

# ENVIRONMENTAL CONCEPT PLAN CORRIDOR SQUARE APARTMENT BUILDING 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

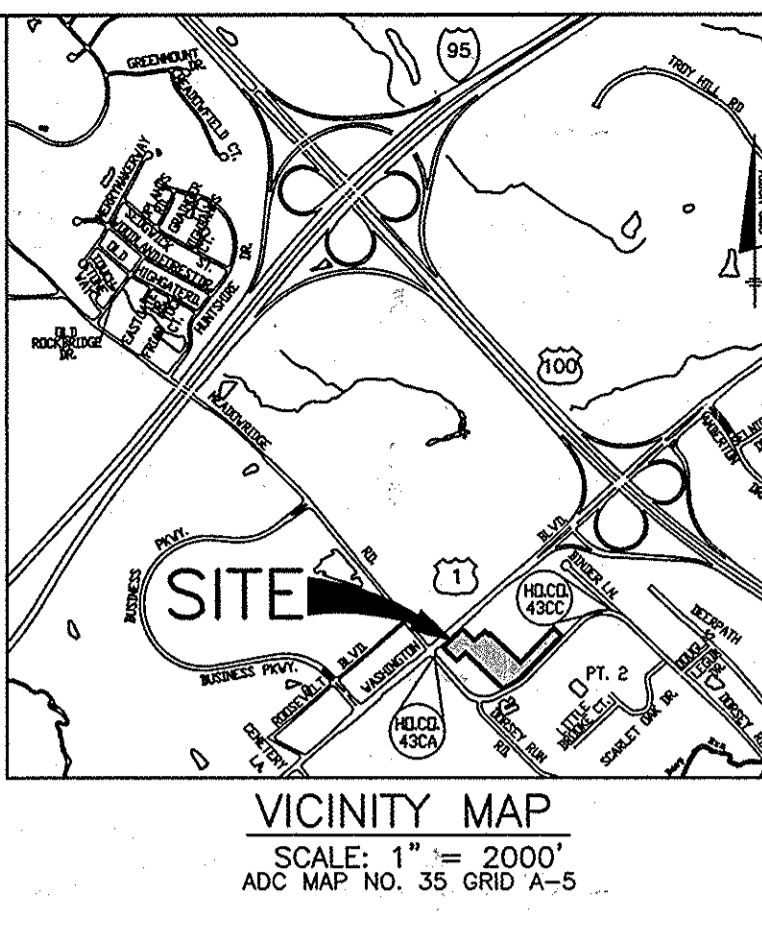
SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND PAGE 25

SYMBOL/HYDRC	HYDROLOGIC GROUP	ALTERNATE GROUP	Kv	NAME
Fa	D		0.02	FALLSINGTON SANDY LOAM, 0 TO 2 PERCENT, NORTHERN COASTAL PLAIN
RuB	C		0.24	RUSSETT FINE SANDY LOAM, 2 TO 5 PERCENT SLOPES
RuB	C		0.24	RUSSETT AND BELTSVILLE SOIL, 2 TO 5 PERCENT SLOPES
RuB	C		0.24	RUSSETT AND BELTSVILLE SOIL, 5 TO 10 PERCENT SLOPES
Ud	D		0.28	URBAN LAND-UDORIENTIS COMPLEX 0 TO 15 PERCENT SLOPES

HOWARD COUNTY SOIL INDEX PAGE 25  
\* INCLUDES HYDRC SOILS

SHEET INDEX	
NO.	DESCRIPTION
1	COVER SHEET AND EXISTING CONDITIONS PLAN
2	DEMOLITION PLAN
3	STORMWATER MANAGEMENT PLAN

**BENCH MARKS (NAD'83)**  
ZONING PLAN:  
HO.CO. No.43CA ELEV 191.633  
STAMPED (BRASS OR ALUMINUM) DISC SET  
TOP OF A 9" DEEP COLUMN OF CONCRETE.  
AT CORNER US-1 AND DORSEY ROAD  
N 552890129 E 13793800380  
HO.CO. No.43CC ELEV 163.700  
CONCRETE MONUMENT WITH BRASS DISC  
AT RT-103(DORSEY ROAD)/1/3 M.E.US-29  
N 553201.462 E 1381152.814



**NOTE:**  
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. APPROVAL OF THIS ECP DOES NOT CONSTITUTE AN APPROVAL OF THE REQUIRED SUBSEQUENT SUBDIVISION PLAN.

**GENERAL NOTES**

- THE SUBJECT PROPERTY IS ZONED TO PER THE 10/06/13 COMPREHENSIVE ZONING PLAN.
- THERE ARE NO FLOODPLAIN, STEEP SLOPES OR STREAMS LOCATED ON THIS SITE.
- THERE ARE NO WETLANDS LOCATED ON THIS SITE BASED ON AN ANALYSIS BY HILLIS-CARNES ENGINEERING ASSOCIATED DATED MARCH, 2016.
- A FOREST STAND DELINEATION FOR THIS SITE WAS PREPARED BY HILLIS-CARNES ENGINEERING ASSOCIATES DATED MARCH, 2016.
- THE CONTOURS SHOWN HEREON HAVE BEEN TAKEN FROM HOWARD COUNTY GIS AND ARE 2' INTERVALS.
- VERTICAL CONTROL AND HORIZONTAL CONTROL IS BASED UPON HOWARD COUNTY NAD '83 CONTROL.
- THIS PROPERTY IS WITHIN THE METROPOLITAN WATER AND SEWER DISTRICT.
- WATER AND SEWER SERVICE FOR THIS SUBDIVISION IS PUBLIC. THE PUBLIC SEWER IS PROVIDED BY CONTRACT 24-1969-D. THE PUBLIC WATER IS PROVIDED BY CONTRACT 24-1969-D. THIS SUBDIVISION FALLS WITHIN THE PATAPUSCO DRAINAGE AREA.
- EXISTING UTILITIES SHOWN WERE LOCATED BY RECORD DRAWINGS AND FIELD LOCATIONS.
- THE BOUNDARY SHOWN HEREON IS TAKEN FROM THE BOUNDARY SURVEY PREPARED BY BENCHMARK ENGINEERING, INC., ON OR ABOUT MAY, 2015.
- PREVIOUS DEPARTMENT OF PLANNING AND ZONING REFERENCE NUMBERS: SDP-78-019, SDP-74-072
- IT IS ANTICIPATED THAT THE FOREST CONSERVATION ACT REQUIREMENTS FOR THIS DEVELOPMENT WILL BE PROVIDED BY AN OFFSITE BANK.
- ALL ONSITE STRUCTURES ARE TO BE REMOVED.
- STORMWATER MANAGEMENT SHOWN IS AN APPROXIMATION OF THE SIZE, SHAPE AND LOCATION. IT IS UNDERSTOOD THAT THIS SYSTEM HAS NOT BEEN DESIGNED AND THE ACTUAL DESIGN MAY CHANGE, ALTERING THE NUMBER OF UNITS ALLOCATED FOR THIS DEVELOPMENT.

**ECP Site Analysis Data Sheet**

Gross Area	6.93 ac
100yr Floodplain	0.00 ac
Slopes 15% or Greater	0.00 ac
Wetlands	0.00 ac
Wetlands Buffer	0.00 ac
Stream	0 if
Stream Buffer	0.00 ac
Forested Area(Excluding Floodplain)	2.09 ac
Erodable Soils(D/Soil)	3.92 ac
Limit of Disturbance	6.50 ac
Impervious Area	3.85 ac
Green Space(Within LOD)	2.65 ac

\*All areas are approximate.

**DESIGN NARRATIVE**

The Corridor Square property is approximately 6.93 acres in area, located at the southeast intersection of Route 1 (Washington Boulevard) and Dorsey Road. The property is zoned T.O.D. and is a combination of several parcels. A majority of the property was previously developed as an auto auction building with several garages and associated parking. The site is located in a developed area where stormwater flows are generally uncontrolled with no adjacent property which drains toward the site. Slopes across the site are relatively flat with slight drainage to the south to Dorsey Road. Soils across the site consist of Urban Land-Udorients and Russett and Beltsville identified as Hydrologic Groups D and C, predominately D soils.

The proposed development is an apartment building consisting of approximately 250 units. The parking for the building will be located within the building. This site will utilize the redevelopment requirements since the site is currently 59% impervious. The use of a Sand Filter and a Bio-Swale will provide the required SWM to meet the Redevelopment requirements. In addition to the required ESD, management of the 10 year and 100 year is required since this site drains to a tributary to the Deep Run above a railroad stream crossing (per the Design Manual Volume 1, Section 5.2.1). Control is proposed by means of underground storage pipe. This site falls within the Patapusco River Lower North Branch watershed designation 02-13-09.

As a result of addressing the stormwater management by use of ESD to the MEP the land conditions have theoretically been returned to woods in good condition and therefore reduced the overall run-off for the 1-year storm. A reduction in impervious area with the use of bio-retention practices makes for a better site design as well as maintaining the original drainage patterns.

Sediment and erosion control shall comply with the latest edition of the MDE Standards and Specifications for Sediment Control and has been limited to the areas necessary to conduct ESD practices and onsite functionality.

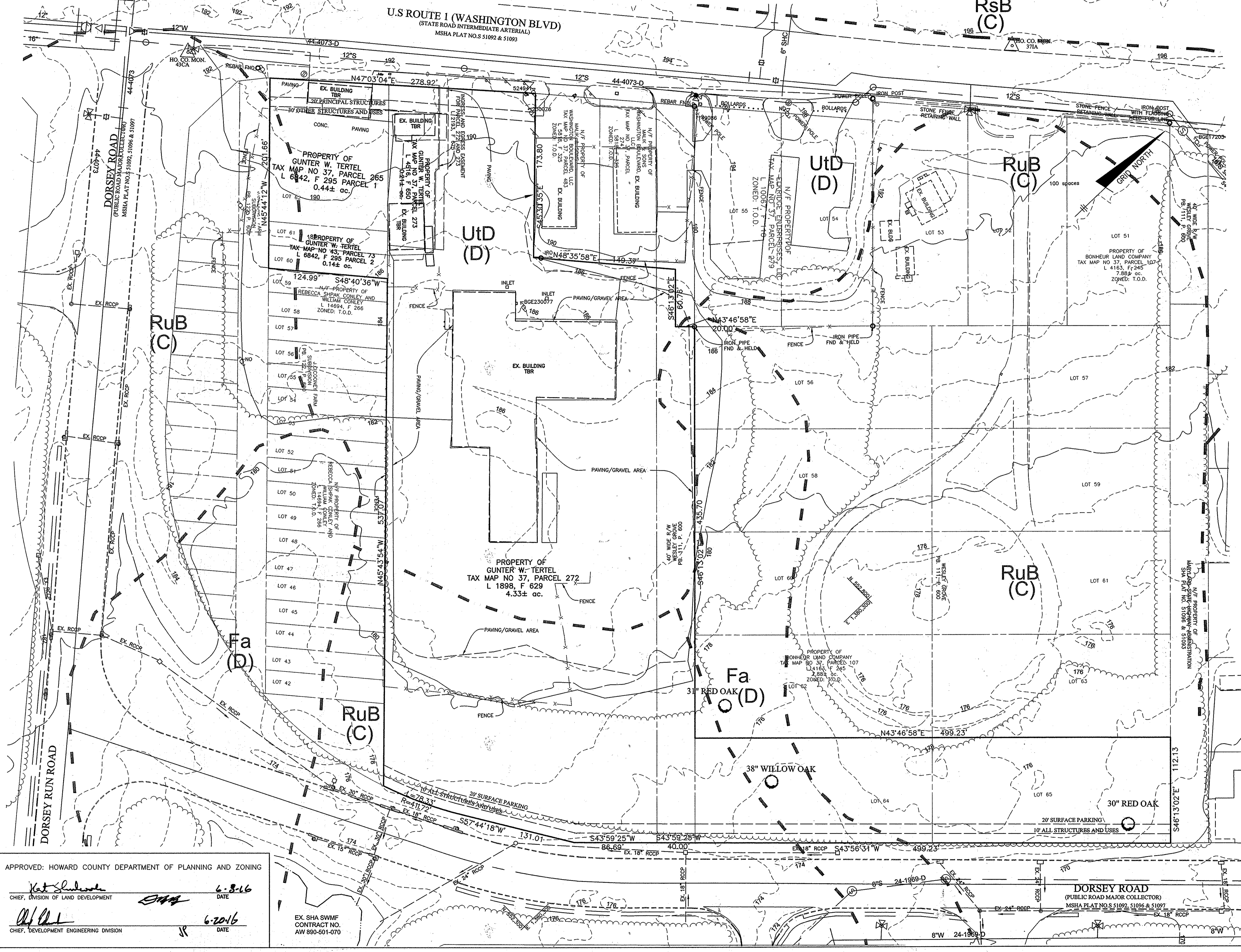
It is concluded that all ESD requirements as defined in the Stormwater Management Act of 2007 have been met for the proposed development to the MEP. The Water Quality has been provided by both bio-swale facility (M-8) and a sand filter to treat the required onsite impervious under Redevelopment.

There is minimal forest located on this site. It is anticipated that the required forest conservation obligations for this site will be provided by an offsite bank.

**LEGEND**

- EXISTING CONTOURS
- EXISTING TRELINE
- PROPOSED TRELINE
- EXISTING BUILDING
- EXISTING PAVING
- SOIL DELINEATION
- SOILS TYPE

**GRAPHIC SCALE**  
0 25 50 100 200  
(IN FEET)  
1 inch = 50 ft.



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Kat Schuchman* 6-8-16  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*AW* 6-20-16  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

EX. SHA SWMF  
CONTRACT NO.  
AW 890-501-070

**BENCHMARK ENGINEERING, INC.**  
ENGINEERS & LAND SURVEYORS & PLANNERS  
6480 BALTIMORE NATIONAL PIKE A SUITE 315 A ELKROTT CITY, MARYLAND 21043  
(P) 410-465-6105 (F) 410-465-8544  
WWW.BEG-ENGINEERING.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 No. 28576, Expiration Date: 01.01.17.

**CORRIDOR SQUARE**

OWNER:  
CORRIDOR SQUARE, LLC  
6800 DEERPATH ROAD  
ELKROTT, MD 21075  
410.579.2442

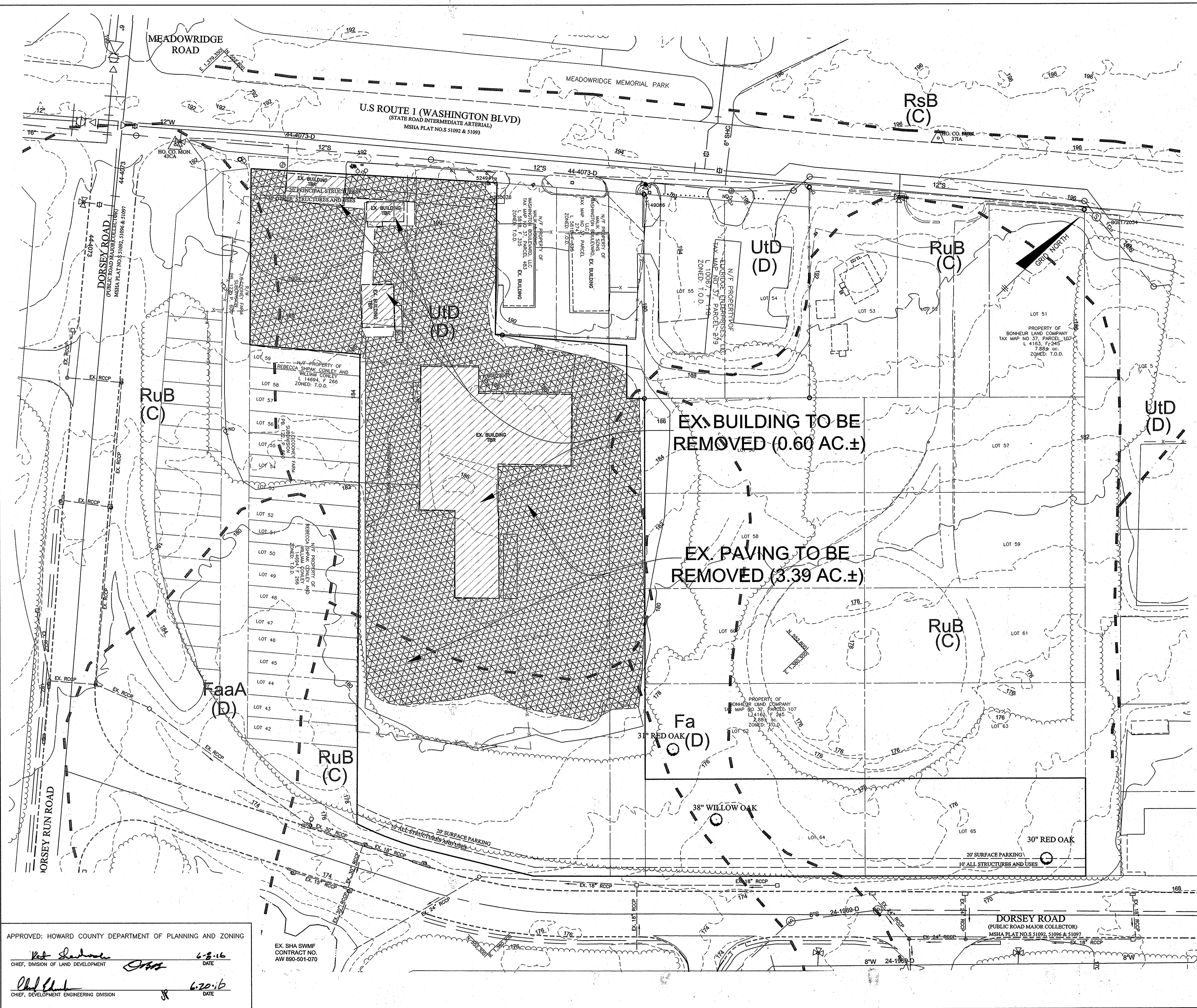
DEVELOPER:  
MURN DEVELOPMENT  
6800 DEERPATH ROAD  
ELKROTT, MD 21075  
410.579.2442

DESIGN: JCO DRAFT: JCO

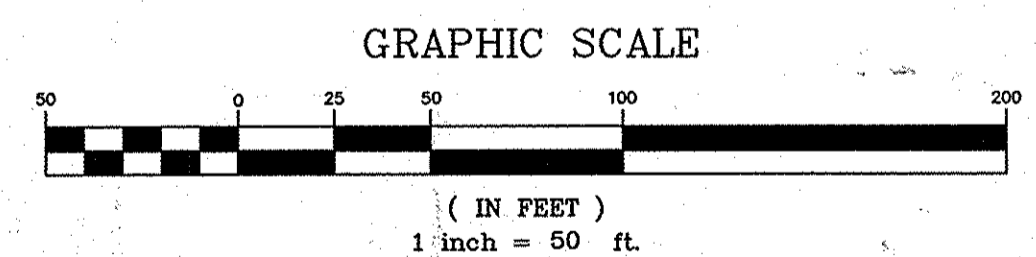
TAX MAP: 37 - GRID: 23 - PARCELS 265,272,273,107(LOTS 64 & 65)  
TAX MAP: 43 - GRID: 5 - PARCEL 75  
ELECTION DISTRICT NO. 1 - HOWARD COUNTY, MARYLAND

**ENVIRONMENTAL CONCEPT PLAN  
COVER SHEET AND EXISTING  
CONDITIONS PLAN**

DATE: JUNE, 2016 BEI PROJECT NO. 2695  
SCALE: 1"=50' SHEET 1 OF 3



- LEGEND**
- EXISTING CONTOURS
  - EXISTING TREELINE
  - PROPOSED TREELINE
  - EXISTING BUILDING
  - EXISTING PAVING
  - SOIL DELINEATION
  - SOILS TYPE
  - EXISTING BUILDING TO BE REMOVED (0.70 AC.±)
  - EXISTING PAVING TO BE REMOVED (3.39 AC.±)



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Howard County Seal*  
 DATE: 6-8-16  
 DATE: 6-20-16

EX. SHA SWMF  
 CONTRACT NO.  
 AW 890-501-070

<p><b>BENCHMARK</b>          ENGINEERS &amp; LAND SURVEYORS &amp; PLANNERS  <b>ENGINEERING, INC.</b>          8480 BALTIMORE NATIONAL PIKE &amp; SUITE 315 &amp; ELLICOTT CITY, MARYLAND 21043          (P) 410-465-6105 (F) 410-465-6644          WWW.BD-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. 26975, State of Maryland, Date: 01.01.17.</p>
<p>OWNER:          CORRIDOR SQUARE, LLC          6800 DEERPATH ROAD          ELKCRIDGE, MD 21075          410.579.2442</p>	<p><b>CORRIDOR SQUARE</b></p> <p>TAX MAP: 37 - GRID: 23 - PARCELS 265,272,273,107 (LOTS 64 &amp; 65)          TAX MAP: 43 - GRID: 5 - PARCEL 73          ELECTION DISTRICT NO. 1 - HOWARD COUNTY, MARYLAND</p>	
<p>DEVELOPER:          MURN DEVELOPMENT          6800 DEERPATH ROAD          ELKCRIDGE, MD 21075          410.579.2442</p>	<p><b>ENVIRONMENTAL CONCEPT PLAN          DEMOLITION PLAN</b></p> <p>DATE: JUNE, 2016    BEI PROJECT NO. 2695          SCALE: 1"=50'    SHEET 2 OF 3</p>	

SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	Kv	NAME
Fa	YES	D		0.02	FALLSINGTON SANDY LOAM, 0 TO 2 PERCENT, NORTHERN COASTAL PLAIN
RuB		C		0.24	RUSSETT FINE SANDY LOAM, 2 TO 5 PERCENT SLOPES
RuB		C	C	0.24	RUSSETT AND BELTSVILLE SOIL, 2 TO 5 PERCENT SLOPES
RuB		C	C	0.24	RUSSETT AND BELTSVILLE SOIL, 5 TO 10 PERCENT SLOPES
Ud		D		0.28	URBAN LAND-USE/THREATS COMPLEX 0 TO 15 PERCENT SLOPES

**REDEVELOPMENT CALCULATIONS:**

Area of Existing site: 6.93 ac.  
 Total Existing Impervious Onsite: 3.99 ac. (58%)  
 Total Impervious Area Proposed: 3.85 ac. (55%)

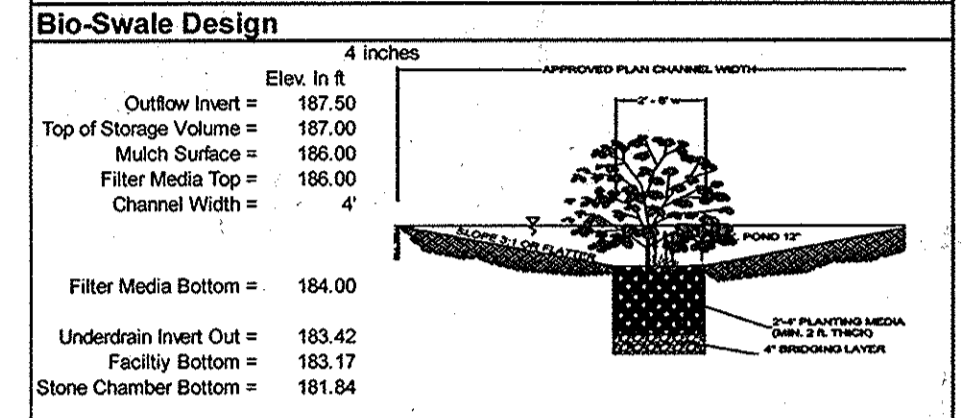
Area to be Treated Per MDE Section 5.5.2.1:  
 50% Existing Impervious Area: 3.99 ac. x 0.50 = 2.0 ac.  
 Existing Impervious Area - Proposed Impervious Area: 3.99 ac. - 3.85 ac. = 0.14 ac.  
 Impervious Area to be Treated for WQ (P=1.0): 2.0 ac. - 0.14 ac. = 1.86 ac.

AT THE SITE DEVELOPMENT PLAN STAGE THE FINAL VOLUME FOR REDEVELOPMENT WATER QUALITY WILL BE RE-EVALUATED BASED ON FINAL DESIGN OF ALL FACILITIES PROVIDED INCLUDING ESD AND NON-ESD PRACTICES.

Date: 3/24/2016 Project: CORRIDOR SQUARE 2695

**(M-8) Bio-Swale Sizing Computations**

Drainage Area = 53,775 sf	Check	R <sub>10</sub> = 0.697816 Runoff Coefficient
I <sub>mp</sub> = 38,707 sf Impervious		A <sub>p-imp</sub> = 1,075.5 SF (Eqn. 5.2)
I = 72% Percent Impervious		A <sub>p-imp</sub> = 2,348.0 SF (587 LF) ok
P <sub>average</sub> = 1 Rainfall in Inches req.		A <sub>p</sub> = 4.4% ok Check
ESD <sub>1</sub> = 3,127.1 CF Storage Req'd		Actual <sub>1</sub> = 2,348.0 CF Storage Prov'd
A <sub>10</sub> = 2.0 ft Filter Depth		Storage = 79% ok Check
2% Porosity		



Date: 3/24/2016 Project: CORRIDOR SQUARE 2695

**Underground Sand Filter Calculations (Total Combined)**

Water Quality Facility	R <sub>10</sub> = 0.95 Runoff Coefficient
A = 1.50 Area in Acres	Q <sub>10</sub> = 1.71 Watershed Inches
I = 100% Percent Impervious	WQ <sub>10</sub> = 15531 #/3 0.356535
P = 1.6 Rainfall in Inches	CN = 99.23
tc = 0.1 Time of Conc. (hr) from TR-55	tp = 0.0165
Figure D-11 (No. Co. Storm Drain Manual)	tp/P = 0.0066
q <sub>10</sub> = 1000 Unit Peak Q (csm/in)	Q <sub>10</sub> = 3.71 cfs

**Orifice Sizing**

C = 0.6

Pipe Dia = 18 inches

g = 32.2 ft/s

a = 1.7871 ft<sup>2</sup>

h = 0.19 ft

**Pretreatment**

w = 30 ft

I = 60 ft

A = 51 ft

V<sub>10</sub>(actual) = 9000 #/3

V<sub>10</sub>(temp) = 3883 #/3

A<sub>10</sub> = 126 ft<sup>2</sup>

Chamber OK

**Treatment**

d<sub>10</sub> = 12 inches

h = 3.5 ft

tp = 1.67 days

tp(pond) = 2

V<sub>10</sub>(actual) = 2700 #/3

V<sub>10</sub>(temp) = 11648 #/3

h<sub>10</sub> = 1 ft

A<sub>10</sub> = 1328.5 ft<sup>2</sup>

w = 30 ft

Chamber OK

Volume

V<sub>10</sub>(actual) = 9000 #/3

V<sub>10</sub>(temp) = 2700 #/3

V<sub>10</sub>(temp) = 11700 #/3

VOID RATIO = 40%

Chamber OK

**Equations**

2000 Maryland Stormwater Design Manual Volume II

1000

1000

CN =  $\frac{1000}{10 + SP + 10Q_2} - 10 \sqrt{(Q_2)^2 + 1.25Q_2}$  [10 + SP] + 10(0.70) - 10√(0.70<sup>2</sup> + 1.25(0.70(1))

WQ(v) = [(P)(R(v))(A)]/12

R(v) = 0.05 + 0.009(I)

V<sub>10</sub> = (0.25)(WQ<sub>10</sub>)

Asp = (0.008)(WQ<sub>10</sub>)

V<sub>10</sub>temp = (0.75)(WQ<sub>10</sub>)

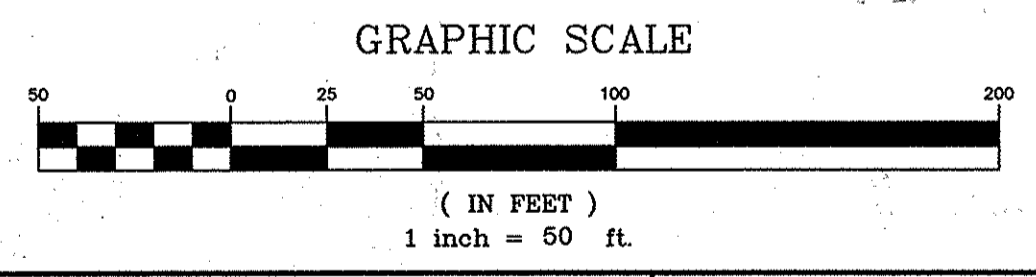
A<sub>y</sub> = (WQ<sub>10</sub>)(d<sub>10</sub>) / [K \* (t<sub>p</sub> + d<sub>10</sub>) \* t<sub>p</sub>]

h<sub>10</sub> = (0.5)(d<sub>10</sub>(pond))

V<sub>10</sub>temp = V<sub>10</sub> + V<sub>10</sub>pretreatment

**10-100 YEAR SWM STORAGE CHART**

STORM	EXISTING RUNOFF	PROPOSED RUNOFF	STORAGE REQUIRED	STORAGE PROVIDED
10 YEAR	22.14 cfs	23.36 cfs	9,584 cf	9,584 cf
100 YEAR	34.34 cfs	35.81 cfs	14,811 cf	14,811 cf



**BENCHMARK ENGINEERING, INC.**

ENGINEERS & LAND SURVEYORS & PLANNERS

8450 BALTIMORE NATIONAL PIKE & SUITE 315 • ELKRIOT CITY, MARYLAND 21043  
 (P) 410-465-6105 (F) 410-465-6444  
 WWW.BE-ENR.COM

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer in the State of Maryland, License No. 2436, 11/28/88, Expiration Date: 01.01.17.

**CORRIDOR SQUARE**

TAX MAP: 37 - GRID: 23 - PARCELS 265,272,273,107 (LOTS 64 & 65)  
 TAX MAP: 43 - GRID: 5 - PARCEL 75  
 ELECTION DISTRICT NO. 1 - HOWARD COUNTY, MARYLAND

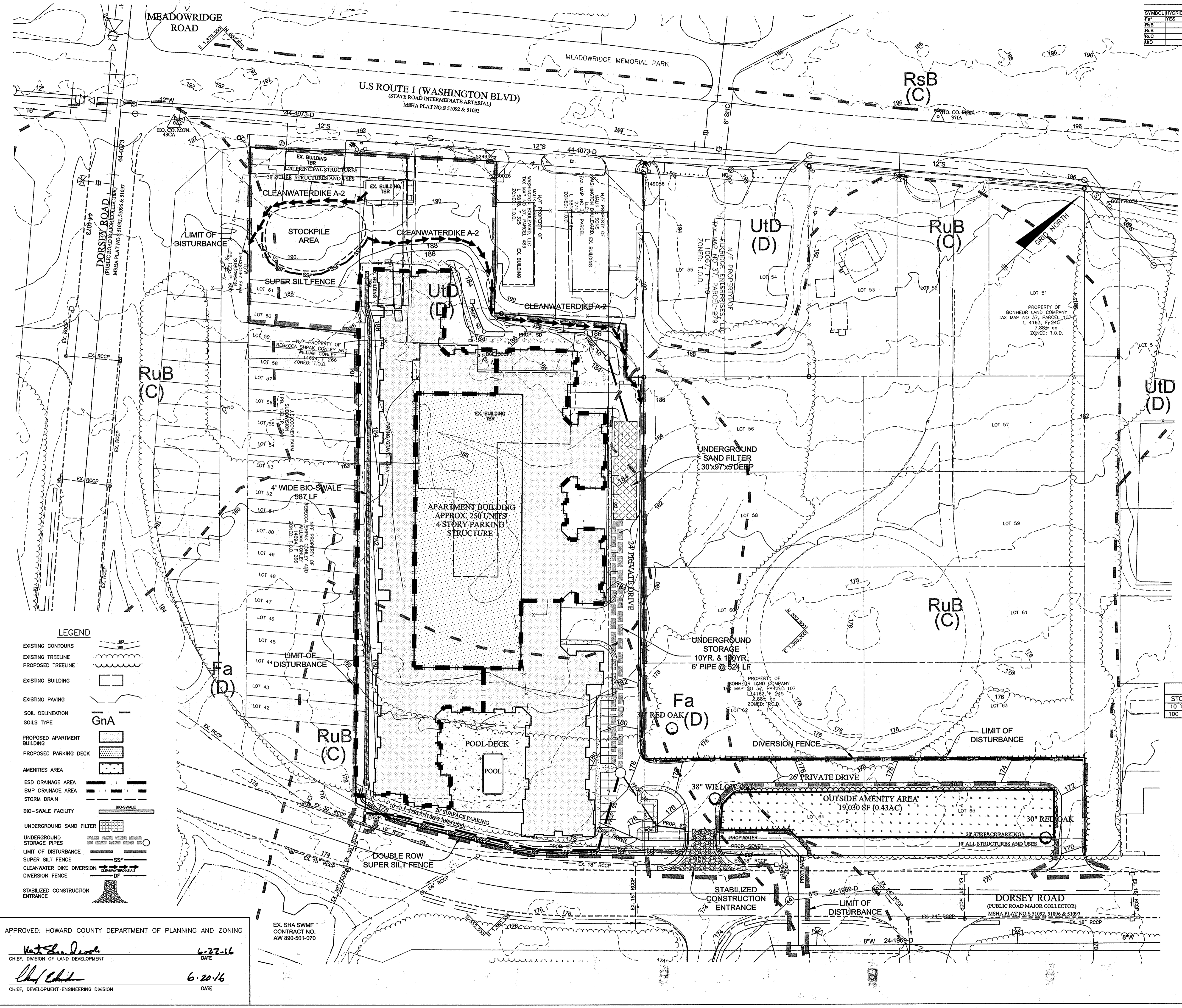
**ENVIRONMENTAL CONCEPT PLAN STORMWATER MANAGEMENT PLAN**

DATE: JUNE, 2016 BEI PROJECT NO. 2695

DESIGN: JCO DRAFT: JCO SCALE: 1"=50' SHEET 3 OF 3

OWNER: CORRIDOR SQUARE, LLC  
 6800 DEERPATH ROAD  
 ELKRIOT, MD 21075  
 410.579.2442

DEVELOPER: MURN DEVELOPMENT  
 6800 DEERPATH ROAD  
 ELKRIOT, MD 21075  
 410.579.2442



**LEGEND**

- EXISTING CONTOURS
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING BUILDING
- EXISTING PAVING
- SOIL DELINEATION
- SOILS TYPE
- PROPOSED APARTMENT BUILDING
- PROPOSED PARKING DECK
- AMENITIES AREA
- ESD DRAINAGE AREA
- BMP DRAINAGE AREA
- STORM DRAIN
- BIO-SWALE FACILITY
- UNDERGROUND SAND FILTER
- UNDERGROUND STORAGE PIPES
- LIMIT OF DISTURBANCE
- SUPER SILT FENCE
- CLEANWATER DIKE DIVERSION
- DIVERSION FENCE
- STABILIZED CONSTRUCTION ENTRANCE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Kurt Schaefer* 6-27-16  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Chris Clark* 6-20-16  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

EX. SHA SWMF CONTRACT NO. AW 890-501-070