GENERAL NOTES

- THIS PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVER OR ALTERNATIVE COMPLIANCE HAVE BEEN APPROVED.
- . THE SUBJECT PROPERTY IS ZONED R-12 PER THE OCTOBER 6, 2013 COMPREHENSIVE
- 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
- 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. 38DB AND 38D6 WERE USED FOR THIS PROJECT. . TRACT BOUNDARY IS BASED ON A FIELD SURVEY PERFORMED BY BENCHMARK ENGINEERING, INC. IN JULY, 2019.
- THE EXISTING TOPOGRAPHY SHOWN IS BASED ON FIELD SURVEY PERFORMED BY BENCHMARK ENGINEERING, INC. IN JULY, 2019.
- . THE EXISTING UTILITIES SHOWN ARE BASED ON FIELD LOCATIONS, SIGNED CONTRACT DRAWINGS AND HOWARD COUNTY GIS.
- 8. THIS PROPERTY IS NOT LOCATED ALONG A SCENIC ROAD.
- 9. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO CEMETERIES, BURIAL GROUNDS OR HISTORIC STRUCTURES LOCATED ON THE SUBJECT PROPERTY.
- O. STORMWATER MANAGEMENT ENVIRONMENTAL SITE DESIGN (ESD) HAS BEEN PROVIDED IN ACCORDANCE WITH THE "MARYLAND DEPARTMENT OF ENVIRONMENT STORMWATER MANAGEMENT ACT OF 2007" AND THE "HOWARD COUNTY DESIGN MANUAL VOLUME I, CHAPTER 5" TO THE MAXIMUM EXTENT PRACTICAL (MEP) VIA ONE (M-6) MICRO BIO-RETENTION PRACTICE, TWENTY TWO (M-5) DRY WELLS, AND ONE SURFACE SAND FILTER (F-1) WITH UNDERGROUND STORMWATER MANAGEMENT STORAGE FOR THE 10 AND 100 YEAR STORM. THE MICRO BIO-RETENTION FACILITY AND DRYWELLS SHALL BE PRIVATELY OWNED AND MAINTAINED BY THE OWNER OF LOT ON WHICH THEY RESIDE. THE SURFACE SAND FILTER FACILITY SHALL BE PRIVATELY OWNED AND JOINTLY MAINTAINED WITH HOWARD COUNTY DPW.
- 11. THE GEO-TECHNICAL REPORT WAS PREPARED BY GEOLAB DATED AUGUST, 2019.
- 12. THIS PROJECT IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
- 13. WATER AND SEWER IS PUBLIC. THE DRAINAGE AREA IS THE DEEP RUN OF THE PATAPSCO THE CONTRACT NUMBERS ARE: 256 W & S
- 4. A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT AS THIS PROJECT DOES NOT FALL WITHIN THE LOCATION GUIDELINES LISTED IN THE DESIGN MANUAL VOLUME III-ROADS AND
- 15. THE TRAFFIC STUDY WAS PREPARED BY MARS GROUP 5/6/18 AND WAS APPROVED UNDER S-19-004
- 16. ALTERNATIVE COMPLIANCE, WP-19-053 TO REQUEST RELIEF FROM SECTION 16.1205(A)(7) SPECIMEN TREES RETENTION; SECTION 16.116(B) STEEP SLOPE DISTURBANCE; SECTION 16.120(B)(4)(III)(A) STEEP SLOPES ON RESIDENTIAL LOTS; WAS APPROVED BY HOWARD COUNTY DIRECTOR OF PLANNING AND ZONING DATED APRIL 15, 2019. APPROVAL IS SUBJECT TO THE FOLLOWING CONDITIONS:
- 1. STEEP SLOPE DISTURBANCE IS LIMITED TO THOSE AREAS SHOWN ON THE WP EXHIBIT FOR WP-19-053. ANY PROPOSAL TO IMPACT ADDITIONAL STEEP SLOPE AREA WILL REQUIRE A NEW ALTERNATIVE COMPLIANCE REQUEST OR AN AMENDMENT TO THIS ALTERNATIVE COMPLIANCE.
- 2. ALTERNATIVE COMPLIANCE APPROVAL IS LIMITED TO THE REMOVAL OF SPECIMEN TREES #1, 3 & 5 AS DEPICTED ON THE ALTERNATIVE COMPLIANCE EXHIBIT. ANY PROPOSAL TO REMOVE ADDITIONAL SPECIMEN TREES WILL REQUIRE A NEW ALTERNATIVE COMPLIANCE REQUEST OR AN AMENDMENT TO THIS ALTERNATIVE COMPLIANCE REQUEST.
- 3. ALL ATTEMPTS MUST BE MADE TO PRESERVE SPECIMEN TREE #3. INDIVIDUAL TREE PROTECTION DEVICES (TREE FENCING) SHALL BE PLACED COMPLETELY AROUND SPECIMEN TREE #3 PRIOR TO THE COMMENCEMENT OF ANY GRADING. ROOT PRUNING WILL OCCUR. THESE MEASURES SHALL BE OUTLINED IN THE PRE-CONSTRUCTION MANAGEMENT PLAN OF THE FINAL FOREST CONSERVATION PLAN (FCP) AND WITHIN THE SEQUENCE OF CONSTRUCTION PROVIDED ON THE FINAL PLAN FÓR "THE AERIE IN ELKRIDGE".
- 4. A MINIMUM OF 6 ADDITIONAL, NATIVE, 2-3" CALIPER TREES SHALL BE PROVIDED ON SITE AS PART OF THE MITIGATION FOR THE SPECIMEN TREE REMOVAL. THIS MITIGATION WILL BE ADDRESSED WITH THE PROJECT KNOWN AS "THE AERIE IN ELKRIDGE" AND WILL BE IN ADDITION TO ANY REQUIRED LANDSCAPE OR FOREST CONSERVATION PLANTINGS.
- 5. THE MITIGATION PLANTINGS SHOULD BE PLACED (IF POSSIBLE) WITHIN THE REAR YARDS OF LOTS 5, 10 AND 12.
- 6. THE EXISTING DRIVEWAY SHALL BE REMOVED AND THE AREA STABILIZED UNDER THE
- 17. A WAIVER TO THE DESIGN MANUAL, VOLUME III WAS APPROVED MARCH 25, 2019. THE WAIVERS GRANTED WERE FOR MINIMUM RADII. CURVE LENGTH, GEOMETRIC DESIGN AND MINIMUM CURB FILLET, AND INCLUDED SECTION 2.3.A.1.A; SECTION 2.3.A.1.C AND APPENDIX A. THE APPROVAL WAS SUBJECT TO INCREASING THE PAVEMENT WIDTH AT THE SUB-STANDARD CURVES TO 26' WITH RESTRICTED PARKING ON BOTH SIDES, AND WITH THE APPROVAL FROM THE DEPARTMENT OF FIRE AND RESCUE SERVICES.
- 18. A PRE-SUBMISSION COMMUNITY MEETING WAS HELD ON 11/28/18, 6:00 PM AT THE ELKRIDGE LIBRARY, 6540 WASHINGTON AVE. ELKRIDGE MD.
- 19. SUBJECT PROPERTY IS LOCATED WITHIN THE BOUNDARIES OF THE BALTIMORE/WASHINGTON INTERNATIONAL AIRPORT (BWI) HEIGHT RESTRICTIONS BUT NOT LOCATED WITHIN THE BWI NOISE ZONE. APPROVAL DOCUMENTATION WILL BE PROVIDED BY THE (MAA) MARYLAND AVIATION ADMINISTRATION FOR THIS PROJECT UPON APPROVAL OF THE FINAL PLAN (F-20-070).
- 20. 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.
- 21. OPEN SPACE WILL BE PROVIDED WITHIN LOT 13 AS INDICATED ON THIS PLAN.
- 22. ECP-19-028 WAS APPROVED BY DEVELOPMENT ENGINEERING DIVISION AND MYLARS WERE SIGNED ON 5/3/19.
- 23. THE FOREST CONSERVATION EASEMENT HAS BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION ACT, NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT, HOWEVER FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED. COMPLIANCE WITH THE REQUIREMENTS OF SECTION 16.200 OF THE HOWARD COUNTY CODE FOR FOREST CONSERVATION IS PROVIDED VIA THE ON-SITE RETENTION OF 0.7 ACRES OF FOREST WITHIN A FOREST CONSERVATION EASEMENT AND BY THE ON-SITE REFORESTATION OF 1.4 ACRES. SURETY, IN THE AMOUNT OF \$8,276.40, MUST BE POSTED WITH THE DPW DEVELOPER'S AGREEMENT.
- 24. A PRIVATE RANGE OF ADDRESS SIGN ASSEMBLY SHALL BE FABRICATED AND INSTALLED BY HOWARD COUNTY BUREAU OF HIGHWAYS AT THE DEVELOPERS/OWNERS EXPENSE. CONTACT HOWARD COUNTY TRAFFIC DIVISION AT 410-313-5752 FOR DETAILS AND COST ESTIMATES.
- 25. TRAFFIC CONTROL DEVICES:
- a) THE R1-1 ("STOP") SIGN AND THE STREET NAME SIGN (SNS) ASSEMBLY FOR THIS
- DEVELOPMENT MUST BE INSTALLED BEFORE THE BASE PAVING IS COMPLETED. b) THE TRAFFIC CONTROL DEVICE LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE FIELD APPROVED BY HOWARD COUNTY TRAFFIC DIVISION (410-313-2430) PRIOR TO THE INSTALLATION OF ANY OF THE TRAFFIC CONTROL DEVICES.) ALL TRAFFIC CONTROL DEVICES AND THEIR LOCATIONS SHALL BE IN ACCORDANCE WITH

THE LATEST EDITION OF THE "MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL

-) 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.
- APPROVED: DEPARTMENT OF PUBLIC WORKS CHIEF, BUREAU OF HIGHWAYS CHIEF, DEVELOPMENT ENGINEERING DIVISION 100

- 26. LANDSCAPING IS PROVIDED IN ACCORDANCE WITH A CERTIFIED LANDSCAPE PLAN INCLUDED WITH THE ROAD CONSTRUCTION PLAN SET, IN ACCORDANCE WITH SECTION 16.124 OF THE A COUNTY CODE AND THE LANDSCAPE MANUAL. THE APPLICANT SHALL OBTAIN MARYLAND DEPARTMENT OF THE ENVIRONMENT PERMITTING AND REFERENCE PERMIT NUMBER ON THE PLAN SUBMISSION. APPROVAL TO REMOVE SPECIMEN TREES IS LIMITED TO TREES #1,3 AND 5, AND SIX MITIGATION TREES (3" CALIPER MIN.) SHALL BE PROVIDED AND BONDED WITH THE LANDSCAPING. LANDSCAPING IS PROVIDED WITH A CERTIFIED LANDSCAPE PLAN IN ACCORDANCE ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL. FINANCIAL POSTING OF SURETY FOR REQUIRED LANDSCAPING IN ACCORDANCE WITH SECTION 16.124 OF THE LANDSCAPE MANUAL IN THE AMOUNT OF \$11,700.00 FOR 33 SHADE TREES AND 6 MITIGATION PLANTINGS. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING MUST BE POSTED AS PART OF THE DPW
- 27. DRIVEWAYS SHALL BE PROVIDED PRIOR TO ISSUANCE OF A USE AND OCCUPANCY PERMIT FOR ANY NEW DWELLINGS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS
- a) WIDTH 12' (16' SERVING MORE THAN ONE RESIDENCE). b) SURFACE - 6" OF COMPACT CRUSHER RUN BASE WITH TAR AND CHIP
- COATING (1-1/2" MIN.)c) GEOMETRY - MAXIMUM 15% GRADE, MAXIMUM 10% GRADE CHANGE AND MINIMUM 45' TURNING RADIUS.
- d) STRUCTURES (CULVERTS/BRIDGES) CAPABLE OF SUPPORTING 25 GROSS TONS (H25 LOADING). e) DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOODPLAIN
- WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY. f) STRUCTURE CLEARANCES - MINIMUM 12 FEET. g) MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE.
- 28. HOWARD COUNTY STANDARD DETAILS R-6.03 AND R-6.05 SHALL BE UTILIZED FOR THE DRIVEWAY APRONS.
- 29. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS, STREAMS, THEIR REQUIRED BUFFERS, 100YR FLOODPLAIN, STEEP SLOPES OR FOREST CONSERVATION EASEMENTS. EXCEPT AS APPROVED BY THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.
- 30. FLAG AND PIPESTEM LOTS, REFUSE COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE ARE PROVIDED TO THE JUNCTION OF THE FLAG OR PIPESTEM AND ROAD RIGHT-OF-WAY LINE AND NOT ONTO THE PIPESTEM LOT DRIVEWAY. TRASH COLLECTION FOR LOTS 7-11 WILL BE AT THE INTERSECTION OF USE-IN-COMMON AND T-TURNAROUND AND WITH WITHIN ROW.
- 31. WATER AND SEWER SERVICE TO THESE LOTS WILL BE GRANTED UNDER THE PROVISIONS OF SECTION 18.122.B OF THE HOWARD COUNTY CODE.
- 32. PUBLIC WATER AND SEWAGE ALLOCATION WILL BE GRANTED AT TIME OF ISSUANCE OF BUILDING PERMIT IF CAPACITY IS AVAILABLE AT THAT TIME.
- 33. RESERVATION OF PUBLIC UTILITY AND FOREST CONSERVATION EASEMENTS DEVELOPER RESERVES UNTO ITSELF, ITS SUCCESSORS AND ASSIGNS, ALL EASEMENTS SHOWN ON THIS PLAN FOR WATER. SEWER. STORM DRAINAGE OTHER PUBLIC UTILITIES AND FOREST CONSERVATION (DESIGNATED AS "FOREST CONSERVATION AREA") LOCATED IN. ON OVER AND THROUGH LOTS/PARCELS. ANY CONVEYANCES OF THE AFORESAID LOTS/PARCELS. DEVELOPER SHALL EXECUTE HEREIN RESERVED, WETHER OR NOT EXPRESSLY STATED IN THE DEED(S) CONVEYING SAID LOTS/PARCELS. DEVELOPER SHALL EXECUTE AND DELIVER DEEDS FOR THE EASEMENTS HEREIN RESERVED TO HOWARD COUNTY. UPON COMPLETION OF THE PUBLIC UTILITIES AND THEIR ACCEPTANCE BY HOWARD COUNTY, AND IN THE CASE OF THE FOREST CONSERVATION EASEMENT(S), UPON COMPLETION OF THE DEVELOPER'S OBLIGATIONS UNDER THE FOREST CONSERVATION INSTALLATION AND MAINTENANCE AGREEMENT EXECUTED BY THE DEVELOPER AND THE COUNTY, AND THE RELEASE OF THE DEVELOPER'S SURETY POSTED WITH SAID AGREEMENT. THE COUNTY SHALL ACCEPT THE EASEMENTS AND THE DEED(S) OF EASEMENT IN THE LAND RECORDS OF HOWARD COUNTY.
- 34. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- 5. 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.
- 36. THE USE-IN-COMMON ACCESS AND MAINTENANCE AGREEMENT FOR LOTS 6-11 SHALL BE RECORDED SIMULTANEOUSLY WITH THE RECORDATION OF THE
- 37.THE ARTICLES OF INCORPORATION FOR THE HOMEOWNERS ASSOCIATION WERE ACCEPTED BY THE STATE DEPARTMENT OF ASSESSMENTS AND TAXATION ON JANUARY 13, 2021 ID#212484555.
- 38. THIS PROJECT IS SUBJECT TO SECTION 13.402 OF THE COUNTY CODE FOR MODERATE INCOME HOUSING UNITS (MIHU). PER SECTION 13.402C.e., THIS REQUIREMENT SHALL BE MET BY FEE-IN-LIEU PAYMENT IN A AMOUNT THAT IS TO BE CALCULATED BY THE DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS AT THE TIME OF BUILDING PERMIT. THE FEE-IN-LIEU SHALL BE PAID FOR ALL LOTS/RESIDENTIAL UNITS WITHIN THIS SUBDIVISION AT THE TIME OF BUILDING PERMIT ISSUANCE.
- 39. IF EXISTING WELLS AND SEPTIC ARE FOUND DURING CONSTRUCTION IT SHALL BE PROPERLY ABANDONED WITH DOCUMENTATION SENT TO THE HEALTH DEPARTMENT PRIOR TO HEALTH APPROVAL OF THIS PLAN.
- 40. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS
- 41. STREET LIGHT PLACEMENT AND TYPE OF FIXTURES AND POLES SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (2017), SECTION 2.13. A MINIMUM OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET
- 42. THE EXISTING SEPTIC SYSTEM MUST BE PROPERLY ABANDONED WITH DOCUMENTATION SENT TO THE HEALTH DEPARTMENT PRIOR TO THE HEALTH DEPARTMENT SIGNATURE APPROVAL OF THIS PLAN.
- 43. HOWARD COUNTY RESERVES THE RIGHT IN THE FUTURE TO CONSTRUCT AND MAINTAIN A PUBLIC PEDESTRIAN PATHWAY WITHIN OPEN SPACE LOT 13. THE PATHWAY IS INTENDED TO TRAVERSE FROM SOUTH HANOVER ROAD, EAST ALONG THE EDGE OF THE EXISTING FOREST CONSERVATION EASEMENT, TO THE SOUTHEAST CORNER OF THE PROPERTY WHERE THERE IS AN EXISTING PUBLIC UTILITY EASEMENT. ANY ACTIVITY IN THE EXISTING FOREST RETENTION EASEMENT SHALL COMPLY WITH SECTION 4.2.4 OF THE HOWARD COUNTY FOREST CONSERVATION

SITE DATA TABULATION

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

2) AREA TABLILATION

- b. LOCATION: TAX MAP 38 GRID 14 PARCEL 232
- c. APPLICABLE DPZ FILE REFERENCES: ECP-19-028. S-19-004, WP-19-053, P-20-003

AREA OF PROPOSED PUBLIC ROAD

- d. DEED REFERENCE: L. 18048 F. 6 e. PROPOSED USE OF SITE: 12 NEW SFD DETACHED RESIDENCES. f. PROPOSED WATER AND SEWER: PUBLIC WATER AND PUBLIC SEWER
- TOTAL AREA OF SITE AREA OF 100 YEAR FLOODPLAIN (APPROX.) .. 0.00 Ac.± AREA OF STEEP SLOPES ON-SITE (25% OR GREATER).. 1.07 Ac.± NET AREA OF SITE . 4.18 Ac.± AREA OF THIS PLAN SUBMISSION 5.25 Ac.± LIMIT OF DISTURBANCE (APPROX.) 4.30 Ac.± AREA OF PROPOSED BUILDABLE LOTS. .. 2.42 Ac.±

 $0.30 \text{ Ac.} \pm$

. 0.57 Ac.±

2,400 SF

AREA OF PROPOSED PUBLIC R/W DEDICATION 3) UNIT/LOT TABULATION

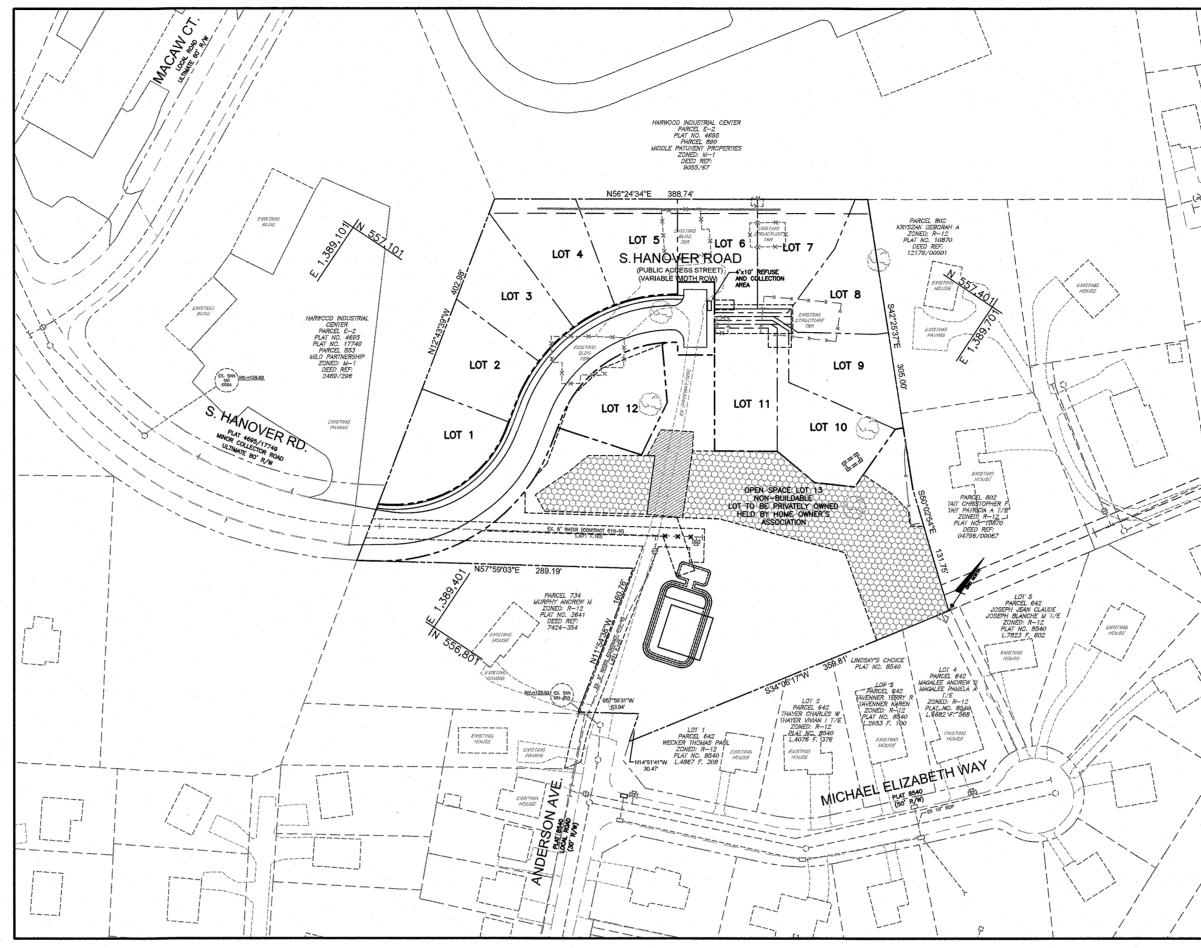
RECREATIONAL OPEN SPACE (200 SF/UNIT)..

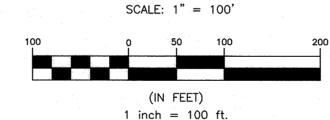
- TOTAL NUMBER OF BUILDABLE LOTS (8,400 SF MIN, LOT SIZE). b. TOTAL NUMBER OF OPEN SPACE LOTS
- 4) OPEN SPACE REQUIRED OPEN SPACE (FULL OBLIGATION 30%)... OPEN SPACE PROVIDED . 2.25 Ac.± NON-CREDIT OPEN SPACE. 2.25 Ac.± CREDITED OPEN SPACE... PERCENT OF OPEN SPACE PROVIDED.

THE AERIE IN ELKRIDGE

LOTS 1-12 AND OS LOT 13 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

FINAL CONSTRUCTION PLANS





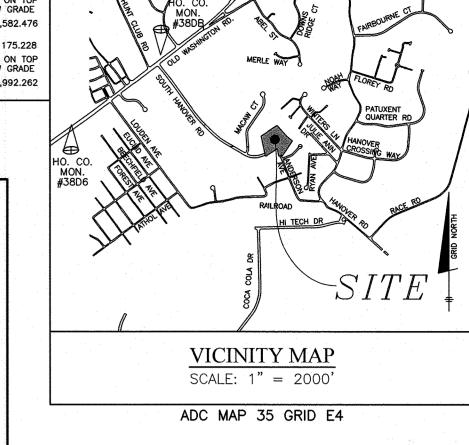
	STORMWATER MANAGME	NT PRACTICES	
LOT NO.	ADDRESS	DRYWELLS (M-5)	MICRO- BIORENTION (M-6)
1	6375 S. HANOVER RD.	2	0
2	6379 S. HANOVER RD.	2	0
3	6383 S. HANOVER RD.	2	0
4	6387 S. HANOVER RD.	2	0
5	6391 S. HANOVER RD.	2	. 0
6	6395 S. HANOVER RD.	2	0
7	6399 S. HANOVER RD.	2	0
8	6403 S. HANOVER RD.	2	. 0
9	6402 S. HANOVER RD.	2	0
10	6498 S. HANOVER RD.	0	1
11	6394 S. HANOVER RD.	2	0
12	6386 S. HANOVER RD.	2	0

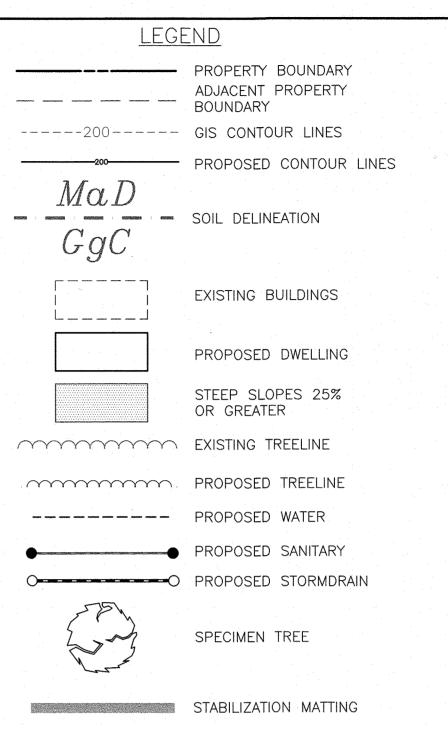
*SURFACE SAND FILTER FACILITY SHALL TREAT THE PUBLIC ROAD AND PORTIONS OF THE LOTS. IT ALSO PROVIDES 10 AND 100 YEAR MANAGEMENT.

	N	INIMUM LOT SIZE CH	ART	
LOT NO.	GROSS AREA (SF)	SS AREA (SF) PIPESTEM (SF)		LOT SIZE
-			SQUARE FEET	ACRES
1	9,228	0	9,228	0.21
2	8,370	0	8,370	0.19
3	8,549	0	8,549	0.20
4	9,383	. 0	9,383	0.22
5	9,013	0 .	9,013	0.21
6	8,440	0	8,440	0.19
7	8,610	179	8,431	0.19
8	8,735	246	8,489	0.19
9	8,760	327	8,433	0.19
10	9,438	640	8,798	0.20
11	8,601	0	8,601	0.20
12	8,413	0	8,413	0.19

BENCH MARKS (NAD '83) HO, CO, #38DB ELEV. 192.13 STAMPED (BRASS OR ALUMINUM) DISC SET ON TOP OF A CONCRETE COLUMN 1" OR 2" BELOW GRADE N 558,427.282 E 1,386,582.476

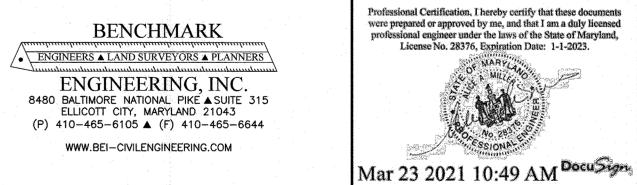
HO. CO. #38D6 ELEV. 175.228 STAMPED (BRASS OR ALUMINUM) DISC SET ON TOP OF A CONCRETE COLUMN 1" OR 2" BELOW GRADE N 557 155 459 E 1,384,992.262





	SHEET INDEX
NO.	DESCRIPTION
1	COVER SHEET
2	FINAL LAYOUT PLAN
3	FINAL ROAD PROFILES S. HANOVER ROAD
4	FINAL GRADING, SEDIMENT AND EROSION CONTROL PLAN
5	FINAL GRADING AND SEDIMENT AND EROSION CONTROL , NOTES AND DETAILS
6	FINAL STORMDRAIN DRAINAGE AREA MAP
7	FINAL STORMDRAIN PROFILES
8	FINAL STORMDRAIN PROFILES
9	STORMWATER MANAGEMENT DRAINAGE AREA MAP
10	STORMWATER MANAGEMENT PLAN, PROFILE, NOTES AND DETAILS
11	STORMWATER MANAGMENT NOTES AND DETAILS
12	STORMWATER MANAGEMENT NOTES AND DETAILS
13	FINAL LANDSCAPE PLAN AND SOILS MAP
14	FINAL FOREST CONSERVATION PLAN
15-17	UNDERGROUND STORMWATER MANAGEMENT (R-TANKS)

MODERATE INCOME HOUSING UNIT (M APPLICATION EXEMPTIONS TRACKIN	,
TOTAL NUMBER OF LOTS/UNITS PROPOSED	12
TOTAL NUMBER OF MIHU'S REQUIRED	2
NUMBER OF MIHU'S PROVIDED ONSITE (EXEMPT FROM APFO ALLOCATIONS)	0
NUMBER OF MIHU'S PROVIDED ONSITE (REMAINING LOTS/UNITS)	11
MIHU FEE-IN-LIEU (INDICATE LOT/UNIT NUMBERS)	YES, LOTS



www.BEI-	WWW.BEI-CIVILENGINEERING.COM		2000 Section 1
			Mar 23 2021 10:49
R/DEVELOPER:			
TROTTER 5857, LLC. 1819 PANARAMA CT. MCLEAN, VA 22101			IE IN ELKRID 1-12 AND OS LOT 13

OWNER/DEVELOPER:

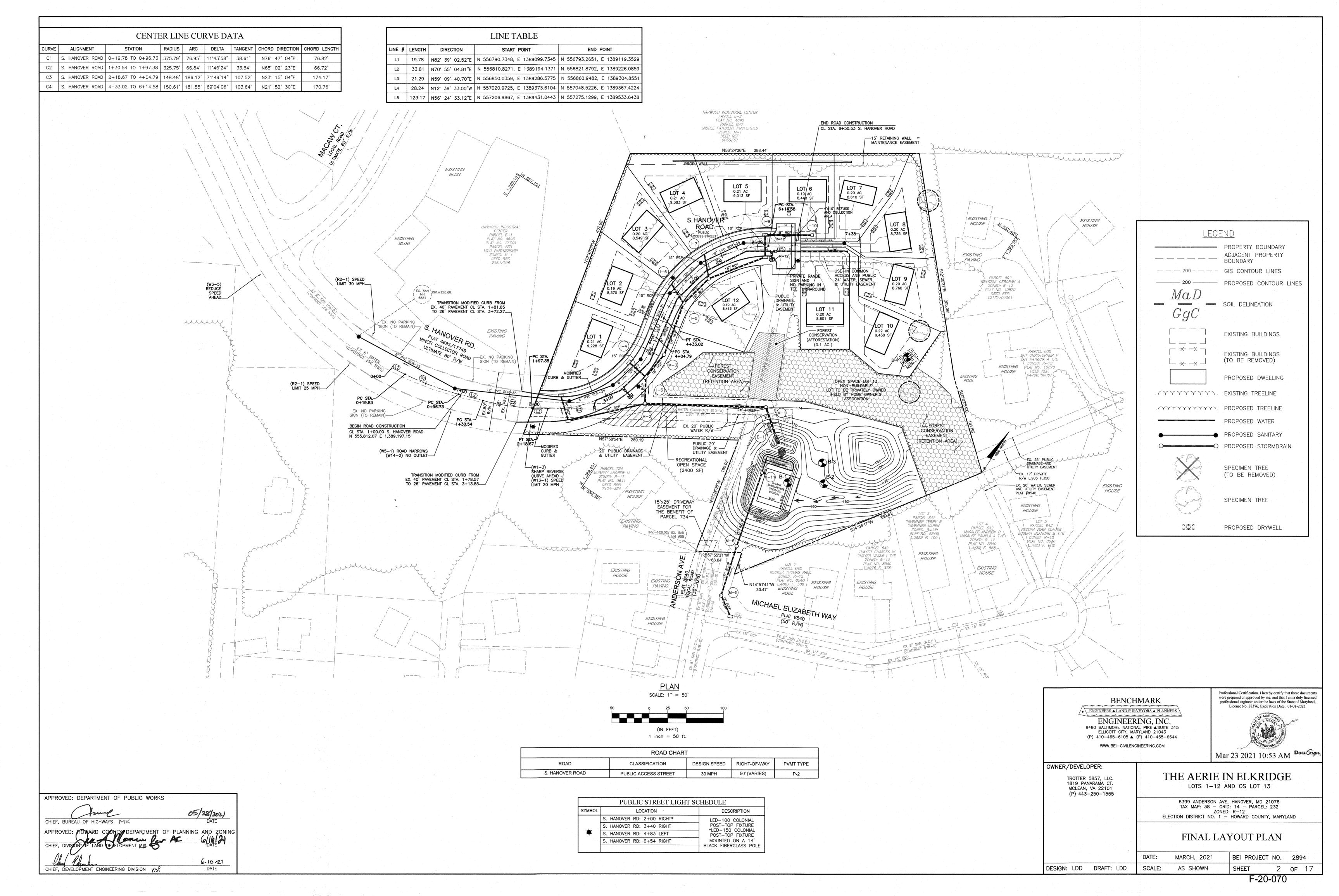
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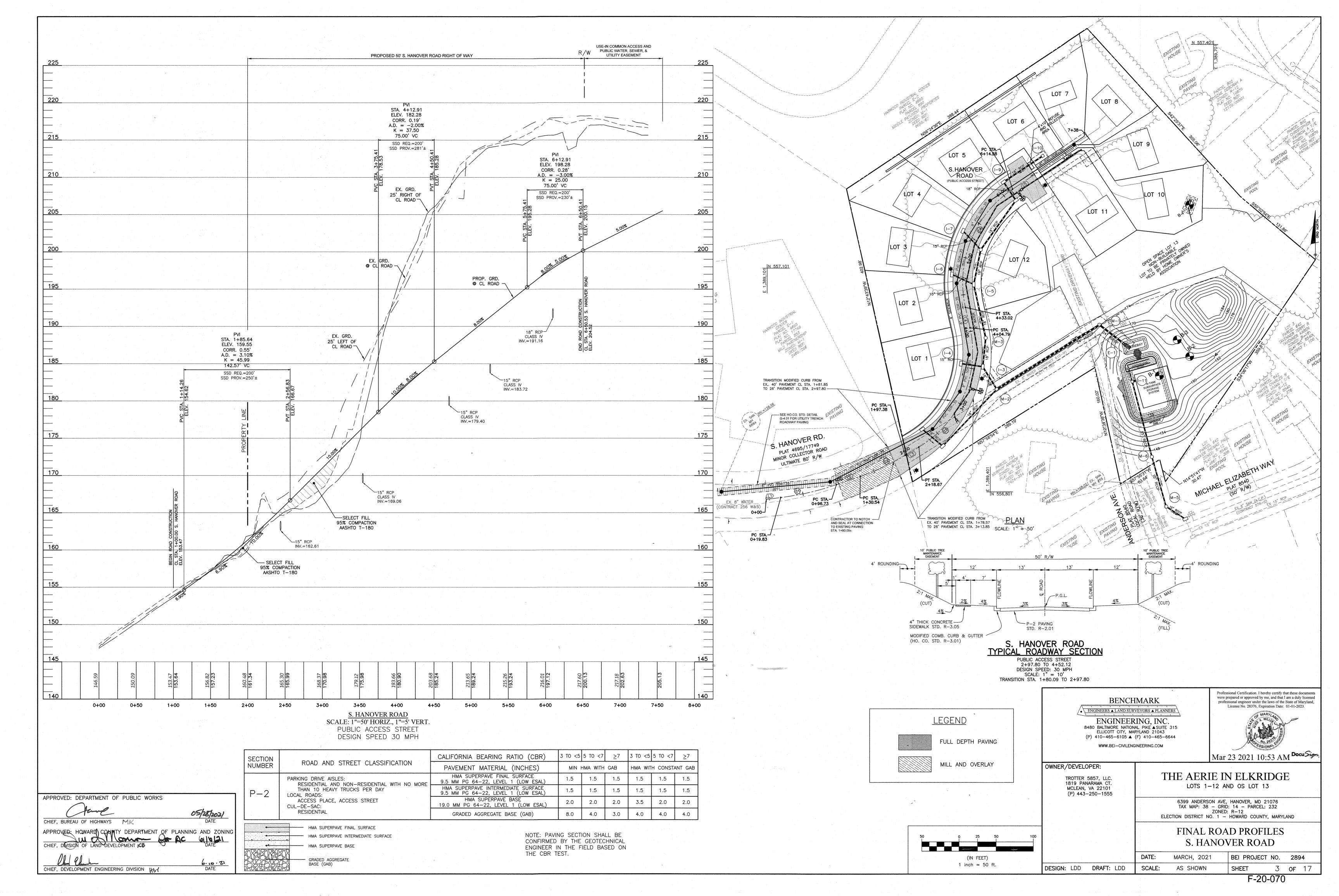
(P) 443-250-1555

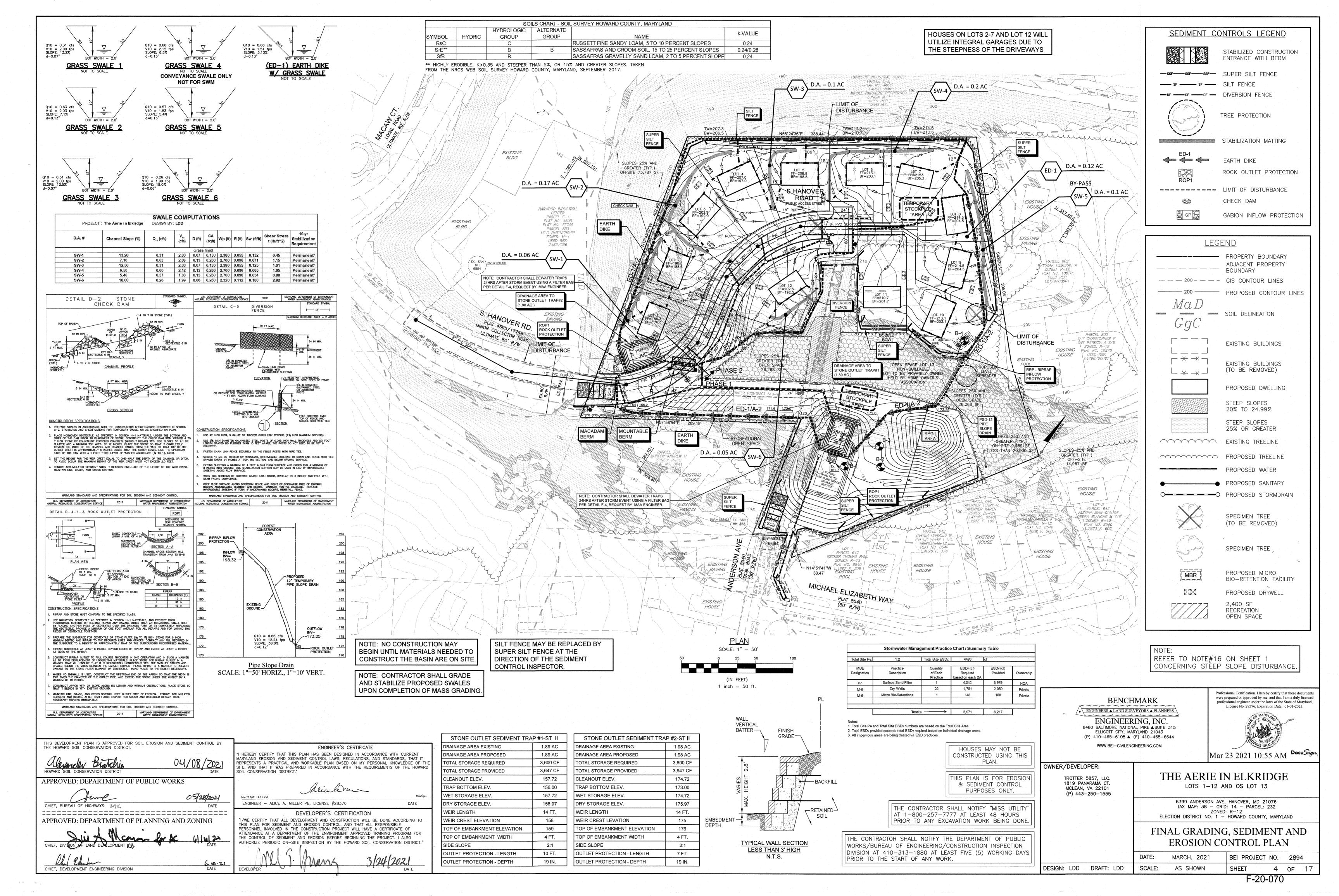
6399 ANDERSON AVE. HANOVER, MD 21076
TAX MAP: 38 - GRID: 14 - PARCEL: 232
ZONED: R-12
ELECTION DISTRICT NO. 1 - HOWARD COUNTY, MARYLAND

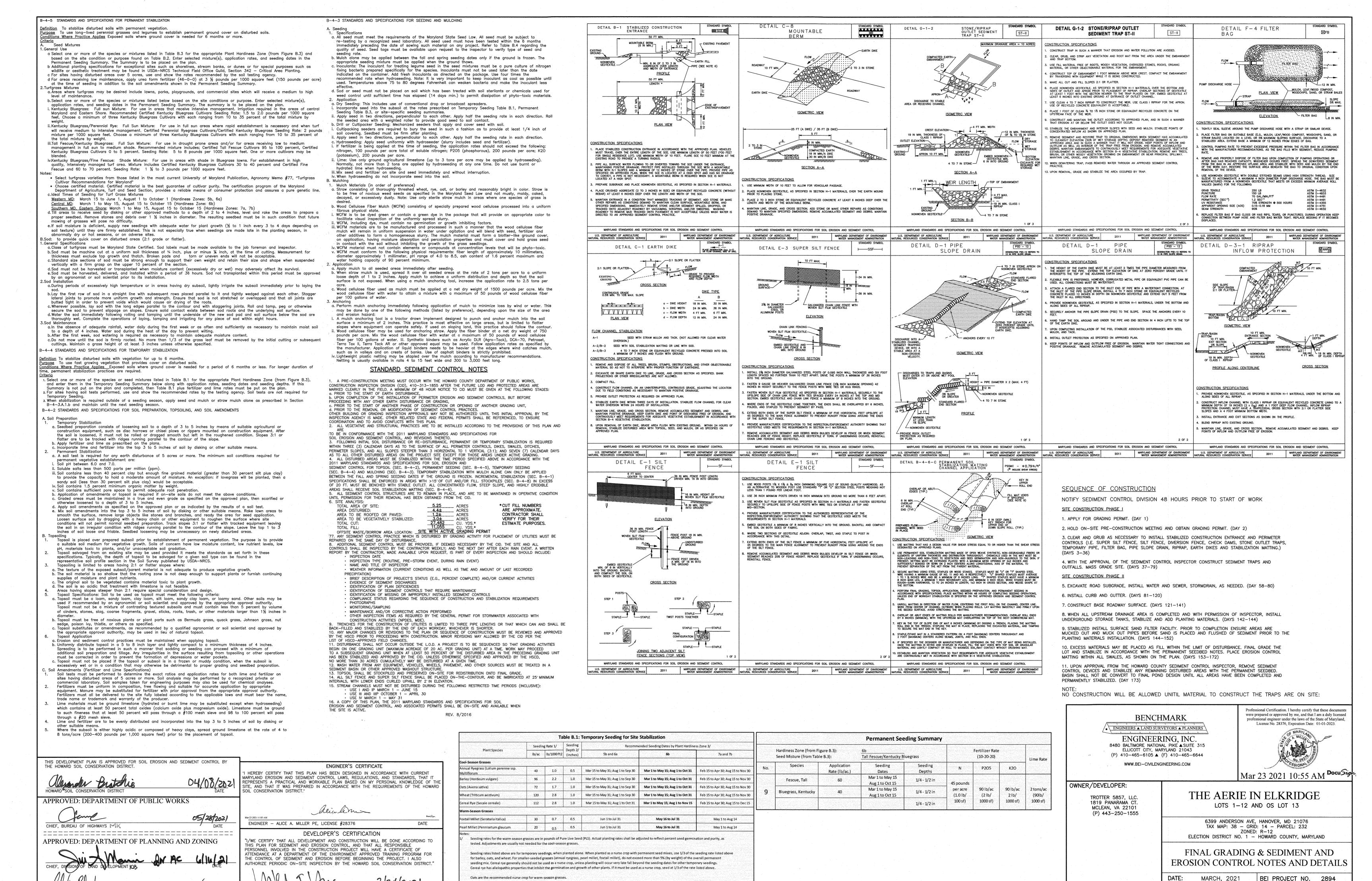
COVER SHEET

MARCH, 2021 BEI PROJECT NO. 2894 SCALE: AS SHOWN 1 of 17









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

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

CHIEF, DEVELOPMENT ENGINEERING DIVISION

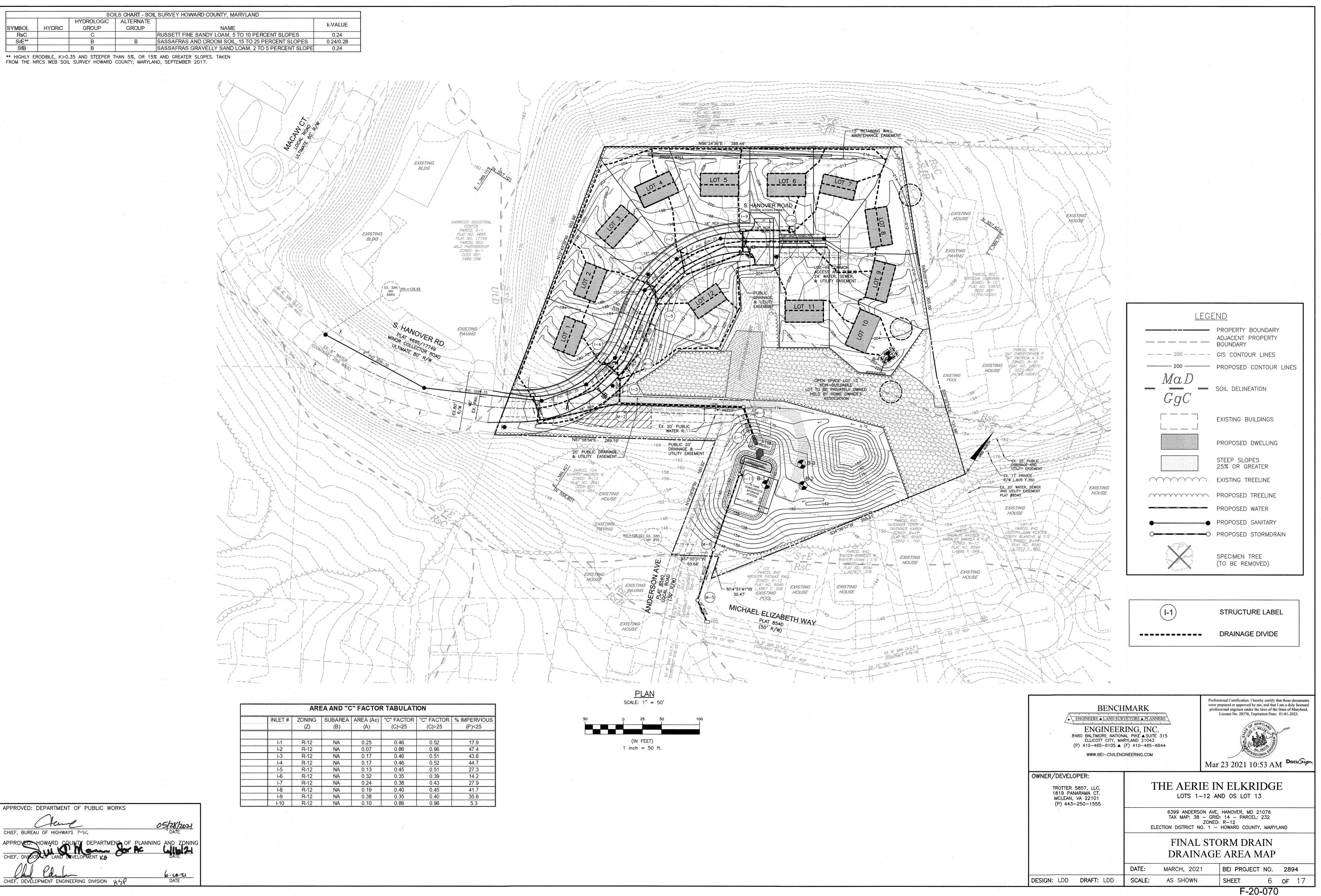
5 **of**

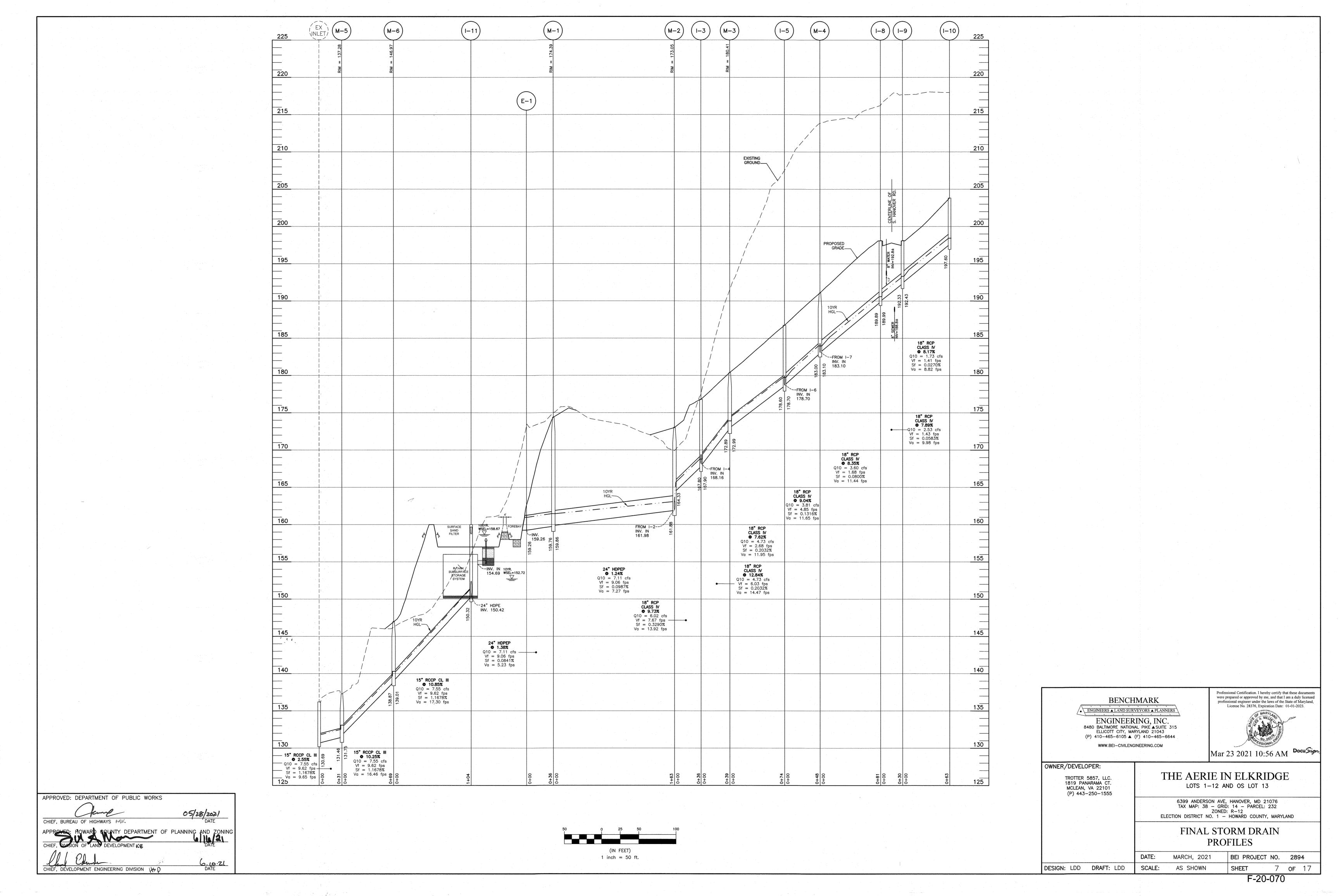
SHEET

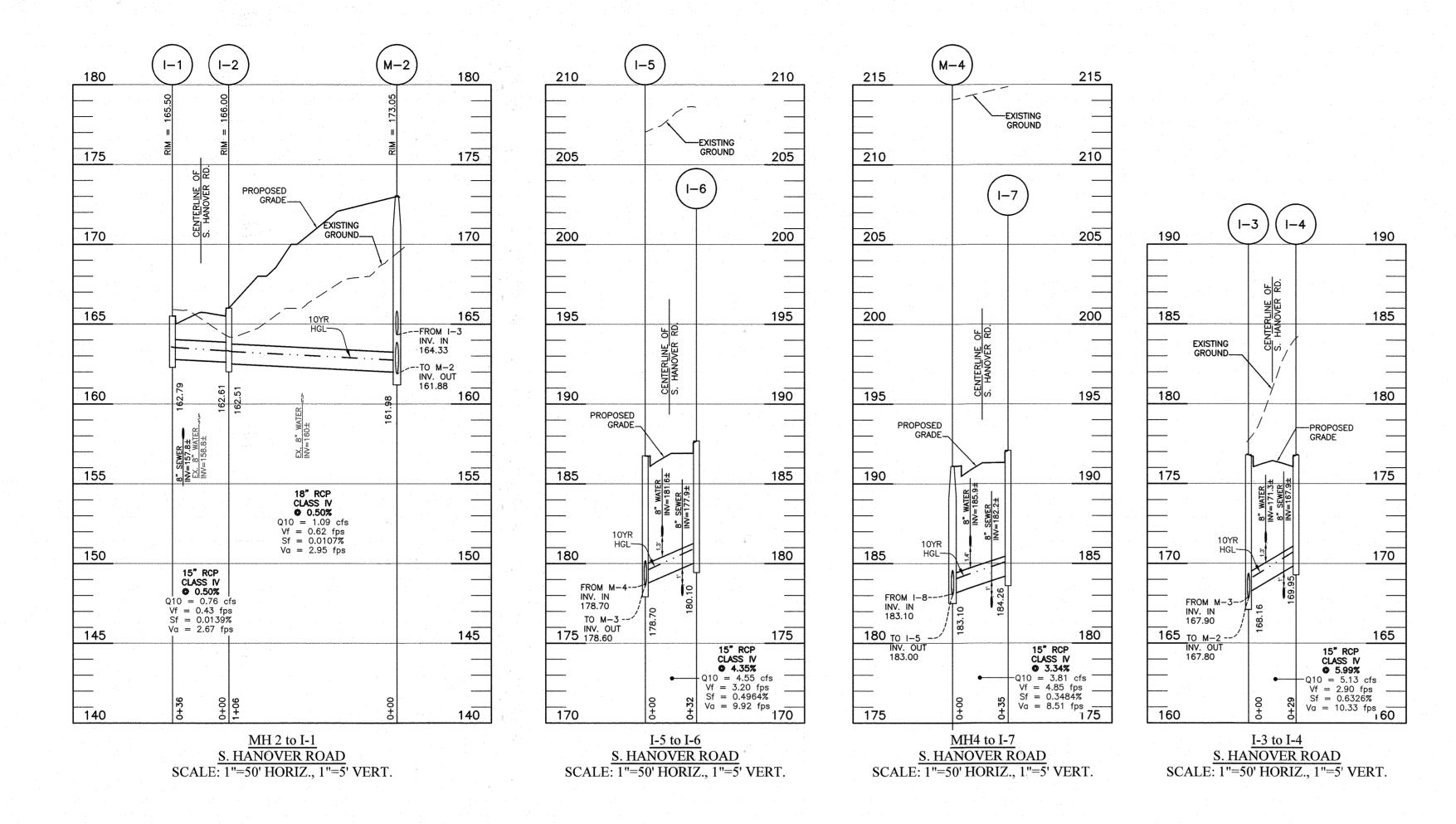
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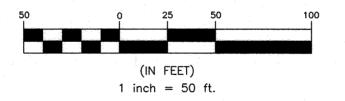
SCALE:

AS SHOWN









		STR	UCTURE	TABLE				
NUMBER	TYPE	LOCATION	INVERT IN	INVERT OUT	TOP ELEV.	STD. DETAIL	OWNER	REMARKS
M-3	48" MH	CL STA. 3+89.02 S. HANOVER ROAD, OFFSET 18.84 RIGHT	172.99(18")	172.89(18")	180.41			
M-2	48" MH	CL STA. 3+32.12 S. HANOVER ROAD, OFFSET 39.24 RIGHT	164.33(18") 161.98(15")	161.88(24")	173.05			
M-1	48" MH	CL STA. 3+88.87 S. HANOVER ROAD, OFFSET 172.56 RIGHT	159.86(24")	159.76(24")	174.39			DROP STRUCTURE
I-10	YARD	CL STA. 6+73.12 S. HANOVER ROAD, OFFSET 14.84 LEFT	: '	197.60(18")	203.83			
1-9	A-5	CL STA. 6+10.29 S. HANOVER ROAD, OFFSET 14.81 LEFT	192.43(18")	192.33(18")	198.07			
1-7	A5	CL STA. 5+31.59 S. HANOVER ROAD, OFFSET 14.88 LEFT		184.26(15")	192.09			
1-6	A-5	CL STA. 4+76.44 S. HANOVER ROAD, OFFSET 14.82 LEFT		180.10(15")	187.68			
I-5	A5	CL STA. 4+63.83 S. HANOVER ROAD, OFFSET 14.80 RIGHT	178.70(18") 178.70(15")	178.60(18")	186.75			
1-4	A-5	CL STA. 3+54.82 S. HANOVER ROAD, OFFSET 14.90 LEFT		169.95(15")	176.79			
I3	A5	CL STA. 3+54.19 S. HANOVER ROAD, OFFSET 14.88 RIGHT	167.90(18") 168.16(15")	167.80(18")	176.80			
E-1	24" END SECTION	CL STA. 3+78.20 S. HANOVER ROAD, OFFSET 199.29 RIGHT	159.26(24")		161.59			

			S	TRUCTURE	TABLE			
NUMBER	TYPE	LOCATION	INVERT IN	INVERT OUT	TOP ELEV.	STD. DETAIL	OWNER	REMARKS
M-6	48" MH	N 556847.8708, E 1389618.1237	139.01(15")	138.87(15")	146.97			
M-5	48" MH	N 556781.1026, E 1389637.4021	131.75(15")	131.46(15")	137.28			
I – 11	YARD	N 556948.7603, E 1389591.8504		150.32(15") 150.42(24")	160.00			

STORM	DRAIN PIPE S	CHEDU	JLE
PIPE	SIZE / MATERIAL	LENGTH	SLOPE
MH4 TO I-7	15" RCP CLASS IV	34.811	3.34%
I-2 TO I-1	15" RCP CLASS IV	35.537	0.50%
I-5 TO I-6	15" RCP CLASS IV	32.165	4.35%
I-3 TO I-4	15" RCP CLASS IV	29.787	5.99%
MH2 TO I-3	18" RCP CLASS IV	35.628	9.73%
I-9 TO I-10	18" RCP CLASS IV	63.253	8.17%
M-3 TO I-5	18" RCP CLASS IV	73.555	7.62%
MH2 TO I-2	18" RCP CLASS IV	105.522	0.50%
I-8 TO I-9	18" RCP CLASS IV	29.676	7.89%
MH4 TO I-8	18" RCP CLASS IV	81.261	8.35%
I-5 TO MH4	18" RCP CLASS IV	47.602	9.04%
I-3 TO MH3	18" RCP CLASS IV	38.896	12.84%
MHI TO MH2	24" HDPEP	162.697	1.24%
E-1 TO MH1	24" HDPEP	35.908	1.38%

RUNOFF COMPUTATIONS										
PROJECT :	The Aerie	in Elkridge			DATE:	5-May				•
D.A. #	AREA (Ac.)	"C" (< 25 Yr)	"C" (> 25 Yr)	tc (min)*	l ₂ (in/hr)	l ₁₀ (in/hr)	l ₁₀₀ (in/hr)	Q ₂ (cfs)	Q ₁₀ (cfs)	Q ₁₀₀ (cfs
I-1	0.25	0.46	0.52	10.0	4.50	6.60	10.00	0.52	0.76	1.15
1-2	0.07	0.86	0.96	10.0	4.50	6.60	10.00	0.27	0.40	0.60
1-3	0.17	0.46	0.51	10.0	4.50	6.60	10.00	0.35	0.51	0.77
1-4	0.17	0.46	0.52	10.0	4.50	6.60	10.00	0.35	0.51	0.77
1-5	0.13	0.45	0.51	10.0	4.50	6.60	10.00	0.26	0.39	0.59
1-6	0.32	0.35	0.39	10.0	4.50	6.60	10.00	0.50	0.74	1.12
1-7	0.24	0.38	0.43	10.0	4.50	6.60	10.00	0.41	0.60	0.91
1-8	0.19	0.40	0.45	10.0	4.50	6.60	10.00	0.35	0.51	0.77
1-9	0.38	0.35	0.40	10.0	4.50	6.60	10.00	0.61	0.89	1.35
I-10	0.10	0.86	0.96	10.0	4.50	6.60	10.00	0.39	0.57	0.86

BENCHMARK

• ENGINEERS A LAND SURVEYORS A PLANNERS

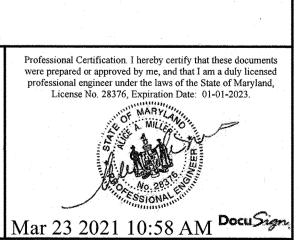
• ENGINEERING, INC.

8480 BALTIMORE NATIONAL PIKE A SUITE 315

ELLICOTT CITY, MARYLAND 21043

(P) 410-465-6105 A (F) 410-465-6644

WWW.BEI-CIVILENGINEERING.COM



OWNER/DEV	ELOPER	:	
1819 MCLE	TER 5857 PANARAN EAN, VA 2 443–250	A CT. 22101	

THE AERIE IN ELKRIDGE LOTS 1-12 AND OS LOT 13

6399 ANDERSON AVE, HANOVER, MD 21076
TAX MAP: 38 — GRID: 14 — PARCEL: 232
ZONED: R-12
ELECTION DISTRICT NO. 1 — HOWARD COUNTY, MARYLAND

FINAL STORM DRAIN PROFILES

PROFILES

DATE: MARCH, 2021 BEI PROJECT NO. 2894

DESIGN: LDD DRAFT: LDD SCALE: AS SHOWN SHEET 8 ' OF 17

CHIEF, DIVISION OF LAND DEVELOPMENT KE DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION (D)

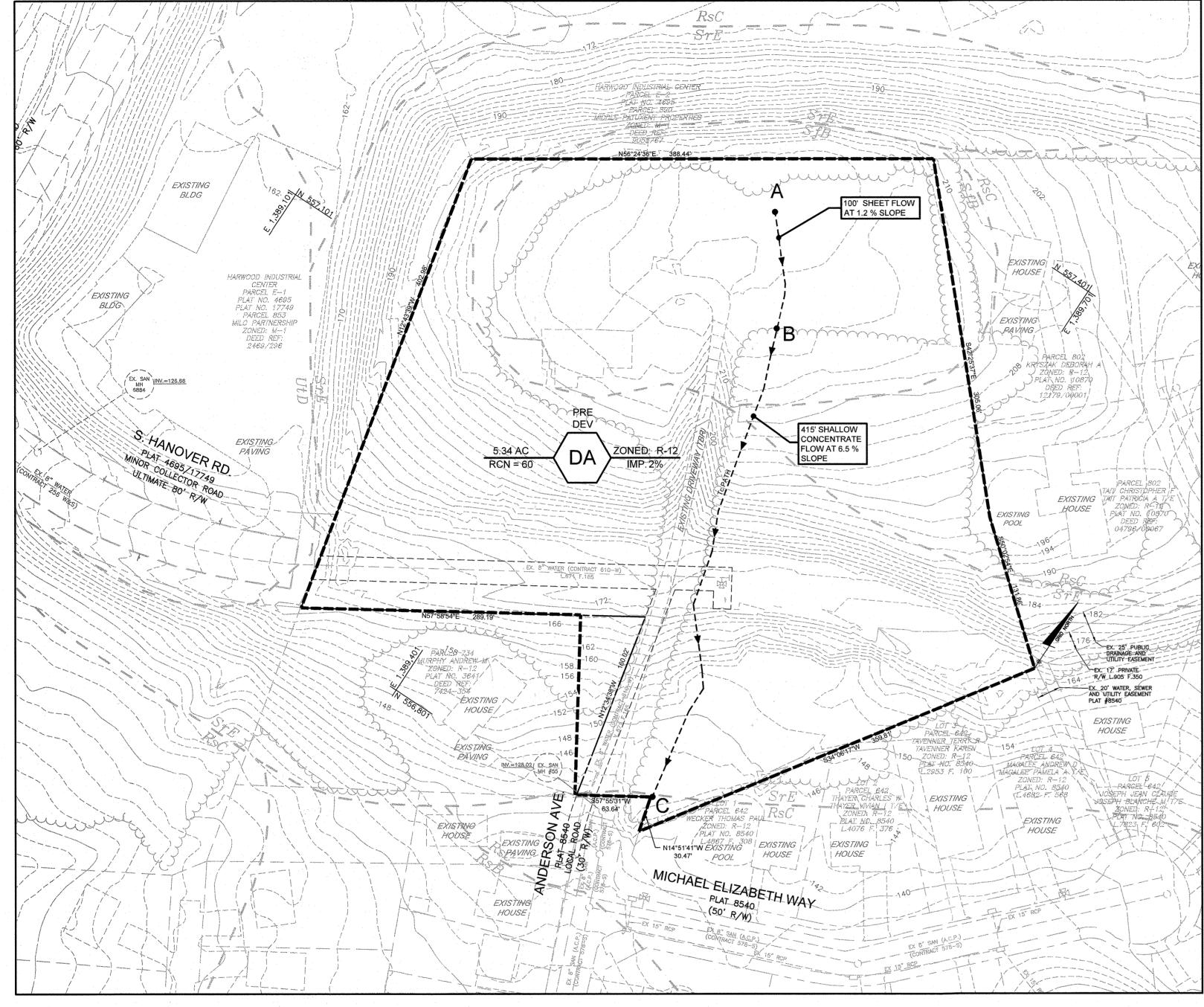
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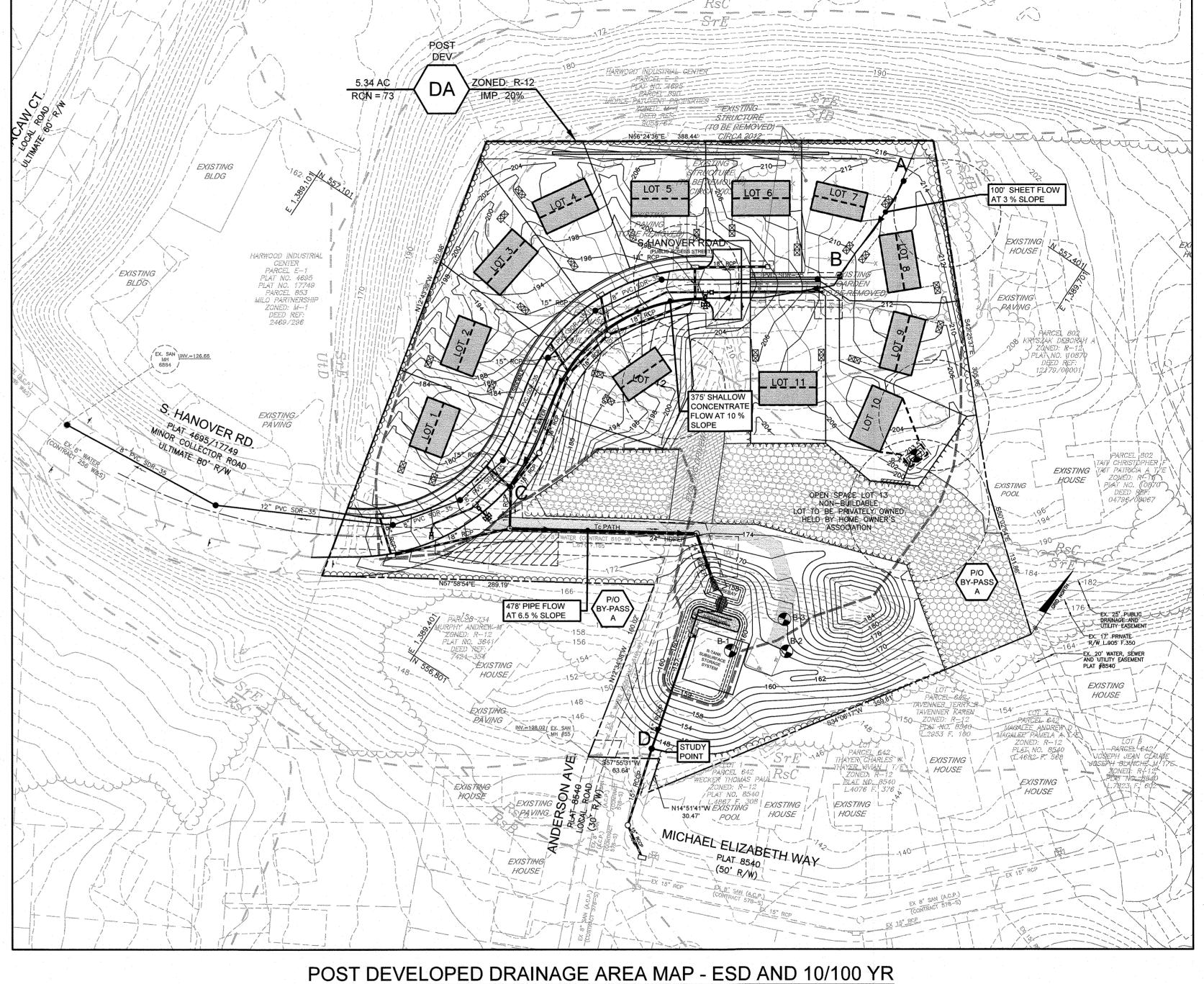
CHIEF, DEVELOPMENT ENGINEERING DIVISION (D)

DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

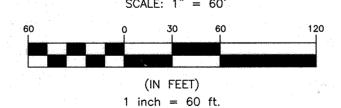
		HYDROLOGIC	ALTERNATE		k-VALUE
SYMBOL	HYDRIC	GROUP	GROUP	NAME	K-VALUE
RsC		C		RUSSETT FINE SANDY LOAM, 5 TO 10 PERCENT SLOPES	0.24
SrE**		В	В	SASSAFRAS AND CROOM SOIL, 15 TO 25 PERCENT SLOPES	0.24/0.28
SfB		В		SASSAFRAS GRAVELLY SAND LOAM, 2 TO 5 PERCENT SLOPE	0.24





1 inch = 60 ft.

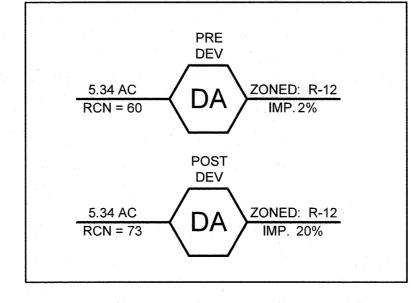
PRE DEVELOPED DRAINAGE AREA MAP



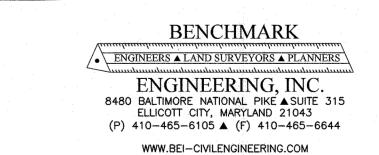
	10 - 100 YEAR STORAGE CHART				
STO	DRM	EXISTING RUNOFF	PROPOSED RUNOFF	STORAGE REQUIRED	STORAGE PROPOSED
10 Y	EAR	8.96 CFS	22.18 CFS	-	-
100 Y	'EAR	28.52 CFS	49.33 CFS	22,857 CF	23,717 CF

APPROVED: DEPAR	TMENT OF PUBLI	C WORKS	
_ On	und		05/28/2021
CHIEF, BUREAU OF H	HIGHWAYS MAK		DATE
APPROVED. HOWAR	RI COUNTY DEPA	RTMENT OF	PLANNING AND ZONING
CHIEF DIVISION OF	Mari	- Ki	PLANNING AND ZONING
THE	AND DEVELOPMENT	- Ki	PLANNING AND ZONING THE GILLA DATE

TIME OF CO	ONCENTRATION
PRE D	EVELOPED
A ToPATH B	100' SHEET FLOW AT 1.2 % SLOPE
B TcPATH C	415 SHALLOW CONCENTRATE FLOW AT 6.5 % SLOPE
POST D	DEVELOPED
A ToPATH B	100' SHEET FLOW AT 3 % SLOPE
B To PATH C	375' SHALLOW CONCENTRATE FLOW AT 10 % SLOPE
С торатн D	478' PIPE FLOW AT 6.5 % SLOPE



	LEGEND	
		GIS CONTOUR LINES
	200	PROPOSED CONTOUR LINES
-	$-\frac{MaD}{GgC}$	SOIL DELINEATION
		PROPOSED DRAINAGE DIVIDE
		EXISTING DRAINAGE DIVIDE



DATE:

SCALE:

Professional Certification, I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 28376, Expiration Date: 01-01-2023.

MARY

MARY

Mar 23 2021 10:53 AM

Docu Signal

Docu Signal

OWNER/DEVELOPER:

TROTTER 5857, LLC.
1819 PANARAMA CT.
MCLEAN, VA 22101
(P) 443-250-1555

DESIGN: LDD DRAFT: LDD

THE AERIE IN ELKRIDGE LOTS 1-12 AND OS LOT 13

6399 ANDERSON AVE, HANOVER, MD 21076
TAX MAP: 38 - GRID: 14 - PARCEL: 232
ZONED: R-12
ELECTION DISTRICT NO. 1 - HOWARD COUNTY, MARYLAND

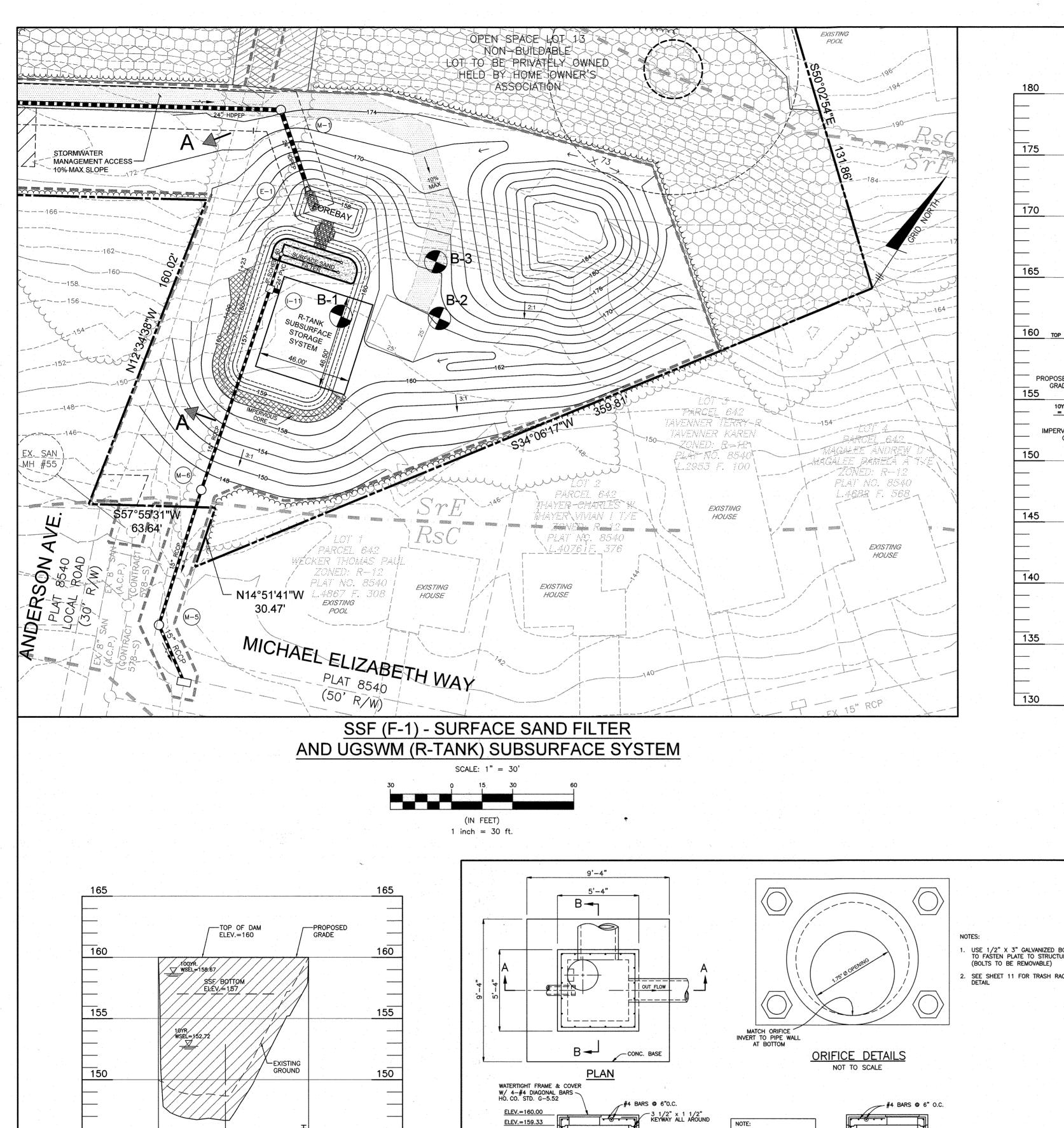
STORMWATER MANAGEMENT DRAINAGE AREA MAP

MARCH, 2021 BEI PROJECT NO. 2894

AS SHOWN

SHEET 9 OF 17

F-20-070



145

140

15" RCCP

05/28/2021

CL OF EMBANKMENT

SCALE: 1"=50' HORIZ., 1"=5' VERT.

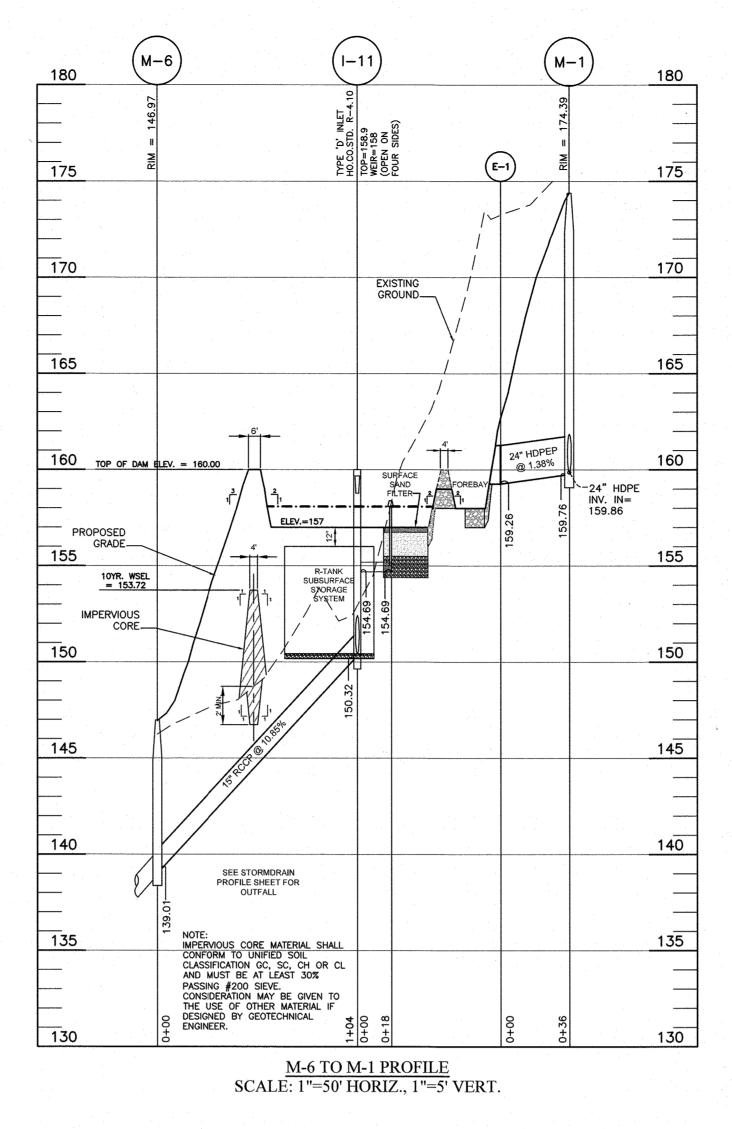
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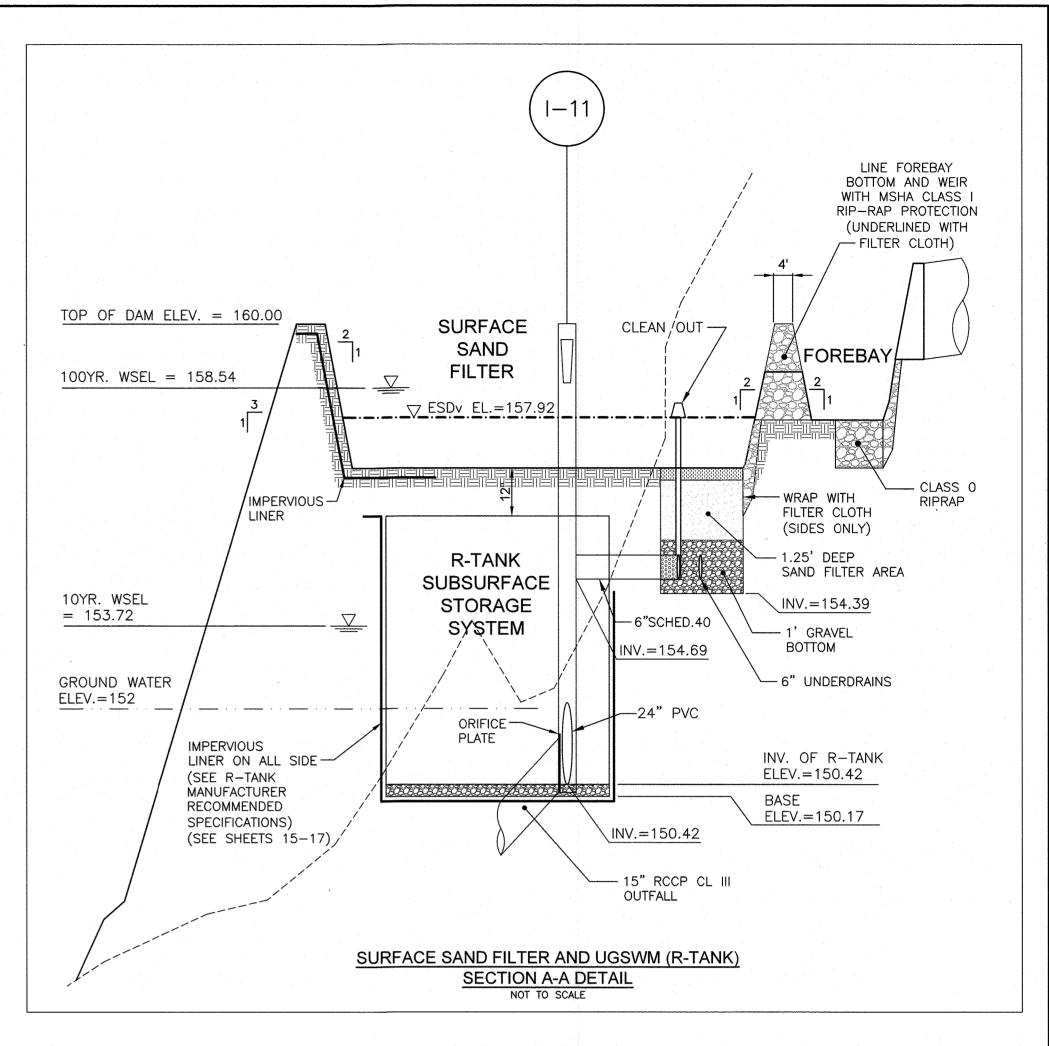
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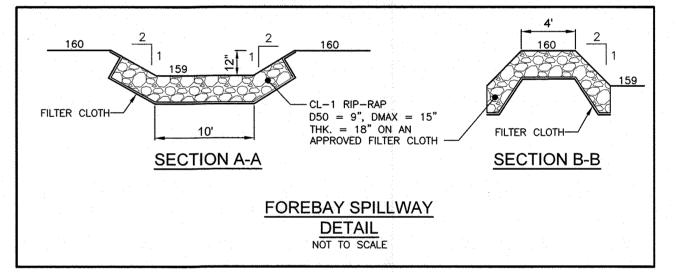
CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PUBLIC WORKS

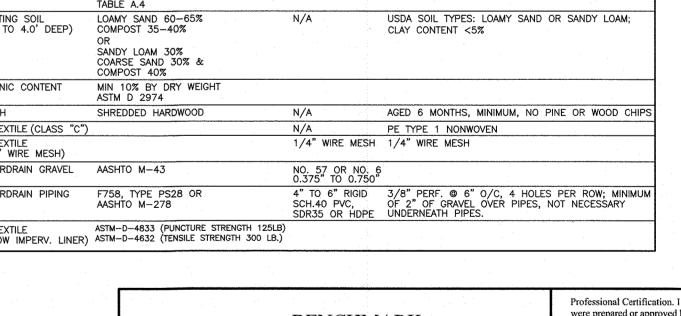
CHIEF, DEVELOPMENT ENGINEERING DIVISION 🚜 🖓

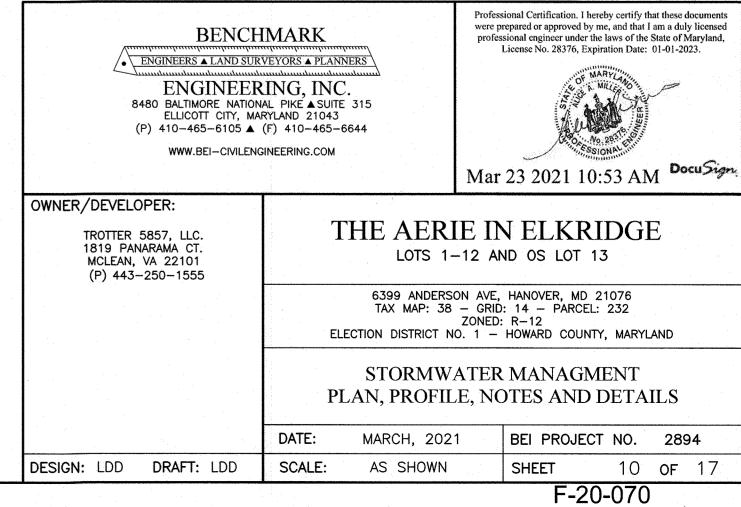


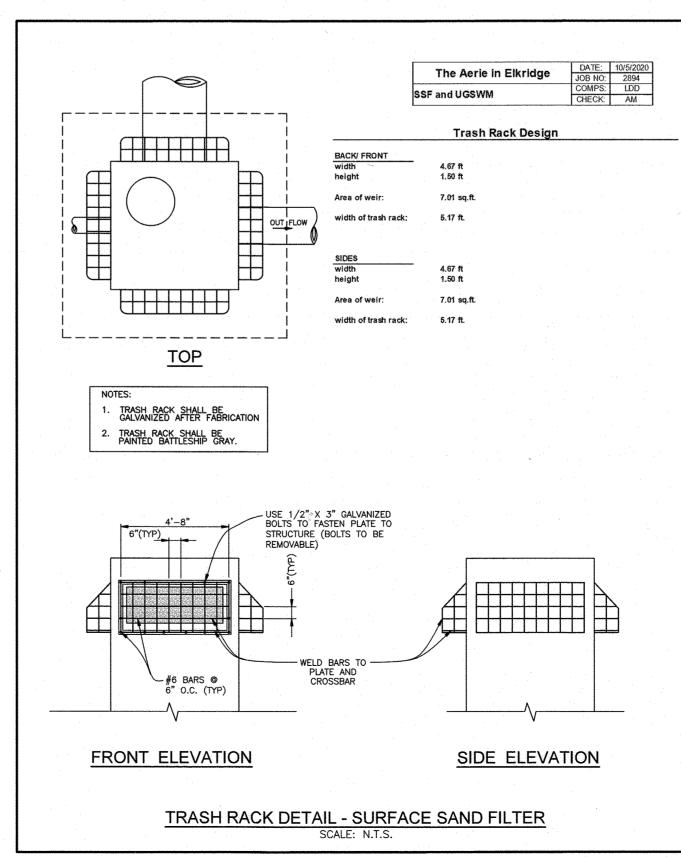


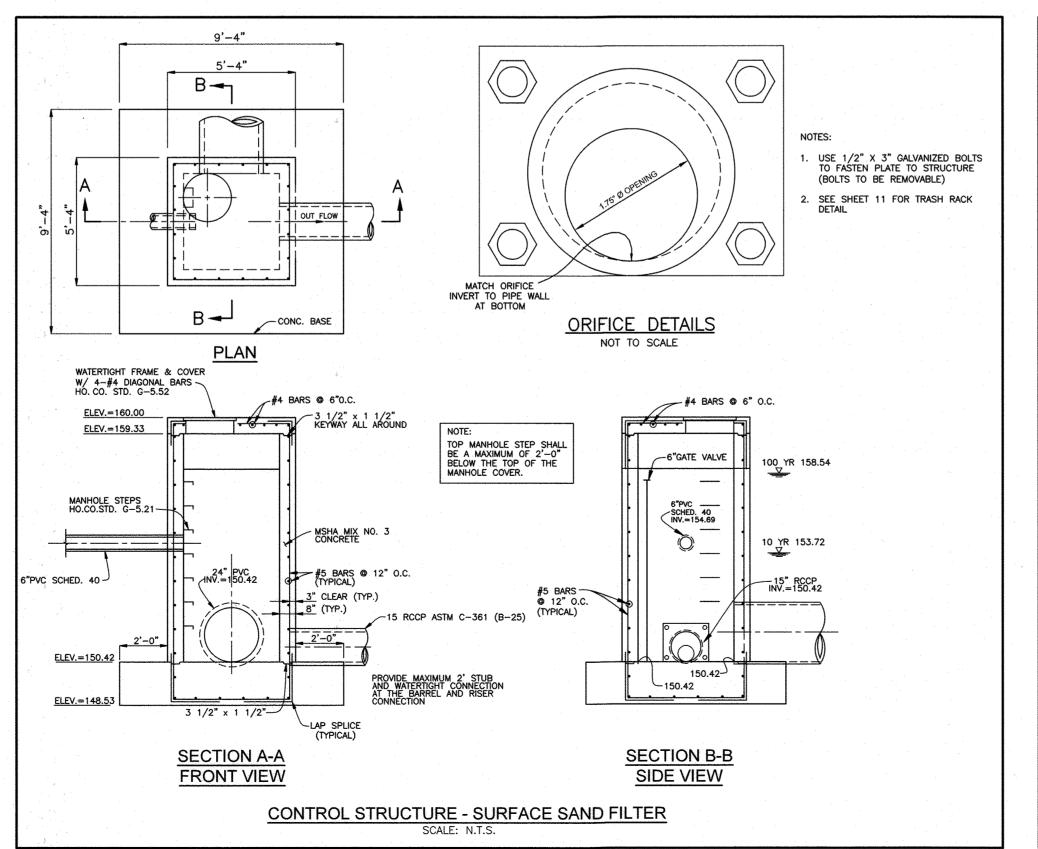


MATERIAL	SPECIFICATION	SIZE	NOTES:
PLANTINGS	SEE APPENDIX A; TABLE A.4	N/A	PLANTINGS ARE SITE SPECIFIC
PLANTING SOIL (2.0' TO 4.0' DEEP)	LOAMY SAND 60-65% COMPOST 35-40% OR SANDY LOAM 30% COARSE SAND 30% & COMPOST 40%	N/A	USDA SOIL TYPES: LOAMY SAND OR SANDY LOAM; CLAY CONTENT <5%
ORGANIC CONTENT	MIN 10% BY DRY WEIGHT ASTM D 2974		
MULCH	SHREDDED HARDWOOD	N/A	AGED 6 MONTHS, MINIMUM, NO PINE OR WOOD CHIP
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"	
UNDERDRAIN 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; MINIMUN OF 2" OF GRAVEL OVER PIPES, NOT NECESSARY UNDERNEATH PIPES.
GEOTEXTILE (BELOW IMPERV. LINER)	ASTM-D-4833 (PUNCTURE STRENGTH 125LB) ASTM-D-4632 (TENSILE STRENGTH 300 LB.)		









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 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 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 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 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 on the outside of the tree ball.

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 ¼" (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 (1/2" to 3/2" 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

R-TANK OPERATION, INSPECTION AND MAINTENANCE

OPERATION

YOUR ACF R-TANK SYSTEM HAS BEEN DESIGNED TO FUNCTION IN CONJUNCTION WITH THE ENGINEERED DRAINAGE SYSTEM ON YOUR SITE, THE EXISTING MUNICIPAL INFRASTRUCTURE, AND/OR THE EXISTING SOILS AND GEOGRAPHY OF THE RECEIVING WATERSHED. UNLESS YOUR SITE INCLUDED CERTAIN UNIQUE AND RARE FEATURES, THE OPERATION OF YOUR R-TANK SYSTEM WILL BE DRIVEN BY NATURALLY OCCURRING SYSTEMS AND WILL FUNCTION AUTONOMOUSLY. HOWEVER, UPHOLDING A PROPER SCHEDULE OF INSPECTION & MAINTENANCE IS CRITICAL TO ENSURING CONTINUED FUNCTIONALITY AND OPTIMUM PERFORMANCE OF THE SYSTEM.

INSPECTION

BOTH THE R-TANK AND ALL STORMWATER PRE-TREATMENT FEATURES INCORPORATED INTO YOUR SITE MUST BE INSPECTED REGULARLY. INSPECTIONS SHOULD BE DONE EVERY SIX MONTHS FOR THE FIRST YEAR OF OPERATION, AND AT LEAST YEARLY THEREAFTER. INSPECTIONS MAY BE REQUIRED MORE FREQUENTLY FOR PRE-TREATMENT SYSTEMS. YOU SHOULD REFER TO THE MANUFACTURER REQUIREMENTS FOR THE PROPER INSPECTION SCHEDULE.

WITH THE RIGHT EQUIPMENT MOST INSPECTIONS AND MEASUREMENTS CAN BE ACCOMPLISHED FROM THE SURFACE WITHOUT PHYSICALLY ENTERING ANY CONFINED SPACES. IF YOUR INSPECTION DOES REQUIRE CONFINED SPACE ENTRY, YOU MUST FOLLOW ALL LOCAL, REGIONAL, AND OSHA REQUIREMENTS.

ALL MAINTENANCE FEATURES OF YOUR SYSTEM CAN BE ACCESSED THROUGH A COVERING AT THE SURFACE. WITH THE LID REMOVED, YOU CAN VISUALLY INSPECT EACH COMPONENT TO IDENTIFY SEDIMENT, TRASH, AND OTHER CONTAMINANTS WITHIN THE STRUCTURE. CHECK YOUR CONSTRUCTION PLANS TO IDENTIFY THE MAINTENANCE FEATURES INCLUDED IN YOUR R-TANK SYSTEM, WHICH MAY INCLUDE THE FOLLOWING:

- UPSTREAM PIPES, INLETS, AND MANHOLES

WORKING FROM THE STRUCTURES ADJACENT THE R-TANK TOWARD THOSE FARTHER AWAY,
CHECK FOR DEBRIS AND SEDIMENT IN BOTH THE STRUCTURES AND THE PIPES. BE SURE TO
INCLUDE ALL STRUCTURES THAT CONTAIN PRETREATMENT SYSTEMS. SOME STRUCTURES
MAY INCLUDE A SUMP.

- MAINTENANCE PORTS

LOCATED NEAR THE INLET AND OUTLET CONNECTIONS AND THROUGHOUT THE SYSTEM,
CHECK SEDIMENT DEPTH AT EACH PORT.

INSPECTION PORTS ARE LESS COMMON, BUT MAY BE LOCATED CENTRALLY IN THE R-TANK SYSTEM. THESE SHOULD BE USED TO CHECK FOR SEDIMENT DEPOSITS, BUT ARE TYPICALLY TOO SMALL TO ACCESS FOR BACKFLUSHING.

- MAINTENANCE ROW

ON INSTALLATIONS IN 2018 OR LATER, INLET PIPES MAY CONNECT TO A ROW OF MODULES WITH 12" DIAMETER ACCESS HOLES RUNNING HORIZONTALLY THROUGH THE MODULE THAT CAN BE JET-VACUUMED. CHECK THESE FOR SEDIMENT ACCUMULATION.

IF SEDIMENT OR DEBRIS IS OBSERVED IN ANY OF THESE STRUCTURES, DETERMINE THE DEPTH OF THE MATERIAL USING A STADIA ROD OR OTHER MEASURING DEVICE. ALL OBSERVATIONS AND MEASUREMENTS SHOULD BE RECORDED ON AN INSPECTION LOG KEPT

ON FILE. WE'VE INCLUDED A FORM YOU CAN USE AT THE END OF THIS GUIDE.

MAINTENANCE

FOR MODULES TALLER THAN 40" THE R-TANK SYSTEM SHOULD BE BACK-FLUSHED ONCE SEDIMENT ACCUMULATION HAS REACHED 6". FOR MODULES LESS THAN 40" TALL, PERFORM MAINTENANCE WHEN SEDIMENT DEPTHS ARE GREATER THAN 15% OF THE TOTAL SYSTEM HEIGHT

IF YOUR SYSTEM INCLUDES A MAINTENANCE ROW WITH LINEAR ACCESS THROUGH THE MODULES FROM THE INLET PIPE, BACKFLUSH THIS AREA WHEN SEDIMENT DEPTHS REACH 6".

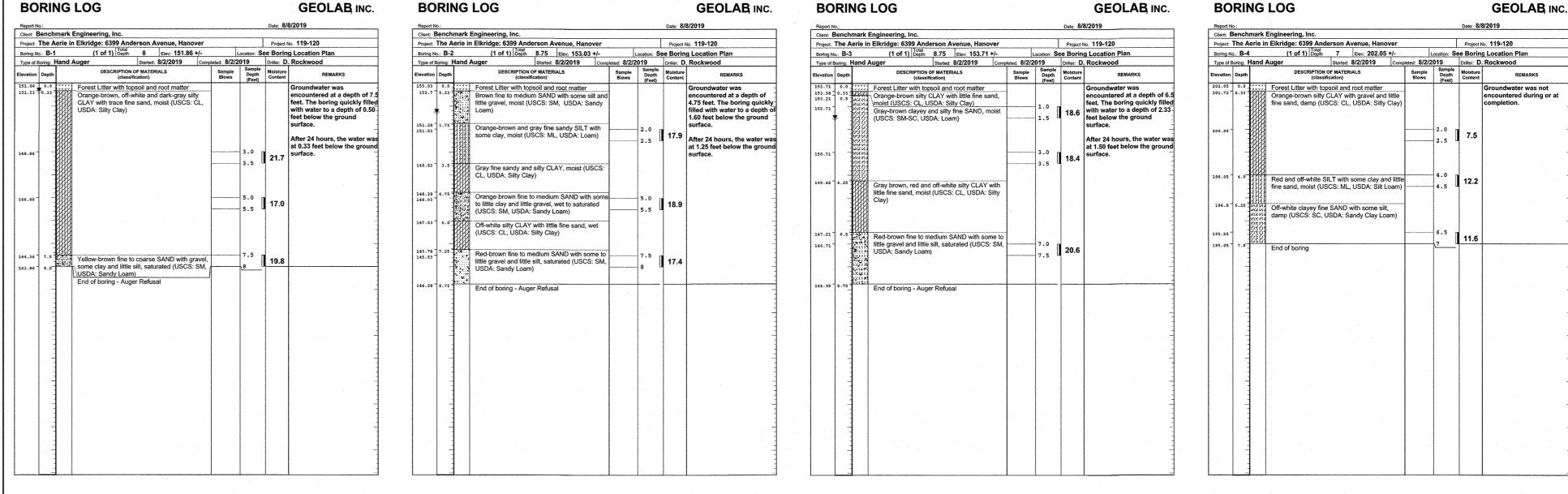
BEFORE ANY MAINTENANCE IS PERFORMED ON YOUR SYSTEM -

PLUG THE OUTLET PIPE TO PREVENT CONTAMINATION OF THE ADJACENT SYSTEMS.
BEGIN BY CLEANING ALL UPSTREAM STRUCTURES, PIPES, AND PRE-TREATMENT SYSTEMS
CONTAINING SEDIMENT AND/ OR DEBRIS. IF YOUR SYSTEM INCLUDES A MAINTENANCE ROW,
THIS PORTION OF THE SYSTEM SHOULD BE CLEANED WITH TRADITIONAL JET-VAC EQUIPMENT
ADD A CENTRALIZER TO THE JET FOR EASIEST ACCESS THROUGH THE MODULES.

TO BACK-FLUSH THE R-TANK, WATER IS PUMPED INTO THE SYSTEM THROUGH THE MAINTENANCE PORTS AS RAPIDLY AS POSSIBLE. THE TURBULENT ACTION OF THE WATER MOVING THROUGH THE R-TANK WILL SUSPEND SEDIMENTS WHICH MAY THEN BE PUMPED OUT. IF YOUR SYSTEM INCLUDES AN OUTLET STRUCTURE, THIS WILL BE THE IDEAL LOCATION TO PUMP CONTAMINATED WATER OUT OF THE SYSTEM. HOWEVER, REMOVAL OF BACK-FLUSH WATER MAY BE ACCOMPLISHED THROUGH THE MAINTENANCE PORTS, AS WELL.

FOR SYSTEMS WITH LARGE FOOTPRINTS THAT WOULD REQUIRE EXTENSIVE VOLUMES OF WATER TO PROPERLY FLUSH THE SYSTEM, YOU SHOULD CONSIDER PERFORMING YOUR MAINTENANCE WITHIN 24 HOURS OF A RAIN EVENT. STORMWATER ENTERING THE SYSTEM WILL AID IN THE SUSPENSION OF SEDIMENTS AND REDUCE THE VOLUME OF WATER REQUIRED TO PROPERLY FLUSH THE SYSTEM.

ONCE REMOVED, SEDIMENT-LADEN WATER MAY BE CAPTURED FOR DISPOSAL OR PUMPED THROUGH A DIRTBAGTM (IF PERMITTED BY THE LOCALITY).



OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED (F-1) SURFACE SAND FILTER

1. THE STORMWATER WETLAND FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHALL BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE FACILITY IS FUNCTIONING PROPERLY.

2. THE TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF ONCE PER YEAR, WHEN VEGETATION REACHES 18" IN HEIGHT OR AS NEFDED.

3. FILTERS THAT HAVE A GRASS COVER SHALL BE MOWED A MINIMUM OF THREE (3) TIMES PER GROWING SEASON TO MAINTAIN A MAXIMUM GRASS HEIGHT OF LESS THAN 12 INCHES.

4. DEBRIS AND LITTER SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.

5. VISIBLE SIGNS OF EROSION IN THE FACILITY SHALL BE REPAIRED AS SOON AS IT IS NOTICED.

6. REMOVE SILT WHEN IT EXCEEDS FOUR (4) INCHES DEEP IN THE FOREBAY, IF

APPLICABLE.

7. WHEN WATER PONDS ON THE SURFACE OF THE FILTER BED FOR MORE THAN 24 HOURS, THE TOP FEW INCHES OF DISCOLORED MATERIAL SHALL BE REPLACED WITH FRESH MATERIAL. PROPER CLEANING AND DISPOSAL OF THE REMOVED

MATERIALS AND LIQUID MUST BE FOLLOWED BY THE OWNER.

8. A LOGBOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.

9. THE MAINTENANCE LOGBOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.

10. ONCE THE PERFORMANCE CHARACTERISTICS OF THE INFILTRATION SYSTEM 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.

PERFORMED PICTURES OF TO OTHER DOWNSPOUT ABEA ONLY SOLO PIC TO OTHER DOWNSPOUT ABEA ONLY TO SOLA DOWNSPOUT LOCATIONS SEE PLAN FOR LOWNSPOUT ALL DIMENSIONS SEE PLAN FOR LOCATIONS SEE PLAN FOR SEE PLANS SEE PLAN FOR SEE PLANS SEE PLAN FOR SEE DEALS TYPICAL DOWNSPOUT LOCATIONS SEE PLAN FOR SEE DEALS TYPICAL DOWNSPOUT ADAPTER WY ROMONAGE OF PICK PLANS SEE PLAN FOR SEE DEALS TYPICAL DOWNSPOUT ADAPTER WY ROMONAGE OF PICK PLANS SEE PLAN FOR SEE DEALS TYPICAL DOWNSPOUT ADAPTER WY ROMONAGE OF PICK PLANS SEE PLAN FOR SEE DEALS TYPICAL DOWNSPOUT ADAPTER WY ROMONAGE OF PICK PLANS SEE PLAN FOR SEE DEALS TYPICAL DOWNSPOUT ADAPTER WY ROMONAGE OF PICK PLANS SEE PLAN FOR SEE DEALS TYPICAL DOWNSPOUT ADAPTER WY ROMONAGE OF PICK PLANS SEE PLAN FOR SEE DEALS TYPICAL DOWNSPOUT ADAPTER WY ROMONAGE OF PICK PLANS SEE PLAN FOR SEE DEALS TYPICAL DOWNSPOUT ADAPTER WY ROMONAGE OF PROPOSED/COSTING GRADE PROPOSED/COSTING GRADE

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

ROOF DRAIN DRYWELL

Department of Public Works

INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.

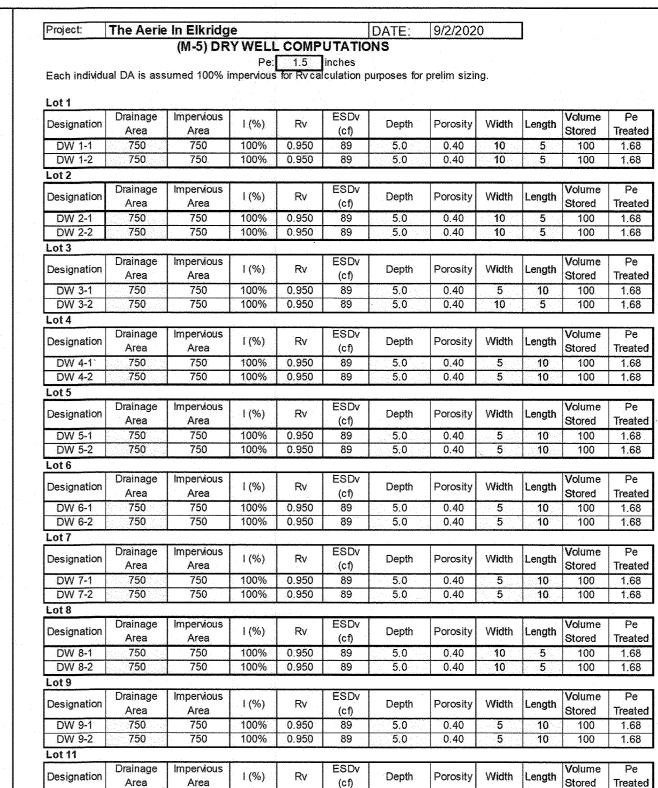
Approved: Orman & Sutle

1. 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

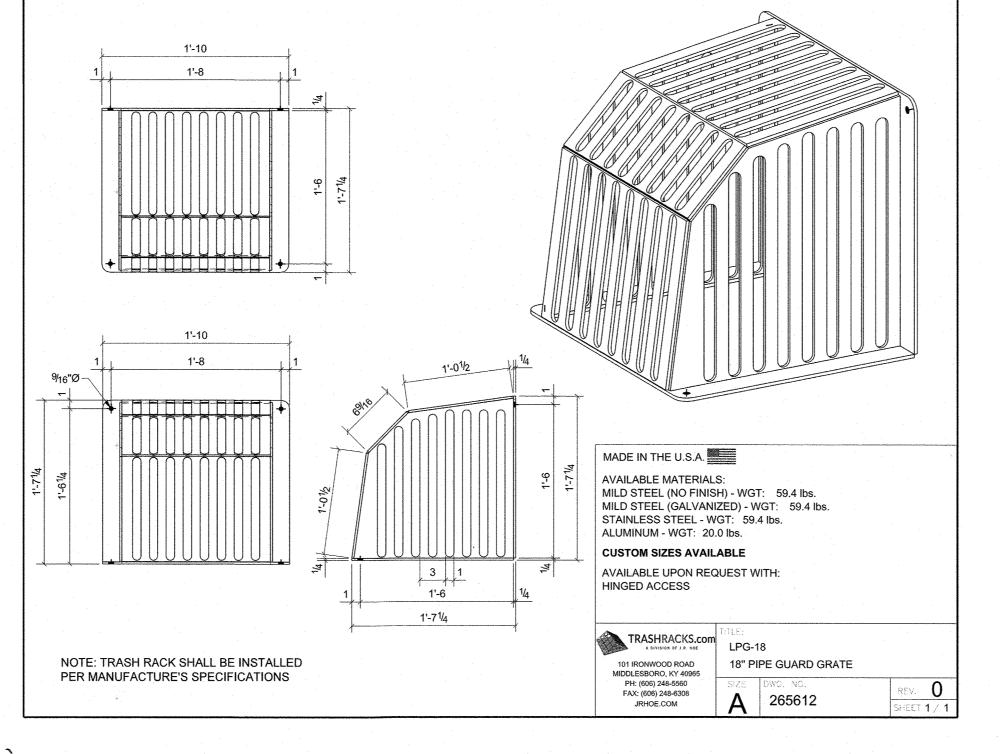
4. WHEN THE FACILITY BECOMES CLOGGED SO THAT IT DOES NOT DRAIN DOWN WITHIN THE 72 HOUR TIME PERIOD, CORRECTIVE ACTION SHALL BE TAKEN.5. THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO

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.



 DW 11-1
 750
 750
 100%
 0.950
 89
 5.0
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 10
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 100
 1.68

 DW 11-2
 750
 750
 100%
 0.950
 89
 5.0
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 10
 5
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BENCHMARK

"""

ENGINEERS & LAND SURVEYORS & PLANNERS

ENGINEERING, INC.

8480 BALTIMORE NATIONAL PIKE & SUITE 315

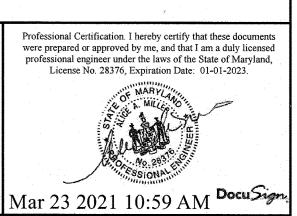
ELLICOTT CITY, MARYLAND 21043

(P) 410-465-66105 & (F) 410-465-6644

OWNER/DEVELOPER:

DESIGN:

WWW.BEI-CIVILENGINEERING.COM



TROTTER 5857, LLC. 1819 PANARAMA CT. MCLEAN, VA 22101 (P) 443-250-1555	THE AERIE II	N ELKRIDGE ND OS LOT 13		
	6399 ANDERSON AVE, HANOVER, MD 21076 TAX MAP: 38 — GRID: 14 — PARCEL: 232 ZONED: R-12 ELECTION DISTRICT NO. 1 — HOWARD COUNTY, MARYLAND			
		MANAGEMENT ID DETAILS		
	DATE: MARCH, 2021	BEI PROJECT NO. 2894		
LDD DRAFT: LDD	SCALE: AS SHOWN	SHEET 11 OF 1		

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS

CHIEF, DIVISION OF LAND DEVELOPMENT

CHIEF, DEVELOPMENT ENGINEERING DIVISION VA P

DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION VA P

DATE

STORMWATER MANAGEMENT FACILITY CONSTRUCTION SPECIFICATIONS

These specifications are appropriate to all ponds within the scope of the Standard for practice MD-378. All references to ASTM and AASHTO specifications apply to the most recent

Site Preparation

Areas designated for borrow areas, embankment, and structural works shall be cleared, arubbed and stripped to topsoil. All trees, vegetation, roots and other objectionable material shall be removed. Channel banks and sharp breaks shall be sloped to no steeper than 1:1. All trees shall be cleared and grubbed within 15 feet of the toe of the embankment.

Areas to be covered by the reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush, and stumps shall be cut approximately level with the ground surface. For dry stormwater management ponds, a minimum of a 25-foot radius around the inlet structure shall be

All cleared and grubbed material shall be disposed of outside and below the limits of the dam and reservoir as directed by the owner or his representative. When specified, a sufficient quantity of topsoil will be stockpiled in a suitable location for use on the

<u>Material</u> — The fill material shall be taken from approved designated borrow areas. If shall be free of roots, stumps, wood, rubbish, stones greater than 6", frozen or other objectionable material. Fill material for the center of the embankment, and cut off trench shall conform to Unified Soil Classification GC, SC, CH, or CL and must have at least 30% passing the #200 sieve. Consideration may be given to the use of other materials in the embankment if designed by a geotechnical engineer. Such special designs must have construction supervised by a geotechnical engineer.

Materials used in the outer shell of the embankment must have the capability to support vegetation of the quality required to prevent erosion of the embankment.

<u>Placement</u> — Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in maximum 8 inch thick (before compaction) layers which are to be continuous over the entire length of the fill. The most permeable borrow material shall be placed in the downstream portions of the embankment. The principal spillway must be installed concurrently with fill placement and not excavated into the embankment.

Compaction - the movement of the hauling and spreading equipment over the fill shall be trolled so that the entire surface of each lift shall be traversed by not less than one tread track of heavy equipment or compaction shall be achieved by a minimum of four complete passes of a sheepsfoot, rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction will be obtained with teh equipment used. The fill material shall contain sufficient moisture so that if formed into a ball it will not crumble, yet not be so wet that water can be squeezed out.

When required by the reviewing agency the minimum required density shall not be less than 95% of maximum dry density with a moisture content within \pm 2% of the optimum. Each layer of fill shall be compacted as necessary to obtain that density, and is to be certified by the Engineer at the time of construction. All compaction is to be determined by AASHTO Method T-99 (Standard Proctor).

Cut Off Trench - The cutoff trench shall be excavated into impervious material along or parallel to the centerline of the embankment as shown on the plans. The bottom width of the trench shall be governed by the equipment used for excavation, with the minimum width being four feet. The depth shall be a least four feet below existing grade or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability.

Embankment Core - The core shall be parallel to the centerline of the embankment as shown on the plans. The top width of the cores shall be a minimum of four feet. The height shall extend up to at least the 10 year water elevation or as shown on the plans. The side slopes shall be 1 to 1 or flatter. The core shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability. In addition, the core shall be placed concurrently with the outer shell of the embankment

Backfill adjacent to pipes or structures shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe,

unless there is a compacted fill of 24" or greater over the structure or pipe.

Structure backfill may be flowable fill meeting the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 313 as modified. The mixture shall have a 100-200 psi; 28 day unconfined compressive strength. The flowable fill shall have a minimum pH of 4.0 and a minimum resistively of 2,000 ohm—cm. Material shall be placed such that a minimum of 6" (measured perpendicular to the outside of the pipe) of flowable fill shall be under (bedding). over and, on the sided of the pipe. It only needs to extend up to the spring line for rigid conduits. Average slump of the fill shall be 7" to assure flowability of the material. Adequate measures shall be taken (sand bags, etc.) to prevent floating the pipe. When using flowable fill, all metal pipe shall be bituminous coated. Any adjoining soil fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material shall completely fill all voids adjacent to the flowable fill zone. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a structure or pipe unless there is a compacted fill of 24 or greater over the structure or pipe. Backfill material outside the structural backfill (flowable fill) zone shall be of the type and quality conforming to that specified for the core of the embankment or other embankment

Pipe Conduits

CHIEF, BUREAU OF HIGHWAYS

CHIEF. DEVELOPMENT ENGINEERING DIVISION 1/45

All pipes shall be circular in cross section

<u>Corrugated Metal Pipe</u> — all of the following criteria shall apply for corrugated metal pipe 1. Materials — (Polymer Coated steel pipe) — Steel pipes with polymeric coatings shall bave a minimum coating thickness of 0.01 inch (10 mil) on both sides of the pipe. This pipe and its appurtenances shall conform to the requirements of AASHTO Specifications M-245 & M-246 with watertight coupling bands or flanges.

Maerials — (Aluminum Coated Steel Pipe) — This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-274 with watertight coupling bands or flanges. Aluminum Coated Steel Pipe, when used with flowable fill or when soil and/or water conditions warrant the need for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Any aluminum coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt.

Materials — (Aluminum Pipe) — This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M—196 or M—211 with watertight coupling bands or flanges. Aluminum Pipe, when used with flowable fill or when soil and/or water conditions warrant for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Aluminum surfaces that are to be contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt. Hot dip galvanized bolts may be used for connections. The pH of the surrounding soils shall be

All connection shall use a rubber or neoprene gasket when joining pipe sections. The end of each pipe shall be re-rolled an adequate number of corrugations to accommodate the bandwidth. The following type connections are acceptable for pipes less than 24 inches in diameter: flanges on both ends of the pipe with a circular 3/8 inch closed cell neoprene gasket, prepunched to the flange bolt circle, sandwiched between adjacent flanges; a 12-inch wide standard lap type band with 12-inch wide by 3/8-inch thick closed cell circular neoprene aasket: and a 12-inch wide hugger type band with o-ring gaskets having a minimum diameter of 1/2 inch greater than the corrugation depth. Pipes 24 inches in diameter and larger shall be connected by a 24 inch long annular corrugated band using a minimum of 4 (four) rods and lugs, 2 on each connecting pipe end. A 24-inch wide by 3/8-inch thick closed cell circular neoprene gasket will be installed with 12 inches on the end of each pipe. Flanged joints with 3/8 inch closed cell gaskets the full width of the flange is also acceptable

Helically corrugated pipe shall have either continuously welded seams or have lock seams with internal caulking or a neoprene bead

4. Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support. 5. Backfilling shall conform to "Structure Backfill"

6. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Reinforced Concrete Pipe - All of the following criteria shall apply for reinforced concrete 1. Materials — Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets and shall equal or exceed ASTM C-361.

. Bedding - Reinforced concrete pipe conduits shall be laid in a concrete bedding/cradle for their entire length. This bedding/cradle shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 50% of its outside diameter with a minimum thickness of 6 inches. Where a concrete cradle is not needed for structural reasons, flowable fill may be used a described in the "Structure Backfill" section of this standard. Gravel

3. Laying pipe - Bell and spigot pipe shall be places with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation form the original line and grade of the pipe. The first joint must be located within 4 feet from the riser.

4. Backfilling shall conform to "Structure Backfill".

5. Other details (anti-seep collars, valves, etc.) shall be shown on the drawings.

<u>Plastic Pipe</u> — The following criteria shall apply for plastic pipe:

1. Materials - PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241. Corrugated High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following: 4' - 10" inch pipe shall meet the requirements of AASHTO M252 Type S, and 12" through 24" inch shall meet the requirements of AASHTO M294 Type S.

2. Joints and connections to anti-seep collars shall be completely watertight.

3. Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

4. Backfilling shall conform to "Structure Backfill". 5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

<u>Drainage Diaphragms</u> — When a drainage diaphragm is used, a registered professional engineer will supervise the design and construction inspection.

Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 414, Rock Riprap

Rock riprap shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 311. Geotextile shall be placed under all riprap and shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 921.09, Class C.

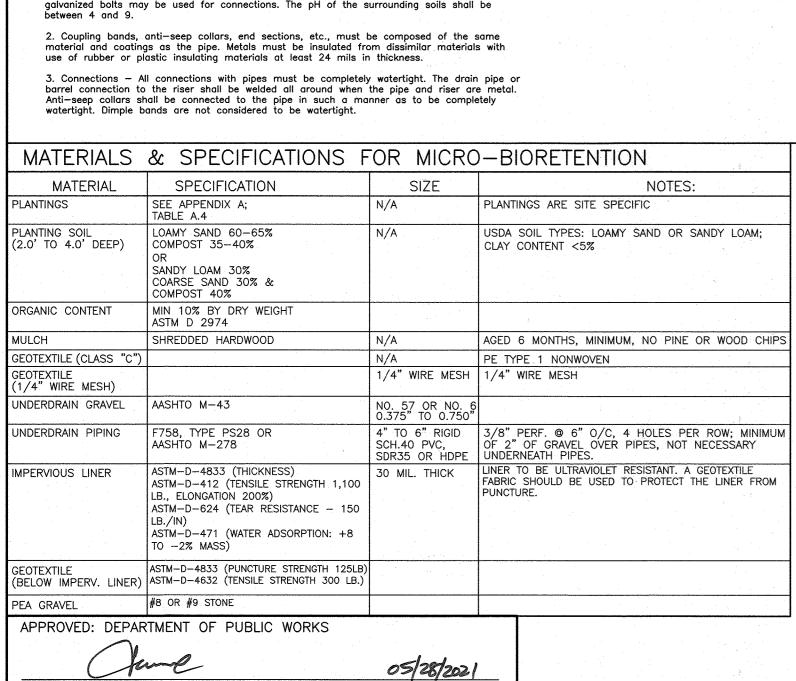
Care of Water during Construction

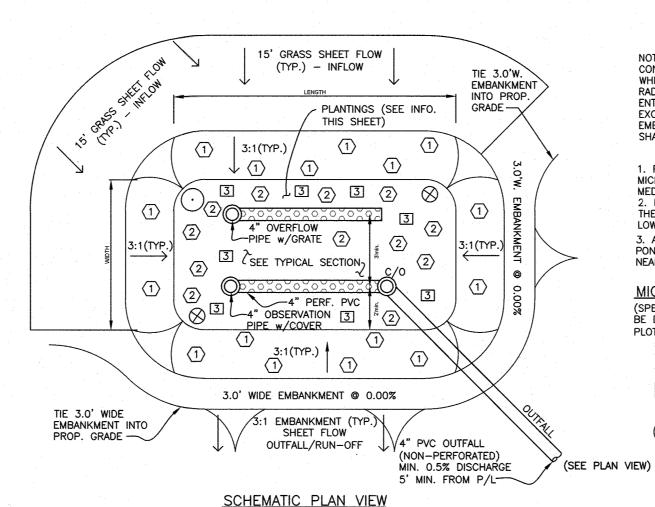
All work on permanent structures shall be carried out in areas free from water. The contractor shall construct and maintain all temporary dikes, levees, cofferdams, drainage channels, and stream diversions necessary to protect the areas to be occupied by the permanent works. The contractor shall also furnish, install, operate, and maintain all necessary pumping and other equipment required for removal of water from various parts of the work and for maintaining the evacuations, foundation, and other parts of the work free from water as required or directed by the engineer for constructing each part of the work. After having served their purpose, all temporary protective works shall be removed or leveled and graded to the extent required to prevent obstruction in any degree whatsoever of the flow of water to the spillway or outlet works and so as not to interfere in any way with the operation or maintenance of the structure. Stream diversions shall be maintained until the ull flow can be passed through the permanent works. The removal of water from the equired excavation and the foundation shall be accomplished in a manner and to the extent that will maintain stability of the excavated slopes and bottom required excavations and will allow satisfactory performance of all construction operations. During the placing and compacting of material in required excavations, the water level at the location being refilled shall be maintained below the bottom of the excavation at such locations which may require draining the water sumps from which the water shall be pumped.

All borrow areas shall be graded to provide proper drainage and left in a sightly condition. All exposed surfaces of the embankment, spillway, spoil and borrow areas, and berms shall be stabilized by seeding, liming, fertilizing and mulching in accordance with the Natural Resources Conservation Service Standards and Specifications for Critical Area Planting (MD-342) or as shown on the accompanying drawings.

Erosion and Sediment Control

Construction operations will be carried out in such a manner that erosion will be controlled and water and air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures.





NOTE: FACILITIES MUST BE CONSTRUCTED WITH IMPERMEABLE LINER WHEN INSTALLED WITHIN THE 100' WEL 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 1. PLANTINGS WITHIN THE PONDING AREA OF THE MICRO-BIORETENTION FACILITY ARE TO BE OF A MEDIUM TO HIGH WATER TOLERANCE PLANTINGS ALONG THE PERIMETER (BERM) AREA OF THE MICRO-BIORETENTION FACILITY ARE TO BE OF A LOW TO MEDIUM WATER TOLERANCE 3. AVOID PLANTINGS WITH EXCESSIVE ROOT MASS IN POND AREA OF THE MICRO-BIORETENTION FACILITY NEAR O.B. PIPE AND UNDERDRAIN.

MICROBIORETENTION PLANTING SCHEDULE (SPECIFIC NUMBER OF PLANTINGS SHALL E DETERMINED WITH FINAL DESIGN AT

PLOT PLAN PHASE) (1) VINCA MINOR (COMMON PERIWINKLE) 2 AJUSTA REPTAS (CREEPING BUNGLEWEED)

IRIS VERSICOLOR (IRIS) CALLUNA VULGARIS (HEATHER) (2 PER FACILITY) RIVER BIRCH (BETULA NIGRA) (1 PER FACILITY)

GRADE -3" MULCH (NON-PERFORATED) OVERFLOW PIPE COLLECTION SYSTEM. PERFORATE PIPE @ 0.0% WITHIN AREA OF FACILITY, CHANGING TO A MINIMUM OF 0.5% SLOPE (NON-PERFORATED) DUTSIDE OF THE FACILITY.

-PLANTINGS (TYP.) SEE TABLE THIS SHEET " PVC ----NON-PERFORATE DBSERVATION PIPE W/CAP ELEV. D ELEV. E 4" PVC PIPE UNDERDRAIN -COLLECTION SYSTEM. PERFORATE PIPE @ 0.0% WITHIN AREA OF FACILITY, CHANGING TO A MINIMUM OF 0.5% SLOPE (NON-PERFORATED) OUTSIDE OF THE FACILITY.

Α B /--->ELEV. A TOP OF STONE FILTER D TOP OF STONE STORAGE G Н

BIO-RETENTION DIMENSION

FACILITY

LEGEND

TOP OF EMBANKMENT

TOP OF MULCH

TOP OF SOIL

UNDERDRAIN INVERT

BOTTOM OF STONE

OUTFALL ELEVATION

ON-LOT BIORETENTION CONCEPTUAL DIMENSIONS* PLANTINGS LENGTH | WIDTH **FILTER FACILITY** (FT) (FT) 203.50 | 202.00 | 201.83 | 199.83 | 199.50 | 198.83 | 197.92 | 198.40±

OPERATION AND MAINTENANCE SCHEDULE FOR

MICRO-BIORETENTION (M-6)

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

A. THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF

B. THE OWNER SHALL PERFORM A PLANT INSPECTION IN THE SPRING AND IN THE FALL OF EACH YEAR. DURING THE

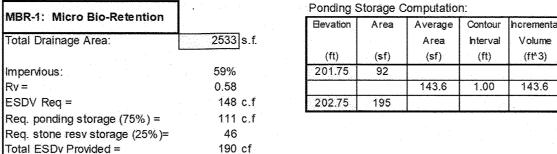
FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II, TABLE A.4.1 AND 2.

WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE

INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT.

MICRO-BIORETENTION DETAILS (TYPICAL)

Date: 7/30/2020 (M-6) MICRO BIO-RETENTION COMPUTATIONS



Pe: 1.2 inches

Project: The Arie in Elkridge

mpervious:

ESDV Reg =

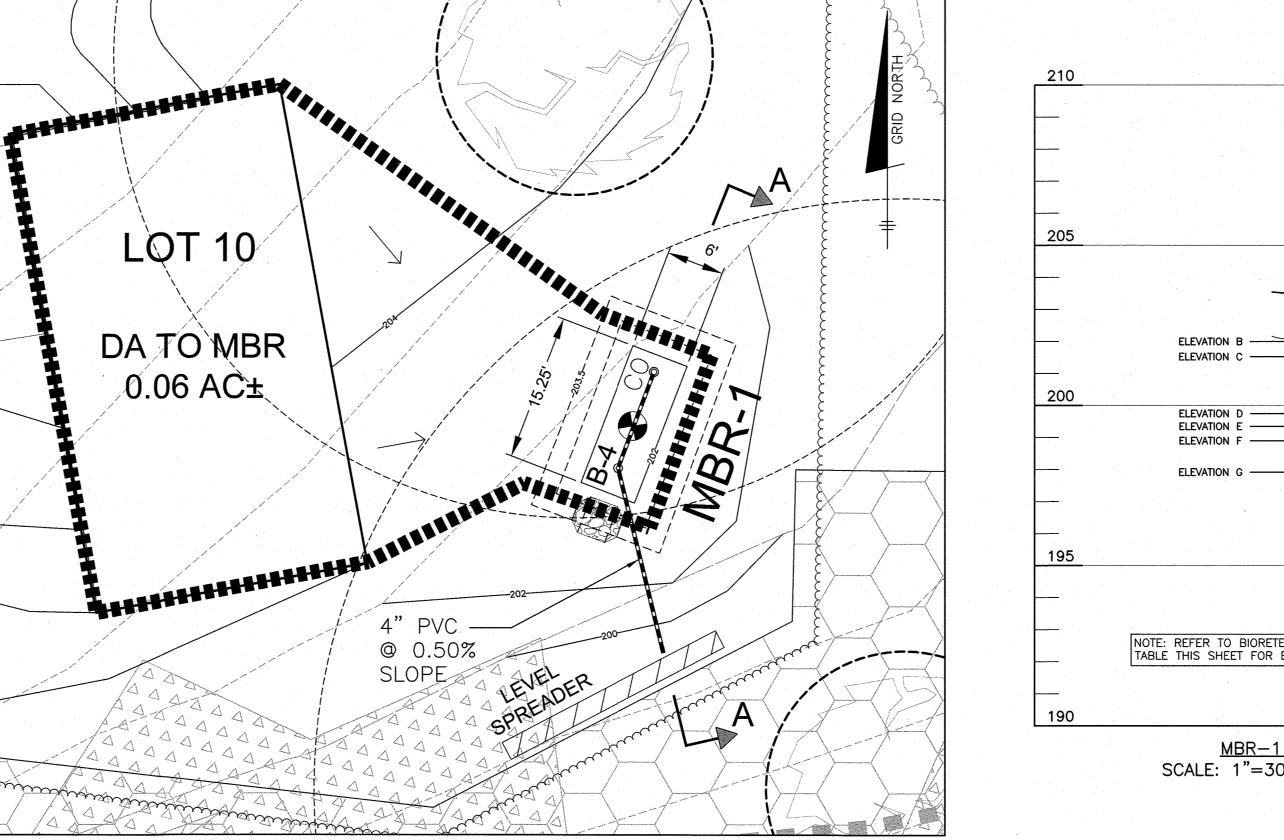
- Volume (ft^3) 143.6 1.00 143.6

LOT 10 (MBR-1) DIMENSIONS

(IN FEET)

1 inch = 10 ft.

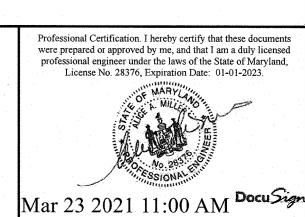
REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLANT MATERIAL, TREAT DISEASED TREES AND SHRUBS, AND REPLACE ALL DEFICIENT STAKES AND WIRES. C. THE OWNER SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE 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.



GRADE @ ---- ELEVATION A 6" DEEP ELEVATION C ----GRADE @ 200 ELEVATION H (DAYLIGHT) @ 0.50%-NOTE: REFER TO BIORETENTION DIMENSION TABLE THIS SHEET FOR ELEVATIONS.

MBR-1 (SECTION A-A) SCALE: 1"=30' HORIZ., 1"=3' VERT.

> BENCHMARK 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/DEVELOPER:	
TROTTER 5857, LLC. 1819 PANARAMA CT. MCLEAN, VA 22101 (P) 443-250-1555	THE A
	6399 A TAX M
	ELECTION DIST

DESIGN: LDD DRAFT: LDD

AERIE IN ELKRIDGE OTS 1-12 AND OS LOT 13

MAP: 38 - GRID: 14 - PARCEL: 232 ZONED: R-12 TRICT NO. 1 - HOWARD COUNTY, MARYLAND

STORMWATER MANAGEMENT NOTES AND DETAILS

MARCH, 2021 BEI PROJECT NO. 2894 SCALE: AS SHOWN SHEET 12 of 17

LANDSCAPE NOTES:

1. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL.

2. STREET TREE LOCATIONS: A. WHEN THE DISTANCE BETWEEN THE CURB AND SIDEWALK IS 6 FEET OR GREATER, THE TREES SHALL BE LOCATED WITHIN THE RIGHT-OF-WAY AND SHALL BE CENTERED BETWEEN THE CURB AND SIDEWALK. B. WHEN THE DISTANCE BETWEEN THE CURB AND SIDEWALK IS LESS THAN 6 FEET, TREES MAY BE PLANTED 3 FEET FROM THE SIDEWALK IN THE DIRECTION AWAY FROM THE ROAD. A 10-FOOT WIDE TREE MAINTENANCE EASEMENT SHALL BE REQUIRED IF THE

RIGHT-OF-WAY IS LIMITED.

C. TREES SHALL BE PLANTED 6 FEET BEHIND CURB WHEN THERE ARE NO SIDEWALKS.

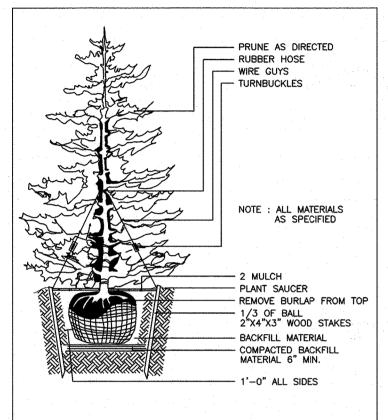
D. TREES TO BE PLANTED MINIMUM 30 FEET FROM SIGNS AND INTERSECTIONS WHEN PLANTED BETWEEN SIDEWALK AND CURB. TREES MAY NOT BE PLANTED WITHIN 5 FEET OF A STORM DRAIN INLET, OPEN SPACE ACCESS STRIP, OR 10 FEET OF A DRIVEWAY.

3. AT THE TIME OF INSTALLMENT, ALL SHRUBS AND OTHER PLANTINGS HEREWITH LISTED AND APPROVED FOR THIS SITE, SHALL BE OF THE PROPER HEIGHT REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATION OF REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THIS APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO APPLICABLE PLANS AND CERTIFICATIONS.

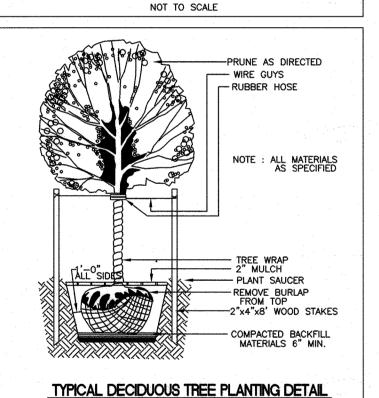
4. THE OWNER, TENANTS AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING INCLUDING BOTH PLANT MATERIALS AND BERMS, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.

5. FINANCIAL SURETY IN THE AMOUNT OF \$11,700.00 FOR THE REQUIRED PERIMETER LANDSCAPING (33 SHADE TREES @ \$300 PER TREE) SHALL BE POSTED AS PART OF THE DPW DEVELOPERS AGREEMENT.

6. ALL PUBLIC TREES SHALL BE SPACED A MINIMUM OF 20' FROM PROPOSED PUBLIC STREET LIGHT LOCATIONS. CONTACT TRAFFIC ENGINEERING TO MARK STREET LIGHT LOCATIONS BEFORE PLANTING TREES.



TYPICAL EVERGREEN TREE PLANTING DETAIL



Specimen Tree Chart

Key (X#)	Species	Size (in.dbh)	CRZ (feet radius)	Comments
1	Black oak **	30.5	45.75	fair, some trimming noted
2	Chestnut oak	31	46.5	CRZ impacted by offsite activity
3	Chestnut oak *	32	48	fair, some dieback noted
4	Black oak	41	61.5	good
5	Chestnut oak **	29.8	44.7	poor, heavy vine cover and dieback in canopy

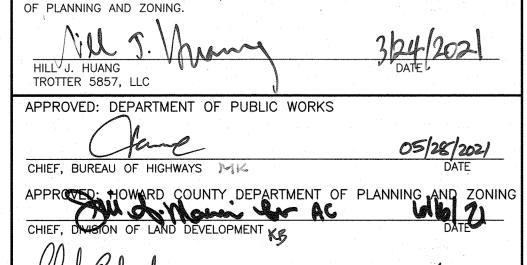
*NOTE: ALL ATTEMPTS MUST BE MADE TO PRESERVE SPECIMEN TREE #3. HOWEVER, WP-19-053 ALLOWED REMOVAL OF THIS TREE IF PROTECTIVE MEASURES PROVE INSUFFICIENT OR HEALTH OF TREE DECLINES. MITIGATION IS PROVIDED FOR THIS TREE UNDER THIS PLAN.

**NOTE: SPECIMEN TREE TO BE REMOVED

DEVELOPER'S/BUILDER'S CERTIFICATE

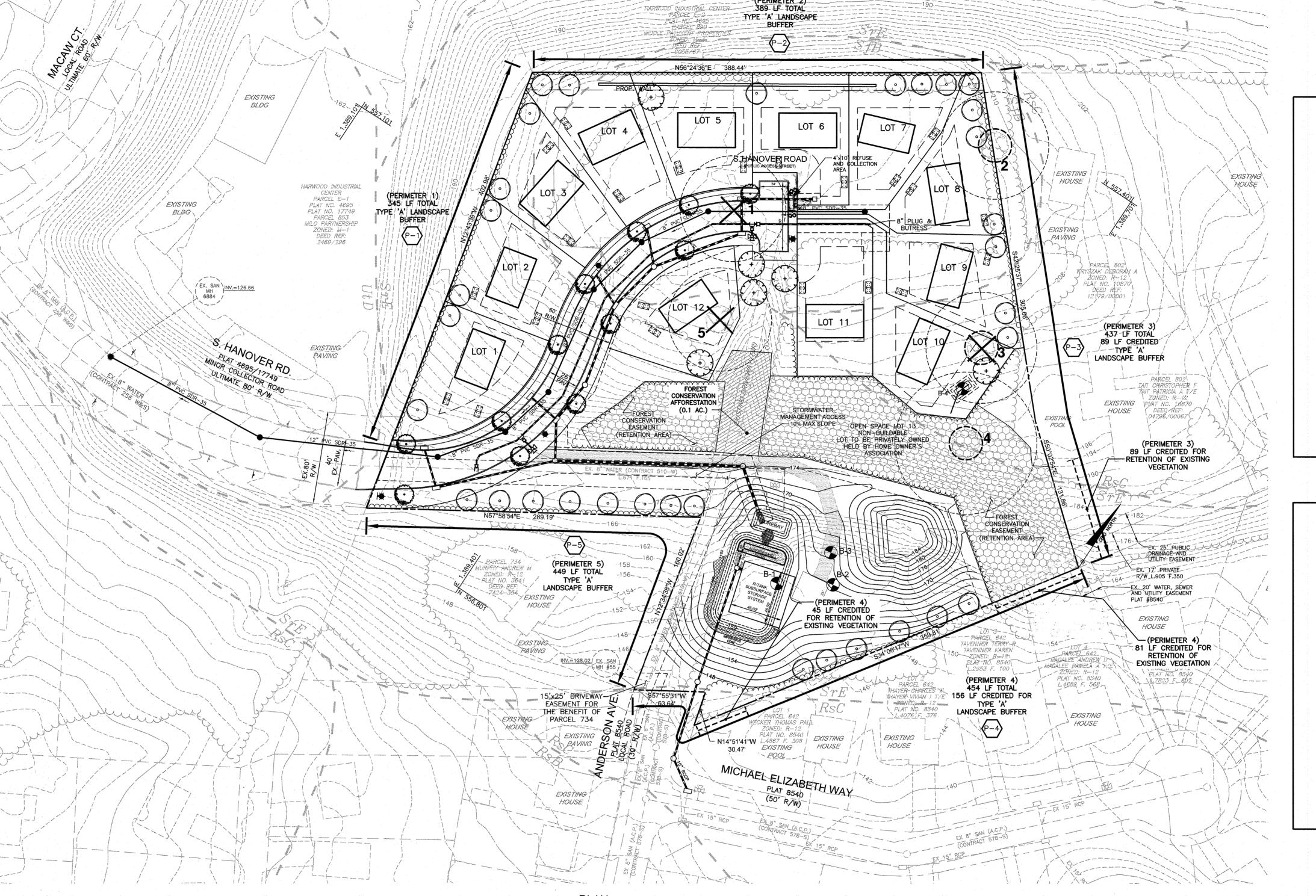
CHIEF, DEVELOPMENT ENGINEERING DIVISION W

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION OF A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE—YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT



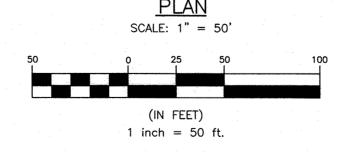
		SO	LS CHART - SOI	L SURVEY HOWARD COUNTY, MARYLAND	
-		HYDROLOGIC	ALTERNATE		k-VALUE
SYMBOL	HYDRIC	GROUP	GROUP	NAME	K-VALUE
RsC		С		RUSSETT FINE SANDY LOAM, 5 TO 10 PERCENT SLOPES	0.24
SrE**		В	В	SASSAFRAS AND CROOM SOIL, 15 TO 25 PERCENT SLOPES	0.24/0.28
SfB	-	В		SASSAFRAS GRAVELLY SAND LOAM, 2 TO 5 PERCENT SLOPE	0.24

** HIGHLY ERODIBLE, K>0.35 AND STEEPER THAN 5%, OR 15% AND GREATER SLOPES. TAKEN FROM THE NRCS WEB SOIL SURVEY HOWARD COUNTY, MARYLAND, SEPTEMBER 2017.



PERIMETER LANDSCAPE PLANTING LIST					
SYMBOL	QUANTITY	NAME	REMARKS	DESCRIPTION	
\odot	33	QUERCUS RUBRA (Red Oak)	3" cal. (min.)	PERIMETER PLANTINGS	
(+)	6	(Mixed Oak)	QUERUS PRINUS, QUERCUS RUBRA, QUERCUS VELUTINA, LIRIODENDRON TULIPIFERA, PINUS VIRGIN IANA	INCLUDES 6 TREES AS MITIGATION FOR REMOVAL OF 3 SPECIMEN TREES (WP-19-053)	

		STREET TREE	STREET TREE PLANTING LIST		
SYMBOL	QUANTITY	NAME	REMARKS	DESCRIPTION	
	12	TILIA CORDATA 'GREENSPIRE' (Greenspire Littleleaf Linden)	2.5" -3" cal.	TO BE PLANTED ALONG S. HANOVER ROAD (PROVIDED BY THE DEVELOPER)	
	5	Juniperus Chinesis (Sea Green Juniper)	18"-24"sp.	TO BE PLACED AROUND REFUSE AREA	



STREET TREE SC	HEDULE	
	S. HANOVER RD ACCESS ROAD	
LINEAR FEET OF RIGHT-OF-WAY	450'	
LINEAR FEET OF CREDIT	0	TOTAL
LINEAR FEET OF REQUIRED PLANTING	450'	IOIAL
TREE SIZE	MEDIUM 1:40 LF	-
TREE SIZE	SMALL 1:10 LF	
TREES REQUIRED	14	14

	SCHEDUL PERIMETER LAND		EDGE		٠.		
CATEGORY	ADJACENT TO PERIMETER PROPERTIES	(P-1)	(P−2)	(P−3)	(P−4)	(P-5)	TOTAL
PERIMETER NO. / LANDSCAPE TYPE		A 1:60 shade					
LINEAR FEET OF PERIMETER (FRONTAGE/ROADWAY)		345	389	437	454	449	2074
CREDIT FOR	EXISTING VEGETATION: NO OR YES (w/LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO -	NO -	YES 89	YES 126	NO -	215
LINEAR FEET	OF REQUIRED PERIMETER LANDSCAPING	345	389	348	328	449	1859
CREDIT FOR	WALL, FENCE OR BERM: NO OR YES (w/LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO -	NO -	NO -	NO -	NO -	
NUMBER OF	PLANTS REQUIRED: SHADE TREES 1:60 EVERGREEN TREES — OTHER TREES (2:1 SUBSTITUTE) SHRUBS	6 - -	7 - -	6 - -	6 - -	8 - - -	33 - -
NUMBER OF	PLANTS PROVIDED: SHADE TREES EVERGREEN TREES OTHER TREES (2:1 SUBSTITUTE) SHRUBS (10:1 SUBSTITUTE) (DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)	6 - - - -	7 - - -	6 - - -	6 - - - -	8 - - - -	33 - - - -

BENCHMARK

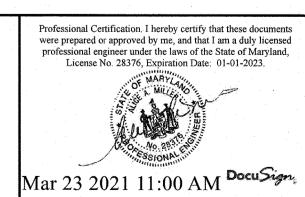
ENGINEERS & LAND SURVEYORS & PLANNERS

ENGINEERING, INC.

8480 BALTIMORE NATIONAL PIKE & SUITE 315
ELLICOTT CITY, MARYLAND 21043

(P) 410-465-6105 & (F) 410-465-6644

WWW.BEI-CIVILENGINEERING.COM



NER/DEVELOPER:	
TROTTER 5857, LLC. 1819 PANARAMA CT. MCLEAN, VA 22101 (P) 443-250-1555	THE AERIE IN ELKRIDGE LOTS 1-12 AND OS LOT 13
	6399 ANDERSON AVE, HANOVER, MD 21076 TAX MAP: 38 — GRID: 14 — PARCEL: 232 ZONED: R-12 ELECTION DISTRICT NO. 1 — HOWARD COUNTY, MARYLAND
	FINAL LANDSCAPE PLAN AND SOILS MAP

MARCH, 2021

AS SHOWN

DATE:

SCALE:

DESIGN: LDD DRAFT: LDD

LEGEND

— — — 200 – — — GIS CONTOUR LINES

EXISTING TREELINE

PROPOSED TREELINE

--- PROPERTY BOUNDARY

PROPOSED CONTOUR LINES

BOUNDARY

SOIL DELINEATION

ADJACENT PROPERTY

EXISTING BUILDINGS

PROPOSED DWELLING

STEEP SLOPES

PROPOSED WATER

O PROPOSED STORMDRAIN

PROPOSED SANITARY

CRITICAL ROOT ZONE

SPECIMEN TREE

SPECIMEN TREE

SPECIMEN TREE
MITIGATION PLANTING

EASEMENT AREA

FOREST CONSERVATION

FUTURE PLANTING AREA AND FC EASEMENT

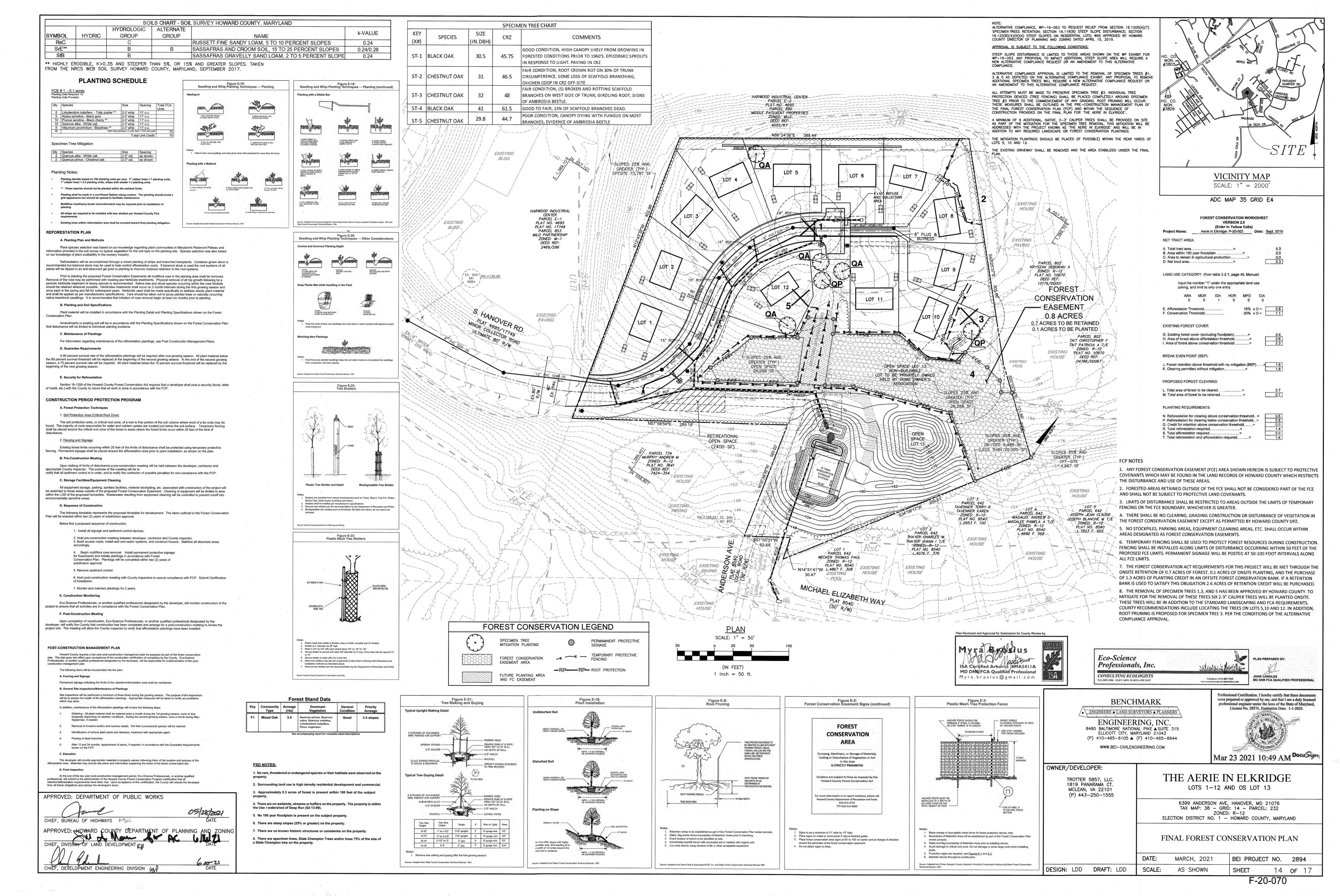
(TO BE REMOVED)

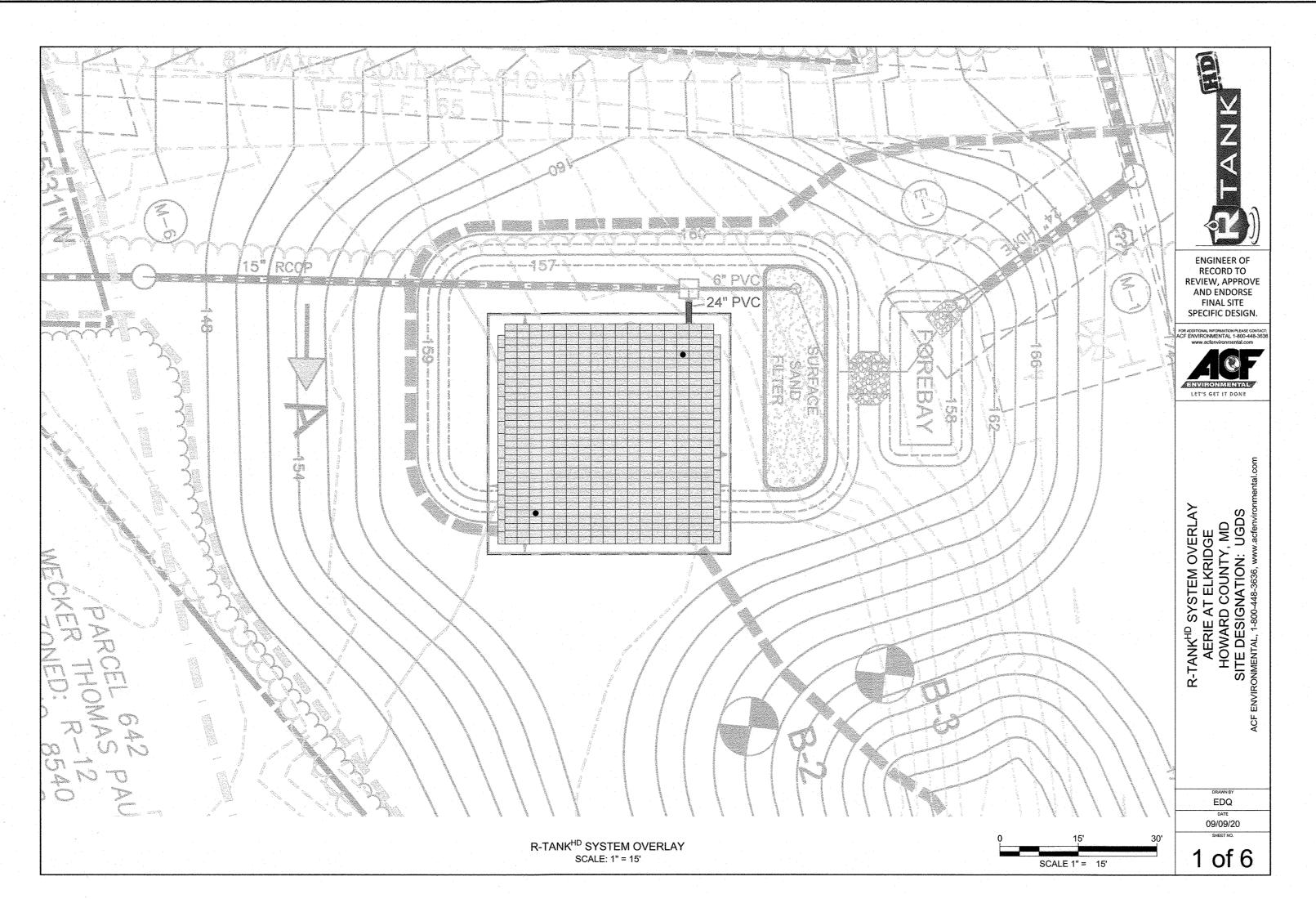
25% OR GREATER

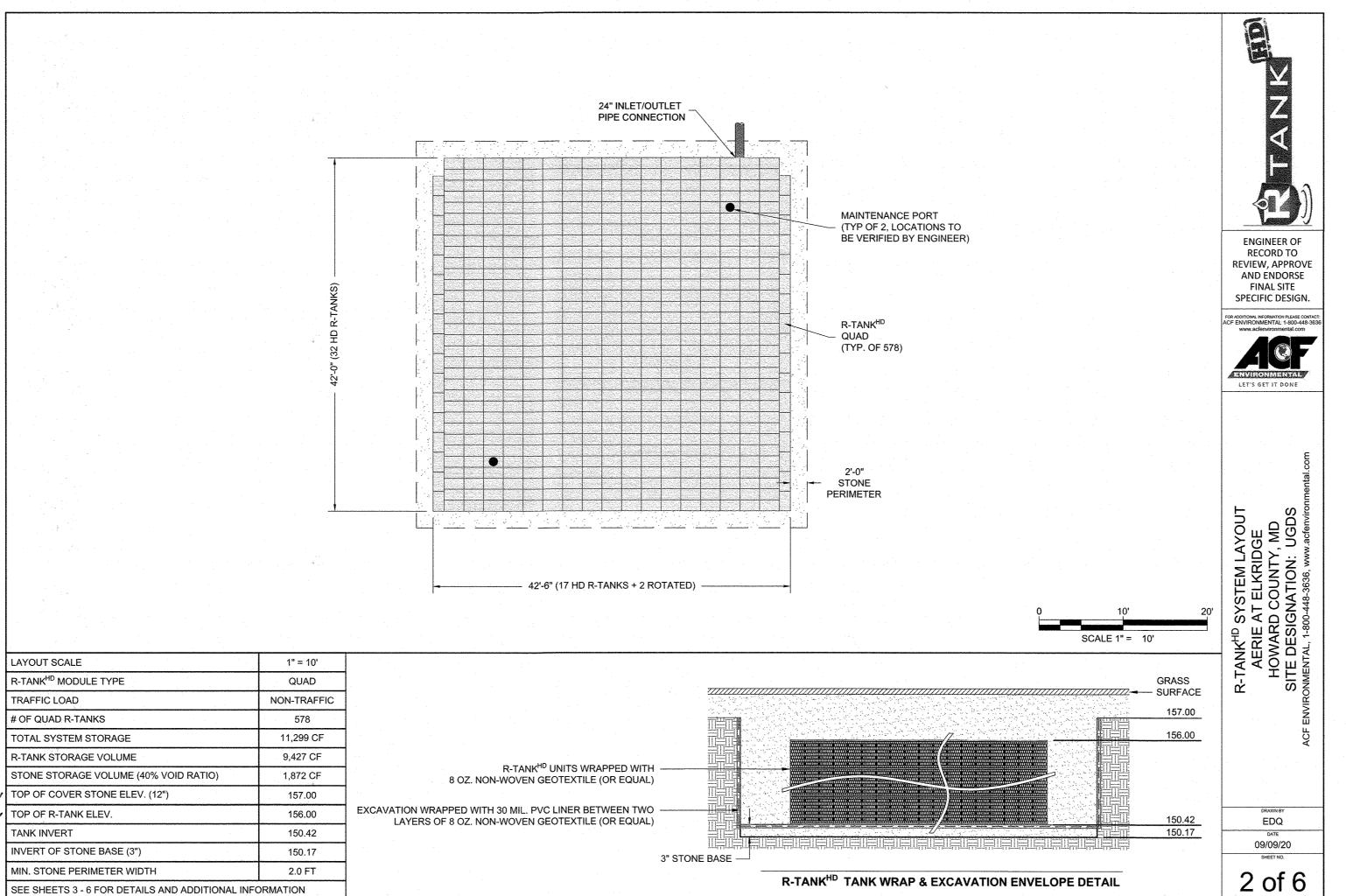
F-20-070

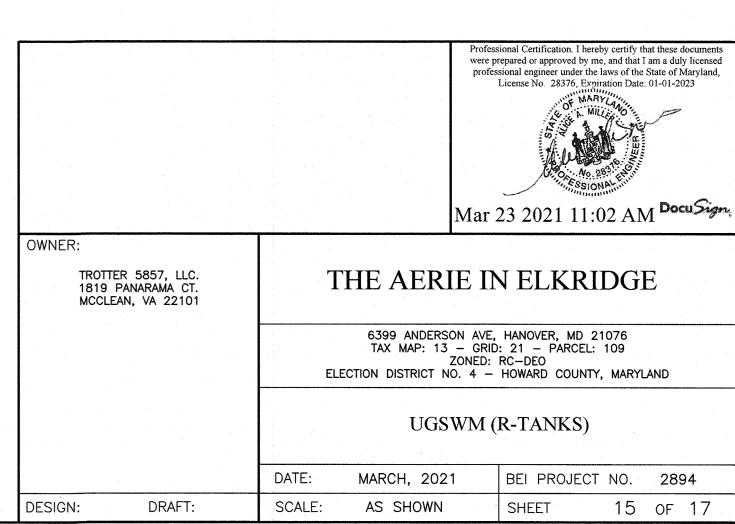
BEI PROJECT NO. 2894

SHEET









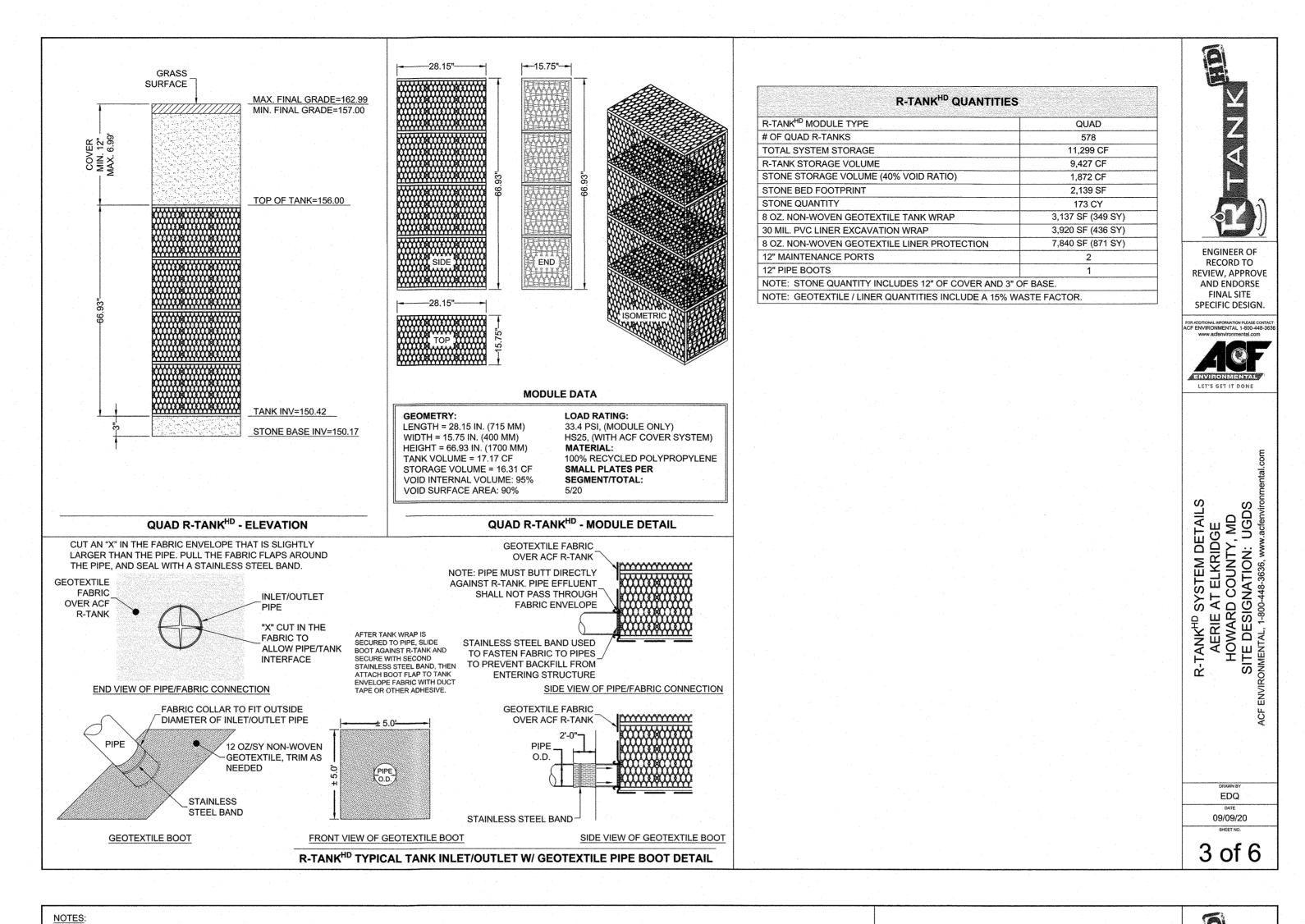
APPROVED: DEPARTMENT OF PUBLIC WORKS

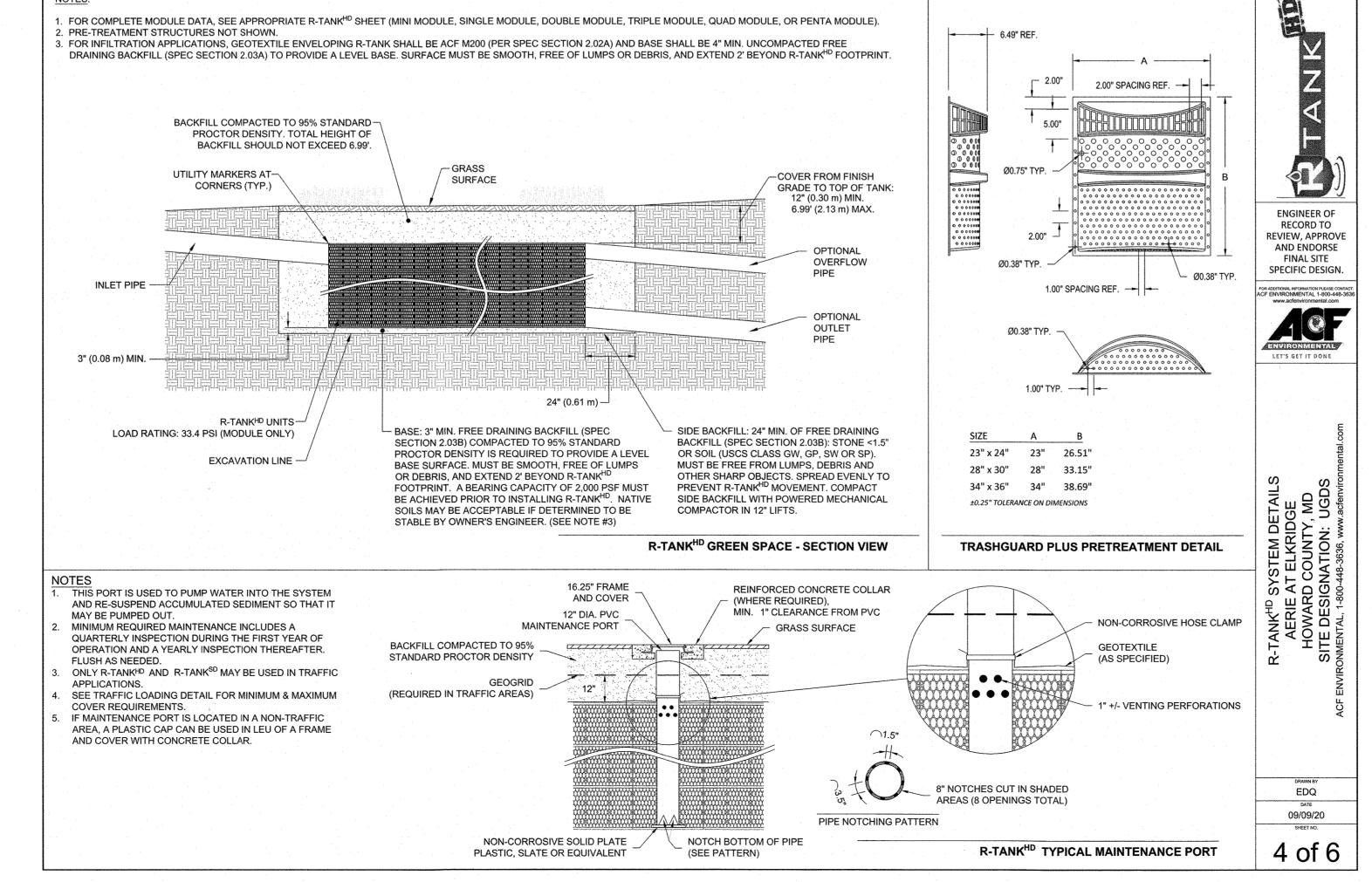
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



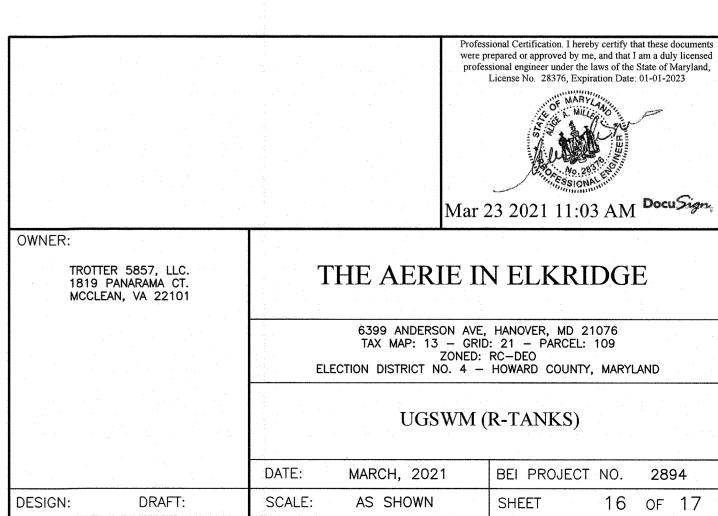


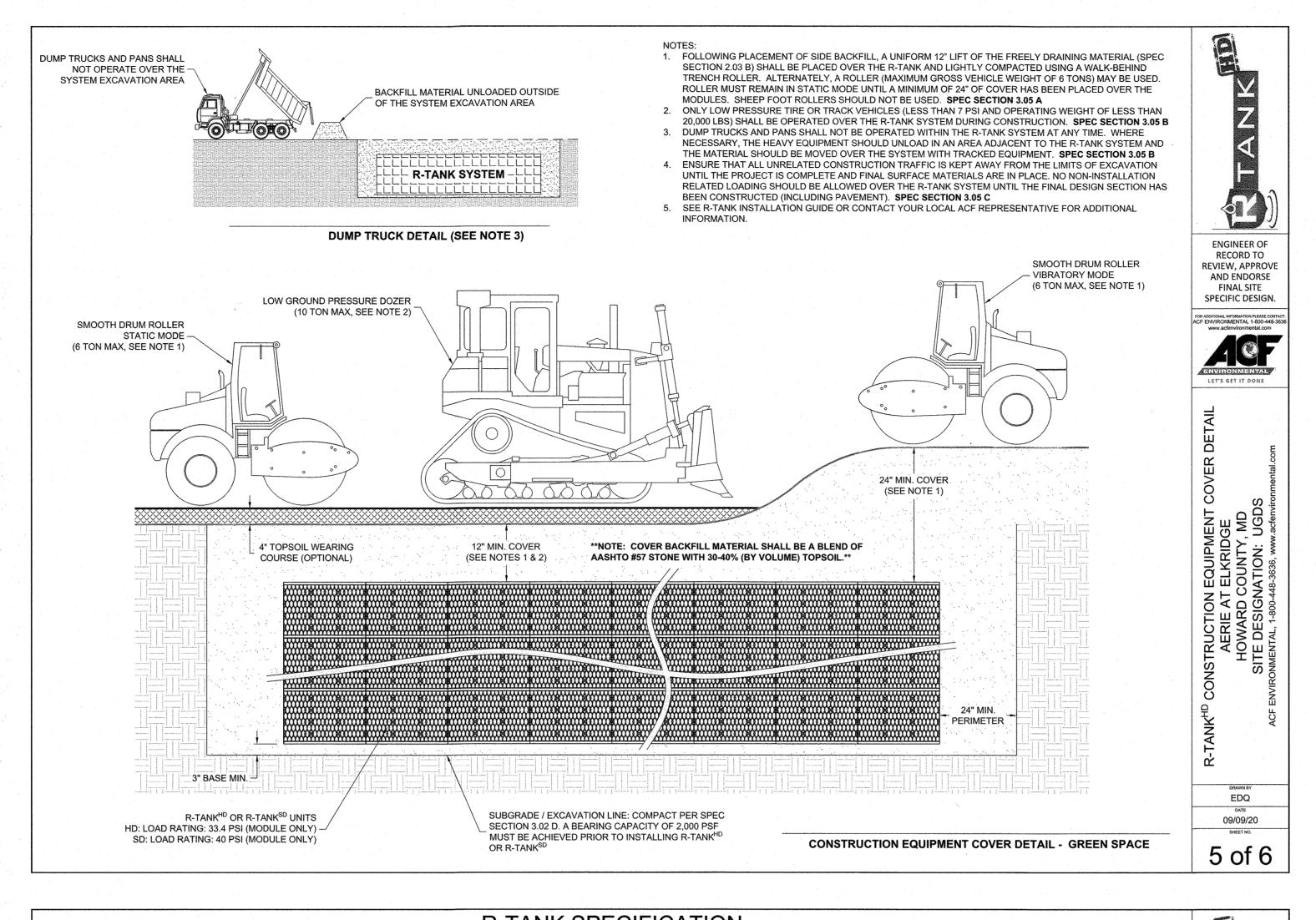
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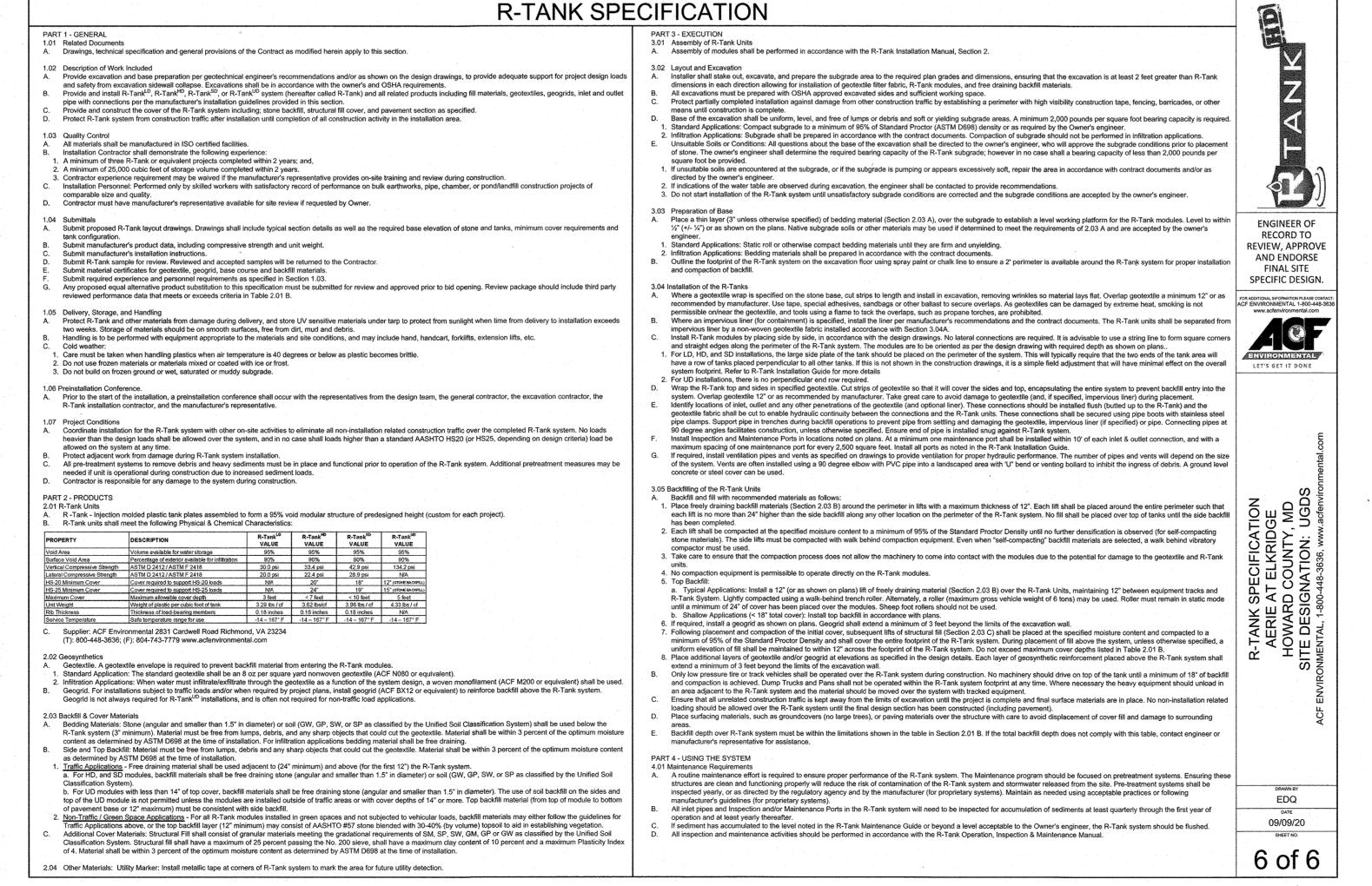
, DEVELOPMENT ENGINEERING DIVISION 🦂

CHIEF, BUREAU OF HIGHWAYS

05/28/2021







APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, DEVELOPMENT ENGINEERING DIVISION

CHIEF, BUREAU OF HIGHWAYS

0928/2021

