

ROADWAY INFORMATION CHART

ROAD NAME	CLASSIFICATION	DESIGN SPEED	R/W WIDTH
ROCKLAND DRIVE	PUBLIC ACCESS PLACE	25 MPH	50 FT.

OPEN SPACE CHART

LOT No.	OWNER	PURPOSE
21	HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS	OPEN SPACE
22	HOME OWNERS ASSOCIATION	OPEN SPACE
23	HOME OWNERS ASSOCIATION	RECREATIONAL OPEN SPACE
24	HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS	OPEN SPACE
25	HOME OWNERS ASSOCIATION	OPEN SPACE
26	HOME OWNERS ASSOCIATION	OPEN SPACE

STORMWATER MANAGEMENT PRACTICES

LOT NO.	ADDRESS	PERMEABLE PAVING A-2 (Y-N)	MICRO BIO-RETENTION (NUMBER)
1	TBD	Y	FACILITIES 15 & 16
2	TBD	Y	FACILITY 17
3	TBD	Y	FACILITY 19
4	TBD	Y	FACILITIES 20 & 21
5	TBD	Y	FACILITIES 22 & 23
6	TBD	Y	FACILITY 24
7	TBD	N	FACILITY 25
8	TBD	N	FACILITY 26
9	TBD	N	FACILITY 27
10	TBD	N	FACILITIES 28 & 29
11	TBD	Y	FACILITIES 30 & 31
12	TBD	Y	FACILITIES 32 & 33
13	TBD	Y	FACILITIES 34 & 35
14	TBD	Y	FACILITIES 13 & 14
15	TBD	Y	FACILITIES 11 & 12
16	TBD	Y	FACILITIES 9 & 10
17	TBD	Y	FACILITIES 7 & 8
18	TBD	Y	FACILITIES 5 & 6
19	TBD	Y	FACILITIES 3 & 4
20	TBD	Y	FACILITIES 1 & 2
21	N/A	N	---
22	N/A	N	---
23	N/A	N	FACILITY 18
24	N/A	N	---
25	N/A	N	FACILITY 37
26	N/A	N	FACILITY 36

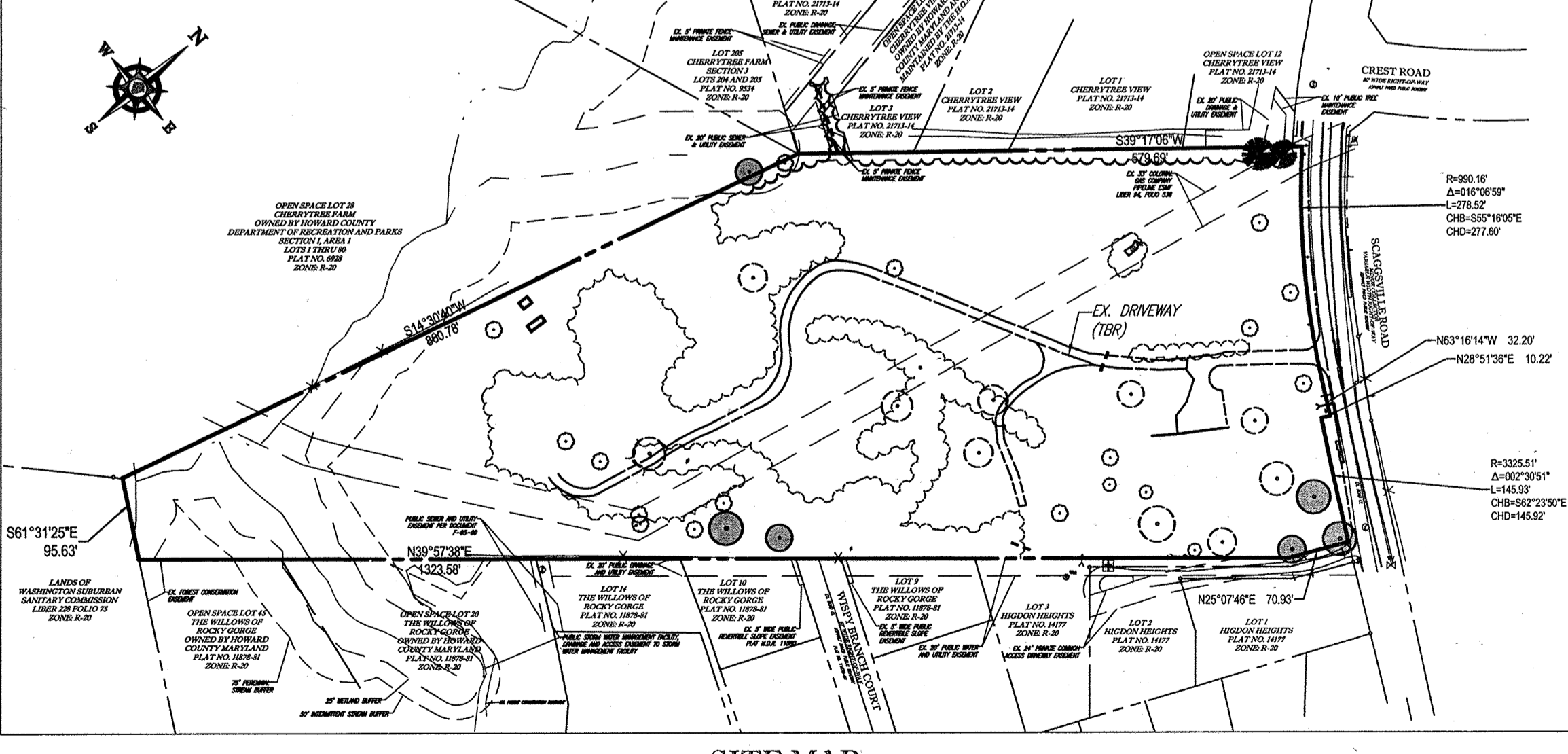
STREET LIGHT CHART

STREET NAME	ROADWAY CLASSIFICATION	STATION	OFFSET	POLE HEIGHT	POLE TYPE	FIXTURE	LAMP SIZE
ROCKLAND DRIVE	PUBLIC ACCESS PLACE	10+18.40	31.58' R	14'-0"	BLACK FIBERGLASS	PREMIER POST-TOP	150 W HPS VAPOR
ROCKLAND DRIVE	PUBLIC ACCESS PLACE	12+88.63	15.00' R	14'-0"	BLACK FIBERGLASS	PREMIER POST-TOP	100 W HPS VAPOR
ROCKLAND DRIVE	PUBLIC ACCESS PLACE	LP 11+58.20	3.00' R	14'-0"	BLACK FIBERGLASS	PREMIER POST-TOP	100 W HPS VAPOR

TRAFFIC CONTROL SIGNS

ROAD NAME	CENTERLINE STA.	OFFSET	POSTED SIGN	SIGN CODE
ROCKLAND DRIVE	10+50	15.00' L	STOP	R1-1
ROCKLAND DRIVE	10+90.56	15.00' R	SPEED LIMIT 25	R2-1

*SEE GENERAL NOTE 4 FOR SIGN POST INFORMATION



APPROVED: DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS: [Signature] DATE: 9/23/2014
APPROVED: DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DIVISION OF LAND DEVELOPMENT: [Signature] DATE: 9-26-14
 CHIEF, DEVELOPMENT ENGINEERING DIVISION: [Signature] DATE: 9-25-14

GENERAL NOTE:
 THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT WORKS PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS ON APPLICABLE CODES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE PROJECT ENGINEER OF RECORD IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY THE PROJECT ENGINEER SHALL BE AT THE CONTRACTOR'S RISK AND ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND ALL FULL COMPLIANCE WITH ALL REGULATIONS AND ORDINANCES.

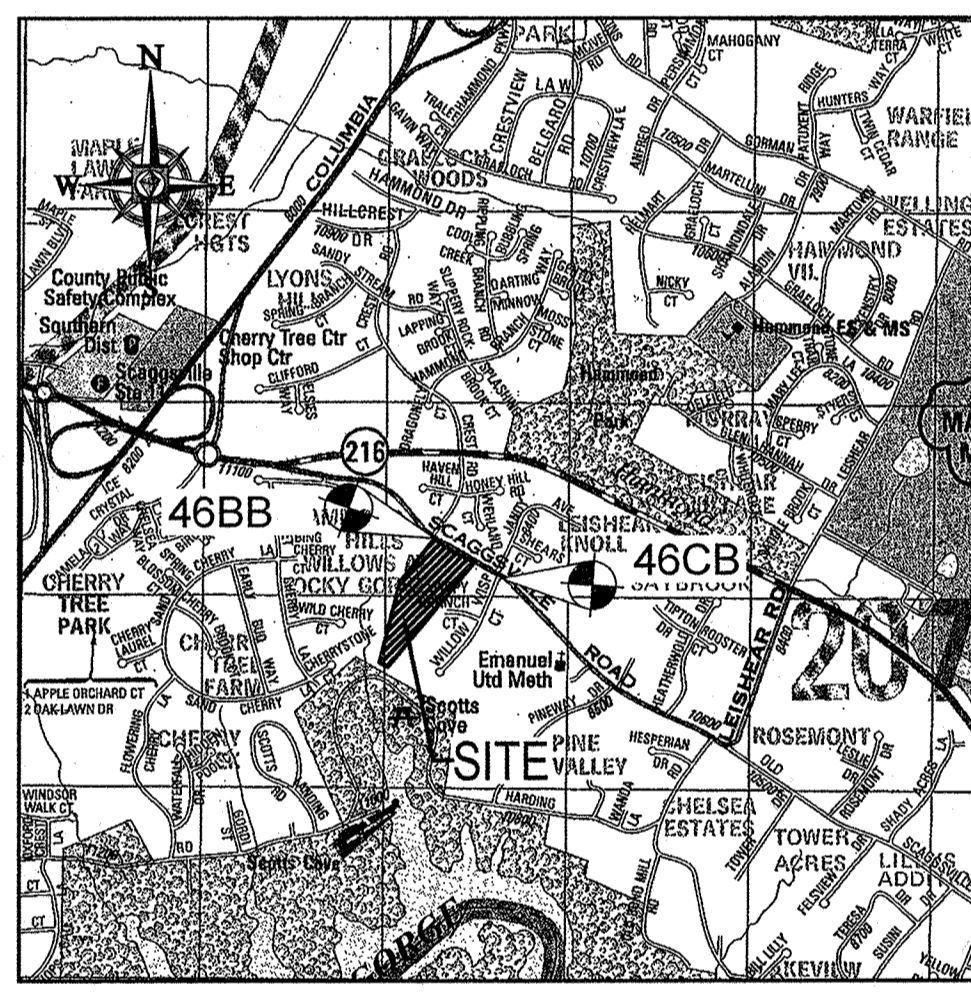
REVISED FINAL ROAD CONSTRUCTION PLANS FOR RESERVOIR ESTATES BUILDABLE LOTS 1 - 20 AND OPEN SPACE LOTS 21 - 26

LOCATION OF SITE
 10883 SCAGGSVILLE ROAD
 ZONING: R-20, 6TH ELECTION DISTRICT
 TAX MAP 46, GRID 11, PARCEL 56
 HOWARD COUNTY, MARYLAND

UTILITIES:

THE FOLLOWING COMPANIES WERE NOTIFIED BY DELMARVA MISS UTILITY SYSTEM (1-800-257-7777) AND REQUESTED TO MARK OUT UNDERGROUND FACILITIES AFFECTING AND SERVICING THIS SITE. THE UNDERGROUND UTILITY INFORMATION SHOWN HEREON IS BASED UPON THE UTILITY COMPANIES RESPONSE TO THIS REQUEST. SERIAL NUMBER(S): 12499659

UTILITY COMPANY	PHONE NUMBER
VERIZON - LAMBERT CABLE	(410) 536-0070
BGE ELECTRIC-USIC	(800) 778-9140
BGE GAS-USIC	(800) 778-9140
COMCAST-FIBER/UTIL/QUEST	(410) 536-0070
HOWARD COUNTY WATER/SEWER	(410) 313-4982
COMCAST/UTIL/QUEST	(410) 536-0070
COLONIAL PIPELINE	(678) 762-2403
AT&T TRANSMISSION	(800) 252-1133
QWEST GOVERNMENT SERVICES	(703) 464-7592



VICINITY MAP
 COPYRIGHT ADC THE MAP PEOPLE
 PERMIT USE NO. 20602153-5
 SCALE: 1"=2000'
 ADC MAP COORDINATES: 5052/H8

BENCHMARK

GEODEIC SURVEY CONTROL - 46BB	GEODEIC SURVEY CONTROL - 46CB
ELEV. 422.444	ELEV. 394.623
N 538,306 4913	N 537,123 0429
E 1,341,329.1023	E 1,344,291.3654

NOTE: THERE IS NO AS-BUILT INFORMATION PROVIDED ON THIS SHEET.
 [Signature] 10/15/2018

PREPARED BY
BOHLER ENGINEERING
 901 DULANEY VALLEY ROAD, SUITE 801
 TOWSON, MARYLAND 21204
 Phone: (410) 821-7900
 Fax: (410) 821-7987
 www.BohlerEngineering.com
 CONTACT: BRANDON ROWE, P.E.

GENERAL NOTES

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
- 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 WORK.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- TRAFFIC CONTROL DEVICES:
 - THE R1-1 "STOP" SIGN AND THE STREET NAME SIGN (SNS) ASSEMBLY FOR THIS DEVELOPMENT MUST BE INSTALLED BEFORE THE BASE PAVING IS COMPLETED.
 - ALL TRAFFIC CONTROL DEVICES AND LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE FIELD APPROVED BY HOWARD COUNTY TRAFFIC DIVISION PRIOR TO THE INSTALLATION OF ANY OF THE TRAFFIC CONTROL DEVICES.
 - ALL TRAFFIC CONTROL DEVICES AND THEIR LOCATIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MDCMTCU).
 - ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL PERFORATED "QUICK PUNCH" SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL PERFORATED SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. THE ANCHOR SHALL NOT EXTEND MORE THAN TWO "QUICK PUNCH" HOLES ABOVE GROUND LEVEL. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
- STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURES AND POLES SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME II (2006), SECTION 5.5.A. A MINIMUM OF 5' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
- EXISTING TOPOGRAPHIC CONTOURS BASED ON BOUNDARY & TOPOGRAPHIC SURVEY PERFORMED BY BOHLER ENGINEERING, DATED 10/9/12, LAST REVISED 11/13/12.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLAN COORDINATE SYSTEM. HORIZONTAL AND VERTICAL CONTROL DATUM ARE BASED ON HOWARD COUNTY MONUMENT NOS. 46BB AND 46CB WHICH WERE USED FOR THIS PROJECT.
- HOWARD COUNTY MONUMENT NO: 46BB ELEV. = 422.444
 HOWARD COUNTY MONUMENT NO: 46CB ELEV. = 394.623
- WATER IS PUBLIC (CONTRACT NO. 24-4787-D)
- SEWER IS PUBLIC (CONTRACT NO. 24-4787-D)
- STORM WATER MANAGEMENT TO BE PROVIDED FOR THIS DEVELOPMENT BY ENVIRONMENTAL SITE DESIGN UTILIZING MICRO BIO RETENTION FACILITIES AND PERVIOUS DRAINWAYS. THE MICRO BIO RETENTION FACILITIES ALONG THE ROAD WILL BE JOINTLY MAINTAINED BY HOWARD COUNTY AND THE HOA. THE COUNTY WILL MAINTAIN THE INLET STRUCTURE AND THE HOA SHALL MAINTAIN THE PERFORATED UNDER DRAINS, PLANTINGS, ETC. WITHIN THE EASEMENTS. THE PERMEABLE CONCRETE DRIVEWAYS AND ON LOT MICRO-BIO RETENTION FACILITIES WILL BE PRIVATELY MAINTAINED BY THE INDIVIDUAL HOMEOWNERS.
- EXISTING UTILITIES ARE BASED ON FIELD RUN SURVEY PERFORMED BY BOHLER ENGINEERING, DATED 10/9/12, LAST REVISED 11/13/12.
- AN OBVIOUSLY NON-CRITICAL FLOOD PLAN STUDY WAS COMPLETED BY BOHLER ENGINEERING ON 11/16/12. FLOODPLAIN DOES EXIST ON THIS SITE. PROPOSED IMPROVEMENTS DO NOT IMPACT EX. FLOOD PLAN.
- WETLANDS EXIST ON SITE BASED UPON A WETLAND DELINEATION REPORT BY ECO-SCIENCE PROFESSIONALS, INC. DATED 10/22/12. FIELD WORK WAS PERFORMED ON 9/21/12.
- THE ADEQUATE ROAD FACILITIES TEST EVALUATION FOR THIS PROJECT WAS PREPARED BY THE TRAFFIC GROUP, DATED 11/20/12.
- THE SUBJECT PROPERTY IS ZONED R-20 AND IS CONSIDERED TO BE "GRANDFATHERED" TO THE 2004 COMPREHENSIVE ZONING PLAN AND THE "COMP LITE" ZONING AMENDMENTS EFFECTIVE 7/26/06. THE GRANDFATHERING OF THIS MAJOR SUBDIVISION IS IN ACCORDANCE WITH SECTION 100 E.8 OF THE NEW ZONING REGULATIONS (EFFECTIVE 10/1/13) SINCE THE INITIAL PLAN SUBMISSION OF THE PRELIMINARY EQUIVALENT SKETCH PLAN (SP-13-008) WAS GRANTED A TECHINICAL COMPLETE STATUS PRIOR TO THE ENACTMENT DATE OF THE NEW REGULATIONS. THIS SUBDIVISION IS NOT REQUIRED TO PROVIDE 10% MODERATE INCOME HOUSING UNITS (MIHU).
- A. GROSS AREA OF TRACT = 11.38 AC.
 B. AREA OF FLOODPLAIN = 0.14 AC.
 C. AREA OF 25% OR GREATER SLOPES = 0.06 AC.
 D. NET AREA OF TRACT = 11.16 AC.
 E. REQUIRED OPEN SPACE = 40% OF GROSS AREA (BASED ON 12,000 S.F. LOTS) = 4.54 AC.
 F. PROVIDED OPEN SPACE = 4.54 AC. (LOTS 21-26)
 G. REQUIRED RECREATIONAL OPEN SPACE = 200 S.F./ACIT = 4,000 S.F.
 H. PROVIDED RECREATIONAL OPEN SPACE = 5,221 S.F.
- LAND DEDICATED TO HOWARD COUNTY, MARYLAND, FOR PURPOSES OF THE PUBLIC ROAD (0.84 ACRES).
- NUMBER OF PARCELS PROPOSED: 26 (TOTAL)
 A. BUILDABLE = 20
 B. OPEN SPACE = 6
- RELATED DPZ FILE NUMBERS ASSOCIATED WITH THIS PROJECT INCLUDE WP-13-048, ECP-13-038, BA-05-028, SP-13-008, 24-4787-D, DATED 12/19/12.
- SOILS INFORMATION TAKEN FROM SOIL SURVEY, HOWARD COUNTY, MARYLAND, ISSUED MAY 2008.
- BOUNDARY OUTLINE BASED ON FIELD RUN SURVEY PERFORMED BY BOHLER ENGINEERING, DATED 10/9/12, LAST REVISED 11/13/12.
- A PORTION (0.06 AC.) OF THE PROPERTY QUALIFIES AS STEEP SLOPES (25% OR GREATER) AS DEFINED BY THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, SECTION 16.116.B. THIS AREA IS SHOWN ON THE GRADING PLAN AND WILL REMAIN UNDISTURBED.
- THE SUBSURFACE EXPLORATION REPORT FOR THIS PROJECT WAS PREPARED BY HILLIS-CARNES ENGINEERING ASSOCIATES, INC. DATED 12/19/12.
- THIS PROPERTY IS LOCATED INSIDE OF THE METROPOLITAN DISTRICT.
- NO CEMETERIES EXIST WITHIN THIS SUBDIVISION.
- A FOREST STAND DELINEATION REPORT WAS COMPLETED BY ECO-SCIENCE PROFESSIONALS, INC. ON 10/22/12. FIELD WORK WAS PERFORMED ON 9/21/12 AND 9/22/12.
- LANDSCAPING FOR THIS SUBDIVISION HAS BEEN PROVIDED IN ACCORDANCE WITH A CERTIFIED LANDSCAPE PLAN INCLUDED WITH THE ROAD CONSTRUCTION PLAN. SETBACK AND ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. PERMETER LANDSCAPE SURVEY IN THE AMOUNT OF \$19,000.00 FOR THE INSTALLATION OF 38 SHADE TREES (\$300.00 EACH); 18 ORNAMENTAL TREES (\$150.00 EACH); AND 10 EVERGREEN TREES (\$150.00 EACH) SHALL BE POSTED BY THE DEVELOPER AS PART OF THE DPW DEVELOPERS AGREEMENT, F-14-003.
- THIS PLAN IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS PER COUNCIL BILL NO. 46-2003 AND THE AMENDED ZONING REGULATIONS PER COUNCIL BILL NO. 75-2003. DEVELOPMENT OR CONSTRUCTION ON THIS PROPERTY MUST COMPLY WITH SETBACK AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF THE SITE DEVELOPMENT PLAN, WAIVER PETITION APPLICATION OR BUILDING/GRADING PERMIT APPLICATIONS.
- WAIVER REQUEST WP-13-048 FOR THE FOLLOWING:
 - THE ALLOWANCE OF A 15' MINIMUM SETBACK FROM EX. UNDERGROUND GAS TRANSMISSION MAIN EASEMENT IN LIEU OF THE REQUIRED 30' SETBACK (SECTION 16.120 (B) (9) (i)).
 - THE REMOVAL OF 10 SPECIMEN TREES (SECTION 16.1205 (A) (10)).

GENERAL NOTES (cont.)

- DRIVEWAYS SHALL BE PROVIDED PRIOR TO RESIDENTIAL OCCUPANCY TO ENSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING (MINIMUM) REQUIREMENTS:
 - WIDTH - 12 FEET (8 FEET SERVING MORE THAN ONE RESIDENCE)
 - SURFACE - SIX (6) INCHES OF COMPACTED CRUSHER RUN BASE WITH TAR AND CHIP COATING GEOMETRY - MAXIMUM 15% GRADE, MAXIMUM 10% GRADE CHANGE AND MINIMUM OF 40' TURNING RADIUS
 - STRUCTURES (CURBS/BRIDGES) CAPABLE OF SUPPORTING 25 GROSS TONS (125,000 LBS)
 - DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOOD WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY SURFACE
 - STRUCTURE CLEARANCES - MINIMUM 12 FEET
 - MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE
- 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, FLOODPLAIN AND FOREST CONSERVATION EASEMENT AREAS.
- FOR FLAG OR PIPESTEM LOTS, REFUSE COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE ARE PROVIDED TO THE JUNCTION OF THE FLAG OR PIPESTEM ROAD RIGHT-OF-WAY LINE AND NOT ONTO THE PIPESTEM LOT DRIVEWAY.
- WATER AND SEWER SERVICE TO THESE LOTS WILL BE GRANTED UNDER THE PROVISIONS OF SECTION 16.122.B OF THE HOWARD COUNTY CODE.
- PUBLIC WATER AND SEWAGE ALLOCATION WILL BE GRANTED AT THE TIME OF ISSUANCE OF THE BUILDING PERMIT IF CAPACITY IS AVAILABLE AT THAT TIME.
- THE FOREST CONSERVATION EASEMENT HAS BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.120 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION ACT. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT, HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED BY THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.
- RESERVATION OF PUBLIC UTILITY AND FOREST CONSERVATION EASEMENTS DEVELOPER RESERVES UNTO ITSELF ITS SUCCESSIONS AND ASSIGNS ALL EASEMENTS SHOWN ON THIS PLAN FOR WATER, SEWER, STORM DRAINAGE, OTHER PUBLIC UTILITIES AND FOREST CONSERVATION (DESIGNATED AS "FOREST CONSERVATION AREA"), LOCATED IN, ON, OVER AND THROUGH LOTS/PARCELS, ANY CONVEYANCES OF THE AFORESAID LOTS/PARCELS SHALL BE SUBJECT TO THE EASEMENTS HEREBY RESERVED, WHETHER OR NOT EXPRESSLY STATED IN THE DEED(S) CONVEYING SAID LOTS/PARCELS. DEVELOPER SHALL EXECUTE AND DELIVER DEEDS FOR THE EASEMENTS HEREBY RESERVED TO HOWARD COUNTY WITH A METES AND BOUNDS DESCRIPTION OF THE FOREST CONSERVATION AREA, UPON COMPLETION OF THE PUBLIC UTILITIES AND THEN ACCEPTANCE BY HOWARD COUNTY, AND IN THE CASE OF THE FOREST CONSERVATION EASEMENTS, UPON COMPLETION OF THE DEVELOPER'S OBLIGATIONS UNDER THE FOREST CONSERVATION INSTALLATION AND MAINTENANCE AGREEMENT EXECUTED BY THE DEVELOPER AND THE COUNTY, AND THE RELEASE OF DEVELOPER'S SURETY POSTED WITH SAID AGREEMENT. THE COUNTY SHALL ACCEPT THE EASEMENTS AND RECORD THE DEED(S) OF EASEMENT IN THE LAND RECORDS OF HOWARD COUNTY.
- THIS SUBDIVISION PLAN COMPLIES WITH THE REQUIREMENTS OF SECTION 16.120 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION ACT BY PROVIDING ON-SITE FOREST RETENTION OF 18 ACRES OF EXISTING FOREST RESOURCES. ON-SITE REFORESTATION PLANTING OF 0.3 ACRES AND THE REMAINING REFORESTATION OBLIGATION OF 0.4 ACRES WILL BE PROVIDED AT THE CHECKS AND/OR CLOSURE CONSTRUCTION BANK. THE TOTAL FORESTATION PLANTING FOR THIS SUBDIVISION IS 2.8 ACRES. REFORESTATION SURETY IN THE AMOUNT OF \$10,000.00 FOR THE 0.3 ACRES OF ON-SITE PLANTING SHALL BE POSTED BY THE DEVELOPER AS PART OF THE DPW DEVELOPERS AGREEMENT, F-14-003.
- ALL FILL AREAS WITHIN ROADWAYS AND UNDER STRUCTURES SHALL BE COMPACTED TO A MINIMUM OF 95% COMPACTION OF AASHTO T-180.
- A PROPOSED 4" VINYL SPIRAL FENCE SHALL BE CONSTRUCTED ADJACENT TO OPEN SPACE LOTS WHERE INDICATED ON THESE PLANS.
- A HOMEOWNERS ASSOCIATION WILL BE ESTABLISHED FOR THE RESIDENTS OF THIS SUBDIVISION AND PROTECTIVE COVENANTS AND COVENANTS GOVERNING THE MAINTENANCE OF THE COMMUNITY OWNED OPEN SPACE LOTS WILL BE RECORDED IN THE LAND RECORDS OF HOWARD COUNTY SIMULTANEOUSLY WITH THE RECORDATION OF THIS SUBDIVISION PLAN, F-14-003.
- THE SHARED DRIVEWAY ACCESS AND MAINTENANCE OBLIGATION AGREEMENTS FOR THE 10' DRIVEWAYS WHICH SERVE LOTS 2 & 3 AND LOTS 17 & 18 WILL BE RECORDED IN THE LAND RECORDS OF HOWARD COUNTY SIMULTANEOUSLY WITH THE RECORDATION OF THIS SUBDIVISION PLAN, F-14-003.

SHEET INDEX

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REVISION PURPOSE STATEMENT:
 THE PROPOSED REVISION RELATES TO THE ROAD PROFILE AND ASSOCIATED GRADES FOR ROCKLAND DRIVE. THE ROAD PROFILE HAS BEEN UPDATED TO MATCH THE PROPOSED CONTOURS. INLET 1-17 HAS BEEN REMOVED FROM THE PLAN.

BOHLER ENGINEERING
 CORPORATE OFFICE: WARREN, NJ
 OFFICES: BOULDER, CO; CHICAGO, IL; DALLAS, TX; DENVER, CO; HOUSTON, TX; KANSAS CITY, MO; LOS ANGELES, CA; MEMPHIS, TN; NEW YORK, NY; PHOENIX, AZ; RICHMOND, VA; TAMPA, FL; WASHINGTON, DC; WEST PALM BEACH, FL; WILMINGTON, DE; WYOMING, WY.
 PROJECT MANAGERS: BOHLER ENGINEERING, INC.
 ENVIRONMENTAL CONSULTANTS: BOHLER ENGINEERING, INC.
 LANDSCAPE ARCHITECTS: BOHLER ENGINEERING, INC.

REVISIONS

REV	DATE	COMMENT	BY
1	9/9/14	REVISED ROAD PROFILE	RLB

THE FOLLOWING STATES REQUIRE NOTIFICATION BY ENGINEERS, DESIGNERS, OR ANY PERSON PREPARING TO RETURN THE DRAFTS SURFACE ANYWHERE IN THE STATE IN VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE CALL: 811
 (NW 1-800-245-4848) (PA 1-800-242-1778) (DC 1-800-257-7777) (VA 1-800-952-7071) (MD 1-800-257-7777) (DE 1-800-383-8655)

PROJECT: MD122060
 DRAWN BY: RLB
 CHECKED BY: BRR
 DATE: 6/2/14
 SCALE: AS SHOWN
 CAD I.D.: SDZ

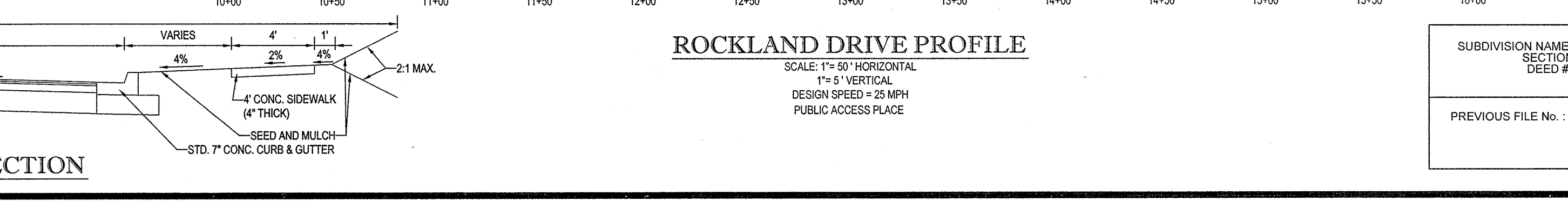
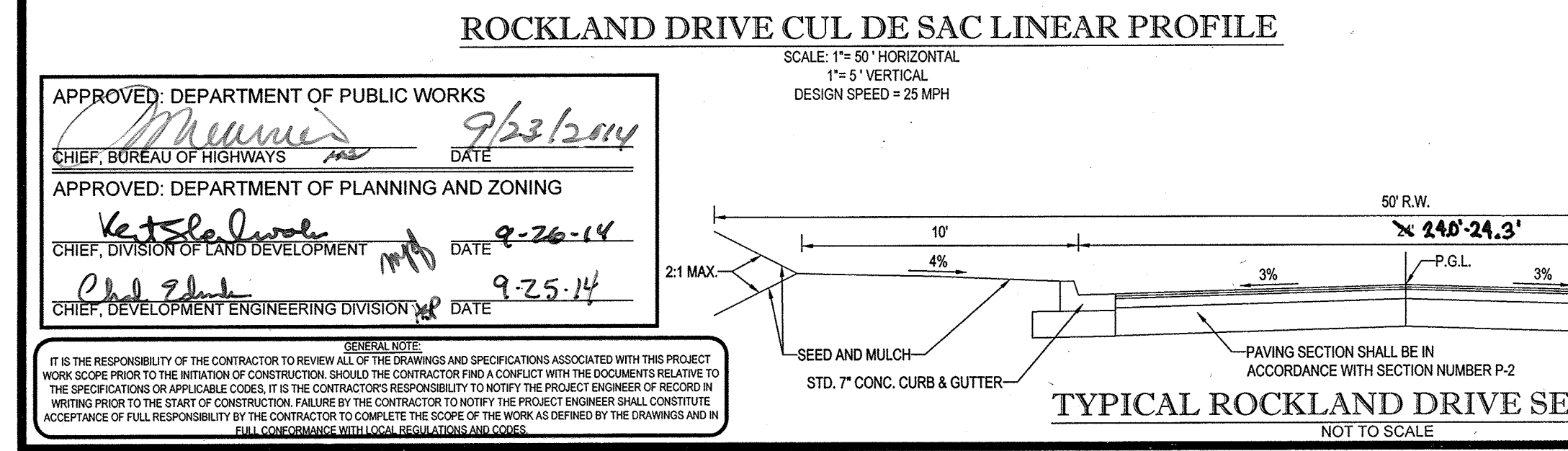
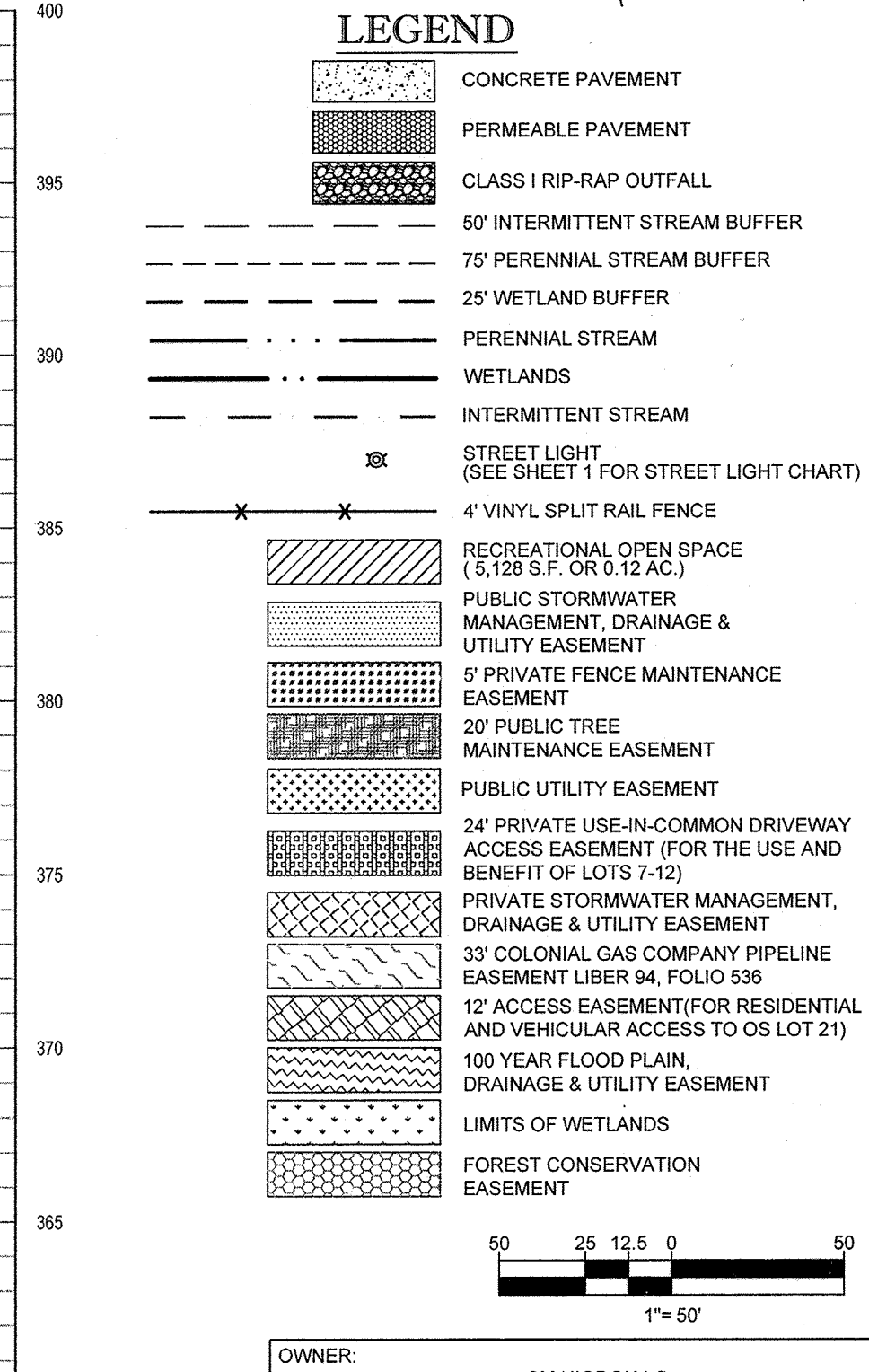
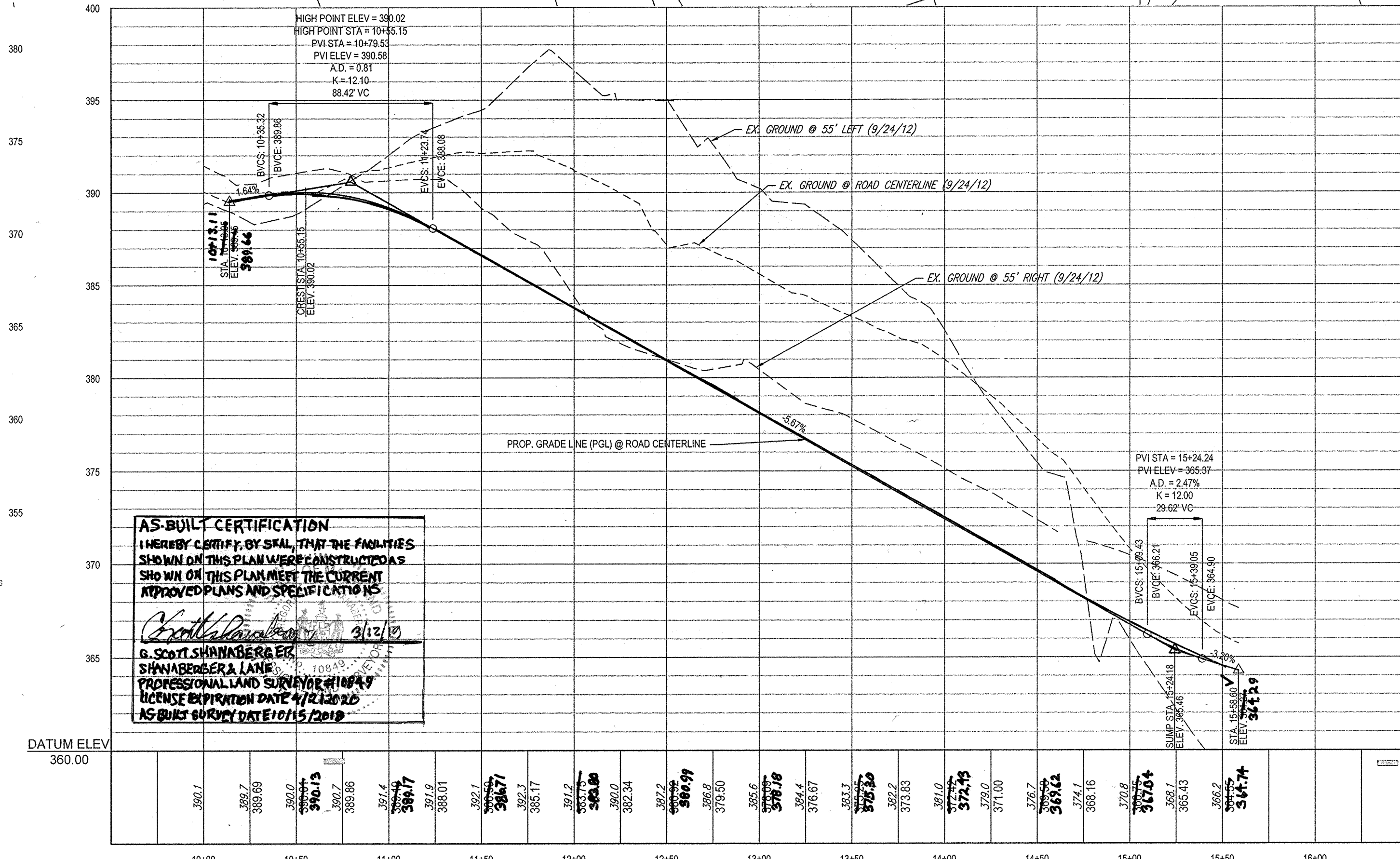
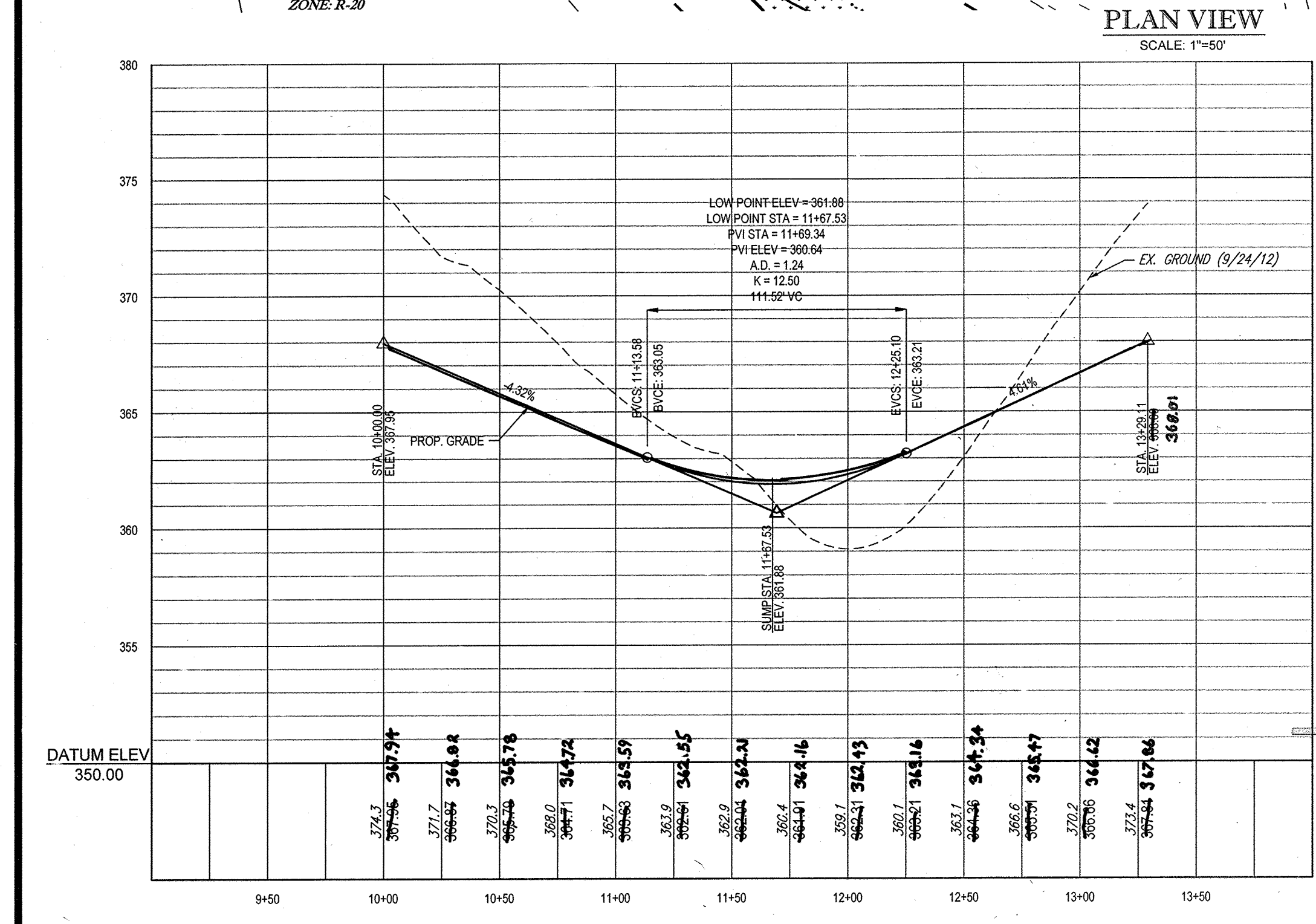
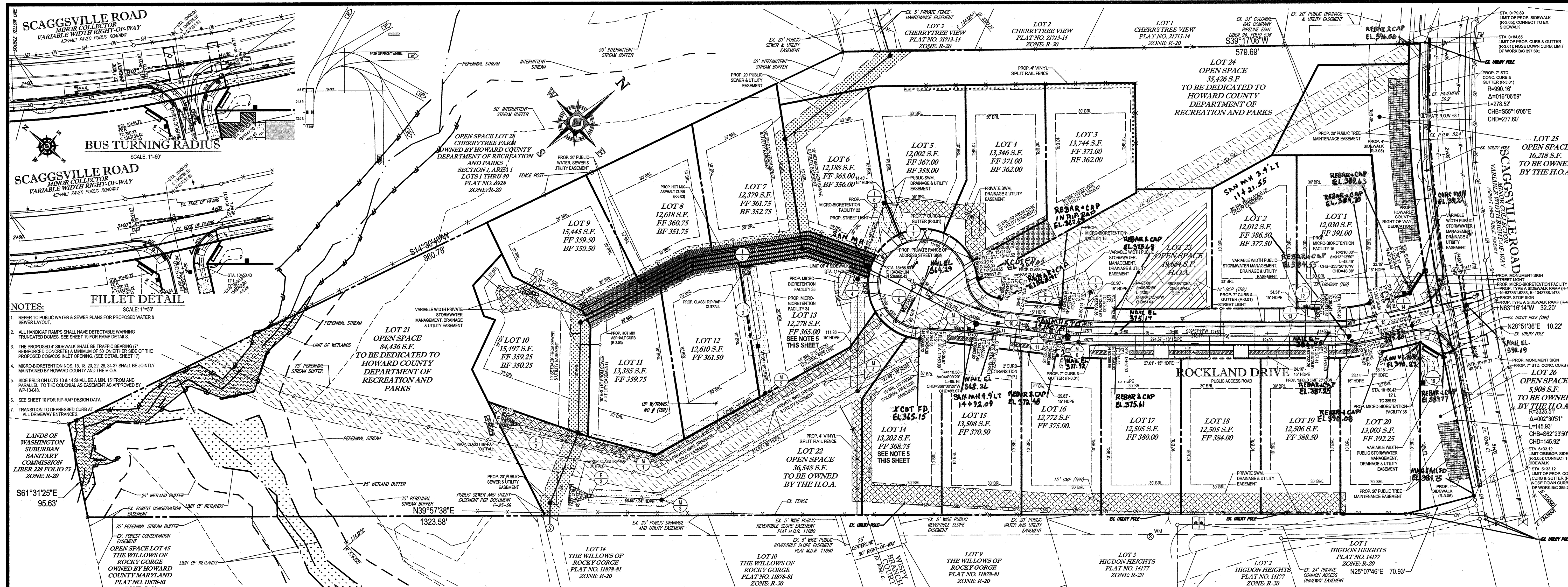
REVISED FINAL ROAD CONSTRUCTION PLANS FOR RESERVOIR ESTATES BUILDABLE LOTS 1-20 AND OPEN SPACE LOTS 21-26 LOCATION OF SITE

10883 SCAGGSVILLE ROAD
 LAUREL, MD 20723
 HOWARD COUNTY

BOHLER ENGINEERING
 901 DULANEY VALLEY ROAD, SUITE 801
 TOWSON, MARYLAND 21204
 Phone: (410) 821-7900
 Fax: (410) 821-7987
 www.BohlerEngineering.com

BRIDGEMAN ENGINEERING
 PROFESSIONAL ENGINEER
 LICENSE NO. 40828, EXPIRATION DATE: 7/3/2015

TITLE SHEET
 SHEET NUMBER: 1 OF 19



APPROVED: DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS
 DATE: 9-23-14

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 9-25-14

GENERAL NOTE:
 IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT WORK. BEFORE THE START OF CONSTRUCTION, THE CONTRACTOR SHALL CONFIRM WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS ON APPLICABLE CODES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE PROJECT ENGINEER OF RECORD IN WRITING PRIOR TO THE START OF CONSTRUCTION, FOLLOWED BY THE CONTRACTOR TO NOTIFY THE PROJECT ENGINEER SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO CALCULATE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND ALL FULL CONSTRUCTION WITHIN THE SPECIFICATIONS.

SEED AND MULCH
 STD. 7" CONC. CURB & GUTTER

PAVING SECTION SHALL BE IN ACCORDANCE WITH SECTION NUMBER P-2

SEED AND MULCH
 STD. 7" CONC. CURB & GUTTER

OWNER: CM HIGDON LC
 1355 BEVERLY ROAD, SUITE 330
 MCLEAN, VA 22101
 CONTACT: DAVID KAUFMAN
 PHONE: (703) 734-9855

DEVELOPER: ELMS AT FIELDS POINT I, LLC
 5074 DORSEY HALL DRIVE, SUITE 205
 ELLICOTT CITY, MD 21143
 CONTACT: JASON VAN KIRK
 PHONE: (410) 729-3021

TAX MAP: 46 GRID: 11 ZONED: R-20
 PARCEL: 56

6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PREVIOUS FILE No.: WP-13-048, ECP-13-038,
 BA-05-028, SP-13-008,
 24-4787-D

PROFESSIONAL CERTIFICATION
 I, BRANDON R. ROWE, 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. 40808, EXPIRATION DATE: 7/31/2015

BOHLER ENGINEERING

CORPORATE OFFICE:
 WARREN, NJ

OFFICES:
 SCOTTSBORO, VA
 ALBANY, NY
 CHAMBERS, NY
 CENTER VALLEY, PA
 FORT LAUDERDALE, FL
 FORT WORTH, TX

CIVIL & CONSULTING ENGINEERS
 SURVEYORS
 PROJECT MANAGERS
 ENVIRONMENTAL CONSULTANTS
 LANDSCAPE ARCHITECTS

REVISIONS

REV	DATE	COMMENT	BY
1	9/9/14	REVISED ROAD PROFILE	RLB

THE FOLLOWING STATES REQUIRE NOTIFICATION BY INDICATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE STATE IN VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE CALL: 811 (WWW.811.COM OR 1-800-245-8488 (PA 1-800-242-7777) (DC 1-800-257-7777) (MD 1-800-552-7001) (DE 1-800-257-7777) (EX 1-800-382-8559)

PROJECT No.: MD122066
 DRAWN BY: RLB
 CHECKED BY: BRR
 DATE: 9/27/14
 SCALE: AS SHOWN
 CAD I.D.: PFD

PROJECT: REVISED FINAL ROAD CONSTRUCTION PLANS FOR RESERVOIR ESTATES BUILDABLE LOTS 1-20 AND OPEN SPACE LOTS 21-26 LOCATION OF SITE

10883 SCAGSVILLE ROAD
 LAUREL, MD 20723
 HOWARD COUNTY

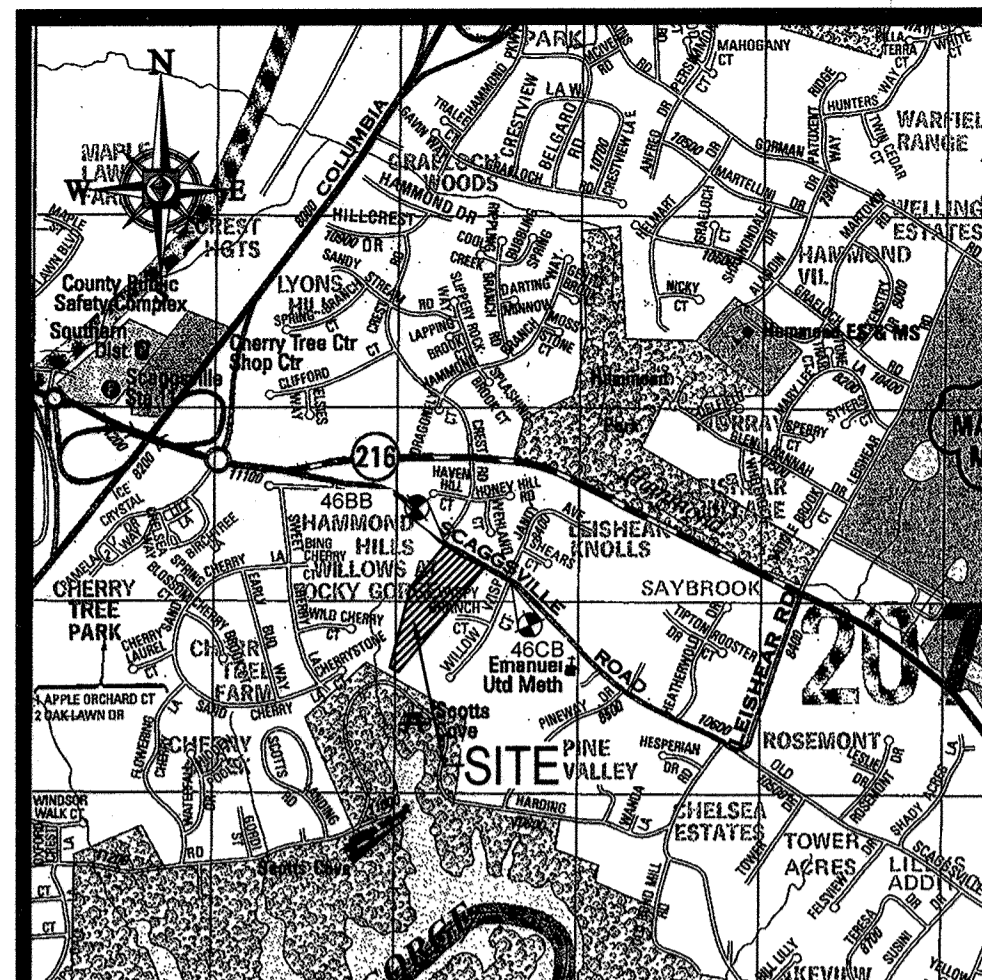
BOHLER ENGINEERING

901 DULANEY VALLEY ROAD, SUITE 801
 TOWSON, MARYLAND 21284
 Phone: (410) 821-7900
 Fax: (410) 821-7987
 www.BohlerEngineering.com

B.R. ROWE
 PROFESSIONAL ENGINEER

SHEET TITLE: PUBLIC ROAD PLAN AND PROFILE

SHEET NUMBER: 2 OF 19



TEMPORARY S.O.S.T. (ST. II)

INITIAL D.A.	7.20 AC.
FINAL D.A.	3.11 AC.
STORAGE REQUIRED	25,920 C.F.
WET =	12,960 C.F.
DRY =	12,960 C.F.
STORAGE PROVIDED	
WET =	13,018 C.F. @ EL. 337.88
DRY =	13,120 C.F. @ EL. 339.48
BOTTOM ELEV.	338.00
TOP OF EMBANKMENT	1.88' WET, 3.48' DRY
CLEANOUT ELEV.	337.00
WEIR CREST ELEV.	342.00
WEIR CREST LENGTH	30 FT.
TEMP. SWM FOR 1 YR. STORM 16,840 C.F. @ EL. 341.24	
S.O.S.T. BAFFLE DESIGN	
A =	7,886 SQ. FT.
W _e = (A ^{2/3}) ^{1/2}	62
L _e =	160 FT.
L _e W _e = 16082'	2.58
2.58 > 2	OK

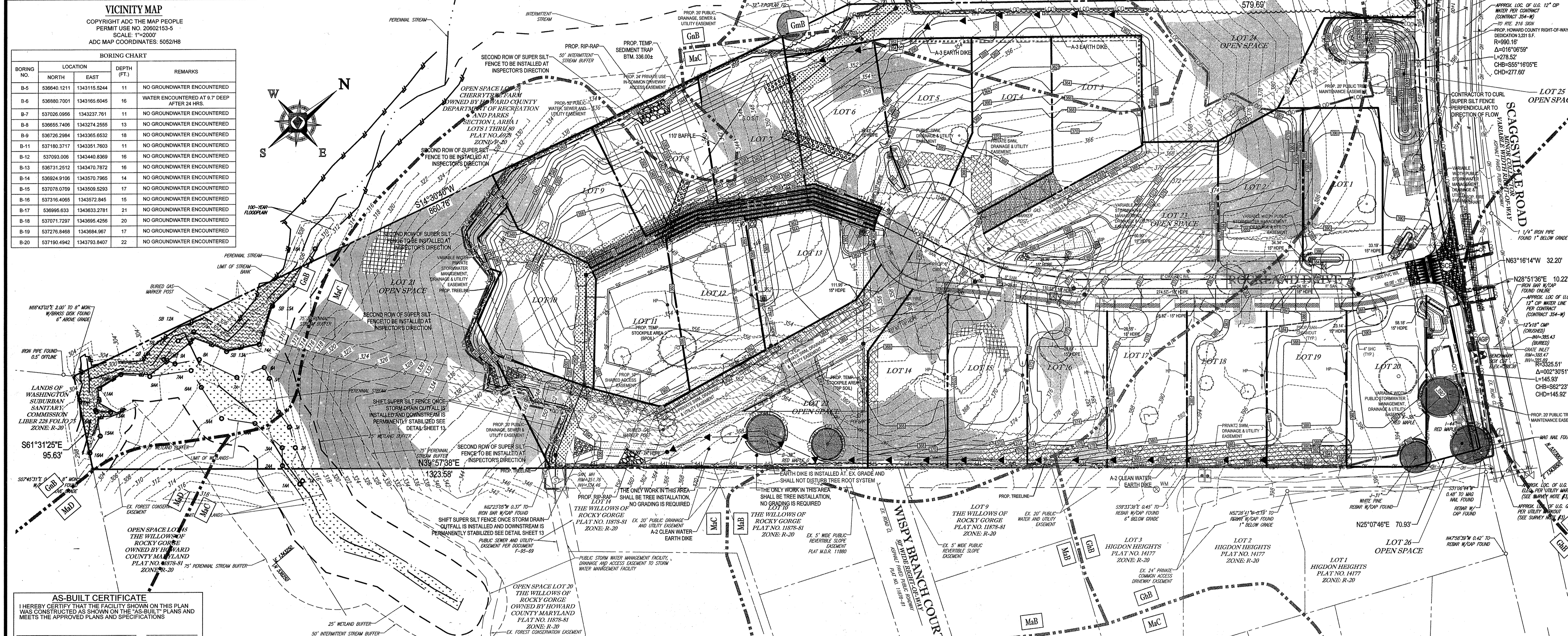
LEGEND:

- RECREATIONAL OPEN SPACE (5.128 S.F. OR 0.12 AC.)
- PUBLIC STORMWATER MANAGEMENT, DRAINAGE & UTILITY EASEMENT
- 5' PRIVATE FENCE MAINTENANCE EASEMENT
- 20' PUBLIC TREE MAINTENANCE EASEMENT
- PUBLIC UTILITY EASEMENT
- 24' PRIVATE USE-IN-COMMON DRIVEWAY ACCESS EASEMENT (FOR THE USE AND BENEFIT OF LOTS 7-12)
- PRIVATE STORMWATER MANAGEMENT, DRAINAGE & UTILITY EASEMENT
- 33' COLONIAL GAS COMPANY PIPELINE EASEMENT LIBER 94, FOLIO 538
- 12' ACCESS EASEMENT (FOR DEPARTMENT OF RECREATION AND PARKS ACCESS TO LOT 21)
- 100 YEAR FLOOD PLAIN, DRAINAGE & UTILITY EASEMENT
- LIMITS OF WETLANDS
- FOREST CONSERVATION EASEMENT

VICINITY MAP
COPYRIGHT ADC THE MAP PEOPLE
PERMIT USE NO. 20602153-5
SCALE: 1"=200'
ADC MAP COORDINATES: 9052/H8

BORING CHART

BORING NO.	NORTH	EAST	DEPTH (FT.)	REMARKS
B-5	53640.1211	1343115.5244	11	NO GROUNDWATER ENCOUNTERED
B-6	53680.7001	1343165.8045	16	WATER ENCOUNTERED AT 0.7' DEEP AFTER 24 HRS.
B-7	537026.0956	1343271.7911	11	NO GROUNDWATER ENCOUNTERED
B-8	53685.7406	1343274.2558	11	NO GROUNDWATER ENCOUNTERED
B-9	53672.2964	1343365.6532	18	NO GROUNDWATER ENCOUNTERED
B-11	537180.3717	1343351.7603	11	NO GROUNDWATER ENCOUNTERED
B-12	537093.006	1343440.8369	16	NO GROUNDWATER ENCOUNTERED
B-13	536731.2512	1343470.7872	16	NO GROUNDWATER ENCOUNTERED
B-14	536924.9106	1343570.7865	14	NO GROUNDWATER ENCOUNTERED
B-15	537078.0759	1343509.8293	17	NO GROUNDWATER ENCOUNTERED
B-16	537316.4065	1343572.845	15	NO GROUNDWATER ENCOUNTERED
B-17	536995.633	1343633.2781	21	NO GROUNDWATER ENCOUNTERED
B-18	537071.7297	1343695.4256	20	NO GROUNDWATER ENCOUNTERED
B-19	537276.8468	1343684.967	17	NO GROUNDWATER ENCOUNTERED
B-20	537190.4842	1343793.8407	22	NO GROUNDWATER ENCOUNTERED



AS-BUILT CERTIFICATE
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: _____ DATE: _____
P.E. NO. _____

ENGINEER'S CERTIFICATE
"I HEREBY CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD COUNTY DISTRICT."

SIGNATURE: _____ DATE: 9/14/14
P.E. NO. _____

DEVELOPER'S CERTIFICATE
"I HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN 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 ALSO AUTHORIZE PERIODIC ONSITE INSPECTION BY THE HOWARD COUNTY DISTRICT."

SIGNATURE: _____ DATE: 9-11-14
P.E. NO. _____

APPROVED: DEPARTMENT OF PUBLIC WORKS
DATE: 9/23/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING
DATE: 9-26-14

CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 9-25-14

INLET PROTECTION NOTE
THE CONTRACTOR IS REQUIRED TO INSTALL INLET PROTECTION ON ALL STORM DRAIN INLETS WITH THE EXCEPTION OF THE FOLLOWING:
1) ANY INLET DIRECTLY OUTFALLING INTO A SEDIMENT TRAPPING DEVICE.
2) INLETS ON PRIVATE OR PUBLIC ROAD OPEN TO THE PUBLIC.
ALL INLET PROTECTION SHALL BE INSTALLED AS DIRECTED BY THE INSPECTOR IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL, PAGE E-2. APPROVAL OF AN INLET PROTECTION DEVICE WILL REQUIRE APPROVAL FROM THE INSPECTOR.

EROSION AND SEDIMENT CONTROL LEGEND

[Symbol]	STABILIZED CONSTRUCTION ENTRANCE
[Symbol]	RIP-RAP OUTLET PROTECTION
[Symbol]	SILT FENCE
[Symbol]	EARTH DIKE (A-2 STABILIZED MATTING OR SOD, A-3 4" STONE)
[Symbol]	TREE PROTECTION FENCE
[Symbol]	LIMIT OF DISTURBANCE
[Symbol]	BAFFLE BOARD
[Symbol]	RIP-RAP INFLOW PROTECTION
[Symbol]	SUPER SILT FENCE
[Symbol]	STEEP SLOPES (15%-25%)
[Symbol]	STEEP SLOPES (>25%)
[Symbol]	SOIL LABEL
[Symbol]	SOIL DIBBLE
[Symbol]	AT GRADE INLET PROTECTION
[Symbol]	STANDARD INLET PROTECTION TYPE 'B'
[Symbol]	SPECIMEN TREE TO REMAIN

EROSION AND SEDIMENT CONTROL UTILITY INSTALLATION NOTES:

- CONTRACTOR SHALL OPEN ONLY THAT SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED EACH DAY. IF TRENCH MUST REMAIN OPEN LONGER THAN ONE DAY, SILT FENCE SHALL BE PLACED BELOW (DOWN-SLOPE) OF TRENCH.
- PLACE ALL EXCAVATED MATERIAL ON UPHILL SIDE OF TRENCH.
- ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY - SAME DAY.
- THE CONTRACTOR SHALL TAKE APPROPRIATE MEASURES TO PROTECT PEDESTRIANS AT ALL TIMES DURING UNDERGROUND UTILITY CONSTRUCTION.

SOILS

MAP SYMBOL	MAP UNIT NAME	RATING
GnB	GLENELG-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	B
GnB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C
GnB	GLENVILLE-BALE SILT LOAMS, 0 TO 8 PERCENT SLOPES	C
MaB	MANOR LOAM, 3 TO 8 PERCENT SLOPES	B
MaC	MANOR LOAM, 8 TO 15 PERCENT SLOPES	B
MaD	MANOR LOAM, 15 TO 25 PERCENT SLOPES	B

BENCHMARK NOTE:
THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLAIN COORDINATE SYSTEM. HORIZONTAL AND VERTICAL CONTROL DATUM ARE BASED ON HOWARD COUNTY MONUMENT NOS. 468B AND 468C WHICH WERE SET IN 1987.

EROSION AND SEDIMENT CONTROL NOTES:

- TEMPORARY DIVERSION DIKES SHALL HAVE A MIN. SLOPE OF 0.50%.
- CONTRACTOR TO ACCOUNT FOR BASEMENT CUT BY LOWERING ELEVATIONS OF LOTS AS REQUIRED. GENERAL GRADING DESIGN SHOULD REMAIN THE SAME. LOTS SHOULD BE BROUGHT TO FINAL GRADE AFTER SFP APPROVAL WHEN HOUSES ARE BUILT AND CUT IN BASEMENTS IS AVAILABLE.
- REFER TO SHEET 11-13 FOR SEQUENCE OF CONSTRUCTION, SEDIMENT CONTROL NOTES, AND SEDIMENT CONTROL DETAILS.
- ALL PROPOSED WORK OUTSIDE OF PERIMETER CONTROLS SHALL BE STABILIZED AT THE END OF EACH WORK DAY.
- PROPOSED SILT FENCE IS TO BE CHANGED TO SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
- SEE SHEET 4 FOR PHASE II GRADING, AND SHEET 5 FOR ULTIMATE GRADING.
- ALL EARTH DIKES INTERRUPTED BY THE INSTALLATION OF STORM DRAINS ARE TO BE REPAIRED IMMEDIATELY - SAME DAY.
- EITHER TEMPORARY OR PERMANENT SEEDING IS TO BE PERFORMED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR OR AT THE TIME FRAMES REQUIRED BY THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, WHICHEVER IS MORE RESTRICTIVE.
- CONTRACTOR TO INSTALL STABILIZATION MATTING IN ALL SWALES AND ON ALL SLOPES 3:1 OR GREATER.
- REGARDING DISTURBANCE ALONG SCAGSVILLE ROAD, CONTRACTOR SHALL NOT RELY ON THESE FIGURES FOR PERIMETER EROSION AND SEDIMENT CONTROLS AT THE END OF EACH WORKING DAY OR AT THE DIRECTION OF THE INSPECTOR.
- SHOULD THE STOCKPILE EXCEED 15 FT. IN HEIGHT, IT MUST BE BENCHED.

EROSION AND SEDIMENT CONTROL QUANTITIES:

TOTAL FOR ALL PHASES:

LIMIT OF DISTURBANCE:	394.175 S.F. OR 0.95 AC
SILT FENCE:	2481 LF
SUPER SILT FENCE:	1203 LF
TREE PROTECTION FENCE:	1636 LF
AT GRADE INLET PROTECTION:	1 EA
STANDARD INLET PROTECTION:	8 EA
EARTHWORK:	32,000 CY CUT
	32,000 CY FILL
	0 CY EXPORT
	1 EA

STABILIZED CONSTRUCTION ENTRANCE:

SPOIL MATERIAL SHALL BE DISCARDED AT A SITE WITH AN ACTIVE GRADING PERMIT AND APPROVED SEDIMENT CONTROL PLAN. BORROW MATERIAL SHALL BE OBTAINED FROM AN APPROVED SITE WITH AN ACTIVE GRADING PERMIT AND AN APPROVED SEDIMENT CONTROL PLAN.

EARTH QUANTITIES LISTED ABOVE ARE FOR SEDIMENT CONTROL USE ONLY. CONTRACTOR SHALL NOT RELY ON THESE FIGURES FOR ESTIMATING AND BIDDING PURPOSES.

SUBDIVISION NAME: RESERVOIR ESTATES SECTION AREA 'A' DEED # 15161, 355

PREVIOUS FILE NO.: WP-13-048, ECP-13-038, BA-05-028, SP-13-008, 24-4787-D

OWNER: CM HIGDON LC, 1365 BEVERLY ROAD, SUITE 330, MCLEAN, VA 22101, CONTACT: DAVID KAUFMAN, PHONE: (703) 734-9855

DEVELOPER: ELMS AT FIELDS POINT II, L.C., 5074 DORSEY HALL DRIVE, SUITE 205, ELLICOTT CITY, MD 21043, CONTACT: JASON VAN KIRK, PHONE: (410) 720-3021

TAX MAP: 46 GRID: 11 ZONED: R-20 PARCEL: 56

6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

HIGDON PROPERTY
20 SINGLE FAMILY DETACHED UNITS

NOTE: SEE SHEET 17 FOR STORMWATER MANAGEMENT FACILITIES ON THE INDIVIDUAL LOTS TO BE CONSTRUCTED AT SFP STAGE.

BOHLER ENGINEERING

CORPORATE OFFICE: WARREN, NJ
SURVEYORS
CIVIL & CONSULTING ENGINEERS

OFFICES:
SOUTH BRUNSWICK, NJ
ALBANY, NY
CHALFONT, PA
CHERRY VALLEY, PA
PORT LEBANON, PA
PRINCETON, PA

PROJECT MANAGERS
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS

REVISIONS

REV	DATE	COMMENT	BY
1	9/9/14	REVISED ROAD PROFILE	RLB

THE FOLLOWING STATES REQUIRE NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE STATE OF VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE CALL: 811 (WV 1-800-245-8484) (PA 1-800-242-1776) (DC 1-800-257-7777) (VA 1-800-452-7031) (MD 1-800-257-2777) (DE 1-800-392-4668)

PROJECT NO: MD12206
DRAWN BY: RLB
CHECKED BY: BRR
DATE: 6/21/14
SCALE: 1"=50'
CAD I.D.: SS2

REVISED FINAL ROAD CONSTRUCTION PLANS FOR RESERVOIR ESTATES
BUILDABLE LOTS 1-20 AND OPEN SPACE LOTS 21-26
LOCATION OF SITE

10883 SCAGSVILLE ROAD
LAUREL, MD 20723
HOWARD COUNTY

BOHLER ENGINEERING

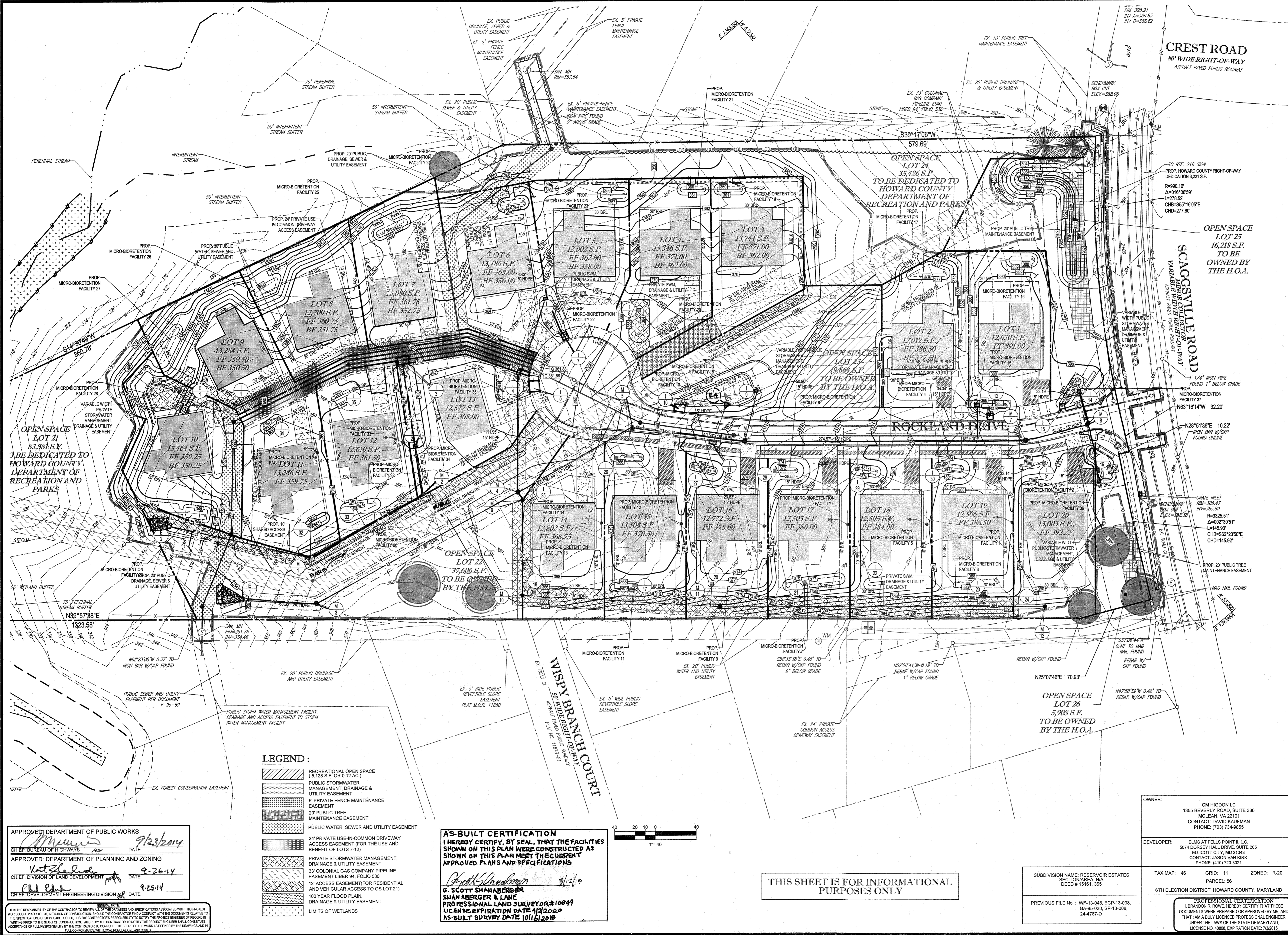
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21284
Phone: (410) 821-7300
Fax: (410) 821-7987
www.BohlerEngineering.com

B.R. ROWE
PROFESSIONAL ENGINEER

GRADING AND SEDIMENT CONTROL PLAN - PHASE I

SHEET NUMBER: 3 OF 19

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 40808, EXPIRATION DATE: 7/31/2015



BOHLER ENGINEERING

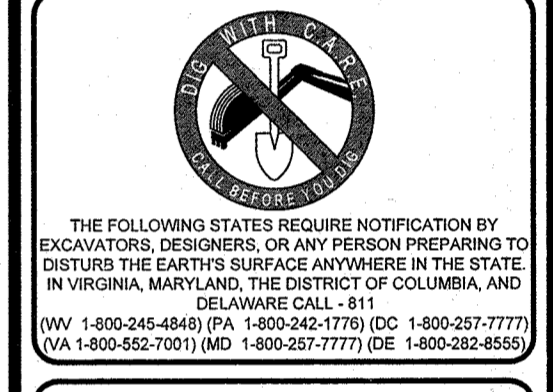
CORPORATE OFFICE:
WARREN, NJ

OFFICES:
SOUTHBRIDGE, MA
BOSTON, MA
WARRINGTON, VA
ROCKVILLE, VA
CANTON, VA
TAMPA, FL
PHILADELPHIA, PA

CIVIL & CONSULTING ENGINEERS
SURVEYORS
PROJECT MANAGERS
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS

REVISIONS

REV	DATE	COMMENT	BY
1	9/14	REVISED ROAD PROFILE	RLB



THE FOLLOWING STATES REQUIRE NOTIFICATION BY EXCAVATORS, DESIGNERS OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE STATE OF VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE CALL - 811 (1-800-245-4848) (IN VA: 1-800-342-3778) (DC: 1-800-251-7777) (MD: 1-800-552-7001) (DE: 1-800-233-8555)

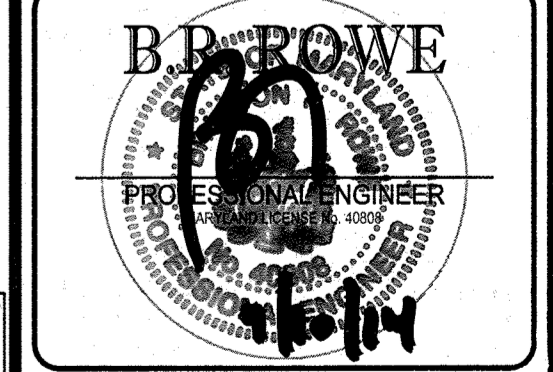
PROJECT NO.: MD122006
DRAWN BY: RLB
CHECKED BY: RLB
DATE: 6/2/14
SCALE: 1"=40'
CAD ID: SS2

REVISED FINAL ROAD CONSTRUCTION PLANS FOR RESERVOIR ESTATES BUILDABLE LOTS 1-20 AND OPEN SPACE LOTS 21-26 LOCATION OF SITE

10883 SCAGVILLE ROAD
LAUREL, MD. 20723
HOWARD COUNTY

BOHLER ENGINEERING

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21284
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com



ULTIMATE GRADING PLAN

SHEET NUMBER: 5 OF 19

APPROVED: DEPARTMENT OF PUBLIC WORKS
9/23/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING
9-26-14

9-25-14

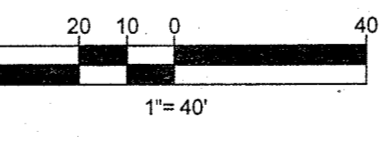
GENERAL NOTE:
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT WORK SCOPE PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE CONTRACTOR HAVE ANY QUESTIONS RELATIVE TO THE SPECIFICATIONS OR APPLICABLE CODES, IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE PROJECT ENGINEER OF RECORD IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY THE PROJECT ENGINEER SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND IN FULL CONFORMANCE WITH ALL REGULATORY AND CODES.

- LEGEND:**
- RECREATIONAL OPEN SPACE (1.28 S.F. OR 0.12 AC.)
 - PUBLIC STORMWATER MANAGEMENT, DRAINAGE & UTILITY EASEMENT
 - 5' PRIVATE FENCE MAINTENANCE EASEMENT
 - 20' PUBLIC TREE MAINTENANCE EASEMENT
 - PUBLIC WATER, SEWER AND UTILITY EASEMENT
 - 24' PRIVATE USE-IN-COMMON DRIVEWAY ACCESS EASEMENT (FOR THE USE AND BENEFIT OF LOTS 7-12)
 - PRIVATE STORMWATER MANAGEMENT, DRAINAGE & UTILITY EASEMENT
 - 33' COLONIAL GAS COMPANY PIPELINE EASEMENT LIBER 34, FOLIO 536
 - 12' ACCESS EASEMENT FOR RESIDENTIAL AND VEHICULAR ACCESS TO OS LOT 21)
 - 100 YEAR FLOOD PLAIN, DRAINAGE & UTILITY EASEMENT
 - LIMITS OF WETLANDS

AS-BUILT CERTIFICATION
I HEREBY CERTIFY, BY SEAL, THAT THE FACILITIES SHOWN ON THIS PLAN WERE CONSTRUCTED AS SHOWN ON THIS PLAN MEET THE CURRENT APPROVED PLANS AND SPECIFICATIONS

3/12/19

G. SCOTT SHAMBERGER
SHANBERGER & LANE
PROFESSIONAL LAND SURVEYOR #10849
LICENSE EXPIRATION DATE 1/2/2020
AS-BUILT SURVEY DATE 10/16/2018

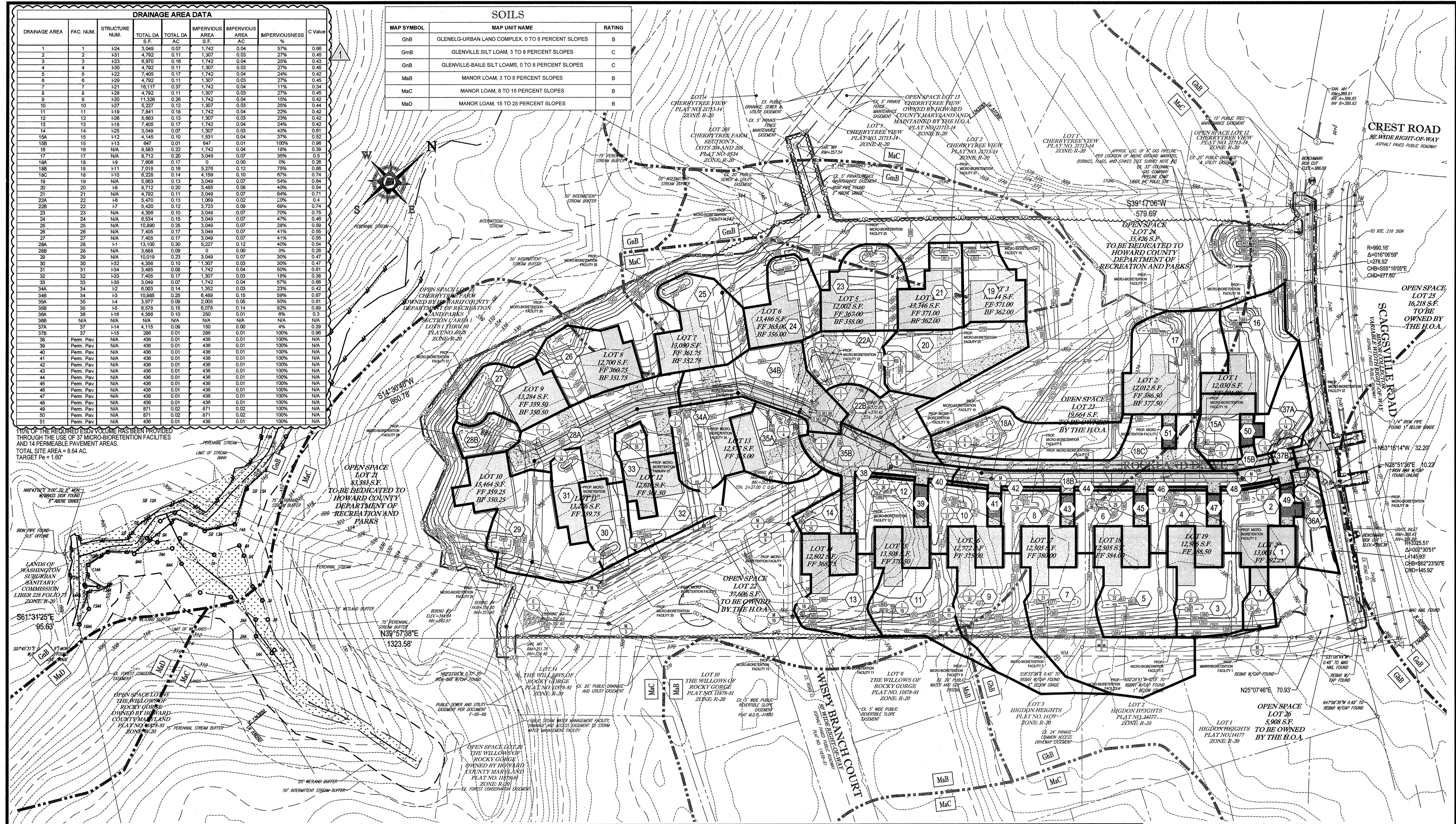


THIS SHEET IS FOR INFORMATIONAL PURPOSES ONLY

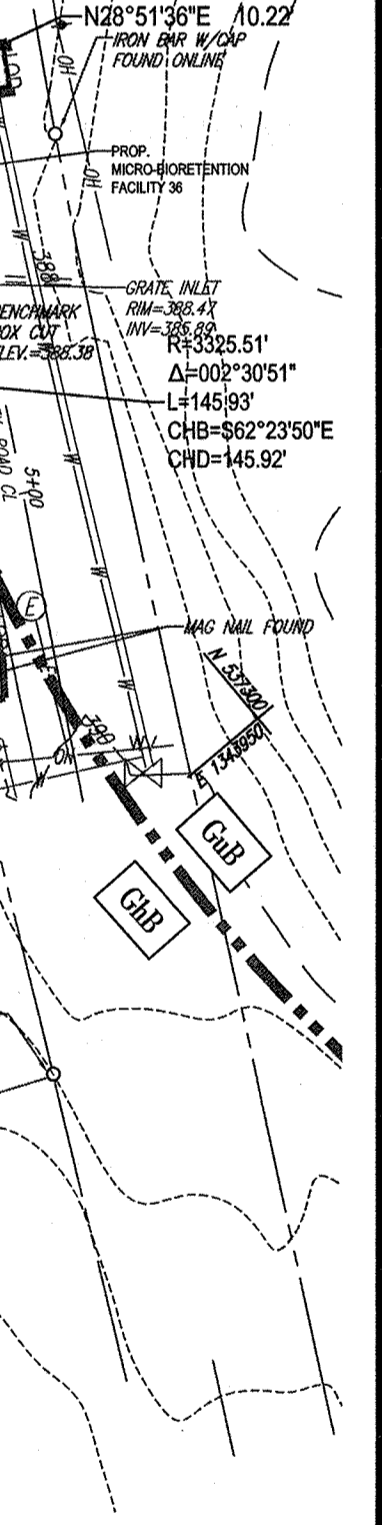
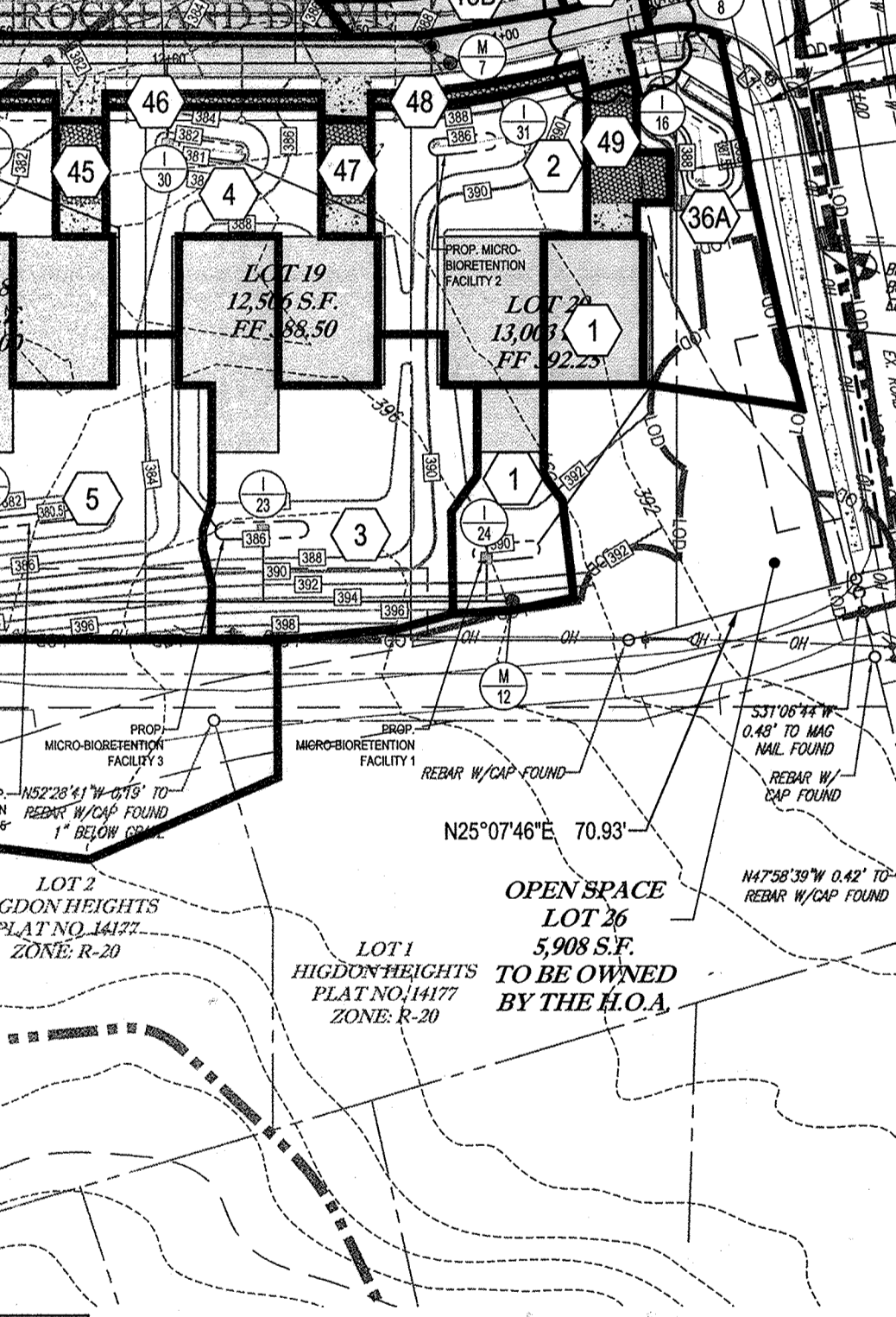
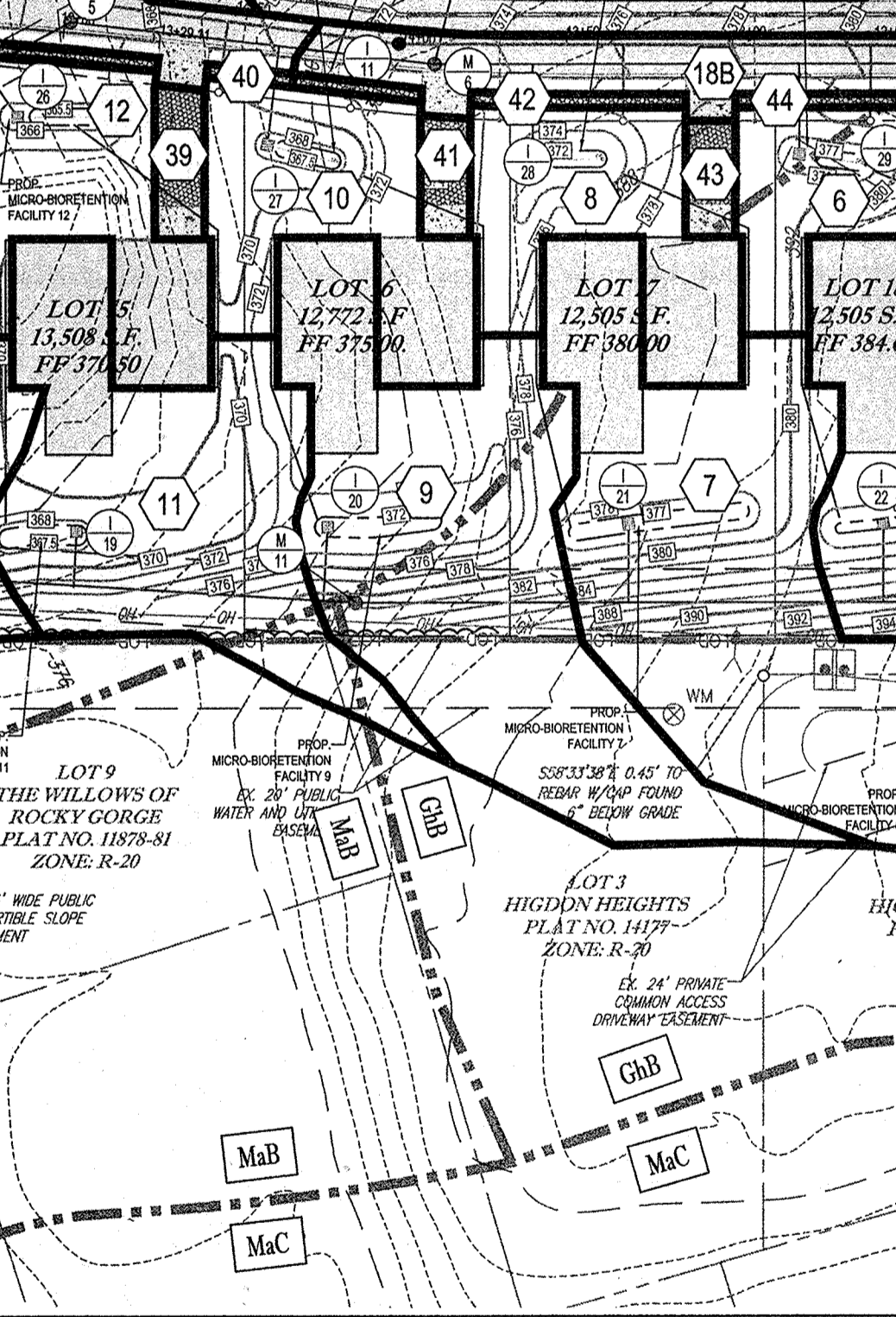
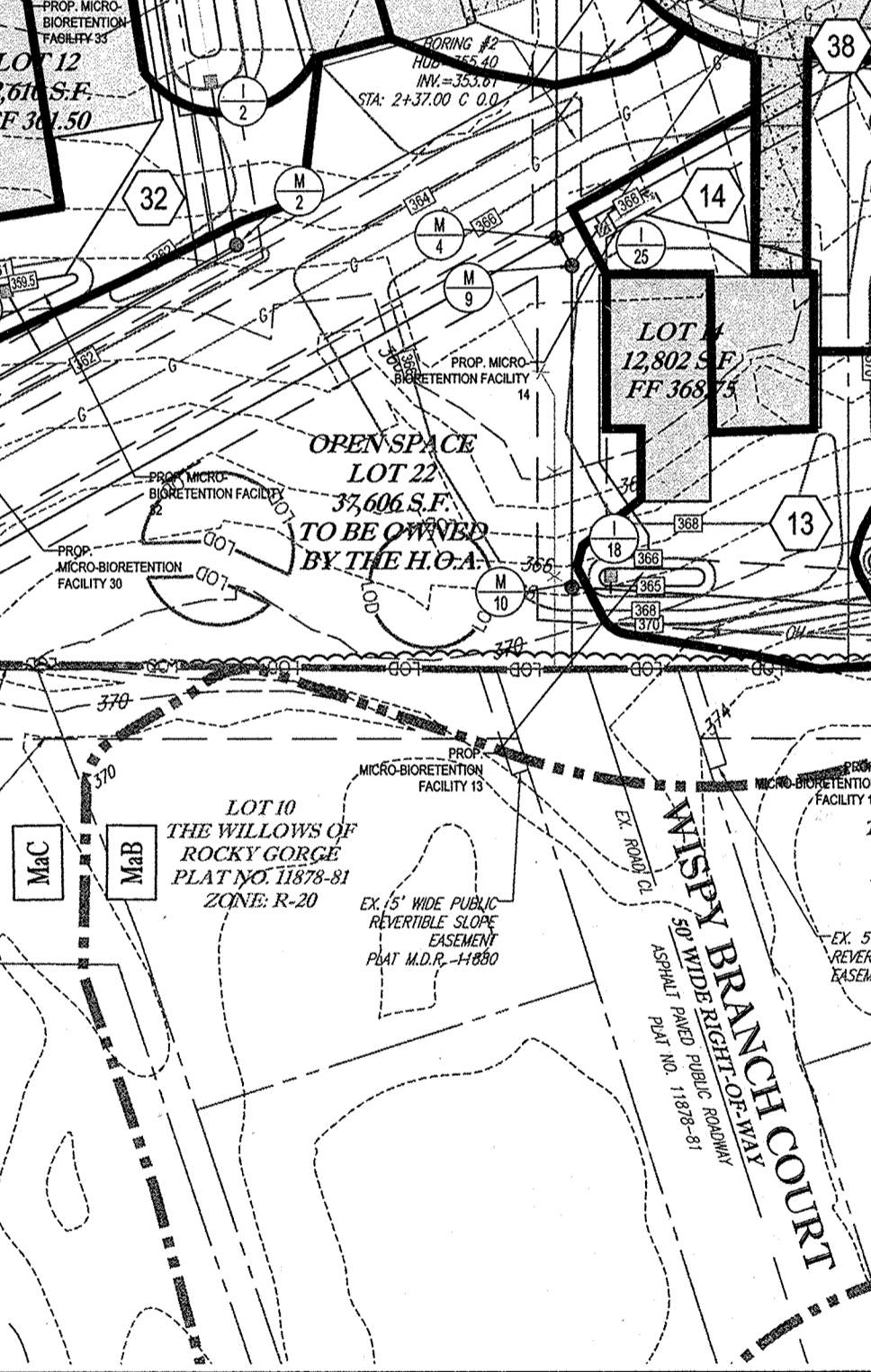
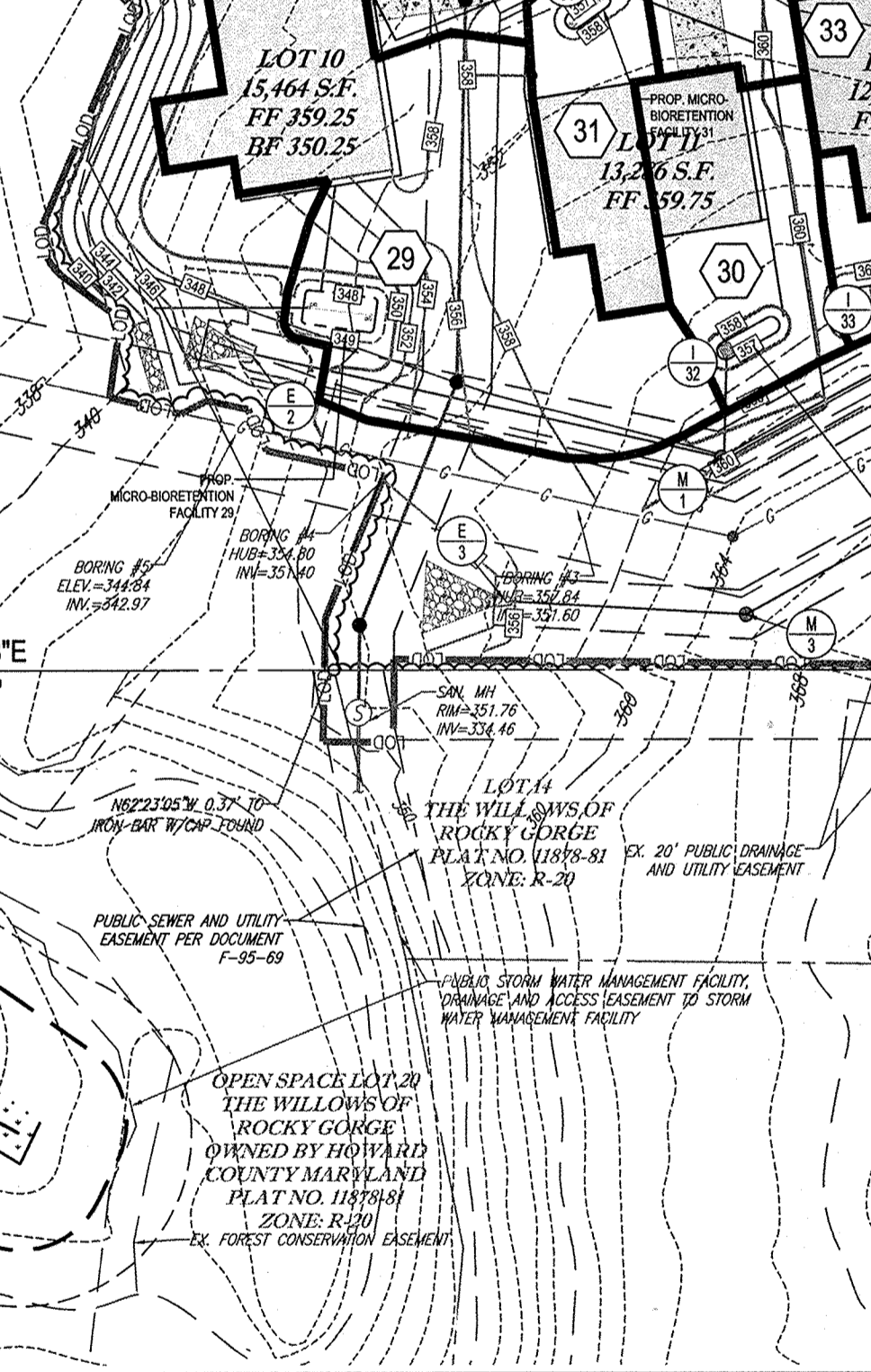
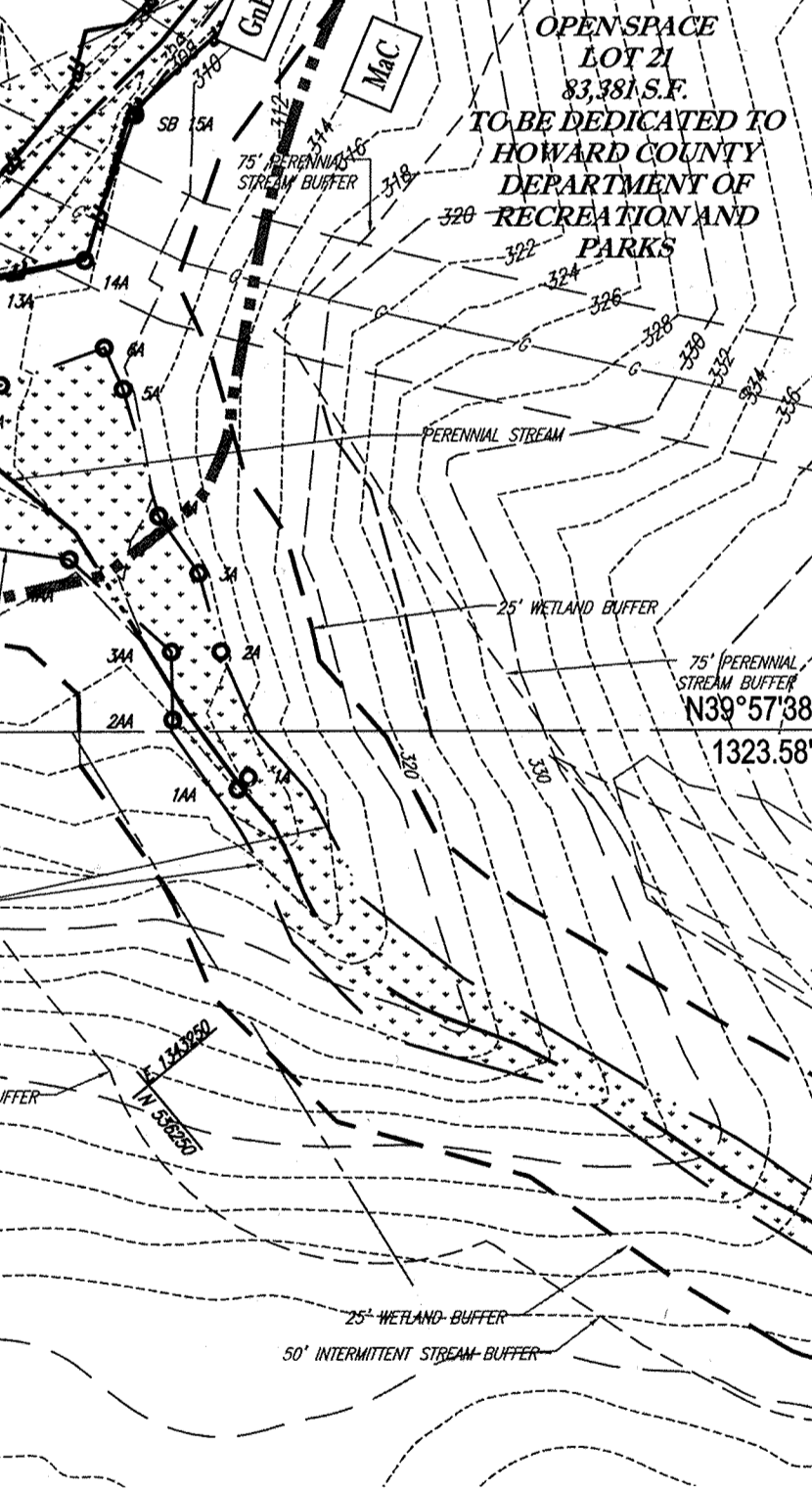
OWNER: CM HIGDON LC 1355 BEVERLY ROAD, SUITE 330 MCLEAN, VA 22101 CONTACT: DAVID KAUFMAN PHONE: (703) 734-9855	TAX MAP: 46 GRID: 11 ZONED: R-20
DEVELOPER: ELMS AT FIELDS POINT II, L.C. 5074 DORSEY HALL DRIVE, SUITE 205 ELLCOTT CITY, MD 21043 CONTACT: JASON VAN KIRK PHONE: (410) 720-3021	PARCEL: 56 6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND
SUBDIVISION NAME: RESERVOIR ESTATES SECTION AREA N/A DEED # 15161, 365	PREVIOUS FILE NO.: WP-13-048, ECP-13-038, BA-95-028, SP-13-008, 24-4787-D
PROFESSIONAL CERTIFICATION I, BRANDON R. ROWE, 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. 42808, EXPIRATION DATE: 7/30/2015	

DRAINAGE AREA DATA									
DRAINAGE AREA	FAC. NUM.	STRUCTURE NUM.	TOTAL DA	IMPERVIOUS AREA	IMPERVIOUS AREA	IMPERVIOUSNESS	C VALUE		
			%	%					
1	1	I-24	3,049	0.07	1,742	0.04	57%	0.69	
2	2	I-31	4,792	0.11	1,307	0.03	27%	0.45	
3	3	I-23	6,970	0.16	1,742	0.04	25%	0.43	
4	4	I-30	4,792	0.11	1,307	0.03	27%	0.45	
5	5	I-22	7,405	0.17	1,742	0.04	24%	0.42	
6	6	I-29	4,792	0.11	1,307	0.03	27%	0.45	
7	7	I-21	16,117	0.37	1,742	0.04	11%	0.34	
8	8	I-28	4,792	0.11	1,307	0.03	27%	0.45	
9	9	I-20	11,326	0.26	1,742	0.04	15%	0.42	
10	10	I-27	5,227	0.12	1,307	0.03	25%	0.44	
11	11	I-19	7,841	0.18	1,742	0.04	22%	0.42	
12	12	I-25	5,863	0.13	1,307	0.03	23%	0.42	
13	13	I-18	7,405	0.17	1,742	0.04	24%	0.42	
14	14	I-25	3,049	0.07	1,307	0.03	43%	0.61	
15A	15	I-12	4,145	0.10	1,531	0.04	37%	0.52	
15B	15	I-13	947	0.01	847	0.01	100%	0.98	
16	16	N/A	5,553	0.22	1,742	0.04	18%	0.38	
17	17	N/A	6,712	0.20	3,049	0.07	35%	0.5	
18A	18	I-19	7,636	0.17	0	0.00	0%	0.26	
18B	18	I-11	7,018	0.16	5,278	0.12	75%	0.85	
18C	18	I-10	6,228	0.14	4,159	0.10	67%	0.74	
19	19	N/A	5,553	0.13	3,049	0.07	54%	0.84	
20	20	I-8	8,712	0.20	3,455	0.08	40%	0.54	
21	21	N/A	4,792	0.11	3,049	0.07	64%	0.71	
22A	22	I-6	5,470	0.13	1,069	0.02	20%	0.4	
22B	22	I-7	5,420	0.12	3,723	0.09	69%	0.74	
23	23	N/A	4,356	0.10	3,049	0.07	70%	0.75	
24	24	N/A	6,534	0.15	3,049	0.07	47%	0.46	
25	25	N/A	10,890	0.25	3,049	0.07	28%	0.59	
26	26	N/A	7,405	0.17	3,049	0.07	41%	0.55	
27	27	N/A	7,405	0.17	3,049	0.07	41%	0.55	
28A	28	I-1	13,100	0.30	5,227	0.12	40%	0.54	
28B	28	N/A	3,888	0.09	0	0.00	0%	0.26	
29	29	N/A	10,019	0.23	3,049	0.07	30%	0.47	
30	30	I-32	4,356	0.10	1,307	0.03	30%	0.47	
31	31	I-34	3,455	0.08	1,742	0.04	50%	0.61	
32	32	I-33	7,405	0.17	1,307	0.03	18%	0.38	
33	33	I-35	3,049	0.07	1,742	0.04	57%	0.65	
34A	34	I-2	6,063	0.14	1,307	0.03	22%	0.42	
34B	34	I-3	10,985	0.25	6,489	0.15	59%	0.67	
35A	35	I-4	3,977	0.09	2,005	0.05	50%	0.61	
35B	35	I-5	5,578	0.15	6,078	0.14	92%	0.89	
36A	36	I-10	4,356	0.10	260	0.01	6%	0.3	
36B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
37A	37	I-14	4,115	0.09	150	0.00	4%	0.29	
37B	37	I-15	298	0.01	298	0.01	100%	0.98	
38	Perm. Pav.	N/A	436	0.01	436	0.01	100%	N/A	
39	Perm. Pav.	N/A	436	0.01	436	0.01	100%	N/A	
40	Perm. Pav.	N/A	436	0.01	436	0.01	100%	N/A	
41	Perm. Pav.	N/A	436	0.01	436	0.01	100%	N/A	
42	Perm. Pav.	N/A	436	0.01	436	0.01	100%	N/A	
43	Perm. Pav.	N/A	436	0.01	436	0.01	100%	N/A	
44	Perm. Pav.	N/A	436	0.01	436	0.01	100%	N/A	
45	Perm. Pav.	N/A	436	0.01	436	0.01	100%	N/A	
46	Perm. Pav.	N/A	436	0.01	436	0.01	100%	N/A	
47	Perm. Pav.	N/A	436	0.01	436	0.01	100%	N/A	
48	Perm. Pav.	N/A	436	0.01	436	0.01	100%	N/A	
49	Perm. Pav.	N/A	871	0.02	871	0.02	100%	N/A	
50	Perm. Pav.	N/A	871	0.02	871	0.02	100%	N/A	
51	Perm. Pav.	N/A	436	0.01	436	0.01	100%	N/A	

SOILS		
MAP SYMBOL	MAP UNIT NAME	RATING
GnB	GLENELG-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	B
GmB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C
GnB	GLENVILLE-BAILE SILT LOAMS, 0 TO 8 PERCENT SLOPES	C
MaB	MANOR LOAM, 3 TO 8 PERCENT SLOPES	B
MaC	MANOR LOAM, 8 TO 15 PERCENT SLOPES	B
MaD	MANOR LOAM, 15 TO 25 PERCENT SLOPES	B



NOTE: THE REQUIRED ESDV VOLUME HAS BEEN PROVIDED THROUGH THE USE OF 37 MICRO-BIORETENTION FACILITIES AND 14 PERMEABLE PAVEMENT AREAS. TOTAL SITE AREA = 8.64 AC. TARGET Pe = 1.60"



STORMWATER MANAGEMENT PRACTICES					
LOT NO.	PERMEABLE PAVING A-2 (Y-N)	MICRO BIO-RETENTION M-6 (NUMBER)	TOTAL AREA	ESDv	
				REQUIRED	PROVIDED
1	Y	FACILITIES 15 & 16	0.33	662	753
2	Y	FACILITY 17	0.20	430	423
3	N	FACILITY 19	0.13	400	348
4	N	FACILITIES 20 & 21	0.31	872	844
5	N	FACILITIES 22 & 23	0.35	1048	939
6	N	FACILITY 24	0.25	409	460
7	N	FACILITY 25	0.25	436	528
8	N	FACILITY 26	0.17	415	452
9	N	FACILITY 27	0.17	415	364
10	N	FACILITIES 28 & 29	0.62	1174	1053

STORMWATER MANAGEMENT PRACTICES					
LOT NO.	PERMEABLE PAVING A-2 (Y-N)	MICRO BIO-RETENTION M-6 (NUMBER)	TOTAL AREA	ESDv	
				REQUIRED	PROVIDED
11	N	FACILITIES 30 & 31	0.18	418	492
12	N	FACILITIES 32 & 33	0.24	435	571
13	N	FACILITIES 34 & 35	0.62	2124	1892
14	N	FACILITIES 13 & 14	0.24	706	568
15	Y	FACILITIES 11 & 12	0.31	457	661
16	Y	FACILITIES 9 & 10	0.38	482	713
17	Y	FACILITIES 7 & 8	0.48	514	771
18	Y	FACILITIES 5 & 6	0.28	449	621
19	Y	FACILITIES 3 & 4	0.27	452	600
20	Y	FACILITIES 1 & 2	0.18	420	514

STORMWATER MANAGEMENT PRACTICES					
LOT NO.	PERMEABLE PAVING A-2 (Y-N)	MICRO BIO-RETENTION M-6 (NUMBER)	TOTAL AREA	ESDv	
				REQUIRED	PROVIDED
21	N	---	---	---	---
22	N	---	---	---	---
23	N	FACILITY 18	0.47	1283	1284
24	N	---	---	---	---
25	N	FACILITY 37	0.08	74	117
26	N	FACILITY 36	0.10	82	385

LEGEND

- IMPERVIOUS AREA
- PERVIOUS AREA
- DRAINAGE AREA DIVIDE
- DRAINAGE AREA LABEL
- SOL DIVIDE
- SOL LABEL

OWNER: CM HIGDON LC
1355 BEVERLY ROAD, SUITE 330
MCLEAN, VA 22101
CONTACT: DAVID KAUFMAN
PHONE: (703) 734-9855

DEVELOPER: ELMS AT FIELDS POINT II, L.C.
6074 DORSEY HALL DRIVE, SUITE 205
ELICOTT CITY, MD 21043
PHONE: (410) 720-3021

TAX MAP: 46 GRID: 11 ZONED: R-20
PARCEL: 56

PREVIOUS FILE NO.: WP-13-048, ECP-13-038, EA-05-028, SP-13-008, 24-4787-D

PROFESSIONAL CERTIFICATION:
I, BRANDON R. ROWE, 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. 40898, EXPIRATION DATE: 7/31/2015

NOTE: THERE IS NO AS-BUILT INFORMATION FOR THIS SHEET.

APPROVED: DEPARTMENT OF PUBLIC WORKS
DATE: 9/23/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING
DATE: 9-23-14

APPROVED: CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 9-23-14

GENERAL NOTE:
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THE PROJECT WORK SCOPE PRIOR TO THE START OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATION OF APPLICABLE CODES IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE PROJECT ENGINEER OF RECORD IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY THE PROJECT ENGINEER SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND ALL FULL COMPLIANCE WITH ALL REGULATIONS AND ORDINANCES.

BOHLER ENGINEERING

CORPORATE OFFICE:
WARREN, NJ

REGIONAL OFFICES:
ROCKFORD, MA
ALBANY, NY
BROWNSVILLE, VA
FORT LAUDERDALE, FL
TAMPA, FL

CIVIL & CONSULTING ENGINEERS
SURVEYORS
PROJECT MANAGERS
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS

REVISIONS				
REV	DATE	COMMENT	BY	
1	9/9/14	REVISED ROAD PROFILE	RLB	

THE FOLLOWING STATES REQUIRE NOTIFICATION BY EDUCATORS, DESIGNERS, OR ANY PERSON PREPARING TO SETBACK THE SURFACE ANYWHERE IN THE STATE IN VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE:

MD 122002
RWB
BRR
6/2/14
1"-50'
DA2

REVISED FINAL ROAD CONSTRUCTION PLANS FOR RESERVOIR ESTATES

BUILDABLE LOTS 1-20 AND OPEN SPACE LOTS 21-26 LOCATION OF SITE

10883 SCAGVILLE ROAD
LAUREL, MD 20723
HOWARD COUNTY

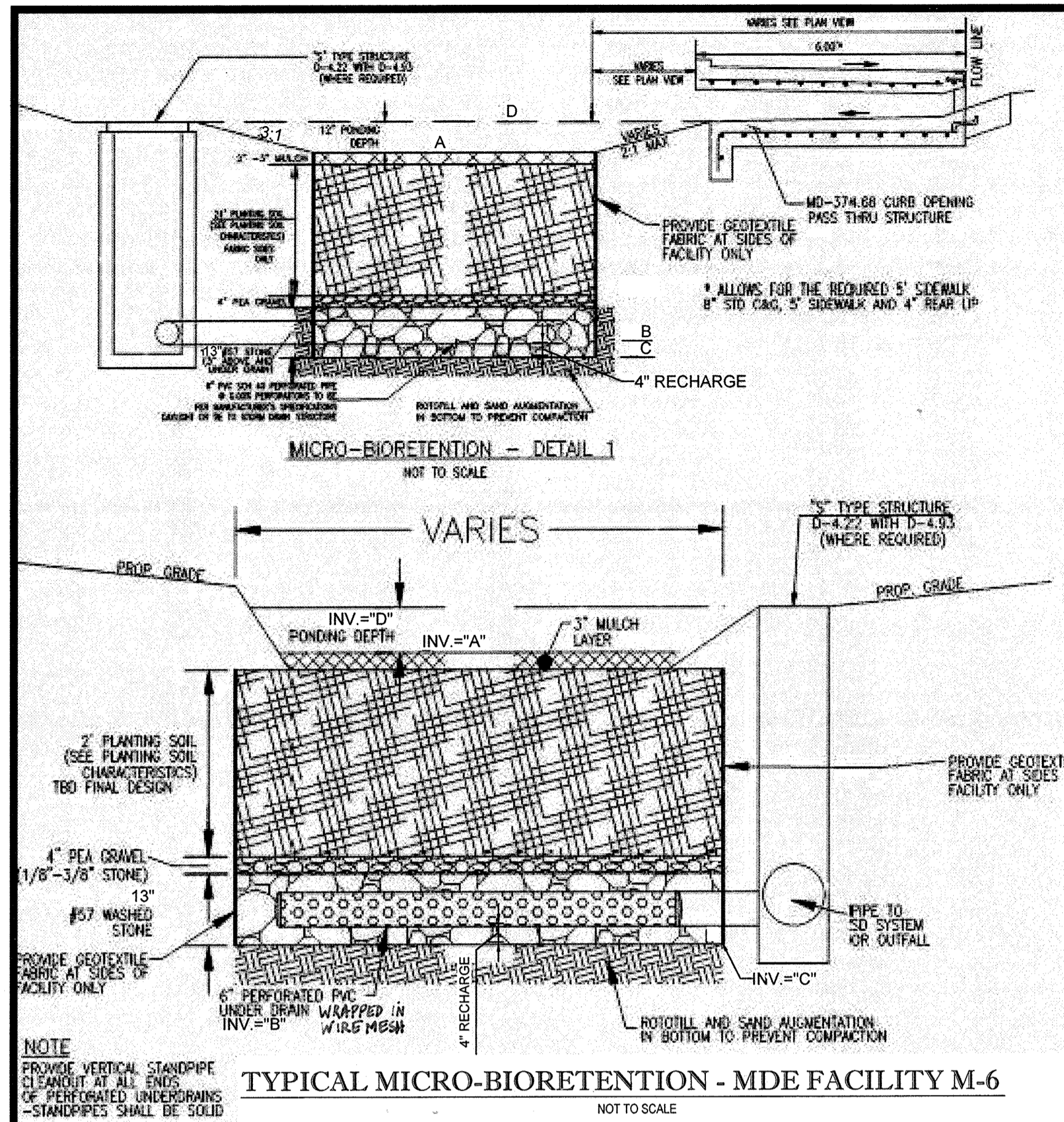
BOHLER ENGINEERING

901 DULANEY VALLEY ROAD, SUITE 901
TOWSON, MARYLAND 21284
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

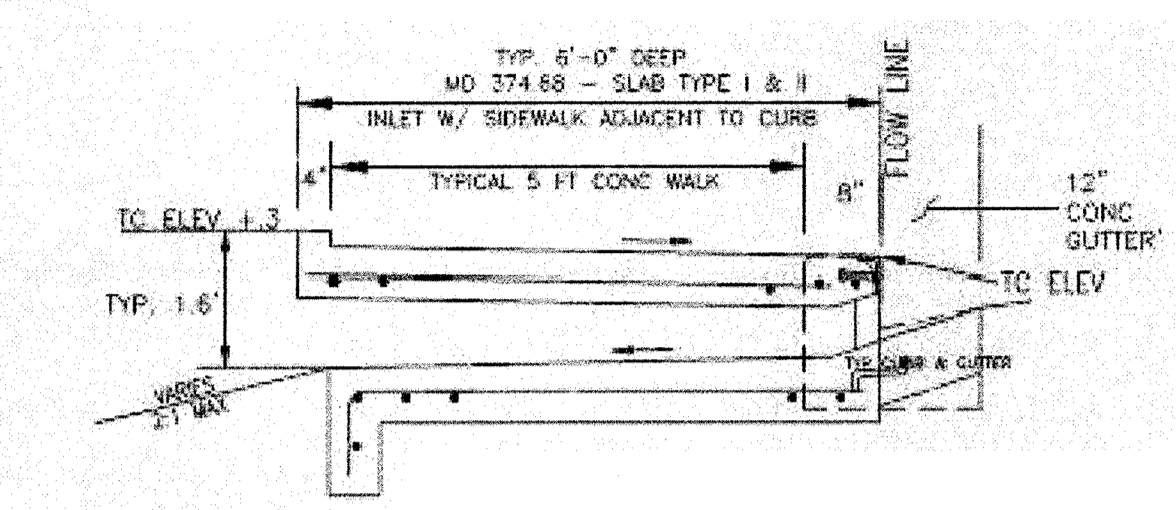
BRITTON ENGINEERING

STORM DRAIN AND STORMWATER DRAINAGE AREA MAP

SHEET NUMBER: 7 OF 19

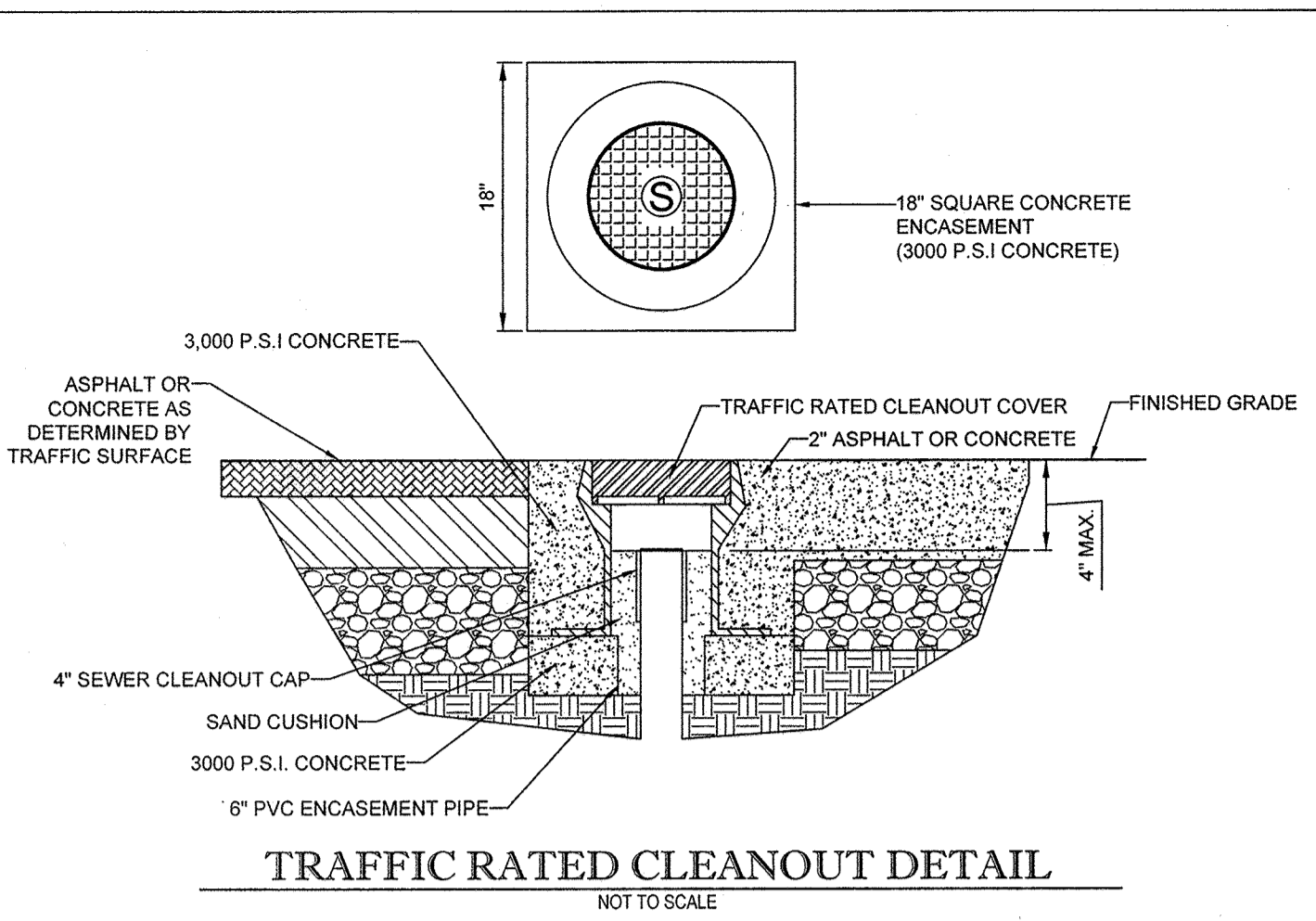
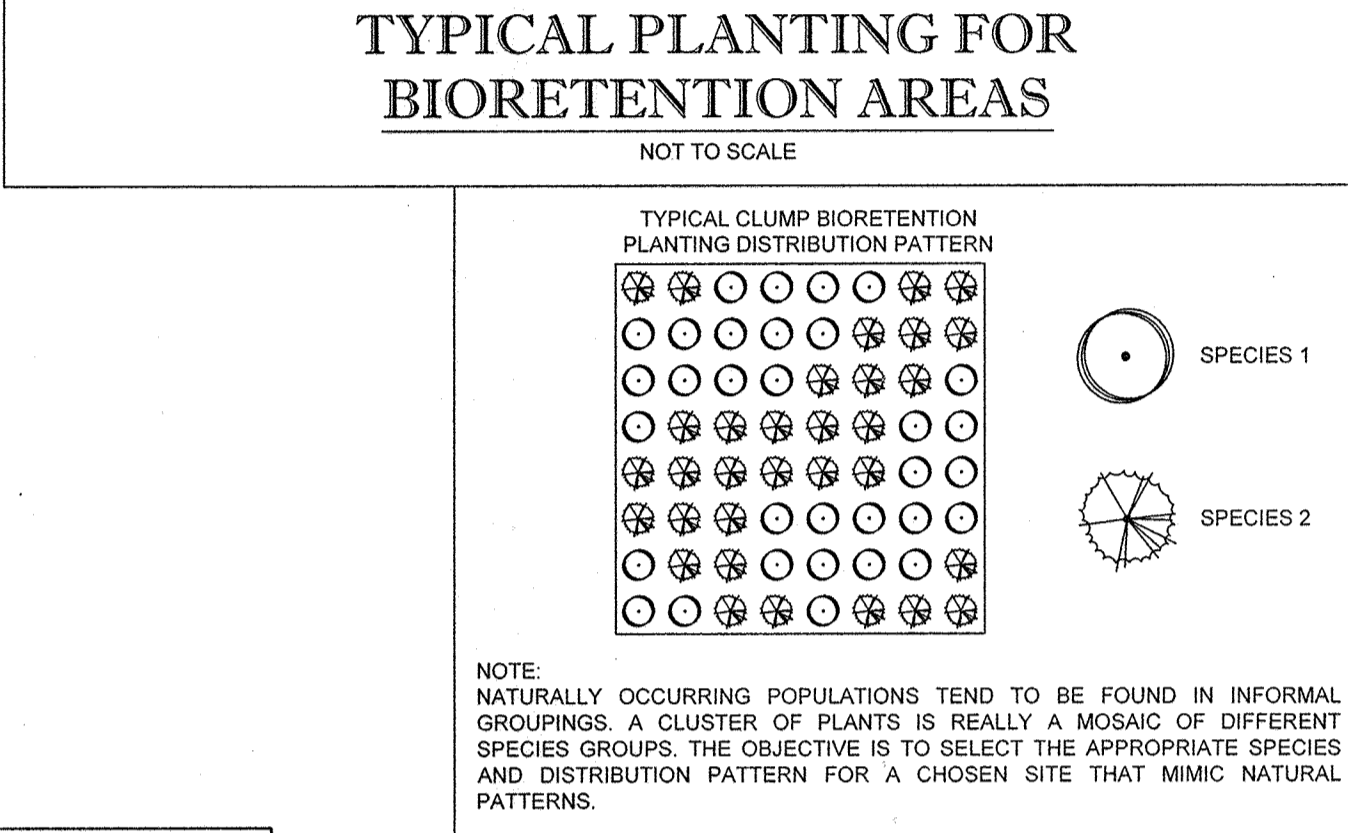
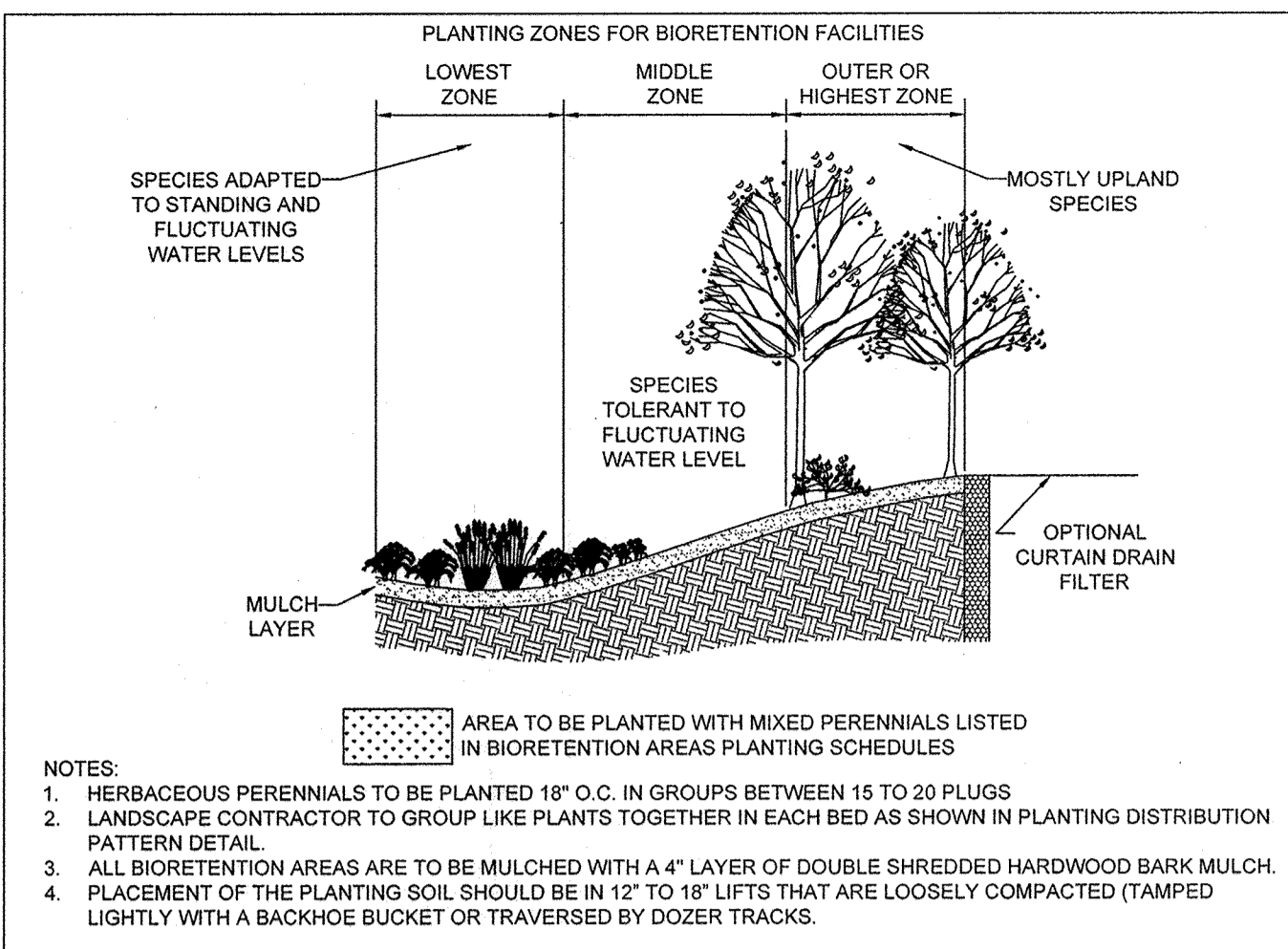


FACILITY NO.	A	B	C	D
15	304.00	304.01	304.02	304.03
18	304.04	304.05	304.06	304.07
22	304.08	304.09	304.10	304.11
34	304.12	304.13	304.14	304.15
35	304.16	304.17	304.18	304.19
36	304.20	304.21	304.22	304.23
37	304.24	304.25	304.26	304.27



AS-BUILT CERTIFICATION
I HEREBY CERTIFY, BY SEAL, THAT THE FACILITIES SHOWN ON THIS PLAN WERE CONSTRUCTED AS SHOWN ON THIS PLAN MEET THE CURRENT APPROVED PLANS AND SPECIFICATIONS.

G. Scott Shanaberger
G. SCOTT SHANABERGER
SHANABERGER & LANE
PROFESSIONAL LAND SURVEYOR #10849
LICENSE EXPIRATION DATE 4/21/2008
AS-BUILT SURVEY DATE 10/15/2010



INFILTRATION AND FILTER SYSTEM CONSTRUCTION SPECIFICATIONS

INFILTRATION AND FILTER SYSTEMS EITHER TAKE ADVANTAGE OF EXISTING PERMEABLE SOILS OR CREATE A PERMEABLE MEDIUM SUCH AS SAND FOR WC1 AND RE V. IN SOME INSTANCES WHERE PERMEABILITY IS GREAT, THESE FACILITIES MAY BE USED FOR OP AS WELL. THE MOST COMMON SYSTEMS INCLUDE INFILTRATION TRENCHES, INFILTRATION BASINS, SAND FILTERS, AND ORGANIC FILTERS.

WHEN PROPERLY PLANTED VEGETATION WILL THRIVE AND ENHANCE THE FUNCTIONING OF THESE SYSTEMS. FOR EXAMPLE, PRE-TREATMENT BUFFERS WILL TRAP SEDIMENTS THAT OFTEN ARE BOUND WITH PHOSPHORUS AND METALS. VEGETATION PLANTED IN THE FACILITY WILL ADD IN NUTRIENT UPTAKE AND WATER STORAGE. ADDITIONALLY, PLANT ROOTS WILL PROVIDE ARTICLES FOR STORMWATER TO PERMEATE SOIL FOR GROUNDWATER RECHARGE. FINALLY, SUCCESSFUL PLANTINGS PROVIDE AESTHETIC VALUE AND WILDLIFE HABITAT MAKING THESE FACILITIES MORE DESIRABLE TO THE PUBLIC.

DESIGN CONSTRAINTS:

- PLANTING BUFFER STRIPS OF AT LEAST 20 FEET WILL CAUSE SEDIMENTS TO SETTLE OUT BEFORE REACHING THE FACILITY, THEREBY REDUCING THE POSSIBILITY OF CLOGGING.
- DETERMINE AREAS THAT WILL BE SATURATED WITH WATER AND WATER TABLE DEPTH SO THAT APPROPRIATE PLANTS MAY BE SELECTED (HYDROLOGY WILL BE SIMILAR TO BIORETENTION FACILITIES. SEE FIGURE A4 AND TABLE A4 FOR PLANTING MATERIAL GUIDANCE).
- PLANTS KNOWN TO SEND DOWN DEEP TAPROOTS SHOULD BE AVOIDED IN SYSTEMS WHERE FILTER FABRIC IS USED AS PART OF FACILITY DESIGN.
- TEST SOIL CONDITIONS TO DETERMINE IF SOIL AMENDMENTS ARE NECESSARY.
- PLANTS SHALL BE LOCATED SO THAT ACCESS IS POSSIBLE FOR STRUCTURE MAINTENANCE.
- STABILIZE HEAVY FLOW AREAS WITH EROSION CONTROL MATS OR SOIL.
- TEMPORARILY DIVERT FLOWS FROM SEEDING AREAS UNTIL VEGETATION IS ESTABLISHED.
- SEE TABLE A5 FOR ADDITIONAL DESIGN CONSIDERATIONS.

BIO-RETENTION

SOIL BED CHARACTERISTICS
THE CHARACTERISTICS OF THE SOIL FOR THE BIORETENTION FACILITY ARE AS IMPORTANT AS THE FACILITY LOCATION, SIZE, AND TREATMENT VOLUME. THE SOIL MUST BE PERMEABLE ENOUGH TO ALLOW RUNOFF TO FILTER THROUGH THE MEDIA, WHILE HAVING CHARACTERISTICS SUITABLE TO PROMOTE AND SUSTAIN A ROBUST VEGETATIVE COVER CROPP. IN ADDITION, MUCH OF THE NUTRIENT POLLUTANT UPTAKE (NITROGEN AND PHOSPHORUS) IS ACCOMPLISHED THROUGH ABSORPTION AND MICROBIAL ACTIVITY WITHIN THE SOIL PROFILE. THEREFORE, SOILS MUST BALANCE THEIR CHEMICAL AND PHYSICAL PROPERTIES TO SUPPORT BIOTIC COMMUNITIES ABOVE AND BELOW GROUND.

THE PLANTING SOIL SHOULD BE A SANDY LOAM, LOAMY SAND, LOAM (USDA), OR A LOAM/SAND MIX (SHOULD CONTAIN A MINIMUM 35 TO 60% SAND, BY VOLUME). THE CLAY CONTENT FOR THESE SOILS SHOULD BE LESS THAN 25% BY VOLUME (ENVIRONMENTAL QUALITY RESOURCES (EQR), 1996; ENGINEERING TECHNOLOGY INC. (ETAB), 1993). SOILS SHOULD FALL WITHIN THE SM, ML, SC CLASSIFICATIONS OR THE UNIFIED SOIL CLASSIFICATION SYSTEM (USCS). A PERMEABILITY OF AT LEAST 1.0 FEET PER DAY (5.7 HR) IS REQUIRED (A CONSERVATIVE VALUE OF 0.5 FEET PER DAY IS USED FOR DESIGN). THE SOIL SHOULD BE FREE OF STONES, STUMPS, ROOTS, OR OTHER WOODY MATERIAL OVER 1" IN DIAMETER. BRUSH OR SEEDS FROM NOXIOUS WEEDS (E.G., JOHNSON GRASS, MILKWEED, MUTESODE, AND CANADA THISTLE OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.05) SHOULD NOT BE PRESENT IN THE SOILS. PLACEMENT OF THE PLANTING SOIL SHOULD BE IN 12 TO 18 LIFTS THAT ARE LOOSELY COMPACTED (TAMPED LIGHTLY WITH A BACKHOE BUCKET OR TRAVERSED BY DOZER TRACKS). THE SPECIFIC CHARACTERISTICS ARE PRESENTED IN TABLE A.3.

TABLE A.3 PLANTING SOIL CHARACTERISTICS

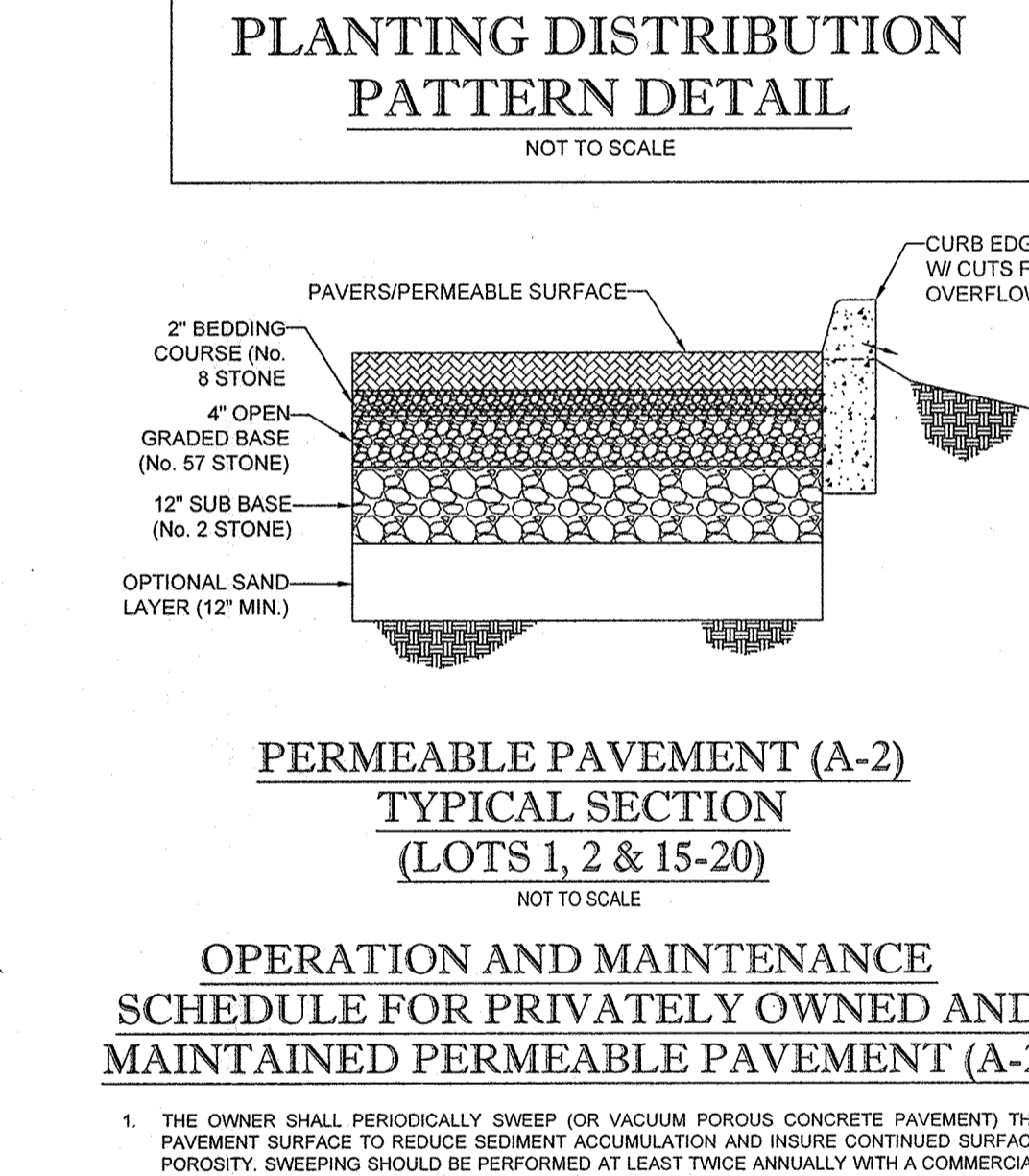
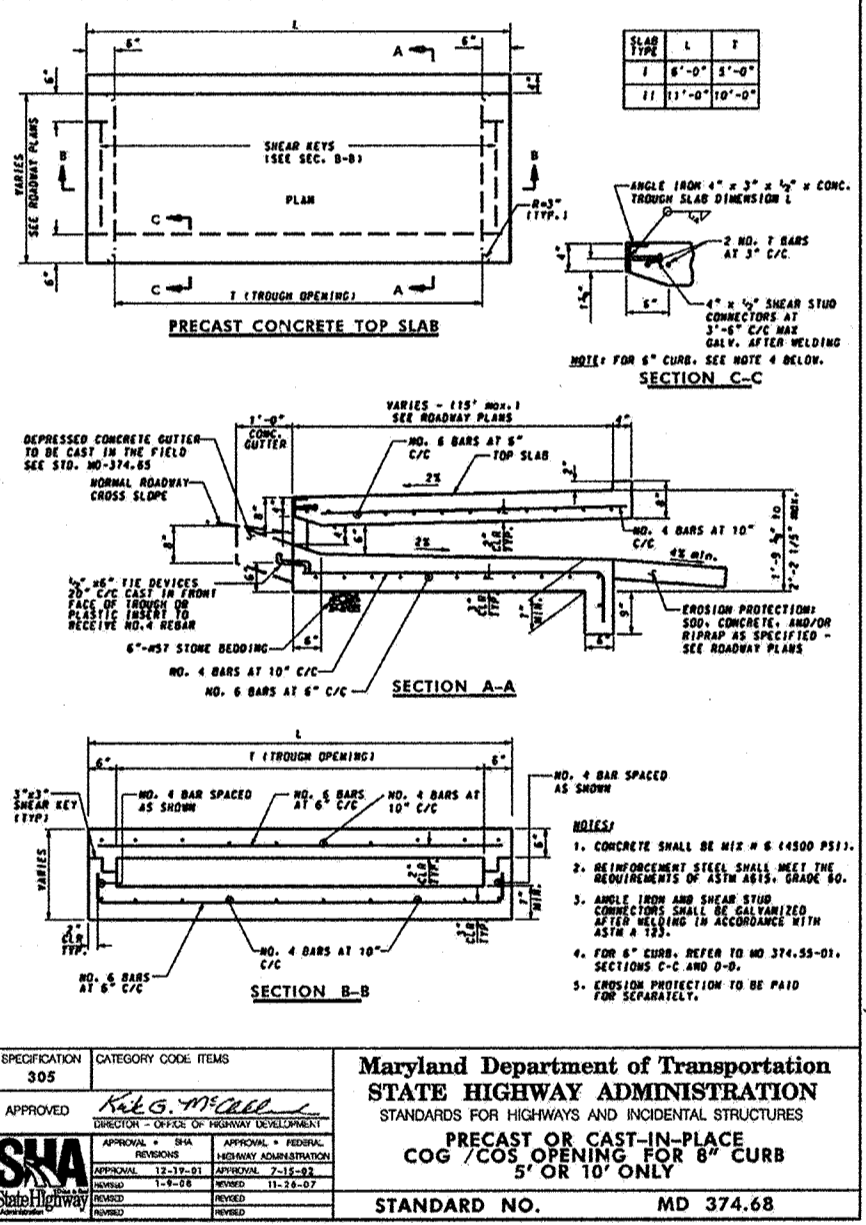
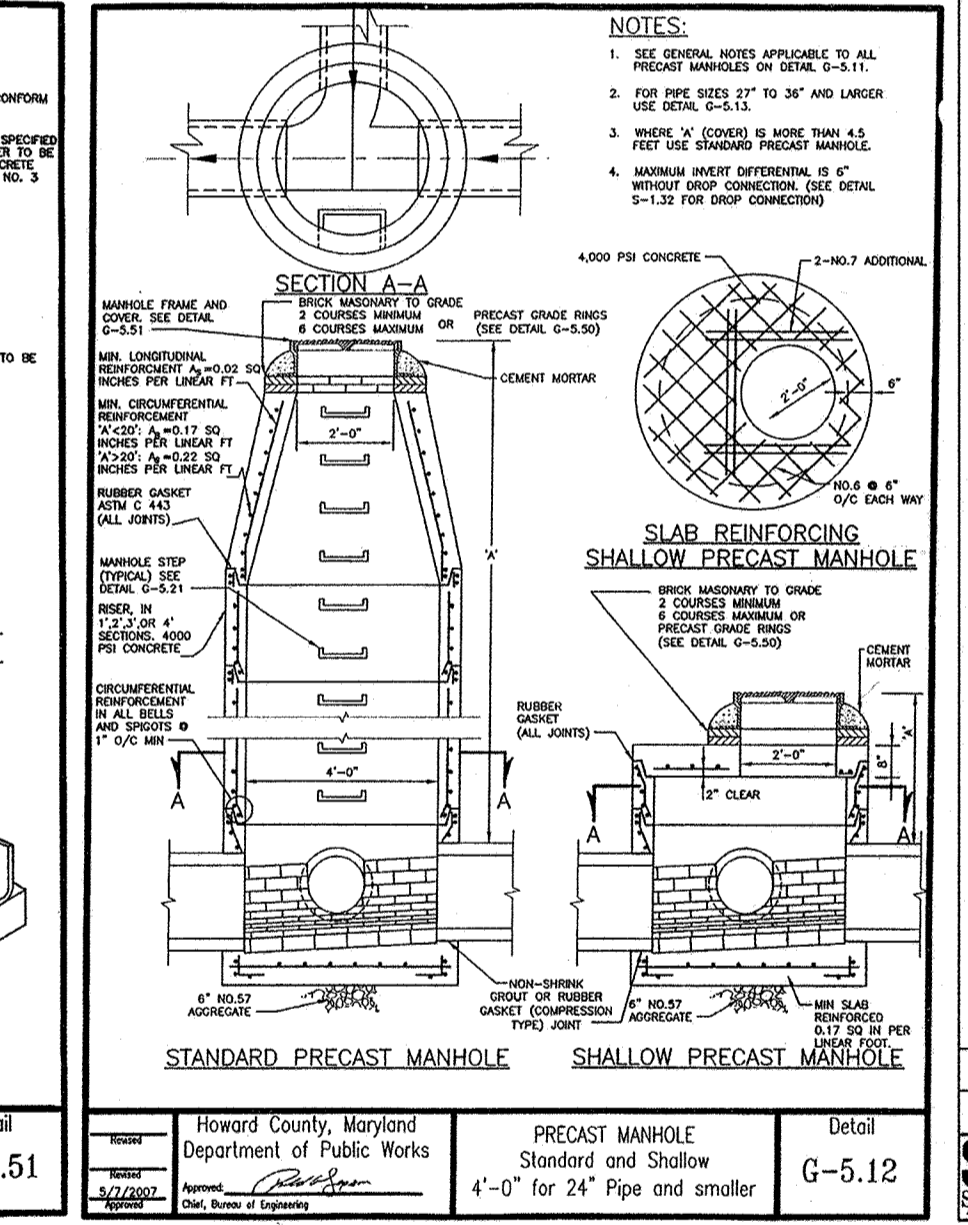
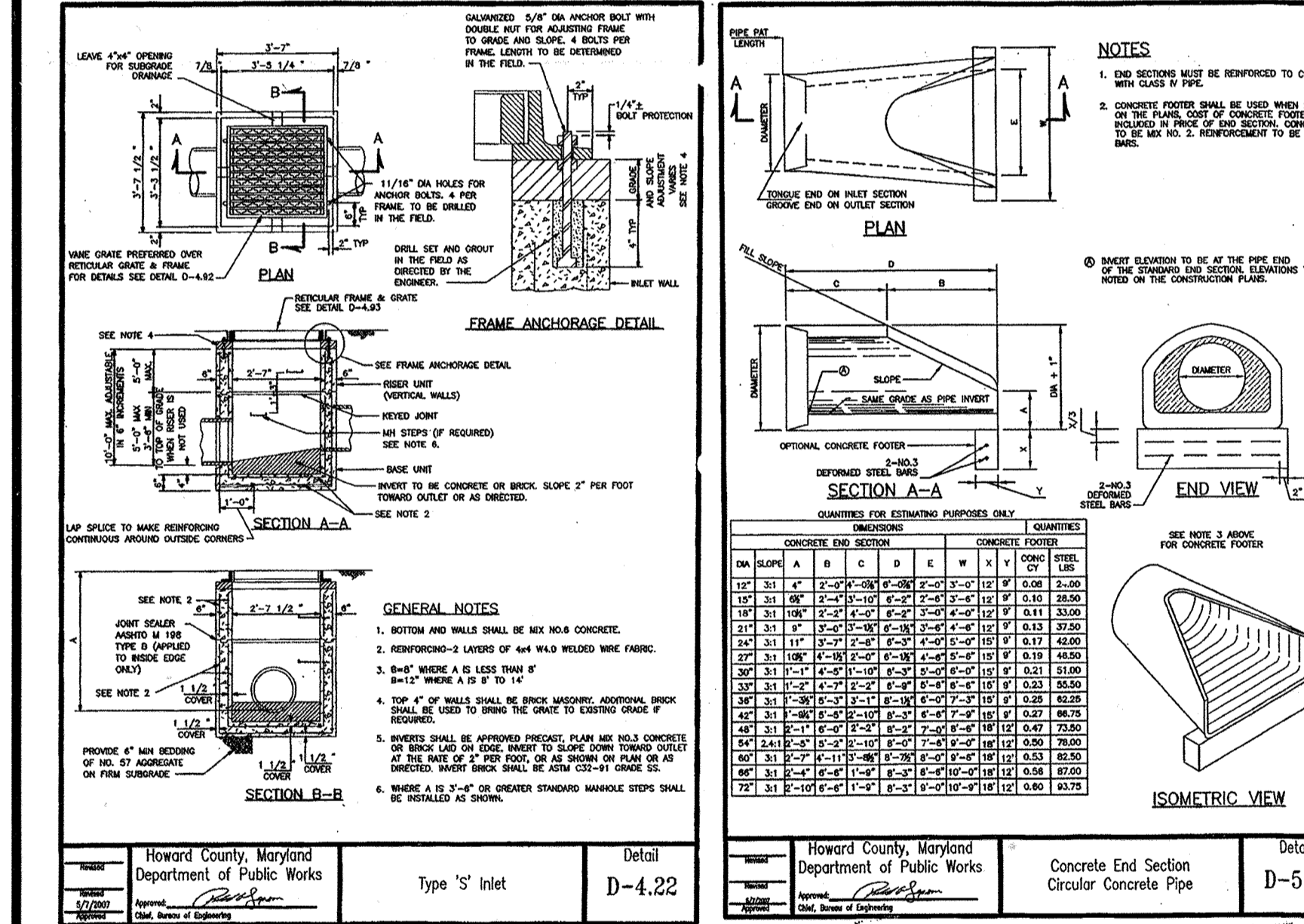
PARAMETER	VALUE
PH RANGE	5.2 TO 7.0
ORGANIC MATTER	1.5 TO 4.0% (BY WEIGHT)
MAGNESIUM	35 LBS. PER ACRE MINIMUM
PHOSPHORUS (PHOSPHATE - P205)	75 LBS. PER ACRE MINIMUM
POTASSIUM (K2OASH - 1(K2O))	85 LBS. PER ACRE MINIMUM
SOLUBLE SALTS	500 PPM
CLAY	10 TO 25%
SILT	30 TO 55%
SAND	35 TO 60%

MULCH LAYER
THE MULCH LAYER PLAYS AN IMPORTANT ROLE IN THE PERFORMANCE OF THE BIORETENTION SYSTEM. THE MULCH LAYER HELPS MAINTAIN SOIL MOISTURE AND AVOIDS SURFACE SEALING, WHICH REDUCES PERMEABILITY. MULCH HELPS PREVENT EROSION, AND PROVIDES A MICROENVIRONMENT SUITABLE FOR SOIL BIOTA AT THE MULCH/SOIL INTERFACE. IT ALSO SERVES AS A PRETREATMENT LAYER, TRAPPING THE FINER SEDIMENTS, WHICH REMAIN SUSPENDED AFTER THE PRIMARY PRETREATMENT.

THE MULCH LAYER SHOULD BE STANDARD LANDSCAPE STYLE, SINGLE OR DOUBLE SHREDED HARDWOOD MULCH OR CHIPS. THE MULCH LAYER SHOULD BE WELL AGED (STOCKPILED OR STORED FOR AT LEAST 12 MONTHS), UNIFORM IN COLOR, AND FREE OF OTHER MATERIALS, SUCH AS WEED SEEDS, SOIL, ROOTS, ETC. THE MULCH SHOULD BE APPLIED TO A MAXIMUM DEPTH OF THREE INCHES. GRASS CLIPPINGS SHOULD NOT BE USED AS A MULCH MATERIAL.

PLANTING GUIDANCE
PLANT MATERIAL SELECTION SHOULD BE BASED ON THE GOAL OF SIMULATING A TERRESTRIAL FORESTED COMMUNITY OF NATIVE SPECIES. BIORETENTION SIMULATES AN UPLAND-SPECIES ECOSYSTEM. THE COMMUNITY SHOULD BE DOMINATED BY TREES, BUT HAVE A DISTINCT COMMUNITY OF UNDERSTORY TREES, SHRUBS AND HERBACEOUS MATERIALS. BY CREATING A DIVERSE, DENSE PLANT COVER, A BIORETENTION FACILITY WILL BE ABLE TO TREAT STORMWATER RUNOFF AND WITHSTAND URBAN STRESS FROM INSECTS, DISEASE, DROUGHT, TEMPERATURE, WIND AND EXPOSURE.

THE PROPER SELECTION AND INSTALLATION OF PLANT MATERIALS IS KEY TO A SUCCESSFUL SYSTEM. THERE ARE ESSENTIALLY THREE ZONES WITHIN A BIORETENTION FACILITY (FIGURE A3). THE LOWEST ELEVATION SUPPORTS PLANT SPECIES ADAPTED TO STANDING AND FLUCTUATING WATER LEVELS. THE MIDDLE ELEVATION SUPPORTS PLANTS THAT LIKE DRYER CONDITIONS BUT CAN STILL TOLERATE OCCASIONAL INUNDATION BY WATER. THE OUTER EDGE IS THE HIGHEST ELEVATION AND GENERALLY SUPPORTS PLANTS ADAPTED TO DRYER CONDITIONS. A SAMPLE OF APPROPRIATE PLANT MATERIALS FOR BIORETENTION FACILITIES ARE INCLUDED IN TABLE A4. THE LAYOUT OF PLANT MATERIAL SHOULD BE FLEXIBLE, BUT SHOULD FOLLOW THE GENERAL PRINCIPLES DESCRIBED IN TABLE A5. THE OBJECTIVE IS TO HAVE A SYSTEM, WHICH RESEMBLES A RANDOM, AND NATURAL PLANT LAYOUT, WHILE MAINTAINING OPTIMAL CONDITIONS FOR PLANT ESTABLISHMENT AND GROWTH. FOR A MORE EXTENSIVE BIORETENTION PLAN, CONSULT ETAB, 1993 OR CLAYTON AND SCHUELER, 1997.



PLANT MATERIAL MICRO-BIORETENTION FACILITIES

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 36	175	12"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	11	PLUG
			IRIS VERSICOLOR	BLUE FLAG	11	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	11	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	22	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	22	PLUG
# 37	100	7"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	12	PLUG
			IRIS VERSICOLOR	BLUE FLAG	12	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	12	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	32	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	32	PLUG

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT
CHIEF, DEVELOPMENT ENGINEERING DIVISION

PLANT MATERIAL MICRO-BIORETENTION FACILITIES

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 15	125	12"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	17	PLUG
			IRIS VERSICOLOR	BLUE FLAG	17	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	17	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	37	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	37	PLUG
# 18	750	12"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	100	PLUG
			IRIS VERSICOLOR	BLUE FLAG	100	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	100	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	225	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	225	PLUG
# 22	242	12"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	34	PLUG
			IRIS VERSICOLOR	BLUE FLAG	34	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	34	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	70	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	70	PLUG

PLANT MATERIAL MICRO-BIORETENTION FACILITIES

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 34	585	12"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	98	PLUG
			IRIS VERSICOLOR	BLUE FLAG	98	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	98	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	146	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	146	PLUG
# 35	510	12"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	72	PLUG
			IRIS VERSICOLOR	BLUE FLAG	72	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	72	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	147	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	147	PLUG

OPERATION AND MAINTENANCE SCHEDULE FOR MICRO-BIORETENTION AREAS (M-6)
(FACILITY NOS. 15, 18, 22, 34, 35 & 37)

- THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER, AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE SHALL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II, TABLE A.1 & A.2.
- THE OWNER SHALL PERFORM A PLANT IN THE SPRING AND IN THE FALL EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT. REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT MATERIAL. TREAT DISEASED TREES AND SHRUBS AND REPLACE DEFICIENT STAKES AND WIRES.
- THE OWNER SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.
- THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

OWNER: CM HIGDON LC
1355 BEVERLY ROAD, SUITE 330
MCLEAN, VA 22101
CONTACT: DAVID KAUFMAN
PHONE: (703) 734-9855

DEVELOPER: ELMS AT FIELDS POINT II, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLCOTT CITY, MD 21043
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

SUBDIVISION NAME: RESERVOIR ESTATES
SECTION/AREA: NA
DEED #: 15161-365

PREVIOUS FILE NO.: WP-13-048, ECP-13-008,
BA-02-026 AND ECP-12-008,
24-4787-D

TAX MAP: 46 GRID: 11 ZONED: R-20
PARCEL: 56
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, 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. 40888, EXPIRATION DATE: 7/31/2015

BOHLER ENGINEERING
CORPORATE OFFICE: WASHINGTON, DC
SURVEYORS: WASHINGTON, DC
PROJECT MANAGERS: WASHINGTON, DC
ENVIRONMENTAL CONSULTANTS: WASHINGTON, DC
LANDSCAPE ARCHITECTS: WASHINGTON, DC
PLANNING: WASHINGTON, DC
CIVIL & CONSULTING ENGINEERS: WASHINGTON, DC

REVISIONS

REV	DATE	COMMENT	BY
1	9/9/14	REVISED ROAD PROFILE	RLB

PROJECT NO.: MD12206
DRAWN BY: BRR
CHECKED BY: 6/2/14
SCALE: AS SHOWN
CADD: SD2

REVISED FINAL ROAD CONSTRUCTION PLANS FOR RESERVOIR ESTATES
BUILDABLE LOTS 1-20 AND OPEN SPACE LOTS 21-26
LOCATION OF SITE

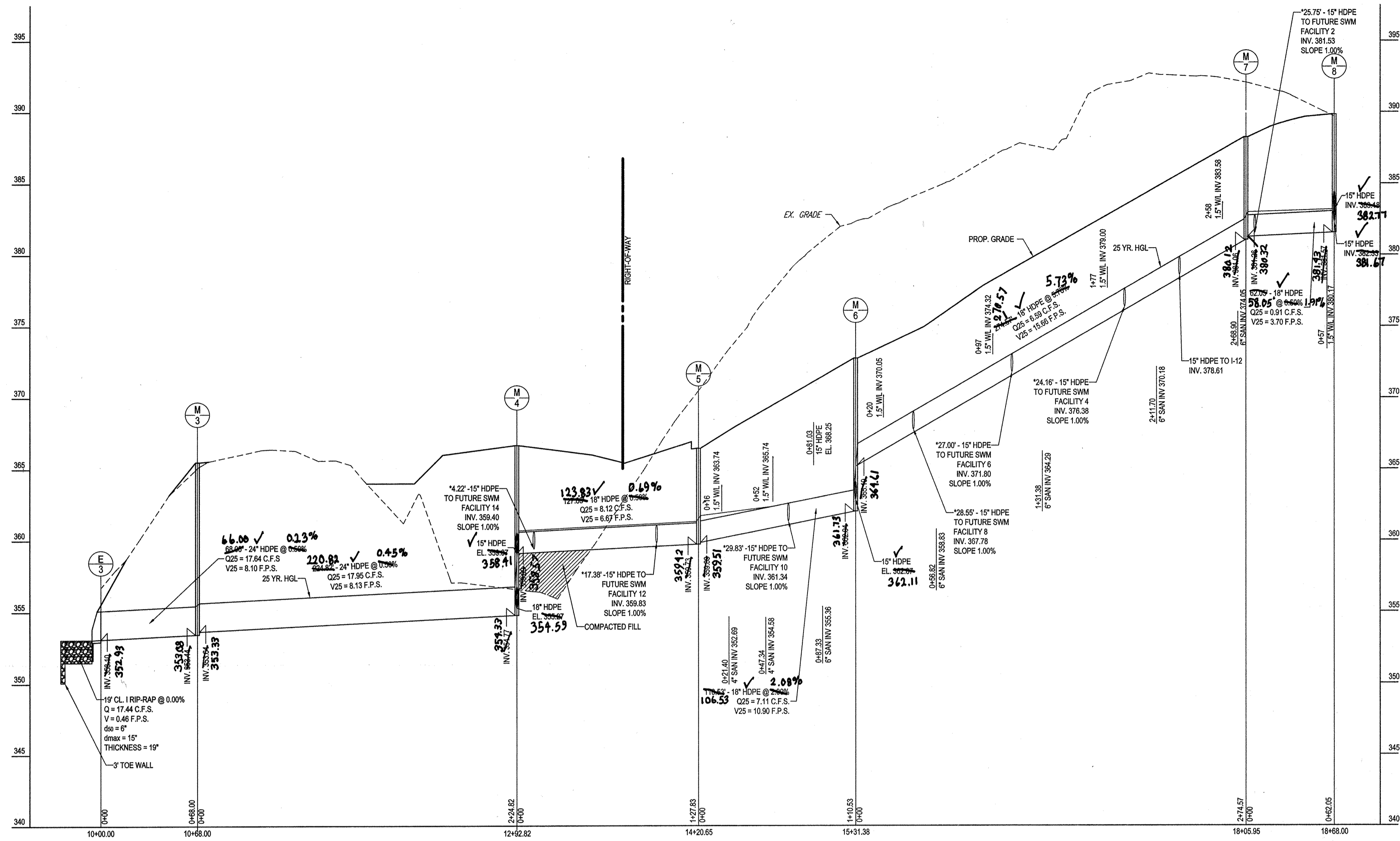
10883 SCAGSVILLE ROAD
LAUREL, MD 20723
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21284
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

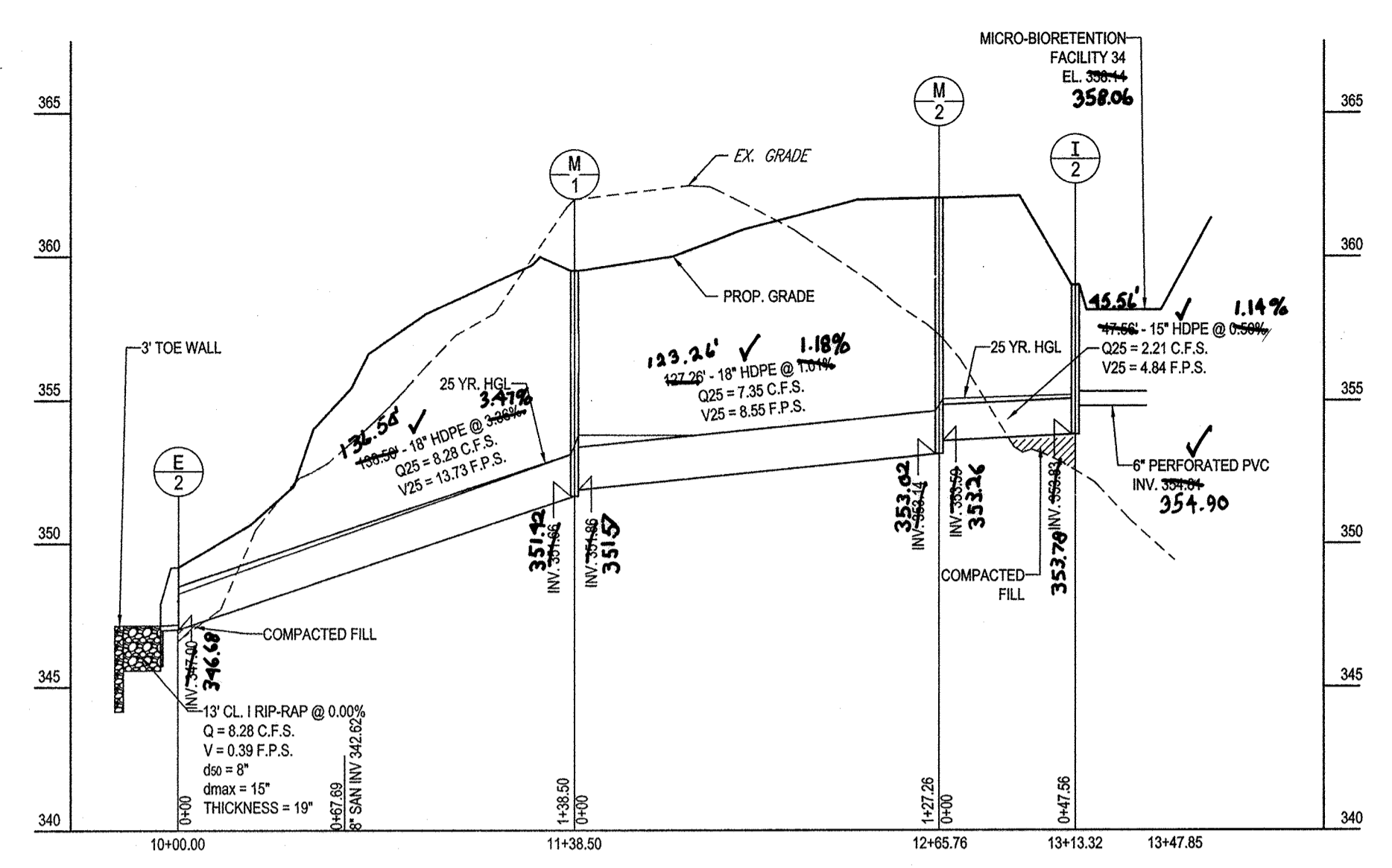
B.R. ROWE
PROFESSIONAL ENGINEER

STORMWATER MANAGEMENT AND STORM DRAIN DETAILS

SHEET NUMBER: 8 OF 19

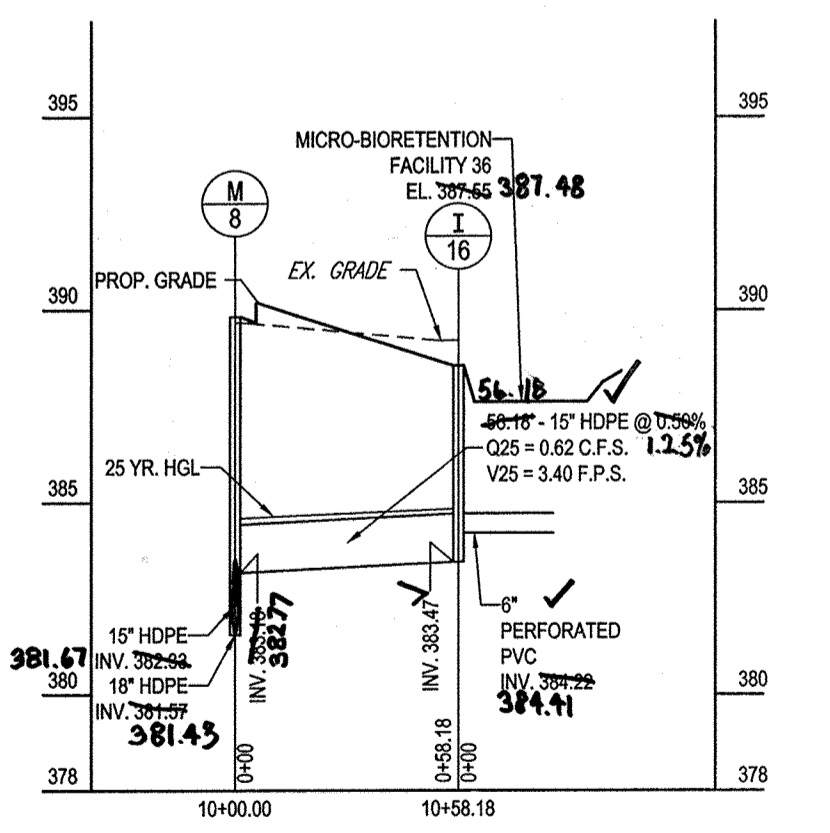


PROPOSED STORM DRAIN PROFILE
SCALE: 1"=50' HORIZONTAL
1"=5' VERTICAL

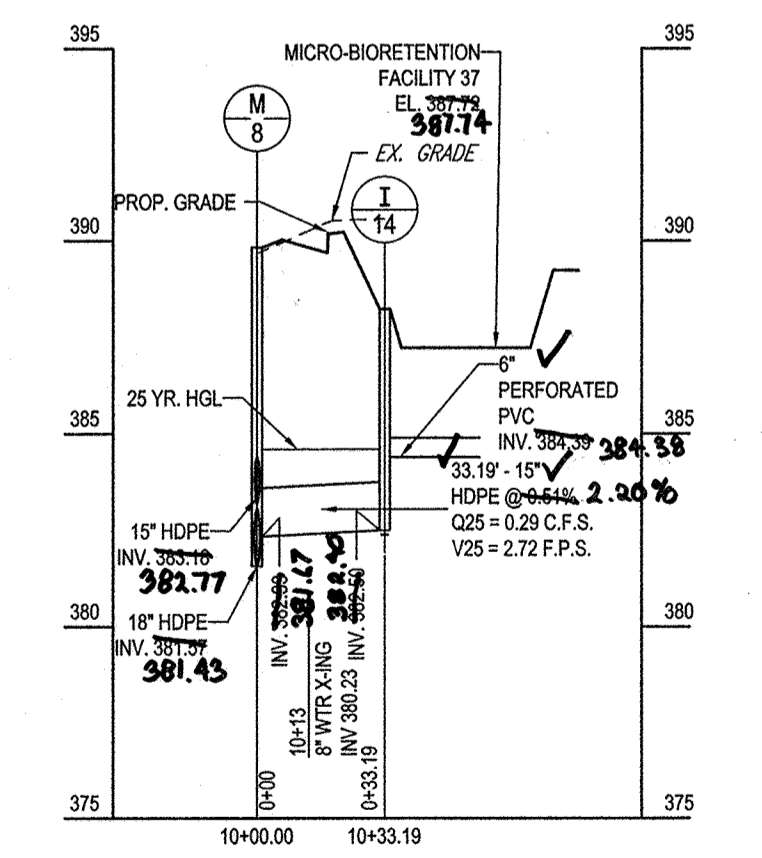


PROPOSED STORM DRAIN PROFILE
SCALE: 1"=50' HORIZONTAL
1"=5' VERTICAL

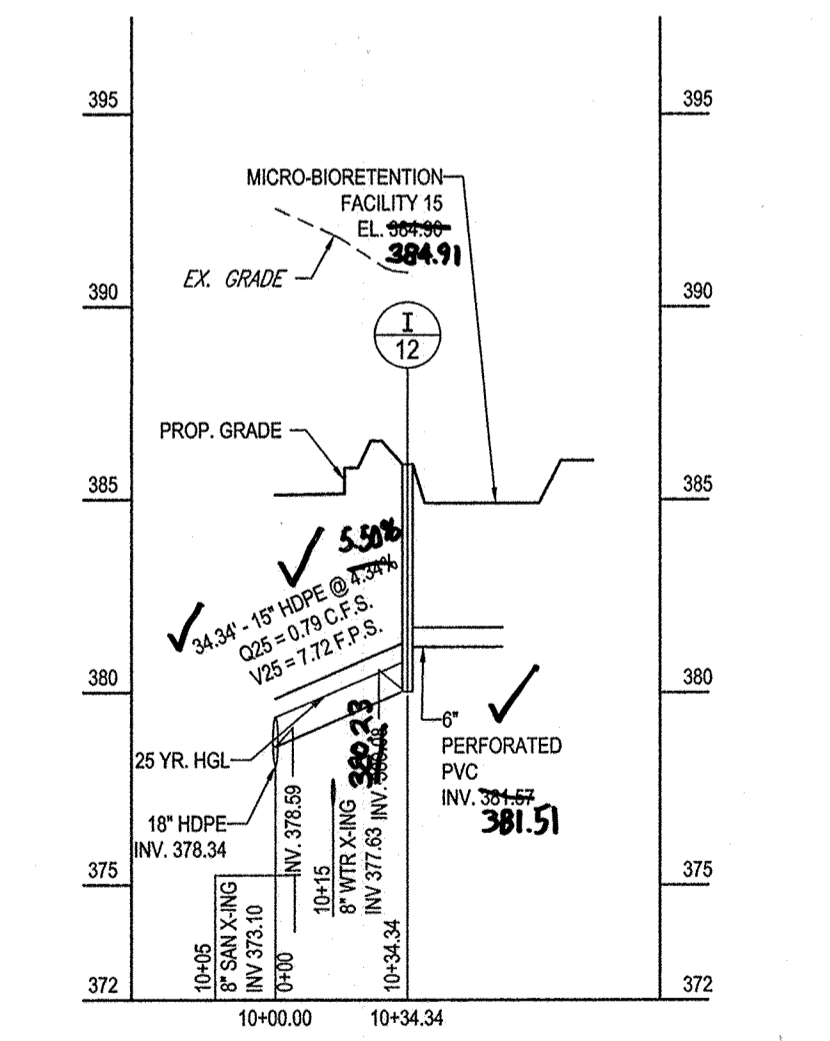
*15" HDPE STORM DRAIN LEADS TO FUTURE SWM FACILITIES SHOULD BE BUILT AT THIS TIME TO AVOID TRENCHING IN THE ROAD AT THE SDP STAGE. LEADS SHOULD BE SLOPED AT 1.00% AND STAKES SHOULD BE PLACED AT THE END OF LEADS FOR FUTURE LOCATION.



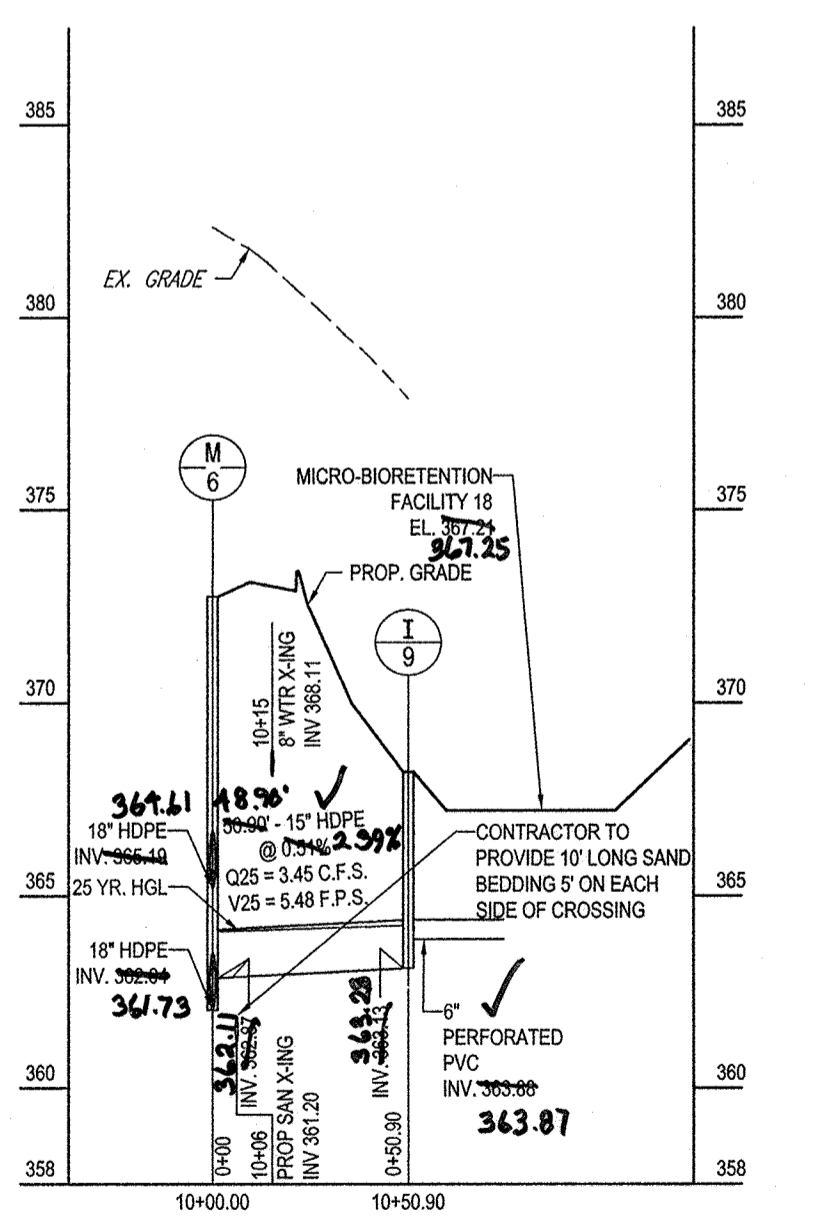
PROPOSED STORM DRAIN PROFILE
SCALE: 1"=50' HORIZONTAL
1"=5' VERTICAL



PROPOSED STORM DRAIN PROFILE
SCALE: 1"=50' HORIZONTAL
1"=5' VERTICAL



PROPOSED STORM DRAIN PROFILE
SCALE: 1"=50' HORIZONTAL
1"=5' VERTICAL



PROPOSED STORM DRAIN PROFILE
SCALE: 1"=50' HORIZONTAL
1"=5' VERTICAL

AS-BUILT CERTIFICATION
I HEREBY CERTIFY, BY SEAL, THAT THE FACILITIES SHOWN ON THIS PLAN WERE CONSTRUCTED AS SHOWN ON THIS PLAN MEET THE CURRENT APPROVED PLANS AND SPECIFICATIONS.
[Signature]
G. SCOTT SHANBERG
SHANBERG & LANE
PROFESSIONAL LAND SURVEYOR #10819
LICENSE EXPIRATION DATE 4/31/2020
AS-BUILT SURVEY DATE 10/13/2018

APPROVED: DEPARTMENT OF PUBLIC WORKS
[Signature] 7/23/2014
CHIEF, BUREAU OF HIGHWAYS DATE
APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 9-26-14
CHIEF, DIVISION OF LAND DEVELOPMENT DATE
[Signature] 9-25-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

GENERAL NOTE:
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT. WORK SCOPE FROM THE INTENTION OF CONSTRUCTION SHOULD BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE PROJECT ENGINEER OF RECORD IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY THE PROJECT ENGINEER SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND ALL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

OWNER: CM HIGDON LC 1355 BEVERLY ROAD, SUITE 330 MOLEAN, VA 22101 CONTACT: DAVID KAUFMAN PHONE: (703) 734-9855	TAX MAP: 46 GRID: 11 ZONED: R-20 PARCEL: 56 6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND
DEVELOPER: ELMS AT FELS POINT II, L.C. 5074 DORSEY HALL DRIVE, SUITE 205 ELLCOTT CITY, MD 21043 CONTACT: JASON VAN KIRK PHONE: (410) 720-3021	PROFESSIONAL CERTIFICATION I, BRANDON R. ROWE, 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. 40808, EXPIRATION DATE: 7/31/2015
SUBDIVISION NAME: RESERVOIR ESTATES SECTION/AREA: N/A DEED # 15161, 365	PREVIOUS FILE NO.: WP-13-045, EOP-13-038, 24-4787-D

BOHLER ENGINEERING
CORPORATE OFFICE:
WARREN, NJ
SURVEYORS
PROJECT MANAGERS
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS
OFFICES:
BOWNE, MD
STERLING, VA
ROCKVILLE, VA
CENTREVILLE, VA
PHILADELPHIA, PA
TAMPA, FL

REVISIONS

REV	DATE	COMMENT	BY
1	9/9/14	REVISED ROAD PROFILE	RLB

THE FOLLOWING STATES REQUIRE NOTIFICATION BY EXAMINERS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE STATE IN VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE CALL: 411
(NW) 1-800-345-4848 (PA) 1-800-342-1778 (DC) 1-800-257-7777 (VA) 1-800-525-7071 (MD) 1-800-257-7777 (DE) 1-800-257-8559

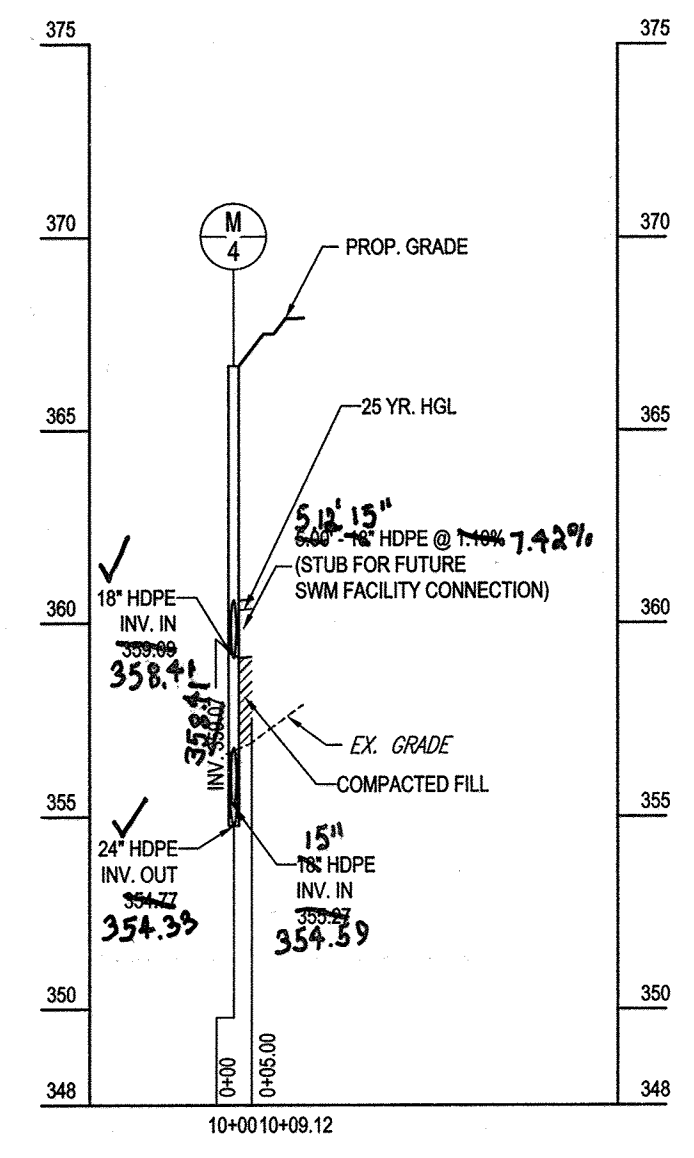
PROJECT No.:	MD122066
DRAWN BY:	RLB
CHECKED BY:	BRR
DATE:	6/20/14
SCALE:	1"=50'
CAD ID.:	SP0

REVISED FINAL ROAD CONSTRUCTION PLANS FOR RESERVOIR ESTATES BUILDABLE LOTS 1-20 AND OPEN SPACE LOTS 21-26 LOCATION OF SITE
10883 SCAGSVILLE ROAD
LAUREL, MD. 20723
HOWARD COUNTY

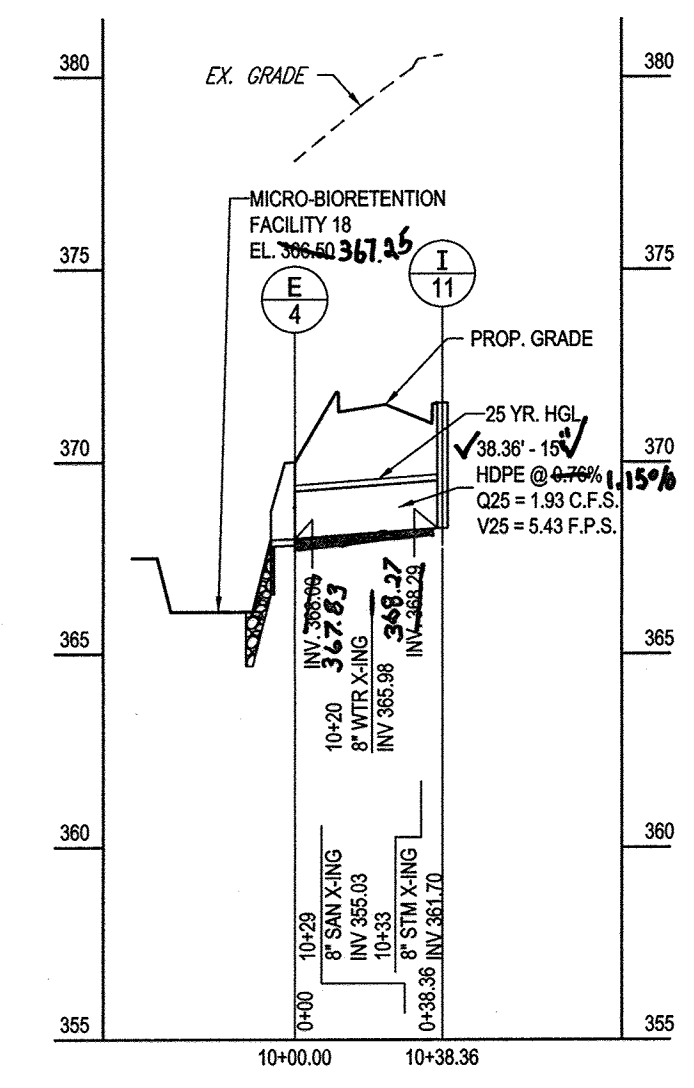
BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21284
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

B.R. ROWE
PROFESSIONAL ENGINEER
[Seal]

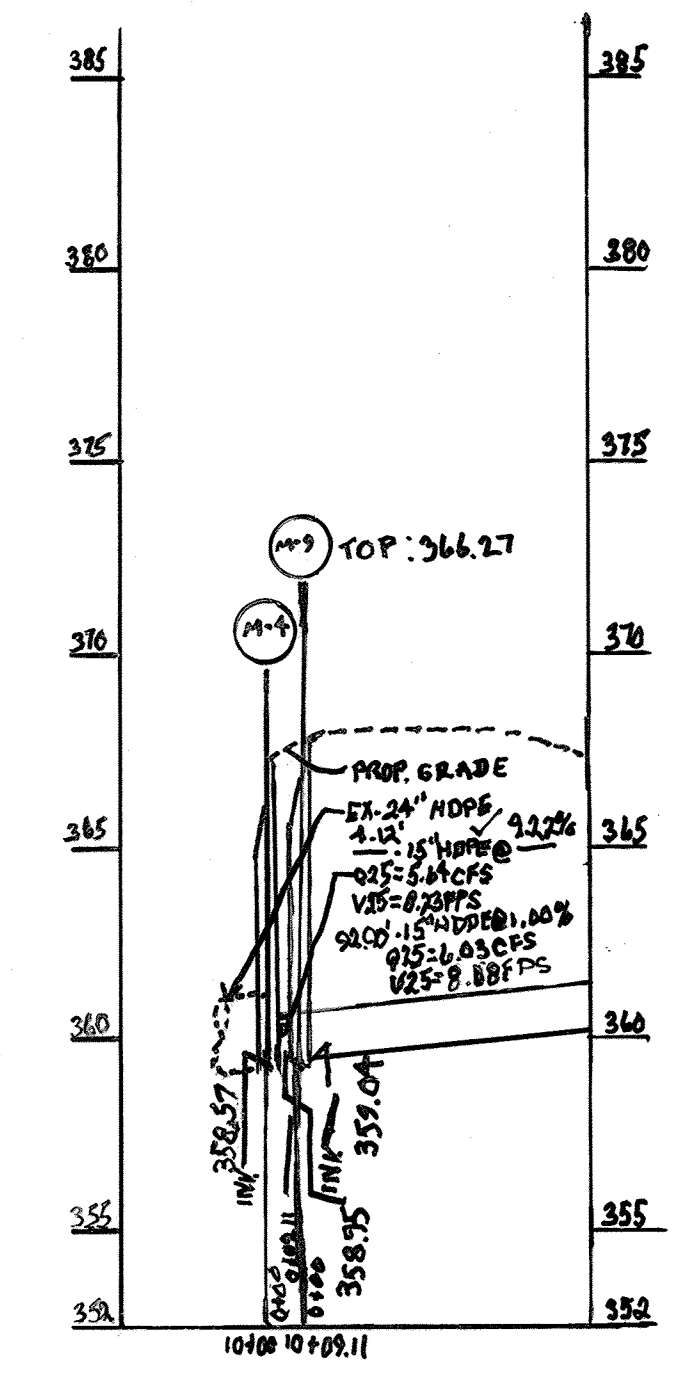
SHEET TITLE:
STORM DRAIN PROFILES
SHEET NUMBER:
9
OF 19



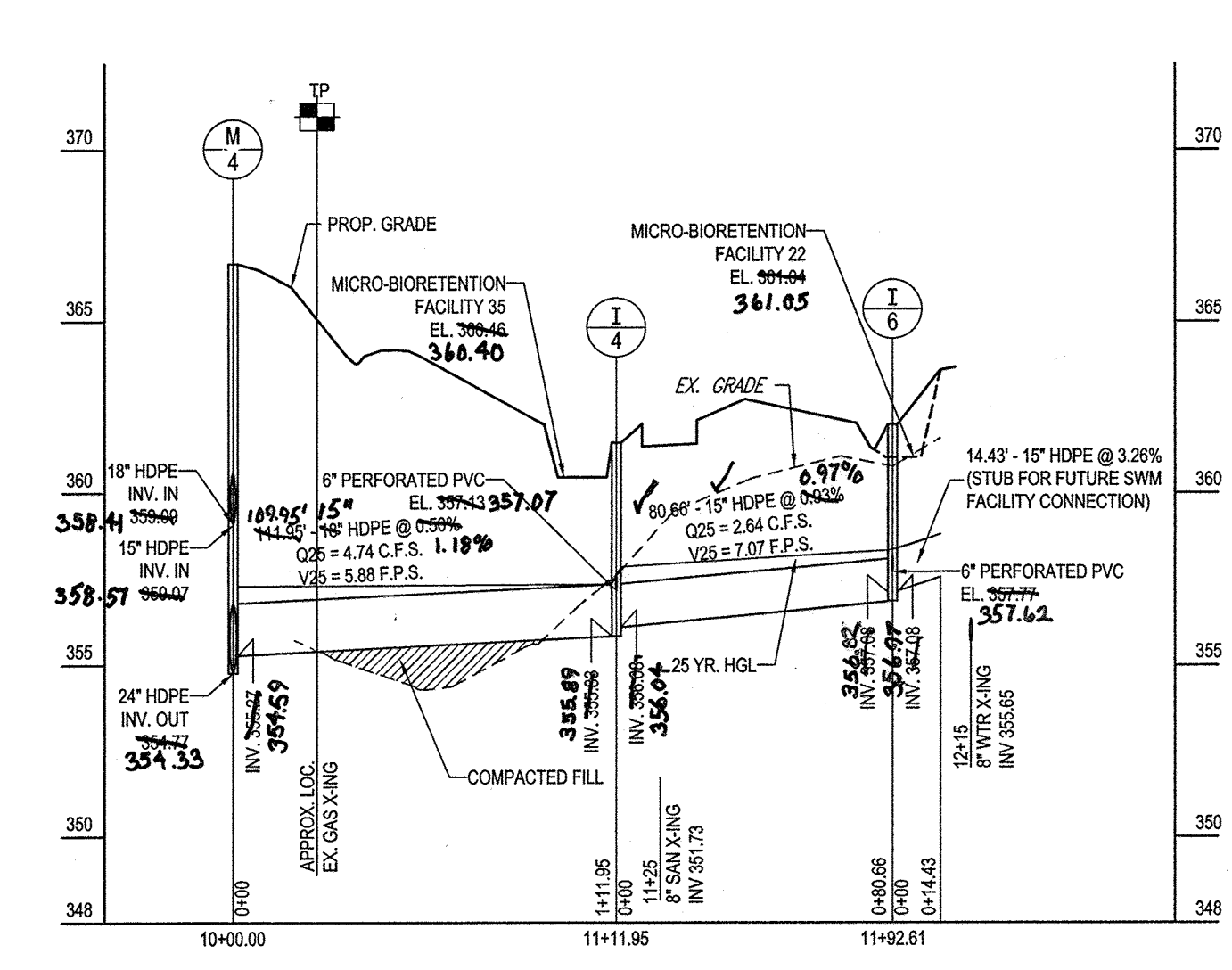
PROPOSED STORM DRAIN PROFILE
SCALE: 1"=50' HORIZONTAL
1"=5' VERTICAL



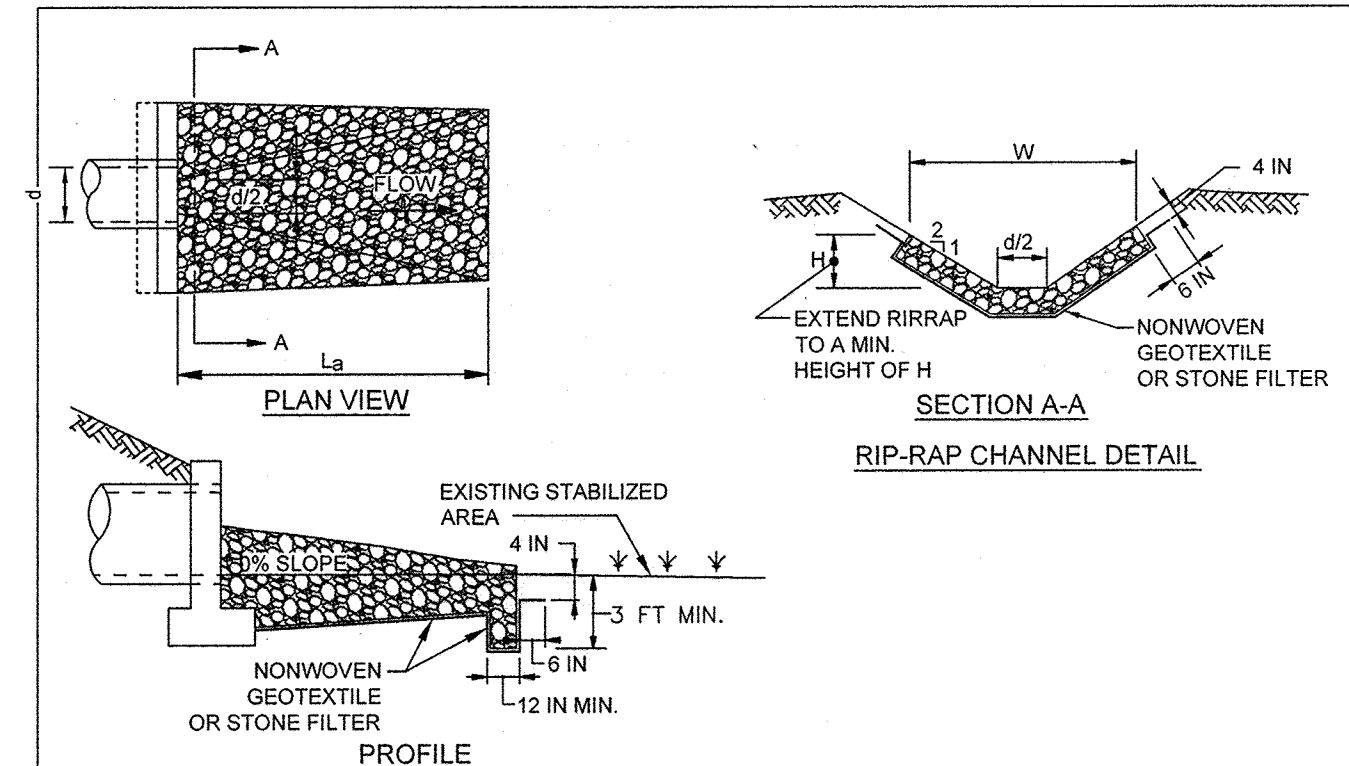
PROPOSED STORM DRAIN PROFILE
SCALE: 1"=50' HORIZONTAL
1"=5' VERTICAL



PROPOSED STORM DRAIN PROFILE
SCALE: 1"=50' HORIZONTAL
1"=5' VERTICAL



PROPOSED STORM DRAIN PROFILE
SCALE: 1"=50' HORIZONTAL
1"=5' VERTICAL



CONSTRUCTION SPECIFICATIONS

- USE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
- PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (1/4 TO 1 1/2 INCH MINIMUM STONE FOR 6 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
- EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPRAP.
- CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENEOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGES TO THE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
- WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.
- CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
- MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND RIPRAP DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

RIP-RAP CHANNEL DESIGN DATA

STRUCTURE	W	n	V25 (F.P.S.)	Q25 (C.F.S.)	RR-PRAP SIZE	BLANKET THICKNESS	PIPE SIZE	Ls
E-2	14.25	0.04	0.39	8.28	6"	15"	18"	13'
E-3	21.00	0.04	0.46	17.64	6"	15"	24"	19'

STORM STRUCTURE SCHEDULE

NAME	RIM ELEV. (FT.)	INVERTS	LOCATION	TYPE AND WIDTH	REMARKS
E-2	N/A	341.88 (15")	N 536520.28, E 134520.60	CONCRETE END SECTION	HO. CO. STD. DETAIL D-5.51
E-3	N/A	344.48 (24")	N 536520.28, E 134520.60	CONCRETE END SECTION	HO. CO. STD. DETAIL D-5.51
E-4	N/A	347.08 (15")	N 537050.98, E 134520.60	CONCRETE END SECTION	HO. CO. STD. DETAIL D-5.51
I-2	359.08	343.28 (15")	N 536520.28, E 134520.60	TYPE 'S' INLET	HO. CO. STD. DETAIL D-4.22
I-3	350.08	344.48 (15")	N 536520.28, E 134520.60	10' FLOW THRU (SLAB TYPE)	MD-374.68
I-4	341.88	341.88 (15")	N 536520.28, E 134520.60	TYPE 'S' INLET	HO. CO. STD. DETAIL D-4.22
I-5	347.08	347.08 (15")	N 537050.98, E 134520.60	10' FLOW THRU (SLAB TYPE)	MD-374.68
I-6	341.88	341.88 (15")	N 536520.28, E 134520.60	TYPE 'S' INLET	HO. CO. STD. DETAIL D-4.22
I-7	347.08	347.08 (15")	N 537050.98, E 134520.60	5' FLOW THRU (SLAB TYPE)	MD-374.68
I-8	341.88	341.88 (15")	N 536520.28, E 134520.60	TYPE 'S' INLET	HO. CO. STD. DETAIL D-4.22
I-9	347.08	347.08 (15")	N 537050.98, E 134520.60	10' FLOW THRU (SLAB TYPE)	MD-374.68
I-10	341.88	341.88 (15")	N 536520.28, E 134520.60	TYPE 'S' INLET	HO. CO. STD. DETAIL D-4.22
I-11	347.08	347.08 (15")	N 537050.98, E 134520.60	5' FLOW THRU (SLAB TYPE)	MD-374.68
I-12	341.88	341.88 (15")	N 536520.28, E 134520.60	TYPE 'S' INLET	HO. CO. STD. DETAIL D-4.22
I-13	347.08	347.08 (15")	N 537050.98, E 134520.60	5' FLOW THRU (SLAB TYPE)	MD-374.68
I-14	341.88	341.88 (15")	N 536520.28, E 134520.60	TYPE 'S' INLET	HO. CO. STD. DETAIL D-4.22
I-15	347.08	347.08 (15")	N 537050.98, E 134520.60	5' FLOW THRU (SLAB TYPE)	MD-374.68
I-16	341.88	341.88 (15")	N 536520.28, E 134520.60	TYPE 'S' INLET	HO. CO. STD. DETAIL D-4.22
I-17	N/A	N/A	N/A	N/A	N/A
M-1	359.47	351.42 (18") OUT	43.54 71.15	MANHOLE STANDARD	HO. CO. STD. DETAIL G-5.12
M-2	342.10	342.10 (18") OUT	0.04 0.04	MANHOLE STANDARD	HO. CO. STD. DETAIL G-5.12
M-3	344.01	344.01 (24") IN	20.19 18.59	MANHOLE STANDARD	HO. CO. STD. DETAIL G-5.12
M-4	344.27	344.27 (18") OUT	10.54 10.54	MANHOLE STANDARD	HO. CO. STD. DETAIL G-5.12
M-5	346.76	346.76 (18") OUT	0.04 0.04	MANHOLE STANDARD	HO. CO. STD. DETAIL G-5.12
M-6	370.13	370.13 (18") OUT	0.04 0.04	MANHOLE STANDARD	HO. CO. STD. DETAIL G-5.12
M-7	368.13	368.13 (18") OUT	0.04 0.04	MANHOLE STANDARD	HO. CO. STD. DETAIL G-5.12
M-8	367.87	367.87 (18") OUT	0.04 0.04	MANHOLE STANDARD	HO. CO. STD. DETAIL G-5.12

** TOP OF CURB ELEVATION AT CENTER OF COGOCS OPENING
NOTE: SEE SHEET #6 FOR COGOCS OPENING DETAIL FOR SLAB TYPES

NO.	DATE	BY	REVISION
M-9	26.6.24	359.04 15" OUT	MANHOLE STANDARD HO. CO. STD. DETAIL G-5.12

PIPE SCHEDULE

SIZE	CLASS	LENGTH
24"	HOPE	292.82
18"	HOPE	895.64
15"	HOPE	330.58
6"	PERF. PVC	826.44

*PIPE SCHEDULE FOR INFORMATIONAL PURPOSES ONLY. LENGTHS OF PIPE NOT TO BE USED FOR THE PROPOSED BID.

APPROVED, DEPARTMENT OF PUBLIC WORKS
DATE: 9/23/2014
CHIEF, BUREAU OF HIGHWAYS
APPROVED, DEPARTMENT OF PLANNING AND ZONING
DATE: 9-26-14
CHIEF, DIVISION OF LAND DEVELOPMENT
APPROVED, DEPARTMENT OF ENGINEERING DIVISION
DATE: 9-25-14
CHIEF, DEPARTMENT OF ENGINEERING DIVISION

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT. WORK SHOULD BE STOPPED IMMEDIATELY IF THE CONTRACTOR FINDS A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR UNRESOLVABLE CONFLICTS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE PROJECT ENGINEER OF RECORD IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY THE PROJECT ENGINEER SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND ALL APPLICABLE REGULATIONS AND CODES.

AS-BUILT CERTIFICATION
I HEREBY CERTIFY, BY SEAL, THAT THE FACILITIES SHOWN ON THIS PLAN WERE CONSTRUCTED AS SHOWN ON THIS PLAN AND THE CURRENT APPROVED PLANS AND SPECIFICATIONS.
G. SCOTT SHANBERGER
PROFESSIONAL LAND SURVEYOR #10849
LICENSE EXPIRES DATE 1/31/2018
AS-BUILT SURVEY DATE 10/15/2018

OWNER: CM HIGDON LC
1355 BEVERLY ROAD, SUITE 330
MCLEAN, VA 22101
CONTACT: DAVID KAUFMAN
PHONE: (703) 734-9855
DEVELOPER: ELMS AT BELLS POINT II, L.L.C.
6074 DORSEY HALL DRIVE, SUITE 205
ELLCOTT CITY, MD 21043
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3221
SUBDIVISION NAME: RESERVOIR ESTATES
SECTION/AREA: N/A
DEED # 15161, 365
TAX MAP: 46 GRID: 11 ZONED: R-20
PARCEL: 56
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND
PREVIOUS FILE NO.: WP-13-045, ECP-13-038, BA-95-028, SP-13-008, 24-4787-D
PROFESSIONAL CERTIFICATION: I, BRANDON R. ROWE, 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. 48088 EXPIRATION DATE: 7/31/2015

BOHLER ENGINEERING
CORPORATE OFFICE: WARREN, NJ
SURVEYORS
PROJECT MANAGERS
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS
OFFICES:
SOUTHBRIDGE, MA
ROCKY HILL, CT
CHICAGO, ILL. PA
TAMPA, FL
BOWIE, MD
STERLING, VA
WARRINGTON, VA
PHILADELPHIA, PA

REVISIONS

REV	DATE	COMMENT	BY
1	9/9/14	REVISED ROAD PROFILE	RLB

THE FOLLOWING STATES REQUIRE NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE STATE OF VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE CALL: 411
(VA) 1-800-246-4848 (PA) 1-800-242-1776 (DC) 1-800-257-7777 (VA) 1-800-552-7001 (MD) 1-800-557-7777 (DE) 1-800-385-8500

PROJECT No.: MD122096
DRAWN BY: RLB
CHECKED BY: BRR
DATE: 6/2/14
SCALE: AS NOTED
CAD I.D.: SPQ

REVISED FINAL ROAD CONSTRUCTION PLANS FOR RESERVOIR ESTATES
BUILDABLE LOTS 1-20 AND OPEN SPACE LOTS 21-26
LOCATION OF SITE
10883 SAGSVILLE ROAD
LAUREL, MD. 20723
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21284
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

B.R. ROWE
PROFESSIONAL ENGINEER
10/14

SHEET TITLE: **STORM DRAIN PROFILES**
SHEET NUMBER: **10** OF 19

B-4 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

DEFINITION
USING VEGETATION AS COVER TO PROTECT EXPOSED SOIL FROM EROSION.

PURPOSE
TO PROMOTE THE ESTABLISHMENT OF VEGETATION ON EXPOSED SOIL.

CONDITIONS WHERE PRACTICE APPLIES

ON ALL DISTURBED AREAS NOT STABILIZED BY OTHER METHODS, THIS SPECIFICATION IS DIVIDED INTO SECTIONS ON INCREMENTAL STABILIZATION, SOIL PREPARATION, SOIL AMENDMENTS AND TOPSOILING, SEEDING AND MULCHING, TEMPORARY STABILIZATION, AND PERMANENT STABILIZATION.

EFFECTS ON WATER QUALITY AND QUANTITY

STABILIZATION PRACTICES ARE USED TO PROMOTE THE ESTABLISHMENT OF VEGETATION ON EXPOSED SOIL. WHEN SOIL IS STABILIZED WITH VEGETATION, THE SOIL IS LESS LIKELY TO ERODE AND MORE LIKELY TO ALLOW INFILTRATION OF RAINFALL, THEREBY REDUCING SEDIMENT LOADS AND RUNOFF TO DOWNSTREAM AREAS.

PLANTING VEGETATION IN DISTURBED AREAS WILL HAVE AN EFFECT ON THE WATER BUDGET, ESPECIALLY ON VOLUMES AND RATES OF RUNOFF. INFILTRATION, EVAPORATION, TRANSPARATION, PERCOLATION AND GROUNDWATER RECHARGE, OVER TIME, VEGETATION WILL INCREASE ORGANIC MATTER CONTENT AND IMPROVE THE WATER HOLDING CAPACITY OF THE SOIL AND SUBSEQUENT PLANT GROWTH.

VEGETATION WILL HELP REDUCE THE MOVEMENT OF SEDIMENT, NUTRIENTS, AND OTHER CHEMICALS CARRIED BY RUNOFF TO RECEIVING WATERS. PLANTS WILL ALSO HELP PROTECT GROUNDWATER SUPPLIES BY ASSIMILATING THOSE SUBSTANCES PRESENT WITHIN THE ROOT ZONE.

SEDIMENT CONTROL PRACTICES MUST REMAIN IN PLACE DURING GRADING, SEEDBED PREPARATION, SEEDING, MULCHING, AND VEGETATIVE ESTABLISHMENT.

ADEQUATE VEGETATIVE ESTABLISHMENT

INSPECT SEEDBED AREAS FOR VEGETATIVE ESTABLISHMENT AND MAKE NECESSARY REPAIRS, REPLACEMENTS, AND RESEEDINGS WITHIN THE PLANTING SEASON.

1. ADEQUATE VEGETATIVE ESTABLISHMENT REQUIRES 95 PERCENT GROUND COVER.

2. IF AN AREA HAS LESS THAN 40 PERCENT GROUND COVER, RESTABILIZE FOLLOWING THE ORIGINAL RECOMMENDATIONS FOR LIME, FERTILIZER, SEEDBED PREPARATION, AND SEEDING.

3. IF AN AREA HAS BETWEEN 40 AND 94 PERCENT GROUND COVER, OVER-SEED AND FERTILIZE USING THE RATES ORIGINALLY SPECIFIED.

4. MAINTENANCE FERTILIZER RATES FOR PERMANENT SEEDING ARE SHOWN IN TABLE B.6.

B-4-1 STANDARDS AND SPECIFICATIONS FOR INCREMENTAL STABILIZATION

DEFINITION
ESTABLISHMENT OF VEGETATIVE COVER ON CUT AND FILL SLOPES.

PURPOSE
TO PROVIDE TIMELY VEGETATIVE COVER ON CUT AND FILL SLOPES AS WORK PROGRESSES.

CONDITIONS WHERE PRACTICE APPLIES

ANY CUT OR FILL SLOPE GREATER THAN 15 FEET IN HEIGHT. THIS PRACTICE ALSO APPLIES TO STOCKPILES.

CRITERIA

1. INCREMENTAL STABILIZATION - CUT SLOPES

a. EXCAVATE AND STABILIZE CUT SLOPES IN INCREMENTS NOT TO EXCEED 15 FEET IN HEIGHT. PREPARE SEEDBED AND APPLY SEED AND MULCH ON ALL CUT SLOPES AS THE WORK PROGRESSES.

2. CONSTRUCTION SEQUENCE EXAMPLE (REFER TO FIGURE B.1):

a. CONSTRUCT AND STABILIZE ALL TEMPORARY SWALES OR DIKES THAT WILL BE USED TO CONVEY RUNOFF AROUND THE EXCAVATION.

b. PERFORM PHASE 1 EXCAVATION, PREPARE SEEDBED, AND STABILIZE.

c. PERFORM PHASE 2 EXCAVATION, PREPARE SEEDBED, AND STABILIZE. OVERSEED PHASE 1 AREAS AS NECESSARY.

d. PERFORM FINAL PHASE EXCAVATION, PREPARE SEEDBED, AND STABILIZE. OVERSEED PREVIOUSLY SEEDBED AREAS AS NECESSARY.

NOTE: ONCE EXCAVATION HAS BEGUN THE OPERATION SHOULD BE CONTINUOUS FROM GRUBBING THROUGH THE COMPLETION OF GRADING AND PLACEMENT OF TOPSOIL (IF REQUIRED) AND PERMANENT SEED AND MULCH. ANY INTERRUPTIONS IN THE OPERATION OR COMPLETING THE OPERATION OUT OF THE SEEDING SEASON WILL NECESSITATE THE APPLICATION OF TEMPORARY STABILIZATION.

3. INCREMENTAL STABILIZATION - FILL SLOPES

a. CONSTRUCT AND STABILIZE FILL SLOPES IN INCREMENTS NOT TO EXCEED 15 FEET IN HEIGHT. PREPARE SEEDBED AND APPLY SEED AND MULCH ON ALL SLOPES AS THE WORK PROGRESSES.

2. STABILIZE SLOPES IMMEDIATELY WHEN THE VERTICAL HEIGHT OF A LIFT REACHES 15 FEET, OR WHEN THE GRADING OPERATION CEASES AS PRESCRIBED IN THE PLANS.

3. AT THE END OF EACH DAY, INSTALL TEMPORARY WATER CONVEYANCE STRUCTURES, AS NECESSARY, TO INTERCEPT SURFACE RUNOFF AND CONVEY IT DOWN THE SLOPE IN A NON-EROSIVE MANNER.

4. CONSTRUCTION SEQUENCE EXAMPLE (REFER TO FIGURE B.2):

a. CONSTRUCT AND STABILIZE ALL TEMPORARY SWALES OR DIKES THAT WILL BE USED TO DIVERT RUNOFF AROUND THE FILL. CONSTRUCT SILT FENCE ON LOW SIDE OF FILL UNLESS OTHER METHODS SHOWN ON THE PLANS ADDRESS THIS AREA.

b. AT THE END OF EACH DAY, INSTALL TEMPORARY WATER CONVEYANCE STRUCTURES, AS NECESSARY, TO INTERCEPT SURFACE RUNOFF AND CONVEY IT DOWN THE SLOPE IN A NON-EROSIVE MANNER.

c. PLACE PHASE 1 FILL, PREPARE SEEDBED, AND STABILIZE.

d. PLACE PHASE 2 FILL, PREPARE SEEDBED, AND STABILIZE. OVERSEED PREVIOUSLY SEEDBED AREAS AS NECESSARY.

NOTE: ONCE THE PLACEMENT OF FILL HAS BEGUN THE OPERATION SHOULD BE CONTINUOUS FROM GRUBBING THROUGH THE COMPLETION OF GRADING AND PLACEMENT OF TOPSOIL (IF REQUIRED) AND PERMANENT SEED AND MULCH. ANY INTERRUPTIONS IN THE OPERATION OR COMPLETING THE OPERATION OUT OF THE SEEDING SEASON WILL NECESSITATE THE APPLICATION OF TEMPORARY STABILIZATION.

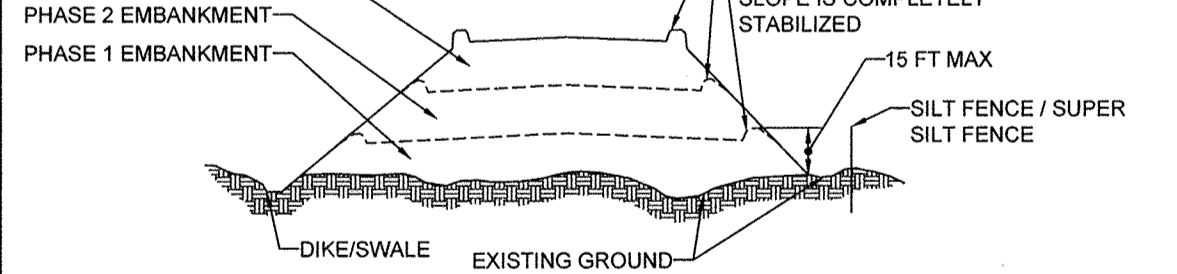


FIGURE B.1: INCREMENTAL STABILIZATION - CUT

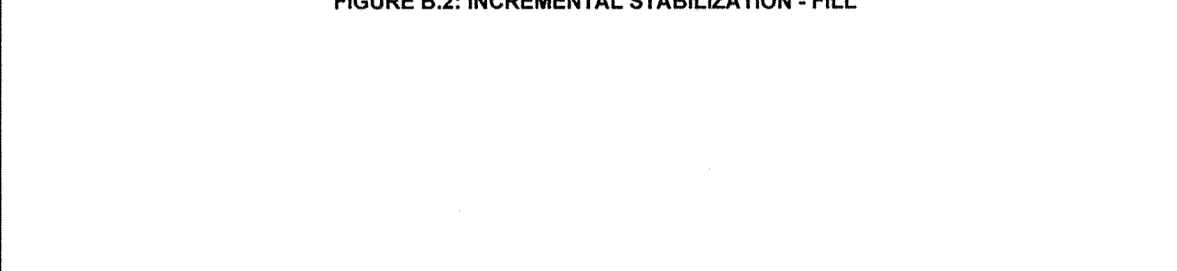


FIGURE B.2: INCREMENTAL STABILIZATION - FILL

APPROVED: DEPARTMENT OF PUBLIC WORKS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

APPROVED: DIVISION OF LAND DEVELOPMENT

APPROVED: DEVELOPMENT ENGINEERING DIVISION

GENERAL NOTE: IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT. WORK SCOPE PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR PLACABLE CODES, IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE PROJECT DIRECTOR OR RECORD BY WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY THE PROJECT DIRECTOR SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND ALL APPLICABLE REGULATORY REQUIREMENTS.

B-4-2 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

DEFINITION
THE PROCESS OF PREPARING THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.

PURPOSE
TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH.

CONDITIONS WHERE PRACTICE APPLIES

WHERE VEGETATIVE STABILIZATION IS TO BE ESTABLISHED.

CRITERIA

A. SOIL PREPARATION

1. TEMPORARY STABILIZATION

a. SEEDBED PREPARATION CONSISTS OF LOOSENING SOIL TO A DEPTH OF 3 TO 5 INCHES BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT. THE AREA SHOULD BE RIPPED AND SOIL SHOULD BE LOOSE AND MORE LIKELY TO DRAGGED SMOOTH BUT LEFT IN THE ROUGHENED CONDITION. SLOPES 3:1 OR FLATTER ARE TO BE TRACKED TO PREVENT SOIL FROM RUNNING TO THE CONTOUR OF THE SLOPE.

c. APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.

2. PERMANENT STABILIZATION

a. SOIL TESTS ARE REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:

i. SOIL PH BETWEEN 6.0 AND 7.0

ii. SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM)

iii. SOIL CONTAINS LESS THAN 40 PERCENT CLAY BUT ENOUGH FINE GRAINED MATERIAL (GREATER THAN 30 PERCENT SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE. AN EXCEPTION IS: LOVEGRASS WILL BE PLANTED, THEN A SANDY SOIL (LESS THAN 30 PERCENT SILT PLUS CLAY) WOULD BE ACCEPTABLE.

iv. SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT.

v. SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.

b. APPLICATION OF AMENDMENTS OR TOPSOIL IS REQUIRED IF ON-SITE TESTS DO NOT MEET THE ABOVE CONDITIONS.

c. GRADED AREAS MUST BE MAINTAINED IN A TRUE AND EVEN GRADE AS SPECIFIED ON THE APPROVED PLAN, THEN SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3 TO 5 INCHES.

d. APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST.

e. MIX SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. RAKE LAWN AREAS TO SMOOTH THE SURFACE, REMOVE LARGE OBJECTS LIKE STONES AND BRANCHES, AND RAKE THE AREA FOR SEED APPLICATION. LOOSEN SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT TO ROUGHEN THE SURFACE WHERE SITE CONDITIONS WILL PERMIT. NORMAL SEEDBED PREPARATION, TRACK SLEWING EQUIPMENT, OR FLAT TIRE WITH A WEIGHTED ROLLER IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. LEAVE THE TOP 1 TO 3 INCHES OF SOIL LOOSE AND STABILIZE. SEEDBED LOOSENING MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.

B. TOPSOILING

3. TOPSOIL IS PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION. THE PURPOSE IS TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.

4. TOPSOIL SALVAGED FROM AN EXISTING SITE MAY BE USED PROVIDED IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE 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-NRCS.

5. TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:

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

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

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

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

e. AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN.

5. TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:

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

b. TOPSOIL MUST BE FREE OF NOXIOUS PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACK GRASS, JOHNSON GRASS, NUT SEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED ON THE PLANS.

c. 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.

6. TOPSOIL APPLICATION

a. EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING TOPSOIL.

b. UNIFORMLY DISTRIBUTE TOPSOIL IN A 5 TO 8 INCH LAYER AND LIGHTLY COMPACT TO A MINIMUM THICKNESS OF 3 INCHES. SPREADING IS TO 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 METHODS MUST BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.

c. TOPSOIL MUST NOT BE PLACED IF THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.

C. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)

1. SOIL TESTS MUST BE PERFORMED TO DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER ON SITES HAVING DISTURBED AREAS OF 5 ACRES OR MORE. SOIL ANALYSIS MAY BE CONDUCTED BY A RECOGNIZED PRIVATE OR COMMERCIAL LABORATORY. SOIL SAMPLES TAKEN FOR ENGINEERING PURPOSES MAY ALSO BE USED FOR CHEMICAL ANALYSES.

2. FERTILIZERS MUST BE UNIFORM IN COMPOSITION, FREE FLOWING AND SUITABLE FOR ACCURATE APPLICATION BY APPROPRIATE EQUIPMENT. MANURE MAY BE SUBSTITUTED FOR FERTILIZER FROM THE APPROPRIATE SOURCE. FERTILIZERS MUST BE DELIVERED TO THE SITE FULLY LABELED ACCORDING TO THE APPLICABLE LAWS AND MUST BEAR THE NAME, TRADE NAME OR TRADEMARK AND WARRANTY OF THE MANUFACTURER.

3. LIME MATERIALS MUST BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHEN OTHERWISE SPECIFIED) WHICH CONTAINS AT LEAST 90 PERCENT TOTAL OXIDES (CALCIUM OXIDE PLUS MAGNESIUM OXIDE). LIMESTONE MUST BE GROUND TO SUCH FINENESS THAT AT LEAST 50 PERCENT WILL PASS THROUGH A #100 MESH SIEVE AND 98 TO 100 PERCENT WILL PASS THROUGH A #20 MESH SIEVE.

4. LIME AND FERTILIZER ARE TO BE EVENLY DISTRIBUTED AND INCORPORATED INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.

5. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, SPREAD GROUND LIMESTONE AT THE RATE OF 4 TO 3 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.

B-4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

DEFINITION
THE APPLICATION OF SEED AND MULCH TO ESTABLISH VEGETATIVE COVER.

PURPOSE
TO PROTECT DISTURBED SOILS FROM EROSION DURING AND AT THE END OF CONSTRUCTION.

CONDITIONS WHERE PRACTICE APPLIES

TO THE SURFACE OF ALL PERIMETER CONTROLS, SLOPES, AND ANY DISTURBED AREA NOT UNDER ACTIVE GRADING.

CRITERIA

A. SEEDING

1. SPECIFICATIONS

a. ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED USED MUST BE TESTED WITHIN 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON ANY PROJECT. REFER TO TABLE B.4 REGARDING THE QUALITY OF SEED. SEED TAGS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY TYPE OF SEED AND SEEDING RATE.

b. MULCH ALONE MAY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES ONLY IF THE GROUND IS FROZEN. THE APPROPRIATE SEEDING MIXTURE MUST BE APPLIED WHEN THE GROUND THAWS.

c. INOCULANTS: THE INOCULANT FOR TREATING LEGUME SEED IN THE SEED MIXTURES MUST BE A PURE CULTURE FREE FROM PATHOGENS. INOCULANTS SHOULD BE PREPARED SPECIFICALLY FOR THE SPECIES. INOCULANTS MUST NOT BE USED LATER THAN THE DATE INDICATED ON THE CONTAINER. ADD FRESH INOCULANTS AS DIRECTED ON THE CONTAINER. USE FOUR TIMES THE RECOMMENDED RATE WHEN HYDROSEEDING. NOTE: IT IS VERY IMPORTANT TO KEEP INOCULANTS AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75 TO 80 DEGREES FAHRENHEIT CAN KILL BACTERIA AND MAKE THE INOCULANT LESS EFFECTIVE.

d. SEED OR SEED MIXTURE MUST NOT 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.

2. APPLICATION

a. DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS.

b. INCORPORATE SEED INTO THE SUBSOIL AT THE RATES PRESCRIBED ON TEMPORARY SEEDING TABLE B.1, PERMANENT SEEDING TABLE B.3, OR SITE-SPECIFIC SEEDING SUMMARIES.

c. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER, APPLY HALF THE SEEDING RATE IN EACH DIRECTION. ROLL THE SEEDBED AREA WITH A WEIGHTED ROLLER TO PROVIDE GOOD SEED TO SOIL CONTACT.

d. DRILL OR CULTIPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL.

e. CULTIPACKING SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 1/4 INCH OF SOIL COVER. SEEDBED MUST BE FIRM AFTER PLANTING.

f. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER, APPLY HALF THE SEEDING RATE IN EACH DIRECTION.

g. HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER).

h. IF FERTILIZER IS BEING APPLIED AT THE TIME OF SEEDING, THE APPLICATION RATES SHOULD NOT EXCEED THE FOLLOWING: NITROGEN, 100 POUNDS PER ACRE TOTAL OF SOLUBLE NITROGEN; P2O5 (PHOSPHOROUS), 200 POUNDS PER ACRE; K2O (POTASSIUM), 200 POUNDS PER ACRE.

i. LIME: USE ONLY GROUND AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE MAY BE APPLIED). HYDROSEEDING: NORMALLY, NOT MORE THAN 3 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME.

iii. MIX SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION.

iv. WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.

B. MULCHING

1. MULCH MATERIALS (IN ORDER OF PREFERENCE)

a. STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, RYE, OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR. STRAW IS TO BE FREE OF NOXIOUS WEED SEEDS AS SPECIFIED IN THE MARYLAND SEED LAW. STRAW IS TO BE CLEAN, DRY, AND FREE OF EXCESSIVE DUST. NOTE: USE ONLY STERILE STRAW MULCH IN AREAS WHERE ONE SPECIES OF GRASS IS DESIRED.

i. WCFM IS TO BE DYED GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORMLY SPREAD SLURRY.

ii. WCFM INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS.

iii. WCFM MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SOIL, FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL MUST FORM A FLATTER LIKE GROUND COVER ON APPLICATION. IT MUST BE SUITABLE FOR ABSORPTION AND PERCOLATION PROPERTIES AND MUST COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS.

iv. WCFM MATERIAL MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE PHYTO-TOXIC.

v. WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH OF APPROXIMATELY 10 MILLIMETERS, DIAMETER APPROXIMATELY 1 MILLIMETER, PH RANGE OF 4.0 TO 8.5, ASH CONTENT OF 1.5 PERCENTS MAXIMUM AND WATER HOLDING CAPACITY OF 90 PERCENT MINIMUM.

2. APPLICATION

a. APPLY MULCH TO ALL SEEDBED AREAS IMMEDIATELY AFTER SEEDING.

b. WHEN STRAW MULCH IS USED, SPREAD IT OVER ALL SEEDBED AREAS AT THE RATE OF 2 TONS PER ACRE TO A UNIFORM LOOSE DEPTH OF 1 TO 2 INCHES. APPLY MULCH TO ACHIEVE A UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED. WHEN USING A MULCH ANCHORING TOOL, INCREASE THE APPLICATION RATE TO 2.5 TONS PER ACRE.

c. WOOD CELLULOSE FIBER USED AS MULCH MUST BE APPLIED AT A NET DRY WEIGHT OF 1500 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER TO ATTAIN A MIXTURE WITH A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.

3. ANCHORING

a. PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS (LISTED BY PREFERENCE), DEPENDING UPON THE SIZE OF THE AREA AND EROSION HAZARD:

i. A MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE A MINIMUM OF 2 INCHES. THIS PRACTICE IS MOST EFFECTIVE ON LARGE AREAS, BUT IS LIMITED TO FLATTER SLOPES WHERE EQUIPMENT CAN OPERATE SAFELY. IF USED ON SLOPING LAND, THIS PRACTICE SHOULD FOLLOW THE CONTOUR.

ii. WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER AT A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.

iii. SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRO-TACK), DCA-70, PETROBET TERRA TAX II, TERRA TACK OR OTHER APPROVED EQUAL MAY BE USED. FOLLOW APPLICATION RATES AS SPECIFIED BY THE MANUFACTURER. APPLICATION OF LIQUID BINDERS NEEDS TO BE PERFORMED IN AREAS WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF BANKS. USE OF ASPHALT BINDERS IS STRICTLY PROHIBITED.

iv. LIGHTWEIGHT PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER RECOMMENDATIONS. NETTING IS USUALLY AVAILABLE IN ROLLS 4 TO 15 FEET WIDE AND 300 TO 3,000 FEET LONG.

B-4-4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION

DEFINITION
TO STABILIZE DISTURBED SOILS WITH VEGETATION FOR UP TO 6 MONTHS.

PURPOSE
TO USE FAST GROWING VEGETATION THAT PROVIDES COVER ON DISTURBED SOILS.

CONDITIONS WHERE PRACTICE APPLIES

EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR A PERIOD OF 6 MONTHS OR LESS. FOR LONGER DURATION OF TIME, PERMANENT STABILIZATION PRACTICES ARE REQUIRED.

CRITERIA

1. SELECT ONE OR MORE OF THE SPECIES OR SEED MIXTURES LISTED IN TABLE B.1 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3), AND ENTER THEM IN THE TEMPORARY SEEDING SUMMARY BELOW ALONG WITH APPLICATION RATES, SEEDING DATES AND SEEDING DEPTHS. IF THIS SUMMARY IS NOT PUT ON THE PLAN, IT IS NOT VALID.

2. FOR SITES HAVING SOIL TESTS PERFORMED, USE AND SHOW THE RECOMMENDED RATES BY THE TESTING AGENCY. SOIL TESTS ARE NOT TO BE USED FOR TEMPORARY SEEDING.

3. WHEN STABILIZATION IS REQUIRED OUTSIDE OF A SEEDING SEASON, APPLY SEED AND MULCH OR STRAW MULCH AS PRESCRIBED IN SECTION B-4-3-1.8 AND MAINTAIN UNTIL THE NEXT SEEDING SEASON.

TEMPORARY SEEDING SUMMARY

HARDINESS ZONE (from Figure B.3): ZONE 7A

SEED MIXTURE (from Table B.1)

FERTILIZER RATE (10-20-20)

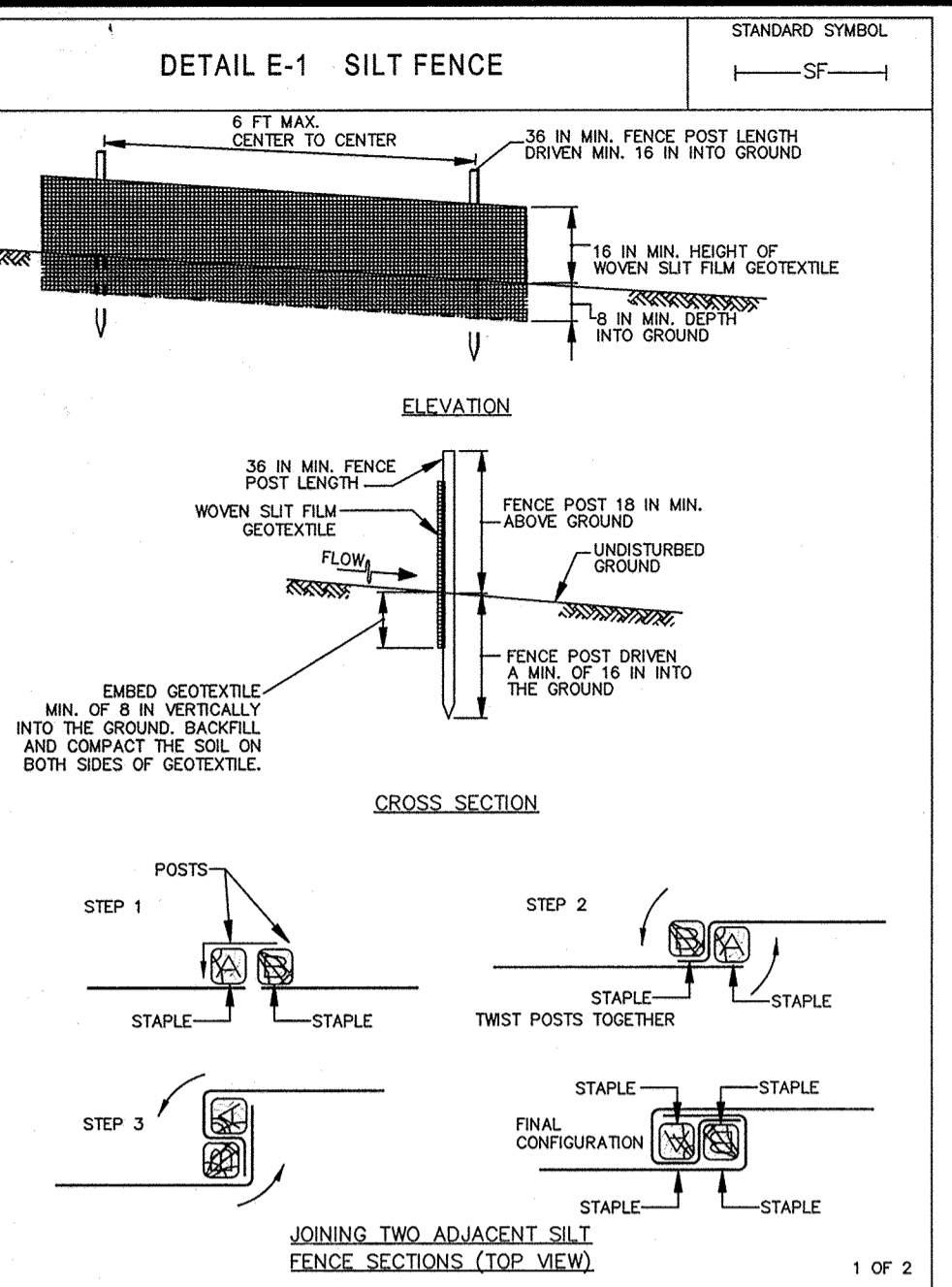
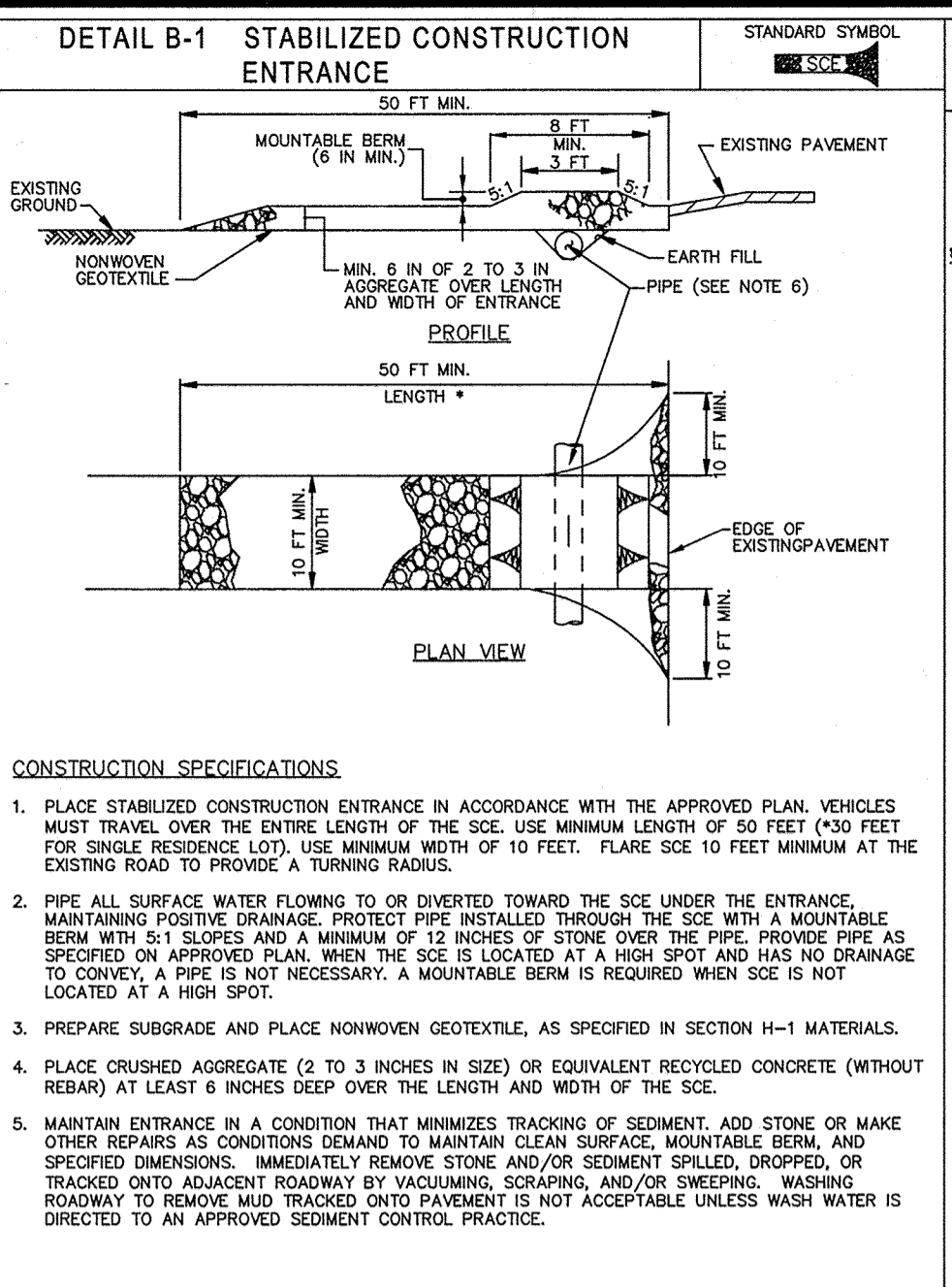
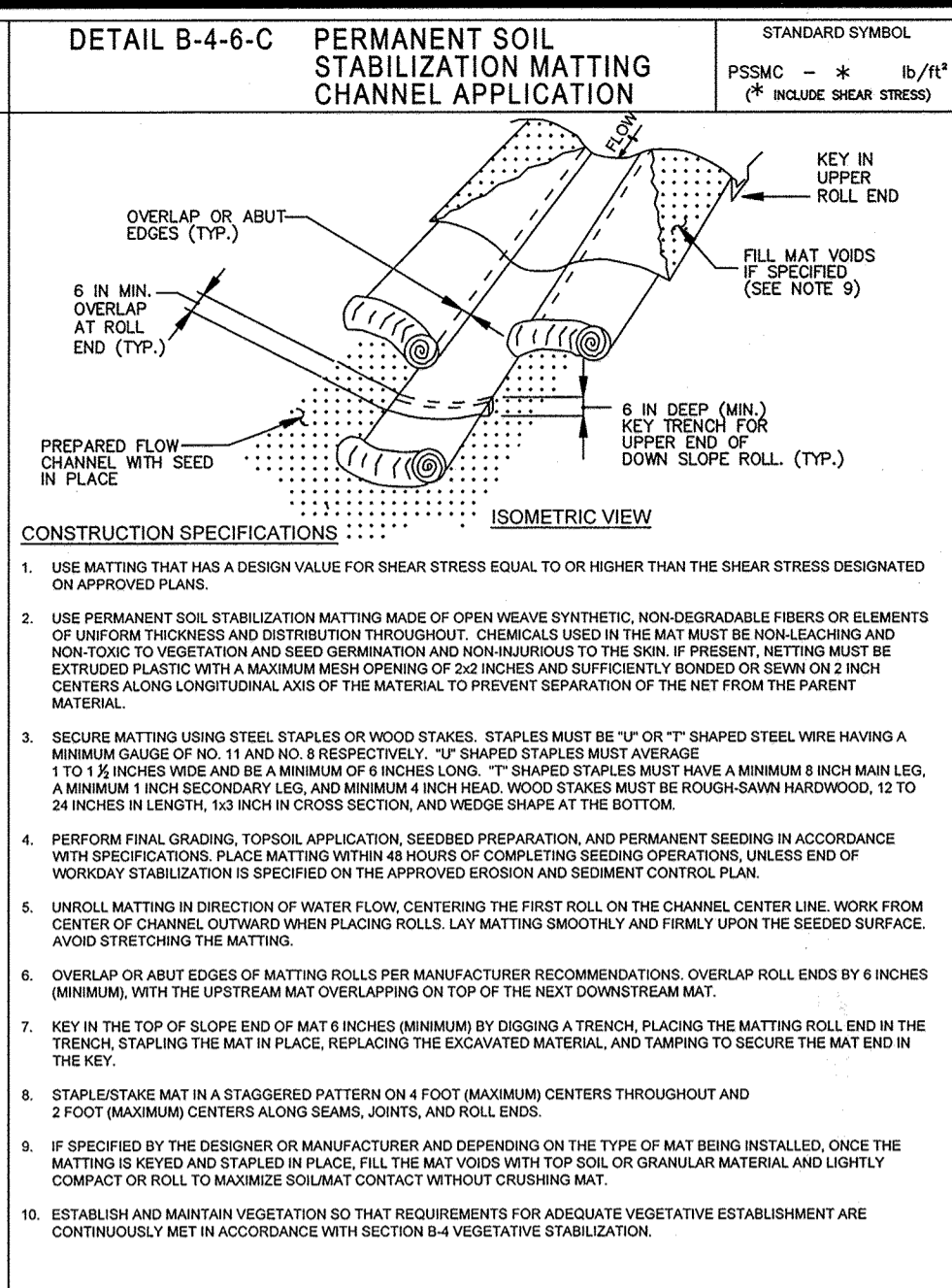
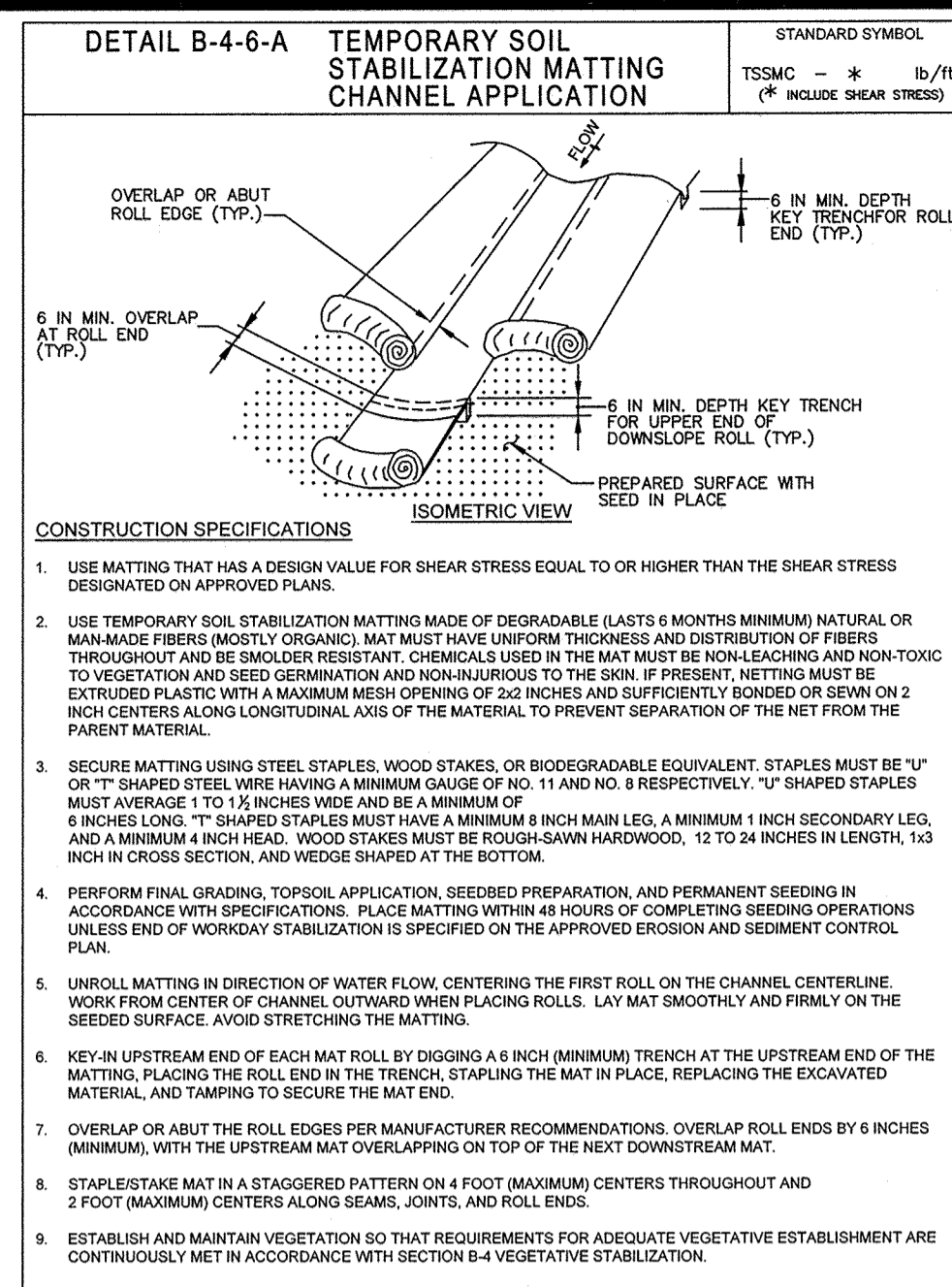
LIME RATE

COOL SEASON GRASSES

1. ANNUAL RYEGRASS 40 2/15 - 4/30 8/1 - 11/30 0.5" 2 TONS/AC (10 LB/1000 SF)

2. BARLEY 96 2/15 - 4/30 8/1 - 11/30 1" 2 TONS/AC (10 LB/1000 SF)

3. OATS 72 2/1



B-4-7 STANDARDS AND SPECIFICATIONS FOR HEAVY USE AREA PROTECTION

DEFINITION
THE STABILIZATION OF AREAS FREQUENTLY AND INTENSIVELY USED BY SURFACING WITH SUITABLE MATERIALS (E.G. MULCH AND AGGREGATE).

PURPOSE
TO PROVIDE A STABLE, NON-ERODING SURFACE FOR AREAS FREQUENTLY USED AND TO IMPROVE THE WATER QUALITY FROM THE RUNOFF OF THESE AREAS.

CONDITIONS WHERE PRACTICE APPLIES
THIS PRACTICE APPLIES TO INTENSIVELY USED AREAS (E.G. EQUIPMENT AND MATERIAL STORAGE, STAGING AREAS, HEAVILY USED TRAVEL LANES).

CRITERIA

- A MINIMUM 4-INCH BASE COURSE OF CRUSHED STONE OR OTHER SUITABLE MATERIALS INCLUDING WOOD CHIPS OVER NONWOVEN GEOTEXTILE SHOULD BE PROVIDED AS SPECIFIED IN SECTION H-1 MATERIALS.
- SELECT THE STABILIZING MATERIAL BASED ON THE INTENDED USE, DESIRED MAINTENANCE FREQUENCY, AND RUNOFF CONTROL.
- THE TRANSPORT OF SEDIMENTS, NUTRIENTS, OILS, CHEMICALS, PARTICULATE MATTER ASSOCIATED WITH VEHICULAR TRAFFIC AND EQUIPMENT, AND MATERIAL STORAGE NEEDS TO BE CONSIDERED IN THE SELECTION OF MATERIAL. ADDITIONAL CONTROL MEASURES MAY BE NECESSARY TO CONTROL SOME OF THESE POTENTIAL POLLUTANTS.
- SURFACE EROSION CAN BE A PROBLEM ON LARGE HEAVY USE AREAS. IN THESE SITUATIONS, MEASURES TO REDUCE THE FLOW LENGTH OF RUNOFF OR EROSION VELOCITIES MUST BE USED.

MAINTENANCE
THE HEAVY USE AREAS MUST BE MAINTAINED IN A CONDITION THAT MINIMIZES EROSION. THIS MAY REQUIRE ADDING SUITABLE MATERIAL, AS SPECIFIED ON THE APPROVED PLANS, TO MAINTAIN A CLEAN SURFACE.

B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

DEFINITION
A MOUND OR PILE OF SOIL PROTECTED BY APPROPRIATELY DESIGNED EROSION AND SEDIMENT CONTROL MEASURES.

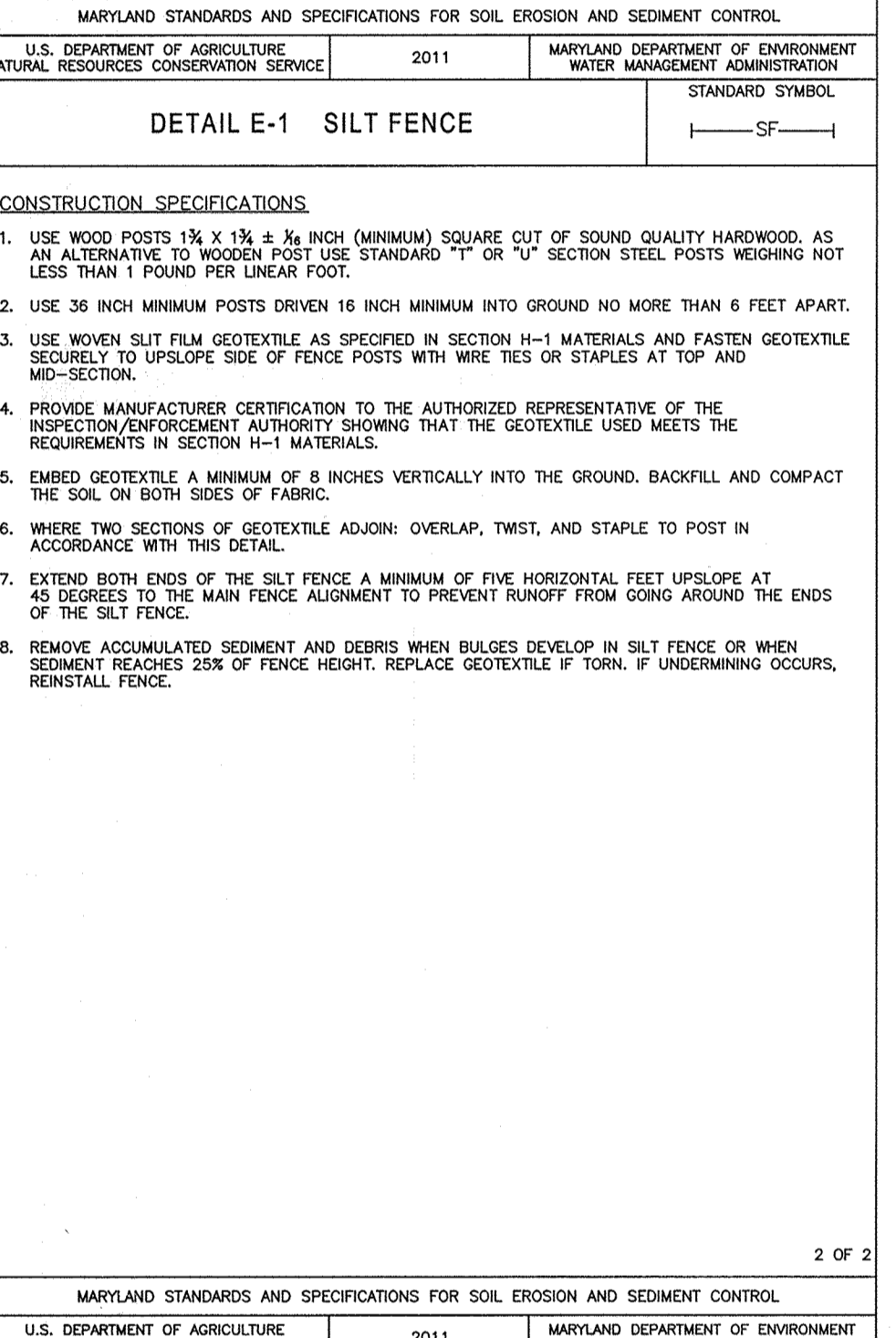
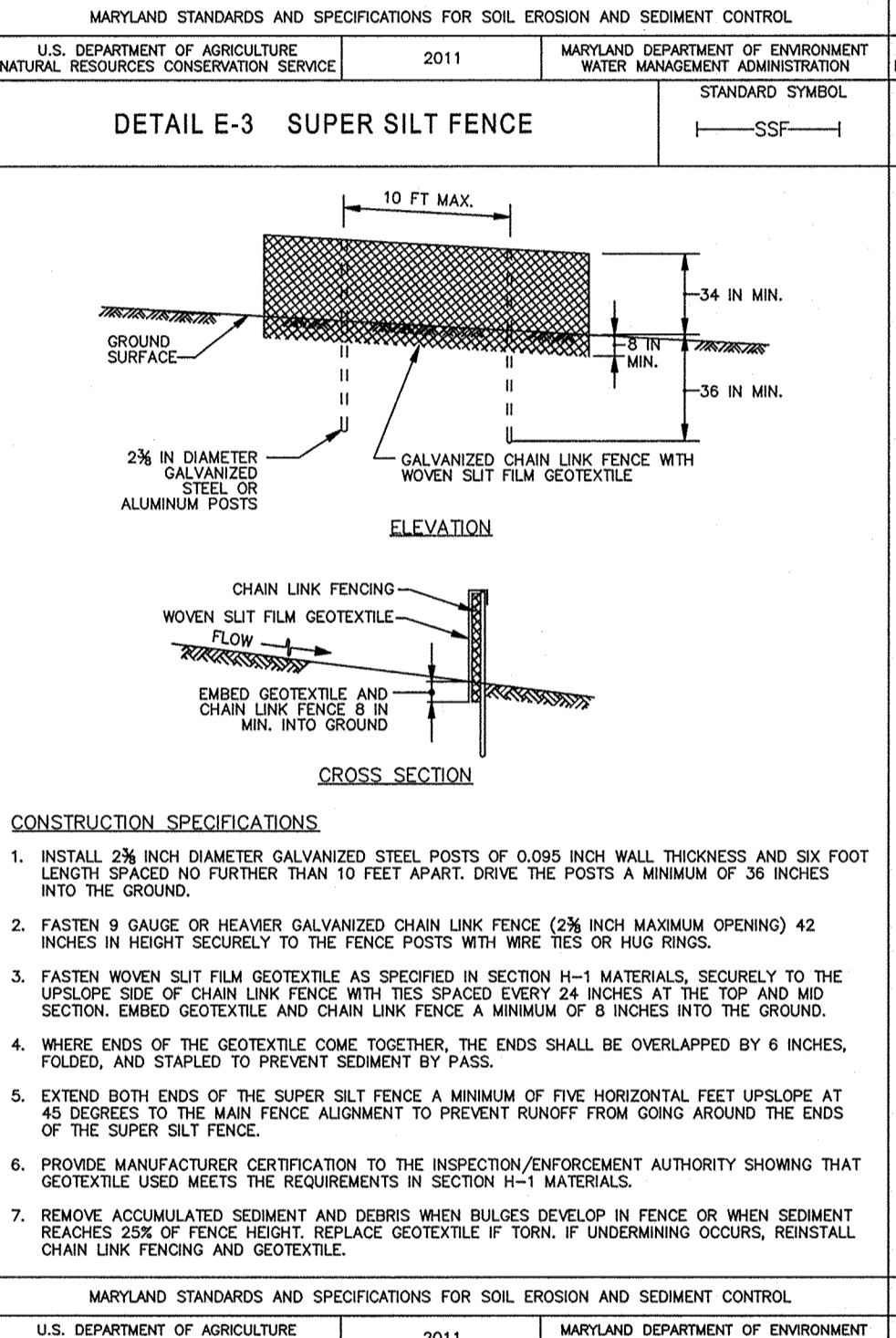
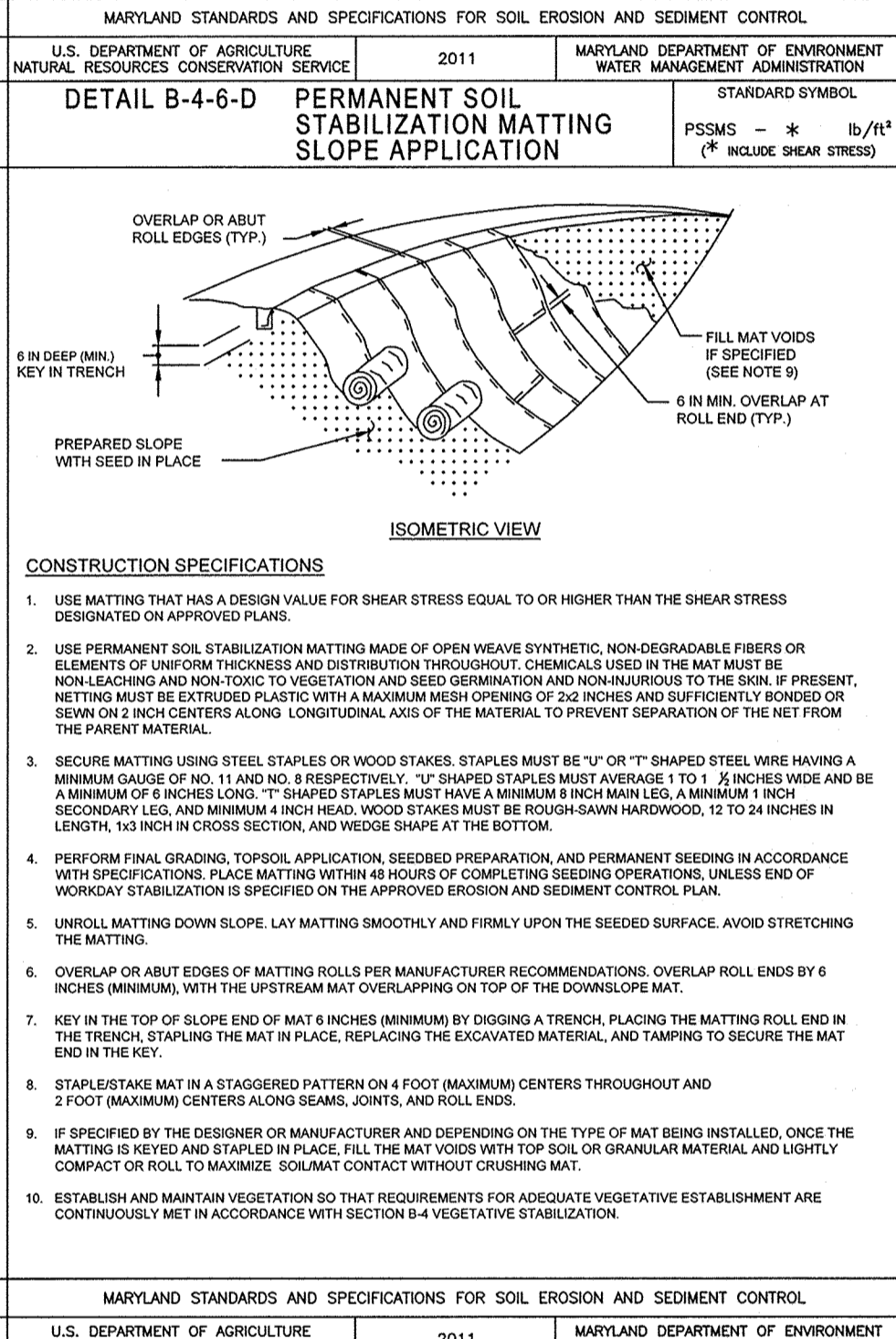
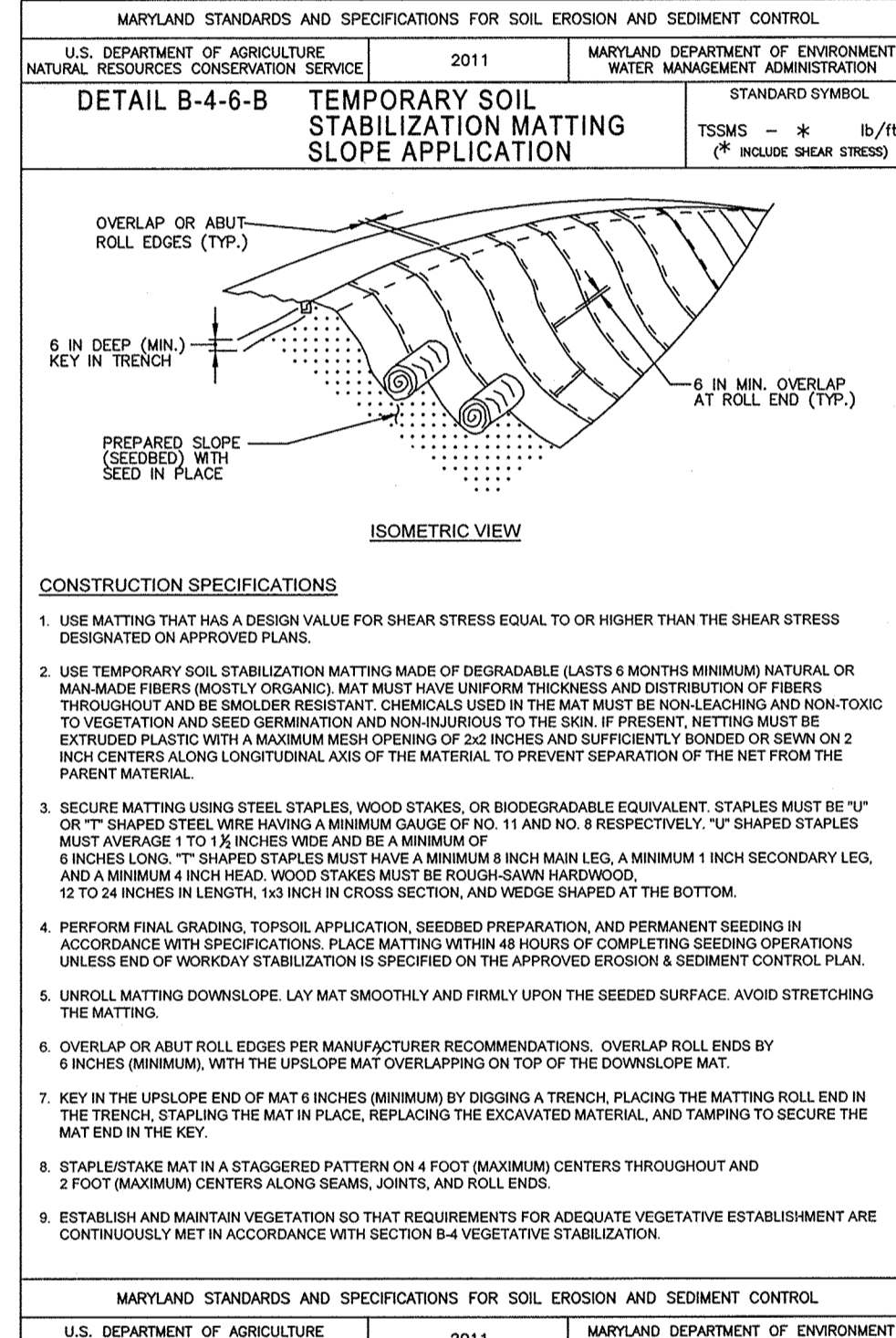
PURPOSE
TO PROVIDE A DESIGNATED LOCATION FOR THE TEMPORARY STORAGE OF SOIL THAT CONTROLS THE POTENTIAL FOR EROSION, SEDIMENTATION, AND CHANGES TO DRAINAGE PATTERNS.

CONDITIONS WHERE PRACTICE APPLIES
STOCKPILE AREAS ARE UTILIZED WHEN IT IS NECESSARY TO SALVAGE AND STORE SOIL FOR LATER USE.

CRITERIA

- THE STOCKPILE LOCATION AND ALL RELATED SEDIMENT CONTROL PRACTICES MUST BE CLEARLY INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN.
- THE FOOTPRINT OF THE STOCKPILE MUST BE SIZED TO ACCOMMODATE THE ANTICIPATED VOLUME OF MATERIAL AND BASED ON A SIDE SLOPE RATIO NO STEEPER THAN 2:1. BENCHING MUST BE PROVIDED IN ACCORDANCE WITH SECTION B-3 LAND GRADING.
- RUNOFF FROM THE STOCKPILE AREA MUST DRAIN TO A SUITABLE SEDIMENT CONTROL PRACTICE.
- ACCESS THE STOCKPILE AREA FROM THE UPSLOPE SIDE.
- CLEAR WATER RUNOFF INTO THE STOCKPILE AREA MUST BE MINIMIZED BY USE OF A DIVERSION DEVICE SUCH AS AN EARTH DIKE, TEMPORARY SWALE OR DIVERSION FENCE. PROVISIONS MUST BE MADE FOR DISCHARGING CONCENTRATED FLOW IN A NON-EROSIVE MANNER.
- WHERE RUNOFF CONCENTRATES ALONG THE TOE OF THE STOCKPILE, FILL AN APPROPRIATE EROSION/SEDIMENT CONTROL PRACTICE MUST BE USED TO INTERCEPT THE DISCHARGE.
- STOCKPILES MUST BE STABILIZED IN ACCORDANCE WITH THE 97 DAY STABILIZATION REQUIREMENT AS WELL AS STANDARD B-4-1 INCREMENTAL STABILIZATION AND STANDARD B-4-4 TEMPORARY STABILIZATION.
- IF THE STOCKPILE IS LOCATED ON AN IMPERVIOUS SURFACE, A LINER SHOULD BE PROVIDED BELOW THE STOCKPILE TO FACILITATE CLEANUP. STOCKPILES CONTAINING CONTAMINATED MATERIAL MUST BE COVERED WITH IMPERMEABLE SHEETING.

MAINTENANCE
THE STOCKPILE AREA MUST CONTINUOUSLY MEET THE REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. SIDE SLOPES MUST BE MAINTAINED AT NO STEEPER THAN A 2:1 RATIO. THE STOCKPILE AREA MUST BE KEPT FREE OF EROSION. IF THE VERTICAL HEIGHT OF A STOCKPILE EXCEEDS 50 FEET FOR 2:1 SLOPES, 30 FEET FOR 3:1 SLOPES, OR 40 FEET FOR 4:1 SLOPES, BENCHING MUST BE PROVIDED IN ACCORDANCE WITH SECTION B-3 LAND GRADING.



B-4-7 STANDARDS AND SPECIFICATIONS FOR HEAVY USE AREA PROTECTION

DEFINITION
THE STABILIZATION OF AREAS FREQUENTLY AND INTENSIVELY USED BY SURFACING WITH SUITABLE MATERIALS (E.G. MULCH AND AGGREGATE).

PURPOSE
TO PROVIDE A STABLE, NON-ERODING SURFACE FOR AREAS FREQUENTLY USED AND TO IMPROVE THE WATER QUALITY FROM THE RUNOFF OF THESE AREAS.

CONDITIONS WHERE PRACTICE APPLIES
THIS PRACTICE APPLIES TO INTENSIVELY USED AREAS (E.G. EQUIPMENT AND MATERIAL STORAGE, STAGING AREAS, HEAVILY USED TRAVEL LANES).

CRITERIA

- A MINIMUM 4-INCH BASE COURSE OF CRUSHED STONE OR OTHER SUITABLE MATERIALS INCLUDING WOOD CHIPS OVER NONWOVEN GEOTEXTILE SHOULD BE PROVIDED AS SPECIFIED IN SECTION H-1 MATERIALS.
- SELECT THE STABILIZING MATERIAL BASED ON THE INTENDED USE, DESIRED MAINTENANCE FREQUENCY, AND RUNOFF CONTROL.
- THE TRANSPORT OF SEDIMENTS, NUTRIENTS, OILS, CHEMICALS, PARTICULATE MATTER ASSOCIATED WITH VEHICULAR TRAFFIC AND EQUIPMENT, AND MATERIAL STORAGE NEEDS TO BE CONSIDERED IN THE SELECTION OF MATERIAL. ADDITIONAL CONTROL MEASURES MAY BE NECESSARY TO CONTROL SOME OF THESE POTENTIAL POLLUTANTS.
- SURFACE EROSION CAN BE A PROBLEM ON LARGE HEAVY USE AREAS. IN THESE SITUATIONS, MEASURES TO REDUCE THE FLOW LENGTH OF RUNOFF OR EROSION VELOCITIES MUST BE USED.

MAINTENANCE
THE HEAVY USE AREAS MUST BE MAINTAINED IN A CONDITION THAT MINIMIZES EROSION. THIS MAY REQUIRE ADDING SUITABLE MATERIAL, AS SPECIFIED ON THE APPROVED PLANS, TO MAINTAIN A CLEAN SURFACE.

B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

DEFINITION
A MOUND OR PILE OF SOIL PROTECTED BY APPROPRIATELY DESIGNED EROSION AND SEDIMENT CONTROL MEASURES.

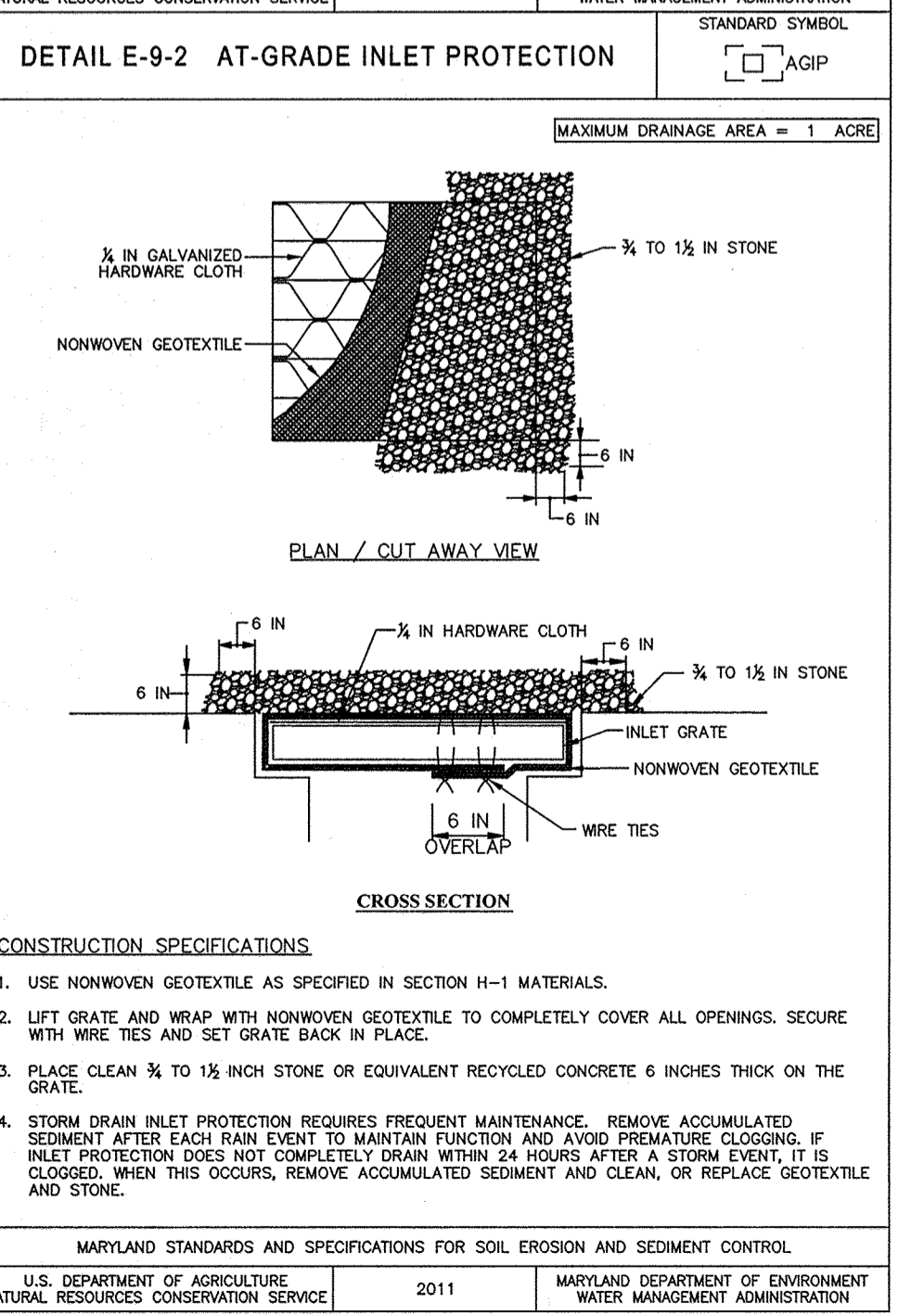
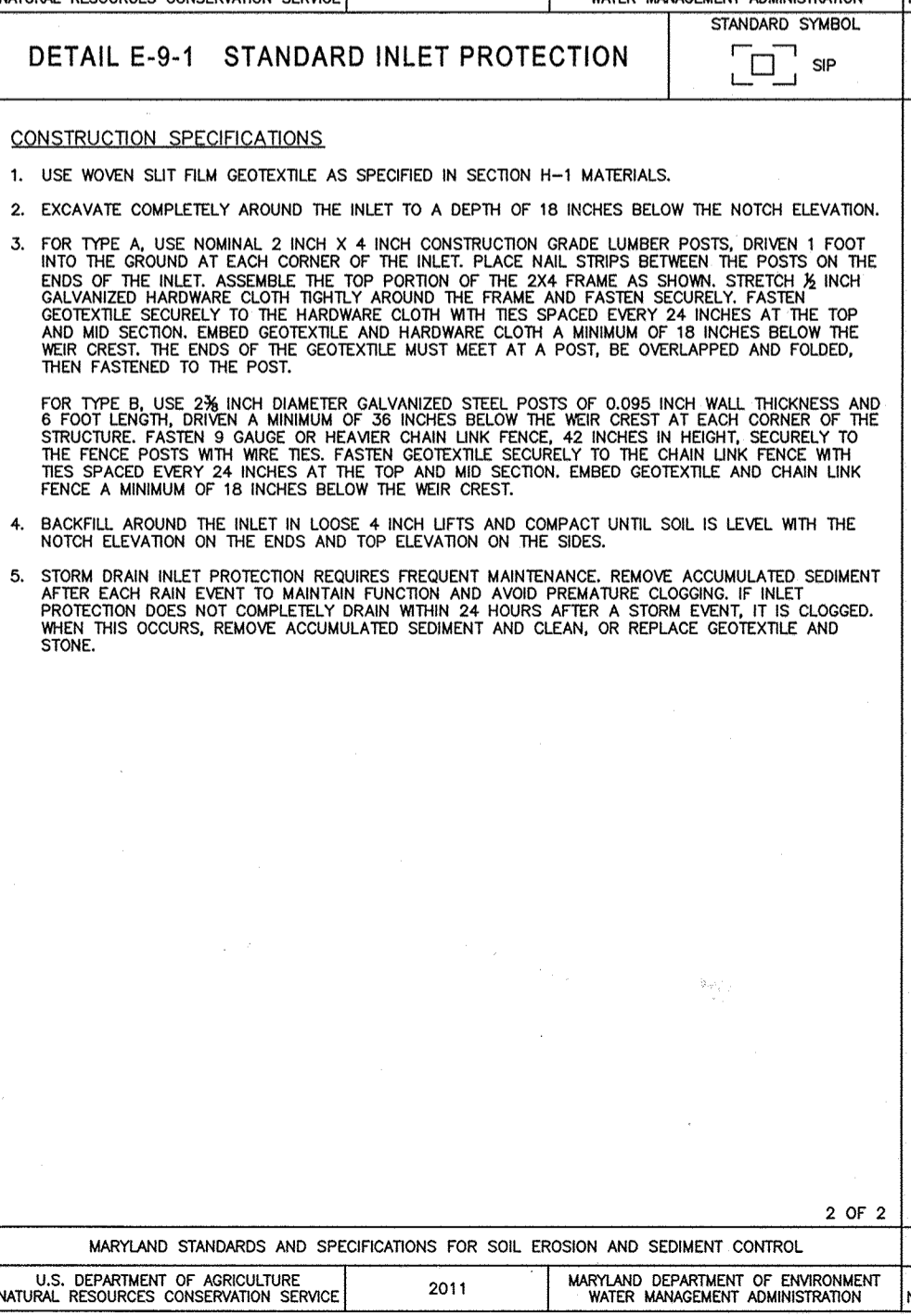
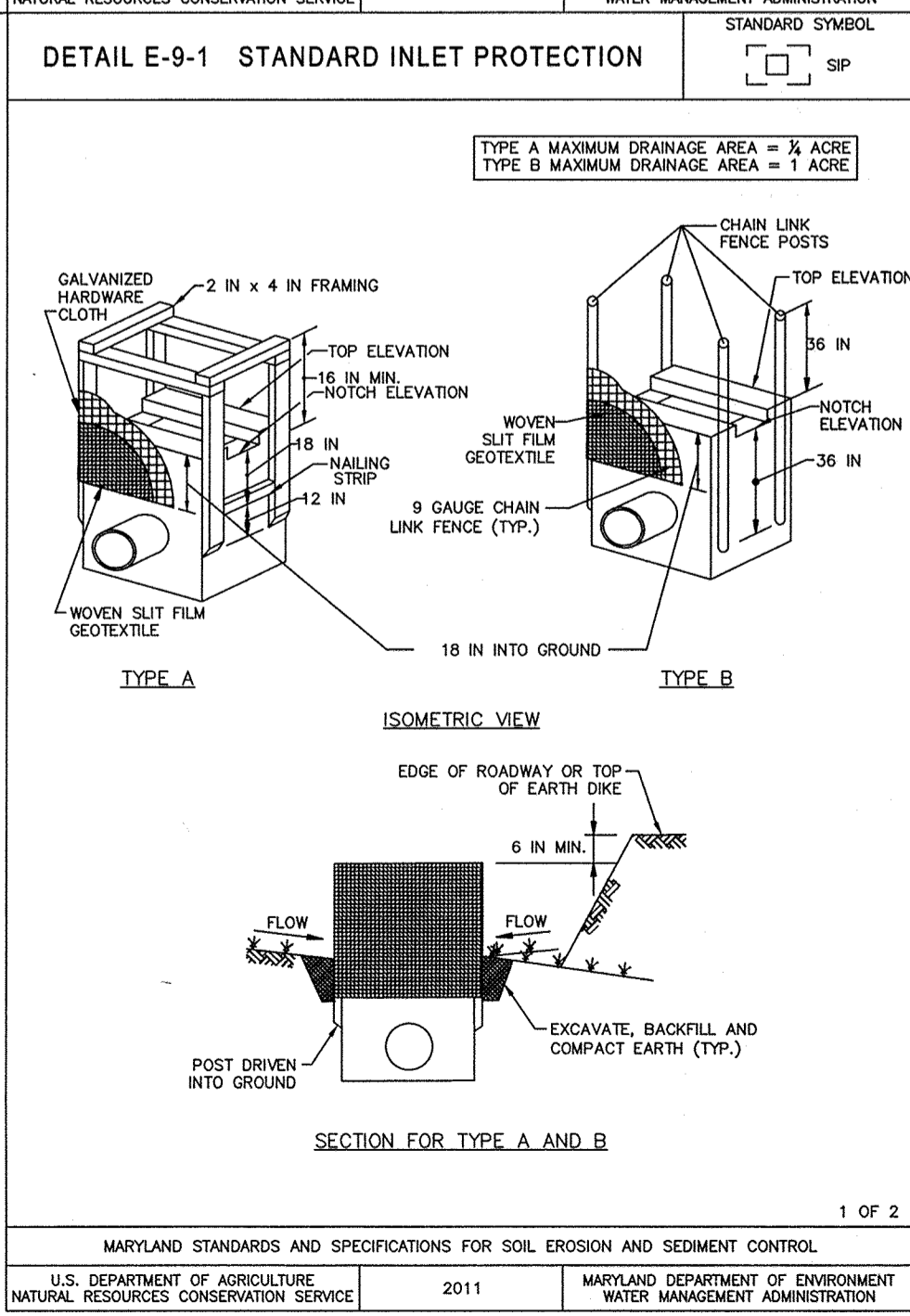
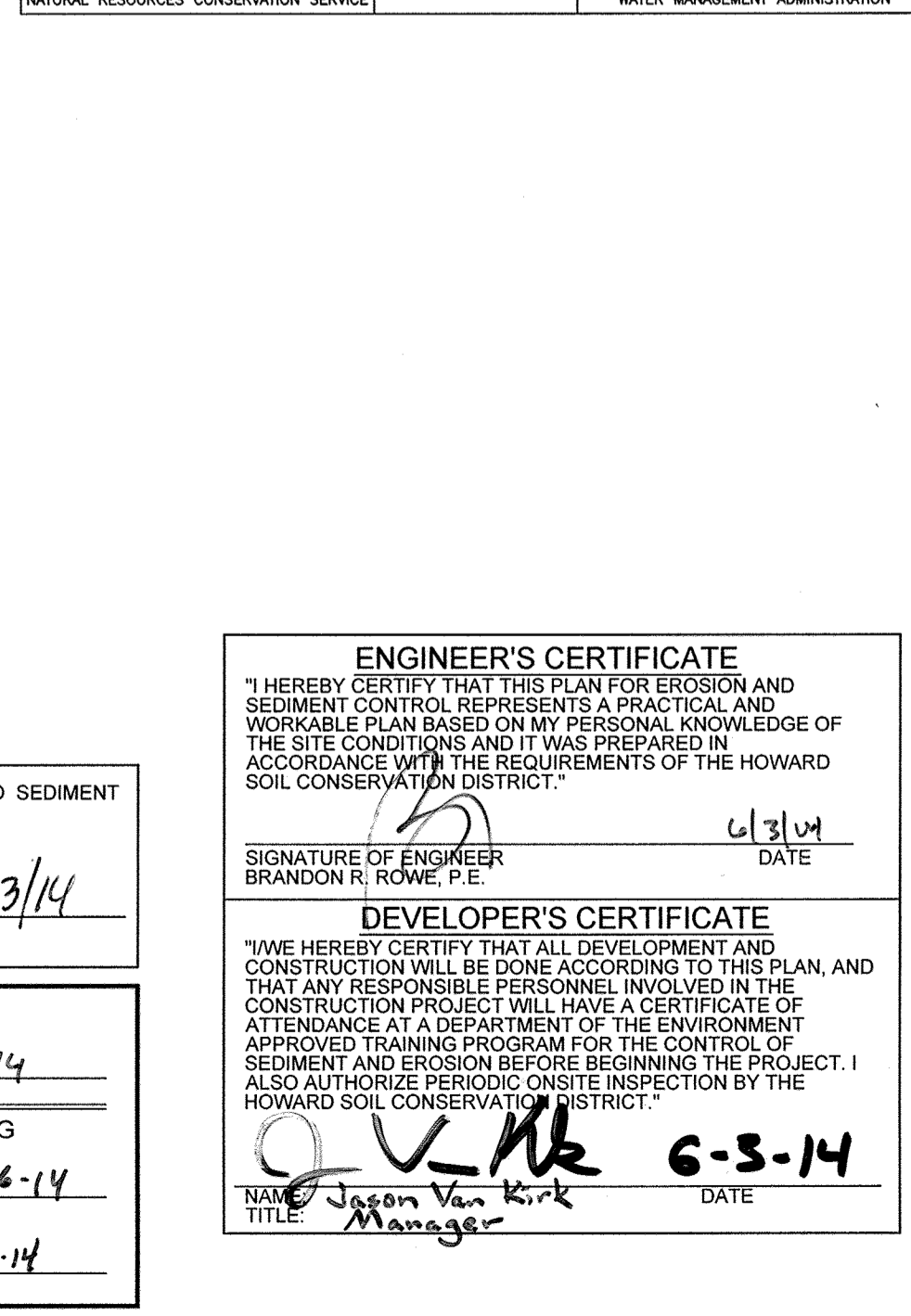
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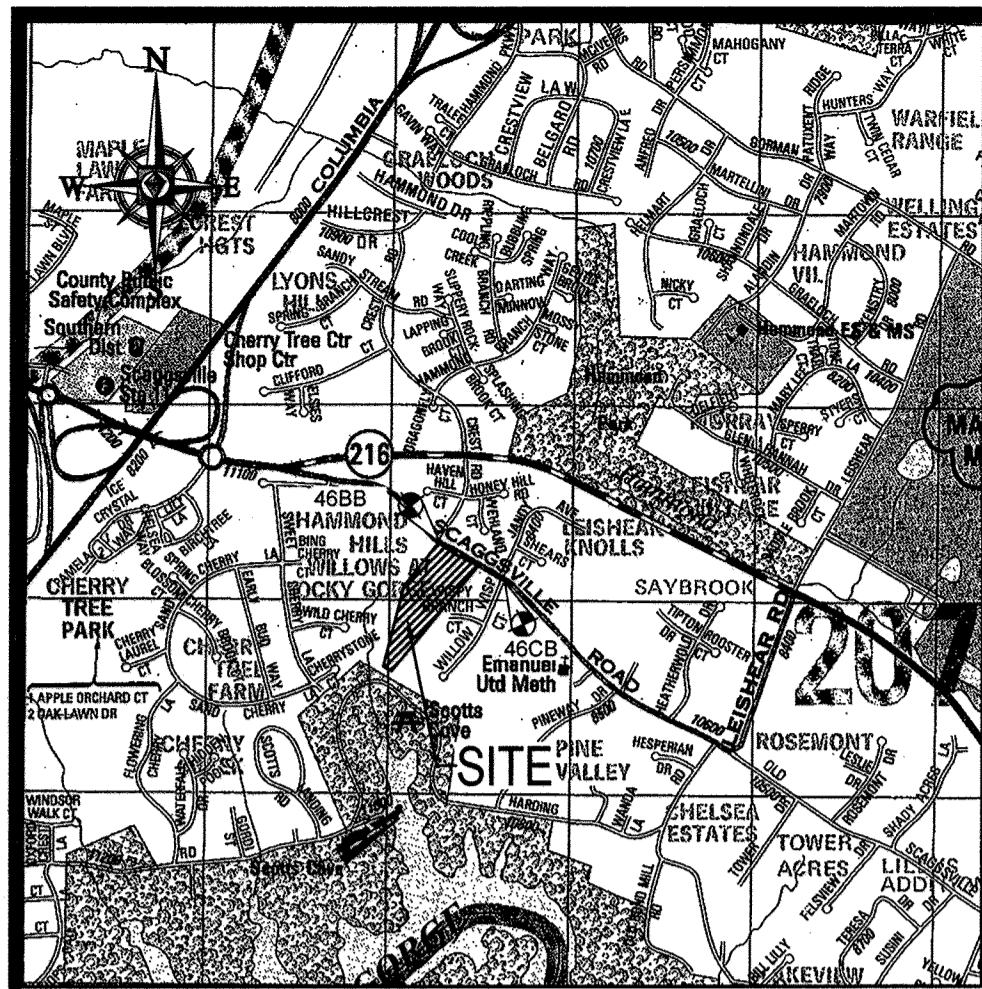
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B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

DEFINITION
A MOUND OR PILE OF SOIL PROTECTED BY APPROPRIATELY DESIGNED EROSION AND SEDIMENT CONTROL MEASURES.



SPECIMEN TREES

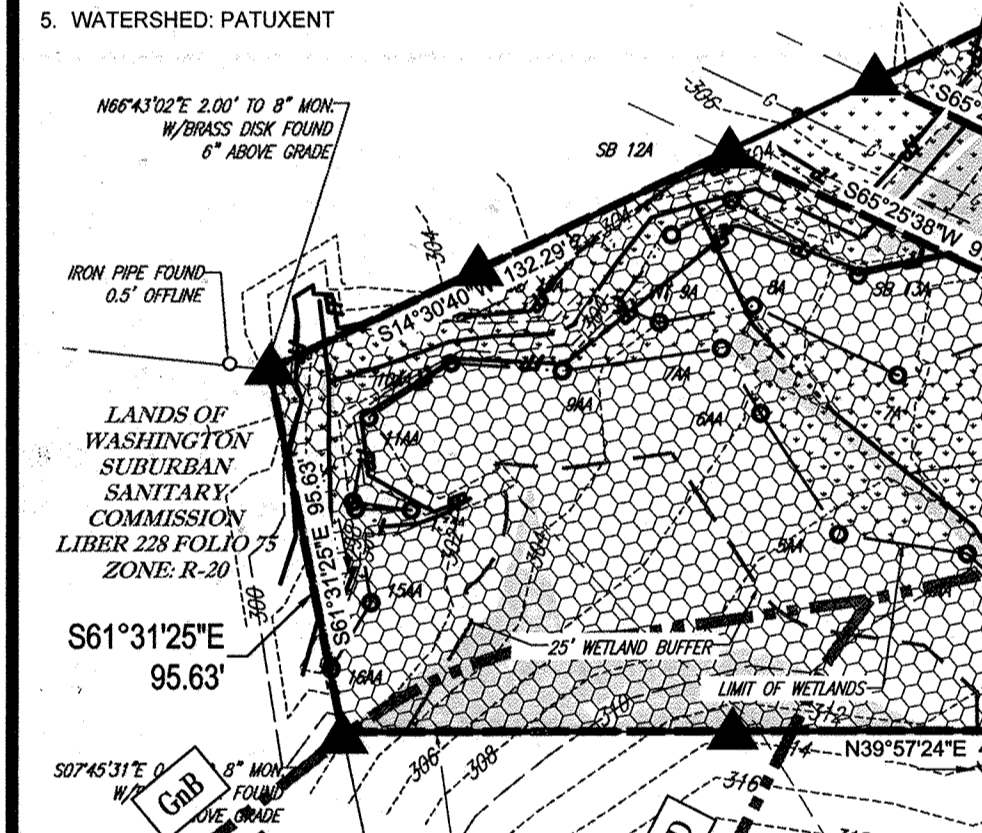
KEY	SPECIES NAME	SIZE	COND.	TO REMAIN
A	TULIP POPLAR	37	GOOD	NO
B	RED MAPLE	38	GOOD	YES
C	TULIP POPLAR	30	F GOOD	YES
D	TULIP POPLAR	35	GOOD	NO
E	TULIP POPLAR	33	GOOD	NO
F	TULIP POPLAR	34	GOOD	NO
G	TULIP POPLAR	41	GOOD	NO
H	RED MAPLE	32	GOOD	NO
I	RED MAPLE	41	GOOD	YES
J	WHITE MAPLE	34	FAIR	YES
K	RED MAPLE	38	FAIR	YES
L	RED MAPLE	38	FAIR	NO
M	RED MAPLE	30	FAIR	NO
N	ATLAS CEDAR	30	POOR	NO
O	TULIP POPLAR	32	FAIR	NO
P	TULIP POPLAR	31	F GOOD	YES

VICINITY MAP
 COPYRIGHT ADC THE MAP PEOPLE
 PERMIT USE NO. 20002153-5
 SCALE: 1"=2000'
 ADC MAP COORDINATES: 50521H8

FOREST CONSERVATION EASEMENT #1
 CREDITED FOREST = 24,541 S.F. OR 0.6 AC
 NON-CREDIT FOREST (FLOODPLAIN) = 878 S.F. OR 0.02 AC
 REFORESTATION = 2,885 S.F. OR 0.06 AC
 EASEMENT AREA = 28,104 S.F. OR 0.6 AC
 CREDITED EASEMENT AREA = 27,226 S.F. OR 0.6 AC

FOREST CONSERVATION EASEMENT #2 - RETENTION
 CREDITED FOREST = 42,014 S.F. OR 1.0 AC
 NON-CREDIT FOREST (FLOODPLAIN) = 3,903 S.F. OR 0.1 AC

- FCP NOTES**
- ANY FOREST CONSERVATION EASEMENT (FCE) SHOWN HEREON IS SUBJECT TO PROTECTIVE COVENANTS WHICH MAY BE FOUND IN THE LAND RECORDS OF HOWARD COUNTY AND WHICH RESTRICT THE DISTURBANCE AND USE OF THESE AREAS.
 - THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION, OR DISTURBANCE OF VEGETATION IN THE FOREST CONSERVATION EASEMENT EXCEPT AS PERMITTED BY HOWARD COUNTY.
 - NO STOCKPILE, PARKING AREAS, EQUIPMENT CLEANING AREAS, ETC. SHALL OCCUR WITHIN AREAS DESIGNATED AS FOREST CONSERVATION EASEMENTS.
 - PERMANENT SIGNAGE SHALL BE PLACED 100' APART ALONG THE BOUNDARIES OF ALL AREAS INCLUDED IN FOREST CONSERVATION EASEMENTS.
 - WATERSHED: PATUXENT



FOREST CONSERVATION WORKSHEET

BASIC SITE DATA	ACRES
GROSS SITE ACREAGE	11.4
AREA WITHIN FLOODPLAIN	0.1
AREA IN UNDERGROUND GAS LINE EASEMENT	1.0
NONCREDITED FOREST	0.01
NET TRACT AREA	10.3
LAND USE CATEGORY	HDR
INFORMATION FOR CALCULATIONS	ACRES
NET TRACT AREA	10.3
FOREST CONSERVATION THRESHOLD (PERCENTAGE OF NET TRACT AREA)	20.00%
AFFORESTATION THRESHOLD (PERCENTAGE OF NET TRACT AREA)	15.00%
EXISTING FOREST ON NET TRACT AREA	3.2
EXISTING FOREST ABOVE FOREST CONSERVATION THRESHOLD	1.1
BREAK-EVEN POINT	2.3
FOREST TO BE CLEARED	1.6
FOREST TO BE RETAINED	1.6
AFFORESTATION CALCULATIONS	ACRES
NO FOREST CLEARING: AFFORESTATION THRESHOLD - EXISTING FOREST	N/A
FOREST CLEARING: (AFF. THRESH. - EX. FOREST) + (FOREST TO BE CLEARED X2)	N/A
REFORESTATION CALCULATIONS	ACRES
FOREST CLEARED ABOVE THRESHOLD 1.1 X 1/4	0.3
FOREST REMOVED BELOW THRESHOLD 0.5 X 2	1.0
FOREST RETAINED ABOVE THRESHOLD	0.0
REFORESTATION REQUIRED	1.3
ON-SITE REFORESTATION PROVIDED	0.9
OFF-SITE REFORESTATION PROVIDED*	0.4
*OFF-SITE MITIGATION TO BE PROVIDED AT CHELSEA KNOLLS FOREST CONSERVATION BANK (SDP-14-032)	

FOREST CONSERVATION EASEMENT AREA TABULATION

EASEMENT	GROSS FOREST AREA (AC)	FOREST AREA NONCREDITED (FOR FOREST LESS THAN 10,000 S.F.) (AC)	FOREST AREA NONCREDITED (100 YEAR FLOODPLAIN) (AC)	NET FOREST (RETAINED) (CREDITED) (AC)	PLANTED AREA (REFORESTATION) (CREDITED) (AC)	CREDITED EASEMENT AREA (AC)	TOTAL EASEMENT AREA (AC)
FCE #1	0.6	0.0	0.03	0.6	0.1	0.6	0.6
FCE #2	1.1	0.0	0.1	1.0	0.0	1.0	1.1
FCE #3	0	0.0	0.0	0.0	0.6	0.6	0.6
FCE #4	0	0.0	0.0	0.0	0.2	0.3	0.3
TOTAL	1.7	0.0	0.1	1.6	0.9	2.5	2.6

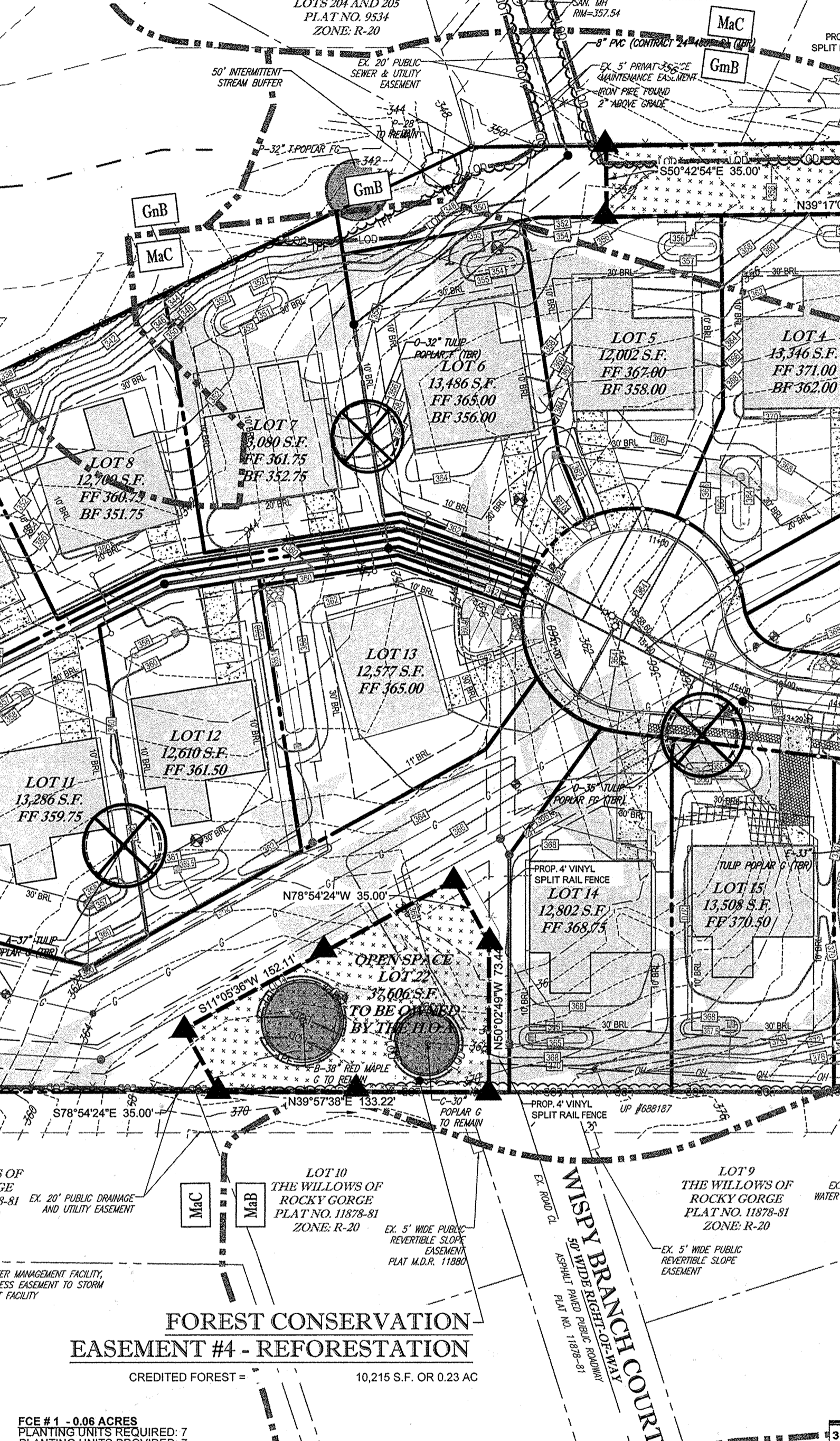
FOREST STAND / VEGETATIVE COVER

MAP SYMBOL	MAP UNIT NAME	RATING
GhB	GLENELG-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	B
GmB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C
GnB	GLENVILLE-BAILE SILT LOAMS, 0 TO 8 PERCENT SLOPES	C
MaB	MANOR LOAM, 3 TO 8 PERCENT SLOPES	B
MaC	MANOR LOAM, 8 TO 15 PERCENT SLOPES	B
MaD	MANOR LOAM, 15 TO 25 PERCENT SLOPES	B

- ### SEQUENCE OF CONSTRUCTION
- PRECONSTRUCTION MEETINGS SHALL BE HELD BETWEEN DEVELOPER, CONTRACTOR, AND COUNTY INSPECTOR.
 - SEEDMATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH GENERAL CONSTRUCTION PLAN FOR SITE. TEMPORARY PROTECTIVE FENCING AND CONSERVATION SIGNAGE SHALL BE INSTALLED AS PER FOREST CONSERVATION PLAN.
 - SITE SHALL BE GRADED, INFRASTRUCTURE INSTALLED, AND HOUSES CONSTRUCTED. DISTURBED AREAS SHALL BE STABILIZED. PERMANENT SIGNAGE IN POOR CONDITION SHALL BE REPLACED.
 - POST-CONSTRUCTION MEETING SHALL BE HELD WITH COUNTY INSPECTOR TO ENSURE COMPLIANCE WITH DEVELOPMENT PLAN, SEEDMATERIAL CONTROL, AND TEMPORARY PROTECTIVE FENCING UPON STABILIZATION OF SITE AND COMPLETION OF CONSTRUCTION ACTIVITIES.
 - CERTIFICATION OF FOREST RETENTION PAPERWORK SHALL BE SUBMITTED TO THE COUNTY.

NOTE:
 FOREST CONSERVATION REQUIREMENTS PER SECTION 16.1200 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION MANUAL FOR THIS SUBDIVISION WILL BE FULFILLED BY RETENTION OF EXISTING FOREST IN THE AMOUNT OF 1.6 ACRES AND ON-SITE REFORESTATION OF 0.9 ACRES FOR A TOTAL CONSERVATION EASEMENT AREA OF 2.5 ACRES. THE SURETY AMOUNT FOR ON-SITE REFORESTATION IS \$100,000. THE DEVELOPER'S AGREEMENT, THE REMAINING REFORESTATION OBLIGATION OF 0.4 ACRES WILL BE PROVIDED AT THE CHELSEA KNOLLS FOREST CONSERVATION BANK (SDP-14-032). TOTAL FORESTATION PROVIDED FOR THIS SUBDIVISION IS 2.9 ACRES.

FOREST CONSERVATION EASEMENT #3 - REFORESTATION
 CREDITED FOREST = 25,921 S.F. OR 0.6 AC



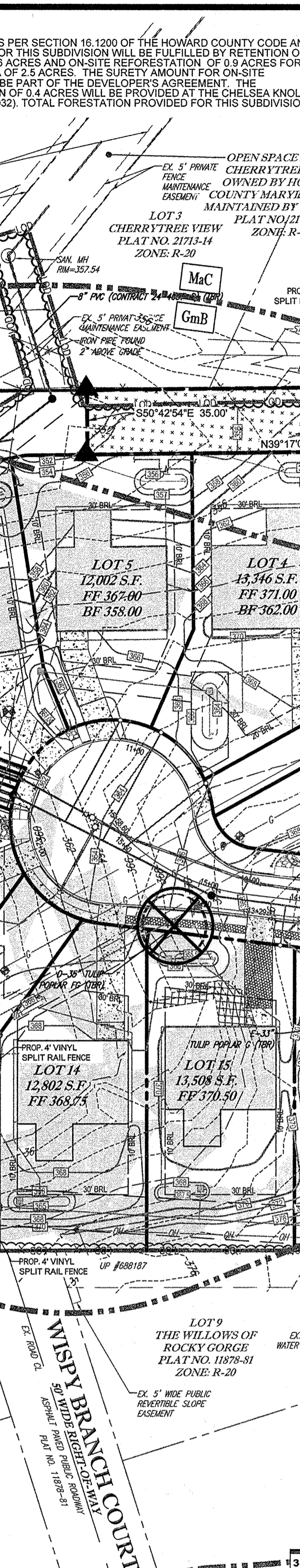
FOREST CONSERVATION EASEMENT #4 - REFORESTATION

CREDITED FOREST = 10,215 S.F. OR 0.23 AC

QTY	SPECIES	SIZE	SPACING	TOTAL PQA UNITS
2	ACER RUBRUM - RED MAPLE	2" CALIPER TREES	20' O.C.	20' O.C.
2	LIRIODENDRON TULIPIFERA - TULIP POPLAR	2" CALIPER TREES	20' O.C.	20' O.C.
2	CERCIS CANADENSIS - EASTERN REDBUD	2" CALIPER TREES	20' O.C.	20' O.C.
1	AMELANCHIER CANADENSIS - SERVICEBERRY	2" CALIPER TREES	20' O.C.	20' O.C.
7		TOTAL PLANTINGS		7
		TOTAL UNIT CREDIT		7

FOREST STAND / VEGETATIVE COVER

QTY	SPECIES	SIZE	SPACING	TOTAL PQA UNITS
21	ACER RUBRUM - RED MAPLE	2" CALIPER TREES	20' O.C.	20' O.C.
21	LIRIODENDRON TULIPIFERA - TULIP POPLAR	2" CALIPER TREES	20' O.C.	20' O.C.
12	CERCIS CANADENSIS - EASTERN REDBUD	2" CALIPER TREES	20' O.C.	20' O.C.
12	AMELANCHIER CANADENSIS - SERVICEBERRY	2" CALIPER TREES	20' O.C.	20' O.C.
66		TOTAL PLANTINGS		66
		TOTAL UNIT CREDIT		66

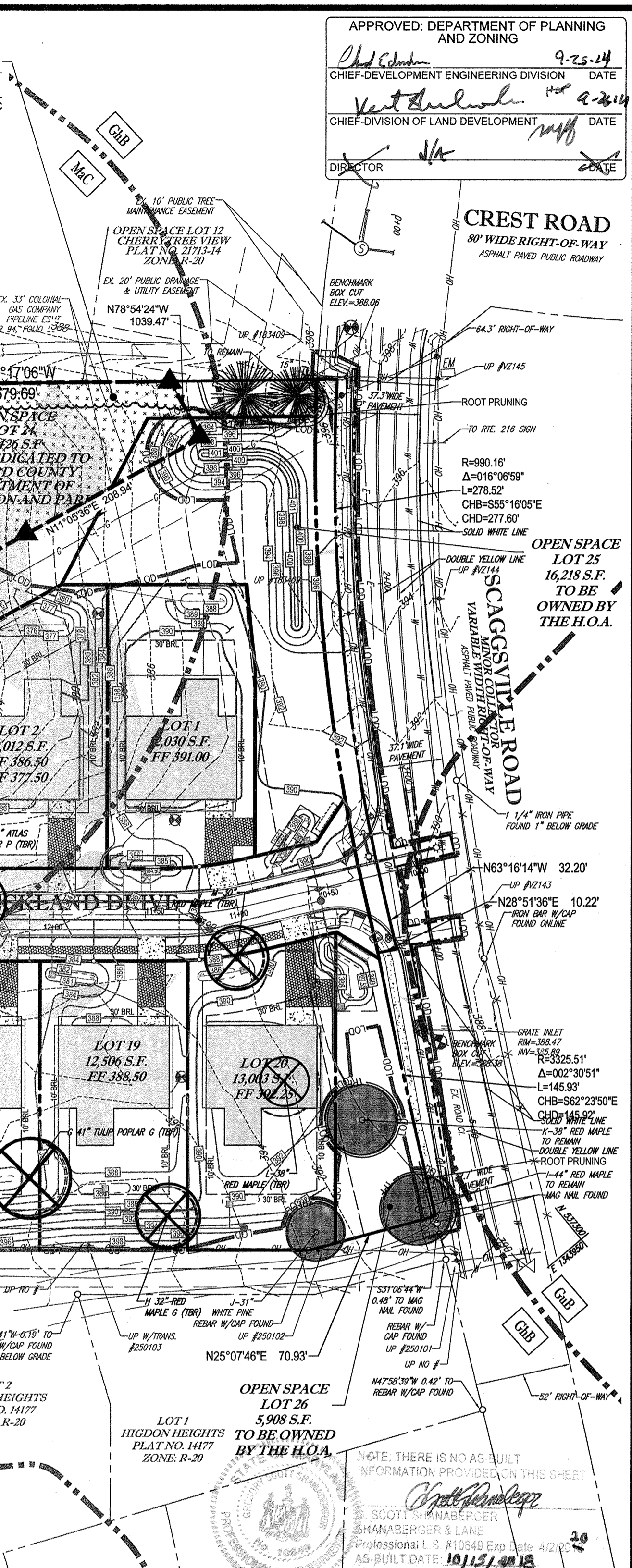
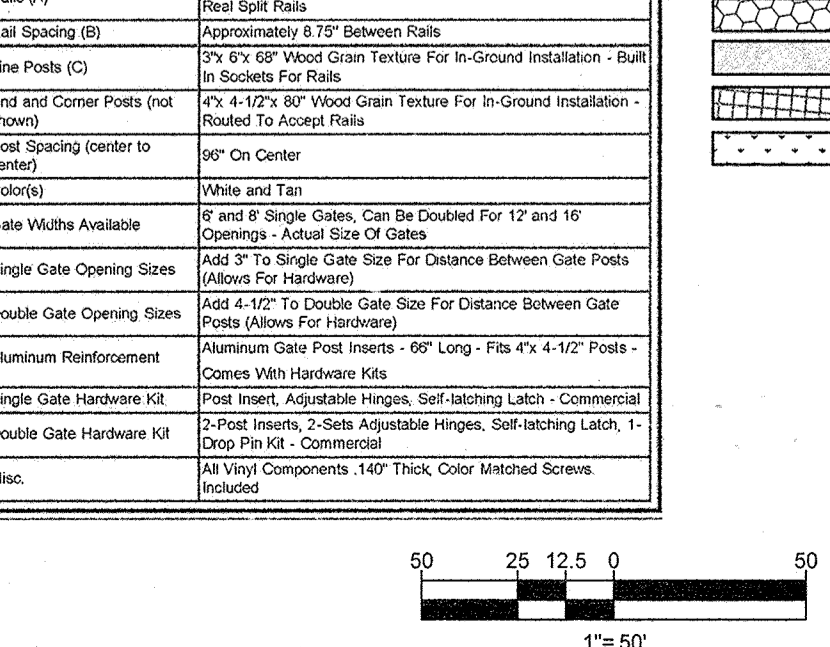
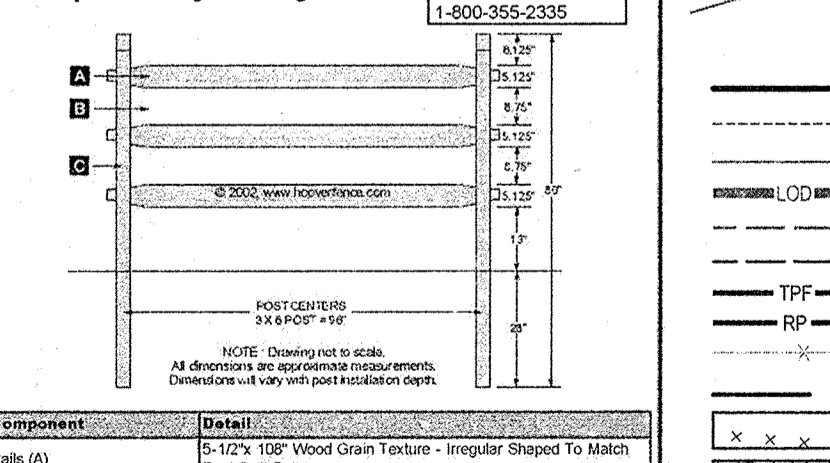
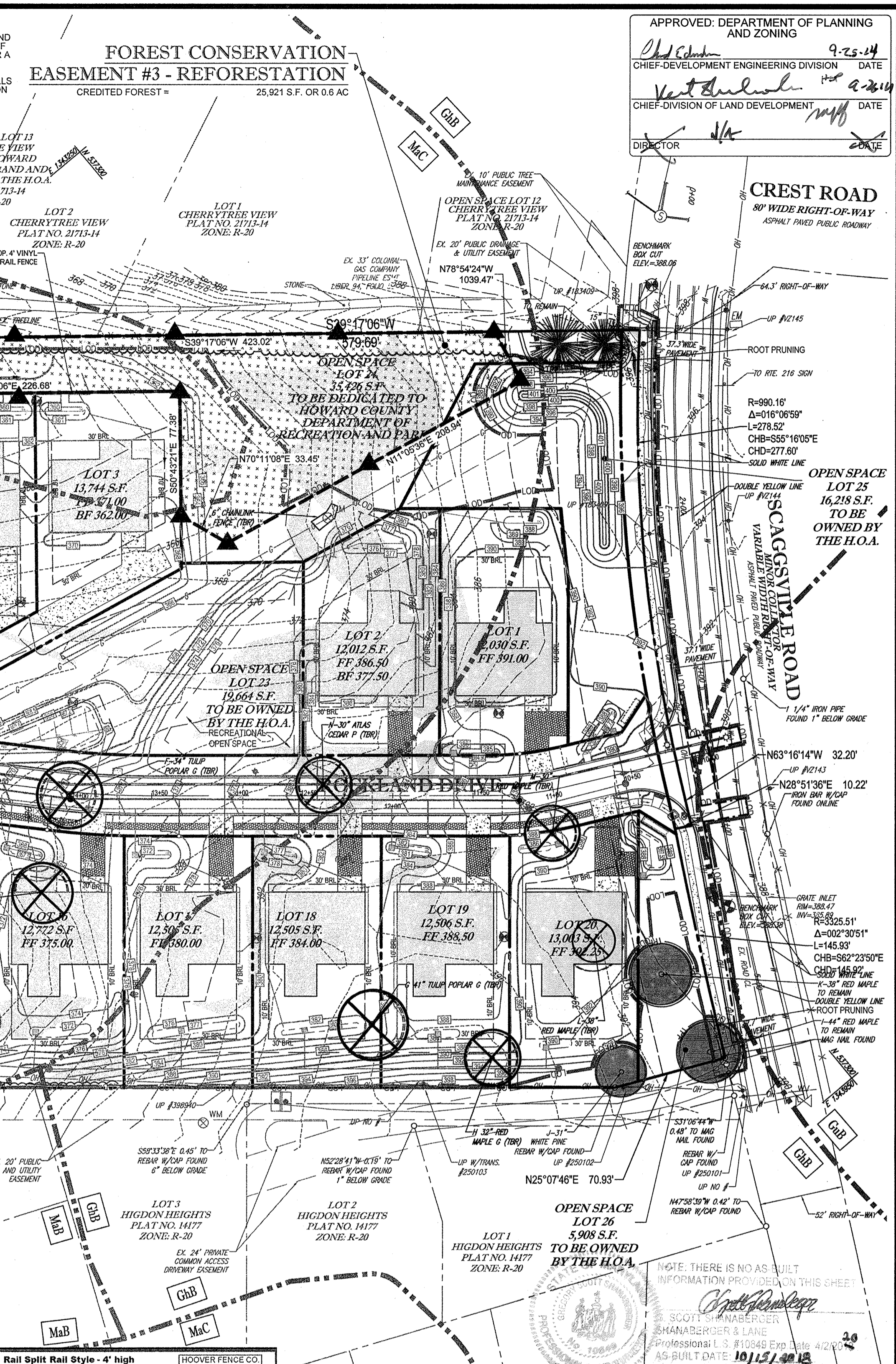


FOREST CLEARING

FOREST TO BE CLEARED = 1.6 AC

WETLAND DATA

WETLAND SYSTEM	COWARD CLASSIFICATION	DOMINANT VEGETATION
A	PF06C	ILEX OPACA, LEX VERTICILLATA, LINDERA BENZOIN, EUALLIA VINIFERA, POLYGONUM PERSICARIA, PILEA PUMILA



PROFESSIONAL CERTIFICATION
 DATE: 9-11-17

OWNER: CM HIGDON LLC
 1355 BEVERLY ROAD, SUITE 330
 MCLEAN, VA 22101
 CONTACT: DAVID KAUFMAN
 PHONE: (703) 734-9855

DEVELOPER: ELMS AT FIELDS POINT II, L.C.
 5074 DORSEY HALL DRIVE, SUITE 205
 ELLICOTT CITY, MD 21143
 CONTACT: JASON VAN KIRK
 PHONE: (410) 720-3021

TAX MAP: 46 GRID: 11 ZONED: R-20
 PARCEL: 56

6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PROFESSIONAL CERTIFICATION
 I, ERIC R. McWILLIAMS, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 3697, EXPIRATION DATE: 9/30/14

BOHLER ENGINEERING
 CIVIL & CONSULTING ENGINEERS
 SURVEYORS
 PROJECT MANAGERS
 ENVIRONMENTAL CONSULTANTS
 LANDSCAPE ARCHITECTS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 CHIEF-DEVELOPMENT ENGINEERING DIVISION DATE: 9-25-14
 CHIEF-DIVISION OF LAND DEVELOPMENT DATE: 9-26-14
 DIRECTOR

REVISIONS

REV	DATE	COMMENT	BY
1	9/19/14	REVISED ROAD PROFILE	RLB

THE FOLLOWING STATES REQUIRE NOTIFICATION BY EDUCATORS, DESIGNERS, OR ANY PERSON PREPARING TO RESTORE THE EARTH'S SURFACE ANYWHERE IN THE STATES OF VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE CALL: 811 (TOLL FREE 1-800-245-4848) (PA 1-800-242-1776) (DC 1-800-287-7777) (VA 1-800-662-7911) (MD 1-800-257-7777) (DE 1-800-368-6655)

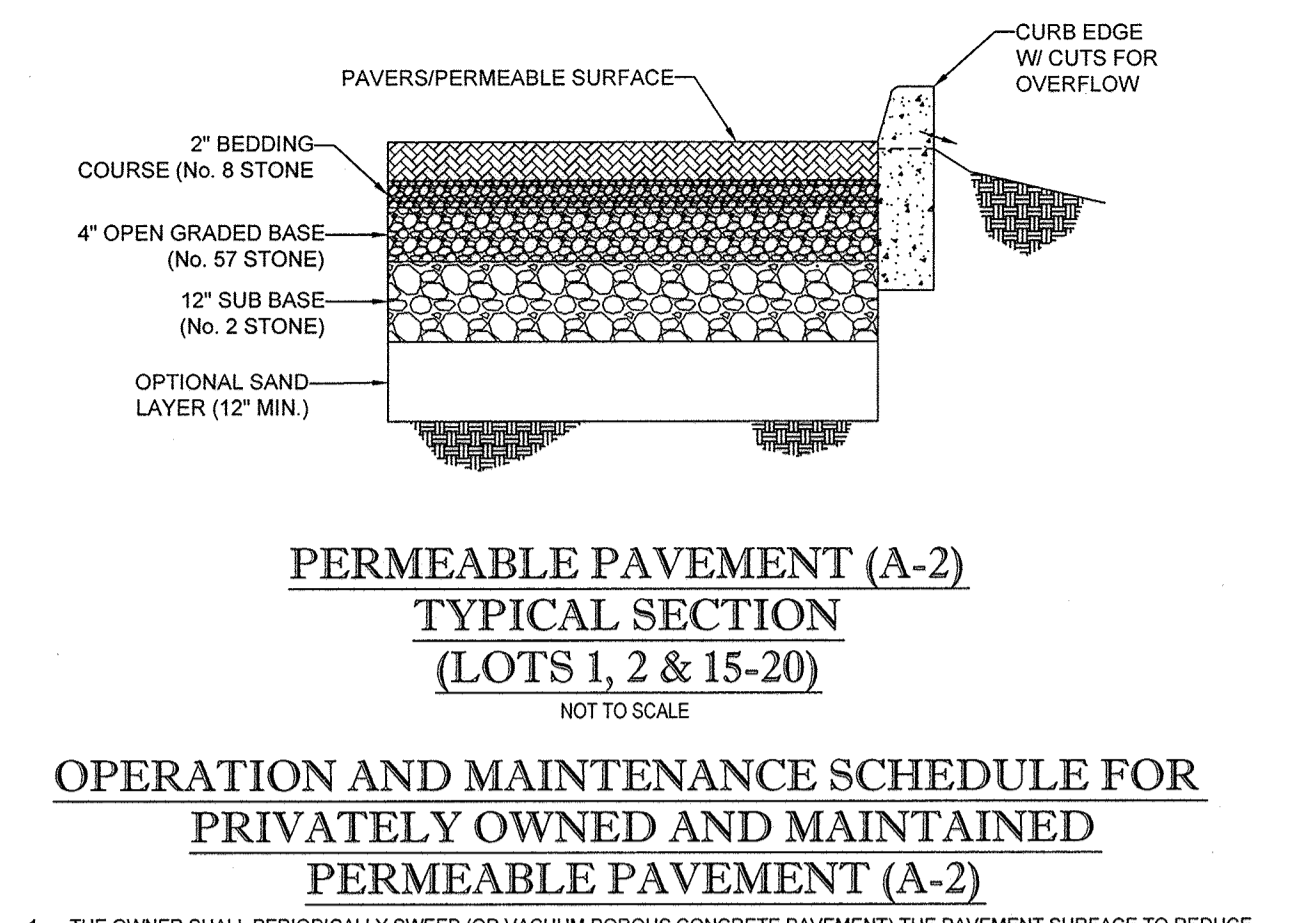
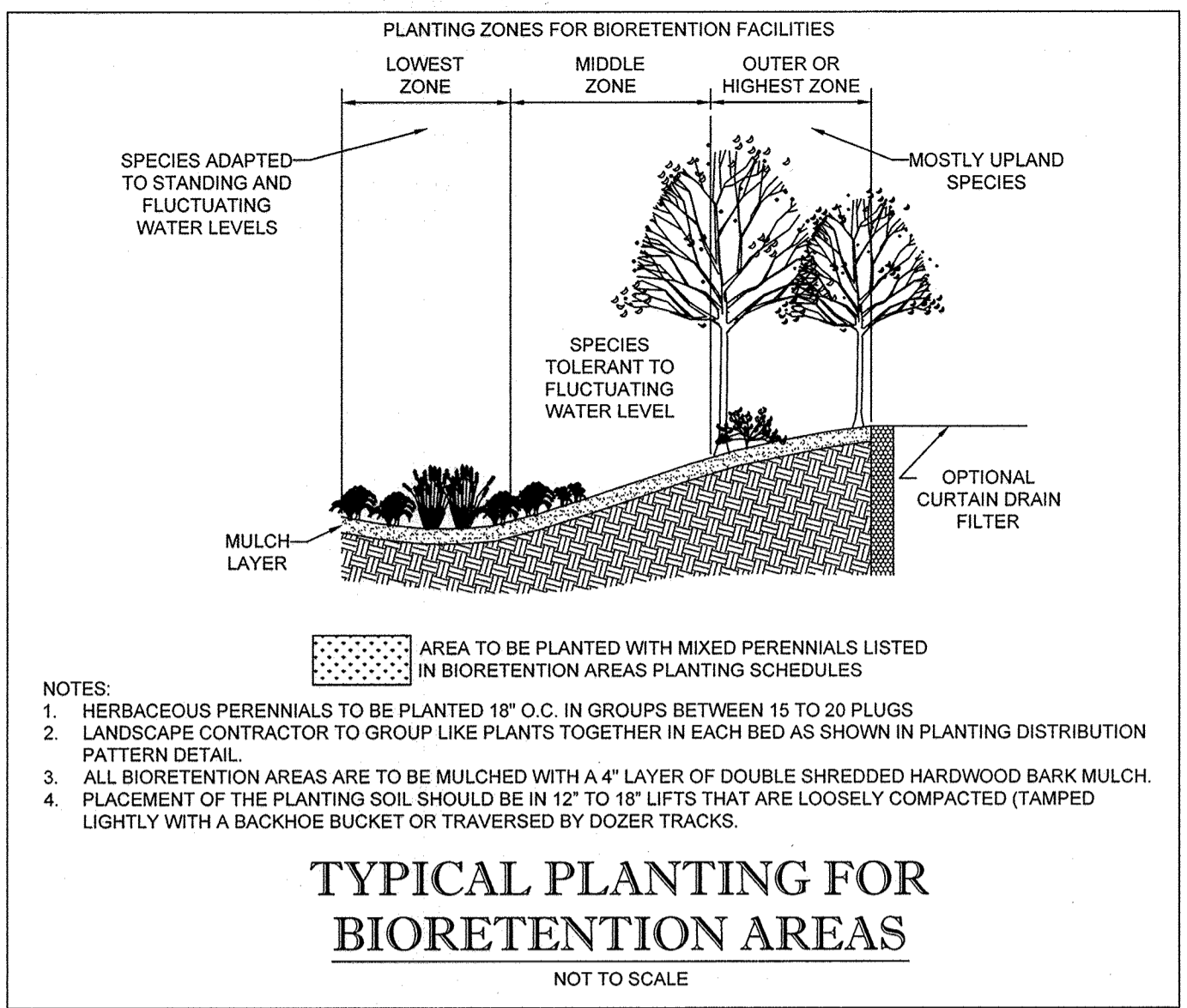
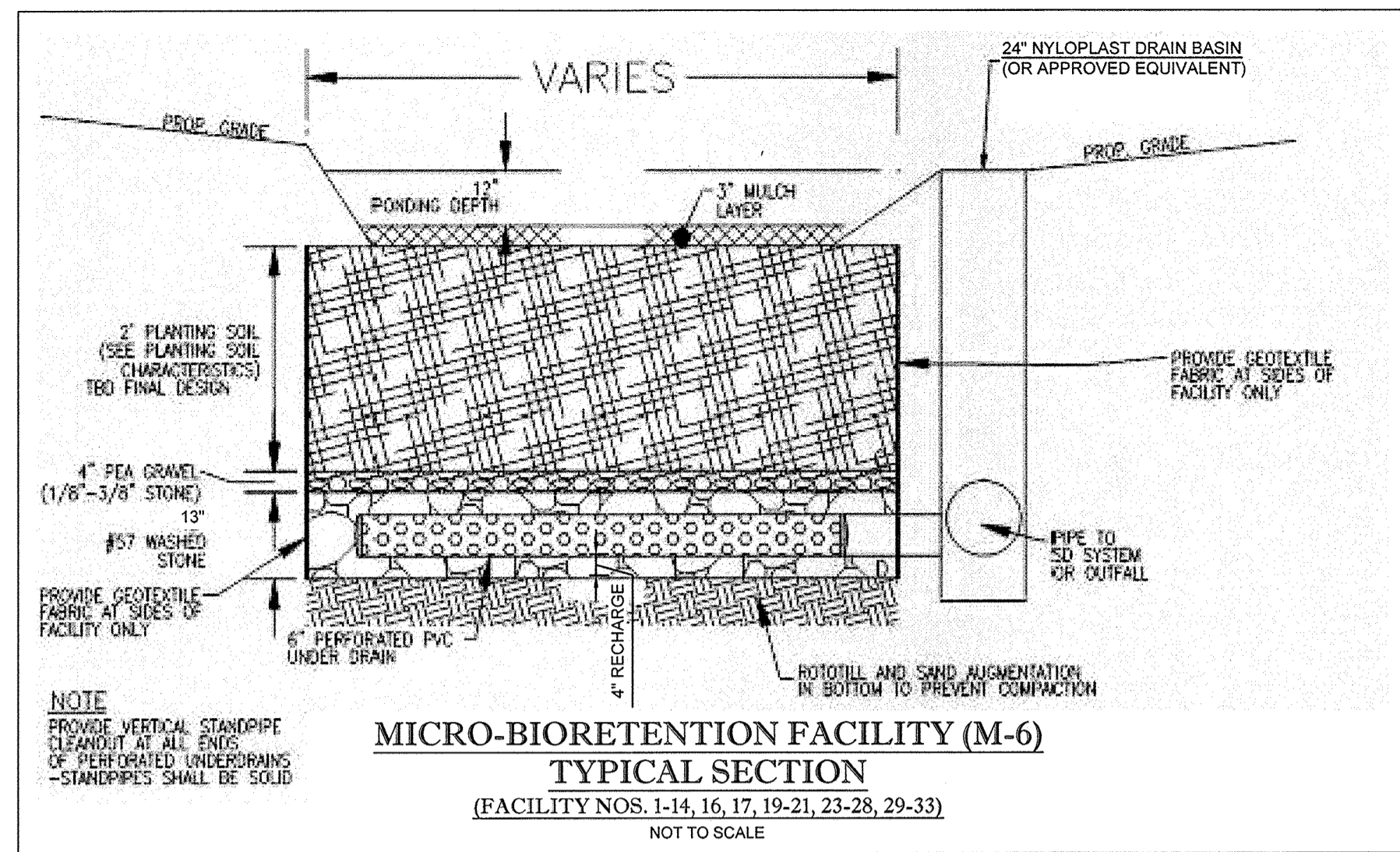
REVISED FINAL ROAD CONSTRUCTION PLANS FOR RESERVOIR ESTATES
 BUILDABLE LOTS 1-20 AND OPEN SPACE LOTS 21-26 LOCATION OF SITE
 10883 SCAGSVILLE ROAD
 LAUREL, MD 20723
 HOWARD COUNTY

BOHLER ENGINEERING
 901 DULANEY VALLEY ROAD, SUITE 801
 TOWSON, MARYLAND 21284
 Phone: (410) 821-7900
 Fax: (410) 821-7987
 www.BohlerEngineering.com

E.R. McWILLIAMS
 REGISTERED LANDSCAPE ARCHITECT
 DATE: 9-11-17

FOREST CONSERVATION PLAN
 SHEET NUMBER: 14 OF 19

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE PROJECT ENGINEER OF RECORD IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY THE PROJECT ENGINEER SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE WORK AS SHOWN BY THE DRAWINGS AND IN FULL COMPLIANCE WITH ALL REGULATIONS AND CODES.



OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED PERMEABLE PAVEMENT (A-2)

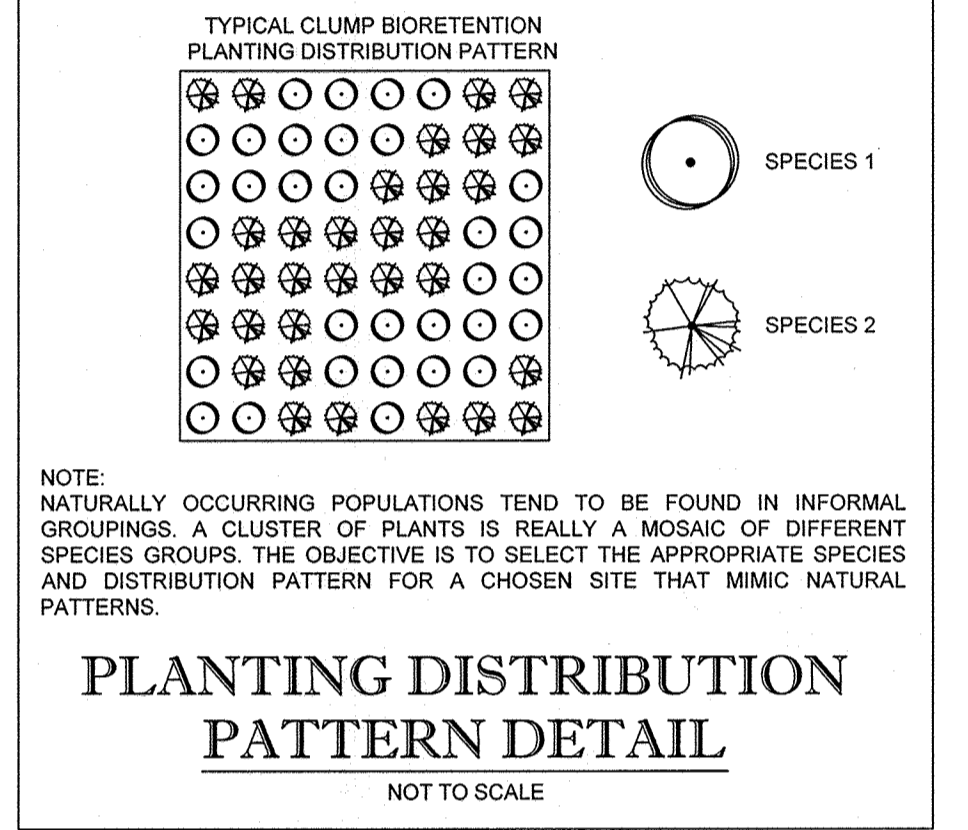
- THE OWNER SHALL PERIODICALLY SWEEP (OR VACUUM POROUS CONCRETE PAVEMENT) THE PAVEMENT SURFACE TO REDUCE SEDIMENT ACCUMULATION AND INSURE CONTINUED SURFACE POROSITY. SWEEPING SHOULD BE PERFORMED AT LEAST TWICE ANNUALLY WITH A COMMERCIAL LEANING UNIT. WASHING OR COMPRESSED AIR UNITS SHOULD NOT BE USED TO PERFORM SURFACE CLEANING.
- THE OWNER SHALL PERIODICALLY CLEAN DRAINAGE PIPES, INLETS, STONE EDGE DRAINS AND OTHER STRUCTURES WITHIN OR DRAINING TO THE SUBBASE.
- THE OWNER SHALL USE DEICERS IN MODERATION. DEICERS SHOULD BE NON-TOXIC AND BE APPLIED EITHER AS CALCIUM MAGNESIUM ACETATE OR AS PRETREATED SALT.
- THE OWNER SHALL ENSURE SNOW PLOWING IS PERFORMED CAREFULLY WITH BLADES SET ONE INCH ABOVE THE SURFACE. PLOWED SNOW PILES AND SNOWMELT SHOULD NOT BE DIRECTED TO PERMEABLE PAVEMENT.

STORMWATER MANAGEMENT NOTES

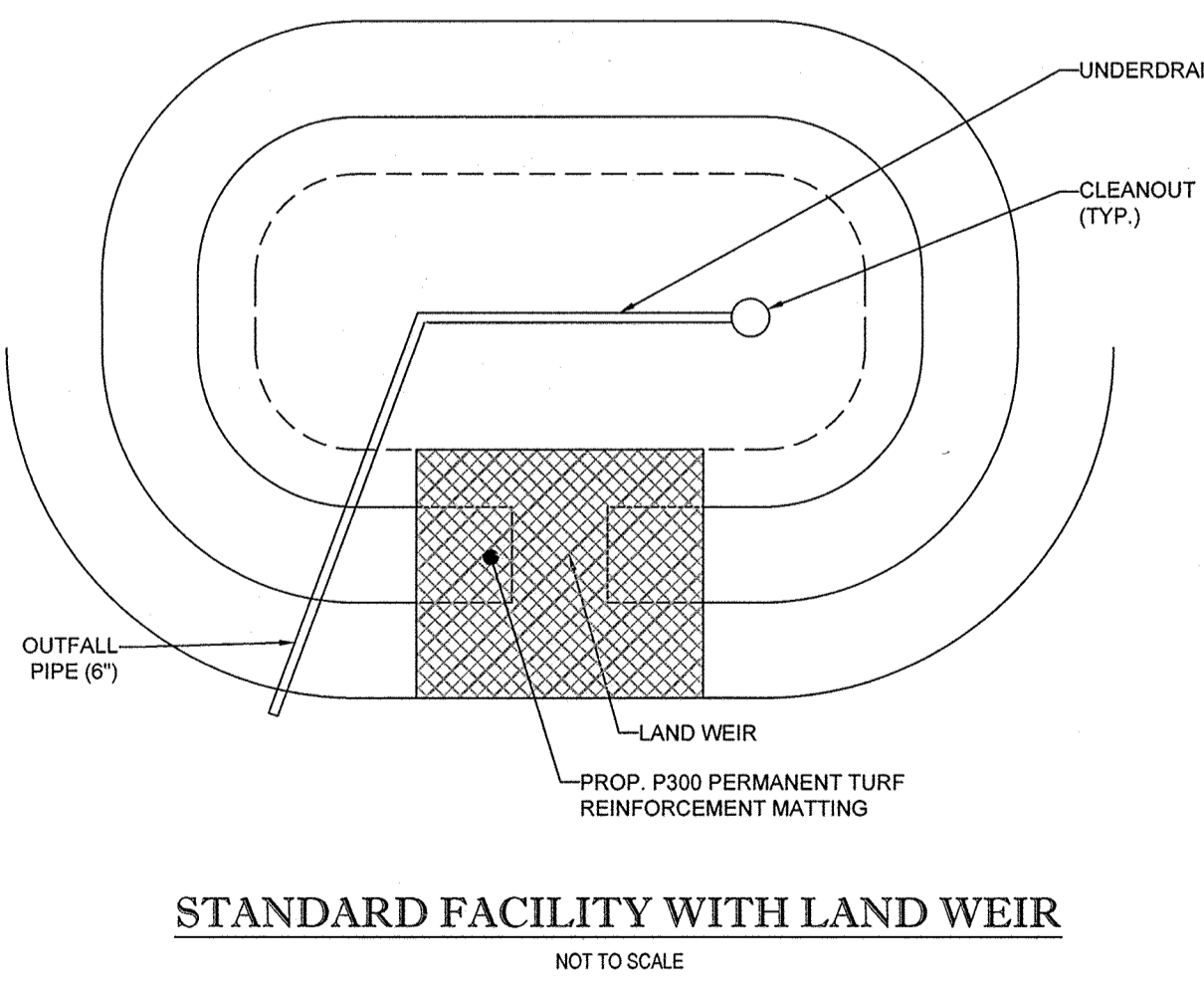
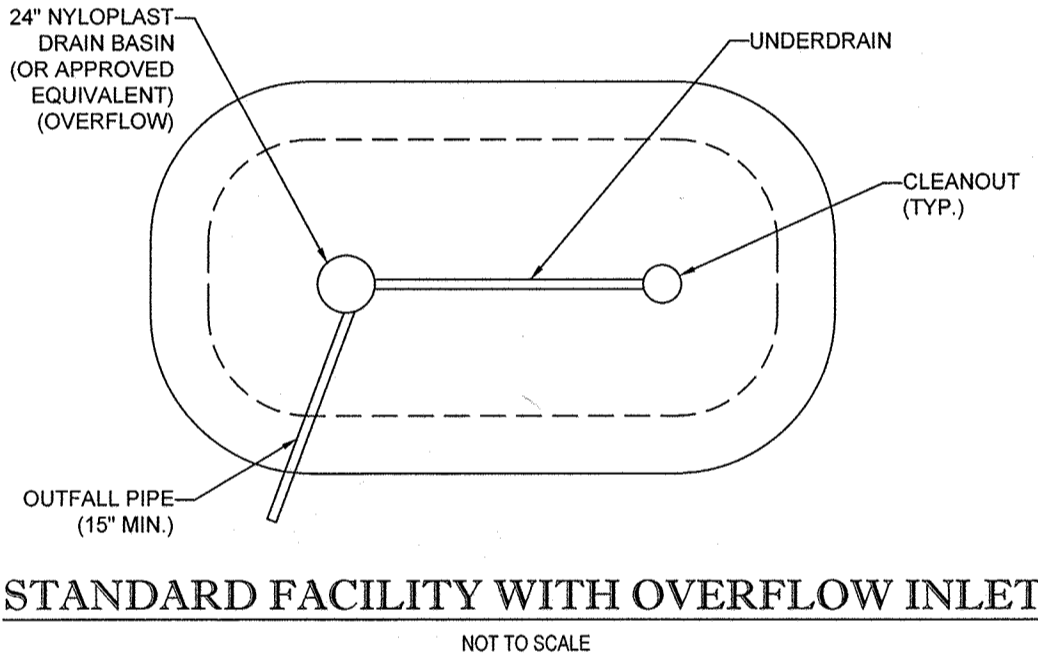
- STORMWATER MANAGEMENT IS PROVIDED IN ACCORDANCE WITH THE 2000 MARYLAND STORMWATER DESIGN MANUAL.
- FINAL GRADING SHALL BE SHOWN ON SITE DEVELOPMENT PLAN.

OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREAS (M-6)
(FACILITY NOS. 1-14, 16, 17, 19-21, 23-33)

- THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II, TABLE A.4.1 AND 2.
- THE OWNER SHALL PERFORM A PLANT IN THE SPRING AND IN THE FALL EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT. REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLANT MATERIAL. TREAT DISEASED TREES AND SHRUBS AND REPLACE DEFICIENT STAKES AND WIRES.
- THE OWNER SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.
- THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.



FACILITY NO.	LENGTH (FT.)	WIDTH (FT.)	BOTTOM (FT.)	UNDERDRAIN INV. (EL.)	LAND WEIR (EL.)	OVERFLOW INLET (EL.)
1	20	5	390.00	386.67	N/A	391.00
2	20	5	386.00	382.67	N/A	387.00
3	28	5	386.00	382.67	N/A	387.00
4	20	5	381.00	377.67	N/A	382.00
5	30	5	380.50	377.17	N/A	381.50
6	20	5	377.00	373.67	N/A	378.00
7	41	8	377.00	373.67	N/A	377.83
8	20	5	372.00	368.67	N/A	373.00
9	38	6	372.00	368.67	N/A	372.92
10	21	5	367.50	364.17	N/A	368.50
11	27	6	367.50	364.17	N/A	368.50
12	23	5	365.50	362.17	N/A	366.50
13	30	5	365.00	361.67	N/A	366.00
14	15	5	366.00	362.67	N/A	367.00
16	25	10	388.00	384.67	389.00	N/A
17	25	8	376.00	372.67	376.92	N/A
19	25	6	360.00	356.67	361.00	N/A
20	30	8	364.00	360.67	N/A	365.00
21	25	6	360.00	356.67	361.00	N/A
23	25	9	356.00	352.67	357.00	N/A
24	25	9	354.00	350.67	355.00	N/A
25	40	6	351.00	347.67	352.00	N/A
26	30	7	342.00	338.67	343.00	N/A
27	30	5	340.00	336.67	341.00	N/A
28	20	17	347.00	343.67	346.00	N/A
29	21	10	348.00	344.67	349.00	N/A
30	20	6	357.00	353.67	N/A	358.00
31	15	5	357.00	353.67	N/A	358.00
32	30	6	359.50	356.17	N/A	360.33
33	20	5	358.00	354.67	N/A	359.00



APPROVED: DEPARTMENT OF PUBLIC WORKS
John Serrano 6-9-14
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Karl Paulovich 6-26-14
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

John E. ... 6-18-14
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

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

DATE: 6/3/14
 SIGNATURE OF ENGINEER: BRANDON R. ROWE, P.E.

DEVELOPER'S CERTIFICATE
 I/WE HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, 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 ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

DATE: 6-3-14
 SIGNATURE OF DEVELOPER: JASON VANKIRK

AS-BUILT CERTIFICATE
 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.

DATE: _____
 SIGNATURE: _____ P.E. NO. _____

NOTICE: THERE IS NO AS-BUILT INFORMATION PROVIDED IN THIS SHEET.

10/15/2018

OWNER: CM HIGDON LC
 1355 BEVERLY ROAD, SUITE 330
 MCLEAN, VA 22101
 CONTACT: DAVID KAUFMAN
 PHONE: (703) 734-9855

DEVELOPER: ELMS AT FELS POINT II, L.C.
 5074 DORSEY HALL DRIVE, SUITE 205
 ELLICOTT CITY, MD 21143
 CONTACT: JASON VAN KIRK
 PHONE: (410) 720-3021

SUBDIVISION NAME: RESERVOIR ESTATES
 SECTION/AREA: N/A
 DEED # 15161, 365

TAX MAP: 46 GRID: 11 ZONED: R-20
 PARCEL: 56

6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PREVIOUS FILE NO.: WP-13-048, ECP-13-038, EA-05-028, SP-13-008, 24-4787-D

PROFESSIONAL CERTIFICATION
 I, BRANDON R. ROWE, 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. 40808, EXPIRATION DATE: 7/31/15

BOHLER ENGINEERING

CORPORATE OFFICE:
 WARREN, NJ

OFFICES:
 BOWEN, MD
 STERLING, VA
 ROCKVILLE, MD
 CENTER VALLEY, PA
 PHILADELPHIA, PA

SOUTH BORO, NJ
 SOUTHWEST, VA
 RICHMOND, VA
 CENTER VALLEY, PA
 TAMPA, FL

CIVIL & CONSULTING ENGINEERS
 SURVEYORS
 PROJECT MANAGERS
 ENVIRONMENTAL CONSULTANTS
 LANDSCAPE ARCHITECTS

REVISIONS

REV	DATE	COMMENT	BY

THE FOLLOWING STATES REQUIRE NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE STATE OF VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE CALL - 811

(WV 1-800-245-4848) (PA 1-800-242-1178) (DC 1-800-257-7777) (VA 1-800-552-7801) (MD 1-800-251-1177) (DE 1-800-382-8555)

PROJECT No.: _____ ER COUNTY: _____
 DRAWN BY: _____ RLB
 CHECKED BY: _____ BRR
 DATE: 6/2/14
 SCALE: AS SHOWN
 CAD ID: 532

FINAL ROAD CONSTRUCTION PLANS
 FOR
RESERVOIR ESTATES
 BUILDABLE LOTS 1-20 AND
 OPEN SPACE LOTS 21-26
 LOCATION OF SITE

10883 SCAGSVILLE ROAD
 LAUREL, MD, 20723
 HOWARD COUNTY

BOHLER ENGINEERING

901 DULANEY VALLEY ROAD,
 SUITE 801
 TOWSON, MARYLAND 21284
 Phone: (410) 821-7900
 Fax: (410) 821-7987
 www.BohlerEngineering.com

B.R. ROWE
 PROFESSIONAL ENGINEER
 LICENSE NO. 40808

SHEET TITLE:
FUTURE STORMWATER MANAGEMENT DETAILS

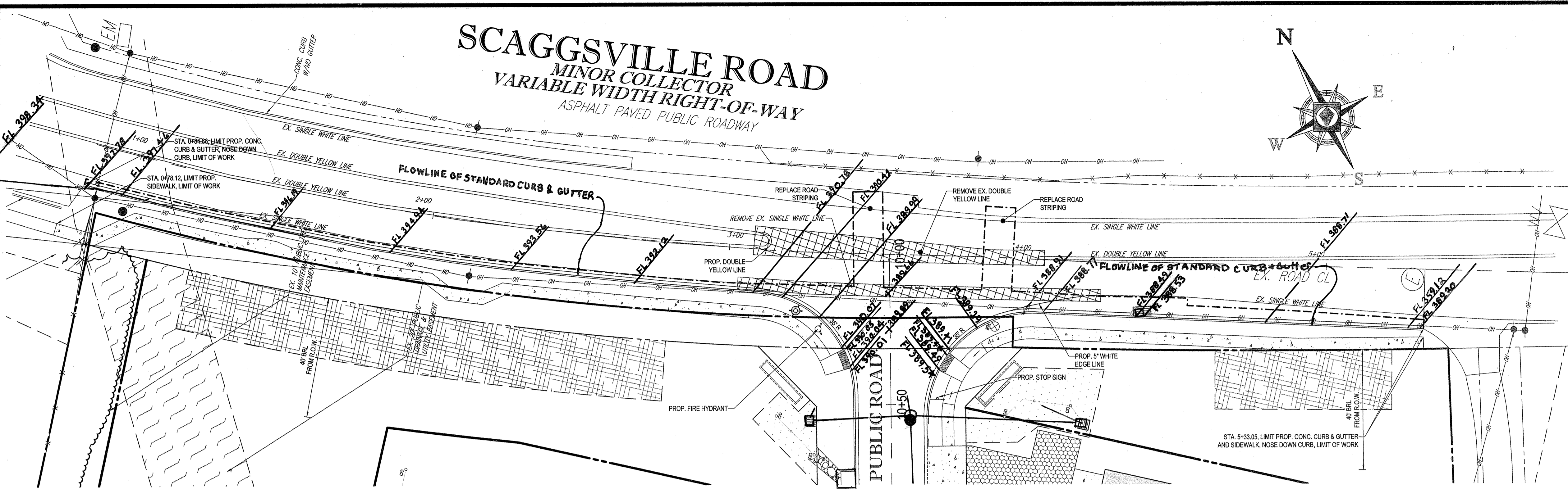
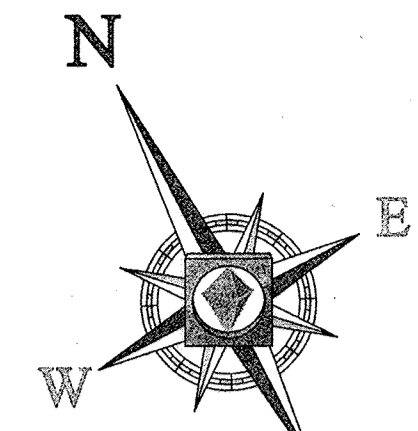
SHEET NUMBER:
17
 OF 19

SCAGGSVILLE ROAD

MINOR COLLECTOR

VARIABLE WIDTH RIGHT-OF-WAY

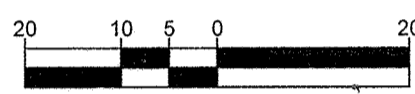
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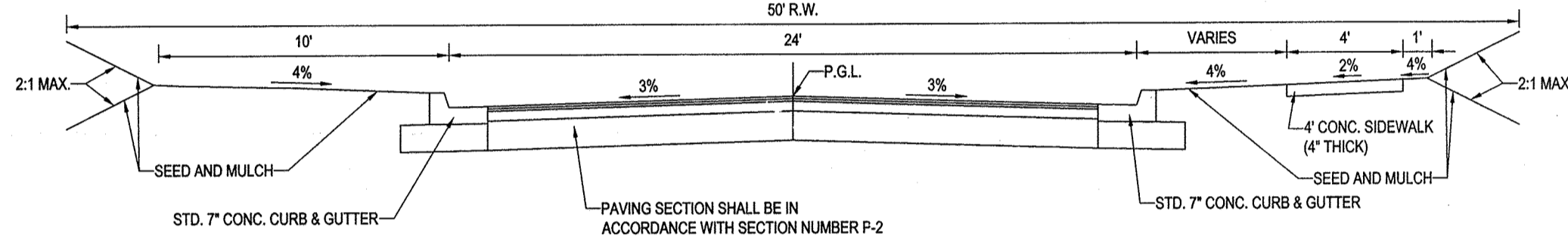
LEGEND

DENOTES EXISTING STRIPING TO BE REMOVED. STRIPING REMOVAL TO BE COMPLETED BY GRINDING OR A NEW SURFACE OVERLAY.

STRIPING PLAN
SCALE: 1"=20'



ROADWAY INFORMATION CHART					
ROAD NAME	CLASSIFICATION	DESIGN SPEED	ZONING	CL STATION LIMITS	PAVING SECTION
TBD	PUBLIC ACCESS PLACE	25 M.P.H.	R-20	0+78.12 TO 5+33.05	P-2

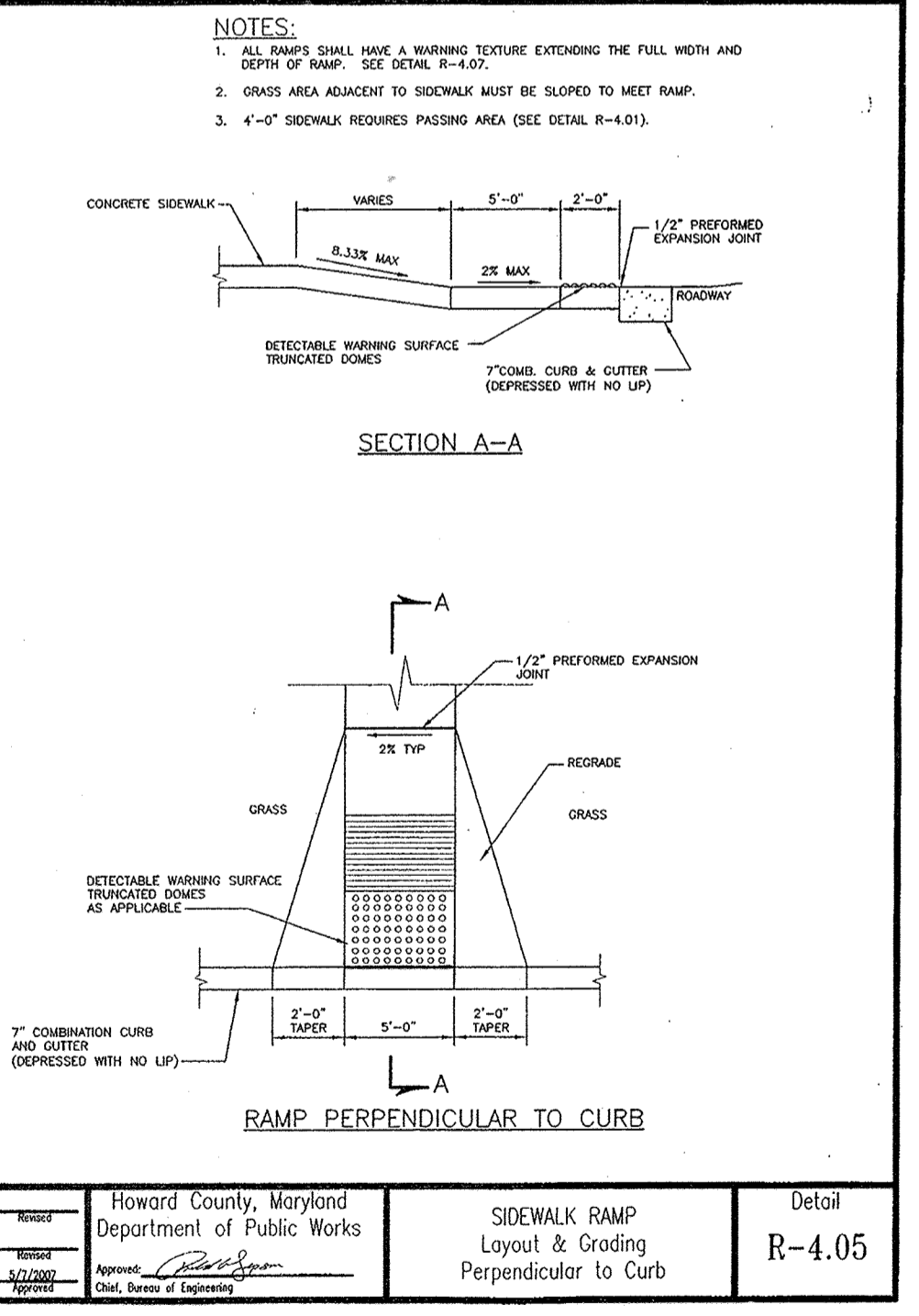
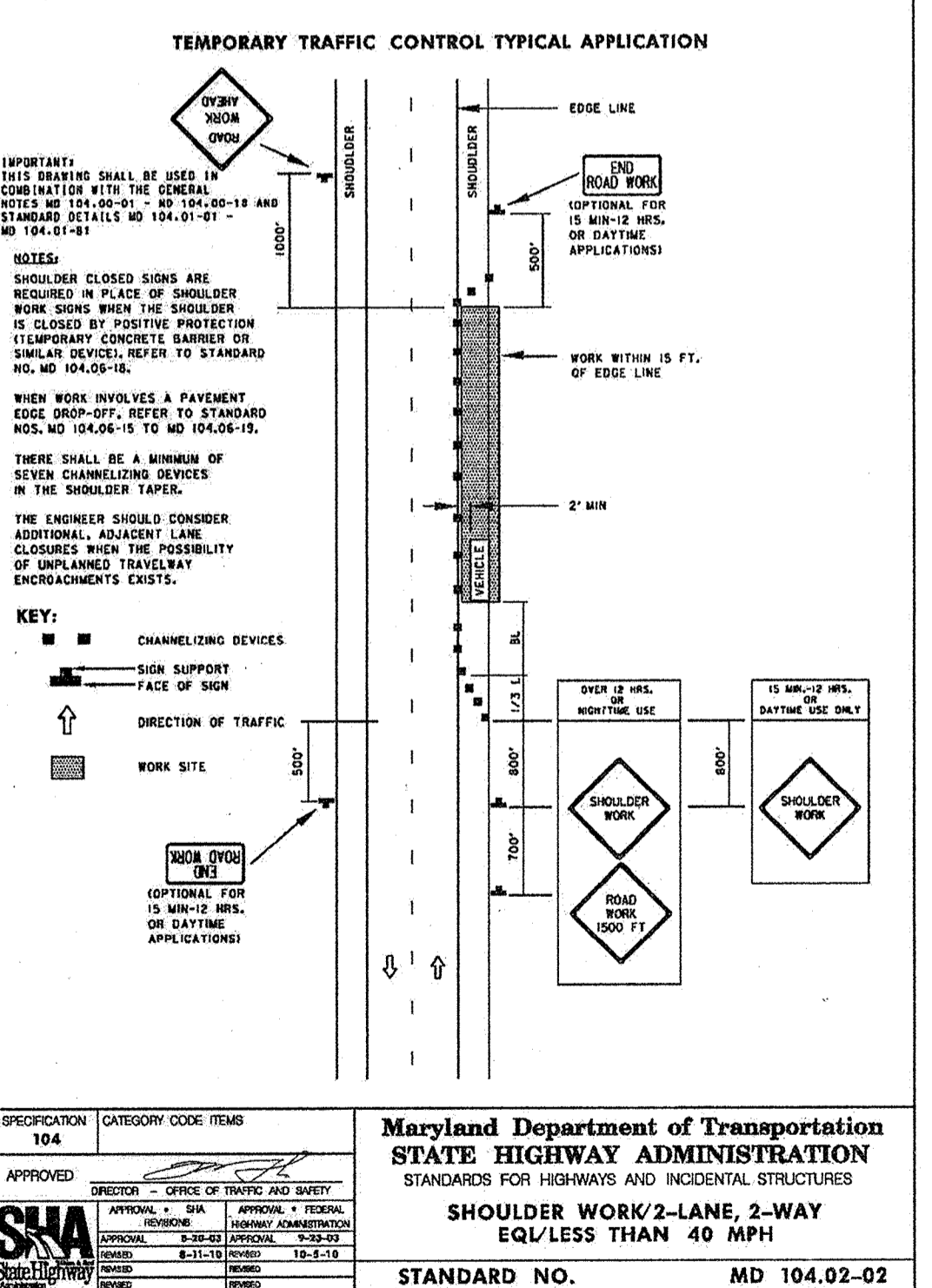
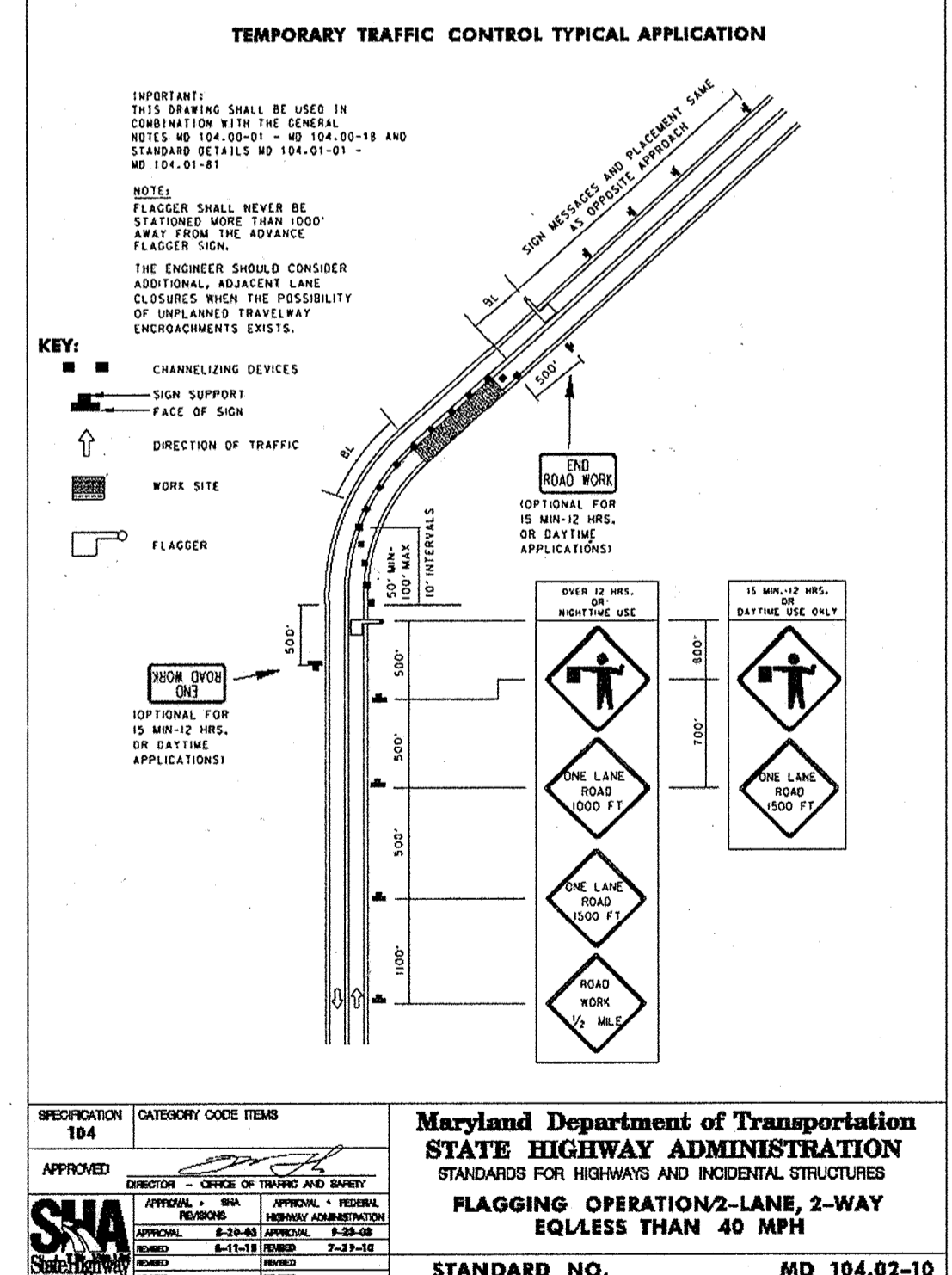
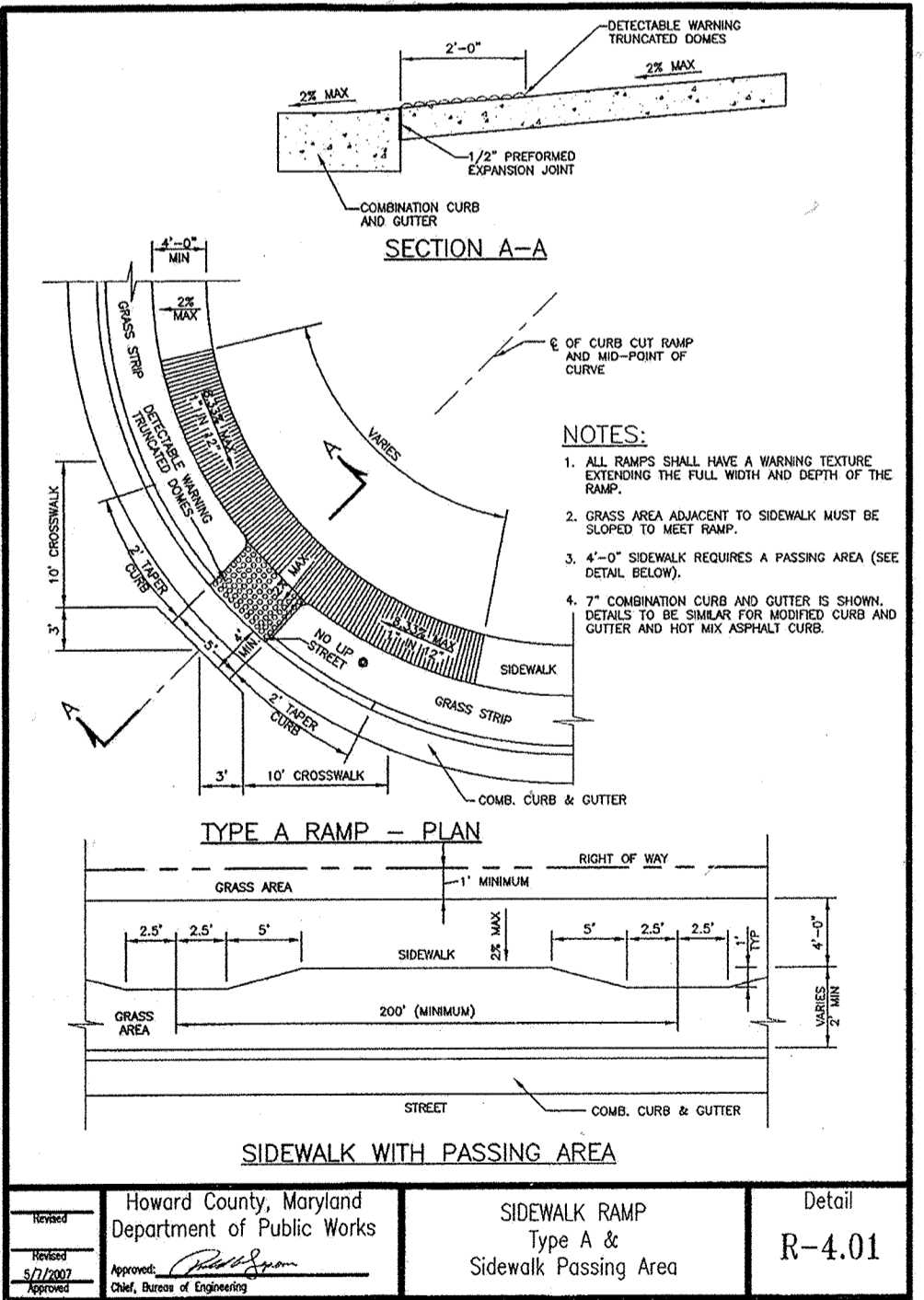
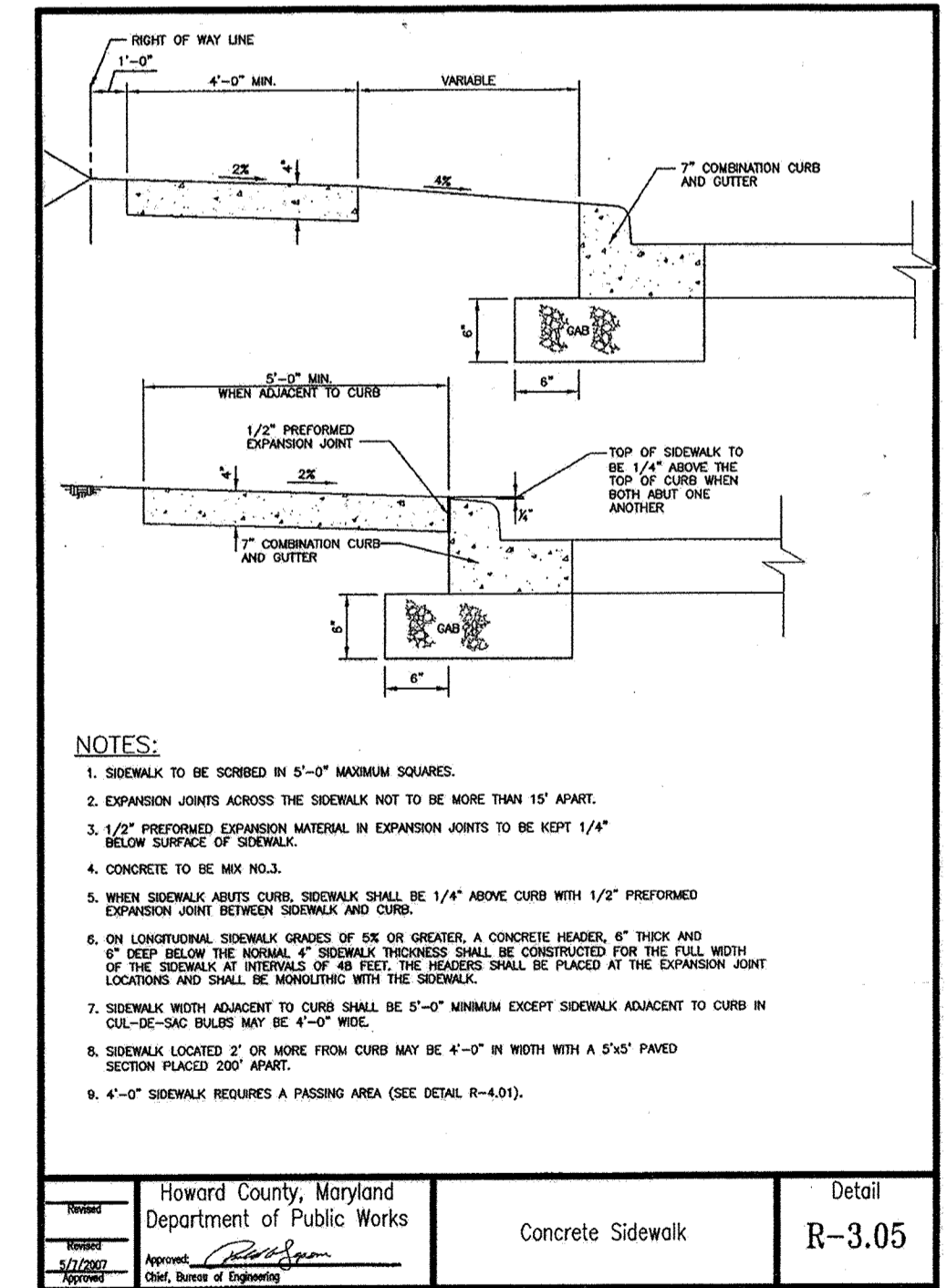


TYPICAL ROADWAY SECTION
NOT TO SCALE

7" REINFORCED CONCRETE SIDEWALK
NOT TO SCALE

AS-BUILT CERTIFICATION
I HEREBY CERTIFY, BY SEAL, THAT THE FACILITIES SHOWN ON THIS PLAN WERE CONSTRUCTED AS SHOWN ON THIS PLAN MEET THE CURRENT APPROVED PLANS AND SPECIFICATIONS.

G. Scott Shamaberger
6. SCOTT SHAMABERGER
SHAMABERGER & LANE
PROFESSIONAL LAND SURVEYOR #10849
LICENSE EXPIRATION DATE 12/31/2020
AS-BUILT SURVEY DATE 10/16/2018



APPROVED: DEPARTMENT OF PUBLIC WORKS
[Signature] 9/23/2014
CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 9-26-14
CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: DEVELOPMENT ENGINEERING DIVISION
[Signature] 9-25-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT WORK SCOPE PRIOR TO THE START OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR APPLICABLE CODES, IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE PROJECT ENGINEER OF RECORD IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY THE PROJECT ENGINEER SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND ALL CONFORMANCE WITH ALL APPLICABLE CODES AND REGULATIONS.

BOHLER ENGINEERING

CORPORATE OFFICE:
WARREN, NJ

PROJECT MANAGERS:
SURVEYORS
CIVIL & CONSULTING ENGINEERS

OFFICES:
SOUTH BRIDGE, VA
ALBANY, NY
CHAMONT, PA
CHERRY VALLEY, PA
CORTLAND, NY
HARRISBURG, PA
HARTFORD, CT
HUNTSVILLE, AL
LANSING, MI
MILWAUKEE, WI
NEW YORK, NY
PHILADELPHIA, PA
RICHMOND, VA
ROCKFORD, IL
SPRINGFIELD, MA
TOWSON, MD
WASHINGTON, DC
WILMINGTON, DE

REVISIONS				
REV	DATE	COMMENT	REVISION ROAD	BY
1	9/9/14	REVISED ROAD PROFILE		RLB

BOHLER ENGINEERING

THE FOLLOWING STATES REQUIRE NOTIFICATION BY EXAMINATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE STATE OF VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE CALL: 811 (WV 1-800-245-4848) (PA 1-800-245-1776) (DC 1-800-287-7777) (VA 1-800-552-7071) (MD 1-800-287-7777) (DE 1-800-382-8582)

PROJECT: **REVISED FINAL ROAD CONSTRUCTION PLANS FOR RESERVOIR ESTATES**
BUILDABLE LOTS 1-20 AND OPEN SPACE LOTS 21-26
LOCATION OF SITE

10883 SCAGGSVILLE ROAD
LAUREL, MD. 20723
HOWARD COUNTY

BOHLER ENGINEERING

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21284
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

B. R. ROWE
PROFESSIONAL ENGINEER
9/14

OWNER: CM HIGDON LC 1355 BEVERLY ROAD, SUITE 330 MCLEAN, VA 22101 CONTACT: DAVID KAUFFMAN PHONE: (703) 734-9855	TAX MAP: 46 GRID: 11 ZONED: R-20 PARCEL: 56 6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND
DEVELOPER: ELMS AT FELS POINT II, L.C. 5074 DORSEY HALL DRIVE, SUITE 205 ELLCOTT CITY, MD 21043 CONTACT: JASON VAN KIRK PHONE: (410) 720-3021	PREVIOUS FILE NO.: WP-13-048, ECP-13-038, BA-95-028, SP-13-008, 24-4787-D
PROFESSIONAL CERTIFICATION I, BRANDON R. ROWE, 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. 40898, EXPIRATION DATE: 7/31/2015	

SHEET TITLE:
OLD SCAGGSVILLE ROAD STRIPING, ROAD SECTION DETAILS AND TRAFFIC CONTROL PLAN

SHEET NUMBER:
19
OF 19