

GENERAL NOTES

- 1.) THIS PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
- 2.) THE SUBJECT PROPERTY IS ZONED R-ED PER THE 2-2-2004 COMPREHENSIVE ZONING PLAN AND THE "COMP LITE" ZONING AMENDMENTS EFFECTIVE 7-28-2006.
- 3.) COORDINATES BASED ON NAD '83, MARYLAND COORDINATE SYSTEM AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS 3166 AND 3167.
- 4.) TRACT BOUNDARY IS BASED ON A FIELD RUN BOUNDARY SURVEY PERFORMED ON OR ABOUT MARCH, 2000 BY CENTURY ENGINEERING, INC. AND VERIFIED BY BENCHMARK ENGINEERING, INC. IN OCTOBER, 2010.
- 5.) THE EXISTING TOPOGRAPHY SHOWN IS BASED SDP-05-017, SDP-04-122 AND ON A FIELD SURVEY BY BENCHMARK ENGINEERING, INC. IN OCTOBER, 2010.
- 6.) A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT.
- 7.) WETLAND DELINEATION WAS PROVIDED BY ECO-SCIENCE PROFESSIONALS IN JULY, 2004.
- 8.) AN APFO TRAFFIC STUDY IS NOT REQUIRED FOR THIS PROJECT AS IT IS LOCATED MORE THAN 1.5 MILES FROM THE NEAREST INTERSECTION OF TWO MAJOR COLLECTOR ROADWAYS.
- 9.) THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
- 10.) WATER IS PUBLIC. THE CONTRACT NUMBER IS 14-4290-D.
- 11.) SEWER IS PUBLIC. THE CONTRACT NUMBER IS 14-4290-D.
- 12.) THIS SUBDIVISION IS SUBJECT TO SECTION 18.122B OF THE HOWARD COUNTY CODE. PUBLIC WATER AND/OR SEWER SERVICE SHALL BE GRANTED UNDER THE TERMS AND PROVISIONS OF DEVELOPER AGREEMENT #14-1490-D.

- 13.) THERE IS NO 100-YEAR FLOODPLAIN OR STEEP SLOPES LOCATED ON THIS SITE.
- 14.) TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO CEMETERY LOCATIONS ON-SITE.
- 15.) THERE ARE NO HISTORIC SITES/FEATURES LOCATED ON THIS SITE.
- 16.) NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS, STREAMS, OR THEIR REQUIRED BUFFERS OR FOREST CONSERVATION RETENTION AREAS.
- 17.) THE GEOTECHNICAL REPORT WAS PREPARED BY HILLIS-CARNES ENGINEERING ASSOCIATES, INC. DATED OCTOBER, 2004 AND APRIL, 2005.

18.) STORMWATER MANAGEMENT IS PROVIDED IN ACCORDANCE WITH THE 2000 MARLAND STORMWATER DESIGN MANUAL. THIS PROJECT MEETS THE CRITERIA OUTLINED IN THE WDE GUIDELINES TO GRANT AN ADMINISTRATIVE WAIVER. THIS PLAN RECEIVED PRELIMINARY APPROVAL (SP-05-017) ON 8-11-2006 AND FINAL PLAN APPROVAL (F-11-034) ON 3-30-2011. A GRADING PERMIT SHALL BE APPROVED PRIOR TO MAY 4, 2013. THIS PLAN IS ALSO SUBJECT TO THE EXPIRATION OF THIS WAIVER UNLESS STORMWATER PRACTICES ARE CONSTRUCTED BY MAY 4, 2017.

STORMWATER MANAGEMENT MAY BE PROVIDED BY A P-5 POCKET POND, SHEETFLOW TO BUFFER CREDIT, NON-ROOFTOP DISCONNECTION AND RAINGARDENS. REV SHALL BE PROVIDED BY SHEETFLOW TO BUFFER CREDIT, NON-ROOFTOP DISCONNECTION AND RAINGARDENS. CPV SHALL BE PROVIDED BY THE P-5 POCKET POND. THE P-5 POCKET POND SHALL BE PRIVATELY OWNED AND JOINTLY MAINTAINED. THE RAINGARDENS SHALL BE PRIVATELY OWNED AND PRIVATELY MAINTAINED.

19.) LANDSCAPING IS PROVIDED IN ACCORDANCE WITH A CERTIFIED LANDSCAPE PLAN INCLUDED IN THIS ROAD CONSTRUCTION PLAN SET IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE REQUIRED PERMETER LANDSCAPING SHALL BE POSTED AS PART OF THE DPW DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$7,050.00 (\$4,800.00 FOR 16 SHADE TREES, \$1,650.00 FOR 11 EVERGREENS AND \$600.00 FOR 20 SHRUBS. FINANCIAL SURETY FOR THE REQUIRED STREET TREES SHALL BE INCLUDED IN THE COST ESTIMATE GENERATED BY HOWARD COUNTY DEVELOPMENT ENGINEERING DIVISION.

20.) FOREST CONSERVATION FOR THIS SITE WAS PREVIOUSLY PROVIDED UNDER SDP-05-017. THE EASEMENTS WERE RECORDED AS PLAT NO. 17426-17427. HOWEVER, UNDER THIS PLAN THERE IS PROPOSED DISTURBANCE WITHIN EXISTING FOREST CONSERVATION EASEMENT #2 ON PARCEL 'A' OF OUR LADY OF PERPETUAL HELP, RECORDED AS PLAT 17427 AND EXISTING FOREST CONSERVATION EASEMENT #2 ON OPEN SPACE LOT 75 OF CASCADE OVERLOOK SECTION ONE, RECORDED AS PLAT 16657-59. THE DISTURBANCE AMOUNTS ARE 11,000 S.F. AND 1,258 S.F., RESPECTIVELY. FINANCIAL SURETY IN THE AMOUNT OF \$6,129.00 FOR THE TOTAL DISTURBANCE AMOUNT OF 12,258 S.F. SHALL BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT FOR THIS PLAN (F-11-034).

21.) STREET LIGHT PLACEMENT AND TYPE OF FIXTURES AND POLES SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (2006), SECTION 5.5.A. A MINIMUM OF 20 FEET SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.

22.) FOR FLAG OR PIPESTEM LOTS, REFUSE COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE ARE PROVIDED TO THE JUNCTION OF THE FLAG OR PIPESTEM AND ROAD RIGHT OF WAY LINE AND NOT THE FLAG OR PIPESTEM LOT DRIVEWAY.

23.) DRIVEWAYS SHALL BE PROVIDED PRIOR TO RESIDENTIAL OCCUPANCY TO INSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:

- a) WIDTH - 12' (16' SERVING MORE THAN ONE RESIDENCE).
- b) SURFACE - 6" OF COMPACT CRUSHER RUN BASE WITH TAR AND CHIP COATING (1-1/2" MIN.).
- c) GEOMETRY - MAXIMUM 15% GRADE, MAXIMUM 10% GRADE CHANGE AND MINIMUM 45' TURNING RADIUS.
- d) STRUCTURES (CULVERTS/BRIDGES) - CAPABLE OF SUPPORTING 25 GROSS TONS (H25 LOADING).
- e) DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOODPLAIN WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY.
- f) STRUCTURE CLEARANCES - MINIMUM 12 FEET.
- g) MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE.

24.) WAIVER PETITION (WP-06-007) A REQUEST TO WAIVE SECTION 16.120(b)(4)(v) AND 16.121(a), TO PERMIT STORMWATER MANAGEMENT ACCESS TO BE LOCATED ON RESIDENTIAL LOTS, THE PIPESTEM AREAS OF PROPOSED LOTS 5-9 AND TO PERMIT THE SWMF FOR OUR LADY OF PERPETUAL HELP CHURCH TO BE LOCATED WITHOUT FRONTAGE ON A PUBLIC ROAD WAS APPROVED ON SEPTEMBER 22, 2005 AND NOVEMBER 15, 2005, RESPECTIVELY, SUBJECT TO THE FOLLOWING CONDITION:

1. OUR LADY OF PERPETUAL HELP CHURCH/ARCHDIOCESE OF BALTIMORE ROMAN CATHOLIC CHURCH SHALL BE A PARTY IN THE SHARED ACCESS EASEMENT AND MAINTENANCE AGREEMENT FOR THE SHARED DRIVEWAY FOR LOT 5-9 AND THE CHURCH'S SWMF, AND SHALL ONLY USE THE SHARED DRIVEWAY TO ACCESS THE SWMF FOR MAINTENANCE OR REPAIR PURPOSES.

25.) WAIVER PETITION (WP-10-084) A REQUEST TO WAIVE SECTION 16.144(k)(3), WHICH STATES THAT THE FINAL PLAN MUST BE SUBMITTED WITHIN FOUR (4) MONTHS OF THE PRELIMINARY EQUIVALENT SKETCH PLAN APPROVAL FOR SUBDIVISIONS WITH 50 OR FEWER HOUSING UNITS WAS APPROVED ON JANUARY 27, 2010 SUBJECT TO THE FOLLOWING CONDITIONS:

1. COMPLIANCE WITH THE DECISION AND ORDER ISSUED ON MAY 25, 2006 AND ALL SRC AGENCY COMMENTS GENERATED WITH THE REVIEW OF THE PRELIMINARY EQUIVALENT SKETCH PLAN, SP-05-017.
2. THE DEVELOPER MUST SUBMIT THE FINAL PLAN IN ASSOCIATION WITH PHASE 1 OF SP-05-017 (CASCADE OVERLOOK, SECTION III) WITHIN ONE (1) YEAR OF FEBRUARY 8, 2010 (ON OR BEFORE FEBRUARY 8, 2011).

26.) A DESIGN MANUAL WAIVER, A REQUEST TO WAIVE SECTION 2.4.1 OF DESIGN MANUAL VOLUME III TO ALLOW A DEVIATION FROM THE STANDARD TYPICAL SECTION TO HAVE A 2:1 SLOPE AFTER THE CURB ALONG THE SOUTH SIDE OF MARCH BROWN ROAD IN ORDER TO SAVE TREES WAS APPROVED ON FEBRUARY 22, 2005.

27.) 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 THE START OF ANY WORK.

28.) THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.

APPROVED: DEPARTMENT OF PUBLIC WORKS

Michael J. ... 6-27-2011 DATE
CHIEF, BUREAU OF HIGHWAYS

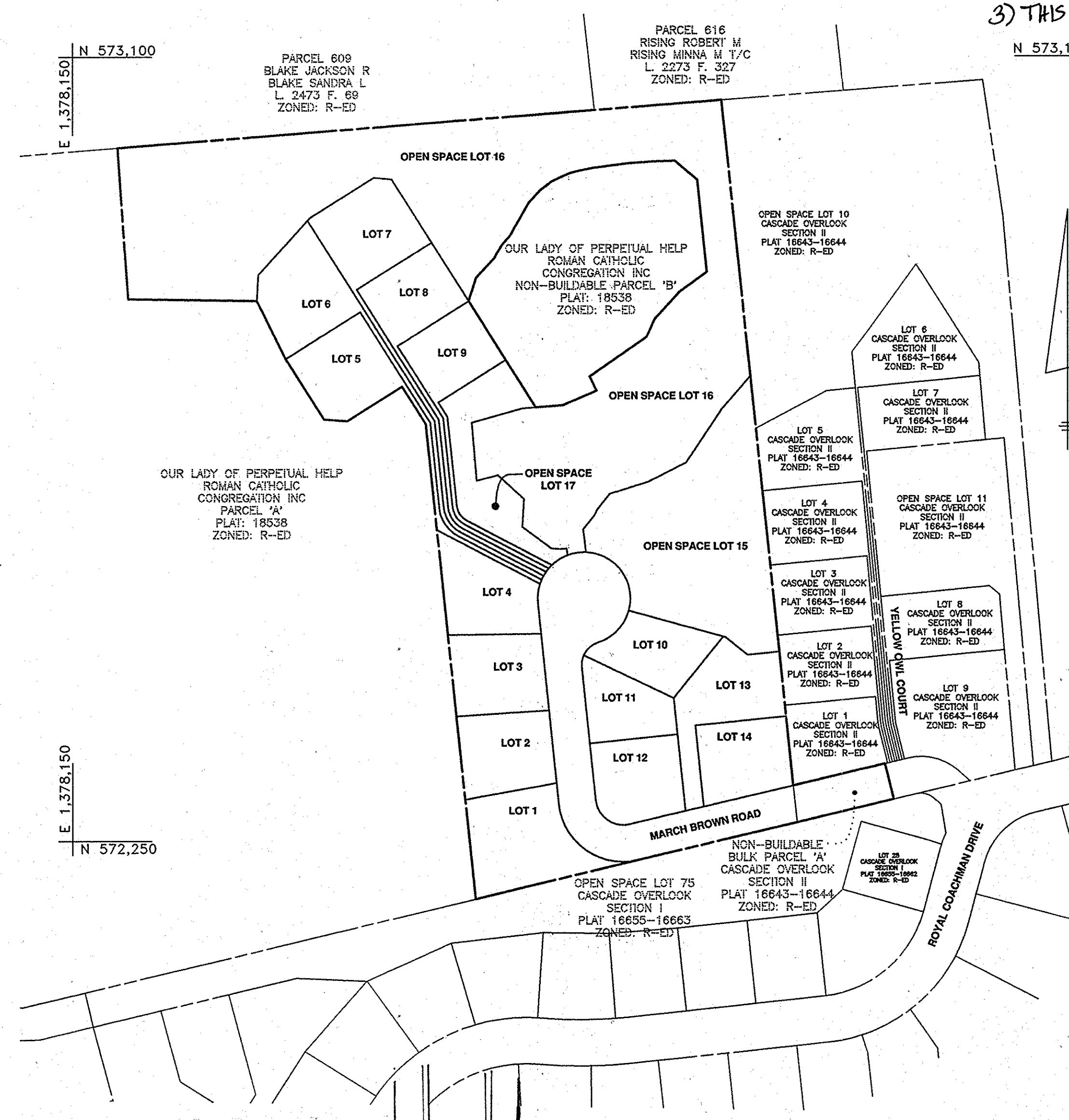
APPROVED: DEPARTMENT OF PLANNING AND ZONING

... 7/06/11 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT

... 7/1/11 DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION

CASCADE OVERLOOK SECTION III

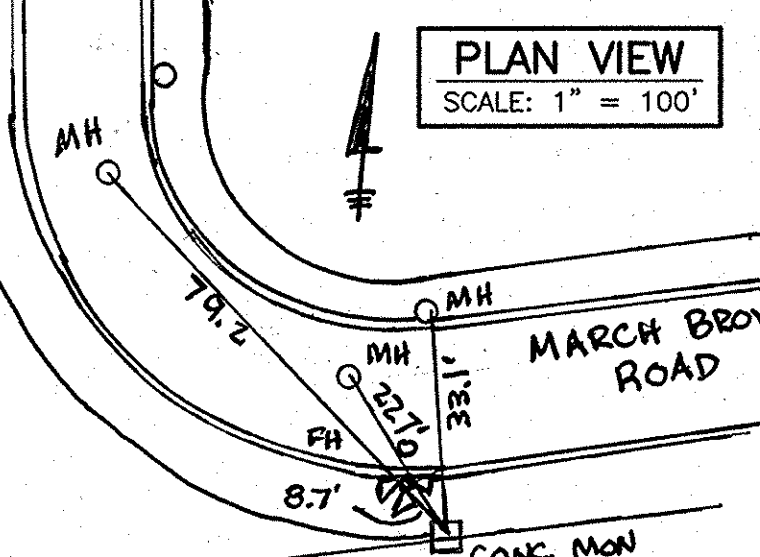
LOTS 1 thru 14 AND OPEN SPACE LOTS 15 thru 17 ROAD, STORM DRAIN AND STORMWATER MANAGEMENT PLANS



- 29.) THE DECISION AND ORDER FOR PB372 (SP-05-017) WAS SIGNED MAY 25, 2006 FOR 14 RESIDENTIAL LOTS IN AN R-ED DISTRICT.
- 30.) BOARD OF APPEALS REFERENCES: BA CASE 83-39E, BA CASE 90-24E AND BA CASE 01-51C. THE CONDITION OF 01-51C INDICATED THAT THE CONDITIONAL USE APPLIES ONLY TO THE PROPOSED MULTI-PURPOSE BUILDING AND SITE IMPROVEMENTS.
- 31.) A PRIVATE RANGE OF ADDRESS SIGN ASSEMBLY FOR THE FLAG LOT DRIVEWAY IN THE CUL-DE-SAC SHALL BE FABRICATED AND INSTALLED BY HOWARD COUNTY BUREAU OF HIGHWAYS AT THE DEVELOPER'S/OWNERS EXPENSE WHERE NEEDED. CONTACT HOWARD COUNTY TRAFFIC DIVISION AT 410-313-5752 FOR DETAILS AND COST ESTIMATES.
- 32.) STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURE AND POLES SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (2006), SECTION 5.5.A. A MINIMUM OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
- 33.) THE PURPOSE OF OPEN SPACE LOT 15 IS FOR STORMWATER MANAGEMENT AND THE PORTION OF THE LOTS NOT CONTAINING ANY STORMWATER MANAGEMENT EASEMENTS SHALL BE USED FOR RECREATIONAL OPEN SPACE. LOT 15 IS PRIVATELY OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION.
- 34.) UNINTERRUPTED ACCESS TO THE EXISTING DRIVE ALONG THE SOUTH SIDE OF LOT 1 MUST BE AVAILABLE AT ALL TIMES DURING CONSTRUCTION OF MARCH BROWN ROAD.
- 35.) ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
36. a) THE TRAFFIC CONTROL DEVICE LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE FIELD APPROVED BY HOWARD COUNTY TRAFFIC DIVISION (410-313-5752) PRIOR TO THE INSTALLATION OF ANY OF THE TRAFFIC CONTROL DEVICES.
b) ALL TRAFFIC CONTROL DEVICES AND THEIR LOCATIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MdmUTCd).
c) ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
- 37.) EXISTING UTILITIES ARE BASED ON FIELD SURVEY LOCATION BY BENCHMARK ENGINEERING, INC. AND PER F-03-150.
- 38.) THE SETBACK REQUIREMENT FOR THE REAR PORTIONS OF LOTS 1-6 AND LOT 9 IS THE STANDARD STRUCTURE SETBACK IN THE R-ED DISTRICT OF 25 FEET FROM THE REAR LOT LINE AS DETERMINED BY THE DEPARTMENT OF PLANNING AND ZONING ON MARCH 8, 2011.

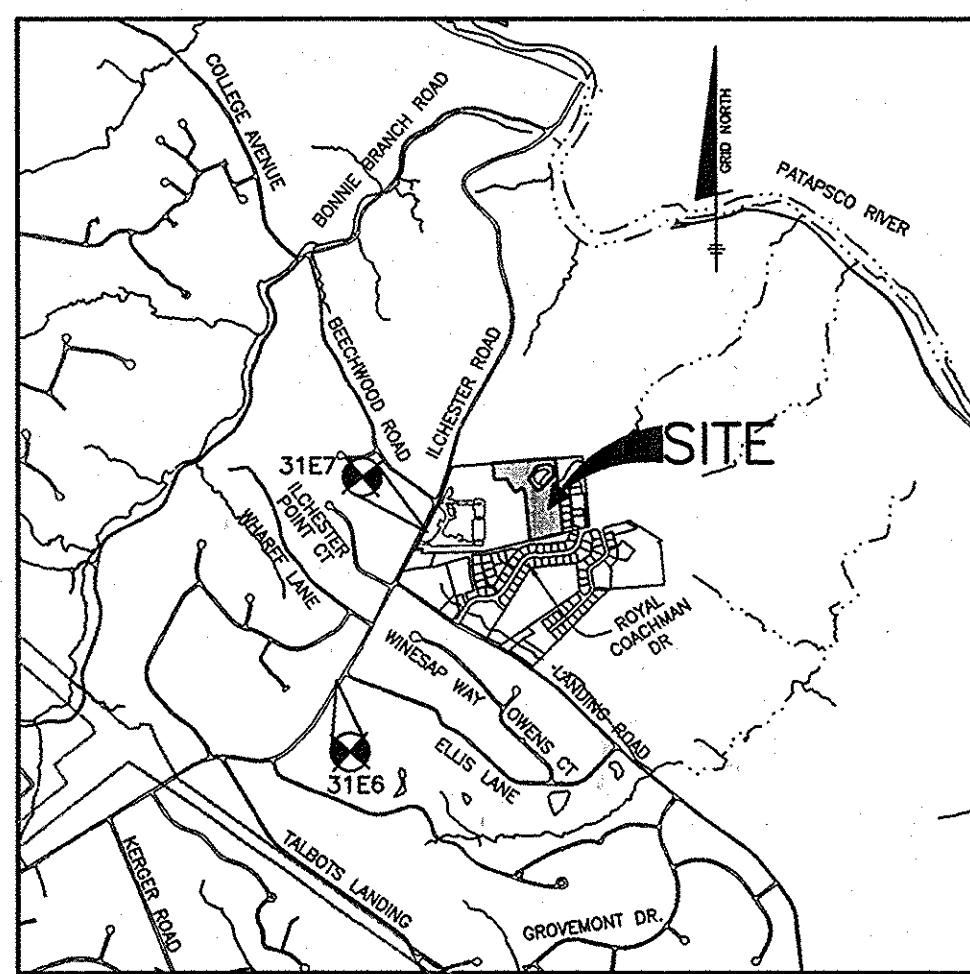
LOT	STREET ADDRESS
1	4915 MARCH BROWN ROAD
2	4919 MARCH BROWN ROAD
3	4923 MARCH BROWN ROAD
4	4927 MARCH BROWN ROAD
5	4945 MARCH BROWN ROAD
6	4949 MARCH BROWN ROAD
7	4948 MARCH BROWN ROAD
8	4944 MARCH BROWN ROAD
9	4940 MARCH BROWN ROAD
10	4926 MARCH BROWN ROAD
11	4922 MARCH BROWN ROAD
12	4918 MARCH BROWN ROAD
13	4914 MARCH BROWN ROAD
14	4910 MARCH BROWN ROAD

R/W PT NO	DESCRIPTION	ELEV
1	REBAR # CAP	428.07
2	REBAR # CAP	429.59
3	REBAR # CAP	425.07
13	MAG NAIL	423.13
14	MAG NAIL	427.72
37	CONC. MONUMENT	428.10
40	REBAR # CAP	416.69
41	CONC. MONUMENT	417.52
42	X-CUT	420.42
43	X-CUT	428.06
44	X-CUT	427.37
45	X-CUT	427.37



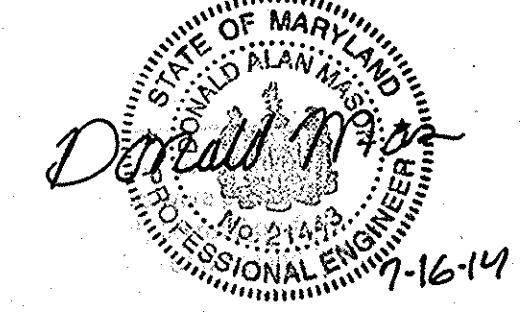
SHEET	TITLE
1	TITLE SHEET
2	ROAD PLAN & PROFILE
3	GRADING, SEDIMENT & EROSION CONTROL PLAN
4	GRADING, SEDIMENT & EROSION CONTROL PLAN
5	SEDIMENT & EROSION CONTROL NOTES AND DETAILS
6	PERIMETER LANDSCAPE & STREET TREE PLAN
7	STORM DRAIN DRAINAGE AREA MAP
8	STORM DRAIN PROFILES & DETAILS
9	STORMWATER MANAGEMENT DETAILS
10	STORMWATER MANAGEMENT DETAILS
11	STORMWATER MANAGEMENT NOTES & SOIL BORING LOGS

HO. CO. #3166	
3/4" REBAR 0.5' BELOW SURFACE	
500' ± WEST OF WARF LANE	N 57052.3717'
	E 1376700.6467'
HO. CO. #3167	
3/4" REBAR 0.5' BELOW SURFACE	
9' SOUTHWEST OF ILCHESTER ROAD	N 572335.3503'
250' ± WEST OF BEECHWOOD ROAD	E 1377504.0332'
HO. CO. BM#2745004	ELEV. 364.78'
	USED FOR VERTICAL CONTROL.



AS-BUILT NOTES:
 1) HORIZONTAL DATUM FOR THIS AS-BUILT IS BASED ON THE MARYLAND STATE REFERENCE SYSTEM NAD 83 AS PROJECTED FROM HO.CO. GEODETIC CONTROL STATIONS 3166 AND 3167. VERTICAL DATUM FOR THIS AS-BUILT IS NORTH AMERICAN VERTICAL DATUM NAVD 29 AS PROJECTED FROM HO. CO. BX # 2745004.
 2) THE INSTRUMENT USED IN PERFORMING THIS AS-BUILT IS A 5" TOTAL STATION AND PRISM.
 3) THIS AS-BUILT WAS PERFORMED BY BENCHMARK ENGINEERING, INC.

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

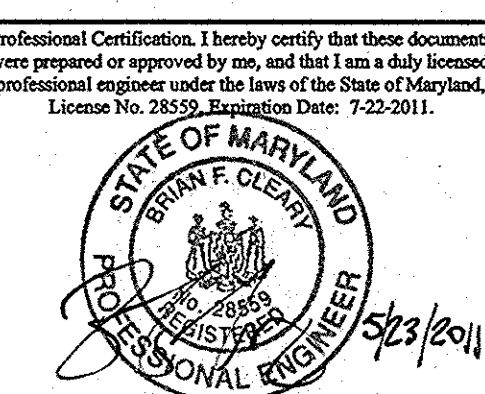


AS-BUILT CERTIFICATION
 I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this AS-BUILT plan.
 Donald Mason, P.E. No. 21443 Date 7-16-14

- ### SITE DATA ANALYSIS
- 1) GENERAL SITE DATA
 - a. PRESENT ZONING: R-ED
 - b. APPLICABLE DPZ FILE REFERENCES: SP-05-017 F-03-150 PB 372
 - c. DEED REFERENCES: L. 13053 F. 035
 - d. PROPOSED USE OF SITE: RESIDENTIAL/SFO HOMES
 - e. PROPOSED WATER AND SEWER SYSTEMS: PUBLIC
 - 2) AREA TABULATION
 - a. TOTAL AREA OF SITE: 7.31± AC. (INCLUDES 0.10 AC FROM PARCEL 'A' RECORDED UNDER F-03-150)
 - b. AREA OF 100 YEAR FLOODPLAIN: 0.00± AC.
 - c. AREA OF STEEP SLOPES ON SITE (25% OR GREATER): 0.00± AC.
 - d. NET AREA OF SITE: 7.31± AC.
 - e. MINIMUM RESIDENTIAL LOT SIZE SELECTED: 6,000 S.F.
 - f. AREA OF PROPOSED BUILDABLE LOTS: 2.92± AC.
 - g. AREA OF PROPOSED OPEN SPACE LOTS: 3.70± AC.
 - h. AREA OF PROPOSED PUBLIC ROAD R/W TO BE DEDICATED TO HOWARD COUNTY: 0.69± AC.
 - 3) LOT TABULATION
 - a. TOTAL NUMBER OF RESIDENTIAL LOTS PROPOSED ON THIS SUBMISSION: 14
 - b. TOTAL NUMBER OF OPEN SPACE LOTS PROPOSED: 3
 - 4) OPEN SPACE DATA
 - a. MINIMUM RESIDENTIAL LOT SIZE SELECTED: 6,000 S.F.
 - b. OPEN SPACE REQUIRED (50% OF 7.21 AC.): 3.61± AC.
 - c. OPEN SPACE PROVIDED (51.2% OF 7.21 AC.): 3.69± AC. NON-CREDITED (LESS THAN 35' IN WIDTH): NA. CREDITED (51.2% OF 7.21 AC.): 3.69± AC.
 - d. AREA OF RECREATION OPEN SPACE REQUIRED: 4,200 S.F. (300 S.F. PER UNIT x 14 UNITS)
 - e. AREA OF RECREATION OPEN SPACE PROVIDED: 4,200 S.F.
- * OPEN SPACE FOR PARCEL 'A' (0.10 AC.), PREVIOUSLY RECORDED UNDER CASCADE OVERLOOK SECTION II, PLAT NO. 16644, WAS PROVIDED UNDER CASCADE OVERLOOK SECTION II, F-03-150.

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
 ENGINEERS & LAND SURVEYORS & PLANNERS
 8480 BALTIMORE NATIONAL PIKE SUITE 418 ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6844
 60 THOMAS JOHNSON DRIVE A FREDERICK, MARYLAND 21702
 (P) 301-371-3505 (F) 301-371-3500
 WWW.BE-ENGINEERING.COM



OWNER: SECURITY DEVELOPMENT LLC P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244

DEVELOPER: SECURITY DEVELOPMENT LLC P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244

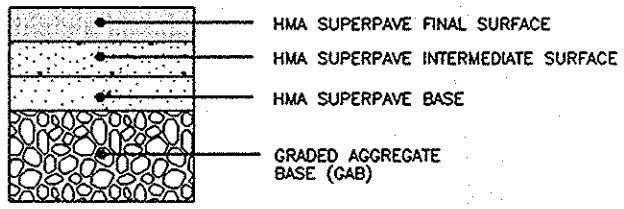
CASCADE OVERLOOK SECTION III
 LOTS 1 thru 14 AND OPEN SPACE LOTS 15 thru 17
 TAX MAP: 31 ZONED: R-ED GRID: 10 PARCELS p/o 260
 ELECTION DISTRICT NO. 1 HOWARD COUNTY, MARYLAND

TITLE SHEET

DATE: MAY, 2011 BEI PROJECT NO: 1676

DESIGN: DBT DRAWN: DBT SCALE: AS SHOWN SHEET 1 OF 11

LOT NUMBER	ADDRESS	GREEN ROOFS	PERMEABLE PAVEMENTS	REINFORCED TURF	DISCONNECTION OF ROOFTOP RUNOFF	DISCONNECTION OF NON-ROOFTOP RUNOFF	SHEETFLOW TO CONSERVATION AREAS	RAINWATER HARVESTING	SUBMERGED GRAVEL WETLANDS	LANDSCAPE INFILTRATION	INFILTRATION BERMS	DRY WELLS	MICRO-BIORETENTION	RAIN GARDENS	SWALES	ENHANCED FILTERS
		A-1 (Y/N)	A-2 (Y/N)	A-3 (Y/N)	N-1 (NUMBER)	N-2 (Y/N)	N-3 (Y/N)	M-1 (NUMBER)	M-2 (NUMBER)	M-3 (NUMBER)	M-4 (NUMBER)	M-5 (NUMBER)	M-6 (NUMBER)	M-7 (NUMBER)	M-8 (NUMBER)	M-9 (NUMBER)
10	4926 March Brown Road	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
11	4922 March Brown Road	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
12	4918 March Brown Road	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
13	4914 March Brown Road	N	N	N	N	Y	N	N	N	N	N	N	N	Y(2)	N	N
14	4910 March Brown Road	N	N	N	N	N	N	N	N	N	N	N	N	Y(2)	N	N

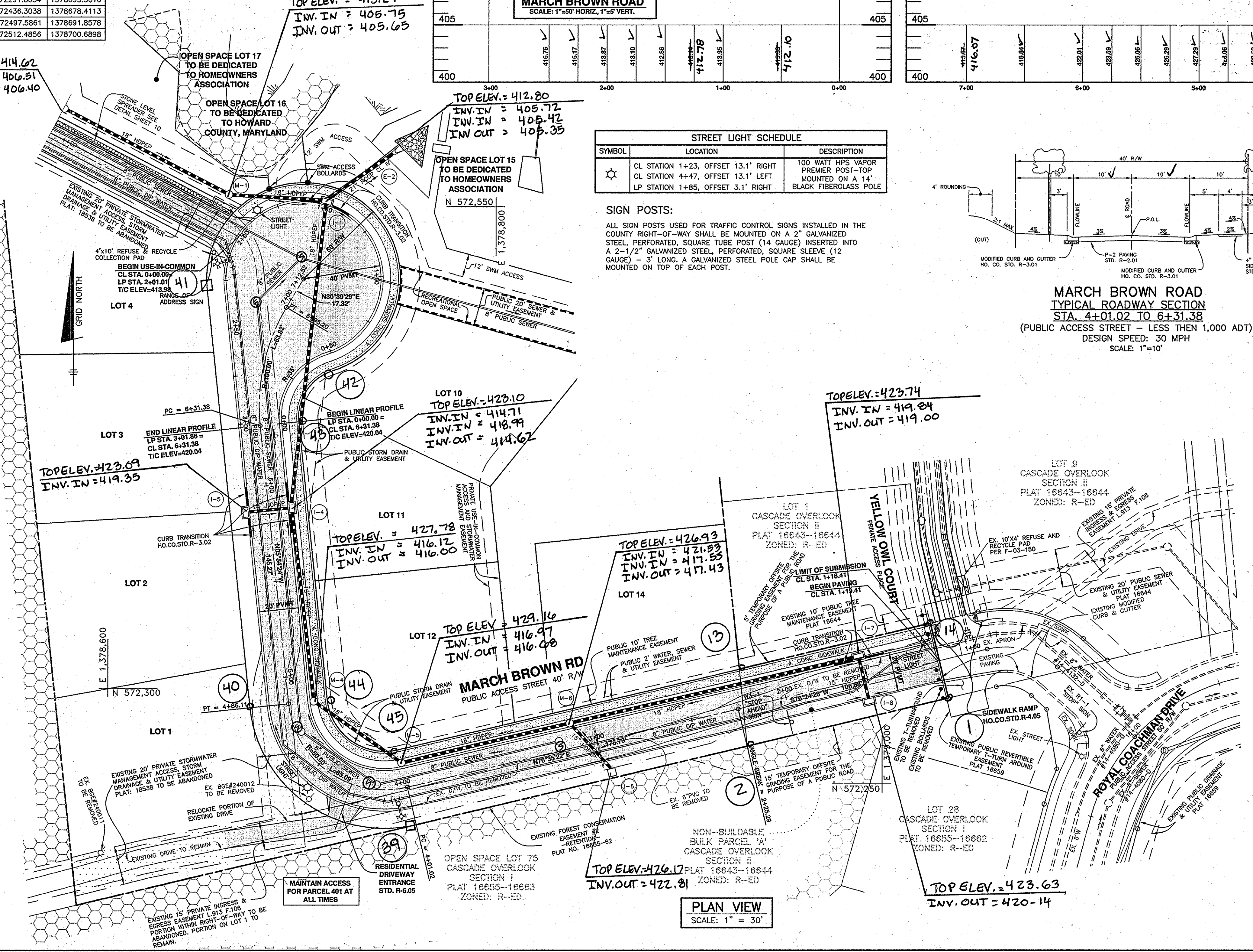
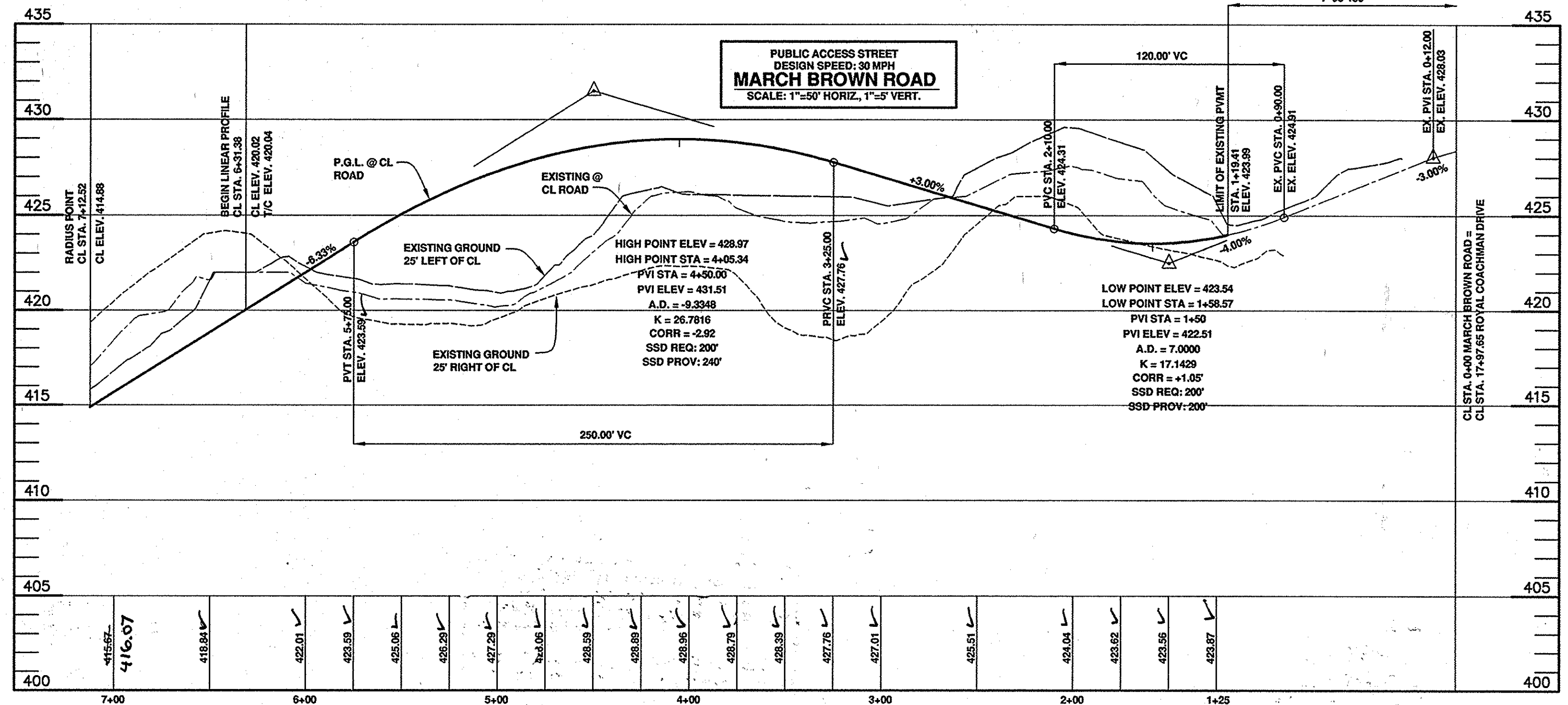
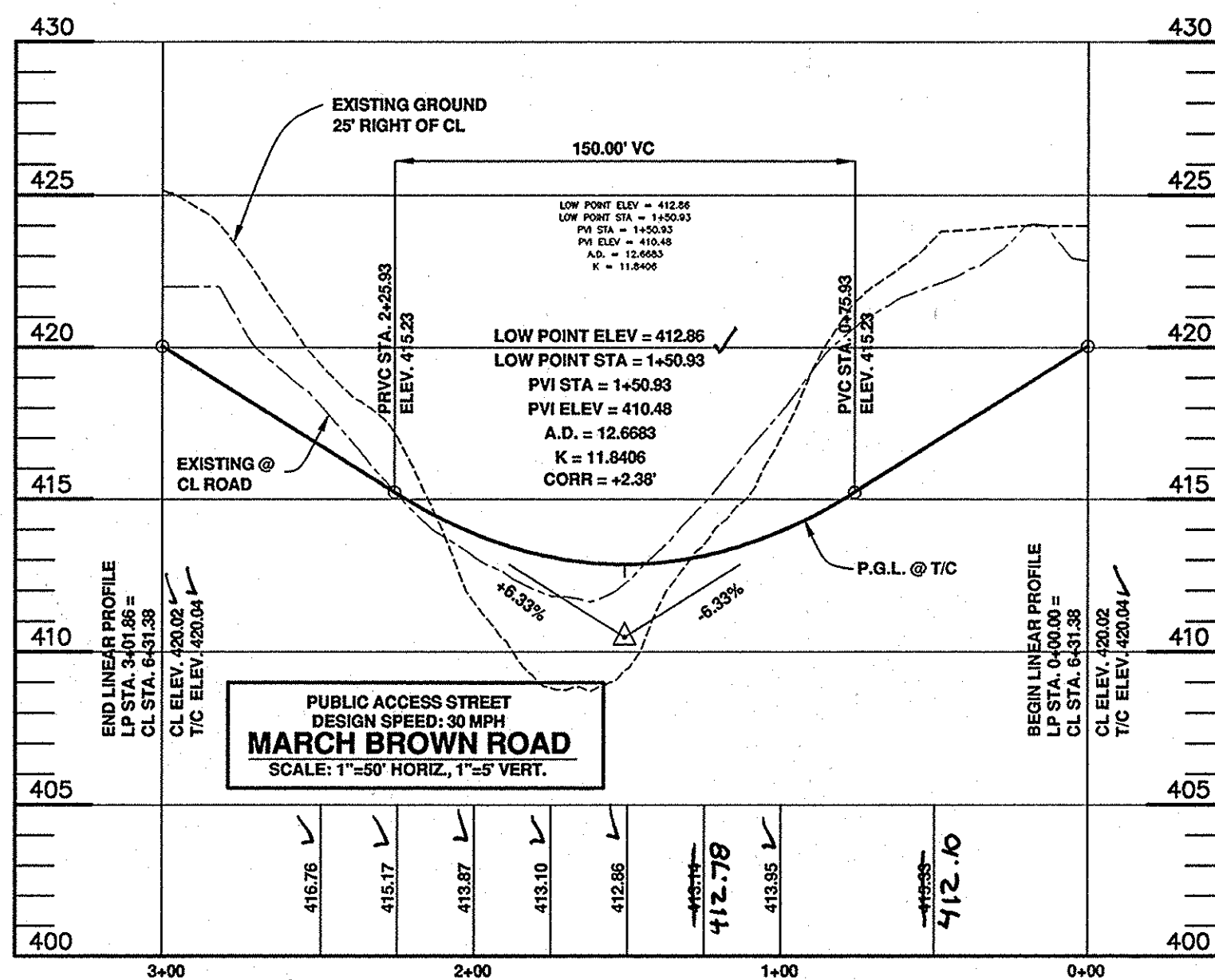


SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR)					
		3 TO <5		5 TO <7		≥7	
P-2	PARKING DRIVE AISLES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY LOCAL ROADS: ACCESS PLACE, ACCESS STREET CUL-DE-SAC: RESIDENTIAL	PAVEMENT MATERIAL (INCHES)					
		HMA SUPERPAVE FINAL SURFACE					
		9.5 MM PG 64-22, LEVEL 1 (LOW ESAL)					
		HMA SUPERPAVE INTERMEDIATE SURFACE					
		9.5 MM PG 64-22, LEVEL 1 (LOW ESAL)					
		HMA SUPERPAVE BASE					
		19.0 MM PG 64-22, LEVEL 1 (LOW ESAL)					
		GRADED AGGREGATE BASE (GAB)					
		8.0	4.0	3.0	4.0	4.0	4.0

P-2 PAVING DETAIL

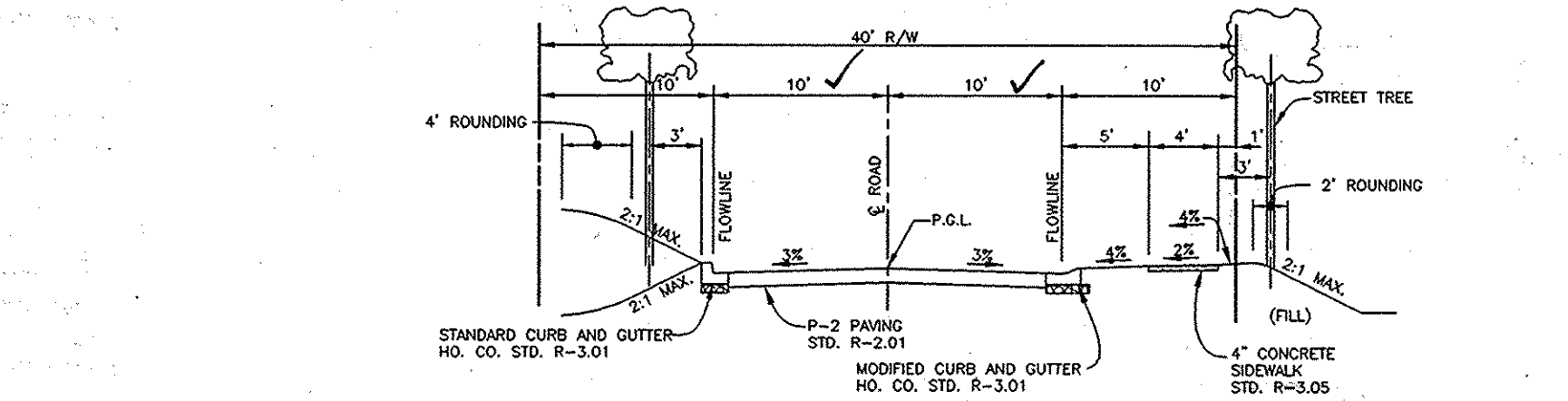
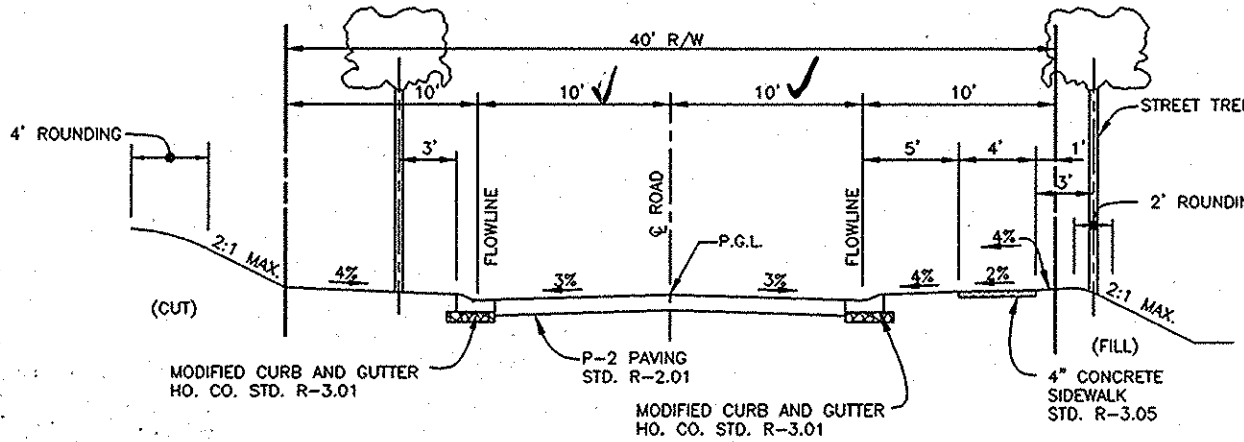
CENTER LINE CURVE DATA						
STREET NAME	STATION	RADIUS	ARC	DELTA	TANGENT	CHORD
MARCH BROWN ROAD	4+01.02 TO 4+86.11	50.00'	85.09°	97°30'14"	57.02'	N54°39'31"W 75.19'
	6+31.38 TO 6+95.20	100.00'	63.82°	36°33'53"	33.04'	N12°22'33"E 62.74'

CENTERLINE CONTROL DATA			
STREET NAME	STATION	NORTH	EAST
MARCH BROWN ROAD	2+25.29	572289.0692	1378925.6327
	4+01.02	572248.3121	1378754.6919
	4+86.11	572291.8034	1378693.3610
	6+31.38	572436.3038	1378678.4113
	6+95.20	572497.5861	1378691.8578
	7+12.52	572512.4856	1378700.6898



STREET LIGHT SCHEDULE		
SYMBOL	LOCATION	DESCRIPTION
☼	CL STATION 1+23, OFFSET 13.1' RIGHT	100 WATT HPS VAPOR PREMIER POST-TOP MOUNTED ON A 14' BLACK FIBERGLASS POLE
☼	CL STATION 4+47, OFFSET 13.1' LEFT	100 WATT HPS VAPOR PREMIER POST-TOP MOUNTED ON A 14' BLACK FIBERGLASS POLE
☼	LP STATION 1+85, OFFSET 3.1' RIGHT	100 WATT HPS VAPOR PREMIER POST-TOP MOUNTED ON A 14' BLACK FIBERGLASS POLE

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



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



AS-BUILT CERTIFICATION
I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this AS-BUILT plan.
Donald Mason, P.E. No. 21443 Date 7-16-14

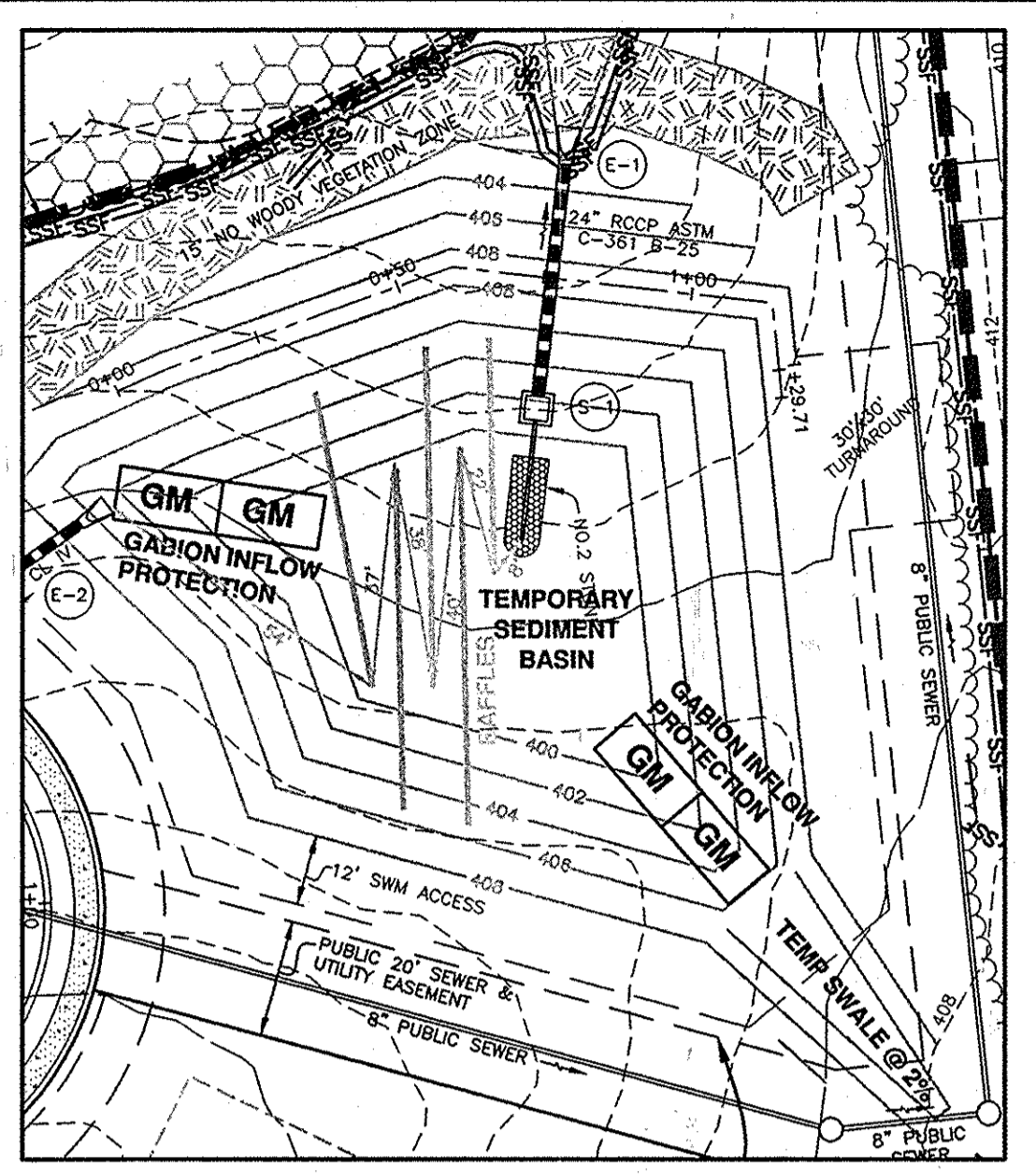
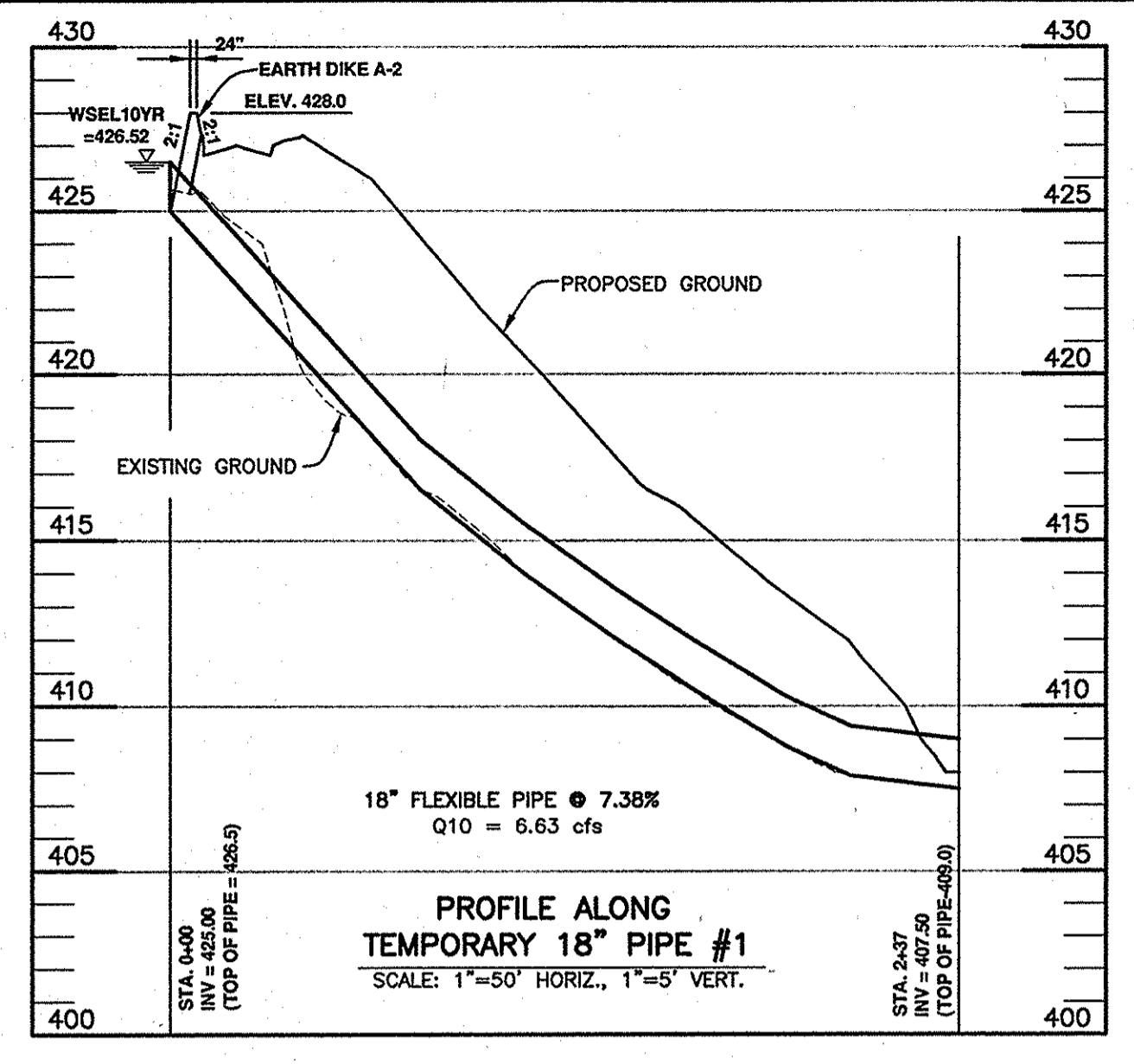
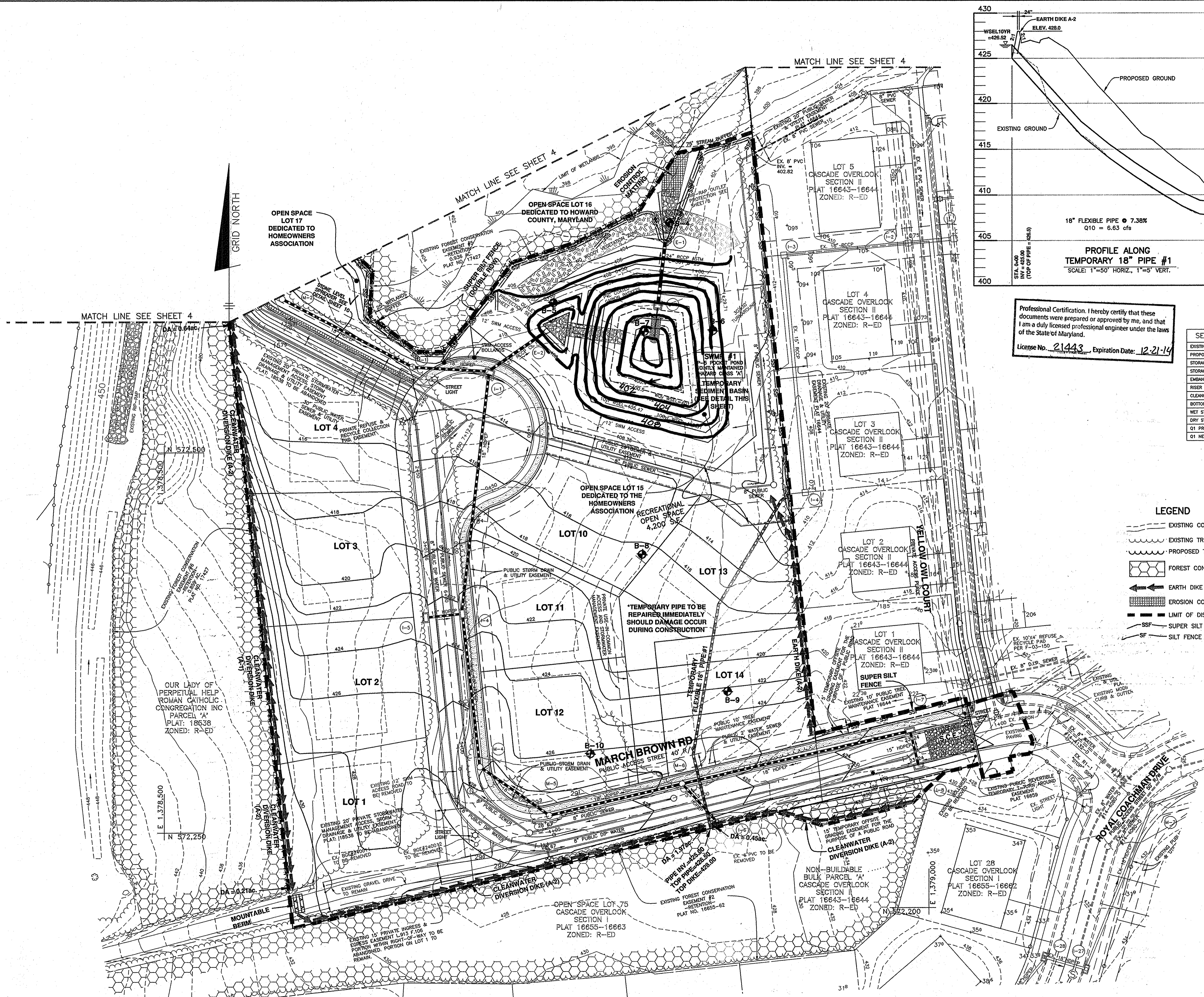
APPROVED: DEPARTMENT OF PUBLIC WORKS	<i>Walter J. ...</i> 6-27-2011	DATE
APPROVED: DEPARTMENT OF PLANNING AND ZONING	<i>...</i> 7/06/11	DATE
	<i>...</i> 7/1/11	DATE

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
ENGINEERS • LAND SURVEYORS • PLANNERS
8480 BALTIMORE NATIONAL PIKE SUITE 418 & ELLICOTT CITY, MARYLAND 21043
(P) 410-465-8105 (F) 410-465-8944
60 THOMAS JOHNSON DRIVE & FREDERICK, MARYLAND 21702
(P) 301-371-3505 (F) 301-371-3506
WWW.BE-CIVILENGINEERING.COM

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 25556 Expiration Date: 7-22-2011.

OWNER: SECURITY DEVELOPMENT LLC P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	<p>CASCADE OVERLOOK SECTION III LOTS 1 thru 14 AND OPEN SPACE LOTS 15 thru 17</p> <p>TAX MAP: 31 GRID: 10 PARCEL: p/o 260 ZONED: R-ED ELECTION DISTRICT NO. 1 HOWARD COUNTY, MARYLAND</p>
DEVELOPER: SECURITY DEVELOPMENT LLC P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	
ROAD PLAN, PROFILE & DETAILS	
DATE: MAY, 2011	BEI PROJECT NO: 1676
DESIGN: DBT	DRAWN: DBT
SCALE: AS SHOWN	SHEET 2 OF 11



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

SEDIMENT BASIN DATA	
EXISTING D.A.	0.50 sq.
PROPOSED D.A.	2.81 sq.
STORAGE REQUIRED	2000 CF
STORAGE PROVIDED	2000 CF
EMBANKMENT ELEVATION	408.00
RISER CREST ELEVATION	405.50
CLEANOUT ELEVATION	400.85
BOTTOM ELEVATION	400.00
WET STORAGE ELEVATION	401.56
DRY STORAGE ELEVATION	402.77
Q1 PRE-DEVELOPMENT	0.02 cfs
Q1 NEWLY GRADED	0.05 cfs

- LEGEND**
- EXISTING CONTOURS
 - EXISTING TREELINE
 - PROPOSED TREELINE
 - FOREST CONSERVATION EASEMENT
 - EARTH DIKE
 - EROSION CONTROL MATTING
 - LIMIT OF DISTURBANCE
 - SUPER SILT FENCE
 - SILT FENCE

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 REQUIREMENTS.

Donald M. Roberts 21443
 ENGINEER 7-16-14

CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL ENGINEER'S RESPONSIBILITY ON-SITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED AND APPROVED BY THE ENGINEER AND APPROPRIATELY BY COMMONLY ACCEPTED ENGINEERING STANDARDS. THE ENGINEER'S CERTIFICATION DOES NOT PROVIDE A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

BY THE DEVELOPER:
Stewart Breese 5/23/11
 DEVELOPER DATE

BY THE ENGINEER:
Stewart Breese 5/23/2011
 ENGINEER DATE

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

John K. Roberts 6/2/11
 HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS
William R. Mast 6-27-2011
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Walt St. John 7/6/11
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Walt St. John 7/6/11
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

PLAN VIEW
 SCALE: 1" = 30'

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
 ENGINEERS & LAND SURVEYORS & PLANNERS
 6400 BALTIMORE NATIONAL PIKE A SUITE 418 ELLICOTT CITY, MARYLAND 21043
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 60 THOMAS JOHNSON DRIVE A FREDERICK, MARYLAND 21702
 (P) 301-371-3505 (F) 301-371-3506
 WWW.BE-CMLENGR.COM

OWNER:
 SECURITY DEVELOPMENT LLC
 P.O. BOX 417
 ELLICOTT CITY, MARYLAND 21041
 410-465-4244

DEVELOPER:
 SECURITY DEVELOPMENT LLC
 P.O. BOX 417
 ELLICOTT CITY, MARYLAND 21041
 410-465-4244

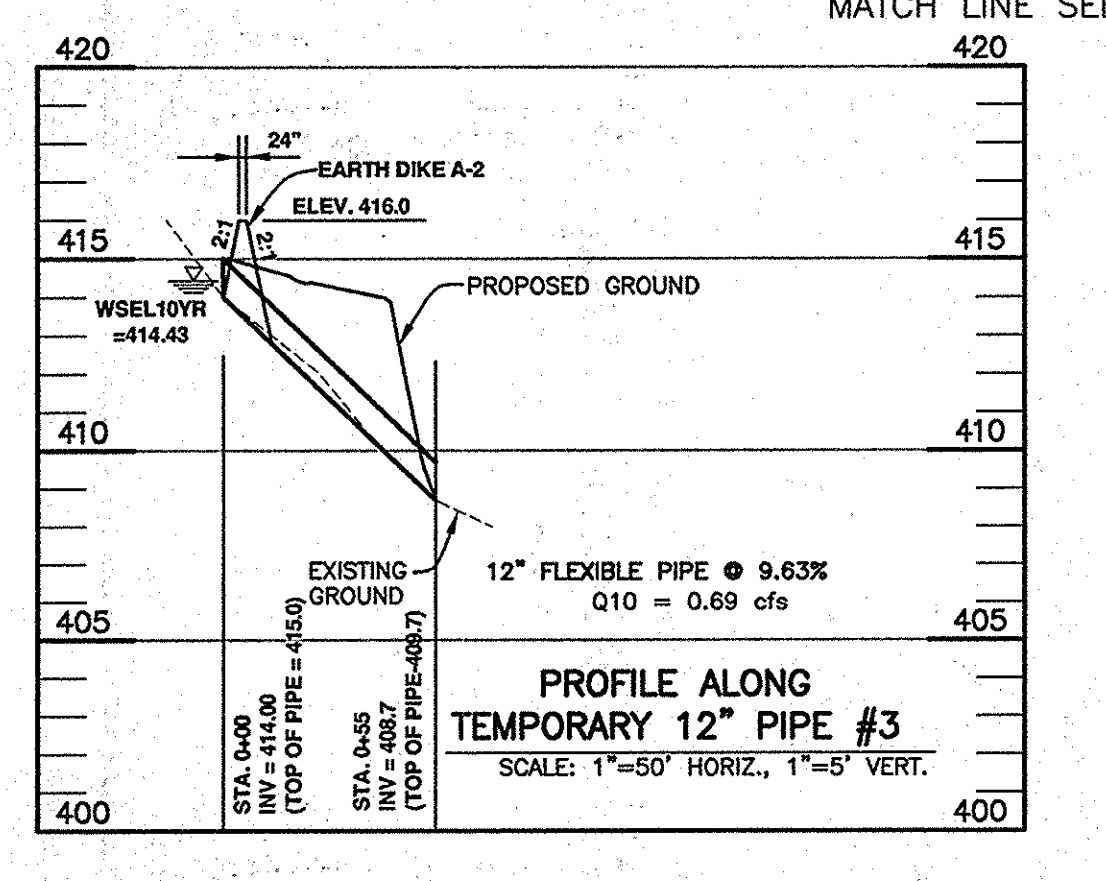
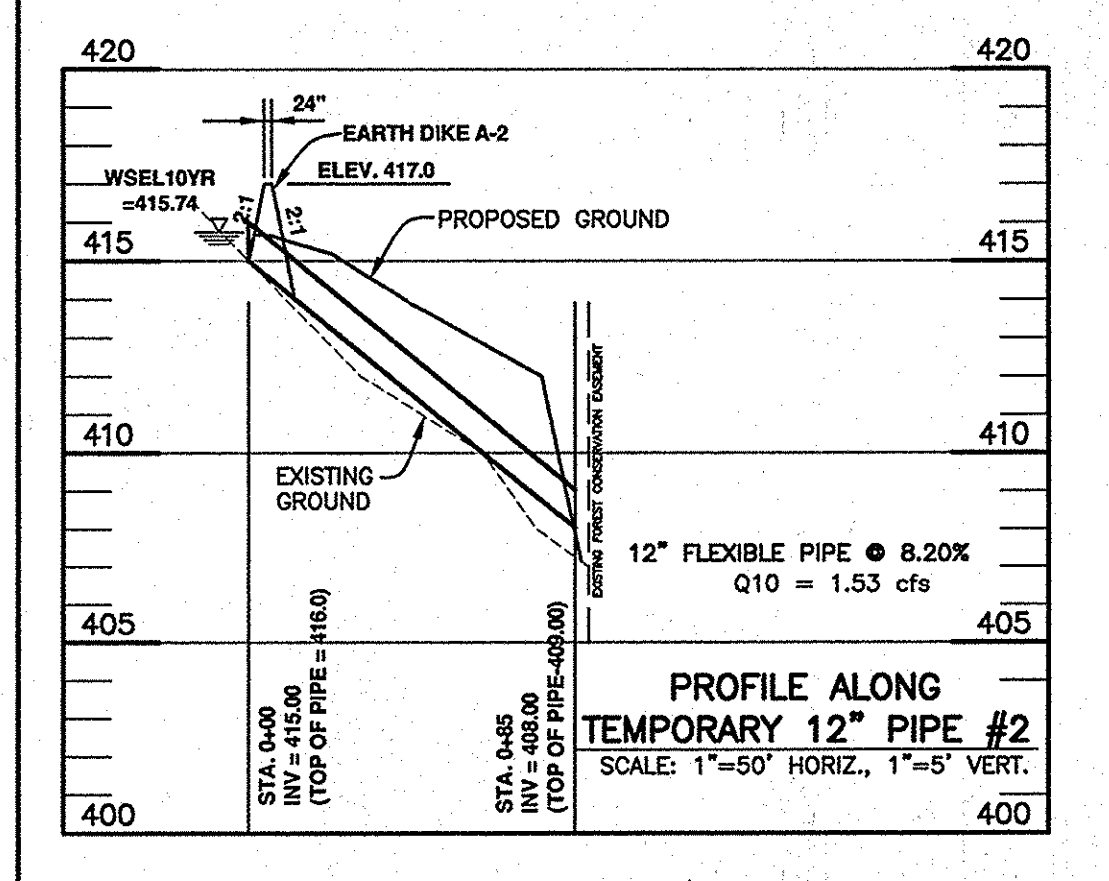
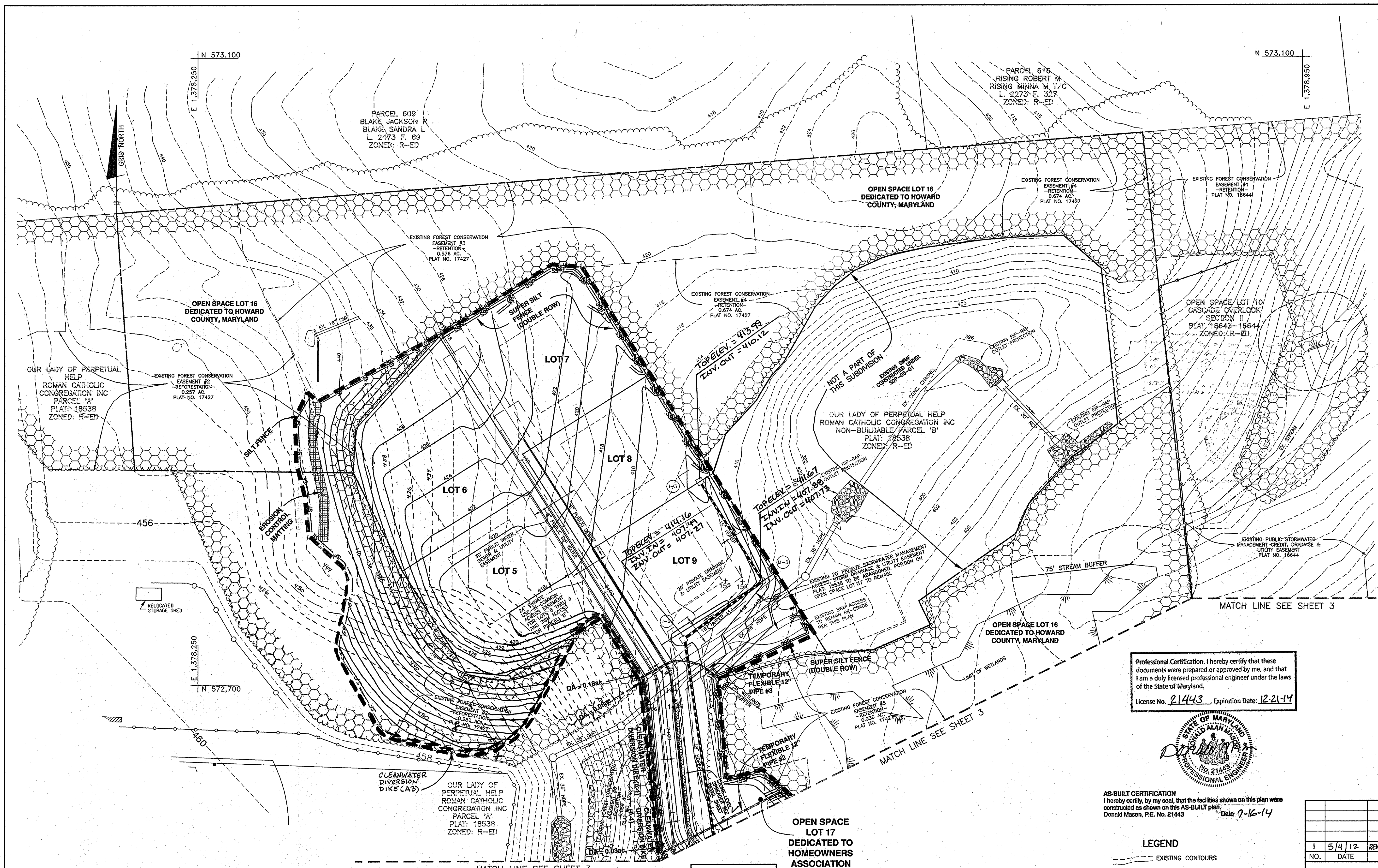
DESIGN: DBT **DRAWN:** DBT

CASCADE OVERLOOK SECTION III
 LOTS 1 thru 14 AND OPEN SPACE LOTS 15 thru 17
 TAX MAP: 31 GRID: 10 PARCEL: p/o 260
 ZONED: R-ED ELECTION DISTRICT NO. 1 HOWARD COUNTY, MARYLAND

GRADING, SEDIMENT & EROSION CONTROL PLAN

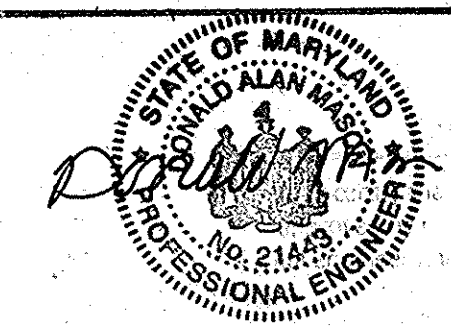
DATE: MAY, 2011 BEI PROJECT NO: 1676
 SCALE: AS SHOWN SHEET 3 OF 11

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PLAN VIEW
 SCALE: 1" = 30'

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



AS-BUILT CERTIFICATION
 I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this AS-BUILT plan.
 Donald Mason, P.E. No. 21443 Date 7-16-14

- LEGEND**
- - - EXISTING CONTOURS
 - ~ ~ ~ EXISTING TREELINE
 - ~ ~ ~ PROPOSED TREELINE
 - [Hatched Box] FOREST CONSERVATION EASEMENT
 - ▬ EARTH DIKE
 - [Stippled Box] EROSION CONTROL MATTING
 - ▬ LIMIT OF DISTURBANCE
 - ▬ SSF SUPER SILT FENCE
 - ▬ SF SILT FENCE

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.

ENGINEER _____ PE NO. _____
 DATE _____

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

BY THE DEVELOPER:
 I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS; AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.
 DEVELOPER: STEVEN L. BRESLOW MEMBER 5/25/11 DATE

BY THE ENGINEER:
 I/WE CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE 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.
 ENGINEER: [Signature] 5/23/2011 DATE

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION, AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
 APPROVED: DEPARTMENT OF PUBLIC WORKS
[Signature] 6/2/11 DATE
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 7/06/11 DATE
 CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: DEVELOPMENT ENGINEERING DIVISION
[Signature] 7/1/11 DATE
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

NO.	DATE	REVISION
1	5/4/12	REVISE EXISTING GRADES PER FIELD SURVEY AUG 2011, REVISE PROP. GRADES ACCORDINGLY

BENCHMARK ENGINEERING, INC.
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 8400 BALTIMORE NATIONAL PIKE SUITE 418 ELLICOTT CITY, MARYLAND 21043
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 WWW.BE-COLLEDCONNECTING.COM

CASCADE OVERLOOK SECTION III
 LOTS 1 thru 14 AND OPEN SPACE LOTS 15 thru 17
 TAX MAP: 31 GRID: 10 PARCEL: p/o 260
 ZONED: R-ED ELECTION DISTRICT NO. 1 HOWARD COUNTY, MARYLAND

GRADING, SEDIMENT & BROSION CONTROL PLAN

OWNER: SECURITY DEVELOPMENT LLC P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244

DEVELOPER: SECURITY DEVELOPMENT LLC P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244

DATE: MAY, 2011 BEI PROJECT NO: 1676

SCALE: AS SHOWN SHEET 4 OF 11

SEDIMENT CONTROL NOTES

TOPSOIL SPECIFICATIONS

30.0 DUST CONTROL

SEQUENCE OF CONSTRUCTION

NOTIFY SEDIMENT CONTROL DIVISION 48 HOURS PRIOR TO START OF WORK

PHASE I

- 1. Obtain grading permit. (day 1)
2. Install stabilized construction entrance, silt fences, super silt fences, clean water diversion dikes and temporary pipes. (day 2-7)
3. Construct temporary sediment basin. Once complete, install earth dike along eastern edge of property (day 8-16)
4. Upon approval of the Howard County sediment control inspector, bring road bed to subgrade and commence mass grading. Stabilize slopes in accordance with the temporary seeded notes. Utilize dust control methods. (day 17-24)
5. Install storm drain, water and sewer mains. (day 25-39)
6. Once storm drain to I-6 is installed, remove temporary pipe #1.
7. Install curb and base paving. (day 40-47)
8. Stabilize all areas in accordance with the temporary seeded notes. (day 48)
9. Upon approval from the Howard County sediment control inspector, remove sediment control devices and stabilize disturbed areas in accordance with the PERMANENT seeded notes. (day 49-55)
10. Convert temporary basin to its final pond design. After completion perform as-built. Forward as-built approval letter to inspector. (day 56-60)

- 1. A MINIMUM OF 24 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSING AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION, (313-1850).
2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATION FOR SOIL EROSION AND SEDIMENT CONTROL, REVISION 1 THROUGH 7.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: A) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1; B) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
4. ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 12, OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
5. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING (SEC. 51) SO (SEC. 54), TEMPORARY SEEDING (SEC. 50) AND MULCHING (SEC. 52). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
6. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMITS FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
7. SITE ANALYSIS:
TOTAL AREA OF SITE 7.3 ACRES
AREA DISTURBED 5.0 ACRES
AREA TO BE ROOFED OR PAVED 0.6 ACRES
AREA TO BE VEGETATIVELY STABILIZED 4.4 ACRES
TOTAL CUT 15,886 CY
TOTAL FILL 13,475 CY
OFFSITE WASTE AREA LOCATION A SITE WITH AN ACTIVE GRADING PERMIT

- I. Topsoil salvaged from the existing site may be used provided that it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-SCS in cooperation with Maryland Agricultural Experiment Station.
II. Topsoil Specifications - Soil to be used as topsoil must meet the following:
1. Topsoil shall be a loam, sandy loam, clay loam, all loam, sandy clay loam, loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Regardless, topsoil shall not be a mixture of contrasting texture subsoils and shall contain less than 2% by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash or other materials larger than 1-1/2" in diameter.
2. Topsoil must be free of plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nutcracker poison ivy, bindweed, or others as specified.
III. Where the subsoil is either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate of 4-8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil. Limes shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.
III. For sites having disturbed areas under 5 acres:
1. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials.
IV. For sites having disturbed areas over 5 acres:
1. On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments prior to being the soil into compliance with the following:
a. pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.
b. Organic content or topsoil shall be not less than 1.5 percent by weight.
c. Topsoil having soluble salt content greater than 500 parts per million shall not be used.
d. No soil or seed shall be placed on soil which has been treated with soil stabilizers or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phytotoxic materials.
Note: Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
II. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials.
V. Topsoil Application
1. 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.
2. Grades on the areas to be topsoiled, which have been previously established, shall be maintained, about 2" - 3" higher in elevation.
3. 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 seeding or sodding 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.
4. Topsoil shall not be placed while the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seeded preparation.
VI. Alternative for Permanent Seeding - Instead of applying the full amounts of lime and commercial fertilizer, composted sludge and amendments may be applied as specified below:
1. Composted Sludge Material for use as a soil conditioner for sites having disturbed areas over 5 acres shall be tested to prescribe amendments and for sites having disturbed areas under 5 acres shall conform to the following requirements:
a. Composted sludge shall be supplied by, or originate from, a person or persons that are permitted (at the time of acquisition of the compost) by the Maryland Department of the Environment under COMAR 26.04.08.
b. Composted sludge shall contain at least 1 percent nitrogen, 1.5 percent phosphorus, and 0.2 percent potassium and have a pH of 7.0 to 8.0. If compost does not meet these requirements, the appropriate constituents must be added to meet the requirements prior to use.
c. Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.
d. Composted sludge shall be amended with a potassium fertilizer applied at the rate of 4.9/1,000 square feet, and 1/2 the normal lime application rate.
References: Guidelines Specifications, Soil Preparation and Sodding, MD-VI, Pub. #1, Cooperative Extension Service, University of Maryland and Virginia Polytechnic Institute, Revised 1973.

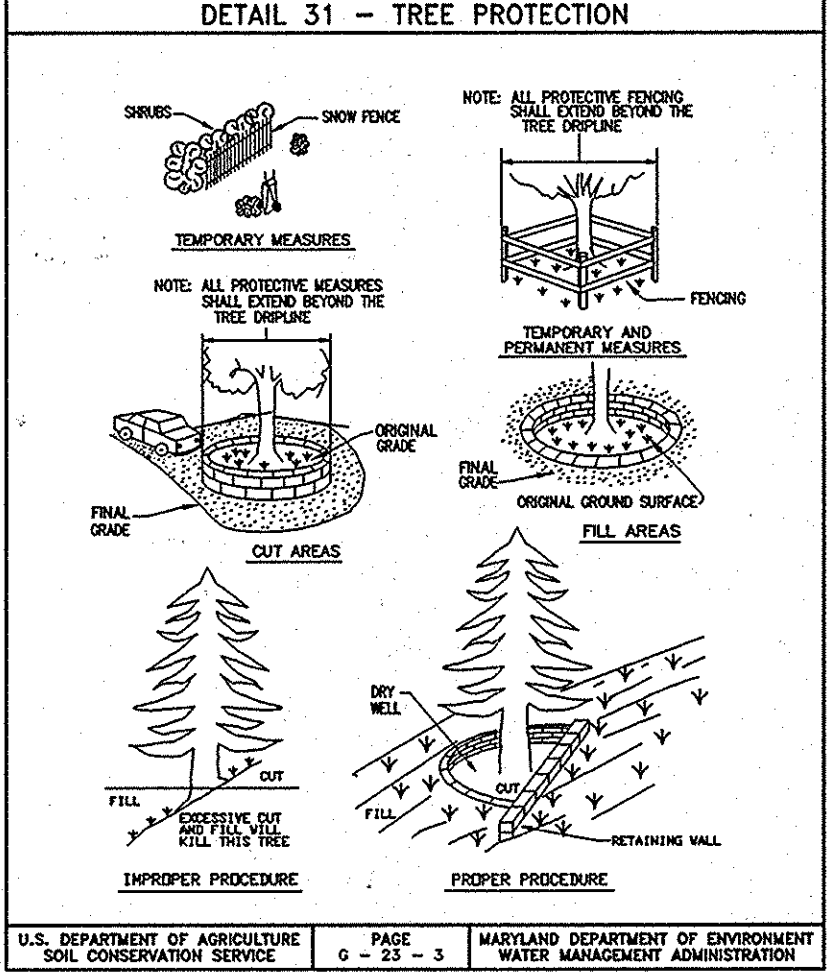
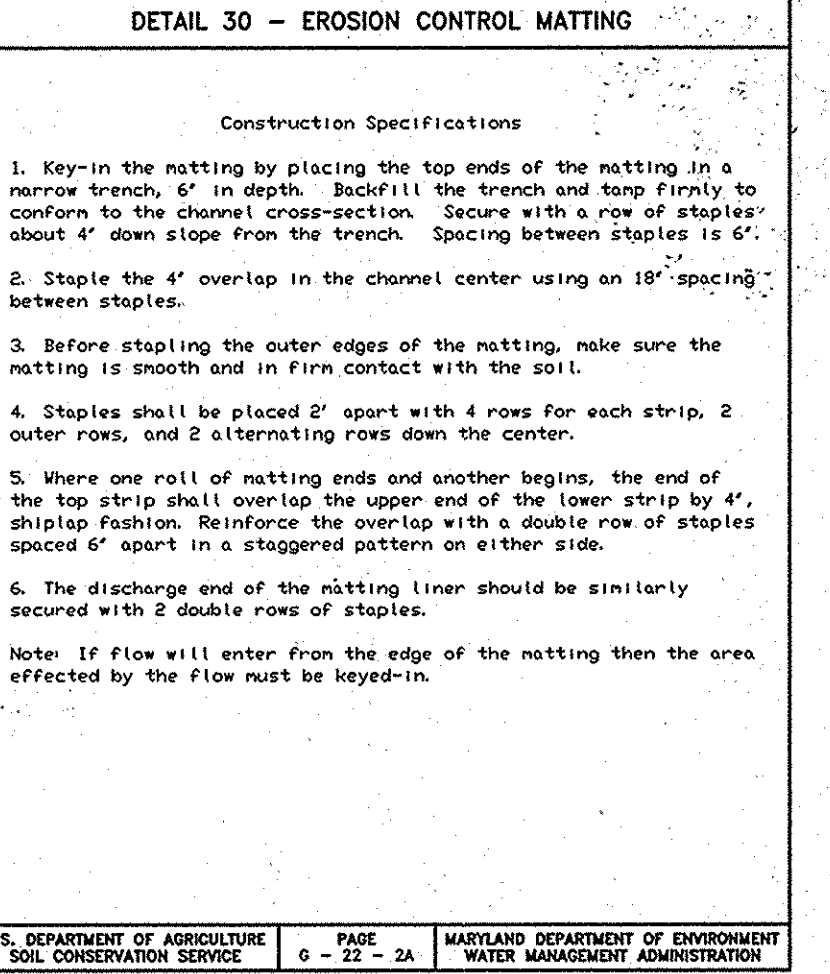
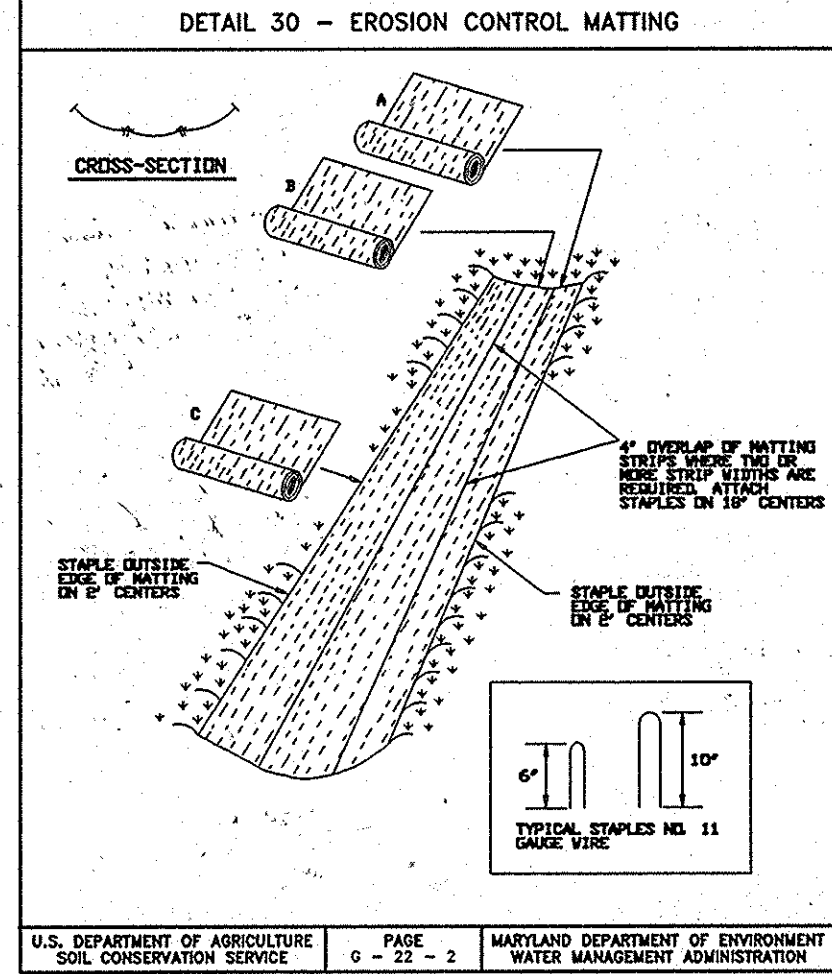
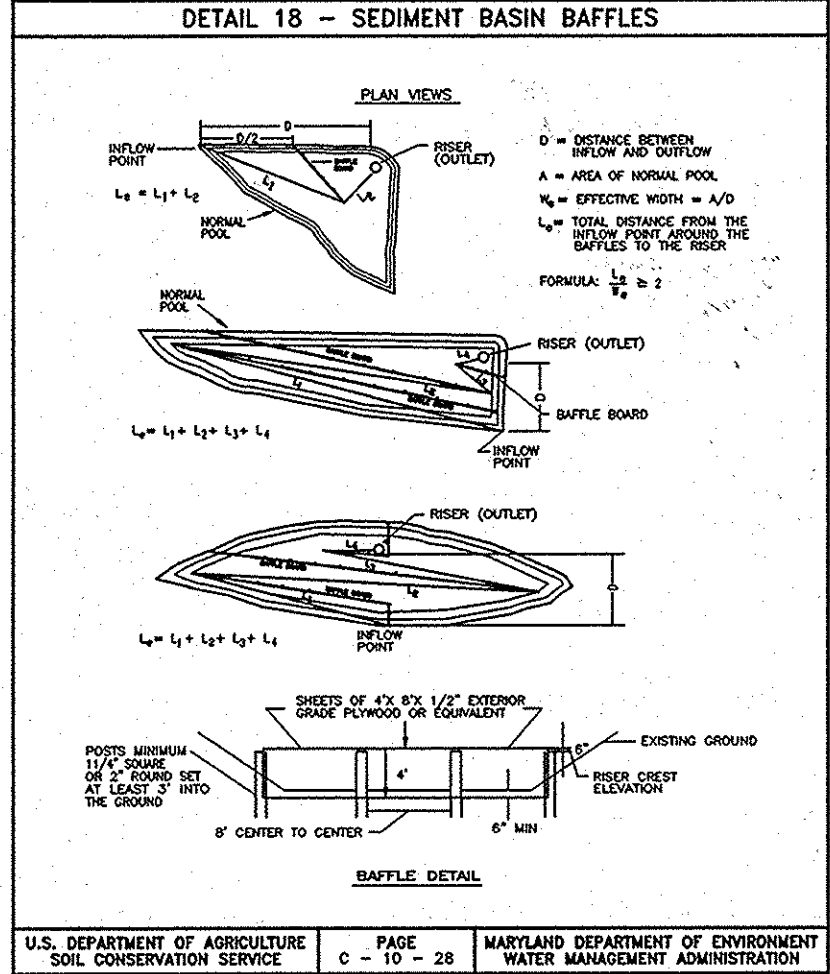
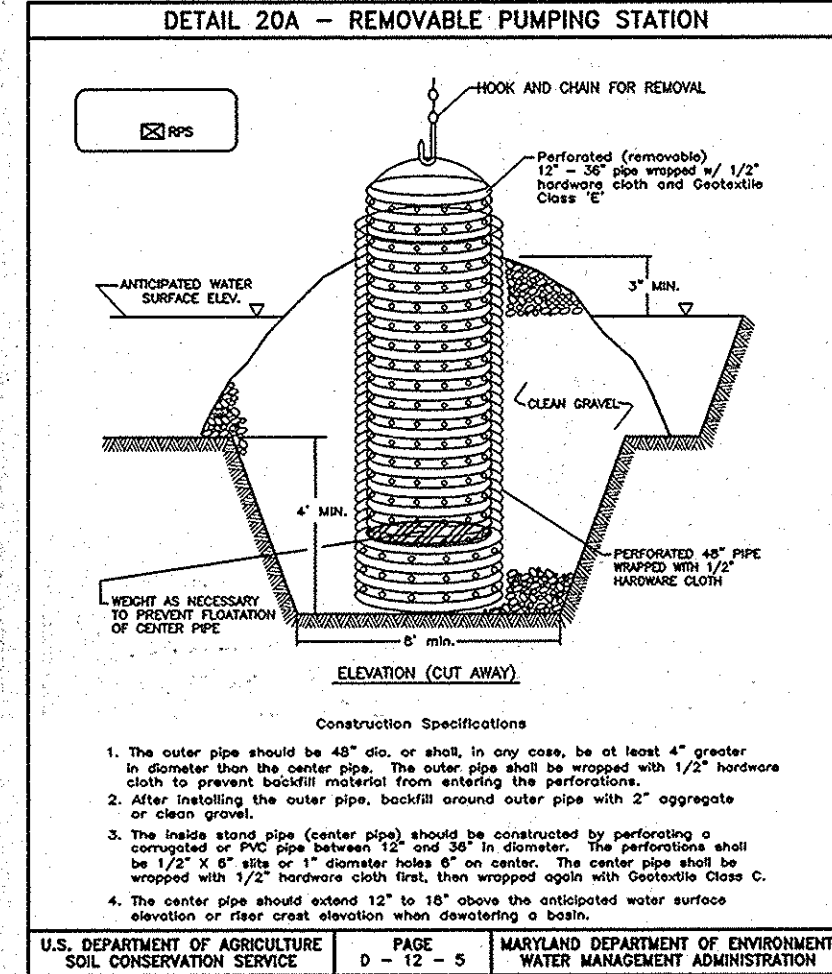
- Controlling dust blowing and movement on construction sites and roads.
Purpose
To prevent blowing and movement of dust from exposed soil surfaces, reduce on and off-site damage, health hazards, and improve traffic safety.
Conditions Where Practice Applies
This practice is applicable to areas subject to dust blowing and movement where on and off-site damage is likely without treatment.
Specifications
1. Mulches - See standards for vegetative stabilization with mulches only. Mulch should be crimped or tracked to prevent blowing.
2. Vegetative Cover - See standards for temporary vegetative cover.
3. Tillage - To roughen surface and bring clods to the surface. This is an emergency measure which should be used before soil blowing starts. Begin plowing on windward side of site. Chisel-type plows spaced about 12' apart, spring-toothed harrows, and similar plows are examples of equipment which may produce the desired effect.
4. Irrigation - This is generally done as an emergency treatment. Site is sprinkled with water until the surface is moist. Repeat as needed. At no time should the site be irrigated to the point that runoff begins to flow.
5. Barriers - Solid board fences, slit 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 reapplication.
Permanent Methods
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.

TEMPORARY SEEDBED PREPARATIONS

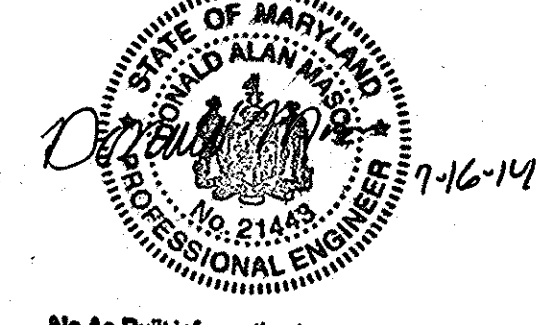
- APPLY TO GRADED OR CLEARED AREAS LIKELY TO BE REDISTURBED WHERE A SHORT-TERM VEGETATIVE COVER IS NEEDED.
SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.
SOIL AMENDMENTS: APPLY 600 LBS PER ACRE 10-10-10 FERTILIZER (14 LBS/1000 SQ FT).
SEEDING: FOR PERIOD MARCH 1 THROUGH APRIL 30 AND FROM AUGUST 15 THROUGH NOVEMBER 15, SEED WITH 2-1/2 BUSHELS PER ACRE OF ANNUAL RYE (3.2 LBS/1000 SQ FT). FOR THE PERIOD MAY 1 THROUGH AUGUST 14, SEED WITH 3 LBS PER ACRE OF WEEPING LOVERGASS (2.7 LBS/1000 SQ FT). FOR THE PERIOD NOVEMBER 16 THROUGH FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOO.
MULCHING: APPLY 1-1/2 TO 2 TONS PER ACRE (70 TO 90 LBS/1000 SQ FT) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ FT) OF EMULSIFIED ASPHALT ON FLAT AREAS, ON SLOPES, 8 FT. OR HIGHER, USE 348 GALLONS PER ACRE (8 GAL/1000 SQ FT) FOR ANCHORING.
REFER TO THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR RATE AND METHODS NOT COVERED.

PERMANENT SEEDBED PREPARATIONS

- 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 ON OF THE FOLLOWING SCHEDULES:
1. 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 TIME OF SEEDING. APPLY 400 LBS PER ACRE 30-0-0 UREA-FORM FERTILIZER (9 LBS/1000 SQ FT).
2. ACCEPTABLE - APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS/1000 SQ FT) AND 1000 LBS PER ACRE 10-10-10 FERTILIZER (23 LBS/1000 SQ FT) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL.
SEEDING: FOR THE PERIODS MARCH 1 THROUGH APRIL 30 AND AUGUST 1 THROUGH OCTOBER 15, SEED WITH 60 LBS PER ACRE (1.4 LBS/1000 SQ FT) OF KENTUCKY 31 TALL FESCUE PER ACRE AND 2 LBS PER ACRE (0.5 LBS/1000 SQ FT) OF WEEPING LOVERGASS DURING THE PERIOD OF OCTOBER 16 THROUGH FEBRUARY 28. PROTECT SITE BY: OPTION (1) 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING. OPTION (2) USE SOO. OPTION (3) SEED WITH 60 LBS PER ACRE OF KENTUCKY 31 TALL FESCUE AND MULCH WITH 2 TONS PER ACRE OF WELL ANCHORED STRAW.
MULCHING: APPLY 1-1/2 TO 2 TONS PER ACRE (70 TO 90 LBS/1000 SQ FT) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ FT) OF EMULSIFIED ASPHALT ON FLAT AREAS, ON SLOPES 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GAL/1000 SQ FT) FOR ANCHORING.
MAINTENANCE: INSPECT ALL SEEDED AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.



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. 211443, Expiration Date: 12-21-14



No As-Built Information is required on this sheet

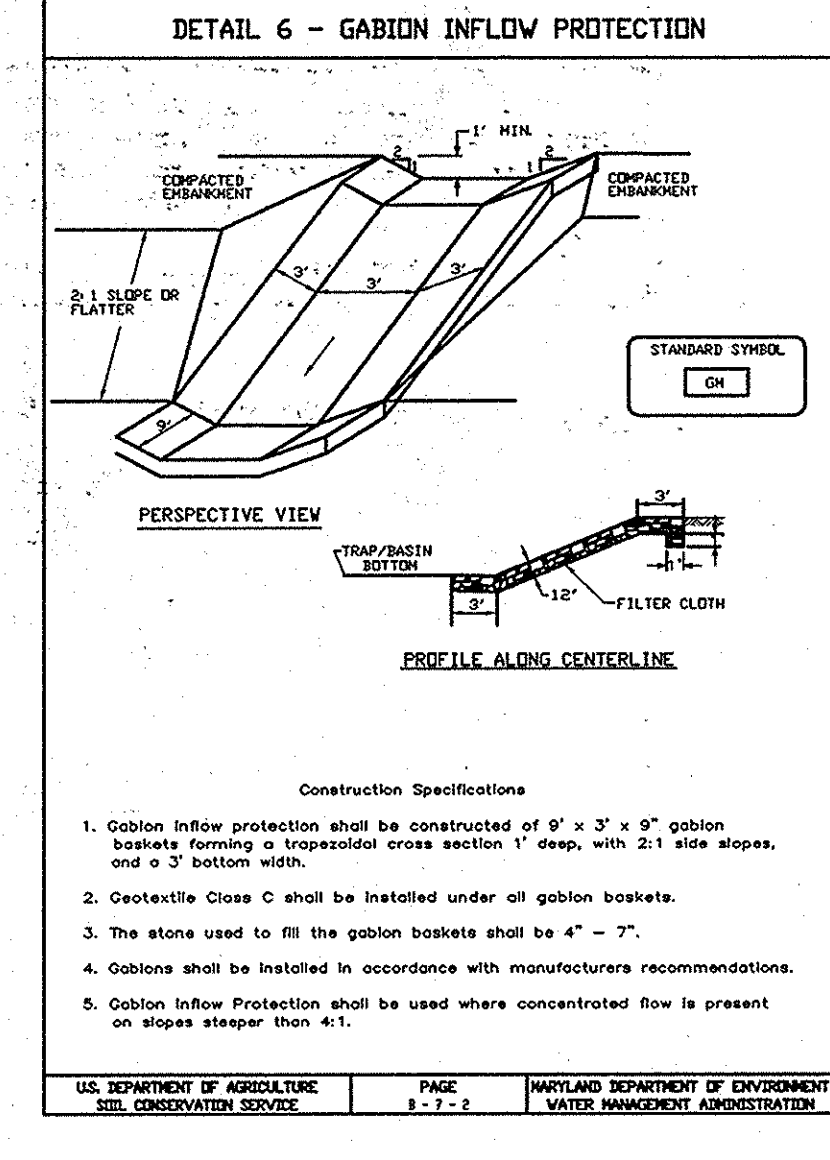


Table with columns for DEVELOPER, ENGINEER, APPROVED, and dates. Includes signatures and dates for Stephen B. Boregan, John C. Roberts, and others.

ROCK OUTLET PROTECTION

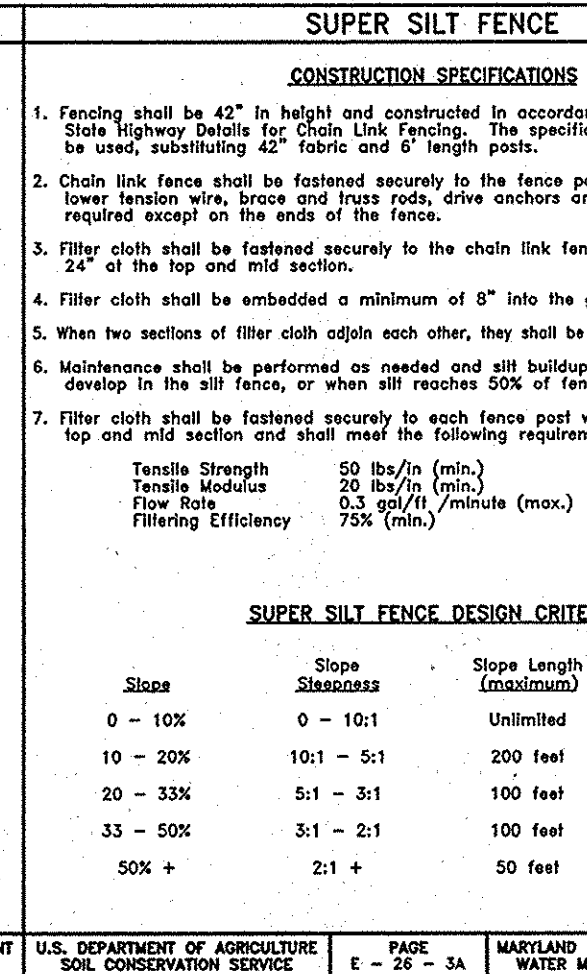
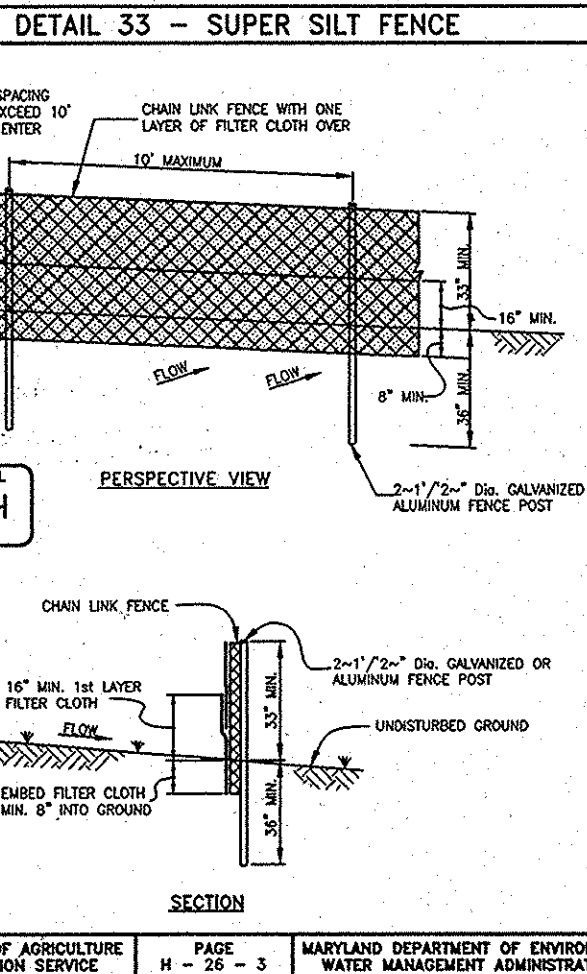
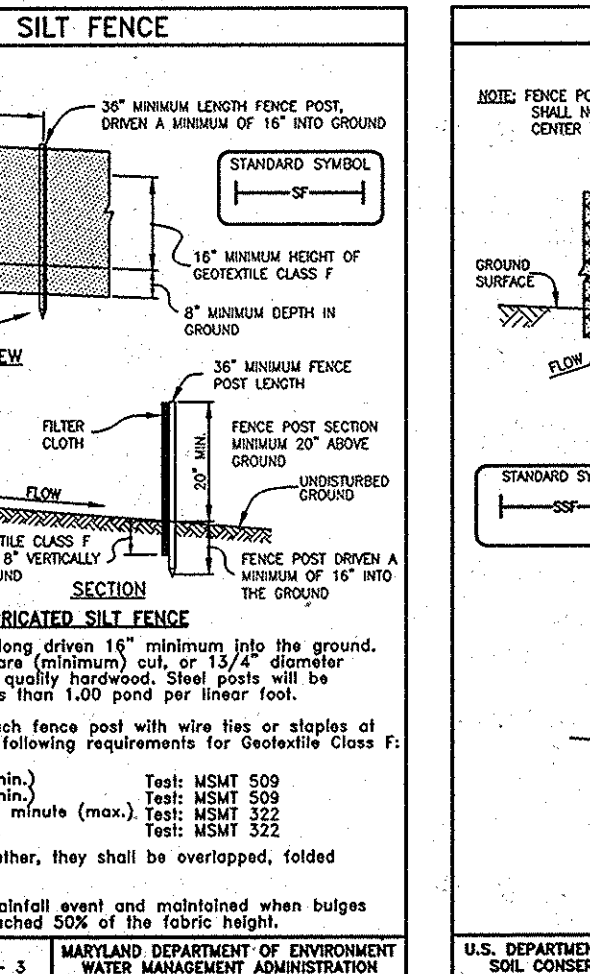
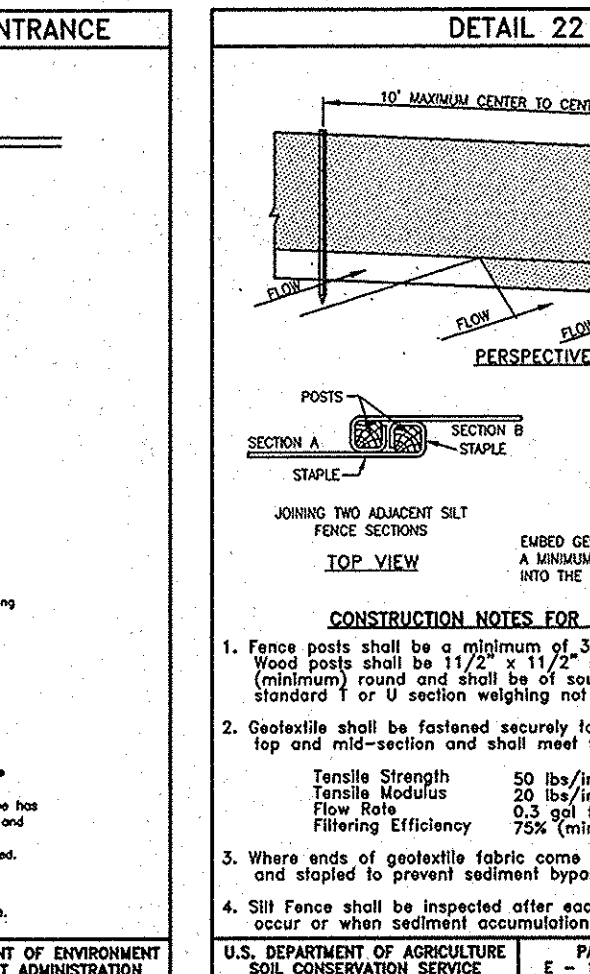
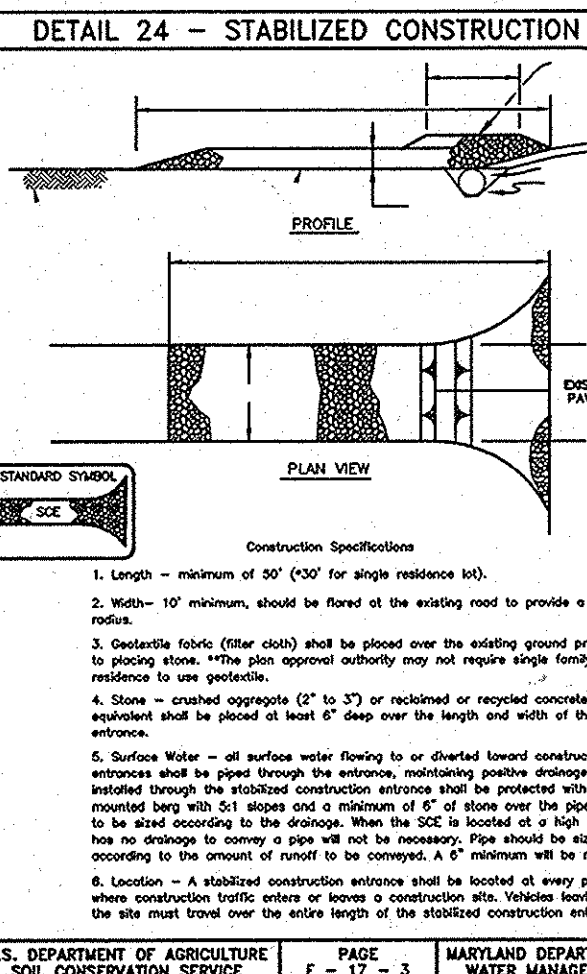
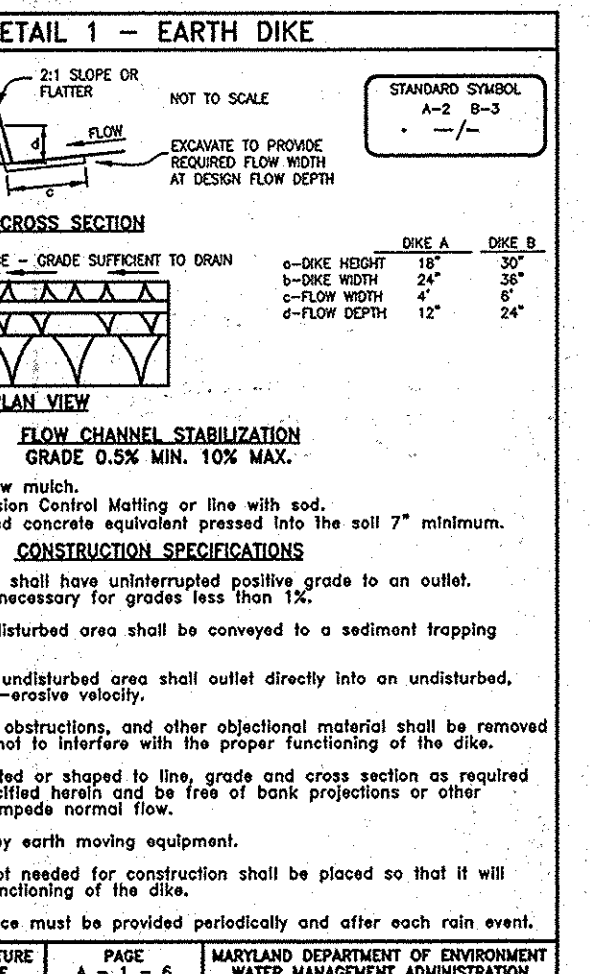
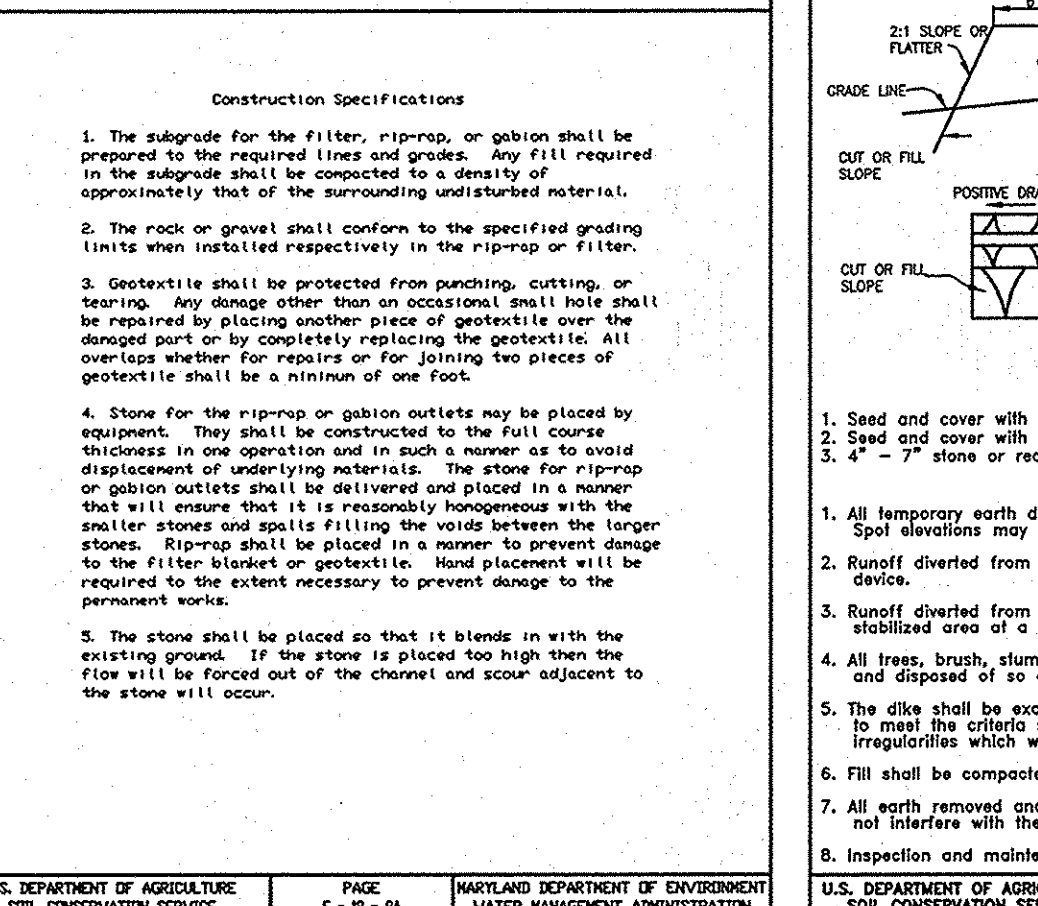


Table with columns for OWNER, DEVELOPER, and project details. Includes Security Development LLC and Cascade Overlook.

BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS. 8480 BALTIMORE NATIONAL PIKE, SUITE 418 ELLICOTT CITY, MARYLAND 21043. (P) 301-371-3506

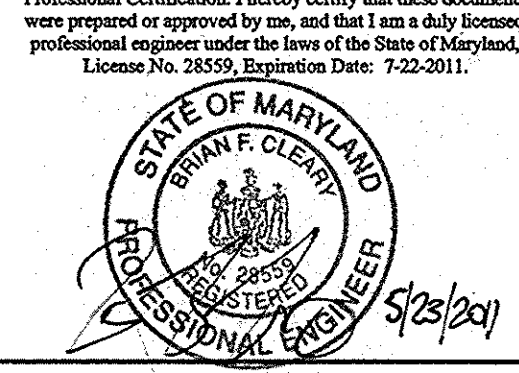
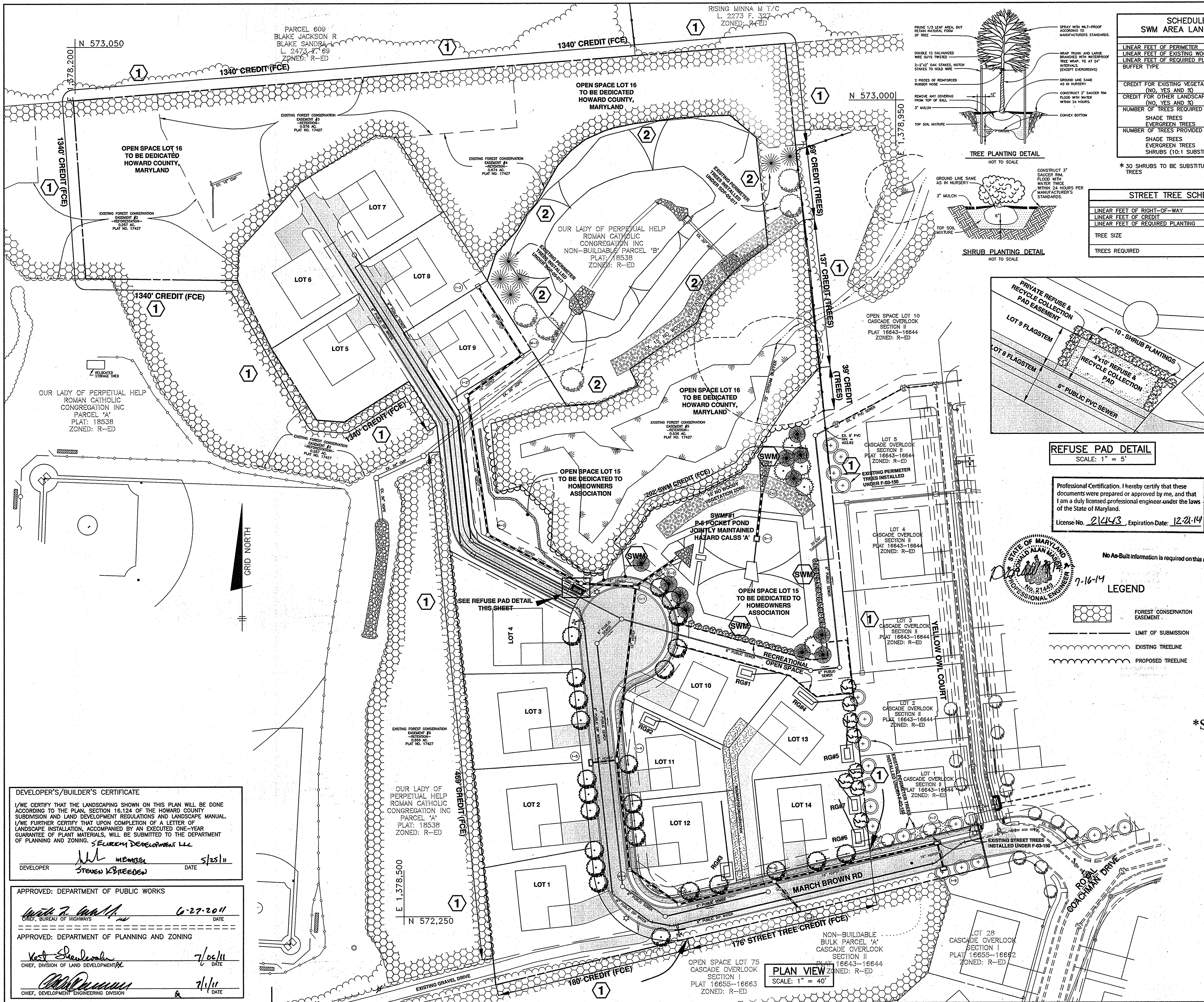


Table with columns for OWNER, DEVELOPER, DATE, BEI PROJECT NO., SHEET, and OF. Includes Security Development LLC and Cascade Overlook.



**SCHEDULE D
SWM AREA LANDSCAPING**

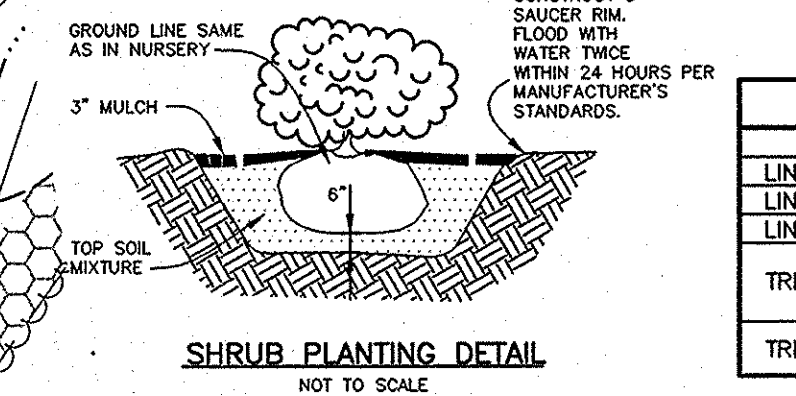
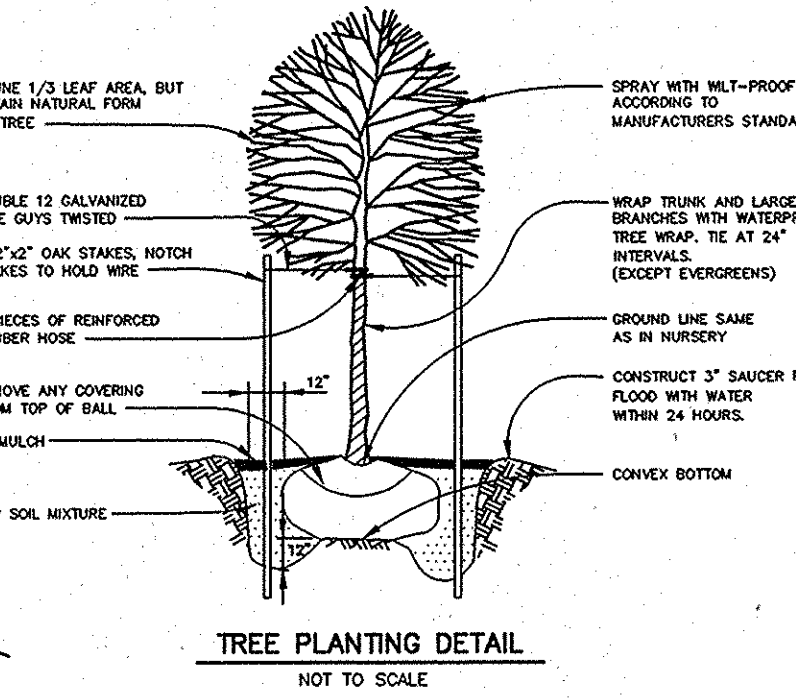
LINEAR FEET OF PERIMETER	622'
LINEAR FEET OF EXISTING WOODS LINE	202'
LINEAR FEET OF REQUIRED PLANTING	420'
BUFFER TYPE	"B"
CREDIT FOR EXISTING VEGETATION (NO, YES AND %)	YES 32%
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	NO
NUMBER OF TREES REQUIRED	8
SHADE TREES	11
EVERGREEN TREES	5
NUMBER OF TREES PROVIDED	11
SHADE TREES	5
EVERGREEN TREES	30*

* 30 SHRUBS TO BE SUBSTITUTED FOR 3 SHADE TREES

**SCHEDULE A
PERIMETER LANDSCAPE EDGE**

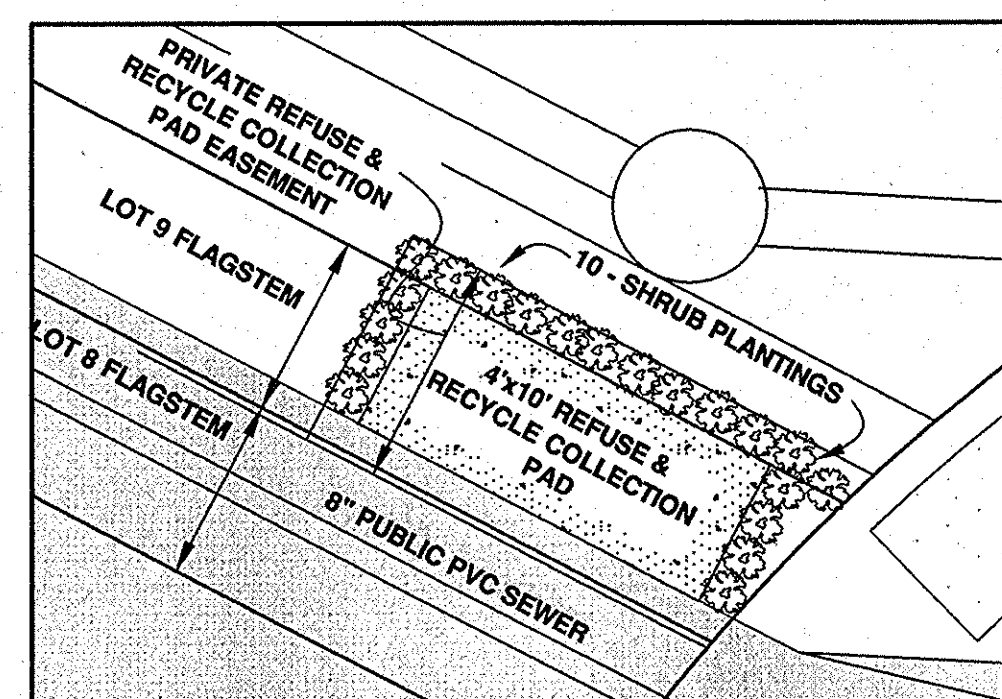
CATEGORY	ADJACENT TO PERM. PROPERTY				
	①	②	③	④	⑤
LANDSCAPE TYPE	A	A	B	B	B
ADJACENT TO ROAD (TO LOT 14)	1:60 shade	1:60 shade	1:50 shade	1:50 shade	1:50 shade
ADJACENT TO ROAD (TO LOT 14)	1:40 evergreen	1:40 evergreen	1:40 evergreen	1:40 evergreen	1:40 evergreen
ADJACENT TO TRASH PAD					
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	2690 LF	821 LF	87 LF	99 LF	28 LF
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	YES 2234 LF	YES 821 LF	NO	NO	NO
CREDIT FOR WALL FENCE OR BERM (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO	NO	NO	NO	NO
NUMBER OF PLANTS REQUIRED	456 LF	0 LF	87 LF	99 LF	28 LF
SHADE TREES	8	0	2	2	1
EVERGREEN TREES	0	0	3	3	0
OTHER TREES (2:1 SUBSTITUTE)	0	0	0	0	0
SHRUBS	0	0	0	0	0
NUMBER OF PLANTS PROVIDED	8	0	2*	2*	0
SHADE TREES	0	0	3*	3*	0
EVERGREEN TREES	0	0	0	0	0
OTHER TREES (2:1 SUBSTITUTE)	0	0	0	0	20

* TO BE DEFERRED TO SITE DEVELOPMENT PLAN.
** CREDIT IS TAKEN FOR SURROUNDING EXISTING FOREST CONSERVATION ELEMENTS AS WELL AS THE PERIMETER TREES INSTALLED UNDER SDP-05-017.



STREET TREE SCHEDULE

LINEAR FEET OF RIGHT-OF-WAY	MARCH BROWN RD
LINEAR FEET OF CREDIT	115'
LINEAR FEET OF REQUIRED PLANTING	176'
LINEAR FEET OF REQUIRED PLANTING	975'
TREE SIZE	LARGE 1:40 LF
TREES REQUIRED	25



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. 21243, Expiration Date: 12-21-14



LEGEND

- FOREST CONSERVATION EASEMENT
- LIMIT OF SUBMISSION
- EXISTING TREELINE
- PROPOSED TREELINE

- LANDSCAPE NOTES:**
- STREET TREES TO BE PLANTED 3 FEET BEHIND SIDEWALK DISTANCE BETWEEN SIDEWALK AND CURB IS LESS THAN 6 FEET. STREET TREES TO BE PLANTED 6 FEET BEHIND BACK OF CURB WHERE THERE IS NO SIDEWALK. TREES MAY NOT BE PLANTED WITHIN 5 FEET OF A DRAIN INLET, 5 FEET OF AN OPEN SPACE ACCESS STRIP, OR 10 FEET OF A DRIVEWAY.
 - THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL.
 - AT THE TIME OF INSTALLMENT, ALL SHRUBS AND OTHER PLANTINGS HEREWIT LISTED AND APPROVED FOR THIS SITE, SHALL BE OF THE PROPER HEIGHT REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATION OF REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THIS APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO APPLICABLE PLANS AND CERTIFICATIONS.
 - THE OWNER, TENANTS AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING INCLUDING BOTH PLANT MATERIALS AND BERMS, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS SHALL TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.
 - FINANCIAL SURETY FOR THE REQUIRED PERIMETER LANDSCAPING SHALL BE POSTED AS PART OF THE DPW DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$7,050.00 (\$4,800.00 FOR 16 SHADE TREES, \$1,650.00 FOR 11 EVERGREENS AND \$500.00 FOR 20 SHRUBS). FINANCIAL SURETY FOR THE REQUIRED STREET TREES SHALL BE INCLUDED IN THE COST ESTIMATE GENERATED BY HOWARD COUNTY DEVELOPMENT ENGINEERING DIVISION.

PUBLIC STREET TREE PLANTING LIST

SYMBOL	QUANTITY	NAME	REMARKS	DESCRIPTION
(Symbol)	25	TILIA CORDATA 'GREENSPIRE' (Greenspire Littleleaf Linden)	2.5" - 3" col.	TO BE PLANTED ALONG MARCH BROWN ROAD AND PROVIDED BY THE DEVELOPER

PERIMETER LANDSCAPE PLANTING LIST

SYMBOL	QUANTITY	NAME	REMARKS	DESCRIPTION
(Symbol)	8	PLATANUS X ACERIFOLIA 'BLOODGOOD' (Bloodgood London Plane)	2.6" - 3" col.	SHADE TREES ALONG PERIMETER TO BE PROVIDED BY THE DEVELOPER
(Symbol)	20	JUNIPERUS CHINENSIS 'Compact Pfitzer Juniper' (Pfitzer Juniper)	2' - 2.5' hgt.	NEEDLE EVERGREEN SHRUB PLANTED AROUND REFUSE PAD TO BE PROVIDED BY THE DEVELOPER
(Symbol)	11	ILEX OPACA (American Holly)	5' - 6' ht.	EVERGREEN TREES ALONG SWMF PERIMETER TO BE PROVIDED BY THE DEVELOPER
(Symbol)	5	ACER RUBRUM 'RED SUNSET' (Red Sunset Red Maple)	2 1/2" - 3" col.	SHADE TREES ALONG SWMF PERIMETER TO BE PROVIDED BY THE DEVELOPER
(Symbol)	30	DELAVARE VALLEY WHITE (Delaware Valley White Azalea)	18" - 24" sp.	SHRUBS PLANTED ALONG SWMF PERIMETER TO BE PROVIDED BY THE DEVELOPER

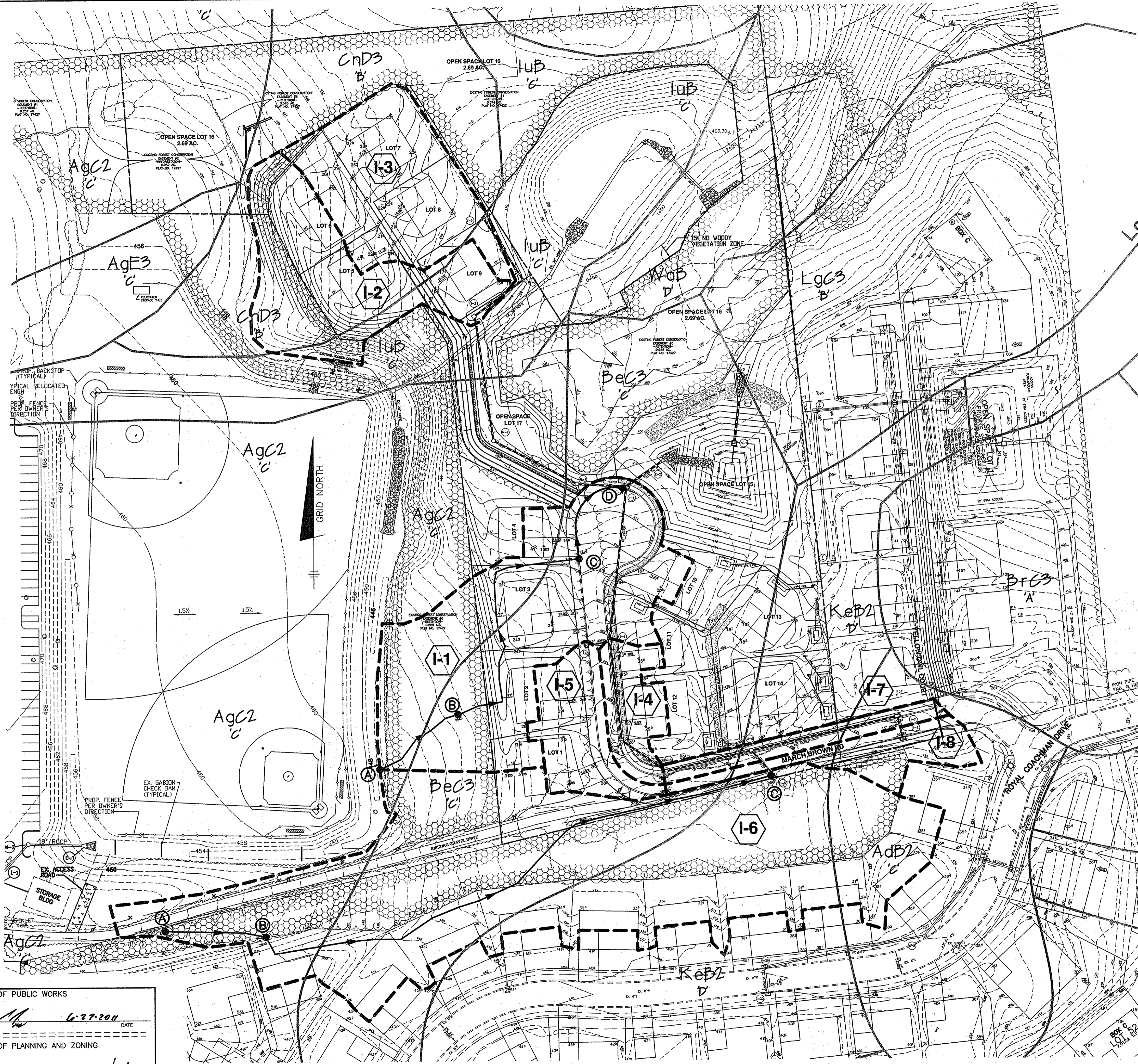
SEE SHEET 11 FOR INTERNAL SWMF PLANTING

DEVELOPER'S/BUILDER'S CERTIFICATE
I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION OF A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE-YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.
SELEUM DEVELOPMENT LLC
DEVELOPER: *Steven B. Breeden* DATE: 5/25/11

APPROVED: DEPARTMENT OF PUBLIC WORKS
Walter J. ... 6-27-2011
APPROVED: DEPARTMENT OF PLANNING AND ZONING
Verd ... 7/06/11
... 7/11/11

BENCHMARK ENGINEERING, INC.
60 THOMAS JOHNSON DRIVE # FREDERICK, MARYLAND 21702
WWW.BE-ENGINEERING.COM

CASCADE OVERLOOK SECTION III
LOTS 1 thru 14 AND OPEN SPACE LOTS 15 thru 17
TAX MAP: 31 GRID: 10 PARCEL: p/o 260 ZONED: R-ED ELECTION DISTRICT NO. 1 HOWARD COUNTY, MARYLAND
PERIMETER LANDSCAPE & STREET TREE PLAN
DATE: MAY, 2011 BEI PROJECT NO: 1676 SCALE: AS SHOWN SHEET 6 OF 11



SOILS CHART				
SYMBOL	HYDRIC	GROUP	NAME	
AdB2	YES	C	ALDINO SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED	
AgC2		C	AURA GRAVELLY LOAM, 5 TO 10 PERCENT SLOPES, MODERATELY ERODED	
AgE3		C	AURA GRAVELLY LOAM, 10 TO 30 PERCENT SLOPES, SEVERELY ERODED	
BeC3	YES	C	BELTSVILLE SILT LOAM, 5 TO 10 PERCENT SLOPES, SEVERELY ERODED	
BrC3		A	BRANDYWINE LOAM, 8 TO 15 PERCENT SLOPES, SEVERELY ERODED	
CdD3		B	CHILLUM-FAIRFAX LOAMS, 5 TO 15 PERCENT SLOPES, SEVERELY ERODED	
LuB	YES	C	ILUKA LOAM, LOCAL ALLUVIUM, 1 TO 5 PERCENT SLOPES	
KeB2	YES	D	KELLY CLAY LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED	
LeC2		B	LEGORE SILT LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED	
LgC3		B	LEGORE SILTY CLAY LOAM, 8 TO 15 PERCENT SLOPES, SEVERELY ERODED	
WaB	YES	D	WATCHUNG SILT LOAM, 3 TO 8 PERCENT SLOPES	

AREA AND "C" FACTOR TABULATION

PROJECT: Cascade Overlook III DATE: 5/9/2011 BY: DBT

PHASE	INLET #	ZONING (Z)	SUBAREA (B)	AREA (Ac) (A)	"C" FACTOR (C)<25	% IMPERVIOUS (P)<25
	I-1	R-ED		1.20	0.38	50.9
	I-2	R-ED		0.62	0.24	40.9
	I-3	R-ED		0.57	0.30	63.9
	I-4	R-ED		0.18	0.57	84.4
	I-5	R-ED		0.26	0.51	77.1
	I-6	R-ED		2.54	0.25	32.4
	I-7	R-ED		0.13	0.85	100.0
	I-8	R-ED		0.20	0.54	55.0

LEGEND

- EXISTING CONTOURS
- PROPOSED TREELINE
- DRAINAGE DIVIDE
- SOILS DELINEATION LINE
- SOILS TYPE

BeC3
C

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
 License No. 21443 Expiration Date: 9-16-14



No As-Built information is required on this sheet

APPROVED: DEPARTMENT OF PUBLIC WORKS
William J. ... 6-27-2011 DATE
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Keith ... 7/6/11 DATE
 CHIEF, DIVISION OF LAND DEVELOPMENT

Michael ... 7/1/11 DATE
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
 ENGINEERS • LAND SURVEYORS • PLANNERS
 8480 BALTIMORE NATIONAL PIKE & SUITE 417 • ELLICOTT CITY, MARYLAND 21043
 P.O. BOX 417 (P) 410-465-6105 (F) 410-465-6544
 60 THOMAS JOHNSON DRIVE & FREDERICK, MARYLAND 21702
 (P) 301-371-3505 (F) 301-371-3508
 WWW.BE-CIVILENGINEERING.COM

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
 License No. 28507 Expiration Date: 7-22-2011

STATE OF MARYLAND
 DAVID ALAN MCCREARY
 PROFESSIONAL ENGINEER
 License No. 21443 Expiration Date: 9-16-14

CASCADE OVERLOOK SECTION III
 LOTS 1 thru 14 AND
 OPEN SPACE LOTS 15 thru 17
 TAX MAP: 31 GRID: 10 PARCEL: p/o 260
 ZONED: R-ED ELECTION DISTRICT NO. 1
 HOWARD COUNTY, MARYLAND

STORM DRAIN DRAINAGE AREA MAP

OWNER: SECURITY DEVELOPMENT LLC
 ELLICOTT CITY, MARYLAND 21041
 410-465-4244

DEVELOPER: SECURITY DEVELOPMENT LLC
 ELLICOTT CITY, MARYLAND 21041
 410-465-4244

DATE: MAY, 2011 BEI PROJECT NO: 1676
 SCALE: AS SHOWN SHEET 7 OF 11

DESIGN: DBT DRAWN: DBT

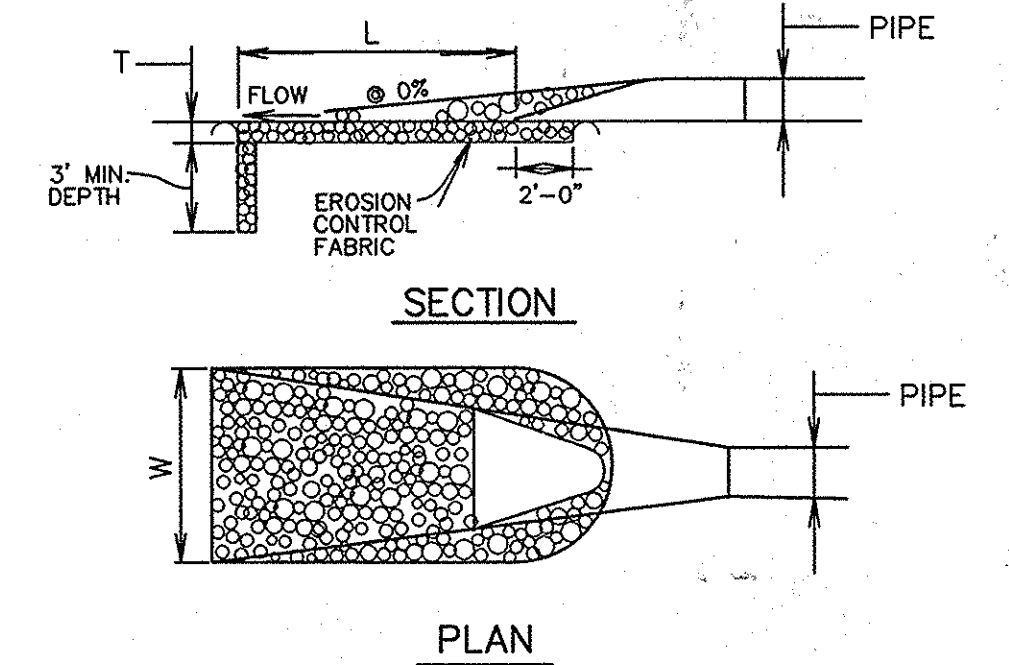
STRUCTURE TABLE										
NUMBER	TYPE	LOCATION	INVERT IN	INVERT OUT	TOP ELEV.	THROAT ELEV.	HO. CO.	STD. DETAIL	MAINTENANCE	
INLETS										
I-1	A-5	LP STA. 1+50.00 OFFSET 0.132' LEFT	405.73	406.70	405.48	413.14	442-64-411.78	D-4.01 & D-4.02	PUBLIC	
I-2	D	N 572728.8521 E 1378557.7831	407.42	NA	407.32	414.33	413.36	D-4.10 & D-4.11	PRIVATE	
I-3	D	N 572829.3390 E 1378568.1671	NA	NA	410.18	444-89-413.77	413.54	D-4.10 & D-4.11	PUBLIC	
I-4	A-5	CL STA. 5+87.39 OFFSET 10.00' RIGHT	414.91 (18")	419.28 (18")	414.71	423.11	422.51	D-4.01 & D-4.02	PUBLIC	
I-5	A-5	CL STA. 5+87.39 OFFSET 10.00' LEFT	NA	NA	419.76	423.11	422.51	D-4.01 & D-4.02	PUBLIC	
I-6	D	CL STA. 2+96.31 OFFSET 17.00' LEFT	NA	NA	422.75	426.33	425.50	D-4.10 & D-4.11	PUBLIC	
I-7	A-5	CL STA. 1+58.57 OFFSET 10.00' RIGHT	419.75	NA	419.50	423.84	423-24-422.74	D-4.01 & D-4.02	PUBLIC	
I-8	A-5	CL STA. 1+58.57 OFFSET 10.00' LEFT	NA	NA	419.99	423.84	423-24-422.84	D-4.01 & D-4.02	PUBLIC	
MANHOLES										
M-1	4" DIA	N 572556.3460 E 1378662.0885	406.09	405.75	NA	406.09	413.30	G-5.12	PRIVATE	
M-2	4" DIA	N 572600.9982 E 1378577.1151	406.67	NA	406.57	414.70	NA	G-5.12	PRIVATE	
M-3	4" DIA	N 572765.8251 E 1378608.1044	407.98	NA	407.73	442-69-411.67	NA	G-5.12	PRIVATE	
M-4	4" DIA	CL STA. 4+86.11 OFFSET 13.05' RIGHT	416.12	NA	415.92	427.86	NA	G-5.12	PUBLIC	
M-5	4" DIA	CL STA. 4+01.02 OFFSET 13.05' RIGHT	416.88	NA	416.68	429.05	NA	G-5.12	PUBLIC	
M-6	4" DIA	CL STA. 3+11.67 OFFSET 13.05' RIGHT	417.97 (18")	422.41 (18")	417.74 (43)	427.46	426.93	G-5.12	PUBLIC	
END SECTIONS										
E-1	24" CONC.	N 572644.5318 E 1378828.2187	399.57	NA	399.50	NA	NA	D-5.51	PRIVATE	
E-2	21" CONC.	N 572580.6035 E 1378751.1204	450.06	NA	450.00	NA	NA	D-5.51	PRIVATE	
STRUCTURES										
S-1	SEE SWM	N 572596.6366 E 1378622.8006	401.49	400.00	400.00	408.00	405.00 (WEIR)	SEE SWM DETAILS	PRIVATE	

STRUCTURE LOCATION FOR MANHOLES IS AT THE CENTER OF THE MANHOLE RIM.
STRUCTURE LOCATION FOR INLETS IS AT THE CENTER OF THE INLET FACE.
STRUCTURE LOCATION FOR THE END-SECTIONS IS AT THE MIDPOINT OF THE END OF THE STRUCTURE.
PRECAST STRUCTURES MEETING HS-20 LOADING MAY BE USED.

PIPE SCHEDULE			
SIZE	TYPE	LENGTH (L.F.)	MAINTENANCE
15"	HDPEP	82	PUBLIC
18"	HDPEP	559	PUBLIC
21"	RCCP CL IV	48	PUBLIC
24"	ASTM C-361 B-25	46	PUBLIC
15"	HDPEP	75	PRIVATE
18"	HDPEP	338	PRIVATE

All pipes shall have smooth interior. No interior corrugations.

- CONSTRUCTION SPECIFICATIONS**
- THE SUBGRADE FOR THE FILTER, RIP-RAP, OR GABION SHALL BE PREPARED TO THE REQUIRED LINES AND GRADES. ANY FILL REQUIRED IN THE SUBGRADE SHALL BE COMPACTED TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
 - THE ROCK OR GRAVEL SHALL CONFORM TO THE SPECIFIED GRADING LIMITS WHEN INSTALLED RESPECTIVELY IN THE RIP-RAP OR FILTER.
 - GEOTEXTILE CLASS C28 OR BETTER SHALL BE PROTECTED FROM PUNCHING, CUTTING, OR TEARING. ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE SHALL BE PREPARED BY PLACING ANOTHER PIECE OF GEOTEXTILE FABRIC OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE FABRIC. ALL OVERLAPS WHETHER FOR REPAIRS OR FOR JOINING TWO PIECES OF GEOTEXTILE FABRIC SHALL BE A MINIMUM OF ONE FOOT.
 - STONE FOR THE RIP-RAP OR GABION SHALL BE PROTECTED FROM PUNCHING, CUTTING, OR TEARING. ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE SHALL BE PREPARED BY PLACING ANOTHER PIECE OF GEOTEXTILE FABRIC OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE FABRIC. ALL OVERLAPS WHETHER FOR REPAIRS OR FOR JOINING TWO PIECES OF GEOTEXTILE FABRIC SHALL BE A MINIMUM OF ONE FOOT.
 - THE STONE SHALL BE PLACED SO THAT IT BLENDS IN WITH THE EXISTING GROUND. IF THE STONE IS PLACED TOO HIGH THEN THE FLOW WILL BE FORCED OUT OF THE CHANNEL AND SCOUR ADJACENT TO THE STONE WILL OCCUR.



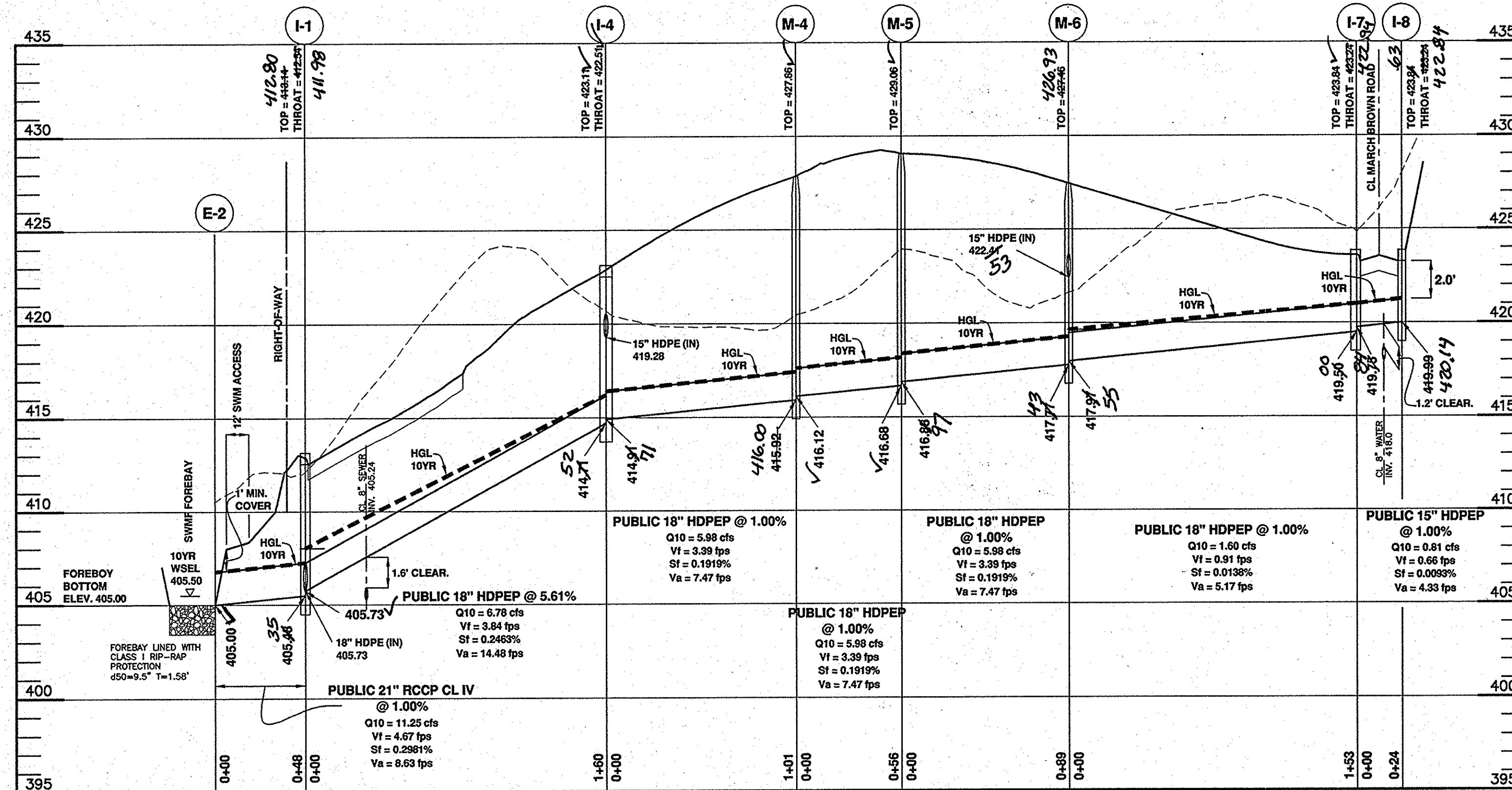
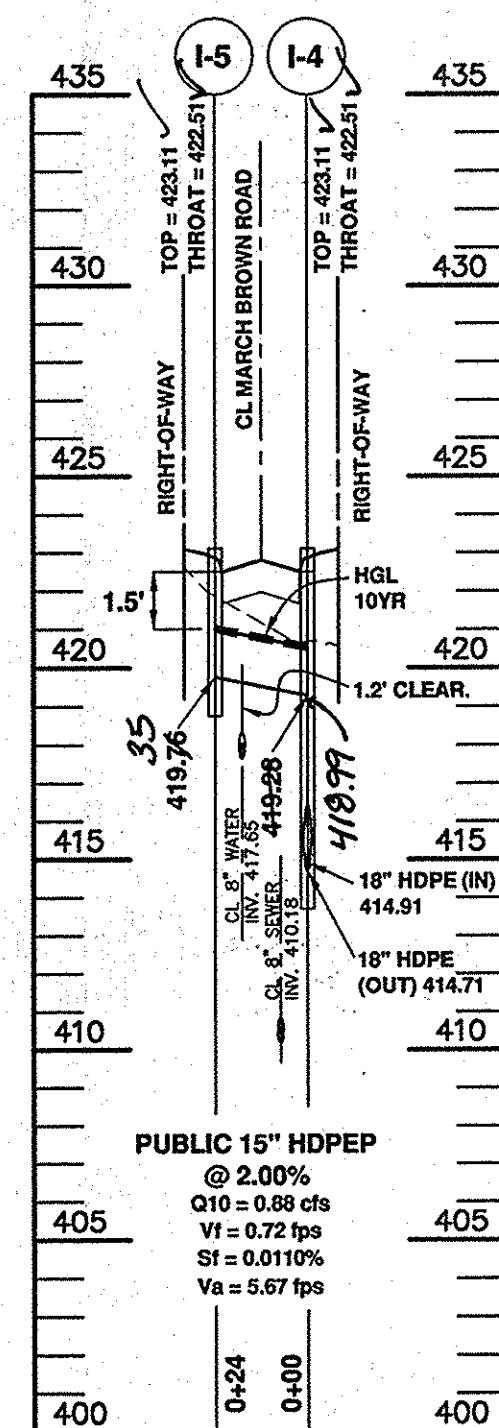
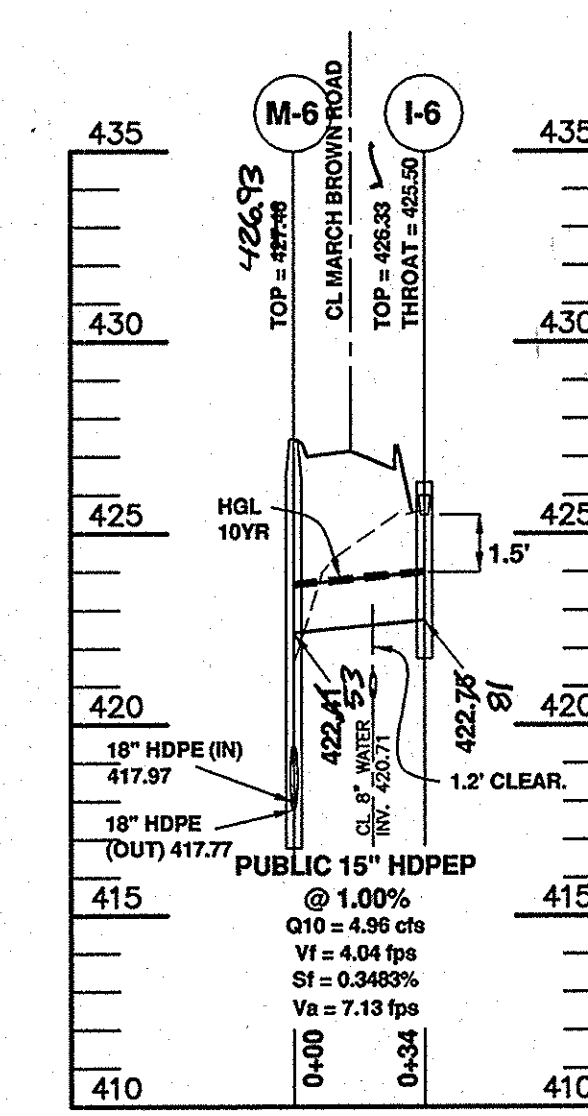
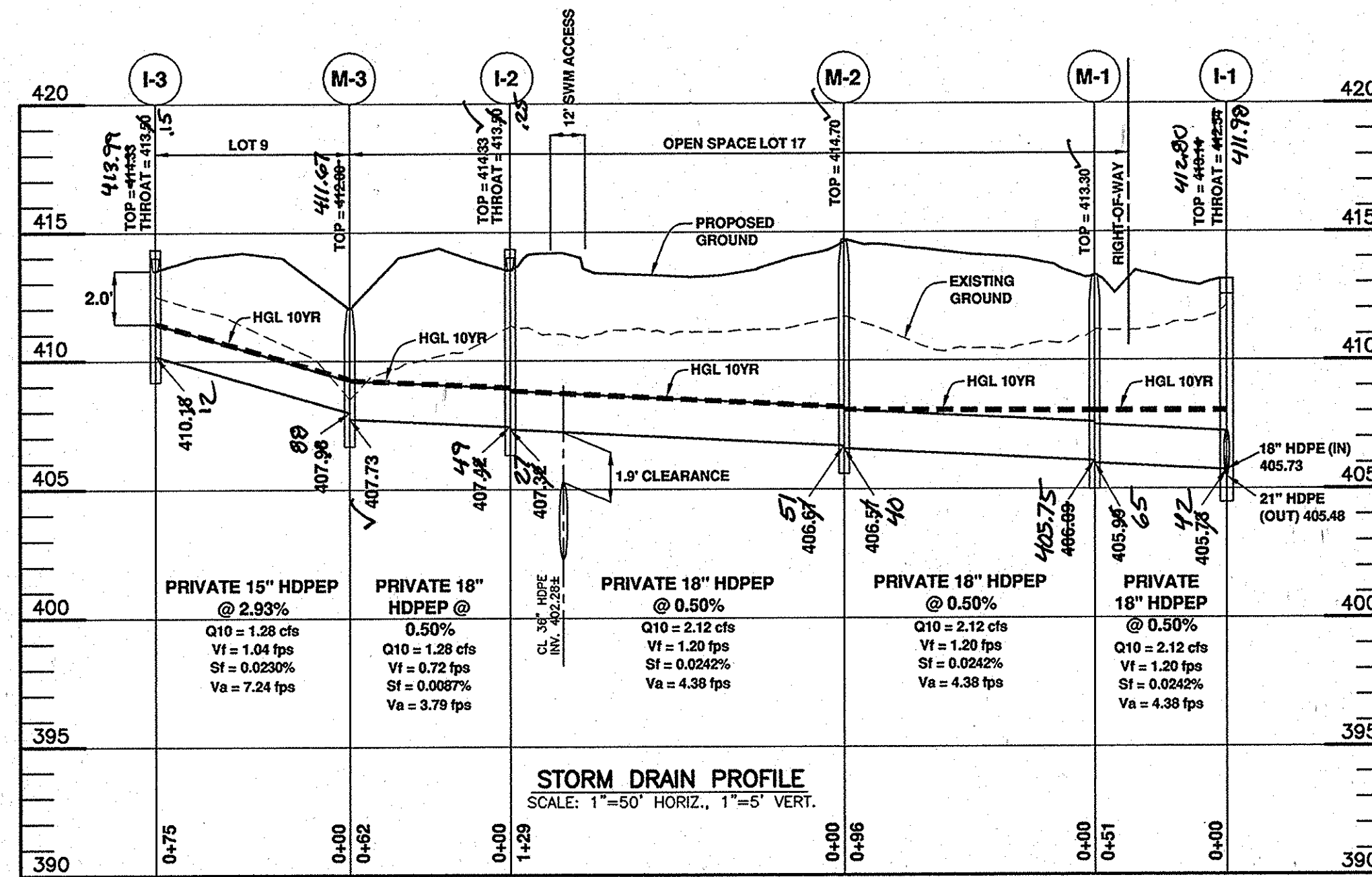
STRUCTURE	D-50	LENGTH (L)	WIDTH (W)	THICKNESS (T)	SHA CLASS
E-1	9.0'	24' @ 0%	11.6'	1.58'	I
E-2	9.5'	FOREBAY	FOREBAY	1.58'	I

OUTLET PROTECTION DETAIL
NOT TO SCALE

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



AS-BUILT CERTIFICATION
I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this AS-BUILT plan.
Donald Mason, P.E. No. 21443 Date 7-16-14



APPROVED: DEPARTMENT OF PUBLIC WORKS
Walter R. Smith 6-27-2011 DATE
CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
K. A. [Signature] 7/16/11 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: DEPARTMENT OF ENGINEERING
[Signature] 7/16/14 DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
ENGINEERS & LAND SURVEYORS & PLANNERS
8480 BALTIMORE NATIONAL PIKE SUITE 418 ELLICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6844
60 THOMAS JOHNSON DRIVE A FREDERICK, MARYLAND 21702
(P) 301-371-3505 (F) 301-371-3506
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Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443, Expiration Date: 7-23-2011.

OWNER: SECURITY DEVELOPMENT LLC P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	DEVELOPER: SECURITY DEVELOPMENT LLC P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	<p>CASCADE OVERLOOK SECTION III LOTS 1 thru 14 AND OPEN SPACE LOTS 15 thru 17</p> <p>TAX MAP: 31 GRID: 10 PARCEL: p/o 260 ZONED: R-ED ELECTION DISTRICT NO. 1 HOWARD COUNTY, MARYLAND</p> <p>STORM DRAIN PROFILES</p>
DATE: MAY, 2011	BEI PROJECT NO: 1676	SCALE: AS SHOWN
DESIGN: DBT	DRAWN: DBT	SHEET 8 OF 11

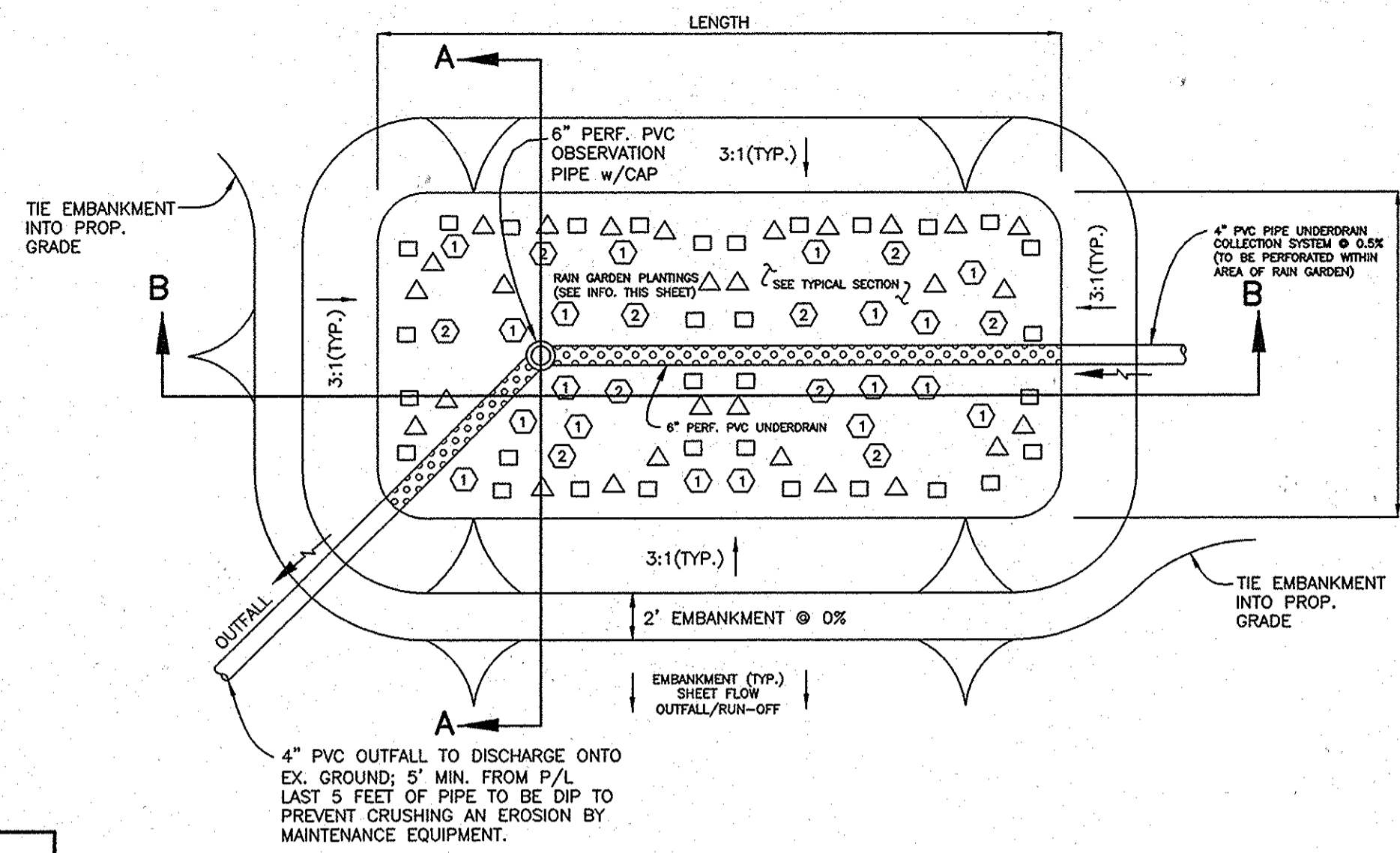
MATERIALS AND SPECIFICATIONS FOR RAIN GARDEN			
MATERIAL	SPECIFICATION	SIZE	NOTES:
PLANTINGS	SEE APPENDIX A; TABLE A.4	N/A	PLANTINGS ARE SITE SPECIFIC
PLANTING SOIL (2.5' TO 4.0' DEEP)	SAND: 30-60% SILT: 30-55% CLAY: 0-25%	N/A	USDA SOIL TYPES: LOAMY SAND, SANDY LOAM OR LOAM
MULCH	SHREDDED HARDWOOD	N/A	AGED 6 MONTHS, MINIMUM
GEOTEXTILE (CLASS "C")	APPARENT OPENING SIZE: (ASTM D-4751) GRAB TENSILE STRENGTH: (ASTM D-4632) PUNCTURE RESISTANCE: (ASTM D-4833)	N/A	FOR USE AS NECESSARY BENEATH UNDERDRAINS ONLY

RAIN GARDEN - PLANTING DATA

- PLANTINGS WITHIN THE PONDING AREA OF THE RAIN GARDEN ARE TO BE OF A MEDIUM TO HIGH WATER TOLERANCE
SUGGESTED SPECIES:
CREEPING BULGWEEED (AJUCA REPTANS)
COMMON PERIWINKLE (VINCA MINOR)
LILY-TURF (LIRIOPE, SP.)
- PLANTINGS ALONG THE PERIMETER (BERM) AREA OF THE RAIN GARDEN ARE TO BE OF A LOW TO MEDIUM WATER TOLERANCE
SUGGESTED SPECIES: (PERENNIALS/ANNUALS)
IRIS (IRIS VERSICOLOR)
DAYLILY (HEMEROCALLIS SP.)
WHITE GLORY (ASTILE SP.)
- AVOID PLANTINGS WITH EXCESSIVE ROOT MASS IN POND AREA OF THE RAIN GARDEN NEAR O.B. PIPE AND UNDERDRAIN.

RAIN GARDEN - PLANTING SCHEDULE

①	Labelia cardinalis	70
②	Iris pseudocorus	44
③	Andropogon virginicus	44
④	Miscanthus sinensis	17

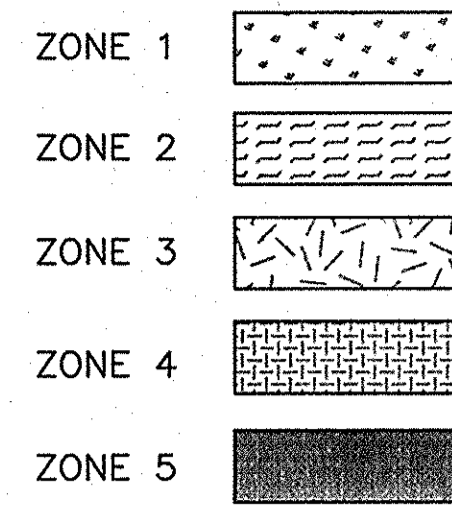


TYPICAL RAINGARDEN PLAN VIEW
NOT TO SCALE

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED RAIN GARDENS

- ANNUAL MAINTENANCE OF PLANT MATERIAL AND MULCH LAYER IS REQUIRED. MAINTENANCE OF MULCH IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH-OUT. ANY REPLACEMENT OF MULCH SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE & INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL & PRUNING.
- SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN THE SPRING AND FALL. THIS INSPECTION WILL INCLUDE: REMOVAL OF DEAD & DISEASED VEGETATION CONSIDERED BEYOND TREATMENT; TREATMENT OF ALL DISEASED TREES & SHRUBS; AND REPLACEMENT OF ALL DEFICIENT STAKES AND WIRES.
- MULCH SHALL BE INSPECTED EACH SPRING. REMOVE THE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.
- SOIL EROSION TO BE ADDRESSED ON AN AS-NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.

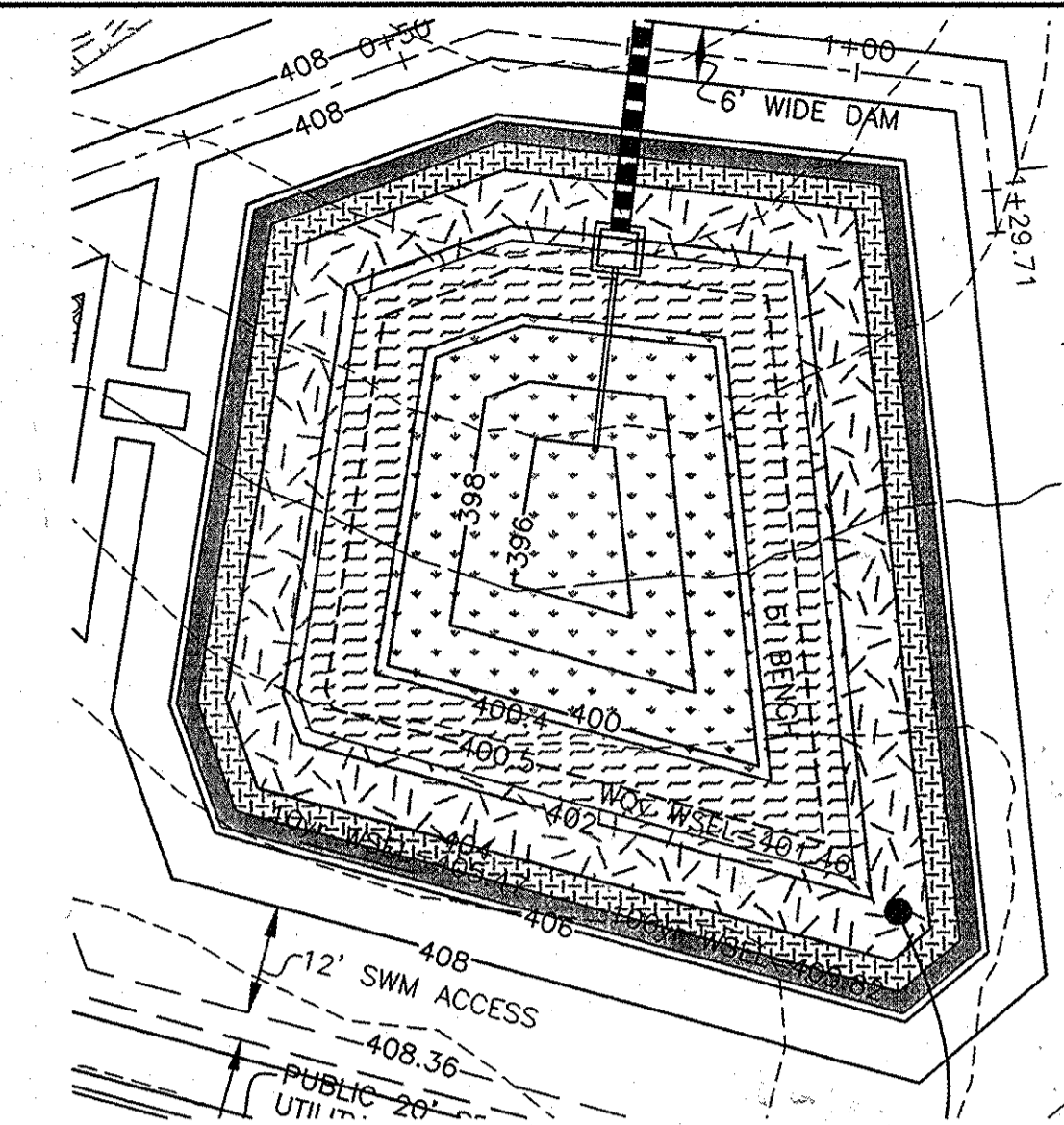
PLANTING LEGEND



INTERNAL PLANTING SCHEDULE FOR P-5 POCKET POND				
ZONE	AREA (SF)	ELEVATION RANGE	PLANT MIX	QUANTITIES
1	1,621	396.00 - 400.40	100% WATER LILLY 50% BROAD WATER WEED	160 85
2	1,536	400.40 - 401.46	25% DUCK POTATO 25% ARROW ARUM	43 43
3	1,894	401.46 - 404.00	50% CUTGRASS, RICE 50% SWITCHGRASS	105 105
4	873	404.00 (CPV) 405.01 - 405.82	50% LOWGRASS-HEADS 25% VIOLETS, COMMON BLUE 25% CONEFLOWER-CUT-LEAF	49 24 24
5	662	(CPV) (100%) 405.01 - 405.82	75% WITCHGRASS, NEEDLE-LEAF 25% CONEFLOWER, SWEET	95 18
6	0	N/A	N/A	0

NOTES:

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



INTERNAL LANDSCAPING FOR P-5 POCKET POND
SCALE: 1" = 30'

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.

ENGINEER: _____ PE NO. _____
DATE: _____
CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ONSITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ONSITE INSPECTIONS AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERING STANDARDS. CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER FOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED PRACTICES.

BY THE DEVELOPER:
"I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT."
Security Development LLC
Developer: *Stevan Breeson* Member 5/23/11 DATE

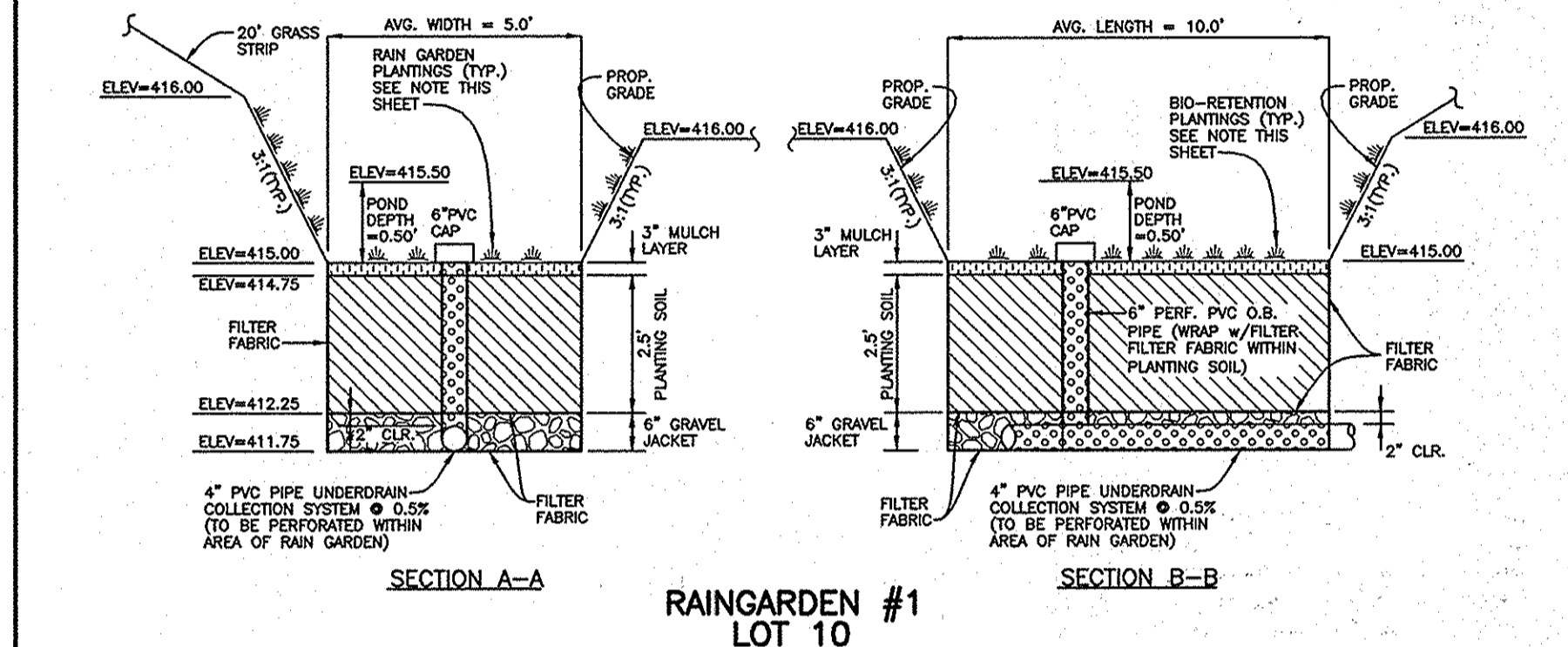
BY THE ENGINEER:
"I/WE CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE 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."
Engineer: *John R. Roberts* 6/2/11 DATE
HOWARD SOIL CONSERVATION DISTRICT

APPROVED: DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways: *Walter F. Mays* 6-27-2011 DATE
APPROVED: DEPARTMENT OF PLANNING AND ZONING
Chief, Division of Land Development: *Walter F. Mays* 7/6/11 DATE
Chief, Development Engineering Division: *Walter F. Mays* 7/6/11 DATE

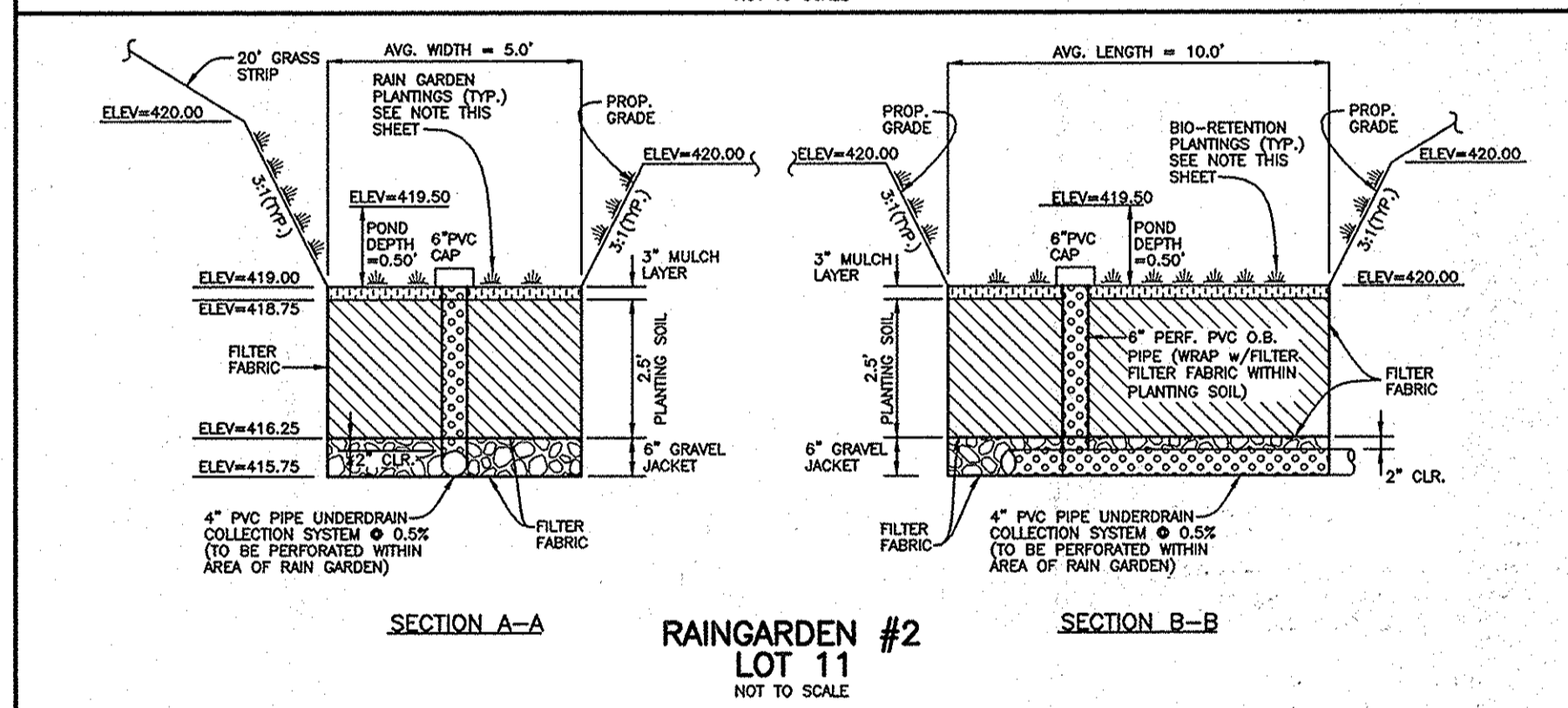
No As-Built information is required on this sheet ON LOT FACILITIES ARE AS-BUILT UNDER GRADE CERTIFICATIONS FOR HOUSES



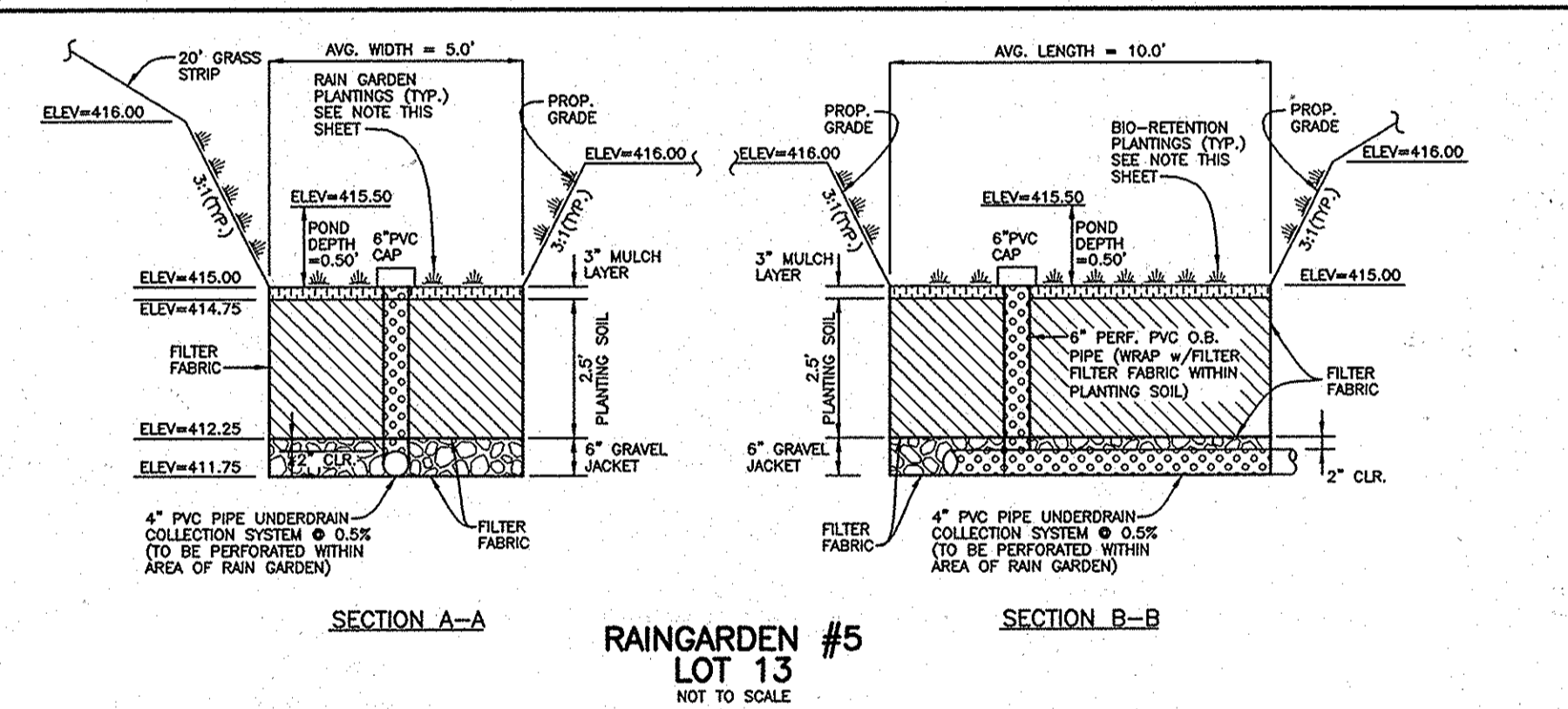
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443 Expiration Date: 12-21-14



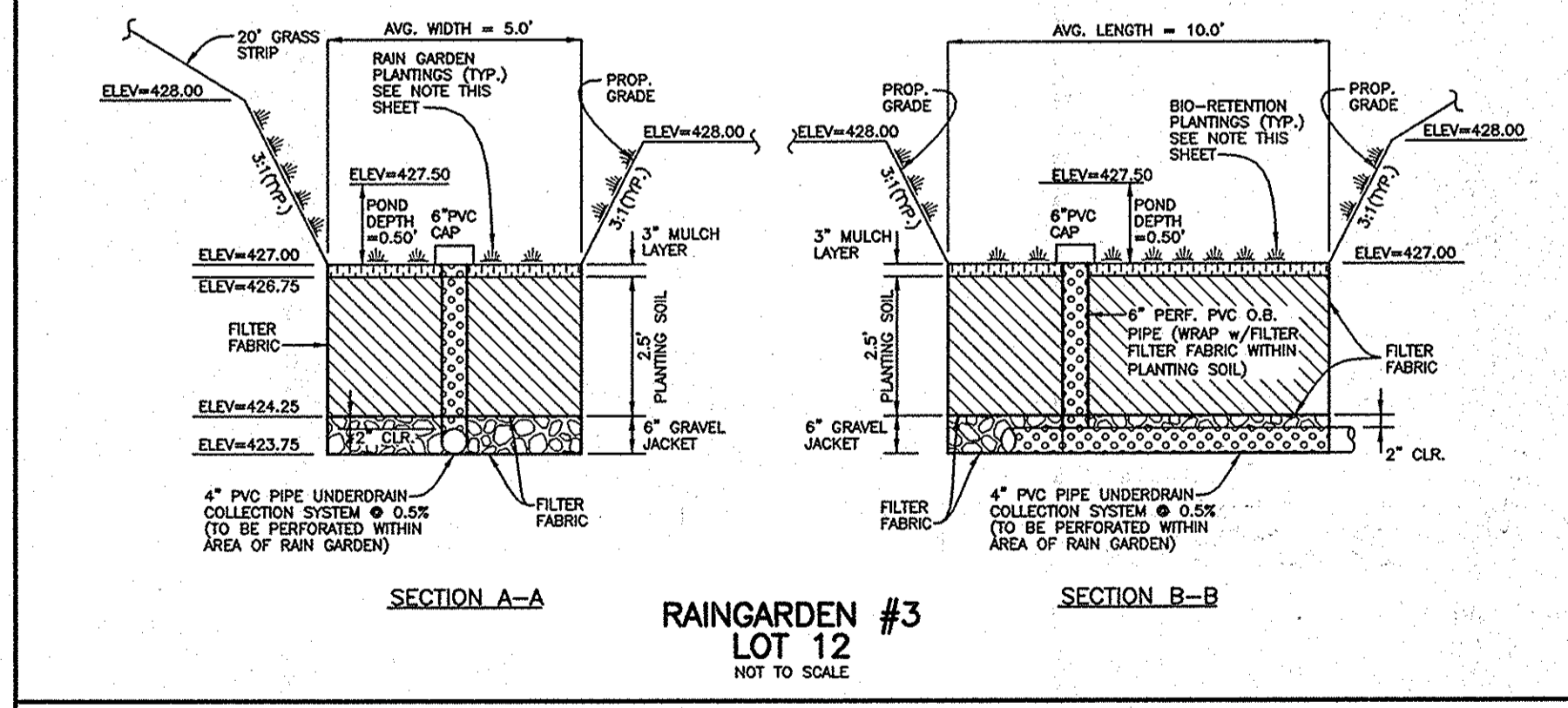
RAINGARDEN #1
LOT 10
NOT TO SCALE



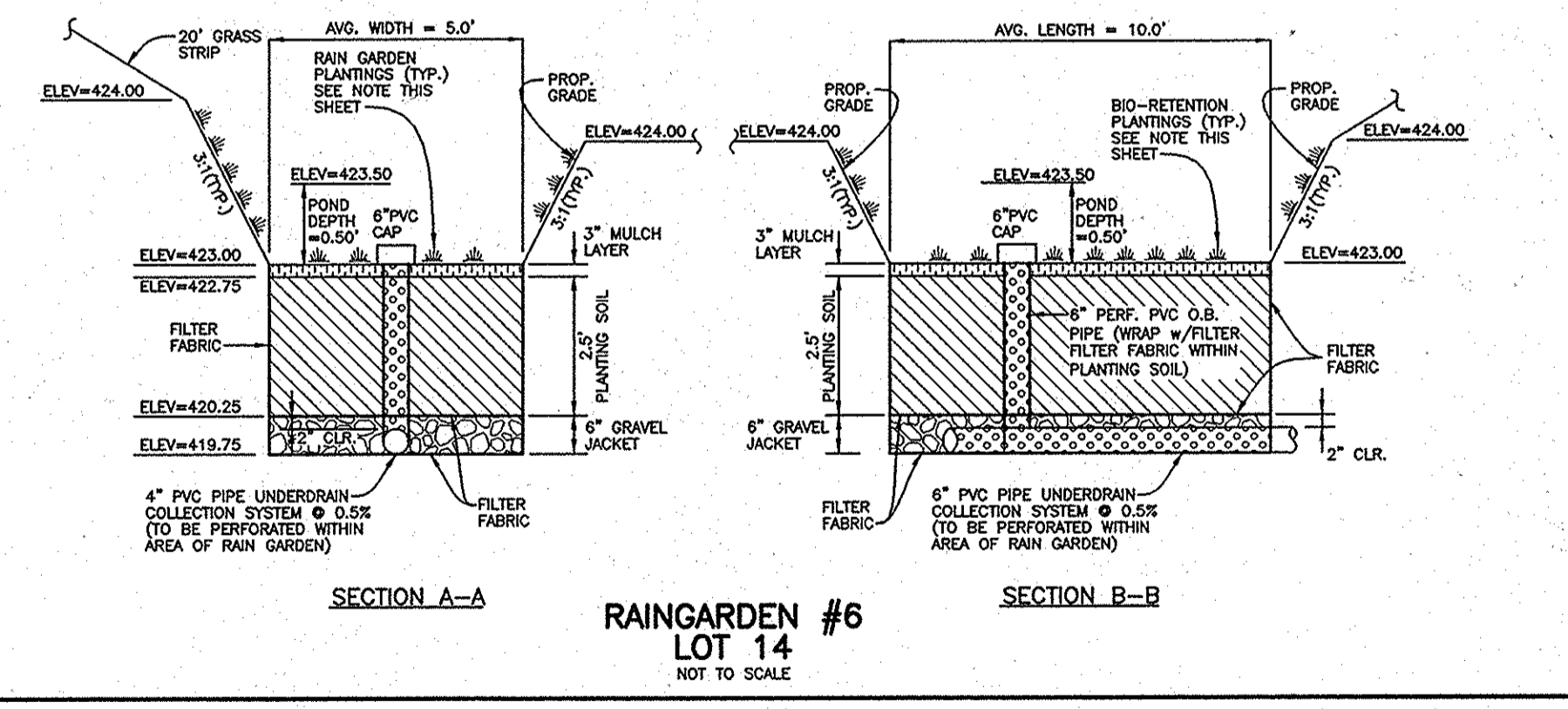
RAINGARDEN #2
LOT 11
NOT TO SCALE



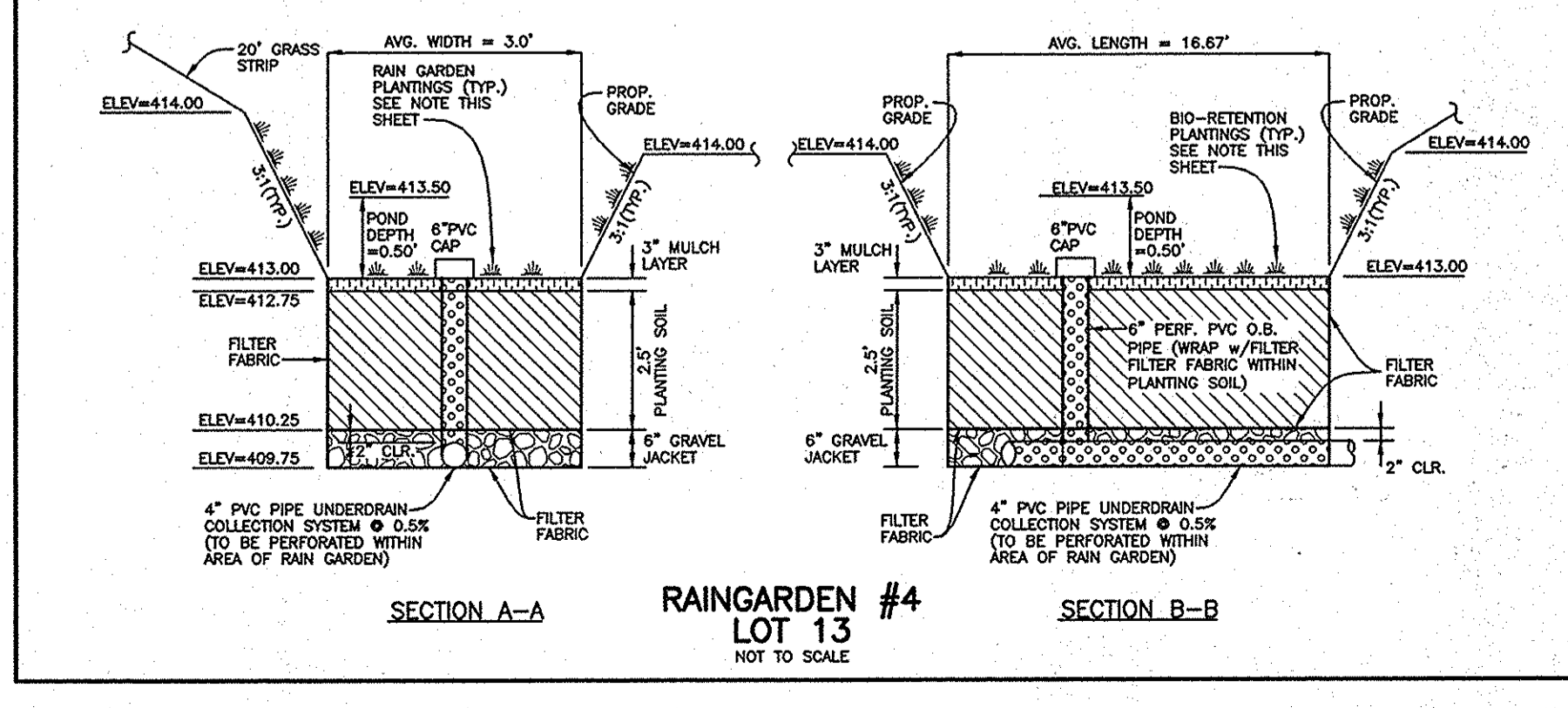
RAINGARDEN #5
LOT 13
NOT TO SCALE



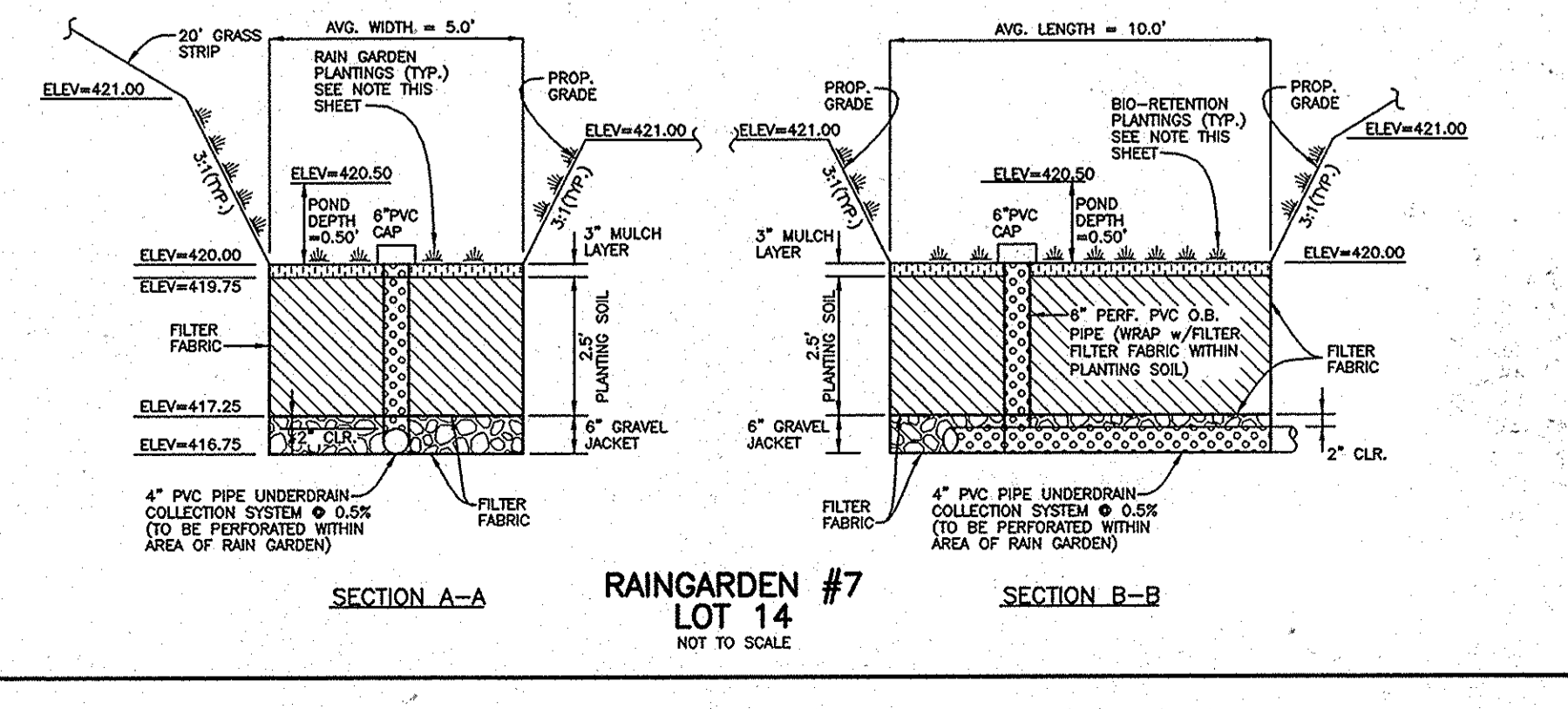
RAINGARDEN #3
LOT 12
NOT TO SCALE



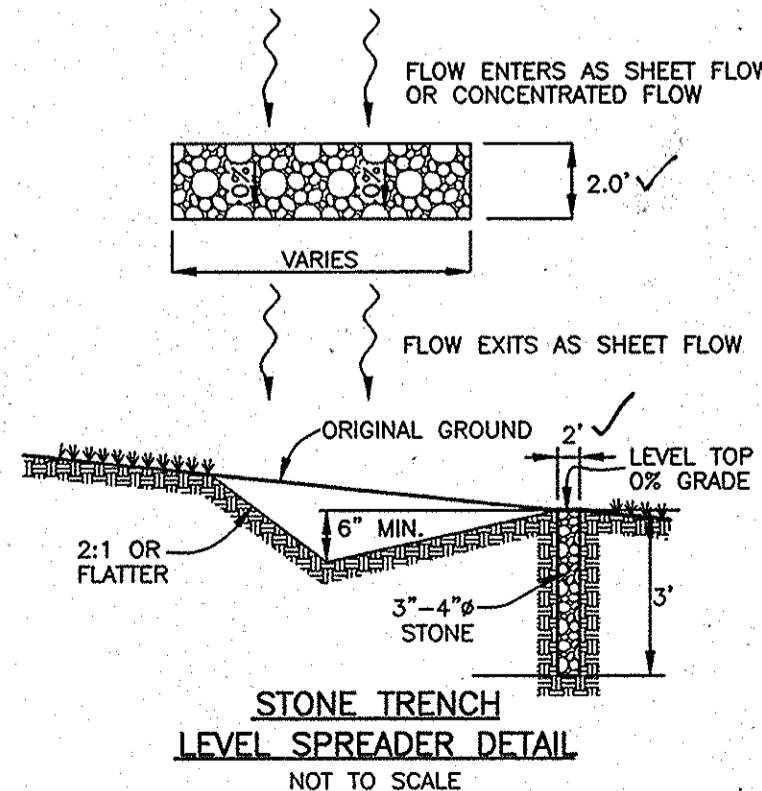
RAINGARDEN #6
LOT 14
NOT TO SCALE



RAINGARDEN #4
LOT 13
NOT TO SCALE



RAINGARDEN #7
LOT 14
NOT TO SCALE



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Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 28559 Expiration Date: 7-22-2011

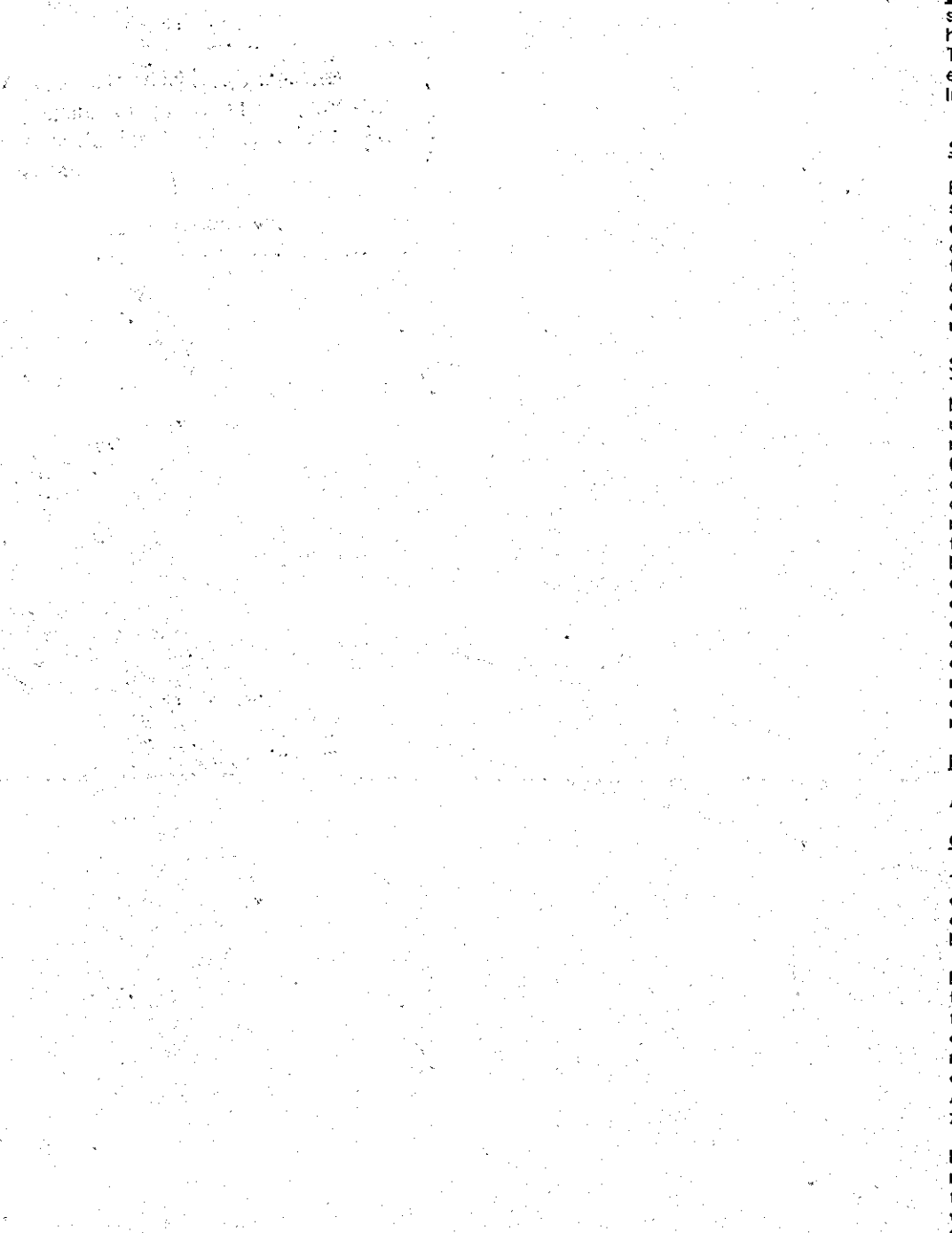
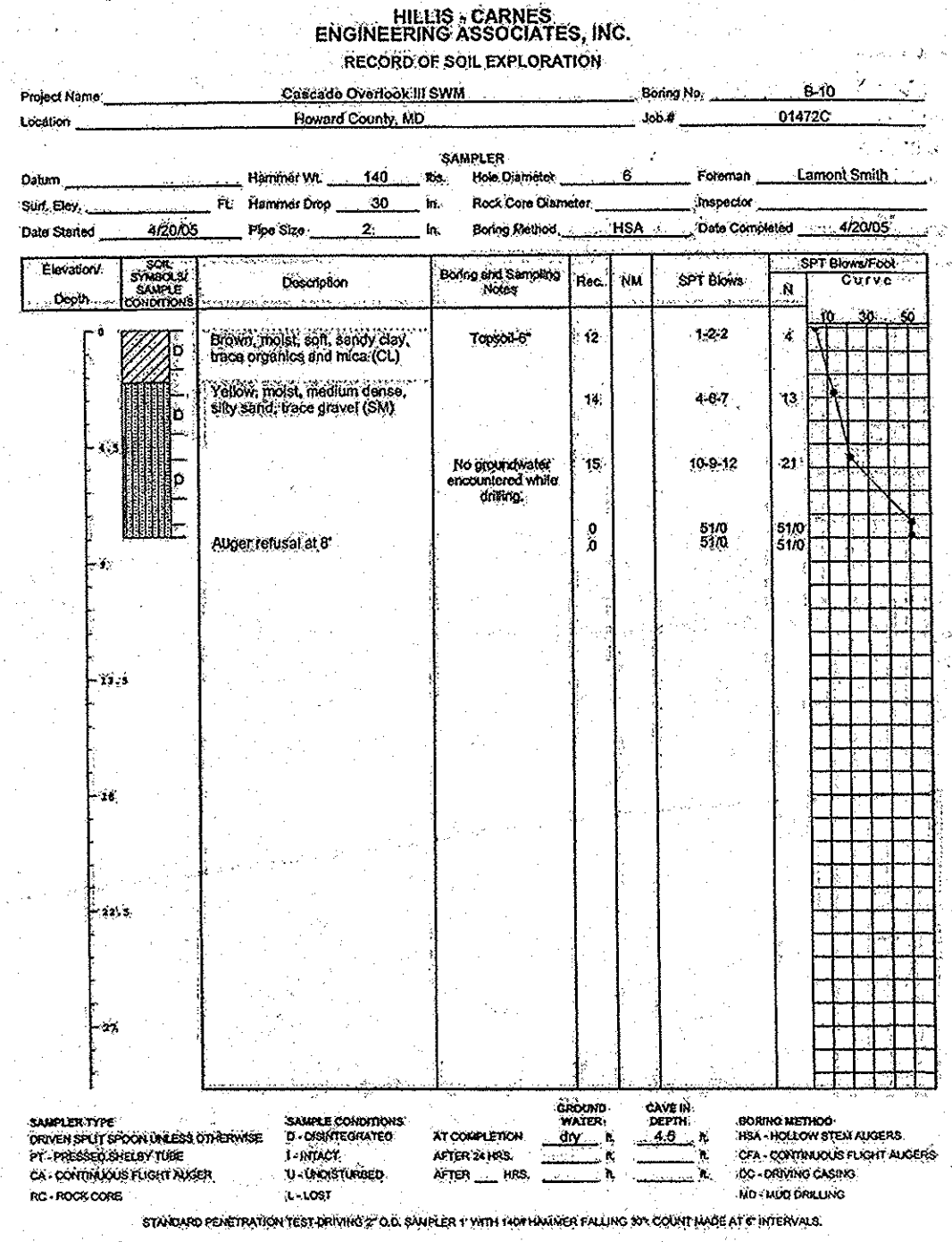
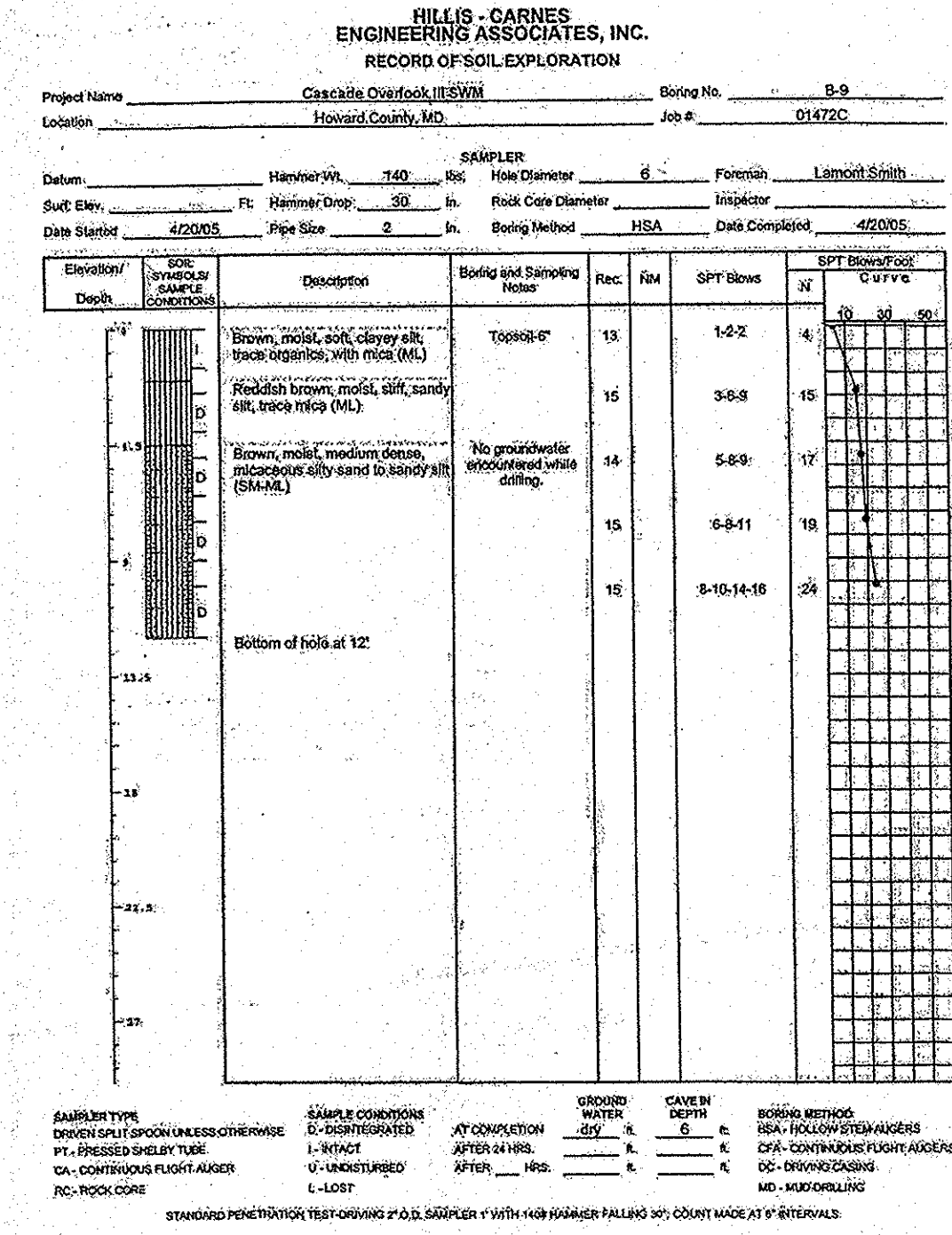
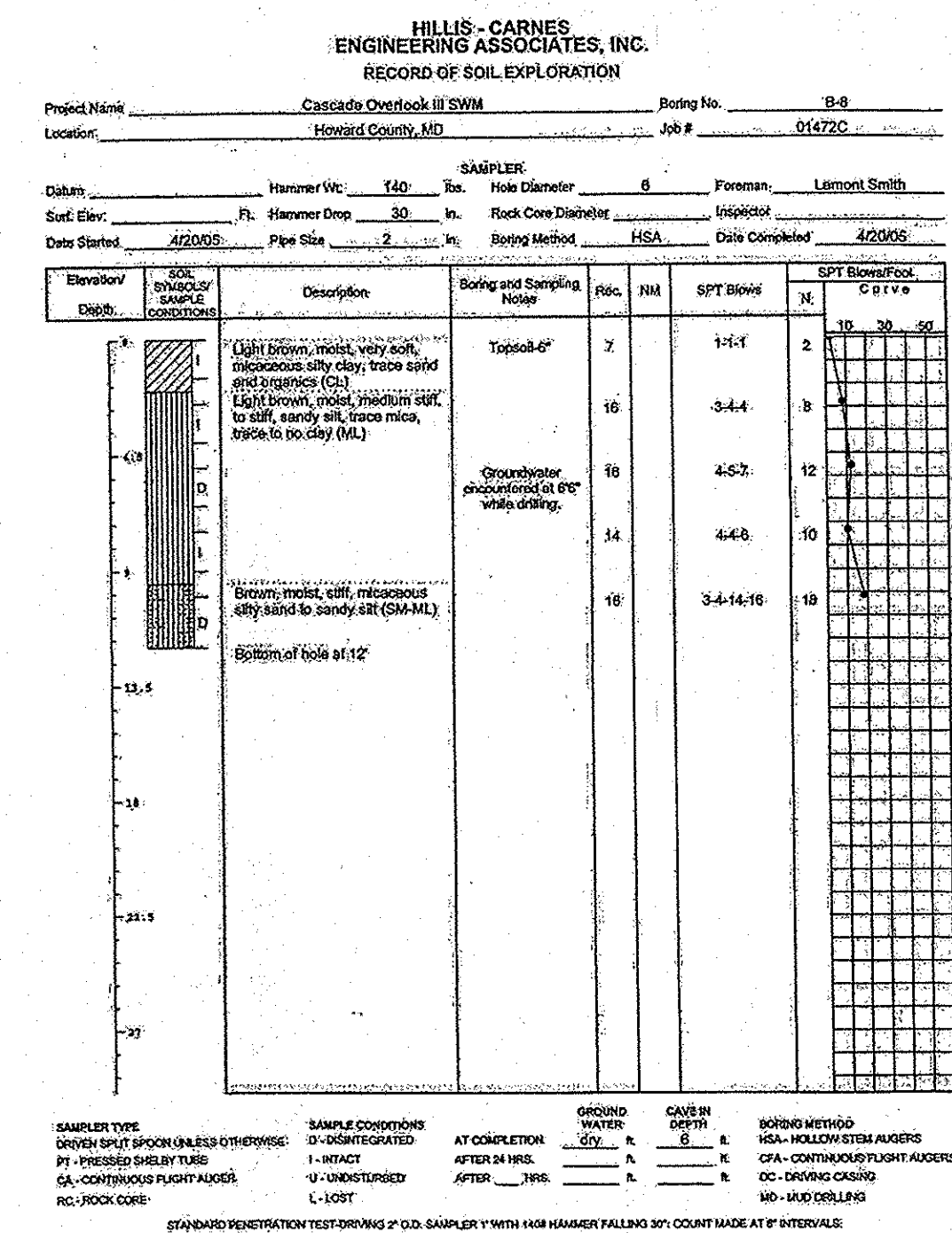
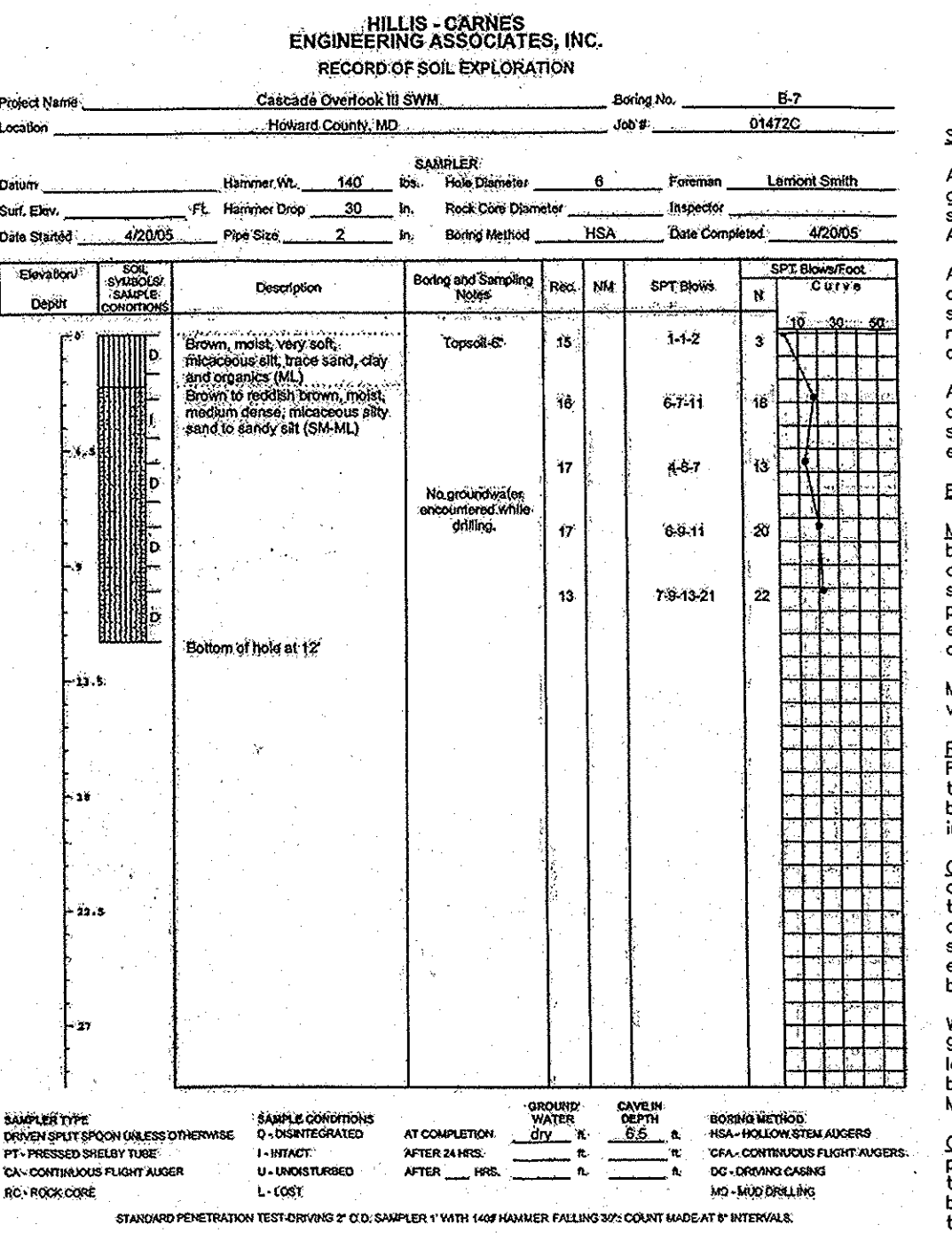
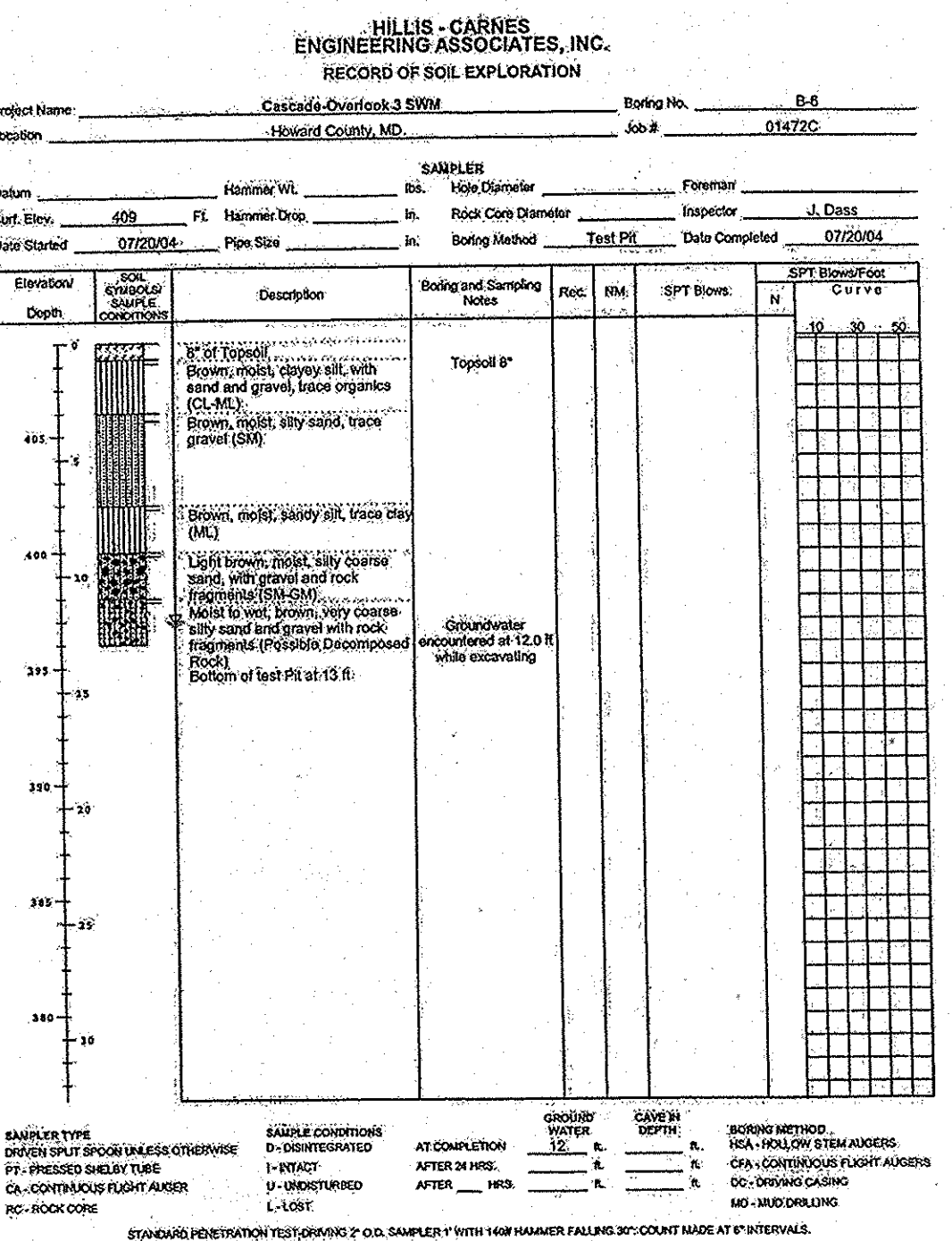
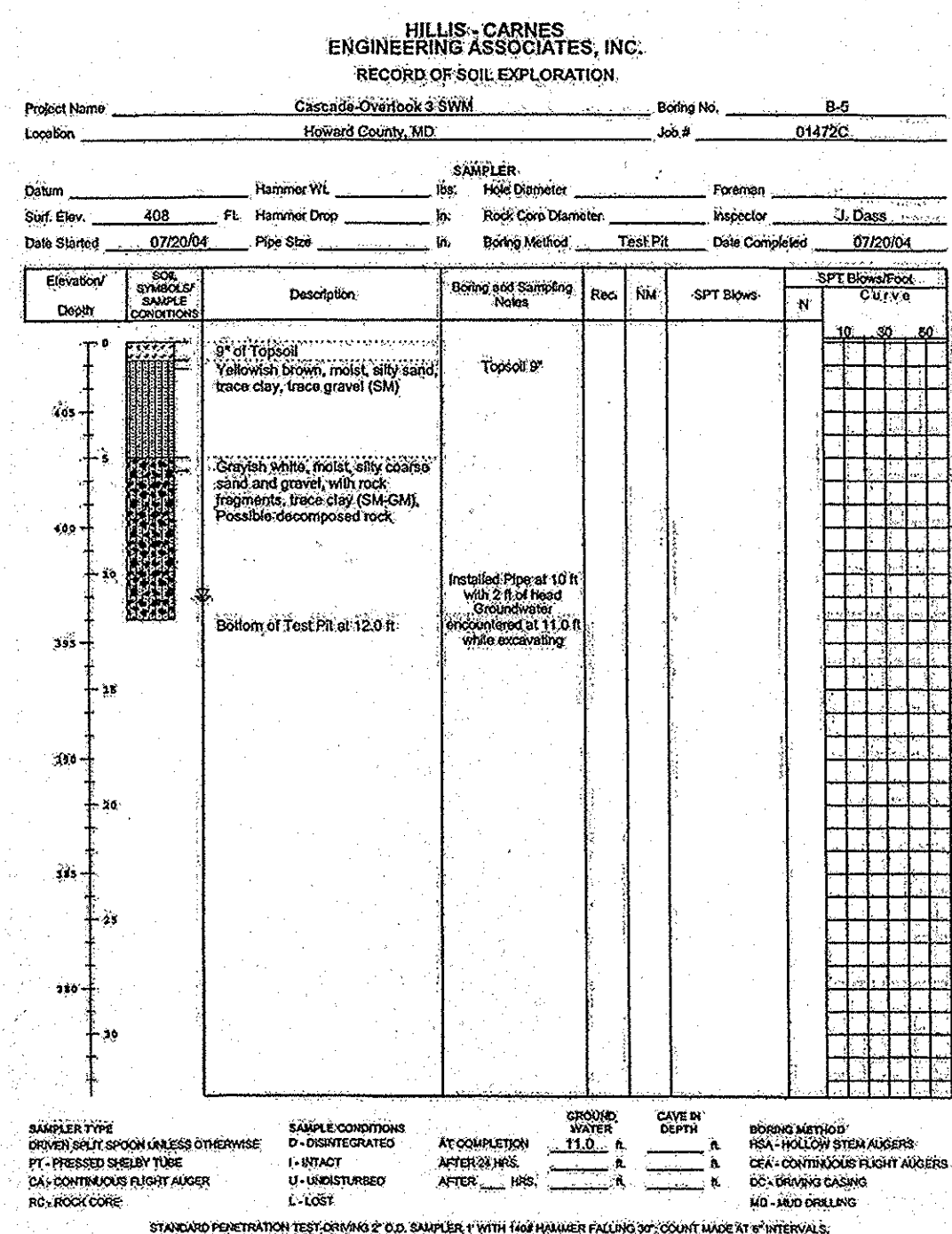
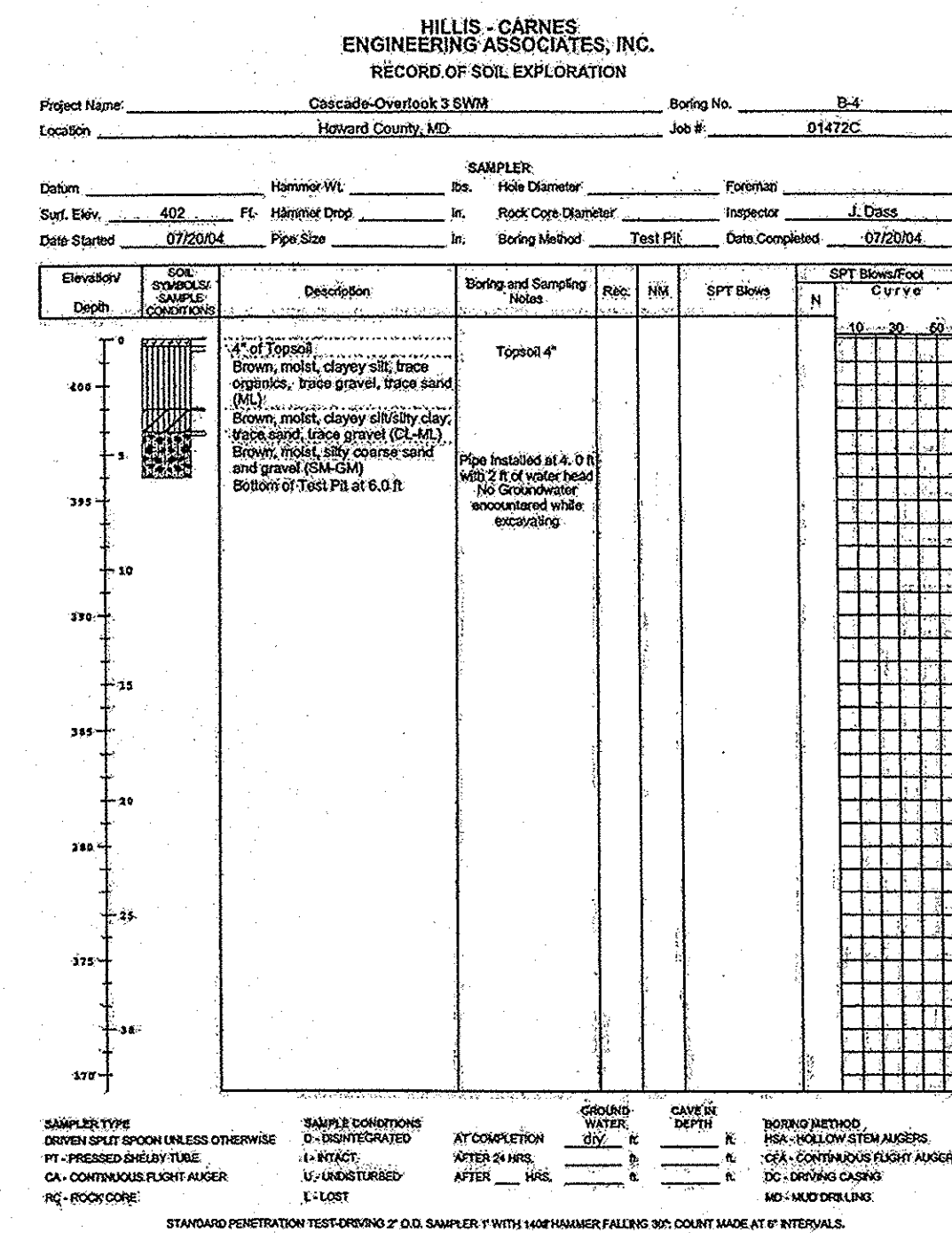
CASCADE OVERLOOK SECTION III
LOTS 1 thru 14 AND OPEN SPACE LOTS 15 thru 17
TAX MAP: 31 GRID: 10 PARCEL p/o 280
ZONED: R-ED
ELECTION DISTRICT NO. 1
HOWARD COUNTY, MARYLAND

STORMWATER MANAGEMENT DETAILS

OWNER: SECURITY DEVELOPMENT LLC
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

DEVELOPER: SECURITY DEVELOPMENT LLC
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

DATE: MAY, 2011 BEI PROJECT NO: 1676
SCALE: AS SHOWN SHEET 10 OF 11



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 to topsoil. All trees, vegetation, roots and other objectionable material shall be removed. Channel banks shall be sloped to meet the adjacent embankment. All trees shall be cleared and grubbed within 15 feet of the toe of the embankment.

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

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

Earth Fill

Material - The fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, wood, rubbish, stones greater than 6", frozen or other objectionable material. Fill material for the center of the embankment, except off trench shall conform to Unified Soil Classification GC, SC, CH, or CL and must have at least 30% passing the #20 sieve. Consideration may be given to the use of other materials in the embankment if designed by a geotechnical engineer. Such special designs must have construction supervised by a geotechnical engineer.

Materials used in the outer shell of the embankment must have the capability to support vegetation of the quality required to prevent erosion of the embankment.

Placement - Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in maximum 9 inch thick (before compaction) layers which are to be continuous over the entire length of the fill. The most permeable borrow material shall be placed in the downstream portions of the embankment. The principal spillway must be installed concurrently with fill placement and not excavated into the embankment.

Compaction - The movement of the hauling and spreading equipment over the fill shall be controlled so that the entire surface of each lift shall be traversed by not less than one 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 it is to be certified by the Engineer of the line of construction. All compaction is to be determined by AASHTO Method T-99 (Standard Proctor).

Cut Off Trench

The cutoff trench shall be excavated into impervious material along or parallel to the centerline of the embankment as shown on the plans. The bottom width of the trench shall be 12 inches and shall be compacted by the equipment used for backfilling. The trench shall be 4 feet deep. The depth shall be at least four feet below existing grade or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability.

Embankment Core

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

Structure Backfill

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

Pipe Conduits

All pipes shall be circular in cross section

Corrugated Metal Pipe - all of the following criteria shall apply for corrugated metal pipe:
1. Materials - (Polymer Coated Steel Pipe) - Steel pipes with polymeric coatings 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 bonds or flanges.

Materials - (Aluminum Coated Steel Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-214 with watertight coupling bonds 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 primed with one coat of zinc chromate primer or two coats of asphalt.

Materials - (Aluminum Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-196 or M-211 with watertight coupling bonds 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 primed 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 bonds, anti-seep collars, and 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. Dipole bonds are not considered to be watertight.

GEOTECHNICAL ENGINEER RECOMMENDATIONS:

EMBANKMENT AND CUT-OFF TRENCH CONSTRUCTION

THE AREAS OF THE PROPOSED SWM FACILITIES SHOULD BE PRESENT TO MONITOR PLACEMENT AND COMPACTION OF FILL FOR THE EMBANKMENT OR STRUCTURE AREAS IN ACCORDANCE WITH THE CONSERVATION GUIDELINES. AFTER STRIPPING OPERATIONS HAVE BEEN COMPLETED, THE EXPOSED SUBGRADE MATERIALS SHOULD BE PROTECTED WITH A LOADED DUMP TRUCK OR SIMILAR EQUIPMENT IN THE PRESENCE OF A GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE. FOR AREAS THAT ARE NOT ACCESSIBLE TO A DUMP TRUCK, THE EXPOSED MATERIALS SHOULD BE OBSERVED AND TESTED BY A GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE UTILIZING A DYNAMIC CONE PENETROMETER. ANY EXCESSIVELY SOFT OR LOOSE MATERIALS IDENTIFIED BY PROOFROLLING OR PENETROMETER TESTING SHOULD BE EXCAVATED TO SUITABLE FIRM SOIL, AND THEN GRADERS RE-ESTABLISHED BY BACKFILLING WITH SUITABLE SOIL.

A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER SHOULD BE PRESENT TO MONITOR PLACEMENT AND COMPACTION OF FILL FOR THE EMBANKMENT AND CUT-OFF TRENCH. IN ACCORDANCE WITH NRCS-MD CODE NO. 378 POND STANDARDS SPECIFICATIONS, SOILS CONSIDERED SUITABLE FOR THE CENTER OF EMBANKMENT AND CUT-OFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL AND MUST HAVE AT LEAST 30% PASSING THE #20 SIEVE.

IT IS OUR PROFESSIONAL OPINION THAT IN ADDITION TO THE SOIL MATERIALS DESCRIBED ABOVE, A FINE-GRAINED SOIL, INCLUDING SILT(SL) WITH A PLASTICITY INDEX OF 10 OR MORE CAN BE UTILIZED FOR THE CENTER OF THE EMBANKMENT AND CORE TRENCH. ALL FILL MATERIALS MUST BE PLACED AND COMPACTED IN ACCORDANCE WITH NRCS-MD CODE NO. 378 SPECIFICATIONS.

No As-Built information is required on this sheet



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

License No. 21443 Expiration Date 12-31-14

APPROVED: DEPARTMENT OF PUBLIC WORKS
 [Signature] 6-27-2011
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 [Signature] 7/1/11
 CHIEF, DIVISION OF LAND DEVELOPMENT

[Signature] 7/1/11
 CHIEF, DIVISION OF ENGINEERING

NO.	DATE	REVISION

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DEVELOPER: SECURITY DEVELOPMENT LLC
 ELLICOTT CITY, MARYLAND 21041
 410-465-4244

DESIGN: DBT DRAWN: DBT SCALE: AS SHOWN SHEET 11 OF 11

CASCADE OVERLOOK SECTION III
 LOTS 1 thru 14 and 17
 OPEN SPACE LOTS 15 thru 17
 TAX MAP: 31 GRID: 10 PARCEL: p/o 260
 ZONED: R-ED ELECTION DISTRICT NO. 1
 HOWARD COUNTY, MARYLAND

SOILS BORINGS & SWM NOTES

DATE: MAY, 2011 BEI PROJECT NO: 1676