FINAL PLAN
FOR
ARNOLD'S CORNER
LOTS 1-18 & OPEN SPACE LOTS 19-23
A RESUBDIVISION OF PARCELS N & O OF THE VILLAGE OF LONG REACH, SECTION 1, AREA 1

LOCATION OF SITE

5320 PHELPS LUCK DRIVE
COLUMBIA, MD
6TH ELECTION DISTRICT
TAX MAP 30, GRID 24, PARCELS N, O, & OPEN SPACE 462
VILLAGE OF LONG REACH,SECTION 1, AREA 1
HOWARD COUNTY

STANDARD DRAWING LEGEND

FOR ENTIRE PLAN SET
(NOT TO SCALE)

EXISTING NOTE	TYPICAL NOTE TEXT	PROPOSED NOTE
	ONSITE PROPERTY LINE / R.O.W. LINE	
	NEIGHBORING PROPERTY LINE / INTERIOR PARCEL LINE	
	EASEMENT LINE	
	SETBACK LINE	
	CONCRETE CURB & GUTTER	CURB AND GUTTER / DEPRESSED CURB AND GUTTER
	UTILITY POLE WITH LIGHT	
	POLE LIGHT	
	UTILITY POLE	
	STREET LIGHT	
	TYPICAL SIGN	
170 / 169	CONTOUR LINE	190 / 187
SL	SANITARY SEWER LATERAL	SL
W	UNDERGROUND WATER LINE	W
E	UNDERGROUND ELECTRIC LINE	E
G	UNDERGROUND GAS LINE	G
OH	OVERHEAD WIRE	OH
T	UNDERGROUND TELEPHONE LINE	T
C	UNDERGROUND CABLE LINE	C
	STORM SEWER	
S	SANITARY SEWER MAIN	S
	HYDRANT	
S	SANITARY MANHOLE	S
D	STORM MANHOLE	D
WM	WATER METER	
WV	WATER VALVE	
	TYPICAL END SECTION	
OR	HEADWALL OR ENDWALL	OR
	YARD INLET	
	CURB INLET	
	CLEAN OUT	
E	ELECTRIC MANHOLE	E
T	TELEPHONE MANHOLE	T
EB	ELECTRIC BOX	EB
EP	ELECTRIC PEDESTAL	EP
	MONITORING WELL	
	BENCHMARK	
	BORING	
	FLOODPLAIN	
	STEEP SLOPES (>25%)	
	STEEP SLOPES (15%-25%)	
	IMPERVIOUS AREA	
	MICROBIORETENTION FACILITY NUMBER	1
	LIMIT OF DISTURBANCE	LOD LOD
	TREE CLEARING AREA	

STANDARD DRAWING LEGEND

FOR ENTIRE PLAN SET
(NOT TO SCALE)

EXISTING NOTE	TYPICAL NOTE TEXT	PROPOSED NOTE
	SOILS LINE	
	WETLAND BUFFER	
	STREAM BUFFER	
	TREELINE	
(TBR)	TO BE REMOVED	
	YARD/OVERFLOW INLET	
	PERENNIAL STREAM	
	INTERMITTENT STREAM	
	LIMIT OF FIELD RUN SURVEY	
	WATER QUALITY FACILITY DRAINAGE AREA	

ROADWAY INFORMATION CHART

ROAD NAME	CLASSIFICATION	DESIGN SPEED	R/W WIDTH
ARNOLDS COURT	PUBLIC ACCESS PLACE	25 MPH	50 FT.

MINIMUM LOT SIZE CHART

LOT #	Area	PIPE STEM AREA	MIN. LOT SIZE
LOT 1	9,188 S.F.	0	9,188 S.F.
LOT 2	9,320 S.F.	0	9,320 S.F.
LOT 3	9,489 S.F.	51 S.F.	9,438 S.F.
LOT 4	9,467 S.F.	384 S.F.	9,083 S.F.
LOT 5	9,761 S.F.	714 S.F.	9,047 S.F.
LOT 6	9,689 S.F.	678 S.F.	9,011 S.F.
LOT 7	9,327 S.F.	299 S.F.	9,028 S.F.
LOT 8	9,035 S.F.	0	9,035 S.F.
LOT 9	9,014 S.F.	0	9,014 S.F.
LOT 10	9,010 S.F.	0	9,010 S.F.
LOT 11	9,009 S.F.	0	9,009 S.F.
LOT 12	13,162 S.F.	0	13,162 S.F.
LOT 13	13,182 S.F.	0	13,182 S.F.
LOT 14	9,017 S.F.	0	9,017 S.F.
LOT 15	9,017 S.F.	0	9,017 S.F.
LOT 16	9,006 S.F.	0	9,006 S.F.
LOT 17	9,012 S.F.	0	9,012 S.F.
LOT 18	9,129 S.F.	0	9,129 S.F.
TOTAL =		174,123 S.F OR 3.997 AC.	

OPEN SPACE CHART

LOT No.	OWNER	PURPOSE
19	TO BE DEDICATED TO ARNOLDS CORNER HOA	OPEN SPACE
20	TO BE DEDICATED TO ARNOLDS CORNER HOA	OPEN SPACE
21	TO BE DEDICATED TO ARNOLDS CORNER HOA	OPEN SPACE
22	TO BE DEDICATED TO ARNOLDS CORNER HOA	OPEN SPACE
23	TO BE DEDICATED TO ARNOLDS CORNER HOA	OPEN SPACE

STORMWATER MANAGEMENT PRACTICES

LOT/PARCEL NUMBER	ADDRESS	FACILITY NAME & NUMBER	PRACTICE TYPE (QUANTITY)	PUBLIC	PRIVATE	HOA MAINTENANCE	MISC.
2	5405 ARNOLDS COURT	DRYWELL # 3-4	MDE M-5		X		HOME OWNER MAINTENANCE
3	5409 ARNOLDS COURT	DRYWELL # 5-6	MDE M-5		X		HOME OWNER MAINTENANCE
4	5413 ARNOLDS COURT	DRYWELL # 7-8	MDE M-5		X		HOME OWNER MAINTENANCE
5	5417 ARNOLDS COURT	DRYWELL # 9-10	MDE M-5		X		HOME OWNER MAINTENANCE
6	5421 ARNOLDS COURT	DRYWELL # 11-12	MDE M-5		X		HOME OWNER MAINTENANCE
7	5425 ARNOLDS COURT	DRYWELL # 13-14	MDE M-5		X		HOME OWNER MAINTENANCE
8	5433 ARNOLDS COURT	DRYWELL # 15-16	MDE M-5		X		HOME OWNER MAINTENANCE
9	5441 ARNOLDS COURT	DRYWELL # 17-18	MDE M-5		X		HOME OWNER MAINTENANCE
10	5445 ARNOLDS COURT	DRYWELL # 19-20	MDE M-5		X		HOME OWNER MAINTENANCE
11	5449 ARNOLDS COURT	DRYWELL # 21-22	MDE M-5		X		HOME OWNER MAINTENANCE
12	5453 ARNOLDS COURT	DRYWELL # 23-24	MDE M-5		X		HOME OWNER MAINTENANCE
13	5454 ARNOLDS COURT	DRYWELL # 25-26	MDE M-5		X		HOME OWNER MAINTENANCE
14	5450 ARNOLDS COURT	DRYWELL # 27-28	MDE M-5		X		HOME OWNER MAINTENANCE
15	5442 ARNOLDS COURT	DRYWELL # 29	MDE M-5		X		HOME OWNER MAINTENANCE
16	5438 ARNOLDS COURT	DRYWELL # 31-32	MDE M-5		X		HOME OWNER MAINTENANCE
17	5430 ARNOLDS COURT	DRYWELL # 33-34	MDE M-5		X		HOME OWNER MAINTENANCE
18	5426 ARNOLDS COURT	DRYWELL # 35-36	MDE M-5		X		HOME OWNER MAINTENANCE

STORMWATER MANAGEMENT INFORMATION

LOT/PARCEL NUMBER	ADDRESS	FACILITY NAME & NUMBER	PRACTICE TYPE (QUANTITY)	PUBLIC	PRIVATE	HOA MAINTENANCE	MISC.
OS19	OPEN SPACE	BIO1	MDE-F-6		X	X	
OS20	OPEN SPACE	BIO2	MDE-F-6		X	X	
OS21	OPEN SPACE	MICRO-BIO # MB3	MDE-M-6		X	X	
OS22	OPEN SPACE	MICRO-BIO # MB4	MDE-M-6		X	X	
OS23	OPEN SPACE	MICRO-BIO # MB5	MDE-M-6		X	X	

SITE ANALYSIS DATA / TABULATION

	TOTAL
TOTAL PROJECT AREA (GROSS)	5.61 AC.
AREA OF WETLANDS AND BUFFER	0.00 AC.
AREA OF 100-YR FLOODPLAIN	0.00 AC.
AREA OF FOREST	0.00 AC.
AREA OF STEEP SLOPES (15% TO 25%)	- AC.
AREA OF STEEP SLOPES (25% OR GREATER)	- AC.
HIGHLY ERODIBLE SOILS (K> 0.35)	- AC.
NET TRACT AREA:	- AC.
LIMIT OF DISTURBED AREA	5.38 AC.
PRESENT ZONING DESIGNATION	NT-SFMD
PROPOSED USE:	RESIDENTIAL
IMPERVIOUS COVER	1.95 AC.

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS MK DATE 1/31/2020
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT DATE 2/10/20
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 2.6.20

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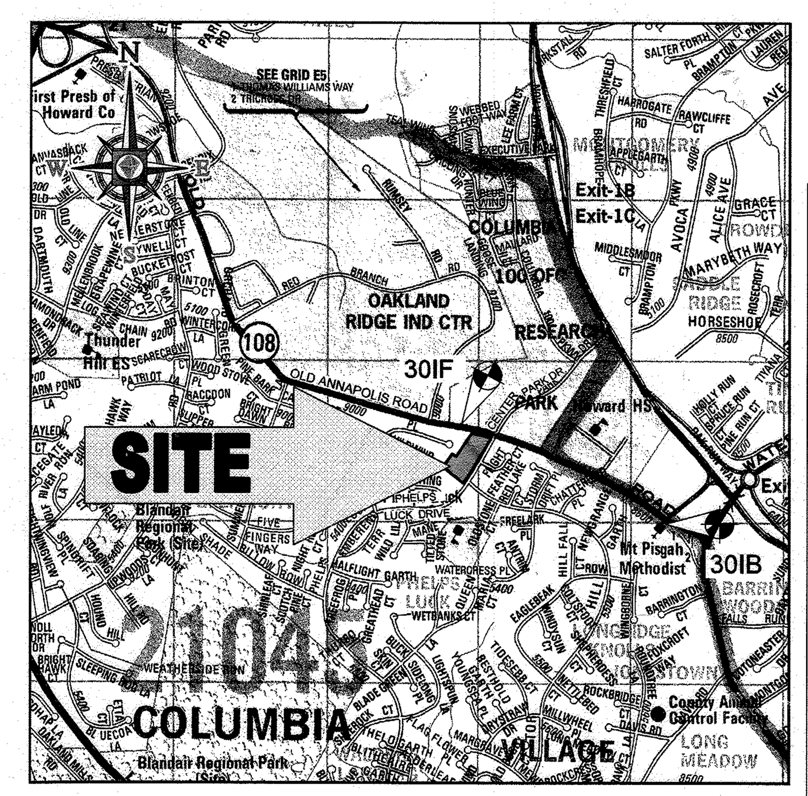

VICINITY MAP
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SCALE: 1"=2000'
ADC MAP COORDINATES: 4935-J5

BENCHMARK

GEODETIC SURVEY CONTROL - 30IB
ELEV. 526.108
N 566,937.964
E 1,366,270.807

GEODETIC SURVEY CONTROL - 30IF
ELEV. 473.359
N 568,033.070
E 1,363,934.332

PROPERTY LINE COORDINATE TABLES

Point #	Northing	Easting
1	567191.5838	1363773.7817
2	567390.9427	1363454.4651
3	567600.5838	1363576.9694
4	567572.0563	1363641.7349
5	567934.2568	1363843.2065
6	567961.5422	1363858.3838
7	568013.6565	1363887.3720
8	567954.1411	1364141.1466
9	567951.2552	1364151.8960
10	567899.7858	1364126.2779
11	567872.1703	1364112.5327
12	567361.8233	1363858.5157
13	567350.5821	1363824.9950
14	567359.3617	1363807.3556
15	567461.3459	1363774.3587
16	567831.3407	1363968.4549
17	567825.3015	1363979.9670
18	567860.7234	1363998.5490
19	567896.0292	1363931.2474
20	567860.6074	1363912.6654
21	567854.5682	1363924.1775
22	567484.5734	1363730.0813
23	567314.5998	1363785.0763
24	567305.8202	1363802.7155
25	567272.2996	1363813.9567

AS-BUILT SURVEY NOTE:

THE INSTRUMENTS USED IN PERFORMING AS-BUILT SURVEY:
10 SECOND ROBOTIC TOTAL STATION & PRISM

SHEET INDEX

SHEET TITLE	SHEET NUMBER
COVER SHEET	1
GENERAL NOTES	2
SOILS MAP, EXISTING CONDITION, & DEMO PLAN	3
GRADING PLAN	4
LANDSCAPE PLAN	5
LANDSCAPE NOTES & DETAILS	6
EROSION & SEDIMENT CONTROL PLAN	7
EROSION & SEDIMENT CONTROL NOTES & DETAILS	8 - 9
ROAD PLAN & PROFILES	10
STORMWATER MANAGEMENT NOTES AND DETAILS	11 - 13
DRAINAGE NOTES AND DETAILS	14
SWALE PROFILES AND SECTION	15
STORM DRAIN PROFILES	16 - 17
EXISTING CONDITIONS AND IMPERVIOUS SURFACE EXHIBIT (BY OTHERS)	18
POST DEVELOPMENT POI DRAINAGE AREA MAP/STORMWATER MANAGEMENT DRAINAGE AREA MAP	19
STORMDRAIN DRAINAGE AREA MAP	20
SEDIMENT CONTROL DRAINAGE AREA MAP	21

GENERAL NOTES (cont.)

47. 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.
48. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
49. LANDSCAPING FOR THIS SUBDIVISION WILL BE PROVIDED IN ACCORDANCE WITH THIS CERTIFIED LANDSCAPE PLAN AND IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. PERIMETER LANDSCAPE SURETY IN THE AMOUNT OF $25,200.00 FOR THE INSTALLATION OF 45 SHADE TREES ($300.00 EACH) AND 78 EVERGREEN TREES ($150.00 EACH) SHALL BE POSTED BY THE DEVELOPER AS PART OF THE DPW DEVELOPER'S AGREEMENT, F-19-088.
50. FINANCIAL SURETY FOR THE REQUIRED 40 STREET TREES WILL BE POSTED WITH THE DEVELOPMENT ENGINEERING DIVISION (DED) COST ESTIMATE UNDER THE FINAL PLAN SUBMISSION.
51. MINIMUM BUILDING SETBACK RESTRICTIONS FROM PROPERTY LINES AND THE PUBLIC RIGHT-OF-WAY LINES TO BE IN ACCORDANCE WITH FDP-77-A-IV CRITERIA.
52. THE 65DBA NOISE CONTOUR LINE DRAWN ON THIS SUBDIVISION PLAN IS ADVISORY AS REQUIRED BY THE HOWARD COUNTY DESIGN MANUAL, CHAPTER 5, REVISED FEBRUARY, 1992 AND CANNOT BE CONSIDERED TO EXACTLY LOCATE THE 65 DBA NOISE EXPOSURE. THE 65DBA NOISE 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.
53. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF THE HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.

AS-BUILT CERTIFICATION

I hereby certify, by my seal, that to the best of my knowledge and belief the the facilities shown on the plan was constructed as shown on this "AS-BUILT" plan meet the approved plans and specifications.

July 12, 2022
Date
PAUL GERARD CAVANAUGH #27020
STATE OF MARYLAND PAUL GERARD CAVANAUGH No. 27020 PROFESSIONAL ENGINEER
EXP 1/25/24

PREPARED BY

BOHLER ENGINEERING
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SINGLE FAMILY DETACHED PARKING ANALYSIS

NUMBER OF SINGLE DETACHED LOTS FOR THIS SKETCH PLAN = 18
REQUIRED PARKING (@ 2.5 SPACES PER SFD UNIT) = 45
PER SECTION 133.0 D.2.A OF THE ZONING REGULATIONS

TOTAL REQUIRED SPACES = 45 SPACES

PARKING PROVIDED

18 SPACES/UNIT (2 GARAGE & 2 DRIVEWAY SPACES) = 72 SPACES

GENERAL NOTES

1. THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS ALTERNATE COMPLIANCE REQUESTS HAVE BEEN APPROVED.
2. THIS PLAN IS BASED ON FIELD RUN MONUMENTED BOUNDARY AND TOPOGRAPHIC SURVEY WITH ONE (1) FOOT CONTOUR INTERVALS PREPARED BY BOHLER ENGINEERING, DATED 08/23/19.
3. THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATES SYSTEM. HOWARD COUNTY MONUMENT Nos. 30IB AND 30IF WERE USED FOR THIS PROJECT.
4. WATER IS PUBLIC. CONT. # 343 W & S, 424-D-W&S
5. SEWER IS PUBLIC. CONT. # 343 W & S, 424-D-W&S
6. EXISTING UTILITIES ARE BASED ON FIELD RUN SURVEY PERFORMED BY BOHLER ENGINEERING, DATED 05/10/19.
7. STORMWATER MANAGEMENT WILL BE PROVIDED IN ACCORDANCE WITH HOWARD COUNTY SPECIFICATIONS. WATER QUALITY AND RECHARGE VOLUMES WILL BE PROVIDED BY BIORETENTION FACILITIES (F-6), MICRO-BIORETENTION FACILITIES (M-6), AND DRYWELLS (M-5) TO MEET MDE REQUIREMENTS. ON-LOT ESD PRACTICES SHALL BE OWNED AND MAINTAINED BY THE HOMEOWNER. ALL SWM IN OPEN SPACE LOTS SHALL BE PRIVATELY OWNED AND MAINTAINED BY THE HOA. HOWARD COUNTY WILL MAINTAIN PIPES AND PROPERTY OWNERS/HOA WILL MAINTAIN FACILITY SURFACES.
8. SUBJECT PROPERTY ZONED NT PER THE 10/06/13 COMPREHENSIVE ZONING REGULATIONS AND IS DESIGNED WITH A SINGLE FAMILY - MEDIUM (SFMD) AND PER FDP-77-A-IV.
9. PROPERTY INFORMATION:
   a. GROSS AREA OF TRACT = 5.609 AC.
   b. AREA OF PROPOSED R/W DEDICATION = 1.154 AC. (0.798 AC. PROP. ROAD "A") (0.356 AC. MD RTE.108)
   c. AREA OF PROPOSED LOTS = 3.991 AC. (LOTS), 0.464 AC. (OPEN SPACE LOTS)
   d. NUMBER OF LOTS/PARCELS PROPOSED: 23 (TOTAL)
   e. BUILDABLE LOTS = 18
   f. OPEN SPACE LOT(S) = 5
10. NO WETLANDS EXIST ON SITE BASED UPON THE WETLAND CERTIFICATION PREPARED BY EXPLORATION RESEARCH, INC. DATED 5/3/18.
11. PER FEMA (FIRM MAP) 24027CO155D NO FEMA DELINEATED FLOODPLAIN EXISTS ON OR SURROUNDING THE SUBJECT PROPERTY.
12. THE TRAFFIC STUDY FOR THIS PROJECT WAS PREPARED BY THE TRAFFIC GROUP, DATED 2/13/18, AND APPROVED ON: 6/7/18.
13. THERE ARE NO KNOWN CEMETERIES ON THE SUBJECT PROPERTY.
14. THIS PROPERTY IS LOCATED INSIDE OF THE METROPOLITAN DISTRICT.
15. THERE IS A HISTORIC HOUSE ON-SITE THAT DATES BACK TO APPROXIMATELY 1890-1910. THIS HOUSE HAS BEEN HEAVILY ALTERED AND WILL BE REMOVED. THIS HOUSE AND ALL OUTBUILDINGS HAVE BEEN REVIEWED AND DOCUMENTED BY THE COUNTY'S ARCHITECTURAL HISTORIAN AND HAVE BEEN APPROVED FOR DEMOLITION BY DPZ STAFF (PERMIT NO. B19000907).
16. THE PROPERTY IS SUBJECT TO FDP-77-A-IV AMENDMENT TO ALLOW THE FOLLOWING:
   (a.) CHANGE THE PERMITTED LAND USE OF PARCEL 'O' FROM COMMERCIAL TO SINGLE FAMILY MEDIUM DENSITY.
   (b.) INCREASE THE DENSITY OF THE NT DISTRICT FROM ITS CURRENT DENSITY OF 2.3800 UNITS PER GROSS ACRES TO 2.3809 UNITS PER GROSS ACRE TO PERMIT 20 ADDITIONAL DWELLING UNITS TO BE ASSIGNED TO TWO SPECIFIC PROPERTIES. 19 UNITS TO 5320 PHELPS LUCK DRIVE, GRANDFATHER'S GARDEN CENTER AND 1 UNIT TO 11608 LITTLE PATUXENT PARKWAY, POPLAR GLEN APARTMENTS. APPROVED BY THE ZONING BOARD IN ITS DECISION AND ORDER DATED NOVEMBER 6, 2017 IN ZONING BOARD CASE NUMBER 1112M.
   (c.) PROVIDE THAT NO IMPROVEMENTS TO PARCELS 'N' AND 'O' MAY BE MADE EXCEPT IN ACCORDANCE WITH A SITE DEVELOPMENT PLAN APPROVED BY THE HOWARD COUNTY PLANNING BOARD; AND
   (d.) CORRECT THE PREVIOUS ERROR OF CREDITED AND NON-CREDITED OPEN SPACE AREAS.
   NOTE: FDP-77-A-IV WAS APPROVED BY THE PLANNING BOARD ON 12/7/17 AND RECORDED IN THE LAND RECORDS ON 1/12/18 AS PLAT NUMBER'S 24488-24510.
17. AN ALTERNATIVE COMPLIANCE REQUEST (WP-19-083) IN ACCORDANCE WITH SECTION 16.134(a) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS TO NOT CONSTRUCT CURB AND GUTTER AND SIDEWALK ALONG MD ROUTE 108 WAS APPROVED ON MAY 9, 2019 WITH THE FOLLOWING CONDITIONS:
   (a.) POST A FEE-IN-LIEU FOR SIDEWALK CONSTRUCTION FOR THE PROPERTY FRONTAGE ALONG MD ROUTE 108. COORDINATE WITH DED, DPW AND SHA REGARDING THE PROPER AGENCY AND PROCESS TO PAY FEE-IN-LIEU.
   (b.) COORDINATE WITH SHA AND THE COUNTY REGARDING MAKING ANY IMPROVEMENTS, IF NECESSARY, TO THE RAMPS, SIGNALS OR CROSSWALK OR ACROSS ROUTE 108 TO ENSURE THAT PEDESTRIANS CAN SAFELY ACCESS THE SIDEWALK ON THE NORTH SIDE OF ROUTE 108.
18. THE EXISTING WELL WILL BE ABANDONED ACCORDING TO HEALTH DEPARTMENT REQUIREMENTS PRIOR TO RECORDATION OF THE PLAT.
19. A NOISE STUDY FOR THIS SITE WAS APPROVED WITH P-19-001 ON 7/16/19. THE STUDY WAS PERFORMED BY THE WILSON T BALLARD COMPANY DATED MAY 2019 AND A NOISE BARRIER PROVIDED FOR NOISE MITIGATION. THIS SUBDIVISION IS NOT LOCATED WITHIN THE BWI HEIGHT AND NOISE ZONE (ANZ). THE 65 DBA NOISE CONTOUR LINE DRAWN ON THIS SUBDIVISION PLAN IS ADVISORY AS REQUIRED BY THE HOWARD COUNTY DESIGN MANUAL, CHAPTER 5 REVISED FEBRUARY 1992 AND CANNOT BE CONSIDERED TO EXACTLY LOCATE THE 65 DBA NOISE EXPOSURE. THE 65 DBA NOISE 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. MITIGATION IS ACHIEVED VIA A COMBINATION OF A PROPOSED EARTH BERM AND A STANDING NOISE WALL STRUCTURE (HOWARD COUNTY DETAIL R-9.05) (APPROX 6FT IN HEIGHT).
20. A GEOTECHNICAL REPORT FOR THIS PROJECT WAS PREPARED BY GTA, DATED MAY 15, 2019.
21. TRAFFIC CONTROL DEVICES:
   (a) THE R1-1 ("STOP") SIGN AND THE STREET NAME SIGN (SNS) ASSEMBLY FOR THIS DEVELOPMENT MUST BE INSTALLED BEFORE THE BASE PAVING IS COMPLETED.
   (b) THE TRAFFIC CONTROL DEVICE LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE FIELD APPROVED BY HOWARD COUNTY TRAFFIC DIVISION (410-313-2430) PRIOR TO THE INSTALLATION OF ANY OF THE TRAFFIC CONTROL DEVICES.
   (c) ALL TRAFFIC CONTROL DEVICES AND THEIR LOCATIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MDMUTCD).
   (d) ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED ("QUICK PUNCH"), SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. THE ANCHOR SHALL NOT EXTEND MORE THAN TWO "QUICK PUNCH" HOLES ABOVE GROUND LEVEL. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
22. STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURES AND POLES SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (2006), SECTION 5.5.A. A MINIMUM OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
23. ONE (1) PUBLIC STREET NAME SIGN AND ONE (1) PRIVATE RANGE OF ADDRESS SIGN ASSEMBLY SHALL BE FABRICATED AND INSTALLED BY HOWARD COUNTY BUREAU OF HIGHWAYS AT THE DEVELOPERS/OWNERS EXPENSE. CONTACT HOWARD COUNTY TRAFFIC DIVISION AT 410-313-2430 FOR DETAILS AND COST ESTIMATES.
24. ALL TRAFFIC CONTROL SIGNS SHALL BE PLACED IN FRONT OF TREE LOCATIONS FOR MAXIMUM SIGHT VISIBILITY. NO TREE CAN BE INSTALLED WITHIN 30' OF ANY STOP SIGN (APPROACH DIRECTION). WHERE SIGNS NEED TO BE PLACED BEHIND THE SIDEWALK, ADDITIONAL SPACING BETWEEN TREES MAY BE REQUIRED AT THOSE LOCATIONS.
25. LAND DEDICATED TO HOWARD COUNTY, MARYLAND FOR THE PURPOSE OF A PUBLIC ROAD (ARNOLDS COURT) (0.798 AC.) AND LAND DEDICATION TO MDSHA FOR PURPOSES OF MD RTE 108 (0.356 ACRES).
26. PRIOR CASE NUMBERS ASSOCIATED WITH THIS PROJECT INCLUDE WP-19-083, WP-19-101, S-18-006, ECP-18-052, ZB1112, FDP-77-A-IV, PB 18 F 44 (F-70-068c) & P-19-001.
27. THIS PLAN IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS PER COUNCIL BILL NO. 45-2003 AND THE AMENDED ZONING REGULATIONS PER COUNCIL BILL NO. 75-2003. DEVELOPMENT OR CONSTRUCTION ON THIS PROPERTY MUST COMPLY WITH SETBACK AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF THE SITE DEVELOPMENT PLAN, WAIVER PETITION APPLICATION OR BUILDING/GRADING PERMIT APPLICATIONS.
28. A PRE-SUBMISSION COMMUNITY MEETING FOR THIS PROJECT WAS HELD ON 6/9/16.
30. OPEN SPACE LOTS TO BE DEDICATED PER OPEN SPACE CHART.
31. ALL LOTS WILL BE ENCUMBERED BY COLUMBIA ASSOCIATION COVENANTS.
32. SITE IS UNDERGOING THE MDE VOLUNTARY REMEDIATION PROGRAM. HEALTH DEPARTMENT WILL NEED TO SEE DOCUMENTATION FROM MDE THAT THE PROPERTY HAS COMPLETED THE VOLUNTARY PROGRAM BEFORE PLAT SIGNATURE AND FORWARD WELL ABANDONMENT REPORT. SITE IS CURRENTLY UNDERGOING CLEANUP EFFORTS WITH GRADING PERMIT NO. 19-00-0123.
33. DRIVEWAYS SHALL BE PROVIDED PRIOR TO RESIDENTIAL OCCUPANCY TO ENSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING (MINIMUM) REQUIREMENTS:
   a. WIDTH - 12 FEET (16 FEET SERVING MORE THAN ONE RESIDENCE)
   b. SURFACE - SIX (6") INCHES OF COMPACTED CRUSHER RUN BASE WITH TAR AND CHIP COATING
   c. GEOMETRY - MAXIMUM 15% GRADE, MAXIMUM 10% GRADE CHANGE AND MINIMUM OF 45 TURNING RADIUS
   d. STRUCTURES (CULVERTS/BRIDGES) CAPABLE OF SUPPORTING 25 GROSS TONS (H 25 LOADING)
   e. DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOOD WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY SURFACE.
   f. STRUCTURE CLEARANCES - MINIMUM 12 FEET
   g. MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE
34. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS, STREAMS OR THE THEIR REQUIRED BUFFERS, FLOODPLAIN AND FOREST CONSERVATION EASEMENT AREA.
35. FOR FLAG OR PIPESTEM LOTS, REFUSE COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE ARE PROVIDED TO THE JUNCTION OF THE FLAG OR PIPESTEM AND ROAD RIGHT-OF-WAY LINE AND NOT ONTO THE PIPESTEM LOT DRIVEWAY.
36. THIS SUBDIVISION IS SUBJECT TO SECTION 18.122B OF THE HOWARD COUNTY CODE. PUBLIC WATER AND/OR SEWER SERVICE HAS BEEN GRANTED UNDER THE TERMS AND PROVISIONS, THEREOF, EFFECTIVE SEE PLAT ON WHICH DATE DEVELOPER AGREEMENT #24-5098-D WAS FILED AND ACCEPTED. PUBLIC WATER AND SEWER PER CONTRACT No.24-5098D. WATER AND SEWER ALLOCATIONS WILL BE GRANTED AT THE TIME OF ISSUANCE OF THE BUILDING PERMIT, IF CAPACITY IS AVAILABLE AT THAT TIME.
37. AN ALTERNATIVE COMPLIANCE REQUEST (WP-19-101) IN ACCORDANCE WITH SECTION 16.155(A)(L)(II), WHICH REQUIRES SITE DEVELOPMENT PLANS FOR SITE DISTURBANCE GREATER THAN 5,000 SF WAS APPROVED ON MAY 21, 2019 WITH THE FOLLOWING CONDITIONS:
   1.) SUBMIT A STANDARD GRADING PLAN AND PERMIT WITH THE DEPARTMENT OF INSPECTION LICENSES AND PERMITS FOR PROCESSING AND APPROVAL. INCLUDE THE SUBMITTED EXHIBIT AS PART OF THE APPLICATION AND REFERENCE WP-19-101.
   2.) NOTE ALTERNATIVE COMPLIANCE ON ALL FUTURE PLAN SUBMISSIONS.
38. THE SHARED DRIVEWAY ACCESS AND MAINTENANCE OBLIGATION AGREEMENTS FOR THE 16' DRIVEWAY WHICH SERVE LOTS 3-7 & ACCESS BY ARNOLDS COURT. WILL BE RECORDED IN THE LAND RECORDS OF HOWARD COUNTY SIMULTANEOUSLY WITH THE RECORDATION OF THE SUBDIVISION PLAT.
39. THIS SITE IS EXEMPT FROM SPECIMEN TREE PER NEW TOWN REGULATIONS.
40. SITE IS LOCATED IN NT DISTRICT, OPEN SPACE IS NOT REQUIRED.
41. TRASH PAD MAINTENANCE AND LANDSCAPE SCREENING SHALL BE THE RESPONSIBILITY OF THE LOT OWNERS WHICH ACCESS ONTO THE APPLICABLE SHARED DRIVEWAYS AND SHALL BE MADE A PART OF THE USE-IN-COMMON MAINTENANCE AGREEMENTS. HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS WILL NOT BE RESPONSIBLE FOR UPKEEP.
42. HIGHLY ERODIBLE SOILS EXIST ON SITE. SEDIMENT CONTROL PLANS WILL ADDRESS THE EROSION CONCERNS.
43. ALL STRUCTURES WILL BE REMOVED PRIOR TO FINAL RECORDATION OF THE FINAL PLAT AND BEFORE THE RELEASE OF ANY BUILDING PERMITS. EXISTING STRUCTURES WERE BUILT CIRCA 1937 OR LATER.
44. "NO PARKING" RESTRICTIONS SHALL BE REQUIRED ALONG ARNOLDS COURT AT STA 10+00 AND STA. 13+00 (BOTH SIDE OF THE STREET). AT THE COUNTY'S DISCRETION, "NO PARKING" RESTRICTIONS MAY BE REQUIRED BETWEEN STA 13+00 AND STA 16+50 DIRECTLY ADJACENT TO LOTS 14-17.
45. THIS SUBDIVISION IS EXEMPT FROM THE REQUIREMENTS OF SECTION 16.1202(B)(I)(IV) OF THE HOWARD COUNTY CODE FOR FOREST CONSERVATION BECAUSE THE SUBJECT PROPERTY IS PART OF A PLANNED UNIT DEVELOPMENT WHICH HAS PRELIMINARY DEVELOPMENT PLAN APPROVAL AND 50% OR MORE OF THE LAND IS RECORDED AND SUBSTANTIALLY DEVELOPED BEFORE DECEMBER 31, 1992.
46. A DESIGN MANUAL WAVIER WAS APPROVED ON MARCH 25,2019 TO ALLOW A HORIZONTAL CURVE WITH A MINIMUM RADIUS OF 100 FEET. FURTHER MORE, THE REQUEST TO PROVIDE A ROADWAY WIDTH OF 28 FEET WITHIN THE CURVE WITH A TRANSITION OF 12:1 FROM A 28 FOOT WIDTH ROAD TO A 24 FOOT WIDTH ROAD WAS APPROVED. PARKING TO BE RESTRICTED ON BOTH SIDES OF THE STREET THROUGH THE ENTIRETY OF THE CURVE.

OWNER/DEVELOPER: ARNOLD'S CORNER, LLC
308 MAGOTHY ROAD
SEVERNA PARK, MD 21146
CONTACT: DAVID WOESSNER
PHONE: (240) 319-1735

SUBDIVISION NAME: ARNOLD'S CORNER
VILLAGE OF LONG REACH
SECTION 1, AREA 1
DEED # 18527/263

TAX MAP: 30 GRID: 24 ZONED: NT
PARCELS: N, O & 462, PUBLIC USE PARCELS
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PREVIOUS FILE No. :

S-18-006,	WP-19-083
ECP-18-052,	FDP-77-A-IV,
ZB1112,	PB 18 F 44 (F-70-068c)
P-19-001,	WP-19-101

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, 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. 40808, EXPIRATION DATE: 7/3/2021

BOHLER ENGINEERING
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

THE INFORMATION, DESIGN AND CONTENT OF THIS PLAN ARE PROPRIETARY AND SHALL NOT BE COPIED OR USED FOR ANY PURPOSE WITHOUT PRIOR WRITTEN AUTHORIZATION FROM BOHLER ENGINEERING. ONLY APPROVED, SIGNED AND SEALED PLANS SHALL BE UTILIZED FOR CONSTRUCTION PURPOSES
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REVISIONS

REV	DATE	COMMENT	BY

811
KNOW WHAT'S BELOW
ALWAYS CALL 811
BEFORE YOU DIG
It's fast. It's free. It's the law.

PROJECT No.:	MD182086
DRAWN BY:	AVG
CHECKED BY:	BRR
DATE:	12/17/19
SCALE:	AS SHOWN
CAD I.D.:	SDP-3

PROJECT:

FINAL PLAN
FOR
ARNOLD'S CORNER
LOTS 1-18 & OPEN SPACE LOTS 19-23
A RESUBDIVISION OF PARCELS N & O OF THE VILLAGE OF LONG REACH, SECTION 1, AREA 1
LOCATION OF SITE
5320 PHELPS LUCK DRIVE
COLUMBIA, MD
6TH ELECTION DISTRICT
TAX MAP 30, GRID 24, PARCELS N, O, & OPEN SPACE 462
VILLAGE OF LONG REACH, SECTION 1, AREA 1
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808
12/20/19

SHEET TITLE:
COVER SHEET

SHEET NUMBER:
1

"AS-BUILT" F-19-088

GENERAL NOTES

(Rev. 11/2019)

1. THESE PLANS ARE SOLELY BASED ON THE INFORMATION THAT OWNER HAS PROVIDED TO BOHLER ENGINEERING, MARYLAND. BOHLER ENGINEERING HAS NOT PERFORMED ANY FIELD VERIFICATIONS OR ANALYSES TO VERIFY THE CONDITIONS PROVIDED. THE CONTRACTOR MUST FIELD VERIFY ALL EXISTING CONDITIONS AND IMMEDIATELY INFORM BOHLER ENGINEERING IN WRITING IF ANY ACTUAL SITE CONDITIONS DIFFER FROM THOSE SHOWN ON THESE PLANS, OR IF THE PROPOSED WORK CONFLICTS WITH ANY OTHER SITE FEATURES.
2. THE CONTRACTOR MUST STRICTLY COMPLY WITH THESE NOTES AND ALL GEOTECHNICAL/GEOMATERIALS REPORTS CONTAINING DESIGN, THE CONTRACTOR MUST ENSURE THE SITE WORK IS COMPLETED IN ALL THE CONDITIONS STATED IN THE GEOTECHNICAL/GEOMATERIALS REPORTS. ADDITIONAL WORK NOT SPECIFICALLY DESCRIBED IN THE PLANS MAY BE REQUIRED TO BE PERFORMED BY THE CONTRACTOR IN ACCORDANCE WITH THE GEOTECHNICAL/GEOMATERIALS REPORTS. THE GENERAL CONTRACTOR MUST ENSURE THAT ALL SUBCONTRACTORS FULLY UNDERSTAND THE GEOTECHNICAL/GEOMATERIALS REPORTS AND THE SCOPE OF WORK REQUIRED BY THE GEOTECHNICAL/GEOMATERIALS REPORTS. THE CONTRACTOR MUST NOTIFY BOHLER ENGINEERING IMMEDIATELY IF THE CONDITIONS OBSERVED IN THE FIELD ARE NOT CONSISTENT WITH THE GEOTECHNICAL/GEOMATERIALS REPORTS.
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(Rev. 11/2019)

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SOIL EROSION & SEDIMENT CONTROL PLAN NOTES

(Rev. 11/2019)

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SITE LAYOUT NOTES

(Rev. 11/2019)

1. THE GENERAL CONTRACTOR MUST BE INCLUDED AS PART OF THE ENTIRE COMMUNITY PACKAGE AND ARE PART OF THIS CONTRACT DOCUMENTS. THE GENERAL CONTRACTOR MUST NOTIFY BOHLER ENGINEERING IN WRITING IF ANY PORTION OF THE PLANS IS NOT CLEAR OR IF ANY ADDITIONAL INFORMATION IS REQUIRED TO COMPLETE THE WORK SHOWN ON THE PLANS. BOHLER ENGINEERING WILL ANSWER ALL QUESTIONS PROPERLY SUBMITTED IN WRITING. BOHLER ENGINEERING WILL NOT BE RESPONSIBLE FOR ANY WORK PERFORMED BY THE CONTRACTOR WHICH EXCEEDS THE SCOPE OF WORK REQUIRED BY THE PLANS, OR ANY WORK PERFORMED BY THE CONTRACTOR WHICH IS NOT SHOWN ON THE PLANS.
2. THE CONTRACTOR MUST COMPLY WITH ALL APPLICABLE STATE, COUNTY AND LOCAL CODES, ORDINANCES, AND REGULATIONS GOVERNING THE PROPOSED WORK. THE CONTRACTOR MUST OBTAIN ALL PERMITS AND PAY ALL FEES REQUIRED BY ALL REGULATORY AGENCIES. THE CONTRACTOR MUST ENSURE THAT ALL WORK IS COMPLETED IN ACCORDANCE WITH THE PERMITS, PLANS, AND APPLICABLE REGULATIONS. THE CONTRACTOR MUST ENSURE THAT ALL INSPECTIONS REQUIRED BY THE PERMITS ARE COMPLETED IN A TIMELY MANNER. THE CONTRACTOR MUST NOTIFY BOHLER ENGINEERING IMMEDIATELY IF ANY VIOLATIONS OF LAW ARE OBSERVED.
3. THE CONTRACTOR MUST OBTAIN ALL PERMITS, POSTINGS, AND LICENSES REQUIRED FOR THE PROPOSED WORK. THE CONTRACTOR MUST MAINTAIN THE PERMITS, POSTINGS, AND LICENSES IN GOOD CONDITION AND MUST PRODUCE THEM FOR INSPECTION UPON REQUEST. THE CONTRACTOR MUST NOTIFY BOHLER ENGINEERING IN WRITING IF ANY OF THE PERMITS, POSTINGS, OR LICENSES ARE NOT IN GOOD CONDITION.
4. THE CONTRACTOR MUST PROTECT ALL PROPERTY, PERSONS, AND ADJACENT PROPERTIES FROM DAMAGE CAUSED BY THE PROPOSED WORK. THE CONTRACTOR MUST REPAIR ANY DAMAGE CAUSED BY THE PROPOSED WORK TO THE SATISFACTION OF THE OWNER OF THE PROPERTY.
5. THE CONTRACTOR MUST ENSURE THAT ALL EXISTING UTILITIES ARE PROTECTED FROM DAMAGE DURING THE PROPOSED WORK. THE CONTRACTOR MUST NOTIFY BOHLER ENGINEERING IMMEDIATELY IF ANY UTILITIES ARE DAMAGED DURING THE PROPOSED WORK.
6. THE CONTRACTOR MUST ENSURE THAT ALL EXISTING UTILITIES ARE PROPERLY MARKED PRIOR TO THE START OF ANY EXCAVATION. THE CONTRACTOR MUST NOTIFY BOHLER ENGINEERING IMMEDIATELY IF ANY UTILITIES ARE NOT PROPERLY MARKED.
7. THE CONTRACTOR MUST ENSURE THAT ALL EXISTING UTILITIES ARE PROPERLY SUPPORTED DURING THE PROPOSED WORK. THE CONTRACTOR MUST NOTIFY BOHLER ENGINEERING IMMEDIATELY IF ANY UTILITIES ARE NOT PROPERLY SUPPORTED.
8. THE CONTRACTOR MUST ENSURE THAT ALL EXISTING UTILITIES ARE PROPERLY BACKFILLED AND COMPACTED. THE CONTRACTOR MUST NOTIFY BOHLER ENGINEERING IMMEDIATELY IF ANY UTILITIES ARE NOT PROPERLY BACKFILLED AND COMPACTED.
9. THE CONTRACTOR MUST ENSURE THAT ALL EXISTING UTILITIES ARE PROPERLY RESTORED TO THEIR ORIGINAL CONDITION. THE CONTRACTOR MUST NOTIFY BOHLER ENGINEERING IMMEDIATELY IF ANY UTILITIES ARE NOT PROPERLY RESTORED TO THEIR ORIGINAL CONDITION.
10. THE CONTRACTOR MUST ENSURE THAT ALL EXISTING UTILITIES ARE PROPERLY MARKED AND RECORDED FOR FUTURE REFERENCE. THE CONTRACTOR MUST NOTIFY BOHLER ENGINEERING IMMEDIATELY IF ANY UTILITIES ARE NOT PROPERLY MARKED AND RECORDED.
11. THE CONTRACTOR MUST ENSURE THAT ALL EXISTING UTILITIES ARE PROTECTED FROM DAMAGE DURING THE PROPOSED WORK. THE CONTRACTOR MUST NOTIFY BOHLER ENGINEERING IMMEDIATELY IF ANY UTILITIES ARE DAMAGED DURING THE PROPOSED WORK.
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19. THE CONTRACTOR MUST ENSURE THAT ALL EXISTING UTILITIES ARE PROPERLY RESTORED TO THEIR ORIGINAL CONDITION. THE CONTRACTOR MUST NOTIFY BOHLER ENGINEERING IMMEDIATELY IF ANY UTILITIES ARE NOT PROPERLY RESTORED TO THEIR ORIGINAL CONDITION.
20. THE CONTRACTOR MUST ENSURE THAT ALL EXISTING UTILITIES ARE PROPERLY MARKED AND RECORDED FOR FUTURE REFERENCE. THE CONTRACTOR MUST NOTIFY BOHLER ENGINEERING IMMEDIATELY IF ANY UTILITIES ARE NOT PROPERLY MARKED AND RECORDED.

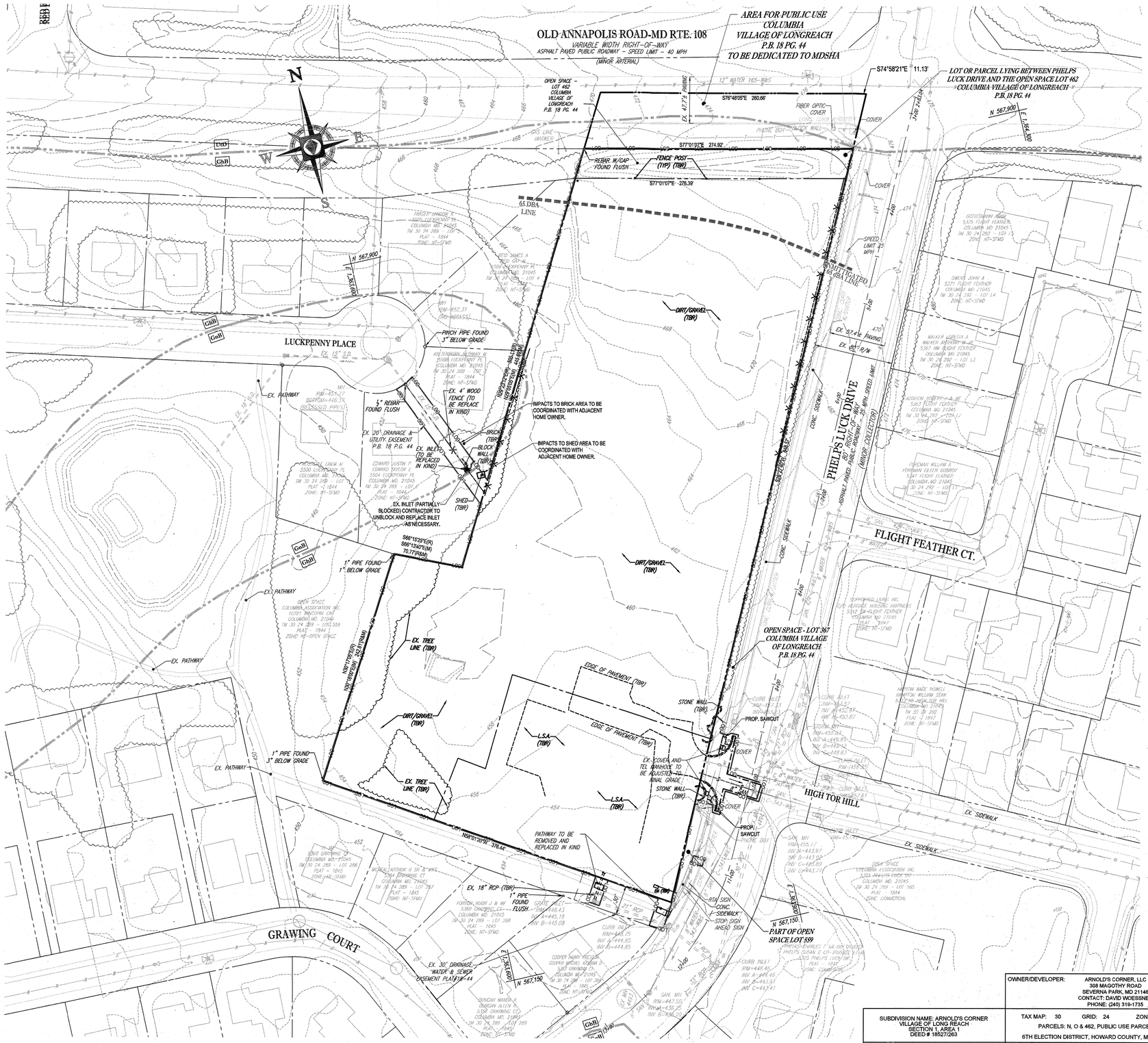
DRAINAGE AND UTILITY NOTES

(Rev. 11/2019)

1. THE GENERAL CONTRACTOR MUST BE INCLUDED AS PART OF THE ENTIRE COMMUNITY PACKAGE AND ARE PART OF THIS CONTRACT DOCUMENTS. THE GENERAL CONTRACTOR MUST NOTIFY BOHLER ENGINEERING IN WRITING IF ANY PORTION OF THE PLANS IS NOT CLEAR OR IF ANY ADDITIONAL INFORMATION IS REQUIRED TO COMPLETE THE WORK SHOWN ON THE PLANS. BOHLER ENGINEERING WILL ANSWER ALL QUESTIONS PROPERLY SUBMITTED IN WRITING. BOHLER ENGINEERING WILL NOT BE RESPONSIBLE FOR ANY WORK PERFORMED BY THE CONTRACTOR WHICH EXCEEDS THE SCOPE OF WORK REQUIRED BY THE PLANS, OR ANY WORK PERFORMED BY THE CONTRACT

SOILS TABLE

SOILS NAME	SOILS DESCRIPTION	HYDROLOGIC SOILS GROUP	HIGHLY ERODIBLE SOIL	K FACTOR
GhB	GLENELG-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	B	NO	0.28
GnB	GLENVILLE-BAILE SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	YES	0.43
UtD	URBAN LAND-UDORTHENTS COMPLEX, 0 TO 15 PERCENT SLOPES	D	NO	0.24



AS-BUILT CERTIFICATION

Note: There is no "AS-BUILT" information provided on this sheet.

STATE OF MARYLAND — PAUL G. CAVANAUGH — No. 27020 — PROFESSIONAL ENGINEER

Date

PAUL GERARD CAVANAUGH #27020

Exp 1/25/21

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 1/31/2020

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/10/20

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.6.20

OWNER/DEVELOPER:	ARNOLD'S CORNER, LLC 308 MAGOTHY ROAD SEVERNA PARK, MD 21146 CONTACT: DAVID WOESSNER PHONE: (240) 319-1735
SUBDIVISION NAME: ARNOLD'S CORNER VILLAGE OF LONG REACH SECTION 1, AREA 1 DEED # 18827/263	TAX MAP: 30 GRID: 24 ZONED: NT PARCELS: N, O & 462, PUBLIC USE PARCELS 6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND
PREVIOUS FILE No. : S-18-006, WP-19-083 ECP-19-052, FDP-77-A-IV, ZB1112, PB 18 F 44 (F-70-068c) P-19-001, WP-19-101	PROFESSIONAL CERTIFICATION I, BRANDON R. ROWE, 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. 40808, EXPIRATION DATE: 7/3/2021

50 25 12.5 0 50
1"= 50'

H:\18MD182086\DRAWINGS\PLAN SET\FINAL PLAN\MD182086-ECP-3.DWG PRINTED BY: AGAMBOA 12.18.19 @ 1:44 PM LAST SAVED BY: AGAMBOA

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

F-19-088

BOHLER™ ENGINEERING

SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

THE INFORMATION, DESIGNS AND CONTENT OF THIS PLAN ARE THE PROPERTY OF BOHLER ENGINEERING. REPRODUCTION, REVISION, REUSE OR DISTRIBUTION WITHOUT WRITTEN AUTHORIZATION FROM BOHLER ENGINEERING, ONLY APPROVED, SIGNED AND SEALED PLANS WILL BE UTILIZED FOR CONSTRUCTION PURPOSES.

REVISIONS

REV	DATE	COMMENT	BY

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PROJECT No.:	MD182086
DRAWN BY:	AVG
CHECKED BY:	BRR
DATE:	12/17/19
SCALE:	1" = 50'
CAD I.D.:	ECP-3

PROJECT:

FINAL PLAN

FOR

ARNOLD'S CORNER

LOTS 1-18 &
OPEN SPACE LOTS 19-23
A RESUBDIVISION OF PARCELS
N & O OF THE VILLAGE OF
LONG REACH, SECTION 1, AREA 1

LOCATION OF SITE
5320 PHELPS LUCK DRIVE
COLUMBIA, MD
6TH ELECTION DISTRICT
TAX MAP 30, GRID 24, PARCELS
N, O, & OPEN SPACE 462
VILLAGE OF LONG REACH,
SECTION 1, AREA 1
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

B.R. ROWE

PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808

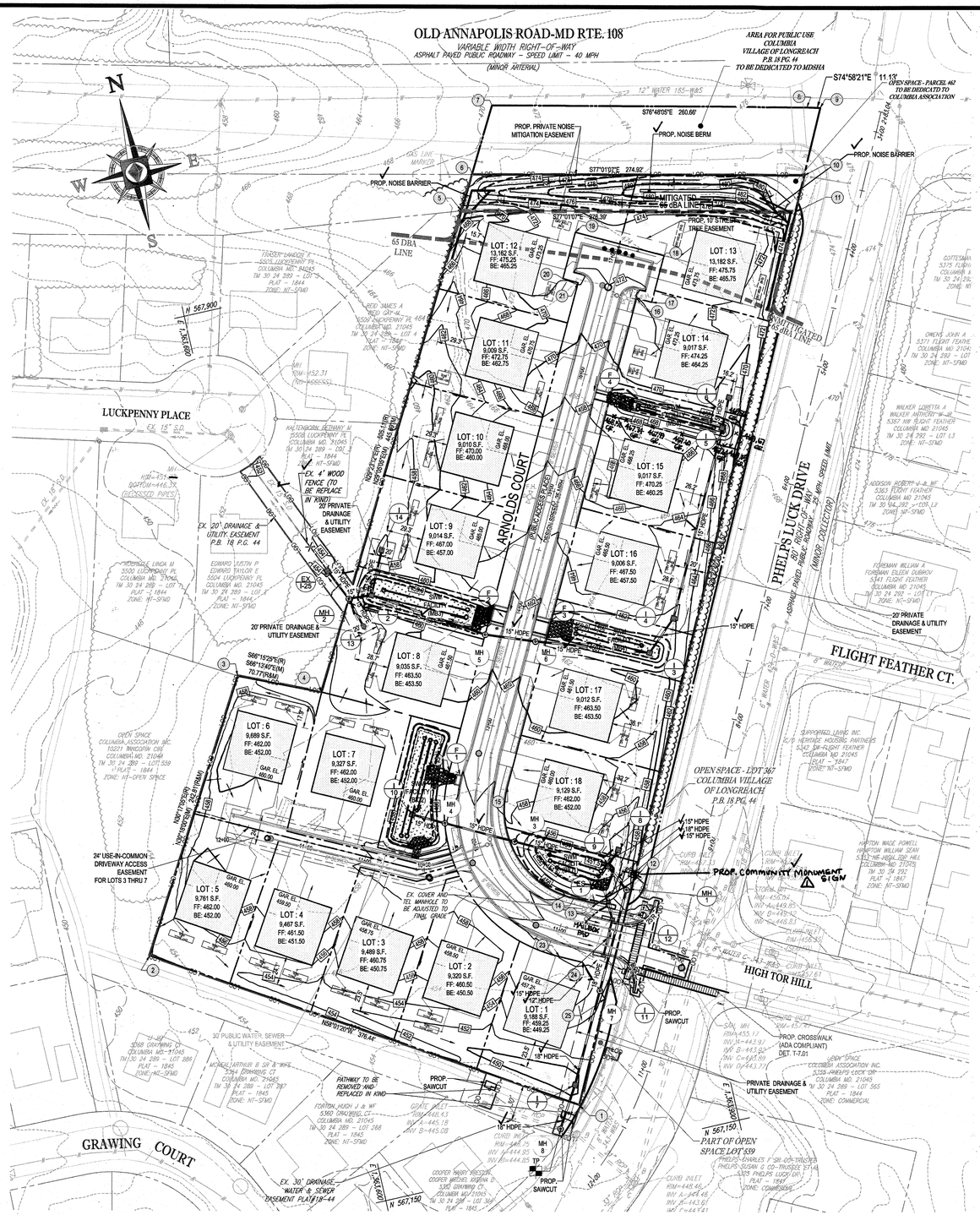
12/20/19

SHEET TITLE:

SOILS MAP, EXISTING CONDITION & DEMO PLAN

SHEET NUMBER:

3



SITE STATISTICS

1. OWNER / DEVELOPER:
   ARNOLDS CORNER, LLC
   308 MAGOTHY ROAD
   SEVERNA PARK, MARYLAND 21146
   CONTACT: DAVID WOESSNER
   PHONE: (240) 319-1735
2. TOTAL ACREAGE OF PROPERTY: 5.609 AC.
   PARCEL N: 4.176 AC.
   PARCEL O: 0.885 AC.
   PARCEL 462: 0.183 AC.
   AREA FOR PUBLIC USE: 0.357 AC.
3. FLOODPLAIN ACREAGE WITHIN FSD: 0.00 AC.
4. WATERSHED: LITTLE PATUXENT RIVER.
5. FEMA: #24027C0155D

NOTES

1. ALL UNDERGROUND ROOF LEADERS WILL BE 6" PVC PIPE.
2. ALL MICRO-BIORETENTION FACILITIES LEADING TO THEIR OWN OUTFALL POINT WILL HAVE OUTFALL PIPES SIZED TO HANDLE THE 10-YR STORM EVENT.
3. STORMWATER QUALITY MANAGEMENT WILL BE PROVIDED BY DRYWELLS AND FIVE (5) MICRO-BIORETENTION FACILITIES.
4. HAZARD CLASS FOR ALL SWM FACILITIES IS "A" DUE TO NO LIFE LOSS FOR FAILURE.
5. REFER TO BORING LOGS LATER IN THIS SET.
6. ALL 2:1 SLOPES WITHIN THE PROJECT LIMIT OF DISTURBANCE WILL RECEIVE SOIL STABILIZATION MATTING AS SOON AS GRADE AS BEEN ESTABLISHED.
7. ONCE GRADES HAVE BEEN ESTABLISHED, THE CONTRACTOR SHALL PROVIDE TEMPORARY / PERMANENT STABILIZATION FOR SLOPES 15% OR GREATER .
8. APPROVAL OF THIS PLAN IS NOT AUTHORIZED TO DISTURB OFFSITE PROPERTY. NOTIFICATION AND AUTHORIZATION FROM THE PROPERTY OWNER IS REQUIRED PRIOR TO ANY DISTURBANCE.

NOTE:

REFERE TOSHEET 5 (LANDSCAPE PLAN) FOR STREET TREE LOCATIONS, SPECIES, AND QUANTITIES.

LEGEND

LOD — LOD	LIMIT OF DISTURBANCE
	SOIL LIMIT
	NOISE MITIGATION
	PROP. SWM FACILITY
M-6	DRYWELL (M-6)
TP	PROP. TEST PIT

TEST PIT NOTE

TP CONTRACTOR TO TEST PIT 2 FEET BELOW PROPOSED UTILITY OR UNTIL EXACT LOCATION OF EXISTING UTILITY IS IDENTIFIED AND SUBMIT ANY DISCREPANCIES TO BOHLER ENGINEERING IN WRITING.

AS-BUILT CERTIFICATION

I hereby certify, by my seal, that to the best of my knowledge and belief the the facilities shown on the plan was constructed as shown on this "AS-BUILT" plan meet the approved plans and specifications.

STATE OF MARYLAND — RICHARD CHASE HOWARD — No. 34626 — PROFESSIONAL ENGINEER

July 12, 2022
Date
PAUL GERARD CAVANAUGH #27020
Exp. 1/25/24

FOR REV. 1 ONLY
12/20/20
BRANDON ROWE

APPROVED: DEPARTMENT OF PUBLIC WORKS CHIEF, BUREAU OF HIGHWAYS MK DATE 1/21/2020	
APPROVED: DEPARTMENT OF PLANNING AND ZONING CHIEF, DIVISION OF LAND DEVELOPMENT DATE 2/10/20	
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 2.6.20	

OWNER/DEVELOPER:	ARNOLD'S CORNER, LLC 308 MAGOTHY ROAD SEVERNA PARK, MD 21146 CONTACT: DAVID WOESSNER PHONE: (240) 319-1735
SUBDIVISION NAME: ARNOLD'S CORNER VILLAGE OF LONG REACH SECTION 1, AREA 1 DEED # 18527/263	TAX MAP: 30 GRID: 24 ZONED: NT PARCELS: N, O & 462, PUBLIC USE PARCELS 6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND
PREVIOUS FILE No. : S-18-003, WP-19-083 ECP-18-052, FDP-77-A-IV, ZB1112, PB 18 F 44 (F-70-068□) P-19-001, WP-19-101	PROFESSIONAL CERTIFICATION I, BRANDON R. ROWE, 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. 40908, EXPIRATION DATE: 7/3/2021

50 25 12.5 0 50
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REVISIONS

REV	DATE	COMMENT	BY
1	12-22-20	ADDED ENTRANCE MONUMENT SIGN	CMB

811
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PROJECT No.:	MD182086
DRAWN BY:	AVG
CHECKED BY:	BRR
DATE:	12/17/19
SCALE:	1" = 50'
CAD I.D.:	OCP-3

PROJECT:

FINAL PLAN
FOR
ARNOLD'S CORNER
LOTS 1-18 &
OPEN SPACE LOTS 19-23
A RESUBDIVISION OF PARCELS N & O OF THE VILLAGE OF LONG REACH, SECTION 1, AREA 1
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Fax: (410) 821-7987
MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40908
12/20/19

SHEET TITLE:

GRADING PLAN

SHEET NUMBER:

4

"AS-BUILT" F-19-088

SCHEDULE 'A' - PERIMETER LANDSCAPE EDGE

PERIMETER	CATEGORY (P = PROPERTIES; R = ROADWAYS)	LANDSCAPE TYPE	LINEAR FEET OF ROADWAY FRONTAGE/ PERIMETER	CREDIT FOR EX. VEGETATION (YES/NO; LF) (DESCRIBE BELOW IF NEEDED)	CREDIT FOR FENCE/WALL/BERM (YES/NO; LF) (DESCRIBE BELOW IF NEEDED)	NUMBER OF PLANTS REQUIRED		NUMBER OF PLANTS PROVIDED			
						EVERGREEN TREES	SHADE TREES	ORNAMENTAL TREES	EVERGREEN TREES	SHADE TREES	SHRUBS
#1	P	*C	517 LF	NO	NO (0)	26	13	9	17	13	0
#2	P	*C	243 LF	NO	NO (0)	13	6	0	6	6	70
#3	P	*C	377 LF	NO	NO (0)	19	10	0	19	10	0
#4	R(SIDE/REAR TO ROAD)	B	791 LF - 24 LF (ENTRANCE) = 767 LF	NO	NO (0)	20	16	11	41	0	0
#5	R(SIDE TO ROAD)	B	277 LF	NO	YES (277 LF)	0	0	13	10	2	63
THE SYMBOL "@" REPRESENTS PLANT MATERIAL TO MEET PERIMETER REQUIREMENT.											
					TOTAL	78	45	33	93	31	133

*ENHANCED LANDSCAPE BUFFER PER SEC. 16.127(C)(1)(II)

HOWARD COUNTY COMPLIANCE CHART

PERIMETER LANDSCAPE TYPES - BASED ON ADJACENT LAND USE

LANDSCAPE EDGE TYPE	LANDSCAPE CHARACTER	SHADE TREE(S) PER LINEAR FEET	EVERGREEN TREE(S) PER LINEAR FEET	SHRUB(S) PER LINEAR FEET
A	LIGHT BUFFER	1:60	0	0
B	MODERATE BUFFER	1:50	1:40	0
C	HEAVY BUFFER	1:40	1:20	0
D	SCREEN	1:60	1:10	0
E	BUFFER - PARKING ADJ. TO ROADWAY	1:40	0	1:4

STREET TREE CHART

STREET NAME	REQUIRED	PROVIDED
OLD ANNAPOLIS ROAD - MD RTE. 108 (277 LF / 40)	7 TREES	7 TREES
PROP. ROAD "A" (654 X 2 = 1308 LF / 40)	33 TREES	33 TREES
TOTAL TREES	40 TREES	40 SHADE TREES

THE SYMBOL "#" REPRESENTS PLANT MATERIAL TO MEET THIS REQUIREMENT.

STREET TREE NOTES

1. FINANCIAL SURETY FOR THE REQUIRED 40 STREET TREES WILL BE POSTED WITH THE DEVELOPMENT ENGINEERING DIVISION (DED) COST ESTIMATE UNDER THE FINAL PLAN SUBMISSION.
2. SHADE TREES MUST BE PLANTED A MINIMUM OF 40 FEET AND ORNAMENTAL TREES MUST BE PLANTED A MINIMUM OF 25 FEET FROM POWER LINES PER B.G.E. PLANTING GUIDE.
3. FINAL PLACEMENT OF STREET TREES WILL OCCUR IN THE FIELD AND BE PLACED A MINIMUM OF 30 FEET FROM ALL SIGNS AND INTERSECTIONS WHEN PLANTED BETWEEN SIDEWALK AND CURB. BE LOCATED WITH CONSIDERATION OF UNDERGROUND UTILITIES AND STRUCTURES AND MAINTAIN A MINIMUM OF 5 FEET DISTANCE ON CENTER FROM A DRAIN INLET STRUCTURE, 5 FEET FROM AN OPEN ACCESS STRIP AND 10 FEET FROM A DRIVEWAY.
4. THE HEALTH DEPARTMENT MAY REQUIRE DISTURBANCE TO THE TREES WITHIN THE VICINITY OF THE SRA. IF DAMAGE OCCURS, THE TREES MUST BE REPLACED IN KIND.
5. A MINIMUM OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY STREET TREE.
6. ON THE APPROACH SIDE OF A STOP SIGN, NO STREET TREE CAN BE PLANTED WITHIN 30' OF THE STOP SIGN.

HOWARD COUNTY LANDSCAPE NOTES

1. LANDSCAPING FOR THIS SUBDIVISION WILL BE PROVIDED IN ACCORDANCE WITH THIS CERTIFIED LANDSCAPE PLAN AND IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. PERIMETER LANDSCAPE SURETY IN THE AMOUNT OF $25,200.00 FOR THE INSTALLATION OF 45 SHADE TREES ($300.00 EACH) AND 78 EVERGREEN TREES ($150.00 EACH) SHALL BE POSTED BY THE DEVELOPER AS PART OF THE DPW DEVELOPER'S AGREEMENT, F-19-088.
2. NO CLEARING OF EXISTING VEGETATION IS PERMITTED WITHIN A LANDSCAPE EDGE FOR WHICH CREDIT IS BEING TAKEN; HOWEVER, LANDSCAPE MAINTENANCE IS AUTHORIZED.
3. AT THE TIME OF INSTALLMENT, ALL SHRUBS AND OTHER PLANTINGS HEREWITH LISTED AND APPROVED FOR THE SITE SHALL BE OF 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 APPROVED FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THIS APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN THE RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO APPLICABLE PLANS AND CERTIFICATIONS.
4. SHOULD ANY TREE DESIGNATED FOR PRESERVATION, FOR WHICH CREDIT IS GIVEN, DIE PRIOR TO RELEASE OF BONDS, THE OWNER WILL BE REQUIRED TO REPLACE THE TREE WITH THE EQUIVALENT SPECIES OR WITH A TREE WHICH WILL OBTAIN THE SAME HEIGHT, SPREAD AND GROWTH CHARACTERISTICS. THE REPLACEMENT TREE MUST BE A MINIMUM OF 3 INCHES IN CALIPER AND INSTALLED AS REQUIRED IN THE LANDSCAPE MANUAL.
5. THE OWNER, TENANT, AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING, PLANT MATERIALS, 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 REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.

LANDSCAPE SCHEDULE

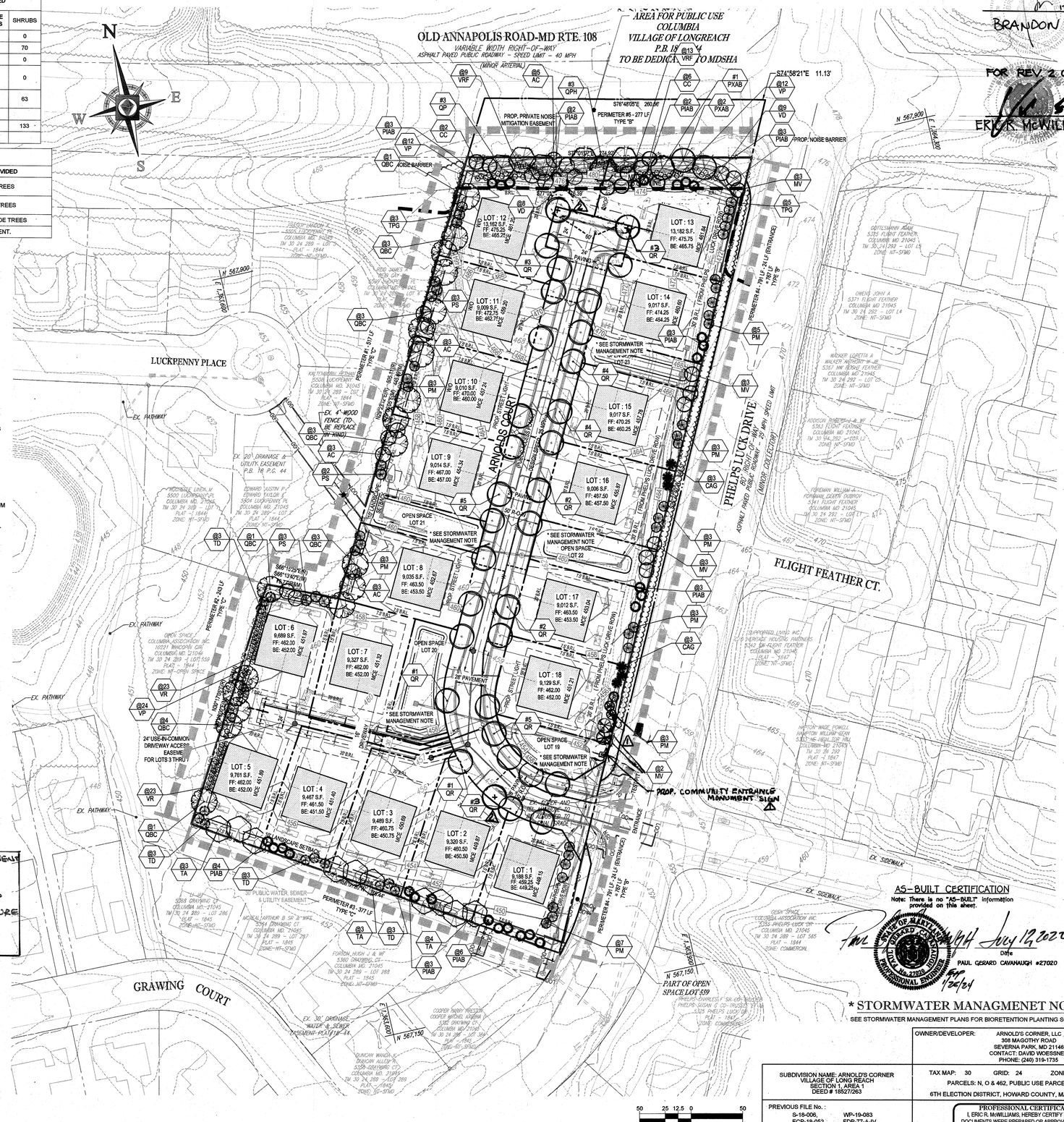
SYMBOL	KEY	QTY.	BOTANICAL NAME	COMMON NAME	CAL.	CONT.
	SHADE TREES					
	PXAB	3	PLATANUS X ACERIFOLIA 'BLOODGOOD'	BLOODGOOD LONDON PLANETREE	2 1/2-3" CAL. / 12-14'	B+B
	QBC	19	QUERCUS BICOLOR	SWAMP WHITE OAK	2 1/2-3" CAL. / 12-14'	B+B
	QP	3	QUERCUS PALUSTRIS	PIN OAK	2 1/2-3" CAL. / 12-14'	B+B
	QPH	3	QUERCUS PHELLOS	WILLOW OAK	2 1/2-3" CAL. / 12-14'	B+B
	QR	33	QUERCUS RUBRA	RED OAK	2 1/2-3" CAL. / 12-14'	B+B
	TA	10	TILIA AMERICANA	BASSWOOD	2 1/2-3" CAL. / 12-14'	B+B
	SUBTOTAL:	71				
	ORNAMENTAL TREES					
	AC	9	AMELANCHIER CANADENSIS	MULTI STEM SHADBLOW SERVICEBERRY	8-10' HT.	B+B
	CC	18	CERCIS CANADENSIS	EASTERN REDBUD	8-10' HT.	B+B
	MV	11	MAGNOLIA VIRGINIANA	SWEETBAY MAGNOLIA	1-1 1/2" CAL. / 8-10'	B+B
	SUBTOTAL:	38				
	EVERGREEN TREES					
	CAG	6	CEDRUS ATLANTICA 'GLAUCA'	BLUE ATLAS CEDAR	7-8' HT.	B+B
	PIAB	29	PICEA ABIES	NORWAY SPRUCE	6-7' HT.	B+B
	PM	30	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	6-7' HT.	B+B
	PS	8	PINUS STROBUS	EASTERN WHITE PINE	6-7' HT.	B+B
	TD	12	TAXODIUM DISTICHUM	BALD CYPRESS	2 1/2-3" CAL. / 8-10'	B+B
	TPG	8	THUJA PLICATA 'GREEN GIANT'	'GREEN GIANT' ARBORVITAE	7-8' HT.	B+B
	SUBTOTAL:	93				
	DECIDUOUS SHRUBS					
	VD	17	VIBURNUM DENTATUM	ARROWWOOD VIBURNUM	3-4'	B+B
	VP	48	VIBURNUM PRUNIFLOLIUM	BLACKHAW	3-4'	B+B
	VRF	22	VIBURNUM RUFIDULUM	RUSTY BLACKHAW VIBURNUM	5'	B+B
	SUBTOTAL:	87				
	EVERGREEN SHRUBS					
	VR	46	VIBURNUM X RHYTIDOPHYLLUM	LEATHERLEAF VIBURNUM	3-4'	B+B
	SUBTOTAL:	46				

NOTE: IF ANY DISCREPANCIES OCCUR BETWEEN AMOUNTS SHOWN IN THE PLAN AND THE PLANT LIST, THE PLAN SHALL DICTATE.

LEGEND

- TPF — TREE PROTECTION
- STEEP SLOPES (15%-25%)
- STEEP SLOPES (>25%)
- SOIL DIVIDE
- MaB — SOIL LABEL
- RIPRAP STABILIZATION
- LOD — LIMIT OF DISTURBANCE
- RP — ROOT PRUNING
- SPECIMEN TREE (TO BE REMOVED)
- SPECIMEN TREE (TO BE REMOVED) CRITICAL ROOT ZONE (CRZ)
- FOREST CONSERVATION EASEMENT

PRIOR TO FINAL TREE PLACEMENT PLEASE NOTIFY BUREAU OF HIGHWAYS - TRAFFIC DIVISION AT 410-313-2430 TO INSURE ADEQUATE VISIBILITY HAS BEEN PROVIDED.



* STORMWATER MANAGMENET NOTE:

SEE STORMWATER MANAGEMENT PLANS FOR BIORETENTION PLANTING SCHEDULES.

AS-BUILT CERTIFICATION

Note: There is no "AS-BUILT" information provided on this sheet.

PAUL GERARD CAVANAUGH #27020 — STATE OF MARYLAND — LICENSED PROFESSIONAL ENGINEER — No. 27020

July 19 2022
Date

PAUL GERARD CAVANAUGH #27020

FOR 1/24/24

OWNER/DEVELOPER:	ARNOLD'S CORNER, LLC 308 MAGOTHY ROAD SEVERNA PARK, MD 21146 CONTACT: DAVID WOESSNER PHONE: (240) 319-1735
SUBDIVISION NAME: ARNOLD'S CORNER VILLAGE OF LONG REACH SECTION 1, AREA 1 DEED # 18527/263	TAX MAP: 30 GRID: 24 ZONED: NT PARCELS: N, O & 462, PUBLIC USE PARCELS 6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND
PREVIOUS FILE No.: S-18-006, ECP-19-052, ZB1112, P-19-001, WP-19-083, FDP-77-A-IV, PB 18 F 44 (F-70-068c), WP-19-101	PROFESSIONAL CERTIFICATION I, ERIC R. McWILLIAMS, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 3697, EXPIRATION DATE: 6/20/2020

50 25 12.5 0 50
1"= 50'

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 1/31/2020
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/10/20
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.6.20

DEVELOPER'S/OWNER'S LANDSCAPE CERTIFICATE

I/WE CERTIFY THAT HE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION 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.

DEVELOPER'S / OWNER'S NAME — DATE 12-20-2019

FOR REV. 1 ONLY
BRANDON ROWE

FOR REV. 2 ONLY
5.13.21
ERIC R. McWILLIAMS

BOHLER ENGINEERING
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

THE INFORMATION, DESIGN AND CONTENT OF THIS DOCUMENT IS PROPRIETARY AND SHALL NOT BE REPRODUCED WITHOUT WRITTEN AUTHORIZATION FROM BOHLER ENGINEERING. ONLY APPROVED, SIGNED AND SEALED PLANS ARE ELIGIBLE FOR CONSTRUCTION PURPOSES.

REVISIONS

REV	DATE	COMMENT	BY
1	12-22-20	ADDED ENTRANCE SIGN, REMOVED TWO MV AND THREE PM TREES	LMB
2	4-20-21	UPDATE STREET TREE LOCATIONS	AG

KNOW WHAT'S BELOW ALWAYS CALL 811 BEFORE YOU DIG
It's fast. It's free. It's the law.

PROJECT No.:	MD182086
DRAWN BY:	AVG
CHECKED BY:	BRR
DATE:	12/17/19
SCALE:	1" = 50'
CAD I.D.:	LSP-3

PROJECT:

FINAL PLAN
FOR
ARNOLD'S CORNER
LOTS 1-18 &
OPEN SPACE LOTS 19-23
A RESUBDIVISION OF PARCELS N & O OF THE VILLAGE OF LONG REACH, SECTION 1, AREA 1
LOCATION OF SITE
5320 PHELPS LUCK DRIVE
COLUMBIA, MD
6TH ELECTION DISTRICT
TAX MAP 30, GRID 24, PARCELS N, O, & OPEN SPACE 462
VILLAGE OF LONG REACH, SECTION 1, AREA 1
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

E.R. McWILLIAMS
REGISTERED LANDSCAPE ARCHITECT
MARYLAND LICENSE No. 3697
12.20.19

SHEET TITLE:

LANDSCAPE PLAN

SHEET NUMBER:

5

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

F-19-088

H:\18MD182086\DRAWING\SPLAN SET\FINAL PLAN\MD182086-LSP-3.DWG PRINTED BY: JCAMPBELL 12.19.19 @ 3:19 PM LAST SAVED BY: JCAMPBELL

LANDSCAPE SPECIFICATIONS

1. SCOPE OF WORK:
THE LANDSCAPE CONTRACTOR SHALL BE REQUIRED TO PERFORM ALL CLEARING, FINISHED GRADING, SOIL PREPARATION, PERMANENT SEEDING OR SODDING, PLANTING AND MULCHING INCLUDING ALL LABOR, MATERIALS, TOOLS AND EQUIPMENT NECESSARY FOR THE COMPLETION OF THIS PROJECT, UNLESS OTHERWISE CONTRACTED BY THE GENERAL CONTRACTOR.

2. MATERIALS

A. GENERAL - ALL HARDSCAPE MATERIALS SHALL MEET OR EXCEED SPECIFICATIONS AS OUTLINED IN THE STATE DEPARTMENT OF TRANSPORTATION'S SPECIFICATIONS.

B. TOPSOIL - NATURAL, FRIABLE, LOAMY SILT SOIL HAVING AN ORGANIC CONTENT NOT LESS THAN 5%, A PH RANGE BETWEEN 4.5-7.0. IT SHALL BE FREE OF DEBRIS, ROCKS LARGER THAN ONE INCH (1"), WOOD, ROOTS, VEGETABLE MATTER AND CLAY CLODS.

C. LAWN - ALL DISTURBED AREAS ARE TO BE TREATED WITH A MINIMUM SIX INCH (6") THICK LAYER OF TOPSOIL, OR AS DIRECTED BY THE LOCAL ORDINANCE OR CLIENT, AND SEEDED OR SODDED IN ACCORDANCE WITH THE PERMANENT STABILIZATION METHODS INDICATED WITHIN THE SOIL EROSION AND SEDIMENT CONTROL NOTES.
1.1. LAWN SEED MIXTURE SHALL BE FRESH, CLEAN NEW CROP SEED.
1.2. SOD SHALL BE STRONGLY ROOTED, WEED AND DISEASE/PEST FREE WITH A UNIFORM THICKNESS.
1.3. SOD INSTALLED ON SLOPES GREATER THAN 4:1 SHALL BE PEGGED TO HOLD SOD IN PLACE.

D. MULCH - THE MULCH AROUND THE PERIMETER OF THE BUILDING SHALL BE A 3" LAYER OF DOUBLE SHREDDED BLACK CEDAR MULCH ONLY. ALL OTHER AREAS SHALL BE MULCHED WITH A 3" LAYER OF DOUBLE SHREDDED DARK BROWN HARDWOOD BARK MULCH, UNLESS OTHERWISE STATED ON THE LANDSCAPE PLAN.

E. FERTILIZER
1.1. FERTILIZER SHALL BE DELIVERED TO THE SITE MIXED AS SPECIFIED IN THE ORIGINAL UNOPENED STANDARD BAGS SHOWING WEIGHT, ANALYSIS AND NAME OF MANUFACTURER. FERTILIZER SHALL BE STORED IN A WEATHERPROOF PLACE SO THAT IT CAN BE KEPT DRY PRIOR TO USE.
1.2. FOR THE PURPOSE OF BIDDING, ASSUME THAT FERTILIZER SHALL BE 10% NITROGEN, 6% PHOSPHORUS AND 4% POTASSIUM BY WEIGHT. A FERTILIZER SHOULD NOT BE SELECTED WITHOUT A SOIL TEST PERFORMED BY A CERTIFIED SOIL LABORATORY.

F. PLANT MATERIAL
1.1. ALL PLANTS SHALL IN ALL CASES CONFORM TO THE REQUIREMENTS OF THE "AMERICAN STANDARD FOR NURSERY STOCK" (ANSI Z60.1), LATEST EDITION, AS PUBLISHED BY THE AMERICAN NURSERY & LANDSCAPE ASSOCIATION.
1.2. IN ALL CASES, BOTANICAL NAMES SHALL TAKE PRECEDENCE OVER COMMON NAMES FOR ANY AND ALL PLANT MATERIAL.
1.3. PLANTS SHALL BE LEGIBLY TAGGED WITH THE PROPER NAME AND SIZE. TAGS ARE TO REMAIN ON AT LEAST ONE PLANT OF EACH SPECIES FOR VERIFICATION PURPOSES DURING THE FINAL INSPECTION.
1.4. TREES WITH ABRASION OF THE BARK, SUN SCALDS, DISFIGURATION OR FRESH CUTS OF LIMBS OVER 1¼", WHICH HAVE NOT BEEN COMPLETELY CALLUSED, SHALL BE REJECTED.PLANTS SHALL NOT BE BOUND WITH WIRE OR ROPE AT ANY TIME SO AS TO DAMAGE THE BARK OR BREAK BRANCHES.
1.5. ALL PLANTS SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY AND SHALL HAVE A NORMAL HABIT OF GROWTH. WELL DEVELOPED BRANCHES, DENSELY FOLIATED, VIGOROUS ROOT SYSTEMS AND BE FREE OF DISEASE, INSECTS, PESTS, EGGS OR LARVAE.
1.6. CALIPER MEASUREMENTS OF NURSERY GROWN TREES SHALL BE TAKEN AT A POINT ON THE TRUNK SIX INCHES (6") ABOVE THE NATURAL GRADE FOR TREES UP TO AND INCLUDING A FOUR INCH (4") CALIPER SIZE. IF THE CALIPER AT SIX INCHES (6") ABOVE THE GROUND EXCEEDS FOUR INCHES (4") IN CALIPER, THE CALIPER SHOULD BE MEASURED AT A POINT 12" ABOVE THE NATURAL GRADE.
1.7. SHRUBS SHALL BE MEASURED TO THE AVERAGE HEIGHT OR SPREAD OF THE SHRUB, AND NOT TO THE LONGEST BRANCH.
1.8. TREES AND SHRUBS SHALL BE HANDLED WITH CARE BY THE ROOT BALL.

3. GENERAL WORK PROCEDURES

A. CONTRACTOR TO UTILIZE WORKMANLIKE INDUSTRY STANDARDS IN PERFORMING ALL LANDSCAPE CONSTRUCTION. THE SITE IS TO BE LEFT IN A CLEAN STATE AT THE END OF EACH WORKDAY. ALL DEBRIS, MATERIALS AND TOOLS SHALL BE PROPERLY STORED, STOCKPILED OR DISPOSED OF.

B. WASTE MATERIALS AND DEBRIS SHALL BE COMPLETELY DISPOSED OF AT THE CONTRACTOR'S EXPENSE. DEBRIS SHALL NOT BE BURIED, INCLUDING ORGANIC MATERIALS, BUT SHALL BE REMOVED COMPLETELY FROM THE SITE.

4. SITE PREPARATIONS

A. BEFORE AND DURING PRELIMINARY GRADING AND FINISHED GRADING, ALL WEEDS AND GRASSES SHALL BE DUG OUT BY THE ROOTS AND DISPOSED OF IN ACCORDANCE WITH GENERAL WORK PROCEDURES OUTLINED HEREIN.

B. ALL EXISTING TREES TO REMAIN SHALL BE PRUNED TO REMOVE ANY DAMAGED BRANCHES. THE ENTIRE LIMB OF ANY DAMAGED BRANCH SHALL BE CUT OFF AT THE TRUNK. CONTRACTOR SHALL ENSURE THAT CUTS ARE SMOOTH AND STRAIGHT. ANY EXPOSED ROOTS SHALL BE CUT BACK WITH CLEAN, SHARP TOOLS AND TOPSOIL SHALL BE PLACED AROUND THE REMAINDER OF THE ROOTS. EXISTING TREES SHALL BE MONITORED ON A REGULAR BASIS FOR ADDITIONAL ROOT OR BRANCH DAMAGE AS A RESULT OF CONSTRUCTION. ROOTS SHALL NOT BE LEFT EXPOSED FOR MORE THAN ONE (1) DAY. CONTRACTOR SHALL WATER EXISTING TREES AS NEEDED TO PREVENT SHOCK OR DECLINE.

C. CONTRACTOR SHALL ARRANGE TO HAVE A UTILITY STAKE-OUT TO LOCATE ALL UNDERGROUND UTILITIES PRIOR TO INSTALLATION OF ANY LANDSCAPE MATERIAL. UTILITY COMPANIES SHALL BE CONTACTED THREE (3) DAYS PRIOR TO THE BEGINNING OF WORK.

5. TREE PROTECTION

A. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING TREES TO REMAIN. A TREE PROTECTION ZONE SHALL BE ESTABLISHED AT THE DRIP LINE OR 15 FEET FROM THE TRUNK OR AT THE LIMIT OF CONSTRUCTION DISTURBANCE, WHICHEVER IS GREATER. LOCAL STANDARDS THAT MAY REQUIRE A MORE STRICT TREE PROTECTION ZONE SHALL BE HONORED.

B. A FORTY-EIGHT INCH (48") HIGH WOODEN SNOW FENCE OR ORANGE COLORED HIGH-DENSITY 'VISI-FENCE', OR APPROVED EQUAL, MOUNTED ON STEEL POSTS SHALL BE PLACED ALONG THE BOUNDARY OF THE TREE PROTECTION ZONE. POSTS SHALL BE LOCATED AT A MAXIMUM OF EIGHT FEET (8') ON CENTER OR AS INDICATED WITHIN THE TREE PROTECTION DETAIL.

C. WHEN THE TREE PROTECTION FENCING HAS BEEN INSTALLED, IT SHALL BE INSPECTED BY THE APPROVING AGENCY PRIOR TO DEMOLITION, GRADING, TREE CLEARING OR ANY OTHER CONSTRUCTION. THE FENCING ALONG THE TREE PROTECTION ZONE SHALL BE REGULARLY INSPECTED BY THE LANDSCAPE CONTRACTOR AND MAINTAINED UNTIL ALL CONSTRUCTION ACTIVITY HAS BEEN COMPLETED.

D. AT NO TIME SHALL MACHINERY, DEBRIS, FALLEN TREES OR OTHER MATERIALS BE PLACED, STOCKPILED OR LEFT STANDING IN THE TREE PROTECTION ZONE.

6. SOIL MODIFICATIONS

A. CONTRACTOR SHALL ATTAIN A SOIL TEST FOR ALL AREAS OF THE SITE PRIOR TO CONDUCTING ANY PLANTING. SOIL TESTS SHALL BE PERFORMED BY A CERTIFIED SOIL LABORATORY.

B. LANDSCAPE CONTRACTOR SHALL REPORT ANY SOIL OR DRAINAGE CONDITIONS CONSIDERED DETRIMENTAL TO THE GROWTH OF PLANT MATERIAL. SOIL MODIFICATIONS, AS SPECIFIED HEREIN, MAY NEED TO BE CONDUCTED BY THE LANDSCAPE CONTRACTOR DEPENDING ON SITE CONDITIONS.

C. THE FOLLOWING AMENDMENTS AND QUANTITIES ARE APPROXIMATE AND ARE FOR BIDDING PURPOSES ONLY. COMPOSITION OF AMENDMENTS SHOULD BE REVISED DEPENDING ON THE OUTCOME OF A TOPSOIL ANALYSIS PERFORMED BY A CERTIFIED SOIL LABORATORY.
1.1. TO INCREASE A SANDY SOIL'S ABILITY TO RETAIN WATER AND NUTRIENTS, THOROUGHLY TILL ORGANIC MATTER INTO THE TOP 6-12". USE COMPOSTED BARK, COMPOSTED LEAF MULCH OR PEAT MOSS. ALL PRODUCTS SHOULD BE COMPOSTED TO A DARK COLOR AND BE FREE OF PIECES WITH IDENTIFIABLE LEAF OR WOOD STRUCTURE. AVOID MATERIAL WITH A PH HIGHER THAN 7.5.
1.2. TO INCREASE DRAINAGE, MODIFY HEAVY CLAY OR SILT (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) AND/OR AGRICULTURAL GYPSUM. COARSE SAND MAY BE USED IF ENOUGH IS ADDED TO BRING THE SAND CONTENT TO MORE THAN 60% OF THE TOTAL MIX. SUBSURFACE DRAINAGE LINES MAY NEED TO BE ADDED TO INCREASE DRAINAGE.
1.3. MODIFY EXTREMELY SANDY SOILS (MORE THAN 85%) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX.

7. FINISHED GRADING

A. UNLESS OTHERWISE CONTRACTED, THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF TOPSOIL AND THE ESTABLISHMENT OF FINE-GRADING WITHIN THE DISTURBANCE AREA OF THE SITE.

B. LANDSCAPE CONTRACTOR SHALL VERIFY THAT SUBGRADE FOR INSTALLATION OF TOPSOIL HAS BEEN ESTABLISHED. THE SUBGRADE OF THE SITE MUST MEET THE FINISHED GRADE LESS THE REQUIRED TOPSOIL THICKNESS (1"±).

C. ALL LAWN AND PLANTING AREAS SHALL BE GRADED TO A SMOOTH, EVEN AND UNIFORM PLANE WITH NO ABRUPT CHANGE OF SURFACE AS DEPICTED WITHIN THIS SET OF CONSTRUCTION PLANS, UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER OR LANDSCAPE ARCHITECT.

D. ALL PLANTING AREAS SHALL BE GRADED AND MAINTAINED TO ALLOW FREE FLOW OF SURFACE WATER IN AND AROUND THE PLANTING BEDS. STANDING WATER SHALL NOT BE PERMITTED IN PLANTING BEDS.

8. TOPSOILING

A. CONTRACTOR SHALL PROVIDE A SIX INCH (6") THICK MINIMUM LAYER OF TOPSOIL, OR AS DIRECTED BY THE LOCAL ORDINANCE OR CLIENT, IN ALL PLANTING AREAS. TOPSOIL SHOULD BE SPREAD OVER A PREPARED SURFACE IN A UNIFORM LAYER TO ACHIEVE THE DESIRED COMPACTED THICKNESS.

B. ON-SITE TOPSOIL MAY BE USED TO SUPPLEMENT THE TOTAL AMOUNT REQUIRED. TOPSOIL FROM THE SITE MAY BE REJECTED IF IT HAS NOT BEEN PROPERLY REMOVED, STORED AND PROTECTED PRIOR TO CONSTRUCTION.

C. CONTRACTOR SHALL FURNISH TO THE APPROVING AGENCY AN ANALYSIS OF BOTH IMPORTED AND ON-SITE TOPSOIL TO BE UTILIZED IN ALL PLANTING AREAS. THE PH AND NUTRIENT LEVELS MAY NEED TO BE ADJUSTED THROUGH SOIL MODIFICATIONS AS NEEDED TO ACHIEVE THE REQUIRED LEVELS AS SPECIFIED IN THE MATERIALS SECTION ABOVE.

D. ALL PLANTING AND LAWN AREAS ARE TO BE CULTIVATED TO A DEPTH OF SIX INCHES (6"). ALL DEBRIS EXPOSED FROM EXCAVATION AND CULTIVATION SHALL BE DISPOSED OF IN ACCORDANCE WITH GENERAL WORK PROCEDURES SECTION ABOVE. THE FOLLOWING SHALL BE TILLED INTO THE TOP FOUR INCHES (4") IN TWO DIRECTIONS (QUANTITIES BASED ON A 1,000 SQUARE FOOT AREA):
1.1. 20 POUNDS 'GROW POWER' OR APPROVED EQUAL
1.2. 20 POUNDS NITRO-FORM (COURSE) 38-0-0 BLUE CHIP

E. THE SPREADING OF TOPSOIL SHALL NOT BE CONDUCTED UNDER MUDDY OR FROZEN CONDITIONS.

9. PLANTING

A. INSOFAR THAT IT IS FEASIBLE, PLANT MATERIAL SHALL BE PLANTED ON THE DAY OF DELIVERY. IN THE EVENT THAT THIS IS NOT POSSIBLE, LANDSCAPE CONTRACTOR SHALL PROTECT UNINSTALLED PLANT MATERIAL. PLANTS SHALL NOT REMAIN UNPLANTED FOR LONGER THAN A THREE DAY PERIOD AFTER DELIVERY. PLANTS THAT WILL NOT BE PLANTED FOR A PERIOD OF TIME GREATER THAN THREE DAYS SHALL BE HEALED IN WITH TOPSOIL OR MULCH TO HELP PRESERVE ROOT MOISTURE.

B. PLANTING OPERATIONS SHALL BE PERFORMED DURING PERIODS WITHIN THE PLANTING SEASON WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE AND IN ACCORDANCE WITH ACCEPTED LOCAL PRACTICE. PLANTS SHALL NOT BE INSTALLED IN TOPSOIL THAT IS IN A MUDDY OR FROZEN CONDITION.

C. ANY INJURED ROOTS OR BRANCHES SHALL BE PRUNED TO MAKE CLEAN-CUT ENDS PRIOR TO PLANTING UTILIZING CLEAN, SHARP TOOLS. ONLY INJURED OR DISEASED BRANCHING SHALL BE REMOVED.

D. ALL PLANTING CONTAINERS AND NON-BIODEGRADABLE MATERIALS SHALL BE REMOVED FROM ROOT BALLS DURING PLANTING. NATURAL FIBER BURLAP MUST BE CUT FROM AROUND THE TRUNK OF THE TREE AND FOLDED DOWN AGAINST THE ROOT BALL PRIOR TO BACKFILLING.

E. POSITION TREES AND SHRUBS AT THEIR INTENDED LOCATIONS AS PER THE PLANS AND SECURE THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO EXCAVATING PITS, MAKING NECESSARY ADJUSTMENTS AS DIRECTED.

F. PRIOR TO THE ISSUANCE OF ANY CERTIFICATE OF OCCUPANCY, THE PROPOSED LANDSCAPE, AS SHOWN ON THE APPROVED LANDSCAPE PLAN, MUST BE INSTALLED, INSPECTED AND APPROVED BY THE APPROVING AGENCY. THE APPROVING AGENCY SHALL TAKE INTO ACCOUNT SEASONAL CONSIDERATIONS IN THIS REGARD AS FOLLOWS. THE PLANTING OF TREES, SHRUBS, VINES OR GROUND COVER SHALL OCCUR ONLY DURING THE FOLLOWING PLANTING SEASONS:
1.1. PLANTS: MARCH 15 TO DECEMBER 15
1.2. LAWN: MARCH 15 TO JUNE 15 OR SEPT. 1 TO DECEMBER 1

G. PLANTINGS REQUIRED FOR A CERTIFICATE OF OCCUPANCY SHALL BE PROVIDED DURING THE NEXT APPROPRIATE SEASON AT THE MUNICIPALITY'S DISCRETION. CONTRACTOR SHOULD CONTACT APPROVING AGENCY FOR POTENTIAL SUBSTITUTIONS.

H. FURTHERMORE, THE FOLLOWING TREE VARIETIES ARE UNUSUALLY SUSCEPTIBLE TO WINTER DAMAGE. WITH TRANSPLANT SHOCK AND THE SEASONAL LACK OF NITROGEN AVAILABILITY, THE RISK OF PLANT DEATH IS GREATLY INCREASED. IT IS NOT RECOMMENDED THAT THESE SPECIES BE PLANTED DURING THE FALL PLANTING SEASON:

ACER RUBRUM	PLATANUS X ACERIFOLIA
BETULA VARIETIES	POPULOUS VARIETIES
CARPINUS VARIETIES	PRUNUS VARIETIES
CRATAEGUS VARIETIES	PYRUS VARIETIES
KOELREUTERIA	QUERCUS VARIETIES
LIQUIDAMBER STYRACIFLUA	TILIA TOMENTOSA
LIRIODENDRON TULIPIFERA	ZELKOVA VARIETIES

I. PLANTING PITS SHALL BE DUG WITH LEVEL BOTTOMS, WITH THE WIDTH TWICE THE DIAMETER OF ROOT BALL. THE ROOT BALL SHALL REST ON UNDISTURBED GRADE. EACH PLANT PIT SHALL BE BACKFILLED IN LAYERS WITH THE FOLLOWING PREPARED SOIL MIXED THOROUGHLY:
- 1 PART PEAT MOSS
- 1 PART COMPOSTED COW MANURE BY VOLUME
- 3 PARTS TOPSOIL BY VOLUME
- 21 GRAMS 'AGRIFORM' PLANTING TABLETS (OR APPROVED EQUAL) AS FOLLOWS:
  - A) 2 TABLETS PER 1 GALLON PLANT
  - B) 3 TABLETS PER 5 GALLON PLANT
  - C) 4 TABLETS PER 15 GALLON PLANT
  - D) LARGER PLANTS: 2 TABLETS PER ½" CALIPER OF TRUNK

J. FILL PREPARED SOIL AROUND BALL OF PLANT HALF-WAY AND INSERT PLANT TABLETS. COMPLETE BACKFILL AND WATER THOROUGHLY.

K. ALL PLANTS SHALL BE PLANTED SO THAT THE TOP OF THE ROOT BALL, THE POINT AT WHICH THE ROOT FLARE BEGINS, IS SET AT GROUND LEVEL AND IN THE CENTER OF THE PIT. NO SOIL IS TO BE PLACED DIRECTLY ON TOP OF THE ROOT BALL.

L. ALL PROPOSED TREES DIRECTLY ADJACENT TO WALKWAYS OR DRIVEWAYS SHALL BE PRUNED AND MAINTAINED TO A MINIMUM BRANCHING HEIGHT OF 7' FROM GRADE.

M. GROUND COVER AREAS SHALL RECEIVE A ½" LAYER OF HUMUS RAKED INTO THE TOP 1" OF PREPARED SOIL PRIOR TO PLANTING. ALL GROUND COVER AREAS SHALL BE WEEDED AND TREATED WITH A PRE-EMERGENT CHEMICAL AS PER MANUFACTURER'S RECOMMENDATION.

N. NO PLANT, EXCEPT GROUND COVERS, GRASSES OR VINES, SHALL BE PLANTED LESS THAN TWO FEET (2') FROM EXISTING STRUCTURES AND SIDEWALKS.

O. ALL PLANTING AREAS AND PLANTING PITS SHALL BE MULCHED AS SPECIFIED HEREIN TO FILL THE ENTIRE BED AREA OR SAUCER. NO MULCH IS TO TOUCH THE TRUNK OF THE TREE OR SHRUB.

P. ALL PLANTING AREAS SHALL BE WATERED IMMEDIATELY UPON INSTALLATION IN ACCORDANCE WITH THE WATERING SPECIFICATIONS AS LISTED HEREIN.

10. TRANSPLANTING (WHEN REQUIRED)

A. ALL TRANSPLANTS SHALL BE DUG WITH INTACT ROOT BALLS CAPABLE OF SUSTAINING THE PLANT.

B. IF PLANTS ARE TO BE STOCKPILED BEFORE REPLANTING, THEY SHALL BE HEALED IN WITH MULCH OR SOIL, ADEQUATELY WATERED AND PROTECTED FROM EXTREME HEAT, SUN AND WIND.

C. PLANTS SHALL NOT BE DUG FOR TRANSPLANTING BETWEEN APRIL 10 AND JUNE 30.

D. UPON REPLANTING, BACKFILL SOIL SHALL BE AMENDED WITH FERTILIZER AND ROOT GROWTH HORMONE.

E. TRANSPLANTS SHALL BE GUARANTEED FOR THE LENGTH OF THE GUARANTEE PERIOD SPECIFIED HEREIN.

F. IF TRANSPLANTS DIE, SHRUBS AND TREES LESS THAN SIX INCHES (6") DBH SHALL BE REPLACED IN KIND. TREES GREATER THAN SIX INCHES (6") DBH MAY BE REQUIRED TO BE REPLACED IN ACCORDANCE WITH THE MUNICIPALITY'S TREE REPLACEMENT GUIDELINES.

11. WATERING

A. NEW PLANTINGS OR LAWN AREAS SHALL BE ADEQUATELY IRRIGATED BEGINNING IMMEDIATELY AFTER PLANTING. WATER SHALL BE APPLIED TO EACH TREE AND SHRUB IN SUCH MANNER AS NOT TO DISTURB BACKFILL AND TO THE EXTENT THAT ALL MATERIALS IN THE PLANTING HOLE ARE THOROUGHLY SATURATED. WATERING SHALL CONTINUE AT LEAST UNTIL PLANTS ARE ESTABLISHED.

B. SITE OWNER SHALL PROVIDE WATER IF AVAILABLE ON SITE AT TIME OF PLANTING. IF WATER IS NOT AVAILABLE ON SITE, CONTRACTOR SHALL SUPPLY ALL NECESSARY WATER. THE USE OF WATERING BAGS IS RECOMMENDED FOR ALL NEWLY PLANTED TREES.

C. IF AN IRRIGATION SYSTEM HAS BEEN INSTALLED ON THE SITE, IT SHALL BE USED TO WATER PROPOSED PLANT MATERIAL, BUT ANY FAILURE OF THE SYSTEM DOES NOT ELIMINATE THE CONTRACTOR'S RESPONSIBILITY OF MAINTAINING THE DESIRED MOISTURE LEVEL FOR VIGOROUS, HEALTHY GROWTH.

12. GUARANTEE

A. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL PLANTS FOR A PERIOD OF ONE (1) YEAR FROM APPROVAL OF LANDSCAPE INSTALLATION BY THE APPROVING AGENCY. CONTRACTOR SHALL SUPPLY THE OWNER WITH A MAINTENANCE BOND FOR TEN PERCENT (10%) OF THE VALUE OF THE LANDSCAPE INSTALLATION WHICH WILL BE RELEASED AT THE CONCLUSION OF THE GUARANTEE PERIOD AND WHEN A FINAL INSPECTION HAS BEEN COMPLETED AND APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.

B. ANY DEAD OR DYING PLANT MATERIAL SHALL BE REPLACED FOR THE LENGTH OF THE GUARANTEE PERIOD. REPLACEMENT OF PLANT MATERIAL SHALL BE CONDUCTED AT THE FIRST SUCCEEDING PLANTING SEASON. ANY DEBRIS SHALL BE DISPOSED OF OFF-SITE, WITHOUT EXCEPTION.

C. TREES AND SHRUBS SHALL BE MAINTAINED BY THE CONTRACTOR DURING CONSTRUCTION AND THROUGHOUT THE 90 DAY MAINTENANCE PERIOD AS SPECIFIED HEREIN. CULTIVATION, WEEDING, WATERING AND THE PREVENTATIVE TREATMENTS SHALL BE PERFORMED AS NECESSARY TO KEEP PLANT MATERIAL IN GOOD CONDITION AND FREE OF INSECTS AND DISEASE.

D. LAWNS SHALL BE MAINTAINED THROUGH WATERING, FERTILIZING, WEEDING, MOWING, TRIMMING AND OTHER OPERATIONS SUCH AS ROLLING, REGARDING AND REPLANTING AS REQUIRED TO ESTABLISH A SMOOTH, ACCEPTABLE LAWN, FREE OF ERODED OR BARE AREAS.

13. CLEANUP

A. UPON THE COMPLETION OF ALL LANDSCAPE INSTALLATION AND BEFORE THE FINAL ACCEPTANCE, THE CONTRACTOR SHALL REMOVE ALL UNUSED MATERIALS, EQUIPMENT AND DEBRIS FROM THE SITE. ALL PAVED AREAS ARE TO BE CLEANED.

B. THE SITE SHALL BE CLEANED AND LEFT IN A NEAT AND ACCEPTABLE CONDITION AS APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.

AS-BUILT CERTIFICATION

Note: There is no "AS-BUILT" information provided on this sheet.

STATE OF MARYLAND · GERARD CAVANAUGH · No. 27020 · PROFESSIONAL ENGINEER

July 12, 2022
Date
PAUL GERARD CAVANAUGH #27020
Exp 12/31/21

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 1/31/2020

APPROVED: DEPARTMENT OF PLANNING AND ZONING

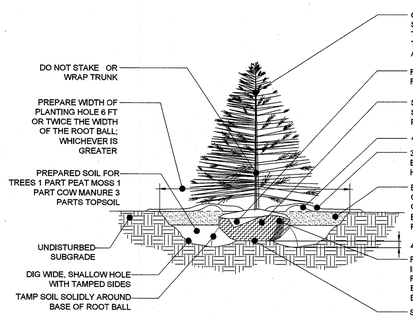
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/10/20

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2-6-20

DEVELOPER'S/OWNER'S LANDSCAPE CERTIFICATE

I/WE CERTIFY THAT ME LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION 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.

DEVELOPER'S / OWNER'S NAME — DATE 12-20-2019

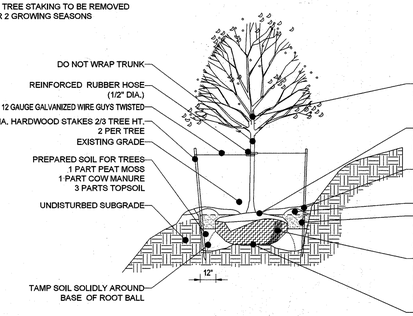


REFERENCE: ARCHITECTURAL GRAPHIC STANDARDS 1998 CUMULATIVE SUPPLEMENT.

EVERGREEN TREE PLANTING DETAIL

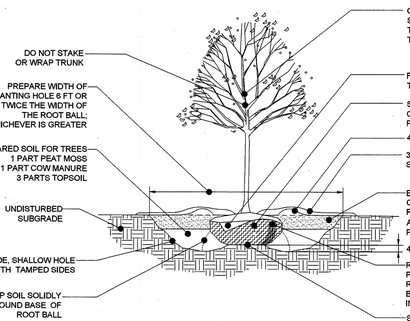
NOT TO SCALE

NOTE: TREE STAKING TO BE REMOVED AFTER 2 GROWING SEASONS



TREE PLANTING ON SLOPE DETAIL

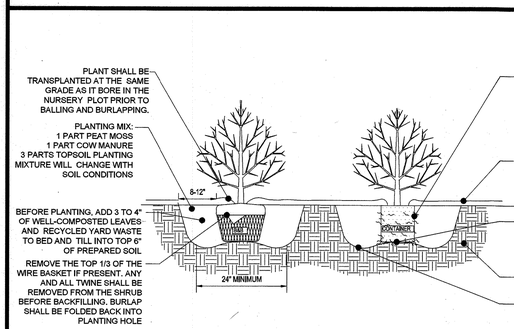
NOT TO SCALE



REFERENCE: ARCHITECTURAL GRAPHIC STANDARDS 1998 CUMULATIVE SUPPLEMENT.

DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE



REFERENCE: ARCHITECTURAL GRAPHIC STANDARDS 1998 CUMULATIVE SUPPLEMENT

DECIDUOUS AND EVERGREEN SHRUB PLANTING DETAIL

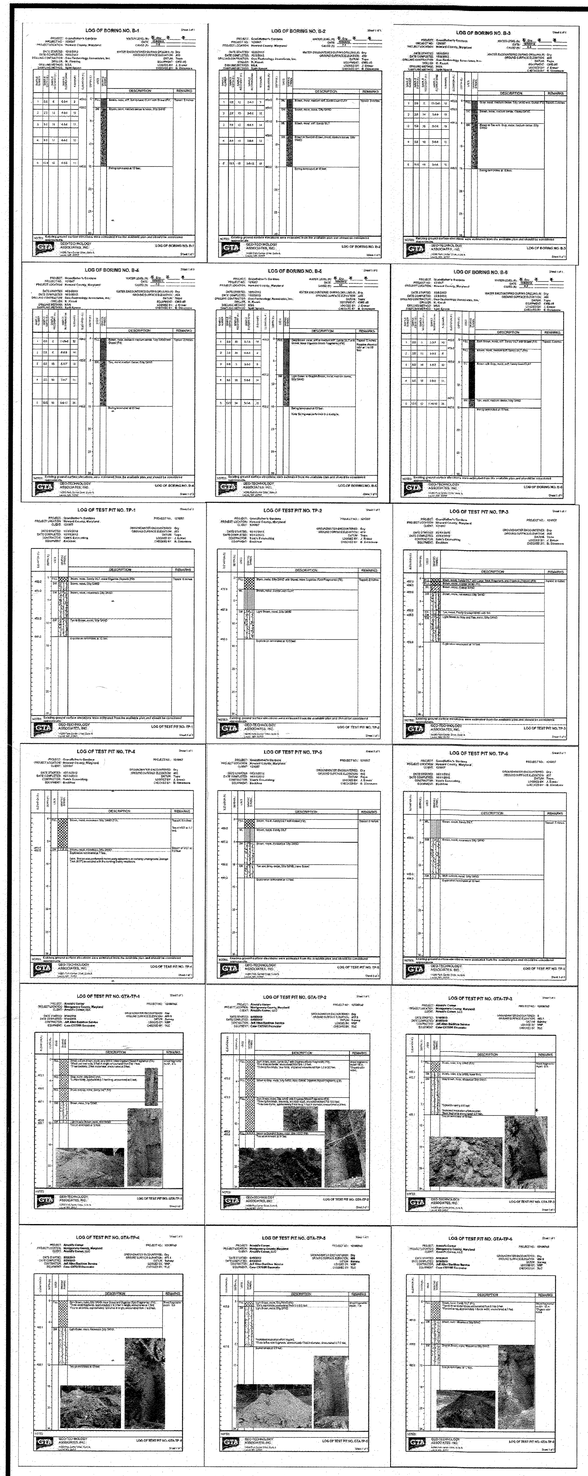
NOT TO SCALE

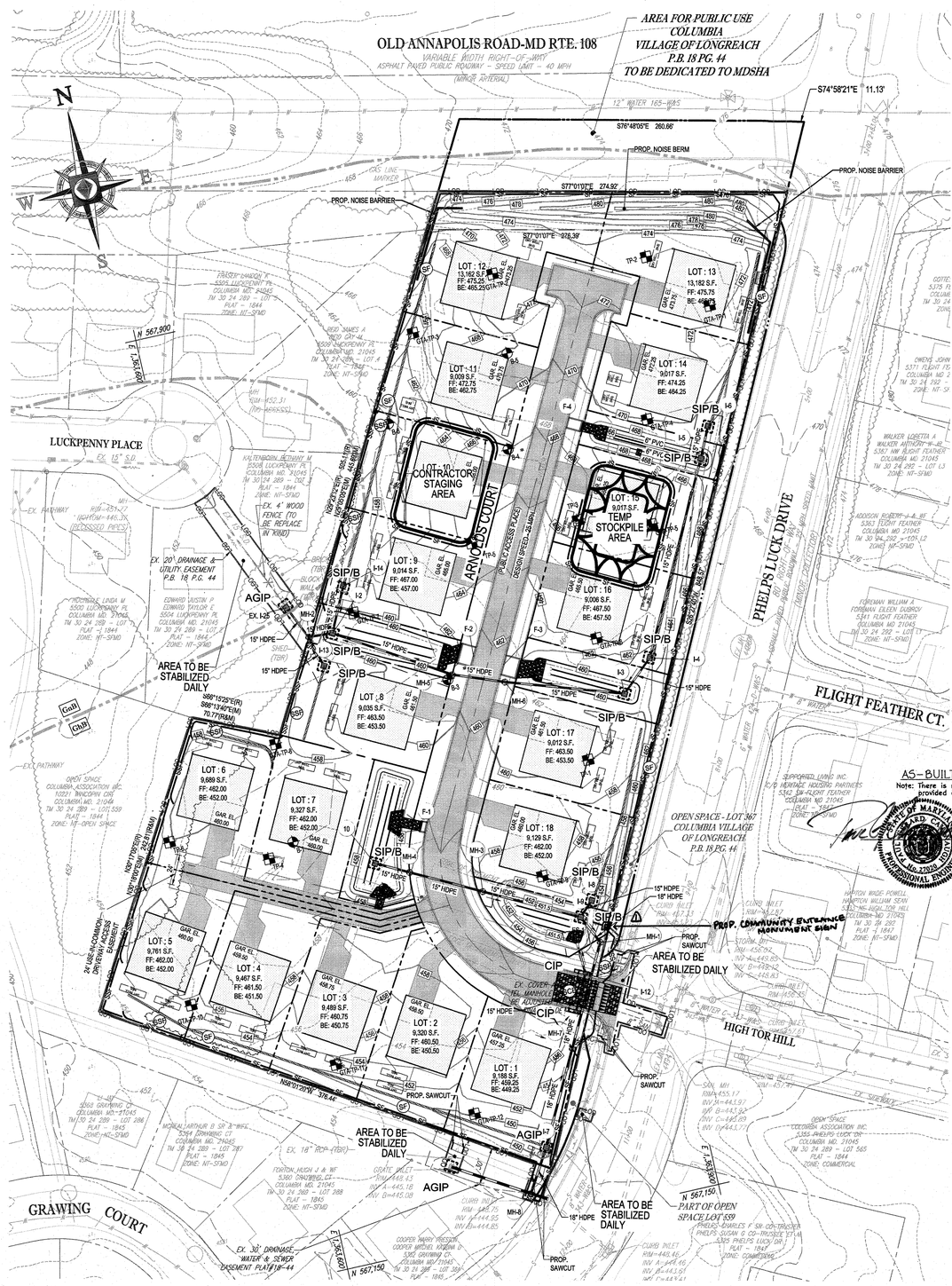
SEEDING SPECIFICATIONS

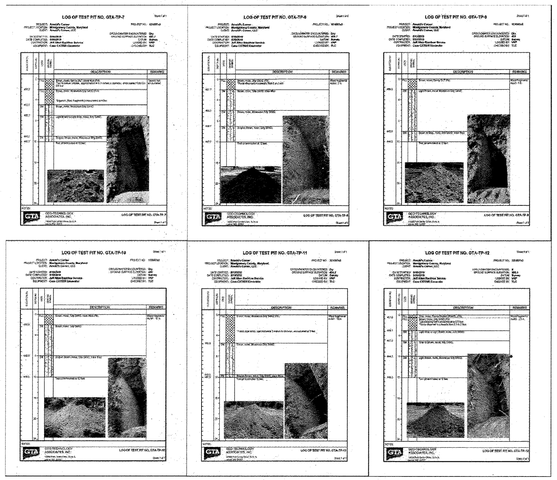
1. PRIOR TO SEEDING, AREA IS TO BE TOPSOILED, FINE GRADED, AND RAKED OF ALL DEBRIS LARGER THAN 2" DIAMETER.
2. PRIOR TO SEEDING, CONSULT MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS.
3. SEEDING RATES:

PERENNIAL RYEGRASS	1/2 LB/1,000 SQ FT
KENTUCKY BLUEGRASS	1 LB/1,000 SQ FT
RED FESCUE	1 1/2 LBS/1,000 SQ FT
SPREADING FESCUE	1 1/2 LBS/1,000 SQ FT
FERTILIZER (20:10:10)	14 LBS/1,000 SQ FT
MULCH	90 LBS/1,000 SQ FT

4. GERMINATION RATES WILL VARY AS TO TIME OF YEAR FOR SOWING. CONTRACTOR TO IRRIGATE SEEDED AREA UNTIL AN ACCEPTABLE STAND OF COVER IS ES







SOILS TABLE

SOILS NAME	SOILS DESCRIPTION	HYDROLOGIC SOILS GROUP	HIGHLY ERODIBLE SOIL	K FACTOR
GhB	GLENELG-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	B	NO	0.28
GnB	GLENVILLE-BAILE SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	YES	0.43
UtD	URBAN LAND-UDORTHENTS COMPLEX, 0 TO 15 PERCENT SLOPES	D	NO	0.24

NOTES

1. ALL 2:1 SLOPES WITHIN THE PROJECT LIMIT OF DISTURBANCE WILL RECEIVE SOIL STABILIZATION MATTING AS SOON AS GRADE AS BEEN ESTABLISHED.
2. ONCE GRADES HAVE BEEN ESTABLISHED, THE CONTRACTOR SHALL PROVIDE TEMPORARY / PERMANENT STABILIZATION FOR SLOPES 15% OR GREATER .
3. NOISE BARRIER COMPOSED OF PROPOSED EARTH BERM AND STANDING STRUCTURE (APPROX. HEIGHT: 6') PER REQUIREMENTS OF NOISE STUDY PREPARED BY WILSON T. BALLARD COMPANY REFERENCED ON SHEET 1.

AS-BUILT CERTIFICATION

Note: There is no "AS-BUILT" information provided on this sheet.

STATE OF MARYLAND PAUL GERARD CAVANAUGH No. 27020 PROFESSIONAL ENGINEER

July 12, 2022
Date

PAUL GERARD CAVANAUGH #27020

EXP. 1/25/24

GEOTECHNICAL TEST PIT NOTE

THE LOCATION OF TWENTY FOUR (24) GEOTECHNICAL TEST PITS ARE SHOWN ON THIS PLAN. REFER TO THE GEOTECHNICAL REPORT REFERENCED ON SHEET #1 OF THE PLANS FOR TEST PIT LOGS AND RESULTS.

BORING AND TEST PIT LEGEND

- B-1 — SOIL BORING PERFORMED IN OCTOBER 2012
- TP-4 — TEST PIT PERFORMED IN OCTOBER 2012
- GTA-TP-8 — TEST PIT PERFORMED IN MAY 2019

EROSION AND SEDIMENT CONTROL LEGEND

- STABILIZED CONSTRUCTION ENTRANCE
- LOD — LIMIT OF DISTURBANCE
- SF — SILT FENCE
- SSF — SUPER SILT FENCE
- AGIP — AT GRADE INLET PROTECTION
- SIP/A OR B — STANDARD INLET PROTECTION TYPE 'A' OR 'B'
- CIP — CURB INLET PROTECTION
- SOIL DIVIDE
- MaB — SOIL LABEL
- RIPRAP STABILIZATION
- PROPOSED STORMDRAIN
- PERMANENT SOIL STABILIZATION MATTING

FOR REVISION 1 ONLY
12/21/2020
BRANDON ROWE

DAILY STABILIZATION NOTES

CONTRACTOR SHALL ONLY DISTURB THAT AREA WHICH CAN BE COMPLETED AND STABILIZED BY THE END OF EACH WORKING DAY.

STABILIZATION SHALL BE AS FOLLOWS:

1. FOR AREAS TO BE PAVED, THE APPLICATION OF STONE BASE.
2. FOR AREAS TO BE VEGETATIVELY STABILIZED:
   a. PERMANENT SEED AND SOIL STABILIZATION MATTING OR SOD FOR ALL STEEP SLOPES, CHANNELS OR SWALES,
   b. PERMANENT SEED AND MULCH FOR ALL OTHER AREAS.

ANY AREAS WHICH CAN NOT BE STABILIZED BY THE END OF EACH WORKING DAY MUST HAVE SILT FENCE INSTALLED ON DOWNSLOPE SIDE.

50 25 12.5 0 50
1"= 50'

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS	MK	1/31/2020 DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT		2/10/20 DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION		8.6.20 DATE

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

HOWARD SCD — DATE 12/12/20

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 PERSONAL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

SIGNATURE OF DEVELOPER (NAME): — DATE 12-20-2019

ENGINEER'S CERTIFICATE

I HEREBY 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 COUNTY SOIL CONSERVATION DISTRICT.

SIGNATURE OF ENGINEER BRANDON R. ROWE P.E. — DATE 12/20/19

OWNER/DEVELOPER: ARNOLD'S CORNER, LLC, 308 MAGOTHY ROAD, SEVERNA PARK, MD 21146, CONTACT: DAVID MOESSNER, PHONE: (240) 319-1735

SUBDIVISION NAME: ARNOLD'S CORNER, VILLAGE OF LONG REACH, SECTION 1, AREA 1, DEED # 18527/263

TAX MAP: 30 GRID: 24 ZONED: NT
PARCELS: N, O & 462, PUBLIC USE PARCELS
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PREVIOUS FILE No.: S-18-006, ECP-18-052, ZB1112, P-19-001, WP-19-083, FDP-77-A-IV, PB 18 F 44 (F-70-068c), WP-19-101

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, 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. 43908, EXPIRATION DATE: 7/3/2021

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

F-19-088

BOHLER ENGINEERING
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

THE INFORMATION, DESIGNS AND CONTENT OF THIS PLAN ARE THE PROPERTY AND COPYRIGHT OF BOHLER ENGINEERING AND MAY BE USED ONLY FOR THE PROJECT AND PURPOSE SPECIFIED IN WRITING BY BOHLER ENGINEERING. ANY OTHER USE, REPRODUCTION OR DISTRIBUTION IS PROHIBITED WITHOUT WRITTEN PERMISSION FROM BOHLER ENGINEERING. ONLY APPROVED, SIGNED AND SEALED PLANS SHALL BE UTILIZED FOR CONSTRUCTION PURPOSES.

REVISIONS

REV	DATE	COMMENT	BY
1	12/22/20	ADD ENTRANCE MONUMENT SIGN	CMR

KNOW WHAT'S BELOW ALWAYS CALL 811 BEFORE YOU DIG
It's fast. It's free. It's the law.

PROJECT No.:	MD182086
DRAWN BY:	AVG
CHECKED BY:	BRR
DATE:	12/17/19
SCALE:	1" = 50'
CAD I.D.:	OCP-3

PROJECT:

FINAL PLAN
FOR
ARNOLD'S CORNER
LOTS 1-18 & OPEN SPACE LOTS 19-23
A RESUBDIVISION OF PARCELS N & O OF THE VILLAGE OF LONG REACH, SECTION 1, AREA I
LOCATION OF SITE
5320 PHELPS LUCK DRIVE
COLUMBIA, MD
6TH ELECTION DISTRICT
TAX MAP 30, GRID 24, PARCELS N, O, & OPEN SPACE 462
VILLAGE OF LONG REACH, SECTION 1, AREA 1
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 43908
12/20/19

SHEET TITLE:

EROSION & SEDIMENT CONTROL PLAN

SHEET NUMBER: 7

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.

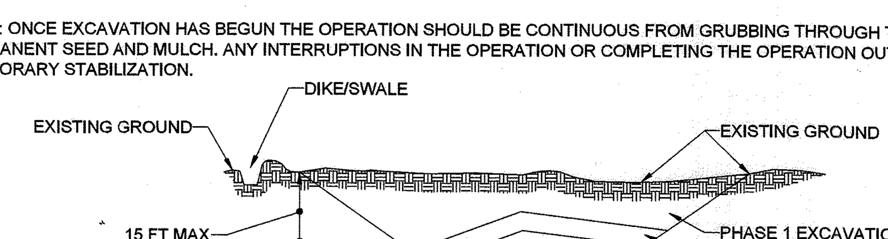


FIGURE B.1: INCREMENTAL STABILIZATION - CUT

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.

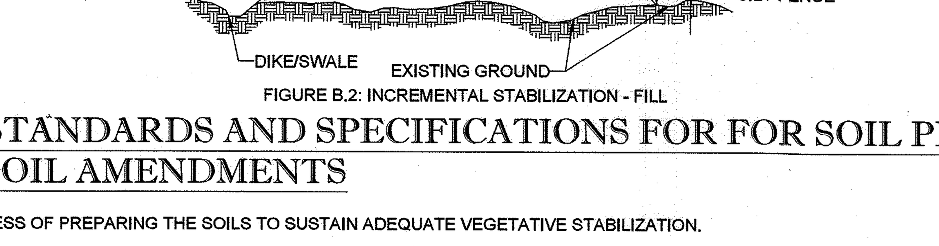


FIGURE B.2: INCREMENTAL STABILIZATION - FILL

B-4-2 STANDARDS AND SPECIFICATIONS FOR 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
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 (WFCM) 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-4-4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION

DEFINITION
TO STABILIZE DISTURBED SOILS WITH VEGETATION FOR UP TO 6 MONTHS.

PURPOSE
TO USE FAST GROWING VEGETATION THAT PROVIDES COVER ON DISTURBED SOILS.

CONDITIONS WHERE PRACTICE APPLIES
EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR A PERIOD OF 6 MONTHS OR LESS. FOR LONGER DURATION OF TIME, PERMANENT STABILIZATION PRACTICES ARE REQUIRED.

CRITERIA
1. SELECT ONE OR MORE OF THE SPECIES OR SEED MIXTURES LISTED IN TABLE B.1 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3), AND ENTER THEM IN THE TEMPORARY SEEDING SUMMARY BELOW ALONG WITH APPLICATION RATES, SEEDING DATES AND SEEDING DEPTHS. IF THIS SUMMARY IS NOT PUT ON THE PLAN AND COMPLETED, THEN TABLE B.1 PLUS FERTILIZER AND LIME RATES MUST BE PUT ON THE PLAN.
2. FOR SITES HAVING SOIL TESTS PERFORMED, USE AND SHOW THE RECOMMENDED RATES BY THE TESTING AGENCY. SOIL TESTS ARE NOT REQUIRED FOR TEMPORARY SEEDING.
3. WHEN STABILIZATION IS REQUIRED OUTSIDE OF A SEEDING SEASON, APPLY SEED AND MULCH OR STRAW MULCH ALONE AS PRESCRIBED IN SECTION B-4-3.A.1.B AND MAINTAIN UNTIL THE NEXT SEEDING SEASON.

TEMPORARY SEEDING SUMMARY

HARDINESS ZONE (from Figure B.3): ZONE 6B SEED MIXTURE (from Table B.1)					FERTILIZER RATE (10-20-20)	LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS		
COOL SEASON GRASSES						
1	ANNUAL RYEGRASS	40	3/1 - 5/15 8/1 - 10/15	0.5"	436 LB/AC (10 LB/1000 SF)	2 TONS/AC (90 LB/1000 SF)
2	BARLEY	96	3/1 - 5/15 8/1 - 10/15	1"		
3	OATS	72	3/1 - 5/15 8/1 - 10/15	1"		
4	WHEAT	120	3/1 - 5/15 8/1 - 10/15	1"		
5	CEREAL RYE	112	3/1 - 5/15 8/1 - 11/15	1"		
WARM SEASON GRASSES						
6	FOXTAIL MILLET	30	5/16 - 7/31	0.5"	436 LB/AC (10 LB/1000 SF)	2 TONS/AC (90 LB/1000 SF)
7	PEARL MILLET	20	5/16 - 7/31	0.5"		

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 IN 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.

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 GUIDE, SECTION 342 - CRITICAL AREA PLANTING.
   c. FOR SITES HAVING DISTURBED AREA 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: 1½ 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 1½ 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 ESPECIALLY TRUE WHEN SEEDINGS ARE MADE LATE IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOT SEASONS, OR ON ADVERSE SITES.

PERMANENT SEEDING SUMMARY

HARDINESS ZONE (from Figure B.3): ZONE 6B SEED MIXTURE (from Table B.3)					FERTILIZER RATE (10-20-20)			LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	*SEEDING DATES	SEEDING DEPTHS	N	P2O5	K2O	
9	TALL FESCUE KENTUCKY BLUEGRASS PERENNIAL RYE GRASS	60 40 20	3/1 - 5/15 8/15 - 10/31	1/4" - 1/2"	45 LB/AC (1.0 LB/1000 SF)	90 LB/AC (2 LB/1000 SF)	90 LB/AC (2 LB/1000 SF)	2 TONS/AC (90 LB/1000 SF)
5	HARD FESCUE PERENNIAL RYE GRASS FLAT PEA	20 10 15	3/1 - 5/15 8/1 - 10/15	1/4" - 1/2"				
1	SWITCH GRASS CREEPING RED FESCUE PARTRIDGE PEA	10 15 4	3/1 - 5 /15	1/4" - 1/2"				

NOTES:
1. THE PLANTING DATES LISTED ARE AVERAGES FOR EACH ZONE. THESE DATES MAY REQUIRE ADJUSTMENT TO REFLECT LOCAL CONDITIONS, ESPECIALLY NEAR THE BOUNDARIES OF THE ZONES. WHEN SEEDING TOWARD THE END OF THE LISTED PLANTING DATES, OR WHEN CONDITIONS ARE EXPECTED TO BE LESS THAN OPTIMAL, SELECT AN APPROPRIATE NURSE CROP FROM TABLE B.1 TEMPORARY SEEDING FOR SITE STABILIZATION AND PLANT TOGETHER WITH THE PERMANENT SEEDING MIX.
2. WHEN PLANTED DURING THE GROWING SEASON, MOST OF THESE MATERIALS MUST BE PURCHASED AND KEPT IN A DORMANT CONDITION UNTIL PLANTING. BARE-ROOT GRASSES ARE THE EXCEPTION—THEY MAY BE SUPPLIED AS GROWING (NON-DORMANT) PLANTS.
♦ ADDITIONAL PLANTING DATES FOR THE LOWER COASTAL PLAIN, DEPENDENT ON ANNUAL RAINFALL AND TEMPERATURE TRENDS. RECOMMEND ADDING A NURSE CROP, AS NOTED ABOVE, IF PLANTING DURING THIS PERIOD.
♦♦WARM-SEASON GRASSES NEED A SOIL TEMPERATURE OF AT LEAST 50 DEGREES F IN ORDER TO GERMINATE. IF SOIL TEMPERATURES ARE COLDER THAN 50 DEGREES, OR MOISTURE IS NOT ADEQUATE, THE SEEDS WILL REMAIN DORMANT UNTIL CONDITIONS ARE FAVORABLE. IN GENERAL, PLANTING DURING THE LATTER PORTION OF THIS PERIOD ALLOWS MORE TIME FOR WEED EMERGENCE AND WEED CONTROL PRIOR TO PLANTING. WHEN SELECTING A PLANTING DATE, CONSIDER THE NEED FOR WEED CONTROL VS. THE LIKELIHOOD OF HAVING SUFFICIENT MOISTURE FOR LATER PLANTINGS, ESPECIALLY ON DROUGHTY SITES.
* ADDITIONAL PLANTING DATES DURING WHICH SUPPLEMENTAL WATERING MAY BE NEEDED TO ENSURE PLANT ESTABLISHMENT.
FREQUENT FREEZING AND THAWING OF WET SOILS MAY RESULT IN FROST-HEAVING OF MATERIALS PLANTED IN LATE FALL, IF PLANTS HAVE NOT SUFFICIENTLY ROOTED IN PLACE.
SOD USUALLY NEEDS 4 TO 6 WEEKS TO BECOME SUFFICIENTLY ROOTED. LARGE CONTAINERIZED AND BALLED-AND-BURLAPPED STOCK MAY BE PLANTED INTO THE WINTER MONTHS AS LONG AS THE GROUND IS NOT FROZEN AND SOIL MOISTURE IS ADEQUATE.
** FOR THE PERIOD 5/1 - 8/14 ADD EITHER FOXTAIL OR PEARL MILLET - 6 LBS/AC. TO MIX NO. 9, 2.25 LBS/AC. TO MIX NO. 5

B. SOD: TO PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER).
1. GENERAL SPECIFICATIONS
   a. CLASS OF TURFGRASS SOD 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 ⅓ 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-4-6 STANDARDS AND SPECIFICATIONS FOR SOIL STABILIZATION MATTING

DEFINITION
MATERIAL USED TO TEMPORARILY OR PERMANENTLY STABILIZE CHANNELS OR STEEP SLOPES UNTIL GROUNDCOVER IS ESTABLISHED.

PURPOSE
TO PROTECT THE SOILS UNTIL VEGETATION IS ESTABLISHED.

CONDITIONS WHERE PRACTICE APPLIES
ON NEWLY SEEDED SURFACES TO PREVENT THE APPLIED SEED FROM WASHING OUT; IN CHANNELS AND ON STEEP SLOPES WHERE THE FLOW HAS EROSIVE VELOCITIES OR CONVEYS CLEAR WATER; ON TEMPORARY SWALES, EARTH DIKES, AND PERIMETER DIKE SWALES AS REQUIRED BY THE RESPECTIVE DESIGN STANDARD; AND, ON STREAM BANKS WHERE MOVING WATER IS LIKELY TO WASH OUT NEW VEGETATIVE PLANTINGS.

MAINTENANCE
VEGETATION MUST BE ESTABLISHED AND MAINTAINED SO THAT THE REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

AS-BUILT CERTIFICATION
Note: There is no "AS-BUILT" information provided on this sheet.
[signature] July 12, 2022
Date
PAUL GERARD CAVANAUGH #27020
EXP 1/25/24

APPROVED: DEPARTMENT OF PUBLIC WORKS
[signature] 1/31/2020
CHIEF, BUREAU OF HIGHWAYS MK DATE
APPROVED: DEPARTMENT OF PLANNING AND ZONING
[signature] 2/10/20
CHIEF, DIVISION OF LAND DEVELOPMENT DATE
[signature] 2.6.20
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

ENGINEER'S CERTIFICATE
I HEREBY 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 COUNTY SOIL CONSERVATION DISTRICT.
[signature] 12/20/19
SIGNATURE OF ENGINEER DATE
BRANDON R. ROWE P.E.

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 PERSONAL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT
[signature] 12-20-2019
SIGNATURE OF DEVELOPER DATE
(NAME):

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
[signature] 1/21/20
HOWARD SCD DATE

SUBDIVISION NAME: ARNOLD'S CORNER
VILLAGE OF LONG REACH
SECTION 1, AREA 1
DEED # 18527/263

PREVIOUS FILE No. :
S-18-006, ECP-18-052, ZB1112, P-19-001, WP-19-083, FDP-77-A-IV, PB 18 F 44 (F-70-068c), WP-19-101

OWNER/DEVELOPER: ARNOLD'S CORNER, LLC
308 MAGOTHY ROAD
SEVERNA PARK, MD 21146
CONTACT: DAVID WOESSNER
PHONE: (240) 319-1735

TAX MAP: 30 GRID: 24 ZONED: NT
PARCELS: N, O & 462, PUBLIC USE PARCELS
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, 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. 40808, EXPIRATION DATE: 7/3/2021

BOHLER ENGINEERING
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
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REVISIONS			
REV	DATE	COMMENT	BY

811
KNOW WHAT'S BELOW
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PROJECT No.: MD182086
DRAWN BY: AVG
CHECKED BY: BRR
DATE: 12/17/19
SCALE: AS SHOWN
CAD I.D.: SDP-3

PROJECT:
FINAL PLAN
FOR
ARNOLD'S CORNER
LOTS 1-18 &
OPEN SPACE LOTS 19-23
A RESUBDIVISION OF PARCELS N & O OF THE VILLAGE OF LONG REACH, SECTION 1, AREA 1
LOCATION OF SITE
5320 PHELPS LUCK DRIVE
COLUMBIA, MD
6TH ELECTION DISTRICT
TAX MAP 30, GRID 24, PARCELS N, O, & OPEN SPACE 462
VILLAGE OF LONG REACH, SECTION 1, AREA 1
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
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MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808
12/20/19

SHEET TITLE:
EROSION & SEDIMENT CONTROL NOTES & DETAILS

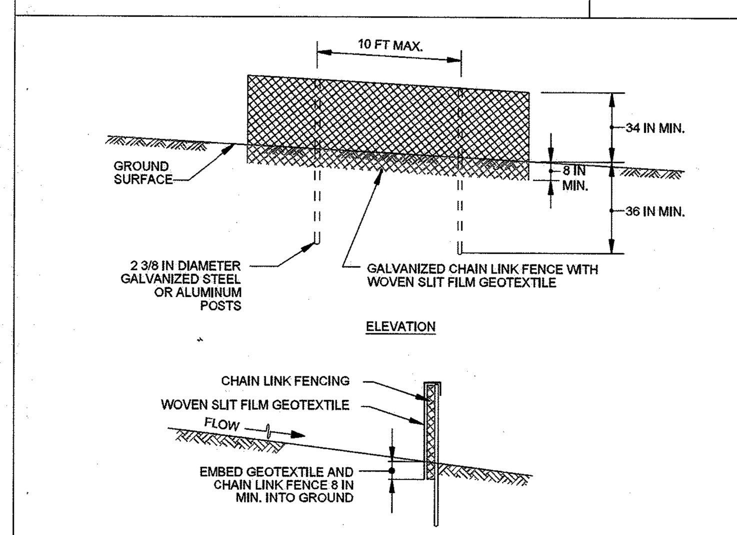
SHEET NUMBER:
8

THERE IS NO "AS-BUILT" INFORMATION PROVIDED ON THIS SHEET
F-19-088

H:\18\MD182086\DRAWINGS\PLAN SETS\FINAL PLAN\MD182086-SDP-3.DWG PRINTED BY: AGAMBOA 12.19.19 @ 1:46 PM LAST SAVED BY: AGAMBOA

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL: SSF



CONSTRUCTION SPECIFICATIONS

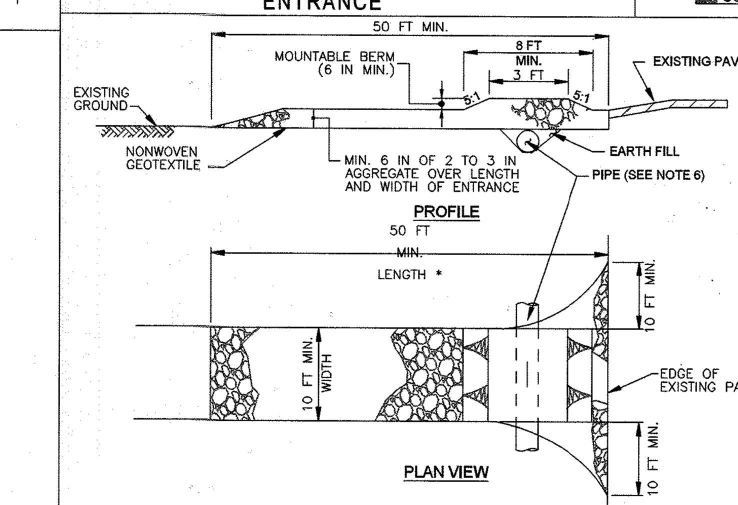
1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅝ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE



CONSTRUCTION SPECIFICATIONS

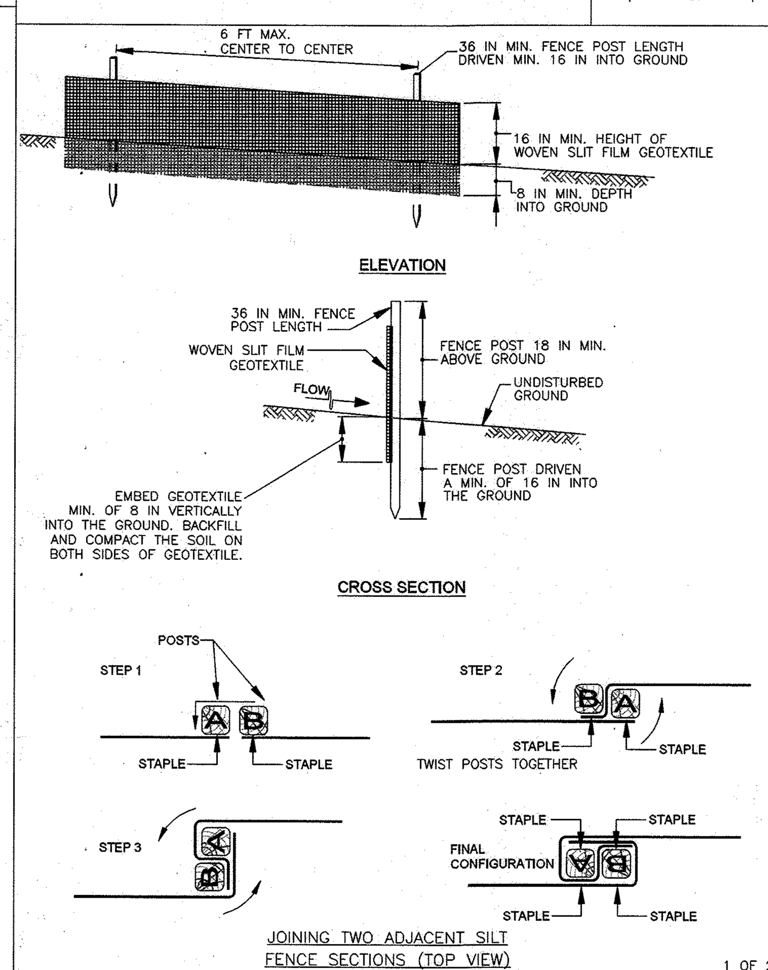
1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING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

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: SF



1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: SF

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1¾ X 1¾ ± ¹⁄₁₆ INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. EXTEND BOTH ENDS OF THE 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 SILT FENCE.
8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

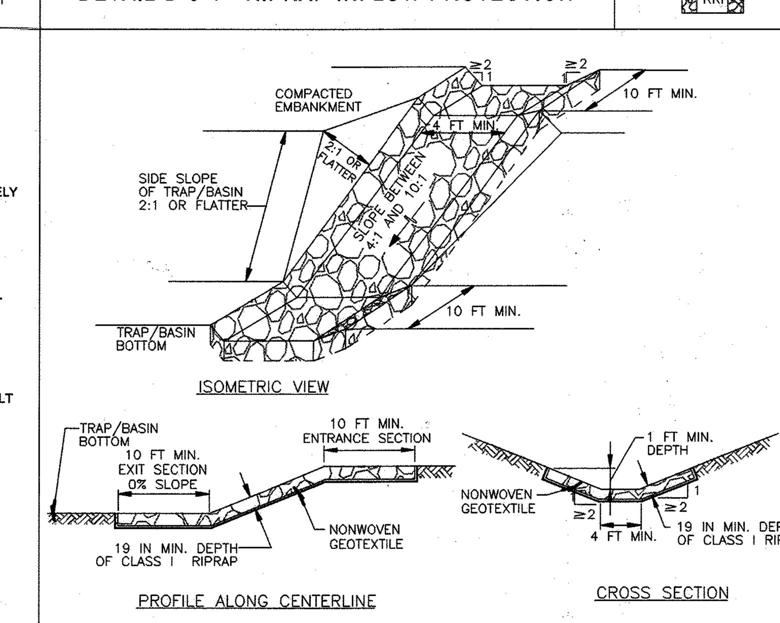
2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL D-3-1 RIPRAP INFLOW PROTECTION

STANDARD SYMBOL: RRP



CONSTRUCTION SPECIFICATIONS

1. PROVIDE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, UNDER THE BOTTOM AND ALONG SIDES OF ALL RIPRAP.
2. CONSTRUCT INFLOW CHANNEL WITH CLASS I RIPRAP OR EQUIVALENT RECYCLED CONCRETE LINING TO A MINIMUM DEPTH OF 19 INCHES (2 x D_{50}) AND A 1 FOOT DEEP FLOW CHANNEL. INFLOW RIPRAP PROTECTION CHANNEL MUST HAVE A TRAPEZOIDAL CROSS SECTION WITH 2:1 OR FLATTER SIDE SLOPES AND A 4 FOOT MINIMUM BOTTOM WIDTH.
3. INSTALL ENTRANCE AND EXIT SECTIONS AS SHOWN ON THE PROFILE.
4. BLEND RIPRAP INTO EXISTING GROUND.
5. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. KEEP POINTS OF INFLOW AND OUTFLOW FREE OF EROSION.

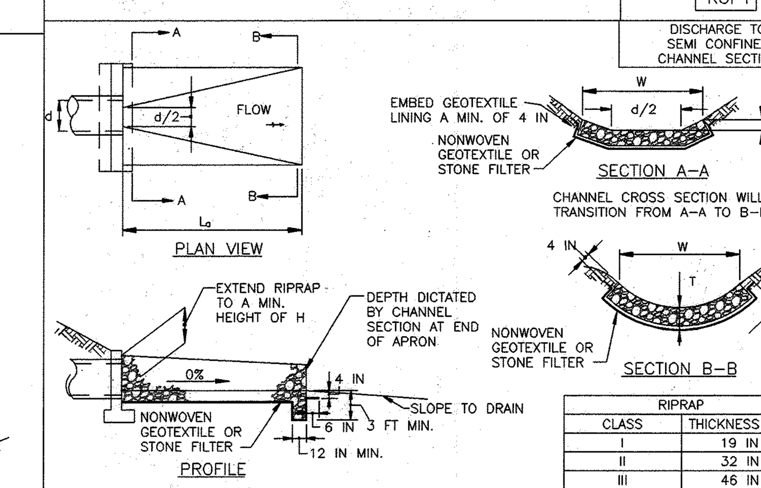
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL D-4-1-A ROCK OUTLET PROTECTION I

STANDARD SYMBOL: ROP1

DISCHARGE TO SEMI CONFINED CHANNEL SECTION



RIPRAP	
CLASS	THICKNESS (T)
I	19 IN
II	32 IN
III	46 IN

CONSTRUCTION SPECIFICATIONS

1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
3. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (⅜ TO 1½ INCH STONE FOR 6 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
4. EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF THE RIPRAP.
5. CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE STONE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
6. WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.
7. CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
8. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

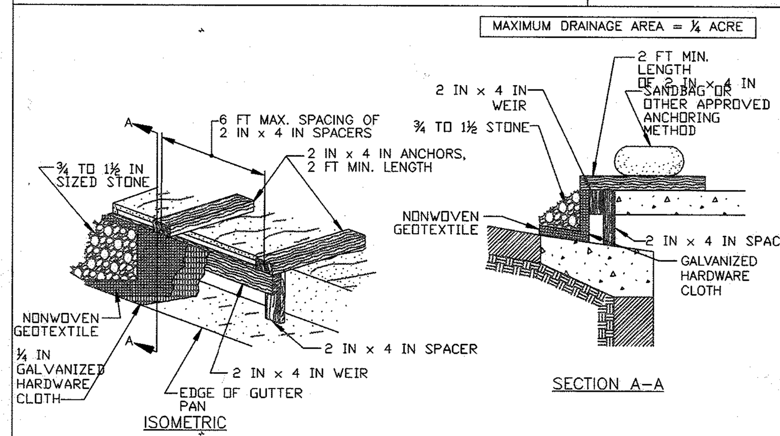
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-9-3 CURB INLET PROTECTION

STANDARD SYMBOL: CIP

MAXIMUM DRAINAGE AREA = ¼ ACRE



CONSTRUCTION SPECIFICATIONS

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

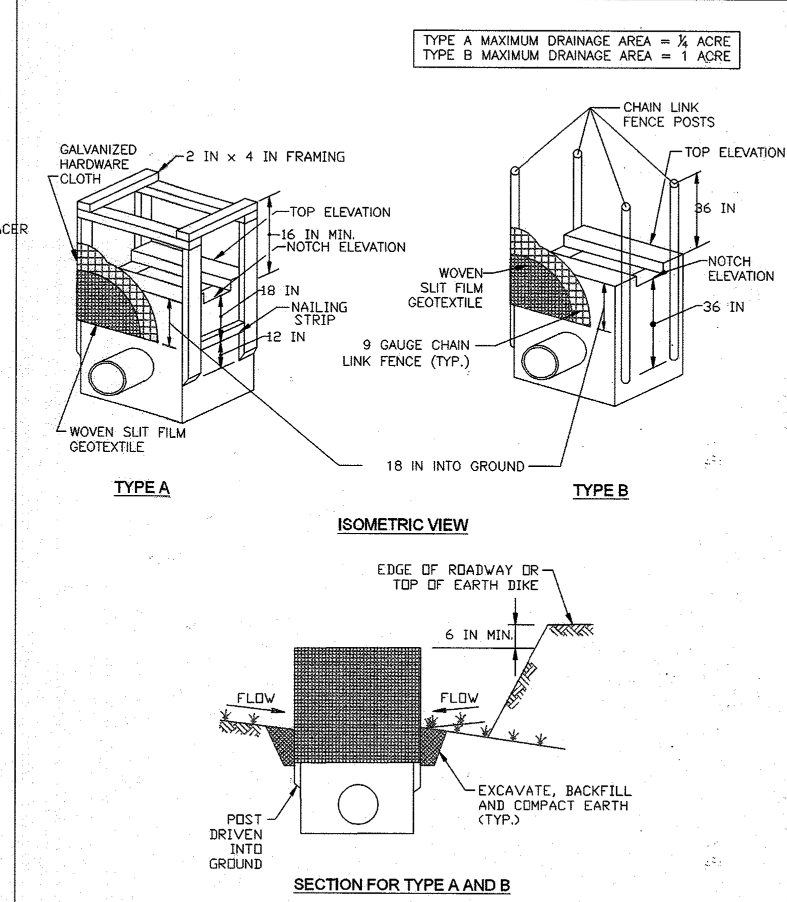
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL: SIP

TYPE A MAXIMUM DRAINAGE AREA = ¼ ACRE
TYPE B MAXIMUM DRAINAGE AREA = 1 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-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL: SIP

CONSTRUCTION SPECIFICATIONS

1. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
2. EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.
3. FOR TYPE A, USE NOMINAL 2 INCH X 4 INCH CONSTRUCTION GRADE LUMBER POSTS, DRIVEN 1 FOOT INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE NAIL STRIPS BETWEEN THE POSTS ON THE ENDS OF THE INLET. ASSEMBLE THE TOP PORTION OF THE 2X4 FRAME AS SHOWN. STRETCH ½ INCH GALVANIZED HARDWARE CLOTH TIGHTLY AROUND THE FRAME AND FASTEN SECURELY. FASTEN GEOTEXTILE SECURELY TO THE HARDWARE CLOTH WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND HARDWARE CLOTH A MINIMUM OF 18 INCHES BELOW THE WEIR CREST. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLAPPED AND FOLDED, THEN FASTENED TO THE POST.

   FOR TYPE B, USE 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND 6 FOOT LENGTH, DRIVEN A MINIMUM OF 36 INCHES BELOW THE WEIR CREST AT EACH CORNER OF THE STRUCTURE. FASTEN 9 GAUGE OR HEAVIER CHAIN LINK FENCE, 42 INCHES IN HEIGHT, SECURELY TO THE FENCE POSTS WITH WIRE TIES. FASTEN GEOTEXTILE SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 18 INCHES BELOW THE WEIR CREST.
4. BACKFILL AROUND THE INLET IN LOOSE 4 INCH LIFTS AND COMPACT UNTIL SOIL IS LEVEL WITH THE NOTCH ELEVATION ON THE ENDS AND TOP ELEVATION ON THE SIDES.
5. 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.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

AS-BUILT CERTIFICATION

Note: There is no "AS-BUILT" information provided on this sheet.

PAUL GERARD CAVANAUGH No. 27020 PROFESSIONAL ENGINEER — STATE OF MARYLAND

Paul [signature] July 12, 2022
Date
PAUL GERARD CAVANAUGH #27020

EHP 1/25/24

HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

1. A PRE-CONSTRUCTION MEETING MUST OCCUR WITH THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION (CID), 410-313-1855 AFTER THE FUTURE LOD AND PROTECTED AREAS ARE MARKED CLEARLY IN THE FIELD. A MINIMUM OF 48 HOUR 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. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE. OTHER RELATED STATE AND FEDERAL PERMITS SHALL BE REFERENCED, TO ENSURE COORDINATION AND TO AVOID CONFLICTS WITH THIS PLAN.
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 FT. 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:	5.61 ACRES
AREA DISTURBED:	5.38 ACRES
AREA TO BE ROOFED OR PAVED:	1.95 ACRES
AREA TO BE VEGETATIVELY STABILIZED:	3.43 ACRES
TOTAL CUT:	24,919 CU. YDS.
TOTAL FILL:	11,477 CU. YDS.
OFFSITE WASTE/BORROW AREA LOCATION:	13,442 CU. YDS

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 AMOUNT 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 WORKDAY, 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 ALLOWED BY THE CID PER THE LIST OF HSCD-APPROVED FIELD CHANGES.
11. DISTURBANCE SHALL NOT OCCUR OUTSIDE THE L.O.D. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 20 AC. PER GRADING UNIT) AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE CID. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE HSCD, NO MORE THAN 30 ACRES CUMULATIVELY 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.

B-4-7 STANDARDS AND SPECIFICATIONS FOR HEAVY USE AREA PROTECTION

DEFINITION

THE STABILIZATION OF AREAS FREQUENTLY AND INTENSIVELY USED BY SURFACING WITH SUITABLE MATERIALS (E.G., MULCH AND AGGREGATE).

PURPOSE

TO PROVIDE A STABLE, NON-ERODING SURFACE FOR AREAS FREQUENTLY USED AND TO IMPROVE THE WATER QUALITY FROM THE RUNOFF OF THESE AREAS.

CONDITIONS WHERE PRACTICE APPLIES

THIS PRACTICE APPLIES TO INTENSIVELY USED AREAS (E.G., EQUIPMENT AND MATERIAL STORAGE, STAGING AREAS, HEAVILY USED TRAVEL LANES).

CRITERIA

1. A MINIMUM 4-INCH BASE COURSE OF CRUSHED STONE OR OTHER SUITABLE MATERIALS INCLUDING WOOD CHIPS OVER NONWOVEN GEOTEXTILE SHOULD BE PROVIDED AS SPECIFIED IN SECTION H-1 MATERIALS.
2. SELECT THE STABILIZING MATERIAL BASED ON THE INTENDED USE, DESIRED MAINTENANCE FREQUENCY, AND RUNOFF CONTROL.
3. THE TRANSPORT OF SEDIMENTS, NUTRIENTS, OILS, CHEMICALS, PARTICULATE MATTER ASSOCIATED WITH VEHICULAR TRAFFIC AND EQUIPMENT, AND MATERIAL STORAGE NEEDS TO BE CONSIDERED IN THE SELECTION OF MATERIAL. ADDITIONAL CONTROL MEASURES MAY BE NECESSARY TO CONTROL SOME OF THESE POTENTIAL POLLUTANTS.
4. SURFACE EROSION CAN BE A PROBLEM ON LARGE HEAVY USE AREAS. IN THESE SITUATIONS, MEASURES TO REDUCE THE FLOW LENGTH OF RUNOFF OR EROSIVE VELOCITIES NEED TO BE CONSIDERED.

MAINTENANCE

THE HEAVY USE AREAS MUST BE MAINTAINED IN A CONDITION THAT MINIMIZES EROSION. THIS MAY REQUIRE ADDING SUITABLE MATERIAL, AS SPECIFIED ON THE APPROVED PLANS, TO MAINTAIN A CLEAN SURFACE.

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.

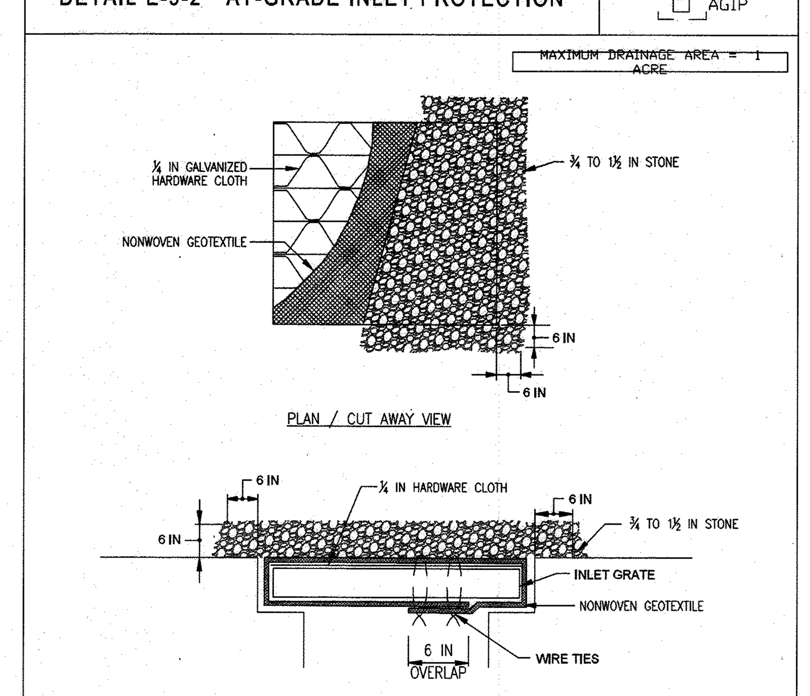
SEQUENCE OF CONSTRUCTION

1. NOTIFY HOWARD COUNTY'S SEDIMENT CONTROL INSPECTOR AT 410-313-1855 AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION. (1 DAY)
2. THE GENERAL CONTRACTOR SHALL NOT COMMENCE ANY LAND DISTURBING ACTIVITIES PRIOR TO OBTAINING A GRADING PERMIT. (1 DAY)
3. THE CONTRACTOR SHALL HOLD A PRE-CONSTRUCTION MEETING WITH THE CONSTRUCTION MANAGER AND THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR PRIOR TO COMMENCING ANY LAND DISTURBING ACTIVITIES. NO CONSTRUCTION TO BEGIN UNTIL ALL MATERIALS NEEDED TO BUILD P.O.S.T. ARE ON SITE (1 DAY)
4. ALL AREAS WHICH ARE TO BE DISTURBED SHALL BE CLEARLY MARKED IN THE FIELD PRIOR TO CONSTRUCTION. DISTURBED AREAS WITHIN THE SITE WHERE CONSTRUCTION ACTIVITY HAS CEASED SHALL BE PERMANENTLY OR TEMPORARILY STABILIZED WITHIN:
   a. THREE (3) CALENDAR DAYS ON SLOPES GREATER THAN 3:1, ALL WATERWAYS AND TO THE SURFACE OF ALL PERIMETER CONTROLS.
   b. SEVEN (7) CALENDAR DAYS ON ALL OTHER DISTURBED OR GRADED AREAS OF THE PROJECT.
5. INSTALL STABILIZED CONSTRUCTION ENTRANCE, INSTALL PERIMETER SUPER SILT, AND PERIMETER SILT FENCE AS SHOWN ON THE E&S PLAN. (1 DAY)
6. UPON APPROVAL FROM THE SEDIMENT CONTROL INSPECTOR; CLEAR AND GRUB THE AREAS IDENTIFIED ON THE PLANS. (2 WEEKS)
7. BEGIN ROUGH GRADING THE SITE TO PROPOSED SUBGRADE AS IDENTIFIED ON THE PLAN. (2 WEEKS)
8. BEGIN INSTALLING UTILITIES AS SHOWN ON THE E&S PLAN. MAINTAIN EARTH DIKES AND OTHER SEDIMENT CONTROL FEATURES DURING PHASE II. INSTALL STANDARD INLET PROTECTION ON ALL PROPOSED INLETS IMMEDIATELY AFTER INSTALLATION. (2 WEEKS)
9. BEGIN INSTALLATION OF PROPOSED ROAD BASE COURSE, AND CURB & GUTTER FOR SUBDIVISION ROAD AS SHOWN ON THE E&S PLAN. (2 WEEKS)
10. AS THE SITE IS BROUGHT TO FINAL GRADE, PERMANENTLY STABILIZE ALL DISTURBED AREAS WITHIN SEVEN (7) CALENDAR DAYS WITH THE EXCEPTION OF THE FUTURE MICRO-BIORETENTION FACILITY AREAS. (1 WEEK).
11. BEGIN INSTALLING PERMANENT LANDSCAPING. (1 WEEK)
12. AS UPSTREAM DRAINAGE AREAS ARE PERMANENTLY STABILIZED AND UPON PERMISSION FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, BEGIN INSTALLATION OF THE SWM FACILITIES. ALL BIORETENTION AND MICRO-BIORETENTION FACILITY PIPING, STONE, SEDIMENT, AND MEDIA. (1 WEEK)
13. AFTER ALL CONSTRUCTION HAS BEEN COMPLETED AND UPON APPROVAL FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR REMOVE SEDIMENT CONTROL MEASURES.
14. NOTIFY HOWARD COUNTY OFFICE OF INSPECTIONS AND PERMITS FOR FINAL INSPECTION OF THE COMPLETED PROJECT.
15. CONTRACTOR TO PROVIDE A COPY OF THE HOWARD COUNTY SCD POND AS-BUILT APPROVED LETTER TO THE INSPECTOR.

DETAIL E-9-2 AT-GRADE INLET PROTECTION

STANDARD SYMBOL: AGIP

MAXIMUM DRAINAGE AREA = 1 ACRE



CONSTRUCTION SPECIFICATIONS

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

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

ENGINEER'S CERTIFICATE

I HEREBY 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 COUNTY SOIL CONSERVATION DISTRICT.

SIGNATURE OF ENGINEER — 12/20/19 DATE
BRANDON R. ROWE P.E.

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 PERSONAL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

SIGNATURE OF DEVELOPER — 12-20-2019 DATE
(NAME): ______

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — MK — 1/31/2020 DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — 2/10/20 DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION — 2.6.20 DATE

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

HOWARD SCD — 1/21/20 DATE

SUBDIVISION NAME: ARNOLD'S CORNER VILLAGE OF LONG REACH SECTION 1, AREA 1 DEED # 18527/263	
PREVIOUS FILE No. : S-18-006, ECP-18-052, ZB1112, P-19-001,	WP-19-083 FDP-77-A-IV, PB 18 F 44 (F-70-068c) WP-19-101

OWNER/DEVELOPER: ARNOLD'S CORNER, LLC, 308 MAGOTHY ROAD, SEVERNA PARK, MD 21146, CONTACT: DAVID WOESSNER, PHONE: (240) 319-1735

TAX MAP: 30 GRID: 24 ZONED: NT
PARCELS: N, O & 462, PUBLIC USE PARCELS
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, 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. 40808, EXPIRATION DATE: 7/3/2021

BOHLER ENGINEERING™
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

THE INFORMATION, DESIGN AND CONTENT OF THIS PLAN ARE PROPRIETARY AND SHALL NOT BE COPIED OR USED FOR ANY PURPOSE WITHOUT PRIOR WRITTEN AUTHORIZATION FROM BOHLER ENGINEERING. ONLY APPROVED, SIGNED AND SEALED PLANS SHALL BE UTILIZED FOR CONSTRUCTION PURPOSES. © 2018 BOHLER ENGINEERING

REVISIONS

REV	DATE	COMMENT	BY

KNOW WHAT'S BELOW
ALWAYS CALL 811
BEFORE YOU DIG
It's fast. It's free. It's the law.

PROJECT No.:	MD182086
DRAWN BY:	AVG
CHECKED BY:	BRR
DATE:	12/17/19
SCALE:	AS SHOWN
CAD I.D.:	SDP-3

PROJECT:

FINAL PLAN
FOR
ARNOLD'S CORNER
LOTS 1-18 & OPEN SPACE LOTS 19-23
A RESUBDIVISION OF PARCELS N & O OF THE VILLAGE OF LONG REACH, SECTION 1, AREA 1
LOCATION OF SITE
5320 PHELPS LUCK DRIVE
COLUMBIA, MD
6TH ELECTION DISTRICT
TAX MAP 30, GRID 24, PARCELS N, O, & OPEN SPACE 462
VILLAGE OF LONG REACH, SECTION 1, AREA 1
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808
12/20/19

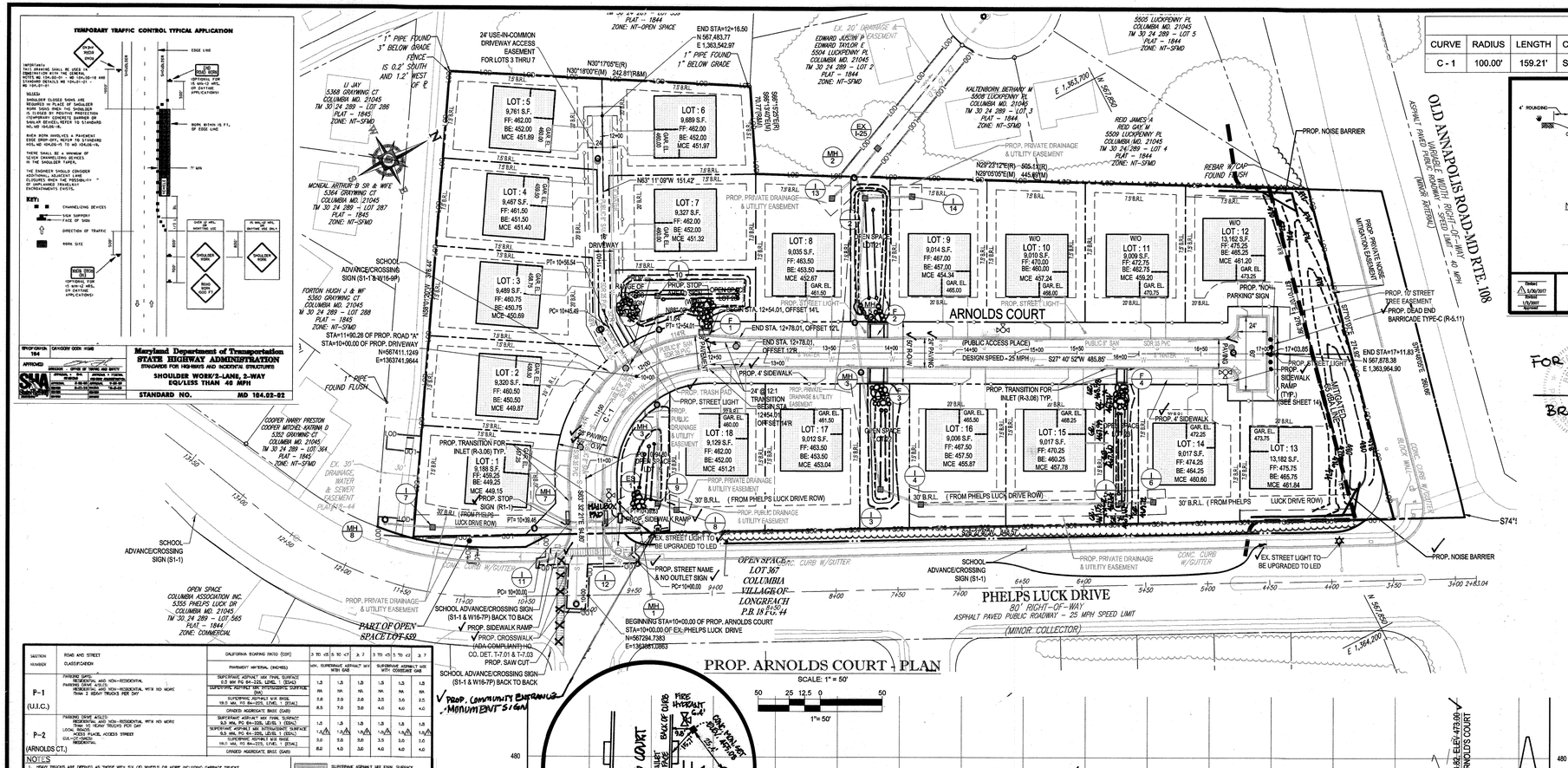
SHEET TITLE:
EROSION & SEDIMENT CONTROL NOTES & DETAILS

SHEET NUMBER:
9

H:\18\MD182086\DRAWINGS\PLAN SETS\FINAL PLAN\MD182086-SDP-3.DWG PRINTED BY: AGAMBOA 12.19.19 @ 1:46 PM LAST SAVED BY: AGAMBOA

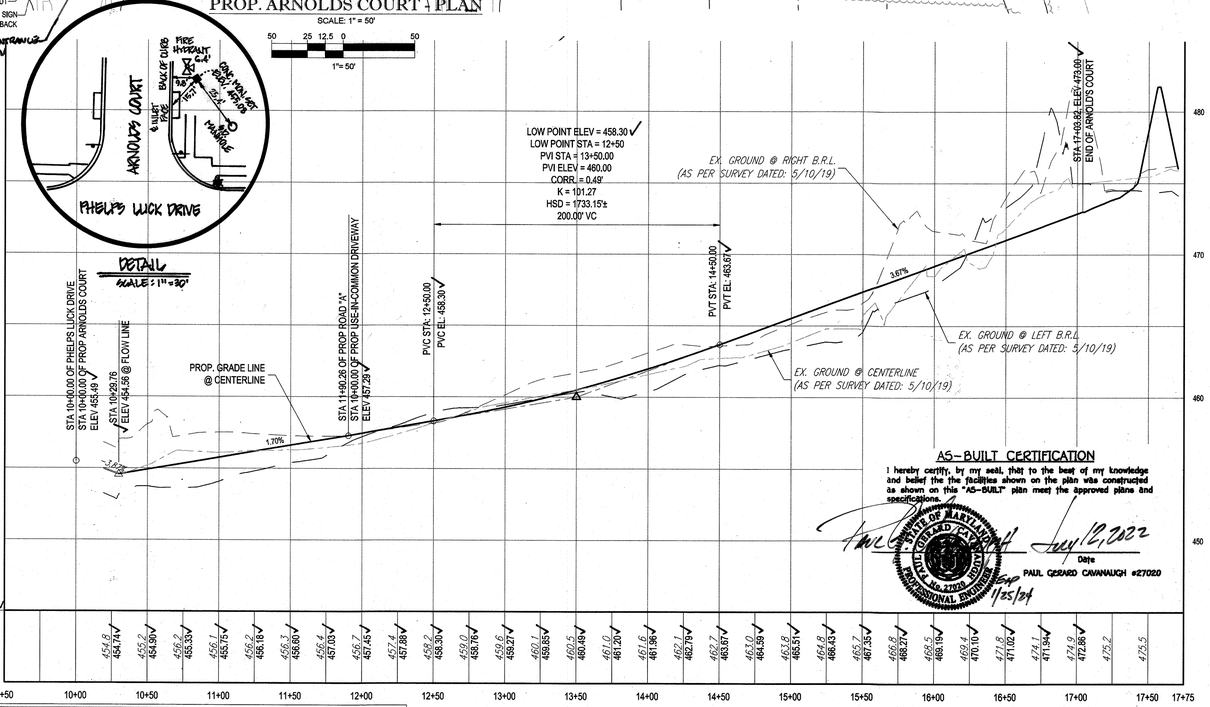
THERE IS NO "AS-BUILT" INFORMATION PROVIDED ON THIS SHEET

F-19-088



PROP. ARNOLDS COURT - PLAN

SCALE: 1" = 50'



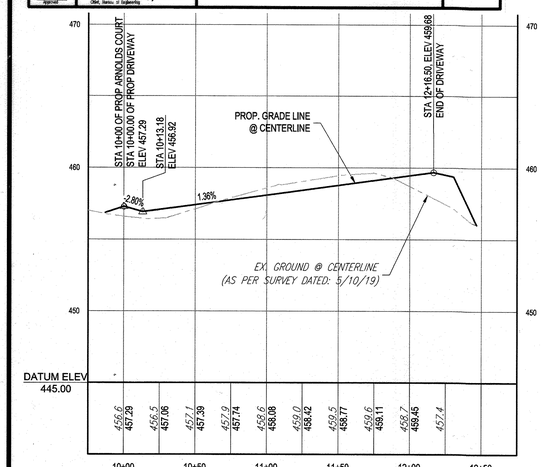
PROP. ARNOLDS COURT - PROFILE

PUBLIC ACCESS PLACE

DESIGN SPEED - 25 MPH

SCALE: 1"= 50' HORIZONTAL

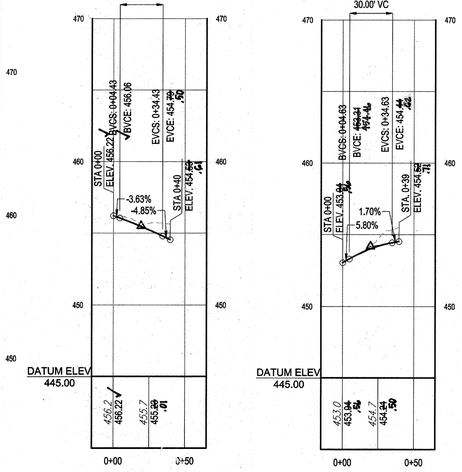
1"= 5' VERTICAL



PROP. USE-IN-COMMON DRIVEWAY - PROFILE

SCALE: 1"= 50' HORIZONTAL

1"= 5' VERTICAL



AS-BUILT CERTIFICATION

I hereby certify, by my seal, that to the best of my knowledge and belief the the facilities shown on the plan was constructed as shown on this "AS-BUILT" plan meet the approved plans and specifications.

STATE OF MARYLAND — PAUL GERARD CAVANAUGH — No. 27020 — PROFESSIONAL ENGINEER — EXP. 7/23/21

July 12, 2022

Date

PAUL GERARD CAVANAUGH #27020

FOR REVISION 1 ONLY 12/20/20 BRANDON ROWE

STREET LIGHT CHART

STREET NAME	LOCATION		POLE HEIGHT	POLE TYPE	TYPE
	STATION	OFFSITE			
ARNOLD'S CT.	15+56.41	17.00' L	14'-0"	BLACK FIBERGLASS	POST-TOP (LED-100 COLONIAL)
ARNOLD'S CT.	13+78.64	17.00' L	14'-0"	BLACK FIBERGLASS	POST-TOP (LED-100 COLONIAL)
ARNOLD'S CT.	12+02.29	19.00' L	14'-0"	BLACK FIBERGLASS	POST-TOP (LED-100 COLONIAL)
ARNOLD'S CT.	17+08.86	0.00' L	14'-0"	BLACK FIBERGLASS	POST-TOP (LED-100 COLONIAL)
PHELPS DRIVE	3+90	30.0 R	30'-0"	EXISTING	LED -250 COBRAHEAD PENDANT
PHELPS DRIVE	9+65	30.0 R	30'-0"	EXISTING	LED -250 COBRAHEAD PENDANT

NOTES:

1. REFER TO LANDSCAPE PLAN (SHEET 5) FOR STREET TREE LOCATIONS AND DETAILS.
2. APPROVAL OF THIS PLAN IS NOT AUTHORIZED TO DISTURB OFFSITE PROPERTY. NOTIFICATION AND AUTHORIZATION FROM THE PROPERTY OWNER IS REQUIRED PRIOR TO ANY DISTURBANCE.

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 1/31/2020

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/10/20

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.6.20

SUBDIVISION NAME: ARNOLD'S CORNER
VILLAGE OF LONG REACH
SECTION 1, AREA 1
DEED # 18527/263

OWNER/DEVELOPER: ARNOLD'S CORNER, LLC
308 MAGOTHY ROAD
SEVERNA PARK, MD 21146
CONTACT: DAVID WOESSNER
PHONE: (240) 319-1735

TAX MAP: 30 GRID: 24 ZONED: NT
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6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PREVIOUS FILE No.: S-18-006, ECP-18-052, ZB1112, P-19-001, WP-19-083, FDP-77-A-IV, PB 18 F 44 (F-70-068c), WP-19-101

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"AS-BUILT" F-19-088

H:\11MD\182086\DRAWING\PLAN SET\FINAL PLAN\MD182086-PPR-3.DWG PRINTED BY: AGAMBOA 12.19.19 @ 1:47 PM LAST SAVED BY: AGAMBOA

CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C - 1	100.00'	159.21'	S17°55'44"E	142.92'	091°13'13"	102.15'

CLOSED SECTION △

NOTES:
1. TYPE OF CURB VARIES (MODIFIED COMBINATION CURB & GUTTER OR COMBINATION CURB & GUTTER – SEE DESIGN MANUAL VOLUME II FOR CRITERIA).
2. 4" CONCRETE SIDEWALK AS REQUIRED BY SUB-DIVISION REGULATIONS.
3. 4'-0" SIDEWALK REQUIRES A PASSING AREA (SEE DETAIL R-4.01).
4. SEE R-3.05 FOR WHERE SIDEWALK IS AGAINST CURB.

CLASSIFICATION	A	B	C	D	PAVING SECTION
MINOR COLLECTOR 2000 ADT	28'	6'	4'	11'	P-3
ACCESS STREET 1000 ADT	24'*	6'	4'	13'	P-2
ACCESS PLACE 200 ADT	24'*	6'	4'	13'	P-2

*TOWNHOUSES, CONDOMINIUM / APARTMENT DEVELOPMENTS REQUIRE 28' MINIMUM PAVING WIDTH (P-2 PAVING SECTION)

Howard County, Maryland Department of Public Works — Approved: Director, Bureau of Engineering — Chief, Bureau of Engineering

TYPICAL SECTIONS – RESIDENTIAL STREETS
Access Place, Access Streets, Minor Collector (Closed Section)

Detail R-1.02

TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION

Maryland Department of Transportation — STATE HIGHWAY ADMINISTRATION — STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

SHOULDER WORK/2-LANE, 2-WAY EQUALESS THAN 40 MPH

STANDARD NO. MD 104.02-02

TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION

Maryland Department of Transportation — STATE HIGHWAY ADMINISTRATION — STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

FLAGGING OPERATIONS/2-LANE, 2-WAY EQUALESS THAN 40 MPH

STANDARD NO. MD 104.02-10

SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR)	≥ 30 <0	≥ 30 <0*	≥ 7	≥ 70 <0	≥ 70 <0*	≥ 7
P-1 (U.I.C.)	PARKING DRIVE AISLES: RESIDENTIAL AND NON-RESIDENTIAL PARKING AREAS, INCLUDING: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 2 HEAVY TRUCKS PER DAY	PAVEMENT MATERIAL (INCHES)						
		SURFACE: ASPHALT MIX FINAL SURFACE	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	2.5	3.0	3.5	3.5	3.5	2.5
		GRADED AGGREGATE BASE (GAB)	6.5	7.0	3.0	4.0	4.0	4.0
P-2 (ARNOLDS CT.)	PARKING DRIVE AISLES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY LOCAL STREETS: ACCESS PLACES, ACCESS STREET CUL-DE-SACS: RESIDENTIAL	SURFACE: ASPHALT MIX FINAL SURFACE	1.5	1.5	1.5	1.5	1.5	1.5
		SUPERPAVE ASPHALT MIX INTERMEDIATE SURFACE	1½	1½	1½	1½	1½	1½
		SUPERPAVE ASPHALT MIX BASE	3.0	3.5	3.0	3.5	3.0	2.0
		GRADED AGGREGATE BASE (GAB)	6.0	4.0	3.0	4.0	4.0	4.0

NOTES
1. HEAVY TRUCKS ARE DEFINED AS THOSE WITH 6(+) (6) WHEELS OR MORE INCLUDING GARBAGE TRUCKS.
2. SUPERPAVE ASPHALT MIXES (SPA) MAY BE PLACED IN ACCORDANCE WITH THE SHOP MANUAL.
3. GRADED AGGREGATE BASE (GAB) TO BE PLACED AND COMPACTED IN 4" MAX. COMPACTED THICKNESS LAYERS.
4. IN LIEU OF PLACING THE INTERMEDIATE SURFACE COURSE LATER FOR COMMERCIAL/INDUSTRIAL ENTRANCE APPROVE WITHIN THE COUNTY RIGHT-OF-WAY WHERE AUXILIARY LANES ARE NOT REQUIRED, THE THICKNESS OF THE INTERMEDIATE PAVEMENT LAYER SHOULD BE ADDED TO THE BASE COURSE.
5. IN LIEU OF PLACING THE INTERMEDIATE SURFACE COURSE LATER FOR COMMERCIAL/INDUSTRIAL ENTRANCE APPROVE WITHIN THE COUNTY RIGHT-OF-WAY WHERE AUXILIARY LANES ARE NOT REQUIRED, THE THICKNESS OF THE INTERMEDIATE PAVEMENT LAYER SHOULD BE ADDED TO THE BASE COURSE.
6. THE SUPERPAVE ASPHALT MIXES (SPA) MAY BE PLACED IN ACCORDANCE WITH THE SHOP MANUAL.
7. THE PAVEMENT SECTION SHOWN HERE IS THE MINIMUM PAVEMENT 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)

Howard County, Maryland Department of Public Works — Approved: Director, Bureau of Engineering — Chief, Bureau of Engineering

PAVING SECTIONS P-1 to P-4

Detail R-2.01

BOHLER ENGINEERING

SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION ENGINEERING

THE INFORMATION, DESIGNS AND CONTENT OF THIS PLAN ARE THE PROPERTY OF BOHLER ENGINEERING. THEY ARE TO BE USED FOR APPROVAL PURPOSES ONLY UNLESS WRITTEN PERMISSION IS OBTAINED FROM BOHLER ENGINEERING. THEY ARE NOT TO BE USED FOR CONSTRUCTION PURPOSES

REVISIONS

REV	DATE	COMMENT	BY
1	12/22/20	ADDED ENTRANCE MONUMENT SIGN	CMG

KNOW WHAT'S BELOW ALWAYS CALL 811 BEFORE YOU DIG

It's fast. It's free. It's the law.

PROJECT No.:	MD182086
DRAWN BY:	AVG
CHECKED BY:	BRR
DATE:	12/17/19
SCALE:	AS SHOWN
CAD I.D.:	PPR - 3

PROJECT:

FINAL PLAN FOR ARNOLD'S CORNER

LOTS 1-18 & OPEN SPACE LOTS 19-23
A RESUBDIVISION OF PARCELS N & O OF THE VILLAGE OF LONG REACH, SECTION 1, AREA 1
LOCATION OF SITE
5320 PHELPS LUCK DRIVE
COLUMBIA, MD
6TH ELECTION DISTRICT
TAX MAP 30, GRID 24, PARCELS N, O, & OPEN SPACE 462
VILLAGE OF LONG REACH, SECTION 1, AREA 1
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7967
MD@BohlerEng.com

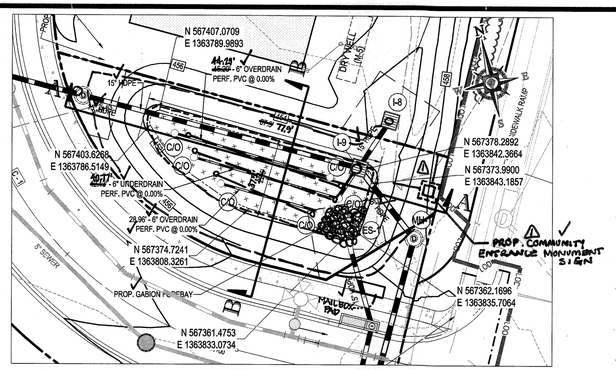
B.R. ROWE — PROFESSIONAL ENGINEER — MARYLAND LICENSE No. 40808 — 12/20/19

SHEET TITLE:

ROAD PLAN & PROFILES

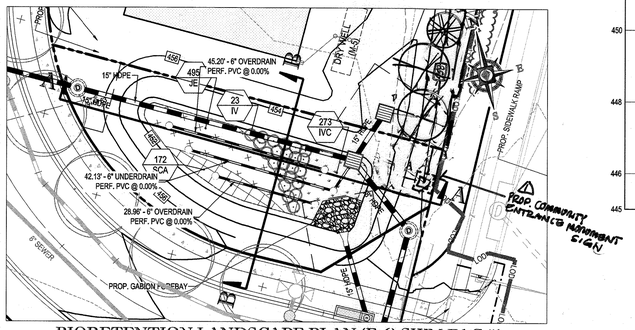
SHEET NUMBER:

10



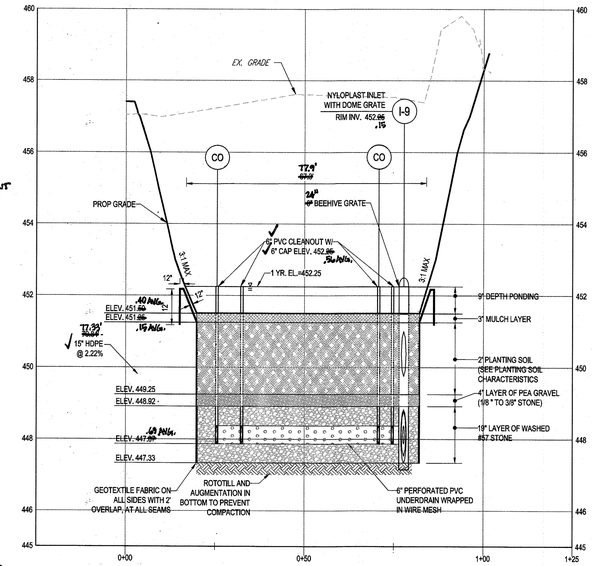
BIORETENTION (F-6) SWM FAC #1

SCALE: 1"=20'



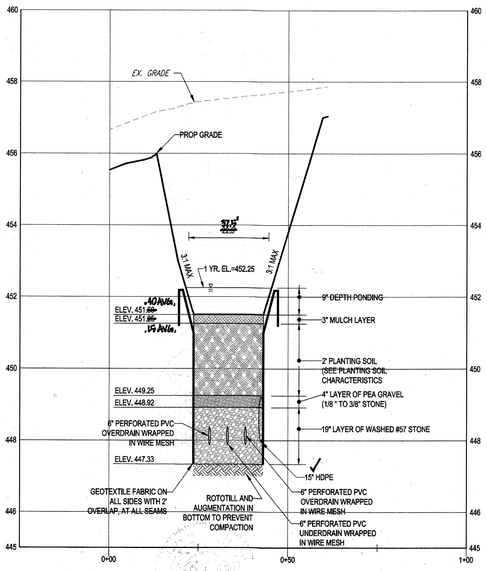
BIORETENTION LANDSCAPE PLAN (F-6) SWM FAC #1

SCALE: 1"=20'



FAC #1 - SECTION A - A

SCALE: 1"= 20' HORIZONTAL
1"= 2' VERTICAL



FAC #1 - SECTION B - B

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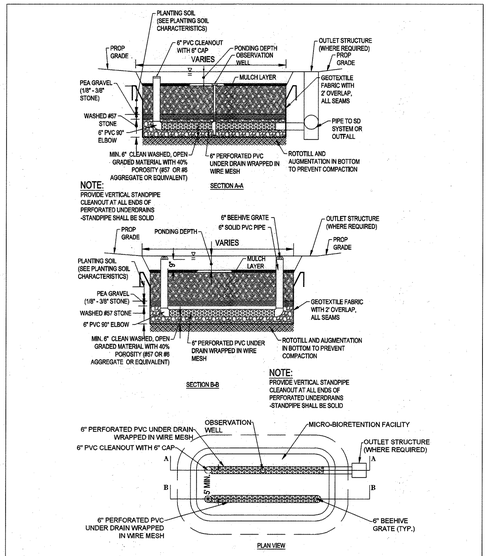
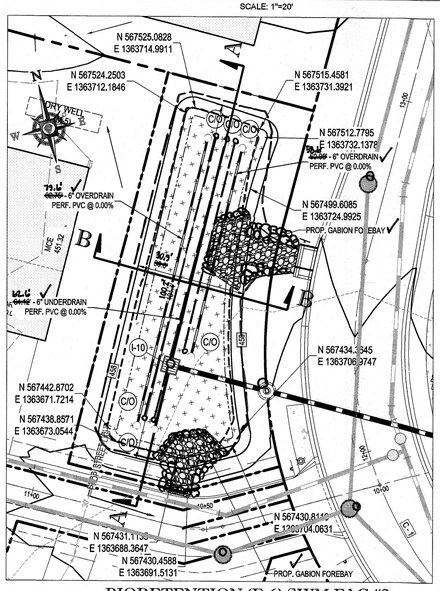
1"= 2' VERTICAL



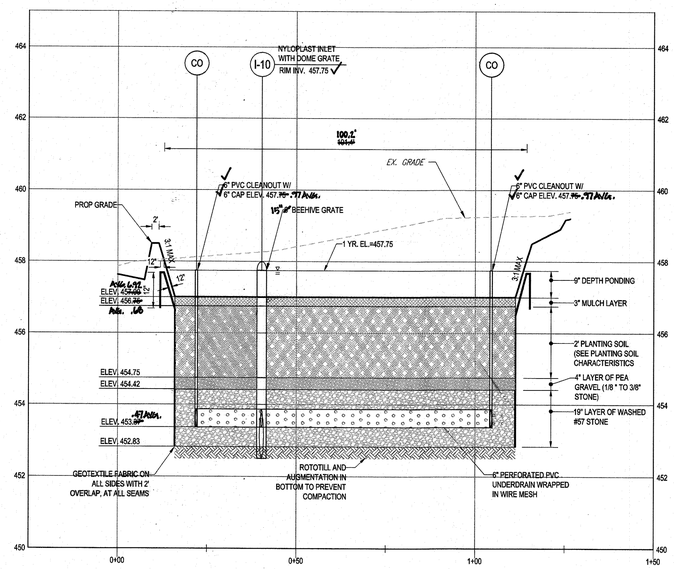
TYPICAL BIORETENTION FACILITY SECTION

NOT TO SCALE



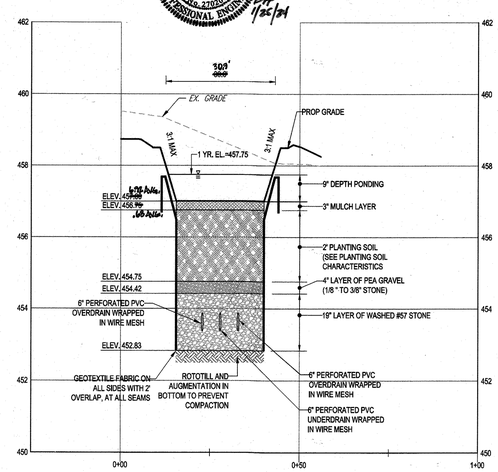
BIORETENTION (F-6) SWM FAC #2

SCALE: 1"=20'



FAC #2 - SECTION A - A

SCALE: 1"= 20' HORIZONTAL
1"= 2' VERTICAL



FAC #2 - SECTION B - B

SCALE: 1"= 20' HORIZONTAL
1"= 2' VERTICAL

AS-BUILT CERTIFICATION

I hereby certify, by my seal, that to the best of my knowledge and belief the the facilities shown on the plan was constructed as shown on this "AS-BUILT" plan meet the approved plans and specifications.

STATE OF MARYLAND GERARD CAVANAUGH No. 27020 PROFESSIONAL ENGINEER

Date

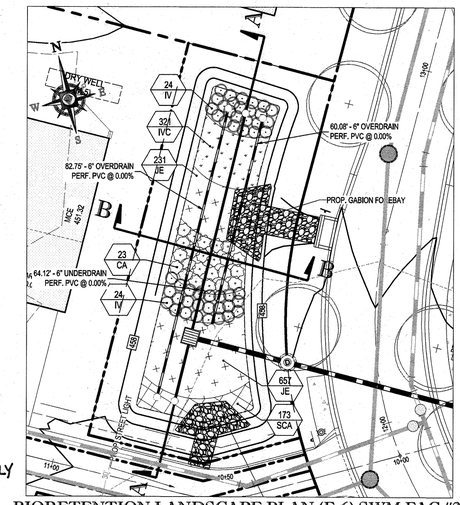
PAUL GERARD CAVANAUGH #27020

Appendix B.3 - Construction Specifications for Sand Filters, Bioretention and Open Channels

B.3.7

Table B.3.2 Materials Specifications for Bioretention

Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
planting soil [2.5' to 4' deep]	sand 35 - 60% silt 30 - 55% clay 10 - 25%	n/a	USDA soil types loamy sand, sandy loam or loam
mulch	shredded hardwood		aged 6 months, minimum
pea gravel diaphragm and entrian drain	pea gravel: ASTM-D-448 ornamental stone: washed cobbles	pea gravel: No. 6 stone: 2" to 5"	
geotextile	Class 'C' - apparent opening size (ASTM-D-4751), grab tensile strength (ASTM-D-4632), puncture resistance (ASTM-D-4833)	n/a	for use as necessary beneath underdrains only
underdrain gravel	AASHTO M-43	0.375" to 0.75"	
underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes
percent in place concrete (if required)	MSHA Mix No. 3 (f'c = 3300 psi @ 28 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	n/a	on-site testing of percent 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/99; vertical loading [H-10 or H-20]; allowable horizontal loading (based on soil properties); and analysis of potential cracking
sand [1' deep]	AASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.



BIORETENTION LANDSCAPE PLAN (F-6) SWM FAC #2

SCALE: 1"=20'

BIORETENTION LANDSCAPE PLAN (F-6) SWM FAC #1 LANDSCAPE SCHEDULE

KEY	QTY.	BOTANICAL NAME	COMMON NAME	CAL.	CONT.
DECIDUOUS SHRUBS					
IV	23	ITEA VIRGINICA 'HENRY'S GARNET'	GARNET SWEETSPIRE	24-30"	#5 CAN
SUBTOTAL:	23				
PERENNIALS					
IVC	273	IRIS VERSICOLOR	BLUE FLAG IRIS	PLUG	PERENNIAL(S)
JE	495	JUNCUS EFFUSUS	COMMON RUSH	PLUG	PERENNIAL(S)
SCA	172	SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	PLUG	PERENNIAL(S)
SUBTOTAL:	940				

BIORETENTION LANDSCAPE PLAN (F-6) SWM FAC #2 LANDSCAPE SCHEDULE

KEY	QTY.	BOTANICAL NAME	COMMON NAME	CAL.	CONT.
DECIDUOUS SHRUBS					
CA	23	CLETHRA ALNIFOLIA	SUMMERSWEET CLETHRA	24-30"	#3 CAN
IV	48	ITEA VIRGINICA 'HENRY'S GARNET'	GARNET SWEETSPIRE	24-30"	#5 CAN
SUBTOTAL:	71				
PERENNIALS					
IVC	321	IRIS VERSICOLOR	BLUE FLAG IRIS	PLUG	PERENNIAL(S)
JE	888	JUNCUS EFFUSUS	COMMON RUSH	PLUG	PERENNIAL(S)
SCA	173	SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	PLUG	PERENNIAL(S)
SUBTOTAL:	1382				

FOR REVISION 4 ONLY

11/22/2021

BRANDON ROWE

50 25 12.5 0 50

1"= 50'

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 1/31/2020

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/10/20

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.6.20

C:\USERS\MGAMBOA\APPDATA\LOCAL\TEMP\ACPUBLISH_9920\MD192086-SWP-3.DWG PRINTED BY: AGAMBOA 12.19.19 @ 2:54 PM LAST SAVED BY: AGAMBOA

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REVISIONS

REV	DATE	COMMENT	BY
1	12/22/20	ADDED ENTRANCE MONUMENT SIGN	CMB

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PROJECT No.:	MD192086
DRAWN BY:	AVG
CHECKED BY:	BRR
DATE:	12/17/19
SCALE:	1" = 50'
CAD I.D.:	SWP-3

PROJECT:

FINAL PLAN

FOR

ARNOLD'S CORNER

LOTS 1-18 & OPEN SPACE LOTS 19-23
A RESUBDIVISION OF PARCELS N & O OF THE VILLAGE OF LONG REACH, SECTION 1, AREA 1

LOCATION OF SITE
5320 PHELPS LUCK DRIVE
COLUMBIA, MD
6TH ELECTION DISTRICT
TAX MAP 30, GRID 24, PARCELS N, O, & OPEN SPACE 462
VILLAGE OF LONG REACH, SECTION 1, AREA 1
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

B.R. ROWE

PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808

12/20/19

SHEET TITLE:

STORMWATER MANAGEMENT NOTES AND DETAILS

SHEET NUMBER:

11

SUBDIVISION NAME: ARNOLD'S CORNER
VILLAGE OF LONG REACH
SECTION 1, AREA 1
DEED # 18527/263

OWNER/DEVELOPER: ARNOLD'S CORNER, LLC
308 MAGOTHY ROAD
SEVERNA PARK, MD 21146
CONTACT: DAVID WOESSNER
PHONE: (240) 319-1735

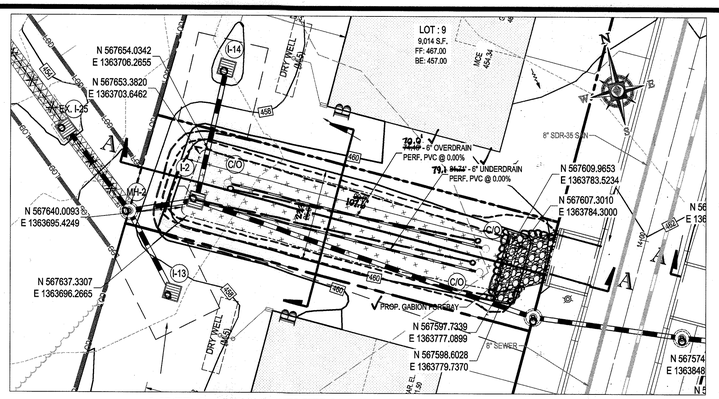
TAX MAP: 30 GRID: 24 ZONED: NT
PARCELS: N, O & 462, PUBLIC USE PARCELS
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PREVIOUS FILE No. :

S-18-006,	WP-19-083
ECP-18-052,	FDP-27-A-IV,
ZB1112,	PB 18 F 44 (F-70-068c)
P-19-001,	WP-19-101

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, 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. 40808, EXPIRATION DATE: 7/2/2021

"AS-BUILT" F-19-088



MICRO-BIORETENTION (M-6) SWM FAC #3

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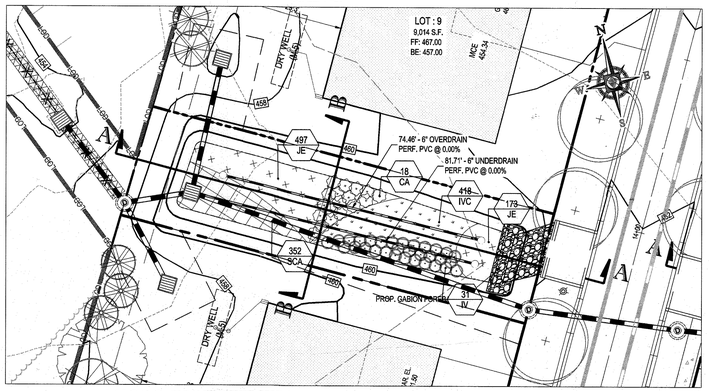
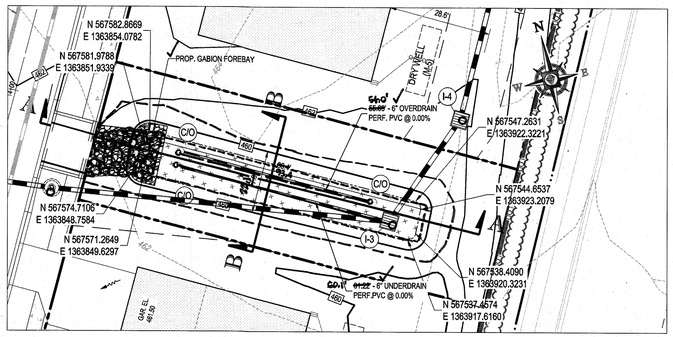


MICRO-BIORETENTION LANDSCAPE PLAN (M-6) SWM FAC #3

SCALE: 1"=20'



MICRO-BIORETENTION (M-6) SWM FAC #4

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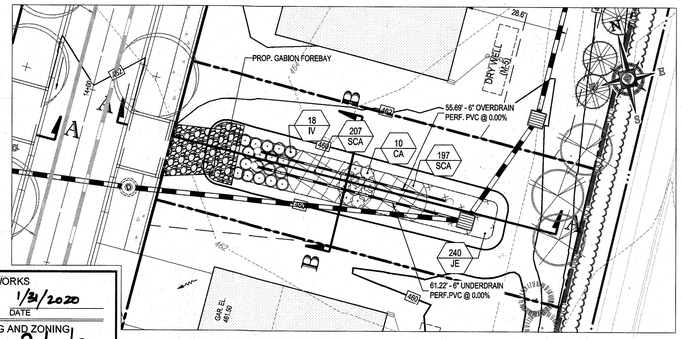

MICRO-BIORETENTION LANDSCAPE PLAN (M-6) SWM FAC #4

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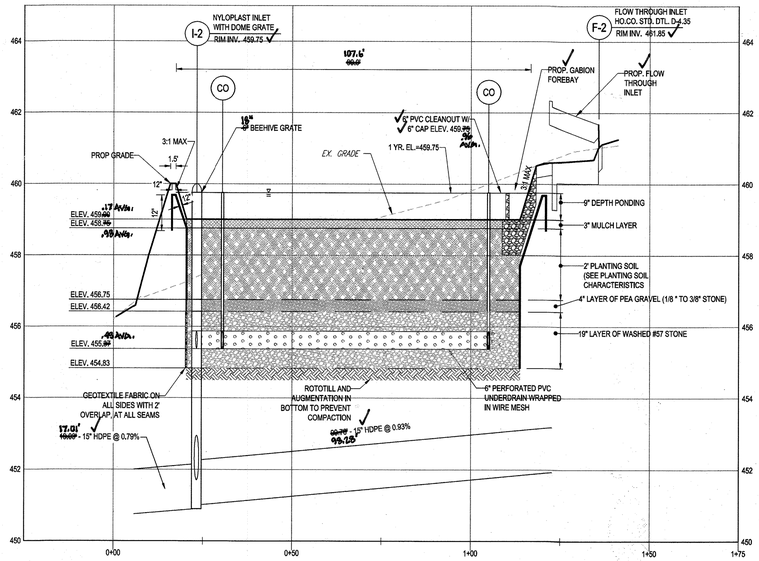

FAC #3- SECTION A - A

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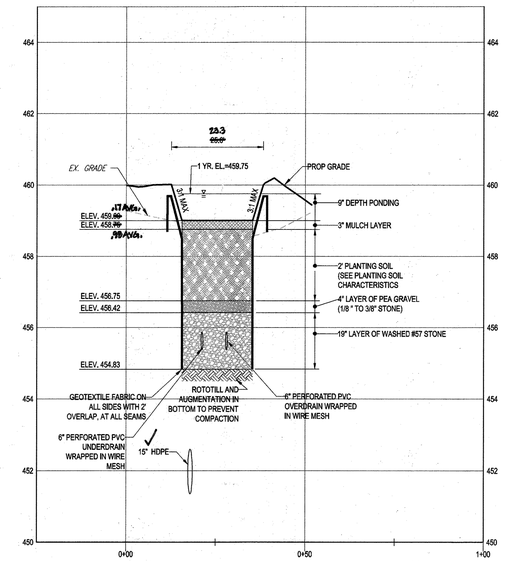
1"= 2 ' VERTICAL



FAC #3 - SECTION B - B

SCALE: 1"= 20 ' HORIZONTAL
1"= 2 ' VERTICAL

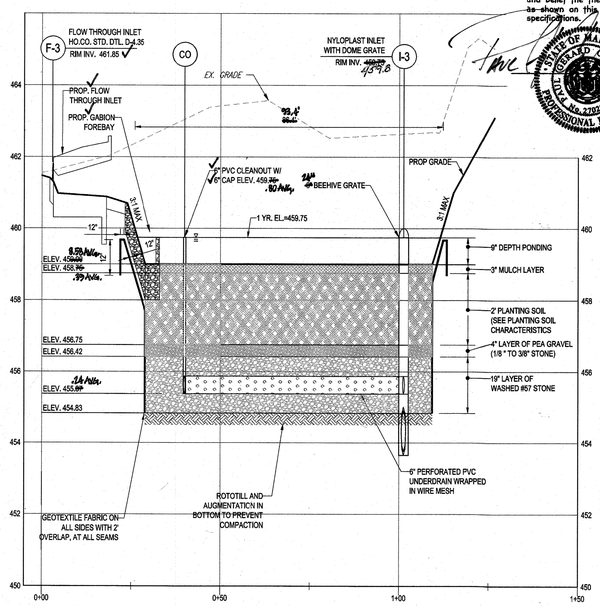
AS-BUILT CERTIFICATION

I hereby certify, by my seal, that to the best of my knowledge and belief the the facilities shown on the plan was constructed as shown on this "AS-BUILT" plan meet the approved plans and specifications.

STATE OF MARYLAND LICENSED PROFESSIONAL ENGINEER PAUL G. CAVANAUGH No. 27020

Nov 16, 2022
Date

PAUL GERARD CAVANAUGH #27020



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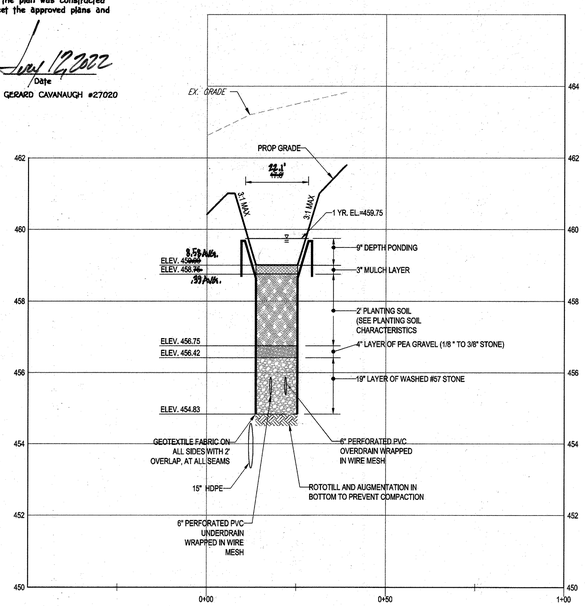
1"= 2 ' VERTICAL



FAC #4 - SECTION B - B

SCALE: 1"= 20 ' HORIZONTAL
1"= 2 ' VERTICAL

MICRO-BIORETENTION LANDSCAPE PLAN (M-6) FACILITY #MB3 PLANTING SCHEDULE

KEY	QTY.	BOTANICAL NAME	COMMON NAME	CAL.	CONT.
DECIDUOUS SHRUBS					
CA	18	CLETHRA ALNIFOLIA	SUMMERSWEET CLETHRA	24-30"	#3 CAN
IV	31	ITEA VIRGINICA 'HENRY'S GARNET'	GARNET SWEETSPIRE	24-30"	#5 CAN
SUBTOTAL:	49				
PERENNIALS					
IVC	418	IRIS VERSICOLOR	BLUE FLAG IRIS	PLUG	PERENNIAL(S)
JE	670	JUNCUS EFFUSUS	COMMON RUSH	PLUG	PERENNIAL(S)
SCA	352	SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	PLUG	PERENNIAL(S)
SUBTOTAL:	1440				

MICRO-BIORETENTION LANDSCAPE PLAN (M-6) FACILITY #MB4 LANDSCAPE SCHEDULE

KEY	QTY.	BOTANICAL NAME	COMMON NAME	CAL.	CONT.
DECIDUOUS SHRUBS					
CA	10	CLETHRA ALNIFOLIA	SUMMERSWEET CLETHRA	24-30"	#3 CAN
IV	18	ITEA VIRGINICA 'HENRY'S GARNET'	GARNET SWEETSPIRE	24-30"	#5 CAN
SUBTOTAL:	28				
PERENNIALS					
JE	240	JUNCUS EFFUSUS	COMMON RUSH	PLUG	PERENNIAL(S)
SCA	404	SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	PLUG	PERENNIAL(S)
SUBTOTAL:	644				

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 1/31/2020
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/10/20
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.6.20

SUBDIVISION NAME: ARNOLD'S CORNER
VILLAGE OF LONG REACH.
SECTION 1, AREA 1
DEED # 18527/263

PREVIOUS FILE No. :
S-18-006, WP-19-083
ECP-18-052, FDP-77-A-IV,
ZB1112, PB 18 F 44 (F-70-068c)
P-19-001, WP-19-101

50 25 0 25 50
1"= 50'

OWNER/DEVELOPER: ARNOLD'S CORNER, LLC
308 MAGOTHY ROAD
SEVERNA PARK, MD 21146
CONTACT: DAVID WOESSNER
PHONE: (240) 319-1735

TAX MAP: 30 GRID: 24 ZONED: NT
PARCELS: N, O & 462, PUBLIC USE PARCELS
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, 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. 40808, EXPIRATION DATE: 7/3/2021

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PROJECT No.:	MD182086
DRAWN BY:	AVC
CHECKED BY:	BRR
DATE:	12/17/19
SCALE:	1" = 50'
CAD I.D.:	SWP-3

PROJECT:

FINAL PLAN

FOR

ARNOLD'S CORNER

LOTS 1-18 &
OPEN SPACE LOTS 19-23
A RESUBDIVISION OF PARCELS
N & O OF THE VILLAGE OF
LONG REACH, SECTION 1, AREA 1
LOCATION OF SITE
5320 PHELPS LUCK DRIVE
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TAX MAP 30, GRID 24, PARCELS
N, O, & OPEN SPACE 462
VILLAGE OF LONG REACH,
SECTION 1, AREA 1
HOWARD COUNTY

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B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE NO. 40808
12/10/19

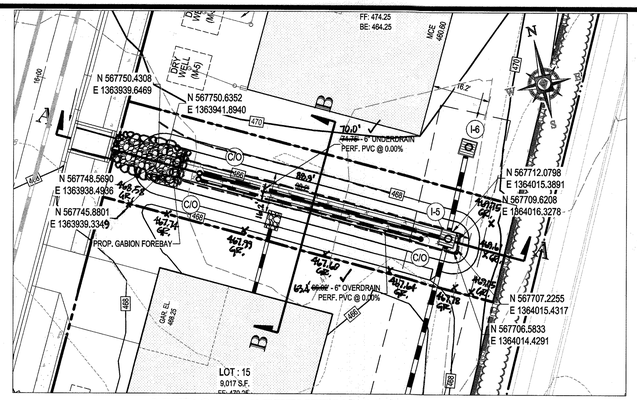
SHEET TITLE:

STORMWATER MANAGEMENT NOTES AND DETAILS

SHEET NUMBER:

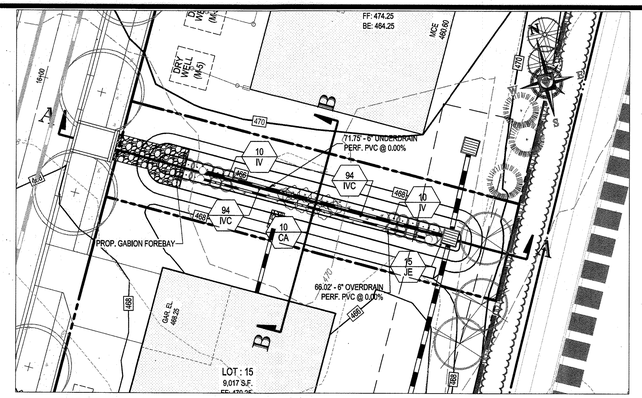
12

"AS-BUILT" F-19-088



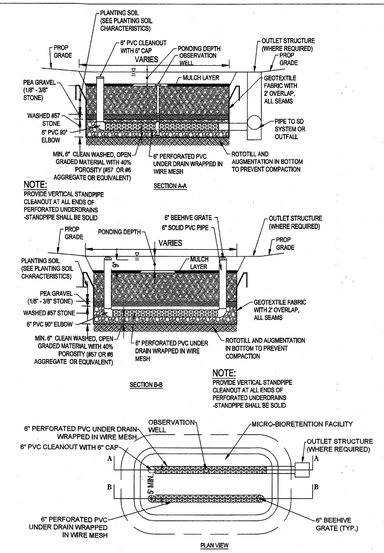
MICRO-BIORETENTION (M-6) SWM FAC #5

SCALE: 1"=20'



MICRO-BIORETENTION LANDSCAPE PLAN (M-6) SWM FAC #5

SCALE: 1"=20'



TYPICAL MICRO-BIORETENTION FACILITY SECTION

NOT TO SCALE

STORMWATER MANAGEMENT NOTES

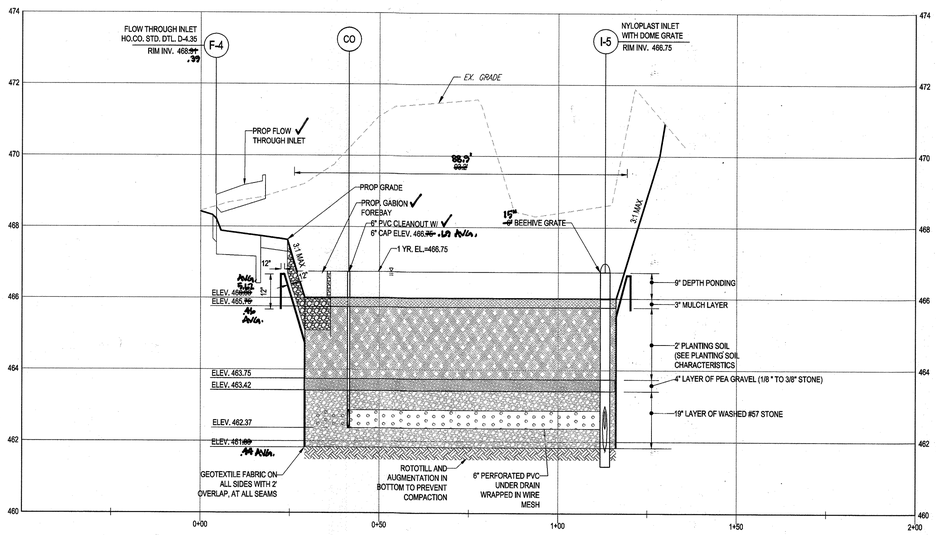
1. STORMWATER MANAGEMENT IS PROVIDED IN ACCORDANCE WITH THE 2000 MARYLAND STORMWATER DESIGN MANUAL.

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

1. 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.
2. THE OWNER SHALL PERFORM A PLANT IN THE SPRING AND IN THE FALL EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT. REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLAN MATERIAL. TREAT DISEASED TREES AND SHRUBS AND REPLACE DEFICIENT STAKES AND WIRES.
3. THE OWNER SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.
4. THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.
5. THE OWNER SHOULD REMOVE AND REPLACE THE TOP FEW INCHES OF FILTER MEDIA IF WATER REMAINS IN THE FACILITY FOR LONGER THAN 24 HOURS FOLLOWING A STORM EVENT.

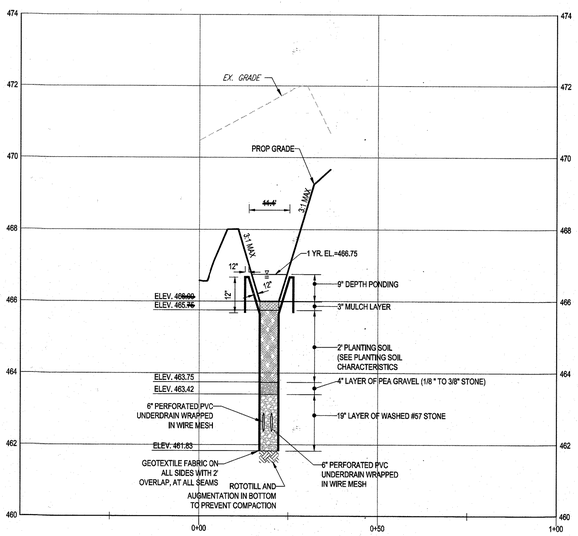
OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED STORMWATER DRY WELLS (M-5)

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.



FAC #5 - SECTION A - A

SCALE: 1"= 20 ' HORIZONTAL
1"= 2 ' VERTICAL



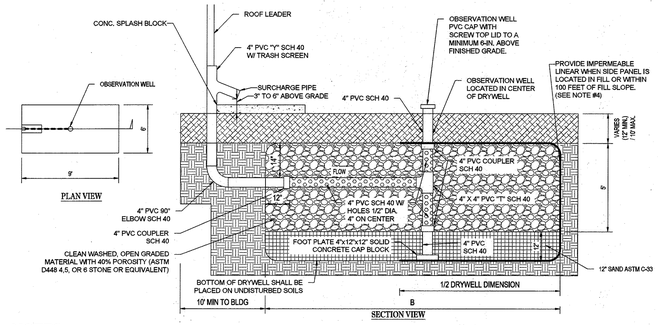
FAC #5 - SECTION B - B

SCALE: 1"= 20 ' HORIZONTAL
1"= 2 ' VERTICAL

Table B.4 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 5 months, minimum; no pine or wood chips
Pea gravel diaphragm	pea gravel: ASTM-D-448	NO. 6 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 beme)	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 pipe. Perforated pipe shall be wrapped with ¼-inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3; f'_c = 3500 psi @ 28 days, normal weight, air-entrained, reinforcing to meet ASTM-615-60	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) *not using previously approved State or local standards* requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland – design to include meeting ACI Code 350 R.9D; 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 Dolomite and Greystone (**AASHTO** #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

MICRO-BIORETENTION LANDSCAPE PLAN (M-6) FACILITY #MB5 PLANTING SCHEDULE

KEY	QTY.	BOTANICAL NAME	COMMON NAME	CAL.	CONT.
DECIDUOUS SHRUBS					
CA	10	CLETHRA ALNIFOLIA	SUMMERSWEET CLETHRA	24-30"	#3 CAN
IV	20	ITEA VIRGINICA 'HENRY'S GARNET'	GARNET SWEETSPIRE	24-30"	#5 CAN
SUBTOTAL:	30				
PERENNIALS					
IVC	188	IRIS VERSICOLOR	BLUE FLAG IRIS	PLUG	PERENNIAL(S)
JE	15	JUNCUS EFFUSUS	COMMON RUSH	PLUG	PERENNIAL(S)
SUBTOTAL:	203				



STANDARD DRYWELL SECTION

NOT TO SCALE

NOTES:

1. FROM THE DOWNSPOUT TO THE DRYWELL THE DRAIN PIPE MUST BE AT LEAST 6" BELOW GRADE.
2. NONWOVEN GEOTEXTILE FABRIC TO BE INSTALLED ON TOP AND SIDES ONLY. THESE GEOTEXTILES ARE AVAILABLE IN FRINKSBURG @ ES&G DISTRIBUTORS 2601 EMORY RD., BLDG 8. 666-744-5001, ANY EQUIVALENT GEOTEXTILE IS ACCEPTABLE.
3. DRYWELL BOTTOM TO BE INSTALLED AS LEVEL AS POSSIBLE AND IN UNDISTURBED SOILS.
4. WHEN TOP OF DRYWELL IS PLACED IN FILL WITHIN 100' OF SLOPES 15% OR GREATER, AN IMPERMEABLE LINER SHALL BE PROVIDED ON THE STEEP SLOPE SIDE OF THE FACILITY AS SHOWN ABOVE.
5. ALL ROOF DRAINS LEADING TO A DRYWELL FACILITY SHALL HAVE A GUTTER DRAIN FILTER.
6. CONSTRUCTION OF A DRYWELL SHALL BE PERFORMED WITH A LIGHTWEIGHT WIDE-TRACKED EQUIPMENT TO MINIMIZE DISTURBANCE AND COMPACTION.

DRY WELL CONSTRUCTION SPECIFICATIONS

REGULAR INSPECTIONS SHALL BE DURING THE FOLLOWING STAGES OF CONSTRUCTION:

- DURING EXCAVATION TO SUBGRADE
- DURING PLACEMENT OF BACKFILL AND PERFORATED INLET PIPE AND OBSERVATION WELL
- DURING PLACEMENT OF GEOTEXTILES AND ALL FILTER MEDIA
- DURING CONSTRUCTION OF THE APPURTENANT CONVEYANCE
- UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

AS-BUILT CERTIFICATION

I hereby certify, by my seal, that to the best of my knowledge and belief the the facilities shown on the plan was constructed as shown on this "AS-BUILT" plan meet the approved plans and specifications.

STATE OF MARYLAND PAUL GERARD CAVANAUGH No. 27020 PROFESSIONAL ENGINEER

Date

PAUL GERARD CAVANAUGH #27020

1/25/24

APPROVED: DEPARTMENT OF PUBLIC WORKS		
CHIEF, BUREAU OF HIGHWAYS	MK	DATE 1/31/2020
APPROVED: DEPARTMENT OF PLANNING AND ZONING		
CHIEF, DIVISION OF LAND DEVELOPMENT		DATE 2/10/20
CHIEF, DEVELOPMENT ENGINEERING DIVISION		DATE 2.6.20

H:\91MD\182086\DRAWINGS\PLAN SET\FINAL PLAN\MD182086-SWP-3.DWG PRINTED BY: ASAMBOA 12.19.19 @ 2:49 PM LAST SAVED BY: ASAMBOA

1" = 50'

SUBDIVISION NAME: ARNOLD'S CORNER VILLAGE OF LONG REACH SECTION 1, AREA 1 DEED # 18527/263	OWNER/DEVELOPER: ARNOLD'S CORNER, LLC 308 MAGOTHY ROAD SEVERNA PARK, MD 21146 CONTACT: DAVID WOESSNER PHONE: (240) 319-1735
	TAX MAP: 30 GRID: 24 ZONED: NT PARCELS: N, O & 462, PUBLIC USE PARCELS 6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND
PREVIOUS FILE No. : S-18-006, ECP-18-052, ZB1112, P-19-001, WP-19-083, FDP-77-A-IV, PB 18 F 44 (F-70-068c), WP-19-101	PROFESSIONAL CERTIFICATION I, BRANDON R. ROWE, 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. 40808, EXPIRATION DATE: 7/3/2021

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DRAWN BY:	AVG
CHECKED BY:	BRR
DATE:	12/17/19
SCALE:	AS SHOWN
CAD I.D.:	SWP-3

PROJECT:

FINAL PLAN FOR ARNOLD'S CORNER

LOTS 1-18 & OPEN SPACE LOTS 19-23
A RESUBDIVISION OF PARCELS N & O OF THE VILLAGE OF LONG REACH, SECTION 1, AREA 1

LOCATION OF SITE
5320 PHELPS LUCK DRIVE
COLUMBIA, MD
6TH ELECTION DISTRICT
TAX MAP 30, GRID 24, PARCELS N, O, & OPEN SPACE 462
VILLAGE OF LONG REACH, SECTION 1, AREA 1
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
No. 40808
12/20/19

SHEET TITLE:

STORMWATER MANAGEMENT NOTES AND DETAILS

SHEET NUMBER:

13

"AS-BUILT" F-19-088

STORMWATER MANAGEMENT CONSTRUCTION SPECIFICATIONS

THESE SPECIFICATIONS ARE APPROPRIATE TO ALL PONDS WITHIN THE SCOPE OF THE STANDARD FOR PRACTICE MD-378. ALL REFERENCES TO ASTM AND AASHTO SPECIFICATIONS APPLY TO THE MOST RECENT VERSION.

SITE PREPARATION

AREAS DESIGNATED FOR BORROW AREAS, EMBANKMENT, AND STRUCTURAL WORKS SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL. ALL TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED. CHANNEL BANKS AND SHARP BREAKS SHALL BE SLOPED TO NO STEEPER THAN 1:1. ALL TREES SHALL BE CLEARED AND GRUBBED WITHIN 15 FEET OF THE TOE OF THE EMBANKMENT.

AREAS TO BE COVERED BY THE RESERVOIR WILL BE CLEARED OF ALL TREES, BRUSH, LOGS, FENCES, RUBBISH AND OTHER OBJECTIONABLE MATERIAL UNLESS OTHERWISE DESIGNATED ON THE PLANS. TREES, BRUSH, AND STUMPS SHALL BE CUT APPROXIMATELY LEVEL WITH THE GROUND SURFACE. FOR DRY STORMWATER MANAGEMENT PONDS, A MINIMUM OF A 25-FOOT RADIUS AROUND THE INLET STRUCTURE SHALL BE CLEARED.

ALL CLEARED AND GRUBBED MATERIAL SHALL BE DISPOSED OF OUTSIDE AND BELOW THE LIMITS OF THE DAM AND RESERVOIR AS DIRECTED BY THE OWNER OR HIS REPRESENTATIVE. WHEN SPECIFIED, A SUFFICIENT QUANTITY OF TOPSOIL WILL BE STOCKPILED IN A SUITABLE LOCATION FOR USE ON THE EMBANKMENT AND OTHER DESIGNATED AREAS.

EARTH FILL

MATERIAL - THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED DESIGNATED BORROW AREAS. IT SHALL BE FREE OF ROOTS, STUMPS, WOOD, RUBBISH, STONES GREATER THAN 6", FROZEN OR OTHER OBJECTIONABLE MATERIALS. FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT, AND CUT OFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL AND MUST HAVE AT LEAST 30% PASSING THE #200 SIEVE. CONSIDERATION MAY BE GIVEN TO THE USE OF OTHER MATERIALS IN THE EMBANKMENT IF DESIGNED BY A GEOTECHNICAL ENGINEER. SUCH SPECIAL DESIGNS MUST HAVE CONSTRUCTION SUPERVISED BY A GEOTECHNICAL ENGINEER. MATERIALS USED IN THE OUTER SHELL OF THE EMBANKMENT MUST HAVE THE CAPABILITY TO SUPPORT VEGETATION OF THE QUALITY REQUIRED TO PREVENT EROSION OF THE EMBANKMENT.

PLACEMENT - AREAS ON WHICH FILL IS TO BE PLACED SHALL BE SCARIFIED PRIOR TO PLACEMENT OF FILL. FILL MATERIALS SHALL BE PLACED IN MAXIMUM 8 INCH THICK (BEFORE COMPACTION) LAYERS WHICH ARE TO BE CONTINUOUS OVER THE ENTIRE LENGTH OF THE FILL. THE MOST PERMEABLE BORROW MATERIAL SHALL BE PLACED IN THE DOWNSTREAM PORTIONS OF THE EMBANKMENT. THE PRINCIPAL SPILLWAY MUST BE INSTALLED CONCURRENTLY WITH FILL PLACEMENT AND NOT EXCAVATED INTO THE EMBANKMENT.

COMPACTION - THE MOVEMENT OF THE HAULING AND SPREADING EQUIPMENT OVER THE FILL SHALL BE CONTROLLED SO THAT THE ENTIRE SURFACE OF EACH LIFT SHALL BE TRAVERSED BY NOT LESS THAN ONE TREAD TRACK OF HEAVY EQUIPMENT OR COMPACTION SHALL BE ACHIEVED BY A MINIMUM OF FOUR COMPLETE PASSES OF A SHEEPS FOOT, RUBBER TIRED OR VIBRATORY ROLLER. FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SUCH THAT THE REQUIRED DEGREE OF COMPACTION WILL BE OBTAINED WITH THE EQUIPMENT USED. THE FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SO THAT IF FORMED INTO A BALL IT WILL NOT CRUMBLE, YET NOT BE SO WET THAT WATER CAN BE SQUEEZED OUT.

WHEN REQUIRED BY THE REVIEWING AGENCY THE MINIMUM REQUIRED DENSITY SHALL NOT BE LESS THAN 95% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN ±2% OF THE OPTIMUM. EACH LAYER OF FILL SHALL BE COMPACTED AS NECESSARY TO OBTAIN THAT DENSITY, AND IS TO BE CERTIFIED BY THE ENGINEER AT THE TIME OF CONSTRUCTION. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T-99 (STANDARD PROCTOR).

CUT OFF TRENCH - THE CUTOFF TRENCH SHALL BE EXCAVATED INTO IMPERVIOUS MATERIAL ALONG OR PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE BOTTOM WIDTH OF THE TRENCH SHALL BE GOVERNED BY THE EQUIPMENT USED FOR EXCAVATION, WITH THE MINIMUM WIDTH BEING FOUR FEET. THE DEPTH SHALL BE AT LEAST FOUR FEET BELOW EXISTING GRADE OR AS SHOWN ON THE PLANS. THE SIDE SLOPES OF THE TRENCH SHALL BE 1 TO 1 OR FLATTER. THE BACKFILL SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY
AND MINIMUM PERMEABILITY.

EMBANKMENT CORE - THE CORE SHALL BE PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE TOP WIDTH OF THE CORE SHALL BE A MINIMUM OF FOUR FEET. THE HEIGHT SHALL EXTEND UP TO AT LEAST THE 10 YEAR WATER ELEVATION OR AS SHOWN ON THE PLANS. THE SIDE SLOPES SHALL BE 1 TO 1 OR FLATTER. THE CORE SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY. IN ADDITION, THE CORE SHALL BE PLACED CONCURRENTLY WITH THE OUTER SHELL OF THE EMBANKMENT.

STRUCTURE BACKFILL

BACKFILL ADJACENT TO PIPES OR STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL MATERIAL. THE FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL NEEDS TO FILL COMPLETELY ALL SPACES UNDER AND ADJACENT TO THE PIPE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A CONCRETE STRUCTURE OR PIPE, UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE.

STRUCTURE BACKFILL MAY BE FLOWABLE FILL MEETING THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 313 AS MODIFIED. THE MIXTURE SHALL HAVE A 100-200 PSI; 28 DAY UNCONFINED COMPRESSIVE STRENGTH. THE FLOWABLE FILL SHALL HAVE A MINIMUM PH OF 4.0 AND A MINIMUM RESISTIVITY OF 2,000 OHM-CM. MATERIAL SHALL BE PLACED SUCH THAT A MINIMUM OF 6" (MEASURED PERPENDICULAR TO THE OUTSIDE OF THE PIPE) OF FLOWABLE FILL SHALL BE UNDER (BEDDING), OVER AND, ON THE SIDES OF THE PIPE. IT ONLY NEEDS TO EXTEND UP TO THE SPRING LINE FOR RIGID CONDUITS. AVERAGE SLUMP OF THE FILL SHALL BE 7" TO ASSURE FLOWABILITY OF THE MATERIAL. ADEQUATE MEASURES SHALL BE TAKEN (SAND BAGS, ETC.) TO PREVENT FLOATING THE PIPE. WHEN USING FLOWABLE FILL, ALL METAL PIPE SHALL BE BITUMINOUS COATED. ANY ADJOINING SOIL FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL SHALL COMPLETELY FILL ALL VOIDS ADJACENT TO THE FLOWABLE FILL ZONE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A STRUCTURE OR PIPE UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE. BACKFILL MATERIAL OUTSIDE THE STRUCTURAL BACKFILL (FLOWABLE FILL) ZONE SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE CORE OF THE EMBANKMENT OR OTHER EMBANKMENT MATERIALS.

PIPE CONDUITS

ALL PIPES SHALL BE CIRCULAR IN CROSS SECTION.

CORRUGATED METAL PIPE - ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR CORRUGATED METAL PIPE:

1. MATERIALS - (POLYMER COATED STEEL PIPE) - STEEL PIPES WITH POLYMERIC COATINGS SHALL HAVE A MINIMUM COATING THICKNESS OF 0.01 INCH (10 MIL) ON BOTH SIDES OF THE PIPE. THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATIONS M-245 & M-246 WITH WATERTIGHT COUPLING BANDS OR FLANGES.

MATERIALS - (ALUMINUM COATED STEEL PIPE) - THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-274 WITH WATERTIGHT COUPLING BANDS OR FLANGES. ALUMINUM COATED STEEL PIPE, WHEN USED WITH FLOWABLE FILL OR WHEN SOIL AND/OR WATER CONDITIONS WARRANT THE NEED FOR INCREASED DURABILITY, SHALL BE FULLY BITUMINOUS COATED PER REQUIREMENTS OF AASHTO SPECIFICATION M-190 TYPE A. ANY ALUMINUM COATING DAMAGED OR OTHERWISE REMOVED SHALL BE REPLACED WITH COLD APPLIED BITUMINOUS COATING COMPOUND. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER OR TWO COATS OF ASPHALT.

MATERIALS - (ALUMINUM PIPE) - THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-196 OR M-211 WITH WATERTIGHT COUPLING BANDS OR FLANGES. ALUMINUM PIPE, WHEN USED WITH FLOWABLE FILL OR WHEN SOIL AND/OR WATER CONDITIONS WARRANT FOR INCREASED DURABILITY, SHALL BE FULLY BITUMINOUS COATED PER REQUIREMENTS OF AASHTO SPECIFICATION M-190 TYPE A. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER OR TWO COATS OF ASPHALT. HOT DIP GALVANIZED BOLTS MAY BE USED FOR CONNECTIONS. THE PH OF THE SURROUNDING SOILS SHALL BE BETWEEN 4 AND 9.

2. COUPLING BANDS, ANTI-SEEP COLLARS, END SECTIONS, ETC., MUST BE COMPOSED OF THE SAME MATERIAL AND COATINGS AS THE PIPE. METALS MUST BE INSULATED FROM DISSIMILAR MATERIALS WITH USE OF RUBBER OR PLASTIC INSULATING MATERIALS AT LEAST 24 MILS IN THICKNESS.

3. CONNECTIONS - ALL CONNECTIONS WITH PIPES MUST BE COMPLETELY WATERTIGHT. THE DRAIN PIPE OR BARREL CONNECTION TO THE RISER SHALL BE WELDED ALL AROUND WHEN THE PIPE AND RISER ARE METAL. ANTI-SEEP COLLARS SHALL BE CONNECTED TO THE PIPE IN SUCH A MANNER AS TO BE COMPLETELY WATERTIGHT. DIMPLE BANDS ARE NOT CONSIDERED TO BE WATERTIGHT.

ALL CONNECTIONS SHALL USE A RUBBER OR NEOPRENE GASKET WHEN JOINING PIPE SECTIONS. THE END OF EACH PIPE SHALL BE RE-ROLLED AN ADEQUATE NUMBER OF CORRUGATIONS TO ACCOMMODATE THE BANDWIDTH. THE FOLLOWING TYPE CONNECTIONS ARE ACCEPTABLE FOR PIPES LESS THAN 24 INCHES IN DIAMETER: FLANGES ON BOTH ENDS OF THE PIPE WITH A CIRCULAR 3/8 INCH CLOSED CELL NEOPRENE GASKET, PRE-PUNCHED TO THE FLANGE BOLT CIRCLE, SANDWICHED BETWEEN ADJACENT FLANGES; A 12-INCH WIDE STANDARD LAP TYPE BAND WITH 12-INCH WIDE BY 3/8-INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET; AND A 12-INCH WIDE HUGGER TYPE BAND WITH ORING GASKETS HAVING A MINIMUM DIAMETER OF 1/2 INCH GREATER THAN THE CORRUGATION DEPTH. PIPES 24 INCHES IN DIAMETER AND LARGER SHALL BE CONNECTED BY A 24 INCH LONG ANNULAR CORRUGATED BAND USING A MINIMUM OF 4 (FOUR) RODS AND LUGS, 2 ON EACH CONNECTING PIPE END. A 24-INCH WIDE BY 3/8-INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET WILL BE INSTALLED WITH 12 INCHES ON THE END OF EACH PIPE. FLANGED JOINTS WITH 3/8 INCH CLOSED CELL GASKETS THE FULL WIDTH OF THE FLANGE IS ALSO ACCEPTABLE.

HELICALLY CORRUGATED PIPE SHALL HAVE EITHER CONTINUOUSLY WELDED SEAMS OR HAVE LOCK SEAMS WITH INTERNAL CAULKING OR A NEOPRENE BEAD.

4. BEDDING - THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.

5. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".

6. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

REINFORCED CONCRETE PIPE - ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR REINFORCED CONCRETE PIPE:

1. MATERIALS - REINFORCED CONCRETE PIPE SHALL HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS AND SHALL EQUAL OR EXCEED ASTM C-361.

2. BEDDING - REINFORCED CONCRETE PIPE CONDUITS SHALL BE LAID IN A CONCRETE BEDDING / CRADLE FOR THEIR ENTIRE LENGTH. THIS BEDDING / CRADLE SHALL CONSIST OF HIGH SLUMP CONCRETE PLACED UNDER THE PIPE AND UP THE SIDES OF THE PIPE AT LEAST 50% OF ITS OUTSIDE DIAMETER WITH A MINIMUM THICKNESS OF 6 INCHES. WHERE A CONCRETE CRADLE IS NOT NEEDED FOR STRUCTURAL REASONS, FLOWABLE FILL MAY BE USED AS DESCRIBED IN THE "STRUCTURE BACKFILL" SECTION OF THIS STANDARD. GRAVEL BEDDING IS NOT PERMITTED.

3. LAYING PIPE - BELL AND SPIGOT PIPE SHALL BE PLACED WITH THE BELL END UPSTREAM. JOINTS SHALL BE MADE IN ACCORDANCE WITH RECOMMENDATIONS OF THE MANUFACTURER OF THE MATERIAL. AFTER THE JOINTS ARE SEALED FOR THE ENTIRE LINE, THE BEDDING SHALL BE PLACED SO THAT ALL SPACES UNDER THE PIPE ARE FILLED. CARE SHALL BE EXERCISED TO PREVENT ANY DEVIATION FROM THE ORIGINAL LINE AND GRADE OF THE PIPE. THE FIRST JOINT MUST BE LOCATED WITHIN 4 FEET FROM THE RISER.

4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".

5. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

PLASTIC PIPE

THE FOLLOWING CRITERIA SHALL APPLY FOR PLASTIC PIPE:

1. MATERIALS - PVC PIPE SHALL BE PVC-1120 OR PVC-1220 CONFORMING TO ASTM D-1785 OR ASTM D-2241. CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) PIPE, COUPLINGS AND FITTINGS SHALL CONFORM TO THE FOLLOWING: 4" – 10" INCH PIPE SHALL MEET THE REQUIREMENTS OF AASHTO M252 TYPE S, AND 12" THROUGH 24" INCH SHALL MEET THE REQUIREMENTS OF AASHTO M294 TYPE S.

2. JOINTS AND CONNECTIONS TO ANTI-SEEP COLLARS SHALL BE COMPLETELY WATERTIGHT.

3. BEDDING -THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.

4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".

5. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS. DRAINAGE DIAPHRAGMS - WHEN A DRAINAGE DIAPHRAGM IS USED, A REGISTERED PROFESSIONAL ENGINEER WILL SUPERVISE THE DESIGN AND CONSTRUCTION INSPECTION.

CONCRETE

CONCRETE SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 414, MIX NO. 3.

ROCK RIPRAP

ROCK RIPRAP SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 311.

GEOTEXTILE SHALL BE PLACED UNDER ALL RIPRAP AND SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 921.09, CLASS C.

CARE OF WATER DURING CONSTRUCTION

ALL WORK ON PERMANENT STRUCTURES SHALL BE CARRIED OUT IN AREAS FREE FROM WATER. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN ALL TEMPORARY DIKES, LEVEES, COFFERDAMS, DRAINAGE CHANNELS, AND STREAM DIVERSIONS NECESSARY TO PROTECT THE AREAS TO BE OCCUPIED BY THE PERMANENT WORKS. THE CONTRACTOR SHALL ALSO FURNISH, INSTALL, OPERATE, AND MAINTAIN ALL NECESSARY PUMPING AND OTHER EQUIPMENT REQUIRED FOR REMOVAL OF WATER FROM VARIOUS PARTS OF THE WORK AND FOR MAINTAINING THE EXCAVATIONS, FOUNDATION, AND OTHER PARTS OF THE WORK FREE FROM WATER AS REQUIRED OR DIRECTED BY THE ENGINEER FOR CONSTRUCTING EACH PART OF THE WORK. AFTER HAVING SERVED THEIR PURPOSE, ALL TEMPORARY PROTECTIVE WORKS SHALL BE REMOVED OR LEVELED AND GRADED TO THE EXTENT REQUIRED TO PREVENT OBSTRUCTION IN ANY DEGREE WHATSOEVER OF THE FLOW OF WATER TO THE SPILLWAY OR OUTLET WORKS AND SO AS NOT TO INTERFERE IN ANY WAY WITH THE OPERATION OR MAINTENANCE OF THE STRUCTURE. STREAM DIVERSIONS SHALL BE MAINTAINED UNTIL THE FULL FLOW CAN BE PASSED THROUGH THE PERMANENT WORKS. THE REMOVAL OF WATER FROM THE REQUIRED EXCAVATION AND THE FOUNDATION SHALL BE ACCOMPLISHED IN A MANNER AND TO THE EXTENT THAT WILL MAINTAIN STABILITY OF THE EXCAVATED SLOPES AND BOTTOM REQUIRED EXCAVATIONS AND WILL ALLOW SATISFACTORY PERFORMANCE OF ALL CONSTRUCTION OPERATIONS. DURING THE PLACING AND COMPACTING OF MATERIAL IN REQUIRED EXCAVATIONS, THE WATER LEVEL AT THE LOCATIONS BEING REFILLED SHALL BE MAINTAINED BELOW THE BOTTOM OF THE EXCAVATION AT SUCH LOCATIONS WHICH MAY REQUIRE DRAINING THE WATER SUMPS FROM WHICH THE WATER SHALL BE PUMPED.

STABILIZATION

ALL BORROW AREAS SHALL BE GRADED TO PROVIDE PROPER DRAINAGE AND LEFT IN A SIGHTLY CONDITION. ALL EXPOSED SURFACES OF THE EMBANKMENT, SPILLWAY, SPOIL AND BORROW AREAS, AND BERMS SHALL BE STABILIZED BY SEEDING, LIMING, FERTILIZING AND MULCHING IN ACCORDANCE WITH THE NATURAL RESOURCES CONSERVATION SERVICE STANDARDS AND SPECIFICATIONS FOR CRITICAL AREA PLANTING (MD-342) OR AS SHOWN ON THE ACCOMPANYING DRAWINGS.

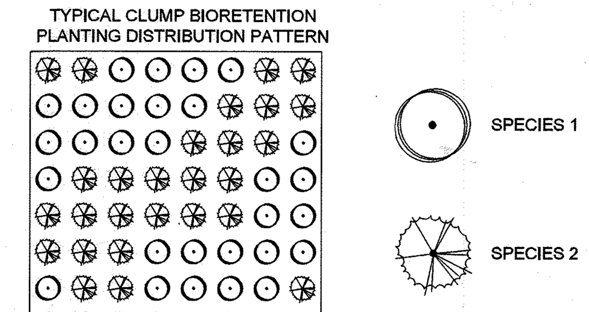
EROSION AND SEDIMENT CONTROL

CONSTRUCTION OPERATIONS WILL BE CARRIED OUT IN SUCH A MANNER THAT EROSION WILL BE CONTROLLED AND WATER AND AIR POLLUTION MINIMIZED. STATE AND LOCAL LAWS CONCERNING POLLUTION ABATEMENT WILL BE FOLLOWED. CONSTRUCTION PLANS SHALL DETAIL EROSION AND SEDIMENT CONTROL MEASURES.

OPERATION AND MAINTENANCE

AN OPERATION AND MAINTENANCE PLAN IN ACCORDANCE WITH LOCAL OR STATE REGULATIONS WILL BE PREPARED FOR ALL PONDS. AS A MINIMUM, THE DAM INSPECTION CHECKLIST LOCATED IN APPENDIX A SHALL BE INCLUDED AS PART OF THE OPERATION AND MAINTENANCE PLAN AND PERFORMED AT LEAST ANNUALLY. WRITTEN RECORDS OF MAINTENANCE AND MAJOR REPAIRS NEEDS TO BE RETAINED IN A FILE. THE ISSUANCE OF A MAINTENANCE AND REPAIR PERMIT FOR ANY REPAIRS OR MAINTENANCE THAT INVOLVES THE MODIFICATION OF THE DAM OR SPILLWAY FROM ITS ORIGINAL DESIGN AND SPECIFICATIONS IS REQUIRED. A PERMIT IS ALSO REQUIRED FOR ANY REPAIRS OR RECONSTRUCTION THAT INVOLVE A SUBSTANTIAL PORTION OF THE STRUCTURE. ALL INDICATED REPAIRS ARE TO BE MADE AS SOON AS PRACTICAL.

TYPICAL CLUMP BIORETENTION PLANTING DISTRIBUTION PATTERN

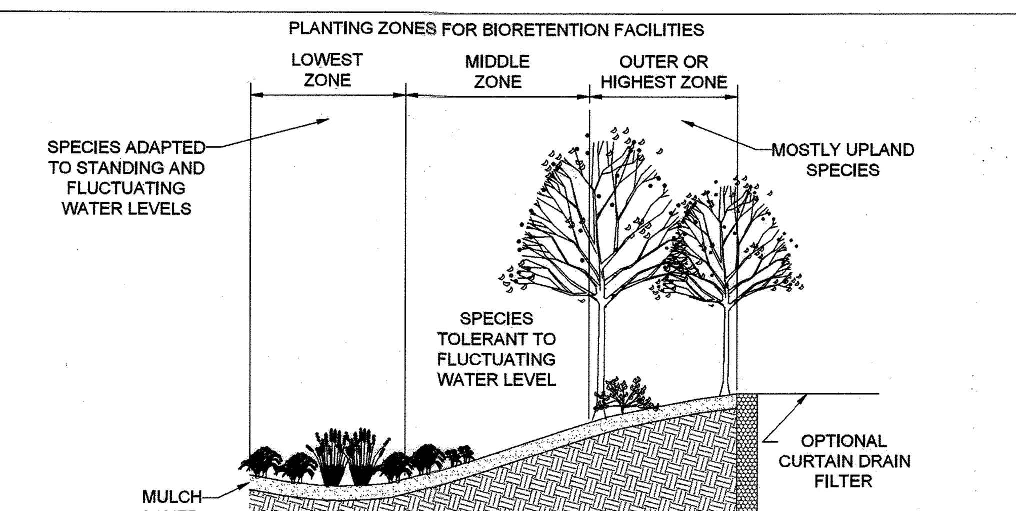


NOTE:
NATURALLY OCCURRING POPULATIONS TEND TO BE FOUND IN INFORMAL GROUPINGS. A CLUSTER OF PLANTS IS REALLY A MOSAIC OF DIFFERENT SPECIES GROUPS. THE OBJECTIVE IS TO SELECT THE APPROPRIATE SPECIES AND DISTRIBUTION PATTERN FOR A CHOSEN SITE THAT MIMIC NATURAL PATTERNS.

PLANTING DISTRIBUTION PATTERN DETAIL

NOT TO SCALE

PLANTING ZONES FOR BIORETENTION FACILITIES

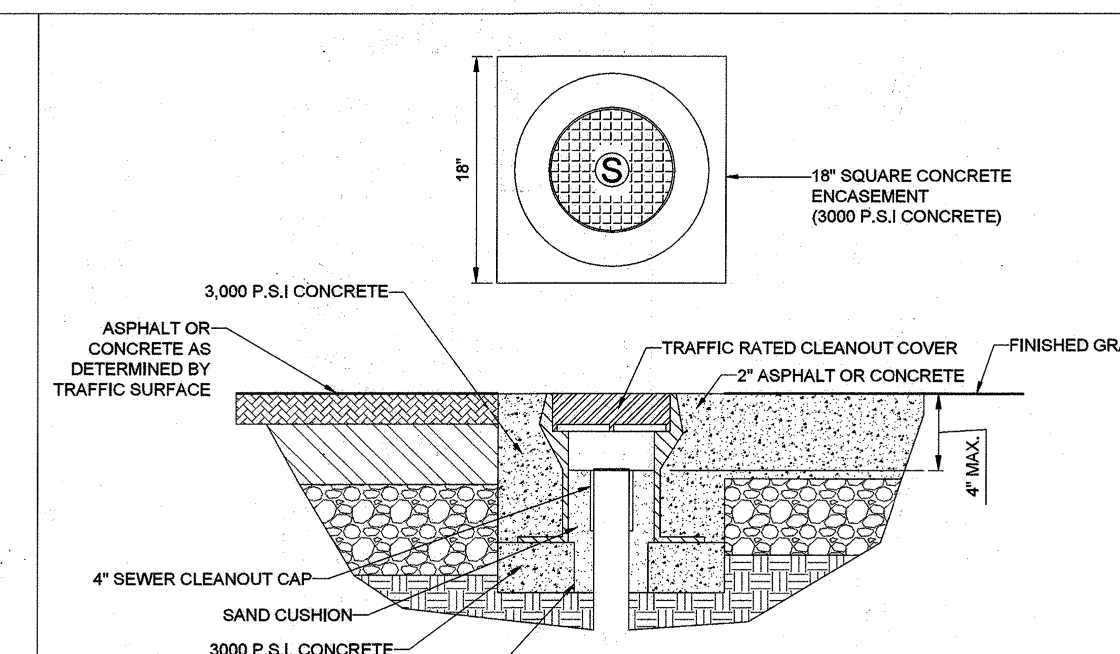


AREA TO BE PLANTED WITH MIXED PERENNIALS LISTED IN BIORETENTION AREAS PLANTING SCHEDULES

NOTES:
1. HERBACEOUS PERENNIALS TO BE PLANTED 12" O.C. IN GROUPS BETWEEN 15 TO 20 PLUGS
2. LANDSCAPE CONTRACTOR TO GROUP LIKE PLANTS TOGETHER IN EACH BED AS SHOWN IN PLANTING DISTRIBUTION PATTERN DETAIL.
3. ALL BIORETENTION AREAS ARE TO BE MULCHED WITH A 3" LAYER OF DOUBLE SHREDDED HARDWOOD BARK MULCH.
4. PLACEMENT OF THE PLANTING SOIL SHOULD BE IN 12" TO 18" LIFTS THAT ARE LOOSELY COMPACTED (TAMPED LIGHTLY WITH A BACKHOE BUCKET OR TRAVERSED BY DOZER TRACKS.

TYPICAL PLANTING FOR BIORETENTION AND MICROBIORETENTION AREAS

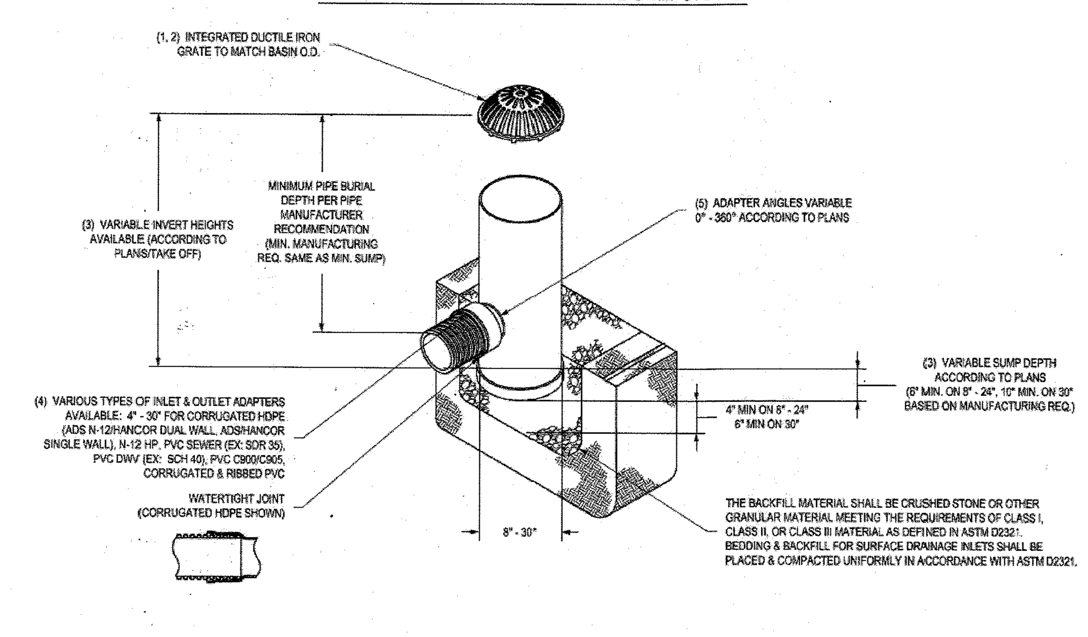
NOT TO SCALE



TRAFFIC RATED CLEANOUT DETAIL

NOT TO SCALE

NYLOPLAST DRAIN BASIN WITH DOME GRATE



1 - 8" - 30" DOME GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - 8" & 10" DOME GRATES FIT ONTO THE DRAIN BASINS WITH THE USE OF A PVC BODY TOP. SEE DRAWING NO. 7001-110-045.
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065.
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER (4" - 24").
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
6 - 8" - 30" DOME GRATES HAVE NO LOAD RATING.

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DRAWN BY	EBC	MATERIAL	Nyloplast 3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com
DATE	03-25-10		
REVISED BY	NMH	PROJECT NO./NAME	TITLE: DRAIN BASIN WITH DOME GRATE QUICK SPEC INSTALLATION DETAIL
DATE	03-11-16		
DWG SIZE A	SCALE 1:40	SHEET 1 OF 1	DWG NO. 7001-110-387 REV D

ADS, Inc. Drainage Handbook Specifications ♦ 1-53

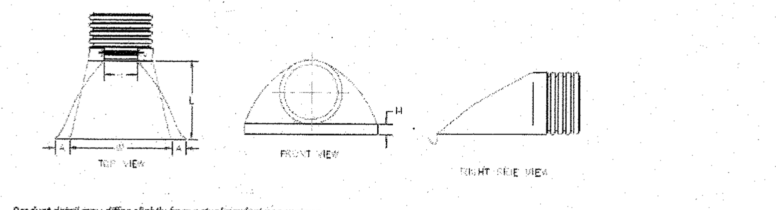
ADS FLARED END SECTION SPECIFICATION

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 invert of the pipe and the end section shall be at the same elevation. 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.

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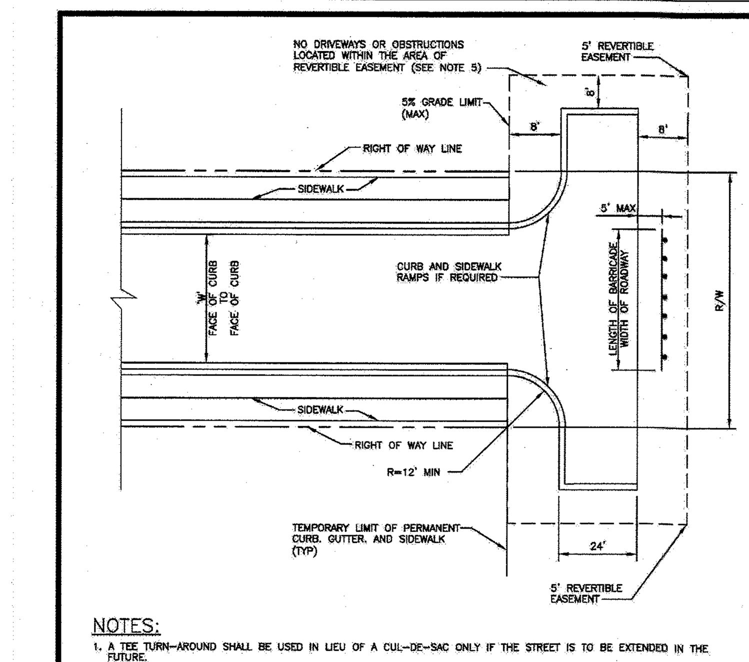
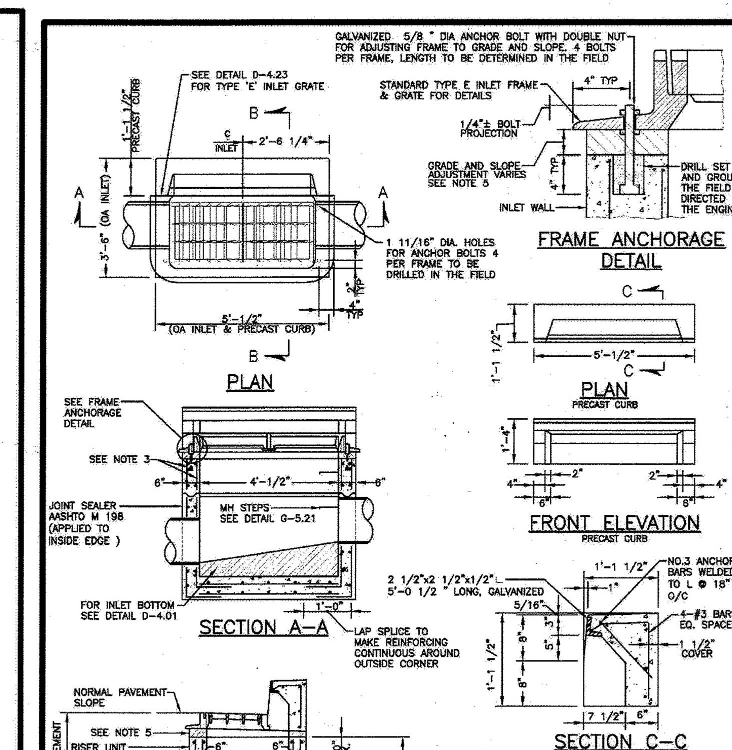


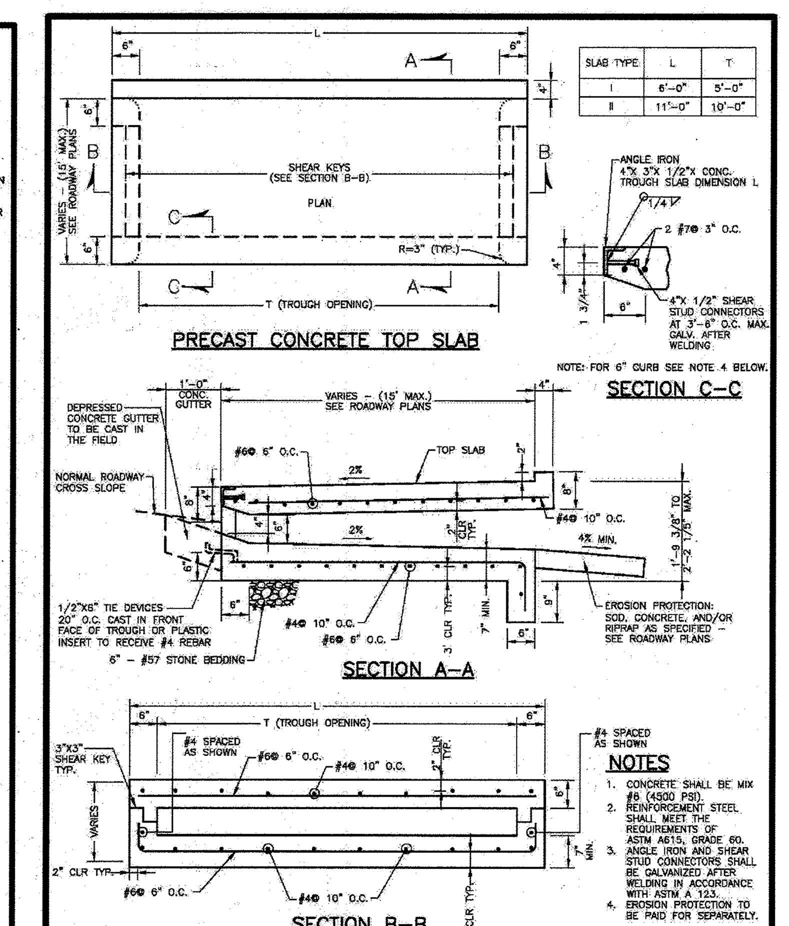
NOTES:
1. A TEE TURN-AROUND SHALL BE USED IN LIEU OF A CUL-DE-SAC ONLY IF THE STREET IS TO BE EXTENDED IN THE FUTURE.
2. HMA CURB SHALL EXTEND AROUND THE TEE TURN-AROUND IF AND AS REQUIRED TO CONTROL CURB DRAINAGE FROM THE ROADWAY SECTION.
3. REFER TO DETAIL R-5.08 FOR TYPICAL ROADWAY PROFILE TEMPORARY LIMIT OF PAVING.
4. PROVIDE REVERTIBLE EASEMENT FOR CONSTRUCTION AND RESTRICTED AREA (INCLUDING PLACEMENT OF DEAD END BARRICADE).
5. GRADING WITHIN 5' OF PERIMETER OF THE CURB AND PAVEMENT SHALL NOT EXCEED 3% IN ANY DIRECTION AND NO OBSTRUCTIONS (FENCE, PLANTINGS) ARE PERMITTED IN REVERTIBLE EASEMENT.
6. PROVIDE POSITIVE DRAINAGE FOR THE TEMPORARY TEE TURN-AROUND INTO A SUITABLE OUTFALL.
7. INSTALL SIGNS R7-1 "NO PARKING", R7-4 "NO STANDING", R7-4(1) "NO STOPPING" AS PER DIRECTED BY DPW
8. INSTALL SIGNS OM-1(2) "END OF ROAD MARKED" BEHIND BARRICADE. SIGN TO BE INSTALLED 12' APART. MINIMUM 2 SIGNS PER TEE-TURN-AROUND.
9. DEAD END BARRICADE (TYPE A OR B AS DIRECTED BY DPW) SEE DETAIL R-5.09 FOR PLACEMENT OF BARRICADE.
10. 4'-0" SIDEWALK REQUIRES A PASSING AREA (SEE DETAIL R-4.01).
11. THERE SHALL BE NO DRIVEWAYS ALONG THE TEE TURN-AROUND

Revised 5/30/2017 Approved 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	TEE TURN-AROUND Temporary	Detail R-5.06



NOTES ⚠
1. SEE DETAIL D-4.01 FOR GENERAL NOTES APPLICABLE TO ALL STORM DRAIN INLETS.
2. CONCRETE TO BE MIX #6 (4500 PSI).
3. REINFORCING-2 LAYERS OF 4x4-W4.0xW4.0 WELDED WIRE FABRIC.
4. THREADED PLASTIC INSERTS TO BE PROVIDED FOR HANDING.
5. GRADE AND SLOPE ADJUSTMENTS TO BE COMPLETED IN THE FIELD USING CONCRETE MIX #6.
6. PIPE OPENINGS TO BE PROVIDED AS REQUIRED. FOR SIZE, LOCATION, AND INVERT ELEVATIONS REFER TO THE PLANS.
7. PLACEMENT OF SUBGRADE DRAINAGE WILL BE AS DIRECTED BY THE ENGINEER OR AS NOTED ON THE CONSTRUCTION PLANS.

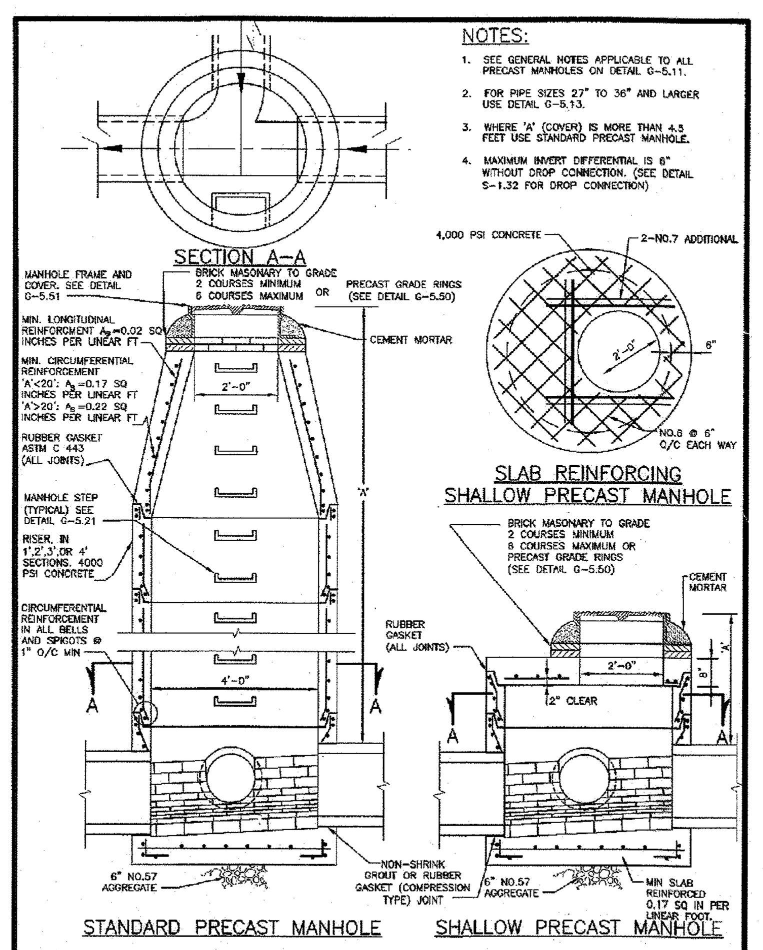
Revised ⚠ 5/30/2017 Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	TYPE 'E' COMBINATION INLET	Detail ⚠ D-4.22



SLAB TYPE	L	T
I	6'-0"	5'-0"
II	11'-0"	10'-0"

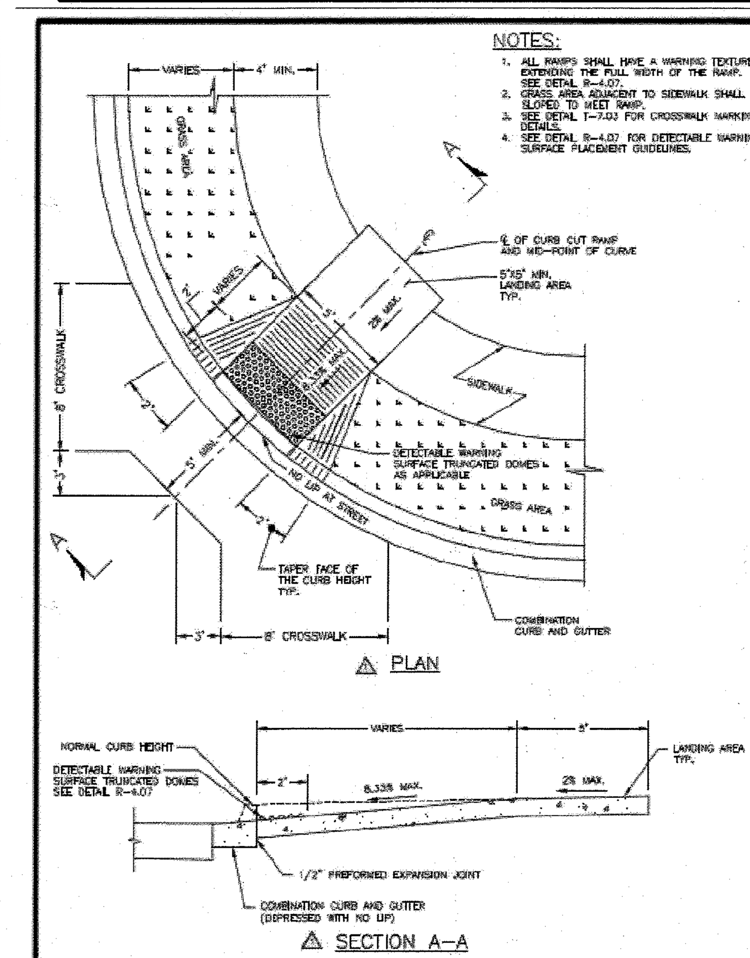
NOTES
1. CONCRETE SHALL BE MIX #6 (4500 PSI).
2. REINFORCEMENT STEEL SHALL MEET THE REQUIREMENTS OF ASTM A615, GRADE 60.
3. ANGLE IRON AND SHEAR STUD CONNECTORS SHALL BE GALVANIZED AFTER WELDING IN ACCORDANCE WITH ASTM A 123.
4. EROSION PROTECTION TO BE PAID FOR SEPARATELY.

Revised 5/30/2017 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	INLET Flow Through	Detail D-4.35



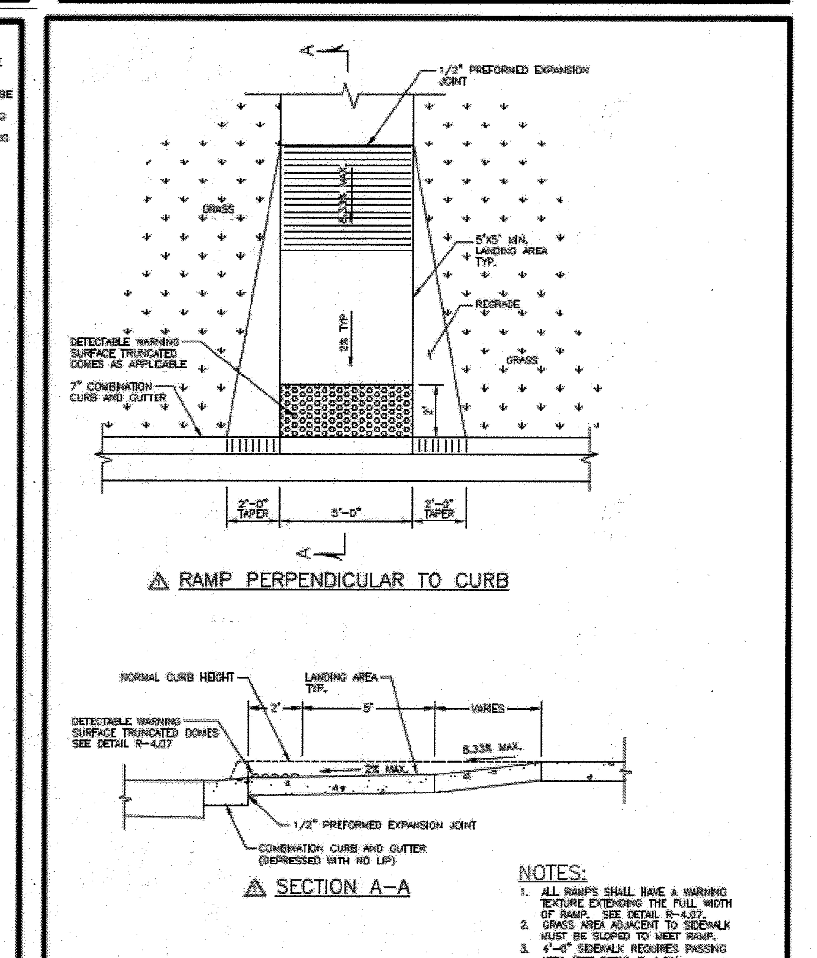
NOTES:
1. SEE GENERAL NOTES APPLICABLE TO ALL PRECAST MANHOLES ON DETAIL G-5.11.
2. FOR PIPE SIZES 27" TO 36" AND LARGER USE DETAIL G-5.13.
3. WHERE 'A' (COVER) IS MORE THAN 4.5 FEET USE STANDARD PRECAST MANHOLE.
4. MAXIMUM INVERT DIFFERENTIAL IS 6" WITHOUT DROP CONNECTION. (SEE DETAIL S-1.32 FOR DROP CONNECTION)

Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	PRECAST MANHOLE Standard and Shallow 4'-0" for 24" Pipe and smaller	Detail G-5.12



NOTES:
1. ALL RAMPS SHALL HAVE A WARNING TEXTURE EXTENDING THE FULL WIDTH OF THE RAMP. SEE DETAIL R-4.07.
2. GRASS AREA ADJACENT TO SIDEWALK SHALL BE SLOPED TO MEET RAMP.
3. SEE DETAIL T-7.03 FOR CROSSWALK MARKING DETAILS.
4. SEE DETAIL R-4.07 FOR DETECTABLE WARNING SURFACE PLACEMENT GUIDELINES.

Revised ⚠ 5/30/2017 Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	SIDEWALK RAMP Type B Single Ramp	Detail R-4.02



NOTES:
1. ALL RAMPS SHALL HAVE A WARNING TEXTURE EXTENDING THE FULL WIDTH OF RAMP. SEE DETAIL R-4.07.
2. GRASS AREA ADJACENT TO SIDEWALK MUST BE SLOPED TO MEET RAMP.
3. 4'-0" SIDEWALK REQUIRES PASSING AREA (SEE DETAIL R-4.01).

Revised ⚠ 5/30/2017 Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	SIDEWALK RAMP Layout & Grading Perpendicular to Curb	Detail R-4.05

AS-BUILT CERTIFICATION
Note: There is no "AS-BUILT" information provided on this sheet.

PAUL GERARD CAVANAUGH #27020 — Date: July 12, 2022

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 1/31/2020

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/10/20
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.6.20

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OWNER/DEVELOPER: ARNOLD'S CORNER, LLC
308 MAGOTHY ROAD
SEVERNA PARK, MD 21146
CONTACT: DAVID WOESSNER
PHONE: (240) 319-1735

SUBDIVISION NAME: ARNOLD'S CORNER
VILLAGE OF LONG REACH
SECTION 1, AREA 1
DEED # 18527/263

TAX MAP: 30 GRID: 24 ZONED: NT
PARCELS: N, O & 462, PUBLIC USE PARCELS
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PREVIOUS FILE No. :
S-18-006, WP-19-083
ECP-18-052, FDP-77-A-IV,
ZB1112, PB 18 F 44 (F-70-068c)
P-19-001, WP-19-101

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, 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. 40808, EXPIRATION DATE: 7/3/2021

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REVISIONS

REV	DATE	COMMENT	BY

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PROJECT No.:	MD182086
DRAWN BY:	AVG
CHECKED BY:	BRR
DATE:	12/17/19
SCALE:	AS SHOWN
CAD I.D.:	SDP-3

PROJECT:

FINAL PLAN
FOR
ARNOLD'S CORNER
LOTS 1-18 &
OPEN SPACE LOTS 19-23
A RESUBDIVISION OF PARCELS N & O OF THE VILLAGE OF LONG REACH, SECTION 1, AREA 1
LOCATION OF SITE
5320 PHELPS LUCK DRIVE
COLUMBIA, MD
6TH ELECTION DISTRICT
TAX MAP 30, GRID 24, PARCELS N, O, & OPEN SPACE 462
VILLAGE OF LONG REACH, SECTION 1, AREA 1
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

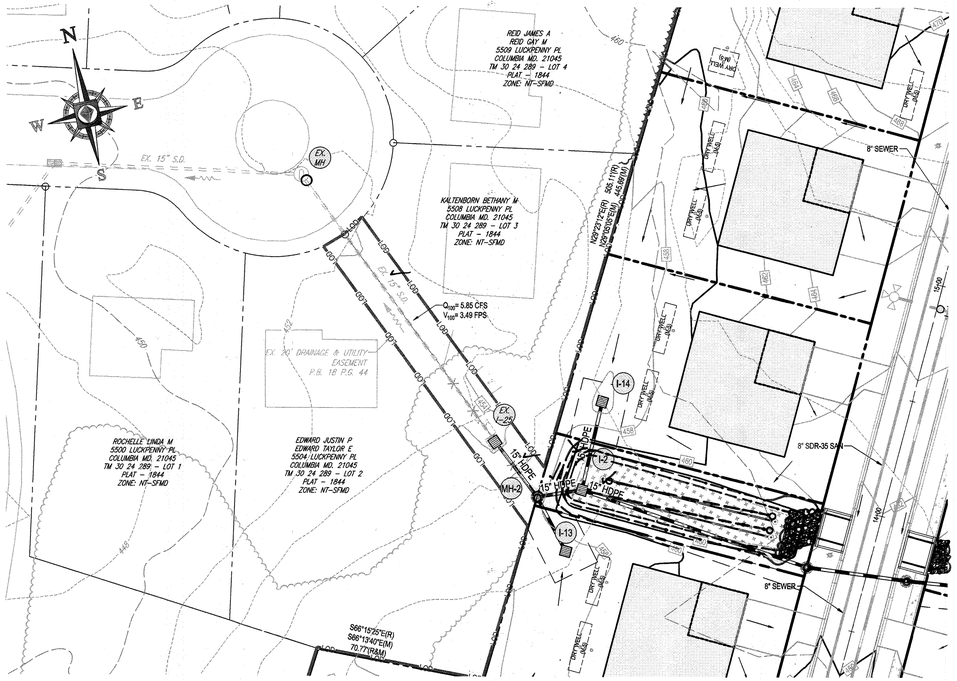
B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808
12/20/19

SHEET TITLE:
DRAINAGE NOTES AND DETAILS

SHEET NUMBER:
14

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

F-19-088

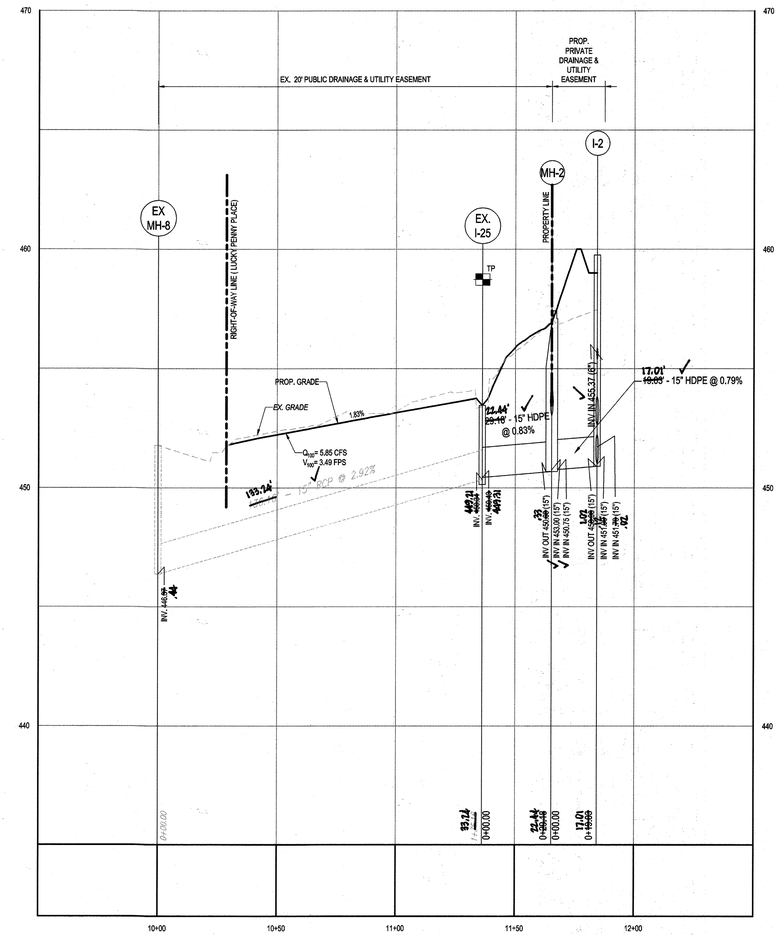


CONVEYANCE SWALE PLAN VIEW

SCALE : 1" = 30'

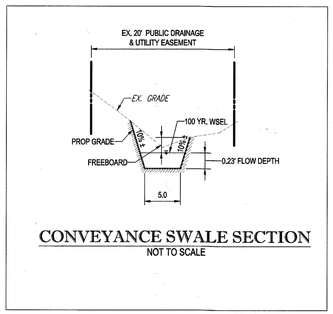
30 15 7.5 0 30

1"= 30'



SWALE - PROFILE

SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL



CONVEYANCE SWALE SECTION

NOT TO SCALE

10 5 2.5 0 10

1"= 10'

AS-BUILT CERTIFICATION

I hereby certify, by my seal, that to the best of my knowledge and belief the the facilities shown on the plan was constructed as shown on this "AS-BUILT" plan meet the approved plans and specifications.

STATE OF MARYLAND — PAUL GERARD CAVANAUGH — No. 27020 — PROFESSIONAL ENGINEER

Date

PAUL GERARD CAVANAUGH #27020

OWNER/DEVELOPER:	ARNOLD'S CORNER, LLC 308 MAGOTHY ROAD SEVERNA PARK, MD 21146 CONTACT: DAVID WOESSNER PHONE: (240) 319-1735
SUBDIVISION NAME: ARNOLD'S CORNER VILLAGE OF LONG REACH SECTION 1, AREA 1 DEED # 18527/263	TAX MAP: 30 GRID: 24 ZONED: NT PARCELS: N, O & 462, PUBLIC USE PARCELS 6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND
PREVIOUS FILE No. : S-18-006, WP-19-083 ECP-19-052, FDP-77-A-IV, ZB1112, PB 18 F 44 (F-70-068c) P-19-001, WP-19-101	PROFESSIONAL CERTIFICATION I, BRANDON R. ROWE, 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. 40808, EXPIRATION DATE: 7/5/2021

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 1/31/2020

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/11/20

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.6.20

H:\191\MD182086\ROAWN\GSP\LAN SETS\FINAL PLANS\MD182086-FPU-3.DWG PRINTED BY: AGAMBOA 12.19.19 @ 1:49 PM LAST SAVED BY: AGAMBOA

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PROJECT No.:	MD182086
DRAWN BY:	AVG
CHECKED BY:	BRR
DATE:	12/17/19
SCALE:	AS SHOWN
CAD I.D.:	PPU- 6

PROJECT:

FINAL PLAN

FOR

ARNOLD'S CORNER

LOTS 1-18 &
OPEN SPACE LOTS 19-23
A RESUBDIVISION OF PARCELS
N & O OF THE VILLAGE OF
LONG REACH, SECTION 1, AREA 1

LOCATION OF SITE
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Fax: (410) 821-7987
MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808
12/20/19

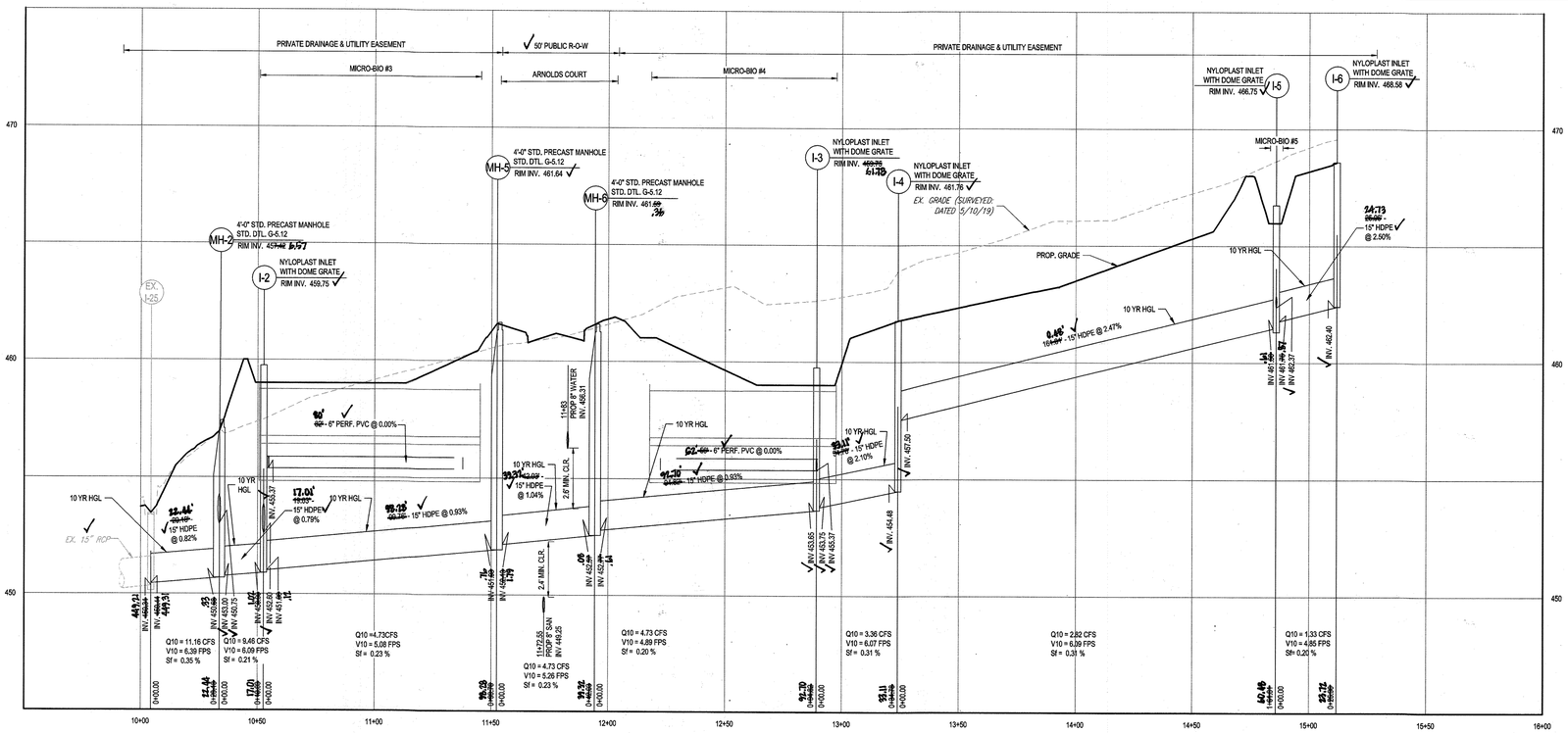
SHEET TITLE:

SWALE PROFILE AND SECTION

SHEET NUMBER:

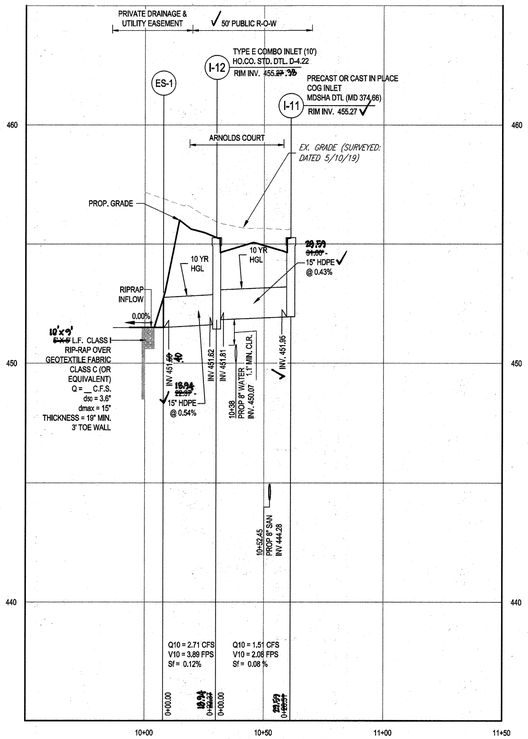
15

"AS-BUILT" F-19-088



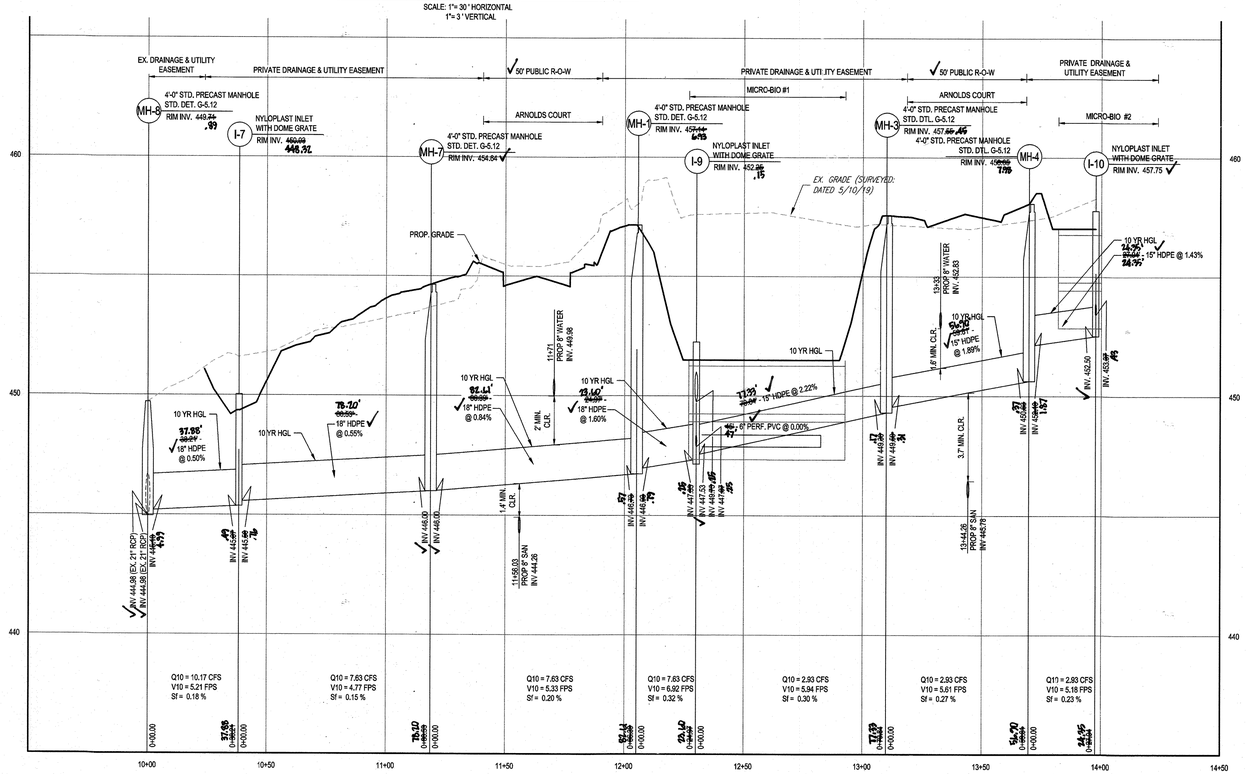
PROPOSED STORM DRAIN PROFILE EX I-25 TO I-6

SCALE: 1"= 30 ' HORIZONTAL
1"= 3 ' VERTICAL



PROPOSED STORM DRAIN PROFILE ES-1 TO I-11

SCALE: 1"= 30 ' HORIZONTAL
1"= 3 ' VERTICAL



PROPOSED STORM DRAIN PROFILE MH-8 TO I-10

SCALE: 1"= 30 ' HORIZONTAL
1"= 3 ' VERTICAL

AS-BUILT CERTIFICATION

I hereby certify, by my seal, that to the best of my knowledge and belief the the facilities shown on the plan was constructed as shown on this "AS-BUILT" plan meet the approved plans and specifications.

STATE OF MARYLAND — PAUL GERARD CAVANAUGH — No. 27020 — PROFESSIONAL ENGINEER

Date: July 12, 2022

PAUL GERARD CAVANAUGH #27020

NOTE:

CONTRACTOR TO VERIFY ALL MANHOLE SIZES PRIOR TO ORDERING

OWNER/DEVELOPER:	ARNOLD'S CORNER, LLC 308 MAGOTHY ROAD SEVERNA PARK, MD 21146 CONTACT: DAVID WOESSNER PHONE: (240) 319-1735
SUBDIVISION NAME: ARNOLD'S CORNER VILLAGE OF LONG REACH SECTION 1, AREA 1 DEED # 18527/263	TAX MAP: 30 GRID: 24 ZONED: NT PARCELS: N, O & 462, PUBLIC USE PARCELS 6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND
PREVIOUS FILE No. : S-19-006, WP-19-083 ECP-18-052, FDP-77-A-IV, ZB1112, PB 18 F 44 (F-70-068c) P-19-001, WP-19-101	PROFESSIONAL CERTIFICATION I, BRANDON R. ROWE, 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. 40808, EXPIRATION DATE: 7/3/2021

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 1/31/2020
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/11/20
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.6.20

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PROJECT No.:	MD182086
DRAWN BY:	AVG
CHECKED BY:	BRR
DATE:	12/17/19
SCALE:	AS SHOWN
CAD I.D.:	PPD - 3

PROJECT:

FINAL PLAN
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OPEN SPACE LOTS 19-23
A RESUBDIVISION OF PARCELS
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LOCATION OF SITE
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Fax: (410) 821-7967
MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808
12/20/19

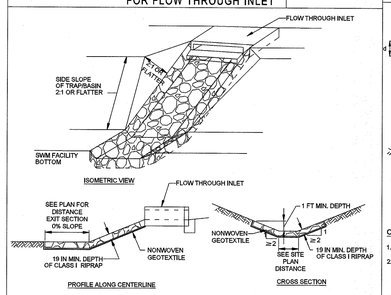
SHEET TITLE:
STORM DRAIN PROFILES

SHEET NUMBER:
16

"AS-BUILT" F-19-088

DETAIL D-3-1 MODIFIED RIPRAP INFLOW PROTECTION FOR FLOW THROUGH INLET

STANDARD SYMBOL



CONSTRUCTION SPECIFICATIONS

1. PROVIDE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, UNDER THE BOTTOM AND ALONG SIDES OF ALL RIPRAP.
2. CONSTRUCT INFLOW CHANNEL WITH CLASS I RIPRAP OR EQUIVALENT RECYCLED CONCRETE LINING TO A MINIMUM DEPTH OF 19 INCHES ($2 \times D_{50}$) AND A 1 FOOT DEEP FLOW CHANNEL. INFLOW RIPRAP PROTECTION CHANNEL MUST HAVE A TRAPEZOIDAL CROSS SECTION WITH 2:1 OR FLATTER SIDE SLOPES AND A 4 FOOT MINIMUM BOTTOM WIDTH.
3. INSTALL ENTRANCE AND EXIT SECTIONS AS SHOWN ON THE PROFILE.
4. BLEND RIPRAP INTO EXISTING GROUND.
5. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. KEEP POINTS OF INFLOW AND OUTFLOW FREE OF EROSION.

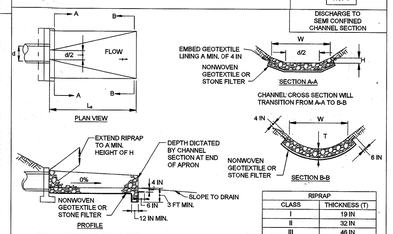
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL D-4-1-A ROCK OUTLET PROTECTION I

STANDARD SYMBOL: ROP1

DISCHARGE TO SEMI CONFINED CHANNEL SECTION



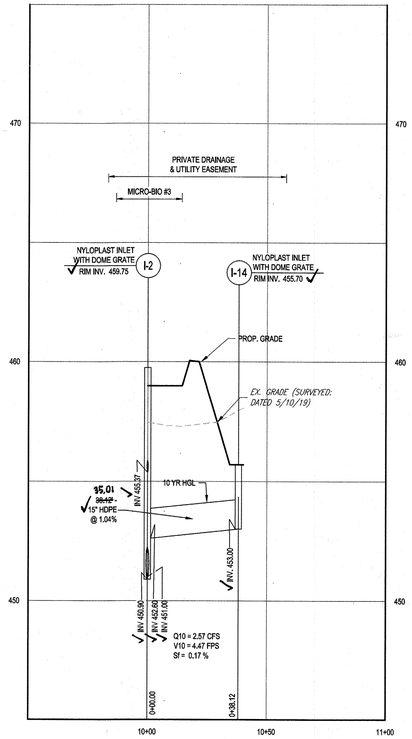
RIPRAP	
CLASS	THICKNESS (T)
I	19 IN
II	32 IN
III	46 IN

CONSTRUCTION SPECIFICATIONS

1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
3. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (½ TO 1½ INCH STONE FOR 6 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
4. EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF THE RIPRAP.
5. CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE STONE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
6. WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.
7. CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
8. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

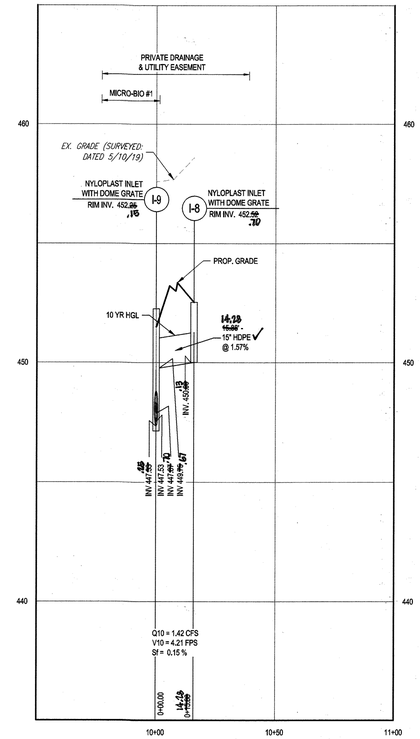
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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



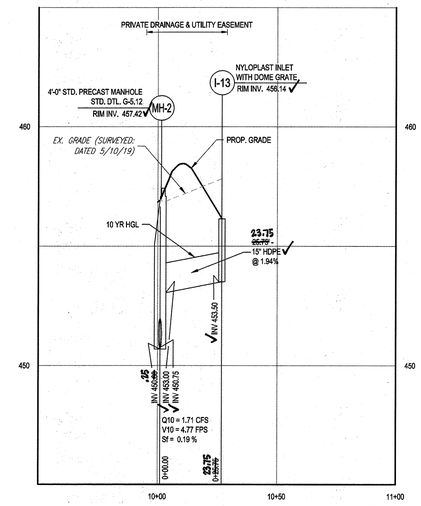
PROPOSED STORM DRAIN PROFILE I-2 TO I-14

SCALE: 1"= 30 ' HORIZONTAL
1"= 3 ' VERTICAL



PROPOSED STORM DRAIN PROFILE I-9 TO I-8

SCALE: 1"= 30 ' HORIZONTAL
1"= 3 ' VERTICAL



PROPOSED STORM DRAIN PROFILE MH-2 TO I-13

SCALE: 1"= 30 ' HORIZONTAL
1"= 3 ' VERTICAL

STORMDRAIN STRUCTURE SCHEDULE

NAME	TYPE	RIM ELEV. (FT.)	INVERTS	COMMENTS
ES-1	15" END SECTION	452.94'	INV IN = 451.42	PUBLIC
EX. I-25	EX. INLET	453.45'	INV. IN = 450.44 INV. OUT = 450.34	PUBLIC
F-1	FLOW THROUGH INLET HO.CO. STD. DTL. D-4.35	458.46'		PUBLIC
F-2	FLOW THROUGH INLET HO.CO. STD. DTL. D-4.35	461.85'		PUBLIC
F-3	FLOW THROUGH INLET HO.CO. STD. DTL. D-4.35	461.85'		PUBLIC
F-4	FLOW THROUGH INLET HO.CO. STD. DTL. D-4.35	458.64 .99		PUBLIC
I-2	NYLOPLAST INLET WITH DOME GRATE	459.75'	INV IN = 453.82 INV IN = 451.69 INV IN = 453.37 INV OUT = 450.90	PRIVATE
I-3	NYLOPLAST INLET WITH DOME GRATE	459.79 461.78	INV IN = 453.75' INV IN = 455.37' INV OUT = 453.65'	PRIVATE
I-4	NYLOPLAST INLET WITH DOME GRATE	461.76'	INV IN = 457.50' INV OUT = 454.48'	PRIVATE
I-5	NYLOPLAST INLET WITH DOME GRATE	466.75'	INV IN = 461.99 INV IN = 462.37' INV OUT = 461.69	PRIVATE
I-6	NYLOPLAST INLET WITH DOME GRATE	468.58'	INV OUT = 462.40'	PRIVATE
I-7	NYLOPLAST INLET WITH DOME GRATE	450.00 448.32	INV IN = 445.59 INV OUT = 445.49	PRIVATE
I-8	NYLOPLAST INLET WITH DOME GRATE	452.50 .10	INV OUT = 450.69 .19	PRIVATE
I-9	NYLOPLAST INLET WITH DOME GRATE	452.69 .19	INV IN = 447.53' INV IN = 449.99 INV IN = 447.07 INV OUT = 447.00	PRIVATE
I-10	NYLOPLAST INLET WITH DOME GRATE	457.75'	INV IN = 453.39 INV IN = 453.09 INV OUT = 452.50'	PRIVATE
I-11	PRECAST OR CAST IN PLACE COG INLET MDSHA DTL (MD 374.66)	455.27'	INV OUT = 451.95'	PUBLIC
I-12	TYPE E COMBO INLET (10') HO.CO. STD. DTL. D-4.22	455.58 .39	INV IN = 451.81' INV OUT = 451.62'	PUBLIC
I-13	NYLOPLAST INLET WITH DOME GRATE	456.14'	INV OUT = 453.50'	PRIVATE
I-14	NYLOPLAST INLET WITH DOME GRATE	455.70'	INV OUT = 453.00'	PRIVATE
MH-1	4'-0" STD. PRECAST MANHOLE STD. DET. G-5.12	452.94 6.35	INV IN = 446.59 INV OUT = 446.39	PUBLIC

STORMDRAIN STRUCTURE SCHEDULE

NAME	TYPE	RIM ELEV. (FT.)	INVERTS	COMMENTS
MH-2	4'-0" STD. PRECAST MANHOLE STD. DTL. G-5.12	457.42 6.57	INV IN = 453.00' INV IN = 450.75' INV OUT = 450.55	PUBLIC
MH-3	4'-0" STD. PRECAST MANHOLE STD. DTL. G-5.12	457.69 .76	INV IN = 449.69 INV OUT = 449.49	PUBLIC
MH-4	4'-0" STD. PRECAST MANHOLE STD. DTL. G-5.12	458.66 3.70	INV IN = 452.69 INV OUT = 450.89	PUBLIC
MH-5	4'-0" STD. PRECAST MANHOLE STD. DTL. G-5.12	461.64'	INV IN = 452.49 INV OUT = 451.99	PUBLIC
MH-6	4'-0" STD. PRECAST MANHOLE STD. DTL. G-5.12	461.69 .36	INV IN = 452.99 INV OUT = 452.89	PUBLIC
MH-7	4'-0" STD. PRECAST MANHOLE STD. DET. G-5.12	454.64'	INV IN = 446.00' INV OUT = 445.00'	PUBLIC
MH-8	4'-0" STD. PRECAST MANHOLE STD. DET. G-5.12	449.71'	INV IN = 444.98' INV IN = 445.69 INV OUT = 444.98'	PUBLIC

STORMDRAIN SCHEDULE

FROM	TO	LOWER INVERT	UPPER INVERT	SLOPE (%)	SIZE (in.)	LENGTH	MATERIAL	COMMENTS
EX. I-25	MH-2	452.11 450.44	450.69 .55	0.82%	15"	55.10 22.68	HDPE	PUBLIC
I-2	MH-5	451.90 .17	451.99 .76	0.93%	15"	82.75 68.78	HDPE	PRIVATE
I-2	I-14	452.60	453.00	1.04%	15"	38.12 39.01	HDPE	PRIVATE
I-3	I-4	453.75	454.48	2.10%	15"	34.75 35.10	HDPE	PRIVATE
I-4	I-5	457.50	461.50	2.47%	15"	16.44 0.48	HDPE	PRIVATE
I-5	I-6	461.99 .87	462.40	2.50%	15"	29.99 24.73	HDPE	PRIVATE
I-7	MH-7	445.59 .76	446.00	0.55%	18"	43.73 43.70	HDPE	PRIVATE
I-9	I-8	449.99 .67	450.69 .19	1.57%	15"	45.00 14.25	HDPE	PRIVATE
I-9	MH-3	447.53	449.99 .17	2.22%	15"	79.00 71.49	HDPE	PRIVATE
I-11	I-12	451.81	451.95	0.43%	15"	33.00 28.93	HDPE	PUBLIC
I-12	ES-1	451.69 .40	451.62	0.54%	15"	69.00 16.94	HDPE	PUBLIC
MH-1	I-9	446.69 .79	447.99 .75	1.60%	18"	94.07 69.10	HDPE	PRIVATE
MH-2	I-2	450.75	450.90 1.02	0.79%	15"	48.05 17.01	HDPE	PRIVATE
MH-2	I-13	453.00	453.50	1.94%	15"	25.75 23.75	HDPE	PRIVATE
MH-3	MH-4	449.69 .31	450.69 .57	1.89%	15"	53.00 53.00	HDPE	PUBLIC
MH-4	I-10	452.99 1.57	452.50	1.43%	15"	33.00 25.75	HDPE	PRIVATE
MH-5	MH-6	452.49 .72	452.99 .08	1.04%	15"	49.00 49.92	HDPE	PUBLIC
MH-6	I-3	452.99 .61	453.65	0.93%	15"	44.92 43.70	HDPE	PRIVATE
MH-7	MH-1	446.00	446.79 .57	0.84%	18"	80.00 70.44	HDPE	PUBLIC
MH-8	I-7	445.49 4.99	445.99 .44	0.50%	18"	89.00 77.00	HDPE	PUBLIC

NOTE:
CONTRACTOR TO VERIFY ALL MANHOLE SIZES PRIOR TO ORDERING

STORM DRAIN PIPE - LENGTH

PIPE SIZE	TYPE	LENGTH	PUBLIC OR PRIVATE
15"	HDPE	767 L.F.	PRIVATE
15"	HDPE	61.5 L.F.	PUBLIC
18"	HDPE	144 L.F.	PRIVATE
18"	HDPE	87 L.F.	PUBLIC

AS-BUILT CERTIFICATION

I hereby certify, by my seal, that to the best of my knowledge and belief the the facilities shown on the plan was constructed as shown on this "AS-BUILT" plan meet the approved plans and specifications.

STATE OF MARYLAND PAUL GERARD CAVANAUGH No. 27020 PROFESSIONAL ENGINEER

1/24/21 — Date

PAUL GERARD CAVANAUGH #27020

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 1/31/2020

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.6.20

OWNER/DEVELOPER: ARNOLD'S CORNER, LLC
308 MAGOTHY ROAD
SEVERNA PARK, MD 21146
CONTACT: DAVID WOESSNER
PHONE: (240) 319-1735

SUBDIVISION NAME: ARNOLD'S CORNER
VILLAGE OF LONG REACH
SECTION 1, AREA 1
DEED # 18527/263

TAX MAP: 30 GRID: 24 ZONED: NT
PARCELS: N, O & 462, PUBLIC USE PARCELS
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PREVIOUS FILE No. :
S-18-006, WP-19-083
ECP-18-052, FDP-77-A-IV,
ZB1112, PB 18 F 44 (F-70-068c)
P-19-001, WP-19-101

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, 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. 40808, EXPIRATION DATE: 7/3/2021

BOHLER™ ENGINEERING
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
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REVISIONS

REV	DATE	COMMENT	BY

811 KNOW WHAT'S BELOW ALWAYS CALL 811 BEFORE YOU DIG
It's fast. It's free. It's the law.

PROJECT No.:	MD182086
DRAWN BY:	AVG
CHECKED BY:	BRR
DATE:	12/17/19
SCALE:	AS SHOWN
CAD I.D.:	PPD - 3

PROJECT:
FINAL PLAN
FOR
ARNOLD'S CORNER
LOTS 1-18 & OPEN SPACE LOTS 19-23
A RESUBDIVISION OF PARCELS N & O OF THE VILLAGE OF LONG REACH, SECTION 1, AREA 1
LOCATION OF SITE
5320 PHELPS LUCK DRIVE
COLUMBIA, MD
6TH ELECTION DISTRICT
TAX MAP 30, GRID 24, PARCELS N, O, & OPEN SPACE 462
VILLAGE OF LONG REACH, SECTION 1, AREA 1
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE NO. 40808
12/20/19

SHEET TITLE:
STORM DRAIN PROFILES

SHEET NUMBER:
17

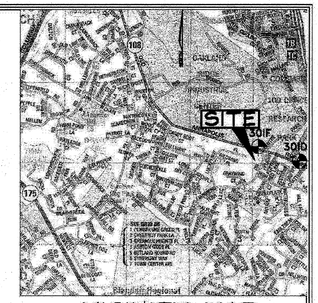
"AS-BUILT" F-19-088

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	SOIL GROUP	Kw	HYDRIC
GhB	Glenelg-Urban land complex, 0 to 8 percent slopes	B	0.20	N
GnB	Glenville-Baile silt loams, 0 to 8 percent slopes	C	0.37	Y

LEGEND

Existing Contour — 382
Existing Trees
Existing Sign
Street Light
Fire Hydrant — FH
Lot Lines
Property Boundary
Existing Water Main
Existing Sewer Main — S
Existing Storm Drain — SD
Existing Storm Drain Inlet
Road Centerline
Building Restriction Line — BRL
Existing House / Building
Soils Line — GnB GhB
Unmitigated 65 dBA Noise Line



VICINITY MAP
SCALE: 1"=2000'
ADC Map: 4935-J5

Existing Impervious/Compacted Gravel Area = 2.38 ac.±
Existing Impervious Area within 50% Imp. = 0.24 ac.±
Total Existing Impervious Area = 2.62 ac.±

Existing Percent Impervious = 2.62 ac./5.15 ac.(L.O.D. Area) = 51%

Pre-Development

A	1.321	AC	Imp Area
	1.233	AC	Pervious Area
	2.553	AC	Total
	84		CN
	11.730	CFS	Q10
B	1.283	AC	Imp Area
	1.173	AC	Pervious Area
	2.455	AC	Total
	84		CN
	12.580	CFS	Q10
C	0.015	AC	Imp Area
	0.283	AC	Pervious Area
	0.298	AC	Total
	70		CN
	0.900	CFS	Q10

AS-BUILT CERTIFICATION

Note: There is no "AS-BUILT" information provided on this sheet.

STATE OF MARYLAND — PAUL GERARD CAVANAUGH — No. 27020 — PROFESSIONAL ENGINEER

July 12, 2022
Date
PAUL GERARD CAVANAUGH #27020
1/25/21

GRAPHIC SCALE
0 25 50 100 150 200
(IN FEET)
1 INCH = 50 FT.

OWNER/DEVELOPER
LANG MILLER AND ASSOCIATES, INC.
5320 Phelps Luck Drive
Columbia, Maryland 21045
Phone: 301-317-4058

EXISTING CONDITIONS AND IMPERVIOUS SURFACE EXHIBIT
GRANDFATHER'S GARDENS
A RESUBDIVISION OF PARCELS 'N' AND 'O' PLAT # 18-44
5320 PHELPS LUCK DRIVE
LIBER 14769, FOLIO 480
TAX MAP 30, GRID 24 — PARCEL 289, ZONED NT
6TH ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

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. #34689, Expiration Date: 07/08/2019.

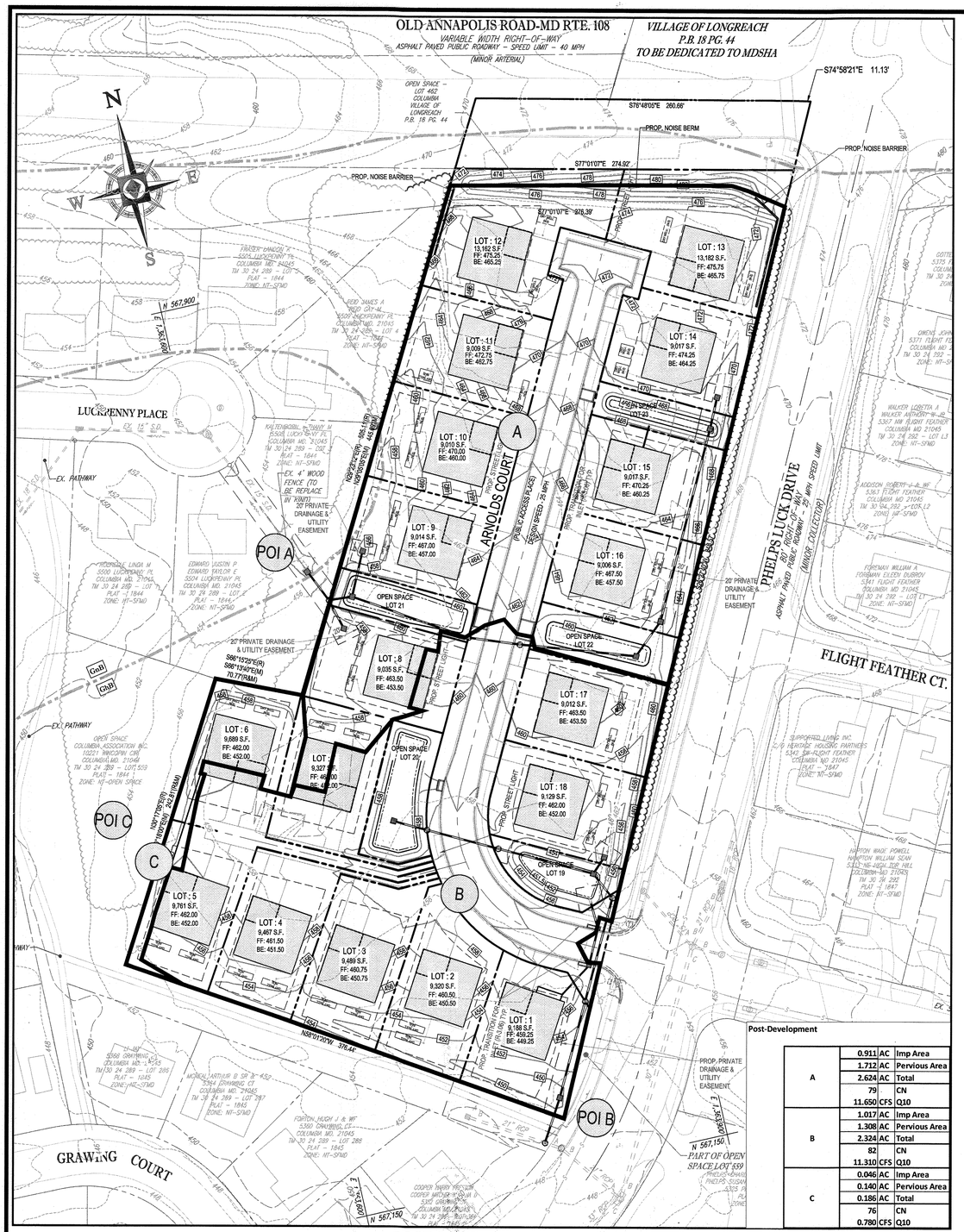
FSH Associates
Engineers Planners Surveyors
6339 Howard Lane, Elkridge, MD 21075
Tel:410-567-5200 Fax: 410-796-1562
E-mail: info@fsheli.com

DESIGN BY: MLT
DRAWN BY: GRH2
CHECKED BY: ZYF
SCALE: 1" = 50'
DATE: July 19, 2018
W.O. No.: 3741
SHEET No.: 18

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 1/31/2020
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/11/20
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.6.20

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

F-19-088

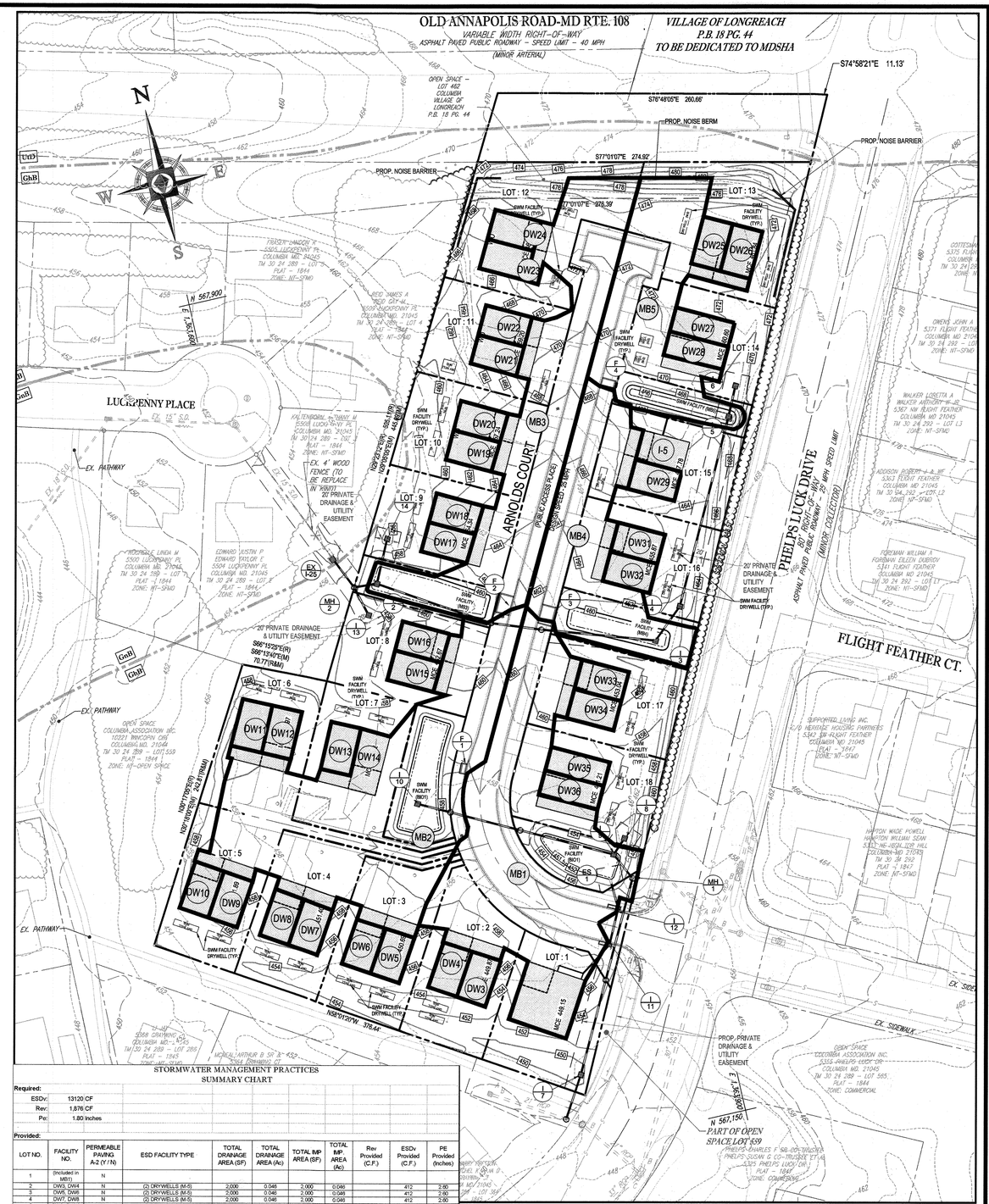


POST-DEVELOPMENT POI DRAINAGE AREA MAP

SCALE : 1" = 50'

Post-Development

A	0.911	AC	Imp Area
	1.712	AC	Pervious Area
	2.624	AC	Total
	79		CN
	11.650	CFS	Q10
B	1.017	AC	Imp Area
	1.308	AC	Pervious Area
	2.324	AC	Total
	82		CN
	11.310	CFS	Q10
C	0.046	AC	Imp Area
	0.140	AC	Pervious Area
	0.186	AC	Total
	76		CN
	0.780	CFS	Q10



STORMWATER MANAGEMENT DRAINAGE AREA MAP

SCALE : 1" = 50'

50 25 12.5 0 50

1"= 50'

STORMWATER MANAGEMENT PRACTICES SUMMARY CHART

Required:

ESDv:	13120 CF
Rev:	1,876 CF
Pe:	1.80 Inches

Provided:

LOT NO.	FACILITY NO.	PERMEABLE PAVING A-2 (Y / N)	ESD FACILITY TYPE	TOTAL DRAINAGE AREA (SF)	TOTAL DRAINAGE AREA (Ac)	TOTAL IMP AREA (SF)	TOTAL IMP. AREA (Ac)	Rev Provided (C.F.)	ESDv Provided (C.F.)	PE Provided (Inches)
1	(Included in MB1)	N								
2	DW3, DW4	N	(2) DRYWELLS (M-5)	2,000	0.046	2,000	0.046		412	2.60
3	DW5, DW6	N	(2) DRYWELLS (M-5)	2,000	0.046	2,000	0.046		412	2.60
4	DW7, DW8	N	(2) DRYWELLS (M-5)	2,000	0.046	2,000	0.046		412	2.60
5	DW9, DW10	N	(2) DRYWELLS (M-5)	2,000	0.046	2,000	0.046		412	2.60
6	DW11,DW12	N	(2) DRYWELLS (M-5)	2,000	0.046	2,000	0.046		412	2.60
7	DW13, DW14	N	(2) DRYWELLS (M-5)	2,000	0.046	2,000	0.046		412	2.60
8	DW15, DW16	N	(2) DRYWELLS (M-5)	2,000	0.046	2,000	0.046		412	2.60
9	DW17, DW18	N	(2) DRYWELLS (M-5)	2,000	0.046	2,000	0.046		412	2.60
10	DW19, DW20	N	(2) DRYWELLS (M-5)	2,000	0.046	2,000	0.046		412	2.60
11	DW21, DW22	N	(2) DRYWELLS (M-5)	2,000	0.046	2,000	0.046		412	2.60
12	DW23, DW24	N	(2) DRYWELLS (M-5)	2,000	0.046	2,000	0.046		412	2.60
13	DW25, DW26	N	(2) DRYWELLS (M-5)	2,000	0.046	2,000	0.046		412	2.60
14	DW27, DW28	N	(2) DRYWELLS (M-5)	2,000	0.046	2,000	0.046		412	2.60
15	DW29 and Included in MB5	N	(1) DRYWELL (M-5)	1,000	0.023	1,000	0.023		206	2.60
16	DW31, DW32	N	(2) DRYWELLS (M-5)	2,000	0.046	2,000	0.046		412	2.60
17	DW33, DW34	N	(2) DRYWELLS (M-5)	2,000	0.046	2,000	0.046		412	2.60
18	DW35, DW36	N	(2) DRYWELLS (M-5)	2,000	0.046	2,000	0.046		412	2.60
Open Space Lot 19	1 - Bio	N	BIORETENTION FACILITY (F-6)	27,913	0.641	15,412	0.354	353	1,268	1.00
Open Space Lot 20	2 - Bio	N	BIORETENTION FACILITY (F-6)	30,985	0.711	13,887	0.319	633	2,178	1.66
Open Space Lot 21	3 - MB	N	MICRO-BIO FACILITY (M-6)	21,108	0.485	9,013	0.207	500	1,769	2.32
Open Space Lot 22	4 - MB	N	MICRO-BIO FACILITY (M-6)	11,892	0.273	5,351	0.123	300	1,135	2.52
Open Space Lot 23	5- MB	N	MICRO-BIO FACILITY (M-6)	12,775	0.293	6,320	0.145	155	696	1.32
			TOTALS:	137,674	3.161	92,993	1.905	1,941	13,837	2.04

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 1/31/2020

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/11/20

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.6.20

AS-BUILT CERTIFICATION

Note: There is no "AS-BUILT" information provided on this sheet.

STATE OF MARYLAND — PAUL GERARD CAVANAUGH — No. 27020 — PROFESSIONAL ENGINEER

Date

PAUL GERARD CAVANAUGH #27020

LEGEND:

A — DRAINAGE AREA

DRAINAGE DIVIDE

H:\19MD\182086\DRAWINGS\PLAN SET\FINAL PLAN\MD182086DA3.DWG PRINTED BY: AGAMBOA 12.19.19 @ 1:49 PM LAST SAVED BY: AGAMBOA

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LANDSCAPE ARCHITECTURE
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REVISIONS

REV	DATE	COMMENT	BY

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PROJECT No.:	MD182086
DRAWN BY:	AVG
CHECKED BY:	BRR
DATE:	12/17/19
SCALE:	1" = 50'
CAD I.D.:	DA3

PROJECT:

FINAL PLAN
FOR
ARNOLD'S CORNER

LOTS 1-18 &
OPEN SPACE LOTS 19-23
A RESUBDIVISION OF PARCELS
N & O OF THE VILLAGE OF
LONG REACH, SECTION 1, AREA 1

LOCATION OF SITE
5320 PHELPS LUCK DRIVE
COLUMBIA, MD
6TH ELECTION DISTRICT
TAX MAP 30, GRID 24, PARCELS
N, O, & OPEN SPACE 462
VILLAGE OF LONG REACH,
SECTION 1, AREA 1
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808
12/20/19

SHEET TITLE:
POST-DEVELOPEMENT POI DRAINAGE AREA MAP/ STORMWATER MANAGEMENT DRAINAGE AREA MAP

SHEET NUMBER:
19

OWNER/DEVELOPER: ARNOLD'S CORNER, LLC
308 MAGOTHY ROAD
SEVERNA PARK, MD 21146
CONTACT: DAVID WOESSNER
PHONE: (240) 319-1735

SUBDIVISION NAME: ARNOLD'S CORNER
VILLAGE OF LONG REACH
SECTION 1, AREA 1
DEED # 18527/263

TAX MAP: 30 GRID: 24 ZONED: NT
PARCELS: N, O & 462, PUBLIC USE PARCELS
6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PREVIOUS FILE NO. :
S-18-006, WP-19-083
ECP-18-052, FDP-27-A-IV,
ZB1112, PB 18 F 44 (F-70-068c)
P-19-001, WP-19-101

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, 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. 40808, EXPIRATION DATE: 7/3/2021.

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

F-19-088

Howard County "C" Factor Computations

Arnold's Corner

Job Name:	Area #	Impervious	AC	Total Area	Soil Type	Composite "C"
Arnold's Corner	I-2	0	0.00	0.08 AC	B	0.24
Arnold's Corner	I-3	0	0.00	0.12 AC	B	0.24
Arnold's Corner	I-4	0	0.00	0.23 AC	B	0.24
Arnold's Corner	I-5	1483	0.03	0.13 AC	B	0.41
Arnold's Corner	I-6	4792	0.11	0.28 AC	B	0.48
Arnold's Corner	I-7	7906	0.18	0.61 AC	B	0.42
Arnold's Corner	I-8	4792	0.11	0.32 AC	B	0.45
Arnold's Corner	I-9	1191	0.03	0.17 AC	B	0.34
Arnold's Corner	I-10	1625	0.04	0.21 AC	B	0.35
Arnold's Corner	I-11	7795	0.18	0.28 AC	B	0.64
Arnold's Corner	I-12	6438	0.15	0.21 AC	B	0.68
Arnold's Corner	I-13	5917	0.14	0.38 AC	B	0.46
Arnold's Corner	I-14	7848	0.18	0.63 AC	B	0.42
Arnold's Corner	F-1	1307	0.03	0.08 AC	B	0.47
Arnold's Corner	F-2	9148	0.21	0.43 AC	B	0.54
Arnold's Corner	F-3	5515	0.13	0.21 AC	B	0.61
Arnold's Corner	F-4	4282	0.10	0.23 AC	B	0.50
Arnold's Corner	CC-1	8524	0.20	0.42 AC	B	0.53

Area #	AC lawn	Woods	Vegetation	Bare Soil	% @	% @	% @	% @
I-2	100.00				0.24			
I-3	100.00				0.24			
I-4	100.00				0.24			
I-5	73.19				0.24			
I-6	39.29				0.86			
I-7	29.75				0.86			
I-8	34.38				0.86			
I-9	15.80				0.86			
I-10	17.76				0.86			
I-11	63.91				0.86			
I-12	71.75				0.86			
I-13	35.75				0.86			
I-14	28.60				0.86			
F-1	37.51				0.86			
F-2	48.84				0.86			
F-3	60.00				0.86			
F-4	42.74				0.86			
CC-1	46.26				0.86			

Area #	AC lawn	Woods	Vegetation	Bare Soil	% @	% @	% @	% @
I-2	0.08				0.24			
I-3	0.12				0.24			
I-4	0				0.86			
I-5	0.09				0.24			
I-6	0.17				0.24			
I-7	0.43				0.24			
I-8	0.21				0.24			
I-9	0.15				0.24			
I-10	0.17				0.24			
I-11	0.10				0.24			
I-12	0.06				0.24			
I-13	0.24				0.24			
I-14	0.45				0.24			
F-1	0.05				0.24			
F-2	0.22				0.24			
F-3	0.08				0.24			
F-4	0.13				0.24			
CC-1	0.23				0.24			

Area #	AC lawn	Woods	Vegetation	Bare Soil	% @	% @	% @	% @
I-2	36.09				0.24			
I-3	28.25				0.24			
I-4	64.25				0.24			
I-5	71.40				0.24			
I-6	62.49				0.24			
I-7	70.25				0.24			
I-8	65.62				0.24			
I-9	84.20				0.24			
I-10	82.24				0.24			
I-11	51.16				0.24			
I-12	40.00				0.24			
I-13	57.26				0.24			
I-14	53.74				0.24			
F-1	51.72				0.24			
F-2	51.72				0.24			
F-3	51.72				0.24			
F-4	51.72				0.24			
CC-1	51.72				0.24			

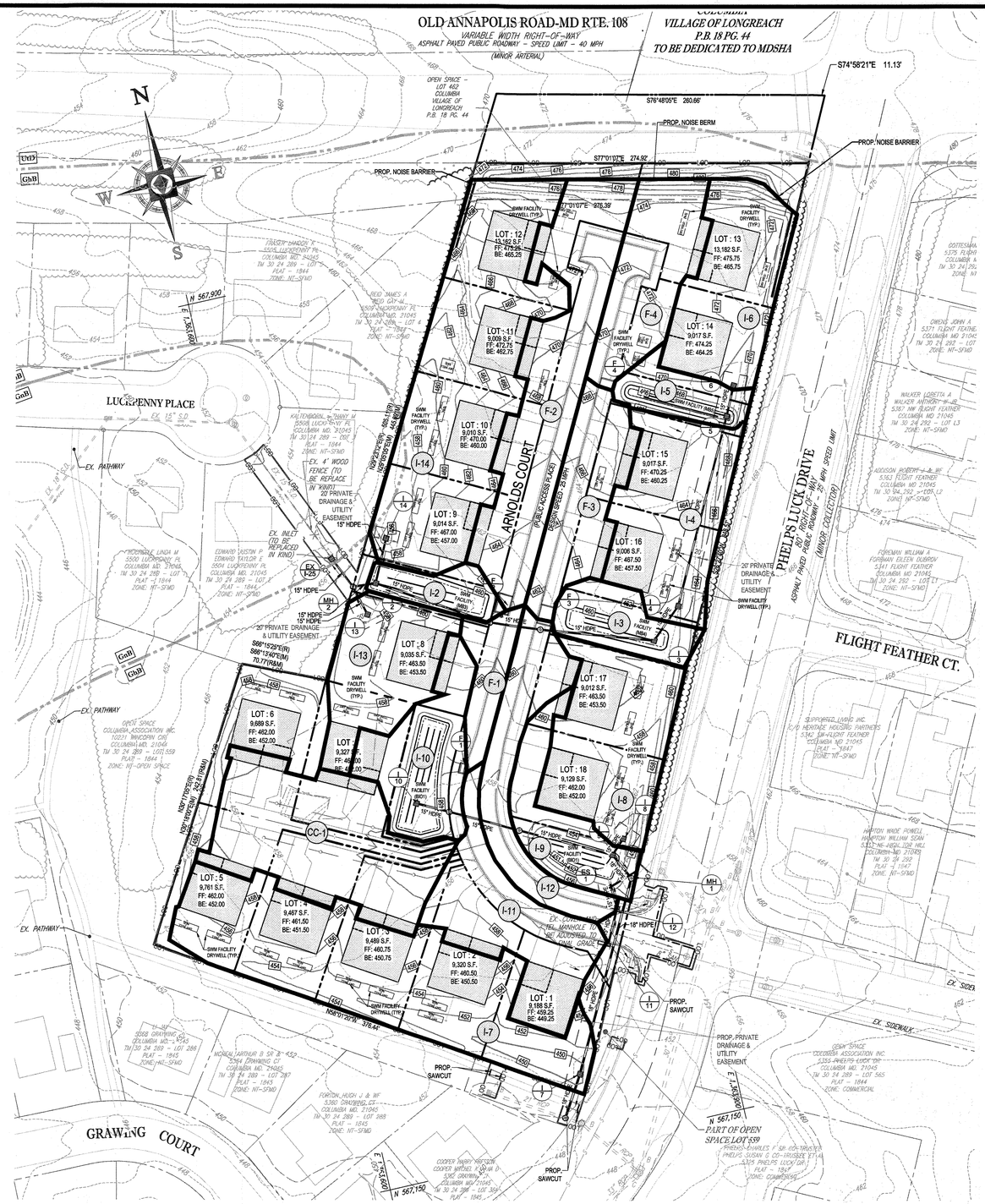
APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 1/31/2020

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/4/20

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.6.2



STORM DRAIN DRAINAGE AREA MAP

SCALE : 1" = 50'

LEGEND:

(A) DRAINAGE AREA

DRAINAGE DIVIDE

50 25 12.5 0 50

1"= 50'

OWNER/DEVELOPER:	ARNOLD'S CORNER, LLC 308 MAGOTHY ROAD SEVERNA PARK, MD 21146 CONTACT: DAVID WOESSNER PHONE: (240) 319-1735
SUBDIVISION NAME: ARNOLD'S CORNER VILLAGE OF LONG REACH SECTION 1, AREA 1 DEED # 18527/263	TAX MAP: 30 GRID: 24 ZONED: NT PARCELS: N, O & 462, PUBLIC USE PARCELS 6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND
PREVIOUS FILE No. : S-19-006, WP-19-083 ECP-18-052, FDP-77-A-IV, ZB1112, PB 18 F 44 (F-70-068c) P-19-001, WP-19-101	PROFESSIONAL CERTIFICATION I, BRANDON R. ROWE, 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. 40808, EXPIRATION DATE: 7/3/2021.

BOHLER ENGINEERING

SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
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REVISIONS

REV	DATE	COMMENT	BY

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BEFORE YOU DIG
It's fast. It's free. It's the law.

PROJECT No.:	MD182086
DRAWN BY:	AVG
CHECKED BY:	BRR
DATE:	12/17/19
SCALE:	1" = 50'
CAD I.D.:	DA3

PROJECT:

FINAL PLAN

FOR

ARNOLD'S CORNER

LOTS 1-18 &
OPEN SPACE LOTS 19-23
A RESUBDIVISION OF PARCELS
N & O OF THE VILLAGE OF
LONG REACH, SECTION 1, AREA 1
LOCATION OF SITE
5320 PHELPS LUCK DRIVE
COLUMBIA, MD
6TH ELECTION DISTRICT
TAX MAP 30, GRID 24, PARCELS
N, O, & OPEN SPACE 462
VILLAGE OF LONG REACH,
SECTION 1, AREA 1
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
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Phone: (410) 821-7900
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B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808
12/20/19

SHEET TITLE:

STORM DRAIN DRAINAGE AREA MAP

SHEET NUMBER:

20

F-19-088

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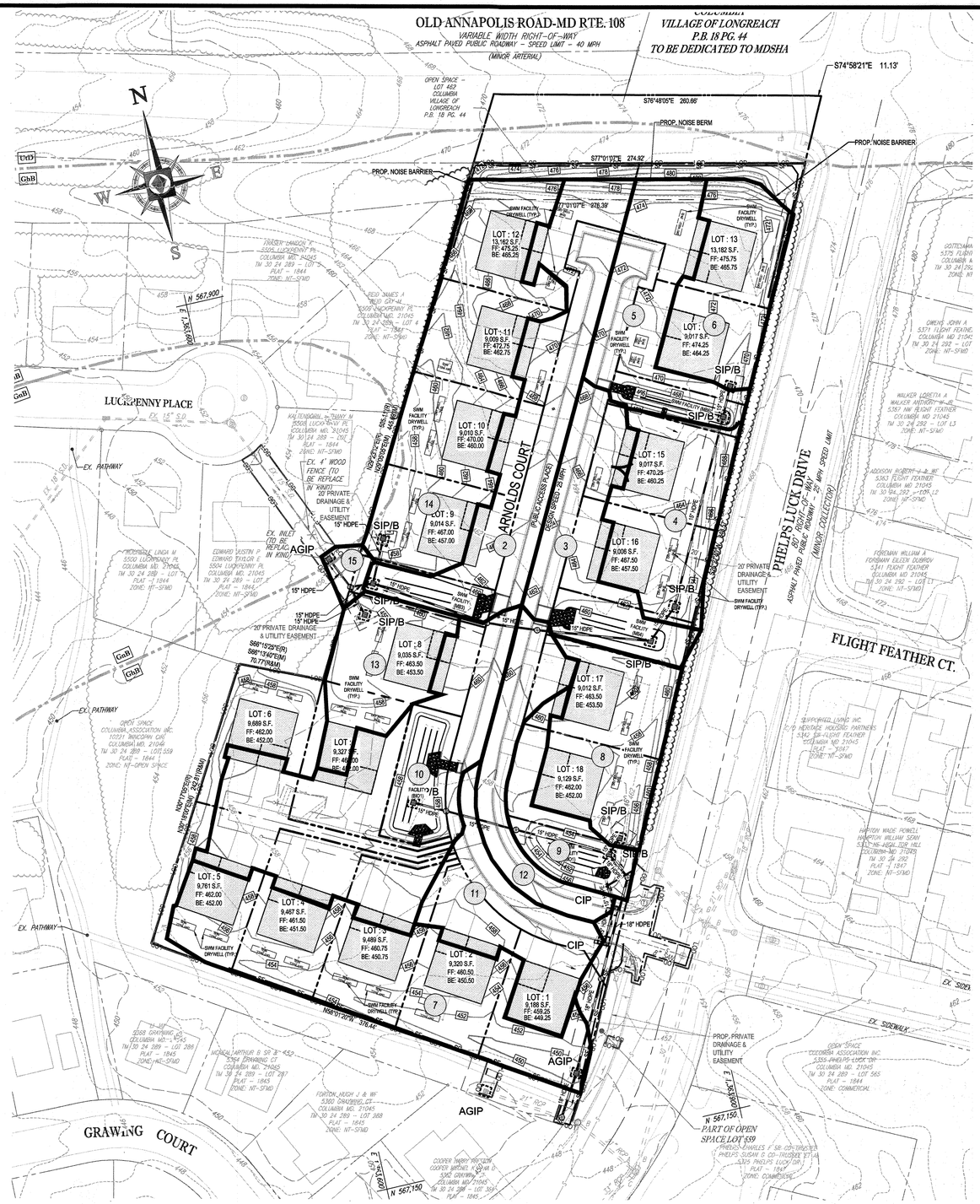

DRAINAGE AREA	TOTAL DRAINAGE (AC.)
2	0.5 AC.
3	0.3 AC.
4	0.2 AC.
5	0.4 AC.
6	0.3 AC.
7	0.6 AC.
8	0.3 AC.
9	0.2 AC.
10	0.7 AC.
11	0.3 AC.
12	0.2 AC
13	0.4 AC.
14	0.6 AC.
15	0.1 AC.

STORM DRAIN DRAINAGE AREA MAP

SCALE : 1" = 50'

LEGEND:

(1) DRAINAGE AREA

DRAINAGE DIVIDE

50 25 12.5 0 50

1"= 50'

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 1/31/2020

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/11/20

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.6.20

OWNER/DEVELOPER:	ARNOLD'S CORNER, LLC 308 MAGOTHY ROAD SEVERNA PARK, MD 21146 CONTACT: DAVID WOESSNER PHONE: (240) 319-1735
SUBDIVISION NAME: ARNOLD'S CORNER VILLAGE OF LONG REACH SECTION 1, AREA 1 DEED # 18527/263	TAX MAP: 30 GRID: 24 ZONED: NT PARCELS: N, O & 462, PUBLIC USE PARCELS 6TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND
PREVIOUS FILE No. : S-18-006, WP-19-083 ECP-18-052, FDP-77-A-IV, ZB1112, PB 18 F 44 (F-70-068c) P-19-001, WP-19-101	PROFESSIONAL CERTIFICATION I, BRANDON R. ROWE, 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. 40808, EXPIRATION DATE: 7/3/2021

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REVISIONS

REV	DATE	COMMENT	BY

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PROJECT No.:	MD182086
DRAWN BY:	AVG
CHECKED BY:	BRR
DATE:	12/17/19
SCALE:	1" = 50'
CAD I.D.:	DA3

PROJECT:

FINAL PLAN

FOR

ARNOLD'S CORNER

LOTS 1-18 &
OPEN SPACE LOTS 19-23
A RESUBDIVISION OF PARCELS
N & O OF THE VILLAGE OF
LONG REACH, SECTION 1, AREA 1
LOCATION OF SITE
5320 PHELPS LUCK DRIVE
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PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808
12/20/19

SHEET TITLE:
SEDIMENT CONTROL DRAINAGE AREA MAP

SHEET NUMBER:
21

F-19-088