

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 ZONING PLAN.
- 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.
- 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. 380B AND 380E 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.
- THIS PROPERTY IS NOT LOCATED ALONG A SCENIC ROAD.
- TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO CEMETERIES, BURIAL GROUNDS OR HISTORIC STRUCTURES LOCATED ON THE SUBJECT PROPERTY.
- 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 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.
- THE GEO-TECHNICAL REPORT WAS PREPARED BY GEOLAB DATED AUGUST, 2019.
- THIS PROJECT IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
- WATER AND SEWER IS PUBLIC. THE DRAINAGE AREA IS THE DEEP RUN OF THE PATAPSCO RIVER. THE CONTRACT NUMBERS ARE: 256 W & S 610-W
- 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 BRIDGES.
- THE TRAFFIC STUDY WAS PREPARED BY MARS GROUP 5/6/18 AND WAS APPROVED UNDER S-19-004.
- 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 16.1205(B)(1) STEEP SLOPES ON RESIDENTIAL LOTS; WAS APPROVED BY HOWARD COUNTY DIRECTOR OF PLANNING AND ZONING DATED APRIL 15, 2019.

APPROVAL: DEPARTMENT OF PUBLIC WORKS

[Signature]
CHIEF, BUREAU OF HIGHWAYS MK
DATE: 09/28/2021

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature]
CHIEF, DIVISION OF LAND DEVELOPMENT KB
DATE: 6/16/21

APPROVED: DEVELOPMENT ENGINEERING DIVISION

[Signature]
CHIEF, DEVELOPMENT ENGINEERING DIVISION #22
DATE: 6-10-21

- 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, 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 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 DEVELOPER'S AGREEMENT.
- 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:
 - WIDTH - 12' (16' SERVING MORE THAN ONE RESIDENCE).
 - SURFACE - 6" OF COMPACT CRUSHER RUN BASE WITH TAR AND CHIP COATING (1-1/2" MIN).
 - GEOMETRY - MAXIMUM 15% GRADE, MAXIMUM 10% GRADE CHANGE AND MINIMUM 45' TURNING RADIUS.
 - STRUCTURES (CULVERTS/BRIDGES) - CAPABLE OF SUPPORTING 25 GROSS TONS (125 TONS LOADING) NET ONTO THE PIPESTEM LOT DRIVEWAY.
 - DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOODPLAIN WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY.
 - STRUCTURE CLEARANCES - MINIMUM 12 FEET.
 - MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE.
- HOWARD COUNTY STANDARD DETAILS R-6.03 AND R-6.05 SHALL BE UTILIZED FOR THE DRIVEWAY APRONS.
- NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS, STREAMS, THEIR REQUIRED BUFFERS, 100'YR FLOODPLAIN, STEEP SLOPES OR FOREST CONSERVATION EASEMENTS, EXCEPT AS APPROVED BY THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.
- 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 WITHIN ROW.
- WATER AND SEWER SERVICE TO THESE LOTS WILL BE GRANTED UNDER THE PROVISIONS OF SECTION 18.122.B OF THE HOWARD COUNTY CODE.
- PUBLIC WATER AND SEWAGE ALLOCATION WILL BE GRANTED AT TIME OF ISSUANCE OF BUILDING PERMIT IF CAPACITY IS AVAILABLE AT THAT TIME.
- 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 EASEMENTS, 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.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
- THE USE-IN-COMMON ACCESS AND MAINTENANCE AGREEMENT FOR LOTS 6-11 SHALL BE RECORDED SIMULTANEOUSLY WITH THE RECORDATION OF THE SUBDIVISION PLAT.
- THE ARTICLES OF INCORPORATION FOR THE HOMEOWNERS ASSOCIATION WERE ACCEPTED BY THE STATE DEPARTMENT OF ASSESSMENTS AND TAXATION ON JANUARY 13, 2021 ID#212484555.
- THIS PROJECT IS SUBJECT TO SECTION 13.402 OF THE COUNTY CODE FOR MODERATE INCOME HOUSING UNITS (MIHU), PER SECTION 13.402.e, THIS REQUIREMENT SHALL BE MET BY FEE-IN-LIEU PAYMENT IN AN 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.
- 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.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IS APPLICABLE.
- 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 LIGHT AND ANY TREE.
- 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.
- 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 SOUTHWEST 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 MANUAL.

SITE DATA TABULATION

- GENERAL SITE DATA
 - PRESENT ZONING: R-12
 - LOCATION: TAX MAP 38 - GRID 14 - PARCEL 232
 - APPLICABLE DPZ FILE REFERENCES: ECP-19-028, S-19-004, WP-19-053, P-20-003
 - DEED REFERENCE: L-18048 F. 6
 - PROPOSED USE OF SITE: 12 NEW SFD DETACHED RESIDENCES.
 - PROPOSED WATER AND SEWER: PUBLIC WATER AND PUBLIC SEWER
- AREA TABULATION
 - TOTAL AREA OF SITE 5.25 Ac.±
 - 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.±
 - AREA OF PROPOSED PUBLIC ROAD 0.30 Ac.±
 - AREA OF PROPOSED PUBLIC R/W DEDICATION 0.57 Ac.±
- UNIT/LOT TABULATION
 - TOTAL NUMBER OF BUILDABLE LOTS (8,400 SF MIN. LOT SIZE) 12
 - TOTAL NUMBER OF OPEN SPACE LOTS 1
- OPEN SPACE
 - REQUIRED OPEN SPACE (FULL OBLIGATION 30%) 1.58 Ac.±
 - OPEN SPACE PROVIDED 2.25 Ac.±
 - NON-CREDIT OPEN SPACE 0
 - CREDITED OPEN SPACE 2.25 Ac.±
 - PERCENT OF OPEN SPACE PROVIDED 42.9%
 - RECREATIONAL OPEN SPACE (200 SF/UNIT) 2,400 SF

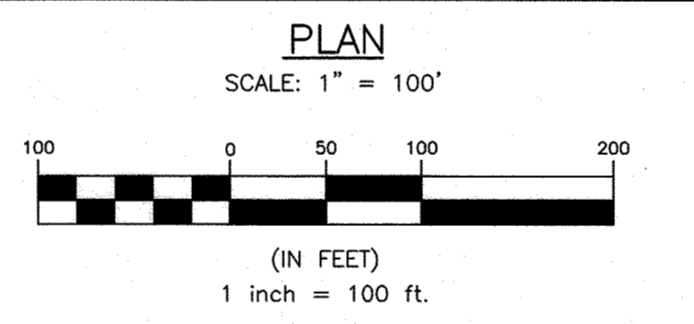
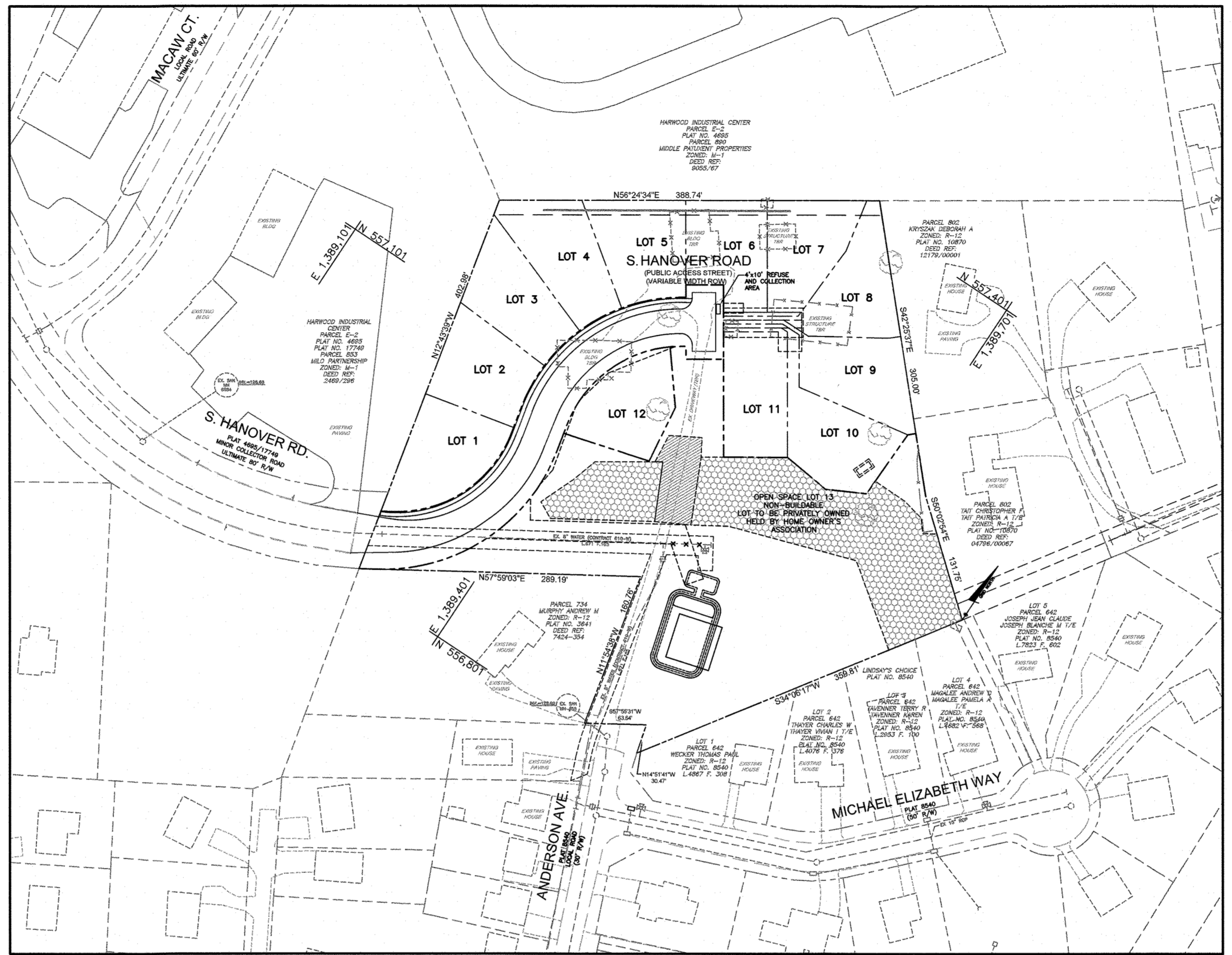
THE AERIE IN ELKCRIDGE

LOTS 1-12 AND OS LOT 13

1ST ELECTION DISTRICT

HOWARD COUNTY, MARYLAND

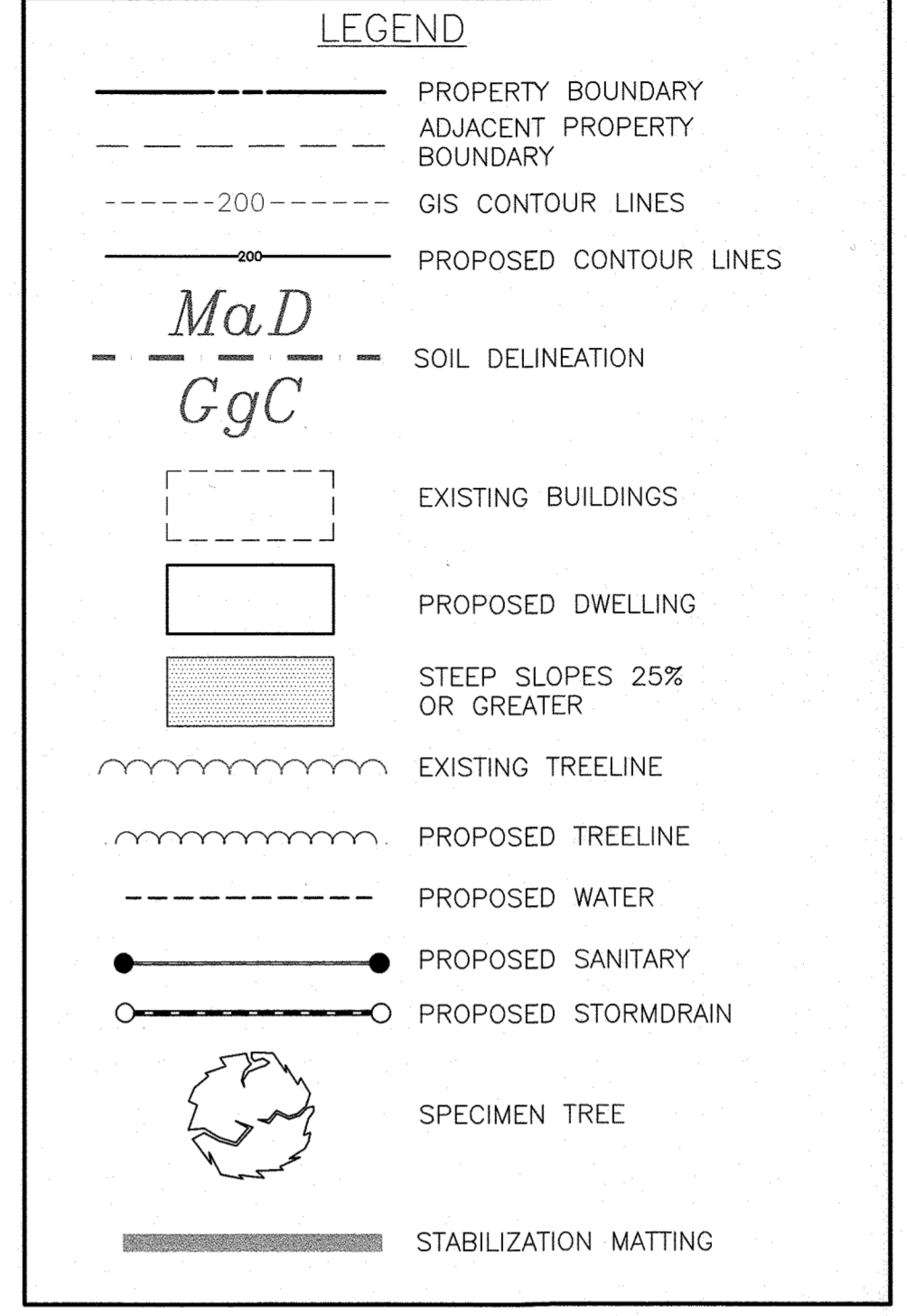
FINAL CONSTRUCTION PLANS



STORMWATER MANAGEMENT PRACTICES			
LOT NO.	ADDRESS	DRYWELLS (M-5)	MICRO-BIORETENTION (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	6407 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

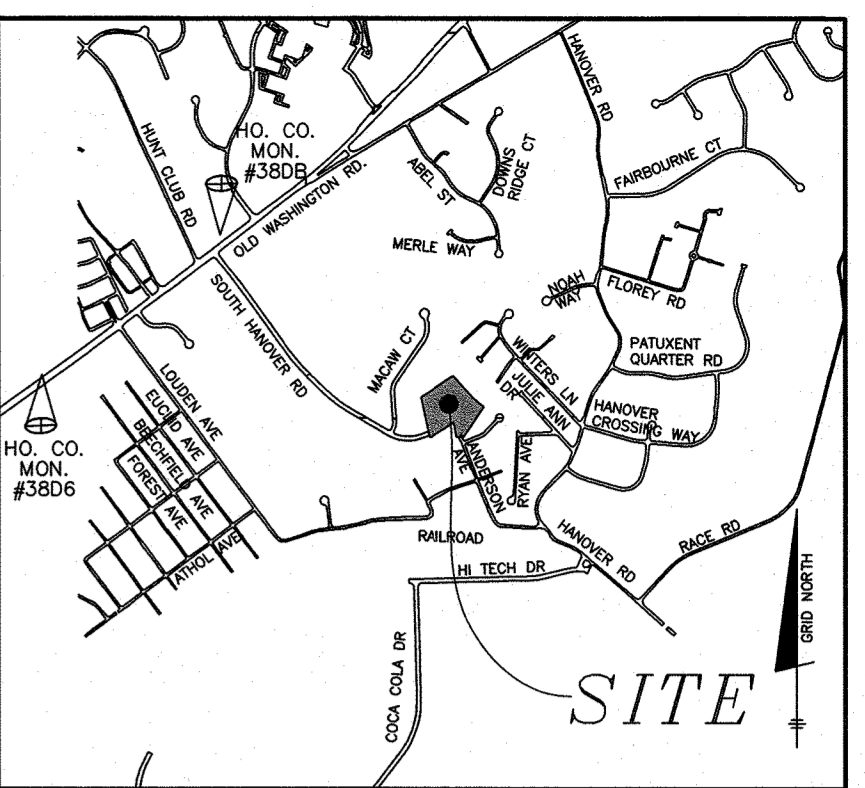
*SURFACE SAND FILTER FACILITY SHALL TREAT THE PUBLIC ROAD AND PORTIONS OF THE LOTS. IT ALSO PROVIDES 10 AND 100 YEAR MANAGEMENT.

MINIMUM LOT SIZE CHART			
LOT NO.	GROSS AREA (SF)	PIPESTEM (SF)	MINIMUM LOT SIZE
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	8,438	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. #380B	ELEV. 192.132
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. #380E	ELEV. 175.228
STAMPED (BRASS OR ALUMINUM) DISC SET ON TOP OF A CONCRETE COLUMN 1" OR 2" BELOW GRADE	
N 507,155.409	E 1,304,992.262



VICINITY MAP
SCALE: 1" = 2000'
ADC MAP 35 GRID E4

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 MANAGEMENT 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 (MIHU) APPLICATION EXEMPTIONS TRACKING

TOTAL NUMBER OF MIHUS PROPOSED	12
TOTAL NUMBER OF MIHUS REQUIRED	2
NUMBER OF MIHUS PROVIDED ON-SITE (EXEMPT FROM APFO ALLOCATIONS)	0
NUMBER OF MIHUS PROVIDED ON-SITE (REMAINING LOTS/UNITS)	11
MIHU FEE-IN-LIEU (INDICATE LOT/UNIT NUMBERS)	YES, LOTS 2-12

BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS
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WWW.BEI-CIVILENGINEERING.COM

THE AERIE IN ELKCRIDGE
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

COVER SHEET

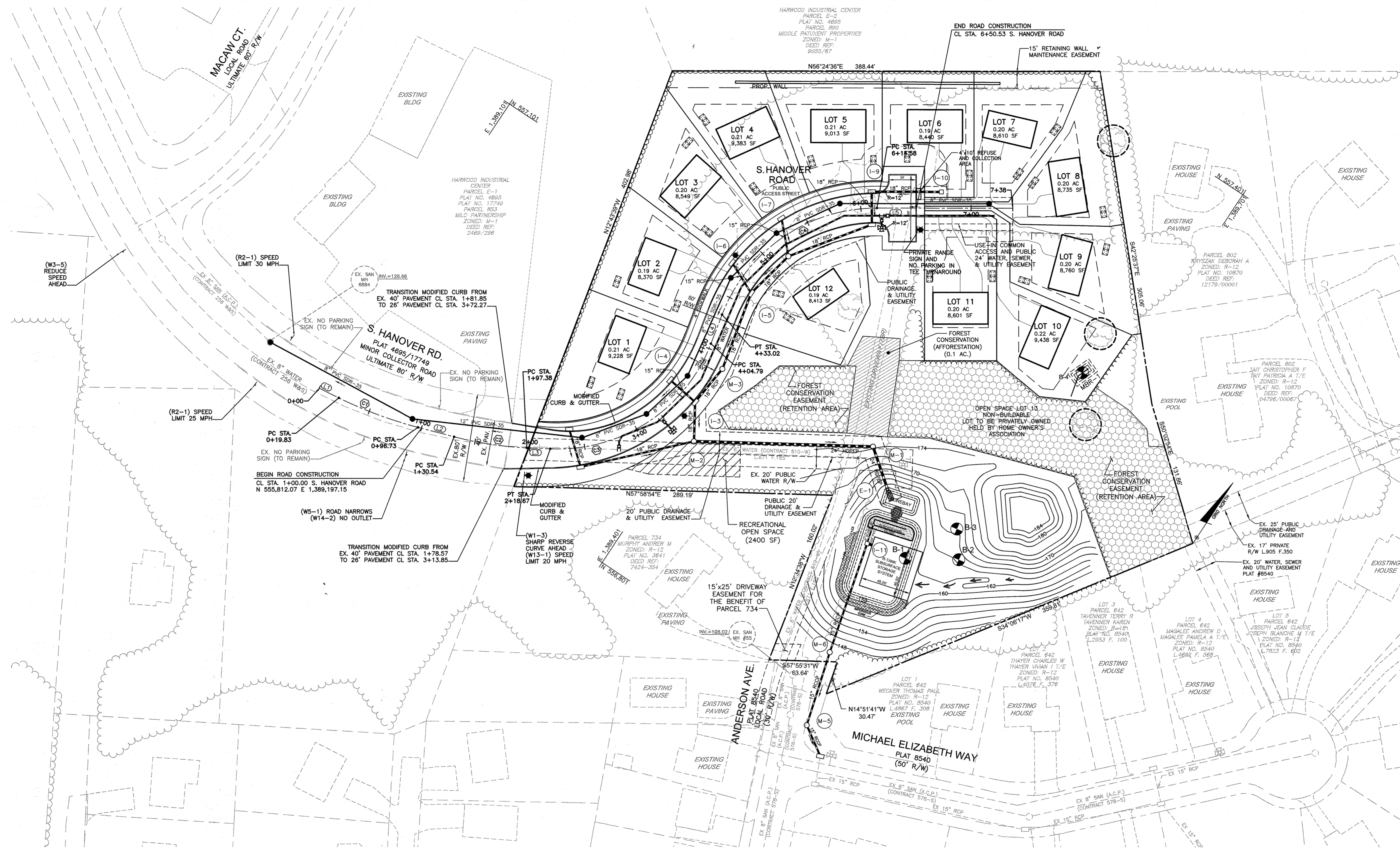
DATE: MARCH, 2021 BEI PROJECT NO. 2894
DESIGN: LDD DRAFT: LDD SCALE: AS SHOWN SHEET 1 OF 17

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. 28374, Expiration Date: 1-1-2023.

[Signature]
Mar 23 2021 10:49 AM

CENTER LINE CURVE DATA								
CURVE	ALIGNMENT	STATION	RADIUS	ARC	DELTA	TANGENT	CHORD DIRECTION	CHORD LENGTH
C1	S. HANOVER ROAD	0+19.78 TO 0+96.73	375.79'	76.95'	11°43'58"	38.61'	N76° 47' 04"E	76.82'
C2	S. HANOVER ROAD	1+30.54 TO 1+97.38	325.75'	66.84'	11°45'24"	33.54'	N65° 02' 23"E	66.72'
C3	S. HANOVER ROAD	2+18.67 TO 4+04.79	148.48'	186.12'	71°49'14"	107.52'	N23° 15' 04"E	174.17'
C4	S. HANOVER ROAD	4+33.02 TO 6+14.58	150.61'	181.55'	69°04'06"	103.64'	N21° 52' 30"E	170.76'

LINE TABLE				
LINE #	LENGTH	DIRECTION	START POINT	END POINT
L1	19.78	N82° 39' 02.52"E	N 556790.7348, E 1389099.7345	N 556793.2651, E 1389119.3529
L2	33.81	N70° 55' 04.81"E	N 556810.8271, E 1389194.1371	N 556821.8792, E 1389226.0859
L3	21.29	N59° 09' 40.70"E	N 556850.0359, E 1389286.5775	N 556860.9482, E 1389304.8551
L4	28.24	N12° 39' 33.00"W	N 557020.9725, E 1389373.6104	N 557048.5226, E 1389367.4224
L5	123.17	N56° 24' 33.12"E	N 557206.9867, E 1389431.0443	N 557275.1299, E 1389533.6438

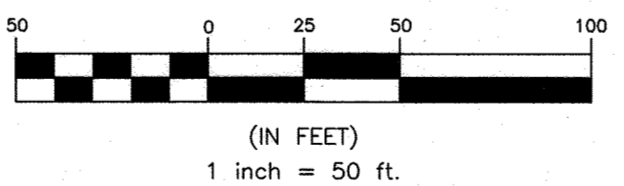


LEGEND

- PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARY
- 200' GIS CONTOUR LINES
- 200' PROPOSED CONTOUR LINES
- Soil Delineation (MaD, GgC)
- EXISTING BUILDINGS
- EXISTING BUILDINGS (TO BE REMOVED)
- PROPOSED DWELLING
- EXISTING TREELINE
- PROPOSED TREELINE
- PROPOSED WATER
- PROPOSED SANITARY
- PROPOSED STORMDRAIN
- SPECIMEN TREE (TO BE REMOVED)
- SPECIMEN TREE
- PROPOSED DRYWELL

PLAN

SCALE: 1" = 50'



ROAD CHART				
ROAD	CLASSIFICATION	DESIGN SPEED	RIGHT-OF-WAY	PVMT TYPE
S. HANOVER ROAD	PUBLIC ACCESS STREET	30 MPH	50' (VARIES)	P-2

PUBLIC STREET LIGHT SCHEDULE		
SYMBOL	LOCATION	DESCRIPTION
★	S. HANOVER RD: 2+00 RIGHT*	LED-100 COLONIAL POST-TOP FIXTURE
★	S. HANOVER RD: 3+40 RIGHT	LED-150 COLONIAL POST-TOP FIXTURE
★	S. HANOVER RD: 4+83 LEFT	MOUNTED ON A 14" BLACK FIBERGLASS POLE
★	S. HANOVER RD: 6+54 RIGHT	MOUNTED ON A 14" BLACK FIBERGLASS POLE

APPROVED: DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS [Signature] 05/28/2021 DATE
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DIVISION OF LAND DEVELOPMENT [Signature] 6/10/21 DATE
 CHIEF, DEVELOPMENT ENGINEERING DIVISION [Signature] 6.10.21 DATE

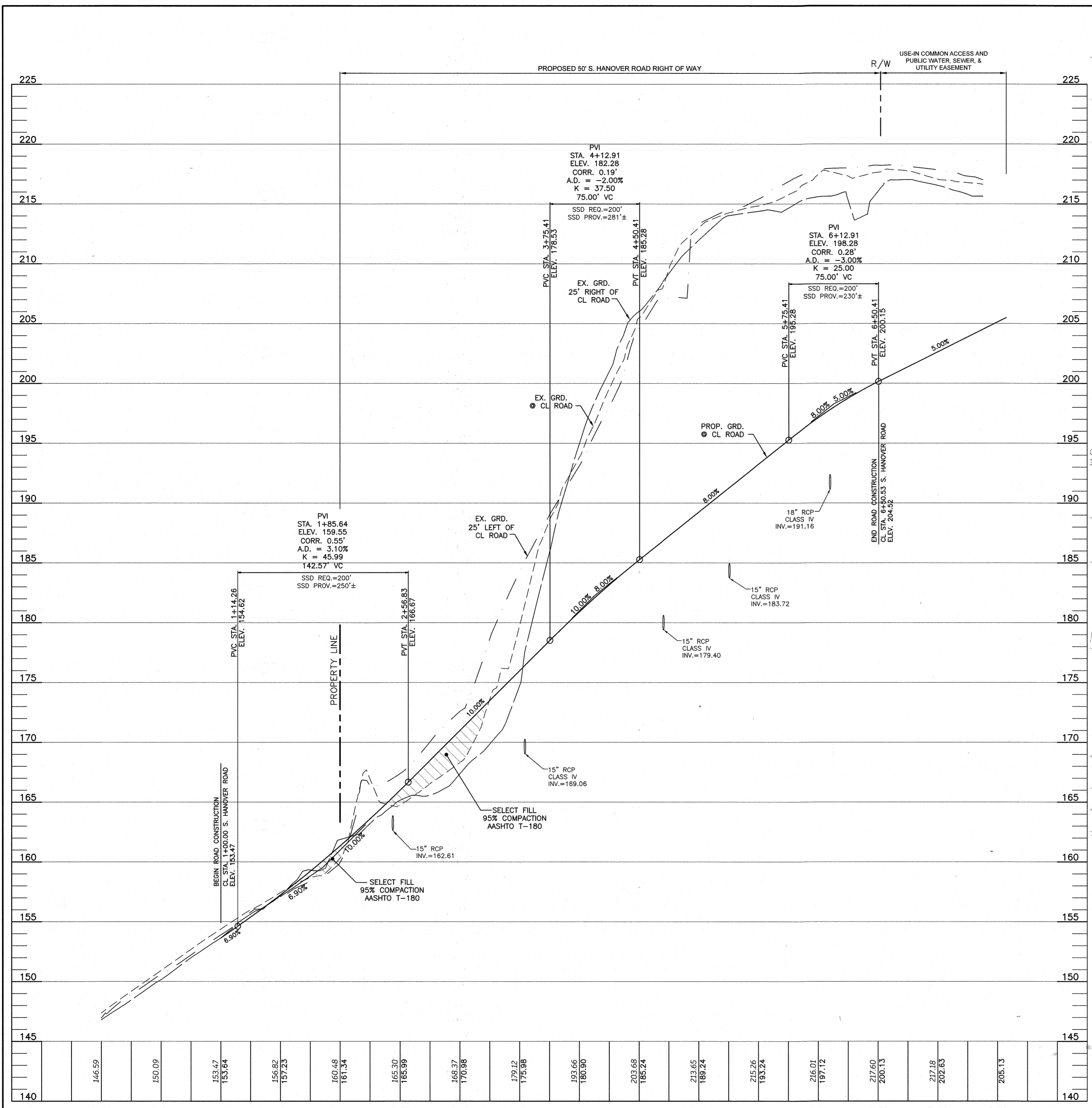
BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.
 8490 BALTIMORE NATIONAL PIKE SUITE 315
 ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6644
 WWW.BEI-CIVILENGINEERING.COM

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

Mar 23 2021 10:53 AM DocuSign

OWNER/DEVELOPER: TROTTER 5857, LLC. 1819 PANARAMA CT. MCLEAN, VA 22101 (P) 443-250-1555	THE AERIE IN ELKCRIDGE LOTS 1-12 AND OS LOT 13 6399 ANDERSON AVE, HANOVER, MD 21076 TAX MAP: 38 - GRID: 14 - PARCEL: 232 ELECTION DISTRICT NO. 1 - HOWARD COUNTY, MARYLAND
DESIGN: LDD DRAFT: LDD	DATE: MARCH, 2021 BEI PROJECT NO.: 2894 SCALE: AS SHOWN SHEET: 2 OF 17

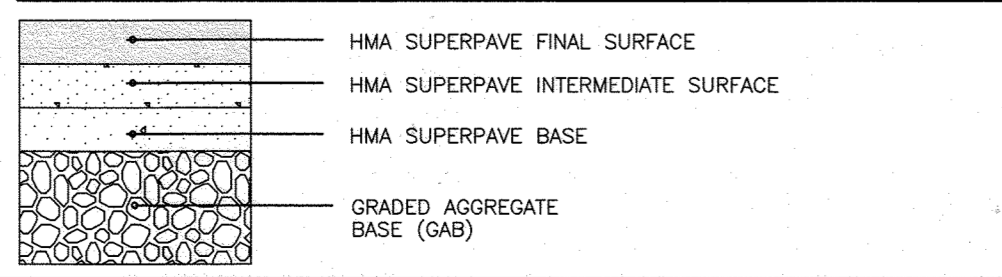
F-20-070



S. HANOVER ROAD
SCALE: 1"=50' HORIZ., 1"=5' VERT.
PUBLIC ACCESS STREET
DESIGN SPEED 30 MPH

146.59	150.09	153.47	155.62	160.48	165.30	169.37	179.12	183.66	188.24	193.24	197.12	200.13	202.63	205.13
0+00	0+50	1+00	1+50	2+00	2+50	3+00	3+50	4+00	4+50	5+00	5+50	6+00	6+50	7+00

SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR)					
		3 TO <5	5 TO <7	≥7	3 TO <5	5 TO <7	≥7
P-2	PARKING DRIVE AISLES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY LOCAL ROADS: ACCESS PLACE, ACCESS STREET CUL-DE-SAC: RESIDENTIAL	PAVEMENT MATERIAL (INCHES)					
		HMA SUPERPAVE FINAL SURFACE					
		9.5 MM PG 64-22, LEVEL 1 (LOW ESAL)					
		HMA SUPERPAVE INTERMEDIATE SURFACE					
9.5 MM PG 64-22, LEVEL 1 (LOW ESAL)							
		HMA SUPERPAVE BASE					
		19.0 MM PG 64-22, LEVEL 1 (LOW ESAL)					
		GRADED AGGREGATE BASE (GAB)					
		8.0	4.0	3.0	4.0	4.0	4.0



NOTE: PAVING SECTION SHALL BE CONFIRMED BY THE GEOTECHNICAL ENGINEER IN THE FIELD BASED ON THE CBR TEST.

APPROVED: DEPARTMENT OF PUBLIC WORKS

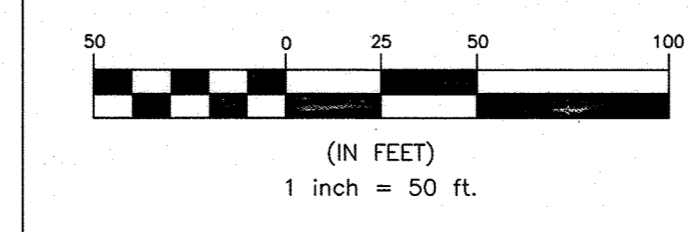
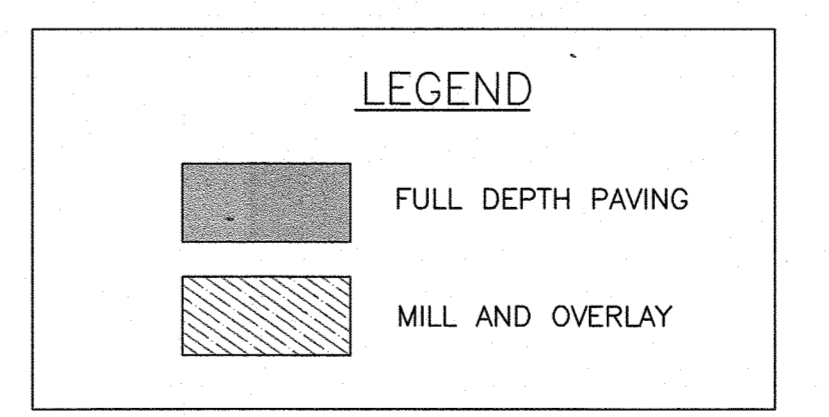
 CHIEF, BUREAU OF HIGHWAYS MK
 DATE: 05/28/2021

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

 CHIEF, DIVISION OF LAND DEVELOPMENT AC
 DATE: 6.10.21

CHIEF, DEVELOPMENT ENGINEERING DIVISION

 DATE: 6.10.21



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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: 01/01-31/23.

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

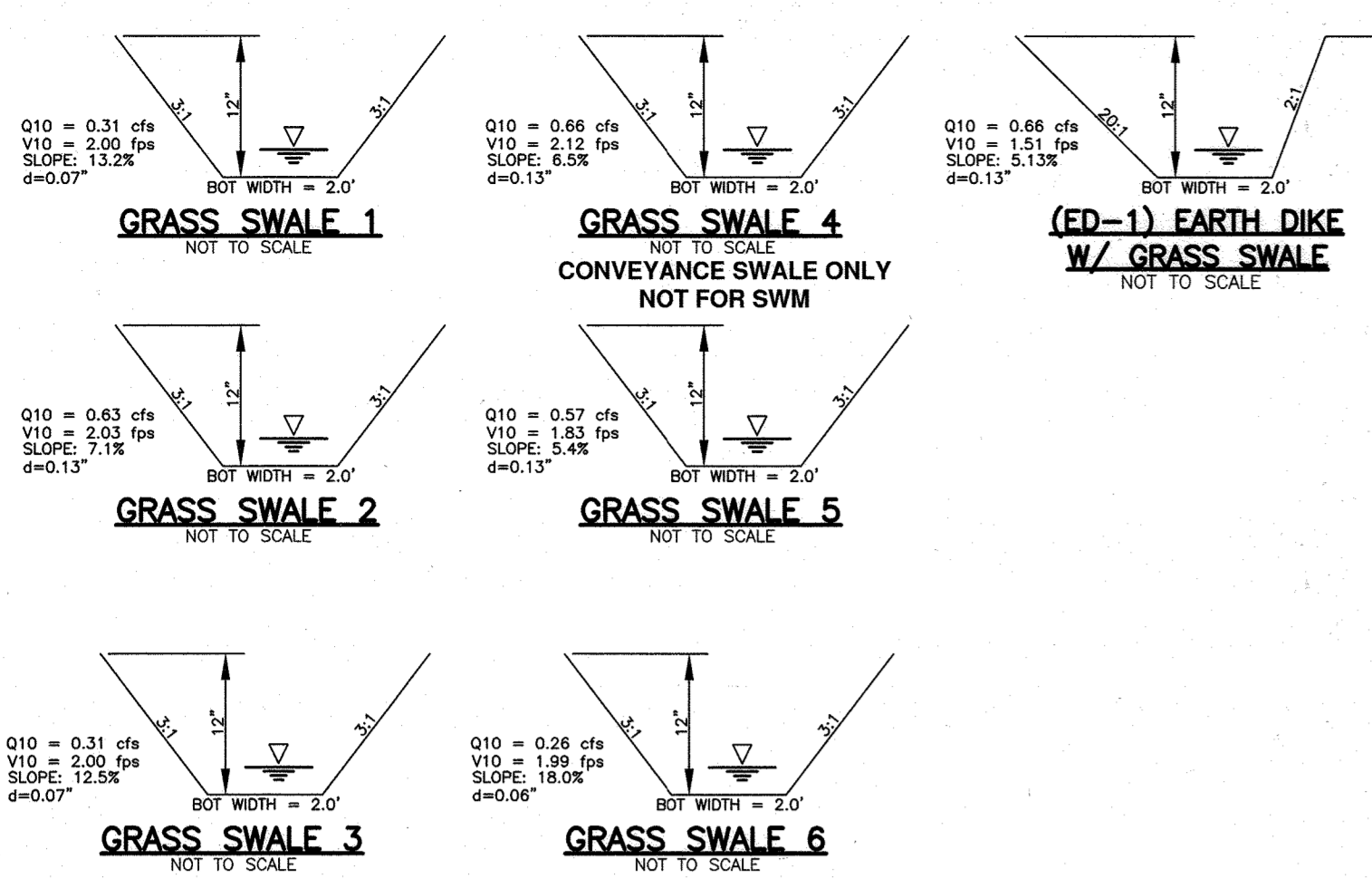
6399 ANDERSON AVE, HANOVER, MD 21076
 TAX MAP: 38 - GRID: 14 - PARCEL: 232
 ELECTION DISTRICT NO. 1 - HOWARD COUNTY, MARYLAND

FINAL ROAD PROFILES
S. HANOVER ROAD

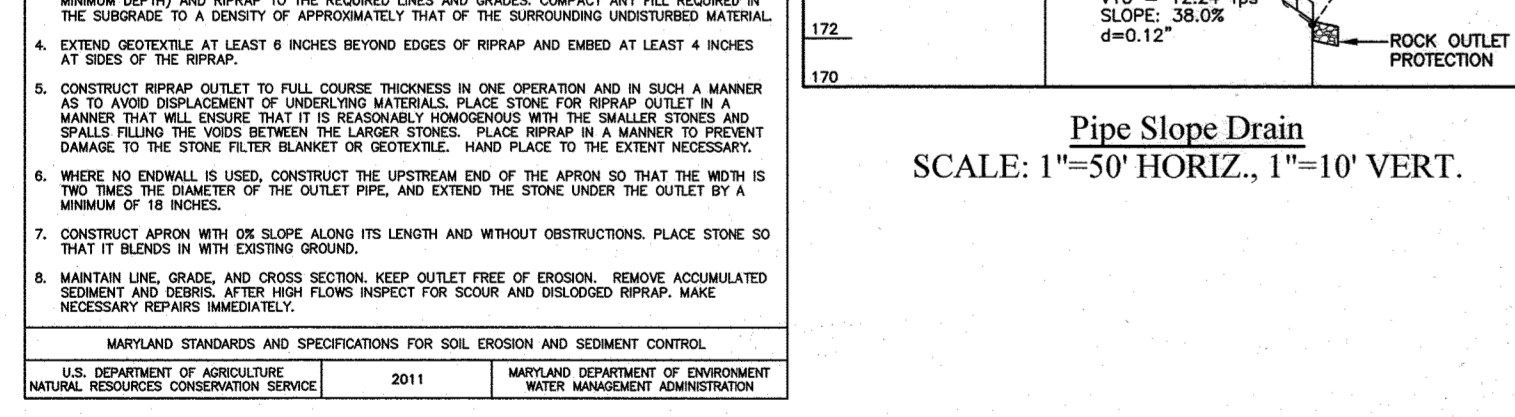
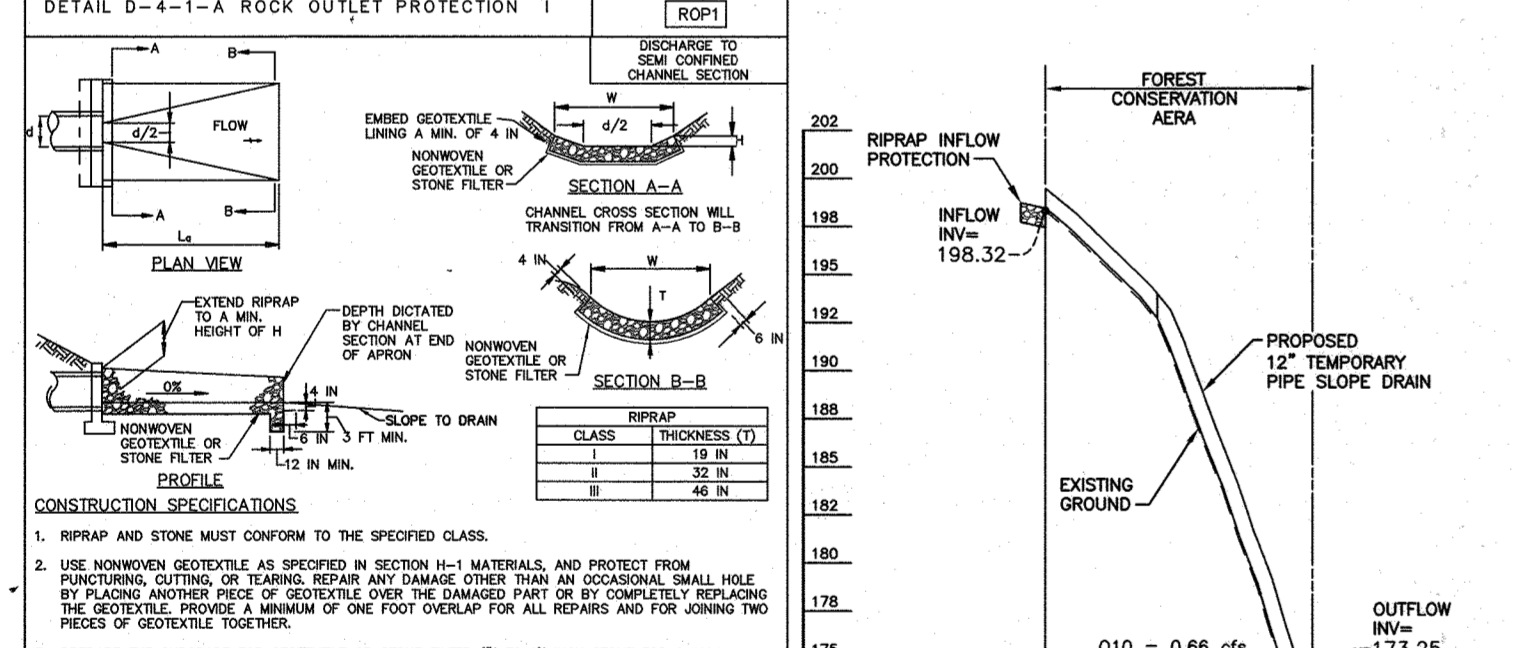
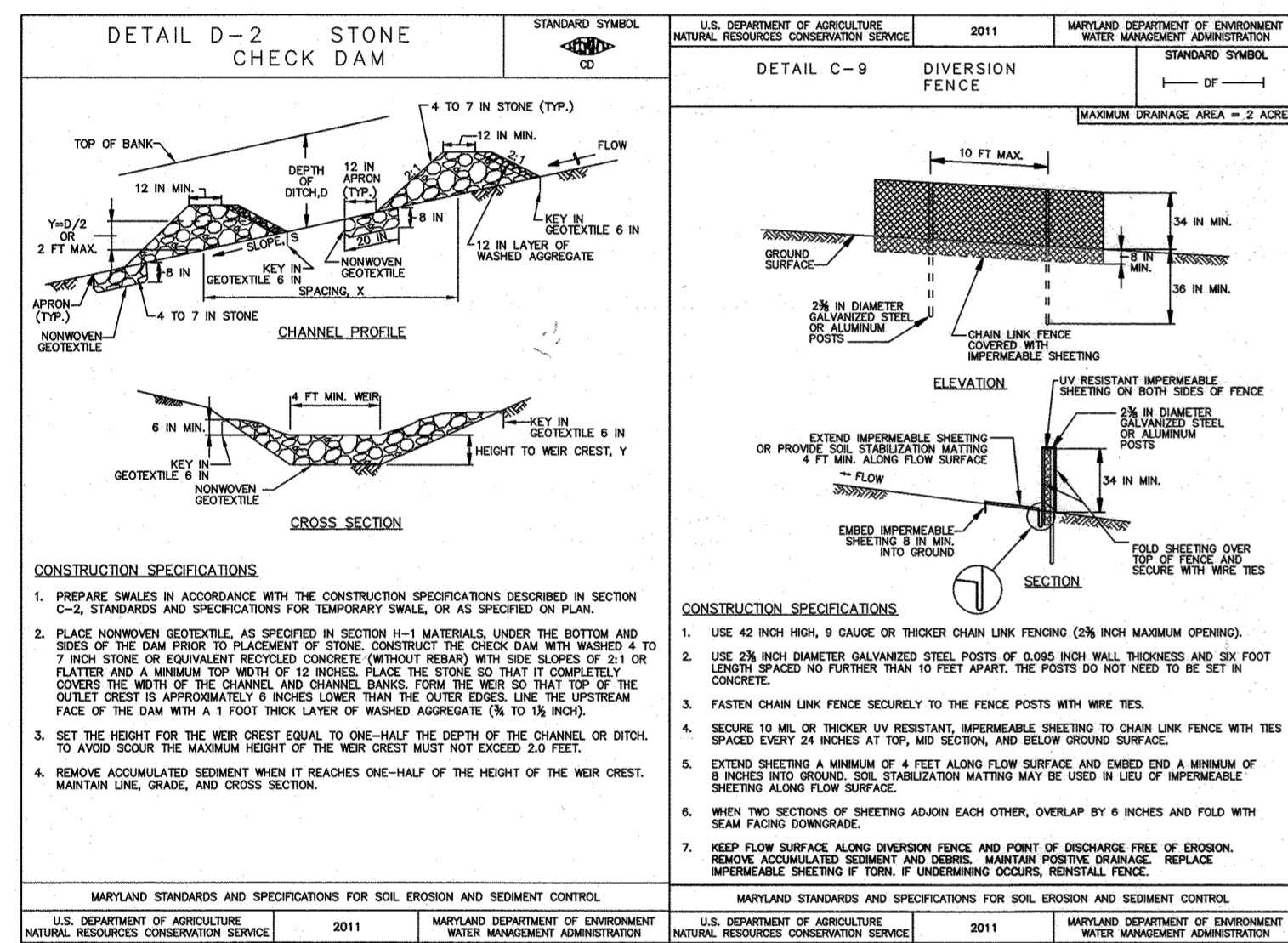
DATE: MARCH, 2021 BEI PROJECT NO. 2894

DESIGN: LDD DRAFT: LDD SCALE: AS SHOWN SHEET 3 OF 17

F-20-070



D.A. #	Channel Slope (%)	Q ₁₀ (cfs)	V ₁₀ (cfs)	D (ft)	CA (sqft)	Wp (ft)	R (ft)	Sw (ft)	Shear Stress (lb/ft ²)	10-yr Stabilization Requirement
SW-1	13.20	0.31	2.00	0.07	0.130	2.380	0.055	0.132	0.45	Permanent*
SW-2	7.10	0.63	2.03	0.13	0.260	2.700	0.096	0.071	1.15	Permanent*
SW-3	12.50	0.31	2.00	0.07	0.130	2.380	0.055	0.132	0.45	Permanent*
SW-4	6.50	0.66	2.12	0.13	0.260	2.700	0.096	0.065	1.05	Permanent*
SW-5	5.40	0.57	1.83	0.13	0.260	2.700	0.096	0.054	0.88	Permanent*
SW-6	18.00	0.26	1.99	0.06	0.260	2.320	0.112	0.180	2.92	Permanent*

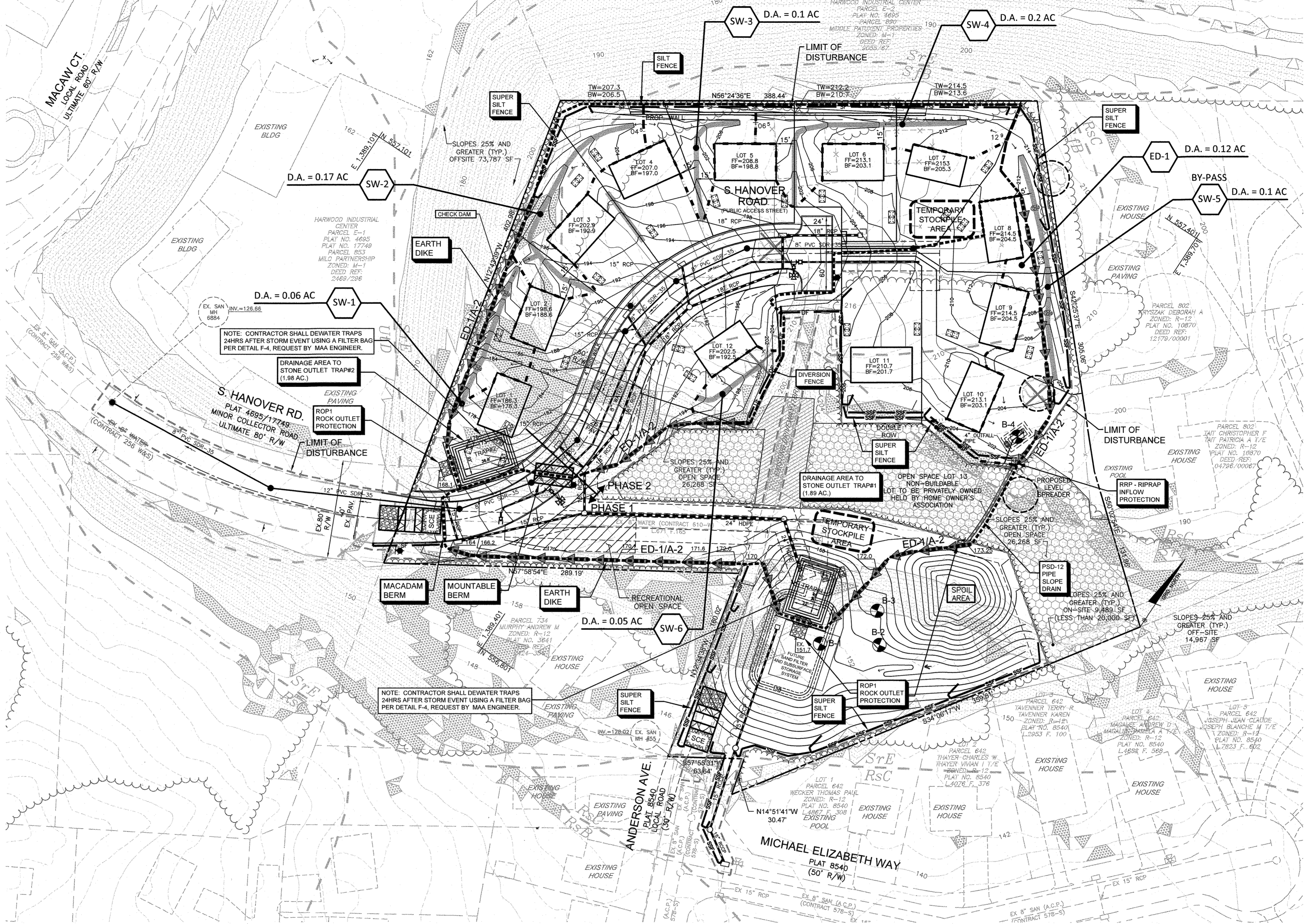


ENGINEER'S CERTIFICATE
 I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

DEVELOPER'S CERTIFICATION
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	K-VALUE
Rsc		C		RUSSETT FINE SANDY LOAM, 5 TO 10 PERCENT SLOPES	0.24
SIE**		B	B	SASSAFRAS AND CROOM SOIL, 15 TO 25 PERCENT SLOPES	0.24/0.28
SIB		B		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.



NOTE: NO CONSTRUCTION MAY BEGIN UNTIL MATERIALS NEEDED TO CONSTRUCT THE BASIN ARE ON SITE.

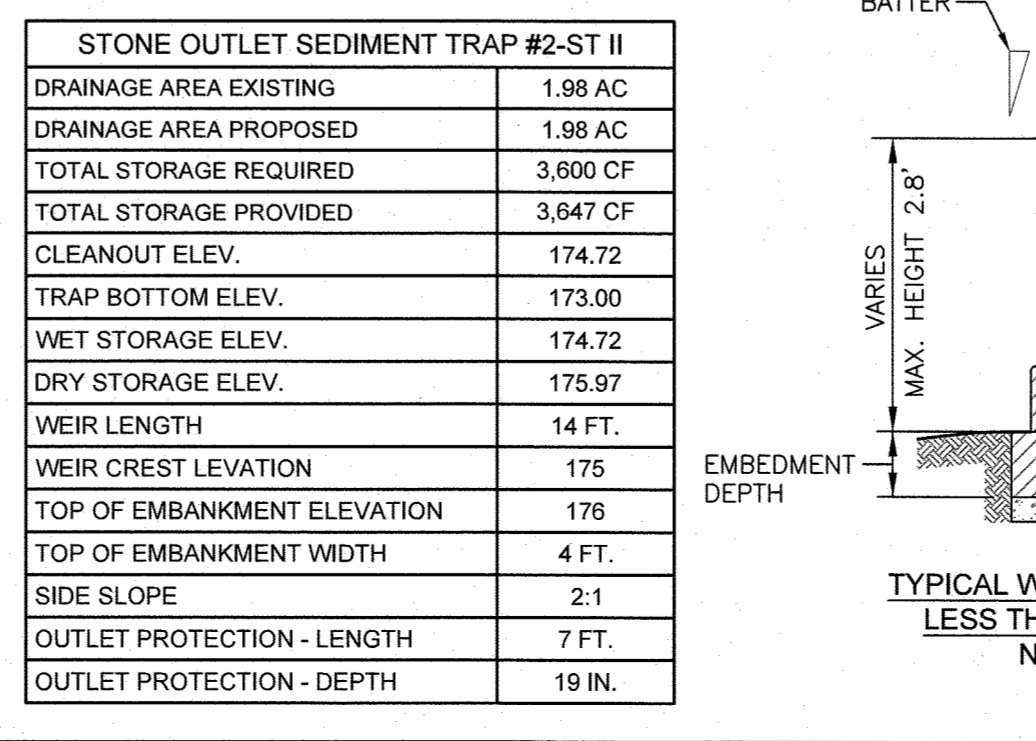
SILT FENCE MAY BE REPLACED BY SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

NOTE: CONTRACTOR SHALL GRADE AND STABILIZE PROPOSED SWALES UPON COMPLETION OF MASS GRADING.

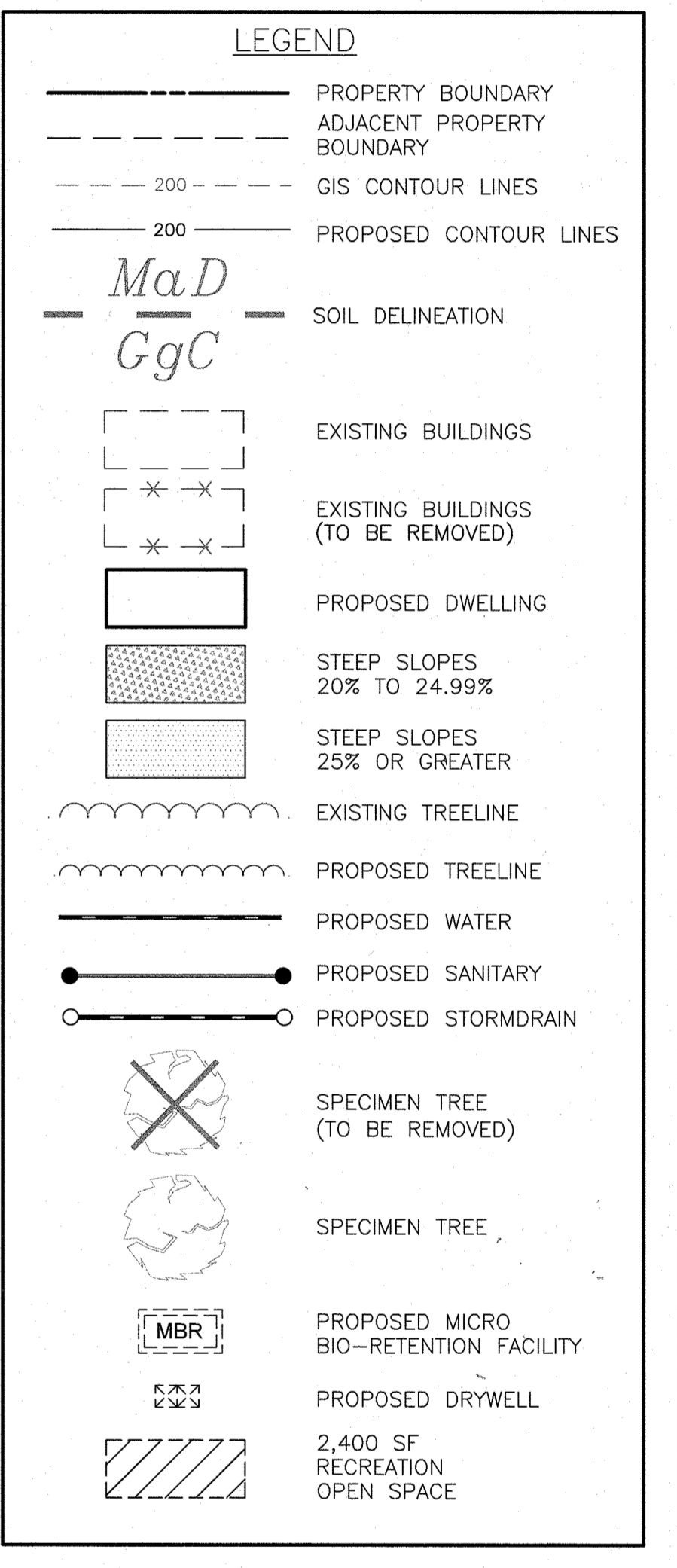
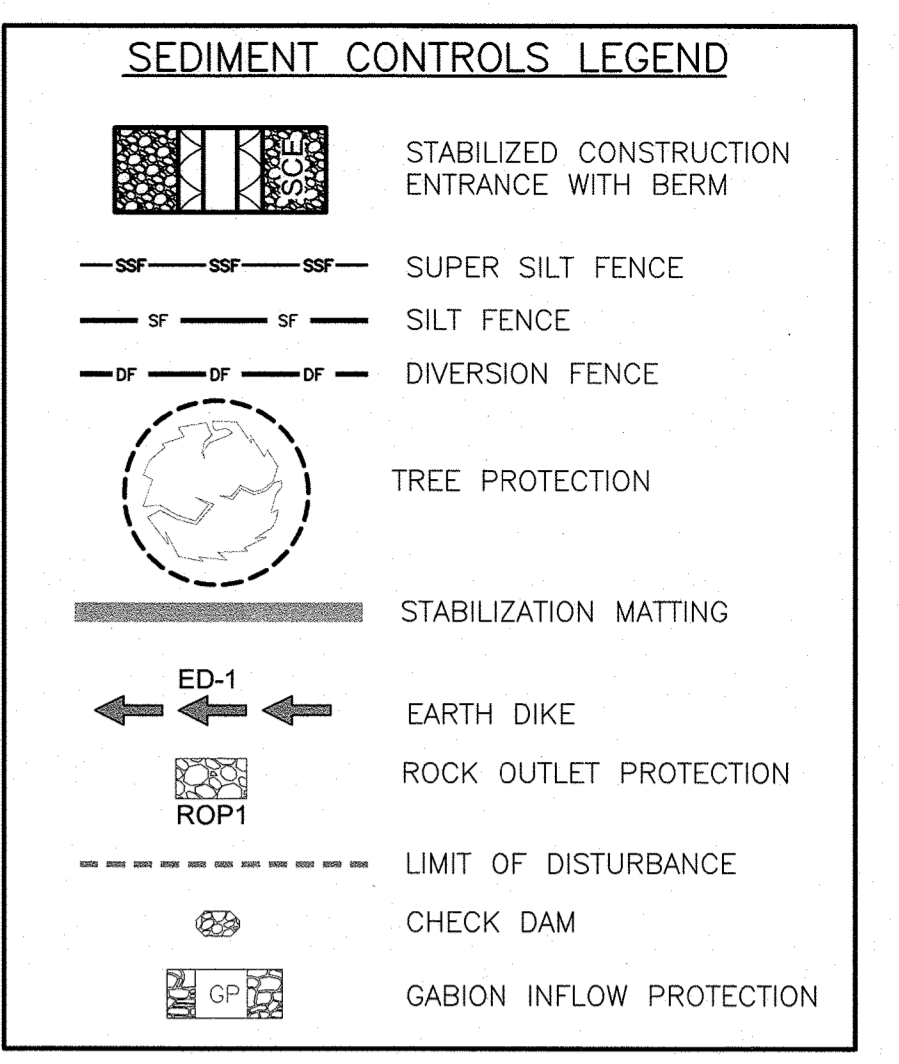
NOTE: CONTRACTOR SHALL DEWATER TRAPS 24HRS AFTER STORM EVENT USING A FILTER BAG PER DETAIL F-4, REQUEST BY MAA ENGINEER.

APPROVED: DEPARTMENT OF PUBLIC WORKS
 APPROVED: DEPARTMENT OF PLANNING AND ZONING

STONE OUTLET SEDIMENT TRAP #1-ST II		STONE OUTLET SEDIMENT TRAP #2-ST II	
DRAINAGE AREA EXISTING	1.89 AC	DRAINAGE AREA EXISTING	1.98 AC
DRAINAGE AREA PROPOSED	1.89 AC	DRAINAGE AREA PROPOSED	1.98 AC
TOTAL STORAGE REQUIRED	3,600 CF	TOTAL STORAGE REQUIRED	3,600 CF
TOTAL STORAGE PROVIDED	3,647 CF	TOTAL STORAGE PROVIDED	3,647 CF
CLEANOUT ELEV.	157.72	CLEANOUT ELEV.	174.72
TRAP BOTTOM ELEV.	156.00	TRAP BOTTOM ELEV.	173.00
WET STORAGE ELEV.	157.72	WET STORAGE ELEV.	174.72
DRY STORAGE ELEV.	158.97	DRY STORAGE ELEV.	175.97
WEIR LENGTH	14 FT.	WEIR LENGTH	14 FT.
WEIR CREST ELEVATION	158	WEIR CREST ELEVATION	175
TOP OF EMBANKMENT ELEVATION	159	TOP OF EMBANKMENT ELEVATION	176
TOP OF EMBANKMENT WIDTH	4 FT.	TOP OF EMBANKMENT WIDTH	4 FT.
SIDE SLOPE	2:1	SIDE SLOPE	2:1
OUTLET PROTECTION - LENGTH	10 FT.	OUTLET PROTECTION - LENGTH	7 FT.
OUTLET PROTECTION - DEPTH	19 IN.	OUTLET PROTECTION - DEPTH	19 IN.



HOUSES ON LOTS 2-7 AND LOT 12 WILL UTILIZE INTEGRAL GARAGES DUE TO THE STEEPNESS OF THE DRIVEWAYS



Total Site Pe	1.2	Total Site ESDV	4893	cf	
MDE Designation	Practice Description	Quantity of Each Practice	ESDV (cf) Required based on each DA	ESDV (cf) Provided	Ownership
F-1	Surface Sand Filter	1	4,042	3,979	HQA
M-5	Dry Walls	22	1,781	2,050	Private
M-6	Micro Bio-Retentions	1	148	188	Private
Totals			5,971	6,217	

THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.

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 ANY WORK.

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

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

FINAL GRADING, SEDIMENT AND EROSION CONTROL PLAN

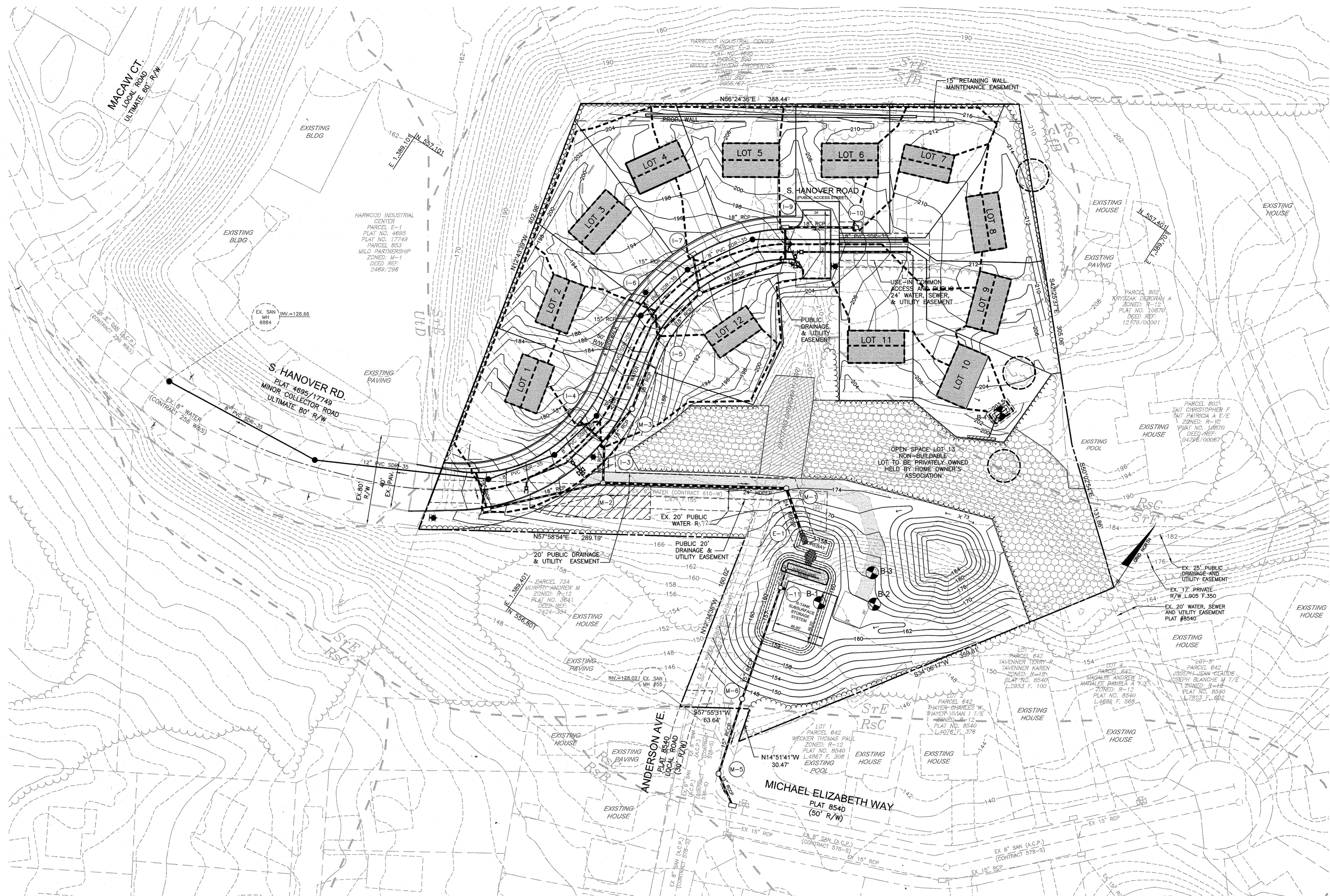
DATE: MARCH, 2021 BEI PROJECT NO. 2894
 SCALE: AS SHOWN SHEET 4 OF 17

Professional certification of a duly licensed professional engineer under the laws of the State of Maryland, License No. 28376, Expiration Date: 01-01-2023.

Mar 23 2021 10:55 AM

SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND						
SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	K-VALUE	
R5C		C		RUSSETT FINE SANDY LOAM, 5 TO 10 PERCENT SLOPES	0.24	
S5E**		B	B	SASSAFRAS AND CROOM SOIL, 15 TO 25 PERCENT SLOPES	0.24/0.28	
S5B		B		SASSAFRAS GRAVELLY SAND LOAM, 2 TO 5 PERCENT SLOPE	0.24	

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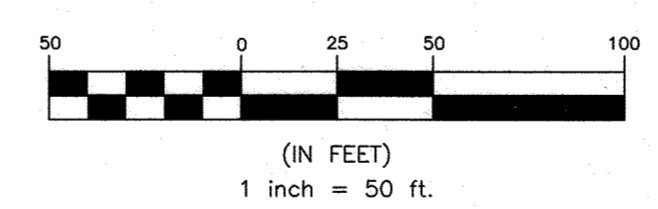
LEGEND

- PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARY
- 200 GIS CONTOUR LINES
- 200 PROPOSED CONTOUR LINES
- MaD** SOIL DELINEATION
- GgC** SOIL DELINEATION
- EXISTING BUILDINGS
- PROPOSED DWELLING
- STEEP SLOPES 25% OR GREATER
- EXISTING TREELINE
- PROPOSED TREELINE
- PROPOSED WATER
- PROPOSED SANITARY
- PROPOSED STORMDRAIN
- SPECIMEN TREE (TO BE REMOVED)

(I-1) STRUCTURE LABEL

----- DRAINAGE DIVIDE

PLAN
SCALE: 1" = 50'



AREA AND "C" FACTOR TABULATION						
INLET #	ZONING (Z)	SUBAREA (B)	AREA (A)	"C" FACTOR (C)<25	"C" FACTOR (C)>25	% IMPERVIOUS (P)>25
I-1	R-12	NA	0.25	0.46	0.52	17.9
I-2	R-12	NA	0.07	0.86	0.96	47.4
I-3	R-12	NA	0.17	0.46	0.51	43.6
I-4	R-12	NA	0.17	0.46	0.52	44.7
I-5	R-12	NA	0.13	0.45	0.51	27.3
I-6	R-12	NA	0.32	0.35	0.39	14.2
I-7	R-12	NA	0.24	0.38	0.43	27.9
I-8	R-12	NA	0.19	0.40	0.45	41.7
I-9	R-12	NA	0.38	0.35	0.40	35.6
I-10	R-12	NA	0.10	0.86	0.96	5.3

APPROVED: DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS *[Signature]* 05/28/2021
 DATE
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DIVISION OF LAND DEVELOPMENT *[Signature]* 6/16/21
 DATE
 CHIEF, DEVELOPMENT ENGINEERING DIVISION *[Signature]* 6-16-21
 DATE

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

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.

Mar 23 2021 10:53 AM DocuSign

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

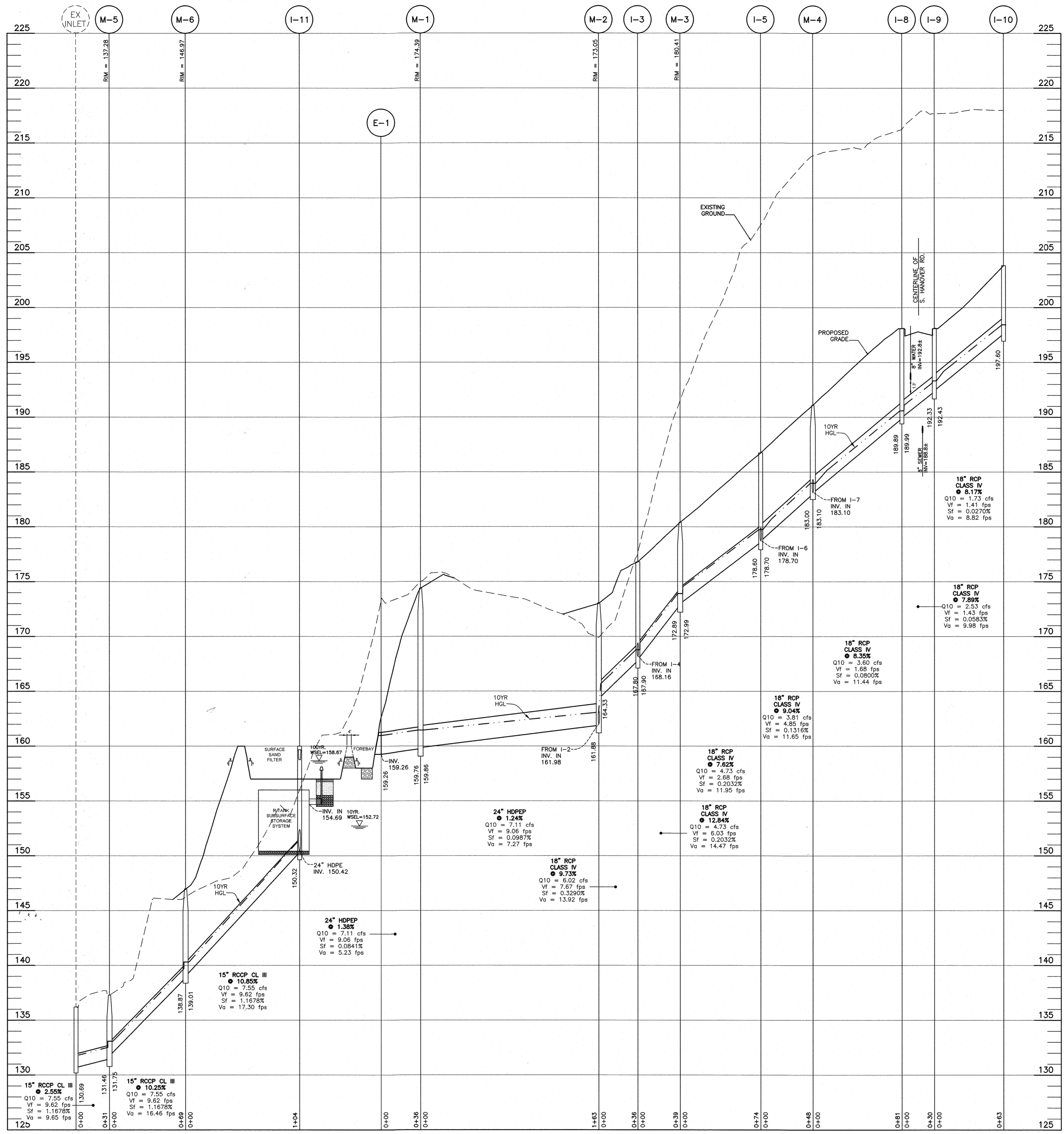
THE AERIE IN ELKBRIDGE
 LOTS 1-12 AND OS LOT 13

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

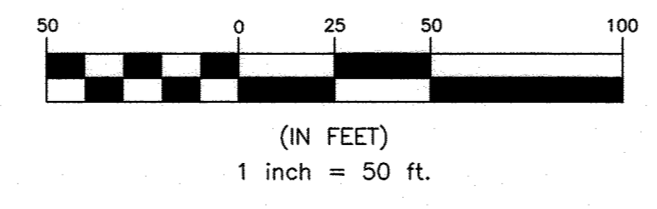
FINAL STORM DRAIN DRAINAGE AREA MAP

DATE: MARCH, 2021 BEI PROJECT NO. 2894
 SCALE: AS SHOWN SHEET 6 OF 17

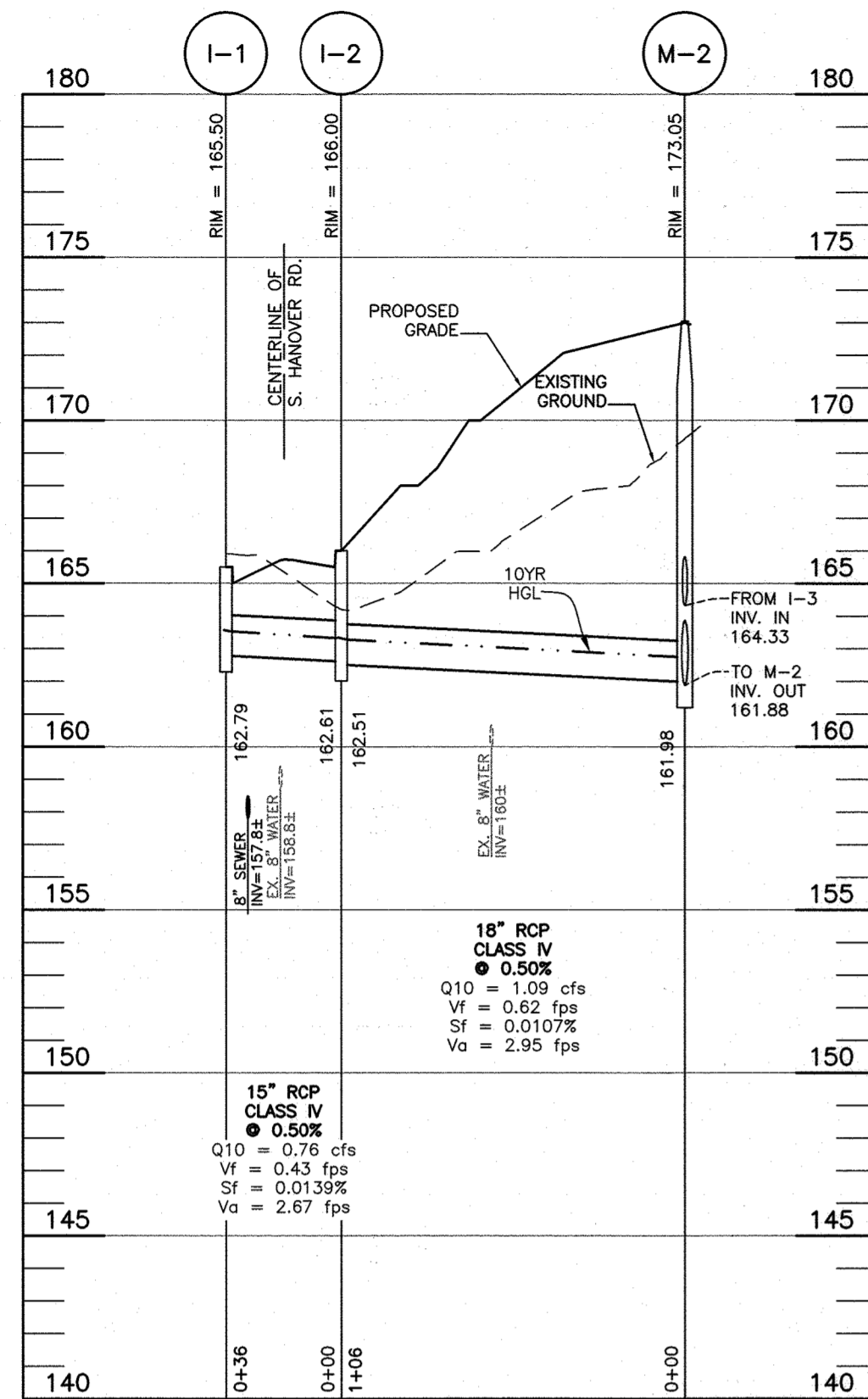
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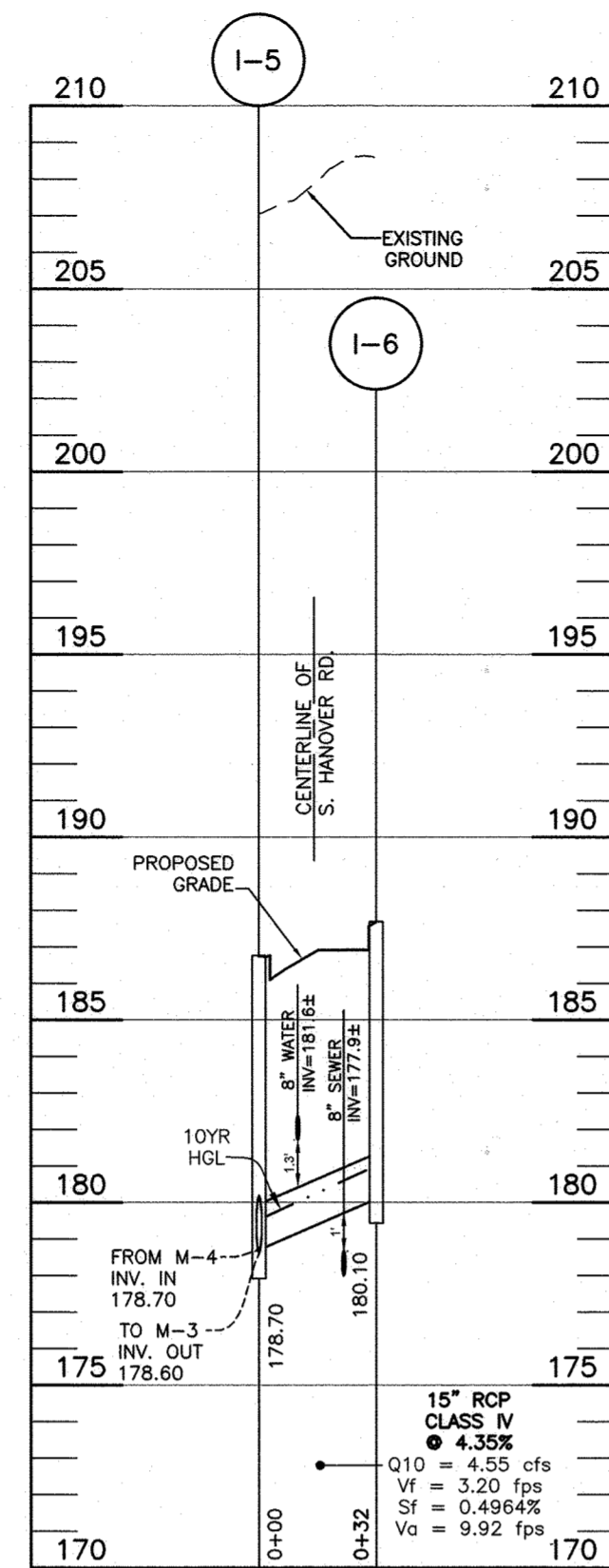
APPROVED: DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS *MJK* 05/28/2021 DATE
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DIVISION OF LAND DEVELOPMENT *kg* 6/16/21 DATE
 CHIEF, DEVELOPMENT ENGINEERING DIVISION *kg* 6.16.21 DATE



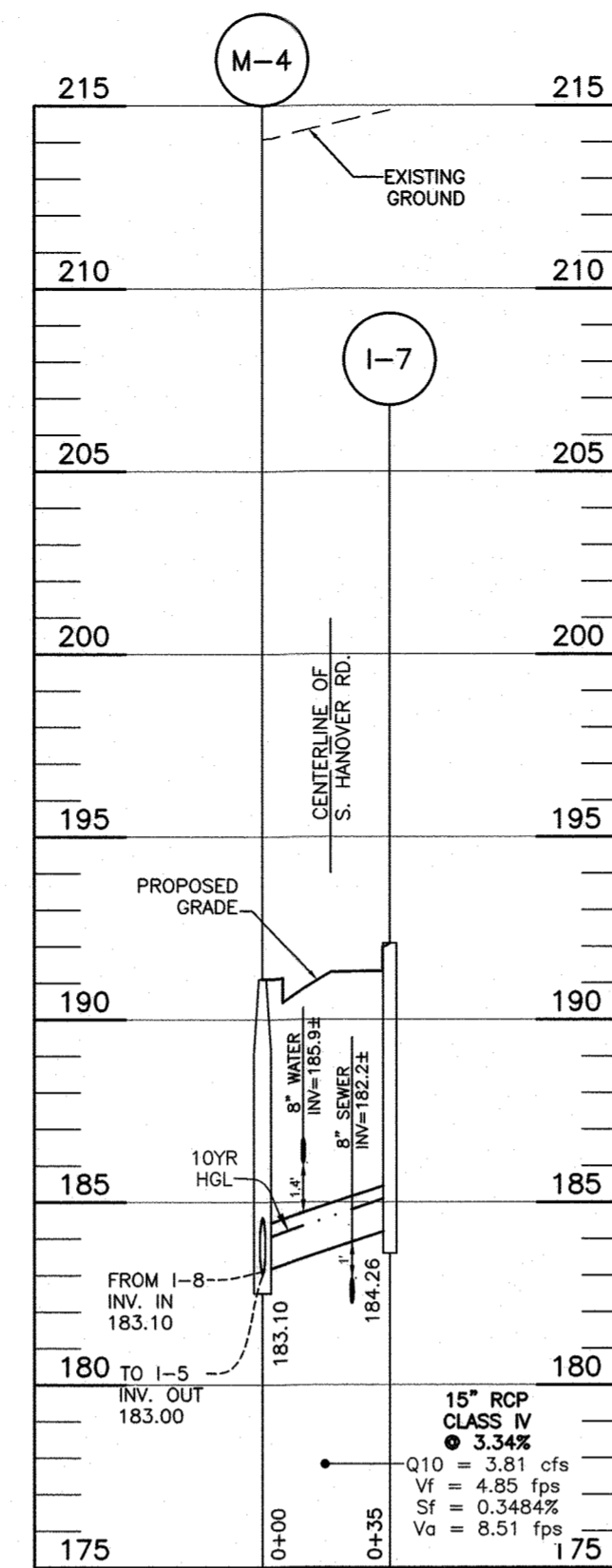
BENCHMARK ENGINEERING, INC. ENGINEERS • LAND SURVEYORS • PLANNERS 8480 BALTIMORE NATIONAL PIKE SUITE 315 ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-8644 WWW.BEI-CIVILENGINEERING.COM		Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 28376, Expiration Date: 01-01-2023.
OWNER/DEVELOPER: TROTTER 5857, LLC. 1819 PANAMA AVE. 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 STORM DRAIN PROFILES		
DATE: MARCH, 2021 SCALE: AS SHOWN	BEI PROJECT NO. 2894 SHEET 7 OF 17	Mar 23 2021 10:56 AM DocuSign



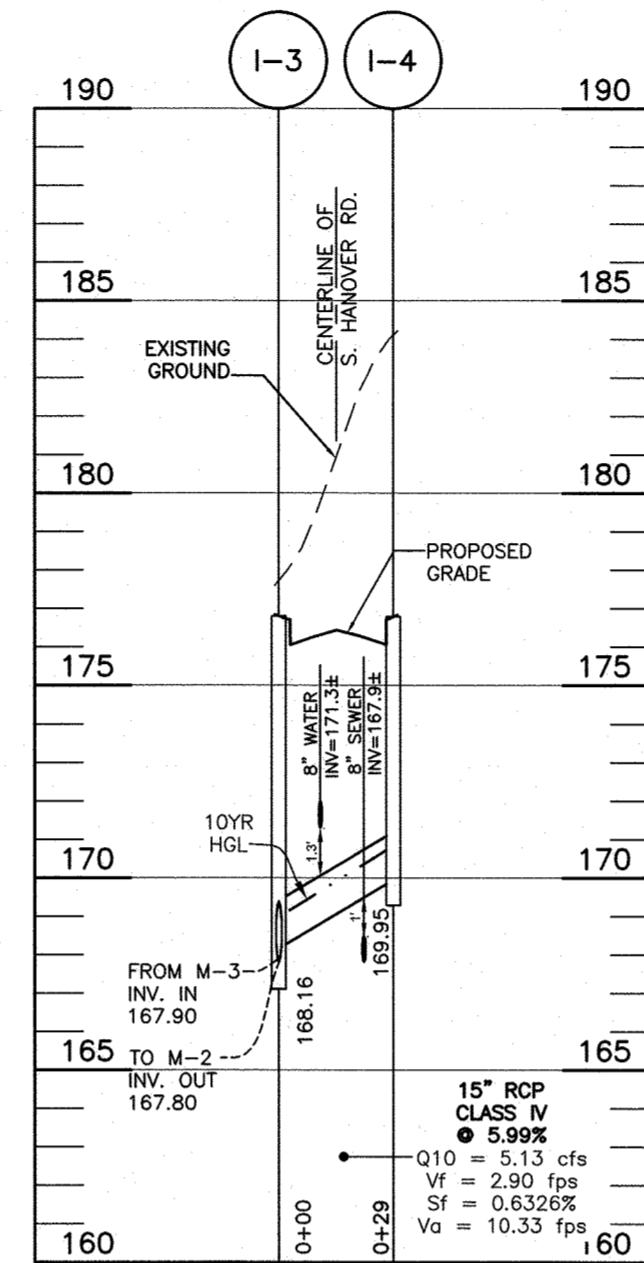
MH 2 to I-1
S. HANOVER ROAD
SCALE: 1"=50' HORIZ., 1"=5' VERT.



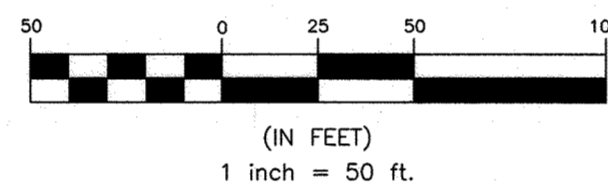
I-5 to I-6
S. HANOVER ROAD
SCALE: 1"=50' HORIZ., 1"=5' VERT.



MH 4 to I-7
S. HANOVER ROAD
SCALE: 1"=50' HORIZ., 1"=5' VERT.



I-3 to I-4
S. HANOVER ROAD
SCALE: 1"=50' HORIZ., 1"=5' VERT.



STRUCTURE 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')	172.99(18')	180.41				
M-2	48" MH	CL STA. 3+32.12 S. HANOVER ROAD, OFFSET 39.24 RIGHT	164.33(18')	161.88(15')	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				
I-9	A-5	CL STA. 6+10.29 S. HANOVER ROAD, OFFSET 14.81 LEFT	192.43(18')	192.33(18')	198.07				
I-7	A-5	CL STA. 5+31.59 S. HANOVER ROAD, OFFSET 14.88 LEFT	184.26(15')	184.26(15')	192.09				
I-6	A-5	CL STA. 4+76.44 S. HANOVER ROAD, OFFSET 14.82 LEFT	180.10(15')	180.10(15')	187.68				
I-5	A-5	CL STA. 4+63.83 S. HANOVER ROAD, OFFSET 14.80 RIGHT	178.70(18')	178.70(18')	186.75				
I-4	A-5	CL STA. 3+54.82 S. HANOVER ROAD, OFFSET 14.90 LEFT	169.95(15')	169.95(15')	176.79				
I-3	A-5	CL STA. 3+54.19 S. HANOVER ROAD, OFFSET 14.88 RIGHT	167.90(18')	166.16(15')	176.80				
E-1	24" END SECTION	CL STA. 3+78.20 S. HANOVER ROAD, OFFSET 199.29 RIGHT	159.26(24')		161.59				

STRUCTURE 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')	160.00				

STORM DRAIN PIPE SCHEDULE				
PIPE	SIZE / MATERIAL	LENGTH	SLOPE	
MH 4 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%	
MH 2 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%	
MH 2 to I-2	18" RCP CLASS IV	105.522	0.50%	
I-8 to I-9	18" RCP CLASS IV	29.676	7.89%	
MH 4 to I-8	18" RCP CLASS IV	81.261	8.35%	
I-5 to MH 4	18" RCP CLASS IV	47.602	9.04%	
I-3 to MH 3	18" RCP CLASS IV	38.896	12.84%	
MH 1 to MH 2	24" HDPEP	162.697	1.24%	
E-1 to MH 1	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)	I ₂ (in/hr)	I ₁₀ (in/hr)	I 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	
I-2	0.07	0.86	0.96	10.0	4.50	6.60	10.00	0.27	0.40	0.60	
I-3	0.17	0.46	0.51	10.0	4.50	6.60	10.00	0.35	0.51	0.77	
I-4	0.17	0.46	0.52	10.0	4.50	6.60	10.00	0.35	0.51	0.77	
I-5	0.13	0.45	0.51	10.0	4.50	6.60	10.00	0.26	0.39	0.59	
I-6	0.32	0.35	0.39	10.0	4.50	6.60	10.00	0.50	0.74	1.12	
I-7	0.24	0.38	0.43	10.0	4.50	6.60	10.00	0.41	0.60	0.91	
I-8	0.19	0.40	0.45	10.0	4.50	6.60	10.00	0.35	0.51	0.77	
I-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	

* A 10 MINUTE MINIMUM Tc WAS USED FOR ALL DRAINAGE AREAS

APPROVED: DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS *[Signature]* 05/28/2021
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DIVISION OF LAND DEVELOPMENT *[Signature]* 4/16/21
 CHIEF, DEVELOPMENT ENGINEERING DIVISION *[Signature]* 6.10.21

BENCHMARK ENGINEERING, INC.
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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.

Mar 23 2021 10:58 AM DocuSign

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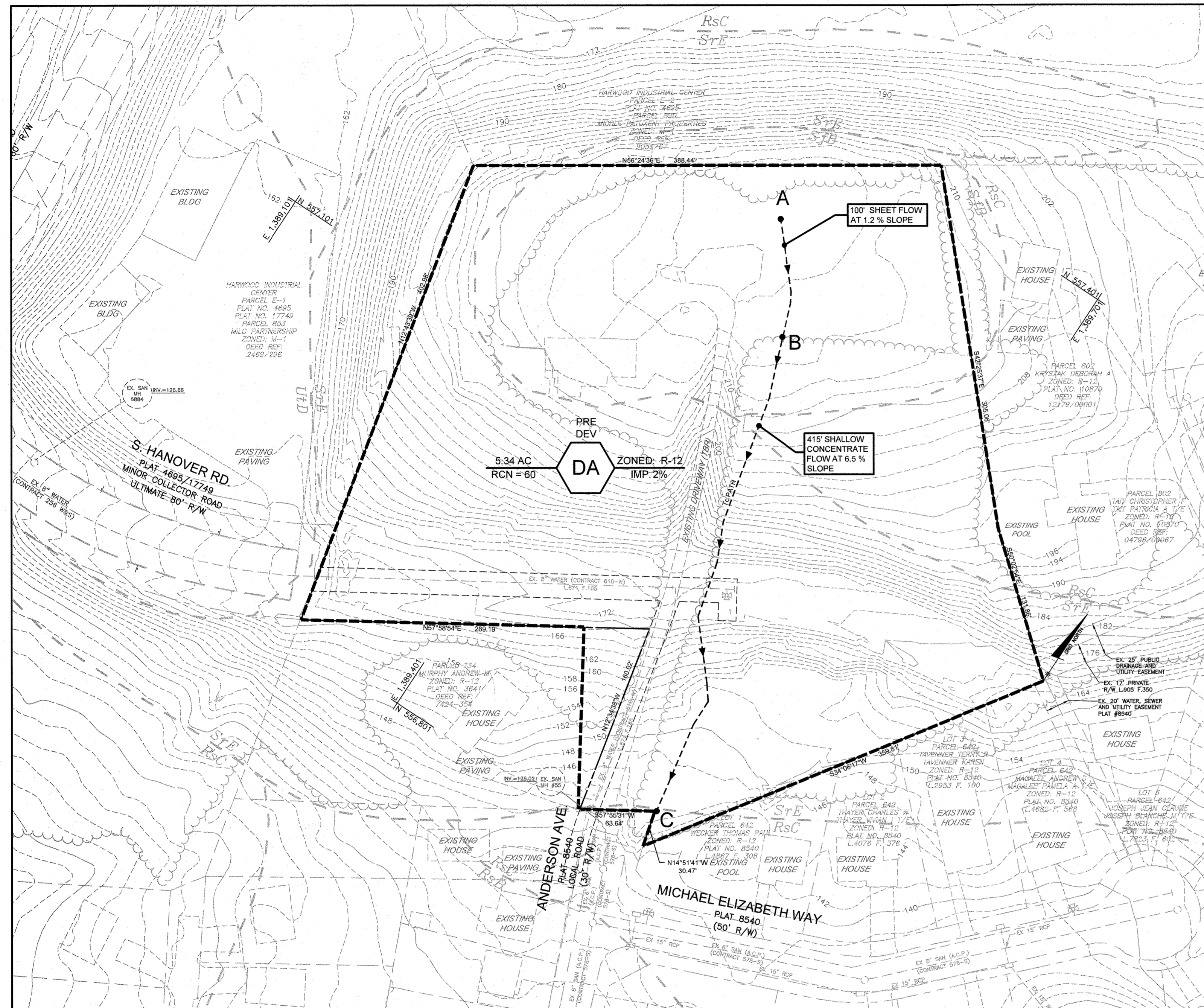
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FINAL STORM DRAIN PROFILES

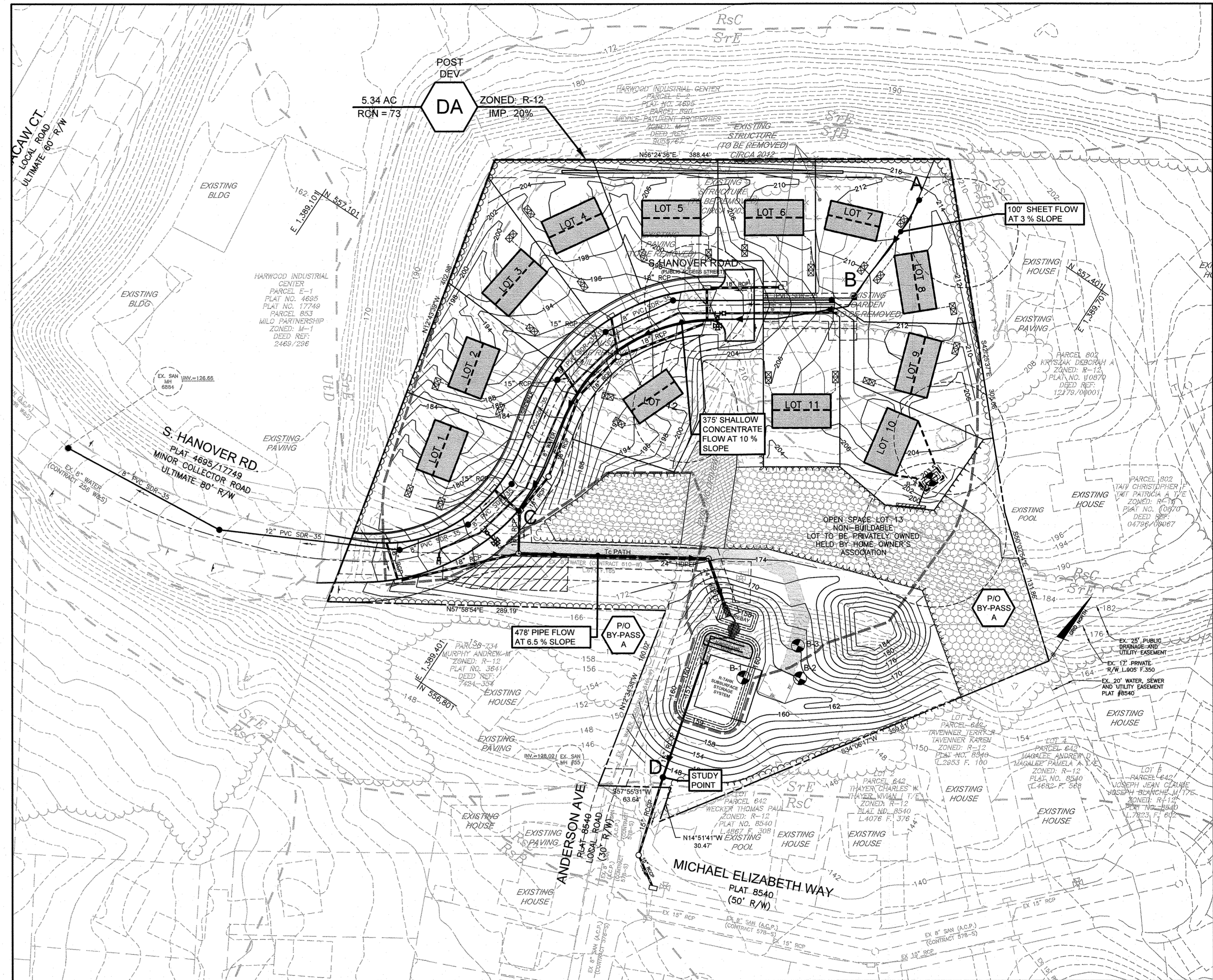
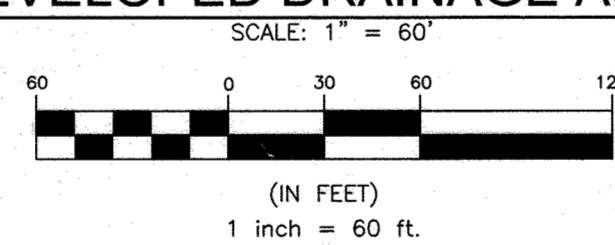
DATE: MARCH, 2021 BEI PROJECT NO. 2894
 DESIGN: LDD DRAFT: LDD SCALE: AS SHOWN SHEET 8 OF 17

SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND					
SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	K-VALUE
R5C		C		RUSSETT FINE SANDY LOAM, 5 TO 10 PERCENT SLOPES	0.24
SrE**		B	B	SASSAFRAS AND CROOM SOIL, 15 TO 25 PERCENT SLOPES	0.24/0.28
SrB		B		SASSAFRAS GRAVELLY SAND LOAM, 2 TO 5 PERCENT SLOPE	0.24

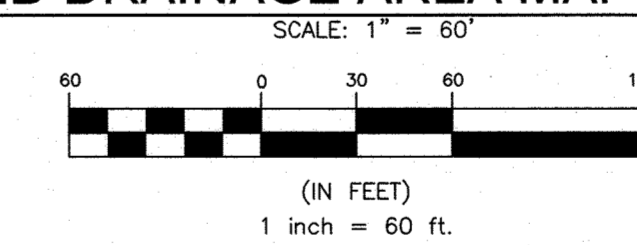
** HIGHLY ERODIBLE, K>0.35 AND STEEPER THAN 5%, OR 15% AND GREATER SLOPES, TAKEN FROM THE NRCS WEB SOIL SURVEY HOWARD COUNTY, MARYLAND, SEPTEMBER 2017.



PRE DEVELOPED DRAINAGE AREA MAP

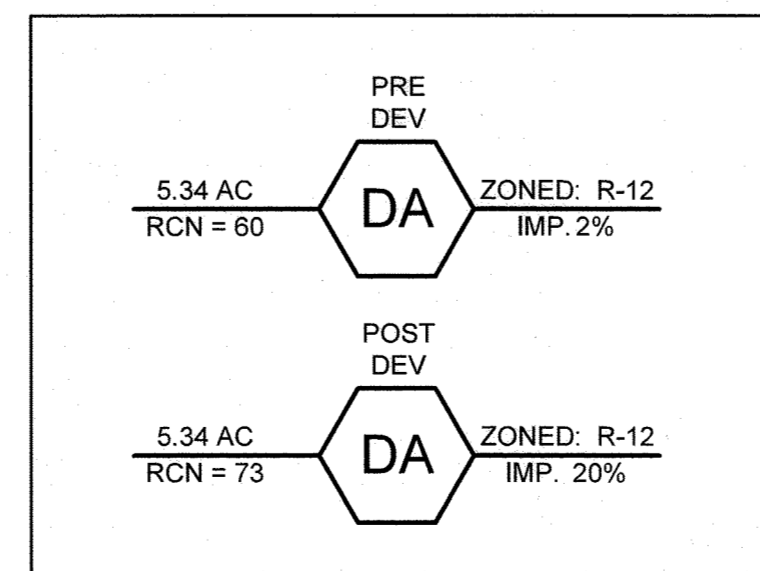


POST DEVELOPED DRAINAGE AREA MAP - ESD AND 10/100 YR



10 - 100 YEAR STORAGE CHART				
STORM	EXISTING RUNOFF	PROPOSED RUNOFF	STORAGE REQUIRED	STORAGE PROPOSED
10 YEAR	8.96 CFS	22.18 CFS	-	-
100 YEAR	28.62 CFS	49.33 CFS	22,857 CF	23,717 CF

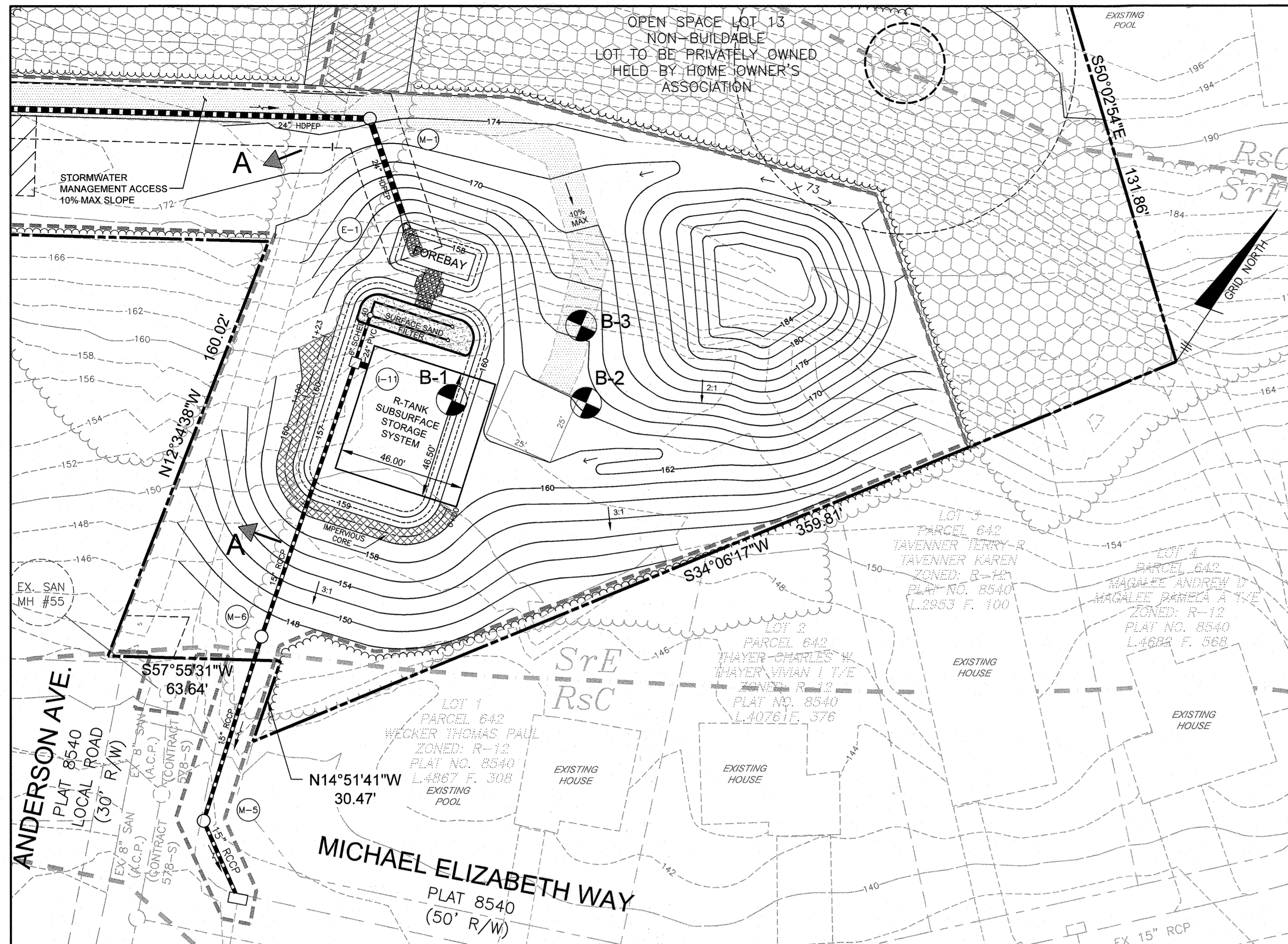
TIME OF CONCENTRATION	
PRE DEVELOPED	
A Tc PATH B	100' SHEET FLOW AT 1.2% SLOPE
B Tc PATH C	415' SHALLOW CONCENTRATE FLOW AT 6.5% SLOPE
POST DEVELOPED	
A Tc PATH B	100' SHEET FLOW AT 3% SLOPE
B Tc PATH C	375' SHALLOW CONCENTRATE FLOW AT 10% SLOPE
C Tc PATH D	478' PIPE FLOW AT 6.5% SLOPE



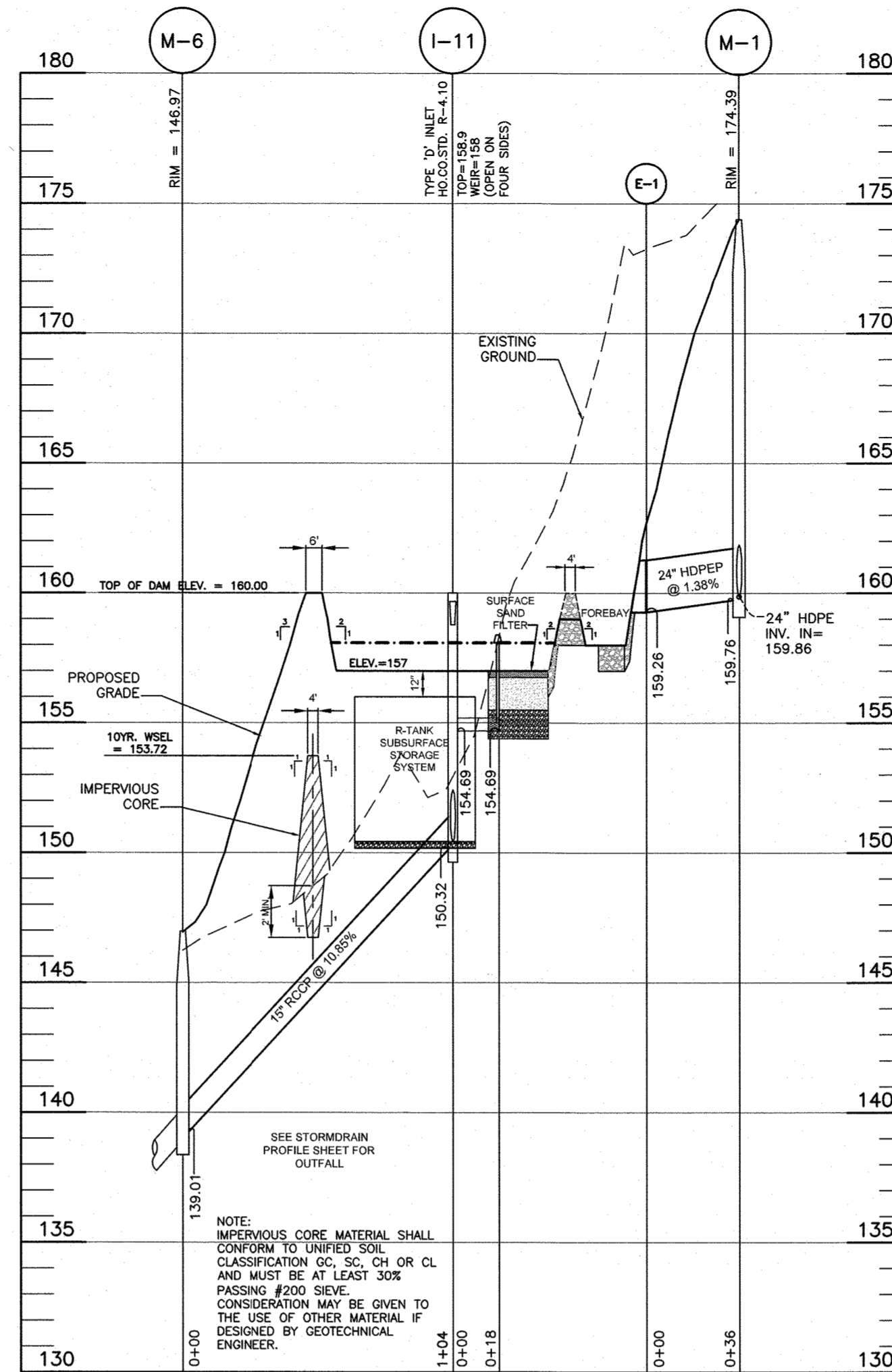
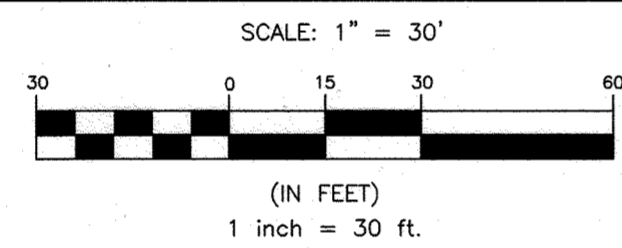
LEGEND	
--- 200 ---	GIS CONTOUR LINES
— 200 —	PROPOSED CONTOUR LINES
MaD	SOIL DELINEATION
GgC	PROPOSED DRAINAGE DIVIDE
---	EXISTING DRAINAGE DIVIDE

APPROVED: DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS T.M.W. DATE: 05/28/2021
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DIVISION OF LAND DEVELOPMENT R.F.C. DATE: 6/10/21
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 6/10/21

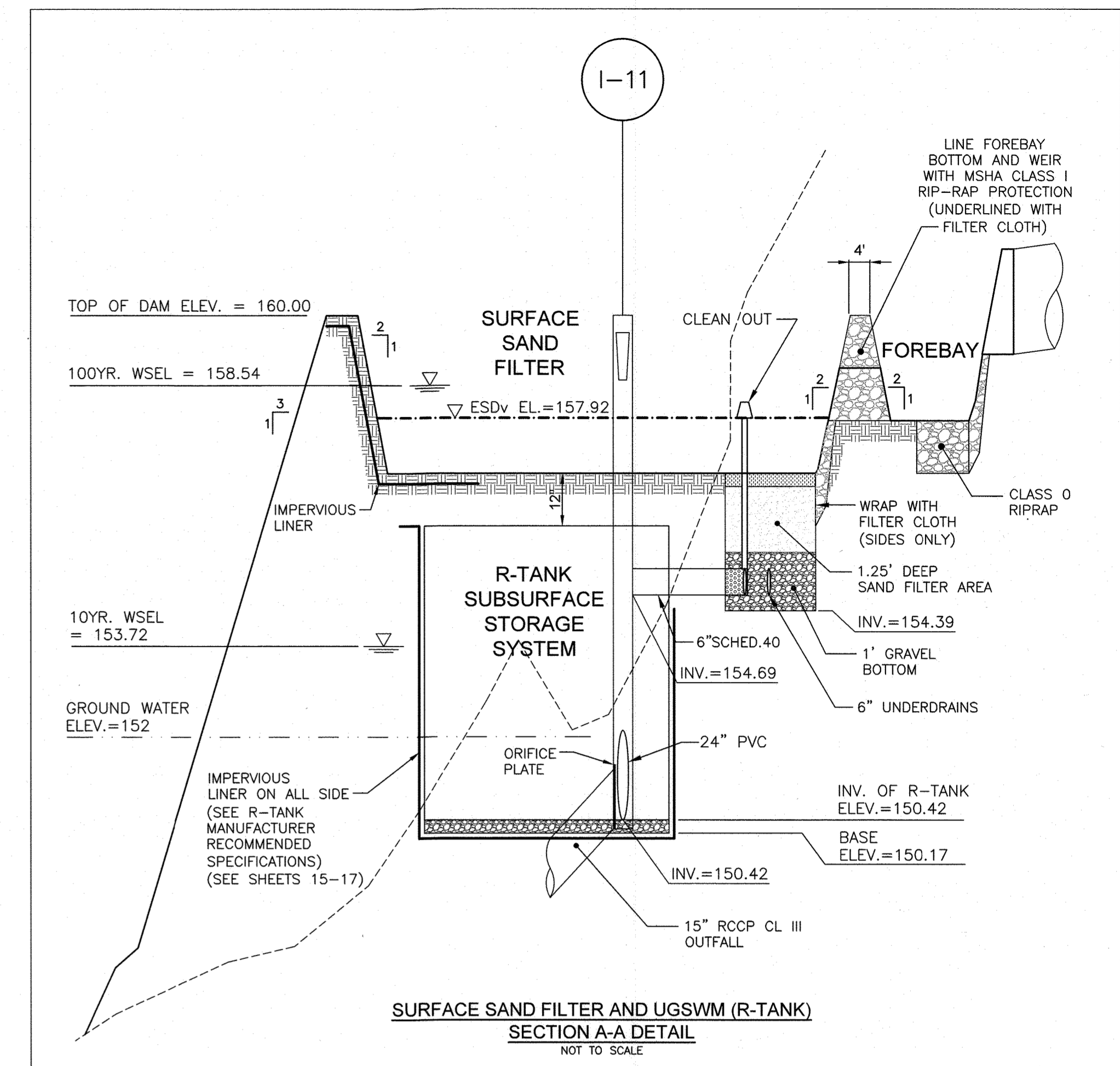
BENCHMARK ENGINEERING, INC ENGINEERS & LAND SURVEYORS & PLANNERS 8480 BALTIMORE NATIONAL PIKE SUITE 315 ELLICOTT CITY, MARYLAND 21043 (P) 410-485-6105 (F) 410-485-6644 WWW.BE1-CIVILENGINEERING.COM		Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 28516, Expiration Date: 01/01/2023. Mar 23 2021 10:53 AM DocuSign
OWNER/DEVELOPER: TROTTER, 5857, LLC 1819 PANARAMA CT. MCLEAN, VA 22101 (P) 443-250-1555	THE AERIE IN ELKBRIDGE LOTS 1-12 AND OS LOT 13 6399 ANDERSON AVE, HANOVER, MD 21076 TAX MAP: 38 - GRID: 14 - PARCEL: 232 ELECTION DISTRICT NO. 1 - HOWARD COUNTY, MARYLAND	
STORMWATER MANAGEMENT DRAINAGE AREA MAP		
DESIGN: LDD DRAFT: LDD	DATE: MARCH, 2021 SCALE: AS SHOWN	BEI PROJECT NO. 2894 SHEET 9 OF 17



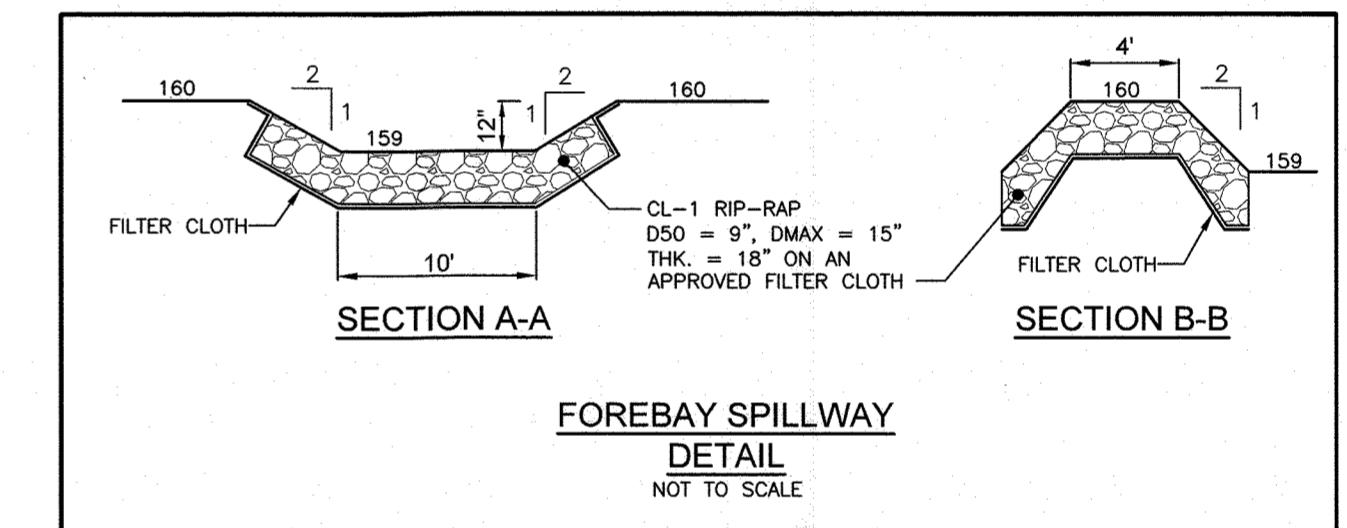
SSF (F-1) - SURFACE SAND FILTER AND UGSWM (R-TANK) SUBSURFACE SYSTEM



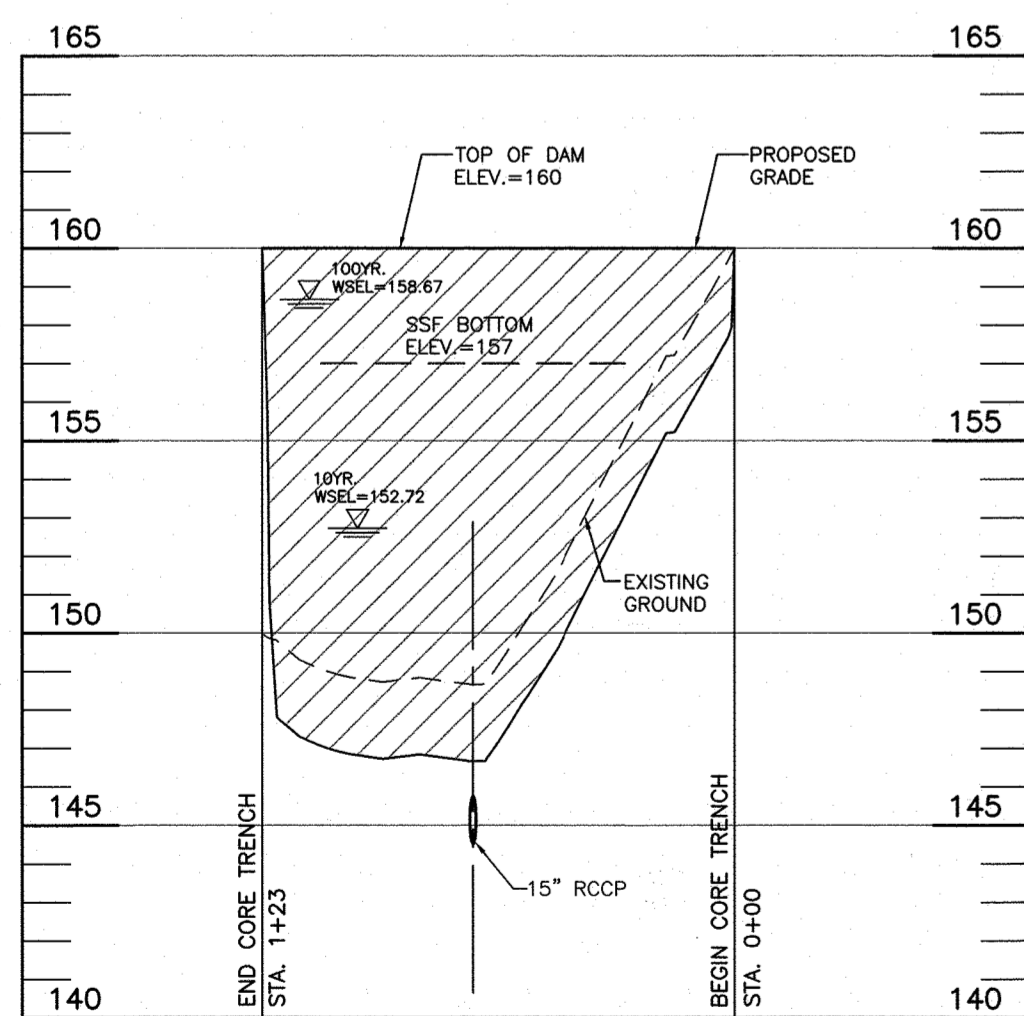
M-6 TO M-1 PROFILE
SCALE: 1"=50' HORIZ., 1"=5' VERT.



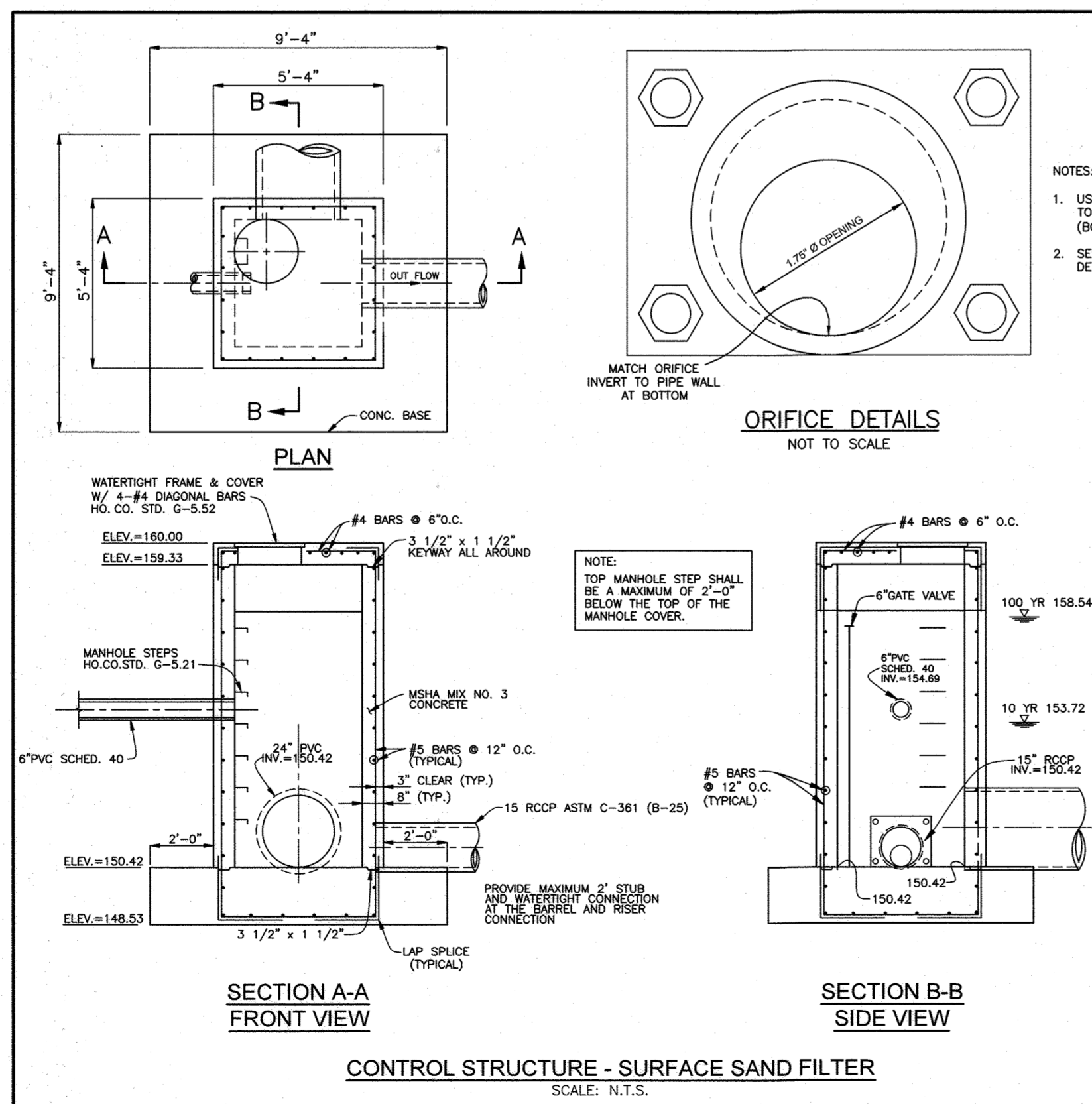
SURFACE SAND FILTER AND UGSWM (R-TANK) SECTION A-A DETAIL
NOT TO SCALE



FOREBAY SPILLWAY DETAIL
NOT TO SCALE

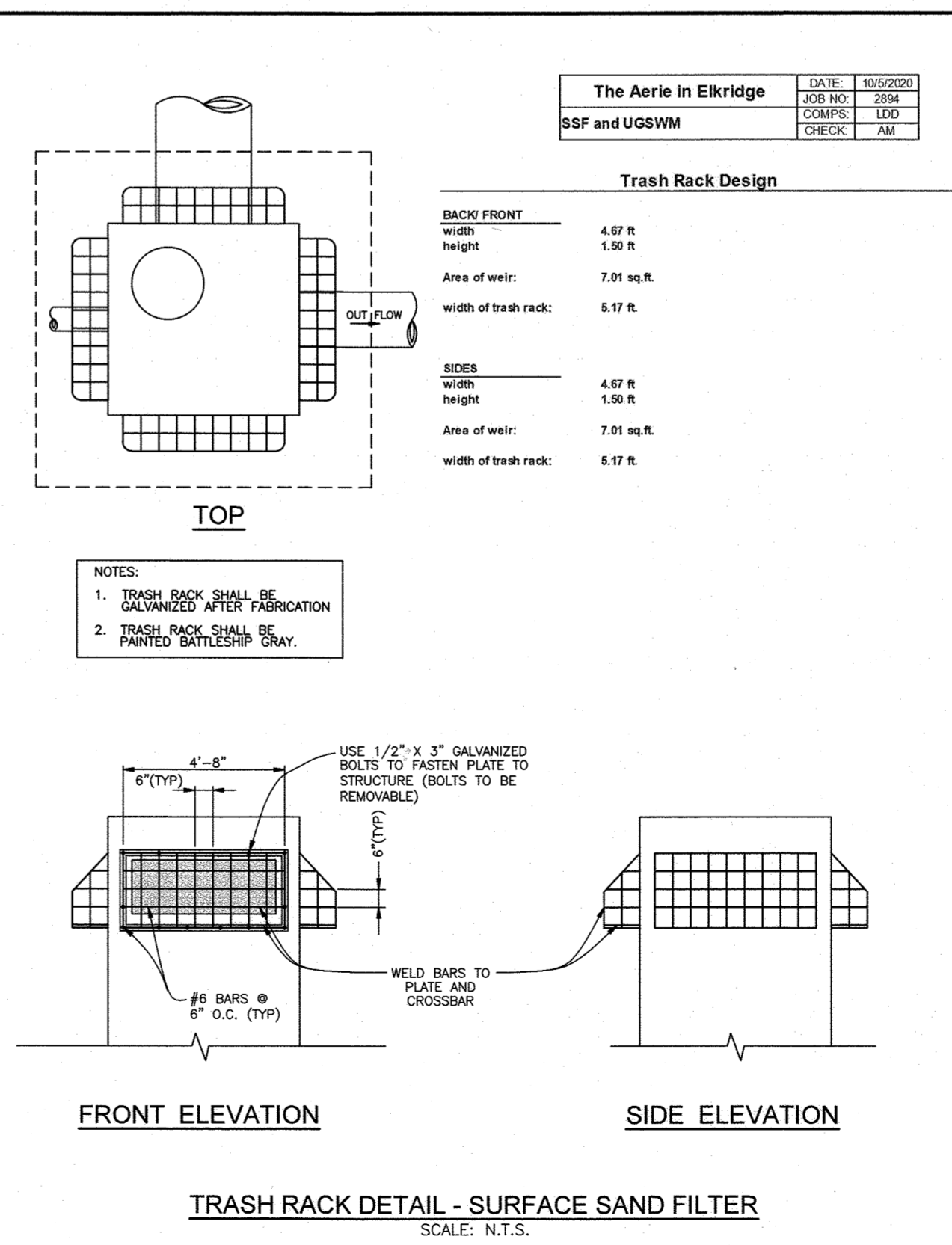


CL OF EMBANKMENT
SCALE: 1"=50' HORIZ., 1"=5' VERT.



CONTROL STRUCTURE - SURFACE SAND FILTER
SCALE: N.T.S.

- NOTES:**
1. USE 1/2" X 3" GALVANIZED BOLTS TO FASTEN PLATE TO STRUCTURE (BOLTS TO BE REMOVABLE)
 2. SEE SHEET 11 FOR TRASH RACK DETAIL.



FRONT ELEVATION

SIDE ELEVATION

TRASH RACK DETAIL - SURFACE SAND FILTER
SCALE: N.T.S.

MATERIALS & SPECIFICATIONS FOR STORMWATER FACILITIES			
MATERIAL	SPECIFICATION	SIZE	NOTES:
PLANTINGS	SEE APPENDIX A, TABLE A.4	N/A	PLANTINGS ARE SITE SPECIFIC
PLANTING SOIL	LOAMY SAND 60-85% 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 CHIPS
GEOTEXTILE (CLASS "C")		N/A	PE TYPE 1 NONWOVEN
GEOTEXTILE (1/4" WIRE MESH)		1/4" WIRE MESH	1/4" WIRE MESH
UNDERDRAN GRAVEL		NO. 57 OR NO. 6 0.375" TO 0.750"	
UNDERDRAN PIPING	1758, TYPE PS28 OR AASHTO M-278	4" TO 6" RIGID 3/8" PERF. @ 6" O.C. 4 HOLES PER ROW; MINIMUM OF 2" OF GRAVEL OVER PIPES, NOT NECESSARY UNDERNEATH PIPES.	
GEOTEXTILE (BELOW IMPERV. LINER)	ASTM-D-4833 (PUNCTURE STRENGTH 125LB) ASTM-D-4832 (TENSILE STRENGTH 300 LB.)		

APPROVED: DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS
 DATE: 05/28/2021
 APPROVED: HANOVER COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 6.10.21
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.
 8480 BALTIMORE NATIONAL PIKE SUITE 315
 ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-8105 (F) 410-465-6644
 WWW.BEI-CIVILENGINEERING.COM

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

Mar 23 2021 10:53 AM DocuSign

OWNER/DEVELOPER:
 TROTTER 5857, LLC.
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THE AERIE IN ELKRIDGE
 LOTS 1-12 AND OS LOT 13

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

STORMWATER MANAGEMENT PLAN, PROFILE, NOTES AND DETAILS

DATE: MARCH, 2021 BEI PROJECT NO. 2894
 DESIGN: LDD DRAFT: LDD SCALE: AS SHOWN SHEET 10 OF 17

CONSTRUCTION SPECIFICATIONS

B.4.C Specifications for Micro-Bioretenion, 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-bioretenion practice that may be harmful to plant growth...

3. Compaction:

It is very important to minimize compaction of both the base of bio-retention practices and the required backfill. When possible, use excavation hoses to remove original soil.

Compaction can be alleviated at the base of the bio-retention facility by using a primary tilling operation such as a chisel plow, ripper, or subsoiler.

Rototill 2 to 3 inches of sand into the base of the bio-retention facility before backfilling the optional sand layer.

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.

When backfilling the bio-retention facility, place soil in lifts 12" to 18". Do not use heavy equipment within the bio-retention basin.

Plant Material:

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

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.

Rootstock of the plant material shall be kept moist during transport and on-site storage.

Trees shall be braced using 2" by 2" stakes only as necessary and for the first growing season only.

Grasses and legume seed should be drilled into the soil to a depth of at least one inch.

The topsoil specifications provide enough organic material to adequately supply nutrients from natural cycling.

Underdrains:

Underdrains should meet the following criteria:

- Pipes-Should be 4" to 6" diameter, slotted or perforated rigid plastic pipe (ASTM F758, Type PS 28, or AASHTO-M-278) in a gravel layer.
- Perforations - If perforated pipe is used, perforations should be 1/2" diameter located 6" on center with a minimum of four holes per row.

The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%.

Miscellaneous:

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

R-TANK OPERATION, INSPECTION AND MAINTENANCE

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 WATERFRESH, UNLESS YOUR SITE INCLUDED CERTAIN UNIQUE AND RARE FEATURES...

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.

WITH THE RIGHT EQUIPMENT MOST INSPECTIONS AND MEASUREMENTS CAN BE ACCOMPLISHED FROM THE SURFACE WITHOUT PHYSICALLY ENTERING ANY CONFINED SPACES.

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.

WORKING FROM THE STRUCTURES ADJACENT THE R-TANK TOWARD THOSE FARTHER AWAY, CHECK FOR DEBRIS AND SEDIMENT IN BOTH THE STRUCTURES AND THE PIPES.

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.

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.

FOR MODULES TALLER THAN 40" THE R-TANK SYSTEM SHOULD BE BACK-FLUSHED ONCE SEDIMENT ACCUMULATION HAS REACHED 6".

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

BEFORE ANY MAINTENANCE IS PERFORMED ON YOUR SYSTEM - PLUG THE OUTLET PIPE TO PREVENT CONTAMINATION OF THE ADJACENT SYSTEMS.

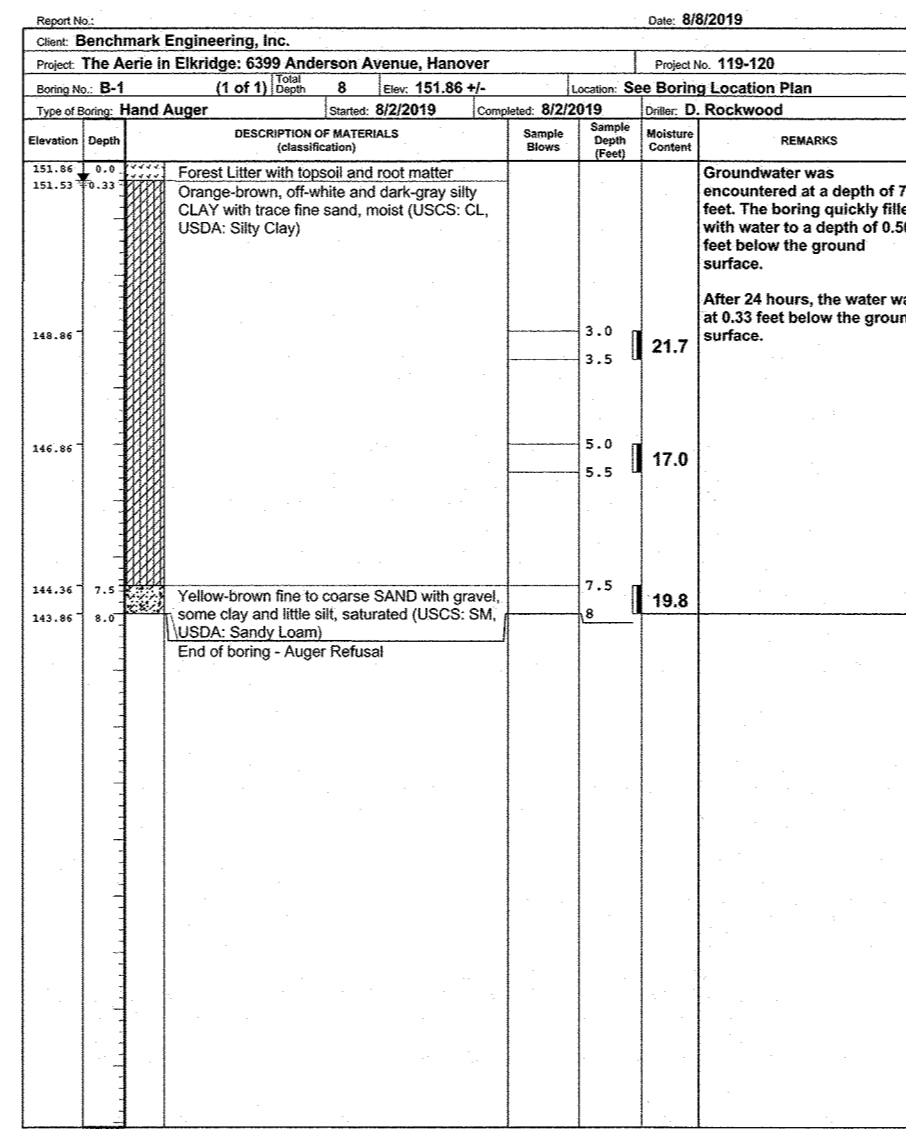
BEGIN BY CLEANING ALL UPSTREAM STRUCTURES, PIPES, AND PRE-TREATMENT SYSTEMS CONTAINING SEDIMENT AND/OR DEBRIS.

TO BACK-FLUSH THE R-TANK, WATER IS PUMPED INTO THE SYSTEM THROUGH THE MAINTENANCE PORTS AS RAPIDLY AS POSSIBLE.

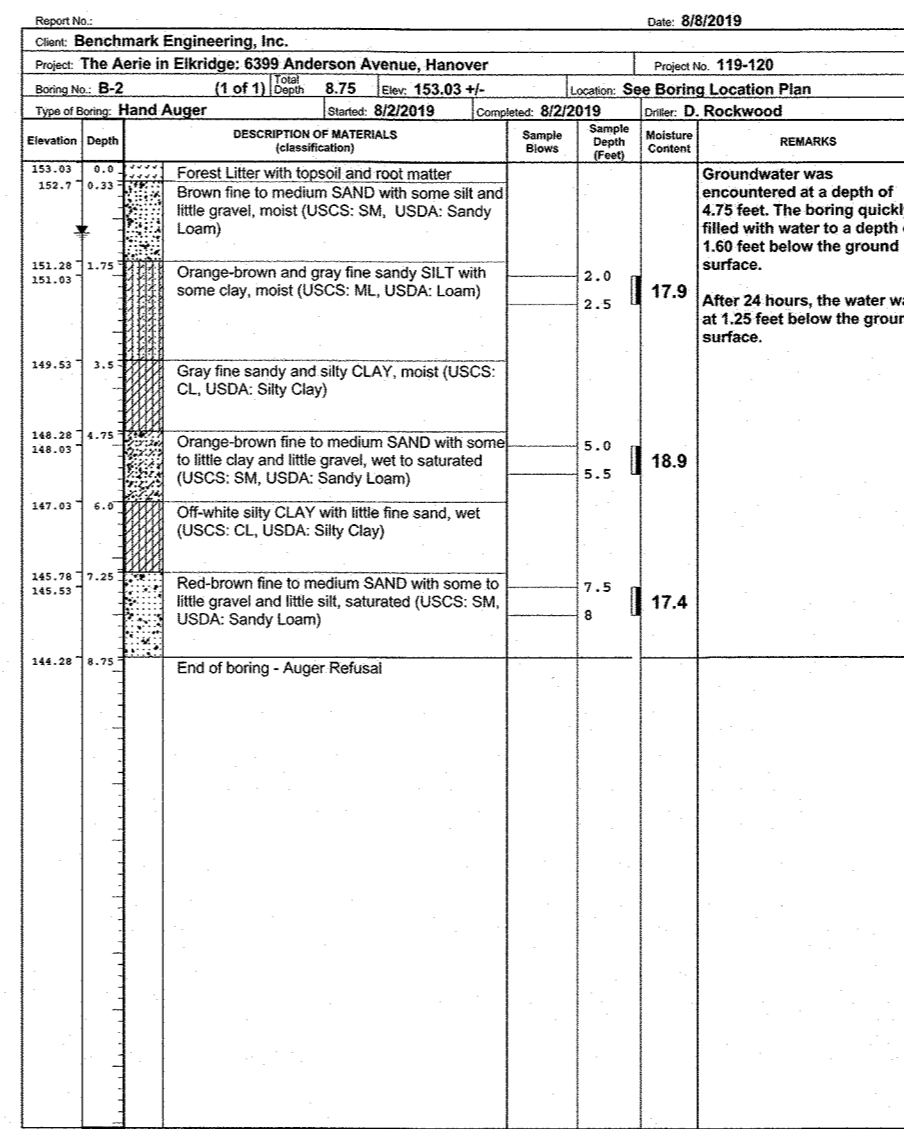
FOR SYSTEMS WITH LARGE FOOTPRINTS THAT WOULD REQUIRE EXTENSIVE VOLUMES OF WATER TO PROPERLY FLUSH THE SYSTEM, YOU SHOULD CONSIDER PERFORMING YOUR MAINTENANCE WITHIN 24 HOURS OF A RAIN EVENT.

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

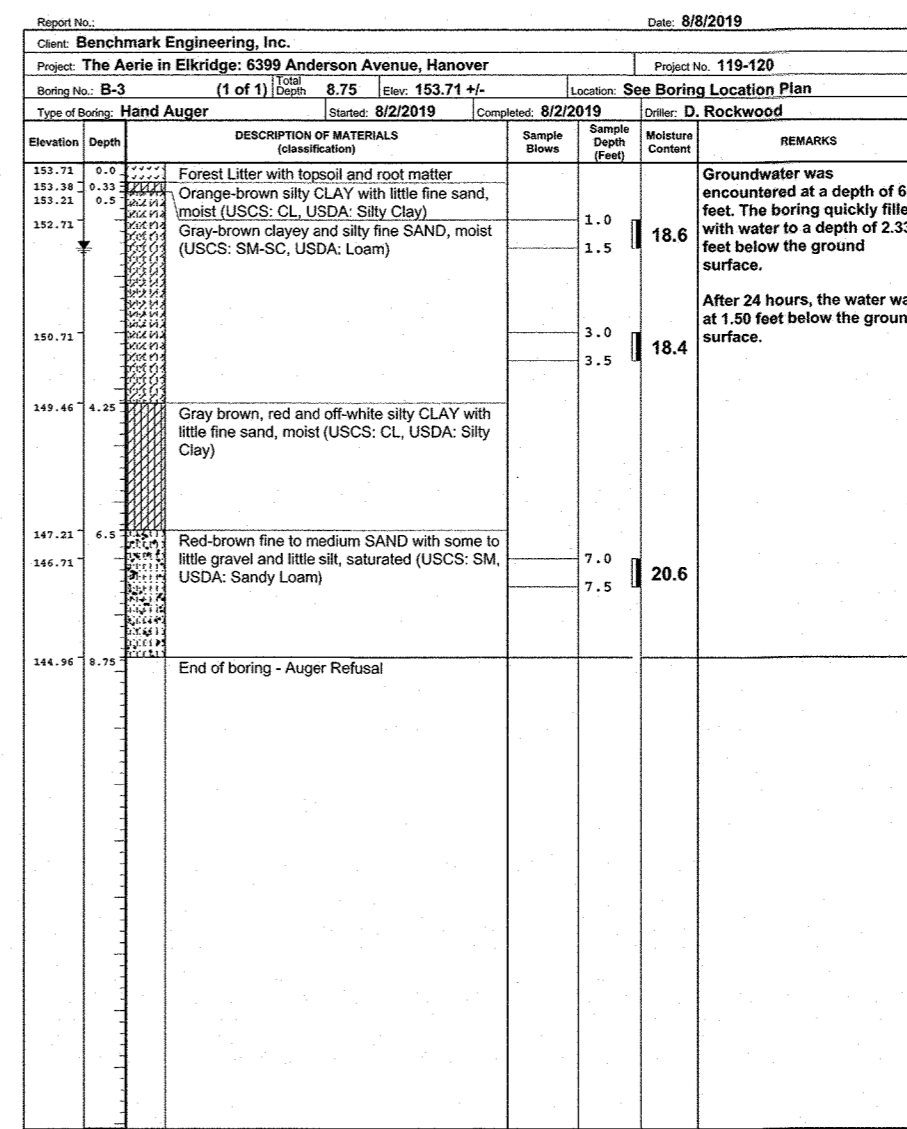
BORING LOG



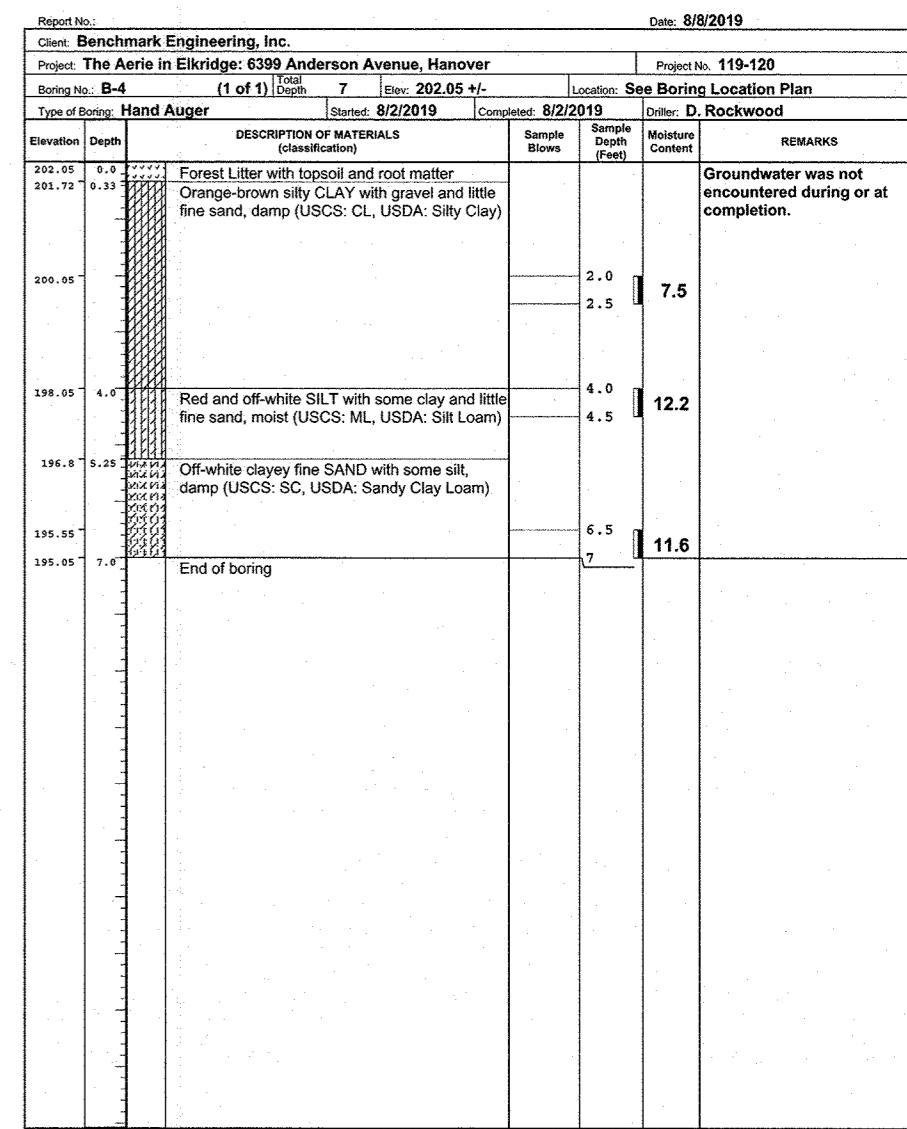
BORING LOG



BORING LOG



BORING LOG



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 NEEDED.
- 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.

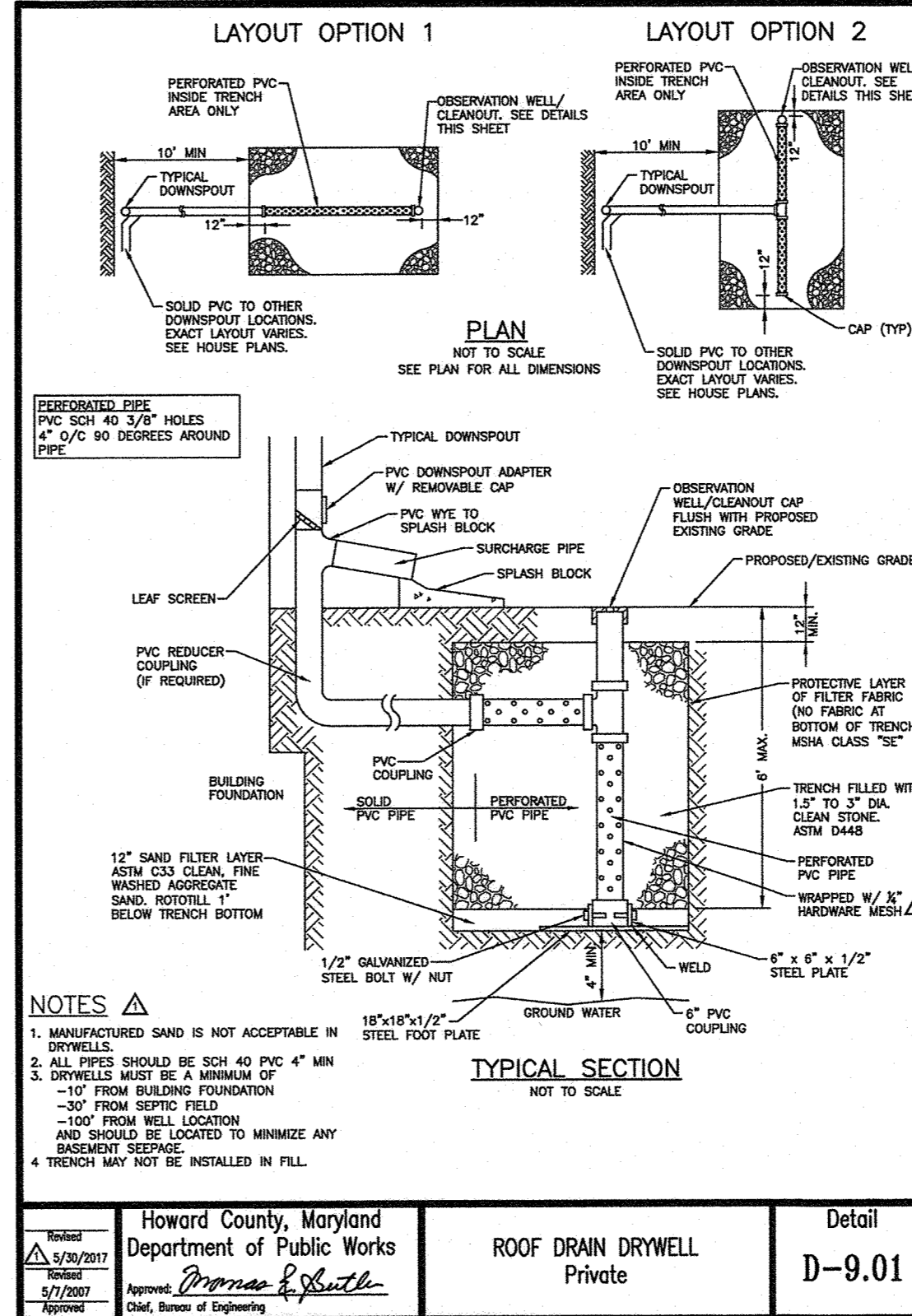
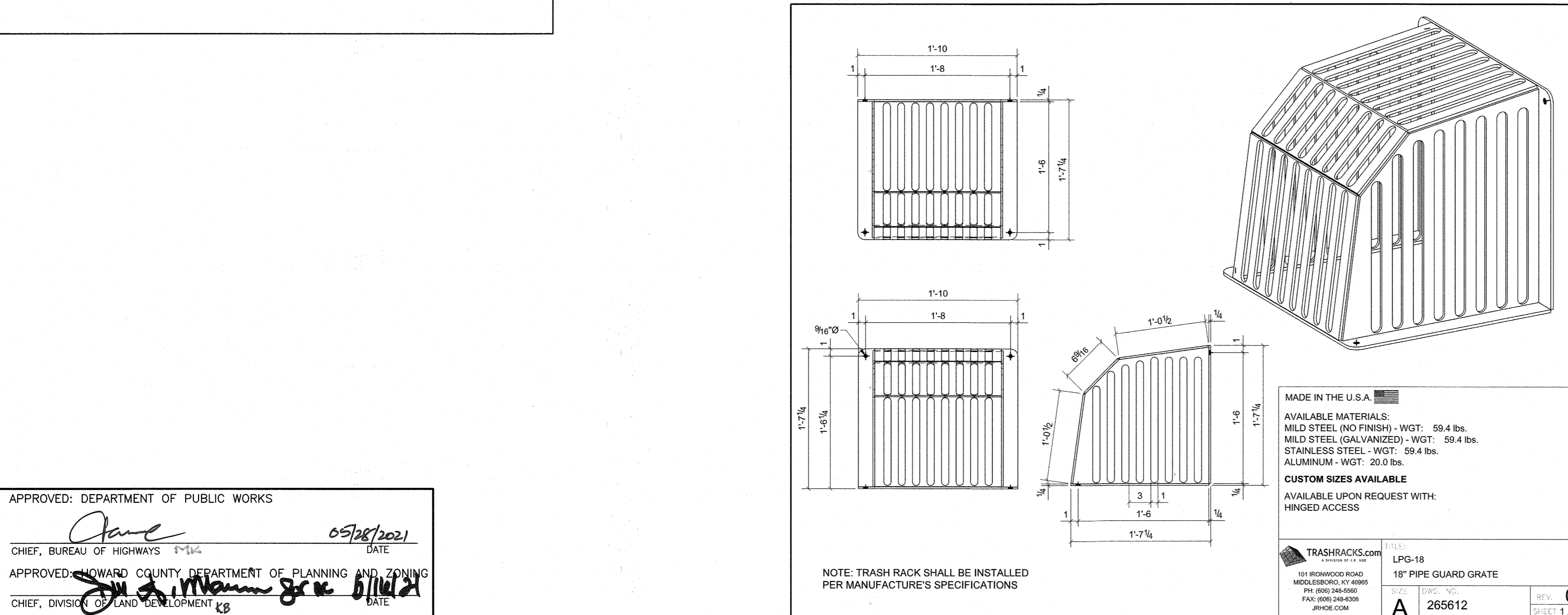


Table with columns: Designation, Drainage Area, Impermeous Area, I (%), Rv, ESDv, Depth, Porosity, Width, Length, Volume Stored, Pe Treated. Lists calculations for Lot 1 through Lot 11.



APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT

- 1. THE MONITORING WELLS AND STRUCTURES SHALL BE INSPECTED ON A QUARTERLY BASIS AND AFTER EVERY LARGE STORM EVENT.
- 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.

BENCHMARK ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE & SUITE 315
ELICOTT CITY, MARYLAND 21043
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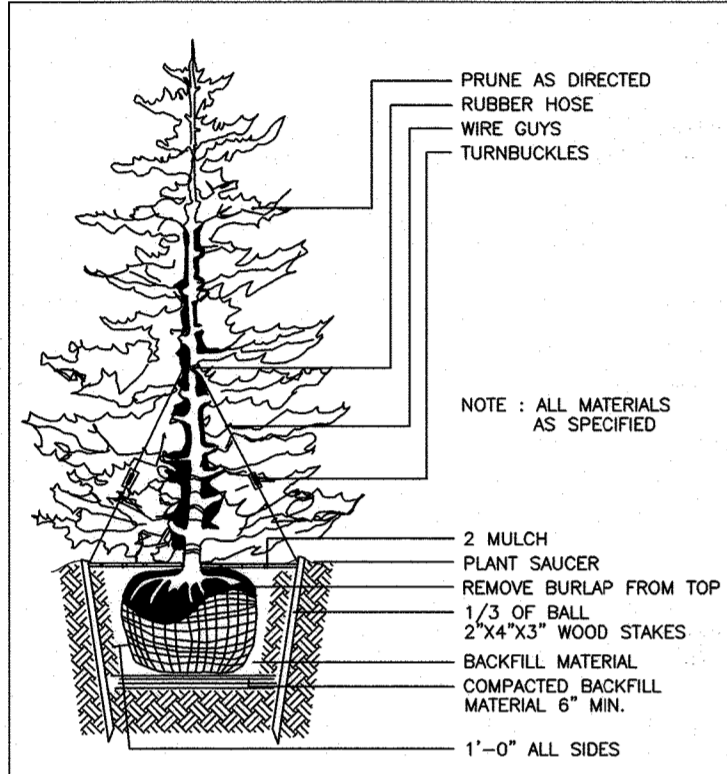
OWNER/DEVELOPER: TROTTER 5857, LLC.
THE AERIE IN ELKRIDGE
LOTS 1-12 AND OS LOT 13
6399 ANDERSON AVE, HANOVER, MD 21076
STORMWATER MANAGEMENT NOTES AND DETAILS

LANDSCAPE NOTES:

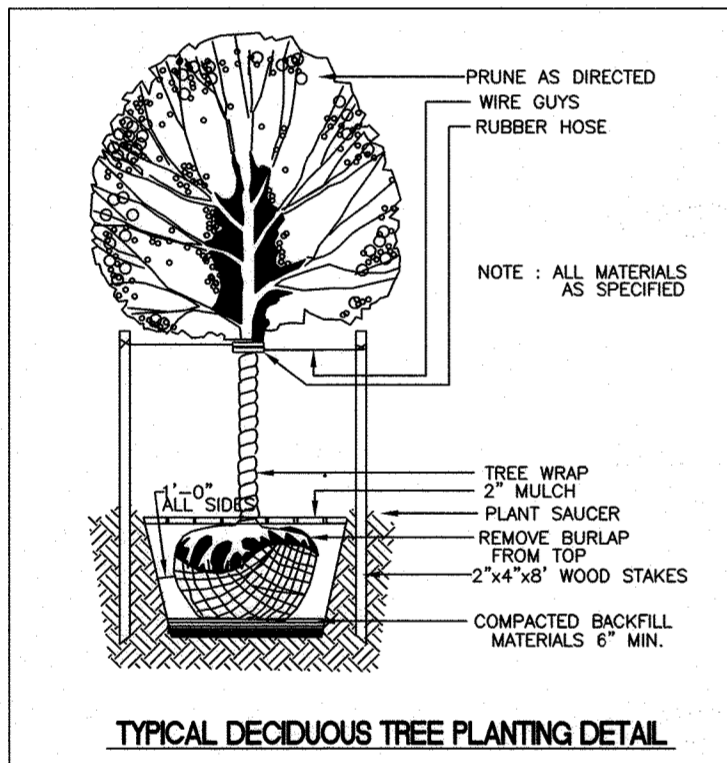
- THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL.
- STREET TREE LOCATIONS:
 - WHEN THE DISTANCE BETWEEN THE CURB AND SIDEWALK IS 6 FEET OR GREATER, THE TREES SHALL BE LOCATED WITHIN THE RIGHT-OF-WAY AND SHALL BE CENTERED BETWEEN THE CURB AND SIDEWALK.
 - 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.
 - TREES SHALL BE PLANTED 6 FEET BEHIND CURB WHEN THERE ARE NO SIDEWALKS.
 - 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.
- 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.
- 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.
- 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.
- 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.

SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND					
SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	K-VALUE
RcC		C		RUSSETT FINE SANDY LOAM, 5 TO 10 PERCENT SLOPES	0.24
SiE**		B	B	SASSAFRAS AND CROOM SOIL, 15 TO 25 PERCENT SLOPES	0.24/0.28
SiB		B		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.



TYPICAL EVERGREEN TREE PLANTING DETAIL
NOT TO SCALE



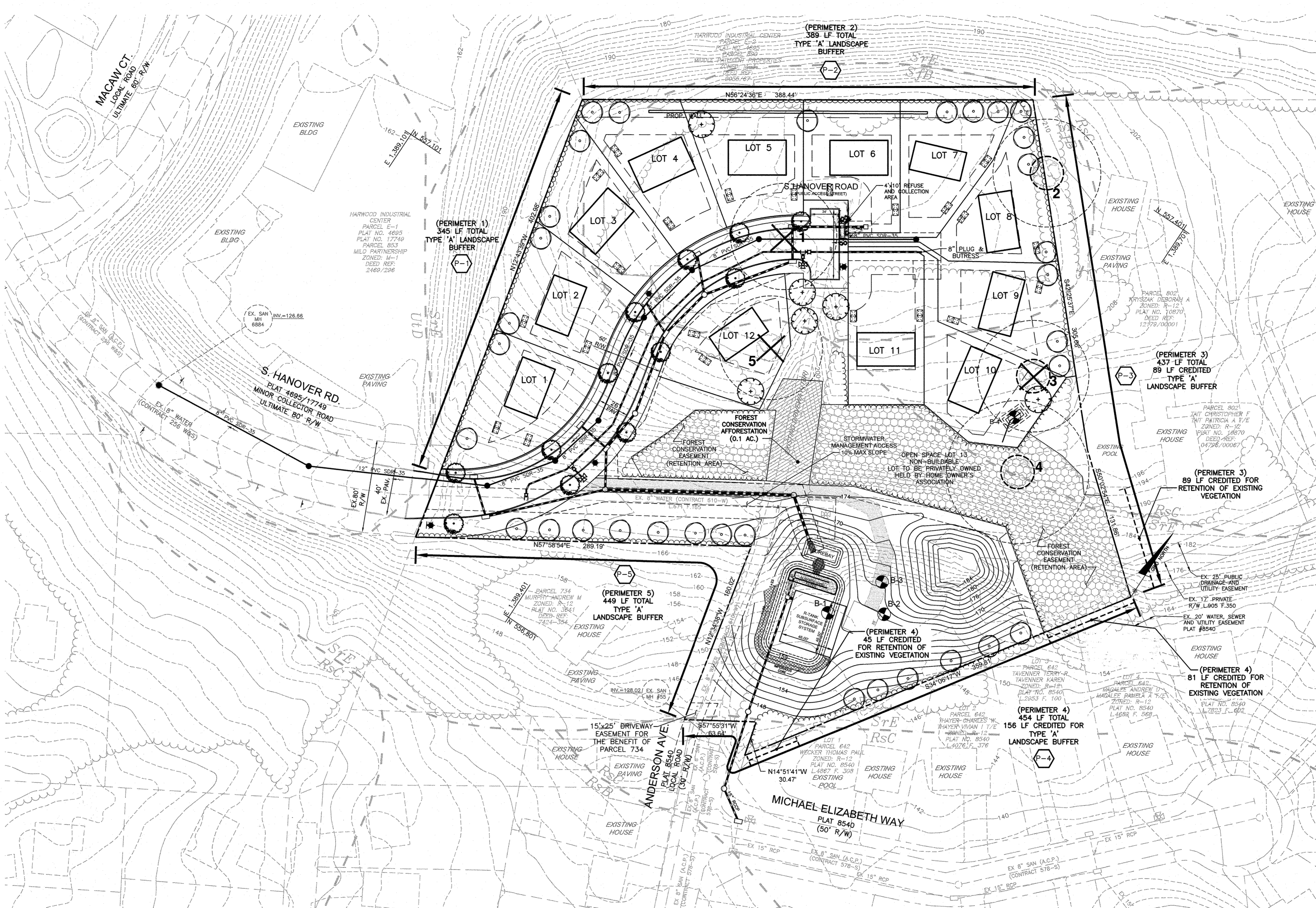
TYPICAL DECIDUOUS TREE PLANTING DETAIL

Specimen Tree Chart

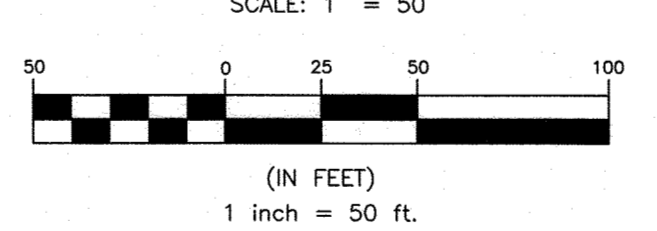
Key (X#)	Species	Size (in dbh)	CRZ (feet radius)	Comments
1	Black oak **	30.5	45.75	fair, some trimming noted
2	Chestnut oak	31	46.5	CRZ impacted by offsite activity
3	Chestnut oak *	32	48	fair, some dieback noted
4	Black oak	41	61.5	good
5	Chestnut oak **	29.8	44.7	poor, heavy vine cover and dieback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



PLAN



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

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 CHINENSIS (DOE GREEN JUNIPER)	18"-24" SP.	TO BE PLACED AROUND REFUSE AREA

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

SCHEDULE A PERIMETER LANDSCAPE EDGE						
CATEGORY	ADJACENT TO PERIMETER PROPERTIES					TOTAL
	P-1	P-2	P-3	P-4	P-5	
PERIMETER NO. / LANDSCAPE TYPE						
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

LEGEND	
	PROPERTY BOUNDARY
	ADJACENT PROPERTY BOUNDARY
	GIS CONTOUR LINES
	200
	PROPOSED CONTOUR LINES
	SOIL DELINEATION
	EXISTING BUILDINGS
	PROPOSED DWELLING
	STEEP SLOPES 25% OR GREATER
	EXISTING TREELINE
	PROPOSED TREELINE
	PROPOSED WATER
	PROPOSED SANITARY
	PROPOSED STORMDRAIN

	CRITICAL ROOT ZONE
	SPECIMEN TREE
	SPECIMEN TREE (TO BE REMOVED)
	SPECIMEN TREE MITIGATION PLANTING
	FOREST CONSERVATION EASEMENT AREA
	FUTURE PLANTING AREA AND FC EASEMENT

DEVELOPER'S/BUILDER'S CERTIFICATE

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 OF PLANNING AND ZONING.

HILL J. HUANG
TROTTER 5857, LLC
DATE: 3/24/2021

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS
DATE: 05/28/2021

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT
DATE: 6/10/21

BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE & SUITE 315
ELLCOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 28378, Expiration Date: 01-01-2023.

Mar 23 2021 11:00 AM DocuSign

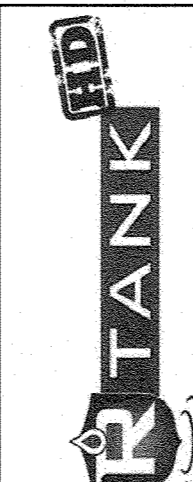
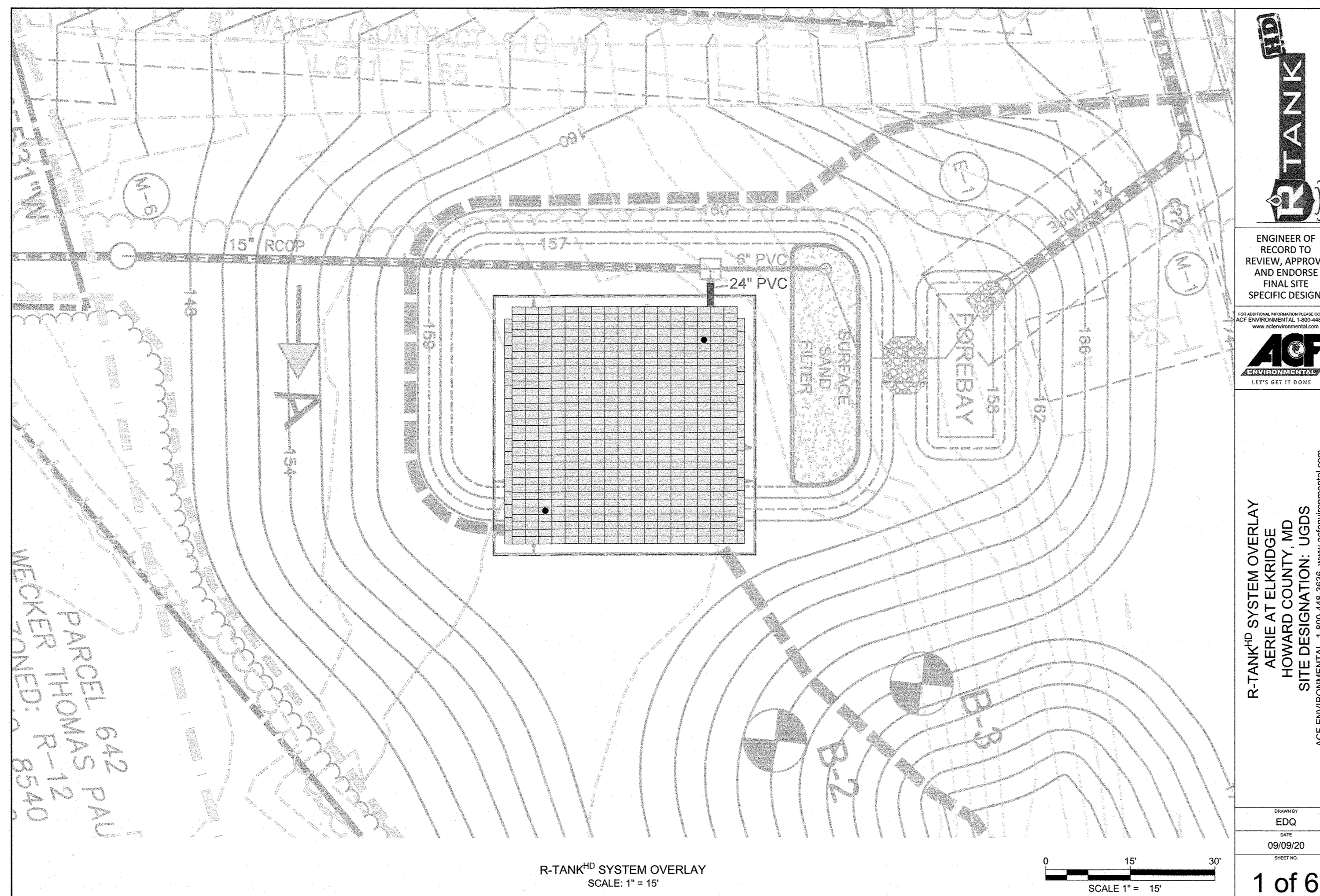
OWNER/DEVELOPER:
TROTTER 5857, LLC
1819 PANARAMA CT.
MCLEAN, VA 22101
(P) 443-250-1555

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

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

FINAL LANDSCAPE PLAN AND SOILS MAP

DATE: MARCH, 2021 BEI PROJECT NO. 2894
DESIGN: LDD DRAFT: LDD SCALE: AS SHOWN SHEET 13 OF 17



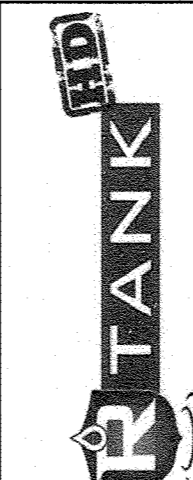
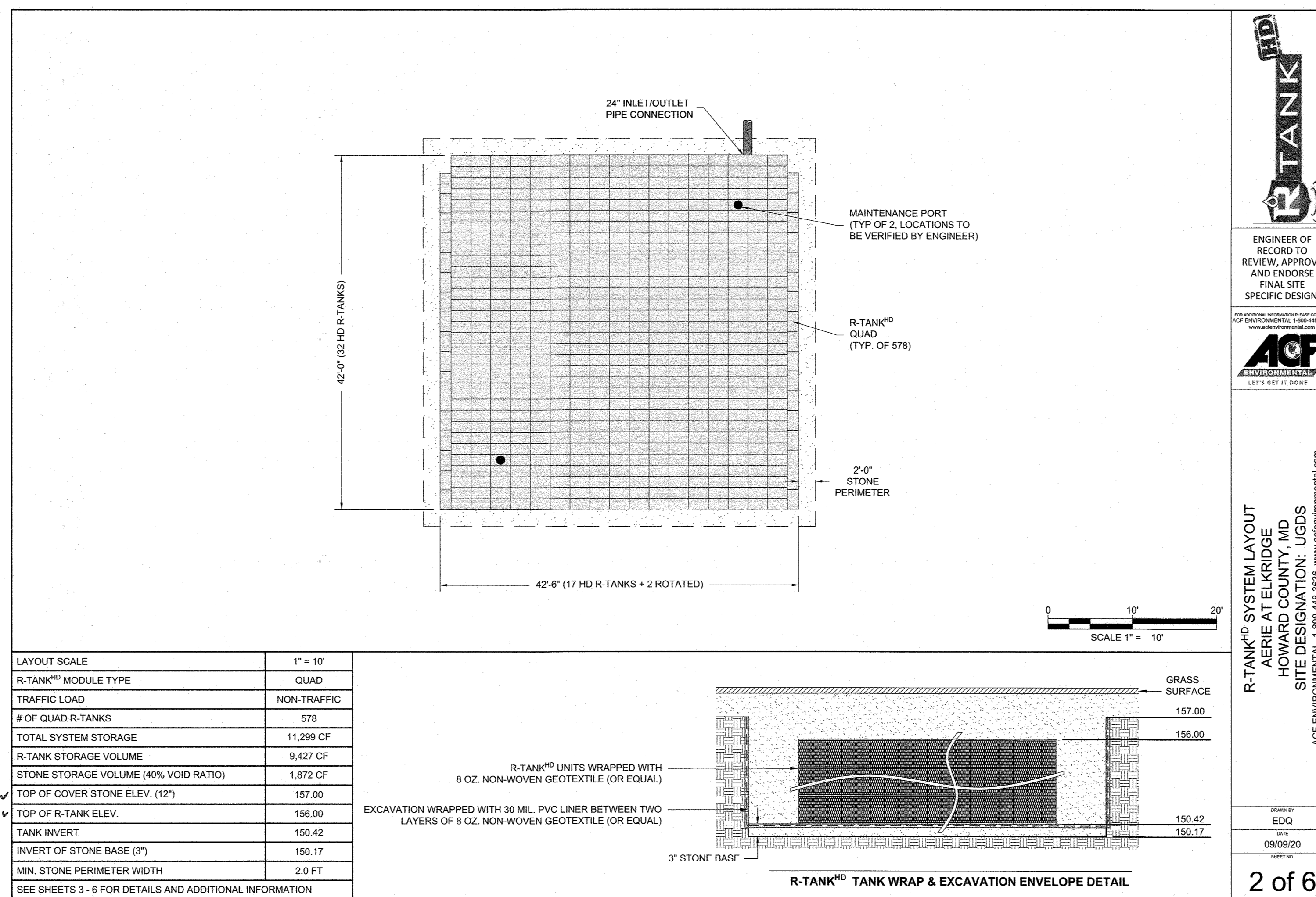
ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN.



R-TANK^{HD} SYSTEM OVERLAY
AERIE AT ELKRIDGE
HOWARD COUNTY, MD
SITE DESIGNATION: UGDS
ACF ENVIRONMENTAL, 1-800-449-3636, www.acfenvironmental.com

DESIGNED BY: EDQ
DATE: 09/09/20

1 of 6



ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN.

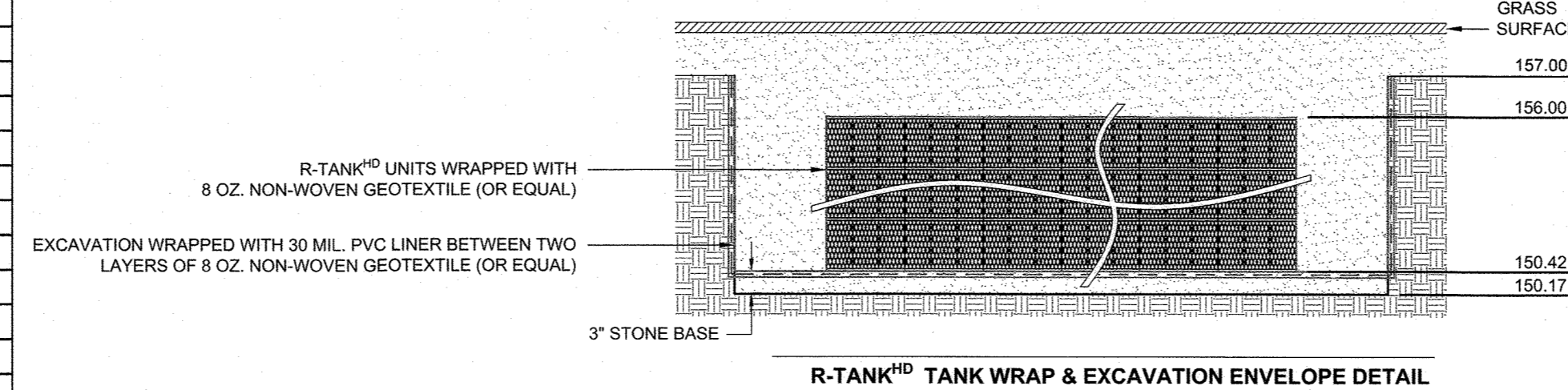


R-TANK^{HD} SYSTEM LAYOUT
AERIE AT ELKRIDGE
HOWARD COUNTY, MD
SITE DESIGNATION: UGDS
ACF ENVIRONMENTAL, 1-800-449-3636, www.acfenvironmental.com

DESIGNED BY: EDQ
DATE: 09/09/20

2 of 6

LAYOUT SCALE	1" = 10'
R-TANK ^{HD} MODULE TYPE	QUAD
TRAFFIC LOAD	NON-TRAFFIC
# OF QUAD R-TANKS	578
TOTAL SYSTEM STORAGE	11,299 CF
R-TANK STORAGE VOLUME	9,427 CF
STONE STORAGE VOLUME (40% VOID RATIO)	1,872 CF
TOP OF COVER STONE ELEV. (12")	157.00
TOP OF R-TANK ELEV.	156.00
TANK INVERT	150.42
INVERT OF STONE BASE (3")	150.17
MIN. STONE PERIMETER WIDTH	2.0 FT
SEE SHEETS 3 - 6 FOR DETAILS AND ADDITIONAL INFORMATION	



APPROVED: DEPARTMENT OF PUBLIC WORKS
Chanel
CHIEF, BUREAU OF HIGHWAYS
DATE: 05/26/2021

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Dustin Mann
CHIEF, DIVISION OF LAND DEVELOPMENT
DATE: 01/11/21

Phil Clark
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 6.10.21

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.

Mar 23 2021 11:02 AM DocuSign

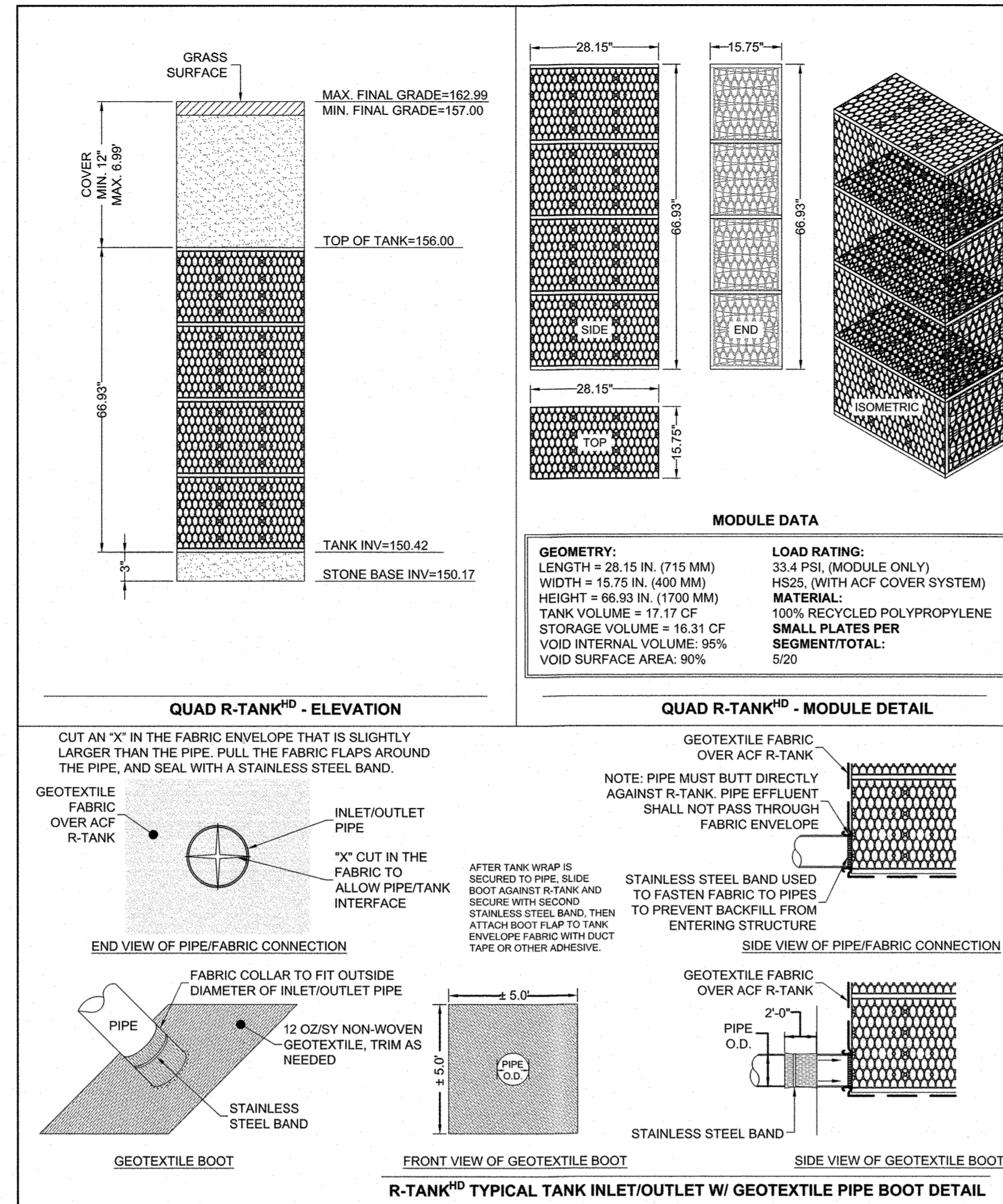
OWNER:
TROTTER 5857, LLC.
1819 PANARAMA CT.
MCCLEAN, VA 22101

THE AERIE IN ELKRIDGE

6399 ANDERSON AVE, HANOVER, MD 21076
TAX MAP: 13 - GRID: 21 - PARCEL: 109
ZONED: RC-DEO
ELECTION DISTRICT NO. 4 - HOWARD COUNTY, MARYLAND

UGSWM (R-TANKS)

DATE: MARCH, 2021 BEI PROJECT NO. 2894
SCALE: AS SHOWN SHEET 15 OF 17



R-TANK [®] QUANTITIES	
R-TANK [®] MODULE TYPE	QUAD
# OF QUAD R-TANKS	578
TOTAL SYSTEM STORAGE	11,299 CF
R-TANK STORAGE VOLUME	9,427 CF
STONE STORAGE VOLUME (40% VOID RATIO)	1,872 CF
STONE BED FOOTPRINT	2,139 SF
STONE QUANTITY	173 CY
8 OZ. NON-WOVEN GEOTEXTILE TANK WRAP	3,137 SF (349 SY)
30 MIL. PVC LINER EXCAVATION WRAP	3,920 SF (436 SY)
8 OZ. NON-WOVEN GEOTEXTILE LINER PROTECTION	7,840 SF (871 SY)
12" MAINTENANCE PORTS	2
12" PIPE BOOTS	1

NOTE: STONE QUANTITY INCLUDES 12" OF COVER AND 3" OF BASE.
NOTE: GEOTEXTILE / LINER QUANTITIES INCLUDE A 15% WASTE FACTOR.

ACF ENVIRONMENTAL
LET'S GET IT DONE

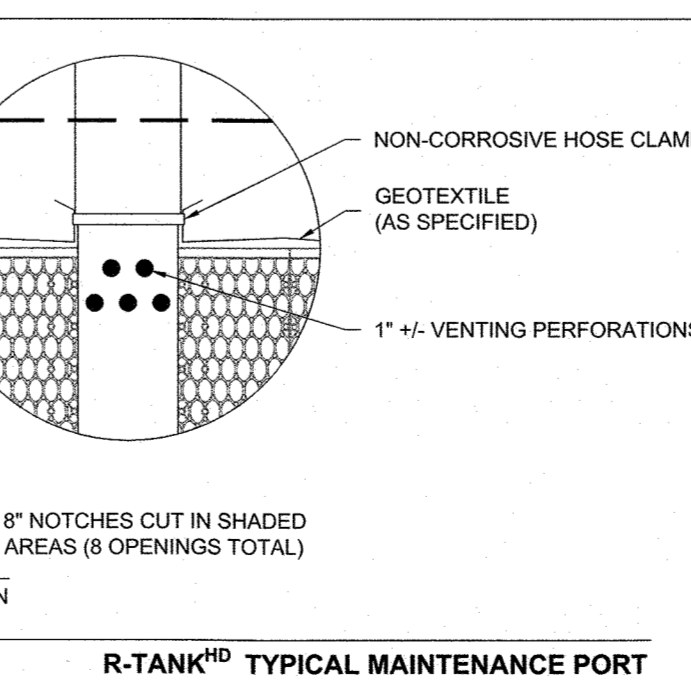
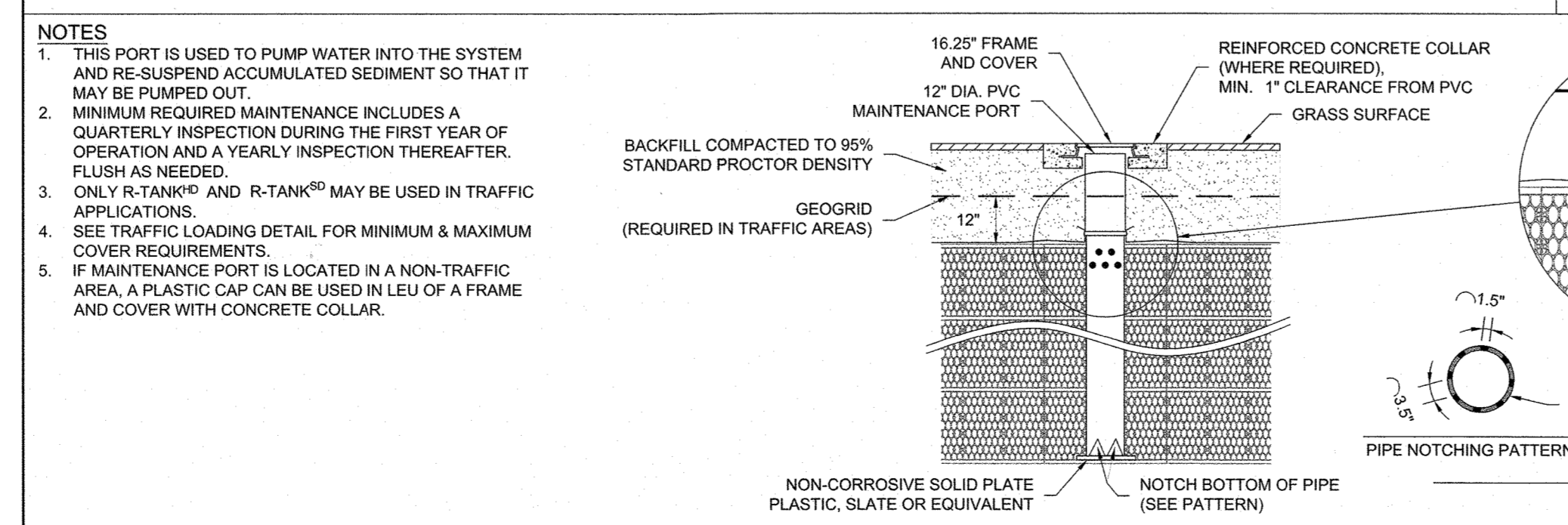
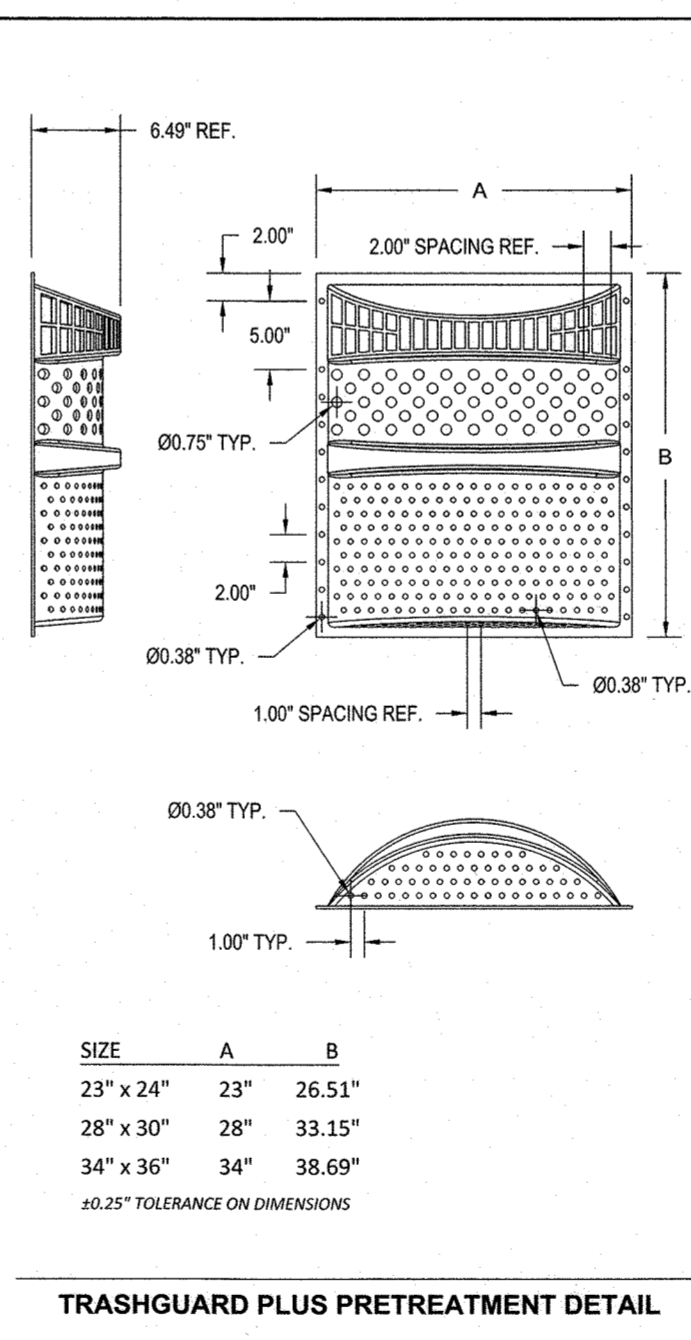
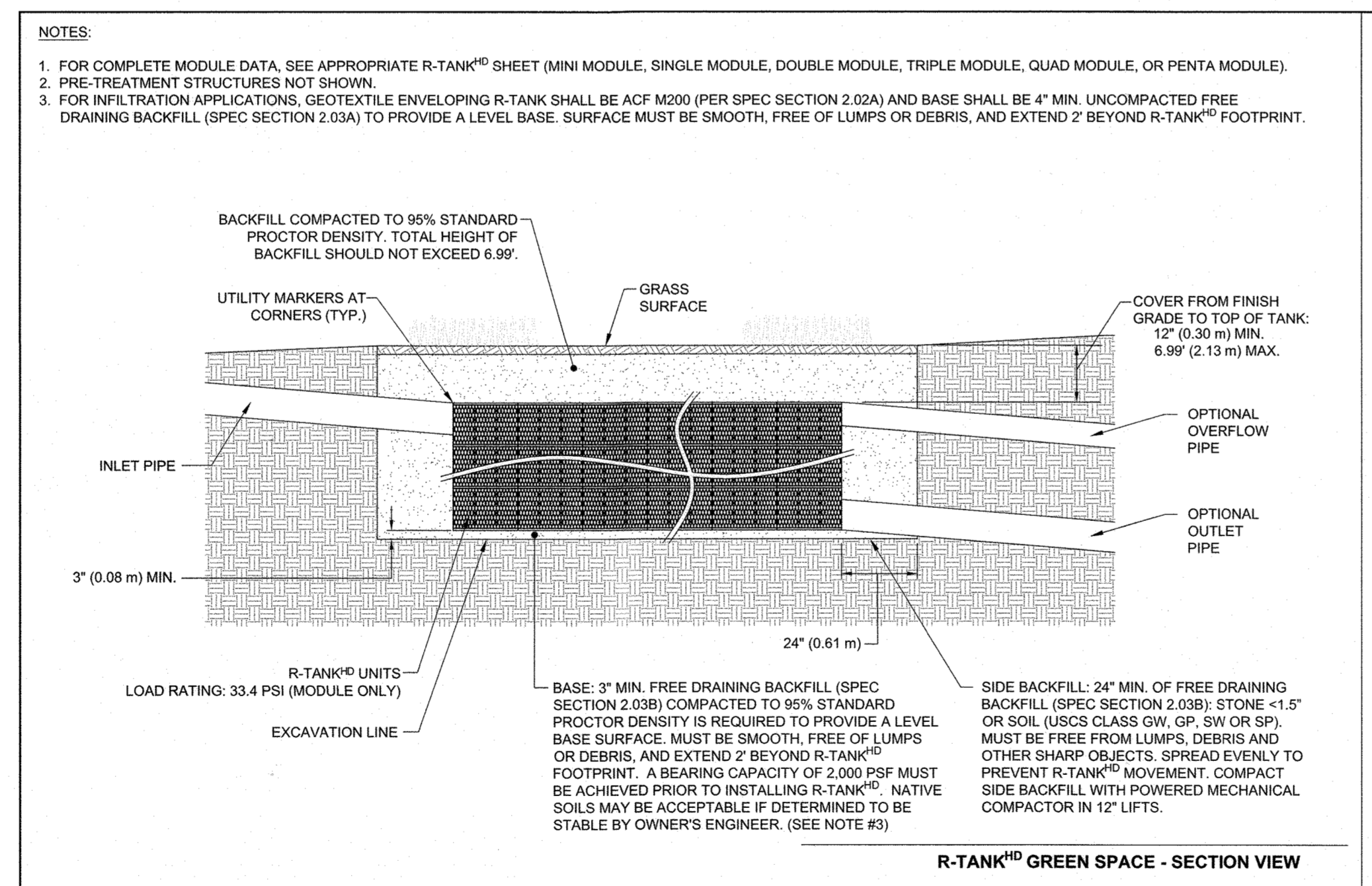
ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN.

ACF ENVIRONMENTAL
1819 FANARAMA CT. #200
HANOVER, MD 21076
TEL: 410-448-3836
WWW.ACFENVIRONMENTAL.COM

R-TANK[®] SYSTEM DETAILS
AERIE AT ELKRIDGE
HOWARD COUNTY, MD
SITE DESIGNATION: UGDS

EDO
09/09/20

3 of 6



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ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN.

ACF ENVIRONMENTAL
1819 FANARAMA CT. #200
HANOVER, MD 21076
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R-TANK[®] SYSTEM DETAILS
AERIE AT ELKRIDGE
HOWARD COUNTY, MD
SITE DESIGNATION: UGDS

EDO
09/09/20

4 of 6

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS
DATE: 05/28/2021

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT
DATE: 6/16/21

APPROVED: CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 6.16.21

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.

Mar 23 2021 11:03 AM DocuSign

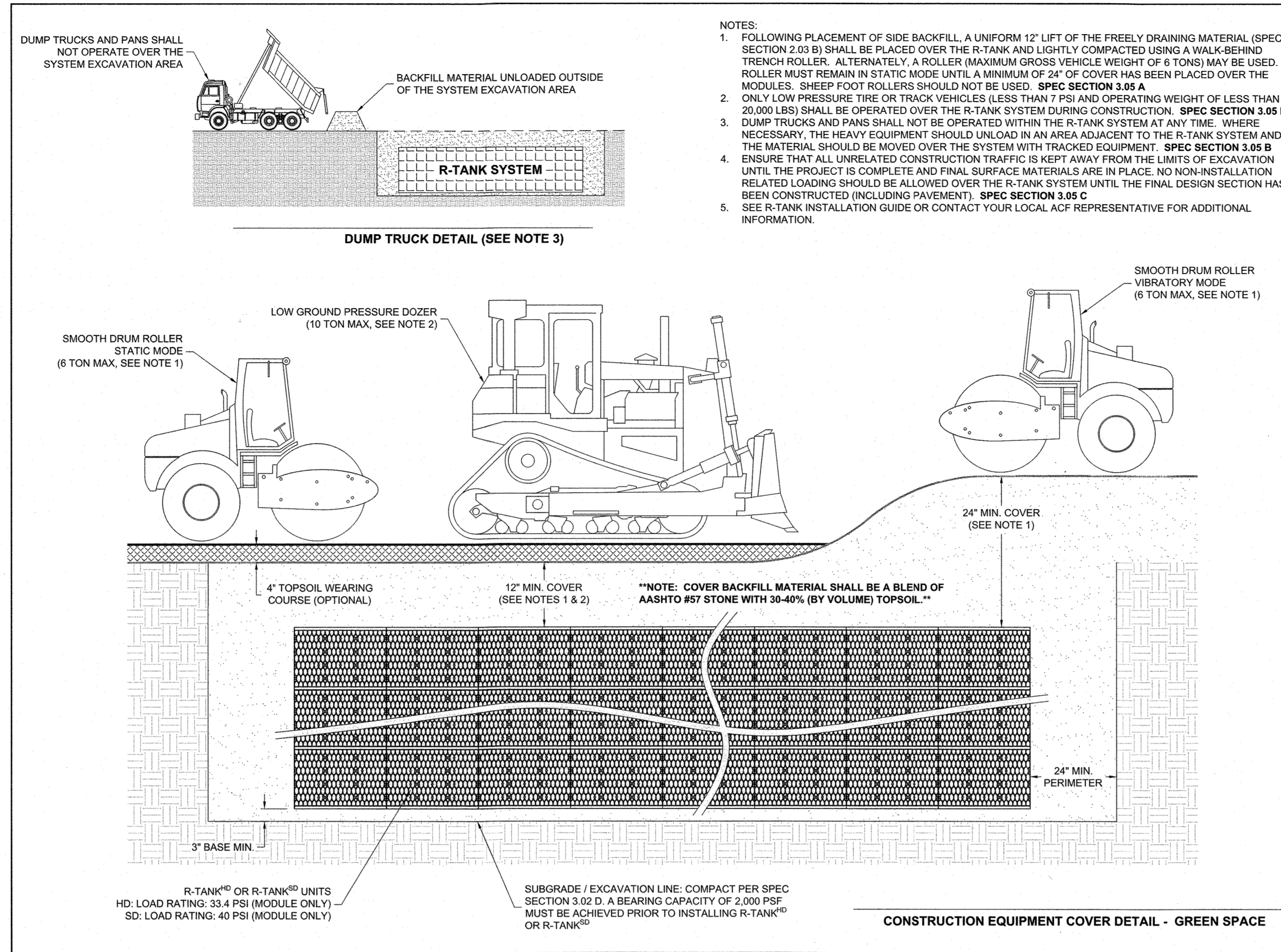
OWNER:
TROTTER 5857, LLC.
1819 FANARAMA CT.
MCCLEAN, VA 22101

THE AERIE IN ELKRIDGE

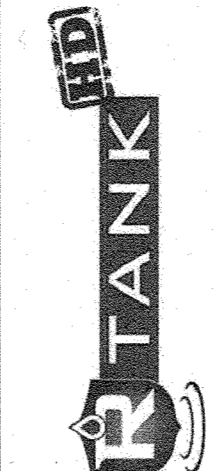
6399 ANDERSON AVE, HANOVER, MD 21076
TAX MAP: 13 - GRID: 21 - PARCEL: 109
ELECTION DISTRICT NO. 4 - HOWARD COUNTY, MARYLAND

UGSWM (R-TANKS)

DATE: MARCH, 2021
SCALE: AS SHOWN
BEI PROJECT NO. 2894
SHEET 16 OF 17



- NOTES:
- FOLLOWING PLACEMENT OF SIDE BACKFILL, A UNIFORM 12" LIFT OF THE FREELY DRAINING MATERIAL (SPEC SECTION 2.03 B) SHALL BE PLACED OVER THE R-TANK AND LIGHTLY COMPACTED USING A WALK-BEHIND TRENCH ROLLER. ALTERNATELY, A ROLLER (MAXIMUM GROSS VEHICLE WEIGHT OF 6 TONS) MAY BE USED. ROLLER MUST REMAIN IN STATIC MODE UNTIL A MINIMUM OF 24" OF COVER HAS BEEN PLACED OVER THE MODULES. SHEEP FOOT ROLLERS SHOULD NOT BE USED. SPEC SECTION 3.05 A
 - ONLY LOW PRESSURE TIRE OR TRACK VEHICLES (LESS THAN 7 PSI AND OPERATING WEIGHT OF LESS THAN 20,000 LBS) SHALL BE OPERATED OVER THE R-TANK SYSTEM DURING CONSTRUCTION. SPEC SECTION 3.05 B
 - DUMP TRUCKS AND PANS SHALL NOT BE OPERATED WITHIN THE R-TANK SYSTEM AT ANY TIME. WHERE NECESSARY, THE HEAVY EQUIPMENT SHOULD UNLOAD IN AN AREA ADJACENT TO THE R-TANK SYSTEM AND THE MATERIAL SHOULD BE MOVED OVER THE SYSTEM WITH TRACKED EQUIPMENT. SPEC SECTION 3.05 B
 - ENSURE THAT ALL UNRELATED CONSTRUCTION TRAFFIC IS KEPT AWAY FROM THE LIMITS OF EXCAVATION UNTIL THE PROJECT IS COMPLETE AND FINAL SURFACE MATERIALS ARE IN PLACE. NO NON-INSTALLATION RELATED LOADING SHOULD BE ALLOWED OVER THE R-TANK SYSTEM UNTIL THE FINAL DESIGN SECTION HAS BEEN CONSTRUCTED (INCLUDING PAVEMENT). SPEC SECTION 3.05 C
 - SEE R-TANK INSTALLATION GUIDE OR CONTACT YOUR LOCAL ACF REPRESENTATIVE FOR ADDITIONAL INFORMATION.



ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN.



R-TANK[®] CONSTRUCTION EQUIPMENT COVER DETAIL
 AERIE AT ELKRIDGE
 HOWARD COUNTY, MD
 SITE DESIGNATION: UGDS
 ACF ENVIRONMENTAL, 1-800-445-3636, www.acfenvironmental.com

DESIGNED BY
 EDO

DATE
 09/09/20

SHEET NO.
 5 of 6

R-TANK SPECIFICATION

PROPERTY	DESCRIPTION	R-Tank [®] VALUE	R-Tank [®] VALUE	R-Tank [®] VALUE	R-Tank [®] VALUE
Void Area	95% void modular structure	95%	95%	95%	95%
Surface Void Area	95% void modular structure	95%	95%	95%	95%
Vertical Compression Strength	ASTM D2412/ASTM F 2412	30.0 kPa	33.4 kPa	42.2 kPa	134.2 kPa
Vertical Compression Strength	ASTM D2412/ASTM F 2412	20.0 kPa	22.2 kPa	27.8 kPa	85.8 kPa
HD-20 Minimum Cover	Cover material supported by 20" depth	30"	27"	17"	17"
HD-20 Minimum Cover	Cover material supported by 20" depth	30"	27"	17"	17"
Minimum Cover	Minimum allowable cover depth	120" min. (4' 0")	120" min. (4' 0")	120" min. (4' 0")	120" min. (4' 0")
HD-20 Minimum Cover	Minimum allowable cover depth	120" min. (4' 0")	120" min. (4' 0")	120" min. (4' 0")	120" min. (4' 0")
Static Stiffness	Static stiffness (kPa/m)	1.14 x 10 ⁷	1.14 x 10 ⁷	1.14 x 10 ⁷	1.14 x 10 ⁷

Supplier: ACF Environmental 2831 Cornwell Road Richmond, VA 23234
 (7) 800-445-3636; (7) 804-473-7779 www.acfenvironmental.com

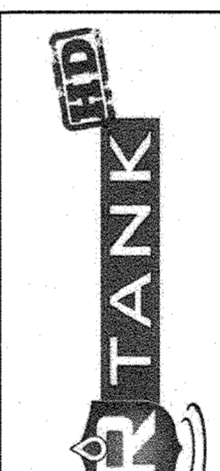
2.02 Geotextiles

- Geotextile: A geotextile envelope is required to prevent backfill material from entering the R-Tank modules.
- Standard Application: The geotextile envelope shall be an 8 oz per square yard nonwoven geotextile (ACF 1008 or equivalent).
- Infiltration Applications: When water must infiltrate through the geotextile as a function of the system design, a woven nonwoven geotextile (ACF M200 or equivalent) shall be used.
- Geotextile: For installations subject to traffic loads and/or when required by project plans, install geotextile (ACF 0512 or equivalent) to reinforce backfill above the R-Tank system. Geotextile is not always required for R-Tank installations, and is often not required for non-traffic load applications.

2.03 Backfill & Cover Materials

- Backfill Materials: Stone (angular and smaller than 1.5" in diameter) or soil (GW, GP, SW, or SP as classified by the Unified Soil Classification System) shall be used below the R-Tank system (17' minimum). Material must be free from stones, debris, and any sharp objects that could cut the geotextile. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation. For infiltration applications backfill material shall be free draining.
- Sides and Top Backfill: Material shall be free draining stone (angular and smaller than 1.5" in diameter) or soil (GW, GP, SW, or SP as classified by the Unified Soil Classification System). For all R-Tank modules installed in green spaces and not subjected to vehicular loads, backfill materials may differ below the guidelines for traffic applications above. The top backfill layer (12' minimum) may consist of AASHTO #57 stone blended with 30-40% (by volume) topsoil or soil in stabilizing vegetation.
- Additional Cover Material: Structural fill shall consist of granular materials meeting the geotechnical requirements of SM, GP, SW, GM, or GP as classified by the Unified Soil Classification System. Structural fill shall have a maximum of 2% passing the No. 200 sieve, shall have a maximum clay content of 10 percent as determined by ASTM D698 at the time of installation.
- Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation.

2.04 Other Materials: Utility Marker: Install metallic tape at corners of R-Tank system to mark the area for future utility detection.



ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN.



R-TANK[®] CONSTRUCTION EQUIPMENT COVER DETAIL
 AERIE AT ELKRIDGE
 HOWARD COUNTY, MD
 SITE DESIGNATION: UGDS
 ACF ENVIRONMENTAL, 1-800-445-3636, www.acfenvironmental.com

DESIGNED BY
 EDO

DATE
 09/09/20

SHEET NO.
 6 of 6

APPROVED: DEPARTMENT OF PUBLIC WORKS

James 05/28/2021
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

J. M...
 CHIEF, DIVISION OF LAND DEVELOPMENT

... 6.26.21
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

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

Mar 23 2021 11:03 AM DocuSign

OWNER: TROTTER 5857, LLC, 1819 PANAMA AVE, HANOVER, MD 21076

THE AERIE IN ELKRIDGE

6399 ANDERSON AVE, HANOVER, MD 21076
 TAX MAP: 13 - GRID: 21 - PARCEL: 109
 ELECTION DISTRICT NO. 4 - HOWARD COUNTY, MARYLAND

UGSWM (R-TANKS)

DATE: MARCH, 2021 BEI PROJECT NO. 2894
 SCALE: AS SHOWN SHEET 17 OF 17