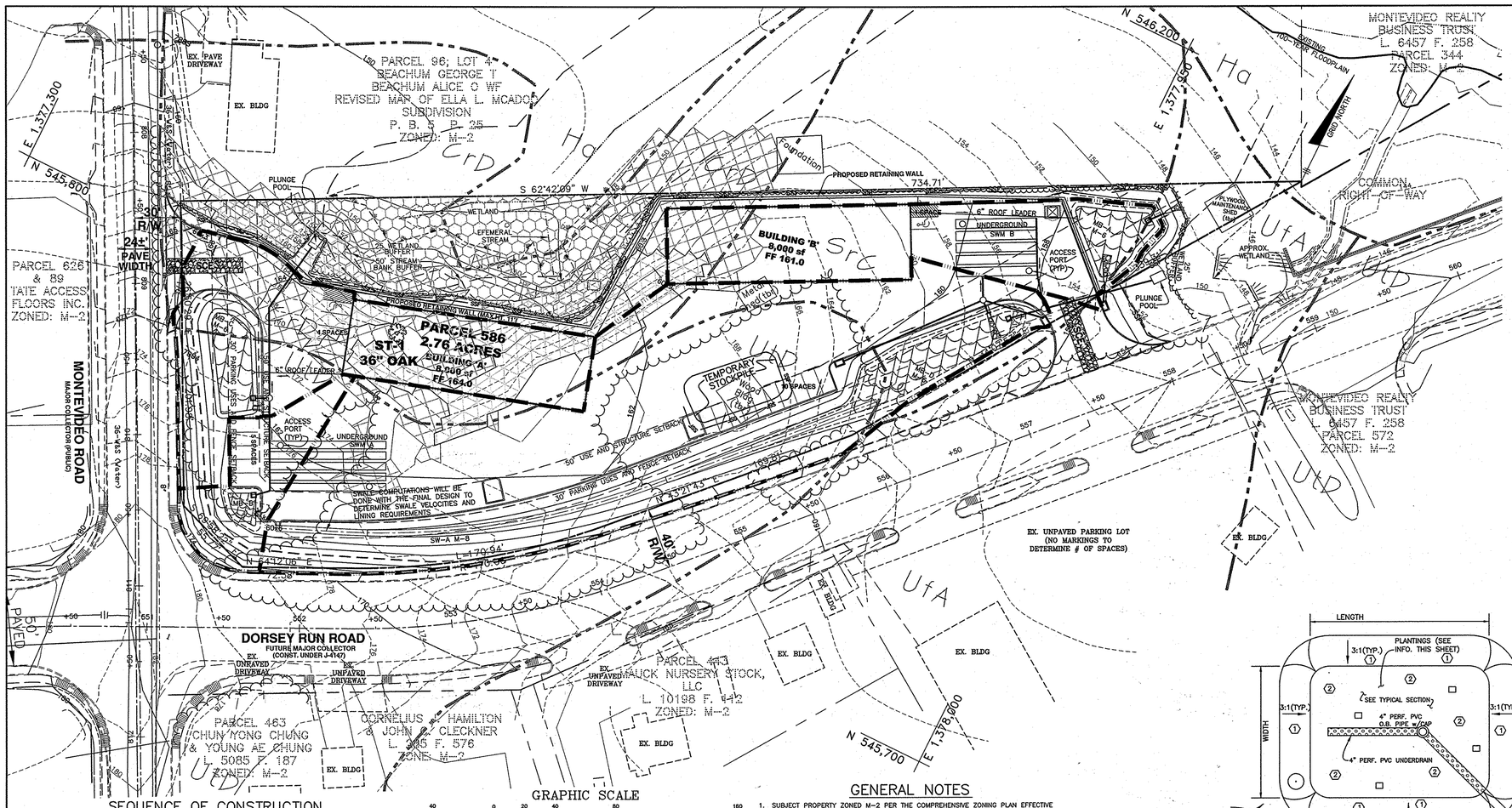


LEGEND

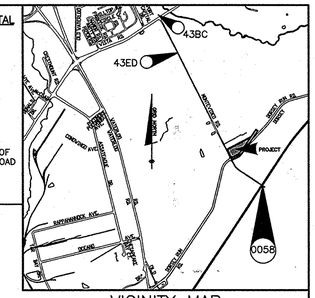
- 700 — EXISTING CONTOURS
- EXISTING TREELINE
- EXISTING CL STREAM
- 100 YEAR FLOODPLAIN
- 50' STREAM BUFFER
- N62°48'10"E 196.37' — PROPERTY BOUNDARY
- UtP — SOILS DELINEATION
- 15%–25% SLOPES
- STEEP SLOPES 25% AND GREATER
- FACILITY DRAINAGE AREA
- MICRO–FACILITIES
- LIMIT OF DISTURBANCE
- SSF — SUPER SILT FENCE
- SCE — STABILIZED CONSTRUCTION ENTRANCE
- A — TIME OF CONCENTRATION PATH DESIGNATIONS
- CONCEPTUAL FOREST CONSERVATION EASEMENT

BENCHMARKS NAD'83 HORIZONTAL

HO.CO. #43BC
STAMPED DISK SET ON TOP OF CONCRETE BASE.
N 549,592.091' E 1,375,466.62'

HO. CO. #43ED
STAMPED DISK SET ON TOP OF CONCRETE BASE
N 548,525.002' E 1,376,022.96'

HO. CO. #0058
RIVET IN CONCRETE HEADWALL ON THE NORTH SIDE OF MONTVIDEO ROAD EAST OF B&O R.R. TRACKS ALONG MONTEVIDEO ROAD
N 544,813.612' E 1,378,390.04'



VICINITY MAP
SCALE: 1" = 2000'
ADC MAP 34 GRID F8

SEQUENCE OF CONSTRUCTION

NOTIFY SEDIMENT CONTROL DIVISION 48 HOURS PRIOR TO START OF CONSTRUCTION

1. OBTAIN GRADING PERMIT. (DAY 1)
2. INSTALL STABILIZED CONSTRUCTION ENTRANCE AND SUPER SILT FENCE. (DAY 2–4)
3. UPON APPROVAL OF HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, CLEAR AND GRUB ALONG RETAINING WALL, AND CONSTRUCT WALL. (DAY 5–12)
4. CLEAR AND GRUB REMAINDER OF SITE. (DAY 13–16)
5. BRING SITE TO GRADE, USING CUT MATERIAL TO FILL BEHIND WALL. (DAY 17–31)
6. FINE GRADE PARKING AREAS, PLACING SUBGRADE STONE AND FIRST PAVEMENT LIFT. (DAY 32–38)
7. CONSTRUCT BUILDINGS. (DAY 39–90)
8. INSTALL FINAL PAVEMENT. (DAY 91–94)
9. UPON STABILIZATION OF CONTRIBUTING AREAS, CONSTRUCT BIORETENTION FACILITIES. (DAY 95–99)
10. UPON APPROVAL OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, REMOVE ALL REMAINING SEDIMENT CONTROL DEVICES, AND STABILIZED DISTURBED AREAS IN ACCORDANCE THE PERMANENT SEEDBED NOTES. (DAY 100–102)

SITE ANALYSIS DATA/TABULATION

A)	TOTAL PROJECT AREA	2.76± AC.
B)	AREA OF WETLANDS AND BUFFER	0.28 AC.
C)	AREA OF 100–YR. FLOODPLAIN	0.00 AC.
D)	AREA OF FOREST	2.44 AC.
E)	AREA OF STEEP SLOPES 25% OR GREATER	0.33 AC.
F)	AREA OF DEDICATION	0.00 AC.
G)	ERODIBLE SOILS	1.62 AC.
H)	AREA OF PLAN SUBMISSION	2.76± AC.
I)	LIMIT OF DISTURBED AREA	2.57± AC.
J)	GREEN OPEN AREA	1.11± AC.
K)	PRESENT ZONING DESIGNATION	M–2
L)	PROPOSED USES FOR THE SITE: COMMERCIAL/INDUSTRIAL	
M)	IMPERVIOUS COVER	59.5%

SOILS LEGEND

MAP SYMBOL	SOIL GROUP	"K" FACTOR	SOIL TYPE
CrD	C	0.37	CROOM AND EVESBORO SOILS, 10 TO 15 PERCENT SLOPES
Ha	D	0.37	HATBORO–CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES
SrC	B	0.37	SASSAFRAS AND CROOM SOILS, 5 TO 10 PERCENT SLOPES
UtD	D	0.28	URBAN LAND – UDORTHENTS COMPLEX, 0 TO 15 PERCENT SLOPES
UfA	D	0.24	URBAN LAND–FALLSINGTON COMPLEX, 0 TO 2 PERCENT SLOPES

TAKEN FROM NRCS WEB SOIL SURVEY, JUNE 2014, HOWARD SOIL SURVEY MAP NO. 25

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3/23/15

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 3.30.15

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

PROJECT:	7525 Montevideo Road	DATE:	08/13/14
	DETAILED SIZING OF PRACTICES		
	Pe: 1.9 inches		

Rev:
Rev has been calculated for the drainage area, then averaged by the total of the filter areas of the micro-bioretention facilities. A single depth of Rev storage will be applied to all MBR facilities.

Total Required Rev:	767 cf		
Total filter area:	5366 sf		
Depth of Rev storage for each MBR:	0.14 ft, or	1.7 inches - use	2"
Total Rev provided in MBR:	894 cf		

Drainage Area MB-A:
Micro-Bioretention (M-8)

		Storage Computation:					
		Elevation	Area	Average Area	Contour Interval	Incremental Volume	Total Volume
Total Drainage Area:	16261 s.f.						
Impervious Area:	13763 s.f.	(ft)	(sf)	(sf)	(ft)	(ft^3)	(ft^3)
Impervious:	85%	152.00	1453				0
Rv =	0.811			1702.5	1.00	1702.5	
ESDV =	2095.2 c.f.	153.00	1952				1703
75% Reqd Storage:	1571	Min. Area of Filter (@ 2% DA):				325.22	OK

Drainage Area MB-B:
Micro-Bioretention (M-6)

		Storage Computation:					
		Elevation	Area	Average Area	Contour Interval	Incremental Volume	Total Volume
Total Drainage Area:	5964 s.f.						
Impervious Area:	3323 s.f.	(ft)	(sf)	(sf)	(ft)	(ft^3)	(ft^3)
Impervious:	56%	161.60	291				0
Rv =	0.551			411.5	1.00	411.5	
ESDV =	522.4 c.f.	162.60	532				412
75% Reqd Storage:	392	Min. Area of Filter (@ 2% DA):				119.28	OK

Drainage Area MB-C:
Micro-Bioretention (M-6)

		Storage Computation:					
		Elevation	Area	Average Area	Contour Interval	Incremental Volume	Total Volume
Total Drainage Area:	19818 s.f.						
Impervious Area:	14768 s.f.	(ft)	(sf)	(sf)	(ft)	(ft^3)	(ft^3)
Impervious:	75%	161.00	1452				0
Rv =	0.721			1715.5	1.00	1715.5	
ESDV =	2268.6 c.f.	162.0	1979				1716
75% Reqd Storage:	1701	Min. Area of Filter (@ 2% DA):				396.36	OK

Drainage Area SW-A, MBR-D:

		Swale Computations			
		Swale Slope:	0.03	ft/ft	
Total Drainage Area:	53752	Swale length:	385	ft	
Impervious Area:	34387	Bottom width:	4		
Impervious:	64%	Side Slopes:	3:1		
Rv =	0.626	Average Depth:	1.00	ft, or	12.0 inches
Required ESDV=	5342.7 c.f.	Cross Sec. Area:	7.0		
		ESDV Provided:	2693.3		

MBR Storage Computation:

		Elevation	Area	Average Area	Contour Interval	Incremental Volume	Total Volume
Swale ESDv treated:	2693	(ft)	(sf)	(sf)	(ft)	(ft^3)	(ft^3)
MBR ESDv Treated:	3403	155.00	2170				0
		156.00	2934	2552.0	1.00	2552.0	
Total Treated:	6096						2552
		Min. Area of Filter (@ 2% DA):				1075.04	OK
						Total ESDv provided:	11202

GENERAL NOTES

1. SUBJECT PROPERTY ZONED M–2 PER THE COMPREHENSIVE ZONING PLAN EFFECTIVE 10–6–2013.
2. THIS PROJECT IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE ZONING REGULATIONS EFFECTIVE APRIL 13, 2004.
3. PROJECT BOUNDARY AND TOPOGRAPHY WITHIN THE SUBDIVISION AREA ARE BASED ON FIELD RUN BOUNDARY SURVEY AND TOPO PERFORMED BY BENCHMARK ENGINEERING, INC. DATED JUNE, 2007.
4. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS, STREAM, OR THEIR REQUIRED BUFFERS UNLESS DEEMED NECESSARY BY THE DEPARTMENT OF PLANNING AND ZONING.
5. THERE IS NO 100–YEAR FLOODPLAIN ON THIS PROPERTY.
6. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO CEMETERIES LOCATED ON THIS SITE.
7. THE FOREST CONSERVATION ACT OBLIGATION FOR THIS PROJECT WILL BE MET BY A COMBINATION OF ON–SITE AFFORESTATION AND PAYMENT OF FEE–IN–LIEU.
8. THERE ARE STEEP SLOPES (25% OR GREATER) ON THIS SITE; HOWEVER, THERE ARE NO AREAS IN EXCESS 20,000 S.F. WITHIN THE PLANNED DISTURBANCE AREAS, AND THEREFORE NO REGULATED STEEP SLOPES WITHIN THE PROJECT AREA.
9. A WETLAND DELINEATION WAS PERFORMED BY ECO–SCIENCE PROFESSIONALS IN MAY 2007. THE HORIZONTAL INFORMATION IS INCLUDED ON THIS PLAN.
10. A FOREST STAND DELINEATION WAS PERFORMED FEBRUARY, 2012 BY BENCHMARK ENGINEERING, INC., AND WAS UPDATED AUGUST 2014.
11. PREVIOUS DPZ FILES: ECP–12–039 (VOIDED).
12. APPROVAL OF THIS ECP DOES NOT CONSTITUTE AN APPROVAL OF ANY SUBSEQUENT AND ASSOCIATED SUBDIVISION PLAN, SITE DEVELOPMENT PLAN, OR GRADING OR BUILDING PERMIT PLAN. REVIEW OF THIS PROJECT FOR COMPLIANCE WITH THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE HOWARD COUNTY ZONING REGULATIONS SHALL OCCUR AT THE SUBDIVISION, SITE DEVELOPMENT PLAN, OR GRADING AND BUILDING PERMIT STAGES.
13. QUANTITY CONTROL WILL BE PROVIDED FOR THE 10–YEAR AND 100–YEAR STORMS IN UNDERGROUND RETENTION FACILITIES, WHICH ARE SHOWN CONCEPTUALLY IN PLAN VIEW.

DESIGN NARRATIVE:

The site was analyzed as woods in good condition and a target RCN was determined. A target rainfall depth treatment (Pe) was determined based on the measured impervious areas and HSG soil types. The target Pe for this site is 1.9 inches. The target Pe was treated using Environmental Site Design practices as outlined in Chapter 5 of the 2000 Maryland Stormwater Design Manual, as amended by Maryland's Stormwater Management Act of 2007. The selected methods include Bio–Swale (M–8) and Micro–bioretention (M–6) facilities.

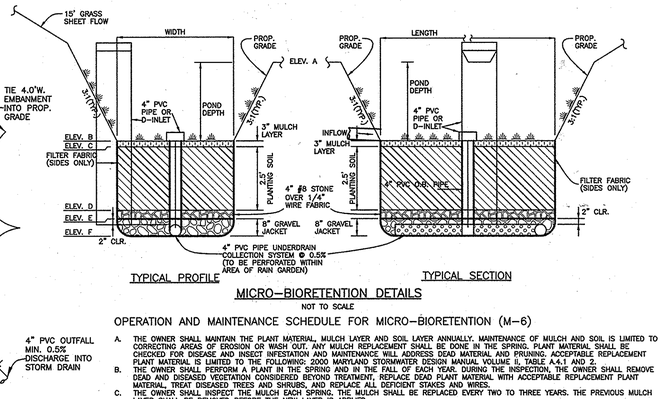
This site is bounded to the north by a stream, with associated wetlands and off–site floodplain. In addition, this site has some areas of steep slopes. To protect these natural resources, it is important to delay release of stormwater runoff from new impervious areas to avoid increasing peak runoffs, and to adequately treat the stormwater to avoid damage to sensitive species. The design incorporates bio–swales and micro–bioretention facilities to treat stormwater runoff and to delay stormwater release. In addition, construction on the steep slope areas will be accomplished by retaining walls, to avoid creation of steeper slopes while making maximum use of the site. The outfalls for the facilities are placed in several locations to mimic natural flow patterns.

Sediment and erosion controls have been designed based on the 2011 Maryland Specifications for Soil Erosion and Sediment Control. Erosion control matting and super silt fence will be used to prevent runoff containing unacceptable levels of TSS from leaving the site and entering the adjacent stream and wetlands during the construction. It will be the obligation of the contractor to install, inspect and maintain these practices.

The target Pe for this site is 1.9 inches. By using Environmental Site Design practices as outlined in Chapter 5 of the 2000 Maryland Stormwater Design Manual as amended by Maryland Stormwater Management Act of 2007, full treatment of the target Pe of 1.9 was achieved, fully addressing the stormwater management requirements.

A Waiver Petition will be submitted requesting approval for the removal of one specimen tree.

SCHEMATIC PLAN VIEW



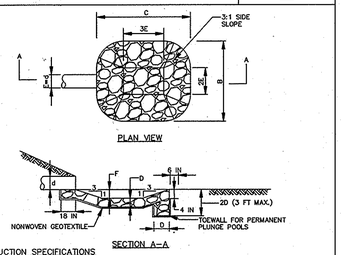
TYPICAL PROFILE — TYPICAL SECTION

MICRO–BIORETENTION DETAILS
NOT TO SCALE

OPERATION AND 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.
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.

DETAIL D-4-2 PLUNGE POOL — STANDARD SYMBOL: PP



SECTION A–A

CONSTRUCTION SPECIFICATIONS

1. USE SPECIFIED CLASS OF RIPRAP.
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H–1 MATERIALS, AND PROTECT FROM PUNCHING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE.
3. PREPARE THE SUBGRADE FOR THE PLUNGE POOL TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
4. EMBED THE GEOTEXTILE A MINIMUM OF 4 INCHES AND EXTEND THE GEOTEXTILE A MINIMUM OF 6 INCHES BEYOND THE EDGE OF THE SCOUR HOLE.
5. STONE FOR THE PLUNGE POOL MAY BE PLACED BY EQUIPMENT. CONSTRUCT TO THE FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. DELIVER AND PLACE THE STONE FOR THE PLUNGE POOL IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENEOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE STONE FOR THE PLUNGE POOL IN A MANNER TO PREVENT DAMAGE TO THE GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
6. AT THE PLUNGE POOL OUTLET, PLACE THE STONE SO THAT IT MEETS THE EXISTING GRADE.
7. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

NO.	DATE	REVISION

BENCHMARK
ENGINEERING
ENGINEERS & LAND SURVEYORS & PLANNERS
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315 ▲ ELLICOTT CITY, MARYLAND 21043
(P) 410–465–6105 (F) 410–465–6644
WWW.BEI–CIVILENGINEERING.COM

STATE OF MARYLAND — JULIE A. MILLER — No. 28378 — PROFESSIONAL ENGINEER — 8-7-15

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. 28378, Expiration Date: 1-1-2017.

OWNER/DEVELOPER:
CROSSROADS ROCK, LLC.
6800 DEERPATH ROAD, SUITE 100
ELKRIDGE, MD 21075
(410) 579–2442

PROJECT: **DORSEY RUN CENTER**
7525 MONTEVIDEO ROAD

LOCATION: TAX MAP 43 PARCEL 586
1ST ELECTION DISTRICT
ZONED: M–2
HOWARD COUNTY, MARYLAND

TITLE: **ENVIRONMENTAL CONCEPT PLAN**

DATE: MARCH, 2015 — PROJECT NO. 2039

DRAFT: AM | DESIGN: AM | CHECK: CAM | SCALE: AS SHOWN | SHEET 1 OF 1

ECP–15–016