

SHEET INDEX	
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	ENVIRONMENTAL CONCEPT & EXISTING CONDITIONS PLAN
3	CONCEPTUAL GRADING & SEDIMENT CONTROL PLAN

SOILS LEGEND			
SOIL	NAME	CLASS	R VALUE
UcB	Urban land-Chillum-Beltsville complex, 0 to 5 percent slopes	D	--

HOWARD COUNTY SOILS MAP PAGE 19; SAVAGE NE

STORMWATER MANAGEMENT DESIGN NARRATIVE

INTRODUCTION:
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 OF 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.

GENERAL SITE CONDITIONS:
DANIEL PROPERTY IS LOCATED WITH FRONTAGE BOTH ON GROVE ANGLE ROAD AS WELL AS WATERLOO ROAD. THE EXISTING DWELLING AND SHED ARE TO REMAIN ON LOT 1 ALSO KNOWN AS 5020 WATERLOO ROAD. PROPERTY IS ZONED R-20 AND LOCATED ON TAX MAP 31, GRID 13, PARCEL NO. 48 OF THE HOWARD COUNTY, MARYLAND TAX MAP DATABASE SYSTEM. LOT WILL UTILIZE PUBLIC WATER AND SEWER SYSTEMS. THE PROPERTY IS LOCATED IN THE ELICOTT CITY AREA OF HOWARD COUNTY, DRAINS TO LITTLE PATUXENT RIVER WATERSHED (02131109). THE SITE DRAINS FROM EAST TO WEST TO A CULVERT PIPE UNDER GROVE ANGLE ROAD. THIS PROPERTY IS RELATIVELY RECTANGULAR IN SHAPE. NO FOREST EXISTS ON-SITE. THE WEBB SOIL SURVEY SHOWS THAT SOILS ON THE SITE TO CONSIST OF URBAN LAND - CHILLUM - BELTSVILLE COMPLEX (UCB), TYPE "D" SOILS. THE RUNOFF FROM THE ROOF OF THE PROPOSED HOUSE, RUNOFF FROM THE DRIVEWAY, AND FRONT LAWN WILL BE TREATED BY A MICRO-BIORETENTION (M-6) FACILITY.

- I. NATURAL RESOURCE PROTECTION:**
ENVIRONMENTALLY SENSITIVE AREAS DO NOT EXIST ON-SITE.
- II. MAINTENANCE OF NATURAL FLOW PATTERNS:**
IT IS THE INTENT OF THE PROPOSED DESIGN TO DISCHARGE RUNOFF SIMILAR TO THE CHARACTERISTICS AND DIRECTION OF THIS SITE PRIOR TO ANY OF THE IMPROVEMENTS.
- III. REDUCTION OF IMPERVIOUS AREAS THROUGH BETTER SITE DESIGN, ALTERNATIVE SURFACES AND NONSTRUCTURAL PRACTICES:**
THE DESIGN OF THIS PROJECT UTILIZES ONE INDIVIDUAL DRIVEWAY FOR THE NEW PROPOSED SINGLE FAMILY DETACHED HOUSE. NON-STRUCTURAL PRACTICES AS PERMITTED IN CHAPTER 5, MICRO-BIORETENTION (M-6) WILL BE USED.
- IV. INTEGRATION OF EROSION AND SEDIMENT CONTROLS INTO STORMWATER STRATEGY:**
IT IS ANTICIPATED THAT SILT FENCE, SUPER SILT FENCE, AND PERMANENT SOIL STABILIZATION MATTING WILL BE UTILIZED TO PROVIDE THE MAJORITY OF EROSION AND SEDIMENT CONTROL.
- 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 DESIGN MANUAL WAIVER:**
NO WAIVERS ARE REQUIRED.

STORMWATER MANAGEMENT NOTES

- STORMWATER MANAGEMENT IS PROVIDED IN ACCORDANCE WITH WITH CHAPTER 5, "ENVIRONMENTAL SITE DESIGN" OF THE 2007 MARYLAND STORMWATER MANAGEMENT DESIGN MANUAL, EFFECTIVE MAY 4, 2010.
- MAXIMUM CONTRIBUTING ROOF TOP AREA TO EACH DOWNSPOUT SHALL BE 500 SQ. FT. OR LESS.

STORMWATER MANAGEMENT SUMMARY			
AREA ID.	ESDV REQUIRED CU.FT.	ESDV PROVIDED CU.FT.	REMARKS
SITE	580 Cu.Ft.	705 Cu.Ft.	1 MICRO-BIORETENTION (M-6)

GROSS AREA = 0.75 ACRES
 LOD = 0.38 ACRES+
 RCN = 77
 TARGET Pe = 1.0"
 Recharge Volume (Rev) = Rev (5) (Rv) (A) / 12 = (0.07)(0.20)(0.75) / 12 = (0.0009 ac-ft or 39 cu-ft) required

Table B.4. Materials Specifications for Micro-Bioretenion, Rain Gardens & Landscape Infiltration

Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
Filtering soil (2" to 4" deep)	loamy sand 60-95% 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)	n/a	
Mulch	shredded hardwood	n/a	aged 6 months, minimum
Pea gravel diaphragm	pea gravel; ASTM-D-448	No. 8 or No. 9 (1/8" to 3/8")	
Curbs/drain	ornamental stone; washed cobbles	stone: 2" to 5"	
Geotextile	n/a	n/a	PE Type 1 nonwoven
Gravel (underdrains and infiltration berms)	AASHTO M-43	No. 57 or No. aggregate (3/8" to 3/4")	
Underdrain piping	F 756, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	slotted or perforated pipe; 3/8" part. @ 6" on center; 4 holes per row; minimum of 3" of gravel over pipes; no necessary underdrain 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 @ 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 preapproved 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 308.2R/99; vertical loading D1-10 or H-202; 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 carbonate or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

ENVIRONMENTAL CONCEPT PLAN

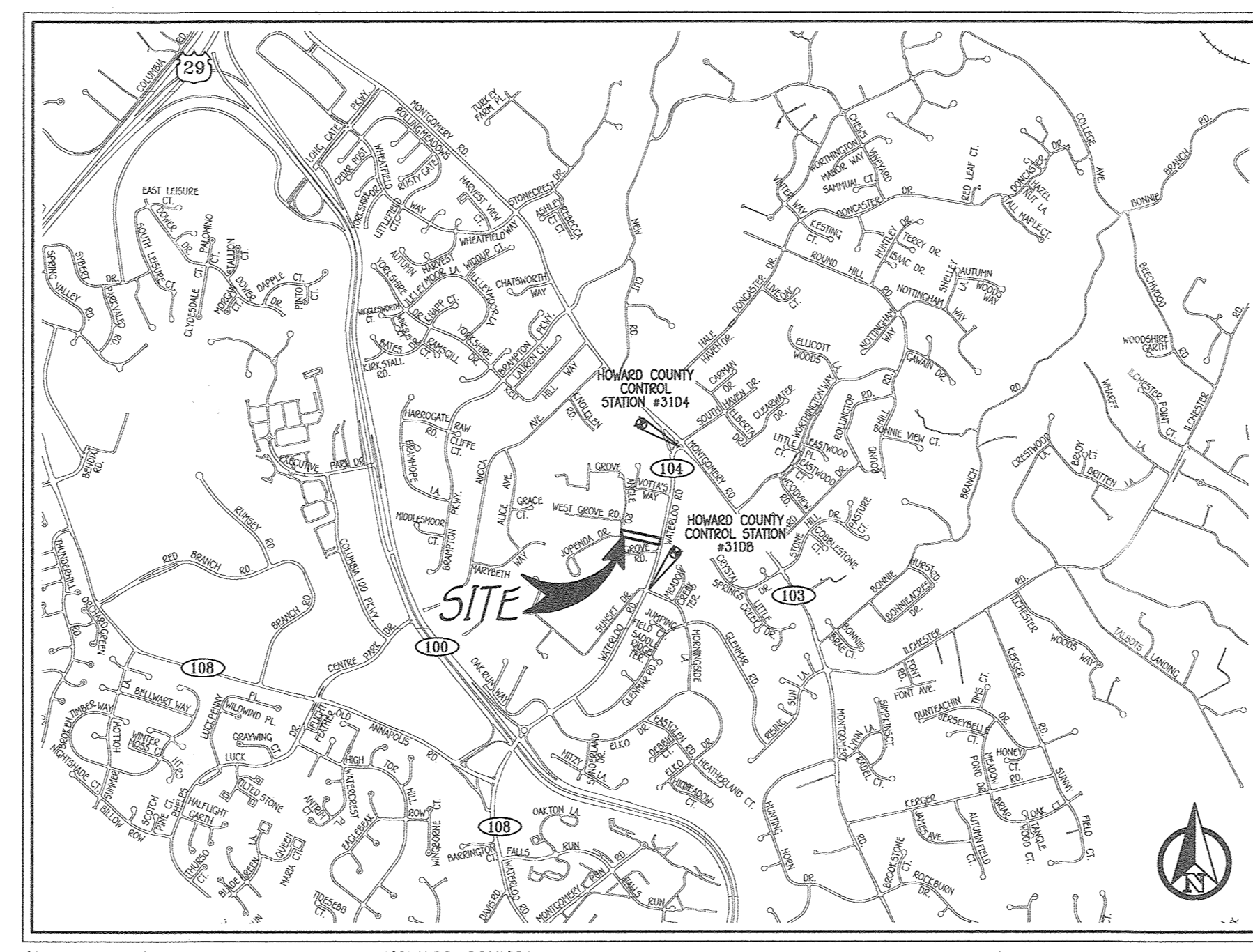
DANIEL PROPERTY

LOTS 1 & 2

R-20 (RESIDENTIAL: SINGLE DISTRICT)

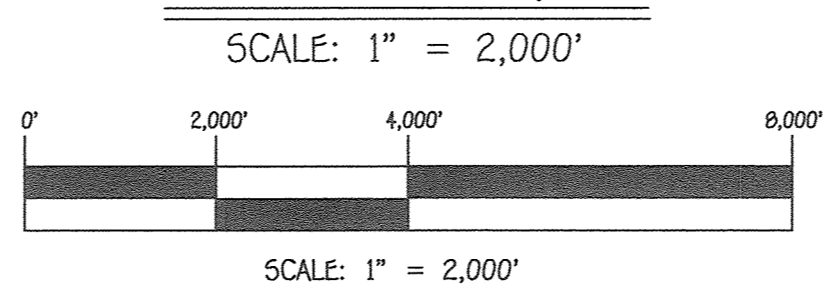
TAX MAP No. 31 GRID No. 13

PARCEL No. 48



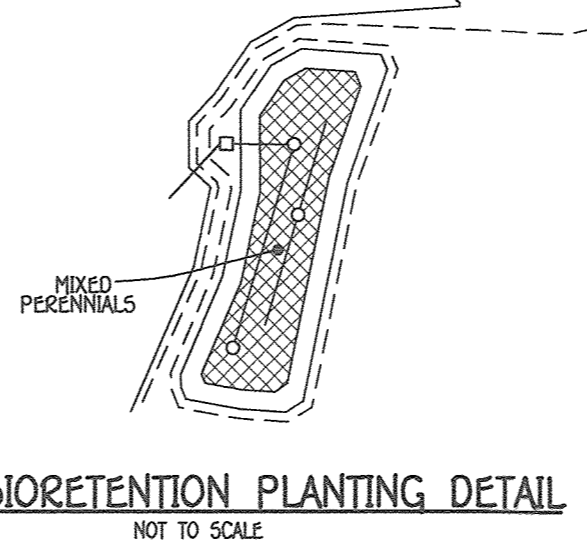
HOWARD COUNTY GEODETIC SURVEY CONTROL NO. 3104
 N 571,700.664 E 1,369,606.417 ELEVATION: 494.445'
 HOWARD COUNTY GEODETIC SURVEY CONTROL NO. 3106
 N 569,503.589 E 1,369,155.211 ELEVATION: 429.348'
 REFER TO HOWARD CO. ADC MAP 28-A6

VICINITY MAP



MICRO-BIORETENTION / BIORETENTION									
BIORETENTION FILTER	A	B	C	D	E	F	G	H	I
LOT 2	461.50	462.25	462.75	460.75	460.50	460.17	459.17	460.17	459.00

MICRO-BIORETENTION PLANT MATERIAL			
MICRO-BIO	QUANTITY	NAME	MAXIMUM SPACING (FT.)
1	55	MIXED PERENNIALS	1.5 TO 3.0 FT.



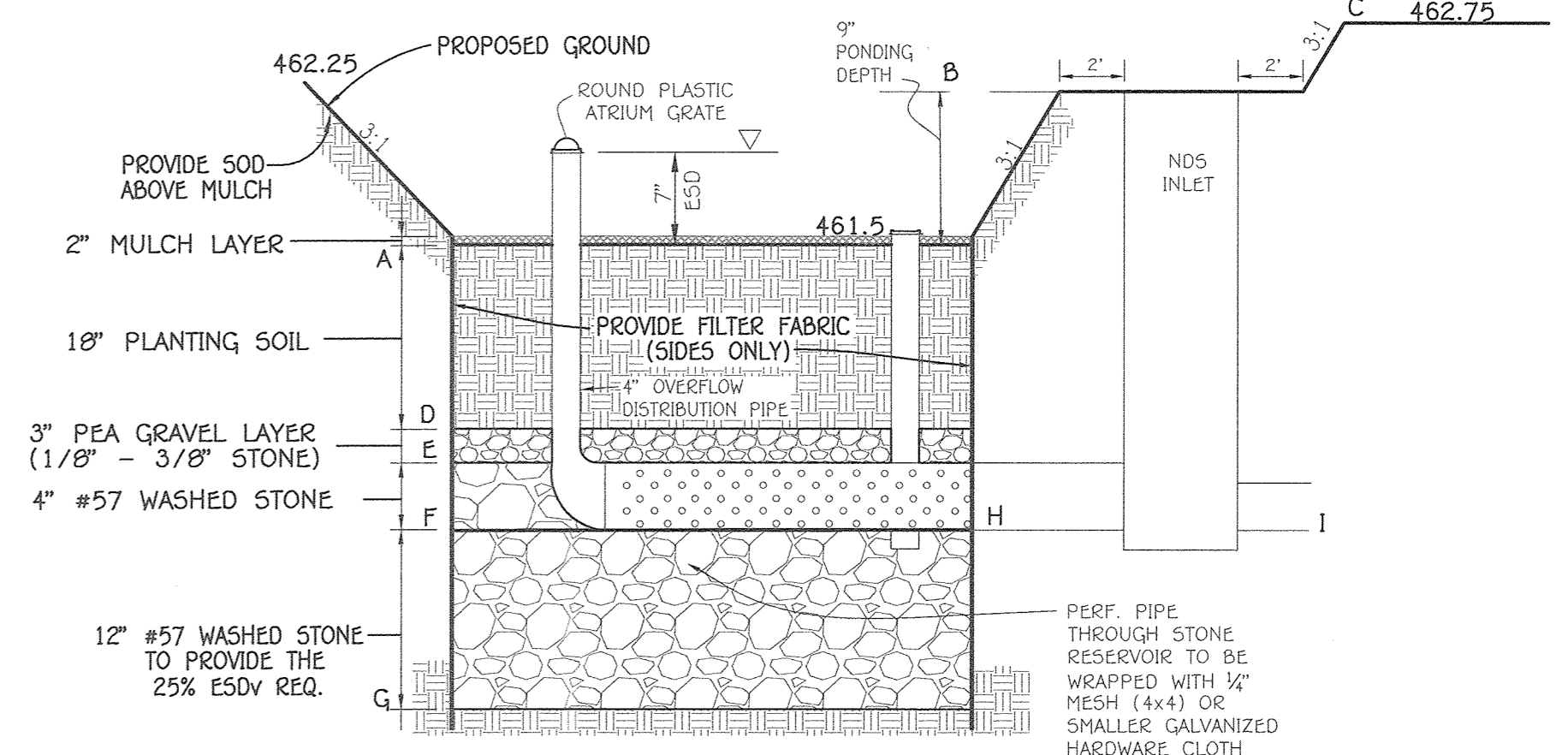
GENERAL NOTES

- THE SUBJECT PROPERTY IS ZONED R-20 (PER 10/06/13 COMPREHENSIVE ZONING PLAN.) IN ACCORDANCE WITH SECTION 108.0 OF THE HOWARD COUNTY ZONING REGULATIONS.
- BOUNDARY IS BASED ON A FIELD RUN SURVEY PERFORMED BY FISHER, COLLINS & CARTER ON OR ABOUT FEBRUARY, 2019.
- CONTOURS ARE BASED ON A TOPOGRAPHIC FIELD RUN SURVEY PERFORMED BY FISHER, COLLINS AND CARTER, ON OR ABOUT FEBRUARY, 2019.
- COORDINATES BASED ON NAD83 MARYLAND COORDINATE SYSTEM AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS NO. 3104 AND NO. 3106:
 HOWARD COUNTY MONUMENT NO. 3104 N 571,700.664 E 1,369,606.417 ELEV. 494.445'
 N 569,503.589 E 1,369,155.211 ELEV. 429.348'
 HOWARD COUNTY MONUMENT NO. 3106 N 571,700.664 E 1,369,606.417 ELEV. 494.445'
 N 569,503.589 E 1,369,155.211 ELEV. 429.348'
- STORM WATER MANAGEMENT IS IN ACCORDANCE WITH THE M.D.E. STORM WATER DESIGN MANUAL, VOLUMES I & II, REVISED 2009. THIS PLAN PROPOSES THE USE OF 1 M-6 MICRO-BIORETENTION FACILITY.
- THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT. PUBLIC WATER AND SEWER WILL BE UTILIZED FOR THIS PROJECT.
- ANY DAMAGE TO THE COUNTY'S RIGHT-OF-WAY SHALL BE CORRECTED AT THE DEVELOPER'S EXPENSE.
- NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE REQUIRED WETLANDS, STREAM(S) OR THEIR BUFFERS, FOREST CONSERVATION EASEMENT AREAS AND 100 YEAR FLOODPLAIN.
- LANDSCAPING WILL BE PROVIDED AT THE FINAL PLAN STAGE OF THIS PROJECT.
- PROPERTY IS A MINOR SUBDIVISION THAT CREATES ONE ADDITIONAL LOT WITH NO FURTHER SUBDIVISION POTENTIAL AND IS THEREFORE EXEMPT FROM FOREST CONSERVATION REGULATIONS PER SECTION 16.1202(b)(vii) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
- SOIL BORING INFORMATION WILL BE PROVIDED AT THE NEXT PLAN STAGE OF THIS PROJECT.
- APPROVAL OF THIS ECP DOES NOT CONSTITUTE APPROVAL OF SUBSEQUENT OR ASSOCIATED SUBDIVISION OR SITE DEVELOPMENT PLANS OR RED-LINE REVISIONS. 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 PLAN, SITE DEVELOPMENT PLAN, OR RED-LINE REVISION PROCESSES. THE APPLICANT AND CONSULTANT SHOULD EXPECT ADDITIONAL AND MORE DETAILED REVIEW COMMENTS (INCLUDING COMMENTS THAT MAY ALTER THE OVERALL SITE DESIGN) AS THE PROJECT PROGRESSES THROUGH THE PLAN REVIEW PROCESS.

IS AN ALTERNATIVE COMPLIANCE WILL BE SUBMITTED IN ORDER TO ALLOW THE EXISTING DRIVEWAY TO REMAIN AND NOT BE RELOCATED.

SITE ANALYSIS DATA CHART

- A. TOTAL AREA OF THIS SUBMISSION = 58,439.5 sq (1.34 AC.) SITE
- B. LIMIT OF DISTURBED AREA = 0.38 AC. (50M BASED ON LOT 2 AREA = 0.75 AC.)
- C. PRESENT ZONING DESIGNATION = R-20 (PER 10/06/2013 COMPREHENSIVE ZONING PLAN)
- D. PROPOSED USE: RESIDENTIAL SINGLE FAMILY DETACHED
- E. PREVIOUS HOWARD COUNTY FILES: N/A
- F. TOTAL AREA OF FLOODPLAIN LOCATED ON-SITE = 0 AC
- G. TOTAL AREA OF SLOPES IN EXCESS OF 25% = 0.0 AC.
- H. TOTAL AREA OF WETLANDS (INCLUDING BUFFER) = 0.0 AC.
- I. TOTAL AREA OF STREAM (INCLUDING BUFFER) = 0.0 AC.
- J. TOTAL AREA OF EXISTING FOREST = 0 AC
- K. TOTAL AREA OF FOREST TO BE RETAINED = 0 AC
- L. TOTAL AREA OF LOTS / BUILDABLE PARCELS = 1.34 AC
- M. TOTAL IMPERVIOUS AREA = 0.13 AC (WITHIN LOD, EXCLUDES EXISTING IMPERVIOUS)
- N. TOTAL AREA OF ERODIBLE SOILS = 1.34 AC



MICRO BIO-RETENTION SECTION WITH 4" OVERFLOW DISTRIBUTION PIPE
NO SCALE

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

- 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 SPECIES AND WIREES.
- 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.
- THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

TITLE SHEET
DANIEL PROPERTY
 LOTS 1 & 2
 5020 WATERLOO ROAD
 TAX MAP NO.: 31 GRID NO.: 13 PARCEL NO.: 48
 ZONED R-20
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: MARCH, 2019
 SHEET 1 OF 3

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTRAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
 ELICOTT CITY, MARYLAND 21042
 (410) 461-2895

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DEVELOPMENT ENGINEERING DIVISION 12/26/2019 DATE
 CHIEF, DIVISION OF LAND DEVELOPMENT 12-18-19 DATE

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. 38366, EXPIRATION DATE: 01/12/2020.
 Signature of Professional Engineer: *Stephen Justice* 12/11/19 DATE



OWNER/DEVELOPER
 Gaji Daniel
 5020 Waterloo Road
 Ellicott City, Maryland 21043
 267-253-4849

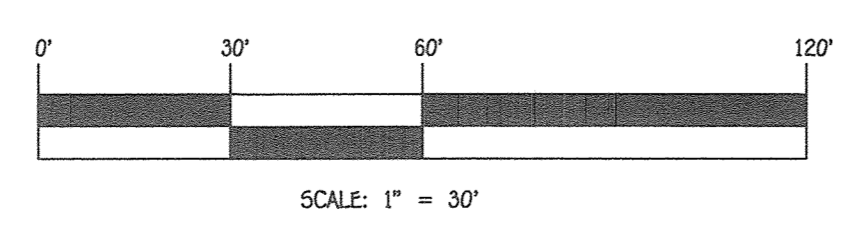


LEGEND	
SYMBOL	DESCRIPTION
---	EXISTING CONTOUR 2' INTERVAL
---	EXISTING CONTOUR 10' INTERVAL
---	PROPOSED CONTOUR 10' INTERVAL
---	PROPOSED CONTOUR 2' INTERVAL
---	EXISTING WATER LINE
---	EXISTING SEWER LINE
---	EXISTING STORM DRAIN
---	EXISTING GAS LINE
---	EXISTING OVERHEAD WIRES
X362.2	SPOT ELEVATION
---	PROPOSED PAVING
---	LIMIT OF DISTURBANCE
---	EXISTING TREE LINE
---	DRAINAGE DIVIDE
---	SOIL LINES AND TYPES
---	BIO RETENTION FACILITY (M-6)
---	EXISTING TREES

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature]
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 12/26/2019

[Signature]
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 12-18-19



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. 36036, EXPIRATION DATE: 01/12/2020.

[Signature] 12/11/19
 SIGNATURE OF PROFESSIONAL ENGINEER DATE



OWNER/DEVELOPER

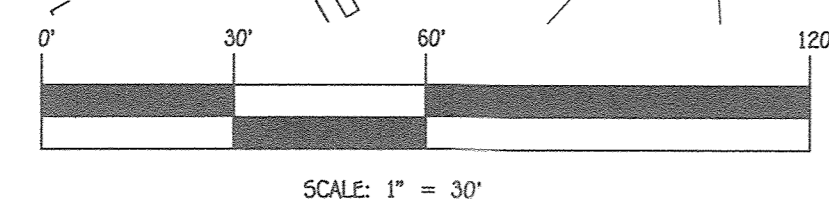
Gigi Daniel
 5020 Waterloo Road
 Ellicott City, Maryland 21043
 267-253-4849

ENVIRONMENTAL CONCEPT & EXISTING CONDITIONS PLAN
DANIEL PROPERTY
 LOTS 1 & 2
 5020 WATERLOO ROAD
 TAX MAP NO.: 31 GRID NO.: 13 PARCEL NO.: 48
 ZONED R-20
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: DECEMBER, 2019
 SHEET 2 OF 3

1:201818008E:\Engineering\02\18008-3003-5020 Waterloo Road\18008-3003 ECP.dwg, sheet 2, 11



LEGEND	
SYMBOL	DESCRIPTION
	EXISTING CONTOUR 2' INTERVAL
	EXISTING CONTOUR 10' INTERVAL
	PROPOSED CONTOUR 10' INTERVAL
	PROPOSED CONTOUR 2' INTERVAL
	EXISTING WATER LINE
	EXISTING SEWER LINE
	EXISTING STORM DRAIN
	EXISTING GAS LINE
	EXISTING OVERHEAD WIRES
	SPOT ELEVATION
	PROPOSED PAVING
	LIMIT OF DISTURBANCE
	SUPER SILT FENCE
	SILT FENCE
	STABILIZED CONSTRUCTION ENTRANCE
	EXISTING TREE LINE
	SOIL LINES AND TYPES
	BIO RETENTION FACILITY (M-6)
	EXISTING TREES



APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 12/26/2019
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 12/18/19
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

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. 38306, EXPIRATION DATE: 01/12/2020.

[Signature] 12/11/19
 SIGNATURE OF PROFESSIONAL ENGINEER DATE



OWNER/DEVELOPER

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 Ellicott City, Maryland 21043
 267-253-4849

CONCEPTUAL GRADING & SEDIMENT CONTROL PLAN

DANIEL PROPERTY
 LOTS 1 & 2
 5020 WATERLOO ROAD
 TAX MAP NO.: 31 GRID NO.: 13 PARCEL NO.: 48
 ZONED R-20
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: DECEMBER, 2019
 SHEET 3 OF 3