FINAL ROAD CONSTRUCTION PLANS
WELLINGTON FARMS
Phase 1 Section 2
Lots 54 thru 132; Open Space Lots 133 thru 143; Parcel 'A'; Non-Buildable Bulk Parcels 'C', 'D', and 'E'

THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.

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

GENERAL NOTES

1. SUBJECT PROPERTY IS ZONED R-20-MXD-3 AND R-SC-MXD-3 PER THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN.
2. THIS PROJECT IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
3. THE PROJECT BOUNDARY IS BASED ON RECORDED PLAT #20136-37.
4. THE EXISTING TOPOGRAPHY IS BASED ON AERIAL SURVEY FLOWN BY POTOMAC AERIAL SURVEYS, INC. IN OCTOBER, 2019 AND SUPPLEMENTED WITH FIELD SURVEY PERFORMED BY BENCHMARK ENGINEERING IN NOVEMBER, 2019.
5. THE WETLANDS, STREAMS, THEIR BUFFERS, AND SPECIMEN TREES WERE IDENTIFIED AND FLAGGED BY WETLANDS STUDIES AND SOLUTIONS, INC. IN FEBRUARY, 2018 AND WERE FIELD LOCATED BY BENCHMARK ENGINEERING, INC IN FEBRUARY, 2018. THE US ARMY CORPS OF ENGINEERING ISSUED AN APPROVED JURISDICTIONAL DETERMINATION OF THE WETLAND AREAS ON THIS SITE, DATED NOVEMBER 30, 2018.
6. 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-YEAR FLOODPLAIN OR 25% OR GREATER STEEP SLOPES WITH MORE THAN 20,000 SF OF CONTIGUOUS AREA UNLESS AN ALTERNATIVE COMPLIANCE IS APPROVED OR A NECESSARY DISTURBANCE DETERMINATION HAS BEEN MADE BY DEPARTMENT OF PLANNING AND ZONING AND NOTED IN THESE GENERAL NOTES.
7. THIS SITE IS WITHIN THE METROPOLITAN DISTRICT PER THE HOWARD COUNTY PLAN FOR WATER AND SEWER, DATED NOVEMBER, 2015.
8. WATER AND SEWER IS PUBLIC. WATER AND SEWER SERVICE TO THESE LOTS SHALL BE GRANTED UNDER THE PROVISIONS OF SECTION 18.122.B OF THE HOWARD COUNTY CODE.
9. TO THE BEST OF OUR KNOWLEDGE, INFORMATION, AND BELIEF, THERE ARE NO CEMETERIES OR HISTORIC STRUCTURES LOCATED ON THIS SITE.
10. THE REQUIRED PRE-SUBMISSION COMMUNITY MEETING WAS HELD ON APRIL 12, 2018. A SECOND MEETING WAS HELD ON JUNE 20, 2018 AND A THIRD WAS HELD ON NOVEMBER 13, 2018.
11. THE FOREST STAND DELINEATION AND REPORT AND THE WETLANDS DELINEATION PLAN AND REPORT WERE PREPARED BY WETLANDS STUDIES AND SOLUTIONS, INC. IN JUNE, 2018 AND APPROVED UNDER S-18-003.
12. THE FOREST CONSERVATION PLAN WAS PREPARED BY ECO-SCIENCE PROFESSIONALS, INC. IN JUNE, 2021 AND IS PART OF THIS PLAN SET. THE FOREST CONSERVATION REQUIREMENTS PER SECTION 16.1200 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION MANUAL FOR THIS PROJECT WILL BE MET THROUGH THE RETENTION OF 4.8 ACRES OF ONSITE FOREST AND 4.8 ACRES OF ONSITE PLANTING. FINANCIAL SURETY IN THE AMOUNT OF $104,544.00 FOR THE 4.8 ACRES OF PLANTING SHALL BE POSTED AS PART OF THE DPW DEVELOPER'S AGREEMENT.
13. A NOISE STUDY IS NOT REQUIRED. THIS PROJECT IS NOT WITHIN THE LIMITS IDENTIFIED IN SECTION 5.2.F.2. OF THE DESIGN MANUAL FOR A NOISE STUDY.
14. THE TRAFFIC IMPACT STUDY WAS PREPARED BY THE TRAFFIC GROUP, INC. ON JUNE 29, 2018 AND REVISED ON NOVEMBER 26, 2018 AND FEBRUARY 6, 2019. IT WAS APPROVED WITH THE APPROVAL OF S-18-003.
15. THE GEOTECHNICAL REPORT WAS PREPARED BY HILLIS-CARNES ENGINEERING ASSOCIATES IN DECEMBER, 2019.
16. STORMWATER MANAGEMENT HAS BEEN PROVIDED VIA ENVIRONMENTAL SITE DESIGN TO THE MAXIMUM EXTENT PRACTICAL (ESD TO THE MEP) AND COMPLIES WITH THE "MARYLAND DEPARTMENT OF THE ENVIRONMENT STORMWATER MANAGEMENT ACT OF 2007" AND THE "HOWARD COUNTY DESIGN MANUAL VOLUME I, CHAPTER 5". THE REPORT WAS PREPARED BY BENCHMARK ENGINEERING IN MARCH, 2021.
17. PROPOSED DEVELOPMENT WITHIN THE R-20 ZONE UTILIZES THE OPTIONAL LOT SIZE METHOD SINCE THERE ARE WETLANDS, STREAMS, AND FLOODPLAIN LOCATED ON THAT PARCEL WHICH WILL BE WITHIN AN OPEN SPACE LOT PROPOSED TO BE DEDICATED TO THE HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS (SECTION 16.121.a.2. OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS). THE OPTIONAL LOT SIZE SELECTED WAS 12,000 sf WHICH REQUIRES 40% OPEN SPACE AND APPROVED BY DPZ UNDER S-18-003.
18. APPLICABLE DPZ FILE REFERENCES: F-08-148, ECP-18-042, S-18-003, WP-20-039, WP-20-099, WP-20-117, P-20-006, F-21-025.
19. THIS PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS AN ALTERNATIVE COMPLIANCE HAS BEEN APPROVED.
20. GORMAN ROAD IS DESIGNATED AS A SCENIC ROAD EAST OF LEISHEAR ROAD. A 100-FOOT SCENIC ROAD BUFFER FROM THE GORMAN ROAD RIGHT-OF-WAY HAS BEEN ESTABLISHED PER SECTION 16.125(c)(2) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
21. STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURES AND POLES SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (DECEMBER, 2017), SECTION 5.5.A. A MINIMUM OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
22. ON THE APPROACH SIDE OF A STOP SIGN, NO STREET TREE CAN BE PLANTED WITHIN 30' OF A STOP SIGN.
23. TRAFFIC CONTROL DEVICES:
    A) THE R1-1 "STOP" SIGN AND STREET NAME SIGN (SNS) ASSEMBLY FOR THIS DEVELOPMENT MUST BE INSTALLED BEFORE THE BASE PAVING IS COMPETED.

    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.

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

    D) 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.
24. THE MARYLAND DEPARTMENT OF NATURAL RESOURCES WILDLIFE AND HERITAGE SERVICE HAS DETERMINED THAT THERE ARE NO OFFICIAL STATE OR FEDERAL RECORDS FOR LISTED PLANT OR ANIMAL SPECIES FOR THE SUBJECT SITE, PER DNR LETTER DATED APRIL 19, 2018.
25. WP-20-039, AN ALTERNATIVE COMPLIANCE TO SECTION 16.1205(a)(3) TO ALLOW FOR THE REMOVAL OF 6 SPECIMEN TREES WAS APPROVED ON MAY 1, 2020 SUBJECT TO THE FOLLOWING CONDITIONS:
    a. THE TREES SHALL BE REPLACED AT A MITIGATION RATE OF 2:1 PER SECTION 16.1216(d) OF THE COUNTY CODE. 12 NATIVE TREES WITH A DBH OF AT LEAST 3 INCHES MUST BE PLANTED AS MITIGATION.
    b. THE 12 TREES MUST BE DEPICTED ON THE FOREST CONSERVATION AND LANDSCAPE PLAN AND SHALL BE BONDED AS PART OF THE LANDSCAPE SURETY. FINAL SUBDIVISION PLAN APPROVAL AND A GRADING PERMIT MUST BE OBTAINED PRIOR TO REMOVAL OF THE SPECIMEN TREES.
    c. ONLY SPECIMEN TREES 49, 51, 56, 57, 90, AND 91 ARE TO BE REMOVED.
    d. DEPARTMENT OF RECREATION AND PARKS MUST PROVIDE DEVELOPER WRITTEN PERMISSION TO REMOVE SPECIMEN TREES 90 AND 91 WITHIN 30 DAYS OF WP-20-039 APPROVAL AND A COPY SUBMITTED TO DPZ. THAT LETTER WAS OBTAINED AND SUBMITTED TO DPZ ON MAY 18, 2020.
    e. COMPLIANCE WITH ANY CONDITION IMPOSED BY THE OFFICE OF COMMUNITY SUSTAINABILITY AND DEPARTMENT OF RECREATION AND PARKS.
    f. INCLUDE WP-20-039 DECISION AS A GENERAL NOTE ON ALL FUTURE PLANS.
26. SECTION 110.0.d.1.e OF THE ZONING REGULATIONS LIMITS THE LENGTH OF SINGLE-FAMILY ATTACHED UNITS TO 120 FEET BUT IT ALSO GRANTS THE DIRECTOR OF DPZ THE AUTHORITY TO APPROVE A GREATER LENGTH UP TO A MAXIMUM OF 200 FEET BASED ON DETERMINATION THAT THE DESIGN OF THE BUILDING WILL MITIGATE THE VISUAL IMPACT OF THE INCREASED LENGTH. A REQUEST TO ALLOW FOR A GREATER BUILDING LENGTH FOR SEVERAL ROWS OF SINGLE-FAMILY ATTACHED UNITS WAS APPROVED BY THE DIRECTOR OF THE DEPARTMENT OF PLANNING AND ZONING ON MAY 19, 2020.
27. A DESIGN MANUAL WAIVER TO SECTIONS 2.3.A.1.a (MINIMUM CURVE RADIUS) AND SECTION 2.3.A.1.c (MINIMUM CURVE LENGTH) OF DESIGN MANUAL VOLUME II WAS APPROVED ON FEBRUARY 13, 2020 FOR CURVE C125 (IDENTIFIED AS C9 ON THIS F-PLAN). THE DESIGN MANUAL WAIVER TO SECTION 2.5.B.1 (INTERSECTION SPACING) FOR THE SPACING ALONG GENEVIEVE BOULEVARD BETWEEN AURORA WAY AND ZOE LANE WAS APPROVED ON MAY 21, 2020.
28. DRIVEWAYS SHALL BE PROVIDED PRIOR TO RESIDENTIAL OCCUPANCY TO INSURE SAFE ACCESS 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.
29. THE COUNTY RESERVES THE RIGHT TO POST "NO PARKING" RESTRICTIONS IF ON-STREET PARKING IMPEDES FUTURE TRAFFIC OPERATION IN THE FOLLOWING LOCATIONS:
    DIRECTLY ADJACENT TO LOTS 8 & 54 ON TRANQUILITY ROAD (BOTH SIDES OF STREET)
30. PARKING SPACES AND THE 8' MACADAM PATHWAYS ALONG THE PUBLIC ROADS SHALL BE MAINTAINED BY THE HOMEOWNERS ASSOCIATION.
31. A PARKING OCCUPANCY STUDY FOR THE CLUBHOUSE/POOL WAS PREPARED ON JUNE 30, 2021 BY THE TRAFFIC GROUP, INC. THE RESULTS CONCLUDE THAT THE 25 SPACES PROVIDED ARE ADEQUATE.
32. FINANCIAL SURETY IN THE AMOUNT OF $69,900.00 FOR THE REQUIRED 227 STREET TREES AND 6 PERIMETER TREES SHALL BE POSTED AS PART OF THE DPW DEVELOPER AGREEMENT. A CERTIFIED LANDSCAPE PLAN IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL IS INCLUDED WITH THIS FINAL PLAN.

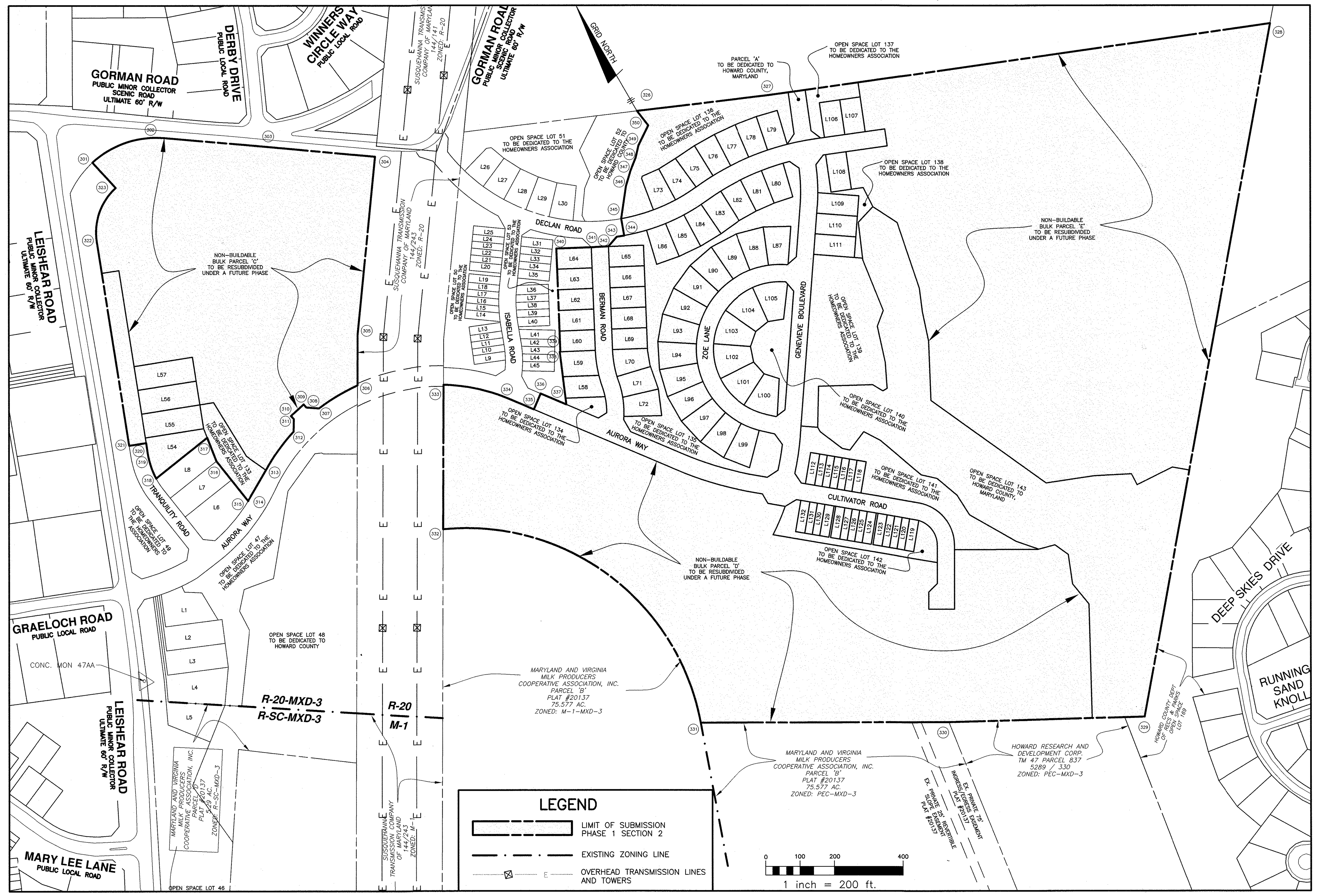
APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MK — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/2/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION HSA — DATE 10-26-21

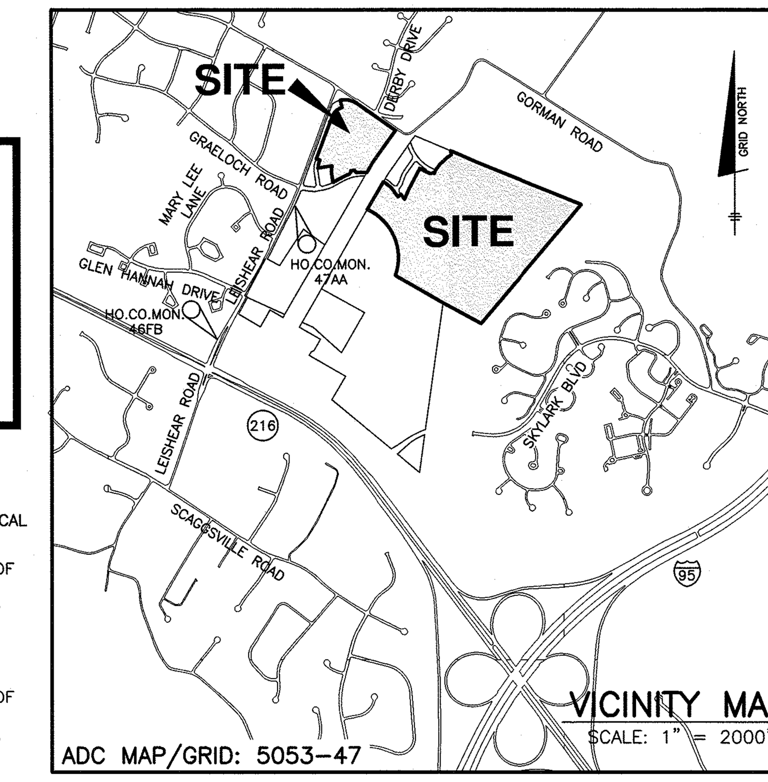


BENCHMARKS

NAD '83 HORIZONTAL – NAVD88 VERTICAL

HO. CO. #46FB
STAMPED BRASS DISK SET ON TOP OF A 3ft DEEP COLUMN OF CONCRETE.
N 537149.785' E 1347468.998'
ELEVATION: 317.217'

HO. CO. #47AA
STAMPED BRASS DISK SET ON TOP OF A 3ft DEEP COLUMN OF CONCRETE.
N 538961.645' E 1348439.009'
ELEVATION: 362.621'



SHEET INDEX	
SHEET	TITLE
1–2	COVER SHEET
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10–11	STRIPING, SIGNAGE, AND STREET LIGHT PLAN
12–13	STORM DRAIN DRAINAGE AREA MAP
14–18	STORM DRAIN PROFILES AND DETAILS
19–20	STORMWATER MANAGEMENT DRAINAGE AREA MAP
21–26	STORMWATER MANAGEMENT DETAILS
27–28	SOIL BORING LOGS
29–33	LANDSCAPE PLAN
34–36	FOREST CONSERVATION PLAN
37–44	GRADING, SEDIMENT, AND EROSION CONTROL PLANS
45–52	RETAINING WALL PLANS

Phasing Chart

Phase	No. of Units	Allocation Year	F-Plan Filing Milestone
1	250	2021	August 10, 2021
2	144	2022	Within 1-year of initial submittal of Phase 1 F-plans

R-SC Density Chart

Gross Area	91.71 ac
100-yr floodplain	0.82 ac
Steep slopes (outside floodplain)	0.82 ac
Net Area	90.07 ac
Density Allowed (4 units per net acre)	360
Density Proposed F-21-025	38
Density Proposed F-21-044	75
Density Remaining	247

MODERATE INCOME HOUSING UNIT (MIHU) APPLICATION EXEMPTIONS TRACKING

Phase/Section	P1S1	P1S2	P1S3	P2	TOTAL
Total Number of Lots/Units Proposed	45	79	126	144	394
Total Number of MIHU's Required	5	8	13	14	40
Number of MIHU's Provided Onsite (Exempt from APFO allocations)	8	0	22	10	40
Number of APFO Allocations Required (Remaining Lots/Units)	40	71	113	130	354
MIHU Fee-in-Lieu (Indicate Lot/Unit numbers)	NA	NA	NA	NA	NA

Stormwater Management Practice Chart / Summary Table

Total Project Pe: 1.7 — Total Project ESDv: 231,361 — Total Project REv: 28,452

Below summary numbers for Phase 1 Section 2 only

MDE Designation	Practice Description	Quantity of Each Practice	ESDv (cf) Required based on individual DA	ESDv (cf) Provided	REv (cf) Provided	Ownership
M-2	Submerged Gravel Wetland	3	48,590	54,352	NA	Private / Joint
M-5	Dry Well	42	3,990	4,282	4,282	Private
M-6	Micro Bio-Retention	9	15,432	16,444	3,858	Private / Joint
	Total from P1S2		**68,012**	**75,077**	**8,140**	
	Total from P1S1 (F-21-025)		**45,302**	**49,178**	**7,890**	
	Total provided to date:		**113,314**	**124,255**	**16,030**	

Notes:
1. Total Project Pe, ESDv, and REv numbers are based on the Total Project Area (all phases) minus environmental areas. See report for detailed explanation.
2. Remaining total project ESDv requirement shall be provided in the future SWM practices in future phases. After final phase, Phase 2, the total project ESDv shall be met after all site practices are accounted for.
3. Remaining total project REv requirement shall be provided in the future SWM practices in future phases. After final phase, Phase 2, the total project REv shall be accounted for.

NOTE:
SEE SHEET 2 FOR MORE DETAILED STORMWATER MANAGEMENT SUMMARY TABLE, LEGEND OF SYMBOLS, ROAD CHART, BOUNDARY COORDINATE CHART, AND CONTINUATION OF GENERAL NOTES.

Site Analysis Data Chart

	Phase 1 Section 1 (F-21-025)			Phase 1 Section 2 (F-21-044)			Total
Zoning	R-20	R-SC	TOTAL	R-20	R-SC	TOTAL	
Gross Area	29.76 acres	91.71 acres	121.47 acres	14.77 acres	78.99 acres	93.76 acres	121.47 acres
100-yr Floodplain	0.07 acres	0.82 acres	0.89 acres	0.00 acres	0.82 acres	0.82 acres	0.89 acres
Steep Slopes 25% or greater (outside floodplain)	0.20 acres	0.82 acres	1.02 acres	0.00 acres	0.82 acres	0.82 acres	1.02 acres
Net Area	29.49 acres	90.07 acres	119.56 acres	14.77 acres	77.35 acres	92.12 acres	119.56 acres
Number of Units Proposed (SFD)	7	6	13	4	54	58	71
Number of Units Proposed (SFA)	0	32	32	0	21	21	53
Number of lots/units proposed (Total)	7	38	45	4	75	79	124
Area of Open Space Provided	8.70 acres	7.99 acres	16.69 acres	0.48 acres	16.93 acres	17.41 acres	34.10 acres
Area of Buildable Lots (SFD)	2.22 acres	1.03 acres	3.25 acres	1.14 acres	8.63 acres	9.77 acres	13.02 acres
Area of Buildable Lots (SFA)	0.00 acres	1.57 acres	1.57 acres	0.00 acres	1.06 acres	1.06 acres	2.63 acres
Area of Parcels	0.00 acres	0.00 acres	0.00 acres	0.00 acres	0.18 acres	0.18 acres	0.18 acres
Area of Bulk Parcels	14.77 acres	78.99 acres	93.76 acres	12.57 acres	46.84 acres	59.41 acres	59.41 acres
Area of Proposed Public Road Right-of-way	4.07 acres	2.13 acres	6.20 acres	0.58 acres	5.35 acres	5.93 acres	12.13 acres

Open Space Chart

Zoning	R-20	R-SC	TOTAL
Gross Area (total project)	29.76 acres	91.71 acres	121.47 acres
Area of Open Space Required *	11.90 acres	22.93 acres	34.83 acres
Open Space Provided			
Phase 1 Section 1 (F-21-025)	8.70 acres	7.99 acres	16.69 acres
Non-Credited	0.02 acres	0.42 acres	0.44 acres
Credited	8.68 acres	7.57 acres	16.25 acres
Phase 1 Section 2 (F-21-044)	0.48 acres	16.93 acres	17.41 acres
Non-Credited	0.00 acres	0.86 acres	0.86 acres
Credited	0.48 acres	16.07 acres	16.55 acres
Total credited Open Space to date	9.16 acres	23.64 acres	32.80 acres
Remaining to meet obligation **	2.74 acres	-0.71 acres	2.03 acres

* Open Space Required based on 40% of gross for R-20 (Section 16.121.a.2)
25% of gross for R-SC (Section 16.121.a.2)

** Remaining total project obligation shall be met under future Phase 1 Section 3 or Phase 2

Recreational Open Space Chart

Zone	*Subdivision Section*	*Requirement*	*Unit Count*	*Required (sf)*
R-20	16.121.a.4.vi	200 sf per unit	35	7,000
R-SC	16.121.a.4.vi (SFD)	300 sf per unit	144	43,200
R-SC	16.121.a.4.vi (SFA)	400 sf per unit	215	86,000
		Total Required:		136,200

Credit	*Size (sf)*	*Credit (sf)*
Clubhouse	3,120	122,928
Pool and Deck	6,283	247,550
Playground	NA	2,000
Total Provided:		372,478

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
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. 22390, Expiration Date: 6-30-2023.

STATE OF MARYLAND — CHRISTOPHER A. MALAGARI — 22390 — PROFESSIONAL ENGINEER — 9-2-21

OWNER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

WELLINGTON FARMS
Phase 1 Section 2
Lots 54 thru 132; Open Space Lots 133 thru 143; Parcel 'A'; Non-Buildable Bulk Parcels 'C', 'D', and 'E'
(A Resubdivision of Non-Buildable Bulk Parcels 'A' and 'B' previously recorded under F-21-025)

TAX MAP: 46 – GRID: 6 – PARCEL: 163
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 – HOWARD COUNTY, MARYLAND

COVER SHEET

DATE: AUGUST 30, 2021 — BEI PROJECT NO. 2879
DESIGN: DBT — DRAFT: DBT — SCALE: AS SHOWN — SHEET 1 OF 52

F-21-044

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BOUNDARY COORDINATES

POINT #	NORTHING	EASTING
301	540341.4468	1349063.1687
302	540298.2985	1349279.7261
303	540124.7597	1349528.1262
304	539944.0425	1349784.4961
305	539519.7822	1349480.1639
306	539394.3971	1349407.1407
307	539392.5233	1349276.3524
308	539413.2089	1349246.2927
309	539425.1635	1349243.6785
310	539414.4821	1349194.8327
311	539402.5275	1349197.4469
312	539371.1832	1349178.7648
313	539320.9503	1349063.7080
314	539270.3557	1348975.5173
315	539263.0646	1348962.3761
316	539409.4208	1348940.5950
317	539481.8484	1348951.7271
318	539453.8654	1348763.6977
319	539527.7474	1348778.5949
320	539557.6136	1348790.0844
321	539575.5660	1348743.4185
322	540135.6977	1348958.9010
323	540243.7805	1349084.6462
326	539676.9356	1350510.3077

BOUNDARY COORDINATES

POINT #	NORTHING	EASTING
328	538975.4936	1352235.3763
329	537413.7014	1350908.6049
330	537685.5866	1350407.2673
331	538045.3178	1349780.4243
332	538906.9498	1349412.5629
333	539270.0255	1349624.0151
334	539138.2588	1349769.1721
335	539076.1587	1349815.9808
336	539106.2547	1349855.9086
337	539041.3957	1349904.7969
339	539182.3175	1349966.2175
340	539447.9288	1350106.5935
341	539400.2683	1350196.7738
342	539377.3671	1350241.2239
343	539389.4933	1350275.8283
344	539381.5582	1350296.3067
345	539428.5171	1350313.4784
346	539504.2713	1350373.2347
347	539535.5530	1350406.7920
348	539561.7001	1350439.7656
349	539587.8111	1350463.9234
350	539624.3578	1350517.6876

ROAD CHART

Road	*Station*	*Classification*	*Right-of-Way width*	*Pavement width*	*Design Speed (mph)*	*Pvmt Type*
Aurora Way	14+58.57 to end	Public Minor Collector	50'	28'	35	P-3
Berman Road	0+00 to end	Public Access Street	50'	24'	30	P-2
Cultivator Road	0+00 to end (except as noted below)	Public Access Street	50'	26'	30	P-2
	3+96.22 to 5+36.81		50'	28'	30	P-2
Declan Road	6+16.09 to 12+33.50	Public Access Street	50'	26'	30	P-3
	12+33.50 to 14+63.86		50'	24'	30	P-2
Geneviève Boulevard	0+00 to 10+38.95	Public Minor Collector	50'	28'	35	P-3
Zoe Lane	0+00 to end	Public Access Street	50'	26'	30	P-2
Tranquility Road	0+00 to end (except as noted below)	Public Access Street	50'	24'	30	P-2
	2+36.12 to 3+57.51	Public Access Street	50'	28'	30	P-2
future	9+97.01 to 12+69.02	Public Access Street	50'	28'	30	P-2
future	14+81.38 to 15+59.92	Public Access Street	50'	30'	30	P-2
future	19+74.03 to 21+19.66	Public Access Street	50'	28'	30	P-2

Parking Chart

Phase	*Item*	*Unit*	*Zoning Section*	*Requirement*	*spaces req.*	*spaces prov.*	
P1S1	SFD Units	13 units	133.D.2.a	2.5 spaces per unit	33	52	1
F-21-025	SFA Units	32 units	133.D.2.a	2.5 spaces per unit	80	64	2
P1S2	SFD Units	58 units	133.D.2.a	2.5 spaces per unit	145	232	1
F-21-044	SFA Units	21 units	133.D.2.a	2.5 spaces per unit	53	42	2
						66	3
				Total:	311	456	

1. Spaces provided include 2 spaces per garage, 2 spaces per driveway.
2. Spaces provided include 1 space per garage and 1 space per driveway.
3. Off-street parking spaces along Aurora Way and Cultivator Court.
4. See General Note 31 on sheet 1 for parking for the community clubhouse/pool.

STORMWATER MANAGEMENT SUMMARY TABLE

Practice		DA (sf)	Imp Area (sf)	% Imp	Rv	Pe required	ESDv (cf) Required	ESDv (cf) Provided	ESDv (cf) 75% ponding Req.	ESDv (cf) ponding Prov.	Pe Provided	Maintenance
M-2 SGW	#4	213,096	82,718	39%	0.40	1.7	12,056	14,516	9,042	10,887	2.0	JOINTLY
M-2 SGW	#5	252,444	124,727	49%	0.49	1.7	17,691	17,819	13,268	13,364	1.7	JOINTLY
M-2 SGW	#6	257,226	133,500	52%	0.52	1.7	18,843	22,017	14,132	16,513	2.0	JOINTLY
M-6 MB	#9	17,302	10,279	59%	0.58	1.7	1,433	1,627	1,075	1,269	2.0	PRIVATE
M-6 MB	#10	21,707	13,206	61%	0.60	1.7	1,838	1,866	1,378	1,407	1.7	JOINTLY
M-6 MB	#11	12,717	8,281	65%	0.64	1.7	1,146	1,371	859	1,085	2.1	JOINTLY
M-6 MB	#12	16,299	10,646	65%	0.64	1.7	1,473	1,572	1,105	1,204	1.9	JOINTLY
M-6 MB	#13	20,413	17,798	87%	0.83	1.7	2,414	2,420	1,810	1,817	1.7	JOINTLY
M-6 MB	#14	18,306	15,131	83%	0.79	1.7	2,059	2,198	1,544	1,684	1.9	JOINTLY
M-6 MB	#15	11,250	11,250	100%	0.95	1.7	1,514	1,601	1,136	1,222	1.8	PRIVATE
M-6 MB	#16	11,411	8,473	74%	0.72	1.7	1,161	1,302	871	1,012	2.0	JOINTLY
M-6 MB	#17	23,418	17,484	75%	0.72	1.7	2,395	2,487	1,796	1,889	1.8	PRIVATE
M-2 DW	ALL	29,646	29,646	100%	0.95	1.7	3,990	4,282			0.0	PRIVATE
TOTALS →		905,235	483,139				68,012	75,077	48,017	53,350		

Notes:
1. The Pe required column is based on total site Pe calculation. The Rv is based on individual drainage area percent impervious

LEGEND OF SYMBOLS

- EXISTING CONTOURS
- EXISTING CL STREAM
- EXISTING STEEP SLOPES 25% OR GREATER
- EXISTING LIMIT OF 100YR FLOODPLAIN
- EXISTING TREELINE
- EXISTING SPECIMEN TREE
- E — E — EXISTING OVERHEAD TRANSMISSION LINES AND TOWERS
- OHL — EXISTING OVERHEAD POWER LINE
- PROJECT BOUNDARY
- ZONING LINE
- PROPOSED CONC. SIDEWALK
- 18" HDPEP — PROPOSED STORM DRAIN
- 8" SEWER — PROPOSED SEWER
- XX' BRL — INDICATES BUILDING RESTRICTION LINE
- PROPOSED MICRO-BIO
- PROPOSED DRY WELL
- FOREST CONSERVATION EASEMENT
- STREET LIGHTS
- B-XX SOIL BORING LOCATION
- END SECTION WITH RIP-RAP AND RIP-RAP WITH GABIONS

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MK — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/2/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION WBK — DATE 10-26-21

NO.	DATE	REVISION

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. 22390, Expiration Date: 6-30-2023.

STATE OF MARYLAND — CHRISTOPHER A. ALLISON — 22390 — PROFESSIONAL ENGINEER — 9-2-21

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5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:
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410-720-3021

WELLINGTON FARMS

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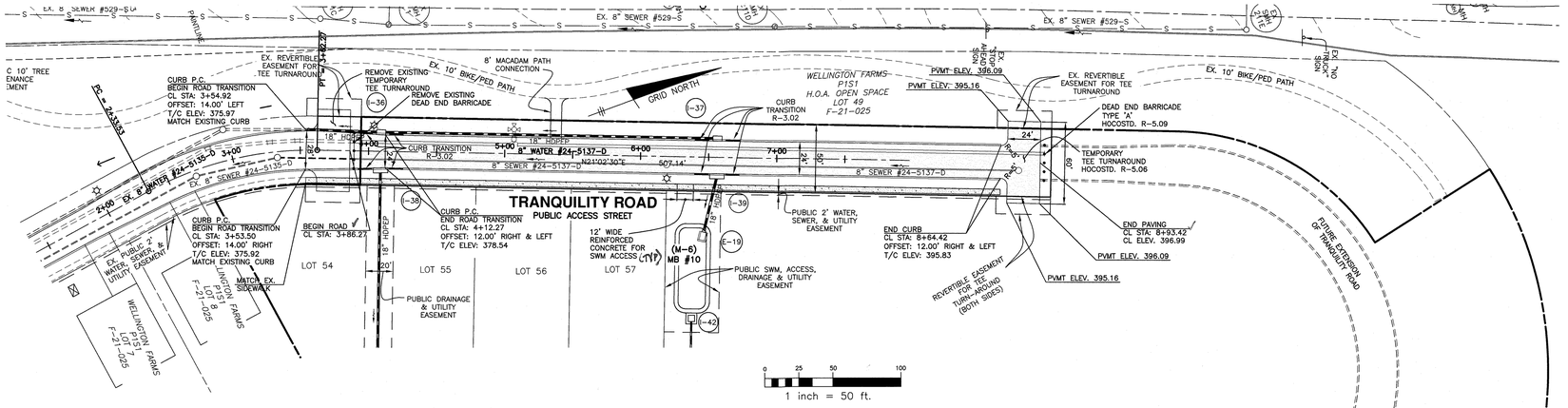
Non-Buildable Bulk Parcels 'C', 'D', and 'E'
(A Resubdivision of Non-Buildable Bulk Parcels 'A' and 'B' previously recorded under F-21-025)

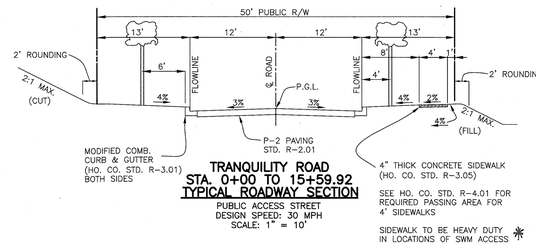
TAX MAP: 46 - GRID: 6 - PARCEL: 163
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 - HOWARD COUNTY, MARYLAND

COVER SHEET B

DESIGN: DBT | DRAFT: DBT | DATE: AUGUST 30, 2021 | SCALE: AS SHOWN | BEI PROJECT NO. 2879 | SHEET 2 OF 52

F-21-044





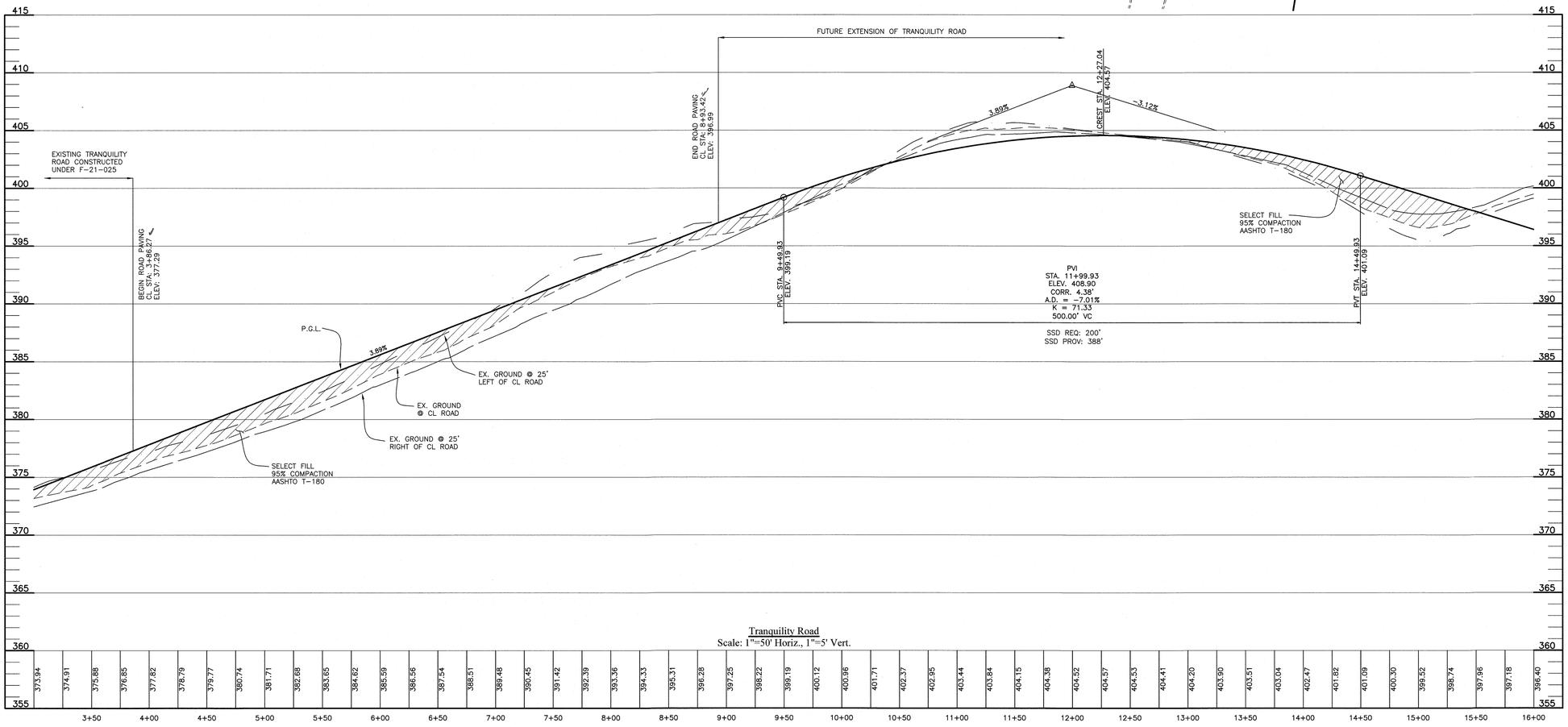
TRANQUILITY ROAD
STA. 0+00 TO 15+59.92
TYPICAL ROADWAY SECTION

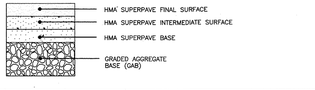
PUBLIC ACCESS STREET
DESIGN SPEED: 30 MPH
SCALE: 1" = 10'

4" THICK CONCRETE SIDEWALK (HO. CO. STD. R-3.05)

SEE HO. CO. STD. R-4.01 FOR REQUIRED PASSING AREA FOR 4' SIDEWALKS

SIDEWALK TO BE HEAVY DUTY IN LOCATIONS OF SWM ACCESS *





SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR)	3 TO <5	5 TO <7	≥7	3 TO <5	5 TO <7	≥7
		PAVEMENT MATERIAL (INCHES)	MIN HMA WITH GAB			HMA WITH CONSTANT GAB		
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	SUPERPAVE ASPHALT MIX FINAL SURFACE 9.5 MM PG 64-22S, LEVEL 1 (LOW ESAL)	1.5	1.5	1.5	1.5	1.5	1.5
		SUPERPAVE ASPHALT MIX INTERMEDIATE SURFACE 9.5 MM PG 64-22S, LEVEL 1 (LOW ESAL)	1.5	1.5	1.5	1.5	1.5	1.5
		SUPERPAVE ASPHALT MIX BASE 19.0 MM PG 64-22S, LEVEL 1 (LOW ESAL)	2.0	2.0	2.0	3.5	2.0	2.0
		GRADED AGGREGATE BASE (GAB)	8.0	4.0	3.0	4.0	4.0	4.0

P-2 PAVING DETAIL

NOTE: GEOTECHNICAL ENGINEER SHALL VERIFY THE ON-SITE CBR TO DETERMINE PAVEMENT DEPTH REQUIRED.

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MK — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/3/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION HSR — DATE 10.26.21

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315 ▲ ELLICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
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STATE OF MARYLAND — CHRISTOPHER A. MILLER — 22390 — PROFESSIONAL ENGINEER — 9-2-21

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410-720-3021

DEVELOPER:
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DESIGN: DBT | DRAFT: DBT

WELLINGTON FARMS

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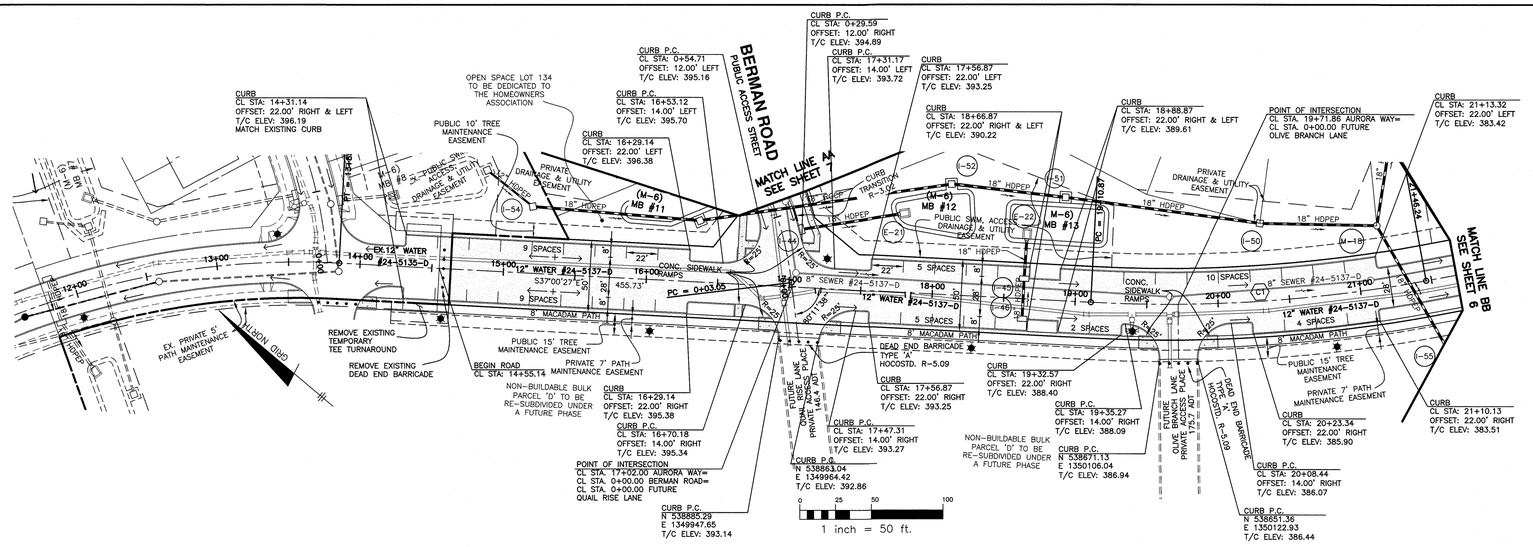
(A Resubdivision of Non-Buildable Bulk Parcels 'A' and 'B' previously recorded under F-21-025)

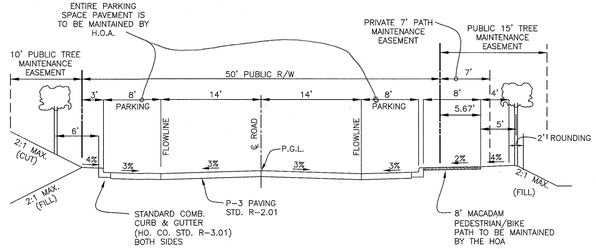
TAX MAP: 46 - GRID: 6 - PARCEL: 163
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 - HOWARD COUNTY, MARYLAND

ROAD PLAN
TRANQUILITY ROAD

DATE: AUGUST 30, 2021 | BEI PROJECT NO. 2879
SCALE: AS SHOWN | SHEET 3 OF 52

F-21-044



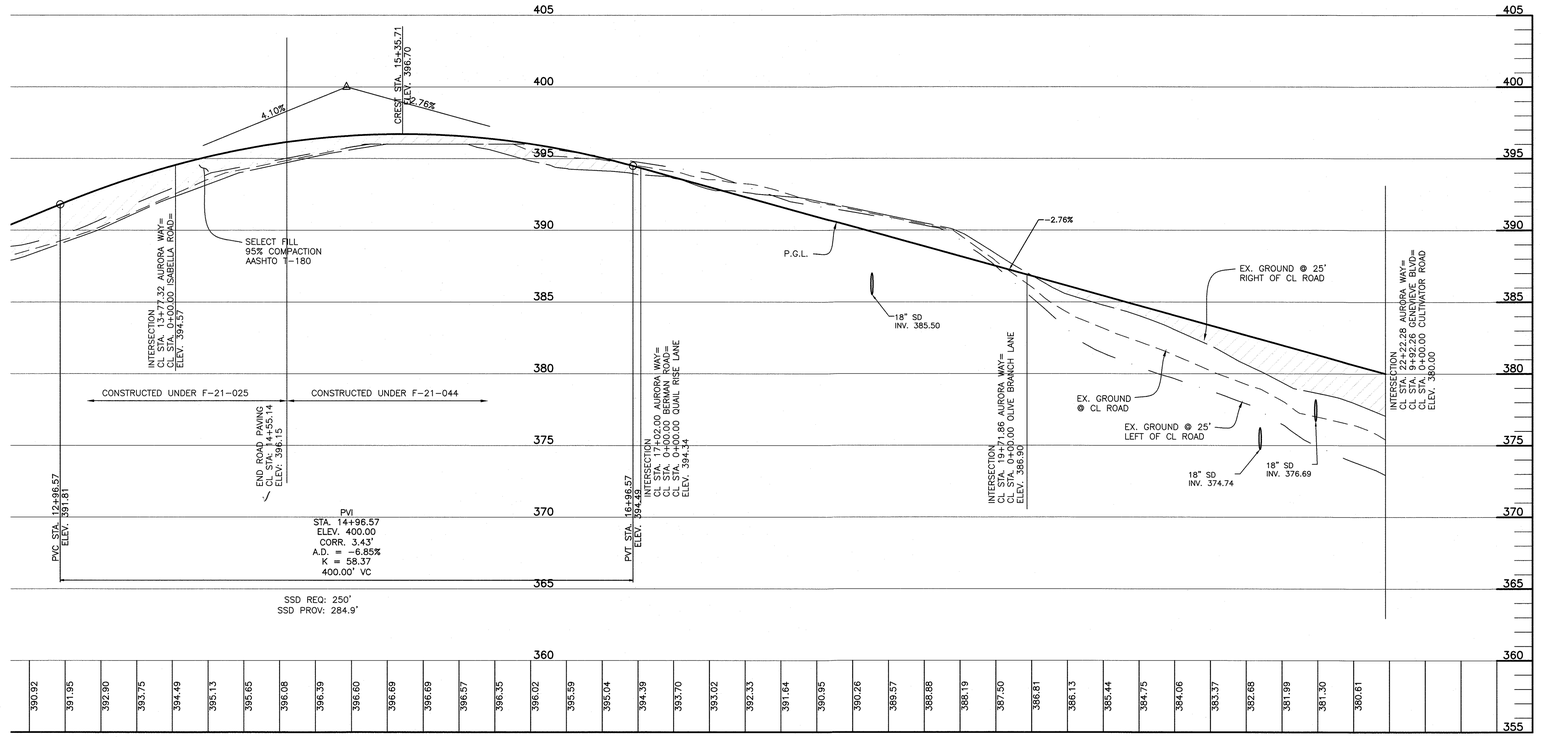


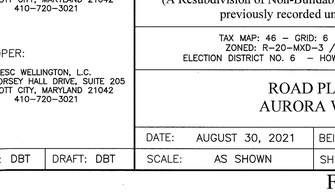
AURORA WAY
W/OFF-STREET PARKING CONDITION
TYPICAL ROADWAY SECTION

PUBLIC MINOR COLLECTOR
DESIGN SPEED: 35 MPH
SCALE: 1" = 10'

CENTER LINE CURVE DATA

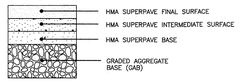
CURVE	ALIGNMENT	STATION	RADIUS	ARC	DELTA	TANGENT	CHORD DIRECTION	CHORD LENGTH
C1	Aurora Way	19+10.87 TO 21+46.24	1000.00'	235.37'	13°29'09"	118.23'	S43° 45' 02"E	234.83'





TYPICAL SIDEWALK RAMP DETAIL

SCALE: 1" = 10'



SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR)	3 TO <5	5 TO <7	≥7	3 TO <5	5 TO <7	≥7
		PAVEMENT MATERIAL (INCHES)	MIN HMA WITH GAB			HMA WITH CONSTANT GAB		
P-3	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 MINOR COLLECTORS: RESIDENTIAL	SUPERPAVE ASPHALT MIX FINAL SURFACE 9.5 MM PG 64-22S, LEVEL 1 (LOW ESAL)	1.5	1.5	1.5	1.5	1.5	1.5
		SUPERPAVE ASPHALT MIX INTERMEDIATE SURFACE 9.5 MM PG 64-22S, LEVEL 1 (LOW ESAL)	1.0	1.0	1.0	1.0	1.0	1.0
		SUPERPAVE ASPHALT MIX BASE 19.0 MM PG 64-22S, LEVEL 1 (LOW ESAL)	3.0	3.0	3.0	4.5	3.0	2.0
		GRADED AGGREGATE BASE (GAB)	10.0	6.0	3.0	6.0	6.0	6.0

P-3 PAVING DETAIL

NOTE: GEOTECHNICAL ENGINEER SHALL VERIFY THE ON-SITE CBR TO DETERMINE PAVEMENT DEPTH REQUIRED.

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MK — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/3/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10-26-21

NO.	DATE	REVISION

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ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315 ▲ ELLICOTT CITY, MARYLAND 21043
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STATE OF MARYLAND — CHRISTOPHER A. WILLIAMS — 22390 — PROFESSIONAL ENGINEER — 9-2-21

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410-720-3021

DEVELOPER:
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WELLINGTON FARMS

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(A Resubdivision of Non-Buildable Bulk Parcels 'A' and 'B' previously recorded under F-21-025)

TAX MAP: 46 – GRID: 6 – PARCEL: 163
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 – HOWARD COUNTY, MARYLAND

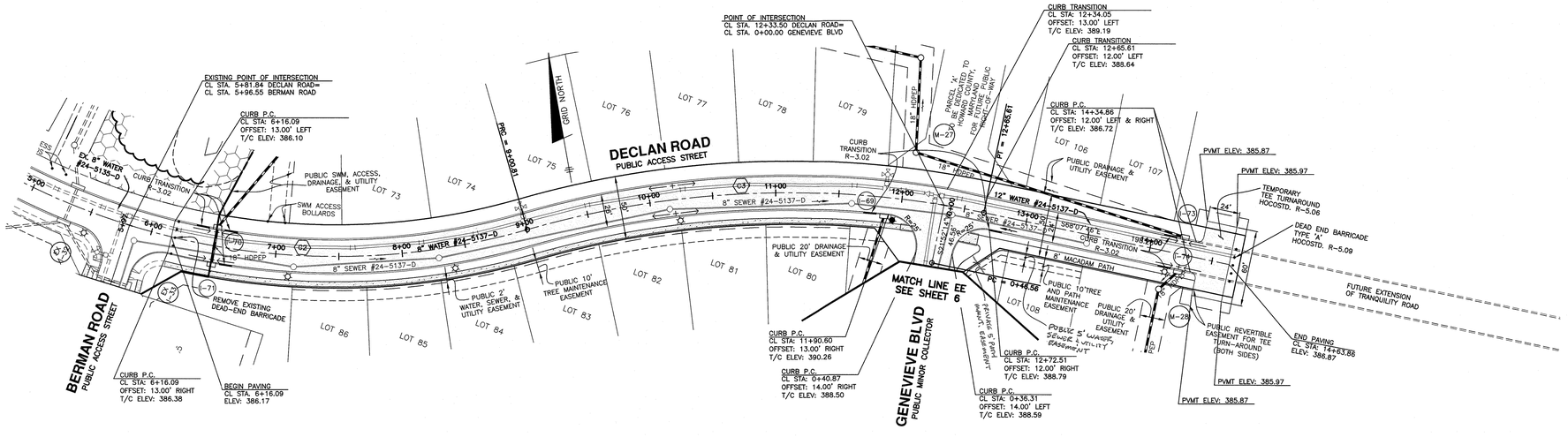
ROAD PLAN
AURORA WAY

DESIGN: DBT | DRAFT: DBT

DATE: AUGUST 30, 2021 | BEI PROJECT NO. 2879

SCALE: AS SHOWN | SHEET 4 OF 52

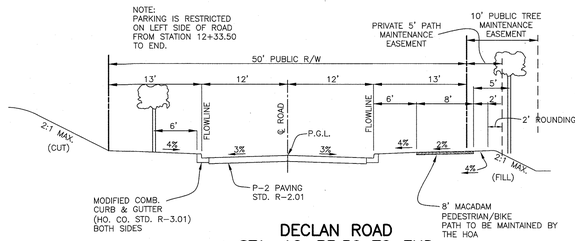
F-21-044



0 25 50 100

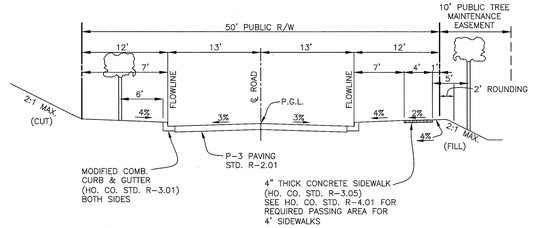
1 inch = 50 ft.

CENTER LINE CURVE DATA								
CURVE	ALIGNMENT	STATION	RADIUS	ARC	DELTA	TANGENT	CHORD DIRECTION	CHORD LENGTH
C2	Declan Road	0+00.00 TO 9+00.81	550.00'	900.81'	93°50'29"	588.17'	S49° 04' 37"E	803.45'
C3	Declan Road	9+00.81 TO 12+65.61	750.00'	364.79'	27°52'05"	186.08'	S82° 03' 48"E	361.21'



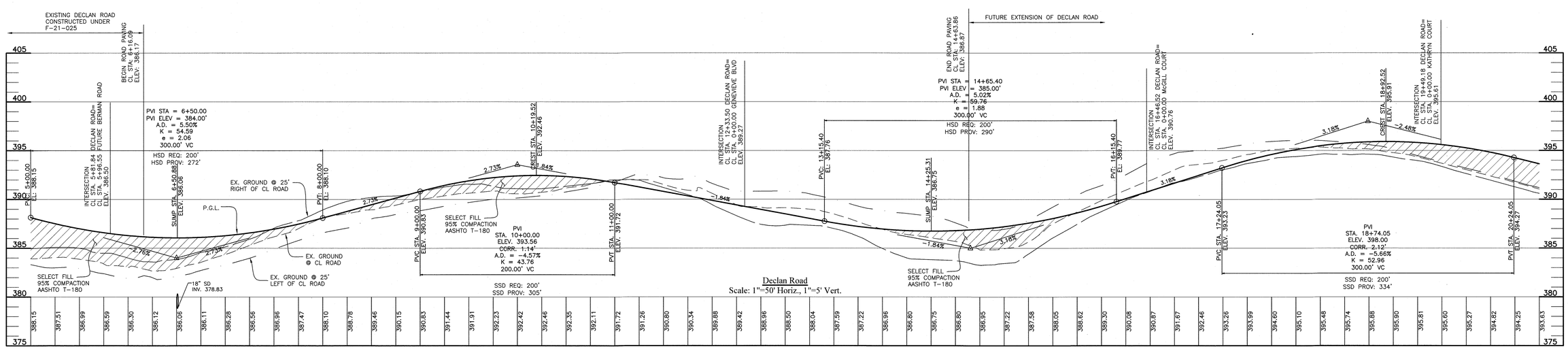
DECLAN ROAD
STA. 12+33.50 TO END
TYPICAL ROADWAY SECTION

PUBLIC ACCESS STREET
STA. 0+00 TO STA. 9+03.96
DESIGN SPEED: 30 MPH
SCALE: 1" = 10'



DECLAN ROAD
STA. 6+19.09 TO 12+33.50
TYPICAL ROADWAY SECTION

PUBLIC ACCESS STREET
DESIGN SPEED: 30 MPH
SCALE: 1" = 10'



Declan Road
Scale: 1"=50' Horiz., 1"=5' Vert.

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MK — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/2/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION RSM — DATE 10-28-21

NO.	DATE	REVISION

BENCHMARK
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ENGINEERING, INC.
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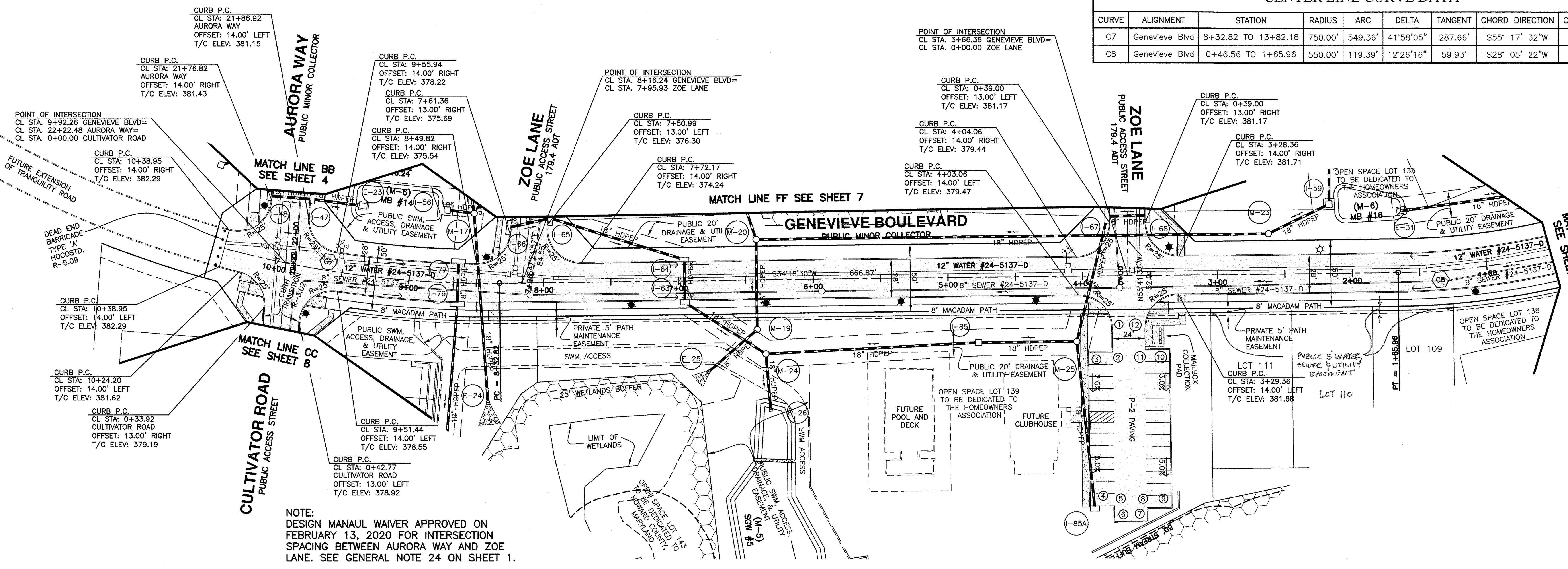
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 – HOWARD COUNTY, MARYLAND

ROAD PLAN
DECLAN ROAD

DATE: AUGUST 30, 2021 | BEI PROJECT NO. 2879
SCALE: AS SHOWN | SHEET 5 OF 52

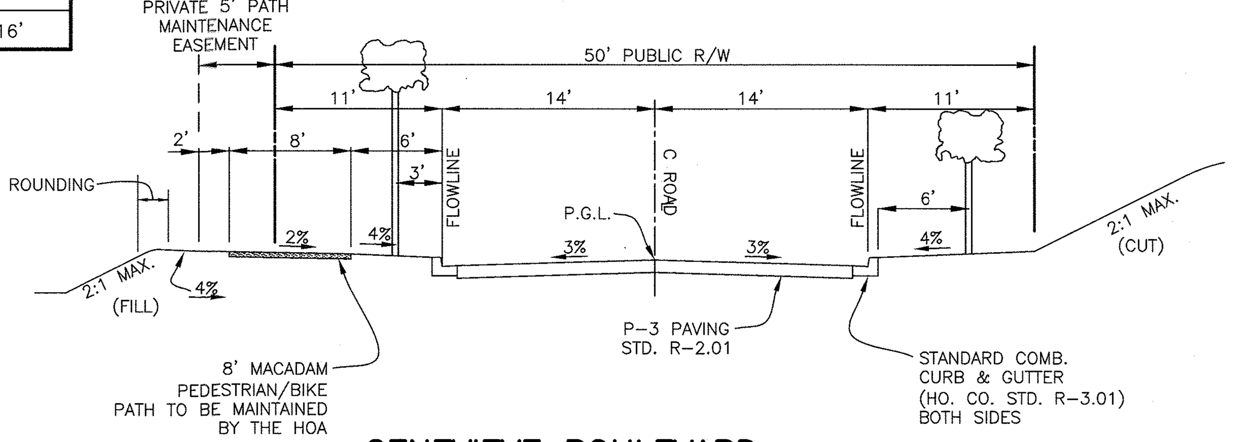
F-21-044



NOTE:
DESIGN MANAUL WAIVER APPROVED ON FEBRUARY 13, 2020 FOR INTERSECTION SPACING BETWEEN AURORA WAY AND ZOE LANE. SEE GENERAL NOTE 24 ON SHEET 1.

CENTER LINE CURVE DATA

CURVE	ALIGNMENT	STATION	RADIUS	ARC	DELTA	TANGENT	CHORD DIRECTION	CHORD LENGTH
C7	Genevieve Blvd	8+32.82 TO 13+82.18	750.00'	549.36'	41°58'05"	287.66'	S55° 17' 32"W	537.16'
C8	Genevieve Blvd	0+46.56 TO 1+65.96	550.00'	119.39'	12°26'16"	59.93'	S28° 05' 22"W	119.16'

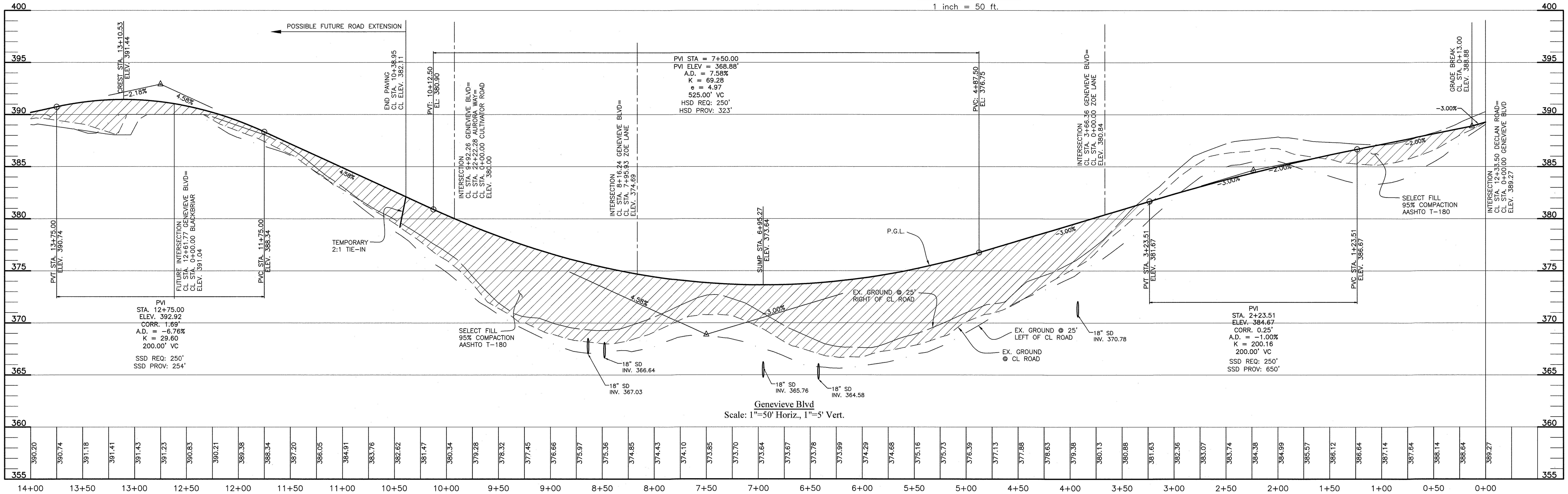


GENEVIEVE BOULEVARD TYPICAL ROADWAY SECTION

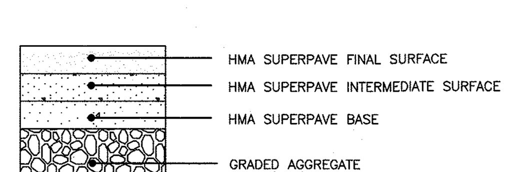
PUBLIC MINOR COLLECTOR
DESIGN SPEED: 35 MPH
SCALE: 1" = 10'

PARKING LOT CHART

POINT #	NORTHING	EASTING	T/C ELEVATION
1	538990.2724	1350718.0030	379.880
2	538980.4086	1350732.4583	378.760
3	538965.5403	1350722.3127	378.740
4	538901.2847	1350816.4786	374.440
5	538916.1530	1350826.6242	374.800
6	538909.6711	1350836.1234	375.000
7	538929.4955	1350849.6509	375.130
8	538935.1319	1350841.3907	374.930
9	538950.0002	1350851.5363	375.290
10	539015.9468	1350754.8924	379.880
11	539001.5154	1350744.1064	379.520
12	539010.0968	1350731.5305	380.000



Genevieve Blvd
Scale: 1"=50' Horiz., 1"=5' Vert.



SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR)	3 TO <5	5 TO <7	≥7	3 TO <5	5 TO <7	≥7
		PAVEMENT MATERIAL (INCHES)	MIN HMA WITH GAB			HMA WITH CONSTANT GAB		
P-3	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; MINOR COLLECTORS: RESIDENTIAL	SUPERPAVE ASPHALT MIX FINAL SURFACE 9.5 MM PG 64-22S, LEVEL 1 (LOW ESAL)	1.5	1.5	1.5	1.5	1.5	1.5
		SUPERPAVE ASPHALT MIX INTERMEDIATE SURFACE 9.5 MM PG 64-22S, LEVEL 1 (LOW ESAL)	1.0	1.0	1.0	1.0	1.0	1.0
		SUPERPAVE ASPHALT MIX BASE 19.0 MM PG 64-22S, LEVEL 1 (LOW ESAL)	3.0	3.0	3.0	4.5	3.0	2.0
		GRADED AGGREGATE BASE (GAB)	10.0	6.0	3.0	6.0	6.0	6.0

P-3 PAVING DETAIL

NOTE: GEOTECHNICAL ENGINEER SHALL VERIY THE ON-SITE CBR TO DETERMINE PAVEMENT DEPTH REQUIRED.

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MK — 10/15/2021 DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — 11/2/21 DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION — 10.26.21 DATE

NO.	DATE	REVISION

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. 22390, Expiration Date: 6-30-2023.

STATE OF MARYLAND — CHRISTOPHER A. MALAGARI — 22390 — PROFESSIONAL ENGINEER — 9-2-21

OWNER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DESIGN: DBT | DRAFT: DBT

WELLINGTON FARMS

Phase 1 Section 2
Lots 54 thru 132; Open Space Lots 133 thru 143; Parcel 'A'; Non-Buildable Bulk Parcels 'C', 'D', and 'E'
(A Resubdivision of Non-Buildable Bulk Parcels 'A' and 'B' previously recorded under F-21-025)

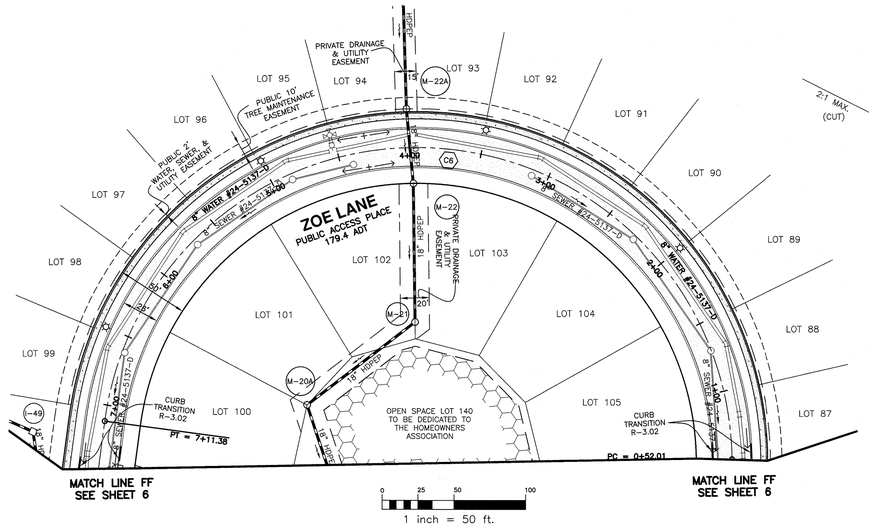
TAX MAP: 46 – GRID: 6 – PARCEL: 163
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 – HOWARD COUNTY, MARYLAND

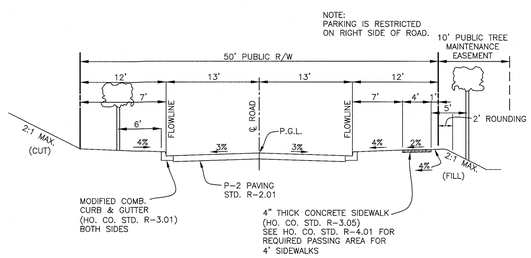
ROAD PLAN
GENEVIEVE BOULEVARD

DATE: AUGUST 30, 2021 | BEI PROJECT NO. 2879
SCALE: AS SHOWN | SHEET 6 OF 52

F-21-044

I:\2879 Milk Producers\dwg\Finals\Phase 1 Section 2\7017 P1S2.dwg, 9/1/2021 1:07:42 PM

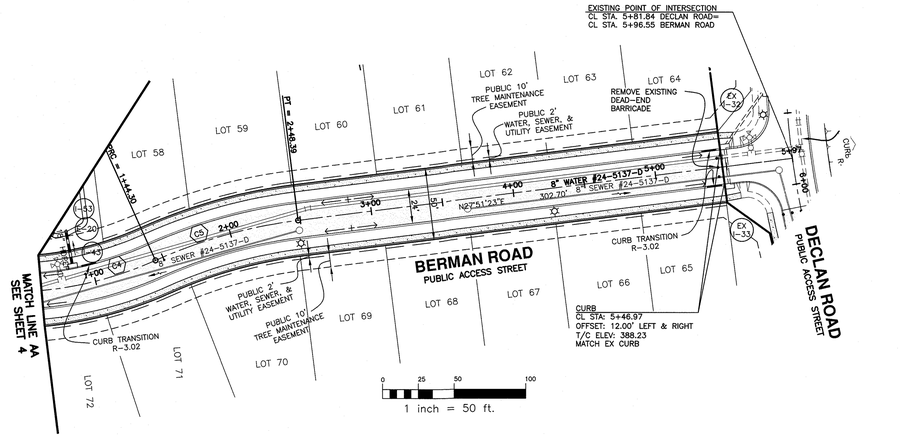


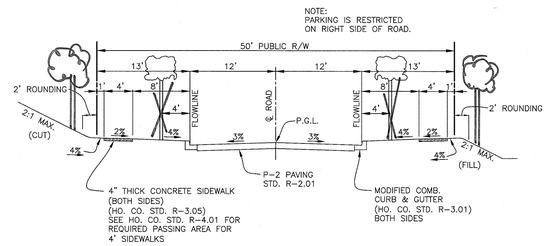


ZOE LANE
TYPICAL ROADWAY SECTION

PUBLIC ACCESS PLACE - 179.4 ADT
DESIGN SPEED: 25 MPH
SCALE: 1" = 10'

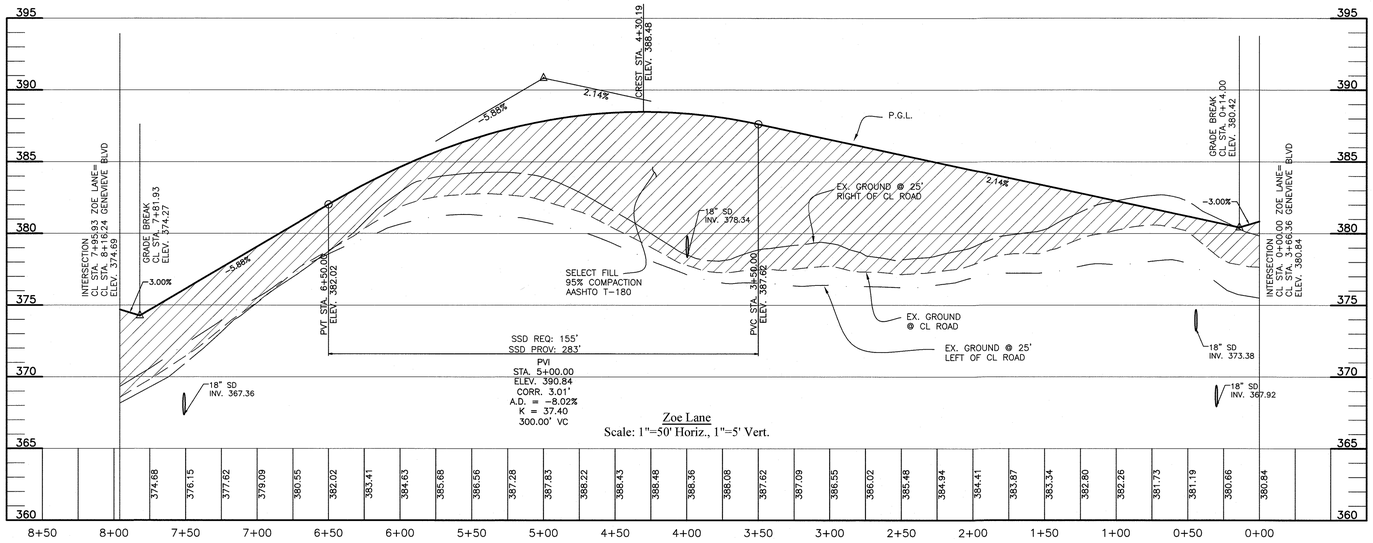
CENTER LINE CURVE DATA								
CURVE	ALIGNMENT	STATION	RADIUS	ARC	DELTA	TANGENT	CHORD DIRECTION	CHORD LENGTH
C6	Zoe Lane	0+52.01 TO 7+11.38	220.00'	659.37'	171°43'26"	3040.88'	S38° 26' 47"W	438.85'
C4	Berman Road	0+03.05 TO 1+44.30	250.00'	141.24'	32°22'14"	72.56'	N27° 00' 04"E	139.37'
C5	Berman Road	1+44.30 TO 2+48.39	350.00'	104.10'	17°02'26"	52.43'	N19° 20' 10"E	103.71'



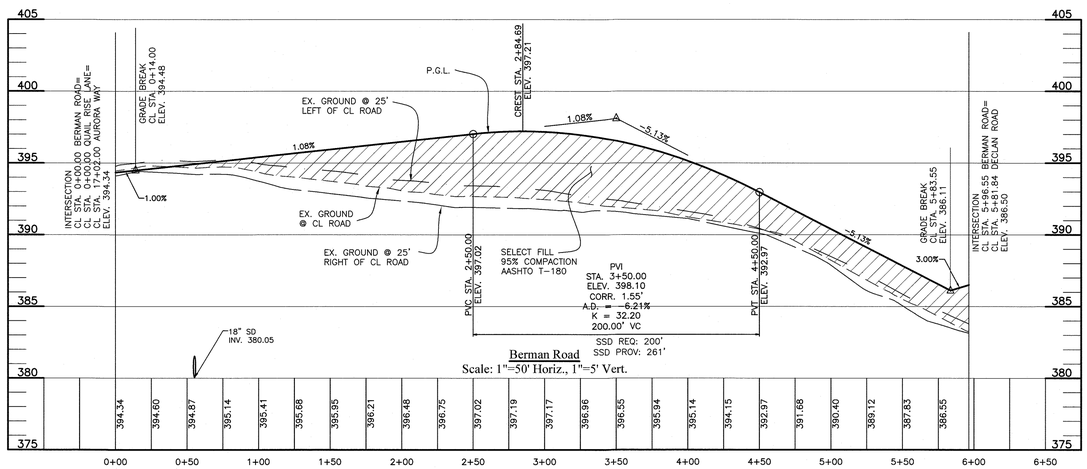


BERMAN ROAD
TYPICAL ROADWAY SECTION

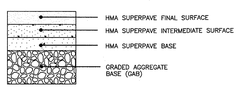
PUBLIC ACCESS STREET
DESIGN SPEED: 30 MPH



Zoe Lane
Scale: 1"=50' Horiz., 1"=5' Vert.



Berman Road
Scale: 1"=50' Horiz., 1"=5' Vert.



SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR)	3 TO <5	5 TO <7	≥7	3 TO <5	5 TO <7	≥7
		PAVEMENT MATERIAL (INCHES)	MIN HMA WITH GAB			HMA WITH CONSTANT GAB		
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	SUPERPAVE ASPHALT MIX FINAL SURFACE 9.5 MM PG 64-22S, LEVEL 1 (LOW ESAL)	1.5	1.5	1.5	1.5	1.5	1.5
		SUPERPAVE ASPHALT MIX INTERMEDIATE SURFACE 9.5 MM PG 64-22S, LEVEL 1 (LOW ESAL)	1.5	1.5	1.5	1.5	1.5	1.5
		SUPERPAVE ASPHALT MIX BASE 19.0 MM PG 64-22S, LEVEL 1 (LOW ESAL)	2.0	2.0	2.0	3.5	2.0	2.0
		GRADED AGGREGATE BASE (GAB)	8.0	4.0	3.0	4.0	4.0	4.0

P-2 PAVING DETAIL

NOTE: GEOTECHNICAL ENGINEER SHALL VERIFY THE ON-SITE CBR TO DETERMINE PAVEMENT DEPTH REQUIRED.

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/3/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.26.21

NO.	DATE	REVISION

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WELLINGTON FARMS

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(A Resubdivision of Non-Buildable Bulk Parcels 'A' and 'B' previously recorded under F-21-025)

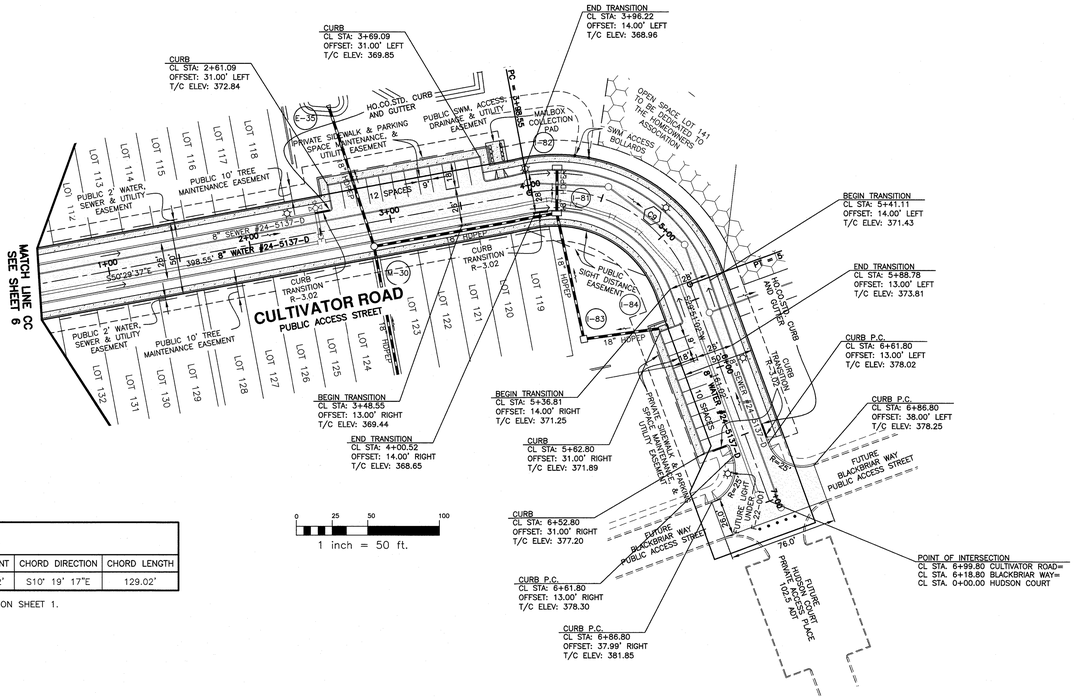
TAX MAP: 46 - GRID: 6 - PARCEL: 163
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 - HOWARD COUNTY, MARYLAND

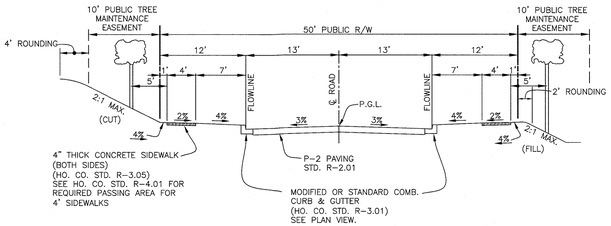
ROAD PLAN
ZOE LANE AND BERMAN ROAD

DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 30, 2021	BEI PROJECT NO. 2879
		SCALE: AS SHOWN	SHEET 7 OF 52

F-21-044

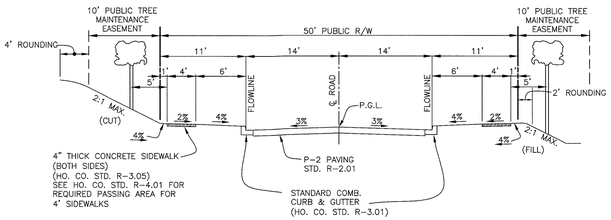
I:\2879 Milk Producers\dwg\Finals\Phase 1 Section 2\7017 P1S2.dwg, 8/26/2021 9:36:08 AM





CULTIVATOR ROAD
TYPICAL ROADWAY SECTION

PUBLIC ACCESS STREET
DESIGN SPEED: 30 MPH
SCALE: 1" = 10'

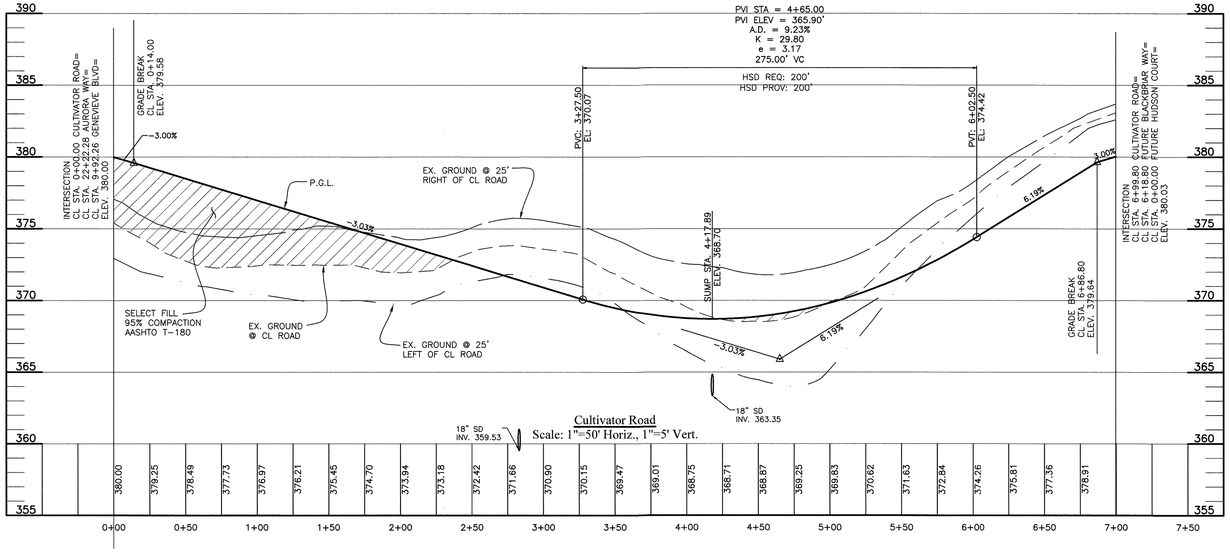


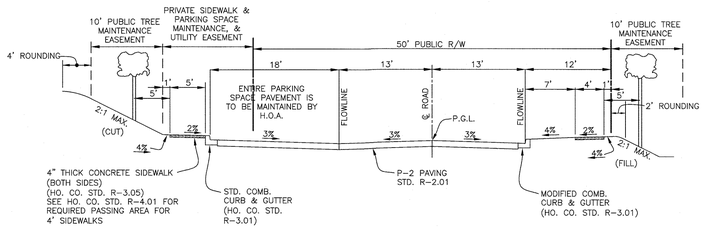
CULTIVATOR ROAD
TYPICAL ROADWAY SECTION THRU CURVE

PUBLIC ACCESS STREET
DESIGN SPEED: 30 MPH
SCALE: 1" = 10'

CENTER LINE CURVE DATA								
CURVE	ALIGNMENT	STATION	RADIUS	ARC	DELTA	TANGENT	CHORD DIRECTION	CHORD LENGTH
* C9	Cultivator Road	3+98.55 TO 5+38.78	100.00'	140.23'	80°20'39"	84.42'	S10° 19' 17"E	129.02'

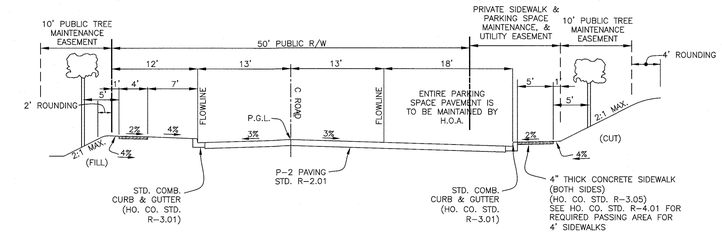
DESIGN MANUAL WAIVER APPROVED ON FEBRUARY 13, 2020. SEE GENERAL NOTE 24 ON SHEET 1.



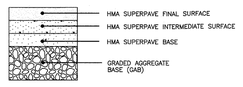


CULTIVATOR ROAD
TYPICAL ROADWAY SECTION W/PARKING LEFT
STA. 2+61.09 TO 3+69.09

PUBLIC ACCESS STREET
DESIGN SPEED: 30 MPH
SCALE: 1" = 10'



CULTIVATOR ROAD
TYPICAL ROADWAY SECTION W/PARKING RIGHT
STA. 5+62.80 TO 6+52.80



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		SUPERPAVE ASPHALT MIX INTERMEDIATE SURFACE 9.5 MM PG 64-22S, LEVEL 1 (LOW ESAL)	1.5	1.5	1.5	1.5	1.5	1.5
		SUPERPAVE ASPHALT MIX BASE 19.0 MM PG 64-22S, LEVEL 1 (LOW ESAL)	2.0	2.0	2.0	3.5	2.0	2.0
		GRADED AGGREGATE BASE (GAB)	8.0	4.0	3.0	4.0	4.0	4.0

P-2 PAVING DETAIL

NOTE: GEOTECHNICAL ENGINEER SHALL VERIFY THE ON-SITE CBR TO DETERMINE PAVEMENT DEPTH REQUIRED.

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MJK — DATE 10/15/2021

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9-2-21

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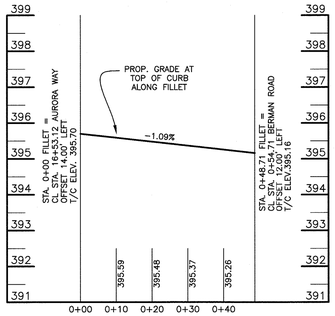
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 – HOWARD COUNTY, MARYLAND

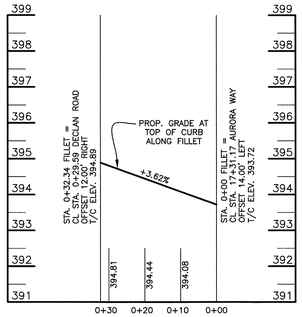
ROAD PLAN
CULTIVATOR ROAD

DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 30, 2021	BEI PROJECT NO. 2879
		SCALE: AS SHOWN	SHEET 8 OF 52

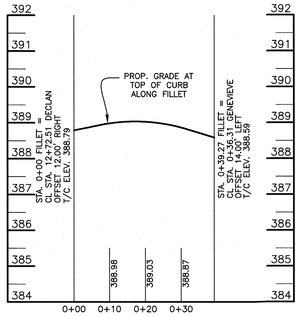
F-21-044



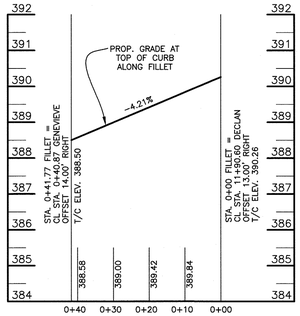
FILLET PROFILE:
AURORA/BERMAN: WEST
SCALE: 1"=20' HORIZ., 1"=2' VERT.



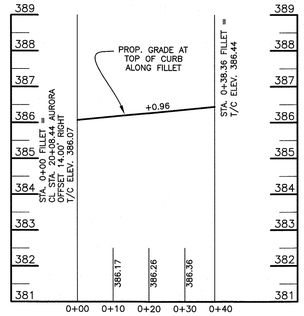
FILLET PROFILE:
AURORA/BERMAN: EAST
SCALE: 1"=20' HORIZ., 1"=2' VERT.



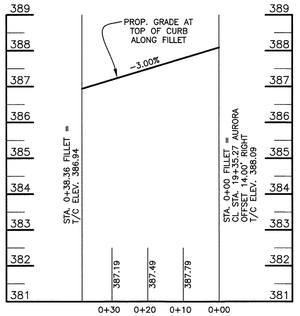
FILLET PROFILE:
DECLAN/GENEVIEVE: EAST
SCALE: 1"=20' HORIZ., 1"=2' VERT.



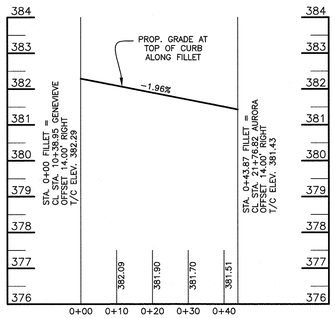
FILLET PROFILE:
DECLAN/GENEVIEVE: WEST
SCALE: 1"=20' HORIZ., 1"=2' VERT.



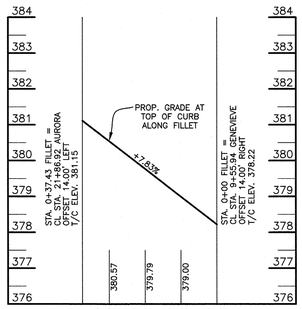
FILLET PROFILE:
AURORA/OLIVE BRANCH: EAST
SCALE: 1"=20' HORIZ., 1"=2' VERT.



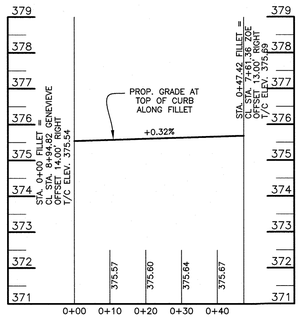
FILLET PROFILE:
AURORA/OLIVE BRANCH: WEST
SCALE: 1"=20' HORIZ., 1"=2' VERT.



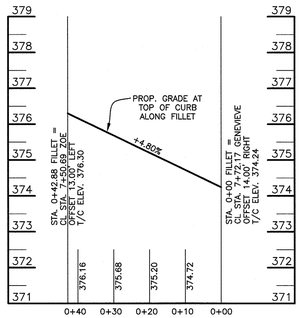
FILLET PROFILE:
GENEVIEVE/AURORA: SOUTH
SCALE: 1"=20' HORIZ., 1"=2' VERT.



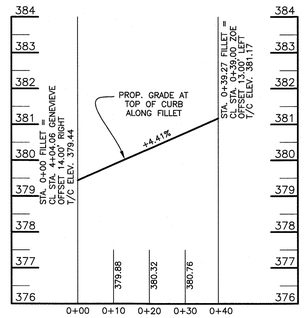
FILLET PROFILE:
GENEVIEVE/AURORA: NORTH
SCALE: 1"=20' HORIZ., 1"=2' VERT.



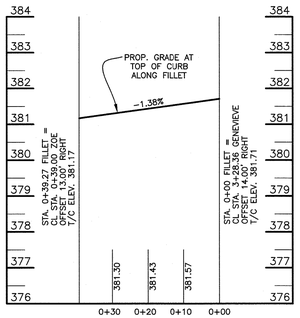
FILLET PROFILE:
GENEVIEVE/ZOE #1: SOUTH
SCALE: 1"=20' HORIZ., 1"=2' VERT.



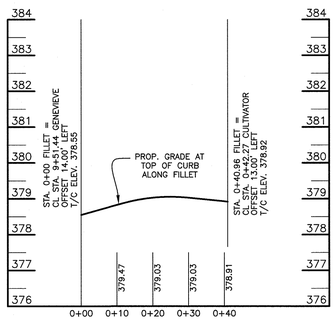
FILLET PROFILE:
GENEVIEVE/ZOE #1: NORTH
SCALE: 1"=20' HORIZ., 1"=2' VERT.



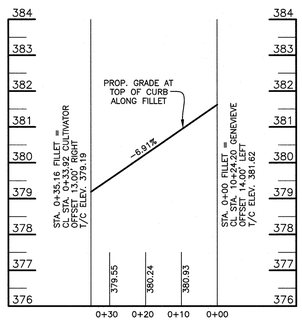
FILLET PROFILE:
GENEVIEVE/ZOE #2: SOUTH
SCALE: 1"=20' HORIZ., 1"=2' VERT.



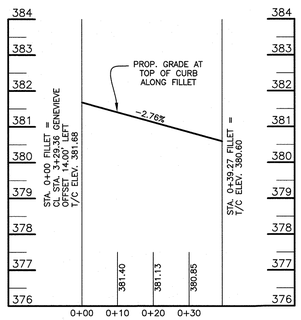
FILLET PROFILE:
GENEVIEVE/ZOE #3: NORTH
SCALE: 1"=20' HORIZ., 1"=2' VERT.



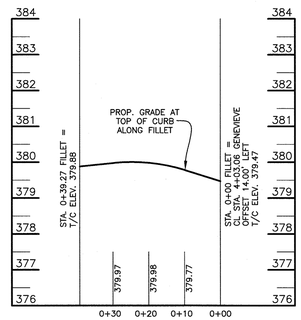
FILLET PROFILE:
GENEVIEVE/CULTIVATOR: NORTH
SCALE: 1"=20' HORIZ., 1"=2' VERT.



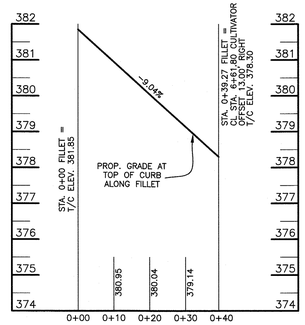
FILLET PROFILE:
GENEVIEVE/CULTIVATOR: SOUTH
SCALE: 1"=20' HORIZ., 1"=2' VERT.



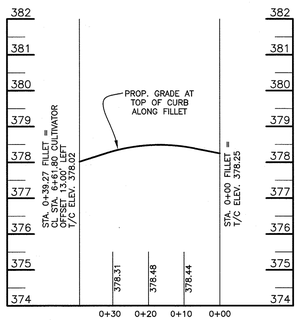
FILLET PROFILE:
GENEVIEVE/PARKING LOT: NORTH
SCALE: 1"=20' HORIZ., 1"=2' VERT.



FILLET PROFILE:
GENEVIEVE/PARKING LOT: SOUTH
SCALE: 1"=20' HORIZ., 1"=2' VERT.



FILLET PROFILE:
FUTURE BLACKBRIAR/
CULTIVATOR: WEST
SCALE: 1"=20' HORIZ., 1"=2' VERT.



FILLET PROFILE:
FUTURE BLACKBRIAR/
CULTIVATOR: EAST
SCALE: 1"=20' HORIZ., 1"=2' VERT.

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MK — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/3/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION HSM — DATE 10-26-21

0 10 20 40
1 inch = 20 ft.

NO.	DATE	REVISION

BENCHMARK
ENGINEERING, INC.
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
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. 22390, Expiration Date: 6-30-2023.

STATE OF MARYLAND — PROFESSIONAL ENGINEER — 22390 — CHRISTOPHER J. JAMES — 9-2-21

OWNER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

WELLINGTON FARMS

Phase 1 Section 2
Lots 54 thru 132; Open Space Lots 133 thru 143; Parcel 'A'; Non-Buildable Bulk Parcels 'C', 'D', and 'E'
(A Resubdivision of Non-Buildable Bulk Parcels 'A' and 'B' previously recorded under F-21-025)

TAX MAP: 46 – GRID: 6 – PARCEL: 163
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 – HOWARD COUNTY, MARYLAND

ROAD PLAN
CURB FILLET PROFILES

DATE: AUGUST 30, 2021 | BEI PROJECT NO. 2879
DESIGN: DBT | DRAFT: DBT | SCALE: AS SHOWN | SHEET 9 OF 52

F-21-044

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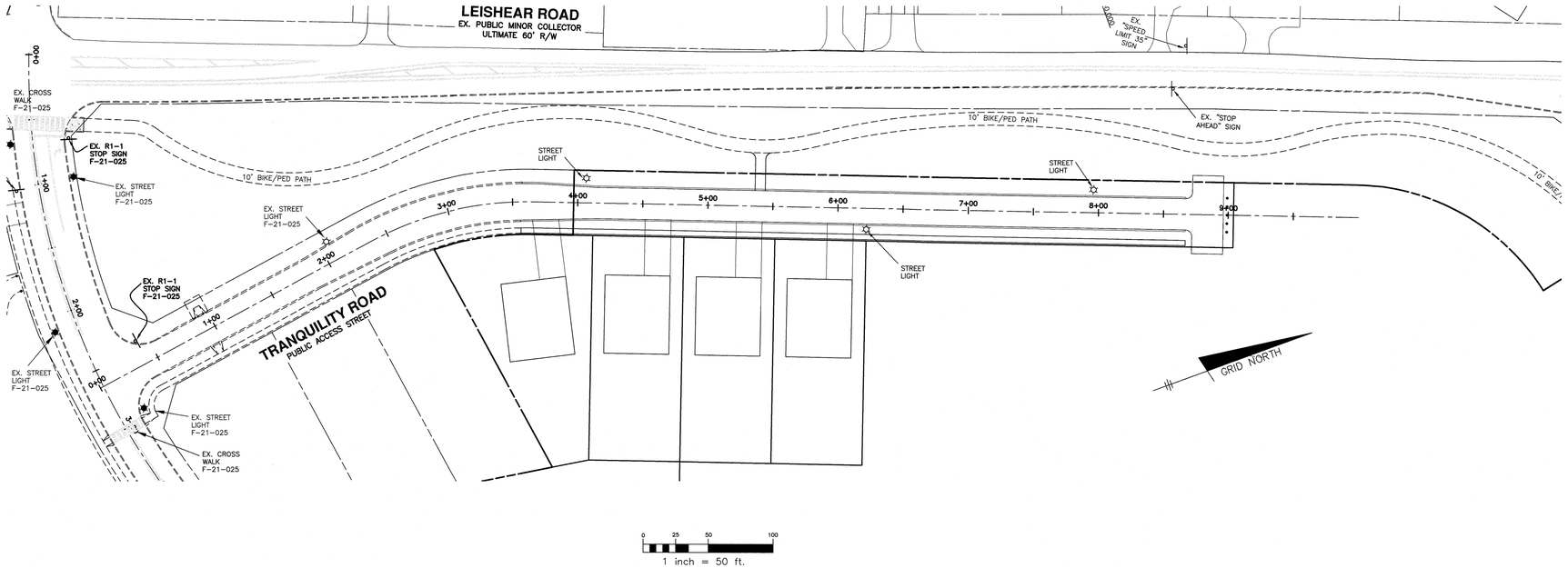

STRIPING LEGEND

Ⓒ 5" WIDE DOUBLE YELLOW LINE

Ⓓ 24" WIDE WHITE SOLID LINE FOR STOP BAR THERMOPLASTIC OR HEAT APPLIED PERFORMED TAPE
4' MIN. SPACING BETWEEN STOP BAR AND CROSS WALK

Ⓔ ALTERNATE 2' WIDE BLACKTOP AND 2' WIDE WHITE THERMOPLASTIC OR HEAT APPLIED PREFORMED TAPE. SIDES TO BE 1' WIDE WHITE THERMOPLASTIC OR HEAT APPLIED PREPFORMED TAPE.

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MJC — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/2/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION KSR — DATE 10-26-21

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315 ▲ ELLICOTT CITY, MARYLAND 21043
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STATE OF MARYLAND — CHRISTOPHER M. WILLARD — 22390 — PROFESSIONAL ENGINEER

12-3-21

OWNER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:
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ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 – HOWARD COUNTY, MARYLAND

ROAD STRIPING, SIGNAGE, AND STREET LIGHT PLAN

DESIGN: DBT | DRAFT: DBT | DATE: AUGUST 30, 2021 | SCALE: AS SHOWN | BEI PROJECT NO. 2879 | SHEET 10 OF 52

F-21-044

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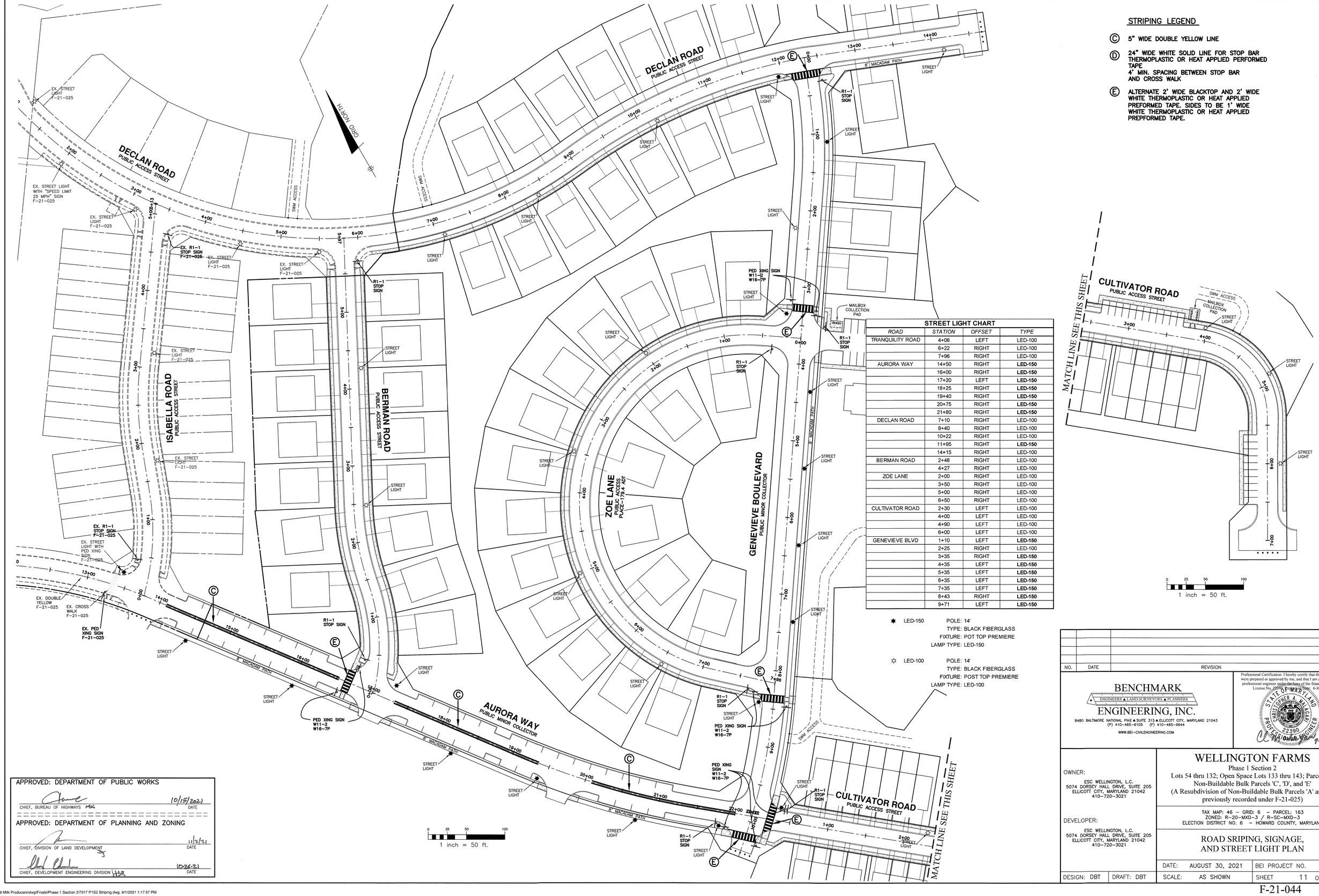

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STREET LIGHT CHART

ROAD	STATION	OFFSET	TYPE
TRANQUILITY ROAD	4+06	LEFT	LED-100
	6+22	RIGHT	LED-100
	7+96	RIGHT	LED-100
AURORA WAY	14+50	RIGHT	**LED-150**
	16+00	RIGHT	**LED-150**
	17+20	LEFT	**LED-150**
	18+25	RIGHT	**LED-150**
	19+40	RIGHT	**LED-150**
	20+75	RIGHT	**LED-150**
	21+80	RIGHT	**LED-150**
DECLAN ROAD	7+10	RIGHT	LED-100
	8+40	RIGHT	LED-100
	10+22	RIGHT	LED-100
	11+95	RIGHT	**LED-150**
	14+15	RIGHT	LED-100
BERMAN ROAD	2+48	RIGHT	LED-100
	4+27	RIGHT	LED-100
ZOE LANE	2+00	RIGHT	LED-100
	3+50	RIGHT	LED-100
	5+00	RIGHT	LED-100
	6+50	RIGHT	LED-100
CULTIVATOR ROAD	2+30	LEFT	LED-100
	4+00	LEFT	LED-100
	4+90	LEFT	LED-100
	6+00	LEFT	LED-100
GENEVIEVE BLVD	1+10	LEFT	**LED-150**
	2+25	RIGHT	LED-100
	3+35	RIGHT	**LED-150**
	4+35	LEFT	**LED-150**
	5+35	LEFT	**LED-150**
	6+35	LEFT	**LED-150**
	7+35	LEFT	**LED-150**
	8+43	RIGHT	**LED-150**
	9+71	LEFT	**LED-150**

✱ LED-150 POLE: 14'
TYPE: BLACK FIBERGLASS
FIXTURE: POT TOP PREMIERE
LAMP TYPE: LED-150

☼ LED-100 POLE: 14'
TYPE: BLACK FIBERGLASS
FIXTURE: POST TOP PREMIERE
LAMP TYPE: LED-100

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MJC — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/2/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION HSR — DATE 10-26-21

NO.	DATE	REVISION

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STATE OF MARYLAND — DOUGLAS B. TAMBURRINO — 22290 — REGISTERED PROFESSIONAL ENGINEER — 9-2-21

OWNER:
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5074 DORSEY HALL DRIVE, SUITE 205
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ROAD SRIPING, SIGNAGE, AND STREET LIGHT PLAN

DESIGN: DBT | DRAFT: DBT
DATE: AUGUST 30, 2021 | BEI PROJECT NO. 2879
SCALE: AS SHOWN | SHEET 11 OF 52

F-21-044

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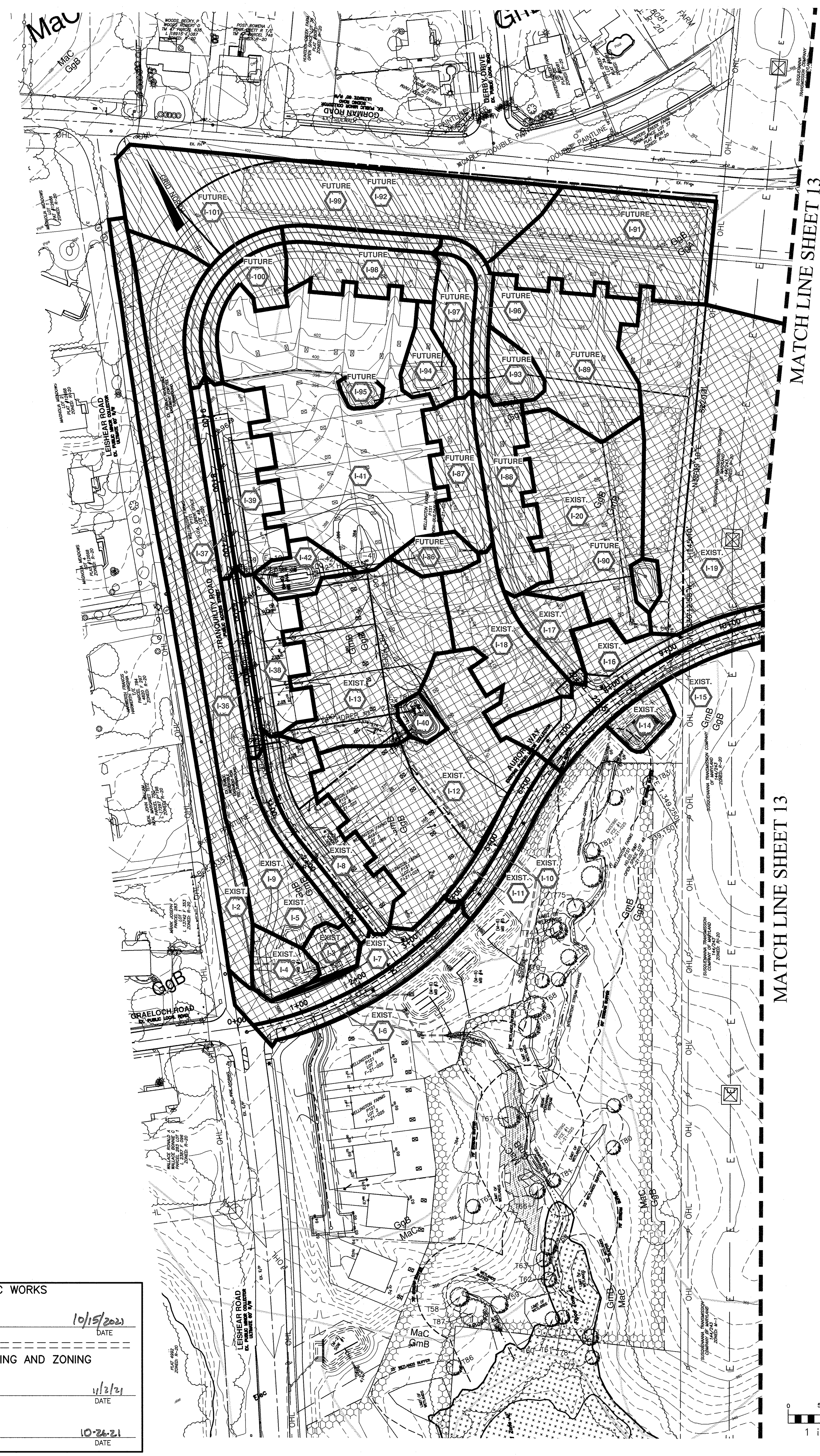

AREA AND 'C' FACTOR TABULATION

Phase	Inlet	Zoning (Z)	Area (ac) (A)	'C' factor < 25yr	'C' factor 25yr and >	% Impervious (I)
P1S2	I-36	R-20-MXD-3	0.16	0.86		100
P1S2	I-37	R-20-MXD-3	0.17	0.86		100
P1S2	I-38	R-20-MXD-3	0.40	0.51		60
P1S2	I-39	R-20-MXD-3	0.50	0.50		59
P1S2	I-40	R-20-MXD-3	0.47	0.44		50
P1S2	I-41	R-20-MXD-3	2.36	0.29		38
P1S2	I-42	R-20-MXD-3	0.67	0.41		44
P1S2	I-43	R-SC-MXD-3	0.29	0.55		81
P1S2	I-44	R-SC-MXD-3	0.37	0.53		79
P1S2	I-45	R-SC-MXD-3	0.22	0.86		100
P1S2	I-46	R-SC-MXD-3	0.24	0.86		100
P1S2	I-47	R-SC-MXD-3	0.18	0.86		100
P1S2	I-48	R-SC-MXD-3	0.24	0.86		100
P1S2	I-49	R-SC-MXD-3	0.24	0.22		26
P1S2	I-50	R-SC-MXD-3	0.77	0.26		48
P1S2	I-51	R-SC-MXD-3	0.59	0.71		78
P1S2	I-52	R-SC-MXD-3	0.54	0.42		55
P1S2	I-53	R-SC-MXD-3	0.42	0.44		57
P1S2	I-54	R-SC-MXD-3	0.49	0.27		52
P1S2	I-55	R-SC-MXD-3	0.59	0.19		7
P1S2	I-56	R-SC-MXD-3	0.53	0.72		80
P1S2	I-57	R-SC-MXD-3	0.29	0.28		50
P1S2	I-58	R-SC-MXD-3	0.33	0.29		55
P1S2	I-59	R-SC-MXD-3	0.45	0.39		51
P1S2	I-60	R-SC-MXD-3	0.64	0.28		47
P1S2	I-61	R-SC-MXD-3	1.03	0.27		48
P1S2	I-62	R-SC-MXD-3	0.63	0.29		45
P1S2	I-63	R-SC-MXD-3	0.79	0.86		100
P1S2	I-64	R-SC-MXD-3	1.89	0.44		58
P1S2	I-65	R-SC-MXD-3	0.37	0.56		81
P1S2	I-66	R-SC-MXD-3	0.48	0.53		79
P1S2	I-67	R-SC-MXD-3	0.44	0.57		82
P1S2	I-68	R-SC-MXD-3	0.64	0.51		78
P1S2	I-69	R-SC-MXD-3	0.26	0.52		78
P1S2	I-70	R-SC-MXD-3	0.50	0.62		84
P1S2	I-71	R-SC-MXD-3	0.67	0.56		73
P1S2	I-72	R-SC-MXD-3	4.87	0.41		60
P1S2	I-73	R-SC-MXD-3	2.54	0.41		62
P1S2	I-74	R-SC-MXD-3	0.46	0.59		82
P1S2	I-75	R-SC-MXD-3	5.79	0.54		69
P1S2	I-76	R-SC-MXD-3	0.79	0.62		77
P1S2	I-77	R-SC-MXD-3	0.29	0.86		100
P1S2	I-78	R-SC-MXD-3	5.91	0.46		60
P1S2	I-79	R-SC-MXD-3	0.69	0.22		29
P1S2	I-80	R-SC-MXD-3	0.47	0.25		42
P1S2	I-81	R-SC-MXD-3	0.70	0.53		75
P1S2	I-82	R-SC-MXD-3	0.59	0.71		90
P1S2	I-83	R-SC-MXD-3	0.43	0.25		40
P1S2	I-84	R-SC-MXD-3	0.16	0.68		74
P1S2	I-85	R-SC-MXD-3	0.27	0.63		67

AREA AND 'C' FACTOR TABULATION

Phase	Inlet	Zoning (Z)	Area (ac) (A)	'C' factor < 25yr	'C' factor 25yr and >	% Impervious (I)
P1S2	I-85A	R-SC-MXD-3	0.24	0.86		100
P1S3	I-86	R-20-MXD-3	0.49	0.41		45
P1S3	I-87	R-20-MXD-3	0.35	0.51		62
P1S3	I-88	R-20-MXD-3	0.46	0.51		62
P1S3	I-89	R-20-MXD-3	0.85	0.29		38
P1S3	I-90	R-20-MXD-3	0.52	0.47		54
P1S3	I-91	R-20-MXD-3	1.03	0.22		17
P1S3	I-92	R-20-MXD-3	1.67	0.16		0
P1S3	I-93	R-20-MXD-3	0.55	0.56		60
P1S3	I-94	R-20-MXD-3	0.69	0.48		52
P1S3	I-95	R-20-MXD-3	0.41	0.74		87
P1S3	I-96	R-20-MXD-3	0.16	0.86		100
P1S3	I-97	R-20-MXD-3	0.23	0.63		75
P1S3	I-98	R-20-MXD-3	0.37	0.50		60
P1S3	I-99	R-20-MXD-3	0.14	0.86		100
P1S3	I-100	R-20-MXD-3	0.24	0.65		77
P1S3	I-101	R-20-MXD-3	0.17	0.86		100
P1S3	I-102	R-SC-MXD-3	0.63	0.51		78
P1S3	I-103	R-SC-MXD-3	0.40	0.54		80
P2	I-104	R-SC-MXD-3	0.29	0.21		23
P2	I-105	R-SC-MXD-3	0.18	0.44		74
P2	I-106	R-SC-MXD-3	0.24	0.44		74

LEGEND

DRAINAGE AREA DIVISION

DRAINAGE AREAS TO INLETS INSTALLED UNDER F-21-025

DRAINAGE AREAS TO INLETS TO BE CONSTRUCTED IN FUTURE PHASES

SOILS DELINEATION

MaC SOILS TYPE

0 50 100 200

1 inch = 100 ft.

SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND

SYMBOL	HYDRIC	HYDROLOGIC GROUP	NAME	k-VALUE	ERODIBLE
CeB		B	CHILLUM LOAM, 2 TO 5 PERCENT SLOPES	0.37	NO
GgA		B	GLENELG LOAM, 0 TO 3 PERCENT SLOPES	0.20	NO
GgB		B	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	0.20	NO
GmB*	YES	C	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	0.37	YES
GmC		C	GLENVILLE SILT LOAM, 8 TO 15 PERCENT SLOPES	0.37	NO
GnB*	YES	C	GLENVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.37/0.32	NO
MaC		B	MANOR LOAM, 8 TO 15 PERCENT SLOPES	0.24	YES
MaD		B	MANOR LOAM, 15 TO 25 PERCENT SLOPES	0.24	YES
RsB		C	RUSSETT FINE SANDY LOAM, 2 TO 5 PERCENT SLOPES	0.24	NO
RuB		C	RUSSETT AND BELTSVILLE SOIL, 2 TO 5 PERCENT SLOPES	0.24/0.37	NO
RuC		C	RUSSETT AND BELTSVILLE SOIL, 5 TO 10 PERCENT SLOPES	0.24/0.37	NO
SaC		B	SASSAFRAS LOAM, 5 TO 10 PERCENT SLOPE	0.24	NO
SrD		B	SASSAFRAS AND CROOM SOIL, 10 TO 15 PERCENT SLOPES	0.37/0.28	YES
W			WATER	0.00	

HSCD Newsletter dated April, 2013 defines erodible soils as those soils with a slope greater than 15 percent or those soils with a soil erodibility factor K greater than 0.35 and with a slope greater than 5%.

APPROVED: DEPARTMENT OF PUBLIC WORKS

[signature] 10/15/2021

CHIEF, BUREAU OF HIGHWAYS MK — DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[signature] 11/2/21

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

[signature] 10-26-21

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

NO.	DATE	REVISION

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STATE OF MARYLAND CHRISTOPHER A. MALAGARI 22390 PROFESSIONAL ENGINEER [signature] 9-2-21

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ESC WELLINGTON, L.C.
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ELLICOTT CITY, MARYLAND 21042
410-720-3021

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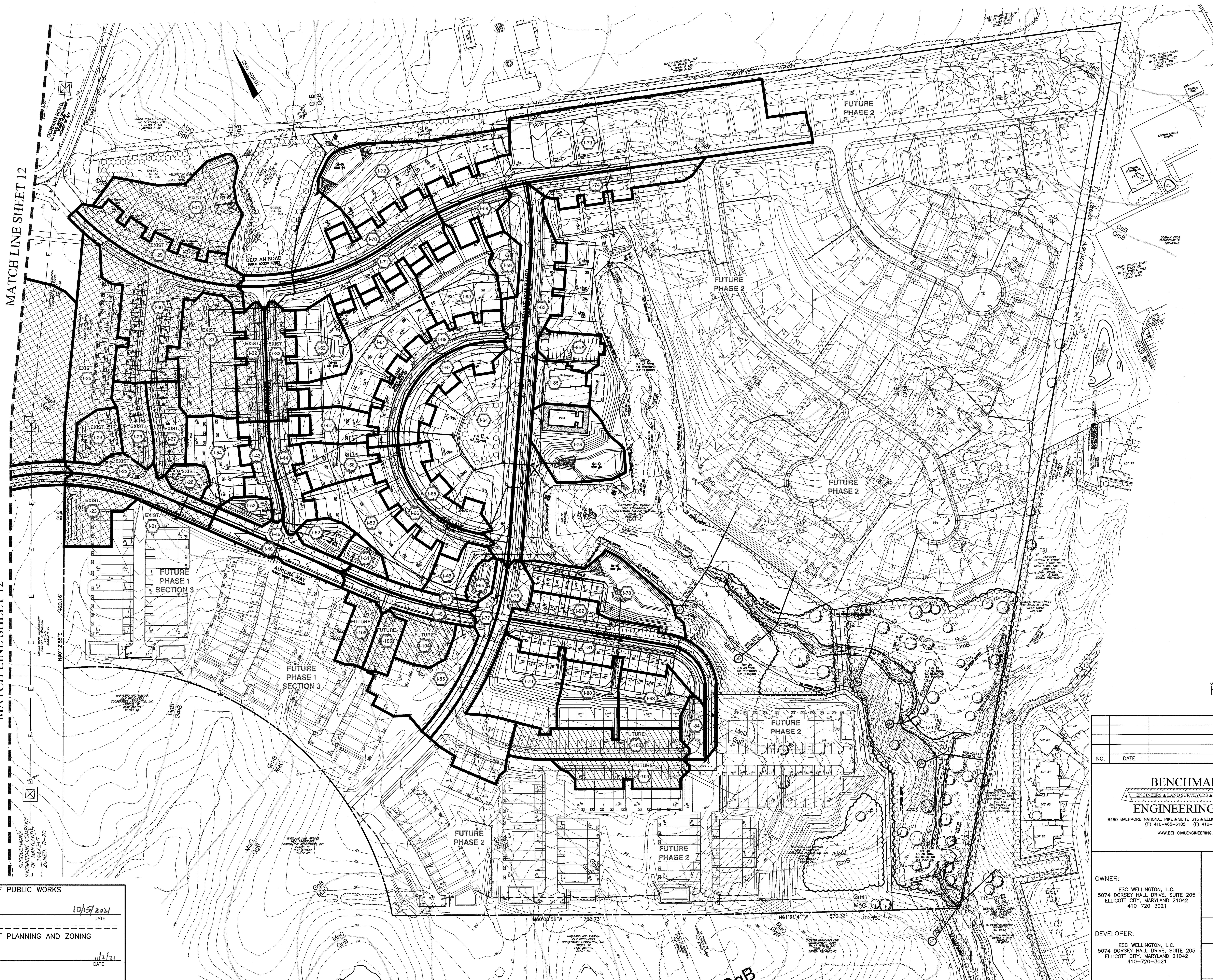
ELECTION DISTRICT NO. 6 – HOWARD COUNTY, MARYLAND

STORM DRAIN DRAINAGE AREA MAP

DATE: AUGUST 30, 2021	BEI PROJECT NO. 2879
SCALE: AS SHOWN	SHEET 12 OF 52

DESIGN: DBT DRAFT: DBT

F-21-044



LEGEND

- DRAINAGE AREA DIVISION
- DRAINAGE AREAS TO INLETS INSTALLED UNDER F-21-025
- DRAINAGE AREAS TO INLETS TO BE CONSTRUCTED IN FUTURE PHASES
- SOILS DELINEATION
- **MaC** SOILS TYPE

0 50 100 200

1 inch = 100 ft.

APPROVED: DEPARTMENT OF PUBLIC WORKS

10/15/2021
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

11/2/21
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

10-20-21
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

NO.	DATE	REVISION

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. 22390, Expiration Date: 6-30-2023.

STATE OF MARYLAND — CHRISTOPHER A. MALAGARI — 22390 — PROFESSIONAL ENGINEER
9-2-21

OWNER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

WELLINGTON FARMS

Phase 1 Section 2
Lots 54 thru 132; Open Space Lots 133 thru 143; Parcel 'A'; Non-Buildable Bulk Parcels 'C', 'D', and 'E'
(A Resubdivision of Non-Buildable Bulk Parcels 'A' and 'B' previously recorded under F-21-025)

TAX MAP: 46 – GRID: 6 – PARCEL: 163
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 – HOWARD COUNTY, MARYLAND

STORM DRAIN DRAINAGE AREA MAP

DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 30, 2021	BEI PROJECT NO. 2879
		SCALE: AS SHOWN	SHEET 13 OF 52

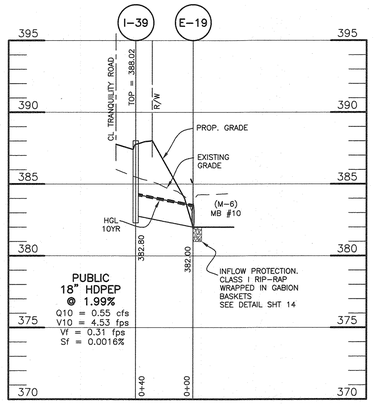
F-21-044

I:\2879 Milk Producers\dwg\Finals\Phase 1 Section 2\7029 P1S2.dwg, 8/25/2021 11:45:24 AM

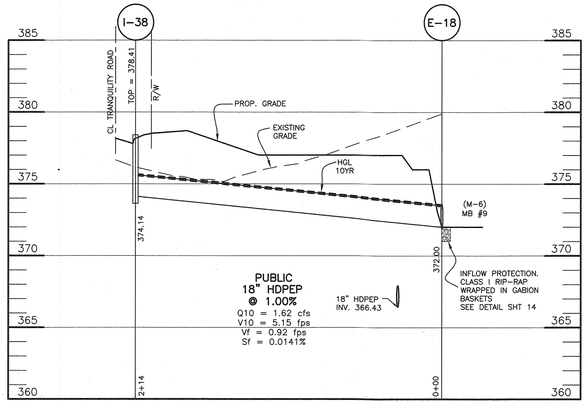
STRUCTURE TABLE

NUMBER	TYPE	STD. DETAIL	LOCATION	INVERT IN	INVERT OUT	TOP ELEV.	MAINTENANCE
E-18	18" HDPE End Section	N/A	539498.95 1348984.82	372.00(18")		N/A	PUBLIC
E-19	18" HDPE End Section	N/A	539784.11 1348907.17	382.00(18")		N/A	PUBLIC
E-20	18" HDPE End Section	N/A	538987.28 1349992.70	390.00(18")		N/A	PUBLIC
E-21	18" HDPE End Section	N/A	538876.68 1350065.40	386.00(18")		N/A	PUBLIC
E-22	18" HDPE End Section	N/A	538795.09 1350108.87	385.00(18")		N/A	PUBLIC
E-23	18" HDPE End Section	N/A	538582.98 1350321.22	376.00(18")		N/A	PUBLIC
E-24	18" HDPE End Section	N/A	538579.60 1350496.47	364.00(18")		N/A	PRIVATE
E-25	18" HDPE End Section	N/A	538727.41 1350572.26	363.50(18")		N/A	PRIVATE
E-26	18" HDPE End Section	N/A	538748.45 1350621.02	358.00(18")		N/A	PUBLIC
E-27	18" HDPE End Section	N/A	539630.62 1350540.90	373.54(24")		N/A	PUBLIC
E-28	18" HDPE End Section	N/A	539555.29 1350475.05	376.00(18")		N/A	PUBLIC
E-29	18" HDPE End Section	N/A	539572.60 1350601.86	376.00(18")		N/A	PUBLIC
E-30	18" HDPE End Section	N/A	539137.86 1350993.06	377.00(18")		N/A	PUBLIC
E-31	18" HDPE End Section	N/A	539216.20 1350769.60	381.00(18")		N/A	PUBLIC
E-32	18" HDPE End Section	N/A	538638.79 1350726.49	355.57(24")		N/A	PUBLIC
E-33	18" HDPE End Section	N/A	538320.00 1350714.01	354.84(18")		N/A	PUBLIC
E-34	18" HDPE End Section	N/A	538496.81 1350566.48	357.00(18")		N/A	PUBLIC
E-35	18" HDPE End Section	N/A	538407.15 1350589.33	357.00(18")		N/A	PUBLIC
.	.		.	.	.	.	
.	.		.	.	.	.	
I-36	A-5	D-4.02	539585.38 1348759.00	370.96(18")	370.76(18")	378.41	PUBLIC
I-37	A-5	D-4.02	539816.06 1348847.90		375.90(18")	388.02	PUBLIC
I-38	A-10	D-4.03	539575.33 1348785.07		374.14(18")	378.41	PUBLIC
I-39	A-10	D-4.03	539806.13 1348873.72		382.80(18")	388.02	PUBLIC
I-40	S	D-4.24	539474.31 1348978.11		367.08(18")	373.00	PRIVATE
I-41	S	D-4.24	539724.55 1349038.59	375.51(12")	373.33(18")	383.00	PRIVATE
I-42	S	D-4.24	539752.81 1348965.27		377.08(12")	383.00	PRIVATE
I-43	A-5	D-4.02	538977.27 1350015.06		390.12(18")	395.48	PUBLIC
I-44	A-5	D-4.02	538921.25 1350014.78		388.70(18")	394.51	PUBLIC
I-45	E	D-4.21	538779.90 1350088.13	385.40(18")	385.20(18")	389.47	PUBLIC
I-46	E	D-4.21	538763.04 1350065.77		385.60(18")	389.47	PUBLIC
I-47	A-5	D-4.02	538558.82 1350299.05	376.53(18")	376.33(18")	381.52	PUBLIC
I-48	A-5	D-4.02	538534.39 1350278.91		376.85(18")	381.52	PUBLIC
I-49	S	D-4.24	538662.55 1350353.98	371.38(18")	371.18(18")	377.00	PRIVATE
I-50	S	D-4.24	538678.60 1350223.68	376.23(18")	376.03(18")	380.12	PRIVATE
I-51	S	D-4.24	538794.10 1350150.19	377.80(18")	377.60(18")	386.00	PRIVATE
I-52	S	D-4.24	538861.00 1350106.07	378.80(18")	378.60(18")	387.00	PRIVATE
I-53	S	D-4.24	538979.46 1349973.82	380.78(18")	380.58(18")	391.01	PRIVATE
I-54	S	D-4.24	539075.21 1349906.26	383.67(12")	383.17(18")	391.00	PRIVATE
I-55	S	D-4.24	538518.25 1350239.57		375.30(18")	380.00	PRIVATE
I-56	S	D-4.24	538636.36 1350362.98		371.08(18")	377.00	PRIVATE
I-57	S	D-4.24	539065.23 1350228.19	381.26(18")	381.26(18")	388.00	PRIVATE
I-58	S	D-4.24	538997.32 1350183.56		382.89(18")	388.00	PRIVATE
I-59	S	D-4.24	539174.80 1350734.41	372.68(18")	372.48(18")	382.00	PRIVATE
I-60	S	D-4.24	539220.42 1350669.45	373.28(18")	373.08(18")	381.00	PRIVATE
I-61	S	D-4.24	539232.47 1350395.28	374.85(18")	374.65(18")	381.00	PRIVATE
I-62	S	D-4.24	539221.22 1350334.94		376.08(18")	382.00	PRIVATE
I-63	A-5	D-4.02	538741.55 1350520.24	364.15(18")	362.55(18")	373.81	PUBLIC
I-64	A-5	D-4.02	538759.40 1350494.08	366.56(18")	365.36(18")	373.81	PUBLIC
I-65	A-10	D-4.03	538695.50 1350412.00	367.27(18")	367.07(18")	376.62	PUBLIC
I-66	A-10	D-4.03	538666.30 1350399.93		367.43(18")	375.99	PUBLIC
I-67	A-10	D-4.03	539034.90 1350647.57	372.83(18")	371.68(18")	381.41	PUBLIC
I-68	A-10	D-4.03	539059.41 1350664.29		373.57(18")	381.40	PUBLIC
I-69	A-5	D-4.02	539335.80 1350830.78		386.00(18")	390.33	PUBLIC
I-70	A-5	D-4.02	539418.78 1350310.51	378.68(18")	378.48(18")	386.27	PUBLIC
I-71	A-5	D-4.02	539390.90 1350300.35		378.98(18")	386.27	PUBLIC
I-72	D	D-4.10	539608.92 1350555.63		373.67(24")	378.83	PRIVATE
I-73	A-5	D-4.02	539278.07 1351062.36		383.39(18")	387.00	PUBLIC
I-74	A-5	D-4.02	539252.39 1351052.05		378.73(18")	387.00	PUBLIC
I-75	DOUBLE S	D-4.25	538658.44 1350727.25		355.67(24")	360.00	PUBLIC
I-76	A-10	D-4.03	538602.29 1350424.42	366.55(18")	366.35(18")	375.86	PUBLIC
I-77	A-10	D-4.03	538621.20 1350399.02		367.50(18")	375.86	PUBLIC
I-78	DOUBLE S	D-4.25	538344.18 1350677.47		355.17(18")	359.00	PUBLIC
I-79	S	D-4.24	538315.73 1350369.35		370.00(18")	373.50	PRIVATE
I-80	S	D-4.24	538236.21 1350465.80	366.25(18")	366.05(18")	370.50	PRIVATE
I-81	A-5	D-4.02	538238.37 1350635.36	363.03(18") 363.03(18")	362.83(18")	368.91	PUBLIC
I-82	A-5	D-4.02	538258.48 1350659.84		363.66(18")	368.91	PUBLIC
I-83	S	D-4.24	538167.37 1350580.27	364.13(18")	363.93(18")	367.50	PRIVATE
I-84	A-5	D-4.02	538129.72 1350622.07		365.26(18")	371.92	PUBLIC
I-85	S	D-4.02	538902.87 1350669.73	368.15(18")	367.95(18")	374.60	PRIVATE

NOTE: TOP ELEVATION FOR TYPE 'E' AND 'S' INLETS IS THE TOP OF GRATE



SD: E-19 to I-39



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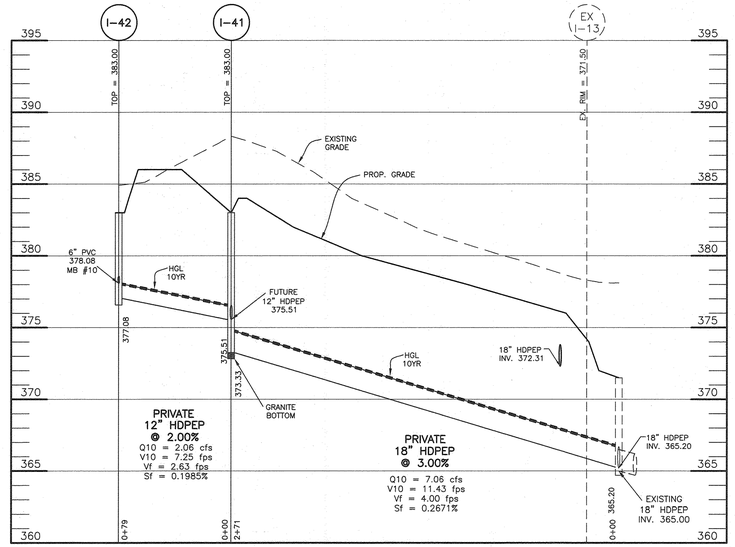


SD: I-13 to I-42

STRUCTURE TABLE

NUMBER	TYPE	STD. DETAIL	LOCATION	INVERT IN	INVERT OUT	TOP ELEV.	MAINTENANCE
I-85A	A-5	D-4.02	538903.00 1350819.87		371.04(18")	375.04	PRIVATE
M-17	4' Precast	G-5.12	538651.18 1350376.48	370.68(18") 370.88(18")	368.19(18")	378.20	PRIVATE
M-18	4' Precast	G-5.12	538615.01 1350275.00	374.27(18") 374.27(18")	374.07(18")	380.07	PRIVATE
M-19	4' Precast	G-5.12	538773.59 1350567.71	364.10(18")	363.90(18")	374.00	PUBLIC
M-20	4' Precast	G-5.12	538811.35 1350512.38	368.52(18") 365.16(18")	364.96(18")	374.50	PUBLIC
M-20A	4' Precast	G-5.12	538830.16 1350448.52	370.72(18")	370.52(18")	377.80	PRIVATE
M-21	4' Precast	G-5.12	538925.14 1350444.40	373.77(18")	373.57(18")	380.50	PRIVATE
M-22	4' Precast	G-5.12	538979.64 1350364.50	377.84(18")	377.64(18")	388.62	PRIVATE
M-22A	4' Precast	G-5.12	539005.42 1350319.19	379.08(18")	378.88(18")	388.72	PRIVATE
M-23	4' Precast	G-5.12	539125.32 1350726.62	371.92(18")	368.96(18")	383.99	PRIVATE
M-24	4' Precast	G-5.12	538768.64 1350586.14	360.42(18") 360.44(18")	360.22(18")	367.00	PUBLIC
M-25	4' Precast	G-5.12	538963.01 1350710.81	369.80(18") 369.80(18")	369.60(18")	378.99	PUBLIC
M-26	4' Precast	G-5.12	539453.89 1350881.22	381.55(18")	381.35(18")	392.00	PUBLIC
M-27	4' Precast	G-5.12	539380.88 1350864.47	382.27(18")	382.07(18")	392.00	PUBLIC
M-28	4' Precast	G-5.12	539241.36 1351034.61	378.32(18")	378.12(18")	388.00	PUBLIC
M-29	4' Precast	G-5.12	538509.80 1350536.43	357.53(18")	357.33(18")	362.00	PUBLIC
M-30	4' Precast	G-5.12	538321.21 1350535.89	360.24(18") 363.85(18")	360.04(18")	371.58	PUBLIC
.	SD Connection	N/A	539536.01 1348738.95	368.63(18")		370.27	PUBLIC

CONSTRUCTION SPECIFICATIONS

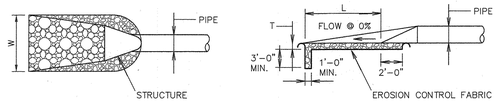
1. THE SUBGRADE FOR THE FILTER, RIP-RAP, OR GABION SHALL BE PREPARED TO THE REQUIRED LINES AND GRADES. ANY FILL REQUIRED IN THE SUBGRADE SHALL BE COMPACTED TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.

2. THE ROCK OR GRAVEL SHALL CONFORM TO THE SPECIFIED GRADING LIMITS WHEN INSTALLED RESPECTIVELY IN THE RIP-RAP OR FILTER.

3. GEOTEXTILE CLASS C28 OR BETTER SHALL BE PROTECTED FROM PUNCHING, CUTTING, OR TEARING. ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE SHALL BE PREPARED BY PLACING ANOTHER PIECE OF GEOTEXTILE FABRIC OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE FABRIC. ALL OVERLAPS WHETHER FOR REPAIRS OR FOR JOINING TWO PIECES OF GEOTEXTILE FABRIC SHALL BE A MINIMUM OF ONE FOOT.

4. STONE FOR THE RIP-RAP OR GABION OUTLETS MAY BE PLACED BY EQUIPMENT. THEY SHALL BE CONSTRUCTED TO THE FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. THE STONE FOR HE RIP-RAP OR GABION OUTLETS SHALL BE DELIVERED AND PLACED IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. RIP-RAP SHALL BE PLACED IN A MANNER TO PREVENT DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE FABRIC. HAND PLACEMENT WILL BE REQUIRED TO THE EXTENT NECESSARY TO PREVENT DAMAGE TO THE PERMANENT WORKS.

5. THE STONE SHALL BE PLACED SO THAT IT BLENDS IN WITH THE EXISTING GROUND. IF THE STONE IS PLACED TOO HIGH THEN THE FLOW WILL BE FORCED OUT OF THE CHANNEL AND SCOUR ADJACENT TO THE STONE WILL OCCUR.

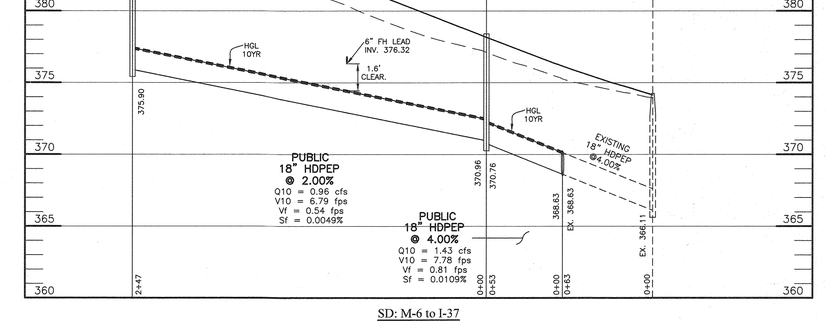


PLAN SECTION

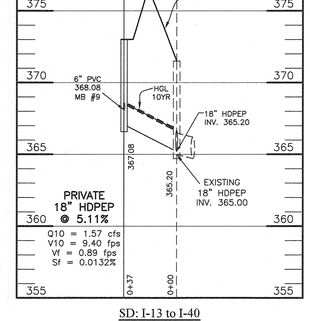
STRUCTURE	Q_2 fps	V_2 fps	d_2 (ft)	Q_{10} fps	V_{10} fps	d_{10} (ft)	d50	LENGTH(L)	WIDTH(W)	THICK.(T)	SHA CLASS
E-18	CONFINED OUTLET - SEE "INFLOW PROTECTION RIP-RAP WRAPPED IN GABION BASKETS" DETAIL (THIS SHEET)										
E-19	CONFINED OUTLET - SEE "INFLOW PROTECTION RIP-RAP WRAPPED IN GABION BASKETS" DETAIL (THIS SHEET)										
E-20	CONFINED OUTLET - SEE "INFLOW PROTECTION RIP-RAP WRAPPED IN GABION BASKETS" DETAIL (THIS SHEET)										
E-21	CONFINED OUTLET - SEE "INFLOW PROTECTION RIP-RAP WRAPPED IN GABION BASKETS" DETAIL (THIS SHEET)										
E-22	CONFINED OUTLET - SEE "INFLOW PROTECTION RIP-RAP WRAPPED IN GABION BASKETS" DETAIL (THIS SHEET)										
E-23	CONFINED OUTLET - SEE "INFLOW PROTECTION RIP-RAP WRAPPED IN GABION BASKETS" DETAIL (THIS SHEET)										
E-24	6.42	3.63	0.54	11.80	13.28	0.75	9.5"	15'	16.5'	19"	I
E-25	3.55	2.01	0.53	6.32	7.49	0.72	9.5"	10'	11.5'	19"	I
E-26	SGW FOREBAY										
E-27	9.07	2.89	0.92	15.49	7.40	1.29	9.5"	18'	9.2'	19"	I
E-28	SGW FOREBAY										
E-29	SGW FOREBAY										
E-30	CONFINED OUTLET - SEE "INFLOW PROTECTION RIP-RAP WRAPPED IN GABION BASKETS" DETAIL (THIS SHEET)										
E-31	CONFINED OUTLET - SEE "INFLOW PROTECTION RIP-RAP WRAPPED IN GABION BASKETS" DETAIL (THIS SHEET)										
E-32	14.15	4.50	1.21	23.26	7.40	2.00	9.5"	19'	9.6'	19"	I
E-33	7.63	4.32	0.88	12.71	7.40	1.40	9.5"	20'	9.5'	19"	I
E-34	SGW FOREBAY										
E-35	SGW FOREBAY										

OUTLET PROTECTION DETAIL

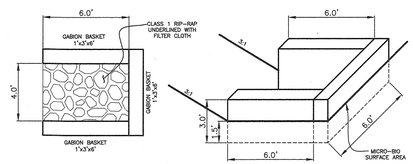
NOT TO SCALE



SD: M-6 to I-37



SD: I-13 to I-40



PLAN VIEW ELEVATION VIEW

GABION BASKETS TO BE BURIED 18 INCHES. THEY SHOULD EXTEND 18 INCHES ABOVE THE MICRO-BIO SURFACE.

INFLOW PROTECTION RIP-RAP WRAPPED IN GABION BASKETS

SCALE: 1" = 5'

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MK — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/2/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION MSA — DATE 10.26.21

NO.	DATE	REVISION
1	4/20/2023	CORRECT TOP OF I-78 TO BE 359.00 IN STRUCTURE SCHEDULE

BENCHMARK ENGINEERING, INC.
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
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. 22390, Expiration Date: 6-30-2023.

STATE OF MARYLAND — CHRISTOPHER A. WILLIAMS — 22390 — PROFESSIONAL ENGINEER — 9-2-21

OWNER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

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WELLINGTON FARMS

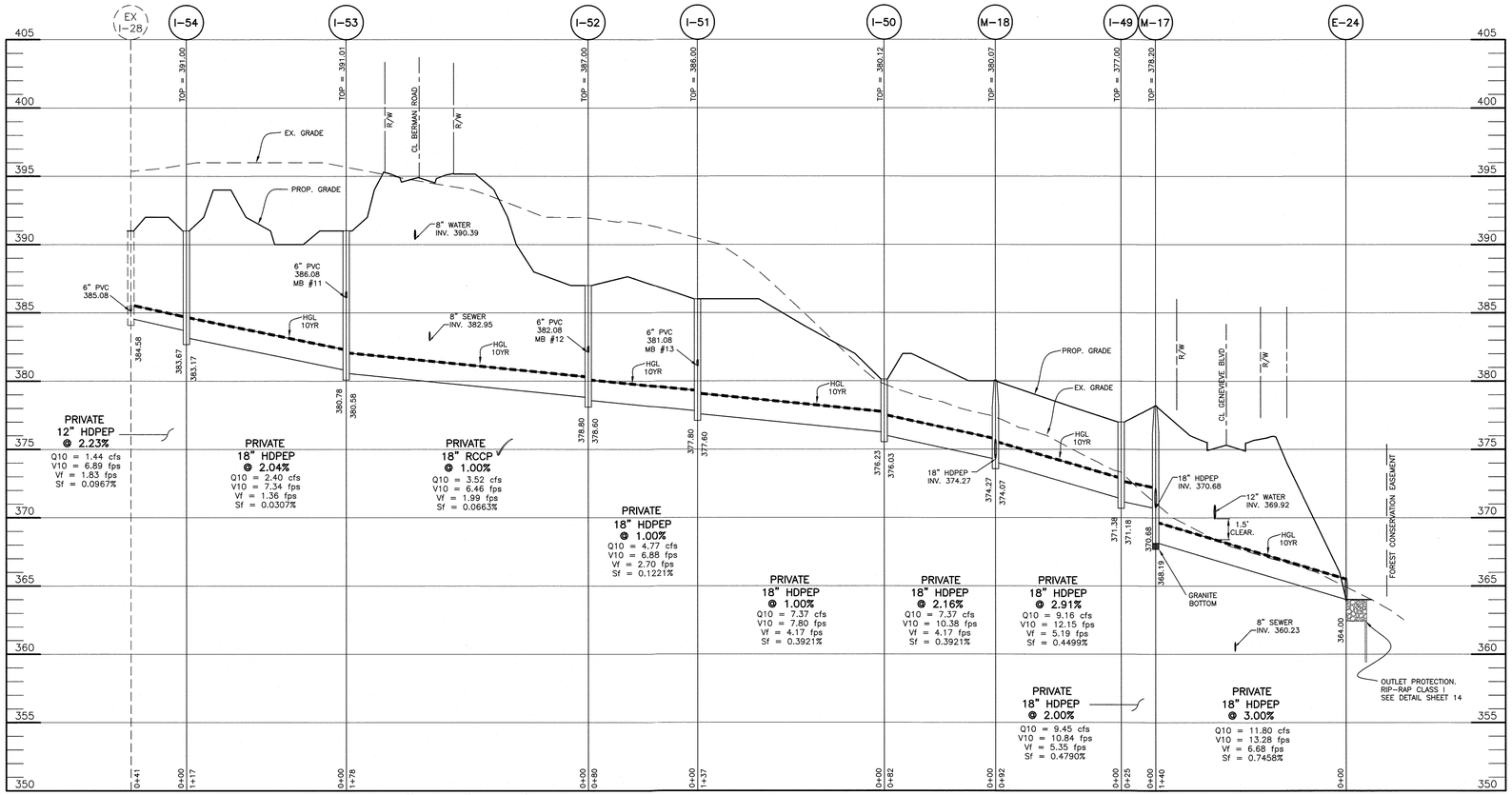
Phase 1 Section 2
Lots 54 thru 132; Open Space Lots 133 thru 143; Parcel 'A'; Non-Buildable Bulk Parcels 'C', 'D', and 'E'
(A Resubdivision of Non-Buildable Bulk Parcels 'A' and 'B' previously recorded under F-21-025)

TAX MAP: 46 - GRID: 6 - PARCEL: 163
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 - HOWARD COUNTY, MARYLAND

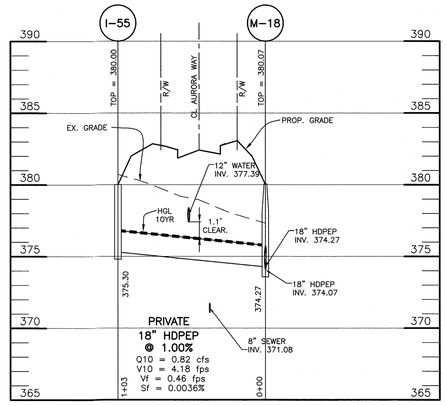
STORM DRAIN PROFILES AND DETAILS

DESIGN: DBT	DRAFT: DBT	SCALE: AS SHOWN	DATE: AUGUST 30, 2021	BEI PROJECT NO. 2879	SHEET 14 OF 52

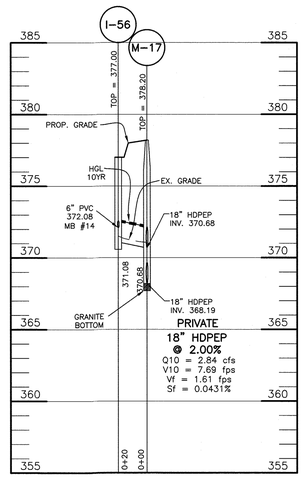
F-21-044



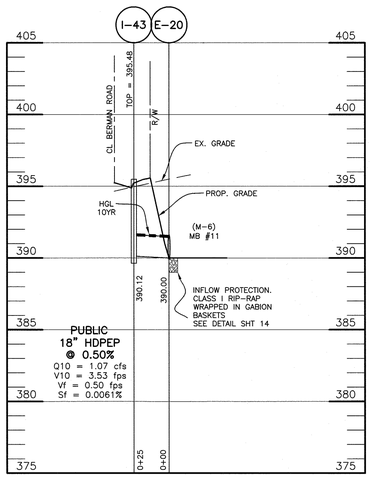
SD: E-24 to I-54



SD: M-18 to I-55



SD: M-17 to I-56



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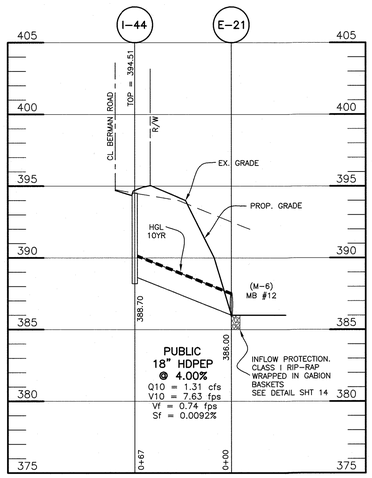

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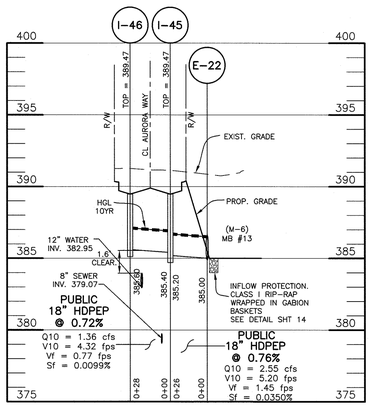

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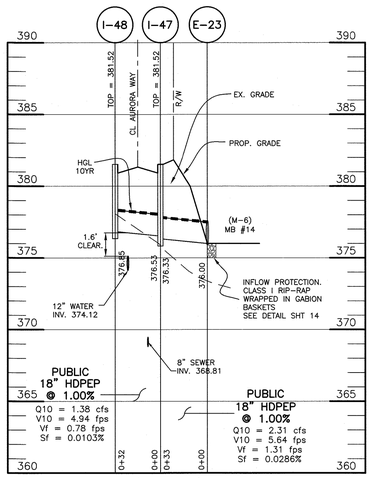


SD: E-23 to I-48

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MK — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/2/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10-26-21

NO.	DATE	REVISION

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. 22390, Expiration Date: 6-30-2023

STATE OF MARYLAND — CHRISTOPHER A. MILLER — 22390 — PROFESSIONAL ENGINEER — 9-2-21

OWNER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

WELLINGTON FARMS

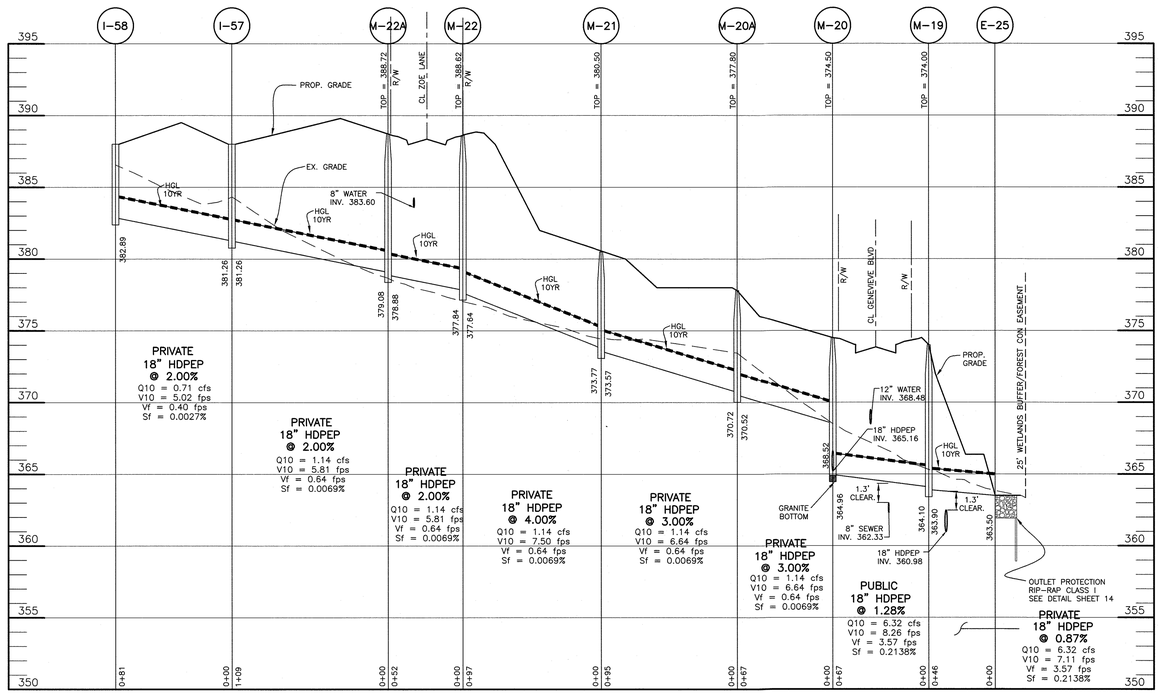
Phase 1 Section 2
Lots 54 thru 132; Open Space Lots 133 thru 143; Parcel 'A';
Non-Buildable Bulk Parcels 'C', 'D', and 'E'
(A Resubdivision of Non-Buildable Bulk Parcels 'A' and 'B'
previously recorded under F-21-025)

TAX MAP: 46 - GRID: 6 - PARCEL: 163
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 - HOWARD COUNTY, MARYLAND

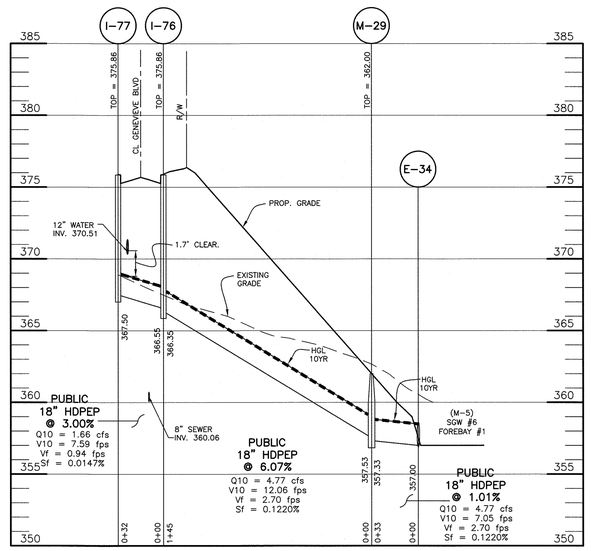
STORM DRAIN PROFILES

DESIGN: DBT | DRAFT: DBT | DATE: AUGUST 30, 2021 | SCALE: AS SHOWN | BEI PROJECT NO. 2879 | SHEET 15 OF 52

F-21-044



SD: E-25 to I-58



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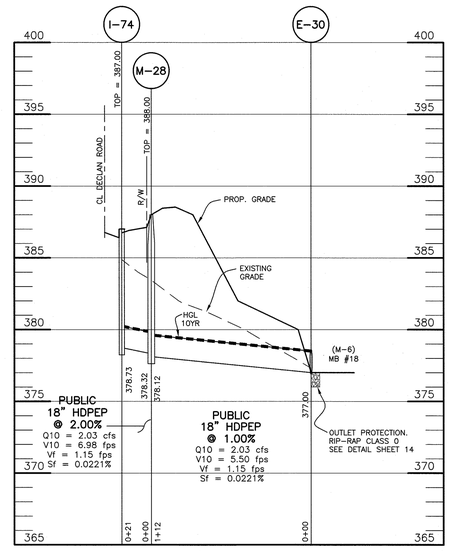

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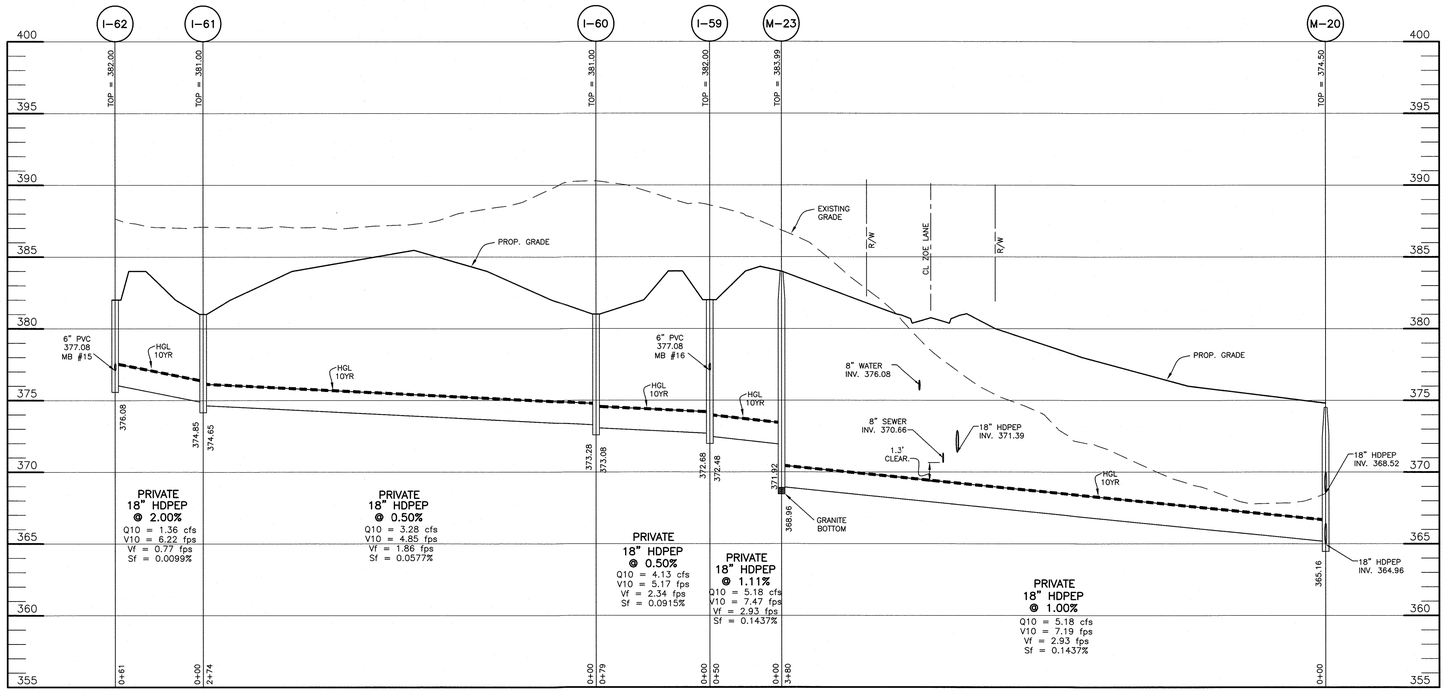

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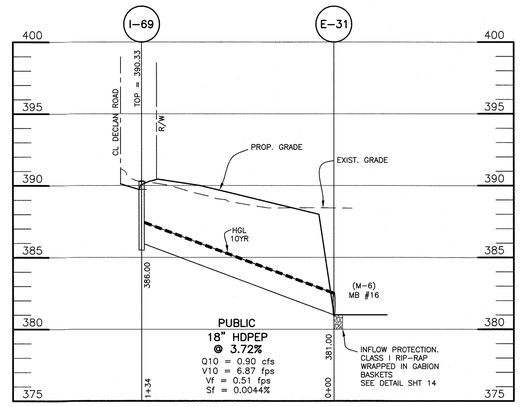

SD: E-31 to I-69

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MK — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/2/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.26.21

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315 ▲ ELLICOTT CITY, MARYLAND 21043
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STATE OF MARYLAND — CHRISTOPHER MICHAEL WILLIAMS — 22390 — PROFESSIONAL ENGINEER — 9-2-21

OWNER:
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5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:
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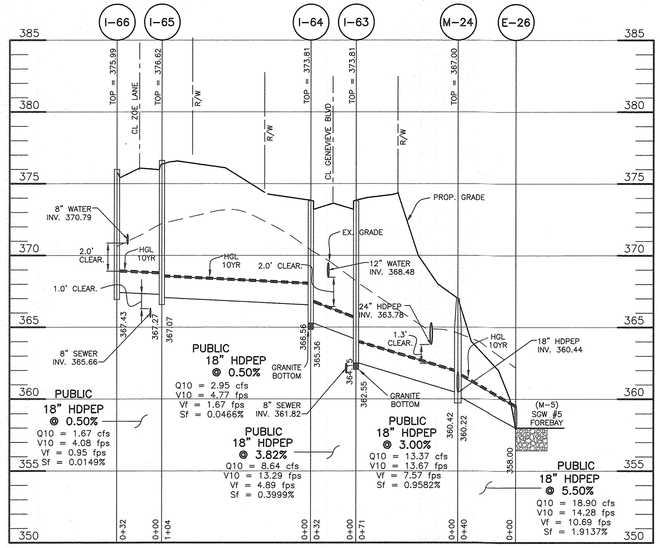
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 - HOWARD COUNTY, MARYLAND

STORM DRAIN PROFILES

DESIGN: DBT | DRAFT: DBT | DATE: AUGUST 30, 2021 | SCALE: AS SHOWN | BEI PROJECT NO. 2879 | SHEET 16 OF 52

F-21-044



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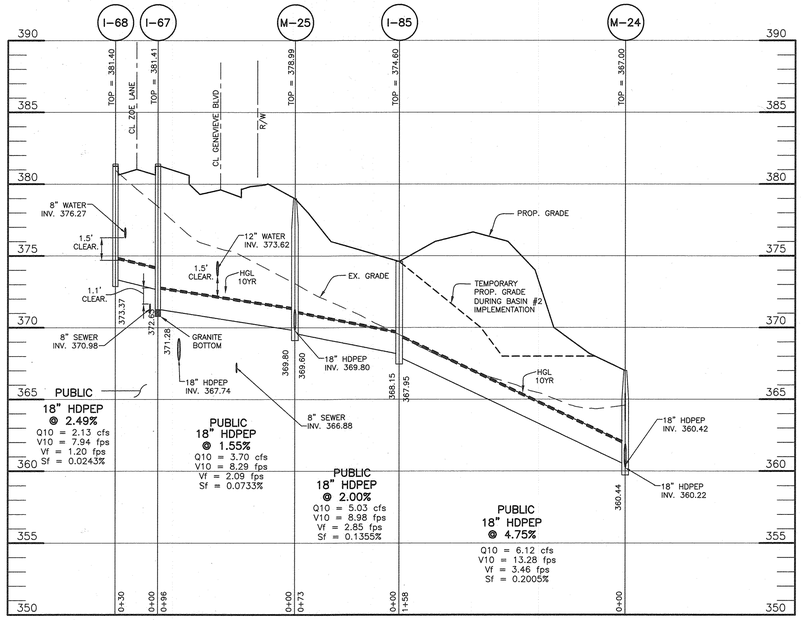

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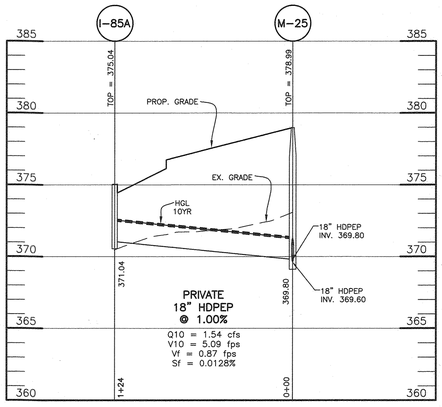

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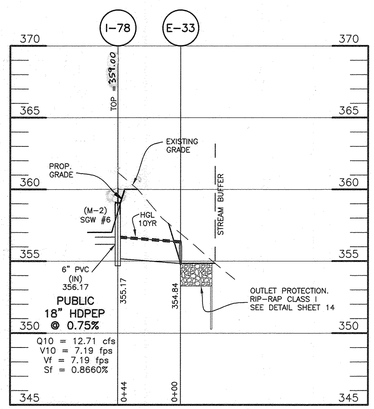

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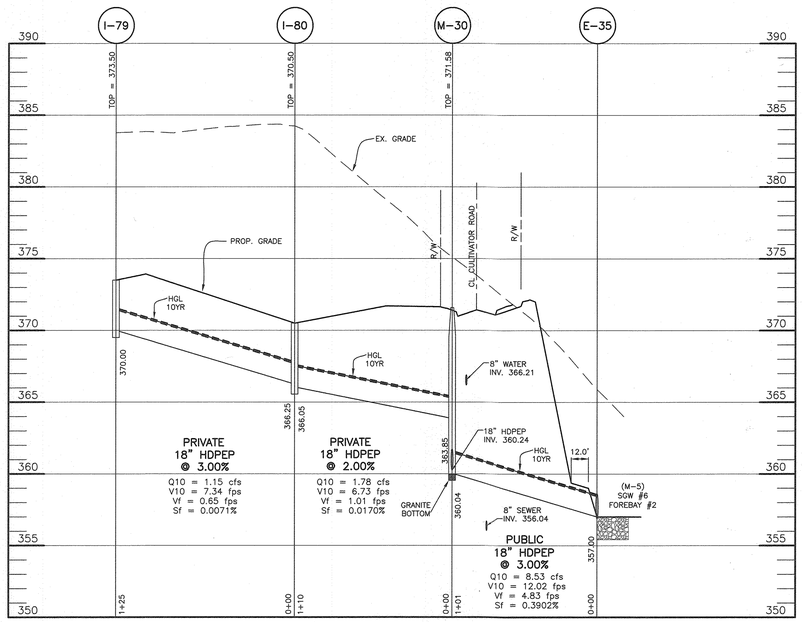

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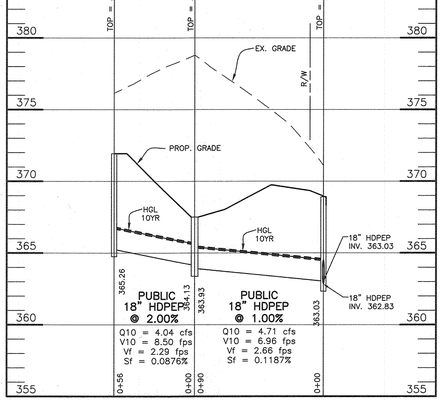

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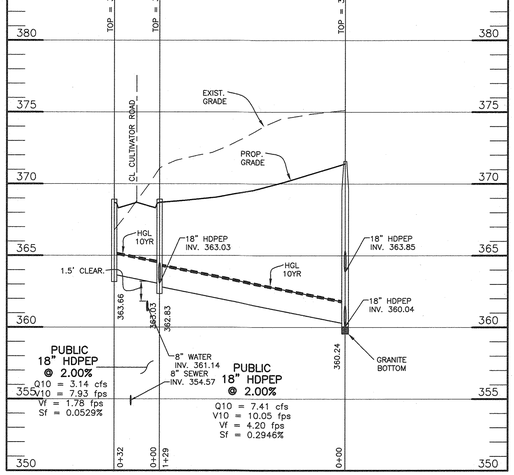

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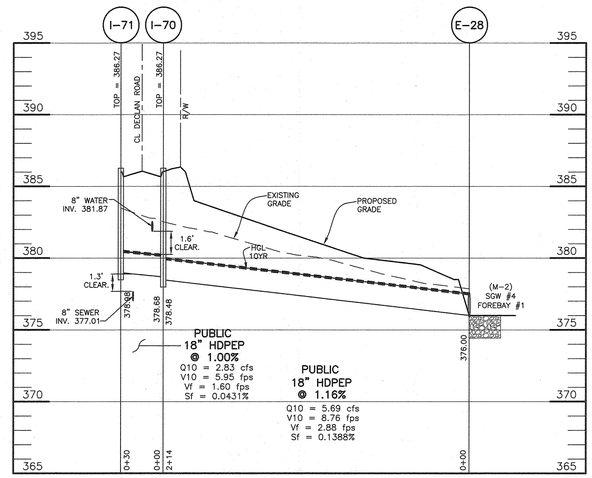

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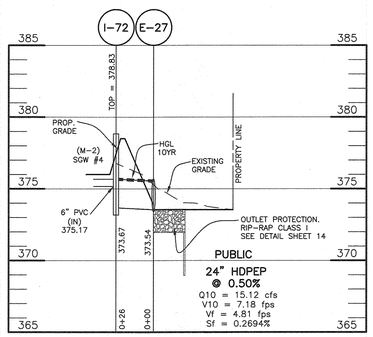

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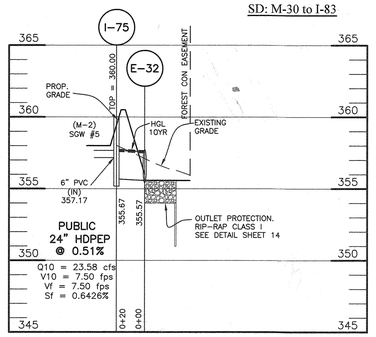

SD: E-32 to I-75

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MK — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/2/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION KSK — DATE 10-26-21

NO.	DATE	REVISION
1	4/20/2023	CORRECT TOP OF I-78 TO BE 359.00 IN PROFILE

BENCHMARK
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ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315 ▲ ELLICOTT CITY, MARYLAND 21043
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STATE OF MARYLAND — CHRISTOPHER A. WILGIS — 22390 — PROFESSIONAL ENGINEER — 9-2-21

OWNER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:
ESC WELLINGTON, L.C.
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WELLINGTON FARMS

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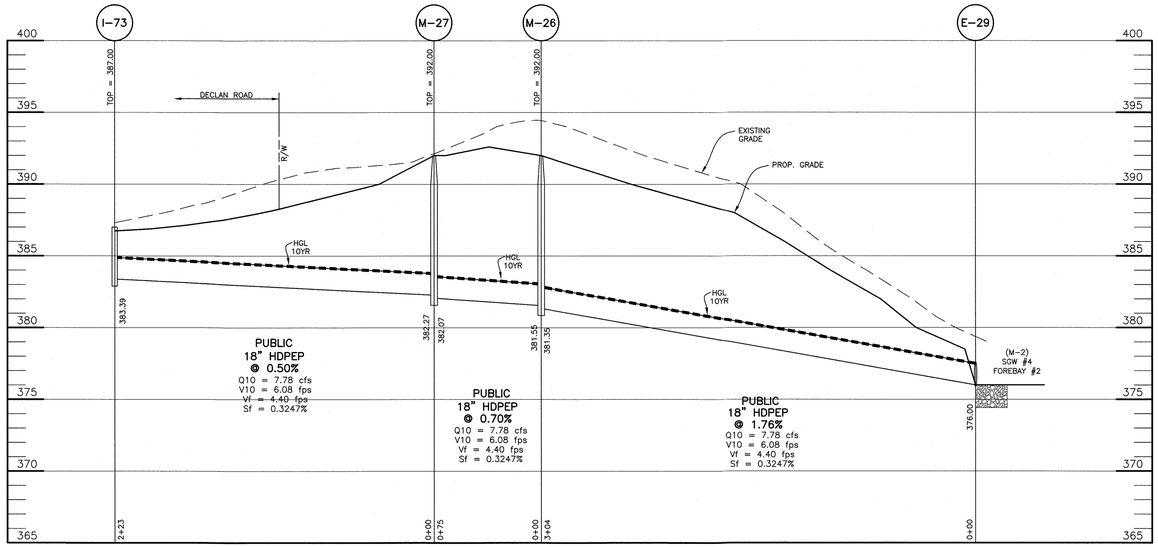
TAX MAP: 46 – GRID: 6 – PARCEL: 163
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 – HOWARD COUNTY, MARYLAND

STORM DRAIN PROFILES

DESIGN: DBT | DRAFT: DBT | DATE: AUGUST 30, 2021 | SCALE: AS SHOWN | BEI PROJECT NO. 2879 | SHEET 17 OF 52

F-21-044



SD: E-29 to I-73

ADS, Inc. Drainage Handbook *Specifications ♦ 1-36*

ADS FLARED END SECTION SPECIFICATION

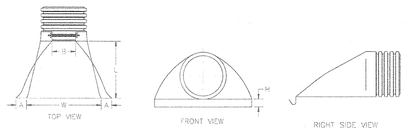
Scope
This specification describes 12- through 36-inch (300 to 900mm) ADS Flared End Sections for use in culvert and drainage outlet applications.

Requirements
The ADS Flared End Section shall be high density polyethylene meeting ASTM D3350 minimum cell classification 213320C; contact manufacturer for additional cell classification information. When provided, the metal threaded fastening rod shall be stainless steel.

Installation
Installation shall be in accordance with ADS installation instructions and with those issued by state or local authorities. Contact your local ADS representative or visit www.ads-pipe.com for the latest installation instructions.

	PIPE DIAMETER, in (mm)					
Diameter in (mm)	12 (300)	15 (375)	18 (450)	24 (600)	30 (750)	36 (900)
A in (mm)	6.5 (165)	6.5 (165)	7.5 (191)	7.5 (191)	7.5 (191)	7.5 (191)
B (max) in (mm)	10.0 (254)	10.0 (254)	15.0 (381)	18.0 (475)	22.0 (559)	25.0 (635)
H in (mm)	6.5 (165)	6.5 (165)	6.5 (165)	6.5 (165)	8.6 (218)	8.6 (218)
L in (mm)	25.0 (635)	25.0 (635)	32.0 (813)	36.0 (914)	58.0 (1473)	58.0 (1473)
W in (mm)	29.0 (737)	29.0 (737)	35.0 (889)	45.0 (1143)	63.0 (1600)	63.0 (1600)

*Product detail may differ slightly from actual product appearance



© ADS, Inc., January 2019

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APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/3/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.26.21

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STATE OF MARYLAND — CHRISTOPHER A. MALAGARI — 22390 — PROFESSIONAL ENGINEER

9-2-21

OWNER:
ESC WELLINGTON, L.C.
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ELLICOTT CITY, MARYLAND 21042
410-720-3021

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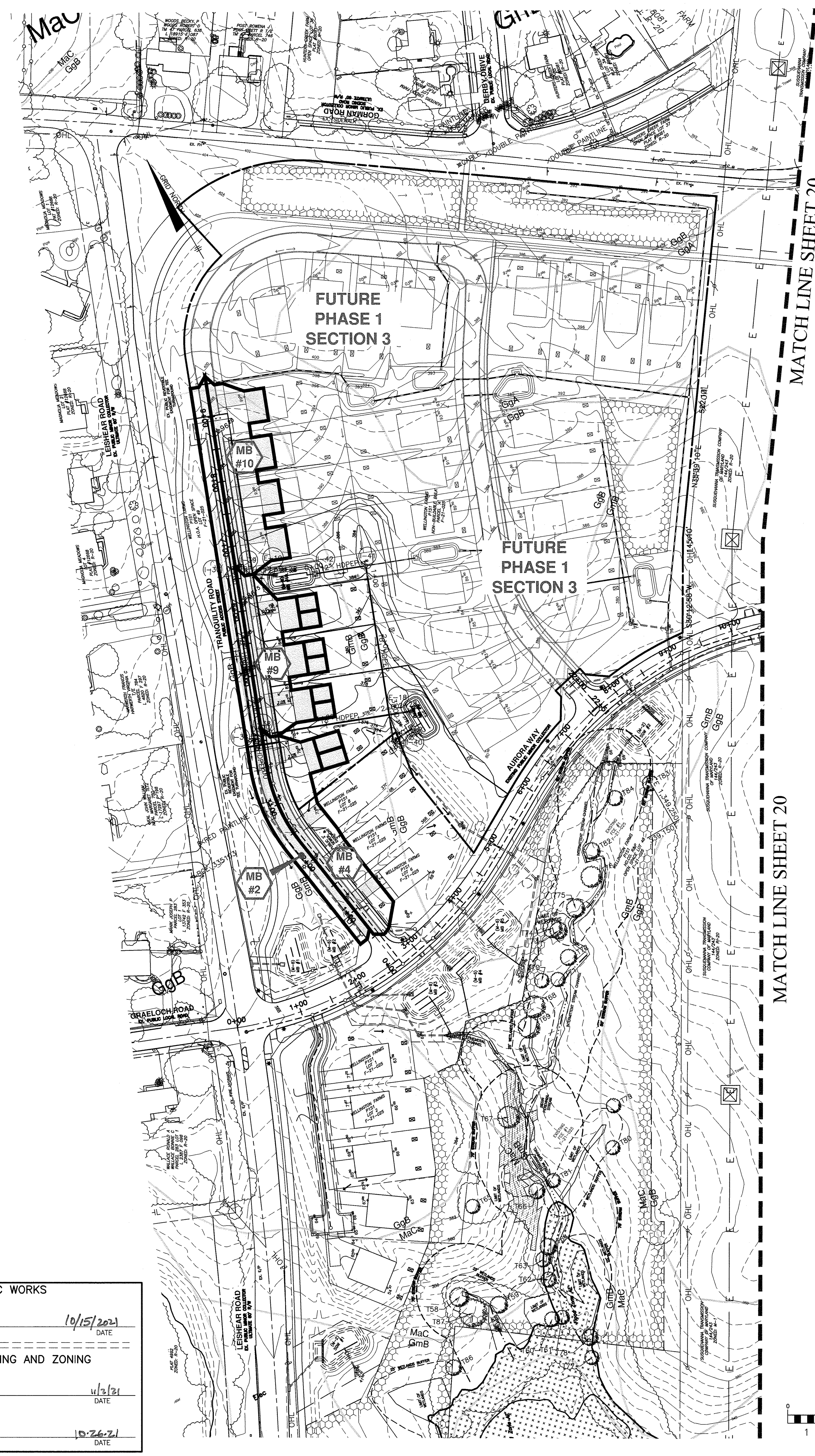
ELECTION DISTRICT NO. 6 – HOWARD COUNTY, MARYLAND

STORM DRAIN PROFILES

DATE: AUGUST 30, 2021		BEI PROJECT NO.	2879
DESIGN: DBT	DRAFT: DBT	SCALE: AS SHOWN	SHEET 18 OF 52

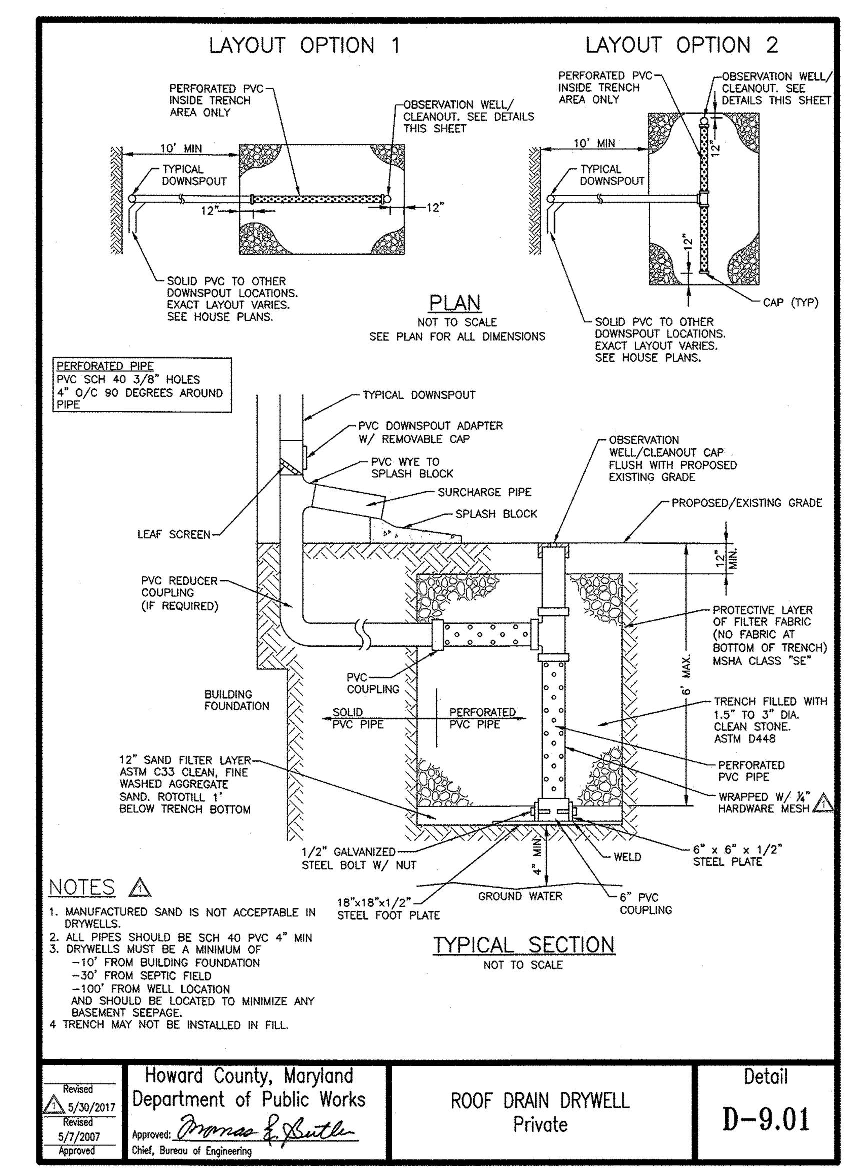
F-21-044



LEGEND

- DRAINAGE AREA DIVISION
- PROPOSED IMPERVIOUS SURFACES
- SOILS DELINEATION
- **MaC** SOILS TYPE

0 50 100 200
1 inch = 100 ft.



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

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.

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 insure compliance with operation and maintenance criteria.

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.

Dry Well Chart

Lot	Dry Well	Length (ft)	Width (ft)	Depth (ft)	Ground Elevation	Top of Storage Elevation	Bottom of Stone Elevation	Bottom of Sand Elevation
54	54A	12.0	6.0	4.0	374.50	373.50	369.50	368.50
	54B	12.0	6.0	4.0	374.50	373.50	369.50	368.50
55	55A	12.0	6.0	4.0	376.50	375.50	371.50	370.50
	55B	12.0	6.0	4.0	378.50	377.50	373.50	372.50
56	56A	12.0	6.0	4.0	379.00	378.00	374.00	373.00
	56B	12.0	6.0	4.0	380.00	379.00	375.00	374.00
57	57A	12.0	6.0	4.0	382.00	381.00	377.00	376.00
	57B	12.0	6.0	4.0	383.00	382.00	378.00	377.00
58	58A	10.0	5.0	4.0	394.50	393.50	389.50	388.50
	58B	10.0	5.0	4.0	395.00	394.00	390.00	389.00
59	59A	10.0	5.0	4.0	396.00	395.00	391.00	390.00
	59B	10.0	5.0	4.0	397.00	396.00	392.00	391.00
60	60A	10.0	5.0	4.0	397.50	396.50	392.50	391.50
	60B	10.0	5.0	4.0	397.50	396.50	392.50	391.50
70	70A	10.0	5.0	4.0	392.10	391.10	387.10	386.10
	70B	10.0	5.0	4.0	392.10	391.10	387.10	386.10
71	71A	10.0	5.0	4.0	391.00	390.00	386.00	385.00
	71B	10.0	5.0	4.0	391.00	390.00	386.00	385.00
72	72A	10.0	5.0	4.0	391.50	390.50	386.50	385.50
	72B	10.0	5.0	4.0	391.50	390.50	386.50	385.50
87	87A	10.0	5.0	4.0	383.50	382.50	378.50	377.50
	87B	10.0	5.0	4.0	383.50	382.50	378.50	377.50
88	88A	10.0	5.0	4.0	384.00	383.00	379.00	378.00
	88B	10.0	5.0	4.0	384.00	383.00	379.00	378.00
89	89A	10.0	5.0	4.0	385.50	384.50	380.50	379.50
	89B	10.0	5.0	4.0	385.50	384.50	380.50	379.50
90	90A	10.0	5.0	4.0	386.20	385.20	381.20	380.20
	90B	10.0	5.0	4.0	386.20	385.20	381.20	380.20
91	91A	10.0	5.0	4.0	388.00	387.00	383.00	382.00
	91B	10.0	5.0	4.0	388.00	387.00	383.00	382.00
92	92A	10.0	5.0	4.0	389.00	388.00	384.00	383.00
	92B	10.0	5.0	4.0	389.00	388.00	384.00	383.00
93	93A	10.0	5.0	4.0	389.70	388.70	384.70	383.70
	93B	10.0	5.0	4.0	389.70	388.70	384.70	383.70
94	94A	10.0	5.0	4.0	389.50	388.50	384.50	383.50
	94B	10.0	5.0	4.0	389.50	388.50	384.50	383.50
95	95A	10.0	5.0	4.0	390.00	389.00	385.00	384.00
	95B	10.0	5.0	4.0	390.00	389.00	385.00	384.00
96	96A	10.0	5.0	4.0	388.50	387.50	383.50	382.50
	96B	10.0	5.0	4.0	388.00	387.00	383.00	382.00
97	97A	10.0	5.0	4.0	386.50	385.50	381.50	380.50
	97B	10.0	5.0	4.0	386.00	385.00	381.00	380.00
98	98A	10.0	5.0	4.0	384.00	383.00	379.00	378.00
	98B	10.0	5.0	4.0	384.00	383.00	379.00	378.00
99	99A	10.0	5.0	4.0	382.50	381.50	377.50	376.50
	99B	10.0	5.0	4.0	381.00	380.00	376.00	375.00
110	110A	10.0	5.0	4.0	378.20	377.20	373.20	372.20
	110B	10.0	5.0	4.0	378.20	377.20	373.20	372.20
111	111A	10.0	5.0	4.0	377.00	376.00	372.00	371.00
	111B	10.0	5.0	4.0	377.00	376.00	372.00	371.00

MATERIALS & SPECIFICATIONS FOR DRY WELLS

MATERIAL	SPECIFICATION	SIZE	NOTES:
GEOTEXTILE (CLASS "C")		N/A	PE TYPE 1 NONWOVEN
GRAVEL	AASHTO M 43	1 1/2" TO 2 1/2"	
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; MINIMUM OF 2" OF GRAVEL OVER PIPES.
SAND	AASHTO M-6 OR ASTM-C-33	.02" TO .04"	SAND SUBSTITUTIONS SUCH AS DIABASE AND GRAYSTONE (AASHTO) #10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATED OR DOLOMITIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NT ROCK DUST CAN BE USED FOR SAND.

NOTE:
SEE COVER SHEETS FOR STORMWATER MANAGEMENT SUMMARY TABLES

SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND

SYMBOL	HYDRIC	HYDROLOGIC GROUP	NAME	k-VALUE	ERODIBLE
CeB		B	CHILLUM LOAM, 2 TO 5 PERCENT SLOPES	0.37	NO
GgA		B	GLENELG LOAM, 0 TO 3 PERCENT SLOPES	0.20	NO
GgB		B	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	0.20	NO
GmB*	YES	C	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	0.37	YES
GmC		C	GLENVILLE SILT LOAM, 8 TO 15 PERCENT SLOPES	0.37	NO
GnB*	YES	C	GLENVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.37/0.32	NO
MaC		B	MANOR LOAM, 8 TO 15 PERCENT SLOPES	0.24	YES
MaD		B	MANOR LOAM, 15 TO 25 PERCENT SLOPES	0.24	YES
RsB		C	RUSSETT FINE SANDY LOAM, 2 TO 5 PERCENT SLOPES	0.24	NO
RuB		C	RUSSETT AND BELTSVILLE SOIL, 2 TO 5 PERCENT SLOPES	0.24/0.37	NO
RuC		C	RUSSETT AND BELTSVILLE SOIL, 5 TO 10 PERCENT SLOPES	0.24/0.37	NO
SaC		B	SASSAFRAS LOAM, 5 TO 10 PERCENT SLOPE	0.24	NO
SrD		B	SASSAFRAS AND CROOM SOIL, 10 TO 15 PERCENT SLOPES	0.37/0.28	YES
W			WATER	0.00	

HSCD Newsletter dated April, 2013 defines erodible soils as those soils with a slope greater than 15 percent or those soils with a soil erodibility factor K greater than 0.35 and with a slope greater than 5%.

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MK — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/3/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION KSK — DATE 10-26-21

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
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. 22390, Expiration Date: 6-30-2023.

STATE OF MARYLAND — CHRISTOPHER A. MALAGARI — 22390 — PROFESSIONAL ENGINEER — 9-2-21

OWNER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

WELLINGTON FARMS

Phase 1 Section 2
Lots 54 thru 132; Open Space Lots 133 thru 143; Parcel 'A'; Non-Buildable Bulk Parcels 'C', 'D', and 'E'
(A Resubdivision of Non-Buildable Bulk Parcels 'A' and 'B' previously recorded under F-21-025)

TAX MAP: 46 – GRID: 6 – PARCEL: 163
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 – HOWARD COUNTY, MARYLAND

STORMWATER MANAGEMENT DRAINAGE AREA MAP AND DRY WELLS DETAILS

DATE: AUGUST 30, 2021	BEI PROJECT NO. 2879
DESIGN: DBT / DRAFT: DBT / SCALE: AS SHOWN	SHEET 19 OF 52

F-21-044

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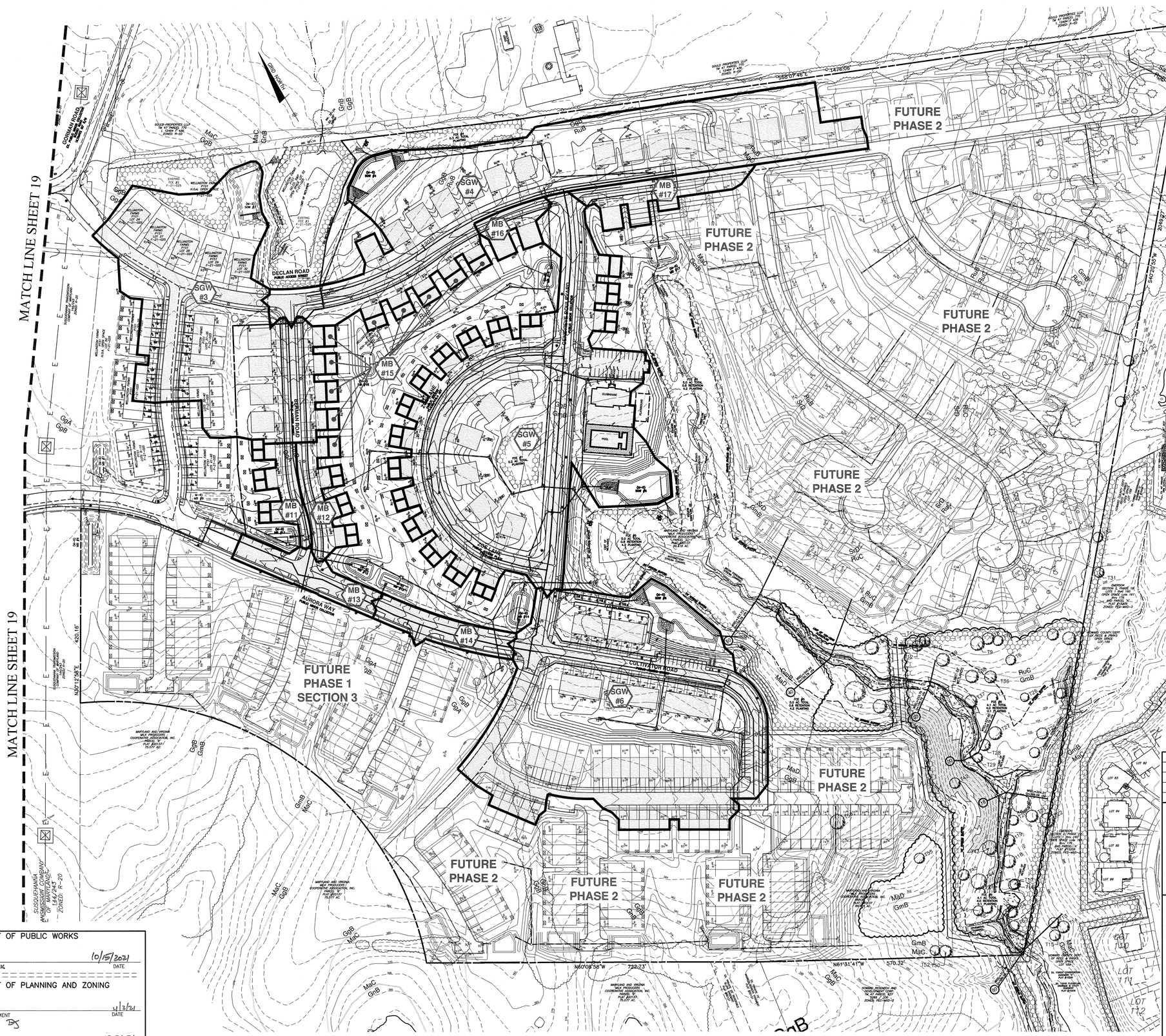

LEGEND

- DRAINAGE AREA DIVISION
- PROPOSED IMPERVIOUS SURFACES
- SOILS DELINEATION
- **MaC** SOILS TYPE

NOTE:
SEE COVER SHEETS FOR STORMWATER MANAGEMENT SUMMARY TABLES

0 50 100 200
1 inch = 100 ft.

NO.	DATE	REVISION

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STATE OF MARYLAND
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22390
PROFESSIONAL ENGINEER
8-2-21

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TAX MAP: 46 – GRID: 6 – PARCEL: 163
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 – HOWARD COUNTY, MARYLAND

STORMWATER MANAGEMENT DRAINAGE AREA MAP

DATE: AUGUST 30, 2021		BEI PROJECT NO.	2879
DESIGN: DBT	DRAFT: DBT	SCALE: AS SHOWN	SHEET 20 OF 52

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MK — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT DJ — DATE 11/2/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10-26-21

F-21-044

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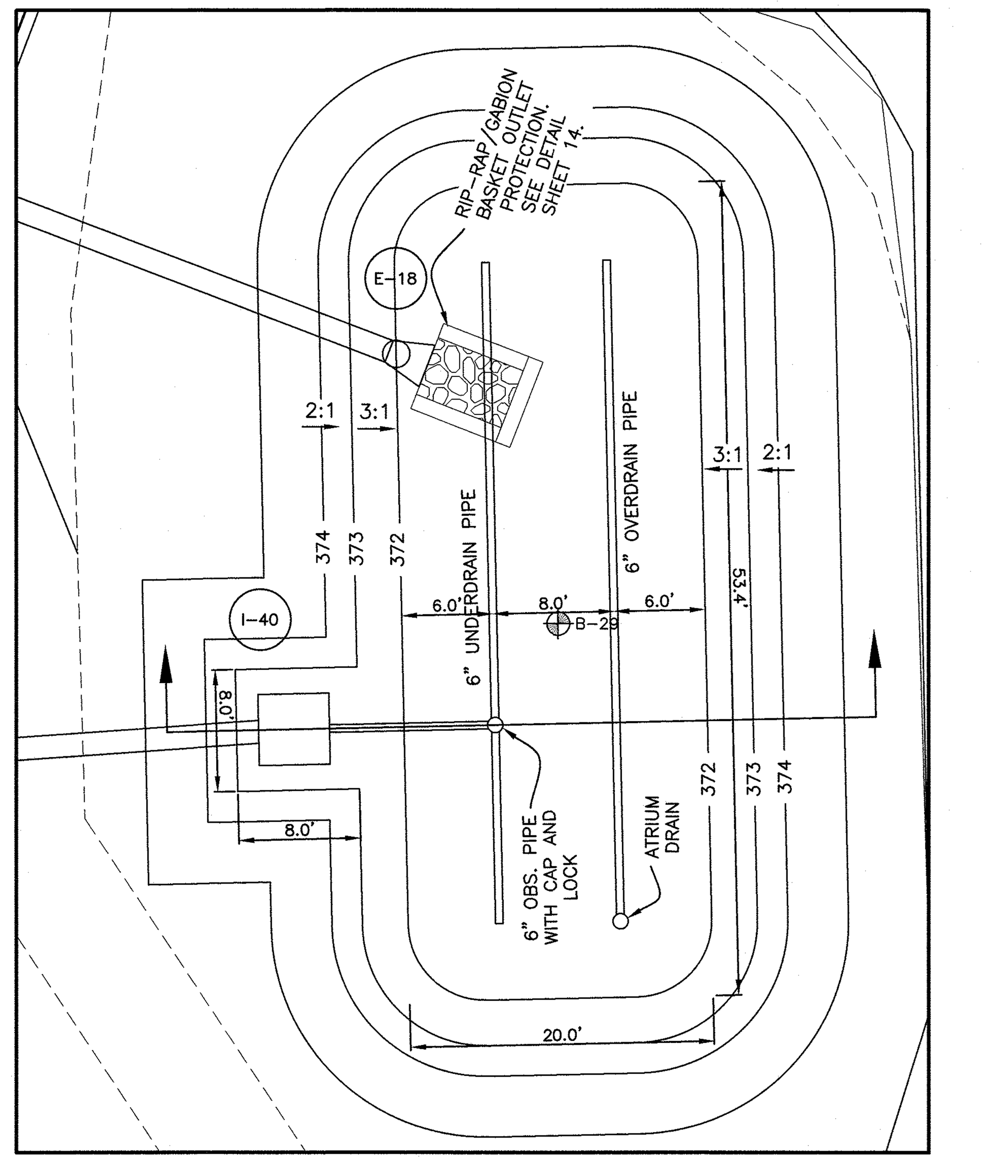
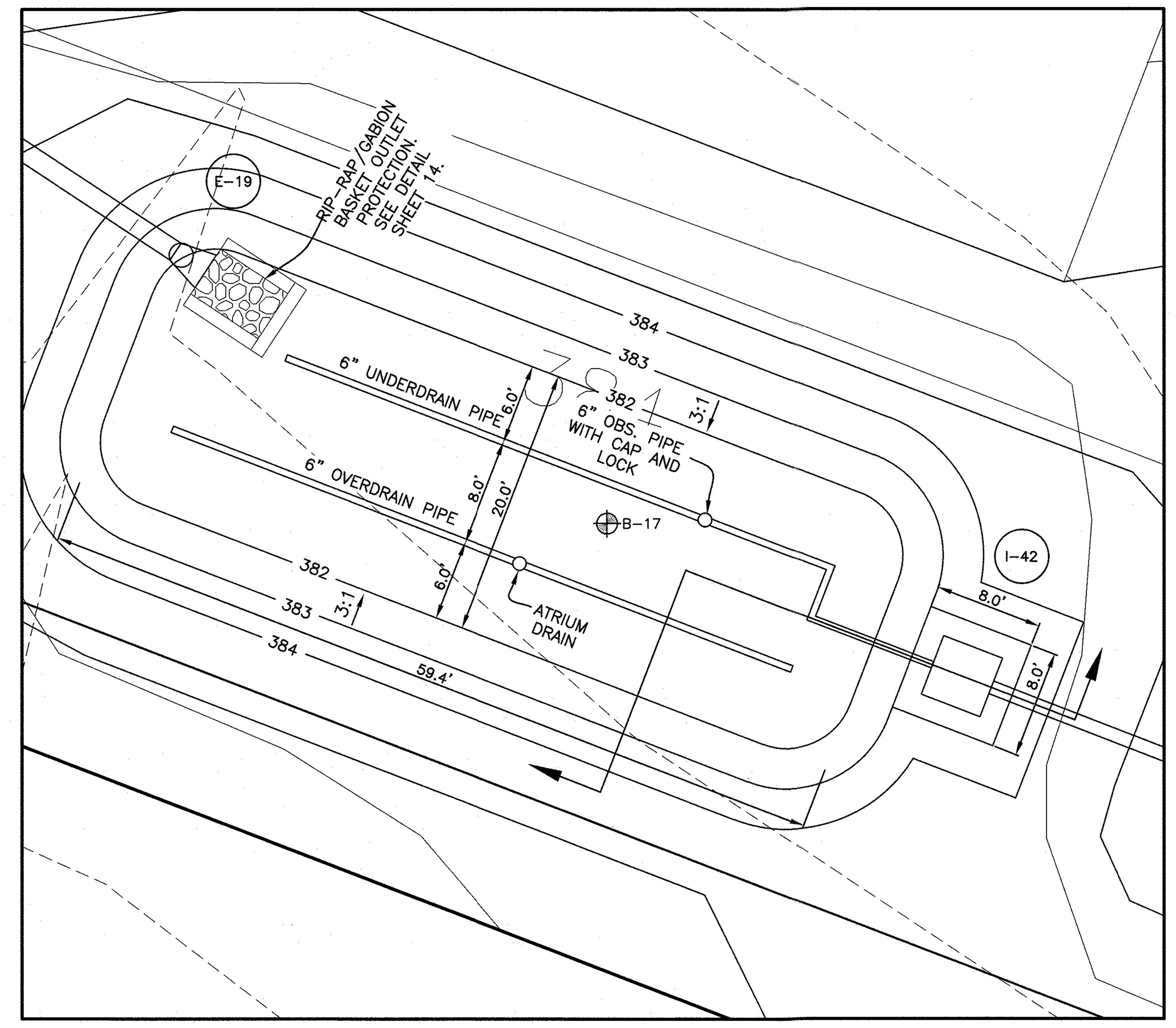


MICRO BIO-RETENTION #9

1 inch = 10 ft.



MICRO BIO-RETENTION #10

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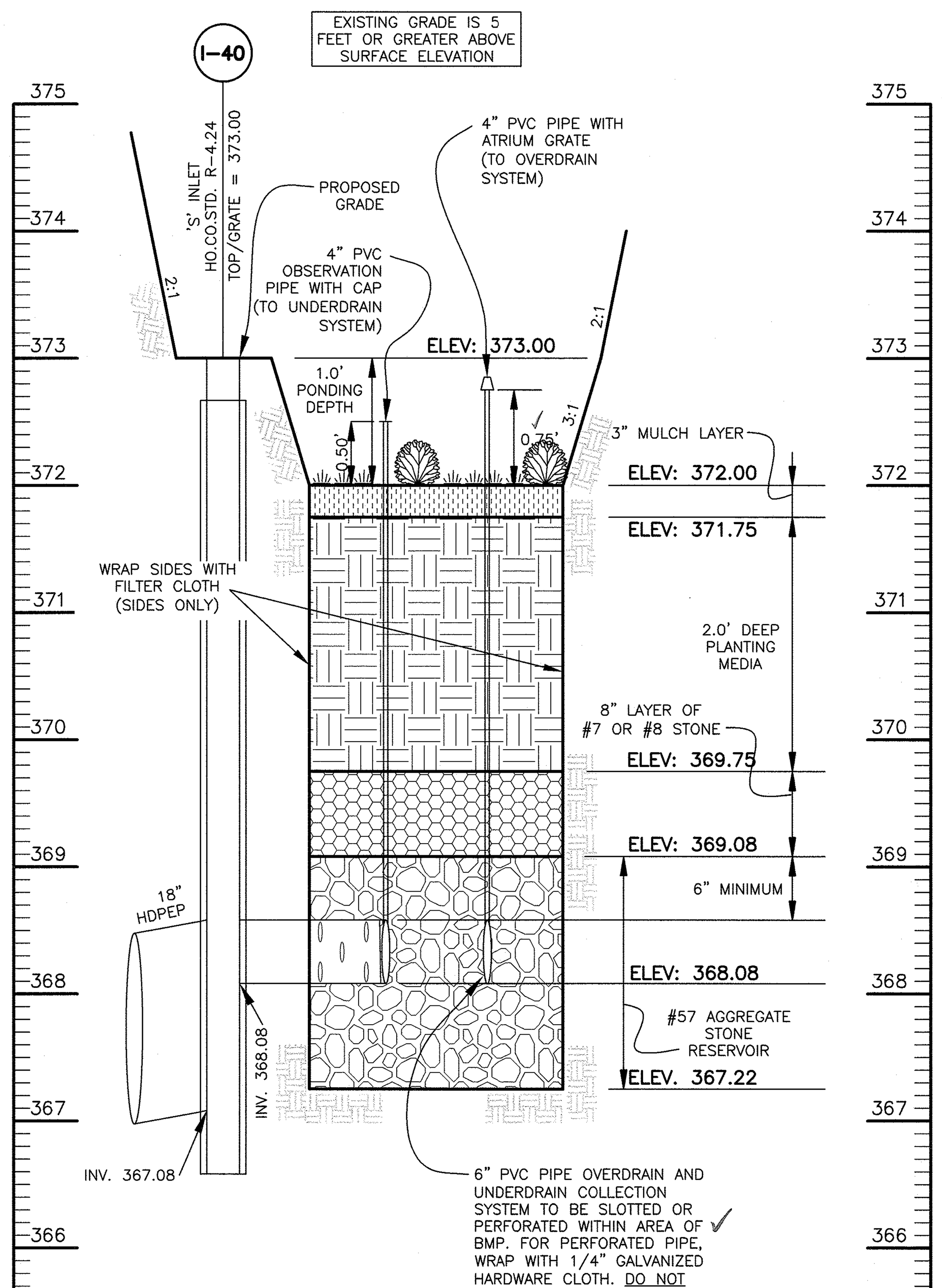
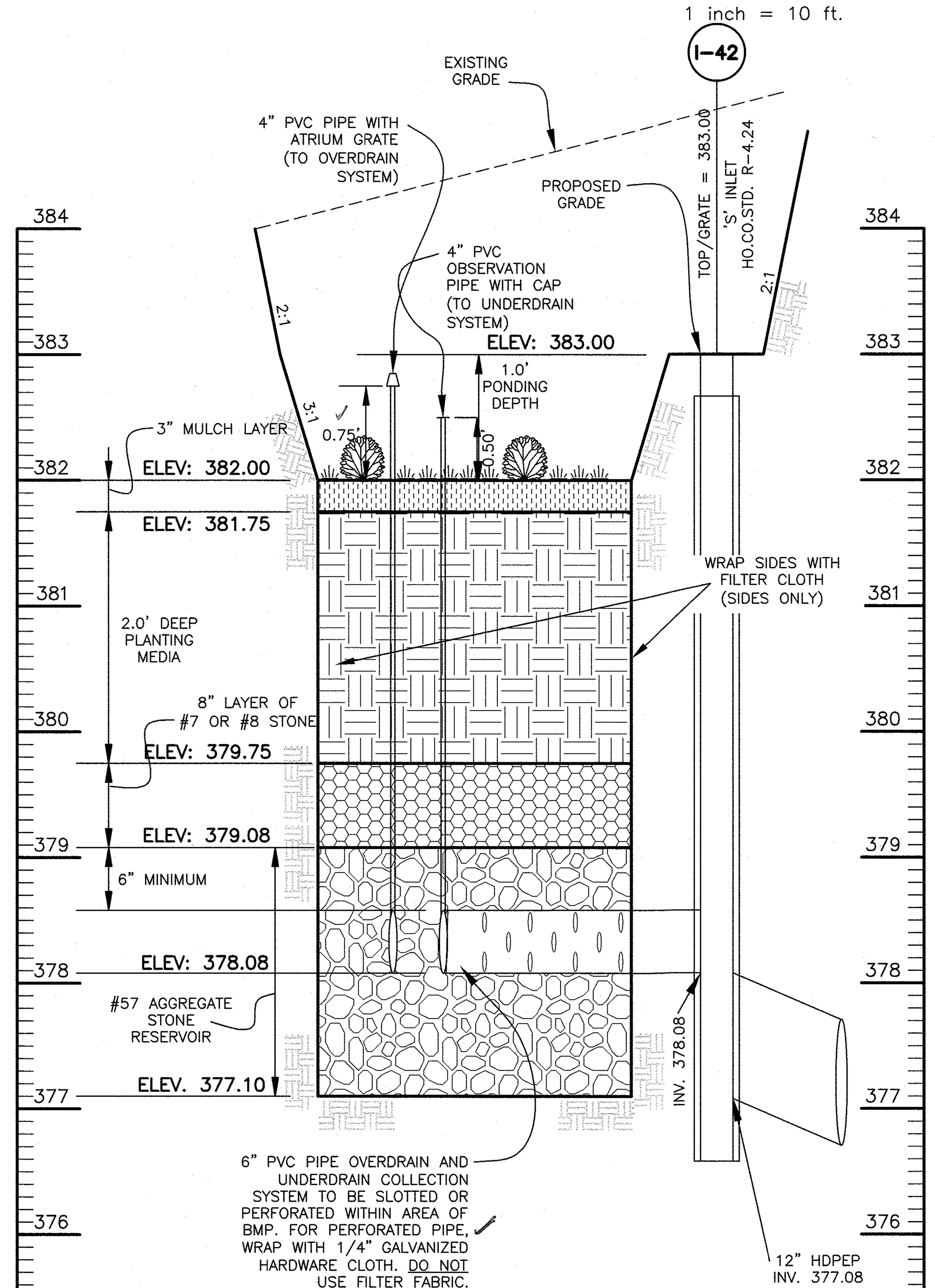


(M-6) MICRO BIO-RETENTION #9

SCALE: 1"=10'HORIZ., 1"=1' VERT.



(M-6) MICRO BIO-RETENTION #10

SCALE: 1"=10'HORIZ., 1"=1' VERT.

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MK — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/3/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION KSA — DATE 10.26.21

(M-6) Micro Bio-Retention Landscaping Chart

PLANT NAME	COMMON NAME	Surface Area (sf) / TYPE	SIZE	MB #9	MB #10	MB #11	MB #12	MB #13
		Surface Area (sf) →		1047	1167	892	989	1542
		TYPE	SIZE	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY
Cornus Amomum	Silky Dogwood	deciduous shrub	18-24" ht. #3 CAN	10	12	9	10	15
Echinacea Purpurea	Purple Coneflower	perennial	2 gal. container	65	73	56	62	96
Juncus Effusus	Common Rush	perennial	1 qt.	196	219	167	185	289

(M-6) Micro Bio-Retention Landscaping Chart

PLANT NAME	COMMON NAME	Surface Area (sf) / TYPE	SIZE	MB #14	MB #15	MB #16	MB #17	
		Surface Area (sf) →		1421	1021	818	1643	
		TYPE	SIZE	QUANTITY	QUANTITY	QUANTITY	QUANTITY	
Cornus Amomum	Silky Dogwood	deciduous shrub	18-24" ht. #3 CAN	14	10	8	16	
Echinacea Purpurea	Purple Coneflower	perennial	2 gal. container	89	64	51	103	
Juncus Effusus	Common Rush	perennial	1 qt.	266	191	153	308	

Common Rush to be planted every 4' OCEW and make up 75% of surface area
Purple Coneflower to be planted every 4' OCEW and make up 25% of surface area
Silky Dogwood to be planted randomly throughout surface area.

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

Table B.4.1 Materials Specifications for Micro-Bioretention, Rain Gardens & Landscape Infiltration-

Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil [2' to 4' 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		aged 6 months, minimum; no pine or wood chips
Pea gravel diaphragm	pea gravel: ASTM-D-448	NO. 8 OR NO. 9 (1/8" TO 3/8")	
Curtain drain	ornamental stone: washed cobbles	stone: 2" to 5"	
Geotextile		n/a	PE Type 1 nonwoven
Gravel (underdrains and infiltration berms)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (3/8" to 3/4")	
Underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	Slotted or perforated pipe; 3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes. Perforated pipe shall be wrapped with ¼-inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3; f'_c = 3500 psi @ 28 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) *not using previously approved State or local standards* requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 350.R/89; vertical loading [H-10 or H-20]; allowable horizontal loading (based on soil pressures); and analysis of potential cracking
Sand	AASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone (**AASHTO**) #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

B.4.7 Supp. 1

OPERATION AND MAINTENANCE SCHEDULE FOR PRVATELY OWNED AND JOINTLY MAINTAINED MICRO BIO-RETENTION (M-6)

Routine Maintenance (By HOA):

1. 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. Top and side slopes of the embankment shall be mowed a minimum of two (2) times per year, once in June and once in September. Other side slopes and maintenance access shall be mowed as needed.

3. Under drains, feeders, plantings, observation well, pipe outfall, or other items shall be inspected annually and after major storms.

4. Debris/litter and sediment shall be removed during regular mowing operations and as needed.

5. Keep annual maintenance logs/records for County inspection.

Non-Routine Maintenance (By County):

1. County shall be responsible for the drain pipes and outfall structures adjacent to a public road. The components shall be inspected during routine maintenance operations.

OPERATION AND MAINTENANCE SCHEDULE FOR PRVATELY OWNED AND PRIVATELY MAINTAINED MICRO BIO-RETENTION (M-6)

Routine Maintenance (By HOA):

1. 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. Top and side slopes of the embankment shall be mowed a minimum of two (2) times per year, once in June and once in September. Other side slopes and maintenance access shall be mowed as needed.

3. Under drains, feeders, plantings, observation well, pipe outfall, or other items shall be inspected annually and after major storms.

4. Debris/litter and sediment shall be removed during regular mowing operations and as needed.

5. Keep annual maintenance logs/records for County inspection.

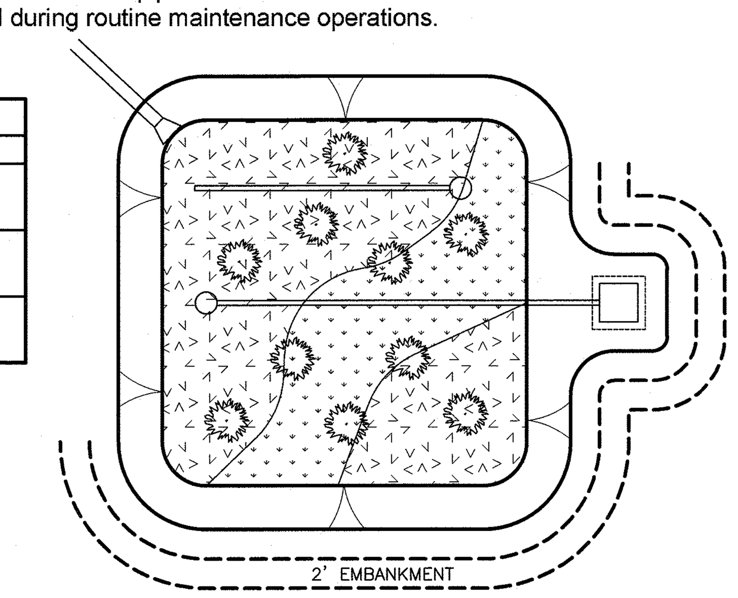
Non-Routine Maintenance (By HOA):

1. HOA shall be responsible for the drain pipes and outfall structures. The components shall be inspected during routine maintenance operations.

PLANTING LEGEND

SYMBOL	NAME
	SILKY DOGWOOD
	PURPLE CONEFLOWER
	COMMON RUSH

NOTE:
THIS DETAIL IS A SCHEMATIC DETAIL. ACTUAL LOCATION OF ALL PLANTINGS TO BE DETERMINED BY THE CONTRACTOR DURING INSTALLTION.



SCHEMATIC PLANTING DETAIL FOR (M-6) MICRO BIO-RETETNION PRACTICES

NOT TO SCALE

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 ⅜" 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 (⅛" to ⅜" 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

NO.	DATE	REVISION

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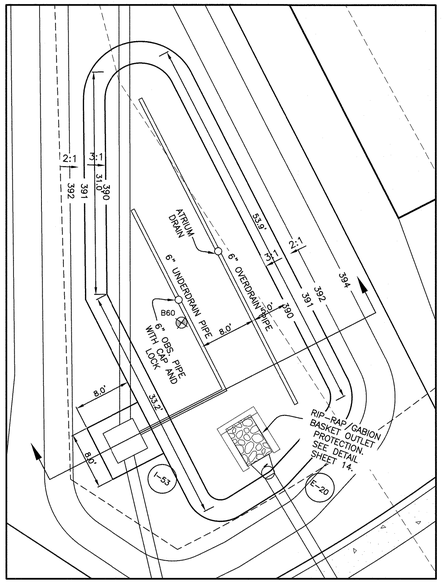
ELECTION DISTRICT NO. 6 – HOWARD COUNTY, MARYLAND

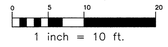
STORMWATER MANAGEMENT DETAILS

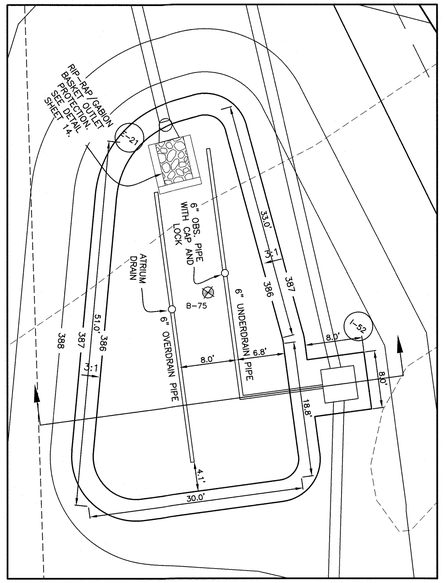
DESIGN: DBT | DRAFT: DBT | DATE: AUGUST 30, 2021 | SCALE: AS SHOWN | BEI PROJECT NO. 2879 | SHEET 21 OF 52

F-21-044



MICRO BIO-RETENTION #11





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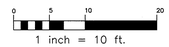
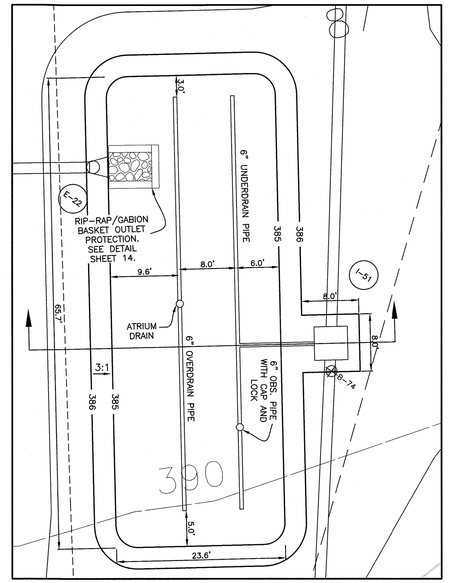
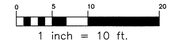
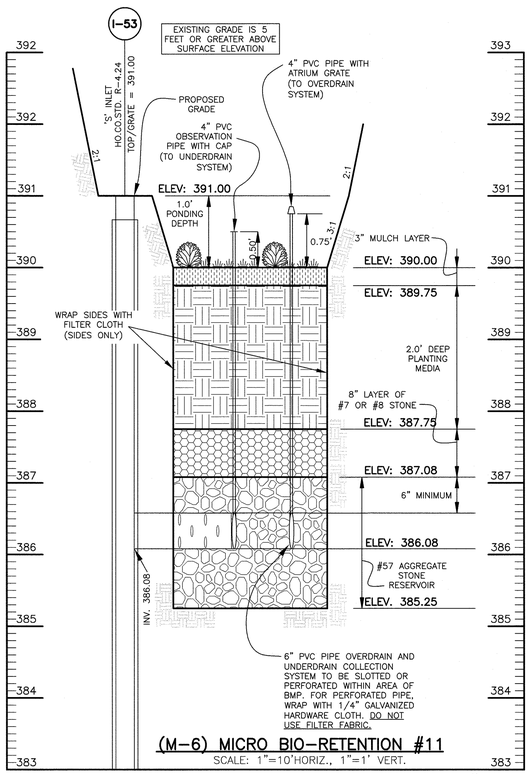




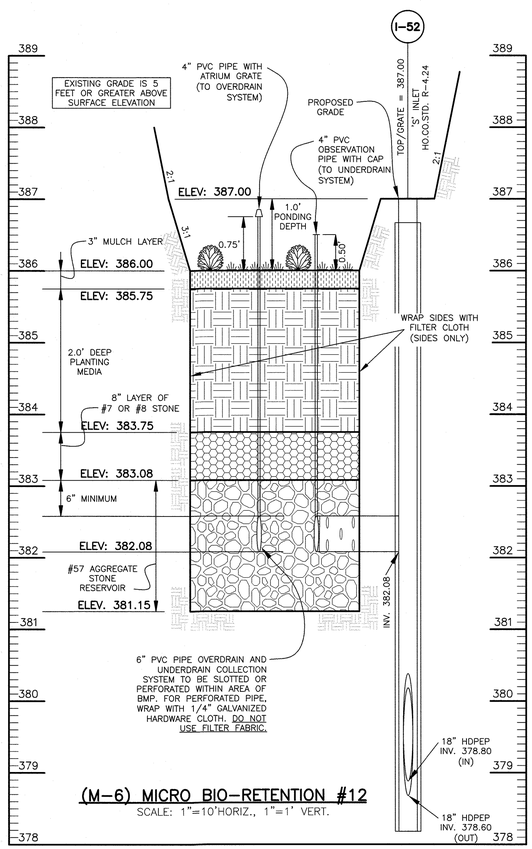
MICRO BIO-RETENTION #13





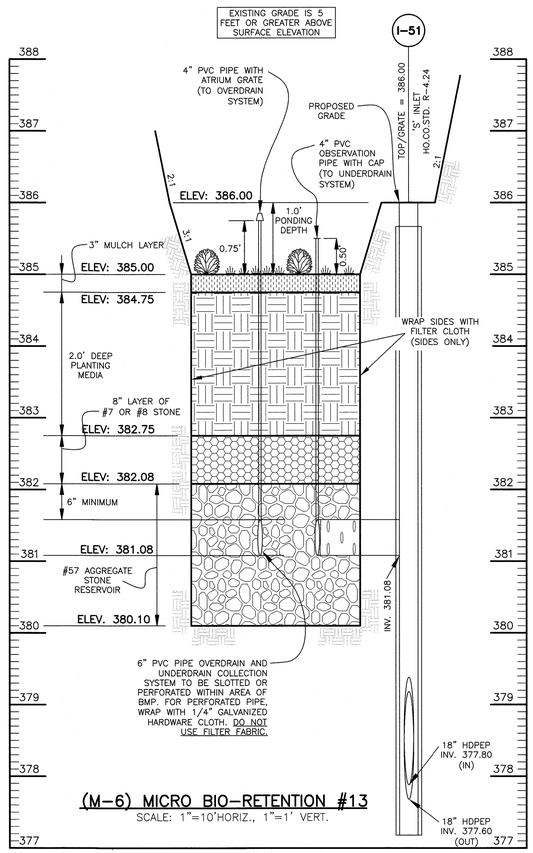
(M-6) MICRO BIO-RETENTION #11

SCALE: 1"=10'HORIZ., 1"=1' VERT.



(M-6) MICRO BIO-RETENTION #12

SCALE: 1"=10'HORIZ., 1"=1' VERT.



(M-6) MICRO BIO-RETENTION #13

SCALE: 1"=10'HORIZ., 1"=1' VERT.

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MK — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/2/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION MSR — DATE 10-26-21

NOTE:
SEE SHEET 21 FOR M-6 PLANTINGS INFORMATION

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
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. 22390, Expiration Date: 6-30-2023.

STATE OF MARYLAND — CHRISTOPHER M. MAHONEY — 22390 — PROFESSIONAL ENGINEER — 9-3-21

OWNER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

WELLINGTON FARMS

Phase 1 Section 2

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(A Resubdivision of Non-Buildable Bulk Parcels 'A' and 'B' previously recorded under F-21-025)

TAX MAP: 46 – GRID: 6 – PARCEL: 163
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 – HOWARD COUNTY, MARYLAND

STORMWATER MANAGEMENT DETAILS

DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 30, 2021	BEI PROJECT NO. 2879
		SCALE: AS SHOWN	SHEET 22 OF 52

F-21-044

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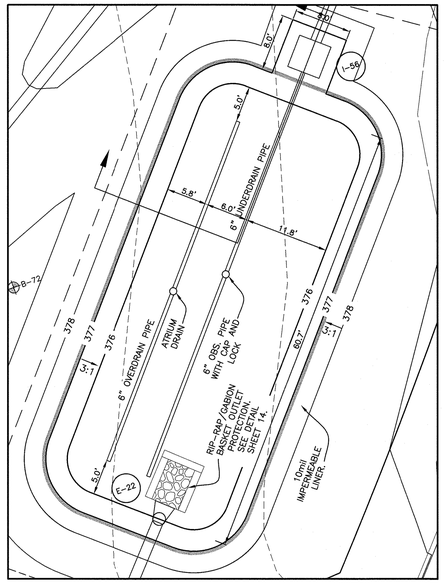
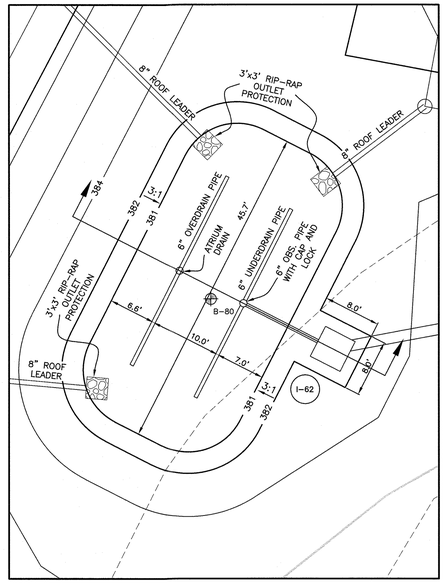


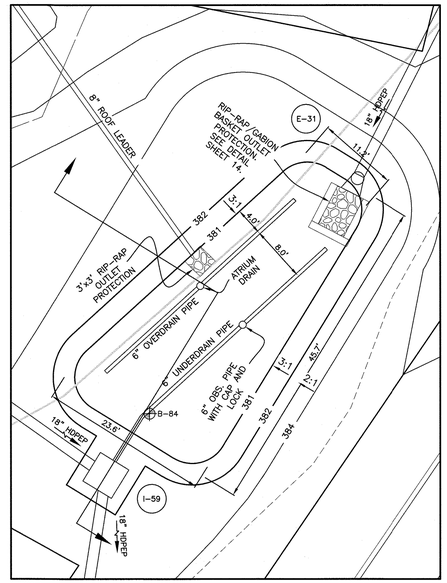
MICRO BIO-RETENTION #14

0 5 10 20
1 inch = 10 ft.



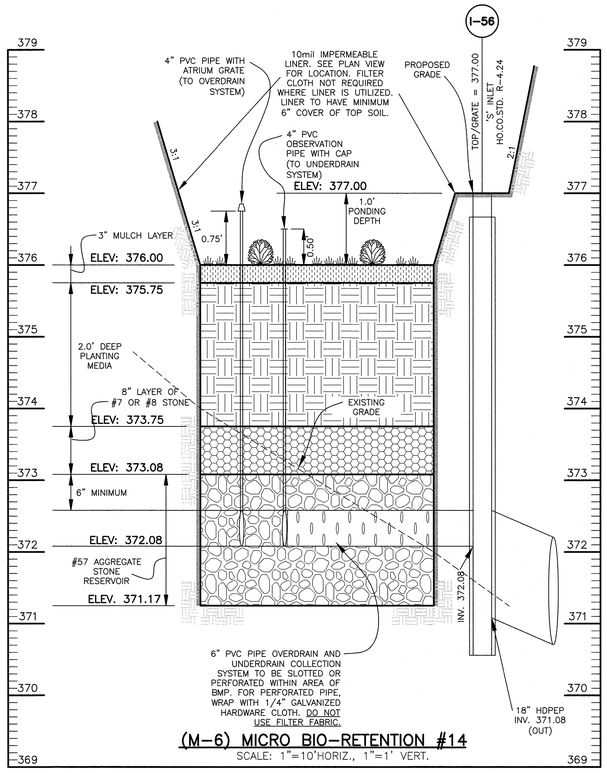
MICRO BIO-RETENTION #15

0 5 10 20
1 inch = 10 ft.



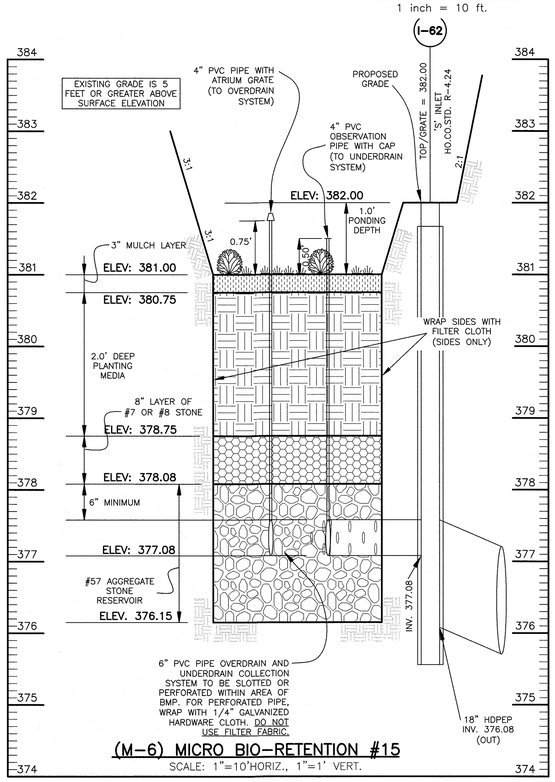
MICRO BIO-RETENTION #16

0 5 10 20
1 inch = 10 ft.



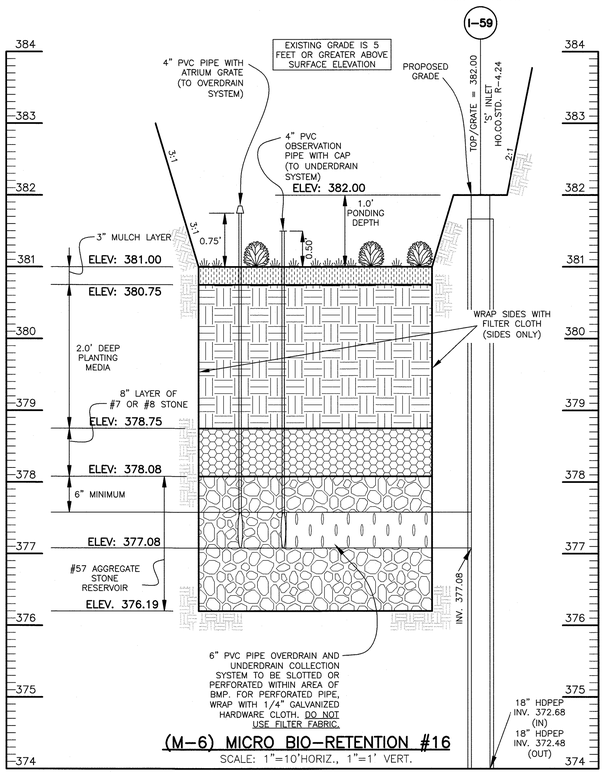
(M-6) MICRO BIO-RETENTION #14

SCALE: 1"=10'HORIZ., 1"=1' VERT.



(M-6) MICRO BIO-RETENTION #15

SCALE: 1"=10'HORIZ., 1"=1' VERT.



(M-6) MICRO BIO-RETENTION #16

SCALE: 1"=10'HORIZ., 1"=1' VERT.

NOTE:
SEE COVER SHEETS FOR STORMWATER MANAGEMENT SUMMARY TABLES

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/3/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.26.21

NO.	DATE	REVISION

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. 22390, Expiration Date: 9-30-2023.

STATE OF MARYLAND — CHRISTOPHER B. MUDD — 22390 — PROFESSIONAL ENGINEER

9-2-21

OWNER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

WELLINGTON FARMS

Phase 1 Section 2
Lots 54 thru 132; Open Space Lots 133 thru 143; Parcel 'A'; Non-Buildable Bulk Parcels 'C', 'D', and 'E'
(A Resubdivision of Non-Buildable Bulk Parcels 'A' and 'B' previously recorded under F-21-025)

TAX MAP: 46 - GRID: 6 - PARCEL: 163
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 - HOWARD COUNTY, MARYLAND

STORMWATER MANAGEMENT DETAILS

DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 30, 2021	BEI PROJECT NO. 2879
		SCALE: AS SHOWN	SHEET 23 OF 52

F-21-044

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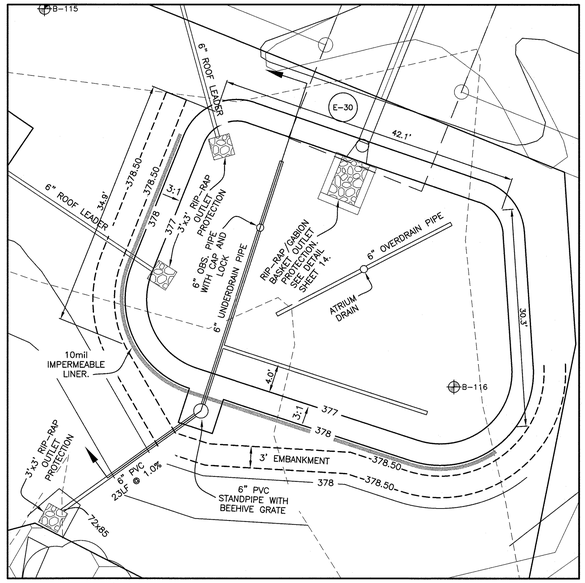
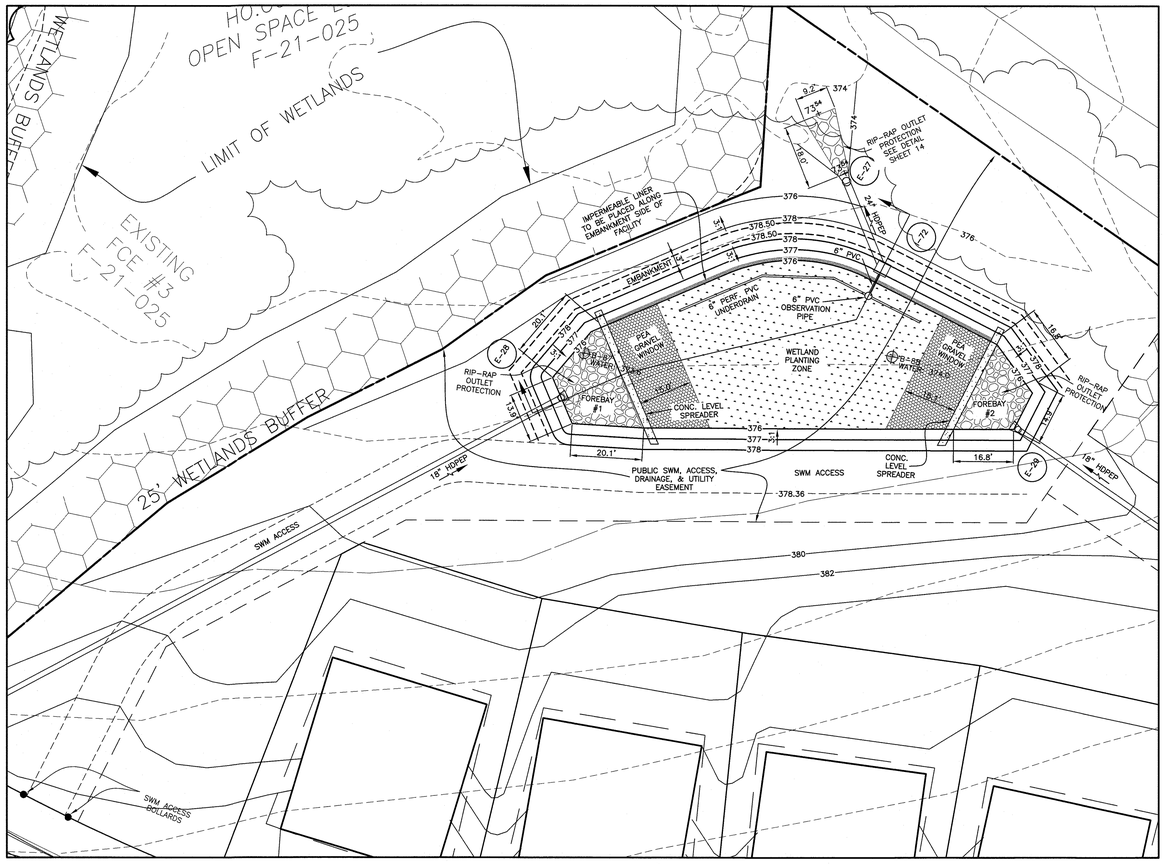


MICRO BIO-RETENTION #17

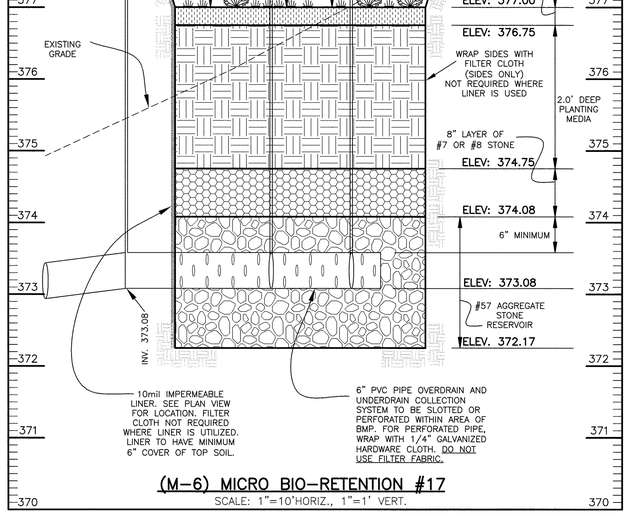
1 inch = 10 ft.



SUBMERGED GRAVEL WETLANDS #4

Scale: 1"=20'

1 inch = 10 ft.



(M-6) MICRO BIO-RETENTION #17

SCALE: 1"=10'HORIZ., 1"=1' VERT.

APPROVED: DEPARTMENT OF PUBLIC WORKS

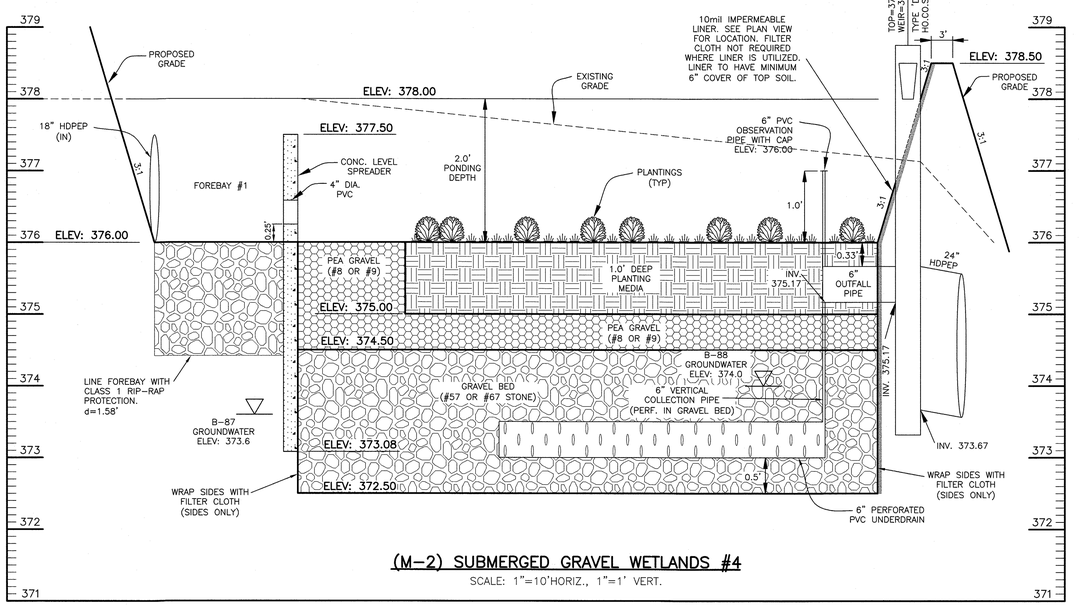
CHIEF, BUREAU OF HIGHWAYS — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/2/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10-26-21

NOTE:
SEE SHEET 21 FOR M-6 PLANTINGS INFORMATION



(M-2) SUBMERGED GRAVEL WETLANDS #4

SCALE: 1"=10'HORIZ., 1"=1' VERT.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND JOINTLY MAINTAINED (M-2) SUBMERGED GRAVEL WETLANDS

Routine Maintenance (By HOA):

1. During the first year of operation the owner shall inspect the facility after every heavy storm and replace vegetation as needed.

2. The owner shall remove sediment accumulated in the pretreatment areas as needed.

3. Signs of uneven flow within the wetlands may mean that the gravel or underdrain is clogged. The gravel or underdrain shall be removed, cleaned, and replaced, as needed.

4. The owner shall ensure a dense stand of wetland vegetation is maintained through the life of the facility and replace vegetation as needed.

5. The owner shall ensure the inlets and outlets to each gravel wetland cell are free from debris.

6. The owner shall repair erosion at inflow points and ensure flow splitters are functional to prevent storm water from bypassing the facility.

Non-Routine Maintenance (By County):

1. County shall be responsible for the drain pipes and outfall structures adjacent to a public road. The components shall be inspected during routine maintenance operations.

(M-2) Submerged Gravel Wetlands Landscaping Chart

		Surface Area (sf) →		SGW #4 3039	SGW #5 4000	SGW #6 4838
PLANT NAME	COMMON NAME	TYPE	SIZE	QUANTITY	QUANTITY	QUANTITY
Ranunculus Subrigidus	Pond Buttercup	perennial	1 qt.	71	93	113
Phlox Maculata	Meadow Phlox	perennial	1 qt.	51	67	81
Lobelia Cardinalis	Cardinal Flower	perennial	1 qt.	81	107	129
Salix Sericea	Silky Willow	tree	18-24" ht. #3 CAN	15	20	24
Viburnum Nudum	Viburnum, Possum-Haw	shrub	18-24" ht.	30	40	48

NO.	DATE	REVISION

BENCHMARK
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STATE OF MARYLAND — CHRISTOPHER M. MARTIN — 22390 — PROFESSIONAL ENGINEER

10-26-21

OWNER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

WELLINGTON FARMS

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(A Resubdivision of Non-Buildable Bulk Parcels 'A' and 'B' previously recorded under F-21-025)

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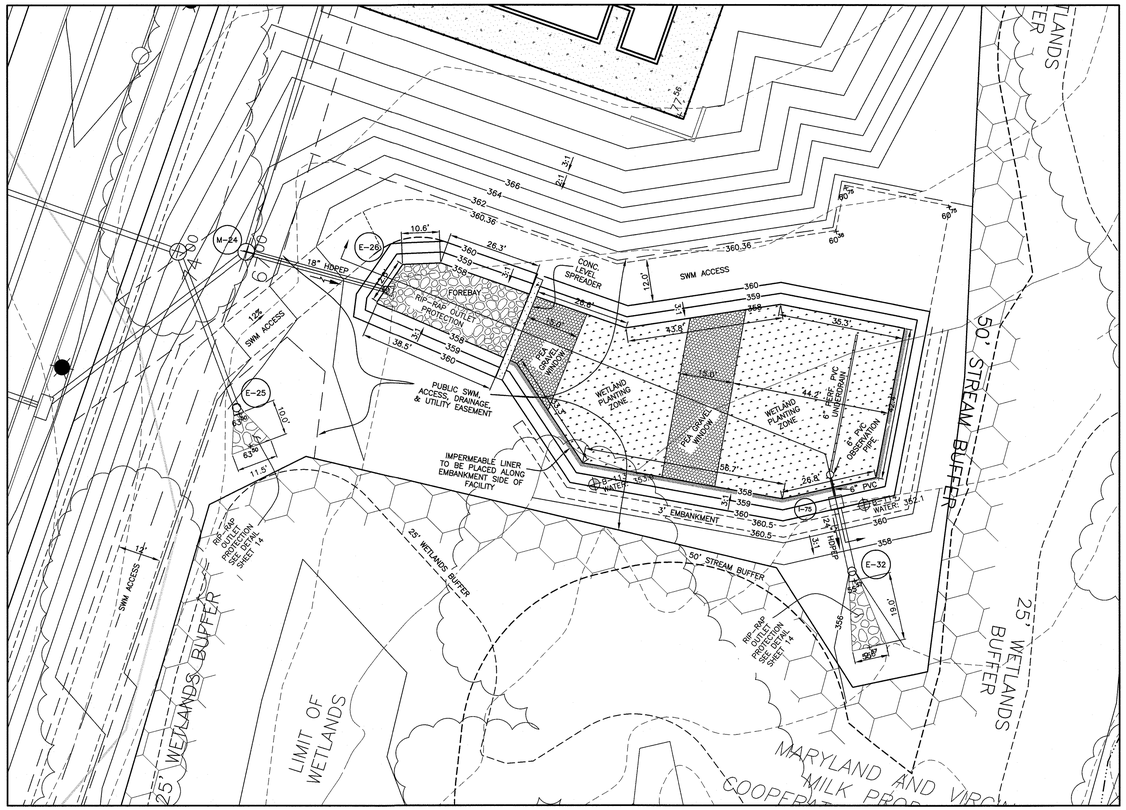
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 – HOWARD COUNTY, MARYLAND

STORMWATER MANAGEMENT DETAILS

DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 30, 2021	BEI PROJECT NO. 2879
		SCALE: AS SHOWN	SHEET 24 OF 52

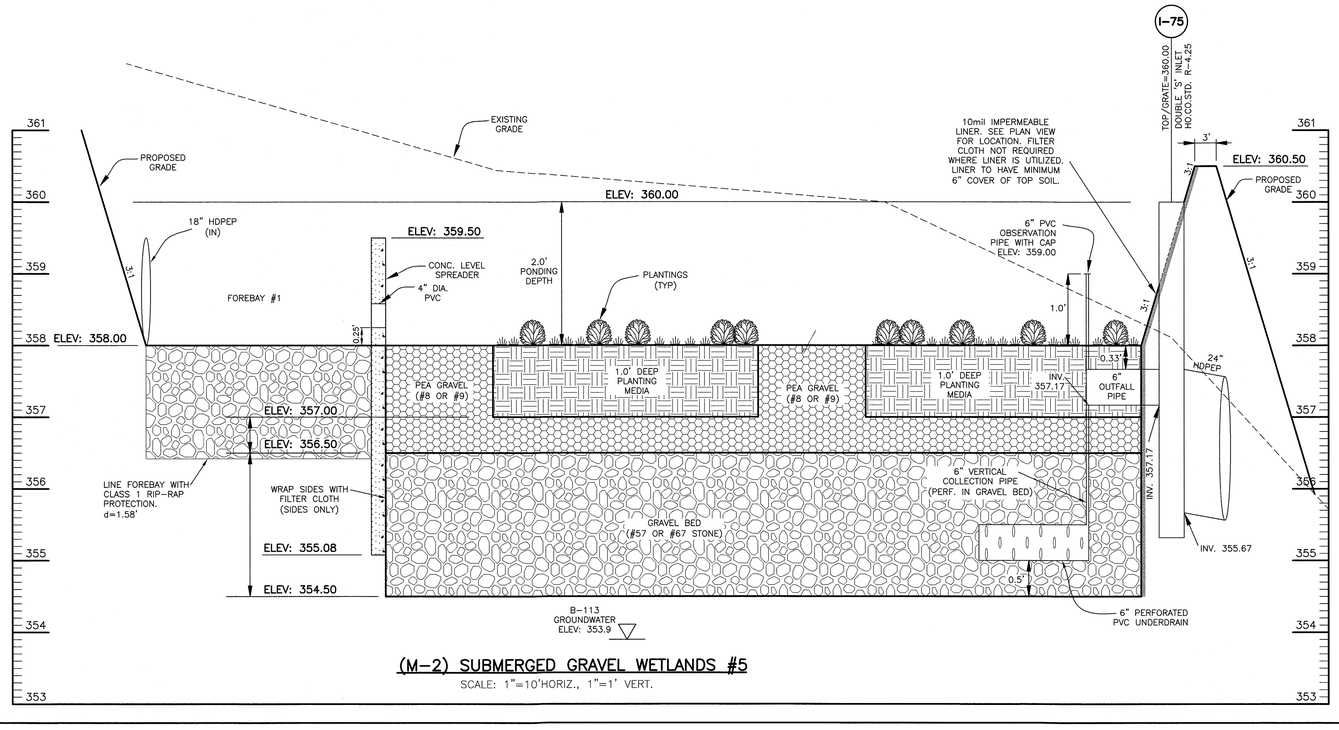
F-21-044



SUBMERGED GRAVEL WETLANDS #5

0 10 20 40

1 inch = 20 ft.



(M-2) SUBMERGED GRAVEL WETLANDS #5

SCALE: 1"=10'HORIZ., 1"=1' VERT.

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 4/3/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10-26-21

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315 ▲ ELLICOTT CITY, MARYLAND 21043
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STATE OF MARYLAND — CHRISTOPHER A. WILLIAMS — 22390 — REGISTERED PROFESSIONAL ENGINEER — 9-2-21

OWNER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:
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ELECTION DISTRICT NO. 6 – HOWARD COUNTY, MARYLAND

STORMWATER MANAGEMENT DETAILS

DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 30, 2021	BEI PROJECT NO. 2879
		SCALE: AS SHOWN	SHEET 25 OF 52

F-21-044

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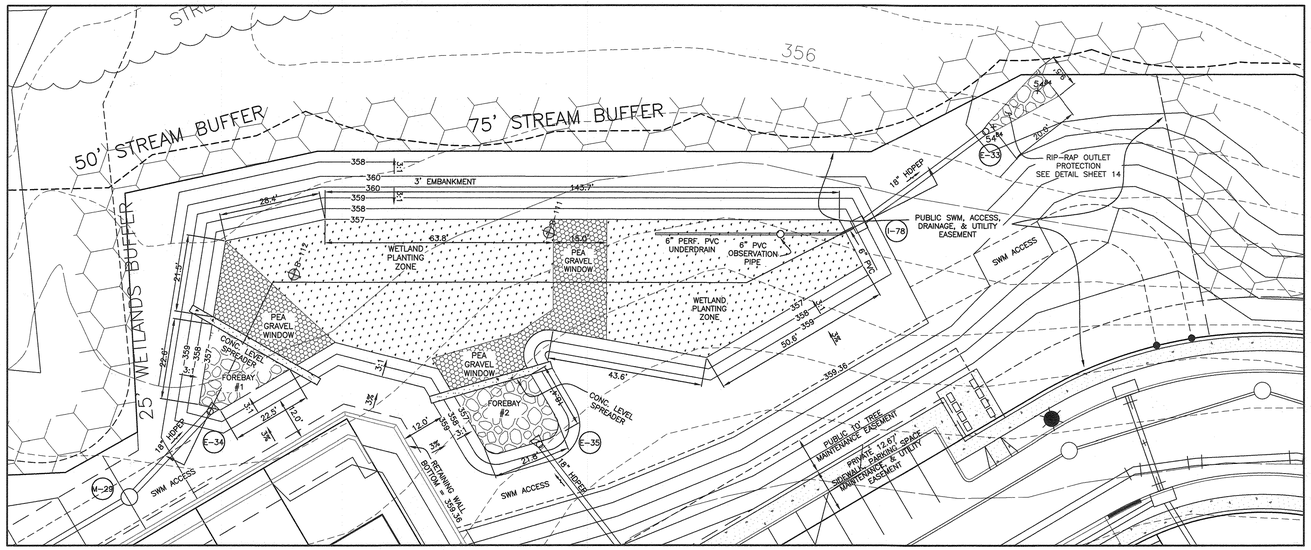
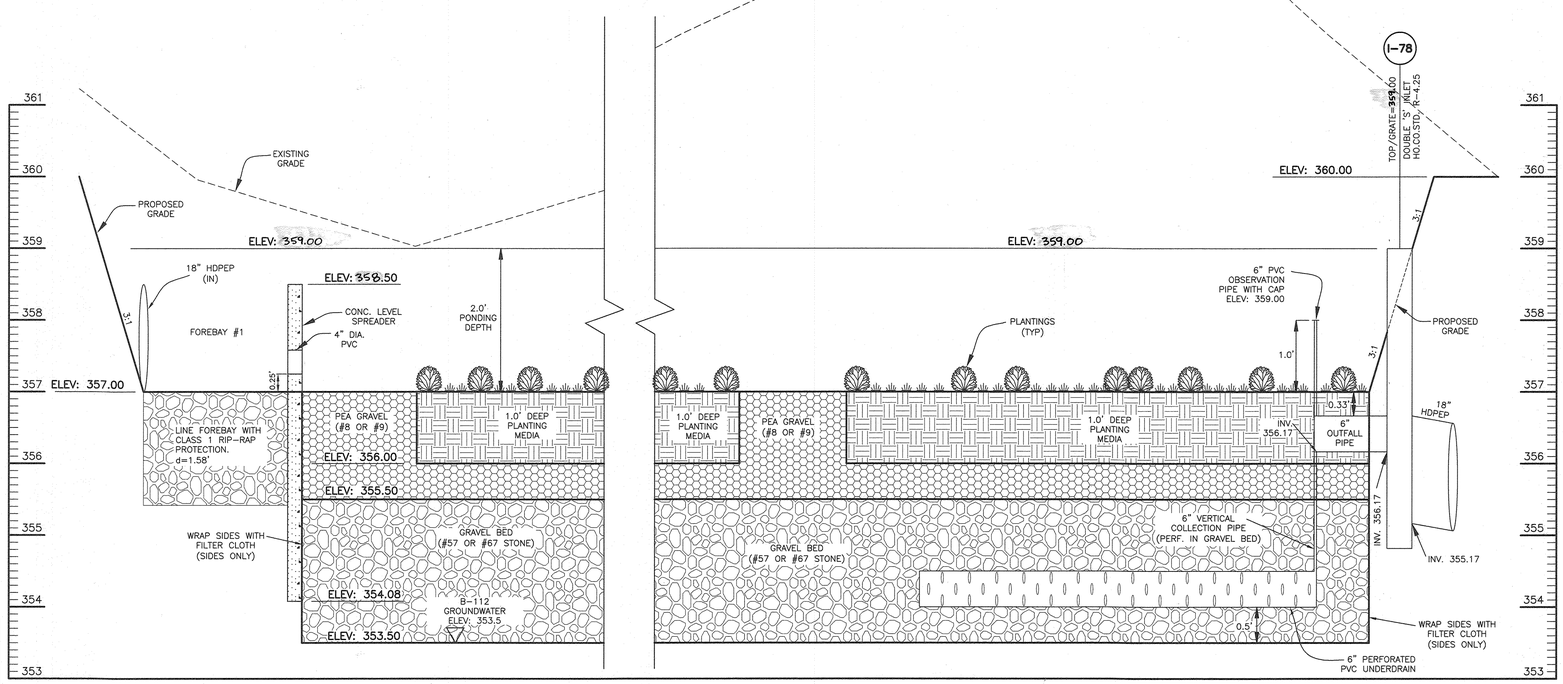


SUBMERGED GRAVEL WETLANDS #6

1 inch = 20 ft.



(M-2) SUBMERGED GRAVEL WETLANDS #6

SCALE: 1"=10'HORIZ., 1"=1' VERT.

B-111 GROUNDWATER ELEV: 351.2

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/3/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.26.21

NO.	DATE	REVISION
1	4/20/2023	CORRECT TOP OF I-78 AND TOP OF PONDING TO BE 359.00

BENCHMARK ENGINEERING, INC.
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315 ▲ ELLICOTT CITY, MARYLAND 21043
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STATE OF MARYLAND — CHRISTOPHER A. WILLIAMS — 22390 — REGISTERED PROFESSIONAL ENGINEER

4-20-23

OWNER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:
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5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
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STORMWATER MANAGEMENT DETAILS

DESIGN: DBT	DRAFT: DBT	SCALE: AS SHOWN	DATE: AUGUST 30, 2021	BEI PROJECT NO. 2879	SHEET 26 OF 52

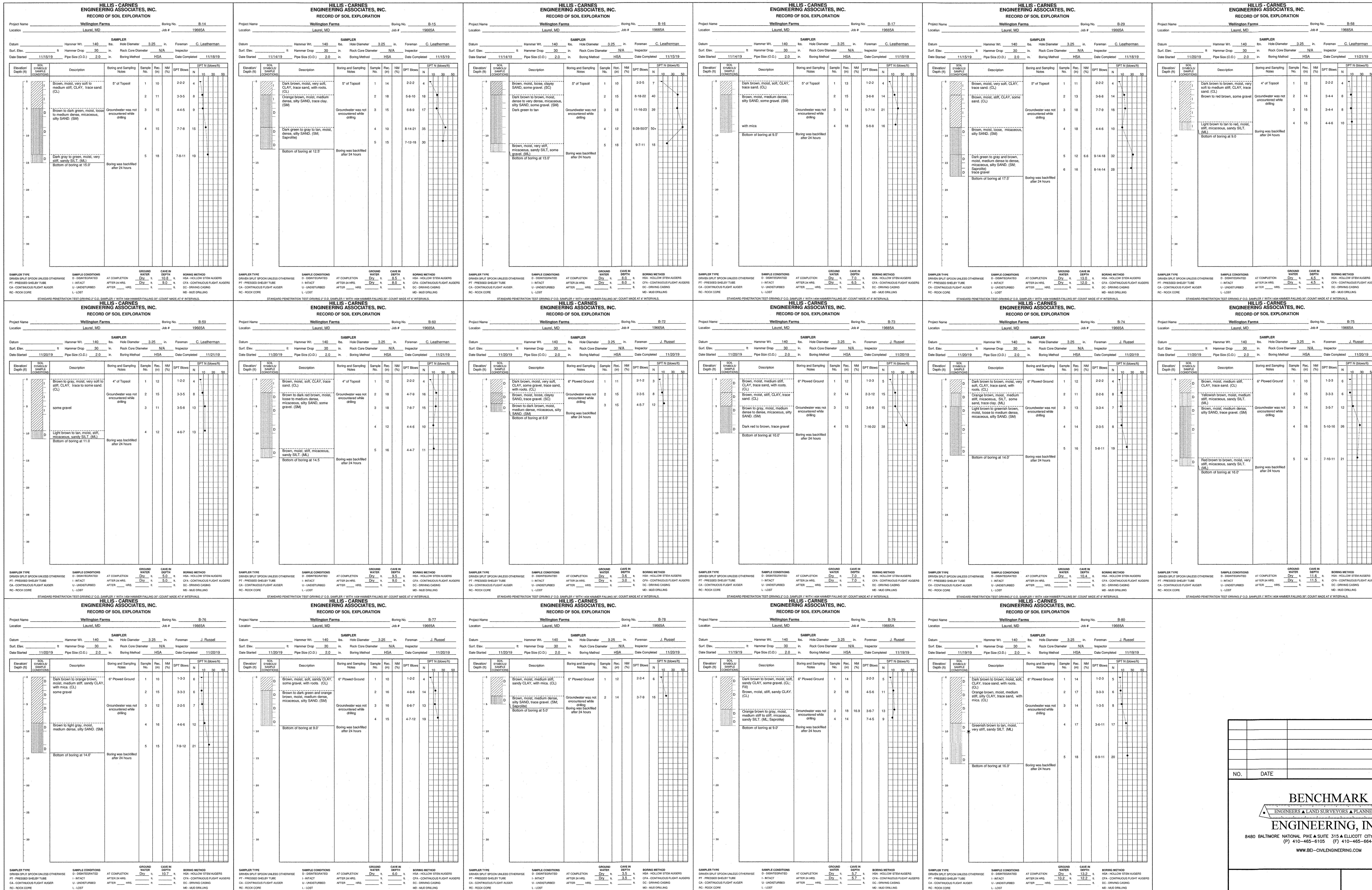
F-21-044

I:\2879 Milk Producers\dwg\Finals\Phase 1 Section 2\7000 P1S2.dwg, 8/25/2021 11:42:59 AM

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: Wellington Farms — Location: Laurel, MD — Job #: 19665A (all borings)

SAMPLER: Hammer Wt. 140 lbs. — Hammer Drop 30 in. — Pipe Size (O.D.) 2.0 in. — Hole Diameter 3.25 in. — Rock Core Diameter N/A — Boring Method HSA (all borings)



Boring No. B-14
Datum ____ Surf. Elev. ____ ft — Foreman: C. Leatherman — Inspector ____ — Date Started 11/15/19 — Date Completed 11/18/19

Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	N
Brown, moist, very soft to medium stiff, CLAY, trace sand. (CL)	5" of Topsoil	1	10		2-2-2	4
		2	11		3-3-5	8
Brown to dark green, moist, loose to medium dense, micaceous, silty SAND. (SM)	Groundwater was not encountered while drilling	3	15		4-4-5	9
		4	15		7-7-8	15
Dark gray to green, moist, very stiff, sandy SILT. (ML)		5	18		7-8-11	19
Bottom of boring at 15.0'	Boring was backfilled after 24 hours					

Ground Water: At completion Dry ft; After 24 hrs. Dry ft. Cave in depth: 10.8 ft; 9.0 ft.

Boring No. B-15
Foreman: C. Leatherman — Date Started 11/14/19 — Date Completed 11/15/19

Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	N
Dark brown, moist, very soft, CLAY, trace sand, with roots. (CL)	5" of Topsoil	1	14		2-2-2	4
Orange brown, moist, medium dense, silty SAND, trace clay. (SM)		2	18		5-8-10	18
	Groundwater was not encountered while drilling	3	15		6-8-9	17
Dark green to gray to tan, moist, dense, silty SAND. (SM; Saprolite)		4	10		8-14-21	35
		5	15		7-12-18	30
Bottom of boring at 12.5'	Boring was backfilled after 24 hours					

Ground Water: At completion Dry ft; After 24 hrs. Dry ft. Cave in depth: 8.5 ft; 8.0 ft.

Boring No. B-16
Foreman: C. Leatherman — Date Started 11/14/19 — Date Completed 11/15/19

Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	N
Brown, moist, loose, clayey SAND, some gravel. (SC)	5" of Topsoil	1	10		2-2-5	7
Dark brown to brown, moist, dense to very dense, micaceous, silty SAND, some gravel. (SM)		2	15		8-18-22	40
Dark green to tan	Groundwater was not encountered while drilling	3	18		11-16-23	39
		4	12		6-38-50/3"	50+
Brown, moist, very stiff, micaceous, sandy SILT, some gravel. (ML)		5	18		9-7-11	18
Bottom of boring at 13.0'	Boring was backfilled after 24 hours					

Ground Water: At completion Dry ft; After 24 hrs. Dry ft. Cave in depth: 8.0 ft; 8.0 ft.

Boring No. B-17
Foreman: C. Leatherman — Date Started 11/14/19 — Date Completed 11/15/19

Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	N
Dark brown, moist, soft, CLAY, trace sand. (CL)	5" of Topsoil	1	13		1-2-2	4
Brown, moist, medium dense, silty SAND, some gravel. (SM)		2	15		3-6-8	14
	Groundwater was not encountered while drilling	3	14		5-7-14	21
with mica		4	18		5-8-8	16
Bottom of boring at 9.5'	Boring was backfilled after 24 hours					

Ground Water: At completion Dry ft; After 24 hrs. Dry ft. Cave in depth: 7.0 ft; 6.5 ft.

Boring No. B-29
Foreman: C. Leatherman — Date Started 11/15/19 — Date Completed 11/18/19

Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	N
Brown, moist, very soft, CLAY, trace sand. (CL)	5" of Topsoil	1	11		2-2-2	4
Brown, moist, stiff, CLAY, some sand. (CL)		2	13		3-6-8	14
	Groundwater was not encountered while drilling	3	18		7-7-9	16
Brown, moist, loose, micaceous, silty SAND. (SM)		4	18		4-4-6	10
Dark green to gray and brown, moist, medium dense to dense, micaceous, silty SAND. (SM; Saprolite) trace gravel		5	12	6.6	9-14-18	32
		6	16		8-14-14	28
Bottom of boring at 17.5'	Boring was backfilled after 24 hours					

Ground Water: At completion Dry ft; After 24 hrs. Dry ft. Cave in depth: 13.0 ft; 12.0 ft.

Boring No. B-58
Foreman: C. Leatherman — Date Started 11/20/19 — Date Completed 11/21/19

Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	N
Dark brown to brown, moist, very soft to medium stiff, CLAY, trace sand. (CL)	4" of Topsoil	1	12		2-2-2	4
Brown to red brown, some gravel	Groundwater was not encountered while drilling	2	14		3-4-4	8
		3	15		3-4-4	8
Light brown to tan to red, moist, stiff, micaceous, sandy SILT. (ML)		4	15		4-4-6	10
Bottom of boring at 9.0	Boring was backfilled after 24 hours					

Ground Water: At completion Dry ft; After 24 hrs. Dry ft. Cave in depth: 4.5 ft; 4.5 ft.

Boring No. B-59
Foreman: C. Leatherman — Date Started 11/20/19 — Date Completed 11/21/19

Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	N
Brown to gray, moist, very soft to stiff, CLAY, trace to some sand. (CL)	4" of Topsoil	1	12		1-2-2	4
	Groundwater was not encountered while drilling	2	15		3-3-5	8
some gravel		3	11		3-5-8	13
Light brown to tan, moist, stiff, micaceous, sandy SILT. (ML)		4	12		4-6-7	13
Bottom of boring at 11.0	Boring was backfilled after 24 hours					

Ground Water: At completion Dry ft; After 24 hrs. Dry ft. Cave in depth: 5.0 ft; 5.0 ft.

Boring No. B-60
Foreman: C. Leatherman — Date Started 11/20/19 — Date Completed 11/21/19

Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	N
Brown, moist, soft, CLAY, trace sand. (CL)	4" of Topsoil	1	12		2-2-2	4
Brown to dark red brown, moist, loose to medium dense, micaceous, silty SAND, some gravel. (SM)	Groundwater was not encountered while drilling	2	18		4-7-9	16
		3	18		7-8-7	15
		4	12		4-4-6	10
Brown, moist, stiff, micaceous, sandy SILT. (ML)		5	16		4-4-7	11
Bottom of boring at 14.5	Boring was backfilled after 24 hours					

Ground Water: At completion Dry ft; After 24 hrs. Dry ft. Cave in depth: 9.5 ft; 9.0 ft.

Boring No. B-72
Foreman: J. Russel — Date Started 11/20/19 — Date Completed 11/20/19

Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	N
Dark brown, moist, very soft, CLAY, some gravel, trace sand, with roots. (CL)	6" Plowed Ground	1	11		2-1-2	3
Brown, moist, loose, clayey SAND, trace gravel. (SC)	Groundwater was not encountered while drilling	2	15		2-3-5	8
Brown to dark brown, moist, medium dense, micaceous, silty SAND. (SM)		3	15		4-5-7	12
Bottom of boring at 6.0'	Boring was backfilled after 24 hours					

Ground Water: At completion Dry ft; After 24 hrs. Dry ft. Cave in depth: 3.6 ft; 3.0 ft.

Boring No. B-73
Foreman: J. Russel — Date Started 11/20/19 — Date Completed 11/20/19

Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	N
Brown, moist, medium stiff, CLAY, trace sand, with roots. (CL)	6" Plowed Ground	1	12		1-2-3	5
Brown, moist, stiff, CLAY, trace sand. (CL)		2	14		2-3-12	15
Brown to gray, moist, medium dense to dense, micaceous, silty SAND. (SM)	Groundwater was not encountered while drilling	3	13		3-6-9	15
Dark red to brown, trace gravel		4	15		7-16-22	38
Bottom of boring at 10.0'	Boring was backfilled after 24 hours					

Ground Water: At completion Dry ft; After 24 hrs. Dry ft. Cave in depth: 7.0 ft; 7.0 ft.

Boring No. B-74
Foreman: J. Russel — Date Started 11/20/19 — Date Completed 11/20/19

Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	N
Dark brown to brown, moist, very soft, CLAY, trace sand, with roots. (CL)	6" Plowed Ground	1	12		2-2-2	4
Orange brown, moist, medium stiff, micaceous, SILT, some sand, trace clay. (ML)		2	11		2-2-6	8
Light brown to greenish brown, moist, loose to medium dense, micaceous, silty SAND. (SM)	Groundwater was not encountered while drilling	3	13		3-3-4	7
		4	14		2-3-5	8
		5	16		5-8-11	19
Bottom of boring at 14.0'	Boring was backfilled after 24 hours					

Ground Water: At completion Dry ft; After 24 hrs. ____ ft. Cave in depth: 10.4 ft; ____ ft.

Boring No. B-75
Foreman: J. Russel — Date Started 11/20/19 — Date Completed 11/20/19

Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	N
Brown, moist, medium stiff, CLAY, trace sand. (CL)	6" Plowed Ground	1	10		1-3-3	6
Yellowish brown, moist, medium stiff, micaceous, sandy SILT. (ML)		2	15		3-3-3	6
Brown, moist, medium dense, silty SAND, trace gravel. (SM)	Groundwater was not encountered while drilling	3	14		3-5-7	12
		4	16		5-10-16	26
Red brown to brown, moist, very stiff, micaceous, sandy SILT. (ML)		5	14		7-10-11	21
Bottom of boring at 16.0'	Boring was backfilled after 24 hours					

Ground Water: At completion Dry ft; After 24 hrs. Dry ft. Cave in depth: 11.6 ft; 11.5 ft.

Boring No. B-76
Foreman: J. Russel — Date Started 11/20/19 — Date Completed 11/20/19

Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	N
Dark brown to orange brown, moist, medium stiff, sandy CLAY, with mica. (CL)	6" Plowed Ground	1	10		1-3-3	6
some gravel		2	15		3-3-3	6
	Groundwater was not encountered while drilling	3	12		2-2-5	7
Brown to light gray, moist, medium dense, silty SAND. (SM)		4	16		4-6-6	12
		5	15		7-9-12	21
Bottom of boring at 14.0'	Boring was backfilled after 24 hours					

Ground Water: At completion Dry ft; After 24 hrs. ____ ft. Cave in depth: 10.7 ft; ____ ft.

Boring No. B-77
Foreman: J. Russel — Date Started 11/20/19 — Date Completed 11/20/19

Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	N
Brown, moist, soft, sandy CLAY, some gravel, with roots. (CL)	6" Plowed Ground	1	10		1-2-2	4
Brown to dark green and orange brown, moist, medium dense, micaceous, silty SAND. (SM)		2	16		4-6-8	14
	Groundwater was not encountered while drilling	3	16		6-6-7	13
		4	15		4-7-12	19
Bottom of boring at 9.0'	Boring was backfilled after 24 hours					

Ground Water: At completion Dry ft; After 24 hrs. ____ ft. Cave in depth: 6.0 ft; ____ ft.

Boring No. B-78
Foreman: J. Russel — Date Started 11/20/19 — Date Completed 11/20/19

Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	N
Brown, moist, medium stiff, sandy CLAY, with mica. (CL)	6" Plowed Ground	1	12		2-2-4	6
Brown, moist, medium dense, silty SAND, trace gravel. (SM; Saprolite)	Groundwater was not encountered while drilling	2	14		3-7-9	16
Bottom of boring at 5.0'	Boring was backfilled after 24 hours					

Ground Water: At completion Dry ft; After 24 hrs. Dry ft. Cave in depth: 3.5 ft; 3.5 ft.

Boring No. B-79
Foreman: J. Russel — Date Started 11/19/19 — Date Completed 11/19/19

Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	N
Dark brown to brown, moist, soft, sandy CLAY, some gravel. (CL; Fill)	6" Plowed Ground	1	14		2-2-3	5
Brown, moist, stiff, sandy CLAY. (CL)		2	18		4-5-6	11
Orange brown to gray, moist, medium stiff to stiff, micaceous, sandy SILT. (ML; Saprolite)	Groundwater was not encountered while drilling	3	18	16.9	3-6-7	13
		4	14		7-4-5	9
Bottom of boring at 9.0'	Boring was backfilled after 24 hours					

Ground Water: At completion Dry ft; After 24 hrs. Dry ft. Cave in depth: 5.7 ft; 5.7 ft.

Boring No. B-80
Foreman: J. Russel — Date Started 11/19/19 — Date Completed 11/19/19

Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	N
Dark brown to brown, moist, soft, CLAY, trace sand, with roots. (CL)	6" Plowed Ground	1	14		1-2-3	5
Orange brown, moist, medium stiff, silty CLAY, trace sand, with mica. (CL)		2	17		3-3-3	6
	Groundwater was not encountered while drilling	3	14		1-3-5	8
Greenish brown to tan, moist, very stiff, sandy SILT. (ML)		4	17		3-6-11	17
		5	18		6-9-11	20
Bottom of boring at 16.0'	Boring was backfilled after 24 hours					

Ground Water: At completion Dry ft; After 24 hrs. 10.2 ft. Cave in depth: 13.2 ft; 12.2 ft.

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE

SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST

BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS.

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/2/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10-26-21

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
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. 22390, Expiration Date: 6-30-2023.

STATE OF MARYLAND — CHRISTOPHER A. MALAGARI — 22390 — PROFESSIONAL ENGINEER — 9-2-21

OWNER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

WELLINGTON FARMS
Phase 1 Section 2
Lots 54 thru 132; Open Space Lots 133 thru 143; Parcel 'A'; Non-Buildable Bulk Parcels 'C', 'D', and 'E'
(A Resubdivision of Non-Buildable Bulk Parcels 'A' and 'B' previously recorded under F-21-025)

TAX MAP: 46 – GRID: 6 – PARCEL: 163
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 – HOWARD COUNTY, MARYLAND

SOIL BORING LOGS

DATE: AUGUST 30, 2021 — BEI PROJECT NO. 2879
DESIGN: DBT — DRAFT: DBT — SCALE: AS SHOWN — SHEET 27 OF 52

F-21-044

I:\2879 Milk Producers\dwg\Finals\Phase 1 Section 2\7033 P1S2.dwg, 8/25/2021 1:34:40 PM

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: Wellington Farms — Boring No.: B-81
Location: Laurel, MD — Job #: 19665A

SAMPLER — Datum: — Hammer Wt.: 140 lbs. — Hole Diameter: 3.25 in. — Foreman: J. Russell
Surf. Elev.: ft — Hammer Drop: 30 in. — Rock Core Diameter: N/A in. — Inspector:
Date Started: 11/19/19 — Pipe Size (O.D.): 2.0 in. — Boring Method: HSA — Date Completed: 11/19/19

Elevation/ Depth (ft)	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	SPT N (blows/ft) N: 10 30 50
0	D	Dark brown to brown, moist, medium stiff, CLAY, trace sand. (CL)	6" Plowed Ground	1	14		2-2-3	5
5	D	Brown to light brown, moist, medium stiff to stiff, clayey SILT, trace sand, with mica. (ML)		2	14		4-5-7	12
	D		Groundwater was not encountered while drilling	3	14		4-4-5	9
10	D	some gravel		4	18		7-7-6	16
		Bottom of boring at 9.0'	Boring was backfilled after 24 hours					
15								
20								
25								
30								

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE
SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST
AT COMPLETION: AFTER 24 HRS. Dry %, Dry %; AFTER ___ HRS. ___ %, ___ %
GROUND WATER: Dry %, Dry %
CAVE IN DEPTH: 5.7 ft, 5.5 ft
BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: Wellington Farms — Boring No.: B-82
Location: Laurel, MD — Job #: 19665A

SAMPLER — Datum: — Hammer Wt.: 140 lbs. — Hole Diameter: 3.25 in. — Foreman: J. Russell
Surf. Elev.: ft — Hammer Drop: 30 in. — Rock Core Diameter: N/A in. — Inspector:
Date Started: 11/19/19 — Pipe Size (O.D.): 2.0 in. — Boring Method: HSA — Date Completed: 11/19/19

Elevation/ Depth (ft)	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	SPT N (blows/ft) N: 10 30 50
0	D	Dark brown, moist, very soft, CLAY, trace sand, with roots. (CL)	6" Plowed Ground	1	12		1-2-2	4
5	D	Orange brown, moist, medium dense, silty SAND, with mica. (SM)		2	18		4-6-7	13
	D	Brown, moist, stiff, CLAY, very silty, sandy SILT, with mica. (ML)	Groundwater was not encountered while drilling	3	18		5-7-11	18
10	D	Orange brown, moist, medium dense, silty SAND, with mica. (SM)		4	15		6-7-19	26
		Bottom of boring at 10.5'	Boring was backfilled after 24 hours					
15								
20								
25								
30								

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE
SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST
AT COMPLETION: AFTER 24 HRS. Dry %, Dry %; AFTER ___ HRS. ___ %, ___ %
GROUND WATER: Dry %, Dry %
CAVE IN DEPTH: 5.3 ft, 5.9 ft
BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: Wellington Farms — Boring No.: B-83
Location: Laurel, MD — Job #: 19665A

SAMPLER — Datum: — Hammer Wt.: 140 lbs. — Hole Diameter: 3.25 in. — Foreman: J. Russell
Surf. Elev.: ft — Hammer Drop: 30 in. — Rock Core Diameter: N/A in. — Inspector:
Date Started: 11/18/19 — Pipe Size (O.D.): 2.0 in. — Boring Method: HSA — Date Completed: 11/19/19

Elevation/ Depth (ft)	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	SPT N (blows/ft) N: 10 30 50
0	D	Brown to dark brown, moist, soft, CLAY, trace sand and gravel. (CL)	6" Plowed Ground	1	14		1-2-2	4
5	D	Orange brown, moist, stiff, sandy SILT, with mica. (ML)		2	18		3-4-6	10
	D	Brown, moist, stiff, CLAY, some gravel, trace sand. (CL)	Groundwater was not encountered while drilling	3	18		4-4-7	11
10	D	Gray to brown, moist, very dense, sandy GRAVEL, trace silt. (GP-GM)		4	16		8-22-32	54
	D	Orange brown, moist, stiff, sandy SILT, with mica. (ML)	Boring was backfilled after 24 hours	5	16		2-4-8	12
15		Bottom of boring at 15.0'						
20								
25								
30								

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE
SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST
AT COMPLETION: AFTER 24 HRS. Dry %, 4.6 %; AFTER ___ HRS. ___ %, ___ %
GROUND WATER: Dry %, Dry %
CAVE IN DEPTH: 7.9 ft, 7.9 ft
BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: Wellington Farms — Boring No.: B-84
Location: Laurel, MD — Job #: 19665A

SAMPLER — Datum: — Hammer Wt.: 140 lbs. — Hole Diameter: 3.25 in. — Foreman: J. Russell
Surf. Elev.: ft — Hammer Drop: 30 in. — Rock Core Diameter: N/A in. — Inspector:
Date Started: 11/25/19 — Pipe Size (O.D.): 2.0 in. — Boring Method: HSA — Date Completed: 11/25/19

Elevation/ Depth (ft)	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	SPT N (blows/ft) N: 10 30 50
0	D	Brown to orange brown, moist, soft to medium stiff, CLAY, trace to some sand. (CL)	6" Plowed Ground	1	16		1-2-2	4
5	D	Brown to gray brown and gray, moist, medium stiff to stiff, sandy SILT. (ML)		2	18		2-3-5	8
	D		Groundwater was not encountered while drilling	3	17		3-4-6	10
10	D			4	18		5-7-9	16
	D	Greenish brown to tan, moist, dense, micaceous, silty SAND. (SM)	Boring was backfilled after 24 hours	5	16		11-18-26	44
15		Bottom of boring at 16.0'						
20								
25								
30								

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE
SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST
AT COMPLETION: AFTER 24 HRS. Dry %, 5.2 %; AFTER ___ HRS. ___ %, ___ %
GROUND WATER: Dry %, Dry %
CAVE IN DEPTH: 8.8 ft, 8.0 ft
BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: Wellington Farms — Boring No.: B-87
Location: Laurel, MD — Job #: 19665A

SAMPLER — Datum: — Hammer Wt.: 140 lbs. — Hole Diameter: 3.25 in. — Foreman: J. Russell
Surf. Elev.: ft — Hammer Drop: 30 in. — Rock Core Diameter: N/A in. — Inspector:
Date Started: 11/19/19 — Pipe Size (O.D.): 2.0 in. — Boring Method: HSA — Date Completed: 11/19/19

Elevation/ Depth (ft)	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	SPT N (blows/ft) N: 10 30 50
0	D	Brown to gray, moist, very soft, CLAY, some gravel, trace sand. (CL)	6" Plowed Ground	1	14		1-2-2	4
5	D	some silt, with mica		2	16		2-4-7	11
	D	Brown to dark brown, moist, medium stiff, sandy SILT, with mica. (ML)	Groundwater was encountered at 9.0' while drilling	3	17		2-3-4	7
10	D	Brown to green, moist, silty SAND, trace gravel. (SM)		4	14		8-11-24	35
		Bottom of boring at 10.5'	Boring was backfilled after 24 hours					
15								
20								
25								
30								

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE
SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST
AT COMPLETION: AFTER 24 HRS. Dry %, 6.4 %; AFTER ___ HRS. ___ %, ___ %
GROUND WATER: 4.0 ft, 3.0 ft
CAVE IN DEPTH: 6.4 ft, ___ ft
BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: Wellington Farms — Boring No.: B-88
Location: Laurel, MD — Job #: 19665A

SAMPLER — Datum: — Hammer Wt.: 140 lbs. — Hole Diameter: 3.25 in. — Foreman: J. Russell
Surf. Elev.: ft — Hammer Drop: 30 in. — Rock Core Diameter: N/A in. — Inspector:
Date Started: 11/19/19 — Pipe Size (O.D.): 2.0 in. — Boring Method: HSA — Date Completed: 11/19/19

Elevation/ Depth (ft)	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	SPT N (blows/ft) N: 10 30 50
0	D	Brown to gray, moist, soft to medium stiff, SILT, some gravel, trace sand, with mica. (ML)	6" Plowed Ground	1	14		2-2-3	5
5	D			2	18		3-4-4	8
	D		Groundwater was encountered at 2.0' while drilling	3	14		2-3-3	6
10	D	Greenish brown to tan and gray, moist, hard, sandy SILT, trace gravel, with mica. (ML; Saprolite)		4	18		8-15-22	37
		Bottom of boring at 11.0'	Boring was backfilled after 24 hours					
15								
20								
25								
30								

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE
SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST
AT COMPLETION: AFTER 24 HRS. Dry %, 3.6 %; AFTER ___ HRS. ___ %, ___ %
GROUND WATER: 7.6 ft, 7.5 ft
CAVE IN DEPTH: 8.0 ft, ___ ft
BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: Wellington Farms — Boring No.: B-111
Location: Laurel, MD — Job #: 19665A

SAMPLER — Datum: — Hammer Wt.: 140 lbs. — Hole Diameter: 3.25 in. — Foreman: J. Russell
Surf. Elev.: ft — Hammer Drop: 30 in. — Rock Core Diameter: N/A in. — Inspector:
Date Started: 11/27/19 — Pipe Size (O.D.): 2.0 in. — Boring Method: HSA — Date Completed: 11/27/19

Elevation/ Depth (ft)	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	SPT N (blows/ft) N: 10 30 50
0	D	Dark brown, moist, very soft, sandy SILT, some gravel, with roots. (ML)	6" Plowed Ground	1	5		1-1-2	3
5	D	Dark green to brown, moist, loose to medium dense, micaceous, silty SAND. (SM)		2	16		2-4-5	9
	D		No groundwater encountered while drilling	3	17		3-4-6	10
10	D			4	16		8-7-5	12
		Bottom of boring at 14.5'	Boring was backfilled after 24 hours	5	14		9-7-10	17
15								
20								
25								
30								

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE
SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST
AT COMPLETION: AFTER 24 HRS. Dry %, 9.0 %; AFTER ___ HRS. ___ %, ___ %
GROUND WATER: Dry %, Dry %
CAVE IN DEPTH: 10.0 ft, 10.0 ft
BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: Wellington Farms — Boring No.: B-112
Location: Laurel, MD — Job #: 19665A

SAMPLER — Datum: — Hammer Wt.: 140 lbs. — Hole Diameter: 3.25 in. — Foreman: J. Russell
Surf. Elev.: ft — Hammer Drop: 30 in. — Rock Core Diameter: N/A in. — Inspector:
Date Started: 11/27/19 — Pipe Size (O.D.): 2.0 in. — Boring Method: HSA — Date Completed: 11/27/19

Elevation/ Depth (ft)	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	SPT N (blows/ft) N: 10 30 50
0	D	Dark brown, moist, very loose, micaceous, silty SAND, some gravel, trace roots. (SM)	6" Plowed Ground	1	7		2-1-2	3
5	D	Dark brown to dark green, moist, loose, micaceous, silty SAND. (SM)		2	15		3-3-5	8
	D		Groundwater encountered at 8.5 while drilling	3	16		2-3-5	8
10	D	Gray to brown, moist, medium dense, silty SAND, some gravel. (SM; Saprolite)		4	18		7-9-19	28
		Bottom of boring at 10.0'	Boring was backfilled after 24 hours					
15								
20								
25								
30								

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE
SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST
AT COMPLETION: AFTER 24 HRS. 6.6 %, 5.3 %; AFTER ___ HRS. ___ %, ___ %
GROUND WATER: Dry %, Dry %
CAVE IN DEPTH: 8.0 ft, 7.7 ft
BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: Wellington Farms — Boring No.: B-113
Location: Laurel, MD — Job #: 19665A

SAMPLER — Datum: — Hammer Wt.: 140 lbs. — Hole Diameter: 3.25 in. — Foreman: J. Russell
Surf. Elev.: ft — Hammer Drop: 30 in. — Rock Core Diameter: N/A in. — Inspector:
Date Started: 11/25/19 — Pipe Size (O.D.): 2.0 in. — Boring Method: HSA — Date Completed: 11/25/19

Elevation/ Depth (ft)	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	SPT N (blows/ft) N: 10 30 50
0	D	Brown, moist, soft, CLAY, trace sand. (CL)	6" Plowed Ground	1	15		1-1-4	5
5	D	Dark brown to brown, moist, medium dense, micaceous, silty SAND. (SM)		2	18		3-4-7	11
	D		Groundwater was not encountered while drilling	3	18		2-4-7	11
10	D	Dark brown to brown, moist, medium dense, micaceous, silty SAND, (SM)		4	18		5-5-6	11
	D	Greenish brown to tan, some gravel	Boring was backfilled after 24 hours					
15		Bottom of boring at 10.0'						
20								
25								
30								

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE
SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST
AT COMPLETION: AFTER 24 HRS. Dry %, 4.6 %; AFTER ___ HRS. ___ %, ___ %
GROUND WATER: Dry %, Dry %
CAVE IN DEPTH: 7.0 ft, 6.5 ft
BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: Wellington Farms — Boring No.: B-114
Location: Laurel, MD — Job #: 19665A

SAMPLER — Datum: — Hammer Wt.: 140 lbs. — Hole Diameter: 3.25 in. — Foreman: J. Russell
Surf. Elev.: ft — Hammer Drop: 30 in. — Rock Core Diameter: N/A in. — Inspector:
Date Started: 11/25/19 — Pipe Size (O.D.): 2.0 in. — Boring Method: HSA — Date Completed: 11/25/19

Elevation/ Depth (ft)	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	SPT N (blows/ft) N: 10 30 50
0	D	Greenish brown, moist, loose, micaceous, silty SAND, some gravel. (SM)	6" Plowed Ground	1	16		1-2-4	6
5	D	Dark brown to green, moist, loose to medium dense, micaceous, silty SAND. (SM)		2	18		3-5-5	10
	D		Groundwater was not encountered while drilling	3	18		4-7-10	17
10	D	Green to tan		4	17		6-8-11	19
		Bottom of boring at 11.0'	Boring was backfilled after 24 hours					
15								
20								
25								
30								

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE
SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST
AT COMPLETION: AFTER 24 HRS. Dry %, 5.2 %; AFTER ___ HRS. ___ %, ___ %
GROUND WATER: Dry %, Dry %
CAVE IN DEPTH: 8.8 ft, 8.0 ft
BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: Wellington Farms — Boring No.: B-115
Location: Laurel, MD — Job #: 19665A

SAMPLER — Datum: — Hammer Wt.: 140 lbs. — Hole Diameter: 3.25 in. — Foreman: J. Russell
Surf. Elev.: ft — Hammer Drop: 30 in. — Rock Core Diameter: N/A in. — Inspector:
Date Started: 11/25/19 — Pipe Size (O.D.): 2.0 in. — Boring Method: HSA — Date Completed: 11/25/19

Elevation/ Depth (ft)	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	SPT N (blows/ft) N: 10 30 50
0	D	Brown to greenish brown, moist, very loose, silty SAND. (SM)	6" Plowed Ground	1	14		2-2-2	4
5	D	Greenish brown to brown and gray, moist, medium dense, micaceous, silty SAND. (SM)		2	14		4-4-8	14
	D		Groundwater was not encountered while drilling	3	16	17.3	5-6-9	15
10	D			4	18		5-6-8	14
		Bottom of boring at 10.0'	Boring was backfilled after 24 hours					
15								
20								
25								
30								

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE
SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST
AT COMPLETION: AFTER 24 HRS. Dry %, Dry %; AFTER ___ HRS. ___ %, ___ %
GROUND WATER: Dry %, Dry %
CAVE IN DEPTH: 6.3 ft, 6.3 ft
BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: Wellington Farms — Boring No.: B-116
Location: Laurel, MD — Job #: 19665A

SAMPLER — Datum: — Hammer Wt.: 140 lbs. — Hole Diameter: 3.25 in. — Foreman: J. Russell
Surf. Elev.: ft — Hammer Drop: 30 in. — Rock Core Diameter: N/A in. — Inspector:
Date Started: 11/25/19 — Pipe Size (O.D.): 2.0 in. — Boring Method: HSA — Date Completed: 11/25/19

Elevation/ Depth (ft)	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Sample No.	Rec. (in)	NM (%)	SPT Blows	SPT N (blows/ft) N: 10 30 50
0	D	Dark brown to brown, moist, very soft to stiff, CLAY, trace sand. (CL) with wood fragments and roots at 0'	6" Plowed Ground	1	14		1-1-2	3
5	D			2	17		1-2-2	4
	D		Groundwater was not encountered while drilling	3	18		2-3-6	11
10	D	Greenish brown to tan, moist, hard, micaceous, sandy SILT. (ML)		4	14		6-17-24	41
		Bottom of boring at 9.0'	Boring was backfilled after 24 hours					
15								
20								
25								
30								

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE
SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST
AT COMPLETION: AFTER 24 HRS. Dry %, Dry %; AFTER ___ HRS. ___ %, ___ %
GROUND WATER: Dry %, Dry %
CAVE IN DEPTH: 6.1 ft, 6.0 ft
BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS.

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MJK — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/2/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION KDK — DATE 10-26-21

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
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. 22390, Expiration Date: 6-30-2023.

STATE OF MARYLAND — CHRISTOPHER A. CARNES — 22390 — PROFESSIONAL ENGINEER
Christopher A. Carnes 9-2-21

OWNER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

WELLINGTON FARMS

Phase 1 Section 2
Lots 54 thru 132; Open Space Lots 133 thru 143; Parcel 'A'; Non-Buildable Bulk Parcels 'C', 'D', and 'E'
(A Resubdivision of Non-Buildable Bulk Parcels 'A' and 'B' previously recorded under F-21-025)

TAX MAP: 46 - GRID: 6 - PARCEL: 163
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 - HOWARD COUNTY, MARYLAND

SOIL BORING LOGS

DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 30, 2021	BEI PROJECT NO. 2879
		SCALE: AS SHOWN	SHEET 28 OF 52

F-21-044

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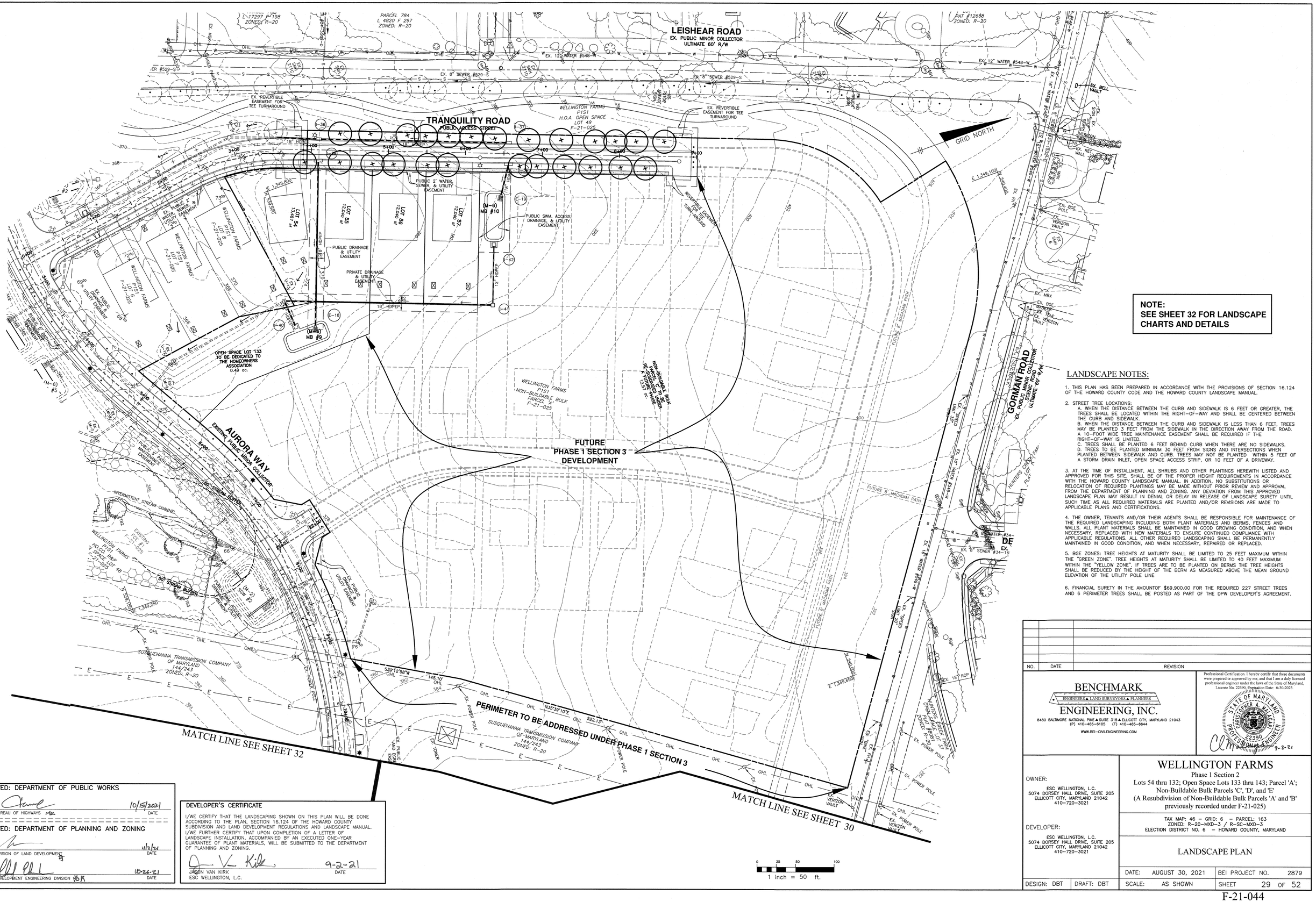

NOTE:
SEE SHEET 32 FOR LANDSCAPE CHARTS AND DETAILS

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. BGE ZONES: TREE HEIGHTS AT MATURITY SHALL BE LIMITED TO 25 FEET MAXIMUM WITHIN THE "GREEN ZONE". TREE HEIGHTS AT MATURITY SHALL BE LIMITED TO 40 FEET MAXIMUM WITHIN THE "YELLOW ZONE". IF TREES ARE TO BE PLANTED ON BERMS THE TREE HEIGHTS SHALL BE REDUCED BY THE HEIGHT OF THE BERM AS MEASURED ABOVE THE MEAN GROUND ELEVATION OF THE UTILITY POLE LINE

6. FINANCIAL SURETY IN THE AMOUNTOF $69,900.00 FOR THE REQUIRED 227 STREET TREES AND 6 PERIMETER TREES SHALL BE POSTED AS PART OF THE DPW DEVELOPER'S AGREEMENT.

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/3/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10-26-21

DEVELOPER'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.

JASON VAN KIRK
ESC WELLINGTON, L.C. — DATE 9-2-21

NO.	DATE	REVISION

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. 22390, Expiration Date: 6-30-2023.

STATE OF MARYLAND — CHRISTOPHER A. MILLER — 22390 — PROFESSIONAL ENGINEER — 9-2-21

OWNER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

WELLINGTON FARMS

Phase 1 Section 2
Lots 54 thru 132; Open Space Lots 133 thru 143; Parcel 'A'; Non-Buildable Bulk Parcels 'C', 'D', and 'E'
(A Resubdivision of Non-Buildable Bulk Parcels 'A' and 'B' previously recorded under F-21-025)

TAX MAP: 46 - GRID: 6 - PARCEL: 163
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 - HOWARD COUNTY, MARYLAND

LANDSCAPE PLAN

DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 30, 2021	BEI PROJECT NO. 2879
		SCALE: AS SHOWN	SHEET 29 OF 52

F-21-044

NOTE:
SEE SHEET 32 FOR LANDSCAPE CHARTS AND DETAILS

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MK — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/3/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION HSK — DATE 10.26.21

DEVELOPER'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.

JASON VAN KIRK
ESC WELLINGTON, L.C. — DATE 9-2-21

NO.	DATE	REVISION

BENCHMARK
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ENGINEERING, INC.
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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. 22390, Expiration Date: 6-30-2023.

STATE OF MARYLAND — CHRISTOPHER A. MALAGARI — 22390 — PROFESSIONAL ENGINEER — 9-2-21

OWNER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

WELLINGTON FARMS

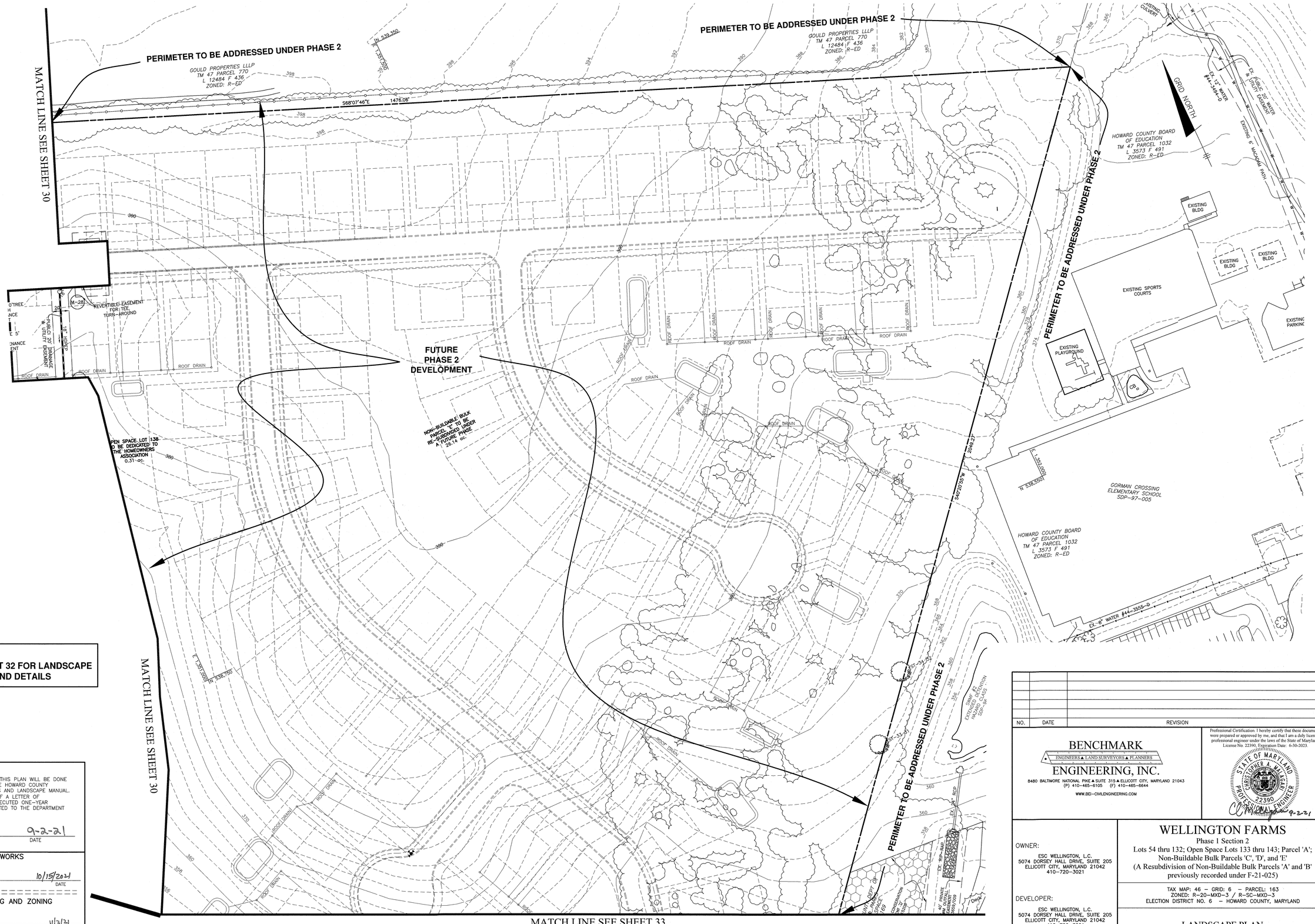
Phase 1 Section 2
Lots 54 thru 132; Open Space Lots 133 thru 143; Parcel 'A'; Non-Buildable Bulk Parcels 'C', 'D', and 'E'
(A Resubdivision of Non-Buildable Bulk Parcels 'A' and 'B' previously recorded under F-21-025)

TAX MAP: 46 - GRID: 6 - PARCEL: 163
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 - HOWARD COUNTY, MARYLAND

LANDSCAPE PLAN

DATE: AUGUST 30, 2021	BEI PROJECT NO. 2879
DESIGN: DBT / DRAFT: DBT / SCALE: AS SHOWN	SHEET 30 OF 52

F-21-044



NOTE:
SEE SHEET 32 FOR LANDSCAPE CHARTS AND DETAILS

DEVELOPER'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.

JASON VAN KIRK
ESC WELLINGTON, L.C. — DATE 9-2-21

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MK — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/3/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10-26-21

NO.	DATE	REVISION

BENCHMARK
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(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. 22390, Expiration Date: 6-30-2023.

STATE OF MARYLAND — DOUGLAS B. TAYLOR — 22390 — PROFESSIONAL ENGINEER — 9-2-21

OWNER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

WELLINGTON FARMS

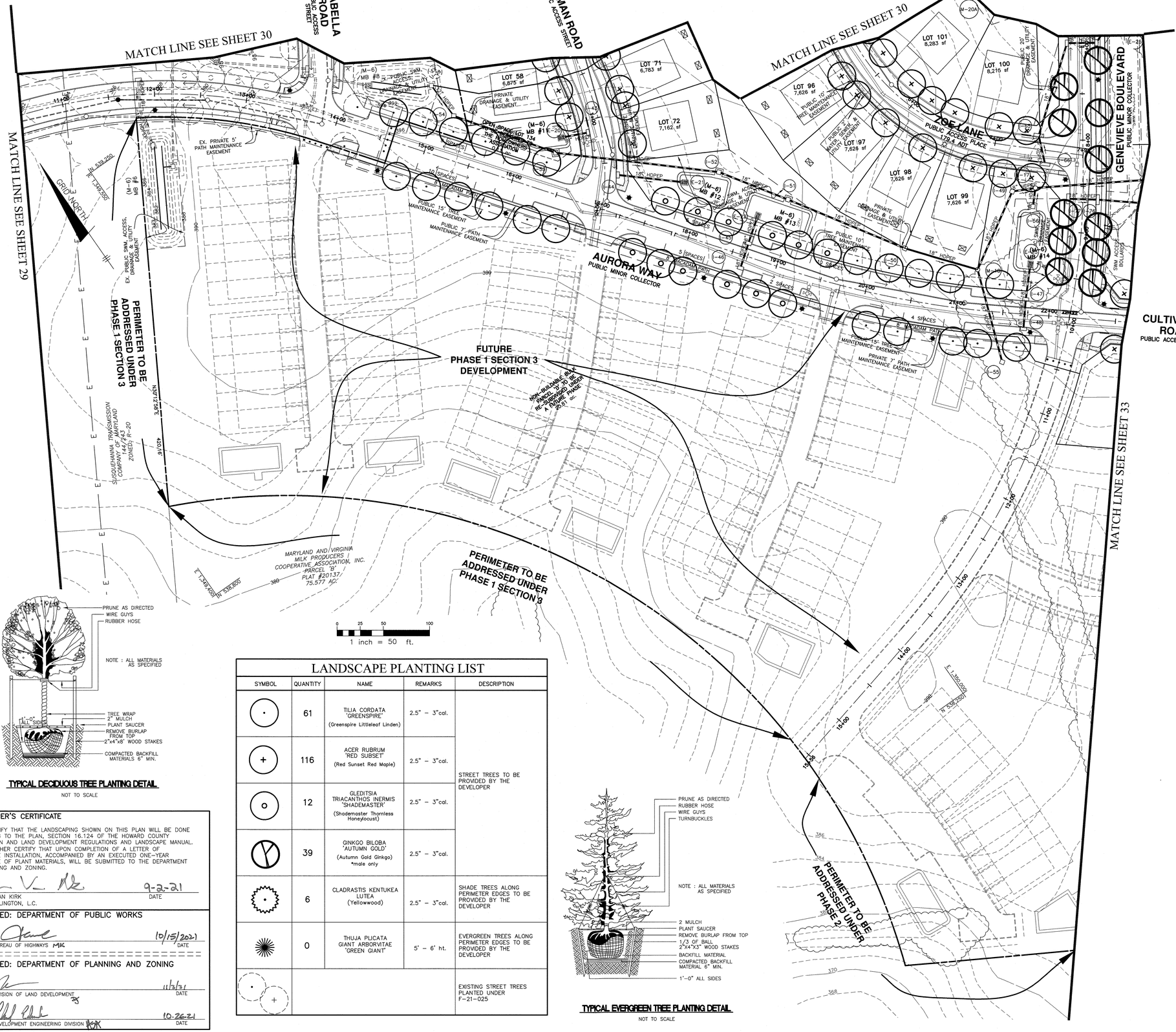
Phase 1 Section 2
Lots 54 thru 132; Open Space Lots 133 thru 143; Parcel 'A'; Non-Buildable Bulk Parcels 'C', 'D', and 'E'
(A Resubdivision of Non-Buildable Bulk Parcels 'A' and 'B' previously recorded under F-21-025)

TAX MAP: 46 - GRID: 6 - PARCEL: 163
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 - HOWARD COUNTY, MARYLAND

LANDSCAPE PLAN

DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 30, 2021	BEI PROJECT NO. 2879
		SCALE: AS SHOWN	SHEET 31 OF 52

F-21-044



TYPICAL DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE

LANDSCAPE PLANTING LIST

SYMBOL	QUANTITY	NAME	REMARKS	DESCRIPTION
⊙	61	TILIA CORDATA 'GREENSPIRE' (Greenspire Littleleaf Linden)	2.5" – 3"cal.	STREET TREES TO BE PROVIDED BY THE DEVELOPER
+	116	ACER RUBRUM 'RED SUBSET' (Red Sunset Red Maple)	2.5" – 3"cal.	
⊙	12	GLEDITSIA TRIACANTHOS INERMIS "SHADEMASTER" (Shademaster Thornless Honeylocust)	2.5" – 3"cal.	
⊙	39	GINKGO BILOBA 'AUTUMN GOLD' (Autumn Gold Ginkgo) *male only	2.5" – 3"cal.	
✺	6	CLADRASTIS KENTUKEA LUTEA (Yellowwood)	2.5" – 3"cal.	SHADE TREES ALONG PERIMETER EDGES TO BE PROVIDED BY THE DEVELOPER
✳	0	THUJA PLICATA GIANT ARBORVITAE 'GREEN GIANT'	5' – 6' ht.	EVERGREEN TREES ALONG PERIMETER EDGES TO BE PROVIDED BY THE DEVELOPER
⊙ +				EXISTING STREET TREES PLANTED UNDER F-21-025

TYPICAL EVERGREEN TREE PLANTING DETAIL

NOT TO SCALE

DEVELOPER'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.

JASON VAN KIRK
ESC WELLINGTON, L.C.
DATE 9-2-21

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MK
DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT
DATE 11/3/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE 10.26.21

Street Tree Schedule

Road Name	LF of ROW	Tree Size	Requirement	Trees Required
Aurora Way	1346	Large	1 per 40 LF	34
Berman Road	993	Large	1 per 40 LF	25
Cultivator Road	1232	Large	1 per 40 LF	31
Declan Road	1565	Large	1 per 40 LF	39
Geneviève Boulevard	1551	Large	1 per 40 LF	39
Tranquility Road	1014	Large	1 per 40 LF	25
Zoe Lane	1391	Large	1 per 40 LF	35
			Total	227

Notes:
1. 5 trees for Cultivator Road obligation to be relocated behind lots 126-132 due to limited places to plant along the roadway.

Schedule A
Perimeter Landscape Edge

Category	P-5	.	.	Totals
Landscape Type	A			
Linear Feet of Road Frontage or Perimeter	650			
Credit for Existing Vegetation (Yes, No, Linear Feet) (Describe below if needed)	318			
Credit for Wall, Fence, or Berm (Yes, No, Linear Feet) (Describe below if needed)	0			
Linear Feet of Planting	332			
Number of Plants Required				
Shade Trees	6			6
Evergreen Trees	0			0
Other Trees (2:1 substitute)				
Shrubs	0			0
Number of Plant Provided				
Shade Trees	6			6
Evergreen Trees	0			0
Other Trees (2:1 substitute)	0			0
Shrubs	0			0

Notes:
1. Remaining tract boundary perimeters not included in the above chart shall be included as part of future phases.
2. Perimeter trees for sideyards to roadway for Lots 58, 64, 65, 72, 80, 87, 99, 100, 105, and 108 and sideyward to parking lot for Lot 111 shall be provided under future Site Development Plan

Schedule B
Parking Lot Internal Landscaping
(Clubhouse Parking Lot)

Number of Parking Spaces	25
Number of Trees Required (1:10 spaces)	3
Number of Trees Provided Shade Trees Other Trees (2:1 substitution)	3

These trees shall be provided under future Site Developm
Plan for the Clubhouse area.

Schedule C
Residential Development Internal Landscaping

Category	SFA	APT
Number of Dwelling Unit	21	0
Number of Trees Required (1:DU SFA; 1:3 DU Apts)	21	0
Number of Trees Provided Shade Trees Other Trees (2:1 substitution)	deferred	0

Chart is shown for informational purposes. The actual planting obligation of these trees shall be deferred until the SDP stage so the plantings do not interfere with house and drywell construction.

NO.	DATE	REVISION

BENCHMARK
ENGINEERING, INC.
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
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. 22390, Expiration Date 6-30-2023.

STATE OF MARYLAND — CHRISTOPHER A. MILLER — 22390 — REGISTERED PROFESSIONAL ENGINEER
9-2-21

OWNER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:
ESC WELLINGTON, L.C.
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ELLICOTT CITY, MARYLAND 21042
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WELLINGTON FARMS

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ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 – HOWARD COUNTY, MARYLAND

LANDSCAPE PLAN

DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 30, 2021	BEI PROJECT NO. 2879
		SCALE: AS SHOWN	SHEET 32 OF 52

F-21-044

I:\2879 Milk Producers\dwg\Finals\Phase 1 Section 2\7022 P1S2.dwg, 9/1/2021 1:14:23 PM

DEVELOPER'S CERTIFICATE

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JASON VAN KIRK — DATE 9-2-21
ESC WELLINGTON, L.C.

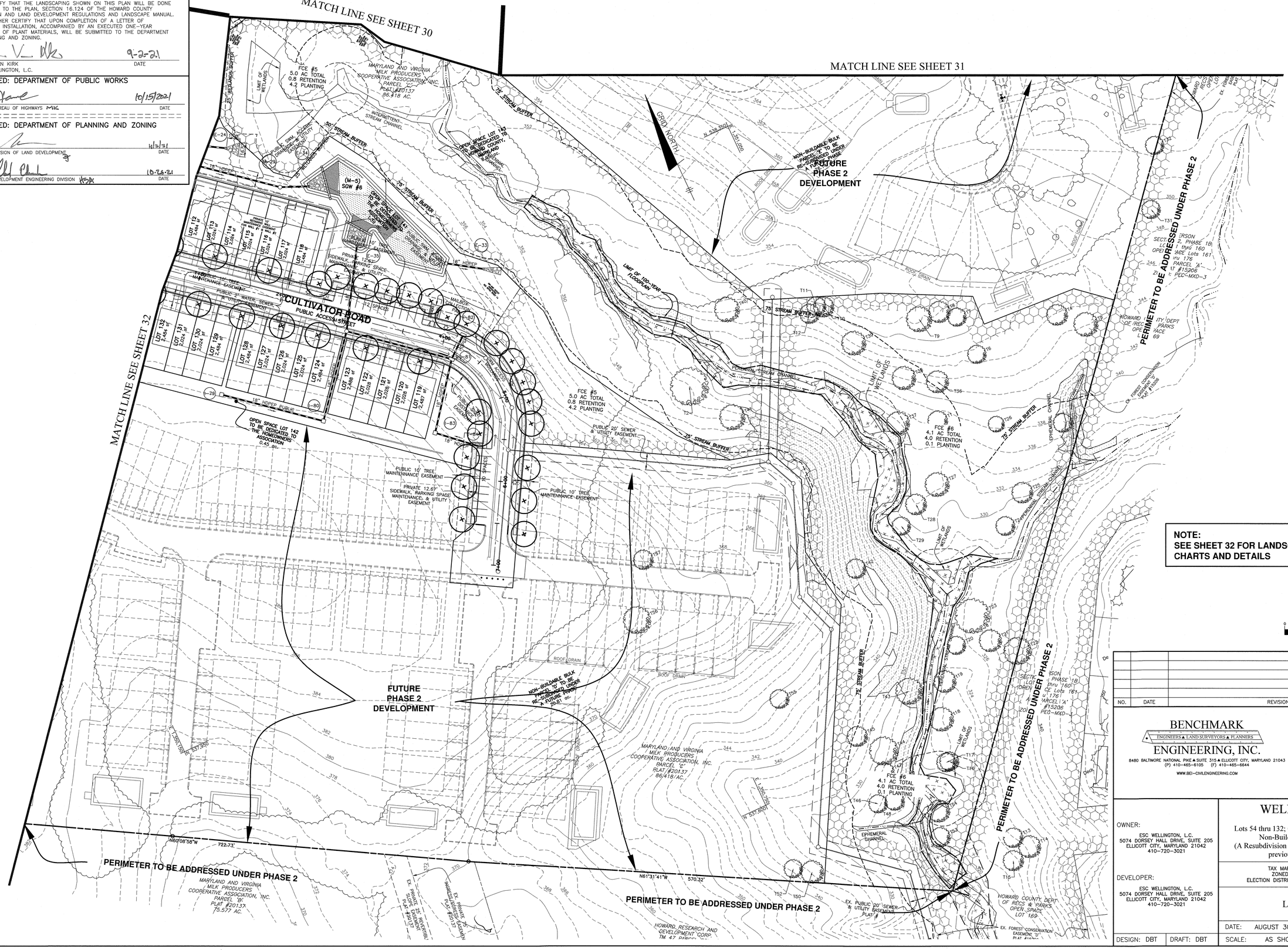
APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/2/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10-26-21



NOTE:
SEE SHEET 32 FOR LANDSCAPE CHARTS AND DETAILS

1 inch = 50 ft.

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315 ▲ ELLICOTT CITY, MARYLAND 21043
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STATE OF MARYLAND — CHRISTOPHER A. MYERS — 22390 — PROFESSIONAL ENGINEER — 9-2-21

OWNER:
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410-720-3021

DEVELOPER:
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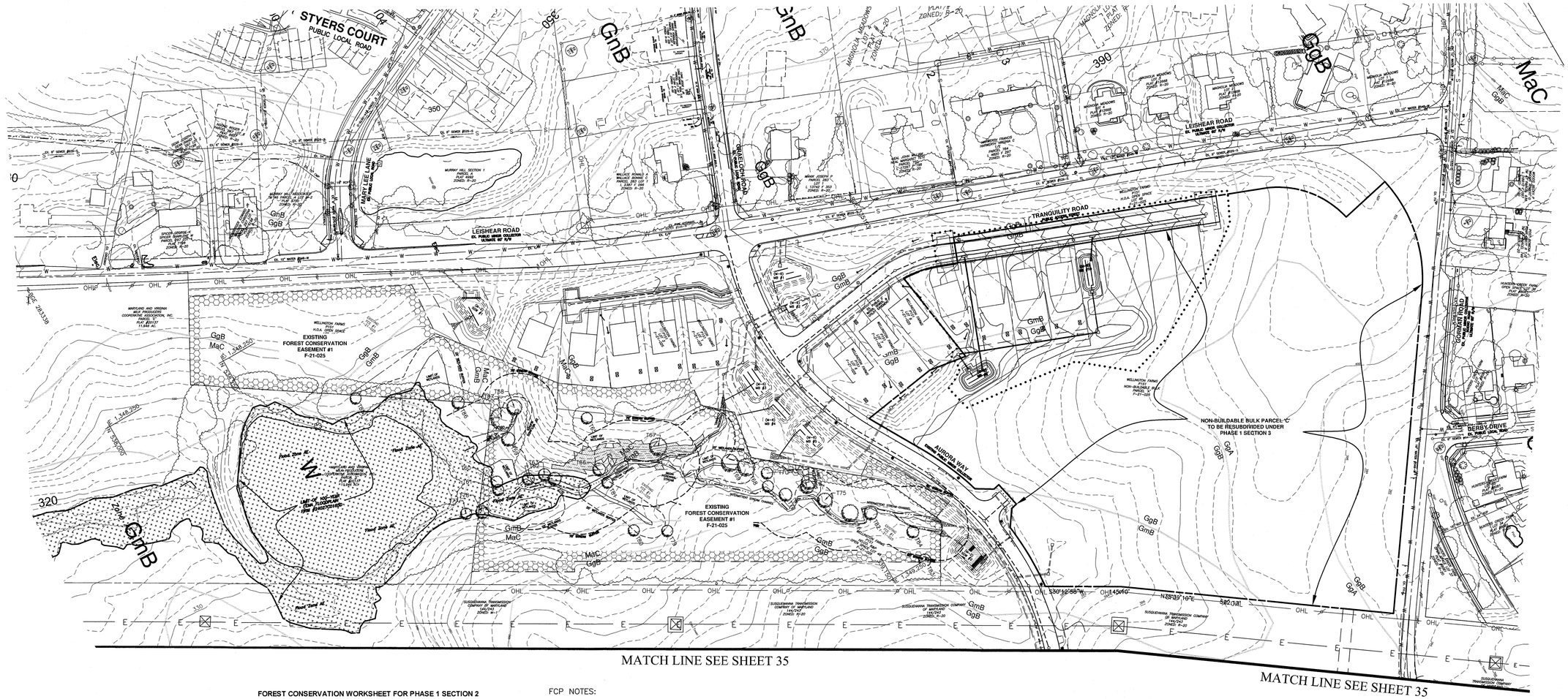
ELECTION DISTRICT NO. 6 - HOWARD COUNTY, MARYLAND

LANDSCAPE PLAN

DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 30, 2021	BEI PROJECT NO. 2879
		SCALE: AS SHOWN	SHEET 33 OF 52

F-21-044



Forest Conservation Planting Phasing Chart					
Phase 1 Section 1 (F-21-025)		Phase 1 Section 2 (F-21-044)		Total	
Required	Provided	Required	Provided	Required	Provided
2.8 acres	4.3 acres	0.5 acres	4.8 acres	3.3 acres	9.1 acres

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/2/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.26.21

FOREST CONSERVATION WORKSHEET FOR PHASE 1 SECTION 2

Net Tract Area

A.	Total (Gross) Tract Area	A =	93.77
B.	Area within 100-year Floodplain	B =	0.60
C.	Other Deductions (Identify: NBBP to be resubdivided in futur)	C =	59.41
D.	Net Tract Area	D =	33.76

Land Use Category

Insert the number "1" under the appropriate land use (limit to only one ent

Resid. Rural LD	Resid. Rural MD	Resid. Suburban	Inst./ Linear	Retail/Ind./Mixed Use/ Office	PUD
0	0	1	0	0	0

E.	Afforestation Threshold	(Net Tract Area x 15%)	E =	5.10
F.	Reforestation Threshold	(Net Tract Area x 20%)	F =	6.80

Existing Forest Cover

G.	Existing Forest Cover within the Net Tract Area	G =	5.00
H.	Area of Forest above Afforestation Threshold	H =	0.00
I.	Area of Forest above Reforestation Threshold	I =	0.00

Break Even Point

J.	Break Even Point	J =	0.00
K.	Forest Clearing Permitted without Mitigation	K =	0.00

Proposed Forest Clearing

L.	Total Area of Forest to be Cleared	L =	0.20
M.	Total Area of Forest to be Retained	M =	4.80

Planting Requirements Inside Watershed

N.	Reforestation for Clearing above the Reforestation Threshold	N =	0.00
P	Reforestation for Clearing below the Reforestation Threshold	P =	0.40
Q.	Credit for Retention above the Reforestation Threshold	Q =	0.00
R.	Total Reforestation Required	R =	0.40
S.	Total Afforestation Required	S =	0.10
T	Total Reforestation and Afforestation Requirement	T=	0.50
U	75% of Total Obligation (Retention + Planting)	U=	4.00
V	Planting Required Onsite to meet 75% Obligation	V=	0.00

Planting Requirements Outside Watershed

W.	Total Planting within Development Site Watershed	W=	4.80
X	Total Afforestation Required	X=	0.00
Y.	Remaining Planting within Watershed for Reforestation Credit	Y=	4.70
Z.	Reforestation for Clearing above the Reforestation Threshold	Z=	0.00
AA.	Reforestation for Clearing below the Reforestation Threshold	AA=	0.00
BB.	Credit for Retention above the Reforestation Threshold	BB=	0.00
CC.	Total Reforestation Required	CC=	0.00
DD.	Total Afforestation and Reforestation Requirement	DD=	0.00

Date: 8/30/21

FCP NOTES:

1. Any Forest Conservation Easement (FCE) area shown hereon is subject to protective covenants which may be found in the Land Records of Howard County which restrict the disturbance and use of these areas.

2. Forested areas retained outside of the FCE shall not be considered part of the FCE and shall not be subject to protective land covenants

3. Limits of disturbance shall be restricted to areas outside the limit of temporary fencing of the FCE boundary, whichever is greater.

4. There shall be no clearing, grading, construction, or disturbance of vegetation in the Forest Conservation Easement, except as permitted by Howard County DPZ

5. No stockpiles, parking areas, equipment cleaning areas, etc. shall occur within areas designated as Forest Conservation Easements.

6. Temporary fencing shall be used to protect forest resources during construction. Fencing shall be installed along limits of disturbance occurring within 50 feet of the proposed FCE limits. Permanent signage will be posted at 50–100 foot intervals along all FCE limits.

7. The forest conservation requirements per section 16.1200 of the Howard County Code and Forest Conservation Manual for this project (Phase 1 Section 2, F–21–044) will be met through the retention of 4.8 acres of onsite forest and 4.8 acres of onsite planting. Financial surety in the amount of $104,544.00 for the 4.8 acres of planting shall be posted as part of the DPW Developer's Agreement,

8. WP–20–039, an alternative compliance to Section 16.1205(a)(3) to allow for the removal of six specimen trees was approved on May 1, 2020. There are no specimen trees to be removed under this phase, F–21–044.

9. Woody invasive species occurring within the proposed planting areas shall be removed prior to planting. This includes, but is not limited to Bradford Pear, multiflora rose, autumn/Russian olive, Oriental bittersweet, tree–of–heaven, and Japanese honeysuckle. These trees, shrubs and vines shall be cut/bush–hogged and all stumps should be treated with an appropriate herbicide treatment. Regrowth of any of the invasive species should be controlled with herbicide and/or mowing on a monthly schedule, in the growing season, during the maintenance and monitoring period.

10. Native trees that are 1' and taller that are present within the planting areas may be counted toward the overall planting density and planting success are required for the release of the planting security.

11. Per Section 16.1205A Subtitle 12 of the County Code the following natural resources must be left undisturbed during land development: trees and other vegetation identified on the lists of rare, threatened and endangered species of the US Fish and Wildlife Service of MD DNR; trees that are part of a historic site or associated with a historic structure and state champion trees, trees 75% of the diameter of state champion trees and trees 30" in diameter or larger. None of these resources, with the exception of the identified trees 30" in diameter or larger, defined as specimen trees, are known to occur on the site.

12. This project will provide larger stock (two rows of one inch caliper trees) planted along the edge of the Forest Conservation Easement in lieu of the 35 foot setback from the rear and side lot lines per section 16.1209(b)(4) of the County Code.

13. The Forest Conservation Plan calculations have been based on existing conditions information provided in the approved Milk Producers Property – Supplemental Forest Stand Delineation as prepare by Wetland Studies and Solutions, October 25, 2019.

0 50 100 200

1 inch = 100 ft.

Plan Reviewed and Approved for Submission for County Review by:

Myra Brosius

ISA Certified Arborist #MA5411A
MD DNR FCA Qualified Professional
Myra.brosius@gmail.com

Eco-Science Professionals, Inc.
CONSULTING ECOLOGISTS
P.O. BOX 966 GLEN ARM, MARYLAND 21057
Telephone (410) 665-7840
www.ecoscienceprofessionalsinc.com

NO.	DATE	REVISION

OWNER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410–720–3021

DEVELOPER:
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TAX MAP: 46 – GRID: 6 – PARCEL: 163
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ELECTION DISTRICT NO. 6 – HOWARD COUNTY, MARYLAND

FOREST CONSERVATION PLAN

DATE: August 30, 2021 | BEI PROJECT NO. 2879
DESIGN: . | DRAFT: .
SCALE: AS SHOWN | SHEET 34 OF 52

F-21-044

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MATCH LINE SEE SHEET 34

MATCH LINE SEE SHEET 34

FCE # 4
0.3 acres
to be planted
(existing trees and brush to be removed prior to planting)

FCE # 5
5.0 acres
0.8 acres to be retained NTA
4.2 acres to be planted

FCE # 6
4.1acres
4.0 acres to be retained NTA
0.1 acres to be planted

FCE # 7
0.2 acres
(10,208 sq.ft.)
to be planted

NON-BUILDABLE BULK PARCEL 'E' TO BE RESUBDIVIDED UNDER PHASE 2

NON-BUILDABLE BULK PARCEL 'D' TO BE RESUBDIVIDED UNDER PHASE 1 SECTION 3

NON-BUILDABLE BULK PARCEL 'D' TO BE RESUBDIVIDED UNDER PHASE 1 SECTION 3

EXISTING FOREST CONSERVATION EASEMENT #2 F-21-025

EXISTING FOREST CONSERVATION EASEMENT #3 F-21-025

DECLAN ROAD

GENEVIEVE BOULEVARD

AURORA WAY

CULTIVATION ROAD

SEA VALLEY WAY

DORMAN CROSSING ELEMENTARY SCHOOL SDP-97-005

S69°07'46"E 1476.06'

N30°12'58"E 420.16'

S40°20'05"W 2049.27'

N60°08'58"W 722.73'

N61°31'41"W 570.32'

0 50 100 200
1 inch = 100 ft.

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MK — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/2/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION RDA — DATE 10-26-21

Plan Reviewed and Approved for Submission for County Review by:

Myra Brosius
ISA Certified Arborist #MA5411A
MD DNR FCA Qualified Professional
Myra.brosius@gmail.com

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ELECTION DISTRICT NO. 6 - HOWARD COUNTY, MARYLAND

FOREST CONSERVATION PLAN

DATE: AUGUST 30, 2021 | BEI PROJECT NO. 2879
DESIGN: . | DRAFT: . | SCALE: AS SHOWN | SHEET 35 OF 52

F-21-044

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TABLE 2: SPECIMEN TREE TABLE

No.	Common Name	Scientific Name	DBH (inches)	Condition Rating	Comments	
1	Yellow poplar	*Liriodendron tulipifera*	32	Fair	Broken branches, narrow crown	
2	White oak	*Quercus alba*	61	Good	Double leader	
3	Yellow poplar	*Liriodendron tulipifera*	31	Fair	Narrow crown, vine cover (*Toxicodendron radicans*)	
4	Southern red oak	*Quercus falcata*	34	Poor	Broken leader, small dead wood	
5	Yellow poplar	*Liriodendron tulipifera*	39	Good	Broken branches, small dead wood	
6	Yellow poplar	*Liriodendron tulipifera*	38	Good	Large dead wood	
7	Yellow poplar	*Liriodendron tulipifera*	30	Good	Small dead wood, broken branches	
8	Yellow poplar	*Liriodendron tulipifera*	35	Poor	Heavy vine cover (*Toxicodendron radicans*), root cavity, poor form, 1-sided crown, small deadwood, broken branches, hollow trunk	
9	Yellow poplar	*Liriodendron tulipifera*	41	Poor	Included bark, large root cavity	
10	Yellow poplar	*Liriodendron tulipifera*	33	Good		
11	Yellow poplar	*Liriodendron tulipifera*	31	Fair	Broken leader, 1-sided crown, poor form	
12	Yellow poplar	*Liriodendron tulipifera*	32	Good		
13	Northern red oak	*Quercus rubra*	33	Fair	Narrow crown, broken branches	
14	Yellow poplar	*Liriodendron tulipifera*	36	Good	Vine cover (*Toxicodendron radicans*)	
15	Yellow poplar	*Liriodendron tulipifera*	33	Good		
16	Yellow poplar	*Liriodendron tulipifera*	31	Fair	Vine cover (*Toxicodendron radicans*), 1-sided crown, large dead wood	
17	Yellow poplar	*Liriodendron tulipifera*	31	Good	Vine cover (*Toxicodendron radicans*), small dead wood	
18	Yellow poplar	*Liriodendron tulipifera*	39	Good	Small dead wood	
19	Yellow poplar	*Liriodendron tulipifera*	36	Good	1-sided crown	
20	White oak	*Quercus alba*	30	Fair	Large dead wood, 1-sided crown	
21	Yellow poplar	*Liriodendron tulipifera*	36	Good	Large dead wood	
22	Yellow poplar	*Liriodendron tulipifera*	44	Fair	Large dead wood, cavity at base	
23	Yellow poplar	*Liriodendron tulipifera*	56	Good		
24	Yellow poplar	*Liriodendron tulipifera*	31	Good		
25	Yellow poplar	*Liriodendron tulipifera*	34	Good	Large dead wood	
26	Yellow poplar	*Liriodendron tulipifera*	35	Poor	Large dead wood, dead leader	
27	Yellow poplar	*Liriodendron tulipifera*	39	Poor	Lean, large dead wood, small dead wood, 1-sided crown	
28	White oak	*Quercus alba*	34	Good	Large dead wood	
29	Yellow poplar	*Liriodendron tulipifera*	30	Good		
30	Yellow poplar	*Liriodendron tulipifera*	58	Poor	Dead leader, large dead wood	
31	Northern red oak	*Quercus rubra*	30	Poor	Crown mostly dead, vine cover (*Toxicodendron radicans*)	
32	Northern red oak	*Quercus rubra*	30	Fair	Heavy vine cover (*Toxicodendron radicans*), large dead wood	
33	Mockernut hickory	*Carya tomentosa*	31	Poor	Small dead wood, double leader, included bark	
34	Yellow poplar	*Liriodendron tulipifera*	34	Good	Large dead wood, heavy vine cover (*Toxicodendron radicans*)	
35	Northern red oak	*Quercus rubra*	35	Fair	Heavy vine cover (*T. radicans, S. rotundifolia, H. helix*)	
36	Yellow poplar	*Liriodendron tulipifera*	30	Good	Small dead wood	
37	Yellow poplar	*Liriodendron tulipifera*	32	Good		
38	Yellow poplar	*Liriodendron tulipifera*	31	Good	Small dead wood	
39	Yellow poplar	*Liriodendron tulipifera*	31	Good	1-sided crown, large dead wood	
40	Yellow poplar	*Liriodendron tulipifera*	32	Good	Large dead wood	
41	Yellow poplar	*Liriodendron tulipifera*	34	Good	Small dead wood	
42	Yellow poplar	*Liriodendron tulipifera*	32	Good		
43	Yellow poplar	*Liriodendron tulipifera*	41	Good		
44	Yellow poplar	*Liriodendron tulipifera*	46	Good		
45	Yellow poplar	*Liriodendron tulipifera*	33	Good	Minor vine cover (*Toxicodendron radicans*)	
46	Yellow poplar	*Liriodendron tulipifera*	30	Poor	Cavity at base, butt rot	
47	Yellow poplar	*Liriodendron tulipifera*	33	Good		
48	Yellow poplar	*Liriodendron tulipifera*	31	Fair	Vine cover (*Toxicodendron radicans*), narrow crown, storm damaged	
49	Northern red oak	*Quercus rubra*	32	Fair	Small cavity at base, minor storm damage, narrow crown	TO BE REMOVED
50	Yellow poplar	*Liriodendron tulipifera*	37	Good		
51	Yellow poplar	*Liriodendron tulipifera*	32	Good		TO BE REMOVED
52	Yellow poplar	*Liriodendron tulipifera*	30	Good		
53	Yellow poplar	*Liriodendron tulipifera*	32	Fair	Dual leader, included bark, vine cover (*Toxicodendron radicans*)	
54	Yellow poplar	*Liriodendron tulipifera*	36	Good		
55	Yellow poplar	*Liriodendron tulipifera*	31	Good		
56	White oak	*Quercus alba*	44	Good		TO BE REMOVED
57	White oak	*Quercus alba*	32	Good	Minor vine cover (*Toxicodendron radicans*)	TO BE REMOVED
58	Yellow poplar	*Liriodendron tulipifera*	40	Very Poor	Lightning and storm damage, crown dieback	
59	Yellow poplar	*Liriodendron tulipifera*	36	Very Poor	Lightning strike, very large cavity at base, butt rot	
60	White oak	*Quercus alba*	31	Fair	Some beaver damage at base, included barbed wire fence in trunk	
61	White oak	*Quercus alba*	30	Very Poor	Cavity at base, dead crown, trunk rot	
62	Yellow poplar	*Liriodendron tulipifera*	32	Good		
63	Yellow poplar	*Liriodendron tulipifera*	32	Good		
64	Yellow poplar	*Liriodendron tulipifera*	35	Fair	Included bark, large dead wood	
65	Yellow poplar	*Liriodendron tulipifera*	30	Poor	Very heavy vine cover (*T. radicans, Vitis sp., R. multiflora*), large dead wood	
66	Red maple	*Acer rubrum*	34	Fair	Double leader, included bark, large dead wood	
67	Yellow poplar	*Liriodendron tulipifera*	46	Good	Small dead wood	
68	Red maple	*Acer rubrum*	46	Poor	Large dead wood, butt rot, large cavity at base, leaning	
69	Yellow poplar	*Liriodendron tulipifera*	45	Good		
70	Yellow poplar	*Liriodendron tulipifera*	31	Very Poor	Leaning, large cavity down trunk (10'), Large dead wood	
71	Red maple	*Acer rubrum*	30	Very Poor	Double leader, included bark, very large trunk cavity, butt rot	
72	Yellow poplar	*Liriodendron tulipifera*	34	Good	Included bark, double leader at 20'	
73	Yellow poplar	*Liriodendron tulipifera*	36	Fair	Large dead wood, included bark	
74	Yellow poplar	*Liriodendron tulipifera*	40	Very Poor	Butt rot, vine cover (*S. rotundifolia, C. orbiculatus*), double leader, included bark	
75	Yellow poplar	*Liriodendron tulipifera*	38	Fair	Double leader, included bark	
76	Yellow poplar	*Liriodendron tulipifera*	44	Fair	Double leader, included bark	
77	Yellow poplar	*Liriodendron tulipifera*	30	Fair	Beaver damage at base, small dead wood	
78	Yellow poplar	*Liriodendron tulipifera*	34	Fair	Large dead wood, heavy vine cover (*Toxicodendron radicans*),	
79	White oak	*Quercus alba*	30	Fair	Double leader, included bark, small dead wood	
80	Yellow poplar	*Liriodendron tulipifera*	30	Good	Large dead wood	
81	Red maple	*Acer rubrum*	30	Good		
82	Yellow poplar	*Liriodendron tulipifera*	35	Fair	Double leader, included bark	
83	Yellow poplar	*Liriodendron tulipifera*	33	Fair	Large dead wood, vine cover (*T. radicans, Vitis sp.*)	
84	Red maple	*Acer rubrum*	32	Fair	Double leader, included bark, small dead wood	
85	Yellow poplar	*Liriodendron tulipifera*	45	Poor	Double leader, included bark, small dead wood	
86	Yellow poplar	*Liriodendron tulipifera*	36	Fair	Double leader, included bark	
87	Yellow poplar	*Liriodendron tulipifera*	58	Good		
88	Yellow poplar	*Liriodendron tulipifera*	34	Fair	Heavy vine cover, girdled roots, trunk decay (woodpecker holes), large dead wood	
89	Yellow poplar	*Liriodendron tulipifera*	39	Good	Large dead wood, small dead wood	
90	Yellow poplar	*Liriodendron tulipifera*	37	Poor	Narrow crown, large lean, large dead wood	TO BE REMOVED
91	Northern red oak	*Quercus rubra*	37	Good	Girdled roots, heavy vine cover - poison ivy (Toxicodendron radicans) and oriental bittersweet (*Celastrus orbiculatus*)	TO BE REMOVED

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MK — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/2/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.26.21

Soils Table

Map Unit Symbol	Map Unit Name	% Hydric Components	Drainage Class	K-Factor* (Whole soil)
CeB	Chillum loam, 2 to 5 % slopes	0	Well drained	0.24
GgA	Glenelg loam, 0 to 3 % slopes	0	Well drained	0.24
GgB	Glenelg loam, 3 to 8 % slopes	0	Well drained	0.24
GmB	Glenville silt loam, 3 to 8 % slopes	10	Moderately well drained	0.37
GnB	Glenville-Baile silt loams, 0 to 8 % slopes	35	Moderately well drained	0.43
MaC	Manor loam, 8 to 15 % slopes	0	Well drained	0.28
MaD	Manor loam, 15 to 25 % slopes	0	Well drained	0.28
RuB	Russett and Beltsville soils, 2 to 5 % slopes	0	Moderately well drained	0.28
RuC	Russett and Beltsville soils, 5 to 10 % slopes	0	Moderately well drained	0.28
SaC	Sassafras loam 5 to 10 % slopes	0	Well drained	0.28
SrD	Sassafras and Croom soils, 10 to 15 % slopes	0	Well drained	0.32

Source: https://websoilsurvey.sc.egov.usda.gov (January 2018)

*Soils are considered highly erodible if the K-factor exceeds 0.35

FOREST STAND ANALYSIS TABLE

Applicant: Maryland and Virginia Milk Producers Business Trust *Project Name:* Milk Producers Property *Submission No.* ________

KEY	A. TYPE OF COMMUNITY	B. AREA (Gross acres)	C. SOIL INFORMATION: 1. Soil Types	C. 2. Typical forest cover for soil type	C. 3. Woodland Suitability Index	C. 4. Habitat value for soil type	D. EXISTING VEGETATION (Dominant Species & Approx. %)	E. STAND CHARACTERISTICS: 1. Size (Diameter)	E. 2. Age	E. 3. General Conditions	F. FOREST AREA IN SENSITIVE ENVIRONMENTS (acres)
F1	Yellow poplar & White oak	14.6	GnB, RuC, GmB, MaD, MaC, GgB	[This information is not available with the updated soil survey]	[This information is not available with the updated soil survey]	[This information is not available with the updated soil survey]	Canopy: Yellow poplar (65%), White oak (25%), Red maple (10%), Northern red oak (10%); Understory Shrubs: American hornbeam (5%), American beech (2%), Wine raspberry (2%), Japanese barberry (5%), Spicebush (5%), Multiflora rose (7%); Herbaceous: Japanese honeysuckle (5%), Japanese stiltgrass (10%), Roundleaf greenbrier (10%), Beefsteak plant (2%)	20-33", 18-28", 12-16", 18-25"	100 -120 years	Good, numerous herbaceous invasive species, some invasive shrub cover	Steep Slopes (25%+) 1.28; Wetlands 0.26; Wetland Buffers 0.90; 100-year Floodplain 0.29; Stream Buffers 7.88
F2	Red maple	0.74	GnB, RuA	[This information is not available with the updated soil survey]	[This information is not available with the updated soil survey]	[This information is not available with the updated soil survey]	Canopy: Red maple (35%), Persimmon (20%), Black cherry (3%), Black Willow (2%); Understory Shrubs: Pin oak (2%), Multiflora rose (10%), Roundleaf greenbrier (10%); Herbaceous: Japanese stiltgrass (2%), Wild onion (2%), Grape vine (20%)	8-14", 6-12", 12-18", 8-10"	40-60 years	Fair, large amount of vine cover at canopy, some invasive species, young forest	Steep Slopes (25%+) 0.00; Wetlands 0.29; Wetland Buffers 0.21; 100-year Floodplain 0.00; Stream Buffers 0.10

PLANTING SCHEDULE

FCP Planting Area # 4 - 0.3 acres

Planting units required: 210
Planting units proposed: 210

Qty	Species	Size	Spacing	Total Units
10	Acer rubrum - Red maple	1" caliper	15' o.c.	
5	Cornus florida - Flowering dogwood	1" caliper	15' o.c. *	
15	Liriodendron tulipifera - Tulip poplar	1" caliper	15' o.c. *	
10	Platanus occidentalis - Sycamore	1" caliper	15' o.c. *	
10	Prunus serotina - Black cherry	1" caliper	15' o.c. *	
5	Quercus palustris - Pin oak	1" caliper	15' o.c.	
5	Sassafras albidum - Sassafras	1" caliper	15' o.c. *	
60	Total plantings (3.5 planting units per tree)	FCA unit credit		210
	Total Unit Credit			210

FCP Planting Area # 5 - 4.2 acres

Planting units required: 2940
Planting units proposed: 2940

Qty	Species	Size	Spacing	Total Units
100	Acer rubrum - Red maple	1" caliper	15' o.c.*	
30	Cercis canadensis - Red bud	1" caliper	15' o.c.*	
60	Cornus florida - Flowering dogwood	1" caliper	15' o.c. *	
120	Liriodendron tulipifera - Tulip poplar	1" caliper	15' o.c.*	
155	Platanus occidentalis - Sycamore	1" caliper	15' o.c.	
120	Prunus serotina - Black cherry	1" caliper	15' o.c. *	
110	Quercus alba - White oak	1" caliper	15' o.c. *	
40	Quercus palustris - Pin oak	1" caliper	15' o.c.	
75	Sassafras albidum - Sassafras	1" caliper	15' o.c. *	
30	Salix nigra - Black willow	5-6' cont	15' o.c.	
840	Total plantings (3.5 planting units per tree)	FCA unit credit		2940
	Total Unit Credit			2940

FCP Planting Area # 6 - 0.1 acres

Planting units required: 70
Planting units proposed: 70

Qty	Species	Size	Spacing	Total Units
5	Acer rubrum - Red maple	1" caliper	15' o.c.	
10	Liriodendron tulipifera - Tulip poplar	1" caliper	15' o.c. *	
5	Prunus serotina - Black cherry	1" caliper	15' o.c. *	
20	Total plantings (3.5 planting units per tree)	FCA unit credit		70
	Total Unit Credit			70

FCP Planting Area # 7 - 0.2 acres (10,208 sq.ft.)

Planting units required: 159
Planting units proposed: 161

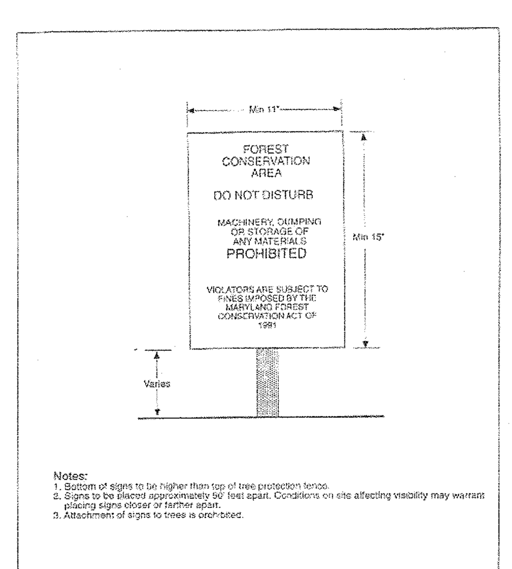
Qty	Species	Size	Spacing	Total Units
5	Cercis canadensis - Red bud	1" caliper	15' o.c.	
5	Cornus florida - Flowering dogwood	1" caliper	15' o.c.	
8	Liriodendron tulipifera - Tulip poplar	1" caliper	15' o.c.	
12	Prunus serotina - Black cherry	1" caliper	15' o.c.	
8	Quercus alba - White oak	1" caliper	15' o.c.	
8	Sassafras albidum - Sassafras	1" caliper	15' o.c.	
46	Total plantings (3.5 planting units per tree)	FCA unit credit		161
	Total Unit Credit			161

Planting Notes:

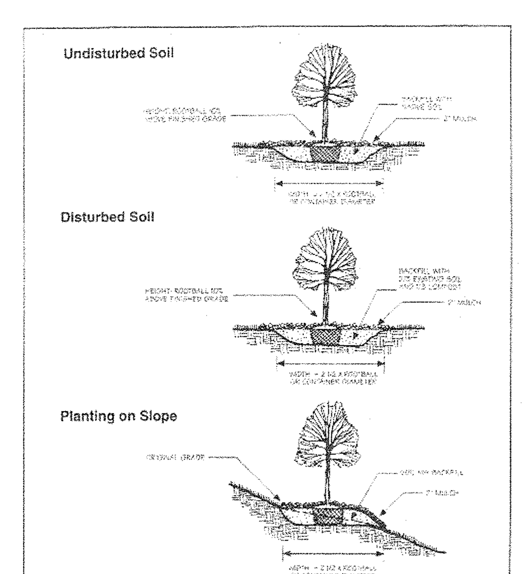
- Planting density based on 700 planting units per acre. 2" caliper trees = 7 planting units, 1" caliper trees = 3.5 planting units, whips with shelter = 2 planting units.
- * - These species should not be planted within the wetland limits.
- Planting shall be made in a curvilinear fashion along contour. The planting should avoid a grid appearance but should be spaced to facilitate maintenance
- Existing native trees 1' and taller may be counted toward final plant density obligation for the purpose calculating planting success and security release.
- Invasive Species Control Note - Woody invasive species occurring within the proposed planting areas shall be removed prior to planting. This includes, bit is not limited to Bradford pear, multiflora rose, autumn/Russian olive, Oriental bittersweet, tree-of-Heaven, and Japanese honeysuckle. These trees, shrubs and vines shall be cut/bush-hogged and all stumps should be treated with an appropriate herbicide treatment. Regrowth of the any woody invasive species should be controlled with herbicide and/or mowing on a monthly schedule, in the growing season, during the maintenance and monitoring period.

FCE Boundary Planting Note

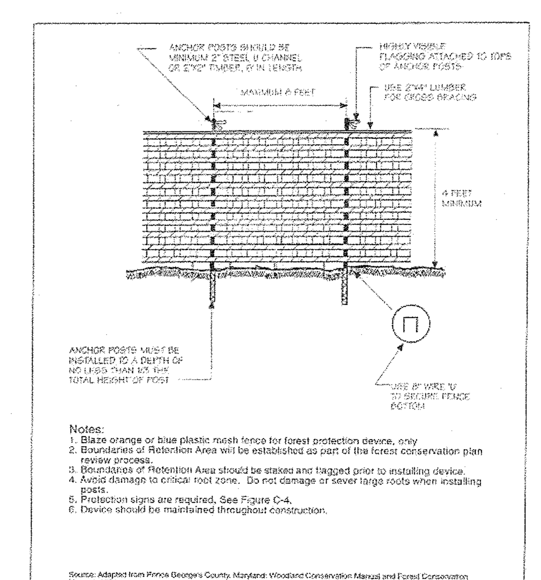
In locations were the FCE is closer than 35 feet to the buildable lot lines, larger planting stock ((2 rows of 1 inch caliper trees shall be planted) to define the planting area boundary and discourage encroachment. Tree spacing in these rows should be reduced to 10 feet between plants and rows.



Construction Signs — Figure C-4



Container Grown and B&B Planting Techniques — Figure C-16



Plastic Mesh Tree Protection Fence — Figure C-5

REFORESTATION PLAN

A. Planting Plan and Methods

Plant species selection was based on our knowledge regarding plant communities in Maryland's Piedmont Plateau and information provided in the soil survey on typical vegetation for the soil type on the planting site. Species selection was also based on our knowledge of plant availability in the nursery industry.

Reforestation will be accomplished through a mixed planting of whips and branched transplants. Container grown stock is recommended but bareroot stock may be used to help control afforestation costs. If bareroot stock is used the root systems of all plants will be dipped in an anti-desiccant gel prior to planting to improve moisture retention in the root systems.

Prior to planting the proposed Forest Conservation Easements all multiflora rose in the planting area shall be removed. Removal of the rose may be performed with mowing and herbicide treatments. Physical removal of all top growth following by a periodic herbicide treatment of stump sprouts is recommended. Native tree and shrub species occurring within the rose thickets should be retained wherever possible. Herbicides treatments shall occur on 2 month intervals during the first growing season and once each in the spring and fall for subsequent years. Herbicide used shall be made specifically to address woody plant material and shall be applied as per manufacturers specifications. Care should be taken not to spray planted trees or naturally occurring native tree/shrub seedlings. It is recommended that initiation of rose removal begin at least six months prior to planting.

B. Planting and Soil Specifications

Plant material will be installed in accordance with the Planting Detail and Planting Specifications shown on the Forest Conservation Plan.

Amendments to existing soil will be in accordance with the Planting Specifications shown on the Forest Conservation Plan. Soil disturbance will be limited to individual planting locations.

C. Maintenance of Plantings

For information regarding maintenance of the reforestation plantings, see Post Construction Management Plans.

D. Guarantee Requirements

A 90 percent survival rate of the reforestation plantings will be required after one growing season. All plant material below the 90 percent survival threshold will be replaced at the beginning of the second growing season. At the end of the third growing season, a 75 percent survival rate will be required. All plant material below the 75 percent survival threshold will be replaced by the beginning of the next growing season.

E. Security for Reforestation

Section 16-1209 of the Howard County Forest Conservation Act requires that a developer shall post a security (bond, letter of credit, etc.) with the County to insure that all work is done in accordance with the FCP.

CONSTRUCTION PERIOD PROTECTION PROGRAM

A. Forest Protection Techniques

1. Soil Protection Area (Critical Root Zone)

The soil protection area, or critical root zone, of a tree is that portion of the soil column where most of a its roots may be found. The majority of roots responsible for water and nutrient uptake are located just below the soil surface. Temporary fencing shall be placed around the critical root zone of the forest in areas where the forest limits occur within 25 feet of the limit of disturbance.

2. Fencing and Signage

Existing forest limits occurring within 25 feet of the limits of disturbance shall be protected using temporary protective fencing. Permanent signage shall be placed around the afforestation area prior to plant installation, as shown on the plan.

B. Pre-Construction Meeting

Upon staking of limits of disturbance a pre-construction meeting will be held between the developer, contractor and appropriate County inspector. The purpose of the meeting will be to
verify that all sediment control is in order, and to notify the contractor of possible penalties for non-compliance with the FCP.

C. Storage Facilities/Equipment Cleaning

All equipment storage, parking, sanitary facilities, material stockpiling, etc. associated with construction of the project will be restricted to those areas outside of the proposed Forest Conservation Easement. Cleaning of equipment will be limited to area within the LOD of the proposed homesites. Wastewater resulting from equipment cleaning will be controlled to prevent runoff into environmentally sensitive areas.

D. Sequence of Construction

The following timetable represents the proposed timetable for development. The items outlined in the Forest Conservation Plan will be enacted within two (2) years of subdivision approval.

Below find a proposed sequence of construction.

1. Install all signage and sediment control devices.

2. Hold pre-construction meeting between developer, contractor and County inspector.
3. Build access roads, install well and septic systems, and construct houses. Stabilize all disturbed areas accordingly.

4. Begin multiflora rose removal. Install permanent protective signage for Easements and initiate plantings in accordance with Forest Conservation Plan. Plantings will be completed within two (2) years of subdivision approval.

5. Remove sediment control.

6. Hold post-construction meeting with County inspectors to assure compliance with FCP. Submit Certification of Installation.

7. Monitor and maintain plantings for 3 years.

E. Construction Monitoring

Eco-Science Professionals, or another qualified professional designated by the developer, will monitor construction of the project to ensure that all activities are in compliance with the Forest Conservation Plan.

F. Post-Construction Meeting

Upon completion of construction, Eco-Science Professionals, or another qualified professional designated by the developer, will notify the County that construction has been completed and arrange for a post-construction meeting to review the project site. The meeting will allow the County inspector to verify that plantings have been installed.

POST-CONSTRUCTION MANAGEMENT PLAN

Howard County requires 3 year post-construction management plan be prepared as part of the forest conservation plan. The plan goes into effect upon acceptance of the construction certification of completion by the County. Eco-Science Professionals, or another qualified professional designated by the developer, will be responsible for implementation of the post-construction management plan.

The following items will be incorporated into the plan:

A. Fencing and Signage

Permanent signage indicating the limits of the retention/reforestation area shall be maintained.

B. General Site Inspections/Maintenance of Plantings

Site inspections will be performed a minimum of three times during the growing season. The purpose of the inspections will be to assess the health of the afforestation plantings. Appropriate measures will be taken to rectify any problems which may arise.

In addition, maintenance of the plantings will involve the following steps:

1. Watering - All plant material shall be watered twice a month during the 1st growing season, more or less frequently depending on weather conditions. During the second growing season, once a month during May-September, if needed.
2. Removal of invasive exotics and noxious weeds. Old field successional species will be retained.
3. Identification of serious plant pests and diseases, treatment with appropriate agent.
4. Pruning of dead branches.
5. After inspections, replacement of plants, if required, in accordance with the Guarantee Requirements shown on the FCP.

C. Education

The developer will provide appropriate materials to property owners informing them of the location and purpose of the afforestation area. Materials may include site plans and information explaining the intent of the forest conservation law.

D. Final Inspection

At the end of the year post-construction management period, Eco-Science Professionals, or another qualified professional, will submit to the administrator of the Howard County Forest Conservation Program certification that all retention/afforestation requirements have been met. Upon acceptance of this certification, the County will release the developer from all future obligations and release the developer's bond.

Plan Reviewed and Approved for Submission for County Review by:

Myra Brosius
ISA Certified Arborist #MA5411A
MD DNR FCA Qualified Professional
Myra.brosius@gmail.com

Eco-Science Professionals, Inc.
CONSULTING ECOLOGISTS
P.O. BOX 5006 GLEN ARM, MARYLAND 21057
Telephone (410) 683-7840
www.ecoscienceprofessionalsinc.com

NO.	DATE	REVISION

OWNER:

ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:

ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

WELLINGTON FARMS

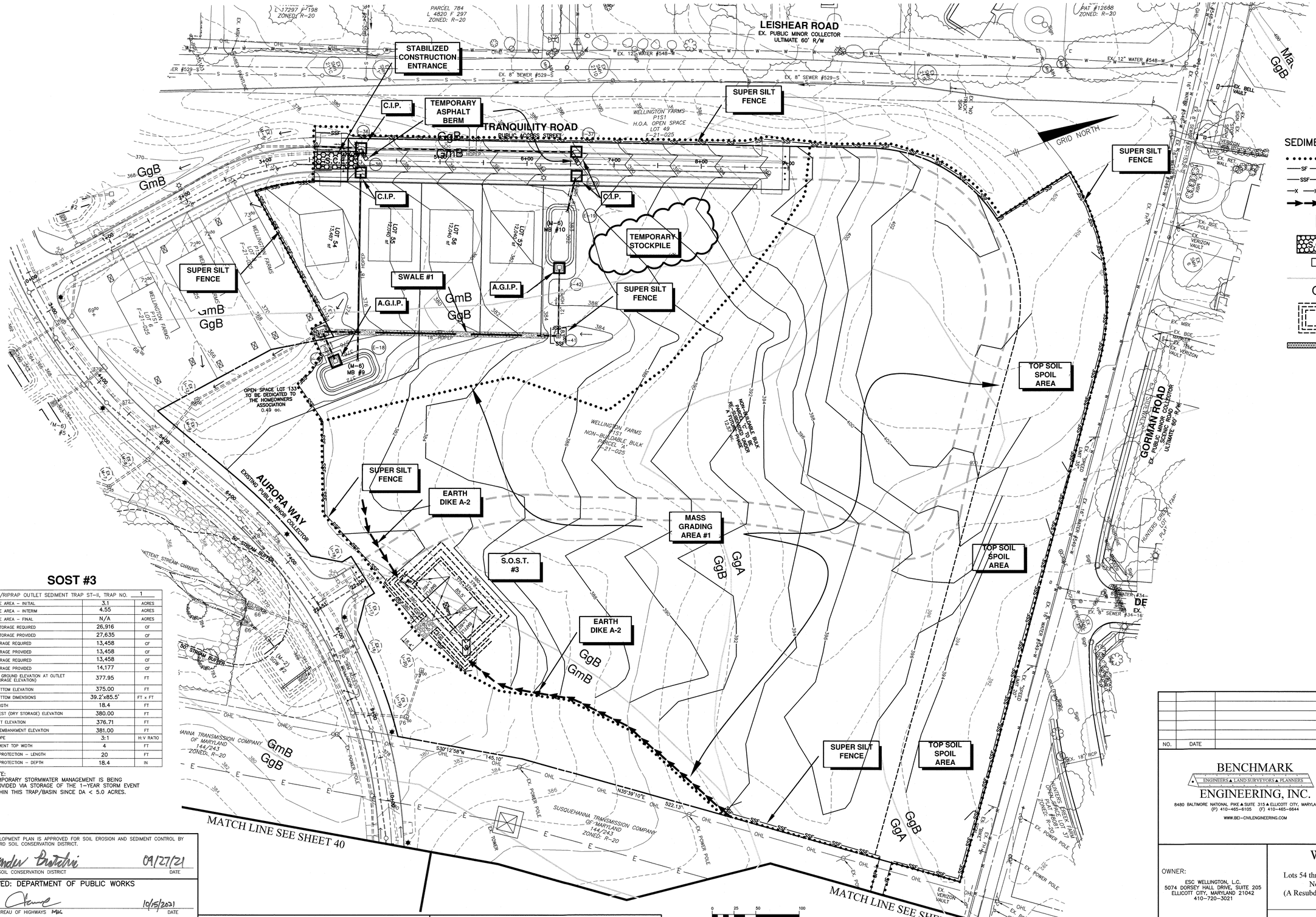
Phase 1 Section 2
Lots 54 thru 132; Open Space Lots 133 thru 144;
Non-Buildable Bulk Parcels 'C', 'D', and 'E'
(A Resubdivision of Non-Buildable Bulk Parcels 'A' and 'B' previously recorded under F-21-025)

TAX MAP: 46 – GRID: 6 – PARCEL: 163
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 – HOWARD COUNTY, MARYLAND

FOREST CONSERVATION PLAN

DATE: AUGUST 30, 2021	BEI PROJECT NO. 2879
DESIGN: . DRAFT: . SCALE: AS SHOWN	SHEET 36 OF 52

F-21-044



SEDIMENT CONTROL LEGEND

- LIMIT OF DISTURBANCE
- SILT FENCE
- SUPER SILT FENCE
- TREE PROTECTION FENCE
- EARTH DIKE
- INLET PROTECTION
- STABILIZED CONSTRUCTION ENT.
- GABION INFLOW PROTECTION
- SOILS LINE
- SOILS TYPE
- SEDIMENT TRAP CONTOURS
- PERMANENT SOIL STABILIZATION MATTING CHANNEL APPLICATION

SOST #3

STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II, TRAP NO. 1		
DRAINAGE AREA – INITIAL	3.1	ACRES
DRAINAGE AREA – INTERIM	4.55	ACRES
DRAINAGE AREA – FINAL	N/A	ACRES
TOTAL STORAGE REQUIRED	26,916	CF
TOTAL STORAGE PROVIDED	27,635	CF
WET STORAGE REQUIRED	13,458	CF
WET STORAGE PROVIDED	13,458	CF
DRY STORAGE REQUIRED	13,458	CF
DRY STORAGE PROVIDED	14,177	CF
EXISTING GROUND ELEVATION AT OUTLET (WET STORAGE ELEVATION)	377.95	FT
TRAP BOTTOM ELEVATION	375.00	FT
TRAP BOTTOM DIMENSIONS	39.2'x85.5'	FT x FT
WEIR LENGTH	18.4	FT
WEIR CREST (DRY STORAGE) ELEVATION	380.00	FT
CLEANOUT ELEVATION	376.71	FT
TOP OF EMBANKMENT ELEVATION	381.00	FT
SIDE SLOPE	3:1	H:V RATIO
EMBANKMENT TOP WIDTH	4	FT
OUTLET PROTECTION – LENGTH	20	FT
OUTLET PROTECTION – DEPTH	18.4	IN

NOTE:
TEMPORARY STORMWATER MANAGEMENT IS BEING PROVIDED VIA STORAGE OF THE 1-YEAR STORM EVENT WITHIN THIS TRAP/BASIN SINCE DA < 5.0 ACRES.

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

Alexander Brestchi — 09/27/21
HOWARD SOIL CONSERVATION DISTRICT — DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

10/5/2021
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

11/3/21
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

10.26.21
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

DEVELOPER'S CERTIFICATE

"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."

DEVELOPER — 9-2-21 DATE

ENGINEER'S CERTIFICATE

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

C.I. Malagari — 9-2-21
ENGINEER — DATE

THIS PLAN IS FOR SEDIMENT AND EROSION CONTROL ONLY.

NO.	DATE	REVISION

BENCHMARK
ENGINEERING, INC.
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
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. 22390, Expiration Date: 6-30-2023.

STATE OF MARYLAND — CHRISTOPHER A. MALAGARI — 22390 — PROFESSIONAL ENGINEER
C.I. Malagari 9-2-21

OWNER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

WELLINGTON FARMS

Phase 1 Section 2
Lots 54 thru 132; Open Space Lots 133 thru 143; Parcel 'A';
Non-Buildable Bulk Parcels 'C', 'D', and 'E'
(A Resubdivision of Non-Buildable Bulk Parcels 'A' and 'B' previously recorded under F-21-025)

TAX MAP: 46 – GRID: 6 – PARCEL: 163
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 – HOWARD COUNTY, MARYLAND

GRADING, SEDIMENT AND EROSION CONTROL PLAN

DESIGN: DBT | DRAFT: DBT | DATE: AUGUST 30, 2021 | SCALE: AS SHOWN | BEI PROJECT NO. 2879 | SHEET 37 OF 52

F-21-044

SEDIMENT CONTROL LEGEND

- LIMIT OF DISTURBANCE
- SF — SF — SILT FENCE
- SSF — SSF — SUPER SILT FENCE
- -x- -x- -x- TREE PROTECTION FENCE
- EARTH DIKE
- INLET PROTECTION
- SCE — STABILIZED CONSTRUCTION EN
- GP — GABION INFLOW PROTECTION
- SOILS LINE
- GgB — SOILS TYPE
- SEDIMENT TRAP CONTOURS

SOST #1

STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II, TRAP NO. 1		
DRAINAGE AREA – INITIAL	2.7	ACRES
DRAINAGE AREA – INTERIM	4.9	ACRES
DRAINAGE AREA – FINAL	4.9	ACRES
TOTAL STORAGE REQUIRED	31,875	CF
TOTAL STORAGE PROVIDED	31,920	CF
WET STORAGE REQUIRED	15,938	CF
WET STORAGE PROVIDED	15,938	CF
DRY STORAGE REQUIRED	15,938	CF
DRY STORAGE PROVIDED	15,982	CF
EXISTING GROUND ELEVATION AT OUTLET (WET STORAGE ELEVATION)	376.45	FT
TRAP BOTTOM ELEVATION	374.50	FT
TRAP BOTTOM DIMENSIONS	SEE PLAN VIEW	FT x FT
WEIR LENGTH	19.6	FT
WEIR CREST (DRY STORAGE) ELEVATION	378.00	FT
CLEANOUT ELEVATION	375.53	FT
TOP OF EMBANKMENT ELEVATION	379.00	FT
SIDE SLOPE	3:1	H:V RATIO
EMBANKMENT TOP WIDTH	4	FT
OUTLET PROTECTION – LENGTH	22	FT
OUTLET PROTECTION – DEPTH	19	IN

NOTE:
TEMPORARY STORMWATER MANAGEMENT IS BEING PROVIDED VIA STORAGE OF THE 1-YEAR STORM EVENT WITHIN THIS TRAP/BASIN SINCE DA < 5.0 ACRES.

SOST #2

STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II, TRAP NO. 1		
DRAINAGE AREA – INITIAL	3.4	ACRES
DRAINAGE AREA – INTERIM	3.4	ACRES
DRAINAGE AREA – FINAL	1.0	ACRES
TOTAL STORAGE REQUIRED	22,117	CF
TOTAL STORAGE PROVIDED	22,653	CF
WET STORAGE REQUIRED	11,059	CF
WET STORAGE PROVIDED	11,059	CF
DRY STORAGE REQUIRED	11,059	CF
DRY STORAGE PROVIDED	11,594	CF
EXISTING GROUND ELEVATION AT OUTLET (WET STORAGE ELEVATION)	376.27	FT
TRAP BOTTOM ELEVATION	374.00	FT
TRAP BOTTOM DIMENSIONS	SEE PLAN VIEW	FT x FT
WEIR LENGTH	13.6	FT
WEIR CREST (DRY STORAGE) ELEVATION	378.00	FT
CLEANOUT ELEVATION	375.23	FT
TOP OF EMBANKMENT ELEVATION	379.00	FT
SIDE SLOPE	3:1	H:V RATIO
EMBANKMENT TOP WIDTH	4	FT
OUTLET PROTECTION – LENGTH	20	FT
OUTLET PROTECTION – DEPTH	19	IN

NOTE:
TEMPORARY STORMWATER MANAGEMENT IS BEING PROVIDED VIA STORAGE OF THE 1-YEAR STORM EVENT WITHIN THIS TRAP/BASIN SINCE DA < 5.0 ACRES.

BASIN #1

DRAINAGE AREA – INITIAL	1.7	ACRES
DRAINAGE AREA – INTERIM	9.9	ACRES
DRAINAGE AREA – FINAL	5.8	ACRES
WET STORAGE REQUIRED	17,748	CF
WET STORAGE PROVIDED	17,748	CF
DRY STORAGE REQUIRED	17,748	CF
DRY STORAGE PROVIDED	45,632	CF
WET STORAGE ELEVATION	356.29	CF
TRAP BOTTOM ELEVATION	354.00	FT
TRAP BOTTOM DIMENSIONS	SEE PLAN VIEW	FT x FT
WEIR LENGTH	25	FT
WEIR CREST (DRY STORAGE) ELEVATION	359.00	FT
CLEANOUT ELEVATION	355.23	FT
TOP OF EMBANKMENT ELEVATION	362.00	FT
SIDE SLOPE	2:1	H:V RATIO
EMBANKMENT TOP WIDTH	8	FT
OUTLET PROTECTION – LENGTH	10	FT
OUTLET PROTECTION – DEPTH	6	IN
Q1 PRE-DEVELOPMENT	1.29	CFS
Q1 NEWLY GRADED/POST-DEVELOPMENT	1.20	CFS

NOTE:
CONSTRUCTION OF CLUBHOUSE, POOL, AND PLAYGROUND CANNOT OCCUR UNTIL AFTER BASIN #1 HAS BEEN REMOVED.

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

Alexander Pistchin — 09/27/21
HOWARD SOIL CONSERVATION DISTRICT — DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

10/5/2021
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

11/3/21
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

10.26.21
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

ENGINEER'S CERTIFICATE

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

C.I. Malagari — 9-2-21
ENGINEER — DATE

DEVELOPER'S CERTIFICATE

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9-2-21
DEVELOPER — DATE

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NO.	DATE	REVISION

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

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STATE OF MARYLAND — CHRISTOPHER I. MALAGARI — 22390 — PROFESSIONAL ENGINEER
9-2-21

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410-720-3021

DEVELOPER:
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GRADING, SEDIMENT AND EROSION CONTROL PLAN

DESIGN: DBT | DRAFT: DBT | DATE: AUGUST 30, 2021 | SCALE: AS SHOWN | BEI PROJECT NO. 2879 | SHEET 38 OF 52

F-21-044

I:\2879 Milk Producers\dwg\Finals\Phase 1 Section 2\7023 P1S2.dwg, 8/27/2021 8:18:59 AM

SEDIMENT CONTROL LEGEND

- LIMIT OF DISTURBANCE
- SF SF — SILT FENCE
- SSF SSF — SUPER SILT FENCE
- X X X — TREE PROTECTION FENCE
- EARTH DIKE
- INLET PROTECTION
- STABILIZED CONSTRUCTION ENT.
- GP — GABION INFLOW PROTECTION
- SOILS LINE
- GgB — SOILS TYPE
- SEDIMENT TRAP CONTOURS
- PERMANENT SOIL STABILIZATION MATTING CHANNEL APPLICATION

MATCH LINE SEE SHEET 38

SUPER SILT FENCE

GOULD PROPERTIES LLLP
TM 47 PARCEL 770
L 12484 F 436
ZONED: R-ED

S68°07'46"E 1476.08'

MASS GRADE AREA #2

RuB MaC

SUPER SILT FENCE

EARTH DIKE A-2

SUPER SILT FENCE

OPEN SPACE LOT 138 (DEDICATED) TO HOMEOWNERS ASSOCIATION 0.31 ac.±

NON-BUILDABLE BULK PARCEL 'C' TO BE RE-SUBDIVIDED UNDER A FUTURE PHASE 25.14 ac.±

OPEN SPACE LOT 133 (DEDICATED) TO HOMEOWNERS ASSOCIATION 0.31 ac.±

RuB RuC GmB RuC

RuB SrD RuC SrD

SrD GmB SrD RuC

SaC RuB

CeB GmB

HOWARD COUNTY BOARD OF EDUCATION
TM 47 PARCEL 1032
L 3573 F 491
ZONED: R-ED

EXISTING CULVERT

EX. PUBLIC 20" WATER & UTILITY EASEMENT

EX. 8" WATER #4-3544-D

EXISTING 5' MACADAM PATH

EXISTING BLDG

EXISTING BLDG

EXISTING BLDG

EXISTING SPORTS COURTS

EXISTING PLAYGROUND

EXISTING PARKING

GORMAN CROSSING ELEMENTARY SCHOOL SDP-97-005

HOWARD COUNTY BOARD OF EDUCATION
TM 47 PARCEL 1032
L 3573 F 491
ZONED: R-ED

EX. 8" WATER #4-3555-D

S42°30'35"W 2049.27'

SWM #2 EXTENDED DETENTION HAZARD CLASS SIZE

EX. 48" RCP

EX. RIP-RAP

NO PRIVATE EASEMENTS WITHIN 100' OF STREAM

COUNTY DEPT OF PARKS SPARKS 1.69

CONSERVATION EASEMENT 20' WIDE

MATCH LINE SEE SHEET 41

0 25 50 100
1 inch = 50 ft.

THIS PLAN IS FOR SEDIMENT AND EROSION CONTROL ONLY.

ENGINEER'S CERTIFICATE

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C. Malagari — 9-2-21
ENGINEER — DATE

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9-2-21
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09/27/21
HOWARD SOIL CONSERVATION DISTRICT — DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

10/15/2021
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

11/3/21
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

10.26.21
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

NO.	DATE	REVISION

BENCHMARK
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ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315 ▲ ELLICOTT CITY, MARYLAND 21043
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C. Malagari 9-2-21

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410-720-3021

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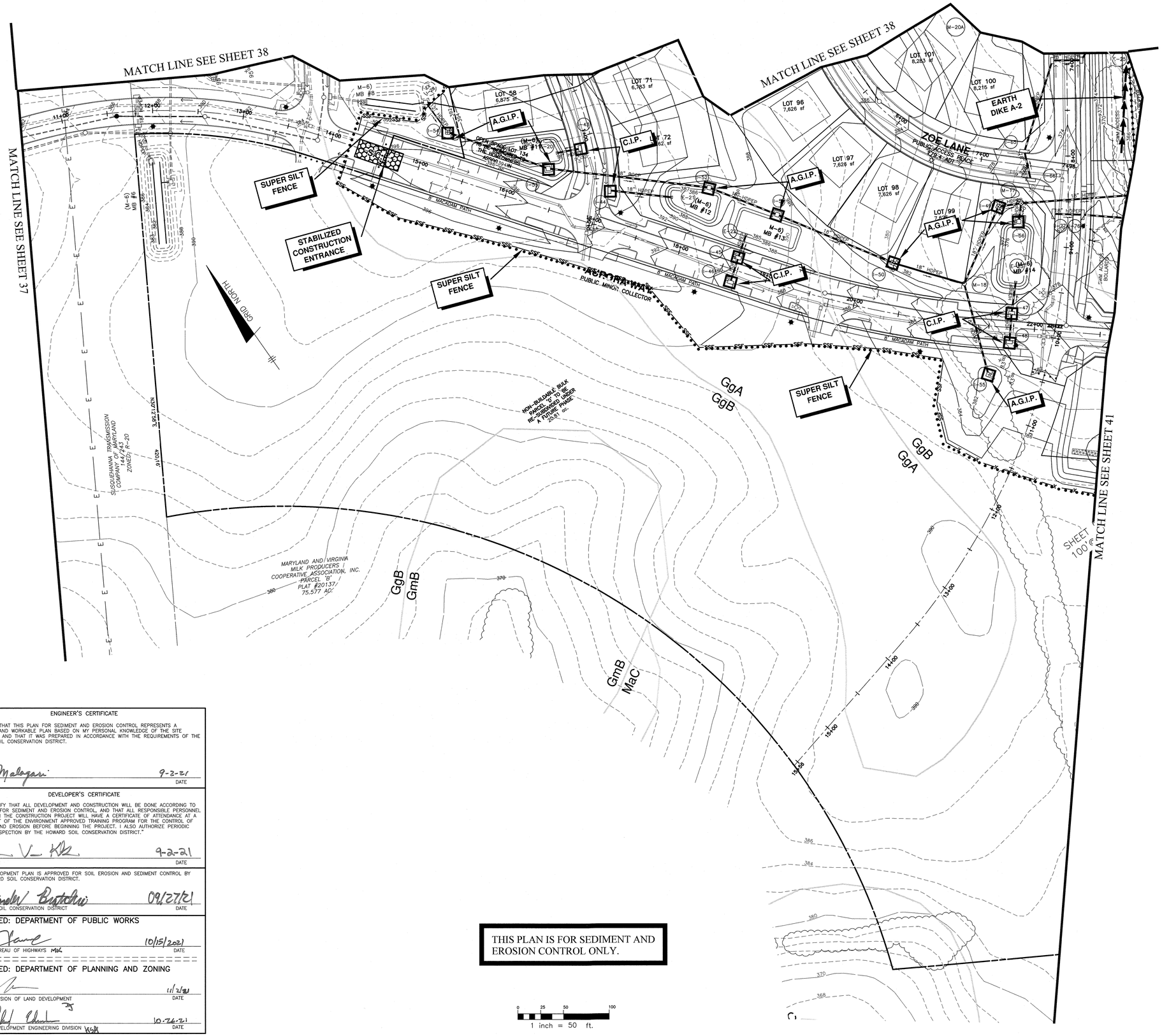
GRADING, SEDIMENT AND EROSION CONTROL PLAN

DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 30, 2021	BEI PROJECT NO. 2879
		SCALE: AS SHOWN	SHEET 39 OF 52

F-21-044



SEDIMENT CONTROL LEGEND

- LIMIT OF DISTURBANCE
- SILT FENCE
- SUPER SILT FENCE
- TREE PROTECTION FENCE
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THIS PLAN IS FOR SEDIMENT AND EROSION CONTROL ONLY.

1 inch = 50 ft.

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APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MK — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/2/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION KGB — DATE 10-26-21

NO.	DATE	REVISION

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F-21-044

I:\2879 Milk Producers\dwg\Finals\Phase 1 Section 2\7023 P1S2.dwg, 8/27/2021 8:19:54 AM

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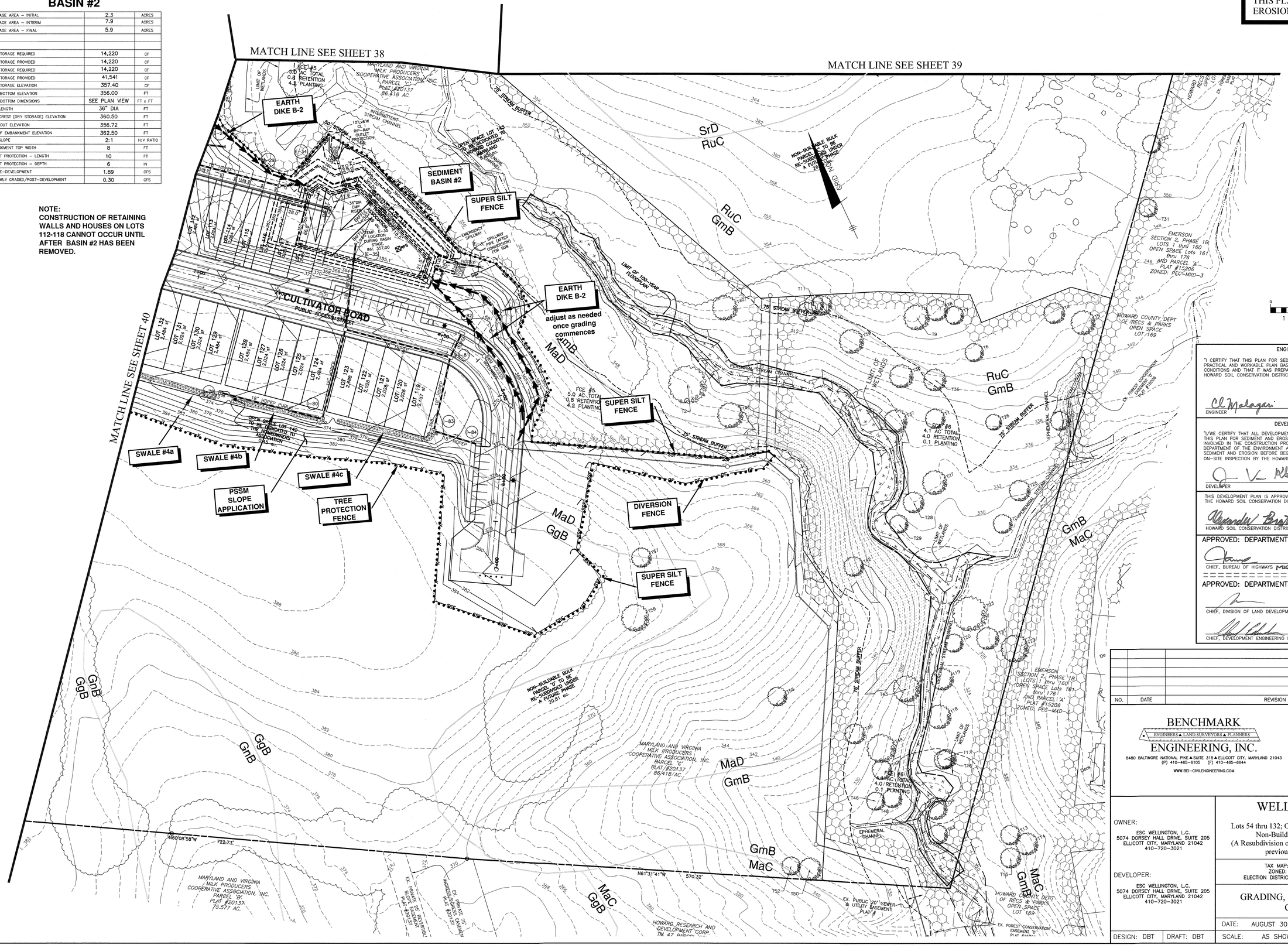
BASIN #2

DRAINAGE AREA – INITIAL	2.3	ACRES
DRAINAGE AREA – INTERIM	7.9	ACRES
DRAINAGE AREA – FINAL	5.9	ACRES
WET STORAGE REQUIRED	14,220	CF
WET STORAGE PROVIDED	14,220	CF
DRY STORAGE REQUIRED	14,220	CF
DRY STORAGE PROVIDED	41,541	CF
WET STORAGE ELEVATION	357.40	CF
TRAP BOTTOM ELEVATION	356.00	FT
TRAP BOTTOM DIMENSIONS	SEE PLAN VIEW	FT x FT
WEIR LENGTH	36" DIA	FT
WEIR CREST (DRY STORAGE) ELEVATION	360.50	FT
CLEANOUT ELEVATION	356.72	FT
TOP OF EMBANKMENT ELEVATION	362.50	FT
SIDE SLOPE	2:1	H:V RATIO
EMBANKMENT TOP WIDTH	8	FT
OUTLET PROTECTION – LENGTH	10	FT
OUTLET PROTECTION – DEPTH	6	IN
Q1 PRE-DEVELOPMENT	1.89	CFS
Q1 NEWLY GRADED/POST-DEVELOPMENT	0.30	CFS

NOTE:
CONSTRUCTION OF RETAINING WALLS AND HOUSES ON LOTS 112-118 CANNOT OCCUR UNTIL AFTER BASIN #2 HAS BEEN REMOVED.



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ENGINEER — DATE 9-2-21

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APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/2/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION HSA — DATE 10.26.21

NO.	DATE	REVISION

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		SCALE: AS SHOWN	SHEET 41 OF 52

F-21-044

B-4 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

Definition

Using vegetation as cover to protect exposed soil from erosion.

Purpose

To promote the establishment of vegetation on exposed soil.

Conditions Where Practice Applies

On all disturbed areas not stabilized by other methods. This specification is divided into sections on incremental stabilization; soil preparation, soil amendments and topsoiling; seeding and mulching; temporary stabilization; and permanent stabilization.

Effects on Water Quality and Quantity

Stabilization practices are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, thereby reducing sediment loads and runoff to downstream areas.
Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Over time, vegetation will increase organic matter content and improve the water holding capacity of the soil and subsequent plant growth.
Vegetation will help reduce the movement of sediment, nutrients, and other chemicals carried by runoff to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present within the root zone.
Sediment control practices must remain in place during grading, seedbed preparation, seeding, mulching, and vegetative establishment.

Adequate Vegetative Establishment

Inspect seeded areas for vegetative establishment and make necessary repairs, replacements, and reseedings within the planting season.
1. Adequate vegetative stabilization requires 95 percent groundcover.
2. If an area has less than 40 percent groundcover, restabilize following the original recommendations for lime, fertilizer, seedbed preparation, and seeding.
3. If an area has between 40 and 94 percent groundcover, over-seed and fertilize using half of the rates originally specified.
4. Maintenance fertilizer rates for permanent seeding are shown in Table B.6.

B-4-1 STANDARDS AND SPECIFICATIONS FOR INCREMENTAL STABILIZATION

Definition

Establishment of vegetative cover on cut and fill slopes.

Purpose

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

Conditions Where Practice Applies

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

Criteria

A. Incremental Stabilization - Cut Slopes
1. Excavate and stabilize cut slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all cut slopes as the work progresses.
2. Construction sequence example (Refer to Figure B.1):
   a. Construct and stabilize all temporary swales or dikes that will be used to convey runoff around the excavation.
   b. Perform Phase 1 excavation, prepare seedbed, and stabilize.
   c. Perform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase 1 areas as necessary.
   d. Perform final phase excavation, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once excavation has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

B. Incremental Stabilization - Fill Slopes
1. Construct and stabilize fill slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all slopes as the work progresses.
2. Stabilize slopes immediately when the vertical height of a lift reaches 15 feet, or when the grading operation ceases as prescribed in the plans.
3. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
4. Construction sequence example (Refer to Figure B.2):
   a. Construct and stabilize all temporary swales or dikes that will be used to divert runoff around the fill. Construct silt fence on low side of fill unless other methods shown on the plans address this area.
   b. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
   c. Place Phase 1 fill, prepare seedbed, and stabilize.
   d. Place Phase 2 fill, prepare seedbed, and stabilize.
   e. Place final phase fill, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once the placement of fill has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.
Figure B.

B-4-2 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

Definition

The process of preparing the soils to sustain adequate vegetative stabilization.

Purpose

To provide a suitable soil medium for vegetative growth.

Conditions Where Practice Applies

Where vegetative stabilization is to be established.

Criteria

A. Soil Preparation
1. Temporary Stabilization
   a. Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.
   b. Apply fertilizer and lime as prescribed on the plans.
   c. Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.
2. Permanent Stabilization
   a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
      i. Soil pH between 6.0 and 7.0.
      ii. Soluble salts less than 500 parts per million (ppm).
      iii. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if lovegrass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
      iv. Soil contains 1.5 percent minimum organic matter by weight.
      v. Soil contains sufficient pore space to permit adequate root penetration.
   b. Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
   c. Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.
   d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.
   e. Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.

B. Topsoiling
1. Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.
2. Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.
3. Topsoiling is limited to areas having 2:1 or flatter slopes where:
   a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
   b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
   c. The original soil to be vegetated contains material toxic to plant growth.
   d. The soil is so acidic that treatment is not feasible.
4. Areas having slopes steeper than 2:1 require special consideration and design.
5. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:
   a. Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1½ inches in diameter.
   b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nutsedge, poison ivy, thistle, or others as specified.
   c. Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
6. Topsoil Application
   a. Erosion and sediment control practices must be maintained when applying topsoil.
   b. Uniformly distribute topsoil in a 4 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
   c. Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

C. Soil Amendments (Fertilizer and Lime Specifications)
1. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
2. Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.
3. Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydroseeding) which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 98 to 100 percent will pass through a #20 mesh sieve.
4. Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disking or other suitable means.
5. Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

B-4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

Definition

The application of seed and mulch to establish vegetative cover.

Purpose

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

Conditions Where Practice Applies

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

Criteria

A. Seeding
1. Specifications
   a. All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject to re-testing by a recognized seed laboratory. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be available upon request to the inspector to verify type of seed and seeding rate.
   b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.
   c. Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.
   d. Sod or seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.
2. Application
   a. Dry Seeding: This includes use of conventional drop or broadcast spreaders.
      i. Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries.
      ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with a weighted roller to provide good seed to soil contact.
   b. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
      i. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seedbed must be firm after planting.
      ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction.
   c. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer).
      i. If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of soluble nitrogen; P2O5 (phosphorous), 200 pounds per acre; K2O (potassium), 200 pounds per acre.
      ii. Lime: Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding.
      iii. Mix seed and fertilizer on site and seed immediately and without interruption.
      iv. When hydroseeding do not incorporate seed into the soil.

B. Mulching
1. Mulch Materials (in order of preference)
   a. Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably bright in color. Straw is to be free of noxious weed seeds as specified in the Maryland Seed Law and not musty, moldy, caked, decayed, or excessively dusty. Note: Use only sterile straw mulch in areas where one species of grass is desired.
   b. Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state.
      i. WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
      ii. WCFM, including dye, must contain no germination or growth inhibiting factors.
      iii. WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material must form a blotter-like ground cover, on application, having moisture absorption and percolation properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
      iv. WCFM material must not contain elements or compounds at concentration levels that will be phyto-toxic.
      v. WCFM must conform to the following physical requirements: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 1.6 percent maximum and water holding capacity of 90 percent minimum.

B-4-4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION

Definition

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

Purpose

To use fast growing vegetation that provides cover on disturbed soils.

Conditions Where Practice Applies

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

Criteria

1. Select one or more of the species or seed mixtures listed in Table B.1 for the appropriate Plant Hardiness Zone (from Figure B.3) and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. If this Summary is not put on the plan and completed, then Table B.1 plus fertilizer and lime rates must be put on the plan.
2. For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.
3. When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3.A.1.b and maintain until the next seeding season.

B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

Definition

To stabilize disturbed soils with permanent vegetation.

Purpose

To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils.

Conditions Where Practice Applies

Exposed soils where ground cover is needed for 6 months or more.

Criteria

A. Seed Mixtures
1. General Use
   a Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
   b Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guild, Section 342 - Critical Area Planting.
   c For sites having disturbed areas over 5 acres, use and show the rates recommended by the soil testing agency.
   d For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 ½ pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary.
2. Turfgrass Mixtures
   a. Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.
   b. Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan.
   i. Kentucky Bluegrass: Full sun Mixture: For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky Bluegrass Cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
   ii. Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky Bluegrass Cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
   iii. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes; Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.
   iv. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1 ½ to 3 pounds per 1000 square feet.
   Notes:Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Memo #77, "Turfgrass Cultivar Recommendations for Maryland" Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line.
   c. Ideal Times of Seeding for Turf Grass Mixtures
   Western MD: March 15 to June 1, August 1 to October 1 (Hardiness Zones: 5b, 6a)
   Central MD:March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6b)
   Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 7a, 7b)
   d. Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 1 ½ inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty.
   e. If soil moisture is deficient, supply new seedings with adequate water for plant growth (¾ to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is not especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.
B. Sod: to provide quick cover on disturbed areas (2:1 grade or flatter).
1. General Specifications
   a. Class of turfgrass must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector.
   b. Sod must be machine cut at a uniform soil thickness of ¾ inch, plus or minus ¼ inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and torn or uneven ends will not be acceptable.
   c. Standard size sections of sod must be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.
   d. Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
   e. Sod must be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period must be approved by an agronomist or soil scientist prior to its installation.
2. Sod Installation
   a. During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the sod.
   b. Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Stagger lateral joints to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.
   c. Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints. Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensure solid contact exists between sod roots and the underlying soil surface.
   d. Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of sod within eight hours.
3. Sod Maintenance
   a. In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.
   b. After the first week, sod watering is required as necessary to maintain adequate moisture content.
   c. Do not mow until the sod is firmly rooted. No more than 1/3 of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless otherwise specified.

B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

Definition

A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

Purpose

To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

Conditions Where Practice Applies

Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

Criteria

1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
2. The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.
3. Runoff from the stockpile area must drain to a suitable sediment control practice.
4. Access the stockpile area from the upgrade side.
5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept and detain the discharge.
7. Stockpiles must be stabilized in accordance with the 3/7 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization.
8. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable sheeting.

Maintenance

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

H-5 STANDARDS AND SPECIFICATIONS FOR DUST CONTROL

Definition

Controlling the suspension of dust particles from construction activities.

Purpose

To prevent blowing and movement of dust from exposed soil surfaces to reduce on and off-site damage including health and traffic hazards.

Conditions Where Practice Applies

Areas subject to dust blowing and movement where on and off-site damage is likely without treatment.

Specifications

1. Mulches: See Section B-4-2 Soil Preparation, Topsoiling, and Soil Amendments, Section B-4-3 Seeding and Mulching, and Section B-4-4 Temporary Stabilization. Mulch must be anchored to prevent blowing.
2. Vegetative Cover: See Section B-4-4 Temporary Stabilization.
3. Tillage: Till to roughen surface and bring clods to the surface. Begin plowing on windward side of site. Chisel-type plows spaced about 12 inches apart, spring-toothed harrows, and similar plows are examples of equipment that may produce the desired effect.
4. Irrigation: Sprinkle site with water until the surface is moist. Repeat as needed. The site must not be irrigated to the point that runoff occurs.
5. Barriers: Solid board fences, silt fences, snow fences, burlap fences, straw bales, and similar material can be used to control air currents and soil blowing.
6. Chemical Treatment: Use of chemical treatment requires approval by the appropriate plan review authority.

HOWARD SOIL CONSERVATION DISTRICT (HSCD) STANDARD SEDIMENT CONTROL NOTES

1. A pre-construction meeting must occur with the Howard County Department of Public Works, Construction Inspection Division (CID), 410-313-1855 after the future LOD and protected areas are marked clearly in the field. A minimum of 48 hours notice to CID must be given at the following stages:
   a. Prior to the start of earth disturbance,
   b. Upon completion of the installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading,
   c. Prior to the start of another phase of construction or opening of another grading unit,
   d. Prior to the removal or modification of sediment control practices.

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

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

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

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

6. Site Analysis:

Total Area of Site:	93.8	Acres
Area Disturbed:	44.6**	Acres
Area to be roofed or paved:	15.0	Acres
Area to be vegetatively stabilized:	29.6	Acres
Total cut:	113,000*	Cu Yds
Total fill:	113,000*	Cu Yds
Off-site waste/borrow area location:	SITE WITH AN ACTIVE GRADING PERMIT	

*CUT/FILL NUMBERS ARE ROUGH ESTIMATE FOR SEDIMENT CONTROL PURPOSES ONLY. CONTRACTOR TO VERIFY.

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

8. Additional sediment control must be provided, if deemed necessary by the CID. The site and all controls shall be inspected by the contractor weekly, and the next day after each rain event. A written report by the contractor, made available upon request, is part of every inspection and should include:
- Inspection date
- Inspection type (routine, pre-storm event, during rain event)
- Name and title of inspector
- Weather information (current conditions as well as time and an=mount of last recorded precipitation
- Brief description of project's status (e.g. percent complete) and/or current activities
- Evidence of sediment discharges
- Identification of plan deficiencies
- Identification of sediment controls that require maintenance
- Identification of missing or improperly installed sediment controls
- Compliance status regarding the sequence of construction and stabilization requirements
- Photographs
- Monitoring/sampling
- Maintenance and/or correction performed
- Other inspection items as required by the General Permit for Stormwater Associated with Construction Activities (NPDES, MDE).

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

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

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

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

13. Topsoil shall be stockpiled and preserved on-site for redistribution onto final grade.

14. All silt fence and super silt fence shall be placed on-the-contour, and be imbricated at 25' minimum intervals, with lower ends curled uphill by 2' in elevation.

15. Stream channels must not be disturbed during the following restricted time periods (inclusive):
- Use I and IP March 1 - June 15
- Use III and IIIP October 1 - April 30
- Use IV March 1 - May 31

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

Permanent Seeding Summary

Hardiness Zone (from Figure B.3):		6b		Fertilizer Rate (10-20-20)			Lime Rate
Seed Misture (from Table B.3):		Tall Fescue/Kentucky Bluegrass					
No.	Species	Application Rate (lb/ac.)	Seeding Dates	Seeding Depths	N	P2O5	K2O	
9	Fescue, Tall	60	Mar 1 to May 15 Aug 1 to Oct 15	1/4 - 1/2 in	45 pounds per acre (1.0 lb/ 100 sf)	90 lb/ac (2 lb/ 1000 sf)	90 lb/ac 2 lb/ 1000 sf)	2 tons/ac (90lb/ 1000 sf)
	Bluegrass, Kentucky	40	Mar 1 to May 15 Aug 1 to Oct 15	1/4 - 1/2 in				
				1/4 - 1/2 in				

Table B.1: Temporary Seeding for Site Stabilization

Plant Species	Seeding Rate 1/		Seeding Depth 2/ (inches)	Recommended Seeding Dates by Plant Hardiness Zone 3/		
	lb/ac	lb/1000 ft2		5b and 6a	6b	7a and 7b
Cool-Season Grasses						
Annual Ryegrass (Lolium perenne ssp. Multiflorum	40	1.0	0.5		**Mar 1 to May 15; Aug 1 to Oct 31**	
Barley (Hordeum vulgare)	96	2.2	1.0		**Mar 1 to May 15; Aug 1 to Oct 31**	
Oats (Avena sativa)	72	1.7	1.0		**Mar 1 to May 15; Aug 1 to Oct 31**	
Wheat (Triticum aestivum)	120	2.8	1.0		**Mar 1 to May 15; Aug 1 to Oct 31**	
Cereal Rye (Secale cereale)	112	2.8	1.0		**Mar 1 to May 15; Aug 1 to Nov 15**	
Warm-Season Grasses						
Foxtail Millet (Setaria italica)	30	0.7	0.5		**May 16 to Jul 31**	
Pearl Millet (Pennisetum glaucum	20	0.5	0.5		**May 16 to Jul 31**	

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

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

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

2/ For sandy soils, plant seeds at twice the depth listed above.
3/ The planting dates listed are averages for each Zone and may require adjustment to reflect local conditions, especially near the boundaries of the zone.

ENGINEER'S CERTIFICATE

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

ENGINEER — DATE 9-2-21

DEVELOPER'S CERTIFICATE

"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."

DEVELOPER — DATE 9-2-21

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 09/27/21

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/3/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.26.21

NO.	DATE	REVISION

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. 22390, Expiration Date: 6-30-2023.

STATE OF MARYLAND — CHRISTOPHER A. MILLER — 22390 — PROFESSIONAL ENGINEER — 9-2-21

OWNER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

WELLINGTON FARMS

Phase 1 Section 2
Lots 54 thru 132; Open Space Lots 133 thru 143; Parcel 'A'; Non-Buildable Bulk Parcels 'C', 'D', and 'E'
(A Resubdivision of Non-Buildable Bulk Parcels 'A' and 'B' previously recorded under F-21-025)

TAX MAP: 46 - GRID: 6 - PARCEL: 163
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 - HOWARD COUNTY, MARYLAND

SEDIMENT AND EROSION CONTROL NOTES

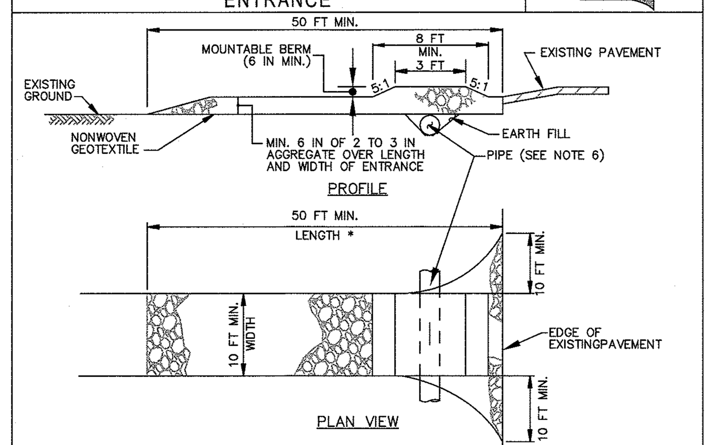
DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 30, 2021	BEI PROJECT NO. 2879
		SCALE: AS SHOWN	SHEET 42 OF 52

F-21-044

I:\2879 Milk Producers\dwg\Finals\Phase 1 Section 2\7023 P1S2.dwg, 8/27/2021 8:20:41 AM

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE



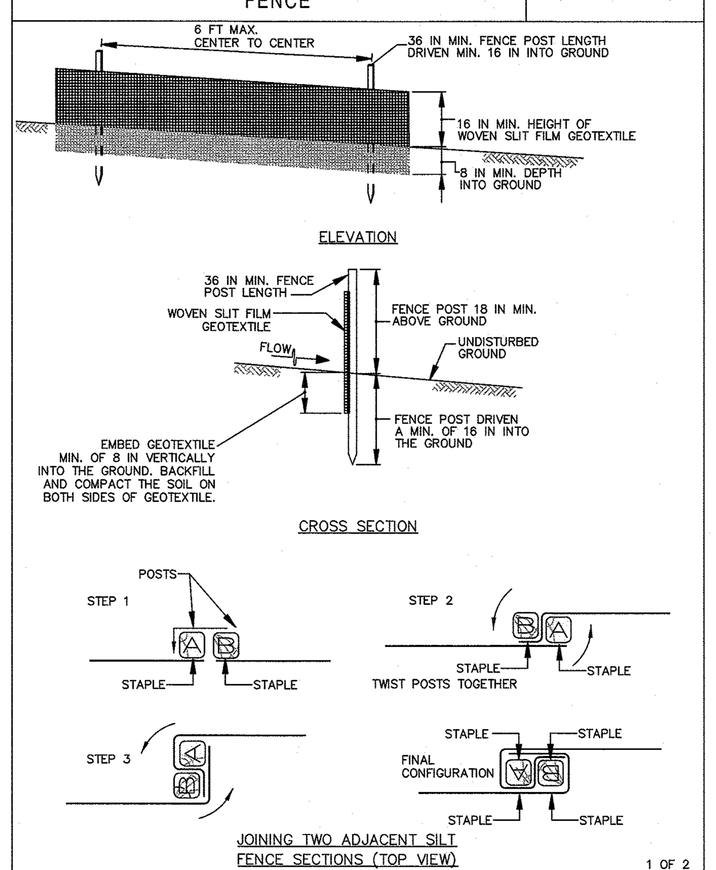
CONSTRUCTION SPECIFICATIONS

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

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: SF

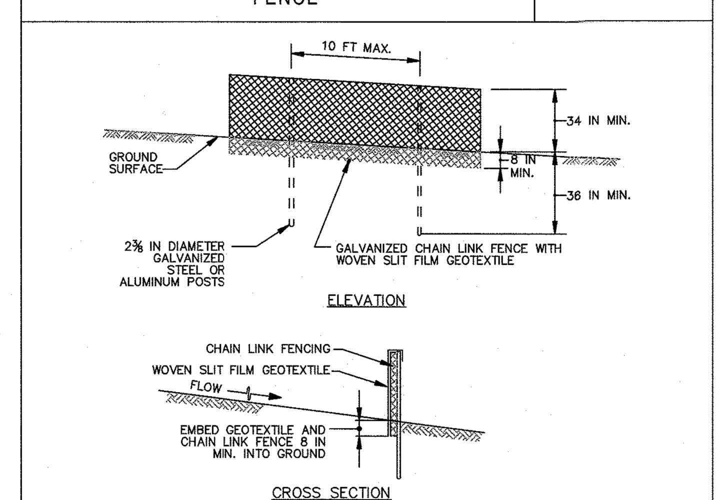


1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL: SSF



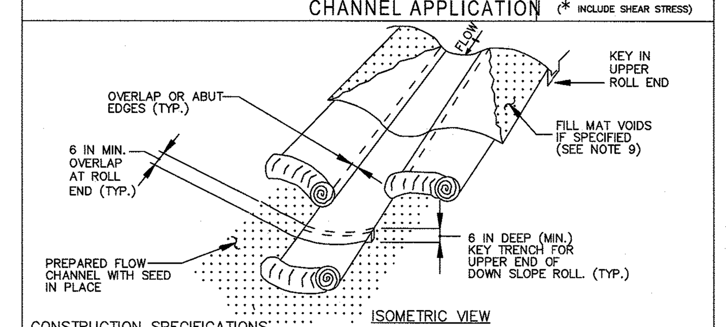
CONSTRUCTION SPECIFICATIONS

1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-C PERMANENT SOIL STABILIZATION MATTING CHANNEL APPLICATION

STANDARD SYMBOL: SSMC – * 0.47 lb/ft² (* INCLUDE SHEAR STRESS)



CONSTRUCTION SPECIFICATIONS

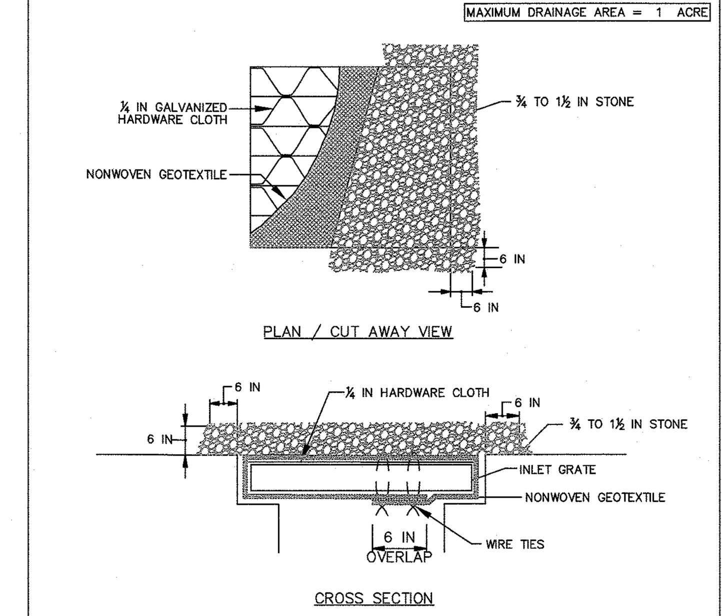
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTER LINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-2 AT-GRADE INLET PROTECTION

STANDARD SYMBOL: AGIP

MAXIMUM DRAINAGE AREA = 1 ACRE



CONSTRUCTION SPECIFICATIONS

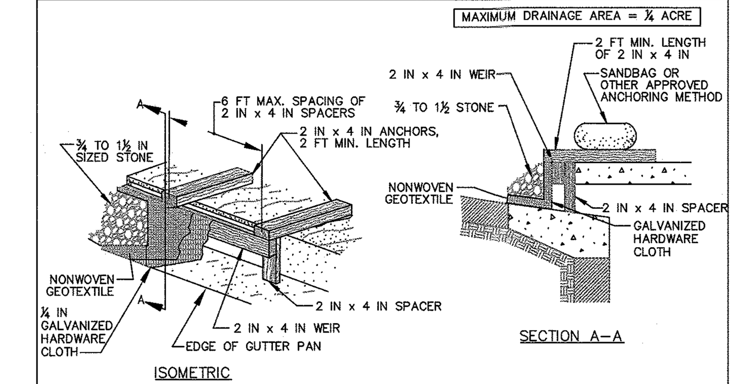
1. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
2. LIFT GRATE AND WRAP WITH NONWOVEN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS. SECURE WITH WIRE TIES AND SET GRATE BACK IN PLACE.
3. PLACE CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE 6 INCHES THICK ON THE GRATE.
4. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-3 CURB INLET PROTECTION

STANDARD SYMBOL: CIP

MAXIMUM DRAINAGE AREA = ¼ ACRE



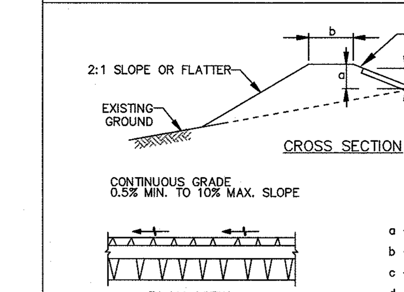
CONSTRUCTION SPECIFICATIONS

1. USE NOMINAL 2 INCH x 4 INCH LUMBER
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
3. NAIL THE 2x4 WEIR TO 9 INCH LONG VERTICAL SPACERS (MAXIMUM 6 FEET APART).
4. ATTACH A CONTINUOUS PIECE OF ¼ INCH GALVANIZED HARDWARE CLOTH, WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4 WEIR, EXTENDING IT 2 FEET BEYOND THROAT ON EACH SIDE.
5. PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE OF THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH TO THE 2x4 WEIR.
6. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FEET LENGTH). EXTEND THE ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
7. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND THE ENDS OF THE THROAT OPENING.
8. FORM THE HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND FACE OF CURB TO SPAN THE INLET OPENING. COVER THE HARDWARE CLOTH AND GEOTEXTILE WITH CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE.
9. AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
10. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL C-1 EARTH DIKE

STANDARD SYMBOL: A-1 — PLACE DESIGNATION (e.g. A-1) ON FLOW CHANNEL SIDE OF DIKE.



DIKE TYPE

	A	B
a – DIKE HEIGHT	18 IN MIN.	30 IN MIN.
b – DIKE WIDTH	24 IN MIN.	36 IN MIN.
c – FLOW WIDTH	4 FT MIN.	6 FT MIN.
d – FLOW DEPTH	12 IN MIN.	24 IN MIN.

FLOW CHANNEL STABILIZATION

- A-1 SEED WITH STRAW MULCH AND TACK. (NOT ALLOWED FOR CLEAR WATER DIVERSION.)
- A-2/B-2 SEED WITH SOIL STABILIZATION MATTING OR LINE WITH SOD.
- A-3/B-3 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO SOIL A MINIMUM OF 7 INCHES AND FLUSH WITH GROUND.

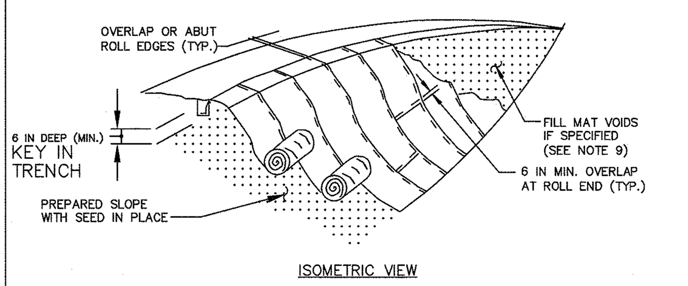
CONSTRUCTION SPECIFICATIONS

1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF EARTHDIKE.
2. EXCAVATE OR SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.
3. COMPACT FILL.
4. CONSTRUCT FLOW CHANNEL ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.
5. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
6. STABILIZE EARTH DIKE WITHIN THREE DAYS OF INSTALLATION. STABILIZE FLOW CHANNEL FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.
7. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS, AND MAINTAIN POSITIVE DRAINAGE. KEEP EARTH DIKE AND POINT OF DISCHARGE FREE OF EROSION, AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
8. UPON REMOVAL OF EARTH DIKE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-D PERMANENT SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL: PSSMS – * 0.47 lb/ft² (* INCLUDE SHEAR STRESS)



CONSTRUCTION SPECIFICATIONS

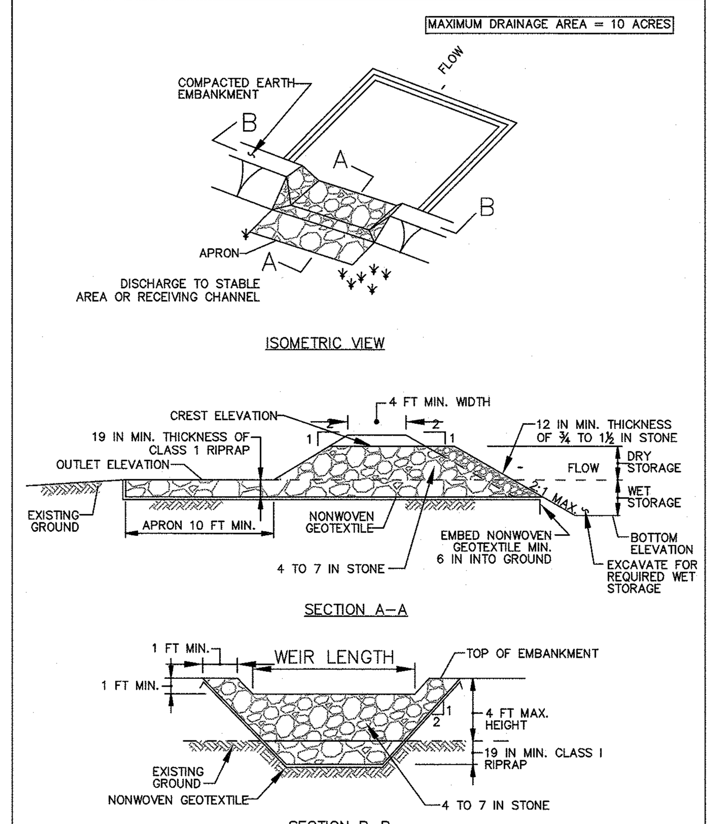
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWN SLOPE. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL G-1-2 STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II

STANDARD SYMBOL: ST-II

MAXIMUM DRAINAGE AREA = 10 ACRES

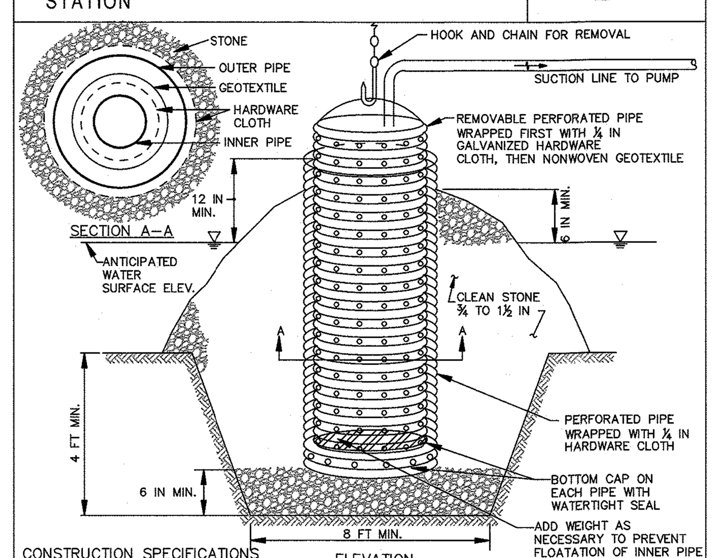


1 OF 3

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL F-1 REMOVABLE PUMPING STATION

STANDARD SYMBOL: RPS



CONSTRUCTION SPECIFICATIONS

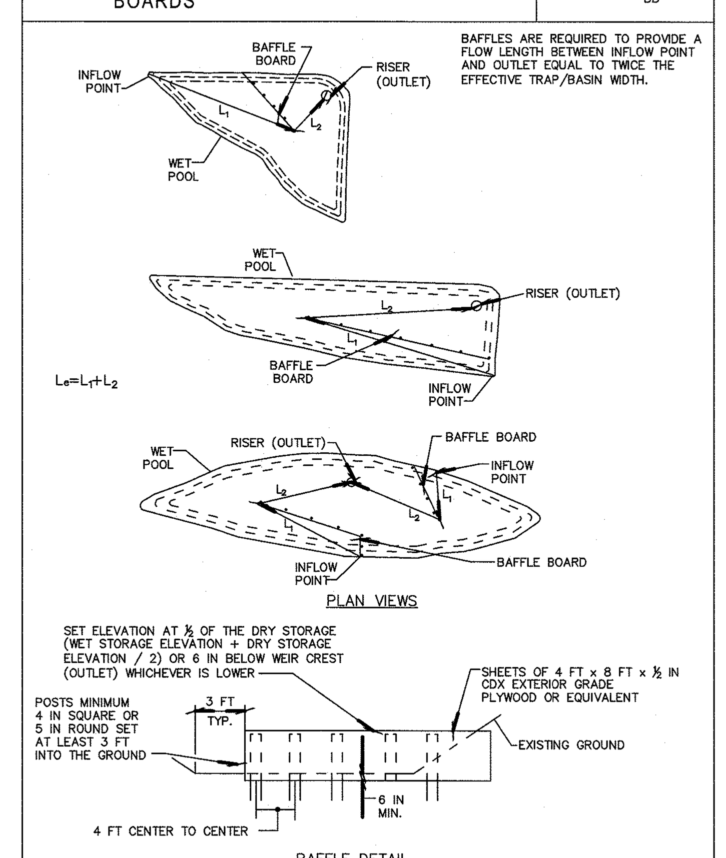
1. USE CORRUGATED METAL OR PLASTIC PIPE WITH 1 INCH DIAMETER PERFORATIONS 6 INCHES ON CENTER.
2. USE A MINIMUM 12 INCH DIAMETER INNER PIPE WITH AN OUTER PIPE A MINIMUM 6 INCHES LARGER IN DIAMETER. BOTTOM OF EACH PIPE MUST BE CAPPED WITH WATERTIGHT SEAL.
3. WRAP EACH PIPE WITH ¼ INCH GALVANIZED HARDWARE CLOTH. ON INNER PIPE WRAP NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE HARDWARE CLOTH.
4. EXCAVATE 8 FEET X 8 FEET X 4 FEET DEEP PIT FOR PIPE PLACEMENT. PLACE CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE, 6 INCHES IN DEPTH PRIOR TO PIPE PLACEMENT.
5. SET TOP OF INNER AND OUTER PIPES MINIMUM 12 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION (OR RISER CREST ELEVATION WHEN DEWATERING A BASIN).
6. BACKFILL PIT AROUND THE OUTER PIPE WITH ¾ TO 1½ INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE AND EXTEND STONE A MINIMUM OF 6 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
7. DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.
8. A REMOVABLE PUMPING STATION REQUIRES FREQUENT MAINTENANCE. IF SYSTEM CLOGS, PULL OUT INNER PIPE AND REPLACE GEOTEXTILE. KEEP POINT OF DISCHARGE FREE OF EROSION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL G-2-4 BAFFLE BOARDS

STANDARD SYMBOL: BB

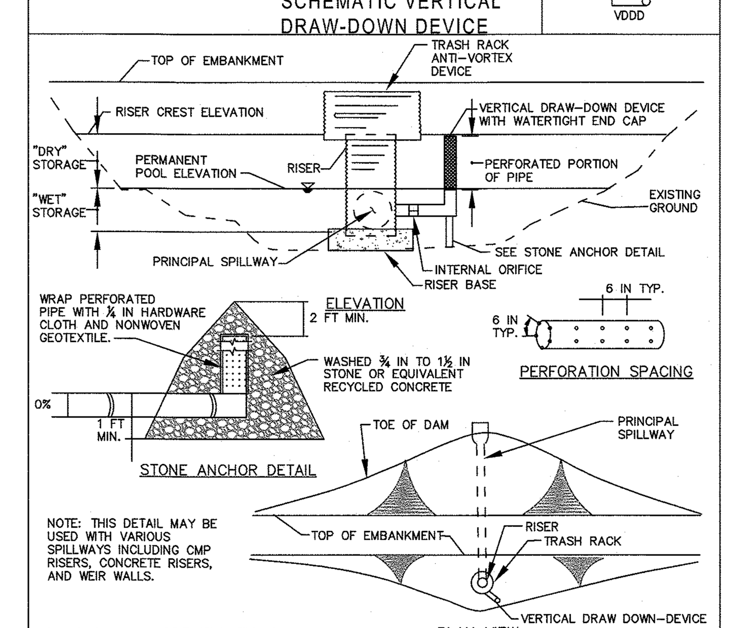
BAFFLES ARE REQUIRED TO PROVIDE A FLOW LENGTH BETWEEN INFLOW POINT AND OUTLET EQUAL TO TWICE THE EFFECTIVE TRAP/BASIN WIDTH.



MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL G-2-7 SEDIMENT BASIN SCHEMATIC VERTICAL DRAW-DOWN DEVICE

STANDARD SYMBOL: VDDD



NOTE: THIS DETAIL MAY BE USED WITH VARIOUS SPILLWAYS INCLUDING CMP RISERS, CONCRETE RISERS, AND WEIR WALLS.

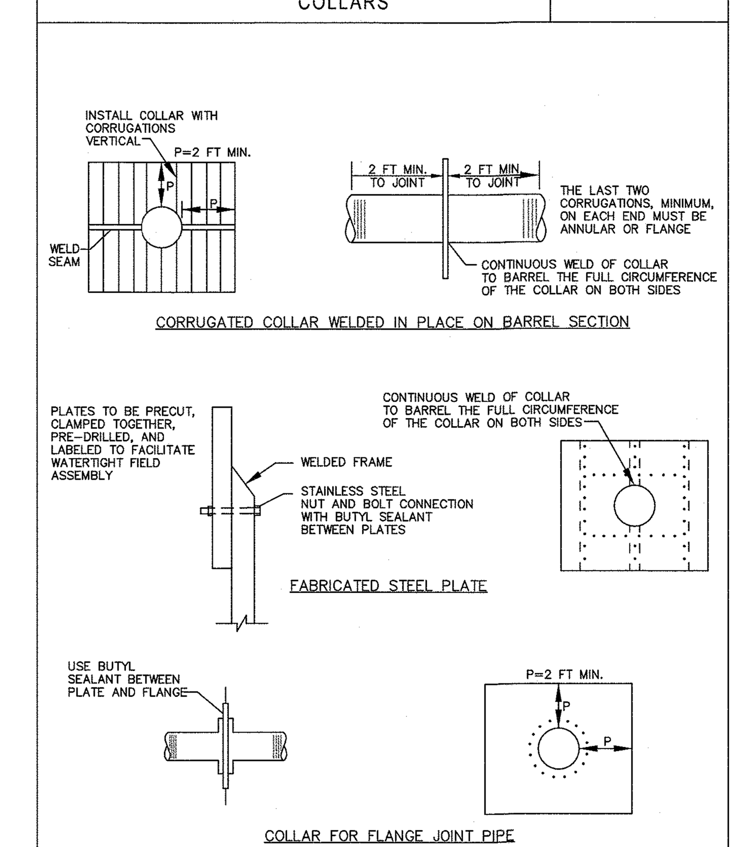
CONSTRUCTION SPECIFICATIONS

1. PERFORATE PIPE WITH 1 INCH DIAMETER PERFORATIONS SPACED 6 INCHES APART LONGITUDINALLY AND RADIALLY OR IN ACCORDANCE WITH APPROVED PLAN.
2. DO NOT EXTEND PERFORATIONS IN THE DRAW-DOWN DEVICE INTO WET STORAGE.
3. WRAP THE PERFORATED PORTION OF THE DRAW-DOWN DEVICE FIRST WITH ¼ INCH GALVANIZED HARDWARE CLOTH, THEN WITH NONWOVEN GEOTEXTILE. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS. DO NOT WRAP WITH MORE THAN ONE LAYER OF GEOTEXTILE.
4. AS AN ALTERNATE TO STONE ANCHORING, SECURE DRAW-DOWN DEVICE WITH TWO 1 INCH STEEL ANGLES SET 3 FEET MINIMUM INTO THE GROUND ATTACHED TO DRAW-DOWN DEVICE BY A 1 INCH WIDE GALVANIZED STEEL STRAP OR 12 GAUGE OR HEAVIER WIRE.
5. REMOVE SEDIMENT WHEN IT ACCUMULATES TO CLEANOUT ELEVATION (50% OF THE WET STORAGE DEPTH). DEPOSIT REMOVED SEDIMENT IN AN APPROVED AREA IN A SUCH A MANNER THAT IT WILL NOT ERODE. MAINTAIN WATER TIGHT CONNECTIONS. REPLACE GEOTEXTILE AROUND PERFORATED RISER IF DRY STORAGE VOLUME DOES NOT DRAW DOWN WITHIN 10 HOURS.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL G-2-1 TYPICAL ANTI-SEEP COLLARS

STANDARD SYMBOL

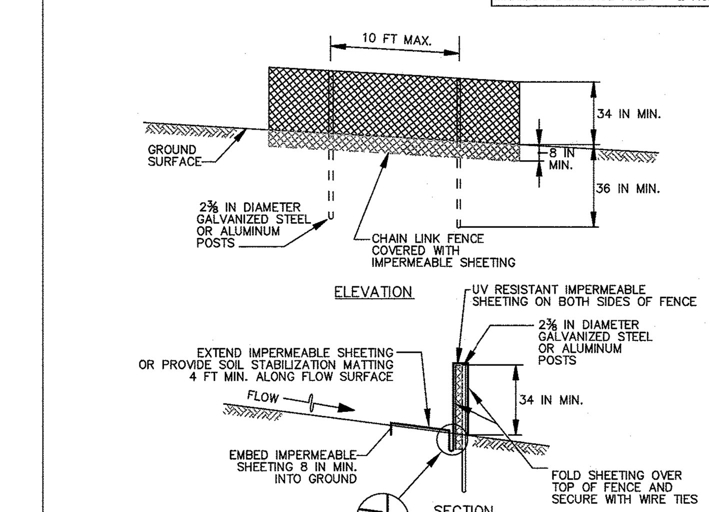


MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL C-9 DIVERSION FENCE

STANDARD SYMBOL: DF

MAXIMUM DRAINAGE AREA = 2 ACRES



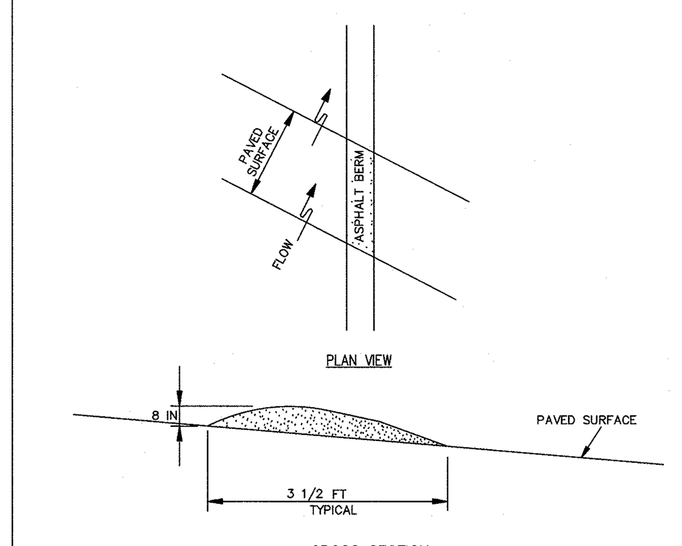
CONSTRUCTION SPECIFICATIONS

1. USE 42 INCH HIGH, 9 GAUGE OR THICKER CHAIN LINK FENCING (2⅜ INCH MAXIMUM OPENING).
2. USE 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. THE POSTS DO NOT NEED TO BE SET IN CONCRETE.
3. FASTEN CHAIN LINK FENCE SECURELY TO THE FENCE POSTS WITH WIRE TIES.
4. SECURE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING TO CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT TOP, MID SECTION, AND BELOW GROUND SURFACE.
5. EXTEND SHEETING A MINIMUM OF 4 FEET ALONG FLOW SURFACE AND EMBED END A MINIMUM OF 8 INCHES INTO GROUND. SOIL STABILIZATION MATTING MAY BE USED IN LIEU OF IMPERMEABLE SHEETING ALONG FLOW SURFACE.
6. WHEN TWO SECTIONS OF SHEETING ADJOIN EACH OTHER, OVERLAP BY 6 INCHES AND FOLD WITH SEAM FACING DOWNGRADE.
7. KEEP FLOW SURFACE ALONG DIVERSION FENCE AND POINT OF DISCHARGE FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE. REPLACE IMPERMEABLE SHEETING IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL C-5 TEMPORARY ASPHALT BERM

STANDARD SYMBOL: TAB



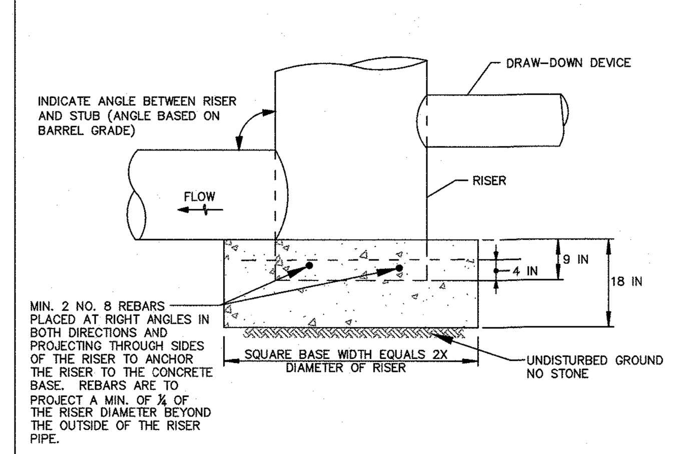
CONSTRUCTION SPECIFICATIONS

1. CONSTRUCT BERM ON AN UNINTERRUPTED, CONTINUOUS GRADE.
2. INSTALL BERM TO CONFORM TO CROSS SECTION DIMENSIONS OF A UNIFORM HEIGHT OF 8 INCHES MINIMUM AND APPROXIMATE WIDTH OF 3½ FEET.
3. PROVIDE OUTLET PROTECTION AS REQUIRED ON PLAN.
4. COMPACT ASPHALT BERM.
5. REPAIR DAMAGED ASPHALT. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE.
6. UPON REMOVAL OF ASPHALT BERM, RETURN TO ORIGINAL CONDITIONS OR AS SPECIFIED ON APPROVED PLAN.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL G-2-2 CORRUGATED RISER BASE

STANDARD SYMBOL



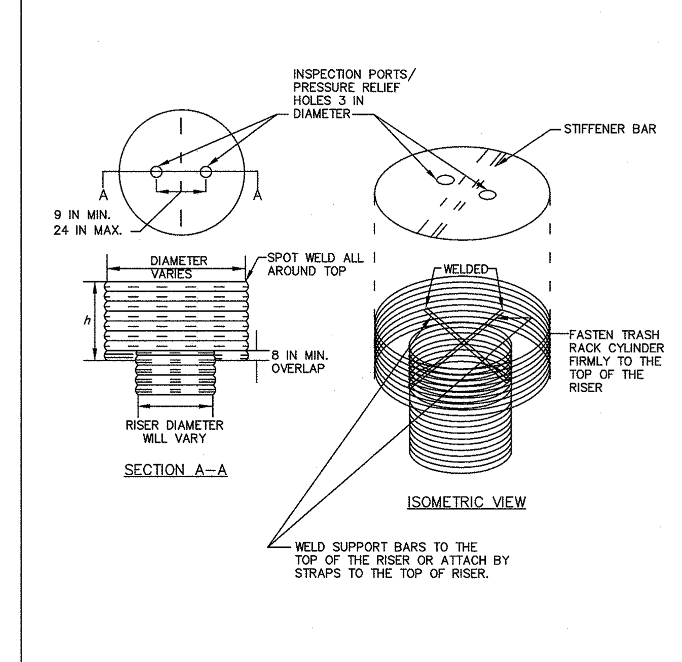
CONSTRUCTION SPECIFICATIONS

1. BOTTOM OF CONCRETE BASE TO BE PLACED ON UNDISTURBED, NATURAL GROUND.
2. NO STONE IS ALLOWED UNDER BASE. IF NECESSARY, TO ACHIEVE STABILITY INCREASE DEPTH OF CONCRETE BASE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL G-2-3 CONCENTRIC TRASH RACK AND ANTI-VORTEX DEVICE

STANDARD SYMBOL: TR



1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL G-2-3 CONCENTRIC TRASH RACK AND ANTI-VORTEX DEVICE

STANDARD SYMBOL: TR

	TRASH RACK CYLINDER				MINIMUM TOP	
RISER DIAM. (IN)	DIAM. (IN)	THICKNESS (GAUGE)	h (IN)	MINIMUM SIZE SUPPORT BAR	THICKNESS (GAUGE)	STIFFENER
12	18	16	14	#6 REBAR	16	N/A
15	21	16	15	#6 REBAR	16	N/A
18	27	16	16	#6 REBAR	16	N/A
21	30	16	19	#6 REBAR	16	N/A
24	36	16	21	#6 REBAR	14	N/A
27	42	16	21	#6 REBAR	14	N/A
36	54	14	25	#8 REBAR	12	N/A
42	60	14	27	#8 REBAR	12	N/A
48	72	12	29	1¼ IN PIPE OR 1¼ x 1¼ x ¼ ANGLE	10	N/A
54	78	12	33	1¼ IN PIPE OR 1¼ x 1¼ x ¼ ANGLE	10	N/A
60	90	12	37	1½ IN PIPE OR 1½ x 1½ x ¼ ANGLE	8	N/A
66	96	10	41	2 IN PIPE OR 2 x 2 x 3/16 ANGLE	8	2 x 2 x ¼ ANGLE
72	102	10	44	2 IN PIPE OR 2 x 2 x 3/16 ANGLE	8	2½ x 2½ x ¼ ANGLE
78	114	10	47	2½ IN PIPE OR 2 x 2 x ¼ ANGLE	8	2½ x 2½ x ¼ ANGLE
84	120	10	50	2½ IN PIPE OR 2½ x 2½ x ¼ ANGLE	8	2½ x 2½ x 5/16 ANGLE

NOTE:
THE ABOVE TRASH RACK AND ANTI-VORTEX DEVICE INFORMATION IS FOR CORRUGATED METAL PIPE ONLY. CONCRETE RISERS MUST MEET THE REQUIREMENTS OF MD 378.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

ENGINEER'S CERTIFICATE

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

CL Malagari 9-2-21
ENGINEER DATE

DEVELOPER'S CERTIFICATE

"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."

[signature] 9-2-21
DEVELOPER DATE

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

Alexander Rotcher 09/27/21
HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

[signature] 10/15/2021
CHIEF, BUREAU OF HIGHWAYS MK DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[signature] 11/2/21
CHIEF, DIVISION OF LAND DEVELOPMENT DJ DATE

[signature] 10.26.21
CHIEF, DEVELOPMENT ENGINEERING DIVISION KSA DATE

NO.	DATE	REVISION

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. 22390, Expiration Date: 6-30-2023.

STATE OF MARYLAND — CHRISTOPHER A. MALAGARI — 22390 — PROFESSIONAL ENGINEER
CL Malagari 9-2-21

OWNER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

WELLINGTON FARMS

Phase 1 Section 2
Lots 54 thru 132; Open Space Lots 133 thru 143; Parcel 'A'; Non-Buildable Bulk Parcels 'C', 'D', and 'E'
(A Resubdivision of Non-Buildable Bulk Parcels 'A' and 'B' previously recorded under F-21-025)

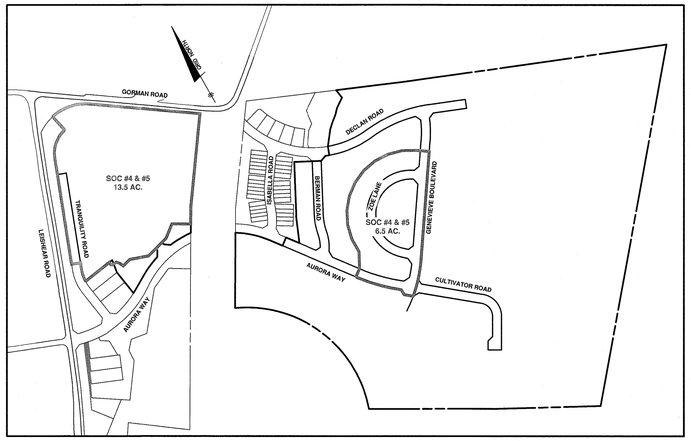
TAX MAP: 46 – GRID: 6 – PARCEL: 163
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 – HOWARD COUNTY, MARYLAND

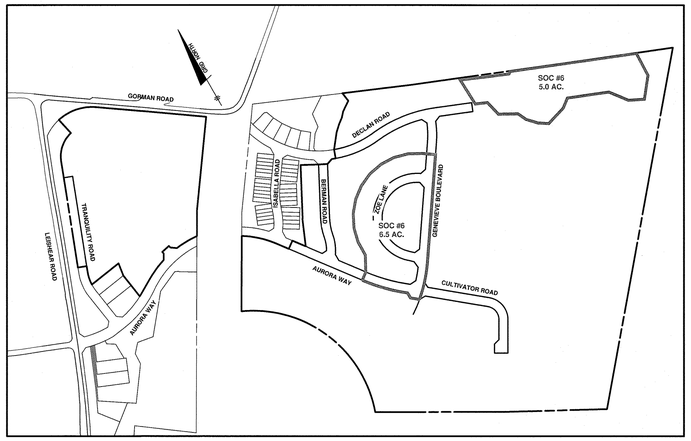
SEDIMENT AND EROSION CONTROL DETAILS

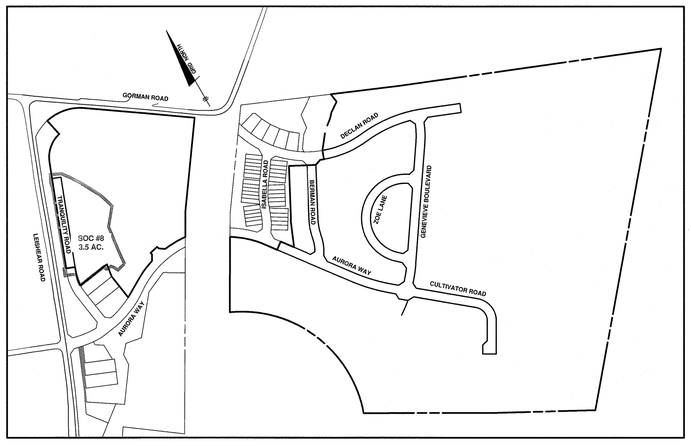
DATE: AUGUST 30, 2021 | BEI PROJECT NO. 2879
DESIGN: DBT | DRAFT: DBT | SCALE: AS SHOWN | SHEET 43 OF 52

F-21-044

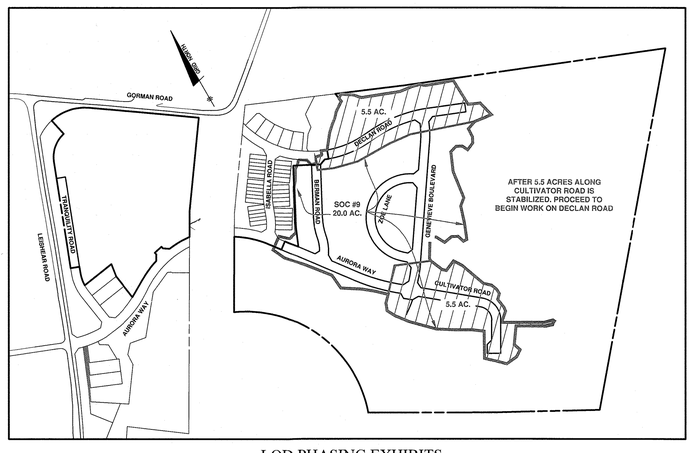
I:\2879 Milk Producers\dwg\Finals\Phase 1 Section 2\7023 P1S2.dwg, 8/27/2021 8:21:00 AM







LOD PHASING EXHIBITS



LOD PHASING EXHIBITS

SEQUENCE OF CONSTRUCTION

NOTIFY SEDIMENT CONTROL DIVISION 48 HOURS PRIOR TO START OF WORK

1. Obtain grading. Notify C.I.D. at 410-313-1880 at least 24 hours before starting any work. (1 day)

2. Hold on-site pre-construction meeting. (day 2)

3. Upon approval from the Howard County Sediment Control Inspector, Clear and grub as necessary in order to install perimeter controls and install those controls (i.e. fencing, dikes, traps, etc.) (day 3-10)

4. Upon approval from the Howard County Sediment Control Inspector, proceed with site excavation. Strip top soil on Bulk Parcel C, Zoe Lane, Lots 87-105, Aurora Way, and Genevieve Blvd. Move top soil to spoil area. Once complete, stabilize areas in accordance with temporary seedbed notes. (day 11-21)

5. Mass grade Area #1. Moving excess dirt to Zoe Lane area. After completion, stabilize Mass grade Area #1 with permanent seedbed notes. (day 22-32)

6. Mass grade Area #2. Moving excess dirt to Zoe Lane/Genevieve area. After completion, stabilize mass grade Area #2 with permanent seedbed notes. (day 33-43)

7. Finalize lot grading and stabilize. As areas along Zoe and Genevieve are being stabilized, begin rough grading the remainder of site. (day 44-55)

8. Bring Tranquility Road to subgrade, install sewer, water, and storm drains. Utilize inlet protection as indicated on the plan view. Inlets that discharge to trap or basin do not need protection. Construct micro bio-retention facilities that are not being used as temporary sediment traps. Cover surface media with filter fabric. Do not install mulch or plantings at this time. (day 56-70)

9. Once Tranquility Road and associated lots are stabilized, bring remaining roads to subgrade, install sewer, water, and storm drains. Utilize inlet protection as indicated on the plan view. Inlets that discharge to trap or basin do not need protection. Construct micro bio-retention facilities that are not being used as temporary sediment traps. Cover surface media with filter fabric. Do not install mulch or plantings at this time. Work along Declan Road cannot begin until equal area is stabilized along Cultivator Road. (day 71-164)

9. Pour curb and gutter. (day 165-172)

10. Base pave all roads. (day 173-180)

11. Construct sidewalks and paths. Once the relative drainage area to each micro bio-retention is stabilized, the filter fabric can be removed and mulch and plantings can be installed. (day 181-200)

12. Upon approval from the Howard County Sediment Control Inspector, begin conversation of traps/basins to their final SWM configuration. Flush the storm drain systems that discharged to traps/basins. Remove all remaining sediment control devices. Stabilize any remaining disturbed areas in accordance with the permanent seedbed notes. (day 201 - 210)

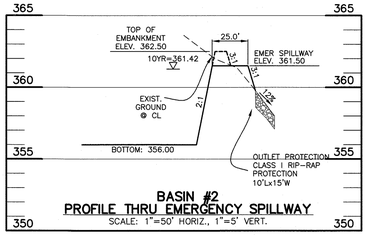
13. Install street tree and forest conservation plantings.

Note: A maximum acreage of 20 acres to be disturbed at any one time. Additional disturbance not to occur until at least 50% of the current disturbed area has been stabilized and approved by CID.

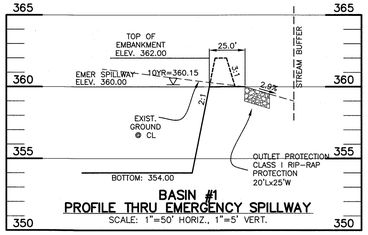
Note: Following initial soil disturbance or any re-disturbances, permanent or temporary stabilization shall be completed within:

A. 3 calendar days for all perimeter sediment control structures, dikes, swales and all slopes greater than 3:1.
B. 7 calendar days for all other disturbed areas.

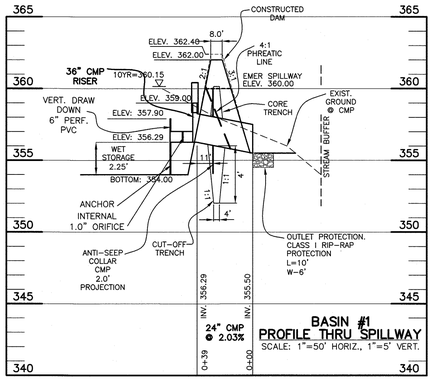
During grading and after each rainfall, contractor will inspect and provide necessary maintenance to the sediment control measures of this plan.



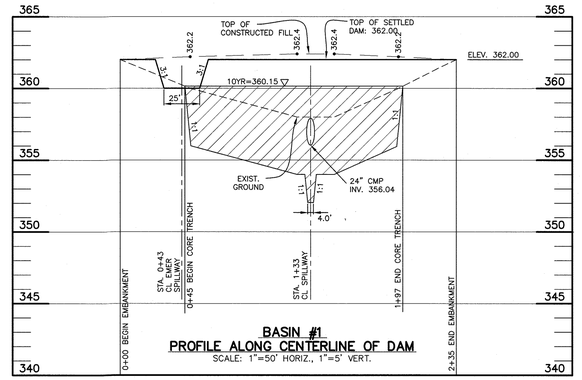
BASIN #2
PROFILE THRU EMERGENCY SPILLWAY
SCALE: 1"=50' HORIZ., 1"=5' VERT.



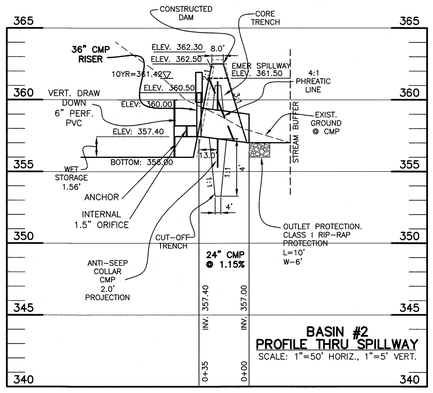
BASIN #1
PROFILE THRU EMERGENCY SPILLWAY
SCALE: 1"=50' HORIZ., 1"=5' VERT.



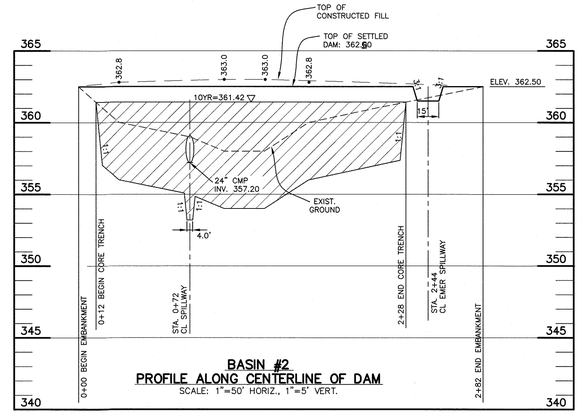
BASIN #1
PROFILE THRU SPILLWAY
SCALE: 1"=50' HORIZ., 1"=5' VERT.



BASIN #1
PROFILE ALONG CENTERLINE OF DAM
SCALE: 1"=50' HORIZ., 1"=5' VERT.



BASIN #2
PROFILE THRU SPILLWAY
SCALE: 1"=50' HORIZ., 1"=5' VERT.



BASIN #2
PROFILE ALONG CENTERLINE OF DAM
SCALE: 1"=50' HORIZ., 1"=5' VERT.

SEDIMENT BASIN

CONSTRUCTION SPECIFICATIONS

1. Install sediment control practices necessary to construct basin. Clear and grub to remove trees, vegetation, roots or other objectionable material from the areas where the embankment is to be placed. Do not clear the pool area until completion of the embankment; unless the pool area is to be used for borrow. Salvage topsoil for later use.
2. Excavate cut-off trench along centerline of proposed embankment a minimum depth of 4 feet and a bottom (min 4 feet) wide enough to permit operation of excavation and compaction equipment. Construct side slopes 1:1 or flatter. Cut-off trench must be continuous and extend the entire length of embankment. Compaction requirements are thee same as those for the embankment. Dewater the trench during the backfilling compaction operations, using an approved practice.
3. Construct embankment of clean soil free of roots, woody vegetation, oversized stones, rocks, or other objectionable material. Fill material for impervious core and cut-off trench must conform to Unified Soil Classification GC, SC, CH, or CL and must have at least 30 percent passing the #200 sieve. Use fill material containing sufficient moisture so that the soil can be formed by hand into a ball without crumbling. If water can be squeezed out of the ball, it is too wet for proper compaction. Place fill material in six-inch to eight-inch-thick continuous lifts over the entire length of the fill. Obtain compaction by passing construction equipment or compactor over the fill, so that the entire surface of each layer of fill is traversed at least four times. Construct the embankment to an elevation a minimum of 10 percent higher than the design height to allow for settlement.
4. Install principal spillway prior to, or concurrently with, fill placement. **Do not excavate embankment for placement of spillway.** All pipe connections, including anti-seep collars must be completely watertight. Install filter diaphragm when specified on plan. Barrel connection to riser must be welded all around when the pipe and riser are metal. Attach barrel stub to riser at the same percent (slope) of grade as the barrel. For concrete riser/barrel assembly, pour riser with barrel in place or set pre-cast riser and install projection collar for watertight connection. Place fill material around the pipe spillway in four (4) inch lifts and hand compact around the pipe to a depth of 1.5 times the pipe diameter (minimum). Securely install anti-vortex device and trash rack as shown on plan.
5. **Install the emergency spillway in undisturbed natural ground.** Construct spillway within a tolerance of +/- 0.2 feet.
6. Stabilize embankment and associated disturbed areas within three (3) days of completion with seed and mulch. Monitor embankment and maintain erosion free during the life of the basin.
7. Install fencing and signage in accordance with the approved plan.
8. Remove sediment when accumulated material has reached 25 percent of the total storage depth. Restore basin to original design volume. Place removed sediments in a controlled area and stabilize. Do not deposit sediment downstream of the embankment, adjacent to a stream or floodplain.
9. When the contributing drainage area is stable, the basin can be removed in accordance with the approved sediment control plan.
10. A sediment basin designed, built, and certified as a stormwater management structure, may be converted when the contributory damage area is stable. Properly dewater basin, modify outlet structure, perform additional grading, and provide required storage volume in accordance with approved stormwater management plans.

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 10/15/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/3/21

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.26.21

DEVELOPER'S CERTIFICATE

"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."

DEVELOPER — DATE 9-2-21

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 09/27/21

ENGINEER'S CERTIFICATE

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

ENGINEER — DATE 9-2-21

NO.	DATE	REVISION

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. 22390, Expiration Date: 6-30-2023.

STATE OF MARYLAND — CHRISTOPHER A. HAGAN — 22390 — PROFESSIONAL ENGINEER — 9-2-21

OWNER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

DEVELOPER:
ESC WELLINGTON, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

WELLINGTON FARMS

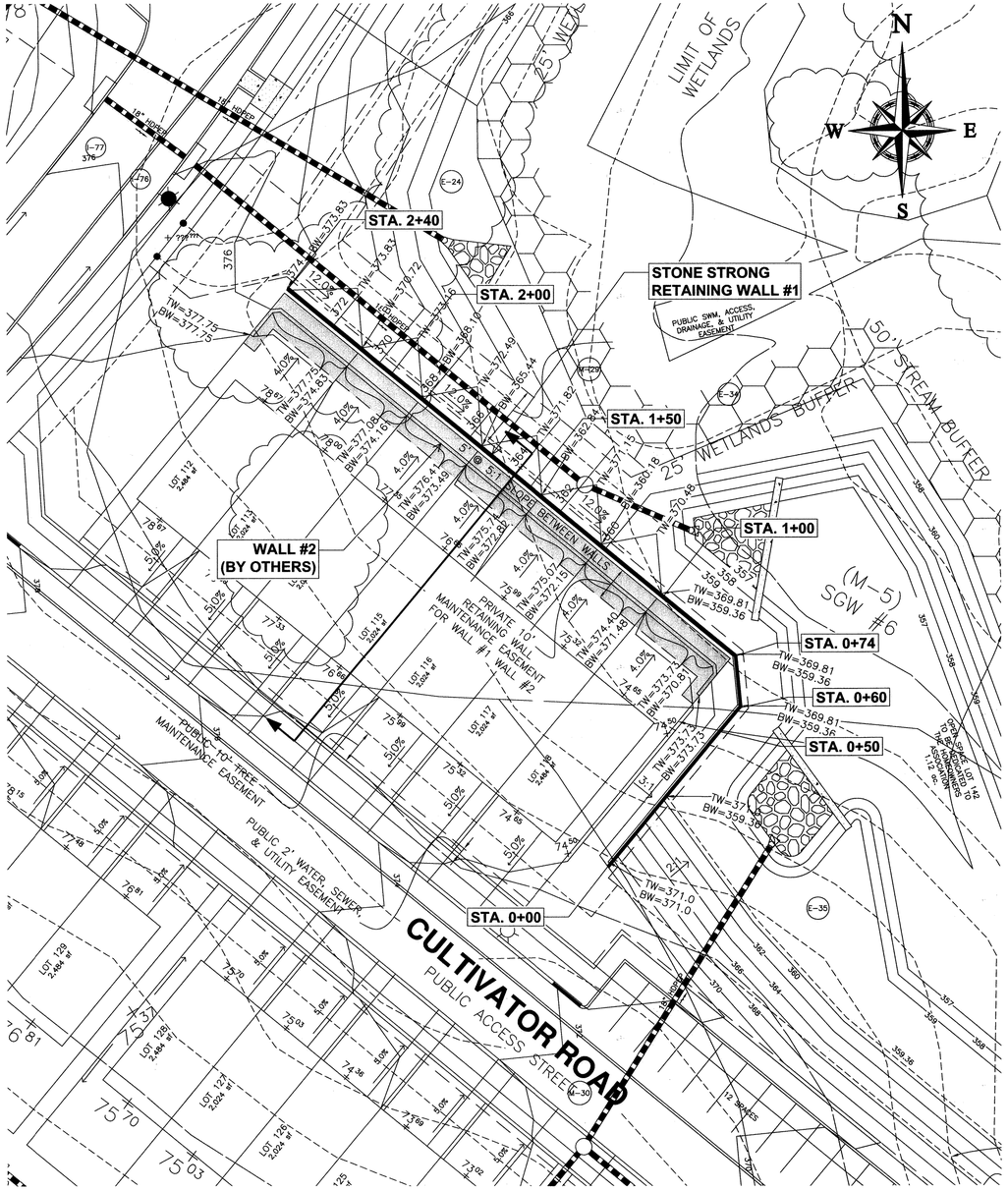
Phase 1 Section 2
Lots 54 thru 132; Open Space Lots 133 thru 143; Parcel 'A'; Non-Buildable Bulk Parcels 'C', 'D', and 'E'
(A Resubdivision of Non-Buildable Bulk Parcels 'A' and 'B' previously recorded under F-21-025)

TAX MAP: 46 – GRID: 6 – PARCEL: 163
ZONED: R-20-MXD-3 / R-SC-MXD-3
ELECTION DISTRICT NO. 6 – HOWARD COUNTY, MARYLAND

SEDIMENT AND EROSION CONTROL NOTES

DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 30, 2021	BEI PROJECT NO. 2879
		SCALE: AS SHOWN	SHEET 44 OF 52

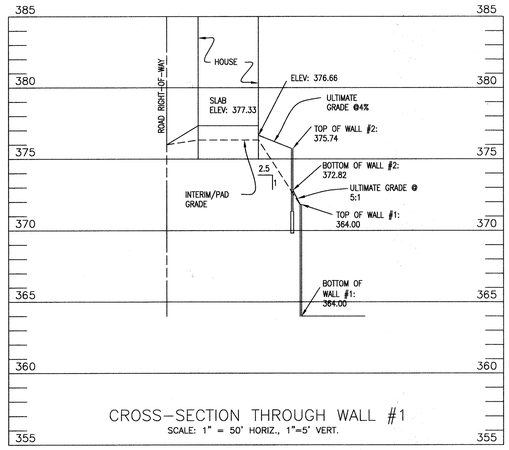
F-21-044



WALL #1 LOCATION PLAN
1" = 20'

NOTES:

1. ANY FUTURE STRUCTURES OR DECKS ON LOTS 112-118 CANNOT EXTEND INTO THE WALL EASEMENTS.
2. WALL #2 IS TO BE CONSTRUCTED UNDER A FUTURE SDP.
3. WALL #1 AND WALL #2 SHALL BOTH BE MAINTAINED BY THE HOMEOWNERS ASSOCIATION.



CROSS-SECTION THROUGH WALL #1
SCALE: 1" = 50' HORIZ., 1"=5' VERT.

OWNER:
NVR, INV.
9720 PATUXENT WOODS DRIVE
COLUMBIA, MARYLAND 21046
703-956-4080

DEVELOPER:
ELM STREET DEVELOPMENT
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 10/18/2021

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.26.21
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/2/21
~~DIRECTOR~~ — DATE

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 14808, EXPIRATION DATE: 02/27/22.

STATE OF MARYLAND — TIMOTHY B. HELL — No. 14808 — REGISTERED PROFESSIONAL ENGINEER — 9-13-21

HILLIS-CARNES
ENGINEERING ASSOCIATES
10975 Guilford Road, Suite A Annapolis Junction, Maryland
Phone: (410) 880-4788 www.hcea.com Fax: (410) 880-4098

STONE STRONG RETAINING WALL #1 PLAN AND CROSS-SECTION
WELLINGTON FARMS - PHASE 1 SECTION 2
HOWARD COUNTY, MARYLAND

REVISION NO.	DESCRIPTION	DATE

JOB NUMBER:	21084A	DESIGNED BY:	AM
SCALE:	AS SHOWN	DRAWN BY:	AM
DATE:	6/16/2021	APPROVED BY:	HM

45 SHEET

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F-21-044

STONE STRONG SYSTEMS SPECIFICATIONS FOR PRECAST MODULAR BLOCK RETAINING WALL SYSTEM

PART 1: GENERAL

1.01 DESCRIPTION

A. WORK INCLUDES FURNISHING AND INSTALLING PRECAST MODULAR BLOCKS (PMB) TO THE LINES AND GRADES SHOWN ON THE PLANS AND AS SPECIFIED HEREIN. ALSO INCLUDED IS FURNISHING AND INSTALLING APPURTENANT MATERIALS REQUIRED FOR CONSTRUCTION OF THE COMPLETE SYSTEM.

B. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR SAFETY. THE ENGINEER AND OWNER SHALL NOT BE RESPONSIBLE FOR MEANS OR METHODS OF CONSTRUCTION OR FOR SAFETY OF WORKERS OR THE PUBLIC.

1.02 DELIVERY, STORAGE, AND HANDLING

A. CONTRACTOR SHALL CHECK THE MATERIALS UPON DELIVERY TO ASSURE THAT PROPER MATERIALS HAVE BEEN RECEIVED.

B. CONTRACTOR SHALL PROTECT THE MATERIALS FROM DAMAGE. DAMAGED MATERIAL SHALL NOT BE INCORPORATED INTO THE WALL OR THE REINFORCED SOIL EMBANKMENTS.

C. CONTRACTOR SHALL PREVENT EXCESSIVE MUD, CONCRETE, ADHESIVES AND OTHER SUBSTANCES THAT MAY ADHERE FROM COMING IN CONTACT WITH THE MATERIALS.

D. EXPOSED FACES OF PRECAST MODULAR BLOCK UNITS SHALL BE REASONABLY FREE OF CHIPS, CRACKS, OR STAINS WHEN VIEWED FROM A DISTANCE OF 10 FEET.

PART 2: MATERIALS

2.01 WALL UNITS

A. PRECAST MODULAR BLOCKS SHALL BE STONE STRONG UNITS MANUFACTURED UNDER LICENSE FROM STONE STRONG LLC.

B. WALL UNITS SHALL CONFORM TO ASTM C1776.

C. DIMENSION TOLERANCES FOR PRECAST MODULAR BLOCKS SHALL BE +/- 1/8 INCH FOR HEIGHT, +/- 1/8 INCH FOR LENGTH (ALONG FACE), AND +1/2 TO -1/4 INCH FOR WIDTH (FACE TO TAIL).

D. CONCRETE FOR PRECAST MODULAR BLOCKS SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI. ENTRAINED AIR CONTENT SHALL BE BETWEEN 5 AND 7%.

E. INTERNAL UNIT REINFORCEMENT OR UNREINFORCED UNITS SHALL BE PROVIDED ACCORDING TO PUBLISHED STONE STRONG ENGINEERING GUIDANCE. REINFORCED UNITS SHALL BE MARKED WITH THE TYPE OF REINFORCEMENT.

F. THE FACE PATTERN SHALL BE SELECTED FROM THE MANUFACTURER'S STANDARD MOLDS. THE COLOR OF THE UNITS SHALL BE NATURAL GRAY. A CONCRETE STAIN MAY BE FIELD APPLIED TO COLOR THE UNITS IF SPECIFIED BY THE ENGINEER OR OWNER.

2.03 WALL BASE

A. THE WALL BASE SHALL CONSIST OF DENSE GRADED CRUSHED AGGREGATE. A MINIMUM OF 75% OF COARSE MATERIAL SHALL HAVE 2 OR MORE FRACTURED FACES. WALL BASE MATERIAL SHALL MEET THE FOLLOWING GRADATION:

US STANDARD SIEVE SIZE	PERCENT PASSING
1-1/2"	80-100%
3/4"	50-90%
#4	0-40%
#200	0-10%

B. THE CONTRACTOR MAY SUBSTITUTE CONCRETE WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3,000 PSI FOR THE GRANULAR BASE MATERIAL. CONCRETE MAY BE PLACED FULL THICKNESS OR AS A TOPPING OVER A COMPACTED GRANULAR THE BASE. IF USED AS A TOPPING, THE CONCRETE SHALL HAVE A MINIMUM THICKNESS OF 3 INCHES.

2.04 UNIT FILL

A. UNIT FILL SHALL CONSIST OF A SCREENED CRUSHED AGGREGATE. A MINIMUM OF 75% OF COARSE MATERIAL SHALL HAVE 2 OR MORE FRACTURED FACES. UNIT FILL MATERIAL SHALL MEET THE FOLLOWING GRADATION:

US STANDARD SIEVE SIZE	PERCENT PASSING
1-1/2"	100%
3/4"	50-90%
#4	0-10%
#8	0-5%

2.05 BACKFILL

A. IF A SELECT GRANULAR REINFORCED ZONE IS INDICATED, IT SHALL CONSIST OF FILL SAND OR OTHER CLEAN AGGREGATE MEETING THE FOLLOWING GRADATION:

US STANDARD SIEVE SIZE	PERCENT PASSING
3/4"	100%
#200	0-5%

B. ALL OTHER BACKFILL BEHIND AND IN FRONT OF THE WALL SHALL CONSIST OF SUITABLE ON-SITE SOIL OR IMPORTED BORROW AND SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER. BACKFILL SHALL GENERALLY CONSIST OF SANDS, SILTS, OR LEAN CLAYS WITH A LIQUID LIMIT LESS THAN 45 AND A PLASTICITY INDEX LESS THAN 20. FAT CLAY SOILS, COBBLES, AND LARGE ROCK SHOULD GENERALLY BE AVOIDED UNLESS APPROVED BY THE GEOTECHNICAL ENGINEER BASED ON LOCAL PRACTICES. FROZEN SOILS, EXCESSIVELY WET OR DRY SOILS, DEBRIS, AND DELETERIOUS MATERIALS SHOULD NOT BE USED.

2.06 DRAIN TILE

A. DRAIN TILE SHALL BE A PERFORATED OR SLOTTED PVC OR CORRUGATED HDPE PIPE. THE DRAIN TILE SHOULD BE CONNECTED TO STORM DRAINS OR DAYLIGHTED AT LOW POINTS AND/OR PERIODICALLY ALONG THE WALL ALIGNMENT AS SHOWN ON THE PLANS.

2.07 GEOTEXTILE FABRIC

A. PROVIDE A GEOTEXTILE FILTER FOR SEPARATION FROM BACKFILL AT THE TAILS OF THE BLOCKS. THE GEOTEXTILE SHALL BE A NEEDLE PUNCHED NON-WOVEN FABRIC WITH A MINIMUM GRAB TENSILE STRENGTH OF 120 POUNDS. THE GEOTEXTILE MAY COVER THE ENTIRE BACK FACE OF THE BLOCKS OR MAY BE CUT IN STRIPS TO COVER THE GAPS BETWEEN TAIL UNITS WITH A MINIMUM OF 6 INCHES OF OVERLAP OVER THE CONCRETE TAIL ON BOTH SIDES.

2.08 CONCRETE FOR TAIL EXTENSIONS

NOTE TO USER - THIS MAY BE OMITTED IF NO CAST IN PLACE TAIL EXTENSIONS ARE INCLUDED IN THE DESIGN

A. CONCRETE FOR TAIL EXTENSIONS SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3,000 PSI. HIGHER MIX STRENGTH MAY BE NECESSARY TO ACHIEVE A STRENGTH OF 2,000 PSI BEFORE THE WALL IS BACKFILLED ABOVE THE LEVEL OF THE TAIL EXTENSION.

B. CONCRETE SHALL HAVE ENTRAINED AIR CONTENT BETWEEN 5% AND 7%.

PART 3: EXECUTION

3.01 EXCAVATION

A. EXCAVATE AS REQUIRED FOR INSTALLATION OF THE RETAINING WALL SYSTEM. EXCAVATE TO THE BASE LEVEL FOR A SUFFICIENT DISTANCE BEHIND THE FACE TO PERMIT INSTALLATION OF THE BASE.

B. SLOPE OR SHORE EXCAVATION AS NECESSARY FOR SAFETY AND FOR CONFORMANCE WITH APPLICABLE OSHA REQUIREMENTS.

3.02 WALL BASE

A. FOUNDATION SOILS SHALL BE EXCAVATED TO THE DIMENSIONS SHOWN ON THE PLANS. FOUNDATION SOIL SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER TO CONFIRM THAT THE BEARING SOILS ARE SIMILAR TO THE DESIGN CONDITIONS OR ASSUMPTIONS.

B. CONSTRUCT THE WALL BASE TO THE LINES AND GRADES SHOWN ON THE PLANS. PLACE AND CONSOLIDATE CONCRETE, STRIKE, AND FINISH PLANE AND LEVEL. OVEREXCAVATED AREAS SHALL BE FILLED WITH ADDITIONAL CONCRETE OR GRANULAR BASE MATERIAL. COMPACT GRANULAR BASE MATERIAL TO PROVIDE A HARD AND LEVEL SURFACE TO SUPPORT THE WALL UNITS. BASE MATERIAL SHALL BE COMPACTED TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY (ASTM D698, STANDARD PROCTOR). FINAL BASE ELEVATION SHALL BE WITHIN 0.1 FEET OF PLAN ELEVATION.

C. PREPARE AND SMOOTH THE GRANULAR MATERIAL TO ENSURE COMPLETE CONTACT OF THE FIRST COURSE WITH THE BASE. THE BASE MAY BE DRESSED WITH FINE AGGREGATE TO AID LEVELING.

3.03 UNIT INSTALLATION

A. PLACE THE FIRST COURSE OF UNITS DIRECTLY ON THE WALL BASE. CHECK UNITS FOR LEVEL AND ALIGNMENT. UNITS SHALL BE WITHIN 1/8 INCH OF LEVEL FROM END TO END AND FROM FRONT TO BACK. ADJACENT UNITS SHOULD BE IN CONTACT. IF POSSIBLE, BEGIN PLACING UNITS AT THE LOWEST SECTION OF THE WALL.

B. FILL ALL VOIDS BETWEEN AND WITHIN THE BLOCKS WITH GRANULAR UNIT FILL. ADDITIONAL UNIT FILL IS NOT REQUIRED BEHIND THE UNITS, BUT MAY BE PLACED FOR THE CONVENIENCE OF THE CONTRACTOR.

C. PLACE BACKFILL BEHIND THE UNITS IN MAXIMUM LOOSE LIFTS OF 8 INCHES AND COMPACT. COMPACT ALL BACKFILL TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY (ASTM D698, STANDARD PROCTOR). FOR COHESIVE SOILS, THE MOISTURE CONTENT AT THE TIME OF COMPACTION SHOULD BE ADJUSTED TO WITHIN -2 AND +3 PERCENT OF OPTIMUM. PLACE BACKFILL IN SUCCESSIVE LIFTS UNTIL LEVEL WITH THE TOP OF THE FACING UNIT.

D. REMOVE ALL EXCESS AGGREGATE AND OTHER MATERIALS FROM THE TOP OF THE UNITS BEFORE LAYING UP THE NEXT COURSE.

NOTE TO USER - FOR A GEOGRID REINFORCED WALL, DELETE THE FOLLOWING SECTIONS ON PARAWEB INSTALLATION

E. FOR PARAWEB REINFORCED WALLS, PLACE THE CORRECT PARAWEB STRAP AT THE LOCATIONS AND ELEVATIONS SHOWN ON THE PLANS OR THE SHOP DRAWINGS. PARAWEB REINFORCEMENT SHALL BE PLACED HORIZONTALLY ON COMPACTED BACKFILL IN A V-LAYOUT. THE LENGTH OF THE PARAWEB IS MEASURED FROM THE EMBEDDED CONNECTOR IN THE BACK OF THE FACING UNIT. WRAP THE PARAWEB STRAP AROUND THE EMBEDDED CONNECTOR AT THE POINT OF THE V-SHAPED STRAP LAYOUT.

NOTE TO USER - FOR A PARAWEB REINFORCED WALL, DELETED THE FOLLOWING SECTIONS ON GEOGRID INSTALLATION

F. FOR GEOGRID REINFORCED WALLS, PLACE THE CORRECT GEOGRID AT THE LOCATIONS AND ELEVATIONS SHOWN ON THE PLANS OR THE SHOP DRAWINGS. GEOGRID REINFORCEMENT SHALL BE PLACED HORIZONTALLY ON COMPACTED BACKFILL. THE LENGTH OF THE GEOGRID IS MEASURED FROM THE FRONT FACE OF THE WALL. EXTEND THE GRID ONTO THE FRONT FACE FLANGE OF THE FACING UNIT. ORIENT THE GEOGRID WITH THE STRONG AXIS (MACHINE DIRECTION) PLACED PERPENDICULAR TO THE WALL FACE. GEOGRID SHALL NOT BE SPLICED BY ANY MEANS IN THE ROLL DIRECTION.

G. GEOGRIDS SHALL BE PLACED SIDE BY SIDE TO PROVIDE COMPLETE COVERAGE ALONG THE WALL FACE. NO OVERLAP IS REQUIRED BETWEEN ADJACENT GRIDS ON STRAIGHT SECTIONS OF THE WALL. ON CONVEX CURVES, PLACE A MINIMUM OF 3 INCHES OF BACKFILL MATERIAL BETWEEN OVERLAPPING GEOGRID LAYERS.

H. PULL GEOGRIDS TAUGHT AND STAKE OR HOLD THE LOOSE END IN PLACE BEFORE PLACING THE NEXT COURSE OF BACKFILL. BACKFILL SHALL BE PLACED, SPREAD, AND COMPACTED IN SUCH A MANNER THAT MINIMIZES THE DEVELOPMENT OF WRINKLES IN THE GEOGRID AND/OR MOVEMENT OF THE GEOGRID. DO NOT OPERATE EQUIPMENT DIRECTLY ON THE GEOGRID. A MINIMUM BACKFILL DEPTH OF 6 INCHES SHOULD BE PLACED BEFORE OPERATING EQUIPMENT OVER THE GRIDS.

NOTE TO USER - EDIT SETBACKS IF A VERTICAL FACE IS INTENDED

I. PLACE THE NEXT COURSE OF PRECAST MODULAR BLOCK UNITS IN RUNNING BOND WITH THE PREVIOUS COURSE. PLACE THE WEB RECESS OVER THE ALIGNMENT HOOP PROTRUDING FROM THE UNIT BELOW, AND PULL THE UNIT FORWARD TO CONTACT THE HOOP. BATTER SHOULD BE WITHIN ¼ INCH TOLERANCE (4 INCHES FROM 24 SF UNIT BELOW, 2 INCHES FROM 6 SF UNIT BELOW).

J. CONTINUE PLACING SUCCESSIVE COURSES TO THE ELEVATIONS SHOWN ON THE PLANS. CONSTRUCT WALL IN LEVEL STAGES, PLACING THE UNITS AT EACH COURSE FOR THE ENTIRE LENGTH OF THE WALL, IF POSSIBLE. UNIT FILL AND BACKFILL SHOULD BE PLACED TO THE LEVEL OF THE TOP OF THE FACING UNIT BEFORE PLACING THE NEXT COURSE.

K. PROVIDE TEMPORARY SWALES TO DIVERT RUNOFF AWAY FROM WALL EXCAVATION AND AWAY FROM FACE.

L. FINAL GRADE ABOVE AND BELOW THE RETAINING WALL SHALL PROVIDE FOR POSITIVE DRAINAGE AND PREVENT PONDING. PROTECT COMPLETED WALL FROM OTHER CONSTRUCTION. DO NOT OPERATE LARGE EQUIPMENT OR STORE MATERIALS ABOVE THE WALL THAT EXCEED THE DESIGN SURCHARGE LOADS.

NOTE TO USER - EDIT IF ALTERNATE CONNECTION IS USED, INCLUDING STEEL REINFORCEMENT INTO VOIDS, OR DELETE IF TAIL EXTENSIONS ARE NOT USED

M. WHERE TAIL EXTENSIONS ARE INDICATED ON THE PLANS, CONCRETE SHALL BE PLACED IN A CONTINUOUS PLACEMENT INSIDE THE SIDE VOIDS BETWEEN THE BLOCKS EXTENDING TO THE MINIMUM WIDTH BEHIND THE BLOCKS INDICATED ON THE DRAWINGS. TAIL EXTENSIONS MAY FORMED OR MAY BE PLACED DIRECTLY AGAINST A CUT EMBANKMENT. TAIL EXTENSIONS SHOULD BE PLACED IN LIFTS NOT TO EXCEED 4½ FEET UNTIL THE PREVIOUS LIFT HAS FULLY SET. THE TAIL EXTENSION SHOULD BE ALLOWED TO REACH 2,000 PSI COMPRESSIVE STRENGTH BEFORE BACKFILL IS PLACED ABOVE THE TOP OF THE EXTENSION.

PART 4: CONSTRUCTION QUALITY CONTROL AND ASSURANCE

4.01 CONSTRUCTION QUALITY CONTROL

A. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT ALL INSTALLATION AND MATERIALS MEET THE QUALITY SPECIFIED IN THE CONSTRUCTION DRAWINGS.

B. THE CONTRACTOR SHALL VERIFY THAT INSTALLATION IS IN ACCORDANCE WITH THE SPECIFICATIONS AND CONSTRUCTION DRAWINGS.

4.02 QUALITY ASSURANCE

A. THE OWNER IS RESPONSIBLE TO ENGAGE TESTING AND INSPECTION SERVICES TO PROVIDE INDEPENDENT QUALITY CONSTRUCTION ASSURANCE.

B. COMPACTION TESTING SHALL BE DONE A MINIMUM OF EVERY 1 FOOT OF VERTICAL FILL AND EVERY 100 LINEAL FEET ALONG THE WALL.

C. TESTING SHALL BE DONE AT A VARIETY OF LOCATIONS TO COVER THE ENTIRE BACKFILL ZONE.

D. THE INDEPENDENT INSPECTION PROFESSIONAL SHOULD PERFORM SUFFICIENT TESTING AND OBSERVATION TO VERIFY THAT WALL INSTALLATION SUBSTANTIALLY CONFORMS TO THE DESIGN DRAWINGS AND SPECIFICATIONS.

END OF SECTION

NOTES:

1. NO TREES SHALL BE PLANTED WITHIN 10 FEET OF THE TOP OF THE RETAINING WALL.
2. RETAINING WALLS SHALL ONLY BE CONSTRUCTED UNDER THE OBSERVATION OF A REGISTERED PROFESSIONAL ENGINEER AND A (NICET, WACEL, OR EQUIV.) CERTIFIED SOILS TECHNICIAN.
3. ONE SOIL BORING SHALL BE REQUIRED EVERY ONE HUNDRED FEET ALONG THE ENTIRE LENGTH OF THE WALL. COPIES OF ALL BORING REPORTS SHALL BE PROVIDED TO THE HOWARD COUNTY INSPECTOR PRIOR TO THE START OF CONSTRUCTION.
4. THE REQUIRED BEARING PRESSURE BENEATH THE WALL SYSTEM SHALL BE VERIFIED IN THE FIELD BY A CERTIFIED SOILS TECHNICIAN. TESTING DOCUMENTATION MUST BE PROVIDED TO THE HOWARD COUNTY INSPECTOR PRIOR TO START OF CONSTRUCTION. THE REQUIRED BEARING TEST SHALL BE THE DYNAMIC CONE PENETROMETER TEST ASTM STP-399.
5. THE SUITABILITY OF FILL MATERIAL SHALL BE CONFIRMED BY THE ON-SITE SOILS TECHNICIAN. EACH 8" LIFT MUST BE COMPACTED TO A MINIMUM 95% STANDARD PROCTOR DENSITY AND THE TESTING REPORT SHALL BE MADE AVAILABLE TO THE HOWARD COUNTY INSPECTOR UPON COMPLETION OF CONSTRUCTION.
6. WALLS SHALL NOT BE CONSTRUCTED ON UNCERTIFIED FILL MATERIALS.
7. WALLS SHALL NOT BE CONSTRUCTED WITHIN A HOWARD CO. RIGHT-OF-WAY OR EASEMENT.

OWNER:
NVR, INV.
9720 PATUXENT WOODS DRIVE
COLUMBIA, MARYLAND 21046
703-956-4080

DEVELOPER:
ELM STREET DEVELOPMENT
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10-26-21

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/3/21

DIRECTOR — DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 10/18/2021

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 14808, EXPIRATION DATE: 02/27/22.

STATE OF MARYLAND · TIMOTHY A. HILL · NO. 14808 · REGISTERED PROFESSIONAL ENGINEER

9-13-21

HILLIS-CARNES
ENGINEERING ASSOCIATES
10975 Guilford Road, Suite A Annapolis Junction, Maryland
Phone: (410) 880-4788 www.hcea.com Fax: (410) 880-4098

STRONG STONE RETAINING WALL #1 SPECIFICATIONS & NOTES

WELLINGTON FARMS - PHASE 1 SECTION 2

HOWARD COUNTY, MARYLAND

REVISION NO.	DESCRIPTION	DATE

JOB NUMBER: 21084A	DESIGNED BY: AM	46
SCALE: AS SHOWN	DRAWN BY: AM	SHEET
DATE: 6/16/2021	APPROVED BY: HM	

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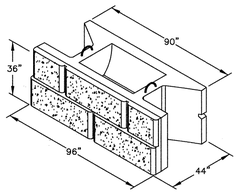
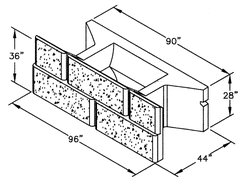
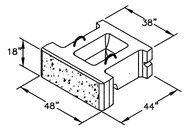


STONE STRONG 24SF UNIT
BATTERED FACE
NOT TO SCALE



STONE STRONG 24SF TOP UNIT
BATTERED FACE
NOT TO SCALE



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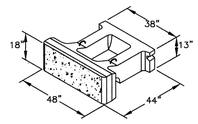
NOT TO SCALE



STONE STRONG 6SF TOP UNIT
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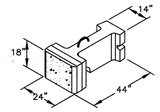
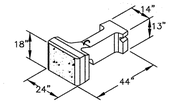
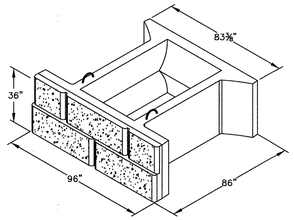


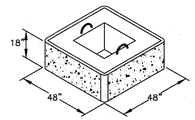
STONE STRONG 3SF UNIT
NOT TO SCALE



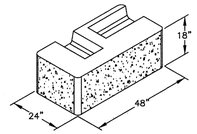
STONE STRONG 3SF TOP UNIT
NOT TO SCALE



STONE STRONG 24–86 UNIT
NOT TO SCALE



STONE STRONG 90° CORNER UNIT
NOT TO SCALE



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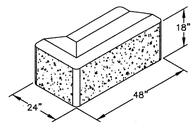
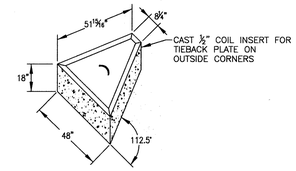
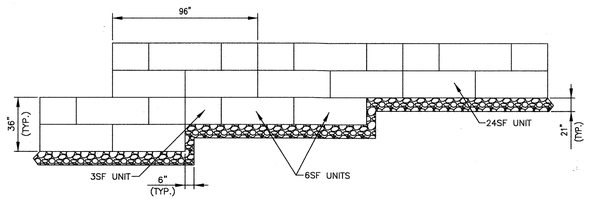
NOT TO SCALE



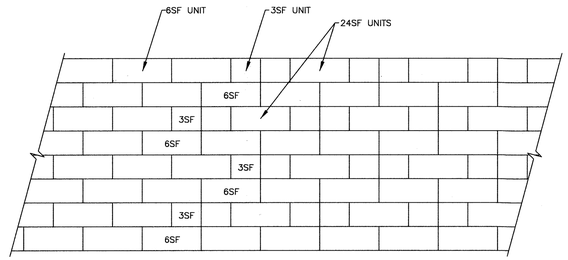
STONE STRONG END UNIT
NOT TO SCALE



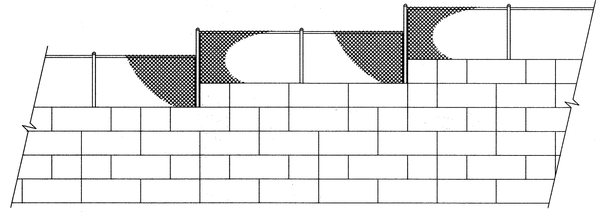
STONE STRONG 45° CORNER UNIT
NOT TO SCALE



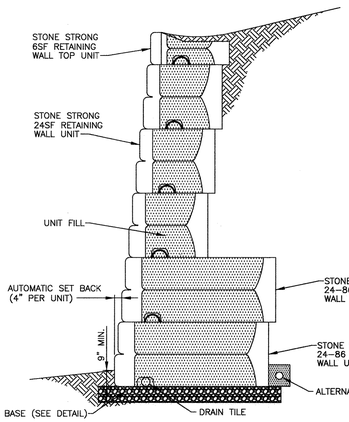
WALL BASE STEP
NOT TO SCALE



TRANSITION 24SF TO 6SF
NOT TO SCALE

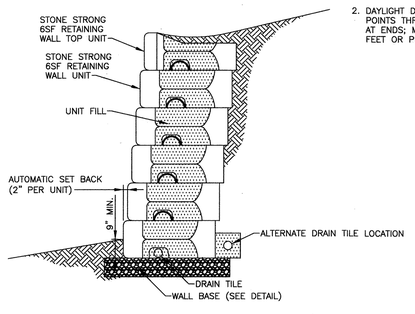


TYPICAL FENCE CONFIGURATION
NOT TO SCALE



NOTES:
1. DRAIN TILE MAY BE ELIMINATED AT THE DISCRETION OF THE SITE ENGINEER.
2. DAYLIGHT DRAIN TILE AT LOW POINTS THROUGH WALL FACE OR AT ENDS; MAXIMUM SPACING 100 FEET OR PER SITE CONDITIONS.

GRAVITY WALL CROSS SECTION w/EXTENDED BASE UNITS
NOT TO SCALE



NOTES:
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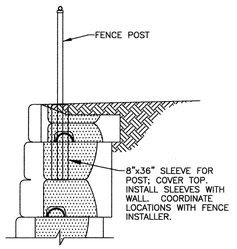
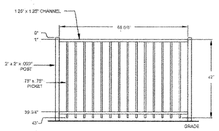
GRAVITY WALL CROSS SECTION
NOT TO SCALE



FENCE SLEEVE
NOT TO SCALE

NOTES:
1. TYPICAL FENCE DETAIL PROVIDED. EQUIVALENT DETAIL MAY BE USED AT THE DISCRETION OF THE CONTRACTOR.



FENCE DETAIL
NOT TO SCALE

OWNER:
NVR, INV.
9720 PATUXENT WOODS DRIVE
COLUMBIA, MARYLAND 21046
703-956-4080

DEVELOPER:
ELM STREET DEVELOPMENT
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 10/18/2021

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.26.21
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/2/21
DIRECTOR — DATE

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 14808, EXPIRATION DATE: 02/27/22.

STATE OF MARYLAND — TIMOTHY R. HILLIS — NO. 14808 — REGISTERED PROFESSIONAL ENGINEER
9-13-21

HILLIS-CARNES
ENGINEERING ASSOCIATES
10975 Guilford Road, Suite A Annapolis Junction, Maryland
Phone: (410) 880-4788 www.hcea.com Fax: (410) 880-4098

STONE STRONG RETAINING WALL #1 TYPICAL DETAILS
WELLINGTON FARMS - PHASE 1 SECTION 2
HOWARD COUNTY, MARYLAND

REVISION NO.	DESCRIPTION	DATE

JOB NUMBER:	21084A	DESIGNED BY:	AM
SCALE:	AS SHOWN	DRAWN BY:	AM/JE
DATE:	9/8/2021	APPROVED BY:	HM

SHEET 47

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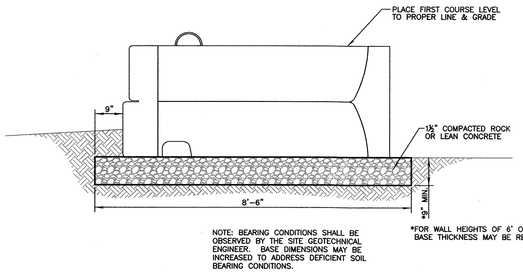
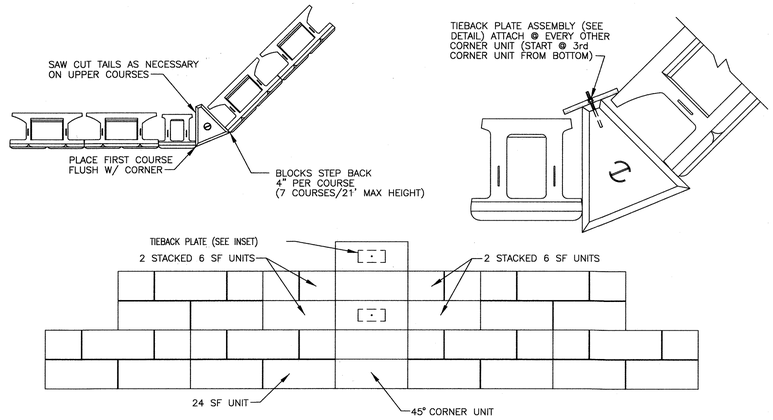


NOTE: BEARING CONDITIONS SHALL BE OBSERVED BY THE SITE GEOTECHNICAL ENGINEER. BASE DIMENSIONS MAY BE INCREASED TO ADDRESS DEFICIENT SOIL BEARING CONDITIONS.

*FOR WALL HEIGHTS OF 6' OR LESS, BASE THICKNESS MAY BE REDUCED TO 6".

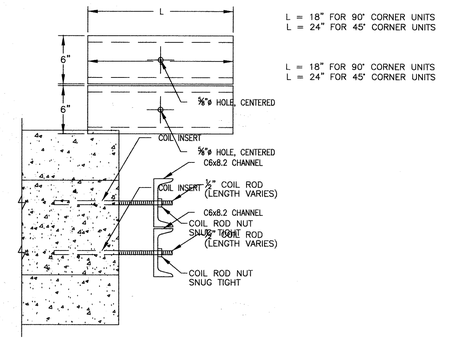
24-86 WALL BASE

NOT TO SCALE



OUTSIDE 45° CORNER

NOT TO SCALE



TIEBACK PLATE ASSEMBLY

NOT TO SCALE

OWNER:
NVR, INV.
9720 PATUXENT WOODS DRIVE
COLUMBIA, MARYLAND 21046
703-956-4080

DEVELOPER:
ELM STREET DEVELOPMENT
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 10/18/2021

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

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CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/2/21

DIRECTOR — DATE

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STATE OF MARYLAND · TIMOTHY E. HILLIS · No. 14808 · REGISTERED PROFESSIONAL ENGINEER

9-13-21

HILLIS-CARNES
ENGINEERING ASSOCIATES
10975 Guilford Road, Suite A Annapolis Junction, Maryland
Phone: (410) 880-4788 www.hcea.com Fax: (410) 880-4098

STONE STRONG RETAINING WALL #1 TYPICAL DETAILS
WELLINGTON FARMS - PHASE 1 SECTION 2
HOWARD COUNTY, MARYLAND

REVISION NO.	DESCRIPTION	DATE

JOB NUMBER:	21084A	DESIGNED BY:	AM
SCALE:	AS SHOWN	DRAWN BY:	AM
DATE:	6/16/2021	APPROVED BY:	HM

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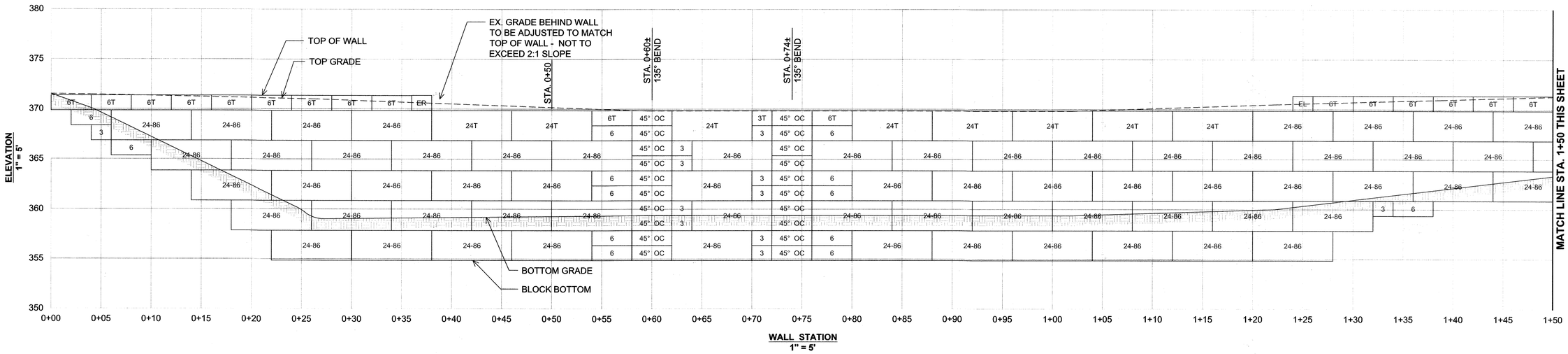
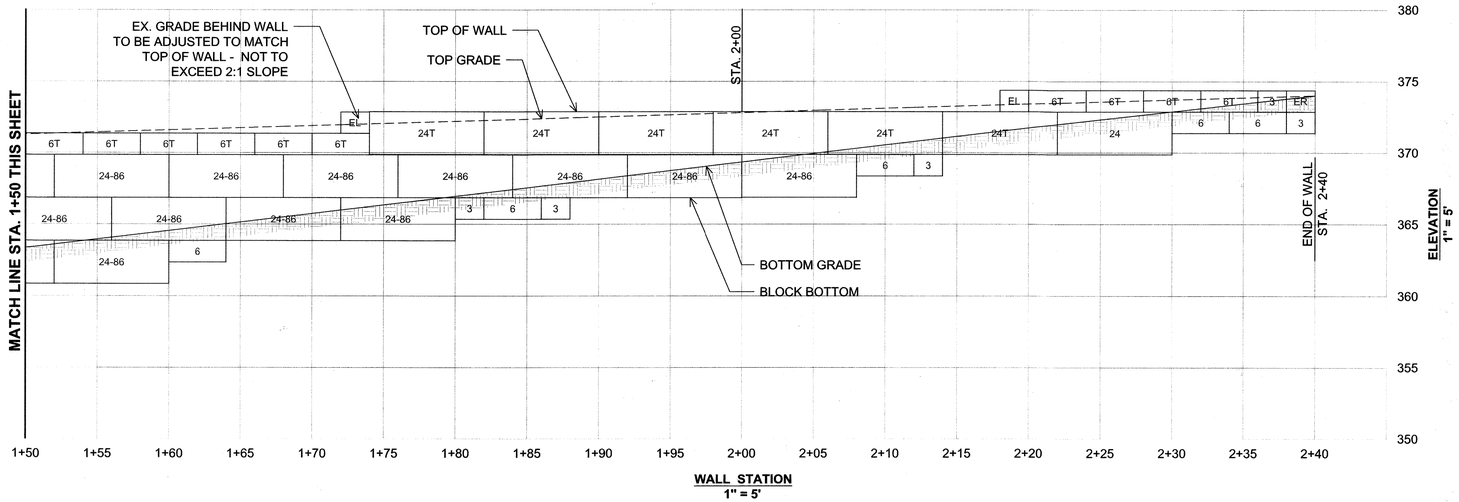
NOTE:
FIELD CONFIRM FINAL TOP AND BOTTOM WALL GRADES AND ADJUST WALL BLOCK ACCORDINGLY.

NOTE:
SEE CORNER DETAILS FOR PROPER BLOCK PLACEMENT. FIELD CONFIRM AND ADJUST BLOCK LOCATION AS REQUIRED.



STONE STRONG WALL #1 ELEVATION
STA. 0+00 TO 1+50



STONE STRONG WALL #1 ELEVATION
STA. 1+50 TO 2+40

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 10/18/2021

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.26.21

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STONE STRONG RETAINING WALL #1 ELEVATION

WELLINGTON FARMS - PHASE 1 SECTION 2

HOWARD COUNTY, MARYLAND

REVISION NO.	DESCRIPTION	DATE

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SCALE:	AS SHOWN	DRAWN BY:	AM
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49 SHEET

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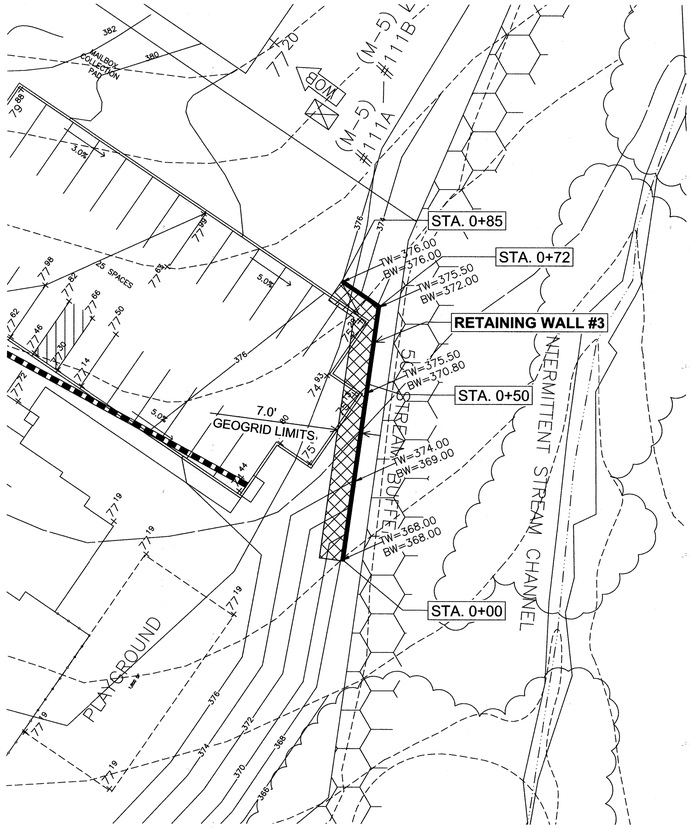
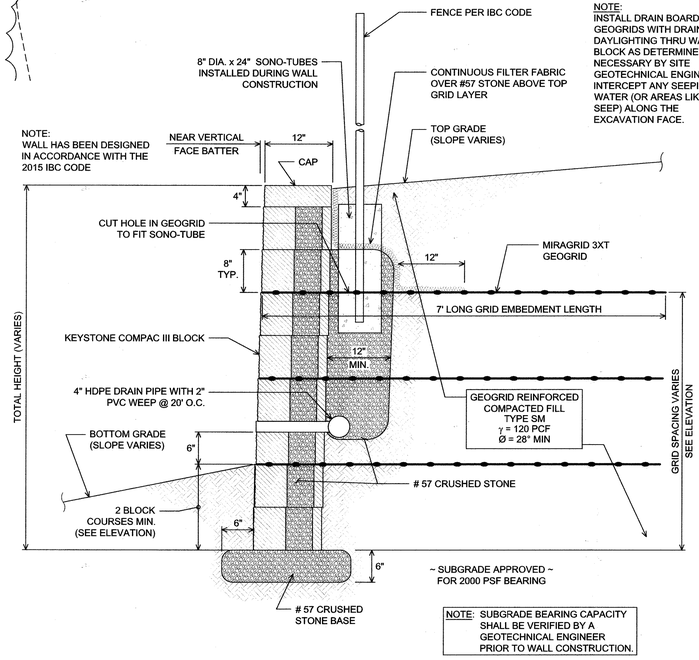


WALL #3 LOCATION PLAN
1" = 20'

NOTES:

1. NO TREES SHALL BE PLANTED WITHIN 10 FEET OF THE TOP OF THE RETAINING WALL.
2. RETAINING WALLS SHALL ONLY BE CONSTRUCTED UNDER THE OBSERVATION OF A REGISTERED PROFESSIONAL ENGINEER AND A (NICET, WACEL, OR EQUIV.) CERTIFIED SOILS TECHNICIAN.
3. ONE SOIL BORING SHALL BE REQUIRED EVERY ONE HUNDRED FEET ALONG THE ENTIRE LENGTH OF THE WALL. COPIES OF ALL BORING REPORTS SHALL BE PROVIDED TO THE HOWARD COUNTY INSPECTOR PRIOR TO THE START OF CONSTRUCTION.
4. THE REQUIRED BEARING PRESSURE BENEATH THE WALL SYSTEM SHALL BE VERIFIED IN THE FIELD BY A CERTIFIED SOILS TECHNICIAN. TESTING DOCUMENTATION MUST BE PROVIDED TO THE HOWARD COUNTY INSPECTOR PRIOR TO START OF CONSTRUCTION. THE REQUIRED BEARING TEST SHALL BE THE DYNAMIC CONE PENETROMETER TEST ASTM STP-399.
5. THE SUITABILITY OF FILL MATERIAL SHALL BE CONFIRMED BY THE ON-SITE SOILS TECHNICIAN. EACH 8" LIFT MUST BE COMPACTED TO A MINIMUM 95% STANDARD PROCTOR DENSITY AND THE TESTING REPORT SHALL BE MADE AVAILABLE TO THE HOWARD COUNTY INSPECTOR UPON COMPLETION OF CONSTRUCTION.
6. WALLS SHALL NOT BE CONSTRUCTED ON UNCERTIFIED FILL MATERIALS.
7. WALLS SHALL NOT BE CONSTRUCTED WITHIN A HOWARD CO. RIGHT-OF-WAY OR EASEMENT.



NOTE:
INSTALL DRAIN BOARD BEHIND GEOGRIDS WITH DRAIN PIPE DAYLIGHTING THRU WALL BLOCK AS DETERMINED NECESSARY BY SITE GEOTECHNICAL ENGINEER TO INTERCEPT ANY SEEPING WATER (OR AREAS LIKELY TO SEEP) ALONG THE EXCAVATION FACE.

TYPICAL WALL SECTION
N.T.S.

SPECIFICATIONS
SEGMENTAL CONCRETE BLOCK RETAINING WALL

PART 1: GENERAL

1.01 DESCRIPTION

A. WORK SHALL CONSIST OF FURNISHING AND CONSTRUCTION OF A SEGMENTAL RETAINING WALL SYSTEM IN ACCORDANCE WITH THESE SPECIFICATIONS AND IN REASONABLY CLOSE CONFORMITY WITH THE LINES, GRADES, DESIGN, AND DIMENSIONS SHOWN ON THE PLANS.

B. WORK INCLUDES PREPARING FOUNDATION SOIL, FURNISHING AND INSTALLING LEVELING PAD, UNIT FACING SYSTEM, UNIT DRAINAGE FILL AND REINFORCED BACKFILL TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS.

C. WORK INCLUDES FURNISHING AND INSTALLING GEOGRID SOIL REINFORCEMENT OF THE TYPE, SIZE, LOCATION, AND LENGTHS DESIGNATED ON THE CONSTRUCTION DRAWINGS.

1.02 DELIVERY, STORAGE AND HANDLING

A. CONTRACTOR SHALL CHECK ALL MATERIALS UPON DELIVERY TO ASSURE THAT THE PROPER TYPE, GRADE, COLOR, AND CERTIFICATION HAS BEEN RECEIVED.

B. CONTRACTOR SHALL PROTECT ALL MATERIALS FROM DAMAGE DUE TO JOB SITE CONDITIONS AND IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. DAMAGED MATERIALS SHALL NOT BE INCORPORATED INTO THE WORK.

PART 2: PRODUCTS

2.01 SEGMENTAL CONCRETE RETAINING WALL UNITS

A. SEGMENTAL CONCRETE UNITS SHALL CONFORM TO THE FOLLOWING ARCHITECTURAL REQUIREMENTS:

FACE COLOR - COLOR MAY BE SPECIFIED BY THE OWNER.

FACE FINISH - HARD SPLIT IN ANGULAR TRI-PLANE OR STRAIGHT FACE CONFIGURATION. OTHER FACE FINISHES WILL NOT BE ALLOWED WITHOUT WRITTEN APPROVAL OF OWNER.

BOND CONFIGURATION - RUNNING WITH BONDS NOMINALLY LOCATED AT MIDPOINT IN VERTICALLY ADJACENT UNITS, IN BOTH STRAIGHT AND CURVED ALIGNMENTS.

EXPOSED SURFACES OF UNITS SHALL BE FREE OF CHIPS, CRACKS OR OTHER IMPERFECTIONS WHEN VIEWED FROM A DISTANCE OF 20 FEET UNDER DIFFUSED LIGHTING.

B. SEGMENTAL CONCRETE UNITS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C1372 - STANDARD SPECIFICATIONS FOR SEGMENTAL RETAINING WALL UNITS.

C. SEGMENTAL CONCRETE UNITS SHALL CONFORM TO THE FOLLOWING STRUCTURAL AND GEOMETRIC REQUIREMENTS MEASURED IN ACCORDANCE WITH ASTM C140 SAMPLING & TESTING CONCRETE MASONRY UNITS.

COMPRESSIVE STRENGTH = 3000 PSI MINIMUM; ABSORPTION = 8% MAXIMUM (6% MAXIMUM IN NORTHERN STATES) FOR STANDARD WEIGHT AGGREGATES;

DIMENSIONAL TOLERANCES = ±1/8" FROM NOMINAL UNIT DIMENSIONS NOT INCLUDING ROUGH SPLIT FACE ± 1/4" FROM NOMINAL UNIT HEIGHT. UNIT SIZE - 8" (H) X 18" (W) X 12" (D) MINIMUM FOR COMPAC III UNITS; [UNIT SIZE - 8" (H) X 18" (W) X 18" (D) MINIMUM FOR STANDARD UNITS.]

INTER-UNIT SHEAR STRENGTH - 1000 PLF MINIMUM AT 2 PSI NORMAL PRESSURE; AT 2 PSI NORMAL FORCE.

[GEOGRID/UNIT PEAK CONNECTION STRENGTH - 1000 PLF MINIMUM.]

D. SEGMENTAL CONCRETE UNITS SHALL CONFORM TO THE FOLLOWING CONSTRUCTABILITY REQUIREMENTS:

VERTICAL SETBACK = 1/8"± PER COURSE (NEAR VERTICAL) OR [1"± PER COURSE] PER TYPICAL WALL SECTION. ALIGNMENT AND GRID ATTACHING MECHANISM - FIBERGLASS PINS, TWO PER UNIT MINIMUM; MAXIMUM HORIZONTAL GAP BETWEEN ERECTED UNITS SHALL BE 1/2 INCH.

2.02 SHEAR AND REINFORCEMENT PIN CONNECTORS

A. SHEAR AND REINFORCEMENT PIN CONNECTORS SHALL BE 1/2 INCH DIAMETER THERMOSET ISOPTHALIC POLYESTER RESIN PULTRUDED FIBERGLASS REINFORCEMENT RODS OR EQUIVALENT TO PROVIDE CONNECTION BETWEEN VERTICALLY AND HORIZONTALLY ADJACENT UNITS AND GEOSYNTHETIC REINFORCEMENT WITH THE FOLLOWING REQUIREMENTS: FLEXURAL STRENGTH IN ACCORDANCE WITH ASTM D4476: 128,000 PSI MINIMUM; SHORT BEAM SHEAR IN ACCORDANCE WITH ASTM D4475: 6,400 PSI MINIMUM.

B. SHEAR CONNECTORS SHALL BE CAPABLE OF HOLDING THE GEOGRID IN THE PROPER DESIGN POSITION DURING GRID PRE-TENSIONING AND BACKFILLING.

2.03 BASE LEVELING PAD MATERIAL

A. MATERIAL SHALL CONSIST OF A COMPACTED #57 CRUSHED STONE BASE OR CONCRETE AS SHOWN ON THE CONSTRUCTION DRAWINGS.

2.04 UNIT DRAINAGE FILL

A. UNIT DRAINAGE FILL SHALL CONSIST OF #57 CRUSHED STONE.

2.05 REINFORCED BACKFILL

A. REINFORCED BACKFILL SHALL BE TYPE SM, FREE OF DEBRIS AND MEET THE FOLLOWING GRADATION TESTED IN ACCORDANCE WITH ASTM D422 AND MEET OTHER PROPERTIES SHOWN ON THE PLAN:

SIEVE SIZE	PERCENT PASSING
1 1/2 INCH	100
3/4 INCH	100-75
NO. 40	0-60
NO. 200	0-35

PLASTICITY INDEX (PI) <15 AND LIQUID LIMIT <40, PER ASTM D4318.

B. MATERIAL CAN BE SITE EXCAVATED SOILS WHERE THE ABOVE REQUIREMENTS CAN BE MET. UNSUITABLE SOILS FOR BACKFILL (HIGHLY PLASTIC CLAYS OR ORGANIC SOILS) SHALL NOT BE USED IN THE REINFORCED SOIL MASS.

C. CONTRACTOR SHALL SUBMIT REINFORCED FILL SAMPLE AND LABORATORY TEST RESULTS FOR APPROVAL PRIOR TO THE USE OF ANY REINFORCED BACKFILL MATERIAL.

2.06 GEOGRID SOIL REINFORCEMENT

A. GEOSYNTHETIC REINFORCEMENT SHALL CONSIST OF GEOGRIDS MANUFACTURED SPECIFICALLY FOR SOIL REINFORCEMENT APPLICATIONS AND SHALL BE MANUFACTURED FROM HIGH TENACITY POLYESTER (PET) YARN.

2.07 DRAINAGE PIPE

A. THE DRAINAGE PIPE SHALL BE PERFORATED CORRUGATED HDPE PIPE MANUFACTURED IN ACCORDANCE WITH ASTM D1248.

2.08 GEOTEXTILE FILTER FABRIC

A. WHEN REQUIRED, FILTER FABRIC SHALL BE A NEEDLE-PUNCHED NONWOVEN FABRIC MEETING REQUIREMENTS OF AASHTO M288.

PART 3 EXECUTION

3.01 EXCAVATION

A. CONTRACTOR SHALL EXCAVATE TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS. OWNER'S REPRESENTATIVE SHALL BE RESPONSIBLE FOR INSPECTING AND APPROVING THE SUBGRADE PRIOR TO PLACEMENT OF LEVELING MATERIAL OR FILL SOILS.

B. RETAINING WALL EXCAVATIONS SHALL BE PERFORMED IN COMPLIANCE WITH MOSH AND OSHA REQUIREMENTS. CARE SHALL BE EXERCISED TO PROPERLY SHORE OR SLOPE BACK EXCAVATIONS TO MAINTAIN STABILITY. IF SLOPE FLATTENING IS NOT ACHIEVABLE, TEMPORARY SUPPORT OF EXCAVATION FOR THE RETAINING WALL CONSTRUCTION SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR AND PERFORMED IN ACCORDANCE WITH ANY JURISDICTIONAL SAFETY STANDARDS.

3.02 BASE LEVELING PAD

A. LEVELING PAD MATERIAL SHALL BE PLACED TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS, TO A MINIMUM THICKNESS OF 6 INCHES AND EXTEND LATERALLY A MINIMUM OF 6" IN FRONT AND BEHIND THE SEGMENTAL WALL UNIT.

B. LEVELING PAD SHALL BE PREPARED TO INSURE FULL CONTACT TO THE BASE SURFACE OF THE CONCRETE UNITS.

C. COMPACT TO MINIMUM 95% OF STANDARD PROCTOR DENSITY PER ASTM D698.

3.03 SEGMENTAL UNIT INSTALLATION

A. FIRST COURSE OF UNITS SHALL BE PLACED ON THE LEVELING PAD AT THE APPROPRIATE LINE AND GRADE. ALIGNMENT AND LEVEL SHALL BE CHECKED IN ALL DIRECTIONS AND INSURE THAT ALL UNITS ARE IN FULL CONTACT WITH THE BASE AND PROPERLY SEATED.

B. PLACE THE FRONT OF UNITS SIDE-BY-SIDE. DO NOT LEAVE GAPS BETWEEN ADJACENT UNITS. LAYOUT OF CORNERS AND CURVES SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

C. INSTALL SHEAR/CONNECTING DEVICES PER MANUFACTURER'S RECOMMENDATIONS.

D. PLACE AND COMPACT DRAINAGE FILL WITHIN AND BEHIND WALL UNITS, NOT LESS THAN 1.3 CU. FT. OF DRAINAGE FILL SHALL BE USED FOR EACH SQ. FT. OF WALL FACE, UNLESS NOTED OTHERWISE.

E. PLACE AND COMPACT REINFORCED BACKFILL SOIL BEHIND DRAINAGE FILL. FOLLOW WALL ERECTION AND DRAINAGE FILL CLOSELY WITH BACKFILL.

F. MAXIMUM STACKED VERTICAL HEIGHT OF WALL UNITS, PRIOR TO UNIT DRAINAGE FILL AND BACKFILL PLACEMENT AND COMPACTION, SHALL NOT EXCEED TWO COURSES.

3.04 STRUCTURAL GEOGRID INSTALLATION

A. GEOGRID SHALL BE ORIENTED WITH THE HIGHEST STRENGTH AXIS PERPENDICULAR TO THE WALL ALIGNMENT.

B. GEOGRID REINFORCEMENT SHALL BE PLACED AT THE STRENGTHS, LENGTHS, AND ELEVATIONS SHOWN ON THE CONSTRUCTION DRAWINGS OR AS DIRECTED BY THE ENGINEER.

C. THE GEOGRID SHALL BE LAID HORIZONTALLY ON COMPACTED BACKFILL AND ATTACHED TO THE SEGMENTAL WALL UNIT PINS AND WITHIN 1 INCH OF THE FACE OF THE UNITS. PLACE THE NEXT COURSE OF SEGMENTAL CONCRETE UNITS OVER THE GEOGRID. THE GEOGRID SHALL BE PULLED TAUT, AND ANCHORED PRIOR TO BACKFILL PLACEMENT ON THE GEOGRID.

D. GEOGRID REINFORCEMENTS SHALL BE CONTINUOUS THROUGHOUT THEIR EMBEDMENT LENGTHS AND PLACED SIDE-BY-SIDE TO PROVIDE 100% COVERAGE AT EACH LEVEL. SPLICED CONNECTIONS BETWEEN SHORTER PIECES OF GEOGRID OR GAPS GREATER THAN 2 INCHES BETWEEN ADJACENT PIECES OF GEOGRID ARE NOT PERMITTED.

3.05 REINFORCED BACKFILL PLACEMENT

A. REINFORCED BACKFILL SHALL BE PLACED, SPREAD, AND COMPACTED IN SUCH A MANNER THAT MINIMIZES THE DEVELOPMENT OF SLACK IN THE GEOGRID AND INSTALLATION DAMAGE TO GEOGRID.

B. REINFORCED BACKFILL SHALL BE PLACED AND COMPACTED IN LIFTS NOT TO EXCEED 6 INCHES WHERE HAND OPERATED COMPACTION EQUIPMENT IS USED, OR 8 - 10 INCHES WHERE HEAVY COMPACTION EQUIPMENT IS USED. LIFT THICKNESS SHALL BE DECREASED TO ACHIEVE THE REQUIRED DENSITY AS REQUIRED.

C. REINFORCED BACKFILL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY AS DETERMINED BY ASTM D698. THE MOISTURE CONTENT OF THE BACKFILL MATERIAL PRIOR TO AND DURING COMPACTION SHALL BE UNIFORMLY DISTRIBUTED THROUGHOUT EACH LAYER AND SHALL BE + 0% TO - 3% OF OPTIMUM.

D. ONLY LIGHTWEIGHT HAND-OPERATED COMPACTION EQUIPMENT SHALL BE ALLOWED WITHIN 3 FEET FROM THE BACK OF THE SEGMENTAL CONCRETE UNIT.

E. TRACKED CONSTRUCTION EQUIPMENT SHALL NOT BE OPERATED DIRECTLY UPON THE GEOGRID REINFORCEMENT. A MINIMUM FILL THICKNESS OF 6 INCHES IS REQUIRED PRIOR TO OPERATION OF TRACKED VEHICLES OVER THE GEOGRID. TRACKED VEHICLE TURNING SHOULD BE KEPT TO A MINIMUM TO PREVENT TRACKS FROM DISPLACING THE FILL AND DAMAGING OR DISPLACING THE SEGMENTAL CONCRETE UNITS OR GEOGRID.

F. RUBBER TIRED EQUIPMENT MAY PASS OVER GEOGRID REINFORCEMENT AT SLOW SPEEDS, LESS THAN 10 MPH. SUDDEN BRAKING AND TURNING SHALL BE AVOIDED.

G. AT THE END OF EACH DAY'S OPERATION, THE CONTRACTOR SHALL SLOPE THE LAST LIFT OF REINFORCED BACKFILL AWAY FROM THE WALL UNITS TO DIRECT RUNOFF AWAY FROM WALL FACE. THE CONTRACTOR SHALL NOT ALLOW SURFACE RUNOFF FROM ADJACENT AREAS TO ENTER THE WALL CONSTRUCTION SITE.

3.06 CAP INSTALLATION

A. PRIOR TO PLACEMENT OF CAP UNITS, THE UPPER SURFACE OF THE TOP COURSE WALL UNITS SHALL BE CLEANED OF SOIL AND ANY OTHER MATERIAL.

B. CAP UNITS SHALL BE GLUED TO UNDERLYING UNITS WITH AN ALL-WEATHER EXTERIOR CONSTRUCTION ADHESIVE RECOMMENDED BY THE MANUFACTURER.

3.07 FIELD QUALITY CONTROL

A. THE OWNER SHALL ENGAGE INSPECTION AND TESTING SERVICES, INCLUDING INDEPENDENT LABORATORIES, TO PROVIDE QUALITY ASSURANCE AND TESTING SERVICES DURING CONSTRUCTION.

B. AS A MINIMUM, QUALITY ASSURANCE TESTING SHOULD INCLUDE FOUNDATION SOIL INSPECTION, RETAINED SOIL AND BACKFILL TESTING, VERIFICATION OF DESIGN PARAMETERS, AND OBSERVATION OF CONSTRUCTION FOR GENERAL COMPLIANCE WITH DESIGN DRAWINGS AND SPECIFICATIONS.

OWNER:
NVR, INV.
9720 PATUXENT WOODS DRIVE
COLUMBIA, MARYLAND 21046
703-956-4080

DEVELOPER:
ELM STREET DEVELOPMENT
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MARYLAND 21042
410-720-3021

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 10/18/2021

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.26.21
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/2/21
DIRECTOR — DATE

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 14808, EXPIRATION DATE: 02/27/22.

STATE OF MARYLAND · TIMOTHY B. HILL · NO. 14808 · REGISTERED PROFESSIONAL ENGINEER

11-3-21

HILLIS-CARNES
ENGINEERING ASSOCIATES
10975 Guilford Road, Suite A Annapolis Junction, Maryland
Phone: (410) 880-4788 www.hcea.com Fax: (410) 880-4098

MSE RETAINING WALL #3 LOCATION PLAN AND DETAILS
WELLINGTON FARMS - PHASE 1 SECTION 2
HOWARD COUNTY, MARYLAND

REVISION NO.	DESCRIPTION	DATE

JOB NUMBER: 21084A	DESIGNED BY: JE		
SCALE: AS SHOWN	DRAWN BY: JE	50	
DATE: 6/16/2021	APPROVED BY: HM	SHEET	

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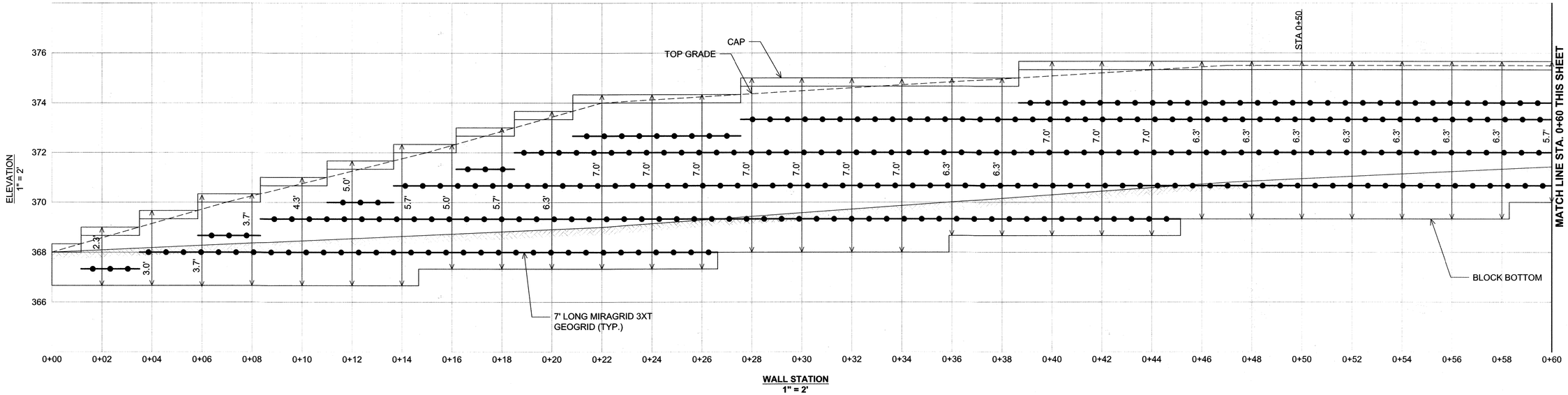
F-21-044

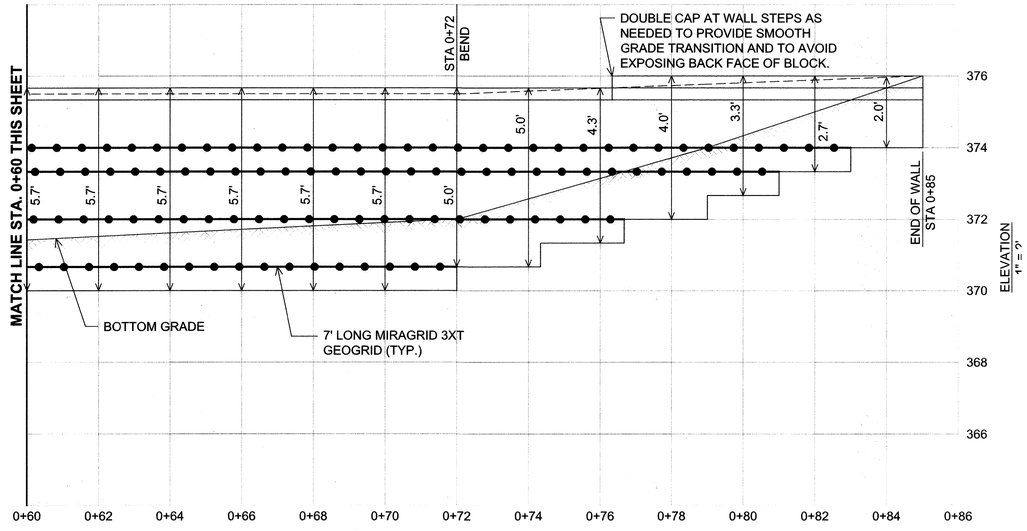
NOTE:
FIELD CONFIRM FINAL TOP AND BOTTOM WALL GRADES AND ADJUST WALL BLOCK ACCORDINGLY

NOTE:
SLOPE TOP GEOGRID LAYER DOWN AS NEEDED TO AVOID CONFLICT WITH CURB AND PAVEMENT INSTALLATION



WALL STATION
1" = 2'

WALL #3 ELEVATION



WALL STATION
1" = 2'

WALL #3 ELEVATION

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 10/15/2021

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.26.21

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/2/21

DIRECTOR — DATE

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STATE OF MARYLAND · TIMOTHY M. HILLIS · No. 14808 · REGISTERED PROFESSIONAL ENGINEER

9-13-21

HILLIS-CARNES
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MSE RETAINING WALL #3 ELEVATION
WELLINGTON FARMS - PHASE 1 SECTION 2
HOWARD COUNTY, MARYLAND

REVISION NO.	DESCRIPTION	DATE

JOB NUMBER:	21084A	DESIGNED BY:	JE
SCALE:	AS SHOWN	DRAWN BY:	JE
DATE:	6/25/2021	APPROVED BY:	HM

SHEET 51

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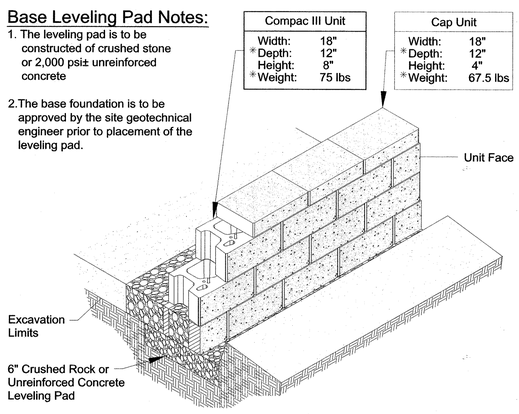
F-21-044

Base Leveling Pad Notes:

1. The leveling pad is to be constructed of crushed stone or 2,000 psi± unreinforced concrete
2. The base foundation is to be approved by the site geotechnical engineer prior to placement of the leveling pad.

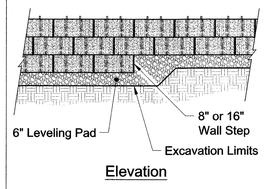
Compac III Unit	
Width:	18"
*Depth:	12"
Height:	8"
*Weight:	75 lbs

Cap Unit	
Width:	18"
*Depth:	12"
Height:	4"
*Weight:	67.5 lbs



Compac III Unit/Base Pad Isometric Section View

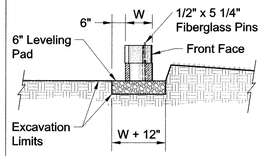
* Dimensions & Weight May Vary by Region



Elevation

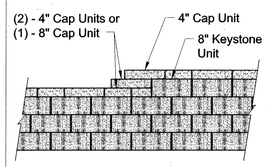
Note:

1. The leveling pad is to be constructed of crushed stone or 2000 psi ± unreinforced concrete.



Section

Leveling Pad Detail

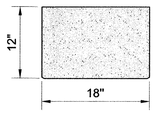


Note:

1. Secure all cap units with Keystone Kapseal or equal.

Top of Wall Steps

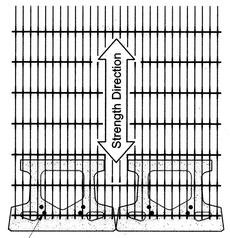
Cap Unit Elevation



Cap Unit Plan

Straight Split Cap Unit

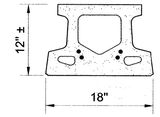
* Dimensions & Availability Will Vary by Region



Geogrid is to be Placed on Level Backfill and Extended Over the Fiberglass Pins. Place Next Unit. Pull Grid Taught and Backfill. Stake as required.

Grid & Pin Connection

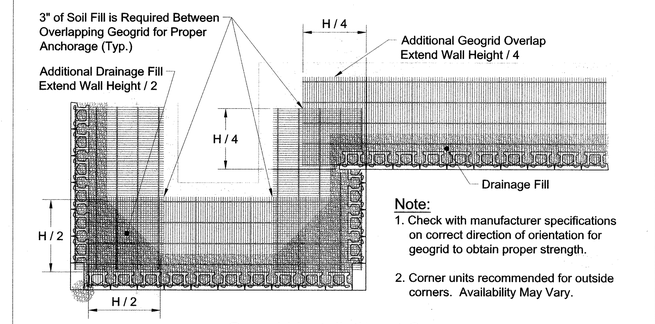
Compac III Elevation



Compac III Plan

Compac III Unit

* Dimensions May Vary by Region



Note:

1. Check with manufacturer specifications on correct direction of orientation for geogrid to obtain proper strength.
2. Corner units recommended for outside corners. Availability May Vary.

Geogrid Installation at Corners

COMPAC III UNIT - STRAIGHT FACE DETAILS

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MSE RETAINING WALL #3 CONSTRUCTION DETAILS

WELLINGTON FARMS - PHASE 1 SECTION 2

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