 EVERGREEN TREES 0 TREES (0 SUBSTITUTION TREES)

SCHEDULE D : STORMWATER MANAGEMENT AREA LANDSCAPING POND #3	
LINEAR FEET OF PERIMETER	1297LF
CREDIT FOR EXISTING VEGETATION (NO, YES AND LINEAR FEET)	YES, 1098 LF EX. WOODS TO REMAIN
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	N/A
NUMBER OF TREES REQUIRED SHADE TREES EVERGREEN TREES	(199LF) 4 SHADE TREES 5 EVERGREEN TREES
NUMBER OF TREES PROVIDED SHADE TREES EVERGREEN TREES OTHER TREES (2:1 SUBSTITUTION)	4 SHADE TREES 5 EVERGREEN TREES 0 TREES (0 SUBSTITUTION TREES)

PUBLIC STREET TREE CALCULATIONS				
STREET NAME	LINEAR FEET	NO. REQUIRED	NO. PROVIDED	TOTAL
CLAREMONT DRIVE	3544/40	89	89	
MEYER DRIVE	1583/40	40	40	
MARGERY LANE	690/40	17	17	146

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN
LANDSCAPE & FOREST CONSERVATION NOTES AND DETAILS

CLAREMONT OVERLOOK

LOTS 1 - 6, OPEN SPACE LOTS 50-57
AND NON - BUILDABLE BULK PARCELS A -I

TAX MAP 32 GRID 21 — PARCELS 632 AND 24
1ST ELECTION DISTRICT — 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 No.16193

DESIGN BY:	RHV/RJ
DRAWN BY:	RJ
CHECKED BY:	RHV
DATE:	SEPTEMBER 2008
SCALE:	AS SHOWN
W.O. NO.:	02-68.00

SHEET 23 OF 27

NO AS-BUILT INFORMATION ON THIS PLAN

AS-BUILT 06/24/15

F-08-63

CLAREMONT OVERLOOK

5600 WASHINGTON BLVD., ELKRIDGE, HOWARD COUNTY, MD

CORNERSTONE RETAINING WALL DESIGN

APPROVED: DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 11-24-08

APPROVED: DEPARTMENT OF PLANNING AND ZONING

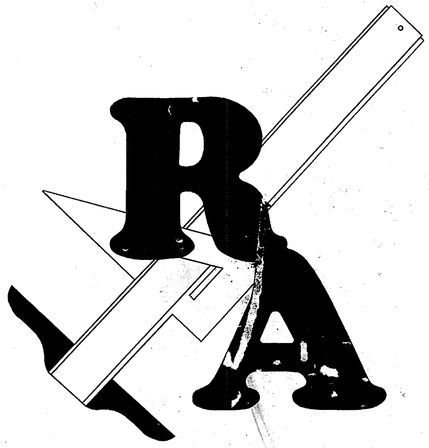
Chief, Division of Land Development — Date 2/9/09

Chief, Development Engineering Division — Date 11/25/08

MARYLAND 1-800-257-7777 STOP-CALL BEFORE YOU DIG!

CALL "MISS UTILITY"
TELEPHONE 1-800-257-7777 FOR UTILITY LOCATIONS
AT LEAST 48 HOURS BEFORE CONSTRUCTION.

WRITTEN DIMENSIONS ON THE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALE DIMENSIONS. CONTRACTORS SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS ON THE JOB AND THIS OFFICE MUST BE NOTIFIED OF ANY VARIATION FROM THE DIMENSIONS AND CONDITIONS SHOWN BY THESE DRAWINGS.



RYAN & ASSOCIATES

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SPECIALIZING IN STRUCTURAL ENGINEERING,
GEOTECHNICAL ENGINEERING AND RETAINING WALLS
www.ryanandassociates.net

Scope: The retaining wall engineer's (Ryan & Associates) scope consists of preparing the wall design to enable the contractor to obtain necessary permits and properly construct the wall. The design considers the internal and local stability of the reinforced soil mass and is in accordance with acceptable engineering practice and these specifications. Services outside this scope such as responding to the owner's engineering firm (civil, structural, geotechnical or otherwise), provision of quality control testing & inspection, certification of wall construction, investigation of failed or non-conforming walls or any other services may be provided on a time & materials basis or for a negotiated fee. The scope of Ryan & Associates (RA) for this project does not include wall stakeout or any other civil engineering/surveying.

Contactor's Responsibility: This design has been done in an effort to achieve the required grade changes shown on the civil plans for this project. The wall installer must verify the accuracy of this design by comparing it to the civil plans prior to wall construction. The civil plans govern and their grades must always be met. The lineal footage of the wall and the TW/BW elevations must be checked. If an error is discovered,, RA shall be notified immediately and revisions will be provided. RA will not be responsible for correcting a wall that is being built or has been built incorrectly due to this design being followed rather than the civil drawings.

Stormwater Management: The segmental retaining wall is not a stormwater management structure (unless designed as a "water application"). Therefore, it is absolutely essential that surface water be prevented from entering and/or ponding above the wall's reinforced geogrid zone. This is usually accomplished by the site engineer (owner's civil engineer) grading the surface behind the wall to direct surface water to swales that divert the water around the wall ends, to inlets or over the top of the wall through scuppers. If water is directed to the wall, the top eight inches of compacted fill over the reinforced geogrid zone must have impermeable soils such as clay (CL, GC or SC) or low permeable soils (ML meeting the parameters listed in the RA Specifications under Section 3.16A). An underlying geomembrane may also be used to line the swale or be laid over top of the part of the reinforced geogrid zone that is prone to ponding (see RA Specifications for details) if clayey or silty soils are not readily available.

INSTALLATION MUST CONFORM TO THE ATTACHED "Ryan & Associates segmental retaining wall specifications and installation guidelines for Cornerstone".

SHEET INDEX

Project : Claremont Overlook
Location : 5600 Washington Blvd., Elkridge, Howard County, MD
Wall Installer : TBD
Contractor : TBD
Owner/Developer : CLAREMONT, LLC.
Block Producer : York Building Products Company
RA Project Manager : Monoj Sircar, P.E.

SHEET 24 OF 27

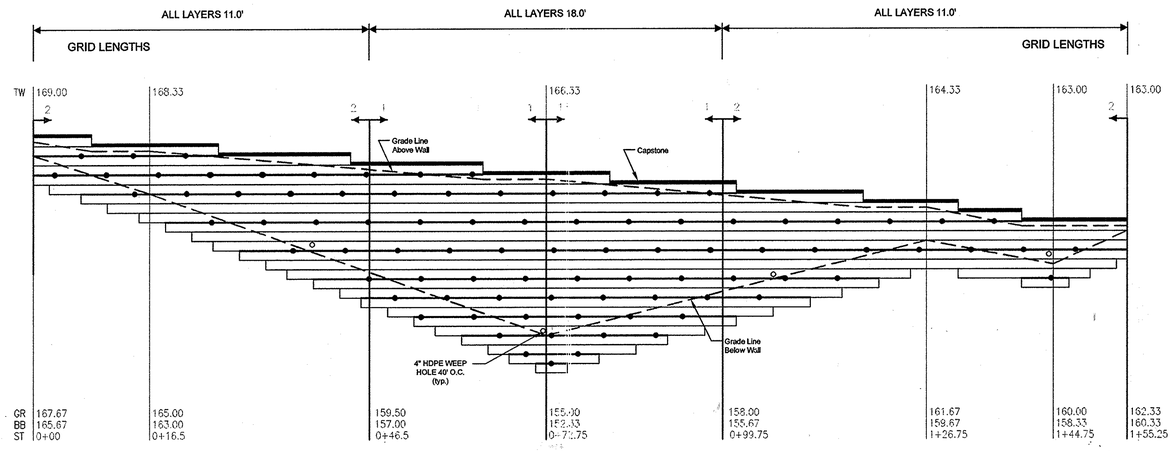
PLOT DATE: 102108 RA PROJECT# 1283-07-01 DESIGNED: MS

NO AS-BUILT INFORMATION ON THIS SHEET

AS-BUILT 06/24/15

F-08-63

WALL PROFILE



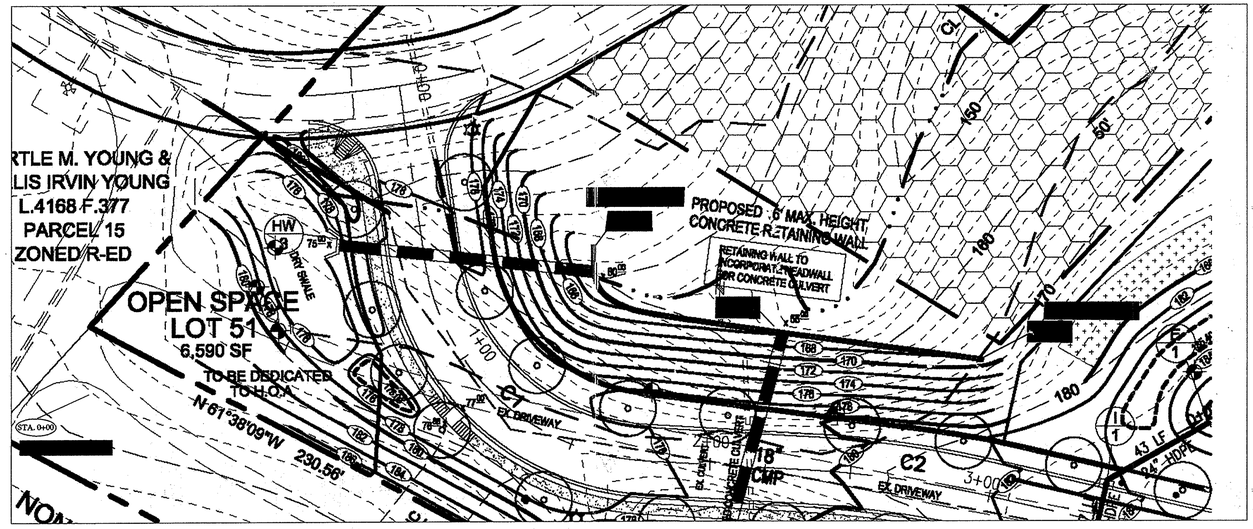
SCALE: HORIZONTAL SCALE 1" = 10'
VERTICAL SCALE 1" = 5'

GRID KEY: MIRAFI 5XT

TW = TOP OF WALL (NOT INCLUDING CAP)
GR = PROPOSED FINISHED GRADE AT BASE OF WALL
BB = BOTTOM OF BLOCK / TOP OF LEVELING PAD
ST = WALL STATION

CROSS SECTION DETAILS & FACTORS OF SAFETY:

SECTION	STATION	TOTAL WALL HEIGHT (Including Embedment) (Excluding Caps)	LOAD APPLIED	SLIDING minimum 1.50	OVERTURNING minimum 2.00	BEARING CAPACITY minimum 2.00	BEARING PRESSURE PSF
1	0+47 TO 1+00	14.00'	100 PSF LIVE LOAD	1.71	4.58	10.58	2,504
2	0+00 TO 0+47 & 1+00 TO 1+55	10.00'	100 PSF LIVE LOAD	1.60	3.88	8.94	1,825



WALL PLAN
SCALE: 1"=25'

STRUCTURAL NOTES

1. SOIL PARAMETERS: Per Marshall Engineering, Inc.'s geotechnical report dated 05/01/03 the soils at the wall location are mostly silty–clayey sand. Therefore, a conservative assumed internal angle of friction of 28° is used for the retaining wall design. This is for a SC–SM soil type and must be verified prior to or during wall construction by the site geotechnical engineer. CH (fat clay), MH and OH/OL/PT (organic) soils are not acceptable for wall construction. If these unsuitable soils are encountered they must be removed and replaced with soils that meet or exceed the design friction angle of 28°. All soils used for wall backfill must also meet the following additional requirements: maximum of 65% passing the #200 sieve (minimum of 35% retained on the #200 sieve), plastic limit =20, maximum optimum moisture of 20%, minimum dry unit weight of 100 PCF and maximum liquid limit of 40. Since a proctor was not provided an assumed unit weight (maximum wet density) of 125 PCF was used for the infill and retained soils. The foundation soils are sandy–silt having 30° internal angle of friction and 115 PCF wet density. The site geotechnical engineer will need to do a proctor test for the proposed wall infill to determine its actual density and moisture. Fluctuations in unit weight of 5 PCF higher or lower will not affect this design, however if the actual unit weights vary by more than 5 PCF RA shall be notified so that the cross sections analyses can be rerun to verify that all factors of safety are still met.

2. BEARING CAPACITY: The sub–grade (the soils under the wall's gravel leveling pad and the soils under the wall's reinforced geogrid zone) must be tested by the site geotechnical engineer prior to wall construction and have a minimum allowable bearing capacity of 3,000 PSF. The actual bearing pressure exerted by each specific wall section is shown on the Cross Section Details and Factors of Safety table so that the site geotechnical engineer may determine specifically how to handle any areas where low bearing capacity soils are encountered on an individual wall section basis. Areas of the sub–grades that do not meet these maximum pressures will require undercutting or geogrid reinforcing. The sub–grade must be virgin (natural undisturbed soil with blow counts ≥12) or suitable fill (≥28°) compacted to 95% of a standard proctor maximum dry density.

3. SLOPES & SURCHARGES: A 100 PSF live load surcharge and a 2:1 back slope is applied to the wall.

4. SPECIFICATIONS: Construction and materials must conform to the attached "Ryan & Associates segmental retaining wall specifications and installation guidelines for "Cornerstone."

5. BLOCK SYSTEM: This design is valid only for the Cornerstone Block System. Each segmental wall system has unique dimensions, connection devices and interacts differently with geogrids; therefore other block types may not be substituted without a partial or total redesign.

6. WALL BATTER: The Cornerstone Blocks have a 4.5° batter (5/8") setback per block course. It is important for the wall installer, general contractor and the civil engineer/surveyor to predetermine the wall's batter during stake out. The base of the wall will need to be moved forward if there are critical dimensions that need to be met on the high side of the wall (such as distances to curbs or guardrails).

7. GEOGRIDS: This wall was designed with Mirafi 5XT which has a LTDS (Long Term Design Strength) of 2327. All geogrid substitutions must have prior approval of RA.

8. CIVIL PLANS: This design package is based on the partial "Grading and Drainage Plan", forwarded to RA on 07/31/07 by Vogel Engineering, Ellicott City, MD.. The plan has been included in this submittal to show the RA wall numbering and stationing.

9. EMBEDMENT: Wall embedment varies from two to four blocks. The exact amount of buried blocks can be determined by subtracting the "BB" elevations from the "GR" elevations on the RA profile drawing.

10. WALL PROFILE: The elevation drawing was done to represent the grade changes necessary on the civil drawings and was done in even block course increments of 0.667' (8.0"). Minor field changes may be necessary by the wall installer. Lineal footage may be added or subtracted as needed if the wall's height is equal to or less than the design height. If the wall needs to be raised in height, RA shall be notified and new structural cross sections must be provided before the installer proceeds. The cap height of 0.500' (6.00") is not shown on the profile drawing however its height may have been used in some cases to achieve the desired TW elevations.

11. DESIGN SOFTWARE: Internal and external wall calculations were performed with SRWall (version 3.22). A table has been included ("Cross Section Details and Factors of Safety") which has the following information: section location (area of wall referenced), total wall height, loads applied, factors of safety (for sliding, overturning and bearing capacity) and bearing pressure (the weight exerted by the wall structure– block and geogrid zone). Factors of safety of 1.5 were also met for: geogrid pullout (from the soil and from the block), geogrid overstress (geogrid rupture) and connection (block to geogrid).

12. PIPES INTERSECTING THE WALL: The civil plans show a 18" CMP pipe intersecting the Wall (at approximate stations 0+73 and at 1+45). The wall leveling pads may not bear on plastic or steel pipes (such as ADS, CMP, HDPE, PVC, SLCPP, etc.) or utilities (such as cable, electric, gas, telephone, sewer or water lines) that are less than 42" below the bottom of the leveling pad elevations (0.5' below the "BB" elevations– bottom of blocks/top of leveling pads). Aluminum pipes, plastic pipes, steel pipes and utilities that are less than 42" below the bottom of leveling pad elevations must be bridged by grade beams (if under or within the walls' leveling pads) or lintels (if within the wall structures). Contact RA office for details on these grade beams or lintels. Grade beams shall bear a minimum of 1.0' on 95% compacted gravel or soils and lintels shall bear a minimum of 9" (half a block width) on the blocks on either side. The maximum free span for cast in place grade beams/lintels is 4.5'. RA is not responsible for wall failure that results from the stormwater structures leaking water and saturating the walls' reinforced geogrid zones. It is imperative that the site contractor adequately seals all joints in these structures.

13. BACK SLOPES: Water management is especially critical since there are back slopes above these walls. Since water is being directed to the walls, the water must be directed over them (sheet flow– the fill soils must come to tops of caps) or swales must be constructed behind the walls to divert the water around the end(s) of the walls. The surface water runoff must not be permitted to enter or pond above the reinforced geogrid zones or be introduced into the 12" gravel drainage layers (saturation of the reinforced geogrid zones will cause the reinforced backfill soils to loose their shear strength and may ultimately lead to wall failure). If swales are done they must have minimum depths of 8" and minimum 1–2% slopes laterally from the high points to the end(s) of the walls (see swale details for clarification). They shall be lined with asphalt, concrete, impermeable soils (clay: CL, GC or SC), low permeable soils (ML meeting the requirements in the RA Specifications) or an underlying geomembrane (see Section 3.16A of the RA Specifications for details on low permeable soils and the geomembranes). The soils in the back slopes and the retained zones (within the walls' zones of influence: behind the reinforced geogrid zones and extending to distances that are twice the walls' exposed heights) must be virgin (natural undisturbed soil with blow counts ≥12) or suitable fill (≥28°) compacted to 95% of a standard proctor maximum dry density. This must be verified by the site geotechnical engineer. The requirements for the impermeable layer/geomembrane may be waived if the infill soils are free–draining gravel or sand (classified by USCS as GP, GW, SP or SW).

14. FENCE/RAILING: Fence/railing installation behind the wall(s) for a wall exposed height of 30 inches or taller (varies by local jurisdiction) is a must. Fence/ railing post (non–wind/ non–load bearing) foundation details are shown on sheet 3.

15. WEEP HOLES: Weep hole(s) shown in wall profile(s) are for guidance purposes only, actual locations to be decided on site in consultation with site geotech engineer at a maximum spacing of 40 feet O.C. and at low grade points.

16. CONSTRUCTION OVERSIGHT: The construction of this wall must be performed under the observation/review of a Maryland Registered Professional Engineer or their designated representative to ensure that it is built in accordance with the RA Structural Notes and Specifications. All wall construction must also be certified by a registered professional geotechnical/structural engineer.

17. SAFETY: The contractor is responsible for the following: a) safety and protection within and adjacent to the site; b) Adhere to OSHA's health & safety laws; c) any special inspections required by the building codes; d) any temporary bracing or shoring; e) verification of all conditions, dimensions & elevations; f) erosion and sediment control of the site; g) notifying the design engineer (RA) of any conflicts or discrepancies between the design condition and site condition.

APPROVED: DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 11-24-08

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development BB — Date 2/9/09

Chief, Development Engineering Division J.P. — Date 11/25/08

NO AS-BUILT INFORMATION ON THIS SHEET.

REVISIONS			
NO.	DATE	BY	DESCRIPTION

DRAWN BY: MS
DESIGN BY: MS
CHECKED BY: WKR
DATE: 08/31/07

CLIENT: CLAREMONT, LLC
OWNER: CLAREMONT, LLC
JOB No: 1268-07-01

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CORNERSTONE BLOCK RETAINING WALL DESIGN
WALL PLAN/PROFILE, STRUCTURAL NOTES & LOAD TABLE

CLAREMONT OVERLOOK

5600 WASHINGTON BLVD., ELKRIDGE, HOWARD CNTY., MD

STATE OF MARYLAND — WILLIAM KEVIN RYAN — PROFESSIONAL ENGINEER

ENGINEER SEAL

PROFESSIONAL CERTIFICATION

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

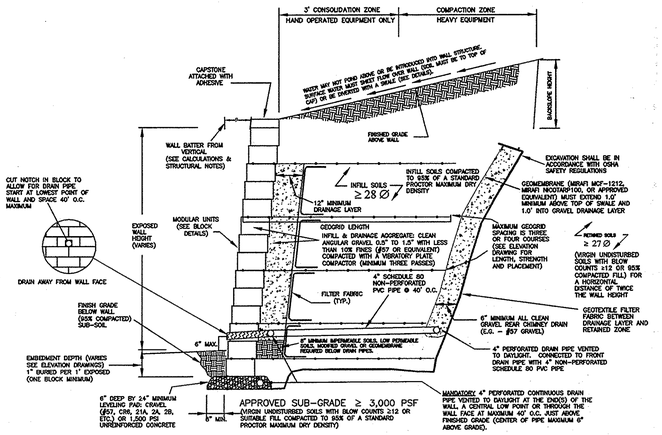
William K. Ryan, P.E.
License No: 21586
Expiration Date: 05/09/2009

SHEET 25 OF 27

AS-BUILT 06/24/15

F-08-63

CORNERSTONE

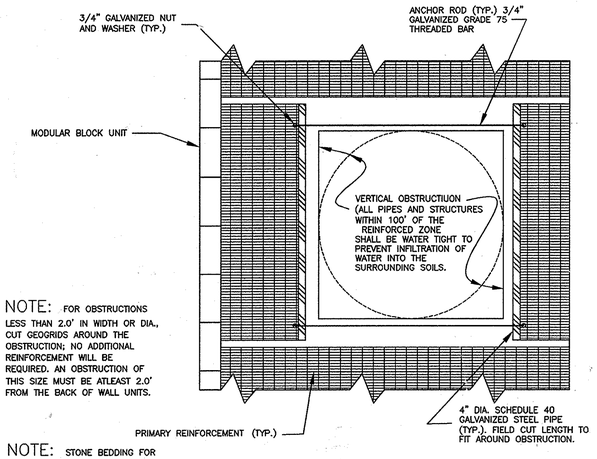


WALL TYPICAL SECTION

N. T. S.

(FOR GEOGRID ELEVATIONS AND BLOCK COURSES SEE WALL PROFILE)

NOTE: PREFABRICATED DRAINAGE BOARD SUCH AS MIRADRAIN OR APPROVED EQUIVALENT MAY BE SUBSTITUTED FOR GRAVELS IN THE CHIMNEY DRAIN

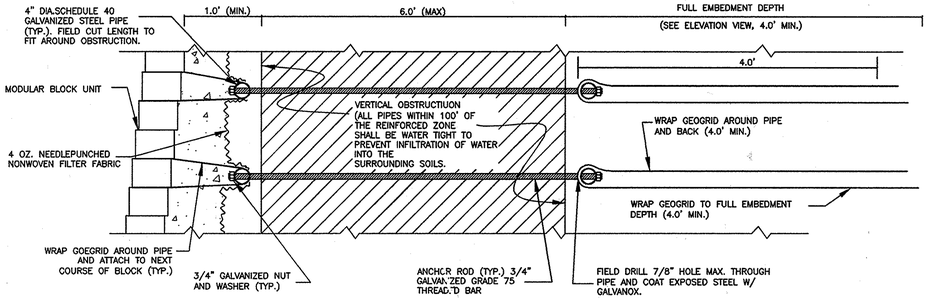


NOTE: FOR OBSTRUCTIONS LESS THAN 2.0' IN WIDTH OR DIA., CUT GEOGRIDS AROUND THE OBSTRUCTION; NO ADDITIONAL REINFORCEMENT WILL BE REQUIRED. AN OBSTRUCTION OF THIS SIZE MUST BE ATLEAST 2.0' FROM THE BACK OF WALL UNITS.

NOTE: STONE BEDDING FOR VERTICAL OBSTRUCTION MUST EXTEND TO FRONT DRAINAGE SYSTEM WRAPPED IN FILTER FABRIC.

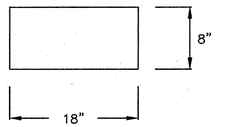
VERTICAL OBSTRUCTION PLAN VIEW

N.T.S.

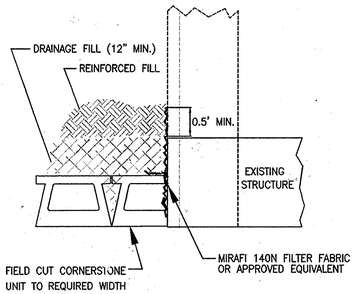


VERTICAL OBSTRUCTION DETAIL GREATER THAN 2.0' IN WIDTH OR DIAMETER CROSS SECTION

N.T.S.

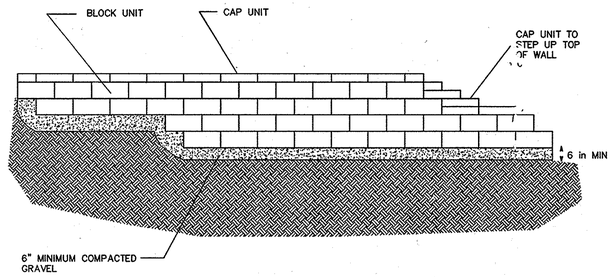


BLOCK DIMENSIONS FRONT VIEW



ABUTMENT DETAIL (PLAN VIEW)

AT SIDES AND ABOVE WALL

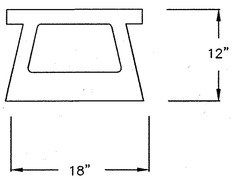


STEP DOWN TYPICAL DETAIL

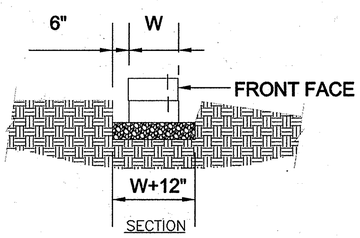
NOTE: THE WALL INSTALLER TO PLACE THE FENCE/RAIL POST SONOTUBES IN ACCORDANCE WITH THIS DETAIL FOR THE FENCE INSTALLER TO INSTALL FENCE/RAIL POSTS AT A LATER DATE. THE SONOTUBES MUST BE COVERED WITH A SECURED PLASTIC SHEET TO PREVENT RAINWATER OR WATER RUN-OFF TO ENTER THE POST HOLES. IT IS HIGHLY RECOMMENDED THAT THE SAFETY FENCE/RAIL BE INSTALLED WITHIN A FEW DAYS OF WALL CONSTRUCTION COMPLETION.

NON-LOAD BEARING & NON-WIND BEARING FENCE

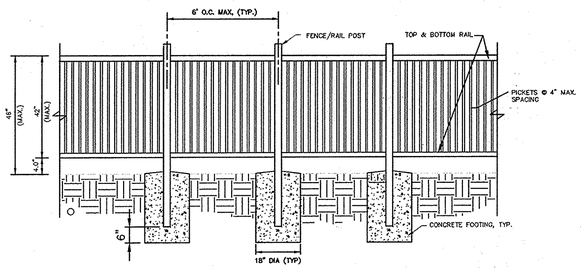
(INSTALLED BEHIND WALL) N.T.S.



BLOCK DIMENSIONS TOP VIEW

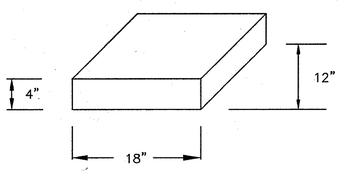


LEVELING PAD DETAIL



FENCE DETAIL AT RETAINING WALL

N.T.S.



CAP DIMENSIONS

APPROVED: DEPARTMENT OF PUBLIC WORKS

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REVISIONS			
No.	DATE	BY	DESCRIPTION

DRAWN BY: MS
DESIGN BY: MS
CHECKED BY: WKR
DATE: 09/25/07

CLIENT: CLAREMONT, LLC
OWNER: CLAREMONT, LLC
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CORNERSTONE BLOCK RETAINING WALL DESIGN
TYPICAL SECTIONS & DETAILS

CLAREMONT OVERLOOK

5600 WASHINGTON BLVD., ELKRIDGE, HOWARD CNTY., MD

ENGINEER SEAL

PROFESSIONAL CERTIFICATION

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

William K. Ryan, P.E.
License No. 21586
Expiration Date: 05/09/2009

SHEET 26 OF 27

F.08-63

SPECIFICATIONS FOR SEGMENTAL RETAINING WALL SYSTEMS

PART 1: GENERAL

1.01 Description

A. Work includes furnishing and installing segmental retaining wall (SRW) Units to the lines and grades designated on the Final Design prepared by Ryan & Associates (RA). Also included are furnishing and installing appurtenant materials required for construction of the retaining wall as shown on the RA Final Design.

1.02 Reference Standards

A. ASTM 3034– Specification for Polyvinyl Chloride (PVC) Plastic Pipe
B. ASTM C 140– Sampling and Testing Concrete Masonry Units and related units
C. ASTM C 1372– Standard Specification for Segmental Retaining Wall Units
D. ASTM D 422– Gradation of Soils
E. ASTM D 698– (AASHTO T99) Standard Test Methods for Laboratory Compaction Characteristics of Soil using Standard Effort
F. ASTM D 1248– Polyethelene Plastics Extrusion Materials for wire and Cable
G. ASTM D 1557– (AASHTO T 180) Standard Test Method for Laboratory Compaction Characteristics of Soil using Modified Effort
H. ASTM D 1586– Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils
I. ASTM D 2166– Unconfined Compressive Strength of Cohesive Soil
J. ASTM D 2487– Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)
K. ASTM D 3080– Direct Shear Test of Soils Under Consolidated Drained Conditions
L. ASTM D 4318– Liquid Limit, Plastic Limit and Plasticity Incex of Soils
M. ASTM D 4595– Tensile Properties of Geotextiles by the Wide-Width Strip Method.
N. ASTM D 5262– Test Method for Evaluating the Unconfined Creep and Creep Rupture Behavior of Geosynthetics
O. ASTM D 2850– Unconsolidated, Undrained Compressive Strength of Cohesive Soils in Triaxial Compression
P. GRI:GG1– Single Rib Geogrid Tensile Strength
Q. GRI:GG5– Geogrid Pullout

1.03 Design Standards

A. The following factors of safety have been met in this design: Sliding 1.5, Overturning 2.0, Bearing Capacity 2.0, Tensile Overstress 1.0, Geogrid Facing Connection (between the block and the geogrid) 1.5 Geogrid Pullout 1.5 (from the soil) and Global Stability 1.3 (if applicable–typically for terraced walls and/or walls situated on front slopes ≥3:1).

1.04 Scope of Work

A. The retaining wall design engineer's (Ryan & Associates) scope consists of preparing the wall design and professionally sealing to enable the contractor to obtain the necessary permits and properly construct the wall. The design considers the internal and local stability of the reinforced soil mass and is in accordance with acceptable engineering practice and these specifications. Services outside this scope such as responding to the owner's engineering firm (civil, structural, geotechnical or otherwise), provision of quality control testing & inspection, investigation of failed or non-conforming walls or any other services may be provided on a time & materials basis or for a negotiated fee. The scope of work for Ryan & Associates (RA) on this project does not include the preparation of a grading plan, site plan, geotechnical investigation, resolution of groundwater issues, sub-grade preparation, sub-grade repair, sub-grade failure (including but not limited to mine subsidence and sinkholes), surveying, wall stakeout or any other civil or geotechnical engineering.

1.05 Contractor's Responsibility

A. This design has been done in an effort to achieve the required grade changes shown on the civil plans for the project or the owner's (or wall installer's) desired grade changes (in the case of design build projects). The wall installer must verify the accuracy of these grades (elevations) by comparing them to the civil plans or actual field conditions prior to wall construction. The civil plans and actual field conditions govern and their grades must always be met. The lineal footage of the wall and the TW/BW (top of wall/bottom of wall) elevations must be checked. If an error is discovered, RA shall be notified immediately and revisions will be provided. RA will not be responsible for correcting a wall that is being built or has been built incorrectly due to this design not being checked for accuracy prior to wall construction. Deviations from the RA Final Design will have ramifications; therefore all changes must be approved by RA in writing prior to wall construction. RA is not responsible for any future problems that result from unauthorized changes to the RA Final Design.

PART 2: MATERIALS & DESIGN PARAMETERS

2.01 Segmental Retaining Wall Units

A. SRW Units shall be machine formed, Portland Cement concrete blocks specifically designed for retaining wall applications. The SRW Unit currently approved for this project is:

Cornerstone as manufactured by York Building Products Company

NOTE: Where Cornerstone specifications and reference documents conflict with these specifications, the RA specifications hold precedence.

B. SRW Units shall be sound and free of cracks or other defects that would interfere with the proper placing of the units or significantly impair the strength or permanence of the structure. Cracking or excessive chipping may be grounds for rejection. Units showing cracks longer than 1/2 inch shall not be used within the wall. Units showing chips visible at a distance of 30 feet from the wall shall not be used within the wall.

C. Concrete used to manufacture SRW Units shall have a minimum 28 days compressive strength of 3,000 PSI and a maximum moisture absorption rate, by weight, of 8% as determined in accordance with ASTM C 140. Compressive strength test specimens shall conform to the saw-cut coupon provisions of Section 5.2.4 of ASTM C 140 with the following exception: Coupon shall be taken from the least dimension of the unit of a size and shape representing the geometry of the unit as a whole.

D. SRW Units molded dimensions shall not differ more than ± 1/8 inch from that specified, except height which shall be ± 1/16 inch as measured in accordance with ASTM C 140.

2.02 Geosynthetic Reinforcement

A. Geosynthetic reinforcement shall consist of geogrids as indicated on the RA Final Design. No geogrid substitutions shall be permitted without the prior approval of RA (a partial or complete redesign may be necessary if geogrids are substituted). NOTE: it is always acceptable to substitute a higher strength geogrid (of the same manufacturer) for a lower strength geogrid (i.e. 5XT Mirafi for 3XT, SF80 Synteen for SF55, etc.).

2.03 Shear Connectors

A. The Cornerstone system does not have separate connectors (clips or pins). The connecting lugs on the underside of the blocks are the connector and alignment guide; therefore these protruding lugs must be in tact and structurally sound (cannot be cracked, loose or partially missing).

2.04 Leveling Pad

A. Material for the leveling pad shall consist of compacted gravel or unreinforced concrete. Typical gravels used for this leveling pad are #57, CR6, 21A, 2A modified, 2B, RC6, RC57, etc. Lean un-reinforced concrete with a strength of 1,500 PSI may also be used for the leveling pad.

2.05 Drainage Aggregate

A. Drainage aggregate shall be clean angular gravel (#57 or equivalent) with a size of 1/2 inch to 1 1/2 inches and less than 10% fines (passing the #200 sieve). Rounded "pea gravel" type aggregate is not permissible since it does not have the necessary frictional properties. Recycled gravel may be used if it meets the above criteria.

2.06 Drainage Pipe

A. The drainage collection pipe shall be a 4 inch perforated or slotted PVC or corrugated HDPE pipe.

2.07 Infill Soils: the reinforced geogrid zone

A. The soils used must meet or exceed the friction angle stated in the RA Final Design (in the Structural Notes, on the typical wall section and on the structural cross sections). The reinforced material shall be free of debris and organic material (i.e.– no plants, roots, sod, top soil, trash, wood, etc.). The infill soils shall not consist of CH (fat clay), MH (elastic silt) or OH/OL/PT (organic) soils. All soils used for wall infill must always meet the following requirements, regardless of the friction angle: maximum liquid limit of 40, maximum optimum moisture of 20%, maximum of 65% passing the #200 sieve (minimum of 35% retained on the #200 sieve) and minimum dry unit weight of 100 PCF (if fine soil). Soil moisture must be within ±2%of optimum to obtain proper compaction results (no exceptions).

B. Rocks may be used as infill material as long as they have a maximum size of 4 inches and a mean diameter of 2 inches. Recycled concrete is permissible for infill except with certain polyester geogrids in water applications. In the case of water applications the geogrid manufacturer shall be consulted to see if the alkali in the recycled material will cause corrosive damage to their geogrid.

C. Select gravel (classified by USCS as GP or GW) is normally an acceptable substitution in the event suitable soils (those meeting RA's and the site geotechnical engineer's requirements) are not readily available or if there are difficulties due to frost or moisture levels. However, the unit weights of gravel can vary widely (clean gravel is typically 90–100 PCF and "crusher run" gravel is typically 130–140 PCF) so RA must be notified so that revised sections can be run prior to making any substitutions. In some cases clean gravel actually requires longer geogrid lengths because of its extremely light unit weight.

D. Asphalt tailings (blacktop millings) are only acceptable for wall infill or the leveling pad if authorized in writing by the municipality (county, township, etc.) and/or regulatory authority since they may be a potential environmental hazard. These materials must also meet the requirements for the backfill soils in the RA Final Design; therefore RA must be given a proctor test and gradation (sieve analysis) for approval prior to wall construction.

E. For soils that have been treated with lime, only HDPE geogrids (such as Tensar) may be used. Polyester geogrids may only be used with lime treated soils when authorized in writing by the geogrid manufacturer.

2.08 Retained Soils: the area beyond the infill soils and extending to a distance that is twice the wall's exposed height

A. These soils must meet or exceed the friction angle stated in the RA Final Design (shown in the Structural Notes, on the typical wall section and on the structural cross sections) and be virgin (natural undisturbed soils with blow counts ≥12) or suitable fill (friction angle ≥ the RA Final Design requirement) compacted to 95% of a standard proctor (or 93% of a modified proctor) maximum dry density.

B. Surface water or groundwater must not be permitted to drain/flow into the retained zone. This could cause hydrostatic pressure to build against the wall structure, leading to failure. The exception is when the wall has been designed as a "water application" with free draining infill gravel or sand (GP, GW, SP or SW).

2.09 Foundation Soils: the soils under the wall's gravel leveling pad and the soils under the rienforced geogrid zone

A. The foundation soils (wall sub-grade) must meet or exceed the minimum allowable bearing capacity stated in the RA Final Design (in the General Notes and on the typical wall section). The sub-grade must be virgin (natural undisturbed soils with blow counts ≥12 blows/foot) or suitable fill (friction angle ≥ the RA Final Design requirement) compacted to 95% of a standard proctor maximum dry density (or 93% of a modified proctor). If highly plastic soils (CH or MH) or organic soils (OH, OL or PT) are encountered in the sub-grade they must be removed and replaced with suitable soils or gravel that is placed in controlled lifts and compacted to 95% of a standard proctor maximum dry density. If the organic or plastic soils extend so deep that they cannot be totally removed, they shall be undercut a minimum of 4' (or as directed by the site geotechnical engineer) and replaced with suitable soils or gravel. It must be emphasized that the wall's sub-grade is not only the soils under the leveling pad, but also includes all soils under the entire reinforced geogrid zone. Therefore, the foundation soils extend from 0' in front of the base block tothe back of the reinforced geogrid zone (back edge of the lowest geogrid layer).

2.10 Soil Investigation

A. RA recommends that every retaining wall design be preceded by an in-situ soil investigation with borings spaced 100' on center under the wall face and at the back of the proposed reinforced geogrid zone by a licensed geotechnical engineer. However, if the owner and/or wall installer elects not to have an investigation conducted, RA may assume soil design parameters based on: published data by the Soil Conservation Service (soil maps), a verbal description by the owner and/or wall installer or by RA's previous experience in certain geographic areas. It must be understood that the owner and/or wall installer bears full responsibility to the election not to have a soil investigation performed.

2.11 Site History & Information

A. Many factors other than soil information affect the performance and design of the retaining wall. RA relies on information provided by the owner and/or wall installer when designing a retaining wall. RA bears no responsibility if the owner and/or wall installer omit critical information required to properly design the wall. Information critical to wall design from the site consists of: topographic features (such as slopes), soil types, utilities, storm water management, structures (including buildings, other existing or proposed walls, swimming pools, etc.), site geological phenomenon, groundwater, loads within the wall's zone of influence (such as driveways, other walls, patios, roadways, sidewalks, etc.) and any other readily known site factors that could potentially impact the RA Final Design.

2.12 Civil Plans

A. These designs are supplemental to the approved land development plans (civil plans). All erosion and sediment controls must be followed in accordance with the approved land deverlopment plans (civil plans).

PART 3: CONSTRUCTION

3.01 Inspection

A. RA considers all retaining walls to be critical structures, meaning most walls require a considerable financial investment by the owner and failure of a wall will negatively impact a property both financially and from a public safety perspective. The owner or owner's representative is responsible for verifying that the wall installer meets all of the requirements of the RA Final Design (as stated in these specifications and the project's Structural Notes). This includes all submittals for materials and design, qualifications and proper installation of the wall system. All walls with an exposed height of 4 feet or greater, or those which require a building permit, must have the construction monitored and the completed wall certified by a licensed geotechnical/structural engineer registered in the jurisdiction of the project. Additionally, after the wall has been completed it is highly recommended that it be surveyed to establish the wall's current horizontal and vertical alignment.

B. The wall installer's field construction supervisor shall have demonstrated experience and be qualified to direct all work at the site.

C. RA provides construction review on some retaining wall projects. RA verifies general compliance with the RA Final Design; however, it is the wall installer's ultimate responsibility to construct the structure properly in accordance with the RA Final Design. RA's liability is limited to the amount of our fees for the scope of work provided for the wall designs and construction oversight.

3.02 Excavation

A. The wall installer shall excavate to the lines and grades shown on the RA Final Design and the project's civil plans. The wall installer shall take precautions to minimize over-excavation. Over-excavated areas shall be filled with compacted soils (friction angle ≥RA design parameters) or gravel (soils or gravel must be compacted to 95% of a standard proctor) as directed by the site geotechnical engineer.

B. The wall installer shall verify the location of existing structures and utilities prior to excavation. The wall installer shall ensure that all surrounding structures are protected from the effects of wall excavation. Excavation support (shoring), if required, is the responsibility of the general contractor and/or site contractor. All excavation must be conducted in accordance with OSHA (federal) and state safety regulations. All work to construct the wall must be in accordance with 29CFR1926 sub-part P (OSHA Excavation Safety Requirements).

3.03 Foundation Preparation

A. Following excavation, the foundation soils (the soils under the wall's gravel leveling pad and the soils under the wall's reinforced geogrid zone) shall be examined by the site geotechnical engineer to assure that the actual foundation soil strength meets or exceeds the minimum allowable bearing capacity in the RA Final Design (stated in the Structural Notes and shown on the typical wall section). Soils that do not meet the required strength shall be removed and replaced with approved select structural fill or gravel and be compacted to 95% of a standard proctor (or 93% of a modified proctor) maximum dry density for the full depth.

B. In cases of poor bearing capacity, deep fill soils, or when groundwater is encountered it may not be possible or practical to undercut to suitable soils. As an alternative, gravel, geogrid reinforcing (or a combination of both) or an reinforced concrete footing (may be steel reinforced if required) may be utilized to meet the required soil bearing capacity. RA can provide a supplemental sub-grade design for an additional fee (it is not within RA's original scope of work for this project). However, it is the site geotechnical engineer's ultimate responsibility to ensure that the sub-grade meets or exceeds that specified by RA for this project (stated in the RA Final Design). The site geotechnical engineer must add a minimum factor of safety of 2.0 to the RA specified capacity (i.e. if RA requires 2,500 PSF the actual field ultimate bearing capacity must meet or exceed 5,000 PSF).

C. If competent rock (blow counts ≥50 blows/inch) is encountered in the sub-grade, or if the wall needs to span a concrete structure, the embedment may need to be reduced. RA must be consulted for an alternate embedment design (pinning to rock or the structure is typically an option).

3.04 Leveling Pad Construction

A. The leveling pad shall be placed so that its top elevation is the same as the bottom of block ("BB") elevation on the RA Final Design profile drawing. It shall have a minimum thickness of 6 inches and a minimum width of 2 feet (for 12" wide blocks). The leveling pad should, at a minimum, extend laterally at least a distance of 6 inches from the toe and heel of the lower most SRW Unit. The leveling pad must have a minimum width of 30 inch for 18 inch wide blocks and a minimum width of 36 inch for 21.5 inch wide blocks.

B. The leveling pad material shall be compacted to 95% of a standard proctor maximum dry density with a vibratory plate compactor to provide a firm level-bearing surface on which to place the first course of SRW Units. A thin layer (not to exceed 1/2 inch) of well-graded sand or stone dust may be used to smooth the top of the leveling pad.

3.05 SRW Unit Installation

A. Embedment shall be a minimum of 1 inch buried for every 1 foot of exposed wall height with one block minimum when the front slope is 4H:1V or greater (more level). Walls constructed on 3H:1V front slopes or less (more steep) require additional buried blocks. See the profile drawing in the RA Final Design for the exact amount of embedment (the amount of buried block can be determined at each wall station by subtracting the "BB" elevations from the "GR" i.e. grade elevations). The wall's toe (front of wall at base course) must be backfilled up to the proposed civil plan elevations with 95% compacted approved sub-soils no later than after the second course above the final grade is placed (two courses exposed). The wall's foundation shall not be left exposed/open for more than two to five days during clear weather, however it must be backfilled and compacted (In accordance with the RA Final Design) prior to a rain event. Clean gravel may not be used to fill against the buried blocks. They must be "locked in" with suitable sub-soils or modified gravel.

B. All SRW Units shall be installed at the proper elevation and orientation as shown on the RA Final Design profile drawing and in conjunction with the project's civil plans. The SRW Units shall be installed in general accordance with the manufacturer's recommendations (RA's Final Design shall govern in any conflict between the two requirements).

C. The first course of SRW Units shall be placed on the leveling pad. The units shall be leveled side-to-side, front-to-rear and with adjacent units, and aligned to ensure intimate contact with the leveling pad. The first course is the most important for accurate and acceptable results. Alignment may be done by means of a string line or an offset from the base line to the backs of the blocks. SRW units shall have a minimum 4 inch overlap of units on each successive course so that the wall is interlocked and continuous. No horizontal gaps greater than 1/4 inch between the faces of adjacent units are permitted.

D. Because the wall has a setback, its batter must be predetermined during the stake out process by the civil engineer/surveyor and wall installer. If there are critical dimensions that must be met on the high side of the wall then the base (at the toe) will need to be moved forward to compensate.

E. Lay out of curves and corners shall be installed in accordance with the civil plans and the RA Final Design. Construction techniques for curves and corners shall be in accordance with the SRW manufacturer's installation guidelines. In general, all tangent angles shown on the civil drawings should be changed into radii (inside and outside curves) to enhance the wall's strength and appearance. Continuous vertical joints are not permitted. Inside and outside 90° corners may be constructed without compromising the wall's integrity if they are properly built. Inside corners should be constructed so that the SRW Units interlock and overlap (according to the manufacturer's recommendations) and outside corners should incorporate special corner blocks when possible. If special outside corner blocks are not available from the block manufacturer for this project then the manufacturer's guidelines for building structural outside corners shall be followed. Outside corners must be built so that the blocks interlock and overlap. If gluing is necessary (when there is not a positive connection from clips, lips, lugs, pins, etc.) only industrial grade adhesives or sealants designed for concrete-to-concrete applications may be used (adhesives designed for plastic or wood applications are not acceptable).

F. Clean all excess debris from the tops of the SRW Units and install the next course.

G. Repeat procedures to the extent of wall height.

H. A ±2° construction tolerance is permitted horizontally for wall batter (block setback). In no case shall a wall go beyond vertical (have a negative batter). Some block systems have an optional near vertical batter (typically 0.5°). If the wall is to be built with a near vertical batter, the base course should be laid so that it is tilted back a minimum of 1/4 inch to compensate for movement that will likely occur from compaction equipment and from the geogrid losing its slack. Walls shall be built level from left to right (not with grade), however a ±1.5 inch tolerance over a 10 foot distance is permitted vertically (as checked from left to right along the wall).

3.06 Geogrid Reinforcement Placement

A. All geogrid reinforcement shall be installed at the proper elevation, length (measured from the face of block) and strength as shown on the profile drawing and structural cross section(s) in the RA Final Design. Partial geogrid coverage is not acceptable: no gaps shall be present between geogrid layers. 100% coverage is required, however it is not necessary to overlap the geogrid pieces (overlapping the geogrid may be detrimental since it will likely cause a "bump" in the wall). The geogrid shall be laid horizontally on the compacted infill soil and on top of the concrete SRW Units. The geogrid must be embedded into the SRW Units to the face. The wall installer shall verify that the orientation of the geogrid is in accordance with the geogrid manufacturer's recommendations. The highest strength direction of the geogrid must be perpendicular to the wall face (the geogrid must not be laid parallel to the wall–cannot be rolled out with the wall). The geogrid must be level (cannot be going "down hill" or "up hill").

B. Geogrid reinforcement layers shall be one continuous piece for their entire embedment length. Overlapping of the geogrid in the design strength direction (perpendicular to the wall face) is not permitted.

C. Tracked construction equipment shall not be operated directly on the geogrid. A minimum of 6 inches of backfill is required prior to operation of tracked vehicles over the geogrid. Turning should be kept to a minimum. Rubber-tired equipment may pass over the geogrid reinforcement at slow speeds (less than 5 MPH).

D. The geogrid shall be in tension and free of wrinkles prior to placement of the infill soil. Nominal tension shall be applied to the geogrid and secured in place with staples, stakes or by hand until it is covered by 6 inches of infill soil.

E. For inside & outside corners and inside & outside curves the geogrid shall be placed according to the manufacturer's instructions to provide total geogrid coverage. On outside corners the geogrid should be shifted up or down one course and alternated so that the geogrid comes into the reinforced geogrid zone from both legs of the 90° angle. Geogrid layers should never be placed on top of one another: there must be a minimum of 3 inches of compacted infill soil between geogrid layers.

F. RA must be notified if the geogrid cannot be placed to its full design length. This is typically caused by restrictions on the site such as rock being encountered, property line restraints or unsafe excavation (embankment too steep). In some cases the geogrid can be shortened (by using gravel infill, if the retained soils are competent rock, if the site retained soils exceed the RA Final Design requirements, etc.). However, the geogrid length may never be less than .6 (60%) of the total wall height (exposed height plus embedment). In the absence of all lateral loads (only when the retained zone is all competent rock with blow counts ≥50 or when there is a full depth structure removing all pressure) the geogrid can never be less than .5 (50%) of the exposed wall height to maintain facial stability.

3.07 Wall Drainage

A. Drainage aggregate (clean gravel such as #57 or approved equivalent) shall be installed behind the entire wall face from the first course below grade to one course from the top of the wall. The drainage gravel shall be placed to a minimum thickness of 12 inches behind the SRW Units. Drainage gravel shall also fill all voids between and within (if hollow) the SRW Units. SRW Units must be filled with drainage aggregate in one course lifts (SRW Units may not be stacked in two or three course lifts and then have the gravel dumped in from the top through multiple courses). An impermeable clay layer (CL, GC or SC) shall be placed on top of the 12" drainage layer. If clayey soils are not readily available, a layer of filter fabric (Mirafi 140N or equivalent) shall be placed on top of the gravel (below the topsoil) to prevent the downward migration of fines.

B. A continuous drainpipe is mandatory and shall be vented to daylight in one of two ways. The continuous drainpipe may run to the end(s) of the wall or to a central low point of the wall. Or, the continuous drainpipe may be vented through the wall face at maximum intervals of 40 feet on center (no more than 6 inches above finished grade). The pipe must maintain gravity flow of water outside the reinforced geogrid zone. Water must drain to an outlet and have positive flow. If a pipe is run below grade, it shall daylight into a storm sewer manhole or along a slope at an elevation lower than the lowest point of the pipe within the drainage aggregate. When drainpipes are daylighted at the end(s) of a wall they must be visible and unobstructed. The drainpipes should be checked by the owner on a regular basis to ensure that they remain open (not blocked, filled in, grown over, pinched). Only one method of venting to daylight is required (end/central low point or through wall face at 40' O.C. starting from the low points), not both.

C. Rear drainpipes are required in the following situations: when groundwater can rise and approach within 1 foot of the wall's sub-grade and for walls that have an exposed height of 10.0' or greater in "cut" situations (since the potential exists for water to enter the interface between the reinforced geogrid zone and the retained zone). This rear drainpipe shall be surrounded by a minimum of 12 inches (6 inches on each side) of clean gravel (#57 or equivalent) and surrounded with filter fabric to prevent the migration of fines. The rear drainpipe must vent to daylight or be directed to a storm sewer manhole (see instructions for front drainpipe in section 3.07B above).

D. A chimney drain (a second 12 inch layer of drainage aggregate comprising the rear 1 foot of the reinforced geogrid zone or directly behind the reinforced geogrid zone) or composite blanket (Mirafi MCF-1212 or approved equivalent) must be installed when groundwater is present or likely (to an elevation that is a minimum of 1 foot above predicted levels as given by the sitegeotechnical engineer), when stated in the RA Final Design or when required by the site geotechnical engineer.

E. All drainage zone aggregate shall be compacted with a vibratory plate compactor (minimum of three passes).

3.08 Backfill Placement

A. The infill soils shall be placed as shown in the RA Final Design in the maximum compacted lift thickness of 8 inches and shall be compacted to a minimum of 95% of a standard proctor (or 93% of a modified proctor) maximum dry density (ASTM D 698) at a moisture content within 2% of optimum. The backfill shall be placed and spread in such a manner as to eliminate wrinkles or movement of the geogrid and the SRW units. Compaction testing shall be done with a minimum of one compaction test per lift per 2,500 sqft, but not fewer than two tests per lift for any lift. Approved compaction tests are the Nuclear Density Gauge or Sand cone

B. Only a vibratory plate or small-scale vibratory smooth drum compactor equipment shall be allowed within 3 feet of the front of the wall face. Compaction within the 3 feet behind the wall face shall be achieved by at leastthree (3) passes of the lightweight mechanical plate compactor or roller. Heavy equipment (such as track hoes, ride on rollers, pans, etc.) must be kept back a minimum of 3 feet from the rear of the wall.

C. At the end of each day's operation, the wall installer shall slope the last level of backfill away from the wall facing to direct water runoff away from the wall face and preferably covered with plastic sheets.

D. At completion of wall construction if final grading, paving, landscaping and/or storm drainage installation adjacent to the wall is not placed immediately after wall completion, temporary grading shall be provided to ensure that water runoff is not allowed to collect or pond behind the wall until final construction adjacent to the wall is completed.

E. Filter fabric (Mirafi 140N or equivalent) is required as shoen on the details/sections and when the infill soil is classified as poorly graded sand (SP) or well graded sand (SW) since these soils are non-cohesive and could potentially slough, clogging the gravel drainage layer. Filter fabric is optional between the 12 inch gravel drainage layer and the compacted infill soil if the backfillsoils are clayey (CL or SC), gravelly (GC, GM, GP or GW) or silty (ML or SM).

3.09 SRW Caps

A. SRW caps shall be properly aligned and glued (for safety reasons) to the underlying SRW Units with a flexible high-strength concrete adhesive or sealant designed for "concrete to concrete" applications (not for plastic or wood). Rigid adhesive or mortar is not acceptable.

3.10 Wall Geometry

A. It is acceptable to modify the wall's configuration (angles to curves, corners to curves, etc.) from the civil plan layout as long as the RA design height is not exceeded and the loads do not increase (slopes do not get steeper, surcharges do not get greater, etc.). There may be differences between the civil plan dimensions and the RA Final Design wall length. This is due to differences in measuring techniques and/or due to copying and scaling of plans. Also, as a conservative measure, RA measures the longest dimension and rounds up. When there is a conflict, the civil plans govern for wall stakeout.

B. Some projects, such as "design build", will require the wall installer to change the wall length and height as needed to meet the field conditions (since there may not be a specific grading plan). This is acceptable, but the wall height in the RA Final Design must not be exceeded. If the wall must be built to a height that exceeds the design, RA must be notified and a revised (taller) cross section provided prior to wall construction.

3.11 Water Applications

A. When walls are installed in water applications (such as storm water ponds, streams, bulkheads, areas adjacent to flood plains, etc.) all free-draining gravel or sand (classified by USCS as GP, GW, SP or SW) must be used as infill up to 1 foot above the 100 year flood elevation, the high water level or the top of berm/spillway. This gravel or sand must be free draining and have less than 10% fines. Filter fabric (Mirafi 140N or approved equivalent) must go in front of the buried block, under the leveling pad, under the reinforced geogrid zone, behind the reinforced geogrid zone (vertically up to the extent of the gravel or sand infill) and on top of the gravel or sand infill (horizontally). This is required to prevent the migration of fines into the gravel or sand infill. Rip rap is required in front of the bottom three courses on walls installed near tidal waters or waters subject to wave action. Rip rap is also required when indicated on the civil plans and where pipes with active water flow exit through the wall (to prevent scour). The scope of work for RA on this project does not include a scour analysis (walls that have interface with flowing water must have a scour analysis performed to prevent undermining of the sub-grade). Contact RA if a scour analysis is needed.

B. Walls installed in ponds that hold water for extended periods of time may require special precautions. If the foundation soils (sub-grade) are not free-draining (classified by USCS as GP, GW, SP or SW) the following shall be done to prevent the wall's sub-grade from being compromised: an 8" impermeable clay layer (soils classified by USCS as CL, GC or SC) must be placed as the final 8" of soils (in front of the first block below grade). The clay layer shall extend forward from the base of the wall a minimum of 20' laterally into the pond. This will ensure that any water seepage does not intersect a 45° slope (1H:1V) downward from the front edge of the wall's leveling pad.

3.12 Responsibilities of the Site Geotechnical Engineer (construction oversight)

A. The site geotechnical engineer's responsibilities include, but are not limited to, verifying the following: sub-grade bearing capacity (must meet or exceed that stated in the RA Final Design); soil friction angles (foundation, infill and retained); soil compaction (≥95% of a standard proctor or ≥93% of a modified proctor maximum dry density); geogrid type (manufacturer and strength), length, coverage, orientation and elevation; placement of drainage aggregate (12" minimum); placement and proper flow of drainpipes; wall geometry (wall must not exceed height of RA Final Design); site geometry (slopes and surcharges must be equal to or less than the RA Final Design and the civil plans); construction techniques (must be in accordance with previously stated procedures); water management (placement of swales, clay layers/geomembranes, flow of surface water to inlets, etc.), presence of groundwater under and behind the walls (retained zone) and all other activity that may impact the wall's integrity. RA must be notified if actual field conditions differ from the Final Design parameters and/or if there are activities on site that are not in accordance with these Specifications.

B. Field changes to the RA Final Design must be approved by RA in writing. Request(s) for design changes/field modifications must be made to RA in writing prior to RA issuing a written response. All correspondence must be documented with formal written response. These additional services are not included in RA's original scope of work and design fee. Therefore, a contract modification/change order must be signed by RA and the client prior to these additional services being provided.

3.13 Rails, Fences & Other Structures

A. RA recommends installation of safety fence or railing for walls with exposed height 30" or taller (varies by local jurisdiction). Typical fence/rail post foundation details has been provided (see sheet 3) for the wall installer. This should be co-ordinated with the fence/rail installer.

B. As a general guidance, all post foundations, including guard rails subject to vehicular impact must be kept back a minimum of 3 feet from the face of the wall to prevent any loading on the wall.

3.14 Storm Structures & Utilities

A. Reinforced Concrete Pipes (RCP) may pass through the leveling pad or wall structure without additional means of support (it must be verified from the pipe manufacturer that the pipe can withstand a load equal to or greater than that exerted by the wall–as stated in the RA Final Design Structural Notes under "Bearing Capacity"). The SRW units may be cut to fit around the pipe and the voids filled with non-shrink grout or type "M" mortar. A concrete collar may be cast around the structure if desired for ease of construction and aesthetic considerations. When a collar is cast, the top of the collar must line up with an even block course to maintain proper alignment, neat workmanship and to eliminate horizontal cutting of blocks. See structural notes for specific design requirements.

B. The wall may not bear on plastic or steel pipes (such as ADS, CMP, HDPE, PVC, SLCPP, etc.) or utilities (such as electric, gas, phone lines, sewer or water lines, etc.). Grade beams or lintels must be used to bridge these non-load bearing structures. If a specific grade beam or lintel is not specified in the RA Final Design, RA shall be consulted to determine the size, strength and reinforcing of the grade beam or lintel. If these non-load bearing pipes or utilities are located at minimum of 42 inches below the wall's leveling pad then a grade beam or lintel is not necessary.

C. Concrete storm structures may be located behind a wall and be within the reinforced geogrid zone as dictated by the project's civil drawings. If the structure(s) cannot be moved out of the reinforced geogrid zone and the geogrid cannot be installed to its full design length the following shall apply. On small structures (such as collection boxes, concrete pipes less than 18 inches, inlets, manholes, etc.) it is acceptable to shorten the geogrid from the design length and meet the structure. The area between the wall and structure where the geogrid has been shortened must be filled with gravel (#57 or equivalent) and not soils. The gravel must be placed in maximum loose lifts of 8" and be compacted with a minimum of three passes by a vibratory plate compactor. For tall narrow structures the geogrid should be "looped" around the structures for additional lateral support. On large structures and in cases where pipes parallel the wall for long distances, RA shall be consulted to determine the impact on the wall before allowing this to be done. Where the geogrid is shortened an extra layer of geogrid is required immediately above and below the structure. See structural details and notes for further guidance.

D. The wall's integrity may be compromised if pipes or structures burst or develop leaks and allow water or fluids to saturate the reinforced geogrid zone. RA is not responsible for wall failure that results from pipes or structures that burst or leak and allow water or fluids to saturate the reinforced geogrid zone. To prevent damage to the wall structure a bed of clean gravel shall be placed under all pipes (minimum of 6" deep), shall extend up to the "spring line" (half way up) and connect to the front drainage layer (see detail(s) on previous sheets). Positive flow of the gravel must be maintained away from the wall structure.

3.15 Construction Adjacent to Completed Wall

A. The owner or owner's representative is responsible for ensuring that construction adjacent to the wall by others does not disturb the wall or place temporary construction loads on the wall that exceed design loads, including loads such as water pressure, temporary grades, or equipment loading. Heavy paving or grading equipment shall be kept a minimum of three feet behind the back of the wall face. Equipment with wheel loads in excess of 150 PSF live load shall not be operated with 10 feet of the face of the retaining wall during construction adjacent to the wall. Care should be taken by the general contractor or owner to ensure water runoff is directed away from the wall structure until final grading and surface drainage collection systems are completed.

B. Care must be taken when installing appurtenances (such as generators, transformers, etc.) or utilities above or behind the wall (within the reinforced geogrid zone). The compaction integrity of the reinforced geogrid zone must be maintained, both below and beside (around) the appurtenance or utility. Neglecting to do so may cause hydrostatic pressure and wall failure.

3.16 Storm Water Management & Slopes

A. The segmental retaining wall is not a storm water management structure. The wall can accommodate the rainfall above the reinforced geogrid zone but not the watershed (including the retained zone). Therefore it is absolutely essential that surface water be prevented from entering (and ultimately saturating) and ponding above the reinforced geogrid zone. This is usually accomplished by the site engineer (owner's civil engineer) grading the surface behind the wall to direct surface water to swales that divert the water around the wall ends, to inlets or over the top of the wall (sheet flow or through scuppers). If water is directed to the wall (such as applications with back slopes), the top 8 inches of compacted fill over the reinforced geogrid zone must be impermeable soils (CL, GC or SC) or low impermeable soils (classified by USCS as ML with LL ≥25, PI between 4 and 22, ≥80% passing the #200 sieve and ≤20% retained on the #200 sieve). If clayey soils are not readily available an underlying geomembrane (geosynthetic liner) may also be used. This geomembrane shall be a composite structure (Mirafi MCF-1212, Mirafi NicoTarp 100 or approved equivalent) and should be laid under the swale or over top of the part of geogrid zone that is prone to ponding.

B. The site geotechnical engineer is responsible for verifying the stability of slopes and management of sub-grade groundwater issues on the project. RA's scope includes only the wall design, not the evaluation of back slopes (above walls), front slopes (at the base of walls) or resolving groundwater issues. RA performs global stability analyses on walls that rest on major (4:1 or steeper) front slopes, however only the wall is analyzed, not the actual slopes above or below the wall. It is the responsibility of the site geotechnical engineer to determine if the site soils are able to sustain the proposed grades. If not, they shall determine and specify the additional reinforcement that is necessary to provide the proper slope stability and prevent erosion.

C. The general contractor, owner, site contractor and/or wall installer must provide for proper wall drainage to prevent the buildup of hydrostatic pressures over the service life of the structure. In the event additional water is introduced into the general wall area, either above or below grade, the RA Final Design will be invalid (the exception is "water applications" where free-draining gravel or sand is used for infill and it is wrapped in filter fabric with the design intent for the wall to be interacting with water).

D. Drains (such as downspouts, roof drains, sump pumps, etc.) for other structures (such as buildings, houses, other walls, etc.) must pass through the wall (solid pipe– not perforated or slotted). They cannot be connected to the wall's drainage system or discharge into the wall's reinforced geogrid zone.

3.17 Parking Lots & Roadways

A. If a paved parking lot or roadway is proposed above the wall it must be properly maintained and have proper suface water management. Typically curbing is installed to catch and divert the surface water runoff to inlets or ponds. All joints between the asphalt and the curbing must be sealed to prevent water from seeping into the walls reinforced geogrid zone. The owner must regularly (semi-annually) inspect the pavement for cracks and repair them immediately if discovered. If cracks remain open they could allow surface water runoff or melting snow to saturate the wall's reinforced geogrid zone or retained zone which can lead to wall failure.

B. RA makes an effort to keep the topmost layer of geogrid two or three courses down from the top of the wall when there is pavement above. This is done so that the geogrid is properly embedded in sub-soils and not lying on top (since there is the depth of the granular sub-base material and the pavement depth to account for). Also, in many cases, RA designs the wall with the "TW" elevation high enough so that the back of the curb is covered (normally required by the civil engineer and required for support of the curbing). Therefore, the top layer of geogrid in some cases must be cut during pavement and/or curb installation (especially when a wall steps continuously on top). It is acceptable to cut the topmost layer of geogrid only if it is at the same elevation as the pavement or curbing (since in this case the wall is not absorbing a lateral load– only holding back "dead space" between the pavement or curbing and itself). However, the second layer of geogrid down from the top must never be cut.

C. If snow is plowed/pushed and stored above a wall its load can not exceed a height of 5'. If there are definite plans for storage of accumulated snow before the wall is built, RA, upon request, can design the wall to accommodate more than 5' of snow (additional geogrid will be required). Snow melt must not be allowed to saturate the wall's reinforced geogrid zone.

3.18 Landscaping

A. The walls on this project were designed ONLY for grass seeding and no other plants. If some other plantings are planned, RA must review the landscaping plan and design a water management system to protect the walls. No plants are allowed on top of the walls without RA's permission.

3.19 Maintenance

A. All walls on this project must be inspected by a qualified geotechnical engineer licensed in the state of construction (or his or her designated representative) quarterly for walls equal to and over 15' in exposed height and semi-annualy for walls 6' and over and under 15' in exposed height. Digital photographs should also be taken at the time of inspection.

3.20 Post Construction Responsibilities

A. Retaining walls are a substantial financial investment. Therefore it is in the owner's best interest that a wall maintenance budget be established within the overall property management budget to monitor and provide preventative maintenance. Retaining wall maintenance, at a minimum, should consist of: checking drainage, inspecting for settling and surveying to verify alignment and batter. This service should be by qualified personnel under the supervision of a licensed geotechnical/structural engineer. RA can provide this service for an additional fee.

B. RA SHOULD BE NOTIFIED AS SOON AS REASONABLY POSSIBLE IF THE RETAINING WALL EXHIBITS CONDITIONS CONTRARY TO THE RA FINAL DESIGN SO THAT RA MAY BE CONSULTED TO PROTECT THE OWNER'S INVESTMENT.

Part 4: Safety

4.0 Site Safety

A. Site Safety is the sole responsibility of the contractor(s) (GC, all subcontractors including segmental wall installer) on-site in strict accordance with all state and federal safety regulations.

END OF SECTION Revised 06-30-06

APPROVED: DEPARTMENT OF PUBLIC WORKS

[signature] 11-24-08
Chief, Bureau of Highways HS Date

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[signature] 2/10/09
Chief, Division of Land Development BB Date

[signature] 11/25/08
Chief, Development Engineering Division JS Date

NO AS-BUILT INFORMATION ON THIS SHEET.

REVISIONS

No.	DATE	BY	DESCRIPTION

DRAWN BY: MS
DESIGN BY: MS
CHECKED BY: WKR
DATE: 08/31/07
DO NOT SCALE THIS DRAWING. DIMENSIONS AND WRITTEN DATA PRECEDENCE OVER DRAWING

CLIENT: CLAREMONT, LLC
OWNER: CLAREMONT, LLC
JOB No: 1288-07-01

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CORNERSTONE BLOCK RETAINING WALL DESIGN SPECIFICATIONS

CLAREMONT OVERLOOK

5600 WASHINGTON BLVD., ELKRIDGE, HOWARD CNTY., MD

ENGINEER SEAL

PROFESSIONAL CERTIFICATION

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

[signature] 10/22/08
William K. Ryan, P.E.
License No: 21586
Expiration Date: 05/09/2009

AS-BUILT 06/24/15

F-08-63