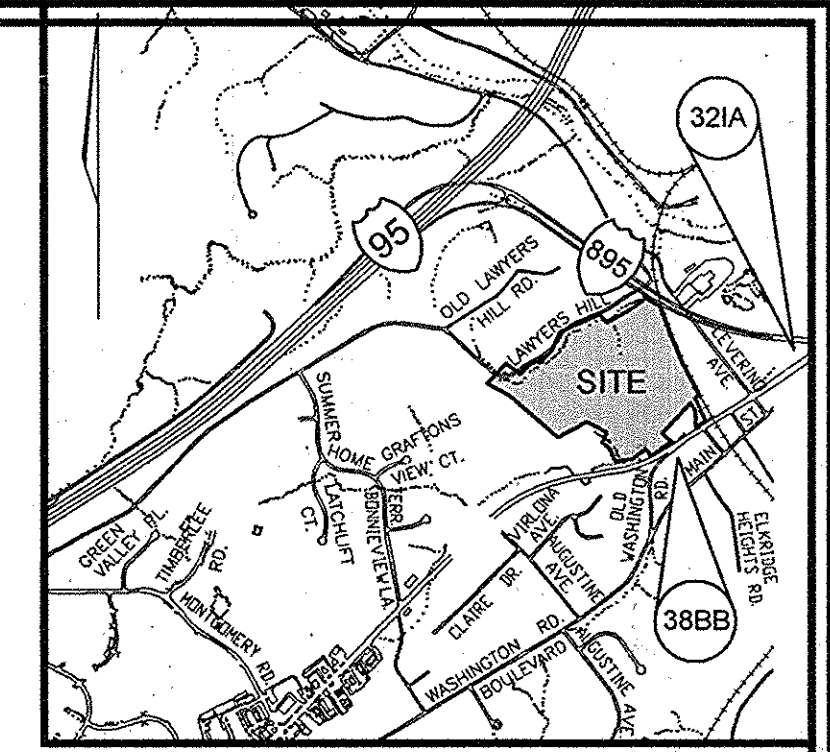


GENERAL NOTES

- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK.
- 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 313-5558
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
- 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.
- ANY DAMAGE TO PUBLIC RIGHTS-OF-WAY, PAVING, OR EXISTING UTILITIES WILL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
- 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.
- 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.
- 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.
- 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
- ALL ASPECTS OF THE PROJECT ARE IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
- DEED REFERENCE: LIBER 5307 FOLIO 448
- 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
- THE PROJECT BOUNDARY IS BASED ON A BOUNDARY SURVEY PREPARED BY FREDERICK WARD ASSOCIATES INC., DATED NOVEMBER 2002.
- THE TOPOGRAPHY SHOWN HEREON IS BASED ON AN AERIAL TOPOGRAPHIC SURVEY PREPARED BY POTOMAC AERIAL SURVEYS, DATED MARCH 2003.
- WATER AND SEWER FOR THIS PROJECT WILL BE PUBLIC. WATER WILL BE PROVIDED THROUGH CONTRACT NO. 14-3208. SEWER WILL BE PROVIDED THROUGH CONTRACT NO. 96-5.
- STORM WATER MANAGEMENT TO BE PROVIDED FOR THIS DEVELOPMENT BY 3 POCKET PONDS ON OPEN SPACE LOTS OWNED AND MAINTAINED BY HOA. OPENSACE LOT 53, (SWM POND 1), OPENSACE LOT 55 (SWM POND 2), & OPENSACE LOT 56 (SWM POND 3) PROVIDED FOR THE REQUIRED C_{pn} AND W_{pn}. DRY WELLS, GRASS SWALES AND INFILTRATING DRY WELLS ARE PROVIDED FOR THE REQUIRED R_{pn}. THE STORMWATER MANAGEMENT FACILITIES ARE HAZARD A POND 3 ALSO PROVIDES OP AND OF MANAGEMENT.
- 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.
- THIS SITE IS NOT LOCATED IN A HISTORIC DISTRICT.
- STREAMS SHOWN ON SITE ARE BASED ON A FIELD INVESTIGATION PREPARED BY FREDERICK WARD ASSOCIATES, INC., DATED AUGUST 2002.
- THERE ARE NO 100-YEAR FLOODPLAIN LOCATED ON THIS SITE.
- FOREST CONSERVATION PLAN PREPARED BY FREDERICK WARD ASSOCIATES, INC., DATED JULY 2003.
- THE PROJECT COMPLIES WITH THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE WITH THE RETENTION OF 18.32 ACRES EASEMENT FOR THIS SITE. FOREST CONSERVATION SURETY IN THE AMOUNT OF \$100,120.50 HAS BEEN POSTED WITH THE DEVELOPER'S AGREEMENT FOR THIS FINAL PLAN, F-08-63.
- A TRAFFIC STUDY IS NOT REQUIRED FOR THIS SITE.
- PERIMETER AND SWM LANDSCAPING AND TRASH PAD SCREENING IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE PLAN SHALL BE PROVIDED AS SHOWN ON THE LANDSCAPE PLAN SHEET OF THE ROAD CONSTRUCTION DRAWINGS FOR THIS SITE SURETY SHALL BE PROVIDED WITH THE DEVELOPER'S AGREEMENT FOR THIS FINAL PLAN, F-08-63 IN THE AMOUNT OF \$16,230.00.
- THIS PROPERTY IS WITHIN THE METROPOLITAN DISTRICT.
- TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL/CEMETERY LOCATIONS ON SITE.
- STREET TREES ARE PROVIDED, AS SHOWN.
- A NOISE STUDY IS NOT REQUIRED FOR THIS DEVELOPMENT.
- NO CLEARING, GRADING, OR CONSTRUCTION IS PERMITTED WITHIN THE STREAMS OR THEIR BUFFERS AND THE FOREST CONSERVATION EASEMENTS.
- 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.
- 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.
- LAWYERS HILL ROAD IS A SCENIC ROAD.
- TREE PROTECTION FENCING WILL BE PROVIDED AT THE LIMITS OF DISTURBANCE WHERE GRADING IS ADJACENT TO ENVIRONMENTAL AREAS.
- 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 RECORPORATION OF THE PLAT.
- 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.
- 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 'B' 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.
- 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 ADJACENT TO WASHINGTON BLVD.
- THE EXISTING HOUSE, LOCATED ON LOT 6, IS LISTED AS HO-798 IN THE HOWARD COUNTY HISTORICAL INVENTORY. 32
- INGRESS AND EGRESS IS RESTRICTED ALONG WASHINGTON BOULEVARD.
- FOR STORMWATER MANAGEMENT PURPOSES, OPEN SPACE IMPROVEMENTS ARE PERMITTED ON RECREATIONAL OPEN SPACE ONLY.
- THE HOMEOWNERS ASSOCIATION DOCUMENTS TO BE RECORDED WITH THE MARYLAND STATE DEPARTMENT OF ASSESSMENTS AND TAXATION PRIOR TO RECORPORATION OF THE FINAL PLAT.

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



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

BENCHMARKS			
NO.	NORTHING	EASTING	ELEVATION
321A	565,065.463'	1,395,212.248	27.696'
388B	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 THESE 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 REMAIN FOR FUTURE PHASES ARE THE SINGLE FAMILY UNIT STRUCTURES 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.

SHEET INDEX

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ROAD CONSTRUCTION PLAN AND DETAILS		3 OF 27
ROAD CONSTRUCTION PLAN AND DETAILS		4 OF 27
ROAD CONSTRUCTION PLAN AND DETAILS		5 OF 27
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STORMWATER MANAGEMENT DETAILS - POND #1		14 OF 27
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RETAINING WALLS DETAILS		27 OF 27

SITE DATA

LOCATION: TAX MAP 32 AND 38, GRID 21, PARCELS 632 AND PAR. 24 1ST ELECTION DISTRICT
EXISTING ZONING: R-ED
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
TOTAL BUILDABLE LOTS AND/OR PARCELS (PHASE #1) = 5 + 1 EXISTING
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 18.32 AC = 9.16 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) = 10.875 AC.
AREA OF NON-BUILDABLE PARCELS (PHASE I) = 0.36 AC.

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

- NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN THE WETLANDS OR BUFFER.
- PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF THE NONTIDAL WETLAND.
- 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 OTHER DELETERIOUS SUBSTANCE.
- PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO THE NONTIDAL WETLANDS OR BUFFER.
- 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.
- RECTIFY ANY NONTIDAL WETLANDS TEMPORARILY IMPACTED BY ANY CONSTRUCTION.
- 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 (UNOLA 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 SEEDING AND MULCHED TO REDUCE EROSION AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
- 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.
- TO PROTECT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM. USE 1 WATER. IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.
- STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.
- 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.

PROFESSIONAL CERTIFICATION

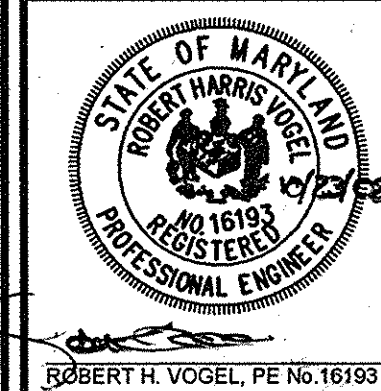
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2010.

NO.	REVISION	DATE
1	ADD STORMWATER MANAGEMENT EASEMENT AND REVERSE GRADING ON OPEN SPACE LOT 54	12/10/09

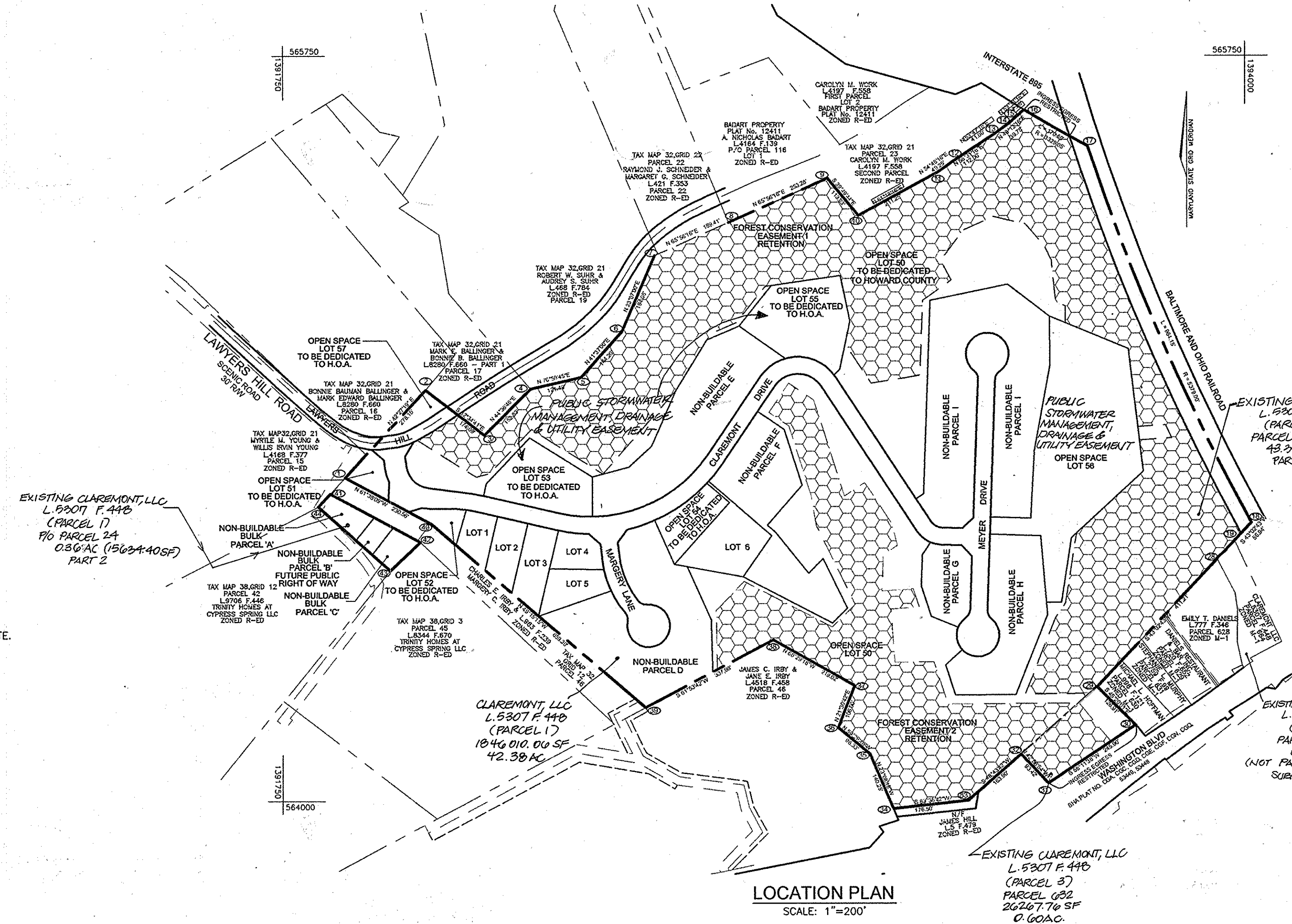
**FINAL ROAD CONSTRUCTION PLAN
COVER SHEET
CLAREMONT OVERLOOK
LOTS 1-6, OPEN SPACE LOTS 50-57
AND NON-BUILDABLE BULK PARCELS A - I**

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 TEL: 410.461.7666
ELLCOTT CITY, MD 21043 FAX: 410.461.8961



DESIGN BY: RHW/RJ
DRAWN BY: RJ
CHECKED BY: RHW
DATE: SEPTEMBER 2008
SCALE: AS SHOWN
W.O. NO.: 02-88-00
1 SHEET OF 27



LOCATION PLAN
SCALE: 1"=200'

COORDINATE TABLE

NO.	NORTHING	EASTING	NO.	NORTHING	EASTING
1	564760.14	1391895.57	28	564568.62	1393934.33
2	564965.36	1392083.32	29	564266.11	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	1393531.88	44	564691.44	1391832.72
18	564854.09	1394014.15			
19	564612.47	1393975.28			

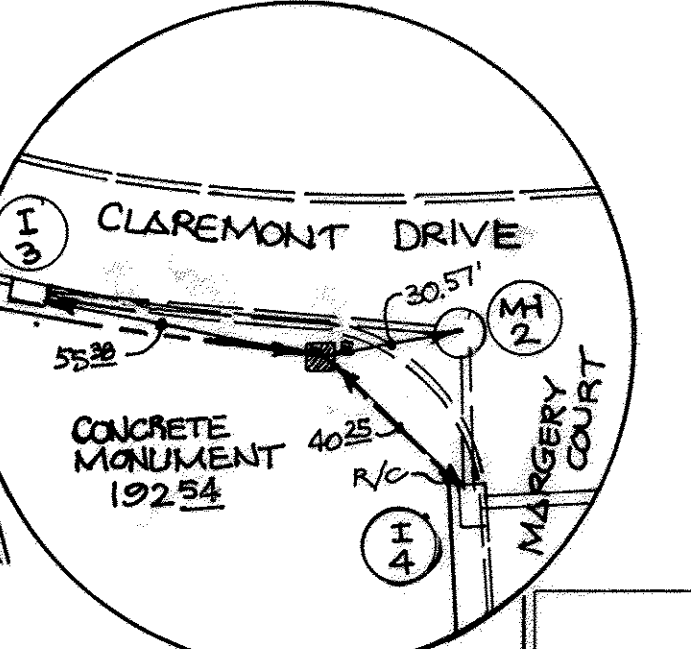
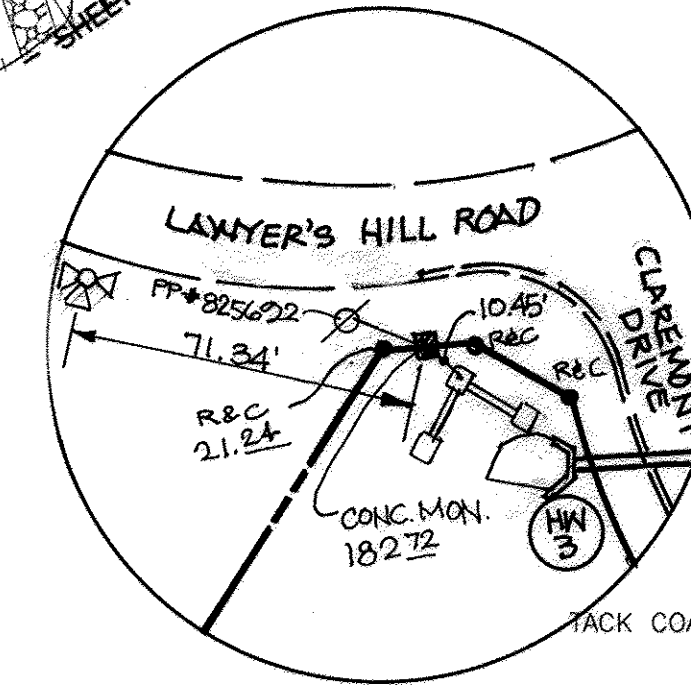
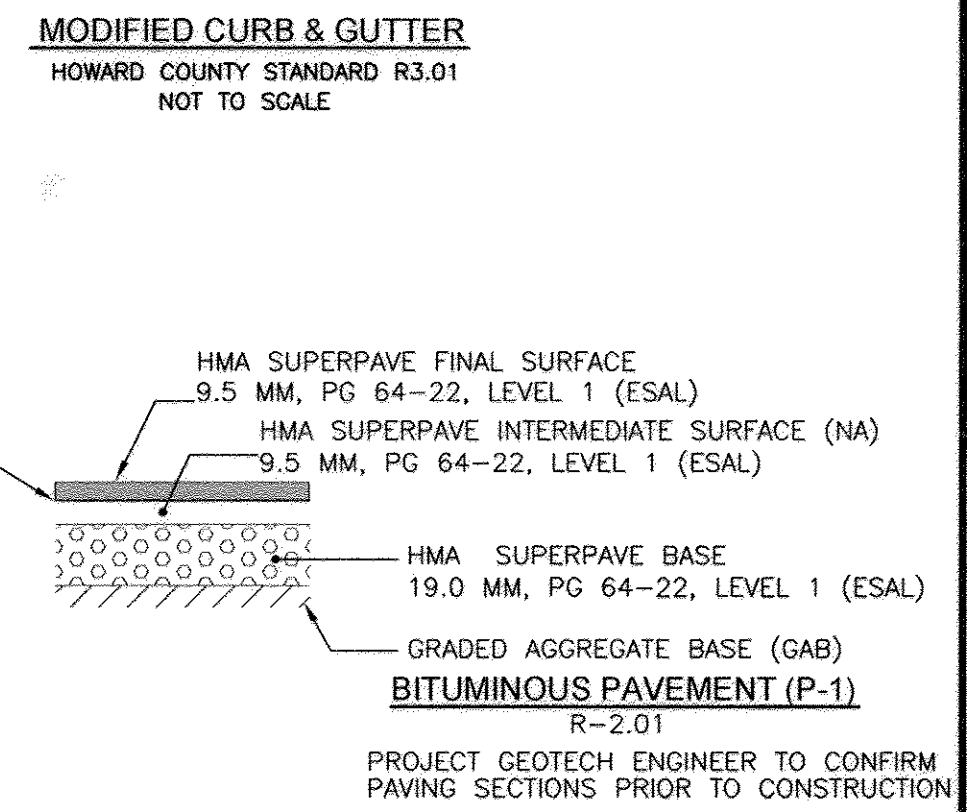
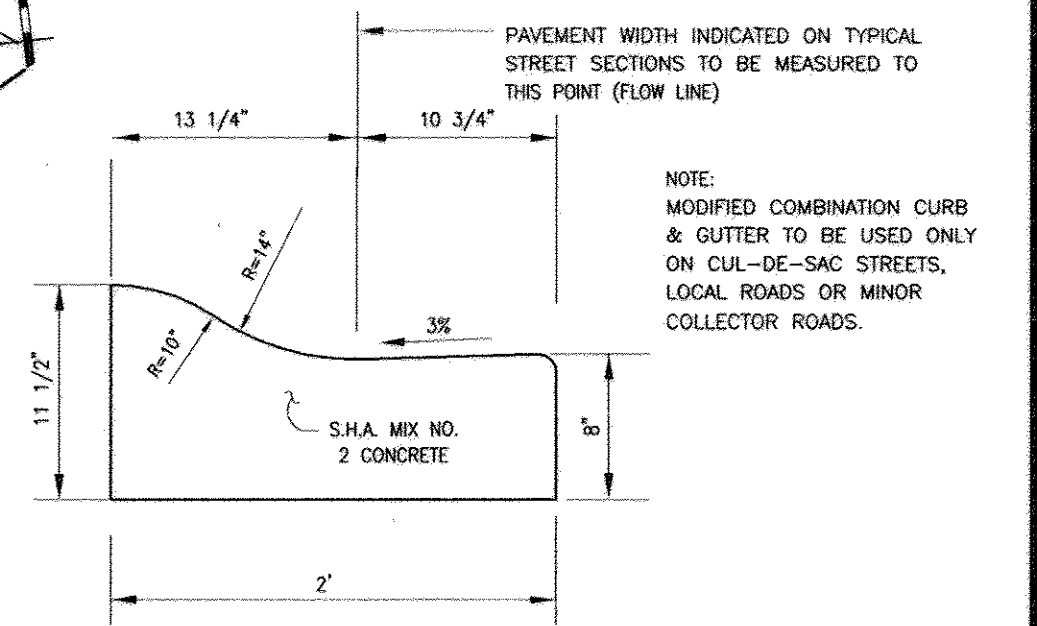
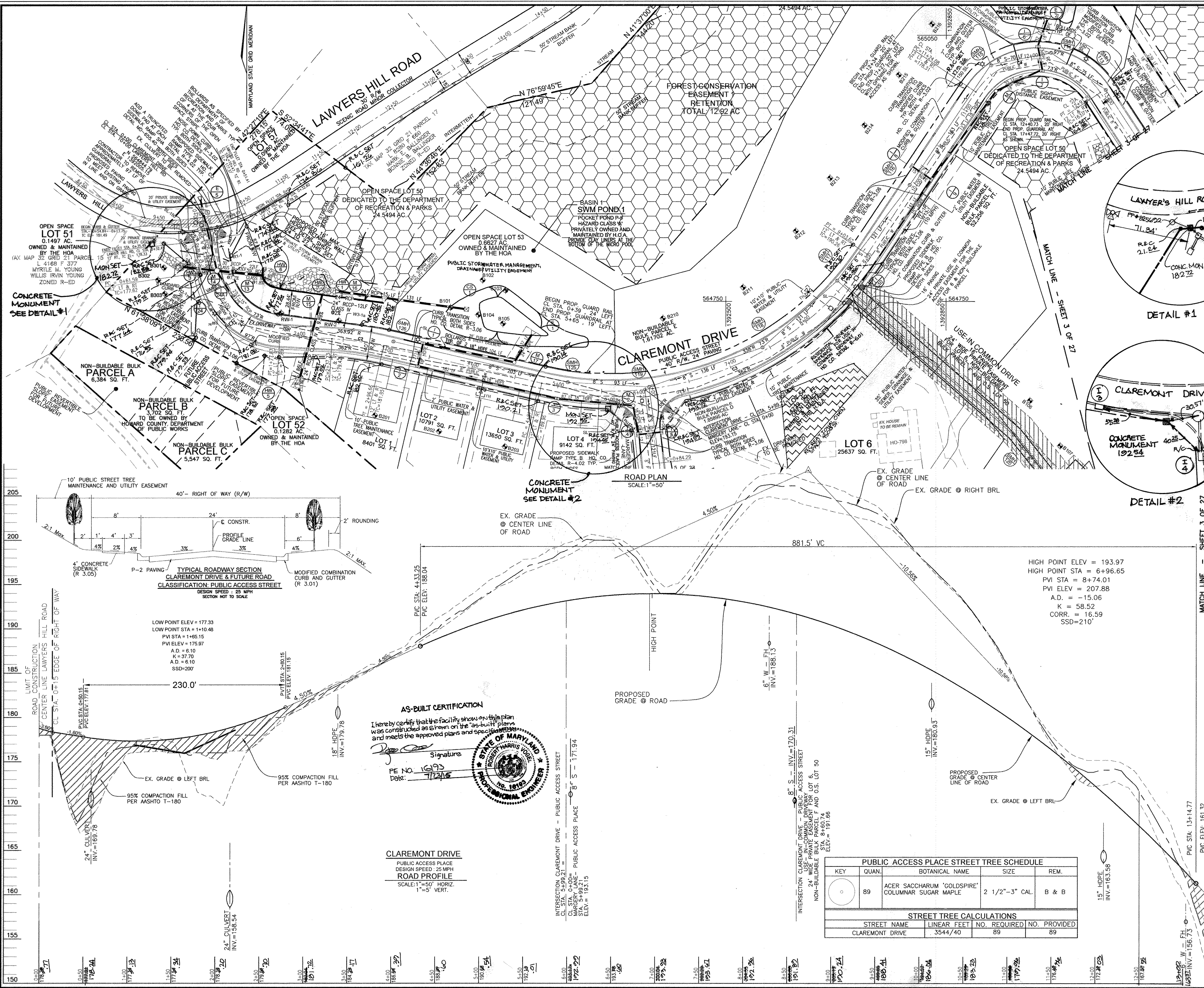
APPROVED: DEPARTMENT OF PUBLIC WORKS

 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 AS-BUILT INFORMATION THIS SHEET.



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

PROFESSIONAL CERTIFICATION

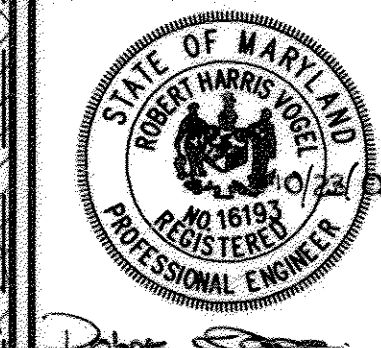
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2010.

APPROVED: DEPARTMENT OF PUBLIC WORKS	
<i>Willie J. White</i> CHIEF, BUREAU OF HIGHWAYS	11-24-08 DATE
APPROVED: DEPARTMENT OF PLANNING AND ZONING	
<i>Cindy H. Smith</i> CHIEF, DIVISION OF LAND DEVELOPMENT	2/10/09 DATE
<i>John J. P.</i> CHIEF, DEVELOPMENT ENGINEERING DIVISION	11/25/08 DATE

3	REMOVE RIP-RAP AT SWALE AS REQUESTED BY C.I.D.	12/21/10
1	ADD PUBLIC STORMWATER MANAGEMENT, DRAINAGE & UTILITY EASEMENT LABELS AND ADD GRADING & REVISED REC. O.S. PER WP-03-223.	11/16/09
NO.	REVISION	DATE

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 241
 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



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

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

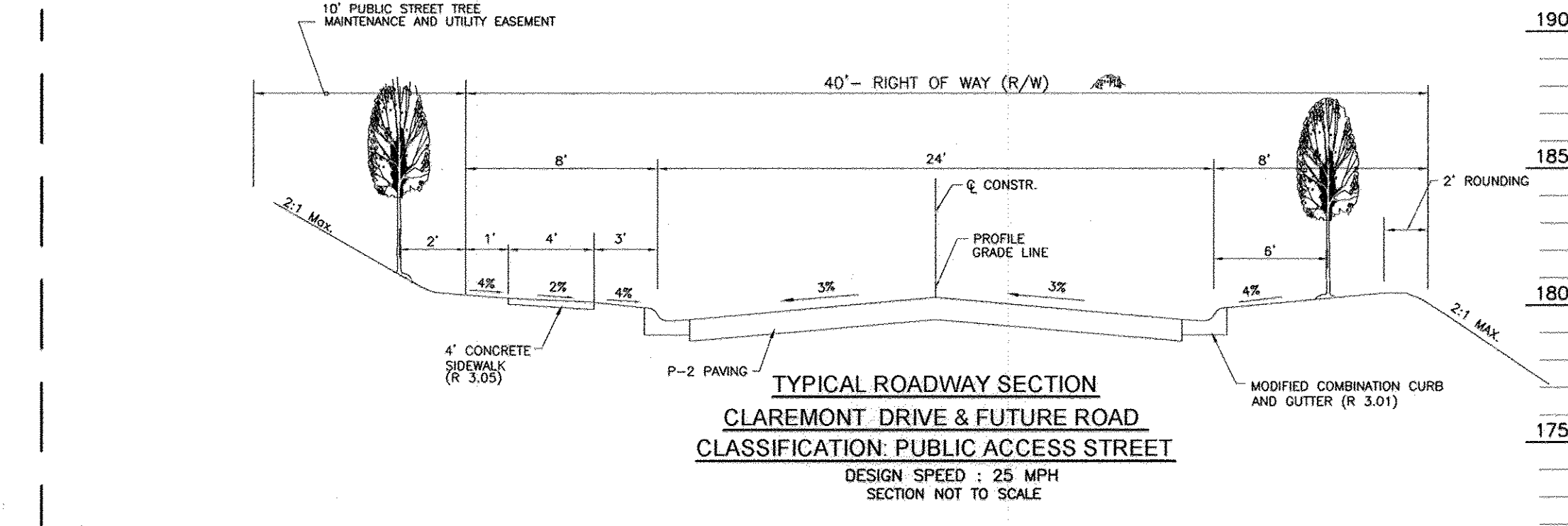
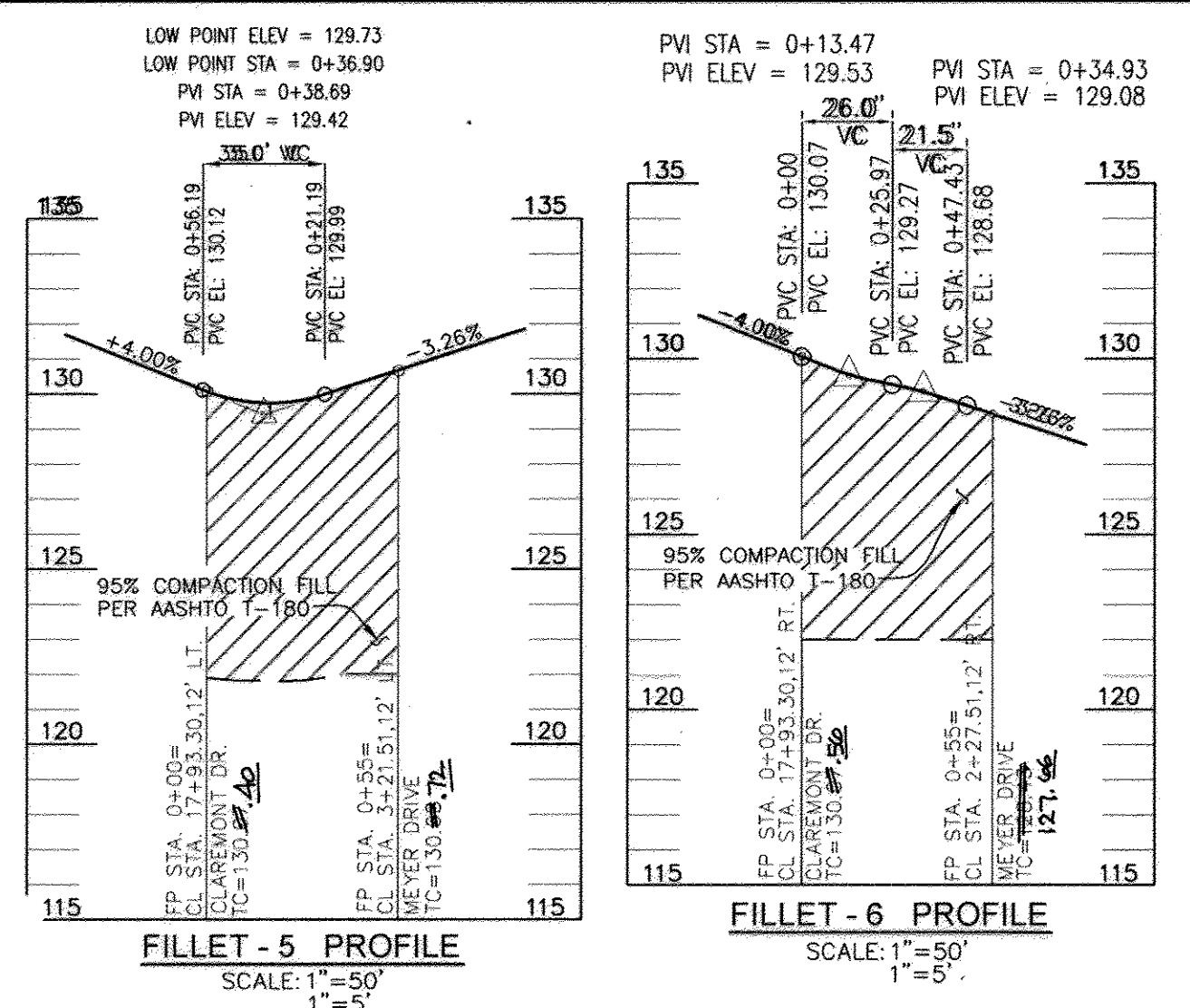
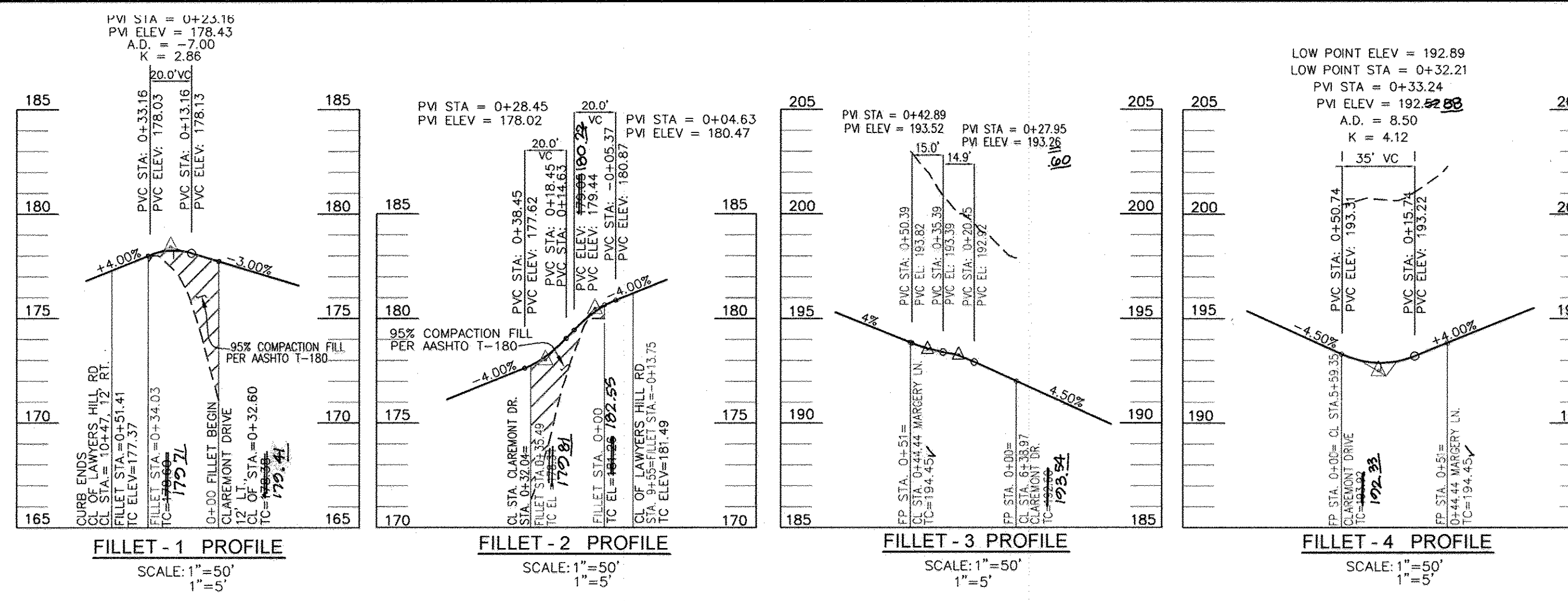
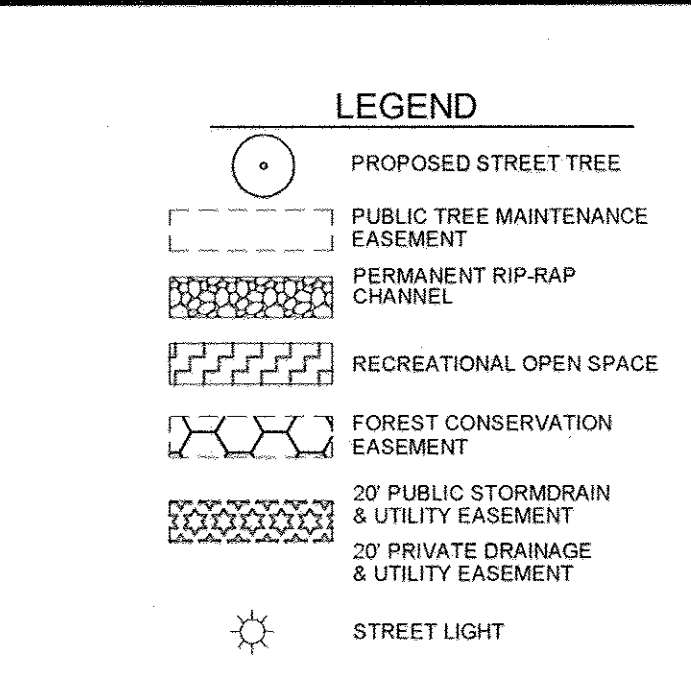
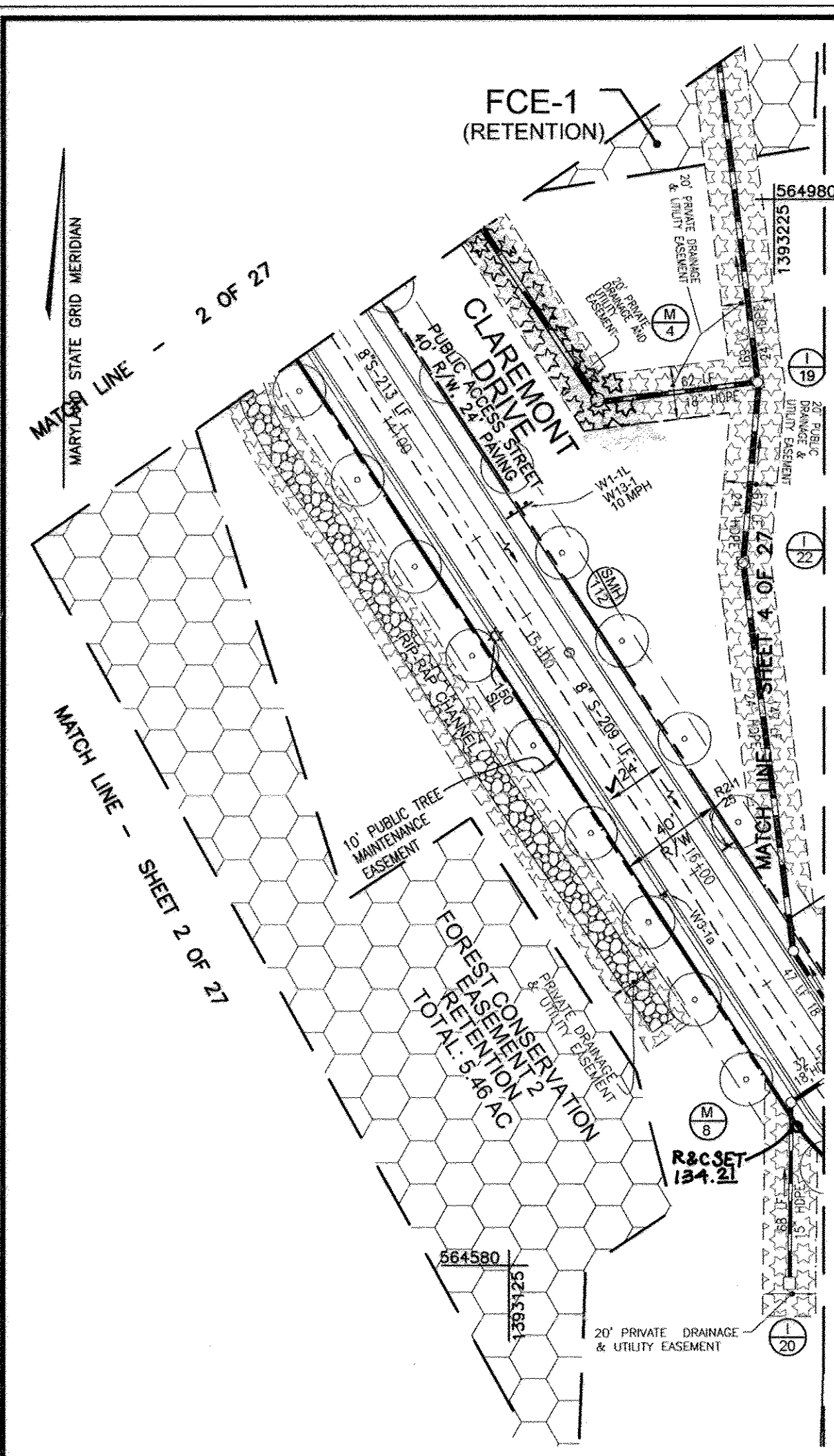
STREET TREE CALCULATIONS

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

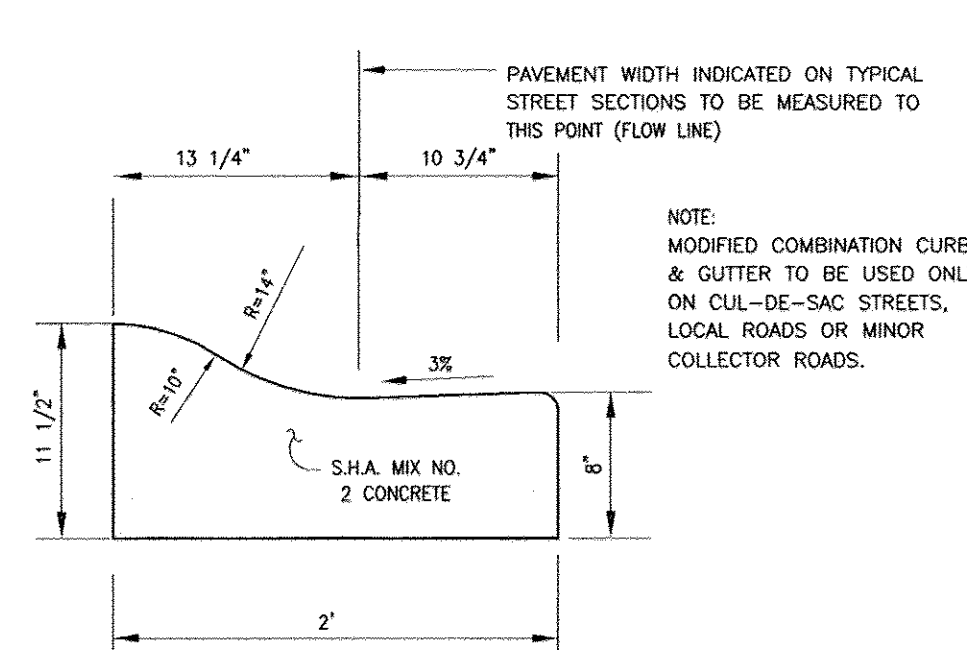
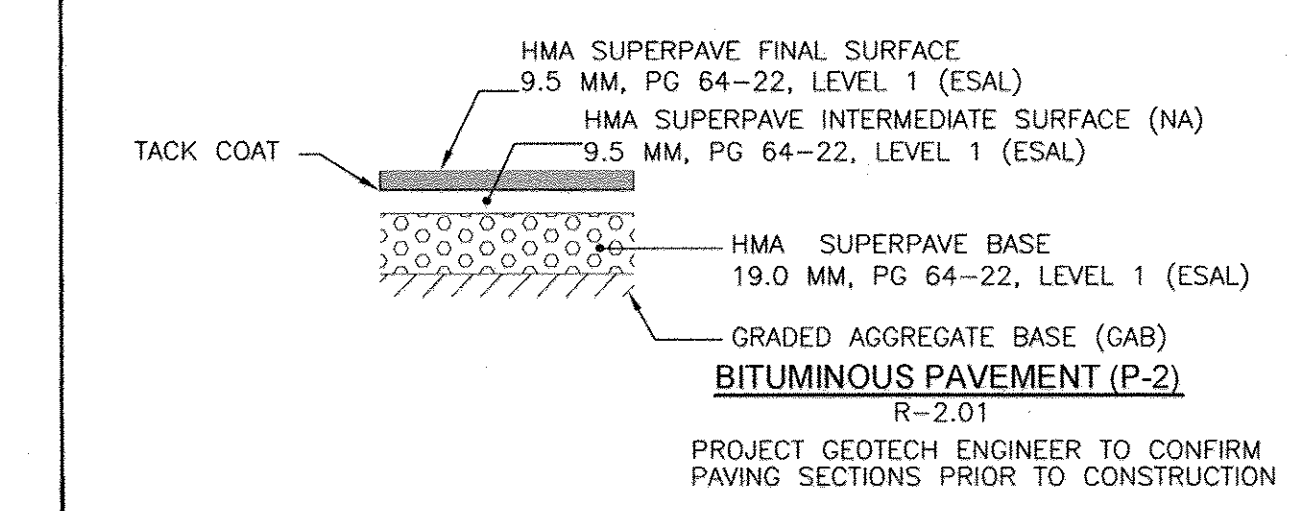
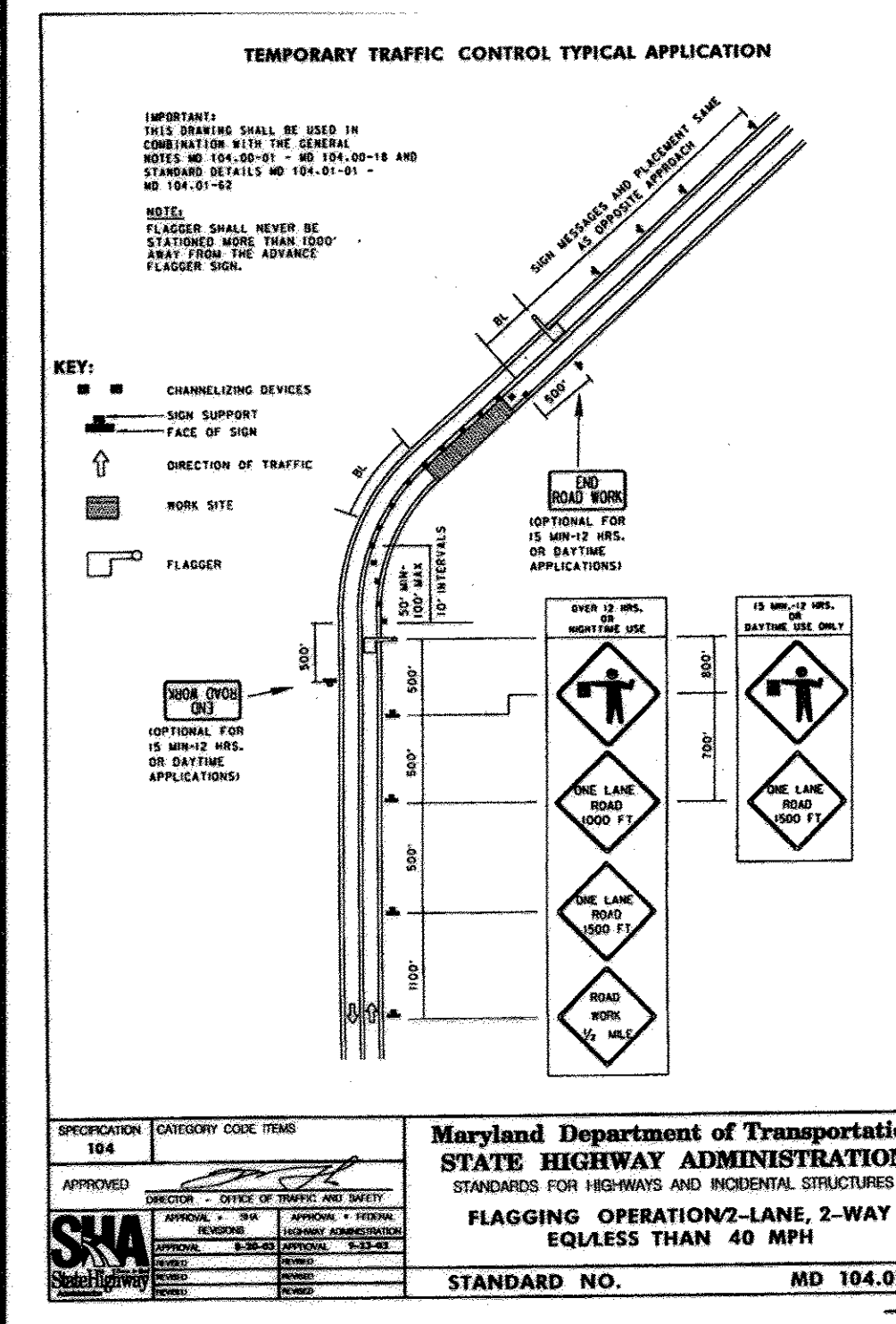
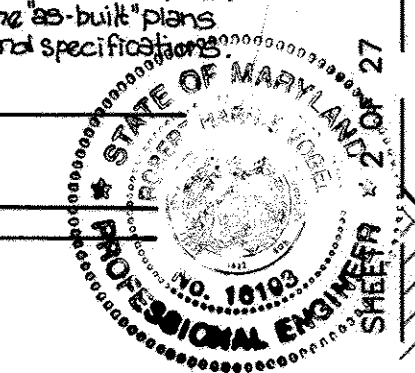
AS-BUILT CERTIFICATION
 I hereby certify that the facility shown on this plan was constructed as shown on the 'as-built' plans and meets the approved plans and specifications.
 Signature: _____
 PE NO. 16193
 Date: 7/23/15



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



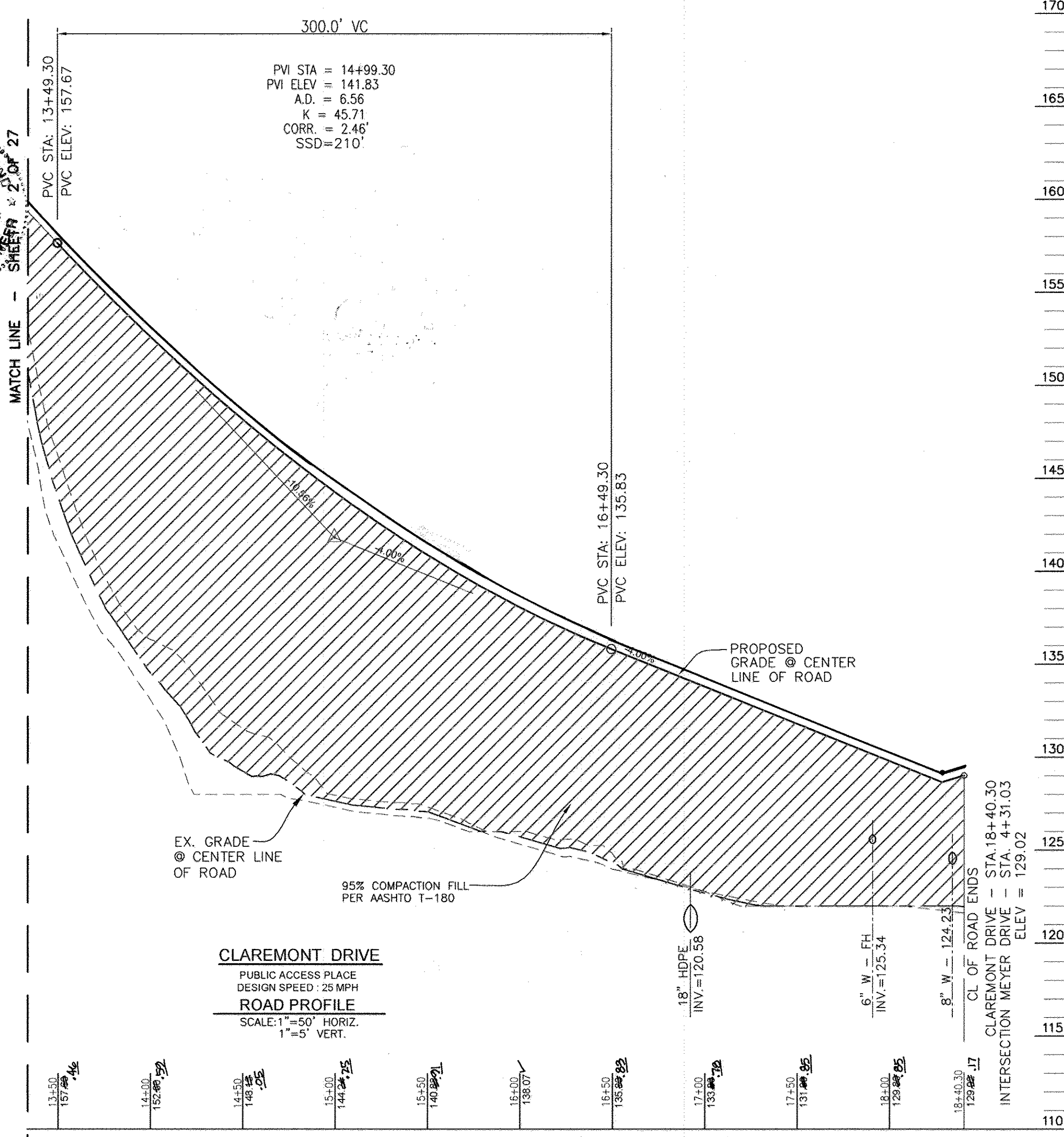
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 I hereby certify that the facility shown on this plan was constructed as shown on the 'as-built' plans and meets the approved plans and specifications.
 Signature: _____
 PE NO. 16193
 Date: 7/23/15



APPROVED: DEPARTMENT OF PUBLIC WORKS
 [Signature] 11-24-08
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: DEPARTMENT OF PLANNING AND ZONING
 [Signature] 2/10/09
 CHIEF, DIVISION OF LAND DEVELOPMENT
 [Signature] 11/20/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

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



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	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	1+57	10' RT.	100-WATT PREMIER POST-TOP FIXTURE

SIGNAGE LOCATION CHART

STREET NAME	STATION	OFFSET	FIXTURE/POLE TYPE
CLAREMONT DRIVE	0+30	17' LEFT	R1-1 "STOP"
MARGERY LANE	0+47	14' RIGHT	"STOP"
CLAREMONT DRIVE	17+99	14.5' RIGHT	"STOP"
CLAREMONT DRIVE	0+87	22' RIGHT	R2-1 "SPEED LIMIT 25 MPH"
CLAREMONT DRIVE	16+00	17' LEFT	"SPEED LIMIT 25 MPH"
CLAREMONT DRIVE	6+25	16' LEFT	W3-1a "STOP AHEAD"
CLAREMONT DRIVE	16+00	17' RIGHT	"STOP AHEAD"
CLAREMONT DRIVE	8+08	15' RIGHT	D3 "STOP"
CLAREMONT DRIVE	8+80	23' RIGHT	*ST. NAME SIGN ASSEMBLY
CLAREMONT DRIVE	6+10	34' RIGHT	W3-1a "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"

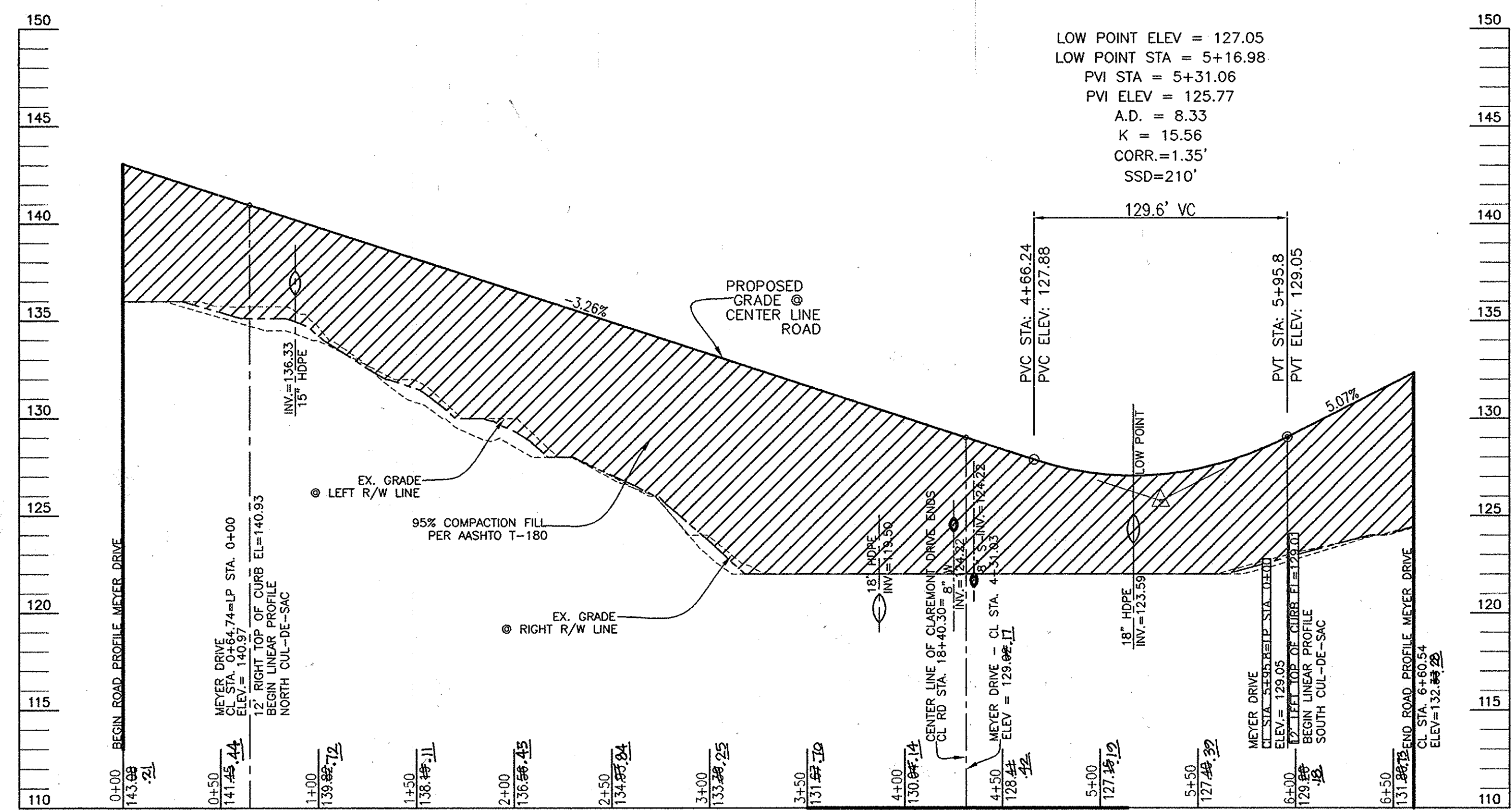
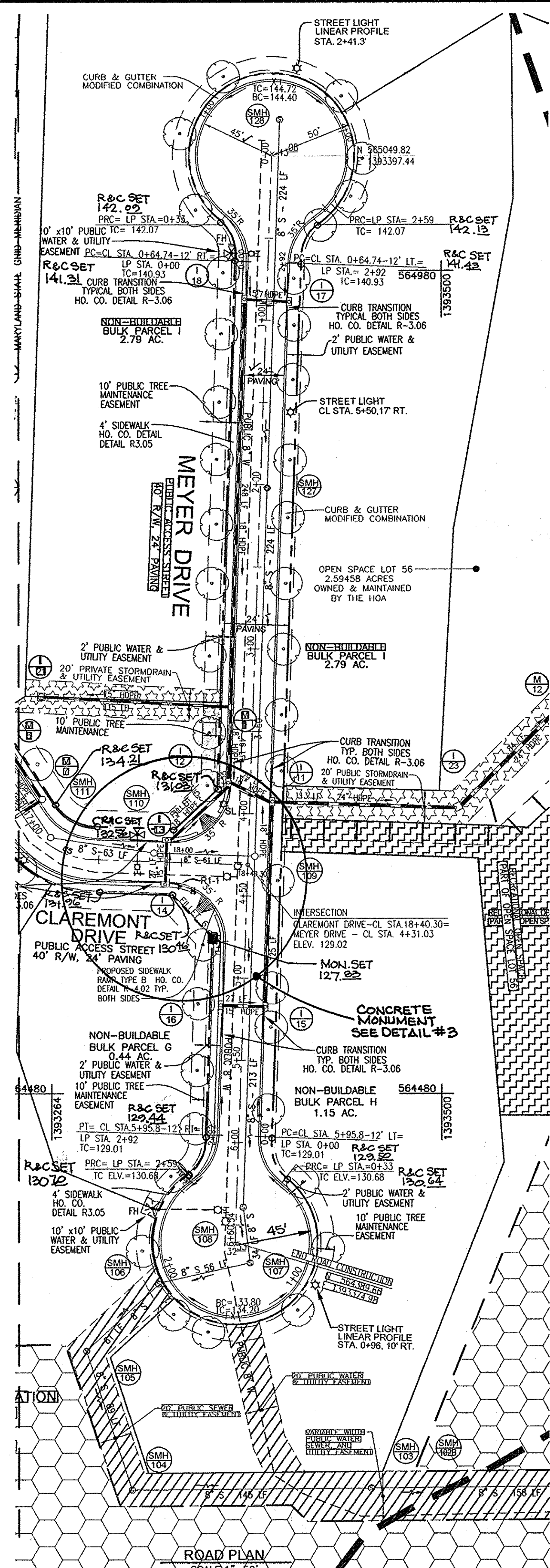
*STREET NAME SIGNS SHALL BE FABRICATED BY HOWARD COUNTY

NO.	REVISION	DATE
3	REMOVE RIP-RAP AT SWALE, AS REQUESTED BY CID	12/21/16

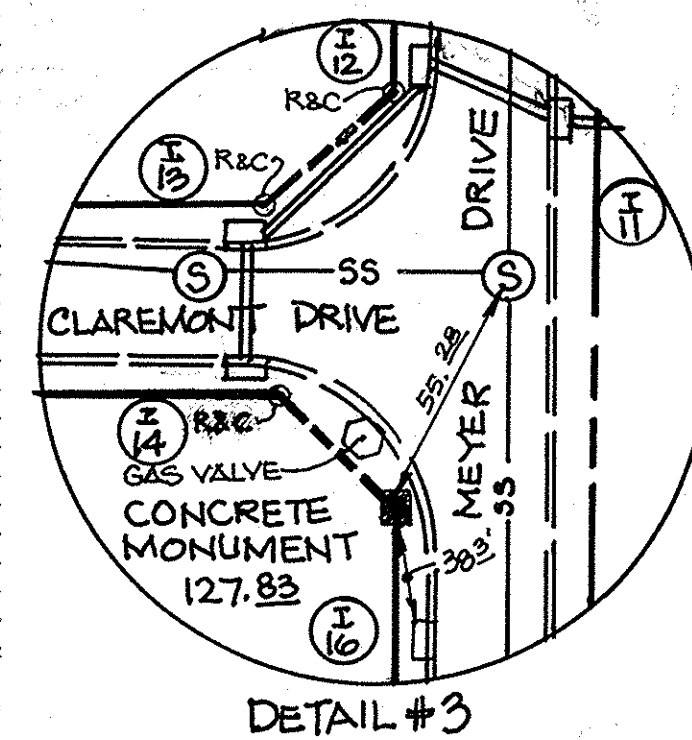
FINAL ROAD CONSTRUCTION PLAN
ROAD CONSTRUCTION PLAN AND DETAILS
CLAREMONT OVERLOOK
 LOTS 1 - 6, OPEN SPACE LOTS 50-57
 AND NON-BUILDABLE BULK PARCELS A - I
 TAX MAP 32 GRID 21 PARCELS 632 AND 24
 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

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



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

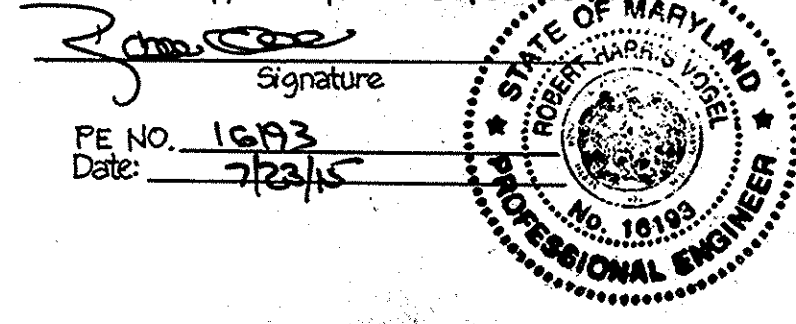


DETAIL #3

HIGH POINT ELEV = 144.72
HIGH POINT STA = 1+46.11
PVI STA = 1+46.11
PVI ELEV = 145.69
A.D. = -8.52
K = 18.40
CORR. = 0.978'

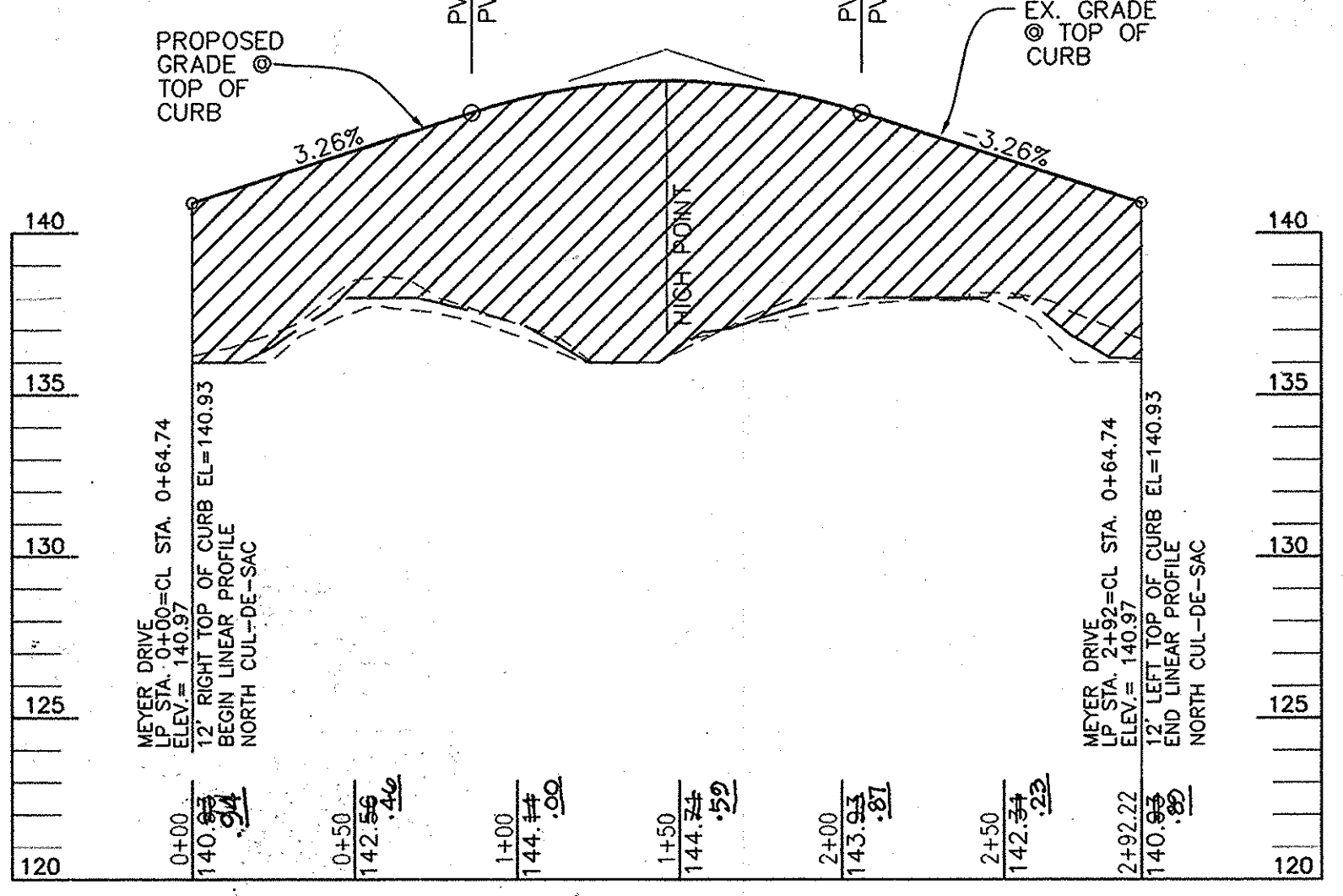
AS-BUILT CERTIFICATION

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

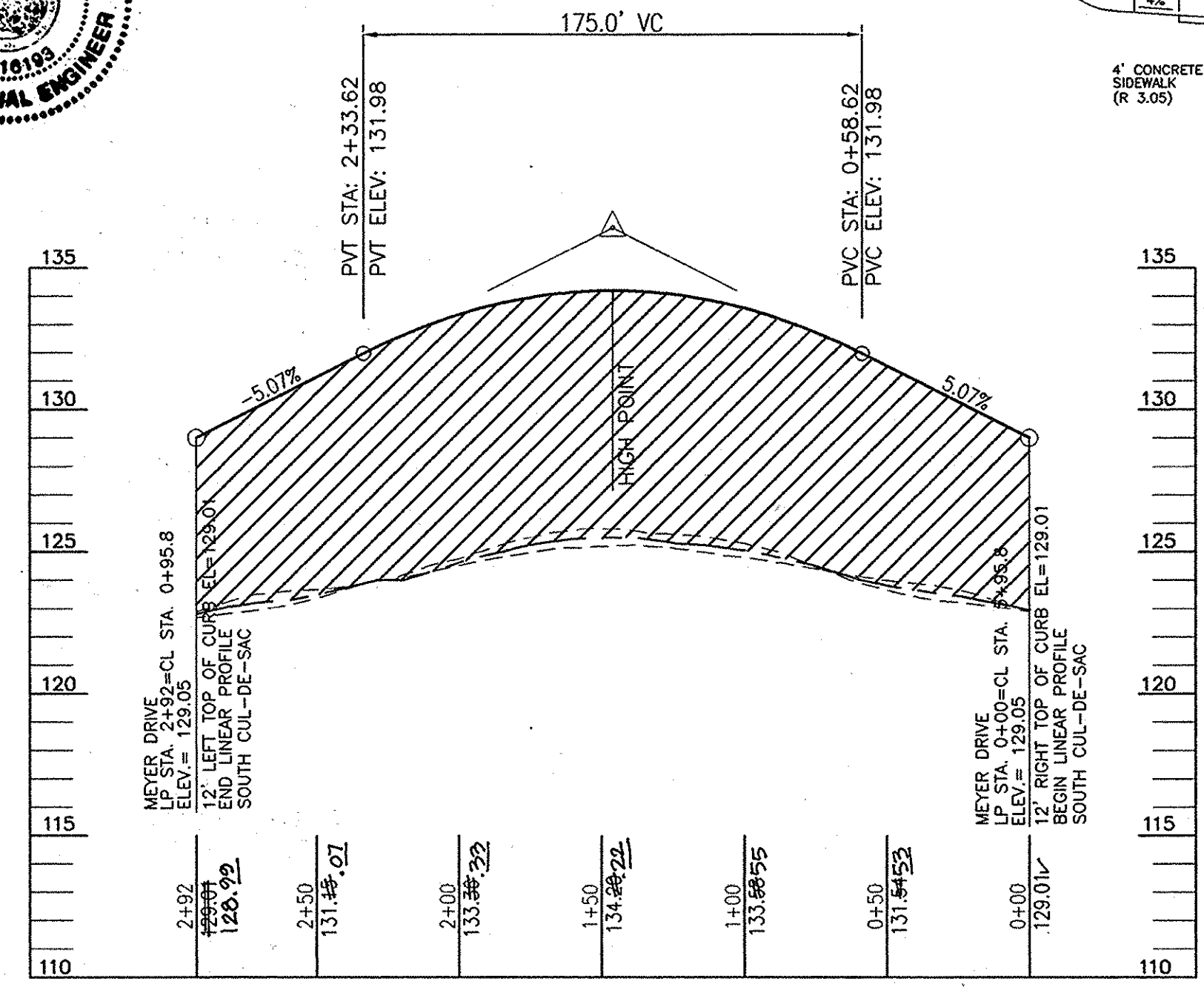


Signature: [Signature]
PE No. 1693
Date: 7/24/15

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'



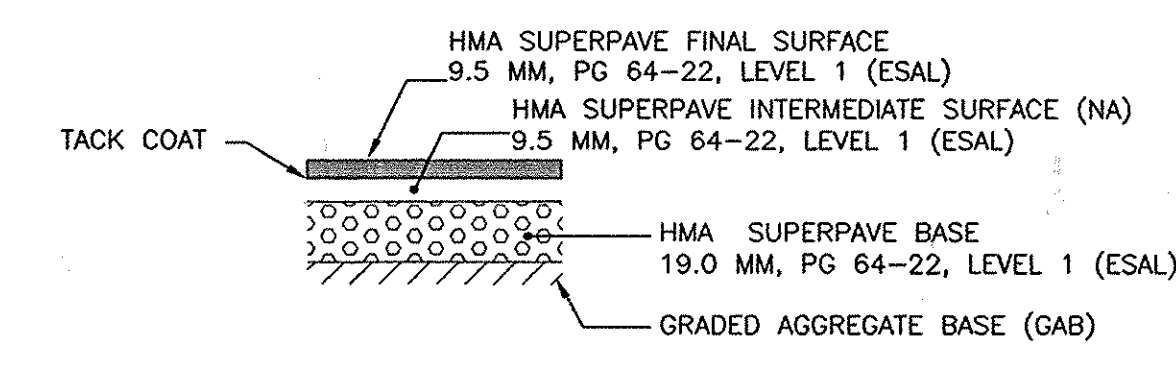
CUL-DE-SAC PROFILE - NORTH
MEYER DRIVE
SCALE: 1"=50' HORIZ.
1"=5' VERT.



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

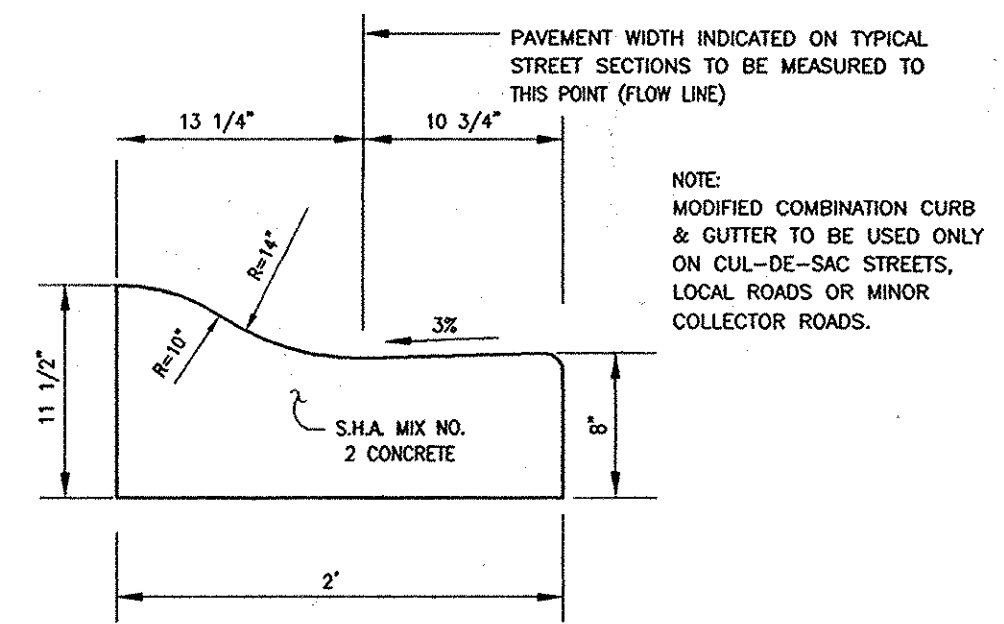
PUBLIC ACCESS PLACE STREET TREE SCHEDULE				
KEY	QUAN.	BOTANICAL NAME	SIZE	REM.
○	40	ACER SACCHARUM 'GOLDSPIRE' COLUMNAR SUGAR MAPLE	2 1/2"-3" CAL.	B & B

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

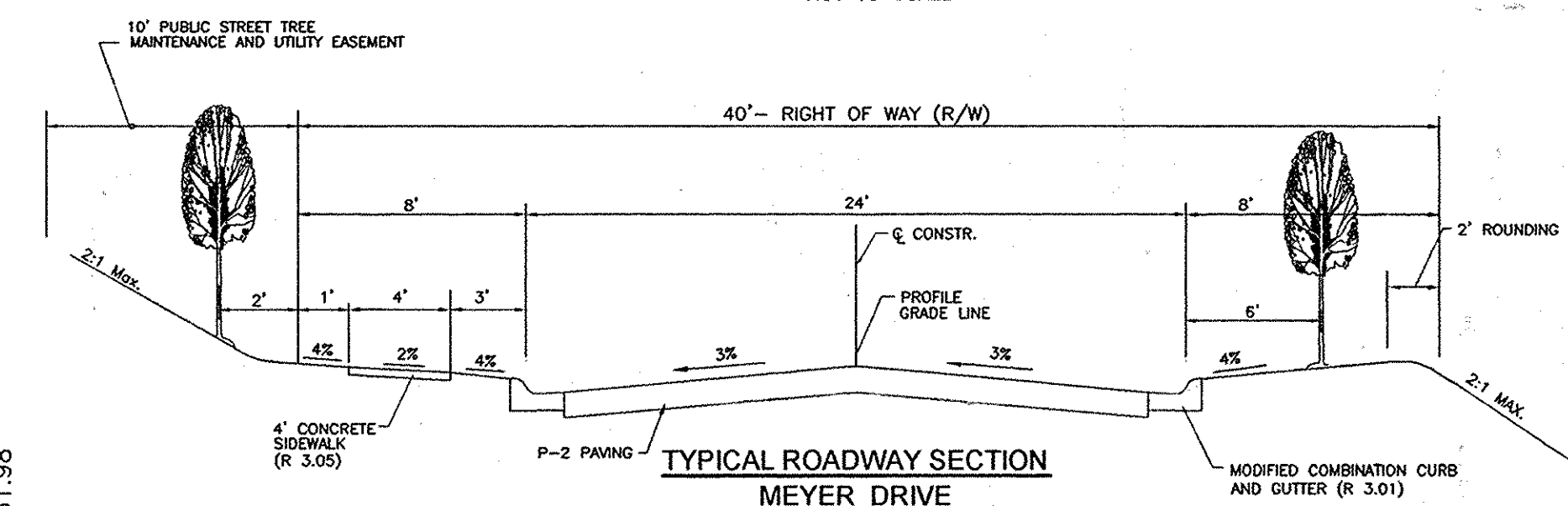


BITUMINOUS PAVEMENT (P-2)
R-2.01

PROJECT GEOTECH ENGINEER TO CONFIRM PAVING SECTIONS PRIOR TO CONSTRUCTION



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



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

APPROVED: DEPARTMENT OF PUBLIC WORKS
[Signature] 11-24-08
CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 2/10/09
CHIEF, DIVISION OF LAND DEVELOPMENT

[Signature] 11/26/00
CHIEF, DEVELOPMENT ENGINEERING DIVISION

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. 18195 EXPIRATION DATE: 09-27-2010.

NO.	REVISION	DATE

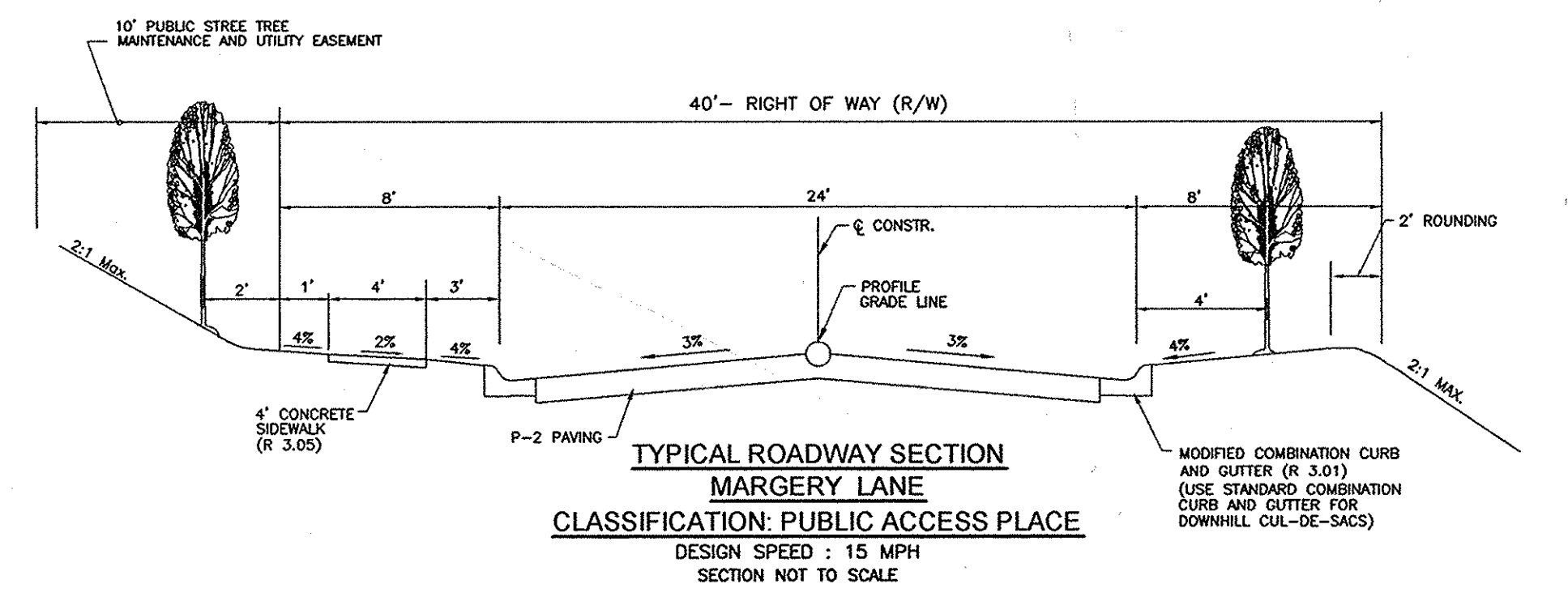
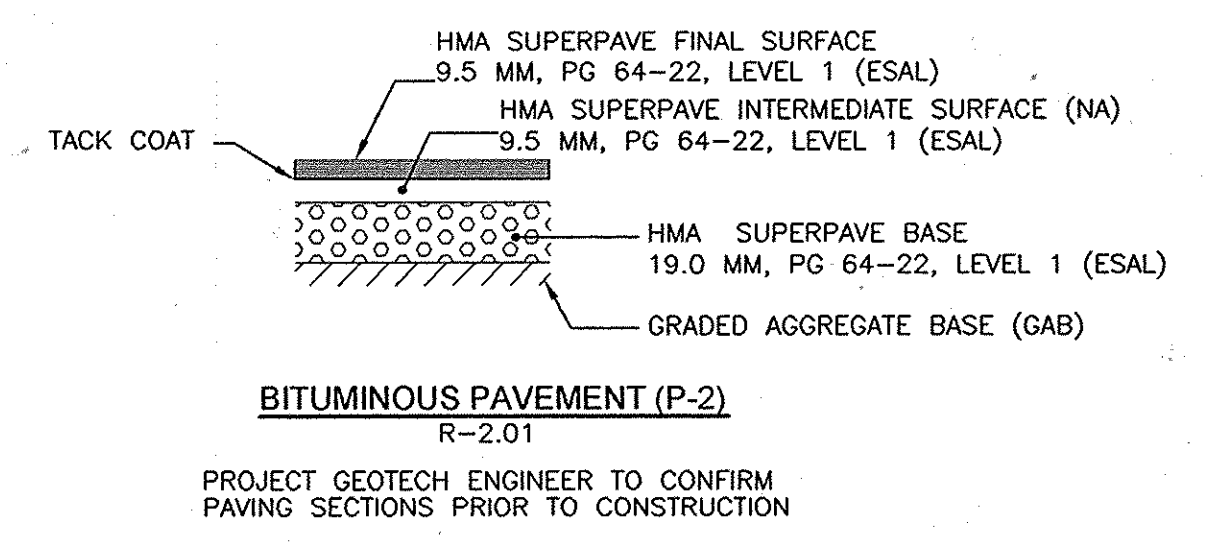
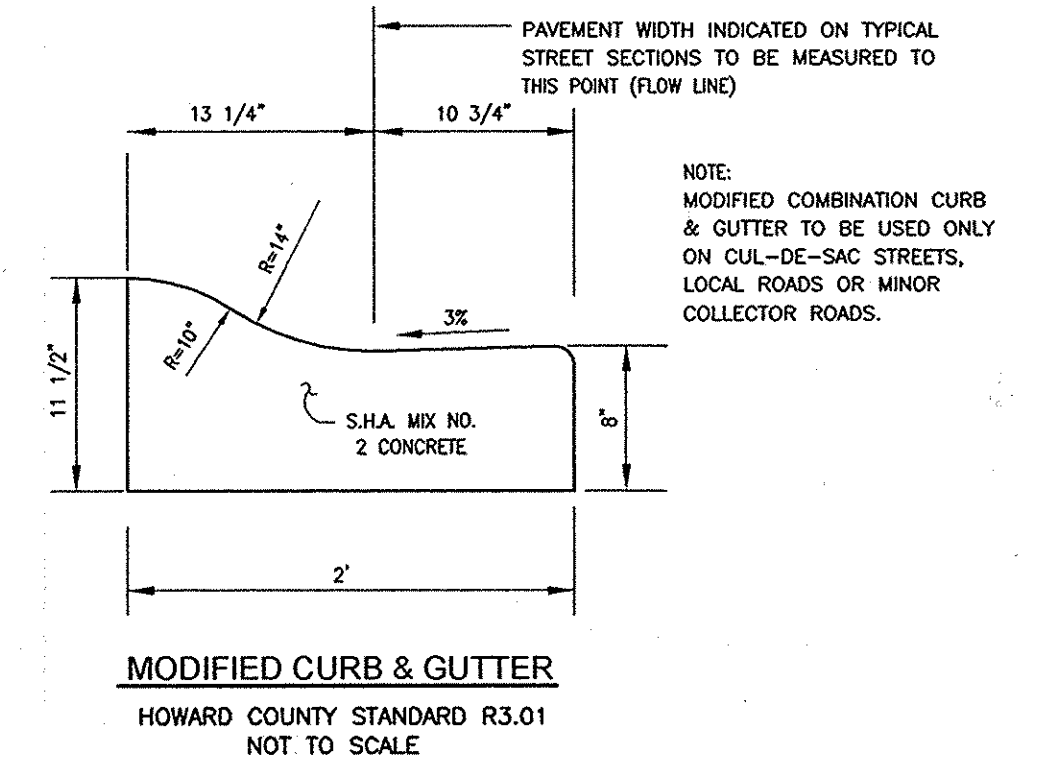
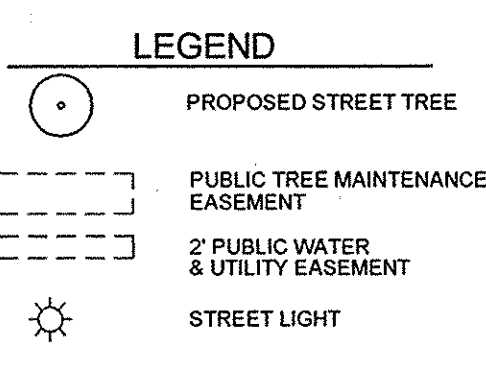
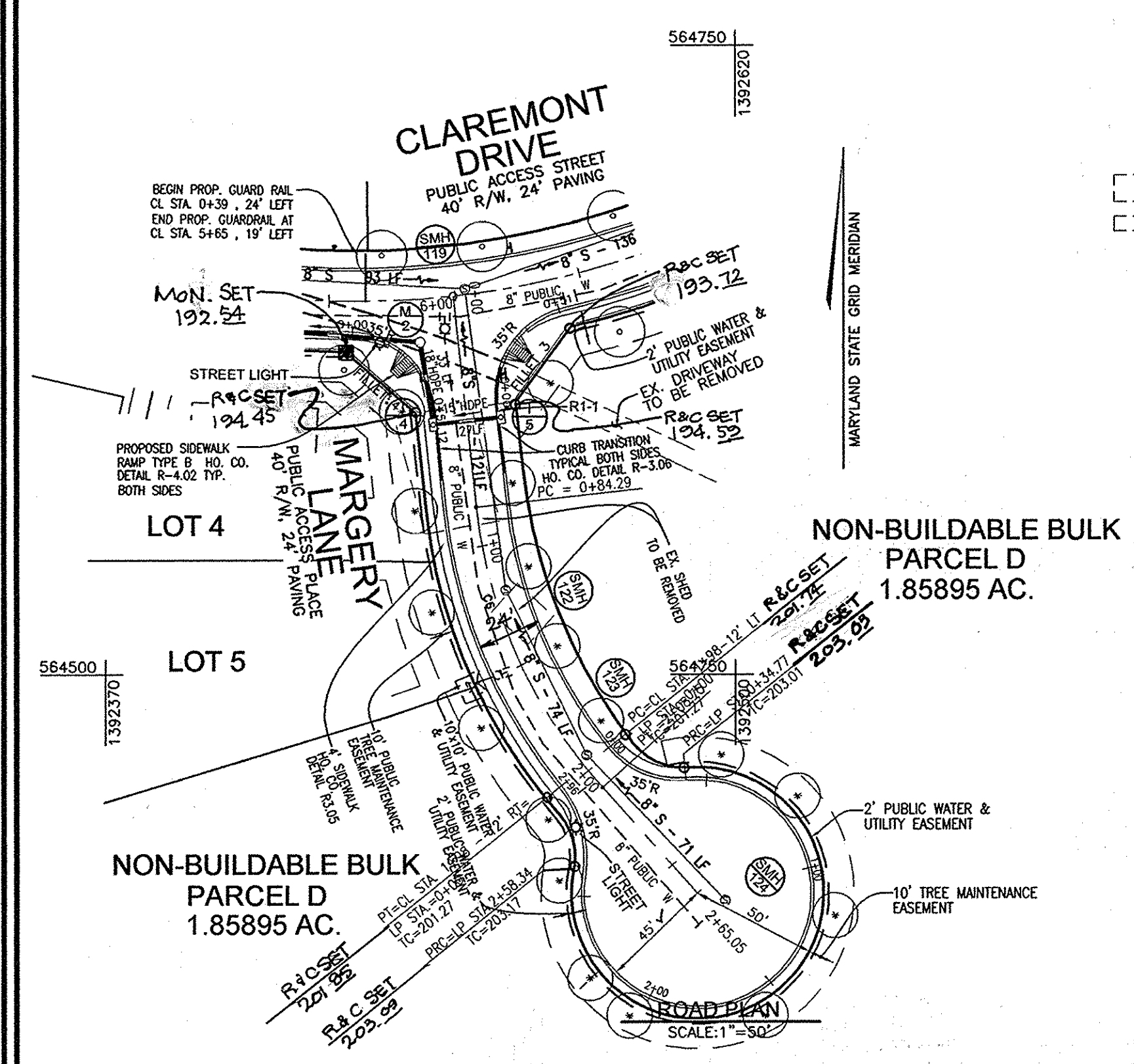
FINAL ROAD CONSTRUCTION PLAN
ROAD CONSTRUCTION PLAN AND DETAILS
CLAREMONT OVERLOOK
LOTS 1 - 6, OPEN SPACE LOTS 50-57
AND NON-BUILDABLE BULK PARCELS A-I
TAX MAP 32 GRID 21 PARCELS 632 AND 24
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

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

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

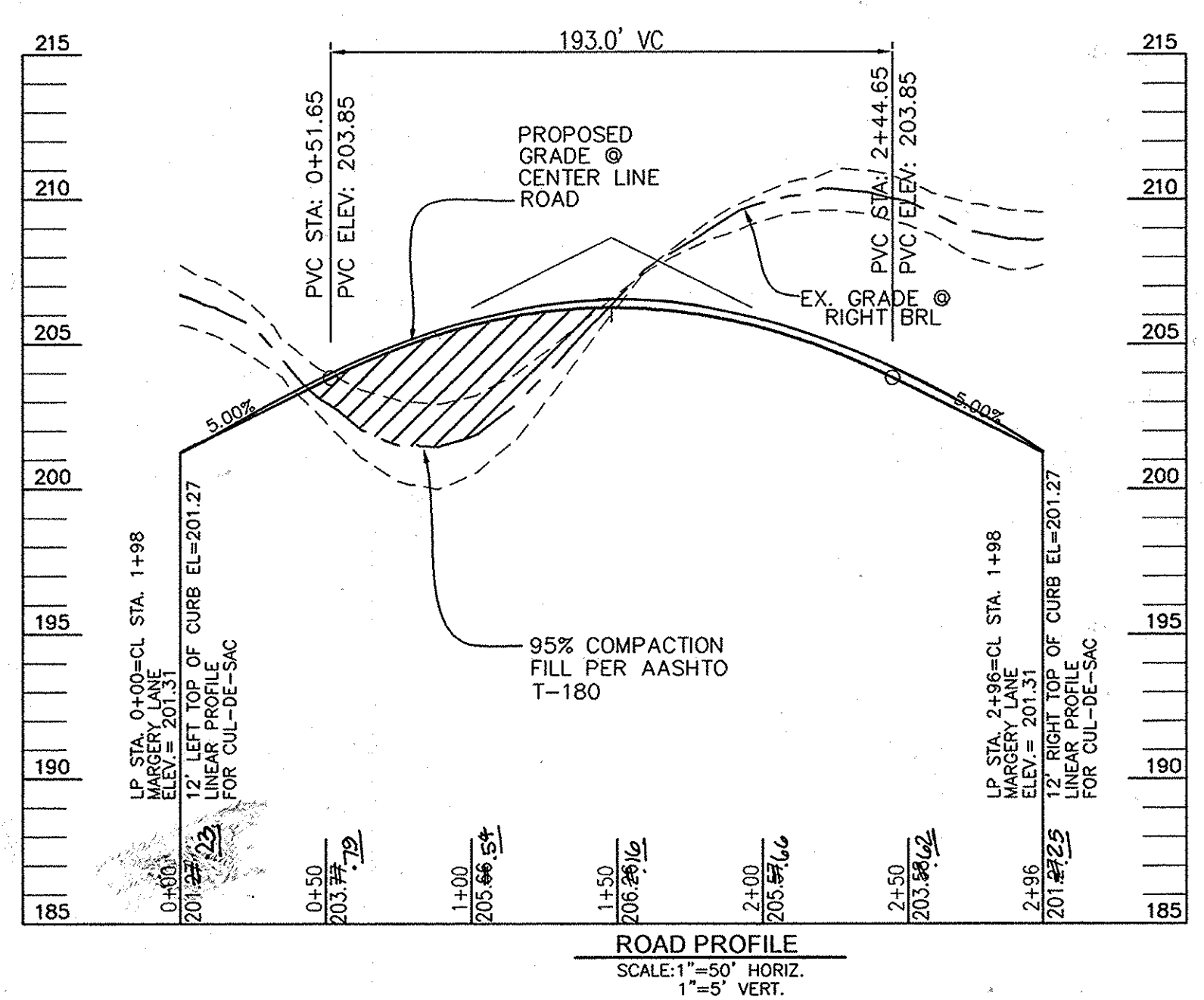
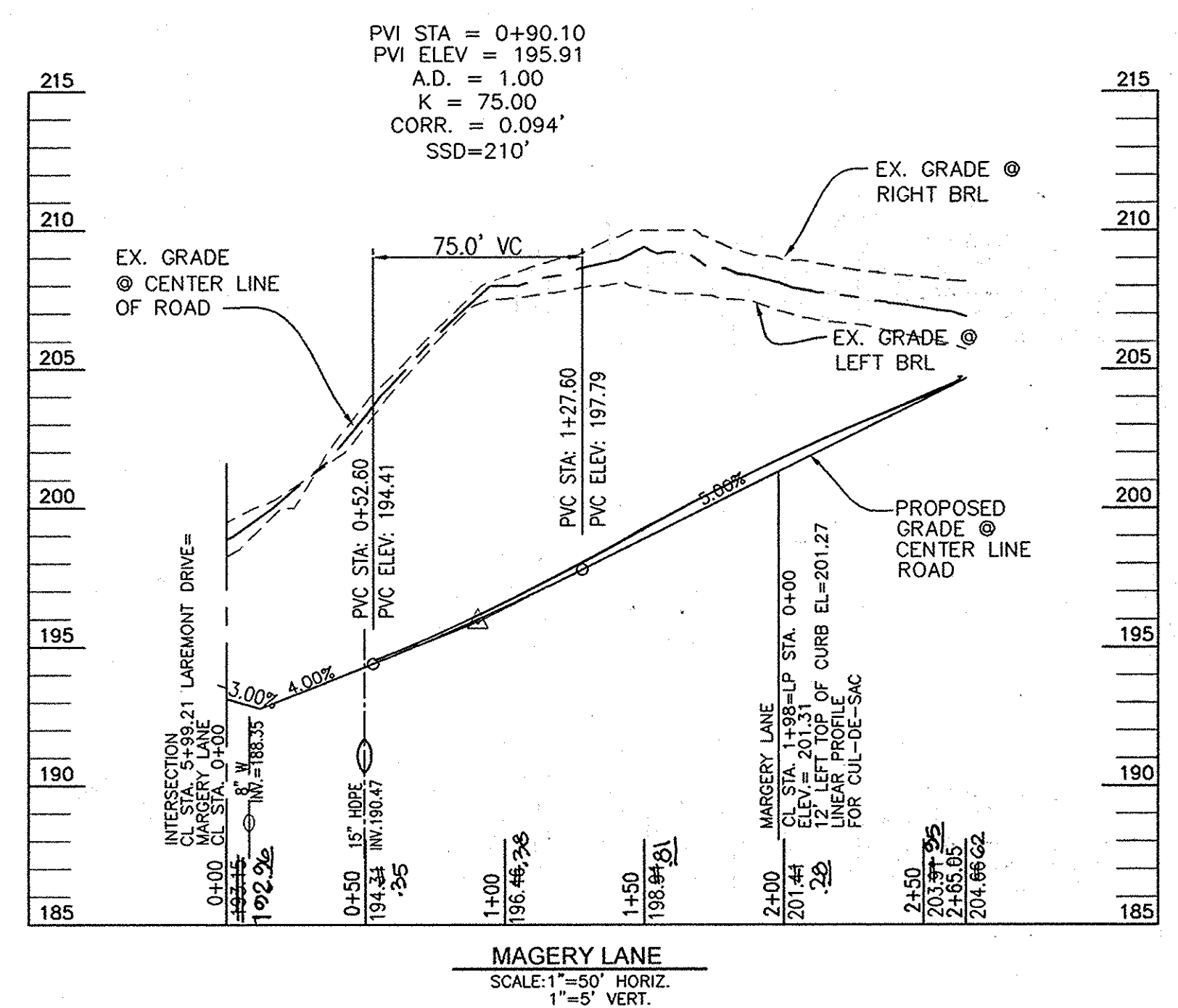
4 SHEET OF 27



PUBLIC ACCESS PLACE STREET TREE SCHEDULE				
KEY	QUAN.	BOTANICAL NAME	SIZE	REM.
	17	KOUZA 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'



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

APPROVED: DEPARTMENT OF PUBLIC WORKS
 [Signature] 11-24-08
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 [Signature] 2/10/09
 CHIEF, DIVISION OF LAND DEVELOPMENT

[Signature] 11/25/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

AS-BUILT CERTIFICATION
 I hereby certify that the facilities shown on this plan were constructed as shown on the approved plans and meet the approved plans and specifications.

[Signature]
 PE NO. 16193
 Date: 1/23/15

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

NO.	REVISION	DATE

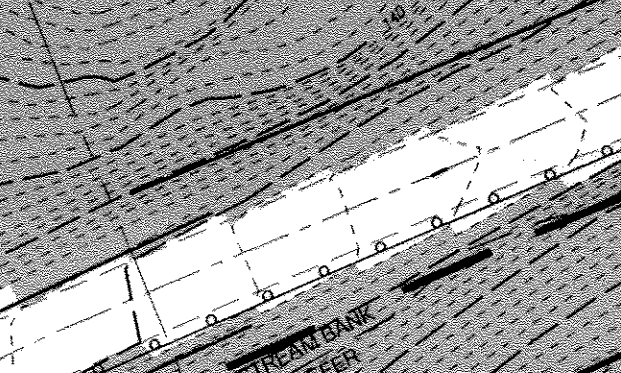
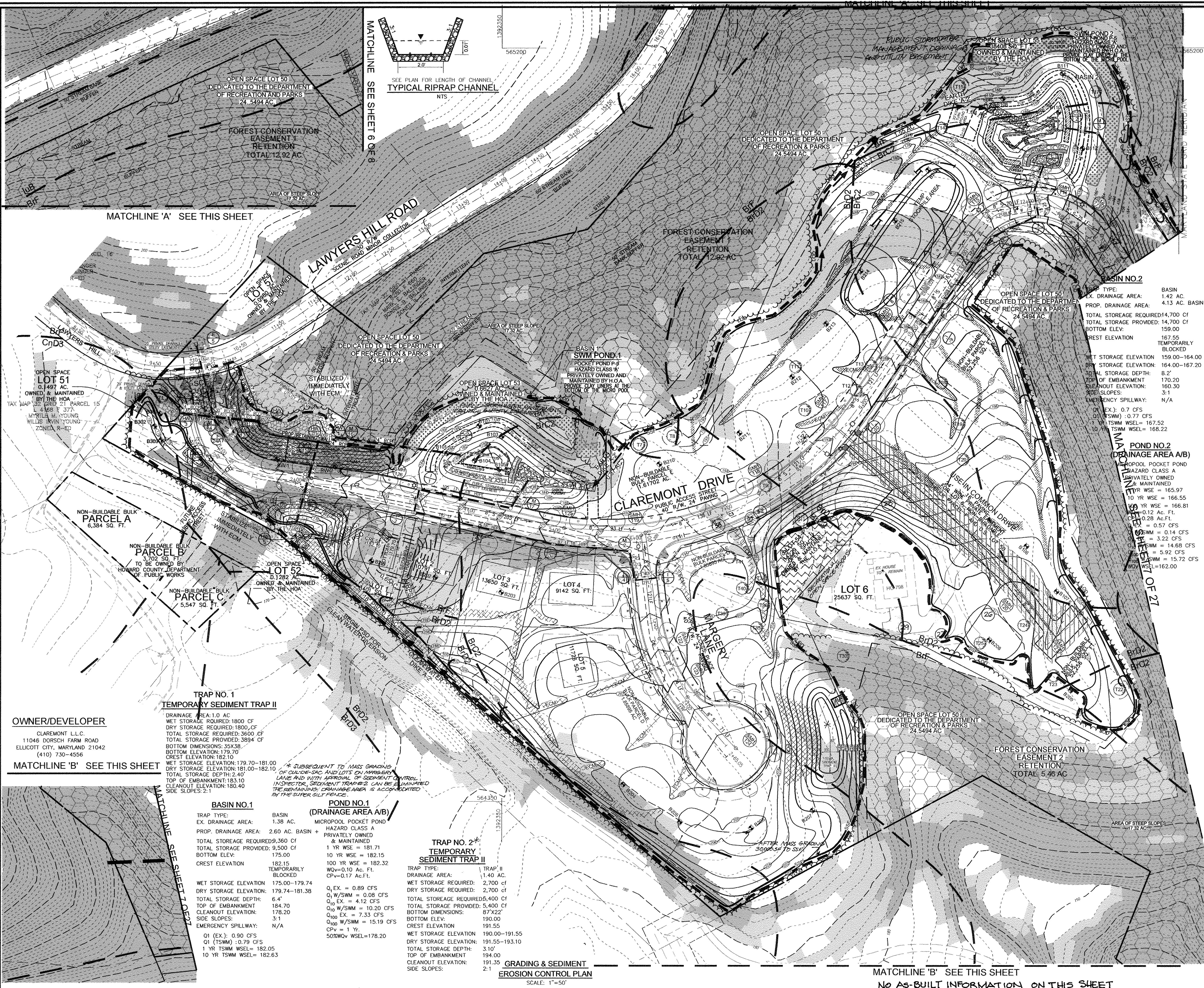
**FINAL ROAD CONSTRUCTION PLAN
 ROAD CONSTRUCTION PLAN AND DETAILS
 CLAREMONT OVERLOOK**
 LOTS 1 - 6, OPEN SPACE LOTS 50-57
 AND NON - BUILDABLE BULK PARCELS A - J

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 TEL: 410.461.7666
 ELLICOTT CITY, MD 21043 FAX: 410.461.8961

DESIGN BY: RHW/RJ
 DRAWN BY: RJ
 CHECKED BY: RHV
 DATE: SEPTEMBER 2008
 SCALE: AS SHOWN
 W.O. NO.: 02-88.00

5 SHEET OF 27



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
 Chief, Bureau of Highways *[Signature]* Date 11-24-08

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 Chief, Division of Land Development *[Signature]* Date 2/10/09

Chief, Development Engineering Division *[Signature]* Date 1/25/09

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

[Signature] Date 4/5/08
 HOWARD SOIL CONSERVATION DISTRICT

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

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] Date 10/24/2008
 SIGNATURE OF DEVELOPER DATE

LEGEND

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

NO.	REVISION	DATE
3	REMOVE RIP-RAP AT SWALE, AS REQUESTED BY CID	12/11/08
2	ELIMINATE SEDIMENT TRAP # 2	11/4/10
1	ADD STORMWATER MANAGEMENT EASEMENT AND REVISE GRADING ON OPEN SPACE LOT 54	11/10/09

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 24-1
 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

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

6 SHEET OF 27

MATCHLINE 'B' SEE THIS SHEET

BASIN NO. 1
 TRAP TYPE: BASIN
 EX. DRAINAGE AREA: 1.38 AC.
 PROP. DRAINAGE AREA: 2.60 AC. BASIN + PRIVATELY OWNED & MAINTAINED
 TOTAL STORAGE REQUIRED: 9,360 CF
 TOTAL STORAGE PROVIDED: 9,500 CF
 BOTTOM ELEV.: 175.00
 CREST ELEVATION: 182.15
 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
 O1 (EX.): 0.90 CFS
 O1 (TSWM): 0.79 CFS
 1 YR TSWM WSEL: 182.05
 10 YR TSWM WSEL: 182.63

**TRAP NO. 1
 TEMPORARY SEDIMENT TRAP II**
 DRAINAGE AREA: 1.0 AC
 WET STORAGE REQUIRED: 1800 CF
 DRY STORAGE REQUIRED: 1800 CF
 TOTAL STORAGE REQUIRED: 3600 CF
 TOTAL STORAGE PROVIDED: 3894 CF
 BOTTOM DIMENSIONS: 35x38
 BOTTOM ELEVATION: 179.20
 CREST ELEVATION: 182.10
 WET STORAGE ELEVATION: 179.20-181.00
 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

**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 STORAGE 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 'A' SEE THIS SHEET

BASIN NO. 2
 TRAP TYPE: BASIN
 EX. DRAINAGE AREA: 1.42 AC.
 PROP. DRAINAGE AREA: 4.13 AC. BASIN + PRIVATELY OWNED & MAINTAINED
 TOTAL STORAGE REQUIRED: 4,700 CF
 TOTAL STORAGE PROVIDED: 14,700 CF
 BOTTOM ELEV.: 159.00
 CREST ELEVATION: 167.55
 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
 O1 (EX.): 0.7 CFS
 O1 (TSWM): 0.77 CFS
 1 YR TSWM WSEL: 167.52
 10 YR TSWM WSEL: 168.22

MATCHLINE 'C' SEE SHEET 6 OF 8

**POND NO. 2
 DRAINAGE AREA A/B**
 POOL POCKET POND
 HAZARD CLASS A
 PRIVATELY OWNED & MAINTAINED
 1 YR WSE = 165.97
 10 YR WSE = 166.55
 100 YR WSE = 166.81
 O1 = 0.12 CFS
 O2 = 0.28 Ac.Ft.
 O3 = 0.57 CFS
 O4 (SWM) = 0.14 CFS
 O5 (SWM) = 3.22 CFS
 O6 (SWM) = 14.68 CFS
 O7 (SWM) = 5.92 CFS
 O8 (SWM) = 15.72 CFS
 W.O. WSEL = 162.00

MATCHLINE 'B' SEE THIS SHEET

NO AS-BUILT INFORMATION ON THIS SHEET

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

* 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 ACCOMMODATED BY THE SUPER SILT FENCE.

MATCHLINE 'A' SEE THIS SHEET

MATCHLINE 'B' SEE THIS SHEET

MATCHLINE 'C' SEE SHEET 6 OF 8

MATCHLINE 'D' SEE THIS SHEET

MATCHLINE 'E' SEE THIS SHEET

MATCHLINE 'F' SEE THIS SHEET

MATCHLINE 'G' SEE THIS SHEET

MATCHLINE 'H' SEE THIS SHEET

MATCHLINE 'I' SEE THIS SHEET

MATCHLINE 'J' SEE THIS SHEET

MATCHLINE 'K' SEE THIS SHEET

MATCHLINE 'L' SEE THIS SHEET

MATCHLINE 'M' SEE THIS SHEET

MATCHLINE 'N' SEE THIS SHEET

MATCHLINE 'O' SEE THIS SHEET

MATCHLINE 'P' SEE THIS SHEET

MATCHLINE 'Q' SEE THIS SHEET

MATCHLINE 'R' SEE THIS SHEET

MATCHLINE 'S' SEE THIS SHEET

MATCHLINE 'T' SEE THIS SHEET

MATCHLINE 'U' SEE THIS SHEET

MATCHLINE 'V' SEE THIS SHEET

MATCHLINE 'W' SEE THIS SHEET

MATCHLINE 'X' SEE THIS SHEET

MATCHLINE 'Y' SEE THIS SHEET

MATCHLINE 'Z' SEE THIS SHEET

MATCHLINE 'AA' SEE THIS SHEET

MATCHLINE 'AB' SEE THIS SHEET

MATCHLINE 'AC' SEE THIS SHEET

MATCHLINE 'AD' SEE THIS SHEET

MATCHLINE 'AE' SEE THIS SHEET

MATCHLINE 'AF' SEE THIS SHEET

MATCHLINE 'AG' SEE THIS SHEET

MATCHLINE 'AH' SEE THIS SHEET

MATCHLINE 'AI' SEE THIS SHEET

MATCHLINE 'AJ' SEE THIS SHEET

MATCHLINE 'AK' SEE THIS SHEET

MATCHLINE 'AL' SEE THIS SHEET

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MATCHLINE 'AW' SEE THIS SHEET

MATCHLINE 'AX' SEE THIS SHEET

MATCHLINE 'AY' SEE THIS SHEET

MATCHLINE 'AZ' SEE THIS SHEET

MATCHLINE 'A' SEE SHEET 565250

**TRAP NO. 3
TEMPORARY
SEDIMENT TRAP #1**

TRAP TYPE	TRAP ST-II
PROP. DRAINAGE AREA	0.44 AC
TOTAL STORAGE REQUIRED	2052C1
TOTAL STORAGE PROVIDED	2100 C1
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 C1
TOTAL STORAGE PROVIDED	27,000 C1
BOTTOM ELEVATION	88.50
CREST ELEVATION	96.30
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
10 YR TSWM WSEL	95.28
30 YR TSWM WSEL	97.12

MATCHLINE SEE SHEET 6 OF 27

**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.
Q1 EX. = 3.16 CFS
Q1 W/SWM = 0.19 CFS
Q10 EX. = 17.59 CFS
Q10 W/SWM = 15.72 CFS
Q100 EX. = 32.49 CFS
Q100 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'

NO AS-BUILT INFORMATION ON THIS SHEET

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

LEGEND

2025	EXISTING 2 FT CONTOUR	ECM	EROSION CONTROL MATTING	FCSE	FOREST CONSERVATION EASEMENT (RETENTION)
2005	EXISTING 10 FT CONTOUR	PTM	PROPOSED TREE MAINTENANCE EASEMENT	SC	STABILIZED CONSTRUCTION ENTRANCE
200	PROPOSED 2 FT CONTOUR	NWV	NO WOODY VEGETATION BUFFER	RR	RIP-RAP CHANNEL
200	PROPOSED 10 FT CONTOUR	RSF	SUPER SILT FENCE	RR	RIP-RAP CHANNEL
SSF	SUPER SILT FENCE	ROS	RECREATIONAL OPEN SPACE	RR	RIP-RAP CHANNEL
LOD	LIMIT OF DISTURBANCE	PWS	PUBLIC WATER, SEWER, AND UTILITY EASEMENT	RR	RIP-RAP CHANNEL
---	EXISTING TREELINE	PWE	PRIVATE WATER, SEWER, AND UTILITY EASEMENT	RR	RIP-RAP CHANNEL
---	PROPOSED TREELINE	UACE	USE-IN-COMMON ACCESS EASEMENT	RR	RIP-RAP CHANNEL
---	EARTH DIKE	AS	AREA OF 15 TO 24.9 PERCENT SLOPES	RR	RIP-RAP CHANNEL
---	SOIL DIVIDE	AS	AREA OF 25 PERCENT OR GREATER SLOPES	RR	RIP-RAP CHANNEL
---	PROPOSED STREET TREE	---	---	RR	RIP-RAP CHANNEL
---	TREE PROTECTION FENCE	---	---	RR	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.

APPROVED: DEPARTMENT OF PUBLIC WORKS
William F. ... 11-24-08
Chief, Bureau of Highways
APPROVED: DEPARTMENT OF PLANNING AND ZONING
Cordy ... 2/10/09
Chief, Division of Land Development
... 11/25/08
Chief, Development Engineering Division

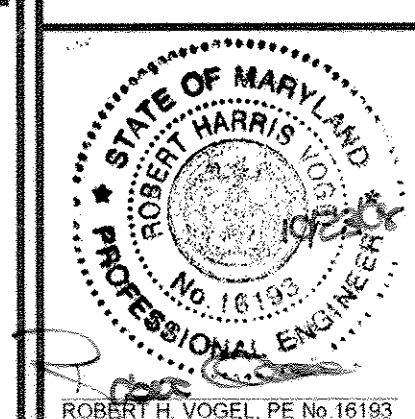
ENGINEERS CERTIFICATE
I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. 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 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 OF DEVELOPER: DATE: 10/24/2008

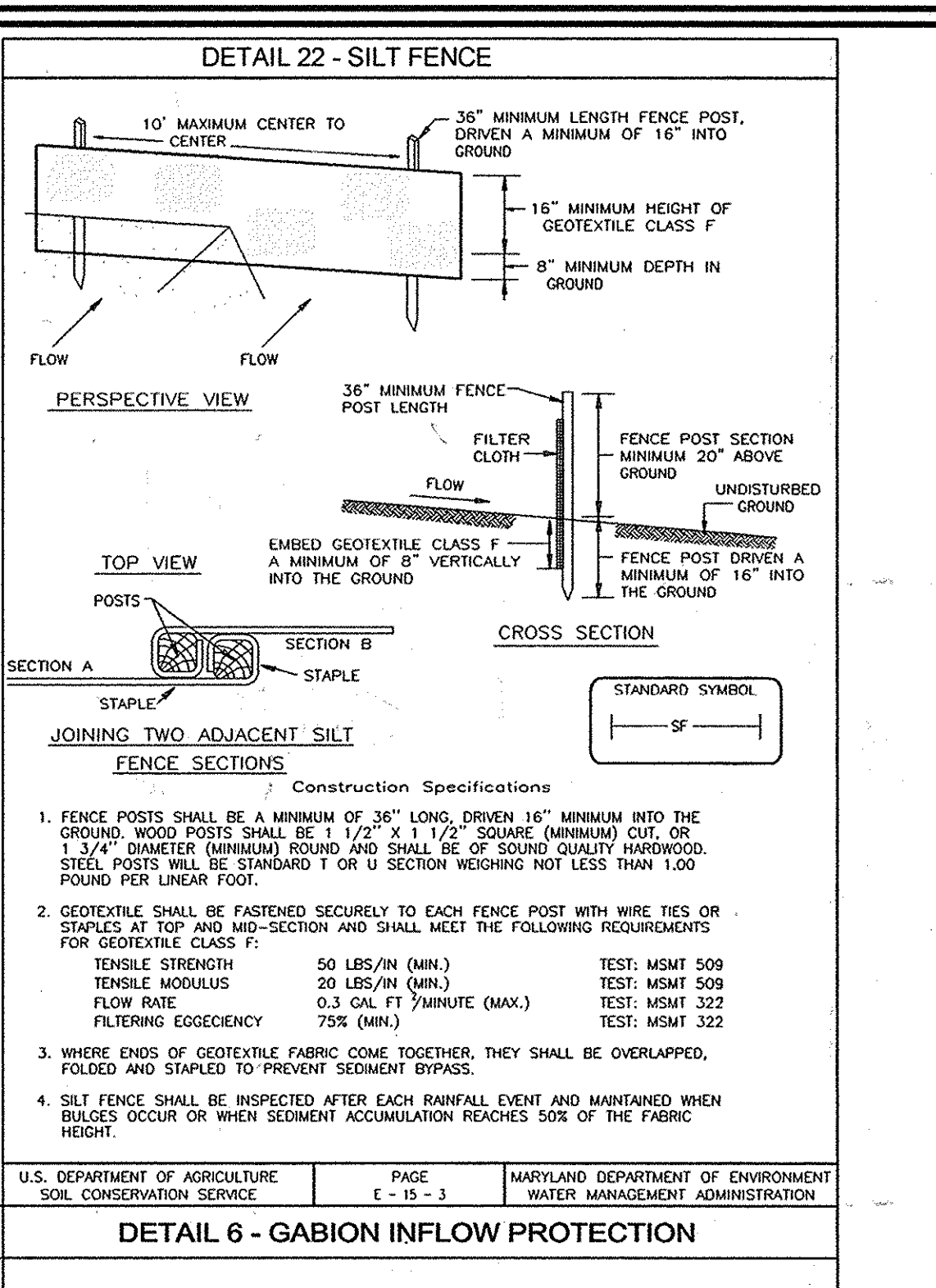
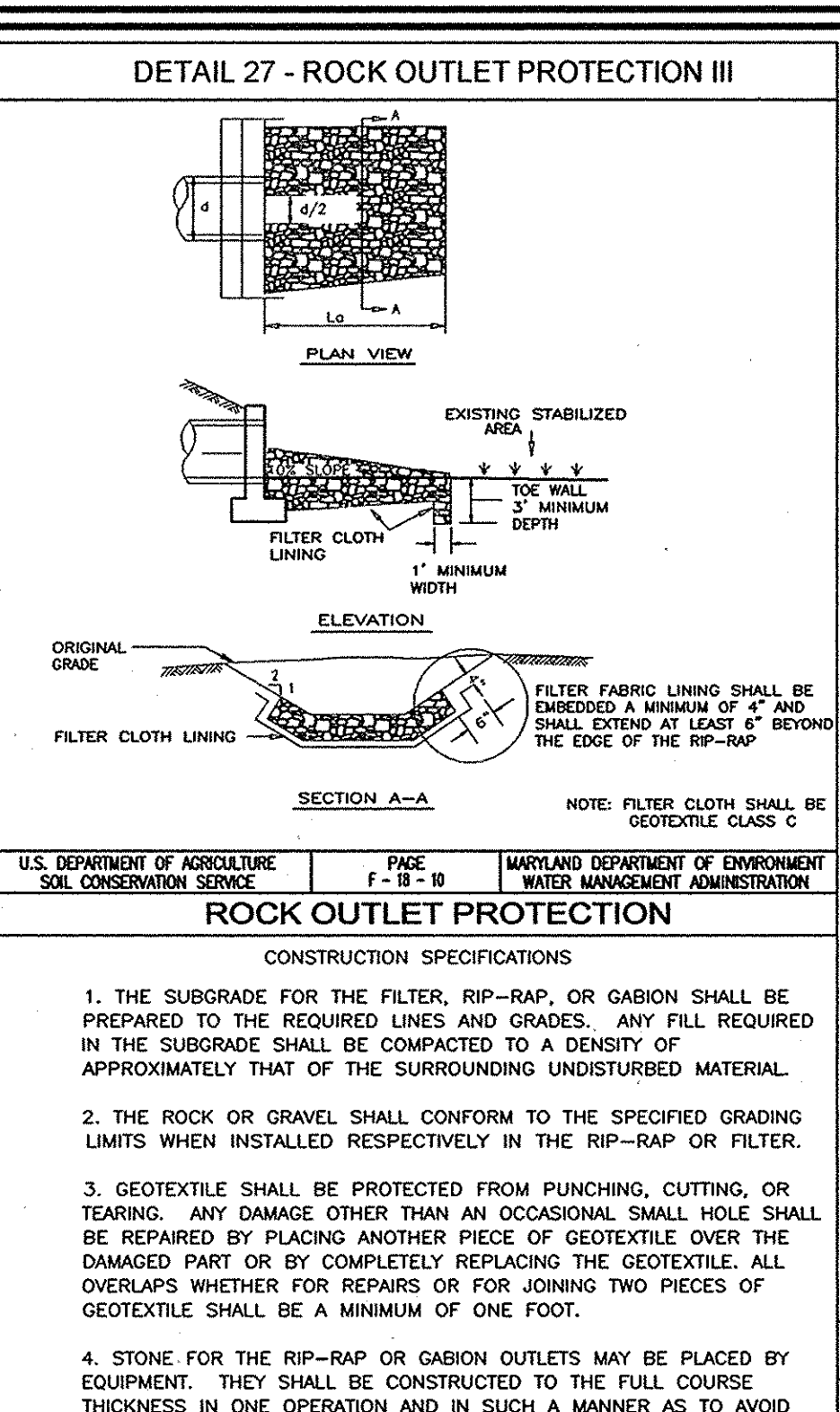
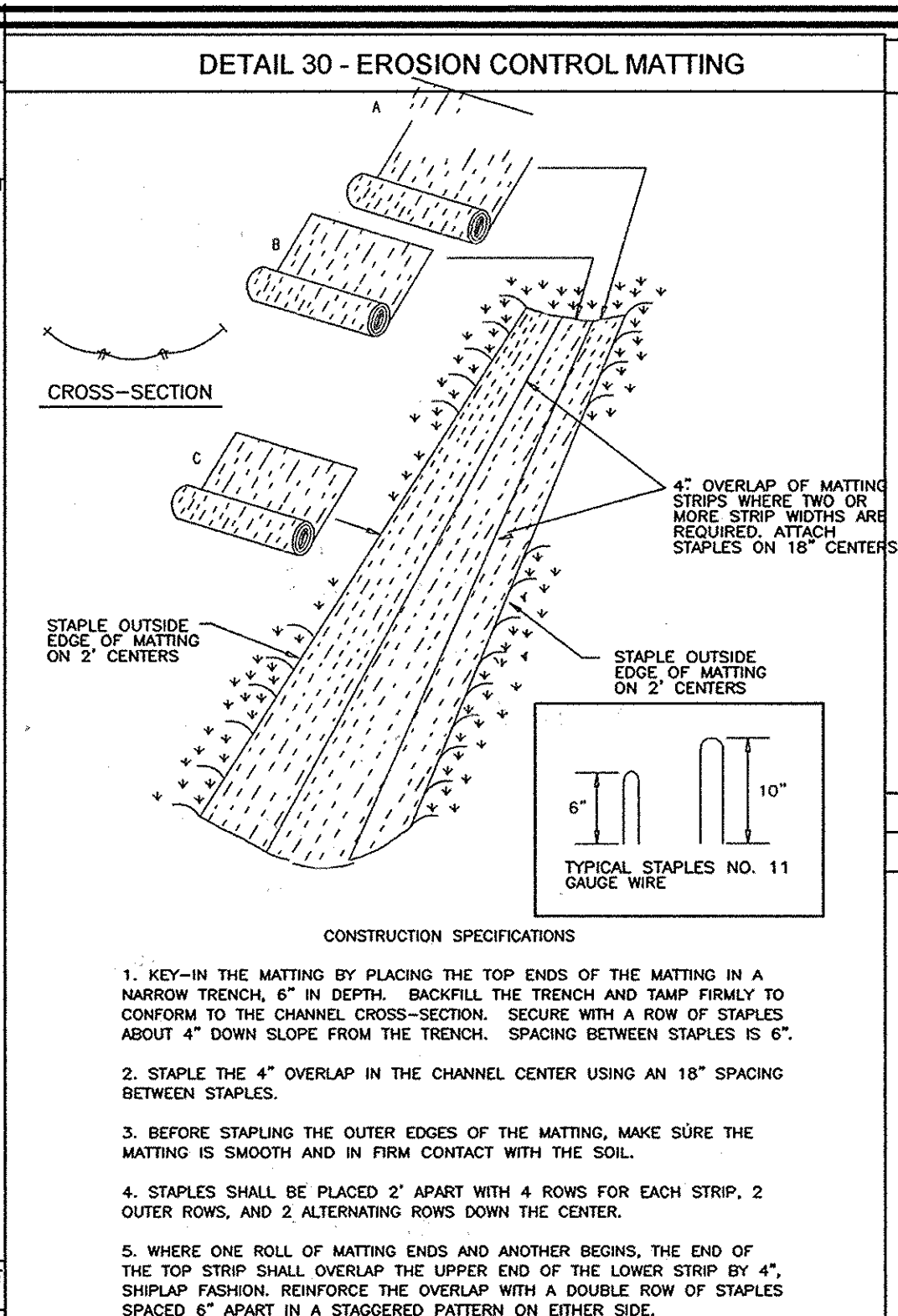
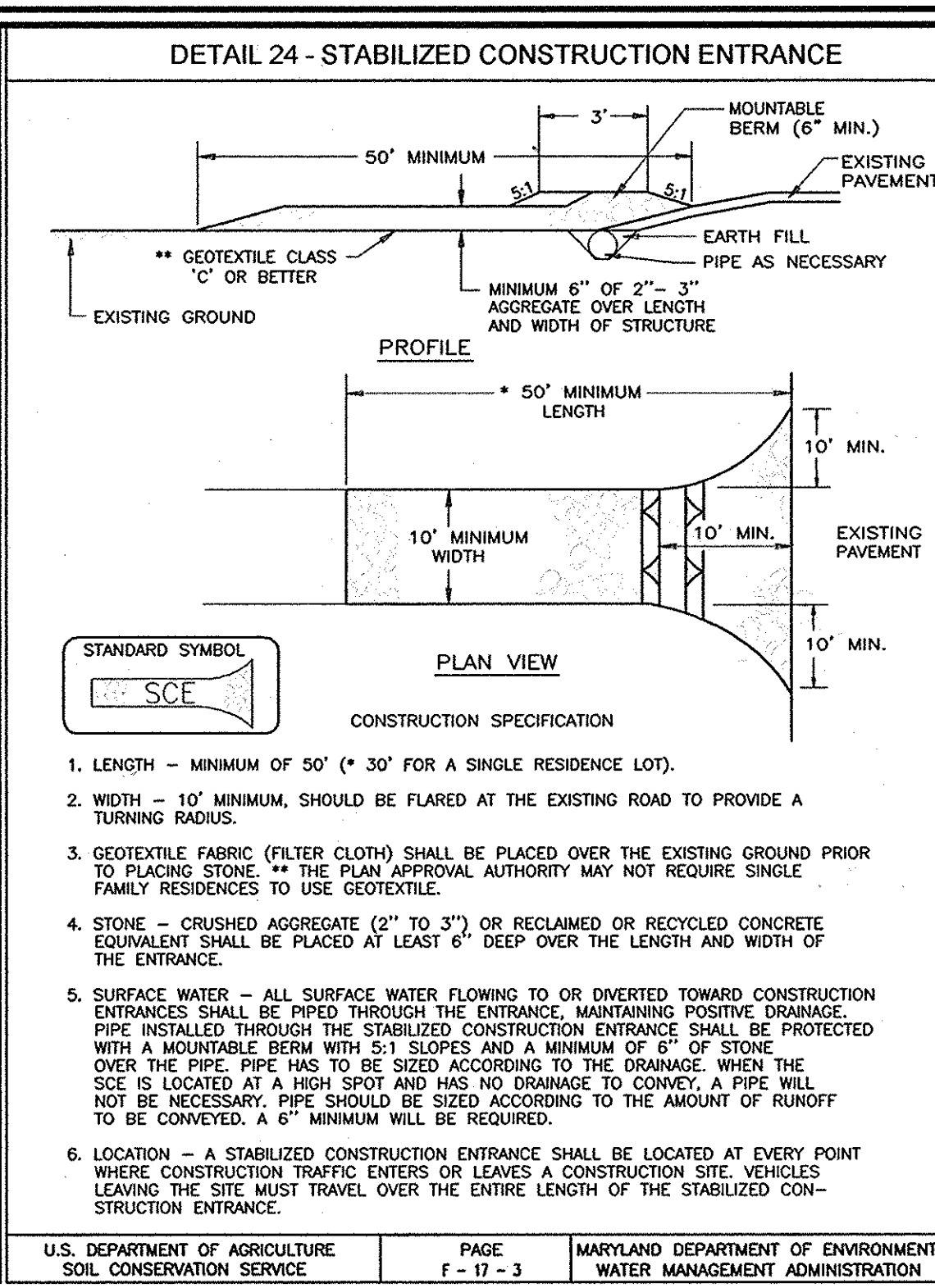
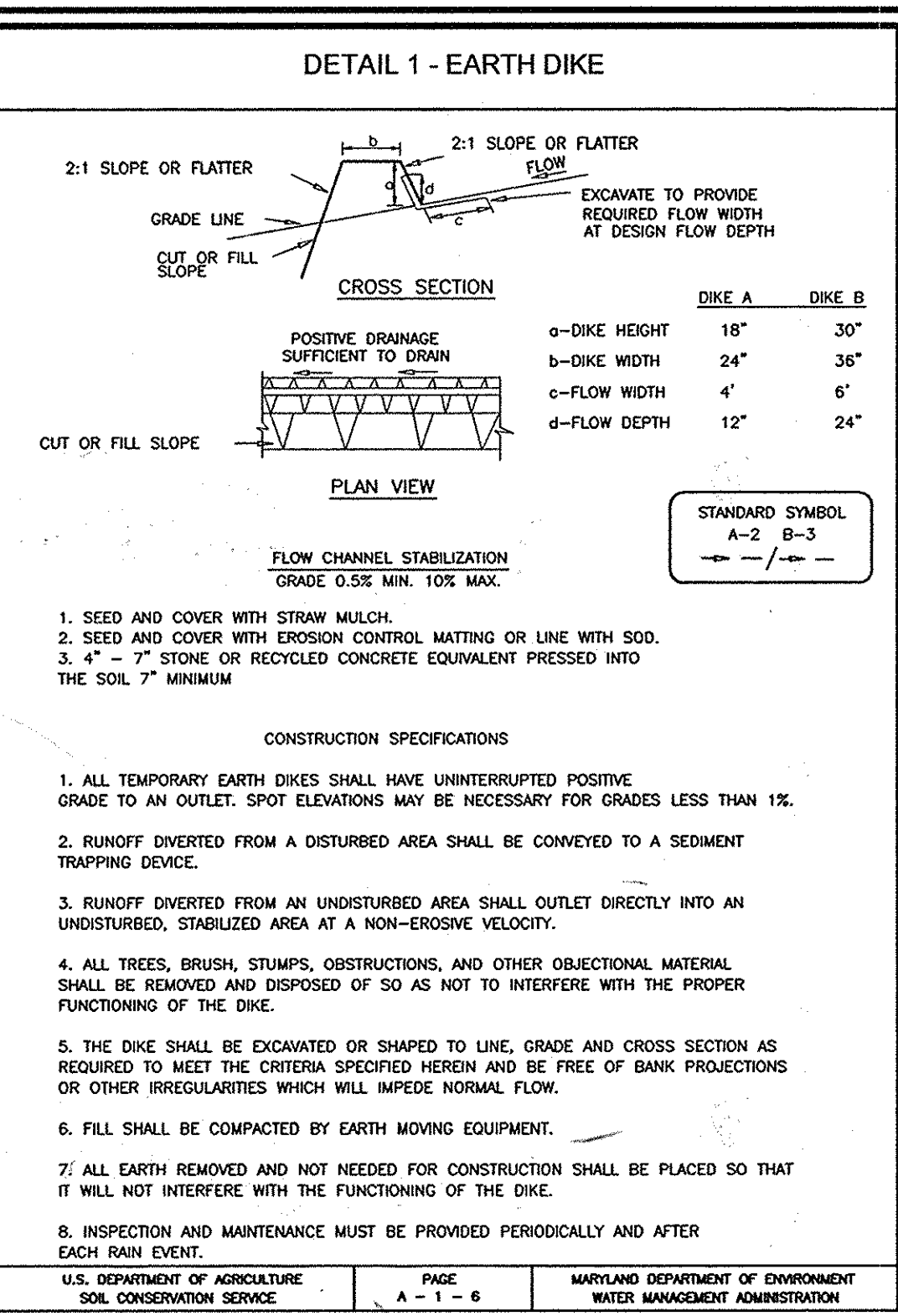
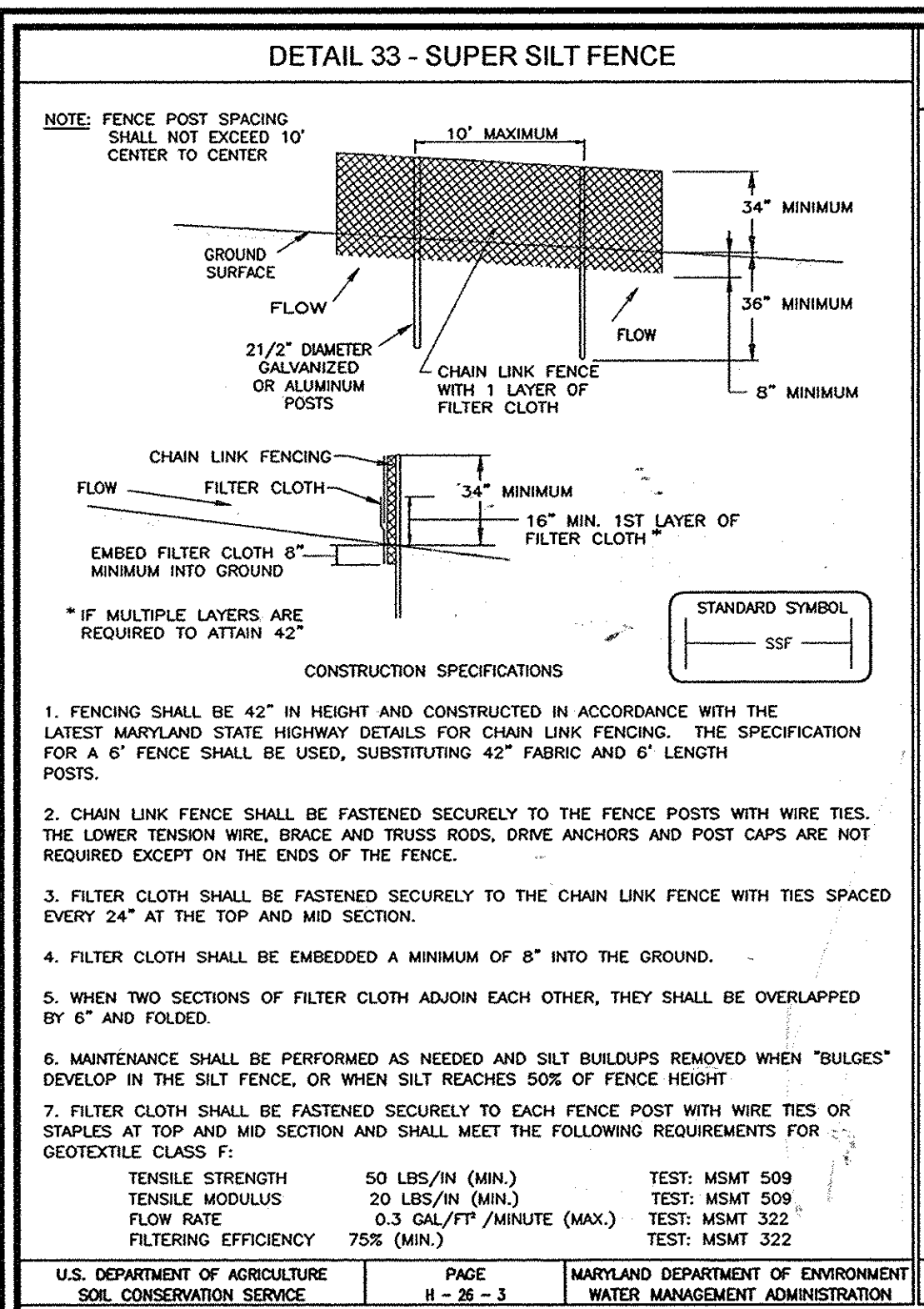
3	REMOVE RIPRAP AT SHALE, AS REQUESTED BY CID	12/11/17
1	ADD STORMWATER MANAGEMENT EASEMENT AND REVISE GRADING ON OPEN SPACE LOT 5-4	12/16/09
NO.	REVISION	DATE

**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 832 ANL 24
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL
ENGINEERS - SURVEYORS - PLANNERS**
2407 MAIN STREET TEL: 410.461.2669
ELICOTT CITY, MD 21043 FAX: 410.461.8969



DESIGN BY:	RHV/RJ
DRAWN BY:	RJ
CHECKED BY:	RHV
DATE:	SEPTEMBER 2008
SCALE:	AS SHOWN
W.O. NO.:	02-88-00
7 SHEET OF 27	



21.0 STANDARDS AND SPECIFICATIONS FOR TOPSOIL

DEFINITION
21.0 STANDARDS AND SPECIFICATIONS FOR TOPSOIL
PLACEMENT OF TOPSOIL OVER A PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION.

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

CONDITIONS WHERE PRACTICE APPLIES

- THIS PRACTICE IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:
 - THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
 - 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.
 - THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
 - THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.
- 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 PLAN.

CONSTRUCTION AND MATERIAL SPECIFICATIONS

- TOPSOIL SALVAGED FROM THE EXISTING SITE MUST BE USED IN THE PROVISION THAT IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICAL 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-SSS IN COOPERATION WITH MARYLAND AGRICULTURAL EXPERIMENTAL STATION.
- TOPSOIL SPECIFICATIONS - SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING:
 - 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 NO PLANTS, ROCKS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1" AND 1/2" DIAMETER.
 - TOPSOIL SHALL BE FREE OF PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACKGRASS, JOHNSONGRASS, NUTSEDGE, POISON DUCHESNA, OR OTHERS AS SPECIFIED.
 - 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. THE SOIL SHALL BE DISTRIBUTED UNIFORMLY OVER DESIGNATED AREAS AND WORKED INTO THE SOIL IN CONJUNCTION WITH TILLAGE OPERATIONS AS DESCRIBED IN THE FOLLOWING PROCEDURES.
 - FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES:
 - PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION - SECTION 1 - VEGETATIVE STABILIZATION METHODS AND MATERIALS.
 - FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES:
 - ON SOIL MEETING TOPSOIL SPECIFICATIONS, OBTAIN TEST RESULTS DICTATING FERTILIZER AND LIME AMENDMENTS REQUIRED TO BRING THE SOIL INTO COMPLIANCE WITH THE FOLLOWING:
 - 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.
 - ORGANIC CONTENT OF TOPSOIL SHALL BE NOT LESS THAN 1.5 PERCENT BY WEIGHT.
 - TOPSOIL HAVING SOLUBLE SALT CONTENT GREATER THAN 500 PARTS PER MILLION SHALL NOT BE USED.
 - NO SOD OR SEED SHALL BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.
 - NOTE: 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.
 - PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION-SECTION 1-VEGETATIVE STABILIZATION METHODS AND MATERIALS.
 - TOPSOIL APPLICATION
 - 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.
 - GRADES ON THE AREAS TO BE TOPSOILED, WHICH HAVE BEEN PREVIOUSLY ESTABLISHED, SHALL BE MAINTAINED, ALBERT 4" - 8" HIGHER IN ELEVATION.
 - 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.
 - TOPSOIL SHALL NOT BE PLACED WHILE THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHILE THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DAMAGED.

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:

- PREFERRED-APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS/1000 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 UREA FERTILIZER (9 LBS/1000 SQ.FT.)
- ACCEPTABLE-APPLY 2 TONS PER ACRE DOLOMITIC 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 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 80 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 15 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 UNROOTED SMALL GRASS 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 SEEDING AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.

SEDIMENT CONTROL NOTES

- A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPT. OF INSPECTION, LICENSE AND PERMITS DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1855).
- 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.
- 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.
- 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.
- 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. (2) TEMPORARY STABILIZATION WITH MULCH ALONE SHALL BE DONE WHEN PROMOTED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
- ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMITS FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- SITE ANALYSIS:

TOTAL AREA NET TRACT AREA	43.24 AC.
AREA DISTURBED (ALL PHASES)	19.43 AC.
AREA TO BE ROOFED OR PAVED	1.97 AC.
AREA TO BE VEGETATIVELY STABILIZED	17.36 AC.
TOTAL CUT	86,917 CY
OFFSITE WASTE/BORROW AREA LOCATION	
- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- 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.
- TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH CAN BE BACK-FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS. (SEE NOTE ON LEFT)

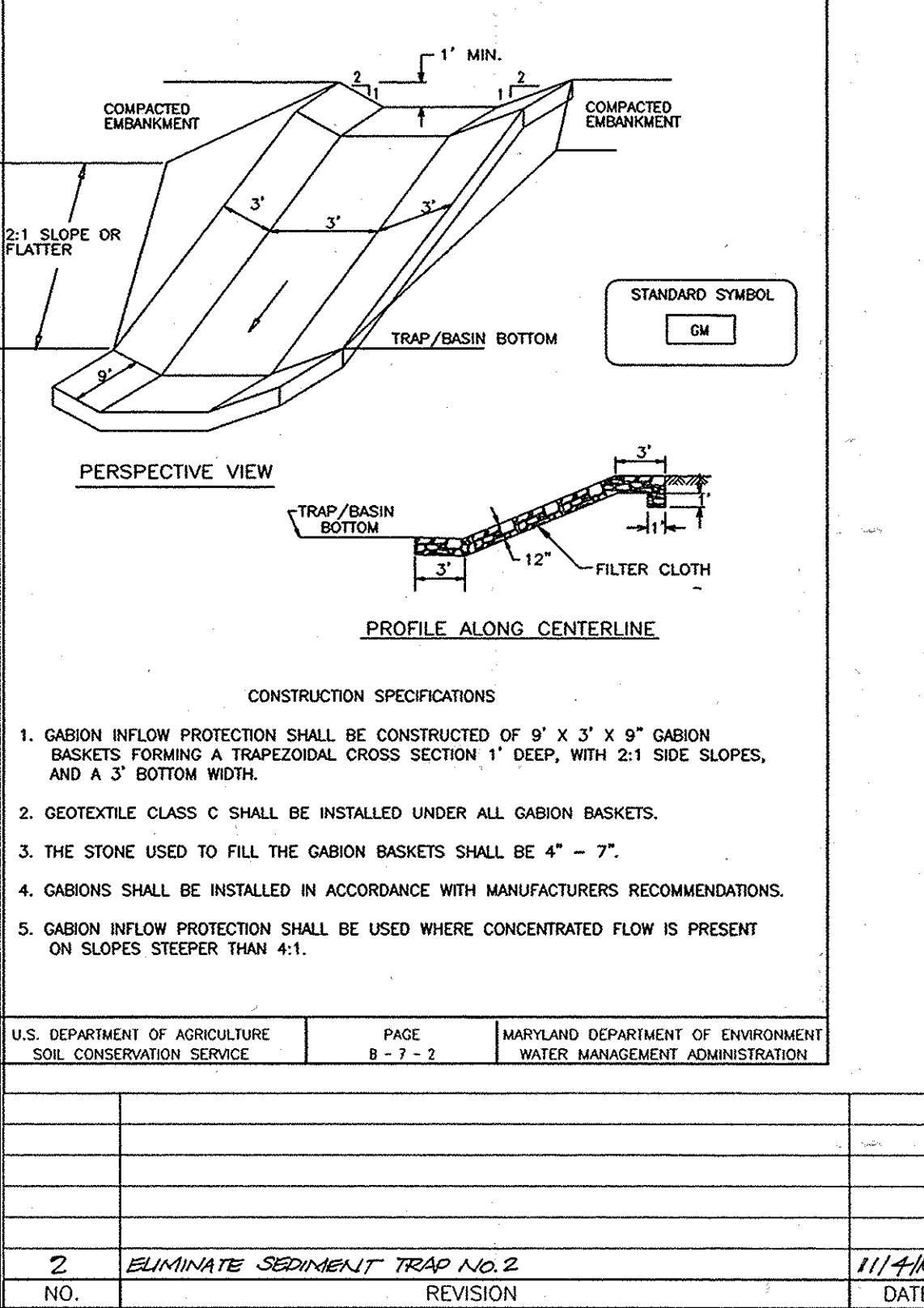
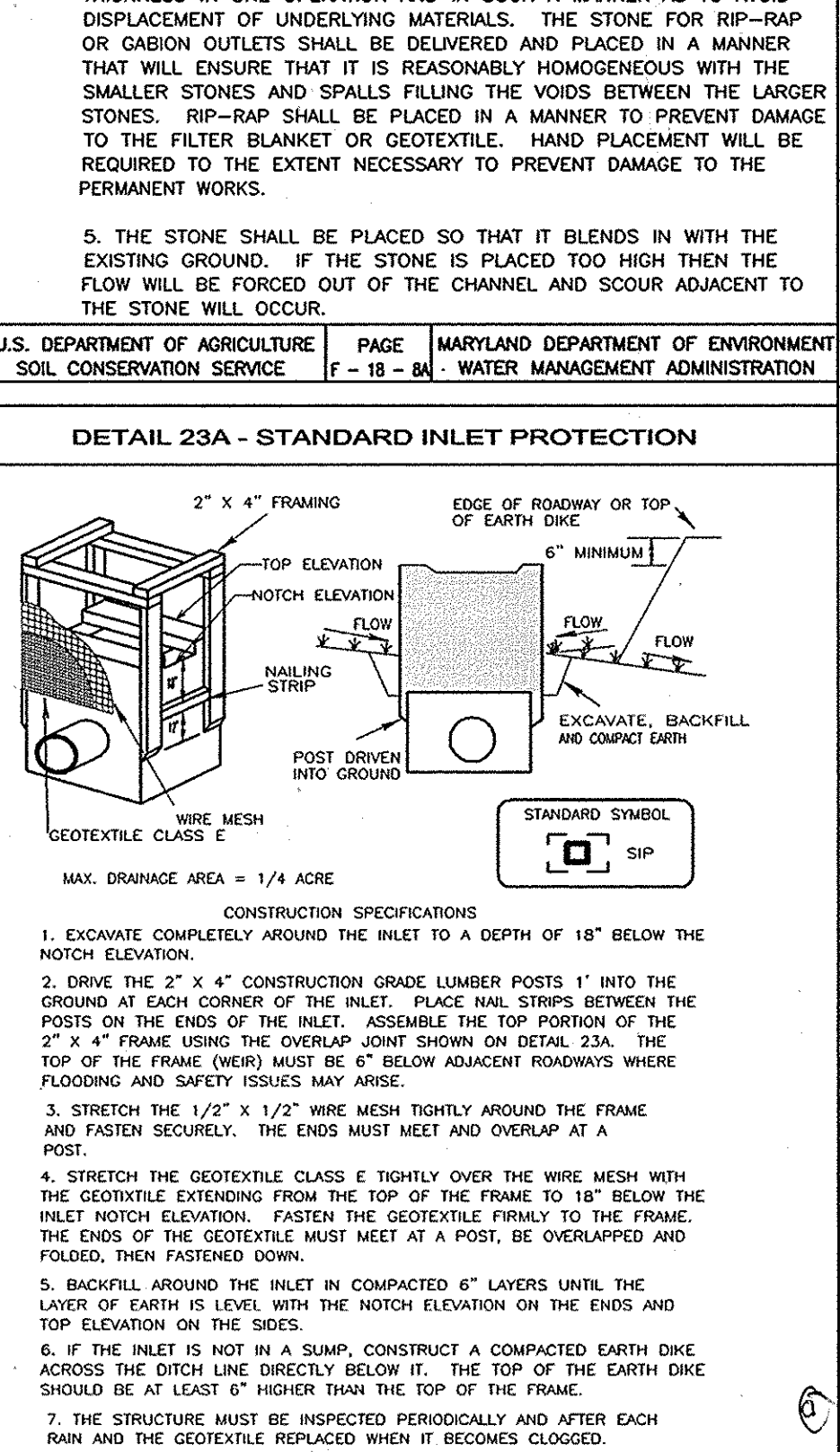
* TO BE DETERMINED BY CONTRACTOR, WITH PRE-APPROVAL OF THE SEDIMENT CONTROL INSPECTOR WITH AN APPROVED AND ACTIVE GRADING PERMIT.

BA. SUBSEQUENT TO MISC. GRADING OF CURB-SAG AND LOTS ON MARGERY LANE AND WITH APPROVAL OF SEDIMENT CONTROL INSPECTOR ELIMINATE SEDIMENT TRAP #2.

SEQUENCE OF CONSTRUCTION

- OBTAIN GRADING PERMIT, MDE PERMIT NO. (APPLICATION TRACKING NUMBER 200802474) STREAM CLOSURE CLASS A IN STREAM CONSTRUCTION MAY NOT OCCUR BETWEEN 3/1 AND 6/15.
- NOTIFY HOWARD COUNTY BUREAU OF INSPECTIONS AND PERMITS (313-1880) AT LEAST 24 HOURS BEFORE STARTING ANY WORK.
- CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE. 1 DAY
- 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, INSTALLED CULVERTS AND HEADWALLS/RETAINING WALLS (HWL TO HWL, ES TO MH+L, HWL TO HWL) 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 PERMITS FROM INSPECTOR TO PROCEED. 3 WEEKS
- INSTALL CLEANWATER EARTH DIKES AND RELATED SWALES, BERMS AND SILT FENCE AS NEEDED FOR THE CONSTRUCTION OF BYPASS STORM DRAIN SYSTEM FROM 1-20 TO E-4 FOR OFFSITE DRAINAGE RUNOFF. STABILIZE IMMEDIATELY WITH ECM. 1 DAY
- INSTALL TREE PROTECTION DEVICES, SILT FENCE, EARTH DIKES, SUPER SILT FENCE, AND ALL REMAINING PERIMETER CONTROLS. 2 WEEKS
- 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
- AFTER OBTAINING PERMISSION FROM SEDIMENT CONTROL INSPECTOR TO PROCEED ROUGH GRADE TO LOD. USE DUST CONTROL SPECIFICATIONS. 4 WEEK
- BEGIN CONSTRUCTION STORM DRAIN SYSTEM. 2 WEEKS
- BEGIN CONSTRUCTION OF WATER & SEWER SYSTEM. 3 WEEKS
- GRADE ROAD TO SUB-BASE. 6 WEEKS
- WITH PERMISSION OF THE INSPECTOR, STABILIZE DISTURBED AREA. 1 DAYS
- WITH ROAD GRADED TO SUB-BASE BEGIN ROAD PAVING. 1 WEEK
- FINE GRADE SITE IN CONFORMANCE WITH PLAN. 2 DAYS
- WITH INSPECTOR APPROVAL AND FINAL ROAD PAVING COMPLETE STABILIZE ANY REMAINING DISTURBED AREAS AND CLOSE CURB CUTS. 3 WEEKS
- 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
- INSTALL STREET TREES AND ALL LANDSCAPING. 1 WEEK
- 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
- REMOVE ALL NEW AND OLD JUNK, TRASH, DEBRIS AND OTHER MAN-MADE OBJECTS FROM THE ENTIRE FORMAL CONSERVATION DISTRICT, WETLANDS, STREAMS AND THEIR BUFFERS. 1 WEEK

TOTAL 26 WEEKS



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

APPROVED: DEPARTMENT OF PUBLIC WORKS
Willie F. McMillan 11-24-08
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Candy Hansen 2/10/09
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
John DeWitt 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.

John H. Vogel 11/25/08
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/WE 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 AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

Oliver R. Meyer 10/24/2008
SIGNATURE OF DEVELOPER DATE

ENGINEER'S CERTIFICATE

I HEREBY CERTIFY THIS PLAN FOR POND CONSTRUCTION AND SEDIMENT AND EROSION CONTROL REPRESENTS MY PROFESSIONAL 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.

Robert H. Vogel 10/23/08
SIGNATURE OF ENGINEER DATE

NOTES

DURING GRADING AND AFTER EACH RAINFALL, THE CONTRACTOR SHALL INSPECT AND HOWARD SOIL CONSERVATION DISTRICT MEASURES SHOWN HEREON.

FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLIED WITH:

- 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, SWALES, DITCH PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1.
- 14 CALENDAR DAYS FOR ALL OTHER DISTURBED AREAS.

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

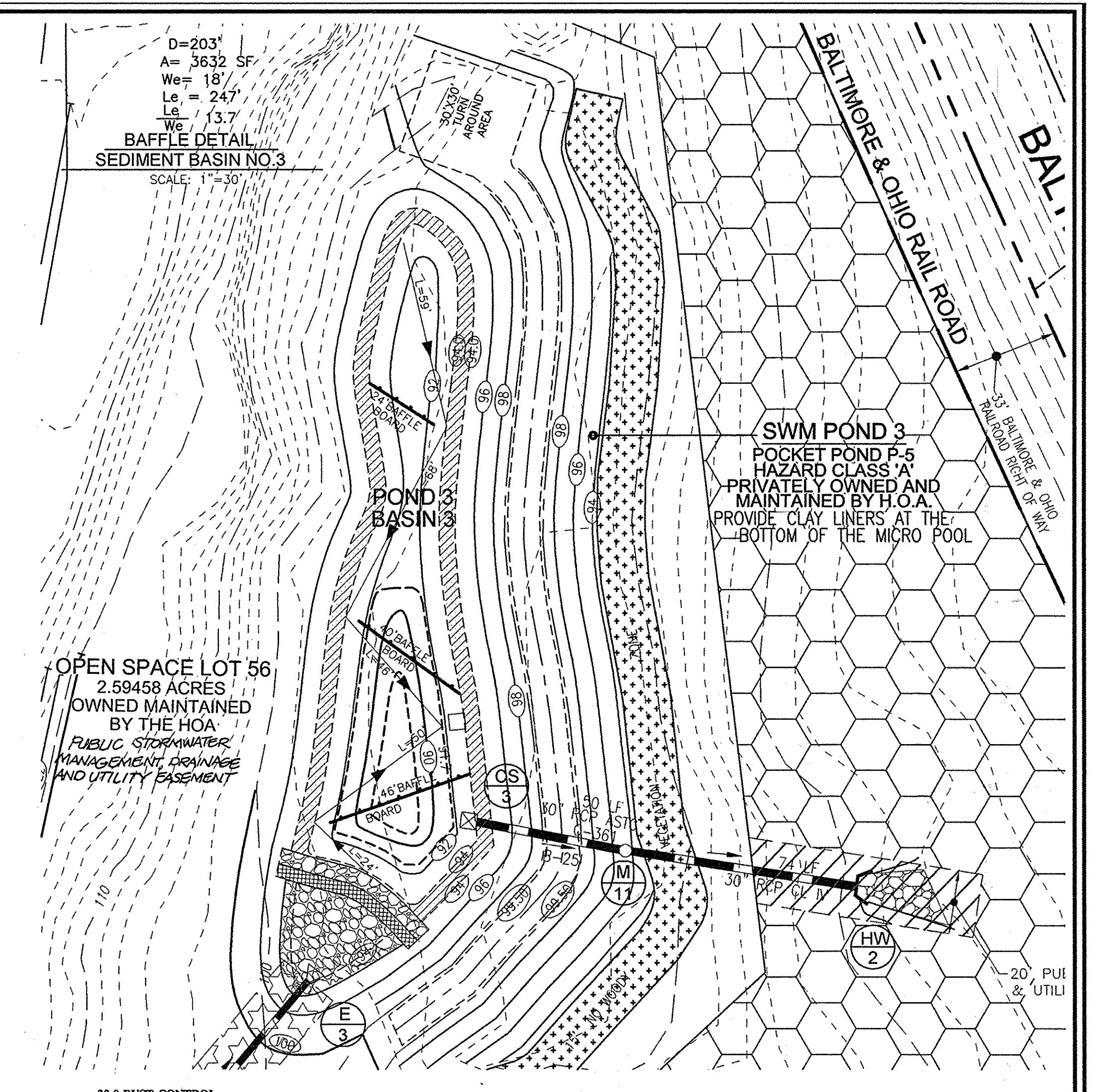
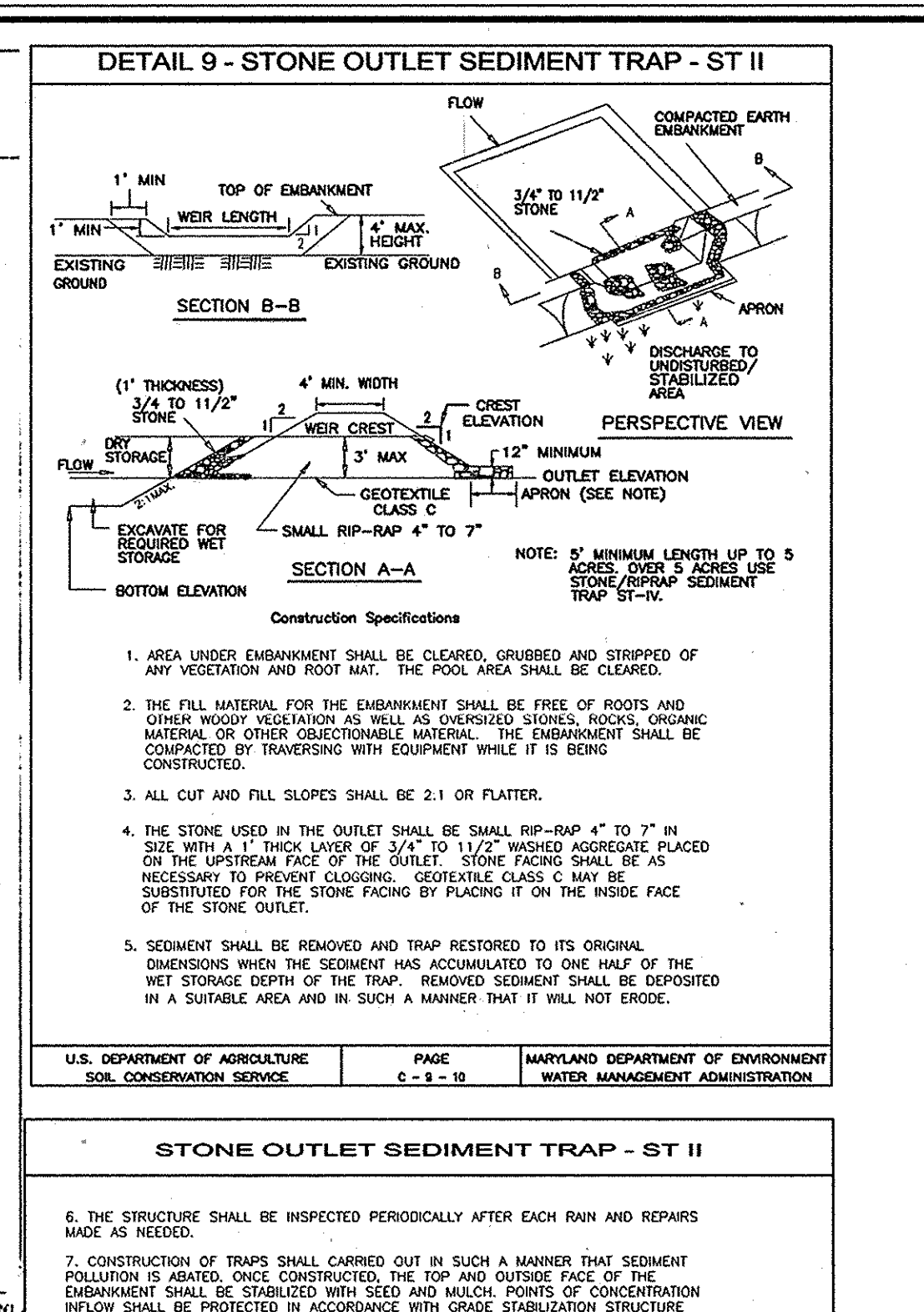
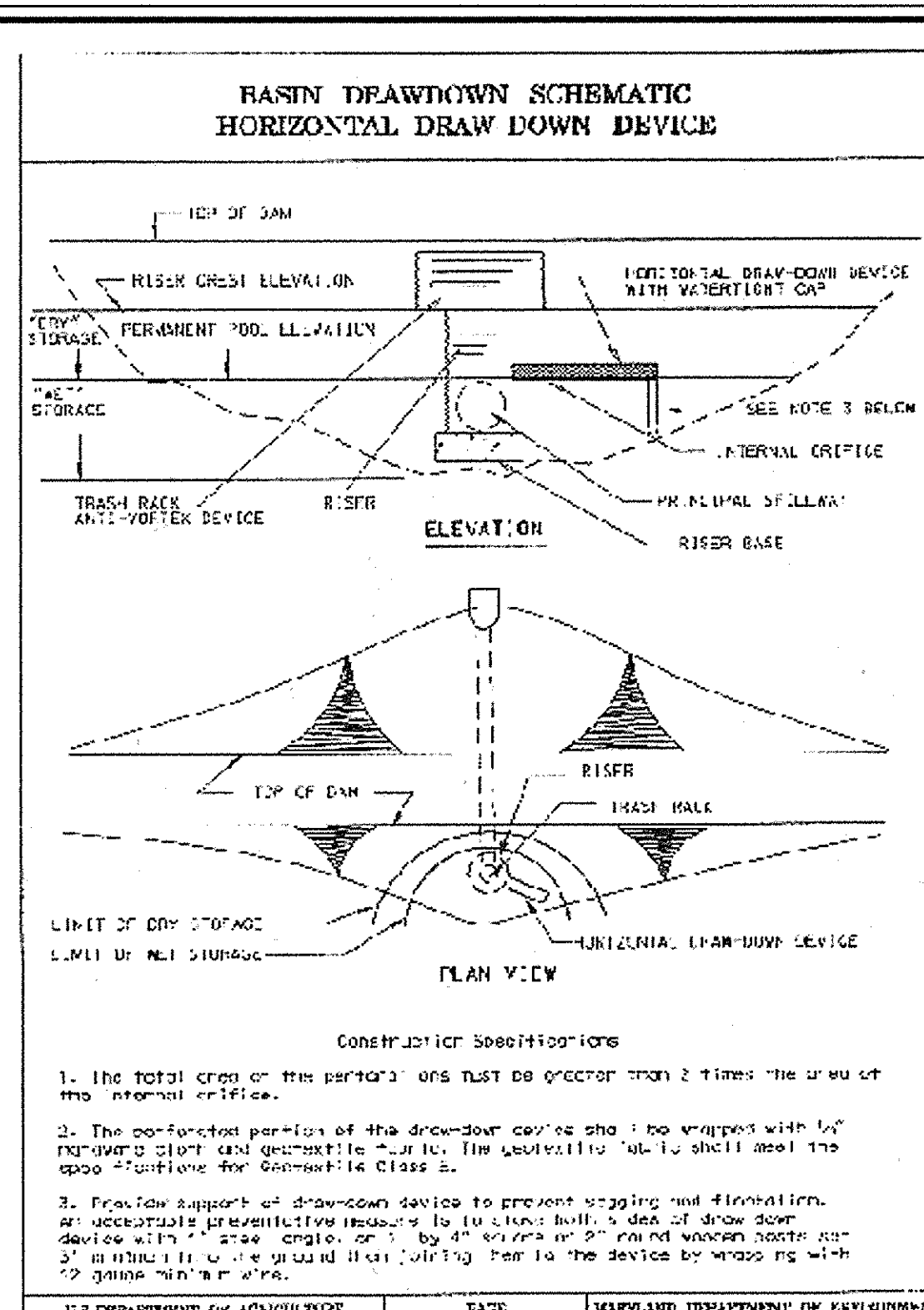
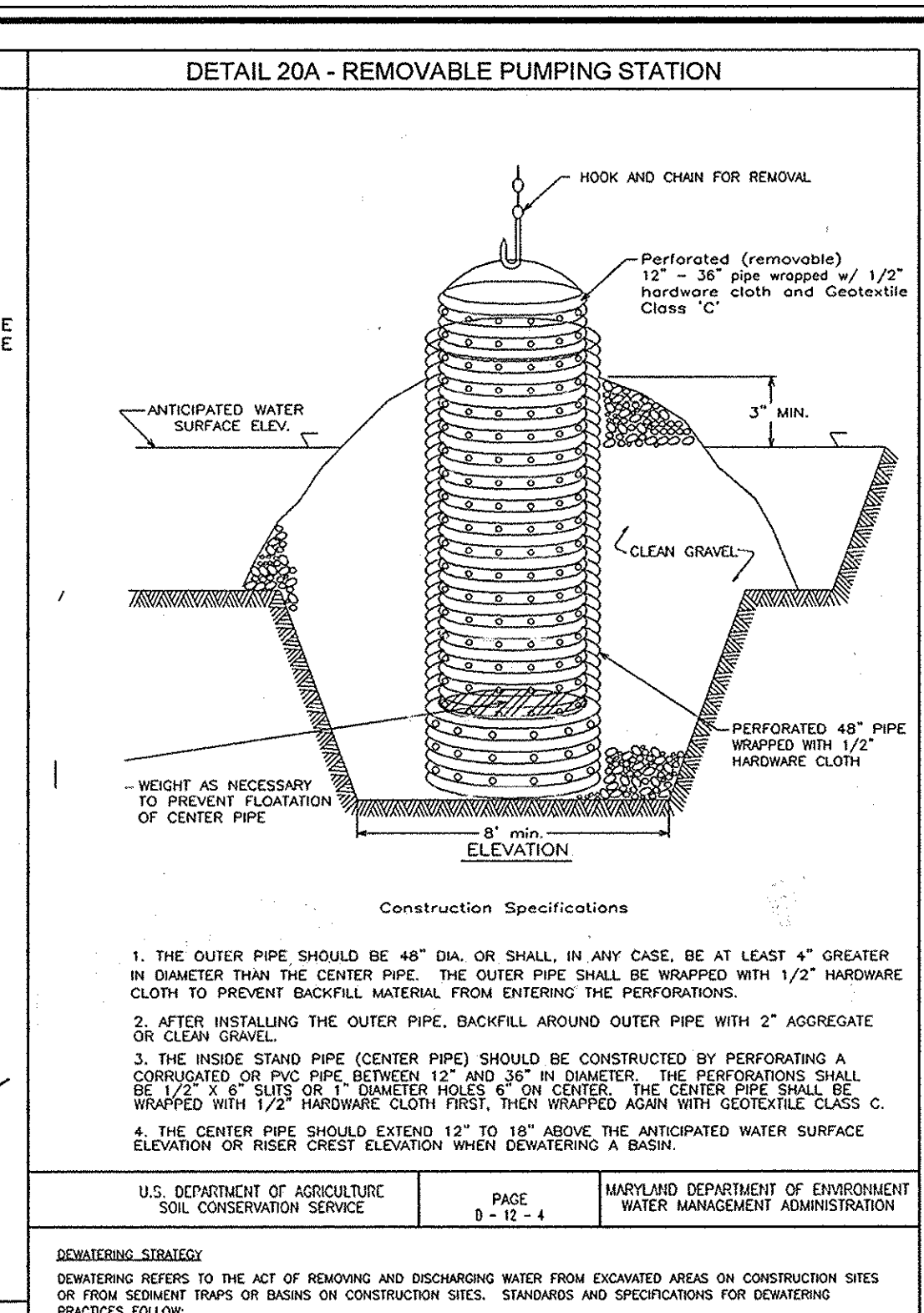
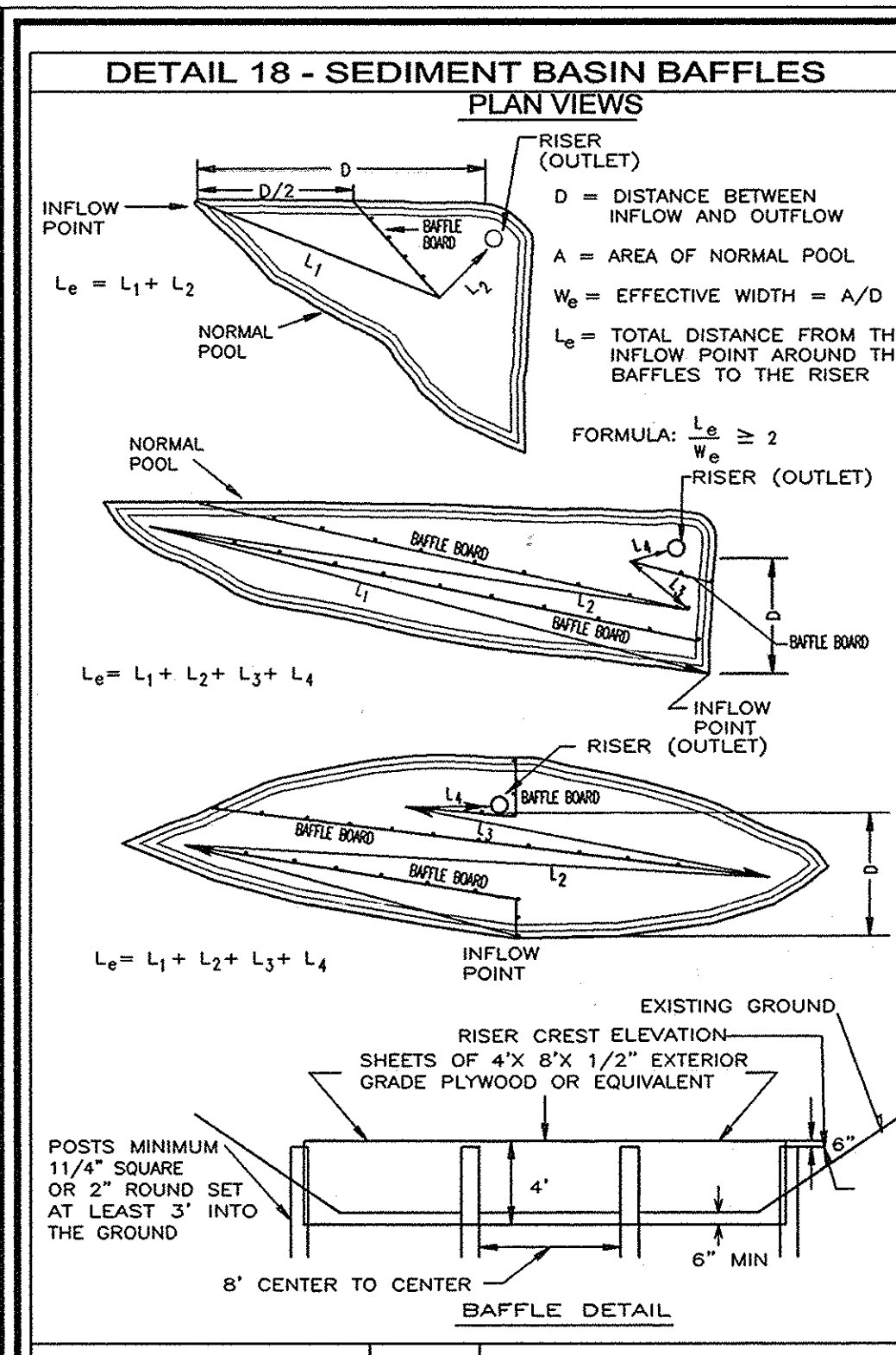
TAX MAP 32 GRID 21 PARCELS 632 AND 24
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

DESIGN BY: RHV/RJ
DRAWN BY: RJ
CHECKED BY: RHV
DATE: SEPTEMBER 2008
SCALE: AS SHOWN
W.O. NO.: 02-68-00

8 SHEET OF 27

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



LEGEND

DEWATERING STRATEGY

DEWATERING STRATEGY 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. THE UNIQUE CONDITIONS OF ANY PARTICULAR CONSTRUCTION SITE MAY NOT BE COVERED BY ALL 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 METHODS. DEWATERING METHODS NOT REFERENCED IN THIS STANDARD MAY BE USED WITH THE CONSENT OF THE APPROVAL AUTHORITY.

APPROVED PRACTICES FOR DEWATERING OF EXCAVATED AREAS

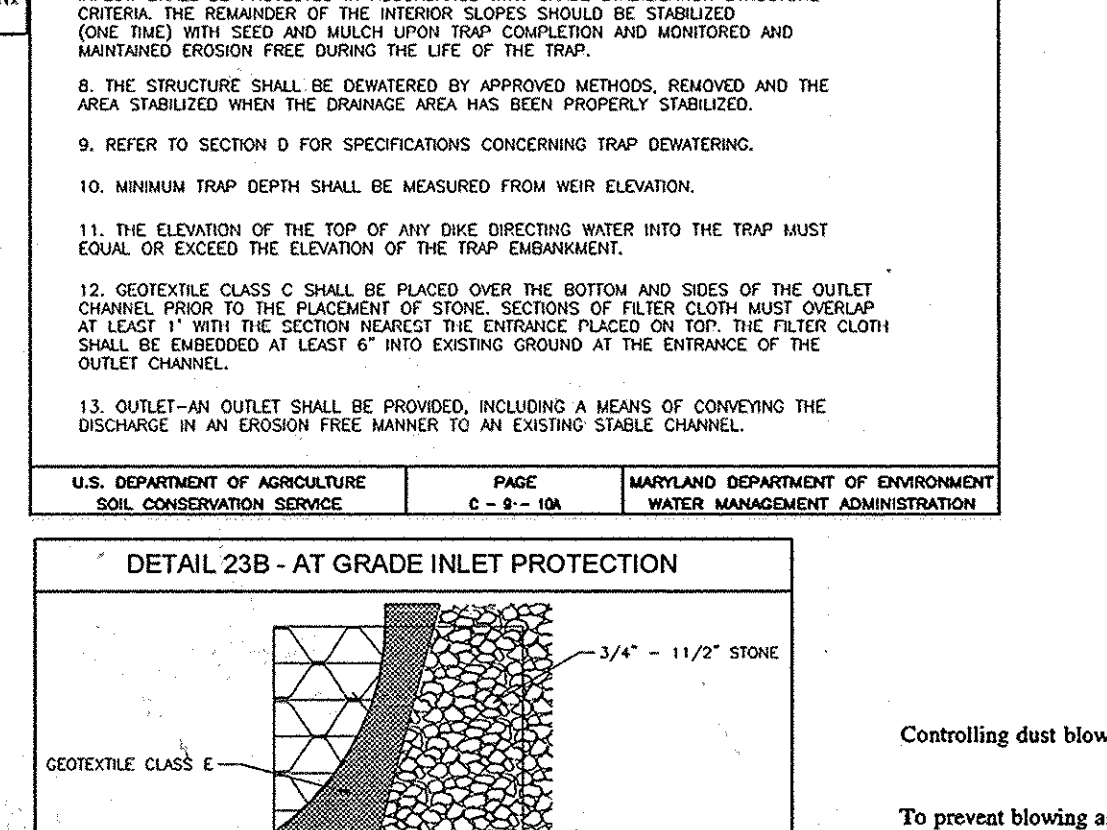
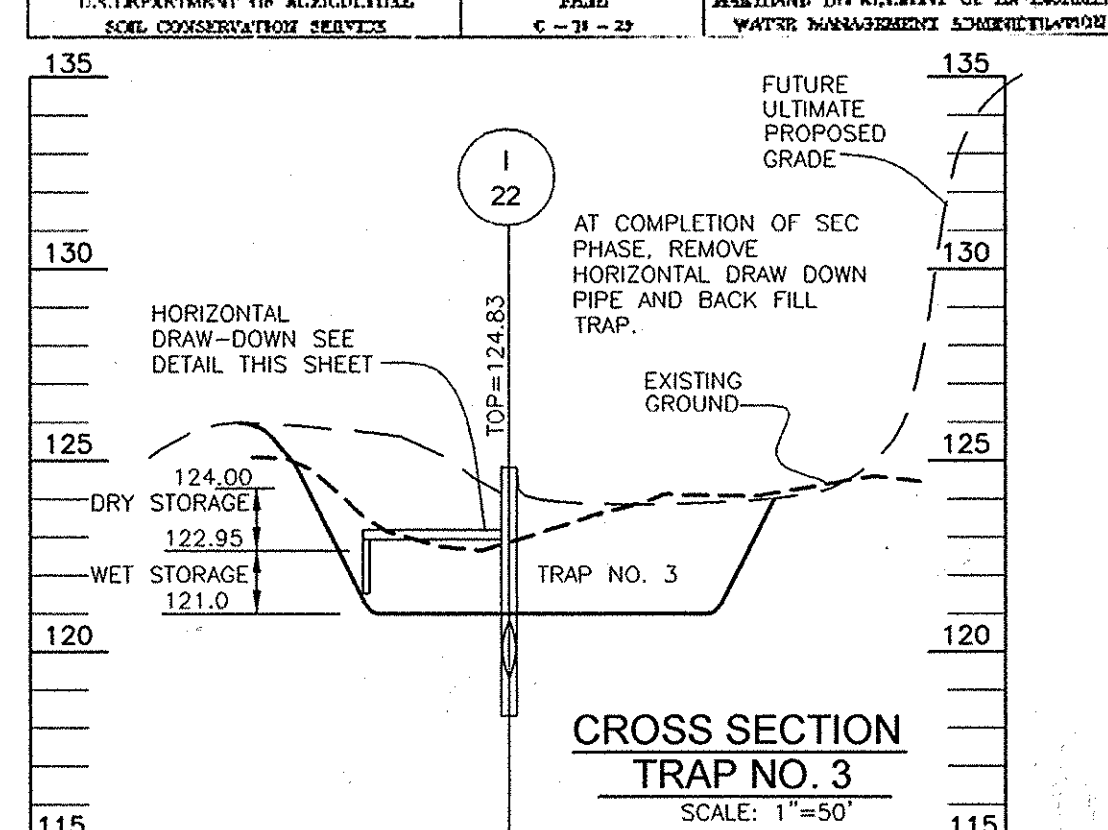
1. PUMPING OF WATER TO AN EXISTING SEDIMENT BASIN OR TRAP IN WHICH THE ENTIRE VOLUME OF WATER FROM THE AREA TO BE DEWATERED CAN BE CONTAINED WITHOUT DISCHARGE TO RECEIVING WATERS.
2. PUMPING OF WATER TO AN EXISTING SEDIMENT BASIN OR TRAP SUCH THAT THE ENTIRE VOLUME OF WATER FROM THE AREA TO BE DEWATERED CAN BE HANDLED WITHOUT EXCEEDING THE DESIGN CAPACITY OF THE SEDIMENT CONTROL STRUCTURE.
3. SEDIMENT PUMPING STATION STANDARDS AND SPECIFICATIONS FOR REMOVABLE PUMPING STATION ARE ON DETAIL 20A.
4. USE OF A PUMP PIT STANDARDS AND SPECIFICATIONS FOR A PUMP PIT ARE ON DETAIL 20B.
5. SEDIMENT TANK STANDARDS AND SPECIFICATIONS FOR A SEDIMENT TANK 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 PUMP PIT.
3. USE OF A FLOTTING SUCTION HOSE TO PUMP THE CLEARER WATER FROM THE TOP OF THE POND, AS THE CLEARER WATER IS PUMPED THE SUCCTION HOSE WILL LOWER AND CONTINUALLY ENGAGE SEDIMENT WHICH WATER.



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.

Temporary Methods

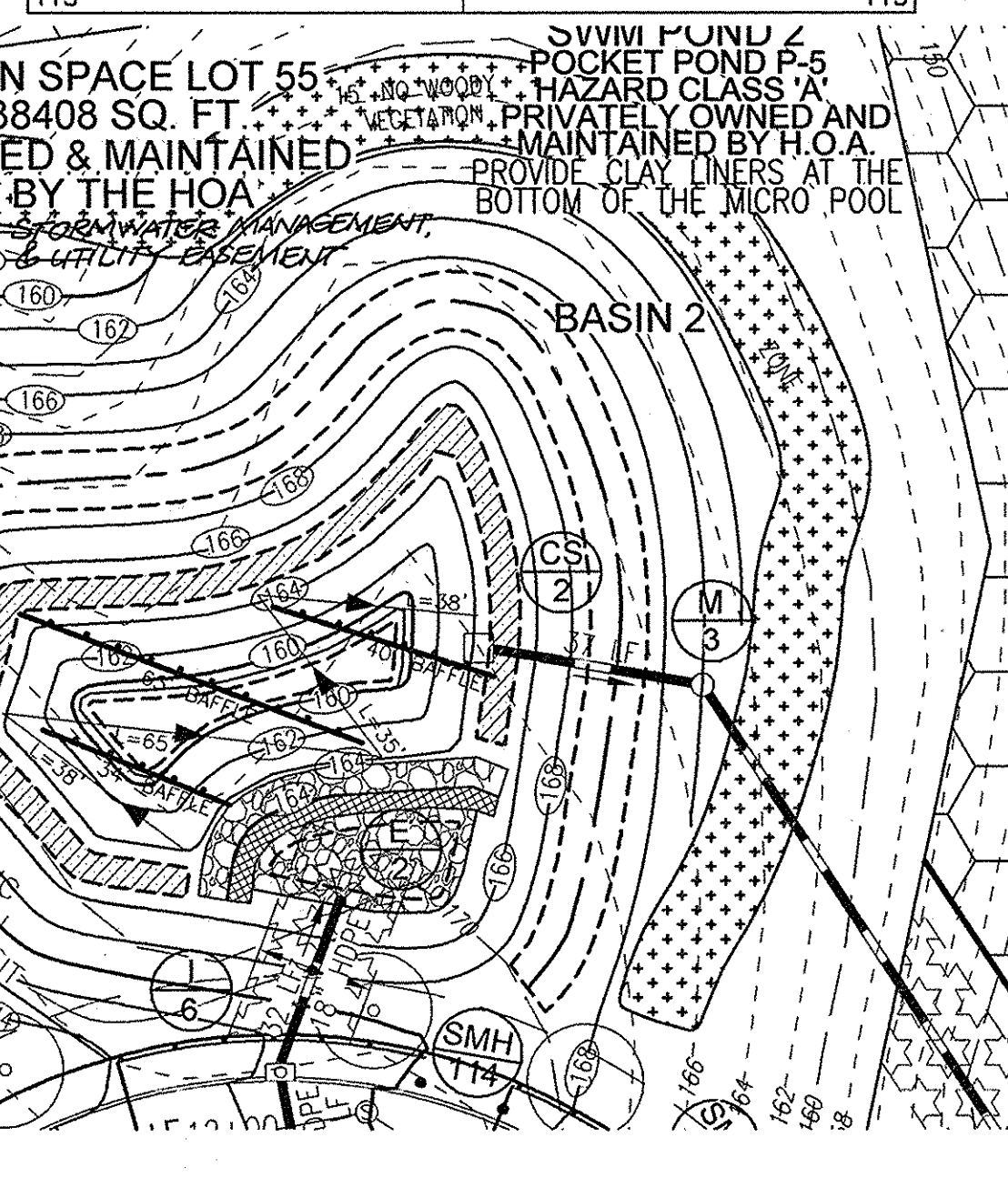
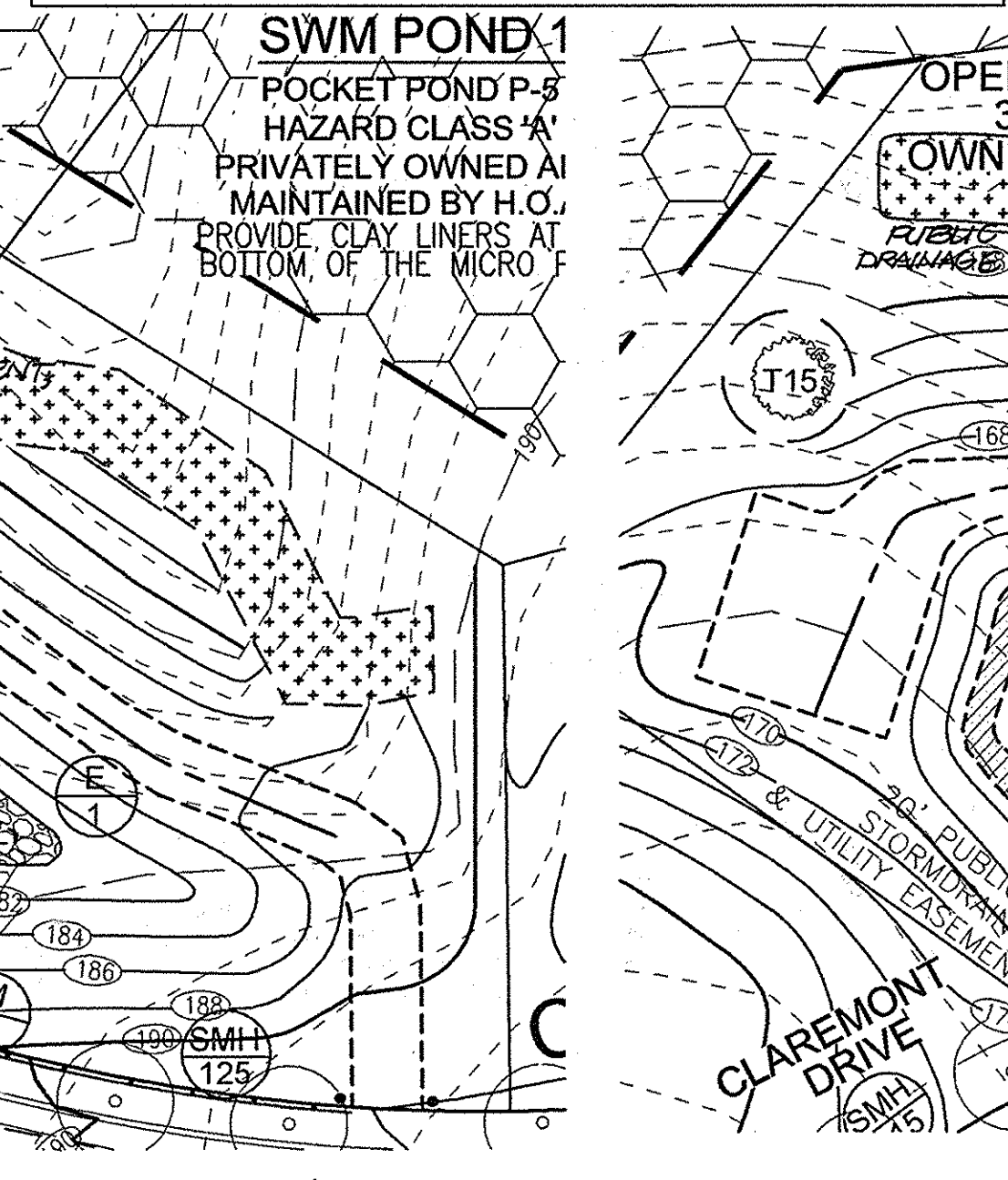
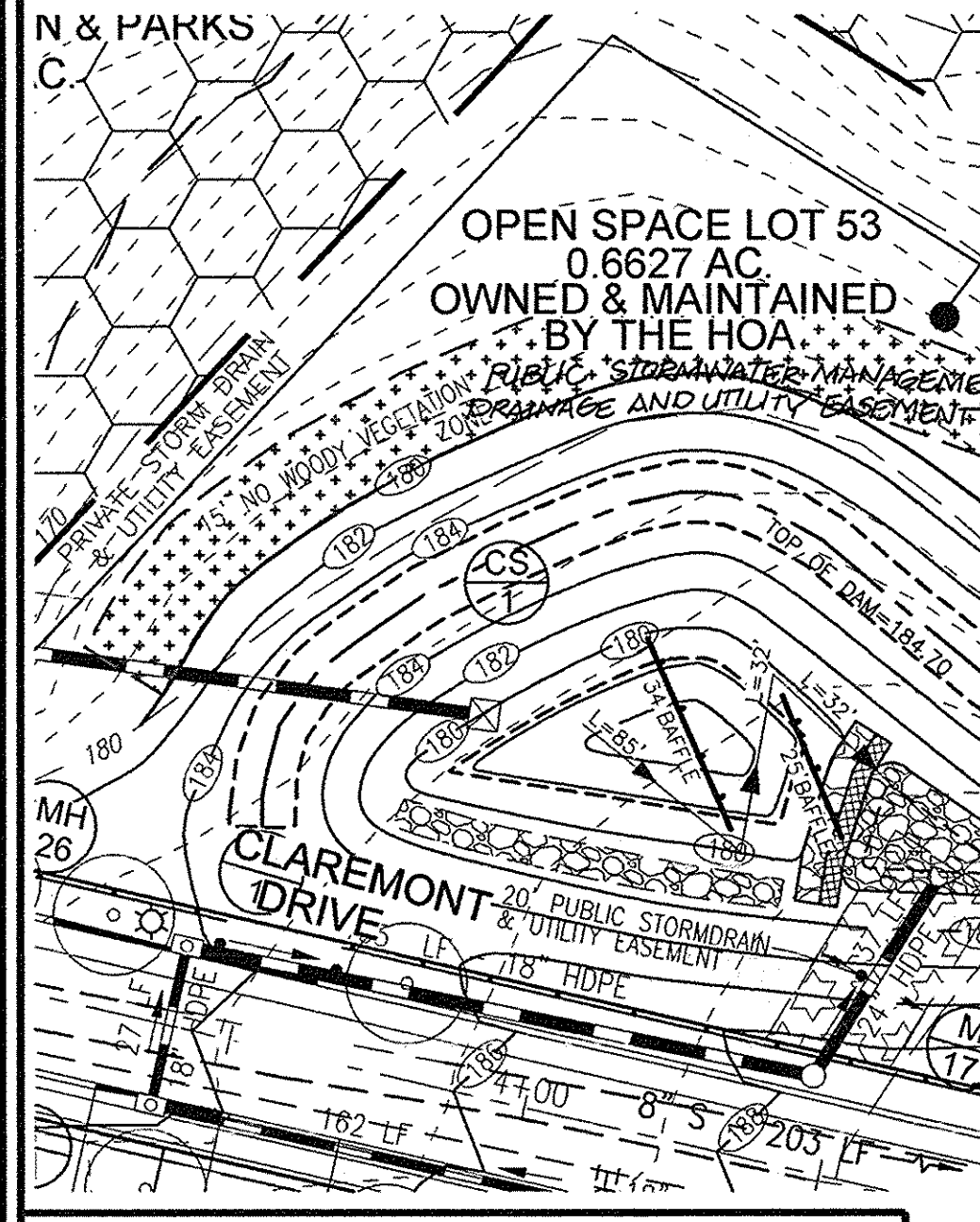
1. Mulches - See standards for vegetative stabilization with mulches only. Mulch should be crimped or tacked to prevent blowing.
2. Vegetative Cover - See standards for temporary vegetative cover.
3. Tillage - To roughen surface and bring clods to the surface. This is an emergency measure which should be used before soil blowing starts. Begin plowing on windward side of site. Chisel-type plows spaced about 12" apart, spring-tooth 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



APPROVED: DEPARTMENT OF PUBLIC WORKS
11-24-08
DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
2/10/09
DATE

BAFFLE DETAIL SEDIMENT BASIN NO. 1

SCALE: 1"=30'

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

11/5/08
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 AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

10/24/2008
DATE

ENGINEER'S CERTIFICATE

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10/23/08
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.

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

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
19TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.

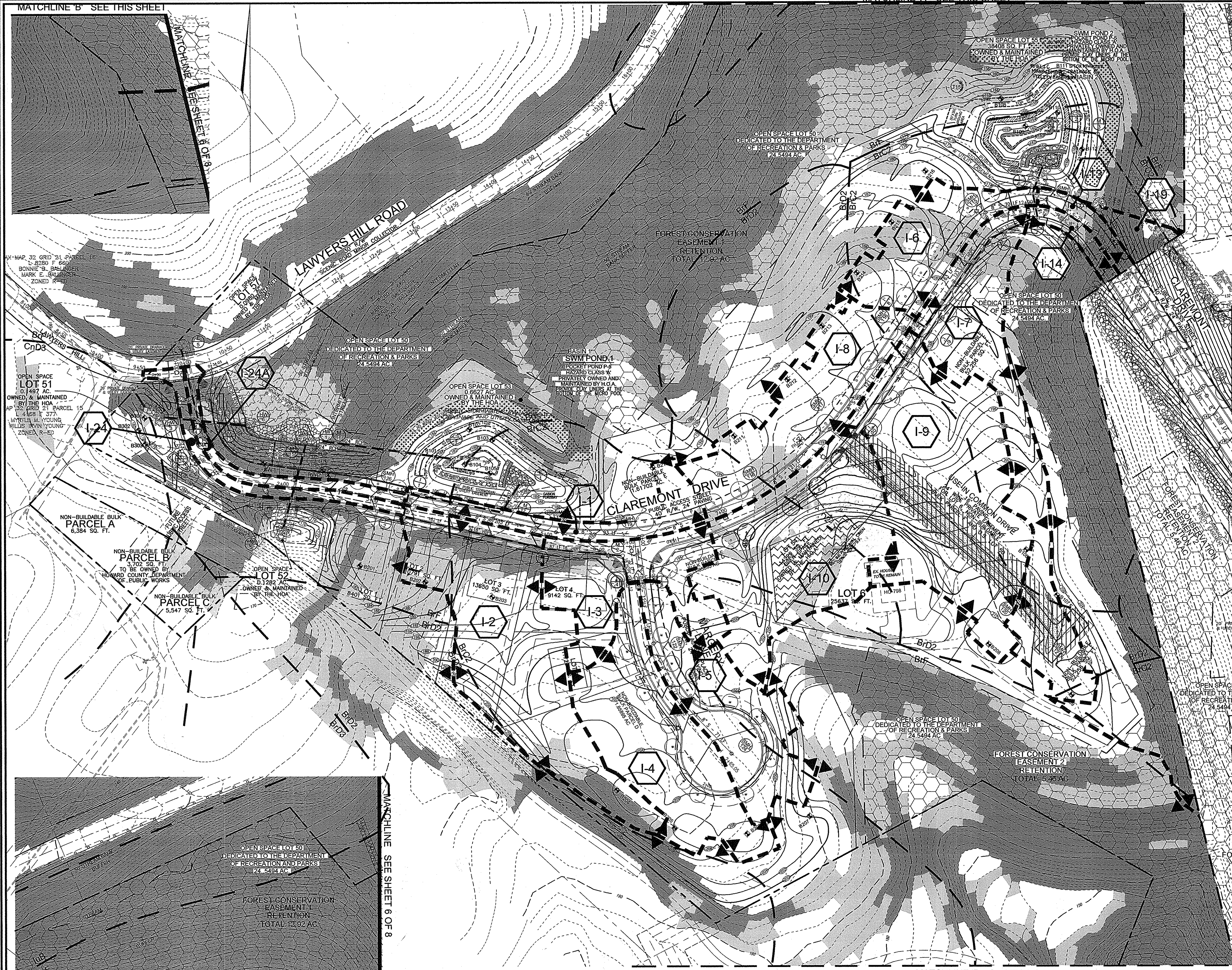
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET TEL: 410.461.7666
ELICOTT CITY, MD 21043 FAX: 410.461.8961

DESIGN BY: RHV/RJ
DRAWN BY: RJ
CHECKED BY: RHV
DATE: SEPTEMBER 2008
SCALE: AS SHOWN
W.O. NO.: 02-88.00

9 SHEET OF 27

MATCHLINE 'B' SEE THIS SHEET

MATCHLINE 'A' SEE THIS SHEET



DRAINAGE AREA TABULATION					
NO.	AREA	% 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	0.86 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	0.38	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	0.66	100	C	R-ED
I-24A	1.70 AC	0.88	100	C	R-ED

LEGEND	
---202---	EXISTING 2 FT CONTOUR
---200---	EXISTING 10 FT CONTOUR
---200---	PROPOSED 10 FT CONTOUR
---SSF---	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)
---	STABILIZED CONSTRUCTION ENTRANCE
---	RIP-RAP CHANNEL

SOILS LEGEND		
SYMBOL	NAME / DESCRIPTION	GROUP
Agc2	AURA GRAVELLY LOAM, 5 TO 10 PERCENT SLOPES, MODERATELY ERODED	B
Bc2	BRANDYWINE LOAM, 6 TO 15 PERCENT SLOPES, MODERATELY ERODED	C
Bc3	BRANDYWINE LOAM, 8 TO 15 PERCENT SLOPES, SEVERELY ERODED	C
Bd2	BRANDYWINE LOAM, 15 TO 25 PERCENT SLOPES, MODERATELY ERODED	C
Bd3	BRANDYWINE LOAM, 15 TO 25 PERCENT SLOPES, SEVERELY ERODED	C
Bf	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
 CLAREMONT L.L.C.
 11046 DORSCH FARM ROAD
 ELLICOTT CITY, MARYLAND 21042
 (410) 730-4556

PROFESSIONAL CERTIFICATION
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APPROVED: DEPARTMENT OF PUBLIC WORKS
 Chief, Bureau of Highways *[Signature]* Date 11-24-08

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 Chief, Division of Land Development *[Signature]* Date 2/10/09

Chief, Development Engineering Division *[Signature]* Date 4/25/08

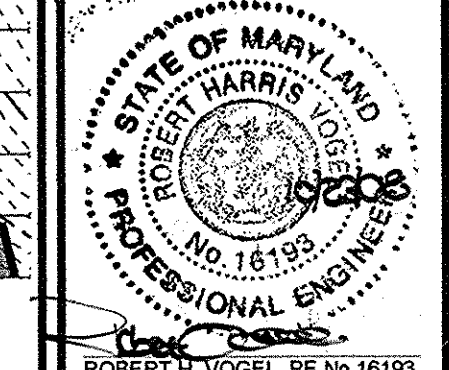
NO.	REVISION	DATE
1	ADD PUBLIC STORMWATER MANAGEMENT DRAINAGE & UTILITY EASEMENT LABELS AND ADDRESSING & REVISED REC. O.S. PER W.P. 09-223.	11/16/09

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
 16TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

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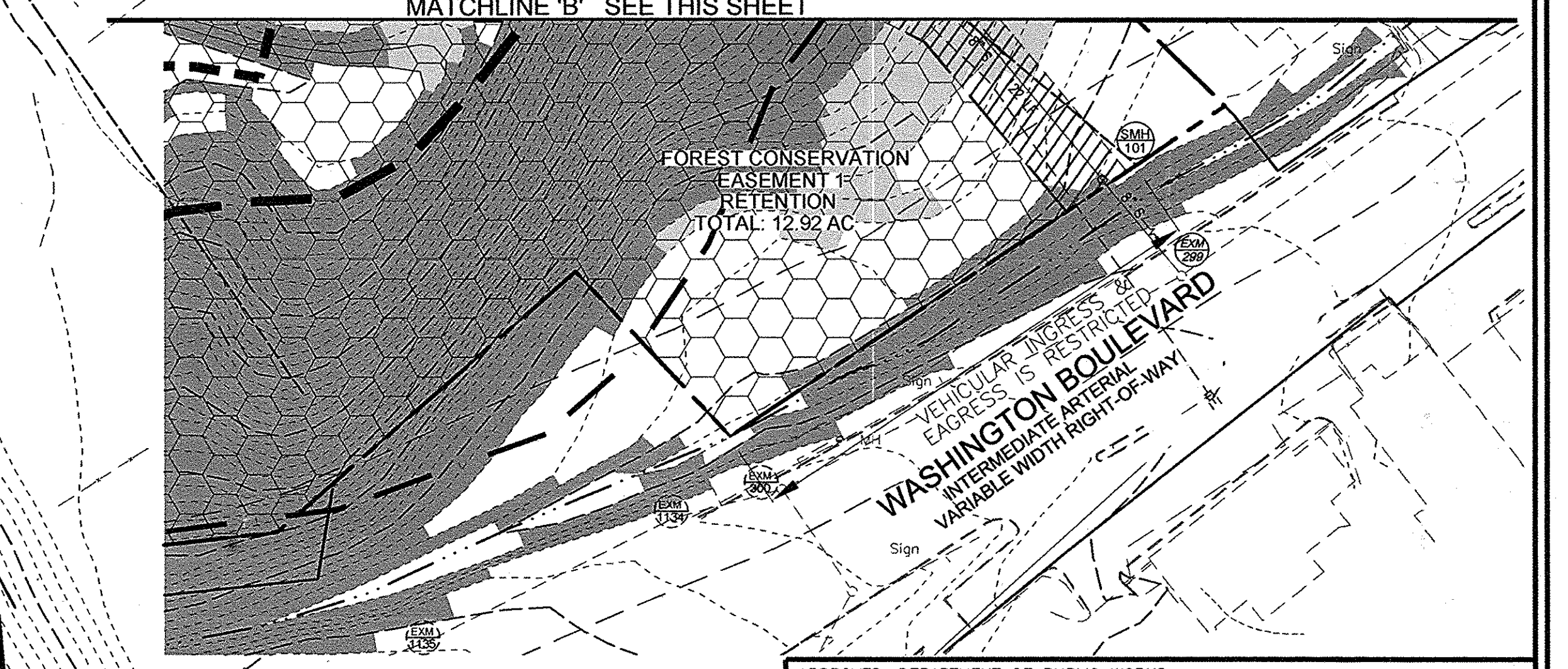
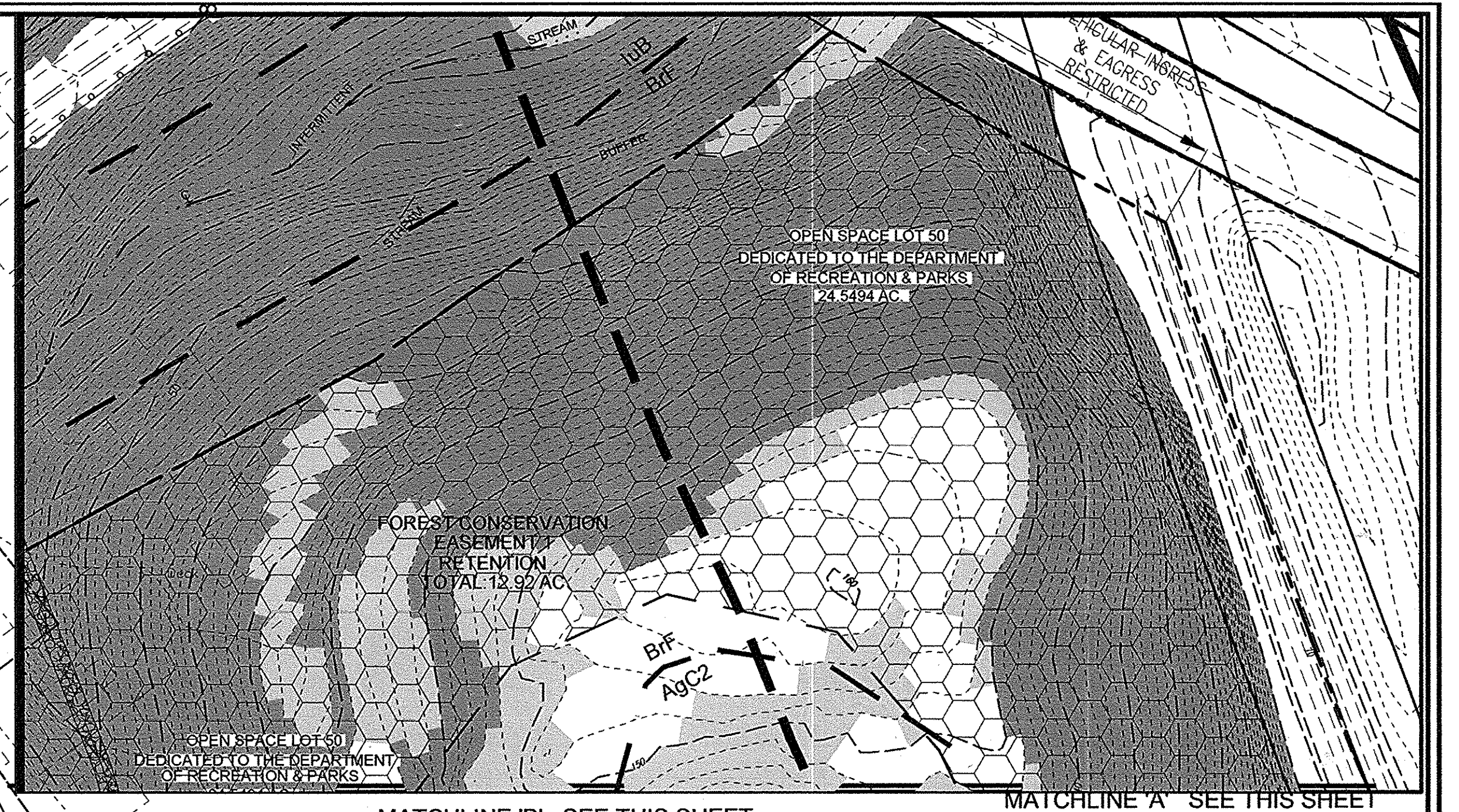
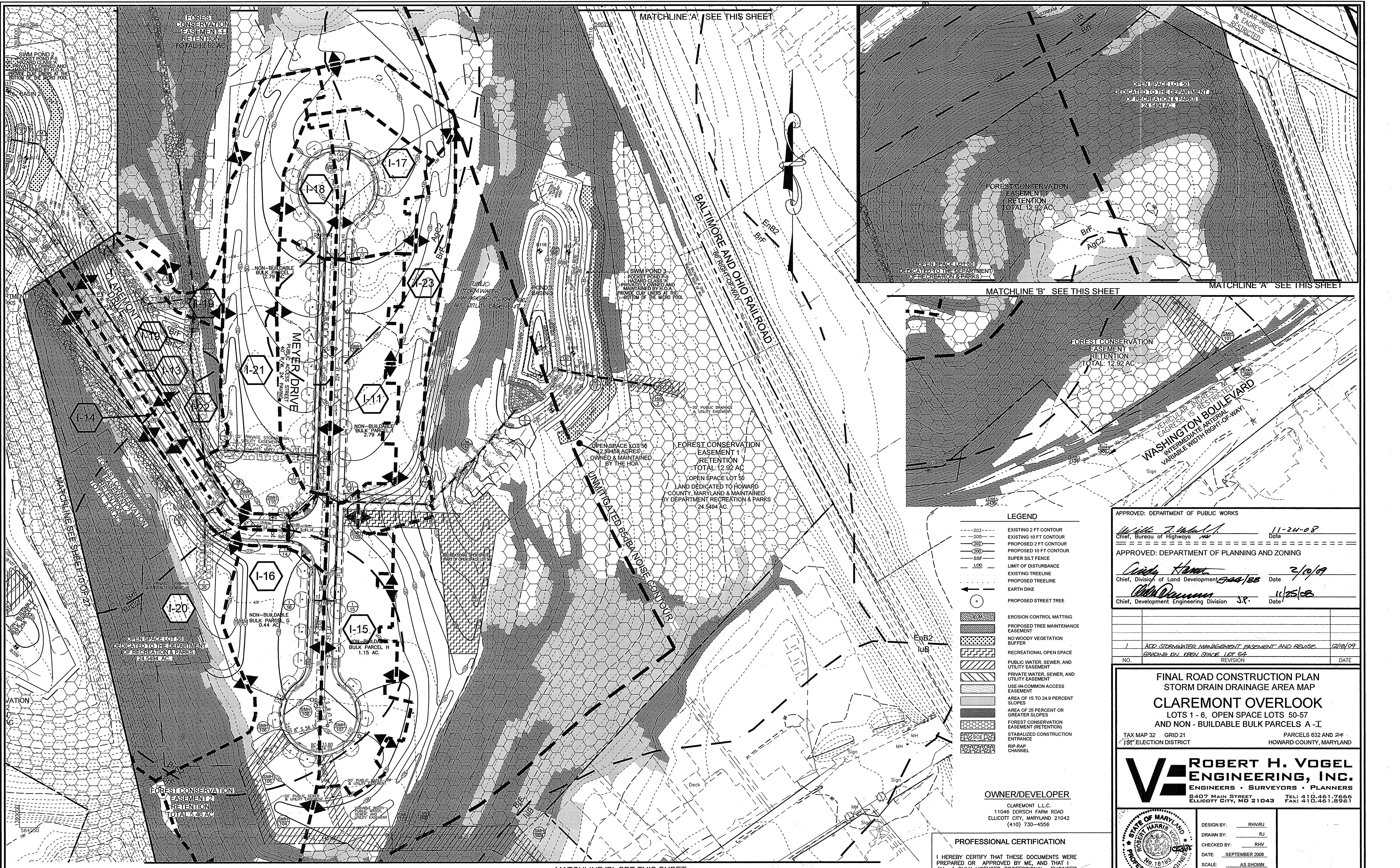


10 SHEET OF 27

MATCHLINE 'A' SEE THIS SHEET

NO AS-BUILT INFORMATION ON THIS SHEET

MATCHLINE 'B' SEE THIS SHEET



- 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
 - LDC--- LIMIT OF DISTURBANCE
 - --- EXISTING TREELINE
 - --- PROPOSED TREELINE
 - --- EARTH DIKE
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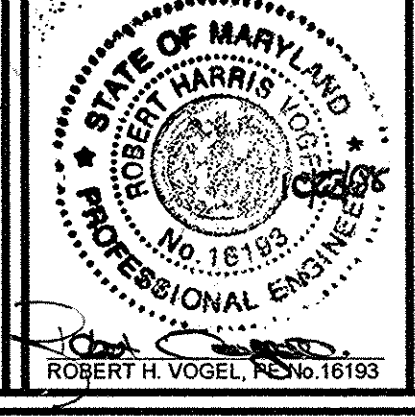
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APPROVED: DEPARTMENT OF PUBLIC WORKS	
<i>William J. ...</i> Chief, Bureau of Highways	11-24-08 Date
APPROVED: DEPARTMENT OF PLANNING AND ZONING	
<i>... ..</i> Chief, Division of Land Development	2/10/09 Date
<i>... ..</i> Chief, Development Engineering Division	11/25/08 Date
ADD STORMWATER MANAGEMENT EASEMENT AND REVISE 12/16/09	
NO.	DATE

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
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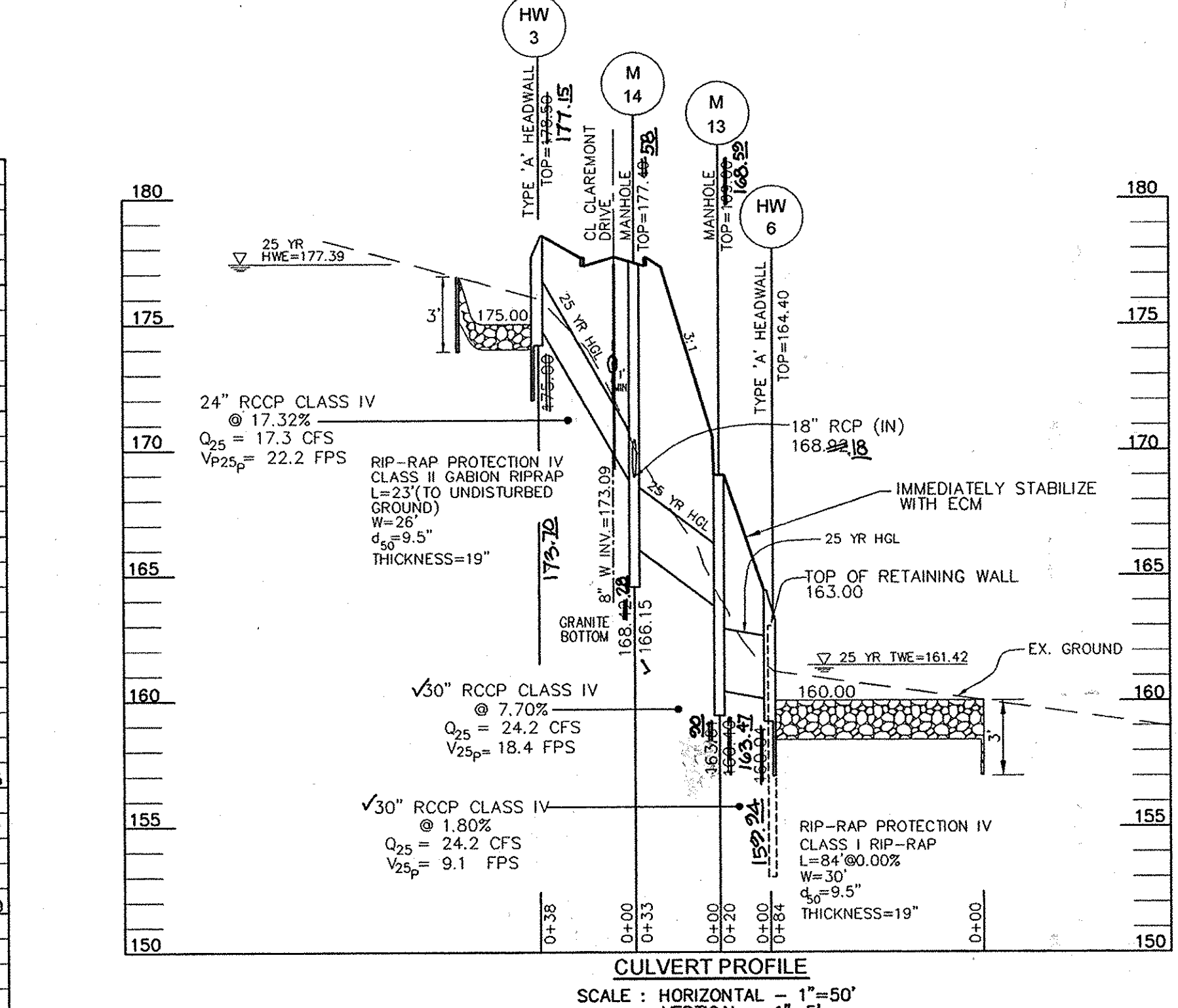
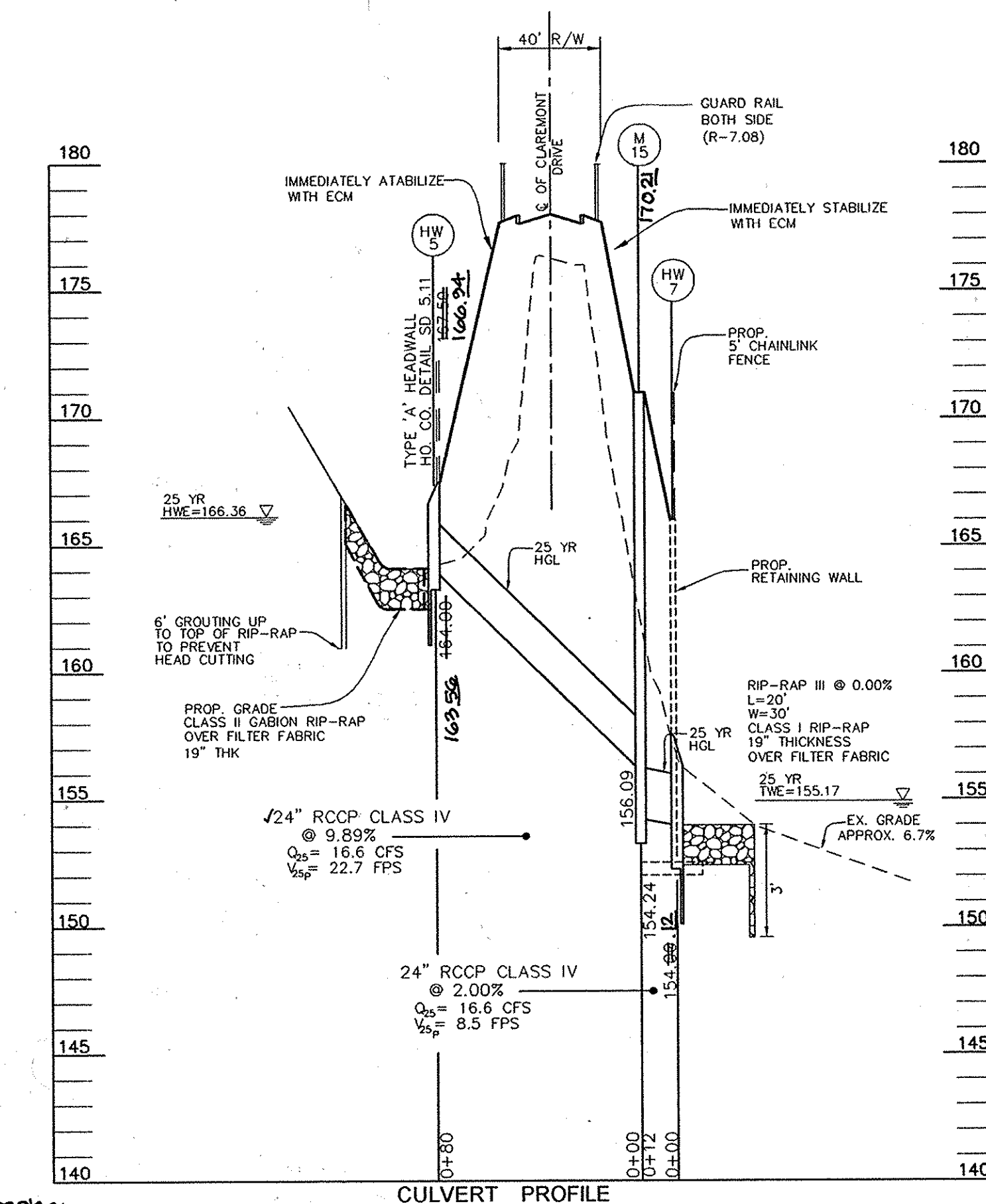
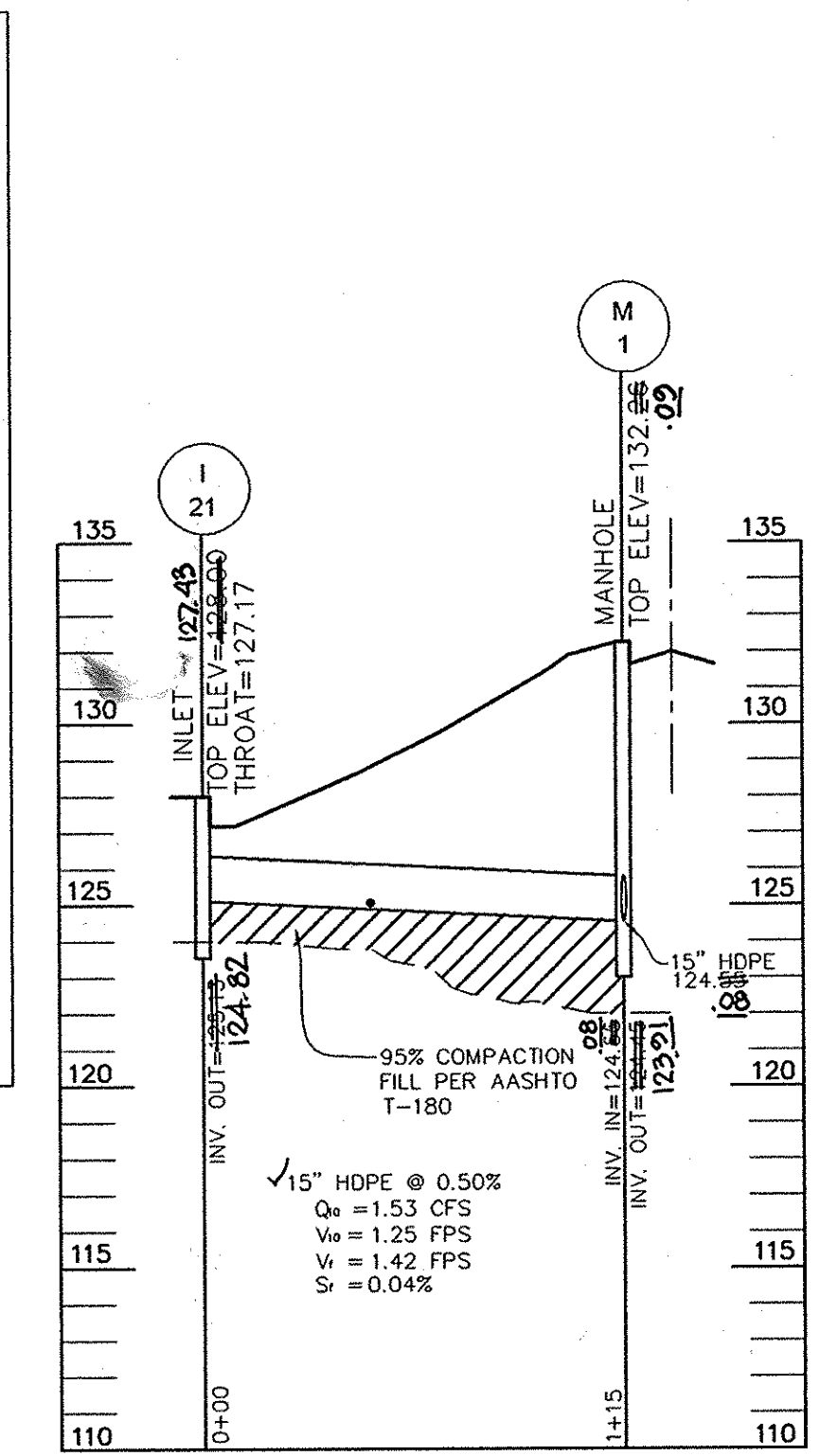
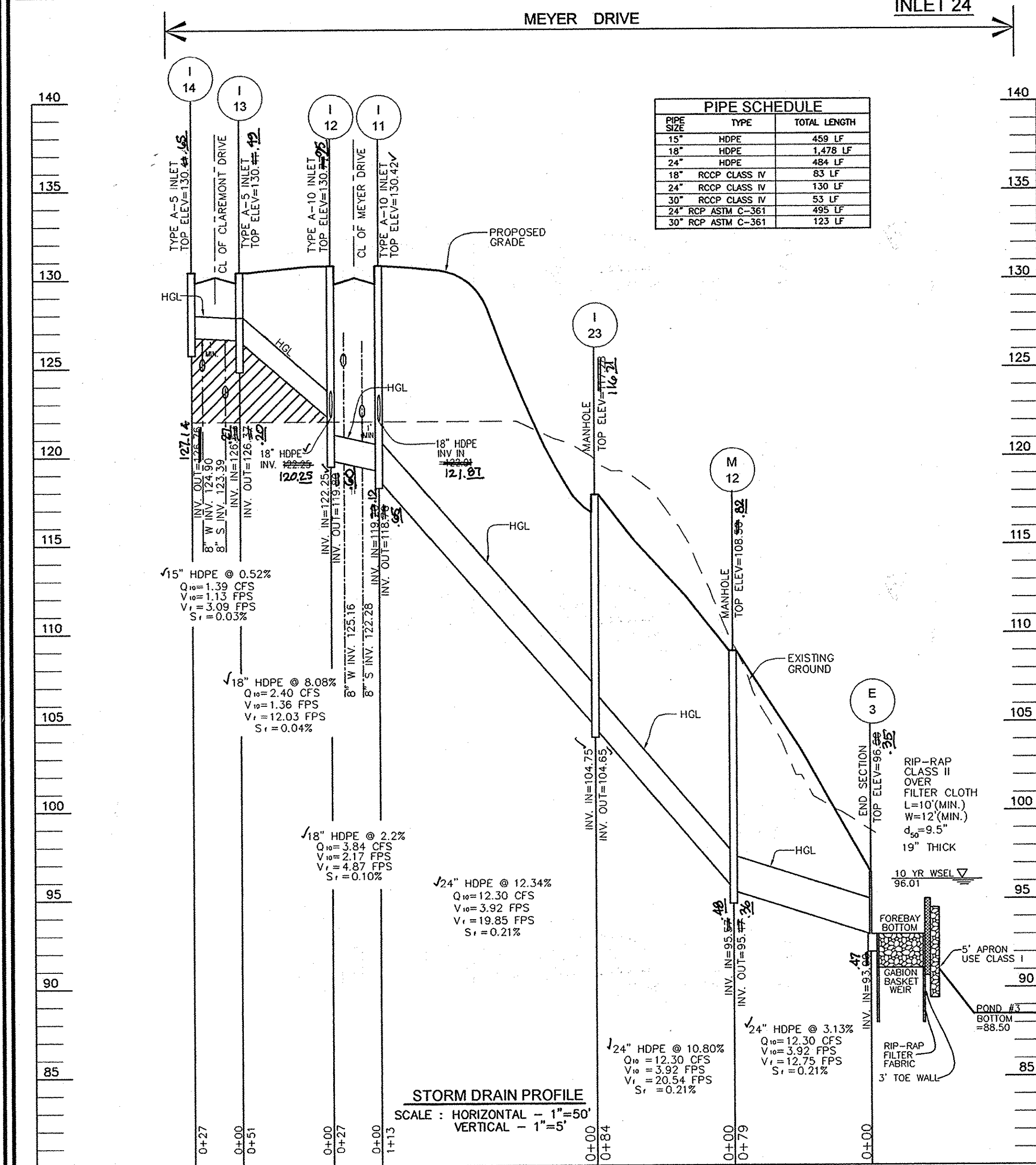
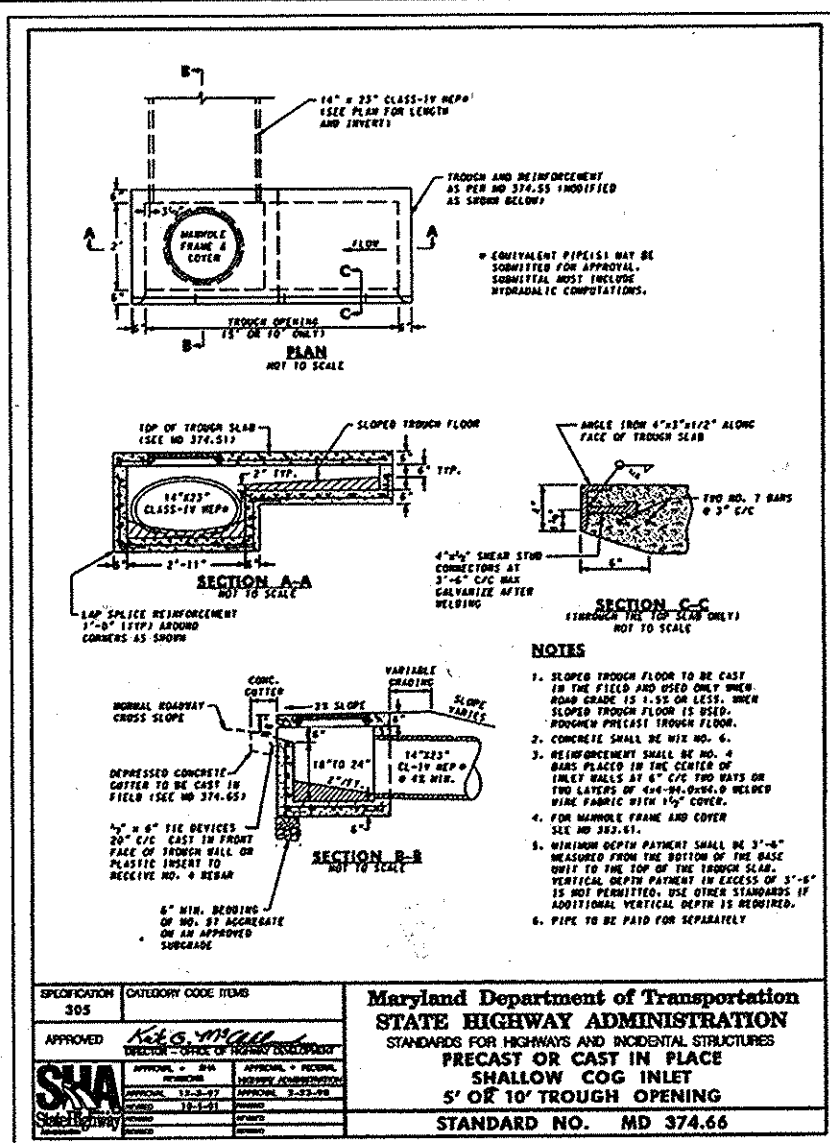
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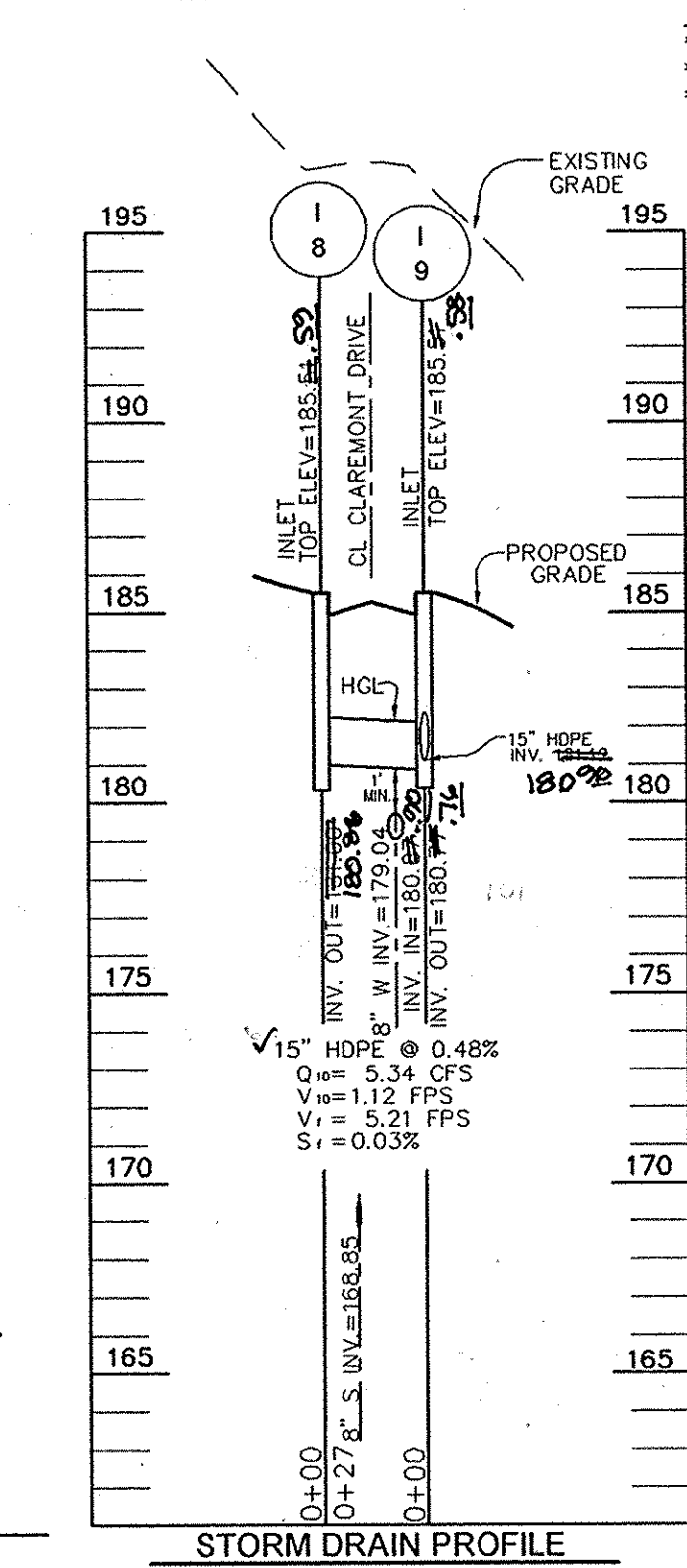
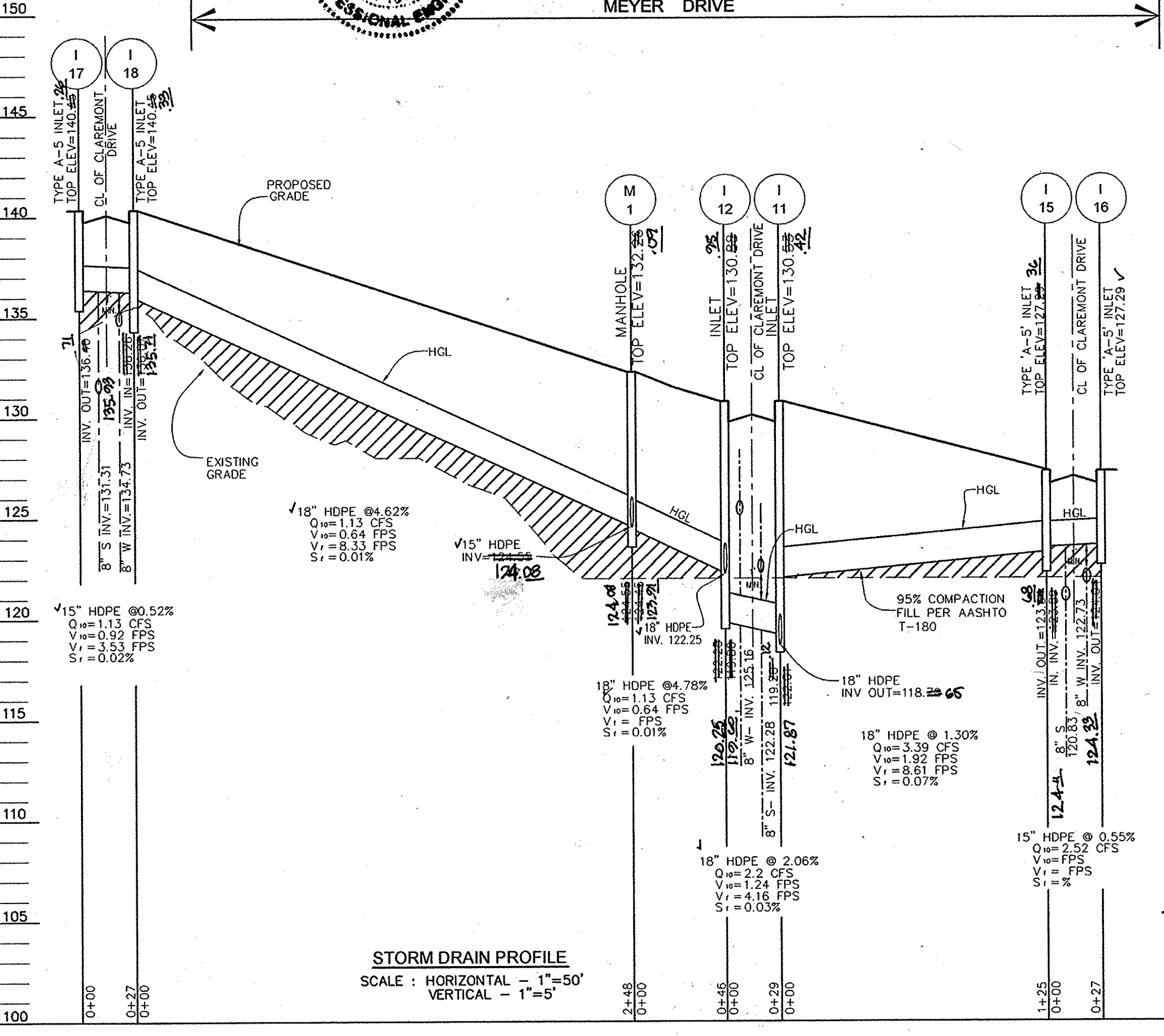
STORM DRAIN MANHOLE SCHEDULE						
NO.	TYPE	LOCATION	TOP ELEV.	INV. IN.	INV. OUT.	REMARKS
M-1	STANDARD 4' PRECAST MANHOLE	MEYER DRIVE CL. STA. 3+69.74, 13.50' LT.	132.26	124.55	124.45	C-5-12
M-2	STANDARD 4' PRECAST MANHOLE	CL. OF CLAREMONT DRIVE, STA. 5+84.80, 17.04' RT.	192.50	188.39	188.29	C-5-12
M-3	STANDARD 4' PRECAST MANHOLE	N 565103.74 E 1393026.68	166.50	158.60	158.50	C-5-12
M-4	STANDARD 4' PRECAST MANHOLE	N 564803.96 E 1393157.79	129.00	119.00	118.90	C-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	C-5-12
M-6	STANDARD 4' PRECAST MANHOLE	CL. OF CLAREMONT DRIVE, STA. 16+92.28, 15.21' LT.	134.55	120.50	120.40	C-5-12
M-7	STANDARD 4' PRECAST MANHOLE	CL. OF CLAREMONT DRIVE, STA. 16+92.33, 16.73' RT.	134.55	120.91	120.86	C-5-12
M-8	STANDARD 4' PRECAST MANHOLE	CL. OF CLAREMONT DRIVE, STA. 11+41.40, 17.02' RT.	177.34	173.12	173.02	C-5-12
M-11	STANDARD 4' PRECAST MANHOLE	N 564812.74 E 1393178.31	94.00	86.0	86.0	C-5-12
M-12	STANDARD 4' PRECAST MANHOLE	N 564712.97 E 1393569.69	108.50	95.57	95.47	C-5-12
M-13	STANDARD 4' PRECAST MANHOLE	N 564780.97 E 1392054.98	169.00	163.61	160.40	C-5-12
M-14	STANDARD 4' PRECAST MANHOLE	CL. OF CLAREMONT DRIVE, STA. 0+62.03, 7.68' LT.	177.40	168.42	166.15	C-5-12
M-15	STANDARD 4' PRECAST MANHOLE	N 564756.01 E 1392138.26	171.00	156.09	154.24	C-5-12
M-16	STANDARD 4' PRECAST MANHOLE	N 564756.92 E 1392175.04	160.00	156.00	153.50	C-5-12
M-17	STANDARD 4' PRECAST MANHOLE	CL. OF CLAREMONT DRIVE, STA. 4+45.41, 15.90' LT.	188.58	179.00	178.59	C-5-12

STRUCTURE SCHEDULE								
NO.	SIZE	TYPE	NORTHING	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	178.29	-	D-5-21
E-2	24"	TYPE 'C' ENDWALL	N 565067.40	E 1392984.78	166.75	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 1393198.25	120.30	117.55	-	D-5-21
E-5	18"	TYPE 'A' HEADWALL	N 564864.84	E 1392002.73	176.05	-	173.80	D-5-21



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.	184.08	179.72	179.62	SD4.41
I-2	TYPE 'A-10' INLET	CL. OF CLAREMONT DRIVE, STA. 3+39.66, 12' RT.	184.08	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	181.12	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	122.01	118.70	SD4.41
I-12	TYPE 'A-10' INLET	CL. OF MEYER DRIVE, STA. 3+81.53, 12' LT.	130.88	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	126.62	126.37	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	124.49	124.24	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	118.49	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

AS-BUILT CERTIFICATION
 I hereby certify that the facility shown on this plan was constructed as shown on the as-built plans and meets the approved plans and specifications.
 Signature: [Signature]
 PE NO. 16193
 Date: 7/23/15



APPROVED: DEPARTMENT OF PUBLIC WORKS
 [Signature] 11-24-08
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: DEPARTMENT OF PLANNING AND ZONING
 [Signature] 2/10/09
 CHIEF, DIVISION OF LAND DEVELOPMENT
 APPROVED: DEPARTMENT OF PLANNING AND ZONING
 [Signature] 11/25/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

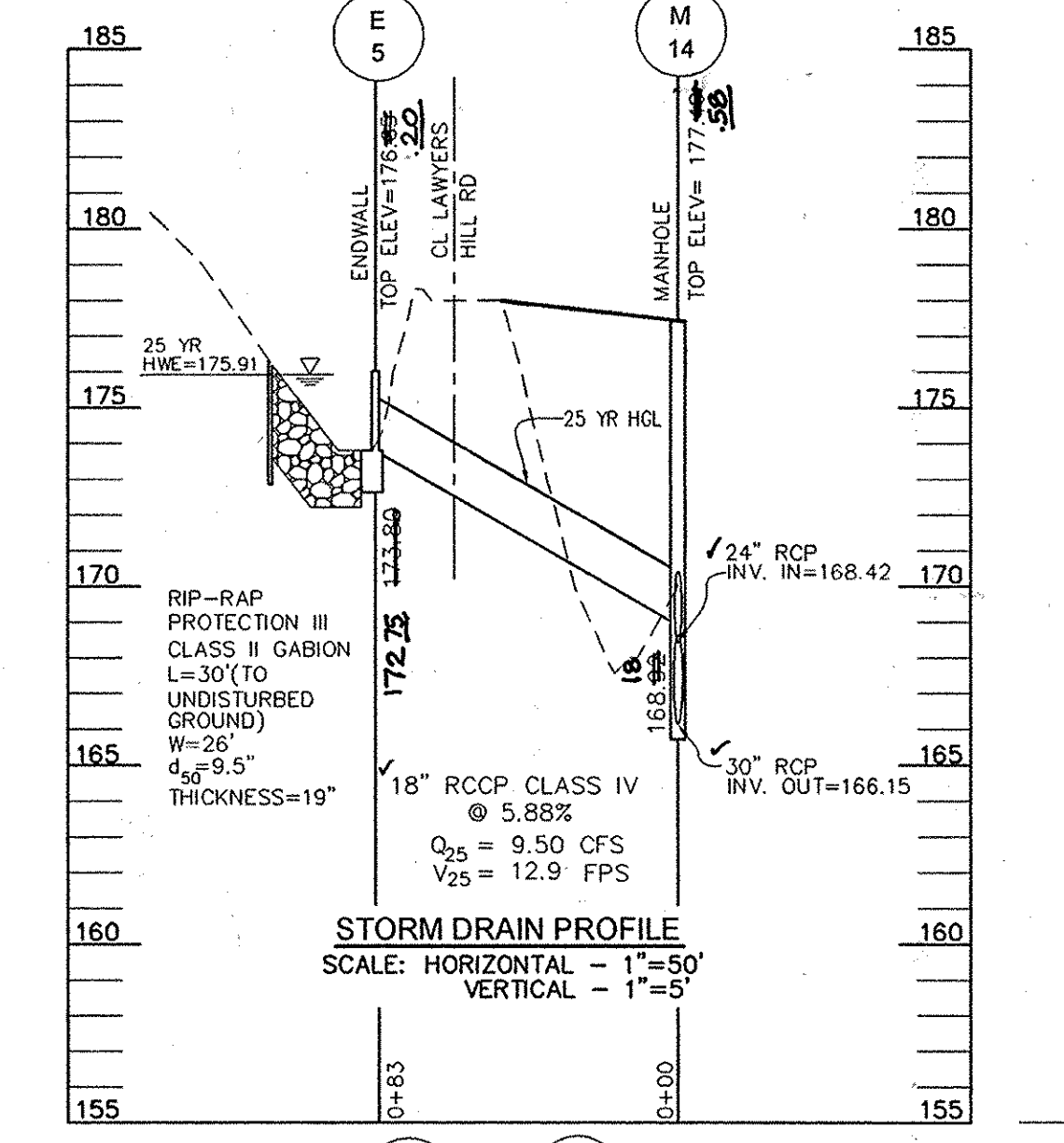
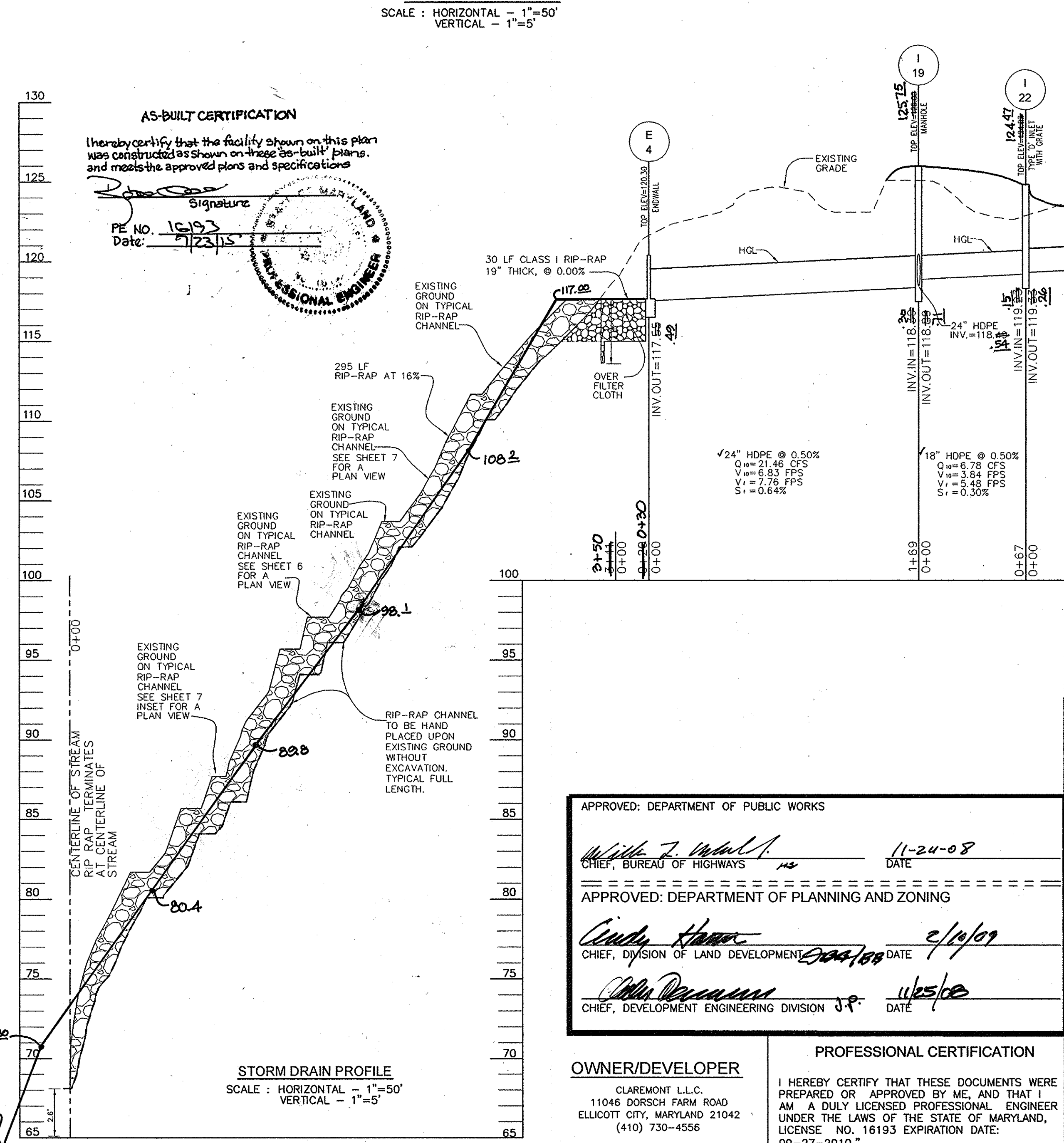
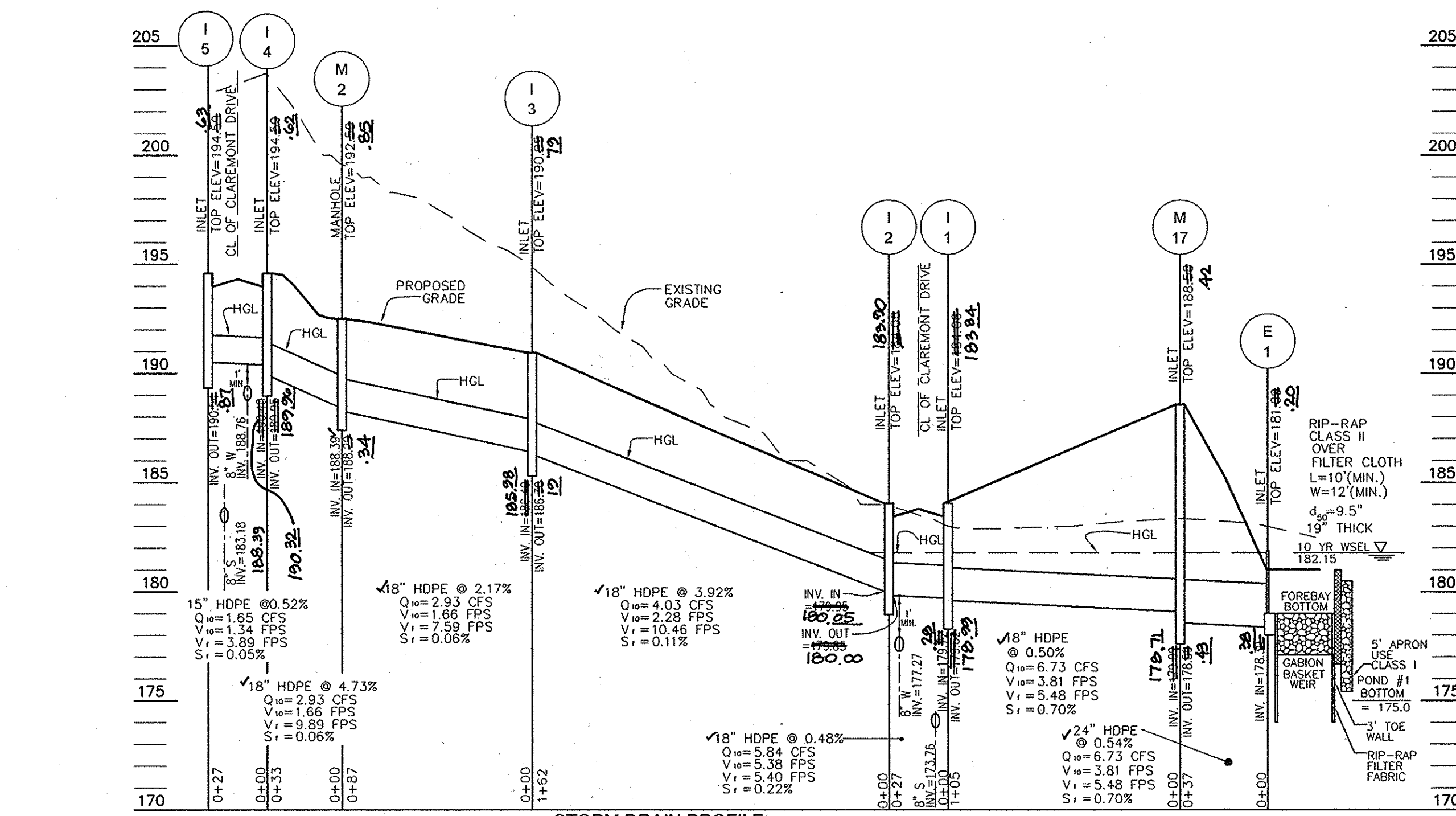
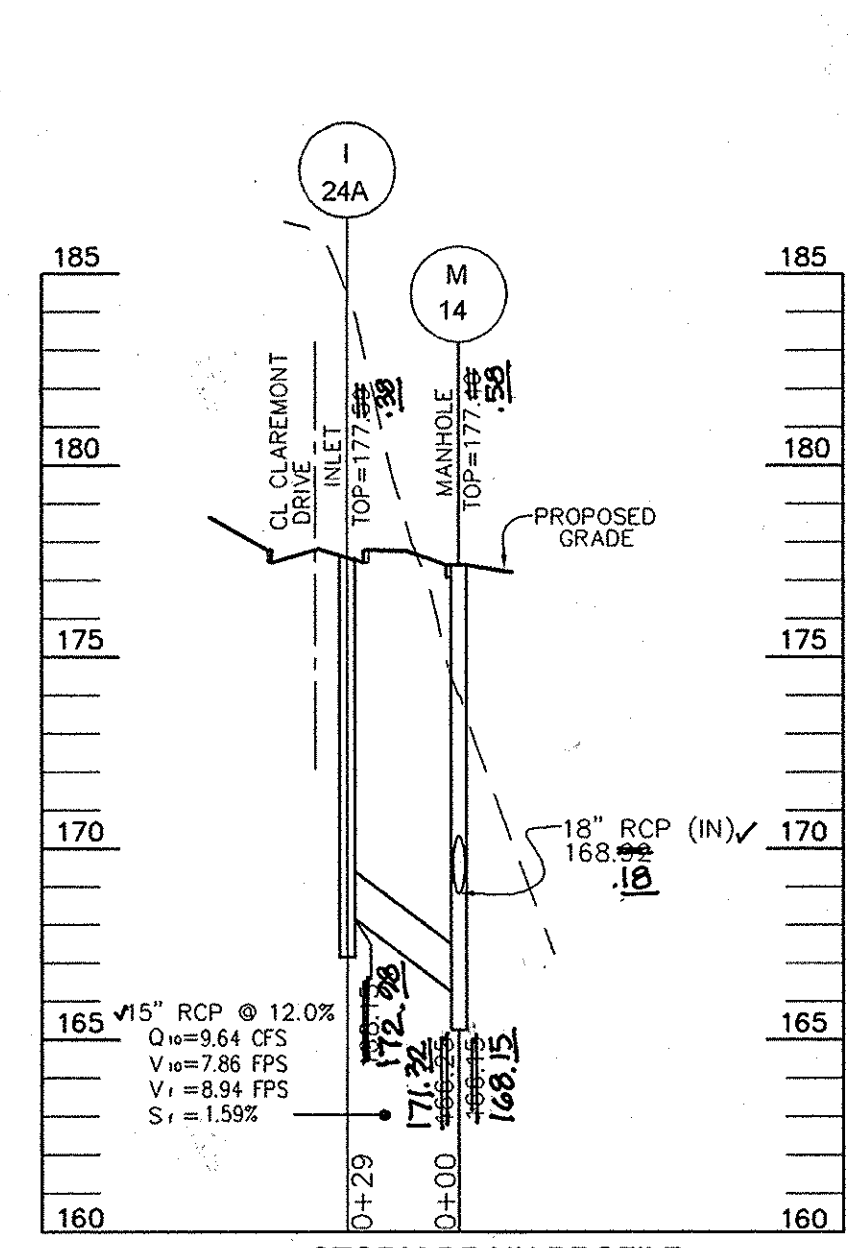
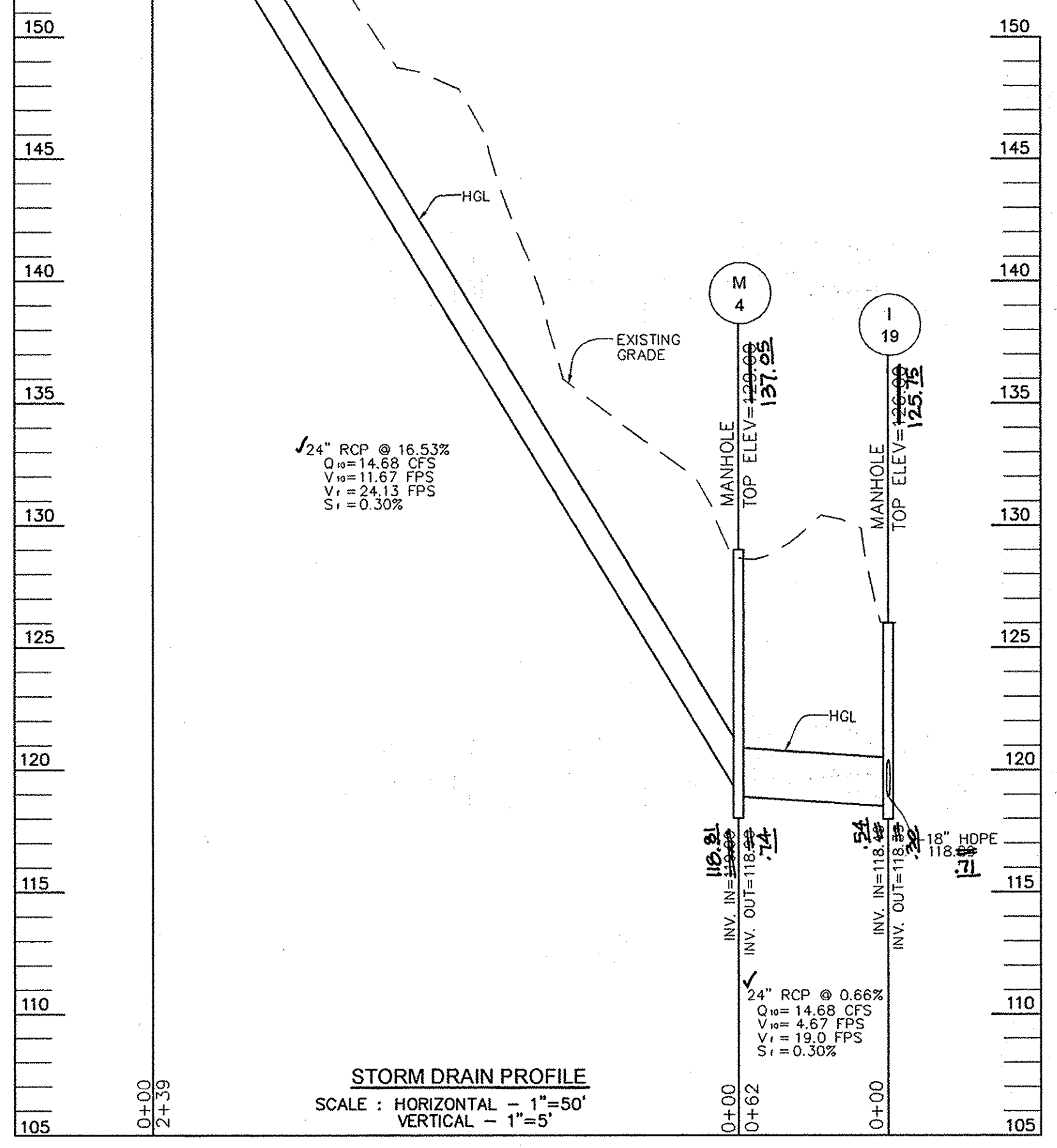
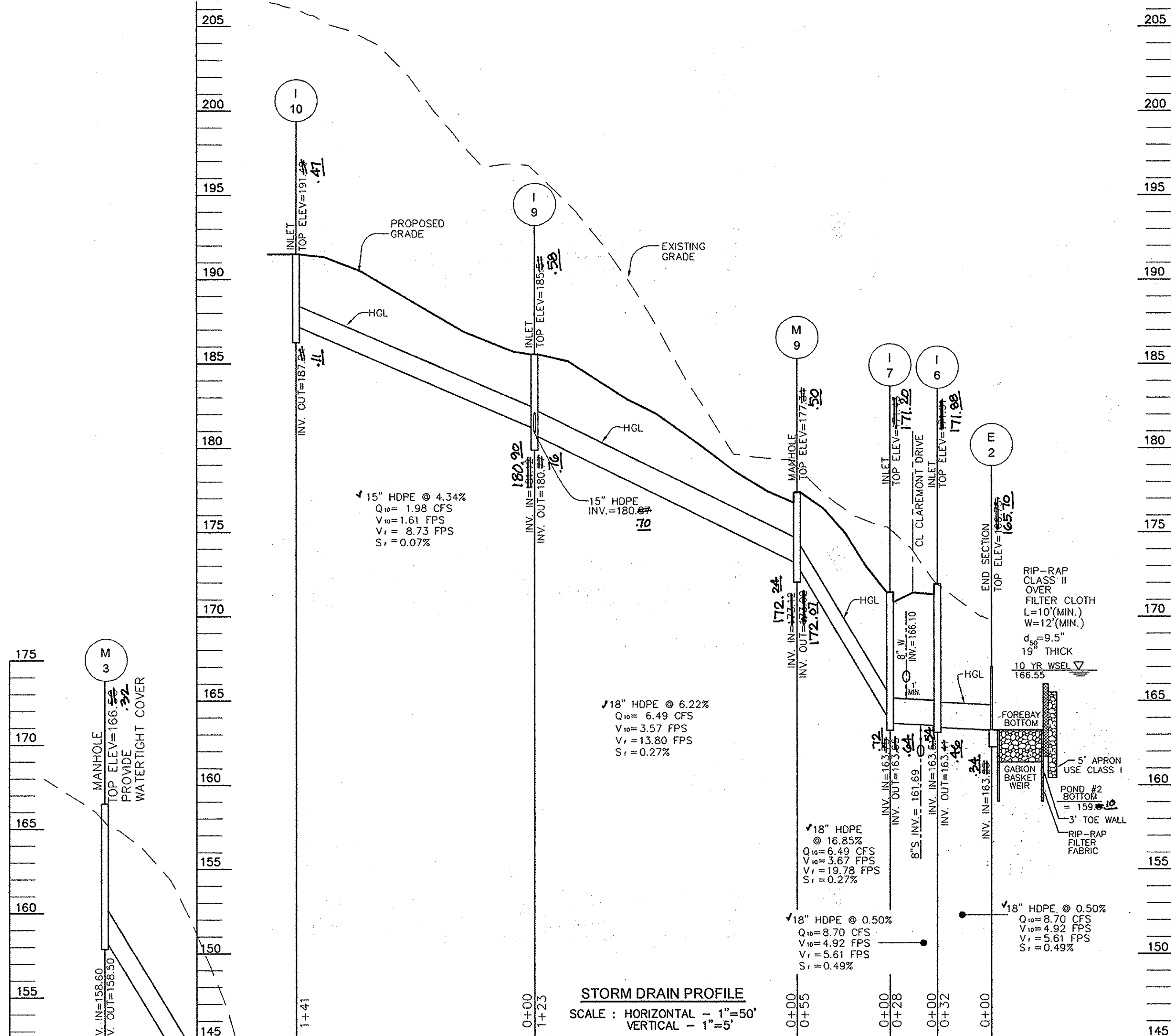
OWNER/DEVELOPER
 CLAREMONT L.L.C.
 11046 DORSCH FARM ROAD
 ELLICOTT CITY, MARYLAND 21042
 (410) 730-4556
 PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2010.

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
 197 ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

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

12 SHEET OF 27



AS-BUILT CERTIFICATION

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

Signature: _____
Date: 10/23/15

PROFESSIONAL ENGINEER

APPROVED: DEPARTMENT OF PUBLIC WORKS

William J. Mahan, 11-24-08
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Cindy Hauer, 2/10/09
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

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

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

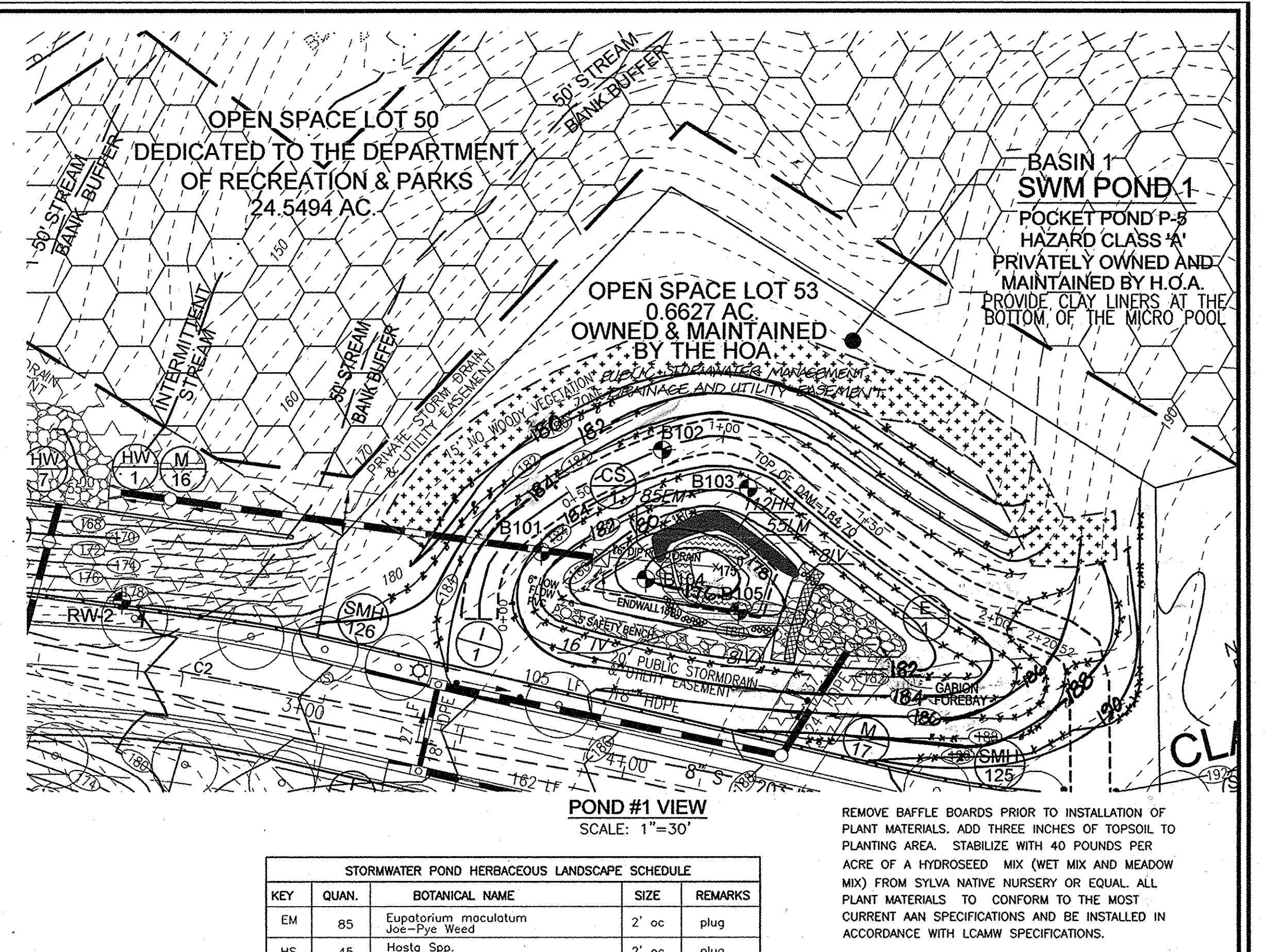
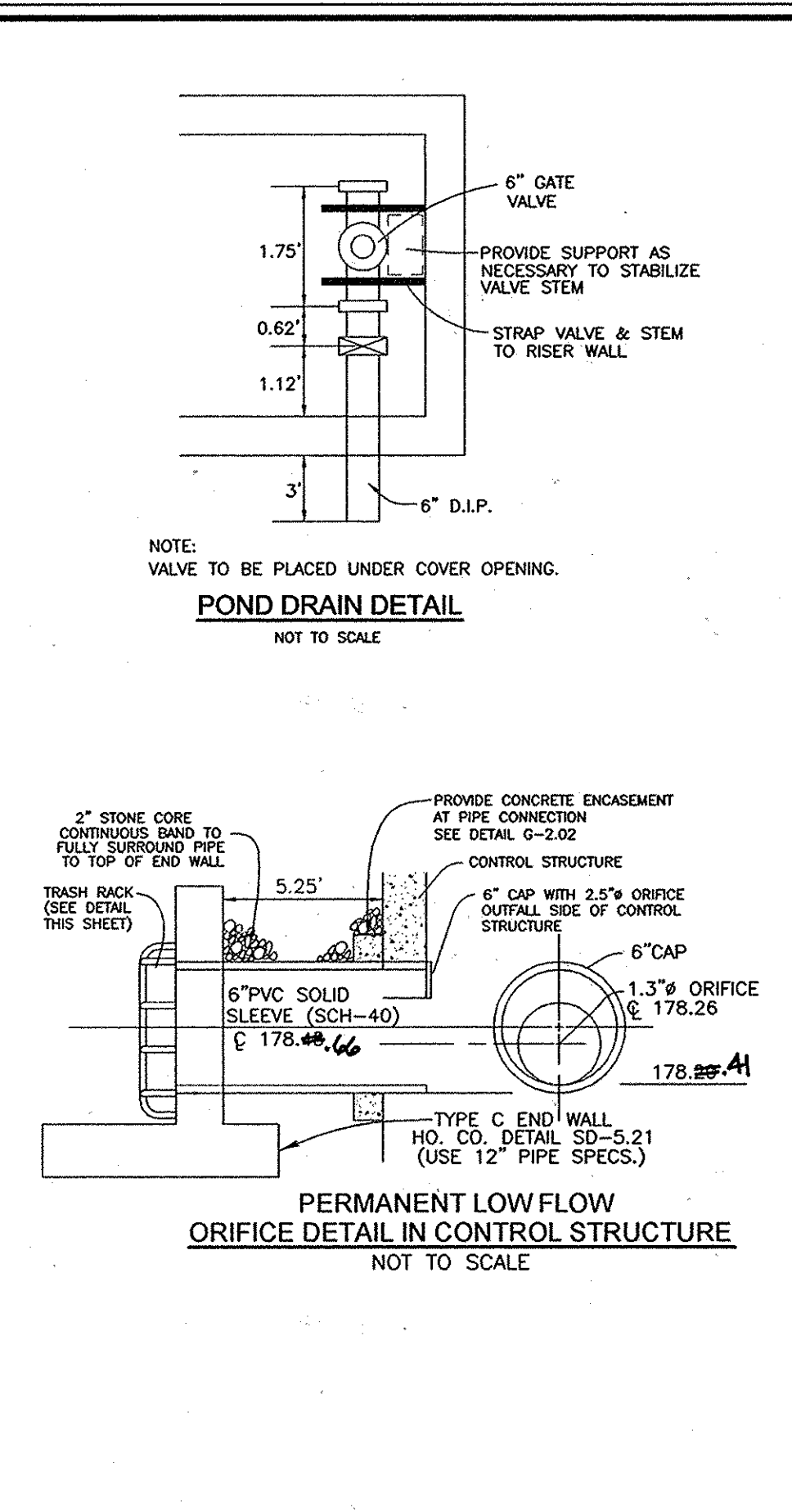
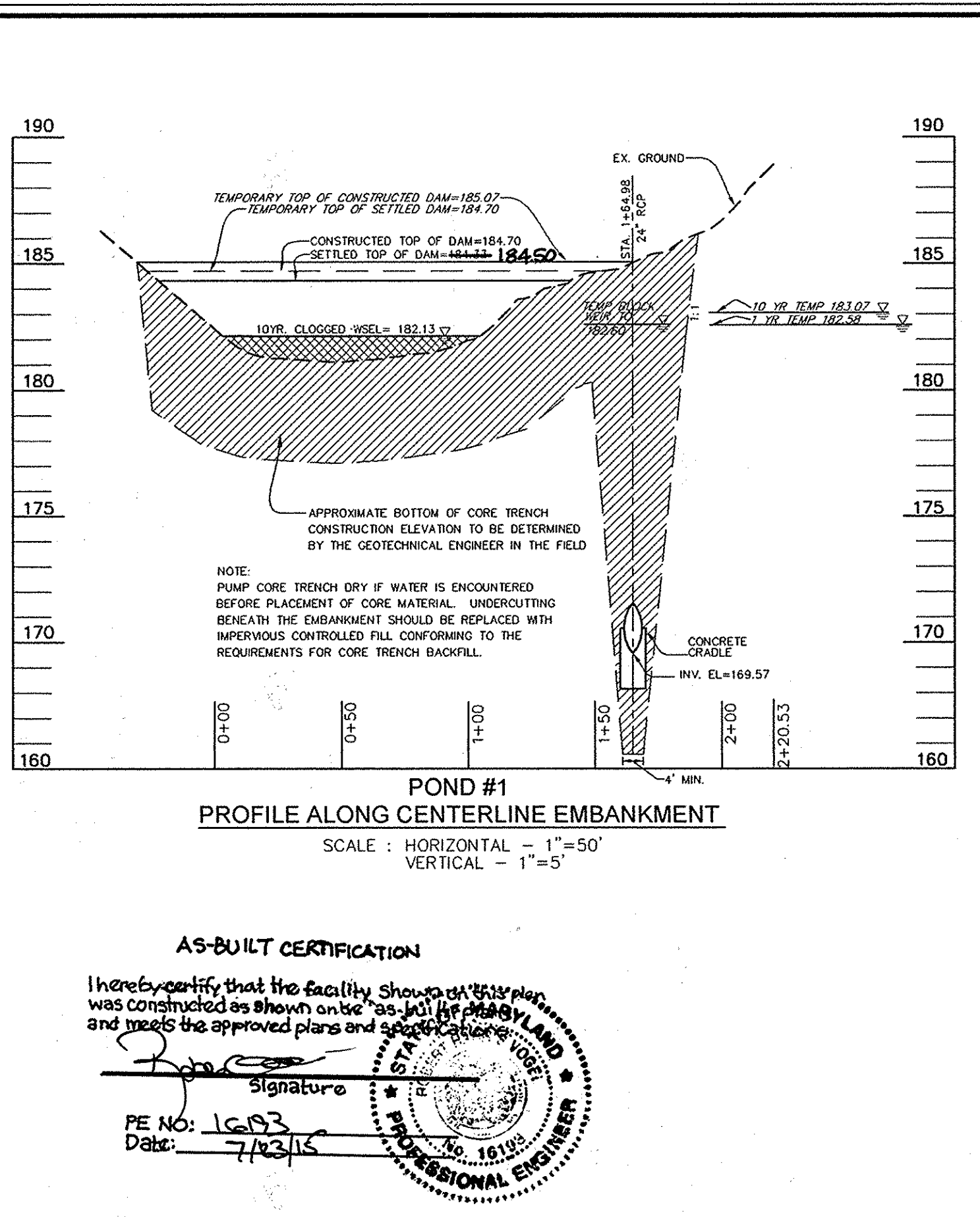
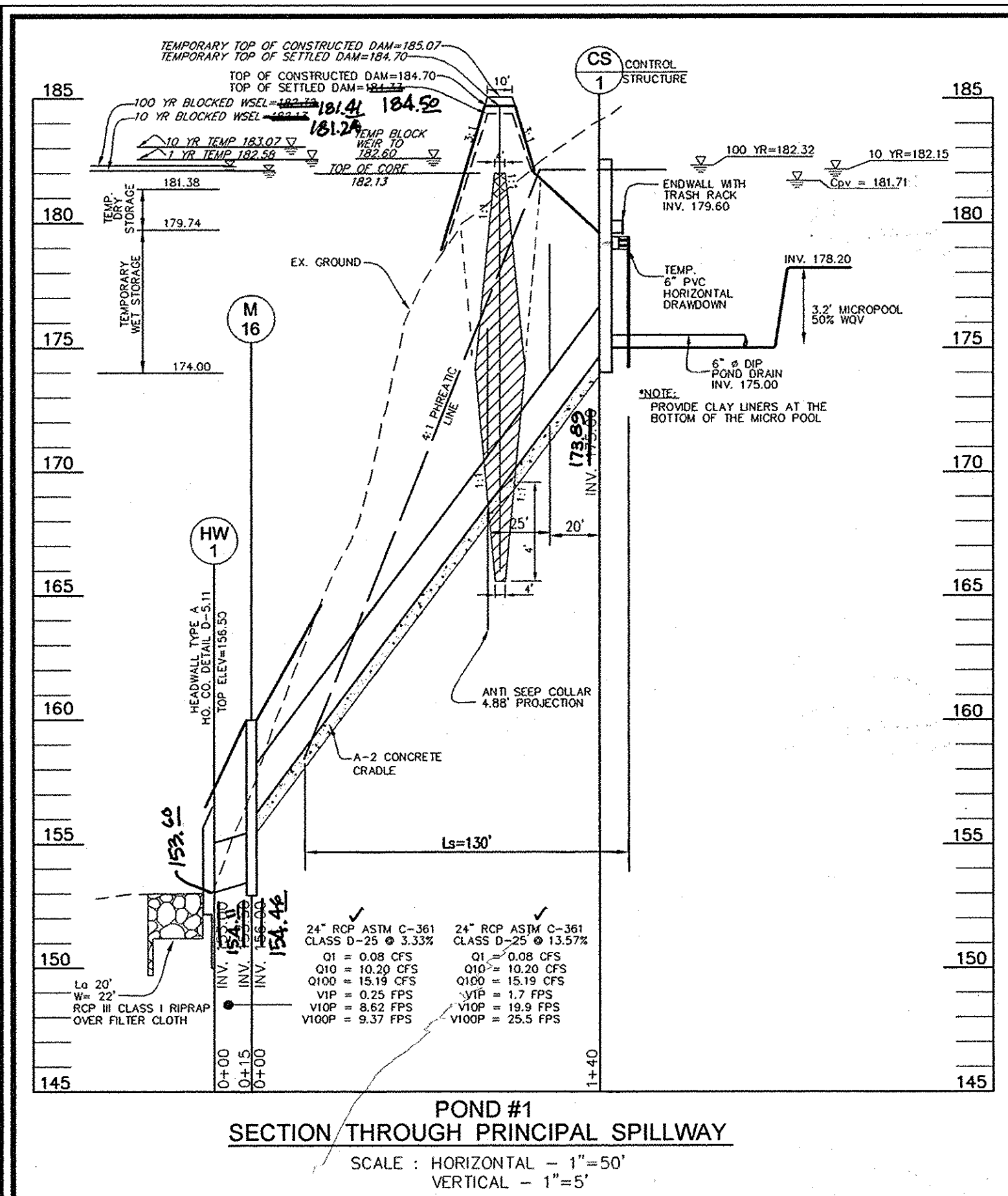
FINAL ROAD CONSTRUCTION PLAN
STORM DRAIN PROFILES
CLAREMONT OVERLOOK
LOTS 1 - 6, OPEN SPACE LOTS 50-57
AND NON - BUILDABLE BULK PARCELS A - I

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

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

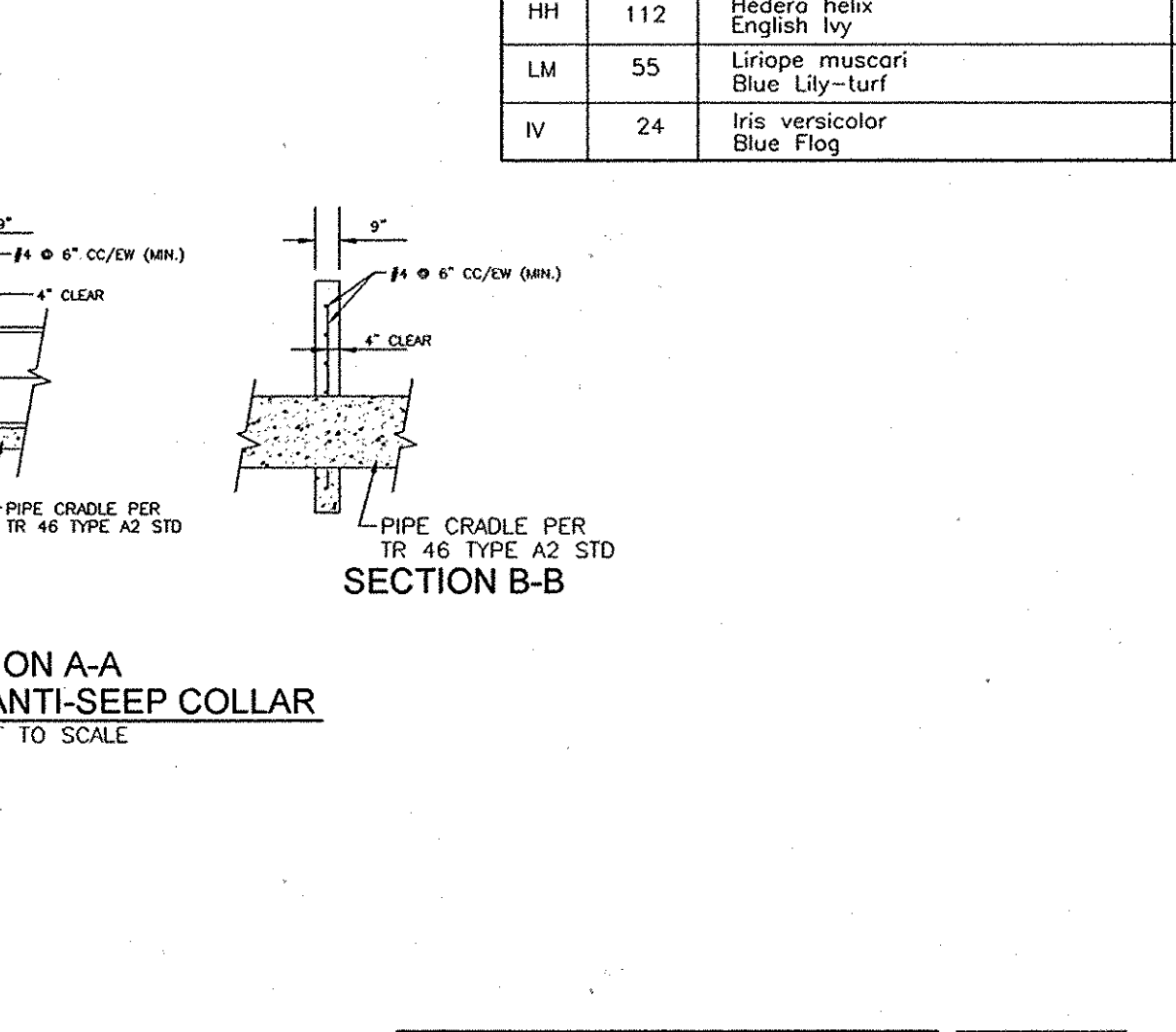
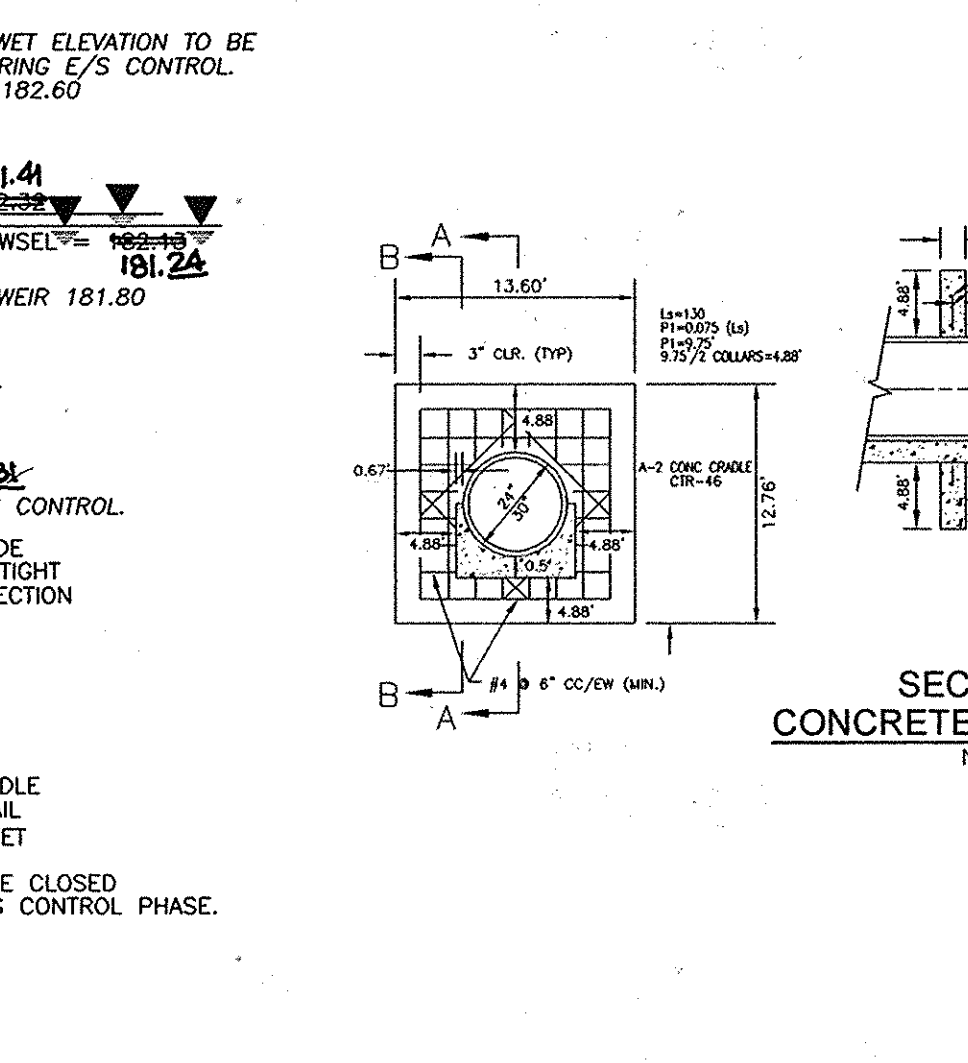
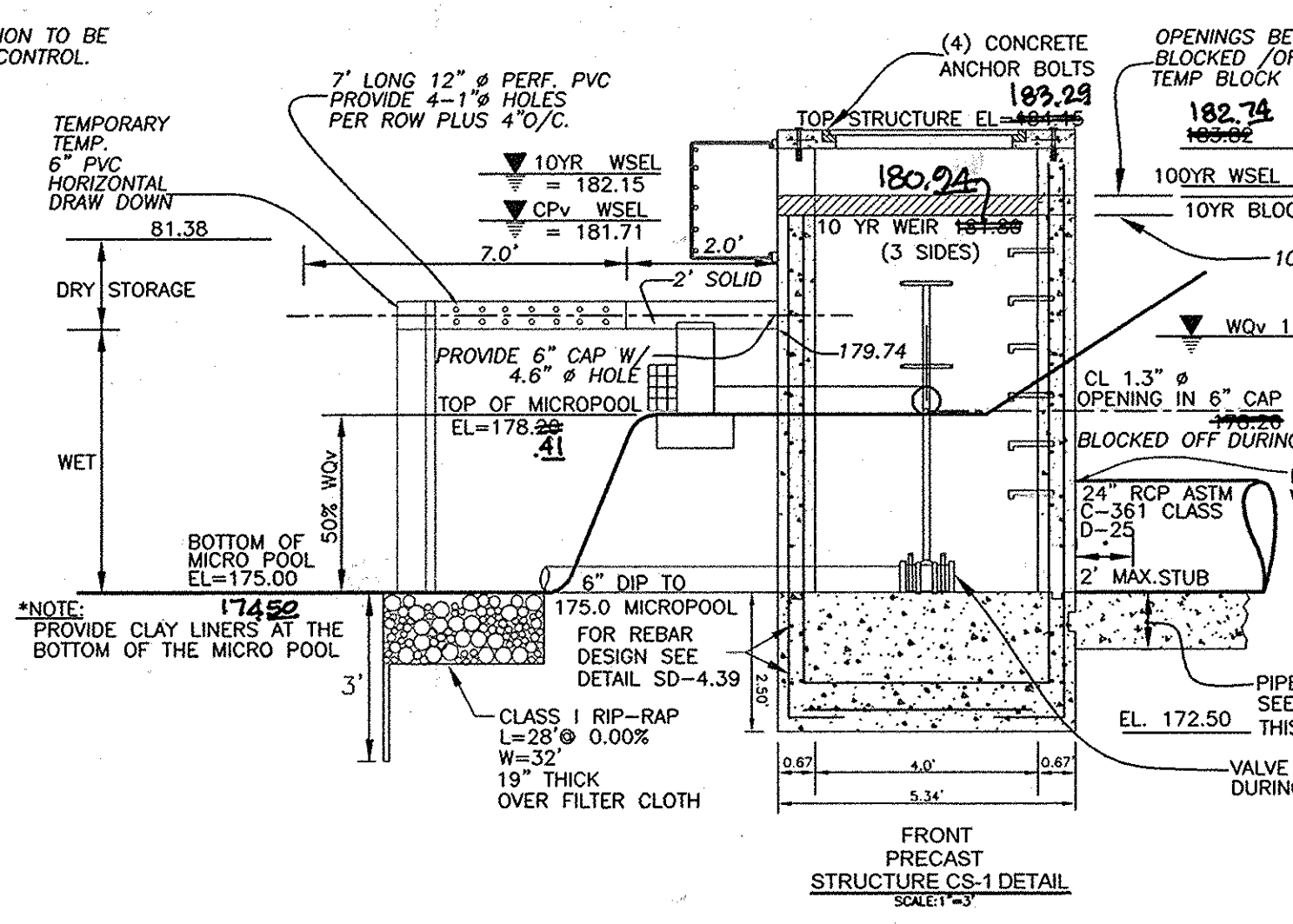
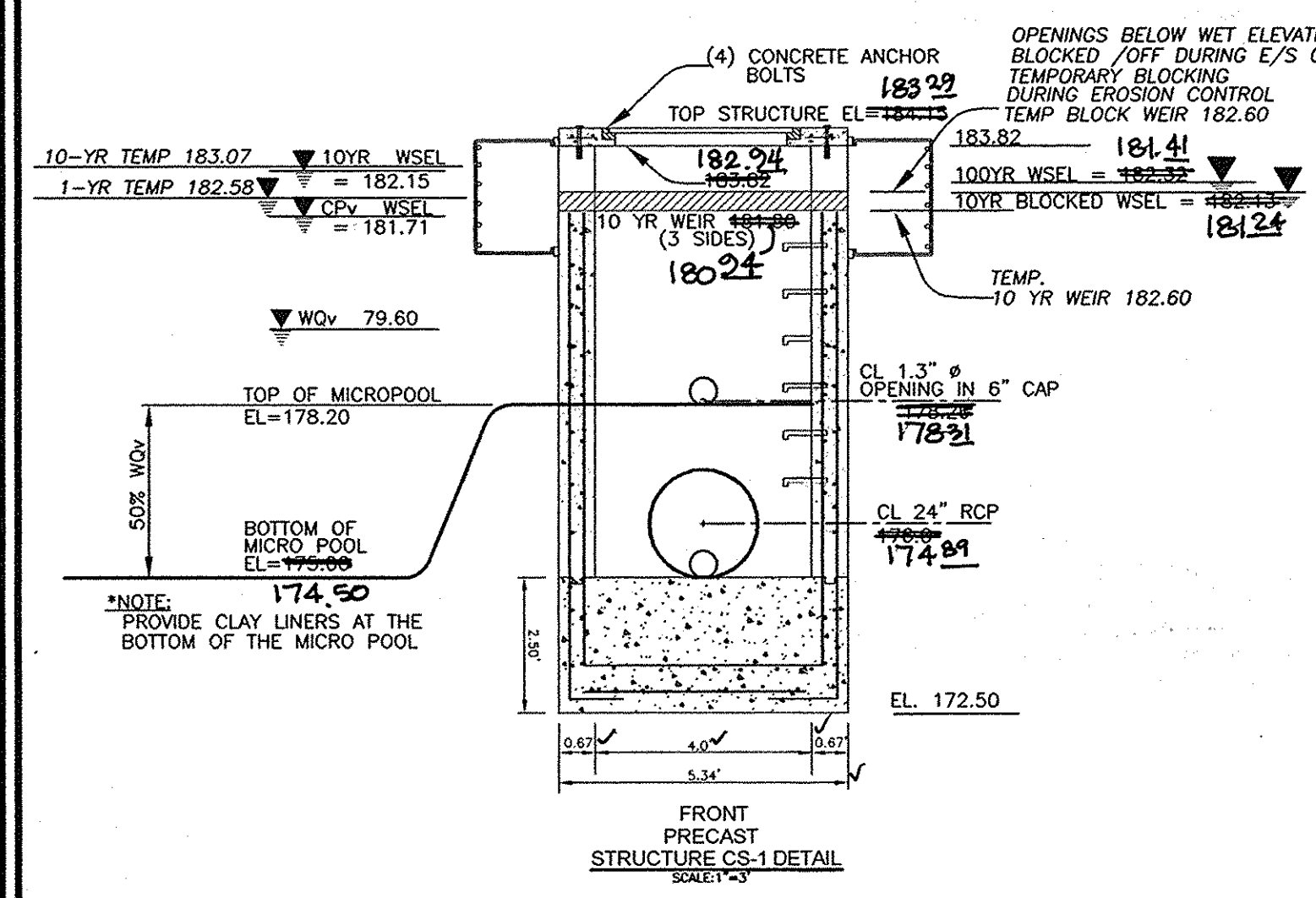
DESIGN BY: RHW/RJ
DRAWN BY: RJ
CHECKED BY: RHW
DATE: SEPTEMBER 2008
SCALE: AS SHOWN
W.O. NO.: 02-88.00

13 SHEET OF 27



AS-BUILT CERTIFICATION
 I hereby certify that the facility shown on this plan was constructed as shown on the "AS-BUILT" plan and meets the approved plans and specifications.
 Signature: [Signature]
 PE No: 1693
 Date: 7/23/15
 PROFESSIONAL ENGINEER

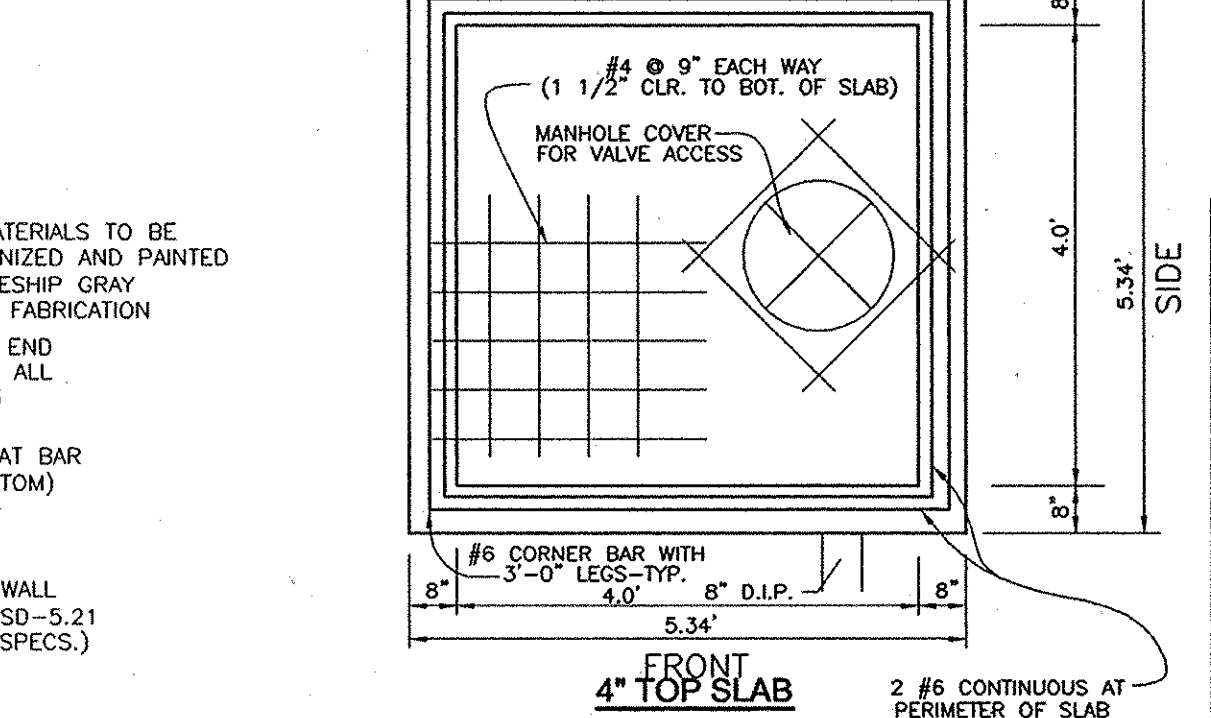
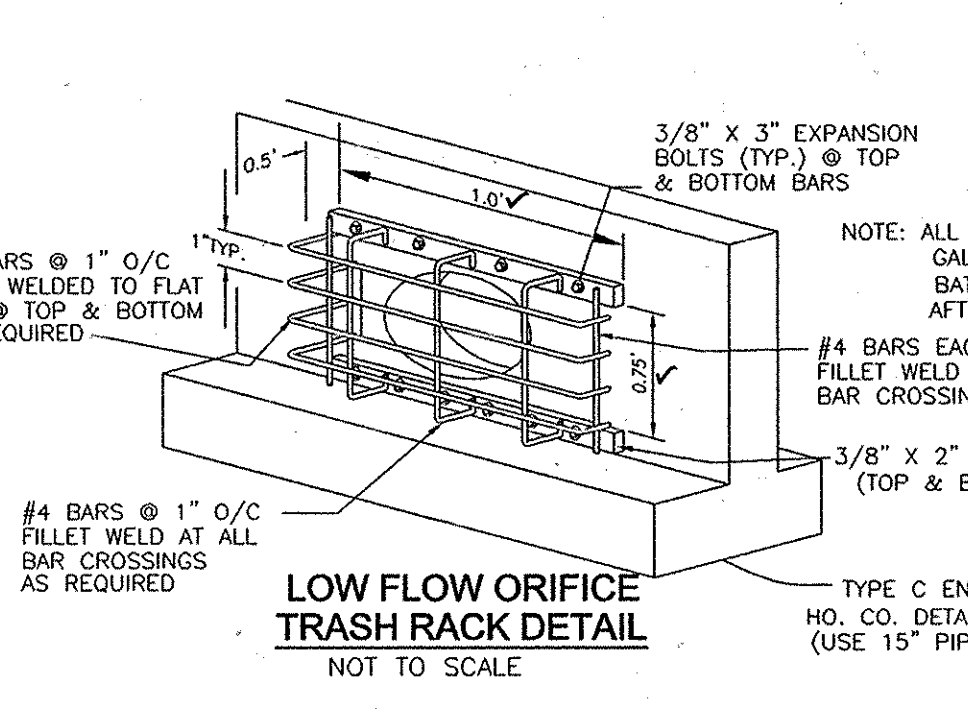
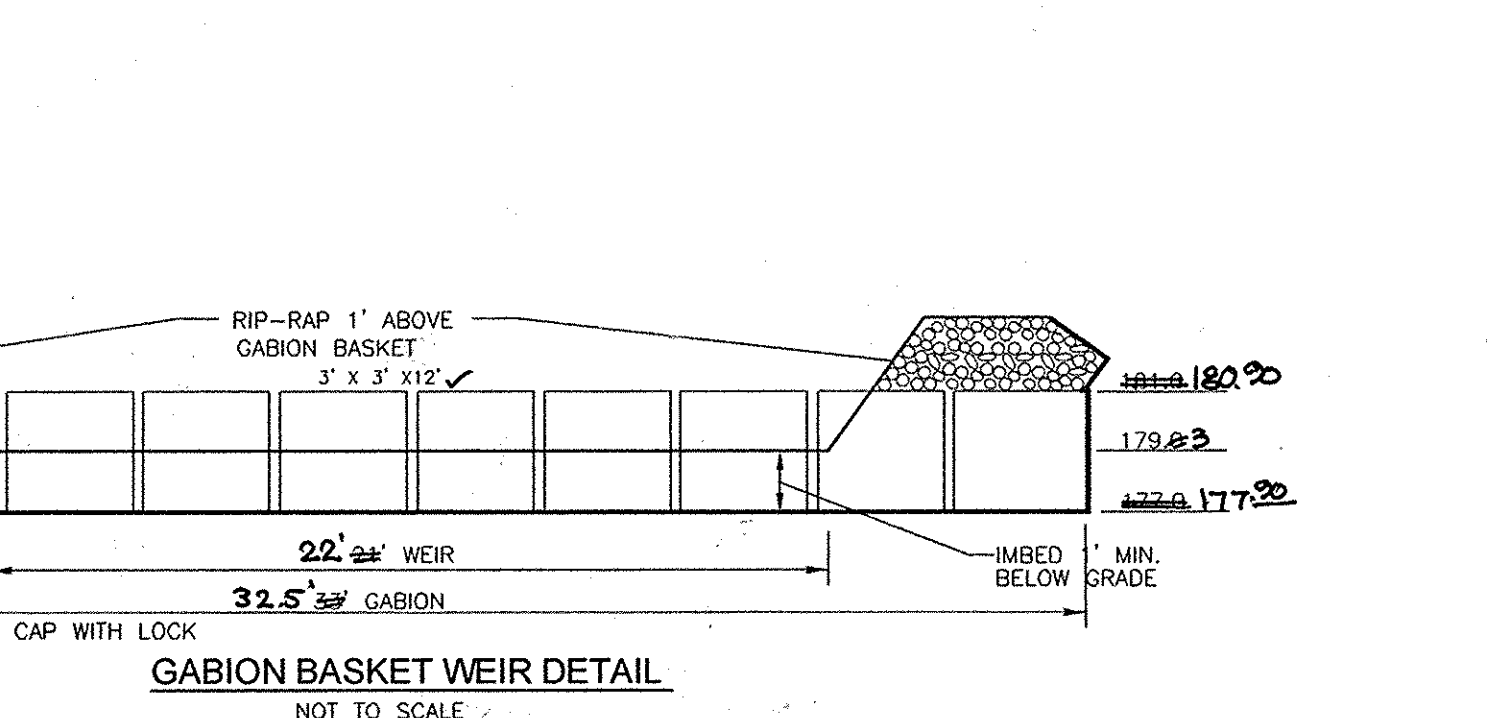
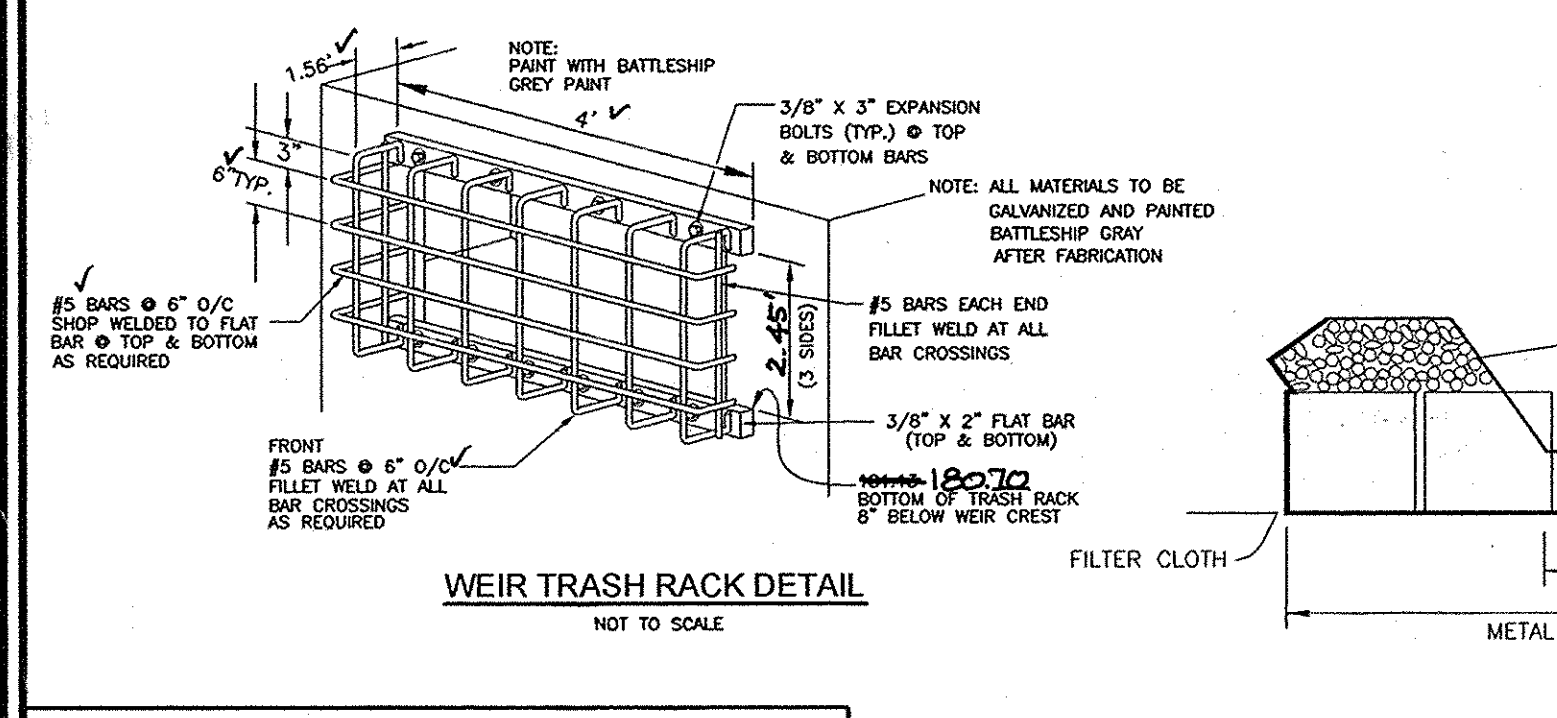
KEY	QUAN.	BOTANICAL NAME	SIZE	REMARKS
EM	85	Eupatorium maculatum Joe-Pye Weed	2' oc	plug
HS	45	Hosta Spp. Plantain Lily	2' oc	plug
HH	112	Hedera helix English Ivy	2' oc	plug
LM	55	Liriope muscari Blue Lily-turf	2' oc	plug
IV	24	Iris versicolor Blue Flag	2' oc	plug



LEGEND

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

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
 [Signature] 11-24-08
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 [Signature] 2/10/09
 CHIEF, DIVISION OF LAND DEVELOPMENT

[Signature] 1/25/09
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

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

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 AN "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 PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. 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

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

ADD STORMWATER MANAGEMENT EASEMENT AND REVISE GRADING ON OPEN SPACE LOT 54
 NO. [] REVISION [] DATE []

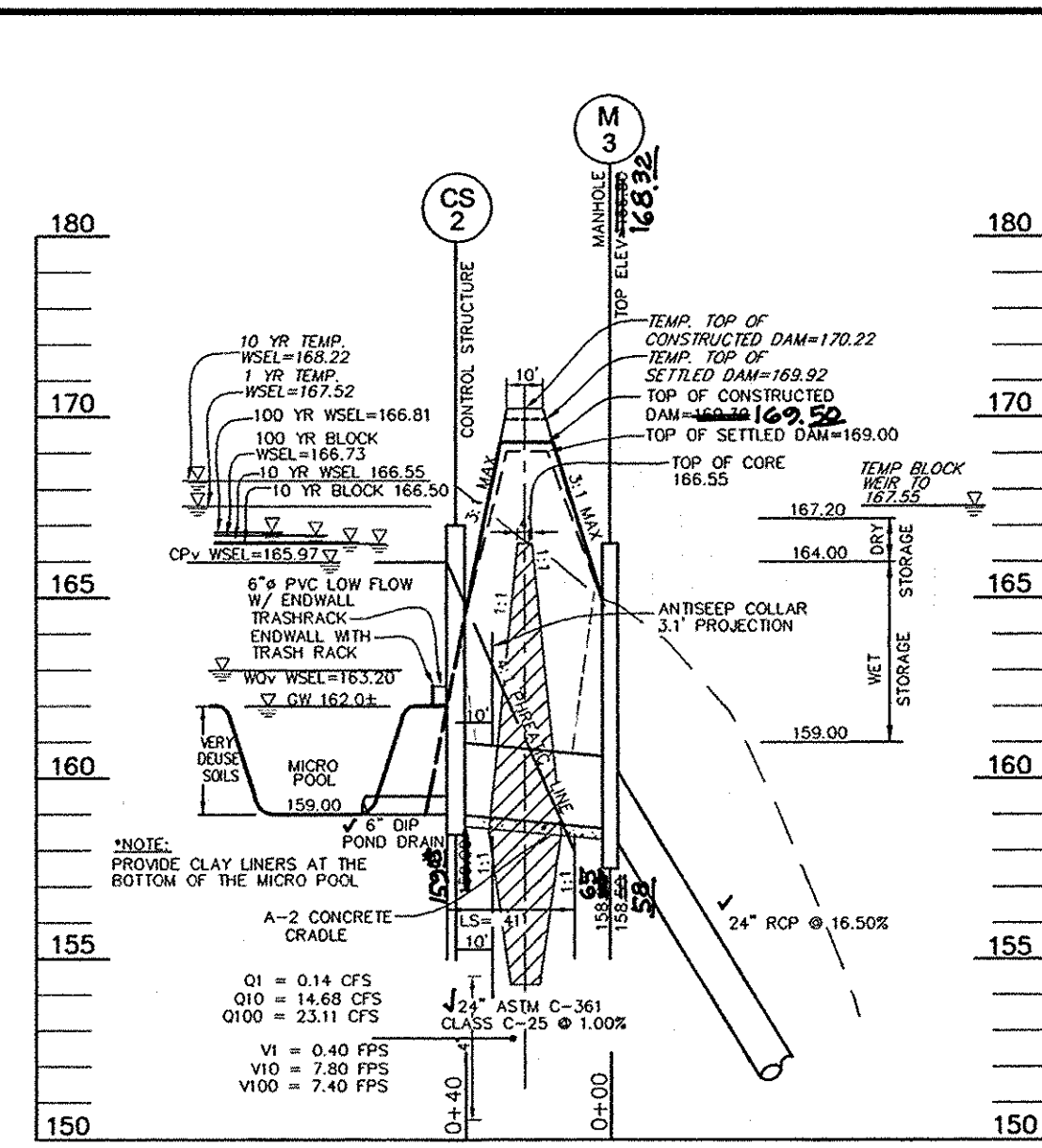
FINAL ROAD CONSTRUCTION PLAN
STORMWATER MANAGEMENT DETAILS - POND-1
CLAREMONT OVERLOOK
 LOTS 1-6, OPEN SPACE LOTS 50-57
 AND NON-BUILDABLE BULK PARCELS A-I

TAX MAP 32 GRID 21 PARCELS 632 AND 24
 19th ELECTION DISTRICT HOWARD COUNTY, MARYLAND

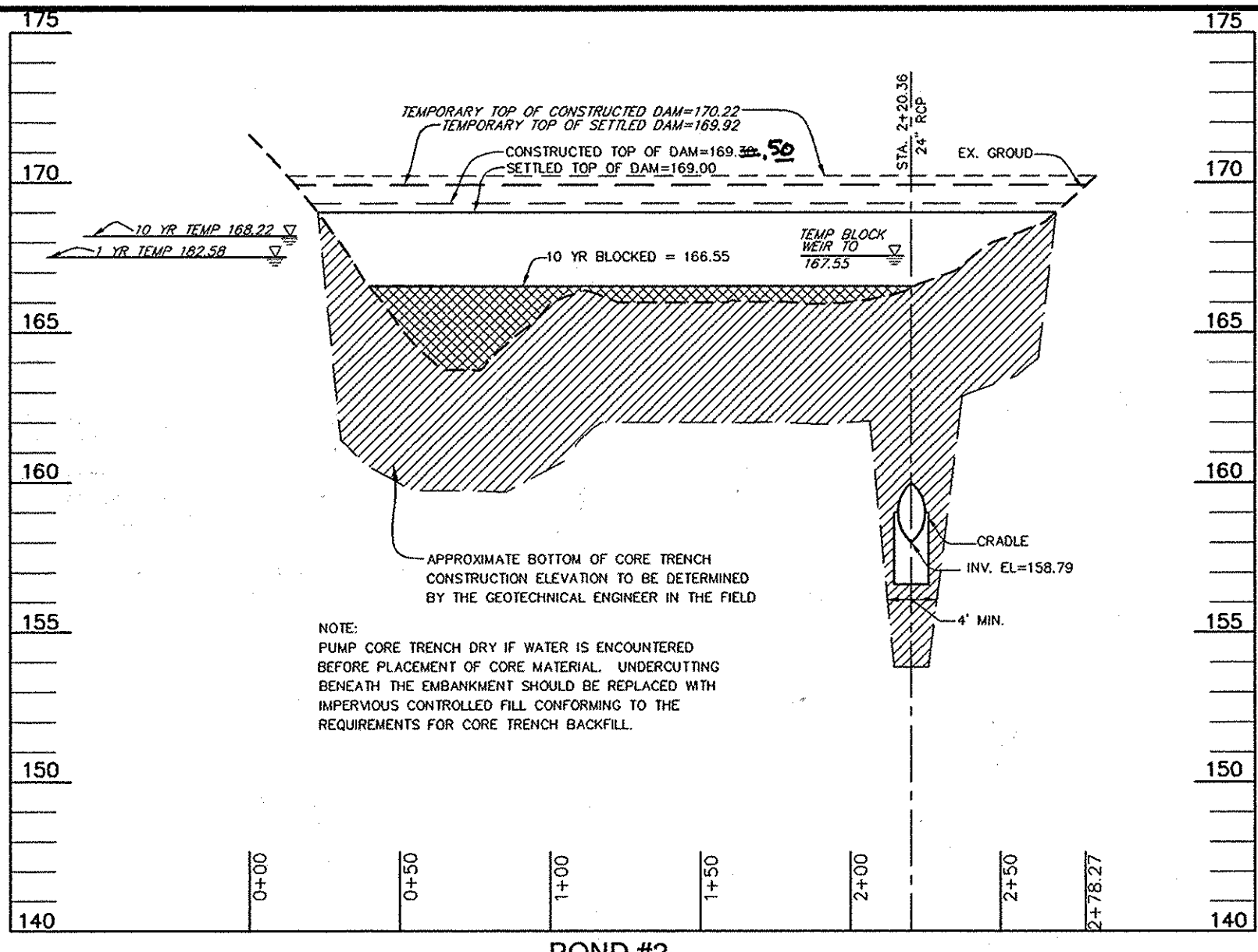
ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 8407 MAIN STREET TEL: 410.461.7666
 ELLICOTT CITY, MD 21043 FAX: 410.461.8961

DESIGN BY: RHV/RJ
 DRAWN BY: RJ
 CHECKED BY: RHV
 DATE: SEPTEMBER 2008
 SCALE: AS SHOWN
 W.O. NO.: 02-88.00

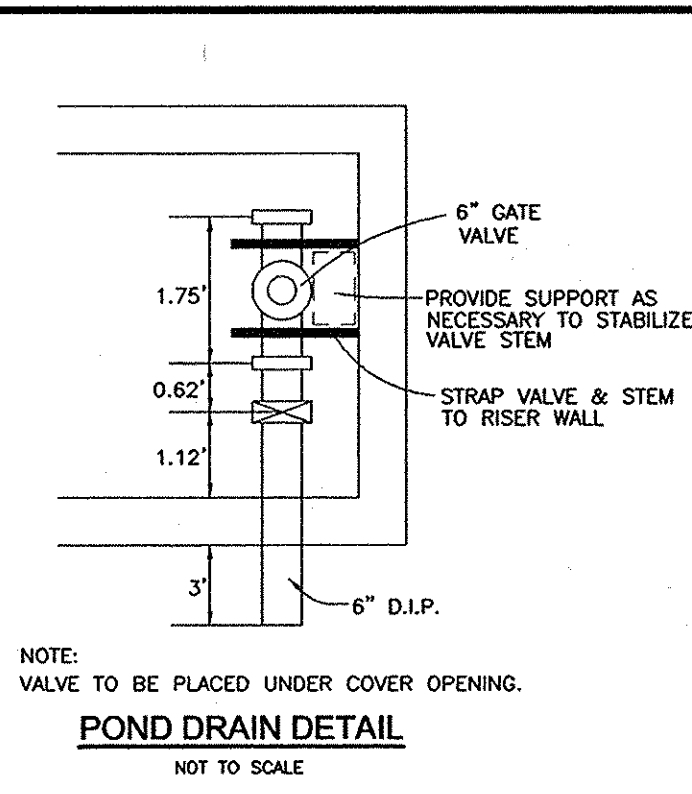
14 SHEET OF 27



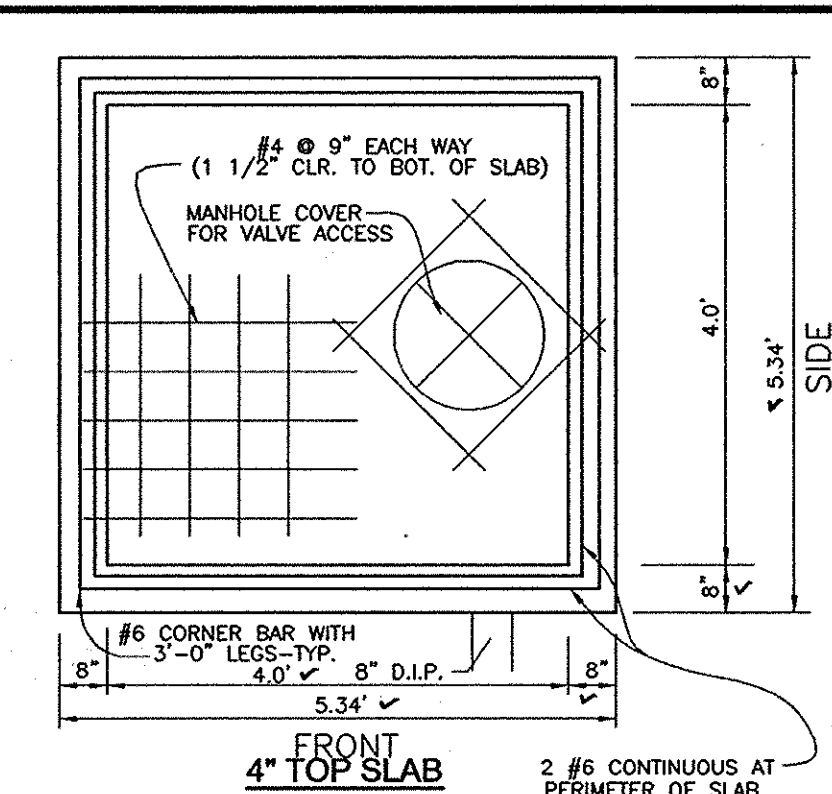
POND #2 SECTION THROUGH PRINCIPAL SPILLWAY
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



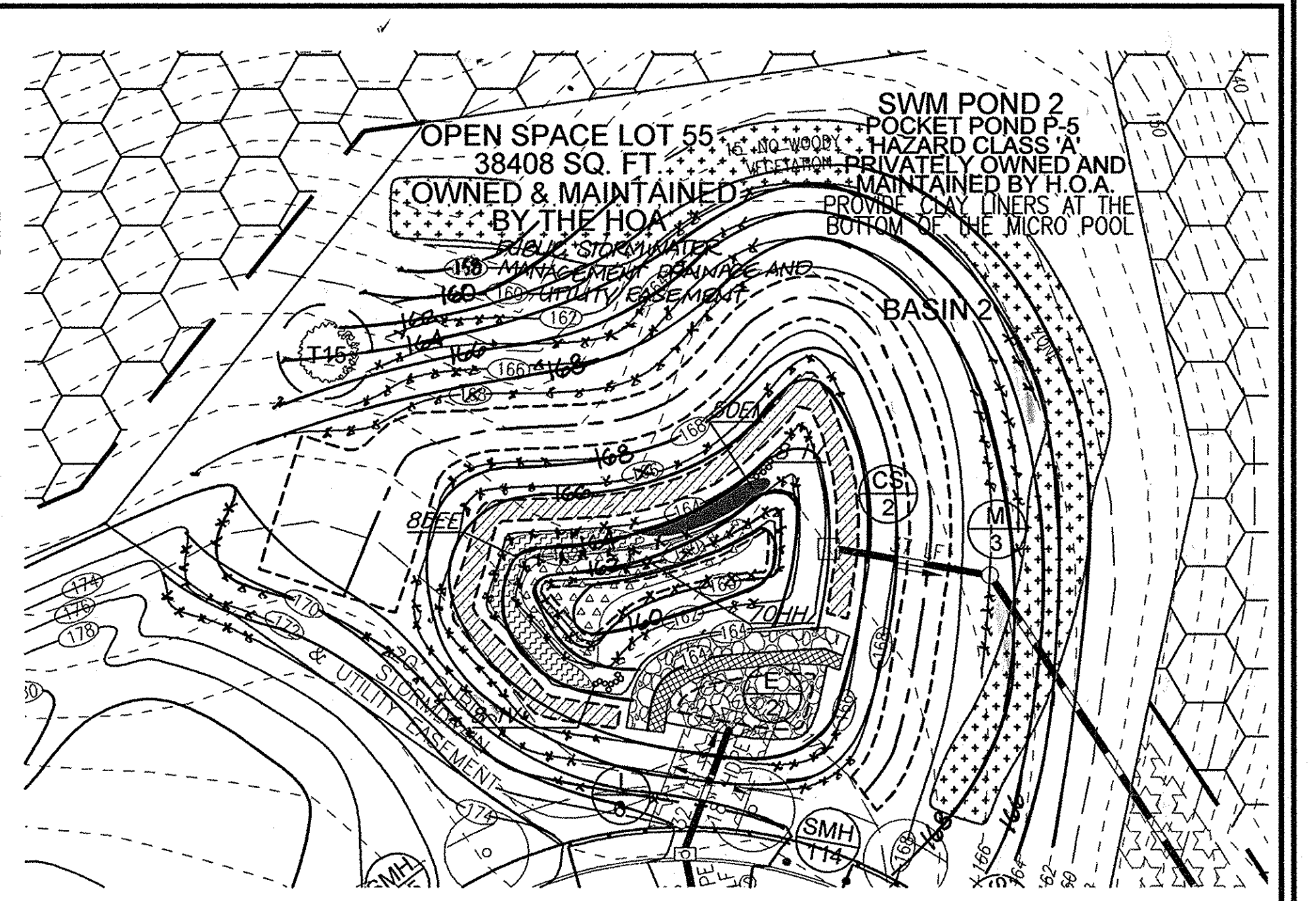
POND #2 PROFILE ALONG CENTERLINE EMBANKMENT
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



POND DRAIN DETAIL
NOT TO SCALE



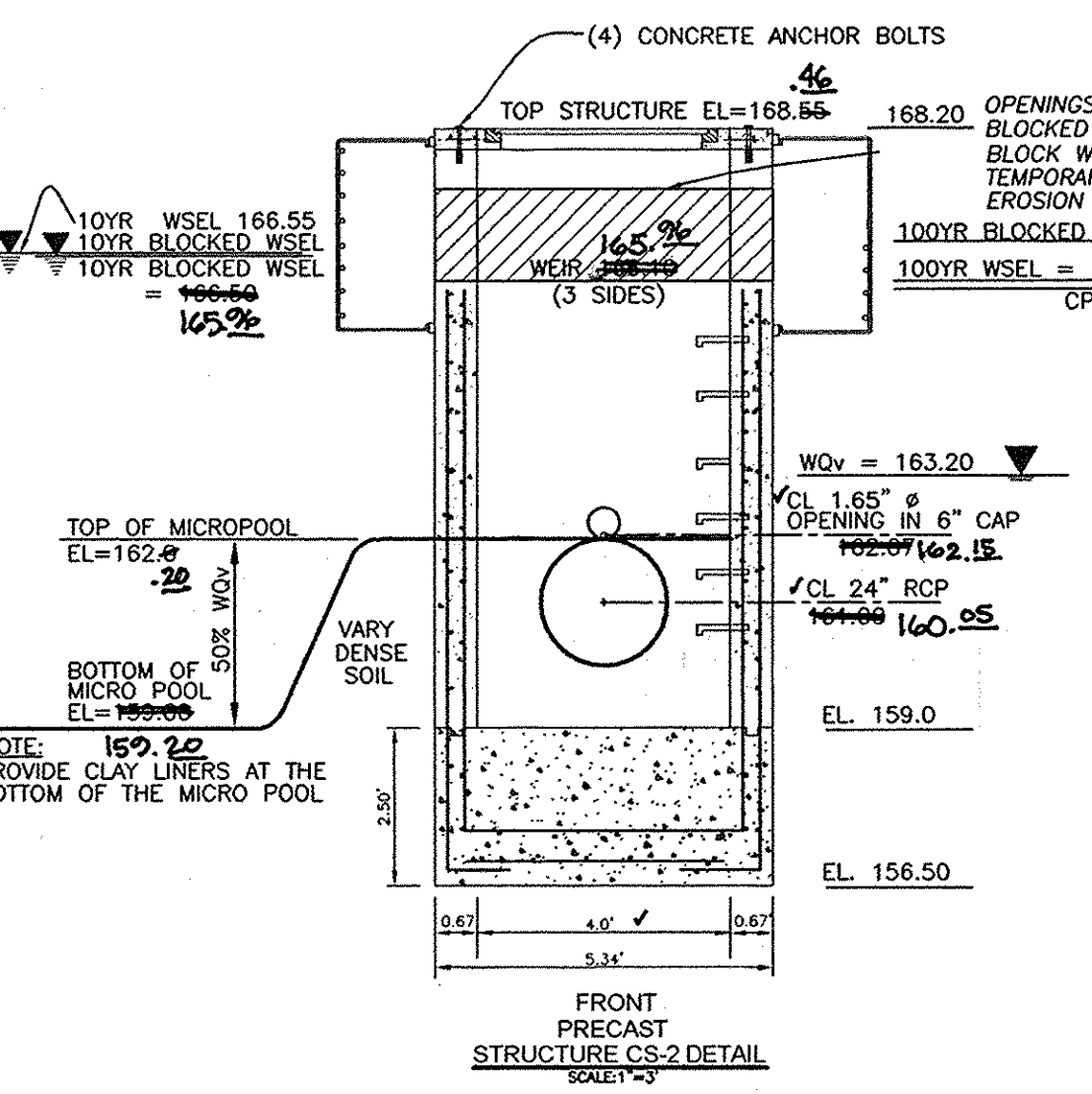
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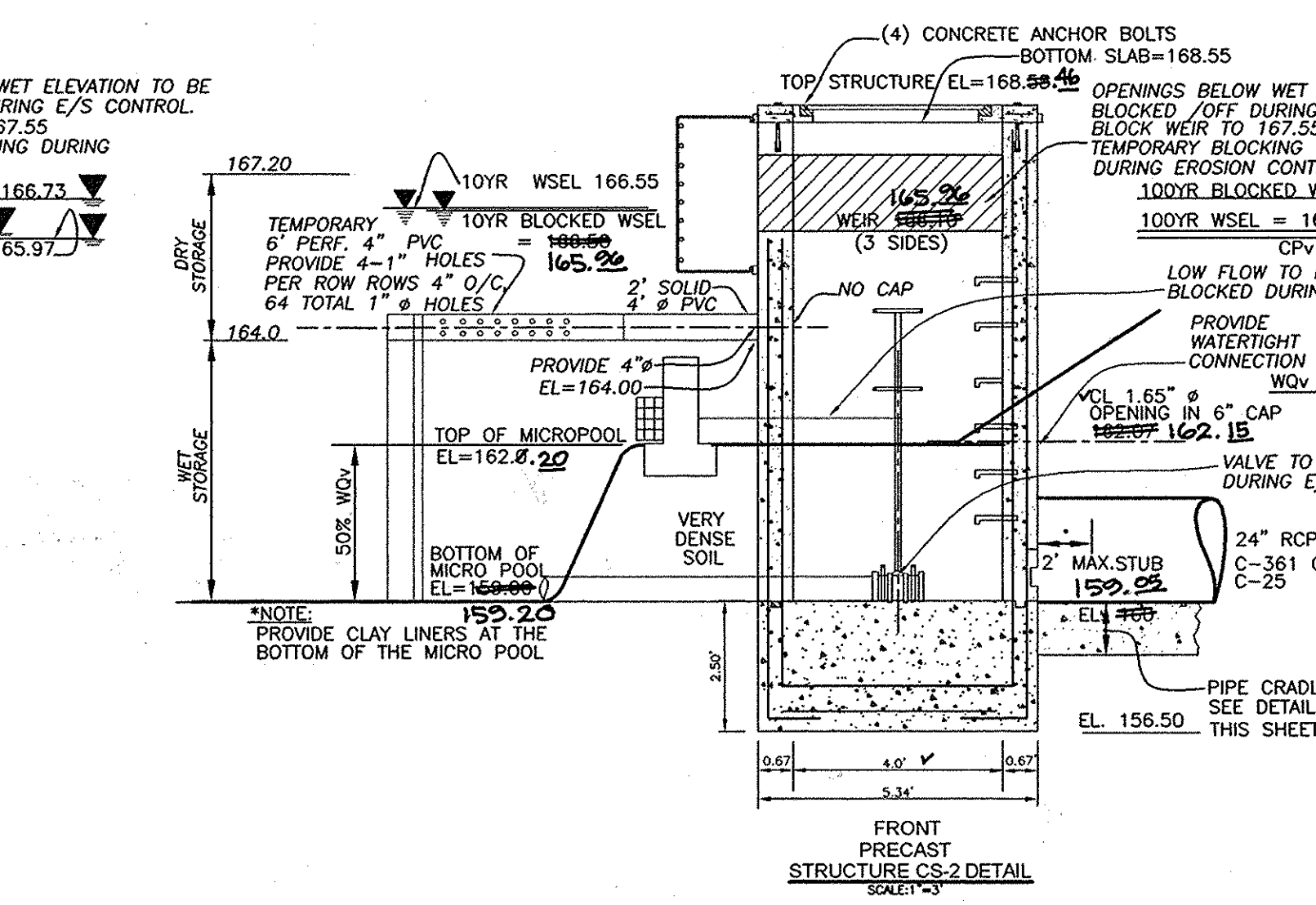
POND #2

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

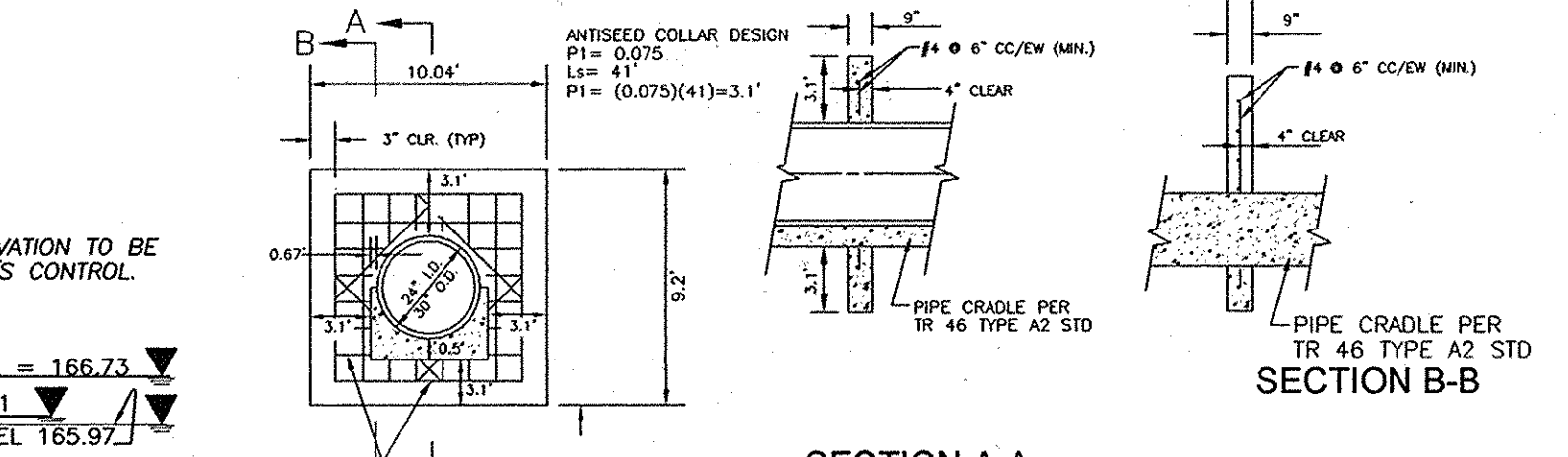
REMOVE Baffle boards PRIOR TO INSTALLATION OF PLANT MATERIALS. ADD THREE INCHES OF TOPSOIL TO PLANTING AREA. STABILIZE WITH 40 POUNDS PER ACRE OF A HYDROSEED MIX (WET MIX AND MEADOW MIX) FROM SYLVIA NATIVE NURSERY OR EQUAL. ALL PLANT MATERIALS TO CONFORM TO THE MOST CURRENT AAN SPECIFICATIONS AND BE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



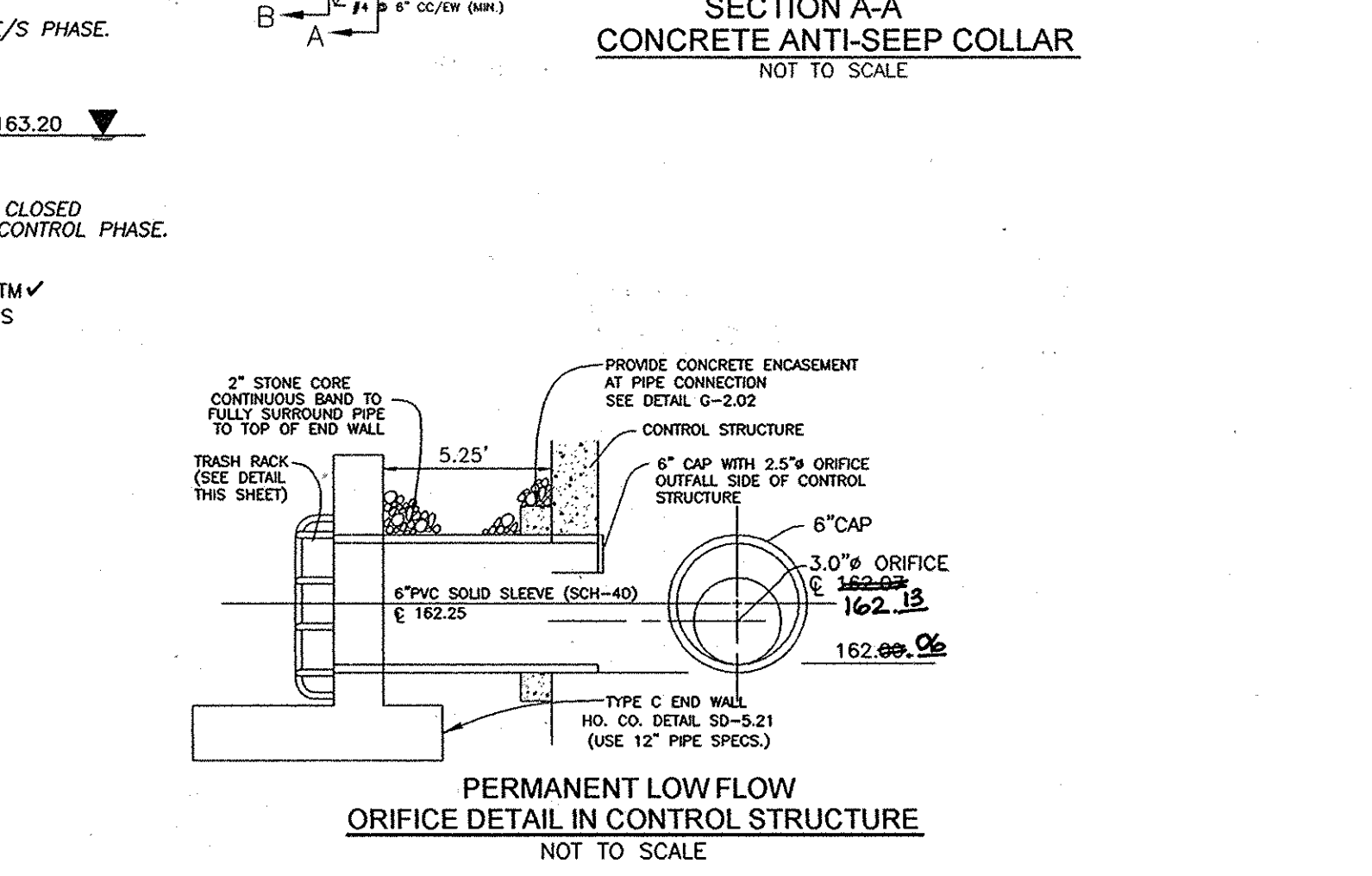
FRONT PRECAST STRUCTURE CS-2 DETAIL
SCALE: 1/4\"/>



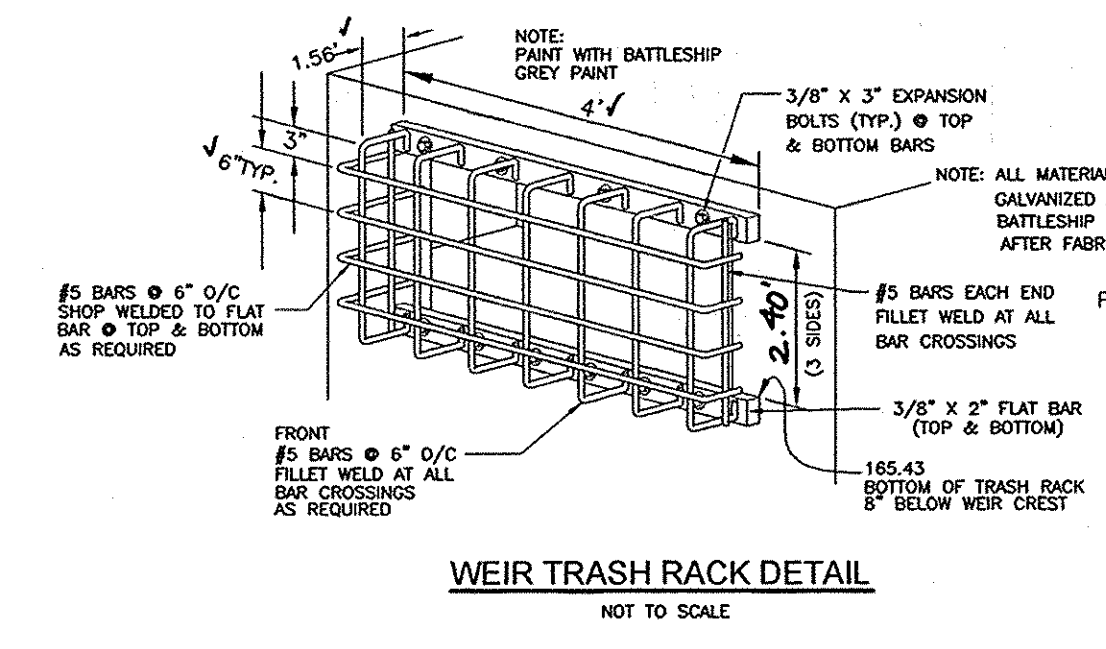
FRONT PRECAST STRUCTURE CS-2 DETAIL
SCALE: 1/4\"/>



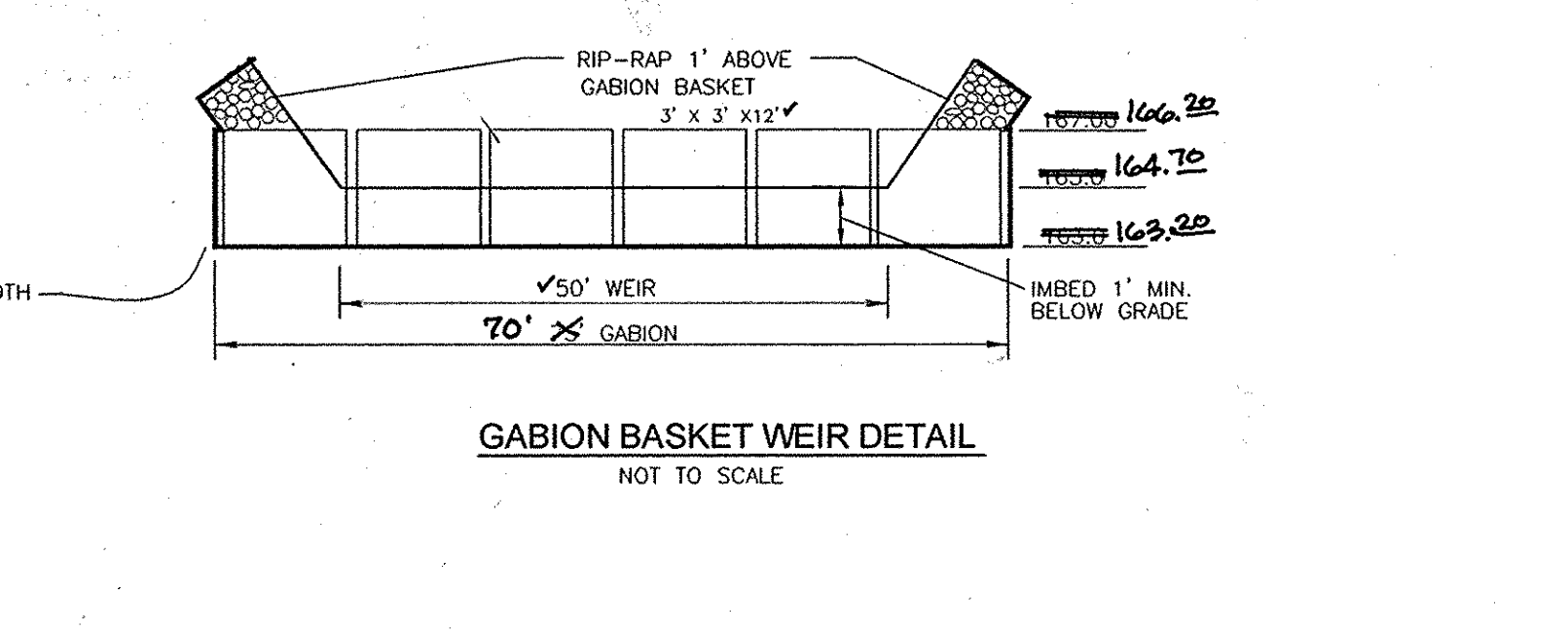
SECTION A-A CONCRETE ANTI-SEEP COLLAR
NOT TO SCALE



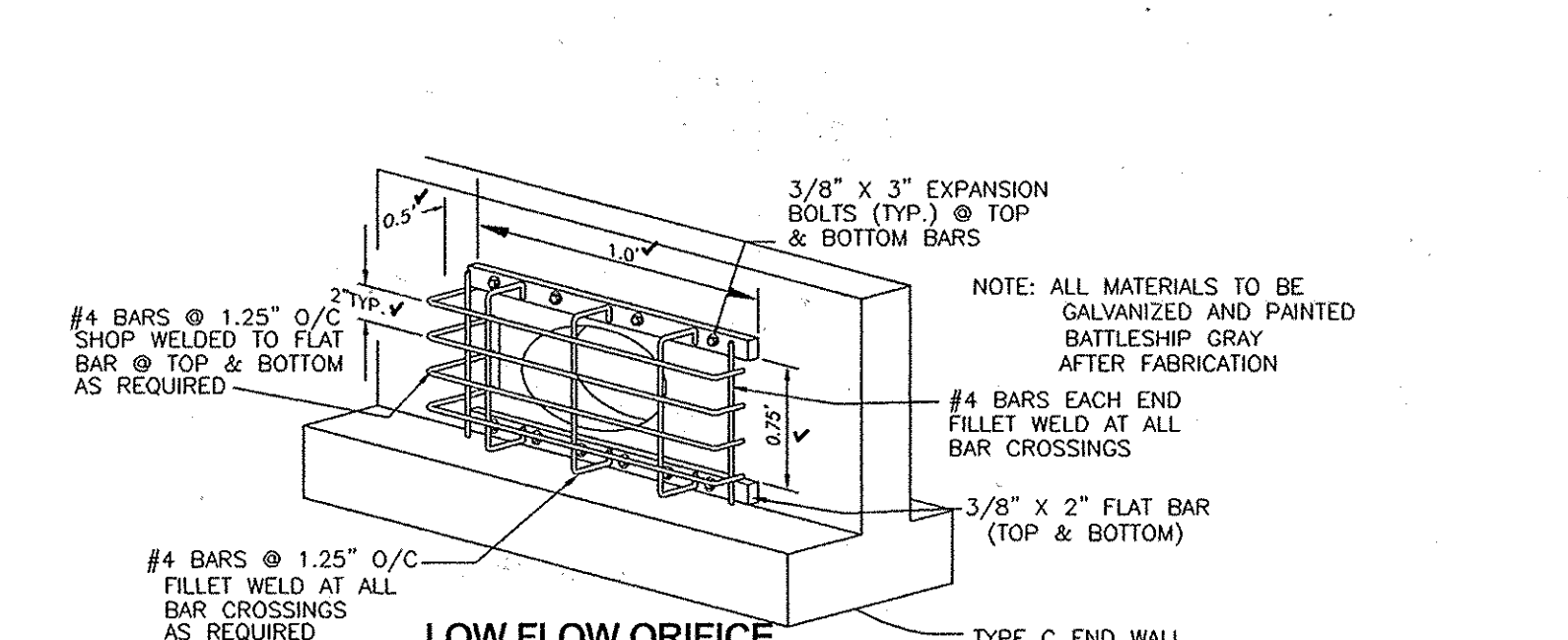
PERMANENT LOW FLOW ORIFICE DETAIL IN CONTROL STRUCTURE
NOT TO SCALE



WEIR TRASH RACK DETAIL
NOT TO SCALE



GABION BASKET WEIR DETAIL
NOT TO SCALE



LOW FLOW ORIFICE TRASH RACK DETAIL
NOT TO SCALE

LEGEND

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

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 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 TEL: 410.461.7666
ELICOTT CITY, MD 21043 FAX: 410.461.8961

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

15 SHEET OF 27

APPROVED: DEPARTMENT OF PUBLIC WORKS
William F. ... 11-24-08
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
... 2/10/09
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

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

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

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 AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

Signature: *...* 10/24/2009
DATE

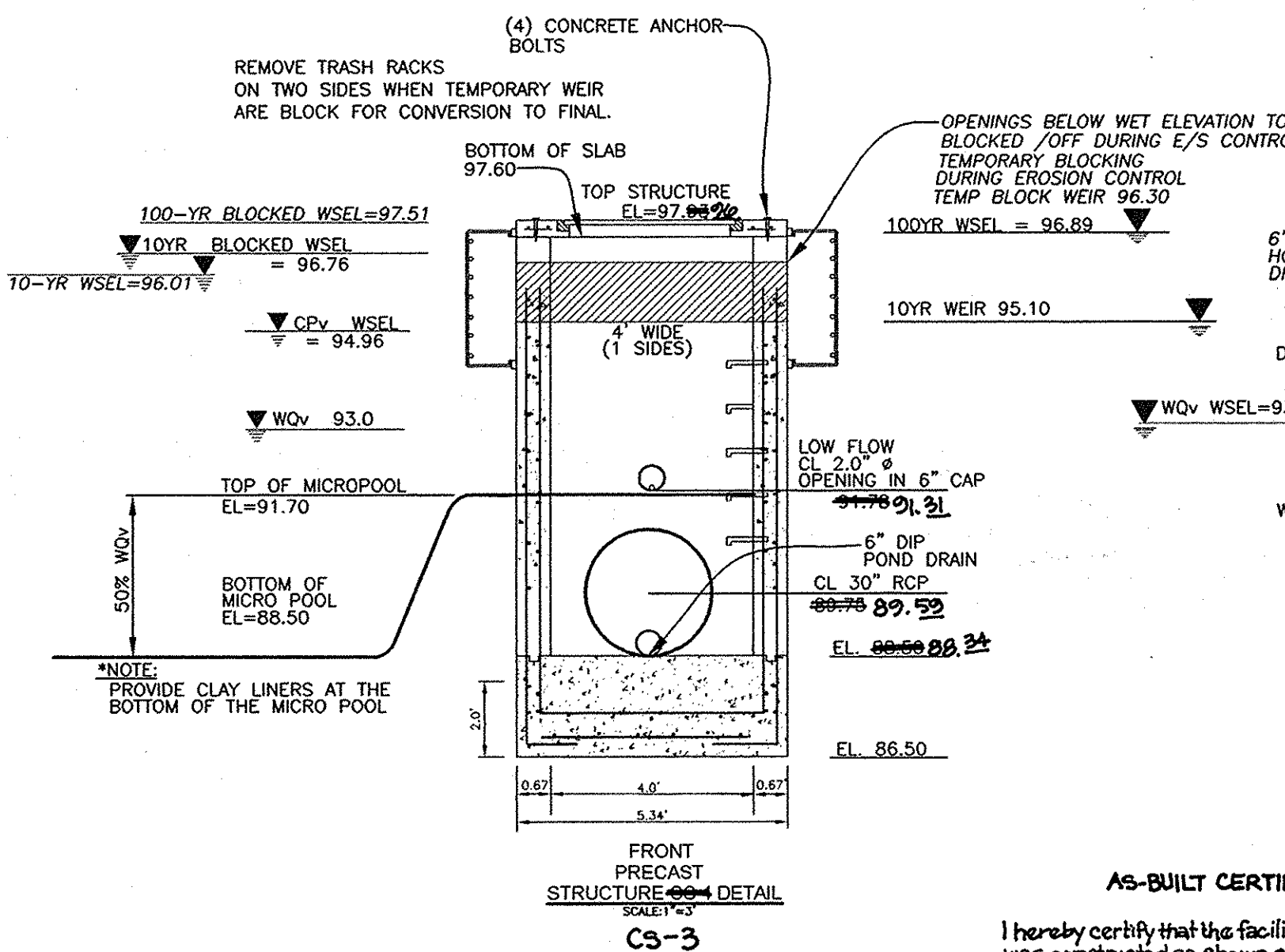
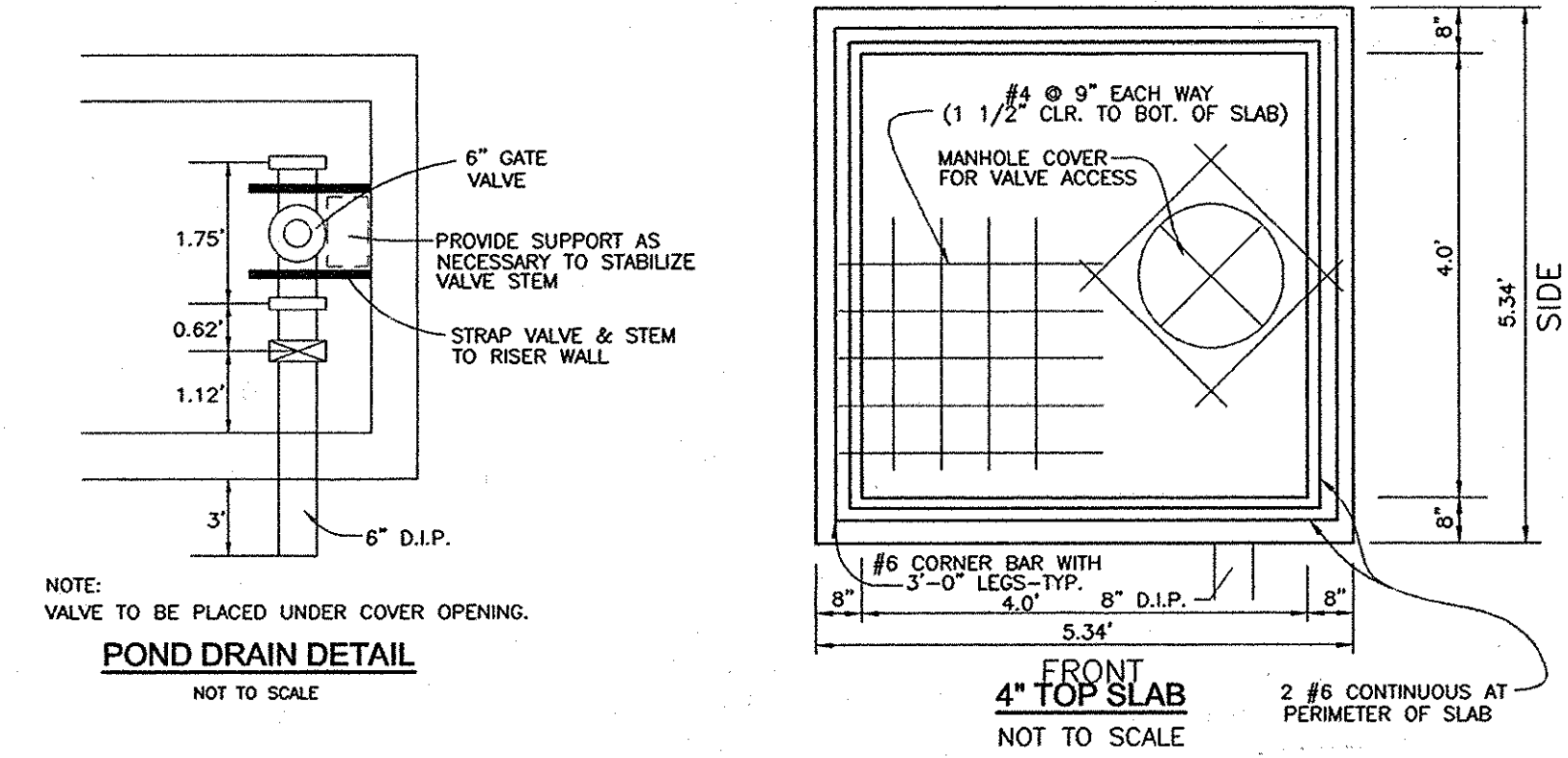
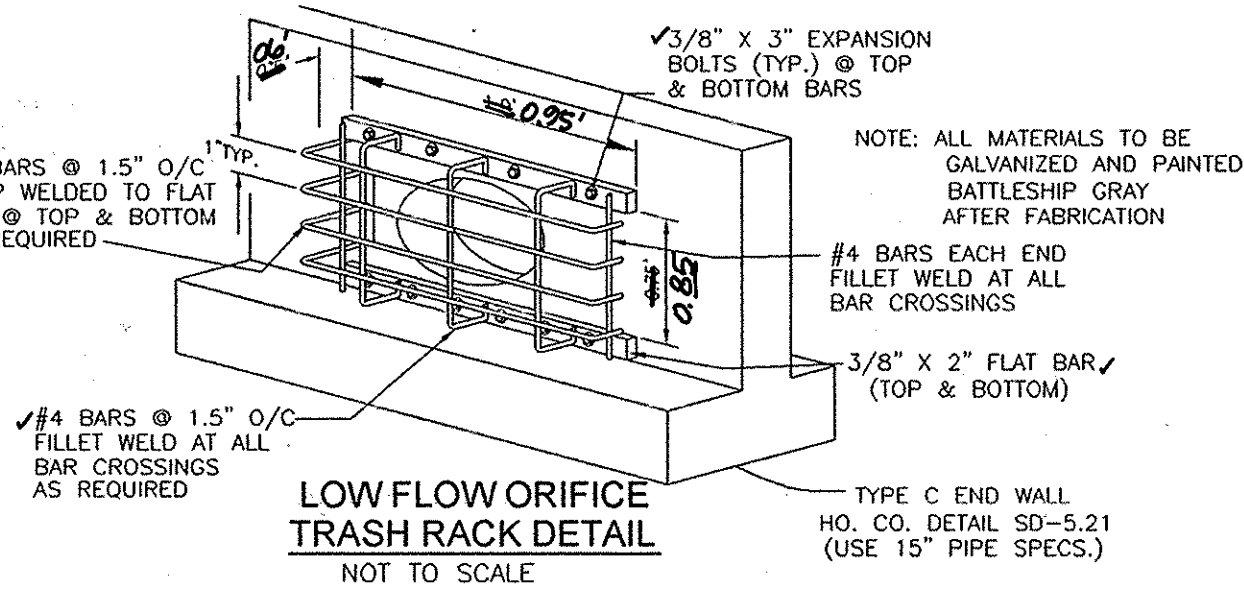
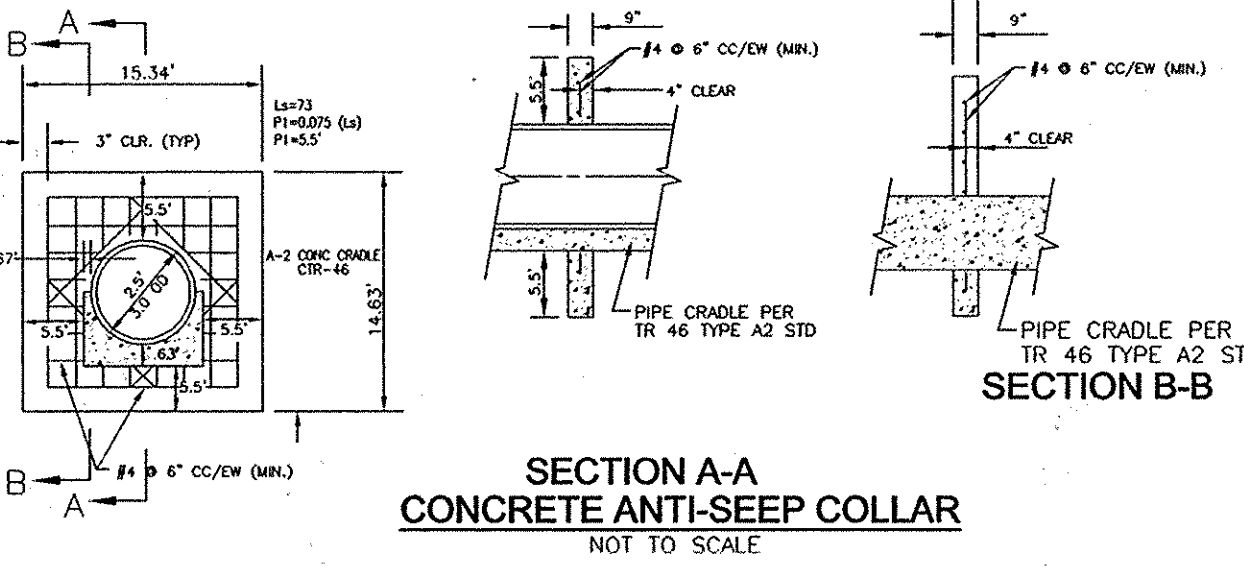
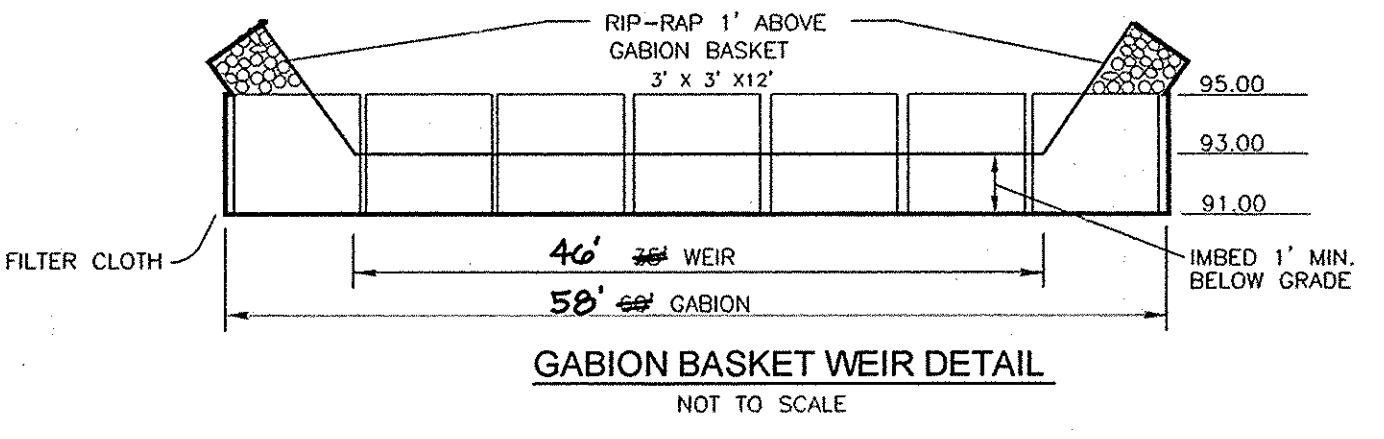
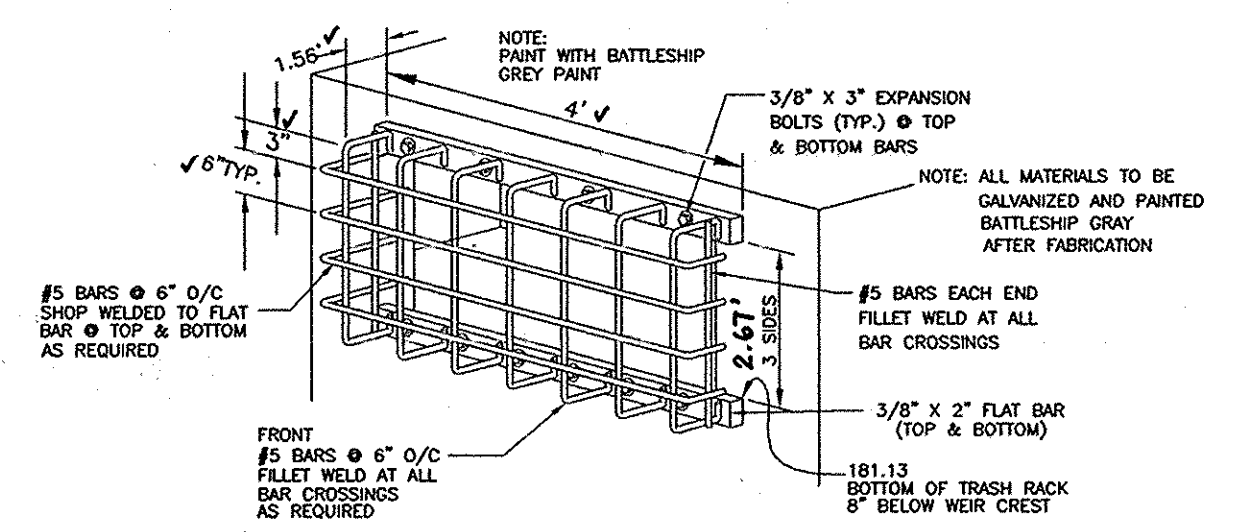
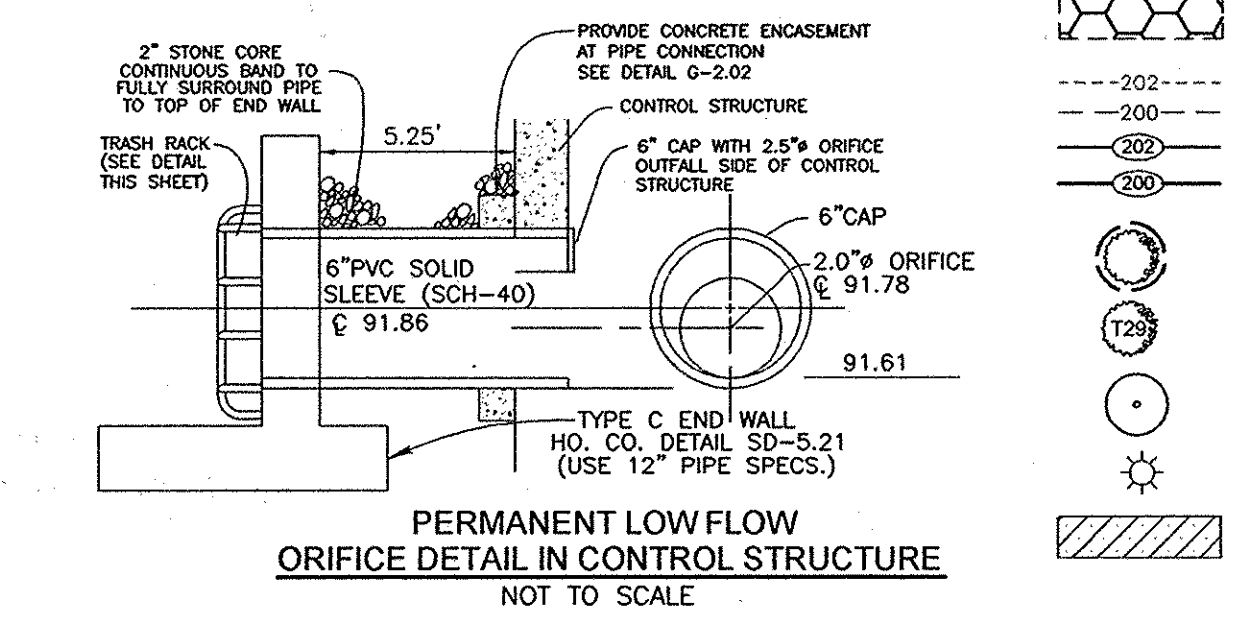
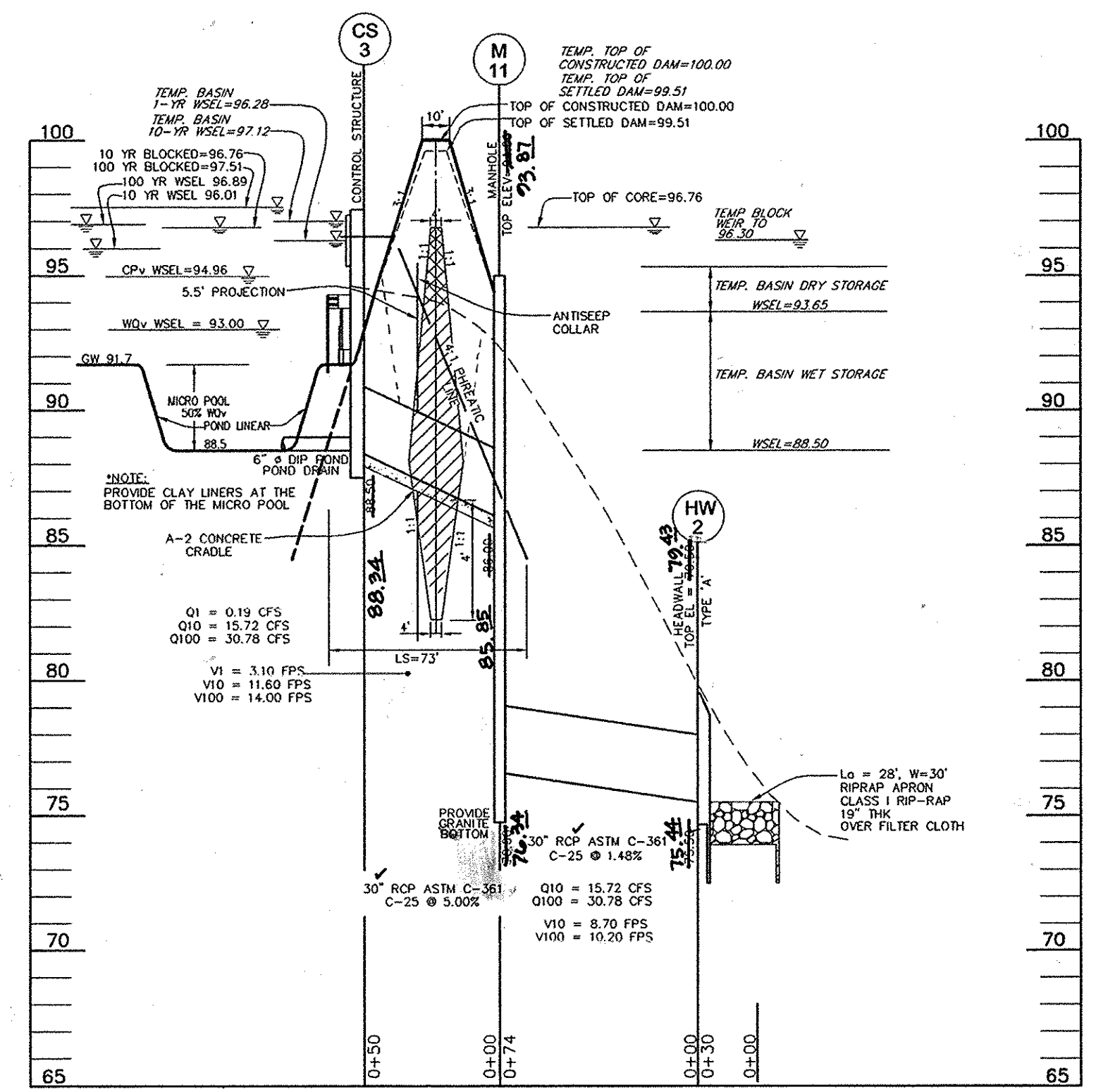
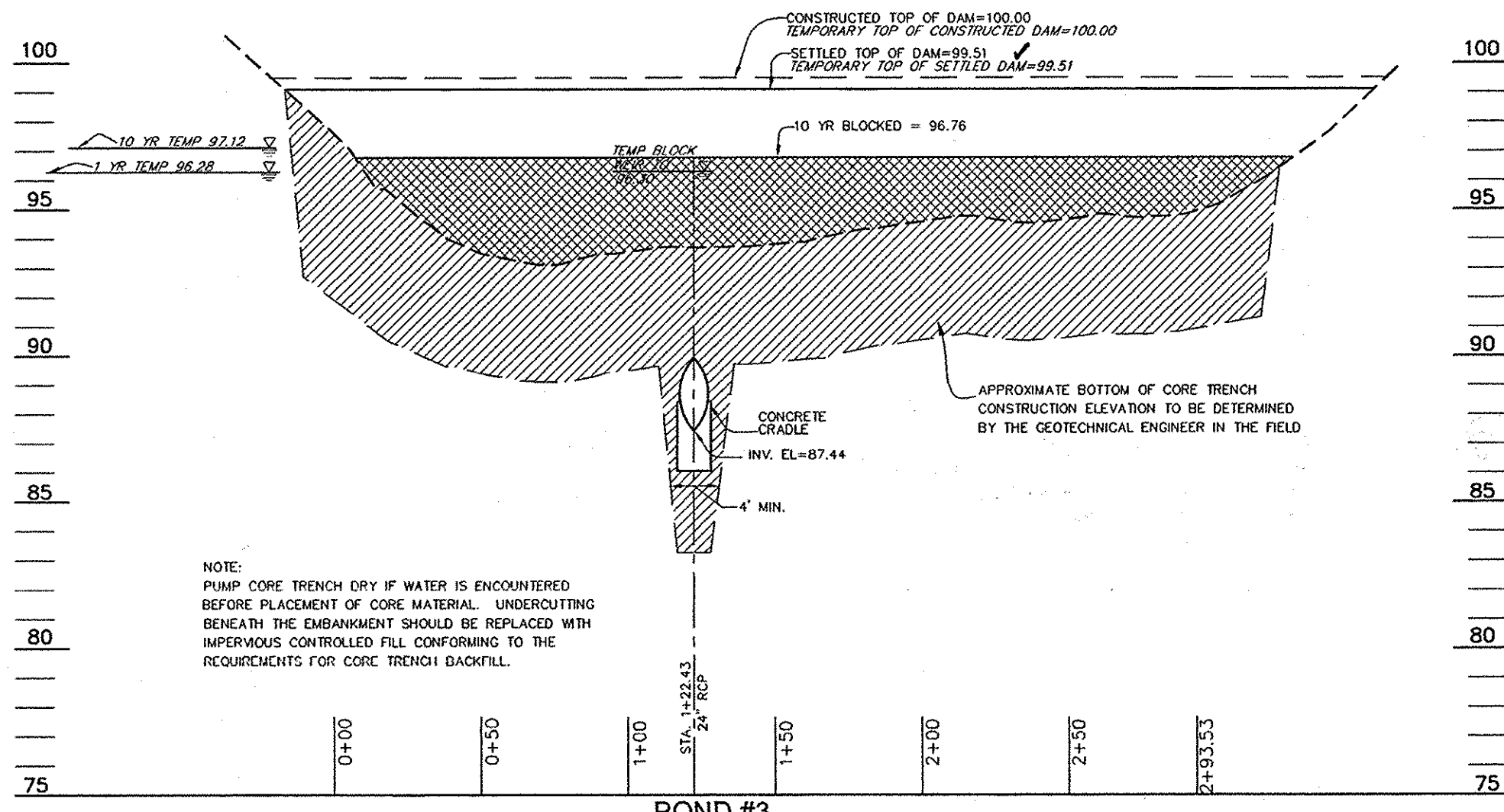
ENGINEER'S CERTIFICATE

"I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION AND SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. 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: *...* 9/23/08
DATE

OWNER/DEVELOPER

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



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

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 2/1/09
 CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 1/25/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

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
 11/5/08

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: [Signature]
 PE No: LC193
 Date: 1/25/08

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 AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

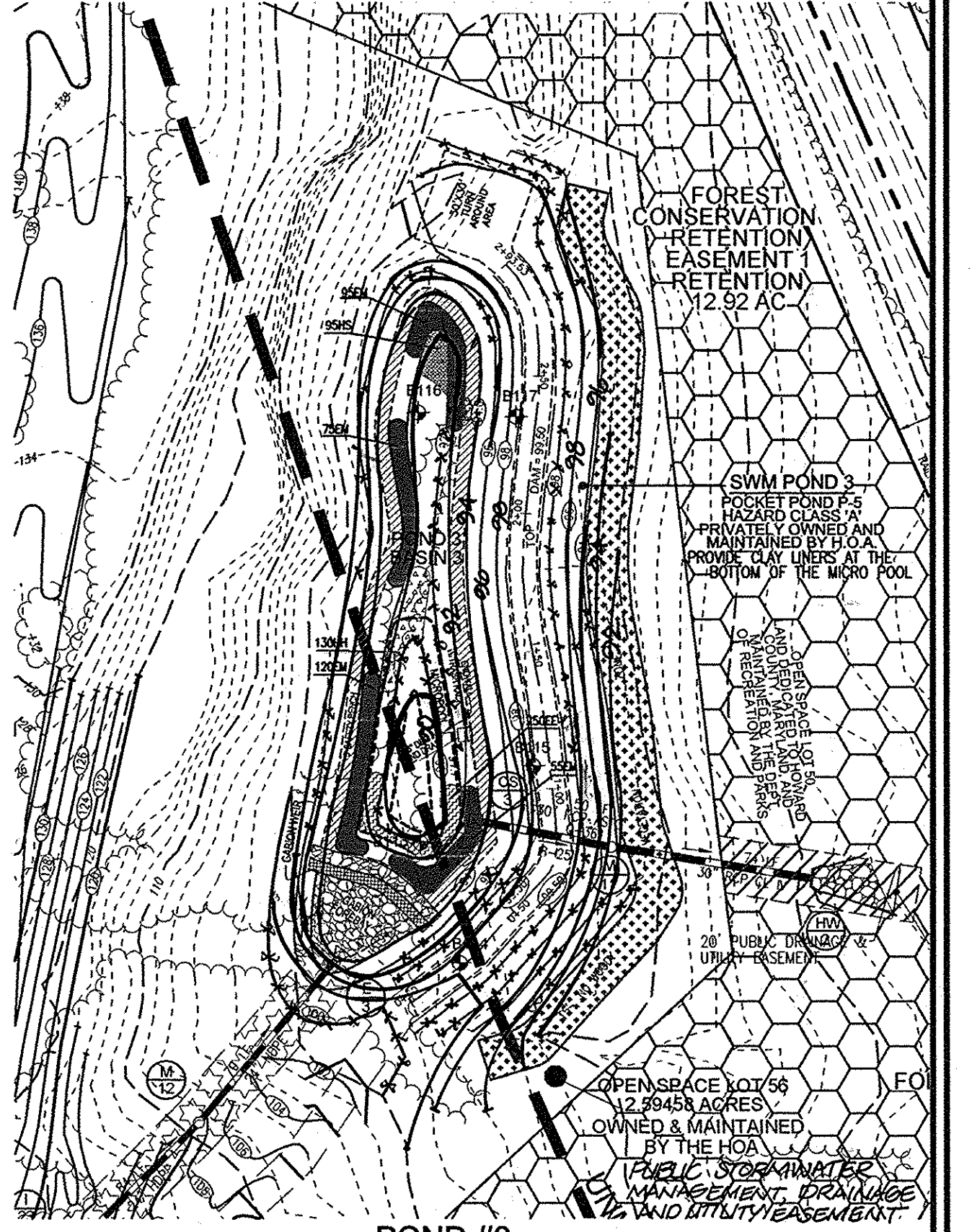
Signature of Developer: [Signature]
 10/24/2008

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

Signature of Engineer: [Signature]
 10/24/08

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



STORMWATER POND HERBACEOUS LANDSCAPE SCHEDULE

KEY	QUAN.	BOTANICAL NAME	SIZE	REMARKS
EM	345	Eupatorium maculatum	2' oc	plug
HS	95	Hosto 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 SYLVIA NATIVE NURSERY OR EQUAL. ALL PLANT MATERIALS TO CONFORM TO THE MOST CURRENT AAN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH LCAMW SPECIFICATIONS.

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

ADD STORMWATER MANAGEMENT EASEMENT AND REVISE 12/10/09
 GRADING ON OPEN SPACE LOT 54

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
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16 SHEET OF 27

**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 50% PASSING THE #200 SIEVE. CONSIDERATION MAY BE GIVEN TO THE USE OF OTHER MATERIALS IN THE EMBANKMENT IF SPECIFIED BY A GEOTECHNICAL ENGINEER. SUCH SPECIAL SPECIFICATIONS 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.

COMPACTMENT 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 TO BE CERTIFIED BY THE ENGINEER AT THE TIME OF CONSTRUCTION. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T-99 (STANDARD PROCTOR).

CUT OFF TRENCH 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 COVERED 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. IN ADDITION, THE CORE SHALL BE PLACED CURRENTLY WITH THE OUTER SHELL OF THE OUTER SHELL OF THE EMBANKMENT.

EMBANKMENT CORNER 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 OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A CONCRETE STRUCTURE OR PIPE, UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE.

STRUCTURE BACKFILL MAY BE FLOWABLE FILL MEETING THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 313 AS MODIFIED. THE MIXTURE SHALL HAVE A 100-200 PSI, 28 DAY UNCONFINED COMPRESSIVE STRENGTH. THE FLOWABLE FILL SHALL HAVE A MINIMUM PH OF 4.0 AND A MINIMUM RESISTIVITY OF 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 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 LEAST 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 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 5/8 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 PIPE THE FOLLOWING CRITERIA SHALL APPLY FOR PLASTIC PIPE:

1. MATERIALS - PVC PIPE SHALL BE PVC-1120 OR PVC-1220 CONFORMING TO ASTM D-1785, OR ASTM D-2241. CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) PIPE, COUPLINGS AND FITTINGS SHALL CONFORM TO THE FOLLOWING: 4"-10" INCH PIPE SHALL MEET THE REQUIREMENTS OF AASHTO M252 TYPE S, AND 12" THROUGH 24" INCH SHALL MEET THE REQUIREMENTS OF AASHTO M294 TYPE S.

2. JOINTS AND CONNECTIONS TO ANTI-SEEP COLLARS SHALL BE COMPLETELY WATERTIGHT.
3. BEDDING - THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.

4. BACKFILLING SHALL CONFORM TO STRUCTURE BACKFILL.
5. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

DRAINAGE DIAPHRAGMS - WHEN A DRAINAGE DIAPHRAGM IS USED, A REGISTERED PROFESSIONAL ENGINEER WILL SUPERVISE THE DESIGN AND CONSTRUCTION INSPECTION.

CONCRETE
CONCRETE SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 414, MIX NO. 3.

ROCK RIPRAP
ROCK RIPRAP SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION MATERIALS, SECTION 311.

GEOTEXILE SHALL BE PLACED UNDER ALL RIPRAP AND SHALL MEET REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 921.09, CLASS C.

CARE OF WATER DURING CONSTRUCTION
ALL WORK ON PERMANENT STRUCTURES SHALL BE CARRIED OUT IN AREAS FREE FROM WATER. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN ALL TEMPORARY DIKES, LEVEES, OFFERDAMS, DRAINAGE CHANNELS, AND STREAM DIVERSIONS NECESSARY TO PROTECT TO BE OCCUPIED BY THE PERMANENT STRUCTURES. 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. 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 STABLE EXCAVATION SLOPES AND BOTTOMS. UNWARRANTED 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 IN A SLIGHTLY 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 OUR 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 CONE 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 3B, THE SUITABLE SOIL SHALL CONFORM TO THE TYPE 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 INDICATORS 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.

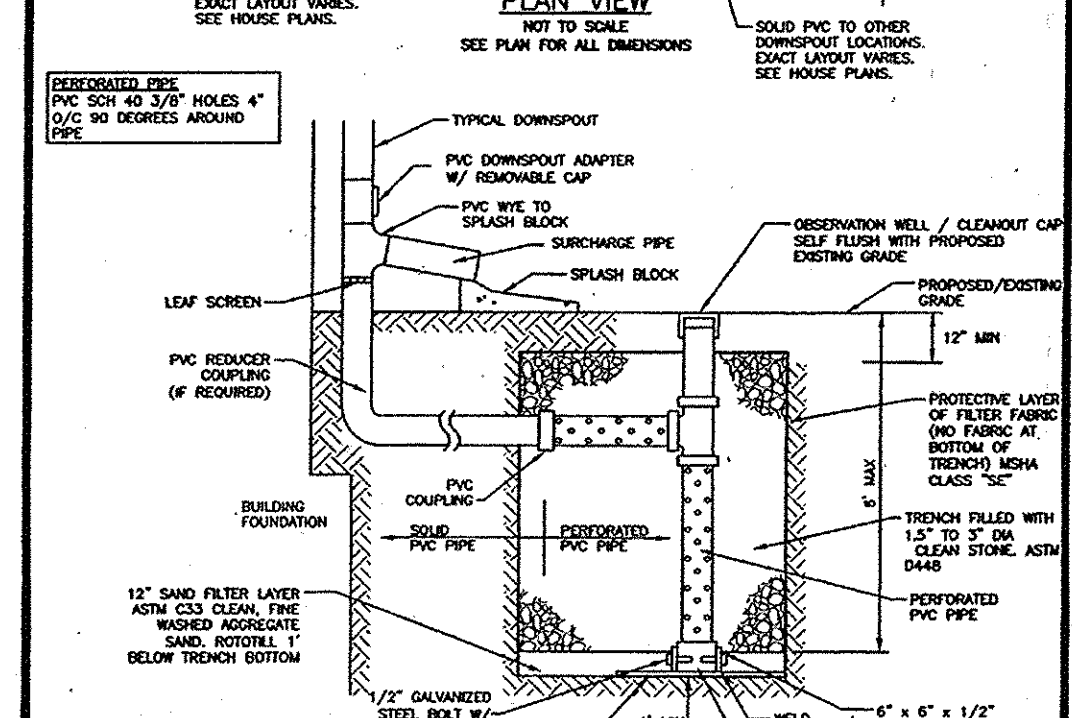
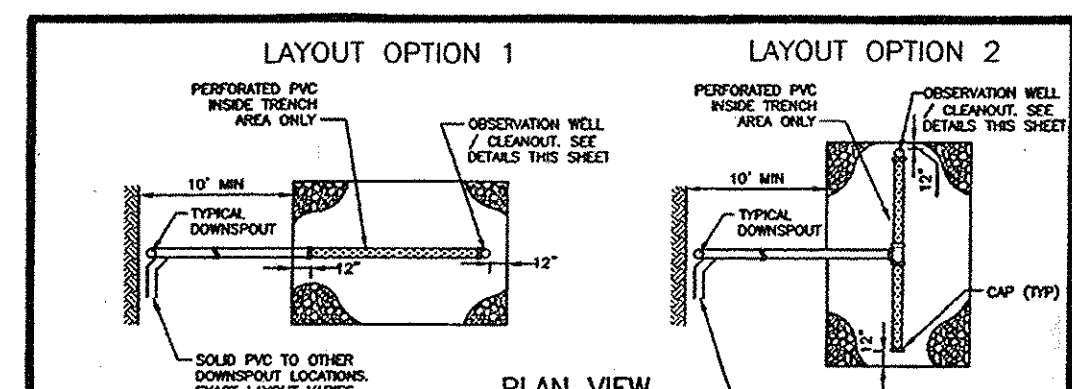
4. VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS RIPRAP OUTLET AREAS SHALL BE REPAIRED AS SOON AS IT IS NOTICED.

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

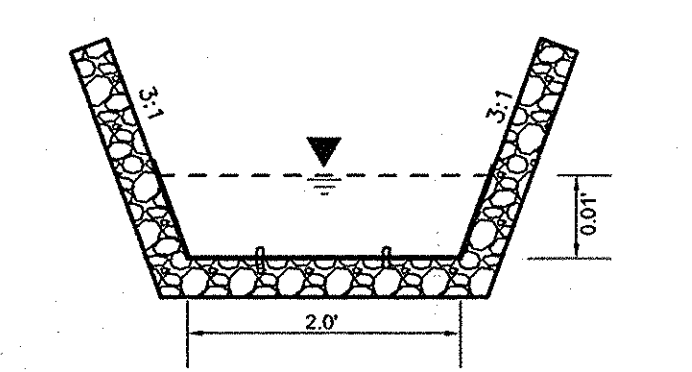


NOTES

- UNDESIGNED SAND IS NOT ACCEPTABLE IN 18" x 18" DRYWELLS
- ALL PIPES SHOULD BE SCH 40 PVC 4" MIN 1/2" STEEL RIPPAP
- DRYWELLS MUST BE A MINIMUM OF 12" FROM BUILDING FOUNDATION
- 10' FROM SPTO FEEL
- 10' FROM WELL LOCATION
- MINIMUM NUMBER OF PERFORATIONS SHALL BE 3 TIMES PIPE AREA
- TRENCH MUST NOT BE INSTALLED IN FILL

Project: Howard County, Maryland Department of Public Works	Client: Roof Drain Drywell Private	Detail: D-9.01
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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

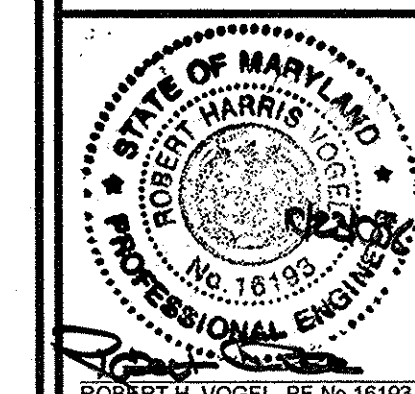
PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2010.

NO.	REVISION	DATE

**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
197E ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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



DESIGN BY: RHV/RJ
DRAWN BY: RJ
CHECKED BY: RHV
DATE: SEPTEMBER 2008
SCALE: AS SHOWN
W.G. NO.: 02-88.00
17 SHEET OF 27

NO AS-BUILT INFORMATION ON THIS SHEET

APPROVED: DEPARTMENT OF PUBLIC WORKS
W. R. Smith 11-24-08
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Cathy Hawk 2/10/09
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

John Damiano 4/23/09
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

OWNER/DEVELOPER
CLAREMONT LLC
11046 DORSCH FARM ROAD
ELLIOTT 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.

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 AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."
Robert R. Meyer 10/29/2008
SIGNATURE OF DEVELOPER DATE

ENGINEER'S CERTIFICATE
"I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION AND SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."
Robert H. Vogel 10/24/08
SIGNATURE OF ENGINEER DATE

DRILL HOLE LOG BORING NO. B-101		DRILL HOLE LOG BORING NO. B-102		DRILL HOLE LOG BORING NO. B-103		DRILL HOLE LOG BORING NO. B-104		DRILL HOLE LOG BORING NO. B-105		DRILL HOLE LOG BORING NO. B-106		DRILL HOLE LOG BORING NO. B-109	
<p>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'</p> <p>PROJECT NO.: 03033 DATE: 03/24/03 ELEVATION: 181.08' LOGGED BY: mec</p>		<p>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: 3.1'</p> <p>PROJECT NO.: 03033 DATE: 03/24/03 ELEVATION: 182.79' LOGGED BY: mec</p>		<p>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'</p> <p>PROJECT NO.: 03033 DATE: 03/24/03 ELEVATION: 183.61' LOGGED BY: mec</p>		<p>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'</p> <p>PROJECT NO.: 03033 DATE: 03/24/03 ELEVATION: 183.61' LOGGED BY: mec</p>		<p>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'</p> <p>PROJECT NO.: 03033 DATE: 03/24/03 ELEVATION: 186.27' LOGGED BY: mec</p>		<p>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'</p> <p>PROJECT NO.: 03033 DATE: 03/24/03 ELEVATION: 162.37' LOGGED BY: mec</p>		<p>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'</p> <p>PROJECT NO.: 03033 DATE: 03/24/03 ELEVATION: 165.44' LOGGED BY: mec</p>	
<p>This information pertains only to this boring and should not be interpreted as being indicative of the site.</p> <p>Marshall Engineering, Inc.</p>		<p>This information pertains only to this boring and should not be interpreted as being indicative of the site.</p> <p>Marshall Engineering, Inc.</p>		<p>This information pertains only to this boring and should not be interpreted as being indicative of the site.</p> <p>Marshall Engineering, Inc.</p>		<p>This information pertains only to this boring and should not be interpreted as being indicative of the site.</p> <p>Marshall Engineering, Inc.</p>		<p>This information pertains only to this boring and should not be interpreted as being indicative of the site.</p> <p>Marshall Engineering, Inc.</p>		<p>This information pertains only to this boring and should not be interpreted as being indicative of the site.</p> <p>Marshall Engineering, Inc.</p>		<p>This information pertains only to this boring and should not be interpreted as being indicative of the site.</p> <p>Marshall Engineering, Inc.</p>	

DRILL HOLE LOG BORING NO. B-110		DRILL HOLE LOG BORING NO. B-111		DRILL HOLE LOG BORING NO. B-112		DRILL HOLE LOG BORING NO. B-113		DRILL HOLE LOG BORING NO. B-114		DRILL HOLE LOG BORING NO. B-115		DRILL HOLE LOG BORING NO. B-116			
<p>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'</p> <p>PROJECT NO.: 03033 DATE: 03/25/03 ELEVATION: 167.54' LOGGED BY: mec</p>		<p>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: 3.6'</p> <p>PROJECT NO.: 03033 DATE: 03/26/03 ELEVATION: 166.41' LOGGED BY: mec</p>		<p>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'</p> <p>PROJECT NO.: 03033 DATE: 03/26/03 ELEVATION: 166.41' LOGGED BY: mec</p>		<p>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: 2.2'</p> <p>PROJECT NO.: 03033 DATE: 03/26/03 ELEVATION: 161.4' LOGGED BY: mec</p>		<p>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'</p> <p>PROJECT NO.: 03033 DATE: 03/26/03 ELEVATION: 161.4' LOGGED BY: mec</p>		<p>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'</p> <p>PROJECT NO.: 03033 DATE: 03/26/03 ELEVATION: 161.4' LOGGED BY: mec</p>		<p>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'</p> <p>PROJECT NO.: 03033 DATE: 03/26/03 ELEVATION: 161.4' LOGGED BY: mec</p>		<p>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'</p> <p>PROJECT NO.: 03033 DATE: 03/26/03 ELEVATION: 161.4' LOGGED BY: mec</p>	
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APPROVED: DEPARTMENT OF PUBLIC WORKS
William R. ... 11-24-08
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
... 2/1/09
 CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: DEPARTMENT OF PLANNING AND ZONING
... 11/25/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

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

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 AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

...
 SIGNATURE OF DEVELOPER

11/5/08
 DATE

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 PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. 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

10/24/2008
 DATE

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
 19th ELECTION DISTRICT HOWARD COUNTY, MARYLAND

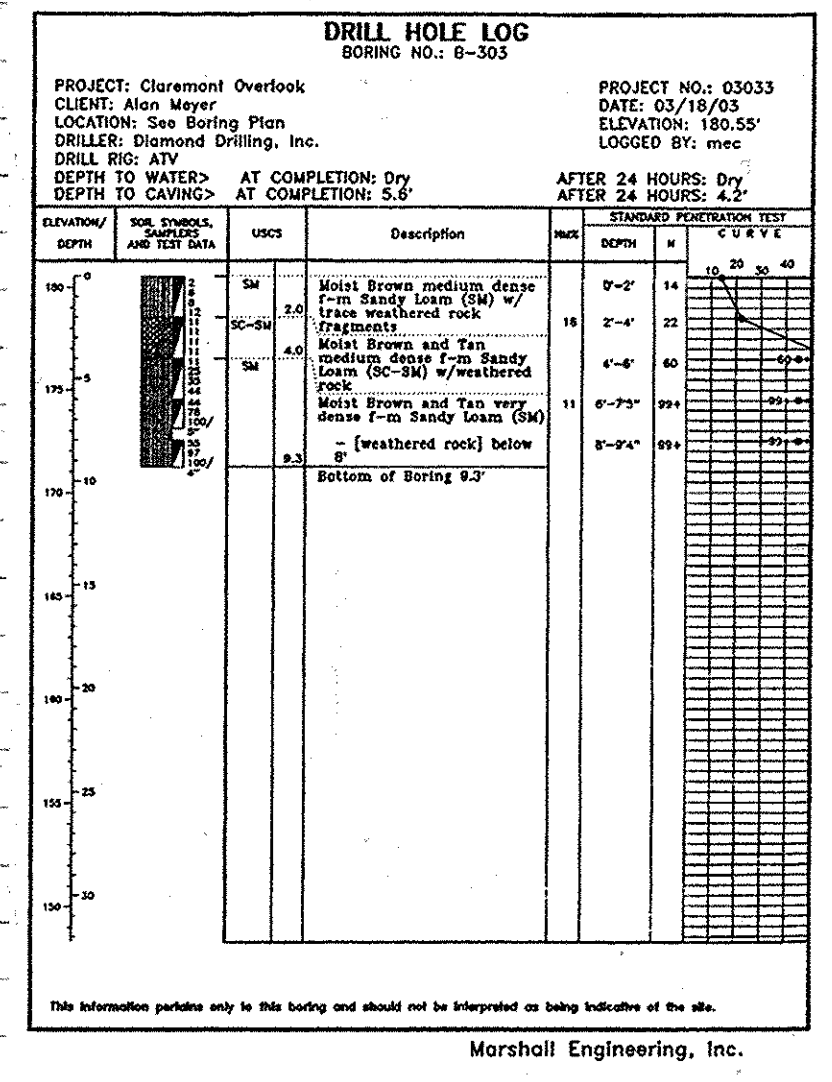
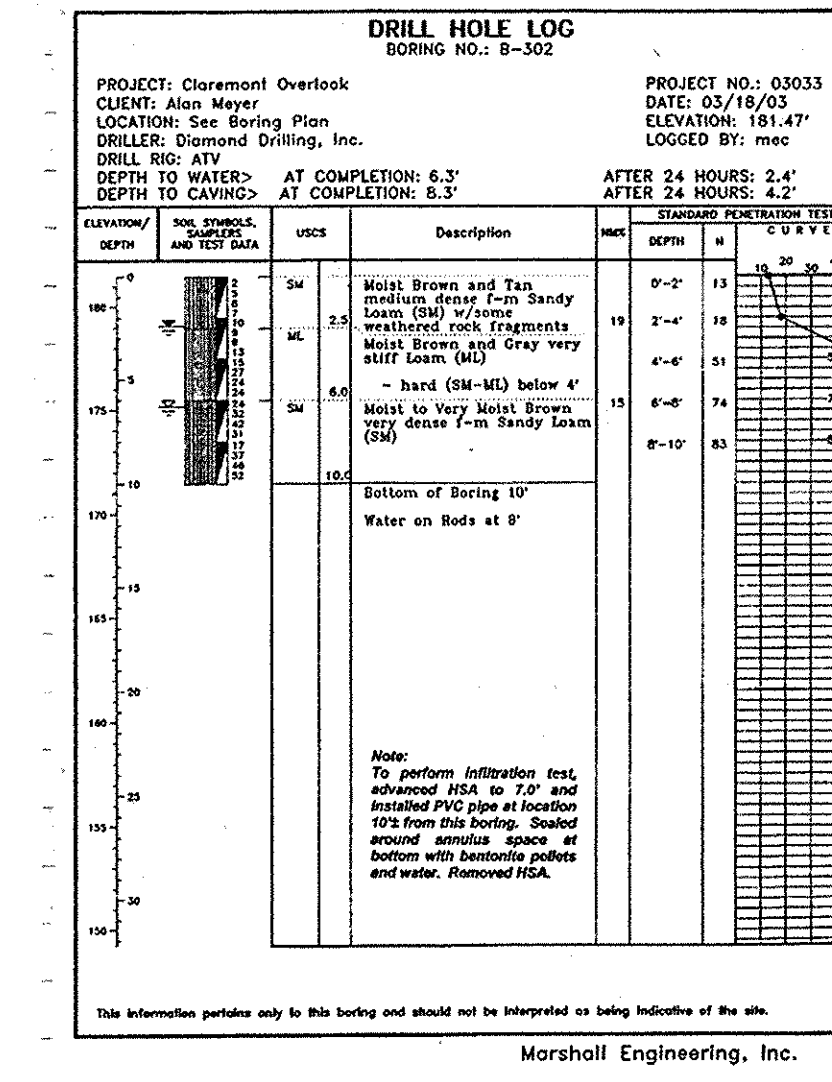
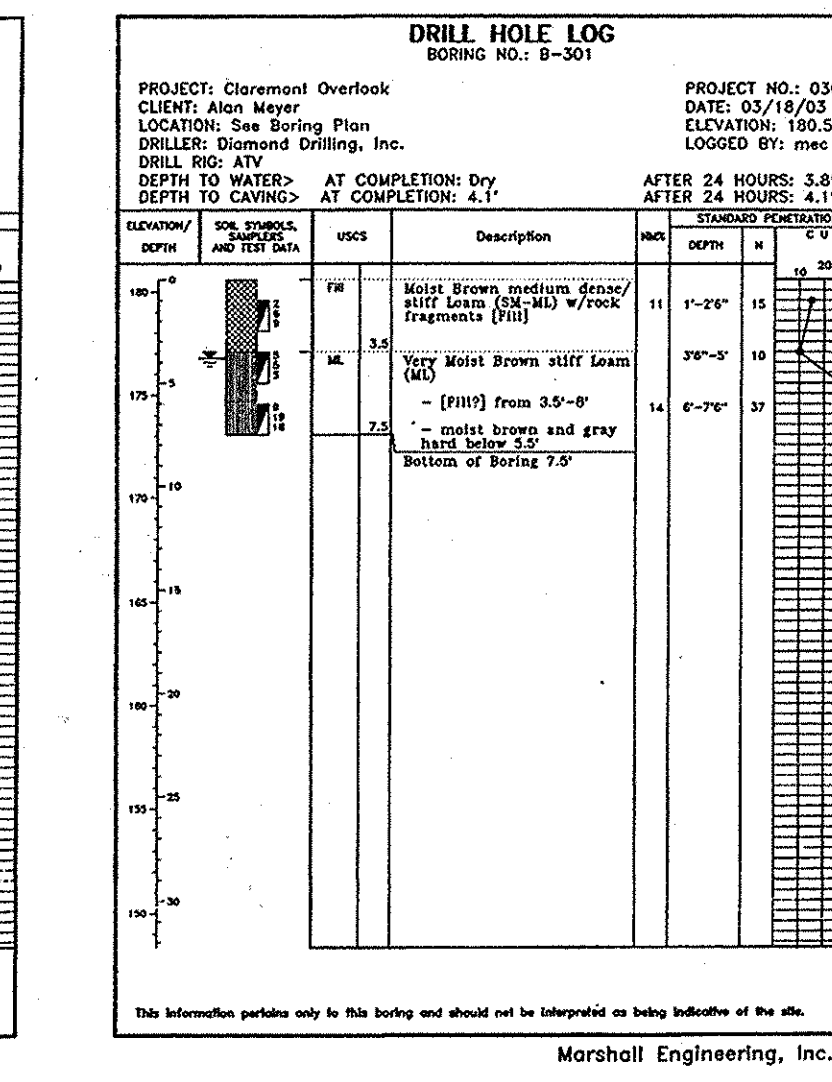
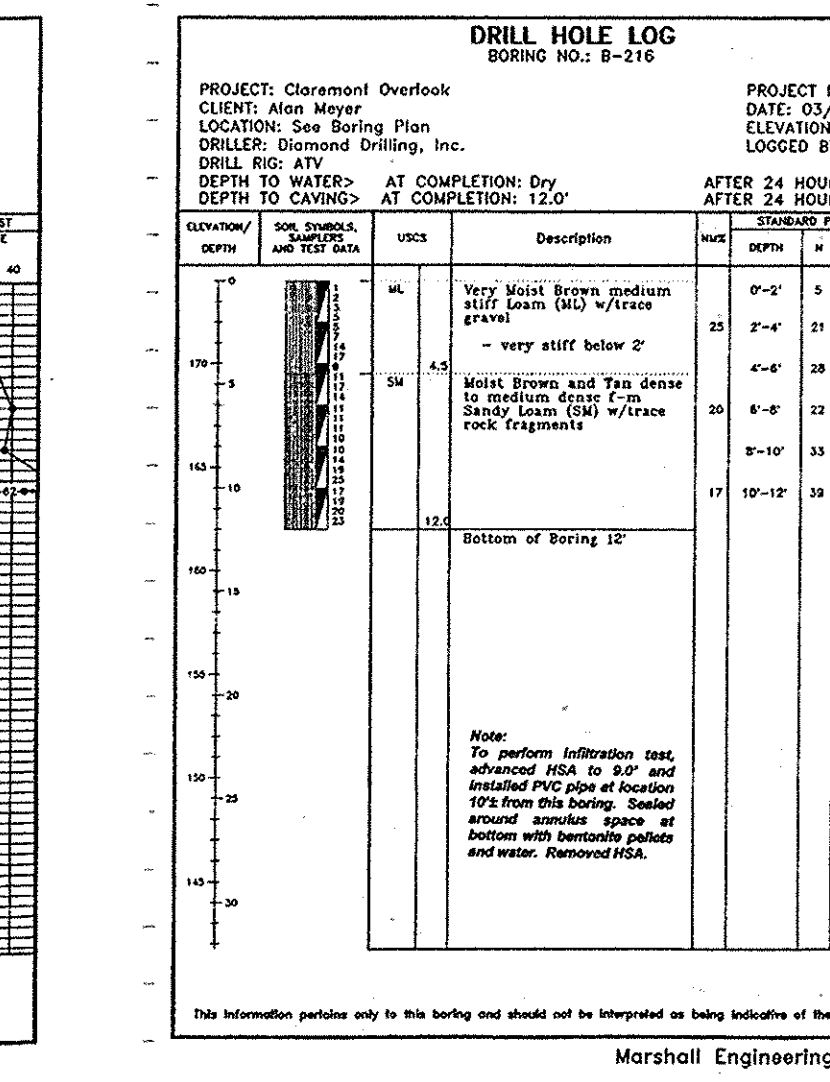
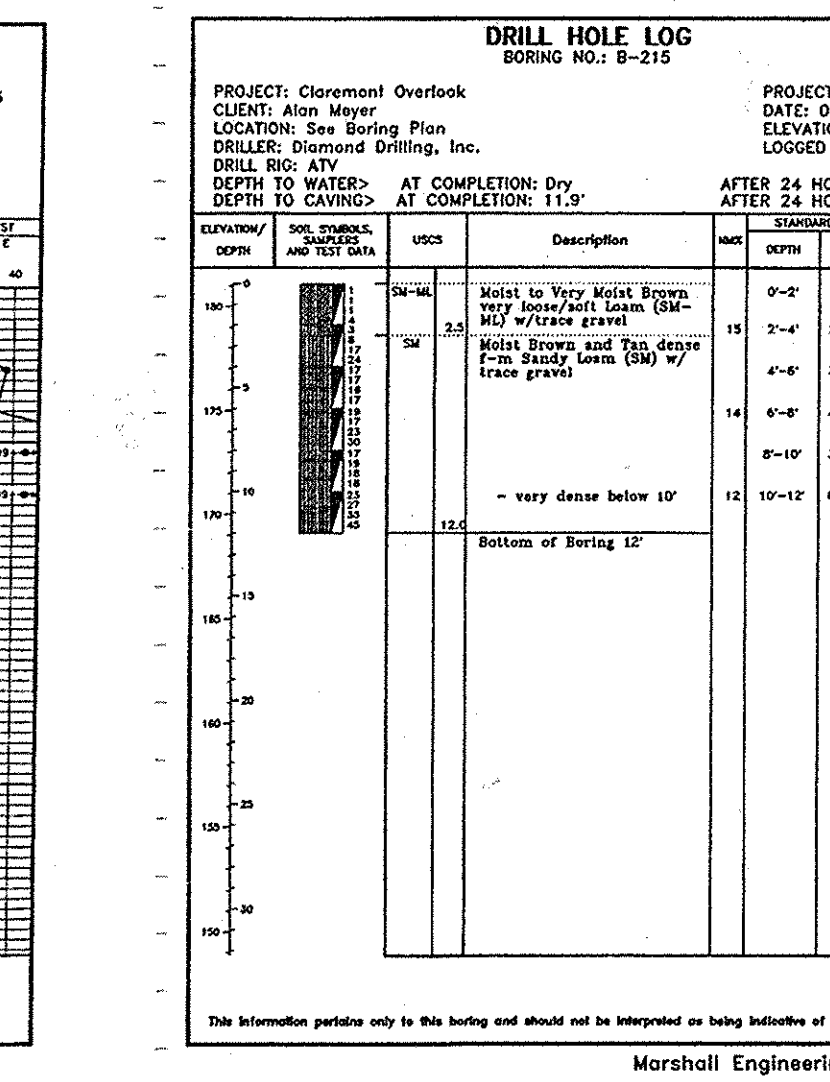
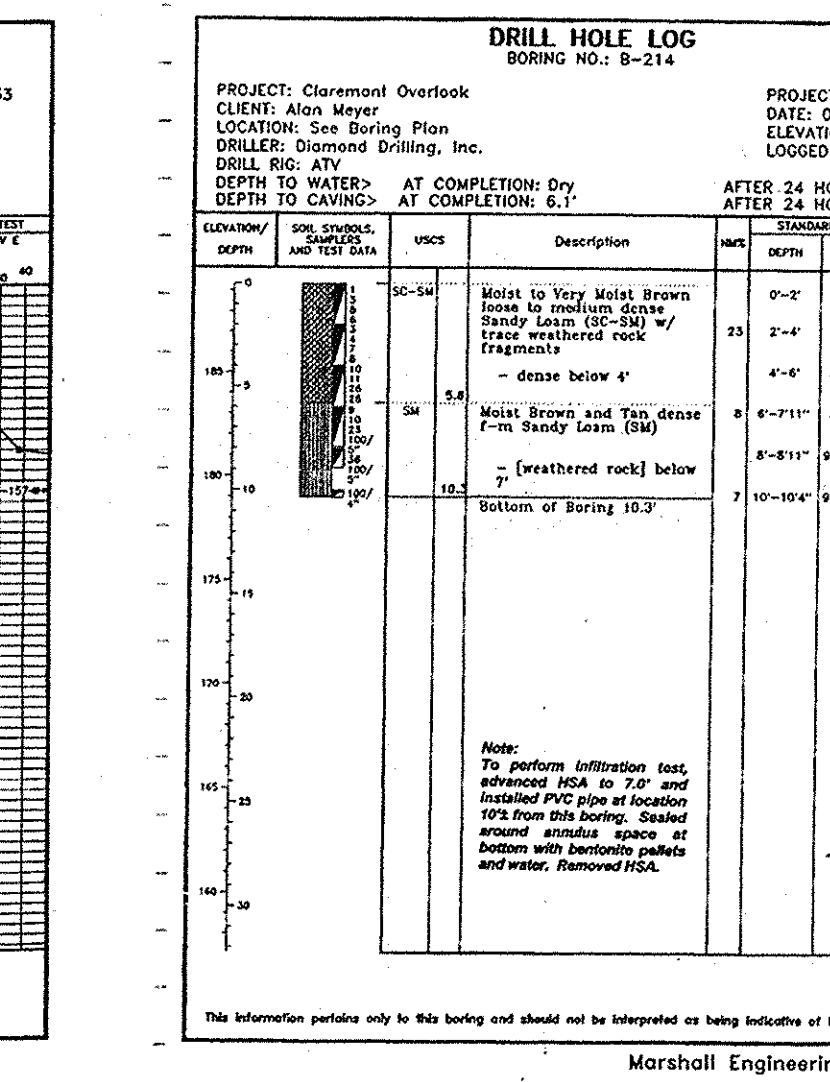
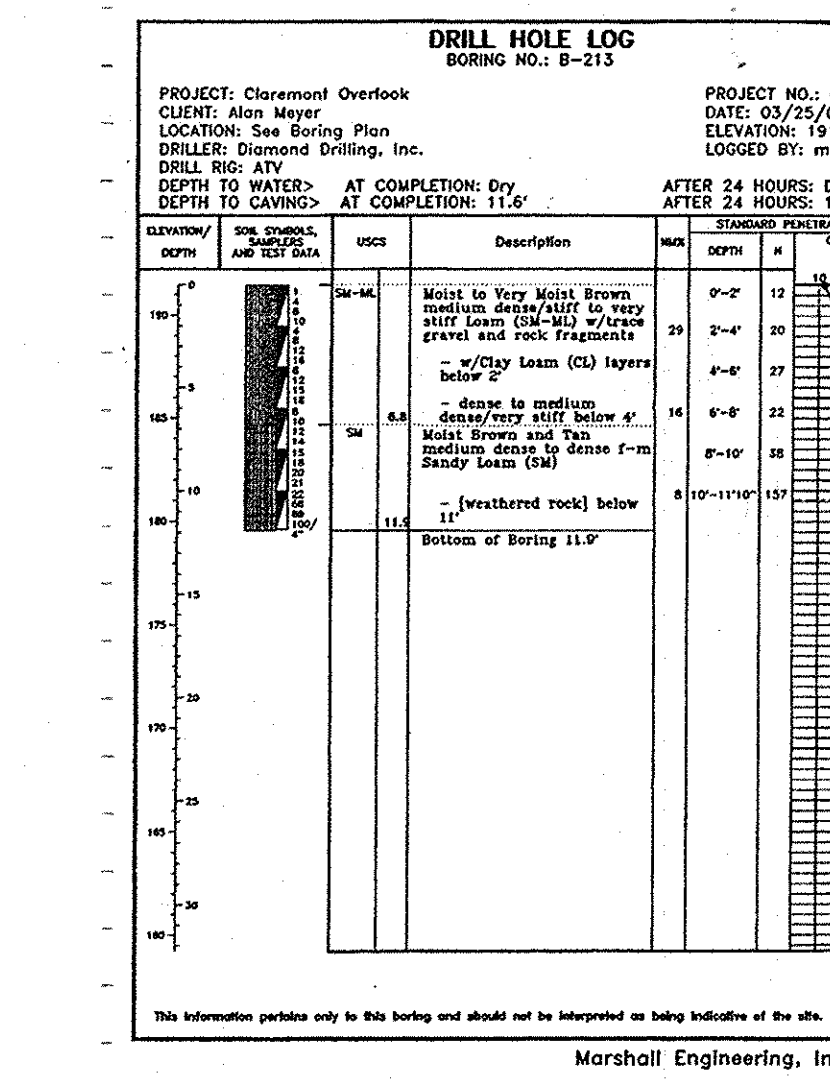
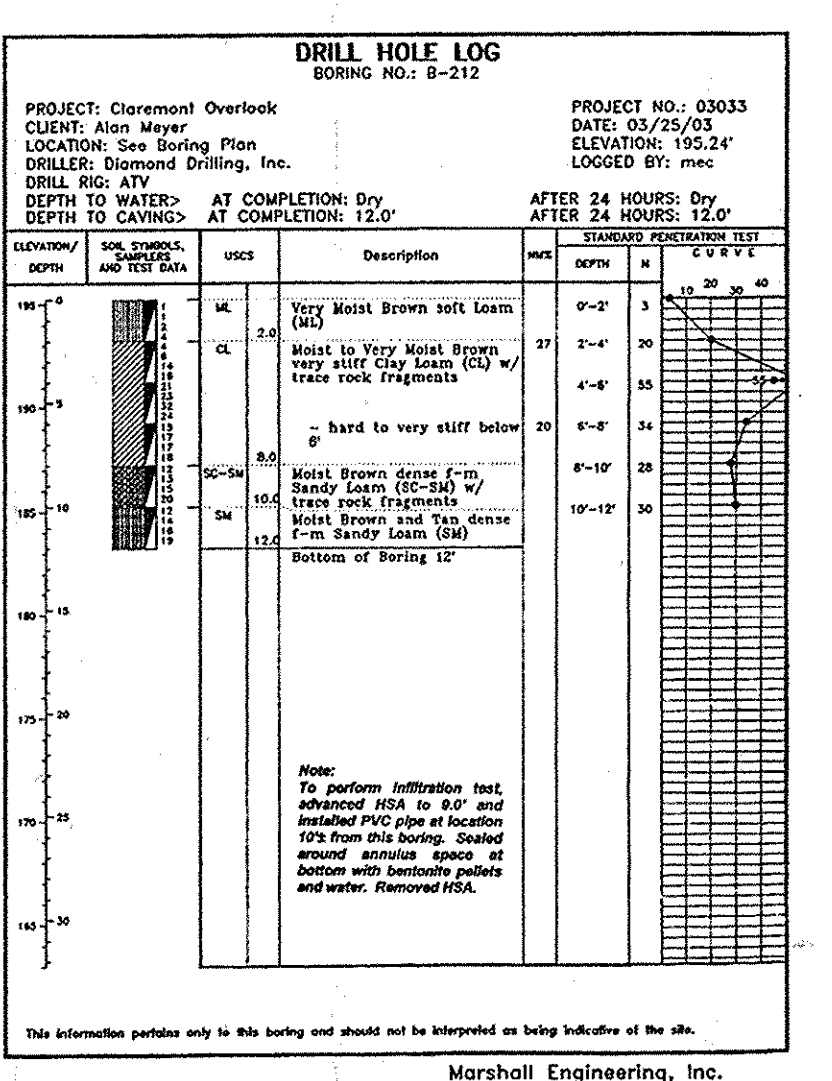
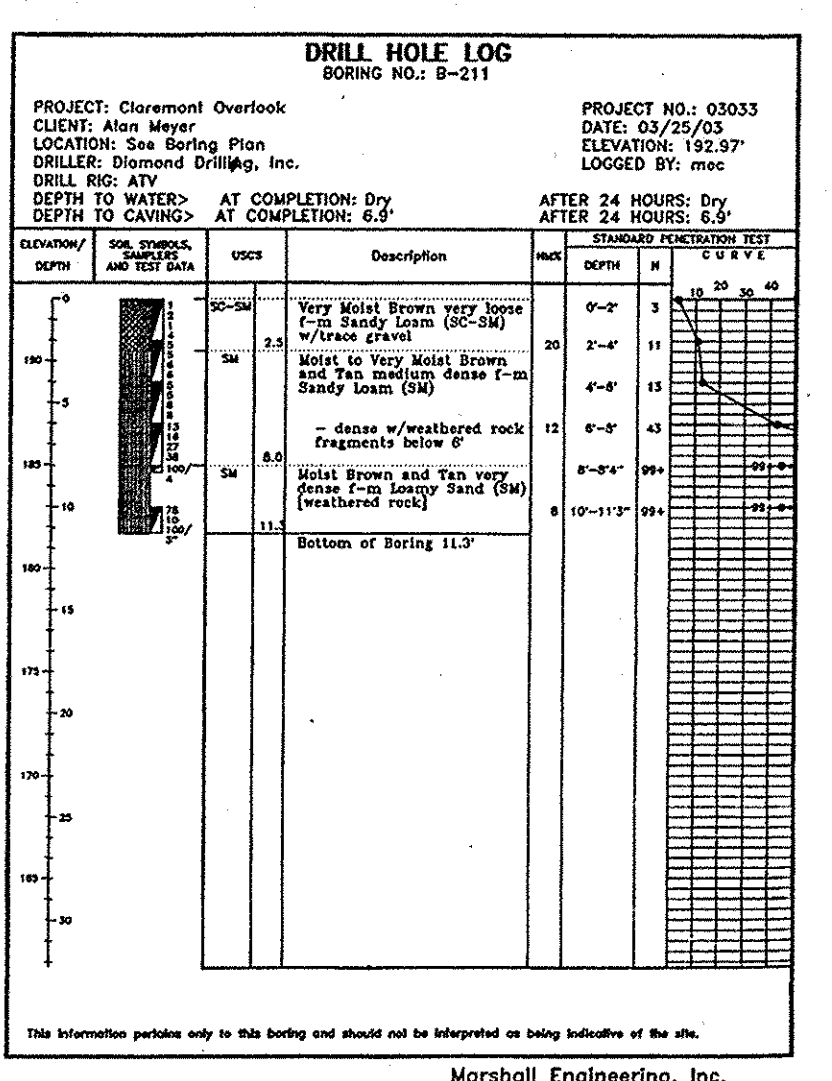
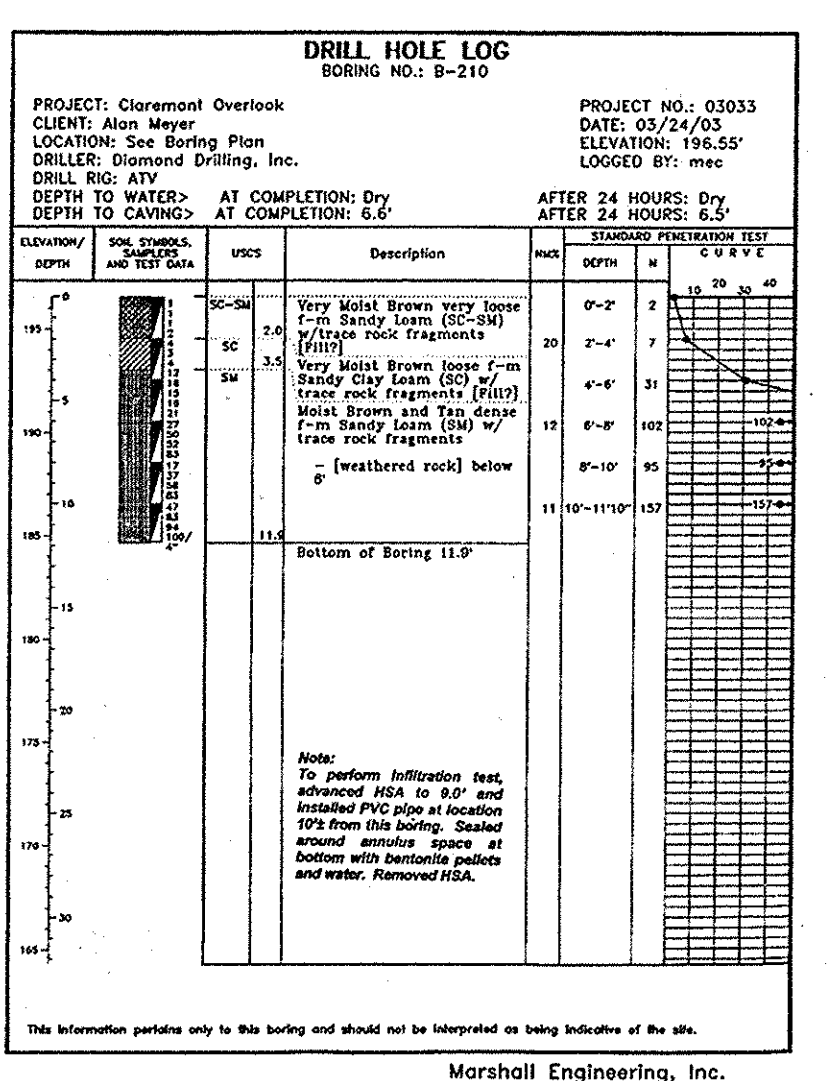
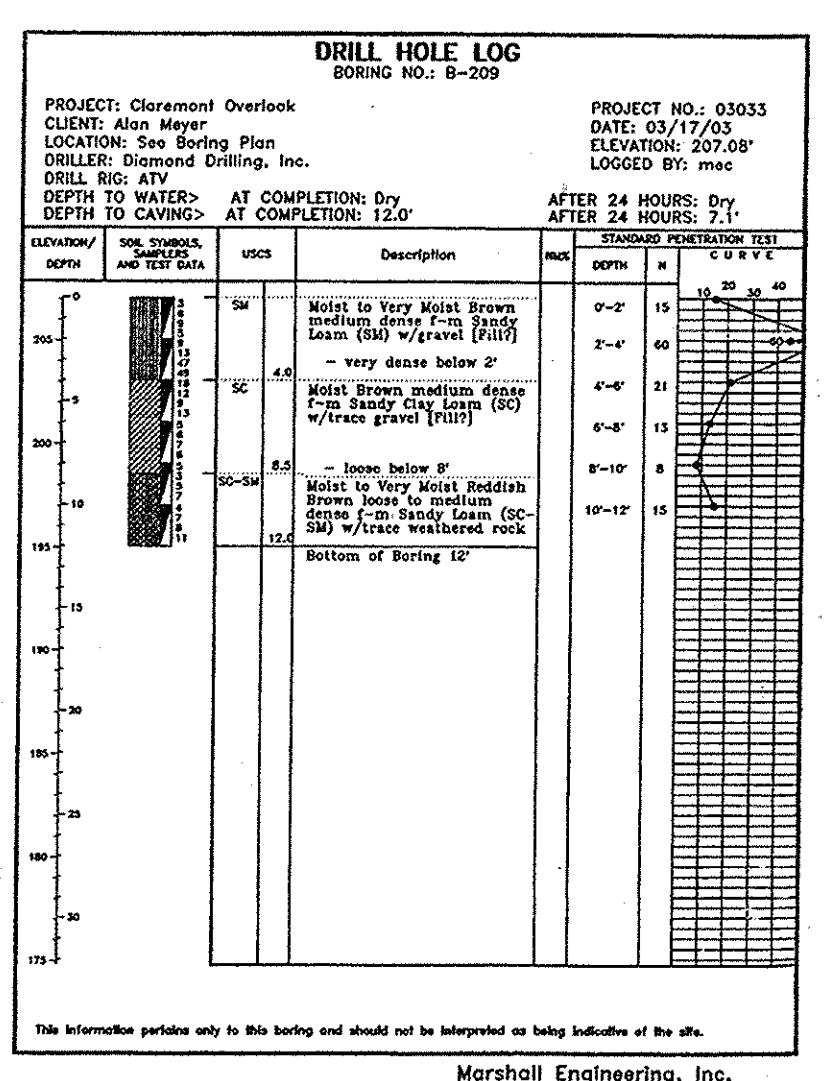
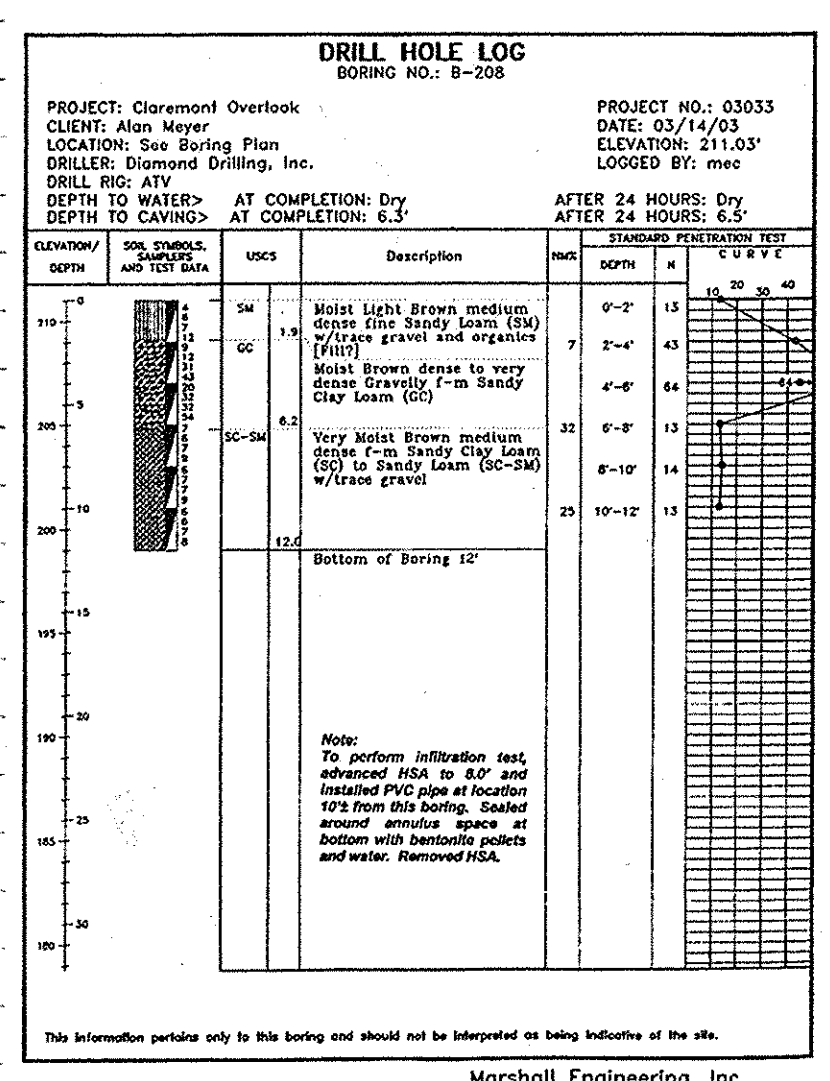
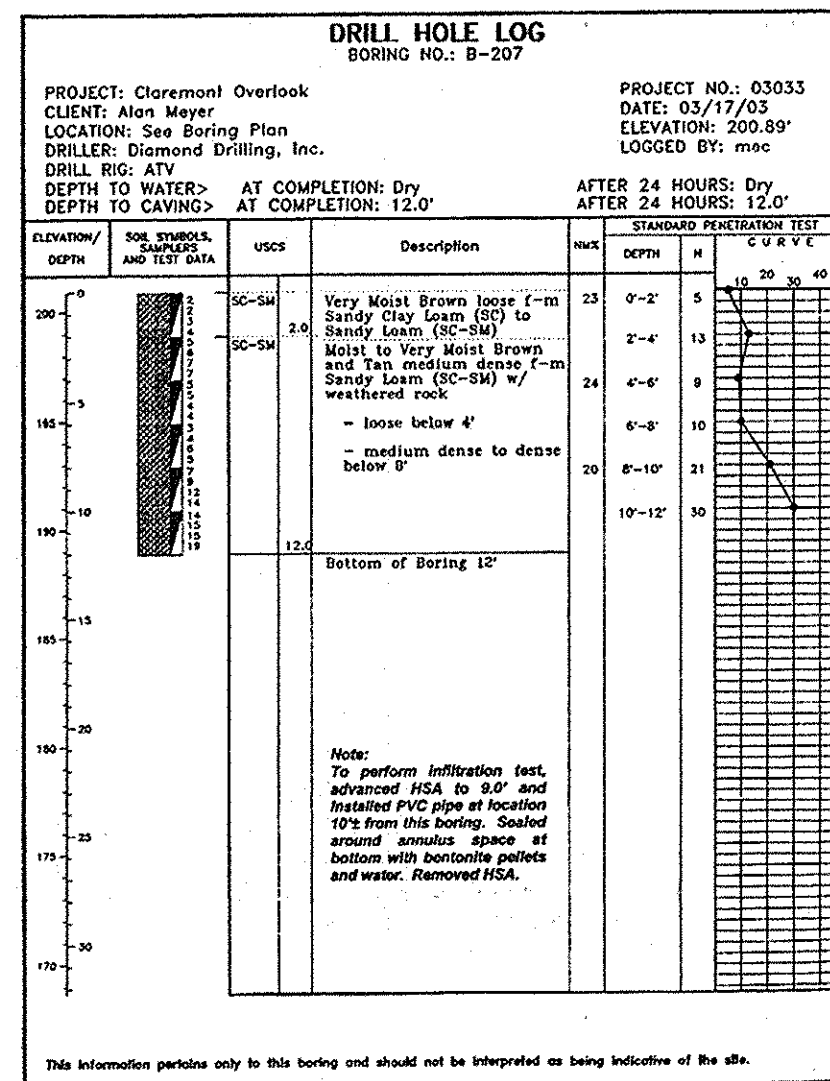
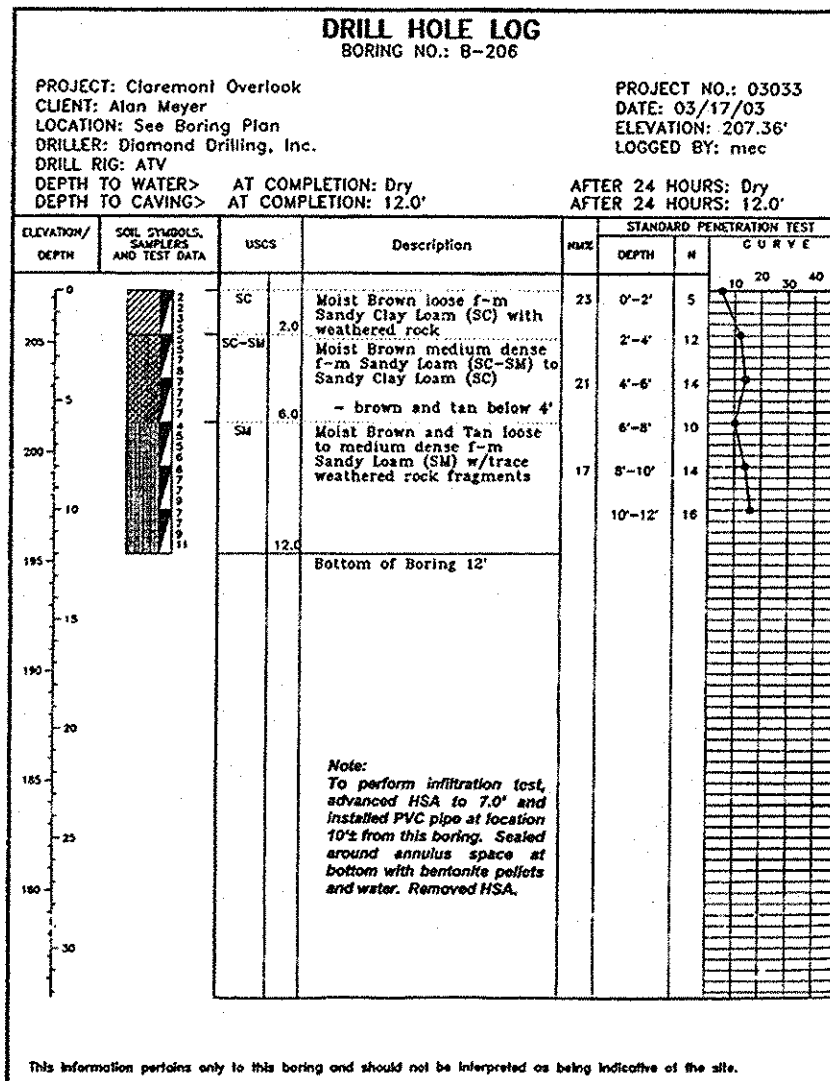
ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 8407 MAIN STREET TEL: 410.461.7666
 ELLICOTT CITY, MD 21043 FAX: 410.461.8961

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 CHECKED BY: RHV
 DATE: SEPTEMBER 2008
 SCALE: AS SHOWN
 W.G. NO.: 02-88.00

18 SHEET OF 27

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

BORING RESULTS FOR STORM WATER FACILITIES 3 & PRE-TREATMENT AREA



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Claremont Overlook
MEI Job No. 03033
May 1, 2003

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May 1, 2003

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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

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

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.

Boring	Depth	Description	Infiltration Potential*
B-302	0' - 2.5'	Sandy Loam	Slow
	2.5' - 6'	Loam	Poor
	6' - 10'	Sandy Loam (dense)	Poor
		Water at 2.4'	
B-303	0' - 4'	Sandy Loam	Slow
	4' - 6'	Sandy Loam (dense)	Poor
	6' - 9.5'	Sandy Loam	Slow
		(very dense weathered rock)	

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	6'-12"
	B-209	9'-12"
	B-210	4'-11"
Out Parcel	B-211	2'-11"
	B-212	6'-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"
	B-106	10'-20"
SWM Pond #2	B-107	10'-12"
	B-108	2'-6"
SWM Pond #3	B-109	2'-6"
	B-110	2'-6"
Bovestation Area	B-113	2'-10"
	B-116	2'-10"
B-302	B-302	6'-10" (Water at 2.4')
	B-303	2'-0"

CONCLUSIONS & RECOMMENDATIONS

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

APPROVED: DEPARTMENT OF PUBLIC WORKS
11-24-02
DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
2/10/03
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.

DEVELOPER'S CERTIFICATE

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT FOR POND CONSTRUCTION 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 AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

ENGINEER'S CERTIFICATE

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

NO AS-BUILT INFORMATION ON THIS SHEET.

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

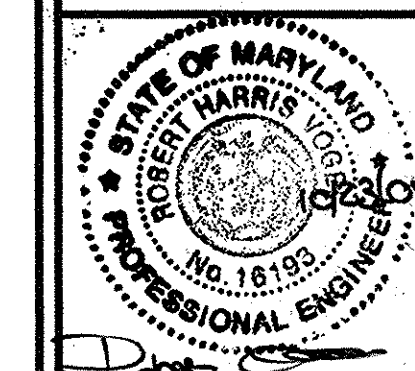
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DRAWN BY: RJ
CHECKED BY: RHW
DATE: SEPTEMBER 2008
SCALE: AS SHOWN
W.O. NO.: 02-68.00

FINAL ROAD CONSTRUCTION PLAN BORING RESULTS

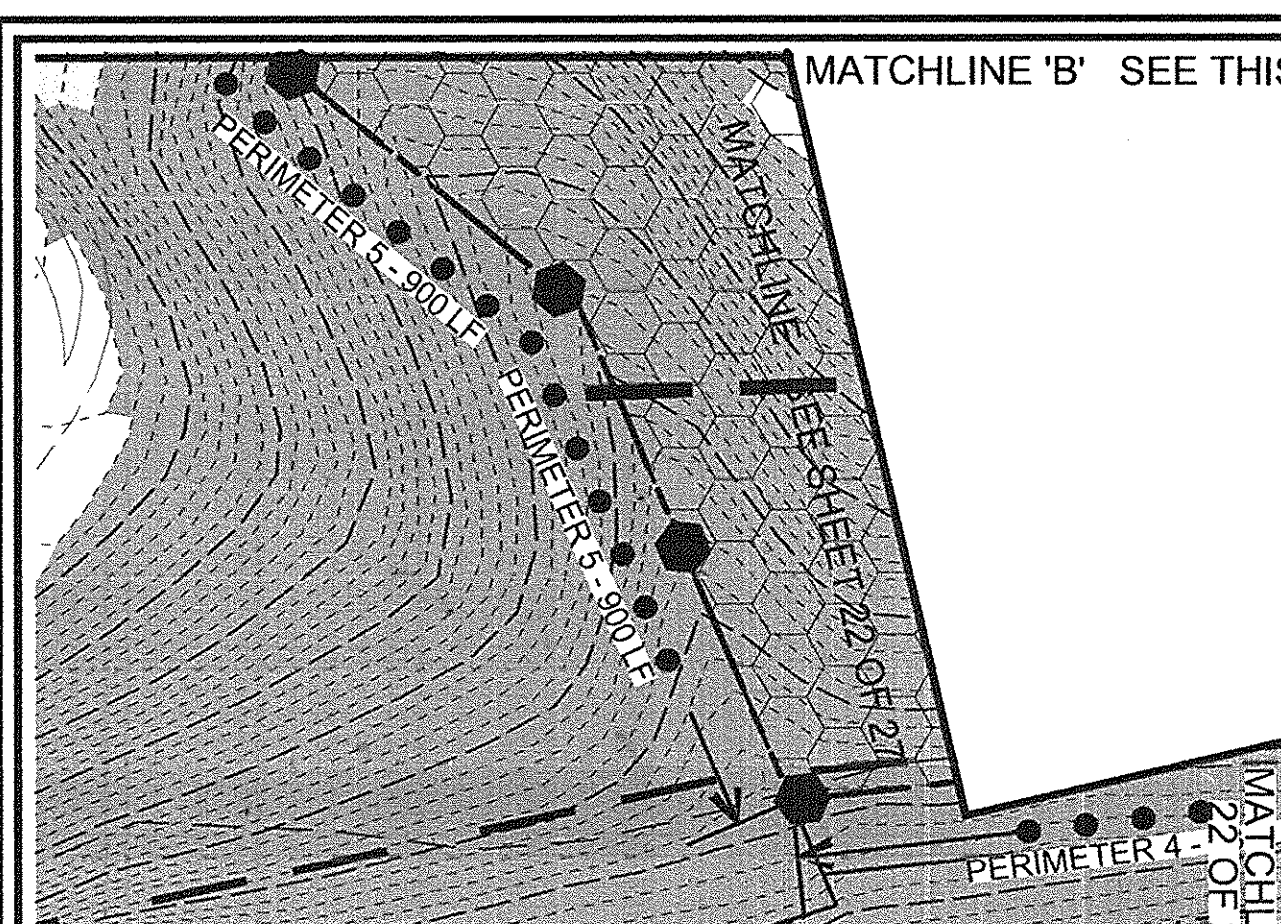
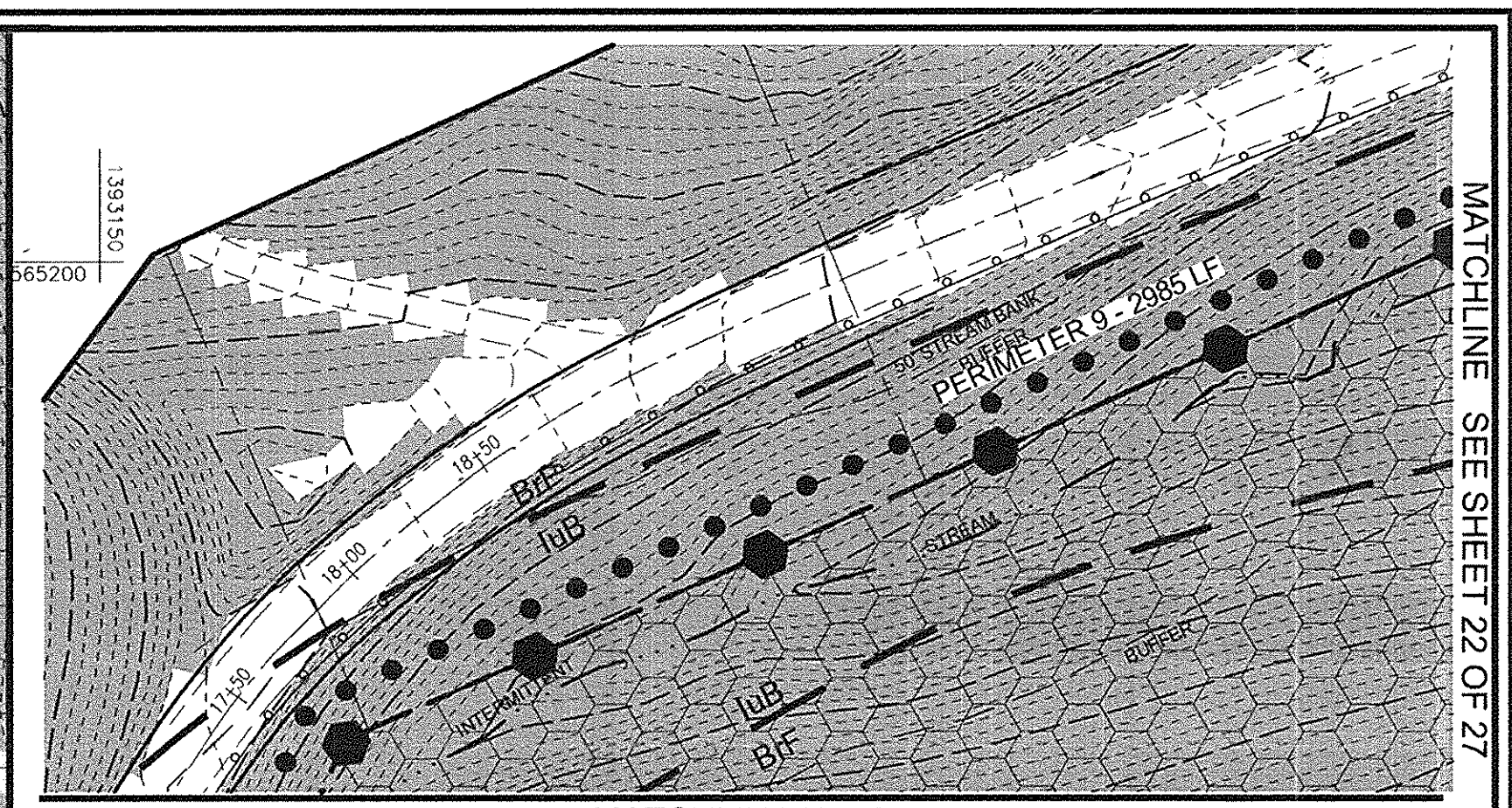
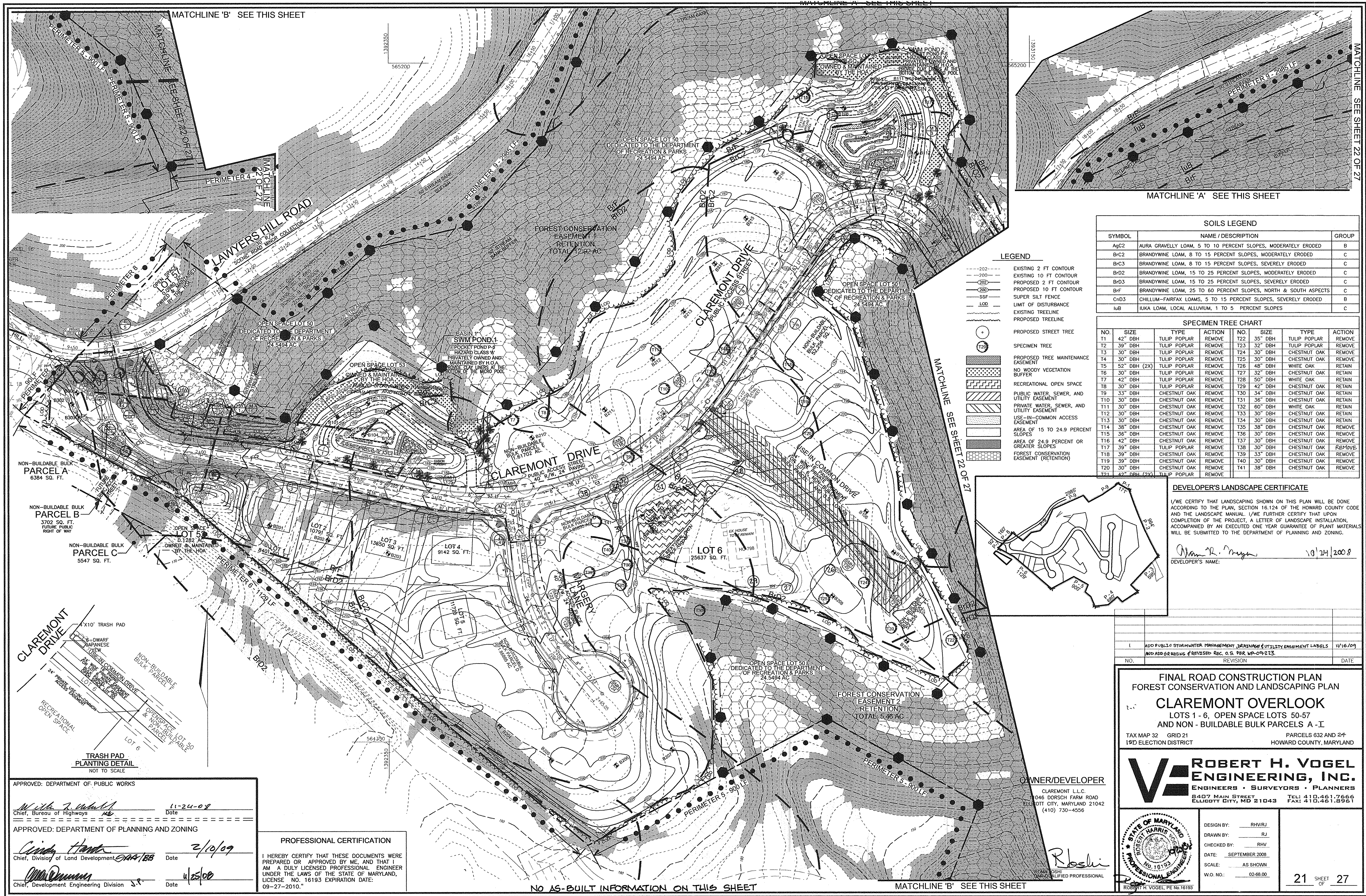
CLAREMONT OVERLOOK
LOTS 1 - 6, OPEN SPACE LOTS 50-57 AND NON-BUILDABLE BULK PARCELS A-I

TAX MAP 32 GRID 21 PARCELS 632 AND 24
19th ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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



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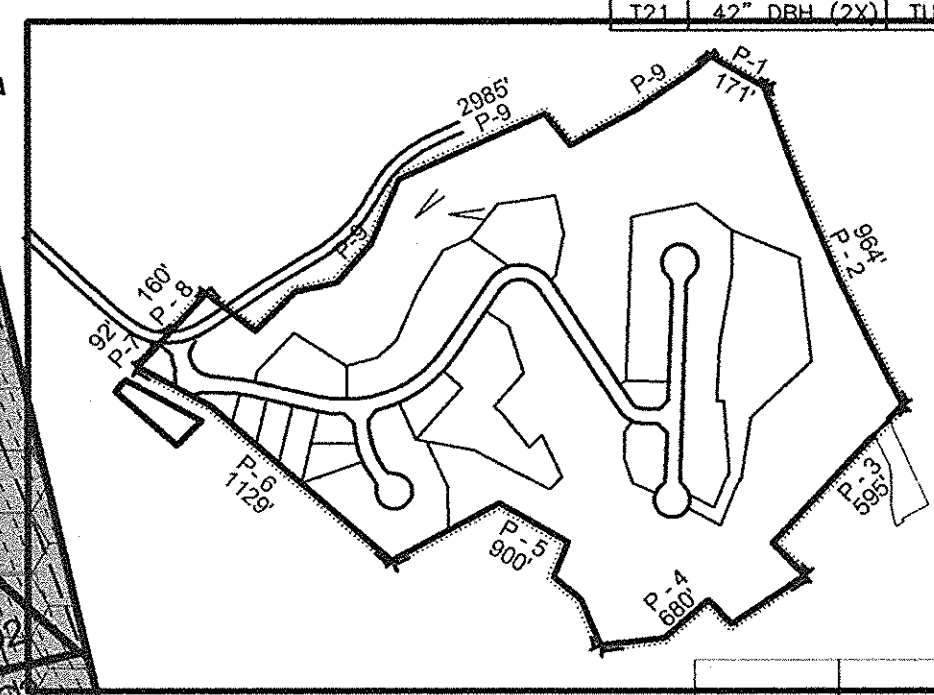
SOILS LEGEND

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

SPECIMEN TREE CHART

NO.	SIZE	TYPE	ACTION	NO.	SIZE	TYPE	ACTION
T1	42" DBH	TULIP POPLAR	REMOVE	T22	35" DBH	TULIP POPLAR	REMOVE
T2	38" DBH	TULIP POPLAR	REMOVE	T23	32" DBH	TULIP POPLAR	REMOVE
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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
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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				

- 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
 - LOO--- LIMIT OF DISTURBANCE
 - LOO--- EXISTING TREELINE
 - LOO--- PROPOSED TREELINE
 - PROPOSED STREET TREE
 - 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)



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.

Robert H. Vogel 10/24/2008
DEVELOPER'S NAME:

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

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
 19D ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

DESIGN BY: RHV/RJ
 DRAWN BY: RJ
 CHECKED BY: RHV
 DATE: SEPTEMBER 2008
 SCALE: AS SHOWN
 W.O. NO.: 02-68-00

21 SHEET OF 27

APPROVED: DEPARTMENT OF PUBLIC WORKS
William J. Mahan 11-24-09
 Chief, Bureau of Highways Date

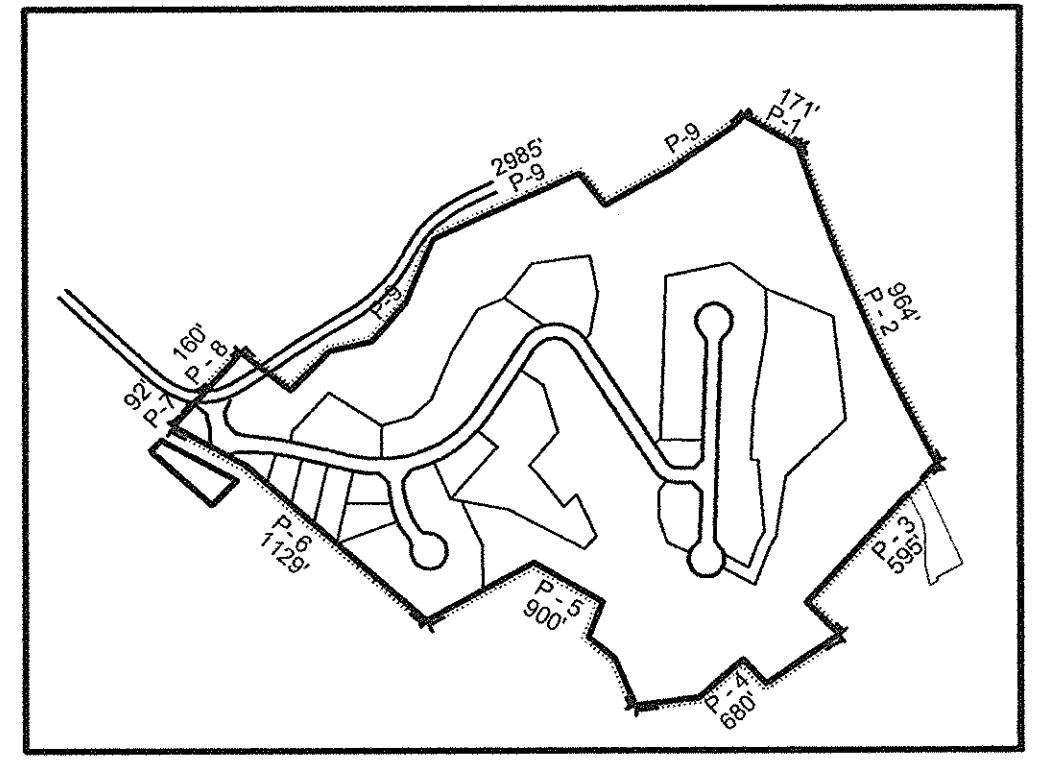
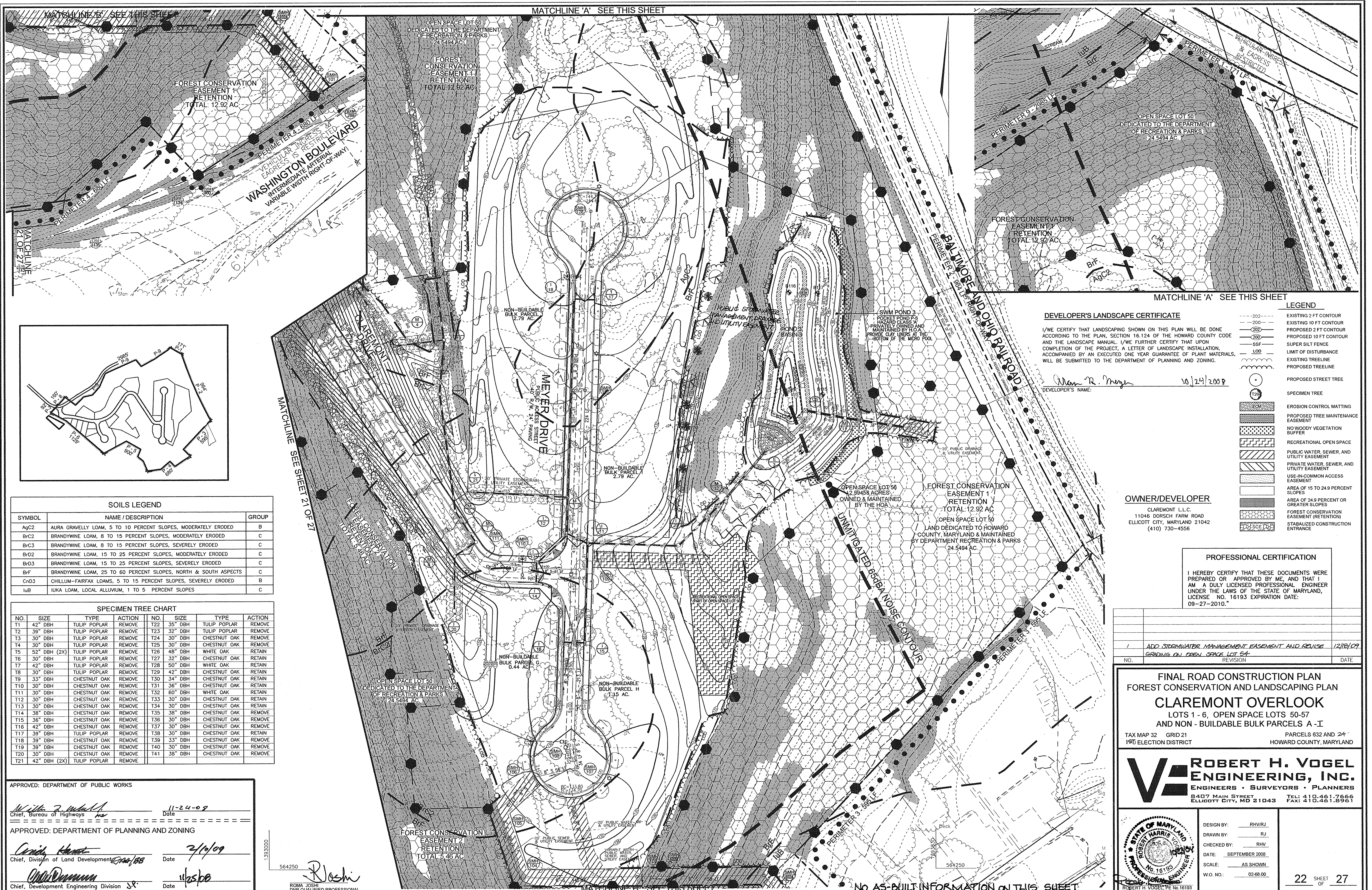
APPROVED: DEPARTMENT OF PLANNING AND ZONING
Cindy Hantz 2/10/09
 Chief, Division of Land Development Date

Chris Dummer 4/25/09
 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.

NO AS-BUILT INFORMATION ON THIS SHEET



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
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IuB	IUKA LOAM, LOCAL ALLUVIUM, 1 TO 5 PERCENT SLOPES	C

SPECIMEN TREE CHART

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APPROVED: DEPARTMENT OF PUBLIC WORKS
 Chief, Bureau of Highways
 11-24-09
 Date

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 Chief, Division of Land Development
 2/10/09
 Date

Chief, Development Engineering Division
 11/25/08
 Date

ROMA JOSHI
 DNR QUALIFIED PROFESSIONAL

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.

Man R. Meyer
 DEVELOPER'S NAME: _____
 10/24/2008

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

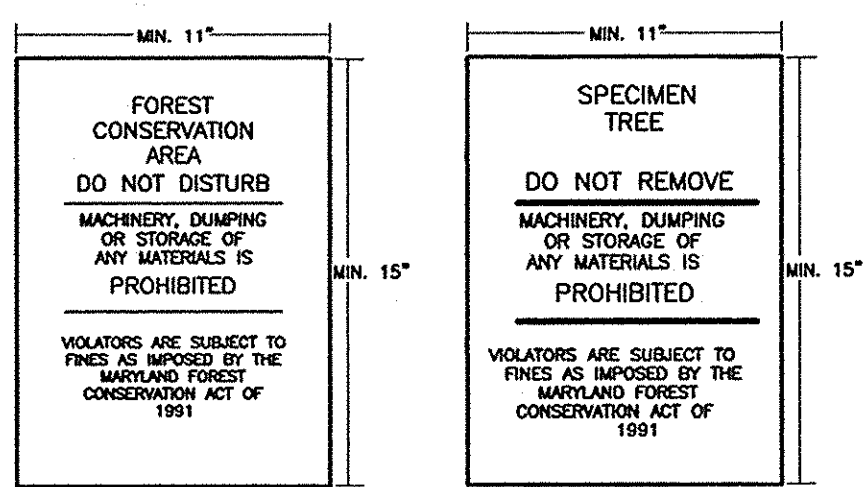
FINAL ROAD CONSTRUCTION PLAN
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CLAREMONT OVERLOOK
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TAX MAP 32 GRID 21 PARCELS 632 AND 24-
 19th ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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 ENGINEERS • SURVEYORS • PLANNERS
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DESIGN BY: RHW/RJ
 DRAWN BY: RJ
 CHECKED BY: RHW
 DATE: SEPTEMBER 2008
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 W.O. NO.: 02-68.00

22 SHEET OF 27



HOWARD COUNTY FOREST CONSERVATION WORKSHEET

ZONED: RED
NET TRACT AREA: 43.34 AC

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 APPROPRIATE 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) = 3.63 AC
H. AREA OF FOREST ABOVE AFFORESTATION THRESHOLD = 25.19 AC
I. AREA OF FOREST ABOVE CONSERVATION THRESHOLD = 22.92 AC

BREAK EVEN POINT:
J. FOREST RETENTION WITH NO MITIGATION REQUIRED = 13.26 AC
K. CLEARING PERMITTED WITHOUT MITIGATION = 13.39 AC

PROPOSED FOREST CLEARING:
L. TOTAL AREA OF FOREST TO BE CLEARED = 13.25 AC
M. TOTAL AREA OF FOREST TO BE RETAINED = 18.10 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

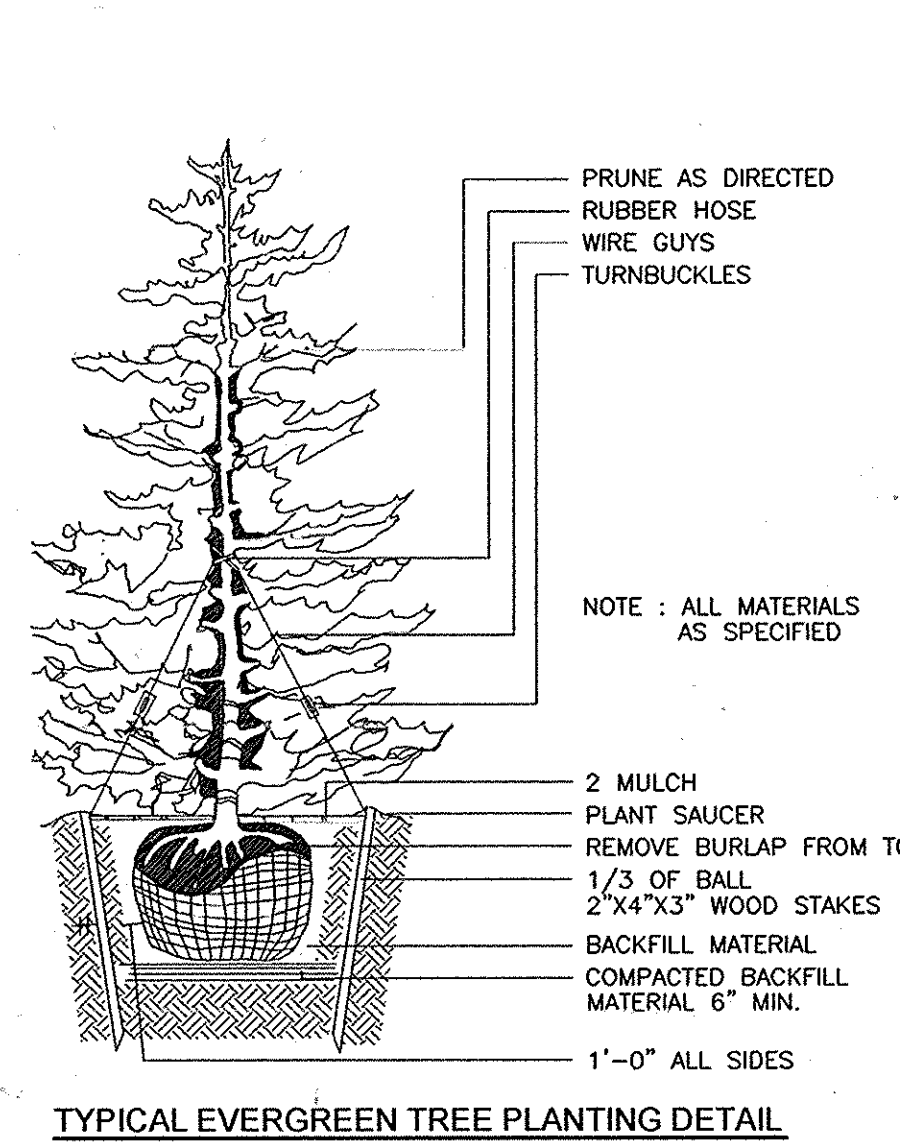
TOTAL FOREST RETENTION = 18.38 AC

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

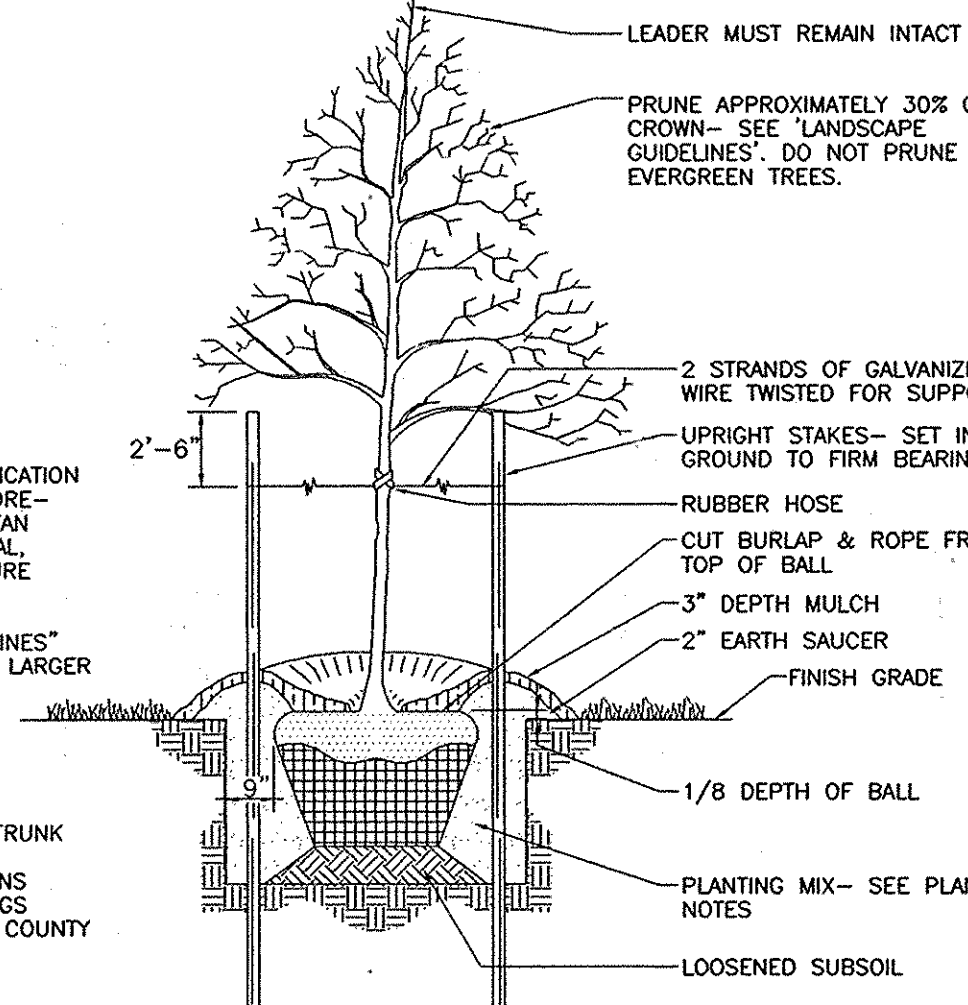
TOTAL FOREST CONSERVATION OBLIGATION FOR CLAREMONT OVERLOOK TO BE FULFILLED BY ON-SITE RETENTION OF 18.38 AC.

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

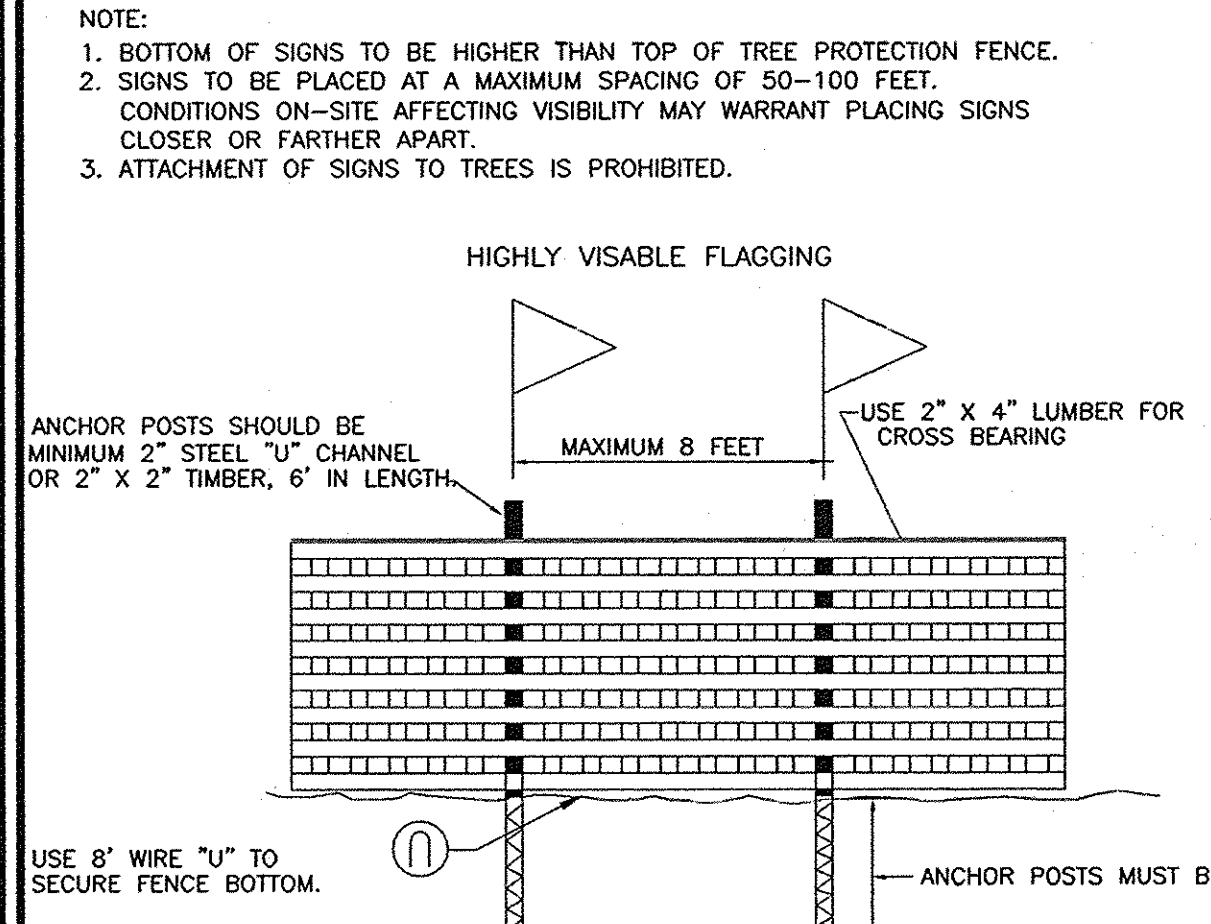
SURETY FOR REQUIRED FOREST CONSERVATION OBLIGATION SHALL BE POSTED WITH THE DEVELOPER'S AGREEMENT FOR THIS FINAL PLAN, F-08-63.



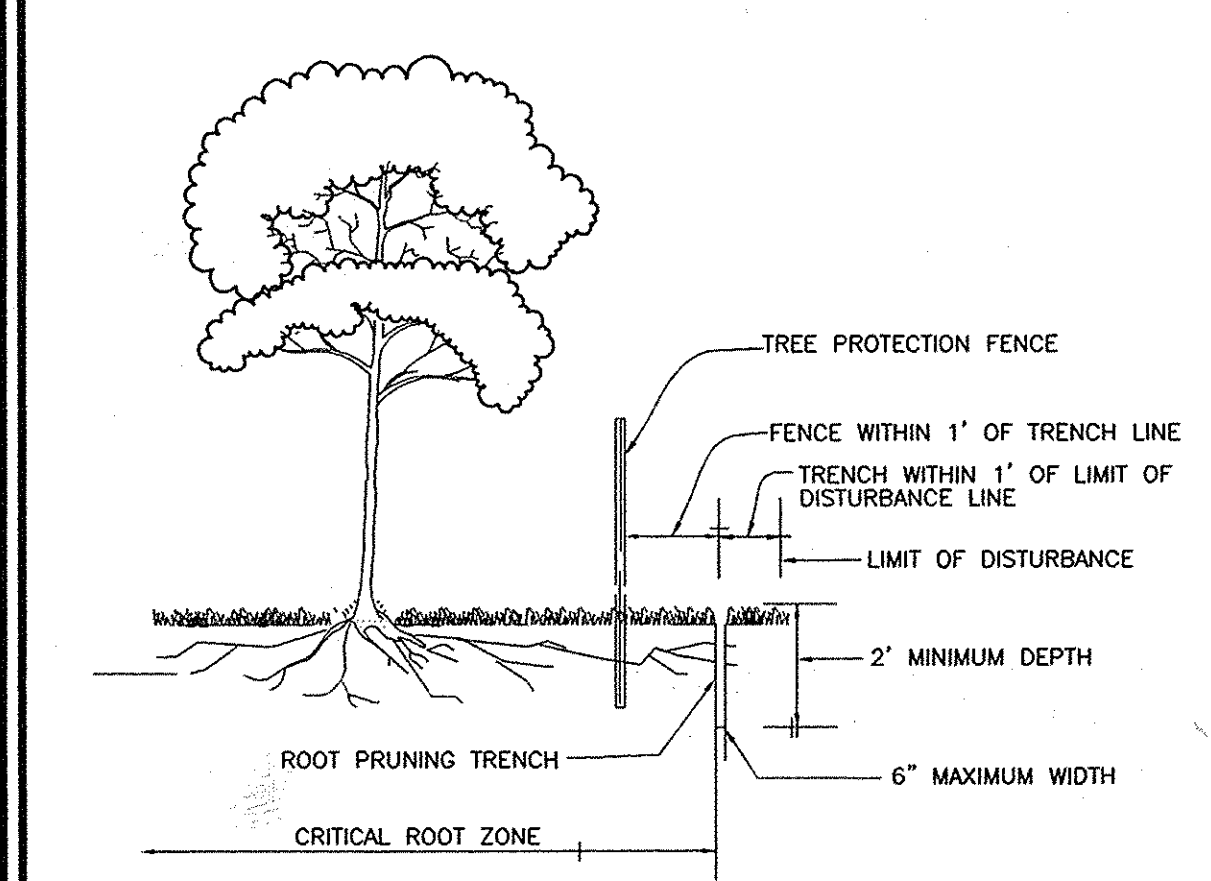
- NOTES**
- SEE "LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE-WASHINGTON METROPOLITAN AREAS" FOR ALL MATERIAL, PRODUCT, AND PROCEDURE SPECIFICATIONS.
 - SEE "LANDSCAPE GUIDELINES" FOR SUPPORTING TREES LARGER THAN 2-1/2" CALIPER.
 - PLACE UPRIGHT STAKES PARALLEL TO WALKS & BUILDINGS.
 - KEEP MULCH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



CATEGORY	PERIMETER LANDSCAPE EDGE									TOTAL
	TRASH PAD	1	2	3	4	5	6	7	8	
PERIMETER/FRONTAGE DESIGNATION	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* 160'	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	-	1:50 0	1:50 0	1:50 0	1:60 1	1:50 0	1:60 3	1:60 19	92'	1:60 0
SHADE TREES	-	1:40 0	1:40 0	1:40 0	-	1:40 0	-	-	-	-
EVERGREEN TREES	6	-	-	-	-	-	-	-	-	-
SHRUBS	-	-	-	-	-	-	-	-	-	-
NUMBER OF PLANTS PROVIDED	-	0	0	0	0	0	3	19	2	0
SHADE TREES	-	0	0	0	0	0	-	-	-	-
EVERGREEN TREES	-	0	0	0	0	0	-	-	-	-
OTHER TREES (2:1 SUBSTITUTION)	6	-	-	-	-	-	-	-	-	-
SHRUBS (10:1 SUBSTITUTION)	-	-	-	-	-	-	-	-	-	-
DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED	-	-	-	-	-	-	-	-	-	-



- NOTES:**
- FOREST PROTECTION DEVICE ONLY.
 - RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
 - BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
 - ROOF DAMAGE SHOULD BE AVOIDED.
- BLAZE ORANGE PLASTIC MESH**
TYPICAL TREE PROTECTION FENCE DETAIL



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

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

W. J. Smith 11-24-08
Chief, Bureau of Highways

APPROVED: DEPARTMENT OF PLANNING AND ZONING

David Hanna 2/4/09
Chief, Division of Land Development

Chris Dummer 11/25/09
Chief, Development Engineering Division

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.

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

PLANTING SCHEDULE FOR STREET TREES (PUBLIC)				
QUAN.	QUAN.	BOTANICAL NAME	SIZE	REM.
⊙	89	ACER RUBRUM RED MAPLE (SEEDLESS CULTIVARS SUCH AS 'CELAZAM', 'KARPIK', AND 'SOMERSET' ONLY)	2 1/2"-3" Col.	B & B
⊙	40	ACER X FREEMAN FREEMAN MAPLE (SEEDLESS CULTIVARS SUCH AS 'AUTUMN BLAZE', 'CELEBRATION', 'MARMO' AND 'SCARLET SENTINEL' ONLY)	2 1/2"-3" Col.	B & B
⊙	17	ACER CAMPESTRE HEDGE MAPLE	2 1/2"-3" Col.	B & B

PLANTING SCHEDULE FOR STREET TREES (PRIVATE)				
QUAN.	QUAN.	BOTANICAL NAME	SIZE	REM.
⊙	17	PRUNUS SERRULATA KWANZAN KWANZAN CHERRY (GROWTH HEIGHT=25')	2 1/2"-3" Col.	B & B

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

- GENERAL NOTES**
- ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT ANN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH LCAMW PLANTING SPECIFICATIONS.
 - CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING
 - FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SAUCES.
 - 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 \$16,230.00 FOR THE REQUIRED 42 SHADE TREES AND THE REQUIRED 23 EVERGREEN TREES AND 6 SHRUBS.

SCHEDULE D: STORMWATER MANAGEMENT AREA LANDSCAPING	
POND #1	703LF
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	790LF
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	1297LF
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

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.

Chris R. Meyer 10/24/2008
DEVELOPER'S NAME:

R. Joshi
DNR QUALIFIED FOREST PROFESSIONAL
ROMA JOSHI

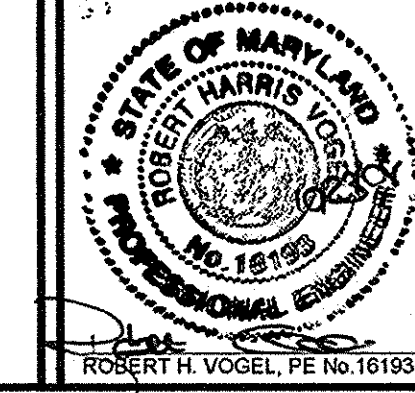
OWNER/DEVELOPER
CLAREMONT L.L.C.
11046 DORSCH FARM ROAD
ELLCOTT CITY, MARYLAND 21042
(410) 730-4556

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 TEL: 410.461.7666
ELLCOTT CITY, MD 21043 FAX: 410.461.8961



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

23 SHEET OF 27

CLAREMONT OVERLOOK

5600 WASHINGTON BLVD., ELKRIDGE, HOWARD COUNTY, MD

CORNERSTONE RETAINING WALL DESIGN

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.

Contractor'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.

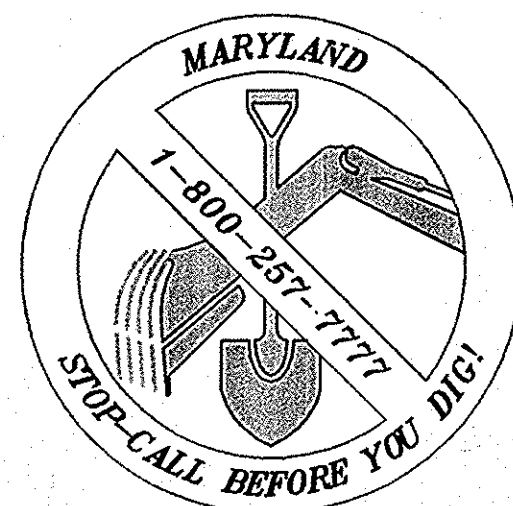
INSTALLATION MUST CONFORM TO THE ATTACHED "Ryan & Associates segmental retaining wall specifications and installation guidelines for Cornerstone".

SHEET INDEX

Sheet 24 - Cover Sheet
Sheet 25 - Wall Plan/Profile, Structural Notes & Load Table
Sheet 26 - Typical Sections & Details
Sheet 27 - Specifications

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.

APPROVED: DEPARTMENT OF PUBLIC WORKS	
<i>William F. ...</i> Chief, Bureau of Highways	11-24-08 Date
APPROVED: DEPARTMENT OF PLANNING AND ZONING	
<i>Cindy ...</i> Chief, Division of Land Development	2/10/09 Date
<i>...</i> Chief, Development Engineering Division	11/25/08 Date



CALL "MISS UTILITY"

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

THESE DRAWINGS ARE THE PROPERTY OF RYAN & ASSOCIATES.
UNAUTHORIZED REPRODUCTION FOR ANY PURPOSE IS AN
INFRINGEMENT UPON COPYRIGHT LAWS. VIOLATORS WILL BE
SUBJECT TO PROSECUTION BY THE FULLEST EXTENT OF THE LAW.

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

A Division of WKR Consulting, Inc.

CONSULTING & DESIGN ENGINEERS

HAGERSTOWN, MD OFFICE

1825 HOWELL RD, SUITE 3
HAGERSTOWN, MD 21740
PHONE: (301) 671-3200
FAX: (301) 360-9574

FREDERICK, MD OFFICE

2412 WYNFIELD CT.
FREDERICK, MD 21701
PHONE: (301) 360-9534
FAX: (301) 360-9574

e-mail: info@ryanandassociates.net

SPECIALIZING IN STRUCTURAL ENGINEERING,
GEOTECHNICAL ENGINEERING AND RETAINING WALLS

www.ryanandassociates.net

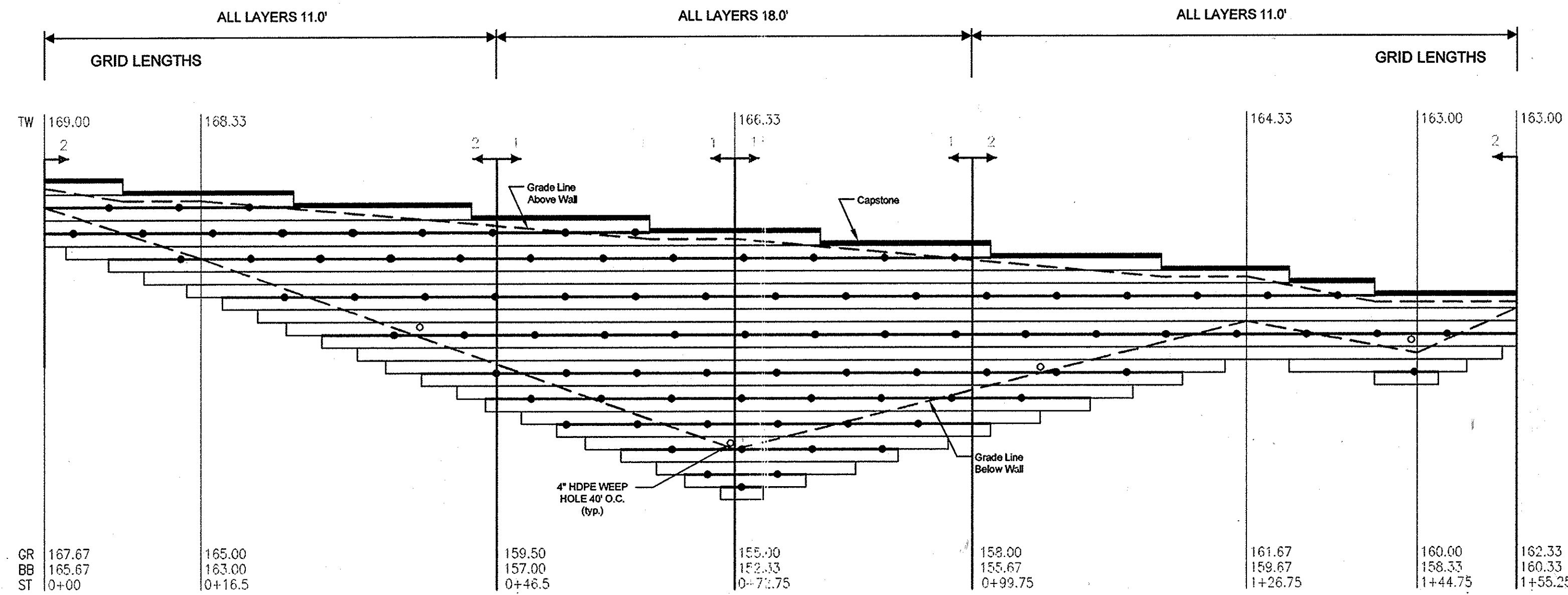
NO AS-BUILT INFORMATION ON THIS SHEET

AS-BUILT 06/24/15

F08-63

SHEET
24 OF 27

WALL PROFILE

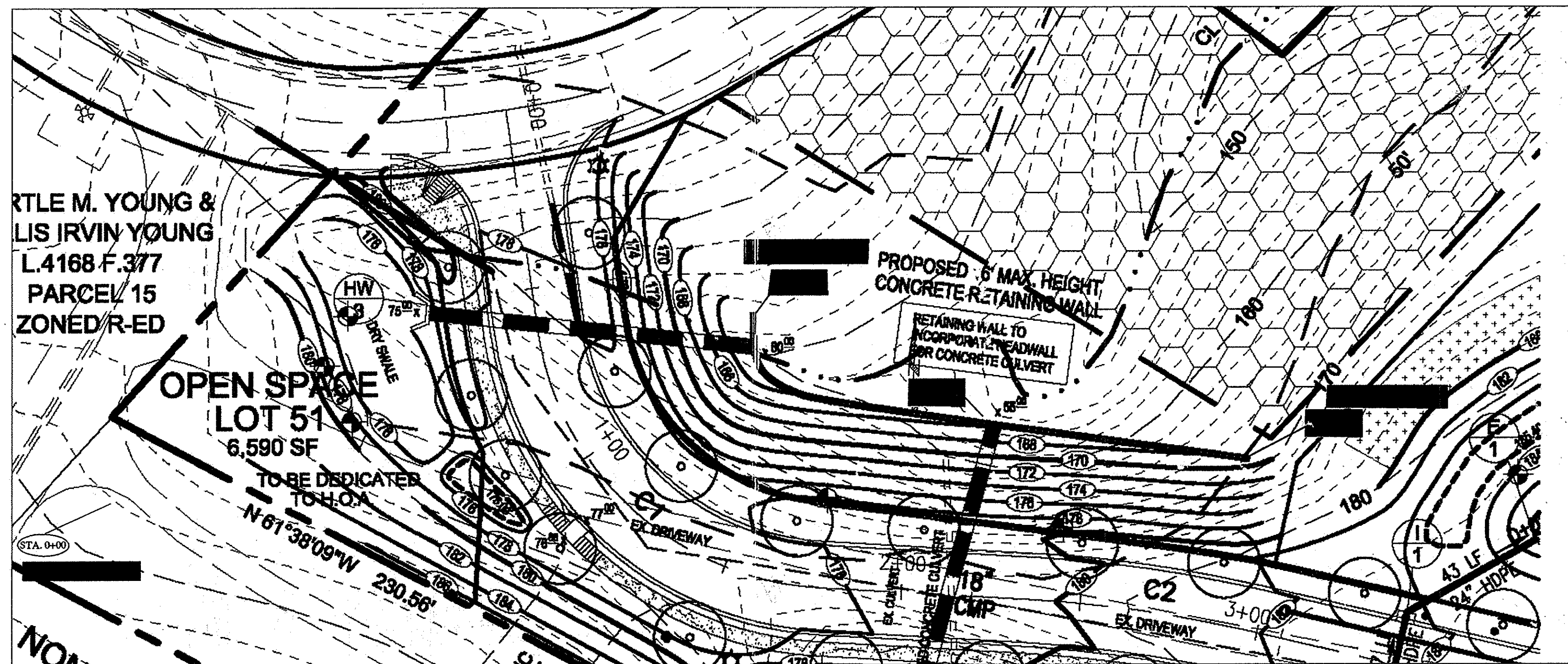


SCALE: HORIZONTAL SCALE 1" = 10'
VERTICAL SCALE 1" = 5'

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	OVERTURNING	BEARING	BEARING
				minimum 1.50	minimum 2.00	capacity	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

- 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.
- 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.
- SLOPES & SURCHARGES:** A 100 PSF live load surcharge and a 2:1 back slope is applied to the wall.
- SPECIFICATIONS:** Construction and materials must conform to the attached "Ryan & Associates segmental retaining wall specifications and installation guidelines for "Cornerstone."
- 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.
- 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).
- 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.
- 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.
- 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.
- 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.
- 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).
- 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, SLOPP, 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.
- 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 geomembrane). 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).
- 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.
- 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.
- 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.
- 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.

NO AS-BUILT INFORMATION ON THIS SHEET.

APPROVED: DEPARTMENT OF PUBLIC WORKS
Michael J. Sabella 11-24-08
 Chief, Bureau of Highways MS Date

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Condy Harmon 2/16/09
 Chief, Division of Land Development BB Date

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

REVISIONS		
No.	DATE	DESCRIPTION

DRAWN BY: MS
CHECKED BY: MS
DATE: 08/01/07

CLIENT: CLAREMONT, LLC
OWNER: CLAREMONT, LLC
JOB No: 1208-07-01

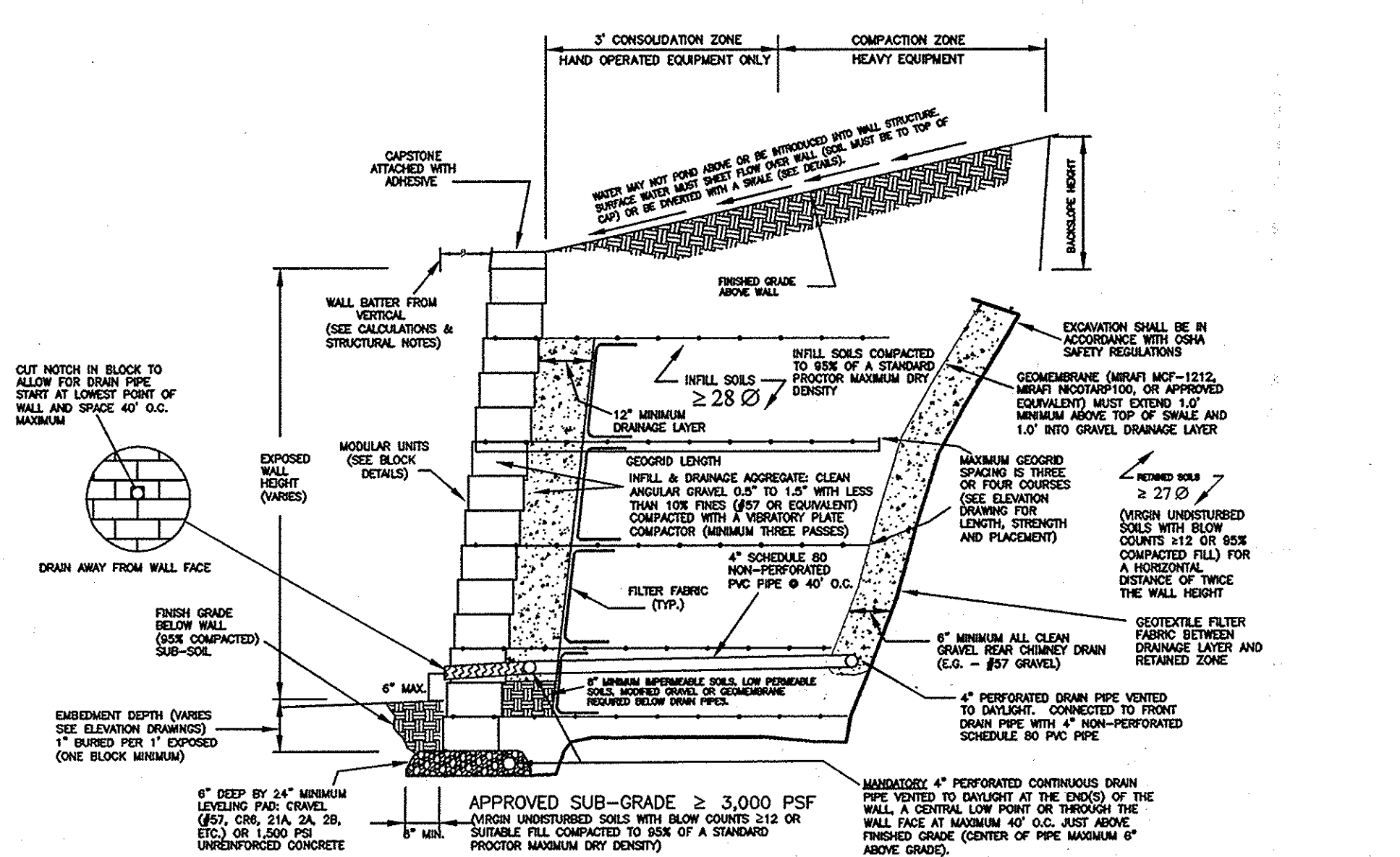
Ryan & Associates
 A Division of WKR Consulting Inc.
 Consulting & Design Engineers
 Structural Retaining Walls - Construction Review
 Email: info@ryanandassociates.net
 922 North East Street, Frederick, MD 21701
 Tel: (301) 360-9534 Fax: (301) 360-9574

CORNERSTONE BLOCK RETAINING WALL DESIGN
 WALL PLAN/PROFILE, STRUCTURAL NOTES & LOAD TABLE
CLAREMONT OVERLOOK
 5600 WASHINGTON BLVD., ELKRIDGE, HOWARD CNTY., MD

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 10/22/08
 William K. Ryan, P.E.
 License No: 21506
 Expiration Date: 03/09/2009
ENGINEER SEAL

SHEET
 25 OF 27

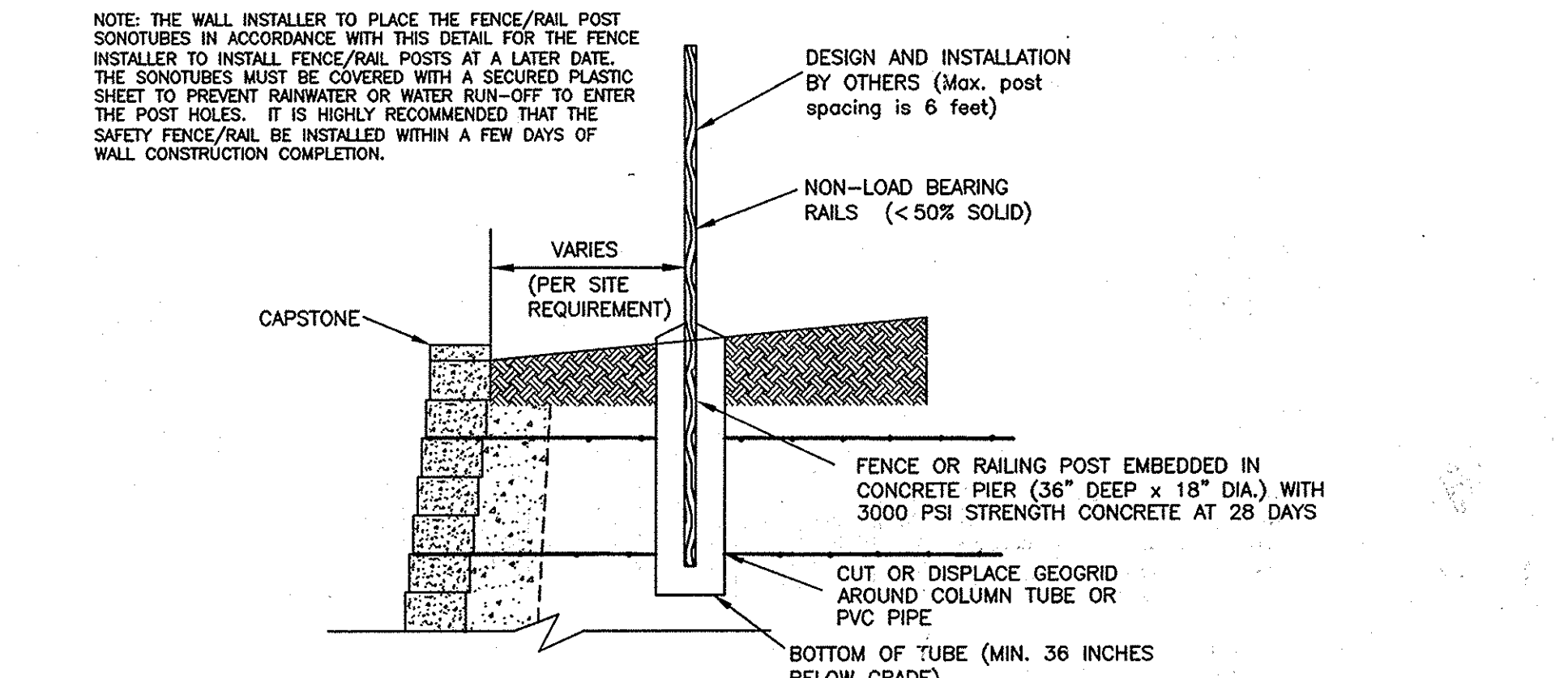
CORNERSTONE



WALL TYPICAL SECTION

(FOR GEOGRID ELEVATIONS AND BLOCK COURSES SEE WALL PROFILE)

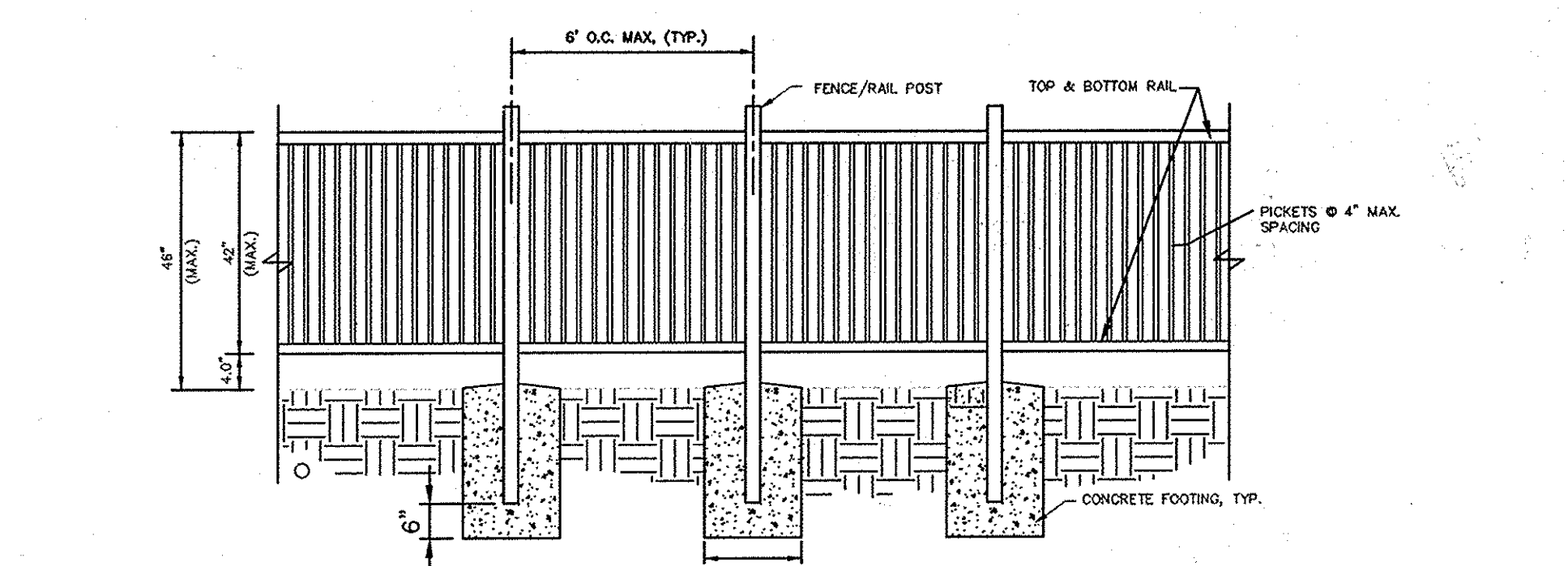
N. T. S.



NON-LOAD BEARING & NON-WIND BEARING FENCE

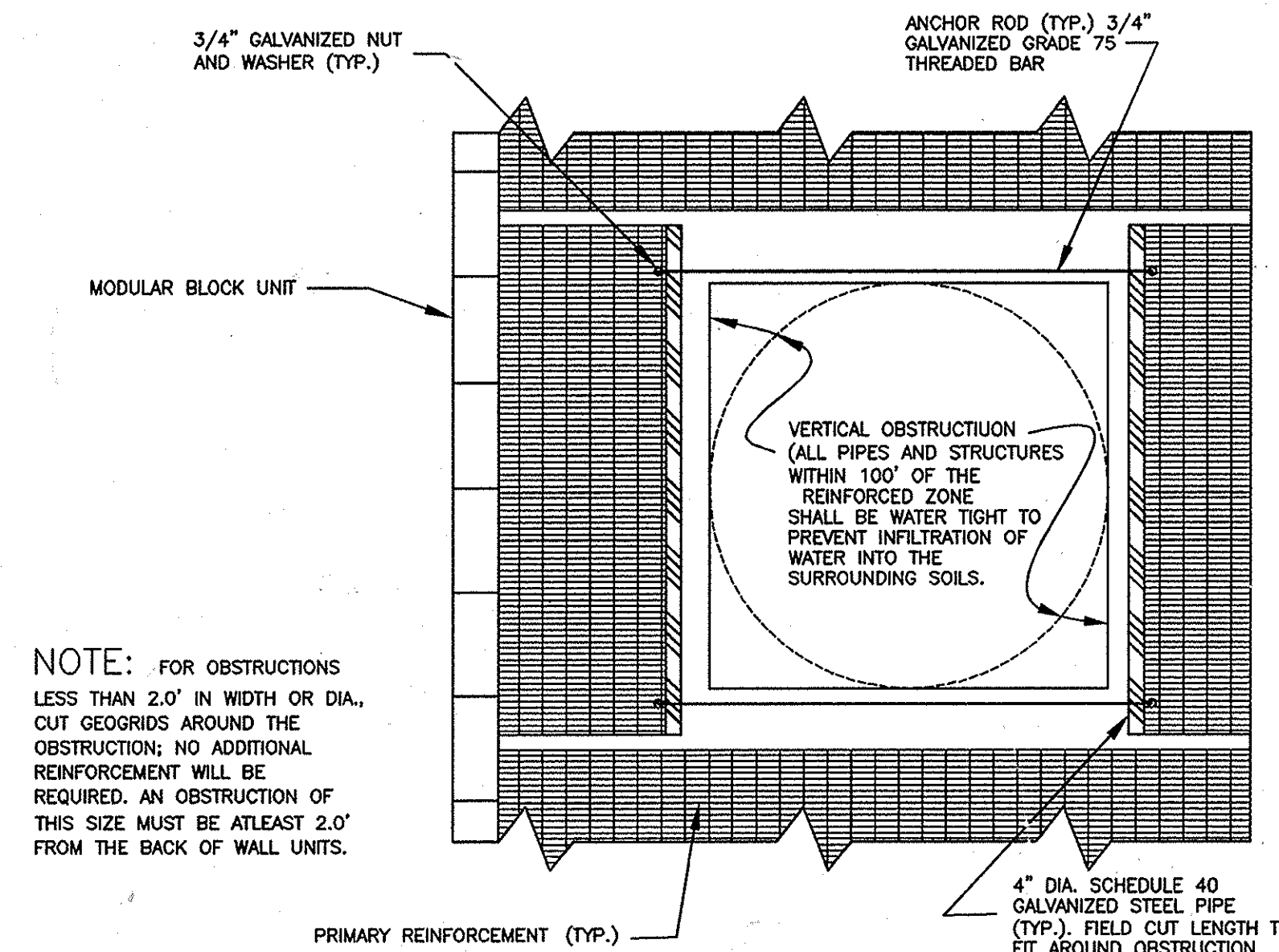
(INSTALLED BEHIND WALL)

N.T.S.



FENCE DETAIL AT RETAINING WALL

N.T.S.

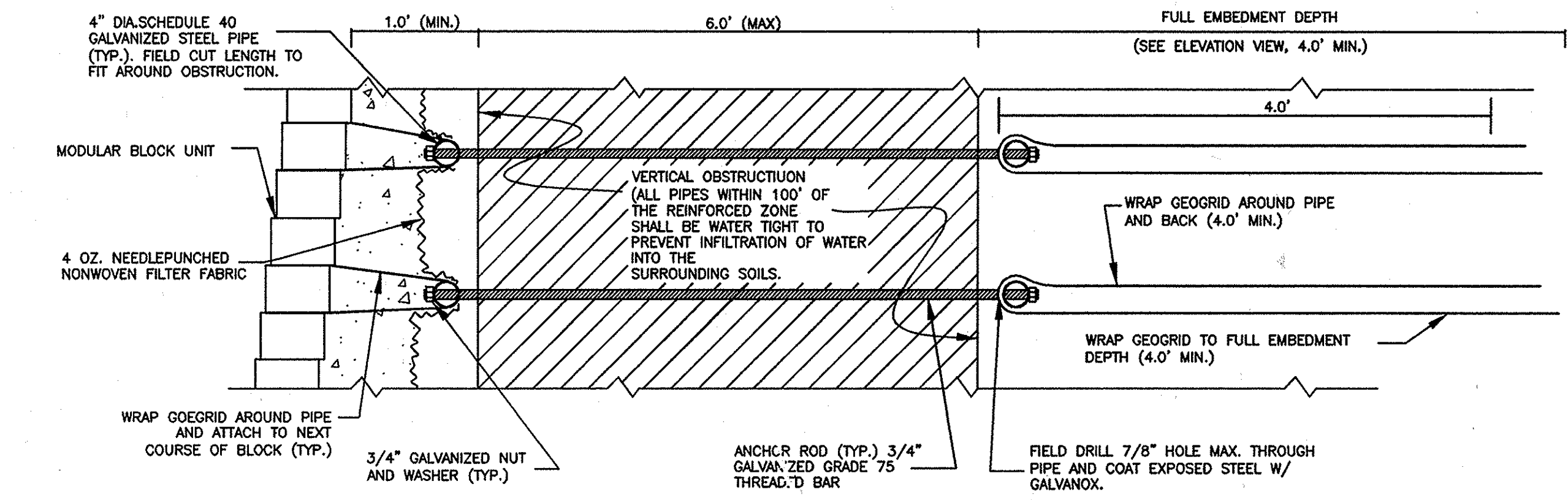


NOTE: FOR OBSTRUCTIONS LESS THAN 2.0' IN WIDTH OR DIA., CUT GEORGRIDS AROUND THE OBSTRUCTION; NO ADDITIONAL REINFORCEMENT WILL BE REQUIRED. AN OBSTRUCTION OF THIS SIZE MUST BE ATLEAST 2.0' FROM THE BACK OF WALL UNITS.

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

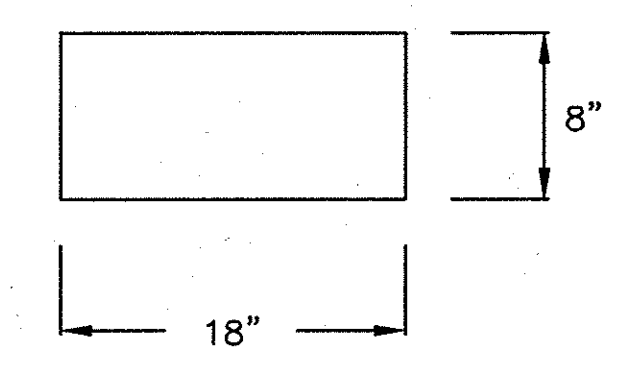
VERTICAL OBSTRUCTION PLAN VIEW

N.T.S.

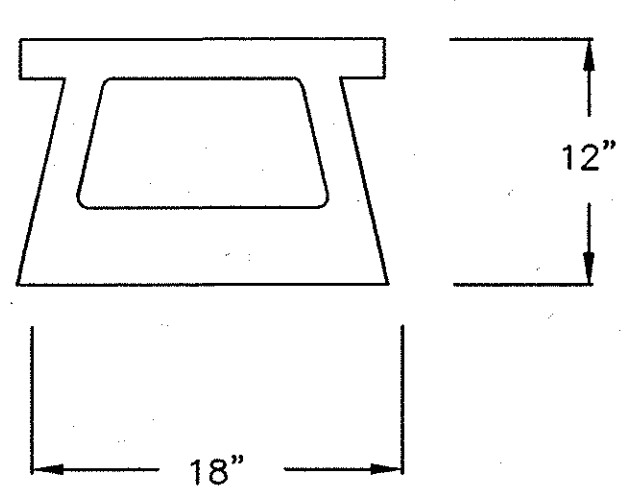


VERTICAL OBSTRUCTION DETAIL GREATER THAN 2.0' IN WIDTH OR DIAMETER CROSS SECTION

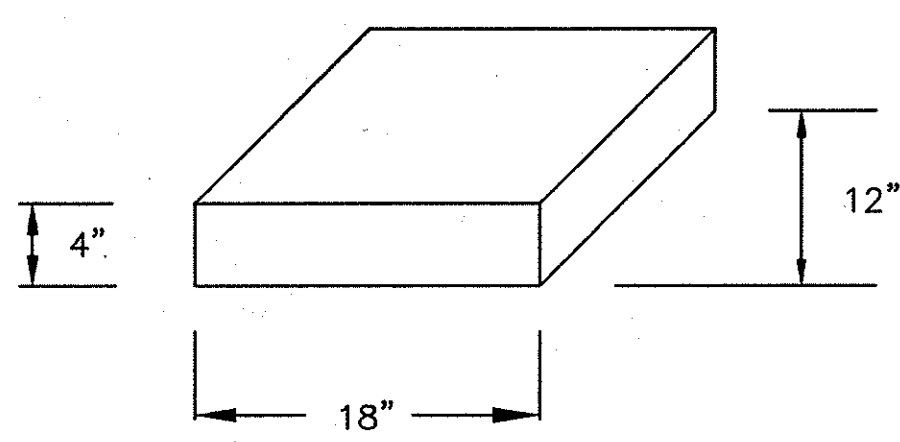
N.T.S.



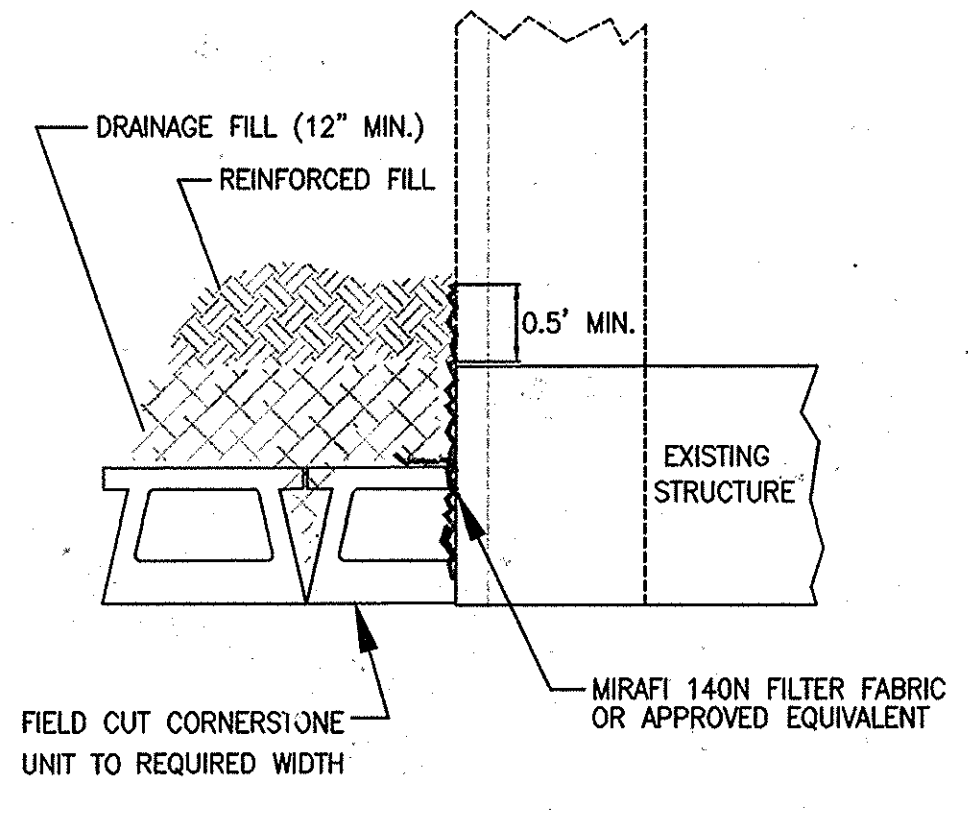
BLOCK DIMENSIONS FRONT VIEW



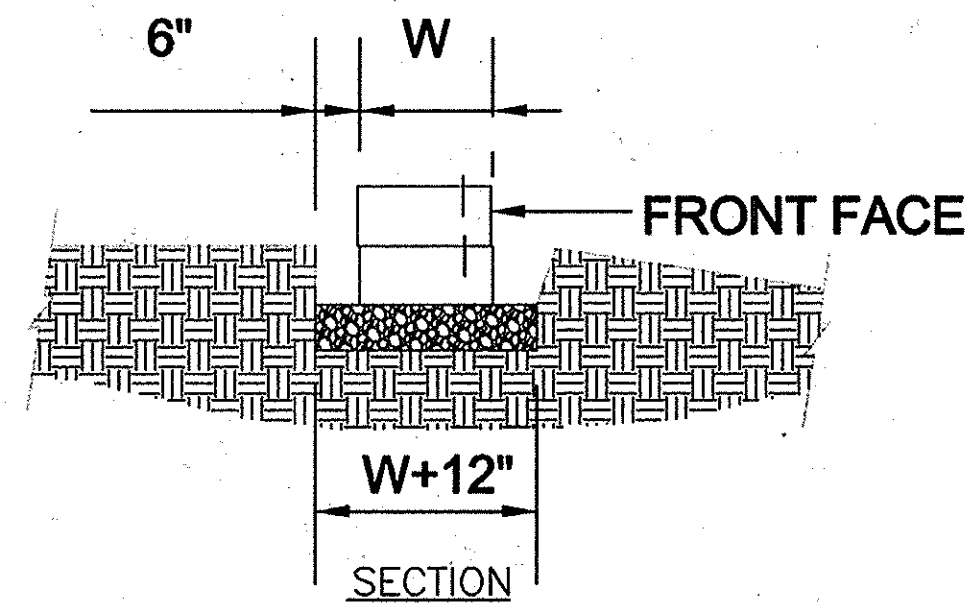
BLOCK DIMENSIONS TOP VIEW



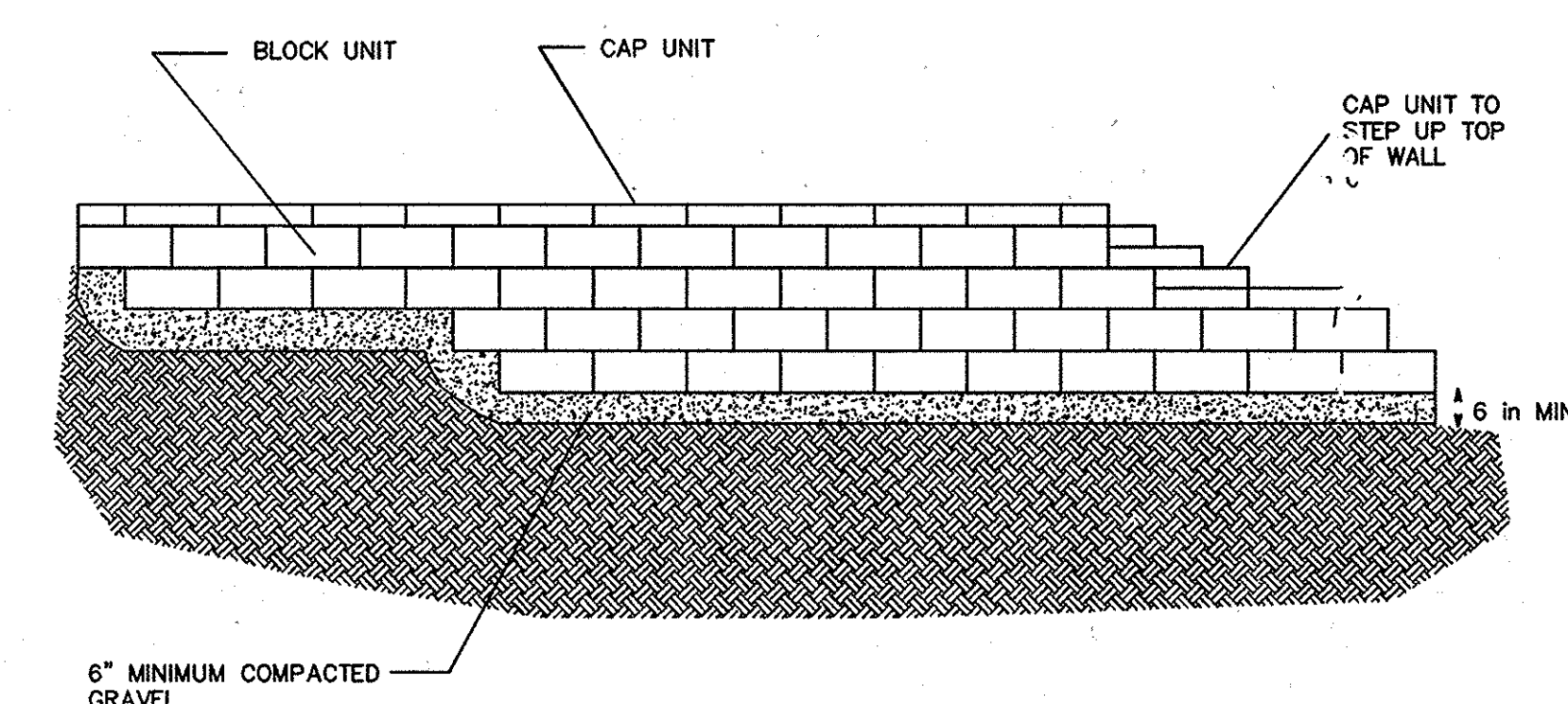
CAP DIMENSIONS



ABUTMENT DETAIL (PLAN VIEW) AT SIDES AND ABOVE WALL



LEVELING PAD DETAIL



STEP DOWN TYPICAL DETAIL

APPROVED: DEPARTMENT OF PUBLIC WORKS	
<i>Wade J. ...</i>	11-24-08
Chief, Bureau of Highways	Date
APPROVED: DEPARTMENT OF PLANNING AND ZONING	
<i>Condy ...</i>	2/10/09
Chief, Division of Land Development	Date
<i>...</i>	11/25/08
Chief, Development Engineering Division	Date

NO.	DATE	BY	DESCRIPTION

DESIGNED BY: <i>...</i>	CLIENT: CLAREMONT, LLC
DRAWN BY: <i>...</i>	OWNER: CLAREMONT, LLC
CHECKED BY: <i>...</i>	JOB No: 1888-07-01
DATE: 08/21/07	

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 TYPICAL SECTIONS & DETAILS
CLAREMONT OVERLOOK
 5600 WASHINGTON BLVD., ELKCRIDGE, HOWARD CNTY., MD

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. 21150
 Expiration Date: 05/09/2009

ENGINEER SEAL

SHEET 26 OF 27

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—(ASTM D 1557) Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort
- F. ASTM D 1248—Polyethylene Plastics Extrusion Materials for wire and Cable
- G. ASTM D 1557—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 2168—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 Index of Soils
- M. ASTM D 4585—Tensile Properties of Geotextiles by the Wide-Width Strip Method.
- N. ASTM D 5252—Standard Test Method for Creep and Creep Rupture Behavior of Geosynthetic
- O. ASTM D 2850—Unconfined, Undrained Compressive Strength of Cohesive Soils in Triaxial Compression
- P. GRS2—Geogrid Tensile Strength
- Q. GRCG5—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 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 other services may be provided on a time & materials basis as per a negotiated fee. The scope of work for Ryan & Associates (RA) on this project does not include the preparation of a grading plan. Evaluating the Unconfined Compressive Strength of Cohesive Soils, 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 the design (elevation) 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 final 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 be responsible for correcting a wall that is being 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 unit construction shall be 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 12 inches 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.

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. SXT Miraflex for SXT, SP80 System for SP85, 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 fact and structurally sound (cannot be cracked, loose or partially missing).

2.04 Leveling Pod

A. Material for the leveling pod shall consist of compacted gravel or unreinforced concrete. Typical gravels for this leveling pod 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 pod.

2.05 Drainage Aggregate

A. Drainage aggregate shall be clean angular gravel (#57 or approved equivalent) with a size of 1/2 inch to 1 1/2 inches and less than 10% fines (passing the #20 sieve). Rounded "too good" 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, and top soil, trash, wood, etc.). The infill shall consist of CH (fat clay), MH (medium silty) or OH/OH-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 ±25% 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 polystyrene geogrids in water applications. In the case of water applications the geogrid manufacturer shall be consulted to see if the dike 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 toppings (blacktop millings) are only acceptable for wall infill or the leveling pod 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 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. An exception is when the wall has been designed as a "water application" with free draining infill gravel or sand (GF, GW, SP or SW).

2.09 Foundation Soils: the soils under the wall's gravel leveling pod and the soils under the reinforced 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 sub-grade is not only the soils under the leveling pod, but also includes all soils under the entire reinforced geogrid zone. Therefore, the foundation soils extend from 'C' in front of the base block to the 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 retained 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 map), 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 consists of: topographic features (such as slopes), soil types, utilities, storm water management, structures (including buildings, other existing or proposed structures), site geological phenomena, groundwater, local water table, and any other site information (such as driveways, other walls, patios, roads, 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 development 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, quantities 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 state where 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 over-excavation. Excavation shall 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 pod and the soils under the wall's reinforced geogrid zone) shall be examined by the site geotechnical engineer to ensure 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 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/ft) is encountered in the sub-grade, or if the wall needs to pass 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 Pod Construction

A. The leveling pod 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 pod should, at a minimum, extend laterally at least 1 foot beyond the face of the wall. The leveling pod 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 pod 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 pod.

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 "OR" i.e. grade elevations). The wall's toe (front of wall at base course) must be backfilled up to the proposed final grade with 95% compacted approved sub-soils no later than 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 pod. The units shall be leveled side-to-side, front-to-rear and with adjacent units, and aligned to ensure uniform contact with the leveling pod. 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. Dimensions must be met 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 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 bricks when available. If special outside corner bricks 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 joints in connection from clips, ties, 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 stick. 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 sections 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 extent that the wall installer shall verify the orientation of the geogrid 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 equipment. Turning equipment must 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. Normal 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. Rubber-tired equipment shall 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 fill). 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 global 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 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, CC or SC) shall be placed on top of the 12" drainage layer. If clayey soils are not readily available, a layer of filter fabric (Miraflex 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 a minimum of 1/2 inch above 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 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 shall 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 (see central low point or through wall face at 40' max. spacing from the wall).

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 be directed to a storm sewer manhole (see instructions for front drainpipes 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 (Miraflex MCF-1212 or approved equivalent) must be installed when drainage is present or likely (to an elevation that is a minimum of 1 foot above predicted levels as given by the site-geotechnical engineer) 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 2000 sq ft, but not fewer than two tests per lift for any lift. Approved compaction tests are the Nuclear Density Gauge and cone penetrometer.

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 3 feet behind the wall face shall be achieved by at least three (3) passes of the lightweight mechanical plate compactor or roller. Heavy equipment (such as track hoes, ride on rollers, pnos, etc.) must be kept back a minimum of 5 feet from the rear of the wall.

C. At the end of each day's operation, the wall installer shall slope the top level of backfill away from the wall facing to direct water runoff away from the wall.

D. At completion of wall construction if final grading, paving, landscaping and/or storm drainage installation adjacent to the wall is not to proceed immediately, the wall installer shall ensure that the wall is protected from erosion. If erosion is not to be collected or pond behind the wall until final construction adjacent to the wall is completed.

E. Filter fabric (Miraflex 140N or equivalent) is required as shown 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 clog, clogging the gravel drainage layer. Filter fabric shall be placed in the geogrid zone and the compacted infill soil if the backfill soils are gravelly (CL or SC), gravelly (GC, GM, GP or GW) or silty (ML or SM).

3.09 SRW Caps

A. SRW caps shall be properly designed 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 lengths. This is due to differences in measuring - i.e. changes 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 (HWT) or crest of dam/levee. This gravel or sand must be free draining and have less than 10% fines. Filter fabric (Miraflex 140N or approved equivalent) must go in front of the buried block, under the leveling pod, 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, CC or SC) must be placed on 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 pod.

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's 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 less than the RA Final Design and the civil plans); construction techniques must be in accordance with previously stated procedures; placement of management (placement of swales, clay layers/geotextiles, flow of surface water to inlets, etc.), presence of groundwater under and behind the wall (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 guideline, 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 pod 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 weight of the RA Final Design Structure above the pipe). 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. The 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, SCLPP, etc.) or utilities (such as electric, gas, phone lines, sewer or water lines, etc.). Groove 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