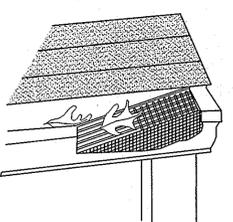


**DRY WELL DETAIL (M-5)**  
NOT TO SCALE



**GUTTER DRAIN FILTER DETAIL**  
NOT TO SCALE

**STORMWATER MANAGEMENT NOTES**

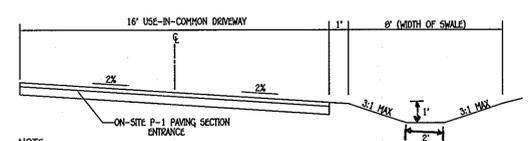
1. STORMWATER MANAGEMENT IS PROVIDED IN ACCORDANCE WITH CHAPTER 5, "ENVIRONMENTAL SITE DESIGN" OF THE 2007 MARYLAND STORMWATER MANAGEMENT DESIGN MANUAL, EFFECTIVE MAY 4, 2010.
2. MAXIMUM CONTRIBUTING ROOF TOP AREA TO EACH DOWNSPOUT SHALL BE 1,000 SQ. FT. OR LESS.
3. DRYWELLS SHALL BE PROVIDED AT LOCATIONS WHERE THE LENGTH OF DISCONNECTION IS LESS THAN 75' AT 5% SIZE AND CONSTRUCTION OF THE DRYWELL SHALL BE IN ACCORDANCE WITH THE DETAIL SHOWN ON THIS SHEET.
4. FINAL GRADING IS SHOWN ON THIS SITE DEVELOPMENT PLAN.

**OPERATION & MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED 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 ENSURE 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 WITHIN A SEVENTY-TWO (72) HOUR 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.

DRYWELL NO.	AREA OF ROOF FEED DOWN SPOUT	VOLUME REQUIRED	VOLUME PROVIDED	AREA OF TREATMENT	L	W	D
1	500 SQ. FT.	64 C.F.	92 C.F.	100%*	9'	8.5'	4'
2	500 SQ. FT.	64 C.F.	92 C.F.	100%*	9'	8.5'	4'
3	500 SQ. FT.	64 C.F.	96 C.F.	100%*	8'	8'	5'
4	500 SQ. FT.	64 C.F.	96 C.F.	100%*	8'	8'	5'
5	500 SQ. FT.	64 C.F.	96 C.F.	100%*	8'	8'	5'
6	500 SQ. FT.	64 C.F.	96 C.F.	100%*	8'	8'	5'

\* AREA OF TREATMENT EXCEEDS THAT REQUIRED. ALL PROPOSED IMPERVIOUS AREAS HAVE BEEN TREATED FOR A MINIMUM OF 1" MEETING ESD TO THE MEP FOR ALL PROPOSED IMPERVIOUS AREAS.



**USE-IN-COMMON DRIVEWAY & SWALE CROSS SLOPE SECTION**  
NOT TO SCALE

**OPERATION & MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED OPEN CHANNEL SYSTEMS - GRASS SWALES, (M-6)**

1. THE OPEN CHANNEL SYSTEM SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHALL BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE FACILITY IS FUNCTIONING PROPERLY.
2. THE OPEN CHANNEL SHALL BE MOWED A MINIMUM OF AS NEEDED DURING THE GROWING SEASON TO MAINTAIN A MINIMUM GRASS HEIGHT OF LESS THAN 6 INCHES.
3. DEBRIS AND LITTER SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
4. VISIBLE SIGNS OF EROSION IN THE OPEN CHANNEL SYSTEM SHALL BE REPAIRED AS SOON AS IT IS NOTICED.
5. REMOVE SILT IN THE OPEN CHANNEL SYSTEM WHEN IT EXCEEDS 25% OF THE ORIGINAL WVD.
6. INSPECT CHECK DAMS TWICE A YEAR FOR STRUCTURAL INTEGRITY. RESTORE CHECK DAMS TO ORIGINAL CONDITION AS APPLICABLE.



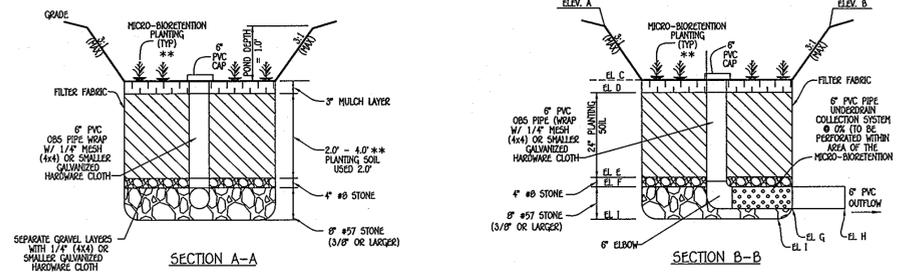
**OPERATION & MAINTENANCE SCHEDULE FOR MICRO-BIORETENTION (M-6)**

- A. THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MIDLAND STORMWATER DESIGN MANUAL, VOLUME I, 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 WIPES.
- 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.

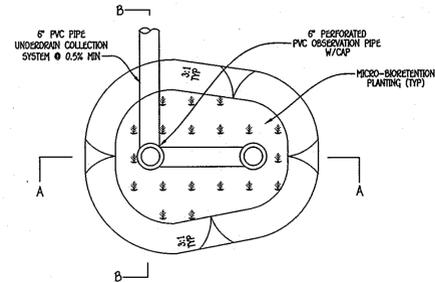
**STORMWATER MANAGEMENT SUMMARY CHART**

AREA = 1.236 ACRES  
RCN = 70  
TARGET PE = 1.8"

AREA ID	SWM TREATMENT PROVIDED
LOT 1	DRYWELLS (M-5), GRASS SWALE (M-6), & ROOFTOP DISCONNECTION (N-1)
LOT 2	DRYWELLS (M-5), GRASS SWALE (M-6), & ROOFTOP DISCONNECTION (N-1)
LOT 3	DRYWELLS (M-5), GRASS SWALE (M-6), & ROOFTOP DISCONNECTION (N-1)
LOT 4	MICRO-BIORETENTION (M-6) & GRASS SWALE (M-6)

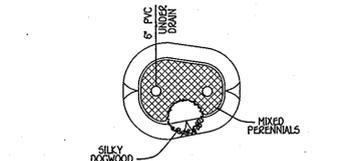


**MICRO-BIORETENTION DETAIL (M-6)**  
NOT TO SCALE



**PLAN**  
NOT TO SCALE

MICRO-BIORETENTION									
BIORETENTION FILTER	A	B	C	D	E	F	G	H	I
1	[293.80]	[293.80]	[292.80]	[292.55]	[290.55]	[290.22]	[289.72]	[289.57]	[289.55]



**MICRO-BIORETENTION PLANTING DETAIL**  
NOT TO SCALE

- MIXED PERENNIALS
- CUT-LEAF CONIFERLOW (1.5' SP.)
- BEEGRASS (1.5' SP.)
- JOE-PYE-MIXED (9' SP.)
- SILKY DOGWOOD

\* SEE PLANT MATERIAL CHARTS FOR QUANTITIES AND SPACING.

MICRO-BIORETENTION PLANT MATERIAL		
QUANTITY	NAME	MAXIMUM SPACING (FT.)
12	MIXED PERENNIALS	1.5 TO 3.0 FT.
1	SILKY DOGWOOD	PLANT AWAY FROM INFLOW LOCATION

**STORMWATER MANAGEMENT DETAILS & NOTES**

MISSION RIDGE, LOTS 1 THRU 4  
ZONED R-12 TAX MAP NO.: 42 GRID NO.: 24  
PARCEL NO.: 507 & 512  
SIXTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
SCALE: AS SHOWN DATE: MAY 17, 2013  
SHEET 4 OF 4

**FISHER, COLLINS & CARTER, INC.**  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
CENTRAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PARK  
ELLCOTT CITY, MARYLAND 21042  
(410) 451-2299

**PROFESSIONAL CERTIFICATION**  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 38386, EXPIRATION DATE: 01/12/2014.  
*Stephanie Inte* 5/17/13  
Signature Of Professional Engineer DATE



**DEVELOPER**  
TIM BURKARD  
BURKARD HOMES  
5300 DORSEY RUN ROAD, SUITE 102  
ELLCOTT CITY, MARYLAND 21042  
(443) 367-0422

**OWNER**  
ARNOLD BENEDICT HYERS  
7025 JONES ROAD  
JESSUP, MARYLAND 20794-9530  
301-785-8931

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Keith Salomon* 6/5/13  
Chief, Division of Land Development Date

*Chad Williams* 6/6/13  
Chief, Development Engineering Division CE Date

PROJECT	SECTION	PARCEL NO.			
MISSION RIDGE, LOTS 1 THRU 4	-	507 & 512			
PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
X / X	24	R-12	42	SIXTH	6069.01
WATER CODE	SEWER CODE				
X	X				