

GENERAL NOTES

- THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
- THE SUBJECT PROPERTY IS ZONED RR-DEO IN ACCORDANCE WITH 02/02/04 COMPREHENSIVE ZONING.
- PROPERTY OUTLINE SHOWN HERE ON IS IN ACCORDANCE WITH DEED AND PLATS AND IS NOT BASED ON A FIELD RUN BOUNDARY SURVEY.
- TOPOGRAPHY SHOWN HEREON IS OBTAINED FROM CURRENT HOWARD COUNTY GIS DATA.
- SOIL TYPES SHOWN HEREON ARE IN ACCORDANCE WITH THE WEB SOIL SURVEY, HOWARD COUNTY MARYLAND.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 30CC AND 31AC WERE USED FOR THIS PROJECT.
- 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.
- THIS PROPERTY IS NOT LOCATED WITHIN THE METROPOLITAN DISTRICT.
- WATER FOR THIS PROJECT IS PRIVATE WELLS.
- SEWER FOR THIS PROJECT IS PRIVATE SEPTIC SYSTEMS.
- PREVIOUSLY PLATTED FLOODPLAIN ON EXISTING LOT 29 - KOANDAH GARDENS ESTATES (PLAT # 15371), IS SHOWN HEREON. NO DISTURBANCE IS PROPOSED.
- NO STEEP SLOPES OVER 20,000 SF CONTIGUOUS ARE LOCATED ON-SITE.
- FOREST CONSERVATION OBLIGATIONS FOR THIS PROJECT SHALL BE ADDRESSED BY A FOREST CONSERVATION PLAN SUBMITTED WITH A SUBDIVISION PLAN PACKAGE.
- WETLANDS AND STREAMS SHOWN HEREON ARE BASED ON DELINEATION BY MCCARTHY & ASSOCIATES, INC. DATED 2/28/2012.
- IF REQUIRED, GEOTECHNICAL INVESTIGATIONS SHALL COMPLETED AS PART OF THE SUBDIVISION PLAN PACKAGE.
- A FOREST STAND DELINEATION WAS PREPARED BY MCCARTHY & ASSOCIATES, INC. DATED FEBRUARY 2012.
- HIGHLAND ROAD IS CLASSIFIED AS A MAJOR COLLECTOR. THE PROPOSED ACCESS POINTS ARE LIMITED TO EXISTING DRIVEWAY LOCATIONS TO BE UPGRADED TO MEET USE-IN-COMMON SPECIFICATIONS.
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 FEET (16 FEET SERVING MORE THAN ONE RESIDENCE).
B) SURFACE - 6 INCHES OF COMPACTED CRUSHER RUN BASE WITH TAR AND CHIP COATING.
C) GEOMETRY - MAXIMUM 15% GRADE, MAXIMUM 10% CHANGE AND MINIMUM OF 45-FOOT DEPTH 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 SURFACE.
F) STRUCTURE CLEARANCES-MINIMUM 12 FEET.
G) MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE.
- THE PROPOSED SUBDIVISION AND RELATED CONSTRUCTION WILL NOT AFFECT ENVIRONMENTAL FEATURES OR BUFFERS.
- TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL GROUNDS OR CEMETERIES LOCATED ON THIS PROPERTY.
- THE EXISTING HOUSE, #13032, IS MHT #20 ON THE HOWARD COUNTY REGISTER; KNOWN AS HICKORY RIDGE, STAT AREA 5-4 KEY RANKING, MHT EASEMENT 6/9/77, AS STATED WITHIN LIBER 827 FOLIO 215, "GRANTOR MAY CAUSE CONSTRUCTION OF NO MORE THAN 5 ADDITIONAL SINGLE FAMILY RESIDENTIAL HOUSES..."
- DUE TO HOWARD COUNTY HEALTH DEPARTMENT SETBACK REQUIREMENTS FOR STORMWATER MANAGEMENT STRUCTURES, STORMWATER MANAGEMENT FOR THE PROJECT IS PROVIDED BY THE USE OF NON STRUCTURAL PRACTICES (DISCONNECTION OF ROOFTOP RUNOFF & DISCONNECTION OF NON-ROOFTOP RUNOFF) AND ALTERNATIVE SURFACES (PERMEABLE SURFACES) IN ACCORDANCE WITH ENVIRONMENTAL SITE DESIGN CRITERIA. THE PERMEABLE SURFACES FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED.
- APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) DOES NOT CONSTITUTE AN APPROVAL OF ANY SUBSEQUENT AND ASSOCIATED SUBDIVISION PLAN/PLAT AND/OR SITE DEVELOPMENT PLAN AND/OR RED-LINE REVISION 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 PLAN/PLAT AND/OR SITE DEVELOPMENT PLAN 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.
- APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) BY THE HOWARD SOIL CONSERVATION DISTRICT DOES NOT GRANT APPROVAL OF THE SHOWN SEDIMENT CONTROL PLAN.
- THERE ARE NO STATE CHAMPION TREES ON THE PROJECT SITE, SPECIMEN TREE # 15 IS 75% OF THE CURRENT STATE CHAMPION.
- IN ACCORDANCE WITH THE WILDLIFE & HERITAGE SERVICE, THERE ARE NO STATE OR FEDERAL RECORDS FOR RARE, THREATENED OR ENDANGERED SPECIES WITHIN THE BOUNDARIES OF THE PROJECT SITE AS DELINEATED.

ENVIRONMENTAL SITE DESIGN NARRATIVE:

IN ACCORDANCE WITH CHECKLIST ITEM III.K.

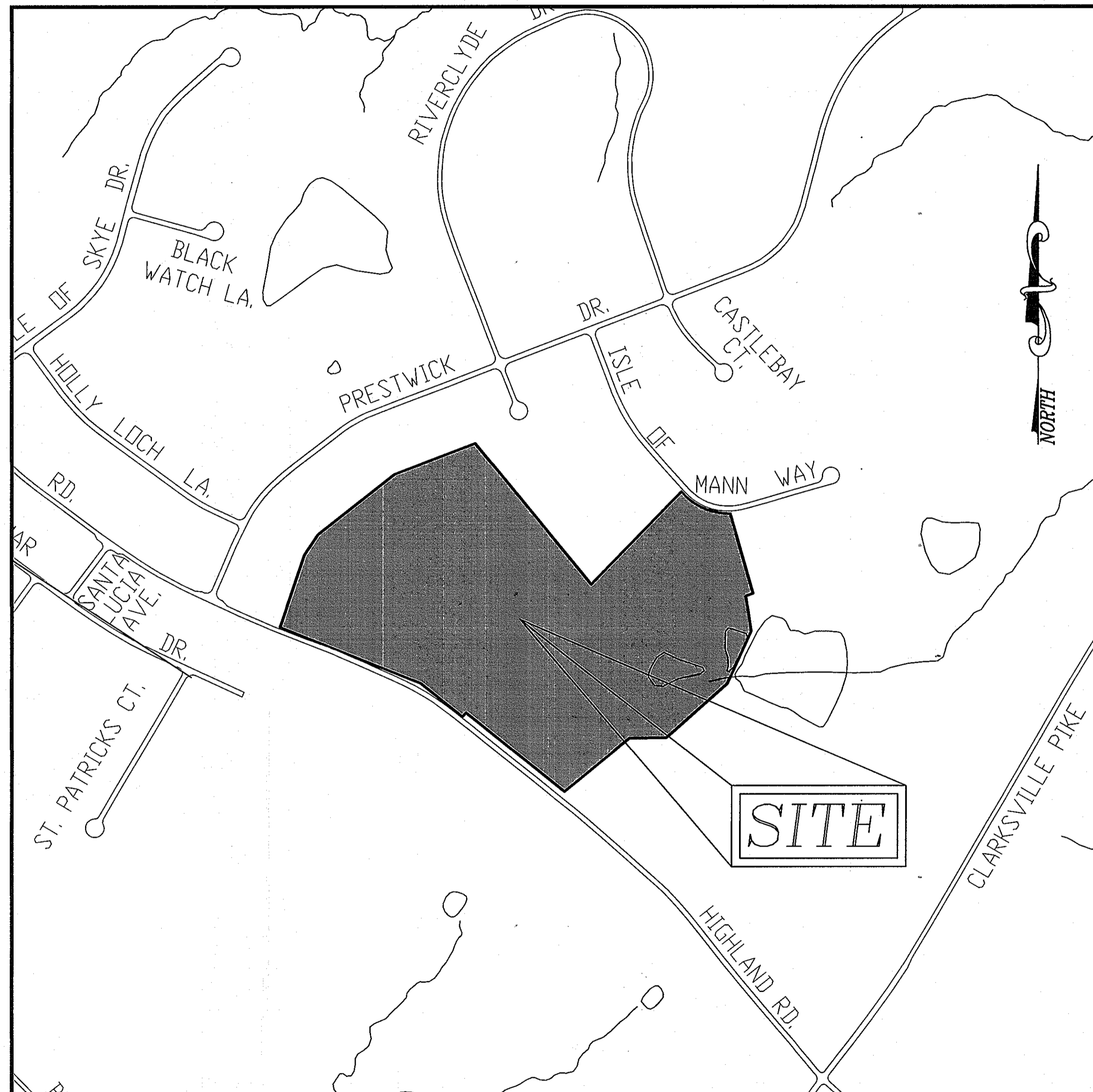
- THE NATURAL AREAS ON THIS PROJECT ARE LOCATED IN THE EASTERNMOST PORTION OF THE SITE. NO DISTURBANCE TO THE NATURAL AREAS, PONDS, STREAMS, STREAM BUFFER, WETLAND AND WETLAND BUFFER RESOURCES IS PROPOSED.
- NO DRAMATIC DISTURBANCE TO THE NATURAL DRAINAGE PATTERNS ARE PROPOSED. PLEASE REFER TO THE PROPOSED GRADING AND THE PROJECT'S 3 & 4 LOTS & USE-IN-COMMON DRIVEWAY CONSTRUCTION, SHALL BALANCE ON A LOT BY LOT BASIS WITHOUT ALTERING NATURAL FLOW PATTERNS.
- THE CONCEPTUAL REDUCTION IN IMPERVIOUS AREA THROUGH BETTER SITE DESIGN IS ACHIEVED THROUGH THE ENVIRONMENTAL SITE DESIGN (ESD) FOR THE PROJECT. THE ESD CONCEPT DUE TO HOWARD COUNTY HEALTH DEPARTMENT SETBACK REQUIREMENTS FOR STORMWATER MANAGEMENT STRUCTURES, INCLUDES THE USE OF NON STRUCTURAL PRACTICES (DISCONNECTION OF ROOFTOP RUNOFF & DISCONNECTION OF NON-ROOFTOP RUNOFF) AND ALTERNATIVE SURFACES (PERMEABLE SURFACES), MICROBIORETENTION AND RAIN BARRELS. THE MICROBIORETENTION, PERMEABLE SURFACE AND RAIN BARREL FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED.
- SEDIMENT CONTROL FOR THIS SPECIFIC SITE PLAN WILL BE PROVIDED THROUGH THE USE PERIMETER CONTROLS (SILT & SUPER SILT FENCE) ON A LOT BY LOT BASIS AS INDIVIDUAL HOUSE CONSTRUCTION PROGRESSES. SEDIMENT CONTROL SHALL BE IN ACCORDANCE WITH CURRENT REQUIREMENTS AND SHALL BE APPROVED BY THE HOWARD SOIL CONSERVATION DISTRICT.
- STORMWATER MANAGEMENT FOR THE PROJECT SHALL BE MET THROUGH THE USE OF PERMEABLE SURFACES, DISCONNECTION OF ROOFTOP RUNOFF BY PARTIAL OR FULL 75 FOOT DISCONNECTION LENGTH, RAIN BARRELS, MICRO BIORETENTION AND IN AREAS WHERE EXISTING DRIVEWAYS ARE TO BE MODIFIED TO PROVIDE THE REQUIRED USE-IN-COMMON DRIVEWAY 16 FOOT WIDTH, DISCONNECTION OF NON-ROOFTOP RUNOFF.
THE RESULTS OF THIS ENVIRONMENTAL SITE DESIGN FOR THIS PROJECT WILL REFLECT "WOODS IN GOOD CONDITION". P_e VALUE FOR THIS PROJECT IS 1.0"
- AT THIS CONCEPT STAGE OF DEVELOPMENT, NO DESIGN MANUAL WAIVERS AND/OR WAIVER PETITIONS FOR ENVIRONMENTAL AND STORMWATER MANAGEMENT DESIGN ARE REQUIRED.

ENVIRONMENTAL CONCEPT PLAN

MCDANIEL PROPERTY

LOTS 1-8, BUILDABLE PRESERVATION PARCEL "A" AND NON BUILDABLE PRESERVATION PARCEL "B"

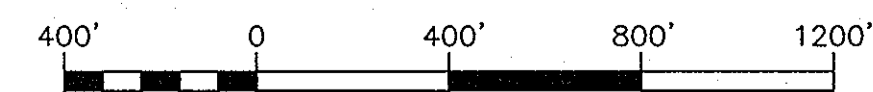
HOWARD COUNTY, MARYLAND



LOCATION MAP
1" = 400'

SITE ANALYSIS DATA

A. TOTAL PROJECT AREA:	39.16 AC.
PARCEL 117 - L1174 F.541	= 22.71 ACRES
PARCEL 78 (LOT 29) - L.6206 F.657	= 16.45 ACRES
B. AREA OF PLAN SUBMISSION:	39.16 AC.
C. AREA OF WETLANDS AND BUFFERS:	0.96 AC.
D. AREA OF FLOODPLAIN:	0.56 AC.
E. AREA OF FOREST & BUFFER:	0.00 AC.
F. AREA OF STEEP SLOPES (15% & GREATER):	0.00 AC.
G. ERODIBLE SOILS:	N/A
H. LIMIT OF DISTURBED AREA:	4.30 AC.
I. PROPOSED USES FOR SITE AND STRUCTURES:	RESIDENTIAL SINGLE FAMILY ATTACHED HOMES
J. GREEN OPEN AREA:	36.90 AC.
K. PROPOSED IMPERVIOUS AREA:	1.16 AC. + 1.10 (1.10 EXISTING IMP)
RR-DEO	= 2.26 AC EX & PROPOSED
L. PRESENT ZONING DESIGNATION:	RR-DEO
M. OPEN SPACE REQUIRED:	N/A
N. TOTAL NUMBER OF UNITS ALLOWED:	9 (39.16 AC. / 4.25)
O. TOTAL NUMBER OF UNITS PROPOSED:	9 (LOTS 1-8 & BULD. PRES. PARCEL "A")
P. DPZ FILE REFERENCES:	S 98-07, P 87-053, F 02-004, P 01-003, F 87-200 F 90-076, F 94-069, F 95-121, F 97-145, F 02-057



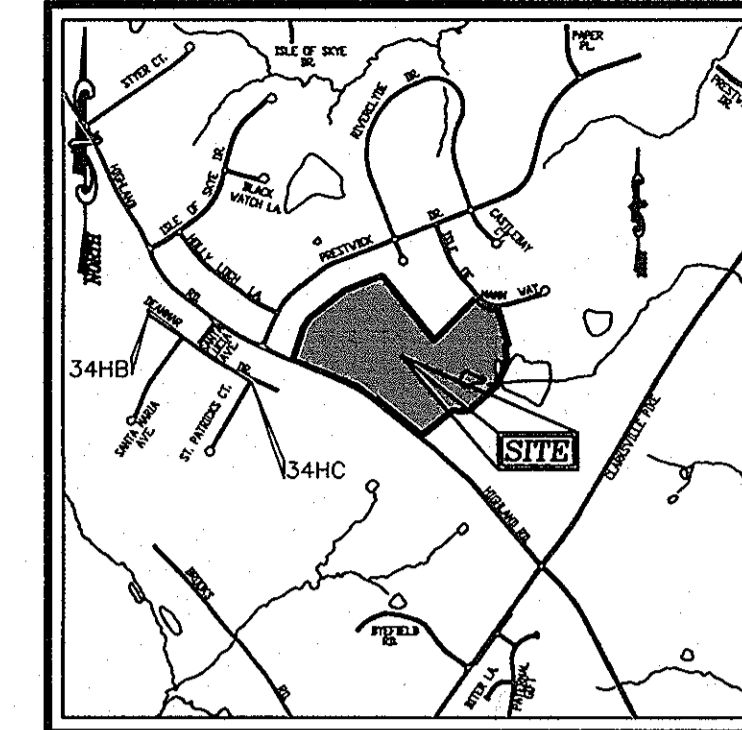
SOILS LEGEND		
SYMBOL	NAME / DESCRIPTION	GROUP
Gba	GLADSTONE LOAM, 0 TO 3 PERCENT SLOPES	B
Gbb	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	B
Gmb	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C
Gnb	GLENVILLE-BAILE SILT LOAMS, 0 TO 8 PERCENT SLOPES	C

NOTE: BASED ON USDA NRCS WEB SOIL SURVEY - HOWARD COUNTY

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Mr. [Signature] 7/13/12
CHIEF, DEVELOPMENT ENGINEERING DIVISION
Mr. [Signature] 6/29/12
CHIEF, DIVISION OF LAND DEVELOPMENT

SHEET INDEX	
DESCRIPTION	SHEET NO.
COVER SHEET	1 OF 5
OVERALL SITE LAYOUT & SOILS PLAN	2 OF 5
SITE LAYOUT, GRADING & SOIL EROSION AND SEDIMENT CONTROL PLAN	3 OF 5
SITE LAYOUT, GRADING & SOIL EROSION AND SEDIMENT CONTROL PLAN	4 OF 5
STORMWATER MANAGEMENT NOTES AND DETAILS	5 OF 5



VICINITY MAP

SCALE: 1"=2,000'
ADC MAP COORDINATE: 5051, F&G 1

BENCHMARKS

HOWARD COUNTY BENCHMARK 34HB (CONC. MON.)
N 553449.1287 E 1320244.3459 ELEV. 549.850
HOWARD COUNTY BENCHMARK 34HC (CONC. MON.)
N 552735.3138 E 1321330.2220 ELEV. 553.078

LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE

OWNER / DEVELOPER

JOHN P. MCDANIEL AND ELLEN G. MCDANIEL
13032 HIGHLAND ROAD
HIGHLAND, MARYLAND 20777
ATTN: MR. DONALD R. REUWER
443-367-0422

NO.	REVISION	DATE

COVER SHEET

MCDANIEL PROPERTY
LOTS 1-8, BUILDABLE PRESERVATION PARCEL "A" AND NON-BUILDABLE PRESERVATION PARCEL "B"
A SUBDIVISION OF THE MCDANIEL PROPERTY (P. 117) AND A RESUBDIVISION OF LOT 29 - KOANDAH GARDENS ESTATES (PLAT 15371)
TAX MAP 34 BLOCK 22 ZONED: RR-DEO
TAX MAP 30 BLOCK 4 PARCELS 117 & 78 (LOT 29)
5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DPZ REF.: REFER TO SITE ANALYSIS

ROBERT H. VOGEL ENGINEERS & SURVEYORS - PLANNERS
8407 MAIN STREET ELICOTT CITY, MD 21043 TEL: 410-461-7666 FAX: 410-461-8961

DESIGN BY: RHY / EDS
DRAWN BY: EDS
CHECKED BY: RHY
DATE: MAY 2012
SCALE: AS SHOWN
W.O. NO.: 08-43

PROFESSIONAL CERTIFICATE
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 UNDER LICENSE NO. 16193 EXPIRES 08-27-2015

1 SHEET OF 5

K:\PROJECTS\08-43\ENGR\ECP\1 COVER SHEETING

SOILS LEGEND		
SYMBOL	NAME / DESCRIPTION	GROUP
GbA	GLADSTONE LOAM, 0 TO 3 PERCENT SLOPES	B
GbB	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	B
GmB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C
GnB	GLENVILLE-BAILE SILT LOAMS, 0 TO 8 PERCENT SLOPES	C

THIS AREA DESIGNATES A MINIMUM 10,000 SQ FT PRIVATE SEWAGE EASEMENT REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT FOR INDIVIDUAL SEWAGE DISPOSAL. IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWAGE IS AVAILABLE. THESE EASEMENTS SHALL BE NULL AND VOID UPON CONNECTION TO A PUBLIC SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE SEWAGE EASEMENT. RECORDATION OF A MODIFIED SEWAGE EASEMENT SHALL NOT BE NECESSARY.

LEGEND			
EXISTING CONTOUR	---	EXISTING WELL	EX WELL (W)
EXISTING TREELINE	~~~~~	PROPERTY LINE	---
SOIL BOUNDARY	---	PROP. WELL AREA	-----
WATER OF THE US	~~~~~	PROP. WELL	(W)
NON-TIDAL WETLANDS	-----	EXISTING SEPTIC EASEMENT	-----
WATERS OF THE US	-----	PROP. SEPTIC EASEMENT	-----
WETLAND BUFFER	-----		
FLOODPLAIN EASEMENT	-----		
			SPECIMEN TREE
			SPECIMEN TREE # 3

Maryland State Grid Meridian



OWNER / DEVELOPER

JOHN P. MCDANIEL AND ELLEN G. MCDANIEL
 13032 HIGHLAND ROAD
 HIGHLAND, MARYLAND 20777
 ATTN: MR. DONALD R. REUWER
 443-367-0422

NO.	REVISION	DATE

OVERALL SITE LAYOUT

MCDANIEL PROPERTY
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AND NON-BUILDABLE PRESERVATION PARCEL B
 A SUBDIVISION OF THE MCDANIEL PROPERTY (P. 117) AND
 A RESUBDIVISION OF LOT 29 - KONDAH GARDENS ESTATES (PLAT 15371)

TAX MAP 34 BLOCK 22 ZONED: RR-DEO
 TAX MAP 40 BLOCK 2 PARCELS 117 & 78 (LOT 29)
 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 DPZ REF'S: REFER TO SITE ANALYSIS

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 8407 MAIN STREET TEL: 410.461.7666
 ELLICOTT CITY, MD 21043 FAX: 410.461.8961

STATE OF MARYLAND
ROBERT H. VOGEL
 No. 16193
 PROFESSIONAL ENGINEER

DESIGN BY: RHW / EDS
 DRAWN BY: EDS
 CHECKED BY: RHW
 DATE: MAY 2012
 SCALE: AS SHOWN
 W.O. NO.: 08-43

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. 16193 EXPIRATION DATE: 06-27-2012

2 SHEET OF 5

TABLE 2
Specimen Tree List for the McDaniel Property

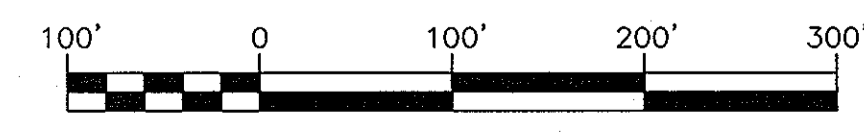
Number	Common Name	Species Name	DBH (inches)	Condition
1	white willow	Salix alba	34	Good
2	white willow	Salix alba	37	Good
3	white willow	Salix alba	42	Good
4	catalpa	Catalpa speciosa	36	Fair
5	catalpa	Catalpa speciosa	36	Fair
6	catalpa	Catalpa speciosa	37	Good
7	catalpa	Catalpa speciosa	32	Good
8	catalpa	Catalpa speciosa	37	Good
9	catalpa	Catalpa speciosa	37	Good
10	black walnut	Juglans nigra	45	Fair
11	yellow-poplar	Liriodendron tulipifera	32	Good
12	catalpa	Catalpa speciosa	38	Good
13	catalpa	Catalpa speciosa	41	Fair
14	basswood	Tilia americana	34	Fair
15	catalpa	Catalpa speciosa	63	Good
16	basswood	Tilia americana	37	Good
17	catalpa	Catalpa speciosa	38	Good
18	catalpa	Catalpa speciosa	32	Good
19	catalpa	Catalpa speciosa	32	Good
20	catalpa	Catalpa speciosa	33	Good
21	eastern white pine	Pinus strobus	32	Good
22	American beech	Fagus grandifolia	35	Good
23	red maple	Acer rubrum	41	Good
24	black walnut	Juglans nigra	44	Good
25	black walnut	Juglans nigra	31	Good
26	catalpa	Catalpa speciosa	32	Fair

OVERALL LAYOUT
 SCALE: 1"=100'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 7/3/12
 CHIEF, DEVELOPMENT ENGINEERING DIVISION J.P. DATE

[Signature] 6/29/12
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE



SOILS LEGEND		
SYMBOL	NAME / DESCRIPTION	GROUP
GbA	GLADSTONE LOAM, 0 TO 3 PERCENT SLOPES	B
GbB	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	B
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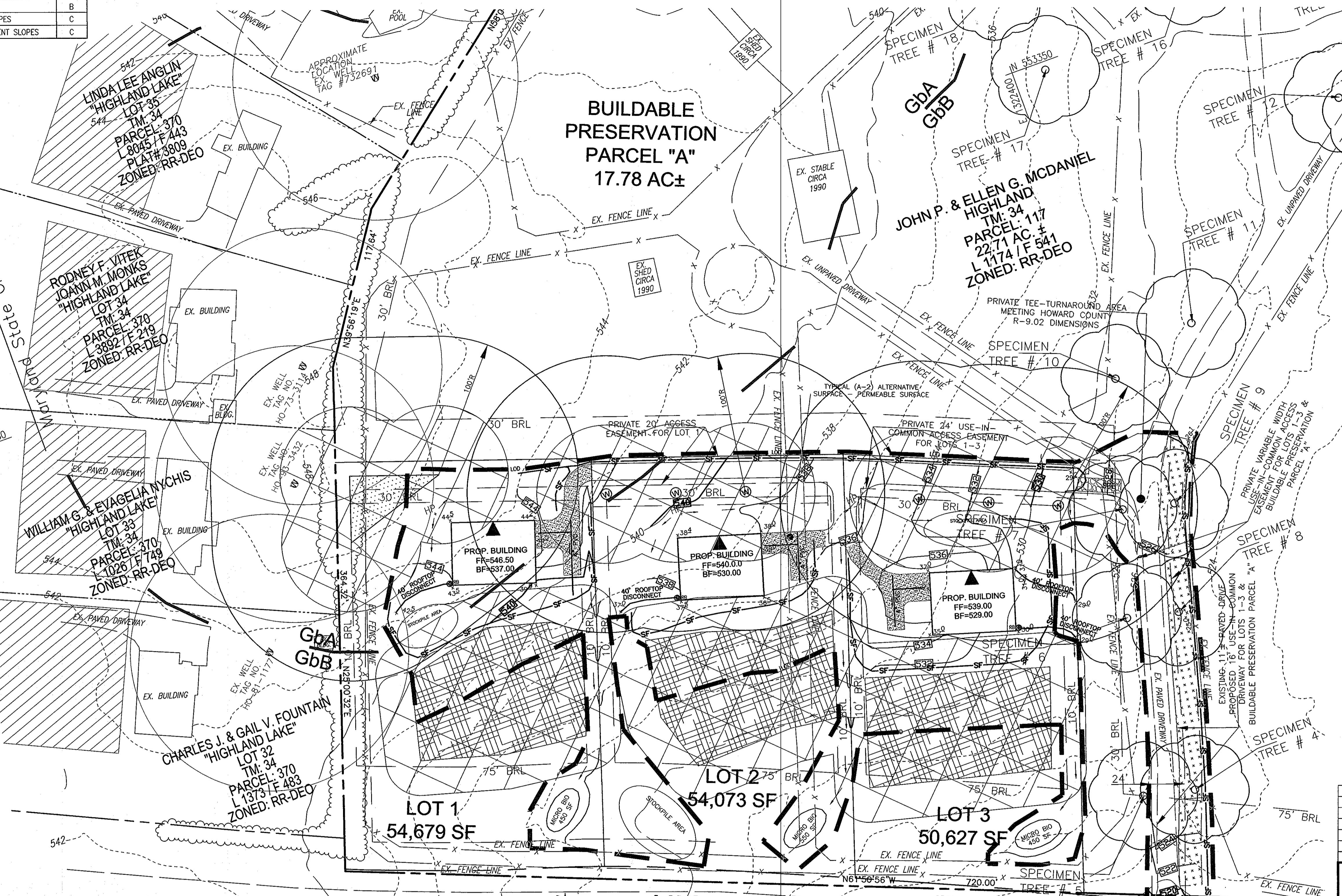
LEGEND	
EXISTING CONTOUR	--- 382 --- --- 380 ---
EXISTING TREELINE	
SOIL BOUNDARY	—
Q STREAM	—
STREAM BUFFER	—
WETLAND BUFFER	—
100 YEAR FLOODPLAIN	—
PASSED PERC TEST LOCATIONS	⊙
FAILED PERC TEST LOCATIONS	●
EXISTING WELL	⊕
PROPERTY LINE	—
PROP. WELL AREA	
PROP. WELL	⊕
EXISTING SEPTIC EASEMENT	
PROP. SEPTIC EASEMENT	
ROOFTOP DISCONNECT	
NON-ROOFTOP DISCONNECT	
HEALTH DEPARTMENT STORMWATER MANAGEMENT STRUCTURE SETBACK	
LIMIT OF DISTURBANCE	LOD — LOD
SILT FENCE	—
SPOT ELEVATION	37.2
STABILIZED CONSTRUCTION ENTRANCE	
RAIN BARREL	RB
SPECIMEN TREE	
HOWARD COUNTY HEALTH DEPARTMENT SETBACKS TO RESIDENTIAL STORMWATER MANAGEMENT STRUCTURES	
MICRO-BIORETENTION AREA	

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AREA 1 (LOTS 1 - 3)
 THE "SITE" DRAINAGE AREA - AREA 1 (LOTS 1 - 3) IS THE LIMITS OF THE PROPOSED NEW LOT LINES. THIS ACCOUNTS FOR AN AREA OF 3.66 ACRES.
 DUE TO HEALTH DEPARTMENT SETBACKS NON STRUCTURAL PRACTICES ARE PROPOSED
 SITE TARGET = 1.0"
 ESDv = 2075 CU.FT.
 AREA 1 REQUIRED VOLUME / P_s REQUIREMENT MET THROUGH USE OF DISCONNECTS OF ROOFTOP RUNOFF, RAIN BARRELS, PERMEABLE SURFACE DRIVEWAYS AND MICROBIORETENTION FACILITIES.
 REFER TO SHEET 5 FOR DETAILS

ESD PRACTICES BY LOT - AREA 1	
LOT #	ESD PRACTICE
#1	DISCONNECT ROOFTOP RUNOFF, PERMEABLE SURFACE DRIVEWAY, RAIN BARREL, MICROBIORETENTION
#2	DISCONNECT ROOFTOP RUNOFF, PERMEABLE SURFACE DRIVEWAY, RAIN BARREL, MICROBIORETENTION
#3	DISCONNECT ROOFTOP RUNOFF, PERMEABLE SURFACE DRIVEWAY, RAIN BARREL, MICROBIORETENTION

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 J.P. 7/3/12
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE
 6/29/12
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE



HIGHLAND ROAD
 MAJOR COLLECTOR
 80' RIGHT-OF-WAY

PLAN VIEW
 SCALE: 1" = 40'

- NOTES:
 1. APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) BY THE HOWARD SOIL CONSERVATION DISTRICT DOES NOT GRANT APPROVAL OF THE SHOWN SEDIMENT CONTROL PLAN.
 2. ALL SPECIMEN TREES ARE TO BE PROTECTED DURING CONSTRUCTION OPERATIONS. NO SPECIMEN TREES ARE PROPOSED TO BE REMOVED.

OWNER / DEVELOPER
 JOHN P. MCDANIEL AND ELLEN G. MCDANIEL
 13032 HIGHLAND ROAD
 HIGHLAND, MARYLAND 20777
 ATTN: MR. DONALD R. REUWER
 443-367-0422

NO.	REVISION	DATE

AREA 1 - SITE LAYOUT, STORMWATER MANAGEMENT GRADING & SOIL EROSION AND SEDIMENT CONTROL PLAN
MCDANIEL PROPERTY
 LOTS 1-8, BUILDABLE PRESERVATION PARCEL "A" AND NON-BUILDABLE PRESERVATION PARCEL B
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 8407 MAIN STREET ELLICOTT CITY, MD 21043 TEL: 410.461.7666 FAX: 410.461.8961

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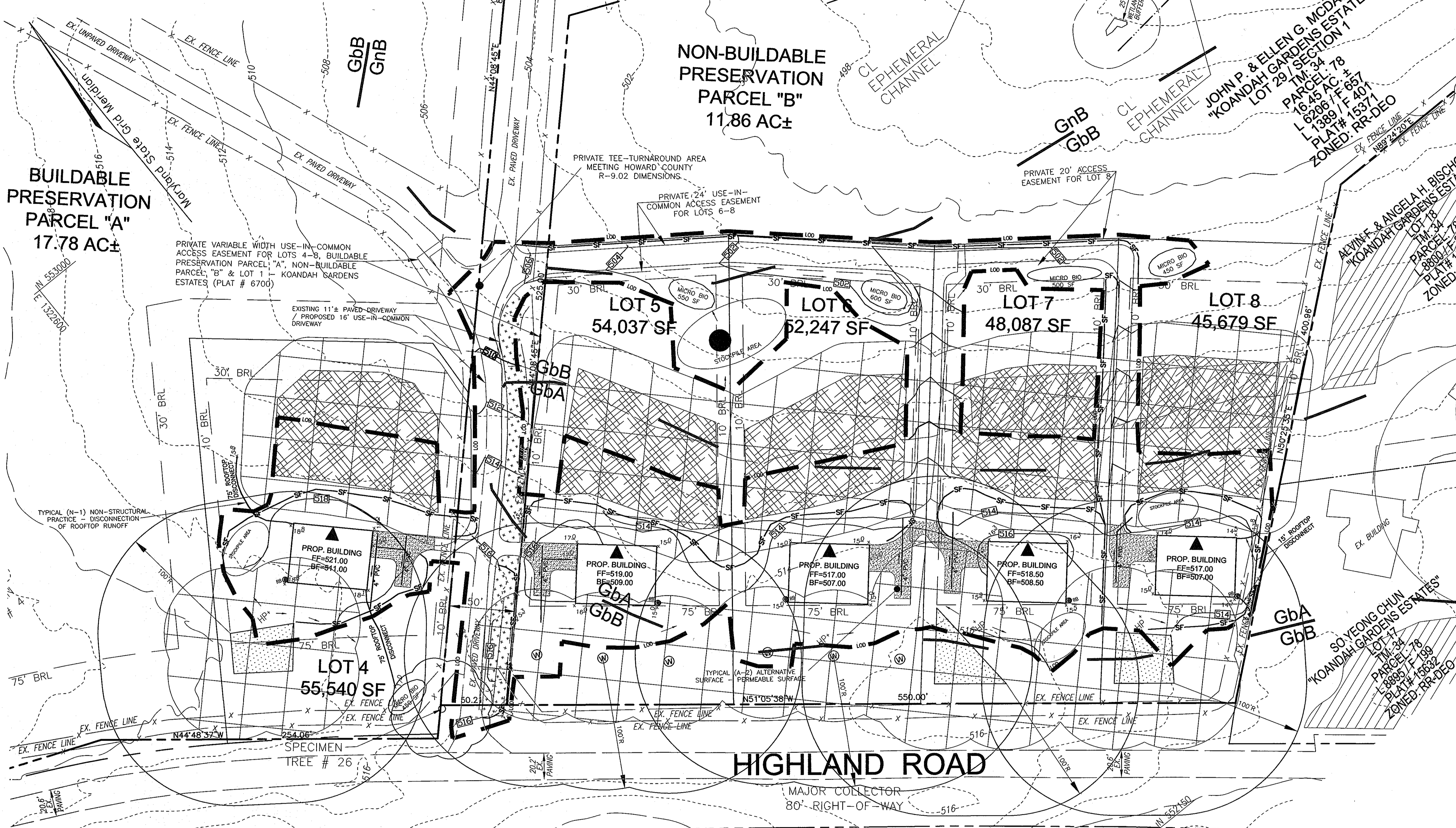
DESIGN BY: RHV / EDS
 DRAWN BY: EDS
 CHECKED BY: RHV
 DATE: MAY 2012
 SCALE: AS SHOWN
 W.O. NO.: 08-43

3 SHEET OF 5

SOILS LEGEND		
SYMBOL	NAME / DESCRIPTION	GROUP
Gba	GLADSTONE LOAM, 0 TO 3 PERCENT SLOPES	B
GbB	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	B
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LEGEND	
EXISTING CONTOUR	382 380
EXISTING TREELINE	
SOIL BOUNDARY	
PASSED PERC TEST LOCATIONS	
FAILED PERC TEST LOCATIONS	
EXISTING WELL	
PROPERTY LINE	
PROP. WELL AREA	
EXISTING SEPTIC EASEMENT	
PROP. WELL	
PROP. SEPTIC EASEMENT	
ROOFTOP DISCONNECT	40' ROOFTOP DISCONNECT
NON-ROOFTOP DISCONNECT	
HEALTH DEPARTMENT STORMWATER MANAGEMENT STRUCTURE SETBACK	
LIMIT OF DISTURBANCE	LOD
SILT FENCE	
SPOT ELEVATION	37.0
STABILIZED CONSTRUCTION ENTRANCE	
NON-ROOFTOP DISCONNECT	
PERMEABLE SURFACE DRIVEWAY	
SPECIMEN TREE	TREE # 3
HOWARD COUNTY HEALTH DEPARTMENT SETBACKS TO RESIDENTIAL STORMWATER MANAGEMENT STRUCTURES	
RAIN BARREL	RB
MICRO-BIORETENTION AREA	MICRO BIO 450 SF



OWNER / DEVELOPER
 JOHN P. MCDANIEL AND ELLEN G. MCDANIEL
 13032 HIGHLAND ROAD
 HIGHLAND, MARYLAND 20777
 ATTN: MR. DONALD R. REUWER
 443-367-0422

NO.	REVISION	DATE

AREA 2 - SITE LAYOUT, STORMWATER MANAGEMENT GRADING & SOIL EROSION AND SEDIMENT CONTROL PLAN
MCDANIEL PROPERTY
 LOTS 1-8, BUILDABLE PRESERVATION PARCEL "A" AND NON-BUILDABLE PRESERVATION PARCEL B
 A SUBDIVISION OF THE MCDANIEL PROPERTY (P. 117) AND A RESUBDIVISION OF LOT 29 - KOANDAH GARDENS ESTATES (PLAT 15371)

TAX MAP 34 BLOCK 22 ZONED: RR-DEO
 TAX MAP 40 BLOCK 4 PARCELS 117 & 78 (LOT 29)
 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 DPZ REF'S: REFER TO SITE ANALYSIS

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 8407 MAIN STREET TEL: 410.461.7666
 ELLICOTT CITY, MD 21043 FAX: 410.461.8961

STATE OF MARYLAND PROFESSIONAL ENGINEER
 DESIGN BY: RHW / EDS
 DRAWN BY: EDS
 CHECKED BY: RHW
 DATE: MAY 2012
 SCALE: AS SHOWN
 W.O. NO.: 08-43
 4 SHEET OF 5

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 7/2/12
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 [Signature] 6/29/12
 CHIEF, DIVISION OF LAND DEVELOPMENT

NOTES:
 1. APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) BY THE HOWARD SOIL CONSERVATION DISTRICT DOES NOT GRANT APPROVAL OF THE SHOWN SEDIMENT CONTROL PLAN.
 2. ALL SPECIMEN TREES ARE TO BE PROTECTED DURING CONSTRUCTION OPERATIONS. NO SPECIMEN TREES ARE PROPOSED TO BE REMOVED.

PLAN SCALE
 SCALE: 1" = 40'

ESD PRACTICES BY LOT - AREA 2	
LOT #	ESD PRACTICE
#4	DISCONNECT ROOFTOP RUNOFF PERMEABLE SURFACE DRIVEWAY, RAIN BARREL, MICROBIORETENTION
#5	PERMEABLE SURFACE DRIVEWAY
#6	PERMEABLE SURFACE DRIVEWAY
#7	PERMEABLE SURFACE DRIVEWAY
#8	DISCONNECT ROOFTOP RUNOFF PERMEABLE SURFACE DRIVEWAY, RAIN BARREL, MICROBIORETENTION

B.4.B SPECIFICATIONS FOR PERMEABLE PAVEMENTS & REINFORCED TURF

THESE SPECIFICATIONS INCLUDE INFORMATION ON ACCEPTABLE MATERIALS FOR TYPICAL APPLICATIONS AND ARE NOT EXCLUSIVE OR LIMITING. THE DESIGNER IS RESPONSIBLE FOR DEVELOPING SPECIFICATIONS FOR INDIVIDUAL PROJECTS AND SPECIFIC CONDITIONS.

1. PERVIOUS CONCRETE SPECIFICATIONS

DESIGN THICKNESS - PERVIOUS CONCRETE APPLICATIONS SHALL BE DESIGNED SO THAT THE THICKNESS OF THE CONCRETE SLAB SHALL SUPPORT THE TRAFFIC AND VEHICLE TYPES THAT WILL BE CARRIED. APPLICATIONS MAY BE DESIGNED USING EITHER STANDARD PAVEMENT PROCEDURES (E.G., AASHTO, ACI 325.9R, ACI 330R) OR USING STRUCTURAL VALUES DERIVED FROM FLEXIBLE PAVEMENT DESIGN PROCEDURES.

MIX & INSTALLATION - TRADITIONAL PORTLAND CEMENTS (ASTM C 150, C 1157) MAY BE USED IN PERVIOUS CONCRETE APPLICATIONS. PHOSPHORUS ADMIXTURES MAY ALSO BE USED. MATERIALS SHOULD BE TESTED (E.G., TRIAL BATCHING) PRIOR TO CONSTRUCTION SO THAT CRITICAL PROPERTIES (E.G., SETTLING TIME, RATE OF STRENGTH DEVELOPMENT, POROSITY, PERMEABILITY) CAN BE DETERMINED.

AGGREGATE - PERVIOUS CONCRETE CONTAINS A LIMITED FINE AGGREGATE CONTENT. COMMONLY USED GRADATIONS INCLUDE ASTM C 33 NO. 67 (3/4 IN. TO NO. 4), NO. 8 (3/8 IN. TO NO.16) AND NO. 89 (3/8 IN. TO NO.50) SIEVES. SINGLE-SIZED AGGREGATE (UP TO 1 INCH) MAY ALSO BE USED.

WATER CONTENT - WATER-TO-CEMENT RATIOS BETWEEN 0.27 AND 0.30 ARE USED ROUTINELY WITH PROPER INCLUSION OF CHEMICAL ADMIXTURES. WATER QUALITY SHOULD MEET ACI 308. AS A GENERAL RULE, POTABLE WATER SHOULD BE USED ALTHOUGH RECYCLED CONCRETE PRODUCTION WATER MEETING ASTM C 94 OR AASHTO M 157 MAY ALSO BE USED.

ADMIXTURES - CHEMICAL ADMIXTURES (E.G., RETARDERS OR HYDRATION-STABILIZERS) ARE USED TO OBTAIN SPECIAL PROPERTIES IN PERVIOUS CONCRETE. USE OF ADMIXTURES SHOULD MEET ASTM C 494 (CHEMICAL ADMIXTURES) AND ASTM C 260 (AIR ENTRAINING ADMIXTURES) AND CLOSELY FOLLOW MANUFACTURER'S RECOMMENDATIONS.

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).

2. PERMEABLE INTERLOCKING CONCRETE PAVEMENTS (PICP)

PAVER BLOCKS - BLOCKS SHOULD BE EITHER 3P IN. OR 4 IN. THICK, AND MEET ASTM C 936 OR CSA A231.2 REQUIREMENTS. APPLICATIONS SHOULD HAVE 20% OR MORE (40% PREFERRED) OF THE SURFACE AREA OPEN. INSTALLATION SHOULD FOLLOW MANUFACTURER'S INSTRUCTIONS, EXCEPT THAT INFILL AND BASE COURSE MATERIALS AND DIMENSIONS SPECIFIED IN THIS APPENDIX SHALL BE FOLLOWED.

INFILL MATERIALS AND LEVELING COURSE - OPENINGS SHALL BE FILLED WITH ASTM C-33 GRADED SAND OR SANDY LOAM. PICP BLOCKS SHALL BE PLACED ON A ONE-INCH THICK LEVELING COURSE OF ASTM C-33 SAND. 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 1-3/4" THICK WITH A LOAD CAPACITY CAPABLE OF SUPPORTING THE TRAFFIC AND VEHICLE TYPES THAT WILL BE CARRIED.

A-2. PERMEABLE PAVEMENTS

CONSTRUCTION CRITERIA:

THE FOLLOWING ITEMS SHOULD BE ADDRESSED DURING CONSTRUCTION OF PROJECTS WITH PERMEABLE PAVEMENT:

- EROSION AND SEDIMENT CONTROL: FINAL GRADING FOR INSTALLATION SHOULD NOT TAKE PLACE UNTIL THE SURROUNDING SITE IS STABILIZED. IF THIS CANNOT BE ACCOMPLISHED, RUNOFF FROM DISTURBED AREAS SHALL BE DIVERTED AROUND PROPOSED PAVEMENT LOCATIONS.
- SOIL COMPACTION: SUB SOILS SHOULD NOT BE COMPACTED. CONSTRUCTION SHOULD BE PERFORMED WITH LIGHTWEIGHT, WIDE TRACKED EQUIPMENT TO MINIMIZE COMPACTION. EXCAVATED MATERIALS SHOULD BE PLACED IN A CONTAINED AREA.
- DISTRIBUTION SYSTEMS: OVERDRAIN, UNDERDRAIN, AND DISTRIBUTION PIPES SHALL BE CHECKED TO ENSURE THAT BOTH THE MATERIAL AND PERFORATIONS MEET SPECIFICATIONS (SEE APPENDIX B. 4). THE UPSTREAM ENDS OF PIPES SHOULD BE CAPPED PRIOR TO INSTALLATION. ALL UNDERDRAIN OR DISTRIBUTION PIPES USED SHOULD BE INSTALLED FLAT ALONG THE BED BOTTOM.
- SUBBASE INSTALLATION: SUBBASE AGGREGATE SHALL BE CLEAN AND FREE OF FINES. THE SUBBASE SHALL BE PLACED IN LIFTS AND LIGHTLY ROLLED ACCORDING TO THE SPECIFICATIONS (SEE APPENDIX B.4).

INSPECTION:

REGULAR INSPECTIONS SHALL BE MADE DURING THE FOLLOWING STAGES OF CONSTRUCTION:

- DURING EXCAVATION TO SUB GRADE.
- DURING PLACEMENT AND BACKFILL OF ANY DRAINAGE OR DISTRIBUTION SYSTEM(S).
- DURING PLACEMENT OF THE CRUSHED STONE SUBBASE MATERIAL.
- DURING PLACEMENT OF THE SURFACE MATERIAL.
- UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF CHARACTERISTIC STABILIZATION.

MAINTENANCE CRITERIA:

THE FOLLOWING PROCEDURES SHOULD BE CONSIDERED ESSENTIAL FOR MAINTAINING PERMEABLE PAVEMENT SYSTEMS:

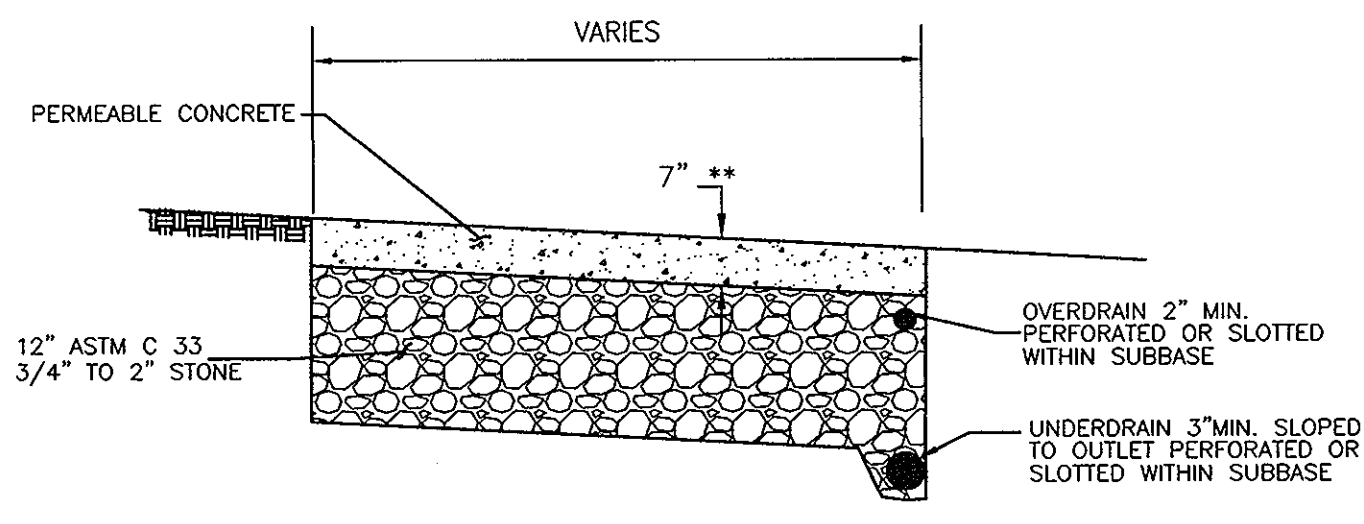
- PAVEMENTS SHOULD BE USED ONLY WHEN REGULAR MAINTENANCE CAN BE PERFORMED. MAINTENANCE AGREEMENTS SHOULD CLEARLY SPECIFY HOW TO CONDUCT ROUTINE TASKS TO ENSURE LONG-TERM PERFORMANCE.
- PAVEMENT SURFACES SHOULD BE SWEEP AND VACUUMED TO REDUCE SEDIMENT ACCUMULATION AND ENSURE CONTINUED SURFACE POROSITY. SWEEPING SHOULD BE PERFORMED AT LEAST TWICE ANNUALLY WITH A COMMERCIAL CLEANING UNIT. WASHING SYSTEMS AND COMPRESSED AIR UNITS SHOULD NOT BE USED TO PERFORM SURFACE CLEANING.
- DRAINAGE PIPES, INLETS, STONE EDGE DRAINS, AND OTHER STRUCTURES WITHIN OR DRAINING TO THE SUBBASE SHOULD BE CLEANED OUT AT REGULAR INTERVALS.
- TRUCKS AND OTHER HEAVY VEHICLES CAN GRIND DIRT AND GRIT INTO THE POROUS SURFACES, LEADING TO CLOGGING AND PREMATURE FAILURE. THESE VEHICLES SHOULD BE PREVENTED FROM TRACKING AND SPILLING MATERIAL ONTO THE PAVEMENT.
- DECIDERS SHOULD BE USED IN MODERATION. WHEN USED, DECIDERS SHOULD BE NON-TOXIC AND ORGANIC AND CAN BE APPLIED EITHER AS CALCIUM MAGNESIUM ACETATE OR AS PRETREATED SALT. SNOW PLOWING SHOULD BE DONE CAREFULLY WITH BLADES SET ONE-INCH HIGHER THAN NORMAL. FLOWED SNOW PILES AND SNOW MELT SHOULD NOT BE DIRECTED TO PERMEABLE PAVEMENT.

HOWARD COUNTY - OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED PERMEABLE PAVEMENT (A-2)

- A. THE OWNER SHALL PERIODICALLY SWEEP (OR VACUUM POROUS CONCRETE PAVEMENT) THE PAVEMENT SURFACES TO REDUCE SEDIMENT ACCUMULATION AND ENSURE CONTINUED SURFACE POROSITY. SWEEPING SHOULD BE PERFORMED AT LEAST TWICE ANNUALLY WITH A COMMERCIAL CLEANING UNIT. WASHING OR COMPRESSED AIR UNITS SHOULD NOT BE USED TO PERFORM SURFACE CLEANING.
B. THE OWNER SHALL PERIODICALLY CLEAN DRAINAGE PIPES, INLETS, STONE EDGE DRAINS AND OTHER STRUCTURES WITHIN OR DRAINING TO THE SUBBASE
C. THE OWNER SHALL USE DECIDERS IN MODERATION. DECIDERS SHOULD BE NON-TOXIC AND BE APPLIED EITHER AS CALCIUM MAGNESIUM ACETATE OR AS PRETREATED SALT.
D. THE OWNER SHALL ENSURE SNOW PLOWING IS PERFORMED CAREFULLY WITH BLADES SET ONE-INCH ABOVE THE SURFACE. FLOWED SNOW PILES AND SNOW MELT SHOULD NOT BE DIRECTED TO PERMEABLE PAVEMENT.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Signature and date for Chief, Development Engineering Division (7/13/12) and Chief, Division of Land Development (6/29/12).



PAVEMENT CROSS SECTION TO BE CONFIRMED BY GEOTECHNICAL ENGINEER UNDERDRAIN SHALL BE LOCATED SUCH THAT IT CAN DAYLIGHT TO DETAIL - PERMEABLE CONCRETE DRIVEWAY NOT TO SCALE

APPENDIX B.4.C SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDEN, 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 PROVIDE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS.
3. COMPACTION: IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL.
4. PLANT MATERIAL: RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3.

N-1. DISCONNECTION OF ROOFTOP RUNOFF

CONSTRUCTION CRITERIA:

- THE FOLLOWING ITEMS SHOULD BE ADDRESSED DURING THE CONSTRUCTION OF PROJECTS WITH PLANNED ROOFTOP DISCONNECTIONS:
- EROSION AND SEDIMENT CONTROL: EROSION AND SEDIMENT CONTROL PRACTICES (E.G., SEDIMENT TRAPS) SHALL NOT BE LOCATED IN VEGETATED AREAS RECEIVING DISCONNECTED RUNOFF.
- SITE DISTURBANCE: CONSTRUCTION VEHICLES AND EQUIPMENT SHOULD AVOID AREAS RECEIVING DISCONNECTED RUNOFF TO MINIMIZE DISTURBANCE AND COMPACTION.

INSPECTION:

A FINAL INSPECTION SHALL BE CONDUCTED BEFORE USE AND OCCUPANCY APPROVAL TO ENSURE THAT SIZING FOR TREATMENT AREAS HAS BEEN MET AND PERMANENT STABILIZATION HAS BEEN ESTABLISHED.

MAINTENANCE CRITERIA:

MAINTENANCE OF AREAS RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPED AREAS. THE AREAS RECEIVING RUNOFF SHOULD BE PROTECTED FROM FUTURE COMPACTION (E.G., BY PLANTING TREES OR SHRUBS ALONG THE PERIMETER). IN COMMERCIAL AREAS, FOOT TRAFFIC SHOULD BE DISCOURAGED AS WELL.

N-2. DISCONNECTION OF NON-ROOFTOP RUNOFF

CONSTRUCTION CRITERIA:

- THE FOLLOWING SHOULD BE ADDRESSED DURING CONSTRUCTION OF PROJECTS WITH NON-ROOFTOP DISCONNECTIONS:
- EROSION AND SEDIMENT CONTROL: EROSION AND SEDIMENT CONTROL PRACTICES (E.G., SEDIMENT TRAPS) SHALL NOT BE LOCATED IN AREAS DESIGNATED FOR NON-ROOFTOP DISCONNECTIONS.
- SITE DISTURBANCE: TO MINIMIZE DISTURBANCE AND COMPACTION, CONSTRUCTION VEHICLES AND EQUIPMENT SHOULD AVOID AREAS RECEIVING DISCONNECTED RUNOFF TO MINIMIZE DISTURBANCE AND COMPACTION.

INSPECTION:

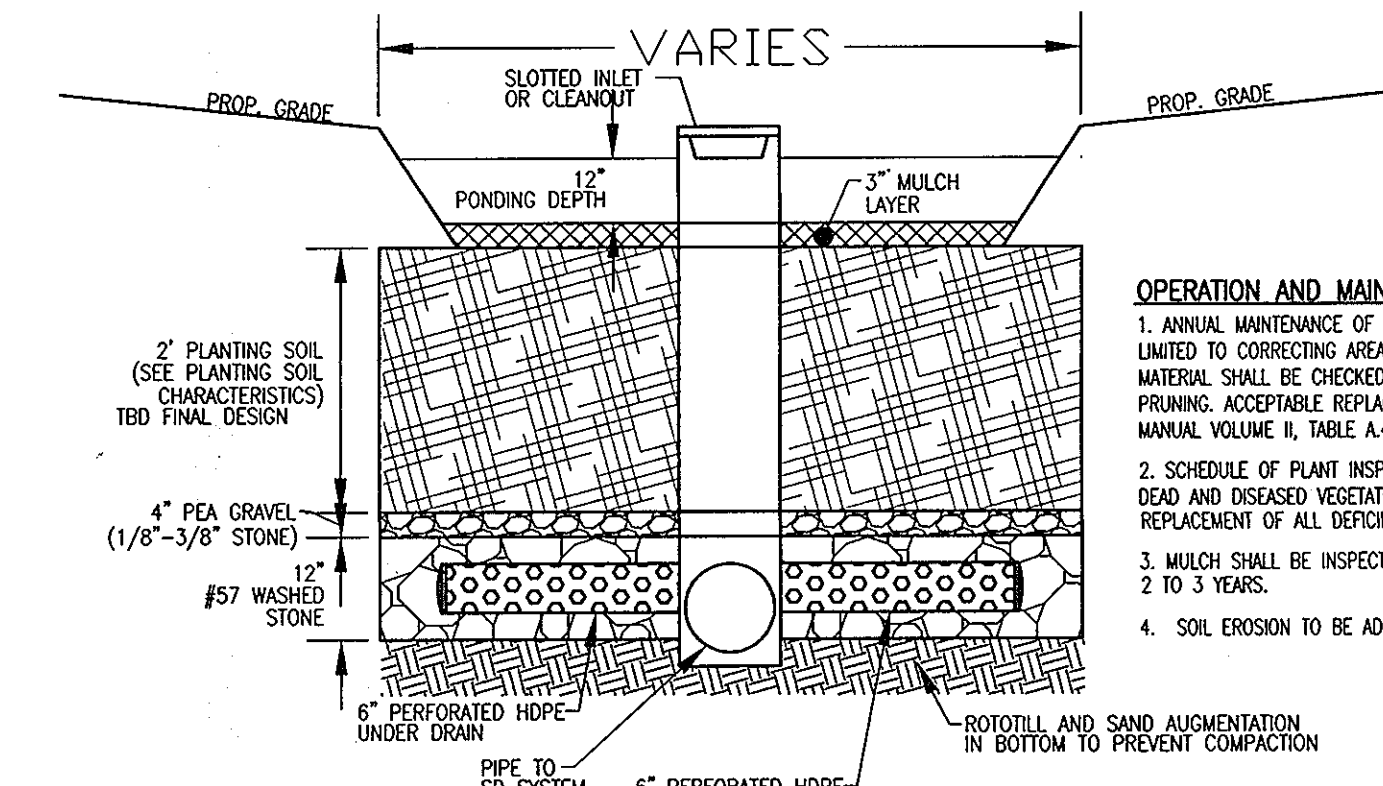
A FINAL INSPECTION SHALL BE CONDUCTED BEFORE USE AND OCCUPANCY APPROVAL TO ENSURE THAT ADEQUATE TREATMENT AREAS AND PERMANENT STABILIZATION HAS BEEN ESTABLISHED.

MAINTENANCE CRITERIA:

MAINTENANCE OF AREAS RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPED AREAS. THE OWNER SHALL ENSURE THE AREAS RECEIVING DISCONNECTED RUNOFF BECOME COMPACTED, SCARIFYING THE SURFACE OR ROTOTILLING THE SOIL TO A DEPTH OF FOUR TO SIX INCHES SHALL BE PERFORMED TO ENSURE PERMEABILITY. ADDITIONALLY, AMENDMENTS MAY BE NEEDED FOR TIGHT, CLAYEY SOILS.

HOWARD COUNTY - OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DISCONNECTION OF ROOFTOP RUNOFF (N-1), DISCONNECTION OF NON-ROOFTOP RUNOFF (N-2)

- A. MAINTENANCE OF AREAS RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPED AREAS. THE OWNER SHALL ENSURE THE AREAS RECEIVING DISCONNECTED RUNOFF BECOME COMPACTED, SCARIFYING THE SURFACE OR ROTOTILLING THE SOIL TO A DEPTH OF FOUR TO SIX INCHES SHALL BE PERFORMED TO ENSURE PERMEABILITY. ADDITIONALLY, AMENDMENTS MAY BE NEEDED FOR TIGHT, CLAYEY SOILS.



TYPICAL MICRO-BIORETENTION NOT TO SCALE

OPERATION AND MAINTENANCE SCHEDULE FOR MICROBIORETENTION AREAS

- 1. ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER IS REQUIRED. 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.
2. SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDERED BEFORE TREATMENT, TREATMENT OF ALL DISEASED TREES AND SHRUBS AND REPLACEMENT OF ALL DISEASED TREES AND SHRUBS.
3. MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.
4. SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED BASIS WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.

ENVIRONMENTAL CONCEPT PLAN - SWM CONCEPT PER LOT ON LOT PRACTICES ARE SUBJECT TO CHANGE DURING FINAL DESIGN

Table with columns for LOT AREA, IMPERVIOUS AREA, GRASS AREA, TOTAL AREA, PERCENT IMPERVIOUS, and SWM PRACTICES (RAIN BARREL, PERMEABLE SURFACE DRIVEWAY, MICRO BIORETENTION, etc.).

Table with columns for LOT AREA, IMPERVIOUS AREA, GRASS AREA, TOTAL AREA, PERCENT IMPERVIOUS, and SWM PRACTICES (RAIN BARREL, PERMEABLE SURFACE DRIVEWAY, MICRO BIORETENTION, etc.).

* Includes Use-In-Common Driveway Impervious Area to be managed on individual lots

APPENDIX B.4 - CONSTRUCTION SPECIFICATIONS

Appendix B.4. Construction Specifications for Environmental Site Design Practices

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

Table with columns for Material, Specification, Size, and Notes. Lists materials like Plantings, Organic content, Mulch, Pea gravel diaphragm, Curtain drain, Geotextile, Gravel, Underdrain piping, Poured in place concrete, and Sand.

BUSHMAN BRT205 Round Tank advertisement including product image, features, and contact information for BUSHMAN America.

BUSHMAN BRT205 (205 GALLON) RAIN HARVESTING SYSTEM OR EQUIVALENT RAIN BARREL DETAIL NOT TO SCALE

HOWARD COUNTY - OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED RAINWATER HARVESTING (M-1)

- A. THE OWNER SHALL EMPTY BARRELS ON A MONTHLY BASIS AND CLEAN BARREL WITH A HOSE.
B. THE OWNER SHALL VERIFY INTEGRITY OF LEAF SCREENS, GUTTERS, DOWNSPOUTS, SPIGOTS, AND MOSQUITO SCREENS, AND CLEAN AND REMOVE ANY DEBRIS.
C. THE OWNER SHALL REPLACE DAMAGED COMPONENTS AS NEEDED.
D. THE OWNER SHALL DISCONNECT THE BARREL PRIOR TO WINTER, OR ALLOW THE BARREL TO DRAIN BY BOTTOM SPIGOT DURING THE WINTER SEASON.

TYPICAL RAIN BARREL DESIGN

Table showing calculations for rain barrel design: 205 GAL = 27.41 CUFT, 500 SF X (0.66") / 12 = 27.41 CUFT, 12 (27.41 CUFT) / 0.66" = 500 SF.

THEFORE A 205 GALLON BARREL CAPTURES Pp OF 0.66" FROM A 500 SF SECTION OF PROPOSED ROOFTOP THE REMAINING PORTION OF THE 500 SF SECTION OF ROOFTOP IS Pp = 0.34". THIS CAN BE ACHIEVED BY A 40' DISCONNECTION OF ROOFTOP RUNOFF LENGTH.

OWNER / DEVELOPER JOHN P. MCDANIEL AND ELLEN G. MCDANIEL 13032 HIGHLAND ROAD HIGHLAND, MARYLAND 20777

STORMWATER MANAGEMENT NOTES AND DETAILS for MCDANIEL PROPERTY, including site map, zoning info, and Robert H. Vogel Engineering, Inc. logo.