SHEET INDEX SHEET NO. 1 TITLE SHEET ENVIRONMENTAL CONCEPT PLAN 3 PRELIMINARY GRADING, SEDIMENT & EROSION CONTROL PLAN

STORMWATER MANAGEMENT SUMMARY					
AREA ID. E5DV REQUIRED CU.FT.		E5Dv PROVIDED CU.FT.	REMARK5		
SITE	3,076	3,970	DRYWELLS (M-5), MICRO-BIORETENTION (M-6), & NON-ROOFTOP DISCONNECTION (N-2)		
TOTAL	3,876	3,970			

GROSS AREA = 17.16 ACRES SITE AREA / LOD = 4.05 ACRES RCN = 56.4

TARGET Pe = 1.2"		
LEAF 5CREEN SURCI	HARGE *THE EXACT NUMBER OF DRY REQUIRED AND THE LENGTH WILL BE DETERMINED ONCE SPLASH DRAINAGE PATTERNS ARE DE	AND WIDTH DOWNSPOUT
	BLOCK CAP WITH LOCK	
	o FILTER / 8889	12" PERF. P.V.C. PIPE W/CAP. PERF.
6"	FABRIC	AREA 5 TIMES PIPE AREA
	12"	OBSERVATION WELL 4-6 INCH PERFORATED PVC PIPE ON CONCRETE FOOTPLATE
BUILDING FOUNDATION FILTER	5TONE ASTM 0-448 SIZE #1	* FILTER FABRIC — TOP AND SIDES (NON- WOVEN) MSHA CL. "C"
FABRIC 10' MINIMUM		
		A 10° GANIO POTOTILI
	CONCRETE FOOT PLATE	12" SAND, ROTOTILL 1'-0" BELOW TRENCH BOTTOM
CONTRIO	* *	NOTE: TRENCH MAY NOT BE INSTALLED IN FILL.
GROUND. DR	RY WELL DETAIL (M-5)
		_

LOT 4 (DW10)

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 DOWN WITHIN A SEVENTY-TWO (72) HOUR TIME PERIOD, CORRECTIVE E. THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND

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.

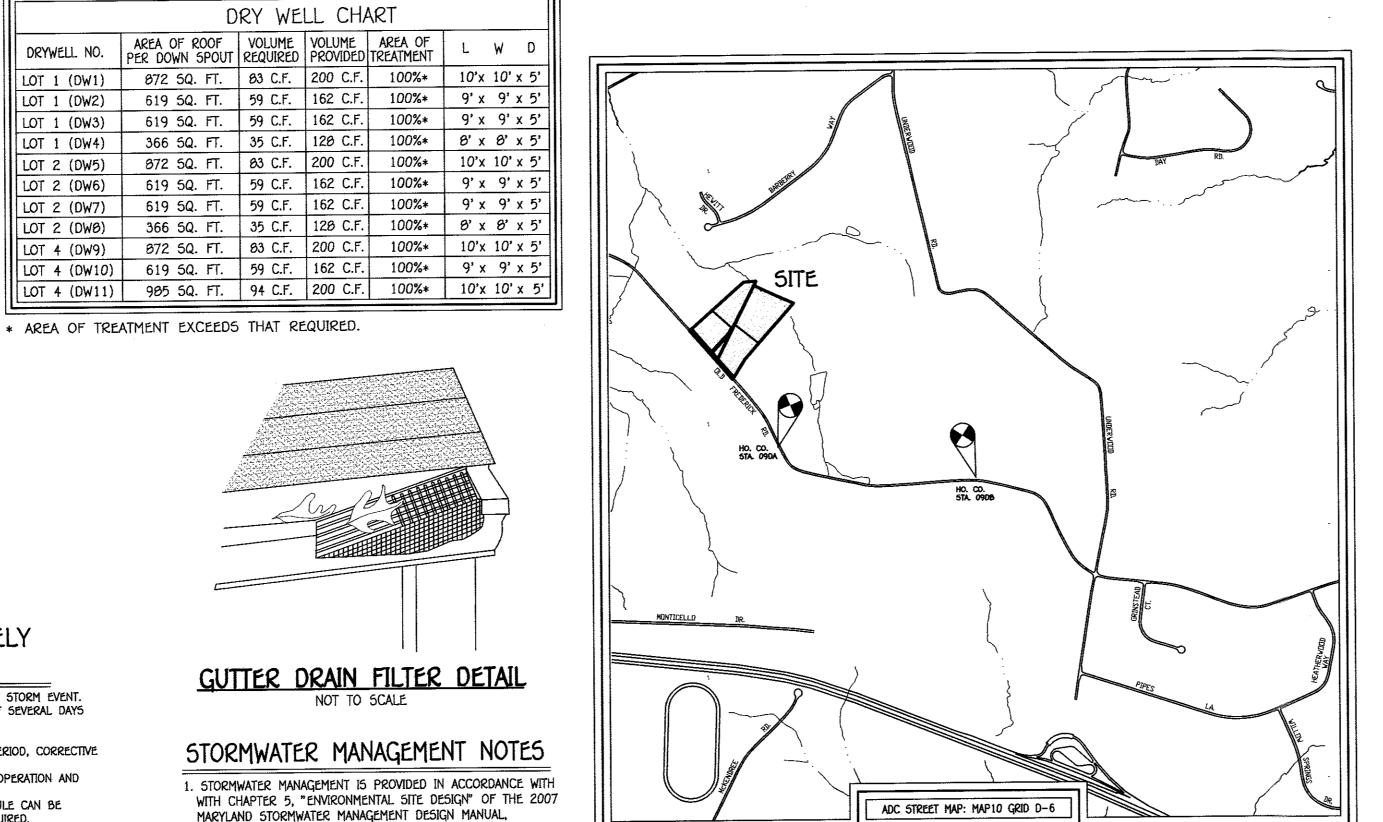
Material	Specification	Size	Notes
Plantings	see Appendix A; Table A.4	n/a	plantings are site-specific
Planting soil [2' to 4' deep]	loamy sand 60-65% compost 35-40% or sandy loam 30% coarse sand 30% compost 40%		USDA soil types loamy sand or sandy loam; clay content <52
Organic Content	Min. 10% by dry weight (ASTM D 2974)		
Mulch	shredded hardwood		aged 6 months, minimum
Pea gravel diaphragm	peā grāvei: ASTM-D-440	No. 8 or No. 9 (1/8 to 3/8)	
Curtain drain	ornamental stone: washed cobbles	stone: 2" to 5"	
Geotextile		n/a	PÉ Type 1 nonwoven
Gravel (underdrains and infiltration berms)	AASHTO M-43	No. 57 or No. Aggregate (3/8" to 3/4")	
Underdrain piping	F 750, Type P5 20 or AASHTO M-270	4" to 6" rigid schedule 40 PVC or 5DR35	Slotted or perforated pipe; 3/6" pert. © 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes. Perforated pipe shall be wrapped with 1/4 inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3; f = 3500 psi at 20 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 5tate or local standards requires design drawings sealed and approved by a professional structural engineer licensed in the 5tate 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.

REVISION

ENVIRONMENTAL CONCEPT PLAN

FIVE HILLS FARM LOTS 1 THRU 4

PARCEL No. 117 TAX MAP No. 9 GRID No. 7 FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND



VICINITY MAP

BENCH	MARK INFORMATION	
B.M.# 09DA-	HOWARD COUNTY CONTROL STATION #09AD - HORIZONTAL - NAD '83) N 605,464.805 E 1,314,516.990 ELEVATION = 570.832 - VERTICAL - (NAVD '88)	
B.M.# 090B -	- HOWARD COUNTY CONTROL STATION #09DB - HORIZONTAL - (NAD '83) N 605,072.376 E 1,316,990.470 ELEVATION = 609.200 - VERTICAL - (NAVD '80)	

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 MARYLAND STORMWATER DESIGN MANUAL VOLUME II, TABLE A.4.1 AND 2.

THE OWNER SHALL PERFORM A PLANT IN THE SPRING AND IN THE FALL 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 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 D. THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER

SITE ANALYSIS DATA CHART

TOTAL AREA OF THIS SUBMISSION = 17.16 AC. ±. LIMIT OF DISTURBED AREA = 4.05 Ac. ± PRESENT ZONING DESIGNATION = RC-DEO (PER 10/06/2013 COMPREHENSIVE ZONING PLAN) PROPOSED USE: RESIDENTIAL PREVIOUS HOWARD COUNTY FILES: WP-16-109.

TOTAL AREA OF FLOODPLAIN LOCATED ON SITE = 0.37 AC± TOTAL AREA OF SLOPES IN EXCESS OF 15% = 0.85 AC (0.78 AC+ 15% TO 25%, 0.07 AC± 25% OR GREATER) H. TOTAL AREA OF WETLANDS (INCLUDING BUFFER, LOCATED OUTSIDE OF

THE FLOODPLAIN) = 1.00 AC.+ TOTAL AREA OF STREAM (INCLUDING BUFFER, LOCATED OUTSIDE OF THE FLOODPLAIN) = 1.26 AC.± TOTAL AREA OF EXISTING FOREST = 7.2 AC+ (EXCLUDES FLOODPLAIN) TOTAL AREA OF FOREST TO BE RETAINED = 3.70 AC+

TOTAL GREEN OPEN AREA = 16.42 AC+ TOTAL IMPERVIOUS AREA = 0.74 AC± TOTAL AREA OF ERODIBLE SOILS = 2.34 AC.+

16264/319

-482 PROPOSED CONTOUR EXISTING 2' CONTOURS +362.5-490- EXISTING 10' CONTOURS GLB2 SOILS LINES AND TYPE LIMITS OF DISTURBANCE PROPOSED TREELINE EXISTING TREELINE 15% TO 24.9% STEEP SLOPES (ERODIBLE SOILS) EXISTING & PROPOSED PAVING 25% AND GREATER STEEP SLOPES (ERODIBLE SOILS) BORING (PERC) TEST HOLE **)**5033 100 YEAR PUBLIC FLOODPLAIN, DRAINAGE AND UTILITY EASEMENT EROSION CONTROL MATTING --- 55F--- SUPER SILT FENCE 25' WETLAND BUFFER STABILIZES CONSTRUCTION ENTRANCE STREAM BANK BUFFER ---- Drainage area divide 100 YEAR FLOODPLAIN LINE TP TREE PROTECTION LIMIT OF EXISTING WETLANDS SPECIMEN TREE EXISTING CENTERLINE OF STREAM + + + FOREST CONSERVATION EASEMENT (REFORESTATION FOREST CONSERVATION EASEMENT (RETENTION)

LEGEND

DESCRIPTION

DESCRIPTION

GENERAL NOTES

SYMBOL

1. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.

THE CONTRACTOR SHALL NOTIFY (MISS UTILITY) AT 1-800-257-7777 AT LEAST 40 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE. 3. BOUNDARY SHOWN HEREON IS BASED ON FIELD RUN MONUMENTED BOUNDARY SURVEY PERFORMED BY FISHER, COLLINS & CARTER, INC. DATED AUGUST, 2015. TOPOGRAPHY SHOWN HEREON IS BASED ON HOWARD COUNTY GIS TOPOGRAPHY AT 5' CONTOUR INTERVAL INTERPOLATED FOR 2' CONTOUR INTERVAL AND SUPPLEMENTED WITH TOPOGRAPHIC SURVEY PERFORMED BY FISHER, COLLINS & CARTER, INC. IN JUNE, 2015 ALONG OLD FREDERICK ROAD ALONG WITH FIELD LOCATION OF THE EXISTING HOUSE AND EXISTING WELLS.
THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANTING WELLS.

COORDINATE SYSTEM, HOWARD COUNTY MONUMENT NOS. 09DA AND 09DB WERE USED FOR THIS PROJECT. PREVIOUS DPZ FILE NUMBERS: WP-16-109. STORM WATER MANAGEMENT IS IN ACCORDANCE WITH THE M.D.E. STORM WATER DESIGN MANUAL, VOLUMES I & II, REVISED 2009. NON-STRUCTURAL

PRACTICES IN ACCORDANCE WITH CHAPTER 5 ARE BEING UTILIZED.
THIS PROPERTY IS LOCATED OUTSIDE THE METROPOLITAN DISTRICT. LOTS TO BE SERVED PRIVATE WATER AND PRIVATE SEWERAGE.

7. IHIS PROPERTY IS LOCATED OUTSIDE THE METROPOLITAN DISTRICT. LOTS TO BE SERVED PRIVATE WATER AND PRIVATE SEWERAGE.

3. ANY DAMAGE TO THE COUNTY'S RIGHT-OF-WAY SHALL BE CORRECTED AT THE DEVELOPER'S EXPENSE.

4. THE SUBJECT PROPERTY IS ZONED RC-DEO (PER DATE 10/06/2013 COMPREHENSIVE ZONING PLAN.

5. THIS AREA DESIGNATES A PRIVATE SEWERAGE EASEMENT OF 10,000 SQUARE FEET AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT FOR INDIVIDUAL SEWERAGE DISPOSAL IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWERAGE IS THE ENVIRONMENT OF THE SECOND THE SEMERATE SHAPE ASSESSMENTS SHAPE ASSESSMENT SHAPE AVAILABLE. THESE EASEMENTS SHALL BECOME NULL AND VOID UPON CONNECTION TO A PUBLIC SEWERAGE SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE THE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE SEWERAGE EASEMENT. RECORDATION OF A MODIFIED SEWERAGE EASEMENT SHALL NOT BE

11. NO CEMETERIES OR HISTORIC STRUCTURES EXIST ON-SITE. 12. STEEP SLOPES, 100 YEAR FLOODPLAIN, STREAM(S), STREAM BUFFERS, WETLAND(S), WETLAND BUFFER(S), AND FOREST STAND DELINEATION HAVE BEEN

13. SOILS SHOWN HEREON ARE BASED ON NRCS WEBSOIL SURVEY. SITE IS LOCATED ON HOWARD COUNTY SOILS MAP #4. 14. NO CLEARING, GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS, WETLAND BUFFERS, STREAM, STREAM BUFFERS, FLOODPLAIN, AND FOREST CONSERVATION EASEMENT AREAS.

15. LANDSCAPING WILL BE PROVIDED AT THE FINAL PLAN STAGE OF THIS PROJECT, TREES SHOWN ARE EXISTING. 16. FOREST CONSERVATION EASEMENTS HAVE BEEN SHOWN TO MEET THE REQUIREMENT OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION MANUAL RETENTION OF 3.70 ACRES OF FOREST, REFORESTATION OF 1.63 ACRES, AND A FEE-IN-LIEU OF 0.12 ACRES OF REFORESTATION I

THE PROPOSED MICRO-BIORETENTION LOCATION. 18. APPROVAL OF THIS ECP DOES NOT CONSTITUTE AN APPROVAL OF ANY SUBSEQUENT AND ASSOCIATED SUBDIVISION PLAN/PLAT AND/OR SITE

BUFFERS, AND FOREST CONSERVATION EASEMENTS TO BE LOCATED ON THE LOT OR PARCEL. APPROVAL IS SUBJECT TO THE

DEVELOPMENT PLAN AND/OR RED-LINE REVISION PLAN. REVIEW OF THIS PROJECT FOR COMPLIANCE WITH THE HOWARD COUNTY SUBDIVISION AND LANG DEVELOPMENT REGULATIONS AND THE HOWARD COUNTY ZONING REGULATIONS SHALL OCCUR AT THE SUBDIVISION PLAN/PLAT AND/OR SITE DEVELOPMENT PLAN STAGES AND/OR RED-LINE REVISION PROCESS. THE APPLICANT AND CONSULTANT SHOULD EXPECT ADDITIONAL AND MORE DETAILED REVIEW COMMENTS (INCLUDING COMMENTS THAT MAY ALTER THE OVERALL SITE DESIGN) AS THIS PROJECT PROGRESSES THROUGH THE PLAN REVIEW PROCESS. 19. WP-16-109 WAS APPROVED ON APRIL 11, 2016 WAIVING SECTION 16.120(B)(4)(iii)(b) WHICH STATES THAT A LOT OR BUILDABLE PRESERVATION PARCEL MUST BE 10 ACRES OR GREATER IN SIZE IN ORDER TO ALLOW FLOODPLAINS, WETLANDS, STREAMS, THEIR

(1) NO GRADING, REMOVAL OF VEGETATIVE COVER AND TREES, PAVING, AND NEW STRUCTURES ARE PERMITTED WITHIN THE 100 YEAR FLOODPLAIN, WETLANDS, STREAMS, OR THEIR BUFFERS, IN ACCORDANCE WITH SECTION 16.116 OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS. THE BUILDING RESTRICTION LINES MUST BE ESTABLISHED AS 35 FEET FROM THE EDGE OF

ANY ENVIRONMENTAL BUFFER OR FEATURE LOCATED WITHIN THE LOT. (2) FOREST CONSERVATION EASEMENTS WILL NOT BE PERMITTED WITHIN 100 FEET OF THE PROPOSED HOUSES TO AVOID

ENCROACHMENTS AND TO ALLOW FOR USABLE YARDS. (3) THE PROPOSED REFORESTATION EASEMENTS SHALL BE LOCATED ADJACENT TO THE ENVIRONMENTAL FEATURES IN THE REAR OF THE PROPERTY. NO EASEMENTS FORE REFORESTATION OR AFFORESTATION WILL BE PERMITTED IN THE AREAS OF THE PROPERTY WHERE DEVELOPMENT IS PROPOSED. RELOCATE THE PROPOSED REFORESTATION EASEMENTS TO ENCOMPASS THE STREAM AND WETLAND BUFFERS AND TO PROVIDE A CONTIGUOUS FORESTED RIPARIAN BUFFER ALONG THE REAR OF THE PROPERTY.

DESIGN NARRATIVE

604002

FOURTH

This report will demonstrate how the criteria set forth in the Maryland Stormwater Design Manual, Volumes I and II (effective October 2000, revised May 2009) will be satisfied on this project. The goal or creating hydrology similar to that of "Woods in Good Condition" will be accomplished through the use of the practices contained within Chapter 5 of said manual. The achievement of this goal will remove the requirement of providing Channel Protection Volume.

13880 Old Frederick Road is zoned RC-DEO and is located on Tax Map 9. Parcel No. 117 of the Howard County, Maryland Tax Map Database System. The site has an existing house, barn, pool, and sheds and partially forested Streams, wetlands, their buffers, and floodplain exist on the property. Retention of existing trees and reforestation are proposed to meet Forest Conservation requirements for the northern portion of the property. The remaining third flows in a northwest direction toward Old

the property. The proposed houses will be served by private well and septic. The runoff from the lots drains mainly from south to north/northwest toward the existing floodplain running east to west through Frederick Road. Drywells (M-5), micro-bioretention (M-6), and non-rooftop disconnection (N-2) will be utilized to treat majority rooftop and driveway runoff. Per the 2004 Web Soil Survey, soils on-site consist of "GgB" & "GgC", Glenely loam & "MaC" & "MaD", Manor loam, type B soils, "GmB", Glenville silt loam and "GnB" Glennville-Baile silt loam, type C soils, and "Ha", Hatboro-Codorus silt loam, type D

Environmentally sensitive features such as wetlands, streams, their buffers, steep and moderately steep slopes, and floodplain do exist on-site.

II. Maintenance of Natural Flow Patterns: Nature flow patterns will be maintained. Existing and proposed runoff flows mostly toward the southwestern to northwestern portions of the site and will continue to flow in those directions.

III. Reduction of impervious areas through better site design, alternative surfaces and Nonstructural Practices A common driveway is proposed to provide access to the proposed houses. The design will make use of non-rooftop disconnection (N-2) and micro-bioretention (M-6) to treat majority of runoff from the

IV. Integration of Erosion and Sediment Controls into Stormwater Strategy: Silt Fence and Super Silt Fence will be utilized to provide erosion and sediment control. There is no direct discharge of runoff directly to a stream. All site runoff will discharge to the existing ground prior to entering the existing stream channel in the northern portion of the property. Only Public 100 year floodplain, drainage & utility easement will be required. It is anticipated that all cut will be utilized on-site for construction at time of Grading Plan.

V. Implementation of ESD Planning Techniques and practices to the Maximum Extent Practicable (MEP) The full required ESD volume is being provided.

VI. Request for a Design Manual Waiver: No Waivers related to stormwater management are being requested in this project.

APPROVED: HOWARD COUNTY DEPARTM	ENT OF PLAN	NING AND ZO	NING
Chief, Development Engineering Division	es on A	,	8.17.16 Date 8.17.16 Date
PROJECT FIVE HILLS FARM		SECTION -	PARCEL NO.
DEED BLOCK NO ZONE	TAX /70NF	FLEC. DIST	CENSUS TR.

RC-DEO

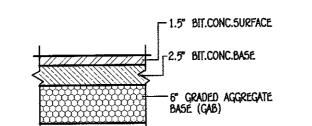
FIVE HILLS FARM

TITLE SHEET

LOTS 1 THRU 4

ZONED RC-DEO TAX MAP No. 9 GRID No. 7 PARCEL No. 117 FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND SCALE: AS SHOWN DATE: JUNE, 2016 SHEET 1 OF 3

ECP-16-023



P-1 DRIVEWAY PAVING SECTION

EFFECTIVE MAY 4, 2010.

SHALL BE 1,000 SQ. FT. OR LESS.

THE DETAIL SHOWN ON THIS SHEET.

2. MAXIMUM CONTRIBUTING ROOF TOP AREA TO EACH DOWNSPOUT

OF DISCONNECTION IS LESS THAN 75' AT 5%. THE SIZE AND

4. FINAL GRADING IS SHOWN ON THIS SITE DEVELOPMENT PLAN.

3. DRYWELLS SHALL BE PROVIDED AT LOCATIONS WHERE THE LENGTH

CONSTRUCTION OF THE DRYWELL SHALL BE IN ACCORDANCE WITH

PROFESSIONAL CERTIFICATION 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 Myprame Just

OWNER / DEVELOPER JOE & JENNIFER HILL P.O. BOX 189 WOODBINE MD 21797 410-339-7583

IFISHER, COLLINS & CARTER, INC. TVIL ENGINEERING CONSULTANTS & LAND SURVEYORS

ntennial square office park — 10272 Baltimore national pike

