SHEET INDEX DESCRIPTION COVER SHEET SITE DEVELOPMENT PLAN GRADING, SEDIMENT AND EROSION CONTROL PLAN SEDIMENT & EROSION CONTROL NOTES AND DETAILS SEDIMENT & EROSION CONTROL NOTES AND DETAILS ESD STORMWATER MANAGEMENT DRAINAGE AREA MAP AND DETAILS **ESD STORMWATER MANAGEMENT NOTES AND DETAILS** LOT-1 DRIVEWAY CULVERT NOTES AND DETAILS LANDSCAPE PLAN NOTES AND DETAILS

1 %	ADDRESS CHART
LOT	ADDRESS
1	6203 ELKRISE PLACE
2	6207 ELKRISE PLACE
3	6211 ELKRISE PLACE
4	6212 ELKRISE PLACE
5	6208 ELKRISE PLACE
. 6	6204 ELKRISE PLACE
7	6200 ELKRISE PLACE

,	ESD - SW	M PRACTICES	}	
LOT NUMBER	ADDRESS	MICRO BIO-RETENTION (M-6) QUANTITY	SURFACE SAND FILTER (F-1) QUANTITY	West (M-5)
1.	6203 ELKRISE PLACE ELKRIDGE MD, 21075	1	0	0
2	6207 ELKRISE PLACE ELKRIDGE MD, 21075		0	0
3	6211 ELKRISE PLACE ELKRIDGE MD, 21075	1	0	0
4	6212 ELKRISE PLACE ELKRIDGE MD, 21075	1	0	
5	6208 ELKRISE PLACE ELKRIDGE MD, 21075	1	0	Ð
7	6200 ELKRISE PLACE ELKRIDGE MD, 21075	1	0	0
O.S. 8	ELKRISE PLACE ELKRIDGE MD, 21075	0	1.	0

LEGEND

PROPERTY BOUNDARY	
ADJACENT PROPERTY OWNER	
EXISTING EASEMENT	
PROPOSED EASEMENT	
PROPOSED LOT LINE	.
SOILS CLASSIFICATION SOILS DELINEATION	MaD
EXISTING WOODS LINE	
PROPOSED TREE LINE	
EXISTING WATER MAIN	
EXISTING SEWER MAIN	scent senior sente atore states name anno amor timpo tenet atore atore
EXISTING GAS LINE	
EXISTING STORM DRAIN	
PROPOSED STORM DRAIN	
PROPOSED HOUSE	

SITE DATA TABULATION

1) GENERAL SITE DATA a. PRESENT ZONING: R-12

b. LOCATION: TAX MAP 38 - GRID 8 - PARCEL 198 c. APPLICABLE DPZ FILE REFERENCES: ECP-18-026, S-18-004,

WP-19-079, HPC-18-06, P-19-002, F-20-041, CONTR#14-5100-D d. DEED REFERENCE: L.17498 / F.00062

PLAT REFERENCE: 25845-25846

g. AREA OF PROPOSED BUILDABLE LOTS..

h. AREA OF OPEN SPACE LOTS ..

e. PROPOSED USE OF SITE: 6 NEW SINGLE FAMILY DETACHED RESIDENCES, RETENTION OF 1 EXISTING SINGLE FAMILY DETACHED RESIDENCE. f. PROPOSED WATER AND SEWER: PUBLIC WATER AND PUBLIC SEWER.

2) AREA TABULATION a. TOTAL AREA OF SITE...... ...2.32 Ac.± b. AREA OF 100 YEAR FLOODPLAIN (APPROX.)..

c. AREA OF STEEP SLOPES (25% OR GREATER)... ...0.09 Ac.± Less than 20,000 sf. ..2.32 Ac.± d. NET AREA OF SITE... e. AREA OF THIS PLAN SUBMISSION2.32 Ac.± f. LIMIT OF DISTURBANCE (APPROX.). .1.69 Ac.±

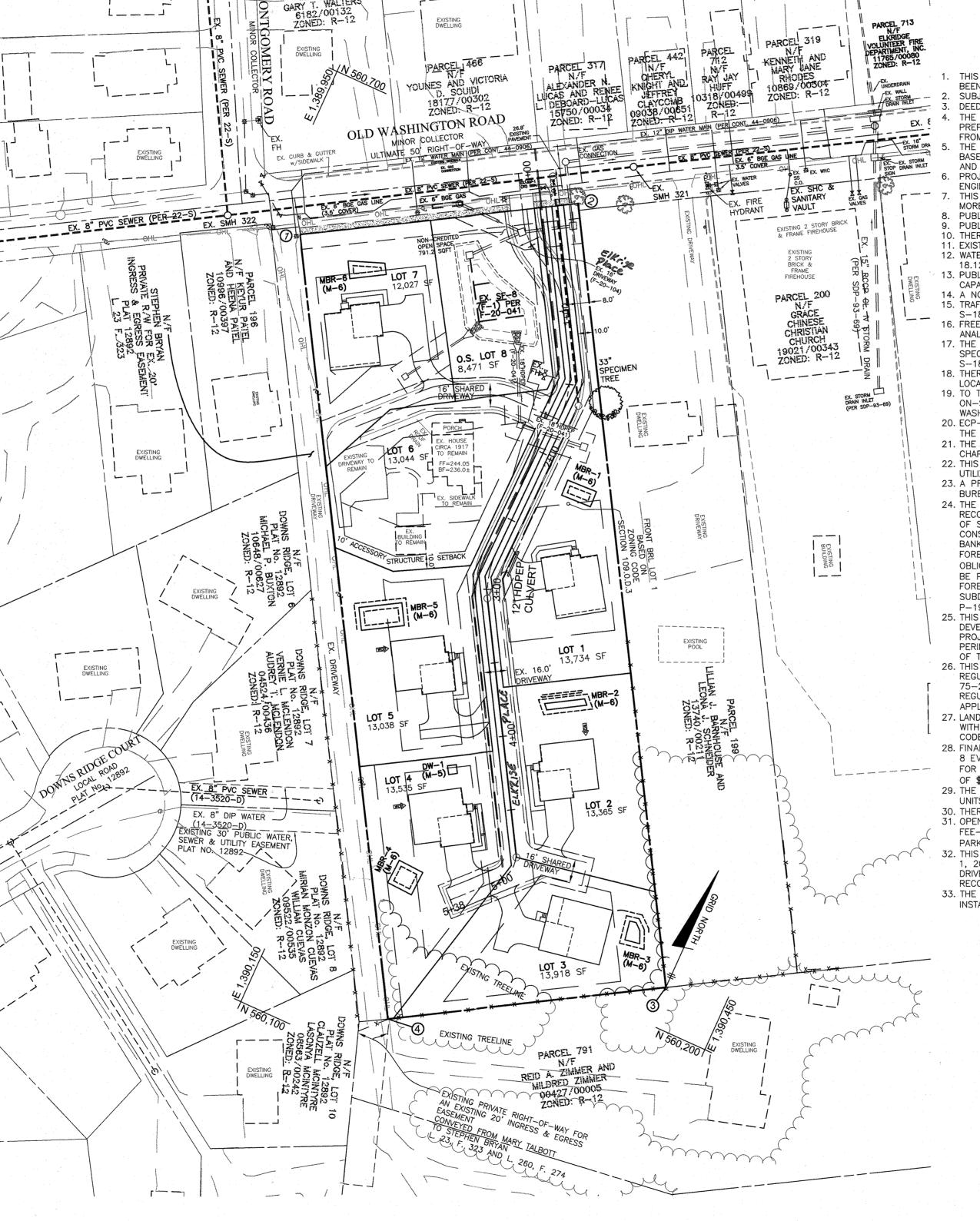
i. AREA OF PROPOSED PUBLIC ROAD.. ...0.00 Ac.± i. AREA OF PROPOSED PUBLIC R/W DEDICATION... ...0.00 Ac.± APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

..2.13 Ac.± ...0.19 Ac.±

CHIEF, DEVELOPMENT ENGINEERING DIVISION CHIEF, DIVISION OF LAND DEVELOPMENT

SITE DEVELOPMENT PLAN ELKRISE HILL

LOTS 1-7, OPEN SPACE LOT 8 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND



(IN FEET)

1 inch = 50 ft.

RUSSETT FINE SANDY LOAM, 5 TO 10 PERCENT SLOPES

** HIGHLY ERODIBLE SOILS: SOILS WITH K OF 0.35 OR GREATER AND ON GRADES 5% OR STEEPER; OR SOILS ON GRADES 15% OR GREATER.

SOILS ARE TAKEN FROM THE NRCS WEB SOIL SURVEY APRIL 2017, MAP 20.

RUSSETT FINE SANDY LOAM, 10 TO 15 PERCENT SLOPES

LIRRAN LAND, CHILLIM-RELTSVILLE COMPLEX 0 TO 5 PERCENT SLOPE

URBAN LAND- CHILLUM-BELTSVILLE COMPLEX, 5 TO 15 PERCENT SLOPES

C	BOUNDA OORDINA	
POINT #	NORTHING	EASTING
1	560589.1055	1389972.67
2	560685.7049	1390135.80
3	560227.5017	1390408.60
4	560130.5810	1390245.66

COORDINATES					
#	NORTHING	EASTING			
	560589.1055	1389972.6792			
	560685.7049	1390135.8054			
.5	560227.5017	1390408.6009			
·	560130.5810	1390245.6660			

MINIMUM LOT SIZE

GROSS AREA 13,734 SF 13,365 SF 13,918 SF 13,535 SF 13.038 SF 13,044 SF

	CONCRETE BASE. N 561158.817 ELEVATION: HO. CO. #38BA STAMPED DISK SET CONCRETE BASE N 562553.31 ELEVATION:	E 1389726.33 220.084 ON TOP OF E 1390967.86	ON COURSE OF THE PROPERTY OF T	GREEN FIELD, RD. HO. #38	BAAA OD OD	SITE SITE	THE REAL PROPERTY OF THE PARTY	ا ھرنہ
			BINGLE BRAZE		BASA OF	B COURTET B		
			EST EST	3	MERLEWAY	SHADY LA.	. //i~	Section 1
				No. The		A A STORE	/ / / / / / / / / / / / / / / / / / / /	
E CHART			The same of the sa			A RIVER C	0//	
TEM AREA	MIN. LOT SI	ZE	TO THE PERSON OF		AND THE	PATUXENDUARTER		
202 SF	12,532 SF		" ME E E	SMITT	WAY W PISTING	ત દુધ ∦ વ ા	/ /2	
365 SF	12,000 SF		THE THE WAY	1	RISTIN DR.	HANOVER CROSSING		
326 SF	12,092 SF		Sall Carles 1	RISTA OUDON AVE.	Most. See	"	June 6	
34 SF	12,001 SF		EN EN EN	LOUDON AVE.			WARD COUNTS	
28 SF	12,010 SF	-	THE THE WHOLE		ν)	Yanon Sin	WED COUNTY	
00 SF	12,544 SF		NE TEN		⁶ √≫.		4.	
		··············	ľŽ		、グ ・.ン	1.28	VICINITY	Y MAP

GENERAL NOTES

1. THIS PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE SUBJECT PROPERTY ZONED R-12 PER THE 10-06-2013 COMPREHENSIVE ZONING PLAN. DEED REFERENCE: 17498/00062. PLAT REFERENCE: 25845-25846.

THE EXISTING TOPOGRAPHY ON-SITE IS TAKEN FROM FIELD SURVEY WITH 2 FOOT CONTOUR INTERVALS PREPARED BY BENCHMARK ENGINEERING, INC. DATED APRIL, 2017. SURROUNDING TOPOGRAPHY IS TAKEN THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS

BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENTS NO. 38AA AND 38BA WERE USED FOR THIS PROJECT PROJECT BOUNDARY IS BASED ON A FIELD RUN BOUNDARY SURVEY PERFORMED BY BENCHMARK ENGINEERING, INC. DATED APRIL, 2017.

PUBLIC WATER MAIN WILL CONNECT TO CONTRACT 44-0906. DRAINAGE IS MIDDLE PATUXENT PUBLIC SEWER MAIN WILL CONNECT TO CONTRACT 22-S. DRAINAGE IS MIDDLE PATUXENT. 10. THERE IS ONE EXISTING DWELLING ON SITE ON LOT 6. IT IS TO BE RETAINED.

11. EXISTING UTILITIES ARE BASED ON FIELD SURVEY LOCATIONS, CONTRACT DRAWINGS AND HOWARD COUNTY GIS. 12. WATER AND SEWER SERVICE TO THESE LOTS WILL BE GRANTED UNDER THE PROVISIONS OF SECTION 18.122.B OF THE HOWARD COUNTY CODE.

13. PUBLIC WATER AND SEWER ALLOCATION WILL BE GRANTED AT TIME OF ISSUANCE OF BUILDING PERMIT IF CAPACITY IS AVAILABLE AT THAT TIME. 14. A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT.

. TRAFFIC STUDY WAS PREPARED BY MARS GROUP ON MAY 3, 2017 AND APPROVED UNDER THE REVIEW OF ANALYSIS WAS APPROVED UNDER S-18-004. 17. THE FOREST STAND DELINEATION WAS PERFORMED BY ECO-SCIENCE PROFESSIONALS, INC. THERE IS ONE

SPECIMEN TREE LOCATED JUST OFF SITE AND THE TREE IS TO REMAIN. THE FSD WAS APPROVED UNDER 18. THERE ARE NO WETLANDS, STREAMS, THEIR REQUIRED BUFFERS, 100-YEAR FLOODPLAIN OR STEEP SLOPES

19. TO THE BEST OF OUR KNOWLEDGE AND BELIEF THERE ARE NO CEMETERIES ONSITE. THE EXISTING DWELLING ON-SITE IS HISTORIC AND IS LISTED ON THE HISTORIC SITES INVENTORY AS HO-803 AS PART OF THE OLD WASHINGTON ROAD SURVEY DISTRICT

20. ECP-18-026 WAS APPROVED BY DEVELOPMENT ENGINEERING DIVISION PER LETTER DATED APRIL 23, 2018. THE ORIGINAL MYLARS WERE SIGNED ON 10/17/18. 21. THE REQUIRED PRESUBMISSION COMMUNITY MEETING WAS HELD ON MARCH 12, 2018 AT 6:00PM AT MELVILLE

UTILIZED WITHIN THIS DEVELOPMENT. 23. A PRIVATE RANGE OF ADDRESS SIGN ASSEMBLY SHALL BE FABRICATED AND INSTALLED BY HOWARD COUNTY

BUREAU OF HIGHWAYS AT THE DEVELOPERS/OWNERS EXPENSE PER FINAL CONSTRUCTION PLANS F-20-041. 24. THE FOREST CONSERVATION REQUIREMENTS FOR THIS SUBDIVISION HAVE BEEN ADDRESSED PRIOR TO RECORDATION OF THE FINAL SUBDIVISION PLAT AND WERE PROVIDED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.1200 OF THE SUBDIVISION REGULATIONS AND FOREST CONSERVATION MANUAL. THE FOREST CONSERVATION OBLIGATION FOR THIS SUBDIVISION WAS SATISFIED BY THE USE OF AN OFFSITE MITIGATION BANK AT PARCEL 2, PROPERTY OF FOREVER A FARM, LLC, FOREST MITIGATION BANK PLAN, SDP-14-005. FOREST MITIGATION, IN THE AMOUNT OF 2.4 ACRES, AT THE FOREST BANK (FULFILLING 1.2 ACRES OF OBLIGATION) WILL FULFILL THE FOREST OBLIGATION FOR THIS PROJECT. THE USE OF THE FOREST BANK WILL

PROCESSED AS A REDLINE REVISION TO THE SDP-14-005 PLAN. THIS PLAN IS GRANDFATHERED TO THE FOREST CONSERVATION REGULATIONS IN EFFECT PRIOR TO COUNCIL BILL CB62-2019 ACCORDING TO SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, SECTION 16.102(H) BECAUSE A PRELIMINARY PLAN, P-19-002, WAS APPROVED ON AUGUST 19, 2019. 25. THIS DEVELOPMENT WAS APPROVED AS IN ACCORDANCE WITH SECTION 16.127 - RESIDENTIAL INFILL

DEVELOPMENT - OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS. THE DEVELOPER OF THIS PROJECT CREATES COMPATIBILITY WITH THE EXISTING NEIGHBORHOOD THROUGH THE USE OF ENHANCED PERIMETER LANDSCAPING, BERMS, FENCES, SIMILAR HOUSING UNIT TYPES AND THE DIRECTIONAL ORIENTATION OF THE PROPOSED HOUSES

26. THIS PROJECT IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS PER COUNCIL BILL 45-2003 AND THE ZONING REGULATIONS, AS AMENDED BY COUNCIL BILL 75-2003. DEVELOPMENT OR CONSTRUCTION ON THESE LOTS MUST COMPLY WITH SETBACK AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF THE SITE DEVELOPMENT PLAN, WAIVER PETITION APPLICATION, OR BUILDING/GRADING PERMIT. 27. LANDSCAPING FOR LOTS 1-8 WAS PROVIDED IN ACCORDANCE WITH A CERTIFIED LANDSCAPE PLAN INCLUDED

WITH THE ROAD CONSTRUCTION PLAN SET; IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. 28. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING IN THE AMOUNT OF \$8,700 FOR 25 SHADE TREES AND 8 EVERGREEN TREES, WAS POSTED IN ACCORDANCE WITH THE APPROVED FINAL LANDSCAPE PLAN. SURETY

FOR THE EXISTING 6 STREET TREES WAS POSTED WITH THE DPW DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$2,250.00 UNDER F-20-041. 29. THE PROJECT IS SUBJECT TO SECTION 13.402 OF THE COUNTY CODE FOR MODERATE INCOME HOUS

30. THERE ARE HIGHLY ERODIBLE SOILS WITHIN THE PROPERTY LIMITS 31. OPEN SPACE LOT 8 IS NON-CREDITED AND OPEN SPACE REQUIREMENTS WERE PROVIDED WITH A FEE-IN-LIEU OF OPEN SPACE OF \$1500 PER LOT FOR SIX LOTS UNDER F-20-041, PER RECREATI PARKS REVIEW. A TOTAL FEE-IN-LIEU OF \$9,000.00 WAS PAID.

32. THIS PLAN WENT BEFORE THE HISTORIC PRESERVATION COMMISSION FOR ADVISORY COMMENTS ON F 2018 IN CASE HPC-18-06. THE COMMENTS OFFERED INCLUDE A REQUEST TO MOVE THE PROPO DRIVEWAY FURTHER FROM THE EAST SIDE OF THE HISTORIC STRUCTURE. THE DRIVEWAY HAS BEEN

RECONFIGURED. THE HOUSE AND BUILDING ARE TO REMAIN. HISTORIC SITE INVENTORY NUMBER HO-33. THE R1-1 ("STOP") SIGN AND THE STREET NAME SIGN (SNS) ASSEMBLY FOR THIS DEVELOPMENT M INSTALLED BEFORE THE BASE PAVING IS COMPLETED.

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Total Number of Lots/Units Proposed	7
Number of MIHU Required	0.7
Number of MIHU Provided Onsite (exempt from APFO allocations)	· · · · · · · · · · · · · · · · · ·
Number of APFO Allocations Required (remaining lots/units)	6
MIHU Fee-in-Lieu (indicate lot/unit numbers)	1-5, 7

	PERMIT	INFOR	MATION CI	HART	
SUBDIVISION NAME:	05 11111		SECTION/	'AREA:	PARCEL:
	SE HILL 1 – 7			.	198
DEED:	BLOCK No.	ZONE:	TAX MAP:	ELECTION DISTRICT	CENSUS TRACT
L. 17498 F. 00062	08	R-12	38	01	601201

34. ANY TRAFFIC CONTROL DEVICES AND THEIR LOCATIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MdMUTCD).

SCALE : 1'=2000'

35. ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED ("QUICK PUNCH"), SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. THE ANCHOR SHALL NOT EXTEND MORE THAN TWO "QUICK PUNCH" HOLES ABOVE GROUND LEVEL. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST. 36. 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 37. UTILITIES TO THE EXISTING HOUSE MAY HAVE TO BE RELOCATED IN ORDER TO PROVIDE SERVICE TO THE

HOUSE WHILE NOT BEING LOCATED ON DIFFERENT LOT OR WITHIN OPEN SPACE. 38. A DESIGN MANUAL WAIVER TO SECTION 2.6.A, 2.6.B AND APPENDIX 'A' FROM THE DESIGN MANUAL VOLUME TO ALLOW A TOTAL OF 7 LOTS TO ACCESS OLD WASHINGTON ROAD VIA A 16' PRIVATE USE-IN-COMMON DRIVEWAY HAS BEEN APPROVED SUBJECT TO SUFFICIENT SIGHT DISTANCE PROVIDED AT OLD WASHINGTON

ROAD ACCESS. THE APPROVAL DATE BY HOWARD COUNTY DPW IS MARCH 26, 2019. ROAD VIA EASEMENTS THROUGH LOT 6 AND OPEN SPACE LOT 8 INSTEAD OF REQUIRING AN ADDITIONAL ACCESS POINT USING LOT 7'S ROAD FRONTAGE, WAS CONDITIONALLY APPROVED BY THE DIRECTOR OF

PLANNING AND ZONING ON JUNE 7, 2019. THE CONDITIONS OF APPROVAL ARE INDICATE THIS ALTERNATIVE COMPLIANCE FILE NUMBER (WP-19-079), SECTIONS, REQUEST, ACTION, DATE AND CONDITIONS OF APPROVAL ON ALL SUBMITTED PLANS, INCLUDING P-19-002.

2. COMPLIANCE WITH ANY CONDITIONS AND COMMENTS FROM DPW REGARDING APPROVAL OF THE DESIGN MANUAL WAIVER TO ALLOW 7 USERS ON A PRIVATE USE—IN—COMMON DRIVEWAY. 40. DRIVEWAYS SHALL BE PROVIDED PRIOR TO ISSUANCE OF A USE AND OCCUPANCY PERMIT FOR ANY NEW

DWELLINGS TO INSURE SAFE ACCESS OF FIRE AND EMERGENCY VEHICLE PER THE FOLLOWING MINIMUM a. WIDTH - 12 FEET (16 FEET SERVING MORE THAN ONE RESIDENCE):

b. SURFACE - 6 INCHES OF COMPACTED CRUSHER RUN BASE WITH TAR AND CHIP COATING (1-1/2" c.GEOMETRY - MAXIMUM 15% GRADE, MAXIMUM 10% GRADE CHANGE AND 45 FOOT TURNING RADIUS d.STRUCTURES (CULVERTS/BRIDGES) - CAPABLE OF SUPPORTING 25 GROSS TONS (H25 LOADING); e.DRAINAGE ELEMENTS - SAFELY PASSING THE 100-YEAR FLOOD WITH NO MORE THAN 1 FOOT DEPTH

f, MAINTENANCE - SUFFICIENT TO ENSURE ALL WEATHER USE. 44. THE PRIVATE MAINTENANCE ACCESS AGREEMENT FOR LOTS 1-7 AND FOR LOTS 6 AND 7 WAS RECORDED SIMULTANEOUSLY WITH THE RECORDATION OF THE PLAT. SEE L. 20928 F. 137. 45. FOR FLAG OR PIPESTEM LOTS, REFUSE COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE ARE PROVIDED

TO THE JUNCTION OF THE FLAG OR PIPESTEM A AND ROAD RIGHT-OF-WAY LINE AND NOT ONTO THE PIPESTEM LOT DRIVEWAY. THE 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUMES I & II AS AMENDED BY THE STORMWATER

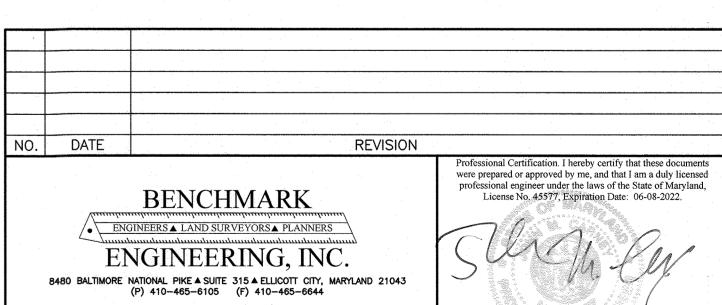
MANAGEMENT ACT OF 2007. ENVIRONMENTAL SITE DESIGN METHODS SHALL BE UTILIZED, INCLUDING MICRO-BIORETENTION (M-6), AND DRY WELLS (M-5) PRACTICES. 48. IF THERE ARE ANY EXISTING WELLS OR SEPTIC SYSTEMS ON THE PROPERTY THEY MUST BE PROPERLY

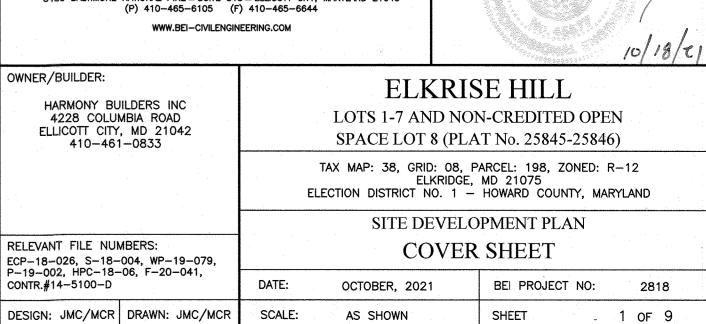
ABANDONED WITH DOCUMENTATION SUBMITTED TO THE HEALTH DEPARTMENT. 49. DPZ RELATED FILE NUMBERS: ECP-18-026, S-18-004, P-19-002, WP-19-079, HPC-18-06, F-20-041, CONTR. #14-5100-[

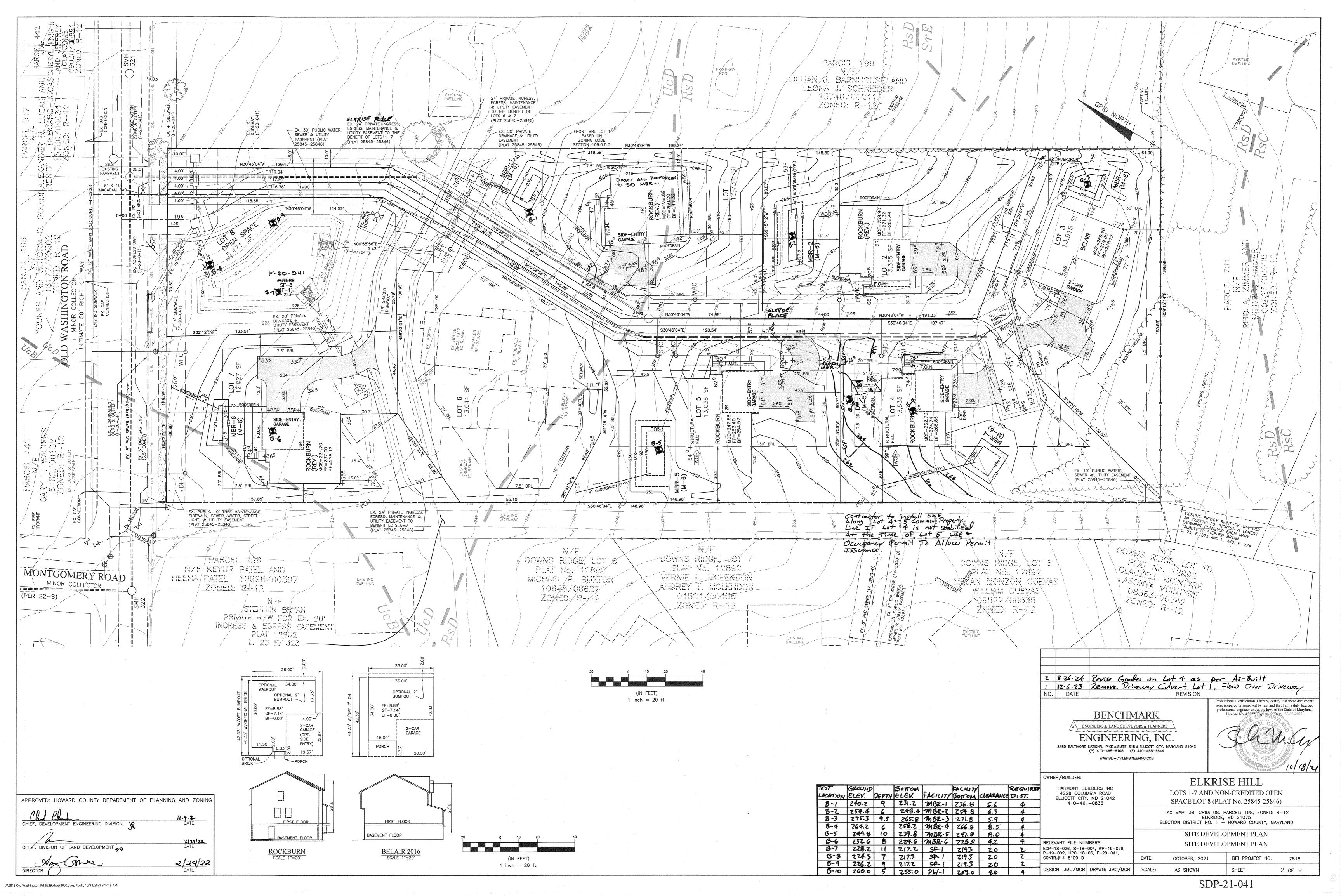
50. THERE IS AN EXISTING DWELLING/STRUCTURE(S) ON LOT 6 TO REMAIN. NO NEW BUILDINGS, EXTENSIONS OR ADDITIONS TO THE EXISTING DWELLING ARE TO BE CONSTRUCTED AT A DISTANCE LESS THAN THE ZONING

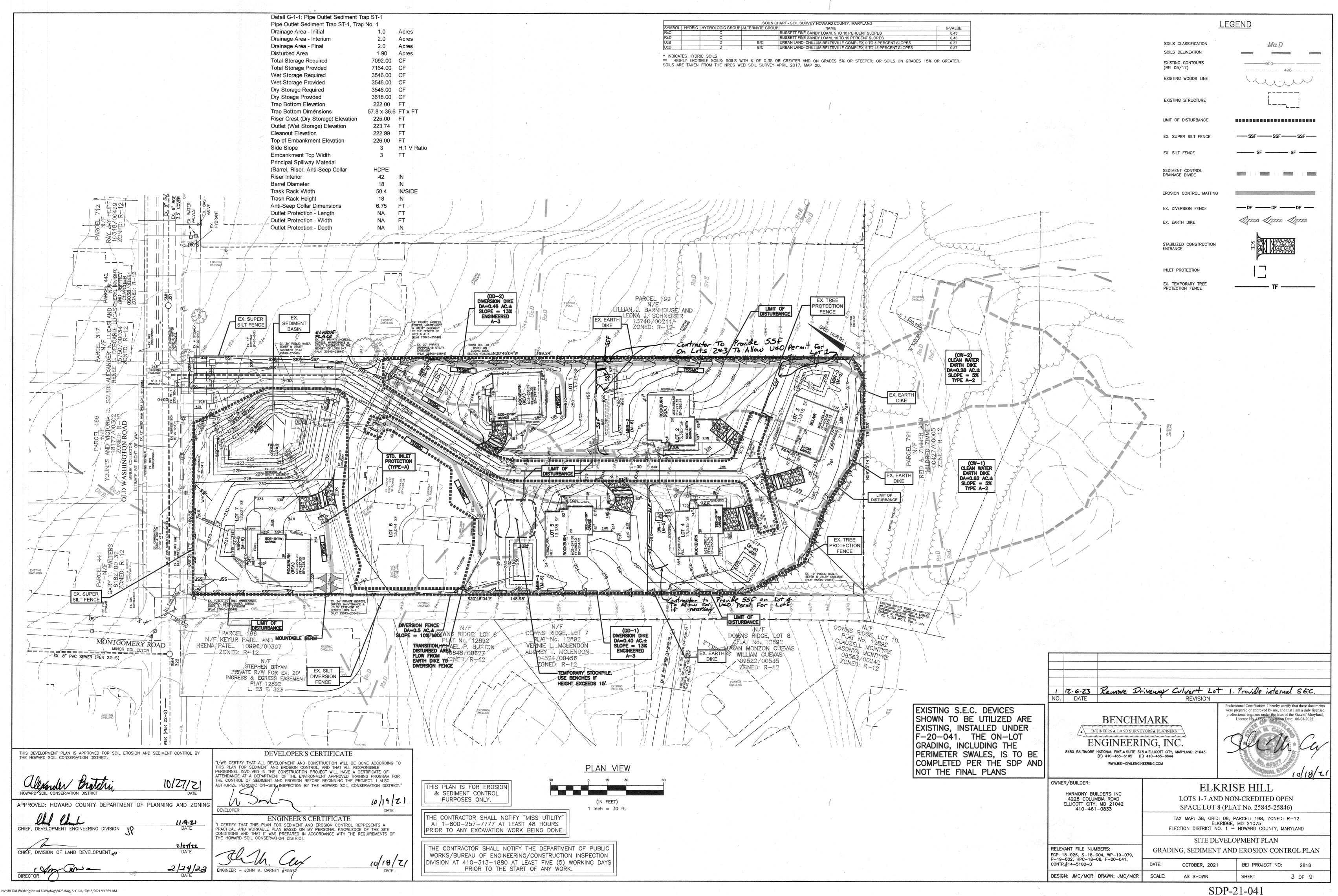
51. THE OPEN SPACE WAS DEDICATED TO A PROPERTY OWNERS ASSOCIATION FOR THE RESIDENTS OF THIS SUBDIVISION AND RECORDING REFERENCES OF THE ARTICLES OF INCORPORATION AND RESTRICTIONS ARE SHOWN ON THE FINAL PLAT.

52. IN ACCORDANCE WITH SECTION 128.0 OF THE HOWARD COUNTY ZONING REGULATIONS, BAY WINDOWS, CHIMNEYS, OR EXTERIOR STAIRWAYS NOT MORE THAN 16 FEET IN WIDTH MAY PROJECT NOT MORE THAN 4 FEET INTO ANY SETBACKS. PORCHES, OR DECKS, OPEN OR ENCLOSED MAY PROJECT NOT MORE THAN 10 FEET INTO THE FRONT OR REAR YARD SETBACK.









b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws. c. Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less d. Sod or seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials. a. Dry Seeding: This includes use of conventional drop or broadcast spreaders. Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries ii, Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with a weighted roller to provide good seed to soil contact. b. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil i. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seedbed must be firm after ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. c. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and i. If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of soluble nitrogen; P2O5 (phosphorous), 200 pounds per acre; K2O (potassium) 200 pounds per acre. ii. Lime: Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when iii. Mix seed and fertilizer on site and seed immediately and without interruption. iv. When hydroseeding do not incorporate seed into the soil 1. Mulch Materials (in order of preference) a. Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably bright in color. Straw is to be free of noxious weed seeds as specified in the Maryland Seed Law and not musty, moldy, caked, decayed, or excessively dusty Note: Use only sterile straw mulch in areas where one species of grass is desired b. Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state. i. WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry. ii. WCFM, including dye, must contain no germination or growth inhibiting iii. WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in unifor suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material must form a blotter-like ground cover, on application. having moisture absorption and percolation properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings. iv. WCFM material must not contain elements or compounds at concentration levels that will be phyto-toxic. v. WCFM must conform to the following physical requirements: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter pH range of 4.0 to 8.5, ash content of 1.6 percent maximum and rater holding capacity of 90 percent minimur 2. Application a. Apply mulch to all seeded areas immediately after seeding. b. When straw mulch is used, spread it over all seeded areas at the rate of 2 tons per acre to a uniform loose depth of 1 to 2 inches. Apply mulch to achieve a uniform distribution and depth so that the soil surface is not exposed. When using a mulch anchoring tool, increase the application rate to 2.5 tons per acre. c. Wood cellulose fiber used as mulch must be applied at a net dry weight of 1500 pounds per acre. Mix the wood cellulose fiber with water to attain a mixture with a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water. a. Perform mulch anchoring immediately following application of mulch to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon the size of the area and erosion hazard: i. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of 2 inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should follow the contour. ii. Wood cellulose fiber may be used for anchoring straw. Apply the fiber binder at a net dry weight of 750 pounds per acre. Mix the wood cellulose fiber with water at a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water. vnthetic binders such as Acrylic DLR (Agro-Tack), DCA-70, Petroset, Terra Ta Terra Tack AR or other approved equal may be used. Follow application rates as specified by the manufacturer. Application of liquid binders needs to be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. Use of asphalt binders is strictly prohibited. iv. Lightweight plastic netting may be stapled over the mulch according to manufacturer recommendations. Netting is usually available in rolls 4 to 15 feet wide and 300 to DEVELOPER'S CERTIFICATE I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO HIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE FRSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR TE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON—SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT. 10-19-21 DEVELOPER **ENGINEER'S CERTIFICATE** CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE ONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF HE HOWARD SOIL CONSERVATION DISTRICT. (0) (8) 71 THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING DEVELOPMENT ENGINEERING DIVISION NO

B-4-3 STANDARDS AND SPECIFICATIONS

SEEDING AND MULCHING

Conditions Where Practice Applies

a. All seed must meet the requirements of the Maryland State Seed Law. All seed must be

subject to re-testing by a recognized seed laboratory. All seed used must have been

any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be

available upon request to the inspector to verify type of seed and seeding rate.

tested within the 6 months immediately preceding the date of sowing such material on

To the surface of all perimeter controls, slopes, and any disturbed area not under active grading

The application of seed and mulch to establish vegetative cover.

A. Seeding
1. Specifications

To protect disturbed soils from erosion during and at the end of construction.

B-4-4 STANDARDS AND SPECIFICATIONS TEMPORARY STABLIZATION

To stabilize disturbed soils with vegetation for up to 6 months.

To use fast growing vegetation that provides cover on disturbed soils. Conditions Where Practice Applies

Exposed soils where ground cover is needed for a period of 6 months or less. For longer duration of time, permanent stabilization practices are required.

Select one or more of the species or seed mixtures listed in Table B.1 for the appropriate Plant Hardiness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. If this Summary is not put on the plan and completed, then Table B.1 plus fertilizer and lime rates must be put on the plan. 2. For sites having soil tests performed, use and show the recommended rates by the testing agency

Soil tests are not required for Temporary Seeding. When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3.A.1.b and maintain until the next seeding season.

B-4-5 STANDARDS AND SPECIFICATIONS PERMANENT STABILIZATION

To stabilize disturbed soils with permanent vegetation.

To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils. Conditions Where Practice Applies Exposed soils where around cover is needed for 6 months or more

A. Seed Mixtures

1 General Specifications

1. General Use a Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan. b Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or

for special purposes such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical

Field Office Guild, Section 342 - Critical Area Planting c For sites having disturbed areas over 5 acres, use and show the rates recommended by the soil testing agency. d For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 ½ pounds per 1000

square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary. 2. Turfgrass Mixtures

a. Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance. b. Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary.

The summary is to be placed on the plan. Kentucky Bluegrass: Full sun Mixture: For use in areas that receive intensive management Irrigation required in the areas of central Maryland and Fastern Shore, Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1,5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky Bluegrass Cultivars with each ranging from 10 to 35 percent of the total

ii. Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky Bluegrass Cultivars with each ranging from 10 to 35 percent of the total mixture by weight.

iii. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes; Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended. v. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes Certified Kentucky

Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1 ½ to 3 pounds per 1000 square feet. Notes: Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Memo #77, "Turfgrass Cultivar Recommendations for Maryland" Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line.

c. Ideal Times of Seeding for Turf Grass Mixtures Western MD: March 15 to June 1. August 1 to October 1 (Hardiness Zones: 5h 6a) Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6b) Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 7a, 7b)

d. Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 1 ½ inches in diameter. The resulting seedbed must be in such condition that future moving of grasses will pose

e. If soil moisture is deficient, supply new seedings with adequate water for plant growth (½ to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is not especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites. B. Sod: to provide quick cover on disturbed areas (2:1 grade or flatter).

a. Class of turfgrass must be Maryland State Certified. Sod labels must be made available to the job b. Sod must be machine cut at a uniform soil thickness of % inch. plus or minus % inch. at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and torr or uneven ends will not be acceptable.

c. Standard size sections of sod must be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section. d. Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.

e. Sod must be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period must be approved by an agronomist or soil scientist prior to its installation. 2. Sod Installation a. During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the

b. Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Stagger lateral joints to promote more uniform growth and strength Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots. c. Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints.

Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensure solid contact exists between sod roots and the underlying soil surface. d. Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of sod within eight hours.

a. In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.

b. After the first week, sod watering is required as necessary to maintain adequate moisture content. c. Do not mow until the sod is firmly rooted. No more than 1/3 of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless otherwise specified

H-5 STANDARDS AND SPECIFICATIONS

Controlling the suspension of dust particles from construction activities. To prevent blowing and movement of dust from exposed soil surfaces to reduce on and off-site damage including health and traffic hazards.

Conditions Where Practice Applies Areas subject to dust blowing and movement where on and off-site damage is likely without treatment <u>Specifications</u>

<u>Mulches:</u> See Section B-4-2 Soil Preparation, Topsoiling, and Soil Amendments, Section B-4-3

eeding and Mulching, and Section B-4-4 Temporary Stabilization. Mulch must be anchored to prevent blowing. Vegetative Cover: See Section B-4-4 Temporary Stabilization. Tillage: Till to roughen surface and bring clods to the surface. Begin plowing on windward side of site. Chisel-type plows spaced about 12 inches apart, spring-toothed harrows, and similar plows are examples of equipment that may produce the desired effect.

Imigation: Sprinkle site with water until the surface is moist. Repeat as needed. The site must

be irrigated to the point that runoff occurs. Barriers: Solid board fences, silt fences, snow fences, burlap fences, straw bales, and similar naterial can be used to control air currents and soil blowing. Chemical Treatment: Use of chemical treatment requires approval by the appropriate plan

B-4-8 STANDARDS AND SPECIFICATIONS

STOCKPILE AREA Definition A mound or pile of soil protected by appropriately designed erosion and sediment control measures To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns. Conditions Where Practice Applies Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan. 2. The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.

3. Runoff from the stockpile area must drain to a suitable sediment control practice. 4. Access the stockpile area from the upgrade side. 5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.

6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge. Stockpiles must be stabilized in accordance with the 3/7 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization. 8. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with

impermeable sheeting. Maintenance The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 30 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.

HOWARD SOIL CONSERVATION DISTRICT (HSCD) STANDARD SEDIMENT CONTROL NOTES

1. A pre-construction meeting must occur with the Howard County Department of Public Works, Construction Inspection Division (CID), 410-3133-1855 after the future LOD and protected areas are marked clearly in the field. A minimum of 48 hours notice to CID must be given at the following stages: a. Prior to the start of earth disturbance,

B-4 STANDARDS AND SPECIFICATIONS

VEGETATIVE STABILIZATION

Conditions Where Practice Applies

Effects on Water Quality and Quantity

Stabilization practices are used to promote the establishment of vegetation on exposed soil. When soil is

Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and

runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Over time, vegetation

Vegetation will help reduce the movement of sediment, nutrients, and other chemicals carried by runoff to

Sediment control practices must remain in place during grading, seedbed preparation, seeding, mulching,

Adequate Vegetative Establishmen

Inspect seeded areas for vegetative establishment and make necessary repairs, replacements, and

2. If an area has less than 40 percent groundcover, restabilize following the original recommendations

3. If an area has between 40 and 94 percent groundcover, over-seed and fertilize using half of the rates

B-4-1 STANDARDS AND SPECIFICATIONS

INCREMENTAL STABILIZATION

Conditions Where Practice Applies

1. Excavate and stabilize cut slopes in increments not to exceed 15 feet in height. Prepare seedbed

a. Construct and stabilize all temporary swales or dikes that will be used to convey runoff

d. Perform final phase excavation, prepare seedbed, and stabilize. Overseed previously

1. Construct and stabilize fill slopes in increments not to exceed 15 feet in height. Prepare seedbed

and apply seed and mulch on all slopes as the work progresses.

2. Stabilize slopes immediately when the vertical height of a lift reaches 15 feet, or when the grading

3. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept

a. Construct and stabilize all temporary swales or dikes that will be used to divert runoff around

b. At the end of each day, install temporary water conveyance practice(s), as necessary, to

intercept surface runoff and convey it down the slope in a non-erosive manner.

e. Place final phase fill, prepare seedbed, and stabilize. Overseed previously seeded areas as

Note: Once the placement of fill has begun the operation should be continuous from grubbing through the

interruptions in the operation or completing the operation out of the seeding season will necessitate the

B-4-2 STANDARDS AND SPECIFICATIONS

SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

Conditions Where Practice Applies

Criteria

be tracked with ridges running parallel to the contour of the slope.

conditions required for permanent vegetative establishment are:

iv. Soil contains 1.5 percent minimum organic matter by weight.

v. Soil contains sufficient pore space to permit adequate root penetration

Graded areas must be maintained in a true and even grade as specified on the

approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches. Apply soil amendments as specified on the approved plan or as indicated by the result

Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable

Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The

Topsoil salvaged from an existing site may be used provided it meets the standards as set

The texture of the exposed subsoil/parent material is not adequate to produce

The soil material is so shallow that the rooting zone is not deep enough to support

Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy

approved by the appropriate approval authority. Topsoil must not be a mixture of

b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack

grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified. Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil

Erosion and sediment control practices must be maintained when applying topsoi

Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum

seeding can proceed with a minimum of additional soil preparation and tillage. Any

Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition

when the subsoil is excessively wet or in a condition that may otherwise be detrimental

irregularities in the surface resulting from topsoiling or other operations must be

corrected in order to prevent the formation of depressions or water pockets.

Soil tests must be performed to determine the exact ratios and application rates for both lime

and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be

Fertilizers must be uniform in composition, free flowing and suitable for accurate application by

appropriate approval authority. Fertilizers must all be delivered to the site fully labeled

Lime materials must be ground limestone (hydrated or burnt lime may be substituted except

according to the applicable laws and must bear the name, trade name or trademark and

when hydroseeding) which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will

pass through a #100 mesh sieve and 98 to 100 percent will pass through a #20 mesh sieve

Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of

Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone

at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of

appropriate equipment. Manure may be substituted for fertilizer with prior approval from the

performed by a recognized private or commercial laboratory. Soil samples taken for

thickness of 4 inches. Spreading is to be performed in such a manner that sodding or

scientist and approved by the appropriate approval authority, may be used in lieu of

sand. Other soils may be used if recommended by an agronomist or soil scientist and

contrasting textured subsoils and must contain less than 5 percent by volume of cinders

stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than

can be found in the representative soil profile section in the Soil Survey published by

plants or furnish continuing supplies of moisture and plant nutrients.

Areas having slopes steeper than 2:1 require special consideration and design

Topsoil Specifications: Soil to be used as topsoil must meet the following criteria

The original soil to be vegetated contains material toxic to plant growth The soil is so acidic that treatment with limestone is not feasible.

forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type

purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low

moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soi

means. Rake lawn areas to smooth the surface, remove large objects like stones and

branches, and ready the area for seed application. Loosen surface soil by dragging with

a heavy chain or other equipment to roughen the surface where site conditions will not

permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment

leaving the soil in an irregular condition with ridges running parallel to the contour of the

slope. Leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be

Apply fertilizer and lime as prescribed on the plans.

ii. Soluble salts less than 500 parts per million (ppm).

a. Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches by means of

Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other

a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil

suitable agricultural or construction equipment, such as disc harrows or chisel plows or

ppers mounted on construction equipment. After the soil is loosened, it must not be

rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to

iii. Soil contains less than 40 percent clay but enough fine grained material (greater than

30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture.

An exception: if lovegrass will be planted, then a sandy soil (less than 30 percent silt

Application of amendments or topsoil is required if on-site soils do not meet the above

completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any

the fill. Construct silt fence on low side of fill unless other methods shown on the plans

c. Perform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase 1 areas as

. Adequate vegetative stabilization requires 95 percent groundcover.

4. Maintenance fertilizer rates for permanent seeding are shown in Table B.6

To provide timely vegetative cover on cut and fill slopes as work progresses

Construction sequence example (Refer to Figure B.1):

around the excavation.

seeded areas as necessary.

operation ceases as prescribed in the plans.

4. Construction sequence example (Refer to Figure B.2):

c. Place Phase 1 fill, prepare seedbed, and stabilize.

d. Place Phase 2 fill prepare seedbed and stabilize

The process of preparing the soils to sustain adequate vegetative stabilization

address this area.

To provide a suitable soil medium for vegetative growth.

Where vegetative stabilization is to be established

Permanent Stabilization

of a soil test.

Soil pH between 6.0 and 7.0.

plus clay) would be acceptable.

unnecessary on newly disturbed areas.

Topsoiling is limited to areas having 2:1 or flatter slopes where:

1½ inches in diameter.

to proper grading and seedbed preparation

engineering purposes may also be used for chemical analyses.

Soil Amendments (Fertilizer and Lime Specifications)

soil by disking or other suitable means.

natural topsoil.

warranty of the producer

Topsoil Application

Any cut or fill slope greater than 15 feet in height. This practice also applies to stockpiles.

and apply seed and mulch on all cut slopes as the work progresses.

b. Perform Phase 1 excavation, prepare seedbed, and stabilize.

Note: Once excavation has begun the operation should be continuous from grubbing through the

completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any

surface runoff and convey it down the slope in a non-erosive manner

interruptions in the operation or completing the operation out of the seeding season will necessitate

for lime, fertilizer, seedbed preparation, and seeding.

Establishment of vegetative cover on cut and fill slopes.

A. Incremental Stabilization - Cut Slopes

the application of temporary stabilization

B. Incremental Stabilization - Fill Slopes

application of temporary stabilization.

A Soil Preparation

increase organic matter content and improve the water holding capacity of the soil and subsequent plant

receiving waters. Plants will also help protect groundwater supplies by assimilating those substances

stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall,

On all disturbed areas not stabilized by other methods. This specification is divided into sections on

stabilization; soil preparation, soil amendments and topsoiling; seeding and mulching; temporary

Using vegetation as cover to protect exposed soil from erosion.

To promote the establishment of vegetation on exposed soil.

reducing sediment loads and runoff to downstream areas.

stabilization:

and permanent stabilization

within the root zone.

reseedings within the

planting season.

originally specified.

and vegetative establishment

b. Upon completion of the installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading, c. Prior to the start of another phase of construction or opening of another grading d. Prior to the removal or modification of sediment control practices.

2. All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the <u>2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL</u>, and revisions thereto.

3. Following initial soil disturbance or re-disturbance, permanent or temporary stabilization is required within three (3) calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes steeper than 3 horizontal to 1 vertical (3:1); and seven (7) calendar days as to all other disturbed areas on the project site except for those areas under active grading.

4. All disturbed areas must be stabilized within the time period specified above accordance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for topsoil (Sec. B-4-2), permanent seeding (Sec. B-4-5), temporary seeding (Sec. B-4-4) and mulching (Sec. B-4-3). Temporary stabilization with mulch glone can only be applied between the fall and spring seeding dates if the ground is frozen. Incremental stabilization (Sec. B-4-1) specifications shall be enforced in areas with >15' of cut and/or fill. Stockpiles (Sec. B-4-8) in excess of 20 feet must be benched with stable outlet. All concentrated flow, steep slope, and highly erodible areas shall receive soil stabilization matting (Sec. B-4-6).

5. All sediment control structures are to remain in place, and are to be maintained in operative condition until permission for their removal has been obtained from the CID.

Site Analysis: ____2.33___ Acres Total Area of Site: _____1.69___ Acres Area Disturbed *CUT/FILL NUMBERS 0.32 Acres Area to be roofed or paved: ARE FOR SEDIMENT 1.37 Acres CONTROL PURPOSES Area to be vegetatively stabilized: ONLY. CONTRACTOR Total cut: ____ Cu Yds TO VERIFY. SITE WITH AN ACTIVE GRADING PERMIT Off-site waste/borrow area location:

7. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance

8. Additional sediment control must be provided, if deemed necessary by the CID. The site and all controls shall be inspected by the contractor weekly; and the next day after each rain event. A written report by the contractor, made available upon request, is part of every inspection and should include:

• Inspection type (routine, pre-storm event, during rain event)

• Weather information (current conditions as well as time and an=mount of last recorded • Brief description of project's status (e.g. percent complete) and/or current activities Evidence of sediment discharges Identification of plan deficiencies

e Identification of sediment controls that require maintenance • Identification of missing or improperly installed sediment controls

· Compliance status regarding the sequence of construction and stabilization requirements Monitoring/sampling · Maintenance and/or corrective action performed • Other inspection items as required by the General Permit for Stormwater Associated with

Construction Activities (NPDES, MDE) 9. Trenches for the construction of utilities is limited to three pipe lengths or that which can and shall be back filled and stabilized by the end of each work day, whichever is

10. Any major changes or revisions to the plan or sequence of construction must be reviewed and approved by the HSCD prior to proceeding with construction. Minor revisions may be allowed by the CID per the list of HSCD—approved field changes.

11. Disturbance shall not occur outside the L.O.D. A project is to be sequenced so that grading activities begin on one grading unit (maximum acreage of 20 ac. per grading unit) at a time. Work may proceed to a subsequent grading unit when at least 50 percent of the disturbed area in the preceding grading unit has been stabilized and approved by the CID. Unless otherwise specified and approved by the HSCD, no more than 30 acres cumulatively

12. Wash water from any equipment, vehicles, wheels, pavement, and other sources must be treated in a sediment basin or other approved washout structur

13. Topsoil shall be stockpiled and preserved on-site for redistribution onto final grade. 14. All silt fence and super silt fence shall be placed on-the-contour, and be imbricated at

25' minimum intervals, with lower ends curled uphill by 2' in elevation. 15. Stream channels must not be disturbed during the following restricted time periods

• Use I and IP March 1 - June 15 • Use III and IIIP October 1 - April 30 • Use IV March 1 - May 31

16. A copy of this plan, the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, and associated permits shall be on-site and available when the site is active.

SEQUENCE OF CONSTRUCTION

NOTIFY SEDIMENT CONTROL DIVISION 48 HOURS PRIOR TO START OF WORK

Individual House

1. Obtain building permit. (day 1)

2. Hold on-site pre-construction meeting. Identify any hazardous conditions on-site. (day 2)

3. Install site perimeter controls, if any. (day 3)

4. Install stabilized construction entrance and individual lot perimeter controls, if any. (day 4)

5. Construct house, install water and sewer house connections from easement/right-of-way up to house, backfill and construct driveway. (day 11-90)

6. Construct on-lot ESD SWM practices, except mulch. Keep ESD-SWM practices covered with geotextile fabric until on-lot contributing area is stabilized. Construct roof leader underdrains to the practice, if necessary. (day 91-95)

7. Final grade lot and upon approval from the Howard County Sediment Control Inspector, remove all sediment control devices stabilize in accordance with the PERMANENT seedbed notes. Remove fabric covering ESD and install mulch & ESD plantings. (day 96-100)

8. Upon final stabilization of all disturbed areas on lots 1-7, and with the approval of the Howard County Sediment Control Inspector, convert the sediment trap to the surface sand filter per F-20-041. (day 101-110)

COURDINATE COUSTRUCTION OF STORM DRAIN IN OLD WASHINGTON WHA F - 20 - 041

** IN ORDER TO ALLOW FOR THE ISSUANCE OF USE AND OCCUPANCY PERMITS FOR DOWNSLOPE LOTS THE CONTRACTOR IS TO INSTALL SUPER SILT FONCE ON THE COMMON PROPERTY LINE OF THE UPHILL LOTS.

Table B.1: Temporary Seeding for Site Stabilization

Plant Species	Jecum Shate 1/		eding Rate 1/ Seeding Reco		nmended Seeding Dates by Plant Hardiness Zone 3/		
riant species	lb/ac	lb/1000 ft2	(inches)	5b and 6a	6b	7a and 7b	
Cool-Season Grasses			-				
Annual Ryegrass (Lolium perenné ssp. Multiflorum	40	1.0	0.5		Mar 1 to May 15; Aug 1 to Oct 31		
Barley (Hordeum vulgare)	96	2.2	1.0		Mar 1 to May 15; Aug 1 to Oct 31		
Oats (Avena sativa)	72	1.7	1.0		Mar 1 to May 15; Aug 1 to Oct 31		
Wheat (Triticum aestivum)	120	2.8	1.0		Mar 1 to May 15; Aug 1 to Oct 31		
Cereal Rye (Secale cereale)	112	2.8	1.0		Mar 1 to May 15; Aug 1 to Nov 15		
Warm-Season Grasses						-	
Foxtail Millet (Serataria italica)	30	0.7	0.5	1	May 16 to Jul 31		
Pearl Millet (Pennisetum glaucum	20	0.5	0.5	-	May 16 to Jul 31		

Seeding rates for the warm season grasses are in pounds of Pure Live Seed (PLS). Actual planting rates shall be adjusted to reflect percent seed germination and purity, as tested. Adjustments are usually not needed for the cool-season grasses

Seeding rates listed above are for temporary seedings, when planted alone. When planted as a nurse crop with permanent seed mixes, use 1/3 of the seeding rate listed above for barley, oats, and wheat. For smaller-seeded grasses (annual ryegrass, pearl millet, foxtail millet), do not exceed more than 5% (by weight) of the overall permanent seeding mix. Cereal rye generally should not be used as a nurse crop, unless planting will occur very late fall beyond the seeding dates for other temporary seedings. Cereal rye has allelopathic properties that inhibit the germination and growth of other plants. If it must be used as a nurse crop, seed at 1/3 of the rate listed above.

Oats are the recommended nurse crop for warm-season grasses.

For sandy soils, plant seeds at twice the depth listed above.

The planting dates listed are averages for each Zone and may require adjustment to reflect local conditions, especially near the boundaries of the zone.

Permanent Seeding Summary

	Hardiness Zone (from Fig Seed Misture (from Table		6b Tall Fescue/Kentucky Bl	uegrass	Secretaria de la constanción d	Fertilizer Rate (10-20-20)		Lime Rat
No.	Species	Application Rate (lb/ac.)	Seeding Dates	Seeding Depths	·N	P2O5	K20	rypermonent or annual property of the control of th
	Fescue, Tall	60	Mar 1 to May 15 Aug 1 to Oct 15	1/4 - 1/2 in	45 pounds		-	
9	Bluegrass, Kentucky	40	Mar 1 to May 15 Aug 1 to Oct 15	1/4 - 1/2 in	per acre (1.0 lb/	90 lb/ac (2 lb/	90 lb/ac 2 lb/	2 tons/ (90lb/
				1/4 - 1/2 in	100 sf)	1000 sf)	1000 sf)	1000 s

12.6.23 Adjust S.O.C. For Downhill Lots U&O Permits. NO. DATE Professional Certification. I hereby certify that these docume were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland **BENCHMARK** License No. 45577, Expiration Date: 06-08-2022. ENGINEERS & LAND SURVEYORS & PLANNERS ENGINEERING, INC 8480 BALTIMORE NATIONAL PIKE & SUITE 315 & ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6644 WWW.BEI-CIVILENGINEERING.COM OWNER/BUILDER: **ELKRISE HILI** HARMONY BUILDERS INC LOTS 1-7 AND NON-CREDITED OPEN 4228 COLUMBIA ROAD ELLICOTT CITY, MD 21042

SPACE LOT 8 (PLAT No. 25845-25846) 410-461-0833 TAX MAP: 38, GRID: 08, PARCEL: 198, ZONED: R-12 ELKRIDGE, MD 21075 ELECTION DISTRICT NO. 1 - HOWARD COUNTY, MARYLAND SITE DEVELOPMENT PLAN SEDIMENT AND EROSION CONTROL

RELEVANT FILE NUMBERS: NOTES AND DETAILS ECP-18-026, S-18-004, WP-19-079. P-19-002, HPC-18-06, F-20-041, CONTR.#14-5100-D DATE: OCTOBER, 2021 BEI PROJECT NO:

SCALE:

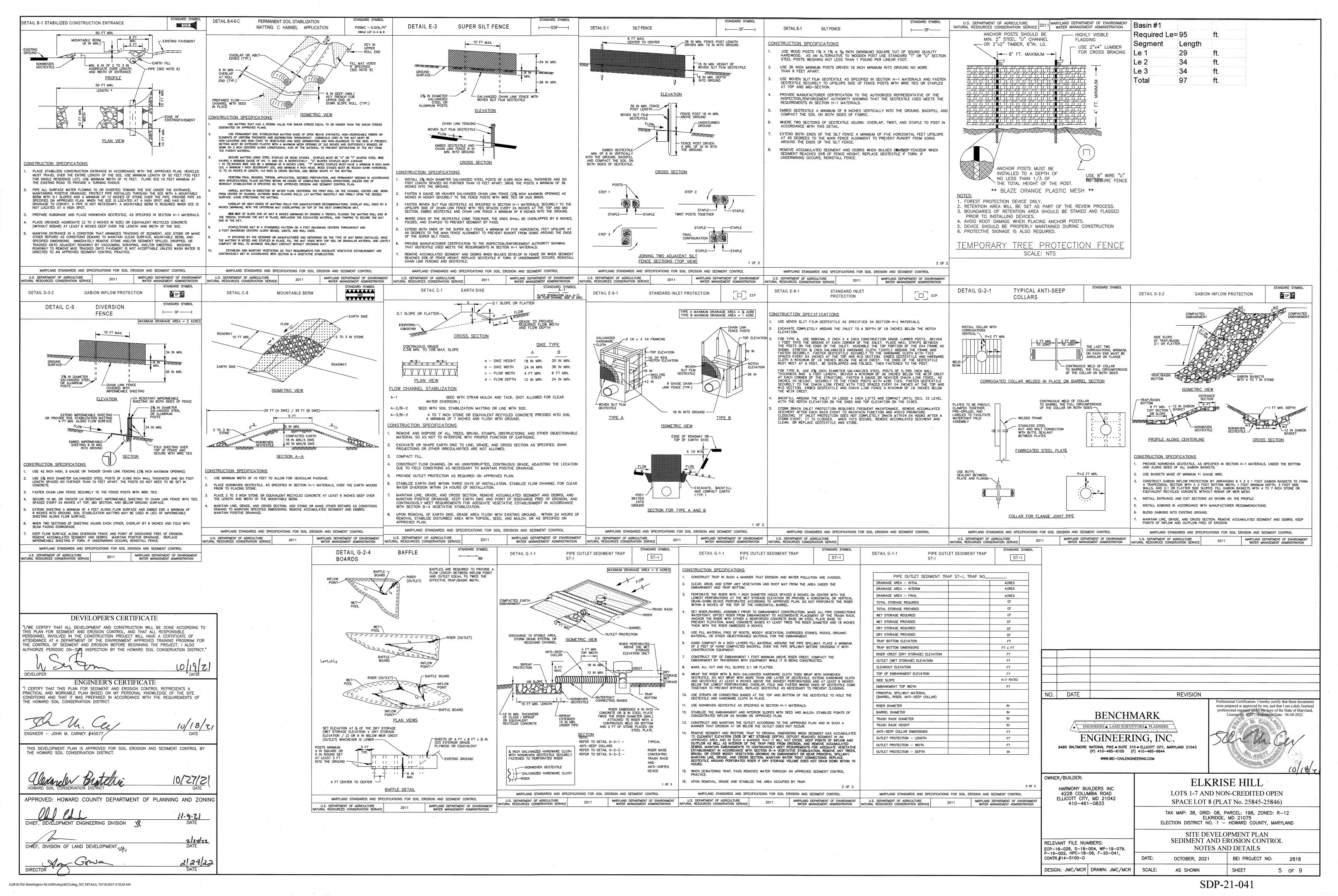
DESIGN: JMC/MCR | DRAWN: JMC/MCR

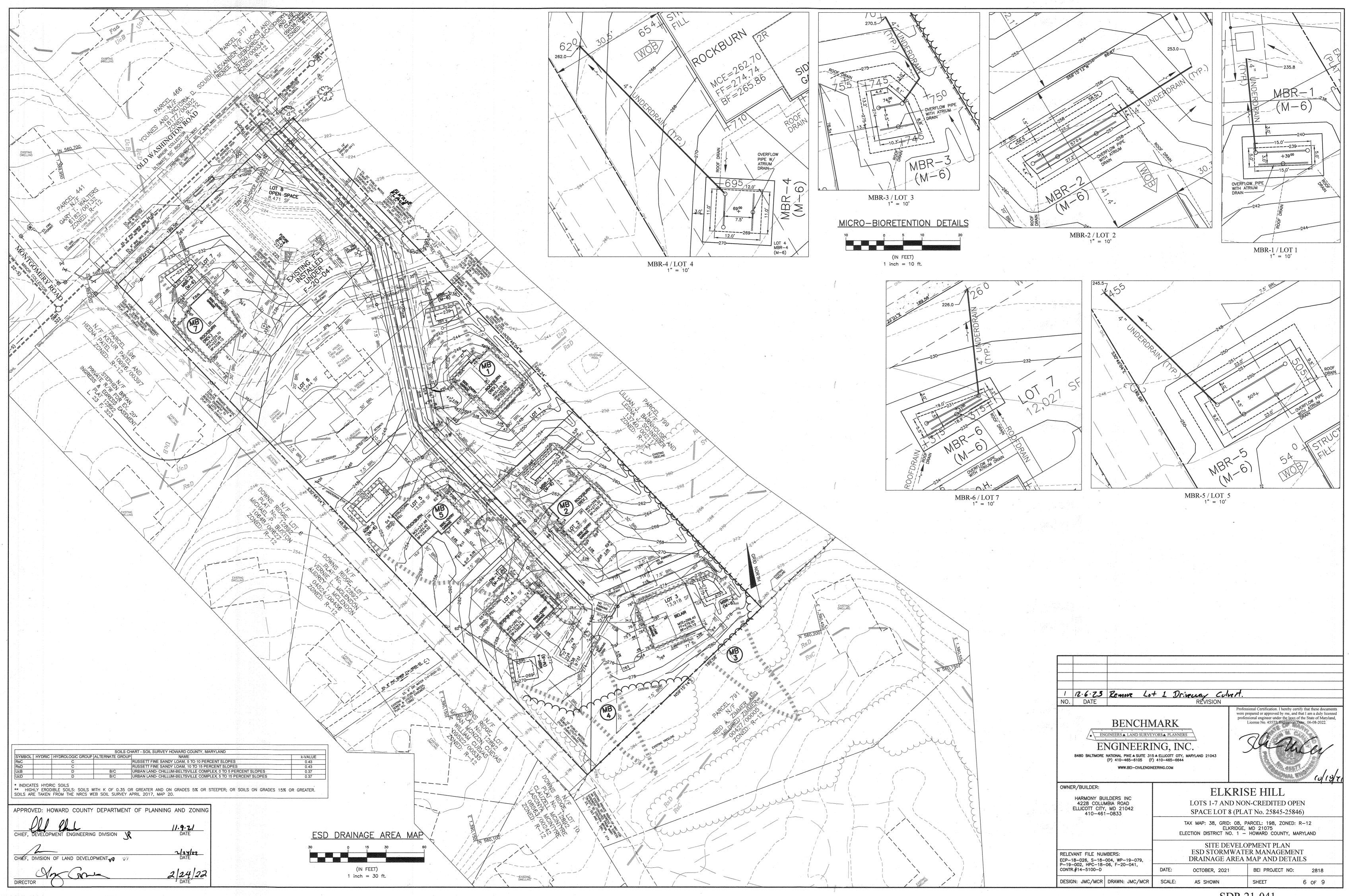
AS SHOWN

2/24/22

2818

4 of 9





CONSTRUCTION SPECIFICATIONS

B.4.C Specifications for Micro-Bioretention. Rain Gardens, Landscape Infiltration & Infiltration Berms

1. Material Specifications:

The allowable materials to be used in these practices are detailed in Table B.4.1.

2. Filtering Media or Planting Soil:

The soil shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the micro-bioretention practice that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The planting soil shall be free of Bermuda grass, Quackgrass, Johnson grass, or other noxious weeds as specified under COMAR 15.08.01.05. The planting soil shall be tested and shall meet the following

Soil Component - Loamy Sand or Sandy Loam (USDA Soil Textural Classification)

Organic Content - Minimum 10% by dry weight (ASTM D 2974). In general, this can be met with a mixture of loamy and (60%-65%) and compost (35% to 40%) or sandy loam (30%), coarse sand (30%), and compost (40%). Clay Content - Media shall have a clay content of less than 5%.

pH Range - Should be between 5.5 - 7.0. Amendments (e.g., lime, iron sulfate plus sulfur) may be mixed into the soil to increase or

There shall be at least one soil test per project. Each test shall consist of both the standard soil test for pH, and additional tests of organic matter, and soluble salts. A textural analysis is required from the site stockpiled topsoil. If topsoil is imported, then a texture analysis shall be performed for each location where the topsoil was excavated.

3. Compaction:

It is very important to minimize compaction of both the base of bioretention practices and the required backfill. When possible, use excavation hoes to remove original soil. If practices are excavated using a loader, the contractor should use wide track or marsh track equipment, or light equipment with turf type 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 refracture the soil profile through the 12 inch compaction zone. Substitute methods must be approved by the engineer. Rototillers typically do not till deep enough to reduce the effects of compaction from heavy equipment.

Rototill 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 (rototilling) base.

When backfilling the topsoil over the sand layer, first place 3 to 4 inches of topsoil over the sand, then rototill 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. Pine 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.

Rootstock of the plant material shall be kept moist during transport and on-site storage. The plant root ball should be planted so 1/8th of the ball is above final grade surface. The diameter of the planting pit shall be at least six inches larger than the diameter of the planting ball. Set and maintain the plant straight during the entire planting process. Thoroughly water ground bed cover after installation

Trees shall be braced using 2" by 2" stakes only as necessary and for the first growing season only. Stakes are to be equally spaced

Grasses and legume seed should be drilled into the soil to a depth of at least one inch. Grass and legume plugs shall be planted following the non-grass ground cover planting specifications.

The topsoil specifications provide enough organic material to adequately supply nutrients from natural cycling. The primary function of the bioretention structure is to improve water quality. Adding fertilizers defeats, or at a minimum, impedes this goal. Only add fertilizer if wood chips or mulch are used to amend the soil. Rototill urea fertilizer at a rate of 2 pounds per 1000 square feet.

6. Underdrains:

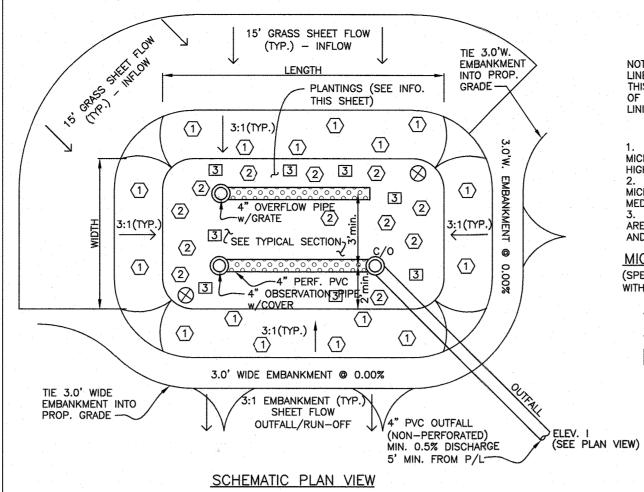
Underdrains should meet the following criteria:

- Pipe- Should be 4" to 6" diameter, slotted or perforated rigid plastic pipe (ASTMF 758, Type PS 28, or AASHTO-M-278) in a
- gravel layer. The preferred material is slotted, 4" rigid pipe (e.g., PVC or HDPE).
- Perforations If perforated pipe is used, perforations should be \%" diameter located 6" on center with a minimum of four holes per row. Pipe shall be wrapped with a \(\frac{1}{2} \) (No. 4 or 4x4) galvanized hardware cloth.
- Gravel The gravel layer (No. 57 stone preferred) shall be at least 3" thick above and below the underdrain.
- The main collector pipe shall be at a minimum 0.5% slope.
- A rigid, non-perforated observation well must be provided (one per every 1,0000 square feet) to provide a clean-out port and monitor performance of the filter.
- A 4" layer of pea gravel (1/8" to 3/8" stone) shall be located between the filter media and underdrain to prevent migration of fines into the underdrain. This layer may be considered part of the filter bed when bed thickness exceeds 24".

The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%. Observation wells and/or clean-out pipes must be provided (one minimum per every 1000 square feet of surface area).

7. Miscellaneous:

These practices may not be constructed until all contributing drainage area has been stabilized



NOTE: FACILITIES MUST BE CONSTRUCTED WITH IMPERMEABLE LINER WHEN INSTALLED WITHIN THE 100' WELL RADIUS THIS LINING SHOULD INCLUDE ENTIRE SIDES AND BOTTOM OF THE EXCAVATION AND EXTEND TO TOP OF EMBANKMENT. LINING ON SIDE SLOPES SHALL BE BELOW TOP SOIL.

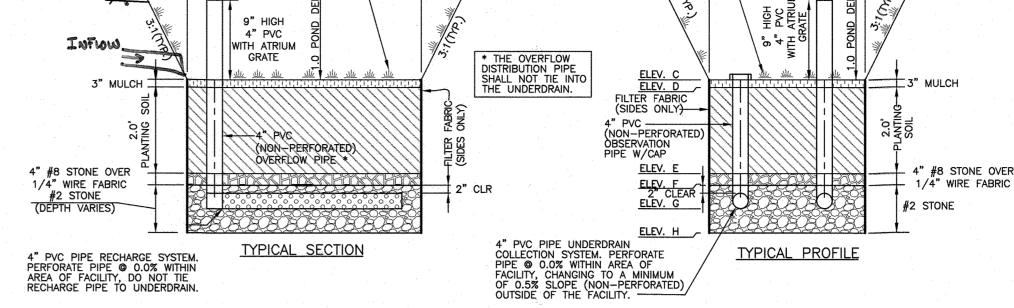
MICROBIORETENTION PLANTING DATA . PLANTINGS WITHIN THE PONDING AREA OF THE MICRO-BIORETENTION FACILITY ARE TO BE OF A MEDIUM TO

PLANTINGS ALONG THE PERIMETER (BERM) AREA OF THE MICRO-BIORETENTION FACILITY ARE TO BE OF A LOW TO MEDIUM WATER TOLFRANCE . AVOID PLANTINGS WITH EXCESSIVE ROOT MASS IN POND AREA OF THE MICRO-BIORETENTION FACILITY NEAR O.B. PIPE

MICROBIORETENTION PLANTING SCHEDULE (SPECIFIC NUMBER OF PLANTINGS SHALL BE DETERMINED WITH FINAL DESIGN AT PLOT PLAN PHASE)

- 1) VINCA MINOR (COMMON PERIWINKLE)
- AJUSTA REPTAS (CREEPING BUNGLEWEED)
- IRIS VERSICOLOR (IRIS) CALLUNA VULGARIS (HEATHER)

(2 PER FACILITY)



WELL/CLEANOUT CAP FLUSH WITH PROPOSED

PROPOSED/EXISTING GRADE

PROTECTIVE LAYER

BIO-RETENTION DIMENSION LEGEND FACILITY NAME TOP OF EMBANKMENT PONDING TOP OF MULCH - D TOP OF SOIL TOP OF STONE FILTER TOP OF STONE STORAGE UNDER DRAIN INVERT BOTTOM OF STONE

OUTFALL ELEVATION

MICRO-BIORETENTION DETAILS (TYPICAL) NOT TO SCALE

CONSTRUCTION SPECIFICATIONS B.4.C SPECIFICATIONS FOR MICRO-BIORETENTION. RAIN GARDENS. LANDSCAPE INFILTRATION & INFILTRATION BERMS

MATERIAL SPECIFICATIONS:
THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.

(30%), AND COMPOST (40%).

FILTERING MEDIA OR PLANTING SOIL:

THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE MICRO-BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT. GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.05. THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:

- SOIL COMPONENT LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURAL CLASSIFICATION ORGANIC CONTENT - MINIMUM 10% BY DRY WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (60%-65%) AND COMPOST (35% TO 40%) OR SANDY LOAM (30%), COARSE SAND
- CLAY CONTENT MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%. PH RANGE - SHOULD BE BETWEEN 5.5 - 7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED INTO THE SOIL TO INCREASE OR DECREASE PH THERE SHALL BE AT LEAST ONE SOIL TEST PER PROJECT. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, AND ADDITIONAL TESTS OF ORGANIC MATTER, AND SOLUBLE SALTS. A TEXTURAL ANALYSIS IS REQUIRED FROM THE SITE STOCKPILED TOPSOIL. IF TOPSOIL IS IMPORTED, THEN A TEXTURE ANALYSIS SHALL BE PERFORMED

COMPACTION:
IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED
OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED AND THE RECEIVED AND THE REQUIRED AND THE REQUIRED AND THE REQUIRED AND THE RECEIVED AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING A LOADER, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TYPE 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 REFRACTURE THE SOIL PROFILE THROUGH THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.

ROTOTILL 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 (ROTOTILLING) BASE.

WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO

WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 120 TO 180, 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 OF

- 4. <u>PLANT MATERIAL:</u>
 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. PINE MULCH AND WOOD CHIPS WILL LOAT 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.

ROOTSTOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON—SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8TH OF THE BALL IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER

TREES SHALL BE BRACED USING 20 BY 20 STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL

LEGUME PLUGS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS. THE TOPSOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS DEFEATS, OR AT A MINIMUM, IMPEDES THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.

GRASSES AND LEGUME SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND

- UNDERDRAINS: UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:
- PIPE- SHOULD BE 40 TO 60 DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTMF 758, TYPE PS 28, OR AASHTO-M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 40 RIGID PIPE (E.G., PVC OR HDPE).

 • PERFORATIONS — IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE %" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A ¼" (NO. 4 OR 4X4)
- GALVANIZED HARDWARE CLOTH. GRAVEL - THE GRAVEL LAYER (NO. 57 STONE PREFERRED) SHALL BE AT LEAST 30 THICK ABOVE AND BELOW
- THE UNDERDRAIN THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE. · A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,0000 SQUARE FEET) TO
- PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE FILTER. A 40 LAYER OF PEA GRAVEL (1/6" TO 3/6" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".
- THE MAIN COLLECTOR PIPE FOR UNDERDRAIN SYSTEMS SHALL BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.5%. OBSERVATION WELLS AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (ONE MINIMUM PER EVERY 1000 SQUARE FEET 7. <u>MISCELLANEOUS:</u>
 THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED

ESD STORMWATER MANAGEMENT SUMMARY TABLE

OPERATION AND MAINTENANCE SCHEDULE FOR MICRO-BIORETENTION (M-6)

- A. 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 REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II, TABLE A.4.1 AND 2.
- B. THE OWNER SHALL PERFORM A PLANT INSPECTION IN THE 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 REPLACE ALL DEFICIENT STAKES AND WIRES.
- C. 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.
- D. THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

PERFORATED PIPE PVC SCH 40 3/8" HOLES

4" O/C 90 DEGREES AROUND

LEAF SCREEN-

PVC REDUCER-COUPLING (IF REQUIRED)

12" SAND FILTER LAYER-

ASTM C33 CLEAN, FINE WASHED AGGREGATE

SAND. ROTOTILL 1' BELOW TRENCH BOTTOM

. ALL PIPES SHOULD BE SCH 40 PVC 4" MIN DRYWELLS MUST BE A MINIMUM OF

AND SHOULD BE LOCATED TO MINIMIZE ANY

-10' FROM BUILDING FOUNDATION

4 TRENCH MAY NOT BE INSTALLED IN FIL

-30' FROM SEPTIC FIELD

-100' FROM WELL LOCATION

FOUNDATION

MANUFACTURED SAND IS NOT ACCEPTABLE IN STEEL FOOT PLATE

-TYPICAL DOWNSPOUT

W/ REMOVABLE CAP

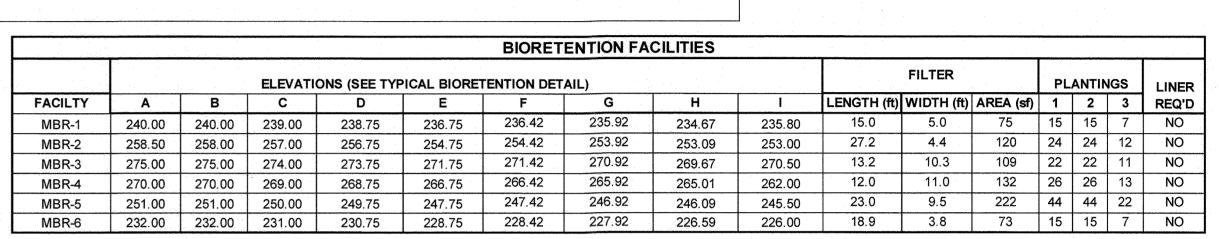
SPLASH BLOCK

COUPLING .

STEEL BOLT W/ NUT

18"x18"x1/2"~

- SPLASH BLOCK



GRADE

4" #8 STONE OVER

#2 STONE

SEE TABLE THIS ELEV. B

PLUS 2 CALLUNA VULGARIS (HEATHER) PER FACILITY

MATERIAL	SPECIFICATION	SIZE	NOTES:
PLANTINGS	SEE APPENDIX A; TABLE A.4	N/A	PLANTINGS ARE SITE SPECIFIC
PLANTING SOIL (2.0' TO 4.0' DEEP)	LOAMY SAND 60-65% COMPOST 35-40% OR SANDY LOAM 30% COARSE SAND 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 2974		
MULCH	SHREDDED HARDWOOD	N/A	AGED 6 MONTHS, MINIMUM, NO PINE OR WOOD CHIF
GEOTEXTILE (CLASS "C")		N/A	PE TYPE 1 NONWOVEN
GEOTEXTILE (1/4" WIRE MESH)		1/4" WIRE MESH	1/4" WIRE MESH
UNDERDRAIN GRAVEL	AASHTO M-43	NO. 57 OR NO. 6 0.375" TO 0.750"	
JNDERDRAIN PIPING	F758, TYPE PS28 OR AASHTO M-278	4" TO 6" RIGID SCH.40 PVC, SDR35 OR HDPE	3/8" PERF. @ 6" O/C, 4 HOLES PER ROW; MINIMU OF 2" OF GRAVEL OVER PIPES, NOT NECESSARY UNDERNEATH PIPES.
MPERVIOUS LINER	ASTM-D-4833 (THICKNESS) ASTM-D-412 (TENSILE STRENGTH 1,100 LB., ELONGATION 200%) ASTM-D-624 (TEAR RESISTANCE - 150 LB./IN) ASTM-D-471 (WATER ADSORPTION: +8 TO -2% MASS)	30 MIL. THICK	LINER TO BE ULTRAVIOLET RESISTANT. A GEOTEXTILE FABRIC SHOULD BE USED TO PROTECT THE LINER FROM PUNCTURE.
GEOTEXTILE	ASTM-D-4833 (PUNCTURE STRENGTH 125LB) ASTM-D-4632 (TENSILE STRENGTH 300 LB.)		

(NO FABRIC AT BOTTOM OF TRENCH) MSHA CLASS "SE" TRENCH FILLED WITH - WRAPPED W/ 1/4" /

			DRYWELL D	IMENSION CHA	RT
Dry Well	Length (ft)	Width (ft)	Depth of Media (Ft)	Bottom of Stone Elevation	Bottom of Sand Elevation
LOT 4	6.0	6.0	5.0	260.00	259.00

DESIGN: JMC/MCR DRAWN: JMC/MCR

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED (M-5) DRY WELLS

GROUND WATER

TYPICAL SECTION

NOT TO SCALE

ROOF DRAIN DRYWELL - PRIVATE

HO.CO. STD D-9.01

- WELD

1. The monitoring wells and structures shall be inspected on a quarterly basis and after

2. Water levels and sediment build up in the monitoring wells shall be recorded over a period of several days to insure trench drainage.

3. A log book shall be maintained to determine the rate at which the facility drains

4. When the facility becomes clogged so that it does not drain down within the 72 hour time period, corrective action shall be taken.

compliance with operation and maintenance criteria.

5. The maintenance log book shall be available to Howard County for inspection to insure

6. 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 PRIVATELY OWNED AND MAINTAINED DISCONNECTION OF ROOFTOP RUNOFF (N-1), DISCONNECTION OF NON-ROOFTOP RUNOFF (N-2)

MAINTENANCE OF AREAS RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPED AREAS. THE OWNER SHALL ENSURE THE AREAS RECEIVING RUNOFF ARE PROTECTED FROM COMPACTION OR DEVELOPMENT OF IMPERVIOUS AREA. IN COMMERCIAL AREAS, FOOT TRAFFIC SHOULD BE DISCOURAGED AS WELL.



Top of

Proposed

			3.	10	2/1			
OWNER/BUILDER: HARMONY BUILDERS INC 4228 COLUMBIA ROAD ELLICOTT CITY, MD 21042 410-461-0833	ELKRISE HILL LOTS 1-7 AND NON-CREDITED OPEN SPACE LOT 8 (PLAT No. 25845-25846)							
	TAX MAP: 38, GRID: 08, PARCEL: 198, ZONED: R-12 ELKRIDGE, MD 21075 ELECTION DISTRICT NO. 1 — HOWARD COUNTY, MARYLAND							
RELEVANT FILE NUMBERS: ECP-18-026, S-18-004, WP-19-079,	SITE DEVELOPMENT PLAN ESD STORMWATER MANAGEMENT NOTES AND DETAILS							
P-19-002, HPC-18-06, F-20-041, CONTR.#14-5100-D	DATE:	OCTOBER, 2021		BEI PROJECT NO:	281			

SCALE:

AS SHOWN

	Practice		DA	Imp Area (sf)	% lmp	Rv	Af (sf)		ESDv		Pe	Rev (ac-ft)			
			(sf)			rv	Required Provided 2% DA		2% DA?	Required	Provided	Provided	Required	Provided	Ė
	Exisitng (F-1) Surface Sand Filter	#8	84,947	22,943	27%	0.29	311	1040	PASS	2490	2522	1.62		0.0096	
	(M-6) Micro Bio-Retention	#1	2,457	1,535	62%	0.61	49	75	PASS	150	190	1.52		0.0009	ĺ
	(M-6) Micro Bio-Retention	#2	2,841	1,405	49%	0.50	57	120	PASS	141	273	2.33		0.0009	Ī
ZONING	(M-6) Micro Bio-Retention	#3	5,306	1,609	30%	0.32	106	109	PASS	171	241	1.69	overall site	0.0013	ĺ
ZOMING	(M-6) Micro Bio-Retention	#4	6,151	1,699	28%	0.30	123	132	PASS	184	292	1.91	obligation	0.0011	Ī
21	(M-6) Micro Bio-Retention	#5	7,342	2,393	33%	0.34	147	222	PASS	252	450	2.14		0.0017	Ī
TE	(M-6) Micro Bio-Retention	#6	2,414	1,473	61%	0.60	48	73	PASS	145	212	1.76		0.0009	Ī
	(M-5) Dry Well	#7	630	630	100%	0.95	n/a	n/a		60	72	1.44		0.0017	Ī
124/22	Totals per individual Drainage Areas	\longrightarrow	111,458	33,057	30%	0.32	841	1770		3592	4253	1.44	0.0096	0.0162	ĺ
TE	Totals per Whole Site	\longrightarrow	102,010	26,223	26%		•			2870	4253				
		······································				ı					•	1			

* Provided Q10 = 7237 * - This storage is all the areas of Micro-Bioretentions and the total storage provide within the composite "F-1"

YHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING A

CHIEF, DEVELOPMENT ENGINEERING DIVISION

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Ownership Private

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