

DESIGN NARRATIVE:

The Effective Site Area was analyzed as woods in good condition and a target R_N was determined. The Hydrologic Soil Group was determined by testing done by Geolab. The soils were determined to be group "D". The Effective Site Area is comprised of the area of the site which will be developed and excludes protected environmental areas which will be preserved. A target rainfall depth treatment (P_e) was determined based on the measured impervious areas and HSG soil types. The target P_e for this site is 1.8 inches. The target P_e 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 method is micro-bioretenion (M-6).

This site contains no streams, floodplains or wetlands. To protect natural resource areas, it is important to delay release of stormwater runoff from new impervious areas to avoid increasing peak runoff, and to adequately treat the stormwater to avoid damage to sensitive species. In addition it is necessary to maintain adequate runoff to wetland areas. The design incorporates minimum width driveways in order to create the least possible stormwater runoff, and provided runoff release in multiple locations. The site contains no specimen trees or forest communities.

Conceptual treatment has been designed based on preliminary grading, the site topography and the house and driveway locations. Driveway areas can not be treated by disconnection or on-lot micro-bioretenion due to space limitations. ESD volumes will be provided in the micro-bioretenion facilities. Generally rooftop runoff will be piped to on-site micro-bioretenion facilities. Multiple outfalls are provided to generally release runoff in natural drainage patterns for the site.

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

The target P_e for this site is 1.8 inches. All impervious areas are treated to at least 1.0" (water quality treatment) and additional volumes are provided in micro-bioretenion facilities. 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 P_e of 1.9 will be achieved for the areas draining to the micro-bio retention (m-6) facilities.

This site is not required to provide Q_f for extreme flood protection. The ESD_v required is 999 cf. The ESD_v provided is 699 cf.

The impervious area not addressed is 2,251 SF of driveways that can not be captured and treated by any micro-scale practices. The 699 cf of ESD provided is treatment to the maximum extent practicable.

APPROVAL OF THIS ECP DOES NOT CONSTITUTE APPROVAL OF SUBSEQUENT OR ASSOCIATED SUBDIVISION PLANS, 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 REVIEW STAGE. 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.

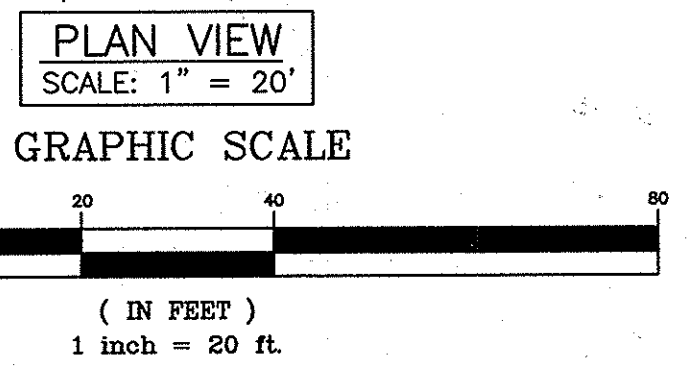
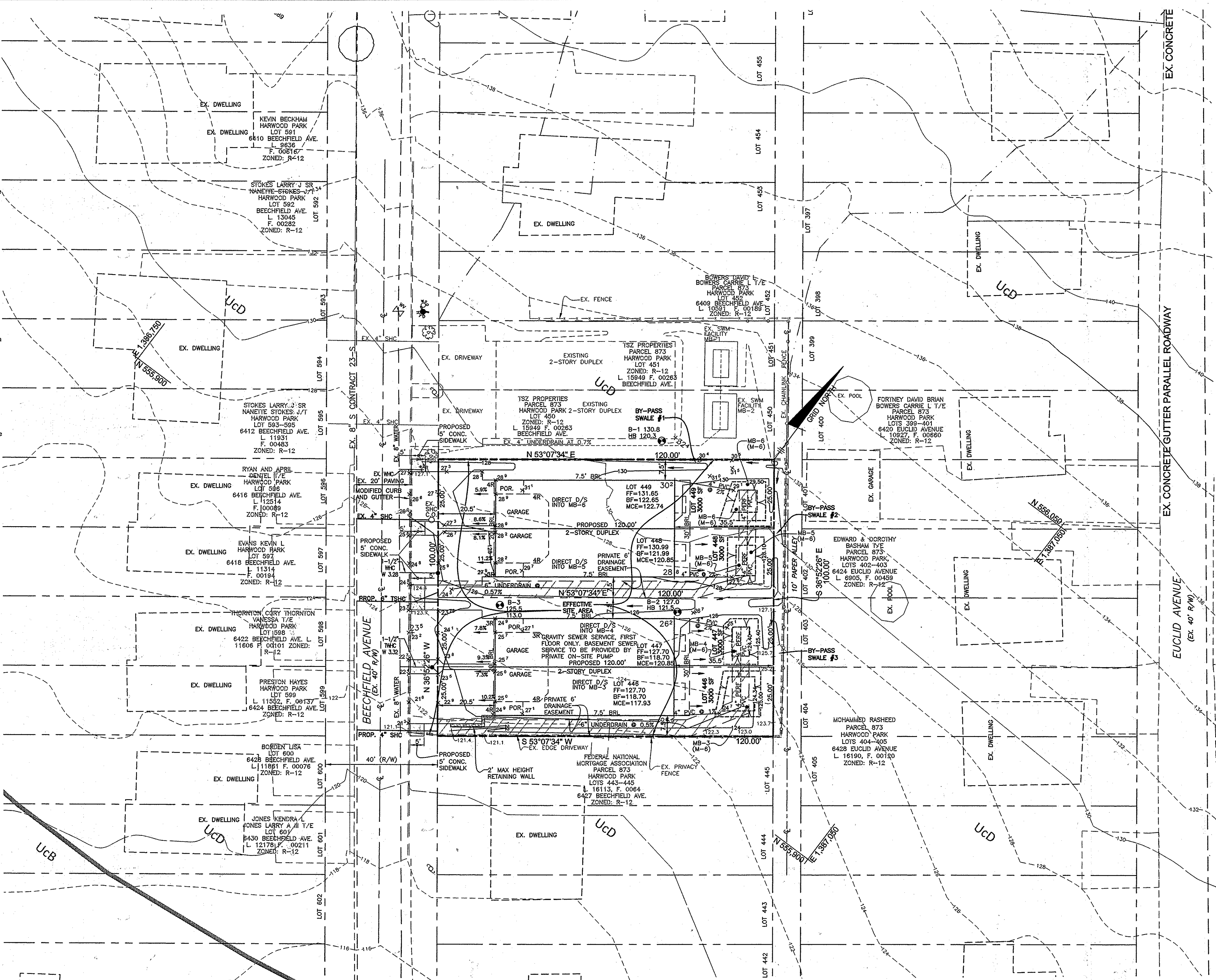
PROJECT BACKGROUND INFORMATION

- GENERAL SITE DATA**
- PRESENT ZONING: R-12
 - APPLICABLE DPZ FILE REFERENCES: N/A
 - DEED REFERENCE: 15949/00263
 - PROPOSED USE OF SITE: SINGLE-FAMILY SEMI-DETACHED
 - PROPOSED WATER AND SEWER SYSTEMS: PUBLIC

SITE DATA TABULATION

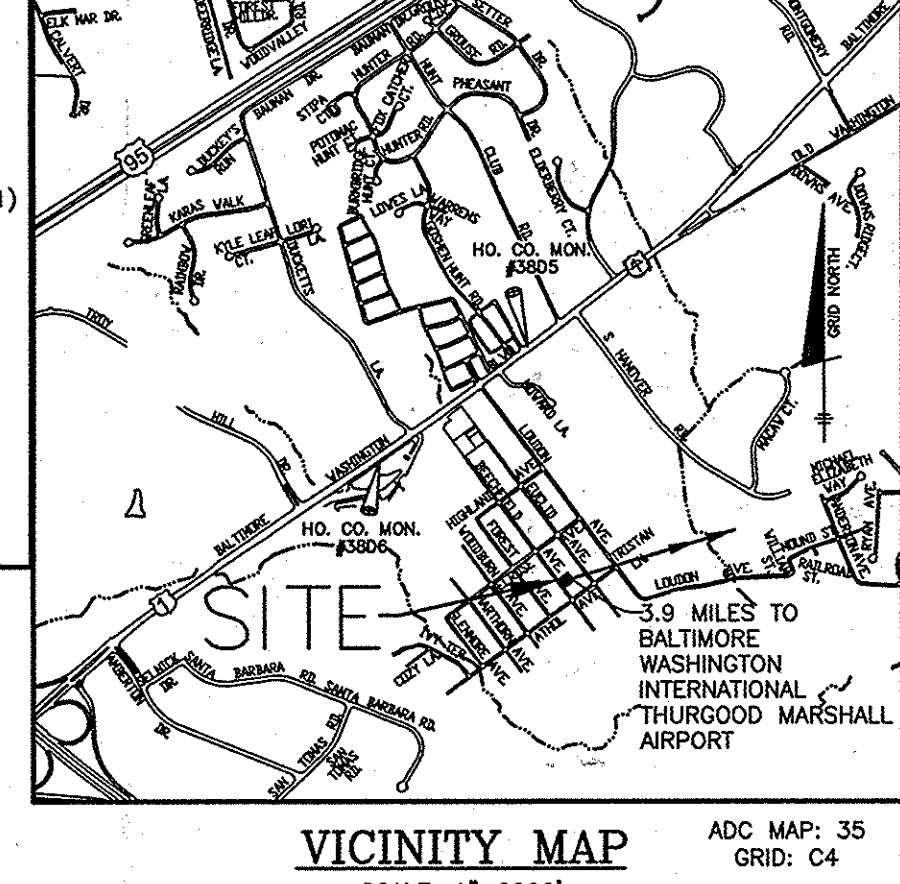
1) TOTAL PROJECT AREA.....	0.28 AC.±
2) AREA OF 100-YR. FLOODPLAIN.....	0.00 AC.
3) AREA OF STEEP SLOPES (15% OR GREATER).....	0.00 AC.
4) AREA OF EXISTING FOREST.....	0.00 AC.
5) AREA OF ERODIBLE SOILS.....	0.00 AC.
6) AREA OF WETLANDS (INCLUDING BUFFER).....	0.00 AC.
7) AREA OF STREAM BUFFER (OUTSIDE WETLANDS & BUFFER).....	0.00 AC.
8) NET AREA OF SITE(S).....	0.28 AC.±
9) NUMBER OF LOTS ALLOWED.....	4 EXISTING
10) NUMBER OF RESIDENTIAL LOTS PROPOSED.....	4
11) AREA OF PLAN SUBMISSION.....	0.28 AC.±
12) APPROXIMATE LIMIT OF DISTURBANCE.....	0.32 AC.±
13) PRESENT ZONING DESIGNATION.....	R-12
14) PROPOSED USES FOR THE SITE & STRUCTURES.....	RESIDENTIAL: SEMI-DETACHED SFD
15) MINIMUM LOT SIZE.....	12,000 SF
16) OPEN SPACE REQUIRE.....	N/A
17) OPEN SPACE PROVIDED (CREDITED).....	0.00 AC.
18) OPEN SPACE PROVIDED (TOTAL).....	0.00 AC.
19) RECREATIONAL OPEN SPACE REQUIRED.....	N/A
20) RECREATIONAL OPEN SPACE PROVIDED.....	N/A
21) NUMBER OF PARKING SPACES REQUIRED.....	10
22) TOTAL NUMBER OF PARKING SPACES PROVIDED.....	12
23) BUILDING COVERAGE AREA (MPERVIOUS).....	0.10 AC.(±37%)
24) TOTAL IMPERVIOUS AREA.....	0.15 AC.(±51%)

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 [Signature] 7-7-16
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE
 [Signature] 3-31-16
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



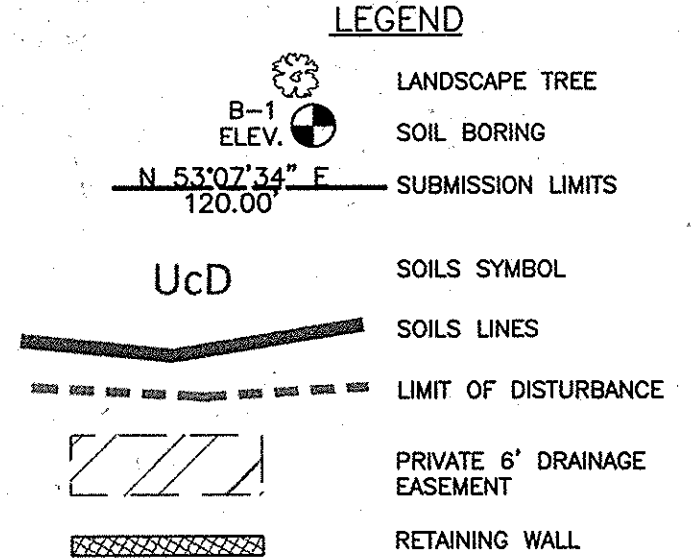
BENCH MARKS

HO. CO. #3805 (NAD '83)	ELEV. 193.71
STAMPED DISC ON CONCRETE MONUMENT BEING 38.8' SOUTHWEST OF A FIRE HYDRANT 5.5' NORTH OF THE EXISTING CONCRETE CURB ALONG NORTH SIDE OF WASHINGTON BLVD (RT.1)	
N 558,378.581	E 1,386,524.195
HO. CO. #3806 (NAD '83)	ELEV. 175.23
STAMPED DISC ON CONCRETE MONUMENT BEING 44' SOUTHWEST OF A LIGHT POLE & 148' NORTH OF THE GATE AT ATLANTIC SUPPLY CO.	
N 557,155.459	E 1,384,992.282



GENERAL NOTES

- SUBJECT PROPERTY IS ZONED R-12 PER THE 10-6-2013 COMPREHENSIVE ZONING PLAN.
- THIS PROJECT IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, DATED OCTOBER 7, 2007.
- PROJECT LIMITS BASED ON FIELD RUN BOUNDARY SURVEY PERFORMED BY BENCHMARK ENGINEERING INC., DATED APRIL, 2015.
- EXISTING TOPOGRAPHY FOR THIS PLAN IS BASED ON GIS DATA FROM HOWARD COUNTY AND FIELD RUN TOPOGRAPHY BY BENCHMARK ENGINEERING INC., IN APRIL, 2015.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. CONTROL STATIONS 3805 AND 3806 WERE USED.
- THERE ARE NO STEEP SLOPES (25% OR GREATER) IN EXCESS OF 20,000 SF OR MODERATE SLOPES RANGING FROM 15%-24.99% LOCATED ON THIS SITE.
- TO THE BEST OF OUR KNOWLEDGE THERE ARE NO CEMETERIES OR HISTORIC STRUCTURES LOCATED ON THIS SITE.
- A NOISE STUDY IS NOT REQUIRED FOR THIS PLAN.
- THIS SITE IS LOCATED WITHIN THE METROPOLITAN DISTRICT AND THE PLANNED SERVICE AREA. WATER AND SEWER WILL BE PUBLIC CONNECTIONS PROPOSED TO CONTRACTS W-108-B AND 23-S.
- THIS PROJECT IS EXEMPT FROM THE REQUIREMENTS OF THE FOREST CONSERVATION ACT IN ACCORDANCE WITH SECTION 16.1202(b)(1)(i) OF THE SUBDIVISION REGULATIONS FOR DEVELOPMENT ON LAND WHICH IS LESS THAN 40,000 SF IN SIZE.
- THE PREVIOUS DPZ FILES FOR THIS SITE ARE: PLAT 60/115
- THERE IS NO FLOODPLAIN ON THIS PROPERTY. THERE IS NO DRAINAGE AREA STUDY POINT WITH MORE THAN 30 ACRES. THERE ARE NO WETLANDS OR STREAMS ON THIS PROPERTY AS INDICATED ON THIS PLAN.
- 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.



SOILS LEGEND

MAP SYMBOL	SOIL TYPE	MAPPING UNIT	Kw FACTOR
Ucd	D	Urban land-Chillum-Beltville complex, 0 to 5 percent slopes	0.37

USDA - NRCS WEBSITE - SOIL SURVEY MAP NO. 25- NO HYDRIC SOILS

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

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 #5577, Expired 09/08/2016.

[Signature] 2/19/16

OWNER/DEVELOPER:
 TSZ PROPERTIES
 10382 BALTIMORE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21042
 410-465-4103
 c/o STEPHANIE PORTA

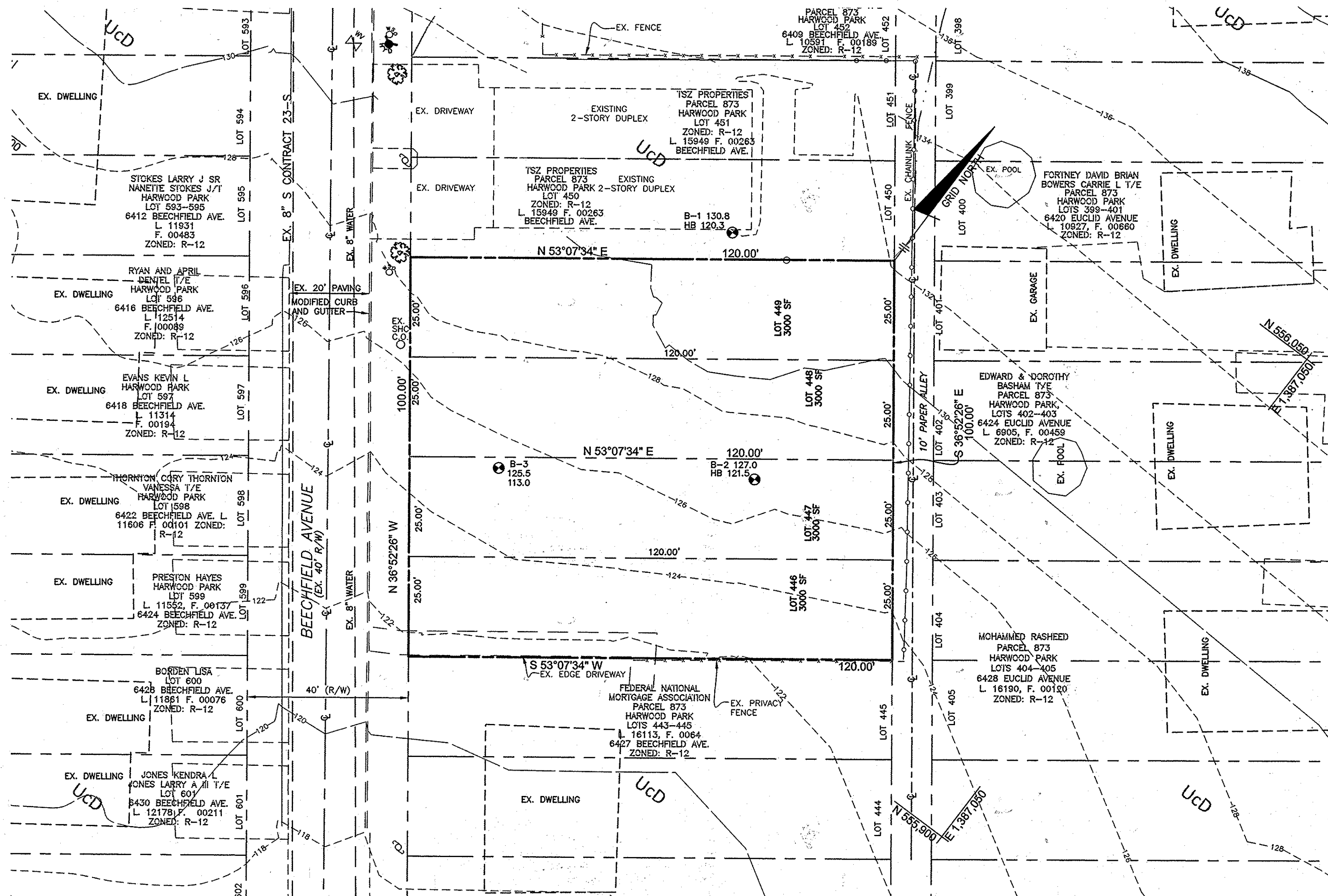
HARWOOD PARK
 LOTS 446-449
 PLAT BOOK 60 FOLIO 115
 SINGLE FAMILY SEMI-DETACHED DUPLEX UNITS
 TAX MAP: 38 GRID: 13 PARCEL: P/O 873
 ZONED: R-12
 BEECHFIELD AVENUE
 ELECTION DISTRICT NO. 1, HOWARD COUNTY, MARYLAND

COVER AND GRADING PLAN

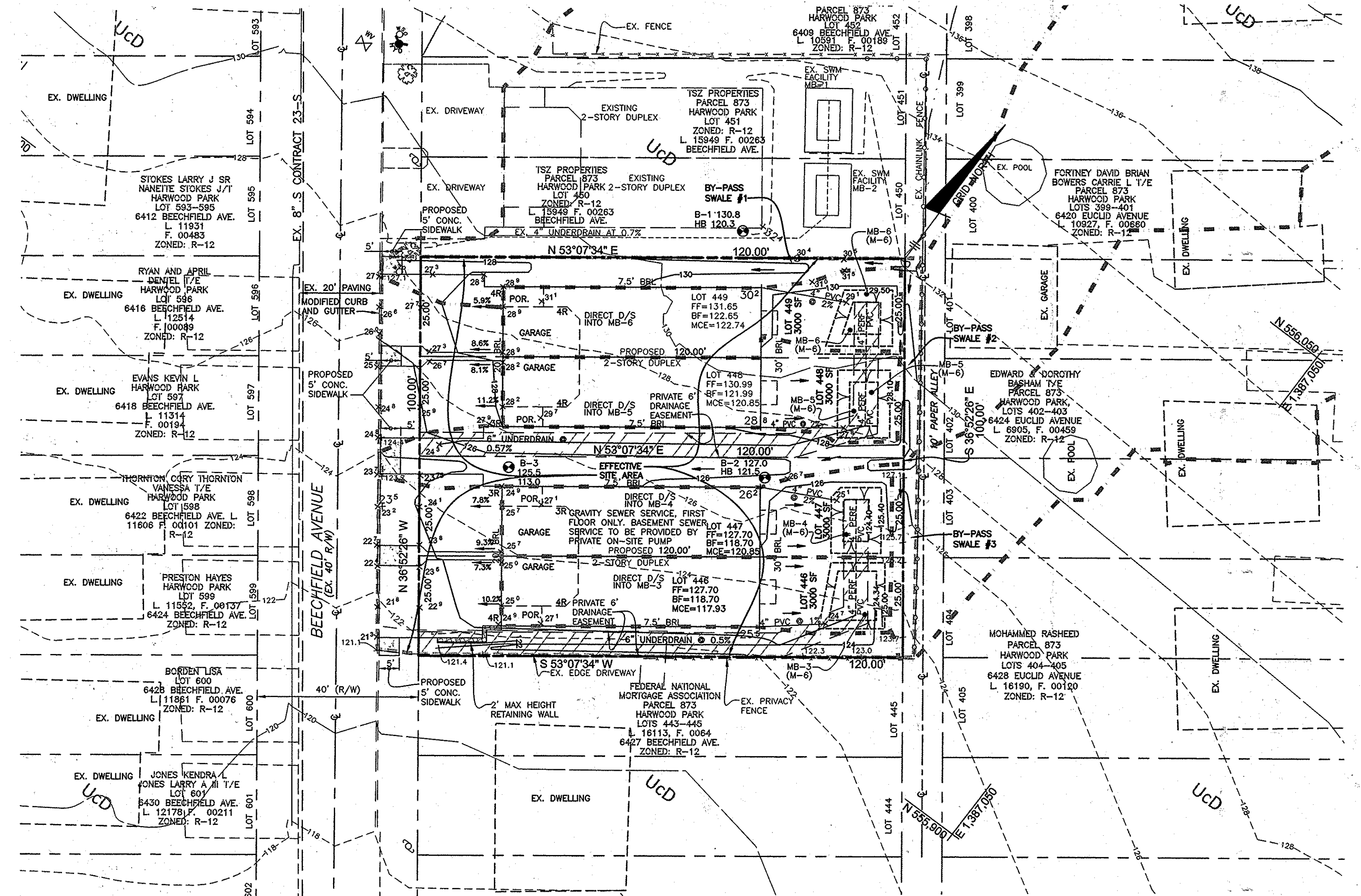
DATE: JANUARY, 2016 BEI PROJECT NO. 2672
 SCALE: 1" = 20' SHEET 1 OF 2

SHEET INDEX

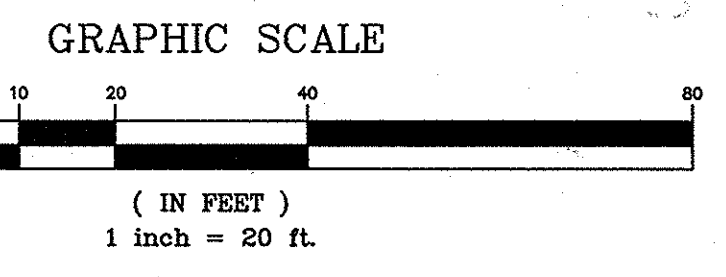
NO.	DESCRIPTION
1	COVER AND GRADING PLAN
2	SEDIMENT & EROSION CONTROL, EXISTING CONDITIONS AND STORMWATER MANAGEMENT PLANS



EXISTING CONDITIONS PLAN
1"=20'

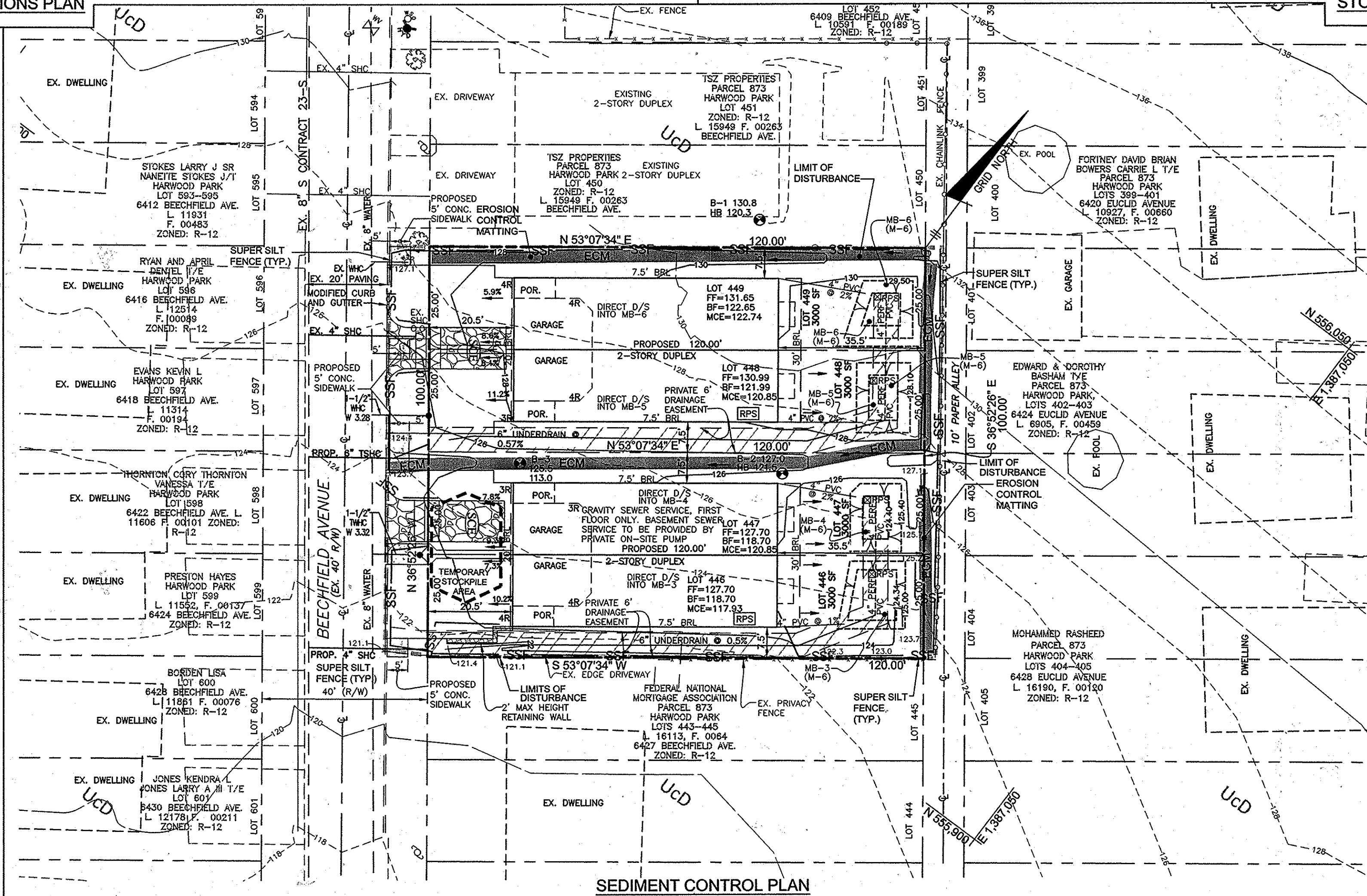


STORMWATER MANAGEMENT PLAN
1"=20'



LEGEND

- EXISTING CONTOURS
- PROPOSED CONTOURS
- PROPOSED STRUCTURE
- EFFECTIVE SITE AREA AND LIMITS OF DISTURBANCE
- DRAINAGE AREA
- BORING LOCATION
- SUPER SILT FENCE
- STABILIZED CONSTRUCTION ENTRANCE
- EROSION CONTROL MATTING
- RETAINING WALL
- PRIVATE DRAINAGE EASEMENT



SEDIMENT CONTROL PLAN
1"=20'

Name of Development:		Harwood Park Lot 446-449 SWM	
Watershed:		Patuxent River	
Watershed Designation:		2-13-11 Class: I	
Area of Site:		13317 square feet	
Impervious Cover:		6731 square feet	Percent: 51%
Area of A soils:		0 square feet	Percent: 0%
Area of B soils:		0 square feet	Percent: 0%
Area of C soils:		0 square feet	Percent: 0%
Area of D soils:		13317 square feet	Percent: 100%
Target RCN:		77	
Target Pa:		1.80 inches	
Facility Achieved Pa:		1.91 inches	pass 100%
Target ESDv:		999 cubic feet	
Achieved ESDv:		699 cubic feet	Provided: 70%

ESD Micro-Scale Practices Summary Table														
Lot No.	Practice	MDE Type	Total DA	Total DA Imp. Area	Q _e	Imp. Treated by Practice	ESDv		Rev					
							cf Prov.	75% Req.						
Lot 449	MB 6	(M-6)	1,736	1,120	1.14	1,120	164.2	132.2	PASS					
Lot 448	MB 5	(M-5)	1,885	1,120	1.05	1,120	164.2	134.1	PASS					
Lot 447	MB 4	(M-5)	1,807	1,120	1.09	1,120	164.8	133.9	PASS					
Lot 446	MB 3	(M-6)	1,728	1,120	1.14	1,120	164.1	124.2	PASS					
Totals							7,154	4,480	1.10	4,480	657	524	33	0

Treated % Imp. 67%
699.0 cf or 70% of required

SOILS LEGEND		
MAP SYMBOL/SOIL TYPE	MAPPING UNIT	Kw FACTOR
UCd	Urban land-Chillum-Baltimore complex, 0 to 5 percent slopes	0.37

USDA - NRCS WEBSITE - SOIL SURVEY MAP No. 25 - NO HYDRIC SOILS

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 www.bei-civilengineering.com

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 #55774, Registration #182/06-08-2016.

[Signature]
2/19/16

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SEDIMENT & EROSION CONTROL, EXISTING CONDITIONS AND STORMWATER MANAGEMENT PLANS

DATE: JANUARY, 2016 BEI PROJECT NO. 2672
 SCALE: 1" = 20' SHEET 2 OF 2

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 3-7-16 DATE
 CHIEF, DIVISION OF LAND DEVELOPMENT
[Signature] 3-31-16 DATE
 CHIEF, DEVELOPMENT ENGINEERING DIVISION