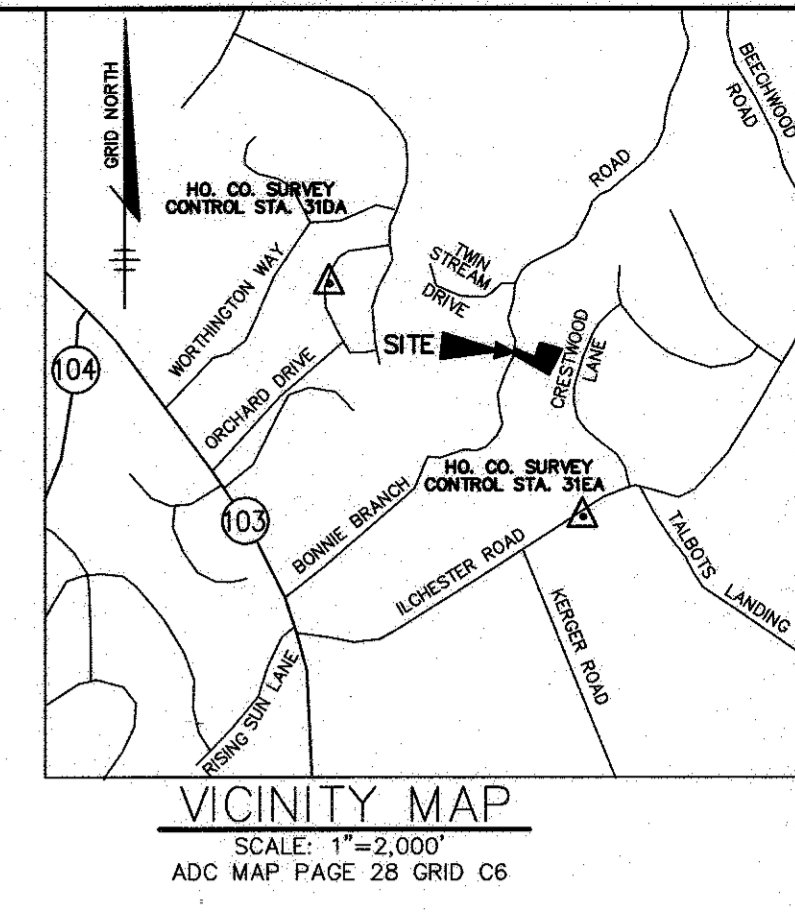


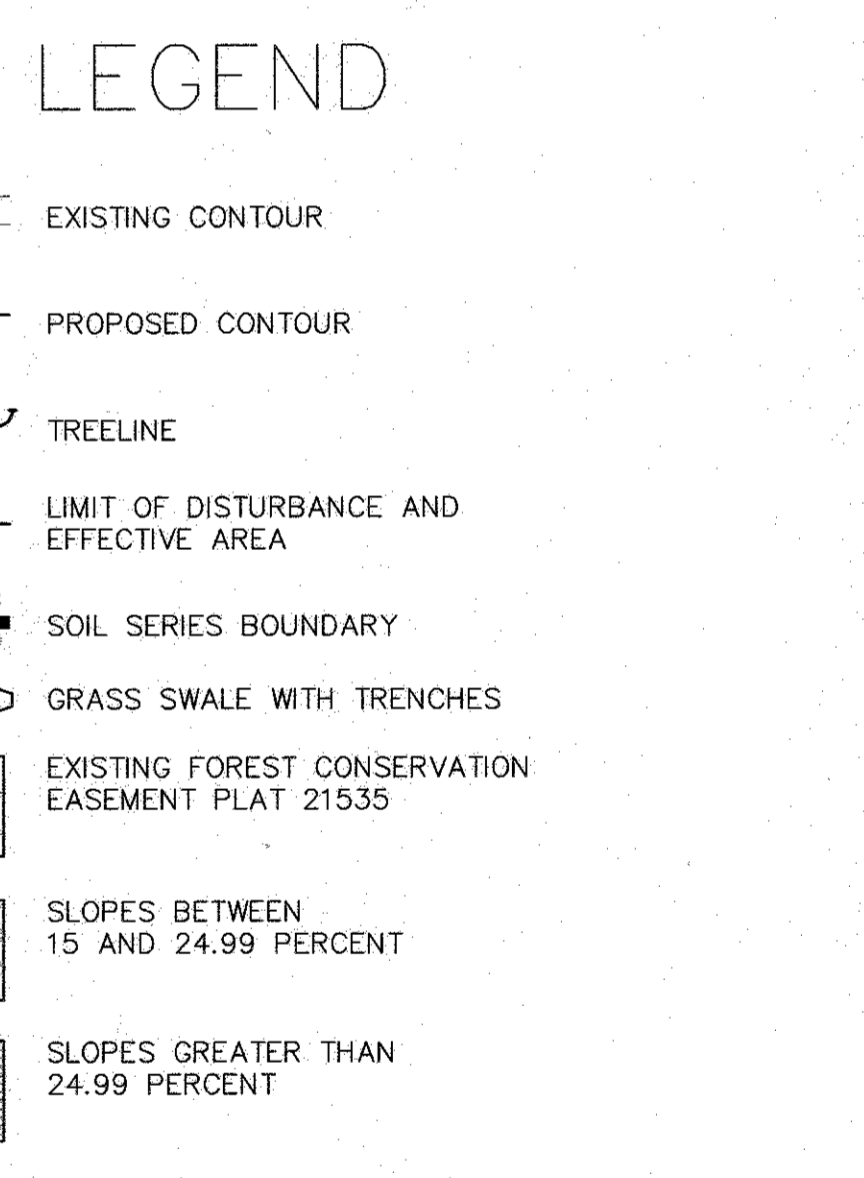


SWM DESIGN NARRATIVE:
 NATURAL RESOURCES, INCLUDING FORESTS, WETLANDS & STREAMS AND ASSOCIATED BUFFERS SHALL BE PRESERVED TO THE MAXIMUM PRACTICABLE. THERE SHOULD BE NO DISTURBANCES TO WETLANDS, WETLAND BUFFERS, STREAMS, STREAM BUFFERS, AND STEEP SLOPES OVER 25% AND 20,000 SF. EXISTING FOREST ALONG THE EASTERN SIDE OF THE PROPOSED LOTS SHALL BE PRESERVED WITHIN A FOREST CONSERVATION EASEMENT. ADDITIONAL FOREST PLANTING WILL BE PROVIDED IN THE AREAS IDENTIFIED ON F-07-193. SOME FOREST RETENTION IS PROVIDED IN THE PRIORITY AREAS, ADJACENT TO EXISTING PRESERVED FOREST AREAS.
 EXISTING FLOW PATTERNS SHALL BE MAINTAINED. UNDER ULTIMATE CONDITIONS ALL DRAINAGE FLOW SHALL EXIT THE PROPERTY AT APPROXIMATELY THE SAME LOCATION AS IT DOES UNDER EXISTING CONDITIONS.
 IMPERVIOUS AREAS ARE BEING HELD TO A MINIMUM BY PUSHING THE PROPOSED HOUSES AS CLOSE AS PRACTICABLE TO THE USE-IN-COMMON DRIVE OR FRONT BUILDING RESTRICTION LINES. THE USE-IN-COMMON DRIVE IS THE NARROWEST WIDTH ALLOWED BY COUNTY REGULATIONS (16 FEET), THE ROADWAY IS THE NARROWEST ALLOWED BY THE DESIGN MANUAL.
 SEDIMENT AND EROSION CONTROL SHALL BE PROVIDED. A SCHEMATIC CONCEPT IS SHOWN WITHIN THIS PLAN SET. IT IS ANTICIPATED THAT IT WILL CONSIST MAINLY OF EARTH Dikes, SUPER SILT FENCE AND SILT FENCE. SINCE THESE ARE RELATIVELY SMALL DRAINAGE AREAS, NO SEDIMENT TRAPS OR BASINS SHOULD BE NEEDED. THERE ARE NO IMPACTS TO SWM DESIGN BASED ON SEDIMENT AND EROSION CONTROL.
 THE PROPOSED M-6 (MICRO-BIORETENTION) AND M-5 (DRY WELLS AND GRAVEL TRENCHES) PRACTICES SHALL ADEQUATELY TREAT THE PROPOSED IMPERVIOUS AREAS. THE PRACTICES SHALL ALL DISCHARGE AT LOCATIONS THAT ARE NOT DETRIMENTAL TO THE ADJACENT PROPERTIES. FULL TREATMENT OF THE ESDV IS BEING PROVIDED THEREFORE THIS PROJECT CAN BE CONSIDERED TO BE TREATED.
 THIS SITE REQUIRED Op PROTECTION. THIS HAS BEEN ACHIEVED TO THE EXTENT POSSIBLE BY ADDITIONAL MICRO-BIORETENTION FACILITIES AND INCREASING THE CAPACITY OF THE PROPOSED DRYWELLS BY USE OF THE STORM CHAMBER DEVICES AND INCREASING THE SIZE OF THE LANDSCAPE INFILTRATIONS AND MICRO-BIORETENTION PRACTICES.



GENERAL NOTES

1. THE SUBJECT PROPERTY ZONED R-20 PER THE 10/6/13 ZONING REGULATIONS.
2. THIS PROJECT IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE ZONING REGULATIONS EFFECTIVE APRIL 13, 2004.
3. THE BOUNDARY SURVEY FOR THIS PROJECT WAS PREPARED BY RBA GROUP, INC., DATED FEBRUARY 1, 2006.
4. THE EXISTING TOPOGRAPHY SHOWN IS TAKEN FROM AN HOWARD COUNTY GIS WITH TWO-FOOT CONTOUR INTERVALS PREPARED AND VERIFIED BY SPOT LOCATIONS AND BENCHMARK ENGINEERING, INC. OFF-SITE AREAS HAVE BEEN SUPPLEMENTED WITH HO. CO. GIS TOPOGRAPHICAL INFORMATION.
5. 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. #310A AND #310B WERE USED FOR THIS PROJECT.
6. 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.
7. THERE ARE STEEP SLOPES AND FORESTED AREAS LOCATED ON-SITE. THERE ARE NO STREAM, STREAM BUFFER, WETLANDS, 25' WETLAND BUFFERS OR FLOODPLAIN LOCATED ON-SITE.
8. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAWING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS, STREAMS, OR THEIR REQUIRED BUFFERS, FLOODPLAIN, AND FOREST CONSERVATION EASEMENT AREAS.
9. THERE ARE NO EXISTING STRUCTURES ON-SITE FOR LOT 2.
10. BASED ON AVAILABLE COUNTY MAPS AND RECORDS, THERE ARE NO HISTORIC STRUCTURES OR KNOWN CEMETERIES LOCATED ON THE SUBJECT PROPERTY.
11. A NOISE STUDY IS NOT REQUIRED FOR THIS DEVELOPMENT.
12. A TRAFFIC STUDY FOR THIS PROJECT, IF NECESSARY, WILL BE PREPARED UNDER SUBSEQUENT PLANS SUBMISSION.
13. THIS SITE IS WITHIN THE METROPOLITAN DISTRICT; WATER & SEWER IS PUBLIC, CONTRACT 417-S.
14. ADEQUATE SITE DISTANCE APPEARS TO BE AVAILABLE AT THE ENTRANCE BASED ON THE APPROVAL OF F-07-193. THE DRIVEWAY LOCATION, HORIZONTAL AND VERTICAL, IS NOT TO CHANGE UNDER THIS PLAN.
15. GEOTECHNICAL INVESTIGATION HAS BEEN DONE BY GEOTECHNICAL LABORATORIES, INC., DATED FEBRUARY 5, 2016.
16. THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE FOR FOREST CONSERVATION HAS BEEN FULFILLED BY PROVIDING ON-SITE RETENTION AND REFORESTATION IN ACCORDANCE WITH F-07-193.
17. A WAIVER REQUEST TO ALLOW REMOVAL OF SPECIEN TREES WAS APPROVED BY WP-10-111.
18. APPROVAL OF THIS EOP 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 SHALL OCCUR AT THE SUBDIVISION PLAN/PLAT AND/OR SITE DEVELOPMENT PLAN STAGES AND 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.

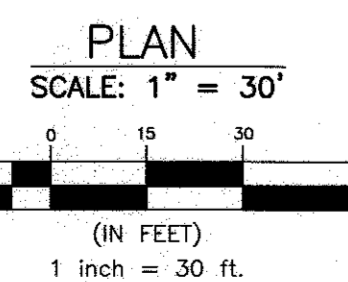


PROJECT BACKGROUND INFORMATION
 PRESENT ZONING: R-20
 LOCATION: TAX MAP 31, GRID 09, P/O PARCEL 321
 APPLICABLE DPZ FILE REFERENCES: F-07-193,
 WP-10-111, BA-10-010
 DEED REFERENCES: L13442 F.456
 PROPOSED WATER AND SEWER SYSTEMS:
 PUBLIC WATER & PUBLIC SEWER

Site Analysis Data Sheet

Gross Area	1.41 ac
100yr Floodplain	0.00 ac
Steep Slopes 15% or greater	0.88 ac
Wetlands (outside of floodplain)	0.00 ac
Wetlands Buffer (outside of floodplain)	0.00 ac
Stream	0 lf
Stream Buffer (outside floodplain)	0.00 ac
Forested Area	1.41 ac
Erodible Soils	0.00 ac
Limit of Disturbance	1.30 ac
Impervious Area	0.38 ac
Green Space	0.92 ac

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 Chief, Development Engineering Division
 Chief, Division of Land Development



SWM SUMMARY TABLE

D.A.	MDE Type	Inches			At		Depth		ESDV Test	Required	Provided	
		Total DA	Impervious Area	Qe	Required	Provided	2% DA	Depth				
MBR-1	(M-6)	9,793	2,310	0.42	196	198	ok	0.90	342	354	PASS	0.2248
MBR-2	(M-6)	5,617	2,658	0.76	121	281	ok	1.00	356	268	fail	0.1289
MBR-3	(M-6)	4,132	1,196	0.42	103	112	ok	0.90	176	192	PASS	0.1178
MBR-4	(M-6)	10,559	2,282	0.36	237	237	ok	0.80	341	345	PASS	0.2424
DW-1	(M-5)	715	715	1.62	NA	NA	NA	NA	91	288	100%	0.0000
DW-2	(M-5)	917	917	1.52	NA	NA	NA	NA	116	370	100%	0.0000
DW-3	(M-5)	715	715	1.52	NA	NA	NA	NA	91	269	100%	0.0000
DW-4	(M-5)	917	917	1.62	NA	NA	NA	NA	116	370	100%	0.0000
DW-5	(M-5)	13,860	2,372	0.33	NA	NA	NA	NA	283	140	fail	0.0000
DW-6	(M-5)	8,217	826	0.19	NA	NA	NA	NA	81	100	100%	0.0000
DW-7	(M-5)	1,953	1,102	0.89	NA	NA	NA	NA	152	100	fail	0.0000
Totals		58,395	15,790		666	827			2,176	2,814		0.6980 0.7140

ESDV for the drainage area containing practice MBR-3 and DW-7 is met by the combination of the practices.
 ESDV for the drainage areas DW-5 is provided to the MEP and is overcompensated for in other areas as the total ESDV provided exceeds the Target.

Field Percolation Test Results
 The percolation (supplemental) holes were, after 24 hours, initially restored to a level of 2.0 feet of water at the start of this testing procedure. The water level was thereafter maintained for a period of 4 hours and checked hourly for fall. At the completion, the average hourly infiltration/percolation rate was calculated based on the recorded data. The infiltration rates obtained decreased over time and the last (and lowest) rates were as follows:
 Boring No. Infiltration Rate (in/hr) Depth (feet)
 B-1 8.0 5.3
 B-2 0.0 5.1
 B-3 0.0 10.0
 B-4 12.0 5.4

MINIMUM LOT SIZE CHART

LOT NO.	GROSS AREA	PIPESTEM AREA	MINIMUM LOT SIZE
3	36,174 S.F.	5,672 S.F.	30,502 S.F.
4	25,195 S.F.	3,952 S.F.	21,243 S.F.

SPECIMEN TREE CHART PER F-07-193

KEY	SPECIES	DBH	HEIGHT	SPREAD	CONDITION	STATUS
1	BLACK OAK	37"	120'	50'	GOOD	TO BE REMOVED
2	RED OAK	31"	110'	40'	GOOD	SAVE
3	CHESTNUT OAK	34"	110'	40'	GOOD	SAVE
4	WHITE OAK	31"	120'	40'	GOOD	SAVE
5	CHESTNUT OAK	30"	110'	70'	GOOD	TO BE REMOVED
6	RED MAPLE	30"	120'	50'	GOOD	SAVE

NOTE: IN CONJUNCTION WITH WAIVER PETITION APPROVAL FOR WP-10-111, SPECIMEN TREE NOS. 1 AND 5 MAY BE REMOVED IN CONJUNCTION WITH CONSTRUCTION OF THE SHARED DRIVEWAY.

SHEET INDEX

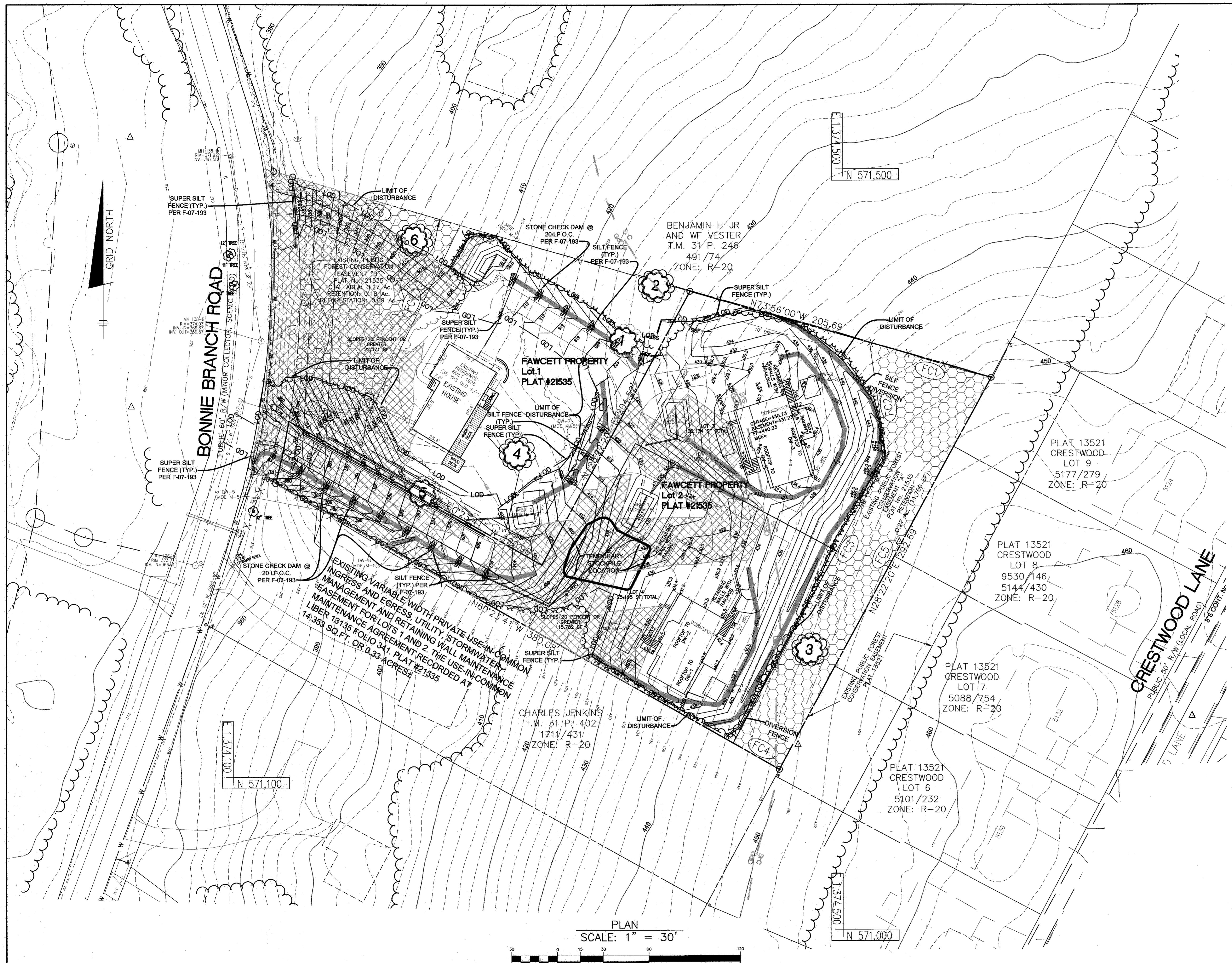
SHEET	TITLE
1	ENVIRONMENTAL CONCEPT PLAN
2	ENVIRONMENTAL CONCEPT PLAN SEDIMENT AND EROSION CONTROL PLAN
3	ENVIRONMENTAL CONCEPT PLAN STORMWATER MANAGEMENT PLAN AND DRAINAGE AREA MAPS

BENCHMARK ENGINEERING, INC.
 8480 BALTIMORE NATIONAL PIKE & SUITE 315 & ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6644
 WWW.BEI-ONLINEENGINEERING.COM

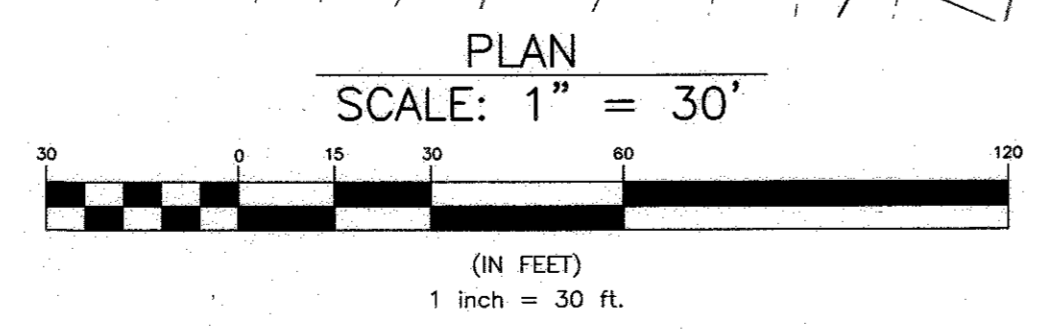
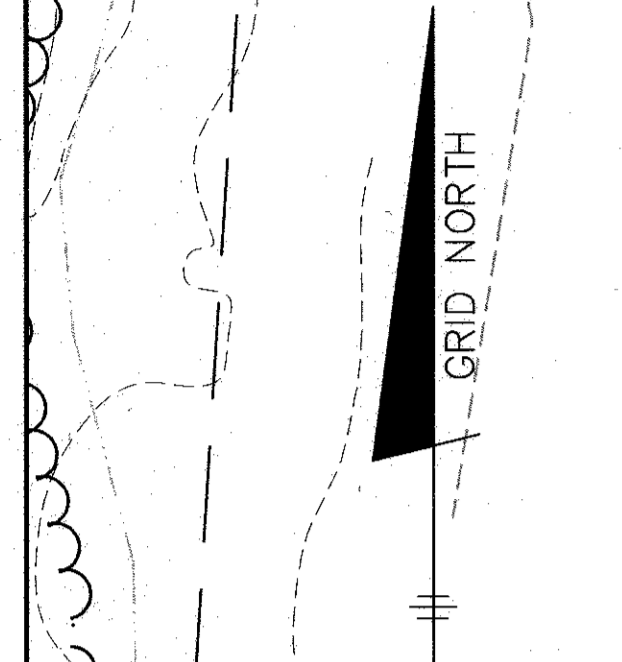
FAWCETT PROPERTY LOTS 3 AND 4
 A RESUBDIVISION OF LOT 2 AS SHOWN ON PLAT NUMBER 21535
 TAX MAP: 31, GRID: 9, PARCEL: P/O 321
 ZONED: R-20 (SINGLE FAMILY DETACHED)
 ELECTION DISTRICT NO. 1 - HOWARD COUNTY, MARYLAND

OWNER/DEVELOPER: BONNIE HILL LLC
 4941 BONNIE BRANCH ROAD
 ELLICOTT CITY, MD 21043-6813
 410-744-0657

DATE: SEPTEMBER, 2016
 SHEET: 1 OF 3
 BEI PROJECT NO. 2735



- LEGEND**
- EXISTING CONTOUR
 - PROPOSED CONTOUR
 - TREELINE
 - LOD LIMIT OF DISTURBANCE
 - SEC DRAINAGE AREA DIVIDES
 - SSF SUPER SILT FENCE
 - SF SILT FENCE
 - EROSION CONTROL MATTING
 - SFD SILT FENCE DIVERSION
 - SOIL SERIES BOUNDARY
 - GRASS SWALE WITH TRENCHES
 - EXISTING FOREST CONSERVATION EASEMENT PLAT 21535
 - SLOPES GREATER THAN 19.99 PERCENT

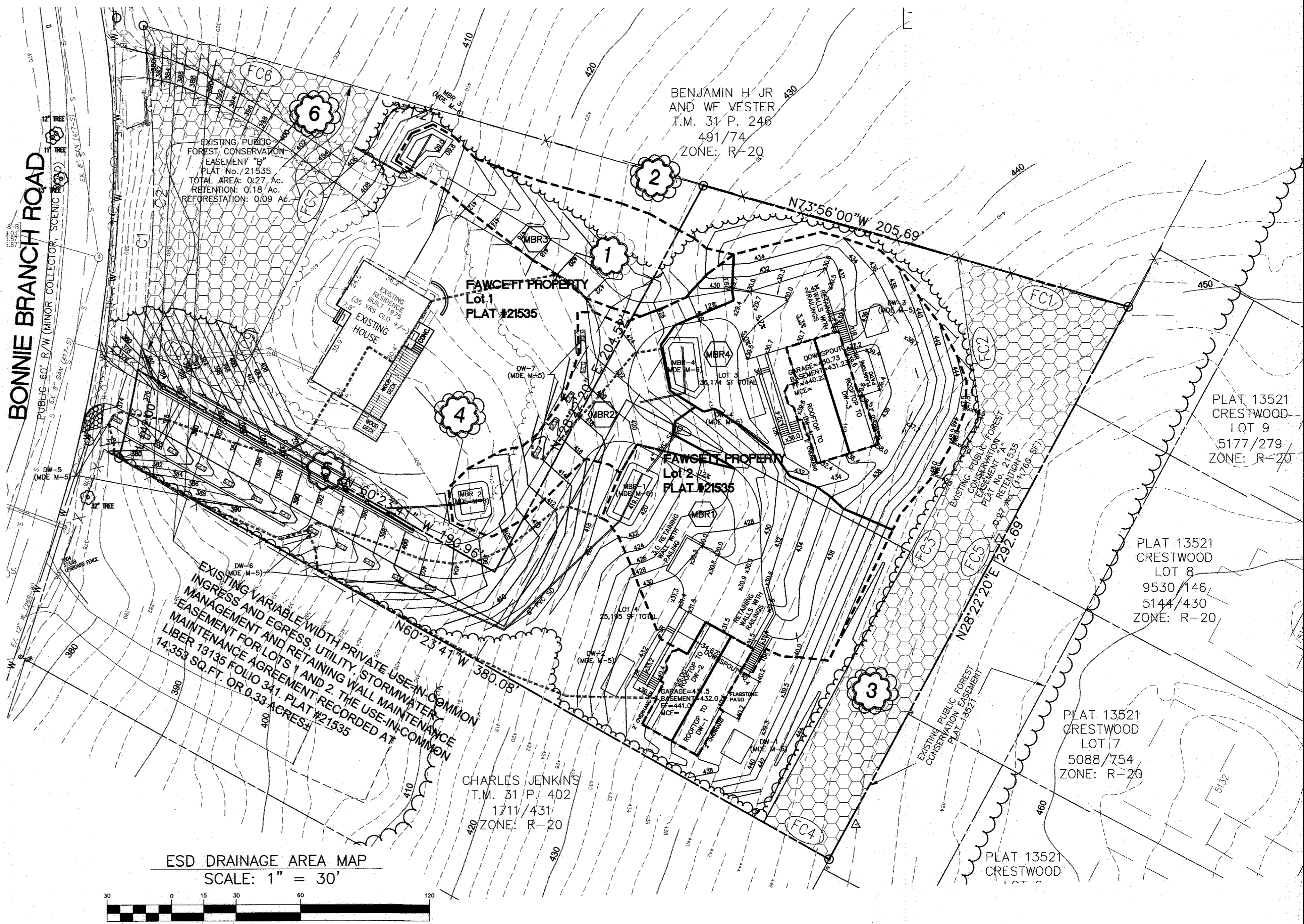


APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

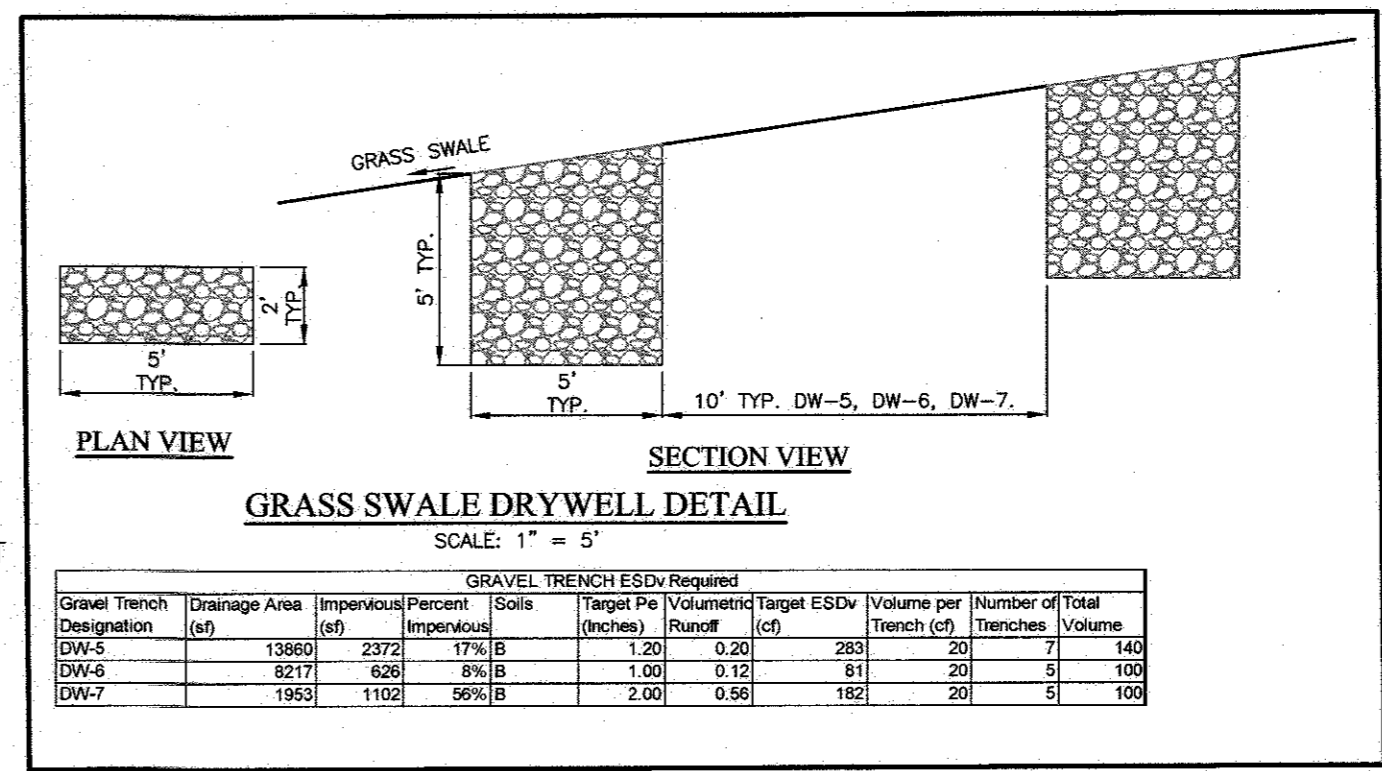
Chad Edwards 10-27-16
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Vanessa Dowd 10-26-16
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

NO.	DATE	REVISION
 BENCHMARK ENGINEERS, INC. 6480 BALTIMORE NATIONAL PIKE & SUITE 315 & ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6644 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 No. 45374
OWNER/DEVELOPER: BONNIE HILL LLC 4941 BONNIE BRANCH ROAD ELLICOTT CITY, MD 21043-6813 410-744-0657		FAWCETT PROPERTY LOTS 3 AND 4 A RESUBDIVISION OF LOT 2 AS SHOWN ON PLAT NUMBER 21535 TAX MAP: 31, GRID: 9, PARCEL: P/O 321 ZONED: R-20 (SINGLE FAMILY DETACHED) ELECTION DISTRICT NO. 1 - HOWARD COUNTY, MARYLAND ENVIRONMENTAL CONCEPT PLAN SEDIMENT AND EROSION CONTROL PLAN
DESIGN: JC	DRAFT: JC	DATE: OCTOBER, 2016 BEI PROJECT NO. 2735 SCALE: 1" = 30' SHEET 2 OF 3



- LEGEND**
- EXISTING CONTOUR
 - PROPOSED CONTOUR
 - TREELINE
 - LOD --- LIMIT OF DISTURBANCE
 - TRENCH DRAINAGE DIVIDE
 - ESD DRAINAGE DIVIDE
 - [Hatched Box] DISCONNECTION IMPERVIOUS AREA
 - [Dotted Box] DISCONNECTION PERVIOUS TREATMENT
 - S/C --- SOIL SERIES BOUNDARY
 - [Hatched Box] GRASS SWALE WITH TRENCHES
 - [Hatched Box] EXISTING FOREST CONSERVATION EASEMENT PLAT 21535
 - [Hatched Box] SLOPES BETWEEN 15 AND 24.99 PERCENT
 - [Hatched Box] SLOPES GREATER THAN 24.99 PERCENT



SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND

SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	K-VALUE
GSD		B		GLADSTONE-LEGORE COMPLEX 15 TO 26 PERCENT SLOPES, STONY	0.20
S/C		B	C	SASSAFRAS AND CROOM SOIL, 5 TO 10 PERCENT SLOPES	0.37/0.28

NOTES: * INDICATES HYDRIC SOILS. HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH SLOPE OF 15% OR GREATER REGARDLESS OF "K" FACTOR OR ANY SOIL WITH A SLOPE OF 5% OR GREATER WITH A "K" FACTOR OF 0.35 OR GREATER. TAKEN FROM THE NRCS WEB SOIL SURVEY, AUGUST 2014. SHEET 19

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chad Rhoads 10-27-16
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Kurt Schneider 10-26-16
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

NO.	DATE	REVISION

BENCHMARK
ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.

6480 BALTIMORE NATIONAL PIKE & SUITE 315 • ELLICOTT CITY, MARYLAND 21045
(P) 410-465-6105 (F) 410-465-6844
WWW.BEI-CVLENGINEERING.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. 45877.

10/29/16

OWNER/DEVELOPER: BONNE HILL LLC 4941 BONNIE BRANCH ROAD ELLICOTT CITY, MD 21043-6813 410-744-0657	<p align="center">FAWCETT PROPERTY LOTS 3 AND 4 A RESUBDIVISION OF LOT 2 AS SHOWN ON PLAT NUMBER 21535</p> <p>TAX MAP: 31, GRID: 9, PARCEL: P/O 321 ZONED: R-20 (SINGLE FAMILY DETACHED) ELECTION DISTRICT NO. 1 - HOWARD COUNTY, MARYLAND</p> <p align="center">ENVIRONMENTAL CONCEPT PLAN STORMWATER MANAGEMENT PLAN AND DRAINAGE AREA MAPS</p> <p>DATE: OCTOBER, 2016 BEI PROJECT NO. 2735</p>
DESIGN: JC DRAFT: JC	SCALE: 1" = 50' SHEET 3 OF 3