RESIDENTIAL SINGLE FAMILY ATTACHED AND MULTI-FAMILY
SITE DEVELOPMENT PLAN
RAVENWOOD CONDOMINUMS AT TURF VALLEY
LOTS 1 thru 7 AND BUILDABLE BULK PARCEL 'AA'

GENERAL NOTES

1.) THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS ALTERNATIVE COMPLIANCES OR DESIGN MANUAL WAIVERS HAVE BEEN APPROVED.

2.) THIS PROJECT IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, THE ZONING REGULATIONS EFFECTIVE OCTOBER 6, 2013, AND THE TURF VALLEY RESIDENTIAL SUBDISTRICT FDP, SECOND AMENDMENT. PER SECTION 126(H)(1) OF THE ZONING REGULATIONS, PLANNING BOARD APPROVAL OF THIS SITE DEVELOPMENT PLAN IS REQUIRED.

3.) THE SUBJECT PROPERTY IS ZONED PGCC-1 PER THE 10-6-2013 COMPREHENSIVE ZONING PLAN.

4.) TRACT BOUNDARY IS BASED ON RECORD PLAT NO. 25078-25081.

5.) THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 16IB AND 17AB WERE USED FOR THIS PROJECT.

6.) THE EXISTING TOPOGRAPHY SHOWN ON THESE LOTS IS BASED ON MASS GRADING AS SHOWN ON APPROVED F-17-096 ROAD CONSTRUCTION PLANS AND AERIAL TOPOGRAPHIC SURVEY BY WINGS AERIAL MAPPING, CO., FLOWN ON OR ABOUT JANUARY, 2006.

7.) THE EXISTING UTILITIES SHOWN ARE BASED ON CONTRACT DRAWINGS AND FILED SURVEY LOCATIONS

8.) THIS PROJECT IS LOCATED WITHIN THE METROPOLITAN DISTRICT.

9.) WATER IS PUBLIC. THE CONTRACT NUMBERS ARE 24-5133-D.

10.) SEWER IS PUBLIC. THE CONTRACT NUMBERS ARE 24-5133-D.

11.) LOTS 1-7 ARE SUBJECT TO SECTION 18.122B OF THE HOWARD COUNTY CODE. PUBLIC WATER AND SEWER SERVICE HAS BEEN GRANTED UNDER THE TERMS AND PROVISIONS, THEREOF, EFFECTIVE APRIL 11, 2019 ON WHICH DATE DEVELOPER AGREEMENT #F-18-027/24-4985-D WAS FILED AND ACCEPTED.

12.) THERE ARE NO WETLANDS, STREAMS, THEIR REQUIRED BUFFERS, 100-YEAR FLOODPLAIN OR 25% OR GREATER STEEP SLOPES THAT ARE AT LEAST 20,000 S.F. OF CONTIGUOUS AREA LOCATED ON LOTS 1-7 OR BUILDABLE BULK PARCEL 'AA'.

13.) TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO BURIAL GROUNDS, CEMETERIES OR HISTORIC STRUCTURES LOCATED ON THESE LOTS.

14). THE NOISE STUDY WAS ORIGINALLY PREPARED BY HUSH ACOUSTICS LLC DATED OCTOBER 23, 2016 AND APPROVED UNDER SP-16-011 ON JANUARY 10, 2017. IT WAS UPDATED BY HUSH ACOUSTICS LLC ON AUGUST 7, 2019. THE 65 dBA LINE ESTABLISHED BY HOWARD COUNTY TO ALERT DEVELOPERS, BUILDERS, AND FUTURE RESIDENTS THAT AREAS BEYOND THIS THRESHOLD MAY EXCEED GENERALLY ACCEPTED NOISE LEVELS ESTABLISHED BY THE U.S. DEPT OF HOUSING AND URBAN DEVELOPMENT.

15.) THE TRAFFIC STUDY WAS PREPARED BY THE TRAFFIC GROUP ON JANUARY 7, 2005 AND UPDATED ON AUGUST 11, 2006 AND WAS APPROVED UNDER THE 4TH AMENDED COMPREHENSIVE SKETCH PLAN, S-86-013. A LETTER DATED JANUARY 16, 2020 PROVIDED BY THE TRAFFIC GROUP, CONFIRMS THAT THIS PROJECT IS STILL IN CONFORMANCE WITH THAT REPORT.

16.) THE GEOTECHNICAL REPORTS WERE PREPARED BY HILLIS-CARNES ENGINEERING ASSOCIATES ON APRIL 26, 2016, OCTOBER 1, 2019, AND FEBRUARY 18, 2020.

17.) THE STORMWATER MANAGEMENT REPORT WAS PREPARED BY BENCHMARK ENGINEERING, INC. THE STORMWATER MANAGEMENT FOR THIS PROJECT COMPLIES WITH "MARYLAND DEPARTMENT OF THE ENVIRONMENT STORMWATER MANAGEMENT ACT OF 2007" AND THE "HOWARD COUNTY DESIGN MANUAL VOLUME I, CHAPTER 5". STORMWATER MANAGEMENT IS PROVIDED VIA M-5 DRY WELLS AND M-6 MICRO BIO-RETENTION PRACTICES. ALL PRACTICES ARE PRIVATELY OWNED AND MAINTAINED.

18.) DECLARATION OF COVENANTS FOR LOTS 1-7 WERE RECORDED ON APRIL 29, 2019 WITH THE F-18-027 SUBDIVISION PLAT.

19.) THE REQUIREMENT OF SECTION 16.1200 OF THE HOWARD COUNTY CODE FOR FOREST CONSERVATION FOR THESE LOTS WAS PROVIDED UNDER F-17-095. THE EASEMENTS WERE RECORDED UNDER F-17-095, RECORD PLAT #24898-24909.

20.) LANDSCAPING IS PROVIDED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL AS SHOWN ON THE CERTIFIED LANDSCAPE PLAN WITHIN THIS SITE DEVELOPMENT PLAN SET. FINANCIAL SURETY IN THE AMOUNT OF $21,300.00 FOR THE REQUIRED 66 SHADE TREES AND 10 EVERGREEN TREES SHALL BE PAID AS PART OF THE DPW DEVELOPERS AGREEMENT.

21.) DRIVEWAYS SHALL BE PROVIDED PRIOR TO ISSUANCE OF A USE AND OCCUPANCY PERMIT FOR ANY NEW DWELLINGS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:

A) WIDTH – 12' (16' SERVING MORE THAN ONE RESIDENCE).
B) SURFACE – 6" OF COMPACT CRUSHER RUN BASE WITH TAR AND CHIP COATING (1-½" MIN.).
C) GEOMETRY – MAX. 15% GRADE, MAX. 10% GRADE CHANGE & MIN. 45' TURNING RADIUS.
D) STRUCTURES(CULVERTS/BRIDGES) – CAPABLE OF SUPPORTING 25 GROSS TONS (H25 LOAD)
E) DRAINAGE ELEMENTS – CAPABLE OF SAFELY PASSING 100 YEAR FLOODPLAIN WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY.
G) MAINTENANCE – SUFFICIENT TO INSURE ALL WEATHER USE.

22.) ANY DAMAGE TO THE COUNTY'S RIGHT-OF-WAY SHALL BE CORRECTED AT THE BUILDER'S EXPENSE.

23.) FOR DRIVEWAY APRON DETAIL, REFER TO THE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, STANDARD DETAIL R-6.03.

24. SNOW REMOVAL, MAINTENANCE, AND TRASH COLLECTION FOR THE APARTMENT BUILDINGS SHALL BE PRIVATE.

25.) A KNOX BOX SHALL BE PLACED ON THE FRONT OF ALL APARTMENT BUILDINGS NO MORE THAN 6' TO THE RIGHT OF THE MAIN ENTRANCE AT A HEIGHT OF 4'-5". IT SHALL BE ELECTRONICALLY SUPERVISED TO NOTIFY THE OWNER THAT IT IS BEING ACCESSED (INTEGRATED WITH THE FIRE SYSTEM). MORE THAN ONE KNOX BOX PER BUILDING MAY BE REQUIRED. THE CONSTRUCTION SUPERINTENDENT SHOULD COORDINATE WITH THE OFFICE O THE FIRE MARSHAL TO DETERMINE THE NUMBER OF KNOX BOXES REQUIRED AND THE PLACEMENT LOCATIONS.

26.) IN ACCORDANCE WITH SECTION 128 OF THE HOWARD COUNTY ZONING REGULATIONS, BAY WINDOWS, WINDOW WELLS, ORIELS, VESTIBULES, BALCONIES AND CHIMNEYS MAY ENCROACH 4 FEET INTO ANY SETBACK OR REQUIRED DISTANCE BETWEEN BUILDINGS PROVIDED THE FEATURE HAS A MAXIMUM WIDTH OF 16 FEET. EXTERIOR STAIRWAYS OR RAMPS, ABOVE OR BELOW GROUND LEVEL (EXCLUDING THOSE ATTACHED TO A PORCH OR DECK) MAY ENCROACH 10 FEET INTO A FRONT SETBACK OR A SETBACK FROM A PROJECT BOUNDARY, 16 FEET INTO A REAR SETBACK, 4 FEET INTO A SIDE SETBACK OR REQUIRED DISTANCE BETWEEN BUILDINGS. OPEN OR ENCLOSED PORCHES OR DECKS AND THE STAIRWAYS OR RAMPS ATTACHED THERETO MAY ENCROACH 10 FEET INTO A FRONT OR REAR SETBACK, SETBACK FROM A PROJECT BOUNDARY OR A REQUIRED DISTANCE BETWEEN BUILDINGS.

27.) 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.

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

29.) SHC ELEVATIONS SHOWN ARE LOCATED AT THE PROPERTY LINE.

30.) THE OPEN SPACE REQUIREMENT FOR THIS SITE DEVELOPMENT PLAN WAS PROVIDED UNDER THE RAVENWOOD AT TURF VALLEY FINAL ROAD CONSTRUCTION PLANS, F-18-027. A TOTAL OF 3.82 ACRES WAS REQUIRED (15% OF GROSS AREA) AND A TOTAL OF 15.38 ACRES WAS PROVIDED.

31.) THE OFFSITE WETLANDS LIMITS SHOWN ARE BASED ON A STUDY CONDUCTED BY EXPLORATION RESEARCH, INC. AND VERIFIED BY ECO-SCIENCE PROFESSIONALS, INC. ON MAY 26, 2016. THE LIMITS SHOWN ARE IN ACCORDANCE WITH THOSE SHOWN ON THE 4TH AMENDMENT TO THE TURF VALLEY COMPREHENSIVE SKETCH PLAN (S-86-13, PB 368) APPROVED JULY 28, 2006.

32.) THE OFF-SITE 100-YEAR FLOODPLAIN LIMITS SHOWN ALONG THE STREAM ON THE SOUTHWEST PORTION OF THE SITE IS BASED ON A STUDY PREPARED BY BENCHMARK ENGINEERING, INC. IN SEPTEMBER, 2016 AND APPROVED BY THE DEPARTMENT OF PLANNING AND ZONING UNDER SP-16-011 ON MARCH 29, 2017. THE FLOODPLAIN LIMIT ALONG THE STREAM ON THE SOUTHEAST PORTION OF THE SITE (LITTLE PATUXENT RIVER TRIBUTARY 15) IS BASED ON FEMA FLOOD INSURANCE MAP NUMBER 24027C0090D, EFFECTIVE NOVEMBER 6, 2013.

33.) THIS PROJECT IS EXEMPT FROM MIHU REQUIREMENTS SINCE IT IS ZONED PGCC-1.

34.) THE DEPARTMENT OF PLANNING AND ZONING HAS DETERMINED THAT THE DISTURBANCE TO THE STREAM AND WETLAND BUFFERS ASSOCIATED WITH THE INSTALLATION OF THE UNDERGROUND UTILITIES IS NECESSARY IN ACCORDANCE WITH SECTION 16.116(c) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.

35.) THIS PLAN COMPLIES WITH SECTION 134.0: – OUTDOOR LIGHTING OF THE HOWARD COUNTY ZONING REGULATIONS. SEE SHEET 17 FOR EXTERIOR LIGHTING DETAILS.

36.) THE FOLLOWING PROVISIONS SHALL APPLY TO A FIRE DEPARTMENT CONNECTION FOR FIRE PROTECTION SYSTEMS: (I) A FIRE DEPARTMENT CONNECTION FOR FIRE PROTECTION SYSTEMS SHALL BE LOCATED: (A.) ON THE SIDE OF THE STRUCTURE DISPLAYING THE ADDRESS CLEARLY VISIBLE TO THE RESPONDING UNITS (UNLESS AN ALTERNATE LOCATION IS APPROVED BY THE AHJ); (B.) WITHIN 100 FT. OF A FIRE HYDRANT;(II) THE APPROPRIATE SIGN SHALL BE MOUNTED ON THE BUILDING'S WALL BETWEEN 8 AND 12 FEET ABOVE THE FIRE DEPARTMENT CONNECTION; (III) A FREE-STANDING FIRE DEPARTMENT CONNECTION SHALL HAVE THE SIGN MOUNTED ON A POLE DIRECTLY BEHIND THE CONNECTION APPROXIMATELY 6 FEET HIGH; (IV) SIGNS SHALL HAVE A WHITE REFLECTIVE BACKGROUND WITH A RED REFLECTIVE BORDER, RED REFLECTIVE LETTERS AND A RED REFLECTIVE ARROW. THE BORDER SHALL HAVE A 3/8" STROKE. THE LETTERS SHALL BE 6" HIGH WITH A 1" STROKE. THE ARROW SHALL HAVE A STROKE NOTE LESS THAN 2". THE OVERALL SIGN MEASUREMENTS SHALL BE 12" BY 18"; (V) ANY OBSTRUCTION OR CONDITION THAT DETERS OR HINDERS ACCESS TO A FDC IS PROHIBITED. A MINIMUM CLEAR SPACE OF 15 FEET (7.5 FEET ON ALL SIDES) SHALL BE MAINTAINED.

37.) ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.

38.) TRAFFIC CONTROL DEVICES, MARKINGS, AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.

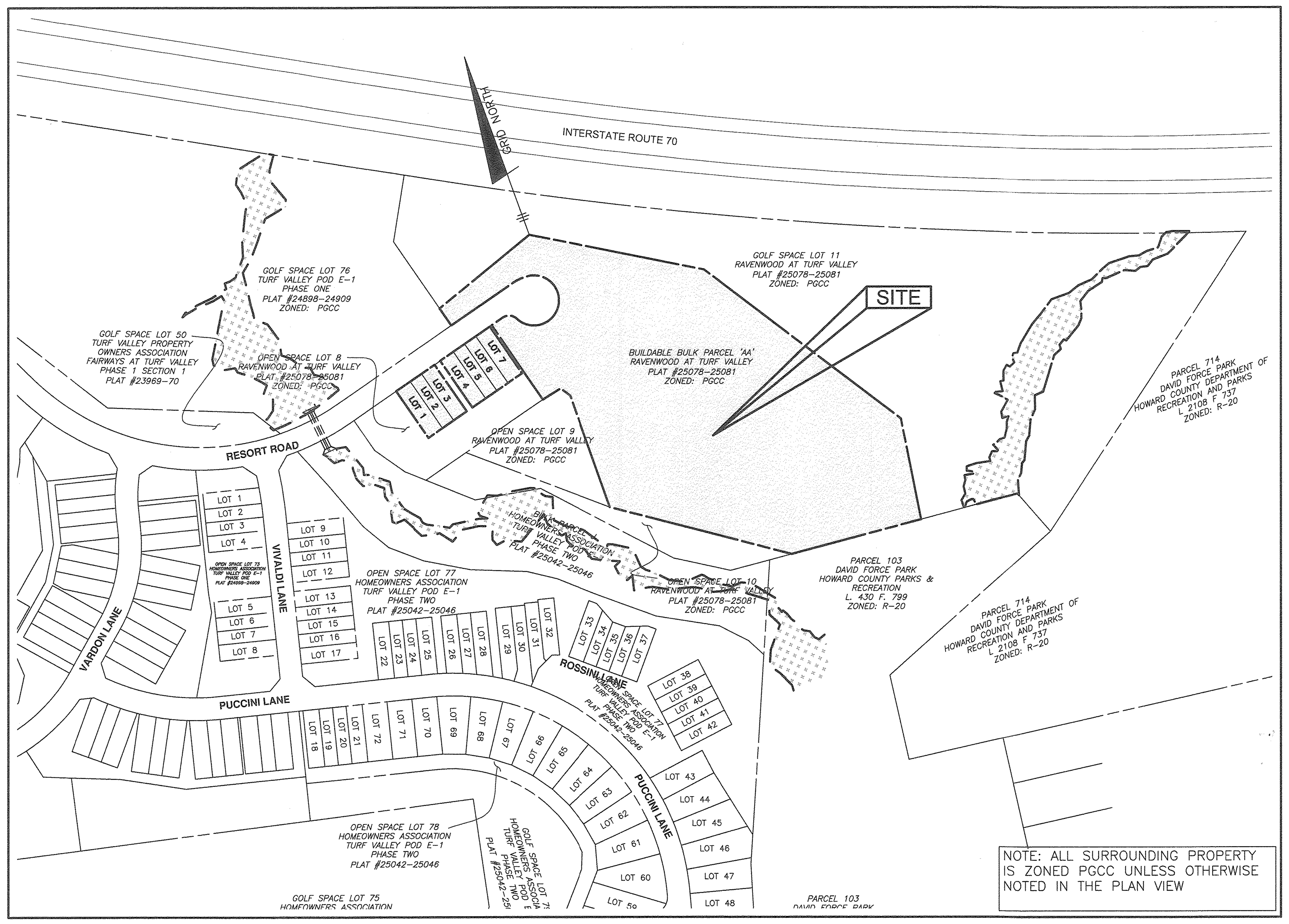
39.) STREET LIGHT PLACEMENT AND TYPE OF FIXTURE AND POLE SHALL BE IN ACCORDANCE WITH THE LATEST HOWARD COUNTY DESIGN MANUAL, VOLUME III (DECEMBER, 2017) AND AS MODIFIED BY "GUIDELINES FOR STREET LIGHTS IN RESIDENTIAL DEVELOPMENTS (JUNE, 1993)." A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREETLIGHT AND ANY TREE.

40.) ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) – 3' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.

41.) ALL PLAN DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.

42.) THE 2ND AMENDMENT TO THE RESIDENTIAL SUB-DISTRICT FDP CONSISTS OF A TOTAL ACREAGE OF 277.26 ACRES WHICH ESTABLISHES THE MAXIMUM ALLOWABLE UNITS AT 485. THE PROPOSED 91 UNITS WITHIN THE RAVENWOOD SITE DEVELOPMENT PLAN BRINGS THE CURRENT TOTAL UNIT COUNT WITHIN THE RESIDENTIAL SUB-DISTRICT TO 454.

43.) THE PLANNING BOARD APPROVED THIS SITE DEVELOPMENT PLAN ON AUGUST 20, 2020 WITH THE CONDITION THAT THE OWNER/DEVELOPER HOLD A MEETING WITH THE COMMUNITY TO DISCUSS TRAFFIC CONCERNS AT THE INTERSECTION OF LEGENDS WAY AND RESORT ROAD. THE MEETING WAS HELD ON AUGUST 25, 2020.



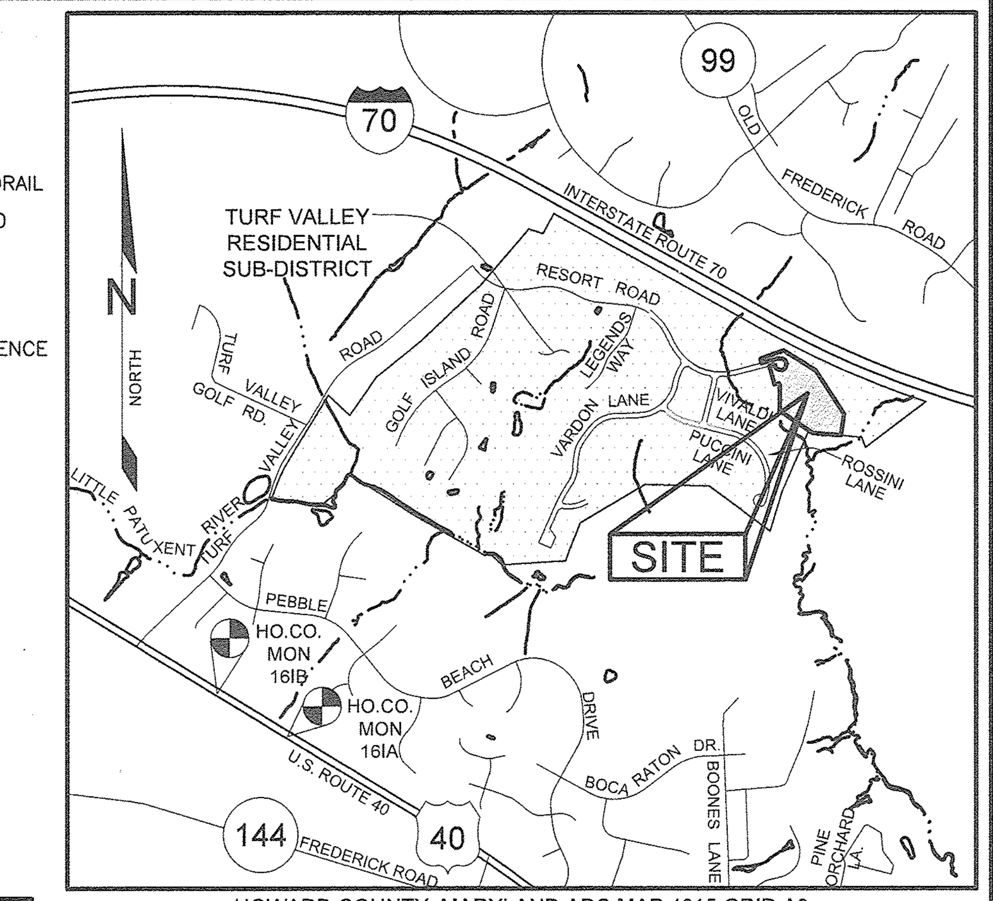
200 0 100 200 400 800

1 inch = 200 ft.

BENCHMARKS
NAD'83 HORIZONTAL

HO. CO. #161B
11.5' SW OF WBL RTE 40
20.8' WEST OF PK NAIL IN SHOULDER
66.4' SOUTH OF LAST POST IN GUARDRAIL
N 590475.2538' E 1344753.9350
ELEVATION: 469.892'

HO. CO. #17AB
SE OF INTERSECTION OF RTE 99 AND WETHERBURN ROAD, 14.8' WEST OF FENCE POST, 35' NE OF MANHOLE
N 598435.249' E 1348615.2482'
ELEVATION: 508.469'



HOWARD COUNTY, MARYLAND ADC MAP 4815 GRID A3

VICINITY MAP
SCALE: 1"=2000'

ADDRESS CHART

LOT	STREET ADDRESS	BUILDING	STREET ADDRESS
1	10445 RESORT ROAD	1	10421 RESORT ROAD
2	10443 RESORT ROAD	2	10411 RESORT ROAD
3	10441 RESORT ROAD	3	10401 RESORT ROAD
4	10437 RESORT ROAD	4	10391 RESORT ROAD
5	10435 RESORT ROAD		
6	10433 RESORT ROAD		
7	10431 RESORT ROAD		

CURVE TABLE

CURVE	RADIUS	ARC LENGTH	DELTA	TANGENT	CHORD DIRECTION	CHORD LENGTH
C1	100.00'	51.41'	29°27'13"	26.28'	N89°49'15"W	50.84'
C2	60.00'	244.48'	233°27'42"	119.14'	N41°57'55"E	107.18'
C3	25.00'	36.32'	83°14'37"	22.21'	N62°55'33"W	33.21'

BOUNDARY COORDINATES

POINT #	NORTHING	EASTING
101	594010.0202	1349890.4458
102	594035.7666	1349989.6596
103	593914.7742	1350021.0577
104	593889.0278	1349921.8440
105	594039.5344	1350004.1787
106	594072.8164	1350132.4306
107	593951.8240	1350163.8287
108	593918.5420	1350035.5768
109	594148.0163	1350042.3662
110	594232.5304	1350283.1235
111	594028.7403	1350618.4119
112	593572.5071	1350913.2439
113	593349.2943	1350879.1389
114	593374.9847	1350585.5960
115	593608.9163	1350245.1875
116	593869.2299	1350246.8189
117	593891.4433	1350232.2129
118	593881.9407	1350187.1294
119	594074.0723	1350137.2703
120	594081.8642	1350167.2962
121	594066.7486	1350196.8675
122	594146.4391	1350268.5335
123	594146.5982	1350217.6915
124	594104.0605	1350053.7729

SITE ANALYSIS DATA CHART

	LOTS 1-7 TOWNHOUSES	PARCEL 'AA' MULTI-FAMILY/CONDO
A.) TOTAL PROJECT AREA	0.67 ACRES	8.97 ACRES
B.) AREA OF PLAN SUBMISSION	0.67 ACRES	8.97 ACRES
C.) LIMIT OF DISTURBED AREA	0.67 ACRES	7.31 ACRES
D.) PRESENT ZONING:	PGCC-1	PGCC-1
E.) PROPOSED USE OF SITE:	RESIDENTIAL SFA	RESIDENTIAL MULTI-FAMILY
F.) TOTAL NUMBER OF UNITS ALLOWED AS SHOWN ON FINAL PLAT(S)	7	N/A
G.) TOTAL NUMBER OF UNITS PROPOSED	7	84
H.) BUILDING COVERAGE PERCENTAGE	LOTS 2,5,6: 52.7% LOTS 3,4: 45.5% LOTS 1,7: 42.4%	N/A
H.) BUILDING SQUARE FOOTAGE		1st FLOOR: 5,271 sf 2nd FLOOR: 9,551 sf 3rd FLOOR: 9,523 sf 4th FLOOR: 9,523 sf
I.) APPLICABLE DPZ FILE REFERENCES:	ECP-16-059, SP-16-011,F-18-027, F-16-004, WP-15-153, WP-16-142, F-17-095, F-21-003	

Parking Chart

Item	Unit	Zoning Section	Requirement	Spaces Req.	Spaces Prov.
SFA Units	7 units	133.D.2.a	2.5 spaces per unit	18	28 [1]
APT Units	84 units	133.D.2.b	2.3 spaces per unit	193	203 [2]
			TOTAL:	211	231

1. Consists of 2 spaces per 2-car garages and 2 spaces per driveway for SFA units.
2. Consists of surface parking lot.

ADA Parking Chart

No. of spaces in facility	Minimum Requirement	ADA Spaces Provided	Van Accessible Provided
203	7 for facility with 201-300 spaces	15	4

1. ADA spaces required based on Table 208.2 Parking Spaces of the "2010 ADA Standards for Accessible Design"
2. Per the Maryland Accessibility Code, Section .07.B.3.a, 1 in every 4 spaces, but not less than 1, shall be van accessible

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. 21443 Expiration Date: 12-21-24

AS-BUILT 5/20/24

"NO AS-BUILT INFORMATION IS" PROVIDED ON THIS SHEET

STORMWATER MANAGEMENT SUMMARY TABLE: LOTS 1-7

Site Pe: 2.0

Lot	Street Address	Practice			ESDv REQ:	ESDv Prov:	Ownership
Lot 1	10445 Resort Road	(M-5)	Drywell	1A	158	161	Private
		(M-5)	Drywell	1B	158	161	Private
Lot 2	10443 Resort Road	(M-5)	Drywell	2A	158	160	Private
		(M-5)	Drywell	2B	158	161	Private
Lot 3	10441 Resort Road	(M-5)	Drywell	3A	158	160	Private
		(M-5)	Drywell	3B	158	161	Private
Lot 4	10437 Resort Road	(M-5)	Drywell	4A	158	161	Private
		(M-5)	Drywell	4B	158	161	Private
Lot 5	10435 Resort Road	(M-5)	Drywell	5A	158	160	Private
		(M-5)	Drywell	5B	158	161	Private
Lot 6	10433 Resort Road	(M-5)	Drywell	6A	158	160	Private
		(M-5)	Drywell	6B	158	161	Private
Lot 7	10431 Resort Road	(M-5)	Drywell	7A	158	160	Private
		(M-5)	Drywell	7B	158	161	Private
		TOTALS →			2,217	2,249	

Note: Declaration of Convenants for these lots was previously recorded under F-18-027

STORMWATER MANAGEMENT SUMMARY TABLE: PARCEL 'AA'

Practice		DA (sf)	Imp Area (sf)	% Imp	Rv	Pe Required	Total ESDv Required (cf)	75% ESDV ponding Required	75% ESDV ponding Provided	25% ESDv (cf) below Required	25% ESDv (cf) below Provided	Total ESDv Provided (cf)	Pe Provided	REv Req. (cf)	REv Prov. (cf)	Ownership
(M-6) MB	#1	19,011	18,138	95%	0.91	1.7	2447	1835	2117	612	612	2728	1.9	2747	612	Private
(M-6) MB	#2	16,417	15,113	92%	0.88	1.7	2043	1532	1807	511	511	2318	1.9		511	Private
(M-6) MB	#3	18,675	17,282	93%	0.88	1.7	2336	1752	1746	584	584	2329	1.7		584	Private
(M-6) MB	#4	17,393	16,325	94%	0.89	1.7	2205	1653	1770	551	551	2321	1.8		551	Private
(M-6) MB	#5	20,592	19,179	93%	0.89	1.7	2591	1943	2006	648	648	2653	1.7		648	Private
(M-6) MB	#6	18,624	17,714	95%	0.91	1.7	2390	1793	2078	598	598	2675	1.9		598	Private
(M-6) MB	#7	21,271	19,291	91%	0.87	1.7	2610	1958	2190	653	653	2842	1.9		653	Private
Totals →							16623					17867		2747	4156	

SHEET INDEX

NOTE: SEE SHEET 2 FOR LEGEND OF SYMBOLS USED THROUGHOUT THIS PLAN SET

PERMIT INFORMATION CHART

SUBDIVISION NAME:			SECTION/AREA:	LOT/PARCEL #	
RAVENWOOD AT TURF VALLEY			N/A	LOTS 1-7 BULK PARCEL 'AA'	
PLAT No.	GRID No.	ZONE	TAX MAP NO	ELECTION DISTRICT	CENSUS TRACT
25078-25081	13	PGCC	17	2	602201

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.5.20

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/28/20

DIRECTOR — DATE 10/29/20

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE AUGUST 20, 2020

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: 6-30-2021
8.27.20

OWNER:
MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP
1205 YORK ROAD, PENTHOUSE
LUTHERVILLE, MARYLAND 21093
410-825-8400

BUILDER:
NV HOMES
9720 PATUXENT WOODS DIVE
COLUMBIA, MARYLAND 21046
410-379-3385

RESIDENTIAL – SINGLE FAMILY ATTACHED AND MULTI-FAMILY
RAVENWOOD CONDOMINIUMS AT TURF VALLEY
LOTS 1 thru 7 AND BUILDABLE BULK PARCEL 'AA'

TAX MAP: 17, PARCEL: 706, GRID: 13
ELECTION DISTRICT NO. 2 – HOWARD COUNTY, MARYLAND
ZONED: PGCC

SITE DEVELOPMENT PLAN
COVER SHEET

DATE: AUGUST 27, 2020	BEI PROJECT NO. 2931
SCALE: AS SHOWN	SHEET 1 OF 23

DESIGN: DBT DRAFT: DBT

AS-BUILT

SDP-20-036

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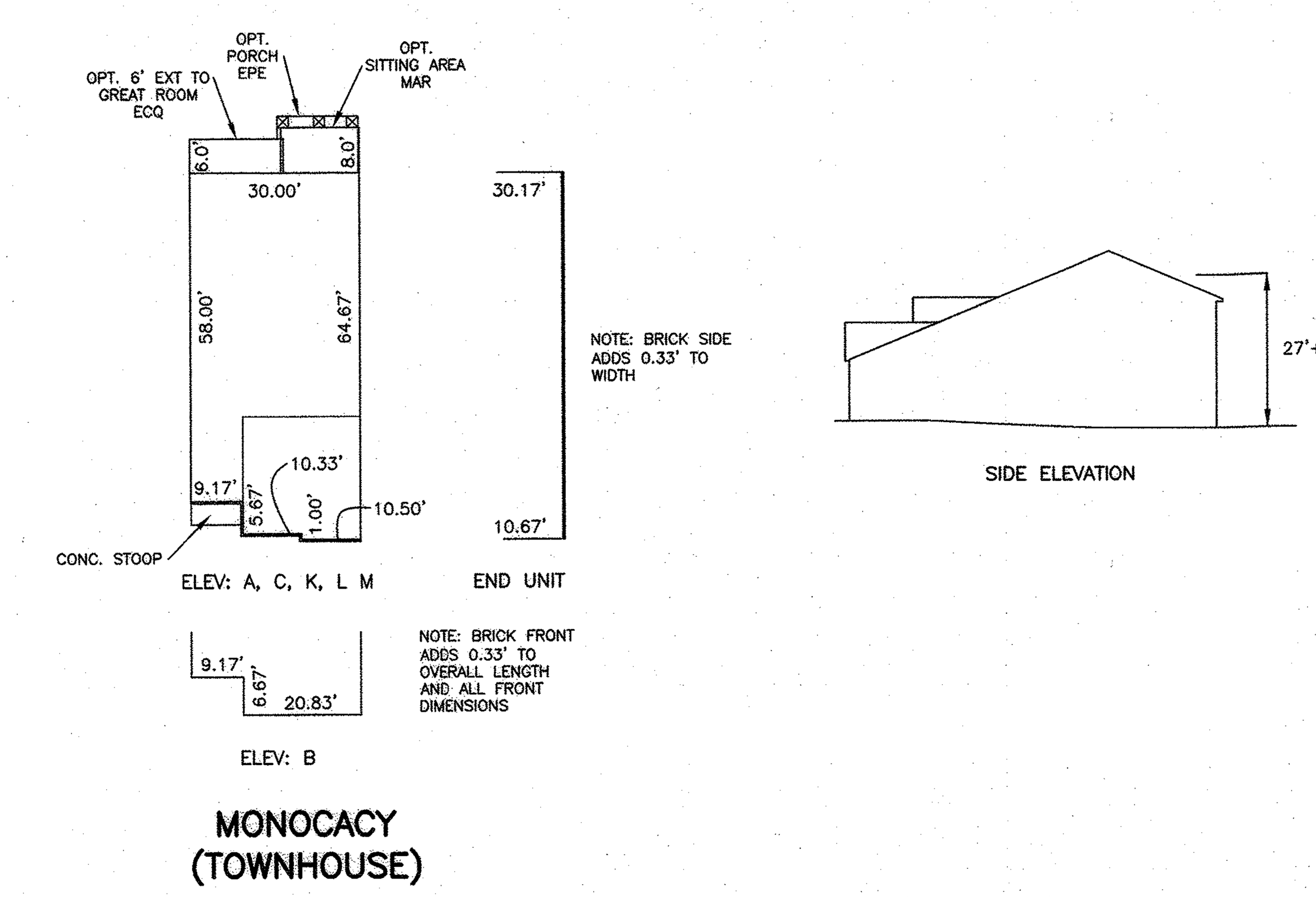
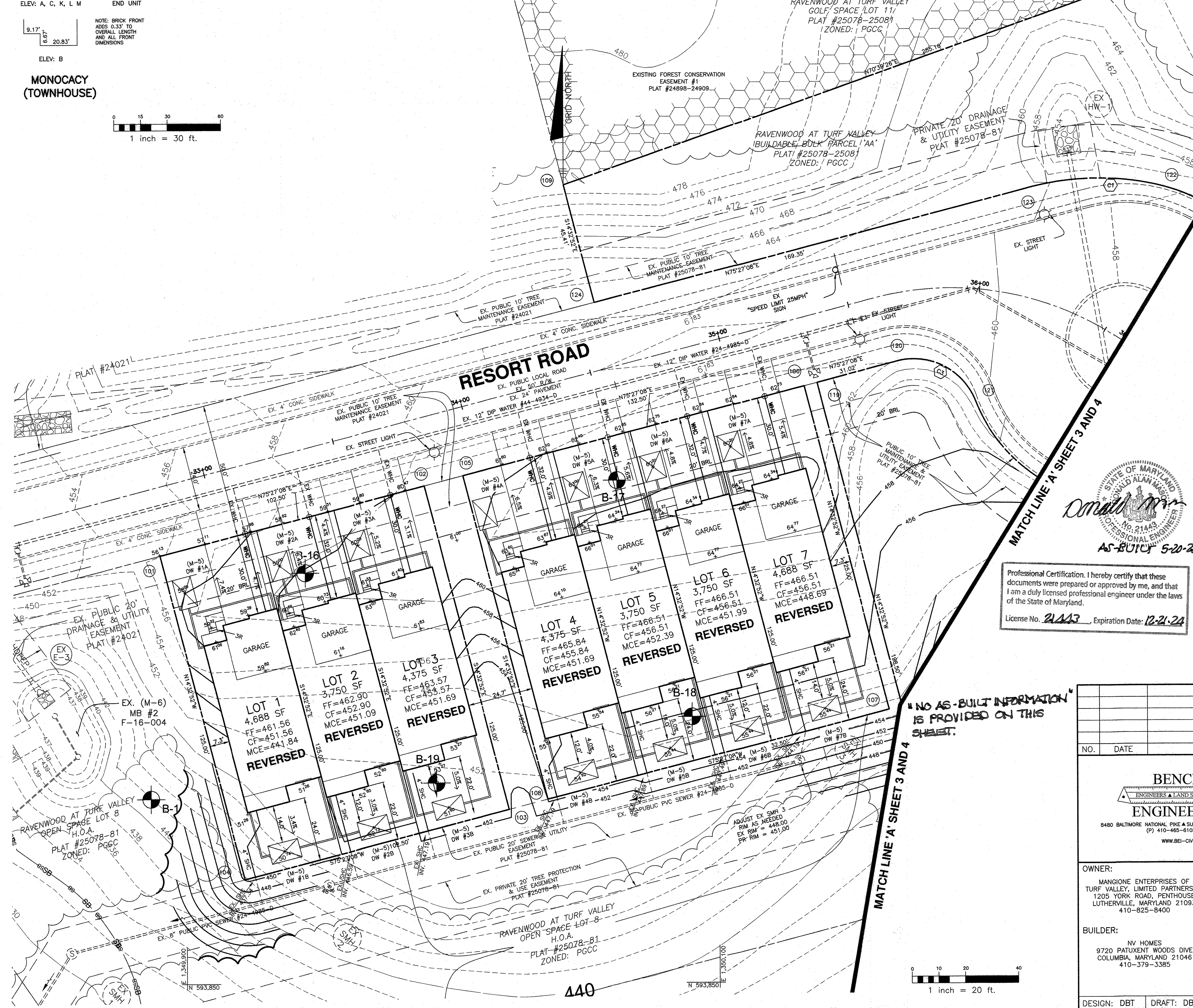


OPT. 6' EXT TO GREAT ROOM ECQ
OPT. PORCH EPE
OPT. SITTING AREA MAR
30.00'
30.17'
58.00'
64.67'
10.33'
9.17'
10.50'
10.67'
NOTE: BRICK SIDE ADDS 0.33' TO WIDTH
27'+/-
SIDE ELEVATION
CONC. STOOP
ELEV: A, C, K, L M
END UNIT
NOTE: BRICK FRONT ADDS 0.33' TO OVERALL LENGTH AND ALL FRONT DIMENSIONS
9.17'
20.83'
ELEV: B
MONOCACY (TOWNHOUSE)
1 inch = 30 ft.



RESORT ROAD
RAVENWOOD AT TURF VALLEY GOLF SPACE LOT 11 PLAT #25078-25081 ZONED: PGCC
EXISTING FOREST CONSERVATION EASEMENT #1 PLAT #24898-24909
RAVENWOOD AT TURF VALLEY BUILDABLE BULK PARCEL 'AA' PLAT #25078-25081 ZONED: PGCC
PRIVATE 20' DRAINAGE & UTILITY EASEMENT PLAT #25078-81
GRID NORTH
"SPEED LIMIT 25MPH" SIGN
EX. STREET LIGHT
LOT 1 4,688 SF FF=461.56 CF=451.56 MCE=441.84 REVERSED
LOT 2 3,750 SF FF=462.90 CF=452.90 MCE=451.09 REVERSED
LOT 3 4,375 SF FF=463.57 CF=453.57 MCE=451.69 REVERSED
LOT 4 4,375 SF FF=465.84 CF=455.84 MCE=451.69 REVERSED
LOT 5 3,750 SF FF=466.51 CF=456.51 MCE=452.39 REVERSED
LOT 6 3,750 SF FF=466.51 CF=456.51 MCE=451.99 REVERSED
LOT 7 4,688 SF FF=466.51 CF=456.51 MCE=448.69 REVERSED
GARAGE
RAVENWOOD AT TURF VALLEY OPEN SPACE LOT 8 H.O.A. PLAT #25078-81 ZONED: PGCC
EX. PUBLIC 20' DRAINAGE & UTILITY EASEMENT PLAT #24021
EX. PRIVATE 20' TREE PROTECTION & USE EASEMENT PLAT #25078-81
MATCH LINE 'A' SHEET 3 AND 4
"NO AS-BUILT INFORMATION" IS PROVIDED ON THIS SHEET.
1 inch = 20 ft.

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. 21443, Expiration Date: 12-21-24

AS-BUILT 5-20-24

BULK REGULATIONS:

(per 2nd AMENDMENT TO THE TURF VALLEY, RESIDENTIAL SUBDISTRICT, FDP RECORDED AS PLAT NO. 20286-87)

PERMITTED USES : ALL USES AS PER ABOVE MENTIONED FDP

PROPOSED USE : SINGLE-FAMILY ATTACHED (SFA) AND MULTI-FAMILY CONDOMINIUM

HEIGHT
- PRINCIPAL STRUCTURES:
  - SINGLE FAMILY ATTACHED AND DETACHED: ____ 34 FEET
  - APARTMENT BUILDINGS ____ 40 FEET
  - OTHER ____ 34 FEET
- ACCESSORY STRUCTURES: ____ 15 FEET
- EXCEPT SPIRES, BELFRIES, CHIMNEYS, FLAG POLES, MONUMENTS, STACKS, STEEPLES, RADIO AND TELEVISION ANTENNAE, OBSERVATION TOWERS, WINDMILLS, BARNS, WATER AND GRAIN STORAGE FACILITIES, SILOS, OUTDOOR ATHLETIC STRUCTURES, LINES AND POLES OR OTHER SUPPORTING STRUCTURES FOR ELECTRIC. TELEPHONE, TELEGRAPH OR CATV TRANSMISSION OR DISTRIBUTION ____ NO LIMIT

LOT COVERAGE FOR STRUCTURES WITHIN SINGLE FAMILY ATTACHED PROJECTS DEVELOPED WITH ONE UNIT PER LOT: ____ 60 PERCENT

DENSITY: 1.75 DWELLING UNITS PER GROSS ACRE

MAXIMUM UNITS PER STRUCTURE
- SINGLE FAMILY ATTACHED DWELLING UNITS ____ 8 UNITS PER STRUCTURE

BUILDING LENGTH – RESIDENTIAL STRUCTURE: ____ 120 FEET
HOWEVER, THE PLANNING BOARD MAY APPROVE A GREATER LENGTH, UP TO A MAXIMUM OF 300 FEET, BASED ON A DETERMINATION THAT THE DESIGN OF THE BUILDING WILL MITIGATE THE VISUAL IMPACT OF THE INCREASED LENGTH.

MINIMUM LOT SIZE REQUIREMENTS
- SINGLE FAMIL DETACHED DWELLINGS: ____ 6,000 SF
- EXCEPT ZERO LOT LINE DWELLINGS: ____ 4,000 SF
- SINGLE FAMILY SEMI-DETACHED DWELLINGS: ____ 4,000 SF

MINIMUM LOT WIDTH AT BUILDING RESTRICTION LINE
- SINGLE FAMILY DETACHED DWELLINGS: ____ 50 FEET
- EXCEPT ZERO LOT LINE DWELLINGS: ____ 40 FEET
- SINGLE FAMILY SEMI-DETACHED DWELLINGS: ____ 40 FEET

MINIMUM SETBACK REQUIREMENTS; EXCEPT THAT STRUCTURES MAY BE CONSTRUCTED AT ANY LOCATION WITHIN SUCH SETBACK IF SUCH CONSTRUCTION IS IN ACCORDANCE WITH A SITE DEVELOPMENT PLAN APPROVED BY THE PLANNING BOARD.

- FROM ARTERIAL ROADS
  - RESIDENTIAL STRUCTURES (ALL) ____ 50 FEET
  - NON-RESIDENTIAL STRUCTURES ____ 30 FEET
  - ACCESSORY USES ____ 30 FEET
  - PARKING ____ 25 FEET
- FROM COLLECTOR ROADS AND LOCAL STREETS
  - RESIDENTIAL STRUCTURES (ALL) ____ 20 FEET
  - NON-RESIDENTIAL STRUCTURES ____ 20 FEET
  - ACCESSORY USES ____ 10 FEET
- NON-PGCC ADJACENT PROPERTIES
  - FROM RESIDENTIAL DISTRICTS
    - RESIDENTIAL STRUCTURES (ALL) ____ 30 FEET
    - NON-RESIDENTIAL USES ____ 30 FEET
    - ACCESSORY USES ____ 10 FEET
  - FROM NON-RESIDENTIAL DISTRICTS
    - RESIDENTIAL STRUCTURES (ALL) ____ 20 FEET
    - NON-RESIDENTIAL USES ____ 20 FEET
    - ACCESSORY USES ____ 10 FEET
- FROM LOT LINES – STRUCTURE AND USES IN ALL DEVELOPMENT PROJECTS EXCEPT SINGLE-FAMILY ATTACHED:
  - PRINCIPAL STRUCTURES – RESIDENTIAL
    - SIDE ____ 7.5 FEET
      - EXCEPT ZERO LOT LINE DWELLINGS ____ 0 FEET
    - REAR ____ 25 FEET
  - DETACHED ACCESSORY GARAGES OR SHEDS – RESIDENTIAL
    - SIDE ____ 0 FEET
    - REAR ____ 0 FEET
  - OTHER ACCESSORY STRUCTURES TO RESIDENTIAL USES
    - SIDE ____ 7.5 FEET
    - REAR ____ 5 FEET

MINIMUM DISTANCES BETWEEN ATTACHED DWELLING UNITS AND APARTMENT BUILDINGS, PROVIDED IMPROVEMENTS THEREON ARE CONSTRUCTED IN ACCORDANCE WITH A SITE DEVELOPMENT PLAN APPROVED BY THE HOWARD COUNTY PLANNING BOARD:
- FACE TO FACE ____ 30 FEET
- FACE TO SIDE / REAR TO SIDE ____ 30 FEET
- SIDE TO SIDE ____ 15 FEET
- REAR TO REAR ____ 60 FEET
- REAR TO FACE ____ 100 FEET

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE AUGUST 20, 2020

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Signature	Date
CHIEF, DEVELOPMENT ENGINEERING DIVISION	10.5.20
CHIEF, DIVISION OF LAND DEVELOPMENT	10/28/20
DIRECTOR	10/29/20

LEGEND OF SYMBOLS

- EXISTING CONTOURS
- EXISTING TREELINE
- 65dBA — EXISTING UNMITIGATED 65 dBA NOISE CONTOUR
- EXISTING FOREST CONSERVATION EASEMENT
- EXISTING SOILS DELINEATION LINE
- MaC — EXISTING SOILS TYPE
- PROJECT BOUNDARY
- XX" HDPEP — PROPOSED STORM DRAIN
- EXISTING WATER MAIN
- EXISTING FIRE HYDRANT
- PROPOSED SEWER MAIN
- B-XX — SOIL BORING LOCATION
- DRY WELL
- PROPOSED CONC. SIDEWALK
- EXISTING STREET LIGHT
- PROPOSED LIGHT POLE
- SB — STREAM BUFFER
- FF=XXX.XX — FIRST FLOOR
- CF=XXX.XX — CELLAR FLOOR
- MCE=XXX.XX — MINIM CELLAR ELEVATION
- PROPOSED TREELINE

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: 6-30-2021

8.27.20

OWNER:
MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP
1205 YORK ROAD, PENTHOUSE
LUTHERVILLE, MARYLAND 21093
410-825-8400

BUILDER:
NV HOMES
9720 PATUXENT WOODS DIVE
COLUMBIA, MARYLAND 21046
410-379-3385

RESIDENTIAL – SINGLE FAMILY ATTACHED AND MULTI-FAMILY

RAVENWOOD CONDOMINIUMS AT TURF VALLEY

LOTS 1 thru 7 AND BUILDABLE BULK PARCEL 'AA'

TAX MAP: 17, PARCEL: 706, GRID: 13
ELECTION DISTRICT NO. 2 – HOWARD COUNTY, MARYLAND
ZONED: PGCC

SITE DEVELOPMENT AND GRADING PLAN LOTS 1-7

DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 27, 2020	BEI PROJECT NO. 2931
		SCALE: AS SHOWN	SHEET 2 OF 23

AS-BUILT

SDP-20-036

NOTES:

1. ALL CURB FILLET RADII IS 3'-0" UNLESS SPECIFIED OTHERWISE ON THIS PLAN SHEET.
2. ALL CURB IS TO BE STD. 7" CURB AND GUTTER (HOCOSTD R-3.01) EXCEPT FOR THE CURB IN FRONT OF THE ADA PARKING SPACES AND ACCESS AISLES WHICH IS A FLUSH CURB (HOCOSTD R-3.07).
3. ALL PAVEMENT WITHIN THE PARKING SPACES AND DRIVE AISLES IS TO BE P-2 PAVING (HOCOSTD R-2.01). THICKNESS TO BE BASED ON CBR RESULTS.
4. ALL PLAN DIMENSIONS ON THIS SHEET ARE TO FACE OF CURB UNLESS OTHERWISE SPECIFIED.
5. ALL STANDARD PARKING SPACES ARE TO BE 9' x 18'.

● LIGHT POLE ATB2 30' POLE

◆ LIGHT POLE AVPL2 14' POLE

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. 21443, Expiration Date: 12-21-24

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications

Donald Mason, P.E.

Date: 5/20/24

STATE OF MARYLAND DONALD ALAN MASON No. 21443 PROFESSIONAL ENGINEER

[illegible]

AS-BUILT

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE AUGUST 20, 2020

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[illegible] 5.9.22
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[illegible] 5/10/22
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[illegible] 5/10/22
DIRECTOR DATE

NO.	DATE	REVISION
2	4.25.2022	ADD 15' WING WALLS TO BUILDINGS
1	2.5.2021	REVISE SITE LIGHT POLE LOCATIONS

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

[illegible] 4.25.22

OWNER:
MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP
1205 YORK ROAD, PENTHOUSE
LUTHERVILLE, MARYLAND 21093
410-825-8400

BUILDER:
NV HOMES
9720 PATUXENT WOODS DIVE
COLUMBIA, MARYLAND 21046
410-379-3385

RESIDENTIAL - SINGLE FAMILY ATTACHED AND MULTI-FAMILY

RAVENWOOD CONDOMINIUMS AT TURF VALLEY

LOTS 1 thru 7 AND BUILDABLE BULK PARCEL 'AA'

TAX MAP: 17, PARCEL: 706, GRID: 13
ELECTION DISTRICT NO. 2 - HOWARD COUNTY, MARYLAND
ZONED: PGCC

SITE DEVELOPMENT LAYOUT PLAN PARCEL 'AA'

DATE:	AUGUST 27, 2020	BEI PROJECT NO.	2931
SCALE:	AS SHOWN	SHEET	3 OF 23
DESIGN: DBT	DRAFT: DBT		

AS-BUILT SDP-20-036

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NOTES:

1. ALL SPOT GRADES WITHIN THE PARKING AREA ARE TOP OF PAVEMENT OR FLOWLINE.

GRID NORTH

MATCH LINE 'A' SHEET 2

MATCH LINE 'A' SHEET 2

RAVENWOOD AT TURF VALLEY GOLF SPACE LOT 11 PLAT #25078-25081 ZONED: PGCC

EXISTING FOREST CONSERVATION EASEMENT #1 PLAT #24898-24909

RAVENWOOD AT TURF VALLEY BUILDABLE BULK PARCEL 'AA' 6.97 ACRES PLAT #25078-25081 ZONED: PGCC

BUILDING #1 4-STORY 21 UNITS 1st floor: 453.20 Grd floor: 442.71

BUILDING #2 4-STORY 21 UNITS 1st floor: 454.32 Grd floor: 443.83

BUILDING #3 4-STORY 21 UNITS 1st floor: 450.32 Grd floor: 439.83

BUILDING #4 4-STORY 21 UNITS 1st floor: 444.32 Grd floor: 433.83

SEE DETAIL SHT 5

PARCEL 103 DAVID FORCE PARK/ HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS L. 430, F. 799 ZONED: R-20

RAVENWOOD AT TURF VALLEY OPEN SPACE LOT 9 TURF VALLEY CONDOMINIUM ASSOC. PLAT #25078-81 ZONED: PGCC

RAVENWOOD AT TURF VALLEY OPEN SPACE LOT 10 TURF VALLEY PROPERTY OWNERS ASSOC. PLAT #25078-81 ZONED: PGCC

POD E-1 PHASE 2 NON-BUILDABLE BULK PARCEL 'J' PLAT #25042-46 ZONED: PGCC

EXISTING FOREST CONSERVATION EASEMENT #5 AREA 2

EXISTING FOREST CONSERVATION EASEMENT #5 AREA 3

EXISTING FOREST CONSERVATION EASEMENT #5 AREA 4

25' WETLANDS BUFFER

LIMIT OF WETLANDS

30 0 15 30 60 120

1 inch = 30 ft.

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. 21443 Expiration Date: 12-21-24

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications

Donald Mason, P.E.

Date: 5/20/24

STATE OF MARYLAND DONALD ALAN MASON No. 21443 PROFESSIONAL ENGINEER

AS-BUILT

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE AUGUST 20, 2020

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5.9.22

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 5/10/22

DIRECTOR — DATE 5/10/22

NO.	DATE	REVISION
3	8.18.2023	REVISE GRADES BEHIND BLDGS 3 AND 4
2	4.25.2022	ADD WING WALLS AND REVISE GRADES ON SIDES OF BUILDINGS
1	2.5.2021	REVISE SITE LIGHT POLE LOCATIONS

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 PROFESSIONAL ENGINEER 4.25.22

OWNER:
MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP
1205 YORK ROAD, PENTHOUSE
LUTHERVILLE, MARYLAND 21093
410-825-8400

BUILDER:
NV HOMES
9720 PATUXENT WOODS DIVE
COLUMBIA, MARYLAND 21046
410-379-3385

RESIDENTIAL - SINGLE FAMILY ATTACHED AND MULTI-FAMILY

RAVENWOOD CONDOMINIUMS AT TURF VALLEY

LOTS 1 thru 7 AND BUILDABLE BULK PARCEL 'AA'

TAX MAP: 17, PARCEL: 706, GRID: 13
ELECTION DISTRICT NO. 2 - HOWARD COUNTY, MARYLAND
ZONED: PGCC

GRADING PLAN PARCEL 'AA'

DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 27, 2020	BEI PROJECT NO. 2931
		SCALE: AS SHOWN	SHEET 4 OF 23

AS-BUILT

SDP-20-036

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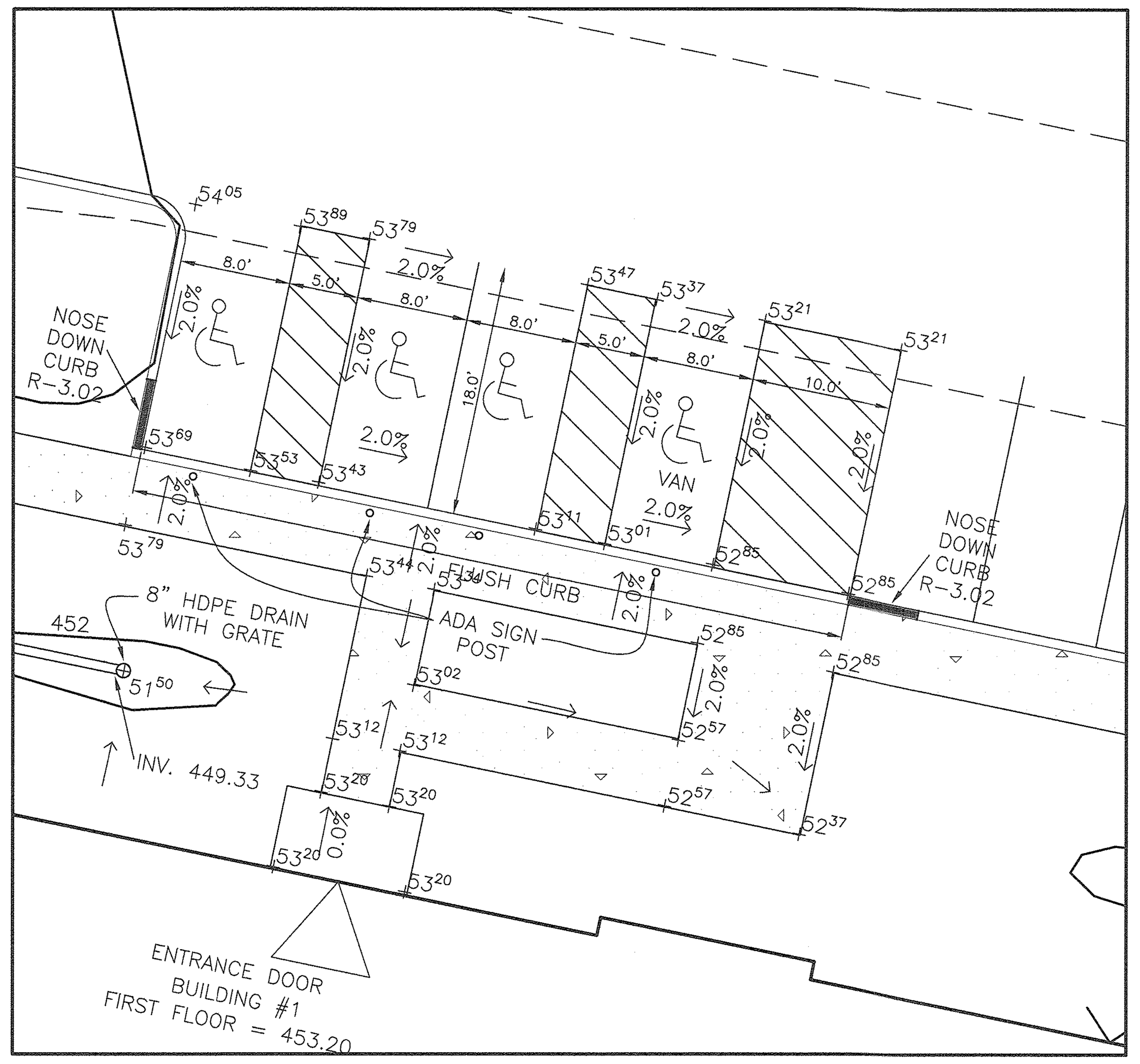
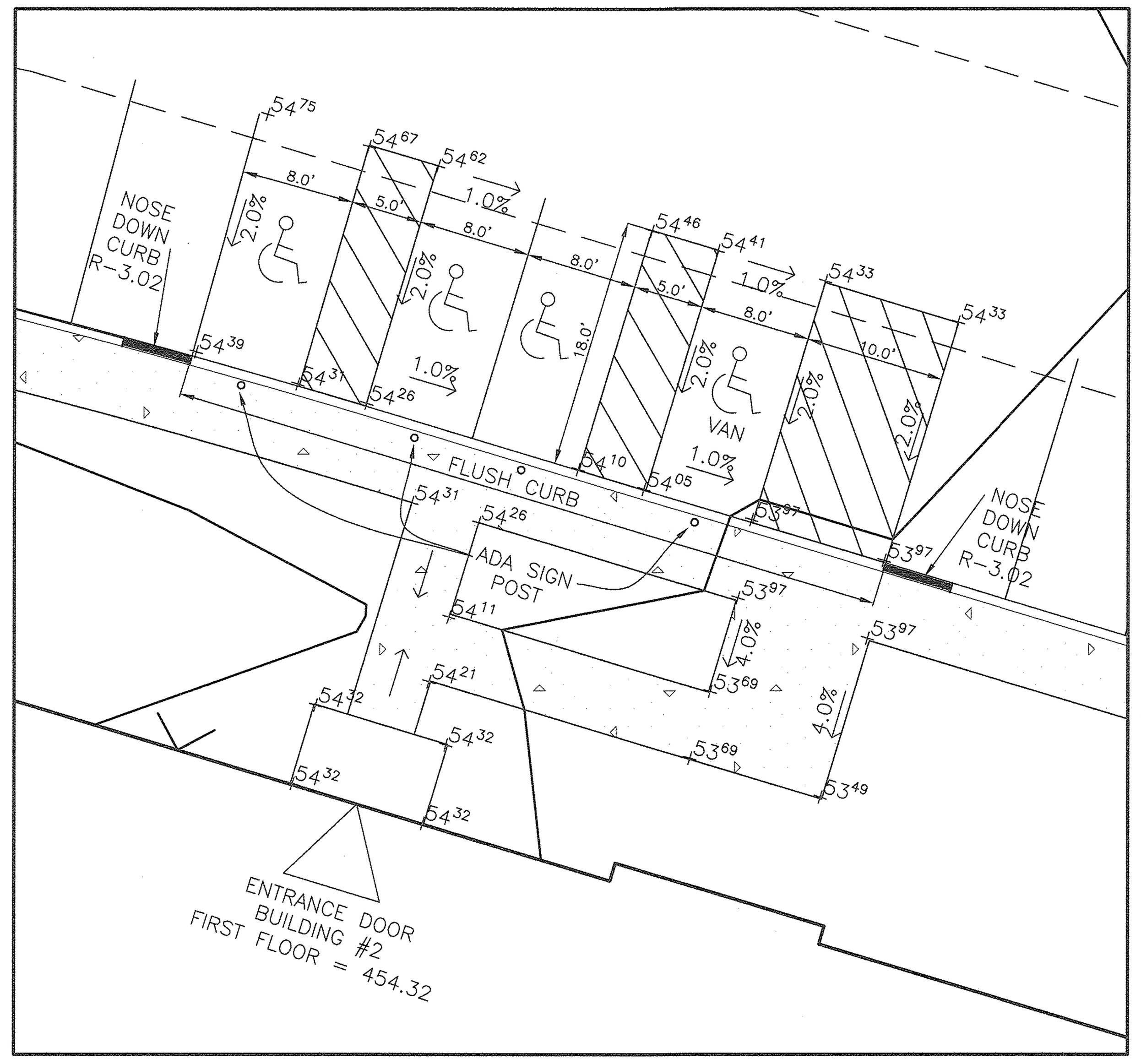
MATCH LINE SEE THIS SHEET



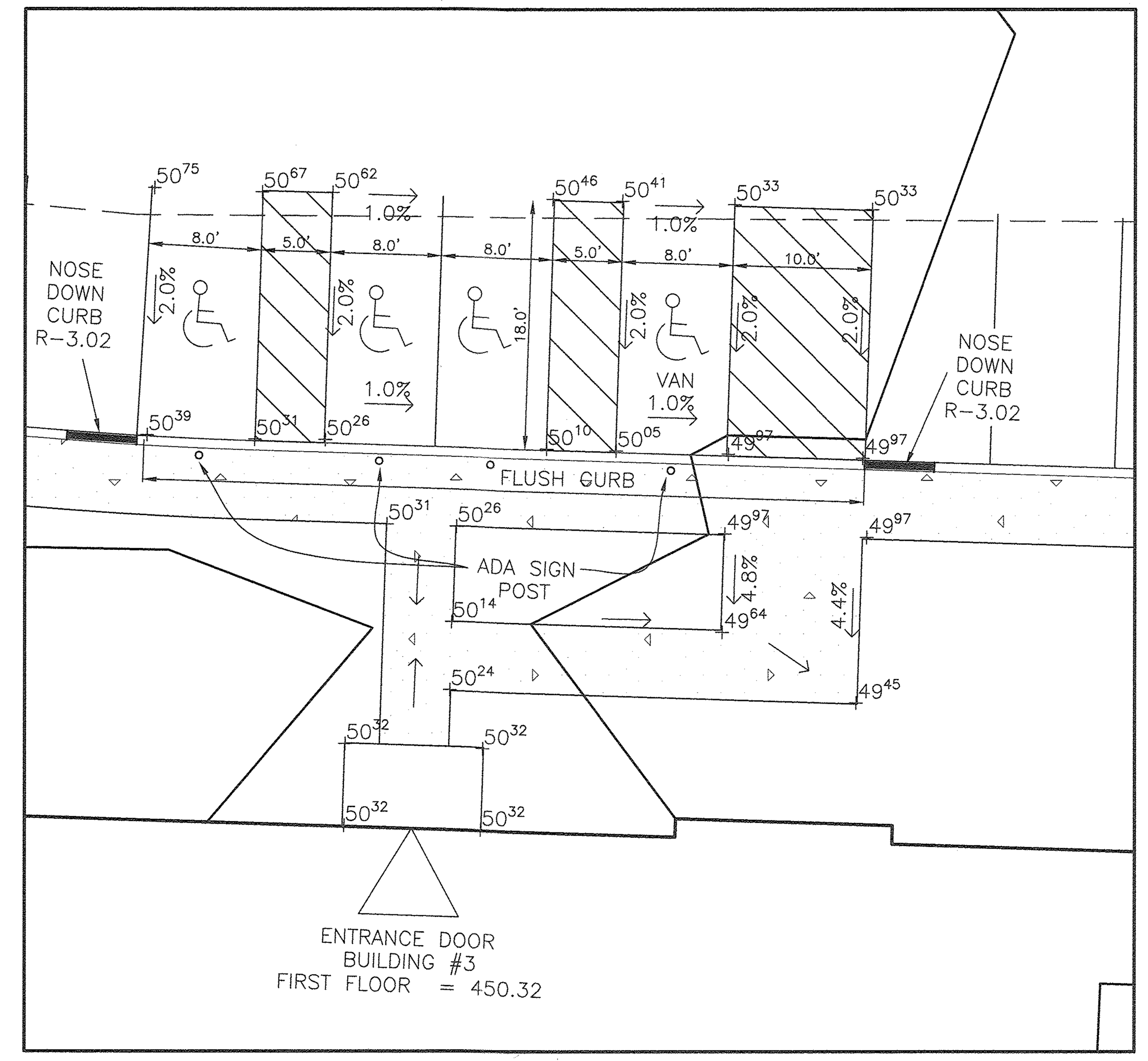
BUILDING 1

1 inch = 10 ft.



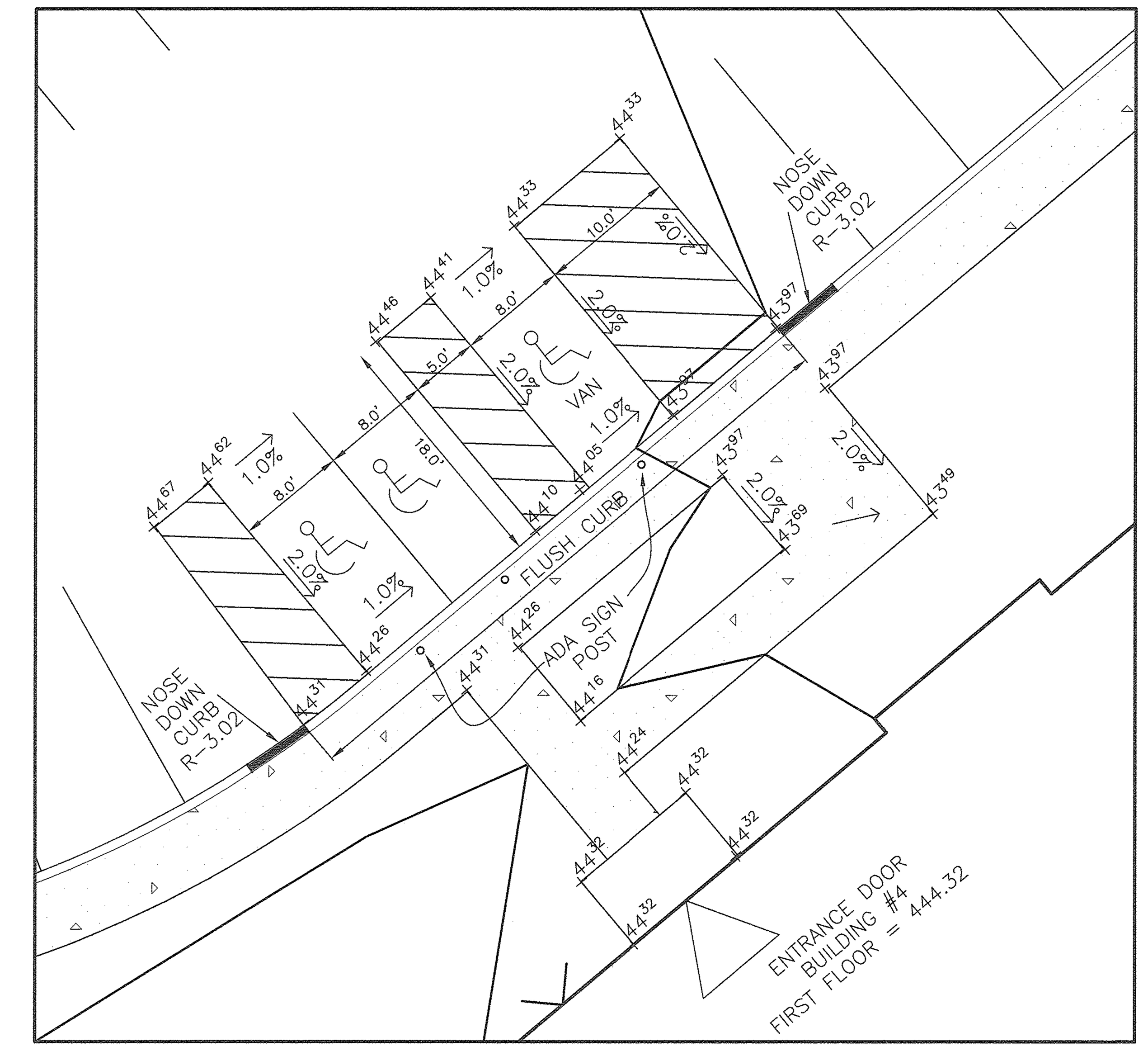
BUILDING 2

1 inch = 10 ft.



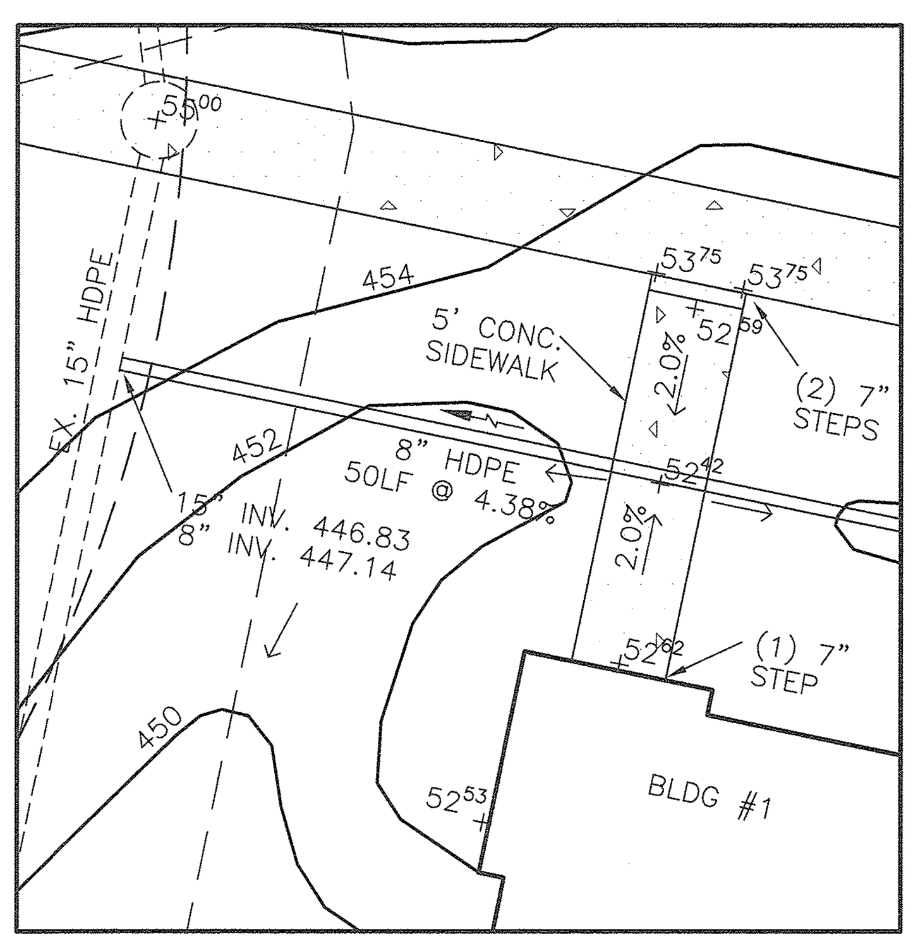
BUILDING 3

1 inch = 10 ft.

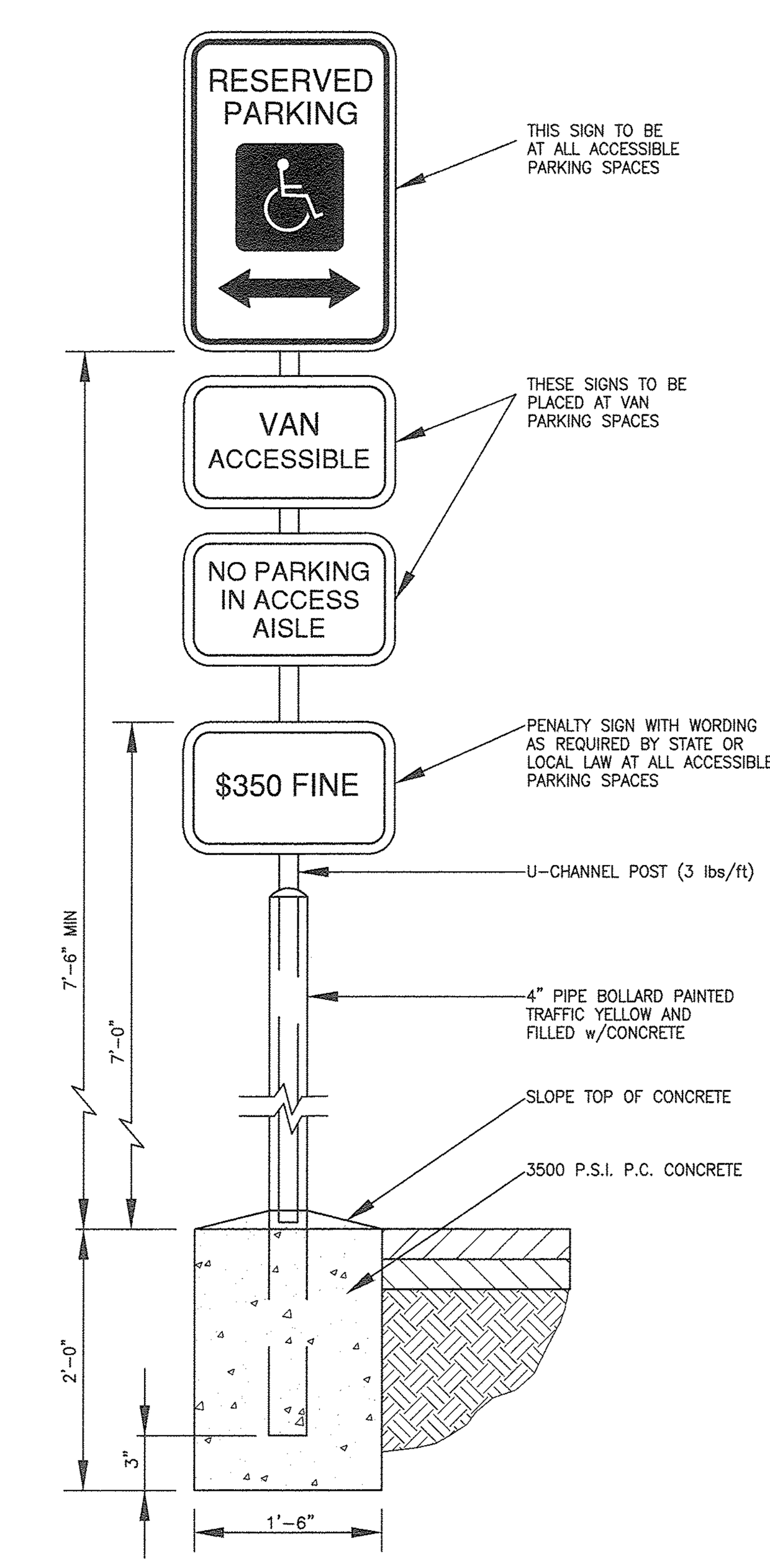


BUILDING 4

1 inch = 10 ft.



MATCH LINE SEE THIS SHEET



POLE MOUNTED DETAIL

ADA POLE DETAIL
NOT TO SCALE

" NO AS-BUILT INFORMATION IS PROVIDED ON THIS SHEET"

STATE OF MARYLAND
DONALD ALAN MASON
No. 21443
PROFESSIONAL ENGINEER

[illegible]

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. 21443 Expiration Date: 12-21-24

AS-BUILT 5-21-24

NO.	DATE	REVISION
1	4.25.2022	EXPAND DETAIL FOR BUILDING #1 TO SHOW ADDITIONAL WALK AND 8" HDPE

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
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Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 22390 Expiration Date: 6-30-2023

STATE OF MARYLAND
CHRISTOPHER A. MALAGARI
22390
PROFESSIONAL ENGINEER

[illegible] 4.25.22

OWNER:
MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP
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LUTHERVILLE, MARYLAND 21093
410–825–8400

BUILDER:
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COLUMBIA, MARYLAND 21046
410–379–3385

RESIDENTIAL – SINGLE FAMILY ATTACHED AND MULTI–FAMILY

RAVENWOOD CONDOMINIUMS AT TURF VALLEY

LOTS 1 thru 7 AND BUILDABLE BULK PARCEL 'AA'

TAX MAP: 17, PARCEL: 706, GRID: 13
ELECTION DISTRICT NO. 2 – HOWARD COUNTY, MARYLAND
ZONED: PGCC

ADA COMPLIANCE PLAN PARCEL 'AA'

DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 27, 2020	BEI PROJECT NO. 2931
		SCALE: AS SHOWN	SHEET 5 OF 23

AS-BUILT SDP-20-036

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE AUGUST 20, 2020

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[illegible] 5.9.22
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[illegible] 5/10/22
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[illegible] 5/10/22
DIRECTOR DATE

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FIELD TEST BORING LOG

BORING NO.: B-16 DRILLER: Harvest START DATE:
PROJECT NAME: Ravenwood at Turf Valley (F-18-027) COMPLETION DATE: 11/29/2017
PROJECT NO.: 2852 PROJECT LOCATION: End of Resort Road
CLIENT: Mangione Enterprises at Turf Valley, LP DRILLING METHOD: Backhoe

DEPTH (FT)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	ROD / CORE	RECOVERY (IN)	PENETROMETER READINGS (TSF)	REMARKS
0	starting elevation = 458.19							
1	6" topsoil							
2	brown silty sand slightly moist							
3								
4	very rocky small to medium size rocks							
5								
6								
7								
8								
9								
10								
11								
12								
13	bottom of boring = 445.19							
14	no refusal/no water encountered							
15								BORING COMPLETED AT A DEPTH OF ____ FEET
16								GROUNDWATER WAS NOT ENCOUNTERED DURING OR UPON COMPLETION OF DRILLING
17								GROUNDWATER WAS ENCOUNTERED AT A DEPTH OF ____ FEET DURING DRILLING
18								CAVE IN DEPTH: ____
19								ELEVATION: ____
20								

LOGGED BY: D. Thompson CHECKED BY: DATE: 11/29/2017

FIELD TEST BORING LOG

BORING NO.: B-17 DRILLER: Harvest START DATE:
PROJECT NAME: Ravenwood at Turf Valley (F-18-027) COMPLETION DATE: 11/29/2017
PROJECT NO.: 2852 PROJECT LOCATION: End of Resort Road
CLIENT: Mangione Enterprises at Turf Valley, LP DRILLING METHOD: Backhoe

DEPTH (FT)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	ROD / CORE	RECOVERY (IN)	PENETROMETER READINGS (TSF)	REMARKS
0	starting elevation = 451.09							
1	6" topsoil							
2	brown silty sand slightly moist							
3								
4	rocks encountered at 3 feet							
5	medium to large size rocks							
6								
7								
8								
9								
10								
11								
12								
13	bottom of boring = 430.09							
14	no refusal/no water encountered							
15								BORING COMPLETED AT A DEPTH OF ____ FEET
16								GROUNDWATER WAS NOT ENCOUNTERED DURING OR UPON COMPLETION OF DRILLING
17								GROUNDWATER WAS ENCOUNTERED AT A DEPTH OF ____ FEET DURING DRILLING
18								CAVE IN DEPTH: ____
19								ELEVATION: ____
20								

LOGGED BY: D. Thompson CHECKED BY: DATE: 11/29/2017

FIELD TEST BORING LOG

BORING NO.: B-18 DRILLER: Harvest START DATE:
PROJECT NAME: Ravenwood at Turf Valley (F-18-027) COMPLETION DATE: 11/29/2017
PROJECT NO.: 2852 PROJECT LOCATION: End of Resort Road
CLIENT: Mangione Enterprises at Turf Valley, LP DRILLING METHOD: Backhoe

DEPTH (FT)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	ROD / CORE	RECOVERY (IN)	PENETROMETER READINGS (TSF)	REMARKS
0	starting elevation = 459.61							
1	6" topsoil							
2	reddish/brown silty sand slightly moist							
3	rocks encountered at 3 feet							
4	medium to large size rocks							
5								
6								
7								
8								
9								
10								
11								
12								
13	bottom of boring = 444.61							
14	no refusal/no water encountered							
15								BORING COMPLETED AT A DEPTH OF ____ FEET
16								GROUNDWATER WAS NOT ENCOUNTERED DURING OR UPON COMPLETION OF DRILLING
17								GROUNDWATER WAS ENCOUNTERED AT A DEPTH OF ____ FEET DURING DRILLING
18								CAVE IN DEPTH: ____
19								ELEVATION: ____
20								

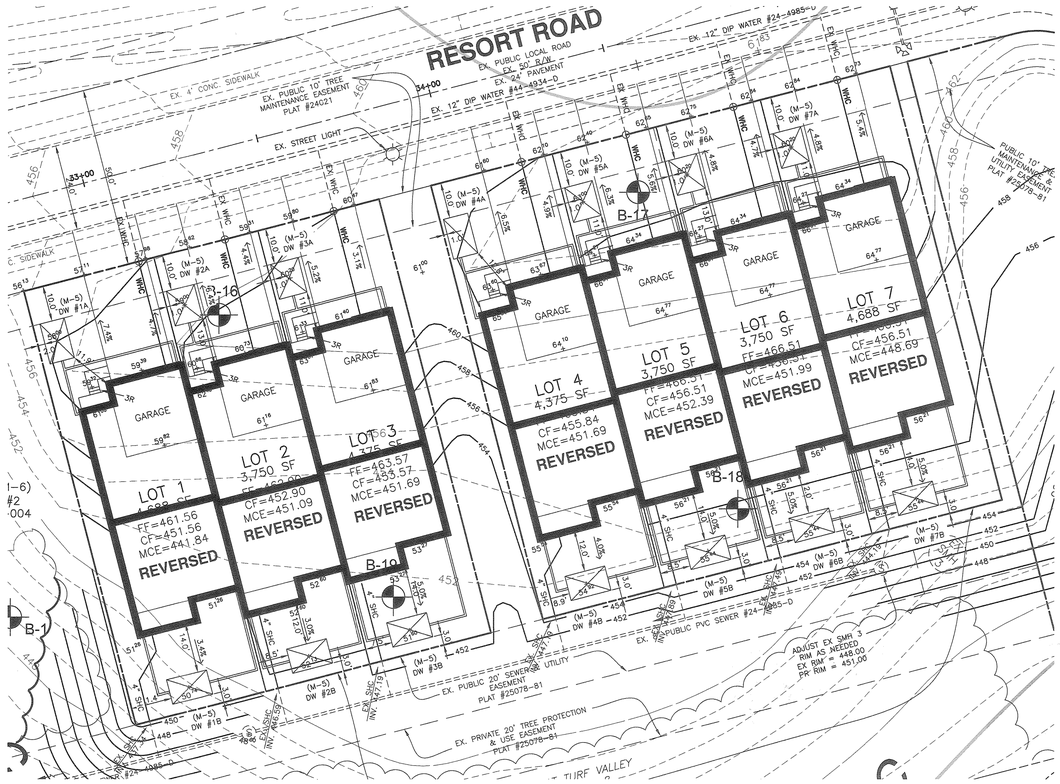
LOGGED BY: D. Thompson CHECKED BY: DATE: 11/29/2017

FIELD TEST BORING LOG

BORING NO.: B-19 DRILLER: Harvest START DATE:
PROJECT NAME: Ravenwood at Turf Valley (F-18-027) COMPLETION DATE: 11/29/2017
PROJECT NO.: 2852 PROJECT LOCATION: End of Resort Road
CLIENT: Mangione Enterprises at Turf Valley, LP DRILLING METHOD: Backhoe

DEPTH (FT)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	ROD / CORE	RECOVERY (IN)	PENETROMETER READINGS (TSF)	REMARKS
0	starting elevation = 457.75							
1	6" topsoil							
2	reddish/brown silty sand slightly moist							
3	rocks encountered at 3 feet							
4	medium to large size rocks							
5								
6								
7								
8								
9								
10								
11								
12								
13	bottom of boring = 439.75							
14	no refusal/no water encountered							
15								BORING COMPLETED AT A DEPTH OF ____ FEET
16								GROUNDWATER WAS NOT ENCOUNTERED DURING OR UPON COMPLETION OF DRILLING
17								GROUNDWATER WAS ENCOUNTERED AT A DEPTH OF ____ FEET DURING DRILLING
18								CAVE IN DEPTH: ____
19								ELEVATION: ____
20								

LOGGED BY: D. Thompson CHECKED BY: DATE: 11/29/2017

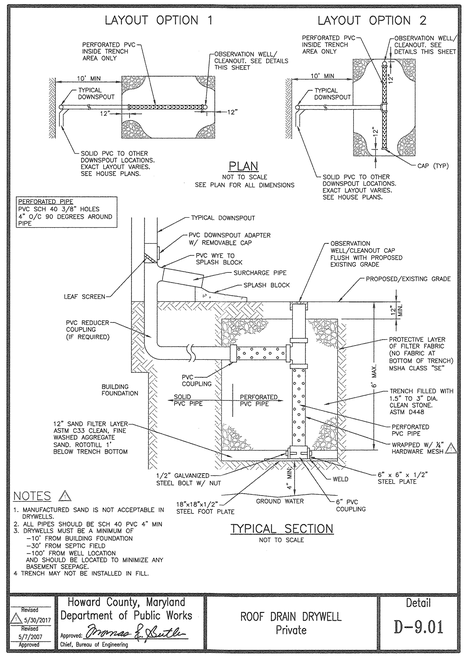


(M-5) DRY WELL PLAN

0 10 20 40
1 inch = 20 ft.

Dry Well Chart

Lot	Dry Well	Width (ft)	Length (ft)	Depth (ft)	Ground Elevation	Top of Storage Elevation	Bottom of Stone Elevation	Bottom of Sand Elevation
1	1A	7.0	11.5	5.0	458.00	457.00	453.00	452.00
	1B	7.0	11.5	5.0	450.74	449.74	445.74	444.74
2	2A	8.0	10	5.0	459.00	458.00	454.00	453.00
	2B	7.0	11.5	5.0	452.13	451.13	447.13	446.13
3	3A	8.0	10	5.0	460.20	459.20	455.20	454.20
	3B	7.0	11.5	5.0	451.60	450.60	446.60	445.60
4	4A	7.0	11.5	5.0	462.00	461.00	457.00	456.00
	4B	7.0	11.5	5.0	454.92	453.92	449.92	448.92
5	5A	8.0	10	5.0	463.00	462.00	458.00	457.00
	5B	7.0	11.5	5.0	455.44	454.44	450.44	449.44
6	6A	8.0	10	5.0	463.50	462.50	458.50	457.50
	6B	7.0	11.5	5.0	455.44	454.44	450.44	449.44
7	7A	8.0	10	5.0	463.55	462.55	458.55	457.55
	7B	7.0	11.5	5.0	455.44	454.44	450.44	449.44



Revised 5/30/2017	Howard County, Maryland Department of Public Works	ROOF DRAIN DRYWELL Private	Detail D-9.01
Revised 5/7/2007 Approved	Approved: Director of Public Works / Chief, Bureau of Engineering		

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.

"NO AS-BUILT INFORMATION IS" PROVIDED ON THIS SHEET

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. 21443 Expiration Date: 12-21-24

AS-BUILT 5-21-24

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE AUGUST 20, 2020

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.5.20
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/28/20
DIRECTOR — DATE 10/29/20

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.

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: 6-30-2021
8.27.20

OWNER:
MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP
1205 YORK ROAD, PENTHOUSE
LUTHERVILLE, MARYLAND 21093
410-825-8400

BUILDER:
NV HOMES
9720 PATUXENT WOODS DIVE
COLUMBIA, MARYLAND 21046
410-379-3385

RESIDENTIAL – SINGLE FAMILY ATTACHED AND SINGLE-FAMILY
RAVENWOOD CONDOMINIUMS AT TURF VALLEY
LOTS 1 thru 7 AND BUILDABLE BULK PARCEL 'AA'

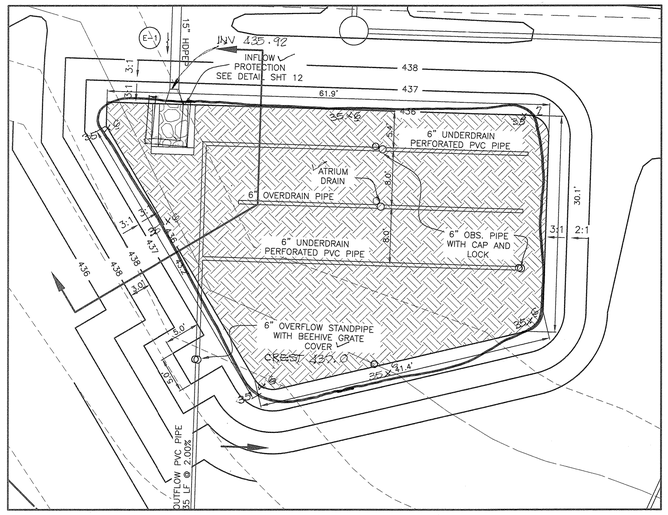
TAX MAP: 17, PARCEL: 706, GRID: 13
ELECTION DISTRICT NO. 2 – HOWARD COUNTY, MARYLAND
ZONED: PGCC

STORMWATER MANAGEMENT PLAN, DETAILS, AND BORING LOGS TOWNHOUSE LOTS

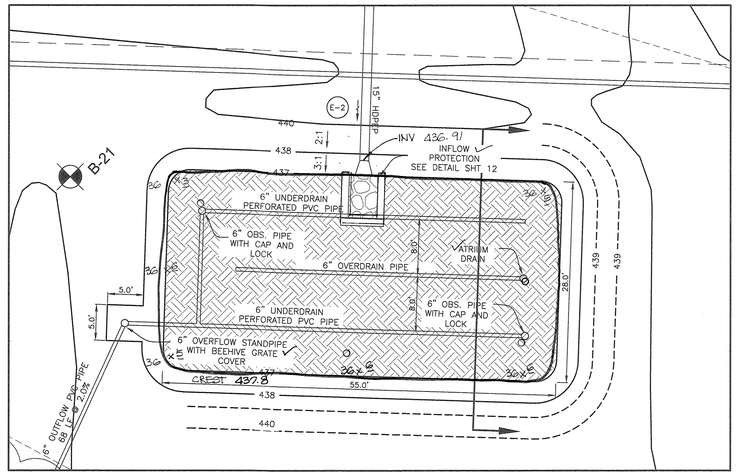
DATE: AUGUST 27, 2020 BEI PROJECT NO. 2931
DESIGN: DBT DRAFT: DBT SCALE: AS SHOWN SHEET 6 OF 23

AS-BUILT

SDP-20-036

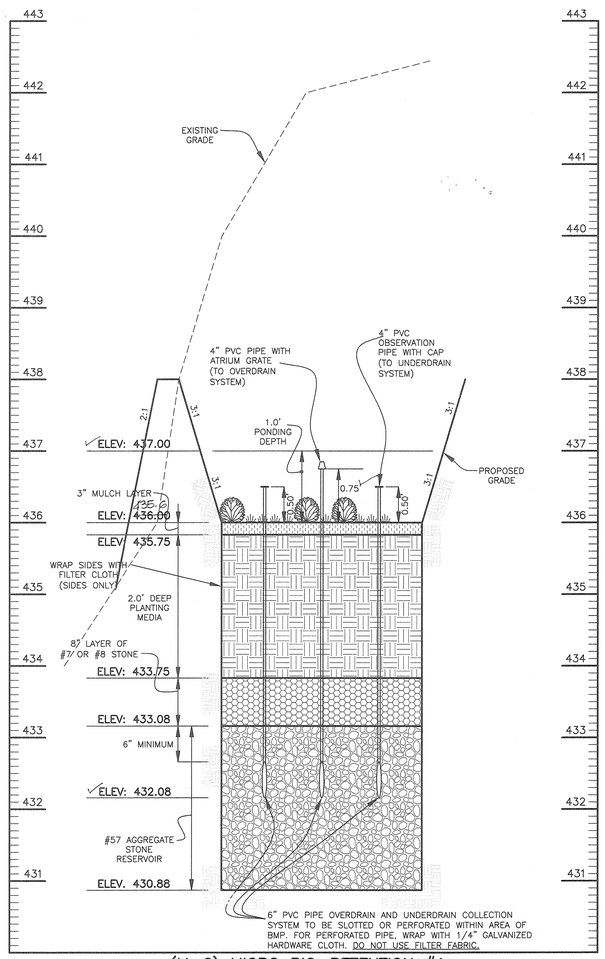


(M-6) MICRO BIO-RETENTION #1

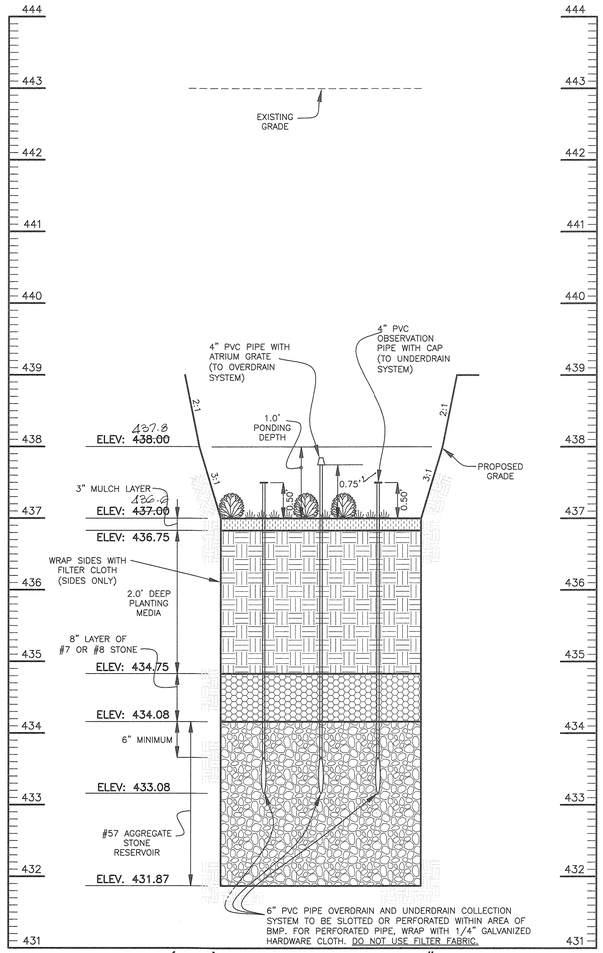


(M-6) MICRO BIO-RETENTION #2

0 5 10 20
1 inch = 10 ft.



(M-6) MICRO BIO-RETENTION #1
CROSS SECTION
SCALE: 1"=20'H; 1"=2'V



(M-6) MICRO BIO-RETENTION #2
CROSS SECTION
SCALE: 1"=20'H; 1"=2'V

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE AUGUST 20, 2020

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.5.20

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/28/20

DIRECTOR — DATE 10/29/20

STATE OF MARYLAND · DONALD ALAN MASON · No. 21443 · PROFESSIONAL ENGINEER

AS-BUILT

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. 21443 Expiration Date: 12/31/24

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications
Donald Mason, P.E. Date: 5/21/24

NOTES:

1. TOP OF GABION BASKETS TO BE SET AT PONDING ELEVATION OR 1-FOOT ABOVE SURFACE ELEVATION OF MICRO BIO-RETENTION.
2. BEEHIVE GRATES TO BE NDS 6" ROUND GRATE, GREEN, OR EQUIVALENT.

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. 21443, Expiration Date: 6-30-2021

STATE OF MARYLAND · CHRISTOPHER ALAN MALONEY · No. 21443 · PROFESSIONAL ENGINEER
8.27.20

OWNER:
MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP
1205 YORK ROAD, PENTHOUSE
LUTHERVILLE, MARYLAND 21093
410-825-8400

BUILDER:
NV HOMES
9720 PATUXENT WOODS DIVE
COLUMBIA, MARYLAND 21046
410-379-3385

RESIDENTIAL - SINGLE FAMILY ATTACHED AND MULTI-FAMILY
RAVENWOOD CONDOMINIUMS AT TURF VALLEY
LOTS 1 thru 7 AND BUILDABLE BULK PARCEL 'AA'

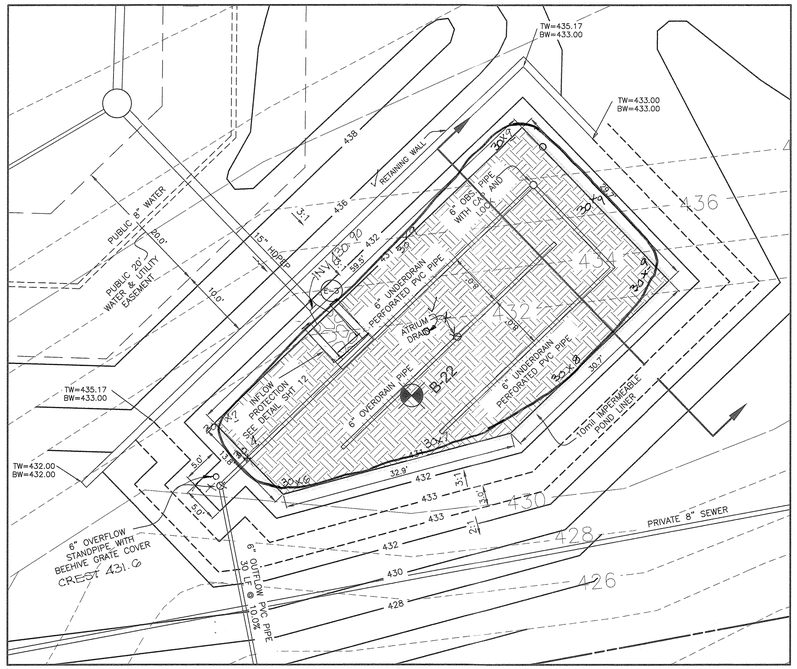
TAX MAP: 17, PARCEL: 706, GRID: 13
ELECTION DISTRICT NO. 2 - HOWARD COUNTY, MARYLAND
ZONED: PGCC

STORMWATER MANAGEMENT DETAILS CONDOMINIUMS

DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 27, 2020	BEI PROJECT NO. 2931
		SCALE: AS SHOWN	SHEET 7 OF 23

AS-BUILT

SDP-20-036



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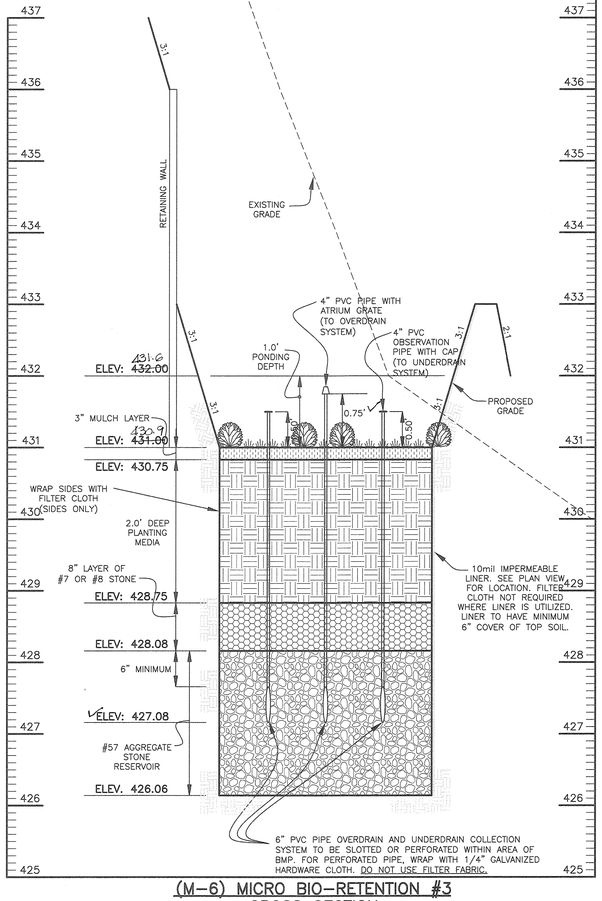
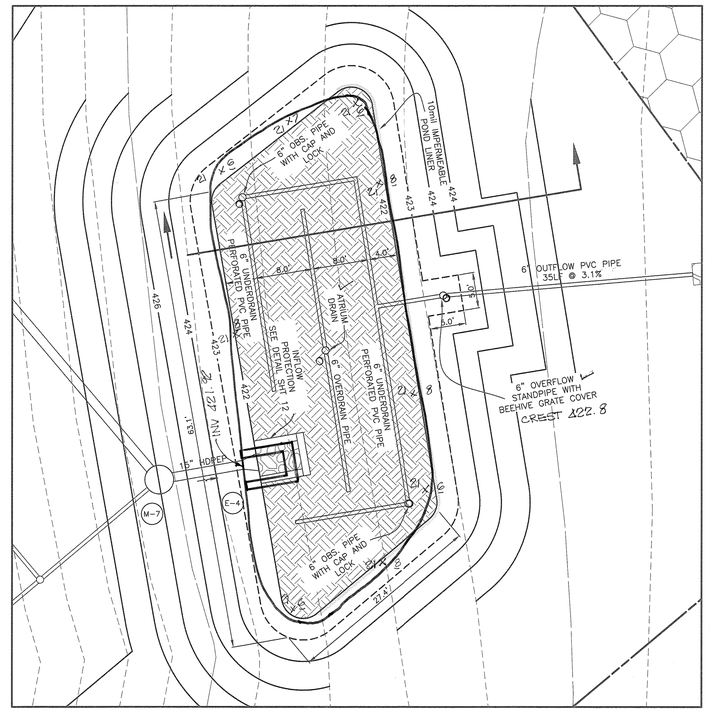
1 inch = 10 ft.



(M-6) MICRO BIO-RETENTION #3
CROSS SECTION

SCALE: 1"=20'H; 1"=2'V



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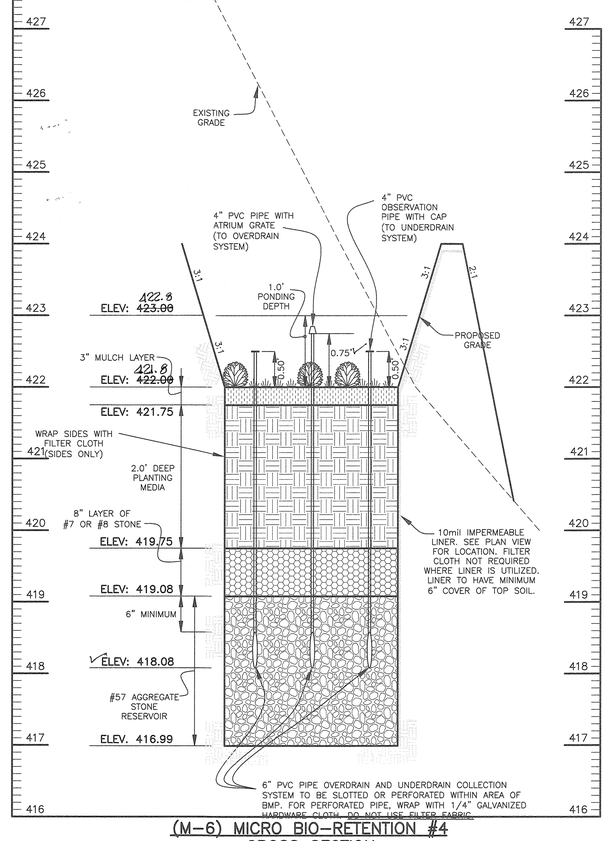

(M-6) MICRO BIO-RETENTION #4
CROSS SECTION

SCALE: 1"=20'H; 1"=2'V

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE AUGUST 20, 2020

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.5.20

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/28/20

DIRECTOR — DATE 10/29/20

STATE OF MARYLAND DONALD ALAN MASON NO. 21443 PROFESSIONAL ENGINEER

Donald Mason

AS-BUILT

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. 21443, Expiration Date: 12-21-24

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications

Donald Mason, P.E. Date: 5/21/24

NOTES:

1. TOP OF GABION BASKETS TO BE SET AT PONDING ELEVATION OR 1-FOOT ABOVE SURFACE ELEVATION OF MICRO BIO-RETENTION.
2. BEEHIVE GRATES TO BE NDS 6" ROUND GRATE, GREEN, OR EQUIVALENT.

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315 ▲ ELLICOTT CITY, MARYLAND 21043
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Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 22308, Expiration Date: 6-30-2021

STATE OF MARYLAND CHRISTOPHER ALAN MALAGARI NO. 22308 PROFESSIONAL ENGINEER

8.27.20

OWNER:
MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP
1205 YORK ROAD, PENTHOUSE
LUTHERVILLE, MARYLAND 21093
410-825-8400

BUILDER:
NV HOMES
9720 PATUXENT WOODS DIVE
COLUMBIA, MARYLAND 21046
410-379-3385

RESIDENTIAL - SINGLE FAMILY ATTACHED AND MULTI-FAMILY

RAVENWOOD CONDOMINIUMS AT TURF VALLEY

LOTS 1 thru 7 AND BUILDABLE BULK PARCEL 'AA'

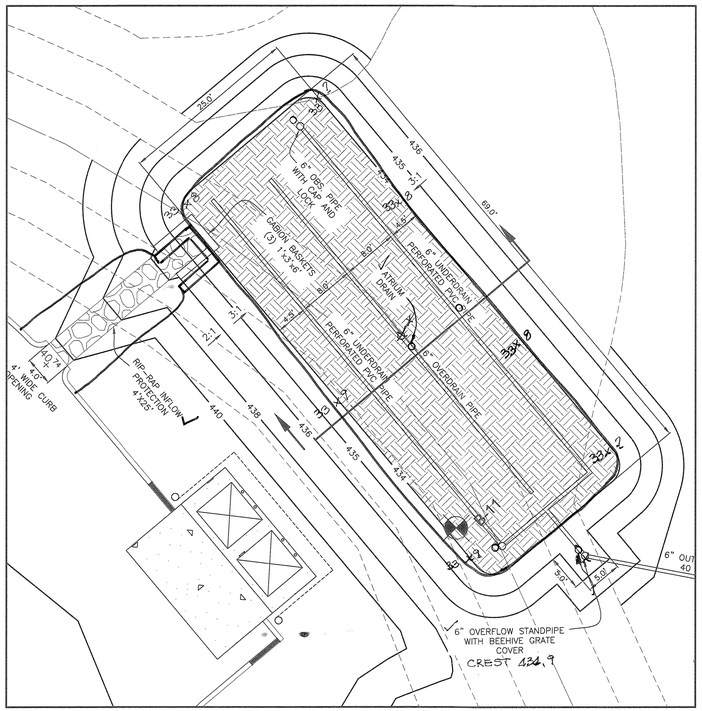
TAX MAP: 17, PARCEL: 706, GRID: 13
ELECTION DISTRICT NO. 2 - HOWARD COUNTY, MARYLAND
ZONED: PGCC

STORMWATER MANAGEMENT DETAILS CONDOMINIUMS

DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 27, 2020	BEI PROJECT NO. 2931
		SCALE: AS SHOWN	SHEET 8 OF 23

AS-BUILT

SDP-20-036



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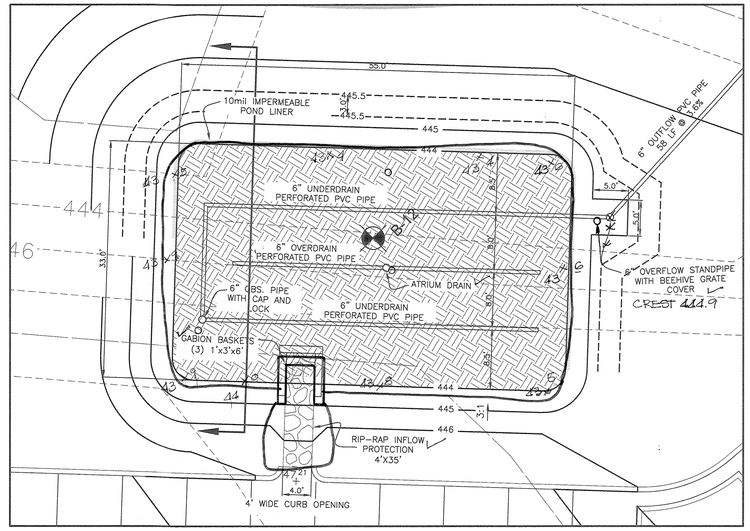
1 inch = 10 ft.



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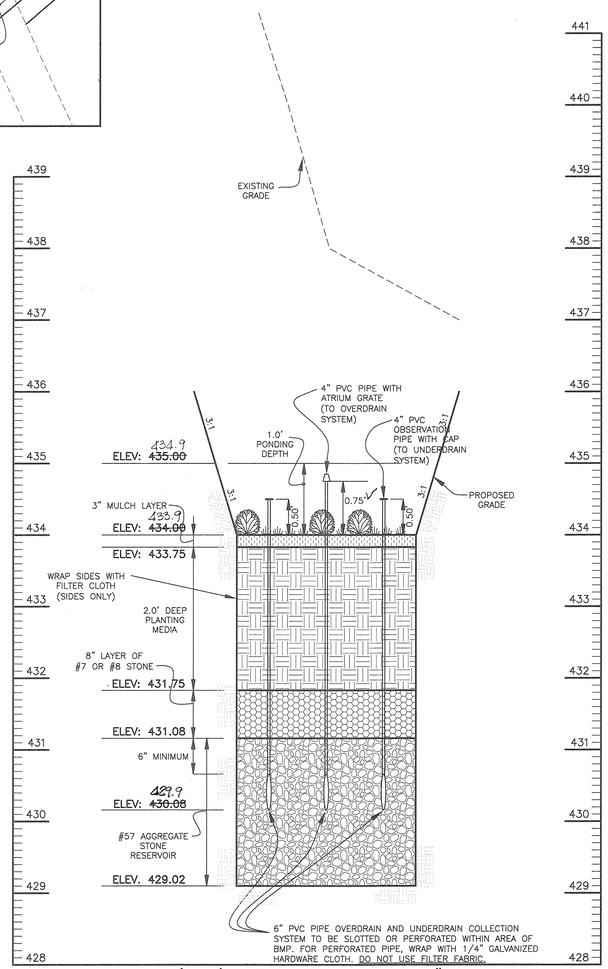
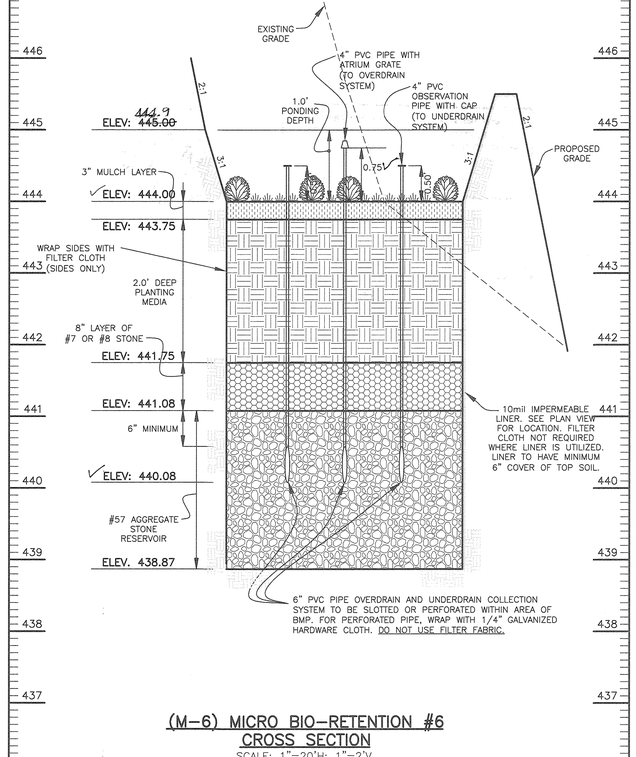


(M-6) MICRO BIO-RETENTION #5
CROSS SECTION
SCALE: 1"=20'H; 1"=2'V



(M-6) MICRO BIO-RETENTION #6
CROSS SECTION
SCALE: 1"=20'H; 1"=2'V

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE AUGUST 20, 2020

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.5.20

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/28/20

DIRECTOR — DATE 10/29/20

STATE OF MARYLAND DONALD ALAN MASON No. 21443 PROFESSIONAL ENGINEER

AS-BUILT

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. 21443, Expiration Date: 12-31-24

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications

Donald Mason, P.E. Date: 5/21/24

NOTES:

1. TOP OF GABION BASKETS TO BE SET AT PONDING ELEVATION OR 1-FOOT ABOVE SURFACE ELEVATION OF MICRO BIO-RETENTION.
2. BEEHIVE GRATES TO BE NDS 6" ROUND GRATE, GREEN, OR EQUIVALENT.

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. 22356, Expiration Date: 6-30-2021

STATE OF MARYLAND CHRISTOPHER ALAN MALAPERT No. 22356 PROFESSIONAL ENGINEER 8.27.20

OWNER:
MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP
1205 YORK ROAD, PENTHOUSE
LUTHERVILLE, MARYLAND 21093
410-825-8400

BUILDER:
NV HOMES
9720 PATUXENT WOODS DIVE
COLUMBIA, MARYLAND 21046
410-379-3385

RESIDENTIAL - SINGLE FAMILY ATTACHED AND MULTI-FAMILY

RAVENWOOD CONDOMINIUMS AT TURF VALLEY

LOTS 1 thru 7 AND BUILDABLE BULK PARCEL 'AA'

TAX MAP: 17, PARCEL: 706, GRID: 13
ELECTION DISTRICT NO. 2 - HOWARD COUNTY, MARYLAND
ZONED: POCC

STORMWATER MANAGEMENT DETAILS CONDOMINIUMS

DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 27, 2020	BEI PROJECT NO. 2931
		SCALE: AS SHOWN	SHEET 9 OF 23

AS-BUILT

SDP-20-036

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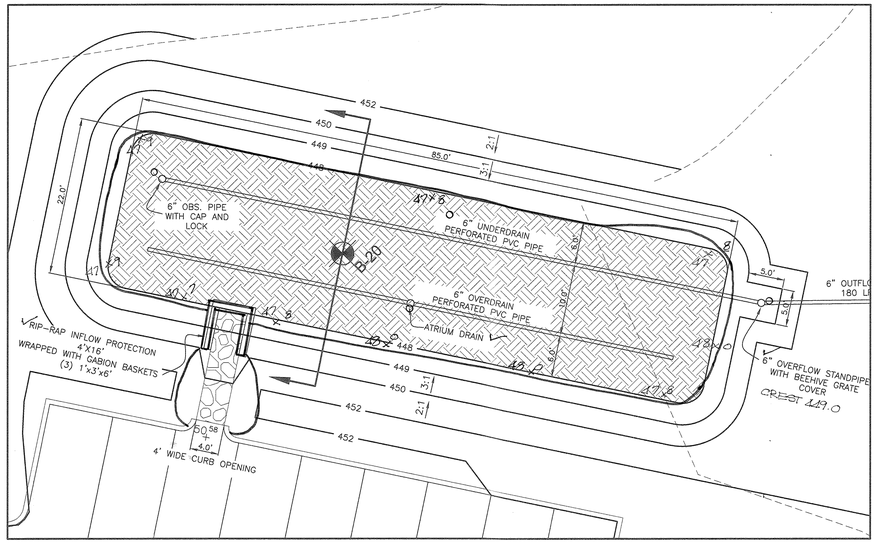
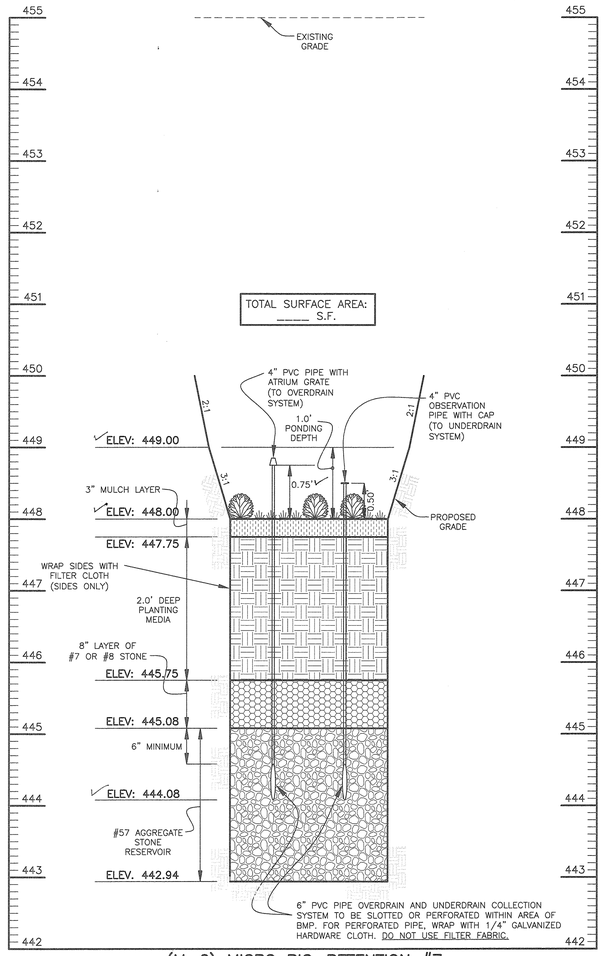


(M-6) MICRO BIO-RETENTION #7

1 inch = 10 ft.



(M-6) MICRO BIO-RETENTION #7
CROSS SECTION
SCALE: 1"=20'H; 1"=2'V

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE AUGUST 20, 2020

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.5.20

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/28/20

DIRECTOR — DATE 10/29/20

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 ½-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.

NOTE:
SEE SHEET 15 FOR LANDSCAPE INFORMATION.

STATE OF MARYLAND DONALD ALAN MASON No. 21443 PROFESSIONAL ENGINEER

AS-BUILT

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. 21443 Expiration Date: 12-21-24

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications

Donald Mason, P.E.

Date: 5/21/24

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

a. The Owner shall maintain the plant material, mulch layer and soil layer annually. Maintenance of mulch and soil is limited to correcting areas of erosion or wash out. Any mulch replacement shall be done in the spring. Plant material shall be checked for disease and insect infestation and maintenance will address dead material and pruning. Acceptable replacement plant material is limited to the following: 2000 Maryland Stormwater Design Manual Volume II, Table A.4.1 and 2.

b. The Owner shall perform a plant inspection in the spring and in the fall of each year. During the inspection, the Owner shall remove dead and diseased vegetation considered beyond treatment, replace dead plant material with acceptable replacement plant material, treat diseased trees and shrubs, and replace all deficient stakes and wires.

c. The Owner shall inspect the mulch each spring. The mulch shall be replaced every two to three years. The previous mulch layer shall be removed the new layer is applied.

d. The Owner shall correct soil erosion on an as needed basis, with a minimum of once per month and after each heavy storm.

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

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. 22360 Expiration Date: 6-30-2021
STATE OF MARYLAND CHRISTOPHER ALAN MAGEE No. 22360 PROFESSIONAL ENGINEER
8.27.20

OWNER:
MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP
1205 YORK ROAD, PENTHOUSE
LUTHERVILLE, MARYLAND 21093
410-825-8400

BUILDER:
NV HOMES
9720 PATUXENT WOODS DIVE
COLUMBIA, MARYLAND 21046
410-379-3385

RESIDENTIAL – SINGLE FAMILY ATTACHED AND MULTI-FAMILY
RAVENWOOD CONDOMINIUMS AT TURF VALLEY
LOTS 1 thru 7 AND BUILDABLE BULK PARCEL 'AA'

TAX MAP: 17, PARCEL: 706, GRID: 13
ELECTION DISTRICT NO. 2 – HOWARD COUNTY, MARYLAND
ZONED: PGCC

STORMWATER MANAGEMENT DETAILS CONDOMINIUMS

DESIGN: DBT | DRAFT: DBT | DATE: AUGUST 27, 2020 | SCALE: AS SHOWN | BEI PROJECT NO. 2931 | SHEET 10 OF 23

AS-BUILT

SDP-20-036

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RAVENWOOD AT TURF VALLEY
BUILDABLE BULK PARCEL 'AA'
8.97 ACRES
PLAT #25078-25081
ZONED: PGCC
RAVENWOOD AT TURF VALLEY
GOLF SPACE LOT 11
PLAT #25078-25081
ZONED: PGCC
EXISTING FOREST CONSERVATION EASEMENT #1
PLAT #24898-24909
GRID NORTH
BUILDING #1
4-STORY
21 UNITS
BUILDING #2
4-STORY
21 UNITS
BUILDING #3
4-STORY
21 UNITS
BUILDING #4
4-STORY
21 UNITS
MB #1
MB #2
MB #3
MB #4
MB #5
MB #6
MB #7
GbC
GbB
BaA
8" PRIVATE SEWER
8" PRIVATE WHC
3'x3' RIP-RAP OUTLET PROTECTION
4' WIDE CURB OPENING
FIRE HYDRANT
25' WETLANDS BUFFER
LIMIT OF WETLANDS
RAVENWOOD AT TURF VALLEY
OPEN SPACE LOT 9
TURF VALLEY CONDOMINIUM ASSOC.
PLAT #25078-81
ZONED: PGCC
RAVENWOOD AT TURF VALLEY
OPEN SPACE LOT 10
TURF VALLEY PROPERTY OWNERS ASSOC.
PLAT #25078-81
ZONED: PGCC
PARCEL 103
DAVID FORCE PARK
HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
L 430, F 799
ZONED: R-20
POD E-1 PHASE 2
NON-BUILDABLE BULK PARCEL 'J'
PLAT #25042-46
EXISTING FOREST
1 inch = 30 ft.

NRCS SOILS CHART - HoCo Soils Map No. 12

SYMBOL	HYDRIC	GROUP	Kw	MAP UNIT NAME
GgB		B	0.37	GLENELG LOAM, 3 TO 8 PERCENT SLOPES
GgC		B	0.37	GLENELG LOAM, 8 TO 15 PERCENT SLOPES
BaA	YES	C	0.43	GLENVILLE SILT LOAM, 0 TO 3 PERCENT SLOPES

SWM Drainage Info

	DA (acres)	% Imp
MB #1	0.44	95%
MB #2	0.38	92%
MB #3	0.43	93%
MB #4	0.40	94%
MB #5	0.47	93%
MB #6	0.43	95%
MB #7	0.49	91%

NOTE:
SEE SHEET 1 FOR STORMWATER MANAGEMENT SUMMARY TABLES

"NO AS-BUILT INFORMATION IS" PROVIDED ON THIS SHEET

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. 21443, Expiration Date: 12-21-24

AS-BUILT 5-21-24

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE AUGUST 20, 2020

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.5.20

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/20/20

DIRECTOR — DATE 10/29/20

NO.	DATE	REVISION
1	8.18.2023	REVISE GRADES BEHIND BLDGS 3 AND 4

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: 6-30-2021

8.27.20

OWNER:
MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP
1205 YORK ROAD, PENTHOUSE
LUTHERVILLE, MARYLAND 21093
410-825-8400

BUILDER:
NV HOMES
9720 PATUXENT WOODS DIVE
COLUMBIA, MARYLAND 21046
410-379-3385

RESIDENTIAL – SINGLE FAMILY ATTACHED AND MULTI-FAMILY

RAVENWOOD CONDOMINIUMS AT TURF VALLEY

LOTS 1 thru 7 AND BUILDABLE BULK PARCEL 'AA'

TAX MAP: 17, PARCEL: 706, GRID: 13
ELECTION DISTRICT NO. 2 – HOWARD COUNTY, MARYLAND
ZONED: PGCC

STORMWATER MANAGEMENT DRAINAGE AREA MAP PARCEL 'AA'

DATE:	AUGUST 27, 2020	BEI PROJECT NO.	2931
DESIGN: DBT	DRAFT: DBT	SCALE: AS SHOWN	SHEET 11 OF 23

AS-BUILT

SDP-20-036

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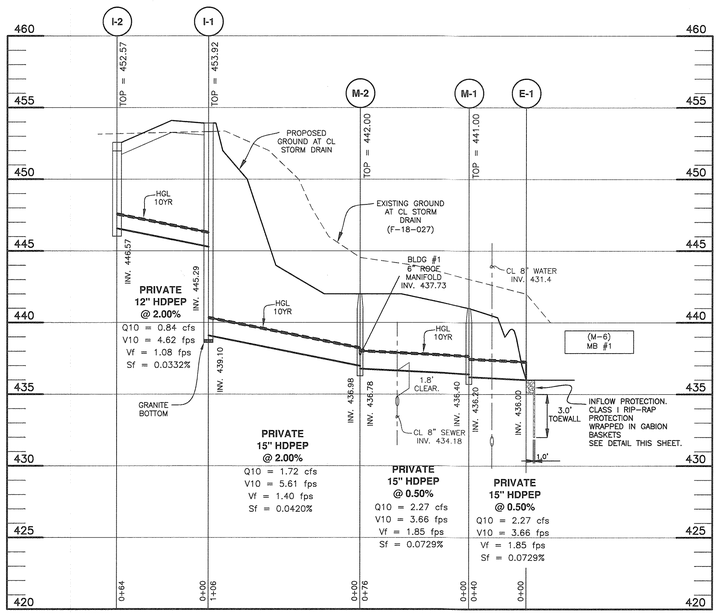
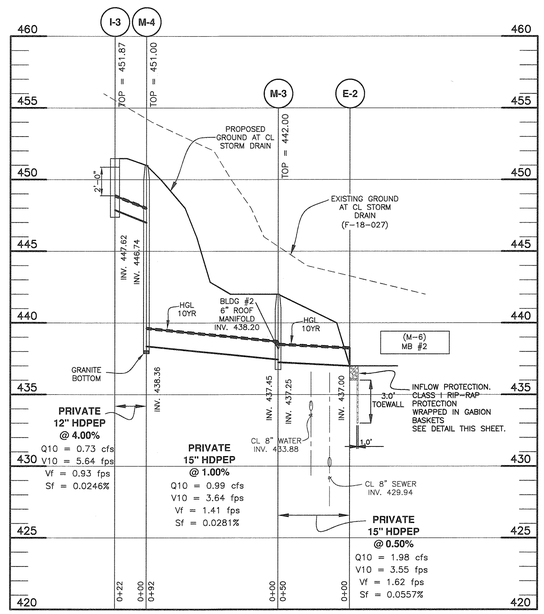
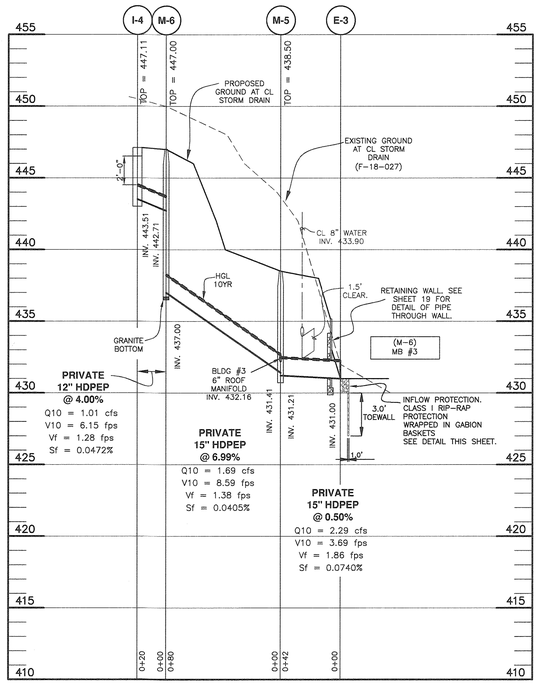


STORM DRAIN PROFILE
SCALE: 1"=50' HORIZ., 1"=5' VERT.



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



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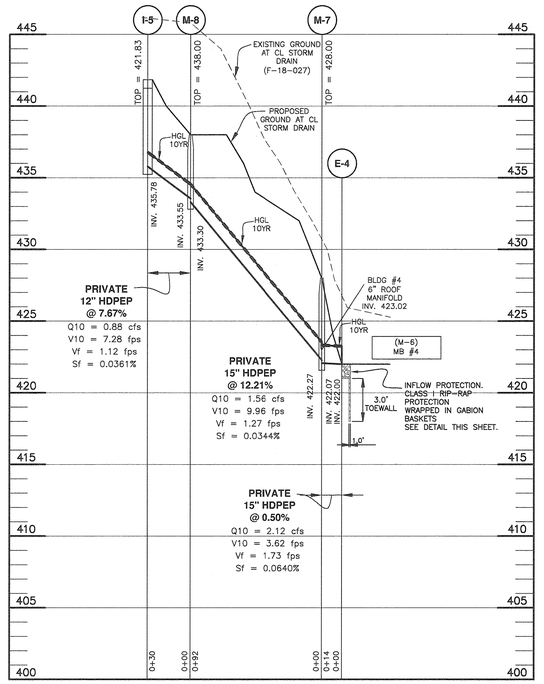
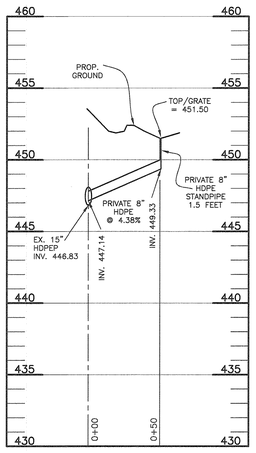


STORM DRAIN PROFILE
SCALE: 1"=50' HORIZ., 1"=5' VERT.



8" STORM DRAIN PROFILE
SCALE: 1"=50' HORIZ., 1"=5' VERT.

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE AUGUST 20, 2020

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5.9.22

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 5/10/22 DJ

DIRECTOR — DATE 5/11/22

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.

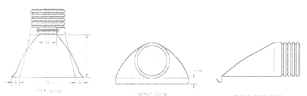
Requirements
The ADS Flared End Section shall be high density polyethylene meeting ASTM D3350 minimum cell classification 213320C; contact manufacturer for additional cell classification information. When provided, the metal threaded fastening rod shall be stainless steel.

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)

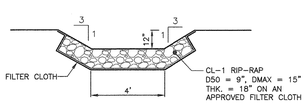
*Product detail may differ slightly from actual product appearance



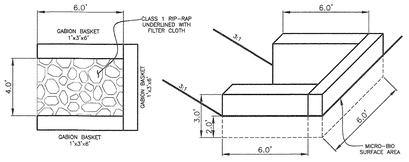
STORM DRAIN STRUCTURE SCHEDULE

STRUCTURE	TYPE	HO.CO. STD. DETAIL	LOCATION	INVERT IN		INVERT OUT	TOP ELEVATION	MAINTENANCE
INLETS								
I-1	A-5	D-4.02	N 593866.27 E 1350416.59	445.29 (12")	-	439.10 (15")	453.92	PRIVATE
I-2	A-5	D-4.02	N 593919.55 E 1350381.55	447.07 (6")	-	446.57 (12")	452.57	PRIVATE
I-3	A-5	D-4.02	N 593717.26 E 1350503.35	-	-	447.62 (12")	451.87	PRIVATE
I-4	A-5	D-4.02	N 593569.60 E 1350630.11	-	-	443.51 (12")	447.11	PRIVATE
I-5	A-5	D-4.02	N 593530.72 E 1350788.48	-	-	135.78 (12")	421.83	PRIVATE
CO-1	4' curb opening	N/A	N 594009.39 E 1350473.28	450.58	-	450.58	TC=451.18	PRIVATE
CO-2	4' curb opening	N/A	N 593700.10 E 1350676.07	447.21	-	447.21	TC=447.81	PRIVATE
CO-3	4' curb opening	N/A	N 593593.66 E 1350813.06	440.74	-	440.74	TC=441.34	PRIVATE
MANHOLES								
M-1	4' Diameter Pre-Cast	G-5.12	N 593731.24 E 1350328.21	436.40 (15")	-	436.20	441.00	PRIVATE
M-2	4' Diameter Pre-Cast	G-5.12	N 593806.82 E 1350326.18	436.98 (15")	437.73 (6")	436.78	442.00	PRIVATE
M-3	4' Diameter Pre-Cast	G-5.12	N 593853.61 E 1350411.10	437.45 (15")	438.20 (6")	437.25 (15")	442.00	PRIVATE
M-4	4' Diameter Pre-Cast	G-5.12	N 593697.08 E 1350492.18	446.74 (12")	447.49 (6")	438.36 (15")	451.00	PRIVATE
M-5	4' Diameter Pre-Cast	G-5.12	N 593499.16 E 1350559.49	431.41 (15")	432.16 (6")	431.21 (15")	438.50	PRIVATE
M-6	4' Diameter Pre-Cast	G-5.12	N 593554.15 E 1350618.04	442.71 (12")	443.21 (6")	437.00 (15")	447.00	PRIVATE
M-7	4' Diameter Pre-Cast	G-5.12	N 593417.66 E 1350802.89	422.27 (15")	423.02 (6")	422.07 (15")	428.00	PRIVATE
M-8	4' Diameter Pre-Cast	G-5.12	N 593509.34 E 1350810.53	433.55 (12")	434.05 (6")	433.30 (15")	438.00	PRIVATE
END SECTIONS								
E-1	15" HDPEP see detail	N/A	N 593703.90 E 1350299.07	N/A	N/A	436.00	N/A	PRIVATE
E-2	15" HDPEP see detail	N/A	N 593619.22 E 1350374.46	N/A	N/A	437.00	N/A	PRIVATE
E-3	15" HDPEP see detail	N/A	N 593457.50 E 1350558.70	N/A	N/A	431.00	N/A	PRIVATE
E-4	15" HDPEP see detail	N/A	N 593409.68 E 1350814.30	N/A	N/A	422.00	N/A	PRIVATE

STRUCTURE LOCATION FOR MANHOLES IS AT THE CENTER OF THE MANHOLE.
STRUCTURE LOCATION FOR TYPE 'A-5' INLETS IS AT THE FRONT CENTER OF THE INLET.
PRECAST STRUCTURES MEETING HS-20 LOADING MAY BE USED.



CROSS-SECTION THROUGH CURB OPENING RIP-RAP CHANNEL
NOT TO SCALE



GABION INFLOW DETAIL
SCALE: 1" = 5'

STORM DRAIN PIPE SCHEDULE

SIZE	TYPE	LENGTH (LF)	MAINTENANCE
6"	HDPEP	726	PRIVATE
12"	HDPEP	136	PRIVATE
15"	HDPEP	591	PRIVATE

All HDPE pipes shall have smooth interior. No interior corrugations.

"NO AS-BUILT INFORMATION IS" PROVIDED ON THIS SHEET

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. 21443, Expiration Date 12-21-22

STATE OF MARYLAND — DONALD ALAN MANN — No. 21443 — PROFESSIONAL ENGINEER

AS-BUILT 5-21-22

NO.	DATE	REVISION
1	4.25.2022	ADD PROFILE FOR 8" HDPE. REVISE PROPOSED GROUND IN STORM DRAIN PROFILE.

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 T. PHILLIPS — No. 22390 — PROFESSIONAL ENGINEER — 4.25.22

OWNER:
MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP
1205 YORK ROAD, PENTHOUSE
LUTHERVILLE, MARYLAND 21093
410-825-8400

BUILDER:
NV HOMES
9720 PATUXENT WOODS DIVE
COLUMBIA, MARYLAND 21046
410-379-3385

RESIDENTIAL - SINGLE FAMILY ATTACHED AND MULTI-FAMILY

RAVENWOOD CONDOMINIUMS AT TURF VALLEY

LOTS 1 thru 7 AND BUILDABLE BULK PARCEL 'AA'

TAX MAP: 17, PARCEL: 706, GRID: 13
ELECTION DISTRICT NO. 2 - HOWARD COUNTY, MARYLAND
ZONED: PGCC

STORM DRAIN PROFILES AND DETAILS PARCEL 'AA'

DESIGN: DBT | DRAFT: DBT | DATE: AUGUST 27, 2020 | SCALE: AS SHOWN | BEI PROJECT NO. 2931 | SHEET 12 OF 23

AS-BUILT SDP-20-036

NRCS SOILS CHART - HoCo Soils Map No. 12				
SYMBOL	HYDRIC	GROUP	Kw	MAP UNIT NAME
GgB		B	0.37	GLENELG LOAM, 3 TO 8 PERCENT SLOPES
GgC		B	0.37	GLENELG LOAM, 8 TO 15 PERCENT SLOPES
BaA	YES	C	0.43	GLENVILLE SILT LOAM, 0 TO 3 PERCENT SLOPES

RAVENWOOD AT TURF VALLEY
GOLF SPACE LOT 11
PLAT #25078-25081
ZONED: PGCC

EXISTING FOREST CONSERVATION EASEMENT #1
PLAT #24898-24909

RAVENWOOD AT TURF VALLEY
BUILDABLE BULK PARCEL 'AA'
8.97 ACRES
PLAT #25078-25081
ZONED: PGCC

GRID NORTH

PARCEL 103
DAVID FORCE PARK/
HOWARD COUNTY DEPARTMENT OF
RECREATION AND PARKS
L. 430, F. 799
ZONED: R-20

RAVENWOOD AT TURF VALLEY
OPEN SPACE LOT 9
TURF VALLEY CONDOMINIUM ASSOC.
PLAT #25078-81
ZONED: PGCC

RAVENWOOD AT TURF VALLEY
OPEN SPACE LOT 10
TURF VALLEY PROPERTY OWNERS ASSOC.
PLAT #25078-81

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License No. 21443, Expiration Date: 12-21-24

AS-BUILT 5-21-24

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE AUGUST 20, 2020

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.5.20

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/28/20

DIRECTOR — DATE 10/29/20

1 inch = 30 ft.

DRAINAGE AREA CHART

Phase	DA	Zoning (Z)	Area (ac) (A)	'C' factor < 25yr	'C' factor 25yr and >	% Impervious (I)
n/a	I-1	PGCC-1	0.05	0.69		75.1
n/a	I-2	PGCC-1	0.13	0.86		100
n/a	I-3	PGCC-1	0.14	0.70		77.8
n/a	I-4	PGCC-1	0.18	0.73		81.9
n/a	I-5	PGCC-1	0.16	0.71		78.8
n/a	ROOF 1A	PGCC-1	0.23	0.86		100
n/a	ROOF 2A	PGCC-1	0.23	0.86		100
n/a	ROOF 3A	PGCC-1	0.23	0.86		100
n/a	ROOF 4A	PGCC-1	0.23	0.86		100
n/a	CO-1	PGCC-1	0.49	0.79		90.7
n/a	CO-2	PGCC-1	0.43	0.83		95.1
n/a	CO-3	PGCC-1	0.47	0.81		93.1

NO.	DATE	REVISION
1	8.18.2023	REVISE GRADES BEHIND BLDGS 3 AND 4

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. 22903, Expiration Date: 6-30-2021

8.18.23

OWNER:
MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP
1205 YORK ROAD, PENTHOUSE
LUTHERVILLE, MARYLAND 21093
410-825-8400

BUILDER:
NV HOMES
9720 PATUXENT WOODS DIVE
COLUMBIA, MARYLAND 21046
410-379-3385

RESIDENTIAL – SINGLE FAMILY ATTACHED AND MULTI-FAMILY
RAVENWOOD CONDOMINIUMS AT TURF VALLEY
LOTS 1 thru 7 AND BUILDABLE BULK PARCEL 'AA'

TAX MAP: 17, PARCEL: 706, GRID: 13
ELECTION DISTRICT NO. 2 – HOWARD COUNTY, MARYLAND
ZONED: PGCC

STORM DRAIN DRAINAGE AREA MAP PARCEL 'AA'

DESIGN: DBT | DRAFT: DBT | DATE: AUGUST 27, 2020 | SCALE: AS SHOWN | BEI PROJECT NO. 2931 | SHEET 13 OF 23

AS-BUILT

SDP-20-036

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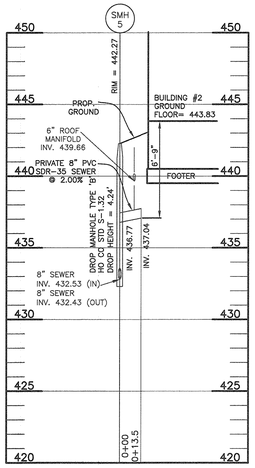
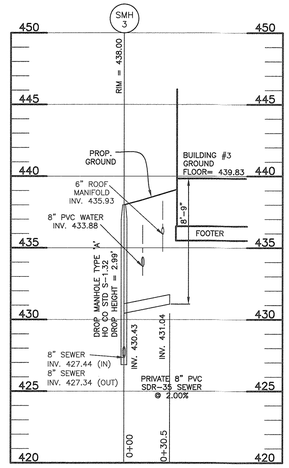
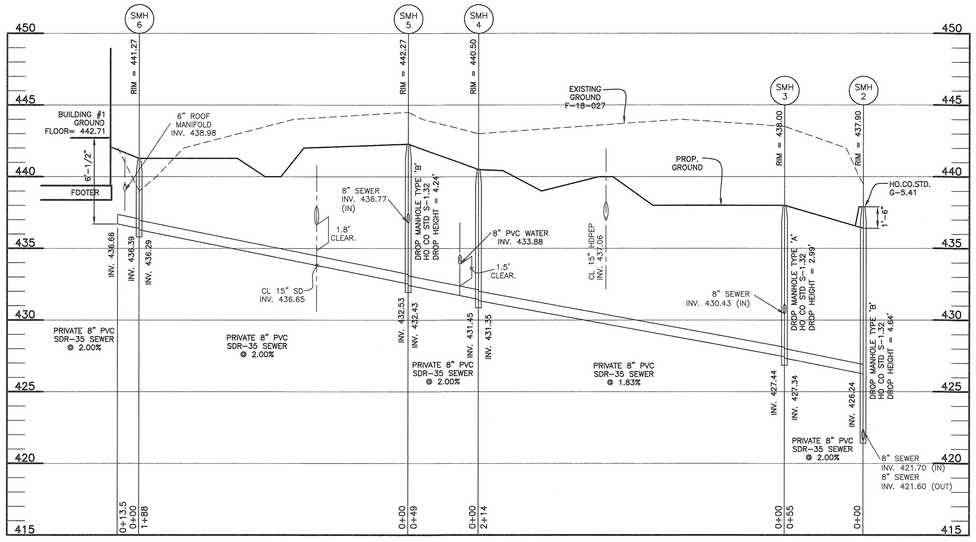


PRIVATE SEWER PROFILE
SCALE: 1"=50' HORIZ., 1"=5' VERT.



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



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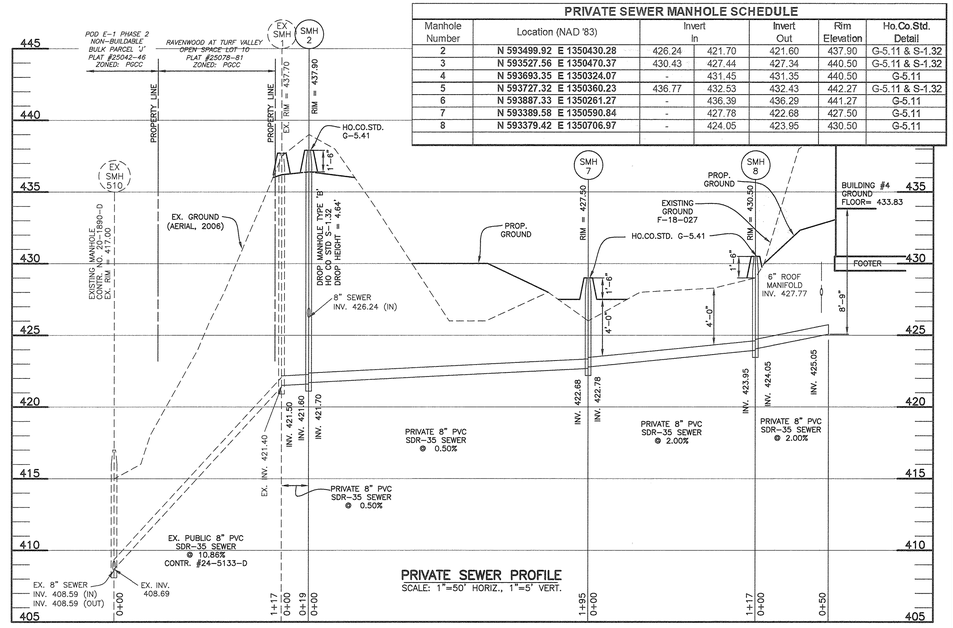
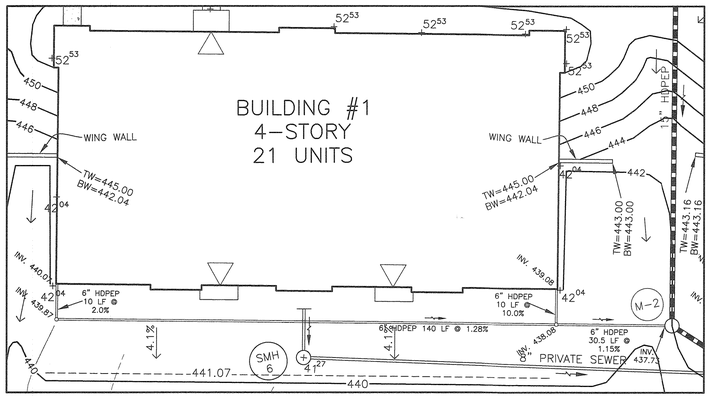
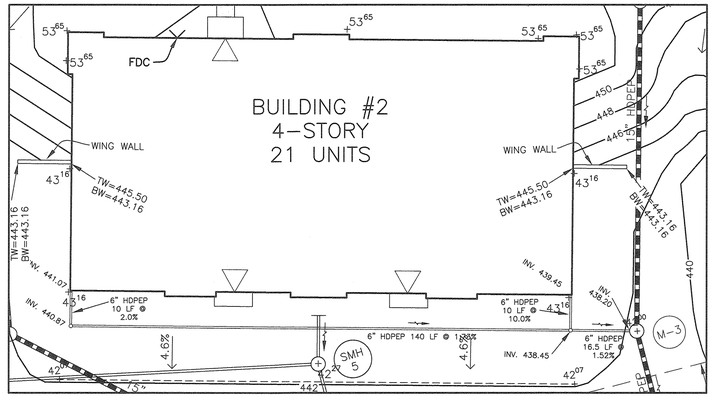


PRIVATE SEWER PROFILE
SCALE: 1"=50' HORIZ., 1"=5' VERT.

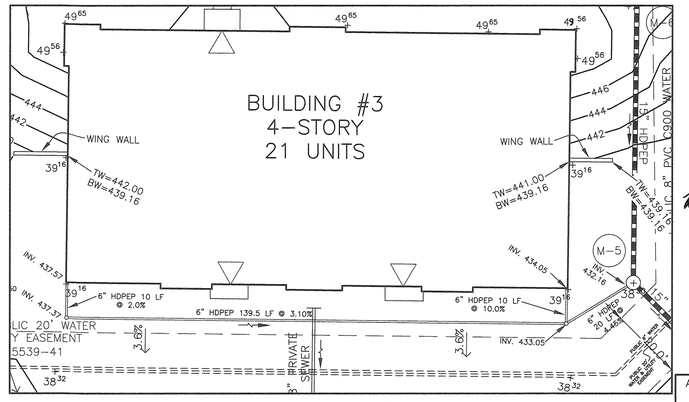
PRIVATE SEWER MANHOLE SCHEDULE						
Manhole Number	Location (NAD '83)	Invert In		Invert Out	Rim Elevation	Ho.Co.Std. Detail
2	N 593499.92 E 1350430.28	426.24	421.70	421.60	437.90	G-5.11 & S-1.32
3	N 593527.56 E 1350470.37	430.43	427.44	427.34	440.50	G-5.11 & S-1.32
4	N 593693.35 E 1350324.07	-	431.45	431.35	440.50	G-5.11
5	N 593727.32 E 1350360.23	436.77	432.53	432.43	442.27	G-5.11 & S-1.32
6	N 593887.33 E 1350261.27	-	436.39	436.29	441.27	G-5.11
7	N 593389.58 E 1350590.84	-	427.78	422.68	427.50	G-5.11
8	N 593379.42 E 1350706.97	-	424.05	423.95	430.50	G-5.11



ROOF LEADER MANIFOLD PLAN
1 inch = 20 ft.



ROOF LEADER MANIFOLD PLAN
1 inch = 20 ft.



ROOF LEADER MANIFOLD PLAN
1 inch = 20 ft.

"NO AS-BUILT INFORMATION IS" PROVIDED ON THIS SHEET

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. 21443, Expiration Date: 12-21-23

STATE OF MARYLAND — DONALD ALAN MANN — No. 21443 — PROFESSIONAL ENGINEER

Donald Mann

AS-BUILT 5/2/24

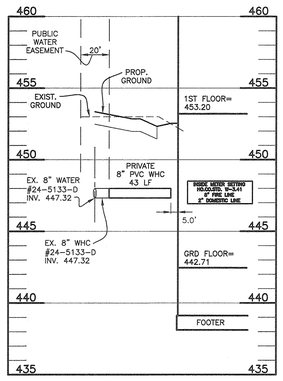
APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE AUGUST 20, 2020

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

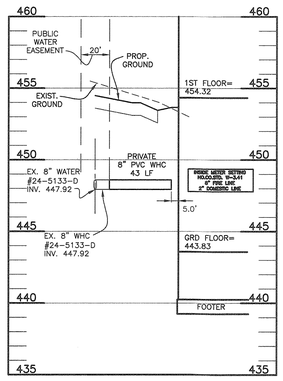
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5.9.22

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 5/10/22

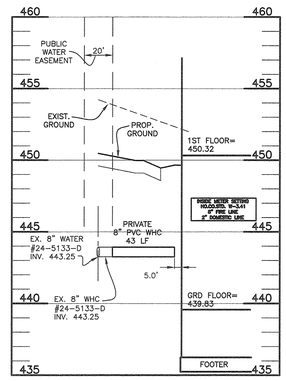
DIRECTOR — DATE 5/10/22



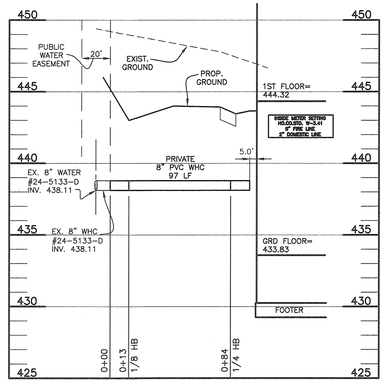
PRIVATE WHC PROFILE – BLDG #1
SCALE: 1"=50' HORIZ., 1"=5' VERT.



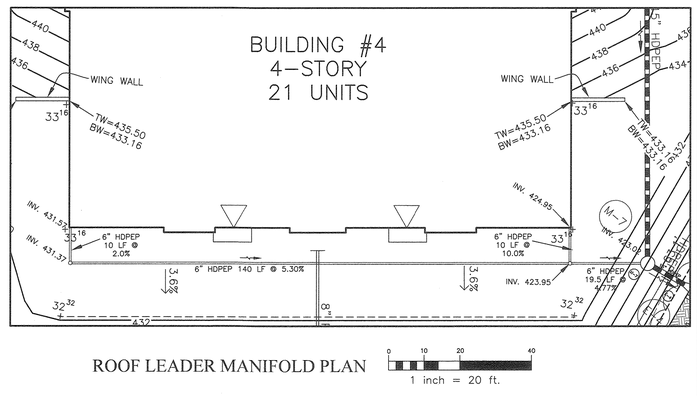
PRIVATE WHC PROFILE – BLDG #2
SCALE: 1"=50' HORIZ., 1"=5' VERT.



PRIVATE WHC PROFILE – BLDG #3
SCALE: 1"=50' HORIZ., 1"=5' VERT.



PRIVATE WHC PROFILE – BLDG #4
SCALE: 1"=50' HORIZ., 1"=5' VERT.



ROOF LEADER MANIFOLD PLAN
1 inch = 20 ft.

NO.	DATE	REVISION
1	4.25.2022	ADD WING WALLS TO SIDES OF BUILDINGS. REVISE GRADES

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 — No. 22390 — PROFESSIONAL ENGINEER

4.25.22

OWNER:
MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP
1205 YORK ROAD, PENTHOUSE
LUTHERVILLE, MARYLAND 21093
410-825-8400

BUILDER:
NV HOMES
9720 PATUXENT WOODS DIVE
COLUMBIA, MARYLAND 21046
410-379-3385

RESIDENTIAL – SINGLE FAMILY ATTACHED AND MULTI-FAMILY

RAVENWOOD CONDOMINIUMS AT TURF VALLEY

LOTS 1 thru 7 AND BUILDABLE BULK PARCEL 'AA'

TAX MAP: 17, PARCEL: 706, GRID: 13
ELECTION DISTRICT NO. 2 – HOWARD COUNTY, MARYLAND
ZONED: PGCC

WATER AND SEWER PROFILES AND ROOF LEADER MANIFOLD PLAN PARCEL 'AA'

DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 27, 2020	BEI PROJECT NO. 2931
		SCALE: AS SHOWN	SHEET 14 OF 23

AS-BUILT

SDP-20-036

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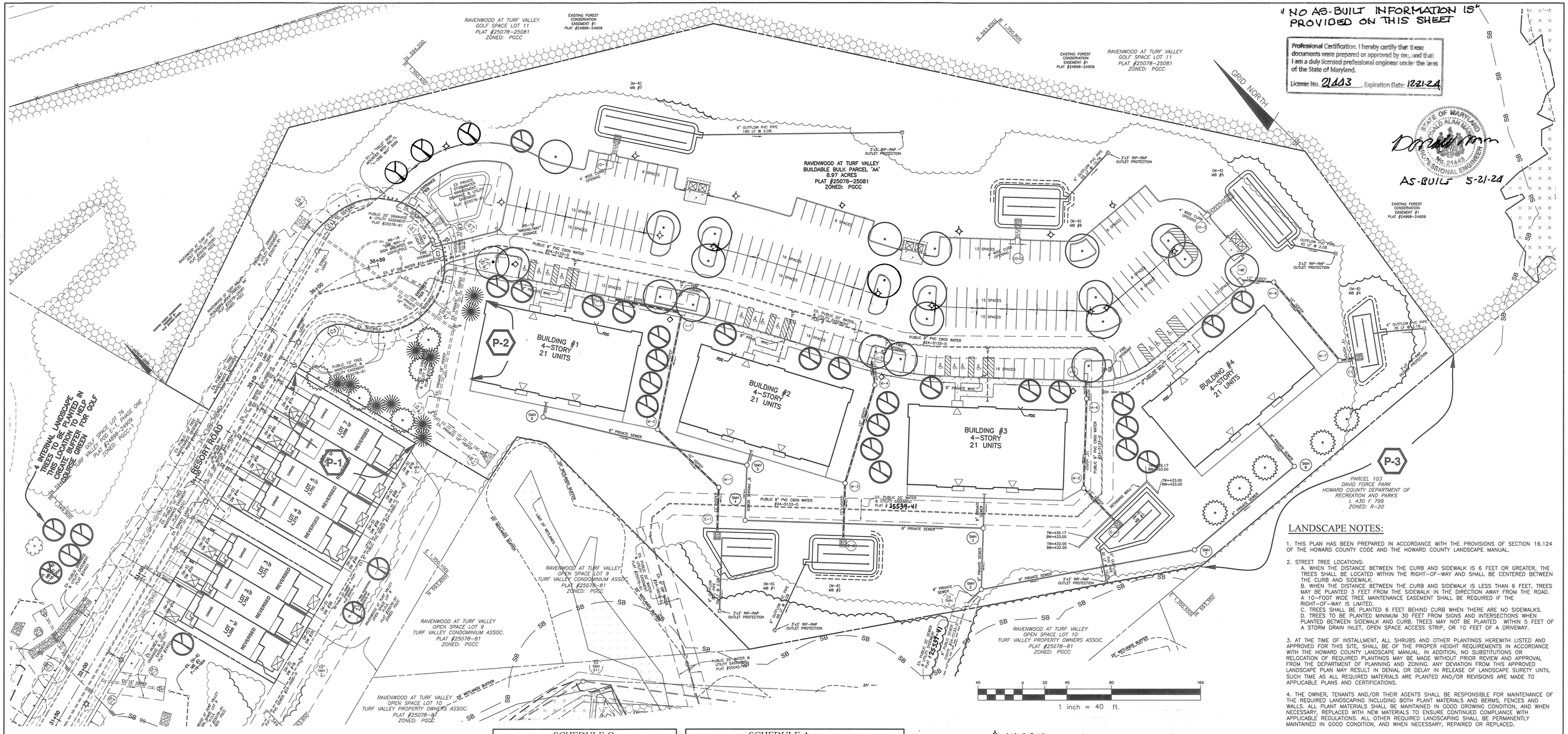
"NO AS-BUILT INFORMATION IS" PROVIDED ON THIS SHEET

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. 21443 Expiration Date: 12-21-24

STATE OF MARYLAND — DONALD ALAN WATTS — No. 21443 — PROFESSIONAL ENGINEER

AS-BUILT 5-21-24



◇ LIGHT POLE AT&T 30' POLE

◇ LIGHT POLE AVPL2 14' POLE

LANDSCAPE NOTES:

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

2. STREET TREE LOCATIONS:
   A. WHEN THE DISTANCE BETWEEN THE CURB AND SIDEWALK IS 6 FEET OR GREATER, THE TREES SHALL BE LOCATED WITHIN THE RIGHT-OF-WAY AND SHALL BE CENTERED BETWEEN THE CURB AND SIDEWALK.
   B. WHEN THE DISTANCE BETWEEN THE CURB AND SIDEWALK IS LESS THAN 6 FEET, TREES MAY BE PLANTED 3 FEET FROM THE SIDEWALK IN THE DIRECTION AWAY FROM THE ROAD. A 10-FOOT WIDE TREE MAINTENANCE EASEMENT SHALL BE REQUIRED IF THE RIGHT-OF-WAY IS LIMITED.
   C. TREES SHALL BE PLANTED 6 FEET BEHIND CURB WHEN THERE ARE NO SIDEWALKS.
   D. TREES TO BE PLANTED MINIMUM 30 FEET FROM SIGNS AND INTERSECTIONS WHEN PLANTED BETWEEN SIDEWALK AND CURB. TREES MAY NOT BE PLANTED WITHIN 5 FEET OF A STORM DRAIN INLET, OPEN SPACE ACCESS STRIP, OR 10 FEET OF A DRIVEWAY.

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

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

5. FINANCIAL SURETY IN THE AMOUNT OF $21,300.00 FOR THE REQUIRED 66 SHADE TREES AND 10 EVERGREEN TREES SHALL BE PAID AS PART OF THE DPW DEVELOPERS AGREEMENT.

BUILDER'S CERTIFICATE

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

LOUIS MANGIONE — DATE 8/27/20
MANGIONE ENTERPRISES OF TURF VALLEY, LP

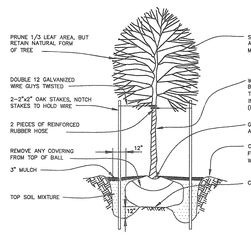
APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE AUGUST 20, 2020

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.5.20

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/28/20

DIRECTOR — DATE 10/29/20



TREE PLANTING DETAIL
NOT TO SCALE

SCHEDULE C
RESIDENTIAL DEVELOPMENT INTERNAL LANDSCAPING

	SFA	APTS
NUMBER OF DWELLING UNITS	7	84
NUMBER OF TREES REQUIRED (1:DU SFA; 1:3 DU APTS)	7	28
NUMBER OF TREES PROVIDED		
SHADE TREES	7	28
OTHER (2:1 RATIO)	0	0

RESIDENTIAL DEVELOPMENT PARKING LOT LANDSCAPING

NUMBER OF PARKING SPACES	203
REQUIREMENT	LARGE (2.5" cal) 1:10 SPACES
NUMBER OF TREES REQUIRED	21
NUMBER OF TREES PROVIDED	21

SCHEDULE A
PERIMETER LANDSCAPE EDGE

CATEGORY	SFA LOT SIDE TO ROAD ⟨P-1⟩	APT SIDE TO ROAD ⟨P-2⟩	APT ADJ PROP ⟨P-3⟩	TOTALS
LANDSCAPE TYPE	C 1:40 shade 1:20 evergreen	C 1:40 shade 1:20 evergreen	A 1:60 shade	
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	125'	72'	295'	
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO	NO	NO	
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO	NO	NO	
NUMBER OF PLANTS REQUIRED				
SHADE TREES	3	2	5	10
EVERGREEN TREES	6	4	0	10
OTHER TREES (2:1 SUBSTITUTE)	0	0	0	0
SHRUBS	0	0	0	0
NUMBER OF PLANTS PROVIDED				
SHADE TREES	3	2	5	10
EVERGREEN TREES	6	4	0	10
OTHER TREES (2:1 SUBSTITUTE)	0	0	0	0
SHRUBS (10:1 SUBSTITUTE)	0	0	0	0

(M-6) Micro Bio-Retention Landscaping Chart

PLANT NAME	COMMON NAME	TYPE	SIZE	MB #1 1838 QUANTITY	MB #2 1540 QUANTITY	MB #3 1483 QUANTITY	MB #4 1497 QUANTITY	MB #5 1717 QUANTITY	MB #6 1807 QUANTITY	MB #6 1862 QUANTITY
Cornus Amomum	Silky Dogwood	deciduous shrub	18-24" ht. #3 CAN	18	15	15	15	17	18	19
Echinacea Purpurea	Purple Coneflower	perennial	2 gal. container	184	154	148	150	172	181	186
Juncus Effusus	Common Rush	perennial	1 qt.	919	770	742	749	859	904	931

(Surface Area →)

LANDSCAPE PLANTING LIST

SYMBOL	QUANTITY	NAME	REMARKS	DESCRIPTION
	35	TILIA CORDATA 'GREENSPIRE' (Greenspire Littleleaf Linden)	2.5" – 3"cal.	SHADE TREES FOR RESIDENTIAL INTERNAL LANDSCAPING TO BE PROVIDED BY THE BUILDER.
	21	ACER RUBRUM 'RED SUBSET' (Red Sunset Red Maple)	2.5" – 3"cal.	PARKING LOT SHADE TREES TO BE PROVIDED BY THE BUILDER.
	10	THUJA PLICATA GIANT ARBORVITAE 'GREEN GIANT'	5' – 6' ht.	EVERGREEN TREES ALONG PERIMETER EDGES TO BE PROVIDED BY THE BUILDER
	10	CLADRASTIS KENTUKEA LUTEA (Yellowwood)	2.5" – 3"cal.	SHADE TREES ALONG PERIMETER EDGES TO BE PROVIDED BY THE BUILDER
				EXISTING STREET TREES PER F-16-004 AND F-18-027

NO.	DATE	REVISION
1	2.5.2021	REVISE SITE LIGHTING POLE LOCATIONS

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. 19961, Expiration Date: 6-30-2021

STATE OF MARYLAND — CHRISTOPHER ALAN MALAGA — No. 19961 — PROFESSIONAL ENGINEER

8.27.20

OWNER:
MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP
1205 YORK ROAD, PENTHOUSE
LUTHERVILLE, MARYLAND 21093
410-825-8400

BUILDER:
NV HOMES
9720 PATUXENT WOODS DIVE
COLUMBIA, MARYLAND 21046
410-379-3385

RESIDENTIAL – SINGLE FAMILY ATTACHED AND MULTI-FAMILY

RAVENWOOD CONDOMINIUMS AT TURF VALLEY

LOTS 1 thru 7 AND BUILDABLE BULK PARCEL 'AA'

TAX MAP: 17, PARCEL: 706, GRID: 13
ELECTION DISTRICT NO. 2 – HOWARD COUNTY, MARYLAND
ZONED: PGCC

LANDSCAPE PLAN

DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 27, 2020	BEI PROJECT NO. 2931
		SCALE: AS SHOWN	SHEET 15 OF 23

AS-BUILT

SDP-20-036

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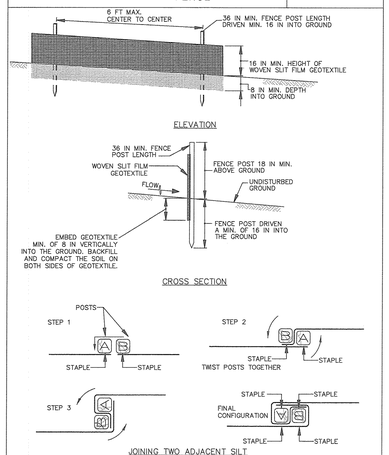
DETAIL E-1 SILT FENCE

STANDARD SYMBOL — SF



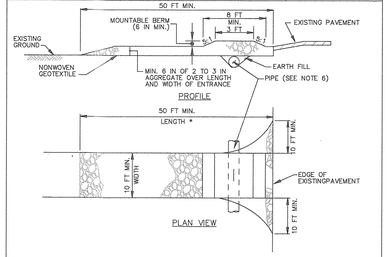
1 OF 2

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 B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL — SCE



CONSTRUCTION SPECIFICATIONS

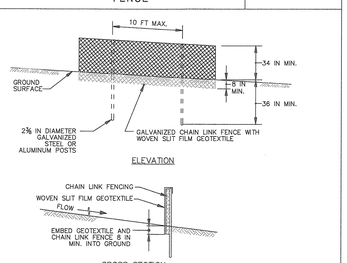
1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*)50 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE TO FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAIN 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. WHERE 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-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.

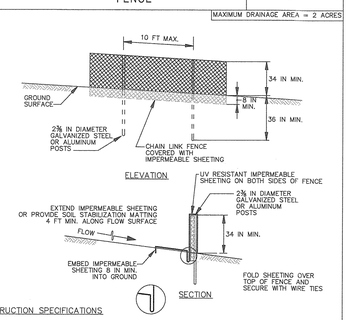
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 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

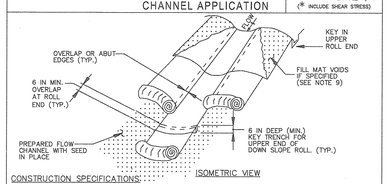
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

LEGEND

- PROJECT BOUNDARY LINE
- LIMIT OF DISTURBANCE
- PSSMC — PERMANENT SOIL STABILIZATION MATTING
- SF — SILT FENCE
- SSF — SSF — SUPER SILT FENCE
- SOILS DELINEATION LINE
- GgC — SOILS TYPE DESIGNATION
- SCE — STABILIZED CONSTRUCTION ENTRANCE
- CURB INLET PROTECTION
- TSOS — TEMPORARY STONE OUTLET STRUCTURE
- DRAINAGE AREA

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

STANDARD SYMBOL — PSSMC – *0.42lb/ft² (*ℓb 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 2×2 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 "I" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 ½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "I" 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.

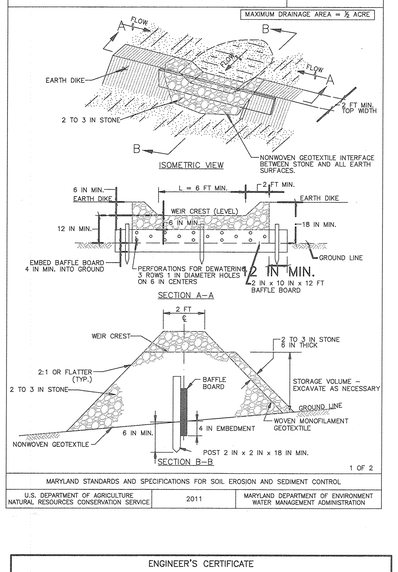
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-7 TEMPORARY STONE OUTLET STRUCTURE

STANDARD SYMBOL — TSOS

MAXIMUM DRAINAGE AREA = ½ ACRE



1 OF 2

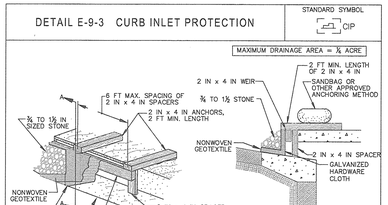
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-3 CURB INLET PROTECTION

STANDARD SYMBOL — CIP

MAXIMUM DRAINAGE AREA = ¾ ACRE



CONSTRUCTION SPECIFICATIONS

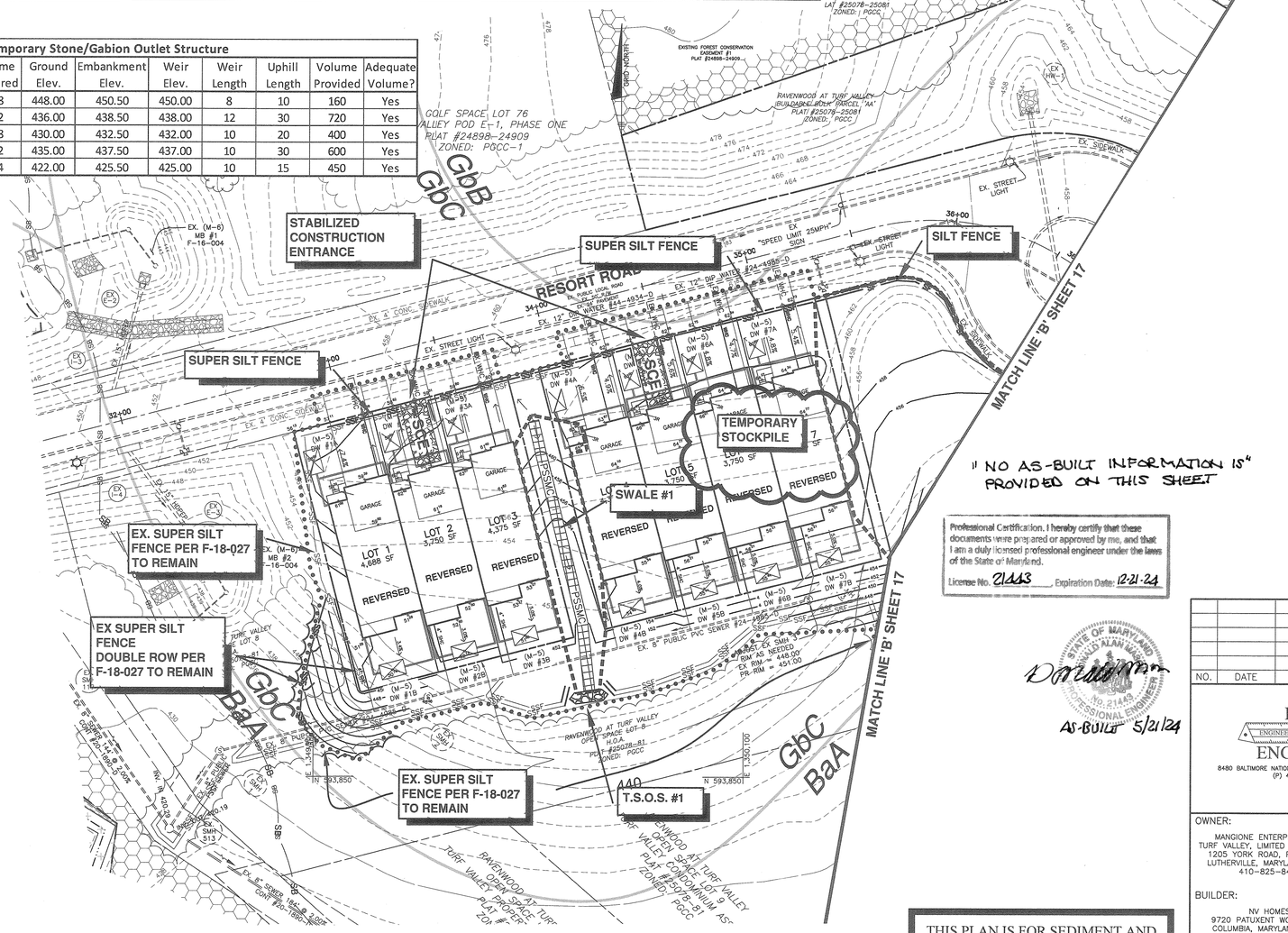
1. USE NOMINAL 2 INCH x 4 INCH LUMBER
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H–1 MATERIALS.
3. NAIL THE 2x4 WEIR TO 9 INCH LONG VERTICAL SPACERS (MAXIMUM 6 FEET APART).
4. ATTACH A CONTINUOUS PIECE OF ¾ INCH GALVANIZED HARDWARE CLOTH, WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4 WEIR, EXTENDING 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

Temporary Stone/Gabion Outlet Structure

Designation	D.A. Acres	Practice	Volume Required	Ground Elev.	Embankment Elev.	Weir Elev.	Weir Length	Uphill Length	Volume Provided	Adequate Volume?
#1	0.06	TSOS	108	448.00	450.50	450.00	8	10	160	Yes
#2	0.39	TSOS	702	436.00	438.50	438.00	12	30	720	Yes
#3	0.21	TSOS	378	430.00	432.50	432.00	10	20	400	Yes
#4	0.29	TSOS	522	435.00	437.50	437.00	10	30	600	Yes
#5	0.23	TSOS	414	422.00	425.50	425.00	10	15	450	Yes



"NO AS-BUILT INFORMATION IS" PROVIDED ON THIS SHEET

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. Malagari — ENGINEER — 8/27/20 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 — 8/27/20 DATE

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

HOWARD SOIL CONSERVATION DISTRICT — 9/15/20 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — 10.5.20 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT — 10/29/20 DATE

DIRECTOR — 10/29/20 DATE

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE AUGUST 20, 2020

30 0 15 30 60 120
1 inch = 30 ft.

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. 21443, Expiration Date: 12-21-24

STATE OF MARYLAND — CHRISTOPHER ALAN MALAGARI — NO. 21443 — PROFESSIONAL ENGINEER

AS-BUILT 5/21/24

NO.	DATE	REVISION

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

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 22393, Expiration Date: 6-30-2021

STATE OF MARYLAND — CHRISTOPHER ALAN MALAGARI — NO. 22393 — PROFESSIONAL ENGINEER

C. Malagari 8.27.20

OWNER:
MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP
1205 YORK ROAD, PENTHOUSE
LUTHERVILLE, MARYLAND 21093
410–825–8400

BUILDER:
NV HOMES
9720 PATUXENT WOODS DIVE
COLUMBIA, MARYLAND 21046
410–379–3385

RESIDENTIAL – SINGLE FAMILY ATTACHED AND MULTI–FAMILY

RAVENWOOD CONDOMINIUMS AT TURF VALLEY

LOTS 1 thru 7 AND BUILDABLE BULK PARCEL 'AA'

TAX MAP: 17, PARCEL: 706, GRID: 13
ELECTION DISTRICT NO. 2 – HOWARD COUNTY, MARYLAND
ZONED: PGCC

SEDIMENT AND EROSION CONTROL PLAN AND DETAILS

DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 27, 2020	BEI PROJECT NO. 2931
		SCALE: AS SHOWN	SHEET 16 OF 23

THIS PLAN IS FOR SEDIMENT AND EROSION CONTROL ONLY.

AS-BUILT

SDP-20-036

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EX. DIVERSION FENCE PER F-18-027 TO REMAIN

DA = 0.70ac

EX. SUPER SILT FENCE PER F-18-027 TO REMAIN

EX SUPER SILT FENCE DOUBLE ROW PER F-18-027 TO REMAIN

EX SUPER SILT FENCE DOUBLE ROW PER F-18-027 TO BE ADJUSTED

SILT FENCE

STABILIZED CONSTRUCTION ENTRANCE

C.I.P.

SWALE #2

SWALE #3

SWALE #4

SWALE #5

TEMPORARY STOCKPILE

T.S.O.S. #2

T.S.O.S. #3

T.S.O.S. #4

T.S.O.S. #5

SUPER SILT FENCE

EX SUPER SILT FENCE DOUBLE ROW PER F-18-027 TO BE ADJUSTED

EX SUPER SILT FENCE DOUBLE ROW PER F-18-027 TO REMAIN

THIS PLAN IS FOR SEDIMENT AND EROSION CONTROL ONLY.

MATCH LINE 'B' SHEET 16

MATCH LINE 'B' SHEET 16

RAVENWOOD AT TURF VALLEY GOLF SPACE LOT 11 PLAT #25078-25081 ZONED: PGCC

EXISTING FOREST CONSERVATION EASEMENT #1 PLAT #24898-24909

RAVENWOOD AT TURF VALLEY BUILDABLE BULK PARCEL 'AA' 8.97 ACRES PLAT #25078-25081 ZONED: PGCC

BUILDING #1 4-STORY 21 UNITS

BUILDING #2 4-STORY 21 UNITS

BUILDING #3 4-STORY 21 UNITS

RAVENWOOD AT TURF VALLEY OPEN SPACE LOT 9 TURF VALLEY CONDOMINIUM ASSOC. PLAT #25078-81 ZONED: PGCC

PARCEL 103 DAVID FORCE PARK HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS

POD E-1 PHASE 2 NON-BUILDABLE BULK PARCEL PLAT #25042-46 ZONED: PGCC

GRID NORTH

1 inch = 30 ft.

AS-BUILT 5-21-24

"NO AS-BUILT INFORMATION IS PROVIDED ON THIS SHEET"

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. 21443, Expiration Date: 12-21-24

ENGINEER'S CERTIFICATE

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ENGINEER — DATE 8/27/20

DEVELOPER'S CERTIFICATE

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DEVELOPER — DATE 8/27/20

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 8/27/20

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.5.20

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/28/20

DIRECTOR — DATE 10/29/20

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE AUGUST 20, 2020

NO.	DATE	REVISION
2	8.18.2023	REVISE GRADES BEHIND BLDGS 3 AND 4
1	2.5.2021	REVISE SITE LIGHT POLE LOCATIONS

BENCHMARK
ENGINEERS ▲LAND SURVEYORS ▲PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315 ▲ ELLICOTT CITY, MARYLAND 21043
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Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 21443, Expiration Date: 6-30-2021

8.27.20

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RESIDENTIAL - SINGLE FAMILY ATTACHED AND MULTI-FAMILY

RAVENWOOD CONDOMINIUMS AT TURF VALLEY

LOTS 1 thru 7 AND BUILDABLE BULK PARCEL 'AA'

TAX MAP: 17, PARCEL: 706, GRID: 13
ELECTION DISTRICT NO. 2 - HOWARD COUNTY, MARYLAND
ZONED: PGCC

SEDIMENT AND EROSION CONTROL PLAN

DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 27, 2020	BEI PROJECT NO. 2931
		SCALE: AS SHOWN	SHEET 17 OF 23

AS-BUILT

SDP-20-036

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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 with limestone 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, nut sedge, 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 5 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.
2. Application
a. Apply mulch to all seeded areas immediately after seeding.
b. When straw mulch is used, spread it over all seeded areas at the rate of 2 tons per acre to a uniform loose depth of 1 to 2 inches. Apply mulch to achieve a uniform distribution and depth so that the soil surface is not exposed. When using a mulch anchoring tool, increase the application rate to 2.5 tons per acre.
c. Wood cellulose fiber used as mulch must be applied at a net dry weight of 1500 pounds per acre. Mix the wood cellulose fiber with water to attain a mixture with a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
3. Anchoring
a. Perform mulch anchoring immediately following application of mulch to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon the size of the area and erosion hazard:
i. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of 2 inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should follow the contour.
ii. Wood cellulose fiber may be used for anchoring straw. Apply the fiber binder at a net dry weight of 750 pounds per acre. Mix the wood cellulose fiber with water at a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
iii. Synthetic binders such as Acrylic DLR (Agro-Tack), DCA-70, Petroset, Terra Tax II, Terra Tack AR or other approved equal may be used. Follow application rates as specified by the manufacturer. Application of liquid binders needs to be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. Use of asphalt binders is strictly prohibited.
iv. Lightweight plastic netting may be stapled over the mulch according to manufacturer recommendations. Netting is usually available in rolls 4 to 15 feet wide and 300 to 3,000 feet long.

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 (½ to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is not especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

B. Sod: to provide quick cover on disturbed areas (2:1 grade or flatter).
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-4-4 STANDARDS AND SPECIFICATIONS
FOR
TEMPORARY STABLIZATION

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-4-8 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 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), 410-3133-1855 after the future LOD and protected areas are marked clearly in the field. A minimum of 48 hours notice to CID must be given at the following stages:

a. Prior to the start of earth disturbance,
b. 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:	9.54	Acres
Area Disturbed:	8.24	Acres
Area to be roofed or paved:	3.23	Acres
Area to be vegetatively stabilized:	5.01	Acres
Total cut:	8,111 *	Cu Yds
Total fill:	8,111 *	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 corrective action performed
- Other inspection items as required by the General Permit for Stormwater Associated with Construction Activities (NPDES, MDE).

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

"NO AS-BUILT INFORMATION IS" PROVIDED ON THIS SHEET

Permanent Seeding Summary

No.	Species	Application Rate (lb/ac.)	Seeding Dates	Seeding Depths	Fertilizer Rate (10-20-20) N	P2O5	K2O	Lime Rate
	Hardiness Zone (from Figure B.3): 6b; Seed Misture (from Table B.3): Tall Fescue/Kentucky Bluegrass							
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/ lb/ac	Seeding Rate 1/ lb/1000 ft2	Seeding Depth 2/ (inches)	Recommended Seeding Dates by Plant Hardiness Zone 3/ 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 (Serataria 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 permanent seeding mix. Cereal rye generally should not be used as a nurse crop, unless planting will occur very late fall beyond the seeding dates for other temporary seedings. Cereal rye has allelopathic properties that inhibit the germination and growth of other plants. If it must be used as a nurse crop, seed at 1/3 of the rate listed above.

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

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.

SEQUENCE OF CONSTRUCTION

NOTIFY SEDIMENT CONTROL DIVISION 48 HOURS PRIOR TO START OF WORK

LOTS 1-7: TOWNHOUSES.

1. Obtain grading/building permit. Notify D.I.L.P. at 410-313-1880 at least 24 hours before starting any work. (1 day)

2. Hold on-site pre-construction meeting. (day 2)

3. Install individual lot perimeter controls (i.e. stabilized construction entrance). (day 3)

4. Excavate for foundation, rough grade lot, and stabilize in accordance with the temporary seedbed notes. (day 4-10)

5. Construct house, install water and sewer house connections from easement/right-of-way up to house, backfill, and construct driveway. Install on-lot dry wells and connect roof leaders for lots that require them. (day 11-90)

6. Upon approval from the Howard County Sediment Control Inspector, remove all sediment control devices and stabilize any remaining disturbed areas in accordance with the permanent seedbed notes. (day 91-100)

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.

SEQUENCE OF CONSTRUCTION

NOTIFY SEDIMENT CONTROL DIVISION 48 HOURS PRIOR TO START OF WORK

PARCEL 'AA' - APARTMENT

1. Obtain grading/building permit. Notify D.I.L.P. at 410-313-1880 at least 24 hours before starting any work. (1 day)

2. Hold on-site pre-construction meeting. (day 2)

3. Install/adjust perimeter controls. (day 3)

4. Bring parking lot up to subgrade, install public water, storm drain, and curb and gutter. Install micro bio-retention facilities. Cover filter media with filter fabric. Do not install mulch or plantings at this time. Pave. Utilize curb inlet protection for inlets within parking lot. (day 4-30)

5. Excavate for apartment building foundation, rough grade, and stabilize in accordance with the temporary seedbed notes. (day 31-45)

6. Construct building, water and sewer house connections, roof leader manifold system. (day 46-120)

7. Once building construction is complete, and newly graded areas have been stabilized, remove filter fabric over micro bio-retentions, install mulch, and plantings.

8. Upon approval from the Howard County Sediment Control Inspector, remove all sediment control devices and stabilize any remaining disturbed areas in accordance with the permanent seedbed notes. (day 91-100)

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.

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 8/27/20
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."

8/27/20
DEVELOPER DATE

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

9/15/20
HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

10.5.20
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

10/28/20
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

10/29/20
DIRECTOR DATE

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE AUGUST 20, 2020

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. 21443 Expiration Date: 12-21-24

STATE OF MARYLAND · DONALD ALAN MASON · No. 21443 · PROFESSIONAL ENGINEER
AS-BUILT 5-21-24

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: 6-30-2021
STATE OF MARYLAND · CHRISTOPHER ALAN MALAGARI · No. 22390 · PROFESSIONAL ENGINEER
8.27.20

OWNER:
MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP
1205 YORK ROAD, PENTHOUSE
LUTHERVILLE, MARYLAND 21093
410-825-8400

BUILDER:
NV HOMES
9720 PATUXENT WOODS DIVE
COLUMBIA, MARYLAND 21046
410-379-3385

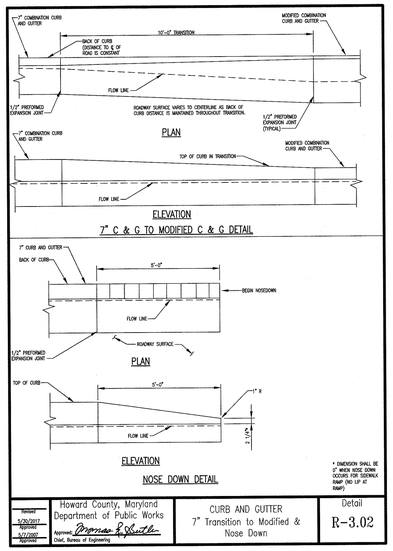
RESIDENTIAL - SINGLE FAMILY ATTACHED AND MULTI-FAMILY
RAVENWOOD CONDOMINIUMS AT TURF VALLEY
LOTS 1 thru 7 AND BUILDABLE BULK PARCEL 'AA'

TAX MAP: 17, PARCEL: 706, GRID: 13
ELECTION DISTRICT NO. 2 - HOWARD COUNTY, MARYLAND
ZONED: PGCC

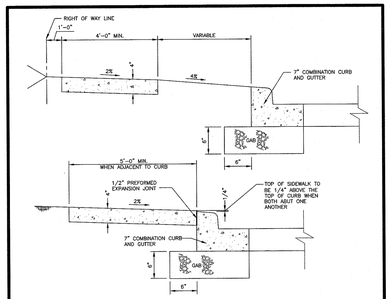
SEDIMENT AND EROSION CONTROL NOTES

DATE: AUGUST 27, 2020 | BEI PROJECT NO. 2931
DESIGN: DBT | DRAFT: DBT | SCALE: AS SHOWN | SHEET 18 OF 23

AS-BUILT
SDP-20-036



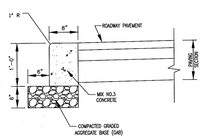
Revised	Howard County, Maryland Department of Public Works	CURB AND GUTTER 7" Transition to Modified & Nose Down	Detail R-3.02
5/30/2017	Approved: Thomas E. Smith		
Approved	Chief, Bureau of Engineering		
5/7/2002			
Approved			



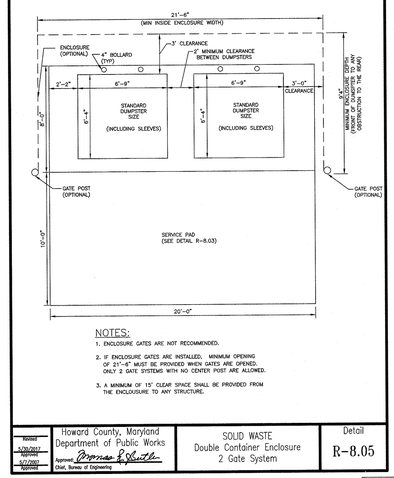
NOTES:

1. SIDEWALK TO BE SCRIBED IN 5'-0" MAXIMUM SQUARES.
2. EXPANSION JOINTS ACROSS THE SIDEWALK NOT TO BE MORE THAN 15' APART, OR 16' FOR 4' WIDE SIDEWALK.
3. 1/2" PREFORMED EXPANSION MATERIAL IN EXPANSION JOINTS TO BE KEPT 1/4" BELOW SURFACE OF SIDEWALK.
4. CONCRETE TO BE MIX #3.
5. WHEN SIDEWALK ABUTS CURB, SIDEWALK SHALL BE 1/4" ABOVE CURB WITH 1/2" PREFORMED EXPANSION JOINT BETWEEN SIDEWALK AND CURB.
6. ON LONGITUDINAL SIDEWALK GRADES OF 5% OR GREATER, A CONCRETE HEADER, 6" THICK AND 6" DEEP BELOW THE NORMAL 4" SIDEWALK THICKNESS SHALL BE CONSTRUCTED FOR THE FULL WIDTH OF THE SIDEWALK AT INTERVALS OF 48 FEET. THE HEADERS SHALL BE PLACED AT THE EXPANSION JOINT LOCATIONS AND SHALL BE MONOLITHIC WITH THE SIDEWALK.
7. SIDEWALK WIDTH ADJACENT TO CURB SHALL BE 5'-0" MINIMUM EXCEPT SIDEWALK ADJACENT TO CURB IN CUL-DE-SAC BULBS MAY BE 4'-0" WIDE.
8. SIDEWALK LOCATED 3' OR MORE FROM CURB MAY BE 4'-0" IN WIDTH WITH A 5'x5' PAVED SECTION PLACED 200' APART.
9. 4'-0" SIDEWALK REQUIRES A PASSING AREA (SEE DETAIL R-4.01).

Revised 5/30/2017	Howard County, Maryland Department of Public Works	CONCRETE SIDEWALK	Detail R-3.05
Approved 5/7/2002	Approved: Thomas E. Smith		
Approved	Chief, Bureau of Engineering		



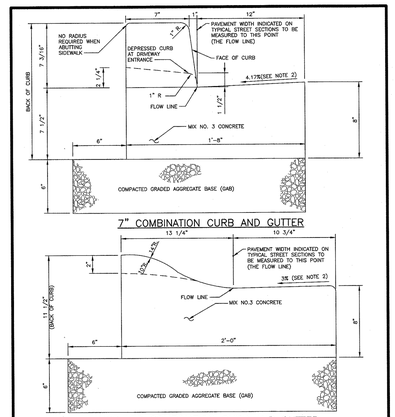
Revised 5/30/2017	Howard County, Maryland Department of Public Works	Curb Flush	Detail R-3.07
Approved 5/7/2002	Approved: Thomas E. Smith		
Approved	Chief, Bureau of Engineering		



NOTES:

1. ENCLOSURE GATES ARE NOT RECOMMENDED.
2. IF ENCLOSURE GATES ARE INSTALLED, MINIMUM OPENING OF 21'-6" MUST BE PROVIDED WHEN GATES ARE OPENED. ONLY 2 GATE SYSTEMS WITH NO CENTER POST ARE ALLOWED.
3. A MINIMUM OF 15' CLEAR SPACE SHALL BE PROVIDED FROM THE ENCLOSURE TO ANY STRUCTURE.

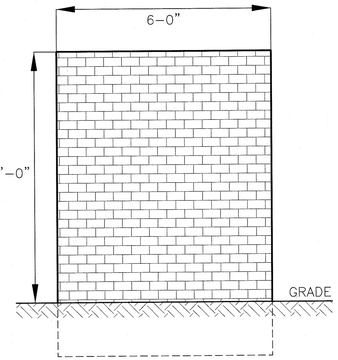
Revised 5/30/2017	Howard County, Maryland Department of Public Works	SOLID WASTE Double Container Enclosure 2 Gate System	Detail R-8.05
Approved 5/7/2002	Approved: Thomas E. Smith		
Approved	Chief, Bureau of Engineering		



NOTE:

1. A REVERSE GUTTER PAN SHALL HAVE A GUTTER SLOPE OF 4.17% AWAY FROM THE FLOW LINE, AND SHALL NOT BE USED WHERE THIS DRAINAGE CREATES A HAZARDOUS CONDITION.
2. GUTTER PAN AT THE MEDIAN EDGE OF INTERMEDIATE ARTERIALS OR THE HIGH SIDE OF SUPERELEVATED SECTIONS SHALL BE SLOPED AT THE SAME RATE AND IN THE SAME DIRECTION AS THE PAVEMENT. MATCH PAVEMENT CROSS SLOPE WHEN CURB IS LOCATED ON THE LOW SIDE OF SUPERELEVATED SECTION AND THE RATE OF SUPERELEVATION IS GREATER THAN 3% FOR MODIFIED CURB & GUTTER.
3. A MINIMUM OF TWO (2) FEET OF COMPACTED STABILIZED EARTH, OR EQUIVALENT, SHALL SUPPORT THE ENTIRE BACK OF CURB.
4. POSITIVE DRAINAGE SHALL BE PROVIDED BOTH BEHIND THE CURB AND ALONG THE GUTTER AND FLOW LINE.

Revised 5/30/2017	Howard County, Maryland Department of Public Works	CURB AND GUTTER 7" & Modified	Detail R-3.01
Approved 5/7/2002	Approved: Thomas E. Smith		
Approved	Chief, Bureau of Engineering		



6'-0" X 6'-0" X 7'-0"
PILLAR W/ BRICK FACADE

ENTRANCE PIER
SCALE: 1" = 2'

SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR) / PAVEMENT MATERIAL (INCHES)	3 TO <5	5 TO <7	≥ 7	3 TO <5	5 TO <7	≥ 7
			MIN. SUPERPAVE ASPHALT MIX WITH GAB			SUPERPAVE ASPHALT MIX WITH CONSTANT GAB		
P-1	PARKING DRIVE AISLES: RESIDENTIAL AND NON-RESIDENTIAL PARKING DRIVE AISLES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 2 HEAVY TRUCKS PER DAY	SUPERPAVE ASPHALT MIX FINAL SURFACE 9.5 MM, PG 64-22S, LEVEL 1 (ESAL)	1.5	1.5	1.5	1.5	1.5	1.5
		SUPERPAVE ASPHALT MIX INTERMEDIATE SURFACE	NA	NA	NA	NA	NA	NA
		SUPERPAVE ASPHALT MIX BASE 19.0 MM, PG 64-22S, LEVEL 1 (ESAL)	2.0	2.0	2.0	3.5	3.0	2.5
		GRADED AGGREGATE BASE (GAB)	8.5	7.0	5.5	4.0	4.0	4.0
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-SACS: RESIDENTIAL	SUPERPAVE ASPHALT MIX FINAL SURFACE 9.5 MM, PG 64-22S, LEVEL 1 (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 (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 (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-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-SACS: NON-RESIDENTIAL MINOR COLLECTORS: RESIDENTIAL MAJOR COLLECTORS: NON-RESIDENTIAL MAJOR COLLECTORS:	SUPERPAVE ASPHALT MIX FINAL SURFACE 9.5 MM, PG 64-22S, LEVEL 1 (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 (ESAL)	1.5	1.5	1.0	1.0	1.0	1.0
		SUPERPAVE ASPHALT MIX BASE 19.0 MM, PG 64-22S, LEVEL 1 (ESAL)	3.0	3.0	3.0	4.5	3.0	3.0
		GRADED AGGREGATE BASE (GAB)	10.0	8.0	6.0	6.0	6.0	6.0
P-4	MAJOR COLLECTORS: NON-RESIDENTIAL MAJOR COLLECTORS:	SUPERPAVE ASPHALT MIX FINAL SURFACE 12.5 MM, PG 64-22S, LEVEL 2, SLOW (ESAL)	2.0	2.0	2.0	2.0	2.0	2.0
		SUPERPAVE ASPHALT MIX INTERMEDIATE SURFACE 19.0 MM, PG 64-22S, LEVEL 1 (ESAL)	2.0	2.0	2.0	2.0	2.0	2.0
		SUPERPAVE ASPHALT MIX BASE 19.0 MM, PG 64-22S, LEVEL 1 (ESAL)	4.0	4.0	3.0	6.0	5.0	3.0
		GRADED AGGREGATE BASE (GAB)	12.0	10.0	8.0	6.0	6.0	6.0

NOTES

1. HEAVY TRUCKS ARE DEFINED AS THOSE WITH SIX (6) WHEELS OR MORE INCLUDING GARBAGE TRUCKS.
2. SUPERPAVE ASPHALT MIX LAYERS SHALL BE PLACED IN APPROPRIATE COMPACTED LIFT THICKNESS: 19.0 MM BASE (2.0" MIN. TO 4.0" MAX.), 12.5 MM SURFACE (1.3" MIN. TO 3.0" MAX.), AND 9.5 MM SURFACE (1.0" MIN. TO 2.0" MAX.)
3. GRADED AGGREGATE BASE (GAB) TO BE PLACED AND COMPACTED IN 6" MAX. COMPACTED THICKNESS LAYERS.
4. THE INTERMEDIATE SURFACE COURSE LAYER MUST BE PLACED WITHIN 3 WEEKS OF PLACEMENT OF BASE COURSE, AND IS REQUIRED PRIOR TO PLACEMENT OF THE FINAL SURFACE COURSE LAYER.
5. IN LIEU OF PLACING THE INTERMEDIATE SURFACE COURSE LAYER FOR COMMERCIAL/INDUSTRIAL ENTRANCE APRONS WITHIN THE COUNTY RIGHT-OF-WAY WHERE AUXILIARY LANES ARE NOT REQUIRED, THE THICKNESS OF THE INTERMEDIATE PAVEMENT LAYER CAN BE ADDED TO THE REQUIRED THICKNESS OF THE BASE ASPHALT LAYER.
6. THE CONSTRUCTION DRAWINGS SHALL SHOW THE PAVING SECTION, ROAD CLASSIFICATION AND CBR VALUE FOR EACH ROADWAY.

SUPERPAVE ASPHALT MIX FINAL SURFACE
SUPERPAVE ASPHALT MIX INTERMEDIATE SURFACE
SUPERPAVE ASPHALT MIX BASE
GRADED AGGREGATE BASE (GAB)

Revised 5/30/2017	Howard County, Maryland Department of Public Works	PAVING SECTIONS P-1 to P-4	Detail R-2.01
Approved 5/7/2002	Approved: Thomas E. Smith		
Approved	Chief, Bureau of Engineering		

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE AUGUST 20, 2020

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.17.21

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

DIRECTOR — DATE 3/3/21

Valiant™ LED

Series AVPL2 (with XL option for Utility)

PRODUCT OVERVIEW

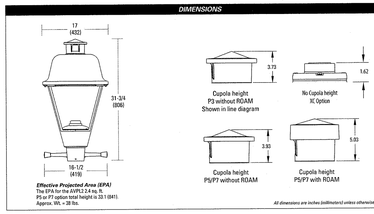
Features:

- Colonial LED lantern, replaces HID models up to 150W HPS for street and area lighting applications
- Eleven (11) LED performance packages deliver just the right amount of light for any given application up to 11,800 lumens
- Available in color temperature choices of 2700K, 3000K, 4000K, and 5000K
- Four (4) distinct light distribution options provide design flexibility, available in Type II, Type III, Type IV, and Type V
- Die-cast aluminum housing with choice of acrylic or polycarbonate panel reflectors; engineered for sturdy life-long performance
- Die-cast aluminum hood features a trigger latch (TL) option and captive thumb screws for fast, easy electrical and optical chamber access
- Standard black finish is textured / matte - all other finishes are smooth / gloss.
- Housing is tenon pole-mounted and designed for use with a 3" tall by 2-3/8" to 3" diameter tenon, and secured by three set screws.
- Rated L70, LED life greater than 100,000 hours at 25°C
- Complies with all applicable ANSI C136 standards
- Suitable for up to 40° C ambient
- Surge protection device (standard) exceeds ANSI/IEEE C62.41-2002 Category C High (10kV/10kA) and ANSI C136.2-2015 Enhanced (10kV/5kA). 20kV Option exceeds ANSI/IEEE C62.41-2002 Category C High (10kV/10kA) and ANSI C136.2-2015 Extreme (20kV/10kA)
- Equipped with LED electronic 0-10V dimmable driver

Applications:

Streetscapes
Walkways
Pathways
Parks

DIMENSIONS



Note: Specifications subject to change without notice.
Valiant LED Series - AVPL2-XL

AEL American Electric Lighting

TO PROCUREMENT COORDINATOR, PURCHASING & MATERIALS MANAGEMENT DEPARTMENT

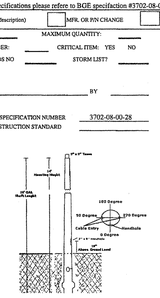
LOC:	MATERIAL NUMBER	UM	ABBREVIATED DESCRIPTION	ESTIMATED MONTHLY USAGE
02	21-790	EA	Pole, Fiberglass 14' Mounting Height 18' OAL (BLACK)	
WGT	35-40 lbs.		COMPLETE DESCRIPTION: Pole, fiberglass (BLACK) 18' overall length, direct embedded tapered, smooth finish fiberglass reinforced plastic with 14' mounting height and 4' embedment. Handhole must be 3" x 9" installed 5' 6" centered from butt of pole. Must have two cable entry holes 2 1/2" x 6" installed 2' centered from butt of pole and be at 90 degrees and 270 degrees from handhole cutout. Tennon must be 3" dia. and 3" mininum exposed length. Pole must be protected by a light duty plastic sleeve, then wrapped in corrugated or foam or foam,then by a 2nd heavy duty UV protected sleeve.	
SIZE	18' X 6'X2-7/8"			
PRICE			For more detailed specifications please refer to BGE specification #3702-08-00-28	

NEW ADDITION [ ] X DESCRIPTION CHANGE (attach old description) [ ] MFR. OR P/N CHANGE [ ] OBSOLETE

QUANTITY TO ORDER: MINIMUM QUANTITY: MAXIMUM QUANTITY:
QUANTITY ORDERED NON-STOCK: REQUISITION NUMBER: CRITICAL ITEM: YES NO
HAZARDOUS MATERIAL: No IF YES MSDS NO STORM LIST?

CHECK ONE IF A NEW ADDITION TO STOCK:
[ ] MATERIAL REPLACES EXISTING STOCK ITEM BY
[ ] RECORD CHECKED FOR DUPLICATES, ITEM HAS NO EFFECT ON EXISTING STOCK
BGE SPECIFICATION NUMBER 3702-08-00-28
CONSTRUCTION STANDARD

CHECK ONE IF A DESCRIPTION CHANGE:
[X] CHANGE URGENT APPLIES TO OPEN ORDERS
[ ] CHANGE NOT URGENT APPLY TO NEXT ORDER



SUBSTITUTE: None
APPROVED USE: Street Light & Private Area Lighting

RECEIPT INSPECTION BGE Eng. Standards & Refurbishment
D.M.I.S. NOTIFIED APPROVED BY: PROCUREMENT COORDINATOR
INCLUDE in CU's?
PREPARED BY: William Kruse E39267 (VENDOR LEAD TIME = DAYS)
APPROVED BY: SUPERVISION APPROVED BY: SUPERVISION

MaterialsrevJan03.xls

AVPL2 VALIANT LED WITH R3
DISTRIBUTION, CLEAR ACRYLIC
(PRISMATIC) OPTIC

QUANTITY: 5
LOCATED IN FRONT OF BUILDINGS
SEE PLAN FOR LOCATIONS

11 NO AS-BUILT INFORMATION IS" PROVIDED ON THIS SHEET

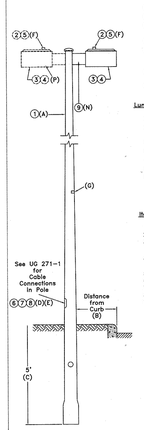
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443, Expiration Date: 12-21-24

STATE OF MARYLAND · DONALD ALAN MASON · No. 21443 · PROFESSIONAL ENGINEER

AS-BUILT 5-21-24

UG 275-2
PAGE 4

30 FT. BRONZED EMBEDDED FIBERGLASS STREET AND PRIVATE AREA LIGHTING POLE WITH RECTILINEAR LUMINAIRE — C



Installation Instructions

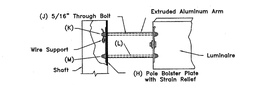
(A) Poles stored at Central Warehouse.
(B) See UG 275-1 for instructions for locations of street light poles.
(C) Pole to be set to a depth of 5'. Pole to be plumbed while backfilling with best of excavated material and tamped well.
(D) See UG 271-1 Page 1 for details of the termination in base of pole.
(E) The lamp will not be fused when connected to a street light circuit. Use a fuseholder (Mat'l No. 11-898) when the lamp is connected to secondary mains. See UG 272-1 for fuse connector details.
(F) Use a photocontrol when the lamp is fed from secondary mains. Use a shorting cap when the lamp is fed from a street light circuit.
(G) Install pole tag (non-stock) 12' above ground level.

Luminaire Installation Instructions

(H) Insert bolster plate in top of pole.
(J) Hold bolster plate in position and align upper thru-bolt in fixture arm with upper hole in pole. Insert bolt through pole and bolster plate.
(K) Install nut on thru-bolt and tighten.
(L) Insert lower thru-bolt in lower hole in pole and screw into bolster plate.
(M) Install nut on the lower thru-bolt and tighten.
(N) Connect wire inside terminal on luminaire.
(P) Pole will accommodate 2 fixures 180° apart.

Bill of Material

Item	Description	Unit	Mat'l No.	Quantities for Assembly Types J	K
1	Pole, 30' bronzed embedded fiberglass	Each	21-151	1	1
2	Shorting Cap	Each	11-046	1	2
3	Luminaire, 400 Watt sodium vapor rectilinear	Each	21-073	1	2
	400 Watt, metal halide rectilinear	Each	21-340	1	2
4	Lamp, 400 Watt sodium vapor	Each	11-130	1	2
	400 Watt metal halide	Each	66-488	1	2
5	Photocontrol	Each	17-307	1	2
6	Wire, #12 twin	Feet	11-585	30	70
7	Fuseholder	Each	11-898	1	1
8	Fuse cartridge	Each	11-897	1	1
9	Wire nut	Each	32-001	2	4



Arm Assembly

BGE UNDERGROUND CONSTRUCTION STANDARDS

LATEST REVISION: ADDED MORE REFERENCES TO DRAWING
APP. DATE: 10/01/05 APPROVAL: DGH

ATB2 SERIES LED 1300MA TYPE 3
4000K/5000K CCT

QUANTITY: 15
LOCATED WITHIN PARKING LOT
SEE PLAN FOR LOCATIONS

NO.	DATE	REVISION
1	2.5.2021	REVISE ALL LIGHTING DETAILS

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. 22508, Expiration Date: 6-30-2021

STATE OF MARYLAND · ROBERT ALAN HALLMAN · 22508 · PROFESSIONAL ENGINEER
5-5-21

OWNER:
MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP
1205 YORK ROAD, PENTHOUSE
LUTHERVILLE, MARYLAND 21093
410-825-8400

BUILDER:
NV HOMES
9720 PATUXENT WOODS DIVE
COLUMBIA, MARYLAND 21046
410-379-3385

RESIDENTIAL – SINGLE FAMILY ATTACHED AND MULTI-FAMILY
RAVENWOOD CONDOMINIUMS AT TURF VALLEY
LOTS 1 thru 7 AND BUILDABLE BULK PARCEL 'AA'

TAX MAP: 17, PARCEL: 706, GRID: 13
ELECTION DISTRICT NO. 2 – HOWARD COUNTY, MARYLAND
ZONED: PGCC

REVISED DETAIL SHEET

DESIGN: DBT	DRAFT: DBT	DATE: AUGUST 27, 2020	BEI PROJECT NO. 2931
		SCALE: AS SHOWN	SHEET 19 OF 23

AS-BUILT

SDP-20-036

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

"NO AS-BUILT INFORMATION IS" PROVIDED ON THIS SHEET

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. 21443 , Expiration Date: 12-21-24

AS-BUILT 5-21-24

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: 6-30-2021

8.27.20

OWNER:
MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP
1205 YORK ROAD, PENTHOUSE
LUTHERVILLE, MARYLAND 21093
410-825-8400

BUILDER:
NV HOMES
9720 PATUXENT WOODS DIVE
COLUMBIA, MARYLAND 21046
410-379-3385

RESIDENTIAL – SINGLE FAMILY ATTACHED AND MULTI-FAMILY

RAVENWOOD CONDOMINIUMS AT TURF VALLEY

LOTS 1 thru 7 AND BUILDABLE BULK PARCEL 'AA'

TAX MAP: 17, PARCEL: 706, GRID: 13
ELECTION DISTRICT NO. 2 – HOWARD COUNTY, MARYLAND
ZONED: PGCC

SOIL BORING LOGS CONDOMINIUMS

DATE: AUGUST 27, 2020	BEI PROJECT NO. 2931
SCALE: AS SHOWN	SHEET 20 OF 23

DESIGN: DBT DRAFT: DBT

AS-BUILT

SDP-20-036

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.5.20

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/28/20

DIRECTOR — DATE 10/29/20

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE AUGUST 20, 2020

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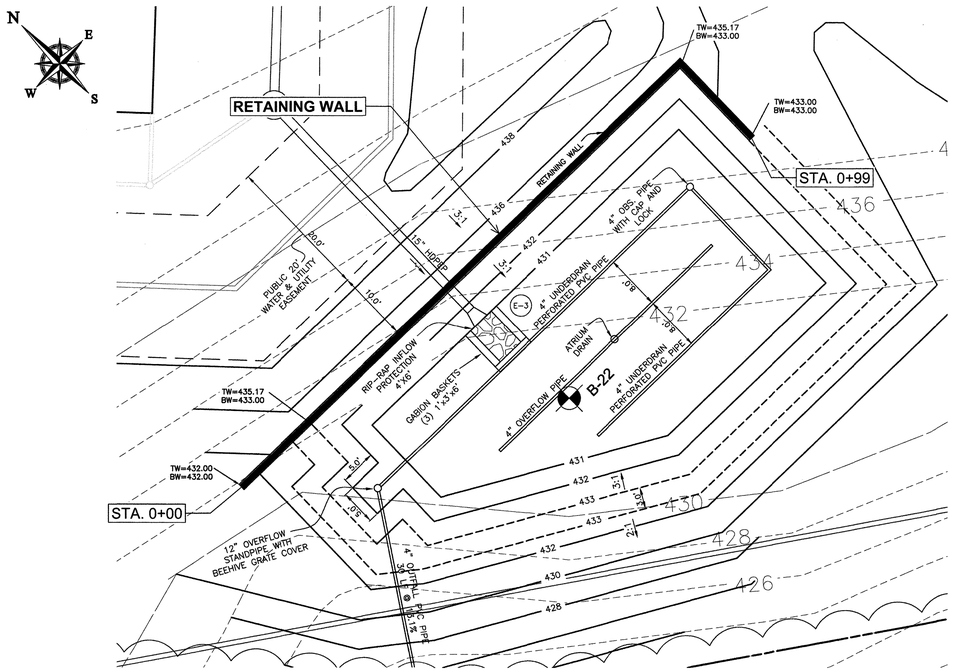

SOURCE: PLAN ADAPTED FROM A PREVIOUS UNTITLED PLAN PREPARED BY BENCHMARK ENGINEERING, INC.

WALL LOCATION PLAN

SCALE: 1" = 10'

0 10' 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.

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE August 20, 2020

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.5.20

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/28/20

DIRECTOR — DATE 10/29/20

SPECIFICATIONS

MODULAR CONCRETE BLOCK RETAINING WALL

PART 1: GENERAL

1.01 DESCRIPTION

A. WORK SHALL CONSIST OF FURNISHING AND CONSTRUCTION OF A MODULAR 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 MODULAR CONCRETE RETAINING WALL UNITS

A. MODULAR 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. MODULAR CONCRETE UNITS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C1372 - STANDARD SPECIFICATIONS FOR SEGMENTAL RETAINING WALL UNITS.

C. MODULAR 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. MODULAR 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.

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 MODULAR 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 MODULAR 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 MODULAR WALL UNIT PINS AND WITHIN 1 INCH OF THE FACE OF THE UNITS. PLACE THE NEXT COURSE OF MODULAR 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 MODULAR 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 MODULAR 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.

11 NO AS-BUILT INFORMATION IS" PROVIDED ON THIS SHEET

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. 21013, Expiration Date: 12-21-21

STATE OF MARYLAND · RONALD ALAN MARCO · No. 21013 · PROFESSIONAL ENGINEER

AS-BUILT 5-21-20

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. 12012, EXPIRATION DATE: 06/16/22.

STATE OF MARYLAND · WILLIAM M. CARNES · NO. 12012 · REGISTERED PROFESSIONAL ENGINEER

HILLIS-CARNES ENGINEERING ASSOCIATES
10975 Guilford Road, Suite A Annapolis Junction, Maryland
Phone: (410) 880-4788 www.hcea.com Fax: (410) 880-4098

RETAINING WALL PLAN AND SPECIFICATIONS
RAVENWOOD CONDOMINIUMS AT TURF VALLEY
HOWARD COUNTY, MARYLAND

REVISION NO.	DESCRIPTION	DATE

JOB NUMBER:	19453A	DESIGNED BY:	AM
SCALE:	AS SHOWN	DRAWN BY:	AM
DATE:	7/21/20	APPROVED BY:	HM

21 SHEET

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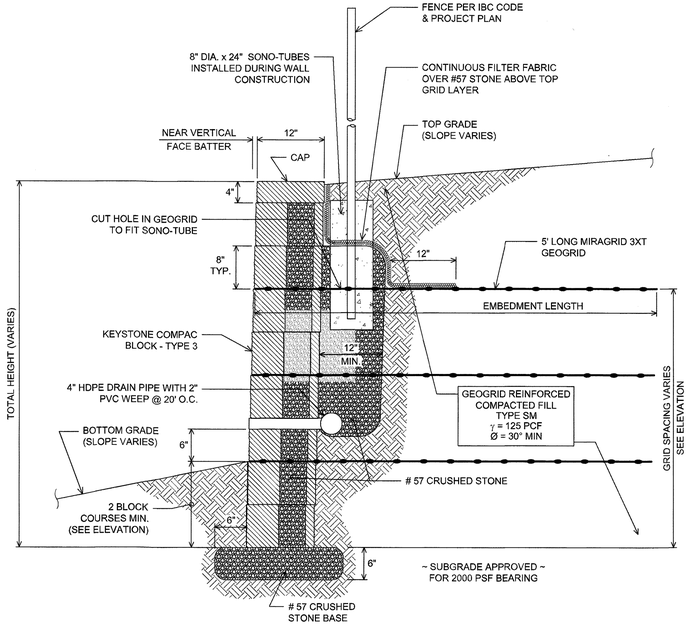
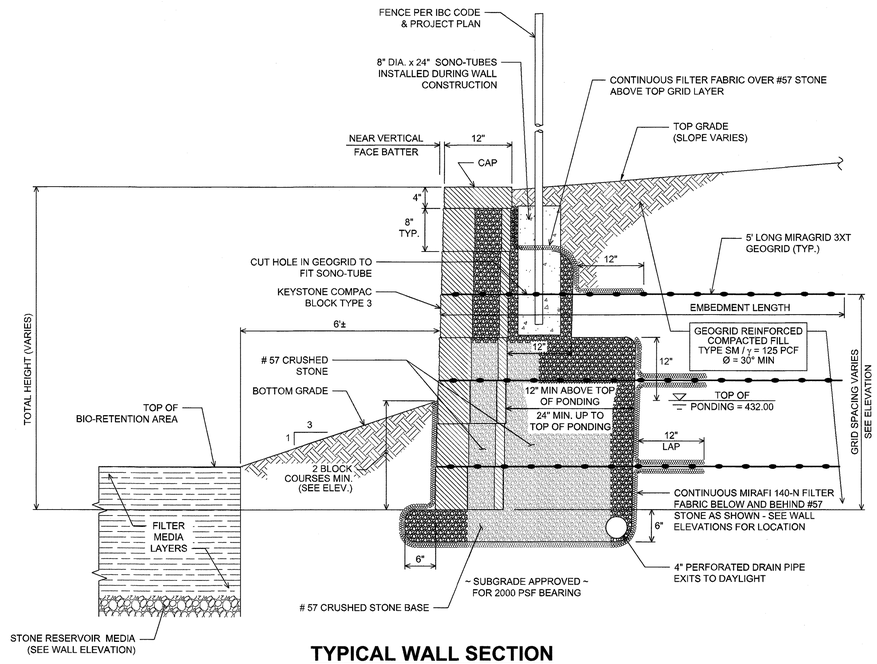
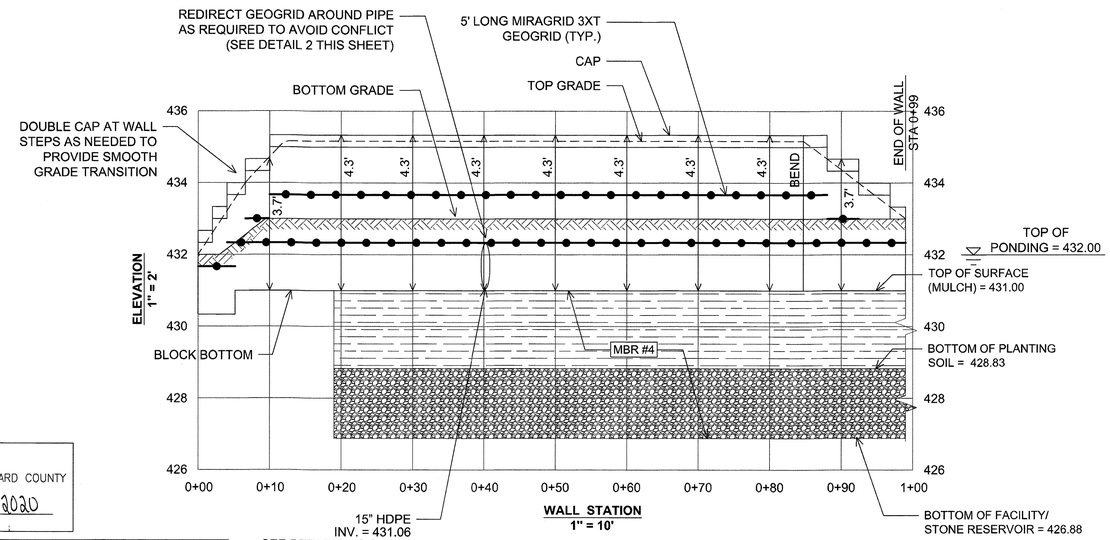


TYPICAL WALL SECTION
STA. 0+00 TO 0+19±
N.T.S.



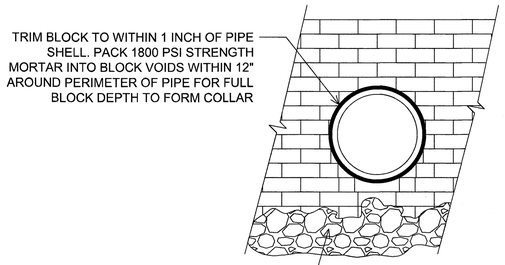
TYPICAL WALL SECTION
STA. 0+19± TO 0+99
N.T.S.



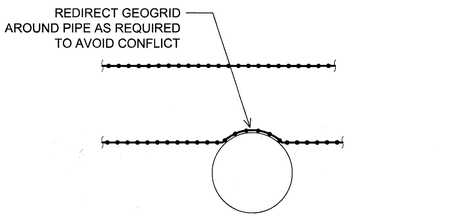
WALL ELEVATION

0 2' 4'
VERTICAL SCALE: 1" = 2'

0 10' 20'
HORIZONTAL SCALE: 1" = 10'



DETAIL 1 - PIPE THRU WALL
N.T.S.



DETAIL 2 - PIPE IN REINFORCED ZONE RUNNING PERPENDICULAR TO WALL
N.T.S.

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE August 20, 2020

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.5.20

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/28/20

DIRECTOR — DATE 10/29/20

"NO AS-BUILT INFORMATION IS" PROVIDED ON THIS SHEET

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — PROFESSIONAL ENGINEER

AS-BUILT 5-21-24

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. 21443 Expiration Date: 12-21-21

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. 12012, EXPIRATION DATE: 06/16/22.

STATE OF MARYLAND — WILLIAM M. CARNES — NO. 12012 — REGISTERED PROFESSIONAL ENGINEER

HILLIS-CARNES ENGINEERING ASSOCIATES
10975 Guilford Road, Suite A Annapolis Junction, Maryland
Phone: (410) 880-4788 www.hcea.com Fax: (410) 880-4098

RETAINING WALL ELEVATION AND DETAILS
RAVENWOOD CONDOMINIUMS AT TURF VALLEY
HOWARD COUNTY, MARYLAND

REVISION NO.	DESCRIPTION	DATE

JOB NUMBER:	19453A	DESIGNED BY:	AM
SCALE:	AS SHOWN	DRAWN BY:	AM
DATE:	7/21/20	APPROVED BY:	HM

SHEET 22

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AS-BUILT

FRONT ELEVATION

0 5 10 20

1 inch = 10 ft.

BUILDING HEIGHT CALCULATION

TOP OF ROOF PARAPET TO GRADE AT FRONT = 35'-8"

TOP OF ROOF FASCIA TO GRADE AT REAR = 43'-8"

MEAN HEIGHT = (35'-8" + 43'-8") / 2

= 79'-4" / 2 = 39'-8"

SIDE ELEVATION

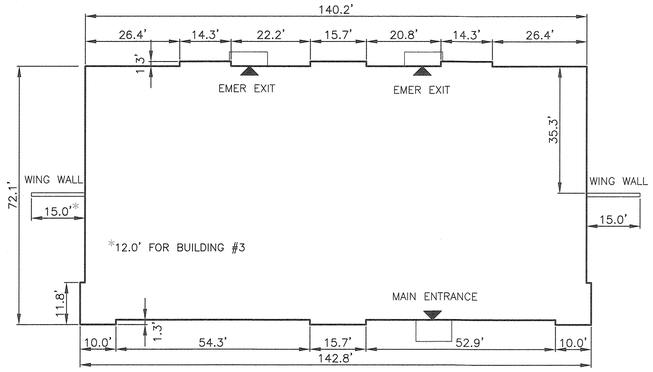
0 5 10 20

1 inch = 10 ft.

REAR ELEVATION

0 5 10 20

1 inch = 10 ft.



FOOTPRINT

0 10 20 40

1 inch = 20 ft.

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE AUGUST 20, 2020

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5.9.22

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 5/10/22

DIRECTOR — DATE 5/10/22

"NO AS-BUILT INFORMATION IS" PROVIDED ON THIS SHEET

STATE OF MARYLAND DONALD ALAN MAIN No. 21443 PROFESSIONAL ENGINEER

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. 21443, Expiration Date: 12.21.21

AS-BUILT 5-2124

NO.	DATE	REVISION
1	4.25.2022	ADD WING WALLS.

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. AMOROSO No. 22390 PROFESSIONAL ENGINEER

4.25.22

OWNER/BUILDER:
MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP
1205 YORK ROAD, PENTHOUSE
LUTHERVILLE, MARYLAND 21093
410-825-8400

RESIDENTIAL – SINGLE FAMILY ATTACHED AND MULTI-FAMILY

RAVENWOOD CONDOMINIUMS AT TURF VALLEY

LOTS 1 thru 7 AND BUILDABLE BULK PARCEL 'AA'

TAX MAP: 17, PARCEL: 706, GRID: 13
ELECTION DISTRICT NO. 2 – HOWARD COUNTY, MARYLAND
ZONED: PGCC

CONDOMINIUM ARCHITECTURE

DATE: AUGUST 27, 2020 | BEI PROJECT NO. 2931

DESIGN: DBT | DRAFT: DBT | SCALE: AS SHOWN | SHEET 23 OF 23

AS-BUILT

SDP-20-036

I:\2931 Ravenwood\dwg\8000.dwg, 4/25/2022 10:56:03 AM