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-RETETION M-6 (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

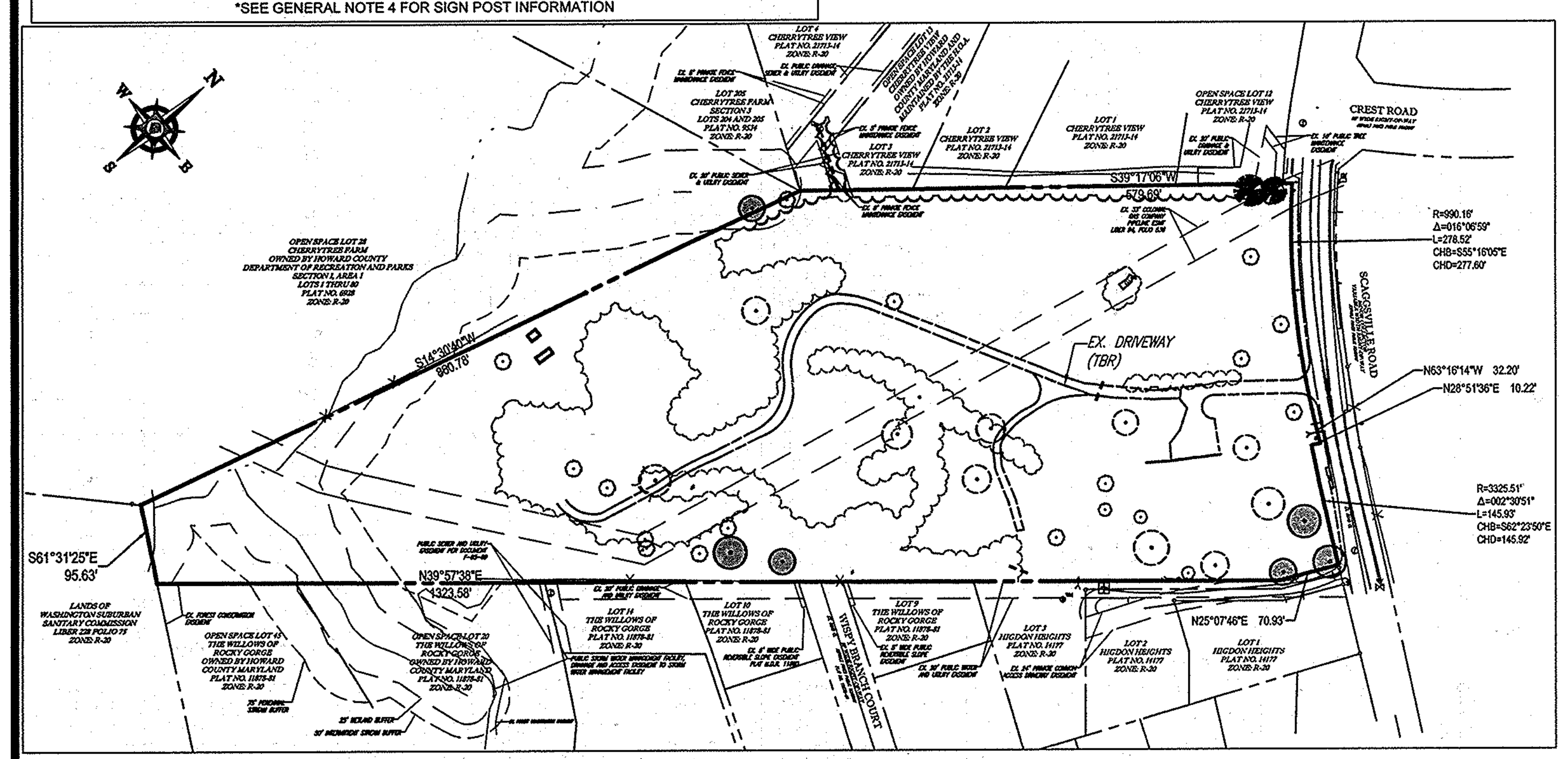
STREET LIGHT CHART

STREET NAME	ROAD WAY 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



SITE MAP

SCALE: 1"=150'

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 9/23/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9-26-14

CHIEF, DEVELOPMENT ENGINEERING DIVISION — 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 SCOPE PRIOR TO THE INITIATION 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 IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

H:\2012\MD122066\DRAWINGS\PLAN SETS\FINAL ROAD CONSTRUCTION GRADING AND STORMWATER MANAGEMENT PLANS\MD122066SD7.DWG PRINTED BY: RBO

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

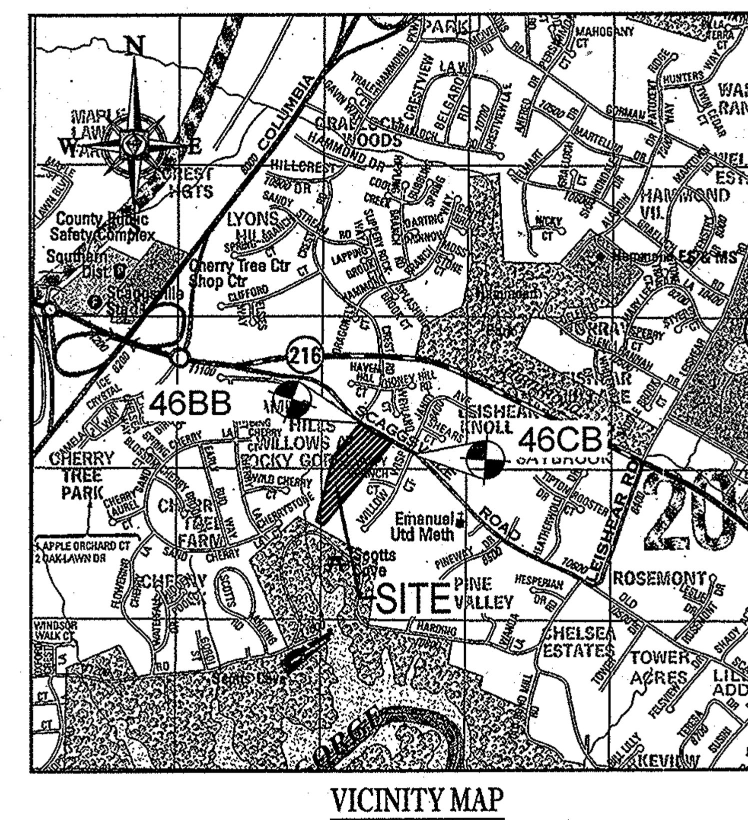
LOCATION OF SITE

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/UTILIQUEST	(410) 536-0070
HOWARD COUNTY WATER/SEWER	(410) 313-4982
COMCAST/UTILIQUEST	(410) 536-0070
COLONIAL PIPELINE	(678) 762-2403
AT&T TRANSMISSION	(800) 252-1133
QWEST GOVERNMENT SERVICES	(703) 464-7592



VICINITY MAP

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

BENCHMARK

GEODETIC SURVEY CONTROL - 46BB	GEODETIC 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

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 (cont.)

34. DRIVEWAYS SHALL BE PROVIDED PRIOR TO RESIDENTIAL OCCUPANCY TO ENSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING (MINIMUM) REQUIREMENTS:
    a. WIDTH - 12 FEET (16 FEET SERVING MORE THAN ONE RESIDENCE)
    b. SURFACE - SIX (6") INCHES OF COMPACTED CRUSHER RUN BASE WITH TAR AND CHIP COATING
    c. GEOMETRY - MAXIMUM 15% GRADE, MAXIMUM 10% GRADE CHANGE AND MINIMUM OF 45° TURNING RADIUS
    d. STRUCTURES (CULVERTS/BRIDGES) CAPABLE OF SUPPORTING 25 GROSS TONS (H 25 LOADING)
    e. DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOOD WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY SURFACE.
    f. STRUCTURE CLEARANCES - MINIMUM 12 FEET
    g. MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE
35. 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.
36. FOR FLAG OR PIPESTEM LOTS, REFUSE COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE ARE PROVIDED TO THE JUNCTION OF THE FLAG OR PIPESTEM AND ROAD RIGHT-OF-WAY LINE AND NOT ONTO THE PIPESTEM LOT DRIVEWAY.
37. WATER AND SEWER SERVICE TO THESE LOTS WILL BE GRANTED UNDER THE PROVISIONS OF SECTION 18.122.B OF THE HOWARD COUNTY CODE.
38. PUBLIC WATER AND SEWAGE ALLOCATION WILL BE GRANTED AT THE TIME OF ISSUANCE OF THE BUILDING PERMIT IF CAPACITY IS AVAILABLE AT THAT TIME.
39. THE FOREST CONSERVATION EASEMENT HAS BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION ACT. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT; HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.
40. RESERVATION OF PUBLIC UTILITY AND FOREST CONSERVATION EASEMENTS
    DEVELOPER RESERVES UNTO ITSELF, ITS SUCCESSORS 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 HEREIN RESERVED, WHETHER OR NOT EXPRESSLY STATED IN THE DEED(S) CONVEYING SAID LOT(S)/PARCELS. DEVELOPER SHALL EXECUTE AND DELIVER DEEDS FOR THE EASEMENTS HEREIN RESERVED TO HOWARD COUNTY WITH A METES AND BOUNDS DESCRIPTION OF THE FOREST CONSERVATION AREA. UPON COMPLETION OF THE PUBLIC UTILITIES AND THEIR ACCEPTANCE BY HOWARD COUNTY, AND IN THE CASE OF THE FOREST CONSERVATION EASEMENT(S), 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.
41. THIS SUBDIVISION PLAN COMPLIES WITH THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION MANUAL BY PROVIDING ON-SITE FOREST RETENTION OF 1.6 ACRES OF EXISTING FOREST RESOURCES, ON-SITE REFORESTATION PLANTING OF 0.9 ACRES AND THE REMAINING REFORESTATION OBLIGATION OF 0.4 ACRES WILL BE PROVIDED AT THE CHELSEA KNOLLS FOREST CONSERVATION BANK (SDP-14-032). THE TOTAL FORESTATION PROVIDED FOR THIS SUBDIVISION IS 2.9 ACRES. REFORESTATION SURETY IN THE AMOUNT OF $19,602.00 FOR THE 0.9 ACRES OF ON-SITE PLANTING SHALL BE POSTED BY THE DEVELOPER AS PART OF THE DPW DEVELOPER'S AGREEMENT, F-14-003.
42. ALL FILL AREAS WITHIN ROADWAYS AND UNDER STRUCTURES SHALL BE COMPACTED TO A MINIMUM OF 95% COMPACTION OF AASHTO T-180.
43. A PROPOSED 4' VINYL SPLIT RAIL FENCE SHALL BE CONSTRUCTED ADJACENT TO OPEN SPACE LOTS WHERE INDICATED ON THESE PLANS.
44. 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 SIMULTANEOUS WITH THE RECORDING OF THE SUBDIVISION PLAT.
45. THE SHARED DRIVEWAY ACCESS AND MAINTENANCE OBLIGATION AGREEMENTS FOR THE 16' DRIVEWAYS WHICH SERVE LOTS 3 & 4 AND LOTS 7 - 12 WILL BE RECORDED IN THE LAND RECORDS OF HOWARD COUNTY SIMULTANEOUSLY WITH THE RECORDATION OF THIS SUBDIVISION PLAT, F-14-003.

SHEET INDEX

SHEET TITLE	SHEET NUMBER
TITLE SHEET	1
PUBLIC ROAD PLAN AND PROFILE	2
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GRADING AND SEDIMENT CONTROL PLAN - PHASE II	4
ULTIMATE GRADING PLAN	5
STORMWATER MANAGEMENT PLAN	6
STORM DRAIN AND STORMWATER MANAGEMENT DRAINAGE AREA MAP	7
STORMWATER MANAGEMENT AND STORM DRAIN DETAILS	8
STORM DRAIN PROFILES	9 - 10
SEDIMENT CONTROL NOTES AND DETAILS	11 - 13
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STREET TREE AND LANDSCAPE PLAN	15
LANDSCAPE AND FOREST CONSERVATION NOTES AND DETAILS	16
FUTURE STORMWATER MANAGEMENT DETAILS	17 - 18
OLD SCAGGSVILLE ROAD STRIPING, ROAD SECTION DETAILS AND TRAFFIC CONTROL PLAN	19

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 I-17 HAS BEEN REMOVED FROM THE PLAN.

GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
2. 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.
3. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
4. TRAFFIC CONTROL DEVICES:
   A) THE R1-1 "STOP" SIGN AND THE STREET NAME SIGN (SNS) ASSEMBLY FOR THIS DEVELOPMENT MUST BE INSTALLED BEFORE THE BASE PAVING IS COMPLETED.
   B) THE TRAFFIC CONTROL DEVICE LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE FIELD APPROVED BY HOWARD COUNTY TRAFFIC DIVISION (410-313-2430) PRIOR TO THE INSTALLATION OF ANY OF THE TRAFFIC CONTROL DEVICES.
   C) ALL TRAFFIC CONTROL DEVICES AND THEIR LOCATIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MDMUTCD).
   D) 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.
5. STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURES AND POLES SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (2006), SECTION 5.5.A. A MINIMUM OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
6. EXISTING TOPOGRAPHIC CONTOURS BASED ON BOUNDARY & TOPOGRAPHIC SURVEY PERFORMED BY BOHLER ENGINEERING, DATED 10/9/12, LAST REVISED 11/13/12.
7. 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
8. WATER IS PUBLIC (CONTRACT NO. 24-4787-D)
9. SEWER IS PUBLIC (CONTRACT NO. 24-4787-D)
10. STORM WATER MANAGEMENT TO BE PROVIDED FOR THIS DEVELOPMENT BY ENVIRONMENTAL SITE DESIGN UTILIZING MICRO BIO RETENTION FACILITIES AND PERVIOUS DRIVEWAYS AND SIDEWALKS. 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.
11. EXISTING UTILITIES ARE BASED ON FIELD RUN SURVEY PERFORMED BY BOHLER ENGINEERING, DATED 10/9/12, LAST REVISED 11/13/12.
12. AN OBVIOUSLY NON-CRITICAL FLOOD PLAIN STUDY WAS COMPLETED BY BOHLER ENGINEERING ON 11/16/12. FLOODPLAIN DOES EXIST ON THIS SITE. PROPOSED IMPROVEMENTS DO NOT IMPACT EX. FLOOD PLAIN
13. 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.
14. THE ADEQUATE ROAD FACILITIES TEST EVALUATION FOR THIS PROJECT WAS PREPARED BY THE TRAFFIC GROUP, DATED 11/20/12.
15. THE SUBJECT PROPERTY IS ZONED R-20 AND IS CONSIDERED TO BE "GRANDFATHERED" TO THE 2/2/04 COMPREHENSIVE ZONING PLAN AND THE "COMP LITE" ZONING AMENDMENTS EFFECTIVE 7/28/06. THE GRANDFATHERING OF THIS MAJOR SUBDIVISION PLAN IS IN ACCORDANCE WITH SECTION 100.E.3.B OF THE NEW ZONING REGULATIONS (EFFECTIVE 10/6/13) SINCE THE INITIAL PLAN SUBMISSION OF THE PRELIMINARY EQUIVALENT SKETCH PLAN (SP-13-008) WAS GRANTED A "TECHNICALLY COMPLETE" STATUS PRIOR TO THE ENACTMENT DATE OF THE NEW REGULATIONS. THIS SUBDIVISION IS NOT REQUIRED TO PROVIDE 10% MODERATE INCOME HOUSING UNITS (MIHU).
16. A. GROSS AREA OF TRACT = 11.36 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 = 4.55 AC. (LOTS 21-26)
    G. REQUIRED RECREATIONAL OPEN SPACE = 200 S.F./UNIT = 4,000 S.F.
    H. PROVIDED RECREATIONAL OPEN SPACE = 5,221 S.F.
17. LAND DEDICATED TO HOWARD COUNTY, MARYLAND, FOR PURPOSES OF THE PUBLIC ROAD (0.84 ACRES).
18. NUMBER OF PARCELS PROPOSED: 26 (TOTAL)
    A. BUILDABLE = 20
    B. OPEN SPACE = 6
19. RELATED DPZ FILE NUMBERS ASSOCIATED WITH THIS PROJECT INCLUDE WP-13-048, ECP-13-038, BA-95-028, SP-13-008, 24-4787-D.
20. SOILS INFORMATION TAKEN FROM SOIL SURVEY, HOWARD COUNTY, MARYLAND, ISSUED MAY 2008.
21. BOUNDARY OUTLINE BASED ON FIELD RUN SURVEY PERFORMED BY BOHLER ENGINEERING, DATED 10/9/12, LAST REVISED 11/13/12.
22. 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.
23. THE SUBSURFACE EXPLORATION REPORT FOR THIS PROJECT WAS PREPARED BY HILLIS-CARNES ENGINEERING ASSOCIATES, INC. DATED 12/16/12.
24. THIS PROPERTY IS LOCATED INSIDE OF THE METROPOLITAN DISTRICT.
25. NO CEMETERIES EXIST WITHIN THIS SUBDIVISION.
26. 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.
27. LANDSCAPING FOR THIS SUBDIVISION HAS BEEN PROVIDED IN ACCORDANCE WITH A CERTIFIED LANDSCAPE PLAN INCLUDED WITH THE ROAD CONSTRUCTION PLAN SET AND IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. PERIMETER LANDSCAPE SURETY IN THE AMOUNT OF $15,600.00 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 DEVELOPER'S AGREEMENT, F-14-003.
28. THIS PLAN IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS PER COUNCIL BILL NO. 45-2003 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.
29. WAIVER REQUEST WP-13-048 FOR THE FOLLOWING:
    1. 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)).
    2. THE REMOVAL OF 10 SPECIMEN TREES (SECTION 16.1205.(A).(10)).

    APPROVED: 1/30/13
    APPROVAL IS SUBJECT TO THE FOLLOWING CONDITIONS:

    1. SECTION 16.120.(B).(9).(I):
       a. DPZ APPROVES THE REDUCTION OF THE 30' REQUIRED SETBACK FROM THE EDGE OF THE UTILITY EASEMENT FROM THE EXISTING "OUT OF SERVICE-IDLED" UNDERGROUND PIPELINE (COLONIAL PIPELINE COMPANY LETTER ON FILE WITH THIS OFFICE) TO 15' FROM THE EDGE OF THE UTILITY EASEMENT FOR LOTS 13 AND 14 ONLY.
       b. ON LOTS 13 AND 14 THE AFFECTED SIDE BRL'S SHOULD BE DRAWN 15' FROM AND PARALLEL TO THE EDGE OF THE UTILITY EASEMENT.
       c. ON LOTS 2 AND 3 THE FRONT BRL'S DRAWN 30' FROM AND PARALLEL TO THE EDGE OF THE UTILITY EASEMENT.
       d. THE DEVELOPER SHALL PLACE A BOLD NOTE WITHIN LOTS 13 AN 14 ON THE PRELIMINARY EQUIVALENT SKETCH PLAN (SP-13-008) AND ALL FUTURE FINAL PLATS AND SDP'S THAT DESCRIBES THIS SETBACK REDUCTION FROM 30' TO 15'.
    2. SECTION 16.1205.(A).(7):
       a. MITIGATION FOR THE REMOVAL OF THE TEN(10) SPECIMEN TREES (A, D, E, F, G, H, L, M, N & O AS IDENTIFIED ON THE ENVIRONMENTAL CONCEPT PLAN AND THE WAIVER PETITION EXHIBIT AS "TO BE REMOVED") WILL CONSIST OF ONE(1) 2 ½" CALIPER TREES FOR EACH ONE(1) REMOVED OF IDENTICAL SPECIES. THESE TEN(10) TREES WILL BE PLACED WITHIN CLOSE PROXIMITY TO THE LOCATION OF THE ORIGINAL SPECIMEN TREE AND WILL BE IN ADDITION TO THE REQUIRED PERIMETER LANDSCAPING (AS DEPICTED ON THE WAIVER PETITION EXHIBIT). COSTS TO COVER THE INSTALLATION OF THESE TREES SHALL BE INCLUDED IN THE PERIMETER LANDSCAPING ESTIMATE; AND, SURETY AND INSPECTION FEES SHALL BE POSTED WITH THE DPW DEVELOPER'S AGREEMENT AT THE FINAL PLAN STAGE FOR THIS DEVELOPMENT.
       b. THE REMOVAL OF ANY OF THE REMAINING SIX(6) SPECIMEN TREES (TREES B, C, I, J, K & P) NOT DESIGNATED FOR REMOVAL UNDER THIS WAIVER PETITION WP-13-048, WOULD REQUIRE A SEPARATE WAIVER PETITION APPROVAL IN ACCORDANCE WITH SECTION 16.1205.(A).7 OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
    3. ON ECP-13-038, SP-13-008 AND ALL SUBSEQUENT PLANS AND PLATS, PROVIDE A BRIEF DESCRIPTION OF THIS WAIVER PETITION, WP-13-048, AS A GENERAL NOTE TO INCLUDE REQUESTS, SECTIONS OF THE REGULATIONS, ACTION AND DATE.
30. NO HISTORIC STRUCTURES EXIST ON THIS PROPERTY.
31. THE EXISTING STRUCTURES ON THIS PROPERTY WERE REMOVED ON OR ABOUT MARCH 29, 2013 AND SEPTEMBER 30, 2013 UNDER DEMOLITION PERMITS #B13003495 AND B13000479.
32. TWO PRIVATE RANGE OF ADDRESS SIGN ASSEMBLIES SHALL BE FABRICATED AND INSTALLED BY HOWARD COUNTY BUREAU OF HIGHWAYS AT THE DEVELOPERS/OWNERS EXPENSE. CONTACT HOWARD COUNTY TRAFFIC DIVISION AT 410-313-5752 FOR DETAILS AND COST ESTIMATES.
33. PRELIMINARY PLAN APPROVAL DATE: JULY 17, 2013

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

DEVELOPER:
ELMS AT FELLS POINT II, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21043
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, 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. 40808, EXPIRATION DATE: 7/3/2015

BOHLER ENGINEERING
CIVIL & CONSULTING ENGINEERS
SURVEYORS
PROJECT MANAGERS
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS
CORPORATE OFFICE: WARREN, NJ
OFFICES: SOUTHBOROUGH, MA; ALBANY, NY; RONKONKOMA, NY; CHALFONT, PA; CENTER VALLEY, PA; TAMPA, FL; BOWIE, MD; TOWSON, MD; STERLING, VA; WARRENTON, VA; FORT LAUDERDALE, FL; PHILADELPHIA, PA

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REVISIONS

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

DIG WITH C.A.R.E. CALL BEFORE YOU DIG

THE FOLLOWING STATES REQUIRE NOTIFICATION BY EXCAVATORS, 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
(WV 1-800-245-4848) (PA 1-800-242-1776) (DC 1-800-257-7777)
(VA 1-800-552-7001) (MD 1-800-257-7777) (DE 1-800-282-8555)

PROJECT No.:	MD122066
DRAWN BY:	RLB
CHECKED BY:	BRR
DATE:	6/2/14
SCALE:	AS SHOWN
CAD I.D.:	SD2

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

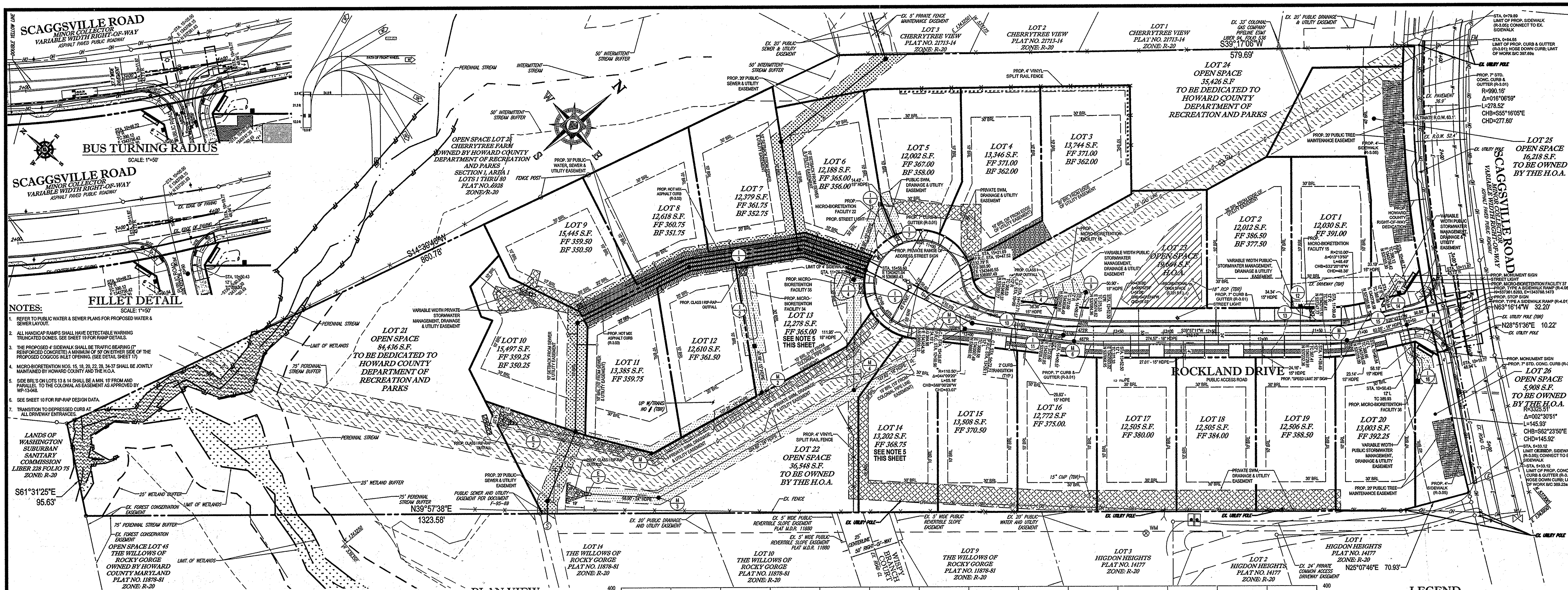
BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

B. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808

SHEET TITLE:
TITLE SHEET

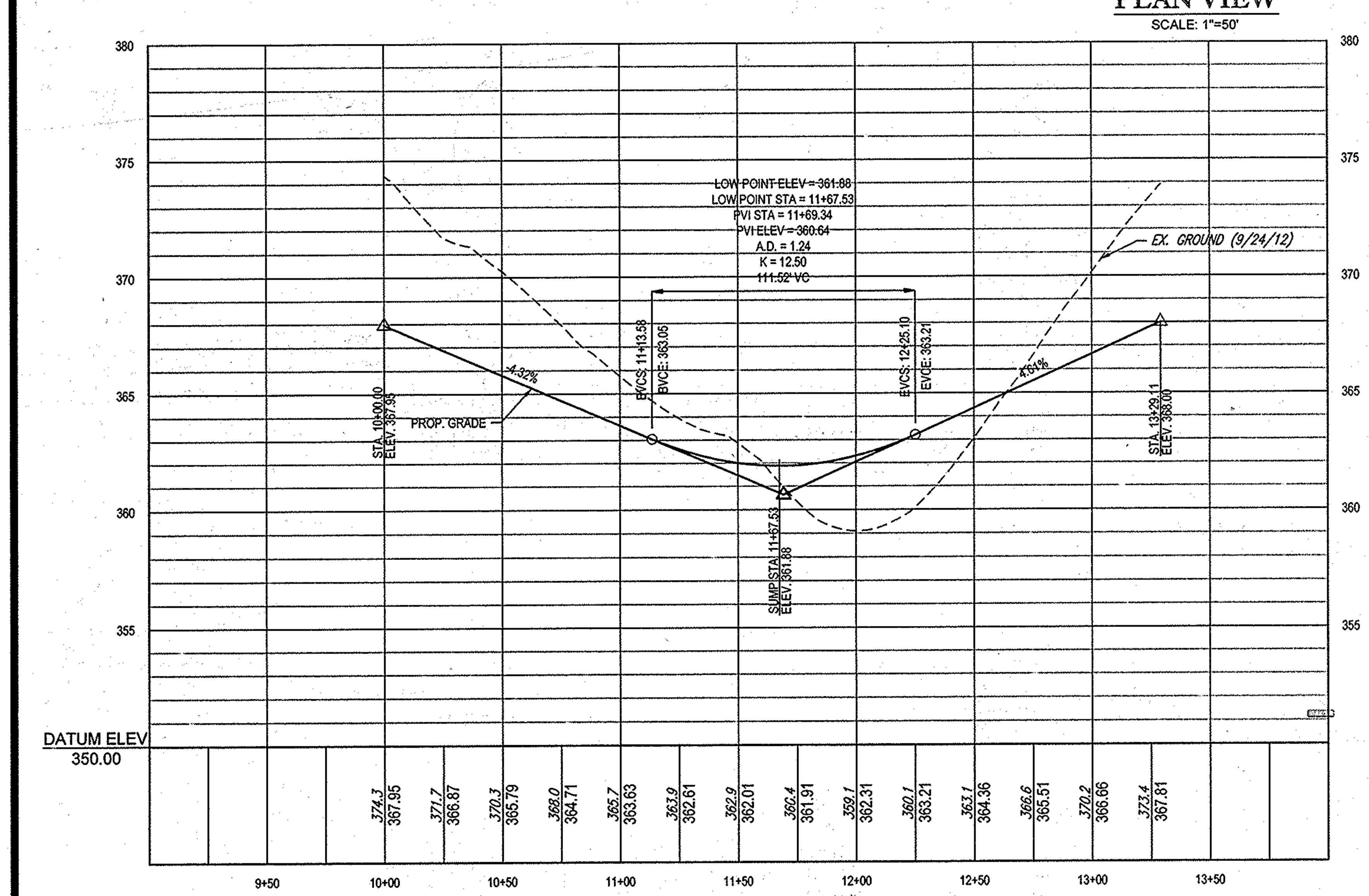
SHEET NUMBER:
1
OF 19

F-14-003



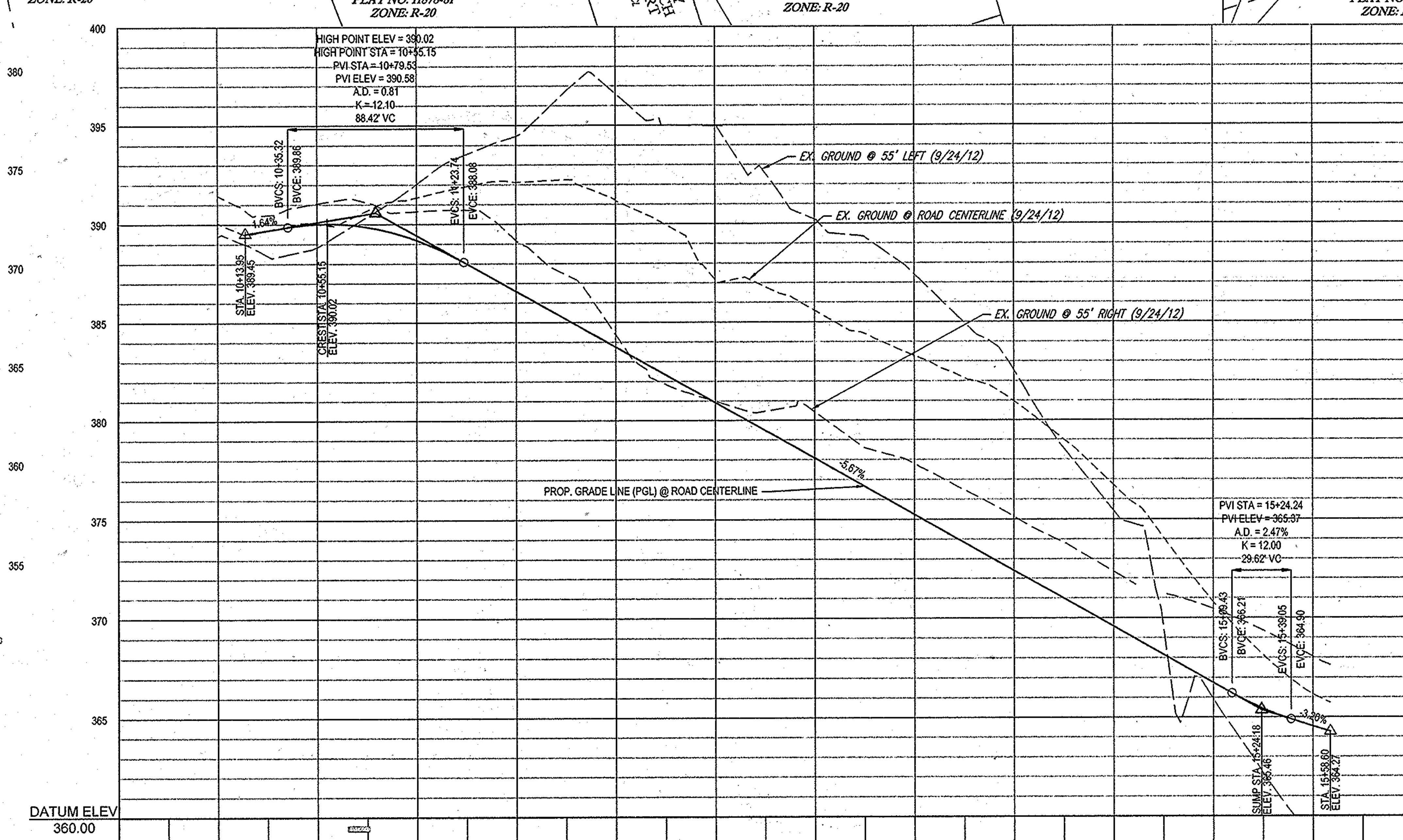
NOTES:

1. REFER TO PUBLIC WATER & SEWER PLANS FOR PROPOSED WATER & SEWER LAYOUT.
2. ALL HANDICAP RAMPS SHALL HAVE DETECTABLE WARNING TRUNCATED DOMES. SEE SHEET 19 FOR RAMP DETAILS.
3. THE PROPOSED 4' SIDEWALK SHALL BE TRAFFIC BEARING (7" REINFORCED CONCRETE) A MINIMUM OF 50' ON EITHER SIDE OF THE PROPOSED COG/COS INLET OPENING. (SEE DETAIL SHEET 17)
4. MICRO-BIORETENTION NOS. 15, 18, 20, 22, 28, 34-37 SHALL BE JOINTLY MAINTAINED BY HOWARD COUNTY AND THE H.O.A.
5. SIDE BRL'S ON LOTS 13 & 14 SHALL BE A MIN. 15' FROM AND PARALLEL TO THE COLONIAL AS EASEMENT AS APPROVED BY WP-13-048.
6. SEE SHEET 10 FOR RIP-RAP DESIGN DATA.
7. TRANSITION TO DEPRESSED CURB AT ALL DRIVEWAY ENTRANCES.



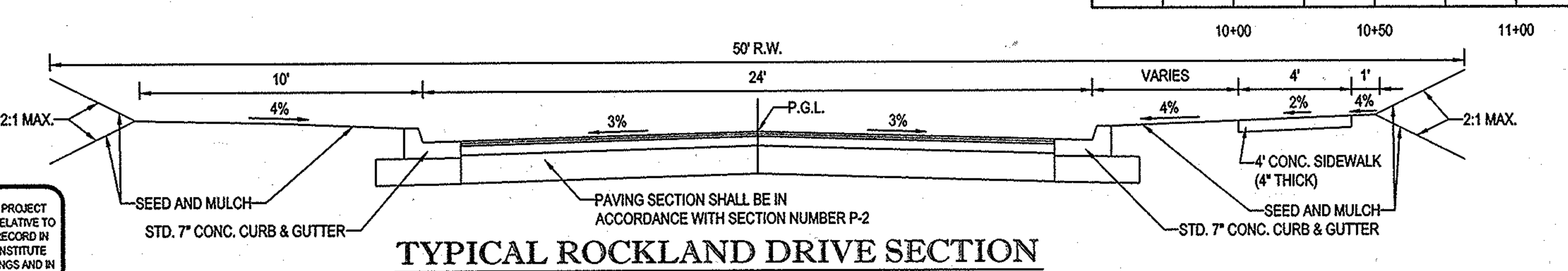
ROCKLAND DRIVE CUL DE SAC LINEAR PROFILE

SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL
DESIGN SPEED = 25 MPH



ROCKLAND DRIVE PROFILE

SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL
DESIGN SPEED = 25 MPH
PUBLIC ACCESS PLACE



TYPICAL ROCKLAND DRIVE SECTION

NOT TO SCALE

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 9/23/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9-26-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION — 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 SCOPE PRIOR TO THE INITIATION 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 IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

H:\2012\MD122066\DRAWINGS\PLAN SETS\FINAL ROAD CONSTRUCTION GRADING AND STORMWATER MANAGEMENT PLANS\MD122066PP7.DWG PRINTED BY: RBO

LEGEND

- CONCRETE PAVEMENT
- PERMEABLE PAVEMENT
- CLASS I RIP-RAP OUTFALL
- 50' INTERMITTENT STREAM BUFFER
- 75' PERENNIAL STREAM BUFFER
- 25' WETLAND BUFFER
- PERENNIAL STREAM
- WETLANDS
- INTERMITTENT STREAM
- STREET LIGHT (SEE SHEET 1 FOR STREET LIGHT CHART)
- 4' VINYL SPLIT RAIL FENCE
- 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 536
- 12' ACCESS EASEMENT(FOR RESIDENTIAL AND VEHICULAR ACCESS TO OS LOT 21)
- 100 YEAR FLOOD PLAIN, DRAINAGE & UTILITY EASEMENT
- LIMITS OF WETLANDS
- FOREST CONSERVATION EASEMENT

50 25 12.5 0 50
1"= 50'

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

DEVELOPER:
ELMS AT FELLS POINT II, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21043
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, 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. 40808, EXPIRATION DATE: 7/3/2015

BOHLER ENGINEERING
CORPORATE OFFICE: WARREN, NJ
OFFICES: SOUTHBOROUGH, MA · ALBANY, NY · RONKONKOMA, NY · CHALFONT, PA · CENTER VALLEY, PA · TAMPA, FL · BOWIE, MD · TOWSON, MD · STERLING, VA · WARRENTON, VA · FORT LAUDERDALE, FL · PHILADELPHIA, PA
CIVIL & CONSULTING ENGINEERS
SURVEYORS
PROJECT MANAGERS
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS

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REVISIONS

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

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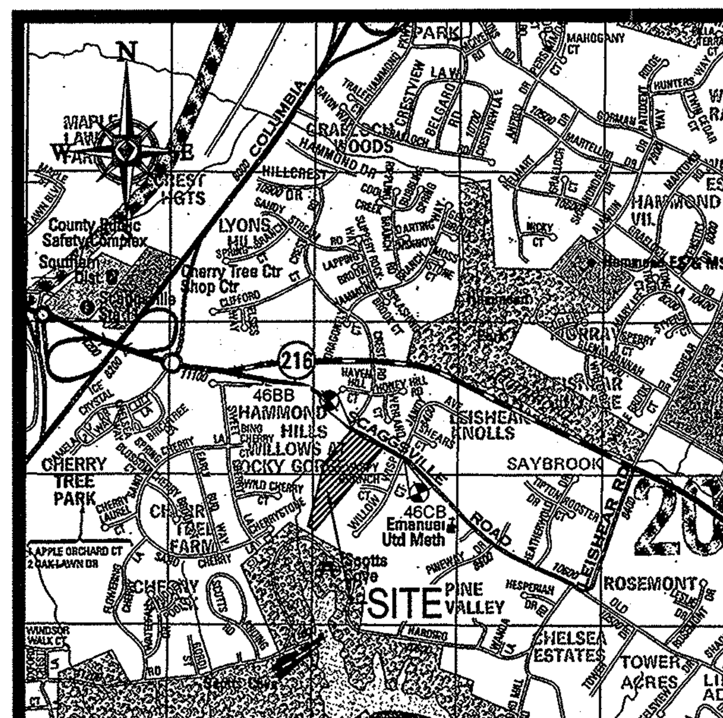
B.R. ROWE
PROFESSIONAL ENGINEER
BRANDON R. ROWE — STATE OF MARYLAND — No. 40808 — PROFESSIONAL ENGINEER

SHEET TITLE:
PUBLIC ROAD PLAN AND PROFILE

F-14-003



VICINITY MAP

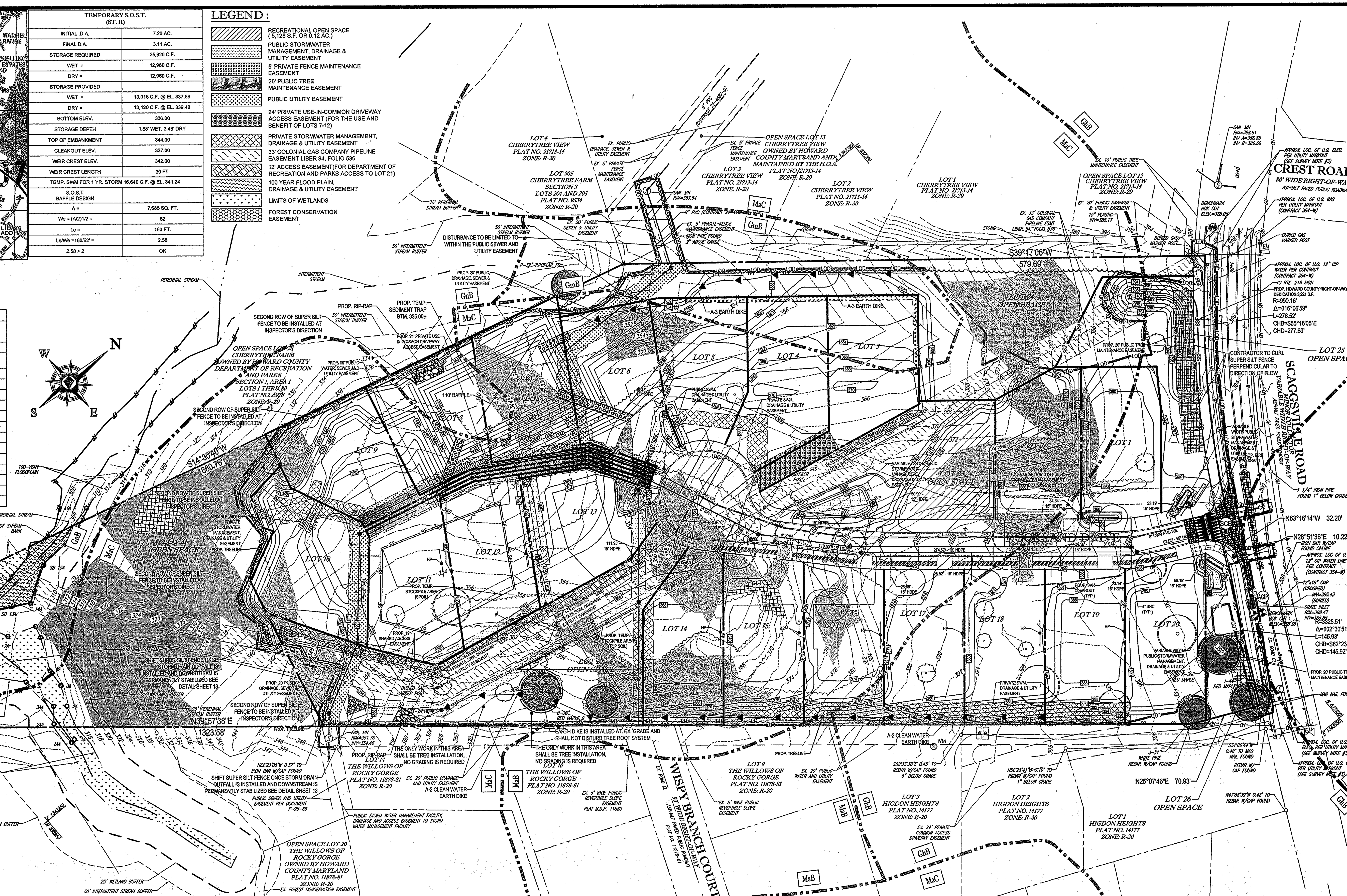
COPYRIGHT ADC THE MAP PEOPLE
PERMIT USE NO. 20602153-5
SCALE: 1"=2000'
ADC MAP COORDINATES: 5052/H8

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.	336.00
STORAGE DEPTH	1.88' WET, 3.48' DRY
TOP OF EMBANKMENT	344.00
CLEANOUT ELEV.	337.00
WEIR CREST ELEV.	342.00
WEIR CREST LENGTH	30 FT.
TEMP. SWM FOR 1 YR. STORM 16,640 C.F. @ EL. 341.24	
S.O.S.T. BAFFLE DESIGN	
A =	7,686 SQ. FT.
We = (A/2)1/2 =	62
Le =	160 FT.
Le/We =160/62' =	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 536
- 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

BORING CHART				
BORING NO.	LOCATION NORTH	LOCATION EAST	DEPTH (FT.)	REMARKS
B-5	536640.1211	1343115.5244	11	NO GROUNDWATER ENCOUNTERED
B-6	536880.7001	1343165.6045	16	WATER ENCOUNTERED AT 9.7' DEEP AFTER 24 HRS.
B-7	537026.0956	1343237.761	11	NO GROUNDWATER ENCOUNTERED
B-8	536655.7406	1343274.2555	13	NO GROUNDWATER ENCOUNTERED
B-9	536726.2984	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	1343570.7965	14	NO GROUNDWATER ENCOUNTERED
B-15	537078.0709	1343509.5293	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	537190.4942	1343793.8407	22	NO GROUNDWATER ENCOUNTERED



EROSION AND SEDIMENT CONTROL LEGEND

- STABILIZED CONSTRUCTION ENTRANCE
- RIP-RAP OUTLET PROTECTION
- SF — SILT FENCE
- EARTH DIKE (A-2 STABILIZED MATTING OR SOD, A-3 - 4-7" STONE)
- SSF — SUPER SILT FENCE
- TPF — TREE PROTECTION FENCE
- LOD — LIMIT OF DISTURBANCE
- BAFFLE BOARD
- RIP-RAP INFLOW PROTECTION
- STEEP SLOPES (15%-25%)
- STEEP SLOPES (>25%)
- SOIL DIVIDE
- MaB — SOIL LABEL
- AGIP — AT GRADE INLET PROTECTION
- SIP — STANDARD INLET PROTECTION TYPE 'B'
- SPECIMEN TREE TO REMAIN

EROSION AND SEDIMENT CONTROL UTILITY INSTALLATION NOTES:

1. 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 (DOWNSLOPE OF) TRENCH.
2. PLACE ALL EXCAVATED MATERIAL ON UPHILL SIDE OF TRENCH.
3. ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.
4. THE CONTRACTOR SHALL TAKE APPROPRIATE MEASURES TO PROTECT PEDESTRIANS AT ALL TIMES DURING UNDERGROUND UTILITY CONSTRUCTION.

SOILS		
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

BENCHMARK NOTE:

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

EROSION AND SEDIMENT CONTROL NOTES:

1. TEMPORARY DIVERSION DIKES SHALL HAVE A MIN. SLOPE OF 0.50%.
2. 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 SDP APPROVAL WHEN HOUSES ARE BUILT AND CUT IN BASEMENTS IS AVAILABLE.
3. REFER TO SHEET 11 - 13 FOR SEQUENCE OF CONSTRUCTION, SEDIMENT CONTROL NOTES, AND SEDIMENT CONTROL DETAILS.
4. ALL PROPOSED WORK OUTSIDE OF PERIMETER CONTROLS SHALL BE STABILIZED AT THE END OF EACH WORK DAY.
5. PROPOSED SILT FENCE IS TO BE CHANGED TO SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
6. SEE SHEET 4 FOR PHASE II GRADING. AND SHEET 5 FOR ULTIMATE GRADING.
7. ALL EARTH DIKES INTERRUPTED BY THE INSTALLATION OF STORM DRAINS ARE TO BE REPAIRED IMMEDIATELY - SAME DAY.
8. 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.
9. CONTRACTOR TO INSTALL STABILIZATION MATTING IN ALL SWALES AND ON ALL SLOPES 3:1 OR GREATER.
10. REGARDING DISTURBANCE ALONG SCAGGSVILLE ROAD, CONTRACTOR SHALL TEMPORARILY STABILIZE ACTIVITIES OUTSIDE THE PERIMETER EROSION AND SEDIMENT CONTROLS AT THE END OF EACH WORKING DAY OR AT THE DIRECTION OF THE INSPECTOR.
11. SHOULD THE STOCKPILE EXCEED 15 FT. IN HEIGHT, IT MUST BE BENCHED.

50 25 12.5 0 50
1"= 50'

EROSION AND SEDIMENT CONTROL QUANTITIES:

TOTAL FOR ALL PHASES

LIMIT OF DISTURBANCE:	394,175 S.F. OR 9.05 AC
SILT FENCE:	248 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
STABILIZED CONSTRUCTION ENTRANCE:	1 EA

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 BONDING PURPOSES.

HIGDON PROPERTY

20 SINGLE FAMILY DETACHED UNITS

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

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

DEVELOPER: ELMS AT FELLS POINT II, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21043
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, BA-95-028, SP-13-008, 24-4787-D

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: ________ P.E. NO. ________ DATE ________

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

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

HOWARD SCD — DATE 9/11/14

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 9/23/2014

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

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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."

SIGNATURE OF ENGINEER — DATE 9/10/14
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 ONSITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

SIGNATURE OF DEVELOPER — DATE 9-11-14
JASON VAN KIRK

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 WILL BE INSTALLED AS DIRECTED BY THE INSPECTOR IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, PAGE E.23. THE REMOVAL OF ANY INLET PROTECTION DEVICES WILL REQUIRE APPROVAL FROM THE INSPECTOR.

BOHLER ENGINEERING
CIVIL & CONSULTING ENGINEERS
SURVEYORS
PROJECT MANAGERS
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS
CORPORATE OFFICE: WARREN, NJ
OFFICES: SOUTHBOROUGH, MA; ALBANY, NY; RONKONKOMA, NY; CHALFONT, PA; CENTER VALLEY, PA; TAMPA, FL; BOWIE, MD; TOWSON, MD; STERLING, VA; WARRENTON, VA; FORT LAUDERDALE, FL; PHILADELPHIA, PA

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PROFESSIONAL ENGINEER

* 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: 7/3/2015

SHEET TITLE:

GRADING AND SEDIMENT CONTROL PLAN - PHASE I

SHEET NUMBER:

F-14-003

H:\2012\MD122066\DRAWINGS\PLAN SETS\FINAL ROAD CONSTRUCTION GRADING AND STORMWATER MANAGEMENT PLANS\MD122066SS7.DWG PRINTED BY: RBO

STORMWATER MANAGEMENT CONSTRUCTION SPECIFICATIONS

THESE SPECIFICATIONS ARE APPROPRIATE TO ALL PONDS WITHIN THE SCOPE OF THE STANDARD FOR PRACTICE MD-378. ALL REFERENCES TO ASTM AND AASHTO SPECIFICATIONS APPLY TO THE MOST RECENT VERSION.

SITE PREPARATION

AREAS DESIGNATED FOR BORROW AREAS, EMBANKMENT, AND STRUCTURAL WORKS SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL. ALL TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED. CHANNEL BANKS AND SHARP BREAKS SHALL BE SLOPED TO NO STEEPER THAN 1:1. ALL TREES SHALL BE CLEARED AND GRUBBED WITHIN 15 FEET OF THE TOE OF THE EMBANKMENT.

AREAS TO BE COVERED BY THE RESERVOIR WILL BE CLEARED OF ALL TREES, BRUSH, LOGS, FENCES, RUBBISH AND OTHER OBJECTIONABLE MATERIAL UNLESS OTHERWISE DESIGNATED ON THE PLANS. TREES, BRUSH, AND STUMPS SHALL BE CUT APPROXIMATELY LEVEL WITH THE GROUND SURFACE. FOR DRY STORMWATER MANAGEMENT PONDS, A MINIMUM OF A 25-FOOT RADIUS AROUND THE INLET STRUCTURE SHALL BE CLEARED.

ALL CLEARED AND GRUBBED MATERIAL SHALL BE DISPOSED OF OUTSIDE AND BELOW THE LIMITS OF THE DAM AND RESERVOIR AS DIRECTED BY THE OWNER OR HIS REPRESENTATIVE. WHEN SPECIFIED, A SUFFICIENT QUANTITY OF TOPSOIL WILL BE STOCKPILED IN A SUITABLE LOCATION FOR USE ON THE EMBANKMENT AND OTHER DESIGNATED AREAS.

EARTH FILL

MATERIAL - THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED DESIGNATED BORROW AREAS. IT SHALL BE FREE OF ROOTS, STUMPS, WOOD, RUBBISH, STONES GREATER THAN 6", FROZEN OR OTHER OBJECTIONABLE MATERIALS. FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT, AND CUT OFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL AND MUST HAVE AT LEAST 30% PASSING THE #200 SIEVE. CONSIDERATION MAY BE GIVEN TO THE USE OF OTHER MATERIALS IN THE EMBANKMENT IF DESIGNED BY A GEOTECHNICAL ENGINEER. SUCH SPECIAL DESIGNS MUST HAVE CONSTRUCTION SUPERVISED BY A GEOTECHNICAL ENGINEER. MATERIALS USED IN THE OUTER SHELL OF THE EMBANKMENT MUST HAVE THE CAPABILITY TO SUPPORT VEGETATION OF THE QUALITY REQUIRED TO PREVENT EROSION OF THE EMBANKMENT.

PLACEMENT - AREAS ON WHICH FILL IS TO BE PLACED SHALL BE SCARIFIED PRIOR TO PLACEMENT OF FILL. FILL MATERIALS SHALL BE PLACED IN MAXIMUM 8 INCH THICK (BEFORE COMPACTION) LAYERS WHICH ARE TO BE CONTINUOUS OVER THE ENTIRE LENGTH OF THE FILL. THE MOST PERMEABLE BORROW MATERIAL SHALL BE PLACED IN THE DOWNSTREAM PORTIONS OF THE EMBANKMENT. THE PRINCIPAL SPILLWAY MUST BE INSTALLED CONCURRENTLY WITH FILL PLACEMENT AND NOT EXCAVATED INTO THE EMBANKMENT.

COMPACTION - THE MOVEMENT OF THE HAULING AND SPREADING EQUIPMENT OVER THE FILL SHALL BE CONTROLLED SO THAT THE ENTIRE SURFACE OF EACH LIFT SHALL BE TRAVERSED BY NOT LESS THAN ONE TREAD TRACK OF HEAVY EQUIPMENT OR COMPACTION SHALL BE ACHIEVED BY A MINIMUM OF FOUR COMPLETE PASSES OF A SHEEPS FOOT, RUBBER TIRED OR VIBRATORY ROLLER. FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SUCH THAT THE REQUIRED DEGREE OF COMPACTION WILL BE OBTAINED WITH THE EQUIPMENT USED. THE FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SO THAT IF FORMED INTO A BALL IT WILL NOT CRUMBLE, YET NOT BE SO WET THAT WATER CAN BE SQUEEZED OUT.

WHEN REQUIRED BY THE REVIEWING AGENCY THE MINIMUM REQUIRED DENSITY SHALL NOT BE LESS THAN 95% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN ±2% OF THE OPTIMUM. EACH LAYER OF FILL SHALL BE COMPACTED AS NECESSARY TO OBTAIN THAT DENSITY, AND IS TO BE CERTIFIED BY THE ENGINEER AT THE TIME OF CONSTRUCTION. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T-99 (STANDARD PROCTOR).

CUT OFF TRENCH - THE CUTOFF TRENCH SHALL BE EXCAVATED INTO IMPERVIOUS MATERIAL ALONG OR PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE BOTTOM WIDTH OF THE TRENCH SHALL BE GOVERNED BY THE EQUIPMENT USED FOR EXCAVATION, WITH THE MINIMUM WIDTH BEING FOUR FEET. THE DEPTH SHALL BE AT LEAST FOUR FEET BELOW EXISTING GRADE OR AS SHOWN ON THE PLANS. THE SIDE SLOPES OF THE TRENCH SHALL BE 1 TO 1 OR FLATTER. THE BACKFILL SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY
AND MINIMUM PERMEABILITY.

EMBANKMENT CORE - THE CORE SHALL BE PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE TOP WIDTH OF THE CORE SHALL BE A MINIMUM OF FOUR FEET. THE HEIGHT SHALL EXTEND UP TO AT LEAST THE 10 YEAR WATER ELEVATION OR AS SHOWN ON THE PLANS. THE SIDE SLOPES SHALL BE 1 TO 1 OR FLATTER. THE CORE SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY. IN ADDITION, THE CORE SHALL BE PLACED CONCURRENTLY WITH THE OUTER SHELL OF THE EMBANKMENT.

STRUCTURE BACKFILL

BACKFILL ADJACENT TO PIPES OR STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL MATERIAL. THE FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL NEEDS TO FILL COMPLETELY ALL SPACES UNDER AND ADJACENT TO THE PIPE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A CONCRETE STRUCTURE OR PIPE, UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE.

STRUCTURE BACKFILL MAY BE FLOWABLE FILL MEETING THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 313 AS MODIFIED. THE MIXTURE SHALL HAVE A 100-200 PSI; 28 DAY UNCONFINED COMPRESSIVE STRENGTH. THE FLOWABLE FILL SHALL HAVE A MINIMUM PH OF 4.0 AND A MINIMUM RESISTIVITY OF 2,000 OHM-CM. MATERIAL SHALL BE PLACED SUCH THAT A MINIMUM OF 6" (MEASURED PERPENDICULAR TO THE OUTSIDE OF THE PIPE) OF FLOWABLE FILL SHALL BE UNDER (BEDDING), OVER AND, ON THE SIDES OF THE PIPE. IT ONLY NEEDS TO EXTEND UP TO THE SPRING LINE FOR RIGID CONDUITS. AVERAGE SLUMP OF THE FILL SHALL BE 7" TO ASSURE FLOWABILITY OF THE MATERIAL. ADEQUATE MEASURES SHALL BE TAKEN (SAND BAGS, ETC.) TO PREVENT FLOATING THE PIPE. WHEN USING FLOWABLE FILL, ALL METAL PIPE SHALL BE BITUMINOUS COATED. ANY ADJOINING SOIL FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL SHALL COMPLETELY FILL ALL VOIDS ADJACENT TO THE FLOWABLE FILL ZONE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO IRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A STRUCTURE OR PIPE UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE. BACKFILL MATERIAL OUTSIDE THE STRUCTURAL BACKFILL (FLOWABLE FILL) ZONE SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE CORE OF THE EMBANKMENT OR OTHER EMBANKMENT MATERIALS.

PIPE CONDUITS

ALL PIPES SHALL BE CIRCULAR IN CROSS SECTION.

CORRUGATED METAL PIPE - ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR CORRUGATED METAL PIPE:

1. MATERIALS - (POLYMER COATED STEEL PIPE) - STEEL PIPES WITH POLYMERIC COATINGS SHALL HAVE A MINIMUM COATING THICKNESS OF 0.01 INCH (10 MIL) ON BOTH SIDES OF THE PIPE. THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATIONS M-245 & M-246 WITH WATERTIGHT COUPLING BANDS OR FLANGES.

MATERIALS - (ALUMINUM COATED STEEL PIPE) - THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-274 WITH WATERTIGHT COUPLING BANDS OR FLANGES. ALUMINUM COATED STEEL PIPE, WHEN USED WITH FLOWABLE FILL OR WHEN SOIL AND/OR WATER CONDITIONS WARRANT THE NEED FOR INCREASED DURABILITY, SHALL BE FULLY BITUMINOUS COATED PER REQUIREMENTS OF AASHTO SPECIFICATION M-190 TYPE A. ANY ALUMINUM COATING DAMAGED OR OTHERWISE REMOVED SHALL BE REPLACED WITH COLD APPLIED BITUMINOUS COATING COMPOUND. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER OR TWO COATS OF ASPHALT.

MATERIALS - (ALUMINUM PIPE) - THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-196 OR M-211 WITH WATERTIGHT COUPLING BANDS OR FLANGES. ALUMINUM PIPE, WHEN USED WITH FLOWABLE FILL OR WHEN SOIL AND/OR WATER CONDITIONS WARRANT FOR INCREASED DURABILITY, SHALL BE FULLY BITUMINOUS COATED PER REQUIREMENTS OF AASHTO SPECIFICATION M-190 TYPE A. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER OR TWO COATS OF ASPHALT. HOT DIP GALVANIZED BOLTS MAY BE USED FOR CONNECTIONS. THE PH OF THE SURROUNDING SOILS SHALL BE BETWEEN 4 AND 9.

2. COUPLING BANDS, ANTI-SEEP COLLARS, END SECTIONS, ETC., MUST BE COMPOSED OF THE SAME MATERIAL AND COATINGS AS THE PIPE. METALS MUST BE INSULATED FROM DISSIMILAR MATERIALS WITH USE OF RUBBER OR PLASTIC INSULATING MATERIALS AT LEAST 24 MILS IN THICKNESS.

3. CONNECTIONS - ALL CONNECTIONS WITH PIPES MUST BE COMPLETELY WATERTIGHT. THE DRAIN PIPE OR BARREL CONNECTION TO THE RISER SHALL BE WELDED ALL AROUND WHEN THE PIPE AND RISER ARE METAL. ANTI-SEEP COLLARS SHALL BE CONNECTED TO THE PIPE IN SUCH A MANNER AS TO BE COMPLETELY WATERTIGHT. DIMPLE BANDS ARE NOT CONSIDERED TO BE WATERTIGHT.

ALL CONNECTIONS SHALL USE A RUBBER OR NEOPRENE GASKET WHEN JOINING PIPE SECTIONS. THE END OF EACH PIPE SHALL BE RE-ROLLED AN ADEQUATE NUMBER OF CORRUGATIONS TO ACCOMMODATE THE BANDWIDTH. THE FOLLOWING TYPE CONNECTIONS ARE ACCEPTABLE FOR PIPES LESS THAN 24 INCHES IN DIAMETER: FLANGES ON BOTH ENDS OF THE PIPE WITH A CIRCULAR 3/8 INCH CLOSED CELL NEOPRENE GASKET, PRE-PUNCHED TO THE FLANGE BOLT CIRCLE, SANDWICHED BETWEEN ADJACENT FLANGES; A 12-INCH WIDE STANDARD LAP TYPE BAND WITH 12-INCH WIDE BY 3/8-INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET; AND A 12-INCH WIDE HUGGER TYPE BAND WITH ORING GASKETS HAVING A MINIMUM DIAMETER OF 1/2 INCH GREATER THAN THE CORRUGATION DEPTH. PIPES 24 INCHES IN DIAMETER AND LARGER SHALL BE CONNECTED BY A 24 INCH LONG ANNULAR CORRUGATED BAND USING A MINIMUM OF 4 (FOUR) RODS AND LUGS, 2 ON EACH CONNECTING PIPE END. A 24-INCH WIDE BY 3/8-INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET WILL BE INSTALLED WITH 12 INCHES ON THE END OF EACH PIPE. FLANGED JOINTS WITH 3/8 INCH CLOSED CELL GASKETS THE FULL WIDTH OF THE FLANGE IS ALSO ACCEPTABLE.

HELICALLY CORRUGATED PIPE SHALL HAVE EITHER CONTINUOUSLY WELDED SEAMS OR HAVE LOCK SEAMS WITH INTERNAL CAULKING OR A NEOPRENE BEAD.

4. BEDDING - THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.

5. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".

6. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS. REINFORCED CONCRETE PIPE - ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR REINFORCED CONCRETE PIPE:

1. MATERIALS - REINFORCED CONCRETE PIPE SHALL HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS AND SHALL EQUAL OR EXCEED ASTM C-361.

2. BEDDING - REINFORCED CONCRETE PIPE CONDUITS SHALL BE LAID IN A CONCRETE BEDDING / CRADLE FOR THEIR ENTIRE LENGTH. THIS BEDDING / CRADLE SHALL CONSIST OF HIGH SLUMP CONCRETE PLACED UNDER THE PIPE AND UP THE SIDES OF THE PIPE AT LEAST 50% OF ITS OUTSIDE DIAMETER WITH A MINIMUM THICKNESS OF 6 INCHES. WHERE A CONCRETE CRADLE IS NOT NEEDED FOR STRUCTURAL REASONS, FLOWABLE FILL MAY BE USED AS DESCRIBED IN THE "STRUCTURE BACKFILL" SECTION OF THIS STANDARD. GRAVEL BEDDING IS NOT PERMITTED.

3. LAYING PIPE - BELL AND SPIGOT PIPE SHALL BE PLACED WITH THE BELL END UPSTREAM. JOINTS SHALL BE MADE IN ACCORDANCE WITH RECOMMENDATIONS OF THE MANUFACTURER OF THE MATERIAL. AFTER THE JOINTS ARE SEALED FOR THE ENTIRE LINE, THE BEDDING SHALL BE PLACED SO THAT ALL SPACES UNDER THE PIPE ARE FILLED. CARE SHALL BE EXERCISED TO PREVENT ANY DEVIATION FROM THE ORIGINAL LINE AND GRADE OF THE PIPE. THE FIRST JOINT MUST BE LOCATED WITHIN 4 FEET FROM THE RISER.

4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".

5. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

PLASTIC PIPE

THE FOLLOWING CRITERIA SHALL APPLY FOR PLASTIC PIPE:

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

2. JOINTS AND CONNECTIONS TO ANTI-SEEP COLLARS SHALL BE COMPLETELY WATERTIGHT.

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

4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".

5. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS. DRAINAGE DIAPHRAGMS - WHEN A DRAINAGE DIAPHRAGM IS USED, A REGISTERED PROFESSIONAL ENGINEER WILL SUPERVISE THE DESIGN AND CONSTRUCTION INSPECTION.

CONCRETE

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

ROCK RIPRAP

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

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

CARE OF WATER DURING CONSTRUCTION

ALL WORK ON PERMANENT STRUCTURES SHALL BE CARRIED OUT IN AREAS FREE FROM WATER. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN ALL TEMPORARY DIKES, LEVEES, COFFERDAMS, DRAINAGE CHANNELS, AND STREAM DIVERSIONS NECESSARY TO PROTECT THE AREAS TO BE OCCUPIED BY THE PERMANENT WORKS. THE CONTRACTOR SHALL ALSO FURNISH, INSTALL, OPERATE, AND MAINTAIN ALL NECESSARY PUMPING AND OTHER EQUIPMENT REQUIRED FOR REMOVAL OF WATER FROM VARIOUS PARTS OF THE WORK AND FOR MAINTAINING THE EXCAVATIONS, FOUNDATION, AND OTHER PARTS OF THE WORK FREE FROM WATER AS REQUIRED OR DIRECTED BY THE ENGINEER FOR CONSTRUCTING EACH PART OF THE WORK. AFTER HAVING SERVED THEIR PURPOSE, ALL TEMPORARY PROTECTIVE WORKS SHALL BE REMOVED OR LEVELED AND GRADED TO THE EXTENT REQUIRED TO PREVENT OBSTRUCTION IN ANY DEGREE WHATSOEVER OF THE FLOW OF WATER TO THE SPILLWAY OR OUTLET WORKS AND SO AS NOT TO INTERFERE IN ANY WAY WITH THE OPERATION OR MAINTENANCE OF THE STRUCTURE. STREAM DIVERSIONS SHALL BE MAINTAINED UNTIL THE FULL FLOW CAN BE PASSED THROUGH THE PERMANENT WORKS. THE REMOVAL OF WATER FROM THE REQUIRED EXCAVATION AND THE FOUNDATION SHALL BE ACCOMPLISHED IN A MANNER AND TO THE EXTENT THAT WILL MAINTAIN STABILITY OF THE EXCAVATED SLOPES AND BOTTOM REQUIRED EXCAVATIONS AND WILL ALLOW SATISFACTORY PERFORMANCE OF ALL CONSTRUCTION OPERATIONS. DURING THE PLACING AND COMPACTING OF MATERIAL IN REQUIRED EXCAVATIONS, THE WATER LEVEL AT THE LOCATIONS BEING REFILLED SHALL BE MAINTAINED BELOW THE BOTTOM OF THE EXCAVATION AT SUCH LOCATIONS WHICH MAY REQUIRE DRAINING THE WATER SUMPS FROM WHICH THE WATER SHALL BE PUMPED.

STABILIZATION

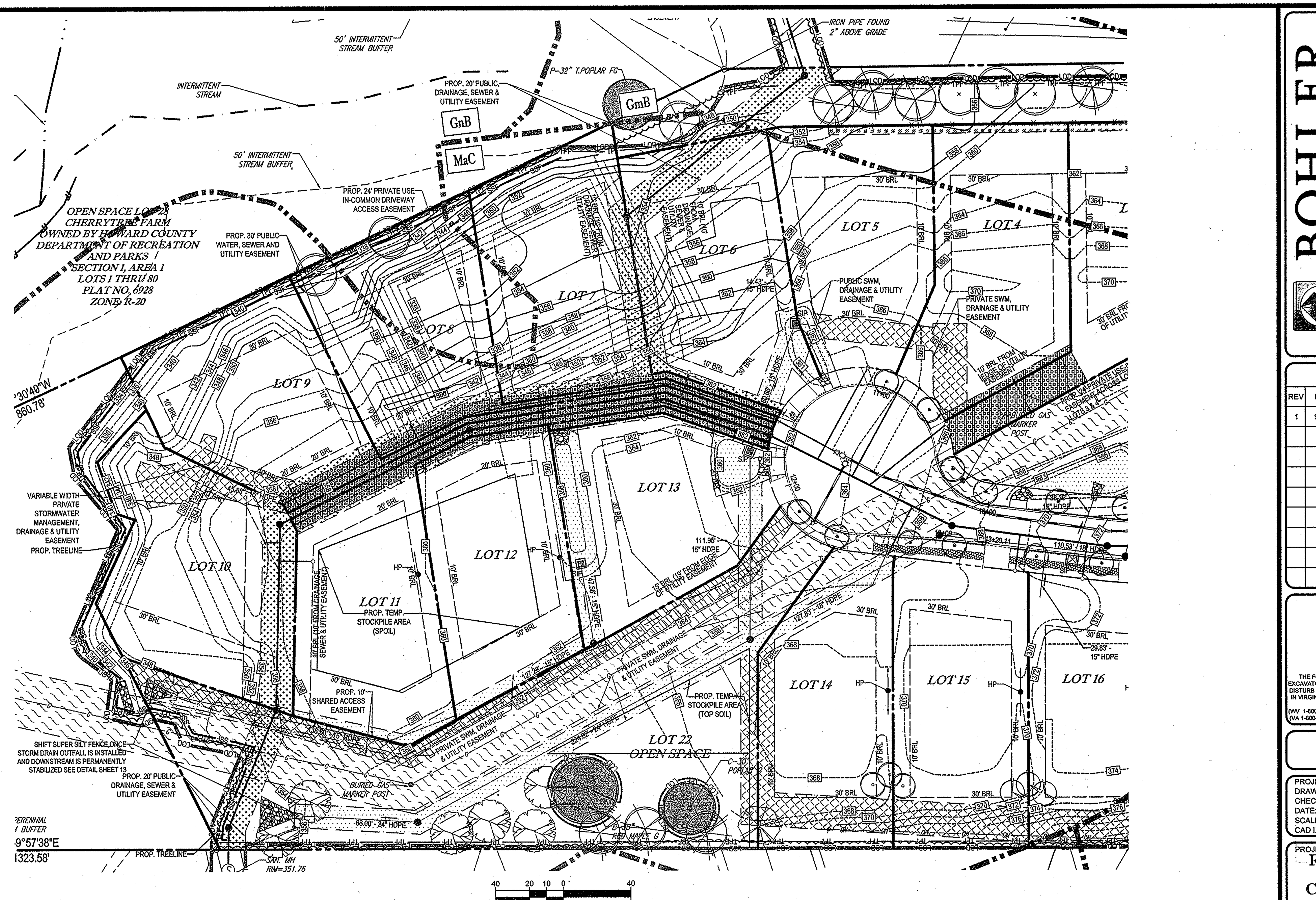
ALL BORROW AREAS SHALL BE GRADED TO PROVIDE PROPER DRAINAGE AND LEFT IN A SIGHTLY CONDITION. ALL EXPOSED SURFACES OF THE EMBANKMENT, SPILLWAY, SPOIL AND BORROW AREAS, AND BERMS SHALL BE STABILIZED BY SEEDING, LIMING, FERTILIZING AND MULCHING IN ACCORDANCE WITH THE NATURAL RESOURCES CONSERVATION SERVICE STANDARDS AND SPECIFICATIONS FOR CRITICAL AREA PLANTING (MD-342) OR AS SHOWN ON THE ACCOMPANYING DRAWINGS.

EROSION AND SEDIMENT CONTROL

CONSTRUCTION OPERATIONS WILL BE CARRIED OUT IN SUCH A MANNER THAT EROSION WILL BE CONTROLLED AND WATER AND AIR POLLUTION MINIMIZED. STATE AND LOCAL LAWS CONCERNING POLLUTION ABATEMENT WILL BE FOLLOWED. CONSTRUCTION PLANS SHALL DETAIL EROSION AND SEDIMENT CONTROL MEASURES.

OPERATION AND MAINTENANCE

AN OPERATION AND MAINTENANCE PLAN IN ACCORDANCE WITH LOCAL OR STATE REGULATIONS WILL BE PREPARED FOR ALL PONDS. AS A MINIMUM, THE DAM INSPECTION CHECKLIST LOCATED IN APPENDIX A SHALL BE INCLUDED AS PART OF THE OPERATION AND MAINTENANCE PLAN AND PERFORMED AT LEAST ANNUALLY. WRITTEN RECORDS OF MAINTENANCE AND MAJOR REPAIRS NEEDS TO BE RETAINED IN A FILE. THE ISSUANCE OF A MAINTENANCE AND REPAIR PERMIT FOR ANY REPAIRS OR MAINTENANCE THAT INVOLVES THE MODIFICATION OF THE DAM OR SPILLWAY FROM ITS ORIGINAL DESIGN AND SPECIFICATIONS IS REQUIRED. A PERMIT IS ALSO REQUIRED FOR ANY REPAIRS OR RECONSTRUCTION THAT INVOLVE A SUBSTANTIAL PORTION OF THE STRUCTURE. ALL INDICATED REPAIRS ARE TO BE MADE AS SOON AS PRACTICAL.



EROSION AND SEDIMENT CONTROL LEGEND

- STABILIZED CONSTRUCTION ENTRANCE
- RIP-RAP OUTLET PROTECTION
- SF — SF: SILT FENCE
- EARTH DIKE (A-2 STABILIZED MATTING OR SOD, A-3 - 4-7" STONE)
- SSF — SSF: SUPER SILT FENCE
- TPF — TPF: TREE PROTECTION FENCE
- LOD — LOD: LIMIT OF DISTURBANCE
- BAFFLE BOARD
- RIP-RAP INFLOW PROTECTION
- STEEP SLOPES (15%-25%)
- STEEP SLOPES (>25%)
- SOIL DIVIDE
- MaB: SOIL LABEL
- AGIP: AT GRADE INLET PROTECTION
- SIP: STANDARD INLET PROTECTION TYPE 'B'
- SPECIMEN TREE TO REMAIN

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 536
- 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

NOTE: SEE SHEET 16 FOR STORMWATER MANAGEMENT FACILITIES ON THE INDIVIDUAL LOTS TO BE CONSTRUCTED AT SDP STAGE.

APPROVED: DEPARTMENT OF PUBLIC WORKS
[signature] 9/23/2014
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 PRIOR TO THE INITIATION 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 IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

OWNER:	CM HIGDON LC 1355 BEVERLY ROAD, SUITE 330 MCLEAN, VA 22101 CONTACT: DAVID KAUFMAN PHONE: (703) 734-9855
DEVELOPER:	ELMS AT FELLS POINT II, L.C. 5074 DORSEY HALL DRIVE, SUITE 205 ELLICOTT CITY, MD 21043 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, 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. 40808, EXPIRATION DATE: 7/3/2015

BOHLER ENGINEERING
CIVIL & CONSULTING ENGINEERS
SURVEYORS
PROJECT MANAGERS
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS
CORPORATE OFFICE: ♦ WARREN, NJ
OFFICES: ♦ SOUTHBOROUGH, MA ♦ ALBANY, NY ♦ RONKONKOMA, NY ♦ CHALFONT, PA ♦ CENTER VALLEY, PA ♦ TAMPA, FL ♦ BOWIE, MD ♦ TOWSON, MD ♦ STERLING, VA ♦ WARRENTON, VA ♦ FORT LAUDERDALE, FL ♦ PHILADELPHIA, PA

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REVISIONS

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

DIG WITH CARE — CALL BEFORE YOU DIG

THE FOLLOWING STATES REQUIRE NOTIFICATION BY EXCAVATORS, 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
(WV 1-800-245-4848) (PA 1-800-242-1776) (DC 1-800-257-7777) (VA 1-800-552-7001) (MD 1-800-257-7777) (DE 1-800-282-8555)

PROJECT No.:	MD122066
DRAWN BY:	RLB
CHECKED BY:	BRR
DATE:	6/2/14
SCALE:	1"=50
CAD I.D.:	SS2

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 21204
Phone: (410) 821-7900
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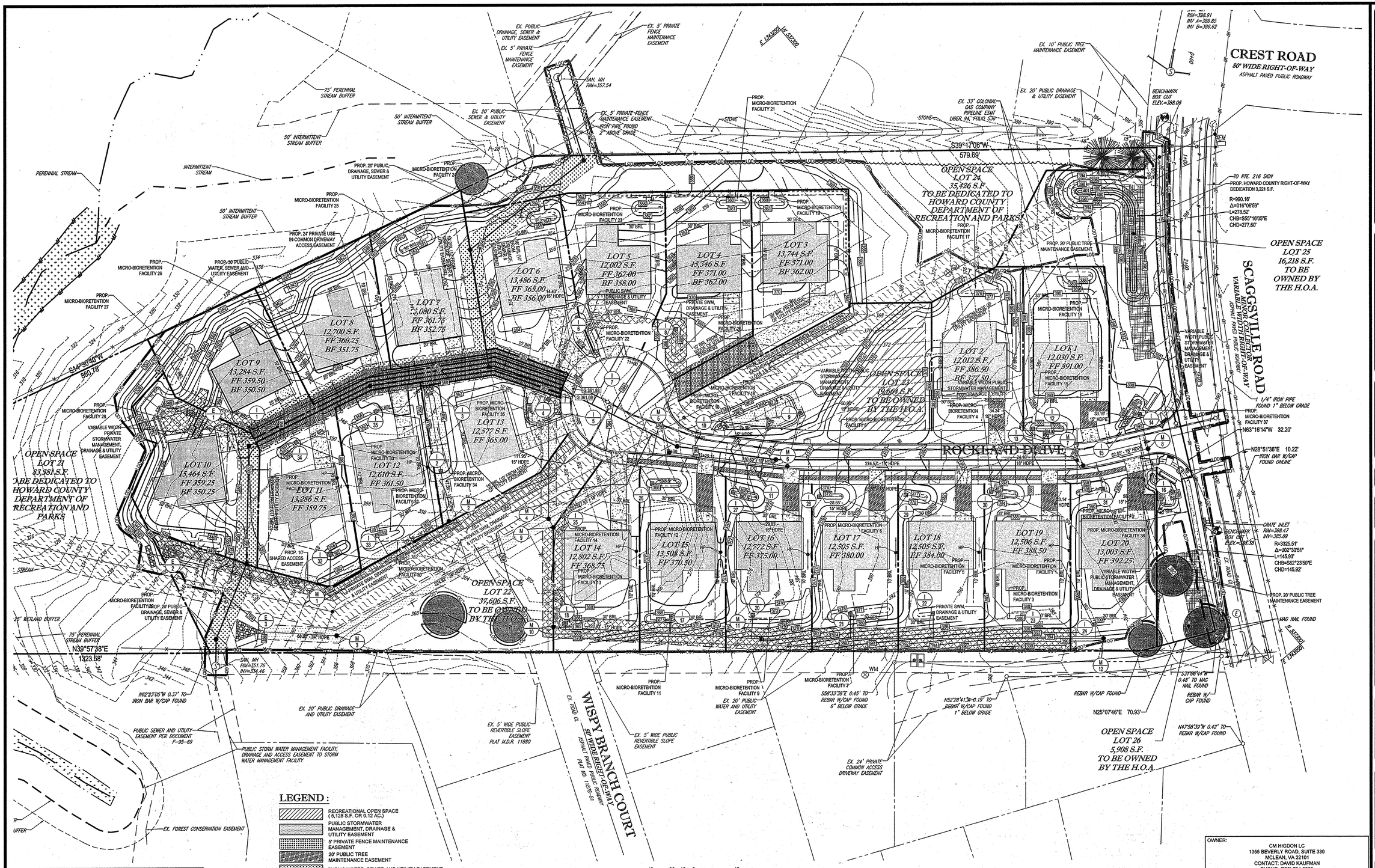
B.R. ROWE
PROFESSIONAL ENGINEER
[Seal: STATE OF MARYLAND, BRANDON R. ROWE, No. 40808, PROFESSIONAL ENGINEER]

SHEET TITLE:
GRADING AND SEDIMENT CONTROL PLAN - PHASE II

SHEET NUMBER:

F-14-003



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 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 94, FOLIO 536
- 12' ACCESS EASEMENT(FOR RESIDENTIAL AND VEHICULAR ACCESS TO OS LOT 21)
- 100 YEAR FLOOD PLAIN, DRAINAGE & UTILITY EASEMENT
- LIMITS OF WETLANDS

THIS SHEET IS FOR INFORMATIONAL PURPOSES ONLY

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

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OWNER:	CM HIGDON LC 1355 BEVERLY ROAD, SUITE 330 MCLEAN, VA 22101 CONTACT: DAVID KAUFMAN PHONE: (703) 734-9855
DEVELOPER:	ELMS AT FELLS POINT II, L.C. 5074 DORSEY HALL DRIVE, SUITE 205 ELLICOTT CITY, MD 21043 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, BA-05-029, 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: 7/3/2015

BOHLER ENGINEERING

CIVIL & CONSULTING ENGINEERS
SURVEYORS
PROJECT MANAGERS
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS

CORPORATE OFFICE: ◆ WARREN, NJ
OFFICES: ◆ BOWIE, MD ◆ SOUTHBOROUGH, MA ◆ HOLMDEL, NJ ◆ RONKONKOMA, NY ◆ STERLING, VA ◆ WARRENTON, VA ◆ CHALFONT, PA ◆ WEST CHESTER, PA ◆ READING, PA ◆ TAMPA, FL ◆ PHILADELPHIA, PA

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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 EARTHS SURFACE ANYWHERE IN THE STATE IN VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE CALL - 811
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PROJECT No.:	MD122066
DRAWN BY:	RLB
CHECKED BY:	BRR
DATE:	6/2/14
SCALE:	1"=40'
CAD I.D.:	SS2

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

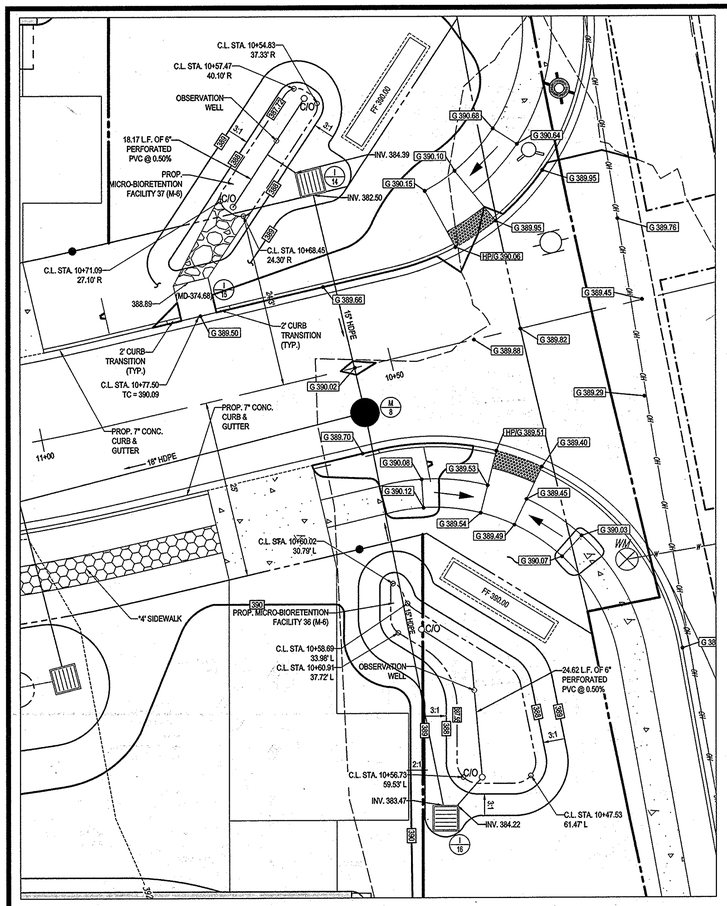
BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

B.R. ROWE
REGISTERED PROFESSIONAL ENGINEER
No. 40808
STATE OF MARYLAND

SHEET TITLE:
ULTIMATE GRADING PLAN

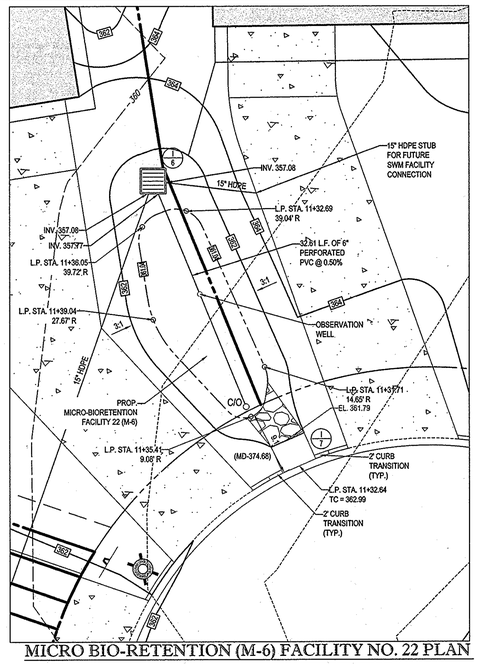
SHEET NUMBER:
5
OF 19

F-14-003



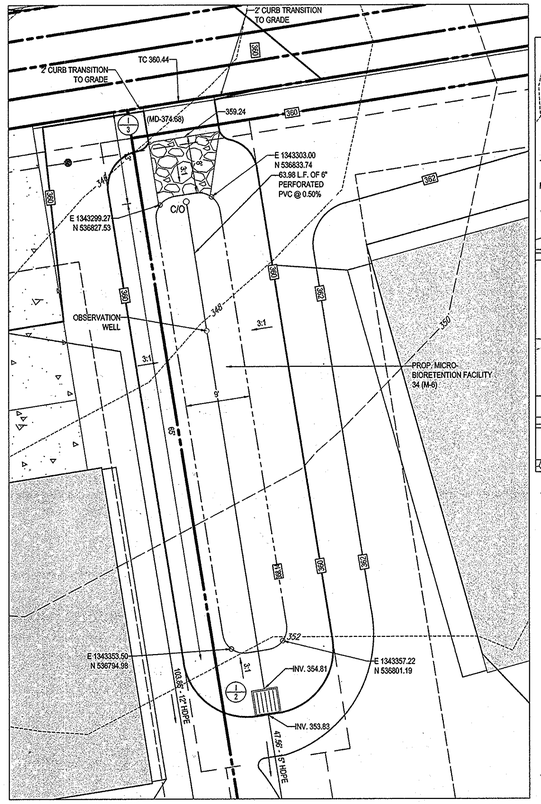
MICRO BIO-RETENTION (M-6) FACILITY NOS. 36 & 37 PLAN

SCALE: 1"=10'



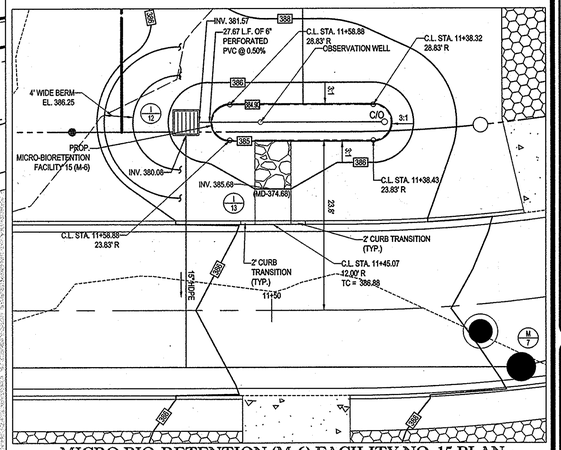
MICRO BIO-RETENTION (M-6) FACILITY NO. 22 PLAN

SCALE: 1"=10'



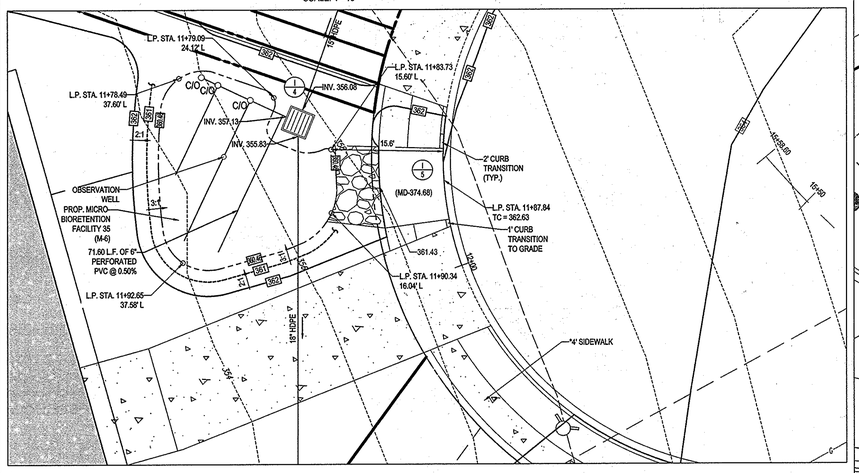
MICRO BIO-RETENTION (M-6) FACILITY NO. 34 PLAN

SCALE: 1"=10'



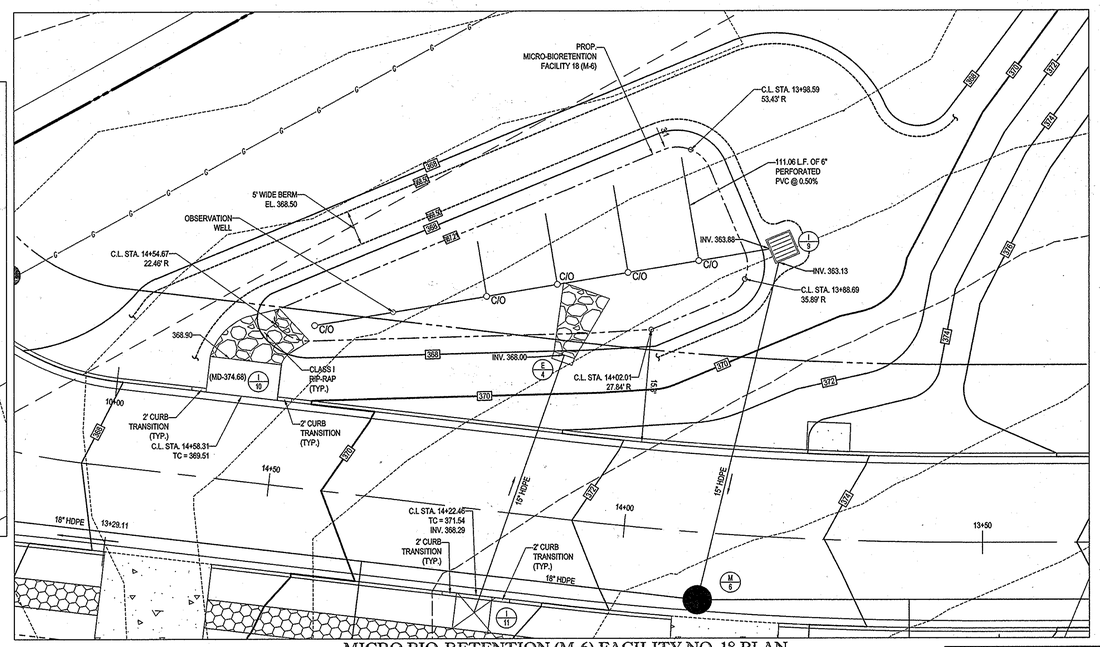
MICRO BIO-RETENTION (M-6) FACILITY NO. 15 PLAN

SCALE: 1"=10'



MICRO BIO-RETENTION (M-6) FACILITY NO. 35 PLAN

SCALE: 1"=10'



MICRO BIO-RETENTION (M-6) FACILITY NO. 18 PLAN

SCALE: 1"=10'

***NOTE:**

THE PROPOSED 4' SIDEWALK SHALL BE TRAFFIC BEARING (7" REINFORCED CONCRETE) TO NEAREST DRIVEWAY ON EITHER SIDE OF THE PROPOSED CODACOS INLET OPENING (SEE DETAIL SHEET 9)

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."

SIGNATURE OF ENGINEER — DATE 9/10/14
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 ONSITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

NAME: Jason Van Kirk — DATE 9-11-14
TITLE: Vice President

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

HOWARD SCD — DATE 9/11/14

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 9/23/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9.22.14
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 9.25.14

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NOTE: SEE SHEET 17 FOR DETAILS OF THE PRIVATE STORMWATER MANAGEMENT FACILITIES TO BE BUILT UNDER THE SDP.

NOTE: SEE SHEET 10 FOR STRUCTURE SCHEDULE.

10 5 2.5 0 10
1"= 10'

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, BA-95-028, SP-13-008, 24-4787-D

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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: 7/3/2015

BOHLER ENGINEERING
CORPORATE OFFICE: WARREN, NJ
OFFICES: SOUTHBOROUGH, MA · WOODBRIDGE, NJ · ROANOKE/NOKIA, NY · CHALFONT, PA · NEW BRITAIN, PA · BOWIE, MD · COLUMBIA, MD · STERLING, VA · WARRENTON, VA · WILMINGTON, DALE, FL · TAMPA, FL · PHILADELPHIA, PA
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REVISIONS

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

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PROJECT No.:	MD122066
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B.R. ROWE, PROFESSIONAL ENGINEER, STATE OF MARYLAND, LICENSE NO. 40808, 9/11/14

SHEET TITLE:
STORMWATER MANAGEMENT PLAN

SHEET NUMBER:
6
OF 19

F-14-003

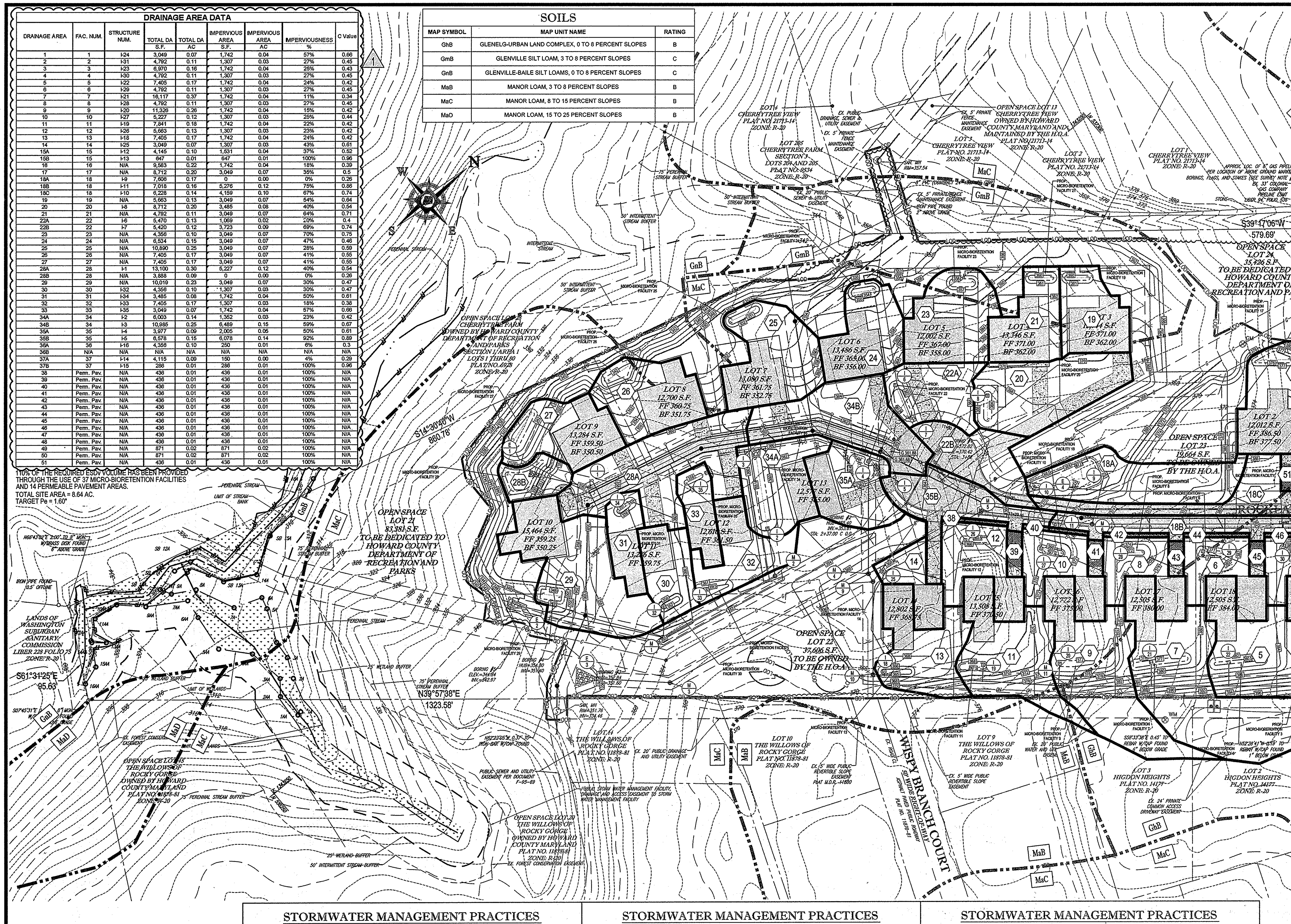
DRAINAGE AREA DATA

DRAINAGE AREA	FAC. NUM.	STRUCTURE NUM.	TOTAL DA S.F.	TOTAL DA AC	IMPERVIOUS AREA S.F.	IMPERVIOUS AREA AC	IMPERVIOUSNESS %	C Value
1	1	I-24	3,049	0.07	1,742	0.04	57%	0.66
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-26	5,663	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	647	0.01	647	0.01	100%	0.96
16	16	N/A	9,583	0.22	1,742	0.04	18%	0.39
17	17	N/A	8,712	0.20	3,049	0.07	35%	0.5
18A	18	I-9	7,606	0.17	0	0.00	0%	0.26
18B	18	I-11	7,018	0.16	5,276	0.12	75%	0.86
18C	18	I-10	6,228	0.14	4,159	0.10	67%	0.74
19	19	N/A	5,663	0.13	3,049	0.07	54%	0.64
20	20	I-8	8,712	0.20	3,485	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	3,485	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%	0.66
34A	34	I-2	6,003	0.14	1,352	0.03	23%	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	6,578	0.15	6,078	0.14	92%	0.89
36A	36	I-16	4,356	0.10	250	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	286	0.01	286	0.01	100%	0.96
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

110% OF 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"

SOILS

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



STORMWATER MANAGEMENT PRACTICES						
	DRAINAGE AREA TO FACILITY					
LOT NO.	PERMEABLE PAVING A-2 (Y-N)	MICRO BIO-RETETION M-6 (NUMBER)	TOTAL AREA	ESDv REQUIRED	ESDv PROVIDED
1	Y	FACILITIES 15 & 16	0.33	562	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
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
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

SITE AREA = 8.64 AC.
TARGET Pe = 1.60"
% IMPERVIOUS = 28% AVG.
TARGET ESDv = 15,211 CU. FT.

LEGEND

IMPERVIOUS AREA
PERVIOUS AREA
DRAINAGE AREA DIVIDE
11 DRAINAGE AREA LABEL
SOIL DIVIDE
MaB SOIL LABEL

50 25 12.5 0 50
1"=50'

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 9/23/2014
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9-26-14
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CM HIGDON LC
1355 BEVERLY ROAD, SUITE 330
MCLEAN, VA 22101
CONTACT: DAVID KAUFMAN
PHONE: (703) 734-9855

DEVELOPER:
ELMS AT FELLS POINT II, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21043
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
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PREVIOUS FILE No.: WP-13-048, ECP-13-038, BA-95-028, SP-13-008, 24-4787-D

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LANDSCAPE ARCHITECTS
CORPORATE OFFICE: WARREN, NJ
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REVISIONS

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

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(WV 1-800-245-4848) (PA 1-800-242-1776) (DC 1-800-257-7777) (VA 1-800-552-7001) (MD 1-800-257-7777) (DE 1-800-282-8555)

PROJECT No.: MD122066
DRAWN BY: RLB
CHECKED BY: BRR
DATE: 6/2/14
SCALE: 1"=50'
CAD I.D.: DA2

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 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

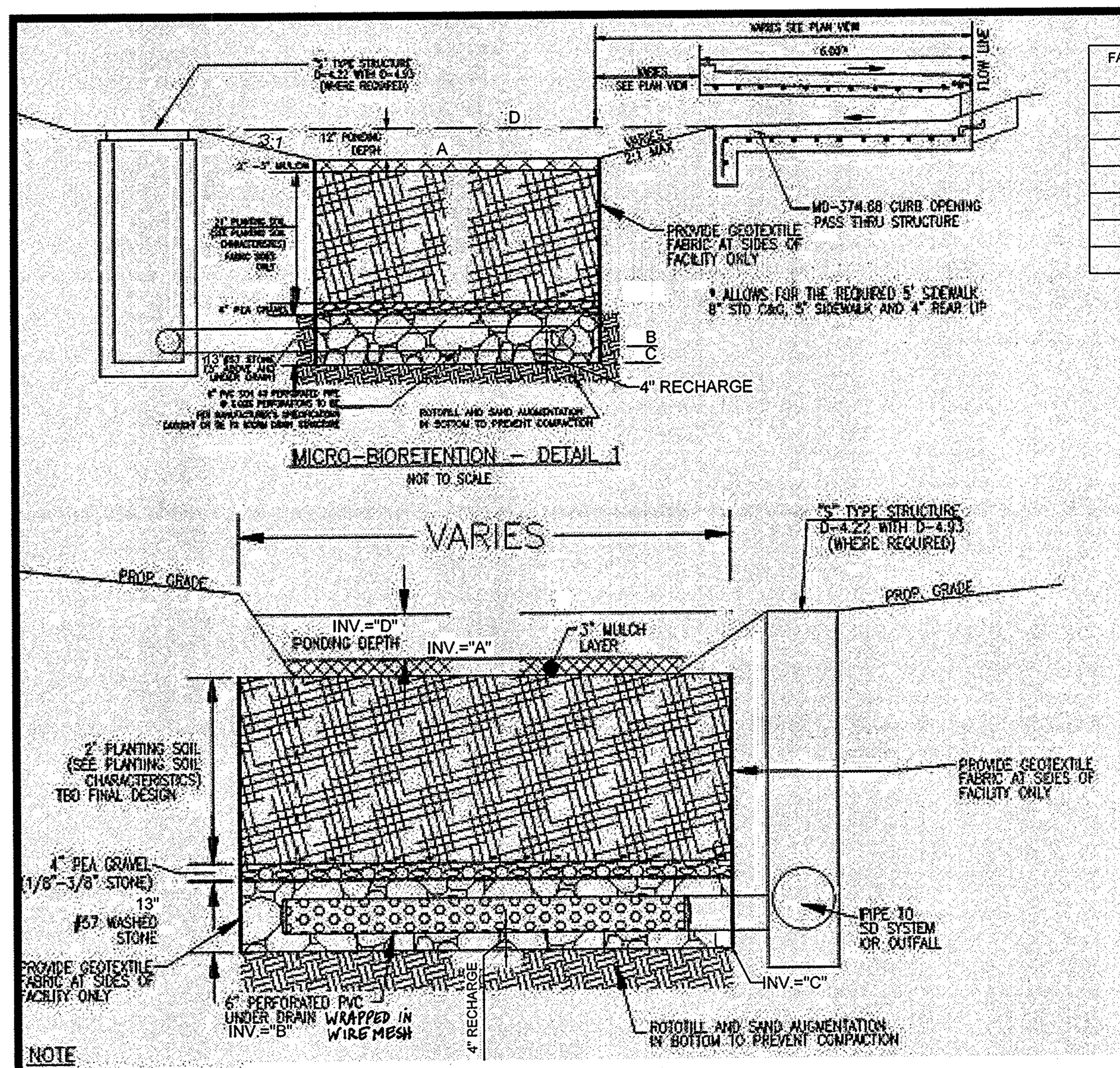
B.R. ROWE
PROFESSIONAL ENGINEER

SHEET TITLE:
STORM DRAIN AND STORMWATER MANAGEMENT DRAINAGE AREA MAP

SHEET NUMBER:

F-14-003

H:\2012\MD122066\DRAWINGS\PLAN SETS\FINAL ROAD CONSTRUCTION GRADING AND STORMWATER MANAGEMENT PLANS\MD122066DA7.DWG PRINTED BY: RBO

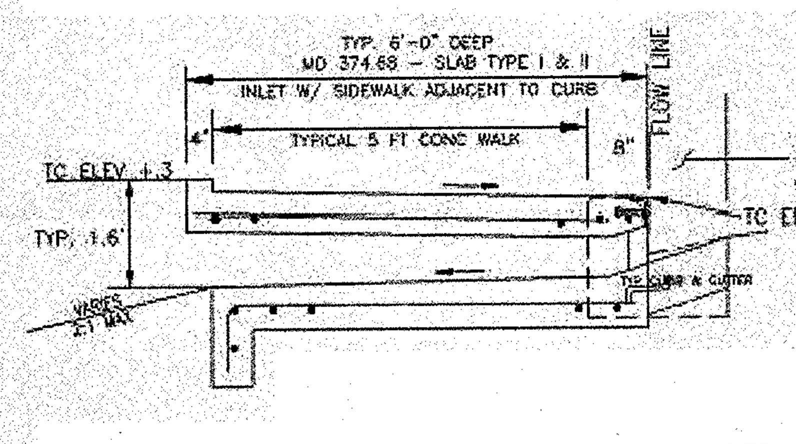


NOTE
PROVIDE VERTICAL STANDPIPE CLEANOUT AT ALL ENDS OF PERFORATED UNDERDRAINS -STANDPIPES SHALL BE SOLID

TYPICAL MICRO-BIORETENTION - MDE FACILITY M-6

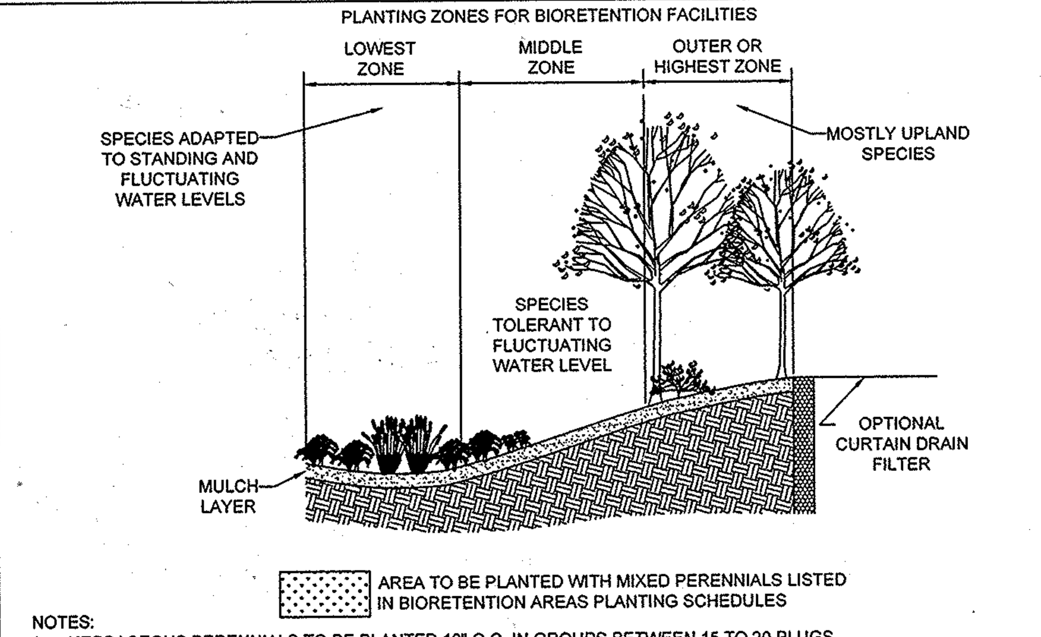
NOT TO SCALE

FACILITY NO.	A	B	C	D
15	384.90	381.57	381.24	12"
18	367.21	363.88	363.55	12"
22	361.04	357.77	357.44	12"
34	358.14	354.81	354.48	12"
35	360.46	357.13	356.80	12"
36	387.55	384.22	383.89	12"
37	387.72	384.39	384.06	7"



PASS THRU INLET AT SIDEWALK MD STANDARD 374.68

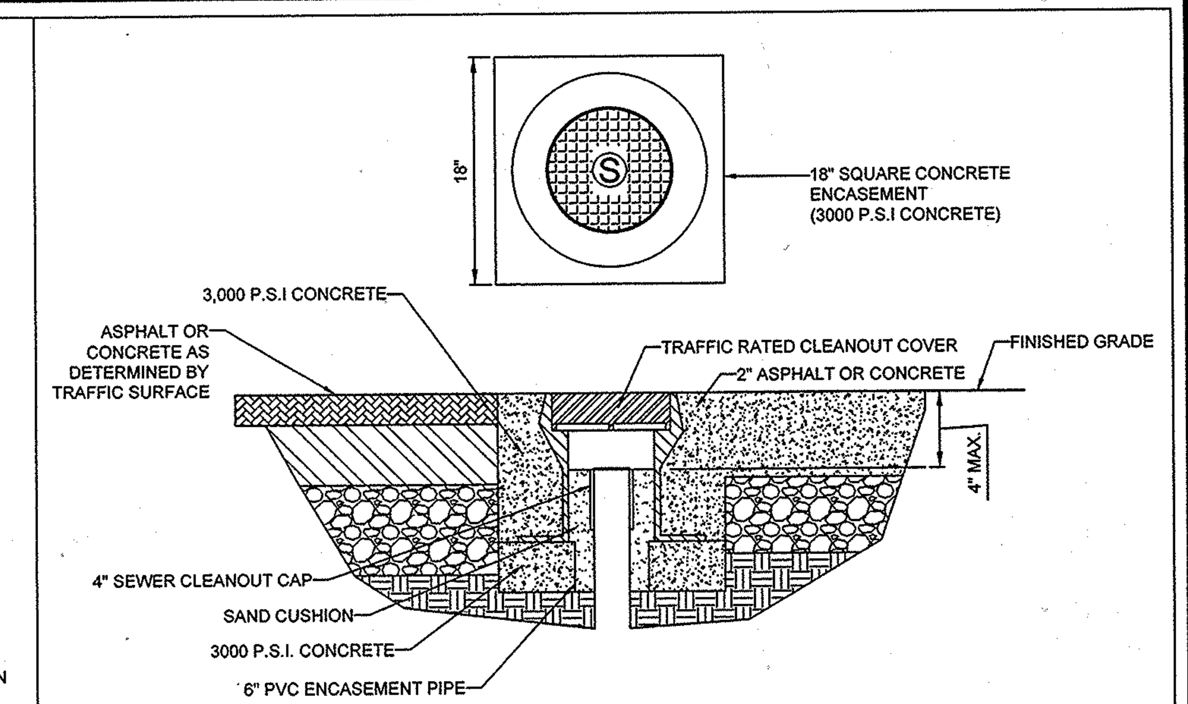
NOT TO SCALE



NOTES:
1. HERBACEOUS PERENNIALS TO BE PLANTED 18" O.C. IN GROUPS BETWEEN 15 TO 20 PLUGS
2. LANDSCAPE CONTRACTOR TO GROUP LIKE PLANTS TOGETHER IN EACH BED AS SHOWN IN PLANTING DISTRIBUTION PATTERN DETAIL.
3. ALL BIORETENTION AREAS ARE TO BE MULCHED WITH A 4" LAYER OF DOUBLE SHREDDED HARDWOOD BARK MULCH.
4. 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.

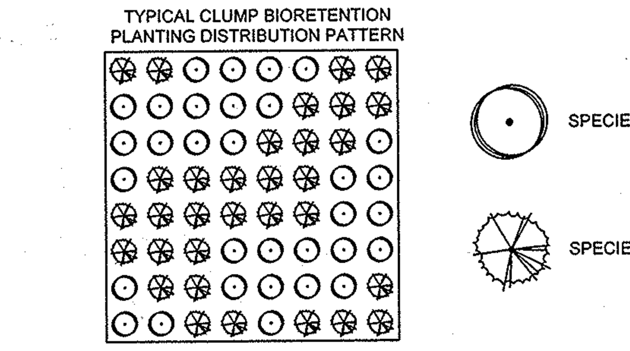
TYPICAL PLANTING FOR BIORETENTION AREAS

NOT TO SCALE



TRAFFIC RATED CLEANOUT DETAIL

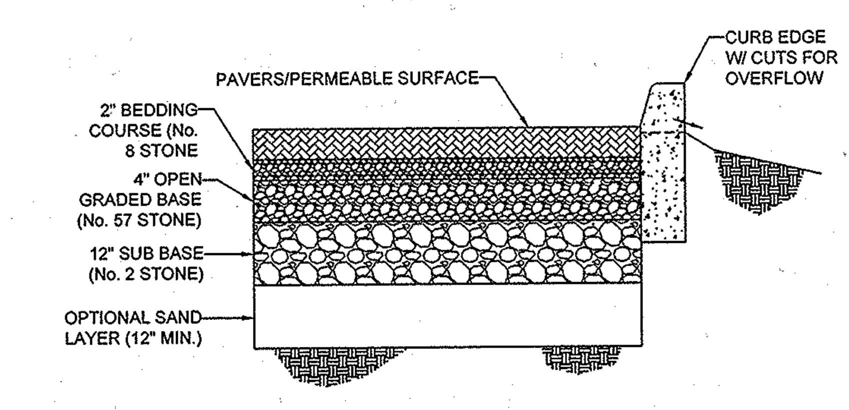
NOT TO SCALE



NOTE:
NATURALLY OCCURRING POPULATIONS TEND TO BE FOUND IN INFORMAL GROUPINGS. A CLUSTER OF PLANTS IS REALLY A MOSAIC OF DIFFERENT SPECIES GROUPS. THE OBJECTIVE IS TO SELECT THE APPROPRIATE SPECIES AND DISTRIBUTION PATTERN FOR A CHOSEN SITE THAT MIMIC NATURAL PATTERNS.

PLANTING DISTRIBUTION PATTERN DETAIL

NOT TO SCALE



PERMEABLE PAVEMENT (A-2) TYPICAL SECTION (LOTS 1, 2 & 15-20)

NOT TO SCALE

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

1. 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.
2. THE OWNER SHALL PERIODICALLY CLEAN DRAINAGE PIPES, INLETS, STONE EDGE DRAINS AND OTHER STRUCTURES WITHIN OR DRAINING TO THE SUBBASE.
3. THE OWNER SHALL SHALL USE DEICERS IN MODERATION. DEICERS SHOULD BE NON-TOXIC AND BE APPLIED EITHER AS CALCIUM MAGNESIUM ACETATE OR AS PRETREATED SALT.
4. 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.

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 QP 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 PHOSPHOROUS AND METALS. VEGETATION PLANTED IN THE FACILITY WILL AID IN NUTRIENT UPTAKE AND WATER STORAGE. ADDITIONALLY, PLANT ROOTS WILL PROVIDE ARTERIES 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 A5 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 SOD.
- TEMPORARILY DIVERT FLOWS FROM SEEDED 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 PERHAPS 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 CROP. 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. AND BIOHABITATS, INC. (ETAB), 19931. 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"/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, MUGWORT, NUTSEDGE, 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

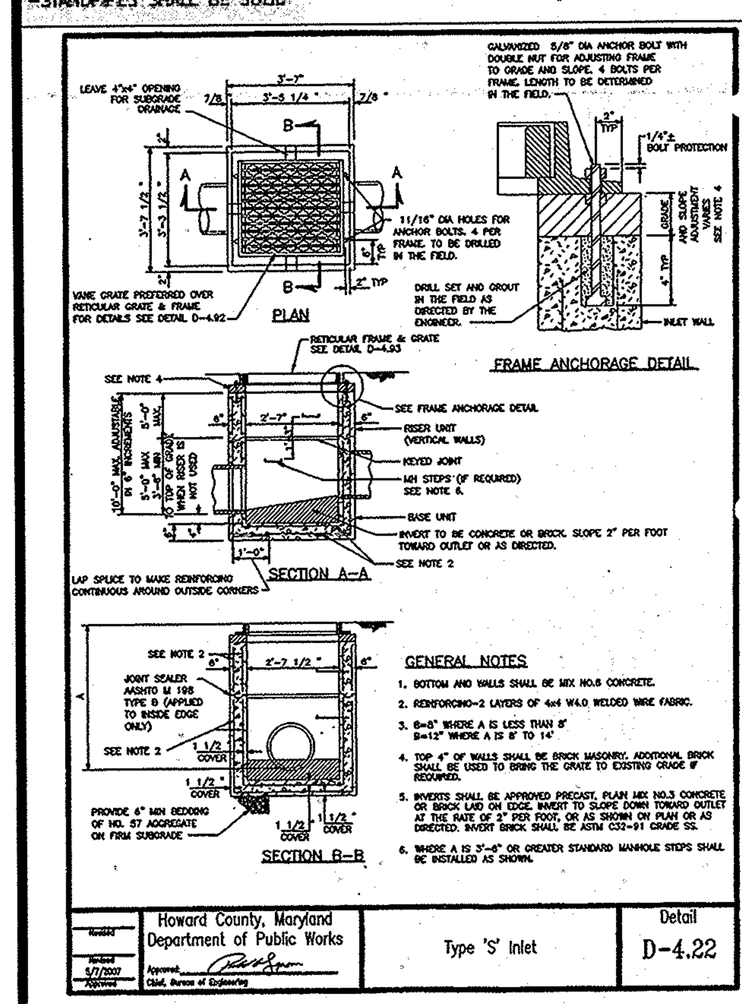
PARAMETER	VALUE
PH RANGE	5.2 TO 7.00
ORGANIC MATTER	1.5 TO 4.0% (BY WEIGHT)
MAGNESIUM	35 LBS. PER ACRE. MINIMUM
PHOSPHORUS (PHOSPHATE - P205)	75 LBS. PER ACRE. MINIMUM
POTASSIUM (POTASH - 1(K20)	85 LBS. PER ACRE. MINIMUM
SOLUBLE SALTS	500 PPM
CLAY	10 TO 25%
SILT	30 TO 55%
SAND	35 TO 60%

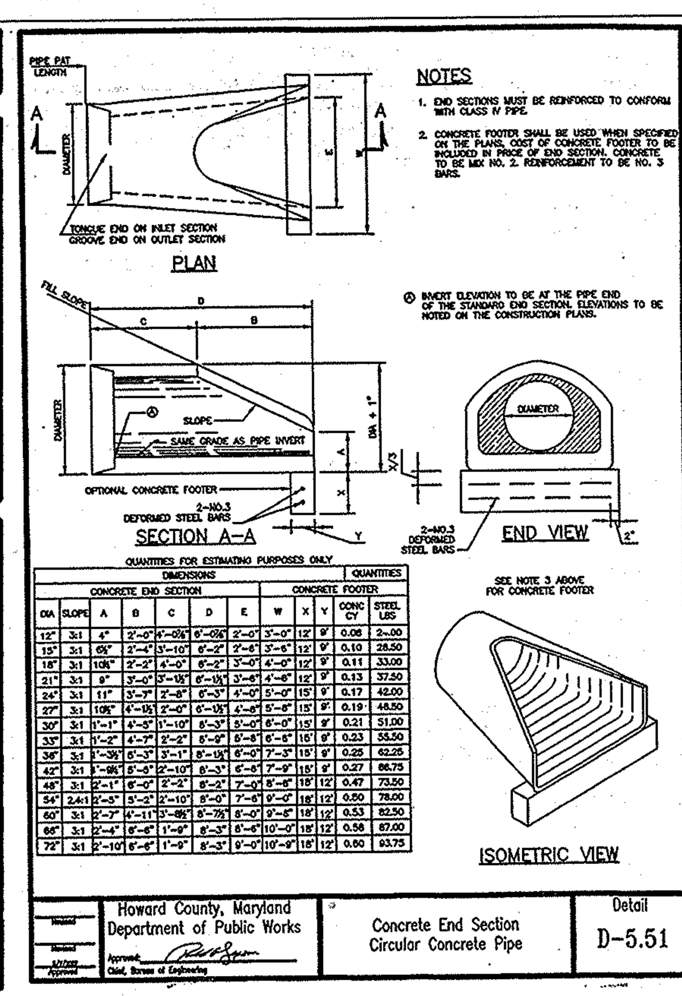
MULCH LAYER
THE MULCH LAYER PLAYS AN IMPORTANT ROLE IN THE PERFORMANCE OF THE BIORETENTION SYSTEM. THE MULCH LAYER HELPS MAINTAIN SOIL MOISTURE AND AVOIDS SURFACE SEALING, WHICH REDUCES PERMEABILITY. MULCH HELPS PREVENT EROSION, AND PROVIDES A MICROENVIRONMENT SUITABLE FOR SOIL BIOTA AT THE MULCH/SOIL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

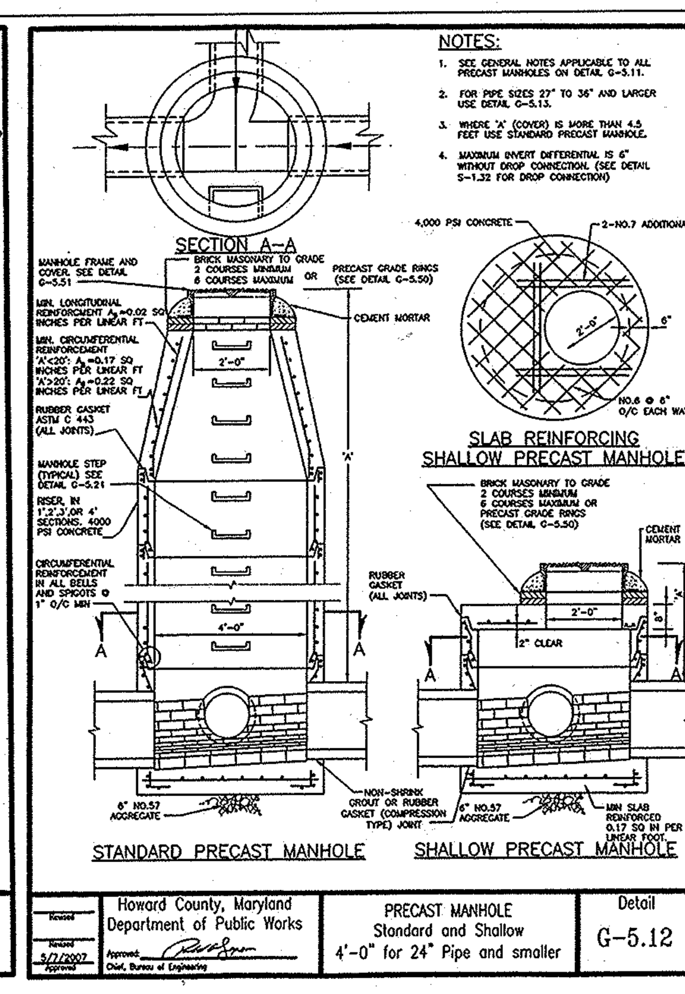
THE MULCH LAYER SHOULD BE STANDARD LANDSCAPE STYLE, SINGLE OR DOUBLE SHREDDED HARDWOOD MULCH OR CHIPS. THE MULCH LAYER SHOULD BE WELL AGED (STOCKPILED OR STORED FOR AT LEAST 12 MONTHS), UNIFORM IN COLOR, AND FREE OF OTHER MATERIALS, SUCH AS WEED SEEDS, SOIL, ROOTS, ETC. THE MULCH SHOULD BE APPLIED TO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

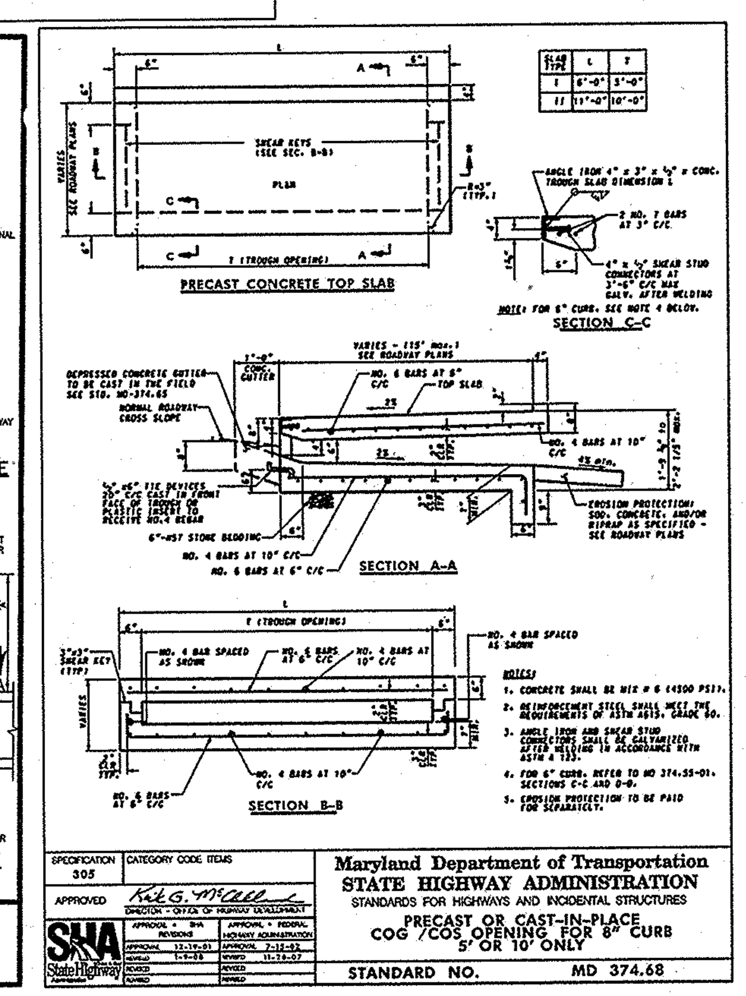
PLANTING GUIDANCE
PLANT MATERIAL SELECTION SHOULD BE BASED ON THE GOAL OF SIMULATING A TERRESTRIAL FORESTED COMMUNITY OF NATIVE SPECIES. BIORETENTION SIMULATES AN UPLAND-SPECIES ECOSYSTEM. THE COMMUNITY SHOULD BE DOMINATED BY TREES, BUT HAVE A DISTINCT COMMUNITY OF UNDERSTORY TREES, SHRUBS AND HERBACEOUS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

THE PROPER SELECTION AND INSTALLATION OF PLANT MATERIALS IS KEY TO A SUCCESSFUI. SYSTEM. THERE ARE ESSENTIALLY THREE ZONES WITHIN A BIORETENTION FACILITY (FIGURE A5). THE LOWEST ELEVATION SUPPORTS PLANT SPECIES ADAPTED TO STANDING AND FLUCTUATING WATER LEVELS. THE MIDDLE ELEVATION SUPPORTS PLANTS THAT LIKE DRIER SOIL 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 PRINCIPALS 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 CLAYTOR AND SCHUELER, 1997.









TYPICAL CURB OPENING INLETS

NOT TO SCALE

PLANT MATERIAL MICRO-BIORETENTION FACILITIES

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES: BOTANICAL NAME	SPECIES: COMMON NAME	COUNT	SIZE
# 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

PLANT MATERIAL MICRO-BIORETENTION FACILITIES

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES: BOTANICAL NAME	SPECIES: COMMON NAME	COUNT	SIZE
# 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: BOTANICAL NAME	SPECIES: COMMON NAME	COUNT	SIZE
#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, 36 & 37)

1. 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.
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 PLAN MATERIAL, TREAT DISEASED TREES AND SHRUBS AND REPLACE DEFICIENT STAKES AND WIRES.
3. 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.
4. THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 9/23/2014
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9-26-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION — 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 SCOPE PRIOR TO THE INITIATION 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 IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

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

DEVELOPER: ELMS AT FELLS POINT II, L.C., 5074 DORSEY HALL DRIVE, SUITE 205, ELLICOTT CITY, MD 21043, 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, 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. 40808, EXPIRATION DATE: 7/3/2015

BOHLER ENGINEERING
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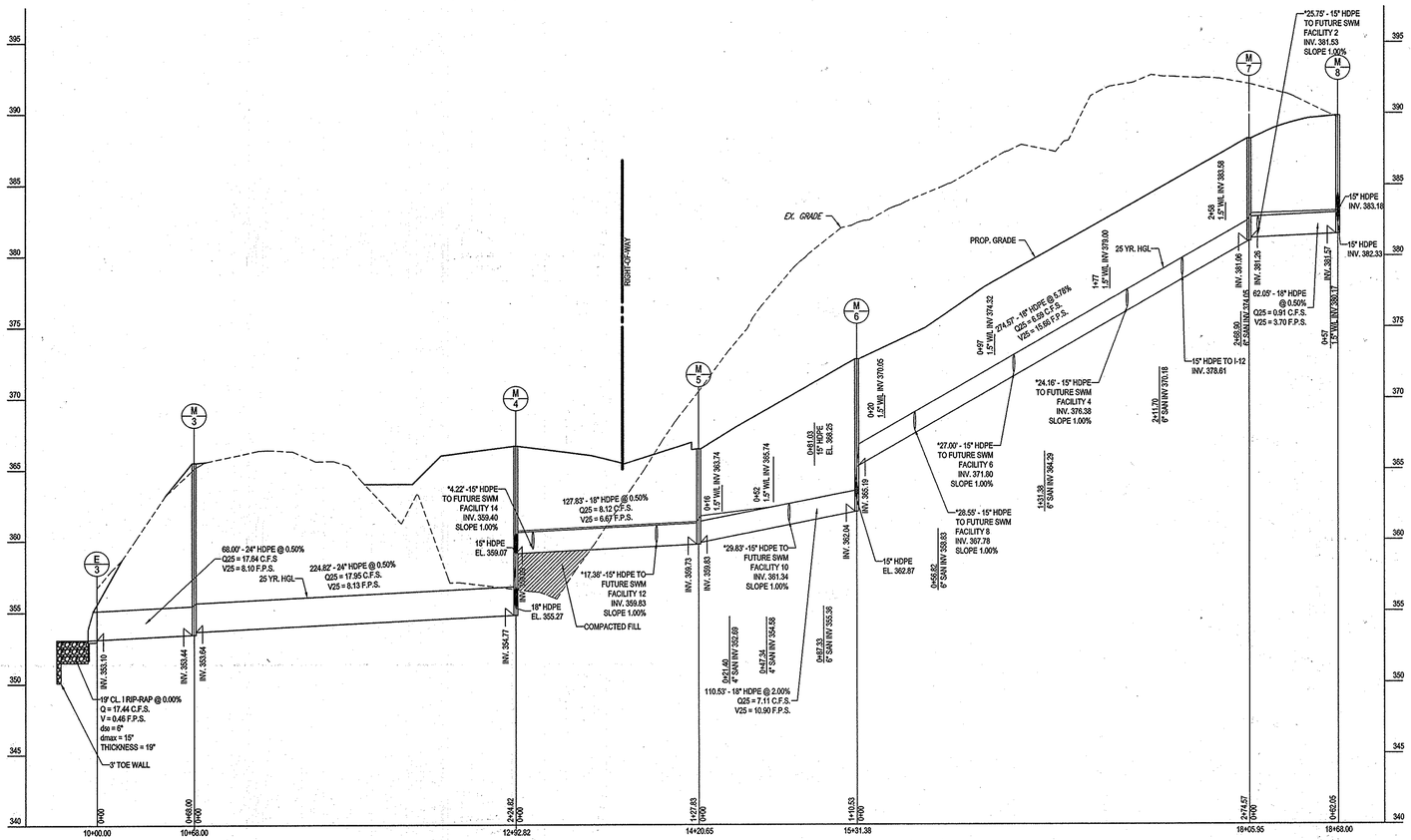
B R ROWE — STATE OF MARYLAND — BRANDON R. ROWE — PROFESSIONAL ENGINEER — No. 40808

SHEET TITLE:
STORMWATER MANAGEMENT AND STORM DRAIN DETAILS

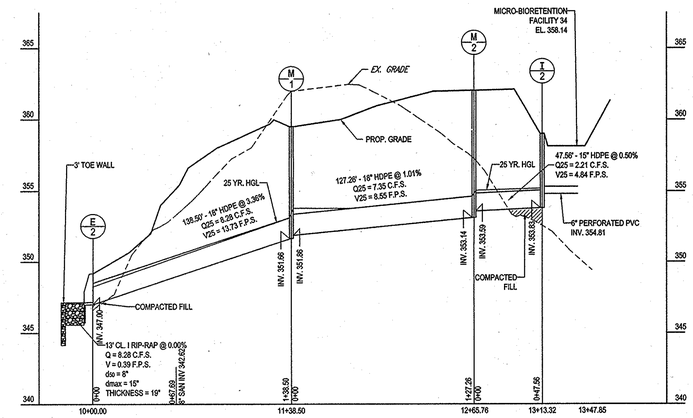
SHEET NUMBER:
8
OF 19

F-14-003



PROPOSED STORM DRAIN PROFILE

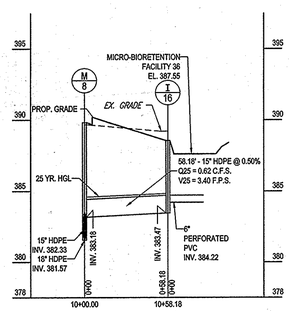
SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL



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.



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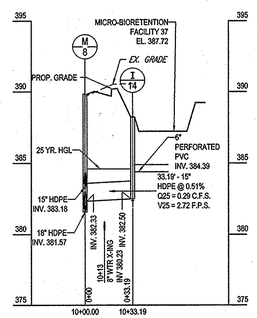

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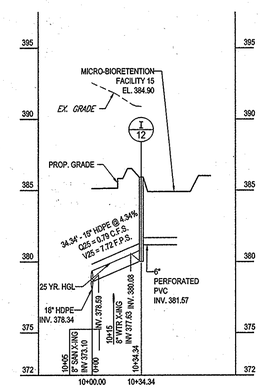

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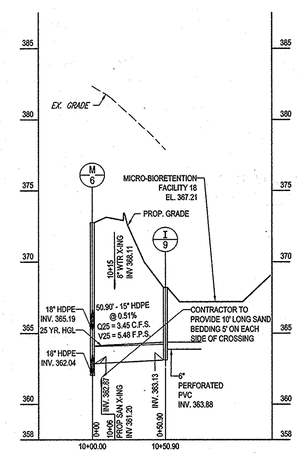

PROPOSED STORM DRAIN PROFILE

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

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CHIEF, BUREAU OF HIGHWAYS — DATE 9/23/2014

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CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9-26-14

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PROJECT No.: MD122066
DRAWN BY: RLB
CHECKED BY: BRR
DATE: 6/2/14
SCALE: 1"=50'
CAD I.D.: SP0

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 21204
Phone: (410) 821-7900
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B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND
LICENSE NO. 40808
6/2/14

SHEET TITLE:
STORM DRAIN PROFILES

SHEET NUMBER:
9
OF 19

OWNER:
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PHONE: (410) 720-3021

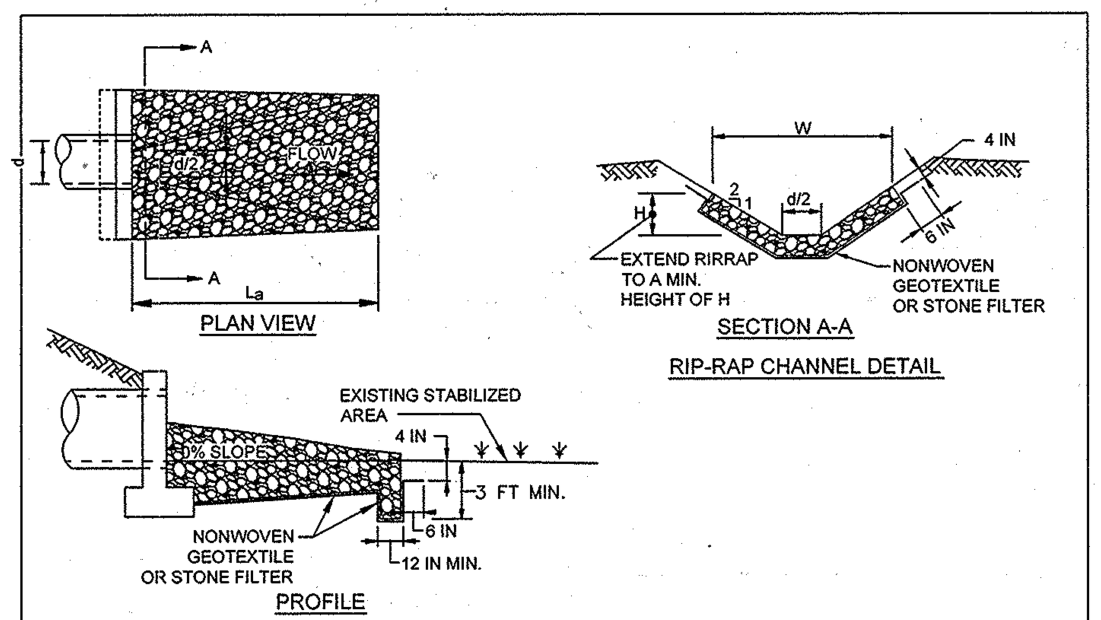
SUBDIVISION NAME: RESERVOIR ESTATES
SECTION/AREA: N/A
DEED # 15161, 365

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, 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. 40808, EXPIRATION DATE: 7/3/2015

F-14-003



CONSTRUCTION SPECIFICATIONS

1. 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.
2. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (⅜ TO 1½ 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.
3. EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPRAP.
4. 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 HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
5. 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.
6. CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
7. 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.

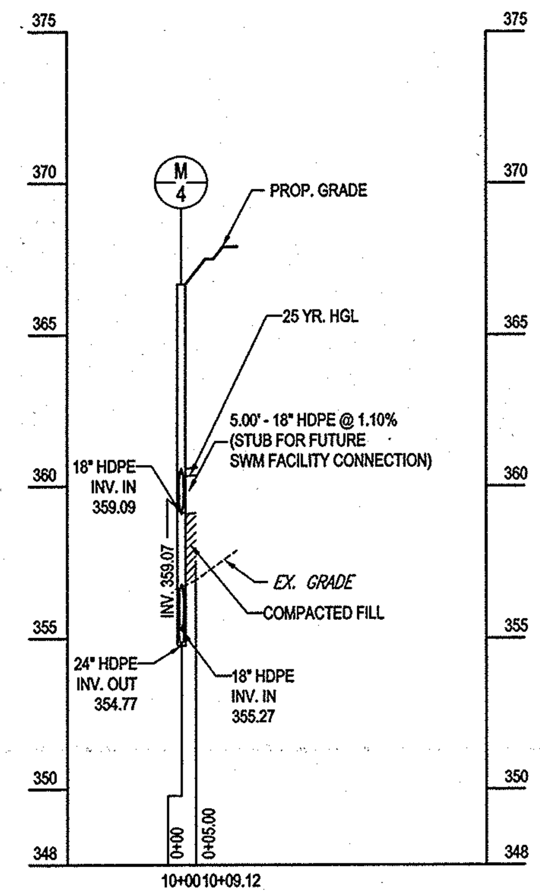
RIP-RAP CHANNEL DESIGN DATA

STRUCURE	W	n	V25 (F.P.S.)	Q25 (C.F.S.)	RIP-RAP SIZE		BLANKET THICKNESS	PIPE SIZE	La
					D50	Dmax			
E-2	14.25	0.04	0.39	8.28	8"	15"	19"	18"	13'
E-3	21.00	0.04	0.46	17.64	6"	15"	19"	24"	19'

STORM STRUCTURE SCHEDULE

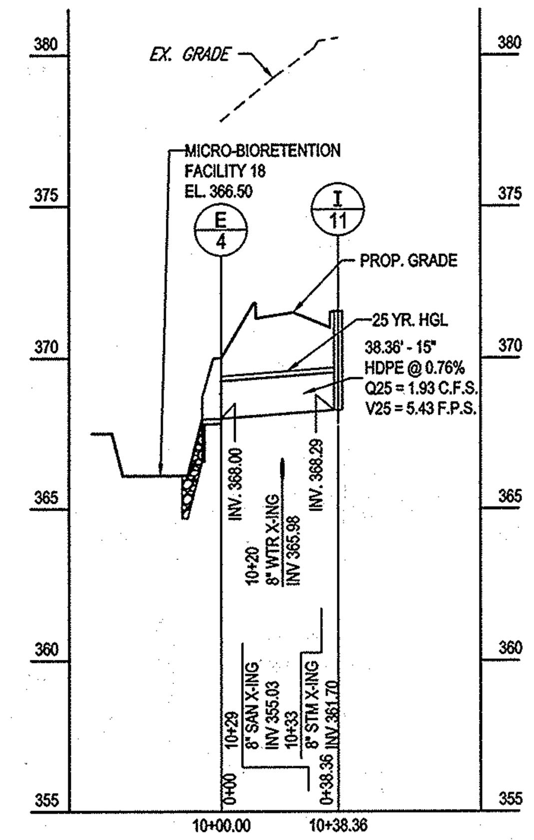
NAME	RIM ELEV. (FT.)	INVERTS	LOCATION	TYPE AND WIDTH	REMARKS
E-2	N/A	347.00 (15")	N 536560.28, E 1343268.68	CONCRETE END SECTION	HO. CO. STD. DETAIL D-5.51
E-3	N/A	353.10 (24")	N 536571.44, E 1343371.27	CONCRETE END SECTION	HO. CO. STD. DETAIL D-5.51
E-4	N/A	368.00 (15")	N 537050.86, E 1343527.73	CONCRETE END SECTION	HO. CO. STD. DETAIL D-5.51
I-2	359.14	353.83 (15")	N 534213.88, E 1341156.48	TYPE 'S' INLET	HO. CO. STD. DETAIL D-4.22
I-3	**360.44	N/A	N 534239.67, E 1341115.78	10' FLOW THRU (SLAB TYPE)	MD-374.68
I-4	361.46	356.08 (15") 355.83 (18")	N 534315.84, E 1341199.11	TYPE 'S' INLET	HO. CO. STD. DETAIL D-4.22
I-5	**362.63	N/A	N 536922.49, E 1343397.00	10' FLOW THRU (SLAB TYPE)	MD-374.68
I-6	362.04	357.08 (2 - 15")	N 534385.20, E 1341157.94	TYPE 'S' INLET	HO. CO. STD. DETAIL D-4.22
I-7	**362.99	N/A	N 536972.91, E 1343377.89	5' FLOW THRU (SLAB TYPE)	MD-374.68
I-9	368.21	363.13	N 534486.07, E 1341359.56	TYPE 'S' INLET	HO. CO. STD. DETAIL D-4.22
I-10	**369.51	N/A	N 537011.19, E 1343501.48	10' FLOW THRU (SLAB TYPE)	MD-374.68
I-11	371.54	368.29	N 537017.92, E 1343547.39	TYPE 'S' INLET	HO. CO. STD. DETAIL D-4.22
I-12	385.90	380.08	N 534641.84, E 1341509.81	TYPE 'S' INLET	HO. CO. STD. DETAIL D-4.22
I-13	**386.88	N/A	N 537239.55, E 1343704.62	5' FLOW THRU (SLAB TYPE)	MD-374.68
I-14	388.30	382.50	N 534726.53, E 1341563.23	TYPE 'S' INLET	HO. CO. STD. DETAIL D-4.22
I-15	**390.09	N/A	N 537300.11, E 1343743.74	5' FLOW THRU (SLAB TYPE)	MD-374.68
I-16	388.55	383.47	N 534708.04, E 1341624.13	TYPE 'S' INLET	HO. CO. STD. DETAIL D-4.22
I-17	N/A	N/A	N/A	N/A	N/A
M-1	359.50	351.66 (18") OUT 351.86 (18") IN	N 536644.56, E 1343378.57	MANHOLE STANDARD	HO. CO. STD. DETAIL G-5.12
M-2	362.20	353.14 (18") OUT 353.59 (15") IN	N 536769.44, E 1343403.06	MANHOLE STANDARD	HO. CO. STD. DETAIL G-5.12
M-3	365.50	353.44 (24") OUT 353.64 (24") IN	N 536621.04, E 1343417.78	MANHOLE STANDARD	HO. CO. STD. DETAIL G-5.12
M-4	366.67	354.77 (24") OUT 359.09 (18") IN 359.07 (15") IN 355.27 (18") IN	N 536841.66, E 1343461.04	MANHOLE STANDARD	HO. CO. STD. DETAIL G-5.12
M-5	366.45	359.73 (18") OUT 359.83 (18") IN	N 536967.10, E 1343485.63	MANHOLE STANDARD	HO. CO. STD. DETAIL G-5.12
M-6	372.75	362.04 (18") OUT 365.19 (15") IN 362.87 (15") IN	N 537042.95, E 1343566.02	MANHOLE STANDARD	HO. CO. STD. DETAIL G-5.12
M-7	388.24	381.06 (18") OUT 381.26 (18") IN	N 537253.43, E 1343742.34	MANHOLE STANDARD	HO. CO. STD. DETAIL G-5.12
M-8	389.82	381.57 (18") OUT 383.18 (15") IN 382.33 (15") IN	N 537309.43, E 1343769.08	MANHOLE STANDARD	HO. CO. STD. DETAIL G-5.12

** TOP OF CURB ELEVATION AT CENTER OF COG/COS OPENING
NOTE: SEE SHEET 6 FOR COG/COS OPENING DETAIL FOR SLAB TYPES



PROPOSED STORM DRAIN PROFILE

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



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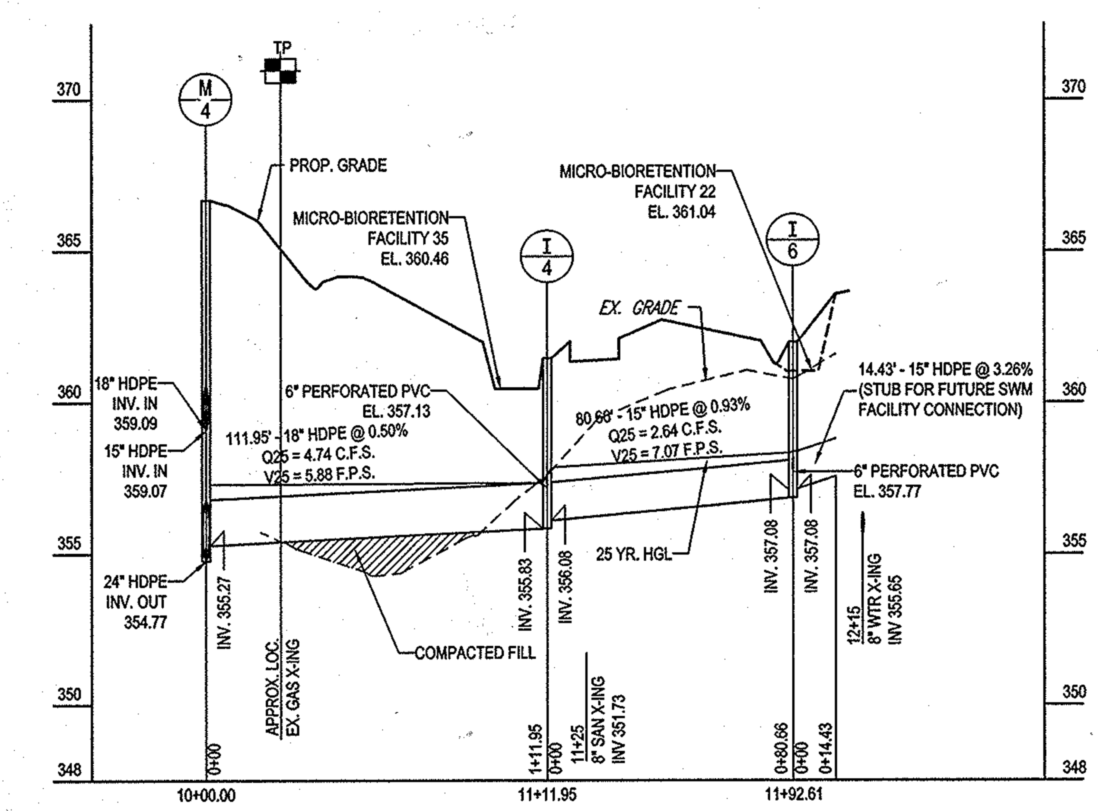

PROPOSED STORM DRAIN PROFILE

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

PIPE SCHEDULE

SIZE	CLASS	LENGTH
24"	HDPE	292.82
18"	HDPE	895.64
15"	HDPE	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
CHIEF, BUREAU OF HIGHWAYS — DATE 9/23/2014
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9-26-14
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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, BA-95-028, SP-13-008, 24-4787-D

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PROJECT No.: MD122066
DRAWN BY: RLB
CHECKED BY: BRR
DATE: 6/2/14
SCALE: AS NOTED
CAD I.D.: SP0

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REVISED FINAL ROAD CONSTRUCTION PLANS
FOR
RESERVOIR ESTATES
BUILDABLE LOTS 1-20 AND OPEN SPACE LOTS 21-26
LOCATION OF SITE
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B.R. ROWE
PROFESSIONAL ENGINEER, STATE OF MARYLAND, BRANDON R. ROWE, No. 40808

SHEET TITLE:
STORM DRAIN PROFILES

SHEET NUMBER:
10 OF 19

F-14-003

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

1. ADEQUATE VEGETATIVE STABILIZATION REQUIRES 95 PERCENT GROUNDCOVER.
2. IF AN AREA HAS LESS THAN 40 PERCENT GROUNDCOVER, RESTABILIZE FOLLOWING THE ORIGINAL RECOMMENDATIONS FOR LIME, FERTILIZER, SEEDBED PREPARATION, AND SEEDING.
3. IF AN AREA HAS BETWEEN 40 AND 94 PERCENT GROUNDCOVER, OVER-SEED AND FERTILIZE USING HALF OF 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

A. INCREMENTAL STABILIZATION - CUT SLOPES

1. 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 SEEDED 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.

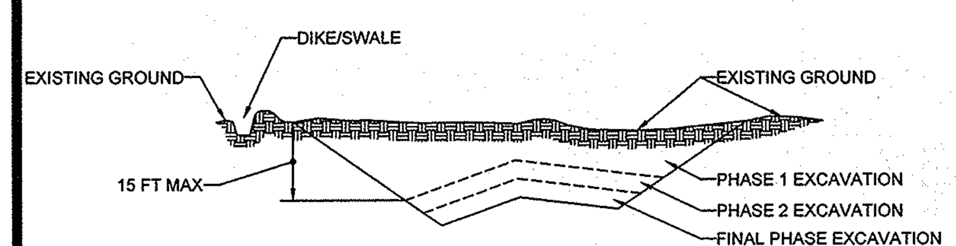

FIGURE B.1: INCREMENTAL STABILIZATION - CUT

B. INCREMENTAL STABILIZATION - FILL SLOPES

1. 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 PRACTICE(S), 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 PRACTICE(S), 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.
   e. PLACE FINAL PHASE FILL, PREPARE SEEDBED, AND STABILIZE. OVERSEED PREVIOUSLY SEEDED 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.

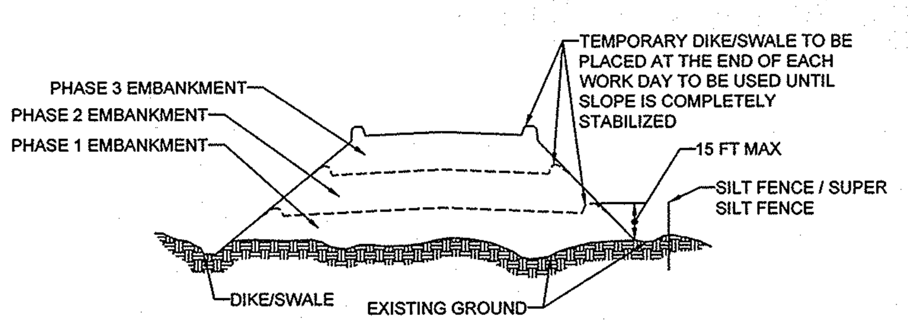

FIGURE B.2: INCREMENTAL STABILIZATION - FILL

APPROVED: DEPARTMENT OF PUBLIC WORKS	
CHIEF, BUREAU OF HIGHWAYS	DATE 6-9-14
APPROVED: DEPARTMENT OF PLANNING AND ZONING	
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6-26-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 6-18-14

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 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 IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

H:\2012\MD122066\DRAWINGS\PLAN SETS\FINAL ROAD CONSTRUCTION GRADING AND STORMWATER MANAGEMENT PLANS\MD122066SD4.DWG PRINTED BY: RBO

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, SUCH AS DISC HARROWS OR CHISEL PLOWS OR RIPPERS MOUNTED ON CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSENED, IT MUST NOT BE ROLLED OR DRAGGED SMOOTH BUT LEFT IN THE ROUGHENED CONDITION. SLOPES 3:1 OR FLATTER ARE TO BE TRACKED WITH RIDGES RUNNING PARALLEL 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. A SOIL TEST IS 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: IF 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 SOILS 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 READY 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 NOT PERMIT NORMAL SEEDBED PREPARATION. TRACK SLOPES 3:1 OR FLATTER WITH TRACKED EQUIPMENT LEAVING THE SOIL 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 FRIABLE. 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 CONCERN HAVE 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 DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-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.
4. 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 APPROVAL 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 1½ 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.
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 4 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 OPERATIONS 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 PERFORMED 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 WITH PRIOR APPROVAL FROM THE APPROPRIATE APPROVAL AUTHORITY. FERTILIZERS MUST ALL 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 PRODUCER.
3. LIME MATERIALS MUST BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHEN HYDROSEEDING) WHICH CONTAINS AT LEAST 50 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 8 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 HAVE BEEN TESTED WITHIN THE 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 OF NITROGEN FIXING BACTERIA 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 PACKAGE. USE FOUR TIMES THE RECOMMENDED RATE WHEN HYDROSEEDING. NOTE: IT IS VERY IMPORTANT TO KEEP INOCULANT AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75 TO 80 DEGREES FAHRENHEIT CAN WEAKEN BACTERIA AND MAKE THE INOCULANT LESS EFFECTIVE.
d. SOD OR SEED 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.
i. 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.
ii. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION. ROLL THE SEEDED AREA WITH A WEIGHTED ROLLER TO PROVIDE GOOD SEED TO SOIL CONTACT.
b. DRILL OR CULTIPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL.
i. CULTIPACKING SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 1/4 INCH OF SOIL COVERING. SEEDBED MUST BE FIRM AFTER PLANTING.
ii. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION.
c. HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER).
i. 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.
ii. LIME: USE ONLY GROUND AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE MAY BE APPLIED BY HYDROSEEDING). NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME WHEN HYDROSEEDING.
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 AND NOT MUSTY, MOLDY, CAKED, DECAYED, OR EXCESSIVELY DUSTY. 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 SEED, FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL MUST FORM A BLOTTER-LIKE GROUND COVER, ON APPLICATION, HAVING MOISTURE 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 1.6 PERCENT MAXIMUM AND WATER HOLDING CAPACITY OF 90 PERCENT MINIMUM.
2. APPLICATION
   a. APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.
   b. WHEN STRAW MULCH IS USED, SPREAD IT OVER ALL SEEDED 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, PETROSET, TERRA TAX II, TERRA TACK AR OR OTHER APPROVED EQUAL MAY BE USED. FOLLOW APPLICATION RATES AS SPECIFIED BY THE MANUFACTURER. APPLICATION OF LIQUID BINDERS NEEDS TO BE HEAVIER AT THE EDGES 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 AND COMPLETED, THEN TABLE B.1 PLUS FERTILIZER AND LIME RATES MUST BE PUT ON THE PLAN.
2. FOR SITES HAVING SOIL TESTS PERFORMED, USE AND SHOW THE RECOMMENDED RATES BY THE TESTING AGENCY. SOIL TESTS ARE NOT REQUIRED FOR TEMPORARY SEEDING.
3. WHEN STABILIZATION IS REQUIRED OUTSIDE OF A SEEDING SEASON, APPLY SEED AND MULCH OR STRAW MULCH ALONE AS PRESCRIBED IN SECTION B-4-3.A.1.B 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
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS		
COOL SEASON GRASSES						
1	ANNUAL RYEGRASS	40	2/15 - 4/30 8/1 - 11/30	0.5"	436 LB/AC (10 LB/1000 SF)	2 TONS/AC (90 LB/1000 SF)
2	BARLEY	96	2/15 - 4/30 8/1 - 11/30	1"		
3	OATS	72	2/15 - 4/30 8/1 - 11/30	1"		
4	WHEAT	120	2/15 - 4/30 8/1 - 11/30	1"		
5	CEREAL RYE	112	2/15 - 4/30 8/1 - 11/30	1"		
WARM SEASON GRASSES						
6	FOXTAIL MILLET	30	5/1 - 7/31	0.5"	436 LB/AC (10 LB/1000 SF)	2 TONS/AC (90 LB/1000 SF)
7	PEARL MILLET	20	5/1 - 7/31	0.5"		

B-4-4 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

DEFINITION

TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION.

PURPOSE

TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

CONDITIONS WHERE PRACTICE APPLIES

EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR 6 MONTHS OR MORE.

CRITERIA

A. SEED MIXTURES

1. GENERAL USE
   a. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE B.3 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3) AND BASED ON THE SITE CONDITION OR PURPOSE FOUND ON TABLE B.2. ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.
   b. ADDITIONAL PLANTING SPECIFICATIONS FOR EXCEPTIONAL SITES SUCH AS SHORELINES, STREAM BANKS, OR DUNES OR FOR SPECIAL PURPOSES SUCH AS WILDLIFE OR AESTHETIC TREATMENT MAY BE FOUND IN USDA-NRCS TECHNICAL FIELD OFFICE GUIDE, SECTION 342 - CRITICAL AREA PLANTING.
   c. FOR SITES HAVING DISTURBED AREA OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY.
   d. FOR AREAS RECEIVING LOW MAINTENANCE, APPLY UREA FORM FERTILIZER (46-0-0) AT 3 ½ POUNDS PER 1000 SQUARE FEET (150 POUNDS PER ACRE) AT THE TIME OF SEEDING IN ADDITION TO THE SOIL AMENDMENTS SHOWN IN THE PERMANENT SEEDING SUMMARY .
2. TURFGRASS MIXTURES
   a. AREAS WHERE TURFGRASS MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, AND COMMERCIAL SITES WHICH WILL RECEIVE A MEDIUM TO HIGH LEVEL OF MAINTENANCE.
   b. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED BELOW BASED ON THE SITE CONDITIONS OR PURPOSE. ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.
   i. KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN AREAS THAT RECEIVE INTENSIVE MANAGEMENT. IRRIGATION REQUIRED IN THE AREAS OF CENTRAL MARYLAND AND EASTERN SHORE. RECOMMENDED CERTIFIED KENTUCKY BLUEGRASS CULTIVARS SEEDING RATE: 1.5 TO 2.0 POUNDS PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
   ii. KENTUCKY BLUEGRASS/PERENNIAL RYE: FULL SUN MIXTURE: FOR USE IN FULL SUN AREAS WHERE RAPID ESTABLISHMENT IS NECESSARY AND WHEN TURF WILL RECEIVE MEDIUM TO INTENSIVE MANAGEMENT. CERTIFIED PERENNIAL RYEGRASS CULTIVARS/CERTIFIED KENTUCKY BLUEGRASS SEEDING RATE: 2 POUNDS MIXTURE PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
   iii. TALL FESCUE/KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN DROUGHT PRONE AREAS AND/OR FOR AREAS RECEIVING LOW TO MEDIUM MANAGEMENT IN FULL SUN TO MEDIUM SHADE. RECOMMENDED MIXTURE INCLUDES; CERTIFIED TALL FESCUE CULTIVARS 95 TO 100 PERCENT, CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 0 TO 5 PERCENT. SEEDING RATE: 5 TO 8 POUNDS PER 1000 SQUARE FEET. ONE OR MORE CULTIVARS MAY BE BLENDED.
   iv. KENTUCKY BLUEGRASS/FINE FESCUE: SHADE MIXTURE: FOR USE IN AREAS WITH SHADE IN BLUEGRASS LAWNS. FOR ESTABLISHMENT IN HIGH QUALITY, INTENSIVELY MANAGED TURF AREA. MIXTURE INCLUDES; CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 30 TO 40 PERCENT AND CERTIFIED FINE FESCUE AND 60 TO 70 PERCENT. SEEDING RATE: 1½ TO 3 POUNDS PER 1000 SQUARE FEET.

   NOTES:

   SELECT TURFGRASS VARIETIES FROM THOSE LISTED IN THE MOST CURRENT UNIVERSITY OF MARYLAND PUBLICATION, AGRONOMY MEMO #77, "TURFGRASS CULTIVAR RECOMMENDATIONS FOR MARYLAND"

   CHOOSE CERTIFIED MATERIAL. CERTIFIED MATERIAL IS THE BEST GUARANTEE OF CULTIVAR PURITY. THE CERTIFICATION PROGRAM OF THE MARYLAND DEPARTMENT OF AGRICULTURE, TURF AND SEED SECTION, PROVIDES A RELIABLE MEANS OF CONSUMER PROTECTION AND ASSURES A PURE GENETIC LINE

   c. IDEAL TIMES OF SEEDING FOR TURF GRASS MIXTURES

   WESTERN MD: MARCH 15 TO JUNE 1, AUGUST 1 TO OCTOBER 1 (HARDINESS ZONES: 5B, 6A)

   CENTRAL MD: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONE: 6B)

   SOUTHERN MD, EASTERN SHORE: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONES: 7A, 7B)

   d. TILL AREAS TO RECEIVE SEED BY DISKING OR OTHER APPROVED METHODS TO A DEPTH OF 2 TO 4 INCHES, LEVEL AND RAKE THE AREAS TO PREPARE A PROPER SEEDBED. REMOVE STONES AND DEBRIS OVER 1½ INCHES IN DIAMETER. THE RESULTING SEEDBED MUST BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL POSE NO DIFFICULTY.
   e. IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER FOR PLANT GROWTH (½ TO 1 INCH EVERY 3 TO 4 DAYS DEPENDING ON SOIL TEXTURE) UNTIL THEY ARE FIRMLY ESTABLISHED. THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE LATE IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOT SEASONS, OR ON ADVERSE SITES.

PERMANENT SEEDING SUMMARY

HARDINESS ZONE (from Figure B.3): ZONE 7A SEED MIXTURE (from Table B.3)					FERTILIZER RATE (10-20-20)			LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	N	P2O5	K2O	
9	TALL FESCUE KENTUCKY BLUEGRASS PERENNIAL RYE GRASS	60 40 20	2/15 - 4/30 8/15 - 11/30	1/4" - 1/2"	45 LB/AC (1.0 LB/1000 SF)	90 LB/AC (2 LB/1000 SF)	90 LB/AC (2 LB/1000 SF)	2 TONS/AC (90 LB/1000 SF)
5	HARD FESCUE PERENNIAL RYE GRASS FLAT PEA	20 10 15	2/15 - 4/30 8/15 - 11/30	1/4" - 1/2"				
1	SWITCH GRASS CREEPING RED FESCUE PARTRIDGE PEA	10 15 4	2/15 - 5/31	1/4" - 1/2"				

B. SOD: TO PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER).

1. GENERAL SPECIFICATIONS
   a. CLASS OF TURFGRASS SOD MUST BE MARYLAND STATE CERTIFIED. SOD LABELS MUST BE MADE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR.
   b. SOD MUST BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF ¾ INCH, PLUS OR MINUS ¼ INCH, AT THE TIME OF CUTTING. MEASUREMENT FOR THICKNESS MUST EXCLUDE TOP GROWTH AND THATCH. BROKEN PADS AND TORN OR UNEVEN ENDS WILL NOT BE ACCEPTABLE.
   c. STANDARD SIZE SECTIONS OF SOD MUST BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP ON THE UPPER 10 PERCENT OF THE SECTION.
   d. SOD MUST NOT BE HARVESTED OR TRANSPLANTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL.
   e. SOD MUST BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS. SOD NOT TRANSPLANTED WITHIN THIS PERIOD MUST BE APPROVED BY AN AGRONOMIST OR SOIL SCIENTIST PRIOR TO ITS INSTALLATION.
2. SOD INSTALLATION
   a. DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, LIGHTLY IRRIGATE THE SUBSOIL IMMEDIATELY PRIOR TO LAYING THE SOD.
   b. LAY THE FIRST ROW OF SOD IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO IT AND TIGHTLY WEDGED AGAINST EACH OTHER. STAGGER LATERAL JOINTS TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE AIR DRYING OF THE ROOTS.
   c. WHEREVER POSSIBLE, LAY SOD WITH THE LONG EDGES PARALLEL TO THE CONTOUR AND WITH STAGGERING JOINTS. ROLL AND TAMP, PEG OR OTHERWISE SECURE THE SOD TO PREVENT SLIPPAGE ON SLOPES. ENSURE SOLID CONTACT EXISTS BETWEEN SOD ROOTS AND THE UNDERLYING SOIL SURFACE.
   d. WATER THE SOD IMMEDIATELY FOLLOWING ROLLING AND TAMPING UNTIL THE UNDERSIDE OF THE NEW SOD PAD AND SOIL SURFACE BELOW THE SOD ARE THOROUGHLY WET. COMPLETE THE OPERATIONS OF LAYING, TAMPING AND IRRIGATING FOR ANY PIECE OF SOD WITHIN EIGHT HOURS.
3. SOD MAINTENANCE
   a. IN THE ABSENCE OF ADEQUATE RAINFALL, WATER DAILY DURING THE FIRST WEEK OR AS OFTEN AND SUFFICIENTLY AS NECESSARY TO MAINTAIN MOIST SOIL TO A DEPTH OF 4 INCHES. WATER SOD DURING THE HEAT OF THE DAY TO PREVENT WILTING.
   b. AFTER THE FIRST WEEK, SOD WATERING IS REQUIRED AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE CONTENT.
   c. DO NOT MOW UNTIL THE SOD IS FIRMLY ROOTED. NO MORE THAN ⅓ OF THE GRASS LEAF MUST BE REMOVED BY THE INITIAL CUTTING OR SUBSEQUENT CUTTINGS. MAINTAIN A GRASS HEIGHT OF AT LEAST 3 INCHES UNLESS OTHERWISE SPECIFIED.

B-4-6 STANDARDS AND SPECIFICATIONS FOR SOIL STABILIZATION MATTING

DEFINITION

MATERIAL USED TO TEMPORARILY OR PERMANENTLY STABILIZE CHANNELS OR STEEP SLOPES UNTIL GROUNDCOVER IS ESTABLISHED.

PURPOSE

TO PROTECT THE SOILS UNTIL VEGETATION IS ESTABLISHED.

CONDITIONS WHERE PRACTICE APPLIES

ON NEWLY SEEDED SURFACES TO PREVENT THE APPLIED SEED FROM WASHING OUT; IN CHANNELS AND ON STEEP SLOPES WHERE THE FLOW HAS EROSIVE VELOCITIES OR CONVEYS CLEAR WATER; ON TEMPORARY SWALES, EARTH DIKES, AND PERIMETER DIKE SWALES AS REQUIRED BY THE RESPECTIVE DESIGN STANDARD; AND, ON STREAM BANKS WHERE MOVING WATER IS LIKELY TO WASH OUT NEW VEGETATIVE PLANTINGS.

MAINTENANCE

VEGETATION MUST BE ESTABLISHED AND MAINTAINED SO THAT THE REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT
Approved: Howard SCD 6/3/14

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

DEVELOPER: ELMS AT FELLS POINT II, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21043
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, 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. 40808, EXPIRATION DATE: 7/3/2015

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SURVEYORS
PROJECT MANAGERS
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REVISIONS

REV	DATE	COMMENT	BY

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(WV 1-800-245-4848) (PA 1-800-242-1776) (DC 1-800-257-7777) (VA 1-800-552-7001) (MD 1-800-257-7777) (DE 1-800-282-8555)

PROJECT No.:	ER COUNTY
DRAWN BY:	RLB
CHECKED BY:	BRR
DATE:	6/2/14
SCALE:	AS SHOWN
CAD I.D.:	SD2

PROJECT:
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 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

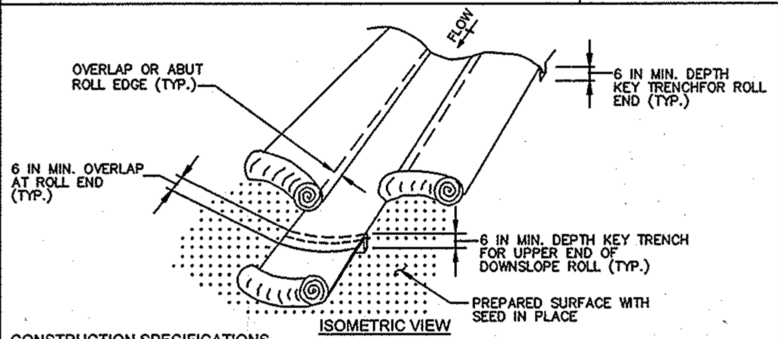
B.R. ROWE PROFESSIONAL ENGINEER 6/3/14

SHEET TITLE:
SEDIMENT CONTROL NOTES AND DETAILS

F-14-003

DETAIL B-4-6-A TEMPORARY SOIL STABILIZATION MATTING CHANNEL APPLICATION

STANDARD SYMBOL: TSSMC – * lb/ft² (* INCLUDE SHEAR STRESS)



CONSTRUCTION SPECIFICATIONS

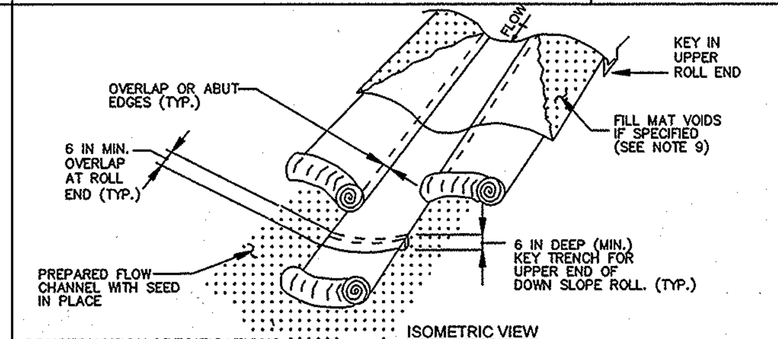
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTERLINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MAT SMOOTHLY AND FIRMLY ON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. KEY-IN UPSTREAM END OF EACH MAT ROLL BY DIGGING A 6 INCH (MINIMUM) TRENCH AT THE UPSTREAM END OF THE MATTING, PLACING THE ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END.
7. OVERLAP OR ABUT THE ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-C PERMANENT SOIL STABILIZATION MATTING CHANNEL APPLICATION

STANDARD SYMBOL: PSSMC – * lb/ft² (* INCLUDE SHEAR STRESS)



CONSTRUCTION SPECIFICATIONS

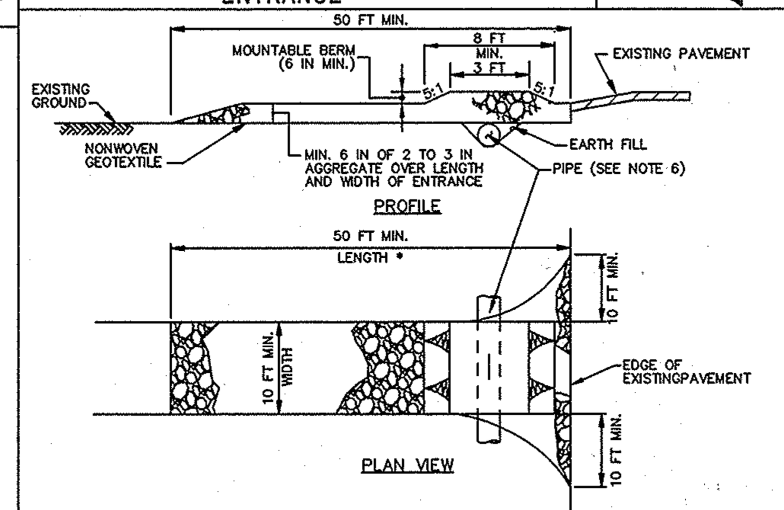
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCH AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTER LINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE



CONSTRUCTION SPECIFICATIONS

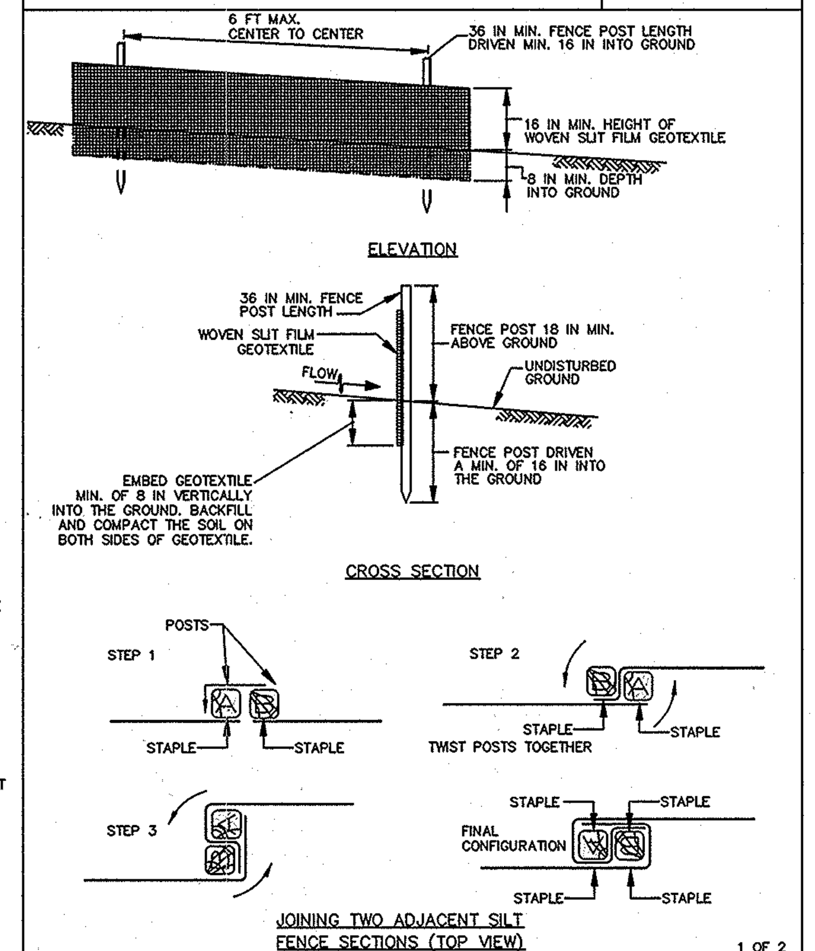
1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: ——SF——



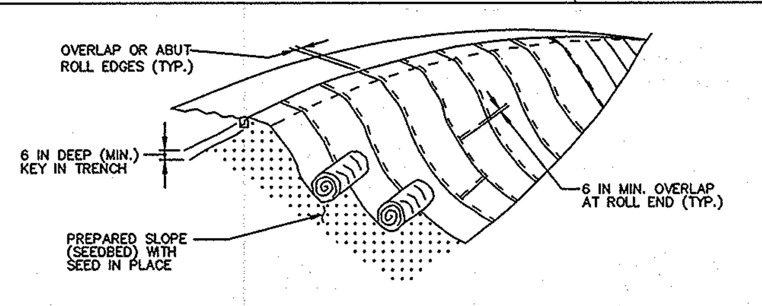
1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-B TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL: TSSMS – * lb/ft² (* INCLUDE SHEAR STRESS)



CONSTRUCTION SPECIFICATIONS

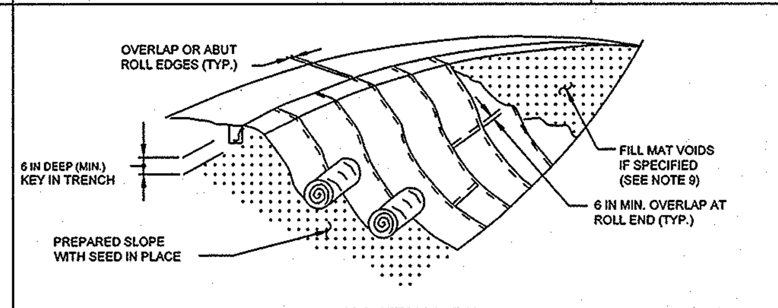
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-D PERMANENT SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL: PSSMS – * lb/ft² (* INCLUDE SHEAR STRESS)



CONSTRUCTION SPECIFICATIONS

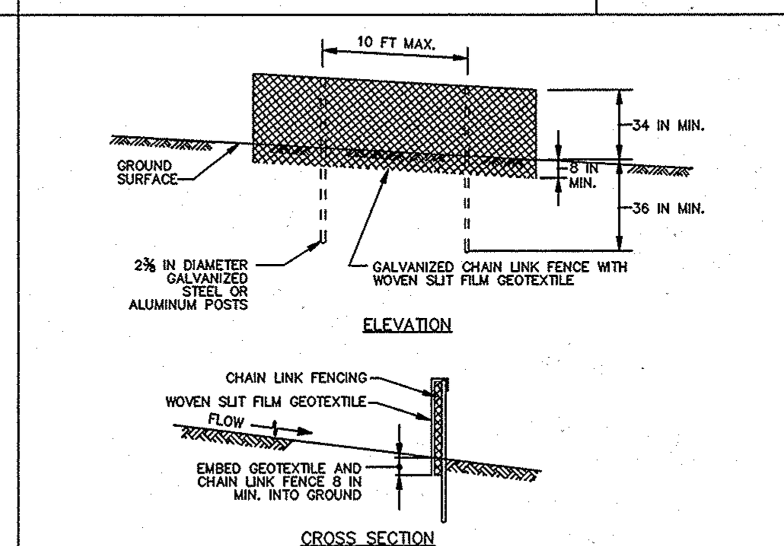
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 ½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWN SLOPE. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL: ——SSF——



CONSTRUCTION SPECIFICATIONS

1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: ——SF——

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1¾ X 1¾ ± ⅙ INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

2 OF 2

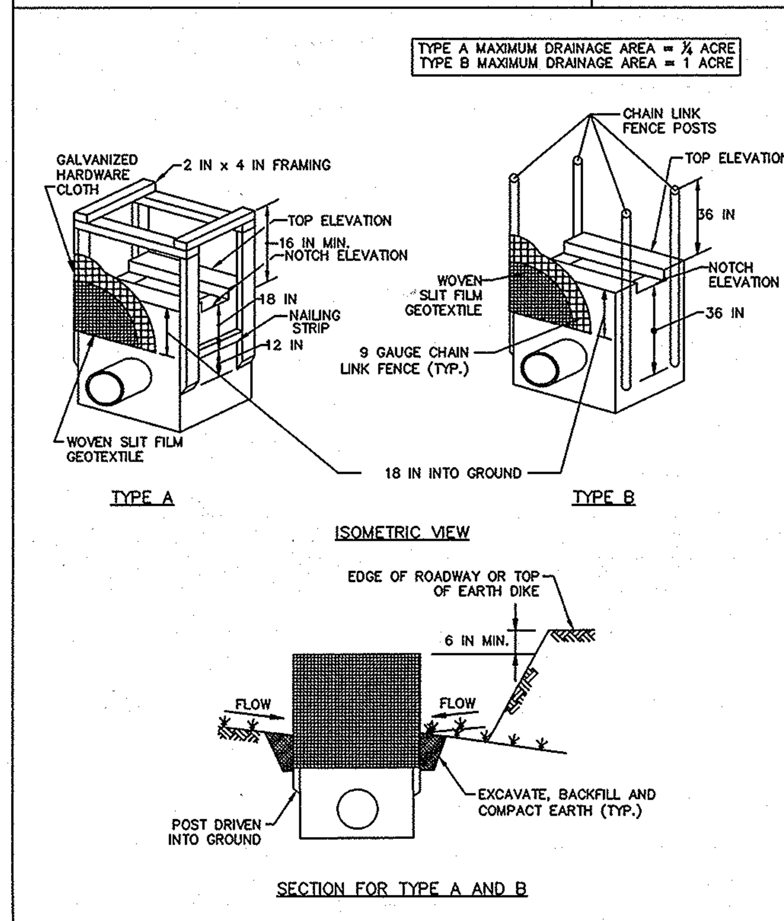
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL: SIP

TYPE A MAXIMUM DRAINAGE AREA = ¼ ACRE
TYPE B MAXIMUM DRAINAGE AREA = 1 ACRE



1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL: SIP

CONSTRUCTION SPECIFICATIONS

1. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
2. EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.
3. FOR TYPE A, USE NOMINAL 2 INCH X 4 INCH CONSTRUCTION GRADE LUMBER POSTS, DRIVEN 1 FOOT INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE NAIL STRIPS BETWEEN THE POSTS ON THE ENDS OF THE INLET. ASSEMBLE THE TOP PORTION OF THE 2X4 FRAME AS SHOWN. STRETCH ½ INCH GALVANIZED HARDWARE CLOTH TIGHTLY AROUND THE FRAME AND FASTEN SECURELY. FASTEN GEOTEXTILE SECURELY TO THE HARDWARE CLOTH WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND HARDWARE CLOTH A MINIMUM OF 18 INCHES BELOW THE WEIR CREST. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLAPPED AND FOLDED, THEN FASTENED TO THE POST.

   FOR TYPE B, USE 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND 6 FOOT LENGTH, DRIVEN A MINIMUM OF 36 INCHES BELOW THE WEIR CREST AT EACH CORNER OF THE STRUCTURE. FASTEN 9 GAUGE OR HEAVIER CHAIN LINK FENCE, 42 INCHES IN HEIGHT, SECURELY TO THE FENCE POSTS WITH WIRE TIES. FASTEN GEOTEXTILE SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 18 INCHES BELOW THE WEIR CREST.
4. BACKFILL AROUND THE INLET IN LOOSE 4 INCH LIFTS AND COMPACT UNTIL SOIL IS LEVEL WITH THE NOTCH ELEVATION ON THE ENDS AND TOP ELEVATION ON THE SIDES.
5. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

2 OF 2

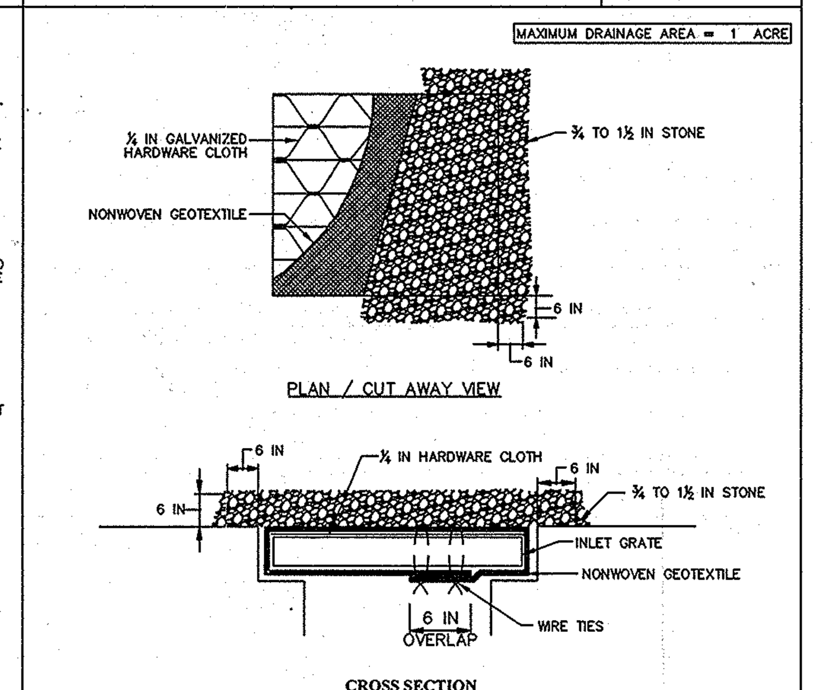
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-2 AT-GRADE INLET PROTECTION

STANDARD SYMBOL: AGIP

MAXIMUM DRAINAGE AREA = 1 ACRE



CONSTRUCTION SPECIFICATIONS

1. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
2. LIFT GRATE AND WRAP WITH NONWOVEN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS. SECURE WITH WIRE TIES AND SET GRATE BACK IN PLACE.
3. PLACE CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE 6 INCHES THICK ON THE GRATE.
4. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

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

1. 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.
2. SELECT THE STABILIZING MATERIAL BASED ON THE INTENDED USE, DESIRED MAINTENANCE FREQUENCY, AND RUNOFF CONTROL.
3. 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.
4. SURFACE EROSION CAN BE A PROBLEM ON LARGE HEAVY USE AREAS. IN THESE SITUATIONS, MEASURES TO REDUCE THE FLOW LENGTH OF RUNOFF OR EROSIVE VELOCITIES NEED TO BE CONSIDERED.

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

1. THE STOCKPILE LOCATION AND ALL RELATED SEDIMENT CONTROL PRACTICES MUST BE CLEARLY INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN.
2. 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.
3. RUNOFF FROM THE STOCKPILE AREA MUST DRAIN TO A SUITABLE SEDIMENT CONTROL PRACTICE.
4. ACCESS THE STOCKPILE AREA FROM THE UPGRADE SIDE.
5. 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.
6. WHERE RUNOFF CONCENTRATES ALONG THE TOE OF THE STOCKPILE FILL, AN APPROPRIATE EROSION/SEDIMENT CONTROL PRACTICE MUST BE USED TO INTERCEPT THE DISCHARGE.
7. STOCKPILES MUST BE STABILIZED IN ACCORDANCE WITH THE 3/7 DAY STABILIZATION REQUIREMENT AS WELL AS STANDARD B-4-1 INCREMENTAL STABILIZATION AND STANDARD B-4-4 TEMPORARY STABILIZATION.
8. 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 20 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.

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

John R Robertson 6/3/14
HOWARD SCD — DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

Holger Serrano 6-9-14
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Kent Sheubrooks 6-26-14
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

Chad Edmondson 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."

SIGNATURE OF ENGINEER — DATE 6/3/14
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 ONSITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

6-3-14
NAME: Jason Van Kirk — DATE
TITLE: Manager

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 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 LOCAL REGULATIONS AND CODES.

H:\2012\MD122066\DRAWINGS\PLAN SETS\FINAL ROAD CONSTRUCTION GRADING AND STORMWATER MANAGEMENT PLANS\MD122066SD4.DWG PRINTED BY: RBO

OWNER:	CM HIGDON LC 1355 BEVERLY ROAD, SUITE 330 MCLEAN, VA 22101 CONTACT: DAVID KAUFMAN PHONE: (703) 734-9855
DEVELOPER:	ELMS AT FELLS POINT II, L.C. 5074 DORSEY HALL DRIVE, SUITE 205 ELLICOTT CITY, MD 21043 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, 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. 40808, EXPIRATION DATE: 7/3/2015

BOHLER ENGINEERING

CIVIL & CONSULTING ENGINEERS
SURVEYORS
PROJECT MANAGERS
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS

CORPORATE OFFICE: ◆ WARREN, NJ
OFFICES: ◆ SOUTHBOROUGH, MA ◆ ALBANY, NY ◆ RONKONKOMA, NY ◆ CHALFONT, PA ◆ CENTER VALLEY, PA ◆ TAMPA, FL ◆ BOWIE, MD ◆ TOWSON, MD ◆ STERLING, VA ◆ WARRENTON, VA ◆ FORT LAUDERDALE, FL ◆ PHILADELPHIA, PA

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REVISIONS

REV	DATE	COMMENT	BY

DIG WITH CARE — CALL BEFORE YOU DIG

THE FOLLOWING STATES REQUIRE NOTIFICATION BY EXCAVATORS, 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
(WV 1-800-245-4848) (PA 1-800-242-1776) (DC 1-800-257-7777) (VA 1-800-552-7001) (MD 1-800-257-7777) (DE 1-800-282-8555)

PROJECT No.:	ER COUNTY
DRAWN BY:	RLB
CHECKED BY:	BRR
DATE:	6/2/14
SCALE:	AS SHOWN
CAD I.D.:	SD2

PROJECT:

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 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

B.R. ROWE
PROFESSIONAL ENGINEER
6/3/14

SHEET TITLE:
SEDIMENT CONTROL NOTES AND DETAILS

SHEET NUMBER:
12
OF 19

F-14-003

HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

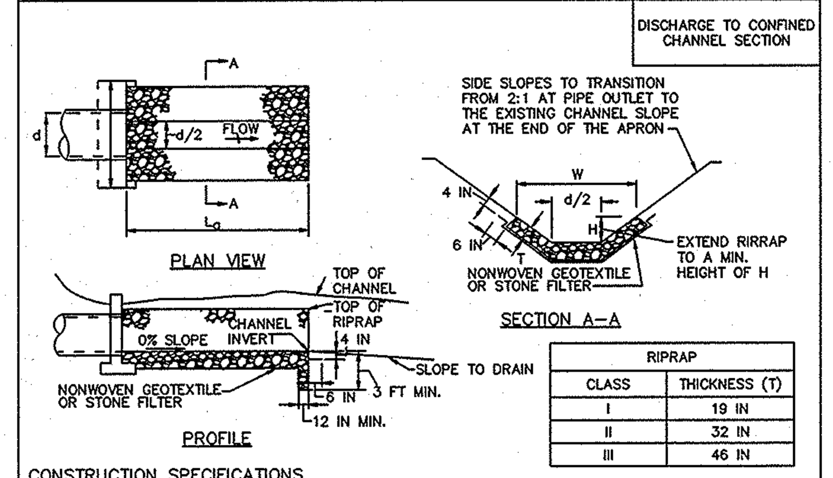
1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1855).
2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: A) 3 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, B) 7 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
4. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING (SEC. B-4-5), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-3). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
5. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
6. SITE ANALYSIS:

TOTAL AREA OF SITE:	11.36 ACRES
AREA DISTURBED:	9.05 ACRES
AREA TO BE ROOFED OR PAVED:	2.43 ACRES
AREA TO BE VEGETATIVELY STABILIZED:	8.93 ACRES
TOTAL CUT:	32,000 CU. YDS.
TOTAL FILL:	32,000 CU. YDS.
OFFSITE WASTE/BORROW AREA LOCATION:	N/A

7. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
8. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
9. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
10. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORK DAY, WHICHEVER IS SHORTER.
11. ANY CHANGES OR REVISIONS TO THE SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE PLAN APPROVAL AUTHORITY PRIOR TO PROCEEDING WITH CONSTRUCTION.
12. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 20 AC. PER GRADING UNIT) AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BE STABILIZED AND APPROVED BY THE ENFORCEMENT AUTHORITY. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE APPROVAL AUTHORITY, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.

DETAIL D-4-1-B ROCK OUTLET PROTECTION II

STANDARD SYMBOL: ROPII



RIPRAP	
CLASS	THICKNESS (T)
I	19 IN
II	32 IN
III	46 IN

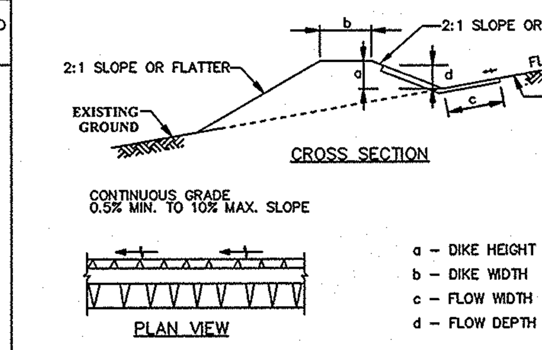
CONSTRUCTION SPECIFICATIONS

1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
2. 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.
3. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (⅜ TO 1½ INCH 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.
4. EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPRAP.
5. 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 HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE STONE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
6. 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.
7. CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
8. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL C-1 EARTH DIKE

STANDARD SYMBOL A–1 — PLACE DESIGNATION (e.g. A–1) ON FLOW CHANNEL SIDE OF DIKE.



DIKE TYPE

	A	B
a – DIKE HEIGHT	18 IN MIN.	30 IN MIN.
b – DIKE WIDTH	24 IN MIN.	36 IN MIN.
c – FLOW WIDTH	4 FT MIN.	6 FT MIN.
d – FLOW DEPTH	12 IN MIN.	24 IN MIN.

FLOW CHANNEL STABILIZATION

- A–1 SEED WITH STRAW MULCH AND TACK. (NOT ALLOWED FOR CLEAR WATER DIVERSION.)
- A–2/B–2 SEED WITH SOIL STABILIZATION MATTING OR LINE WITH SOD.
- A–3/B–3 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO SOIL A MINIMUM OF 7 INCHES AND FLUSH WITH GROUND.

CONSTRUCTION SPECIFICATIONS

1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF EARTHDIKE.
2. EXCAVATE OR SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.
3. COMPACT FILL.
4. CONSTRUCT FLOW CHANNEL ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.
5. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
6. STABILIZE EARTH DIKE WITHIN THREE DAYS OF INSTALLATION. STABILIZE FLOW CHANNEL FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.
7. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AND MAINTAIN POSITIVE DRAINAGE. KEEP EARTH DIKE AND POINT OF DISCHARGE FREE OF EROSION, AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B–4 VEGETATIVE STABILIZATION.
8. UPON REMOVAL OF EARTH DIKE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
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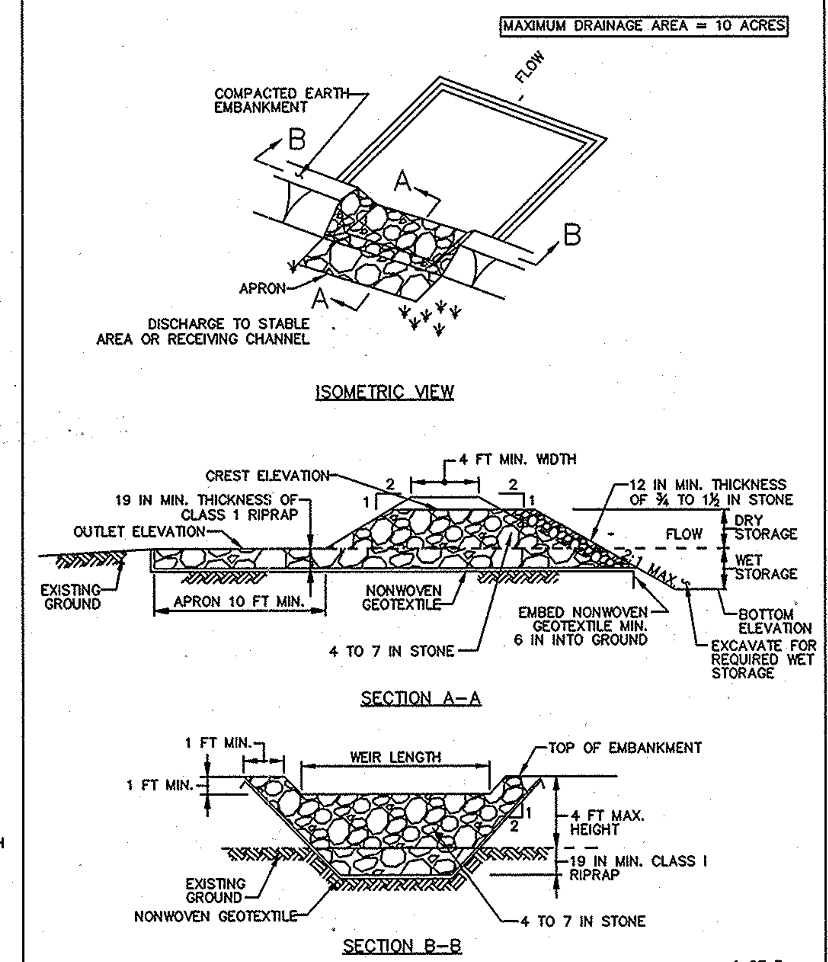
DETAIL G-1-2 STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II

STANDARD SYMBOL: ST–II



1 OF 3

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL G-1-2 STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II

STANDARD SYMBOL: ST–II

CONSTRUCTION SPECIFICATIONS

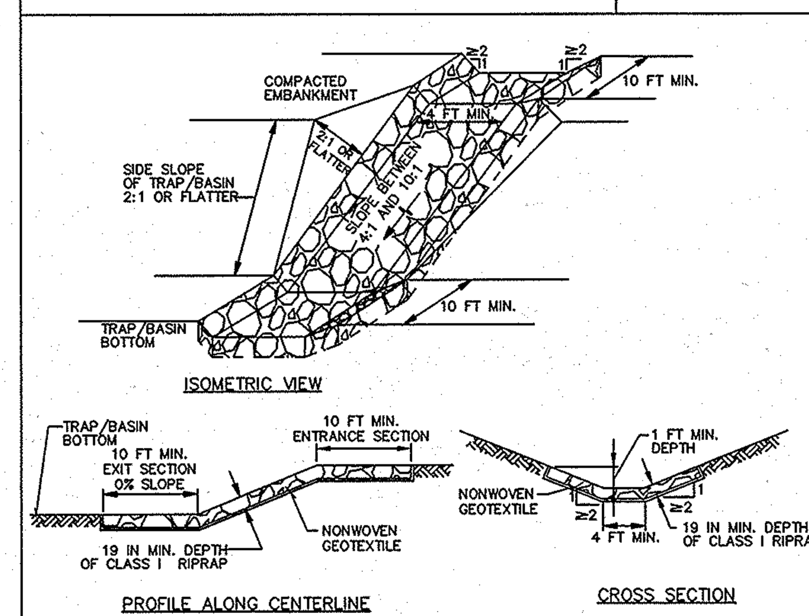
1. CONSTRUCT TRAP IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE AVOIDED.
2. CLEAR, GRUB, AND STRIP ANY VEGETATION AND ROOT MAT FROM THE AREA UNDER THE EMBANKMENT AND TRAP BOTTOM.
3. USE FILL MATERIAL FREE OF ROOTS, WOODY VEGETATION, OVERSIZED STONES, ROCKS, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIAL FOR THE EMBANKMENT.
4. CONSTRUCT TOP OF EMBANKMENT 1 FOOT MINIMUM ABOVE WEIR CREST. COMPACT THE EMBANKMENT BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
5. MAKE ALL CUT AND FILL SLOPES 2:1 OR FLATTER.
6. PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H–1 MATERIALS, OVER THE BOTTOM AND SIDES OF OUTLET AND APRON PRIOR TO PLACEMENT OF RIPRAP. OVERLAP SECTIONS OF GEOTEXTILE AT LEAST 1 FOOT WITH THE SECTION NEARER TO THE TRAP PLACED ON TOP. EMBED GEOTEXTILE AT LEAST 6 INCHES INTO EXISTING GROUND AT ENTRANCE OF OUTLET CHANNEL.
7. USE CLEAN 4 TO 7 INCH RIPRAP TO CONSTRUCT THE WEIR. USE CLASS I RIPRAP FOR THE APRON. USE OF RECYCLED CONCRETE EQUIVALENT IS ACCEPTABLE.
8. PLACE 1 FOOT OF CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE ON THE UPSTREAM FACE OF THE WEIR.
9. CONSTRUCT AND MAINTAIN THE OUTLET ACCORDING TO APPROVED PLAN, AND IN SUCH A MANNER THAT EROSION AT OR BELOW THE OUTLET DOES NOT OCCUR.
10. STABILIZE THE EMBANKMENT AND INTERIOR SLOPES WITH SEED AND MULCH. STABILIZE POINTS OF CONCENTRATED INFLOW AS SHOWN ON APPROVED PLAN.
11. REMOVE SEDIMENT AND RESTORE TRAP TO ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO CLEANOUT ELEVATION (50% OF WET STORAGE DEPTH). DEPOSIT REMOVED SEDIMENT IN AN APPROVED AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE. KEEP POINTS OF INFLOW AND OUTFLOW AS WELL AS INTERIOR OF THE TRAP FREE FROM EROSION, AND REMOVE ACCUMULATED DEBRIS. MAINTAIN EMBANKMENTS TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B–4 VEGETATIVE STABILIZATION. REMOVE ANY TREES, BRUSH, OR OTHER WOODY VEGETATION GROWING ON EMBANKMENT OR NEAR PRINCIPAL SPILLWAY. MAINTAIN LINE, GRADE, AND CROSS SECTION.
12. WHEN DEWATERING TRAP, PASS REMOVED WATER THROUGH AN APPROVED SEDIMENT CONTROL PRACTICE.
13. UPON REMOVAL, GRADE AND STABILIZE THE AREA OCCUPIED BY TRAP.

2 OF 3

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL D-3-1 RIPRAP INFLOW PROTECTION

STANDARD SYMBOL: RRP



CONSTRUCTION SPECIFICATIONS

1. PROVIDE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H–1 MATERIALS, UNDER THE BOTTOM AND ALONG SIDES OF ALL RIPRAP.
2. CONSTRUCT INFLOW CHANNEL WITH CLASS I RIPRAP OR EQUIVALENT RECYCLED CONCRETE LINING TO A MINIMUM DEPTH OF 19 INCHES (2 x D_{50}) AND A 1 FOOT DEEP FLOW CHANNEL. INFLOW RIPRAP PROTECTION CHANNEL MUST HAVE A TRAPEZOIDAL CROSS SECTION WITH 2:1 OR FLATTER SIDE SLOPES AND A 4 FOOT MINIMUM BOTTOM WIDTH.
3. INSTALL ENTRANCE AND EXIT SECTIONS AS SHOWN ON THE PROFILE.
4. BLEND RIPRAP INTO EXISTING GROUND.
5. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. KEEP POINTS OF INFLOW AND OUTFLOW FREE OF EROSION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
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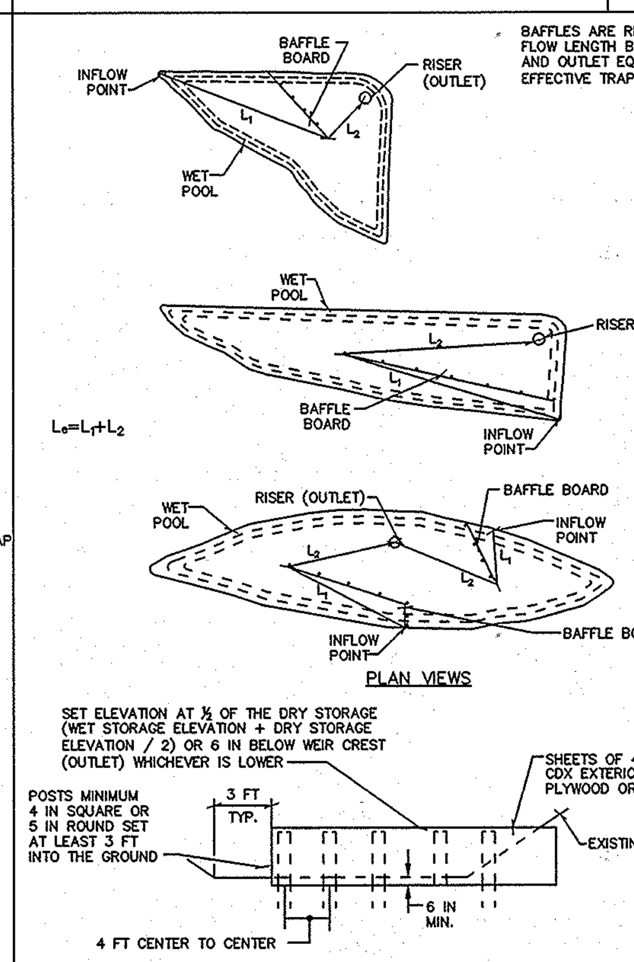
DETAIL G-2-4 BAFFLE BOARDS

STANDARD SYMBOL: BB

BAFFLES ARE REQUIRED TO PROVIDE A FLOW LENGTH BETWEEN INFLOW POINT AND OUTLET EQUAL TO TWICE THE EFFECTIVE TRAP/BASIN WIDTH.



MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
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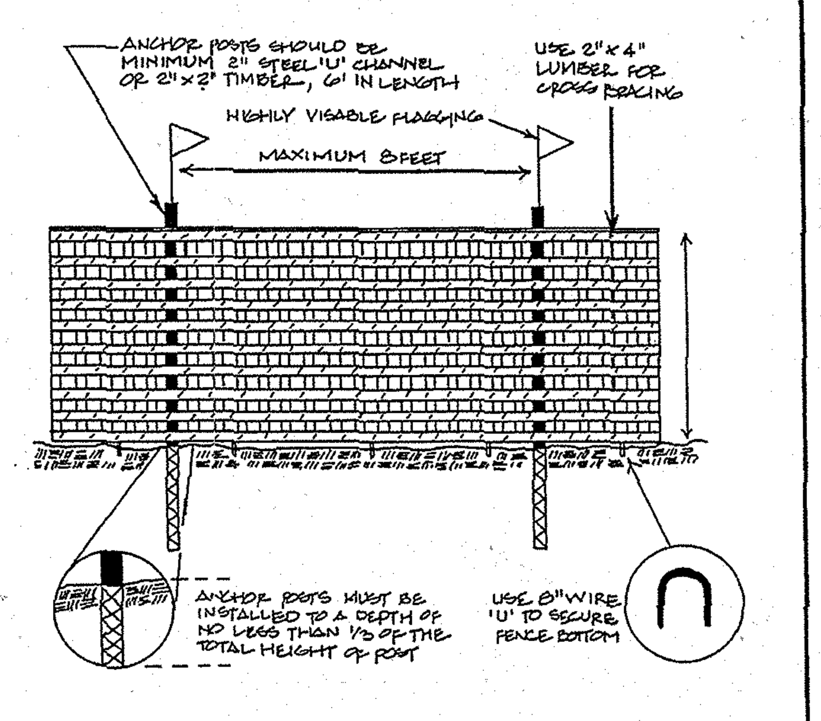
Figure J-4 **Blaze Orange Plastic Mesh**



Notes
1. Forest protection device only.
2. Retention Area will be set as part of the review process.
3. Boundaries of Retention Area should be staked and flagged prior to installing device.
4. Root damage should be avoided.
5. Protective signage may also be used.
6. Device should be maintained throughout construction.

Source: Prince George's County, Maryland; Woodland Conservation Manual

J-4

TREE PROTECTION FENCE DETAIL

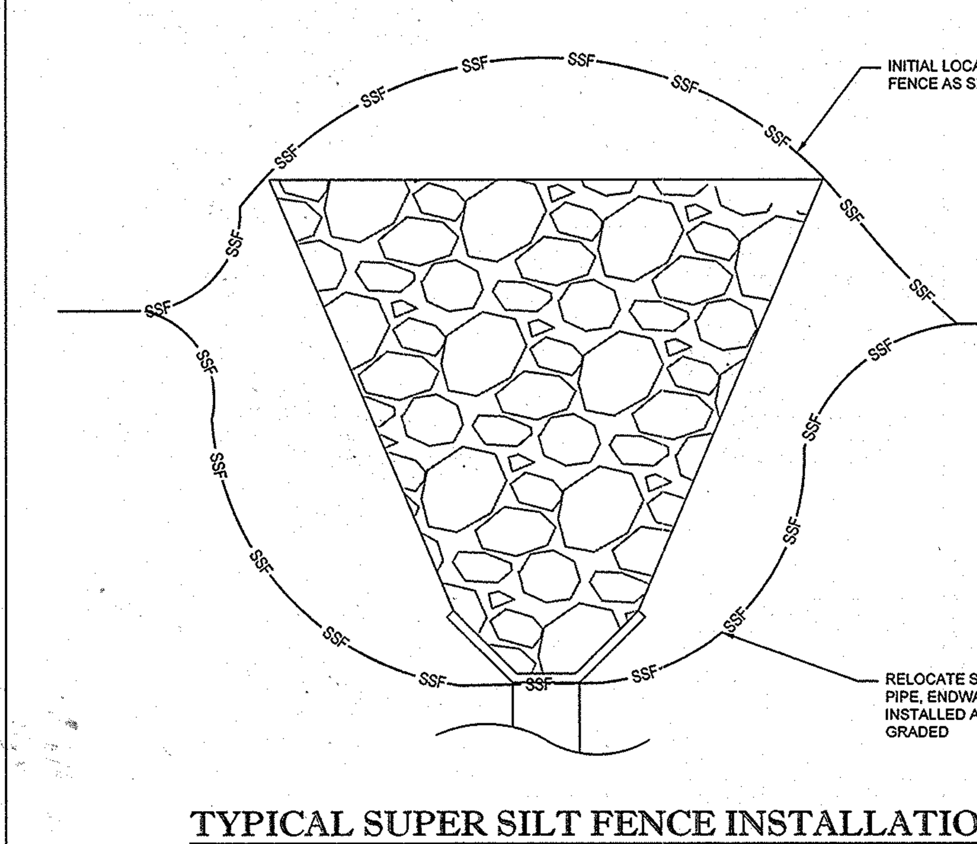
NOT TO SCALE

SEQUENCE OF CONSTRUCTION

1. NOTIFY HOWARD COUNTY'S SEDIMENT CONTROL INSPECTOR AT 410-313-1855 AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION. (1 DAY)
2. THE GENERAL CONTRACTOR SHALL NOT COMMENCE ANY LAND DISTURBING ACTIVITIES PRIOR TO OBTAINING A GRADING PERMIT. (1 DAY)
3. THE CONTRACTOR SHALL HOLD A PRE-CONSTRUCTION MEETING WITH THE CONSTRUCTION MANAGER AND THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR PRIOR TO COMMENCING ANY LAND DISTURBING ACTIVITIES. (1 DAY)
4. ALL AREAS WHICH ARE TO BE DISTURBED SHALL BE CLEARLY MARKED IN THE FIELD PRIOR TO CONSTRUCTION. DISTURBED AREAS WITHIN THE SITE WHERE CONSTRUCTION ACTIVITY HAS CEASED SHALL BE PERMANENTLY OR TEMPORARILY STABILIZED WITHIN:
   a. THREE (3) CALENDAR DAYS ON SLOPES GREATER THAN 3:1, ALL WATERWAYS AND TO THE SURFACE OF ALL PERIMETER CONTROLS.
   b. SEVEN (7) CALENDAR DAYS ON ALL OTHER DISTURBED OR GRADED AREAS OF THE PROJECT.
5. INSTALL STABILIZED CONSTRUCTION ENTRANCE AS SHOWN. ALL HARD SURFACE PUBLIC ROADS SHALL BE CLEANED AT THE END OF EACH WORK DAY. (2 DAYS)
6. INSTALL PERIMETER SILT FENCE AND AT-GRADE INLET PROTECTION ON ALL EXISTING INLETS AS SHOWN ON THE PHASE I PLANS. INSTALL FOREST PROTECTION MEASURES AND SPECIMEN TREE PROTECTION MEASURES. (1 WEEK)
7. INSTALL STONE OUTLET SEDIMENT TRAP AND EARTH DIKES AS SHOWN ON PLANS. IN AREAS WHERE EARTH DIKES ARE LOCATED ON FILL, CONTRACTOR SHALL GRADUALLY RAISE DIKES ALONG WITH PROPOSED GRADE. ENSURE POSITIVE DRAINAGE AT ALL TIMES.(1 WEEK)
8. UPON APPROVAL FROM THE SEDIMENT CONTROL INSPECTOR; CLEAR AND GRUB THE AREAS IDENTIFIED ON THE PLANS. (2 WEEKS)
9. ROUGH GRADE THE SITE TO PROPOSED SUBGRADE AS IDENTIFIED ON THE PLAN. (2 WEEKS)
10. INSTALL UTILITIES AS SHOWN ON THE PLAN. INSTALL STANDARD INLET PROTECTION ON ALL PROPOSED INLETS IMMEDIATELY AFTER INSTALLATION. (12 WEEKS)
11. INSTALL PROPOSED ROAD BASE COURSE AND CURB AND GUTTER FOR SUBDIVISION ROADS AS SHOWN ON THE PHASE I PLAN. (1 WEEK)
12. ONCE PHASE I SLOPES ARE STABILIZED AND WITH PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR, COMPLETE PHASE II GRADING AND CONSTRUCTION. FILL SEDIMENT TRAP.
13. AS THE SITE IS BROUGHT TO FINAL GRADE, PERMANENTLY STABILIZE ALL DISTURBED AREAS WITHIN SEVEN (7) CALENDAR DAYS. (1 WEEK)
14. AS UPSTREAM DRAINAGE AREAS ARE STABILIZED FLUSH STORM DRAIN SYSTEM AND INSTALL ALL MICRO-BIORETENTION FACILITIES. STABILIZE ALL PROPOSED SLOPES. (1 WEEK)
15. INSTALL PERMANENT LANDSCAPING. (1 WEEK)
16. AFTER ALL CONSTRUCTIONS HAS BEEN COMPLETED AND UPON APPROVAL FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR REMOVE SEDIMENT CONTROL MEASURES.
17. NOTIFY HOWARD COUNTY OFFICE OF INSPECTIONS AND PERMITS FOR FINAL INSPECTION OF THE COMPLETED PROJECT.

NOTES:

1. THE CONTRACTOR SHALL INSPECT AND PROVIDE NECESSARY MAINTENANCE ON ALL SEDIMENT AND EROSION CONTROL STRUCTURES SHOWN HEREON, AFTER EACH RAINFALL AND ON A DAILY BASIS.
2. ALL OF THE PRIVATE ON-LOT FACILITIES SHOWN ON SHEET 17 WILL BE CONSTRUCTED AT THE SITE DEVELOPMENT PLAN STAGE WHERE ALL ESD PRACTICES WILL BE CONSTRUCTED.



TYPICAL SUPER SILT FENCE INSTALLATION DETAIL AT PIPE OUTFALL

NOT TO SCALE

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."

SIGNATURE OF ENGINEER: [signature] DATE: 6/3/14
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 ONSITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

[signature] DATE: 6-3-14
NAME: Jason Van Kirk
TITLE: Manager

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

HOWARD SCD [signature] DATE 6/3/14

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS [signature] DATE 6-9-14

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT [signature] DATE 6-26-14

CHIEF, DEVELOPMENT ENGINEERING DIVISION [signature] DATE 6-18-14

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 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 IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

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

DEVELOPER:
ELMS AT FELLS POINT II, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21043
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, 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. 40808, EXPIRATION DATE: 7/3/2015

BOHLER ENGINEERING
CIVIL & CONSULTING ENGINEERS
SURVEYORS
PROJECT MANAGERS
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS
CORPORATE OFFICE: ◆ WARREN, NJ
OFFICES: ◆ SOUTHBOROUGH, MA ◆ ALBANY, NY ◆ RONKONKOMA, NY ◆ CHALFONT, PA ◆ CENTER VALLEY, PA ◆ TAMPA, FL ◆ BOWIE, MD ◆ TOWSON, MD ◆ STERLING, VA ◆ WARRENTON, VA ◆ FORT LAUDERDALE, FL ◆ PHILADELPHIA, PA

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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. IN VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE CALL - 811
(WV 1-800-245-4848) (PA 1-800-242-1776) (DC 1-800-257-7777) (VA 1-800-552-7001) (MD 1-800-257-7777) (DE 1-800-282-8555)

PROJECT No.:	ER COUNTY
DRAWN BY:	RLB
CHECKED BY:	BRR
DATE:	6/2/14
SCALE:	AS SHOWN
CAD I.D.:	SD2

PROJECT:
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 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

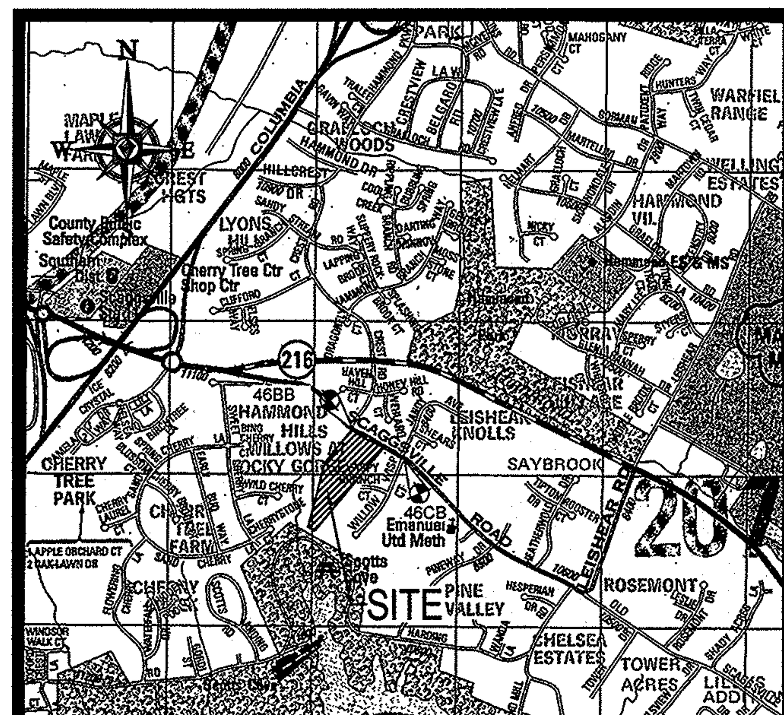
B.R. ROWE — STATE OF MARYLAND PROFESSIONAL ENGINEER

SHEET TITLE:
SEDIMENT CONTROL NOTES AND DETAILS

SHEET NUMBER:
13
OF 19

F-14-003

H:\2012\MD122066\DRAWINGS\PLAN SETS\FINAL ROAD CONSTRUCTION GRADING AND STORMWATER MANAGEMENT PLANS\MD122066SD4.DWG PRINTED BY: RBO



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

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	44	GOOD	YES
J	WHITE MAPLE	31	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

SEQUENCE OF CONSTRUCTION

1. PRECONSTRUCTION MEETING SHALL BE HELD BETWEEN DEVELOPER, CONTRACTOR, AND COUNTY INSPECTOR.
2. SEDIMENT 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.
3. SITE SHALL BE GRADED, INFRASTRUCTURE INSTALLED, AND HOUSES CONSTRUCTED. DISTURBED AREAS SHALL BE STABILIZED. PERMANENT SIGNAGE IN POOR CONDITION SHALL BE REPLACED.
4. POST-CONSTRUCTION MEETING SHALL BE HELD WITH COUNTY INSPECTOR TO ENSURE COMPLIANCE WITH DEVELOPMENT PLAN. SEDIMENT CONTROL AND TEMPORARY PROTECTIVE FENCING UPON STABILIZATION OF SITE AND COMPLETION OF CONSTRUCTION ACTIVITIES.
5. 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 $19,602 WHICH WILL BE PART OF 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 #1

CREDITED FOREST = 24,541 S.F. OR 0.6 AC
NONCREDIT FOREST(FLOODPLAIN) = 878 S.F. OR 0.02 AC
REFORESTATION = 2,685 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

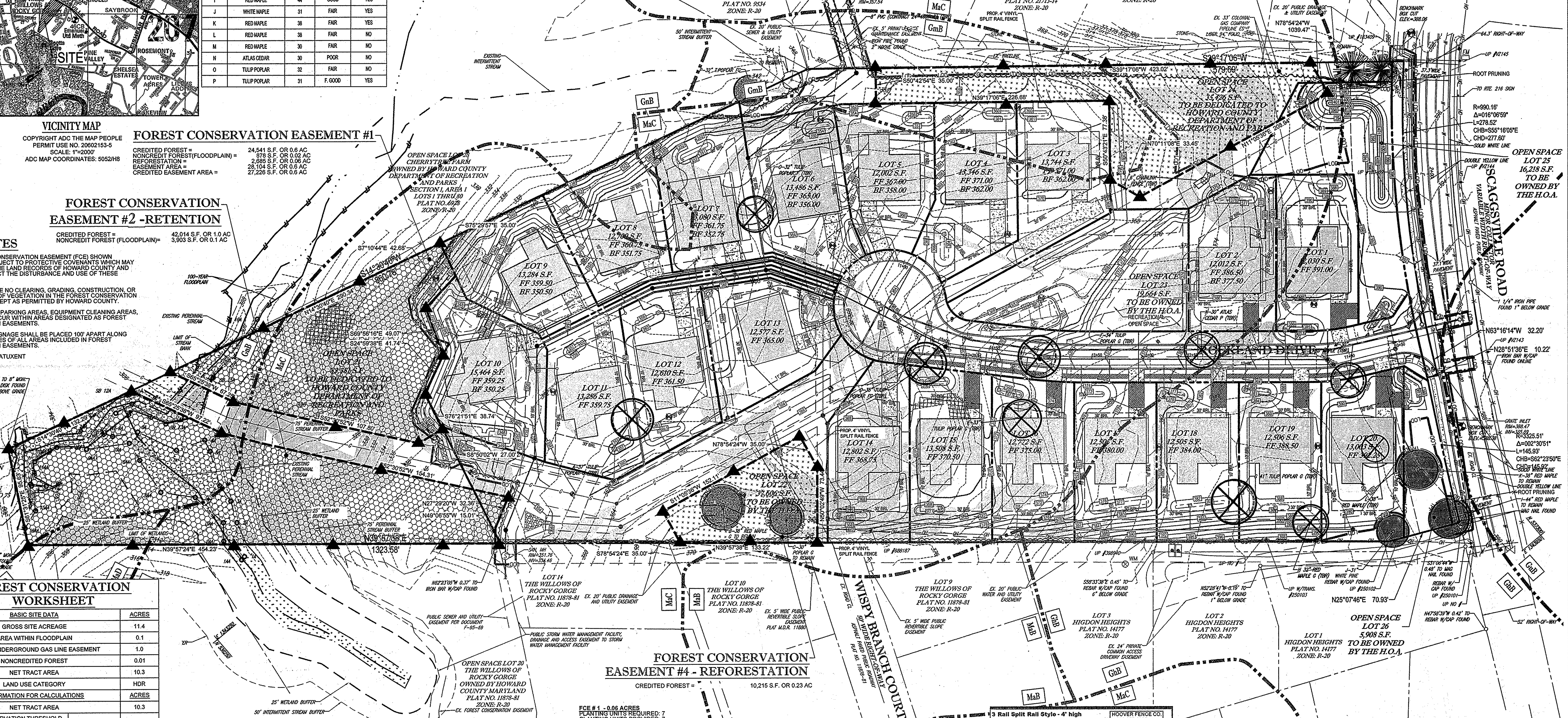
CREDITED FOREST = 42,014 S.F. OR 1.0 AC
NONCREDIT FOREST (FLOODPLAIN)= 3,903 S.F. OR 0.1 AC

FOREST CONSERVATION EASEMENT #3 - REFORESTATION

CREDITED FOREST = 25,921 S.F. OR 0.6 AC

FCP NOTES

1. 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.
2. THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION, OR DISTURBANCE OF VEGETATION IN THE FOREST CONSERVATION EASEMENT EXCEPT AS PERMITTED BY HOWARD COUNTY.
3. NO STOCKPILE, PARKING AREAS, EQUIPMENT CLEANING AREAS, ETC. SHALL OCCUR WITHIN AREAS DESIGNATED AS FOREST CONSERVATION EASEMENTS.
4. PERMANENT SIGNAGE SHALL BE PLACED 100' APART ALONG THE BOUNDARIES OF ALL AREAS INCLUDED IN FOREST CONSERVATION EASEMENTS.
5. WATERSHED: PATUXENT



FOREST CONSERVATION EASEMENT #4 - REFORESTATION

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

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%	2.1
AFFORESTATION THRESHOLD (PERCENTAGE OF NET TRACT AREA)	15.00%	1.5
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)

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 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 LOCAL REGULATIONS AND CODES.

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	0.2	0.3	0.3
TOTAL	1.7	0.0	0.1	1.6	0.9	2.5	2.6

FOREST STAND / VEGETATIVE COVER

.75	COMMUNITY TYPE	ACREAGE	DOMINANT VEGETATION	GENERAL CONDITION	PRIORITY ACREAGE
F1	TULIP POPLAR	3.5 AC (3.2 AC NTA)	LIRIODENDRON TULIPIFERA, ACER RUBRUM, CARYA GLABRA, CARPINUS CAROLINIANA, LINDERA BENZOIN,ROSA MULTIFLORA, CELASTRUS ORBICULATUS, LONICERA JAPONICA,EULALIA VIIMINEA	FAIR	1.1 AC± WETLANDS/ BUFFERS

SOILS

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

FCE # 1 - 0.06 ACRES
PLANTING UNITS REQUIRED: 7
PLANTING UNITS PROVIDED: 7

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

FCE # 3 - 0.6 ACRES
PLANTING UNITS REQUIRED: 66
PLANTING UNITS PROVIDED: 66

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

FCE # 4 - 0.3 ACRES
PLANTING UNITS REQUIRED: 33
PLANTING UNITS PROVIDED: 33

QTY	SPECIES	SIZE	SPACING	TOTAL FCA UNITS
10	ACER RUBRUM - RED MAPLE	2" CALIPER TREES	20' O.C.	
10	LIRIODENDRON TULIPIFERA - TULIP POPLAR	2" CALIPER TREES	20' O.C.	
6	CERCIS CANADENSIS - EASTERN REDBUD	2" CALIPER TREES	20' O.C.	
7	AMELANCHIER CANADENSIS - SERVICEBERRY	2" CALIPER TREES	20' O.C.	
33	TOTAL PLANTINGS			
	TOTAL UNIT CREDIT			33

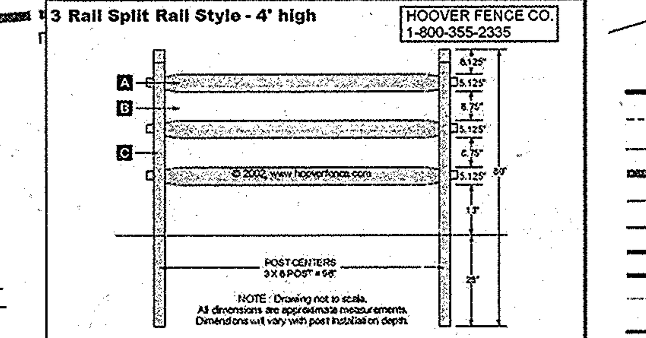
FOREST CLEARING

FOREST TO BE CLEARED = 1.6 AC

WETLAND DATA

WETLAND SYSTEM	COWARDIN CLASSIFICATION	DOMINANT VEGETATION
A	PF06C	ILEX OPACA, ILEX VERTICILLATA, LINDERA BENZOIN, EULAILIA VIMINEA, POLYGONUM PERSICARIA, PILEA PUMILA

3 Rail Split Rail Style - 4' high
HOOVER FENCE CO. 1-800-355-2335



Component	Detail
Rails (A)	5-1/2"x 108" Wood Grain Texture - Irregular Shaped To Match Real Split Rails
Rail Spacing (B)	Approximately 8.75" Between Rails
Line Posts (C)	3"x 6"x 68" Wood Grain Texture For In-Ground Installation - Built In Sockets For Rails
End and Corner Posts (not shown)	4"x 4-1/2"x 80" Wood Grain Texture For In-Ground Installation - Routed To Accept Rails
Post Spacing (center to center)	96" On Center
Color(s)	White and Tan
Gate Widths Available	6' and 8' Single Gates, Can Be Doubled For 12' and 16' Openings - Actual Size Of Gates
Single Gate Opening Sizes	Add 3" To Single Gate Size For Distance Between Gate Posts (Allows For Hardware)
Double Gate Opening Sizes	Add 4-1/2" To Double Gate Size For Distance Between Gate Posts (Allows For Hardware)
Aluminum Reinforcement	Aluminum Gate Post Inserts - 66" Long - Fits 4"x 4-1/2" Posts - Comes With Hardware Kits
Single Gate Hardware Kit	Post Insert, Adjustable Hinges, Self-latching Latch - Commercial
Double Gate Hardware Kit	2-Post Inserts, 2-Sets Adjustable Hinges, Self-latching Latch, 1-Drop Pin Kit - Commercial
Misc.	All Vinyl Components .140" Thick, Color Matched Screws, Included

50 25 12.5 0 50
1"= 50'

LEGEND

- PROPERTY LINE
- EXISTING CONTOUR (341)
- PROPOSED CONTOUR (341)
- LIMIT OF DISTURBANCE (LOD)
- WETLAND BUFFER LIMITS
- FOREST CONSERVATION EASEMENT
- TREE PROTECTION FENCE (TPF)
- ROOT PRUNING (RP)
- PROP. 4' VINYL SPLIT RAIL FENCE
- LIMITS OF WETLANDS
- REFORESTATION AREA
- FOREST RETENTION AREA
- STEEP SLOPES (15%-25%)
- STEEP SLOPES (GREATER THAN 25%)
- WETLANDS
- FOREST CONSERVATION SIGNAGE
- SPECIMEN TREE (TO BE REMOVED)
- SPECIMEN TREE (TO REMAIN)

SITE AREA COMPUTATIONS

GROSS TRACT AREA = 11.36 AC
100 YEAR FLOODPLAIN = 0.14 AC
TRANSMISSION LINE EASEMENT= 1.0
NONCREDITED FOREST = 0.0 AC
NET TRACT AREA = 10.22 AC
ZONING = R20
EXISTING FOREST COVER = 3.5 AC.
FOREST COVER WITHIN GAS LINE EASEMENT = 0.3 AC.
NET TRACT FOREST AREA = 3.2 AC.

PROFESSIONAL CERTIFICATION
SIGNATURE [signature] DATE 9.11.14

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

DEVELOPER: ELMS AT FELLS POINT II, L.C., 5074 DORSEY HALL DRIVE, SUITE 205, ELLICOTT CITY, MD 21043, 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, BA-95-028, SP-13-008, 24-4787-D

PROFESSIONAL CERTIFICATION
I, ERIC R. MCWILLAIMS, 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: 9/20/14

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

BOHLER ENGINEERING
CORPORATE OFFICE: ◆ WARREN, NJ
OFFICES: ◆ SOUTHBOROUGH, MA ◆ ALBANY, NY ◆ RONKONKOMA, NY ◆ CHALFONT, PA ◆ CENTER VALLEY, PA ◆ TAMPA, FL ◆ BOWIE, MD ◆ TOWSON, MD ◆ STERLING, VA ◆ WARRENTON, VA ◆ FORT LAUDERDALE, FL ◆ PHILADELPHIA, PA
CIVIL & CONSULTING ENGINEERS
SURVEYORS
PROJECT MANAGERS
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS

THE INFORMATION, DESIGN AND CONTENT OF THIS PLAN ARE PROPRIETARY AND SHALL NOT BE COPIED OR USED FOR ANY PURPOSE WITHOUT PRIOR WRITTEN AUTHORIZATION FROM BOHLER ENGINEERING. ONLY APPROVED, SIGNED AND SEALED PLANS SHALL BE UTILIZED FOR CONSTRUCTION PURPOSES. © 2008 BOHLER ENGINEERING.

REVISIONS

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

DIG WITH C.A.R.E. CALL BEFORE YOU DIG

THE FOLLOWING STATES REQUIRE NOTIFICATION BY EXCAVATORS, 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
(WV 1-800-245-4848) (PA 1-800-242-1776) (DC 1-800-257-7777) (VA 1-800-552-7001) (MD 1-800-257-7777) (DE 1-800-282-8555)

PROJECT No.:	MD122066
DRAWN BY:	RLB
CHECKED BY:	BRR
DATE:	6/2/14
SCALE:	AS NOTED
CAD I.D.:	FC2

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 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

E.R. McWILLIAMS
REGISTERED LANDSCAPE ARCHITECT
9.11.14

SHEET TITLE:
FOREST CONSERVATION PLAN

SHEET NUMBER:

F-14-003

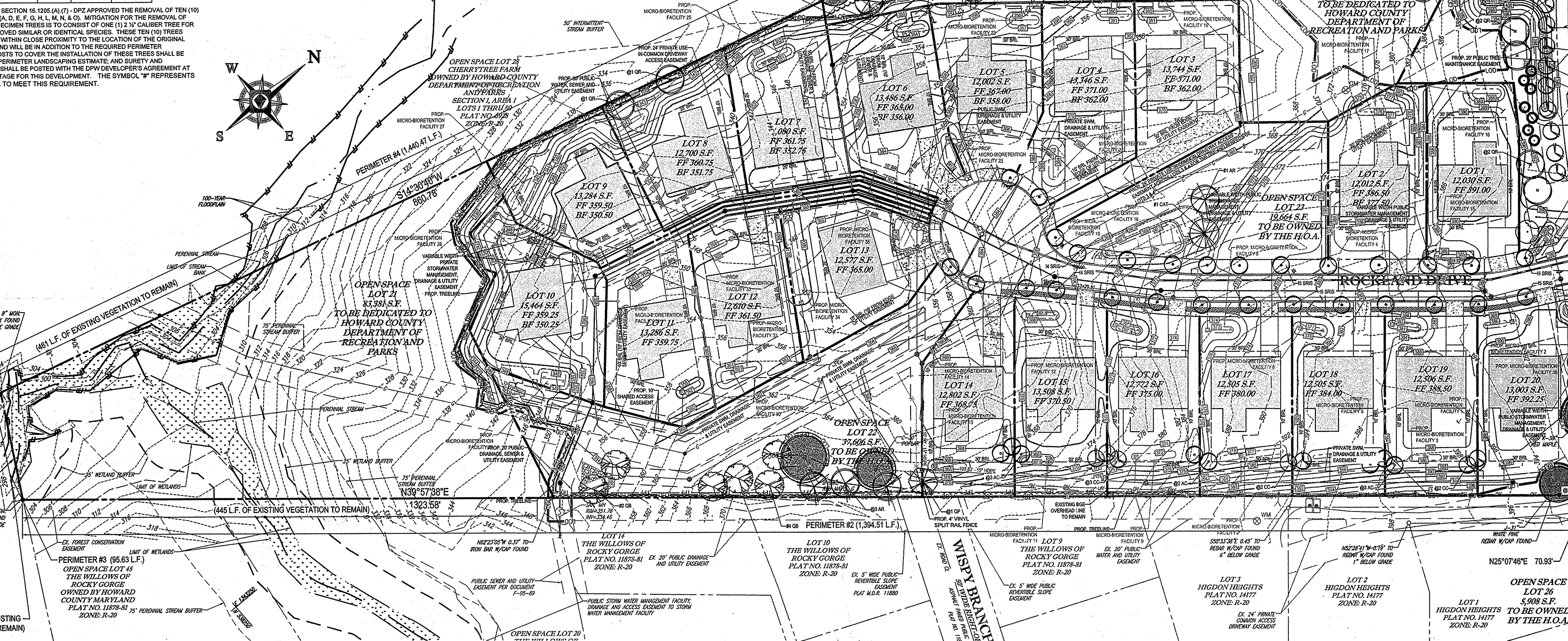
SPECIMEN TREES

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	44	GOOD	YES
J	WHITE MAPLE	31	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

UNDER WP-13-048, SECTION 16.1205.(A).(7) - DPZ APPROVED THE REMOVAL OF TEN (10) SPECIMEN TREES (A, D, E, F, G, H, L, M, N, & O). MITIGATION FOR THE REMOVAL OF THESE TEN (10) SPECIMEN TREES IS TO CONSIST OF ONE (1) 2 ½" CALIBER TREE FOR EACH ONE (1) REMOVED SIMILAR OR IDENTICAL SPECIES. THESE TEN (10) TREES SHALL BE PLACED WITHIN CLOSE PROXIMITY TO THE LOCATION OF THE ORIGINAL SPECIMEN TREE AND WILL BE IN ADDITION TO THE REQUIRED PERIMETER LANDSCAPING. COSTS TO COVER THE INSTALLATION OF THESE TREES SHALL BE INCLUDED IN THE PERIMETER LANDSCAPING ESTIMATE; AND SURETY AND INSPECTION FEES SHALL BE POSTED WITH THE DPW DEVELOPER'S AGREEMENT AT THE FINAL PLAN STAGE FOR THIS DEVELOPMENT. THE SYMBOL "#" REPRESENTS PLANT MATERIAL TO MEET THIS REQUIREMENT.

LANDSCAPE NOTES

1. LANDSCAPING FOR THIS SUBDIVISION WILL BE PROVIDED IN ACCORDANCE WITH THIS CERTIFIED LANDSCAPE PLAN AND IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. PERIMETER LANDSCAPE SURETY IN THE AMOUNT OF $15,600.00 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 DEVELOPER'S AGREEMENT, F-14-003.
2. NO CLEARING OF EXISTING VEGETATION IS PERMITTED WITHIN A LANDSCAPE EDGE FOR WHICH CREDIT IS BEING TAKEN; HOWEVER, LANDSCAPE MAINTENANCE IS AUTHORIZED.
3. AT THE TIME OF INSTALLMENT, ALL SHRUBS AND OTHER PLANTINGS HEREWITH LISTED AND APPROVED FOR THE SITE SHALL BE OF PROPER HEIGHT REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATION OF REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVED FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THIS APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN THE RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO APPLICABLE PLANS AND CERTIFICATIONS.
4. SHOULD ANY TREE DESIGNATED FOR PRESERVATION, FOR WHICH CREDIT IS GIVEN, DIE PRIOR TO RELEASE OF BONDS, THE OWNER WILL BE REQUIRED TO REPLACE THE TREE WITH THE EQUIVALENT SPECIES OR WITH A TREE WHICH WILL OBTAIN THE SAME HEIGHT, SPREAD AND GROWTH CHARACTERISTICS. THE REPLACEMENT TREE MUST BE A MINIMUM OF 3 INCHES IN CALIPER AND INSTALLED AS REQUIRED IN THE LANDSCAPE MANUAL.
5. THE OWNER, TENANT, AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING, PLANT MATERIALS, BERMS, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.



PLANT LIST

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
SHADE TREE(S)					
@AR	10	ACER RUBRUM	RED MAPLE	2 1/2-3" CAL.	B+B
#AR	1	ACER RUBRUM	RED MAPLE	2 1/2-3" CAL.	B+B
@BN	4	BETULA NIGRA	MULTI STEM RIVER BIRCH	12-14'	B+B
@QB	6	QUERCUS BOREALIS	NORTHERN RED OAK	2 1/2-3" CAL.	B+B
@QP	1	QUERCUS PALUSTRIS	PIN OAK	2 1/2-3" CAL.	B+B
@QR	14/36	QUERCUS RUBRA	RED OAK	2 1/2-3" CAL.	B+B
ORNAMENTAL TREE(S)/STREET TREES					
@AC	8	AMELANCHIER CANADENSIS	MULTI STEM SHADBLOW SERVICEBERRY	8-10'	B+B
@CC	12	CERCIS CANADENSIS	EASTERN REDBUD	2-2 1/2" CAL.	B+B
!CC	9	CERCIS CANADENSIS	EASTERN REDBUD	2-2 1/2" CAL.	B+B
!SRIS	28/57	SYRINGA RETICULATA 'IVORY SILK'	IVORY SILK JAPANESE TREE LILAC	7-8'	B+B
EVERGREEN TREE(S)					
@PIAB	10	PICEA ABIES	NORWAY SPRUCE	6-7'	B+B
#CAT	1/11	CEDRUS ATLANTICA	ATLAS CEDAR	2 1/2-3" CAL.	B + B

NOTE: IF ANY DISCREPANCIES OCCUR BETWEEN AMOUNTS SHOWN IN THE PLAN AND THE PLANT LIST, THE PLAN SHALL DICTATE.

SCHEDULE 'A'
PERIMETER LANDSCAPE EDGE

PERIMETER	CATEGORY (P = PROPERTIES; R = ROADWAYS)	LANDSCAPE TYPE	LINEAR FEET OF ROADWAY FRONTAGE/ PERIMETER	CREDIT FOR EX. VEGETATION (YES/NO; LF) (DESCRIBE BELOW IF NEEDED)	CREDIT FOR FENCE/WALL/BERM (YES/NO; LF) (DESCRIBE BELOW IF NEEDED)	NUMBER OF PLANTS REQUIRED: EVERGREEN TREES	NUMBER OF PLANTS REQUIRED: SHADE TREES	NUMBER OF PLANTS PROVIDED: EVERGREEN TREES	NUMBER OF PLANTS PROVIDED: ORNAMENTAL TREES	NUMBER OF PLANTS PROVIDED: SHADE TREES	NUMBER OF PLANTS PROVIDED: SHADE TREES FOR REMOVAL OF SPECIMEN TREES
#1	R	B	456.65 LF	NO	NO (0)	12	10	10 + 2 EXISTING		8 + 2 EXISTING SPECIMEN TREES	N/A
#2	P	A	1,394.51 LF	YES(445') 949'	NO (0)	0	16	0	18	4 + 3 EXISTING SPECIMEN TREES	N/A
#3	P	A	95.63 LF	YES(95.63') 0'	NO (0)	0	0	0		0	NA/
#4	P	A	1,440.47 LF	YES(461') 980'	NO (0)	0	17	0		16 + 1 EXISTING SPECIMEN TREE	N/A
THE SYMBOL "@" REPRESENTS PLANT MATERIAL TO MEET PERIMETER REQUIREMENT.											
SPECIMEN TREE MITIGATION (THE SYMBOL "#" REPRESENTS PLANT MATERIAL TO MEET PERIMETER REQUIREMENT.)											10
TOTAL						12	43	10 + 2 EXISTING	18	28 + 6 EXISTING SPECIMEN TREES	10

NOTE: MITIGATION FOR THE REMOVAL OF THE TEN (10) SPECIMEN TREES (A,B,E,F,G,H,L,M,N &O) AS IDENTIFIED ON ECP-13-038 AND WP-13-048 WILL CONSIST OF ONE (1) 2 1/2" CALIPER SHADE TREE FOR EACH SPECIMEN TREE REMOVED. THESE TEN (10) TREES WILL BE PLACED WITHIN CLOSE PROXIMITY TO THE LOCATION OF THE ORIGINAL SPECIMEN TREE AND WILL BE IN ADDITION TO THE REQUIRED PERIMETER LANDSCAPING. COSTS TO COVER THE INSTALLATION OF THESE TEN (10) SHADE TREES SHALL BE INCLUDED IN THE PERIMETER LANDSCAPING ESTIMATE AND SURETY AND INSPECTION FEES SHALL BE POSTED WITH THE DPW DEVELOPERS AGREEMENT, F-14-003.

STREET TREE CHART

STREET NAME	REQUIRED	PROVIDED
SCAGGSVILLE ROAD (457 LF / 40)	12 TREES	12 TREES
PUBLIC ROAD (545 X 2 = 1090 LF / 40)	28 TREES	28 TREES
TOTAL TREES	40 TREES	40 EQUIVALENT TREES

THE SYMBOL "!" REPRESENTS PLANT MATERIAL TO MEET THIS REQUIREMENT.

1. FINANCIAL SURETY FOR THE REQUIRED 40 STREET TREES WILL BE POSTED AS PART OF THE DEVELOPERS AGREEMENT IN THE AMOUNT OF $15,000.
2. SHADE TREES MUST BE PLANTED A MINIMUM OF 40 FEET AND ORNAMENTAL TREES MUST BE PLANTED A MINIMUM OF 25 FEET FROM POWER LINES FROM POWER LINES PER B.G.E. PLANTING GUIDE.
3. FINAL PLACEMENT OF STREET TREES WILL OCCUR IN THE FIELD AND BE PLACED A MINIMUM OF 30 FEET FROM ALL SIGNS AND INTERSECTIONS WHEN PLANTED BETWEEN SIDEWALK AND CURB, BE LOCATED WITH CONSIDERATION OF UNDERGROUND UTILITIES AND STRUCTURES AND MAINTAIN A MINIMUM 5 FEET DISTANCE ON CENTER FROM A DRAIN INLET STRUCTURE, 5 FEET FROM AN OPEN ACCESS STRIP AND 10 FEET FROM A DRIVEWAY.

LEGEND

—— TPF —— TPF —— TREE PROTECTION FENCE

NOTE:
DUE TO THE SITES UNIQUE CONSTRAINTS SUCH AS THE BOUNDARY CONFIGURATION, THE EXISTING GAS EASEMENT, SMALL LOT SIZES AND MORE THAN 90 FEET OF ELEVATION DIFFERENCE FROM SCAGGSVILLE ROAD TO THE STREAM, IT IS NOT FEASIBLE TO PROVIDE A CONNECTION FROM THIS SUBDIVISION TO WISPY BRANCH COURT.

50 25 12.5 0 50
1"= 50'

DEVELOPER'S/OWNER'S LANDSCAPE CERTIFICATE

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

DEVELOPER'S / OWNER'S NAME

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 9/23/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9-26-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION — 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 SCOPE PRIOR TO THE INITIATION 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 IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

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

DEVELOPER: ELMS AT FELLS POINT II, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21043
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, BA-95-028, SP-13-008, 24-4787-D

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: 9/20/2014

BOHLER ENGINEERING
CIVIL & CONSULTING ENGINEERS
SURVEYORS
PROJECT MANAGERS
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS
CORPORATE OFFICE: WARREN, NJ
OFFICES: SOUTHBOROUGH, MA; ALBANY, NY; RONKONKOMA, NY; CHALFONT, PA; CENTER VALLEY, PA; TAMPA, FL; BOWIE, MD; TOWSON, MD; STERLING, VA; WARRENTON, VA; FORT LAUDERDALE, FL; PHILADELPHIA, PA

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REVISIONS

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

DIG WITH CARE — CALL BEFORE YOU DIG
THE FOLLOWING STATES REQUIRE NOTIFICATION BY EXCAVATORS, 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
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PROJECT No.:	MD122066
DRAWN BY:	RLB
CHECKED BY:	BRR
DATE:	6/2/14
SCALE:	1"=50'
CAD I.D.:	SS2

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 21204
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E.R. McWILLIAMS
REGISTERED LANDSCAPE ARCHITECT
9-11-14

SHEET TITLE:
STREET TREE AND LANDSCAPE PLAN

SHEET NUMBER:
15
OF 19

F-14-003

H:\2012\MD122066\DRAWINGS\PLAN SETS\FINAL ROAD CONSTRUCTION GRADING AND STORMWATER MANAGEMENT PLANS\MD122066SS7.DWG PRINTED BY: RBO

LANDSCAPE SPECIFICATIONS

1. SCOPE OF WORK:
THE LANDSCAPE CONTRACTOR SHALL BE REQUIRED TO PERFORM ALL CLEARING, FINISHED GRADING, SOIL PREPARATION, PERMANENT SEEDING OR SODDING, PLANTING AND MULCHING INCLUDING ALL LABOR, MATERIALS, TOOLS AND EQUIPMENT NECESSARY FOR THE COMPLETION OF THIS PROJECT, UNLESS OTHERWISE CONTRACTED BY THE GENERAL CONTRACTOR.

2. MATERIALS
A. GENERAL - ALL HARDSCAPE MATERIALS SHALL MEET OR EXCEED SPECIFICATIONS AS OUTLINED IN THE STATE DEPARTMENT OF TRANSPORTATION'S SPECIFICATIONS.

B. TOPSOIL - NATURAL, FRIABLE, LOAMY SILT SOIL HAVING AN ORGANIC CONTENT NOT LESS THAN 5%, A PH RANGE BETWEEN 4.5-7.0. IT SHALL BE FREE OF DEBRIS, ROCKS LARGER THAN ONE INCH (1"), WOOD, ROOTS, VEGETABLE MATTER AND CLAY CLODS.

C. LAWN - ALL DISTURBED AREAS ARE TO BE TREATED WITH A MINIMUM SIX INCH (6") THICK LAYER OF TOPSOIL, OR AS DIRECTED BY THE LOCAL ORDINANCE OR CLIENT, AND SEEDED OR SODDED IN ACCORDANCE WITH THE PERMANENT STABILIZATION METHODS INDICATED WITHIN THE SOIL EROSION AND SEDIMENT CONTROL NOTES.
1.1. LAWN SEED MIXTURE SHALL BE FRESH, CLEAN NEW CROP SEED.
1.2. SOD SHALL BE STRONGLY ROOTED, WEED AND DISEASE/PEST FREE WITH A UNIFORM THICKNESS.
1.3. SOD INSTALLED ON SLOPES GREATER THAN 4:1 SHALL BE PEGGED TO HOLD SOD IN PLACE.

D. MULCH - THE MULCH AROUND THE PERIMETER OF THE BUILDING SHALL BE A 3" LAYER OF DOUBLE SHREDDED BLACK CEDAR MULCH ONLY. ALL OTHER AREAS SHALL BE MULCHED WITH A 3" LAYER OF DOUBLE SHREDDED DARK BROWN HARDWOOD BARK MULCH, UNLESS OTHERWISE STATED ON THE LANDSCAPE PLAN.

E. FERTILIZER
1.1. FERTILIZER SHALL BE DELIVERED TO THE SITE MIXED AS SPECIFIED IN THE ORIGINAL UNOPENED STANDARD BAGS SHOWING WEIGHT, ANALYSIS AND NAME OF MANUFACTURER. FERTILIZER SHALL BE STORED IN A WEATHERPROOF PLACE SO THAT IT CAN BE KEPT DRY PRIOR TO USE.
1.2. FOR THE PURPOSE OF BIDDING, ASSUME THAT FERTILIZER SHALL BE 10% NITROGEN, 6% PHOSPHORUS AND 4% POTASSIUM BY WEIGHT. A FERTILIZER SHOULD NOT BE SELECTED WITHOUT A SOIL TEST PERFORMED BY A CERTIFIED SOIL LABORATORY.

F. PLANT MATERIAL
1.1. ALL PLANTS SHALL IN ALL CASES CONFORM TO THE REQUIREMENTS OF THE "AMERICAN STANDARD FOR NURSERY STOCK" (ANSI Z60.1), LATEST EDITION, AS PUBLISHED BY THE AMERICAN NURSERY & LANDSCAPE ASSOCIATION.
1.2. IN ALL CASES, BOTANICAL NAMES SHALL TAKE PRECEDENCE OVER COMMON NAMES FOR ANY AND ALL PLANT MATERIAL.
1.3. PLANTS SHALL BE LEGIBLY TAGGED WITH THE PROPER NAME AND SIZE. TAGS ARE TO REMAIN ON AT LEAST ONE PLANT OF EACH SPECIES FOR VERIFICATION PURPOSES DURING THE FINAL INSPECTION.
1.4. TREES WITH ABRASION OF THE BARK, SUN SCALDS, DISFIGURATION OR FRESH CUTS OF LIMBS OVER 1¼", WHICH HAVE NOT BEEN COMPLETELY CALLUSED, SHALL BE REJECTED.PLANTS SHALL NOT BE BOUND WITH WIRE OR ROPE AT ANY TIME SO AS TO DAMAGE THE BARK OR BREAK BRANCHES.
1.5. ALL PLANTS SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY AND SHALL HAVE A NORMAL HABIT OF GROWTH: WELL DEVELOPED BRANCHES, DENSELY FOLIATED, VIGOROUS ROOT SYSTEMS AND BE FREE OF DISEASE, INSECTS, PESTS, EGGS OR LARVAE.
1.6. CALIPER MEASUREMENTS OF NURSERY GROWN TREES SHALL BE TAKEN AT A POINT ON THE TRUNK SIX INCHES (6") ABOVE THE NATURAL GRADE FOR TREES UP TO AND INCLUDING A FOUR INCH (4") CALIPER SIZE. IF THE CALIPER AT SIX INCHES (6") ABOVE THE GROUND EXCEEDS FOUR INCHES (4") IN CALIPER, THE CALIPER SHOULD BE MEASURED AT A POINT 12" ABOVE THE NATURAL GRADE.
1.7. SHRUBS SHALL BE MEASURED TO THE AVERAGE HEIGHT OR SPREAD OF THE SHRUB, AND NOT TO THE LONGEST BRANCH.
1.8. TREES AND SHRUBS SHALL BE HANDLED WITH CARE BY THE ROOT BALL.

3. GENERAL WORK PROCEDURES
A. CONTRACTOR TO UTILIZE WORKMANLIKE INDUSTRY STANDARDS IN PERFORMING ALL LANDSCAPE CONSTRUCTION. THE SITE IS TO BE LEFT IN A CLEAN STATE AT THE END OF EACH WORKDAY. ALL DEBRIS, MATERIALS AND TOOLS SHALL BE PROPERLY STORED, STOCKPILED OR DISPOSED OF.

B. WASTE MATERIALS AND DEBRIS SHALL BE COMPLETELY DISPOSED OF AT THE CONTRACTOR'S EXPENSE. DEBRIS SHALL NOT BE BURIED, INCLUDING ORGANIC MATERIALS, BUT SHALL BE REMOVED COMPLETELY FROM THE SITE.

4. SITE PREPARATIONS
A. BEFORE AND DURING PRELIMINARY GRADING AND FINISHED GRADING, ALL WEEDS AND GRASSES SHALL BE DUG OUT BY THE ROOTS AND DISPOSED OF IN ACCORDANCE WITH GENERAL WORK PROCEDURES OUTLINED HEREIN.

B. ALL EXISTING TREES TO REMAIN SHALL BE PRUNED TO REMOVE ANY DAMAGED BRANCHES. THE ENTIRE LIMB OF ANY DAMAGED BRANCH SHALL BE CUT OFF AT THE TRUNK. CONTRACTOR SHALL ENSURE THAT CUTS ARE SMOOTH AND STRAIGHT. ANY EXPOSED ROOTS SHALL BE CUT BACK WITH CLEAN, SHARP TOOLS AND TOPSOIL SHALL BE PLACED AROUND THE REMAINDER OF THE ROOTS. EXISTING TREES SHALL BE MONITORED ON A REGULAR BASIS FOR ADDITIONAL ROOT OR BRANCH DAMAGE AS A RESULT OF CONSTRUCTION. ROOTS SHALL NOT BE LEFT EXPOSED FOR MORE THAN ONE (1) DAY. CONTRACTOR SHALL WATER EXISTING TREES AS NEEDED TO PREVENT SHOCK OR DECLINE.

C. CONTRACTOR SHALL ARRANGE TO HAVE A UTILITY STAKE-OUT TO LOCATE ALL UNDERGROUND UTILITIES PRIOR TO INSTALLATION OF ANY LANDSCAPE MATERIAL. UTILITY COMPANIES SHALL BE CONTACTED THREE (3) DAYS PRIOR TO THE BEGINNING OF WORK.

5. TREE PROTECTION
A. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING TREES TO REMAIN. A TREE PROTECTION ZONE SHALL BE ESTABLISHED AT THE DRIP LINE OR 15 FEET FROM THE TRUNK OR AT THE LIMIT OF CONSTRUCTION DISTURBANCE, WHICHEVER IS GREATER. LOCAL STANDARDS THAT MAY REQUIRE A MORE STRICT TREE PROTECTION ZONE SHALL BE HONORED.

B. A FORTY-EIGHT INCH (48") HIGH WOODEN SNOW FENCE OR ORANGE COLORED HIGH-DENSITY 'VISI-FENCE', OR APPROVED EQUAL, MOUNTED ON STEEL POSTS SHALL BE PLACED ALONG THE BOUNDARY OF THE TREE PROTECTION ZONE. POSTS SHALL BE LOCATED AT A MAXIMUM OF EIGHT FEET (8') ON CENTER OR AS INDICATED WITHIN THE TREE PROTECTION DETAIL.

C. WHEN THE TREE PROTECTION FENCING HAS BEEN INSTALLED, IT SHALL BE INSPECTED BY THE APPROVING AGENCY PRIOR TO DEMOLITION, GRADING, TREE CLEARING OR ANY OTHER CONSTRUCTION. THE FENCING ALONG THE TREE PROTECTION ZONE SHALL BE REGULARLY INSPECTED BY THE LANDSCAPE CONTRACTOR AND MAINTAINED UNTIL ALL CONSTRUCTION ACTIVITY HAS BEEN COMPLETED.

D. AT NO TIME SHALL MACHINERY, DEBRIS, FALLEN TREES OR OTHER MATERIALS BE PLACED, STOCKPILED OR LEFT STANDING IN THE TREE PROTECTION ZONE.

6. SOIL MODIFICATIONS
A. CONTRACTOR SHALL ATTAIN A SOIL TEST FOR ALL AREAS OF THE SITE PRIOR TO CONDUCTING ANY PLANTING. SOIL TESTS SHALL BE PERFORMED BY A CERTIFIED SOIL LABORATORY.

B. LANDSCAPE CONTRACTOR SHALL REPORT ANY SOIL OR DRAINAGE CONDITIONS CONSIDERED DETRIMENTAL TO THE GROWTH OF PLANT MATERIAL. SOIL MODIFICATIONS, AS SPECIFIED HEREIN, MAY NEED TO BE CONDUCTED BY THE LANDSCAPE CONTRACTOR DEPENDING ON SITE CONDITIONS.

C. THE FOLLOWING AMENDMENTS AND QUANTITIES ARE APPROXIMATE AND ARE FOR BIDDING PURPOSES ONLY. COMPOSITION OF AMENDMENTS SHOULD BE REVISED DEPENDING ON THE OUTCOME OF A TOPSOIL ANALYSIS PERFORMED BY A CERTIFIED SOIL LABORATORY.
1.1. TO INCREASE A SANDY SOIL'S ABILITY TO RETAIN WATER AND NUTRIENTS, THOROUGHLY TILL ORGANIC MATTER INTO THE TOP 6-12". USE COMPOSTED BARK, COMPOSTED LEAF MULCH OR PEAT MOSS. ALL PRODUCTS SHOULD BE COMPOSTED TO A DARK COLOR AND BE FREE OF PIECES WITH IDENTIFIABLE LEAF OR WOOD STRUCTURE. AVOID MATERIAL WITH A PH HIGHER THAN 7.5.
1.2. TO INCREASE DRAINAGE, MODIFY HEAVY CLAY OR SILT (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) AND/OR AGRICULTURAL GYPSUM. COARSE SAND MAY BE USED IF ENOUGH IS ADDED TO BRING THE SAND CONTENT TO MORE THAN 60% OF THE TOTAL MIX. SUBSURFACE DRAINAGE LINES MAY NEED TO BE ADDED TO INCREASE DRAINAGE.
1.3. MODIFY EXTREMELY SANDY SOILS (MORE THAN 85%) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX.

7. FINISHED GRADING
A. UNLESS OTHERWISE CONTRACTED, THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF TOPSOIL AND THE ESTABLISHMENT OF FINE-GRADING WITHIN THE DISTURBANCE AREA OF THE SITE.

B. LANDSCAPE CONTRACTOR SHALL VERIFY THAT SUBGRADE FOR INSTALLATION OF TOPSOIL HAS BEEN ESTABLISHED. THE SUBGRADE OF THE SITE MUST MEET THE FINISHED GRADE LESS THE REQUIRED TOPSOIL THICKNESS (1"±).

C. ALL LAWN AND PLANTING AREAS SHALL BE GRADED TO A SMOOTH, EVEN AND UNIFORM PLANE WITH NO ABRUPT CHANGE OF SURFACE AS DEPICTED WITHIN THIS SET OF CONSTRUCTION PLANS, UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER OR LANDSCAPE ARCHITECT.

D. ALL PLANTING AREAS SHALL BE GRADED AND MAINTAINED TO ALLOW FREE FLOW OF SURFACE WATER IN AND AROUND THE PLANTING BEDS. STANDING WATER SHALL NOT BE PERMITTED IN PLANTING BEDS.

8. TOPSOILING
A. CONTRACTOR SHALL PROVIDE A SIX INCH (6") THICK MINIMUM LAYER OF TOPSOIL, OR AS DIRECTED BY THE LOCAL ORDINANCE OR CLIENT, IN ALL PLANTING AREAS. TOPSOIL SHOULD BE SPREAD OVER A PREPARED SURFACE IN A UNIFORM LAYER TO ACHIEVE THE DESIRED COMPACTED THICKNESS.

B. ON-SITE TOPSOIL MAY BE USED TO SUPPLEMENT THE TOTAL AMOUNT REQUIRED. TOPSOIL FROM THE SITE MAY BE REJECTED IF IT HAS NOT BEEN PROPERLY REMOVED, STORED AND PROTECTED PRIOR TO CONSTRUCTION.

C. CONTRACTOR SHALL FURNISH TO THE APPROVING AGENCY AN ANALYSIS OF BOTH IMPORTED AND ON-SITE TOPSOIL TO BE UTILIZED IN ALL PLANTING AREAS. THE PH AND NUTRIENT LEVELS MAY NEED TO BE ADJUSTED THROUGH SOIL MODIFICATIONS AS NEEDED TO ACHIEVE THE REQUIRED LEVELS AS SPECIFIED IN THE MATERIALS SECTION ABOVE.

D. ALL PLANTING AND LAWN AREAS ARE TO BE CULTIVATED TO A DEPTH OF SIX INCHES (6"). ALL DEBRIS EXPOSED FROM EXCAVATION AND CULTIVATION SHALL BE DISPOSED OF IN ACCORDANCE WITH GENERAL WORK PROCEDURES SECTION ABOVE. THE FOLLOWING SHALL BE TILLED INTO THE TOP FOUR INCHES (4") IN TWO DIRECTIONS (QUANTITIES BASED ON A 1,000 SQUARE FOOT AREA):
1.1. 20 POUNDS 'GROW POWER' OR APPROVED EQUAL
1.2. 20 POUNDS NITRO-FORM (COURSE) 38-0-0 BLUE CHIP

E. THE SPREADING OF TOPSOIL SHALL NOT BE CONDUCTED UNDER MUDDY OR FROZEN CONDITIONS.

9. PLANTING
A. INSOFAR THAT IT IS FEASIBLE, PLANT MATERIAL SHALL BE PLANTED ON THE DAY OF DELIVERY. IN THE EVENT THAT THIS IS NOT POSSIBLE, LANDSCAPE CONTRACTOR SHALL PROTECT UNINSTALLED PLANT MATERIAL. PLANTS SHALL NOT REMAIN UNPLANTED FOR LONGER THAN A THREE DAY PERIOD AFTER DELIVERY. PLANTS THAT WILL NOT BE PLANTED FOR A PERIOD OF TIME GREATER THAN THREE DAYS SHALL BE HEALED IN WITH TOPSOIL OR MULCH TO HELP PRESERVE ROOT MOISTURE.

B. PLANTING OPERATIONS SHALL BE PERFORMED DURING PERIODS WITHIN THE PLANTING SEASON WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE AND IN ACCORDANCE WITH ACCEPTED LOCAL PRACTICE. PLANTS SHALL NOT BE INSTALLED IN TOPSOIL THAT IS IN A MUDDY OR FROZEN CONDITION.

C. ANY INJURED ROOTS OR BRANCHES SHALL BE PRUNED TO MAKE CLEAN-CUT ENDS PRIOR TO PLANTING UTILIZING CLEAN, SHARP TOOLS. ONLY INJURED OR DISEASED BRANCHING SHALL BE REMOVED.

D. ALL PLANTING CONTAINERS AND NON-BIODEGRADABLE MATERIALS SHALL BE REMOVED FROM ROOT BALLS DURING PLANTING. NATURAL FIBER BURLAP MUST BE CUT FROM AROUND THE TRUNK OF THE TREE AND FOLDED DOWN AGAINST THE ROOT BALL PRIOR TO BACKFILLING.

E. POSITION TREES AND SHRUBS AT THEIR INTENDED LOCATIONS AS PER THE PLANS AND SECURE THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO EXCAVATING PITS, MAKING NECESSARY ADJUSTMENTS AS DIRECTED.

F. PRIOR TO THE ISSUANCE OF ANY CERTIFICATE OF OCCUPANCY, THE PROPOSED LANDSCAPE, AS SHOWN ON THE APPROVED LANDSCAPE PLAN, MUST BE INSTALLED, INSPECTED AND APPROVED BY THE APPROVING AGENCY. THE APPROVING AGENCY SHALL TAKE INTO ACCOUNT SEASONAL CONSIDERATIONS IN THIS REGARD AS FOLLOWS. THE PLANTING OF TREES, SHRUBS, VINES OR GROUND COVER SHALL OCCUR ONLY DURING THE FOLLOWING PLANTING SEASONS:
1.1. PLANTS: MARCH 15 TO DECEMBER 15
1.2. LAWN: MARCH 15 TO JUNE 15 OR SEPT. 1 TO DECEMBER 1

G. PLANTINGS REQUIRED FOR A CERTIFICATE OF OCCUPANCY SHALL BE PROVIDED DURING THE NEXT APPROPRIATE SEASON AT THE MUNICIPALITY'S DISCRETION. CONTRACTOR SHOULD CONTACT APPROVING AGENCY FOR POTENTIAL SUBSTITUTIONS.

H. FURTHERMORE, THE FOLLOWING TREE VARIETIES ARE UNUSUALLY SUSCEPTIBLE TO WINTER DAMAGE. WITH TRANSPLANT SHOCK AND THE SEASONAL LACK OF NITROGEN AVAILABILITY, THE RISK OF PLANT DEATH IS GREATLY INCREASED. IT IS NOT RECOMMENDED THAT THESE SPECIES BE PLANTED DURING THE FALL PLANTING SEASON:

ACER RUBRUM	PLATANUS X ACERIFOLIA
BETULA VARIETIES	POPULOUS VARIETIES
CARPINUS VARIETIES	PRUNUS VARIETIES
CRATAEGUS VARIETIES	PYRUS VARIETIES
KOELREUTERIA	QUERCUS VARIETIES
LIQUIDAMBER STYRACIFLUA	TILIA TOMENTOSA
LIRIODENDRON TULIPIFERA	ZELKOVA VARIETIES

I. PLANTING PITS SHALL BE DUG WITH LEVEL BOTTOMS, WITH THE WIDTH TWICE THE DIAMETER OF ROOT BALL. THE ROOT BALL SHALL REST ON UNDISTURBED GRADE. EACH PLANT PIT SHALL BE BACKFILLED IN LAYERS WITH THE FOLLOWING PREPARED SOIL MIXED THOROUGHLY:
• 1 PART PEAT MOSS
• 1 PART COMPOSTED COW MANURE BY VOLUME
• 3 PARTS TOPSOIL BY VOLUME
• 21 GRAMS 'AGRIFORM' PLANTING TABLETS (OR APPROVED EQUAL) AS FOLLOWS:
A) 2 TABLETS PER 1 GALLON PLANT
B) 3 TABLETS PER 5 GALLON PLANT
C) 4 TABLETS PER 15 GALLON PLANT
D) LARGER PLANTS: 2 TABLETS PER ½" CALIPER OF TRUNK

J. FILL PREPARED SOIL AROUND BALL OF PLANT HALF-WAY AND INSERT PLANT TABLETS. COMPLETE BACKFILL AND WATER THOROUGHLY.

K. ALL PLANTS SHALL BE PLANTED SO THAT THE TOP OF THE ROOT BALL, THE POINT AT WHICH THE ROOT FLARE BEGINS, IS SET AT GROUND LEVEL AND IN THE CENTER OF THE PIT. NO SOIL IS TO BE PLACED DIRECTLY ON TOP OF THE ROOT BALL.

L. ALL PROPOSED TREES DIRECTLY ADJACENT TO WALKWAYS OR DRIVEWAYS SHALL BE PRUNED AND MAINTAINED TO A MINIMUM BRANCHING HEIGHT OF 7' FROM GRADE.

M. GROUND COVER AREAS SHALL RECEIVE A ¼" LAYER OF HUMUS RAKED INTO THE TOP 1" OF PREPARED SOIL PRIOR TO PLANTING. ALL GROUND COVER AREAS SHALL BE WEEDED AND TREATED WITH A PRE-EMERGENT CHEMICAL AS PER MANUFACTURER'S RECOMMENDATION.

N. NO PLANT, EXCEPT GROUND COVERS, GRASSES OR VINES, SHALL BE PLANTED LESS THAN TWO FEET (2') FROM EXISTING STRUCTURES AND SIDEWALKS.

O. ALL PLANTING AREAS AND PLANTING PITS SHALL BE MULCHED AS SPECIFIED HEREIN TO FILL THE ENTIRE BED AREA OR SAUCER. NO MULCH IS TO TOUCH THE TRUNK OF THE TREE OR SHRUB.

P. ALL PLANTING AREAS SHALL BE WATERED IMMEDIATELY UPON INSTALLATION IN ACCORDANCE WITH THE WATERING SPECIFICATIONS AS LISTED HEREIN.

10. TRANSPLANTING (WHEN REQUIRED)
A. ALL TRANSPLANTS SHALL BE DUG WITH INTACT ROOT BALLS CAPABLE OF SUSTAINING THE PLANT.

B. IF PLANTS ARE TO BE STOCKPILED BEFORE REPLANTING, THEY SHALL BE HEALED IN WITH MULCH OR SOIL, ADEQUATELY WATERED AND PROTECTED FROM EXTREME HEAT, SUN AND WIND.

C. PLANTS SHALL NOT BE DUG FOR TRANSPLANTING BETWEEN APRIL 10 AND JUNE 30.

D. UPON REPLANTING, BACKFILL SOIL SHALL BE AMENDED WITH FERTILIZER AND ROOT GROWTH HORMONE.

E. TRANSPLANTS SHALL BE GUARANTEED FOR THE LENGTH OF THE GUARANTEE PERIOD SPECIFIED HEREIN.

F. IF TRANSPLANTS DIE, SHRUBS AND TREES LESS THAN SIX INCHES (6") DBH SHALL BE REPLACED IN KIND. TREES GREATER THAN SIX INCHES (6") DBH MAY BE REQUIRED TO BE REPLACED IN ACCORDANCE WITH THE MUNICIPALITY'S TREE REPLACEMENT GUIDELINES.

11. WATERING
A. NEW PLANTINGS OR LAWN AREAS SHALL BE ADEQUATELY IRRIGATED BEGINNING IMMEDIATELY AFTER PLANTING. WATER SHALL BE APPLIED TO EACH TREE AND SHRUB IN SUCH MANNER AS NOT TO DISTURB BACKFILL AND TO THE EXTENT THAT ALL MATERIALS IN THE PLANTING HOLE ARE THOROUGHLY SATURATED. WATERING SHALL CONTINUE AT LEAST UNTIL PLANTS ARE ESTABLISHED.

B. SITE OWNER SHALL PROVIDE WATER IF AVAILABLE ON SITE AT TIME OF PLANTING. IF WATER IS NOT AVAILABLE ON SITE, CONTRACTOR SHALL SUPPLY ALL NECESSARY WATER. THE USE OF WATERING BAGS IS RECOMMENDED FOR ALL NEWLY PLANTED TREES.

C. IF AN IRRIGATION SYSTEM HAS BEEN INSTALLED ON THE SITE, IT SHALL BE USED TO WATER PROPOSED PLANT MATERIAL, BUT ANY FAILURE OF THE SYSTEM DOES NOT ELIMINATE THE CONTRACTOR'S RESPONSIBILITY OF MAINTAINING THE DESIRED MOISTURE LEVEL FOR VIGOROUS, HEALTHY GROWTH.

12. GUARANTEE
A. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL PLANTS FOR A PERIOD OF ONE (1) YEAR FROM APPROVAL OF LANDSCAPE INSTALLATION BY THE APPROVING AGENCY. CONTRACTOR SHALL SUPPLY THE OWNER WITH A MAINTENANCE BOND FOR TEN PERCENT (10%) OF THE VALUE OF THE LANDSCAPE INSTALLATION WHICH WILL BE RELEASED AT THE CONCLUSION OF THE GUARANTEE PERIOD AND WHEN A FINAL INSPECTION HAS BEEN COMPLETED AND APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.

B. ANY DEAD OR DYING PLANT MATERIAL SHALL BE REPLACED FOR THE LENGTH OF THE GUARANTEE PERIOD. REPLACEMENT OF PLANT MATERIAL SHALL BE CONDUCTED AT THE FIRST SUCCEEDING PLANTING SEASON. ANY DEBRIS SHALL BE DISPOSED OF OFF-SITE, WITHOUT EXCEPTION.

C. TREES AND SHRUBS SHALL BE MAINTAINED BY THE CONTRACTOR DURING CONSTRUCTION AND THROUGHOUT THE 90 DAY MAINTENANCE PERIOD AS SPECIFIED HEREIN. CULTIVATION, WEEDING, WATERING AND THE PREVENTATIVE TREATMENTS SHALL BE PERFORMED AS NECESSARY TO KEEP PLANT MATERIAL IN GOOD CONDITION AND FREE OF INSECTS AND DISEASE.

D. LAWNS SHALL BE MAINTAINED THROUGH WATERING, FERTILIZING, WEEDING, MOWING, TRIMMING AND OTHER OPERATIONS SUCH AS ROLLING, REGARDING AND REPLANTING AS REQUIRED TO ESTABLISH A SMOOTH, ACCEPTABLE LAWN, FREE OF ERODED OR BARE AREAS.

13. CLEANUP
A. UPON THE COMPLETION OF ALL LANDSCAPE INSTALLATION AND BEFORE THE FINAL ACCEPTANCE, THE CONTRACTOR SHALL REMOVE ALL UNUSED MATERIALS, EQUIPMENT AND DEBRIS FROM THE SITE. ALL PAVED AREAS ARE TO BE CLEANED.

B. THE SITE SHALL BE CLEANED AND LEFT IN A NEAT AND ACCEPTABLE CONDITION AS APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.

REFORESTATION PLAN

THE REFORESTATION AREA WILL BE PLACED INTO A FOREST CONSERVATION EASEMENT.

A. PLANTING PLAN AND METHODS

PLANT SPECIES SELECTION WAS BASED ON OUR KNOWLEDGE REGARDING PLANT COMMUNITIES IN MARYLAND'S PIEDMONT PLATEAU AND INFORMATION PROVIDED IN THE SOIL SURVEY ON TYPICAL VEGETATION FOR THE SOIL TYPE ON THE PLANTING SITE. SPECIES SELECTION WAS ALSO BASED ON OUR KNOWLEDGE OF PLANT AVAILABILITY IN THE NURSERY INDUSTRY.

REFORESTATION WILL BE ACCOMPLISHED THROUGH A MIXED PLANTING OF WHIPS AND BRANCHED TRANSPLANTS. CONTAINER GROWN STOCK IS RECOMMENDED BUT BAREROOT STOCK MAY BE USED TO HELP CONTROL AFFORESTATION COSTS. IF BAREROOT STOCK IS USED THE ROOT SYSTEMS OF ALL PLANTS WILL BE DIPPED IN AN ANTI-DESICCANT GEL PRIOR TO PLANTING TO IMPROVE MOISTURE RETENTION IN THE ROOT SYSTEMS.

PRIOR TO PLANTING THE PROPOSED FOREST CONSERVATION EASEMENTS ALL MULTIFLORA ROSE IN THE PLANTING AREA SHALL BE REMOVED. REMOVAL OF THE ROSE MAY BE PERFORMED WITH MOWING AND HERBICIDE TREATMENTS. PHYSICAL REMOVAL OF ALL TOP GROWTH FOLLOWING BY A PERIODIC HERBICIDE TREATMENT OF STUMP SPROUTS IS RECOMMENDED. NATIVE TREE AND SHRUB SPECIES OCCURRING WITHIN THE ROSE THICKETS SHOULD BE RETAINED WHEREVER POSSIBLE. HERBICIDES TREATMENTS SHALL OCCUR ON 2 MONTH INTERVALS DURING THE FIRST GROWING SEASON AND ONCE EACH IN THE SPRING AND FALL FOR SUBSEQUENT YEARS. HERBICIDE USED SHALL BE MADE SPECIFICALLY TO ADDRESS WOODY PLANT MATERIAL AND SHALL BE APPLIED AS PER MANUFACTURERS SPECIFICATIONS. CARE SHOULD BE TAKEN NOT TO SPRAY PLANTED TREES OR NATURALLY OCCURRING NATIVE TREE/SHRUB SEEDLINGS. IT IS RECOMMENDED THAT INITIATION OF ROSE REMOVAL BEGIN AT LEAST SIX MONTHS PRIOR TO PLANTING.

B. PLANTING AND SOIL SPECIFICATIONS

PLANT MATERIAL WILL BE INSTALLED IN ACCORDANCE WITH THE PLANTING DETAIL AND PLANTING SPECIFICATIONS SHOWN ON THE FOREST CONSERVATION PLAN.

AMENDMENTS TO EXISTING SOIL WILL BE IN ACCORDANCE WITH THE PLANTING SPECIFICATIONS SHOWN ON THE FOREST CONSERVATION PLAN. SOIL DISTURBANCE WILL BE LIMITED TO INDIVIDUAL PLANTING LOCATIONS.

C. MAINTENANCE OF PLANTINGS

SEE POST CONSTRUCTION NOTES

D. GUARANTEE REQUIREMENTS

A 90 PERCENT SURVIVAL RATE OF THE REFORESTATION PLANTINGS WILL BE REQUIRED AFTER ONE GROWING SEASON. ALL PLANT MATERIAL BELOW THE 90 PERCENT SURVIVAL THRESHOLD WILL BE REPLACED AT THE BEGINNING OF THE SECOND GROWING SEASON. AT THE END OF THE SECOND GROWING SEASON, A 75 PERCENT SURVIVAL RATE WILL BE REQUIRED. ALL PLANT MATERIAL BELOW THE 75 PERCENT SURVIVAL THRESHOLD WILL BE REPLACED BY THE BEGINNING OF THE NEXT GROWING SEASON.

E. SECURITY FOR REFORESTATION

SECTION 16-1209 OF THE HOWARD COUNTY FOREST CONSERVATION ACT REQUIRES THAT A DEVELOPER SHALL POST A SECURITY (BOND, LETTER OF CREDIT, ETC.) WITH THE COUNTY TO INSURE THAT ALL WORK IS DONE IN ACCORDANCE WITH THE FCP.

CONSTRUCTION PERIOD PROTECTION PROGRAM

A. FOREST PROTECTION TECHNIQUES

1. SOIL PROTECTION AREA (CRITICAL ROOT ZONE)

THE SOIL PROTECTION AREA, OR CRITICAL ROOT ZONE, OF A TREE IS THAT PORTION OF THE SOIL COLUMN WHERE MOST OF A ITS ROOTS MAY BE FOUND. THE MAJORITY OF ROOTS RESPONSIBLE FOR WATER AND NUTRIENT UPTAKE ARE LOCATED JUST BELOW THE SOIL SURFACE. TEMPORARY FENCING SHALL BE PLACED AROUND THE CRITICAL ROOT ZONE OF THE FOREST IN AREAS WHERE THE FOREST LIMITS OCCUR WITHIN 25 FEET OF THE LIMIT OF DISTURBANCE.

2. FENCING AND SIGNAGE

EXISTING FOREST LIMITS OCCURRING WITHIN 25 FEET OF THE LIMITS OF DISTURBANCE SHALL BE PROTECTED USING TEMPORARY PROTECTIVE FENCING. PERMANENT SIGNAGE SHALL BE PLACED AROUND THE AFFORESTATION AREA PRIOR TO PLANT INSTALLATION, AS SHOWN ON THE PLAN.

B. PRE-CONSTRUCTION MEETING

UPON STAKING OF LIMITS OF DISTURBANCE A PRE-CONSTRUCTION MEETING WILL BE HELD BETWEEN THE DEVELOPER, CONTRACTOR AND APPROPRIATE COUNTY INSPECTOR. THE PURPOSE OF THE MEETING WILL BE TO VERIFY THAT ALL SEDIMENT CONTROL IS IN ORDER, AND TO NOTIFY THE CONTRACTOR OF POSSIBLE PENALTIES FOR NON-COMPLIANCE WITH THE FCP.

C. STORAGE FACILITIES/EQUIPMENT CLEANING

ALL EQUIPMENT STORAGE, PARKING, SANITARY FACILITIES, MATERIAL STOCKPILING, ETC. ASSOCIATED WITH CONSTRUCTION OF THE PROJECT WILL BE RESTRICTED TO THOSE AREAS OUTSIDE OF THE PROPOSED FOREST CONSERVATION EASEMENT. CLEANING OF EQUIPMENT WILL BE LIMITED TO AREA WITHIN THE LOD OF THE PROPOSED HOMESITES. WASTEWATER RESULTING FROM EQUIPMENT CLEANING WILL BE CONTROLLED TO PREVENT RUNOFF INTO ENVIRONMENTALLY SENSITIVE AREAS.

D. SEQUENCE OF CONSTRUCTION

THE FOLLOWING TIMETABLE REPRESENTS THE PROPOSED TIMETABLE FOR DEVELOPMENT. THE ITEMS OUTLINED IN THE FOREST CONSERVATION PLAN WILL BE ENACTED WITHIN TWO (2) YEARS OF SUBDIVISION APPROVAL.

BELOW FIND A PROPOSED SEQUENCE OF CONSTRUCTION.

1. INSTALL ALL SIGNAGE AND SEDIMENT CONTROL DEVICES.
2. HOLD PRE-CONSTRUCTION MEETING BETWEEN DEVELOPER, CONTRACTOR AND COUNTY INSPECTOR.
3. BUILD ACCESS ROADS, INSTALL WELL AND SEPTIC SYSTEMS, AND CONSTRUCT HOUSES. STABILIZE ALL DISTURBED AREAS ACCORDINGLY.
4. INSTALL PERMANENT PROTECTIVE SIGNAGE FOR EASEMENTS AND INITIATE PLANTINGS IN ACCORDANCE WITH FOREST CONSERVATION PLAN. PLANTINGS WILL BE COMPLETED WITHIN TWO (2) YEARS OF SUBDIVISION APPROVAL.
5. REMOVE SEDIMENT CONTROL.
6. HOLD POST-CONSTRUCTION MEETING WITH COUNTY INSPECTORS TO ASSURE COMPLIANCE WITH FCP. SUBMIT CERTIFICATION OF INSTALLATION.
7. MONITOR AND MAINTAIN PLANTINGS FOR 2 YEARS.

E. CONSTRUCTION MONITORING

ECO-SCIENCE PROFESSIONALS, OR ANOTHER QUALIFIED PROFESSIONAL DESIGNATED BY THE DEVELOPER, WILL MONITOR CONSTRUCTION OF THE PROJECT TO ENSURE THAT ALL ACTIVITIES ARE IN COMPLIANCE WITH THE FOREST CONSERVATION PLAN.

F. POST-CONSTRUCTION MEETING

UPON COMPLETION OF CONSTRUCTION, ECO-SCIENCE PROFESSIONALS, OR ANOTHER QUALIFIED PROFESSIONAL DESIGNATED BY THE DEVELOPER, WILL NOTIFY THE COUNTY THAT CONSTRUCTION HAS BEEN COMPLETED AND ARRANGE FOR A POST-CONSTRUCTION MEETING TO REVIEW THE PROJECT SITE. THE MEETING WILL ALLOW THE COUNTY INSPECTOR TO VERIFY THAT AFFORESTATION PLANTINGS HAVE BEEN INSTALLED.

POST-CONSTRUCTION MANAGEMENT PLAN

HOWARD COUNTY REQUIRES A TWO YEAR POST-CONSTRUCTION MANAGEMENT PLAN BE PREPARED AS PART OF THE FOREST CONSERVATION PLAN. THE PLAN GOES INTO EFFECT UPON ACCEPTANCE OF THE CONSTRUCTION CERTIFICATION OF COMPLETION BY THE COUNTY. ECO-SCIENCE PROFESSIONALS, OR ANOTHER QUALIFIED PROFESSIONAL DESIGNATED BY THE DEVELOPER, WILL BE RESPONSIBLE FOR IMPLEMENTATION OF THE POST-CONSTRUCTION MANAGEMENT PLAN.

THE FOLLOWING ITEMS WILL BE INCORPORATED INTO THE PLAN:

A. FENCING AND SIGNAGE

PERMANENT SIGNAGE INDICATING THE LIMITS OF THE RETENTION/REFORESTATION AREA SHALL BE MAINTAINED.

B. GENERAL SITE INSPECTIONS/MAINTENANCE OF PLANTINGS

SITE INSPECTIONS WILL BE PERFORMED A MINIMUM OF THREE TIMES DURING THE GROWING SEASON. THE PURPOSE OF THE INSPECTIONS WILL BE TO ASSESS THE HEALTH OF THE AFFORESTATION PLANTINGS. APPROPRIATE MEASURES WILL BE TAKEN TO RECTIFY ANY PROBLEMS WHICH MAY ARISE.

IN ADDITION, MAINTENANCE OF THE AFFORESTATION PLANTINGS WILL INVOLVE THE FOLLOWING STEPS:

1. WATERING - ALL PLANT MATERIAL SHALL BE WATERED TWICE A MONTH DURING THE 1ST GROWING SEASON, MORE OR LESS FREQUENTLY DEPENDING ON WEATHER CONDITIONS. DURING THE SECOND GROWING SEASON, ONCE A MONTH DURING MAY-SEPTEMBER, IF NEEDED.
2. REMOVAL OF INVASIVE EXOTICS AND NOXIOUS WEEDS. OLD FIELD SUCCESSIONAL SPECIES WILL BE RETAINED.
3. IDENTIFICATION OF SERIOUS PLANT PESTS AND DISEASES, TREATMENT WITH APPROPRIATE AGENT.
4. PRUNING OF DEAD BRANCHES.
5. AFTER 12 AND 24 MONTHS, REPLACEMENT OF PLANTS, IF REQUIRED, IN ACCORDANCE WITH THE GUARANTEE REQUIREMENTS SHOWN ON THE FCP.

C. EDUCATION

THE DEVELOPER WILL PROVIDE APPROPRIATE MATERIALS TO PROPERTY OWNERS INFORMING THEM OF THE LOCATION AND PURPOSE OF THE AFFORESTATION AREA. MATERIALS MAY INCLUDE SITE PLANS AND INFORMATION EXPLAINING THE INTENT OF THE FOREST CONSERVATION LAW.

D. FINAL INSPECTION

AT THE END OF THE TWO YEAR POST-CONSTRUCTION MANAGEMENT PERIOD, ECO-SCIENCE PROFESSIONALS, OR ANOTHER QUALIFIED PROFESSIONAL, WILL SUBMIT TO THE ADMINISTRATOR OF THE HOWARD COUNTY FOREST CONSERVATION PROGRAM CERTIFICATION THAT ALL RETENTION/AFFORESTATION REQUIREMENTS HAVE BEEN MET. UPON ACCEPTANCE OF THIS CERTIFICATION, THE COUNTY WILL RELEASE THE DEVELOPER FROM ALL FUTURE OBLIGATIONS AND RELEASE THE DEVELOPER'S BOND.

PLANTING/SOIL SPECIFICATIONS

1. PLANTING OF NURSERY STOCK SHALL TAKE PLACE BETWEEN MARCH 15TH AND APRIL 30TH OR SEPTEMBER 15TH - NOVEMBER 15TH.
2. A TWELVE (12) INCH LAYER OF TOPSOIL SHALL BE SPREAD OVER ALL FORESTATION AREAS IMPACTED BY SITE GRADING TO ASSURE A SUITABLE PLANTING AREA. DISTURBED AREAS SHALL BE SEEDED AND STABILIZED AS PER GENERAL CONSTRUCTION PLAN FOR PROJECT. PLANTING AREAS NOT IMPACTED BY SITE GRADING SHALL HAVE NO ADDITIONAL TOPSOIL INSTALLED.
3. ALL BAREROOT PLANTING STOCK SHALL HAVE THEIR ROOT SYSTEMS DIPPED INTO AN ANTI-DESICCANT GEL PRIOR TO PLANTING.
4. PLANTS SHALL BE INSTALLED SO THAT THE TOP OF ROOT MASS IS LEVEL WITH THE TOP OF EXISTING GRADE. BACKFILL IN THE PLANTING PITS SHALL CONSIST OF 3 PARTS EXISTING SOIL TO 1 PART PINE FINES OR EQUIVALENT.
5. FERTILIZER SHALL CONSIST OF AGRIFORM 22-8-2, OR EQUIVALENT, APPLIED AS PER MANUFACTURER'S SPECIFICATIONS.
6. A TWO (2) INCH LAYER OF HARDWOOD MULCH SHALL BE PLACED OVER THE ROOT AREA OF ALL PLANTINGS.
7. PLANT MATERIAL SHALL BE TRANSPORTED TO THE SITE IN A TARPED OR COVERED TRUCK. PLANTS SHALL BE KEPT MOIST PRIOR TO PLANTING.
8. ALL NON-ORGANIC DEBRIS ASSOCIATED WITH THE PLANTING OPERATION SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR.

SEQUENCE OF CONSTRUCTION

1. SEDIMENT CONTROL AND TREE PROTECTION DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH GENERAL CONSTRUCTION PLAN FOR SITE. SITE SHALL BE GRADED IN ACCORDANCE WITH GENERAL CONSTRUCTION PLANS.
2. PROPOSED FORESTATION AREAS IMPACTED BY SITE GRADING SHALL BE TOPSOILED AND STABILIZED AS PER #2 OF PLANTING/SOIL SPECIFICATIONS FOR PROJECT.
3. PLANTS SHALL BE INSTALLED AS PER PLANT SCHEDULE AND THE PLANTING/SOIL SPECIFICATIONS FOR THE PROJECT.
4. UPON COMPLETION OF THE PLANTING, SIGNAGE SHALL BE INSTALLED AS PER THE FOREST PROTECTION DEVICES SHOWN ON THE FOREST CONSERVATION PLAN.
5. PLANTINGS SHALL BE MAINTAINED AND GUARANTEED IN ACCORDANCE WITH THE MAINTENANCE AND GUARANTEE REQUIREMENTS FOR PROJECT.

MAINTENANCE OF PLANTINGS

1. MAINTENANCE OF PLANTINGS SHALL LAST FOR A PERIOD OF 24 MONTHS.
2. ALL PLANT MATERIAL SHALL BE WATERED TWICE A MONTH DURING THE 1ST GROWING SEASON. WATERING MAY BE MORE OR LESS FREQUENT DEPENDING ON WEATHER CONDITIONS. DURING SECOND GROWING SEASON, ONCE A MONTH DURING MAY-SEPTEMBER, IF NEEDED.
3. INVASIVE EXOTICS AND NOXIOUS WEEDS WILL BE REMOVED FROM FORESTATION AREAS. OLD FIELD SUCCESSIONAL SPECIES WILL BE RETAINED.
4. PLANTS WILL BE EXAMINED A MINIMUM TWO TIMES DURING THE GROWING SEASON FOR SERIOUS PLANT PESTS AND DISEASES. SERIOUS PROBLEMS WILL BE TREATED WITH THE APPROPRIATE AGENT.
5. DEAD BRANCHES WILL BE PRUNED FROM PLANTINGS.

GUARANTEE REQUIREMENTS

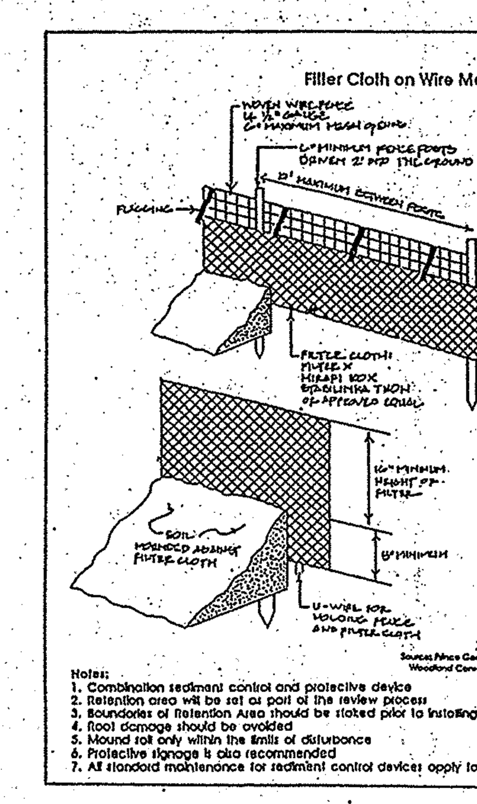
1. A 75 PERCENT SURVIVAL RATE OF FORESTATION PLANTINGS WILL BE REQUIRED AT THE END OF THE 24 MONTH MAINTENANCE PERIOD. ALL PLANT MATERIAL BELOW THE 75 PERCENT THRESHOLD WILL BE REPLACED AT THE BEGINNING OF THE NEXT GROWING SEASON.

SURETY FOR FORESTATION

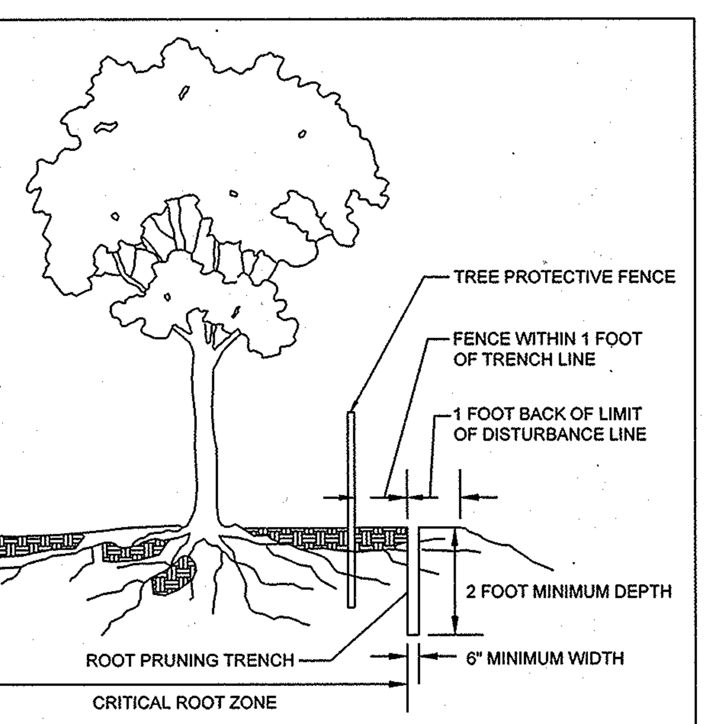
1. THE DEVELOPER SHALL POST A SURETY (BOND, LETTER OF CREDIT) TO ENSURE THAT FORESTATION PLANTINGS ARE COMPLETED. UPON ACCEPTANCE OF THE PLANTINGS BY THE COUNTY, THE BOND SHALL BE RELEASED.

FCP NOTES

1. ANY FOREST CONSERVATION EASEMENT (FCE) AREA SHOWN HEREON IS SUBJECT TO PROTECTIVE COVENANTS WHICH MAY BE FOUND IN THE LAND RECORDS OF HOWARD COUNTY WHICH RESTRICT THE DISTURBANCE AND USE OF THESE AREAS.
2. FORESTED AREAS OCCURRING OUTSIDE OF THE FCE SHALL NOT BE CONSIDERED PART OF THE FCE AND SHALL NOT BE SUBJECT TO PROTECTIVE LAND COVENANTS.
3. LIMITS OF DISTURBANCE SHALL BE RESTRICTED TO AREAS OUTSIDE THE LIMIT OF TEMPORARY FENCING OR THE FCE BOUNDARY, WHICHEVER IS GREATER.
4. THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST CONSERVATION EASEMENT, EXCEPT AS PERMITTED BY HOWARD COUNTY DPZ.
5. NO STOCKPILES, PARKING AREAS, EQUIPMENT CLEANING AREAS, ETC. SHALL OCCUR WITHIN AREAS DESIGNATED AS FOREST CONSERVATION EASEMENTS.
6. TEMPORARY FENCING SHALL BE USED TO PROTECT FOREST RESOURCES DURING CONSTRUCTION. FENCING SHALL BE INSTALLED ALONG LIMITS OF DISTURBANCE OCCURRING WITHIN 50 FEET OF THE PROPOSED FCE LIMITS.
7. PERMANENT SIGNAGE WILL BE POSTED A AT 50-100 FOOT INTERVALS ALONG ALL FCE LIMITS.
8. THE FOREST CONSERVATION ACT REQUIREMENTS FOR THIS PROJECT WILL BE MET THROUGH THE RETENTION OF 1.6 ACRES OF NET TRACT AREA FOREST WITHIN THE LIMITS OF A FOREST CONSERVATION EASEMENT AND A REFORESTATION OBLIGATION OF 1.3 ACRES. THE REFORESTATION OBLIGATION WILL BE MET WITH 0.9 ACRES OF ONSITE PLANTING AND 0.4 ACRES OF OFFSITE REFORESTATION OR WITH THE PURCHASE OF CREDIT IN A FOREST CONSERVATION BANK.
9. EXISTING FOREST CALCULATIONS DIFFER BETWEEN THE APPROVED FOREST STAND DELINEATION AND THE FOREST CONSERVATION PLAN. THE DIFFERENCE IS ATTRIBUTED TO A DIFFERENCE IN THE MAPPED FLOODPLAIN LIMITS. THE APPROXIMATE FLOODPLAIN LIMITS ON THE FSD WERE LARGER THAN THE CALCULATED LIMITS AND RESULTED IN A CALCULATION OF LESS NET TRACT AREA FOREST. THE EXISTING FOREST CALCULATION SHOWN IN THE FOREST CONSERVATION WORKSHEET REFLECTS THE REVISED FLOODPLAIN LIMITS AND COMPUTER CALCULATED FOREST AREA.

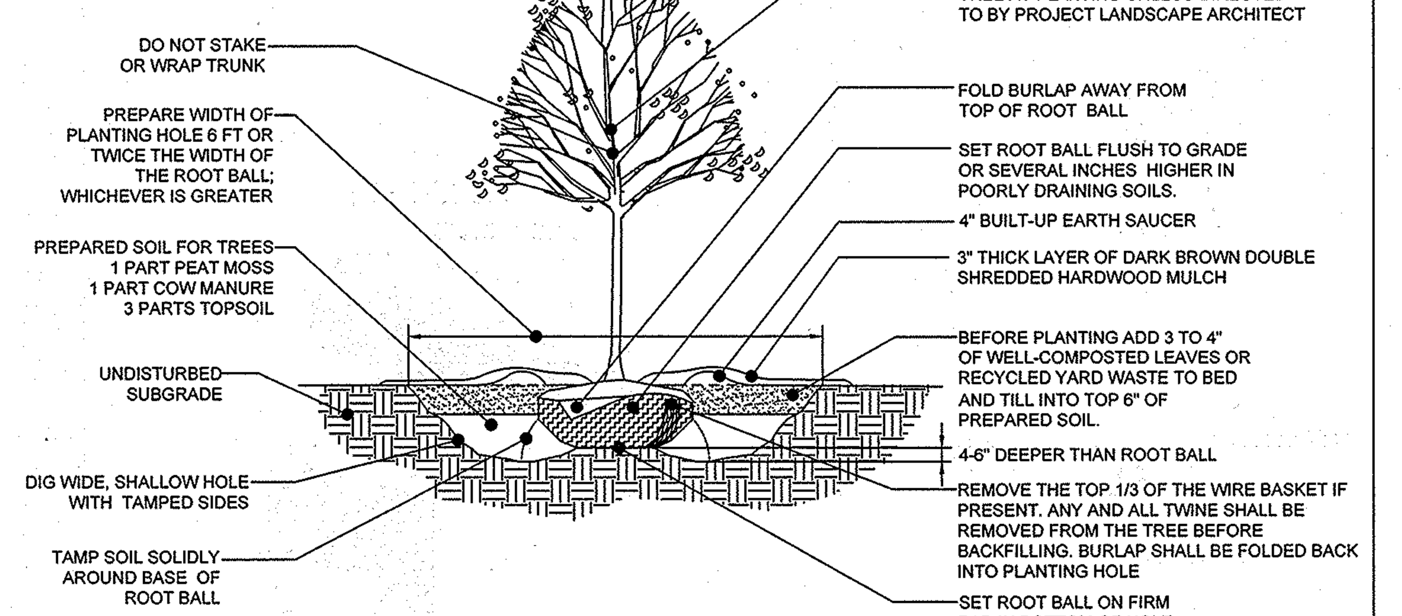


PROTECTIVE TREE FENCE DETAIL
NOT TO SCALE



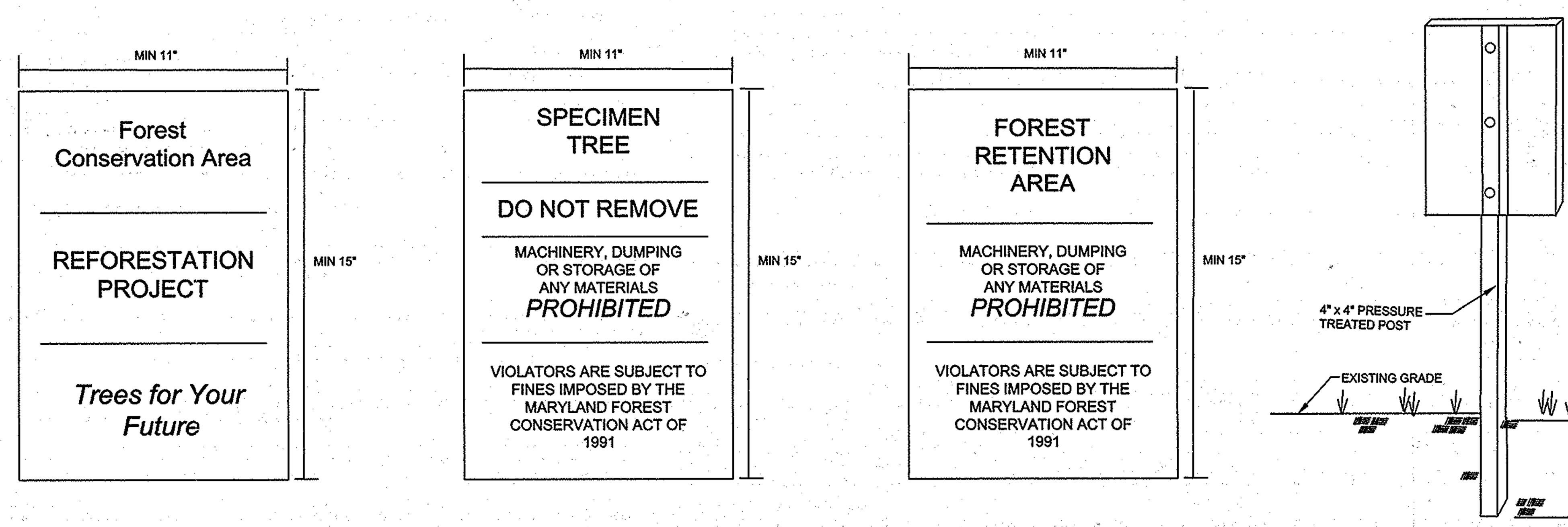
NOTES:
1. RETENTION AREAS WILL BE SET AS PART OF THE REVIEW PROCESS.
2. BOUNDARIES OF RETENTION AREAS SHOULD BE STAKED FLAGGED PRIOR TO TRENCHING.
3. EXACT LOCATION OF TRENCH SHOULD BE IDENTIFIED.
4. TRENCH SHOULD BE IMMEDIATELY BACKFILLED WITH SOIL REMOVED OR OTHER HIGH ORGANIC SOIL.
5. ROOTS SHOULD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

ROOT PRUNING DETAIL
NOT TO SCALE



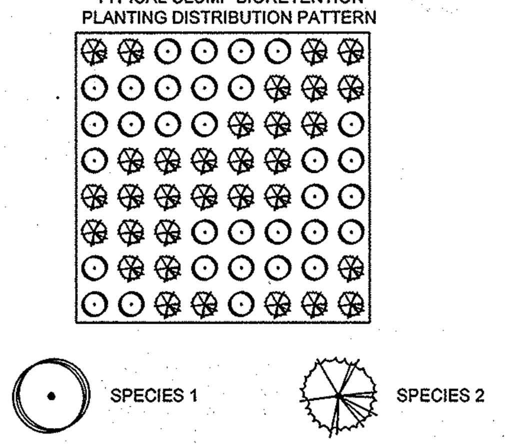
REFERENCE: ARCHITECTURAL GRAPHIC STANDARDS 1998 CUMULATIVE SUPPLEMENT.

DECIDUOUS TREE PLANTING DETAIL
NOT TO SCALE



FOREST CONSERVATION SIGN DETAIL
NOT TO SCALE

TYPICAL CLUMP BIORETENTION PLANTING DISTRIBUTION PATTERN



NOTE:
NATURALLY OCCURRING POPULATIONS TEND TO BE FOUND IN INFORMAL GROUPINGS. A CLUSTER OF PLANTS IS REALLY A MOSAIC OF DIFFERENT SPECIES GROUPS. THE OBJECTIVE IS TO SELECT THE APPROPRIATE SPECIES AND DISTRIBUTION PATTERN FOR A CHOSEN SITE THAT MIMIC NATURAL PATTERNS.

PLANTING DISTRIBUTION PATTERN DETAIL
NOT TO SCALE

APPROVED: DEPARTMENT OF PUBLIC WORKS
Holger Serrano 6-9-14
CHIEF, BUREAU OF HIGHWAYS — DATE
APPROVED: DEPARTMENT OF PLANNING AND ZONING
Kent Sheubrooks 6-26-14
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE
Chad Edmondson 6-18-14
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 PRIOR TO THE INITIATION 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 IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

PROFESSIONAL CERTIFICATION
SIGNATURE — DATE 6-3-14

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

DEVELOPER:
ELMS AT FELLS POINT II, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21043
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, BA-95-028, SP-13-008, 24-4787-D

PROFESSIONAL CERTIFICATION
I, ERIC R. MCWILLAIMS, 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: 9/20/14

BOHLER ENGINEERING
CIVIL & CONSULTING ENGINEERS
SURVEYORS
PROJECT MANAGERS
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS
CORPORATE OFFICE: ◆ WARREN, NJ
OFFICES: ◆ SOUTHBOROUGH, MA ◆ ALBANY, NY ◆ RONKONKOMA, NY ◆ CHALFONT, PA ◆ CENTER VALLEY, PA ◆ TAMPA, FL ◆ BOWIE, MD ◆ TOWSON, MD ◆ STERLING, VA ◆ WARRENTON, VA ◆ FORT LAUDERDALE, FL ◆ PHILADELPHIA, PA

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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. IN VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE CALL - 811
(WV 1-800-245-4848) (PA 1-800-242-1776) (DC 1-800-257-7777)
(VA 1-800-552-7001) (MD 1-800-257-7777) (DE 1-800-282-8555)

PROJECT No.:	ER COUNTY
DRAWN BY:	RLB
CHECKED BY:	BRR
DATE:	6/2/14
SCALE:	AS SHOWN
CAD I.D.:	FCP1

PROJECT:
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

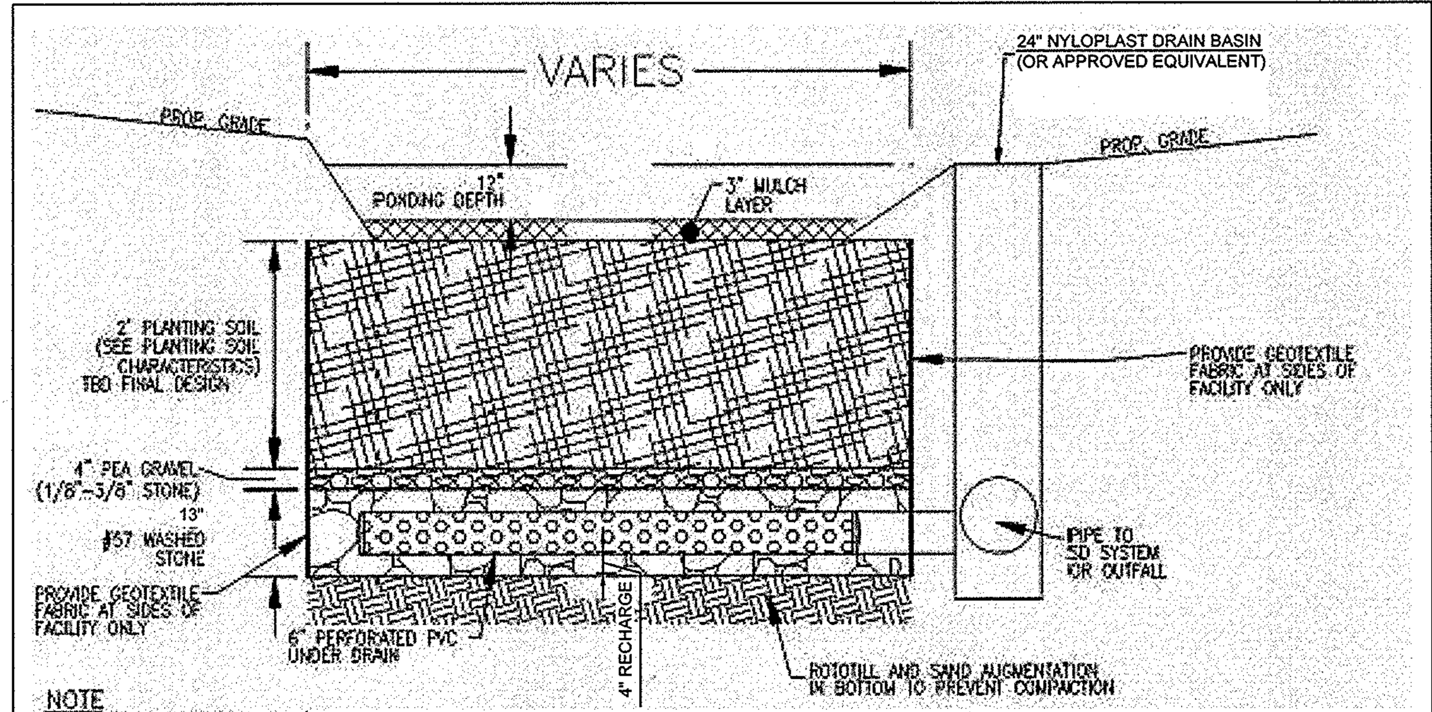
BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

E.R. McWILLIAMS
REGISTERED LANDSCAPE ARCHITECT
6-3-14

SHEET TITLE:
LANDSCAPE AND FOREST CONSERVATION NOTES AND DETAILS

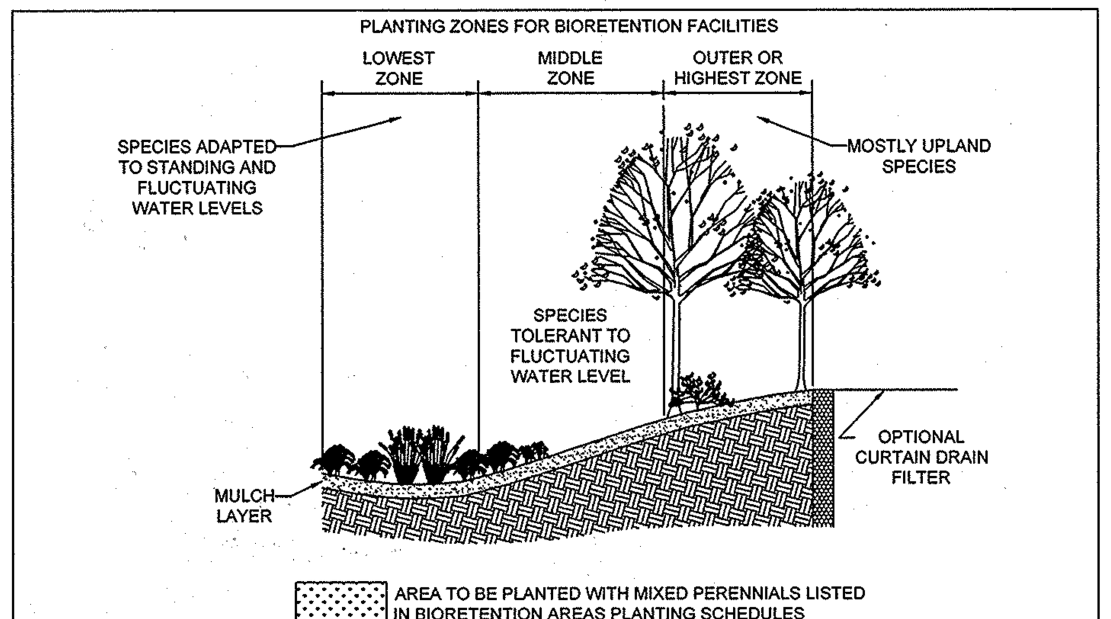
SHEET NUMBER:
16
OF 19

F-14-003



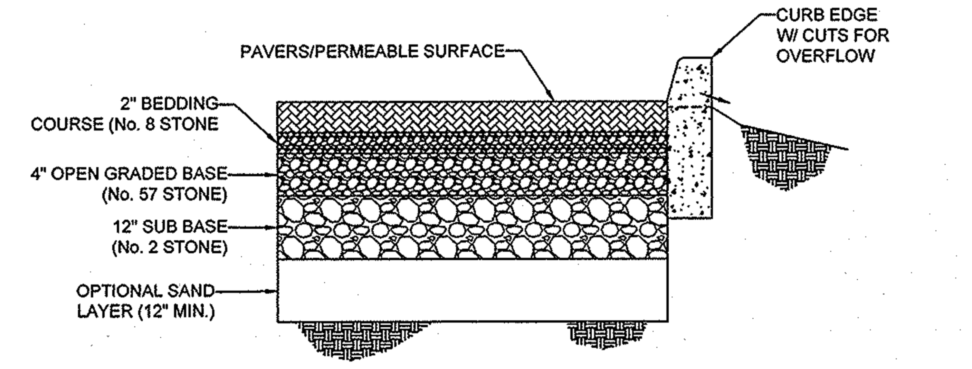
NOTE
PROVIDE VERTICAL STANDPIPE CLEANOUT AT ALL ENDS OF PERFORATED UNDERDRAINS -STANDPIPES SHALL BE SOLID

MICRO-BIORETENTION FACILITY (M-6) TYPICAL SECTION
(FACILITY NOS. 1-14, 16, 17, 19-21, 23-28, 29-33)
NOT TO SCALE



NOTES:
1. HERBACEOUS PERENNIALS TO BE PLANTED 18" O.C. IN GROUPS BETWEEN 15 TO 20 PLUGS
2. LANDSCAPE CONTRACTOR TO GROUP LIKE PLANTS TOGETHER IN EACH BED AS SHOWN IN PLANTING DISTRIBUTION PATTERN DETAIL.
3. ALL BIORETENTION AREAS ARE TO BE MULCHED WITH A 4" LAYER OF DOUBLE SHREDDED HARDWOOD BARK MULCH.
4. 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.

TYPICAL PLANTING FOR BIORETENTION AREAS
NOT TO SCALE



PERMEABLE PAVEMENT (A-2) TYPICAL SECTION (LOTS 1, 2 & 15-20)
NOT TO SCALE

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

1. 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.
2. THE OWNER SHALL PERIODICALLY CLEAN DRAINAGE PIPES, INLETS, STONE EDGE DRAINS AND OTHER STRUCTURES WITHIN OR DRAINING TO THE SUBBASE.
3. THE OWNER SHALL SHALL USE DEICERS IN MODERATION. DEICERS SHOULD BE NON-TOXIC AND BE APPLIED EITHER AS CALCIUM MAGNESIUM ACETATE OR AS PRETREATED SALT.
4. 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.

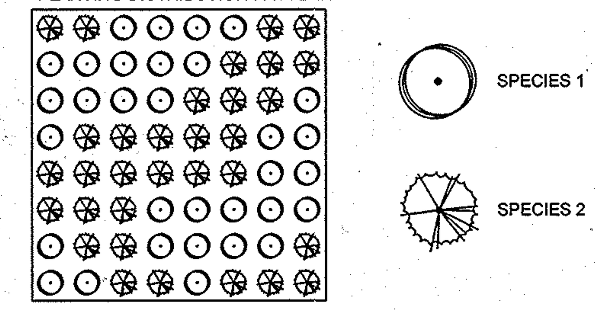
STORMWATER MANAGEMENT NOTES

1. STORMWATER MANAGEMENT IS PROVIDED IN ACCORDANCE WITH THE 2000 MARYLAND STORMWATER DESIGN MANUAL.
2. 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)

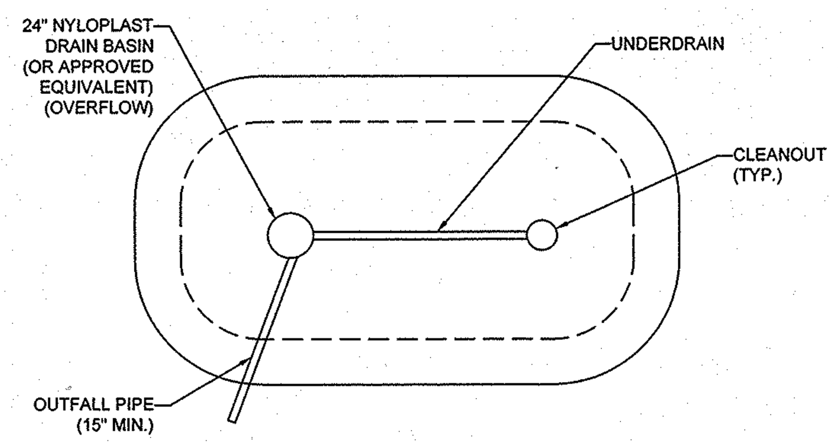
1. THE OWNER SHALL MAINTAIN HE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE 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.
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 PLAN MATERIAL, TREAT DISEASED TREES AND SHRUBS AND REPLACE DEFICIENT STAKES AND WIRES.
3. 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.
4. THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

TYPICAL CLUMP BIORETENTION PLANTING DISTRIBUTION PATTERN

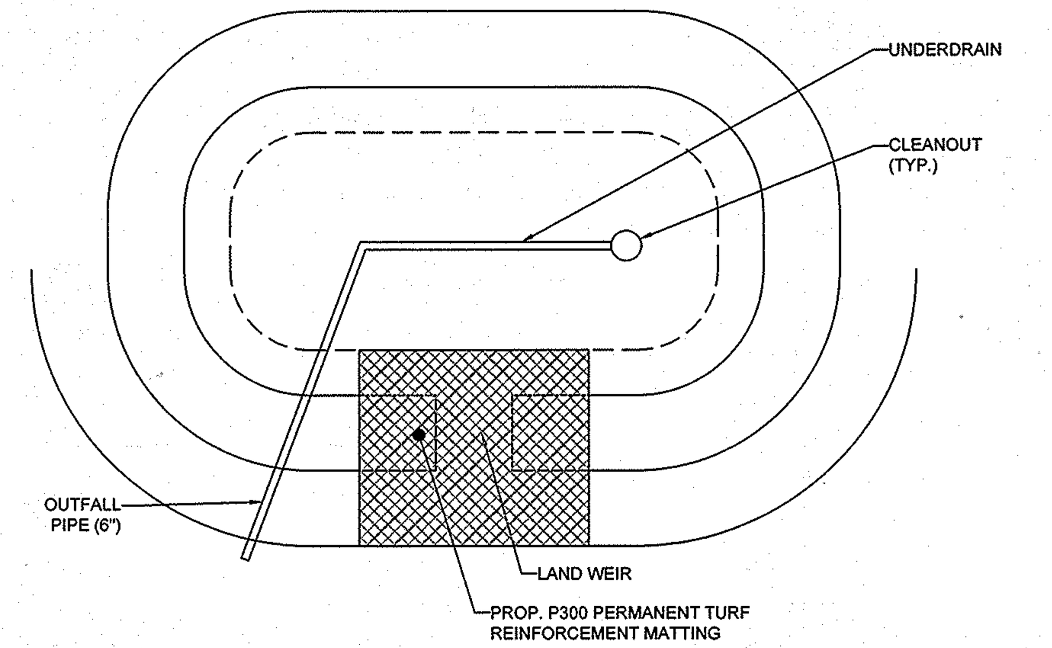


NOTE:
NATURALLY OCCURRING POPULATIONS TEND TO BE FOUND IN INFORMAL GROUPINGS. A CLUSTER OF PLANTS IS REALLY A MOSAIC OF DIFFERENT SPECIES GROUPS. THE OBJECTIVE IS TO SELECT THE APPROPRIATE SPECIES AND DISTRIBUTION PATTERN FOR A CHOSEN SITE THAT MIMIC NATURAL PATTERNS.

PLANTING DISTRIBUTION PATTERN DETAIL
NOT TO SCALE



STANDARD FACILITY WITH OVERFLOW INLET
NOT TO SCALE



STANDARD FACILITY WITH LAND WEIR
NOT TO SCALE

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	348.00	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

SEE SHEET 5 FOR FACILITY LOCATIONS

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 6-9-14
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-26-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6.18.14

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 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 IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

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.
SIGNATURE OF ENGINEER — DATE 6/3/14
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 ONSITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.
SIGNATURE OF DEVELOPER — DATE 6-3-14
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
SIGNATURE: — P.E. NO.
DATE
CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ONSITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ONSITE INSPECTIONS AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS DEEMED SUFFICIENT AND APPROPRIATE COMMONLY ACCEPTED ENGINEERING STANDARDS. CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

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

DEVELOPER: ELMS AT FELLS POINT II, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21043
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, 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. 40808, EXPIRATION DATE: 7/3/2015

BOHLER ENGINEERING
CIVIL & CONSULTING ENGINEERS
SURVEYORS
PROJECT MANAGERS
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS
CORPORATE OFFICE: WARREN, NJ
OFFICES: SOUTHBOROUGH, MA; ALBANY, NY; RONKONKOMA, NY; CHALFONT, PA; CENTER VALLEY, PA; TAMPA, FL; BOWIE, MD; TOWSON, MD; STERLING, VA; WARRENTON, VA; FORT LAUDERDALE, FL; PHILADELPHIA, PA

THE INFORMATION, DESIGN AND CONTENT OF THIS PLAN ARE PROPRIETARY AND SHALL NOT BE COPIED OR USED FOR ANY PURPOSE WITHOUT PRIOR WRITTEN AUTHORIZATION FROM BOHLER ENGINEERING. ONLY APPROVED, SIGNED AND SEALED PLANS SHALL BE UTILIZED FOR CONSTRUCTION PURPOSES © 2008 BOHLER ENGINEERING.

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. IN VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE CALL - 811
(WV 1-800-245-4848) (PA 1-800-242-1776) (DC 1-800-257-7777) (VA 1-800-552-7001) (MD 1-800-257-7777) (DE 1-800-282-8555)

PROJECT No.:	ER COUNTY
DRAWN BY:	RLB
CHECKED BY:	BRR
DATE:	6/2/14
SCALE:	AS SHOWN
CAD I.D.:	SD2

PROJECT:
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 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

B.R. ROWE
PROFESSIONAL ENGINEER

SHEET TITLE:
FUTURE STORMWATER MANAGEMENT DETAILS
SHEET NUMBER:
17
OF 19

F-14-003

PLANT MATERIAL MICRO-BIORETENTION FACILITIES

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 1	100	12"	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

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 2	100	12"	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

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 3	140	12"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	16	PLUG
			IRIS VERSICOLOR	BLUE FLAG	16	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	16	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	46	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	46	PLUG

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 4	100	12"	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

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 5	150	12"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	18	PLUG
			IRIS VERSICOLOR	BLUE FLAG	18	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	18	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	48	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	48	PLUG

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 6	100	12"	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

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 7	328	10"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	46	PLUG
			IRIS VERSICOLOR	BLUE FLAG	46	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	46	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	95	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	95	PLUG

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 8	100	12"	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

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 9	228	11"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	32	PLUG
			IRIS VERSICOLOR	BLUE FLAG	32	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	32	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	66	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	66	PLUG

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 10	105	12"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	13	PLUG
			IRIS VERSICOLOR	BLUE FLAG	13	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	13	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	33	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	33	PLUG

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 11	162	12"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	13	PLUG
			IRIS VERSICOLOR	BLUE FLAG	13	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	13	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	33	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	33	PLUG

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 12	115	12"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	15	PLUG
			IRIS VERSICOLOR	BLUE FLAG	15	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	15	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	35	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	35	PLUG

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 13	150	12"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	22	PLUG
			IRIS VERSICOLOR	BLUE FLAG	22	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	22	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	42	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	42	PLUG

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 14	75	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	21	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	21	PLUG

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 16	250	12"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	36	PLUG
			IRIS VERSICOLOR	BLUE FLAG	36	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	36	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	71	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	71	PLUG

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 17	200	12"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	24	PLUG
			IRIS VERSICOLOR	BLUE FLAG	24	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	24	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	64	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	64	PLUG

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 19	150	12"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	22	PLUG
			IRIS VERSICOLOR	BLUE FLAG	22	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	22	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	42	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	42	PLUG

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 20	240	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	69	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	69	PLUG

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 21	150	12"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	22	PLUG
			IRIS VERSICOLOR	BLUE FLAG	22	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	22	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	42	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	42	PLUG

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 23	225	12"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	33	PLUG
			IRIS VERSICOLOR	BLUE FLAG	33	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	33	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	63	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	63	PLUG

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 24	225	12"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	33	PLUG
			IRIS VERSICOLOR	BLUE FLAG	33	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	33	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	63	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	63	PLUG

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 25	240	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	69	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	69	PLUG

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 26	210	12"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	30	PLUG
			IRIS VERSICOLOR	BLUE FLAG	30	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	30	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	60	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	60	PLUG

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 27	150	12"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	22	PLUG
			IRIS VERSICOLOR	BLUE FLAG	22	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	22	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	42	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	42	PLUG

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
#28	340	12"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	48	PLUG
			IRIS VERSICOLOR	BLUE FLAG	48	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	48	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	98	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	98	PLUG

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 29	210	12"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	30	PLUG
			IRIS VERSICOLOR	BLUE FLAG	30	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	30	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	60	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	60	PLUG

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 30	120	12"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	18	PLUG
			IRIS VERSICOLOR	BLUE FLAG	18	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	18	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	33	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	33	PLUG

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 31	75	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	21	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	21	PLUG

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 32	180	12"	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	26	PLUG
			IRIS VERSICOLOR	BLUE FLAG	26	PLUG
			LOBELIA CARDINALIS	CARDINAL FLOWER	26	PLUG
			JUNCUS EFFUSUS	SOFT RUSH	51	PLUG
			SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	51	PLUG

FACILITY	AREA (S.F.)	PONDING DEPTH	SPECIES		COUNT	SIZE
			BOTANICAL NAME	COMMON NAME		
# 33	100	11"	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 — DATE 6-9-14

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-26-14

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6.18.14

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 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 IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

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.

SIGNATURE OF ENGINEER — DATE 6/3/14
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 ONSITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

SIGNATURE OF DEVELOPER — DATE 6-3-14
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

SIGNATURE: — P.E. NO.

DATE

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

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

DEVELOPER: ELMS AT FELLS POINT II, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21043
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, 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. 40808, EXPIRATION DATE: 7/3/2015

BOHLER ENGINEERING
CIVIL & CONSULTING ENGINEERS
SURVEYORS
PROJECT MANAGERS
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS
CORPORATE OFFICE:
◆ WARREN, NJ
OFFICES:
◆ SOUTHBOROUGH, MA ◆ BOWIE, MD
◆ ALBANY, NY ◆ TOWSON, MD
◆ RONKONKOMA, NY ◆ STERLING, VA
◆ CHALFONT, PA ◆ WARRENTON, VA
◆ CENTER VALLEY, PA ◆ FORT LAUDERDALE, FL
◆ TAMPA, FL ◆ PHILADELPHIA, PA

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REVISIONS

REV	DATE	COMMENT	BY

DIG WITH CARE — CALL BEFORE YOU DIG

THE FOLLOWING STATES REQUIRE NOTIFICATION BY EXCAVATORS, 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
(WV 1-800-245-4848) (PA 1-800-242-1776) (DC 1-800-257-7777)
(VA 1-800-552-7001) (MD 1-800-257-7777) (DE 1-800-282-8555)

PROJECT No.:	ER COUNTY
DRAWN BY:	RLB
CHECKED BY:	BRR
DATE:	6/2/14
SCALE:	AS SHOWN
CAD I.D.:	SD2

PROJECT:
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

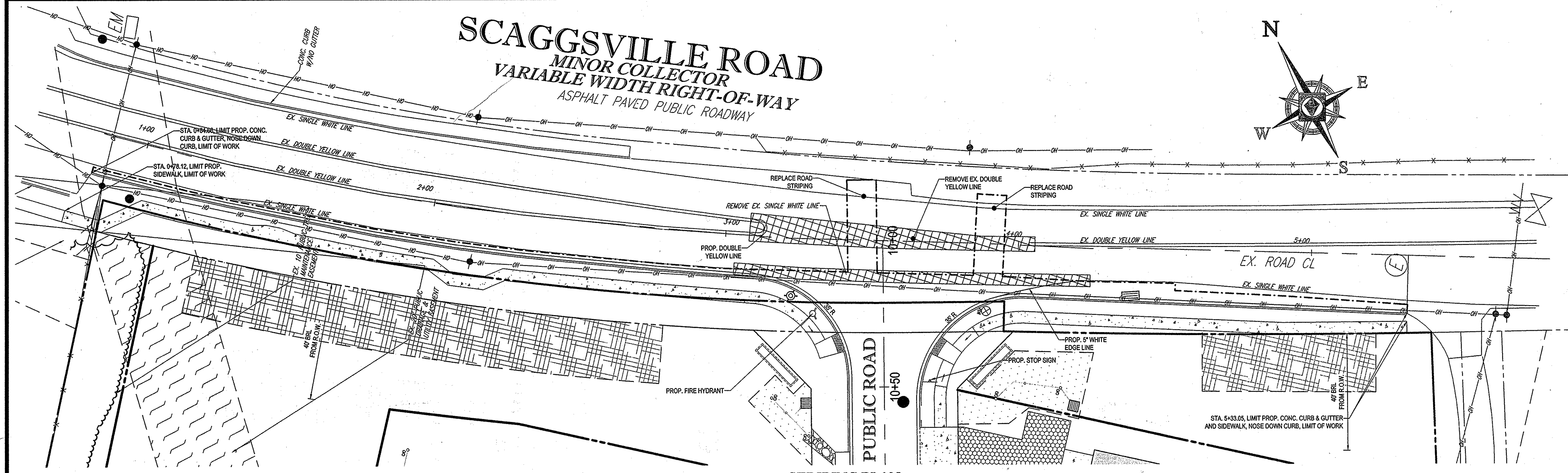
BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

B.R. ROWE — PROFESSIONAL ENGINEER

SHEET TITLE:
FUTURE STORMWATER MANAGEMENT DETAILS

F-14-003

H:\2012\MD122066\DRAWINGS\PLAN SETS\FINAL ROAD CONSTRUCTION GRADING AND STORMWATER MANAGEMENT PLANS\MD122066SD4.DWG PRINTED BY: RBO



LEGEND

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

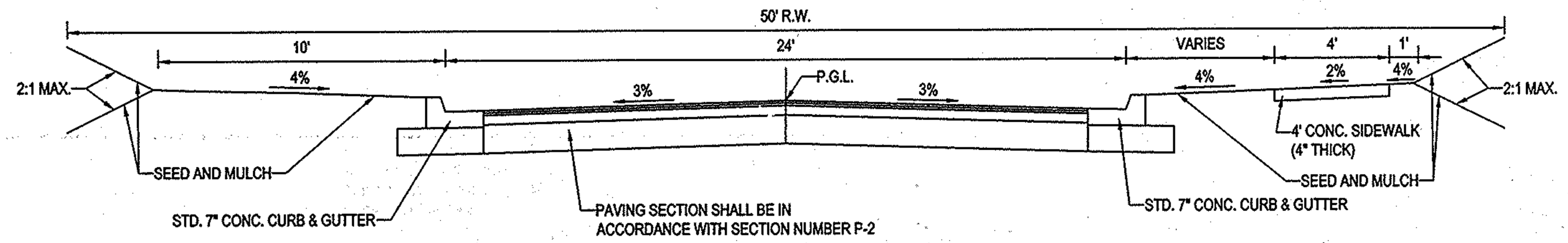
STRIPING PLAN

SCALE: 1"=20'

1"= 20'

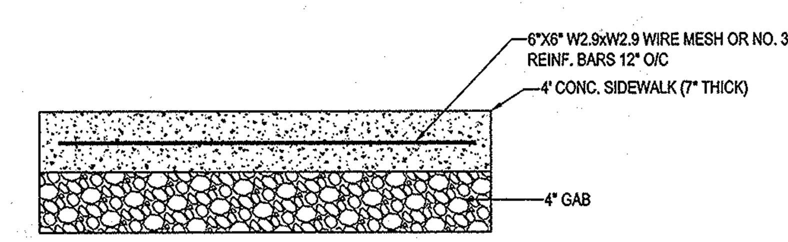
ROADWAY INFORMATION CHART

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



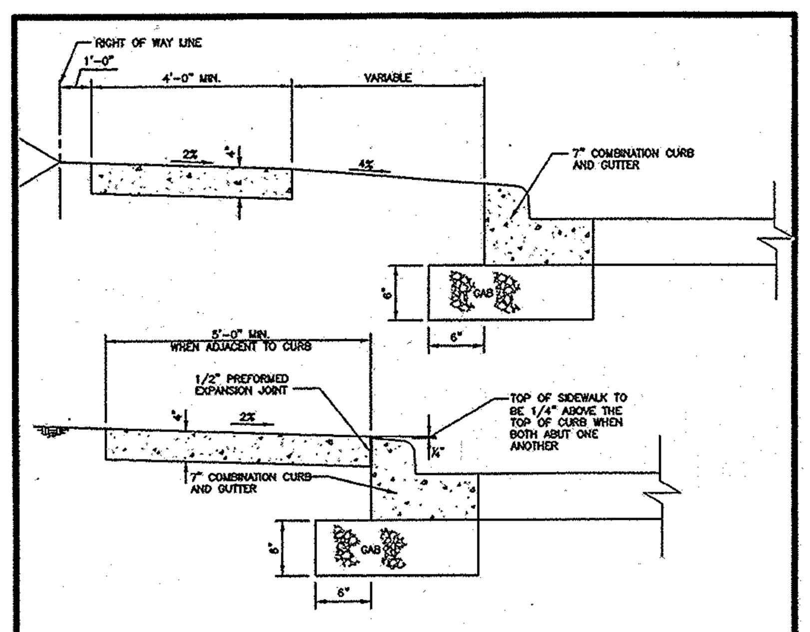
TYPICAL ROADWAY SECTION

NOT TO SCALE



7" REINFORCED CONCRETE SIDEWALK

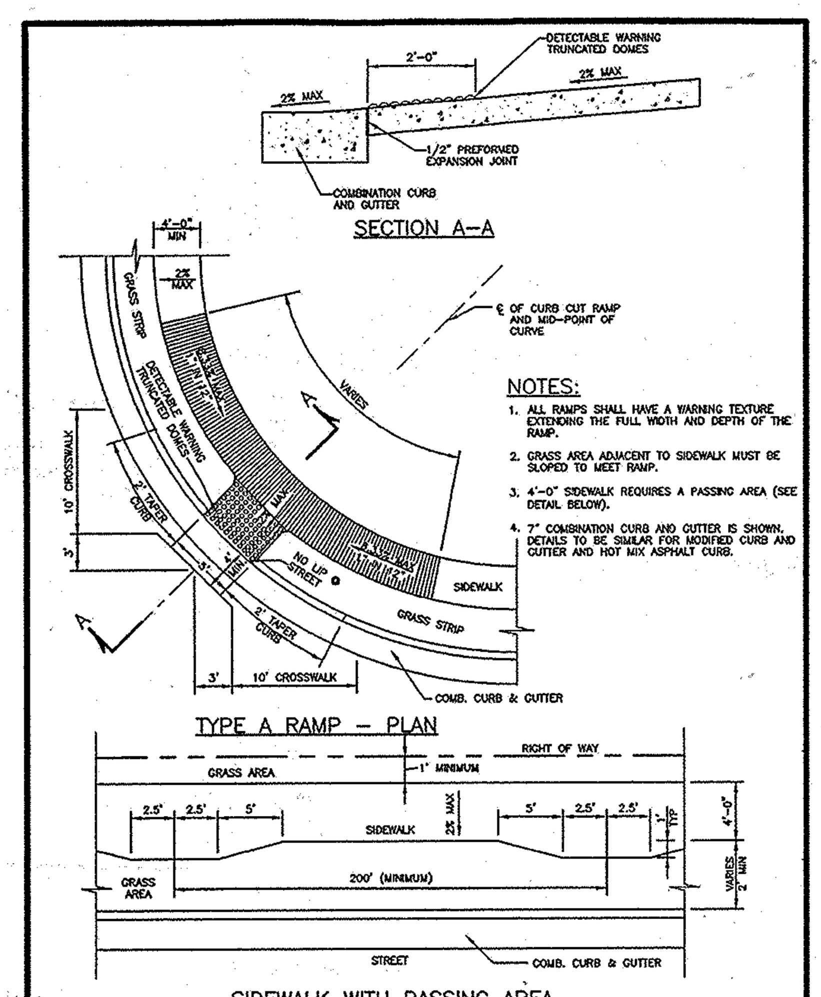
NOT TO SCALE



NOTES:

1. SIDEWALK TO BE SCRIBED IN 5'-0" MAXIMUM SQUARES.
2. EXPANSION JOINTS ACROSS THE SIDEWALK NOT TO BE MORE THAN 15' APART.
3. 1/2" PREFORMED EXPANSION MATERIAL IN EXPANSION JOINTS TO BE KEPT 1/4" BELOW SURFACE OF SIDEWALK.
4. CONCRETE TO BE MIX NO.3.
5. WHEN SIDEWALK ABUTS CURB, SIDEWALK SHALL BE 1/4" ABOVE CURB WITH 1/2" PREFORMED EXPANSION JOINT BETWEEN SIDEWALK AND CURB.
6. ON LONGITUDINAL SIDEWALK GRADES OF 5% OR GREATER, A CONCRETE HEADER, 6" THICK AND 6" DEEP BELOW THE NORMAL 4" SIDEWALK THICKNESS SHALL BE CONSTRUCTED FOR THE FULL WIDTH OF THE SIDEWALK AT INTERVALS OF 48 FEET. THE HEADERS SHALL BE PLACED AT THE EXPANSION JOINT LOCATIONS AND SHALL BE MONOLITHIC WITH THE SIDEWALK.
7. SIDEWALK WIDTH ADJACENT TO CURB SHALL BE 5'-0" MINIMUM EXCEPT SIDEWALK ADJACENT TO CURB IN CUL-DE-SAC BULBS MAY BE 4'-0" WIDE.
8. SIDEWALK LOCATED 2' OR MORE FROM CURB MAY BE 4'-0" IN WIDTH WITH A 5'x5' PAVED SECTION PLACED 200' APART.
9. 4'-0" SIDEWALK REQUIRES A PASSING AREA (SEE DETAIL R-4.01).

Howard County, Maryland Department of Public Works — Concrete Sidewalk — Detail R-3.05 (Revised 5/7/2007 Approved; Chief, Bureau of Engineering)



NOTES:

1. ALL RAMPS SHALL HAVE A WARNING TEXTURE EXTENDING THE FULL WIDTH AND DEPTH OF THE RAMP.
2. GRASS AREA ADJACENT TO SIDEWALK MUST BE SLOPED TO MEET RAMP.
3. 4'-0" SIDEWALK REQUIRES A PASSING AREA (SEE DETAIL BELOW).
4. 7" COMBINATION CURB AND GUTTER IS SHOWN. DETAILS TO BE SIMILAR FOR MODIFIED CURB AND GUTTER AND HOT MIX ASPHALT CURB.

Howard County, Maryland Department of Public Works — SIDEWALK RAMP Type A & Sidewalk Passing Area — Detail R-4.01

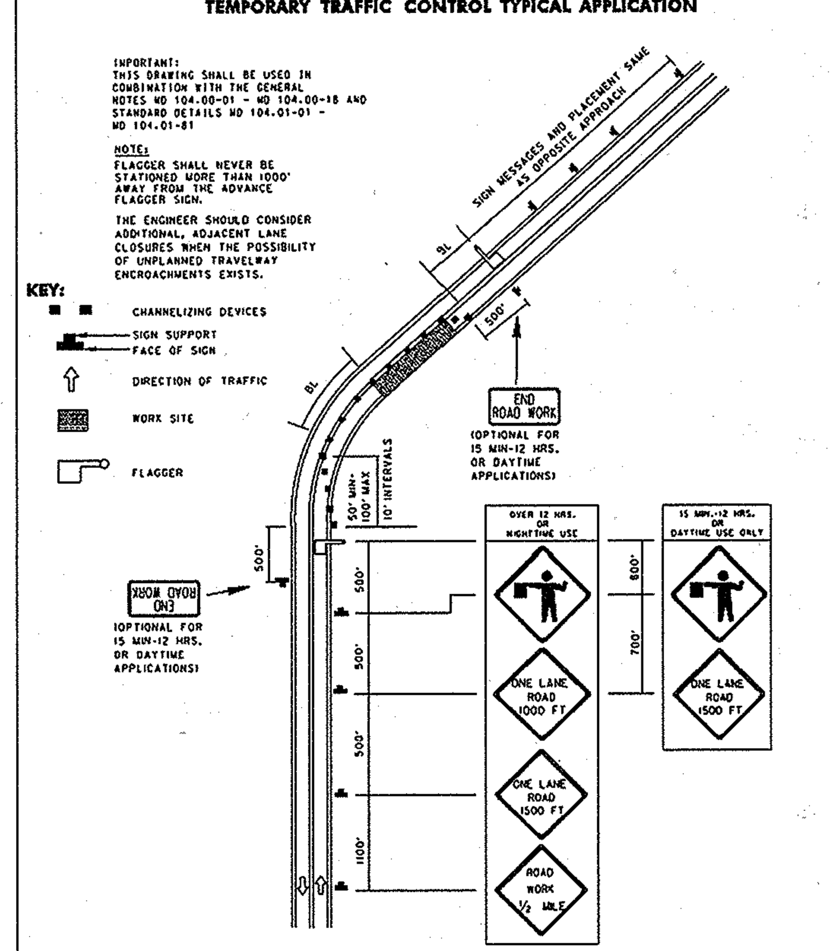
TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION

IMPORTANT: THIS DRAWING SHALL BE USED IN COMBINATION WITH THE GENERAL NOTES MD 104.00-01 - MD 104.00-18 AND STANDARD DETAILS MD 104.01-01 - MD 104.01-81

NOTE: FLAGGER SHALL NEVER BE STATIONED MORE THAN 1000' AWAY FROM THE ADVANCE FLAGGER SIGN.

THE ENGINEER SHOULD CONSIDER ADDITIONAL, ADJACENT LANE CLOSURES WHEN THE POSSIBILITY OF UNPLANNED TRAVELWAY ENCROACHMENTS EXISTS.

KEY: CHANNELIZING DEVICES; SIGN SUPPORT / FACE OF SIGN; DIRECTION OF TRAFFIC; WORK SITE; FLAGGER



Maryland Department of Transportation STATE HIGHWAY ADMINISTRATION — STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES — FLAGGING OPERATION/2-LANE, 2-WAY EQL/LESS THAN 40 MPH — STANDARD NO. MD 104.02-10 (SPECIFICATION 104)

TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION

IMPORTANT: THIS DRAWING SHALL BE USED IN COMBINATION WITH THE GENERAL NOTES MD 104.00-01 - MD 104.00-18 AND STANDARD DETAILS MD 104.01-01 - MD 104.01-81

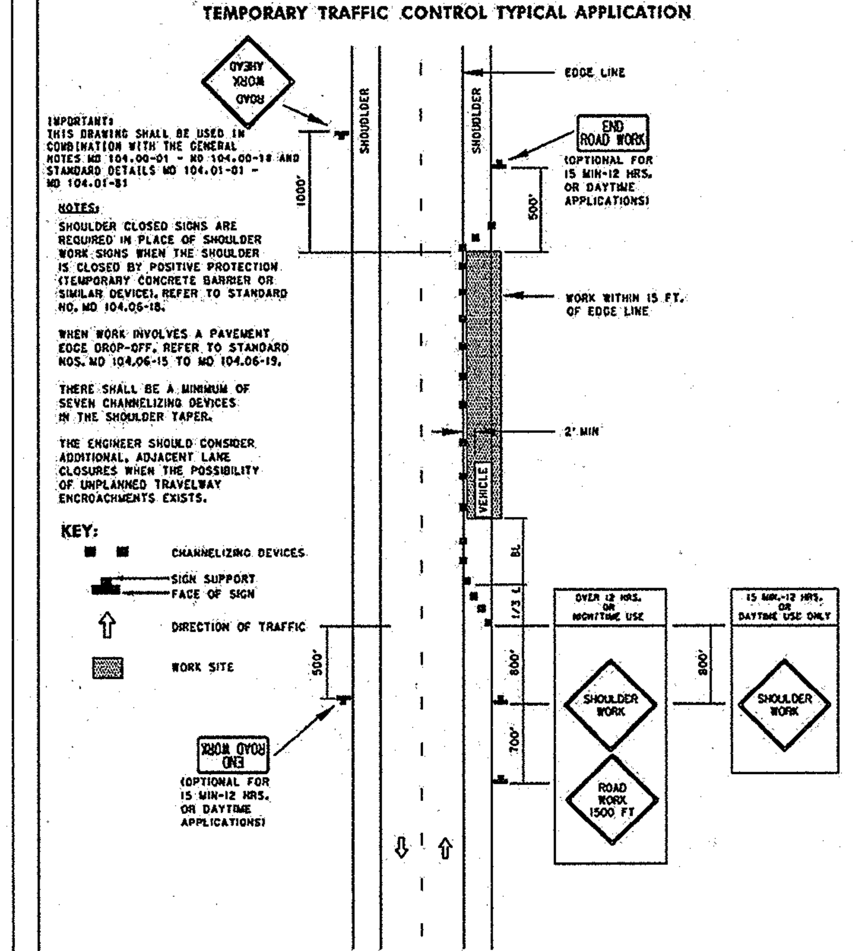
NOTES: SHOULDER CLOSED SIGNS ARE REQUIRED IN PLACE OF SHOULDER WORK SIGNS WHEN THE SHOULDER IS CLOSED BY POSITIVE PROTECTION (TEMPORARY CONCRETE BARRIER OR SIMILAR DEVICE). REFER TO STANDARD NO. MD 104.06-18.

WHEN WORK INVOLVES A PAVEMENT EDGE DROP-OFF, REFER TO STANDARD NOS. MD 104.06-15 TO MD 104.06-19.

THERE SHALL BE A MINIMUM OF SEVEN CHANNELIZING DEVICES IN THE SHOULDER TAPER.

THE ENGINEER SHOULD CONSIDER ADDITIONAL, ADJACENT LANE CLOSURES WHEN THE POSSIBILITY OF UNPLANNED TRAVELWAY ENCROACHMENTS EXISTS.

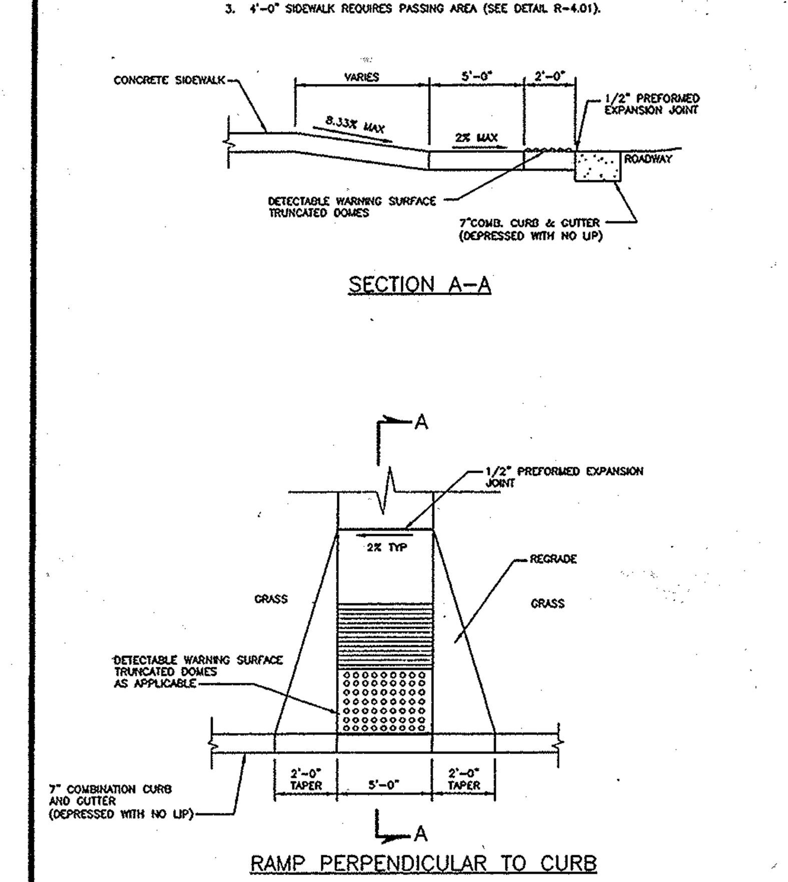
KEY: CHANNELIZING DEVICES; SIGN SUPPORT / FACE OF SIGN; DIRECTION OF TRAFFIC; WORK SITE



Maryland Department of Transportation STATE HIGHWAY ADMINISTRATION — STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES — SHOULDER WORK/2-LANE, 2-WAY EQL/LESS THAN 40 MPH — STANDARD NO. MD 104.02-02 (SPECIFICATION 104)

NOTES:

1. ALL RAMPS SHALL HAVE A WARNING TEXTURE EXTENDING THE FULL WIDTH AND DEPTH OF RAMP. SEE DETAIL R-4.07.
2. GRASS AREA ADJACENT TO SIDEWALK MUST BE SLOPED TO MEET RAMP.
3. 4'-0" SIDEWALK REQUIRES PASSING AREA (SEE DETAIL R-4.01).



Howard County, Maryland Department of Public Works — SIDEWALK RAMP Layout & Grading Perpendicular to Curb — Detail R-4.05

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 9/23/2014

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

GENERAL NOTE:
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H:\2012\MD122066\DRAWINGS\PLAN SETS\FINAL ROAD CONSTRUCTION GRADING AND STORMWATER MANAGEMENT PLANS\MD122066SS7.DWG PRINTED BY: RBO

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

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

DEVELOPER: ELMS AT FELLS 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

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: 7/3/2015

BOHLER ENGINEERING
CIVIL & CONSULTING ENGINEERS
SURVEYORS
PROJECT MANAGERS
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS
CORPORATE OFFICE: WARREN, NJ
OFFICES: SOUTHBOROUGH, MA; ALBANY, NY; RONKONKOMA, NY; CHALFONT, PA; CENTER VALLEY, PA; TAMPA, FL; BOWIE, MD; TOWSON, MD; STERLING, VA; WARRENTON, VA; FORT LAUDERDALE, FL; PHILADELPHIA, PA

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REVISIONS

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

DIG WITH CARE — CALL BEFORE YOU DIG

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(WV 1-800-245-4848) (PA 1-800-242-1776) (DC 1-800-257-7777) (VA 1-800-552-7001) (MD 1-800-257-7777) (DE 1-800-282-8555)

PROJECT No.:	MD122066
DRAWN BY:	RLB
CHECKED BY:	BRR
DATE:	6/2/14
SCALE:	AS SHOWN
CAD I.D.:	SS2

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 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

B.R. ROWE — STATE OF MARYLAND PROFESSIONAL ENGINEER No. 40808

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

SHEET NUMBER:

F-14-003