SITE DEVELOPMENT PLAN FOR WALDEN WOODS

PLANNED SENIOR COMMUNITY (PSC) - AGE RESTRICTED ADULT HOUSING

LOCATION OF SITE

6TH ELECTION DISTRICT
TAX MAP 47, GRID 2, TM PARCEL 4, LOTS 1-97,
OPEN SPACE LOT 98
HOWARD COUNTY, MARYLAND 20723

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STREET SIGN CHART

STREET NAME	STATION	OFFSET	POSTED SIGN	SIGN CODE
WILDERNESS LANE	10+50.45	28.6' RT	STREET NAME (STRAPPED TO LIGHT POLE)	
WILDERNESS LANE	10+59	22' LT	STOP	R1-1
WILDERNESS LANE	21+00	22.5' RT	STREET NAME	
WILDERNESS LANE	11+00	20' RT	25 MPH	R2-1
KNOWLEDGE DRIVE	10+45	16' LT	STOP	R1-1
KNOWLEDGE DRIVE	10+35	17.5' LT	STREET NAME (STRAPPED TO LIGHT POLE)	
SIMPLICITY COURT	10+20.86	21' RT	STREET NAME (STRAPPED TO LIGHT POLE)	
SIMPLICITY COURT	10+20.52	18.81' LT	STOP	R1-1

STREET LIGHT CHART

STREET NAME	STATION	OFFSET	FIXTURE POLE TYPE	COMMENTS
WILDERNESS LANE	10+50.45	28.6' RT	150-WATT H.P.S. VAPOR PREMIER POST TOP MOUNTED ON A 14-FOOT BLACK FIBERGLASS POLE	PRIVATE; TO BE INSTALLED BY BGE
WILDERNESS LANE	20+76.44	30.56' LT	150-WATT H.P.S. VAPOR PREMIER POST TOP MOUNTED ON A 14-FOOT BLACK FIBERGLASS POLE	PRIVATE; TO BE INSTALLED BY BGE
KNOWLEDGE DRIVE	10+35	17.5' LT	150-WATT H.P.S. VAPOR PREMIER POST TOP MOUNTED ON A 14-FOOT BLACK FIBERGLASS POLE	PRIVATE; TO BE INSTALLED BY BGE
SIMPLICITY COURT	10+20.86	21' RT	150-WATT H.P.S. VAPOR PREMIER POST TOP MOUNTED ON A 14-FOOT BLACK FIBERGLASS POLE	PRIVATE; TO BE INSTALLED BY BGE

PERMIT INFORMATION CHART

SUBDIVISION NAME		SECTION/AREA		LOT/PARCEL NO.	
WALDEN WOODS		N/A		4	
PLAT # OR L/F	GRID #	ZONING	TAX MAP	ELECTION DISTRICT	CENSUS TRACT
5192	2	PSC	47	6	6068.21

ADDRESS CHART

UNIT #	STREET ADDRESS
COMMUNITY CENTER (LOT 98)	9815 WILDERNESS LANE

APPROVED
PLANNING BOARD OF HOWARD COUNTY
~~DATE~~ PB406
DATE 10/08/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING

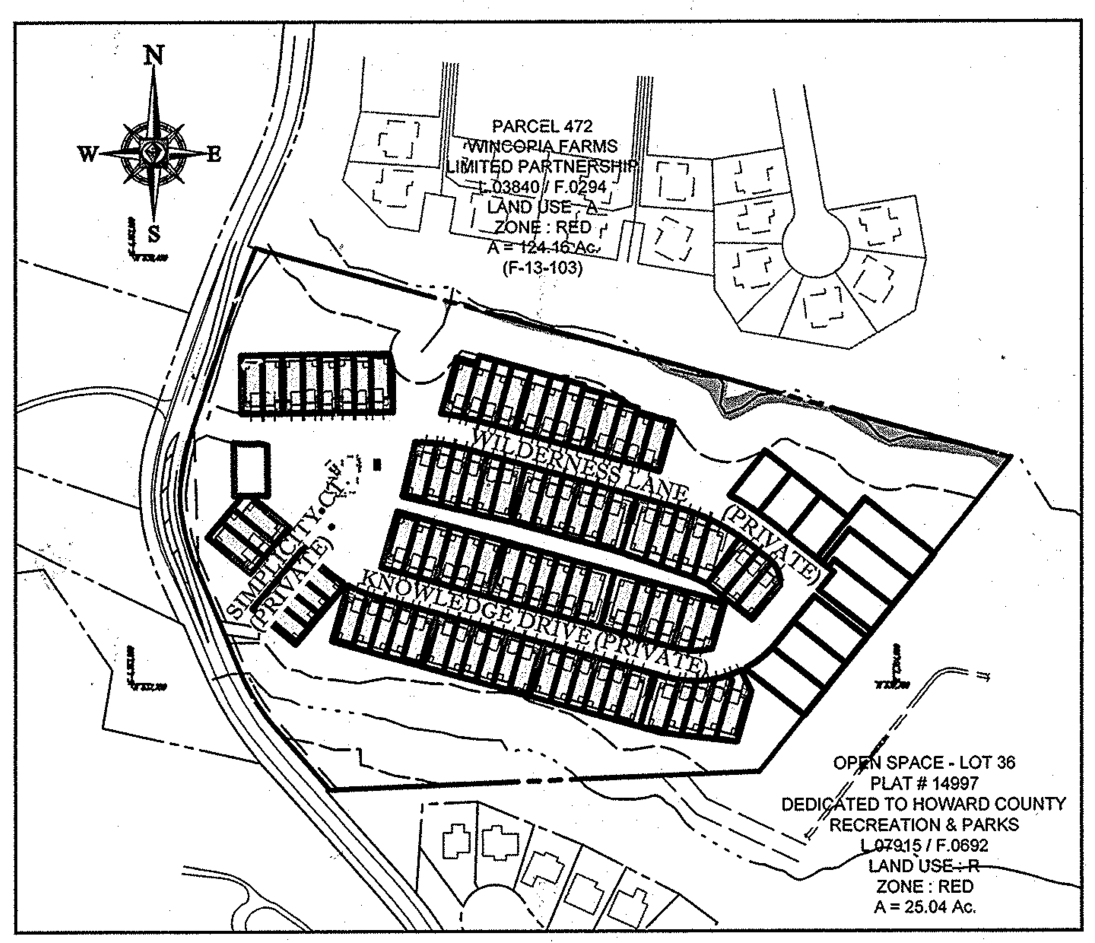
CHIEF-DEVELOPMENT ENGINEERING DIVISION 10-21-15 DATE

CHIEF-DIVISION OF LAND DEVELOPMENT 10-22-15 DATE

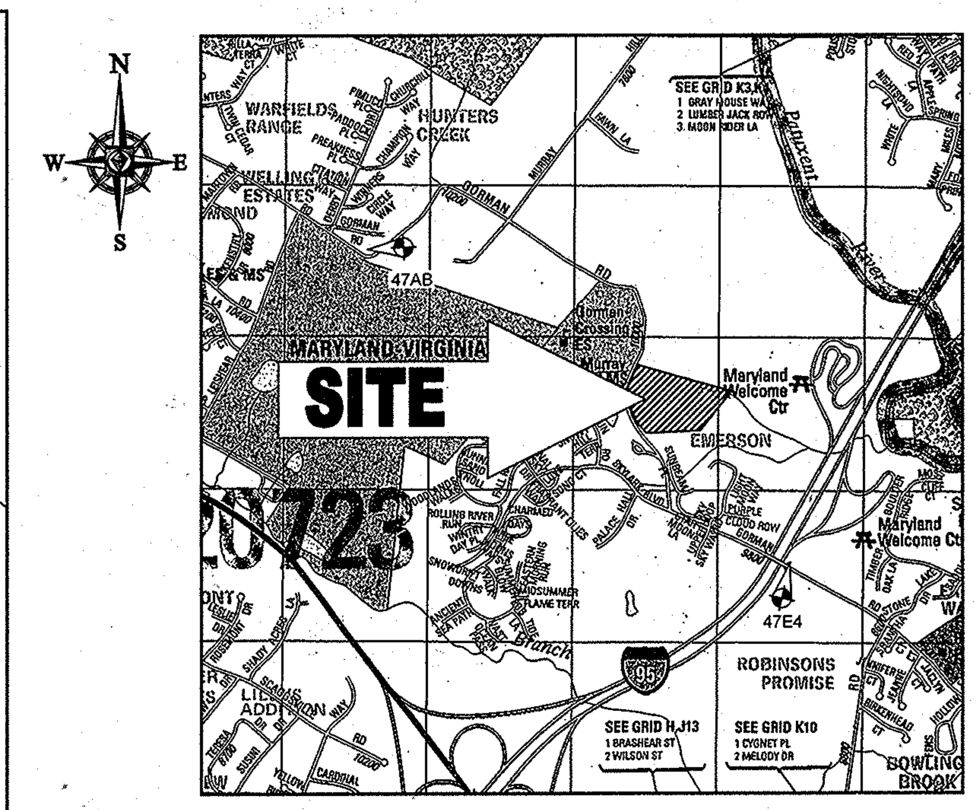
DIRECTOR 10-23-15 DATE

ADDRESS CHART

UNIT #	STREET ADDRESS	
1	9804	WILDERNESS LANE
2	9806	WILDERNESS LANE
3	9810	WILDERNESS LANE
4	9812	WILDERNESS LANE
5	9814	WILDERNESS LANE
6	9816	WILDERNESS LANE
7	9818	WILDERNESS LANE
8	9820	WILDERNESS LANE
9	9830	WILDERNESS LANE
10	9832	WILDERNESS LANE
11	9834	WILDERNESS LANE
12	9836	WILDERNESS LANE
13	9840	WILDERNESS LANE
14	9842	WILDERNESS LANE
15	9844	WILDERNESS LANE
16	9846	WILDERNESS LANE
17	9850	WILDERNESS LANE
18	9852	WILDERNESS LANE
19	9854	WILDERNESS LANE
20	9856	WILDERNESS LANE
21	9866	WILDERNESS LANE
22	9870	WILDERNESS LANE
23	9874	WILDERNESS LANE
24	9878	WILDERNESS LANE
25	9882	WILDERNESS LANE
26	9786	KNOWLEDGE DRIVE
27	9780	KNOWLEDGE DRIVE
28	9776	KNOWLEDGE DRIVE
29	9772	KNOWLEDGE DRIVE
30	9768	KNOWLEDGE DRIVE
31	9766	KNOWLEDGE DRIVE
32	9764	KNOWLEDGE DRIVE
33	9762	KNOWLEDGE DRIVE
34	9760	KNOWLEDGE DRIVE
35	9756	KNOWLEDGE DRIVE
36	9754	KNOWLEDGE DRIVE
37	9752	KNOWLEDGE DRIVE
38	9750	KNOWLEDGE DRIVE
39	9748	KNOWLEDGE DRIVE
40	9746	KNOWLEDGE DRIVE
41	9742	KNOWLEDGE DRIVE
42	9740	KNOWLEDGE DRIVE
43	9738	KNOWLEDGE DRIVE
44	9736	KNOWLEDGE DRIVE
45	9734	KNOWLEDGE DRIVE
46	9732	KNOWLEDGE DRIVE
47	9728	KNOWLEDGE DRIVE
48	9726	KNOWLEDGE DRIVE
49	9724	KNOWLEDGE DRIVE
50	9722	KNOWLEDGE DRIVE
51	9720	KNOWLEDGE DRIVE
52	9901	SIMPLICITY COURT
53	9903	SIMPLICITY COURT
54	9905	SIMPLICITY COURT
55	9907	SIMPLICITY COURT
56	9906	SIMPLICITY COURT
57	9904	SIMPLICITY COURT
58	9902	SIMPLICITY COURT
59	9805	WILDERNESS LANE
60	9829	WILDERNESS LANE
61	9831	WILDERNESS LANE
62	9833	WILDERNESS LANE
63	9835	WILDERNESS LANE
64	9837	WILDERNESS LANE
65	9839	WILDERNESS LANE
66	9843	WILDERNESS LANE
67	9845	WILDERNESS LANE
68	9847	WILDERNESS LANE
69	9849	WILDERNESS LANE
70	9851	WILDERNESS LANE
71	9853	WILDERNESS LANE
72	9857	WILDERNESS LANE
73	9859	WILDERNESS LANE
74	9861	WILDERNESS LANE
75	9863	WILDERNESS LANE
76	9865	WILDERNESS LANE
77	9869	WILDERNESS LANE
78	9871	WILDERNESS LANE
79	9873	WILDERNESS LANE
80	9761	KNOWLEDGE DRIVE
81	9759	KNOWLEDGE DRIVE
82	9757	KNOWLEDGE DRIVE
83	9755	KNOWLEDGE DRIVE
84	9753	KNOWLEDGE DRIVE
85	9751	KNOWLEDGE DRIVE
86	9747	KNOWLEDGE DRIVE
87	9745	KNOWLEDGE DRIVE
88	9743	KNOWLEDGE DRIVE
89	9741	KNOWLEDGE DRIVE
90	9739	KNOWLEDGE DRIVE
91	9737	KNOWLEDGE DRIVE
92	9733	KNOWLEDGE DRIVE
93	9731	KNOWLEDGE DRIVE
94	9729	KNOWLEDGE DRIVE
95	9727	KNOWLEDGE DRIVE
96	9725	KNOWLEDGE DRIVE
97	9723	KNOWLEDGE DRIVE
O.S. LOT 98	9815	WILDERNESS LANE (COMMUNITY CENTER)



LOCATION PLAN
SCALE: 1"=250'



VICINITY MAP
COPYRIGHT ADC THE MAP PEOPLE
PERMIT USE NO. 20602153-5
SCALE: 1"=2000'
ADC MAP COORDINATES: MAP 40 GRID B3

8/31/15 REVISION TO UPDATE CLUBHOUSE/COMMUNITY CENTER AND SURROUNDING AREA.

OPEN SPACE TABULATION

GROSS ACREAGE =	18.61± AC
OPEN SPACE REQUIRED =	6.51 AC. (35%)
OPEN SPACE PROVIDED =	11.21 AC. (60%)
PROPOSED DISTURBANCE AREA =	14.80 AC

DENSITY TABULATION

GROSS ACREAGE =	18.61± AC.
FLOODPLAIN =	0.35 AC.
STEEP SLOPES =	0.30 AC. *
NET ACREAGE =	17.96 AC.
ALLOWABLE UNITS =	(8 PER NET AC.)
TOTAL ALLOWABLE UNITS =	143
PROPOSED UNITS =	97

* EXCLUSIVE OF FLOODPLAIN

PARKING ANALYSIS

PARKING REQUIRED:	
87 TOWNHOME UNITS x 2 SP/UNIT =	174 SPACES
10 SFD UNITS x 2 SP/UNIT =	20 SPACES
SFD GUEST SPACES (10 LOTS X 0.5 SP/LOT) =	5 SPACES
SFA GUEST SPACES (87 LOTS X 0.3SP/LOT) =	26 SPACES
OVERFLOW SPACES (97 UNITS X 0.5 SP/UNIT) =	49 SPACES
TOTAL SPACES REQUIRED =	274 SPACES
PARKING PROPOSED:	
97 UNITS x 2 SP/GARAGE =	194 SPACES
97 UNITS x 2 SP/DRWY =	194 SPACES
COMMON/GUEST SPACES (INCLUDING 3 ADA SPACES) =	42 SPACES
TOTAL SPACES PROVIDED =	430 SPACES

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 R. ROWE, P.E.

GENERAL NOTES

1. THE PROPERTY IS ZONED PSC PER THE OCTOBER 6, 2013 COMPREHENSIVE ZONING REGULATIONS, Z.B. CASE 1041M DATED MAY 16, 2005 AND Z.B. CASE 1101M DATED JULY 31, 2012.
2. PROPOSED USE FOR SITE AND STRUCTURES: AGE RESTRICTED TOWNHOME (SFA) AND SINGLE FAMILY UNITS (SFD).
3. TOTAL AREA OF PROPERTY = 18.61 AC.
4. TOTAL AREA OF FLOOD PLAIN = 0.35 AC.
5. TOTAL AREA SLOPES IN EXCESS OF 25% = 0.30 AC.
6. NET TRACT AREA = 17.96 AC.
   TOTAL AREA OF DISTURBANCE = 14.80 ± AC.
   TOTAL AREA OF HOUSES = 3.54 ± AC.
7. TOTAL NUMBER OF BUILDABLE UNITS ALLOWED = 143 UNITS (8 PER NET ACRE)
8. TOTAL NUMBER OF PROPOSED BUILDABLE UNITS = 97 UNITS
   A. NUMBER OF SINGLE FAMILY ATTACHED (TOWNHOUSES) = 87 UNITS
   B. NUMBER OF SINGLE FAMILY DETACHED = 10 UNITS
9. TOTAL AREA OF ROADWAY DEDICATION = 0.08 AC. DEDICATED UNDER F-13-032.
10. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST (5) WORKING DAYS PRIOR TO THE START OF WORK.
11. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK.
12. PUBLIC WATER AND PUBLIC SEWER TO BE UTILIZED. EXISTING UTILITIES ARE BASED ON CURRENT HOWARD COUNTY CONTRACT DRAWINGS.
    EX. 12" WATER - CONTRACT NO. 44-3874.
    EX. 12" WATER - CONTRACT NO. 34-4338-D.
    EX. 8" SEWER - CONTRACT NO. 20-3733
13. WETLANDS AND STREAM BUFFERS WERE DELINEATED BY ECO-SCIENCE PROFESSIONALS ON APRIL 9, 2012.
14. THE PROPERTY SHOWN IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
15. THE BOUNDARY AND TOPOGRAPHY IS BASED ON A FIELD MONUMENTED SURVEY PERFORMED BY JOHN C. MELLEMA SR. INC. IN AUGUST. 2004.
16. IN ACCORDANCE WITH SECTION 128 OF THE HOWARD COUNTY ZONING REGULATIONS, BAY WINDOWS, CHIMNEYS OR EXTERIOR STAIRWAYS NOT MORE THAN 16 FEET IN WIDTH MAY PROJECT NOT MORE THAN 4 FEET INTO ANY SETBACKS, PORCHES OR DECKS, OPEN OR ENCLOSED MAY PROJECT NOT MORE THAN 10 FEET INTO THE FRONT OR REAR YARD SETBACK. EXTERIOR STAIRWAYS OR RAMPS, ABOVE OR BELOW GROUND LEVEL MAY PROJECT UP TO 10 FEET INTO A FRONT SETBACK OR PROJECT BOUNDARY SETBACK OR UP TO 16 FEET INTO A REAR SETBACK.
17. A STRUCTURE AND USE SETBACK LINE HAS BEEN ESTABLISHED PER SECT. 127.1.F.2
18. DRIVEWAY(S) SHALL BE PROVIDED PRIOR TO RESIDENTIAL OCCUPANCY TO INSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING (MINIMUM) REQUIREMENTS:
    A.) WIDTH - 12' (16') SERVING MORE THAN ONE RESIDENCE.
    B.) SURFACE - SIX (6") INCHES OF COMPACTED CRUSHER RUN BASE WITH TAR AND CHIP COATING. (1 1/2" MIN.)
    C.) GEOMETRY - MAXIMUM 15 % GRADE, MAXIMUM 10% GRADE CHANGE AND 45 FOOT TURNING RADIUS;
    D.) STRUCTURES (CULVERTS/BRIDGES) - CAPABLE OF SUPPORTING 25 GROSS TONS (H25-LOADING);
    E.) DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOOD WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY;
    F.) STRUCTURE CLEARANCES - MINIMUM 12 FEET;
    G.) MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE.
19. REFUSE COLLECTION, SNOW REMOVAL AND PRIVATE ROAD MAINTENANCE WILL BE PROVIDED BY THE HOMEOWNERS ASSOCIATION. REFUSE COLLECTION TO BE PROVIDED BY PRIVATE CONTRACTOR.
20. THIS PROJECT IS SUBJECT TO THE AMENDED SUBDIVISION AND LAND DEVELOPMENT REGULATIONS ADOPTED PER COUNCIL BILL 45-2003 EFFECTIVE OCTOBER 2, 2003, THE ZONING REGULATIONS PER COUNCIL BILL NO. 75-2003 ADOPTED 2/2/04 AND THE OCTOBER 6, 2013 COMPREHENSIVE ZONING REGULATIONS.
21. ALL ROADS AND PARKING AREAS ARE TO BE PRIVATELY MAINTAINED BY THE HOA.
22. HORIZONTAL AND VERTICAL CONTROL DATUM IS BASED ON HOWARD COUNTY GEODETIC CONTROL STATIONS:
    HOWARD COUNTY MONUMENT 47E4 N 535846.138 E 1355431.199 ELEV. = 338.18 FT
    HOWARD COUNTY MONUMENT 47AB N 540058.246 E 135005.038 ELEV. = 397.57 FT.
23. THE FOREST CONSERVATION REQUIREMENTS PER SECTION 16.1202 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION MANUAL FOR THIS PROJECT HAS BEEN FULFILLED BY RETENTION OF EXISTING FOREST IN THE AMOUNT OF 3.2 ACRES AND 2.0 ACRES OF REFORESTATION FOR A TOTAL FOREST CONSERVATION EASEMENT AREA OF 5.2 ACRES. THE SURETY AMOUNT FOR OFF-SITE REFORESTATION IS $ 0.00 AND ON-SITE REFORESTATION IS $ 22,673.00 FOR A TOTAL SURETY AMOUNT OF $ 22,673.00 WHICH WILL BE PART OF THE DEVELOPER'S AGREEMENT (SEE SHEETS 17 & 18). OFFSITE MITIGATION TO BE PROVIDED AT CHELSEA KNOLLS FOREST CONSERVATION BANK (SDP-14-032).
24. SIDEWALKS ARE TO BE PROVIDED OR CONSTRUCTED ON ONE SIDE OF THE PROPOSED ROAD. WAIVER WP-13-093 IS WAS APPROVED ON MAY 14, 2013 TO ELIMINATE SIDEWALK ALONG PORTIONS OF GORMAN ROAD AND ONE SIDE OF THE PROPOSED ROADS.
25. TOTAL NUMBER OF "MODERATE INCOME HOUSING UNITS" REQUIRED FOR THIS SITE PER THE (PSC) ZONING DISTRICT IS 10%
    A.) TOTAL NUMBER OF "M.I.H.U" REQUIRED = 10
    B.) THE DEVELOPER WILL PAY A FEE-IN-LIEU TO THE COUNTY TO SATISFY THE M.I.H.U. REQUIREMENTS
26. STORMWATER MANAGEMENT FACILITIES ARE NON MD-378 FACILITIES, AND WILL BE PRIVATELY OWNED AND MAINTAINED.
27. ANY DAMAGE TO THE COUNTY'S RIGHT-OF-WAY SHALL BE CORRECTED AT THE DEVELOPER'S EXPENSE.
28. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MDSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
29. ALL EXISTING STRUCTURES SHALL BE RAZED. THE FOUR (4) EXISTING DWELLING UNITS MUST BE RAZED PRIOR TO PLAT RECORDATION.
30. THERE ARE NO HISTORIC STRUCTURES OR CEMETERIES LOCATED ON THIS PROPERTY.
31. THIS PSC DISTRICT IS SUBJECT TO COMPLIANCE WITH THE DECISION AND ORDER ISSUED FOR ZB CASE NO. 1041M APPROVED BY THE HOWARD COUNTY ZONING BOARD ON MAY 16, 2005 AND REAPPROVED ON JULY 31, 2012 PER ZONING CASE ZB-1101M. TO CREATE A PSC OVERLAY ZONE ON THIS PROPERTY NO CONDITIONS WERE IMPOSED.
32. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN FLOODPLAIN, WETLANDS, STREAMS AND THEIR BUFFERS AND FOREST CONSERVATION EASEMENTS, EXCEPT AS PERMITTED BY WP-12-131. WP-12-131 WAS APPROVED ON MAY 29, 2012 WHICH WAIVED SECTION 16.116(A)(2)(I)(II) ALLOWING FOR DISTURBANCE WITHIN THE STREAM BUFFER AS SHOWN ON PLAN.
33. ALL PLAN DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
34. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISION OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF $112,050 FOR ADDITIONAL DETAIL SEE SHEET 16.
35. A NOISE STUDY PERFORMED ON THE EMERSON SITE INDICATED THE 65DBA LINE TO BE 500 FT. EAST OF THIS PROPERTY. SEE F-01-140 SHEET 11 OF 25.
36. PARKING IS ONLY ALLOWED WITHIN GARAGES, MARKED PARKING SPACES OR DRIVEWAYS. PARKING IS PROHIBITED ALONG CURBS.
37. NO PHASING IS PROPOSED.
38. THIS PROJECT COMPLIES WITH THE COMMUNITY BUILDING REQUIREMENT PER THE PSC ZONING REGULATIONS OF 20 SQUARE FEET PER UNIT (RE: SECT.127.1.B.8.a) OR 1,940 SQUARE FEET BY PROVIDING A COMMUNITY CENTER BUILDING OF 2,567 SQUARE FEET IN SIZE. △1
39. THIS PLAN INCLUDES RECREATION AND COMMUNITY ACTIVITY AREAS FOR RESIDENTS PER THE PSC ZONING REGULATIONS SUCH AS PATHWAYS, OUTDOOR SEATING AREAS, AND A COMMUNITY CENTER.
40. HOMEOWNER'S OR CONDOMINIUM ASSOCIATION FOR THIS PROJECT HAS BEEN OR WILL BE ESTABLISHED PRIOR TO SDP SIGNATURE APPROVAL WITH SDP SIGNATURE APPROVAL WITH THE STATE DEPARTMENT OF ASSESSMENT AND TAXATION ON 10/1/14 AND — RECORDED AS 16137581 ~~(TO BE PROVIDED)~~
41. ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST. THE ANCHOR SHALL NOT EXTEND MORE THAN TWO PERFORATIONS ABOVE GROUND LEVEL.
42. STREET LIGHTS WILL BE REQUIRED IN THIS DEVELOPMENT IN ACCORDANCE WITH THE DESIGN MANUAL. STREET LIGHTS PLACEMENTS AND THE TYPE OF FIXTURES AND POLE SELECTED SHALL BE IN ACCORDANCE WITH THE LATEST HOWARD COUNTY DESIGN MANUAL, VOLUME III (1993) AND AS MODIFIED BY "GUIDELINES FOR THE STREET LIGHTS IN RESIDENTIAL DEVELOPMENTS (JUNE 1993)." THE JUNE 1993 POLICY INCLUDES GUIDELINES FOR LATERAL AND LONGITUDINAL PLACEMENT. A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREETLIGHT AND ANY TREE.
43. THIS PROJECT WILL COMPLY WITH THE UNIVERSAL DESIGN STANDARDS FOR AGE RESTRICTED ADULT HOUSING IN HOWARD COUNTY.
44. THE ARAH DOCUMENTS ARE RECORDED AT LIBER 15183, FOLIO 138.
45. NO BUILDING PERMITS WILL BE ISSUED UNTIL ALL EXISTING DWELLINGS, WELLS, AND SEPTIC SYSTEMS HAVE BEEN ABANDONED IN COMPLIANCE WITH HEALTH DEPARTMENT REGULATIONS.
46. A WAIVER PETITION (WP-13-093) TO ALLOW REMOVAL OF TWO CHAMPION TREES WAS APPROVED BY HOWARD COUNTY DIVISION OF LAND DEVELOPMENT ON MAY 14, 2013.
47. A DESIGN MANUAL WAIVER REQUEST TO REDUCE MINIMUM HORIZONTAL CURVE RADII FOR ROADS WAS SUBMITTED TO HOWARD COUNTY DEVELOPMENT ENGINEERING DIVISION ON NOV. 28, 2012, AND A WAIVER TO ALLOW STORMDRAIN STRUCTURES IN PUBLIC WATER AND SEWER EASEMENTS WAS APPROVED BY HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS ON FEB. 19, 2013.
48. PROPERTY WAS PREVIOUSLY PROPOSED FOR DEVELOPMENT AS WESTOVER GLEN (SDP-06-039 AND F-06-170) BUT WAS NOT RECORDED.
49. A PRIVATE RANGE OF ADDRESS SIGNS SHALL BE FABRICATED AND INSTALLED BY HOWARD COUNTY BUREAU OF HIGHWAYS AT THE DEVELOPERS/OWNERS EXPENSE. CONTACT HOWARD COUNTY TRAFFIC DIVISION AT 410-313-2430 FOR DETAILS AND COST ESTIMATE. THE R1-1 (STOP) SIGNS AND THE STREET NAME SIGN (SNS) ASSEMBLIES FOR THIS DEVELOPMENT MUST BE INSTALLED BEFORE THE BASE PAVING IS COMPLETED. b) THE TRAFFIC CONTROL DEVICE 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.
50. STORMWATER MANAGEMENT FACILITIES WILL BE PROVIDED IN ACCORDANCE WITH CURRENT MDE AND HOWARD COUNTY STANDARDS UTILIZING BIO-RETENTION FACILITIES, SAND FILTERS, AND DRY WELLS. THE BIORETENTION FACILITIES AND SAND FILTERS WILL BE JOINTLY MAINTAIN BY HOWARD COUNTY AND THE HOA. THE COUNTY WILL MAINTAIN THE INLET STRUCTURE AND THE HOA WILL MAINTAIN THE UNDERDRAINS, MEDIA, PLANTINGS, ETC. WITHIN THE EASEMENTS. THE DRY WELLS WILL BE PRIVATELY MAINTAINED BY THE INDIVIDUAL HOMEOWNERS.
51. A WAIVER PETITION (WP-14-148) TO ALLOW A PHASED GRADING PERMIT WAS APPROVED BY HOWARD COUNTY DIVISION OF LAND DEVELOPMENT ON JULY 8, 2014 SUBJECT TO THE FOLLOWING CONDITIONS:
    A. PETITIONERS MAY COMMENCE ACTIVITIES ONLY UPON APPROVAL OF A GRADING PLAN BY THE HOWARD SOIL CONSERVATION DISTRICT AND ISSUANCE OF A GRADING PERMIT BY THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS.
    B. PETITIONERS MAY COMMENCE PROPOSED PHASE 2 ACTIVITIES ONLY UPON PLANNING BOARD APPROVAL, BY VOTE, OF PLANNING BOARD CASE NUMBER PB 406 (SITE DEVELOPMENT PLAN SDP -13-023) ON JULY 17, 2014.
    C. THE DPW DEVELOPER AGREEMENT AND PAYMENT OF ALL REQUIRED FEES AND SURETIES ASSOCIATED WITH F-13-032 SHALL BE COMPLETED BY THE PETITIONER PRIOR TO INITIATION OF THE GORMAN ROAD IMPROVEMENTS AND WATER AND SEWER IMPROVEMENTS WITH THE RIGHT-OF-WAY.
    D. PETITIONERS SHALL SEAL ALL EXISTING WELLS AND PROPERLY ABANDON ALL EXISTING SEPTIC SYSTEMS PRIOR TO GRADING OPERATIONS IN ACCORDANCE WITH THE ATTACHED HEALTH DEPARTMENT COMMENTS.

UNIVERSAL DESIGN REQUIREMENTS FOR AGE-RESTRICTED ADULT HOUSING IN HOWARD COUNTY

1. FOR SINGLE FAMILY DETACHED AND ATTACHED DEVELOPMENTS, A "NO-STEP" ACCESS TO THE FRONT ENTRANCE TO THE COMMUNITY BUILDING AND ALL DWELLINGS (A NO-STEP ENTRANCE IS DESIRABLE, BUT NOT REQUIRED TO OTHER ENTRANCES).
2. 36" WIDE FRONT DOOR WITH EXTERIOR LIGHTING OF THE ENTRANCE.
3. ALL INTERIOR DOORWAYS AT LEAST 32" WIDE (36" IS PREFERABLE).
4. HALLWAYS AT LEAST 36" WIDE, (40-42" IS PREFERABLE).
5. COMPLETE LIVING AREA INCLUDING MASTER BEDROOM AND BATH ON FIRST FLOOR (OR ELEVATOR ACCESS IF MASTER BEDROOM IS LOCATED ON THE SECOND FLOOR.
6. LEVER HANDLES ON INTERIOR AND EXTERIOR DOORS.
7. BLOCKING FOR GRAB BARS IN WALLS IN BATHROOM WALLS NEAR TOILET AND SHOWER.

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)

NO.	DATE	REVISION DESCRIPTION
△1	8/31/15	REVISED CLUBHOUSE/COMMUNITY CENTER

OWNER:
M/I HOMES OF DC, LLC
21355 RIDGETOP CIRCLE, SUITE 220
STERLING, VA 20166
CONTACT : CINDY HUNTZBERRY
PHONE : 443-677-9803

DEVELOPER:
SOMERWORTH II, L.C.
5704 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT
REVISED SITE DEVELOPMENT PLAN
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
COVER SHEET

BOHLER ENGINEERING
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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

STATE OF MARYLAND BRANDON R. ROWE No. 40808 PROFESSIONAL ENGINEER
BRANDON R. ROWE
PROFESSIONAL ENGINEER NO. 40808

CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	AS NOTED
DRAWING NO.	1 OF 34

STANDARD DRAWING LEGEND

FOR ENTIRE PLAN SET
(NOT TO SCALE)

EXISTING NOTE	TYPICAL NOTE TEXT	PROPOSED NOTE
	ONSITE PROPERTY LINE / R.O.W. LINE	
	NEIGHBORING PROPERTY LINE / INTERIOR PARCEL LINE	
	EASEMENT LINE	
	SETBACK LINE	
	CONCRETE CURB & GUTTER	CURB AND GUTTER SPILL CURB | TRANSITION CURB DEPRESSED CURB AND GUTTER
	UTILITY POLE WITH LIGHT	
	POLE LIGHT	
	TRAFFIC LIGHT	
	UTILITY POLE	
	TYPICAL LIGHT	
	ACORN LIGHT	
	TYPICAL SIGN	
X	PARKING COUNTS	X
170 169	CONTOUR LINE	190 187
TC 516.4 OR 516.4	SPOT ELEVATIONS	TC516.00 TC 516.00 BC 515.55
SAN #	SANITARY LABEL	SAN #
X #	STORM LABEL	X #
SL	SANITARY SEWER LATERAL	SL
W	UNDERGROUND WATER LINE	
E	UNDERGROUND ELECTRIC LINE	E
G	UNDERGROUND GAS LINE	G
OH	OVERHEAD WIRE	OH
T	UNDERGROUND TELEPHONE LINE	T
C	UNDERGROUND CABLE LINE	C
	STORM SEWER	
S	SANITARY SEWER MAIN	S
	HYDRANT	
S	SANITARY MANHOLE	S
D	STORM MANHOLE	D
WM	WATER METER	
WV	WATER VALVE	
	GAS VALVE	
	GAS METER	
	TYPICAL END SECTION	
OR	HEADWALL OR ENDWALL	OR
	YARD INLET	
	CURB INLET	
	CLEAN OUT	
E	ELECTRIC MANHOLE	E
T	TELEPHONE MANHOLE	T
EB	ELECTRIC BOX	EB
EP	ELECTRIC PEDESTAL	EP
	MONITORING WELL	
	TEST PIT	
	BENCHMARK	
	BORING	

STANDARD ABBREVIATIONS

FOR ENTIRE PLAN SET

AC	ACRES	POG	POINT OF GRADE
ADA	AMERICANS WITH DISABILITY ACT	PROP	PROPOSED
ARCH	ARCHITECTURAL	PT	POINT OF TANGENCY
BC	BOTTOM OF CURB	PTCR	POINT OF TANGENCY, CURB RETURN
BF	BASEMENT FLOOR	PVC	POLYVINYL CHLORIDE PIPE
BK	BLOCK	PVI	POINT OF VERTICAL INTERSECTION
BL	BASELINE	PVT	POINT OF VERTICAL TANGENCY
BLDG	BUILDING	R	RADIUS
BM	BUILDING BENCHMARK	RCP	REINFORCED CONCRETE PIPE
BRL	BUILDING RESTRICTION LINE	RET WALL	RETAINING WALL
CF	CUBIC FEET	R/W	RIGHT OF WAY
CL	CENTERLINE	S	SLOPE
CMP	CORRUGATED METAL PIPE	SAN	SANITARY SEWER
CONN	CONNECTION	SF	SQUARE FEET
CONC	CONCRETE	STA	STATION
CPP	CORRUGATED PLASTIC PIPE	STM	STORM
CY	CUBIC YARDS	TBR	TO BE REMOVED
DEC	DECORATIVE	TBRL	TO BE RELOCATED
DEP	DEPRESSED	TC	TOP OF CURB
DIP	DUCTILE IRON PIPE	TELE	TELEPHONE
DOM	DOMESTIC	TPF	TREE PROTECTION FENCE
ELEC	ELECTRIC	TW	TOP OF WALL
ELEV	ELEVATION	TYP	TYPICAL
EP	EDGE OF PAVEMENT	UG	UNDERGROUND
ES	EDGE OF SHOULDER	UON	UNLESS OTHERWISE NOTED
EW	END WALL	UP	UTILITY POLE
EX	EXISTING	W	WIDE
FES	FLARED END SECTION	W/L	WATER LINE
FF	FINISHED FLOOR	W/M	WATER METER
FH	FIRE HYDRANT	±	PLUS OR MINUS
FG	FINISHED GRADE	°	DEGREE
G	GRADE	Ø	DIAMETER
GF	GARAGE FLOOR (AT DOOR)	#	NUMBER
GH	GRADE HIGHER SIDE OF WALL		
GL	GRADE LOWER SIDE OF WALL		
GRT	GRATE		
GV	GATE VALVE		
HDPE	HIGH DENSITY POLYETHYLENE PIPE		
HP	HIGH POINT		
HOR	HORIZONTAL		
HW	HEADWALL		
INT	INTERSECTION		
INV	INVERT		
LF	LINEAR FOOT		
LOC	LIMITS OF CLEARING		
LOD	LIMITS OF DISTURBANCE		
LOS	LINE OF SIGHT		
LP	LOW POINT		
L/S	LANDSCAPE		
MAX	MAXIMUM		
MIN	MINIMUM		
MH	MANHOLE		
MJ	MECHANICAL JOINT		
OC	ON CENTER		
PA	POINT OF ANALYSIS		
PC	POINT CURVATURE		
PCCR	POINT OF COMPOUND CURVATURE, CURB RETURN		
PI	POINT OF INTERSECTION		

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chad Edmondson 11-7-14
CHIEF-DEVELOPMENT ENGINEERING DIVISION DATE

T. Mahn fr KS 12-22-14
CHIEF-DIVISION OF LAND DEVELOPMENT DATE

Marsha L. McLaughlin 12/24/14
DIRECTOR DATE

APPROVED
PLANNING BOARD OF HOWARD COUNTY

PB406

DATE 10/08/2014

GENERAL DEMOLITION PLAN NOTES

1. BOHLER ENGINEERING IS NOT RESPONSIBLE FOR JOB SITE SAFETY OR SUPERVISION.
2. ALL DEMOLITION ACTIVITIES ARE TO BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AS WELL AS ALL FEDERAL, STATE AND LOCAL REGULATIONS. ANY DISCREPANCIES OR DEVIATIONS SHALL BE IDENTIFIED BY THE CONTRACTOR TO BOHLER ENGINEERING IN WRITING FOR RESOLUTION PRIOR TO INITIATION OF SITE ACTIVITY.
3. PRIOR TO STARTING ANY, DEMOLITION CONTRACTOR IS RESPONSIBLE FOR/TO:
   A. ENSURING THAT COPIES OF ALL APPLICABLE PERMITS AND APPROVALS ARE MAINTAINED ON-SITE AND AVAILABLE FOR REVIEW.
   B. INSTALLING THE REQUIRED SOIL EROSION AND SEDIMENT CONTROL AND/OR TREE PROTECTION MEASURES NEEDED FOR DEMOLITION PRIOR TO SITE DISTURBANCE.
   C. LOCATING (VERTICALLY AND HORIZONTALLY) ALL UTILITIES AND SERVICES, INCLUDING, BUT NOT LIMITED TO GAS, WATER, ELECTRIC, SANITARY AND STORM SEWER, TELEPHONE, CABLE, FIBER OPTIC CABLE, ETC. WITHIN THE LIMITS OF DISTURBANCE. THE CONTRACTOR SHALL USE AND COMPLY WITH THE REQUIREMENTS OF THE APPLICABLE UTILITY NOTIFICATION SYSTEM TO LOCATE ALL THE UNDERGROUND UTILITIES.
   D. PROTECTING AND MAINTAINING IN OPERATION, ALL ACTIVE SYSTEMS THAT ARE NOT BEING REMOVED DURING ALL DEMOLITION ACTIVITIES.
   E. FAMILIARIZING THEMSELVES WITH THE APPLICABLE UTILITY SERVICE PROVIDER AND IS RESPONSIBLE FOR ALL COORDINATION REGARDING UTILITY DEMOLITION REQUIRED FOR THE PROJECT. THE CONTRACTOR SHALL PROVIDE THE OWNER WRITTEN NOTIFICATION THAT THE EXISTING UTILITIES AND SERVICES HAVE BEEN TERMINATED AND ABANDONED IN ACCORDANCE WITH JURISDICTION AND UTILITY COMPANY REQUIREMENTS.
   F. COORDINATION WITH UTILITY COMPANIES REGARDING WORKING "OFF-PEAK" HOURS OR ON WEEKENDS AS MAY BE REQUIRED TO MINIMIZE THE IMPACT ON THE AFFECTED PARTIES.
   G. A COMPLETE INSPECTION FOR CONTAMINANTS BY A LICENSED ENVIRONMENTAL TESTING AGENCY, OF ALL BUILDINGS AND/OR STRUCTURES TO BE REMOVED. SAME SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL ENVIRONMENTAL REGULATIONS. ANY/ALL CONTAMINANTS SHALL BE REMOVED AND DISPOSED OF BY A FEDERALLY LICENSED CONTRACTOR IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS. ALL ENVIRONMENTAL WORK INCLUDING HAZARDOUS MATERIAL, SOILS, ASBESTOS, OR OTHER REFERENCED OR IMPLIED HEREIN IS THE SOLE RESPONSIBILITY OF THE OWNER'S ENVIRONMENTAL CONSULTANT.
4. BOHLER ENGINEERING IS NOT RESPONSIBLE FOR JOB SITE SAFETY OR SUPERVISION. CONTRACTOR IS TO PROCEED WITH THE DEMOLITION IN A SYSTEMATIC AND SAFE MANNER, FOLLOWING ALL THE OSHA REQUIREMENTS, TO ENSURE PUBLIC AND CONTRACTOR SAFETY.
5. THE CONTRACTOR SHALL PROVIDE ALL THE "MEANS AND METHODS" NECESSARY TO PREVENT MOVEMENT, SETTLEMENT, OR COLLAPSE OF EXISTING STRUCTURES, AND ANY OTHER IMPROVEMENTS THAT ARE REMAINING ON-SITE OR OFF-SITE. THE DEMOLITION CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS OF DAMAGE TO ALL ITEMS THAT ARE TO REMAIN AS A RESULT OF HIS ACTIVITIES. ALL REPAIRS SHALL USE NEW MATERIAL. THE REPAIRS SHALL RESTORE THE ITEM TO THE PRE-DEMOLITION CONDITION.
6. IN THE ABSENCE OF SPECIFICATIONS, THE CONTRACTOR SHALL PERFORM EARTH MOVEMENT ACTIVITIES, DEMOLITION AND REMOVAL OF ALL FOUNDATION WALLS, FOOTINGS, AND OTHER MATERIALS WITHIN THE LIMITS OF DISTURBANCE IN ACCORDANCE WITH DIRECTION BY OWNER'S STRUCTURAL OR GEOTECHNICAL ENGINEER.
7. EXPLOSIVES SHALL NOT BE USED WITHOUT PRIOR WRITTEN CONSENT OF BOTH THE OWNER AND APPLICABLE GOVERNMENTAL AUTHORITIES. ALL THE REQUIRED PERMITS AND EXPLOSIVE CONTROL MEASURES THAT ARE REQUIRED BY THE FEDERAL, STATE, AND LOCAL GOVERNMENTS SHALL BE IN PLACE PRIOR TO STARTING AN EXPLOSIVE PROGRAM. THE CONTRACTOR IS ALSO RESPONSIBLE FOR ALL INSPECTION AND SEISMIC VIBRATION TESTING THAT IS REQUIRED TO MONITOR THE EFFECTS ON ALL LOCAL STRUCTURES.
8. CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL AND GENERALLY ACCEPTED SAFE PRACTICES IN CONFORMANCE WITH: THE CURRENT "MANUAL ON UNIFORM TRAFFIC CONTROL," AS WELL AS FEDERAL, STATE, AND LOCAL REGULATIONS WHEN DEMOLITION RELATED ACTIVITIES IMPACT ROADWAYS OR ROADWAY RIGHTS-OF-WAY.
9. CONDUCT DEMOLITION ACTIVITIES IN SUCH A MANNER TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, SIDEWALKS, WALKWAYS, AND OTHER ADJACENT FACILITIES. STREET CLOSURE PERMITS MUST BE RECEIVED FROM THE APPROPRIATE GOVERNMENTAL AUTHORITY.
10. DEMOLITION ACTIVITIES AND EQUIPMENT SHALL NOT USE AREAS OUTSIDE THE DEFINED PROPERTY LINE WITHOUT WRITTEN PERMISSION OF THE APPLICABLE PROPERTY OWNER, AND/OR APPROPRIATE GOVERNMENT AGENCY.
11. USE DUST CONTROL MEASURES TO LIMIT AIRBORNE DUST AND DIRT RISING AND SCATTERING IN THE AIR IN ACCORDANCE WITH FEDERAL, STATE, AND/OR LOCAL STANDARDS. AFTER THE DEMOLITION IS COMPLETE, ADJACENT STRUCTURES AND IMPROVEMENTS SHALL BE CLEANED OF ALL DUST AND DEBRIS CAUSED BY THE DEMOLITION OPERATIONS. THE CONTRACTOR IS RESPONSIBLE FOR RETURNING ALL ADJACENT AREAS TO THEIR "PRE-DEMOLITION" CONDITION.
12. CONTRACTOR IS RESPONSIBLE TO SAFEGUARD SITE AS NECESSARY TO PERFORM THE DEMOLITION IN SUCH A MANNER AS TO PREVENT THE ENTRY OF UNAUTHORIZED PERSONS AT ANY TIME.
13. THIS DEMOLITION PLAN IS INTENDED TO IDENTIFY THOSE EXISTING ITEMS/CONDITIONS WHICH ARE TO BE REMOVED. IT IS NOT INTENDED TO PROVIDE DIRECTION OTHER THAN THAT ALL "MEANS AND METHODS" ARE TO BE IN ACCORDANCE WITH STATE, FEDERAL, LOCAL, AND JURISDICTIONAL REQUIREMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OSHA AND OTHER SAFETY PRECAUTIONS NECESSARY TO PROVIDE A SAFE WORK SITE.
14. DEBRIS SHALL NOT BE BURIED ON THE SUBJECT SITE. ALL DEMOLITION WASTES AND DEBRIS (SOLID WASTE) SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL TOWN, COUNTY, STATE, AND FEDERAL LAWS AND APPLICABLE CODES.

GENERAL SITE PLAN NOTES

1. ALL ADA ACCESSIBLE PARKING SPACES AND ACCESS ROUTES SHALL BE CONSTRUCTED TO MEET ADA REQUIREMENTS.
2. PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL ENSURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PLANS AND OTHER DOCUMENTS BY ALL OF THE PERMITTING AUTHORITIES.
3. THE OWNER/CONTRACTOR SHALL BE FAMILIAR WITH AND RESPONSIBLE FOR ANY/ALL CERTIFICATIONS, INSPECTIONS, ETC. REQUIRED BY ALL GOVERNING JURISDICTIONAL AGENCIES DURING AND AFTER CONSTRUCTION FOR SIGN-OFF AND CERTIFICATE OF OCCUPANCY ISSUANCE, INCLUDING BUT NOT LIMITED TO PROCUREMENT OF SERVICES, SCHEDULING OF FIELD OBSERVATIONS AND COORDINATION WITH REPRESENTATIVES OF THE APPROPRIATE PARTIES.
4. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE REQUIREMENTS AND STANDARDS OF THE LOCAL GOVERNING AUTHORITY.
5. THE GEOTECHNICAL REPORT AND RECOMMENDATIONS SET FORTH THEREIN ARE A PART OF THE REQUIRED CONSTRUCTION DOCUMENTS AND IN CASE OF CONFLICT SHALL TAKE PRECEDENCE UNLESS SPECIFICALLY NOTED OTHERWISE ON THE PLANS. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING OF ANY SUCH DISCREPANCY BETWEEN GEOTECHNICAL REPORT AND PLANS, ETC.
6. THE PROPERTY SURVEY SHALL BE CONSIDERED A PART OF THESE PLANS.
7. THESE PLANS ARE BASED ON INFORMATION PROVIDED TO BOHLER ENGINEERING AT THE TIME OF PLAN PREPARATION. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND NOTIFY BOHLER ENGINEERING IF ACTUAL SITE CONDITIONS DIFFER FROM THOSE SHOWN ON THE PLAN, OR IF THE PROPOSED WORK WOULD BE INHIBITED BY ANY OTHER SITE FEATURES.
8. ALL DIMENSIONS SHOWN ON THE PLANS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ENGINEER IN WRITING IF ANY DISCREPANCIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION. NO EXTRA COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR WORK HAVING TO BE REDONE DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.
9. CONTRACTOR SHALL REFER TO THE ARCHITECTURAL/BUILDING PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF ENTRY/EXIT POINTS, ELEVATIONS, PRECISE BUILDING DIMENSIONS, EXACT BUILDING UTILITY LOCATIONS.
10. DEBRIS SHALL NOT BE BURIED ON THE SUBJECT SITE AND ALL UNSUITABLE EXCAVATED HAZARDOUS MATERIAL, AND DEBRIS (SOLID WASTE) SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL TOWN, COUNTY, STATE AND FEDERAL LAWS AND APPLICABLE CODES.
11. CONTRACTOR IS RESPONSIBLE FOR ALL SHORING REQUIRED DURING EXCAVATION (TO BE PERFORMED IN ACCORDANCE WITH CURRENT OSHA STANDARDS) AND ANY ADDITIONAL PROVISIONS TO ASSURE STABILITY OF CONTIGUOUS STRUCTURES, AS FIELD CONDITIONS DICTATE.
12. CONTRACTOR IS TO EXERCISE EXTREME CARE WHEN PERFORMING ANY WORK ACTIVITIES ADJACENT TO PAVEMENT, STRUCTURES, ETC. TO REMAIN. CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING THE APPROPRIATE MEASURES AS NECESSARY TO ENSURE THE STRUCTURAL STABILITY OF PAVEMENT, STRUCTURES, ETC. TO REMAIN, AND TO PROVIDE A SAFE WORK AREA.
13. CONTRACTOR IS RESPONSIBLE FOR DOCUMENTING ALL EXISTING DAMAGE AND FOR NOTIFYING CONSTRUCTION MANAGER PRIOR TO START OF CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR REPAIRING THE DAMAGE DONE TO ANY EXISTING ITEM DURING CONSTRUCTION SUCH AS BUT NOT LIMITED TO DRAINAGE, UTILITIES, PAVEMENT, STRIPING, CURB, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR AND SHALL REPLACE ALL SIGNAL INTERCONNECT CABLE, CONDUITS, AND ANY UNDERGROUND ACCESSORY EQUIPMENT DAMAGED DURING CONSTRUCTION. REPAIR SHALL BE EQUAL TO OR BETTER THAN EXISTING CONDITIONS.
14. ALL CONCRETE SHALL HAVE THE MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS AS INDICATED IN SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS, DETAILS AND/OR GEOTECHNICAL REPORT.
15. ENGINEER IS NOT RESPONSIBLE FOR CONSTRUCTION METHODS/MEANS FOR COMPLETION OF THE WORK DEPICTED ON THESE PLANS NOR ANY CONFLICTS/SCOPE REVISIONS WHICH RESULT FROM SAME. CONTRACTOR IS RESPONSIBLE FOR DETERMINING METHODS/MEANS FOR COMPLETION OF THE WORK PRIOR TO THE COMMENCEMENT OF CONSTRUCTION AND NOTIFICATION OF OWNER AND ENGINEER OF RECORD WHEN A CONFLICT IS IDENTIFIED.
16. ENGINEER OF RECORD IS NOT RESPONSIBLE FOR JOB SITE SAFETY NOR HAVE THEY BEEN RETAINED FOR SUCH PURPOSES.
17. ALL CONTRACTORS MUST CARRY STATUTORY WORKER'S COMPENSATION INSURANCE, EMPLOYER'S LIABILITY INSURANCE AND APPROPRIATE LIMITS OF COMMERCIAL GENERAL LIABILITY INSURANCE (CGL). ALL CONTRACTORS MUST HAVE THEIR CGL POLICIES ENDORSED TO NAME BOHLER ENGINEERING, AND ITS SUB-CONSULTANTS AS ADDITIONAL INSURED AND TO PROVIDE CONTRACTUAL LIABILITY COVERAGE SUFFICIENT TO INSURE THE HOLD HARMLESS AND INDEMNITY OBLIGATIONS ASSUMED BY THE CONTRACTORS. ALL CONTRACTORS MUST FURNISH BOHLER ENGINEERING WITH CERTIFICATIONS OF INSURANCE AS EVIDENCE OF THE REQUIRED INSURANCE PRIOR TO COMMENCING WORK AND UPON RENEWAL OF EACH POLICY DURING THE ENTIRE PERIOD OF CONSTRUCTION. IN ADDITION, ALL CONTRACTORS WILL, TO THE FULLEST EXTENT PERMITTED BY LAW, INDEMNIFY AND HOLD HARMLESS BOHLER ENGINEERING AND ITS SUB-CONSULTANTS FROM AND AGAINST ANY DAMAGES, LIABILITIES OR COSTS, INCLUDING REASONABLE ATTORNEYS' FEES AND DEFENSE COSTS, ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE PROJECT, INCLUDING ALL CLAIMS BY EMPLOYEES OF THE CONTRACTORS.
18. NEITHER THE PROFESSIONAL ACTIVITIES OF BOHLER ENGINEERING, NOR THE PRESENCE OF BOHLER ENGINEERING OR ITS EMPLOYEES AND SUB-CONSULTANTS AT A CONSTRUCTION/PROJECT SITE, SHALL RELIEVE THE GENERAL CONTRACTOR OF ITS OBLIGATIONS, DUTIES AND RESPONSIBILITIES INCLUDING, BUT NOT LIMITED TO, CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, SUPERINTENDING AND COORDINATING THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND ANY HEALTH OR SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY AGENCIES. BOHLER ENGINEERING AND ITS PERSONNEL HAVE NO AUTHORITY TO EXERCISE ANY CONTROL OVER ANY CONSTRUCTION CONTRACTOR OR ITS EMPLOYEES IN CONNECTION WITH THEIR WORK OR ANY HEALTH OR SAFETY PROGRAMS OR PROCEDURES. THE GENERAL CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR JOB SITE SAFETY. BOHLER ENGINEERING SHALL BE INDEMNIFIED BY THE GENERAL CONTRACTOR AND SHALL BE MADE ADDITIONAL INSURED UNDER THE GENERAL CONTRACTOR'S POLICIES OF GENERAL LIABILITY INSURANCE.
19. BOHLER ENGINEERING SHALL REVIEW AND APPROVE OR TAKE OTHER APPROPRIATE ACTION ON THE CONTRACTOR SUBMITTALS, SUCH AS SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND OTHER DATA, WHICH THE CONTRACTOR IS REQUIRED TO SUBMIT, BUT ONLY FOR THE LIMITED PURPOSE OF CHECKING FOR CONFORMANCE WITH THE DESIGN CONCEPT AND THE INFORMATION SHOWN IN THE CONSTRUCTION MEANS OR METHODS, COORDINATION OF THE WORK WITH OTHER TRADES, OR CONSTRUCTION SAFETY PRECAUTIONS, ALL OF WHICH ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. BOHLER ENGINEERING'S REVIEW SHALL BE CONDUCTED WITH REASONABLE PROMPTNESS WHILE ALLOWING SUFFICIENT TIME TO PERMIT ADEQUATE REVIEW. REVIEW OF A SPECIFIC ITEM SHALL NOT INDICATE THAT BOHLER ENGINEERING HAS REVIEWED THE ENTIRE ASSEMBLY OF WHICH THE ITEM IS A COMPONENT. BOHLER ENGINEERING SHALL NOT BE RESPONSIBLE FOR ANY DEVIATIONS FROM THE CONSTRUCTION DOCUMENTS NOT BROUGHT TO THE ATTENTION OF BOHLER ENGINEERING IN WRITING BY THE CONTRACTOR. BOHLER ENGINEERING SHALL NOT BE REQUIRED TO REVIEW PARTIAL SUBMISSIONS OR THOSE FOR WHICH SUBMISSIONS OF CORRELATED ITEMS HAVE NOT BEEN RECEIVED.
20. IN AN EFFORT TO RESOLVE ANY CONFLICTS THAT ARISE DURING THE DESIGN AND CONSTRUCTION OF THE PROJECT OR FOLLOWING THE COMPLETION OF THE PROJECT, BOHLER ENGINEERING AND THE CONTRACTOR MUST AGREE THAT ALL DISPUTES BETWEEN THEM ARISING OUT OF OR RELATING TO THIS AGREEMENT OR THE PROJECT SHALL BE SUBMITTED TO NON-BINDING MEDIATION UNLESS THE PARTIES MUTUALLY AGREE OTHERWISE.
21. THE CONTRACTOR MUST INCLUDE A MEDIATION PROVISION IN ALL AGREEMENTS WITH INDEPENDENT SUBCONTRACTORS AND CONSULTANTS RETAINED FOR THE PROJECT AND TO REQUIRE ALL INDEPENDENT CONTRACTORS AND CONSULTANTS ALSO TO INCLUDE A SIMILAR MEDIATION PROVISION IN ALL AGREEMENTS WITH THEIR SUBCONTRACTORS, SUB-CONSULTANTS, SUPPLIERS AND FABRICATORS, THEREBY PROVIDING FOR MEDIATION AS THE PRIMARY METHOD FOR DISPUTE RESOLUTION BETWEEN THE PARTIES TO ALL THOSE AGREEMENTS.
22. IF THE CONTRACTOR DEVIATES FROM THE PLANS AND SPECIFICATIONS, INCLUDING THE NOTES CONTAINED THEREON, WITHOUT FIRST OBTAINING PRIOR WRITTEN AUTHORIZATION FOR SUCH DEVIATIONS FROM THE OWNER AND ENGINEER, IT SHALL BE RESPONSIBLE FOR THE PAYMENT OF ALL COSTS TO CORRECT ANY WORK DONE, ALL FINES OR PENALTIES ASSESSED WITH RESPECT THERETO AND ALL COMPENSATORY OR PUNITIVE DAMAGES RESULTING THEREFROM. THE CONTRACTOR SHALL INDEMNIFY AND HOLD THE OWNER AND ENGINEER HARMLESS FROM ALL SUCH COSTS TO CORRECT ANY SUCH WORK AND FROM ALL SUCH FINES AND PENALTIES, COMPENSATION AND PUNITIVE DAMAGES AND COSTS OF ANY NATURE RESULTING THEREFROM.

GENERAL GRADING & UTILITY PLAN NOTES

1. LOCATION OF ALL EXISTING AND PROPOSED SERVICES ARE APPROXIMATE AND MUST BE CONFIRMED INDEPENDENTLY WITH LOCAL UTILITY COMPANIES PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION OR EXCAVATION. SANITARY SEWER AND ALL OTHER UTILITY SERVICE CONNECTION POINTS SHALL BE CONFIRMED INDEPENDENTLY BY THE CONTRACTOR IN FIELD PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. ALL DISCREPANCIES SHALL BE REPORTED IMMEDIATELY IN WRITING TO THE ENGINEER. CONSTRUCTION SHALL COMMENCE BEGINNING AT THE LOWEST INVERT (POINT OF CONNECTION) AND PROGRESS UP GRADIENT. ALL PROPOSED INTERFACE POINTS (CROSSINGS) WITH EXISTING UNDERGROUND UTILITIES SHALL BE FIELD VERIFIED BY TEST PIT PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. ALL UTILITIES AND SERVICES INCLUDING BUT NOT LIMITED TO GAS, WATER, ELECTRIC, SANITARY AND STORM SEWER, TELEPHONE, CABLE, FIBER OPTIC CABLE, ETC. WITHIN THE LIMITS OF DISTURBANCE SHALL BE VERTICALLY AND HORIZONTALLY LOCATED. THE CONTRACTOR SHALL USE AND COMPLY WITH THE REQUIREMENTS OF THE APPLICABLE UTILITY NOTIFICATION SYSTEM TO LOCATE ALL THE UNDERGROUND UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRS OF DAMAGE TO ANY EXISTING UTILITIES DURING CONSTRUCTION AT NO COST TO THE OWNER.
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THE PROJECT WORK SCOPE PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR THE RELATIVE CODES, IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY BOHLER ENGINEERING 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 WORK AS DEFINED BY THE DRAWINGS AND IN FULL COMPLIANCE WITH LOCAL REGULATIONS AND CODES.
4. DEFINE AND LOCATE VERTICALLY AND HORIZONTALLY ALL ACTIVE UTILITY AND/OR SERVICE SYSTEMS THAT ARE TO BE REMOVED. THE CONTRACTOR IS RESPONSIBLE TO PROTECT AND MAINTAIN ALL ACTIVE SYSTEMS THAT ARE NOT BEING REMOVED/RELOCATED DURING SITE ACTIVITY.
5. THE CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH THE APPLICABLE UTILITY SERVICE PROVIDER REQUIREMENTS AND IS RESPONSIBLE FOR ALL COORDINATION REGARDING UTILITY DEMOLITION AS IDENTIFIED OR REQUIRED FOR PROJECT. THE CONTRACTOR SHALL PROVIDE THE OWNER WRITTEN NOTIFICATION THAT THE EXISTING UTILITIES AND SERVICES HAVE BEEN TERMINATED AND ABANDONED IN ACCORDANCE WITH JURISDICTION AND UTILITY COMPANY REQUIREMENTS.
6. CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF SITE PLAN DOCUMENTS AND ARCHITECTURAL DESIGN FOR EXACT BUILDING UTILITY CONNECTION LOCATIONS, GREASE TRAP REQUIREMENTS/DETAILS, DOOR ACCESS, AND EXTERIOR GRADING. THE UTILITY SERVICE SIZES ARE TO BE DETERMINED BY THE ARCHITECT. THE CONTRACTOR SHALL COORDINATE INSTALLATION OF UTILITIES/SERVICES WITH THE INDIVIDUAL COMPANIES, TO AVOID CONFLICTS AND ENSURE PROPER DEPTHS ARE ACHIEVED. THE JURISDICTION UTILITY REQUIREMENTS SHALL ALSO BE MET, AS WELL AS COORDINATING THE UTILITY TIE-INS/CONNECTIONS PRIOR TO CONNECTING TO THE EXISTING UTILITY/SERVICE. WHERE CONFLICTS EXIST WITH THESE SITE PLANS, ENGINEER IS TO BE NOTIFIED PRIOR TO CONSTRUCTION TO RESOLVE SAME.
7. WATER SERVICE MATERIALS, BURIAL DEPTH, AND COVER REQUIREMENTS SHALL BE SPECIFIED BY THE LOCAL UTILITY COMPANY. CONTRACTOR'S PRICE FOR WATER SERVICE SHALL INCLUDE ALL FEES AND APPURTENANCES REQUIRED BY THE UTILITY TO PROVIDE A COMPLETE WORKING SERVICE.
8. ALL NEW UTILITIES/SERVICES, INCLUDING ELECTRIC, TELEPHONE, CABLE TV, ETC. ARE TO BE INSTALLED UNDERGROUND. ALL NEW UTILITIES/SERVICES SHALL BE INSTALLED IN ACCORDANCE WITH THE UTILITY/SERVICE PROVIDER INSTALLATION SPECIFICATIONS AND STANDARDS.
9. SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT REFERENCED IN THIS PLAN SET. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND REPLACING WITH SUITABLE MATERIALS AS SPECIFIED IN THE GEOTECHNICAL REPORT. ALL EXCAVATED OR FILLED AREAS SHALL BE COMPACTED AS OUTLINED IN THE GEOTECHNICAL REPORT. MOISTURE CONTENT AT TIME OF PLACEMENT SHALL BE SUBMITTED IN COMPACTION REPORT PREPARED BY A QUALIFIED GEOTECHNICAL ENGINEER, REGISTERED WITH THE STATE WHERE THE WORK IS PERFORMED, VERIFYING THAT ALL FILLED AREAS AND SUB-GRADE AREAS WITHIN THE BUILDING PAD AREA AND AREAS TO BE PAVED HAVE BEEN COMPACTED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT. SUB-BASE MATERIAL FOR SIDEWALKS, CURB, OR ASPHALT SHALL BE FREE OF ORGANICS AND OTHER UNSUITABLE MATERIALS. SHOULD SUB-BASE BE DEEMED UNSUITABLE BY OWNER OR OWNER'S REPRESENTATIVE, SUB-BASE IS TO BE REMOVED AND FILLED WITH APPROVED FILL MATERIAL COMPACTED AS DIRECTED BY THE GEOTECHNICAL REPORT.
10. ALL FILL, COMPACTION, AND BACKFILL MATERIALS REQUIRED FOR UTILITY INSTALLATION SHALL BE AS PER THE RECOMMENDATIONS PROVIDED IN THE GEOTECHNICAL REPORT AND SHALL BE COORDINATED WITH THE APPLICABLE UTILITY COMPANY SPECIFICATIONS.
11. THE CONTRACTOR SHALL COMPLY TO THE FULLEST EXTENT WITH THE LATEST OSHA STANDARDS AND REGULATIONS, OR ANY OTHER AGENCY HAVING JURISDICTION FOR EXCAVATION AND TRENCHING PROCEDURES. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE "MEANS AND METHODS" REQUIRED TO MEET THE INTENT AND PERFORMANCE CRITERIA OF OSHA, AS WELL AS ANY OTHER ENTITY THAT HAS JURISDICTION FOR EXCAVATION AND/OR TRENCHING PROCEDURES.
12. PAVEMENT SHALL BE SAW CUT IN STRAIGHT LINES TO THE FULL DEPTH OF THE EXISTING PAVEMENT. ALL DEBRIS FROM REMOVAL OPERATIONS SHALL BE REMOVED FROM THE SITE AT THE TIME OF EXCAVATION. STOCKPILING OF DEBRIS WILL NOT BE PERMITTED.
13. THE TOPS OF EXISTING MANHOLES, INLET STRUCTURES, AND SANITARY CLEANOUT TOPS SHALL BE ADJUSTED, IF REQUIRED, TO MATCH PROPOSED GRADES IN ACCORDANCE WITH ALL APPLICABLE STANDARDS.
14. THE CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF EXISTING TOPOGRAPHIC INFORMATION AND UTILITY INVERT ELEVATIONS PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION. CONTRACTOR TO ENSURE 0.75% MINIMUM SLOPE ALONG ALL ISLANDS, GUTTERS, AND CURBS; 1.0% ON ALL CONCRETE SURFACES; AND 1.0% MINIMUM ON ASPHALT, TO PREVENT PONDING. ANY DISCREPANCIES THAT MAY AFFECT THE PUBLIC SAFETY OR PROJECT COST MUST BE IDENTIFIED TO THE ENGINEER IN WRITING IMMEDIATELY. PROCEEDING WITH CONSTRUCTION WITHOUT NOTIFICATION IS DONE SO AT THE CONTRACTOR'S OWN RISK.
15. REFER TO SITE PLAN FOR ADDITIONAL NOTES.
16. IN CASE OF DISCREPANCIES BETWEEN PLANS OR RELATIVE TO OTHER PLANS, THE SITE PLAN WILL TAKE PRECEDENCE. IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY CONFLICTS.
17. CONTRACTOR SHALL BE REQUIRED TO SECURE ALL NECESSARY PERMITS AND APPROVALS FOR ALL OFF-SITE MATERIAL SOURCES AND DISPOSAL FACILITIES. CONTRACTOR SHALL SUPPLY A COPY OF APPROVALS TO ENGINEER AND OWNER PRIOR TO INITIATING WORK.

UTILITY CONTACTS

- NATURAL GAS AND ELECTRIC
  BALTIMORE GAS AND ELECTRIC
  7317 PARKWAY DRIVE
  SOUTH HANOVER, MD 21076
  PHONE: (410) 859-9383
- TELEPHONE
  VERIZON
  7133 RUTHERFORD ROAD
  BALTIMORE, MD 21244
  PHONE: (410) 224-5286
- STORMWATER MANAGEMENT
  HOWARD COUNTY PLANNING AND ZONING DEPARTMENT
  3430 COURTHOUSE DRIVE
  ELLICOTT CITY, MD 21043
  PHONE: (410) 313-2350
- WATER AND SANITARY SEWER
  HOWARD COUNTY PUBLIC WORKS BUREAU OF UTILITIES
  8250 OLD MONTGOMERY ROAD
  COLUMBIA, MD 21045
  PHONE: (410) 313-4910
- EROSION AND SEDIMENT CONTROL
  DEPARTMENT OF INSPECTIONS, LICENSES & PERMITS
  3430 COURTHOUSE DRIVE
  ELLICOTT CITY, MD 21043
  PHONE: (410) 313-2455
- PLANNING AND ZONING
  HOWARD COUNTY PLANNING AND ZONING DEPARTMENT
  3430 COURTHOUSE DRIVE
  ELLICOTT CITY, MD 21043
  PHONE: (410) 313-2350

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)

NO.:	DATE	REVISION DESCRIPTION

OWNER:
M/I HOMES OF DC, LLC
21355 RIDGETOP CIRCLE, SUITE 220
STERLING, VA 20166
CONTACT : CINDY HUNTZBERRY
PHONE : 443-677-9803

DEVELOPER:
SOMERWORTH II, L.C.
5704 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
GENERAL NOTES AND LEGEND

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

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

BRANDON R. ROWE
PROFESSIONAL ENGINEER NO. 40808

CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	AS NOTED
DRAWING NO.	2 OF 34

APPROVED
PLANNING BOARD OF HOWARD COUNTY
PB 406
DATE 10/08/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[signature] 11.17.14
CHIEF-DEVELOPMENT ENGINEERING DIVISION DATE

T. Mauler for KS 12-22-14
CHIEF-DIVISION OF LAND DEVELOPMENT DATE

[signature]
DIRECTOR DATE

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PROJECT
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
SITE DEMOLITION PLAN

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
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SCALE:	1"=50'
DRAWING NO.	3 OF 34

H:\2011\MD112149\DRAWINGS\PLAN SETS\SITE DEVELOPMENT PLAN\MD112149ED10.DWG PRINTED BY: RBOWEN 10.29.14 @ 3:55 PM LAST SAVED BY: A

SDP-13-023

GENERAL NOTES :

1. FOR PARKING ELEVATIONS PCs, PTs AND PARKING LOT CORNERS SPOT GRADES, SEE SHEET 5.
2. NO BUILDING PERMITS WILL BE ISSUED UNTIL ALL EXISTING DWELLINGS, WELLS, AND SEPTIC SYSTEMS HAVE BEEN ABANDONED IN COMPLIANCE WITH HEALTH DEPARTMENT REGULATIONS.
3. PATHWAYS AND SIDEWALKS TO BE ADA COMPLAINT.
4. PROP. R1-1 STOP SIGN AT THE MAIN ENTRANCE TO THE PROPERTY SHALL BE INSTALLED AS PART OF THE SDP PLAN.

DEVELOPMENT CRITERIA PER APPROVED PDP PLAN

1. MAXIMUM OF 97 HOUSING UNITS WILL BE SPECIALLY DESIGNED FOR RESIDENTS OVER THE AGE OF 55 WITH WALKING PATHS, SEATING AREAS AND RECREATIONAL AMENITIES.
2. A TOTAL OF 10 MODERATE INCOME DWELLINGS ARE TO BE PROVIDED OR A FEE-IN-LIEU PAYMENT SHALL BE PROVIDED.
3. A TOTAL OF 87 TOWNHOMES AND 10 SINGLE FAMILY HOMES ARE PLANNED.
4. ALL HOMES WILL HAVE A GARAGE.
5. THE EXTERIOR WALLS WILL BE BRICK AND/OR STONE AND/OR HARDIPLANK AND/OR BEADED SIDING.
6. ACCESS TO AND CIRCULATION WITHIN ALL OF THE BUILDINGS WILL BE WITHIN THE DESIGN CRITERIA OF THE AMERICANS WITH DISABILITIES ACT ("ADA").
7. THERE WILL BE A PATH AND SIDEWALK SYSTEM CONNECTING SEATING AREAS WITHIN THE COMMUNITY AND TO THE ADJACENT RECREATION AND PARKS PATHWAYS.
8. VEHICULAR ACCESS INTO AND OFF OF THE SITE WILL BE THROUGH AN INTERNAL PRIVATE ROAD TO BE BUILT.
9. A 2,567 SQUARE FOOT COMMUNITY BUILDING, CONTAINING A LIBRARY, AN EXERCISE ROOM, MEETING ROOMS AND OTHER ACTIVITY AREAS WILL BE BUILT ON THE SITE.
10. THE EXTERIOR OF THE COMMUNITY BUILDING WILL BE THE SAME BRICK AND/OR STONE.
11. ONE (1) OCCUPANT OF THE DWELLING UNIT, NOT NECCESSARILY THE PURCHASER, MUST BE 55 YEARS OF AGE OR OVER IN ORDER TO BE ELIGIBLE TO PURCHASE ANY OF THE DWELLING UNITS.
12. CHILDREN UNDER THE AGE OF 18 MAY NOT RESIDE IN A DWELLING FOR MORE THAN 90 DAYS WITHIN A CALENDAR YEAR.
13. ALL STREET LIGHTS SHOWN SHALL BE PRIVATELY OWNED OR LEASED FROM BG&E.

AMENDED DEVELOPMENT CRITERIA PER ZONING, SECTION 127.1.B, C, D, F (1-5).

A. PERMITTED USES:
1. AGE-RESTRICTED ADULT HOUSING.

B. ACCESSORY USES:
1. SERVICES AND BUSINESSES THAT SERVE THE RESIDENTS OF THE PSC DISTRICT, INCLUDING RECREATIONAL, EDUCATIONAL, HEALTH, PERSONAL, PROFESSIONAL AND BUSINESS SERVICES.
2. HOME OCCUPATIONS, SUBJECT TO THE REQUIREMENTS OF SECTION 128.C.1.
3. COMMUNITY CENTER ALLOWS CUSTOMARY COMMUNITY ACTIVITIES INCLUDING BUT NOT LIMITED TO RECREATIONAL, SOCIAL AND EDUCATIONAL ACTIVITIES SUCH AS PICNICS RUMMAGE SALES, CAKE SALES, DANCES, AND OTHER SIMILAR ACTIVITIES.

C. BULK REGULATIONS:
1. MAXIMUM DENSITY IS 8.0 DWELLING UNITS PER NET ACRE.
2. MAXIMUM UNITS PER STRUCTURE:
   - a. SINGLE FAMILY ATTACHED = 8 UNITS PER STRUCTURE
   - b. BUILDING LENGTH = 320 FEET FOR SFA
3. MAXIMUM HEIGHT SHALL NOT EXCEED:
   - a. APARTMENTS AND GARDEN CONDOMINIUMS = 60 FT. (max.)
   - b. SINGLE FAMILY ATTACHED AND DETACHED = 34 FEET (max.)
   - c. ACCESSORY STRUCTURE = 15 FEET
4. MINIMUM DISTANCES BETWEEN RESIDENTIAL UNITS (ALL STYLES), EXCEPT IMPROVEMENTS MAY BE LOCATED ANYWHERE WITHIN SUCH SETBACK AREAS IF IN ACCORDANCE WITH A SITE DEVELOPMENT PLAN APPROVED BY THE PLANNING BOARD.
   - a. FACE TO FACE = 30 FEET
   - b. FACE TO SIDE/REAR TO SIDE = 15 FEET
   - c. SIDE TO SIDE = 10 FEET
   - d. REAR TO REAR = 25 FEET
   - e. REAR TO FACE = 20 FEET
5. MINIMUM DISTANCES BETWEEN RESIDENTIAL UNITS (ALL STYLES) AND EDGE OF PRIVATE ROAD ROADWAY. EXCEPT IMPROVEMENTS MAY BE LOCATED ANYWHERE WITHIN SUCH SETBACK AREAS IF IN ACCORDANCE WITH A SITE DEVELOPMENT PLAN APPROVED BY THE PLANNING BOARD.
   - a. RESIDENTIAL FRONT = 18 FEET (AS MEASURED FROM GARAGE DOOR ONLY)*
   - b. RESIDENTIAL SIDE = 10 FEET
   - c. RESIDENTIAL REAR = 30 FEET
   - d. RESIDENTIAL ACCESSORY STRUCTURE = 10 FEET (EXCEPT RECREATIONAL AMENITIES)
   - e. GARDEN CONDOMINIUM = 10 FEET
6. MINIMUM DISTANCES BETWEEN COMMUNITY BUILDING, AND GAZEBO STRUCTURES AND EDGE OF PRIVATE ROADWAY AND/OR PARKING AREAS = 10 FEET
7. BUILDING COVERAGE - NO COVERAGE REQUIREMENTS ARE IMPOSED OTHER THAN COMPLIANCE WITH THE 35% MINIMUM OPEN SPACE REQUIREMENTS FOR THE PSC ZONING DISTRICT.
8. MINIMUM STRUCTURE AND USE SETBACKS FROM PERIMETER OF THE PSC DISTRICT :
   - a. FROM ARTERIAL OR COLLECTOR PUBLIC STREET RIGHT-OF-WAY = 50 FEET
   - b. FROM OTHER PUBLIC RIGHT-OF-WAY = 40 FEET
   - c. FROM RESIDENTIAL LOTS IN RC, RR, R-ED, R-20, R-12 OR R-SC DISTRICTS = 50 FEET
     EXCEPT STRUCTURES CONTAINING APARTMENTS, ASSISTED LIVING FACILITIES OR NURSING FACILITIES = 75 FEET
   - d. FROM OPEN SPACE AND OTHER USUES IN RC,RR RED, R-20, R-12 & PSC DISTRICTS = 30 FEET
   - e. FROM ZONING DISTRICTS OTHER THAN RC, RR, R-ED, R-20, R-12 OR R-SC DISTRICTS = 30 FEET

D. OTHER PROVISIONS:
1. THE PROVISIONS OF SECTION 128 (SUPPLEMENTAL ZONING DISTRICT REGULATIONS) AND SECTION 133 (OFF-STREET PARKING AND LOADING FACILITIES) PER APPROVED FEBRUARY 2, 2004 ZONING REGULATIONS SHALL APPLY IN THE PSC DISTRICT.
2. THE PLAN ALLOWS FOR SOME FLEXIBILITY IN THE EXACT LOCATION AND DENSITY OF LAND USES.

E. LANDSCAPING AND SCREENING:
1. THE MINIMUM LANDSCAPING AND SCREENING REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE SUBDIVISION REGULATIONS, THE ZONING REGULATIONS AND THE HOWARD COUNTY LANDSCAPING MANUAL.

F. PARKING STANDARDS :

87 TOWNHOME UNITS x 2 SP/UNIT =	174 SPACES
10 SFD UNITS x 2 SP/UNIT =	20 SPACES
SFD GUEST SPACES (10 LOTS X 0.5 SP/LOT) =	5 SPACES
SFA GUEST SPACES (87 LOTS X 0.3 SP/LOT) =	26 SPACES
OVERFLOW SPACES (97 UNITS X 0.5 SP/UNITS) =	49 SPACES
TOTAL SPACES REQUIRED =	274 SPACES

1/20/16 REVISION TO REVISE SFD GENERIC FOOTPRINT AND FF/CE ELEVATIONS

8/31/15 REVISION TO UPDATE CLUBHOUSE/COMMUNITY CENTER AND SURROUNDING AREA.

11-09-16 REVISED GRADES AND FOOTPRINTS (LOTS 9-16 & 72-79)

12/1/16

NO.:	DATE	REVISION DESCRIPTION
4	10/21/16	Revised Footprint for Lots 66-77 & 151
3	1/20/16	REVISED SFD GENERIC FOOTPRINT
2	10/27/15	UPDATED GRADING FOR LOTS 17 - 20
1	8/31/15	REVISED CLUBHOUSE/COMMUNITY CENTER

LEGEND

- PROPERTY LINE
- LIMITS OF CLEARING
- FOREST CONSERVATION AREA
- PUBLIC WATER AND SEWER EASEMENT
- PRIVATE SWM, DRAINAGE AND UTILITY EASEMENT
- WETLAND LIMITS
- FLOODPLAIN LIMITS
- LIMITS OF CURB PAINTED RED
- PROP. ROAD END BARRICADE (R-5.11)

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ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT
REVISED SITE DEVELOPMENT PLAN
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
SITE DEVELOPMENT PLAN

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
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CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	6/23/14
SCALE:	1" = 50'
DRAWING NO.	4 OF 34

PROFESSIONAL ENGINEER NO. 40808

SDP-13-023

APPROVED
PLANNING BOARD OF HOWARD COUNTY
~~DATE~~
DATE 10-08-14

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF-DEVELOPMENT ENGINEERING DIVISION	DATE 4/11/16
CHIEF-DIVISION OF LAND DEVELOPMENT	DATE 4-14-16
DIRECTOR	DATE 4-15-16

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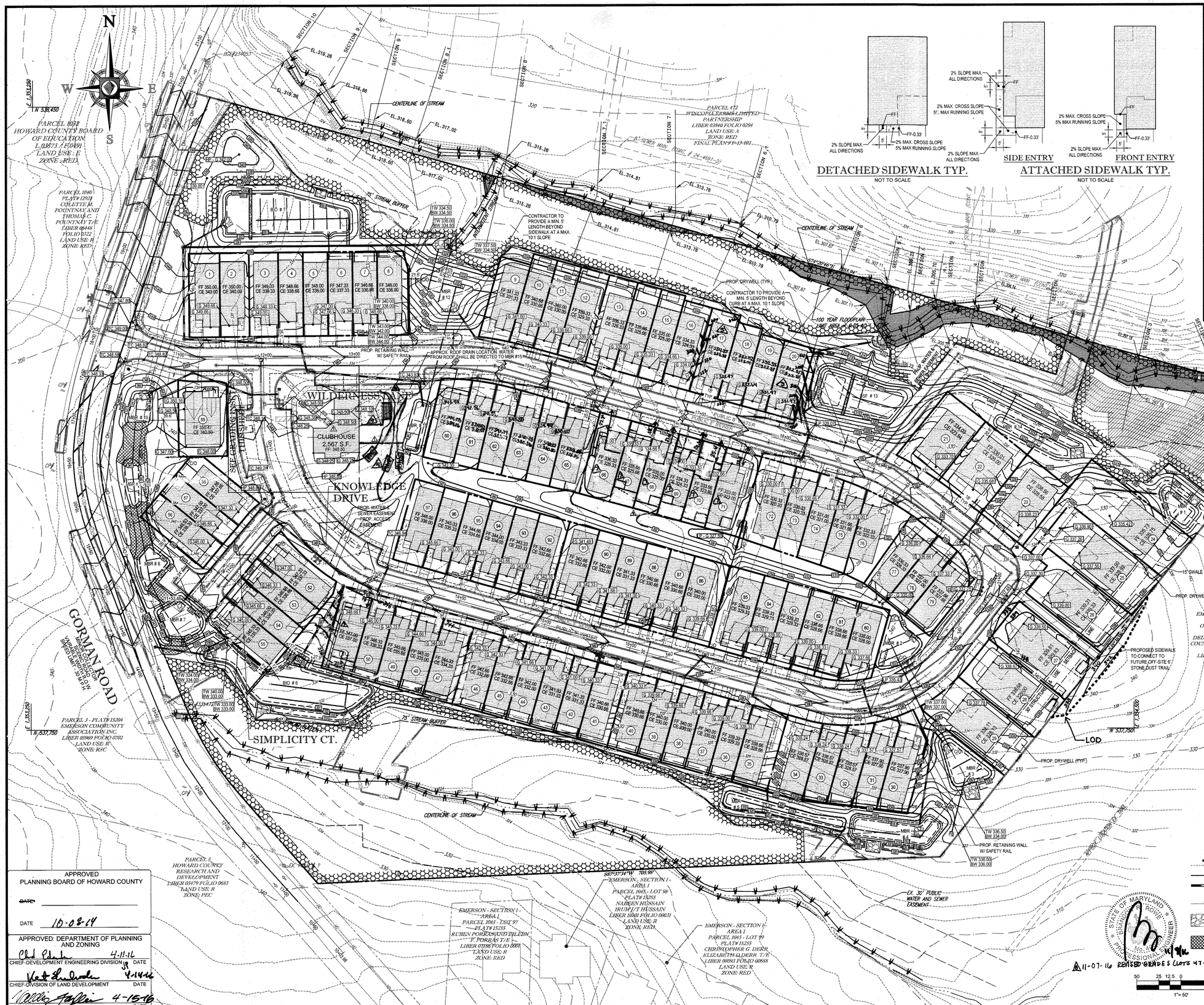

1/20/16 REVISION TO REVISE SFD GENERIC FOOTPRINT AND FF/CE ELEVATIONS

8/31/15 REVISION TO UPDATE CLUBHOUSE/COMMUNITY CENTER AND SURROUNDING AREA.

LEGEND

TC 341.25	PROP. GRADE SPOT
341	EX. CONTOUR
341	PROP. CONTOUR
	PROP. UNDERGROUND STORM PIPE
	PROP. DEAD END BARRICADE (HOWARD COUNTY DETAIL R-5.11)
	RIP-RAP
	PERMANENT SOIL STABILIZATION MATTING. CONTRACTOR TO USE SLOPE OR CHANNEL APPLICATION AS NECESSARY (MDE DETAILS B-4-6-C, B-4-6-D)

APPROVED
PLANNING BOARD OF HOWARD COUNTY

DATE _____

DATE 10-08-14

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF-DEVELOPMENT ENGINEERING DIVISION	DATE 4-11-16
CHIEF-DIVISION OF LAND DEVELOPMENT	DATE 4-14-16
DIRECTOR	DATE 4-15-16

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NO.	DATE	REVISION DESCRIPTION
7	7/21/16	REVISED LOT GRADES
6	1/20/16	REVISED SFD GENERIC FOOTPRINT
5	10/27/15	UPDATED GRADING FOR LOTS 17 - 20
4	8/31/15	REVISED CLUBHOUSE/COMMUNITY CENTER

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PROJECT
REVISED SITE DEVELOPMENT PLAN
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
GRADING PLAN

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PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	AS NOTED
DRAWING NO.	5 OF 34

PROFESSIONAL ENGINEER NO. 40808

SDP-13-023

ROOF DRAIN PIPE / INVERT SCHEDULE			
ESD #	ROOF DRAIN	PIPE	INV. ELEV.
2	RD-19	6" PVC	333.00
	RD-19A	6" PVC	333.40
	RD-20	6" PVC	334.50
	RD-21	6" PVC	335.00
	RD-25	6" PVC	333.00
	RD-26	6" PVC	333.75
	RD-27	6" PVC	336.50
4	FC-1	6" PVC	319.59
	RD-1	6" PVC	322.75
5	RD-2 @ MH-9	6" PVC	320.05
	RD-2A	6" PVC	323.00
	RD-3	6" PVC	326.00
	RD-4	6" PVC	328.50
6	RD-6	6" PVC	331.00
	RD-7	6" PVC	331.56
	RD-8	6" PVC	331.80
	RD-9	6" PVC	331.00
	RD-10	6" PVC	340.30
	RD-11	6" PVC	344.00
8	RD-12	6" PVC	340.00
	RD-13	6" PVC	341.00
	RD-14	6" PVC	343.00
11	RD-22	6" PVC	330.50
	RD-23	6" PVC	331.00
	RD-24	6" PVC	333.00
13	RD-15 (@ I-11)	6" PVC	324.81
	RD-16	6" PVC	333.50
	RD-17	6" PVC	336.00
	RD-18	6" PVC	337.20

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NO.:	DATE	REVISION DESCRIPTION
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PHONE : 443-677-9803

DEVELOPER:
SOMERWORTH II, L.C.
5704 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT
REVISED SITE DEVELOPMENT PLAN
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
UTILITY PLAN

8/31/15 REVISION TO UPDATE CLUBHOUSE/COMMUNITY CENTER AND SURROUNDING AREA.

LEGEND

- RD - 1 — ROOF DRAIN
- PROP. STORM DRAIN
- PROP. 8" WATER MAIN
- PROP. 8" SEWER MAIN
- PRIVATE SWM, DRAINAGE & UTILITY EASEMENT
- PUBLIC WATER & SEWER EASEMENT

50 25 12.5 0 50
1"= 50'

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

APPROVED
PLANNING BOARD OF HOWARD COUNTY
PB 406
DATE 10/08/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE 10-21-15
CHIEF-DIVISION OF LAND DEVELOPMENT — DATE 10-22-15
DIRECTOR — DATE 10-23-15

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
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www.BohlerEngineering.com

CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	1"=50'
DRAWING NO.	6 OF 34

BRANDON R. ROWE
PROFESSIONAL ENGINEER NO. 40808

SDP-13-023

TYPE II SEDIMENT TRAP #1

DRAINAGE AREA =	2.0 AC
VOLUME REQUIRED (2.0 X 3,600)=	7,200 CF
VOLUME PROVIDED =	7,200 CF @ ELEV 320.00
WET VOL. REQUIRED (2.0 X 1,800) =	3,600 CF
WET VOL. PROVIDED =	3,600 CF @ ELEV 318.75
DRY VOL. REQUIRED =	3,600 CF
DRY VOL. PROVIDED =	3,600 CF
CLEAN OUT VOLUME (2.0 X 900) =	1,800 CF
WEIR ELEV =	320.60
PERMANENT POOL ELEV =	318.75
TOP ELEV. =	321.60
BOTTOM ELEV =	317.00
BASIN CLEANOUT ELEV =	317.87
BOTTOM SIZE =	100' X 18'
SIDE SLOPES =	2:1
WEIR LENGTH =	72'
TEMP. SWM FOR 1 YR. STORM =	2,090 CF @ ELEV 320.60

TYPE II SEDIMENT TRAP #2

DRAINAGE AREA =	3.2 AC
VOLUME REQUIRED (3.2 X 3,600)=	11,520 CF
VOLUME PROVIDED =	11,500 CF @ ELEV 319.00
WET VOL. REQUIRED (3.2 X 1,800) =	5,760 CF
WET VOL. PROVIDED =	5,800 CF @ ELEV 317.75
DRY VOL. REQUIRED =	5,760 CF
DRY VOL. PROVIDED =	5,800 CF
CLEAN OUT VOLUME (3.2 X 900) =	2,850 CF
WEIR ELEV =	319.55
PERMANENT POOL ELEV =	317.75
TOP ELEV. =	320.55
BOTTOM ELEV =	316.00
BASIN CLEANOUT ELEV =	316.60
BOTTOM SIZE =	SEE PLAN
SIDE SLOPES =	2:1
WEIR LENGTH =	18'
TEMP. SWM FOR 1 YR. STORM =	3,310 CF @ ELEV 319.55

TYPE II SEDIMENT TRAP #3

DRAINAGE AREA =	3.1 AC
VOLUME REQUIRED (3.1 X 3,600)=	11,162 CF
VOLUME PROVIDED =	12,080 CF @ ELEV 331.00
WET VOL. REQUIRED (3.1 X 1,800) =	5,580 CF
WET VOL. PROVIDED =	6,080 CF @ ELEV 329.75
DRY VOL. REQUIRED =	5,580 CF
DRY VOL. PROVIDED =	6,000 CF
CLEAN OUT VOLUME (3.1 X 900) =	2,790 CF
WEIR ELEV =	331.62
PERMANENT POOL ELEV =	329.75
TOP ELEV. =	332.62
BOTTOM ELEV =	328.00
BASIN CLEANOUT ELEV =	328.80
BOTTOM SIZE =	32 X 100'
SIDE SLOPES =	2:1
WEIR LENGTH =	18'
TEMP. SWM FOR 1 YR. STORM =	2,660 CF @ ELEV 331.62

TYPE II SEDIMENT TRAP #4

DRAINAGE AREA =	2.0 AC
VOLUME REQUIRED (2.0 X 3,600)=	7,200 CF
VOLUME PROVIDED =	12,500 CF @ ELEV 331.00
WET VOL. REQUIRED (2.0 X 1,800) =	3,600 CF
WET VOL. PROVIDED =	6,560 CF @ ELEV 329.75
DRY VOL. REQUIRED =	3,600 CF
DRY VOL. PROVIDED =	5,940 CF
CLEAN OUT VOLUME (2.0 X 900) =	1,800 CF
WEIR ELEV =	331.30
PERMANENT POOL ELEV =	329.75
TOP ELEV =	332.30
BOTTOM ELEV =	328.50
BASIN CLEANOUT ELEV =	328.90
BOTTOM SIZE =	SEE PLAN
SIDE SLOPES =	2:1
WEIR LENGTH =	12'
TEMP. SWM FOR 1 YR. STORM =	2,090 CF @ ELEV 331.30

STANDARD SYMBOLS

FOR EROSION AND SEDIMENT CONTROL PRACTICES

TITLE	KEY	SYMBOL
STABILIZED STONE CONSTRUCTION ENTRANCE	SCE	
SILT FENCE	SF	SF
SUPER SILT FENCE	SSF	SSF
TREE PROTECTION FENCE	TPF	TPF
AT GRADE INLET PROTECTION	AGIP	
CURB INLET PROTECTION	SSF	
DIVERSION DIKE TYPE A-2		E.D. (A-2)
RIP RAP		
GABION INFLOW PROTECTION	GP	
TO BE REMOVED	TBR	
LIMIT OF DISTURBANCE	LOD	LOD
BAFFLE BOARDS	BB	
DIVERSION FENCE	DF	DF
SOIL TYPE / BOUNDARY	GaB	

SOILS TABLE

SOILS NAME	SOILS DESCRIPTION	HYDROLOGIC SOILS GROUP	HIGHLY ERODIBLE SOIL
GmB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	NO
GnB	GLENVILLE-BAILE SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	YES
MaB	MANOR LOAM, 3 TO 8 PERCENT SLOPES	B	NO
MaC	MANOR LOAM, 8 TO 15 PERCENT SLOPES	B	NO
MaD	MANOR LOAM, 15 TO 25 PERCENT SLOPES	B	NO
SaC	SASSAFRAS LOAM, 5 TO 10 PERCENT SLOPES	B	NO

NO.:	DATE	REVISION DESCRIPTION

OWNER:
M/I HOMES OF DC, LLC
21355 RIDGETOP CIRCLE, SUITE 220
STERLING, VA 20166
CONTACT : CINDY HUNTZBERRY
PHONE : 443-677-9803

DEVELOPER: SOMERWORTH II, L.C.
5704 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
EROSION AND SEDIMENT CONTROL PLAN PHASE I

SITE ANALYSIS

TOTAL DISTURBED AREA =	644,808 S.F. OR 14.80 AC
PROPOSED CUT =	45,354 CY ±
PROPOSED FILL =	41,200 CY ±
TOPSOIL =	12,000 CY ±

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.

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

HOWARD SCD — DATE 11/6/14

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE 11-17-14

CHIEF-DIVISION OF LAND DEVELOPMENT — DATE 12-22-14

DIRECTOR — DATE 12/22/14

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DECISION PB406
DATE 10/08/2014

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. IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

SIGNATURE OF ENGINEER — DATE 10/30/14

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 11-3-14

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)

50 25 12.5 0 50
1"=50'

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

PROFESSIONAL ENGINEER NO. 40808

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
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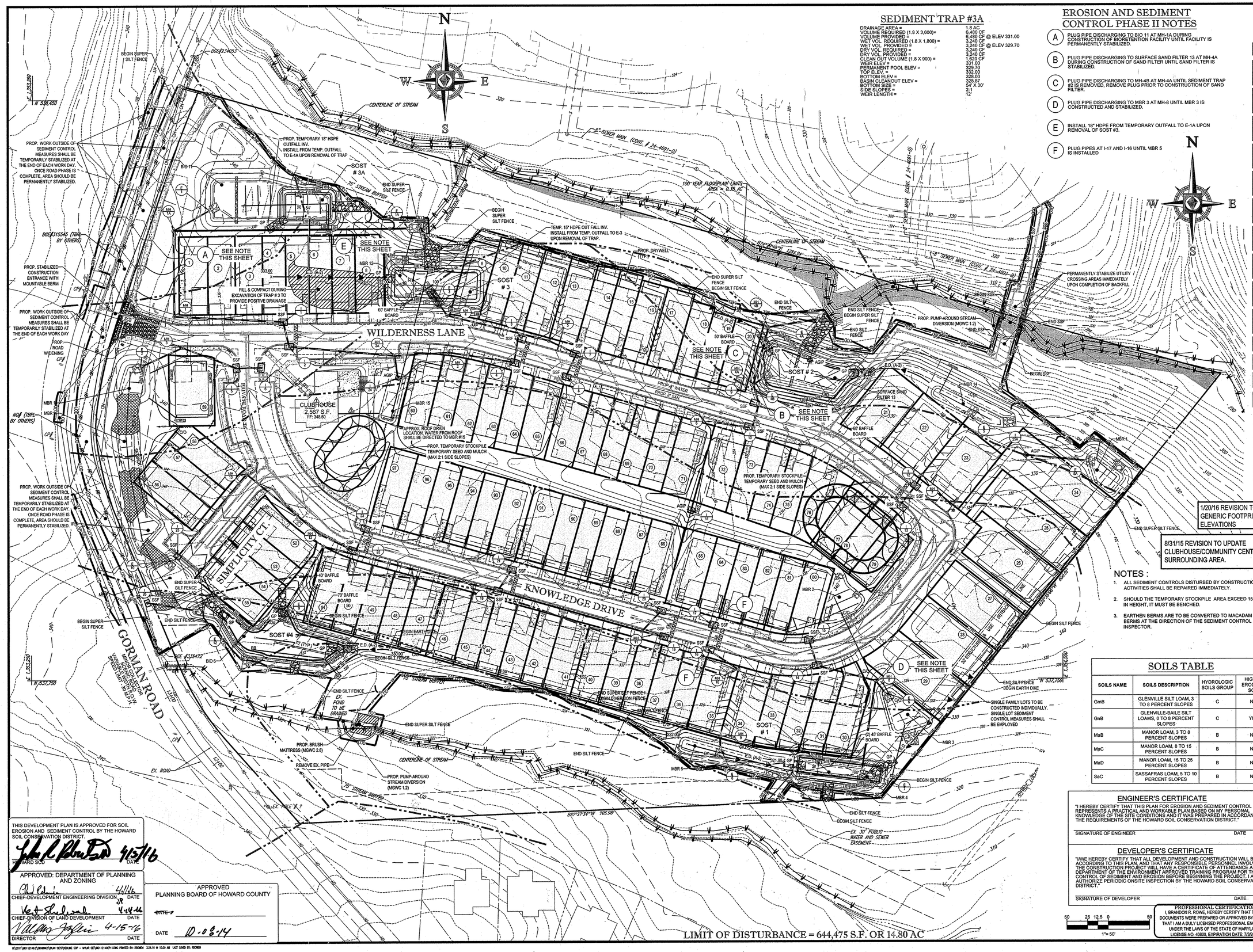
CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	1"=50'
DRAWING NO.	7 OF 34

SDP-13-023



SEDIMENT TRAP #3A

DRAINAGE AREA =	1.8 AC
VOLUME REQUIRED (1.8 X 3,600)=	6,480 CF
VOLUME PROVIDED =	6,480 CF @ ELEV 331.00
WET VOL. REQUIRED (1.8 X 1,800) =	3,240 CF
WET VOL. PROVIDED =	3,240 CF @ ELEV 329.70
DRY VOL. REQUIRED =	3,240 CF
DRY VOL. PROVIDED =	3,240 CF
CLEAN OUT VOLUME (1.8 X 900) =	1,620 CF
WEIR ELEV =	331.00
PERMANENT POOL ELEV =	329.70
TOP ELEV =	332.00
BOTTOM ELEV =	328.00
BASIN CLEANOUT ELEV =	328.87
BOTTOM SIZE =	54' X 30'
SIDE SLOPES =	2:1
WEIR LENGTH =	12'

EROSION AND SEDIMENT CONTROL PHASE II NOTES

- (A) PLUG PIPE DISCHARGING TO BIO 11 AT MH-1A DURING CONSTRUCTION OF BIORETENTION FACILITY UNTIL FACILITY IS PERMANENTLY STABILIZED.
- (B) PLUG PIPE DISCHARGING TO SURFACE SAND FILTER 13 AT MH-4A DURING CONSTRUCTION OF SAND FILTER UNTIL SAND FILTER IS STABILIZED.
- (C) PLUG PIPE DISCHARGING TO MH-4B AT MH-4A UNTIL SEDIMENT TRAP #2 IS REMOVED, REMOVE PLUG PRIOR TO CONSTRUCTION OF SAND FILTER.
- (D) PLUG PIPE DISCHARGING TO MBR 3 AT MH-8 UNTIL MBR 3 IS CONSTRUCTED AND STABILIZED.
- (E) INSTALL 16" HDPE FROM TEMPORARY OUTFALL TO E-1A UPON REMOVAL OF SOST #3.
- (F) PLUG PIPES AT I-17 AND I-16 UNTIL MBR 5 IS INSTALLED

STANDARD SYMBOLS

FOR EROSION AND SEDIMENT CONTROL PRACTICES

TITLE	KEY	SYMBOL
STABILIZED STONE CONSTRUCTION ENTRANCE	SCE	
SILT FENCE	SF	SF
SUPER SILT FENCE	SSF	SSF
TREE PROTECTION FENCE	TPF	TPF
AT GRADE INLET PROTECTION	AGIP	
CURB INLET WRAPPED IN SUPER SILT FENCE	SSF	
DIVERSION DIKE TYPE A-2		E.D. (A-2)
RIP RAP		
GABION INFLOW PROTECTION	GP	
TO BE REMOVED	TBR	
MICROBIORETENTION FACILITY	MBR	
LIMIT OF DISTURBANCE	LOD	LOD
BAFFLE BOARDS	BB	
DIVERSION FENCE	DF	DF DF DF
SOIL TYPE / BOUNDARY	GmB	
PERMANENT SOIL STABILIZATION MATTING.		
EARTHEN / MACADAM BERM	TAB	

1/20/16 REVISION TO REVISE SFD GENERIC FOOTPRINT AND FF/CE ELEVATIONS

8/31/15 REVISION TO UPDATE CLUBHOUSE/COMMUNITY CENTER AND SURROUNDING AREA.

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
(VA 1-800-552-7001) (MD 1-800-257-7777) (DE 1-800-282-8555)

NOTES :

1. ALL SEDIMENT CONTROLS DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE REPAIRED IMMEDIATELY.
2. SHOULD THE TEMPORARY STOCKPILE AREA EXCEED 15 FEET IN HEIGHT, IT MUST BE BENCHED.
3. EARTHEN BERMS ARE TO BE CONVERTED TO MACADAM BERMS AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

SOILS TABLE

SOILS NAME	SOILS DESCRIPTION	HYDROLOGIC SOILS GROUP	HIGHLY ERODIBLE SOIL
GmB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	NO
GnB	GLENVILLE-BAILE SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	YES
MaB	MANOR LOAM, 3 TO 8 PERCENT SLOPES	B	NO
MaC	MANOR LOAM, 8 TO 15 PERCENT SLOPES	B	NO
MaD	MANOR LOAM, 15 TO 25 PERCENT SLOPES	B	NO
SaC	SASSAFRAS LOAM, 5 TO 10 PERCENT SLOPES	B	NO

NO.	DATE	REVISION DESCRIPTION
3	1/20/16	REVISED SFD GENERIC FOOTPRINT
2	10/27/15	UPDATED GRADING FOR LOTS 17 - 20
1	8/31/15	REVISED CLUBHOUSE/COMMUNITY CENTER

OWNER:
M/I HOMES OF DC, LLC
21355 RIDGETOP CIRCLE, SUITE 220
STERLING, VA 20166
CONTACT : CINDY HUNTZBERRY
PHONE : 443-677-9803

DEVELOPER:
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CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT
REVISED SITE DEVELOPMENT PLAN
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
EROSION AND SEDIMENT CONTROL PLAN PHASE II

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

HOWARD SCD — DATE 4/13/16

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE 4/11/16

CHIEF-DIVISION OF LAND DEVELOPMENT — DATE 4-14-16

DIRECTOR — DATE 4-15-16

APPROVED
PLANNING BOARD OF HOWARD COUNTY

~~DATE~~

DATE 10-08-14

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

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

50 25 12.5 0 50
1"= 50'

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

BRANDON R. ROWE
PROFESSIONAL ENGINEER NO. 40808

CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	1"=50'
DRAWING NO.	8 OF 34

SDP-13-023

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.

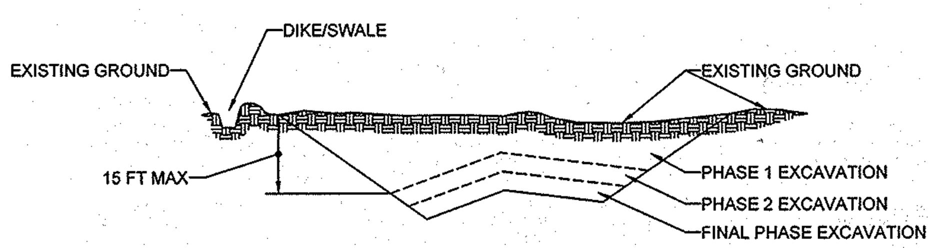


FIGURE B.1: INCREMENTAL STABILIZATION - CUT

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.

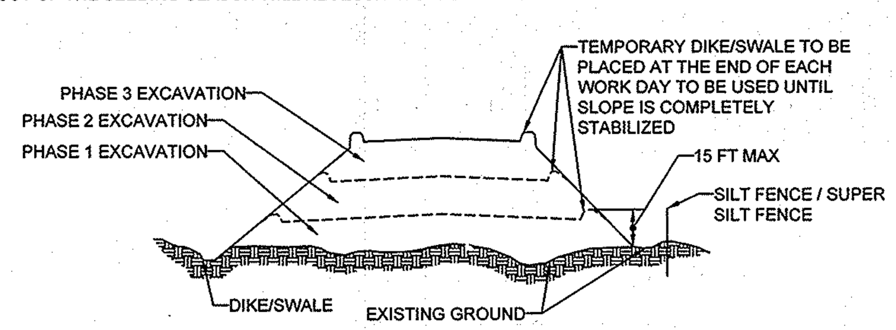


FIGURE B.2: INCREMENTAL STABILIZATION - FILL

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.
   b. APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS.
   c. 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

1. 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.
2. 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.
3. 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 6B 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	3/1 - 5/15 8/1 - 10/15	0.5"		
2	BARLEY	96	3/1 - 5/15 8/1 - 10/15	1"		
3	OATS	72	3/1 - 5/15 8/1 - 10/15	1"	436 LB/AC (10 LB/1000 SF)	2 TONS/AC (90 LB/1000 SF)
4	WHEAT	120	3/1 - 5/15 8/1 - 10/15	1"		
5	CEREAL RYE	112	3/1 - 5/15 8/1 - 11/15	1"		
WARM SEASON GRASSES						
6	FOXTAIL MILLET	30	5/16 - 7/31	0.5"	436 LB/AC (10 LB/1000 SF)	2 TONS/AC (90 LB/1000 SF)
7	PEARL MILLET	20	5/16 - 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 6B 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	3/1 - 5/15 8/1 - 10/15	1/4" - 1/2"				
5	HARD FESCUE PERENNIAL RYE GRASS FLAT PEA	20 10 15	3/1 - 5/15 8/1 - 10/15	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)
1	SWITCH GRASS CREEPING RED FESCUE PARTRIDGE PEA	10 15 4	3/1 - 5/15 8/1 - 10/15	1/4" - 1/2"				

* FOR THE PERIOD 5/1 TO 8/14 ADD 6.0 LBS/AC. FOXTAIL OR PEARL MILLET TO PERMANENT MIX # 9, AND 2.25 LBS/AC. FOXTAIL OR PEARL MILLET TO MIX No. 5

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.

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	18.61 ACRES
AREA DISTURBED	14.80 ACRES
AREA TO BE ROOFED OR PAVED	7.29 ACRES
AREA TO BE VEGETATIVELY STABILIZED	11.32 ACRES
TOTAL CUT	45,354 CU. YDS.
TOTAL FILL	41,200 CU. YDS.
OFFSITE WASTE/BORROW AREA LOCATION	TBD

7. ANY SEDIMENT CONTROL PRACTICE THAT 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 WORKDAY, 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.

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)

NO.:	DATE	REVISION DESCRIPTION

OWNER:

M/I HOMES OF DC, LLC
21355 RIDGETOP CIRCLE, SUITE 220
STERLING, VA 20166
CONTACT : CINDY HUNTZBERRY
PHONE : 443-677-9803

DEVELOPER: SOMERWORTH II, L.C.
5704 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT

WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE **EROSION AND SEDIMENT CONTROL NOTES**

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

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 10/30/14 DATE

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 11-3-14 DATE

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

BRANDON R. ROWE
PROFESSIONAL ENGINEER NO. 40808

CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	AS NOTED
DRAWING NO.	9 OF 34

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

HOWARD SCD 11/6/14 DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF-DEVELOPMENT ENGINEERING DIVISION 11.17.14 DATE

CHIEF-DIVISION OF LAND DEVELOPMENT 12-22-14 DATE

DIRECTOR 12/22/14 DATE

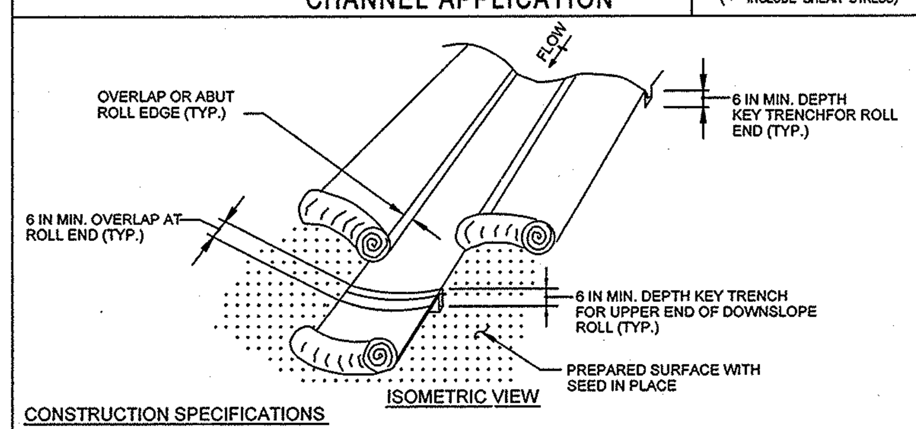
APPROVED
PLANNING BOARD OF HOWARD COUNTY
PB406
DATE 10/08/2014

H:\2011\MD112149\DRAWINGS\PLAN SETS\SITE DEVELOPMENT PLAN\MD112149SD10.DWG PRINTED BY: RBOWEN - 10.29.14 @ 3:59 PM LAST SAVED BY: R

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.

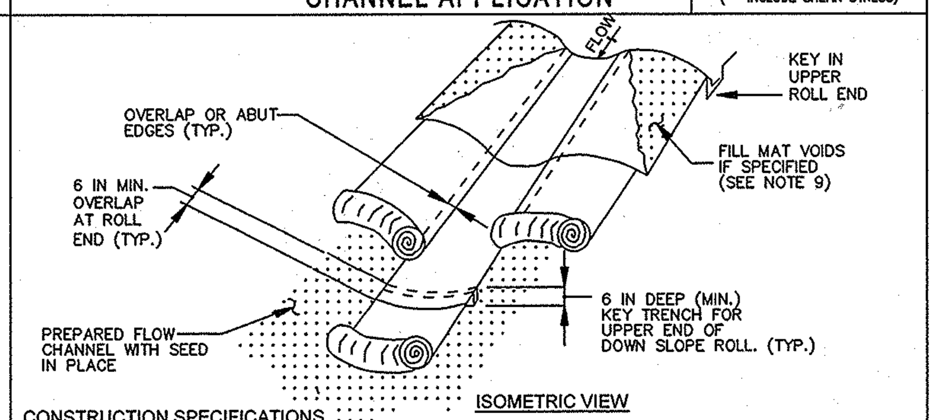
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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 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 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.

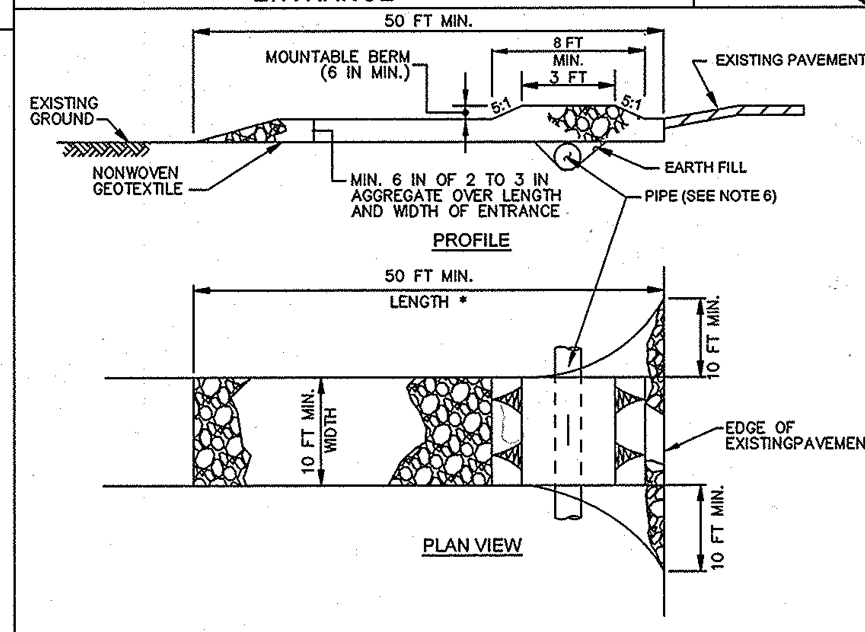
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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.

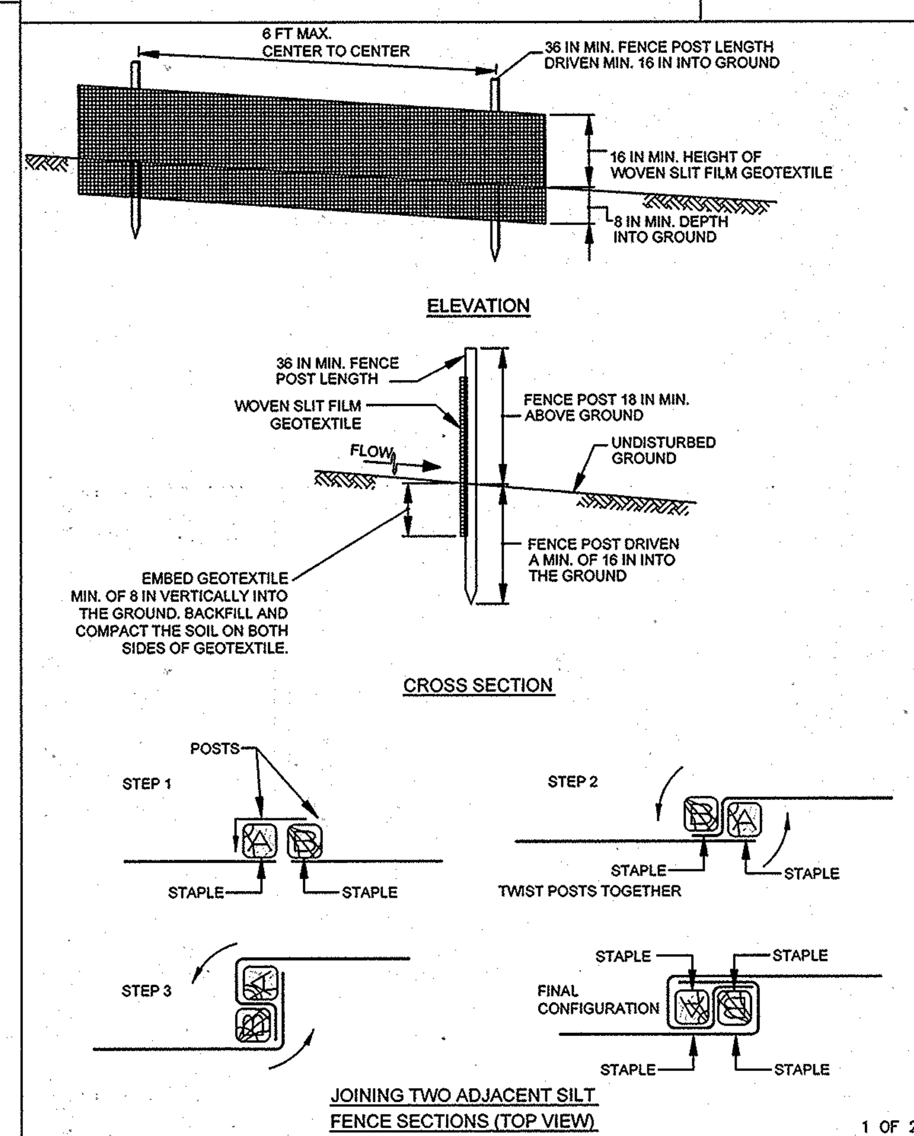
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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 E-1 SILT FENCE

STANDARD SYMBOL

├── SF ──┤

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1¾ X 1¾ ± 1/16 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

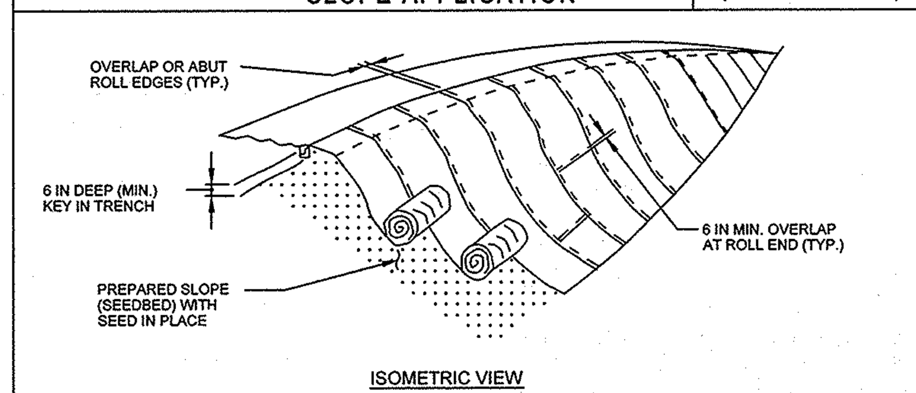
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL 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.

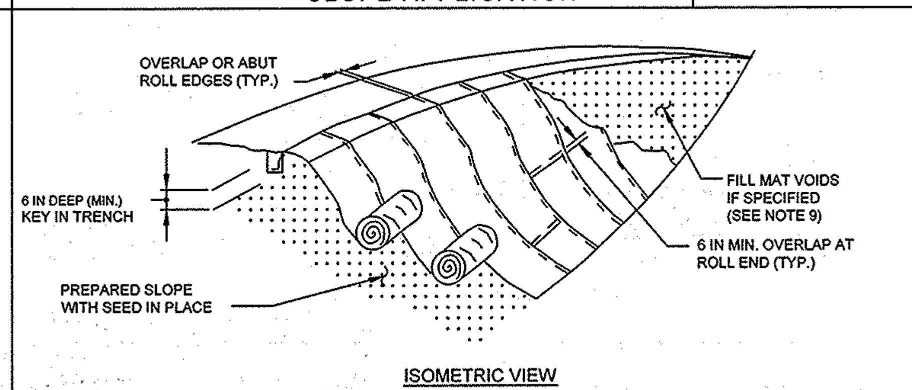
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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.

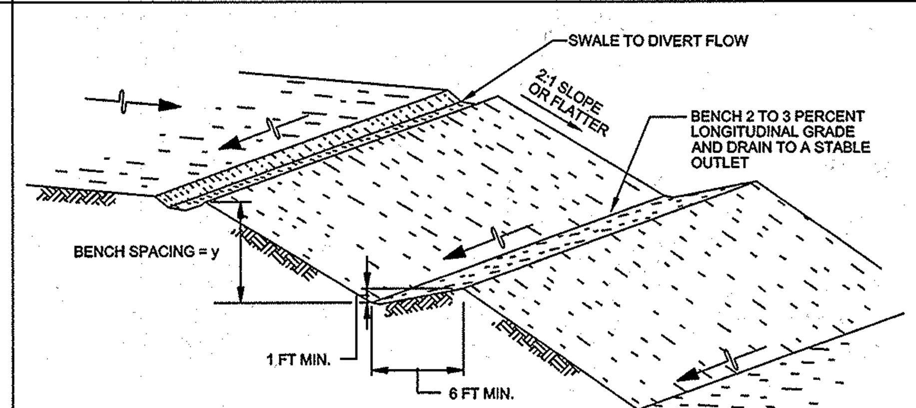
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL B-3-1 BENCHING

STANDARD SYMBOL

BENCHING



SLOPE	y (MAX.)
2:1	20 FT
3:1	30 FT
4:1	40 FT

CONSTRUCTION SPECIFICATIONS

1. USE FILL MATERIAL FREE OF BRUSH, RUBBISH, ROCKS, LOGS, STUMPS, BUILDING DEBRIS, AND OTHER OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS.
2. DO NOT INCORPORATE FROZEN, SOFT, MUCKY, OR HIGHLY COMPRESSIBLE MATERIALS INTO FILL SLOPES OR STRUCTURAL FILLS. DO NOT PLACE FILL ON A FROZEN FOUNDATION.
3. PLACE ALL FILL IN LOOSE LIFTS NOT TO EXCEED 8 INCHES AND THEN COMPACT.
4. COMPACT ALL FILLS AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, OR OTHER RELATED PROBLEMS. COMPACT FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES, CONDUITS, ETC., IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES.
5. HANDLE SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION IN ACCORDANCE WITH SECTION H-2 SUBSURFACE DRAINS OR OTHER APPROVED METHODS.
6. MAINTAIN LINE, GRADE, AND CROSS SECTION OF BENCHING. STABILIZE IN ACCORDANCE WITH THE 3/7 DAY STABILIZATION CRITERIA OR AS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN. INSTALLATION OF EROSION CONTROL MATTING MAY BE NECESSARY IN BENCH/SWALE INVERTS. CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
7. KEEP ALL BENCHES FREE OF SEDIMENT DURING ALL PHASES OF DEVELOPMENT.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

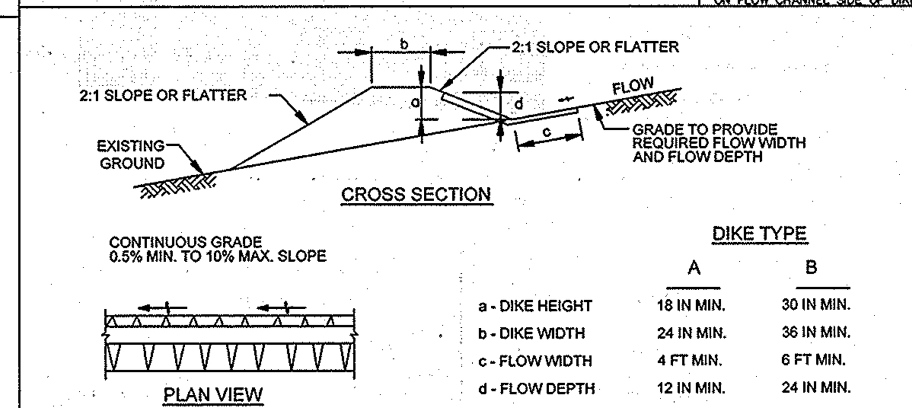
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

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

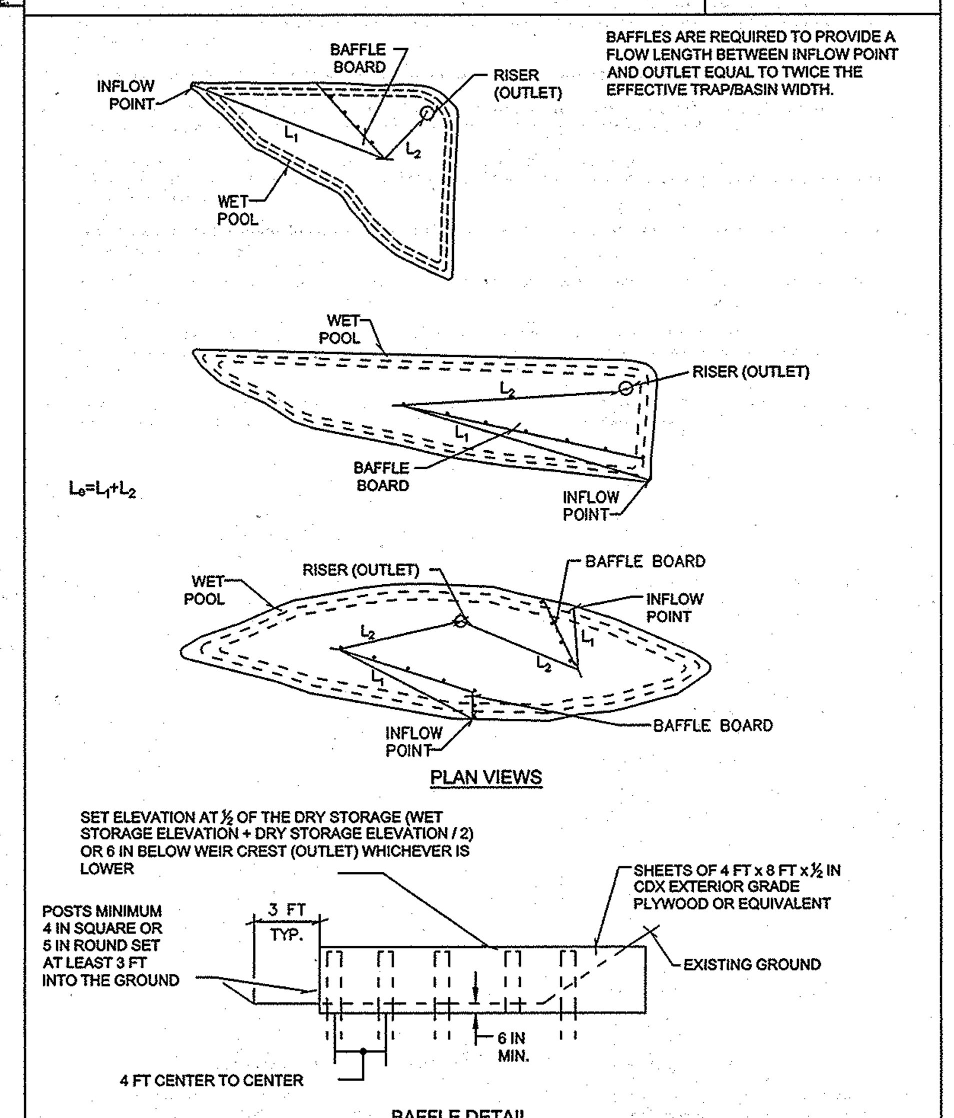
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

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

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-4-7 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 11/6/14
HOWARD SCD DATE

APPROVED
PLANNING BOARD OF HOWARD COUNTY

PB 406

DATE 10/08/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chd Edmds 11.17.14
CHIEF-DEVELOPMENT ENGINEERING DIVISION DATE

Y. Mauler for KS 12-22-14
CHIEF-DIVISION OF LAND DEVELOPMENT DATE

Marsha McLaughlin 12/22/14
DIRECTOR 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 10/30/14 DATE

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 11-3-14 DATE

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

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)

NO.:	DATE	REVISION DESCRIPTION

OWNER:
M/I HOMES OF DC, LLC
21355 RIDGETOP CIRCLE, SUITE 220
STERLING, VA 20166
CONTACT : CINDY HUNTZBERRY
PHONE : 443-677-9803

DEVELOPER:
SOMERWORTH II, L.C.
5704 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

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

10/30/14
BRANDON R. ROWE
PROFESSIONAL ENGINEER NO. 40808

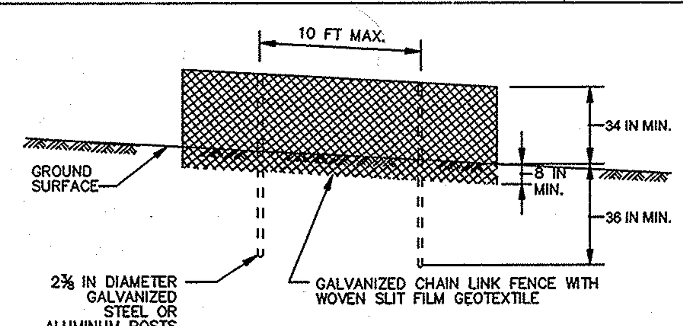
CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	AS NOTED
DRAWING NO.	10 OF 34

SDP-13-023

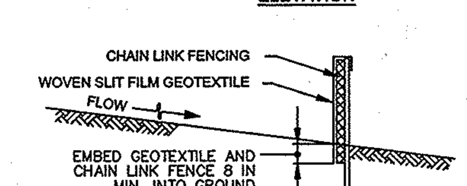
H:\2011\MD112149\DRAWINGS\PLAN SETS\SITE DEVELOPMENT PLAN\MD112149SD10.DWG PRINTED BY: RBOWEN 10.29.14 @ 3:59 PM LAST SAVED BY: R

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL
SSF



ELEVATION



CROSS SECTION

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.

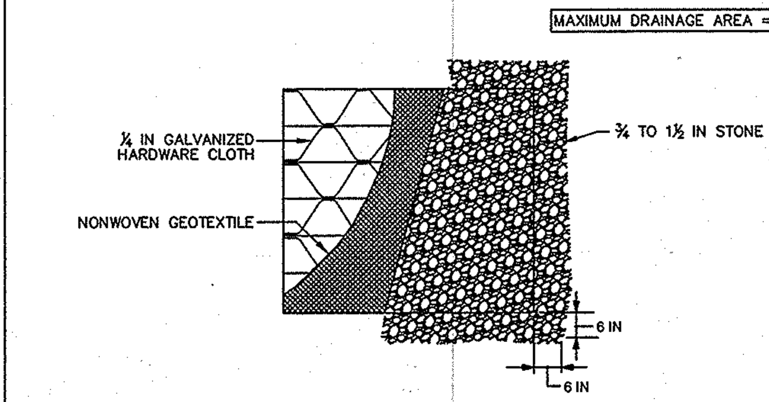
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

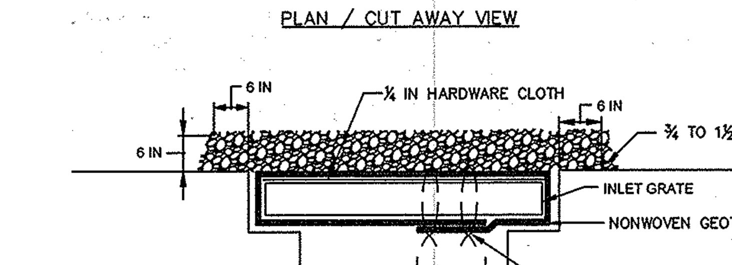
DETAIL E-9-2 AT-GRADE INLET PROTECTION

STANDARD SYMBOL
AGIP

MAXIMUM DRAINAGE AREA = 1 ACRE



PLAN / CUT AWAY VIEW



CROSS SECTION

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.

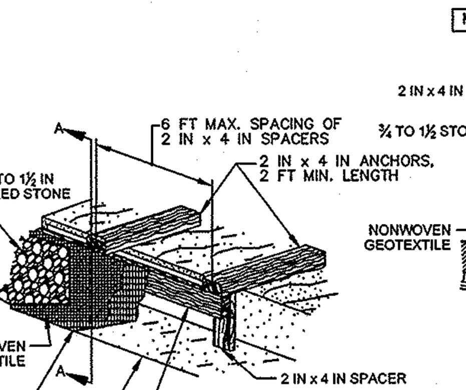
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

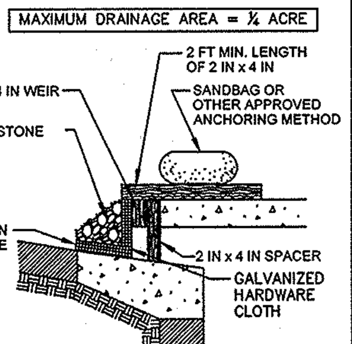
DETAIL E-9-3 CURB INLET PROTECTION

STANDARD SYMBOL
CIP

MAXIMUM DRAINAGE AREA = ¼ ACRE



ISOMETRIC



SECTION A–A

CONSTRUCTION SPECIFICATIONS

1. USE NOMINAL 2 INCH x 4 INCH LUMBER
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
3. NAIL THE 2x4 WEIR TO 9 INCH LONG VERTICAL SPACERS (MAXIMUM 6 FEET APART).
4. ATTACH A CONTINUOUS PIECE OF ¼ INCH GALVANIZED HARDWARE CLOTH, WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4 WEIR, EXTENDING IT 2 FEET BEYOND THROAT ON EACH SIDE.
5. PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE OF THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH TO THE 2x4 WEIR.
6. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FEET LENGTH). EXTEND THE ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
7. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND THE ENDS OF THE THROAT OPENING.
8. FORM THE HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND FACE OF CURB TO SPAN THE INLET OPENING. COVER THE HARDWARE CLOTH AND GEOTEXTILE WITH CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE.
9. AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
10. 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.

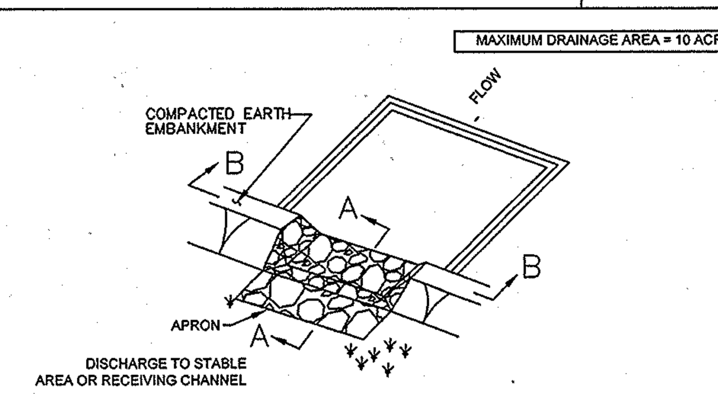
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

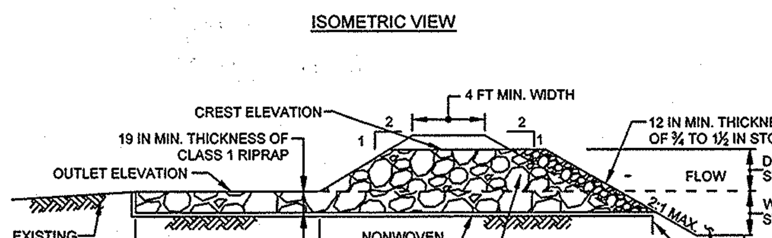
DETAIL G-1-2 STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II

STANDARD SYMBOL
ST–II

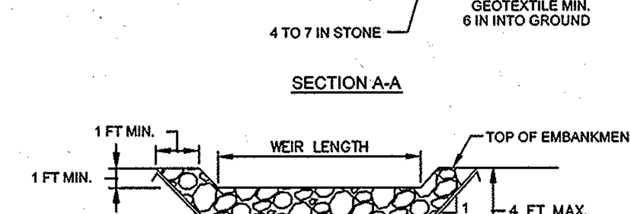
MAXIMUM DRAINAGE AREA = 10 ACRES



ISOMETRIC VIEW



SECTION A-A



SECTION B-B

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

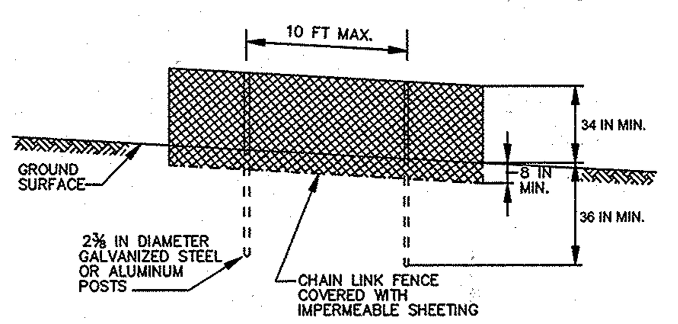
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

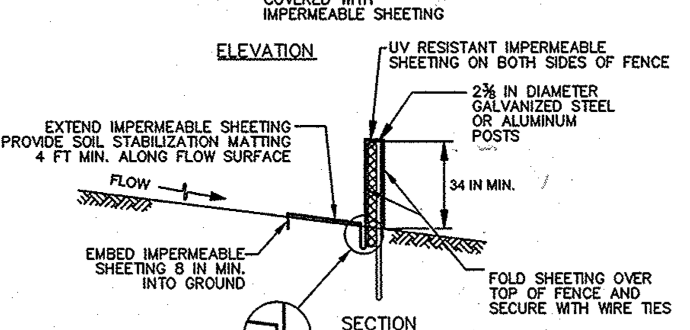
DETAIL C-9 DIVERSION FENCE

STANDARD SYMBOL
DF

MAXIMUM DRAINAGE AREA = 2 ACRES



ELEVATION



SECTION

CONSTRUCTION SPECIFICATIONS

1. USE 42 INCH HIGH, 9 GAUGE OR THICKER CHAIN LINK FENCING (2⅜ INCH MAXIMUM OPENING).
2. USE 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. THE POSTS DO NOT NEED TO BE SET IN CONCRETE.
3. FASTEN CHAIN LINK FENCE SECURELY TO THE FENCE POSTS WITH WIRE TIES.
4. SECURE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING TO CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT TOP, MID SECTION, AND BELOW GROUND SURFACE.
5. EXTEND SHEETING A MINIMUM OF 4 FEET ALONG FLOW SURFACE AND EMBED END A MINIMUM OF 8 INCHES INTO GROUND. SOIL STABILIZATION MATTING MAY BE USED IN LIEU OF IMPERMEABLE SHEETING ALONG FLOW SURFACE.
6. WHEN TWO SECTIONS OF SHEETING ADJOIN EACH OTHER, OVERLAP BY 6 INCHES AND FOLD WITH SEAM FACING DOWNGRADE.
7. KEEP FLOW SURFACE ALONG DIVERSION FENCE AND POINT OF DISCHARGE FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE. REPLACE IMPERMEABLE SHEETING IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

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

MGWC 1.2: PUMP-AROUND PRACTICE

Temporary measure for dewatering in-channel construction sites

DESCRIPTION

The work should consist of installing a temporary pump around and supporting measures to divert flow around in-stream construction sites.

IMPLEMENTATION SEQUENCE

Sediment control measures, pump-around practices, and associated channel and bank construction should be completed in the following sequence (refer to Detail 1.2):

1. Construction activities including the installation of erosion and sediment control measures should not begin until all necessary easements and/or right-of-ways have been acquired. All existing utilities should be marked in the field prior to construction. The contractor is responsible for any damage to existing utilities that may result from construction and should repair the damage at his/her own expense to the county's or utility company's satisfaction.
2. The contractor should notify the Maryland Department of the Environment or WMA sediment control inspector at least 5 days before beginning construction. Additionally, the contractor should inform the local environmental protection and resource management inspection and enforcement division and the provider of local utilities a minimum of 48 hours before starting construction.
3. The contractor should conduct a pre-construction meeting on site with the WMA sediment control inspector, the county project manager, and the engineer to review limits of disturbance, erosion and sediment control requirements, and the sequence of construction. The contractor should stake out all limits of disturbance prior to the pre-construction meeting so they may be reviewed. The participants will also designate the contractor's staging areas and flag all trees within the limit of disturbance which will be removed for construction access. Trees should not be removed within the limit of disturbance without approval from the WMA or local authority.
4. Construction should not begin until all sediment and erosion control measures have been installed and approved by the engineer and the sediment control inspector. The contractor should stay within the limits of the disturbance as shown on the plans and minimize disturbance within the work area whenever possible.
5. Upon installation of all sediment control measures and approval by the sediment control inspector and the local environmental protection and resource management inspection and enforcement division, the contractor should begin work at the upstream section and proceed downstream beginning with the establishment of stabilized construction entrances. In some cases, work may begin downstream if appropriate. The sequence of construction must be followed unless the contractor gets written approval for deviations from the WMA or local authority. The contractor should only begin work in an area which can be completed by the end of the day including grading adjacent to the channel. At the end of each work day, the work area must be stabilized and the pump around removed from the channel. Work should not be conducted in the channel during rain events.
6. Sandbag dikes should be situated at the upstream and downstream ends of the work area as shown on the plans, and stream flow should be pumped around the work area. The pump should discharge onto a stable velocity dissipater made of riprap or sandbags.

TEMPORARY INSTREAM CONSTRUCTION MEASURES — *MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES REVISED NOVEMBER 2000*

PAGE 1.2 - 1

MGWC 1.2: PUMP-AROUND PRACTICE

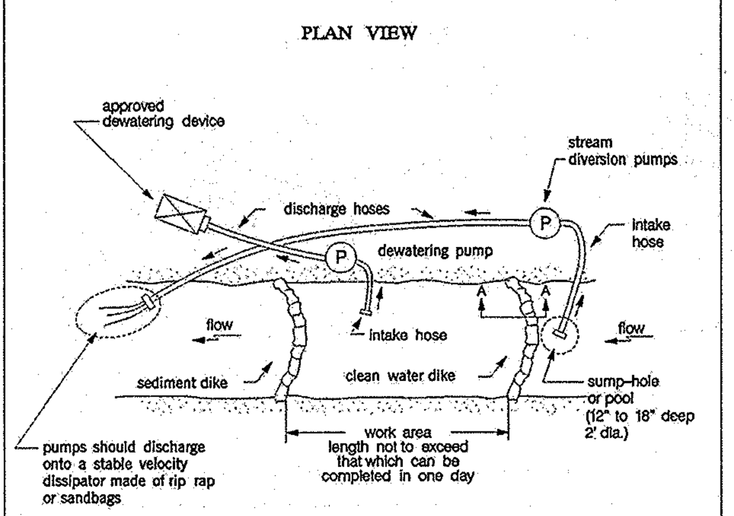
7. Water from the work area should be pumped to a sediment filtering measure such as a dewatering basin, sediment bag, or other approved source. The measure should be located such that the water drains back into the channel below the downstream sandbag dike.
8. Traversing a channel reach with equipment within the work area where no work is proposed should be avoided. If equipment has to traverse such a reach for access to another area, then timber mats or similar measures should be used to minimize disturbance to the channel. Temporary stream crossings should be used only when necessary and only where noted on the plans or specified. (*See Section 4, Stream Crossings, Maryland Guidelines to Waterway Construction*).
9. All stream restoration measures should be installed as indicated by the plans and all banks graded in accordance with the grading plans and typical cross- sections. All grading must be stabilized at the end of each day with seed and mulch or seed and matting as specified on the plans.
10. After an area is completed and stabilized, the clean water dike should be removed. After the first sediment flush, a new clean water dike should be established upstream from the old sediment dike. Finally, upon establishment of a new sediment dike below the old one, the old sediment dike should be removed.
11. A pump around must be installed on any tributary or storm drain outfall which contributes baseflow to the work area. This should be accomplished by locating a sandbag dike at the downstream end of the tributary or storm drain outfall and pumping the stream flow around the work area. This water should discharge onto the same velocity dissipater used for the main stem pump around.
12. If a tributary is to be restored, construction should take place on the tributary before work on the main stem reaches the tributary confluence. Construction in the tributary, including pump around practices, should follow the same sequence as for the main stem of the river or stream. When construction on the tributary is completed, work on the main stem should resume. Water from the tributary should continue to be pumped around the work area in the main stem.
13. The contractor is responsible for providing access to and maintaining all erosion and sediment control devices until the sediment control inspector approves their removal.
14. After construction, all disturbed areas should be regraded and revegetated as per the planting plan.

TEMPORARY INSTREAM CONSTRUCTION MEASURES — *MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES REVISED NOVEMBER 2000*

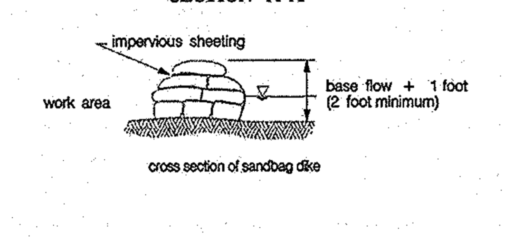
PAGE 1.2 - 2

Maryland's Guidelines To Waterway Construction DETAIL 1.2: PUMP–AROUND PRACTICE

PLAN VIEW



SECTION A–A



TEMPORARY INSTREAM CONSTRUCTION MEASURES	REVISED NOVEMBER 2000 PAGE 1.2 – 3	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

MGWC 2.8: BRUSH MATTRESSES

Woody vegetative system for bank stabilization

DESCRIPTION

Brush mattresses are formed from live branches which are wired together to create an erosion resistant mat. This mat is then secured to the bank by live and/or dead stakes and partially covered with fill soil to initiate growth of the cuttings.

EFFECTIVE USES & LIMITATIONS

Brush mattresses provide bank protection soon after establishment. They are generally resistant to wave and current action and function to:

- capture sediment and rebuild streambanks;
- facilitate the colonization of native riparian vegetation; and
- provide long-term durability and erosion control, especially when used on Rosgen stream types B3, B4, B5, B6, C1, C2, C3, C4, C5, C6, DA, E3, E4, E5, and E6.

Brush mattresses should be limited to use on:

- sites having only low to moderate water level fluctuations and slope gradients not exceeding 2H:1V,
- streams with low to moderate suspended sediment loads since high loads may precipitate the burial of these bioengineering systems and complicate future planting efforts at the site, and
- native fill soils which contain enough fine material to allow the live branches to root and grow readily; key trenches backfilled with topsoil may be required on rocky slopes.

Additionally, this measure should be initiated in conjunction with a revegetation strategy since brush mattresses make it more difficult to propagate vegetative plantings once the mats become established.

MATERIAL SPECIFICATIONS

When choosing and preparing woody material for brush mattresses, the following guidelines should be followed:

- Live branches should be cut from fresh, green, healthy, dormant parent plants which are adapted to the site conditions whenever possible with the following guidelines:
  1. Woody branches up to 2.5 inches (6 centimeters) in diameter and 5 to 10 feet (1 to 3 meters) in length can be used for brush mattresses.
  2. Commonly used woody plants for this measure include willow, poplar, and alder since they are versatile and have high growth rates with shrubby habits, fibrous root systems, and high transpiration rates, especially when in leaf.
  3. A partial listing of woody plants recommended by the United States Department of Agriculture's Soil Conservation Service is presented in MGWC 2.4: Live Stakes.
- Live branch cuttings should be kept covered and moist at all times and should be placed in cold storage if more than a few hours elapse before installation.

SLOPE PROTECTION AND STABILIZATION TECHNIQUES — *MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES REVISED NOVEMBER 2000*

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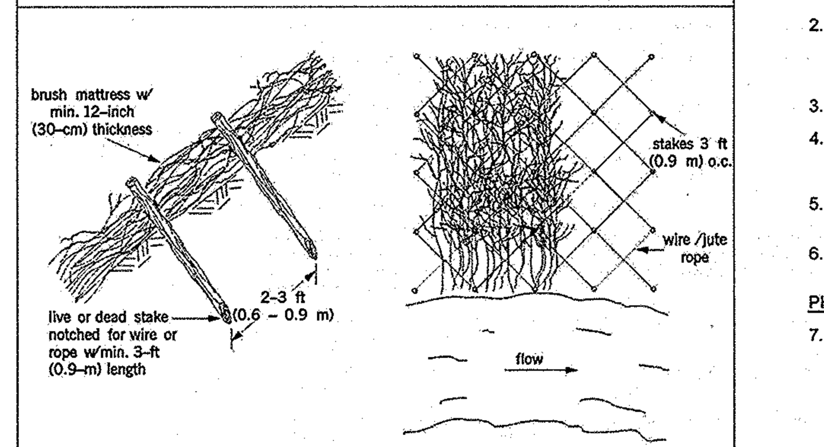
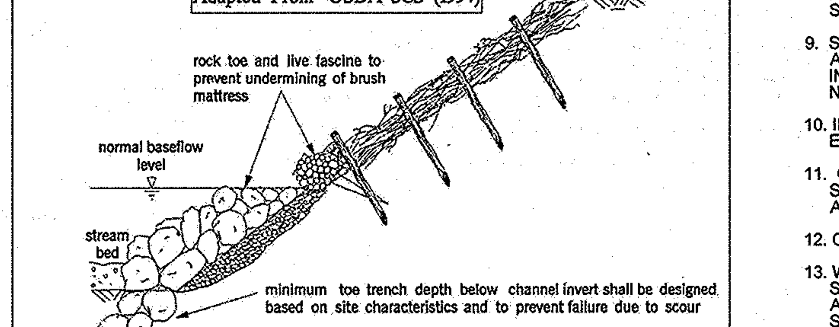
Maryland's Guidelines To Waterway Construction DETAIL 2.8: BRUSH MATTRESSES



DETAIL — PLAN VIEW

Adapted From USDA–SCS (1994)



SECTION VIEW

SLOPE PROTECTION AND STABILIZATION TECHNIQUES	REVISED NOVEMBER 2000 PAGE 2.8 – 3	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

SEQUENCE OF CONSTRUCTION

PHASE I

1. OBTAIN A GRADING AND NPDES PERMIT. (1 DAY)
2. NOTIFY "MISS UTILITY" AT LEAST 48 HOURS BEFORE BEGINNING WORK AT 1-800-257-7777. NOTIFY THE HOWARD COUNTY OFFICE OF CONSTRUCTION INSPECTION AT 410-313-1330 AT LEAST 48 HOURS BEFORE STARTING WORK. (2 DAYS)
3. INSTALL TREE PROTECTION FENCE. (2 DAYS)
4. CLEAR TO AND INSTALL STABILIZED CONSTRUCTION ENTRANCE, SILT FENCE, SUPER SILT FENCE AND SEDIMENT TRAPS. (2 WEEKS)
5. CONSTRUCT EARTH DIKES TO TRAPS #1-4, SEDIMENT BAFFLE BOARDS AND INFLOW PROTECTION. (2 DAYS)
6. CLEAR AND GRUB REMAINING TREES AND ROUGH GRADE SITE. (2 MONTHS)

PHASE II

7. CONSTRUCT ROAD TO SUBGRADE. INSTALL ALL STORM DRAIN SYSTEMS, WATER AND SEWER MAINS, AND INSTALL CURB AND GUTTER. SEE E&S CONTROL PHASE II NOTES ON SHEET 8 FOR BLOCKING INSTALLATIONS, GRADE IN FACILITIES 7, 8, 9, 10, 5, 3, 14, 1, 2, AND 15. DO NOT INSTALL FILTER MEDIA, UNDERDRAIN, OR OUTFALL PIPES UNTIL THE DRAINAGE AREA TO THE RESPECTIVE FACILITY HAS BEEN PERMANENTLY STABILIZED AND THE SEDIMENT CONTROL INSPECTOR HAS APPROVED THE CONVERSION. (2 MONTHS)
8. INSTALL AT GRADE INLET PROTECTION AND SUPER SILT FENCE AT ALL INLETS. INSTALL EARTHEN/MACADAM BERMS DOWN STREAM OF ROAD INLETS AS SHOWN ON PLANS.(1 DAY)
9. STABILIZE LOTS 1, 2, 59, AND 60-65, WITH PERMANENT SEED AND MULCH. UPON APPROVAL OF SEDIMENT CONTROL INSPECTOR, REMOVE SOST #3 AND INSTALL SOST #3A. SEE NOTE E ON SHEET 8. (2 DAYS)
10. INSTALL SEDIMENT CONTROL MEASURES FOR REMOVAL OF EXISTING POND AND REMOVE EXISTING POND. (2 WEEKS)
11. CONSTRUCT ROAD BASE COURSE AND HOUSES AND GRADE SITE TO PROPOSED GRADE AND STABILIZE ALL DISTURBED AREAS WITH PERMANENT SEEDING. (50 TO 75 WEEKS)
12. CONSTRUCT IMPROVEMENTS TO GORMAN ROAD. (2 WEEKS)
13. WHEN ALL DISTURBED AREAS ON THE SITE HAVE BEEN STABILIZED WITH PERMANENT SEEDING AND WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, CONVERT SEDIMENT TRAPS TO SWM FACILITIES. EXCAVATE SATURATED SOIL FROM TRAPS PRIOR TO INSTALLATION OF ANY COMPONENT OF MICRO-BIORETENTION OR SAND FILTER AREAS. (1 WEEK)
14. ONE THE DRAINAGE AREA TO THE RESPECTIVE SWM FACILITY HAS BEEN PERMANENTLY STABILIZED AND WITH THE SEDIMENT CONTROL INSPECTORS APPROVAL, INSTALL FILTER MEDIA, UNDERDRAIN AND OUTFALL PIPES IN SWM FACILITIES AND STABILIZE WITH SEED AND MULCH. (4 WEEKS)
15. CLEAR AND REMOVE ANY/ALL OLD OR NEW TRASH , DEBRIS, OR OTHER MANMADE ITEMS OUT OF FLOODPLAIN BUFFER AND OPEN SPACE. (1 DAY)
16. WHEN ALL DISTURBED AREAS ON THE SITE HAVE BEEN STABILIZED WITH PERMANENT SEEDING AND WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, REMOVE REMAINING SEDIMENT CONTROL DEVICES. (1 WEEK)

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)

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

1) No excess fill, construction material, or debris shall be stockpiled or stored in nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
2) Place materials in a location and manner which does not adversely impact surface or subsurface water flow into or out of nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
3) Do not use the excavated material as backfill if it contains waste metal products, unsightly debris, toxic material, or any other deleterious substance. If additional backfill is required, use clean material free of waste metal products, unsightly debris, toxic material, or any other deleterious substance.
4) Place heavy equipment on mats or suitably operate the equipment to prevent damage to nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
5) Repair and maintain any serviceable structure or fill so there is no permanent loss of nontidal wetlands, nontidal wetland buffers, or waterways, or permanent modification of the 100-year floodplain in excess of that lost under the originally authorized structure or fill.
6) Rectify any nontidal wetlands, wetland buffers, waterways, or 100-year floodplain temporarily impacted by any construction.
7) All stabilization in the nontidal wetland and nontidal wetland buffer shall consist of the following species: Annual Ryegrass (Lolium multiflorum), Millet (Setaria italica), Barley (Hordeum sp.), Oats (Uniola sp.), and/or Rye (Secale cereale). These species will allow for the stabilization of the site while also allowing for the voluntary revegetation of natural wetland species. Other non-persistent vegetation may be acceptable, but must be approved by the Nontidal Wetlands and Waterways Division. **Kentucky 31 fescue shall not be utilized in wetland or buffer areas.** The area should be seeded and mulched to reduce erosion after construction activities have been completed.
8) After installation has been completed, make post-construction grades and elevations the same as the original grades and elevations in temporarily impacted areas.
9) To protect aquatic species, in-stream work is prohibited as determined by the classification of the stream:

   Use IV waters: In-stream work shall not be conducted during the period March 1 through May 31, inclusive, during any year.

10) Stormwater runoff from impervious surfaces shall be controlled to prevent the washing of debris into the waterway.
11) Culverts shall be constructed and any riprap placed so as not to obstruct the movement of aquatic species, unless the purpose of the activity is to impound water.

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.

MGWC 2.8: BRUSH MATTRESSES

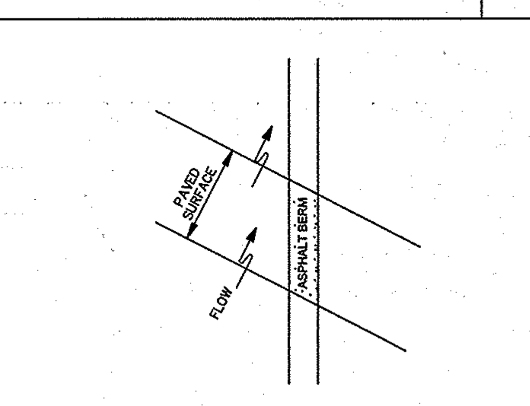
INSTALLATION GUIDELINES

Brush mattresses should be installed as follows (refer to Detail 2.8):

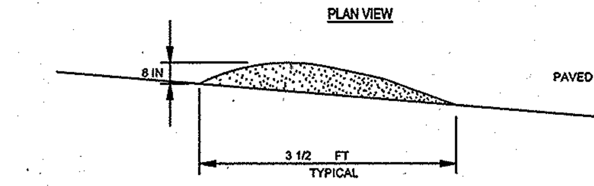
1. Live branches should be oriented in crisscross layers perpendicularly to the flow of water in slight manmade depressions along the embankment. The butt ends should alternate to provide a uniform mat thickness of at least 12 inches (0.3 meters) and a minimum percentage of air voids.
   - Approximately 20 to 50 branches should be used per running meter provided their lengths are the same as the slope length.
   - If the branches are not long enough to cover the entire slope from the toe to the top of slope, multiple layers should be utilized with the branches in the lower layers overlapping those in the upper layers by at least 1 foot (30 centimeters).
2. Once in position, the mattresses should be bound with wire and secured with 3-foot (0.9-meter) wooden stakes spaced at 2 to 3-foot (0.60 to 0.90-meter) intervals The wire should be tied to notches in the stakes before they are driven into the ground; this allows for tension to develop in the wire when the stakes are driven, thereby pulling the mattress firmly to ground.
3. Upon being bound and secured to the embankment, the mattresses should be covered with alternating layers of soil and water until only a portion of the top layer of branches is exposed, but all butt ends must be covered. The use of alternating applications of soil and water helps to insure a proper soil-branch interface to initiate growth.
4. Finally, the toe of the embankment should be reinforced against undercutting with a rock toe and vegetative measure such as a live fascine. (Refer to MGWC 2.1: Riprap and Figure 2.1.)

DETAIL C-5 TEMPORARY ASPHALT BERM

STANDARD SYMBOL
TAB



PLAN VIEW



CROSS SECTION

CONSTRUCTION SPECIFICATIONS

1. CONSTRUCT BERM ON AN UNINTERRUPTED, CONTINUOUS GRADE.
2. INSTALL BERM TO CONFORM TO CROSS SECTION DIMENSIONS OF A UNIFORM HEIGHT OF 8 INCHES MINIMUM AND APPROXIMATE WIDTH OF 3½ FEET.
3. PROVIDE OUTLET PROTECTION AS REQUIRED ON PLAN.
4. COMPACT ASPHALT BERM.
5. REPAIR DAMAGED ASPHALT. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE.
6. UPON REMOVAL OF ASPHALT BERM, RETURN TO ORIGINAL CONDITIONS OR AS SPECIFIED ON APPROVED PLAN.

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

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. REMOVE SEDIMENT FROM THE POND WHEN THE CLEANOUT ELEVATION HAS BEEN REACHED. ALL SEDIMENT MUST BE PLACED UPSTREAM OF THE APPROVED SEDIMENT TRAPPING DEVICE.
2. CONTRACTOR SHALL INSTALL ONLY AS MUCH UTILITIES THAT CAN BE BACKFILLED AND COMPACTED ON THE SAME DAY.

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
John R Robertson 11/6/14
HOWARD SCD — DATE

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE PB 406
DATE 10/08/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Chad Edmondson 11.17.14
CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE
J. Manchen for KS 12-22-14
CHIEF-DIVISION OF LAND DEVELOPMENT — DATE
[signature] 12/22/14
DIRECTOR — 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 10/30/14

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 11-3-14

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

NO.:	DATE	REVISION DESCRIPTION

OWNER:
M/I HOMES OF DC, LLC
21355 RIDGETOP CIRCLE, SUITE 220
STERLING, VA 20166
CONTACT : CINDY HUNTZBERRY
PHONE : 443-677-9803

DEVELOPER:
SOMERWORTH II, L.C.
5704 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE **EROSION AND SEDIMENT CONTROL NOTES AND DETAILS**

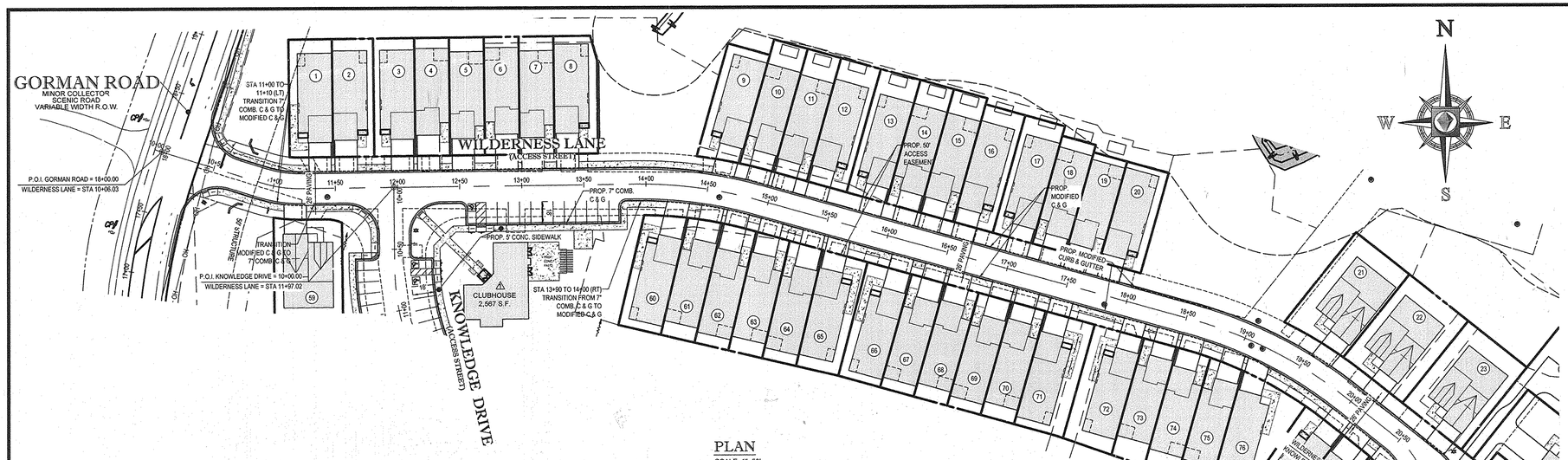
BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

BRANDON R. ROWE
PROFESSIONAL ENGINEER NO. 40808

CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	AS NOTED
DRAWING NO.	11 OF 34

SDP-13-023

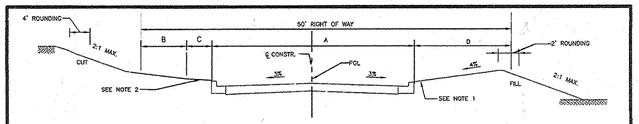
H:\2011\MD112149\DRAWINGS\PLAN SETS\SITE DEVELOPMENT PLAN\MD112149SD10.DWG PRINTED BY: RBOWEN 10.29.14 @ 4:00 PM LAST SAVED BY: R



PLAN
SCALE: 1"=50'

ROAD CURVE TABLE

CURVE NUMBER	RADIUS	DELTA	LENGTH	CHORD BEARING	CHORD DISTANCE
C1	100'	17°56'54"	31.33'	S81°34'53"E	31.20'
C2	350'	16°12'33"	99.02'	S82°27'03"E	98.69'
C3	350'	22°56'53"	140.15'	S62°52'20"E	139.25'



CLOSED SECTION

NOTES:

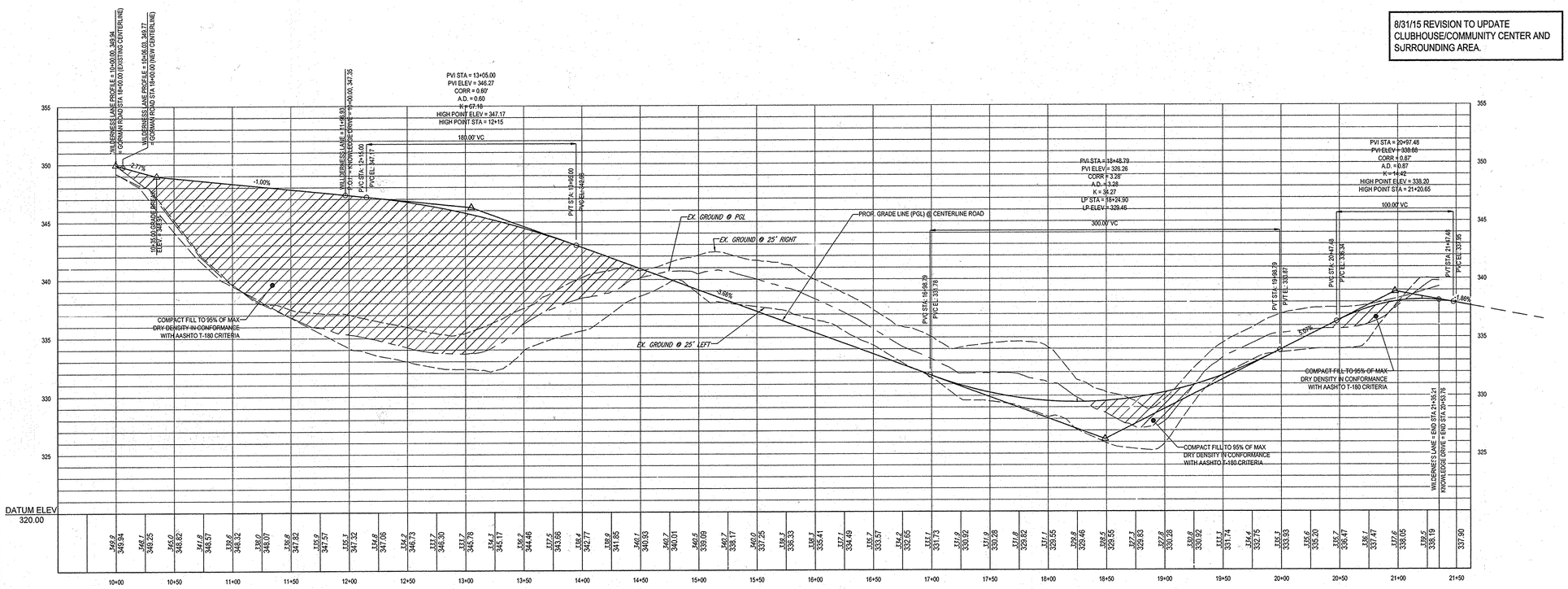
1. TYPE OF CURB VARIES (MODIFIED COMBINATION CURB & GUTTER OR COMBINATION CURB & GUTTER – SEE DESIGN MANUAL VOLUME III FOR CRITERIA).
2. 4" CONCRETE SIDEWALK AS REQUIRED BY SUB-DIVISION REGULATIONS.
3. 4'-0" SIDEWALK REQUIRES A PASSING AREA (SEE DETAIL R-4.01).

CLASSIFICATION	A	B	C	D	PAVING SECTION
~~MINOR COLLECTOR 2000 ADT~~	~~48'~~	~~4'~~	~~11'~~		~~P-3~~
ACCESS STREET 1000 ADT	26'*	7'	5'	12'	P-2
ACCESS PLACE 200 ADT	24'*	3'	4'	13'	P-2

*TOWNHOUSES, CONDOMINIUM / APARTMENT DEVELOPMENTS REQUIRE 26' MINIMUM PAVING WIDTH (P-2 PAVING SECTION), U.O.N.

Revised / Revised / 1/3/2007 Approved	Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering	TYPICAL SECTIONS – Residential Streets Access Place, Access Street, Minor Collector (Closed Section) (MODIFIED)	Detail R-1.02

8/31/15 REVISION TO UPDATE CLUBHOUSE/COMMUNITY CENTER AND SURROUNDING AREA.



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

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
(VV 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 1-8^0-2^2-8555)

NO.	DATE	REVISION DESCRIPTION
1	8/31/15	REVISED CLUBHOUSE/COMMUNITY CENTER

OWNER:
M/I HOMES OF DC, LLC
21355 RIDGETOP CIRCLE, SUITE 220
STERLING, VA 20166
CONTACT : CINDY HUNTZBERRY
PHONE : 443-677-9803

DEVELOPER:
SOMERWORTH II, L.C.
5704 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT
REVISED SITE DEVELOPMENT PLAN
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
WILDERNESS LANE PLAN AND PROFILE

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

CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	AS NOTED
DRAWING NO.	12 OF 34

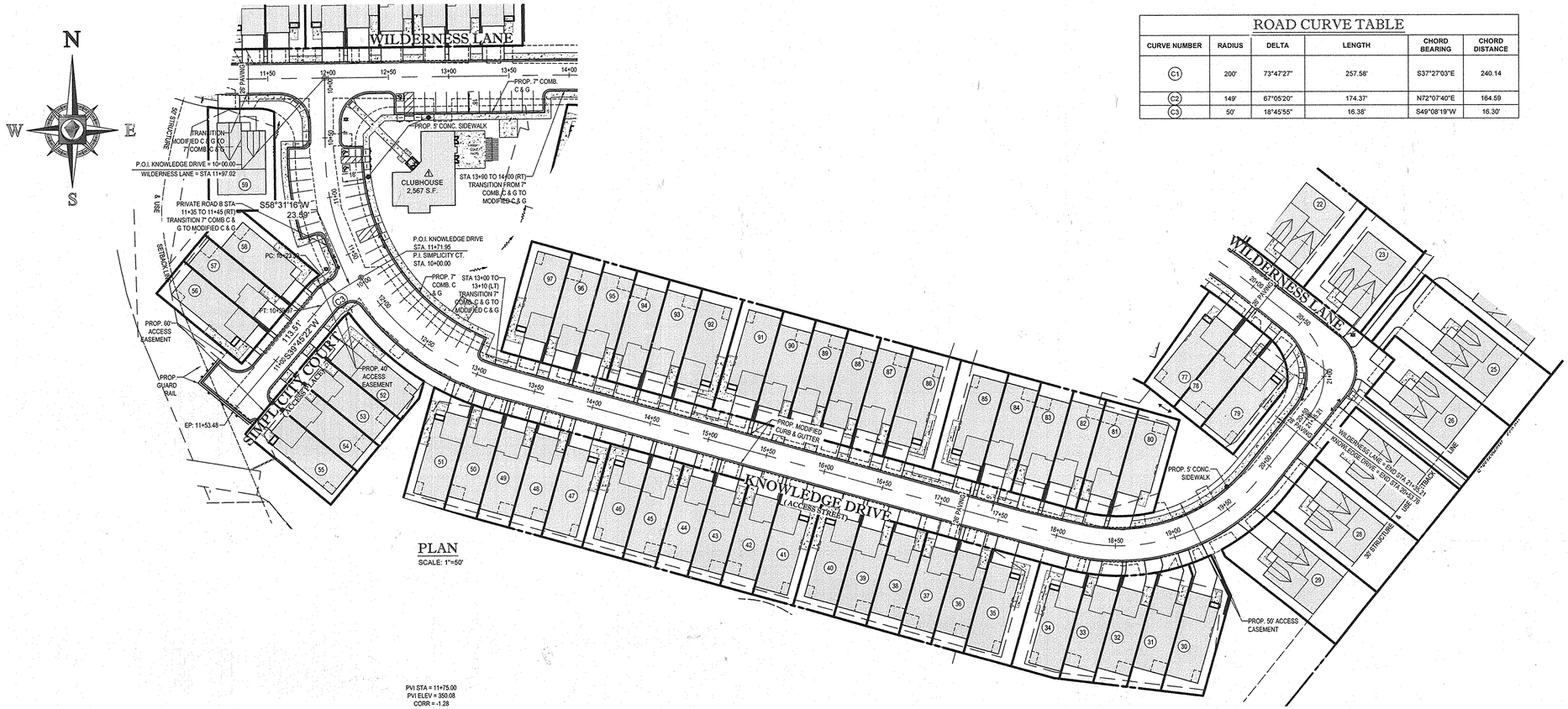
PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 40808, EXPIRATION DATE: 7/3/2015

BRANDON R. ROWE
PROFESSIONAL ENGINEER NO. 40808

APPROVED
PLANNING BOARD OF HOWARD COUNTY
PB 406
DATE 10/08/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING
10-21-15
CHIEF-DEVELOPMENT ENGINEERING DIVISION DATE
10-22-15
CHIEF-DIVISION OF LAND DEVELOPMENT DATE
10-23-15
DIRECTOR DATE

SDP-13-023

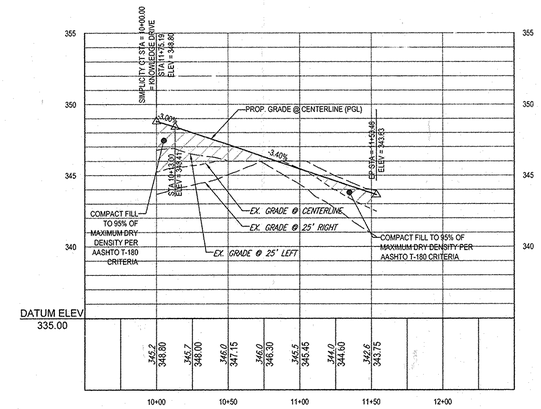


PLAN

SCALE: 1"=50'

ROAD CURVE TABLE

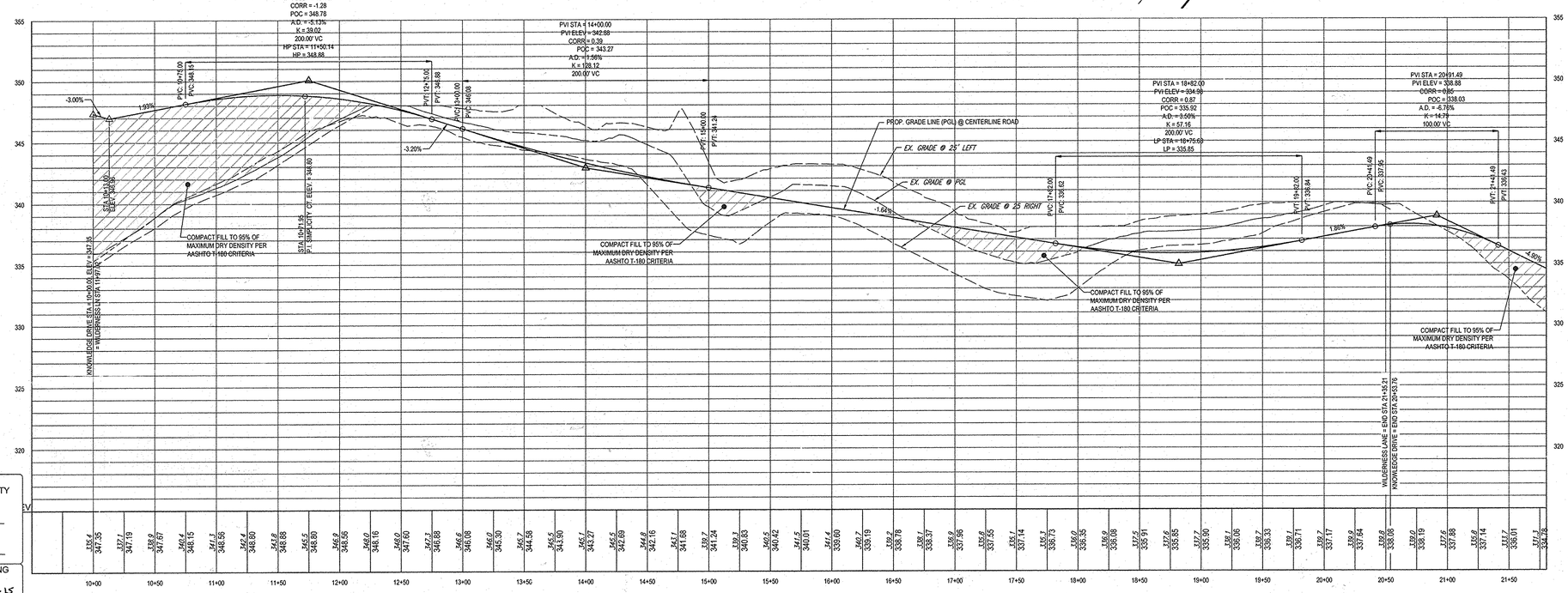
CURVE NUMBER	RADIUS	DELTA	LENGTH	CHORD BEARING	CHORD DISTANCE
C1	200'	73°47'27"	257.58'	S37°27'03"E	240.14
C2	149'	67°05'20"	174.37'	N72°07'40"E	164.59
C3	50'	18°45'55"	16.38'	S49°08'19"W	16.30'



SIMPLICITY COURT PROFILE

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

8/31/15 REVISION TO UPDATE CLUBHOUSE/COMMUNITY CENTER AND SURROUNDING AREA.



KNOWLEDGE DRIVE PROFILE

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

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)

NO.:	DATE	REVISION DESCRIPTION
1	8/31/15	REVISED CLUBHOUSE/COMMUNITY CENTER

OWNER:
M/I HOMES OF DC, LLC
21355 RIDGETOP CIRCLE, SUITE 220
STERLING, VA 20166
CONTACT : CINDY HUNTZBERRY
PHONE : 443-677-9803

DEVELOPER: SOMERWORTH II, L.C.
5704 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT
REVISED SITE DEVELOPMENT PLAN
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
KNOWLEDGE DRIVE AND SIMPLICITY COURT PLAN AND PROFILES

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

CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112145
DATE:	10/27/14
SCALE:	AS NOTED
DRAWING NO.	13 OF 34

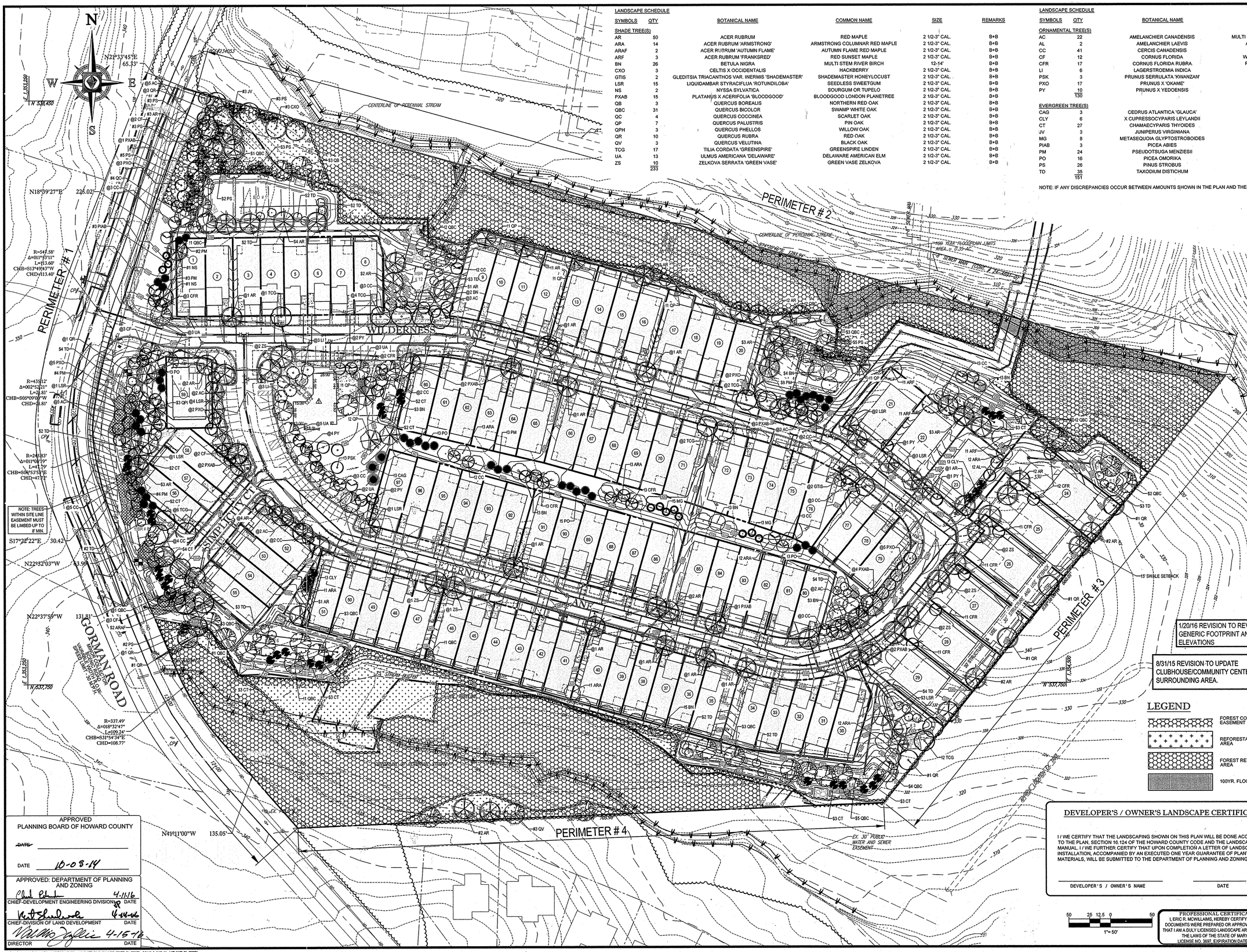
PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 40808, EXPIRATION DATE: 7/3/2015

BRANDON R. ROWE
PROFESSIONAL ENGINEER NO. 40808

APPROVED
PLANNING BOARD OF HOWARD COUNTY
SP-13-06
DATE 10/08/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE 10-21-15
CHIEF-DIVISION OF LAND DEVELOPMENT — DATE 10-22-15
DIRECTOR — DATE 10-23-15

SDP-13-023



LANDSCAPE SCHEDULE

SYMBOLS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
SHADE TREE(S)					
AR	50	ACER RUBRUM	RED MAPLE	2 1/2-3" CAL.	B+B
ARA	14	ACER RUBRUM 'ARMSTRONG'	ARMSTRONG COLUMNAR RED MAPLE	2 1/2-3" CAL.	B+B
ARAF	2	ACER RUBRUM 'AUTUMN FLAME'	AUTUMN FLAME RED MAPLE	2 1/2-3" CAL.	B+B
ARF	3	ACER RUBRUM 'FRANKSRED'	RED SUNSET MAPLE	2 1/2-3" CAL.	B+B
BN	26	BETULA NIGRA	MULTI STEM RIVER BIRCH	12-14'	B+B
CXO	3	CELTIS X OCCIDENTALIS	HACKBERRY	2 1/2-3" CAL.	B+B
GTIS	2	GLEDITSIA TRIACANTHOS VAR. INERMIS 'SHADEMASTER'	SHADEMASTER HONEYLOCUST	2 1/2-3" CAL.	B+B
LSR	15	LIQUIDAMBAR STYRACIFLUA 'ROTUNDILOBA'	SEEDLESS SWEETGUM	2 1/2-3" CAL.	B+B
NS	2	NYSSA SYLVATICA	SOURGUM OR TUPELO	2 1/2-3" CAL.	B+B
PXAB	15	PLATANUS X ACERIFOLIA 'BLOODGOOD'	BLOODGOOD LONDON PLANETREE	2 1/2-3" CAL.	B+B
QB	3	QUERCUS BOREALIS	NORTHERN RED OAK	2 1/2-3" CAL.	B+B
QBC	31	QUERCUS BICOLOR	SWAMP WHITE OAK	2 1/2-3" CAL.	B+B
QC	4	QUERCUS COCCINEA	SCARLET OAK	2 1/2-3" CAL.	B+B
QP	7	QUERCUS PALUSTRIS	PIN OAK	2 1/2-3" CAL.	B+B
QPH	3	QUERCUS PHELLOS	WILLOW OAK	2 1/2-3" CAL.	B+B
QR	10	QUERCUS RUBRA	RED OAK	2 1/2-3" CAL.	B+B
QV	3	QUERCUS VELUTINA	BLACK OAK	2 1/2-3" CAL.	B+B
TCG	17	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN	2 1/2-3" CAL.	B+B
UA	13	ULMUS AMERICANA 'DELAWARE'	DELAWARE AMERICAN ELM	2 1/2-3" CAL.	B+B
ZS	10	ZELKOVA SERRATA 'GREEN VASE'	GREEN VASE ZELKOVA	2 1/2-3" CAL.	B+B
	233				

LANDSCAPE SCHEDULE

SYMBOLS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
ORNAMENTAL TREE(S)					
AC	22	AMELANCHIER CANADENSIS	MULTI STEM SHADBLOW SERVICEBERRY	8-10'	B+B
AL	2	AMELANCHIER LAEVIS	ALLEGHANY SERVICEBERRY	8-10'	B+B
CC	41	CERCIS CANADENSIS	EASTERN REDBUD	2-2 1/2" CAL.	B+B
CF	12	CORNUS FLORIDA	WHITE FLOWERING DOGWOOD	2-2 1/2" CAL.	B+B
CFR	17	CORNUS FLORIDA RUBRA	PINK FLOWERING DOGWOOD	2-2 1/2" CAL.	B+B
LI	6	LAGERSTROEMIA INDICA	COMMON CRAPEMYRTLE	8-10'	B+B
PSK	3	PRUNUS SERRULATA 'KWANZAN'	KWANZAN CHERRY	2-2 1/2" CAL.	B+B
PXO	17	PRUNUS X 'OKAME'	OKAME CHERRY	2-2 1/2" CAL.	B+B
PY	10	PRUNUS X YEDOENSIS	YOSHINO CHERRY	2-2 1/2" CAL.	B+B
	130				
EVERGREEN TREE(S)					
CAG	3	CEDRUS ATLANTICA 'GLAUCA'	BLUE ATLAS CEDAR	7-8'	B+B
CLY	6	X CUPRESSOCYPARIS LEYLANDII	LEYLAND CYPRESS	6-7'	B+B
CT	27	CHAMAECYPARIS THYOIDES	ATLANTIC WHITE CEDAR	6-7'	B+B
JV	3	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	8-10'	B+B
MG	8	METASEQUOIA GLYPTOSTROBOIDES	DAWN REDWOOD	6-8'	B+B
PIAB	3	PICEA ABIES	NORWAY SPRUCE	6-7'	B+B
PM	24	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	6-7'	B+B
PO	16	PICEA OMORIKA	SERBIAN SPRUCE	6-7'	B+B
PS	26	PINUS STROBUS	EASTERN WHITE PINE	6-7'	B+B
TD	35	TAXODIUM DISTICHUM	BALD CYPRESS	8-10'	B+B
	151				

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

1/20/16 REVISION TO REVISE SFD GENERIC FOOTPRINT AND FF/CE ELEVATIONS

8/31/15 REVISION TO UPDATE CLUBHOUSE/COMMUNITY CENTER AND SURROUNDING AREA.

LEGEND

- FOREST CONSERVATION EASEMENT
- REFORESTATION AREA
- FOREST RETENTION AREA
- 100YR. FLOODPLAIN

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)

NO.:	DATE	REVISION DESCRIPTION
4	1/20/16	REVISED SFD GENERIC FOOTPRINT
3	10/27/15	UPDATED GRADING FOR LOTS 17 - 20
2	8/31/15	REVISED CLUBHOUSE/COMMUNITY CENTER

OWNER:
M/I HOMES OF DC, LLC
21355 RIDGETOP CIRCLE, SUITE 220
STERLING, VA 20166
CONTACT : CINDY HUNTZBERRY
PHONE : 443-677-9803

DEVELOPER: SOMERWORTH II, L.C.
5704 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT
REVISED SITE DEVELOPMENT PLAN
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
LANDSCAPE PLAN

APPROVED
PLANNING BOARD OF HOWARD COUNTY
~~DATE~~
DATE 10-08-14

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE 4-11-16
CHIEF-DIVISION OF LAND DEVELOPMENT — DATE 4-14-16
DIRECTOR — DATE 4-15-16

DEVELOPER'S / OWNER'S LANDSCAPE CERTIFICATE

I / WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY 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 — DATE

50 25 12.5 0 50
1"= 50'

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: 9/20/14

ERIC R. MCWILLIAMS
REGISTERED LANDSCAPE ARCHITECT
MARYLAND LICENSE No. 3697

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

CHECKED BY:	BRR
DESIGNED BY:	ERM
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	1"=50'
DRAWING NO.	14 OF 34

SDP-13-023

M:\2011\MD112149.2\DRAWINGS\PLAN SETS\SDP\ - MYLAR SET\MD112149LL11.DWG PLOTTED BY: RBONNER 3.24.16 @ 10:29 AM LAST SAVED BY: RBONNER

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.

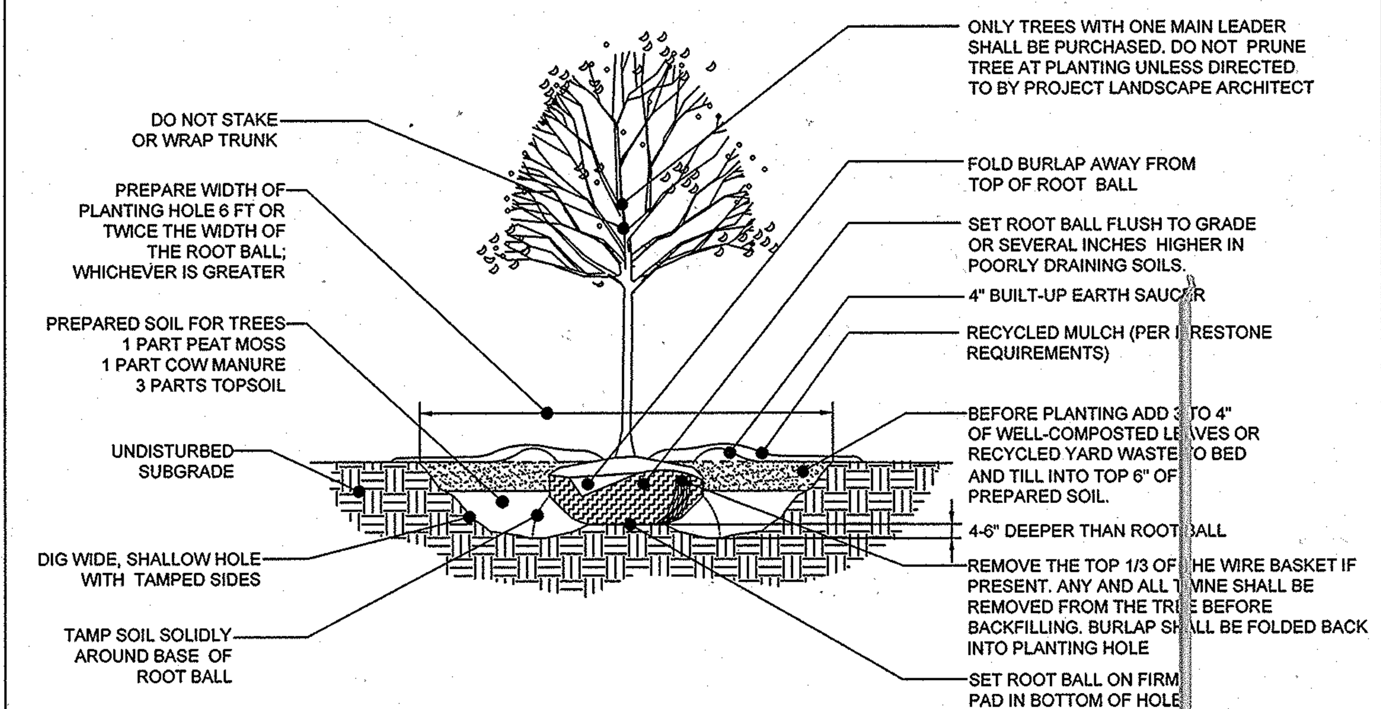
APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chad Edmondson 11.17.14
CHIEF-DEVELOPMENT ENGINEERING DIVISION DATE

Y. Mushin for KCS 12-22-14
CHIEF-DIVISION OF LAND DEVELOPMENT DATE

Marsha McLaughlin 12/24/14
DIRECTOR DATE

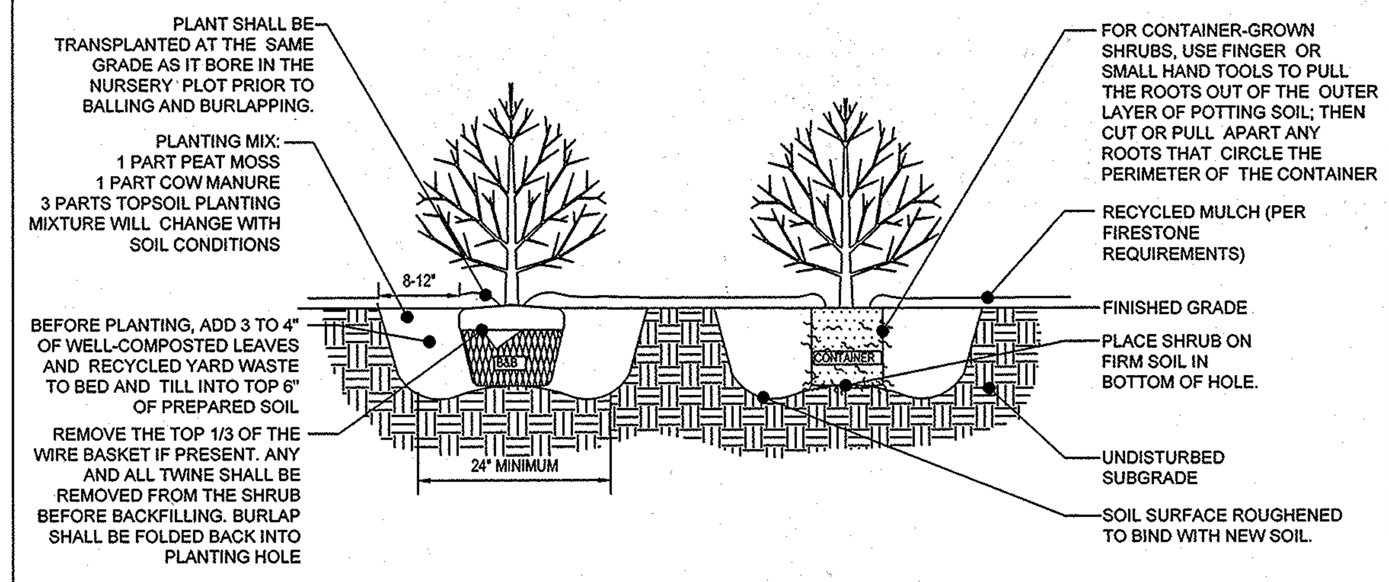
APPROVED
PLANNING BOARD OF HOWARD COUNTY
PB406
DATE 10/08/2014



REFERENCE: ARCHITECTURAL GRAPHIC STANDARDS 1998 CUMULATIVE SUPPLEMENT.

DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE



REFERENCE: ARCHITECTURAL GRAPHIC STANDARDS 1998 CUMULATIVE SUPPLEMENT

DECIDUOUS AND EVERGREEN SHRUB PLANTING DETAIL

NOT TO SCALE

TABLE B.3.2 MATERIALS SPECIFICATIONS FOR BIORETENTION

MATERIAL	SPECIFICATIONS	SIZE	NOTES
PLANTINGS	SEE APPENDIX A, TABLE A.4	N/A	PLANTINGS ARE SITE-SPECIFIC
PLANTING SOIL	SAND 35-60% SILT 30-55% CLAY 10-25%	N/A	USDA SOIL TYPES LOAMY SAND, SANDY LOAM OR LOAM
MULCH	SHREDDED HARDWOOD		AGED 6 MONTHS, MINIMUM
PEA GRAVEL DIAPHRAGM AND CURTAIN DRAIN	PEA GRAVEL: ASTM-D-448 ORNAMENTAL STONE: WASHED COBBLES	PEA GRAVEL: NO. 6 STONE: 2" TO 5"	
GEOTEXTILE	CLASS "C" - APPARENT OPENING SIZE (ASTM-D-4751), GRAB TENSILE STRENGTH (ASTM-D-4632), PUNCTURE RESISTANCE (ASTM-D-4833)	N/A	FOR USE AS NECESSARY BENEATH UNDERDRAINS ONLY
UNDERDRAIN GRAVEL	AASHTO M-43	[illegible] TO 0.75"	
UNDERDRAIN PIPING	F 758, TYPE PS 28 OR AASHTO M-278	4" TO 6" RIGID SCHEDULE 40 PVC OR SDR35	3/8" PERF. @ 6" ON CENTER, 4 HOLES PER ROW; MINIMUM OF 3" OF GRAVEL OVER PIPES; NOT NECESSARY UNDERNEATH PIPES
POURED IN PLACE CONCRETE (IF REQUIRED)	MSHA MIX NO. 3; F'c = 3500 PSI @ 28 DAYS, NORMAL WEIGHT, AIR-ENTRAINED; REINFORCING TO MEET ASTM-615-60	N/A	ON-SITE TESTING OF POURED-IN-PLACE CONCRETE REQUIRED: 28 DAY STRENGTH AND SLUMP TEST; ALL CONCRETE DESIGN (CAST-IN-PLACE OR PRE-CAST) NOT USING PREVIOUSLY APPROVED STATE OR LOCAL STANDARDS REQUIRES DESIGN SEALED AND APPROVED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF MARYLAND - DESIGN TO INCLUDE MEETING ACI CODE 350.R/89; VERTICAL LOADING [H-10 OR H-20]; ALLOWABLE HORIZONTAL LOADING (BASED ON SOIL PRESSURES); AND ANALYSIS OR POTENTIAL CRACKING
SAND [1' DEEP]	AASHTO-M-6 OR ASTM-C-33	0.02" TO 0.04"	SAND SUBSTITUTIONS SUCH AS DIABASE AND GRAYSTONE #10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATED OR DOLOMITIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NO "ROCK DUST" CAN BE USED FOR SAND.

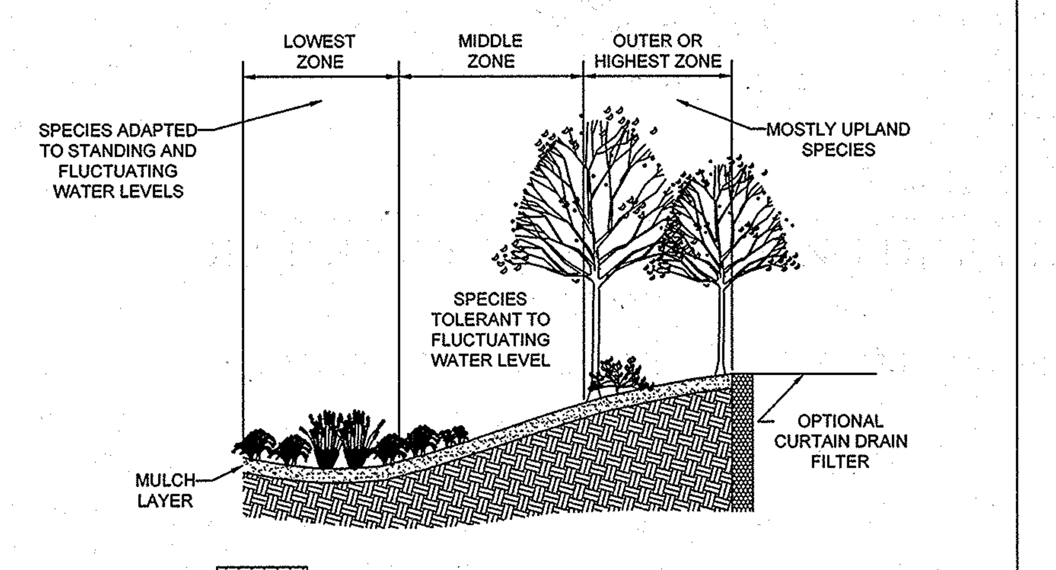
SEEDING SPECIFICATIONS

1. PRIOR TO SEEDING, AREA IS TO BE TOPSOILED, FINE GRADED, AND RAKED OF ALL DEBRIS LARGER THAN 2" DIAMETER.
2. PRIOR TO SEEDING, CONSULT MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS.

PERENNIAL RYEGRASS	1/2 LB/1,000 SQ FT
KENTUCKY BLUEGRASS	1 LB/1,000 SQ FT
RED FESCUE	1 1/2 LBS/1,000 SQ FT
SPREADING FESCUE	1 1/2 LBS/1,000 SQ FT
FERTILIZER (20:10:10)	14 LBS/1,000 SQ FT
MULCH	90 LBS/1,000 SQ FT

4. GERMINATION RATES WILL VARY AS TO TIME OF YEAR FOR SOWING. CONTRACTOR TO IRRIGATE SEEDED AREA UNTIL AN ACCEPTABLE STAND OF COVER IS ESTABLISHED BY OWNER.

PLANTING ZONES FOR BIORETENTION FACILITIES



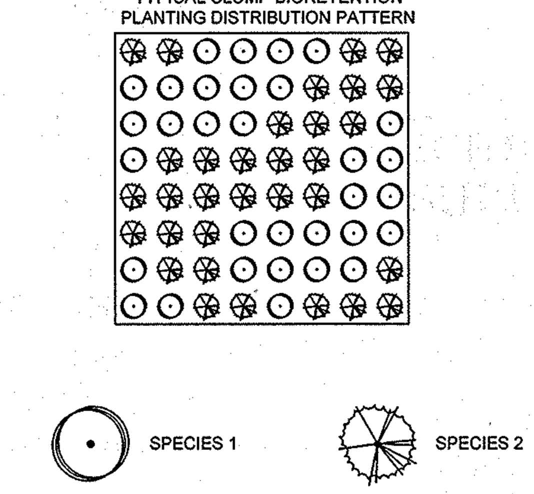
AREA TO BE PLANTED WITH MIXED PERENNIALS LISTED IN BIORETENTION AREAS PLANTING SCHEDULES

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 3" LAYER OF DOUBLE SHREDDED HARDWOOD BARK MULCH.
4. WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.
(SEE ALSO CONST. SPECS. ON SHEET 25 FOR ADDITIONAL REQUIREMENTS.)

TYPICAL PLANTING FOR BIORETENTION AREAS

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.

BIORETENTION PLANTING DISTRIBUTION PATTERN DETAIL

NOT TO SCALE

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)

NO.:	DATE	REVISION DESCRIPTION

OWNER:
M/I HOMES OF DC, LLC
21355 RIDGETOP CIRCLE, SUITE 220
STERLING, VA 20166
CONTACT : CINDY HUNTZBERRY
PHONE : 443-677-9803

DEVELOPER:
SOMERWORTH II, L.C.
5704 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
LANDSCAPE NOTES AND DETAILS

DEVELOPER'S / OWNER'S LANDSCAPE CERTIFICATE

I / WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY 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.

[signature] 11-3-14
DEVELOPER'S / OWNER'S NAME DATE

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

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

REGISTERED LANDSCAPE ARCHITECT
MARYLAND LICENSE No. 3697

CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	AS NOTED
DRAWING NO. 15 OF 34	

H:\2011\MD112149\DRAWINGS\PLAN SETS\SITE DEVELOPMENT PLAN\MD112149SD10.DWG PRINTED BY: RBOWEN 10.29.14 @ 4:02 PM LAST SAVED BY: R

BIORETENTION AREAS PLANTING SCHEDULES

SPECIES		CONTAINER SIZE	SPACING	FACILITY/SIZE (S.F.)															
				#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#14	#15	TOTAL
BOTANICAL NAME	COMMON NAME			704	1456	1232	1800	1053	5900	1330	895	550	716	5868	1206	800	630	
SHRUBS																		
ALNUS RUGOSA	SPECKLED ALDER	2 GAL. CONT.	3' O.C.	10	25	20	30	20	110	25	15	10	12	110	25	15	12	439
ARONIA ARBUTIFOLIA	CHOKEBERRY	2 GAL. CONT.	3' O.C.	10	25	25	35	20	110	25	15	10	12	110	25	15	12	449
CORNUS AMMOMUM	SILKY DOGWOOD	2 GAL. CONT.	3' O.C.	20	30	25	35	20	110	25	18	10	15	110	25	15	12	470
HERBACEOUS																		
ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	PLUG	18" O.C.	20	25	30	45	15	110	30	20	15	15	110	20	25	15	495
IRIS VERSICOLOR	BLUE FLAG	PLUG	18" O.C.	20	25	25	45	15	110	30	20	15	15	110	20	25	15	490
LOBELIA CARDINALIS	CARDINAL FLOWER	PLUG	18" O.C.	20	25	25	45	15	110	30	25	15	15	110	20	25	15	495
CYPERUS PSEUDOVEGETUS	MARSH FLATSEDGE	PLUG	18" O.C.	20	30	25	45	15	110	30	20	10	15	110	20	30	15	495
RUDBECKIA LACINIATA	TALL CONEFLOWER	PLUG	18" O.C.	-	30	30	45	-	110	-	-	10	-	110	-	-	-	335
JUNCUS EFFUSUS	SOFT RUSH	PLUG	18" O.C.	35	80	65	85	50	225	70	45	30	35	250	75	40	35	1120
SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	PLUG	18" O.C.	35	80	65	85	50	225	70	45	30	35	250	75	40	35	1120
SOLIDAGO SEMPERVIRENS	GOLDEN ROD	PLUG	18" O.C.	20	-	-	-	-	110	35	-	-	15	110	-	30	15	335
HIBISCUS MOSCHEUTOS	SWAMP ROSEMALLOW	PLUG	18" O.C.	-	30	-	-	15	110	-	25	-	-	110	25	-	-	315

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			NUMBER OF PLANTS PROVIDED		
						EVERGREEN TREES	SHADE TREES	SHRUBS	EVERGREEN TREES	SHADE TREES	SHRUBS
#1	R	C	983 LF	(261') 722'	NO (0)	37	19	0	37	19	0
#2	P	A	1,286 LF	(1,136') 150'	NO (0)	0	3	0	0	3	0
#3	P	A	650 LF	(150') 500'	NO (0)	0	8	0	0	8	0
#4	P	A	712 LF	(452') 260'	NO (0)	0	5	0	0	5	0
TOTAL						37	30	0	37	30	0

SYMBOL DESIGNATES PERIMETER LANDSCAPE EDGE PLANTINGS

SCHEDULE 'C'
RESIDENTIAL DEVELOPMENT INTERNAL LANDSCAPING

NUMBER OF DWELLING UNITS	87 TOWNHOMES (SFA) + 10 SINGLE FAMILY DWELLINGS = 97 UNITS		
NUMBER OF TREES REQUIRED (1:DU SFA)	87 TREES		
NUMBER OF TREES PROVIDED (2:1 RATIO EVERGREEN TO SHADE)	36 EVERGREEN / 28 SMALL DECIDUOUS	SHADE	TOTAL EQUIVALENT TREES
	32 EQUIVALENT TREES	55	87

! SYMBOL DESIGNATES INTERNAL LANDSCAPING REQUIREMENTS

RELEASE OF SURETY WILL NOT BE GRANTED UNTIL ALL LANDSCAPING SHOWN ON THESE PLANS HAS BEEN COMPLETED IN ACCORDANCE WITH THE APPROVED LANDSCAPE PLAN. SURETY FOR LANDSCAPING SHALL BE BASED ON THE TOTAL NUMBER OF REQUIRED NEW TREES (SHADE, ORNAMENTAL AND EVERGREEN) OR COMPARABLE ELEMENTS SHOWN ON THE LANDSCAPE PLAN. THE UNIT PRICES TO BE USED FOR ESTABLISHING SURETY REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE ADOPTED COUNTY FEE SCHEDULE WHICH IS $300.00 PER SHADE TREE, $150.00 PER EVERGREEN/ORNAMENTAL TREE, $30.00 PER SHRUB, $10.00 PER LINEAR FEET OF FENCING AND $20.00 PER LINEAR FEET OF WALL.

BASED ON ALL THE PLANTING SCHEDULE, THE SURETY FOR REQUIRED LANDSCAPING IS THE FOLLOWING:

233 SHADE TREES X $300.00 = $69,900.00 (STREET TREES =130)

130 ORNAMENTAL TREES X $150.00 =$19,500

151 EVERGREEN TREES X $150.00 =$22,650

TOTAL = $112,050.00

NOTE: THE LANDSCAPING SURETY WILL BE POSTED WITH THE DEVELOPER'S AGREEMENT.

SCHEDULE 'D'
STORMWATER MANAGEMENT BIORETENTION FACILITY #1

LINEAR FEET OF PERIMETER	108 FT
NUMBER OF TREES REQUIRED (SHADE TREE = 1:50) (EVERGREEN TREE = 1:40)	2 3
CREDIT FOR EX. VEGETATION	YES - 33%
CREDIT FOR OTHER LANDSCAPING	NO

$ SYMBOL DESIGNATES STORMWATER LANDSCAPING REQUIREMENTS

SCHEDULE 'D'
STORMWATER MANAGEMENT BIORETENTION FACILITY #2

LINEAR FEET OF PERIMETER	171 FT
NUMBER OF TREES REQUIRED (SHADE TREE = 1:50) (EVERGREEN TREE = 1:40)	3 4
CREDIT FOR EX. VEGETATION	NO
CREDIT FOR OTHER LANDSCAPING	NO

$ SYMBOL DESIGNATES STORMWATER LANDSCAPING REQUIREMENTS

SCHEDULE 'D'
STORMWATER MANAGEMENT BIORETENTION FACILITY #3

LINEAR FEET OF PERIMETER	152 FT
NUMBER OF TREES REQUIRED (SHADE TREE = 1:50) (EVERGREEN TREE = 1:40)	3 4
CREDIT FOR EX. VEGETATION	NO
CREDIT FOR OTHER LANDSCAPING	NO

$ SYMBOL DESIGNATES STORMWATER LANDSCAPING REQUIREMENTS

SCHEDULE 'D'
STORMWATER MANAGEMENT BIORETENTION FACILITY #4

LINEAR FEET OF PERIMETER	221 FT
NUMBER OF TREES REQUIRED (SHADE TREE = 1:50) (EVERGREEN TREE = 1:40)	5 6
CREDIT FOR EX. VEGETATION	NO
CREDIT FOR OTHER LANDSCAPING	NO

$ SYMBOL DESIGNATES STORMWATER LANDSCAPING REQUIREMENTS

SCHEDULE 'D'
STORMWATER MANAGEMENT BIORETENTION FACILITY #5

LINEAR FEET OF PERIMETER	286 FT
NUMBER OF TREES REQUIRED (SHADE TREE = 1:50) (EVERGREEN TREE = 1:40)	3 4
CREDIT FOR EX. VEGETATION	YES - 50%
CREDIT FOR OTHER LANDSCAPING	NO

$ SYMBOL DESIGNATES STORMWATER LANDSCAPING REQUIREMENTS

SCHEDULE 'D'
STORMWATER MANAGEMENT BIORETENTION FACILITY #6

LINEAR FEET OF PERIMETER	604 FT
NUMBER OF TREES REQUIRED (SHADE TREE = 1:50) (EVERGREEN TREE = 1:40)	8 9
CREDIT FOR EX. VEGETATION	YES - 40%
CREDIT FOR OTHER LANDSCAPING	NO

$ SYMBOL DESIGNATES STORMWATER LANDSCAPING REQUIREMENTS

SCHEDULE 'D'
STORMWATER MANAGEMENT BIORETENTION FACILITY #7

LINEAR FEET OF PERIMETER	132 FT
NUMBER OF TREES REQUIRED (SHADE TREE = 1:50) (EVERGREEN TREE = 1:40)	4 4
CREDIT FOR EX. VEGETATION	NO
CREDIT FOR OTHER LANDSCAPING	NO

$ SYMBOL DESIGNATES STORMWATER LANDSCAPING REQUIREMENTS

SCHEDULE 'D'
STORMWATER MANAGEMENT BIORETENTION FACILITY #8

LINEAR FEET OF PERIMETER	121 FT
NUMBER OF TREES REQUIRED (SHADE TREE = 1:50) (EVERGREEN TREE = 1:40)	3 4
CREDIT FOR EX. VEGETATION	NO
CREDIT FOR OTHER LANDSCAPING	NO

$ SYMBOL DESIGNATES STORMWATER LANDSCAPING REQUIREMENTS

SCHEDULE 'D'
STORMWATER MANAGEMENT BIORETENTION FACILITY #9

LINEAR FEET OF PERIMETER	109 FT
NUMBER OF TREES REQUIRED (SHADE TREE = 1:50) (EVERGREEN TREE = 1:40)	3 4
CREDIT FOR EX. VEGETATION	NO
CREDIT FOR OTHER LANDSCAPING	NO

$ SYMBOL DESIGNATES STORMWATER LANDSCAPING REQUIREMENTS

SCHEDULE 'D'
STORMWATER MANAGEMENT BIORETENTION FACILITY #10

LINEAR FEET OF PERIMETER	105 FT
NUMBER OF TREES REQUIRED (SHADE TREE = 1:50) (EVERGREEN TREE = 1:40)	3 4
CREDIT FOR EX. VEGETATION	NO
CREDIT FOR OTHER LANDSCAPING	NO

$ SYMBOL DESIGNATES STORMWATER LANDSCAPING REQUIREMENTS

SCHEDULE 'D'
STORMWATER MANAGEMENT BIORETENTION FACILITY #11

LINEAR FEET OF PERIMETER	427 FT
NUMBER OF TREES REQUIRED (SHADE TREE = 1:50) (EVERGREEN TREE = 1:40)	8 11
CREDIT FOR EX. VEGETATION	NO
CREDIT FOR OTHER LANDSCAPING	NO

$ SYMBOL DESIGNATES STORMWATER LANDSCAPING REQUIREMENTS

SCHEDULE 'D'
STORMWATER MANAGEMENT BIORETENTION FACILITY #12

LINEAR FEET OF PERIMETER	147 FT
NUMBER OF TREES REQUIRED (SHADE TREE = 1:50) (EVERGREEN TREE = 1:40)	3 3
CREDIT FOR EX. VEGETATION	YES - 35%
CREDIT FOR OTHER LANDSCAPING	NO

$ SYMBOL DESIGNATES STORMWATER LANDSCAPING REQUIREMENTS

SCHEDULE 'D'
STORMWATER MANAGEMENT BIORETENTION FACILITY #13

LINEAR FEET OF PERIMETER	289 FT
NUMBER OF TREES REQUIRED (SHADE TREE = 1:50) (EVERGREEN TREE = 1:40)	10 13
CREDIT FOR EX. VEGETATION	YES - 18%
CREDIT FOR OTHER LANDSCAPING	NO

$ SYMBOL DESIGNATES STORMWATER LANDSCAPING REQUIREMENTS

SCHEDULE 'D'
STORMWATER MANAGEMENT BIORETENTION FACILITY #14

LINEAR FEET OF PERIMETER	159 FT
NUMBER OF TREES REQUIRED (SHADE TREE = 1:50) (EVERGREEN TREE = 1:40)	3 3
CREDIT FOR EX. VEGETATION	YES - 42%
CREDIT FOR OTHER LANDSCAPING	NO

$ SYMBOL DESIGNATES STORMWATER LANDSCAPING REQUIREMENTS

SCHEDULE 'D'
STORMWATER MANAGEMENT BIORETENTION FACILITY #15

LINEAR FEET OF PERIMETER	136 FT
NUMBER OF TREES REQUIRED (SHADE TREE = 1:50) (EVERGREEN TREE = 1:40)	3 4
CREDIT FOR EX. VEGETATION	NO
CREDIT FOR OTHER LANDSCAPING	NO

$ SYMBOL DESIGNATES STORMWATER LANDSCAPING REQUIREMENTS

STREET TREE CHART

STREET NAME	REQUIRED	PROVIDED
GORMAN ROAD (983 FT- 265 EXISTING FOREST TO REMAIN = 718)	18 TREES	18 TREES
ROAD A (1,104 FT)	56 TREES	43 SHADE: 26 ORNAMENTAL & EVERGREEN = 56 EQUIVALENT
ROAD B (1,109 FT)	56 TREES	42 SHADE; 28 ORNAMENTAL & EVERGREEN = 56 EQUIVALENT
TOTAL TREES	130 TREES	130 EQUIVALENT TREES

@ SYMBOL DESIGNATES STREET TREES

DEVELOPER'S / OWNER'S LANDSCAPE CERTIFICATE

I / WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY 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 — DATE 11-3-14

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: 6/30/14

APPROVED
PLANNING BOARD OF HOWARD COUNTY
28406
DATE 10/08/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE 11-17-14
CHIEF-DIVISION OF LAND DEVELOPMENT — DATE 12-22-14
DIRECTOR — DATE 12/22/14

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)

NO.:	DATE	REVISION DESCRIPTION

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M/I HOMES OF DC, LLC
21355 RIDGETOP CIRCLE, SUITE 220
STERLING, VA 20166
CONTACT : CINDY HUNTZBERRY
PHONE : 443-677-9803

DEVELOPER: SOMERWORTH II, L.C.
5704 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
LANDSCAPE NOTES AND DETAILS

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

ERIC R. MCWILLIAMS
REGISTERED LANDSCAPE ARCHITECT
MARYLAND LICENSE No. 3697

CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	NOT TO SCALE
DRAWING NO.	16 OF 34

SDP-13-023

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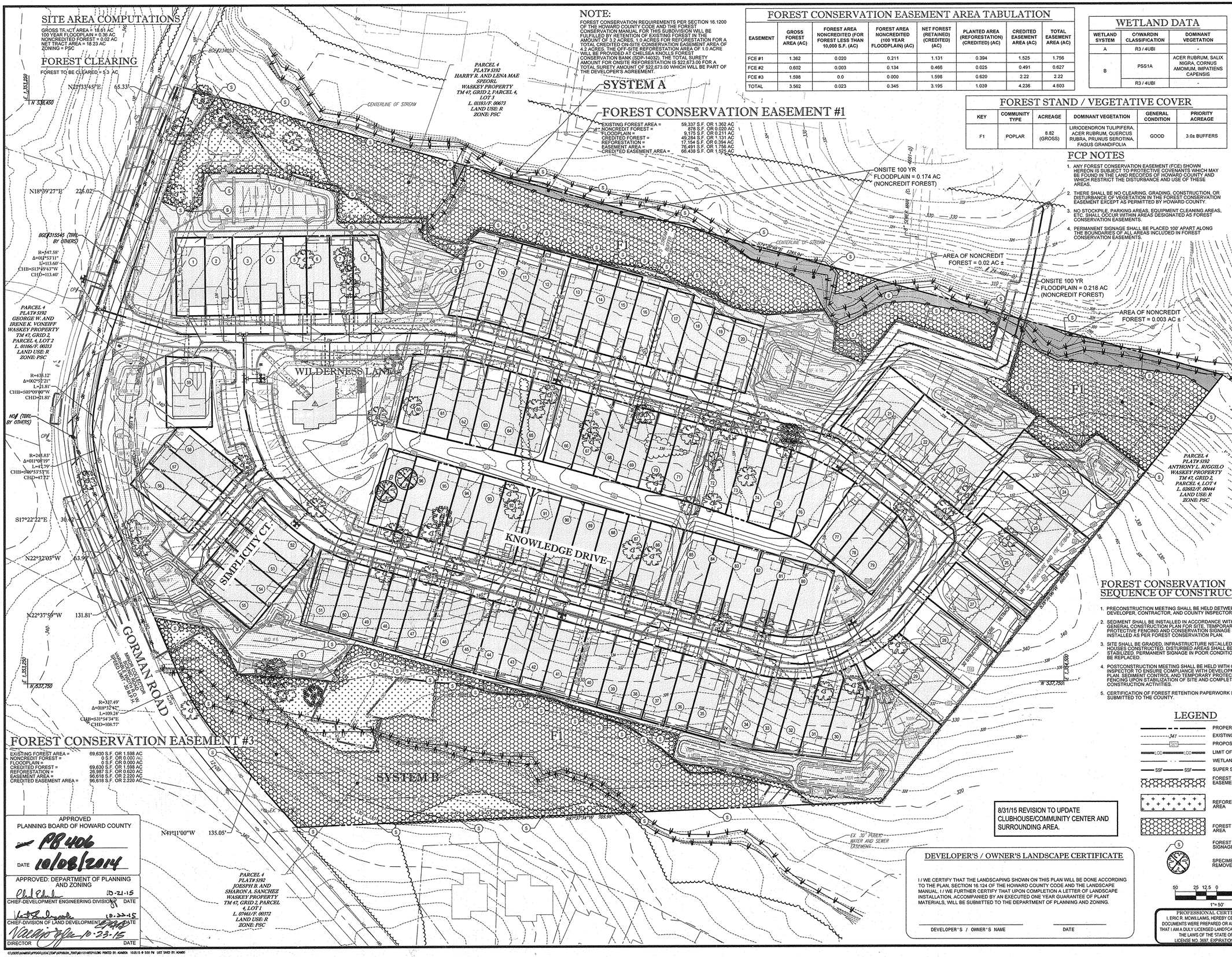


SITE AREA COMPUTATIONS

GROSS TRACT AREA = 18.61 AC
100 YEAR FLOODPLAIN = 0.36 AC
NONCREDITED FOREST = 0.02 AC
NET TRACT AREA = 18.23 AC
ZONING = PSC

FOREST CLEARING

FOREST TO BE CLEARED = 5.3 AC

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 3.2 ACRES, 1.0 ACRES FOR REFORESTATION FOR A TOTAL CREDITED ON-SITE CONSERVATION EASEMENT AREA OF 4.2 ACRES. THE OFF-SITE REFORESTATION AREA OF 1.0 ACRE WILL BE PROVIDED AT CHELSEA KNOLLS FOREST CONSERVATION BANK (SDP-14032). THE TOTAL SURETY AMOUNT FOR ONSITE REFORESTATION IS $22,673.00 FOR A TOTAL SURETY AMOUNT OF $22,673.00 WHICH WILL BE PART OF THE DEVELOPER'S AGREEMENT.

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	1.382	0.020	0.211	1.131	0.394	1.525	1.756
FCE #2	0.602	0.003	0.134	0.466	0.025	0.491	0.627
FCE #3	1.598	0.0	0.000	1.598	0.620	2.22	2.22
TOTAL	3.562	0.023	0.345	3.195	1.039	4.236	4.603

WETLAND DATA

WETLAND SYSTEM	C/WARDIN CLASSIFICATION	DOMINANT VEGETATION
A	R3 / 4UBI	-
B	PSS1A	ACER RUBRUM, SALIX NIGRA, CORNUS AMOMUM, IMPATIENS CAPENSIS
	R3 / 4UBI	-

FOREST STAND / VEGETATIVE COVER

KEY	COMMUNITY TYPE	ACREAGE	DOMINANT VEGETATION	GENERAL CONDITION	PRIORITY ACREAGE
F1	POPLAR	8.82 (GROSS)	LIRIODENDRON TULIPIFERA, ACER RUBRUM, QUERCUS RUBRA, PRUNUS SEROTINA, FAGUS GRANDIFOLIA	GOOD	3.0± BUFFERS

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.

FOREST CONSERVATION WORKSHEET

BASIC SITE DATA		ACRES
GROSS SITE ACREAGE		18.6
AREA WITHIN FLOODPLAIN		0.4
AREA IN OVERHEAD TRANSMISSION LINE EASEMENT		0
NONCREDITED FOREST		.02
NET TRACT AREA		18.2
LAND USE CATEGORY		HDR
INFORMATION FOR CALCULATIONS		ACRES
NET TRACT AREA		18.2
FOREST CONSERVATION THRESHOLD (PERCENTAGE OF NET TRACT AREA)	20.00%	3.6
AFFORESTATION THRESHOLD (PERCENTAGE OF NET TRACT AREA)	15.00%	2.7
EXISTING FOREST ON NET TRACT AREA		8.5
EXISTING FOREST ABOVE FOREST CONSERVATION THRESHOLD		4.9
BREAK-EVEN POINT		4.6
FOREST TO BE CLEARED		5.3
FOREST TO BE RETAINED		3.2
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 4.9 X 1/4		1.2
FOREST REMOVED BELOW THRESHOLD 0.40 X 2		0.8
FOREST RETAINED ABOVE THRESHOLD		0.0
REFORESTATION REQUIRED		2.0
ON-SITE REFORESTATION PROVIDED		1.0
OFF-SITE REFORESTATION PROVIDED *		1.0

* OFF-SITE MITIGATION TO BE PROVIDED AT CHELSEA KNOLLS FOREST CONSERVATION BANK (SDP-14-032)

FOREST CONSERVATION EASEMENT #1

EXISTING FOREST AREA =	59,337 S.F.	OR 1.362 AC
NONCREDIT FOREST =	878 S.F.	OR 0.020 AC
FLOODPLAIN =	9,175 S.F.	OR 0.211 AC
CREDITED FOREST =	49,284 S.F.	OR 1.131 AC
REFORESTATION =	17,154 S.F.	OR 0.394 AC
EASEMENT AREA =	76,491 S.F.	OR 1.756 AC
CREDITED EASEMENT AREA =	66,438 S.F.	OR 1.525 AC

FOREST CONSERVATION EASEMENT #2

EXISTING FOREST AREA =	26,215 S.F.	OR 0.602 AC
NONCREDIT FOREST =	112 S.F.	OR 0.003 AC
FLOODPLAIN =	5,815 S.F.	OR 0.134 AC
CREDITED FOREST =	20,288 S.F.	OR 0.466 AC
REFORESTATION =	1,106 S.F.	OR 0.025 AC
EASEMENT AREA =	27,321 S.F.	OR 0.627 AC
CREDITED EASEMENT AREA =	21,394 S.F.	OR 0.491 AC

FOREST CONSERVATION EASEMENT #3

EXISTING FOREST AREA =	69,630 S.F.	OR 1.598 AC
NONCREDIT FOREST =	0 S.F.	OR 0.000 AC
FLOODPLAIN =	0 S.F.	OR 0.000 AC
CREDITED FOREST =	69,630 S.F.	OR 1.598 AC
REFORESTATION =	26,987 S.F.	OR 0.620 AC
EASEMENT AREA =	96,618 S.F.	OR 2.220 AC
CREDITED EASEMENT AREA =	96,618 S.F.	OR 2.220 AC

FOREST CONSERVATION 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. POSTCONSTRUCTION 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.

LEGEND

- PROPERTY LINE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- LIMIT OF DISTURBANCE
- WETLAND BUFFER LIMITS
- SUPER SILT FENCE
- FOREST CONSERVATION EASEMENT
- REFORESTATION AREA
- FOREST RETENTION AREA
- FOREST CONSERVATION SIGNAGE
- SPECIMEN TREE (TO BE REMOVED)

50 25 12.5 0 50
1"= 50'

8/31/15 REVISION TO UPDATE CLUBHOUSE/COMMUNITY CENTER AND SURROUNDING AREA.

DEVELOPER'S / OWNER'S LANDSCAPE CERTIFICATE

I / WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY 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 _____ DATE _____

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. 3997, EXPIRATION DATE: 6/20/14

ERIC R. MCWILLIAMS
REGISTERED LANDSCAPE ARCHITECT
MARYLAND LICENSE No. 3997

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)

NO.:	DATE	REVISION DESCRIPTION
1	8/31/15	REVISED CLUBHOUSE/COMMUNITY CENTER

OWNER:
M/I HOMES OF DC, LLC
21355 RIDGETOP CIRCLE, SUITE 220
STERLING, VA 20166
CONTACT : CINDY HUNTZBERRY
PHONE : 443-677-9803

DEVELOPER:
SOMERWORTH II, L.C.
5704 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT
REVISED SITE DEVELOPMENT PLAN
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
FOREST CONSERVATION PLAN

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

DATE

CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	1"=50'
DRAWING NO.	17 OF 34

APPROVED
PLANNING BOARD OF HOWARD COUNTY
PB 406
DATE 10/08/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING
10-21-15
CHIEF-DEVELOPMENT ENGINEERING DIVISION DATE
10-22-15
CHIEF-DIVISION OF LAND DEVELOPMENT DATE
10-23-15
DIRECTOR DATE

SDP-13-023

C:\USERS\AGAMBOA\APPDATA\LOCAL\TEMP\ACPUBLISH_7000\MD112149FCP10.DWG PLOTTED BY: AGAMBOA 10.05.15 @ 3:50 PM LAST SAVED BY: AGAMBO

FOREST CONSERVATION PLANTING 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 3.2 ACRES OF NET TRACT AREA FOREST WITHIN THE LIMITS OF A FOREST CONSERVATION EASEMENT AND A REFORESTATION OBLIGATION OF 2.0 ACRES. THE REFORESTATION OBLIGATION WILL BE MET WITH 1.0 ACRES OF ONSITE PLANTING AND 1.0 ACRES OF OFFSITE REFORESTATION OR FOREST MITIGATION BANK CREDITS PURCHASE AT CHELSEA KNOLLS FOREST BANK F-07-072.

   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.

FCE # 1 - 0.394 ACRES
PLANTING UNITS REQUIRED: 76
PLANTING UNITS PROVIDED: 76

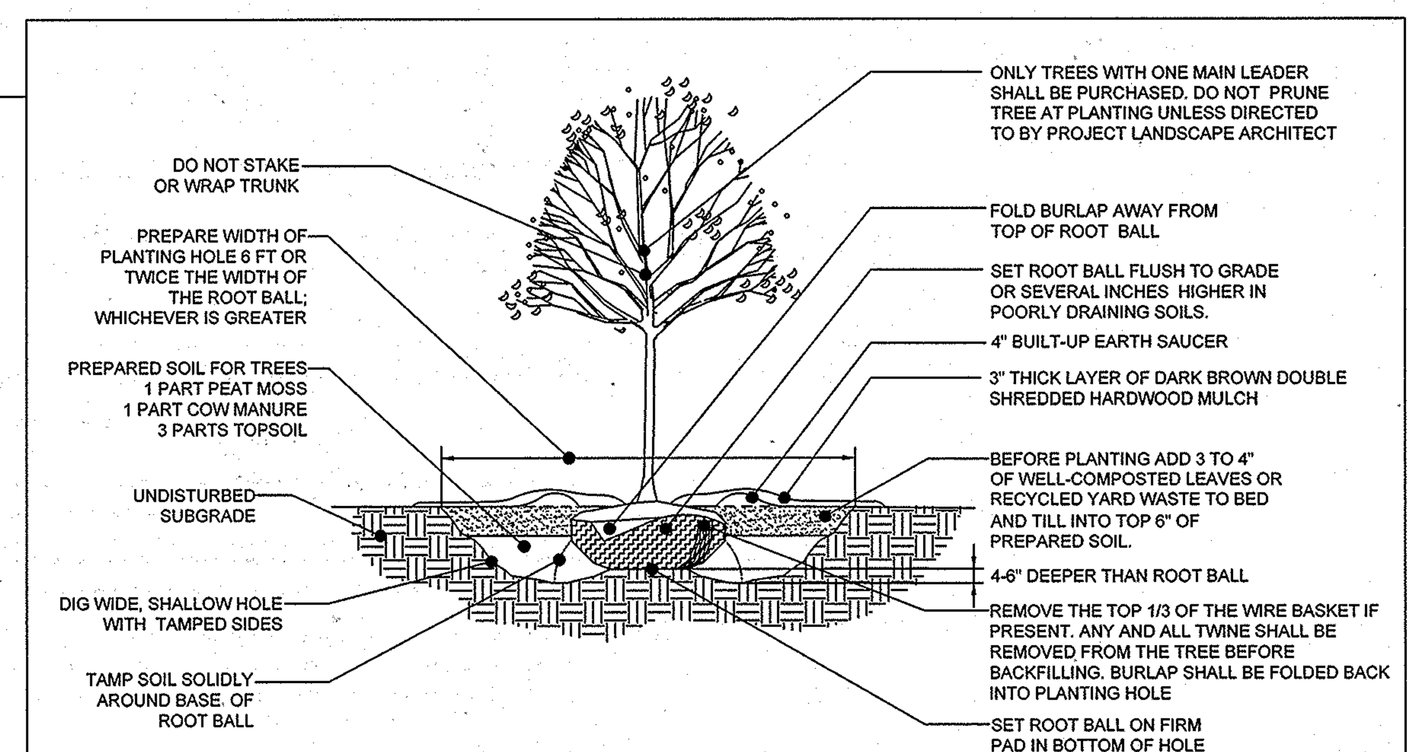
Qty	Species	Size	Spacing	Total FCA Units
14	Acer rubrum - Red maple	1' cal	15'x15' spacing	
13	Liriodendron tulipifera - Tulip poplar **	1' cal	15'x15' spacing	
14	Nyssa sylvatica - Black gum	1' cal	15'x15' spacing	
13	Prunus serotina - Black cherry	1' cal	15'x15' spacing	
11	Quercus alba - White oak	1' cal	15'x15' spacing	
11	Quercus rubra - Red oak	1' cal	15'x15' spacing	
76			FCA unit credit	76
	Total Unit Credit			76

FCE # 2 - 0.025 ACRES
PLANTING UNITS REQUIRED: 5
PLANTING UNITS PROVIDED: 5

Qty	Species	Size	Spacing	Total FCA Units
5	Acer rubrum - Red maple	1' cal	15'x15' spacing	
5			FCA unit credit	5
	Total Unit Credit			5

FCE # 3 - 0.622 ACRES
PLANTING UNITS REQUIRED: 120
PLANTING UNITS PROVIDED: 120

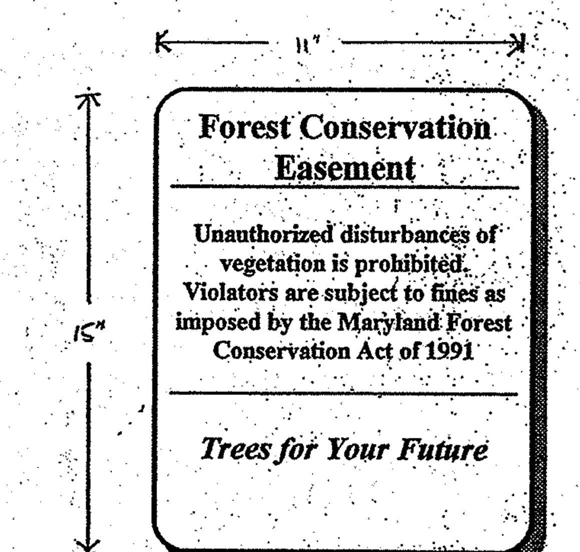
Qty	Species	Size	Spacing	Total FCA Units
17	Acer rubrum - Red maple	1' cal	15'x15' spacing	
17	Liriodendron tulipifera - Tulip poplar **	1' cal	15'x15' spacing	
17	Nyssa sylvatica - Black gum	1' cal	15'x15' spacing	
17	Platanus occidentalis - Sycamore	1' cal	15'x15' spacing	
17	Quercus palustris - Pin oak	1' cal	15'x15' spacing	
17	Salix nigra - Black Willow	1' cal	15'x15' spacing	
18	Quercus rubra - Red oak	1' cal	15'x15' spacing	
120			FCA unit credit	120
	Total Unit Credit			120

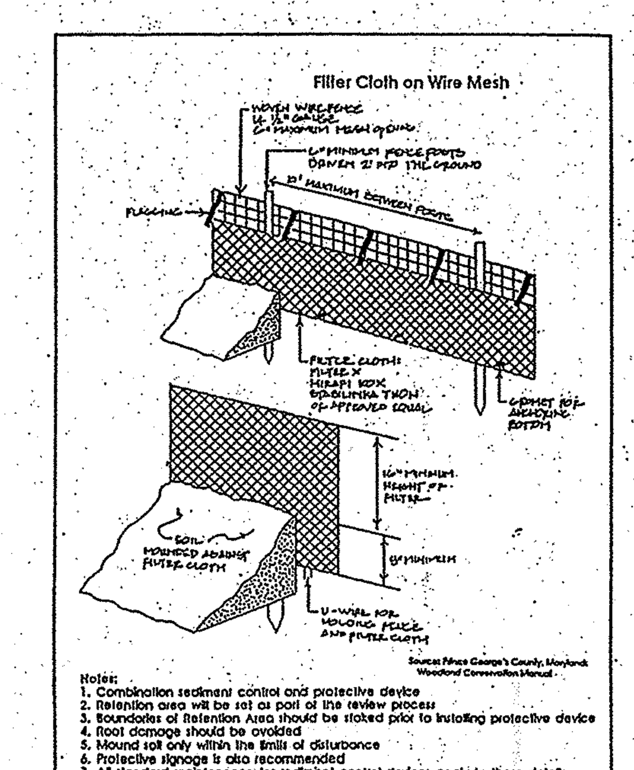


REFERENCE: ARCHITECTURAL GRAPHIC STANDARDS 1998 CUMULATIVE SUPPLEMENT.

DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE





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)

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE PB406
DATE 10/08/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[signature] 11-17-14
CHIEF-DEVELOPMENT ENGINEERING DIVISION DATE
[signature] 12-22-14
CHIEF-DIVISION OF LAND DEVELOPMENT DATE
[signature] 12/22/14
DIRECTOR DATE

DEVELOPER'S / OWNER'S LANDSCAPE CERTIFICATE

I / WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY 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.

[signature] 11-3-14
DEVELOPER'S / OWNER'S NAME DATE

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

NO.:	DATE	REVISION DESCRIPTION

OWNER:
M/I HOMES OF DC, LLC
21355 RIDGETOP CIRCLE, SUITE 220
STERLING, VA 20166
CONTACT : CINDY HUNTZBERRY
PHONE : 443-677-9803

DEVELOPER:
SOMERWORTH II, L.C.
5704 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT
WALDEN WOODS

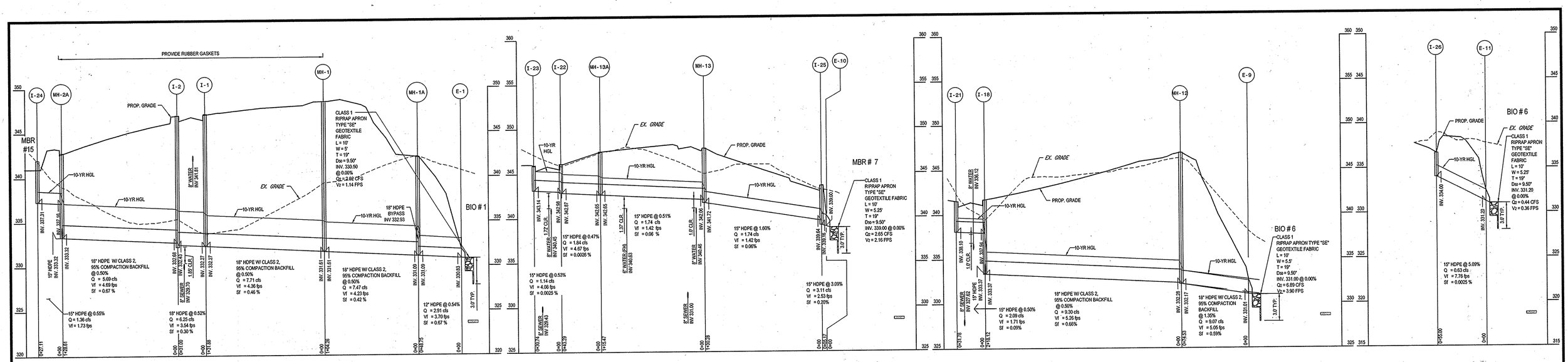
TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
FOREST CONSERVATION NOTES AND DETAILS

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

REGISTERED LANDSCAPE ARCHITECT

CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	NOT TO SCALE
DRAWING NO.	18 OF 34



I-24 TO E-1 STORM DRAIN PROFILE

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

I-23 TO E-10 STORM DRAIN PROFILE

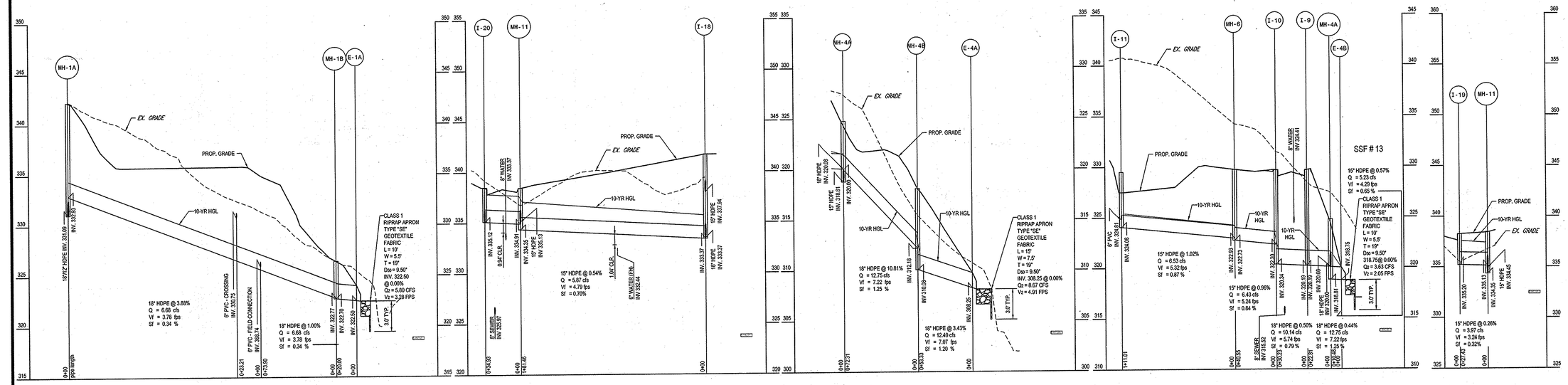
SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL

I-21 TO E-9 STORM DRAIN PROFILE

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

I-26 TO E-11 STORM DRAIN PROFILE

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



MH-A1 TO E-A1 - STORM DRAIN PROFILE

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

I-20 TO I-18 STORM DRAIN PROFILE

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

MH-4A TO E-4A STORM DRAIN PROFILE

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

I-11 TO E-4B STORM DRAIN PROFILE

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

I-19 TO MH-11 STORM DRAIN PROFILE

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

NOTE : CLASS 3 BACKFILL TO BE USED FOR PIPE INSTALLATION UNLESS OTHERWISE NOTED.

5 2.5 1.25 0 5
1"= 5'

50 25 12.5 0 50
1"= 50'

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

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
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
STORM DRAIN PROFILE

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7997
www.BohlerEngineering.com

CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	1"=50'
DRAWING NO.	19 OF 34

BRANDON R. ROWE
PROFESSIONAL ENGINEER NO. 40808

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE PB 486
DATE 10/09/2014

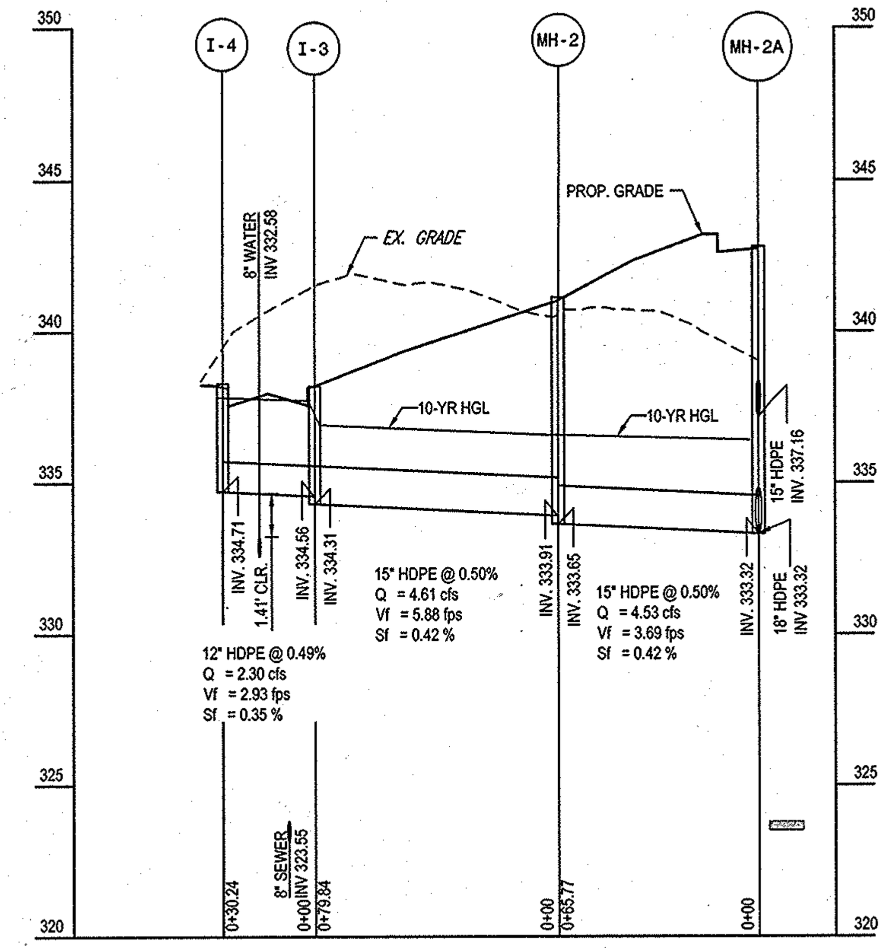
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF-DEVELOPMENT ENGINEERING DIVISION DATE 12-17-14
CHIEF-DIVISION OF LAND DEVELOPMENT DATE 12-22-14
DIRECTOR DATE 12/24/14

SDP-13-023

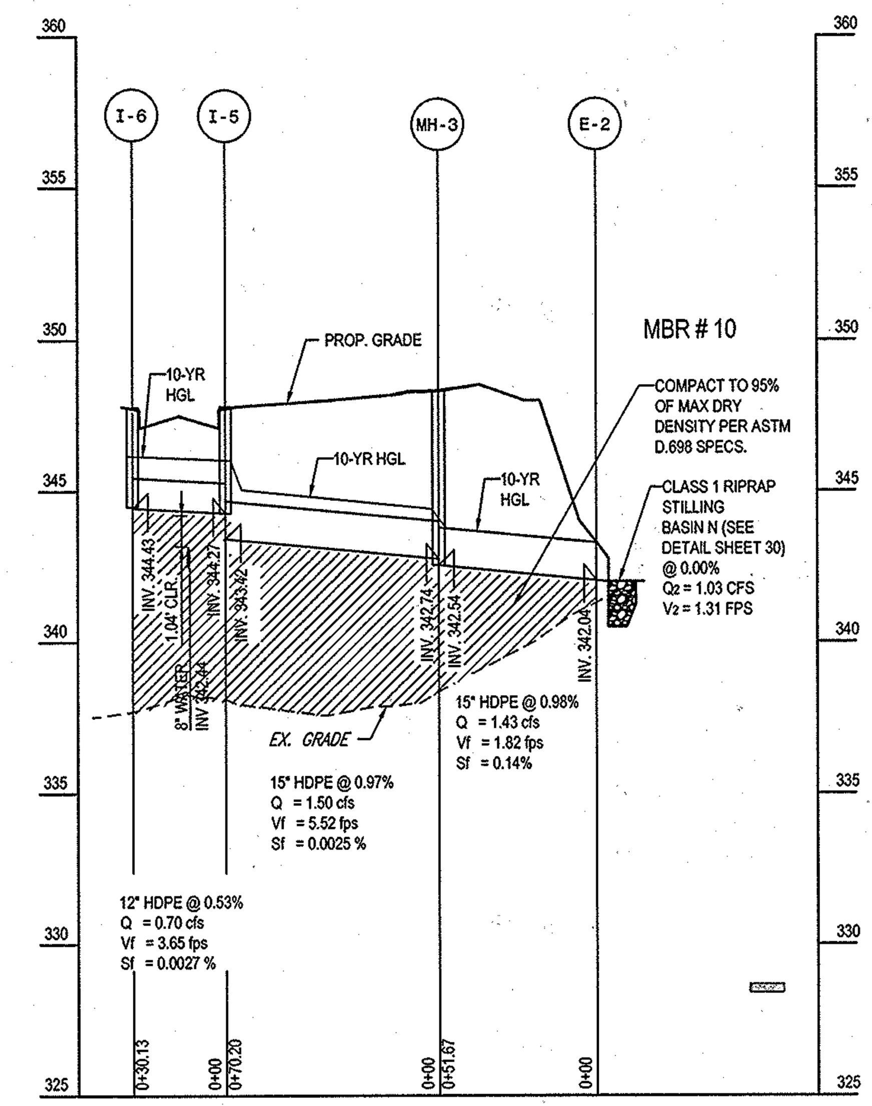
STORM STRUCTURE SCHEDULE

NAME	TYPE (HO. CO. STD)	TOP ELEVATION	INV. IN	INV. OUT	ROAD NAME	ROAD STATION & OFFSET
E-1	HDPE END SECTION	-	330.83		WILDERNESS LN	N 538314.1708, E 1353462.6548
E-1A	HDPE END SECTION	-	322.50		WILDERNESS LN	N 538292.8247, E 1353702.7436
E-2	HDPE END SECTION	-	342.03		WILDERNESS LN	10+82.72; 45.54 R
E-3	HDPE END SECTION	-	330.02		WILDERNESS LN	N 538214.5945, E 1353733.1495
E-4A	HDPE END SECTION	-	308.25		WILDERNESS LN	N 538180.8428, E 1354199.7082
E-4B	HDPE END SECTION	-	318.75		WILDERNESS LN	N 538107.2433, E 1354132.2447
E-5	HDPE END SECTION	-	323.20		WILDERNESS LN	N 538061.8220, E 1354383.9813
E-5A	HDPE END SECTION	-	326.00		WILDERNESS LN	N 538008.3433, E 1354523.1040
E-6	HDPE END SECTION	-	326.02		ETERNITY LN	N 537728.7318, E 1354278.7696
E-8	HDPE END SECTION	-	319.00		ETERNITY LN	N 537635.0933, E 1354254.5676
E-9	HDPE END SECTION	-			ETERNITY LN	N 537661.3086, E 1354082.2752
E-10	HDPE END SECTION	-	339.00		ETERNITY LN	N 537841.5304, E 135563.6120
E-11	HDPE END SECTION	-			GORMAN ROAD	N 537890.1404, E 1353421.9241
I-1	A-5 INLET (D4.01)	-	330.96	332.27	WILDERNESS LN	N 537818.0600, E 1353474.9477
I-2	A-5 INLET (D4.01)	346.94	332.27	332.43	WILDERNESS LN	12+45.94; 13.00 R
I-3	A-5 INLET (D4.01)	338.19	334.56	332.43	WILDERNESS LN	12+46.27; 13.86 R
I-4	A-5 INLET (D4.01)	338.27		334.71	WILDERNESS LN	15+21.96; 13.00 L
I-5	A-5 INLET (D4.01)	347.80	344.27		ETERNITY LN	10+40.82; 13.00 R
I-6	A-5 INLET (D4.01)	347.78			ETERNITY LN	1(10+39.69; 16.87 R
I-7	A-5 INLET (D4.01)	335.47		332.10	WILDERNESS LN	1(10+39.53; 16.94 R
I-8	A-5 INLET (D4.01)	335.75		332.50	WILDERNESS LN	15+90.69; 13.00 R
I-9	A-10 INLET (D4.03)	329.67	320.19	320.19	WILDERNESS LN	18+24.90; 13.00 L
I-10	A-10 INLET (D4.03)	329.67	322.30	320.34	WILDERNESS LN	18+24.90; 13.00 R
I-11	D INLET (D4.10)*	329.50	324.81	324.06	WILDERNESS LN	17+80.26; 13.00 R
I-12	A-5 INLET (D4.0 *	336.07	332.57	332.00	WILDERNESS LN	N 537948.4702, E 1354047.4663
I-13	A-5 INLET (D4.01)	336.13		332.87	WILDERNESS LN	20+35.67; 13.00 R
I-14	A-10 INLET (D4.03)	336.06	331.31		ETERNITY LN	18+79.35; 13.00 R
I-15	A-10 INLET (D4.03)	336.03			ETERNITY LN	18+74.45; 13.28 L
I-16	A-5 INLET (D4.01)	337.33	333.83	333.63	ETERNITY LN	17+48.44; 14.74 R
I-17	A-5 INLET (D4.01)	337.40		334.18	ETERNITY LN	17+49.27; 13.00 L
I-18	A-5 INLET (D4.01)	341.70	333.37 (15") 337.94 (15")	333.37	ETERNITY LN	14+86.39; 13.00 R
I-19	A-5 INLET (D4.01)	338.26		335.20	ETERNITY LN	16+95.27; 13.00 R
I-20	A-5 INLET (D4.01)	338.51		335.12	ETERNITY LN	16+84.17; 13.00 L
I-21	A-5 INLET (D4.01)	341.53		338.10	ETERNITY LN	14+95.94; 13.00 L
I-22	A-5 INLET (D4.01)	346.12	342.98	342.87	ETERNITY LN	13+08.20; 13.00 R
I-23	A-5 INLET (D4.01)	345.91		343.14	ETERNITY LN	13+10.48; 13.00 L
I-24	D INLET (D4.10)	342.00		337.31	WILDERNESS LN	13+77.07; 13.00 R
I-25	A-5 INLET (D4.01)	343.56	339.64	339.16	SIMPLICITY CT	N 538110.7357', E 1353692.1980
I-25A	YARD INLET (D4.14)*	334.93		329.46	SIMPLICITY CT.	N 537895.7293, E 1353426.6254
I-26	A-5 INLET (D4.01) *	336.65		334.00	GORMAN ROAD	N 538015.0938, E 1354453.3163
MH-1	STD MANHOLE (G5.12)	348.44	331.61	331.61	WILDERNESS LN	11+03.27; 21.82 L
MH-1A	STD MANHOLE (G5.12)	342.18	331.09	331.09 (12") 332.93 (18")	MD112149 - I-24 TO E-1	0+63.52; 0.00
MH-1B	STD MANHOLE (G5.12)	326.40	322.76	322.70	GORMAN ROAD	N 538290.7271, E 1353420.6838
MH-2A	STD MANHOLE (G5.12)	342.81	337.16 333.32	333.32	-	N 538292.4459, E 1353682.7458
MH-3	STD MANHOLE (G5.12)	348.30	342.74	342.54	WILDERNESS LN	11+17.50; 15.16 R
MH-4	STD MANHOLE (G5.12)	340.66	331.27	330.27	WILDERNESS LN	14+35.11; 23.15 L
MH-4A	STD MANHOLE (G5.12)	324.80	320.08	320.00 (15") 318.81 (18")	WILDERNESS LN	18+12.16; 36.37 L
MH-4B	STD MANHOLE (G5.12)	318.09	312.18	310.08	WILDERNESS LN	18+10.90; 108.66 L
MH-5	SHALLOW MANHOLE (G5.12)	336.63	331.91	331.91	WILDERNESS LN	15+58.67; 21.65 L
MH-6	STD MANHOLE (G5.12)	329.72	322.93	322.73	WILDERNESS LN	N 538171.4339, E 1354141.7706
MH-7	STD MANHOLE (G5.12)	336.27	331.85 (12") 327.43 (6") 327.43 (6")	327.05	WILDERNESS LN	20+33.32; 29.92 L
MH-8	STD MANHOLE (G5.12)	333.59	328.90	326.12 326.12	ETERNITY LN	19+28.31; 56.78 R
MH-9	STD MANHOLE (G5.12)	325.21	320.00 (15") 320.75 (6")	319.35	ETERNITY LN	17+93.09; 112.51 R
MH-10	STD MANHOLE (G5.12)	337.31	332.71	327.00	ETERNITY LN	N 537673.9447, E 1354081.9271
MH-11	STD MANHOLE (G5.12)	338.46	334.91 (15") 335.13 (15")	334.35	ETERNITY LN	16+67.84; 15.76 R
MH-12	STD MANHOLE (G5.12)	346.88	332.28	332.17	ETERNITY LN	12+73.87; 25.46 R
MH-13	STD MANHOLE (G5.12)	347.83	342.06	341.72	SIMPLICITY CT	10+28.49; 14.32 R
MH-13A	STD MANHOLE (G5.12)	347.47	342.65	342.65	ETERNITY LN	12+64.03; 14.98 R

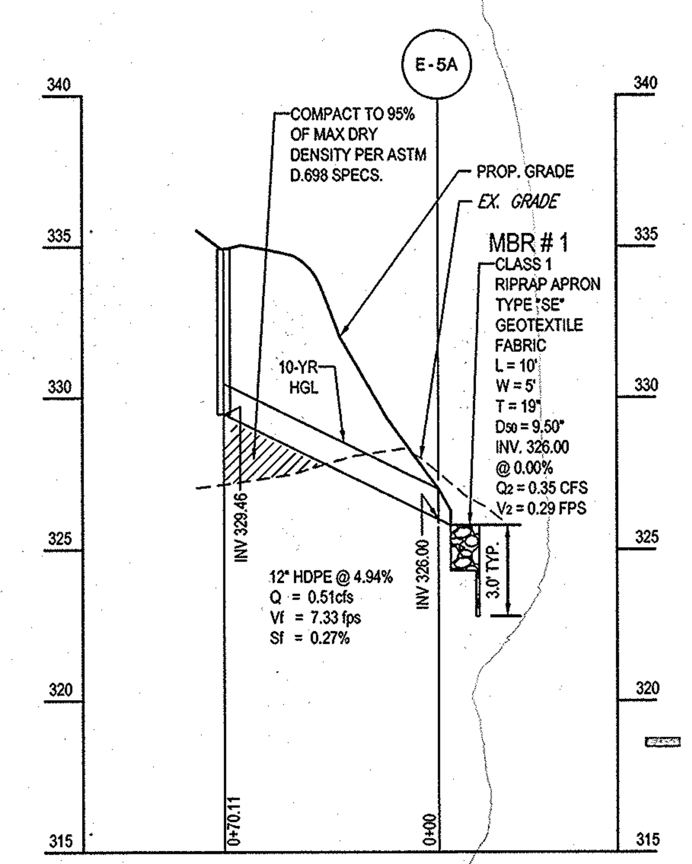
* ALL (4) SIDES OF INLET SHALL BE OPEN



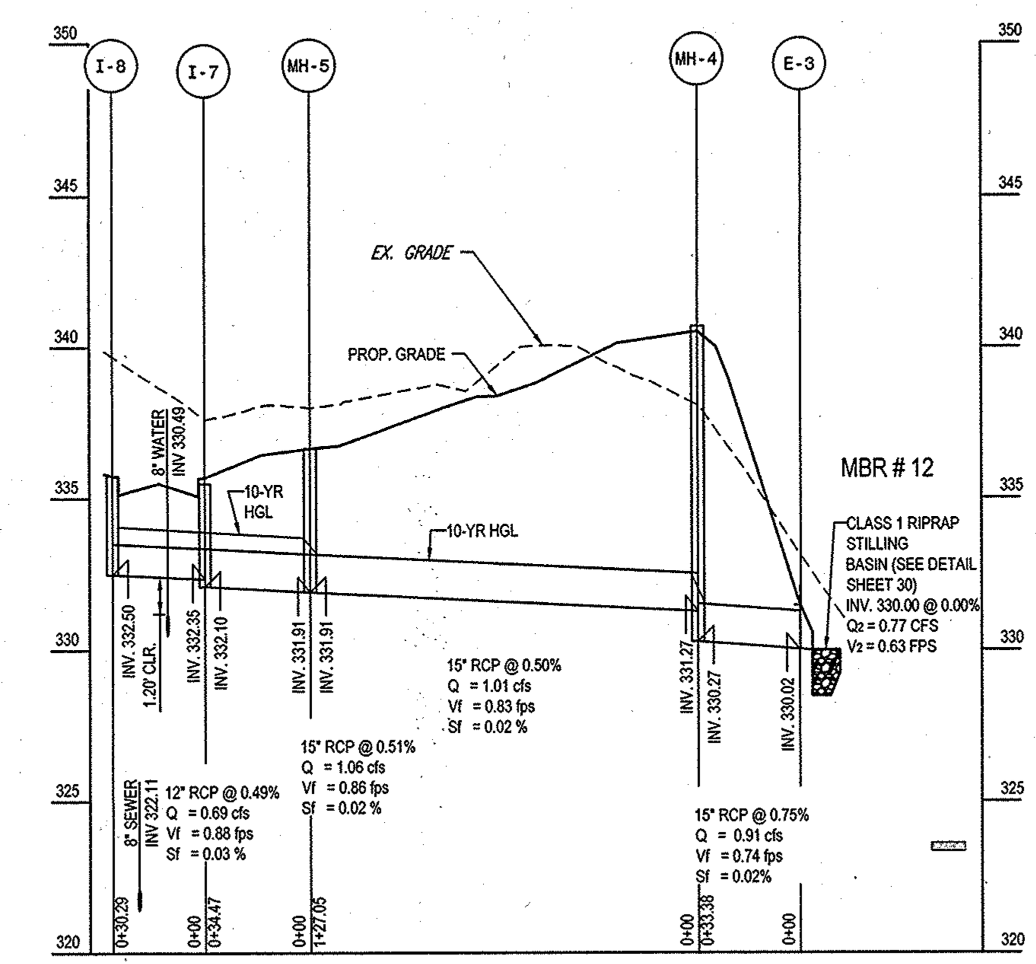
I-4 TO MH-2A STORM DRAIN PROFILE
SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL



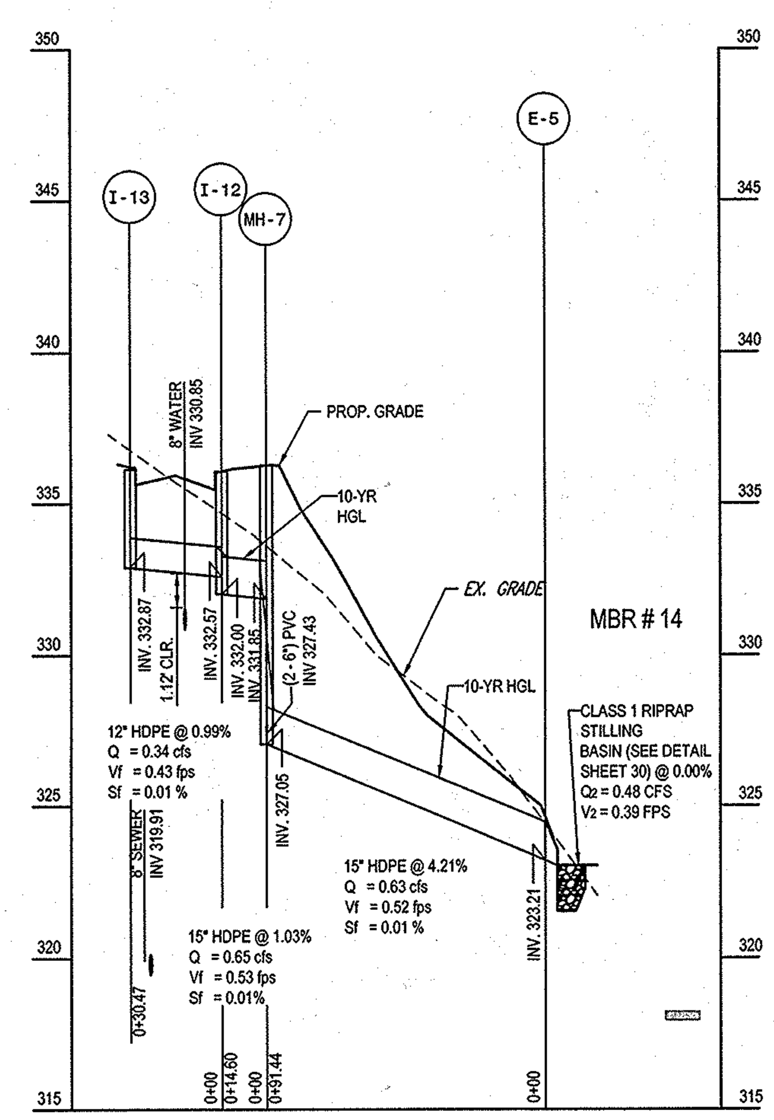
I-6 TO E-2 STORM DRAIN PROFILE
SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL



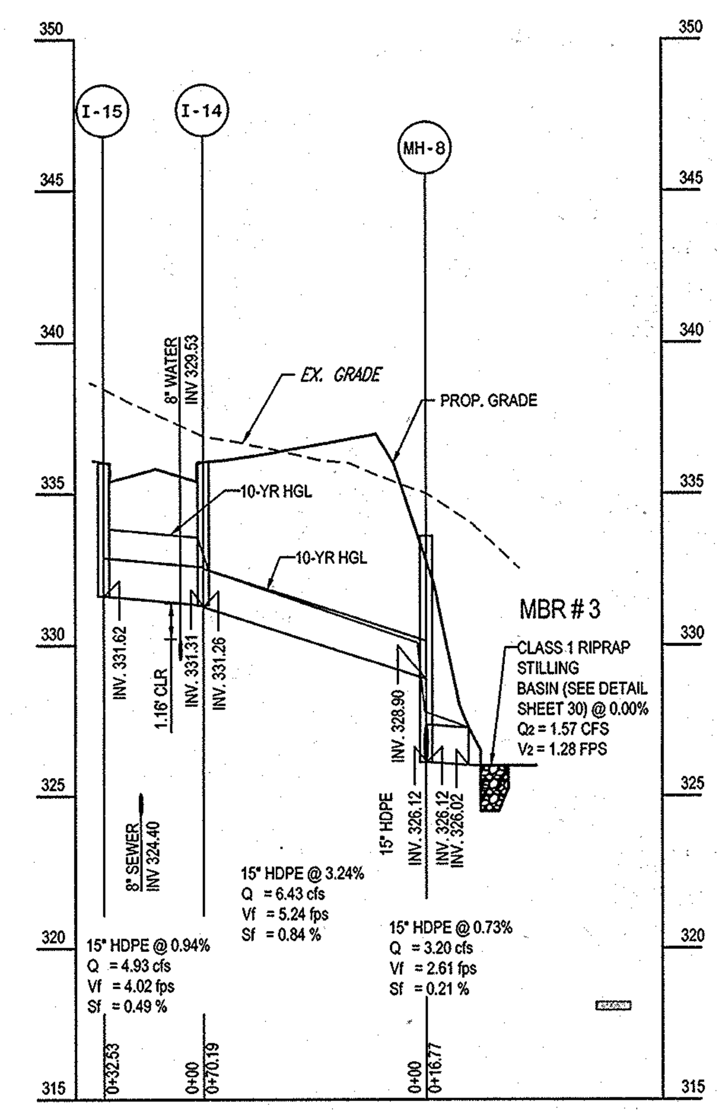
I-25A TO E-5A STORM DRAIN PROFILE
SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL



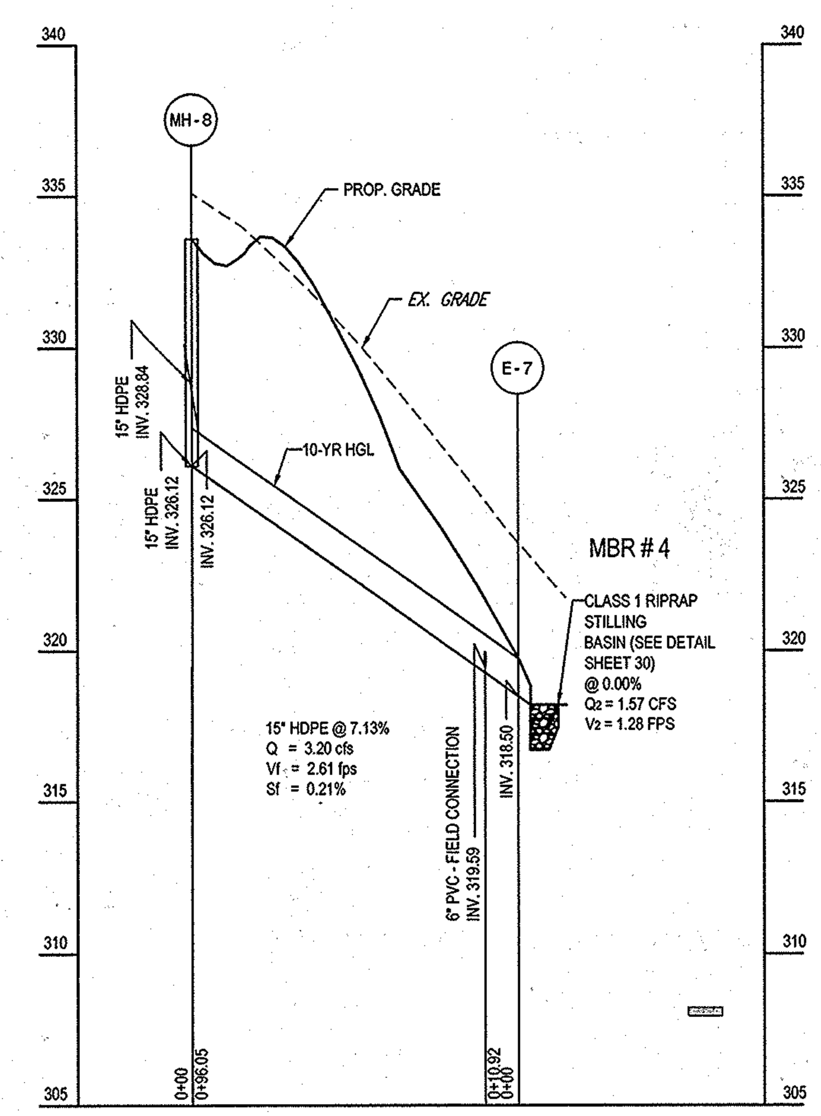
I-8 TO E-3 STORM DRAIN PROFILE
SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL



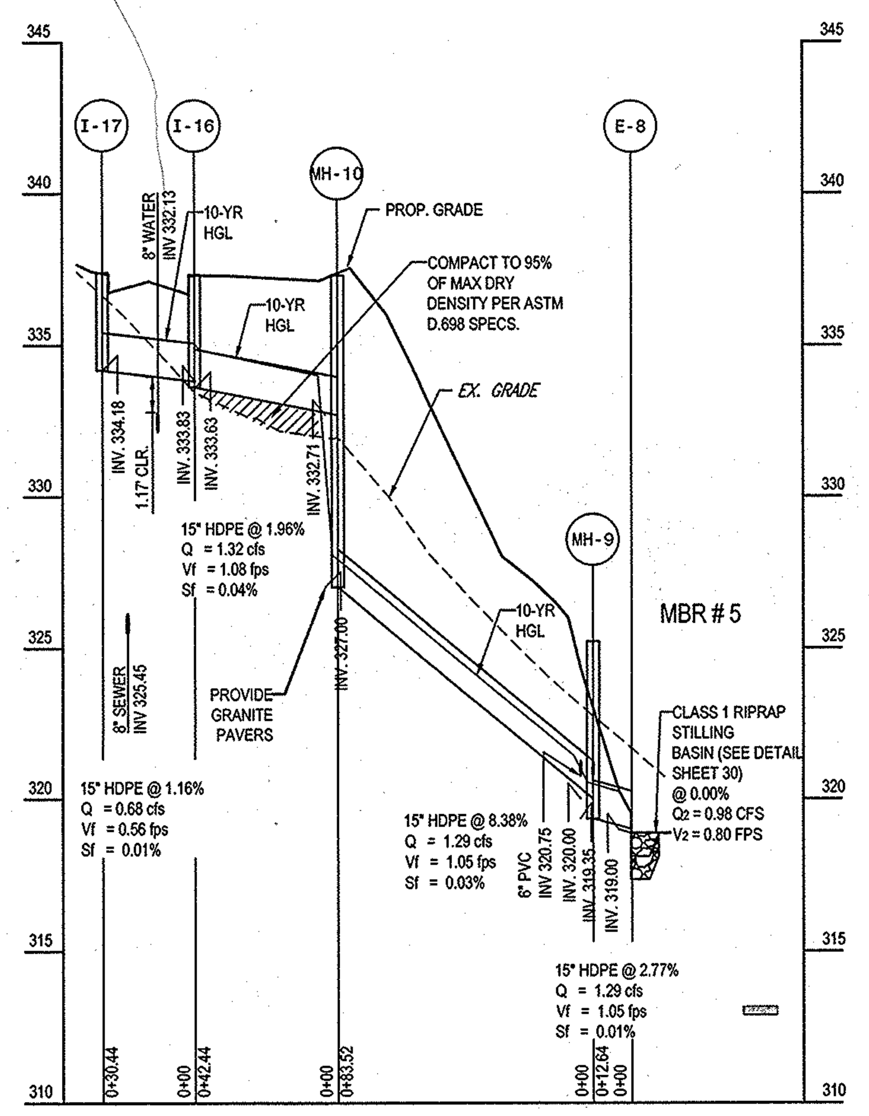
I-13 TO E-5 STORM DRAIN PROFILE
SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL



I-15 TO ES-6 STORM DRAIN PROFILE
SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL



MH-8 TO E-7 STORM DRAIN PROFILE
SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL



I-17 TO E-8 STORM DRAIN PROFILE
SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL

NOTE : CLASS 3 BACKFILL TO BE USED FOR PIPE INSTALLATION UNLESS OTHERWISE NOTED.

50 25 12.5 0 50
1"= 50'

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

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE PB 406
DATE 10/08/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[signature] 11-17-14
CHIEF-DEVELOPMENT ENGINEERING DIVISION DATE
[signature] 12-22-14
CHIEF-DIVISION OF LAND DEVELOPMENT DATE
[signature] 12/24/14
DIRECTOR DATE

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)

NO.	DATE	REVISION DESCRIPTION

OWNER:
M/I HOMES OF DC, LLC
21355 RIDGETOP CIRCLE, SUITE 220
STERLING, VA 20166
CONTACT : CINDY HUNTZBERRY
PHONE : 443-677-9803

DEVELOPER:
SOMERWORTH II, L.C.
5704 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
STORM DRAIN PROFILE

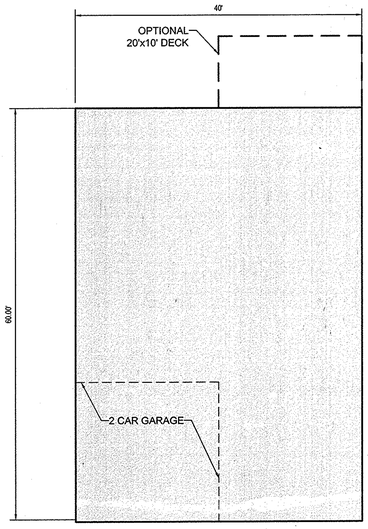
BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

10/30/14
DATE
STATE OF MARYLAND — BRANDON R. ROWE — PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER NO. 40808

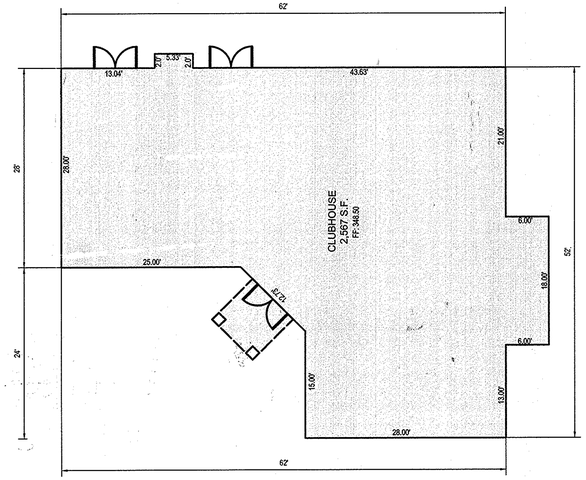
CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	1"=50'
DRAWING NO.	20 OF 34

SDP-13-023

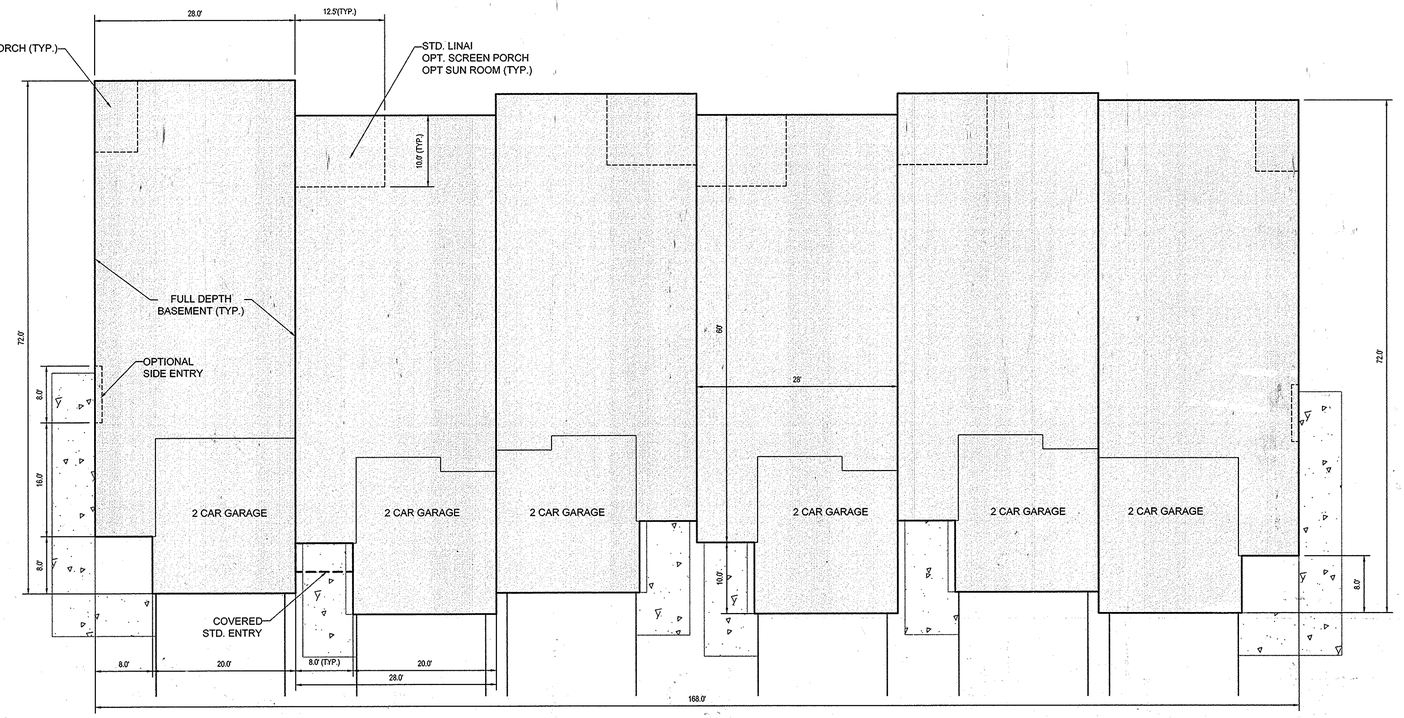
H:\2011\MD112149\DRAWINGS\PLAN SETS\SITE DEVELOPMENT PLAN\MD112149PP10.DWG PRINTED BY: RBOWEN 10.29.14 @ 4:06 PM LAST SAVED BY: A...



GENERIC BOX 'A'
SINGLE FAMILY DETACHED
SCALE: 1" = 10'

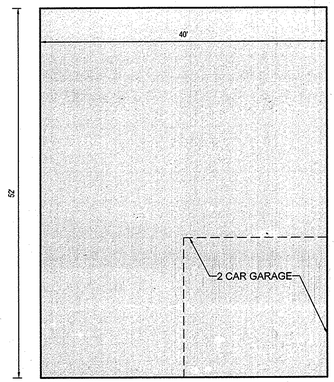


COMMUNITY CENTER
SCALE: 1" = 10'

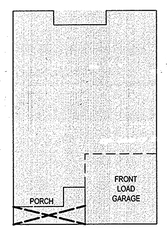


SINGLE FAMILY ATTACHED
SCALE: 1" = 10'

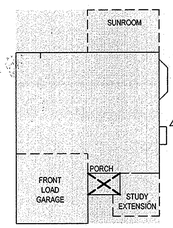
★ LOTS 52, 58, AND 60 HAVE MODIFIED BUILDING FOOTPRINTS



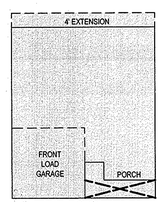
GENERIC BOX 'B'
SINGLE FAMILY DETACHED
SCALE: 1" = 10'



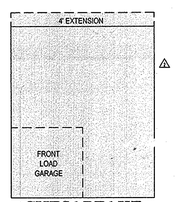
EMERSON
1"=20'



CAPE ST. CLAIR
1"=20'



ELLICOTT II
1"=20'



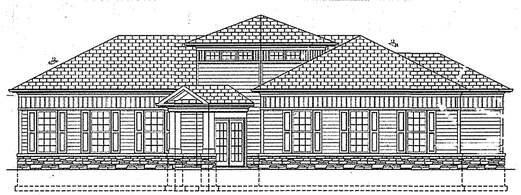
CHESAPEAKE
1"=20'

HOUSE OPTIONS

GENERIC FOOTPRINT	UNIT NAME							
	CHESAPEAKE		ELLICOTT II		CAPE ST. CLAIR			EMERSON
	BASE	4' EXTENSION	BASE	4' EXTENSION	BASE	SUNROOM	STUDY EXTENSION	BASE
A	Y	Y	Y	Y	Y	Y	Y	Y
B	Y	Y	Y	Y	Y	N	Y	N

1/20/16 REVISION TO REVISE SFD GENERIC FOOTPRINT AND FF/CE ELEVATIONS

SINGLE FAMILY DETACHED - FRONT ELEVATION
NOT TO SCALE



COMMUNITY CENTER - SIDE ELEVATION
NOT TO SCALE

SINGLE FAMILY ATTACHED - FRONT ELEVATION
NOT TO SCALE

8/31/15 REVISION TO UPDATE CLUBHOUSE/COMMUNITY CENTER AND SURROUNDING AREA.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF-DEVELOPMENT ENGINEERING DIVISION	DATE 4/11/16
CHIEF-DIVISION OF LAND DEVELOPMENT	DATE 4-14-16
DIRECTOR	DATE 4-15-16

APPROVED
PLANNING BOARD OF HOWARD COUNTY

~~DATE~~

DATE 10-08-14

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

BRANDON R. ROWE
PROFESSIONAL ENGINEER NO. 40808

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
(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)

NO.	DATE	REVISION DESCRIPTION
4	1/20/16	REVISED SFD GENERIC FOOTPRINT
3	10/27/15	UPDATED GRADING FOR LOTS 17 - 20
2	8/31/15	REVISED CLUBHOUSE/COMMUNITY CENTER

OWNER:
M/I HOMES OF DC, LLC
21355 RIDGETOP CIRCLE, SUITE 220
STERLING, VA 20166
CONTACT : CINDY HUNTZBERRY
PHONE : 443-677-9803

DEVELOPER:
SOMERWORTH II, L.C.
5704 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT
REVISED SITE DEVELOPMENT PLAN
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
BUILDING ELEVATIONS AND FOOT PRINTS

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

CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	AS NOTED
DRAWING NO.	21 OF 34

SDP-13-023

PREDEVELOPMENT DRAINAGE AREAS TO EROSION AND SEDIMENT CONTROL MEASURES

SCALE: 1"=100'

1. AREA 1 - SEDIMENT TRAP # 1 — TOTAL AREA = 1.27 AC
2. AREA 2 - SEDIMENT TRAP # 2 — TOTAL AREA = 3.17 AC
3. AREA 3 - SEDIMENT TRAP # 3 — TOTAL AREA = 3.10 AC
4. AREA 4 - SEDIMENT TRAP # 4 — TOTAL AREA = 1.90 AC
5. AREA 5 - SUPER SILT FENCE — TOTAL AREA = 0.83 AC
6. AREA 6 - SUPER SILT FENCE — TOTAL AREA = 2.00 AC
7. AREA 7 - SUPER SILT FENCE — TOTAL AREA = 0.33 AC
8. AREA 8 - SUPER SILT FENCE — TOTAL AREA = 1.11 AC
9. AREA 9 - SUPER SILT FENCE — TOTAL AREA = 0.66 AC

LEGEND

DRAINAGE DIVIDE

(#) DRAINAGE AREA LABEL

POSTDEVELOPMENT DRAINAGE AREAS TO EROSION AND SEDIMENT CONTROL MEASURES

SCALE: 1"=100'

1. AREA 1 - SEDIMENT TRAP # 1 — TOTAL AREA = 2.0 AC
2. AREA 2 - SEDIMENT TRAP # 2 — TOTAL AREA = 3.2 AC
3. AREA 3 - SEDIMENT TRAP # 3 — TOTAL AREA = 0.85 AC
3A. AREA 3A - SEDIMENT TRAP # 3A — TOTAL AREA = 1.80 AC
4. AREA 4 - SEDIMENT TRAP # 4 — TOTAL AREA = 1.93 AC
5. AREA 5 - SUPER SILT FENCE — TOTAL AREA = 1.27 AC
6. AREA 6 - SUPER SILT FENCE — TOTAL AREA = 1.34 AC
7. AREA 7 - SUPER SILT FENCE — TOTAL AREA = 0.37 AC
8. AREA 8 - SUPER SILT FENCE — TOTAL AREA = 0.50 AC
9. AREA 9 - SUPER SILT FENCE — TOTAL AREA = 0.32 AC
10. AREA 10 - SEDIMENT CIP — TOTAL AREA = 0.35 AC

100 50 25 0 100
1"= 100'

8/31/15 REVISION TO UPDATE CLUBHOUSE/COMMUNITY CENTER AND SURROUNDING AREA.

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

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

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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(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)

NO.:	DATE	REVISION DESCRIPTION
1	8/31/15	REVISED CLUBHOUSE/COMMUNITY CENTER

OWNER:
M/I HOMES OF DC, LLC
21355 RIDGETOP CIRCLE, SUITE 220
STERLING, VA 20166
CONTACT : CINDY HUNTZBERRY
PHONE : 443-677-9803

DEVELOPER:
SOMERWORTH II, L.C.
5704 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT
REVISED SITE DEVELOPMENT PLAN
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97, OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
DRAINAGE AREAS TO EROSION AND SEDIMENT CONTROL MEASURES

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7967
www.BohlerEngineering.com

CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	1"=100'
DRAWING NO.	22 OF 34

BRANDON R. ROWE
PROFESSIONAL ENGINEER NO. 40808

APPROVED
PLANNING BOARD OF HOWARD COUNTY
~~DATE~~ PB 406
DATE 10/08/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE 10-21-15
CHIEF-DIVISION OF LAND DEVELOPMENT — DATE 10-22-15
DIRECTOR — DATE 10-23-15

SDP-13-023

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SUMMARY TABLE																	
Pe = 1.8 inches																	
							At					ESDv				Rev	
DRAINAGE AREA	MDE TYPE	TOTAL DA	IMPERVIOUS AREA	Qe	REQUIRED	PROVIDED	2% DA	PONDING DEPTH	MEDIA DEPTH	TOTAL REQUIRED	TOTAL PROVIDED	PONDING REQUIRED (75%)	PONDING PROVIDED	75% ESDv PROVIDED	Pe PROVIDED	REQUIRED	PROVIDED
		S.F.	S.F.														
1	M-6	16,988	7,405.20	0.80	339.77	704	PASS	12"	2'	1,121.23	1,178.67	840.93	884.00	PASS	1.68"	Rev REQUIREMENT CALCULATION BASED ON ESDv REQUIREMENTS MINUS 6" STONE STORAGE BELOW THE SPECIFIC FACILITIES.	140.8
2	M-6	19,602	11,325.60	1.03	392.04	1,456	PASS	12"	2'	1,675.97	2,370.93	1,256.98	1,703.20	PASS	2.44"		291.2
3	M-6	22,869	11,325.60	0.89	457.38	1,232	PASS	12"	2'	1,715.18	1,961.56	1,286.38	1,471.17	PASS	2.08"		246.4
4	M-6	22,651	17,859.60	1.37	453.02	1,800	PASS	12"	2'	2,582.24	2,896.00	1,936.68	2,172.00	PASS	2.02"		360.0
5	M-6	21,998	12,414.60	1.00	439.96	1,053	PASS	12"	2'	1,847.82	1,999.20	1,385.86	1,499.40	PASS	1.95"		210.6
6	Bio	82,503	57,673.44	1.22	1650.05	5,760	PASS	12"	2'	8,415.27	8,440.00	6,311.45	6,330.00	PASS	1.81"		1152.0
7	M-6	17,860	12,632.40	1.24	357.19	1,264	PASS	12"	2'	1,848.47	1,993.67	1,386.35	1,495.25	PASS	1.95"		252.7
8	M-6	16,553	9,583.20	1.03	331.06	880	PASS	12"	2'	1,415.26	1,445.33	1,061.45	1,084.00	PASS	1.83"		176.0
9	M-6	19,602	6,098.40	0.59	392.04	550	PASS	12"	2'	970.30	972.33	727.72	729.25	PASS	1.80"		110.0
10	M-6	15,682	9,147.60	1.04	313.63	716	PASS	12"	2'	1,364.30	1,368.67	1,023.22	1,026.50	PASS	1.82"		143.2
11	Bio	75,577	45,650.88	1.07	1511.53	5,868	PASS	12"	2'	6,688.53	8,592.41	5,016.40	6,444.31	PASS	2.30"		1173.5
12	M-6	21,911	12,327.48	1.00	438.21	1,206	PASS	12"	2'	1,840.50	1,910.67	1,380.37	1,433.00	PASS	1.88"		241.2
13	SSF	135,777	83,068.92	1.08	896.00	3,906	PASS	24"	1.50"	12,219.89	12,768.00	9,164.92	9,576.00	PASS	1.88"		781.2
14	M-6	19,602	8,276.40	0.77	392.04	800	PASS	12"	2'	1,264.33	1,450.67	948.25	1,088.00	PASS	2.07"		160.0
15	M-6	21,257	6,011.28	0.55	425.15	630	PASS	12"	2'	956.58	1,100.00	717.43	825.00	PASS	2.04"		126.0
16*	M-5	11,326	11,325.60	1.71	NA	NA	NA	NA	5'	1,613.90	1,680.00	NA	NA	NA	1.80"		
17*	M-5	11,326	11,325.60	1.71	NA	NA	NA	NA	5'	1,613.90	1,680.00	NA	NA	NA	1.80"		
TOTALS		530,430	310,800.60		8769.07	27,825				45,925.85	50,708.11					3,702	5564.9

* Drainage areas 16 and 17 are each divided into (1)N Dry Wells

8/31/15 REVISION TO UPDATE CLUBHOUSE/COMMUNITY CENTER AND SURROUNDING AREA.

LEGEND

— ESD MEASURE DRAINAGE AREA LABEL

DRAINAGE DIVIDE

SOILS TABLE

SOILS NAME	SOILS DESCRIPTION	HYDROLOGIC SOILS GROUP	HIGHLY ERODIBLE SOIL
GmB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	NO
GnB	GLENVILLE-BAILE SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	YES
MaB	MANOR LOAM, 3 TO 8 PERCENT SLOPES	B	NO
MaC	MANOR LOAM, 8 TO 15 PERCENT SLOPES	B	NO
MaD	MANOR LOAM, 15 TO 25 PERCENT SLOPES	B	NO
SaC	SASSAFRAS LOAM, 5 TO 10 PERCENT SLOPES	B	NO

50 25 12.5 0 50
1"= 50'

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

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)

NO.	DATE	REVISION DESCRIPTION
1	8/31/15	REVISED CLUBHOUSE/COMMUNITY CENTER

OWNER:
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PROJECT
REVISED SITE DEVELOPMENT PLAN
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
SWM DRAINAGE AREAS TO ESD MEASURES

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
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STATE OF MARYLAND BRANDON R. ROWE PROFESSIONAL ENGINEER No. 40808
BRANDON R. ROWE
PROFESSIONAL ENGINEER NO. 40808

CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	1"=50'
DRAWING NO.	23 OF 34

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE PB 406
DATE 10/08/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING
10-21-15
CHIEF-DEVELOPMENT ENGINEERING DIVISION DATE
10-22-15
CHIEF-DIVISION OF LAND DEVELOPMENT DATE
10-23-15
DIRECTOR DATE

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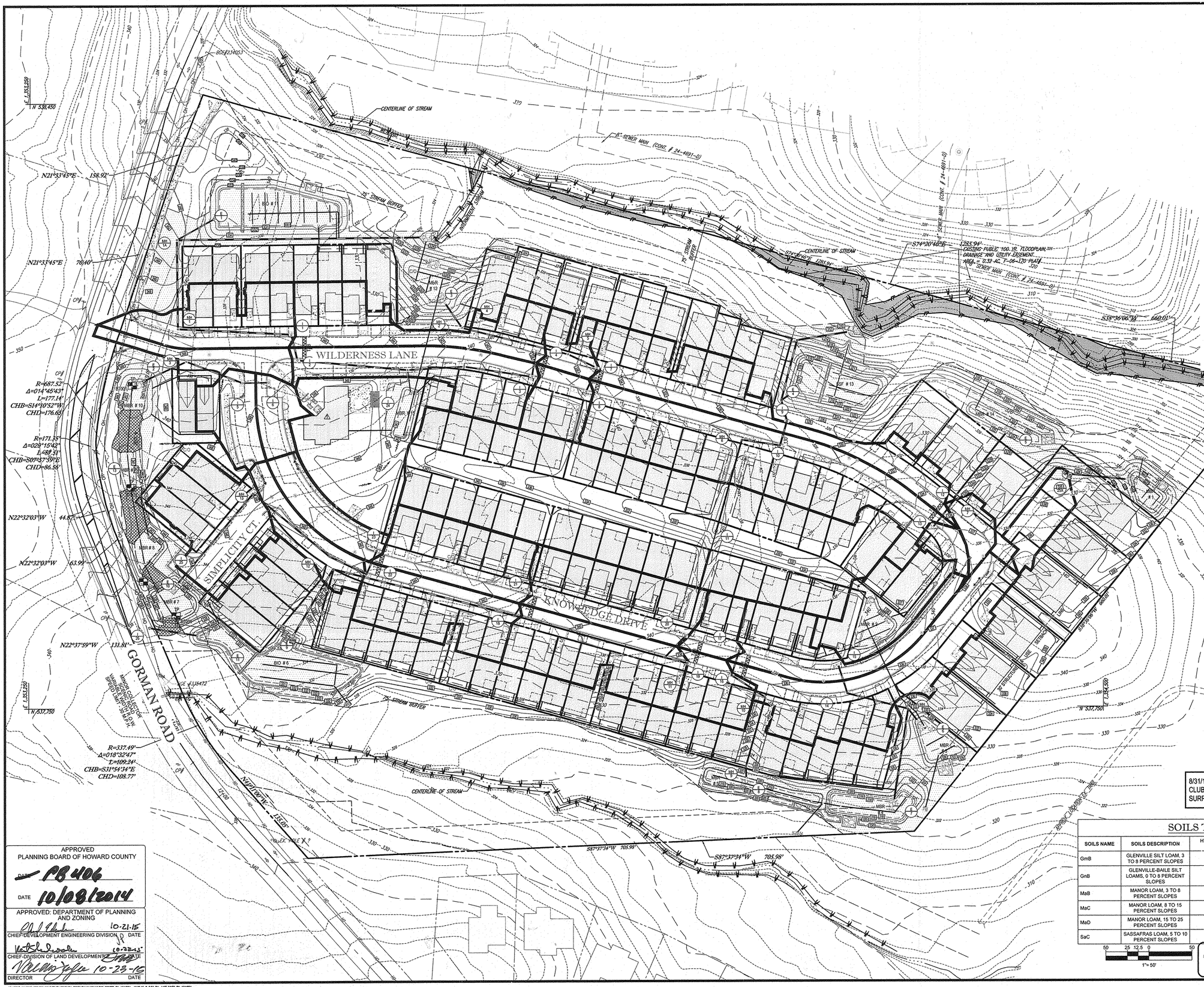

HYDROLOGIC TABLE

INLET NUMBER	AREA (AC)	IMP. %	C FACTOR	C X AREA	TC (MIN)	I_{10} (CFS)	Q_{10} (CFS)	ZONE
I-1	0.26	82	0.73	0.19	5.0	8.50	1.61	PSC
I-2	0.12	72	0.67	0.08	5.0	8.50	0.68	PSC
I-3	0.37	82	0.74	0.27	5.0	8.50	2.33	PSC
I-4	0.35	86	0.76	0.27	5.0	8.50	2.26	PSC
I-5	0.15	65	0.63	0.09	5.0	8.50	0.80	PSC
I-6	0.14	59	0.59	0.08	5.0	8.50	0.70	PSC
I-7	0.10	78	0.52	0.05	5.0	8.50	0.44	PSC
I-8	0.11	81	0.73	0.08	5.0	8.50	0.68	PSC
I-9	0.48	78	0.71	0.34	5.0	8.50	2.90	PSC
I-10	0.64	84	0.75	0.48	5.0	8.50	4.08	PSC
I-11	1.58	48	0.52	0.82	6.0	8.00	6.57	PSC
I-12	0.06	75	0.69	0.04	5.0	8.50	0.35	PSC
I-13	0.06	80	0.67	0.04	5.0	8.50	0.34	PSC
I-14	0.48	72	0.67	0.32	5.0	8.50	2.73	PSC
I-15	0.27	87	0.77	0.21	5.0	8.50	1.77	PSC
I-16	0.11	87	0.78	0.09	5.0	8.50	0.73	PSC
I-17	0.11	81	0.73	0.08	5.0	8.50	0.68	PSC
I-18	0.30	81	0.74	0.22	5.0	8.50	1.89	PSC
I-19	0.31	82	0.73	0.23	5.0	8.50	1.92	PSC
I-20	0.33	78	0.71	0.23	5.0	8.50	1.99	PSC
I-21	0.3*	89	0.79	0.24	5.0	8.50	2.08	PSC
I-22	0.14	60	0.59	0.08	5.0	8.50	0.70	PSC
I-23	0.16	97	0.84	0.13	5.0	8.50	1.14	PSC
I-24	0.43	31	0.37	0.16	5.0	8.50	1.35	PSC
I-25	0.31	85	0.76	0.24	5.0	8.50	2.00	PSC
I-25A	0.10	50	0.55	0.06	5.0	8.50	0.47	PSC

SOILS TABLE

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GnB	GLENVILLE-BAILE SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	YES
MaB	MANOR LOAM, 3 TO 8 PERCENT SLOPES	B	NO
MaC	MANOR LOAM, 8 TO 15 PERCENT SLOPES	B	NO
MaD	MANOR LOAM, 15 TO 25 PERCENT SLOPES	B	NO
SaC	SASSAFRAS LOAM, 5 TO 10 PERCENT SLOPES	B	NO

50 25 12.5 0 50
1"= 50'

8/31/15 REVISION TO UPDATE CLUBHOUSE/COMMUNITY CENTER AND SURROUNDING AREA.

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE SB 406
DATE 10/08/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF-DEVELOPMENT ENGINEERING DIVISION DATE 10-21-15
CHIEF-DIVISION OF LAND DEVELOPMENT DATE 10-22-15
DIRECTOR DATE 10-23-15

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WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
STORM DRAIN DRAINAGE AREAS

BOHLER ENGINEERING
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TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

10.22.15
STATE OF MARYLAND
BRANDON R. ROWE
No. 40808
PROFESSIONAL ENGINEER
BRANDON R. ROWE
PROFESSIONAL ENGINEER NO. 40808

CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	1"=50'
DRAWING NO.	24 OF 34

SDP-13-023

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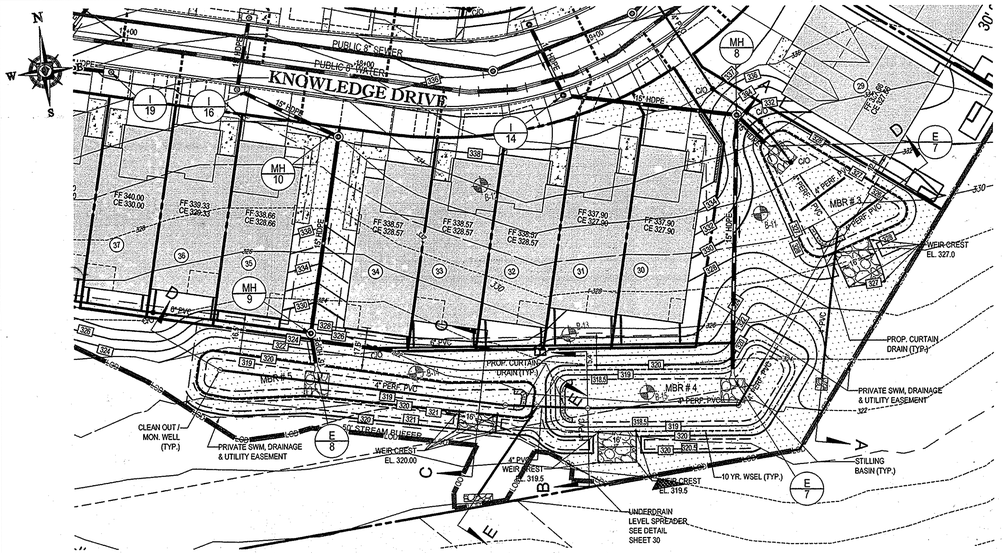
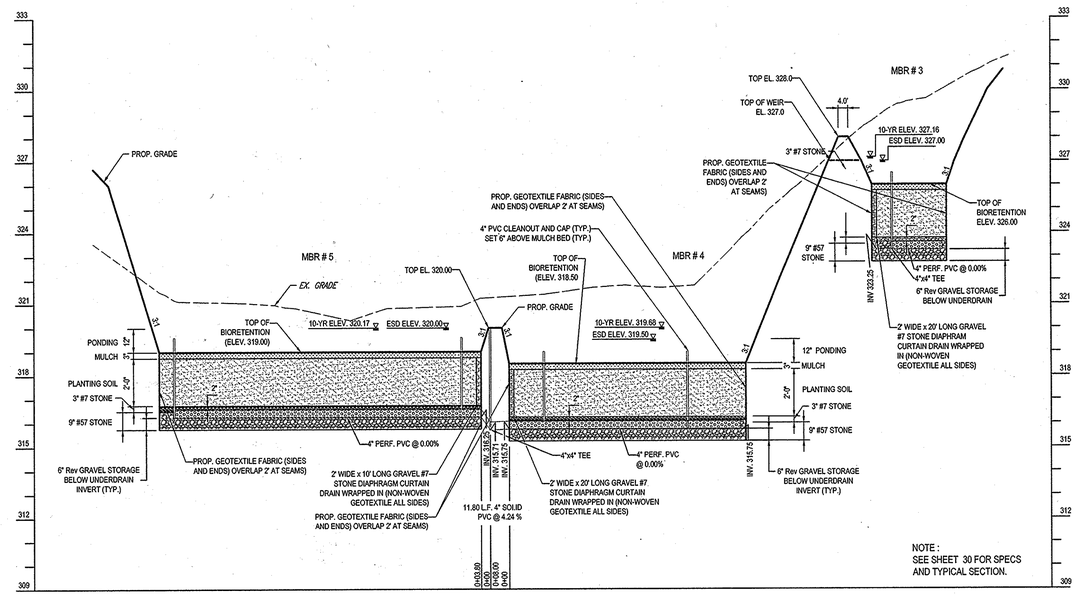


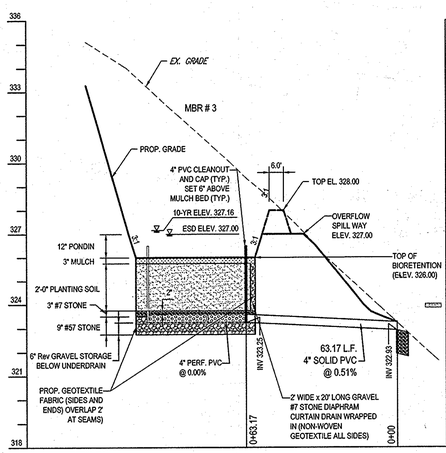
MICROBIORETENTION FACILITY 3, 4 & 5 PLAN

SCALE: 1" = 30'



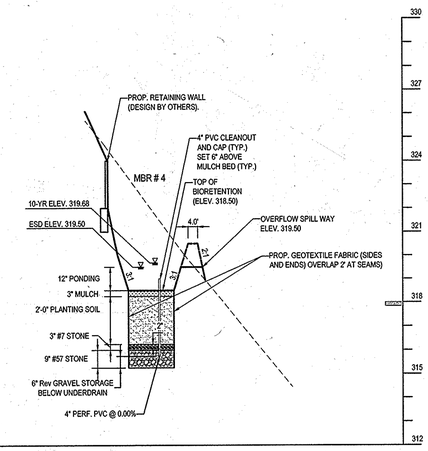
MBR # 3, 4, & 5 - SECTION D-D

SCALE : 1" = 30' HOR.
1" = 3' VER.



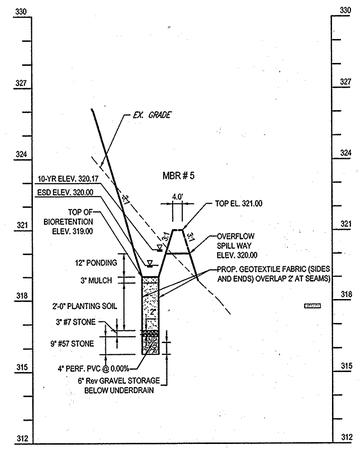
MBR # 3 - SECTION A-A

SCALE : 1" = 30' HOR.
1" = 3' VER.



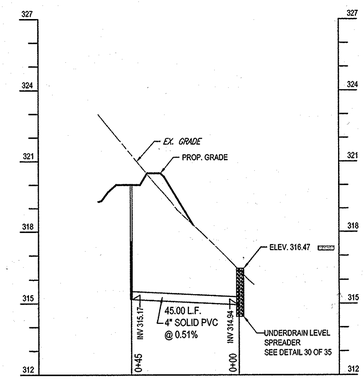
MBR # 4 - SECTION B-B

SCALE : 1" = 30' HOR.
1" = 3' VER.



MBR # 5 - SECTION C-C

SCALE : 1" = 30' HOR.
1" = 3' VER.



MBR #4 & # 5 - SECTION E-E

SCALE : 1" = 30' HOR.
1" = 3' VER.

Construction Specifications for Environmental Site Design Practices

Base Course - The base course shall be AASHTO No. 3 or 4 course aggregate with an assumed open pore space of 30% ($n = 0.30$).

3. Reinforced Turf

Reinforced Grass Pavement (RGP) – Whether used with grass or gravel, the RGP thickness shall be at least 14" thick with a load capacity capable of supporting the traffic and vehicle types that will be carried.

B.4.C Specifications for Micro-Bioretention, Rain Gardens, Landscape Infiltration & Infiltration Berms

1. Material Specifications

The allowable materials to be used in these practices are detailed in Table B.4.1.

2. Filtering Media or Planting Soil

The soil shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the micro-bioretention practice that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The planting soil shall be free of Bermuda grass, Quackgrass, Johnson grass, or other noxious weeds as specified under COMAR 15.08.01.05.

The planting soil shall be tested and shall meet the following criteria:

- Soil Component - Loamy Sand or Sandy Loam (USDA Soil Textural Classification)
- Organic Content - Minimum 10% by dry weight (ASTM D 2974) - In general, this can be met with a mixture of loamy sand (60%-65%) and compost (35% to 40%) or sandy loam (30%), coarse sand (30%), and compost (40%).
- Clay Content - Media shall have a clay content of less than 5%.
- pH Range – Should be between 5.5 - 7.0. Amendments (e.g., lime, iron sulfate plus sulfur) may be mixed into the soil to increase or decrease pH.

There shall be at least one soil test per project. Each test shall consist of both the standard soil test for pH, and additional tests of organic matter, and soluble salts. A textural analysis is required from the site stockpiled topsoil. If topsoil is imported, then a texture analysis shall be performed for each location where the topsoil was excavated.

3. Compaction

It is very important to minimize compaction of both the base of bioretention practices and the required backfill. When possible, use excavation hoes to remove original soil. If practices are

Construction Specifications for Environmental Site Design Practices

excavated using a loader, the contractor should use wide track or marsh track equipment, or light equipment with turf type tires. Use of equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high-pressure tires will cause excessive compaction resulting in reduced infiltration rates and is not acceptable. Compaction will significantly contribute to design failure.

Compaction can be alleviated at the base of the bioretention facility by using a primary tilling operation such as a chisel plow, ripper, or subsoiler. These tilling operations are to refracture the soil profile through the 12 inch compaction zone. Substitute methods must be approved by the engineer. Rototillers typically do not till deep enough to reduce the effects of compaction from heavy equipment.

Rototill 2 to 3 inches of sand into the base of the bioretention facility before backfilling the optional sand layer. Pump any ponded water before preparing (rototilling) base.

When backfilling the topsoil over the sand layer, first place 3 to 4 inches of topsoil over the sand, then rototill the sand/topsoil to create a gradation zone. Backfill the remainder of the topsoil to final grade.

When backfilling the bioretention facility, place soil in lifts 12" to 18". Do not use heavy equipment within the bioretention basin. Heavy equipment can be used around the perimeter of the basin to supply soils and sand. Grade bioretention materials with light equipment such as a compact loader or a dozer/loader with marsh tracks.

4. Plant Material

Recommended plant material for micro-bioretention practices can be found in Appendix A, Section A.2.3.

5. Plant Installation

Compost is a better organic material source, is less likely to float, and should be placed in the invert and other low areas. Mulch should be placed in surrounding to a uniform thickness of 2" to 3". Shredded or chipped hardwood mulch is the only accepted mulch. Pine mulch and wood chips will float and move to the perimeter of the bioretention area during a storm event and are not acceptable. Shredded mulch must be well aged (6 to 12 months) for acceptance.

Rootstock of the plant material shall be kept moist during transport and on-site storage. The plant root ball should be planted so 1/8th of the ball is above final grade surface. The diameter of the planting pit shall be at least six inches larger than the diameter of the planting ball. Set and maintain the plant straight during the entire planting process. Thoroughly water ground bed cover after installation.

Construction Specifications for Environmental Site Design Practices

Trees shall be braced using 2" by 2" stakes only as necessary and for the first growing season only. Stakes are to be equally spaced on the outside of the tree ball.

Grasses and legume seed should be drilled into the soil to a depth of at least one inch. Grass and legume plugs shall be planted following the non-grass ground cover planting specifications.

The topsoil specifications provide enough organic material to adequately supply nutrients from natural cycling. The primary function of the bioretention structure is to improve water quality. Adding fertilizers defeats, or at a minimum, impedes this goal. Only add fertilizer if wood chips or mulch are used to amend the soil. Rototill urea fertilizer at a rate of 2 pounds per 1000 square feet.

6. Underdrains

Underdrains should meet the following criteria:

- Pipe- Should be 4" to 6" diameter, slotted or perforated rigid plastic pipe (ASTMF 758, Type PS 28, or AASHTO-M-278) in a gravel layer. The preferred material is slotted, 4" rigid pipe (e.g., PVC or HDPE).
- Perforations - If perforated pipe is used, perforations should be ⅜" diameter located 6" on center with a minimum of four holes per row. Pipe shall be wrapped with a ¼" (No. 4 or 4x4) galvanized hardware cloth.
- Gravel – The gravel layer (No. 57 stone preferred) shall be at least 3" thick above and below the underdrain.
- The main collector pipe shall be at a minimum 0.5% slope.
- A rigid, non-perforated observation well must be provided (one per every 1,0000 square feet) to provide a clean-out port and monitor performance of the filter.
- A 4" layer of pea gravel (⅛" to ⅜" stone) shall be located between the filter media and underdrain to prevent migration of fines into the underdrain. This layer may be considered part of the filter bed when bed thickness exceeds 24".

The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%. Observation wells and/or clean-out pipes must be provided (one minimum per every 1000 square feet of surface area).

7. Miscellaneous

These practices may not be constructed until all contributing drainage area has been stabilized

Construction Specifications for Environmental Site Design Practices

Table B.4.1 Materials Specifications for Micro-Bioretention, Rain Gardens & Landscape Infiltration

Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil [2' to 4' deep]	loamy sand (60 - 65%) & compost (35 – 40%) or sandy loam (30%), coarse sand (30%) & compost (40%)	n/a	USDA soil types loamy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)		
Mulch	shredded hardwood		aged 6 months, minimum; no pine or wood chips
Pea gravel diaphragm	pea gravel: ASTM-D-448	NO. 6 OR NO. 9 (1/8" TO 3/8")	
Curtain drain	ornamental stone: washed cobbles	stone: 2" to 5"	
Geotextile		n/a	PE Type 1 nonwoven
Gravel (underdrains and infiltration berms)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (3/8" to 3/4")	
Underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	Slotted or perforated pipe; 3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes. Perforated pipe shall be wrapped with ¼-inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3; $f'_c = 3500$ psi @ 28 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	n/a	on-site testing of poured-in-place concrete required; 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) *not using previously approved State or local standards* requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 350.R/89; vertical loading [H-10 or H-20]; allowable horizontal loading (based on soil pressures); and analysis of potential cracking.
Sand	AASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone (AASHTO #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DAY PB 406
DATE 10/08/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING
11-17-14
CHIEF-DEVELOPMENT ENGINEERING DIVISION DATE
T. Mackert for KS 12-22-14
CHIEF-DIVISION OF LAND DEVELOPMENT DATE
12/22/14
DIRECTOR DATE

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

PROFESSIONAL ENGINEER BRANDON R. ROWE No. 40808

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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)

NO.:	DATE	REVISION DESCRIPTION

OWNER:
M/I HOMES OF DC, LLC
21355 RIDGETOP CIRCLE, SUITE 220
STERLING, VA 20166
CONTACT : CINDY HUNTZBERRY
PHONE : 443-677-9603

DEVELOPER: SOMERWORTH II, L.C.
5704 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT
WALDEN WOODS

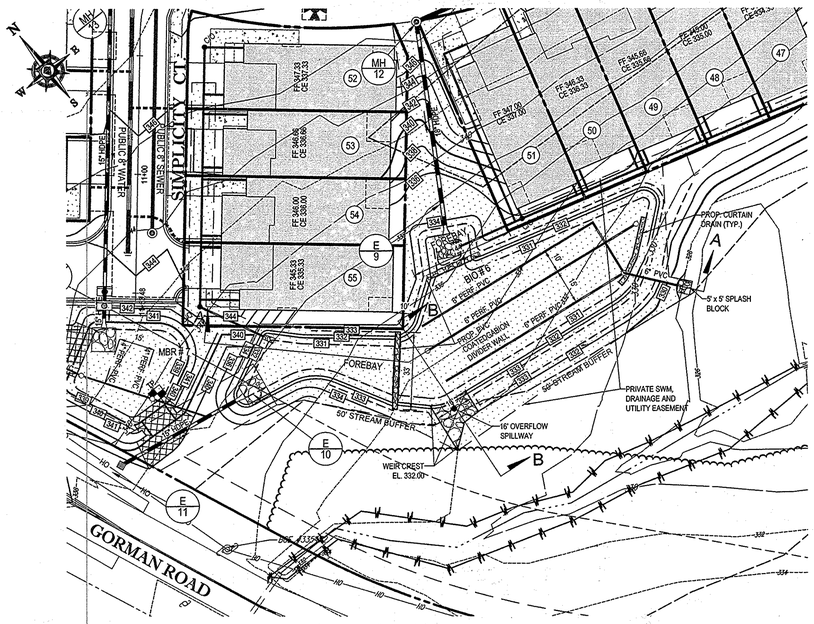
TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
MICROBIORETENTION FACILITY DETAILS

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7600
Fax: (410) 821-7987
www.BohlerEngineering.com

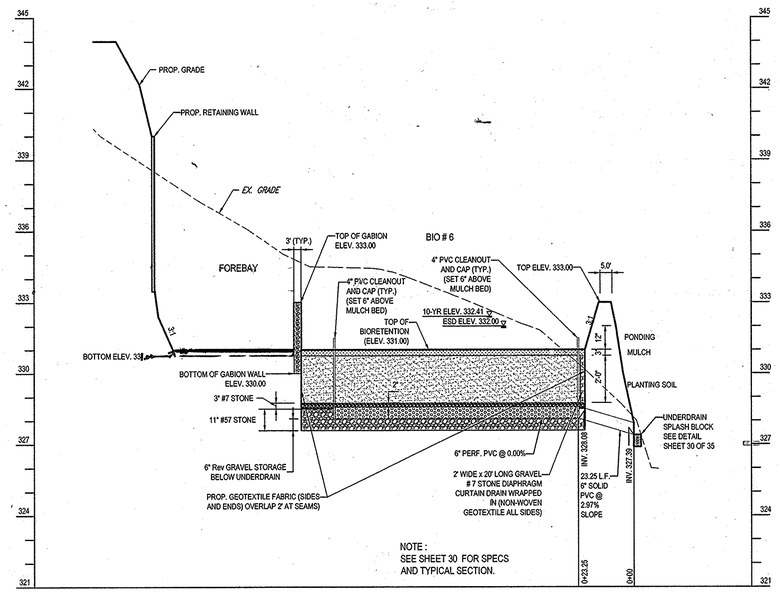
CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	AS NOTED
DRAWING NO.	25 OF 34

SDP-13-023



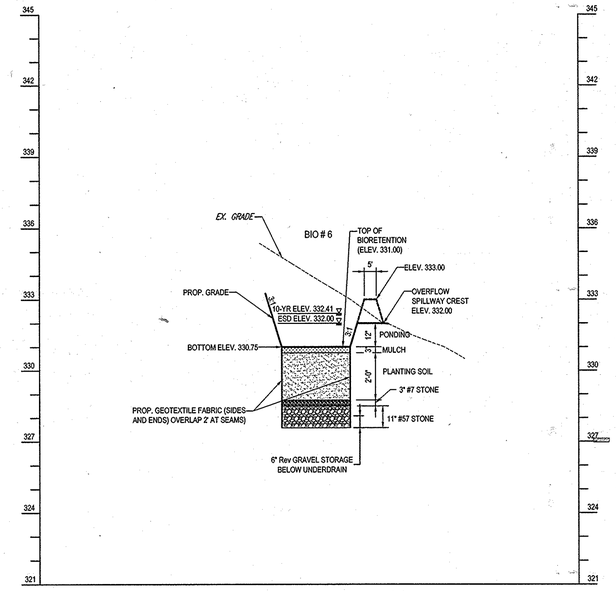
BIORETENTION FACILITY # 6 - PLAN

SCALE: 1" = 30'



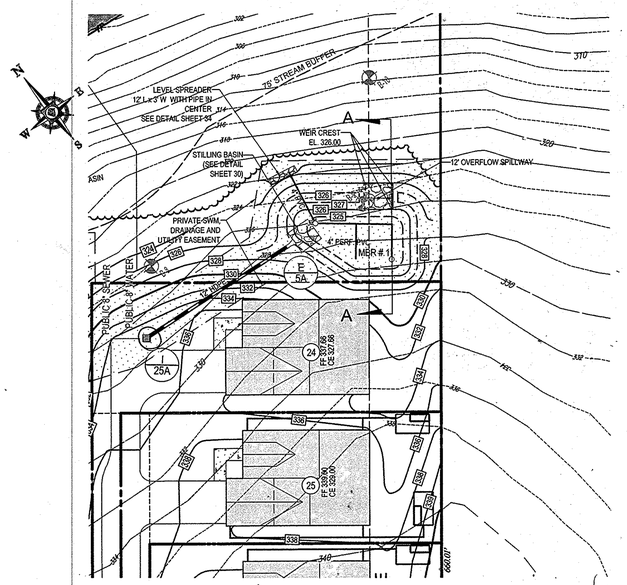
BIO # 6 - SECTION A-A

SCALE: 1" = 30' HOR.
1" = 3' VER.



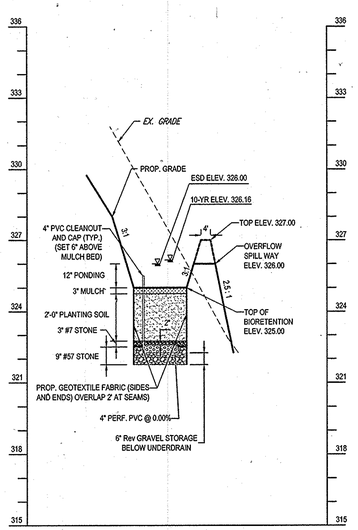
BIO # 6 - SECTION B-B

SCALE: 1" = 30' HOR.
1" = 3' VER.



MICROBIORETENTION FACILITY # 1 PLAN

SCALE: 1" = 30'



MBR # 1 - SECTION A-A

SCALE: 1" = 30' HOR.
1" = 3' VER.

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ELLICOTT CITY, MD 21042
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PROJECT
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
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6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
MICROBIORETENTION FACILITY DETAILS

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11-17-14
STATE OF MARYLAND BRANDON R. ROWE No. 40808 PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER NO. 40808

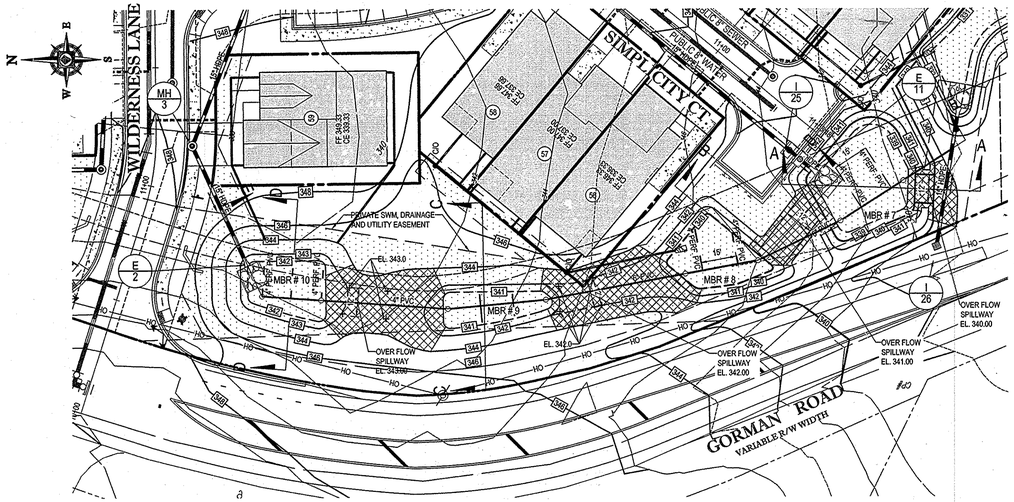
CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	AS NOTED
DRAWING NO.	26 OF 34

SDP-13-023

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Chad Edmondson 11-17-14
CHIEF-DEVELOPMENT ENGINEERING DIVISION DATE
J. Machado for KS 12-22-14
CHIEF-DIVISION OF LAND DEVELOPMENT DATE
DIRECTOR DATE

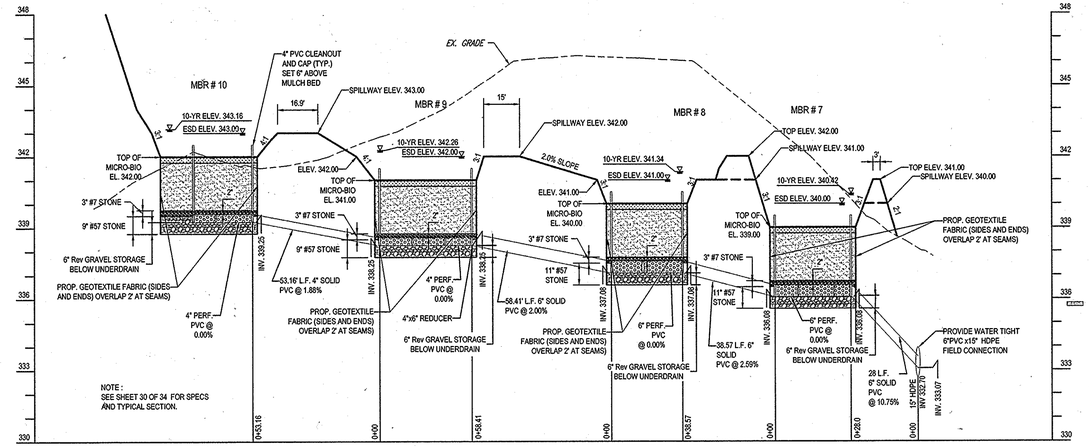
APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 10/08/2014
PB 406

H:\2011\MD112149\DRAWINGS\PLAN SETS\SITE DEVELOPMENT PLAN\MD112149PB102.DWG PRINTED BY: RROWE 10:28:14 @ 4:10 PM - LAST SAVED BY: A



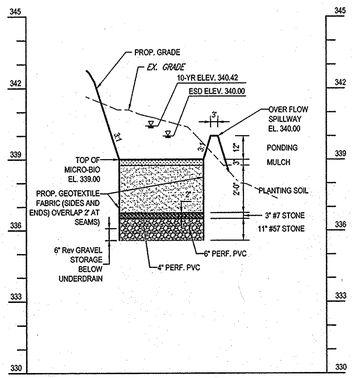
MICROBIORETENTION FACILITY 7, 8, 9 & 10 - PLAN

SCALE: 1" = 30'



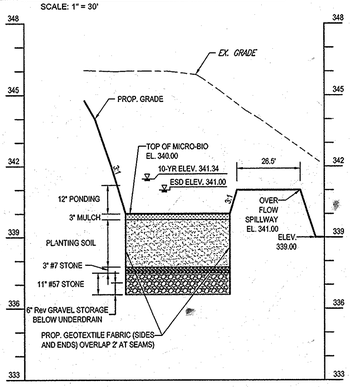
MBR # 7, 8, 9 & 10 - SECTION E-E

SCALE: 1" = 30' HOR.
1" = 3' VER.



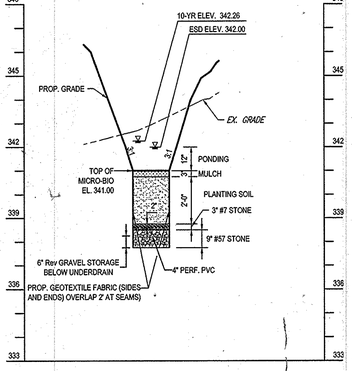
MBR # 7 - SECTION A-A

SCALE: 1" = 30' HOR.
1" = 3' VER.



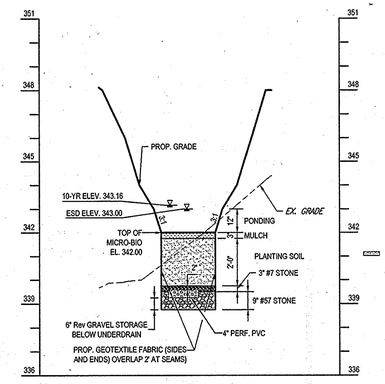
MBR # 8 - SECTION B-B

SCALE: 1" = 30' HOR.
1" = 3' VER.



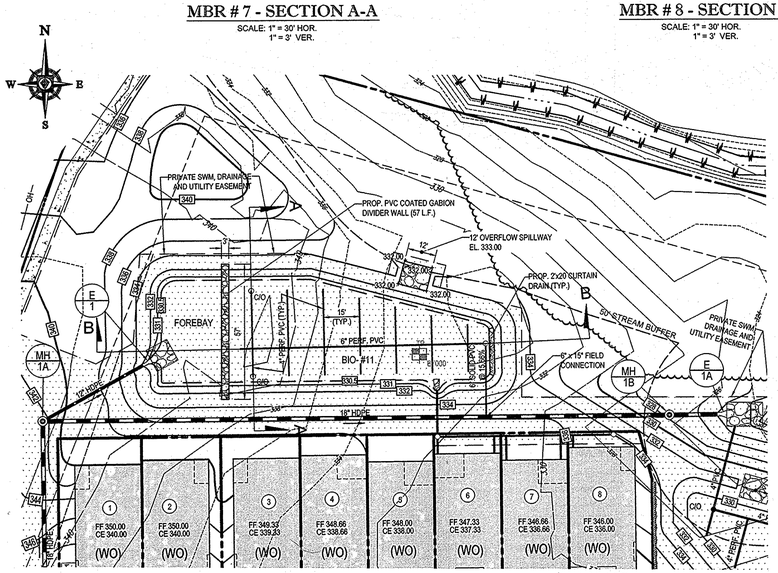
MBR # 9 - SECTION C-C

SCALE: 1" = 30' HOR.
1" = 3' VER.



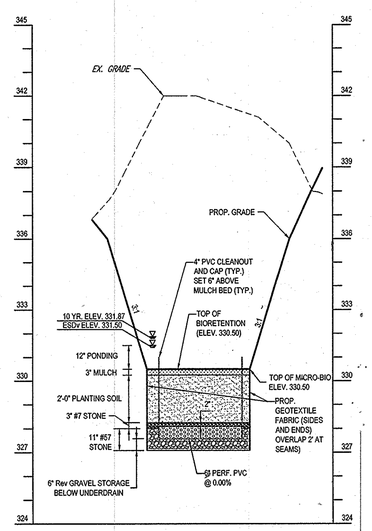
MBR # 10 - SECTION D-D

SCALE: 1" = 30' HOR.
1" = 3' VER.



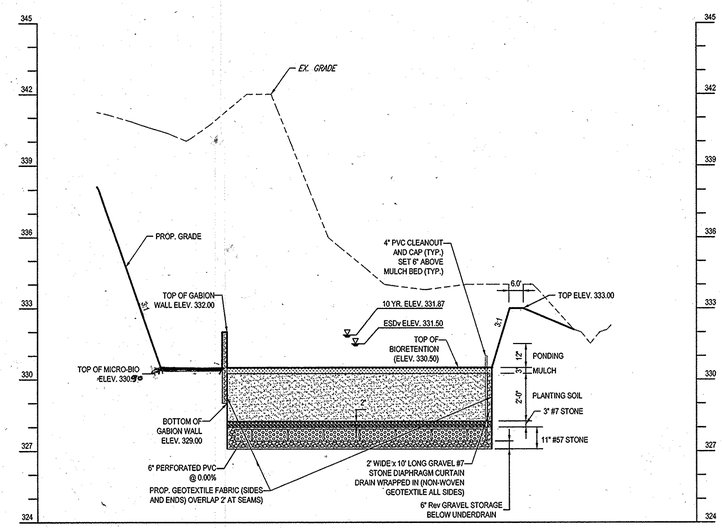
BIORETENTION FACILITY 11 - PLAN

SCALE: 1" = 30'



BIO # 11 - SECTION A-A

SCALE: 1" = 30' HOR.
1" = 3' VER.



BIO # 11 - SECTION B-B

SCALE: 1" = 30' HOR.
1" = 3' VER.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

11-17-14	
CHIEF-DEVELOPMENT ENGINEERING DIVISION	DATE
J. Marshall for KS 12-22-14	
CHIEF-DIVISION OF LAND DEVELOPMENT	DATE
12/24/14	
DIRECTOR	DATE

APPROVED
PLANNING BOARD OF HOWARD COUNTY

DATE PB406

DATE 10/08/2014

PROFESSIONAL CERTIFICATION
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BEFORE YOU DIG CALL 811 TOLL FREE

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NO.	DATE	REVISION DESCRIPTION

OWNER:
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21355 RIDGETOP CIRCLE, SUITE 220
STERLING, VA 20166
CONTACT : CINDY HUNTZBERRY
PHONE : 443-677-9803

DEVELOPER: SOMERWORTH II, L.C.
5704 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

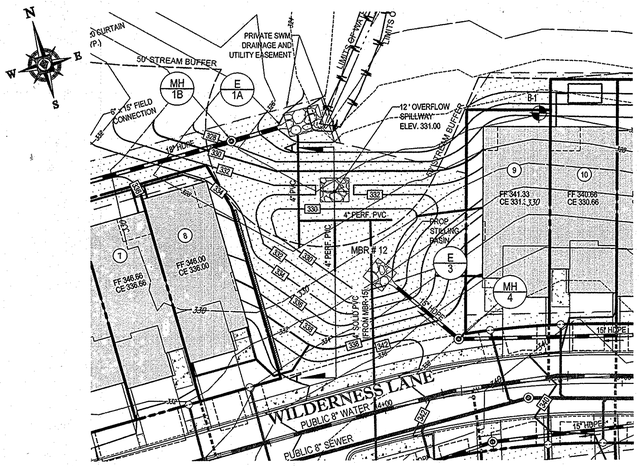
TITLE
MICROBIORETENTION FACILITY DETAILS

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

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

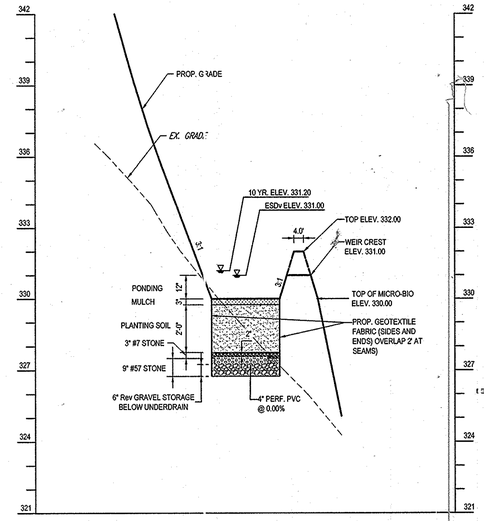
CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	AS NOTED
DRAWING NO.	27 OF 34

SDP-13-023



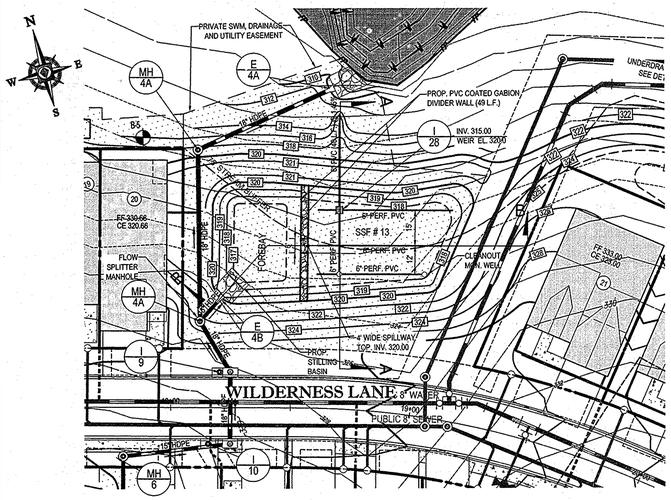
MICROBIORETENTION FACILITY 12 - PLAN

SCALE: 1" = 30'



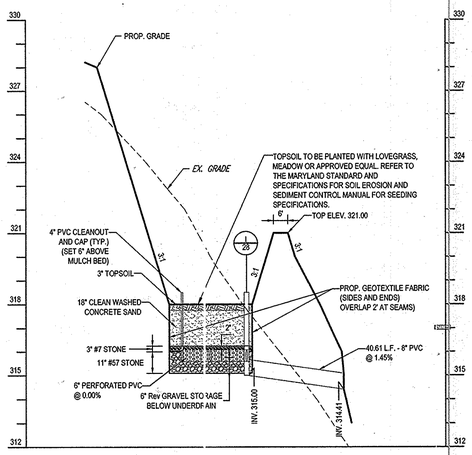
MBR # 12 - SECTION A-A

SCALE: 1" = 30' HOR.
1" = 3' VER.



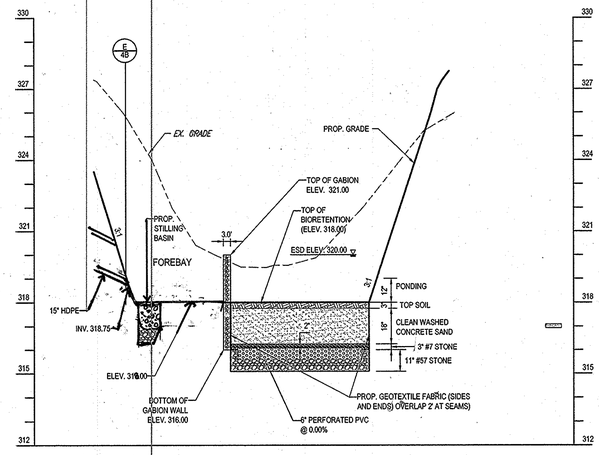
SURFACE SAND FILTER FACILITY 13 - PLAN

SCALE: 1" = 30'



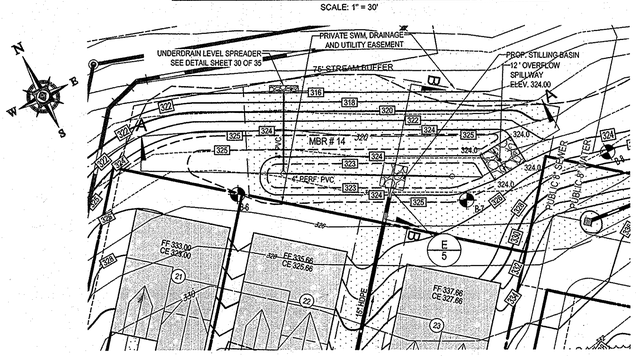
SSF # 13 - SECTION A-A

SCALE: 1" = 30' HOR.
1" = 3' VER.



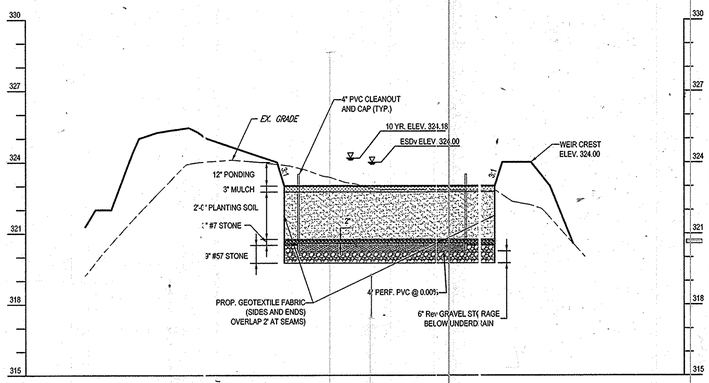
SSF # 13 - SECTION B-B

SCALE: 1" = 30' HOR.
1" = 3' VER.



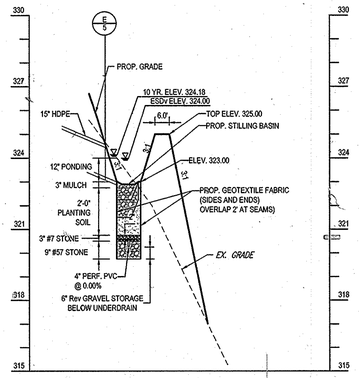
MICROBIORETENTION FACILITY 14 PLAN

SCALE: 1" = 30'



MBR # 14 - SECTION A-A

SCALE: 1" = 30' HOR.
1" = 3' VER.



MBR # 14 - SECTION B-B

SCALE: 1" = 30' HOR.
1" = 3' VER.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF-DEVELOPMENT ENGINEERING DIVISION — DATE 11-17-14

CHIEF-DIVISION OF LAND DEVELOPMENT — DATE 12-22-14

DIRECTOR — DATE 12/24/14

APPROVED
PLANNING BOARD OF HOWARD COUNTY

DATE 10/08/2014

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PROJECT
WALDEN WOODS

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CHECKED BY:	BRR
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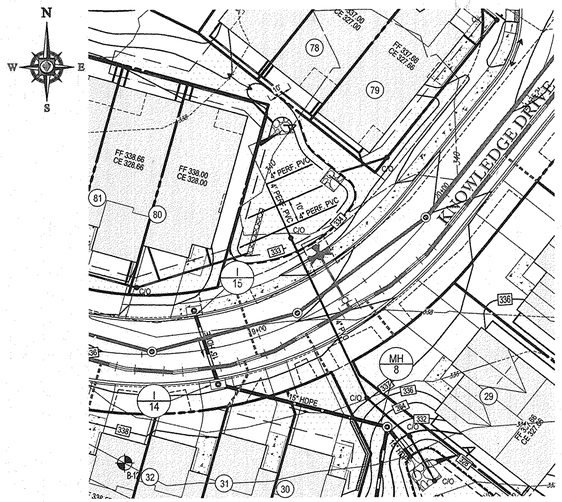
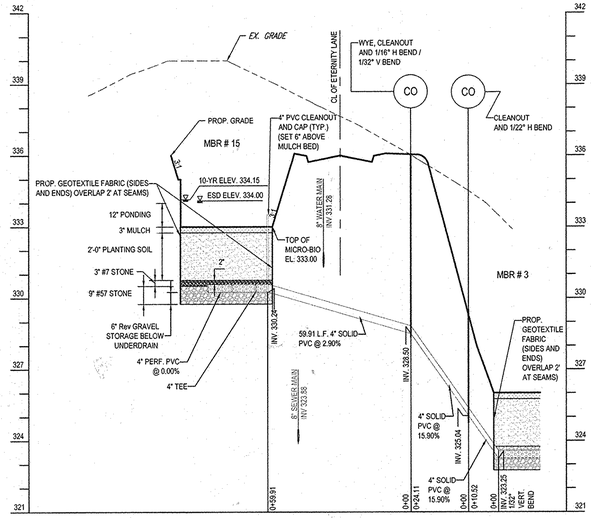
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	AS NOTED
DRAWING NO.	28 OF 34

SDP-13-023



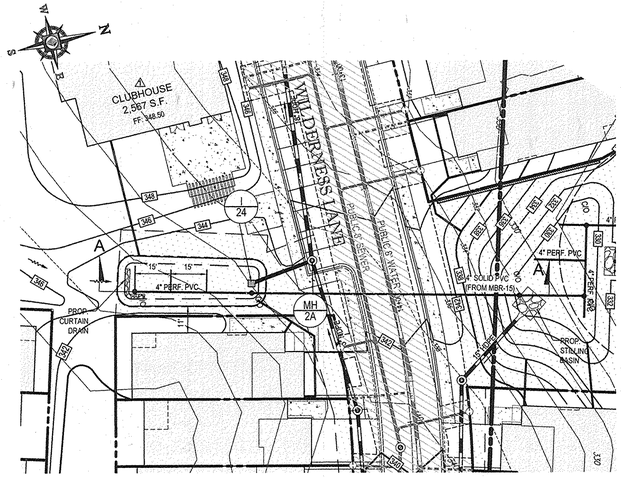
MICROBIORETENTION FACILITY 2 - PLAN

SCALE: 1" = 30'



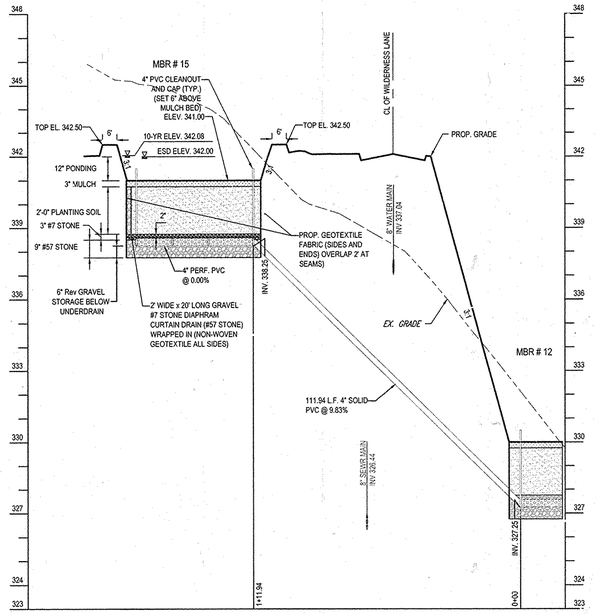
MBR # 2 - SECTION A-A

SCALE: 1" = 30' HOR.
1" = 3' VER.



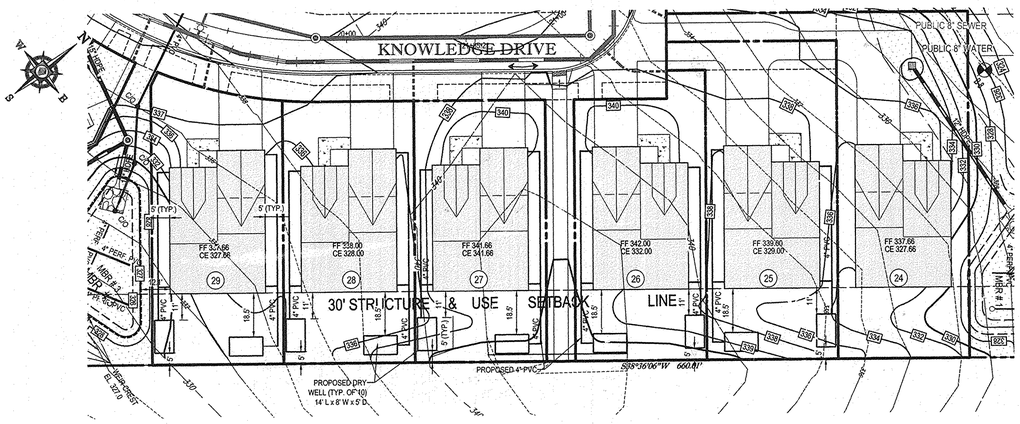
MICROBIORETENTION FACILITY 15 - PLAN

SCALE: 1" = 30'



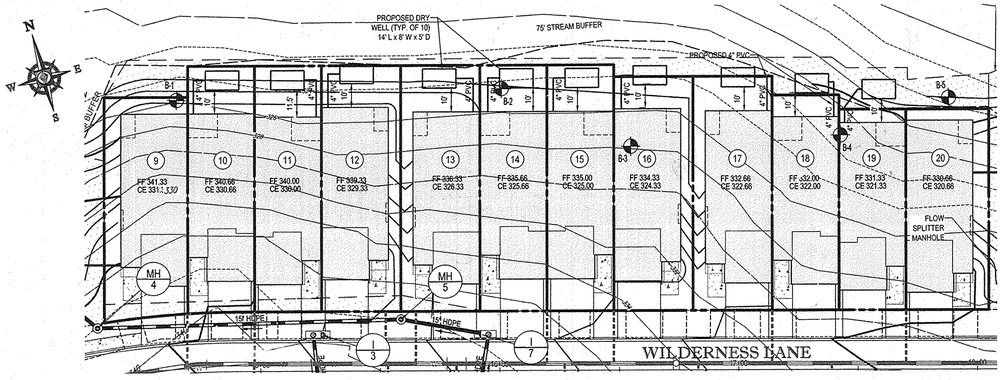
MBR # 15 - SECTION A-A

SCALE: 1" = 30' HOR.
1" = 3' VER.



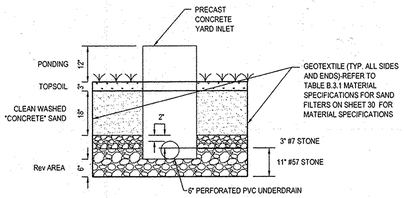
DRY WELL (DA #2) - PLAN

SCALE: 1" = 30'



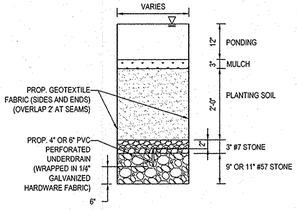
DRY WELL (DA #17) - PLAN

SCALE: 1" = 30'



TYPICAL SURFACE SAND FILTER SECTION

NOT TO SCALE



TYPICAL BIORETENTION FACILITY SECTION

NOT TO SCALE

[OPERATION AND MAINTENANCE SCHEDULE FOR LANDSCAPE INFILTRATION (M-3) MICRO-BIORETENTION (M-6), RAIN GARDENS (M-7), BIORETENTION SWALE (M-8), ENHANCED FILTERS (M-9)]

a. The Owner shall maintain the plant material, mulch iayer 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.

b. The Owner shall perform a plant in the spring and in the fall of each year. During the inspection, the Owner shall remove dead and diseased vegetation considered beyond treatment, replace dead plant material with acceptable replacement plant material, treat diseased trees and shrubs, and replace all deficient stakes and wires.

c. 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.

d. The Owner shall correct soil erosion on an as needed basis, with a minimum of once per month and after each heavy storm.

STORMWATER INFILTRATION TRENCHES (I-1), DRY WELLS (M-5)]

a. The Owner shall inspect the monitoring wells and structures on a quarterly basis and after every heavy storm event.

b. The Owner shall record the water levels and sediment build up in the monitoring wells over a period of several days to insure trench drainage.

c. The Owner shall maintain a log book to determine the rate at which the facility drains.

d. When the facility becomes clogged so that it does not drain down within a seventy two (72) hour time period, corrective action shall be taken.

e. The maintenance log book shall be available to Howard County for inspection to insure compliance with operation and maintenance criteria.

f. Once the performance characteristics of the infiltration facility have been verified, the monitoring schedule can be reduced to an annual basis unless the performance data indicates that a more frequent schedule is required.

SURFACE STORMWATER FILTRATION SYSTEMS (F-1, F-4, AND F-5)]

a. The Owner shall inspect the stormwater wetland facility annually and after every heavy storm. Inspections shall be performed during wet weather to determine if the facility is functioning properly.

b. The Owner shall mow the top and side slopes of the embankment a minimum of once per year, when vegetation reaches 18" in height or as needed.

c. The Owner shall mow filters that have a grass cover a minimum of three (3) times per growing season to maintain a maximum grass height of less than 12 inches.

d. The Owner shall remove any debris and litter from the facility.

e. The Owner shall repair any erosion in the facility as soon as it is noticed.

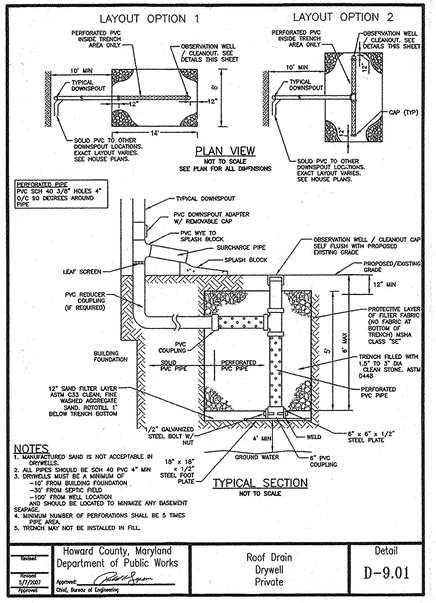
f. The Owner shall remove silt when it exceeds four (4) inches deep in the forebay.

g. When water ponds on the surface of the filter bed for more than seventy-two (72) hours, the Owner shall replace the top few inches of discolored material with fresh material. Proper cleaning and disposal of the removed materials and liquid must be followed by the Owner.

h. The Owner shall maintain a log book to determine the rate at which the facility drains.

i. The maintenance log book shall be available to Howard County for inspection to insure compliance with operation and maintenance criteria.

j. Once the performance characteristics of the infiltration system have been verified, the monitoring schedule can be reduced to an annual basis unless the performance data indicates that a more frequent schedule is required.



Revised	Howard County, Maryland Department of Public Works	Roof Drain Drywell Private	Detail D-9.01
Revised 5/7/2003	Approved: Chief, Bureau of Engineering		

DRY WELL DETAIL

NTS

8/31/15 REVISION TO UPDATE CLUBHOUSE/COMMUNITY CENTER AND SURROUNDING AREA.

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:
(VA 1-800-345-4848) (PA 1-800-242-1776) (DC 1-800-257-7777) (MD 1-800-552-7001) (NO 1-800-257-7777) (DE 1-800-282-8555)

NO.	DATE	REVISION DESCRIPTION
1	8/31/15	REVISED CLUBHOUSE/COMMUNITY CENTER

OWNER:
M/I HOMES OF DC, LLC
21355 RIDGETOP CIRCLE, SUITE 220
STERLING, VA 20166
CONTACT : CINDY HUNTZBERRY
PHONE : 443-677-9803

DEVELOPER:
SOMERWORTH II, L.C.
5704 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT
REVISED SITE DEVELOPMENT PLAN
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
MICROBIORETENTION FACILITY DETAILS

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

CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	AS NOTED
DRAWING NO.	29 OF 34

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

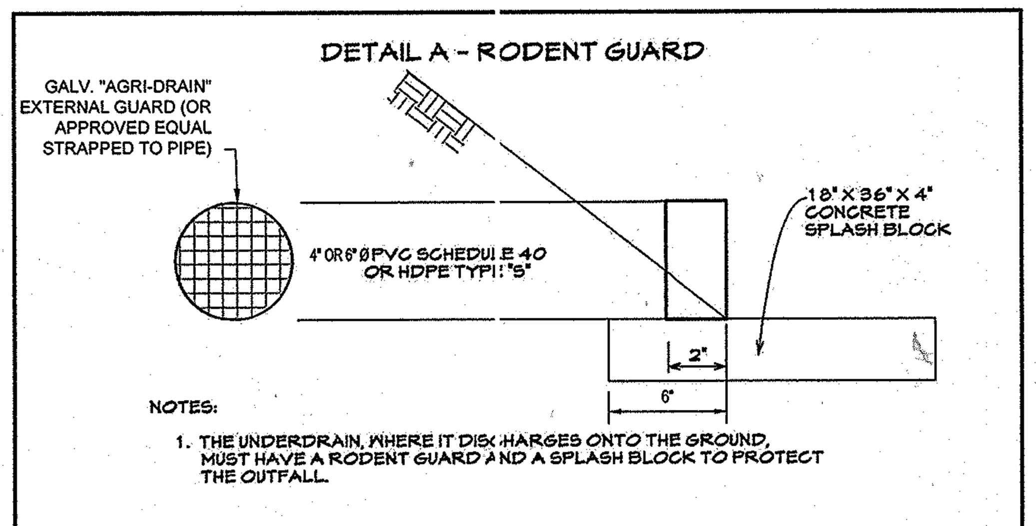
10/8/15
BRANDON R. ROWE
PROFESSIONAL ENGINEER NO. 40808

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF-DEVELOPMENT ENGINEERING DIVISION	DATE 10-21-15
CHIEF-DIVISION OF LAND DEVELOPMENT	DATE 10-22-15
DIRECTOR	DATE 10-23-15

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DECISION PB 406
DATE 10/08/2014

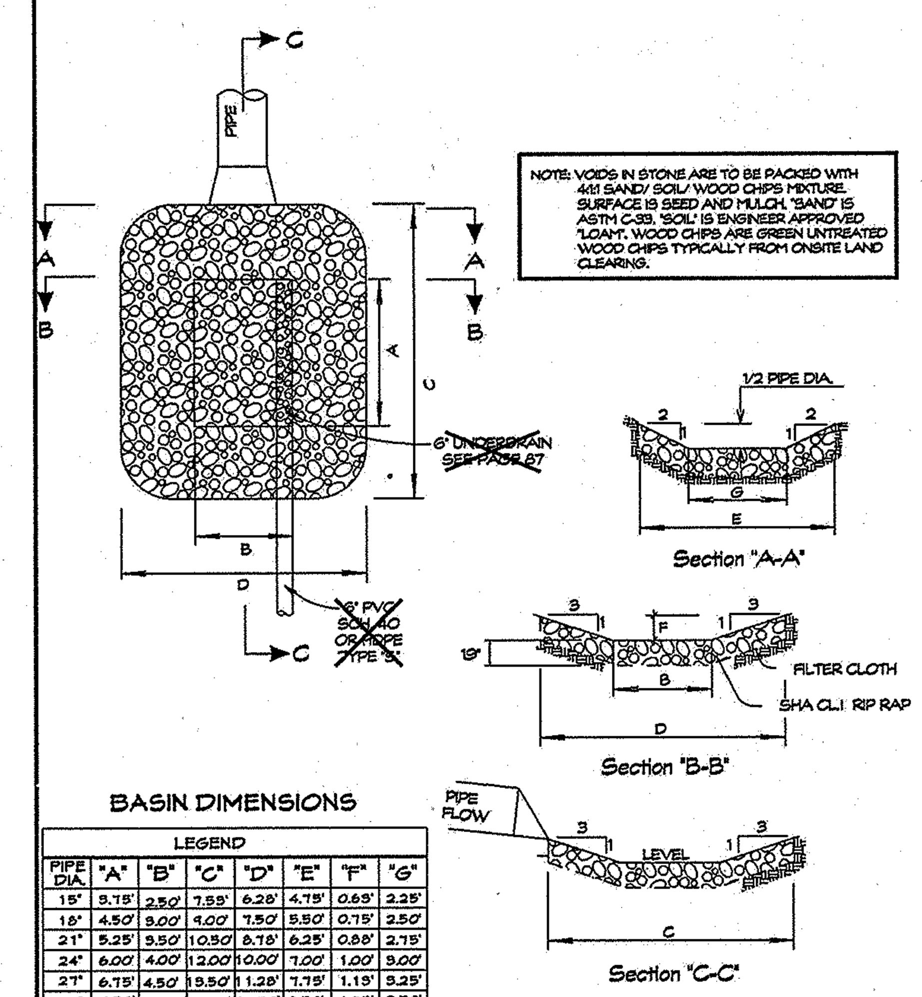
SDP-13-023



UNDERDRAIN OUTFALL SPLASH BLOCK AT GRADE (<10.0% SLOPE)

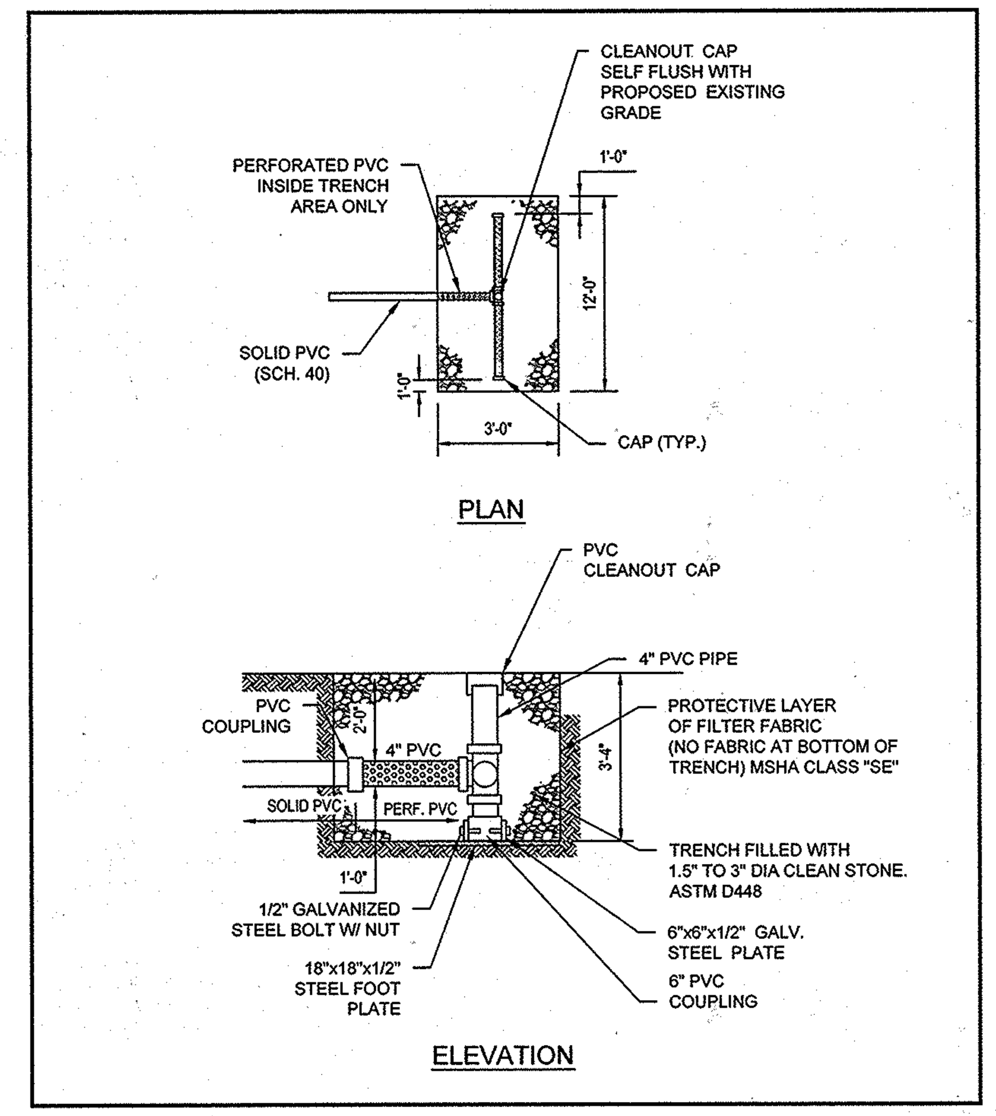
NTS

STILLING BASIN DETAIL



BASIN DIMENSIONS

LEGEND							
PIPE DIA.	"A"	"B"	"C"	"D"	"E"	"F"	"G"
15"	3.75'	2.50'	7.55'	6.28'	4.75'	0.65'	2.25'
18"	4.50'	3.00'	9.00'	7.50'	5.50'	0.75'	2.50'
21"	5.25'	3.50'	10.50'	8.78'	6.25'	0.88'	2.75'
24"	6.00'	4.00'	12.00'	10.00'	7.00'	1.00'	3.00'
27"	6.75'	4.50'	13.50'	11.28'	7.75'	1.13'	3.25'
30"	7.50'	5.00'	15.00'	12.50'	8.50'	1.25'	3.50'
36"	9.00'	6.00'	18.00'	15.00'	10.00'	1.50'	4.00'
42"	10.50'	7.00'	21.00'	17.50'	11.50'	1.75'	4.50'
48"	12.00'	8.00'	24.00'	20.00'	13.00'	2.00'	5.00'
54"	13.50'	9.00'	27.00'	22.50'	14.50'	2.25'	5.50'
60"	15.00'	10.00'	30.00'	25.00'	16.00'	2.50'	6.00'



UNDERDRAIN LEVEL SPREADER

NTS

B.3.A Sand Filter Specifications

1. Material Specifications for Sand Filters

The allowable materials for sand filter construction are detailed in Table B.3.1.

2. Sand Filter Testing Specifications

Underground sand filters, facilities within sensitive groundwater aquifers, and filters designed to serve urban hot spots are to be tested for water tightness prior to placement of filter media. Entrances and exits should be plugged and the system completely filled with water to demonstrate water tightness. Water tightness means no leakage for a period of 8 hours.

All overflow weirs, multiple orifices and flow distribution slots are to be field-tested to verify adequate distribution of flows.

3. Sand Filter Construction Specifications

Provide sufficient maintenance access (i.e., 12-foot-wide road with legally recorded easement). Vegetated access slopes are to be a maximum of 10%; gravel slopes to 15%; paved slopes to 25%.

Absolutely no runoff is to enter the filter until all contributing drainage areas have been stabilized.

Surface of filter bed is to be level.

All underground sand filters should be clearly delineated with signs so that they may be located when maintenance is due.

Surface sand filters may be planted with appropriate grasses; see Appendix A.

"Pocket" sand filters (and residential bioretention facilities treating areas larger than an acre) shall be sized with a stone "window" that covers approximately 10% of the filter area. This "window" shall be filled pea gravel (3/4 inch stone).

4. Specifications Pertaining to Underground Sand Filters (F-2)

Provide manhole and/or grates to all underground and below grade structures. Manholes shall be in compliance with standard specifications for each county but diameters should be 30" minimum (to comply with OSHA confined space requirements). Aluminum and steel louvered doors are also acceptable. Ten inch wide (minimum) manhole steps (12" o.c.) shall be cast in place or drilled and mortared into the wall below each manhole. A 5' minimum height clearance (from the top of the sand layer to the bottom of the upper/surface slab) is required for all permanent underground structures. Lift rings are to be supplied to remove/replace top slabs on pre-fabricated structures. Manhole covers should allow for proper ventilation.

Underground sand filters should be constructed with a gate valve located just above the top of the filter bed for dewatering in the event that clogging occurs.

Underground sand beds shall be protected from trash accumulation by a wide mesh geotextile screen to be placed on the surface of the sand bed; screen is to be rolled up, removed, cleaned and re-installed during maintenance operations.

Table B.3.1 Material Specifications for Sand Filters

Material	Specification/Test Method	Size	Notes
sand	clean AASHTO-M-6 or ASTM-C-33 concrete sand	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.
peat	ash content: < 15% pH range: 5.2 to 4.9 loose bulk density 0.12 to 0.15 g/cc	n/a	The material must be reed-sedge hemic peat, shredded, uncompacted, uniform, and clean.
leaf compost		n/a	
underdrain gravel	AASHTO-M-43	0.375" to 0.75"	
geotextile fabric (if required)	ASTM-D-4833 (puncture strength - 125 lb.) ASTM-D-4632 (Tensile Strength - 300 lb.)	0.08" thick equivalent opening size of #80 sieve	Must maintain 125 gpm per sq. ft. flow rate. Note: a 4" pea gravel layer may be substituted for geotextiles meant to "separate" sand filter layers.
impermeable liner (if required)	ASTM-D-4833 (thickness) ASTM-D-412 (tensile strength 1,100 lb., elongation 200%) ASTM-D-624 (Tear resistance - 150 lb./in) ASTM-D-471 (water adsorption: +8 to -2% mass)	30 mil thickness	Liner to be ultraviolet resistant. A geotextile fabric should be used to protect the liner from puncture.
underdrain piping	F 758, Type PS 28 or AASHTO-M-278	4" - 6" rigid schedule 40 PVC or SDR35	3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes
concrete (cast-in-place)	MSHA Standards and Specs, Section 902, Mix No. 3, f'c = 3500 psi, normal weight, air-entrained; re-inforcing to meet ASTM-615-60	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) *not using previously approved State or local standards* requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland
concrete (pre-cast)	per pre-cast manufacturer	n/a	SEE ABOVE NOTE
non-rebar steel	ASTM A-36	n/a	structural steel to be hot-dipped galvanized ASTM-A-123

APPROVED
PLANNING BOARD OF HOWARD COUNTY
~~DATE~~ PB 406
DATE 10/08/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Chad Edmondson 11-17-14
CHIEF-DEVELOPMENT ENGINEERING DIVISION DATE
J. Marchant for KS J.P. 12-22-14
CHIEF-DIVISION OF LAND DEVELOPMENT DATE
Marsha McLaughlin 12/22/14
DIRECTOR DATE

~~APPROVED~~
~~PLANNING BOARD OF HOWARD COUNTY~~
~~DATE~~
~~DATE~~

H:\2011\MD112149\DRAWINGS\PLAN SETS\SITE DEVELOPMENT PLAN\MD112149PB10.DWG PRINTED BY: RBOWEN 10.29.14 @ 4:12 PM LAST SAVED BY: A

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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(VA 1-800-552-7001) (MD 1-800-257-7777) (DE 1-800-282-8555)

NO.:	DATE	REVISION DESCRIPTION

OWNER:
M/I HOMES OF DC, LLC
21355 RIDGETOP CIRCLE, SUITE 220
STERLING, VA 20166
CONTACT : CINDY HUNTZBERRY
PHONE : 443-677-9803

DEVELOPER:
SOMERWORTH II, L.C.
5704 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
SWM DETAILS

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

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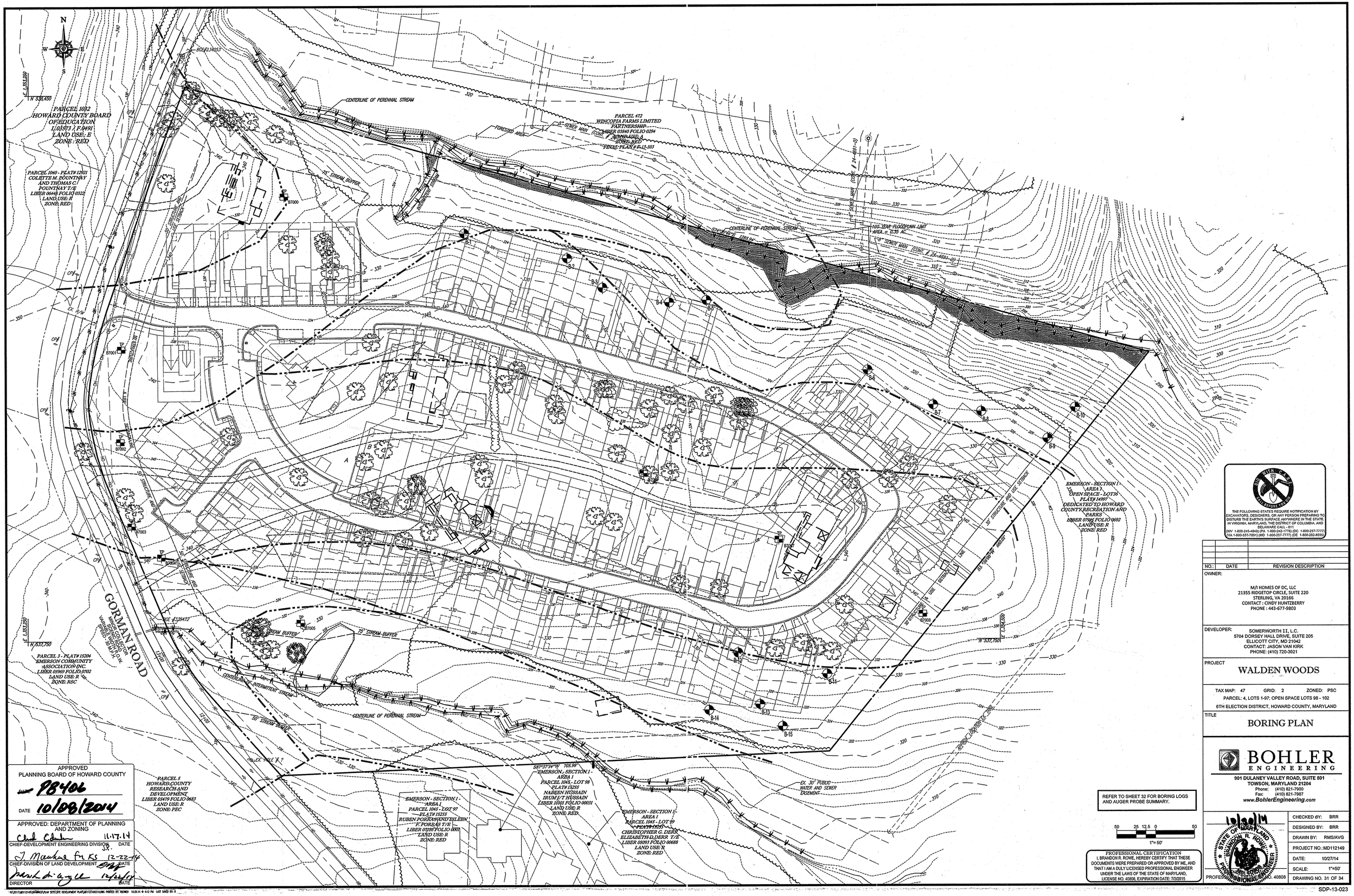
10/30/14
BRANDON R. ROWE
PROFESSIONAL ENGINEER NO. 40808

CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	AS NOTED
DRAWING NO.	30 OF 34

SDP-13-023



APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 10/08/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF-DEVELOPMENT ENGINEERING DIVISION	DATE 11.17.14
CHIEF-DIVISION OF LAND DEVELOPMENT	DATE 12-22-14
DIRECTOR	DATE 12/22/14

REFER TO SHEET 32 FOR BORING LOGS AND AUGER PROBE SUMMARY.

50 25 12.5 0 50
1"= 50'

PROFESSIONAL CERTIFICATION
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5704 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
BORING PLAN

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

10/30/14
STATE OF MARYLAND BRANDON R. ROWE PROFESSIONAL ENGINEER No. 40808

CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	1"=50'
DRAWING NO.	31 OF 34

SDP-13-023

WALDEN WOODS

HC PROJECT. No. 12399A

TABLE 1 - AUGER PROBE SUMMARY

BORING	SURFACE ELEVATION	BORING DEPTH		AT COMPLETION		AFTER 24 HOURS	
		PROPOSED	DRILLED	WATER (FT)	CAVE-IN (FT)	WATER (FT)	CAVE-IN (FT)
B-7000	334.03	9	9	DRY	7.3	DRY	6.8
B-7001	341.89	10	10	DRY	8.5	DRY	8.5
B-7002	344.81	12	12	DRY	11.3	DRY	10.1
B-7003	344.13	4	4	DRY	2.7	DRY	2.7
B-7004	339.84	7	7	DRY	5.7	DRY	5.7
B-7005	330.65	8	8	DRY	7.1	DRY	7.0
B-7006	341.63	20	20	DRY	15.0	DRY	14.7
B-7007	339.41	8	8	DRY	6.4	DRY	6.4
B-7008	339.54	8	8	DRY	6.1	DRY	5.8

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. — RECORD OF SOIL EXPLORATION — B-1

Project Name: Westover Glen SWM Boring No.: B-1
Location: Howard County, MD Job #: 05458A
Datum: ___ Hammer Wt. 140 lbs. SAMPLER Hole Diameter 6" Foreman Lamont Smith
Surf. Elev. 352' Ft. Hammer Drop 30 in. Rock Core Diameter ___ Inspector ___
Date Started 8/11/05 Pipe Size 2 in. Boring Method HSA Date Completed 8/11/05

Description	Boring and Sampling Notes	Rec.	SPT Blows	N
Dark brown, moist, very soft, sandy clay and silt, trace organics, mica and gravel (CL-ML)	Topsoil-4"; No groundwater encountered while drilling.	4"	1-1-2	3
Dark gray to reddish brown, moist, medium dense to very dense, micaceous silty sand, with gravel and rock fragments (SM)		13"	7-12-16	28
		5"	51/5"	100+
Light gray to greenish gray, wet to damp, dense to very dense, silty coarse sand, with gravel, decomposed rock fragments, and mica (Decomposed Rock to Rock)		12"	14-19-21	40
		10"	37-51/4"	100+
		2"	51/2"	100+
Auger refusal @ 18.5' Bottom of Boring @ 18.5'		0"	51/0"	100+

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE
SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST
GROUND WATER / CAVE IN DEPTH: AT COMPLETION Dry ft. 9.5 ft.; AFTER 24 HRS. ___ ft. ___ ft.; AFTER ___ HRS. ___ ft. ___ ft.
BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING
STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1" WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. — RECORD OF SOIL EXPLORATION — B-4

Project Name: Westover Glen SWM Boring No.: B-4 Location: Howard County, MD Job #: 05458A
Hammer Wt. 140 lbs. Hole Diameter 6" Foreman Lamont Smith; Surf. Elev. 321' Ft. Hammer Drop 30 in.; Date Started 8/10/05 Pipe Size 2 in. Boring Method HSA Date Completed 8/10/05

Description	Boring and Sampling Notes	Rec.	SPT Blows	N
Dark brown, moist, very soft, sandy clay and silt, trace gravel and organics (CL-ML)	Topsoil-4"; No groundwater encountered while drilling.	13"	1-1-2	3
Brown and grayish brown, moist, medium dense to dense, micaceous silty sand to sandy silt, trace rock fragments (SM-ML)		15"	6-7-9	16
		16"	11-14-22	36
Light grayish brown, moist, very dense, silty sand, with decomposed rock fragments and gravel (Decomposed Rock to Rock)		17"	32-34-51/6"	85
		5"	51/5"	100+
Bottom of boring @ 13.0'		0"	51/0"	100+

AT COMPLETION Dry ft. 6.0 ft.; AFTER 24 HRS. Dry ft. 6.0 ft.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. — RECORD OF SOIL EXPLORATION — B-7

Project Name: Westover Glen SWM Boring No.: B-7 Location: Howard County, MD Job #: 05458A
Hammer Wt. 140 lbs. Hole Diameter 6" Foreman Lamont Smith; Surf. Elev. 325' Ft. Hammer Drop 30 in.; Date Started 8/10/05 Pipe Size 2 in. Boring Method HSA Date Completed 8/10/05

Description	Boring and Sampling Notes	Rec.	SPT Blows	N
Dark brown, moist, soft, clayey silt, trace organics and mica (ML)	Topsoil-6"; No groundwater encountered while drilling.	13"	1-2-3	5
Reddish brown, moist, stiff, silt, trace fine sand, mica and gravel (ML)		14"	6-6-8	14
Light grayish brown and reddish brown, moist, loose to medium dense, micaceous silty sand to sandy silt, trace rock fragments (SM-ML)		15"	11-11-11	22
		14"	2-4-5	9
		12"	6-11-19	30
Possible Decomposed Rock		0"	51/0"	100+
Bottom of boring @ 20.0'		0"	51/0"	100+

AT COMPLETION Dry ft. 8.0 ft.; AFTER 24 HRS. Dry ft. 8.0 ft.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. — RECORD OF SOIL EXPLORATION — B-10

Project Name: Westover Glen SWM Boring No.: B-10 Location: Howard County, MD Job #: 05458A
Hammer Wt. 140 lbs. Hole Diameter 6" Foreman Lamont Smith; Surf. Elev. 314' Ft. Hammer Drop 30 in.; Date Started 8/10/05 Pipe Size 2 in. Boring Method HSA Date Completed 8/10/05

Description	Boring and Sampling Notes	Rec.	SPT Blows	N
Brown, moist, very soft, sandy clay and silt, trace organics (CL-ML)	Topsoil-4"; No groundwater encountered while drilling.	10"	1-1-2	3
Brown, moist, dense, silty sand, trace gravel and rock fragments (SM)		13"	4-5-43	48
Auger refusal @ 5.0' Bottom of boring @ 5.0'		0"	51/0"	100+

AT COMPLETION Dry ft. 1.5 ft.; AFTER 24 HRS. Dry ft. 1.5 ft.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. — RECORD OF SOIL EXPLORATION — B-13

Project Name: Westover Glen SWM Boring No.: B-13 Location: Howard County, MD Job #: 05458A
Hammer Wt. 140 lbs. Hole Diameter 6" Foreman Lamont Smith; Surf. Elev. 326' Ft. Hammer Drop 30 in.; Date Started 8/09/05 Pipe Size 2 in. Boring Method HSA Date Completed 8/09/05

Description	Boring and Sampling Notes	Rec.	SPT Blows	N
Dark brown, moist, medium stiff, sandy clay and silt, trace mica, gravel and organics (CL-ML)	Topsoil-4"; No groundwater encountered while drilling.	12"	3-4-4	8
Reddish brown, moist, stiff, sandy silt, trace clay and mica (ML)		15"	6-9-12	21
Reddish brown, moist, hard, micaceous sandy silt to silty sand, trace gravel (ML-SM)		15"	10-13-19	32
Light grayish brown, moist, very dense, silty sand, with decomposed rock fragments and gravel (Decomposed Rock)		14"	35-36-36	72
		10"	20-51/4"	100+
Light grayish brown, moist, medium dense, silty sand, with decomposed rock fragments and gravel (SM)	In-situ pipe installed to 14.0'	18"	9-15-12-13	27
Bottom of boring @ 17.0'				

AT COMPLETION Dry ft. 6.5 ft.; AFTER 24 HRS. Dry ft. 7.0 ft.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. — RECORD OF SOIL EXPLORATION — B-2

Project Name: Westover Glen SWM Boring No.: B-2 Location: Howard County, MD Job #: 05458A
Hammer Wt. 140 lbs. Hole Diameter 6" Foreman Lamont Smith; Surf. Elev. 324' Ft. Hammer Drop 30 in.; Date Started 8/11/05 Pipe Size 2 in. Boring Method HSA Date Completed 8/11/05

Description	Boring and Sampling Notes	Rec.	SPT Blows	N
Dark brown, moist, soft, sandy silt and clay, trace organics and gravel (CL-ML)	Topsoil-5"; No groundwater encountered while drilling.	12"	1-2-3	5
Grayish brown, moist, medium dense to dense, silty sand, with gravel and rock fragments (SM)		13"	12-17-25	42
		16"	10-10-9	19
		15"	19-20-27	47
Grayish brown, moist, very dense, sand, with gravel and decomposed rock fragments (Decomposed Rock to Rock)		15"	25-36-51/6"	87
Bottom of boring @ 13.5'		0"	51/0"	100+

AT COMPLETION Dry ft. 6.6 ft.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. — RECORD OF SOIL EXPLORATION — B-5

Project Name: Westover Glen SWM Boring No.: B-5 Location: Howard County, MD Job #: 05458A
Hammer Wt. 140 lbs. Hole Diameter 6" Foreman Lamont Smith; Surf. Elev. 315' Ft. Hammer Drop 30 in.; Date Started 8/10/05 Pipe Size 2 in. Boring Method HSA Date Completed 8/10/05

Description	Boring and Sampling Notes	Rec.	SPT Blows	N
Dark brown, moist, soft, sandy clay and silt, trace gravel and organics (CL-ML)	Topsoil-5"; No groundwater encountered while drilling.	12"	1-2-2	4
Brown, moist, medium dense, silty sand, with gravel and rock fragments, trace mica (SM)		15"	3-10-13	23
Reddish brown to light gray, moist, very dense, silty sand, with decomposed rock fragments, trace mica (Decomposed Rock to Rock)		12"	11-51/6"	100+
		12"	30-26-51/2"	100+
Bottom of boring @ 9.0'		0"	51/0"	100+

AT COMPLETION Dry ft. 4.5 ft.; AFTER 24 HRS. Dry ft. 4.5 ft.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. — RECORD OF SOIL EXPLORATION — B-8

Project Name: Westover Glen SWM Boring No.: B-8 Location: Howard County, MD Job #: 05458A
Hammer Wt. 140 lbs. Hole Diameter 6" Foreman Lamont Smith; Surf. Elev. 324' Ft. Hammer Drop 30 in.; Date Started 8/10/05 Pipe Size 2 in. Boring Method HSA Date Completed 8/10/05

Description	Boring and Sampling Notes	Rec.	SPT Blows	N
Dark brown, moist, soft, clayey silt, with sand, trace mica and organics (CL-ML)	Topsoil-5"; No groundwater encountered while drilling.	3"	2-2-3	5
Light grayish brown, moist, dense to very dense, micaceous silty sand, with gravel and rock fragments (SM to Decomposed Rock)		17"	16-21-28	49
		5"	51/5"	100+
		11"	35-51/5"	100+
		16"	24-40-51/6"	91
Bottom of boring @ 12.5'		0"	51/0"	100+

AT COMPLETION Dry ft. 6.5 ft.; AFTER 24 HRS. Dry ft. 6.5 ft.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. — RECORD OF SOIL EXPLORATION — B-11

Project Name: Westover Glen SWM Boring No.: B-11 Location: Howard County, MD Job #: 05458A
Hammer Wt. 140 lbs. Hole Diameter 6" Foreman Lamont Smith; Surf. Elev. 331' Ft. Hammer Drop 30 in.; Date Started 8/08/05 Pipe Size 2 in. Boring Method HSA Date Completed 8/08/05

Description	Boring and Sampling Notes	Rec.	SPT Blows	N
Dark brown, moist, soft, clay and silt, trace fine sand, mica and organics (CL-ML)	TTopsoil-4"; No groundwater encountered while drilling.	10"	2-2-3	5
Dark reddish brown to tan, moist, stiff, silt, some sand, trace organics; S-2 with clay (ML)	No groundwater encountered while drilling.	12"	7-8-9	17
		13"	4-5-8	13
Dark reddish brown, moist, stiff, sandy silt, with mica and gravel (ML)		15"	7-8-10	18
		16"	13-11-12	23
Light grayish brown, moist, very dense, silty sand, with gravel and decomposed rock fragments (Decomposed Rock)		16"	17-25-30	55
Bottom of boring @ 20.3'		0"	51/3"	100+

AT COMPLETION Dry ft. 9.5 ft.; AFTER 24 HRS. Dry ft. 9.5 ft.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. — RECORD OF SOIL EXPLORATION — B-14

Project Name: Westover Glen SWM Boring No.: B-14 Location: Howard County, MD Job #: 05458A
Hammer Wt. 140 lbs. Hole Diameter 6" Foreman Lamont Smith; Surf. Elev. 322' Ft. Hammer Drop 30 in.; Date Started 8/10/05 Pipe Size 2 in. Boring Method HSA Date Completed 8/10/05

Description	Boring and Sampling Notes	Rec.	SPT Blows	N
Dark brown, moist, medium stiff, sandy clay and silt, trace organics (CL-ML)	Topsoil-5"; No groundwater encountered while drilling.	12"	2-3-5	8
Reddish brown, moist, stiff, micaceous sandy silt to silty sand, trace gravel and rock fragments (ML-SM)		15"	9-9-8	17
		15"	7-8-13	21
Light grayish brown to reddish brown, moist, very dense, micaceous silty sand to sandy silt, with decomposed rock and gravel (Decomposed Rock)		15"	23-28-28	56
		14"	13-18-43	61
		18"	20-35-51/5"	100+
Bottom of boring @ 15.0'				

AT COMPLETION Dry ft. 6.0 ft.; AFTER 24 HRS. Dry ft. 8.0 ft.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. — RECORD OF SOIL EXPLORATION — B-3

Project Name: Westover Glen SWM Boring No.: B-3 Location: Howard County, MD Job #: 05458A
Hammer Wt. 140 lbs. Hole Diameter 6" Foreman Lamont Smith; Surf. Elev. 328' Ft. Hammer Drop 30 in.; Date Started 8/10/05 Pipe Size 2 in. Boring Method HSA Date Completed 8/10/05

Description	Boring and Sampling Notes	Rec.	SPT Blows	N
Dark brown, moist, medium stiff, sandy clay and silt, trace gravel, organics and mica (CL-ML)	Topsoil-4"; No groundwater encountered while drilling.	6"	1-3-5	8
Greenish brown, moist, very dense, micaceous silty sand, with decomposed rock fragments (Decomposed Rock to Rock)		17"	10-13-40	53
		6"	51/6"	100+
		16"	14-14-51/5"	100+
		12"	15-51/6"	100+
		0"	51/0"	100+
Bottom of boring @ 20.0'		0"	51/0"	100+

AT COMPLETION Dry ft. 9.0 ft.; AFTER 24 HRS. Dry ft. 9.5 ft.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. — RECORD OF SOIL EXPLORATION — B-6

Project Name: Westover Glen SWM Boring No.: B-6 Location: Howard County, MD Job #: 05458A
Hammer Wt. 140 lbs. Hole Diameter 6" Foreman Lamont Smith; Surf. Elev. 325' Ft. Hammer Drop 30 in.; Date Started 8/10/05 Pipe Size 2 in. Boring Method HSA Date Completed 8/10/05

Description	Boring and Sampling Notes	Rec.	SPT Blows	N
Brown, moist, medium stiff, sandy clay and silt, trace organics and gravel (CL-ML)	Topsoil-5"; No groundwater encountered while drilling.	10"	3-4-4	8
Light gray, moist, very dense, silty sand, with gravel and decomposed rock fragments (Decomposed Rock to Rock)		5"	51/5"	100+
		9"	27-51/3"	100+
		0"	51/0"	100+
		3"	51/3"	100+
		0"	51/0"	100+
Auger refusal @ 17.0' Bottom of boring @ 17.0'		0"	51/0"	100+

AT COMPLETION Dry ft. 9.0 ft.; AFTER 24 HRS. Dry ft. 9.0 ft.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. — RECORD OF SOIL EXPLORATION — B-9

Project Name: Westover Glen SWM Boring No.: B-9 Location: Howard County, MD Job #: 05458A
Hammer Wt. 140 lbs. Hole Diameter 6" Foreman Lamont Smith; Surf. Elev. 325' Ft. Hammer Drop 30 in.; Date Started 8/10/05 Pipe Size 2 in. Boring Method HSA Date Completed 8/10/05

Description	Boring and Sampling Notes	Rec.	SPT Blows	N
Brown, moist, soft, sandy silt, trace organics and mica (ML)	Topsoil-5"; No groundwater encountered while drilling.	10"	1-2-2	4
Brown to light gray, moist, loose to very dense, silty sand, with gravel and rock fragments (SM)		14"	4-4-5	9
		15"	5-5-6	11
		15"	6-7-8	15
		15"	7-27-25	52
Brown to light gray, moist, very dense, silty sand, with gravel and rock fragments (Decomposed Rock to Rock)		0"	51/0"	100+
Bottom of boring @ 19.0'		0"	51/0"	100+

AT COMPLETION Dry ft. 8.5 ft.; AFTER 24 HRS. Dry ft. 8.5 ft.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. — RECORD OF SOIL EXPLORATION — B-12

Project Name: Westover Glen SWM Boring No.: B-12 Location: Howard County, MD Job #: 05458A
Hammer Wt. 140 lbs. Hole Diameter 6" Foreman Lamont Smith; Surf. Elev. 334' Ft. Hammer Drop 30 in.; Date Started 8/08/05 Pipe Size 2 in. Boring Method HSA Date Completed 8/08/05

Description	Boring and Sampling Notes	Rec.	SPT Blows	N
Dark brown, moist, medium stiff, sandy clay and silt, trace organics and mica (CL-ML)	Topsoil-5"; No groundwater encountered while drilling.	10"	2-3-3	6
Brown, moist, stiff, clayey silt, trace fine sand (ML)		16"	5-6-5	11
Brown, moist, stiff, micaceous sandy silt to silty sand, trace gravel (ML-SM)		14"	7-6-7	13
Brown, moist, medium dense to dense, micaceous silty sand to sandy silt, trace gravel (SM-ML)		15"	9-11-14	25
		13"	14-15-18	33
Light grayish brown, moist, very dense, micaceous silty sand, with gravel and decomposed rock fragments (Decomposed Rock to Rock)		15"	13-35-51/3"	100+
		10"	33-51/4"	100+
Bottom of boring @ 25.0'		0"	51/0"	100+

AT COMPLETION Dry ft. 10.5 ft.; AFTER 24 HRS. Dry ft. 11.5 ft.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. — RECORD OF SOIL EXPLORATION — B-15

Project Name: Westover Glen SWM Boring No.: B-15 Location: Howard County, MD Job #: 05458A
Hammer Wt. 140 lbs. Hole Diameter 6" Foreman Lamont Smith; Surf. Elev. 323' Ft. Hammer Drop 30 in.; Date Started 8/10/05 Pipe Size 2 in. Boring Method HSA Date Completed 8/10/05

Description	Boring and Sampling Notes	Rec.	SPT Blows	N
Dark brown, moist, soft, sandy silt and clay, trace organics and mica (CL-ML)	Topsoil-4"; No groundwater encountered while drilling.	10"	2-2-3	5
Reddish brown, moist, stiff, sandy silt, trace clay (ML)		13"	4-5-7	12
Brown to dark reddish brown, moist, medium dense to very dense, micaceous silty sand to sandy silt, trace gravel; S-5 and S-6 with decomposed rock fragments (SM-ML to Decomposed Rock)		18"	6-6-7	13
		14"	6-12-13	25
		16"	7-16-15	31
		18"	28-39-41	80
Bottom of boring @ 15.0'				

AT COMPLETION Dry ft. 6.0 ft.; AFTER 24 HRS. Dry ft. 6.5 ft.

APPROVED
PLANNING BOARD OF HOWARD COUNTY
PB406
DATE 10/08/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Chad Edmondson 11-17-14
CHIEF-DEVELOPMENT ENGINEERING DIVISION DATE
J. Manhan for KS 12-22-14
CHIEF-DIVISION OF LAND DEVELOPMENT DATE
Marsha McLaughlin 12/22/14
DIRECTOR DATE

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)

NO.:	DATE	REVISION DESCRIPTION

OWNER:
M/I HOMES OF DC, LLC
21355 RIDGETOP CIRCLE, SUITE 220
STERLING, VA 20166
CONTACT : CINDY HUNTZBERRY
PHONE : 443-677-9803

DEVELOPER:
SOMERWORTH II, L.C.
5704 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
BORING LOGS

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

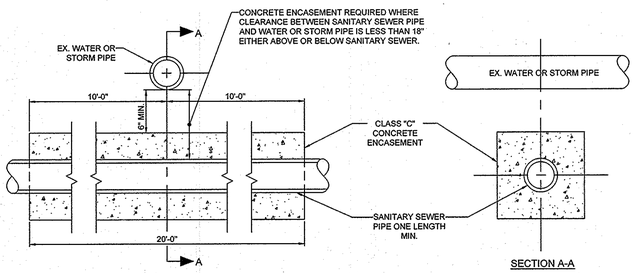
PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 40808, EXPIRATION DATE: 7/3/2015

BRANDON R. ROWE
PROFESSIONAL ENGINEER NO. 40808

CHECKED BY: BRR
DESIGNED BY: BRR
DRAWN BY: RMS/AVG
PROJECT NO.: MD112149
DATE: 10/27/14
SCALE: AS NOTED
DRAWING NO. 32 OF 34

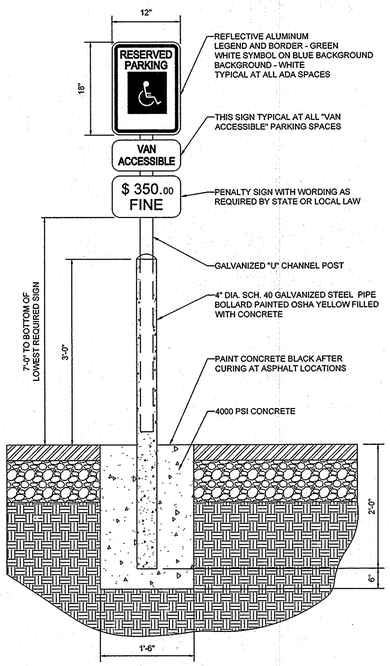
SDP-13-023

H:\2011\MD112149\DRAWINGS\PLAN SETS\SITE DEVELOPMENT PLAN\MD112149SS10.DWG PRINTED BY: RBOWEN 10.29.14 @ 4:13 PM LAST SAVED BY: R



CONCRETE ENCASEMENT DETAIL

NOT TO SCALE

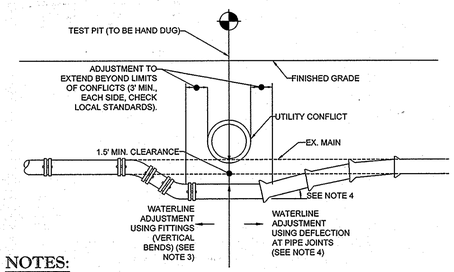


NOTE:

ONE AT EACH ADA SPACE. WHERE ADA SPACES FACE EACH OTHER WITHOUT WALKWAY, THERE SHALL BE ONE POST WITH SIGNS MOUNTED BOTH SIDES

BOLLARD MOUNTED ADA PARKING SIGN DETAIL

NOT TO SCALE

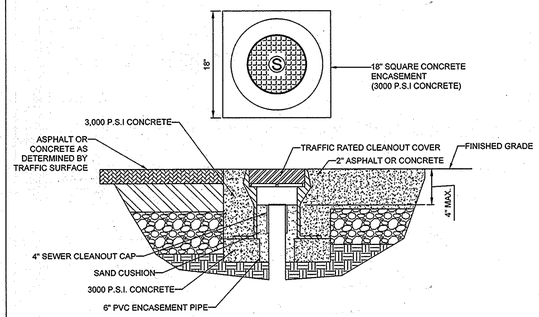


NOTES:

1. CONTRACTOR TO COORDINATE WATERLINE ADJUSTMENT WITH APPROPRIATE INSPECTOR, BASED UPON LOCAL JURISDICTIONAL REQUIREMENTS AND FIELD CONDITIONS.
2. CONTRACTOR TO HAND DIG TEST PIT AT ANTICIPATED CROSSING LOCATION TO DETERMINE EXISTING WATERLINE DEPTH, TOTAL WATERLINE DEFLECTION REQUIRED, AND BEST METHOD FOR WATERLINE ADJUSTMENT.
3. VERTICAL BENDS (INSTALLED PER LOCAL STANDARDS) AS REQUIRED.
4. PIPE DEFLECTION AT JOINTS (PER LOCAL STANDARDS)

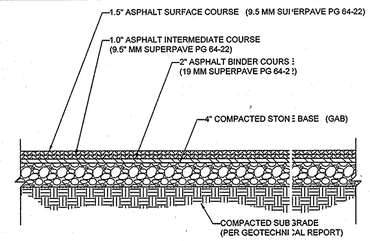
WATERLINE ADJUSTMENT DETAIL

NOT TO SCALE



TRAFFIC RATED CLEANOUT DETAIL

NOT TO SCALE

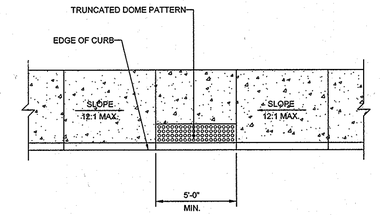


NOTE:

1. SECTION SHOWN IS BASED ON AN ANTICIPATED CBR OF 5 ANY COUNTY P-2 STANDARD PAVING SECTION. FINAL DESIGN TO BE PROVIDED ONCE FINAL CBR'S ARE AVAILABLE ON COMPACTED SUB-BASE.

ASPHALT PAVEMENT SECTION

NOT TO SCALE

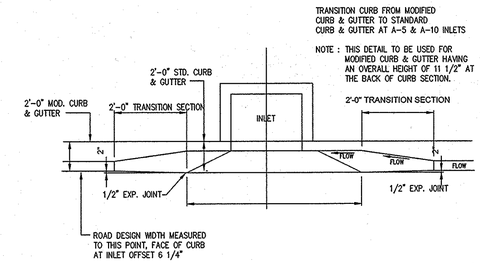


NOTE:

ADA ACCESSIBLE RAMP CONSTRUCTION SHALL CONFORM TO CURRENT ADA ACCESSIBLE GUIDELINES.

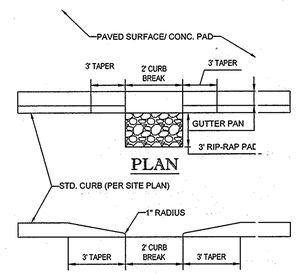
ADA ACCESSIBLE RAMP DETAIL

NOT TO SCALE



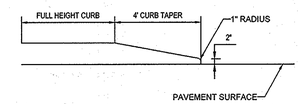
CONCRETE CURB & GUTTER TRANSITION

NOT TO SCALE



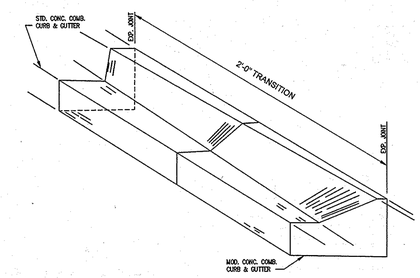
CURB BREAK DETAIL

NOT TO SCALE



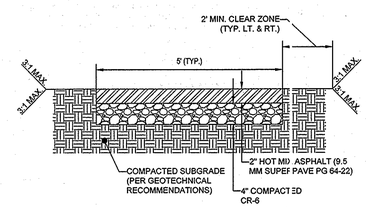
CURB TAPER DETAIL

NOT TO SCALE



CONCRETE CURB & GUTTER TRANSITION

NOT TO SCALE

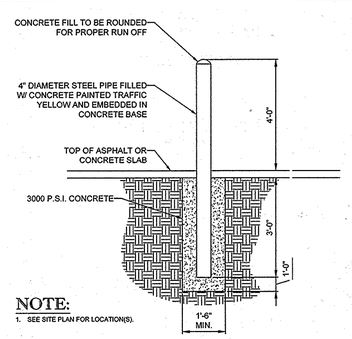


NOTE:

1. TRAIL CROSS SLOPE NOT TO EXCEED 2.00%.

ASPHALT TRAIL DETAIL

NOT TO SCALE

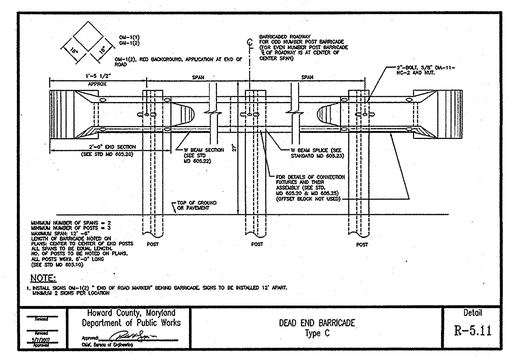


NOTE:

1. SEE SITE PLAN FOR LOCATION(S).

BOLLARD DETAIL

NOT TO SCALE



NOTE:

1. INSTALL SIGNS OM-1(2) "END OF ROAD MARKER" BEHIND BARRICADE. SIGNS TO BE INSTALLED 12' APART. MINIMUM 2 SIGNS PER LOCATION

Revised	Howard County, Maryland Department of Public Works	DEAD END BARRICADE Type C	Detail R-5.11
Revised 5/27/2003 Approved	Approved: Chief, Bureau of Engineering		

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.

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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NO.:	DATE	REVISION DESCRIPTION

OWNER:

M/I HOMES OF DC, LLC
21355 RIDGETOP CIRCLE, SUITE 220
STERLING, VA 20166
CONTACT : CINDY HUNTZBERRY
PHONE : 443-677-9803

DEVELOPER: SOMERWORTH II, L.C.
5704 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT

WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE

SITE DETAILS

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

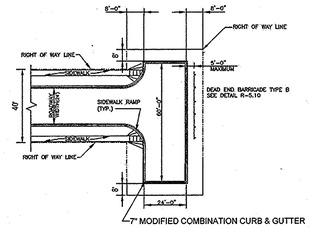
STATE OF MARYLAND BRANDON R. ROWE No. 40808 PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER NO. 40808

CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	NOT TO SCALE
DRAWING NO.	33 OF 34

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DECISION PB406
DATE 10/08/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING
11-17-14
CHIEF-DEVELOPMENT ENGINEERING DIVISION DATE
12-22-14
CHIEF-DIVISION OF LAND DEVELOPMENT DATE
12/22/14
DIRECTOR DATE

SDP-13-023

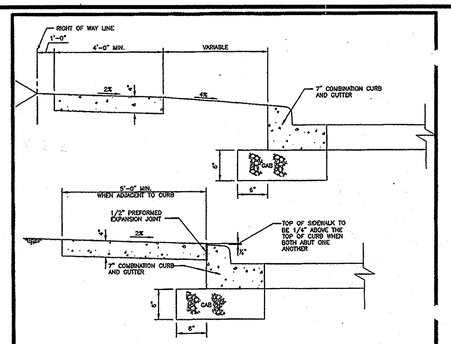


7" MODIFIED COMBINATION CURB & GUTTER

NOTES:

1. PERMANENT TEE SHALL ONLY BE INSTALLED ON RESIDENTIAL STREETS WITH LESS THAN 200 ADT.
2. THE LENGTH OF THE BARRICADE IS TO EQUAL THE WIDTH OF THE ROADWAY.
3. INSTALL SIGNS R7-1 (1) "NO PARKING", R7-4 "NO STANDING", R7-4 (1) "NO STOPPING" AS DIRECTED BY DPW.
4. INSTALL SIGNS OM-1 (2) "END OF ROAD BARRIER" BEHIND BARRICADE. SIGNS TO BE INSTALLED 12" APART. MINIMUM 2 SIGNS PER TEE TURN-AROUND.

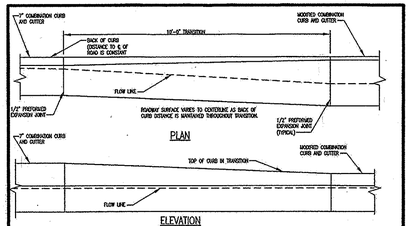
	MODIFIED TEE TURN AROUND PERMANENT (<200 ADT)	



NOTES:

1. SIDEWALK TO BE SCORED 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 8" 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).

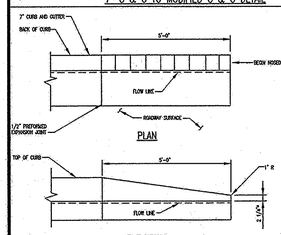
Revised / Revised 5/7/2003 / Approved	Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering	Concrete Sidewalk	Detail R-3.05



PLAN

ELEVATION

7" C & G TO MODIFIED C & G DETAIL



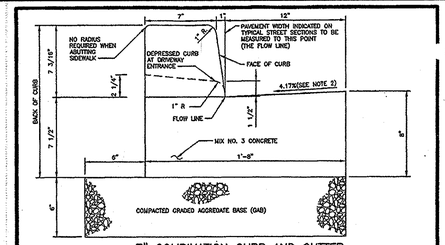
PLAN

ELEVATION

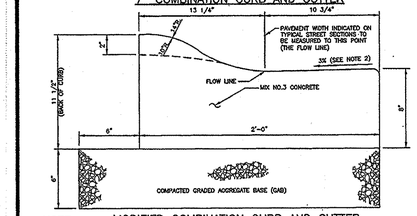
NOSE DOWN DETAIL

* DIMENSION SHALL BE 0" WHEN NOSE DOWNS OCCURS FOR SIDEWALK RAMP (NO LIP AT RAMP)

Revised / Revised / Approved	Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering	CURB AND GUTTER 7" Transition to Modified & Nose Down	Detail R-3.02



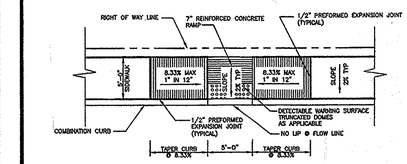
7" COMBINATION CURB AND GUTTER



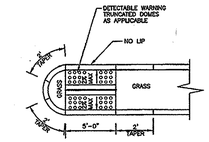
NOTE: MODIFIED COMBINATION CURB AND GUTTER

1. A REVERSE GUTTER PAN SHALL HAVE A GUTTER SLOPE OF 4.17% AWAY FROM THE FLOW LINE, AND SHALL NOT BE USED WHERE THIS DRAINAGE CREATES A HAZARDOUS CONDITION.
2. GUTTER PAN AT THE MEDIAN EDGE OF INTERMEDIATE ARTERIALS OR THE HIGH SIDE OF SUPERELEVATED SECTIONS SHALL BE SLOPED AT THE SAME RATE AND IN THE SAME DIRECTION AS THE PAVEMENT. WHEN PAVEMENT CROSS SLOPE WHEN CURB IS LOCATED ON THE LOW SIDE OF SUPERELEVATED SECTION AND THE RATE OF SUPERELEVATION IS GREATER THAN 3% FOR MODIFIED CURB & GUTTER.
3. A MINIMUM OF TWO (2) FEET OF COMPACTED STABILIZED EARTH, OR EQUIVALENT, SHALL SUPPORT THE ENTIRE BACK OF CURB.
4. POSITIVE DRAINAGE SHALL BE PROVIDED BOTH BEHIND THE CURB AND ALONG THE GUTTER AND FLOW LINE.

Revised / Revised 5/7/2003 / Approved	Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering	CURB AND GUTTER 7" & Modified	Detail R-3.01



RAMP PARALLEL TO CURB

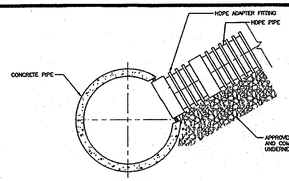


RAMP THRU MEDIAN

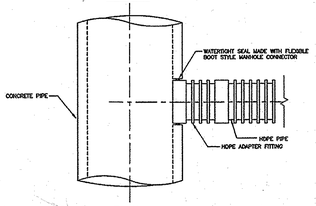
NOTES:

1. ALL RAMPS SHALL HAVE DETECTABLE WARNING SURFACES. SEE DETAIL R-4.07.
2. GRASS AREA ADJACENT TO SIDEWALK MUST BE SLOPED TO MEET RAMP.

Revised / Revised 5/7/2003 / Approved	Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering	SIDEWALK RAMP Layout & Grading Parallel to Curb & Thru Median	Detail R-4.06



SECTION



PLAN

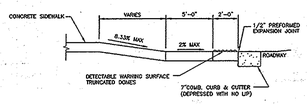
NOTES:

1. FOR USE WITH HDPE PIPE CONNECTION TO RCP PIPE ONLY.
2. 24" MINIMUM DIAMETER OF CONCRETE PIPE.
3. 0.45 MINIMUM RATIO OF SMALLER PIPE TO LARGER PIPE DIAMETER.
4. ONLY ONE FIELD CONNECTION PERMITTED IN A SINGLE LENGTH OF LARGER PIPE.
5. CORE DRILL OPENING IN CONCRETE PIPE TO SIZE SPECIFIED BY FLEXIBLE BOOT MANUFACTURER. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
6. CONNECT FLEXIBLE BOOT TO HDPE ADAPTER FITTING BEFORE CONNECTING TO HDPE PIPE. SEE HDPE MANUFACTURER INSTRUCTIONS.
7. PROVIDE WATERTIGHT GASKETS IN ACCORDANCE WITH HDPE MANUFACTURER INSTRUCTIONS.

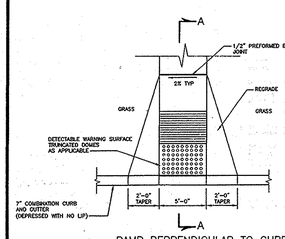
Revised / Revised 5/7/2003 / Approved	Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering	HDPE Pipe Connection To RCCP Private	Detail D-9.04

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).

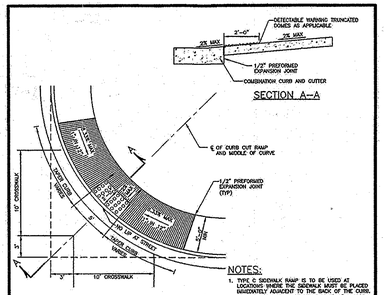


SECTION A–A



RAMP PERPENDICULAR TO CURB

Revised / Revised 5/7/2003 / Approved	Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering	SIDEWALK RAMP Layout & Grading Perpendicular to Curb	Detail R-4.05



SECTION A–A

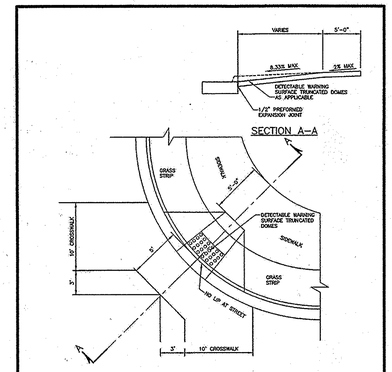
PLAN

FRONT VIEW

NOTES:

1. TYPE C SIDEWALK RAMP IS TO BE USED AT CROSSWALKS WHERE THE SIDEWALK MUST BE PLACED IMMEDIATELY ADJACENT TO THE BACK OF THE CURB. THE SIDEWALK SHALL BE AT LEAST 5'-0" IN WIDTH.
2. ALL RAMPS SHALL HAVE A WARNING TEXTURE EXTENDING THE FULL WIDTH AND DEPTH OF THE CURB RAMP.
3. 7" COMB. CURB AND GUTTER IS SHOWN. DETAILS TO BE SIMILAR FOR MOD. CURB AND GUTTER AND BT. CURB.
4. 4'-0" SIDEWALK REQUIRES A PASSING AREA (SEE DETAIL R-4.01).

Revised / Revised / Approved	Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering	SIDEWALK RAMP Type C	Detail R-4.04



SECTION A–A

PLAN

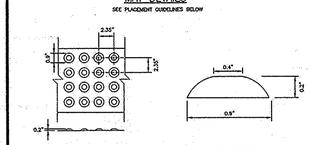
NOTES:

1. ALL RAMPS SHALL HAVE DETECTABLE WARNING SURFACE. SEE DETAIL R-4.07
2. GRADE AREA ADJACENT TO SIDEWALK SHALL BE SLOPED TO MEET RAMP.

Revised / Revised 5/7/2003 / Approved	Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering	SIDEWALK RAMP Type B Single Ramp	Detail R-4.02

MAT DETAILS

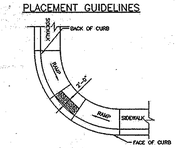
SEE PLACEMENT GUIDELINES BELOW



DOME SPACING

DOME SECTION

PLACEMENT GUIDELINES



RAMP RADIAL AND ADJACENT TO CURB

NOTES:

1. THE DETECTABLE WARNING SURFACE SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6 TO 8 INCHES FROM THE FACE OF THE CURB.
2. FOR SKEWED APPLICATIONS DETECTABLE WARNING SHALL BE PLACED SUCH THAT THE DOMES CLOSEST TO THE BACK OF THE CURB ARE NO LESS THAN 0.5" AND NO MORE 3.0" FROM THE BACK OF THE CURB. TRUNCATED DOME SURFACES SHALL BE FABRICATED TO PROVIDE FULL DOMES ONLY.

Revised / Revised 5/7/2003 / Approved	Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering	SIDEWALK RAMP Detectable Warning Truncated Domes	Detail R-4.07

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)

NO.:	DATE	REVISION DESCRIPTION

OWNER:
M/I HOMES OF DC, LLC
21355 RIDGETOP CIRCLE, SUITE 220
STERLING, VA 20166
CONTACT : CINDY HUNTZBERRY
PHONE : 443-677-9803

DEVELOPER:
SOMERWORTH II, L.C.
5704 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

PROJECT
WALDEN WOODS

TAX MAP: 47 GRID: 2 ZONED: PSC
PARCEL: 4, LOTS 1-97; OPEN SPACE LOTS 98 - 102
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE
SITE DETAILS

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7957
www.BohlerEngineering.com

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

PROFESSIONAL ENGINEER NO. 40808

CHECKED BY:	BRR
DESIGNED BY:	BRR
DRAWN BY:	RMS/AVG
PROJECT NO.:	MD112149
DATE:	10/27/14
SCALE:	NOT TO SCALE
DRAWING NO.	34 OF 34

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DPZ 406
DATE 10/08/2014

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Chad Edmondson 11.17.14
CHIEF-DEVELOPMENT ENGINEERING DIVISION DATE
J. Marshall for KS 12-22-14
CHIEF-DIVISION OF LAND DEVELOPMENT DATE
Marsha McLaughlin 12/22/14
DIRECTOR DATE

H:\2011\M112149\DRAWINGS\PLAN SET\SITE DEVELOPMENT PLAN\M112149SD10.DWG PRINTED BY: RROWEN 10.28.14 @ 4:13 PM LAST SAVED BY: R

SDP-13-023