

LOT NO.	GROSS AREA	PIPESTEM AREA	MIN. LOT SIZE
15	10,180 S.F.	1,784 S.F.	8,406 S.F.

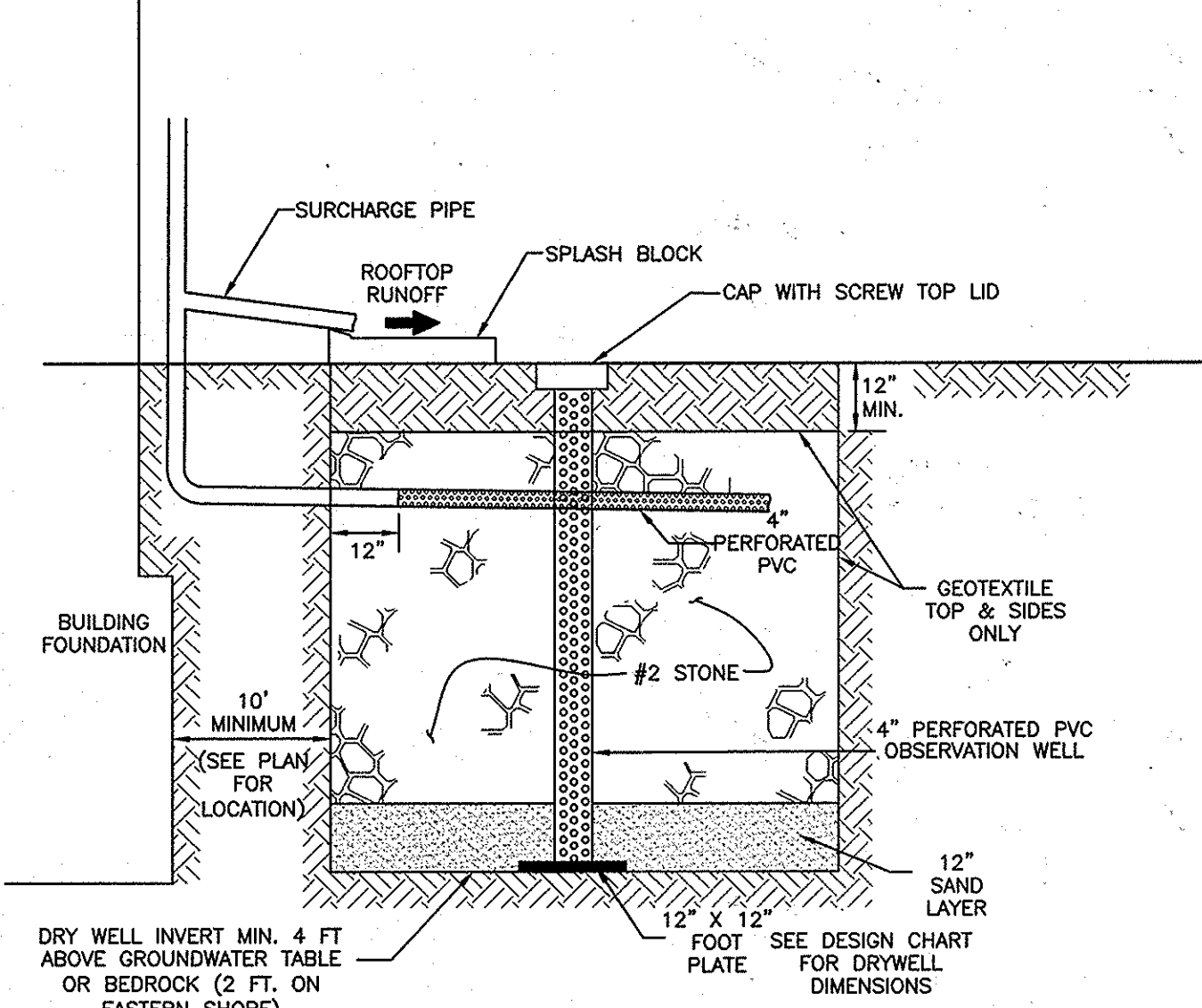
MAP SYMBOL	SOIL TYPE	Kw VALUE	MAPPING UNIT
UcB	D	0.37	URBAN LAND-CHILLUM-BELTSVILLE COMPLEX, 0% TO 8% SLOPES

ECP NOTE:
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.

- OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED STORMWATER DRY WELLS (M-5)**
- The monitoring wells and structures shall be inspected on a quarterly basis and after every large storm event.
 - Water levels and sediment build up in the monitoring wells shall be recorded over a period of several days to insure trench drainages.
 - A log book shall be maintained to determine the rate at which the facility drains.
 - When the facility becomes clogged so that it does not drain down within the 72 hour time period, corrective action shall be taken.
 - The maintenance log book shall be available to Howard County for inspection to insure compliance with operation and maintenance criteria.
 - 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 (IF REQUIRED)	SEE APPENDIX A, TABLE A.4	N/A	PLANTINGS ARE SITE SPECIFIC
FINISHING SOIL (2.4 TO 4.0 DEEP)	SAND, 30-60% S.I.T., 30-35% CLAY, 10-25% SILT	N/A	USDA SOIL TYPES: LOAMY SAND, SANDY LOAM OR LOAM
MULCH	SHREDDED WOODHED	N/A	2" TO 3" DEPTH, AGED 6 MONTHS, MINIMUM
GEOTEXTILE (CLASS "C")	APPARENT OPENING SIZE: (ASTM D-4751) 60% TENSILE STRENGTH: (ASTM D-4832) PUNCTURE RESISTANCE: (ASTM D-4833)	N/A	FOR USE AS NECESSARY BENEATH UNDERDRAINS ONLY
UNDERDRAIN GRAVEL	ASHTO M-43	0.375" TO 0.750"	
UNDERDRAIN PIPING	7758, TYPE P238 OR ASHITO M-278	4" TO 6" RIGID SCH 40 PVC OR SDR35	3/8" PERF. Ø 6" O/C, 4 HOLES PER ROW, MINIMUM OF 3" OF GRAVEL OVER PIPES, NOT NECESSARY UNDERNEATH PIPES
POURED-IN-PLACE CONC. (IF REQUIRED)	MISHA MIX NO. 3, F-360000 Ø 28 OVALS, NORMAL WEIGHT, AIR ENTRAINED, REINFORCING TO MEET ASTM 615-60	N/A	ON-SITE TESTING OF POURED-IN-PLACE CONC. REQUIRED: 28 DAY STRENGTH TEST AND SLUMP TEST ALL CONC. DESIGN (CAST-IN-PLACE OR PRE-CAST) NOT USING PREVIOUSLY APPROVED STATE OR LOCAL STANDARDS. DESIGN DRAWINGS SEALED AND APPROVED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF MARYLAND. DESIGN TO INCLUDE MEETING AAS CODE 320A/68: VERTICAL LOADING (H-10 or H-20) ALLOWABLE HORIZONTAL LOADING (BASED ON SOIL PRESSURES); AND ANALYSIS OF POTENTIAL CRACKING
CRACK DAMPENER (WOOD)	AWPA STANDARD C6	6"X6" OR 6"X8"	DO NOT COAT WITH CREOSOTE, EMBED TO EIGHT (8) INTO SOIL SURFACE

- LEGEND**
- SOILS CLASSIFICATION: *Abc*
 - SOILS DELINEATION: 999
 - EXISTING CONTOURS: 999
 - PROPOSED CONTOURS: 999
 - EXISTING WOODS LINE: [Symbol]
 - PROPOSED WOODS LINE: [Symbol]
 - EXISTING STRUCTURE: [Symbol]
 - PROPOSED STRUCTURE: [Symbol]
 - EX. PRIVATE ACCESS PLACE EASEMENT: [Symbol]
 - EX. PRIVATE DRAINAGE & UTILITY EASEMENT: [Symbol]
 - EX. PRIVATE 20' DRAINAGE & UTILITY EASEMENT: [Symbol]
 - EX. PUBLIC WATER & UTILITY EASEMENT: [Symbol]
 - STABILIZED CONSTRUCTION ENTRANCE: [Symbol]
 - SILT DIVERSION FENCE: [Symbol]
 - SUPER SILT FENCE: [Symbol]
 - LIMIT OF DISTURBANCE: [Symbol]



NARRATIVE

The area of this submission is a portion of Tax Map 38, Parcel 881 and is approximately 0.43 acres total. The property is zoned R-12. The site is located at the terminus of Hooks Lane and at the terminus of a private use-in-common drive serving the Bonnie Ridge subdivision (F-03-109). The entire site topography slopes generally east to west and flows towards Hooks Lane, into an unnamed tributary, and ultimately flows into the Lower Northern Branch of the Patapsco River (HoCo 2130906A), which is a major tributary to the Patapsco River Area Watershed (2-13-09) a Class 1 stream.

The site currently is an undeveloped, but recorded subdivision. It is mostly meadow with a wooded area at the eastern boundary of Lot 15. There are no existing structures on-site. The majority of the site drains east to west in sheet flow condition at an average slope of 3-10 percent towards Hooks Lane from a slightly ridged high area along the southern boundaries.

The existing project infrastructure was constructed under F-03-109 (Bonnie Ridge Lots 1 thru 11). This project area previously existed as Lot 2 on those plans and was later subdivided into present Lots 15 & 16 under F-07-202 (Plat #22555).

The proposed development shall consist of, 2 single family homes, potentially with detached garages to match surrounding neighborhood. The improvements will include tying the driveways into existing public roadway Hooks Lane (Lot 16) & an existing use-in-common drive (Lot 15), respectively.

The proposed development has no encroachments into any non-existent surrounding environmental elements and buffers. The limit of disturbance is basically limited to the site boundary. The existing natural flow patterns are generally maintained through the location of ESD practices which dissipate concentrated flows back towards their original discharge points.

There will be minimal clearing of existing tree canopy & vegetative undergrowth along the eastern boundary of Lot 15. This area is included within the project limit of disturbance. The majority of this area will ultimately be grassed pervious areas (law) and the minimal impervious area will be the proposed driveway & driveway. Since the overall area is already accounted for within the effective area and subsequent ESD practices provide full treatment of the target ESDv, no further treatment is necessary.

The drainage areas to each individual practice were 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 D-soils types. This Pe was then used to determine if any Alternative Surface practices could be implemented, this was deemed impractical. Permeable paving cannot be utilized due to the majority of the proposed driveways being within an on-site Public Utility Easement, and the subsequent slopes exceeding 5% based on the required Minimum Cellar Elevations.

The computations for this ECP were prepared with the purpose of calculating and presenting the developed runoff for target Pe & ESDv. The measured impervious areas under developed conditions within the drainage area were used in establishing the runoff volumes and associated factors. Addressing the stormwater management by use of ESD provides 100% treatment of ESDv for the affected areas, therefore, it has been provided to the MEP.

It is proposed to increase the size of the Dry Wells by approximately 10% from MDE standard design contributing impervious area of 1,000 sf to 1,115 sf. This will allow for a more practical ESD implementation by better constructability of roof leaders based on typical standard house/gutter assembly, convenient location for future homeowner maintenance, and the installation of one less Dry Well in the backyard resulting in more usable space.

As a result of aforementioned site constraints the proposed driveways cannot be treated, but the Sand Filter constructed under F-03-109 provides the overall WQv & CPv requirements for the non-roof-top discharge of this project. Additionally, the Dry Wells shall be sized to overcompensate for the driveway impervious areas.

Sediment and Erosion control shall comply with the latest edition of the MDE Standards and Specifications for Sediment Control as shown on the accompanying plan.

It is concluded that all ESD requirements as defined in the Stormwater Management Act of 2007 have been met for the proposed development to the MEP. All of the rooftop impervious areas are treated, and the driveway imperviousness is overcompensated within the Dry Wells (M-5), therefore the required total ESDv is adequately treated. Due to inherent Site limitations, ESD has been provided to the MEP.

The provisions for F-03-109 to provide Rev, WQv and CPv still exist and shall be available to these lots since they were included with the drainage of F-03-109. The Water Quality has been provided by the implementation

DW	15A	15B	16A	16B
DRYWELL (M-5)	DRYWELL (M-5)	DRYWELL (M-5)	DRYWELL (M-5)	DRYWELL (M-5)
Length (Ld)	7.58	7.58	7.58	7.58
Width (Wd)	15.00	15.00	15.00	15.00
Depth (Dd)	5.00	5.00	5.00	5.00
Grade	203.00	202.15	202.40	202.15
Top of Stone	202.00	202.15	201.40	201.40
Bottom of Stone	197.00	197.15	196.40	196.40

Drainage Area	Practice	MDE	Number	Ownership/Maintenance
LOT 15A	Dry Well	(M-5)	1	Private
LOT 15B	Dry Well	(M-5)	1	Private
LOT 16A	Dry Well	(M-5)	1	Private
LOT 16B	Dry Well	(M-5)	1	Private

Drainage Area	Practice	MDE Type	Rooftop Imp. DA	Pe	Imp. Treated by Practice**	of Req. at Prov.	% Min. at Prov.	Depth (ft.)	of Req. at Prov.	% Req. at Prov.	Required	Provided			
LOT 15A	DW	(M-5)	1,115	1.8	1,470	N/A	N/A	5.0	209.5	227.4	PASS	0.0030			
LOT 15B	DW	(M-5)	1,115	1.8	1,470	N/A	N/A	5.0	209.5	227.4	PASS	0.0209			
LOT 16A	DW	(M-5)	1,115	1.8	1,470	N/A	N/A	5.0	209.5	227.4	PASS	ac/ft*			
LOT 16B	DW	(M-5)	1,115	1.8	1,470	N/A	N/A	5.0	209.5	227.4	PASS	ac/ft*			
Totals										4,460	5,870	Target ESDv =	908.3	ESDv Provided:	910

** includes areas of overcompensation for the driveways that do not actually flow to the practice

* hydrologically site has been returned to woods in good condition by ESD to the MEP

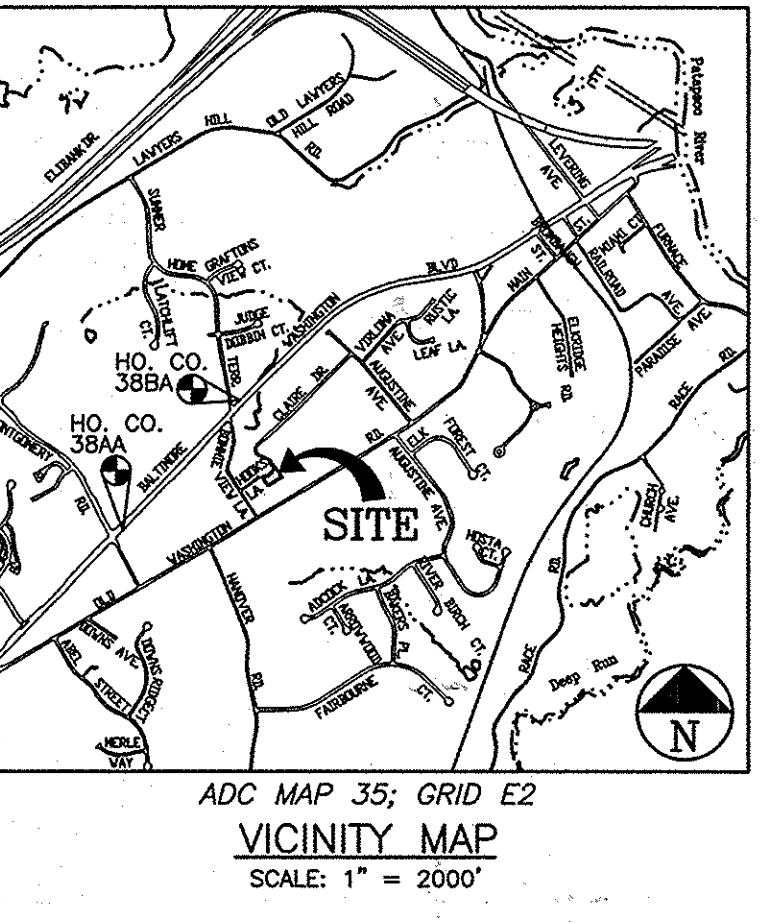
PROJECT BACKGROUND INFORMATION

PRESENT ZONING: R-12
LOCATION: TAX MAP 38 - GRID 3 - PARCEL 881
ELECTION DISTRICT: 1ST
DEED REFERENCES: L15037/F.00188
PROPOSED USE OF SITE: RESIDENTIAL (SFD)
PROPOSED WATER AND SEWER SYSTEMS: PUBLIC WATER & SEWER

1) TOTAL PROJECT AREA.....	0.43 AC.±
2) AREA OF 100-YR. FLOODPLAIN.....	0.00 AC.
3) AREA OF STEEP SLOPES (15% OR GREATER).....	0.00 AC.
4) AREA OF EXISTING FOREST.....	0.00 AC.
5) AREA OF ERODIBLE SOILS.....	0.00 AC.
6) AREA OF WETLANDS.....	0.00 AC.
7) NET AREA OF SITE(S).....	0.43 AC.±
8) NUMBER OF UNITS ALLOWED.....	2
9) NUMBER OF RESIDENTIAL UNITS PROPOSED.....	2
10) AREA OF PLAN SUBMISSION.....	0.43 AC.±
11) APPROXIMATE LIMIT OF DISTURBANCE.....	0.39 AC.±
12) PRESENT ZONING DESIGNATION.....	R-12
13) PROPOSED USES FOR THE SITE & STRUCTURES	RESIDENTIAL - SFD
14) MINIMUM LOT SIZE.....	8,400 SF
15) OPEN SPACE REQUIRED (30% OF 3,6564).....	1,0969 AC.(F-03-109)
16) OPEN SPACE PROVIDED.....	1,3116 AC.(F-03-109)
17) RECREATIONAL OPEN SPACE REQUIRED.....	NA(F-03-109)
18) NON-CREDITED OPEN SPACE PROVIDED.....	0.0172 AC.(F-03-109)
19) NUMBER OF PARKING SPACES REQUIRED.....	(F-03-109)
20) TOTAL NUMBER OF PARKING SPACES PROVIDED.....	(F-03-109)
21) BUILDING COVERAGE AREA (IMPERVIOUS).....	0.10 AC.±(±23%)
22) TOTAL IMPERVIOUS AREA.....	0.13 AC.±(±30%)
23) TOTAL GREEN SPACE AREA.....	0.30 AC.±(±70%)
24) APPLICABLE DPZ FILE REFERENCES.....	F-03-109, WP-13-024, WP-13-122, SDP-05-045, F-07-202

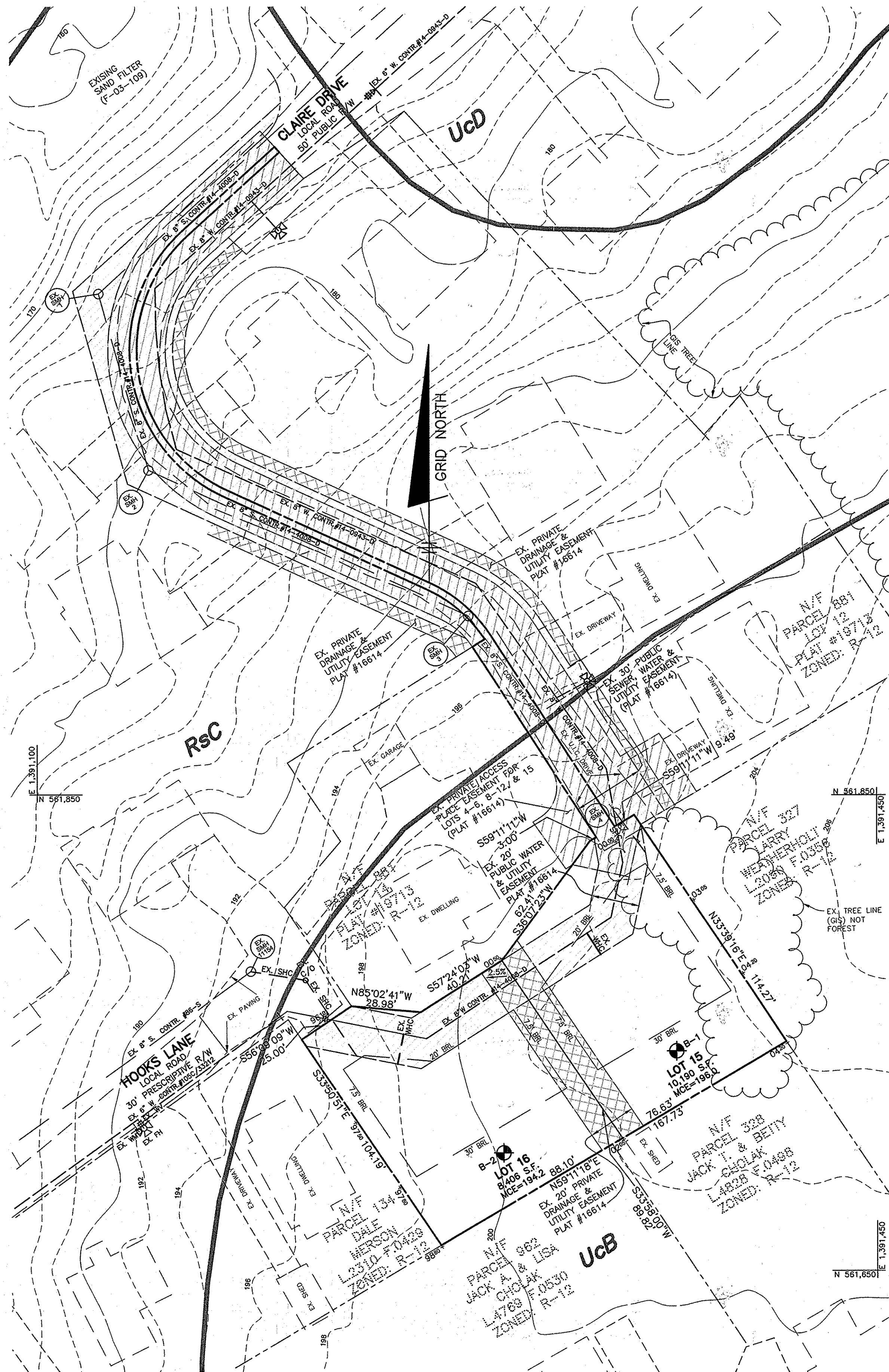
HO. CO. #38AA (NAD '83)	ELEV. 220.044
STAMPED DISC ON CONCRETE MONUMENT	
N 561,158.819	E 1,389,726.3323
HO. CO. #38BA (NAD '83)	ELEV. 166.177
STAMPED DISC ON CONCRETE MONUMENT	
N 562,553.3149	E 1,390,967.8619

NO.	DESCRIPTION
1	ENVIRONMENTAL CONCEPT PLAN
2	SEDIMENT & EROSION CONTROL AND EXISTING CONDITION PLANS



- GENERAL NOTES**
- THE SUBJECT PROPERTY IS ZONED R-12 PER THE 10-06-13 COMPREHENSIVE ZONING PLAN.
 - THIS PROJECT IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE ZONING REGULATIONS EFFECTIVE APRIL 13, 2004.
 - THE BOUNDARY FOR THIS PROJECT WAS TAKEN FROM F-07-202 PREPARED BY FSH ASSOCIATES.
 - THE EXISTING TOPOGRAPHY IS TAKEN FROM HO.CO. GIS TOPOGRAPHICAL INFORMATION.
 - 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. #38AA AND #38BA WERE USED FOR THIS PROJECT.
 - EXISTING UTILITIES SHOWN HAVE BEEN TAKEN FROM APPROVED CONTRACT DRAWINGS AND FIELD SURVEYED LOCATIONS IF NECESSARY. THE CONTRACTOR SHALL ADJUST ANY OR ALL STRUCTURE TOP ELEVATIONS TO MATCH PROPOSED GRADES.
 - THERE ARE NO 100 YEAR-FLOODPLAIN, STREAMS, STEEP SLOPES OR FORESTED AREAS LOCATED ON-SITE.
 - THERE ARE NO EXISTING STRUCTURES LOCATED ON THIS SITE.
 - TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO HISTORIC STRUCTURES OR KNOWN CEMETERIES LOCATED ON-SITE.
 - A NOISE STUDY IS NOT REQUIRED FOR THIS DEVELOPMENT.
 - A TRAFFIC STUDY IS NOT REQUIRED FOR THIS DEVELOPMENT.
 - THIS SITE IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
 - WATER & SEWER IS PUBLIC, CONNECTING INTO EXISTING CONTRACTS.
 - THE DRAINAGE AREA IS THE PATAPSCO RIVER WATERSHED.
 - THE FOREST CONSERVATION OBLIGATIONS FOR THIS PROJECT WERE PROVIDED UNDER F-03-109.
 - THE GEOTECHNICAL REPORT FOR THIS PROJECT PREPARED BY GEOLAB DATED OCTOBER, 2015.
 - THERE ARE NO WETLANDS LOCATED ON-SITE PER F-07-202.
 - THIS PLAN WILL BE PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL.
 - APPROVAL OF THIS ECP DOES NOT CONSTITUTE AN APPROVAL OF ANY SUBSEQUENT AND ASSOCIATED SUBDIVISION AND/OR SITE DEVELOPMENT 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 AND/OR SITE DEVELOPMENT PLAN STAGES. THEREFORE, THE APPLICANT AND CONSULTANT SHOULD EXPECT ADDITIONAL AND MORE DETAILED COMMENTS (INCLUDING THOSE THAT MAY ALTER OVERALL SITE DESIGN) AS THIS PROJECT PROGRESSES.

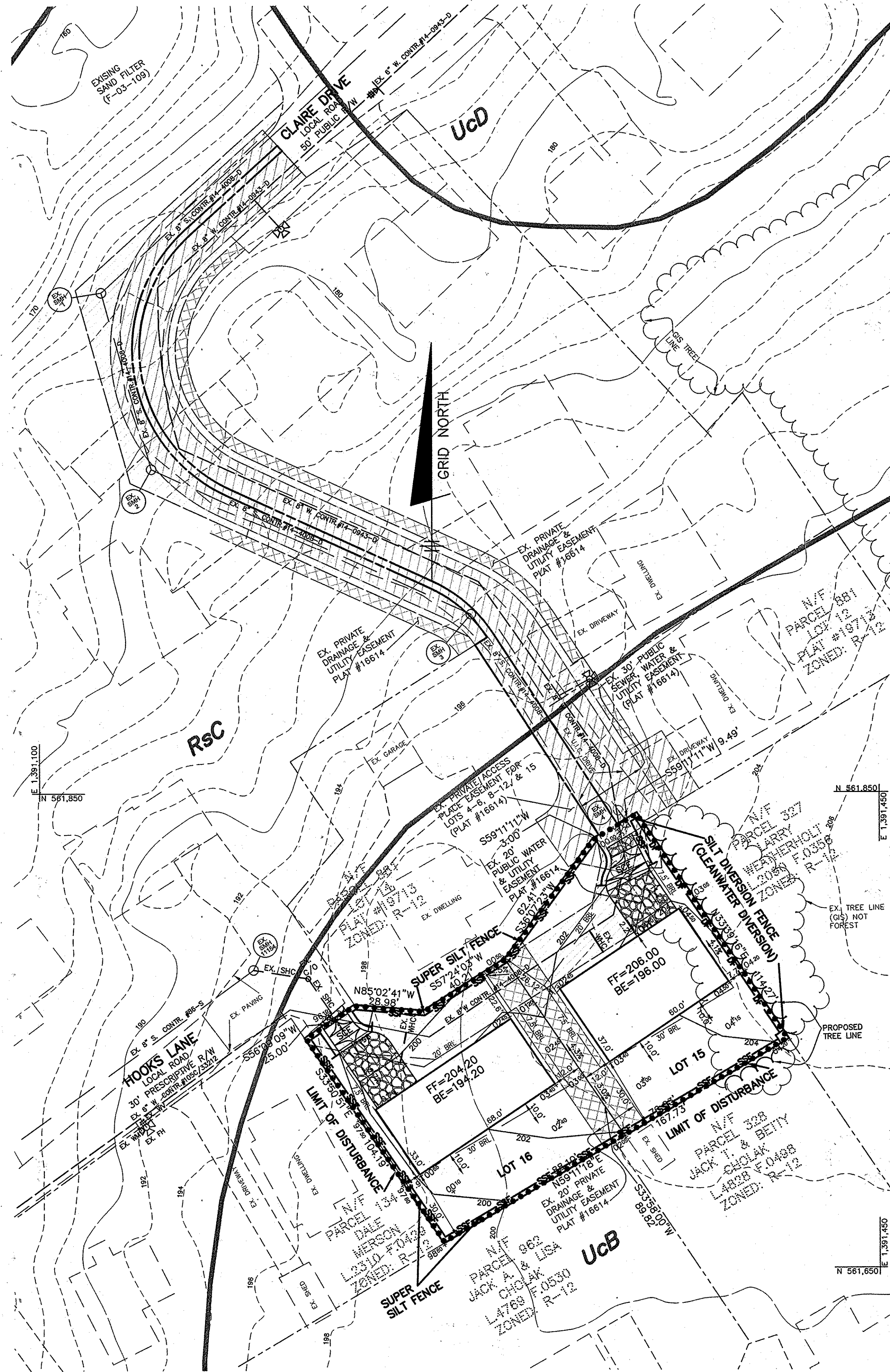
<p>BENCHMARK ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE SUITE 315 ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6844 WWW.BEI-CIVILENGINEERING.COM</p>		<p>Professional Certification, I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45272, Expiration Date: 6-08-2018.</p> <p><i>[Signature]</i> 6/10/16</p>
<p>OWNER/DEVELOPER: LAWYERS HILL, LLLP 8333 MAIN STREET ELLICOTT CITY, MD 21043-4602 410-825-8400</p>	<p>BONNIE RIDGE LOTS 15 & 16 (PLAT #22555)</p> <p>TAX MAP: 38 - GRID: 03 - PARCEL: 881 ZONED: R-12 ELECTION DISTRICT NO. 1 - HOWARD COUNTY, MARYLAND</p>	
<p>ENVIRONMENTAL CONCEPT PLAN</p>		
<p>DESIGN: MCR DRAFT: MCR</p>	<p>DATE: JUNE, 2016 SCALE: AS SHOWN</p>	<p>BEI PROJECT NO. 2713 SHEET 1 OF 2</p>



EXISTING CONDITION PLAN
GRAPHIC SCALE



(IN FEET)
1 inch = 30 ft.



SEDIMENT & EROSION CONTROL PLAN
GRAPHIC SCALE



(IN FEET)
1 inch = 30 ft.

SEC NOTE:
SEDIMENT & EROSION CONTROL NOTES AND DETAILS WILL
BE PROVIDED UNDER SUBSEQUENT PLAN SUBMISSIONS.

BORING LOG		Geolab, Inc.	
Project:	Lot 15 & 16	Location:	Bonnie Ridge
Client:	Bonnie Ridge	Drawn:	11-12-15
Scale:	As Shown	Sheet:	Center of Lot 15
Location:	North of	Sheet:	Center of Lot 16
Station:	15-1	Depth:	10.00
Remarks:	Soil with red (organic) matter and organic soil		
Station:	15-2	Depth:	10.00 - 15.00
Remarks:	Tan fine SAND with some silt and fine gravel, along with (S&G), sandy loam		
Station:	15-3	Depth:	15.00 - 20.00
Remarks:	Tan and off-white fine sands SILT, moist (S&G), silty loam		
Station:	15-4	Depth:	20.00 - 25.00
Remarks:	Tan fine SAND with some silt and fine gravel, along with (S&G), sandy loam		
Station:	15-5	Depth:	25.00 - 30.00
Remarks:	Fractured		
Station:	15-6	Depth:	30.00 - 35.00
Remarks:	Fractured		

BORING LOG		Geolab, Inc.	
Project:	Lot 15 & 16	Location:	Bonnie Ridge
Client:	Bonnie Ridge	Drawn:	11-12-15
Scale:	As Shown	Sheet:	Center of Lot 16
Location:	North of	Sheet:	Center of Lot 15
Station:	16-1	Depth:	10.00
Remarks:	Soil with red (organic) matter and organic soil		
Station:	16-2	Depth:	10.00 - 15.00
Remarks:	Down to tan fine SAND with silt and some gravel, moist (S&G)		
Station:	16-3	Depth:	15.00 - 20.00
Remarks:	Reddish-brown fine SAND with some gravel and silt, moist (S&G)		
Station:	16-4	Depth:	20.00 - 25.00
Remarks:	Fractured		

Texture Class	Effective Water Capacity (inches)	Minimum Infiltration Rate (inches/hour)	Hydrologic Soil Group
Loamy Sand	0.31	2.41	A
Sandy Loam	0.25	1.02	B
Loam	0.19	0.52	B

LEGEND		AbC
SOILS CLASSIFICATION		AbC
SOILS DELINEATION	---	---
EXISTING CONTOURS	---	---
PROPOSED CONTOURS	---	---
EXISTING WOODS LINE	---	---
PROPOSED WOODS LINE	---	---
EXISTING STRUCTURE	---	---
PROPOSED STRUCTURE	---	---
EX. PRIVATE PLACE EASEMENT	---	---
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EX. PUBLIC WATER & UTILITY EASEMENT	---	---
STABILIZED CONSTRUCTION ENTRANCE	---	---
SILT DIVERSION FENCE	---	---
SUPER SILT FENCE	---	---
LIMIT OF DISTURBANCE	---	---

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chad E. ... 6-27-16
CHIEF, DEVELOPMENT ENGINEERING DIVISION
Kurt ... 6-11-16
CHIEF, DIVISION OF LAND DEVELOPMENT

NO. DATE REVISION		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. 45577.
 8480 BALTIMORE NATIONAL PIKE & SUITE 315 A ELLICOTT CITY, MARYLAND 21043 (P) 410-465-8105 (F) 410-465-6644 WWW.BE-CVLENGINEERING.COM		
OWNER/DEVELOPER:		BONNIE RIDGE LOTS 15 & 16 (PLAT #22555) TAX MAP: 38 - GRID: 03 - PARCEL: 881 ZONED: R-12 ELECTION DISTRICT NO. 1 - HOWARD COUNTY, MARYLAND
LAWYERS HILL, LLLP 8333 MAIN STREET ELLICOTT CITY, MD 21043-4602 410-825-8400		
SEDIMENT & EROSION CONTROL AND EXISTING CONDITION PLANS		DATE: JUNE, 2016 BEI PROJECT NO. 2713 SCALE: AS SHOWN SHEET 2 OF 2