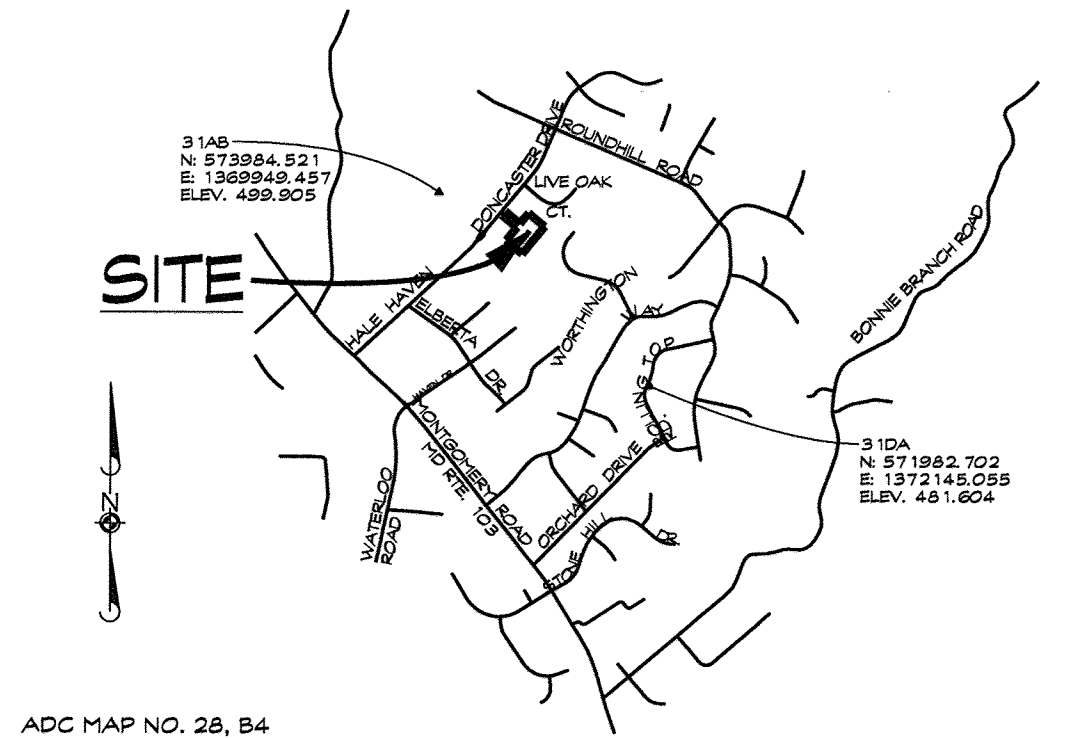


GENERAL NOTES - ROADS

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
- STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURE AND POLE SHALL BE IN ACCORDANCE WITH THE LATEST HOWARD COUNTY DESIGN MANUAL, VOLUME III. A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREETLIGHT AND ANY TREE.
- THE EXISTING TOPOGRAPHY IS TAKEN FROM A FIELD RUN SURVEY BY CLSI AND HOWARD COUNTY GIS WITH TWO FOOT CONTOUR INTERVALS PREPARED BY CLSI DATED JULY, 2012.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLAN COORDINATE SYSTEM, HOWARD COUNTY MONUMENT NOS. 31AB & 31DA WERE USED FOR THIS PROJECT.
- WATER IS PRIVATE, TIES TO WATER HOUSE CONNECTION AT THE RIGHT OF WAY.
- SEWER IS PRIVATE, TIES TO SEWER HOUSE CONNECTION AT THE RIGHT OF WAY.
- STORMWATER MANAGEMENT SHALL BE PRIVATELY OWNED AND MAINTAINED.
LOT 30: N-2 DISCONNECTION OF NON-ROOFTOP RUNOFF FOR DRIVEWAY, M-5 DRYWELLS FOR THE HOUSE.
LOT 31: N-2 DISCONNECTION OF NON-ROOFTOP RUNOFF FOR DRIVEWAY.
LOT 32: M-5 DRYWELL FOR 1,000 S.F. OF HOUSE, M-6 MICRO-BIORETENTION FOR REMAINDER OF HOUSE AND DRIVEWAY.
- THE EXISTING WATER LINES ARE BASED ON AS-BUILT DRAWINGS DONE BY WHITMAN, REQUARDT & ASSOCIATES AND APPROVED SEPTEMBER, 1966.
- THE EXISTING SEWER LINES ARE BASED ON AS-BUILT DRAWINGS DONE BY PURDUM & JESCHKE AND APPROVED FEBRUARY, 1974.
- THERE IS NO FLOODPLAIN ON THIS SITE.
- THERE ARE NO WETLANDS ON THIS SITE.
- THE TRAFFIC STUDY FOR THIS PROJECT WAS PREPARED BY LENHART TRAFFIC CONSULTING, INC., DATED MAY 6, 2014, AND WAS APPROVED ON MAY 8, 2014.
- THIS SITE CONSISTS OF 3 PROPOSED LOTS.
a) THE ENVIRONMENTAL CONCEPT PLAN (ECP-13-022) WAS APPROVED ON MAY 21, 2013.
b) DPZ REFERENCE NUMBER F-13-116.
c) PRELIMINARY STORMWATER MANAGEMENT PLAN (ECP-13-022) WAS APPROVED ON MAY 21, 2013.
d) PRELIMINARY GRADING AND SEDIMENT CONTROL PLAN (ECP-13-022) WAS APPROVED ON MAY 21, 2013.
e) FOREST STAND DELINEATION PLAN (ECP-13-022) WAS APPROVED ON MAY 21, 2013.
f) WP-14-070 WAS APPROVED ON FEBRUARY 27, 2014.
- A NOISE STUDY IS NOT REQUIRED.
- GRAVITY SEWER SERVICE, FIRST FLOOR ONLY. BASEMENT SEWER SERVICE TO BE PROVIDED BY PRIVATE ON-SITE PUMP.

SUPPLEMENTAL PLANS FOR SWM, GRADING AND FOREST CONSERVATION FOR ELLICOTT WOODS

LOTS 30, 31 & 32
A RESUBDIVISION OF LOT 28.
 2nd ELECTION DISTRICT * HOWARD COUNTY, MD.
OWNER/ DEVELOPER
MATTHEW SHANLEY
 4633 DONCASTER DRIVE
 ELLICOTT CITY, MD 21043
 (443) 786-1583



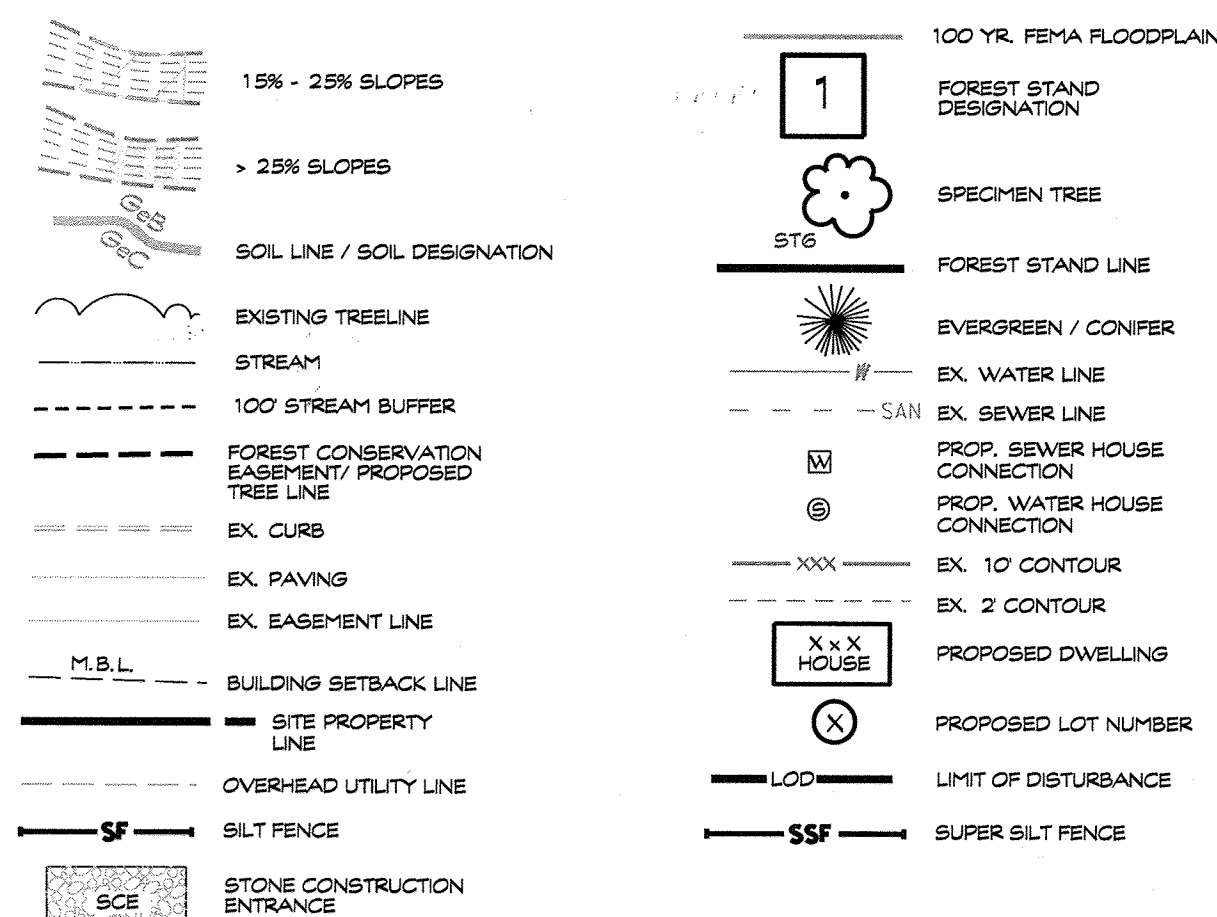
INDEX OF SHEETS

- TITLE SHEET
- GRADING & SEDIMENT CONTROL PLAN
- SEDIMENT CONTROL NOTES & DETAILS
- STORMWATER MANAGEMENT PLAN
- STORMWATER MANAGEMENT NOTES & DETAILS
- USE-IN-COMMON DRIVEWAY PLAN & PROFILE
- FOREST CONSERVATION PLAN, NOTES & DETAILS

SITE ANALYSIS DATA SHEET

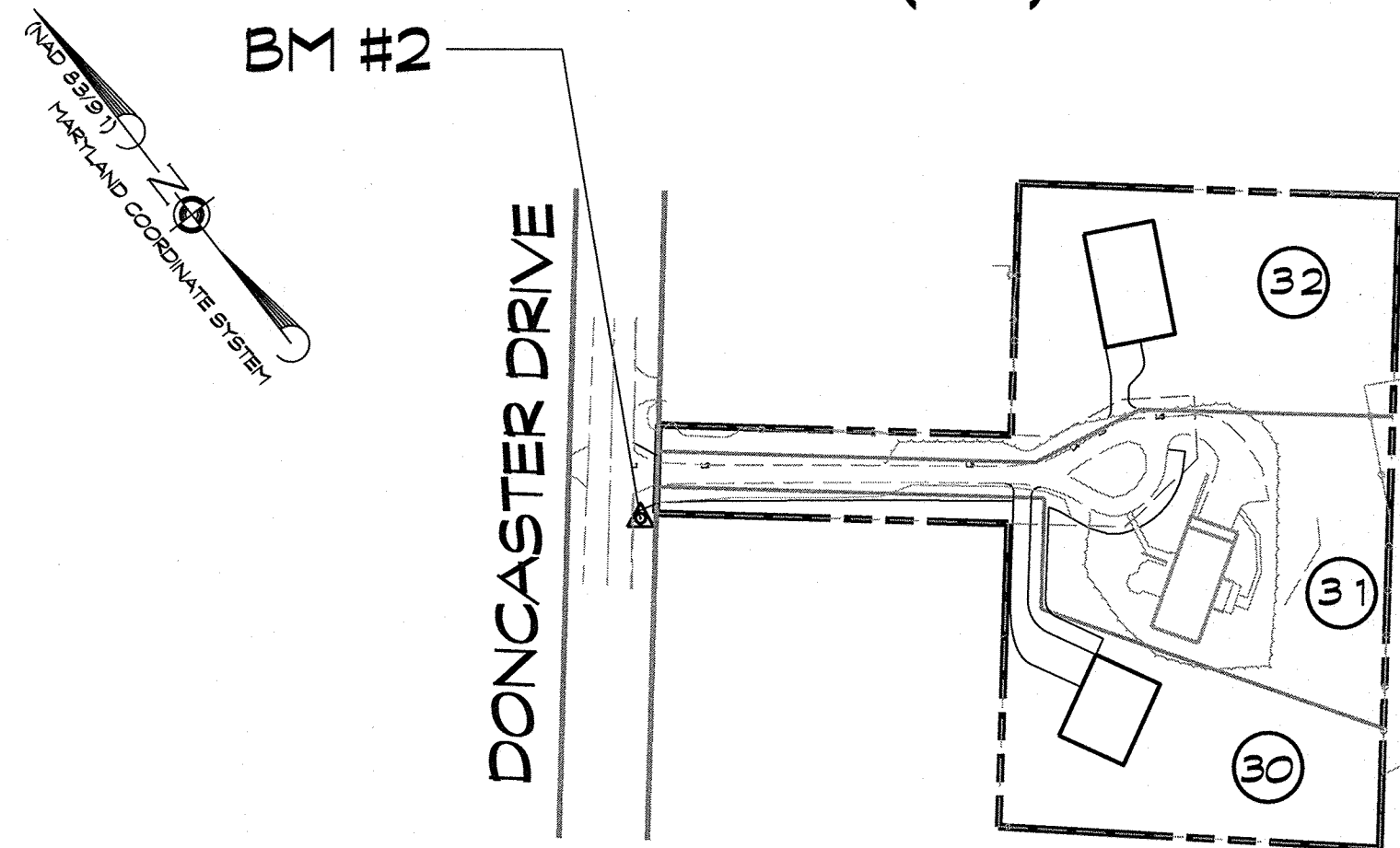
AREA OF WETLANDS: 0 AC.
 AREA OF WETLANDS BUFFER: 0 AC.
 AREA OF FLOODPLAIN: 0 AC.
 AREA OF FLOODPLAIN BUFFER: 0 AC.
 AREA OF EXISTING FOREST: 1.68 AC.
 AREA OF FOREST TO REMAIN: 0.34 AC.
 AREA OF STEEP SLOPES:
 25% OR GREATER: 0.11 AC.
 15% - 25%: 0.58 AC.
 ERODIBLE SOIL AREA: 1.94 AC.
 AREA OF LIMIT OF DISTURBANCE: 1.01 AC.
 AREA OF EXISTING IMPERVIOUS: 0.20 AC.
 AREA OF PROPOSED IMPERVIOUS: 0.22 AC.
 TOTAL AREA OF IMPERVIOUS: 0.42 AC.
 GREEN OPEN AREA: 0.36 AC.
 TOTAL AREA OF PROPOSED RESIDENTIAL USE: 1.45 AC.
 TOTAL AREA OF SITE: 2.03 AC.

LEGEND



BENCHMARKS:

B.M.#1 F-1 N: 573538.2640
 REBAR CAP SET E: 1370392.3710
 ELEV. 490.42
 B.M.#2 F-6 N: 573752.9678
 REBAR CAP SET E: 1370597.6922
 ELEV. 508.06



PROJECT CERTIFICATIONS

OWNERS CERTIFICATION

I/WE HERBY CERTIFY THAT ALL PROPOSED WORK SHOWN ON THESE CONSTRUCTION DRAWING(S) HAS BEEN REVIEWED BY ME/US AND THAT I/WE FULLY UNDERSTAND WHAT IS NECESSARY TO ACCOMPLISH THIS WORK AND THAT THE WORK WILL BE CONDUCTED IN STRICT ACCORDANCE WITH THESE PLANS. I/WE ALSO UNDERSTAND THAT ANY CHANGES TO THESE PLANS WILL REQUIRE AN AMENDED PLAN TO BE REVIEWED AND APPROVED BY THE HOWARD COUNTY PLANNING AND ZONING COMMISSION BEFORE ANY CHANGE IN THE WORK IS MADE.

Matthew Shanley 8/29/18
 OWNER DATE

ENGINEER

I CERTIFY THAT THIS PLAN OF SEDIMENT CONTROL IS DESIGNED WITH MY PERSONAL KNOWLEDGE OF THE SITE CONDITION AND HAS BEEN DESIGNED TO THE STANDARDS AND SPECIFICATIONS ADOPTED BY THE HOWARD SOIL CONSERVATION DISTRICT.

Brian E. Wagner 8/29/18
 Brian E. Wagner, P.E. DATE
 Professional Engineer Registration No. 51063

HOWARD SOIL CONSERVATION DISTRICT
 THIS PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

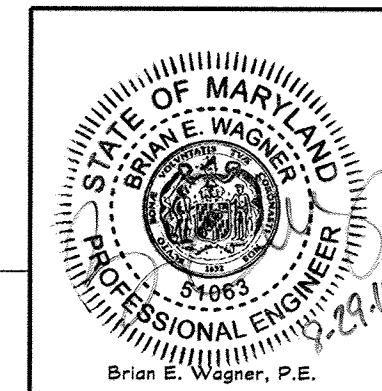
BY: _____ DATE: _____

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chad Clark 9.10.18
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
Kathleen Walsh 10-16-18
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

PIPESTEM LOTS CALCULATIONS

LOT #	GROSS AREA	PIPESTEM AREA	MINIMUM LOT SIZE
30	25,428 S.F.	4,238 S.F.	21,189 S.F.
31	31,829 S.F.	4,238 S.F.	27,604 S.F.
32	31,206 S.F.	2,988 S.F.	28,218 S.F.



PROFESSIONAL CERTIFICATION. I HERBY CERTIFY THAT THIS DOCUMENT WAS PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 51063, EXPIRATION DATE: JUNE 7, 2019



439 East Main Street Westminster, MD 21157-5539
 (410) 848-1790 FAX (410) 848-1791

Surveyed By: CLSI Drawn By: BM
 Computed By: DLA Checked By: L&D

HOWARD COUNTY FILES

WATER CONTRACT NO. 147-W
 SEWER CONTRACT NO. 419-S

OWNER/ DEVELOPER

MATTHEW SHANLEY
 4633 DONCASTER DRIVE
 ELLICOTT CITY, MD 21043
 (443) 786-1583

ADDRESS CHART

OLD LOT NO.	NEW LOT NO.	STREET ADDRESS
28	31	4633 DONCASTER DRIVE ELLICOTT CITY, MD 21043

PERMIT INFORMATION CHART

SUBDIVISION NAME	SECTION/AREA	LOT / PARCEL NO.			
ELLICOTT WOODS		28/22			
PLAT NO.	BLOCK NO.	ZONE	TAX MAP NO.	ELECT. DISTR.	CENSUS TRACT
10532	8	R-20	31	2nd	602700

SUPPLEMENTAL PLANS FOR SWM, GRADING AND FOREST CONSERVATION FOR

ELLICOTT WOODS

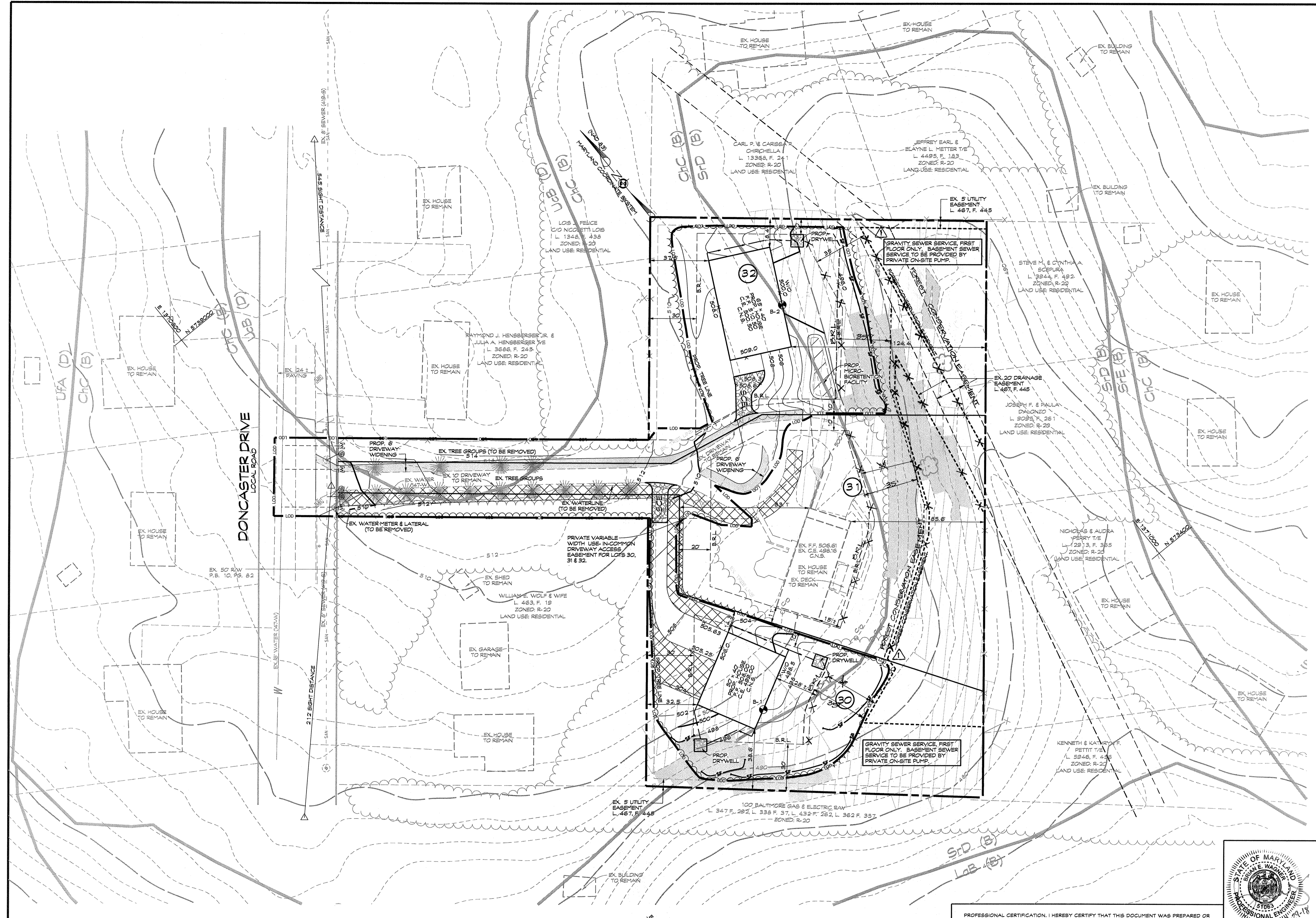
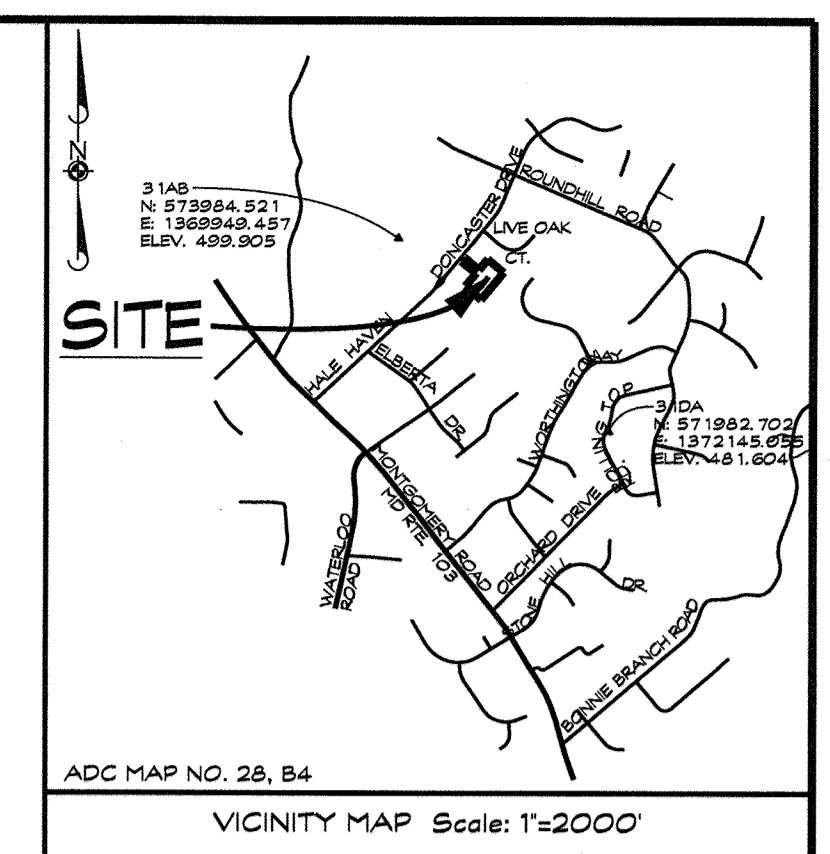
LOTS 30, 31 & 32
A RESUBDIVISION OF LOT 28.

DEED REFERENCE: 14212/ 00084
 TAX MAP: 31 BLOCK: 8 PARCEL: 22
 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

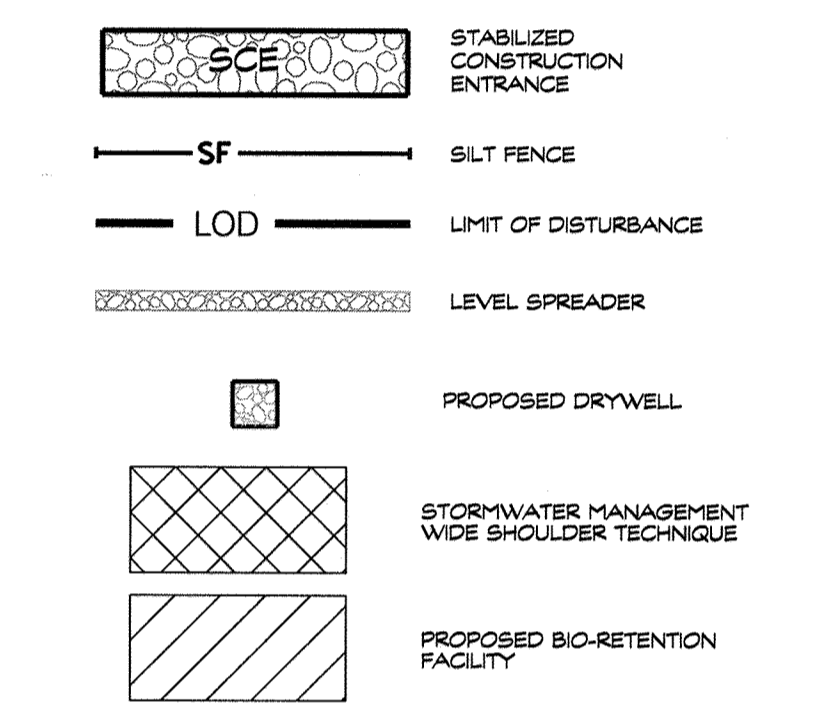
SCALE: AS SHOWN DATE: AUG., 2018 SHEET: 1 OF 7

RELATED DPZ FILE NUMBERS: ECP-13-022

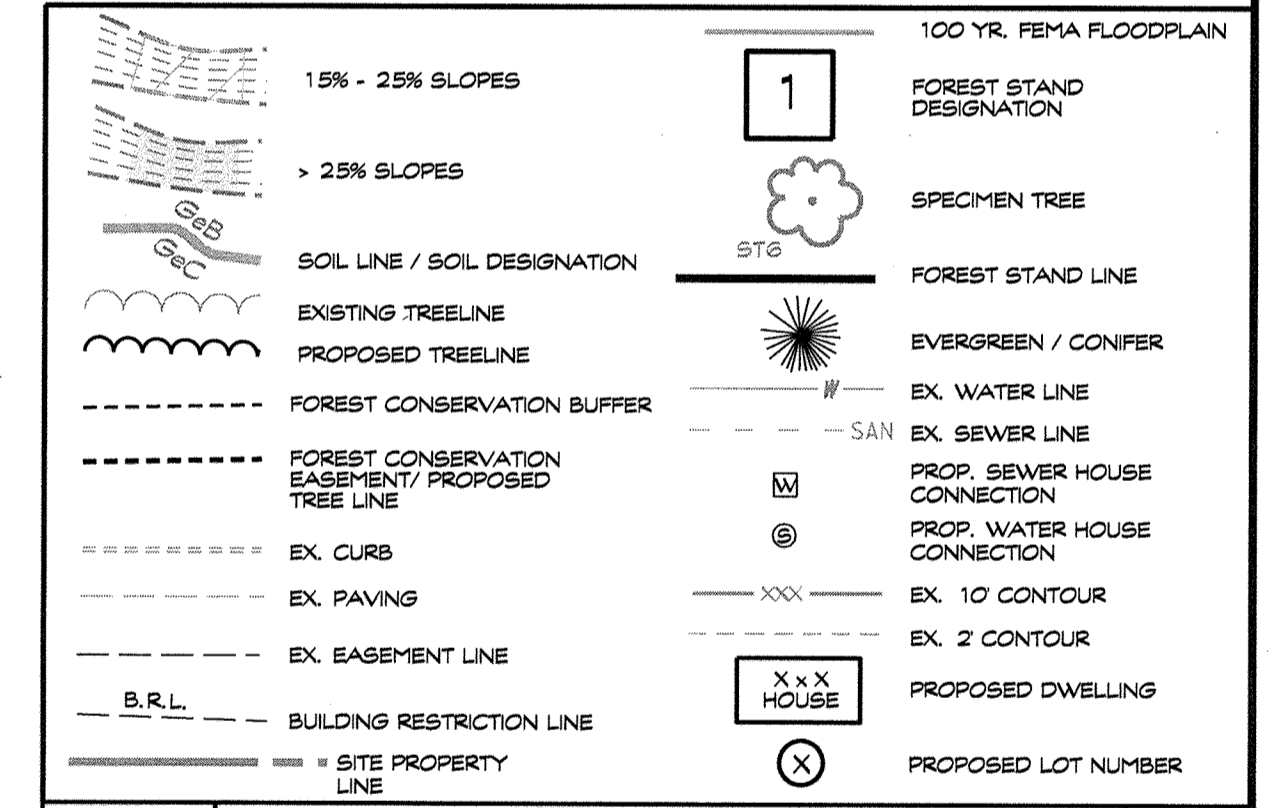
CLSI JOB NO.: 2012032
 COUNTY FILE NO.: F-13-116



SEDIMENT CONTROL LEGEND



LEGEND



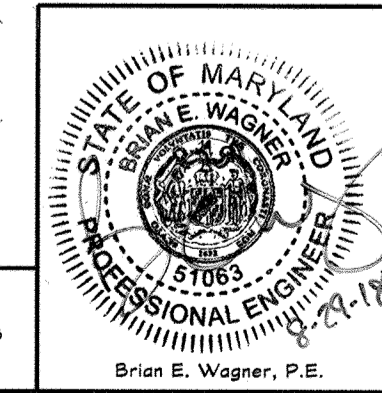
DATE	REVISION	BY
10/16/18	REVISED LOCATION OF EX. DRAINAGE & UTILITY EASEMENT FOR 32A & 32B	BM/9/17/18

ADDRESS CHART

OLD LOT NO.	NEW LOT NO.	STREET ADDRESS
28	31	4633 DONCASTER DRIVE ELlicOTT CITY, MD 21043

PERMIT INFORMATION CHART

SUBDIVISION NAME		SECTION/AREA	LOT / PARCEL NO.		
ELlicOTT WOODS			28/22		
PLAT NO.	BLOCK NO.	ZONE	TAX MAP NO.	ELECT. DIST.	CENSUS TRACT
10532	8	R-20	31	2nd	602700



PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 91063, EXPIRATION DATE: JUNE 7, 2019



439 East Main Street Westminister, MD 21157-5539
(410) 848-1790 FAX (410) 848-1791

Surveyed By: CLSI Drawn By: BM
Computed By: DLA Checked By: LGD

HOWARD COUNTY FILES

WATER CONTRACT NO. 147-W
SEWER CONTRACT NO. 419-S

OWNER / DEVELOPER

MATTHEW SHANLEY
4633 DONCASTER DRIVE
ELlicOTT CITY, MD 21043
(443) 786-1563

GRADING & SEDIMENT CONTROL PLAN

ELlicOTT WOODS
LOTS 30, 31 & 32
A RESUBDIVISION OF LOT 28.

DEED REFERENCE: 14212/ 00084
TAX MAP: 31 BLOCK: 8 PARCEL: 22
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

SCALE: 1" = 30' DATE: AUG., 2018 SHEET: 2 OF 7
RELATED DPZ FILE NUMBERS: ECP-13-022

SOILS CHART

SOIL SERIES	HYDROLOGIC SOIL GROUP	ERODIBLE (k-factor * 35)	HYDRIC
CHILLUM-RUSSET	B	-	-
SASSARFRAS AND CROOM	B	+	-
URBAN LAND-CHILLUM-BELTSVILLE	D	+	-

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chen
CHIEF, DEVELOPMENT ENGINEERING DIVISION

10-16-18
DATE

Wagner
CHIEF, DIVISION OF LAND DEVELOPMENT

10-16-18
DATE

ENGINEER CERTIFICATE

I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

SIGNED: *Brian E. Wagner* DATE: 9-29-18
BRIAN E. WAGNER, P.E.
PROFESSIONAL ENGINEER REG. NO. 91063

DEVELOPER'S CERTIFICATION FOR SEDIMENT AND EROSION CONTROL

I CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERSONS ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY.

SIGNED: *Matthew Shanley* DATE: 8/29/18
PRINTED

CAD Drawing File Name:

SEDIMENT & EROSION CONTROL NOTES

- All erosion/sediment control measures shall comply with the Maryland Standards and Specifications for Soil Erosion and Sediment Control by the Maryland Department of the Environment, Water Management Administration in association with the National Resources Conservation Service and Maryland Association of Soil Conservation Districts (referenced as the 2011 Standards and Specs).
- Areas that have been cleared and/or graded, but will not be constructed or permanently vegetated for more than 5 days (3 days for sediment control measures steep slopes) must be stabilized with mulch or temporary stabilization. Any areas that are in temporary vegetation for over 6 months will need to be permanently vegetated.
- For specifications on permanent or temporary stabilization see B-4-4 and B-4-5.
- Mulching can only be used on undisturbed areas as a temporary cover where vegetation is not feasible or where seeding germination cannot be completed because of weather conditions. For specifications see B-4-3, A.1.B.
- For specifications on the stabilization of cut and fill slopes greater than 3 horizontal to 1 vertical, see Incremental Stabilization B-4-1.
- The existing topsoil from an on or off site that is used must meet the minimum specifications in B-4-2.
- The required sequence of construction must be followed during site development. Any change in the sequence of construction must be approved by the Soil Conservation District.
- Any revisions to the sediment control plan, not covered under the list of plan modifications that can be approved by the sediment control inspector, need to be submitted to the Soil Conservation District for approval.
- No slopes greater than 2:1 shall require an engineered design for stabilization. Slopes greater than 2:1 shall require an engineered design for stabilization.
- All sediment control structures will be inspected once a week and after each rainfall and will be repaired, as needed, so that the structure meets the minimum specifications as shown in the 2011 Standards and Specs.
- The contractor is responsible for maintaining all sediment and erosion control measures until the disturbed areas are permanently stabilized.
- The district approval for this sediment control plan is good for 2 years. At the end of 2 years, if construction of the plan has not started, the plan will need to be resubmitted to the soil conservation district for review and re-approval. Any plans that are currently under construction after 2 years may be required to be re-submitted to the soil conservation district by the sediment control inspector.

1. TOTAL AREA OF SITE: 2.03 AC.
2. AREA DISTURBED: 1.01 AC.
3. TOTAL CUT: 30 C.Y.
4. TOTAL FILL: 10 C.Y.

DUST CONTROL SCHEDULE

May-October - All graded areas not being immediately stabilized as noted in the "Required Sequence of Construction" shall be watered on a continuing basis as necessary to provide for dust proofing. Contractor shall provide tank truck with spray bar on site at any time the disturbed area exceeds three (3) acres.

SITE ANALYSIS

1. TOTAL AREA OF SITE: 2.03 AC.
2. AREA DISTURBED: 1.01 AC.
3. TOTAL CUT: 30 C.Y.
4. TOTAL FILL: 10 C.Y.

REQUIRED SEQUENCE OF CONSTRUCTION

- OBTAIN GRADING PERMIT
 - NOTIFY THE HOWARD COUNTY SEDIMENT CONTROL DIVISION 24 HOURS PRIOR TO START OF CONSTRUCTION ACTIVITIES. ALL PROTECTION FENCING AND PERMANENT SIGNS REQUIRED UNDER THE HOWARD COUNTY CODE OF PUBLIC LAWS AND ORDINANCES, FOREST CONSERVATION SHALL BE INSTALLED PRIOR TO THE PRE-CONSTRUCTION MEETINGS WITH THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
 - INSTALL STABILIZED CONSTRUCTION ENTRANCES OFF EXISTING DRIVEWAY FOR LOTS 30 & 32.
 - INSTALL ALL SILT FENCE ON LOTS 30 & 32.
 - WITH APPROVAL OF SEDIMENT CONTROL INSPECTOR, CLEAR AND GRUB WITHIN THE LIMITS OF DISTURBANCE. VEGETATIVE MATTER MAY BE GROUND ON-SITE AND USED AS MULCH AT THE DISCRETION OF THE CONTRACTOR. ANY VEGETATIVE MATTER NOT CONVERTED TO MULCH AND USED ON-SITE SHALL BE DISPOSED OF AT AN APPROVED OFF-SITE LOCATION.
 - ROUGH GRADE LOTS AND DRIVEWAYS.
 - INSTALL SANITARY SEWER AND WATER HOUSE CONNECTIONS. DONCASTER DRIVE SHALL BE REPAIRED IN ACCORDANCE WITH UTILITY TRENCH ROADWAY REPAIRING DETAIL NO. S-4-01
- NOTE: CONTRACTOR SHALL MAINTAIN A MINIMUM 12' WIDE DRIVING LANE ON DONCASTER DRIVE AT ALL TIMES. TRAFFIC CONTROL DEVICES AND/OR FLAGGERS SHALL BE IMPLEMENTED IN ACCORDANCE WITH MARYLAND SHA TRAFFIC CONTROL STANDARDS. CONTRACTOR SHALL NOT STORE EQUIPMENT, VEHICLES, OR MATERIALS WITHIN THE RIGHT-OF-WAY OF DONCASTER DRIVE.
 - CONSTRUCT HOUSES, DRY WELLS AND MICRO-BIORETENTION FACILITY. INSPECTION OF STORM-WATER MANAGEMENT PRACTICES TO BE COORDINATED WITH THE CERTIFYING PROFESSIONAL ENGINEER. INSPECTIONS BY HOWARD COUNTY MAY NOT BE ADEQUATE PER CERTIFICATION OF AS-BUILTS BY CERTIFYING PROFESSIONAL ENGINEER.
 - FINE GRADE LOTS AND COMPLETE DRIVEWAY CONSTRUCTION
 - WITH APPROVAL OF SEDIMENT CONTROL INSPECTOR REMOVE TEMPORARY SILT FENCE.
 - STABILIZED CONSTRUCTION ENTRANCES AND STABILIZE REMAINING DISTURBED AREAS.
 - SUBMIT "AS-BUILT" SWM DRAWINGS TO HOWARD COUNTY.

STABILIZATION SPECIFICATIONS

TEMPORARY SEEDING NOTES

- Scope: Planting short term (no more than 6 Months) vegetation to temporarily stabilize any areas where soil disturbance has occurred, until the area can be permanently stabilized with vegetative or non-vegetative practices.
- Standards: The following notes shall conform to Section B-4 of the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL published jointly by the Maryland Department of Environment - Water Management Administration, the National Resources Conservation Service and the Maryland Association of Soil Conservation Districts.
- The seed bed shall be prepared by loosening the soil to a depth of 3 to 5 inches and incorporating the lime and fertilizer into this loosened layer of soil. See section B-4-2.
 - For temporary stabilization, fertilizer shall consist of a mixture of 10-20-20 and be applied at a rate of 4.36 lb. per acre (10 lb. per 1000 sq. ft.) and will meet the requirements in section B-4-2. Lime shall be applied at a rate of 2 tons per acre (80 lb. per sq. ft.) and shall meet the requirements in section B-4-2 and B-4-4.
 - Seed type and application shall meet the requirements in section B-4-3. Seed tags shall be made available to the inspector to verify the type and rate of seed used. Mulch type and its application will meet the requirements in section B-4-3 a, b and c and will be applied along with the seed or immediately after seeding.
 - Seeding mixtures shall be selected from or will be equal to those on Table B. 1 (page B. 20).

The seeding chart below will need to be placed on and filed in on the sediment control plan.

Hardness Zone (from Figure B. 3):					Fertilizer Rate (10-20-20)		Lime Rate
Seed Mixture (from Table B. 1):					N	P ₂ O ₅	
No.	Species	Application Rate (lb/acre)	Seeding Dates	Seeding Depths	N	P ₂ O ₅	Lime Rate
	Annual Ryegrass (Lolium perenne esp. multiflorum)	4.0 lb/acre	3/15 - 5/31 8/1 - 9/30	0.5"	4.36 lb/acre (10 lb/1000 sq. ft.)	80 lb/acre (20 lb/1000 sq. ft.)	2 tons/acre (80 lb/1000 sq. ft.)

PERMANENT SEEDING NOTES

- Scope: Planting permanent, long lived vegetative cover on graded and/or cleared areas and areas that have been in temporary vegetation for more than 6 months.
- Standards: The following notes shall conform to Section B-4 of the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL published jointly by the Maryland Department of Environment - Water Management Administration, the National Resources Conservation Service and the Maryland Association of Soil Conservation Districts.
- The seed bed shall be prepared by loosening the soil to a depth of 3 to 5 inches and incorporating the lime and fertilizer into this loosened layer of soil. See section B-4-2.
- For sites over 5 ac. soil tests will be performed. Soil tests will be conducted by the University of Maryland or a recognized commercial laboratory. Minimum soil conditions shall meet the requirements of section B-4-2a-2-a, otherwise soil amendments or topsoil will need to be applied. Topsoil may occur when soil conditions meet the minimum requirements as stated in section B-4-2-b. Soil amendments must meet the requirements as set forth in section B-4-2-c and must be applied as indicated by the soils tests.
- For sites of 5 ac. or less of disturbance, the following fertilizer and lime rates shall apply. Fertilizer shall consist of a mixture of 10-20-20 and be applied at the following rates: N = 4.5 lb. per acre (1 lb. per 1000 sq. ft.) P₂O₅ = 80 lb. per acre (20 lb. per 1000 sq. ft.) K₂O = 90 lb. per acre (2 lb. per 1000 sq. ft.) Lime shall be applied at a rate of 2 tons per acre (80 lb. per 1000 sq. ft.)

Seed type, turfgrass or sod application shall meet the requirements in section B-4-5. Seed tags shall be made available to the inspector to verify the type and application rate of seed used. Mulch type and its application will meet the requirements in section B-4-3 a, b and c, and will be applied along with seed or immediately after seeding.

Seeding mixtures shall be selected from or will be equal to those on Table B-3. The seeding chart below will need to be placed on and filed in on the sediment control plan.

Hardness Zone (from Figure B. 3):					Fertilizer Rate (10-20-20)		Lime Rate
Seed Mixture (from Table B. 3):					N	P ₂ O ₅	
No.	Species	Application Rate (lb/acre)	Seeding Dates	Seeding Depths	N	P ₂ O ₅	Lime Rate
1	Improved Tall Fescue (Lolium arundinaceum)	80 lb/acre	3/15 - 5/31 8/1 - 10/15	1/4 - 1/2 in	4.5 pounds per acre (1.1 lb/1000 sq. ft.)	80 lb/acre (20 lb/1000 sq. ft.)	2 tons/acre (80 lb/1000 sq. ft.)
2	Improved Kentucky Bluegrass	10 lb/acre	3/15 - 5/31 8/1 - 10/15	1/4 - 1/2 in	1.0 lb/1000 sq. ft.	20 lb/1000 sq. ft.	20 lb/1000 sq. ft.
3	Improved Perennial Ryegrass	10 lb/acre	3/15 - 5/31 8/1 - 10/15	1/4 - 1/2 in	1.0 lb/1000 sq. ft.	20 lb/1000 sq. ft.	20 lb/1000 sq. ft.

- 1-use 2-4 varieties on the MDVA recommended list (TT-77)
- 2-use 1 variety on the MDVA recommended list (TT-77)
- 3-use 1 variety on the MDVA recommended list (TT-77)

TRACKING NOTE:

On areas where the slope is 3:1 or steeper and the height is 8' or greater, contractor shall track the slope using cleared dozer prior to placing asphalt binder. Dozer shall run up-and-down so that clear marks are horizontal. Where tracking is required, it shall be done from existing grade level to finished grade level within the limits established by the 8' height criteria.

UTILITY CONSTRUCTION NOTES

- Place all excavated material on the high side of the trench.
- City do as much work as can be done in one day so backfilling, final grading, and permanent stabilization can occur.
- Any sediment control measures disturbed by the utility construction will be repaired the same day.

STOCKPILE/TOPSOIL NOTES

- Stockpiling will not be allowed on any impervious areas.
- All stockpiles left at the end of the day will need to be temporarily stabilized until they are again disturbed, unless they are within existing perimeter sediment controls.
- All stockpile areas shall be confined within perimeter controls. In the event that stockpile areas must be located outside disturbed areas, the location shall be as directed by the inspector in the field.

NOTE:
ALL SEDIMENT CONTROL MEASURES SHOWN HEREON ARE TEMPORARY UNLESS OTHERWISE NOTED.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chad E. Smith
CHIEF, DEVELOPMENT ENGINEERING DIVISION

9.10.18
DATE

Kurt Sebold
CHIEF, DIVISION OF LAND DEVELOPMENT

10.16.18
DATE

ENGINEER CERTIFICATE

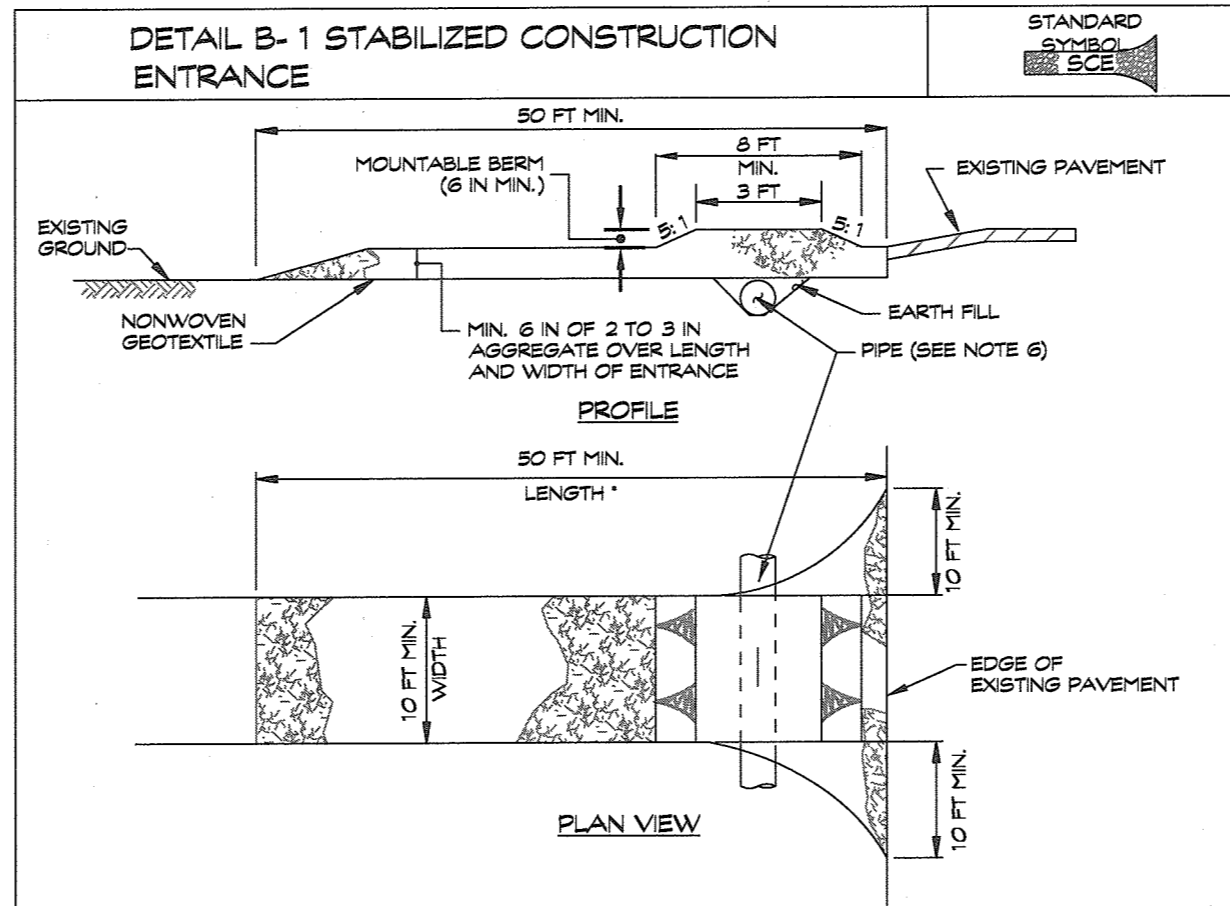
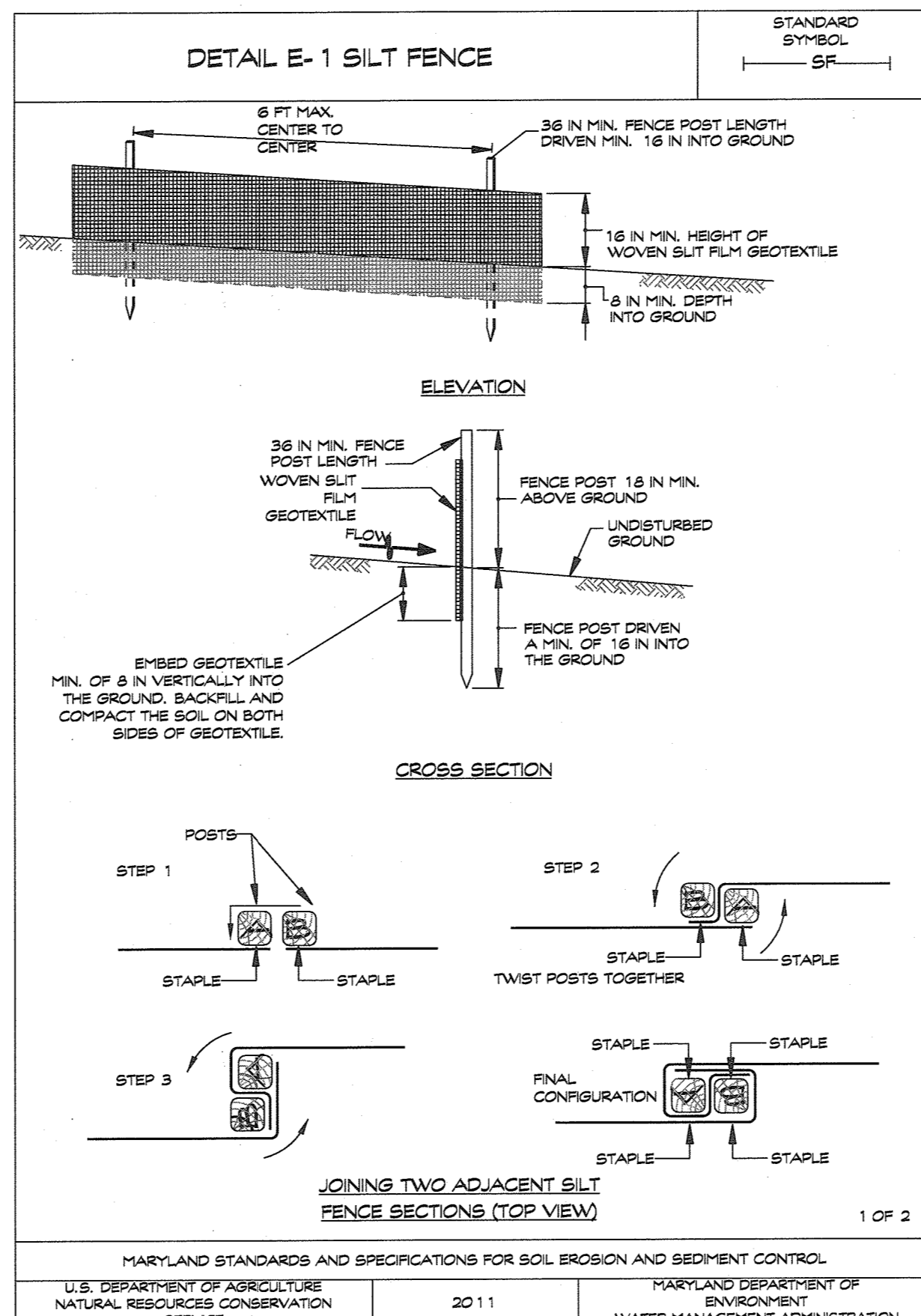
I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.

SIGNED *Brian E. Wagner* DATE 8-29-18
BRIAN E. WAGNER, P.E.
PROFESSIONAL ENGINEER REG. NO. 51063

DEVELOPERS CERTIFICATION FOR SEDIMENT AND EROSION CONTROL

I CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY.

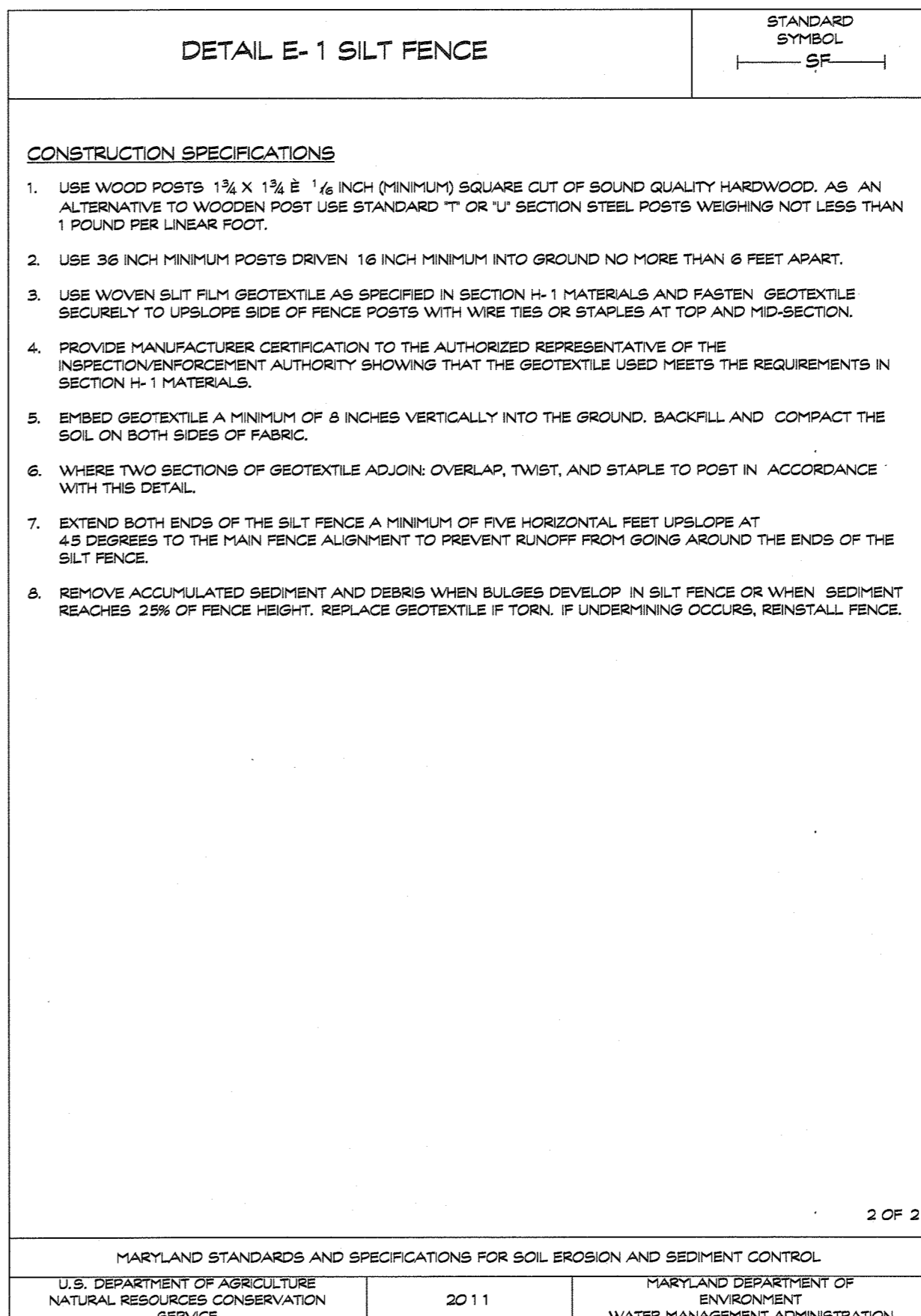
SIGNED *Matthew Shanley* DATE 8/29/18
PRINTED



- CONSTRUCTION SPECIFICATIONS**
- PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
 - PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
 - PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
 - PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
 - MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE. MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011

NOTE:
ALL STOCKPILE AREAS SHALL BE CONFINED WITHIN PERIMETER CONTROLS. IN THE EVENT THAT STOCKPILE AREAS MUST BE LOCATED OUTSIDE OF DISTURBED AREAS, THE LOCATION SHALL BE AS DIRECTED BY THE INSPECTOR IN THE FIELD



MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011

DATE	REVISION	BY

ADDRESS CHART

OLD LOT NO.	NEW LOT NO.	STREET ADDRESS
28	31	4633 DONCASTER DRIVE ELLICOTT CITY, MD 21043

PERMIT INFORMATION CHART

SUBDIVISION NAME	SECTION/AREA	LOT / PARCEL NO.			
ELLICOTT WOODS		28/22			
PLAT NO.	BLOCK NO.	ZONE	TAX MAP NO.	ELECT. DISTR.	CENSUS TRACT
10532	8	R-20	31	2nd	602700

SEDIMENT CONTROL NOTES & DETAILS
ELLICOTT WOODS
LOTS 30, 31 & 32
A RESUBDIVISION OF LOT 28.

DEED REFERENCE: 14212/ 00084
TAX MAP: 31 BLOCK: 8 PARCEL: 22
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUG., 2018 SHEET: 3 OF 7
RELATED DPZ FILE NUMBERS: ECP-13-022

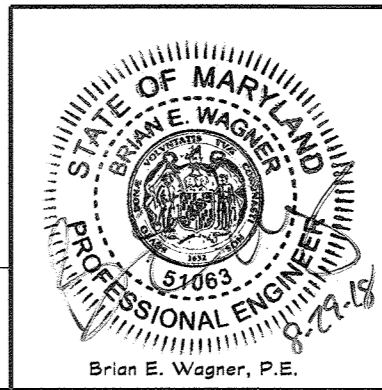
PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 91063, EXPIRATION DATE: JUNE 7, 2019



439 East Main Street Westminster, MD 21157-5539
(410) 848-1790 FAX (410) 848-1791

Surveyed By: CLSI Drawn By: BM
Computed By: DLA Checked By: LGD

HOWARD COUNTY FILES
WATER CONTRACT NO. 147-W
SEWER CONTRACT NO. 419-S
OWNER/ DEVELOPER
MATTHEW SHANLEY
4633 DONCASTER DRIVE
ELLICOTT CITY, MD 21043
(443) 786-1583



Environmental Site Design Strategies and Practices

After examination of the site fingerprinting the CSWMP and future final design intends to incorporate the Environmental Site Design ("ESD") strategies and practices to the maximum extent practicable ("MEP"). We note the following "Better Site Design Techniques" that are incorporated as ESD's for this project design:

- a. The use of level spreaders for sheet flow to conservation area. (House and driveways)
- b. The use of Non-Rooftop disconnect. (Use-in-common driveway)
- c. Rooftop disconnect by use of drywell. (House)

These ESD's satisfy the intent of the SWM criteria to the MEP by:

- acknowledging and retaining the NFA
- mimicking as closely as possible, the natural flow paths;
- reducing impervious areas; and
- utilizing low-impact ESD's.

Natural Resource Protection

Natural resource protection and enhancement is being achieved by minimizing the disturbance for each lot. In addition, the existing woods on the east side of the site are being preserved by providing a forest conservation easement greater than 50 feet wide. The use of the level spreaders will maintain the natural flow of the water into the easement/buffer area.

Natural Flow Patterns

Natural flow patterns are being maintained by use of non-rooftop disconnect for the 6' widening of the entrance driveway and by providing level spreaders on the proposed lots to achieve sheet flow to the conservation area. In addition, a drywell is used to achieve rooftop runoff disconnect for half the house on Lot 30.

Integration of Erosion and Sediment Control into SWM Strategy

Sediment control is being provided by use of stabilized construction entrance at each proposed driveway and by use of silt fence. The silt fence works as a level spreader in the interim during construction prior to the site being stabilized. Once site is stabilized the lever spreaders will be constructed and silt fence removed.

ESD Planning Techniques and Practices

The following are proposed design techniques being used to achieve implementation of ESD planning techniques and practices for this site:

Lot 30:
Prop. Treatment = N-2: Non-Rooftop disconnect driveway
M-5: Drywell (Rooftop disconnect) for the house.

Lot 31:
Prop. Treatment = N-2: Non-Rooftop disconnect for the proposed 6' widening of the entrance drive within Lot 31 boundary.

Lot 32:
Prop. Treatment = N-2: Non-Rooftop disconnect for the proposed 6' widening of entrance drive within Lot 32 boundary.
M-5: Drywell (Rooftop disconnect) for 1,000 S.F. of house.
M-4: Micro-bioretenion to treat remainder of house and driveway.

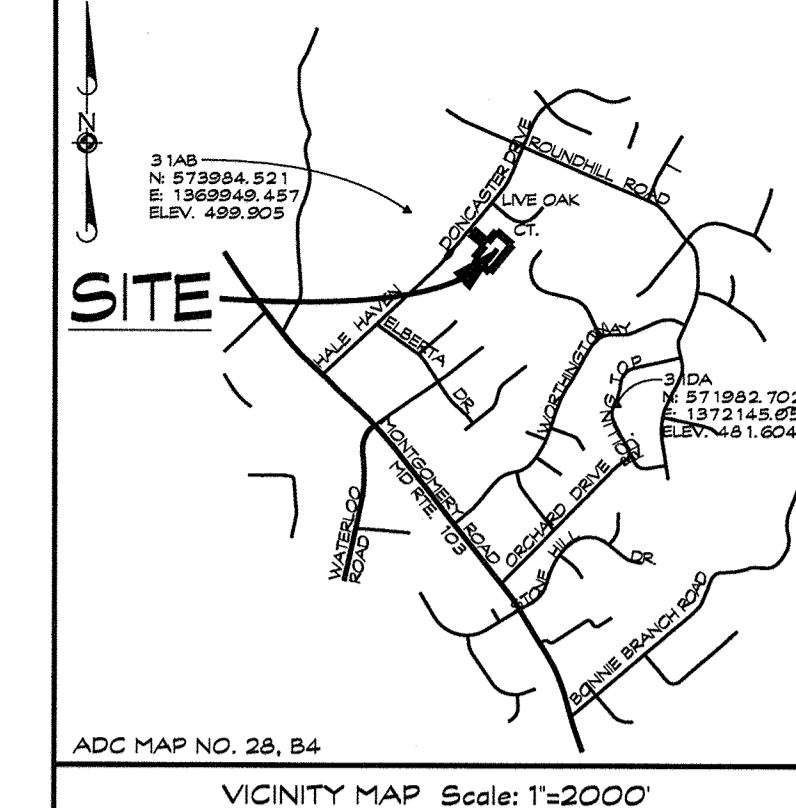
SOILS CHART

SOIL SERIES	HYDROLOGIC SOIL GROUP	ERODIBLE (k-factor > 35)	HYDRIC
CHILLUM-RUSSET	B	+	-
SASSAFRAS AND CROOM	B	+	-
URBAN LAND-CHILLUM-BELTSVILLE	D	+	-

LOT NUMBER	ADDRESS	STORMWATER MANAGEMENT PRACTICES														
		GREEN ROOFS A-1 (Y/N)	PERMEABLE PAVEMENTS A-2 (Y/N)	REINFORCED TURF A-3 (Y/N)	DISCONNECTION OF ROOFTOP RUNOFF N-1 (NUMBER)	DISCONNECTION OF NON-ROOFTOP RUNOFF N-2 (Y/N)	SHEETFLOW TO CONSERVATION AREAS N-3 (Y/N)	RAINWATER HARVESTING M-1 (NUMBER)	SUBMERGED GRAVEL WETLANDS M-2 (NUMBER)	LANDSCAPE INFILTRATION M-3 (NUMBER)	INFILTRATION BERMS M-4 (NUMBER)	DRYWELLS M-5 (NUMBER)	MICRO-BIORETENTION M-6 (NUMBER)	RAIN GARDENS M-7 (NUMBER)	SWALES M-8 (NUMBER)	ENHANCED FILTERS M-9 (NUMBER)
30	4631 DONCASTER DRIVE	N	N	N	0	Y	N	0	0	0	0	2	0	0	0	0
31	4633 DONCASTER DRIVE	N	N	N	0	Y	N	0	0	0	0	0	0	0	0	
32	4635 DONCASTER DRIVE	N	N	N	0	Y	N	0	0	0	1	1	0	0	0	

STORMWATER MANAGEMENT TREATMENT METHOD LEGEND

- PROPOSED IMPERVIOUS TREATED BY BIO-RETENTION
- FOREST CONSERVATION EASEMENT AREA
- PROPOSED IMPERVIOUS AREA TO NON-ROOFTOP DISCONNECT
- NON-ROOFTOP DISCONNECT AREA
- PROPOSED IMPERVIOUS TREATED BY DRYWELL
- PROPOSED DRYWELL



DATA SUMMARY:

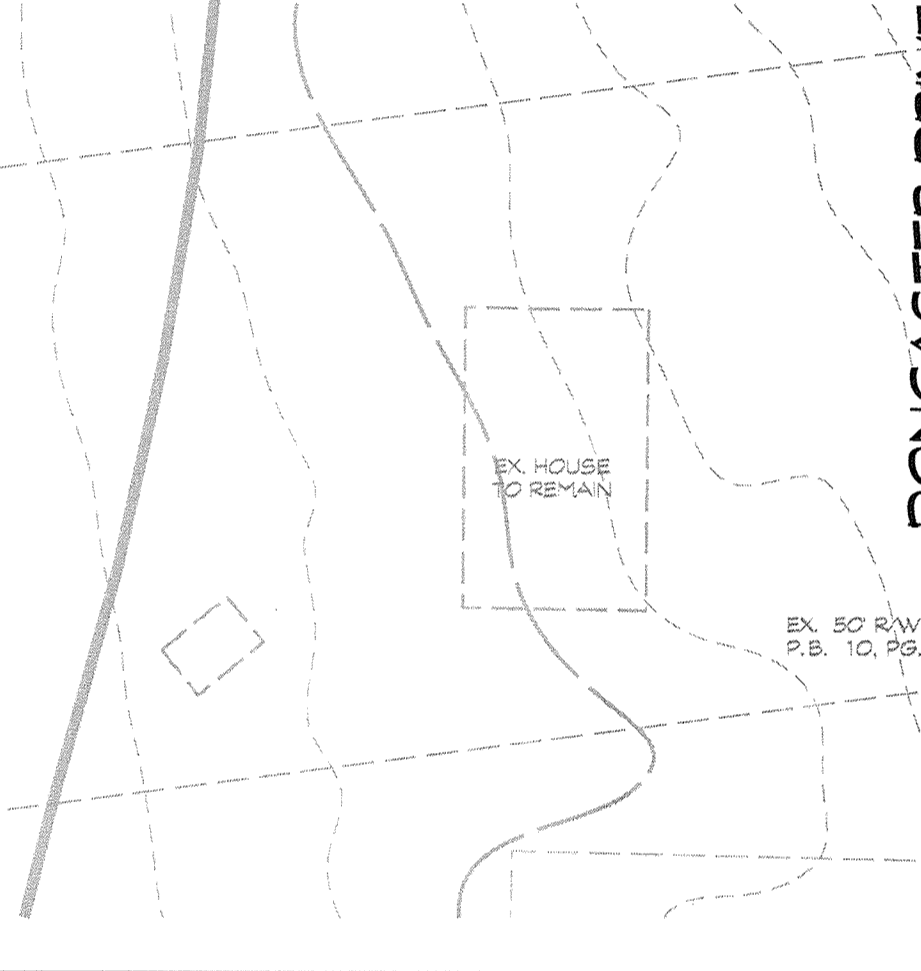
TOTAL AREA OF SITE = 2.03 AC.
D SOIL = 0.03 AC.
B SOIL = 1.94 AC.

LOT 30:
PROP. DRIVEWAY = 1730 S.F.
PROP. HOUSE = 2000 S.F.
PROP. TREATMENT = N-2: NON-ROOFTOP DISCONNECT TO TREAT PROPOSED DRIVEWAY.
M-5: DRYWELL (ROOFTOP DISCONNECT) TO TREAT THE HOUSE.

LOT 31: 4633 DONCASTER DRIVE ELLICOTT CITY, MD 21043
THE EX. DRIVEWAY WILL BE WIDENED 6' AND USED AS A USE-IN-COMMON DRIVEWAY FOR ALL THREE LOTS. PROP. DRIVEWAY WIDENING WITHIN LOT 31 BOUNDARY = 1405 S.F.
PROP. TREATMENT = N-2: NON-ROOFTOP DISCONNECT

LOT 32:
PROP. DRIVEWAY (INCLUDING WIDENED EX. DRIVEWAY) WITHIN LOT 32S LOT BOUNDARY = 1261 S.F. OR 0.02 AC.
PROP. HOUSE = 2600 S.F.
PROP. TREATMENT = N-2: NON-ROOFTOP DISCONNECT FOR PROPOSED 6' WIDENING OF ENTRANCE DRIVE (690 S.F.) OF HOUSE
M-5: DRYWELL (ROOFTOP DISCONNECT) (1000 S.F.) OF HOUSE
M-6: MICRO-BIORETENTION REMAINING (2171 S.F.) IMPERVIOUS HOUSE & DRIVEWAY

LEGEND:
A = DRAINAGE AREA TO N-2
B = DRAINAGE AREA TO M-5 DRYWELLS
C = DRAINAGE AREA TO M-5 DRYWELLS
D = DRAINAGE AREA TO M-5 DRYWELLS
E = DRAINAGE AREA TO M-6 MICRO-BIORETENTION
F = DRAINAGE AREA TO M-5 DRYWELL



DEVELOPERS/LANDOWNERS CERTIFICATION

I HAVE HEREBY CERTIFIED THAT ALL PROPOSED WORK SHOWN ON THESE CONSTRUCTION DRAWING(S) WILL BE CONDUCTED IN STRICT ACCORDANCE WITH THESE PLANS. I HAVE ALSO UNDERSTOOD THAT IT IS MY/OUR RESPONSIBILITY TO HAVE THE CONSTRUCTION SUPERVISED AND CERTIFIED, INCLUDING THE SUBMITTAL OF "AS-BUILT" PLANS CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER WITHIN THIRTY(30) DAYS OF COMPLETION OF WORK ON THE STORMWATER MANAGEMENT FACILITIES. I HAVE ALSO CERTIFIED THAT THESE STORMWATER MANAGEMENT FACILITIES WILL BE INSPECTED DURING CONSTRUCTION BY A REGISTERED PROFESSIONAL ENGINEER IN ACCORDANCE WITH THE CODE OF PUBLIC LOCAL LAWS AND ORDINANCES OF HOWARD COUNTY.

SIGNED: *Matthew Shanley* DATE: 9/6/18

ENGINEERS 'AS-BUILT' CERTIFICATION

I HEREBY CERTIFY THAT THE FACILITY/FACILITIES SHOWN ON THIS/ THESE PLAN(S) WAS CONSTRUCTED AS SHOWN ON THE 'AS-BUILT' PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS. I ALSO CERTIFY THAT THIS/ THESE FACILITY/FACILITIES WERE INSPECTED IN ACCORDANCE WITH THE CODE OF PUBLIC LOCAL LAWS AND ORDINANCES OF HOWARD COUNTY AND I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

SIGNED: _____ DATE: _____
LICENSE NO. _____ EXPIRATION DATE: _____

ENGINEERS DESIGN CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS HAVE BEEN DESIGNED ACCORDING TO THE CODE OF PUBLIC LOCAL LAWS AND ORDINANCES OF HOWARD COUNTY AND I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

SIGNED: *Brian E. Wagner* DATE: 8-29-18
LICENSE NO. 51063 EXPIRATION DATE: 6-7-19

NOTE:
SEE SHEET 2 FOR GRADING AND SEDIMENT CONTROL PLAN
SEE SHEET 5 STORMWATER MANAGEMENT NOTES & DETAILS.

APPROVED, DEPARTMENT OF PLANNING AND ZONING

Cheryl 9.10.18
CHIEF, DEVELOPMENT ENGINEERING DIVISION

Kent 10-16-18
CHIEF, DIVISION OF LAND DEVELOPMENT

ENGINEER CERTIFICATE

I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

SIGNED: *Brian E. Wagner* DATE: 8-29-18
BRIAN E. WAGNER, P.E.
PROFESSIONAL ENGINEER REG. NO. 51063

DEVELOPERS CERTIFICATION FOR SEDIMENT AND EROSION CONTROL

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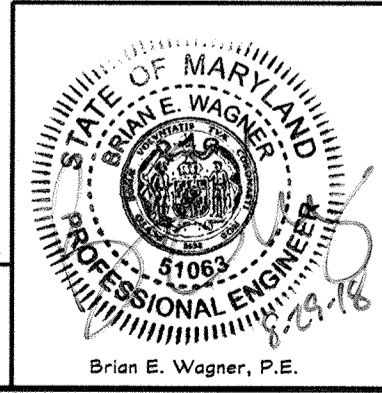
SIGNED: *Matthew Shanley* DATE: 8/29/18
PRINTED: _____

BORING LOG

LOT 30 - BORING B-1
EX. GROUND EL. 498 ±
HOLE EXCAVATED 13' TO EL. 485 ±
NO WATER OR ROCK REFUSAL

LOT 31 - BORING B-2
EX. GROUND EL. 504 ±
HOLE EXCAVATED 12' TO EL. 492 ±
NO WATER OR ROCK REFUSAL

⊙ = BORING LOCATION



PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 51063, EXPIRATION DATE: JUNE 7, 2019

CLSI
www.clsi-civileng.com

439 East Main Street Westminster, MD 21157-5539
(410) 848-1730 FAX (410) 848-1791

Surveyed By: CLSI Drawn By: BM
Computed By: DLA Checked By: LGD

HOWARD COUNTY FILES

WATER CONTRACT NO. 147-W
SEWER CONTRACT NO. 419-S

OWNER/DEVELOPER
MATTHEW SHANLEY
4633 DONCASTER DRIVE
ELLICOTT CITY, MD 21043
(443) 786-1583

LEGEND

100 YR. FEMA FLOODPLAIN	1	FOREST STAND DESIGNATION
15% - 25% SLOPES	STB	SPECIMEN TREE
> 25% SLOPES	STC	FOREST STAND LINE
SOIL LINE / SOIL DESIGNATION	STL	EVERGREEN / CONIFER
EXISTING TREELINE	STN	EX. WATER LINE
PROPOSED TREELINE	STP	PROP. SEWER HOUSE CONNECTION
FOREST CONSERVATION BUFFER	STQ	PROP. WATER HOUSE CONNECTION
FOREST CONSERVATION EASEMENT/ PROPOSED TREE LINE	STR	EX. 10 CONTOUR
EX. CURB	STU	EX. 2 CONTOUR
EX. PAVING	STV	PROPOSED DWELLING
EX. EASEMENT LINE	STW	PROPOSED LOT NUMBER
B.R.L. - BUILDING RESTRICTION LINE	STX	
--- SITE PROPERTY LINE	STY	

ADDRESS CHART

DATE	REVISION	BY
9/6/18	REVISED LOCATION OF EX. DRAINAGE & UTILITY EASEMENT	7/10 3/19

PERMIT INFORMATION CHART

OLD LOT NO.	NEW LOT NO.	STREET ADDRESS			
28	31	4633 DONCASTER DRIVE ELLICOTT CITY, MD 21043			
SUBDIVISION NAME	SECTION/AREA	LOT / PARCEL NO.			
ELLICOTT WOODS		28/22			
PLAT NO.	BLOCK NO.	ZONE	TAX MAP NO.	ELECT. DISTR.	CENSUS TRACT
10532	8	R-20	31	2nd	602700

STORMWATER MANAGEMENT PLAN

ELLICOTT WOODS
LOTS 30, 31 & 32
A RESUBDIVISION OF LOT 28.

DEED REFERENCE: 14212/ 00084
TAX MAP: 31 BLOCK: 8 PARCEL: 22
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

SCALE: 1" = 30' DATE: AUG., 2018 SHEET: 4 OF 7

RELATED DPZ FILE NUMBERS: ECP-13-022

APPENDIX B.4 CONSTRUCTION SPECIFICATIONS FOR ESD PRACTICES

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

B.4.A Green Roof Specifications

1. Material Specifications

Because there is significant variation in green roof assemblies and methods, providing comprehensive specifications is not feasible. Material specifications for green roofs will vary based on each roofing system and specific information should be obtained from the appropriate manufacturer or retailer. The following information and specifications, which include acceptable materials for generic applications, is not exclusive or limiting.

2. Planting Media

Planting media should be a soil-like mixture with an organic content of 15% or less. The grain size distribution is necessary for to attain proper moisture content, permeability, nutrient management and non-capillary porosity, and soil structure. Grain size guidelines vary for single and dual media green roof assemblies.

The planting media shall be tested and meet the following criteria:

Non-Capillary Pore Space at Field Capacity, 0.333 bar (TMECC 03.01, A)	≥ 15% (volume)
Moisture Content at Field Capacity (TMECC 03.01, A)	≥ 12% (volume)
Maximum Media Water Retention (FLI)	≥ 30% (volume)
Alkalinity, CaCO ₃ equivalents (MSA)	≤ 2.5%
Total Organic Matter by Wet Combustion (MSA)	≤ 1-15% (dry wt.)
pH (RCSTP)	6.3 - 8.0
Soilable Sulfate (DTPA saturated media extraction - RCSTP)	≤ 5 mmba/cm
Cation Exchange Capacity (MSA)	≥ 10 meq/100 g
Saturated Hydraulic Conductivity (FLI):	≥ 0.05 in/min
Single Media Assemblies	≥ 0.30 in/min
Dual Media Assemblies	≥ 0.30 in/min
Mineral Fraction Grain Size Distribution (ASTM D422):	
Clay Fraction (< 2 micron)	0
% Passing #200 Sieve	≤ 5%
% Passing # 60 Sieve	10 - 25%
% Passing #16 Sieve	4 - 5%
% Passing # 4 Sieve	20 - 70%
% Passing 3/8 inch Sieve	75 - 100%

B.4.1 Supp. 1

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

3. Green Roof Layers

Root Barriers - should be thermoplastic membranes with minimum thickness of 30 mils. Membranes certified for use as root barriers are recommended. However, only FLL currently offers a recognized certification test. Many FLL-certified materials are locally available.

Granular Drainage Media - should be a non-carbonate mineral aggregate meeting the following specifications:

Saturated Hydraulic Conductivity	≥ 25 inches/minute
Total Organic Matter (by wet combustion)	≤ 1%
Abrasion Resistance (ASTM C131-96)	≤ 25% loss
Soundness (ASTM C88 or T103 or T103-01)	≤ 5% loss
Porosity (ASTM C29)	≥ 25%
Alkalinity, CaCO ₃ equivalents (MSA)	≤ 1%
Grain Size Distribution (ASTM C136)	
Percent Passing #18 Sieve	≤ 1%
Percent Passing # 4 Sieve	≥ 30%
Percent Passing 3/8 inch Sieve	≥ 80%

Separation Fabric - should be a lightweight, non-woven geotextile that is easily penetrated by roots while providing a durable separation between drainage and growth media layers. Separation fabrics should meet the following:

Unit Weight (ASTM D3776)	≤ 4.25 ounces per square yard
Grab Tensile Strength (ASTM D4632)	≥ 90 lbs.
Mullen Burst Strength (ASTM D4632)	≥ 135 lbf/inch
Permeability (ASTM D4691)	≥ 2 sec-1

B.4.2 Supp. 1

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

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 detailed specifications for individual projects and specific conditions.

1. Previous Concrete Specifications

Design Thickness - Previous 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 previous concrete applications. Phosphorus admixtures may also be used. Materials should be tested (e.g., trial batches) prior to construction so that critical properties (e.g., setting time, rate of strength development, porosity, permeability) can be determined.

Aggregate - Previous concrete contains a limited fine aggregate content. Commonly used gradations include ASTM C 33 No. 67 (4 in. to No. 4), No. 8 (4 in. to No. 16) and No. 89 (4 in. to No. 10) 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 previous concrete. Use of admixtures should meet ASTM C 494 (chemical admixtures) and ASTM C 260 (air entraining admixture) 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 3/4 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. Installers 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.

B.4.3 Supp. 1

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

excavated using a loader, the contractor should use wide track or marsh track equipment, or light equipment with turf tires. Use of equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high-pressure tires will cause excessive compaction resulting in reduced infiltration rates and is not acceptable. Compaction will significantly contribute to design failure.

Compaction can be alleviated at the base of the bioretention facility by using a primary tilling operation such as a chisel plow, ripper, or subsoiler. These tilling operations are to restructure the soil profile through the 12 inch compaction zone. Subsoiler methods must be approved by the engineer. Retottlers typically do not till deep enough to reduce the effects of compaction from heavy equipment.

Retottling 2 to 3 inches of sand into the base of the bioretention facility before backfilling the optional sand layer. Pump any ponded water before preparing (retottling) base.

When backfilling the topsoil over the sand layer, first place 3 to 4 inches of topsoil over the sand, then backfill the sand/topsoil to create a gradation zone. Backfill the remainder of the topsoil to final grade.

When backfilling the bioretention facility, place soil in lifts 12" to 18". Do not use heavy equipment within the bioretention basin. Heavy equipment can be used around the perimeter of the basin to supply soils and sand. Grade bioretention materials with light equipment such as a compact loader or a dozer/loader with marsh tracks.

4. Plant Material

Recommended plant material for micro-bioretention practices can be found in Appendix A, Section A.2.3.

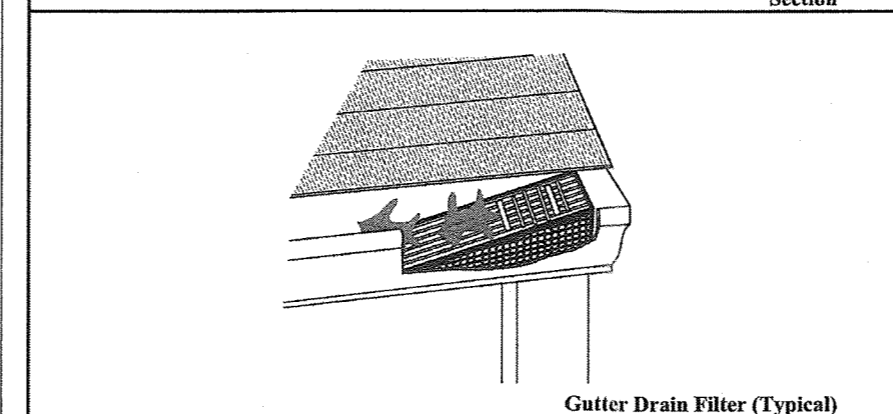
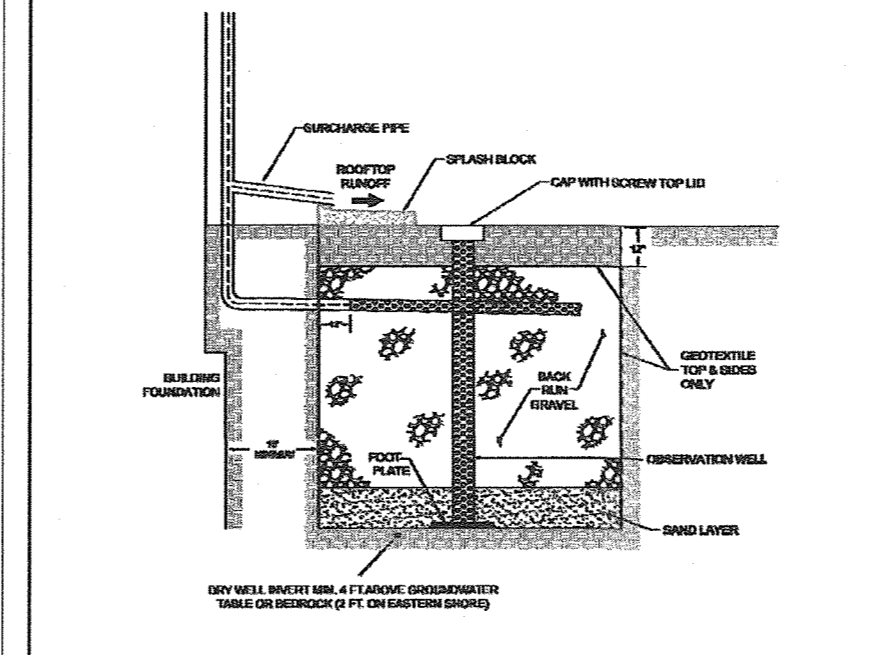
5. Plant Installation

Compost is a better organic material source, is less likely to float, and should be placed in the invert and other low areas. Mulch should be placed in surrounding to a uniform thickness of 2" to 3". Shredded or chipped hardwood mulch is the only accepted mulch. Fine mulch and wood chips will float and move to the perimeter of the bioretention area during a storm event and are not acceptable. Shredded mulch must be well aged (6 to 12 months) for acceptance.

B.4.5 Supp. 1

Chapter 5. Environmental Site Design.....Nonstructural and Micro-Scale Practices

Figure 5.13 Dry Well



Chapter 5. Environmental Site Design.....Nonstructural and Micro-Scale Practices

Setbacks:

- Dry wells shall be located down gradient of building structures and shall be setback at least 10 feet from buildings, 50 feet from confined water supply wells, 100 feet from unconfined water supply wells, and 25 feet from septic systems.
- Dry wells shall be setback a minimum of 100 feet from fill slopes of 15% and 200 feet from fill slopes of 25%.

Observation Wells: An observation well consisting of an anchored, 4 to 6-inch diameter perforated pipe shall be required. The top of the observation well shall be at least six inches above grade.

Underground Distribution Pipe: This pipe (4 to 6 inch diameter) will be perforated to fill the trench along its entire length.

Landscaping: A minimum one-foot of soil cover shall be provided from the top of the trench to the ground surface elevation. The soil should be stabilized with a dense cover of vegetation. In areas where front lawn is a concern, soil cover may need to be as much as four feet. In these cases, a geotechnical engineer should be consulted.

Construction Criteria:

The following items should be addressed during construction of projects with dry wells:

Erosion and Sediment Control: Final grading for proposed dry wells should not take place until the surrounding site is completely stabilized. If this cannot be accomplished, runoff from disturbed areas shall be diverted.

Soil Compaction: Excavation should be conducted in dry conditions with equipment located outside of the practice to minimize bottom and sidewall compaction. Construction of a dry well shall be performed with lightweight, wide-tracked equipment to minimize disturbance and compaction. Excavated materials shall be placed in a contained area.

Underground Chamber: A subsurface prefabricated chamber may be used.

Dry Well Bottom: The bottom shall be as level as possible to minimize pooled water in small areas that may reduce overall infiltration and longevity.

Filter Cloth: Filter cloth shall not be installed on the bottom of the well. Non-woven filter cloth should be used to line the top and sides of the well to prevent the pore space between the stones from being blocked by the surrounding native material.

Gravel Media: The aggregate shall be composed of an 18 to 48-inch layer of clean washed, open graded material with 40% porosity (e.g., ASTM D448 4.3, or 6 stone or equal).

Inspection:

- Regular inspections shall be made during the following stages of construction:
 - During excavation to subgrade.
 - During placement of backfill and perforated inlet pipe and observation well.
 - During placement of geotextiles and all filter media.
 - During construction of the observation well.
 - Upon completion of final grading and establishment of permanent stabilization.

Maintenance Criteria: The following items should be addressed to ensure proper maintenance and long-term performance of dry wells:

- Privately owned practices shall have a maintenance plan and shall be protected by easement, deed restriction, ordinance, or other legal measures preventing its neglect, adverse alteration, and removal.
- Dry wells shall be inspected and cleaned annually. This includes pipes, gutters, downspouts, and all filters.

Ponding, standing water, or algal growth on the top of a dry well may indicate failure due to sedimentation in the gravel media. If water ponds for more than 48 hours after a major storm or more than six inches of sediment has accumulated, the gravel media should be excavated and replaced.

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 51063, EXPIRATION DATE: JUNE 7, 2018

CLSI
Civil, Surveying & Environmental Consulting
www.clsi-civileng.com

439 East Main Street Westminster, MD 21157-5539
(410) 848-1790 FAX (410) 848-1791

Surveyed By: CLSI Drawn By: BM
Computed By: DLA Checked By: LGD

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DISSECTION OF NON-SEPTIC RUNOFF (NS)

1. 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 OR DEVELOPMENT OF IMPERVIOUS AREA IN COMMERCIAL AREAS. FOOT TRAFFIC SHOULD BE DISCOURAGED AS WELL.

- ONCE THE INDIVIDUAL HOUSE HAS BEEN CONSTRUCTED AND FINAL GRADING IS COMPLETE.
- PLACEMENT OF SAND
- PLACEMENT OF NO. 2 STONE AND PIPE
- PLACEMENT OF 4" PVC PIPE
- FINE GRADE & STABILIZATION OF AREAS DISTURBED DURING CONSTRUCTION OF DRYWELL

OPERATION AND MAINTENANCE SCHEDULE FOR MICRO-BIORETENTION (MBS) AND SAND GRASSES (MGS)

- 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 DRAINAGE.
- A LOG BOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
- WHEN THE FACILITY BECOMES CLOTTED SO THAT IT DOES NOT DRAIN 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.

OPERATION AND MAINTENANCE SCHEDULE FOR MICRO-BIORETENTION (MBS) AND SAND GRASSES (MGS)

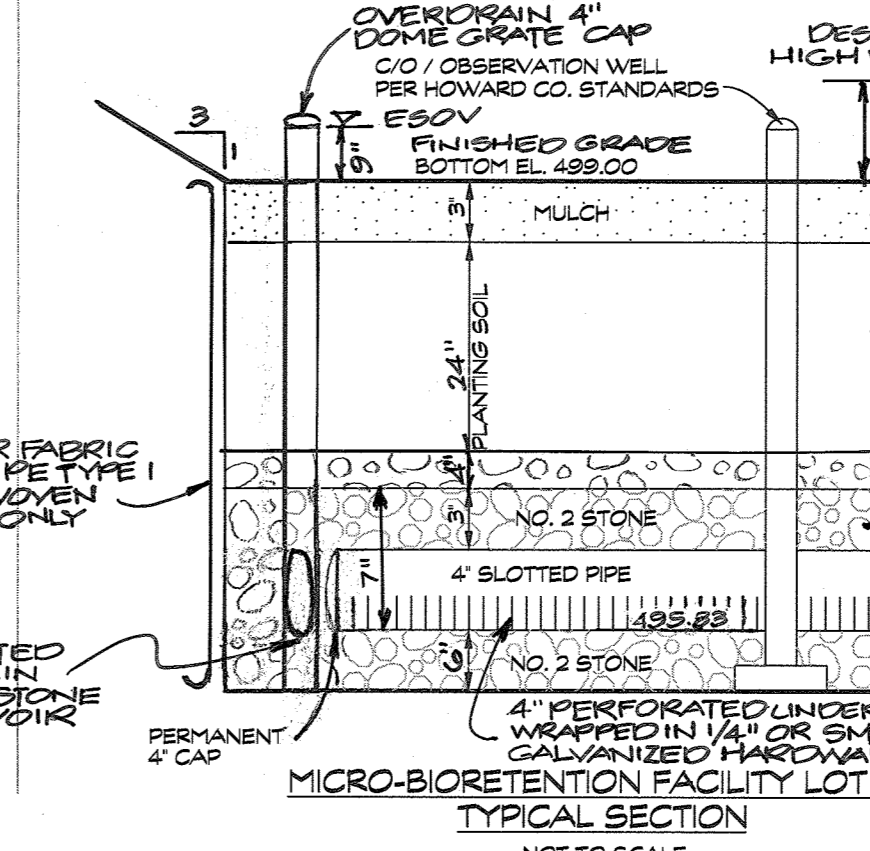
- THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 20% HARDWOOD AND 80% TROPICAL WATER DESIGN MANUAL VOLUME I, TABLE A.4.1 AND 2.
- THE OWNER SHALL PERFORM A PLANT AND SPRING AND IN THE FALL OF EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT. REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLANT MATERIAL. TREAT DISEASED TREES AND SHRUBS, AND REPAIR DISTURBED CURBS AND WALKS.
- THE OWNER SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.
- THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

INSPECTION CHART FOR DRYWELL INSTALLATION

STAGE	ENGINEERS APPROVAL					
	LOT 30 DRYWELL 'A'		LOT 30 DRYWELL 'B'		LOT 32 DRYWELL 'C'	
	INITIALS	DATE	INITIALS	DATE	INITIALS	DATE
1. ONCE THE INDIVIDUAL HOUSE HAS BEEN CONSTRUCTED AND FINAL GRADING IS COMPLETE.						
2. PLACEMENT OF SAND						
3. PLACEMENT OF NO. 2 STONE AND PIPE						
4. PLACEMENT OF 4" PVC PIPE						
5. FINE GRADE & STABILIZATION OF AREAS DISTURBED DURING CONSTRUCTION OF DRYWELL						

* PLEASE NOTIFY CERTIFYING ENGINEER 48 HRS PRIOR TO CONSTRUCTION *

ENGINEERS NAME: CLSI
PHONE NUMBER: 410-848-1790



LOT 32 MICRO-BIORETENTION PLANT LIST

KEY	QUANTITY	BOTANIC NAME	COMMON NAME	MINIMUM SIZE
R	1	Betula nigra	RIVER BIRCH	2" CAL.
Sb	3	Lindera benzoin	SPICEBUSH	#3 CONT. (18")
-	1/3 MIX	Vernonia noveboracensis	NEW YORK IRONWEED	SEE NOTE BELOW
-	1/3 MIX	Scirpus pungens	THREE SQUARE BULRUSH	SEE NOTE BELOW
-	1/3 MIX	Panicum virgatum	SWITCHGRASS	SEE NOTE BELOW

NOTE: REMAINING FILTER SURFACE AREA SHALL BE PLANTED WITH A HERBACEOUS SPECIES BED MIXTURE CONSISTING OF 2 NEW YORK IRONWEED, 2 THREE SQUARE BULRUSH AND 1 SWITCHGRASS.

HOWARD COUNTY FILES

WATER CONTRACT NO. 147-W
SEWER CONTRACT NO. 419-S

OWNER/DEVELOPER
MATTHEW SHANLEY
4633 DONCASTER DRIVE
ELLICOTT CITY, MD 21043
(443) 786-1583

STORMWATER MANAGEMENT NOTES & DETAILS
ELLICOTT WOODS
LOTS 30, 31 & 32
A RESUBDIVISION OF LOT 28.

DEED REFERENCE: 14212/00084
TAX MAP: 31 BLOCK: 8 PARCEL: 22
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN DATE: AUG, 2018 SHEET: 5 OF 7

RELATED DPZ FILE NUMBERS: ECP-13-022

INSPECTION CHART FOR MICRO-BIORETENTION FACILITY INSTALLATION

STAGE	ENGINEERS APPROVAL	
	INITIALS	DATE
1. ONCE THE INDIVIDUAL HOUSE HAS BEEN CONSTRUCTED AND FINAL GRADING IS COMPLETE.		
2. EXCAVATE TO BOTTOM OF STONE RESERVOIR. PLACEMENT OF FILTER FABRIC ON SIDES OF FACILITY AS SHOWN.		
3. INSTALLATION OF 10" NO. 2 STONE		
4. INSTALL 18" OF PLANTING SOIL		
5. INSTALL 3" OF HARDWOOD MULCH OVER SURFACE OF FACILITY		
6. INSTALL LANDSCAPING PER PLANTING PLAN		

* PLEASE NOTIFY CERTIFYING ENGINEER 48 HRS PRIOR TO CONSTRUCTION *

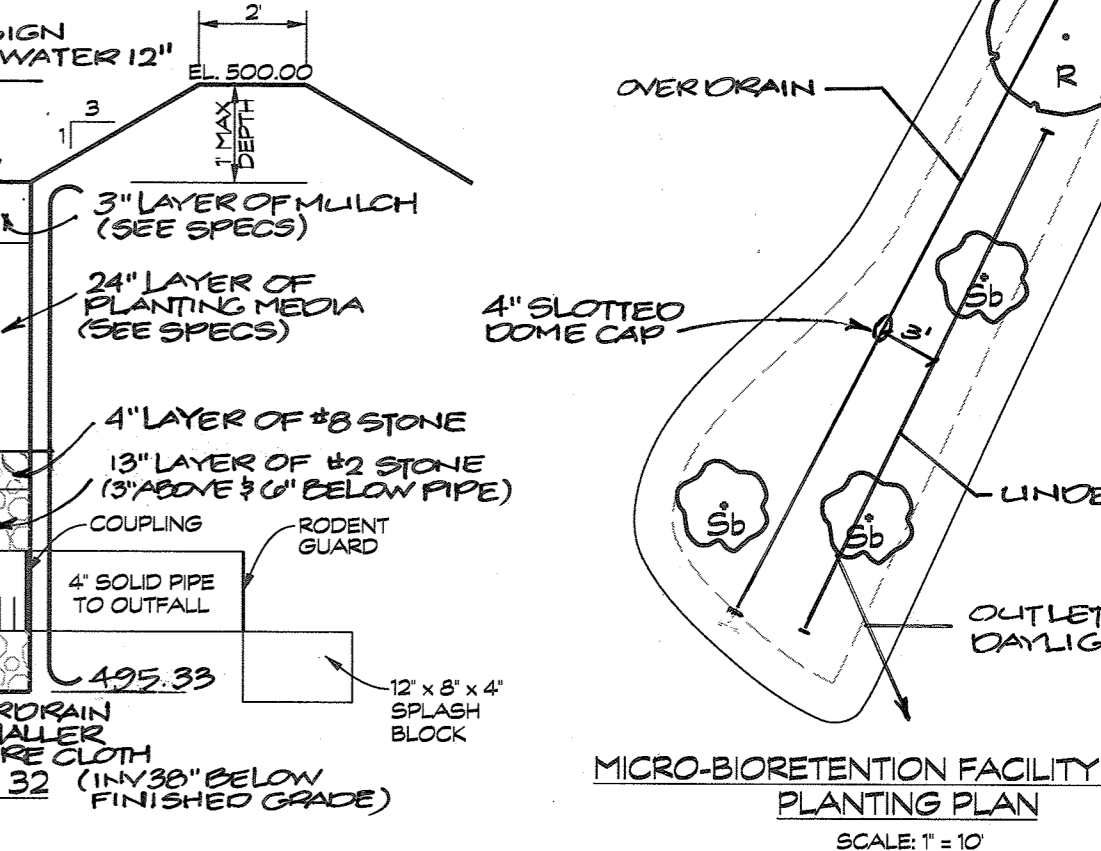
ENGINEERS NAME: CLSI
PHONE NUMBER: 410-848-1790

INSPECTION CHART FOR DRYWELL INSTALLATION

STAGE	ENGINEERS APPROVAL					
	LOT 30 DRYWELL 'A'		LOT 30 DRYWELL 'B'		LOT 32 DRYWELL 'C'	
	INITIALS	DATE	INITIALS	DATE	INITIALS	DATE
1. ONCE THE INDIVIDUAL HOUSE HAS BEEN CONSTRUCTED AND FINAL GRADING IS COMPLETE.						
2. PLACEMENT OF SAND						
3. PLACEMENT OF NO. 2 STONE AND PIPE						
4. PLACEMENT OF 4" PVC PIPE						
5. FINE GRADE & STABILIZATION OF AREAS DISTURBED DURING CONSTRUCTION OF DRYWELL						

* PLEASE NOTIFY CERTIFYING ENGINEER 48 HRS PRIOR TO CONSTRUCTION *

ENGINEERS NAME: CLSI
PHONE NUMBER: 410-848-1790



ADDRESS CHART

DATE	REVISION	BY

PERMIT INFORMATION CHART

OLD LOT NO.	NEW LOT NO.	STREET ADDRESS
28	31	4633 DONCASTER DRIVE ELLICOTT CITY, MD 21043

SUBDIVISION NAME	SECTION/AREA	LOT / PARCEL NO.
ELLICOTT WOODS		28/22

PLAT NO.	BLOCK NO.	ZONE	TAX MAP NO.	ELECT. DISTR.	CENSUS TRACT
10332	8	R-20	31	2nd	602700

STORMWATER MANAGEMENT NOTES & DETAILS
ELLICOTT WOODS
LOTS 30, 31 & 32
A RESUBDIVISION OF LOT 28.

DEED REFERENCE: 14212/00084
TAX MAP: 31 BLOCK: 8 PARCEL: 22
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN DATE: AUG, 2018 SHEET: 5 OF 7

RELATED DPZ FILE NUMBERS: ECP-13-022

ENGINEERS 'AS-BUILT' CERTIFICATION

I/We hereby certify that the facility/facilities shown on this/these plan(s) was/were constructed as shown on the 'As-Built' plans and meets the approved plans and specifications. I/also certify that this/these facilities were inspected in accordance with Article VII of Chapter 191 of the Code of Public Local Laws and Ordinances of Carroll County and I hereby certify that these documents were prepared or approved by me, and I am a duly licensed professional engineer under the laws of the state of Maryland.

SIGNED: [Signature] DATE: 5/12/15
LICENSE NO. 51063 EXPIRATION DATE: 6-7-19

ENGINEERS DESIGN CERTIFICATION

I/We hereby certify that these plans have been designed according to Chapter 191 of the Code of Public Local Laws and Ordinances of Carroll County and I hereby certify that these documents were prepared or approved by me, and I am a duly licensed professional engineer under the laws of the state of Maryland.

SIGNED: [Signature] DATE: 5/12/15
LICENSE NO. 51063 EXPIRATION DATE: 6-7-19

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 9-10-18
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 10-16-18
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

DEVELOPERS/LANDOWNERS CERTIFICATION

I/We hereby certify that all proposed work shown on these construction drawing(s) will be constructed in strict accordance with these plans. I/We also understand that it is my/our responsibility to have the construction supervised and certified, including the submittal of 'As-Built' plans certified by a Registered Professional Engineer within thirty (30) days of completion of work on the stormwater management facility/facilities. I/We also certify that this/these stormwater management facility/facilities will be inspected during construction by a Registered Professional Engineer in accordance with Article VII of Chapter 191 of the Code of Public Local Laws and Ordinances of Carroll County.

SIGNED: [Signature] DATE: 8/27/16

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

Material	Specification	Size	Note
Planting soil (2" to 4" deep)	loamy sand (60 - 65%) & compost (35 - 40%) or sandy loam (30%) & compost (40%)	n/a	USDA soil types loamy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2744)	n/a	aged 6 months, minimum no pine or wood chips
Mulch	peat gravel: ASTM-D448	NO. 8 OR NO. 9 (18" TO 3/8")	planting use site-specific
Curtain drain	ornamental stone: washed cobble	stone: 2" to 5"	PE Type 1 nonwoven
Geotextile	AASHTO M-43	NO. 57 OR NO. 6	AGGREGATE (3/8" to 3/4")
Gravel (underdrains and infiltration berm)	AASHTO M-43	NO. 57 OR NO. 6	AGGREGATE (3/8" to 3/4")
Underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or HDPE	slotted or perforated pipe, 3/8" perf. @ 4" on center, 4 holes per row; minimum 4" of gravel over pipe; no necessary underdrain pipes. Perforated pipe shall be wrapped with 1/4-inch galvanized hardware cloth.
Poured in place concrete (if required)	MSHA Mix No. 3, F _c = 3000 psi @ 28 days, normal weight, air-entrained, reinforcing to meet ASTM-615-00	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or precast) not using previously approved State or local standards requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 308.8B; vertical loading (16-10 or 16-20); allowable horizontal loading (based on soil properties); and analysis of potential cracking. Sand substitutions such as Diabase and Gypstone (AASHTO) #10 are not acceptable. No calcium substituted or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.
Sand	AASHTO M-6 or ASTM C-33	0.075" to 0.04"	

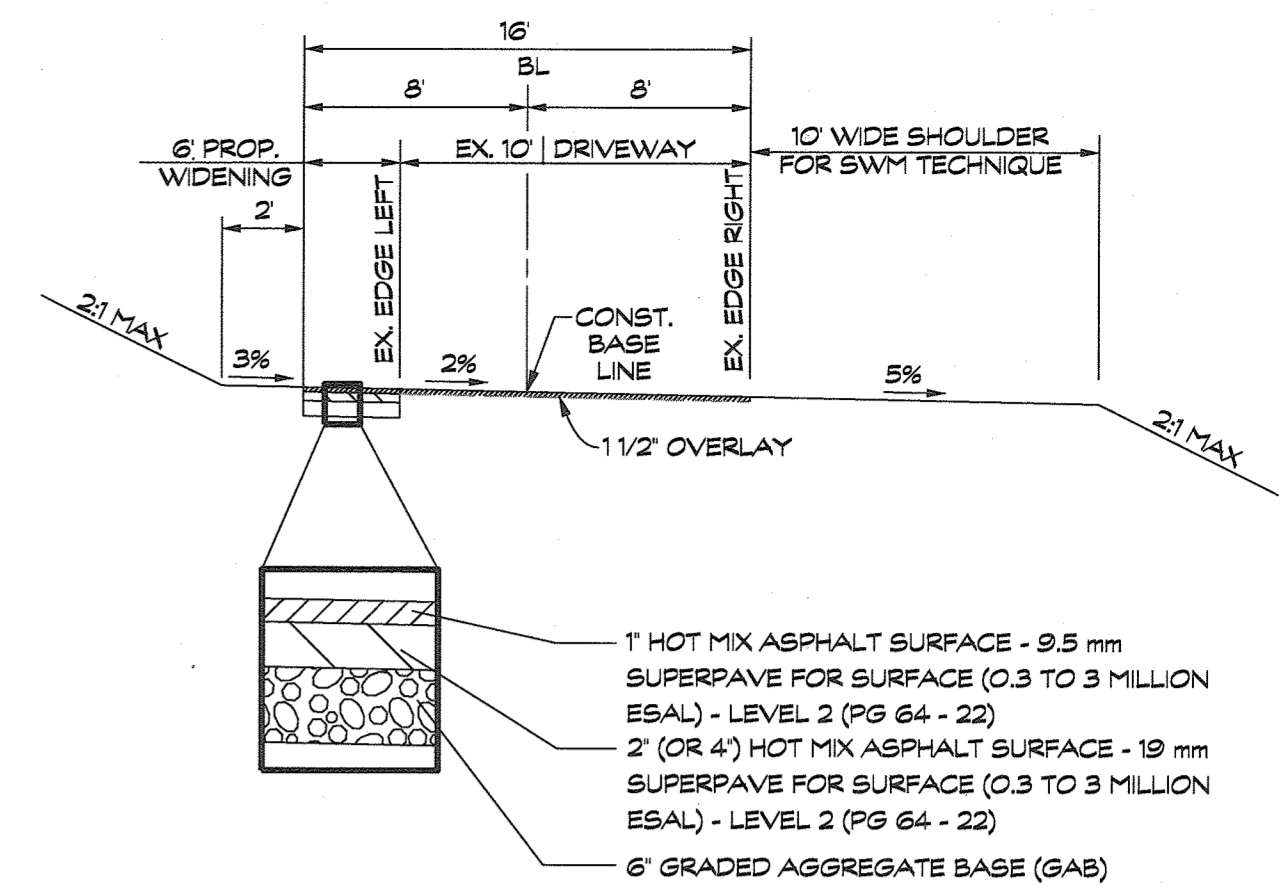
B.4.7 Supp. 1

UIC CURVE DATA

NUMBER	RADIUS	ARC	DELTA	TAN	CHORD BRG.	DIST
C1	4508.00	95.79	0°13'03"	47.90	S 52°23'29" E	95.79
C2	58.00	34.91	34°29'27"	18.00	S 69°01'41" E	34.39
C3	42.00	4.22	05°45'46"	2.11	S 83°23'32" E	4.22
C4	17.00	7.43	25°03'12"	3.76	S 67°59'03" E	7.37

UIC LINE TABLE

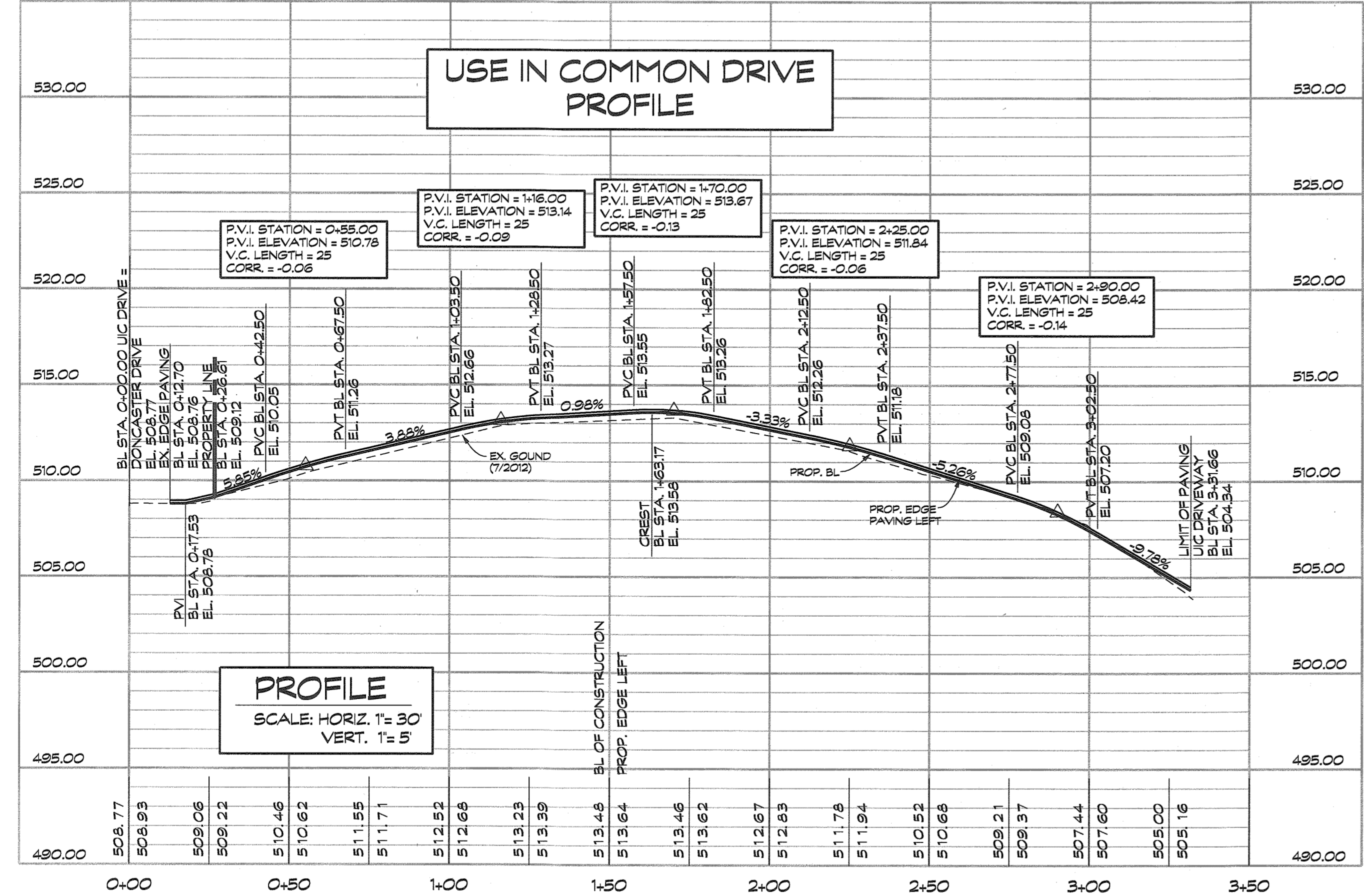
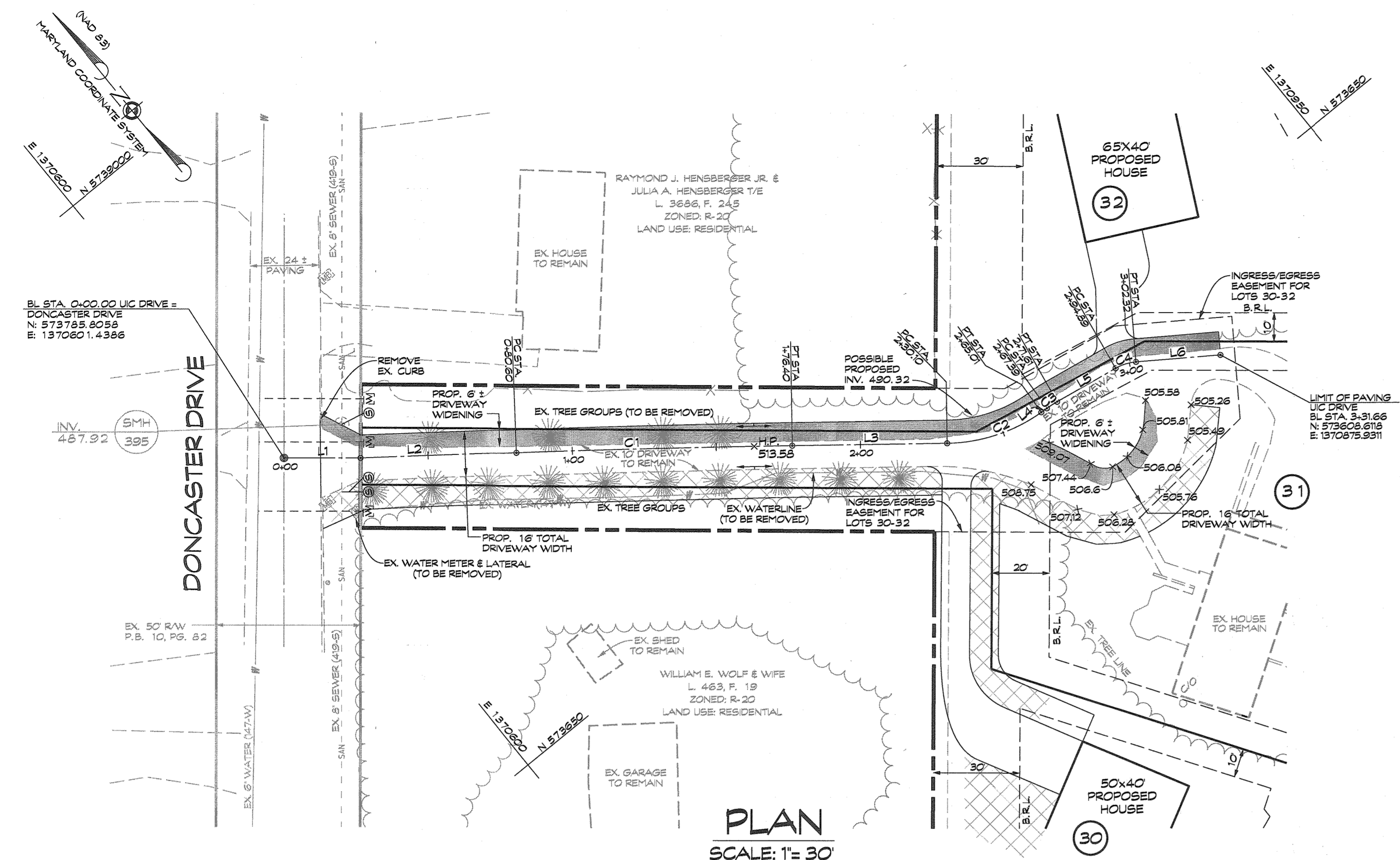
NUMBER	BEARING	DISTANCE
L1	S 50°48'44" E	26.59'
L2	S 53°00'01" E	54.01'
L3	S 51°46'58" E	53.70'
L4	S 66°16'25" E	2.97'
L5	S 80°30'39" E	23.28'
L6	S 55°27'27" E	29.37'



LEGEND



16' PAVED USE-IN-COMMON DRIVEWAY TYPICAL SECTION SUPER RIGHT



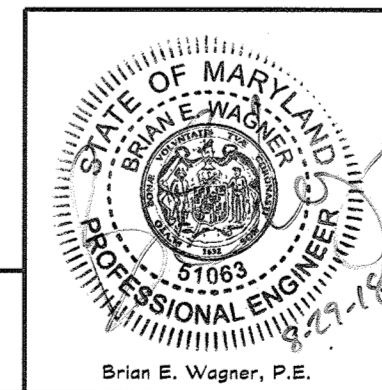
DATE	REVISION	BY

ADDRESS CHART

OLD LOT NO.	NEW LOT NO.	STREET ADDRESS
28	31	4633 DONCASTER DRIVE ELlicOTT CITY, MD 21043

PERMIT INFORMATION CHART

SUBDIVISION NAME	SECTION/AREA	LOT / PARCEL NO.			
ELlicOTT WOODS		28/22			
PLAT NO.	BLOCK NO.	ZONE	TAX MAP NO.	ELECT. DISTR.	CENSUS TRACT
10832	8	R-20	31	2nd	602700



PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 51063, EXPIRATION DATE: JUNE 7, 2019.



439 East Main Street Westminster, MD 21157-5539
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HOWARD COUNTY FILES

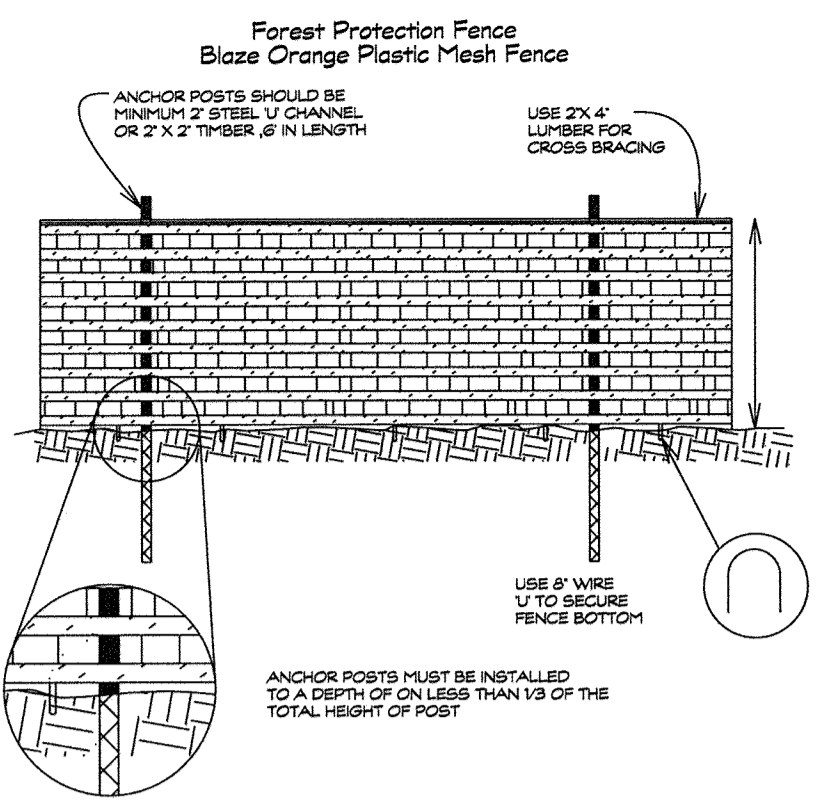
WATER CONTRACT NO. 147-W
SEWER CONTRACT NO. 419-S

OWNER/ DEVELOPER
MATTHEW SHANLEY
4633 DONCASTER DRIVE
ELlicOTT CITY, MD 21043
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Surveyed By: CLSI Drawn By: BM
Computed By: DLA Checked By: LGD

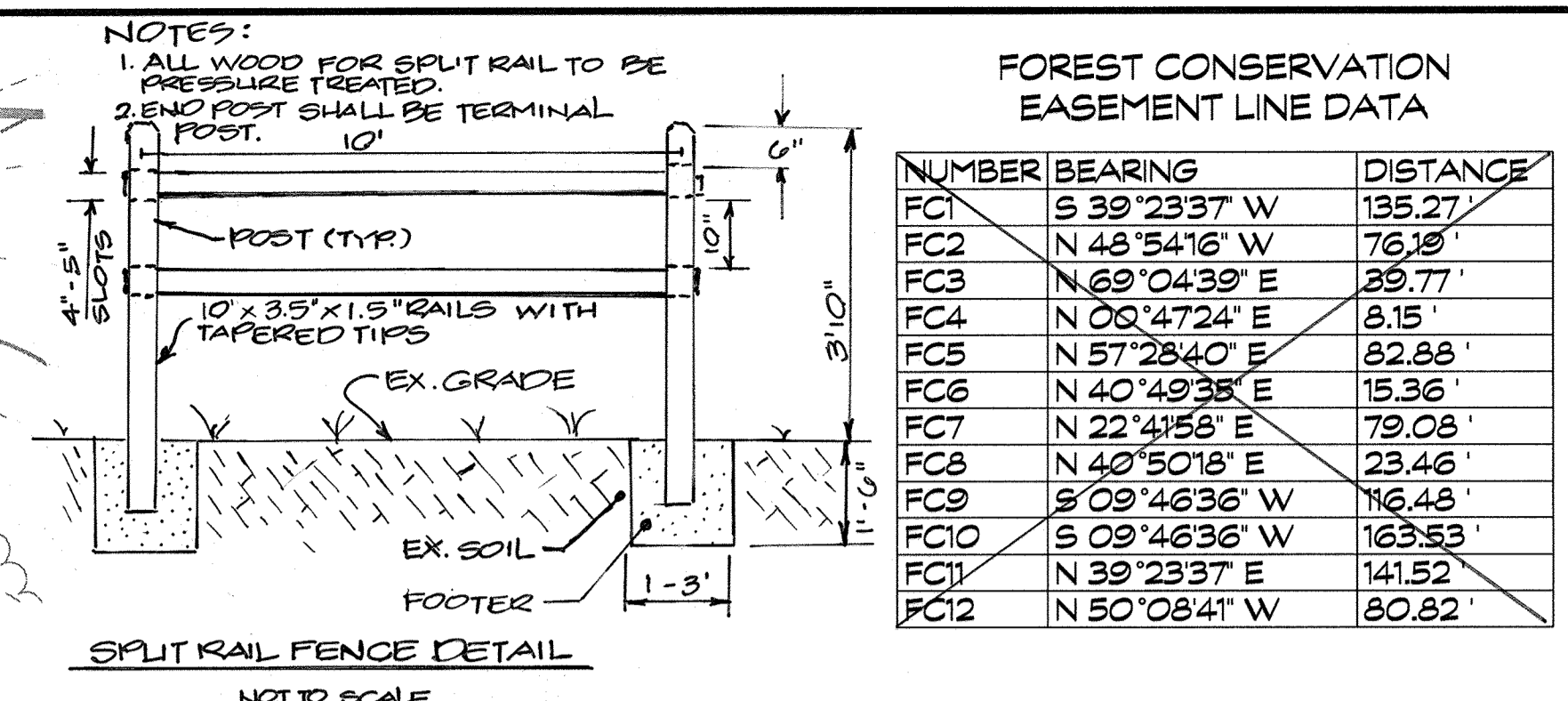
USE-IN-COMMON DRIVE PLAN & PROFILE ELlicOTT WOODS LOTS 30, 31 & 32 A RESUBDIVISION OF LOT 28.

DEED REFERENCE: 14212/ 00084
TAX MAP: 31 BLOCK: 8 PARCEL: 22
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUG., 2018 SHEET: 6 OF 7
RELATED DPZ FILE NUMBERS: ECP-13-022



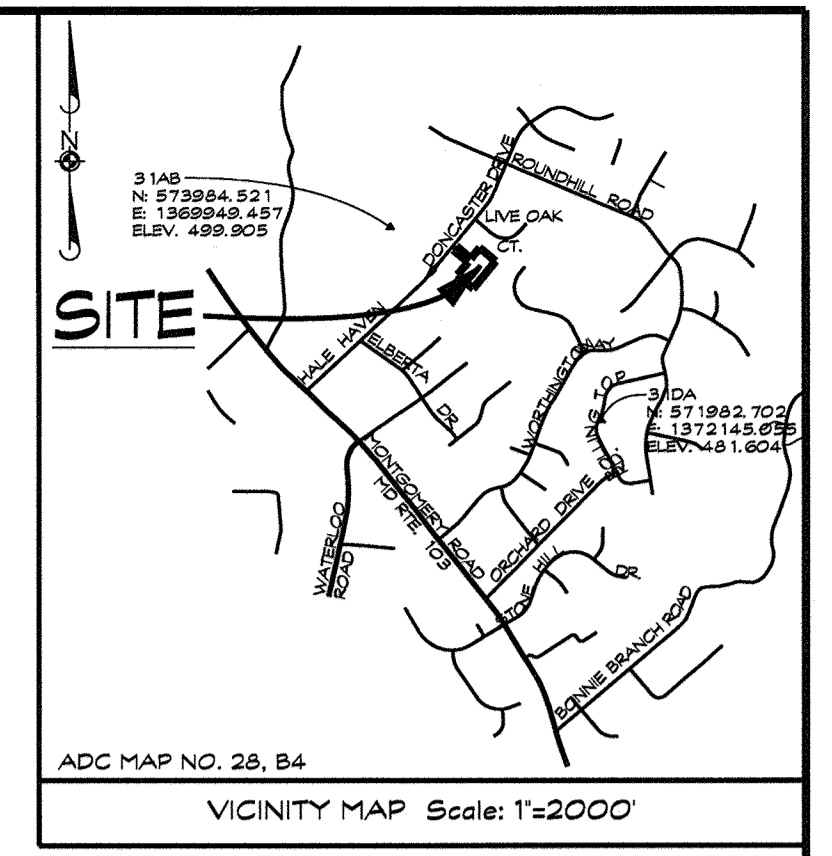
WAIVER PETITION FILE NUMBER WP-14-070 FOR ELLICOTT WOODS WAS APPROVED BY THE DIRECTOR OF THE DEPARTMENT OF PLANNING AND ZONING ON FEBRUARY 27, 2014. THE SPECIFICATIONS WAIVED WERE SECTIONS 16.120(B)(1)(B), 16.120(A)(7), AND 16.125(A)(10) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS. WAIVER APPROVAL IS SUBJECT TO THE FOLLOWING CONDITIONS:

- THE FOREST CONSERVATION EASEMENT AREA IS TO BE PROPERLY IDENTIFIED AND PROTECTED ON THE SUBJECT LOTS BY POSTING FOREST CONSERVATION EASEMENT SIGNS EVERY 50' AROUND THE PERIMETER OF THE EASEMENT AREA. THE FOREST CONSERVATION EASEMENT SIGNS ARE TO MAIN POSTED AND VISIBLE IN PERPETUITY.
- THE FOREST CONSERVATION EASEMENT IS TO BE PROTECTED BY FENCING SUCH AS A SPLIT RAIL FENCE ALONG THE PERIMETER FACING INTERNALLY TO THE SUBJECT LOTS.
- THE PROPERTY OWNER/DEVELOPER MUST ENSURE THAT ALL FUTURE RESIDENTS OF THE 3 LOTS USE THE LOTS IN WAYS THAT DO NOT VIOLATE THE FOREST CONSERVATION EASEMENT RESTRICTIONS. THEY MUST BE EDUCATED ABOUT THE PERMITTED AND PROHIBITED ACTIVITIES WITHIN OR AFFECTING THE FOREST CONSERVATION EASEMENT.
- THE PROPOSED SINGLE FAMILY DWELLINGS ON LOTS 30 & 32 MUST BE LOCATED AS CLOSE TO THE FRONT BRL AS POSSIBLE TO PERMIT A USEABLE BACK YARD ON BOTH LOTS AND TO PROVIDE ADEQUATE ROOM FOR A DECK, PATIO OR FUTURE ADDITION. PLEASE NOTE THAT THE HOUSE SITTING WILL BE EVALUATED AS PART OF THE SITE DEVELOPMENT PLAN REVIEW AND APPROVAL PROCESS FOR LOTS 30 AND 32.
- THE FINAL PLAN MUST PROVIDE THE REQUIRED 35' SETBACK FROM THE EDGE OF THE FOREST CONSERVATION EASEMENT AS DEPICTED ON THE WAIVER PETITION PLAN EXHIBIT IN ACCORDANCE WITH SECTION 16.120(B)(4)(ii) OF THE SUBDIVISION REGULATIONS.
- THE REMAINING PORTION OF THE FOREST CONSERVATION OBLIGATION WILL BE ADDRESSED AT AN OFF-SITE PROPERTY RESTORATION BANK TRIGGERS OR A FUTURE FEE-IN-LIEU PAYMENT.
- NO GRADING, REMOVAL OF VEGETATIVE COVER AND TREES, PAVING AND NEW STRUCTURES ARE PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT.



FOREST CONSERVATION EASEMENT LINE DATA

NUMBER	BEARING	DISTANCE
FC1	S 39°23'37" W	135.27'
FC2	N 48°54'16" W	76.19'
FC3	N 69°04'39" E	39.77'
FC4	N 08°47'24" E	8.15'
FC5	N 57°28'40" E	82.88'
FC6	N 40°49'38" E	15.36'
FC7	N 22°41'58" E	79.08'
FC8	N 40°50'18" E	23.46'
FC9	S 09°46'36" W	116.48'
FC10	S 09°46'36" W	163.53'
FC11	N 39°23'37" E	141.52'
FC12	N 50°08'41" W	80.82'



FOREST CONSERVATION WORKSHEET

NET TRACT AREA:

A. Total tract area	2.03
B. Land dedication acres (parks, county facility, etc.)	0.00
C. Land dedication for roads or utilities (not being constructed by this plan)	0.00
D. Area to remain in commercial agricultural production	0.00
E. Other deductions (specify)	0.00
F. Net Tract Area	2.03

LAND USE CATEGORY: (from Trees Technical Manual)

AREA	MIR	IDA	H	MPD	CA
0	0	0	0	0	0

EXISTING FOREST COVER:

G. Afforestation Threshold	15%	X F =	0.30
H. Conservation Threshold	20%	X F =	0.41

BREAK EVEN POINT:

I. Existing forest cover	1.68
J. Area of forest above afforestation threshold	1.38
K. Area of forest above conservation threshold	1.27

PROPOSED FOREST CLEARING:

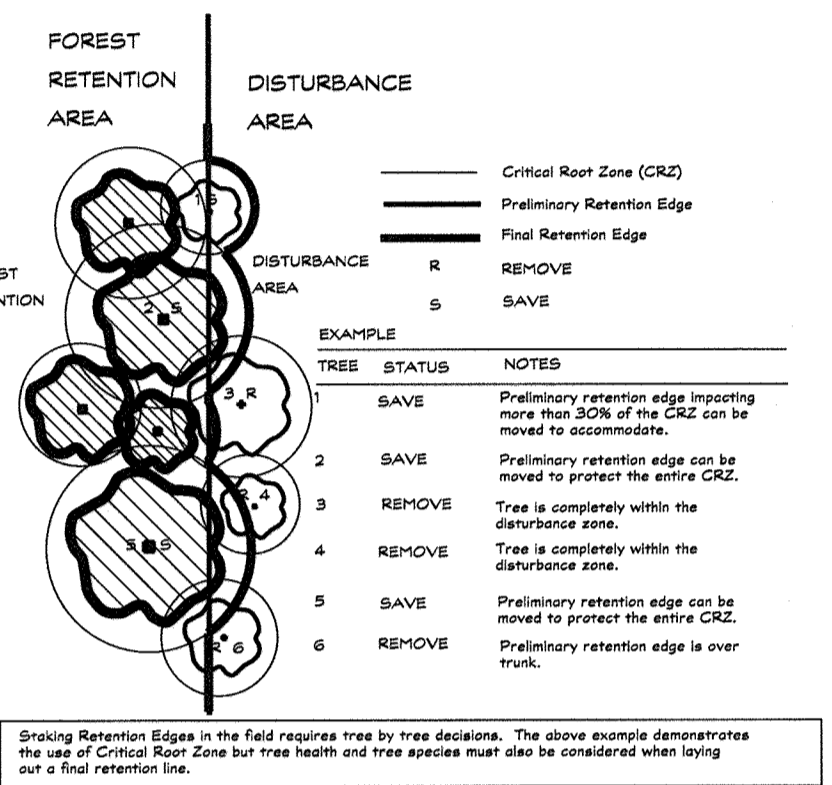
L. Forest retention above threshold with no mitigation	0.66
M. Clearing permitted without mitigation	1.02

PLANTING REQUIREMENTS:

N. Total area of forest to be cleared	1.34
O. Total area of forest to be retained	0.34

PLANTING REQUIREMENTS:

P. Rehabilitation for clearing above conservation threshold	0.32
Q. Rehabilitation for clearing below conservation threshold	0.13
R. Credit for retention above conservation threshold	0.00
S. Total reforestation required	0.45
T. Total afforestation required	0.00
U. Credit for landscaping (may not exceed 20% of 'S')	0.00
V. Total reforestation and afforestation required	0.45



FIELD EDGE DETERMINATION

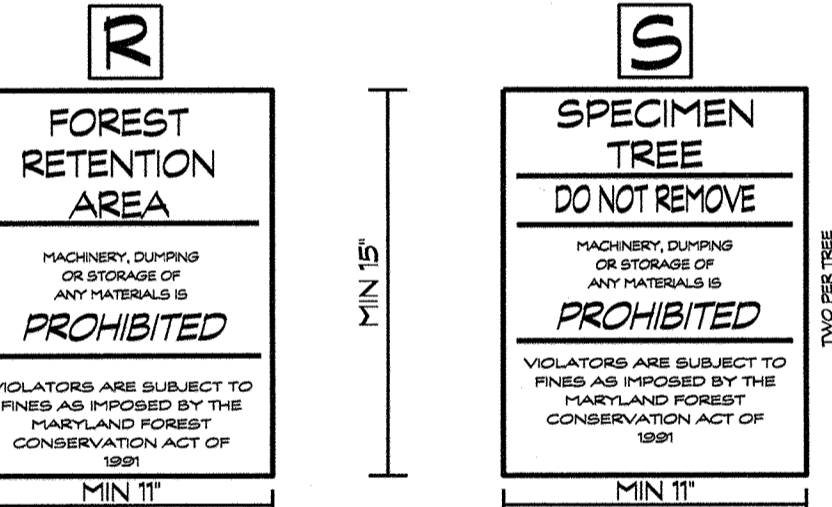
Shading Retention Edges in the field requires tree by tree decisions. The above example demonstrates the Critical Root Zone but tree health and tree species must also be considered when laying out a final retention line.

NOTE:

PRIOR TO ANY ADJUSTMENT, ALL ADJUSTMENTS MUST BE APPROVED BY CARROLL COUNTY BUREAU OF RESOURCE MANAGEMENT. THIS DETAIL PERTAINS TO INCLEMENT FOREST PROTECTION FENCE ADJUSTMENTS ON STANDES OR EASEMENT CONTROL DEVICE LOCATIONS UNLESS APPROVED BY CARROLL COUNTY.

FIELD EDGE DETERMINATION TO BE PERFORMED BY FOREST CONSERVATION QUALIFIED PROFESSIONAL.

FOREST PROTECTION SIGN & FENCE - DETAIL



FOREST PROTECTION FENCE & SIGNS

FOREST CONSERVATION PROTECTION FENCE	400 LF.
Temporary Forest Protection Area Fence:	620 LF.
Permanent Split Rail Fence:	1020 LF.
Total Fence:	2040 LF.

SIGNS	10
Permanent Forest Retention Area:	4
Specimen Tree:	4
Total Signs:	14

NOTE: This estimate for bond purposes only. Contractor is responsible to confirm or provide own estimate for bidding purposes.

FOREST CONSERVATION NARRATIVE

The proposed resubdivision of Ellcott Woods Lot 28 will include 3 residential lots with a use in common driveway on 2.03 acres of land. The site contains 1.68 acres of forest and has 3 specimen trees. The forest conservation threshold for this land use (Residential Suburban) is 0.41 acres, 20% of the Net Tract. 0.57 acres of forest will be retained within 111 acres to be cleared. No afforestation will be required. One specimen tree, in fair condition, is proposed to be removed. No suitable priority planting areas exist on-site; therefore, 0.1 acres of reforestation will be provided through the fee-in-lieu program.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chad Clark 9.10.18
CHIEF, DEVELOPMENT ENGINEERING DIVISION

Walter D. Dwork 10-16-18
CHIEF, DIVISION OF LAND DEVELOPMENT

SEQUENCE OF CONSTRUCTION

- INSTALL FOREST PROTECTION DEVICES (FENCE & SIGNS) PRIOR TO CONSTRUCTION.
- CONTACT COUNTY FOR INSPECTION.
- PERFORM CONSTRUCTION.
- CONTACT COUNTY FOR POST CONSTRUCTION INSPECTION.
- REMOVE FOREST PROTECTION FENCE.

POST-CONSTRUCTION PHASE

- The following measures shall be taken when appropriate:
- Corrective measures if damages were incurred due to negligence:
 - Stress reduction ("Mitigation for Unanticipated and Unauthorized Injury to Trees").
 - Removal of dead or dying trees: this may be done only if trees pose an immediate safety hazard.
 - Removal of temporary structures: the following minimum standards shall be observed during the removal of temporary structures.
 - No burial of discarded materials will occur on-site within the conservation area.
 - No open burning within 100 feet of a wooded area.
 - All temporary forest protection structures will be removed after construction.
 - On-site inspection by representative of Howard County.

FOREST CONSERVATION NOTES

- Plan prepared by C.L.S.I.
- This plan complies with the requirements of Section 16.1200 of the Howard County Code by placing 0.34 acres of forest in easements in perpetuity and providing fee-in-lieu in the amount of \$14,701.50 for 0.45 acres.
- Attachment of signs or any other object, to trees is prohibited.
- No equipment, machinery, vehicles, materials or excessive pedestrian traffic shall be allowed in conservation areas.
- Signs to be posted as noted on plan sheet.
- All protective devices must be in place prior to any grading which includes signs and fencing.
- Pre-Construction meeting: Before any disturbance, the developer, contractor or project manager and local inspector shall attend. Temporary parking, stockpile, staging and fueling area will be shown to all personnel.
- Any changes made to the Forest Conservation Plan due to On-Site conditions shall be made in consultation with a Representative of the Bureau of Resource Management.
- No burial of discarded materials will occur on-site.
- No open burning within 100 feet of a wooded area.
- Forest retention and planting areas will be placed within a forest conservation easement in perpetuity and conveyed to Howard County. Watershed: Patuxent (02120906)

FOREST STAND CHART

STAND	PRIORITY	AREA	RETAINED	CLEARED	RETENTION NO EASEMENT
1	1	1.68 AC.	0.48 AC.	1.11 AC.	0.09 AC.
TOTAL FOREST		1.68 AC.	0.48 AC.	1.11 AC.	0.09 AC.

SPECIMEN TREE CHART

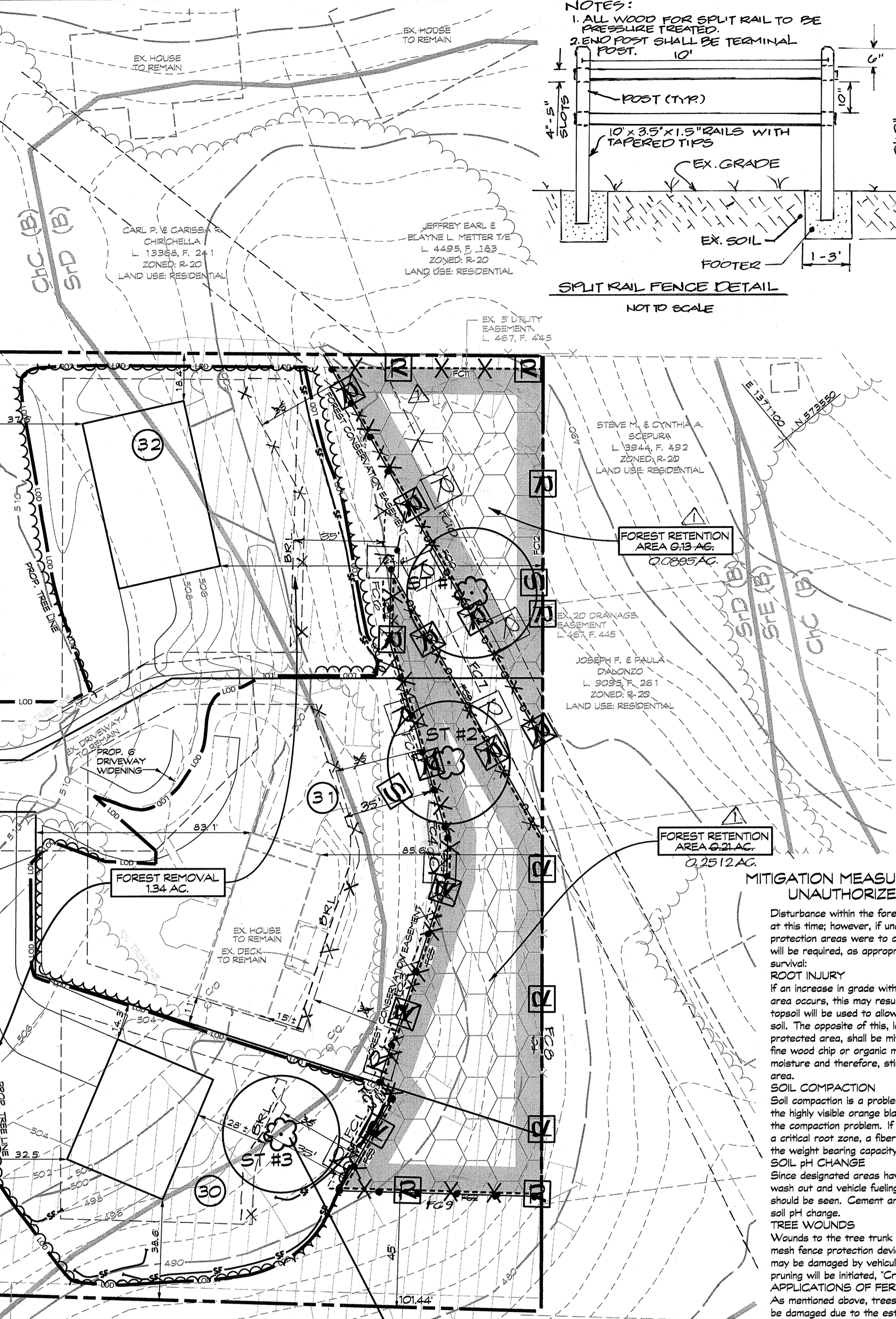
NO.	D.B.H.	COMMON NAME / SCIENTIFIC NAME	CRZ	CONDITION	RETENTION
1	33.3"	Tulip Poplar / Liriodendron tulipifera	50.0'	GOOD	YES
2	31.4"	Am. Beech / Fagus grandifolia	47.1'	GOOD	YES
3	30.0"	Black Oak / Quercus velutina	45.0'	FAIR	NO

SOILS CHART

SOIL SERIES	HYDROLOGIC SOIL GROUP	ERODIBLE (k-factor > 35)	HYDRIC
CHILLUM-RUSSET	B	-	-
SASSAFRAS AND CROOM	B	+	-
URBAN LAND-CHILLUM-BELTSVILLE	D	+	-

DATA TABULATIONS

- ZONING DISTRICT: R20,000
- SOILS MAP NO.: N/A, NRCS SOIL INFO
- AREA OF LOTS: 2.03 AC.
- TOTAL NET TRACT AREA OF PLAN: 2.03 AC.



MITIGATION MEASURES FOR UNANTICIPATED UNAUTHORIZED INJURY TO TREES

Disturbance within the forest protection area is not proposed at this time; if unauthorized impacts within the forest protection area were to occur, the following corrective measures will be required, as appropriate, to insure tree health and survival:

ROOT INJURY

If an increase in grade within an identified forest protection area occurs, this may result in root injury. The use of a porous topsoil will be used to allow for exchange of oxygen through the soil. The opposite of this, lowering if the grade within the protected area, shall be mitigated by covering the roots with a fine wood chip or organic mulch material. This will help retain moisture and therefore, stimulate root re-growth into the disturbed area.

SOIL COMPACTION

Soil compaction is a problem on most construction sites; however, the highly visible orange blaze plastic mesh fence should eliminate the compaction problem. If heavy equipment did come in contact with a critical root zone, a fiber mat should be laid down to increase the weight bearing capacity and minimize soil compaction.

SOIL pH CHANGE

Since designated areas have been established for cement truck wash out and vehicle fueling, little to no change in the soil pH should be seen. Cement and fuel spills are the two main causes of soil pH change.

TREE WOUNDS

Wounds to the tree trunk are unlikely to occur, due to the mesh fence protection device; however, crown branching structures may be damaged by vehicular movement. If this should occur, proper pruning will be initiated, "Crown Reduction".

APPLICATIONS OF FERTILIZERS BY INJECTION

As mentioned above, trees inside the protection area shall not be damaged due to the establishment of Forest Protection Devices. If trees are damaged and show signs of stress, they will receive liquid fertilizer injections. Fertilizer injections will improve the health and vigor of the damaged tree and increase the survival potential. For recommended rates and time of application, contact a licensed tree expert.

PLEASE NOTE THAT ALL LOTS/RESIDENTIAL UNITS IN THIS SUBDIVISION ARE SUBJECT TO THE MIHU FEE-IN-LIEU REQUIREMENT THAT IS TO BE CALCULATED AND PAID AT THE TIME OF BUILDING PERMIT APPLICATION BY THE DEVELOPER/BUILDER.

Martin H. Rickell
Qualified Professional
for Forest Conservation



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Surveyed By: CLSI Drawn By: BM
Computed By: DLA Checked By: LGD

HOWARD COUNTY FILES

WATER CONTRACT NO. 147-W
SEWER CONTRACT NO. 419-S

OWNER/ DEVELOPER
MATTHEW SHANLEY
4633 DONCASTER DRIVE
ELLICOTT CITY, MD 21043
(443) 786-1583

DATE	REVISION	BY
	REVISED LOCATION OF EX. DRAINAGE & UTILITY EASEMENTS.	
	ADJUST FENCE & FENCE UPDATE RETENTION SIGN LOCATIONS.	BM 9/11/18

ADDRESS CHART

OLD LOT NO.	NEW LOT NO.	STREET ADDRESS
28	31	4633 DONCASTER DRIVE ELLICOTT CITY, MD 21043

PERMIT INFORMATION CHART

SUBDIVISION NAME	SECTION/AREA	LOT / PARCEL NO.
ELLICOTT WOODS		28/22

PLAT NO.	BLOCK NO.	ZONE	TAX MAP NO.	ELECT. DIST.	CENSUS TRACT
10832	8	R-20	31	2nd	602700

FOREST CONSERVATION PLAN, NOTES & DETAILS
ELLICOTT WOODS
LOTS 30, 31 & 32
A RESUBDIVISION OF LOT 28.

DEED REFERENCE: 14212/ 00084
TAX MAP: 31 BLOCK: 8 PARCEL: 22
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

SCALE: 1" = 30' DATE: AUG., 2018 SHEET: 7 OF 7
RELATED DPZ FILE NUMBERS: ECP-13-022