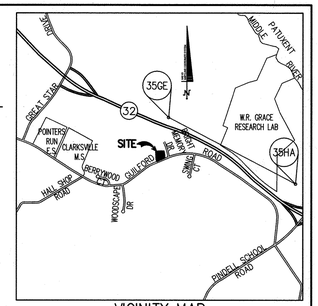
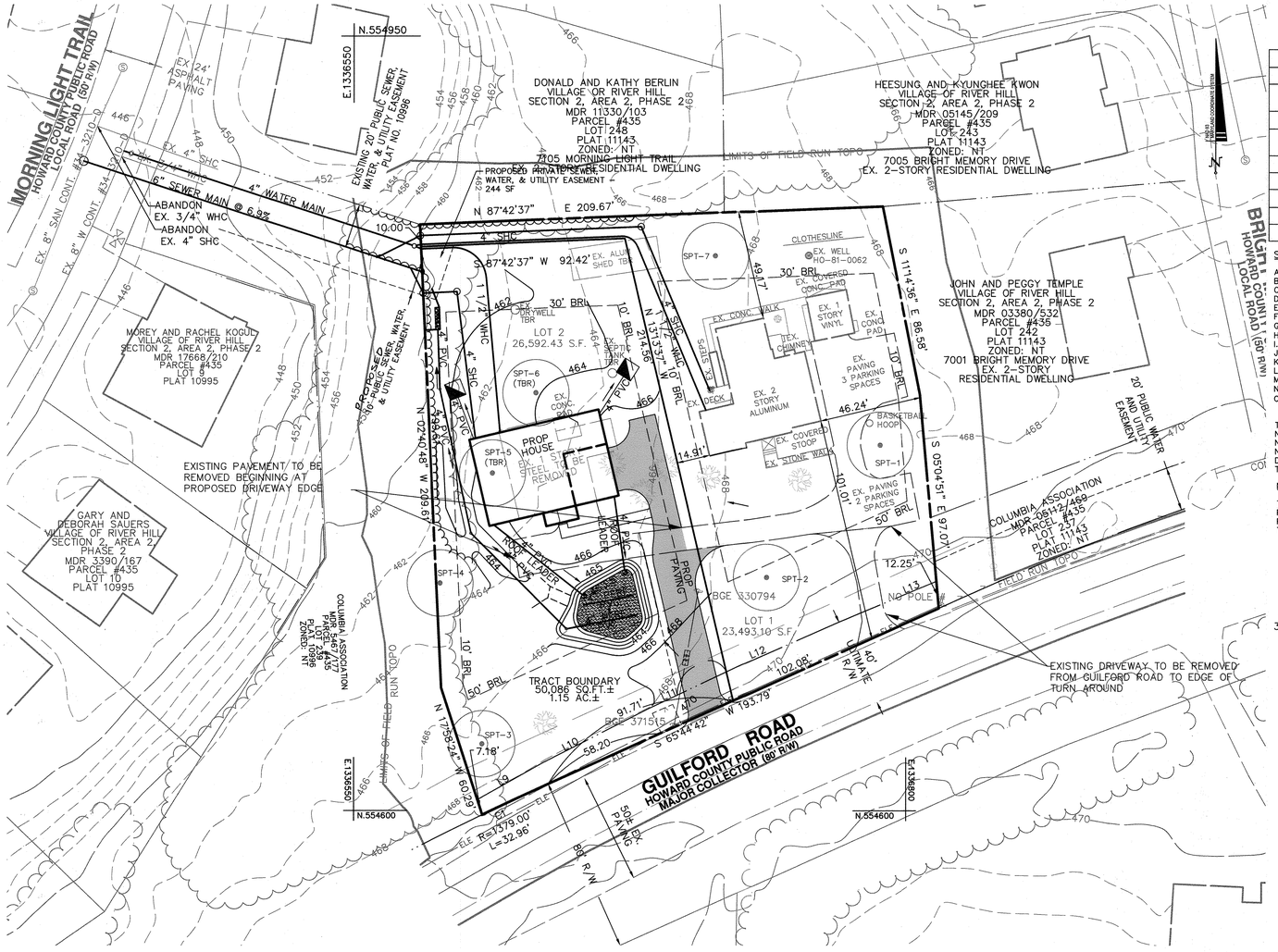




FINAL MINOR SUBDIVISION PLAN
for
WILLOW NOOK
COLUMBIA, MD 21029

TAX MAP 35, GRID 21, PARCEL 222
5TH ELECTION DISTRICT HOWARD COUNTY, MD

STORMWATER MANAGEMENT PRACTICES

LOT NUMBER	ADDRESS	GREEN ROOFS A-1 (Y/N)	PERMEABLE PAVEMENTS A-2 (Y/N)	REINFORCED TURF A-3 (Y/N)	DISCONNECTION OF ROOFTOP RUNOFF N-1 (NUMBER)	DISCONNECTION OF NON-ROOFTOP RUNOFF N-2 (Y/N)	SHEETFLOW TO CONSERVATION AREAS N-3 (Y/N)	RAINWATER HARVESTING M-1 (NUMBER)
1 (EX)	7079 GUILFORD RD	N	N	N	0	N	N	0
2	7075 GUILFORD RD	N	N	N	0	N	N	0

STORMWATER MANAGEMENT PRACTICES (cont)

LOT NUMBER	ADDRESS	SUBMERGED GRAVEL WETLANDS M-2 (NUMBER)	LANDSCAPE INFILTRATION M-3 (NUMBER)	INFILTRATION BERMS M-4 (NUMBER)	DRY WELLS M-5 (NUMBER)	MICRO-BIORETENTION M-6 (NUMBER)	RAIN GARDENS M-7 (NUMBER)	SWALES M-8 (NUMBER)	ENHANCED FILTERS M-9 (NUMBER)
1 (EX)	7079 GUILFORD RD	0	0	0	0	0	0	0	0
2	7075 GUILFORD RD	0	0	0	2	1	0	0	0

GENERAL NOTES

1. ALL CONSTRUCTION, INCLUDING DETAILS NOT SHOWN ON THE DRAWINGS, MATERIALS AND CONSTRUCTION METHODS, SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (LATEST EDITION), PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE. THE CONTRACTOR SHALL HAVE A COPY OF VOLUME IV ON THE JOB.
2. 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.
3. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST FIVE (5) WORKING DAYS PRIOR TO ANY EXCAVATION WORK BEING DONE.
4. 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). 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. THAT 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.
5. BOUNDARY AND TOPOGRAPHIC SURVEY ARE BASED ON A FIELD RUN SURVEY COMPLETED BY DEVELOPMENT DESIGN CONSULTANTS, LLC. IN APRIL 2013 AND HAS BEEN SUPPLEMENTED WITH HOWARD COUNTY GIS.
6. THE COORDINATES SHOWN ON THE DRAWINGS ARE BASED ON MARYLAND STATE REFERENCE SYSTEM NAD '83/'91 AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS 35GE AND 35HA. ALL VERTICAL CONTROLS ARE BASED ON NAVD '88. VERTICAL CONTROLS PROVIDED ON THE DRAWINGS ARE BASED ON REBAR AND CAP FOUND.
7. WATER SERVICE IS PUBLIC.
8. SEWER SERVICE IS PUBLIC.
9. STORMWATER MANAGEMENT IS ADDRESSED BY (2) M-5 DRY WELLS AND AN M-6 MICRO-BIORETENTION FACILITY. THESE STRUCTURES ARE PRIVATELY OWNED AND THEREFORE MAINTENANCE IS THE RESPONSIBILITY OF THE OWNER.
10. ALL EXISTING WATER AND SEWER PER CONTRACTS 44-3299-W AND 30-3690-S.
11. THERE IS NO FLOODPLAIN ON THIS SITE.
12. THE ARE NO WETLANDS ON THIS SITE. A SITE VISIT WAS CONDUCTED BY DDC,INC. ON MAY 10, 2013 TO CONFIRM.
13. ALL PLAN DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED. ALL CURB RADII ARE 5' UNLESS OTHERWISE NOTED.
14. THIS PROPERTY IS WITHIN THE METROPOLITAN DISTRICT.
15. SITE DISTANCE ANALYSIS WAS PREPARED BY KCI TECHNOLOGIES, INC.
16. GEOTECHNICAL STUDY PERFORMED BY HERBST/BENSON & ASSOCIATES, DATED DECEMBER 31, 2018.
17. THIS SITE IS EXEMPT FROM FOREST CONSERVATION REQUIREMENTS ACCORDING TO TITLE 16, SUBTITLE 12. SECTION 16.1202(b)(viii) OF THE HOWARD COUNTY CODE OF ORDINANCES. MINOR SUBDIVISIONS THAT CREATE ONE ADDITIONAL LOT AND HAVE NO FURTHER SUBDIVISION POTENTIAL ARE EXEMPT FROM FOREST CONSERVATION REGULATIONS.
18. THE SUBJECT PROPERTY IS ZONED R-20 IN ACCORDANCE WITH THE 10/6/13 COMPREHENSIVE ZONING PLAN.
19. THERE ARE NO KNOWN CEMETERIES OR SCENIC ROADS ON OR ADJACENT TO THIS PROPERTY. LOT 1 CONTAINS A HISTORIC STRUCTURE, DATING TO 1948, THAT IS TO REMAIN.
20. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE REQUIRED WETLANDS, STREAM(S) OR THEIR BUFFERS, FOREST CONSERVATION EASEMENT AREAS AND 100 YEAR FLOODPLAIN.
21. THIS PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
22. SEDIMENT AND EROSION CONTROL MEASURES ARE PROVIDED IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
23. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL
24. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING WILL BE DEFERRED UNTIL THE SITE DEVELOPMENT PLAN PHASE IN THE AMOUNT OF $3,600.00 FOR 12 SHADE TREES.
25. A COMMUNITY INPUT MEETING WAS HELD ON NOVEMBER 6, 2013 AT 6:00 PM AT THE CLARKSVILLE MIDDLE SCHOOL.
26. A FEE-IN-LIEU WILL BE PROVIDED FOR OPEN SPACE PER SECTION 16.121(a) AND (b) OF THE SUBDIVISION REGULATIONS IN THE AMOUNT OF $1,500.00 FOR THE ADDITIONAL LOT.
27. THIS DEVELOPMENT IS DESIGNED TO BE IN ACCORDANCE WITH SECTION 16.127 – RESIDENTIAL INFILL DEVELOPMENT OF SUBDIVISION AND LAND DEVELOPMENT REGULATIONS. THE DEVELOPER OF THIS PROJECT SHALL CREATE COMPATIBILITY WITH THE EXISTING NEIGHBORHOOD THROUGH USE OF ENHANCED PERIMETER LANDSCAPING, BERMS, FENCES, SIMILAR HOUSING UNIT TYPES AND DIRECTION ORIENTATION OF THE PROPOSED HOUSES.
28. SUBDIVISION IS SUBJECT TO SECTION 104.0.F OF THE ZONING REGULATIONS. AT LEAST 10% OF THE DWELLING UNITS SHALL BE MODERATE INCOME HOUSING UNITS (M.I.H.U.) OR AN ALTERNATIVE COMPLIANCE WILL BE PROVIDED. THE DEVELOPER SHALL EXECUTE A MIHU AGREEMENT WITH THE DEPARTMENT OF HOUSING TO INDICATE HOW THE MIHU REQUIREMENT WILL BE MET. THE MIHU AGREEMENT AND COVENANTS WILL BE RECORDED SIMULTANEOUSLY WITH THIS PLAT IN THE LAND RECORDS OFFICE OF HOWARD COUNTY, MARYLAND. THIS DEVELOPMENT WILL MEET MIHU ALTERNATIVE COMPLIANCE BY PAYING A FEE-IN-LIEU TO THE HOWARD COUNTY HOUSING DEPARTMENT.
29. THE EXISTING DWELLING WILL REMAIN ON LOT 2 ALL ACCESSORY STRUCTURES WILL BE DEMOLISHED.
30. THE EXISTING WELL AND SEPTIC SYSTEMS SHALL BE REMOVED PRIOR TO RECORDATION OF THE RECORD PLAT.
31. APPROXIMATE LOCATION OF EXISTING MAINS ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING MAINS AND SERVICES AND MAINTAINS UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
32. ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS UNLESS OTHERWISE NOTED ON THE PLANS.
33. CLEAR ALL UTILITIES BY A MINIMUM OF 12 INCHES. CLEAR ALL POLES BY 5'-0" MINIMUM OR TUNNEL AS REQUIRED UNLESS OTHERWISE NOTED. THE OWNER HAS CONTACTED THE UTILITY COMPANIES AND HAS MADE ARRANGEMENTS FOR BRACING OF POLES AS SHOWN ON THE DRAWINGS. IN THE EVENT THE CONTRACTOR'S WORK REQUIRES THE BRACING OF ADDITIONAL POLES, ANY COST INCURRED BY THE OWNER FOR THE BRACING OF ADDITIONAL POLES OR DAMAGES SHALL BE DEDUCTED FROM MONIES OWED THE CONTRACTOR. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES TO SCHEDULE THE BRACING OF THE POLES.
34. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES OR AGENCIES AT LEAST FIVE WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:

AT&T	800-252-1133
BGE (CONTRACTOR SERVICES)	410-637-8713
BGE (EMERGENCY)	410-685-0123
BUREAU OF UTILITIES	410-313-4900
COLONIAL PIPELINE CO.	410-795-1390
MISS UTILITY	800-257-7777
STATE HIGHWAY ADMINISTRATION	410-531-5533
VERIZON	800-743-0033

35. TREES AND SHRUBS ARE TO BE PROTECTED FROM DAMAGE TO THE MAXIMUM EXTENT. TREES AND SHRUBS LOCATED WITHIN THE CONSTRUCTION STRIP ARE NOT TO BE REMOVED OR DAMAGED BY THE CONTRACTOR. SEE TREE PROTECTION FENCE LOCATION, SHEET 2 & 7, AND TREE PROTECTION FENCING DETAIL, SHEET 8.
36. THE CONTRACTOR SHALL REMOVE TREES, STUMPS AND ROOTS ALONG THE LINE OF EXCAVATION. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONSTRUCTION OF THE MAIN.
37. THE CONTRACTOR SHALL NOTIFY THE BUREAU OF HIGHWAYS, HOWARD COUNTY, AT (410) 313-7450 AT LEAST FIVE WORKING DAYS BEFORE OPEN CUTTING OR BORING/JACKING OF ANY COUNTY ROAD FOR LAYING WATER/SEWER MAINS OR HOUSE CONNECTIONS. THE APPROVAL OF THESE DRAWINGS WILL CONSTITUTE COMPLIANCE WITH DPW REQUIREMENTS PER SECTION 18.114(a) OF THE HOWARD COUNTY CODE.
38. ALL WATER FITTINGS SHALL BE BUTTRESSED OR ANCHORED WITH CONCRETE IN ACCORDANCE WITH STANDARD DETAILS UNLESS OTHERWISE PROVIDED FOR ON THE DRAWINGS.
39. THE CONTRACTOR SHALL NOT OPERATE ANY WATER MAIN VALVES ON THE EXISTING WATER SYSTEM.
40. STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURE AND POLE SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (1993) AND AS MODIFIED BY "GUIDELINES FOR STREET LIGHTS IN RESIDENTIAL DEVELOPMENTS (JUNE 1993)." A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREETLIGHT AND ANY TREE.
41. NO TRAFFIC STUDY IS REQUIRED FOR THIS PROJECT.
42. A FEE-IN-LIEU WILL BE PROVIDED FOR PEDESTRIAN IMPROVEMENTS ALONG THE GUILFORD ROAD FRONTAGE OF THE SUBDIVISION.
43. AN ALTERNATIVE COMPLIANCE APPLICATION, WP-19-043, WAS APPROVED ON JANUARY 4, 2019, FOR SECTION 16.1205(a)(7) FOREST RETENTION PRIORITIES AND SECTION 16.135 STREET LIGHTING. APPROVAL IS SUBJECT TO THE FOLLOWING CONDITIONS:
    1. MITIGATE AT 2:1 THE REMOVAL OF 2 SPECIMEN TREES. THE 4 REPLACEMENT TREES SHALL BE NATIVE SHADE TREES OF 2.5" CALIPER AND PLANTED IN ADDITION TO ANY LANDSCAPE REQUIREMENTS FOR DEVELOPMENT OF THE SITE.
    2. INDICATE THIS ALTERNATIVE COMPLIANCE NUMBER (WP-19-043), ON THE COVER SHEET OF ALL CURRENT AND FUTURE PLAN SUBMITTALS; INCLUDE SECTION NUMBERS, CONDITIONS OF APPROVAL AND DATE OF DECISION. THIS INCLUDES F-18-118.
    3. INCLUDE A REFERENCE TO WP-19-043 ON ANY RELATED LANDSCAPE PLANS AND INDICATE WHICH TREES ARE USED TO SATISFY THE CONDITIONS OF APPROVAL.

BY THE DEVELOPER:

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

DEVELOPER 10/27/22 DATE

ENGINEER

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

ENGINEER 10/27/22 DATE

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

Alexander Bratchie 11/08/22
HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION 10.2.22 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT 12/15/22 DATE

PLAN VIEW

SCALE: 1" = 30'

STORMWATER MANAGEMENT SUMMARY TABLE

WATERSHED	DA #	FACILITY NO.	FACILITY TYPE	ESDv TARGET Pe	ESDv TARGET ESDv (CF)	ESDv PROVIDED Pe	ESDv PROVIDED ESDv (CF)	ESDv TREATED ESDv(CF)	ESDv REQUIRED ESDv(CF)	DISCHARGE (cfs) CPv (Q1) EX.	DISCHARGE (cfs) CPv (Q1) PROP.	DISCHARGE (cfs) Q10 EX.	DISCHARGE (cfs) Q10 PROP.	DISCHARGE (cfs) Q100 EX.	DISCHARGE (cfs) Q100 PROP.
MIDDLE PATUXENT	1	1	DRYWELL M-5	1.0	48	1.2	113	113	–	–	–	–	–	–	–
	2	2	DRYWELL M-5	1.0	48	1.2	113	113	–	–	–	–	–	–	–
	3	3	MICRO-BIORETENTION M-6	1.0	438	1.5	758	758	–	–	--	–	–	–	–
			TOTAL =		534	–	984	984	–	0.7	0.4	3.6	2.8	6.4	5.4

SUMMARY: TO ACHIEVE ENVIRONMENTAL SITE DESIGN REQUIREMENTS, ONE (1) MICRO-BIORETENTION (M-6) FACILITY AND TWO (2) DRYWELLS (M-5) HAVE BEEN USED. THE DISCHARGE EVENTUALLY FLOWS TO THE MIDDLE PATUXENT RIVER.

CONCLUSION: THE TREATED ESDv (984 CF) IS GREATER THAN THE REQUIRED (534 CF). THEREFORE, ENVIRONMENTAL SITE DESIGN HAS BEEN ACHIEVED.

DRAWING LEGEND

682	EXISTING MINOR CONTOUR (2' INTERVAL)
680	EXISTING MAJOR CONTOUR (10' INTERVAL)
	ADJACENT PROPERTY LINE
N 06°45'45"W 120.00'	EXISTING PROPERTY BOUNDARY
	EX. ROAD / EDGE OF PAVING
Ⓢ EX. 8" S. c/o Ⓢ	EX. SEWER LINE & MANHOLES, CLEAN-OUTS
	EX. OVERHEAD ELECTRIC & UTILITY POLES
	EX. BUILDING
	PROPOSED BUILDING
	EXISTING TREELINE
LIMITS OF FIELD RUN TOPO	TOPOGRAPHY LIMIT

OWNER AND DEVELOPER

JOSH YOLTAY
14325 HOWARD ROAD
DAYTON, MD 21036
PHONE # (301)385-6244

8/30/22
DATE

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. 28935, Expiration Date: 1/15/23

MATTHEW SHENK SICHEL No. 28935

10/27/22

BENCHMARK

BENCHMARK 35GE
N. 555817.487
E. 1336928.786
B.M. CONC. MON.
ELEV. 418.132

BENCHMARK 35HA
N. 553966.737
E. 1340477.030
B.M. CONC. MON.
ELEV. 404.609

VICINITY MAP

SCALE: 1"=2000'
ADC MAP 32-A4 GRID D10

SHT #	DRAWING LIST
1	COVER
2	GRADING, STORMWATER MANAGEMENT AND SEC PLAN
3	SEDIMENT & EROSION CONTROL NOTES, & DETAILS
4	STORMWATER MANAGEMENT PROFILES, NOTES AND DETAILS
5	SOILS & STORMWATER MANAGEMENT BORING PLAN
6	MISCELLANEOUS DETAILS & UTILITY PROFILES
7	LANDSCAPE PLAN
8	LANDSCAPE DETAILS
9	MAINTENANCE OF TRAFFIC PLAN

SITE ANALYSIS DATA CHART

A. TOTAL PROJECT AREA: 1.15± Ac. 50,086 Sq.Ft.
B. LIMIT OF DISTURBED AREA: 0.64± Ac.
C. PRESENT ZONING DISTRICT: R-20
D. PROPOSED USES FOR THE SITE AND STRUCTURES: RESIDENTIAL
E. TOTAL NUMBER OF UNITS ALLOWED FOR PROJECT AS SHOWN ON THE FINAL PLAT: 2
F. TOTAL NUMBER OF UNITS PROPOSED ON SUBMISSION: 2
G. OPEN SPACE ON SITE: 0.00 Ac. (Fee-in-Lieu) (SEE GENERAL NOTE 26)
H. BUILDING COVERAGE OF SITE: 0.11 Ac. – 10% OF GROSS AREA
I. APPLICABLE DPZ FILE REFERENCES: ECP-18-007, WP-19-043
J. ALL EXISTING STRUCTURES WERE BUILT IN 1948.
K. ELECTION DISTRICT: 5TH
L. COUNCILMAN DISTRICT: 4
M. TAX ACCOUNT NO: 05366461
N. PLAT REFERENCE: N/A
O. DEED REFERENCE: 17337/;00001

TYPE OF BUILDING: RESIDENTIAL – DETACHED
NUMBER OF LOTS: 2
NO. OF WATER HOUSE CONNECTIONS: 2
NO. OF SEWER HOUSE CONNECTIONS: 2
DRAINAGE AREA: MIDDLE PATUXENT RIVER BASIN
TREATMENT PLANT: LITTLE PATUXENT WATER QUALITY MANAGEMENT CENTER

NOTE:

THE PURPOSE OF THIS PLAN AND REQUEST IS TO VERIFY THE MINIMUM REQUIREMENTS FOR THE DEVELOPMENT OF THIS SITE.

GRAPHIC SCALE

30 0 30 60 90

DATA SOURCES:

INFORMATION SHOWN HEREON IS BASED ON A BOUNDARY AND TOPOGRAPHIC SURVEY PREPARED BY DEVELOPMENT DESIGN CONSULTANTS, INC. IN APRIL 2013 AND SUPPLEMENTED WITH HOWARD COUNTY GIS.

KCI
TECHNOLOGIES
ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818

WILLOW NOOK
FINAL PLAN LOTS 1 & 2

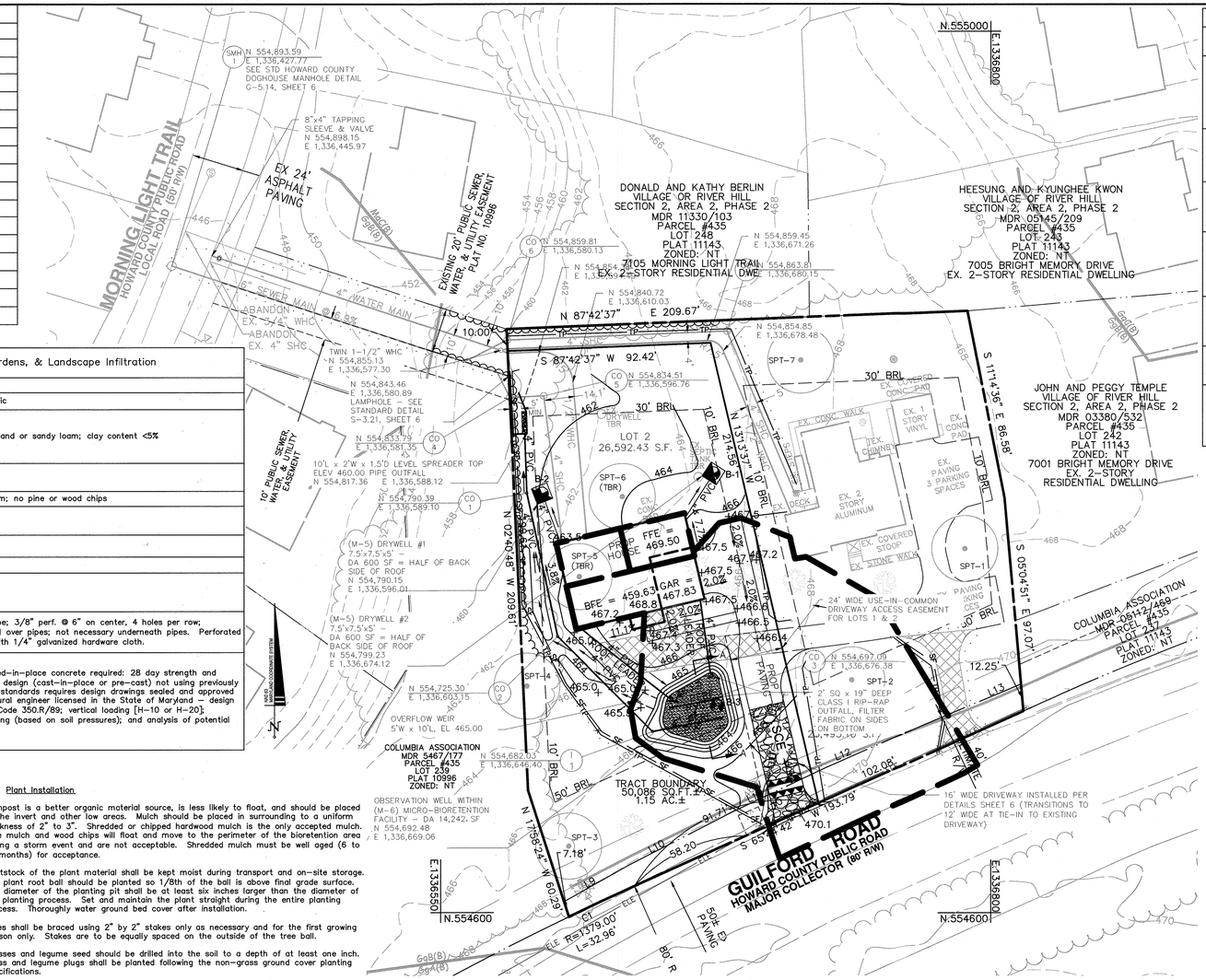
COVER

ELECTION DISTRICT: 5 HOWARD COUNTY, MARYLAND

NO.	DESCRIPTION OF CHANGES	DRN.	REV.	DATE
	REVISIONS			

CO. FILE #:	DES. BY: CTS
TAX ACC. #: 05366461	DRN. BY: CTS
TAX MAP: 35	CHK. BY: BCC
BLOCK / GRID: 21	DATE: 2/13/19
PARCEL #: 0222	KCI JOB#: 271802313
ZONE / USE: R-20	SHEET NUMBER: 1 of 09
DWG. SCALE: 1" = 30'	

F# 18-118



SWM SUMMARY TABLE		
	M-6 MICRO-BIORETENTION	M-5 DRY WELLS
FACILITY OWNERSHIP/MAINT.	PRIVATE	PRIVATE
OWNER NAME	JOSH YOLTAY	JOSH YOLTAY
DRAINAGE AREA TO FACILITY(Ac)	0.33	0.03
IMPERVIOUS AREA (Ac)	0.13	0.03
PERVIOUS AREA (Ac)	0.20	0.00
ESDv REQUIRED (cu-ft) (LOD)	534	
ESDv PROVIDED (cu-ft)	758	225
Pe REQUIRED (in)	1.0	1.0
Pe PROVIDED (in)	1.5	2.4
Cpv	AUTOMATICALLY MET BY ACHIEVING ESD TO THE MEP	
1-YR STORM, PR OUTFLOW(cfs)	0.4	N/A
1-YR WATER SURFACE ELEV(ft)	463.50	N/A
10-YR STORM, PR OUTFLOW(cfs)	2.4	N/A
10-YR WATER SURFACE ELEV(ft)	464.86	N/A
100-YR STORM, PR OUTFLOW(cfs)	N/A	N/A
100-YR WATER SURFACE ELEV(ft)	N/A	N/A

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

Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil (2' to 4' deep)	loamy sand (60-65%) & compost (35-40%) or sandy loam (30%), coarse sand (30%) & compost (40%)	n/a	USDA soil types loamy sand or sandy loam; clay content <5%
Organic content	Min. 10% by dry weight (ASTM D 2974)		
Mulch	shredded hardwood		Aged 6 months, minimum; no pine or wood chips
Pea gravel diaphragm	pea gravel: ASTM-D-448	NO. 8 OR NO. 9 (1/8" TO 3/8")	
Curtain drain	ornamental stone: washed cobbles	stone: 2" to 5"	
Geotextile		n/a	PE Type 1 nonwoven
Gravel (underdrains and infiltration berms)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (3/8" to 3/4")	
Underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	Slotted or perforated pipe; 3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes. Perforated pipe shall be wrapped with 1/4" galvanized hardware cloth.
Poured in place concrete (if required)	MSHA Mix No. 3; f'c=3500 psi @ 28 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	n/a	On-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) not using previously approved State or local standards requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland – design to include meeting ACI Code 350.R/89; vertical loading [H-10 or H-20]; allowable horizontal loading (based on soil pressures); and analysis of potential cracking

CONSTRUCTION SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDENS, LANDSCAPE INFILTRATION & INFILTRATION BERMS

1. Material specifications

The allowable materials to be used in these practices are detailed in Table B.4.1.

2. Filtering Media or Planting Soil

The soil shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the micro-bioretention practice that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The planting soil shall be free of Bermuda grass, Quackgrass, Johnson grass, or other noxious weeds as specified under COMAR 15.08.01.05.

The planting soil shall be tested and shall meet the following criteria:

-Soil Component – Loamy Sand or Sandy Loam (USDA Soil Textural Classification)
-Organic Content – Minimum 10% by dry weight (ASTM D 2974). In general, this can be met with a mixture of loamy sand (60%-65%) and compost (35% -40%) or sandy loam (30%), coarse sand (30%), and compost (40%).
-Clay Content – Media shall have a clay content of less than 5%.
-pH Range – Should be between 5.5 – 7.0. Amendments (e.g., lime, iron sulfate plus sulfur) may be mixed into the soil to increase or decrease pH.

There shall be at least one soil test per project. Each test shall consist of both the standard soil test for pH, and additional tests of organic matter, and soluble salts. A textural analysis is required from the site stockpiled topsoil. If topsoil is imported, then a texture analysis shall be performed for each location where the topsoil was excavated.

3. Compaction

It is very important to minimize compaction of both the base of bioretention practices and the required backfill. When possible, use excavation hoes to remove original soil. If practices are excavated using a loader, the contractor should use wide track or marsh track equipment, or light equipment with turf type tires. Use of equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high pressure tires will cause excessive compaction resulting in reduced infiltration rates and is not acceptable. Compaction will significantly contribute to design failure.

Compaction can be alleviated at the base of the bioretention facility by using a primary tilling operation such as a chisel plow, ripper, or subsoiler. These tilling operations are to refracture the soil profile through the 12 inch compaction zone. Substitute methods must be approved by the engineer. Rototillers typically do not till deep enough to reduce the effects of compaction from heavy equipment.

Rototill 2 to 3 inches of sand into the base of the bioretention facility before backfilling the optional sand layer. Pump any ponded water before preparing (rototilling) base.

When backfilling the topsoil over the sand layer, first place 3 to 4 inches of topsoil over the sand, then rototill the sand/topsoil to create a gradation zone. Backfill the remainder of the topsoil to final grade.

When backfilling the bioretention facility, place soil in lifts 12" to 18". Do not use heavy equipment within the bioretention basin. Heavy equipment can be used around the perimeter of the basin to supply soils and sand. Grade bioretention materials with light equipment such as a compact loader or a dozer/loader with marsh tracks.

4. Plant Material

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

5. Plant Installation

Compost is a better organic material source, is less likely to float, and should be placed in the invert and other low areas. Mulch should be placed in surrounding to a uniform thickness of 2" to 3". Shredded or chipped hardwood mulch is the only accepted mulch. Pine mulch and wood chips will float and move to the perimeter of the bioretention area during a storm event and are not acceptable. Shredded mulch must be well aged (6 to 12 months) for acceptance.

Rootstock of the plant material shall be kept moist during transport and on-site storage. The plant root ball should be planted so 1/8th of the ball is above final grade surface. The diameter of the planting pit shall be at least six inches larger than the diameter of the planting process. Set and maintain the plant straight during the entire planting process. Thoroughly water ground bed cover after installation.

Trees shall be braced using 2" by 2" stakes only as necessary and for the first growing season only. Stakes are to be equally spaced on the outside of the tree ball.

Grasses and legume seed should be drilled into the soil to a depth of at least one inch. Grass and legume plugs shall be planted following the non-grass ground cover planting specifications.

The topsoil specifications provide enough organic material to adequately supply nutrients from natural cycling. The primary function of the bioretention structure is to improve water quality. Adding fertilizers defeats, or at a minimum, impedes this goal. Only add fertilizer if wood chips or mulch are used to amend the soil. Rototill urea fertilizer at a rate of 2 pounds per 1000 square feet.

6. Underdrains

Underdrains should meet the following criteria:

-Pipe – Should be 4" to 6" diameter, slotted or perforated rigid plastic pipe (ASTMF 758, Type PS 28, or AASHTO-M-278) in a gravel layer. The preferred material is slotted, 4" rigid pipe (e.g., PVC or HDPE).
-Perforations – If perforated pipe is used, perforations should be 3/8" diameter located 6" on center with a minimum of four holes per row. Pipe shall be wrapped with a 1/4" (No. 4 or 4x4) galvanized hardware cloth.
-Gravel – The gravel layer (No. 57 stone preferred) shall be at least 3" thick above and below the underdrain.
-The main collector pipe shall be at a minimum 0.5% slope.
-A rigid, non-perforated observation well must be provided (one every 1,000 square feet) to provide a clean-out port and monitor performance of the filter.
-A 4" layer of pea gravel (1/8" to 3/8" stone) shall be located between the filter media and underdrain to prevent migration of fines into the underdrain. This layer may be considered part of the filter bed when bed thickness exceeds 24".

The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%. Observation wells and/or clean-out pipes must be provided (one minimum per every 1000 square feet of surface area).

7. Miscellaneous

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

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED STORMWATER MANAGEMENT BIORETENTION FACILITIES

A. Annual maintenance of plant material, mulch layer, sand media and soil layer is required. Maintenance of mulch and soil is limited to correction areas of erosion and washout. Check for dewatering within 48 hours. When necessary, replace filter media per plan.

B. Schedule of plant inspection will be twice a year in spring and fall. This inspection will include removal of dead, diseased and excessive vegetation considered beyond treatment. Replacement of all diseased trees, shrubs, deficient stakes and wires will be required.

C. Mulch layer shall be inspected each spring. Once every 2 to 3 years, remove previous mulch layer and apply new 2 to 3 inch layer.

D. Soil erosion and flow blockages to be addressed on an as needed basis with a minimum of once per month and after heavy storms. Inspect clean outs and observation wells along with overflow/outfall/exit pipes.

NOTE:
SEE SHEET 4 FOR STORMWATER MANAGEMENT SECTION A-A.

MICRO-BIORETENTION INSPECTION CHECKLIST			
PHASE	DATE	INITIALS	REMARKS – DESCRIPTION OF ACTION TAKEN
1. EXCAVATION A. SIZE AND LOCATION B. SIDE SLOPE STABILITY C. SOIL PERMEABILITY D. GROUNDWATER/BEDROCK E. SETBACKS PER DESIGN MANUAL			
2. FILTER FABRIC A. FABRIC SPECIFICATIONS B. SIDES ONLY (INFILTRATION) C. SIDES, TOP, BOTTOM (ATTENUATION)			
3. AGGREGATE MATERIAL A. TYPE (SLAG, # CRUSHED, GRAVEL) B. SIZE C. PLACEMENT			
4. OBSERVATION WELL/ROOF LEADERS A. ROOF LEADERS B. SURCHARGE PIPE(S) C. PIPE SIZE AND TYPE D. MINIMUM COVER (1 FOOT)			
5. SURFACE LAYER A. AGGREGATE SURFACE B. VEGETATIVE SURFACE C. PAVED SURFACE			
6. INLET STRUCTURE A. INVERTS AND ELEVATIONS B. RECEIVES DESIGNED DRAINAGE AREA			

I HEREBY CERTIFY THAT I PERSONALLY REVIEWED OR A PERSON UNDER MY DIRECT SUPERVISION PROVIDED THE INFORMATION REPORTED ON THIS CHECKLIST AND TO THE BEST OF MY KNOWLEDGE DO HEREBY INSURE THAT THE SUBMITTAL IS COMPLETE AND ACCURATE.

PROFESSIONAL ENGINEER SIGNATURE AND DATE

DRAWING LEGEND

682	EXISTING MINOR CONTOUR (2' INTERVAL)
680	EXISTING MAJOR CONTOUR (10' INTERVAL)
	ADJACENT PROPERTY LINE
N 06°45'45"W 120.00'	EXISTING PROPERTY BOUNDARY
	EX. ROAD / EDGE OF PAVING
EX. 8" S. C/O	EX. SEWER LINE & MANHOLES, CLEAN-OUTS
	EX. OVERHEAD ELECTRIC & UTILITY POLES
682	PROPOSED MINOR CONTOUR (2' INTERVAL)
680	PROPOSED MAJOR CONTOUR (10' INTERVAL)
	EX. BUILDING
▭	PROPOSED BUILDING EXPANSION
← + 665.5	PROPOSED SPOT ELEVATION & FLOW ARROW
	EXISTING TREELINE
▨	EXISTING DRIVEWAY TO BE REMOVED
MnF / NcA	SOIL DELINEATION LINE
SF SF SF	SILT FENCE
	PROPOSED LIMIT OF DISTURBANCE
TP TP	PROPOSED TEMPORARY TREE PROTECTION FENCE (SEE DETAIL, SEE SHEET 7)
SCE	STABILIZED CONSTRUCTION ENTRANCE WITH MOUNTABLE BERM
◪	PROPOSED M-5 DRY WELLS
▨	PROPOSED M-6 MICRO-BIORETENTION
⊕	PROPOSED OBSERVATION WELL
○	PROPOSED CLEANOUT
▬ ▬	PROPOSED STORMWATER MANAGEMENT DRAINAGE DIVIDE
B-2	PROPOSED BORING LOCATION AND NUMBER
SPT-1	SPECIMEN TREE

DATA SOURCES:

INFORMATION SHOWN HEREON IS BASED ON A BOUNDARY AND TOPOGRAPHIC SURVEY PREPARED BY DEVELOPMENT DESIGN CONSULTANTS, INC. IN APRIL 2013 AND SUPPLEMENTED WITH HOWARD COUNTY GIS.

DOWNSPOUT DRYWELL INSTALLATION INSPECTION CHART				
STAGE*	INSPECTOR'S APPROVAL		INSPECTOR'S APPROVAL	
	DRYWELL #1		DRYWELL #2	
	INITIALS	DATE	INITIALS	DATE
1. EXCAVATE TO SUBGRADE				
2. PLACEMENT OF BACKFILL AND PERFORATED INLET PIPE AND OBSERVATION WELL				
3. PLACEMENT OF GEOTEXTILES AND ALL FILTER MEDIA				
4. CONSTRUCTION OF APPURTENANT CONVEYANCE				
5. COMPLETION OF FINAL GRADE AND ESTABLISHMENT OF PERMANENT STABILIZATION				
6. SUBMIT AS-BUILT PLANS WITHIN 60 DAYS OF COMPLETION OF CONSTRUCTION				

*PLEASE NOTIFY CERTIFYING ENGINEER 48 HOURS PRIOR TO COMMENCING CONSTRUCTION
Engineer's name: Matthew S. Sichel
Phone number: (410) 316-7800

QUANTITIES				
ITEM	ESTIMATED	AS-BUILT		
		QUANTITIES	TYPE	MFG
4" SHC	300 LF			
6" SEWER MAIN	162 LF			
1-1/2" WHC	295 LF			
4" WATER MAIN	140 LF			

WATER HOUSE CONNECTION AS-BUILT TABLE			
LOT NUMBER	ADDRESS	LOCATION DIMENSION 1	LOCATION DIMENSION 2
LOT 1			
LOT 2			

SEWER HOUSE CONNECTION AS-BUILT TABLE			
LOT NUMBER	ADDRESS	LOCATION DIMENSION 1	LOCATION DIMENSION 2
LOT 1			
LOT 2			

NOTE:
STORMWATER MANAGEMENT FACILITIES ARE PRIVATELY OWNED AND THEREFORE MAINTENANCE IS THE RESPONSIBILITY OF THE OWNER.

GRAPHIC SCALE

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

Alexander Bratchie 11/08/22
HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

10.2.22
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

12/15/22
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

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

10/27/22
DEVELOPER DATE

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

10/27/22
ENGINEER DATE

8/30/22
DATE

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. 28935 Expiration Date: 1/15/23

MATTHEW SHENK SICHEL
No. 28935

10/27/22

KCI
TECHNOLOGIES

Engineers
Planners
Scientists
Construction Managers

936 Ridgebrook Road
Sparks, Maryland 21152
Telephone: (410) 316-7800
Fax: (410) 316-7818

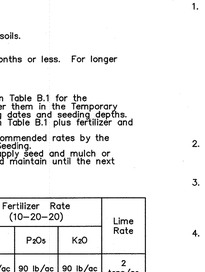
WILLOW NOOK
FINAL PLAN LOTS 1 & 2
GRADING, STORMWATER
MANAGEMENT & SEDIMENT
EROSION CONTROL
PLAN

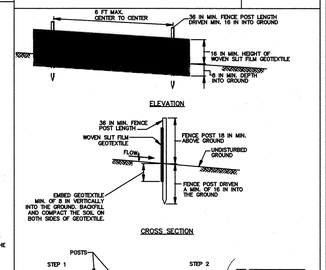
ELECTION DISTRICT: 5 HOWARD COUNTY, MARYLAND

REVISIONS				
NO.	DESCRIPTION OF CHANGES	DRN.	REV.	DATE

CO. FILE #:	DES. BY: CTS
TAX ACC. #: 05366461	DRN. BY: CTS
TAX MAP: 35	CHK. BY: BCC
BLOCK / GRID: 21	DATE: 2/13/19
PARCEL #: 0222	KCI JOB#: 271802313
ZONE / USE: R-20	SHEET NUMBER: 2 of 09
DWG. SCALE: 1"=30'	

F# 18-118





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

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

Purpose
To provide a suitable soil medium for vegetative growth.

Conditions Where Practices Applies
Where vegetative stabilization is to be established.

Criteria

A. Soil Preparation
   1. Temporary Stabilization
      a. Seedbed preparations 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 establishments 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, material 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, sand 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 1 1/2 inches in diameter.
      b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.
      c. Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
   6. Topsoil Application
      a. Erosion and sediment control practices must be maintained when applying topsoil.
      b. Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
      c. Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

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

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

Definition
The application of seed and mulch to establish vegetative cover.

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

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

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.
      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; P205 (phosphorous), 200 pounds per acre; K20 (potassium), 200 pounds per acre.
         ii. Lime: Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding.
         iii. Mix seed and fertilizer on site and seed immediately and without interruption.
         iv. When hydroseeding do not incorporate seed into the soil.

B. Mulching
   1. Mulch Materials (in order of preference)
      a. Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably bright in color. Straw is to be free of noxious weed seeds as specified in the Maryland Seed Law and not musty, moldy, caked, decayed, or excessively dusty. Note: Use only sterile straw mulch in areas where one species of grass is desired.
      b. Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state.
         i. WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
         ii. WCFM, including dye, must contain no germination or growth inhibiting factors.
         iii. WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogenous 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 per water.
   3. Anchoring
      a. Perform mulch anchoring immediately following applications 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.

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

Alexander Bratchie 09/12/22
Howard SCD Date

ENGINEER'S CERTIFICATE

"I certify that this plan for sediment and erosion control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District."

8/30/22
Signature of Engineer (print name below signature) Date
MATTHEW SICHEL

DEVELOPER'S CERTIFICATE

"I/We certify that all development and construction will be done according to this plan for sediment and erosion control, and that all responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of the Environment Approved Training Program for the Control of Sediment and Erosion before beginning the project. I also authorize periodic on-site inspection by the Howard Soil Conservation District."

8/30/22
Signature of Developer (print name below signature) Date

APPROVED: DEPARTMENT OF PLANNING AND ZONING

9.20.22
Chief, Development Engineering Division Date

~~Director~~
12/15/22
Cheif, Division of Land Development Date

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 Apply
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): _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	P_2O_5	K_2O	
1	Annual Ryegrass	40	3/1-5/15 8/1-10/15	1/2 in	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)
	Foxtail Millet	30	5/16-7/31	1/2 in				

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

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 soils testing agency.
      d. For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 1/2 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 include; Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.
         iv. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes; Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1 1/2 to 3 pounds per 100 square feet.

         Notes:
         Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Memo #77, "Turfgrass Cultivar Recommendations for Maryland"

         Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line.
      c. Ideal Times of Seeding for Turf Grass Mixtures
         Western MD: March 15 to June 1, August 1 to October 1 (Hardiness Zones: 5b, 6a)
         Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6b)
         Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 7a, 7b)
      d. Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 1 1/2 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 (1/2 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): Seed Mixture (from Table B.1):					Fertilizer Rate (10-20-20)	Lime Rate
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths		
9	Tall Fescue	60	3/1-5/15 8/1-10/15	1/2 IN	436 lb/ac (10 lb/1000 sf)	2 tons/ac (90 lb/1000 sf)
	Perennial Ryegrass	20	3/1-5/15 8/1-10/15	1/2 IN		
	Kentucky Bluegrass	40	3/1-5/15 8/1-10/15	1/2 IN		

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 3/4 inch, plus or minus 1/4 inch, at the time of cutting. Measurement for thickness mist exclude top growth and thatch. Broken pads and torn or uneven ends will not be acceptable.
      c. Standard size sections of sod must be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.
      d. Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
      e. Sod must be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period must be approved by an agronomist or soil scientist prior to its installation.
   2. Sod Installation
      a. During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the sod.
      b. Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Stagger lateral joints to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.
      c. Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints. Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensure solid contact exists between sod roots and the underlying soil surface.
      d. Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of sod within eight hours.
   3. Sod Maintenance
      a. In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.
      b. After the first week, sod watering is required as necessary to maintain adequate moisture content.
      c. Do not mow until the sod is firmly rooted. No more than 1/3 of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless otherwise specified.

Either temporary or permanent seeding and stabilization are to be performed at the direction of the sediment control inspector or at the minimum time frames required by the 2011 MD Standards & Specifications for Soil Erosion & Sediment Control whichever is more stringent.

HOWARD SOIL CONSERVATION DISTRICT (HSCD) STANDARD SEDIMENT CONTROL NOTES

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

   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 acres 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:	1.15± Ac.
Area Disturbed:	0.64 Ac.
Area to be roofed or paved:	0.11± Ac.
Area to be vegetatively stabilized:	0.53± Ac.
Total Cut:	180 CY
Total Fill:	180 CY
Offsite waste/borrow are location:	N/A

   All quantities shown on plans are for reviewing agency only. Contractor shall verify quantities for bidding.
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-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 be allowed by the CID per the list of HSCD-approved field changes.
11. Disturbance shall not occur outside the L.O.D. A project is to be sequenced so that grading activities begin on one grading unit (maximum acreage of 20 ac. per grading unit) at a time. Work may proceed to a subsequent grading unit when at least 50 percent of the disturbed area in the preceding grading unit has been stabilized and approved by the CID. Unless otherwise specified and approved by the HSCD, no more than 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 SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, and associated permits shall be on-site and available when the site is active.

Sequence of Construction

1. Obtain a Grading Permit. (1 day)
2. Notify "Miss Utility" at least 48 hours before beginning any work at 1-800-257-7777. Notify Howard County Department of Inspections,Licenses and Permits, Sediment Control Division at 410-313-1855 at least 24 hours before starting any work. (2 days)
3. Contractor shall install stabilized construction entrance. (1 day)
4. Install tree protection fence and perimeter silt fence. (1 day)
5. With perimeter sediment control devices installed and with permission from the Sediment Control Inspector, Demo buildings and clear remaining lot for construction. (1 week)
6. Dust control will be provided for all disturbed areas. Refer to "2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control", section H-5 (and also this sheet), for acceptable methods and specifications for dust control (ongoing) (18 to 24 weeks).
7. Begin construction of proposed features. Care shall be taken to not allow any sediment to enter the stormwater management devices. Prior to the installation of the micro-bioretention facility, the contributing drainage area shall be permanently stabilized.
8. With construction complete, with all disturbed areas stabilized, and with permission from the sediment control inspector, remove sediment control devices. Permanently stabilize any disturbed area from the removal of the sediment control devices. (1 week)
8. Notify Howard County Office of Inspections and Permits for a final inspection of the completed site. (2 days)

H-5 STANDARDS AND SPECIFICATIONS FOR DUST CONTROL

Definition
Controlling the suspension of dust particles from construction activities.

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

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

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

GRAPHIC SCALE

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

DATA SOURCES:

INFORMATION SHOWN HEREON IS BASED ON A BOUNDARY AND TOPOGRAPHIC SURVEY PREPARED BY DEVELOPMENT DESIGN CONSULTANTS, INC. IN APRIL 2013 AND SUPPLEMENTED WITH HOWARD COUNTY GIS.

KCI
TECHNOLOGIES
ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818

WILLOW NOOK
FINAL PLAN LOTS 1 & 2

SEDIMENT & EROSION CONTROL NOTES & DETAILS

ELECTION DISTRICT: 5 HOWARD COUNTY, MARYLAND

REVISIONS

NO.	DESCRIPTION OF CHANGES	DRN.	REV.	DATE

CO. FILE #:	DES. BY: CTS
TAX ACC. #: 05366461	DRN. BY: CTS
TAX MAP: 35	CHK. BY: BCC
BLOCK / GRID: 21	DATE: 2/13/19
PARCEL #: 0222	KCI JOB#: 271802313
ZONE / USE: R-20	SHEET NUMBER: 3 of 09
DWG. SCALE: N/A	

8/30/22
DATE

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. 28935, Expiration Date: 4/15/23

MATTHEW SHENK SICHEL
No. 28935

F# 18-118

REQUIRED SEQUENCE OF CONSTRUCTION FOR M-5 DRY WELL FACILITIES:

1. Notify engineer prior to beginning work on dry well facility.
2. Install site sediment control. Build site and stabilize with a minimum of 2" stand of dense grass. (2 months)
3. The Contractor shall inform the engineer, KCI Technologies, Inc. (410) 316-7800 prior to start of construction.
4. Stakeout and excavate Dry Well facilities.
5. Install Geotextile filter fabric on sides.
6. Install Observation well (4" Perforated PVC,sch-40) along with downspout (4"PVC sch 40) extension in to facility. (1 day)
7. Install 12" C-33 Sand layer. (1 day)
8. Install 5' layer of #57 stone. (1 day)
9. Cover top of stone with filter fabric. (1 day)
10. Install 12" cover to close facility. (1 day)
11. Fine grade, seed, mulch and stabilize. (1 Day)
12. Once Engineer inspects facilities they can be put online. (1 day)
13. The engineer must submit signed and sealed stormwater management as-built mylars within 30 days of completion of these facilities to the Howard County Bureau of Resource Management.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED STORMWATER MANAGEMENT RESIDENTIAL DRY WELL

A. Drywells shall be inspected and cleaned annually. This includes pipe, gutters, downspouts and all filters.

B. Ponding, standing water or algae growth on the top of a dry well may indicate failure due to sedimentation in the gravel media.

C. If water ponds for more than 48 hours after a major storm of more than 6" of sediment has accumulated, the gravel media should be excavated and replaced.

D. Privately owned practices shall have a maintenance plan and shall be protected by easement, deed restriction, ordinance or other legal measures preventing its neglect, adverse alteration or removal.

DRY WELL SPECIFICATIONS:

1. PRETREATMENT MEASURES SHALL BE INSTALLED TO ALLOW FILTERING OF SEDIMENT, LEAVES OR OTHER DEBRIS. THIS MAY BE DONE BY PROVIDING GUTTER SCREENS AND A REMOVABLE FILTER SCREEN INSTALLED WITHIN THE DOWNSPOUT PIPE OR OTHER LOCALLY- APPROVED METHOD. THE REMOVABLE FILTER SCREEN SHOULD BE INSTALLED BELOW THE OVERFLOW OUTLET AND EASILY REMOVED SO THAT HOMEOWNERS CAN CLEAN THE FILTER.
2. A ONE-FOOT LAYER OF CLEAN SAND SHALL BE PROVIDED IN THE BOTTOM OF THE DRY WELL TO ALLOW FOR BRIDGING BETWEEN THE EXISTING SOILS AND TRENCH GRAVEL.
3. NON-WOVEN MSHA CLASS 'C' FILTER FABRIC, SHALL BE PLACED ON ONLY THE TOP AND SIDES OF THE DRYWELLS. WHERE PIECES OF FABRIC MEET, THERE SHALL BE A MINIMUM 12" OVERLAP.
4. DISCHARGE FROM THE SURCHARGE PIPE SHALL BE DIRECTED TO AN ABOVE GROUND SPLASH PAD.
5. AN OBSERVATION WELL CONSISTING OF AN ANCHORED, 4 TO 6-INCH DIAMETER PERFORATED PIPE SHALL BE INSTALLED IN EACH DRY WELL. THE TOP OF THE OBSERVATION WELL SHALL BE AT LEAST SIX INCHES ABOVE GRADE. THE OBSERVATION WELL PIPE OUTSIDE OF THE STONE/SAND IS TO BE SOLID PVC.
6. THE BOTTOM OF THE DRY WELL SHALL BE LEVEL.
7. A MINIMUM OF ONE-FOOT OF SOIL COVER SHALL BE PROVIDED FROM THE TOP OF THE TRENCH TO THE GROUND SURFACE ELEVATION.

REQUIRED SEQUENCE OF CONSTRUCTION FOR M-6 MICRO-BIORETENTION:

1. Notify engineer prior to beginning work on micro-bioretention facility.
2. Install site sediment control. Build site and stabilize with a minimum of 2"stand of dense grass. (2 months)
3. Excavate facilities, The Contractor shall inform the engineer prior to start of construction for inspection. (1 days)
4. Install level spreader, cleanouts, discharge pipes, roof leaders and outfalls, geotextile fabric, observation well, Harco Drain Basin, 12" #57 stone, 24" planting media, mulch, plant landscaping and stabilize. (3 days)
5. Once Engineer inspects facilities they can be put online. (1 day)
6. The engineer must submit signed and sealed stormwater management as-built mylars within 30 days of completion of these facilities to the Howard County Bureau of Resource Management.

MATERIAL SPECIFICATIONS FOR DRY WELLS

MATERIAL	SPECIFICATION	SIZE	NOTES
BANK RUN GRAVEL	AASHTO-M-43	No. 57	
GEOTEXTILE FABRIC	ASTM-D-4833 (PUNCTURE STRENGTH-125 LB.) ASTM-D-4632 (TENSILE STRENGTH-300LB.)	0.08" THICK EQUIVALENT OPENING SIZE OF #80 SIEVE	CLASS 'C' OR BETTER
SAND LAYER	ASTM C-33	12" THICK LAYER	WASHED

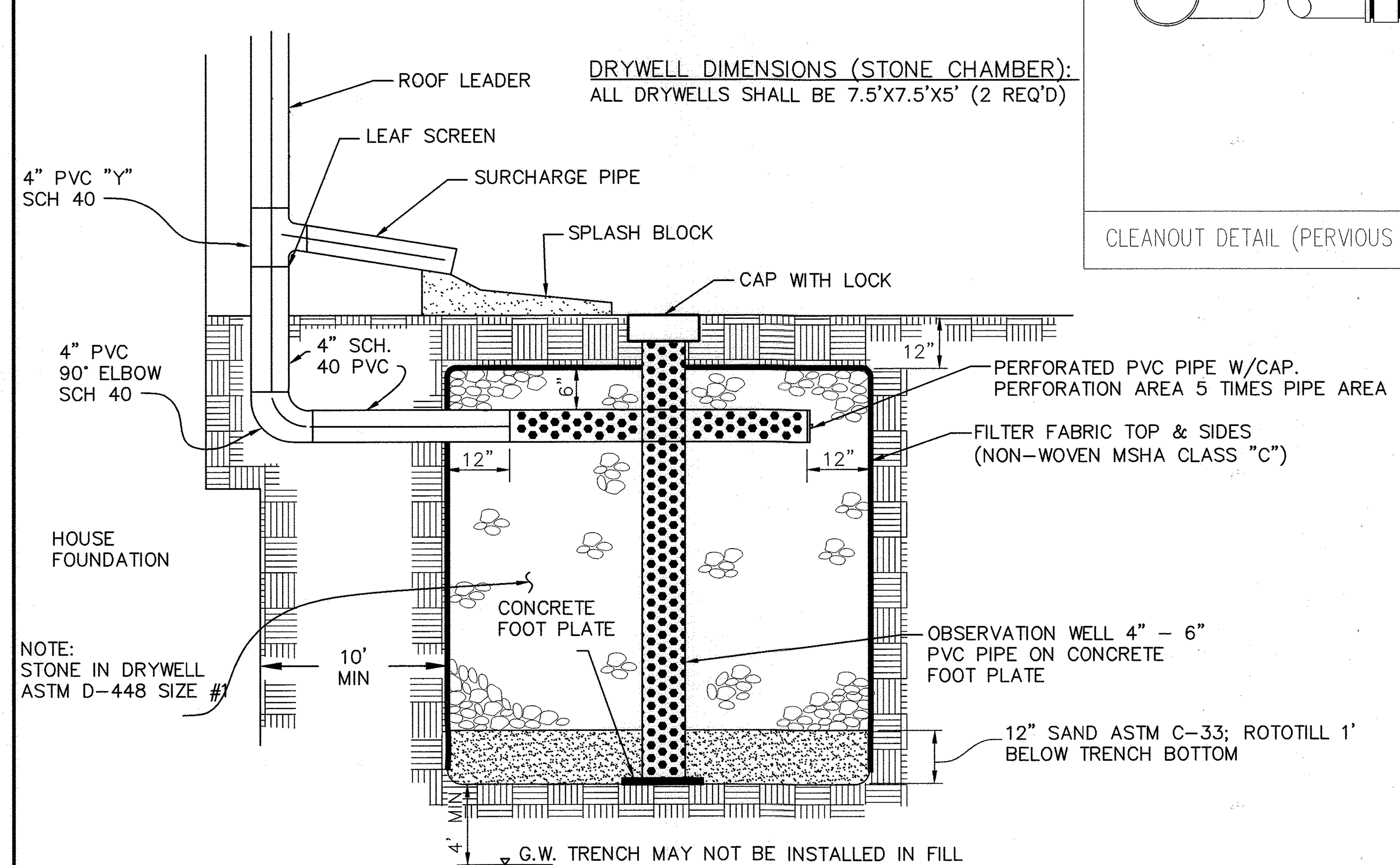
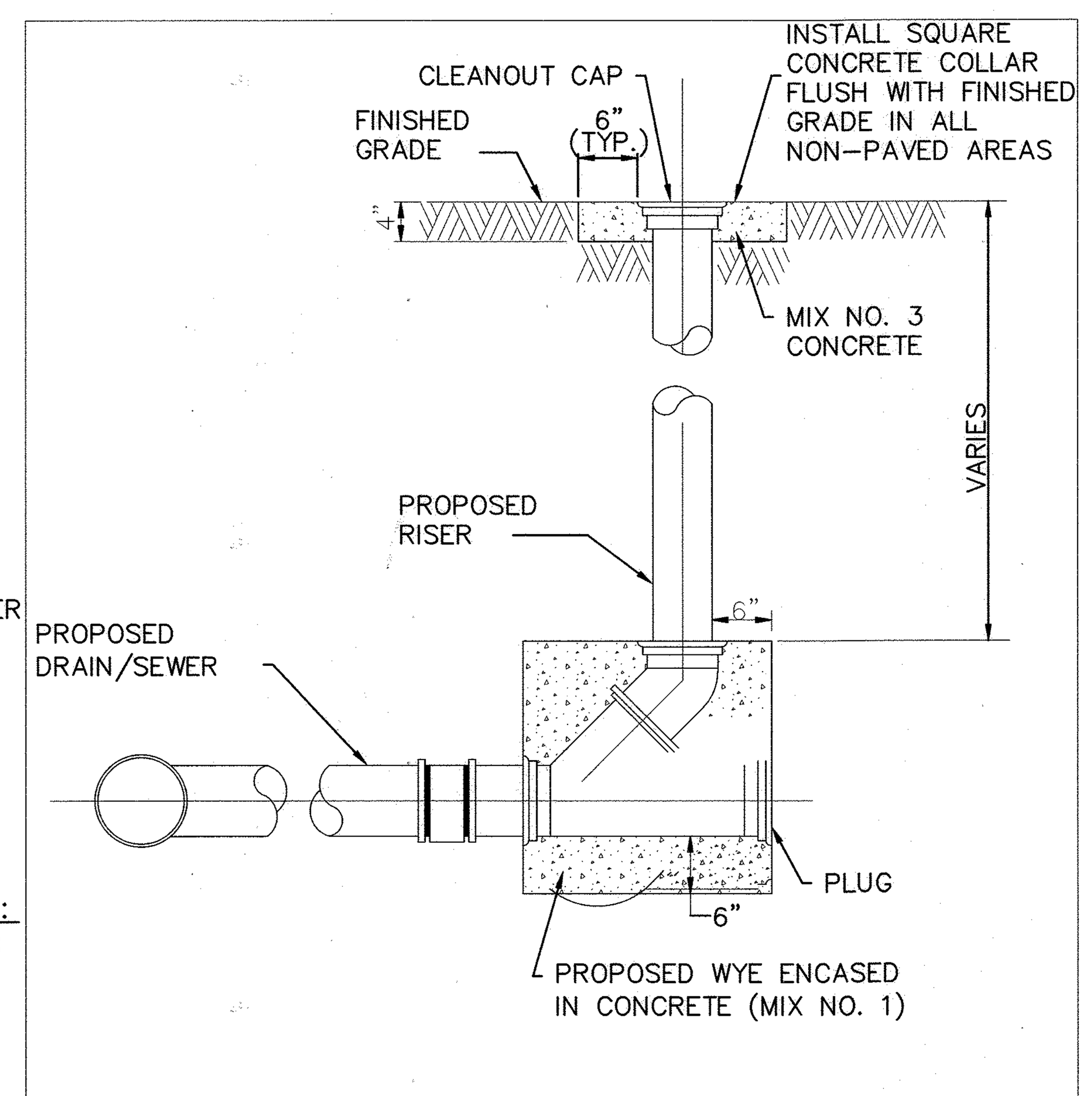


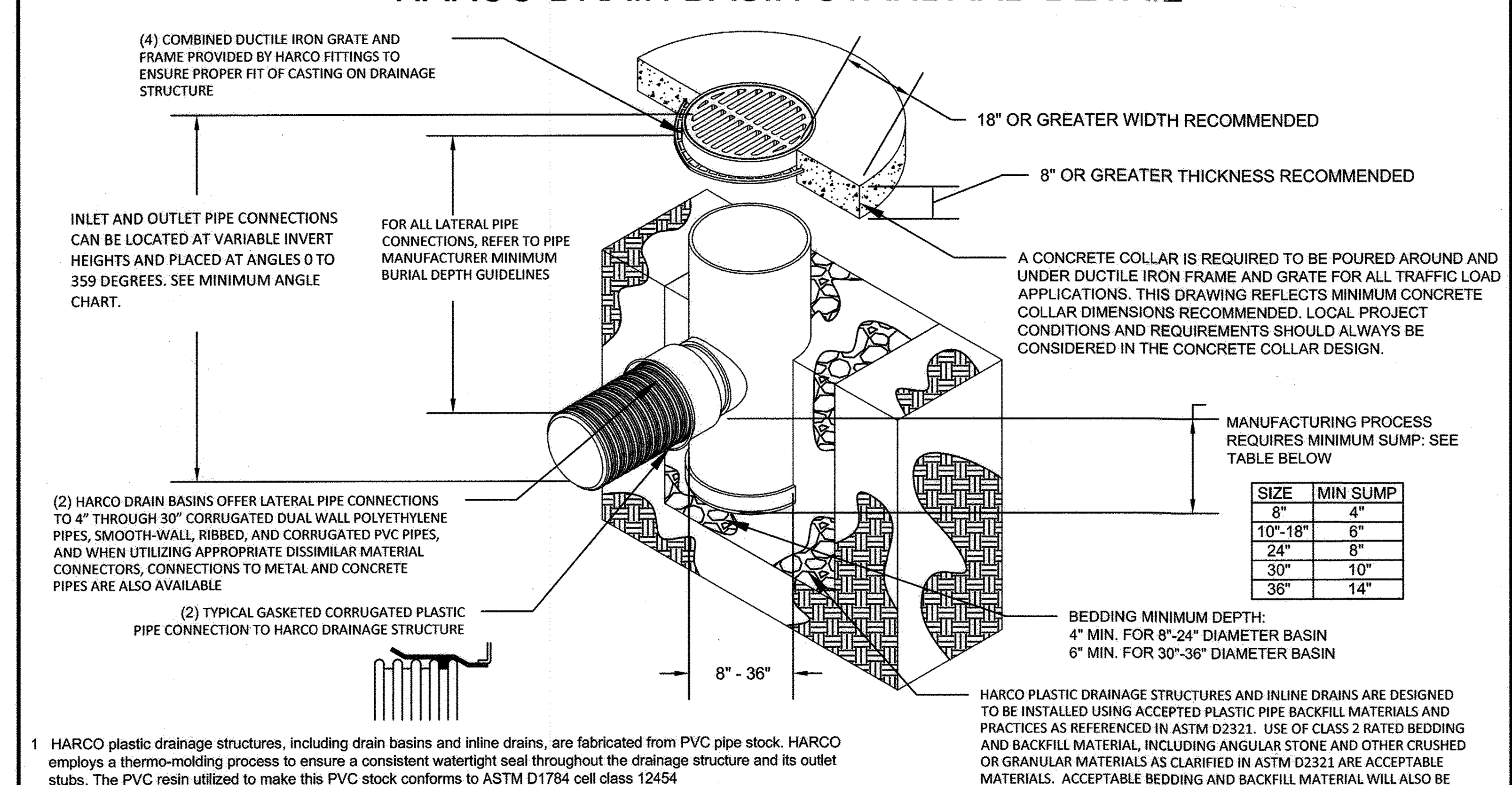
FIGURE 5.1 SCHEMATIC OF DRY WELL

NOTE: ALL DOWNSPOUTS ON THE REAR OF THE HOUSE SHALL BE MANIFOLDED AND CONVEYED TO DRYWELLS.



CLEANOUT DETAIL (PERVIOUS AREAS) SCALE: N.T.S.

HARCO DRAIN BASIN STANDARD DETAIL



SIZE	MIN SUMP
8"	4"
10"-18"	6"
24"	8"
30"	10"
36"	14"

1 HARCO plastic drainage structures, including drain basins and inline drains, are fabricated from PVC pipe stock. HARCO employs a thermo-molding process to ensure a consistent watertight seal throughout the drainage structure and its outlet stubs. The PVC resin utilized to make this PVC stock conforms to ASTM D1784 cell class 12454

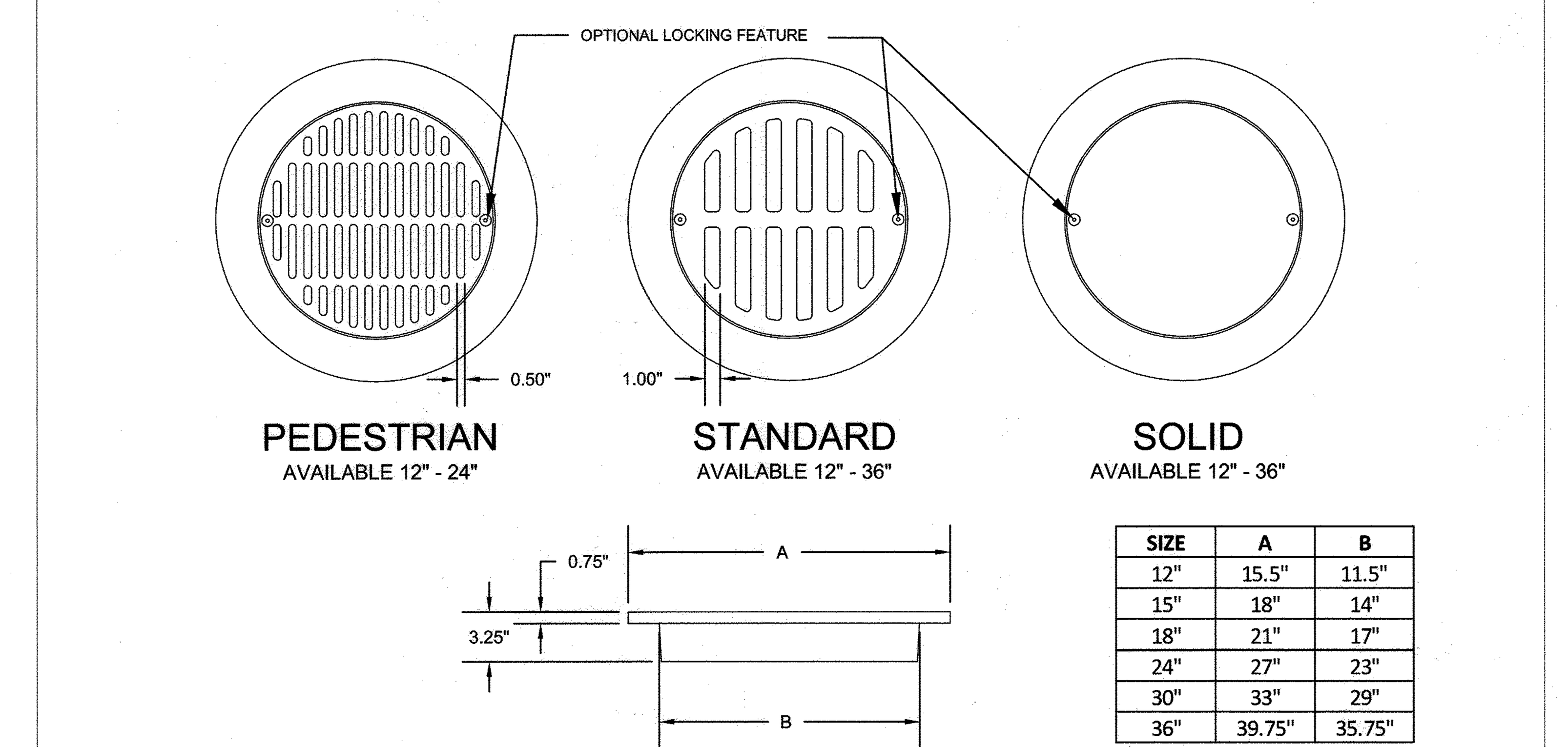
2 The outlet stubs for HARCO plastic drainage structures are also manufactured from PVC pipe stock utilizing thermo-molding process to ensure a tight pipe-to-structure fit, so that when utilizing the appropriate pipe gaskets, the pipe-to-structure connection meets or exceeds the pressure requirements of the ASTM D3212 standard for pipe connections of plastic drainage pipe and sewer pipe using flexible elastomeric seals. These pipe gaskets must meet ASTM F477 requirements.

3 Riser pipe extensions are required for drain basins taller than 84" due to shipping restrictions, and are available for convenient in-the-field drain basin height adjustments.

4 HARCO grates, covers, and frames shall be constructed of ductile iron meeting ASTM A536 Grade 80-55-06. 12" through 36" round and square hinged standard grates and solid covers meet H25 load rating. 12" through 24" round and square hinged pedestrian grates meet H10 load rating. Traffic family and Curb Inlet 2'x2' and 2'x3' grates meet H25 load rating. 8" and 10" grates and solid covers are one-piece drop-in castings designed for light duty load applications. All domed grates are not load rated.

THE HARRINGTON CORPORATION
TITLE: DRAIN BASIN STANDARD DETAIL — DWG NO: 2013-001 — REV: 001 — SCALE: N/A — DATE: 2-23-17 — DRWN BY: JBF — CHKD BY: JP

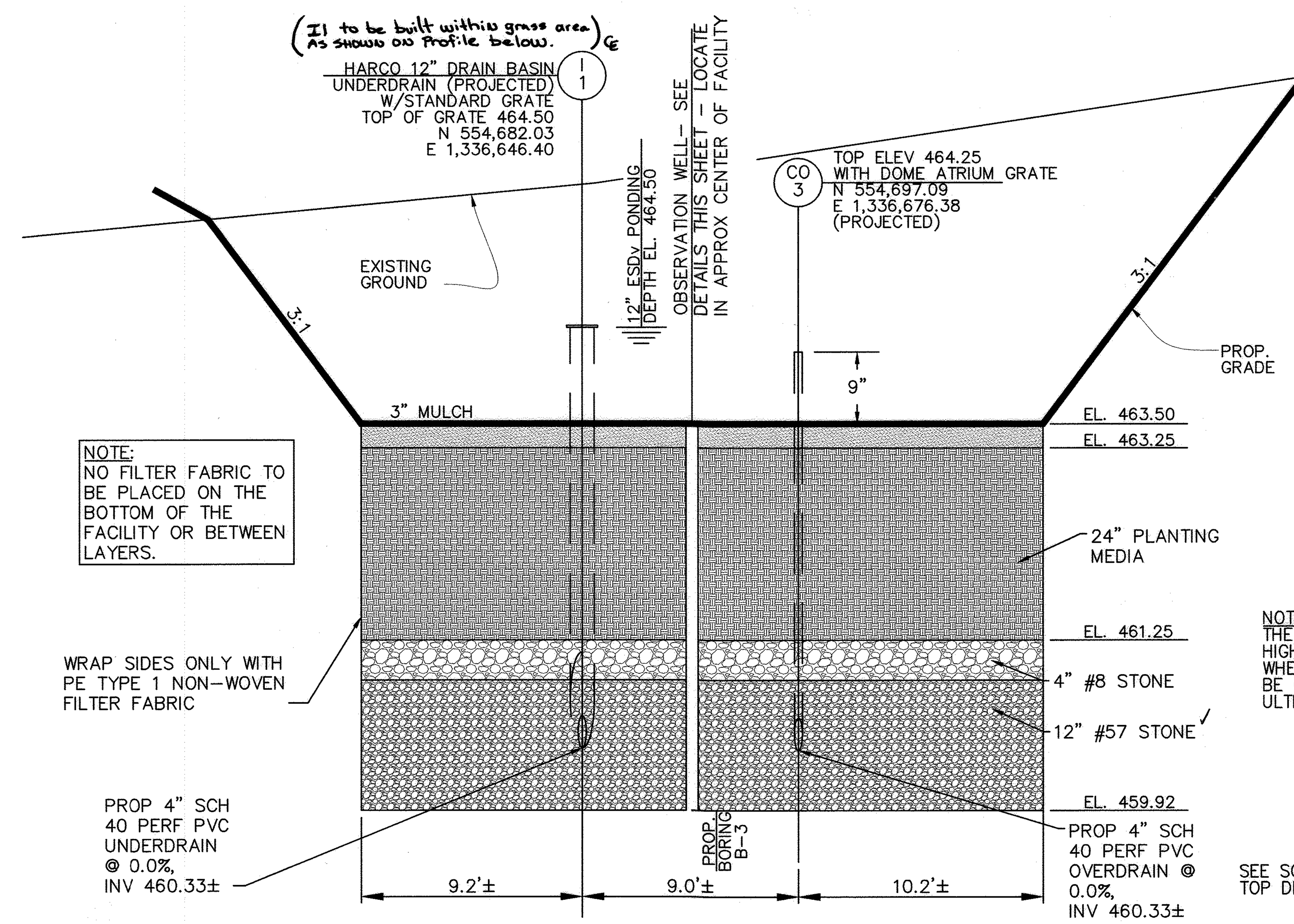
HARCO ROUND GRATE AND FRAME DETAIL



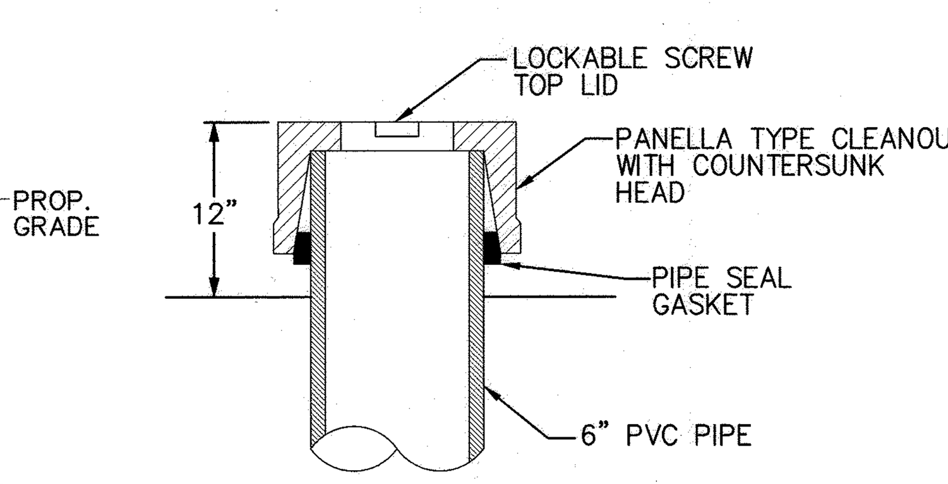
SIZE	A	B
12"	15.5"	11.5"
15"	18"	14"
18"	21"	17"
24"	27"	23"
30"	33"	29"
36"	39.75"	35.75"

STANDARD GRATE HAS H-25 HEAVY DUTY RATING
SOLID COVER HAS H-25 HEAVY DUTY RATING
PEDESTRIAN HAS H-10 MEDIUM DUTY RATING
MATERIAL: DUCTILE IRON GRATE W/ DUCTILE IRON FRAME
MATERIALS SHALL CONFORM TO ASTM A536 80-55-06
PAINT: CASTINGS ARE FURNISHED WITH BLACK PAINT
OPTIONAL LOCKING DEVICE: 3/8" X 2" FHCS - USE 7/32 ALLEN WRENCH

THE HARRINGTON CORPORATION
TITLE: 12"-36" ROUND GRATE AND FRAME DETAIL — DWG NO: 2013-002 — REV — SCALE: N/A — DATE: 2-12-13 — DRWN BY: JBF — CHKD BY: JP



MICRO-BIORETENTION SECTION A-A
SCALE: 1"=5' HORIZ.



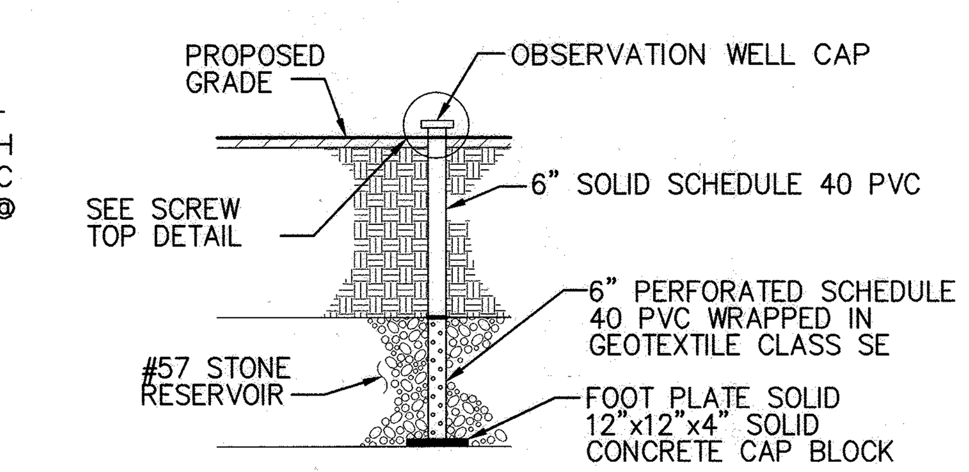
SCREW TOP CAP
NOT TO SCALE

NOTE: THE TUBE SHALL HAVE A FACTORY ATTACHED CAST IRON OR HIGH IMPACT PLASTIC COLLAR WITH RIBS TO PREVENT ROTATION WHEN REMOVING SCREW TOP LID. THE SCREW TOP LID SHALL BE CAST IRON OR HIGH IMPACT PLASTIC THAT WILL WITHSTAND ULTRA-VIOLET RAYS.

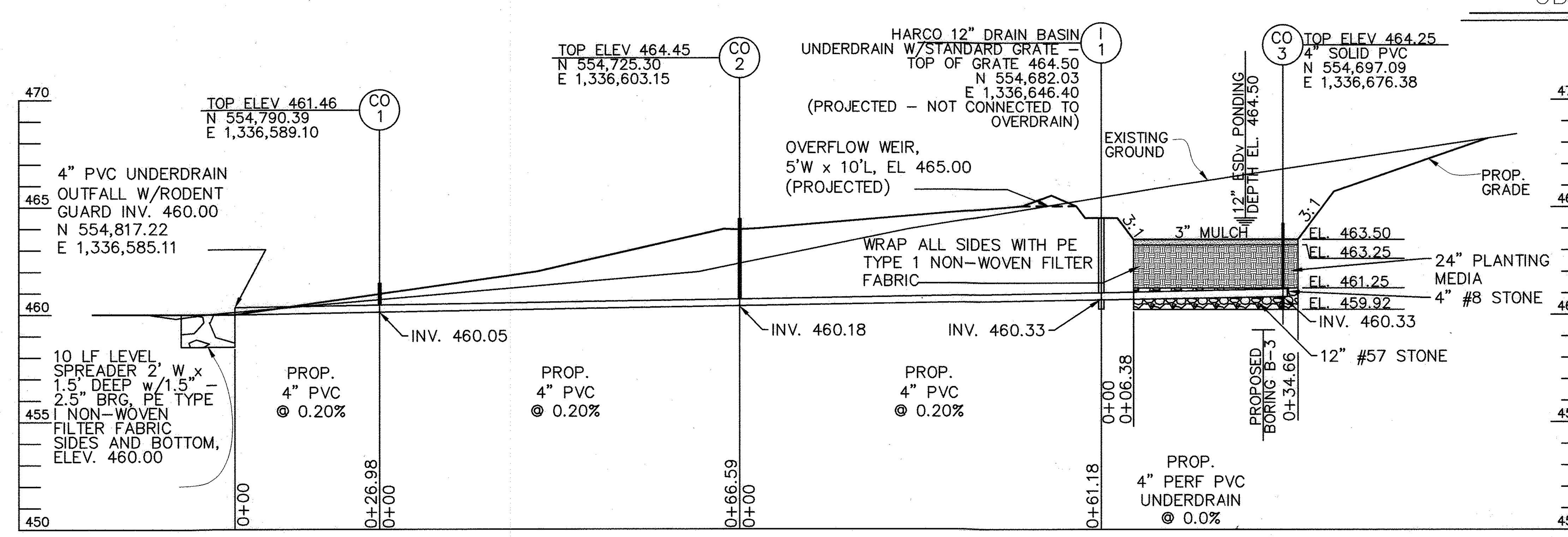
GRAPHIC SCALE
30 0 30 60 90

DATA SOURCES:

INFORMATION SHOWN HEREON IS BASED ON A BOUNDARY AND TOPOGRAPHIC SURVEY PREPARED BY DEVELOPMENT DESIGN CONSULTANTS, INC. IN APRIL 2013 AND SUPPLEMENTED WITH HOWARD COUNTY GIS.



OBSERVATION WELL DETAIL
NOT TO SCALE



MICRO-BIORETENTION FACILITY
SCALE: 1"=20' HORIZ. 1"=5' VERT.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10-7-22

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/15/22

8/30/22
DATE

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. 28993, Expiration Date 1/12/24

KCI TECHNOLOGIES
ENGINEERS
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936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818

WILLOW NOOK
FINAL PLAN LOTS 1 & 2

STORMWATER MANAGEMENT PROFILES, NOTES & DETAILS

ELECTION DISTRICT: 5 — HOWARD COUNTY, MARYLAND

REVISIONS

NO.	DESCRIPTION OF CHANGES	DRN.	REV.	DATE

CO. FILE #:	DES. BY: CTS
TAX ACC. #: 05366461	DRN. BY: CTS
TAX MAP: 35	CHK. BY: BCC
BLOCK / GRID: 21	DATE: 2/13/19
PARCEL #: 0222	KCI JOB#: 271802313
ZONE / USE: R-20	SHEET NUMBER:
DWG. SCALE: AS SHOWN	4 of 09

F# 18-118

DRAWING LEGEND

- 682 — EXISTING MINOR CONTOUR (2' INTERVAL)
- 680 — EXISTING MAJOR CONTOUR (10' INTERVAL)
- ADJACENT PROPERTY LINE
- N 06°45'45"W 120.00' — EXISTING PROPERTY BOUNDARY
- EX. ROAD/EDGE OF PAVING
- EX. 8" S. — EX. SEWER LINE & MANHOLES, CLEAN-OUTS
- EX. 12" W. — EX. WATER LINE & MANHOLES, CLEAN-OUTS
- EX. OVERHEAD ELECTRIC & UTILITY POLES
- 682 — PROPOSED MINOR CONTOUR (2' INTERVAL)
- 680 — PROPOSED MAJOR CONTOUR (10' INTERVAL)
- EX. BUILDING
- PROPOSED BUILDING EXPANSION
- + 665.5 — PROPOSED SPOT ELEVATION & FLOW ARROW
- EXISTING TREELINE
- MnF NcA — SOIL DELINEATION LINE
- 4" SHC — PROPOSED SEWER HOUSE CONNECTION
- 1½" WHC — PROPOSED WATER HOUSE CONNECTION
- STEEP SLOPES 15%-25% (0.27± AC.)
- STEEP SLOPED 25%+ (0.04± AC.)
- EXISTING TREES
- EXISTING SPECIMEN TREE
- SPECIMEN TREE CRITICAL ROOT ZONE
- PROPOSED ORNAMENTAL TREE
- PROPOSED SHADE TREE
- PROPOSED EVERGREEN TREE
- B-1 — PROPOSED BORING LOCATIONS

PLAN VIEW
SCALE: 1"=30'

ESD FACILITY LEGEND

- PROPOSED M-5 DRY WELLS
- PROPOSED M-6 MICRO-BIORETENTION

SOILS CHART			
CODE (CLASS)	NAME	HYDRIC (Y/N/INCL.)	K VALUE
GgB (B)	Glenelg Loam - 3 to 8 Percent Slopes	N	0.24

GRAPHIC SCALE
30 0 30 60 90

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.2.22

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/1/22

8/30/22
DATE

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. 22225, Expiration Date: 1/4/23

STATE OF MARYLAND — MATTHEW SHENK SISCHO — No. 22225 — PROFESSIONAL ENGINEER — 8/30/22

DATA SOURCES:

INFORMATION SHOWN HEREON IS BASED ON A BOUNDARY AND TOPOGRAPHIC SURVEY PREPARED BY DEVELOPMENT DESIGN CONSULTANTS, INC. IN APRIL 2013 AND SUPPLEMENTED WITH HOWARD COUNTY GIS.

KCI TECHNOLOGIES
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CONSTRUCTION MANAGERS
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SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818

WILLOW NOOK
FINAL PLAN LOTS 1 & 2

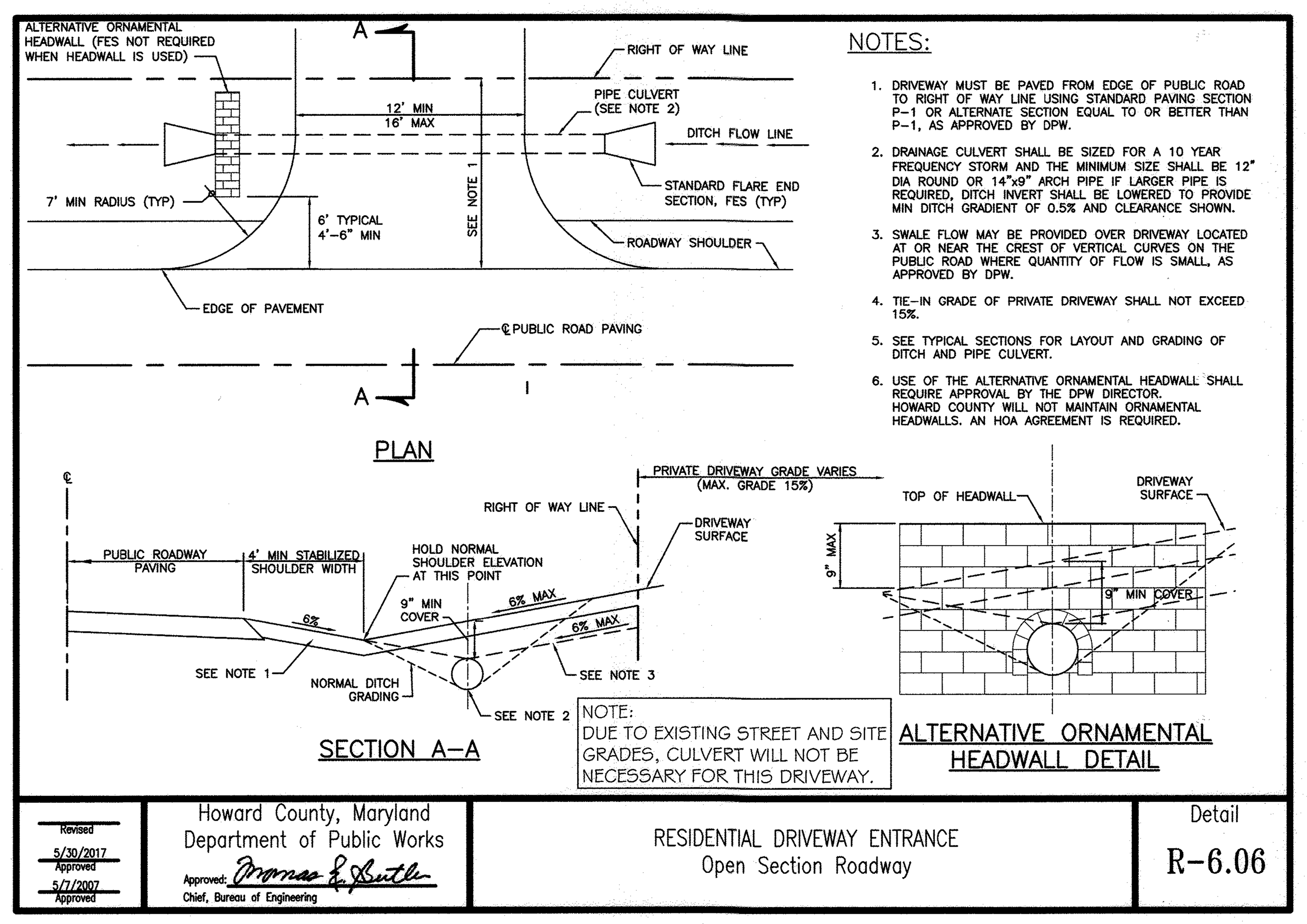
SOILS & SWM BORING PLAN

ELECTION DISTRICT: 5 HOWARD COUNTY, MARYLAND

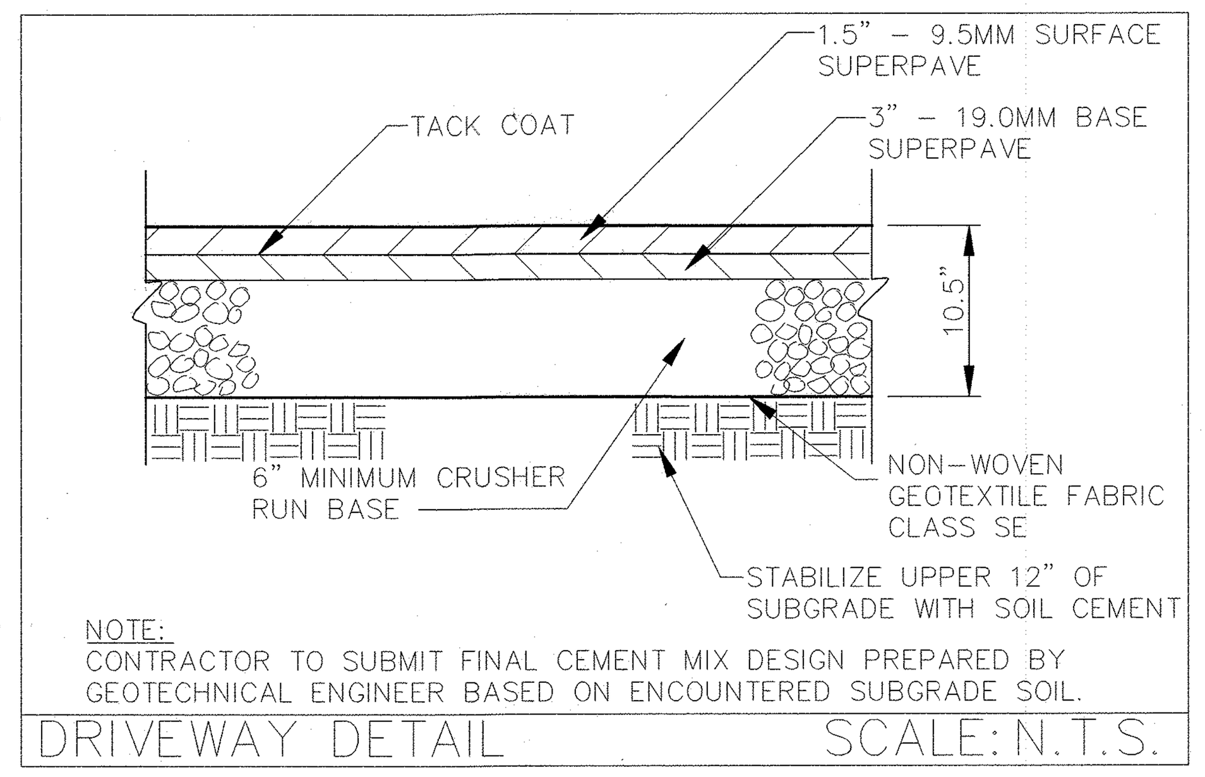
REVISIONS				
NO.	DESCRIPTION OF CHANGES	DRN.	REV.	DATE

CO. FILE #:	DES. BY: CTS
TAX ACC. #: 05366461	DRN. BY: CTS
TAX MAP: 35	CHK. BY: BCC
BLOCK / GRID: 21	DATE: 2/13/19
PARCEL #: 0222	KCI JOB#: 271802313
ZONE / USE: R-20	SHEET NUMBER: 5 of 09
DWG. SCALE: 1"=30'	

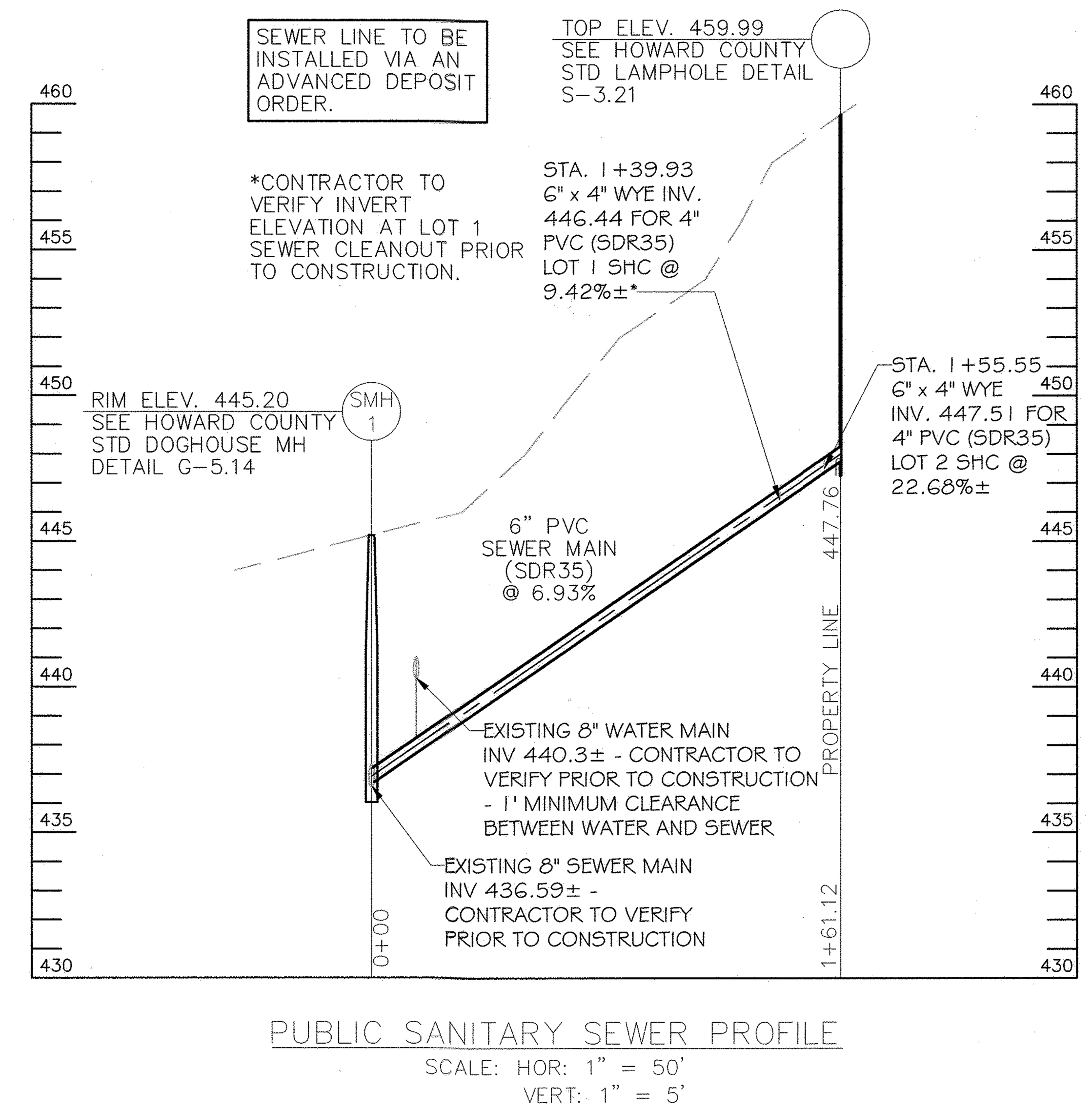
F# 18-118



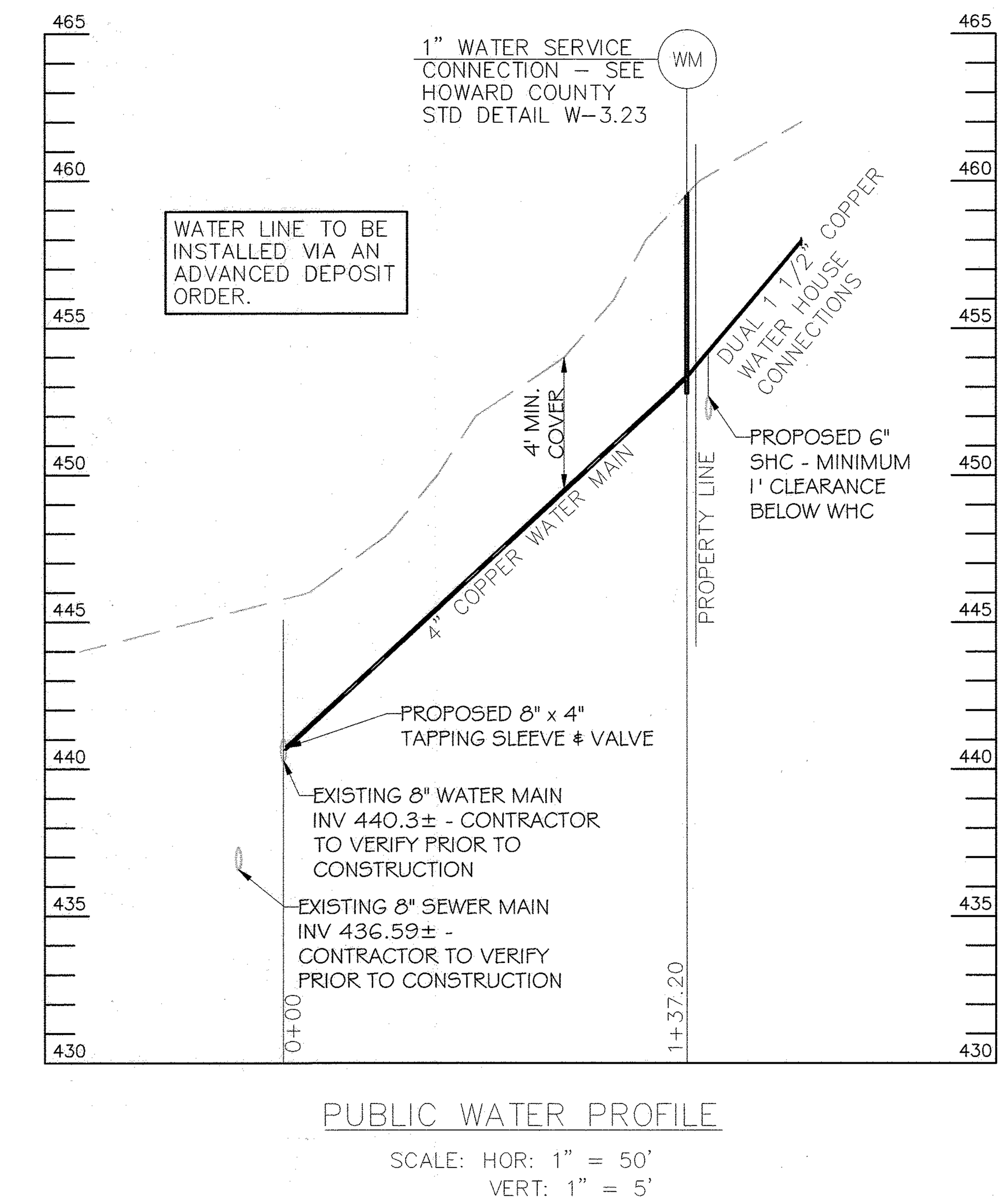
ALTERNATIVE ORNAMENTAL HEADWALL (FES NOT REQUIRED WHEN HEADWALL IS USED)
RIGHT OF WAY LINE
PIPE CULVERT (SEE NOTE 2)
DITCH FLOW LINE
STANDARD FLARE END SECTION, FES (TYP)
ROADWAY SHOULDER
7' MIN RADIUS (TYP)
12' MIN 16' MAX
6' TYPICAL 4'-6' MIN
SEE NOTE 1
EDGE OF PAVEMENT
PUBLIC ROAD PAVING
PLAN
NOTES:
1. DRIVEWAY MUST BE PAVED FROM EDGE OF PUBLIC ROAD TO RIGHT OF WAY LINE USING STANDARD PAVING SECTION P-1 OR ALTERNATE SECTION EQUAL TO OR BETTER THAN P-1, AS APPROVED BY DPW.
2. DRAINAGE CULVERT SHALL BE SIZED FOR A 10 YEAR FREQUENCY STORM AND THE MINIMUM SIZE SHALL BE 12" DIA ROUND OR 14"x9" ARCH PIPE. IF LARGER PIPE IS REQUIRED, DITCH INVERT SHALL BE LOWERED TO PROVIDE MIN DITCH GRADIENT OF 0.5% AND CLEARANCE SHOWN.
3. SWALE FLOW MAY BE PROVIDED OVER DRIVEWAY LOCATED AT OR NEAR THE CREST OF VERTICAL CURVES ON THE PUBLIC ROAD WHERE QUANTITY OF FLOW IS SMALL, AS APPROVED BY DPW.
4. TIE-IN GRADE OF PRIVATE DRIVEWAY SHALL NOT EXCEED 15%.
5. SEE TYPICAL SECTIONS FOR LAYOUT AND GRADING OF DITCH AND PIPE CULVERT.
6. USE OF THE ALTERNATIVE ORNAMENTAL HEADWALL SHALL REQUIRE APPROVAL BY THE DPW DIRECTOR. HOWARD COUNTY WILL NOT MAINTAIN ORNAMENTAL HEADWALLS. AN HOA AGREEMENT IS REQUIRED.
PRIVATE DRIVEWAY GRADE VARIES (MAX. GRADE 15%)
RIGHT OF WAY LINE
PUBLIC ROADWAY PAVING
4' MIN STABILIZED SHOULDER WIDTH
HOLD NORMAL SHOULDER ELEVATION AT THIS POINT
DRIVEWAY SURFACE
9" MIN COVER
SEE NOTE 1
NORMAL DITCH GRADING
SEE NOTE 2
SEE NOTE 3
TOP OF HEADWALL
9" MAX
9" MIN COVER
SECTION A-A
NOTE:
DUE TO EXISTING STREET AND SITE GRADES, CULVERT WILL NOT BE NECESSARY FOR THIS DRIVEWAY.
ALTERNATIVE ORNAMENTAL HEADWALL DETAIL
Revised 5/30/2017
Approved 5/7/2007
Howard County, Maryland
Department of Public Works
Chief, Bureau of Engineering
RESIDENTIAL DRIVEWAY ENTRANCE
Open Section Roadway
Detail
R-6.06



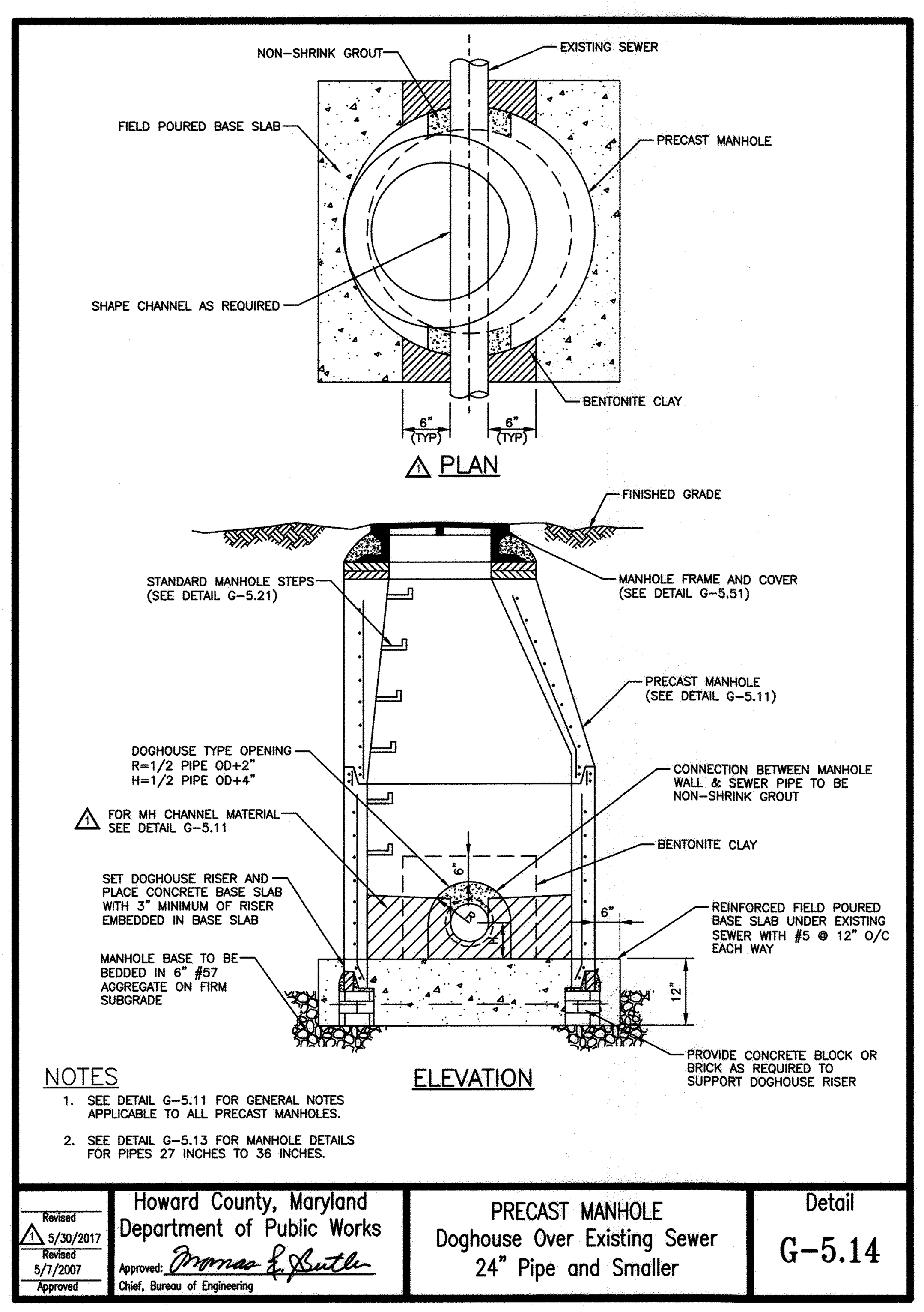
1.5" – 9.5MM SURFACE SUPERPAVE
TACK COAT
3" – 19.0MM BASE SUPERPAVE
10.5"
6" MINIMUM CRUSHER RUN BASE
NON-WOVEN GEOTEXTILE FABRIC CLASS SE
STABILIZE UPPER 12" OF SUBGRADE WITH SOIL CEMENT
NOTE:
CONTRACTOR TO SUBMIT FINAL CEMENT MIX DESIGN PREPARED BY GEOTECHNICAL ENGINEER BASED ON ENCOUNTERED SUBGRADE SOIL.
DRIVEWAY DETAIL
SCALE: N.T.S.



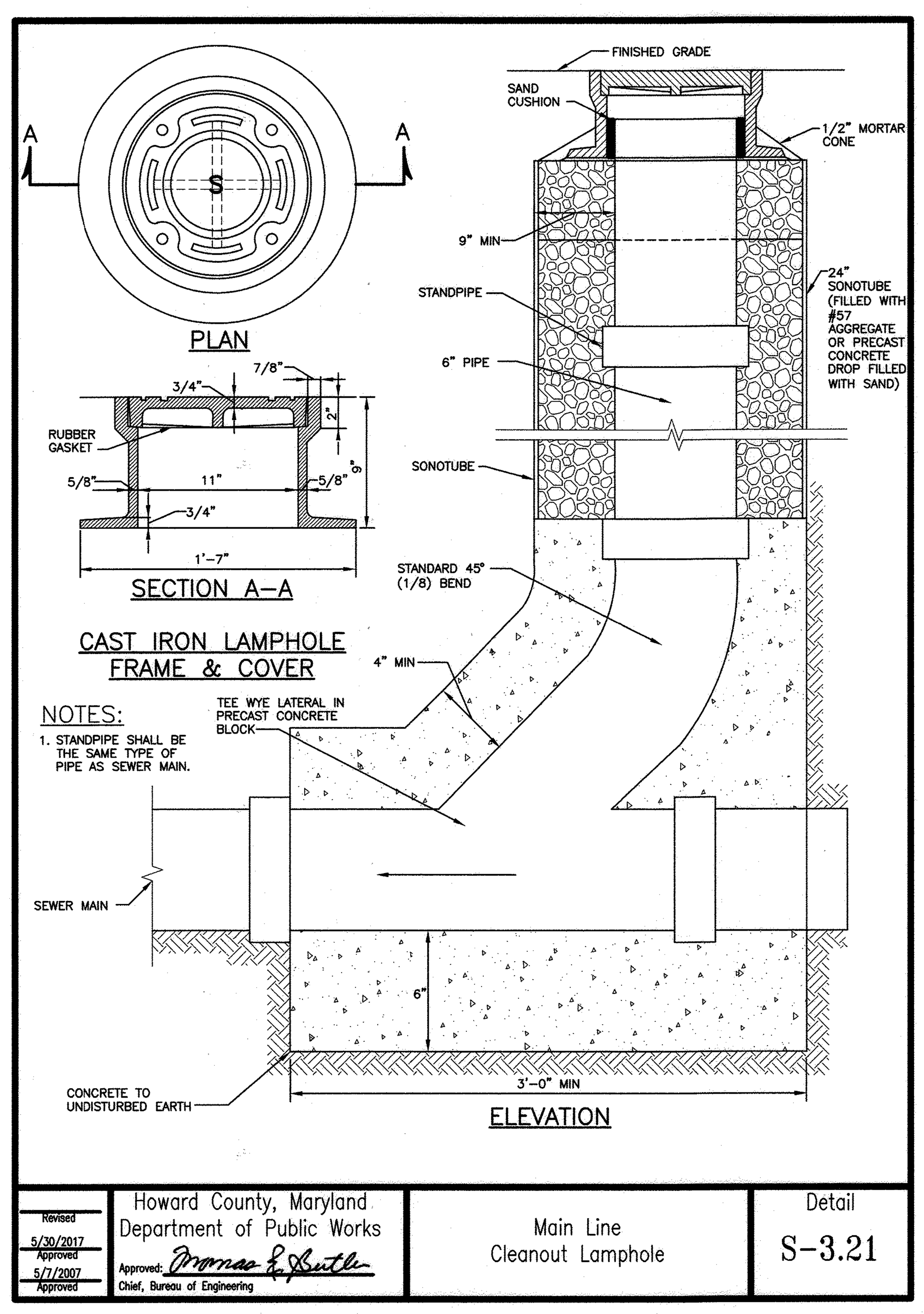
SEWER LINE TO BE INSTALLED VIA AN ADVANCED DEPOSIT ORDER.
TOP ELEV. 459.99
SEE HOWARD COUNTY STD LAMPHOLE DETAIL S-3.21
*CONTRACTOR TO VERIFY INVERT ELEVATION AT LOT 1 SEWER CLEANOUT PRIOR TO CONSTRUCTION.
STA. 1+39.93
6" x 4" WYE INV. 446.44 FOR 4" PVC (SDR35) LOT 1 SHC @ 9.42%±*
RIM ELEV. 445.20
SEE HOWARD COUNTY STD DOGHOUSE MH DETAIL G-5.14
SMH 1
STA. 1+55.55
6" x 4" WYE
INV. 447.51 FOR 4" PVC (SDR35) LOT 2 SHC @ 22.68%±
6" PVC SEWER MAIN (SDR35) @ 6.93%
447.76
PROPERTY LINE
EXISTING 8" WATER MAIN
INV 440.3± - CONTRACTOR TO VERIFY PRIOR TO CONSTRUCTION - 1' MINIMUM CLEARANCE BETWEEN WATER AND SEWER
EXISTING 8" SEWER MAIN
INV 436.59± - CONTRACTOR TO VERIFY PRIOR TO CONSTRUCTION
0+00
1+61.12
460
455
450
445
440
435
430
PUBLIC SANITARY SEWER PROFILE
SCALE: HOR: 1" = 50'
VERT: 1" = 5'



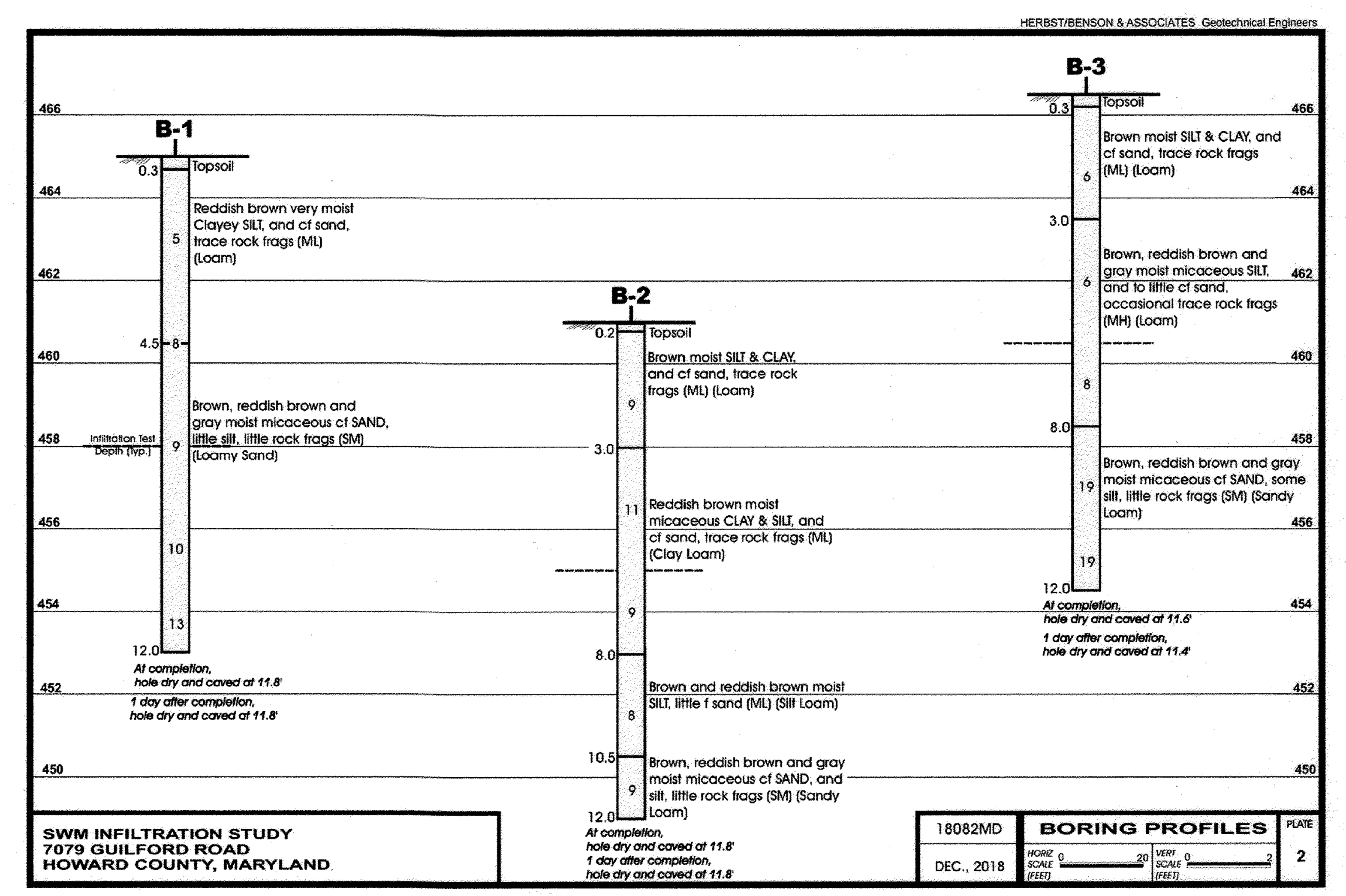
1" WATER SERVICE CONNECTION – SEE HOWARD COUNTY STD DETAIL W-3.23
WM
WATER LINE TO BE INSTALLED VIA AN ADVANCED DEPOSIT ORDER.
DUAL 1 1/2" COPPER WATER HOUSE CONNECTIONS
4' MIN. COVER
4" COPPER WATER MAIN
PROPERTY LINE
PROPOSED 6" SHC - MINIMUM 1' CLEARANCE BELOW WHC
PROPOSED 8" x 4" TAPPING SLEEVE & VALVE
EXISTING 8" WATER MAIN
INV 440.3± - CONTRACTOR TO VERIFY PRIOR TO CONSTRUCTION
EXISTING 8" SEWER MAIN
INV 436.59± - CONTRACTOR TO VERIFY PRIOR TO CONSTRUCTION
0+00
1+37.20
465
460
455
450
445
440
435
430
PUBLIC WATER PROFILE
SCALE: HOR: 1" = 50'
VERT: 1" = 5'



NON-SHRINK GROUT
EXISTING SEWER
FIELD POURED BASE SLAB
PRECAST MANHOLE
SHAPE CHANNEL AS REQUIRED
BENTONITE CLAY
6" (TYP)
6" (TYP)
PLAN
FINISHED GRADE
STANDARD MANHOLE STEPS (SEE DETAIL G-5.21)
MANHOLE FRAME AND COVER (SEE DETAIL G-5.51)
PRECAST MANHOLE (SEE DETAIL G-5.11)
DOGHOUSE TYPE OPENING R=1/2 PIPE OD+2" H=1/2 PIPE OD+4"
CONNECTION BETWEEN MANHOLE WALL & SEWER PIPE TO BE NON-SHRINK GROUT
FOR MH CHANNEL MATERIAL SEE DETAIL G-5.11
BENTONITE CLAY
SET DOGHOUSE RISER AND PLACE CONCRETE BASE SLAB WITH 3" MINIMUM OF RISER EMBEDDED IN BASE SLAB
REINFORCED FIELD POURED BASE SLAB UNDER EXISTING SEWER WITH #5 @ 12" O/C EACH WAY
MANHOLE BASE TO BE BEDDED IN 6" #57 AGGREGATE ON FIRM SUBGRADE
PROVIDE CONCRETE BLOCK OR BRICK AS REQUIRED TO SUPPORT DOGHOUSE RISER
NOTES
1. SEE DETAIL G-5.11 FOR GENERAL NOTES APPLICABLE TO ALL PRECAST MANHOLES.
2. SEE DETAIL G-5.13 FOR MANHOLE DETAILS FOR PIPES 27 INCHES TO 36 INCHES.
ELEVATION
Revised 5/30/2017
Approved 5/7/2007
Howard County, Maryland
Department of Public Works
Chief, Bureau of Engineering
PRECAST MANHOLE
Doghouse Over Existing Sewer 24" Pipe and Smaller
Detail
G-5.14



PLAN
RUBBER GASKET
SECTION A-A
CAST IRON LAMPHOLE FRAME & COVER
NOTES:
1. STANDPIPE SHALL BE THE SAME TYPE OF PIPE AS SEWER MAIN.
FINISHED GRADE
SAND CUSHION
1/2" MORTAR CONE
9" MIN
STANDPIPE
24" SONOTUBE (FILLED WITH #57 AGGREGATE OR PRECAST CONCRETE DROP FILLED WITH SAND)
6" PIPE
SONOTUBE
STANDARD 45° (1/8) BEND
4" MIN
TEE WYE LATERAL IN PRECAST CONCRETE BLOCK
SEWER MAIN
CONCRETE TO UNDISTURBED EARTH
3'-0" MIN
ELEVATION
Revised 5/30/2017
Approved 5/7/2007
Howard County, Maryland
Department of Public Works
Chief, Bureau of Engineering
Main Line
Cleanout Lamphole
Detail
S-3.21



HERBST/BENSON & ASSOCIATES Geotechnical Engineers
B-1
B-2
B-3
Topsoil
Reddish brown very moist Clayey SILT, and cf sand, trace rock frags (ML) (Loam)
Brown, reddish brown and gray moist micaceous cf SAND, little silt, little rock frags (SM) (Loamy Sand)
At completion, hole dry and caved at 11.8'
1 day after completion, hole dry and caved at 11.8'
Brown moist SILT & CLAY, and cf sand, trace rock frags (ML) (Loam)
Reddish brown moist micaceous CLAY & SILT, and cf sand, trace rock frags (ML) (Clay Loam)
Brown and reddish brown moist SILT, little f sand (ML) (Silt Loam)
Brown, reddish brown and gray moist micaceous cf SAND, and silt, little rock frags (SM) (Sandy Loam)
Brown moist SILT & CLAY, and cf sand, trace rock frags (ML) (Loam)
Brown, reddish brown and gray moist micaceous SILT, and a little cf sand, occasional trace rock frags (MH) (Loam)
Brown, reddish brown and gray moist micaceous cf SAND, some silt, little rock frags (SM) (Sandy Loam)
At completion, hole dry and caved at 11.4'
1 day after completion, hole dry and caved at 11.4'
SWM INFILTRATION STUDY
7079 GUILFORD ROAD
HOWARD COUNTY, MARYLAND
18082MD
DEC., 2018
BORING PROFILES
PLATE 2

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — 9·20·22 — Date

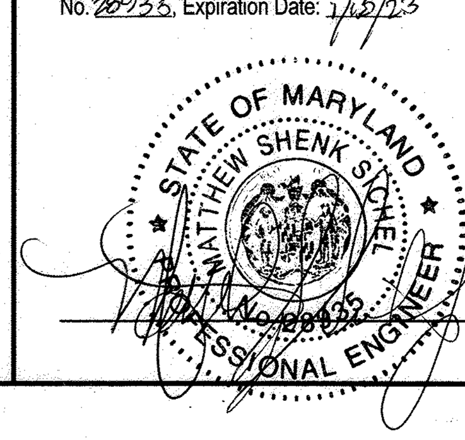
~~Director~~

Chief, Division of Land Development — 12/15/22 — Date

8/30/22

DATE

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. 28735, Expiration Date: 1/15/23



ENGINEERS
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KCI TECHNOLOGIES

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SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818

WILLOW NOOK
FINAL PLAN LOTS 1 & 2

MISCELLANEOUS DETAILS AND UTILITY PROFILES

ELECTION DISTRICT: 5 HOWARD COUNTY, MARYLAND

REVISIONS

NO.	DESCRIPTION OF CHANGES	DRN.	REV.	DATE

CO. FILE #:	DES. BY: CTS
TAX ACC. #: 05366461	DRN. BY: CTS
TAX MAP: 35	CHK. BY: BCC
BLOCK / GRID: 21	DATE: 2/13/19
PARCEL #: 0222	KCI JOB#: 271802313
ZONE / USE: R-20	SHEET NUMBER: 6 of 09
DWG. SCALE: AS SHOWN	

F# 18-118

SCHEDULE A – PERIMETER LANDSCAPE EDGE				
CATEGORY	ADJACENT TO ROADWAYS	ADJACENT TO PERIMETER PROPERTIES		
	P–1	P–2	P–3	P–4
LINEAR FEET OF PERIMETER	227 L.F.	270 L.F.	210 L.F.	184 L.F.
LANDSCAPE TYPE	None	A	A	A
CREDIT FOR EXISTING VEGETATION (DESCRIBE BELOW IF NEEDED)	N/A	2 SHADE	1 SHADE	1 SHADE
CREDITS FOR BERM (DESCRIPTION BELOW IF NEEDED)	N/A	N/A	N/A	N/A
NUMBER OF PLANTS REQUIRED – SHADE TREES – EVERGREEN TREES – SHRUBS	0 0 0	(1:60')5 0 0	(1:60')4 0 0	(1:60')3 0 0
NUMBER OF PLANTS PROVIDED – SHADE TREES – EVERGREEN TREES – OTHER TREES (2:1 SUBSTITUTION) – SHRUBS (DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)	0 0 0 0 0	3 0 0 0 0	3 0 0 0 0	2 0 0 0 0

NOTE:
P–1 SINGLE FAMILY DETACHED FRONTING ON A PUBLIC RIGHT–OF–WAY DOES NOT REQUIRE PERIMETER PLANTINGS.
P–2 TAKES PARTIAL CREDIT FOR TWO (2) SHADE TREES (SPT–3 AND 4)
P–3 TAKES PARTIAL CREDIT FOR ONE (1) SHADE TREE (SPT–7) ON RIGHT SIDE OF EXISTING ALUMINUM SHED.
P–4 TAKES PARTIAL CREDIT FOR ONE (1) EXISTING SHADE TREE (SPT–1) ON RIGHT SIDE OF EXISTING DRIVEWAY.

4 ADDITIONAL SHADE TREES HAVE BEEN PROVIDED TO OFFSET THE REMOVAL OF THE TWO SPECIMEN TREES (2:1)

ANY TREES THAT HAVE BEEN TAKEN FOR CREDIT MUST BE REPLACED IF THEY PERISH AT ANY TIME IN THE FUTURE.

PLANT LIST

QTY	SYM	BOTANICAL NAME/ COMMON NAME	SIZE	REMARKS
SHADE TREES				
4	AS	ACER SACCHARUM 'GREEN MOUNTAIN' GREEN MOUNTAIN SUGAR MAPLE	2 1/2" – 3" CAL. 12' – 14' HT.	B & B
4	QC	QUERCUS COCCINEA SCARLET OAK	2 1/2" – 3" CAL. 12' – 14' HT.	B & B
4	QP	QUERCUS PHELLOS WILLOW OAK	2 1/2" – 3" CAL. 12' – 14' HT.	B & B

General Planting Notes

1. All plant material (nursery stock) to conform to American Nursery & Landscape Association's (A.N.L.A.) latest edition of "American Standard for Nursery Stock" (ANSI Z60.1), particularly with regard to size, growth, size of ball, and density of branch structure.
2. The Contractor is to follow specification guidelines for Baltimore & Washington Metropolitan Area as approved by the L.C.A. of Maryland, Washington D.C., & Virginia and described in the latest edition of "Landscape Specification Guidelines."
3. No substitutions are to be made without the consent of the Landscape Architect and/or the Owner.
4. All tree and shrub planting beds are to be topped with three inches of hardwood mulch. No mulch shall be placed against trunks and/or stems. All groundcovers and seedlings should be mulched to a depth of one to two inches.
5. Contractor shall notify Miss Utility at 1 (800) 257–7777, at least 72 hours prior to construction and verify the location of all utilities with the Owner before planting.
6. Landscape Architect/Owner shall select, verify, and/or approve all plant material. At the Owner's discretion, specimen and other plant material may be selected.
7. The Landscape Contractor shall coordinate with the general, lighting, & irrigation contractors regarding timing and installation of plant material. At the time of final inspection with acceptance, all electric, water & drainage utilities, as well as plant material, shall remain undamaged. Likewise, the Landscape Contractor and utilities contractors shall coordinate efforts to ensure that surface utilities are at the proper elevation relative to final grades.
8. The owner, tenant, and/or their agents shall be responsible for maintenance of the required landscaping, including both plant materials and berms, fences and walls. All plant materials shall be maintained in good growing condition, and when necessary, replaced with new materials to ensure continued compliance with applicable regulations. All other required landscaping shall be permanently maintained in good condition, and when necessary, repaired or replaced.
9. This plan has been prepared in accordance with the provisions of Section 16.124 of the Ho. Co. Code. Financial surety for the required landscaping in the amount of $3,600.00 will be deferred until the Site Development Plan Phase (12 shade trees).
10. At the time of plant installation, all shrubs and other plantings herewith listed and approved for this site, shall be of the proper height requirements in accordance with the Howard County Landscaping Manual. In addition, no substitutions or relocation of required plantings may be made without prior review and approval from the Department of Planning & 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 certificates.
11. Provision of landscaping will be deferred to the Site Development Plan stage because physical improvements to the property (i.e. vegetative clearing and grading) will not be required until the SDP stage.
13. A Forest Stand Delineation was completed by DDC, Inc. on December 17, 2013.
14. An Alternative Compliance Application, WP–19–043, was approved on January 4, 2019, for section 16.1205(a)(7) Forest Retention Priorities and section 16.135 Street Lighting. Approval is subject to the following conditions:
1. Mitigate at 2:1 the removal of 2 specimen trees. The 4 replacement trees shall be native shade trees of 2.5" caliper and planted in addition to any landscape requirements for development of the site.
2. Indicate this alternative compliance number (WP–19–043), on the cover sheet of all current and future plan submittals; include section numbers, conditions of approval and date of decision. This includes 1–18–118.
3. Include a reference to WP–19–043 on any related landscape plans and indicate which trees are used to satisfy the conditions of approval.
15. Developer/Builder's Certificate

I/We certify that the landscaping shown on this plan will be done according to the plan, Section 16.124 of the Howard County Code and the Howard County Landscape Manual. I/We further certify that, upon completion, a letter of landscape installation, accompanied by an executed one–year guarantee of the plant materials, will be submitted to the Department of Planning and Zoning.

NAME _____ DATE 10/27/22

Tree Protection Note:

No equipment, machinery, vehicle, materials or excessive pedestrian traffic will be allowed in the Tree Protection Fence Area. Therefore, no openings through the fence will be allowed. Entrance to the protected area will occur only if necessary for repair of accidental injury to the tree. This protective tree device will remain in place and will be maintained throughout the life of the construction project.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

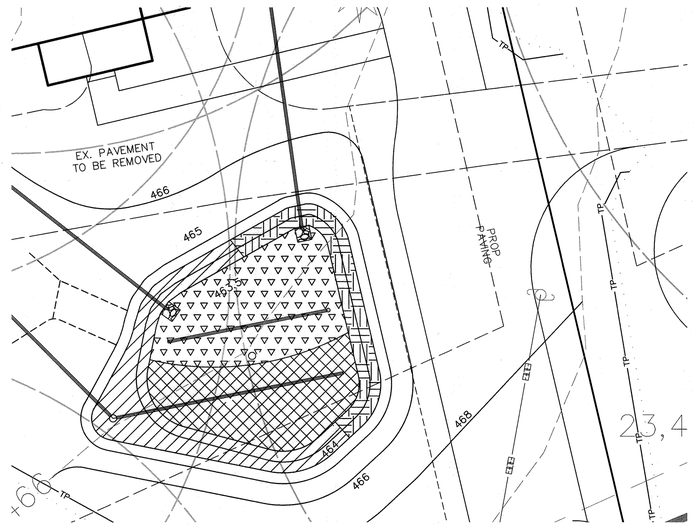
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.2.22

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/16/22

DRAWING LEGEND

- EXISTING MINOR CONTOUR (2' INTERVAL) (682)
- EXISTING MAJOR CONTOUR (10' INTERVAL) (680)
- ADJACENT PROPERTY LINE
- EXISTING PROPERTY BOUNDARY (N 06°45'45"W 120.00')
- EX. ROAD/EDGE OF PAVING
- EX. SEWER LINE & MANHOLES, CLEANOUTS (EX. 8" S.)
- EX. OVERHEAD ELECTRIC & UTILITY POLES
- PROPOSED MINOR CONTOUR (2' INTERVAL) (682)
- PROPOSED MAJOR CONTOUR (10' INTERVAL) (680)
- EX. BUILDING
- PROPOSED BUILDING EXPANSION
- EXISTING TREELINE
- SOIL DELINEATION LINE (MnF, NcA)
- EXISTING TREES TO BE REMOVED
- EXISTING TREES TO REMAIN
- PROPOSED LIMIT OF DISTURBANCE
- PROPOSED TEMPORARY TREE PROTECTION FENCE (SEE DETAIL SHEET 8) (TP)
- PROPOSED SHADE TREE
- SPECIMEN TREE AND CRITICAL ROOT ZONE (SPT–1 AND SPT–7 ARE CREDIT TREES)
- SPECIMEN TREE TO BE REMOVED
- PROPOSED SWM BORING LOCATION AND NUMBER (B–2)

GRAPHIC SCALE
30 0 30 60 90



MICRO–BIORETENTION PLANTING PLAN

SCALE: 1"=10'

PLANTING MICRO–BIORETENTION SCHEDULE					
KEY	QTY	BOTANICAL/COMMON NAME	SIZE	CONDITION	COMMENT
GRASSES/PERENNIALS					
	39	ANDROPOGON VIRGINICUS/BROOMSEDGE BLUESTEM	1 QT.	CONTAINER	2' O.C.
	52	EUPATORIUM DUBIUM 'BABY JOE'/DWARF JOE–PYE WEED	1 QT.	CONTAINER	2' O.C.
	87	IRIS VERSICOLOR 'GERALD DARBY'/BLUEFLAG IRIS	1 QT.	CONTAINER	2' O.C.
	100	PANICUM VIRGATUM 'HEAVY METAL'/HEAVY METAL SWITCHGRASS	1 QT.	CONTAINER	2' O.C.

SPECIMEN TREE CHART				
KEY	SPECIES	SIZE (IN. DBH)	CRZ (FEET RADIUS)	COMMENTS
1	TULIP POPLAR	60.50	90	GOOD
2	OAK	49	73.50	GOOD
3	TULIP POPLAR	41.50	62.25	GOOD
4	TULIP POPLAR	49	73.50	GOOD
5(TBR)	BLACK GUM	35.60	53.40	FAIR
6(TBR)	RED MAPLE	46.50	69.75	FAIR
7	TULIP POPLAR	56.20	84.30	FAIR

DATA SOURCES:

INFORMATION SHOWN HEREON IS BASED ON A BOUNDARY AND TOPOGRAPHIC SURVEY PREPARED BY DEVELOPMENT DESIGN CONSULTANTS, INC. IN APRIL 2013 AND SUPPLEMENTED WITH HOWARD COUNTY GIS.

8/30/22
DATE

STATE OF MARYLAND BRIAN KEITH COLLINS No. 3171 REGISTERED LANDSCAPE ARCHITECT

BRIAN K. COLLINS R.L.A NO. 3171

KCI TECHNOLOGIES
ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD
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WILLOW NOOK
FINAL PLAN LOTS 1 & 2

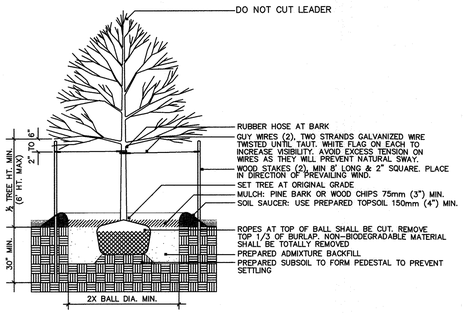
LANDSCAPE PLAN

ELECTION DISTRICT: 5 HOWARD COUNTY, MARYLAND

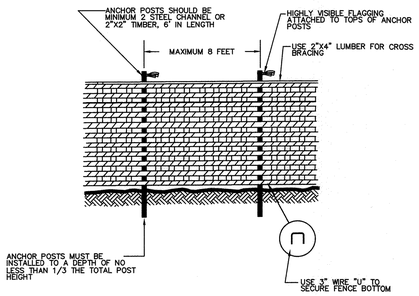
REVISIONS				
NO.	DESCRIPTION OF CHANGES	DRN.	REV.	DATE

CO. FILE #:	DES. BY: CTS
TAX ACC. #: 05366461	DRN. BY: CTS
TAX MAP: 35	CHK. BY: BCC
BLOCK / GRID: 21	DATE: 2/13/19
PARCEL #: 0222	KCI JOB#: 271802313
ZONE / USE: R-20	SHEET NUMBER: 7 of 09
DWG. SCALE: 1"=30'	

F# 18–118



DECIDUOUS TREE PLANTING (LESS THAN 3" CAL.)
N.T.S.



NOTES:
1. BLAZE ORANGE OR BLUE PLASTIC MESH FENCE FOR FOREST/TREE PROTECTION DEVICE ONLY.
2. BOUNDARIES OF RETENTION/PROTECTION AREA WILL BE ESTABLISHED AS PART OF THE FOREST/LANDSCAPE PLAN REVIEW PROCESS.
3. BOUNDARIES OF THE RETENTION/PROTECTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE POSTS.
4. AVOID DAMAGE TO CRITICAL ROOT ZONE. DO NOT DAMAGE OR SEVER LARGE ROOTS WHEN INSTALLING POSTS.
5. PROTECTION SIGNS ARE REQUIRED FOR FOREST RETENTION AREAS.
6. DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION.

SOURCE: FIGURE D-5, CARROLL COUNTY FOREST CONSERVATION MANUAL, SECOND EDITION. DATED MAY 16, 2002.

PLASTIC MESH TREE PROTECTION FENCE
N.T.S.

Supplemental Landscape Notes & Specifications

1. The Contractor shall review architectural/engineering plans to become thoroughly familiar with the grading and surface utilities.
2. The Contractor shall insure that his work does not interrupt established or projected drainage patterns.
3. During planting operations, excess waste materials shall be promptly and frequently removed from the site.
4. All equipment and tools shall be placed so as not to interfere or hinder the pedestrian and/or vehicular traffic flow. No vehicles, equipment, tools, etc. shall be placed on or within any indicated tree protection zone. No staging, storing or stockpiling of supplies or material within indicated tree protection zones.
5. The contractor is responsible for verifying the location of all existing utilities. If utility lines are encountered in the excavation of tree pits, other locations for trees shall be made by the contractor without additional compensation. No changes of location shall be made without the approval of the Landscape Architect.
6. Every possible safeguard shall be taken to protect building surfaces, equipment, and furnishings. The Contractor shall be responsible for any damage or injury to persons or property which may occur as a result of negligence in the execution of the work.
7. In the event of a variation between quantities shown on the plant list and the plans, the plans shall govern. The Contractor is responsible for verifying all plant quantities prior to the commencement of work. Sod quantity takeoffs are the responsibility of the Contractor. All discrepancies shall be reported to the Landscape Architect for clarification prior to bidding. The Contractor shall furnish plant material in sizes specified in the plant list.
8. Transport and handle plants so that foliage, roots, or root balls are protected from breakage, sun, and winds. Root stock of the plant material shall be kept moist during transport from the source to the job site and until planted. Tops or roots of plants allowed to dry out or which have been damaged and/or disturbed root balls will be rejected.
9. The Contractor shall stake all material located on the site for review and/or adjustment by the Landscape Architect or the Owner prior to planting. All locations are to be approved by the Landscape Architect or Owner's Representative before excavation.
10. The Contractor is responsible for testing project soils. The Contractor is to provide a certified soils report to the owner. The contractor shall verify that the soils on site are acceptable for the proper growth of the proposed plant material. Should the Contractor find poor soil conditions, the contractor shall be required to provide soil amendments as necessary. These amendments shall include, but not be limited to, fertilizers, lime and topsoil. Proper planting soils must be verified prior to planting materials.
11. All plants shall be identified in accordance with "Hortus Third, by the Staff of the L. H. Bailey Hortorium, Cornell University, 1976.
12. Plants shall have normal, well developed branches and vigorous, fibrous root systems. They shall be healthy and free from disease, decay, sun scald, abrasions, insect pests or infestations and other damage.
13. The Landscape Architect or Owner shall have the right, at any stage of the operations, to reject any and all work and materials which, in his or her opinion, does not meet the requirements of these plans and specifications. All rejected material shall be removed from the site by the Contractor.
14. All plant material should be backfilled with soil (amended as necessary) in layers to two-thirds of the depth of the planting pit. Soil should then be tamped and watered thoroughly at low pressure before being backfilled to proper grade. The planting pit should be flooded again, once backfilling is completed, so that backfill is thoroughly saturated and settled.
15. If the soil is wet or compacted, all containerized and balled nursery stock should be planted such that the top one-third of the ball is above the existing grade.
16. The top two-thirds of wire baskets on root balls should be removed.
17. All soils disturbed during installation of plant material shall be treated by incorporating composted organic material within the top four to six (4 – 6) inches.
18. All planting beds adjacent to lawn, sod, or seeded areas shall be spade edged to a depth of three inches.
19. The Contractor shall dispose of stumps and major roots of all plants to be removed. Any depressions caused by removal operations shall be refilled with fertile, friable, soil placed and compacted so as to reestablish proper grade for new planting and/or lawn areas.
20. The Contractor shall insure adequate vertical drainage in all plant beds and planters.
21. Upon completion of all landscaping, an acceptance of the work shall be held. The Contractor shall notify the Landscape Architect or the Owner for scheduling of the inspection at least seven (7) days prior to the anticipated inspection date.
22. Maintenance shall begin after each plant has been installed and shall continue 90 days after initial acceptance by the Landscape Architect or the Owner's Representative. Maintenance shall include mowing of turf, watering, pruning, weeding, fertilizing, mulching, replacement of sick or dead plants, and other care necessary for the proper growth of the plant material. The Contractor shall be responsible for the use of all equipment, labor and material necessary to perform maintenance operations and any injury to plant material caused by such equipment, labor and material shall be corrected and repaired by the Contractor at no additional expense to the owner.
23. All trees shall be guaranteed for twelve (12) months from the date of acceptance. All shrubs and ground covers shall be guaranteed for twelve (12) months from the date of acceptance.
24. All disturbed areas on the site not planted with shrubs or ground cover shall be fine graded and seeded or sodded as noted on landscape plan.
25. All sod shall be obtained from areas having growing conditions familiar to areas to be covered. Areas to be sodded shall be raked of stones and debris. Debris and stones over one inch (1") shall be removed from the site. All damaged sod will be rejected. All sod must be placed with staggered joints, tightly butted, with no inequalities in grade. Place all sod rows at right angle to slope (where applicable).

Tree Protection Notes/Sequence:

Pre-Construction

1. An on-site pre-construction meeting is required after the limits of disturbance have been staked and flagged, but before any clearing or grading begins. The developer's representative, construction superintendent, ISA certified arborist or Maryland-licensed tree expert that will implement the tree protection measures, should attend this pre-construction meeting.

2. No clearing or grading shall begin before stress-reduction measures have been implemented. Appropriate measures may include, but are not limited to:

a. Root pruning
b. Crown reduction or pruning
c. Watering
d. Fertilizing
e. Vertical mulching
f. Root aeration matting

3. A Maryland-licensed tree expert or an International Society of Arboriculture-certified arborist must perform all stress reduction measures.

4. Temporary tree protection devices shall be installed per the Forest Conservation Plan/Tree Save Plan and prior to any construction activities. Tree protection fencing locations should be staked prior to the pre-construction meeting.

5. Temporary protection devices shall be maintained and installed by the contractor for the duration of construction project and must not be altered without prior approval. No equipment, trucks, materials, or debris may be stored within the tree protection fence areas during the entire construction project. No vehicle or equipment access to the fenced area will be permitted. Tree protection shall not be removed without prior approval from the ISA certified arborist or Maryland-licensed tree expert.

Post-Construction

9. After construction is completed Corrective measures may include:

a. Stress reduction ("Mitigation for Unanticipated and Unauthorized Injury to Trees").
b. Pruning of dead or declining limbs
c. Soil aeration
d. Fertilization
e. Watering
f. Wound repair

10. After inspection and completion of corrective measures have been undertaken, all temporary protection devices shall be removed from the site. Removal of tree protection devices that also operate for erosion and sediment control must be coordinated with the sediment control inspector. No additional grading, sodding, or burial may take place after the tree protection fencing is removed.

Mitigation Measures for Unanticipated and Unauthorized Injury to Trees

Disturbance within the tree protection areas is not proposed at this time; however, if unauthorized impacts within the tree protection areas were to occur, the following corrective measures will be required, as appropriate, to insure tree health and survival:

Root Injury
If an increase in grade within an identified tree protection area occurs, this may result in root injury. The use of a porous topsoil will be used to allow for exchange of oxygen through the soil. The opposite of this, lowering if the grade within the protected area, shall be mitigated by covering the roots with a fine wood chip or organic mulch material. This will help retain moisture and therefore, stimulate root re-growth into the disturbed area.

Soil Compaction
Soil compaction is a problem on most construction sites; however, the highly visible orange blaze plastic mesh fence should eliminate the compaction problem. If heavy equipment did come in contact with a critical root zone, a fiber mat should be laid down to increase the weight bearing capacity and minimize soil compaction.

Soil pH Change
Since designated areas have been established for cement truck wash out and vehicle fueling, little to no change in the soil pH should be seen. Cement and fuel spills are the two main causes of soil pH change.

Tree Wounds
Wounds to the tree trunk are unlikely to occur, due to the mesh fence protection device; however, crown branching structures may be damaged by vehicular movement. If this should occur, proper pruning will be initiated, "Crown Reduction".

Application of Fertilizers by Injection
As mentioned above, trees inside the protection area shall not be damaged due to the establishment of Forest Protection Devices. If trees are damaged and show signs of stress, they will receive liquid fertilizer injections. Fertilizer injections will improve the health and vigor of the damaged tree and increase the survival potential. For recommended rates and time of application, contact a licensed tree expert.

DATA SOURCES:

INFORMATION SHOWN HEREON IS BASED ON A BOUNDARY AND TOPOGRAPHIC SURVEY PREPARED BY DEVELOPMENT DESIGN CONSULTANTS, INC. IN APRIL 2013 AND SUPPLEMENTED WITH HOWARD COUNTY GIS.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date: 9.20.22

~~Director~~

Chief, Division of Land Development — Date: 12/15/22

GRAPHIC SCALE
50 0 50 100 150

8/30/22
DATE

STATE OF MARYLAND — CRAIG KEITH COLLINS — No. 3171 — REGISTERED LANDSCAPE ARCHITECT

KCI TECHNOLOGIES
ENGINEERS
PLANNERS
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CONSTRUCTION MANAGERS
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TELEPHONE: (410) 316-7800
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WILLOW NOOK
FINAL PLAN LOTS 1 & 2

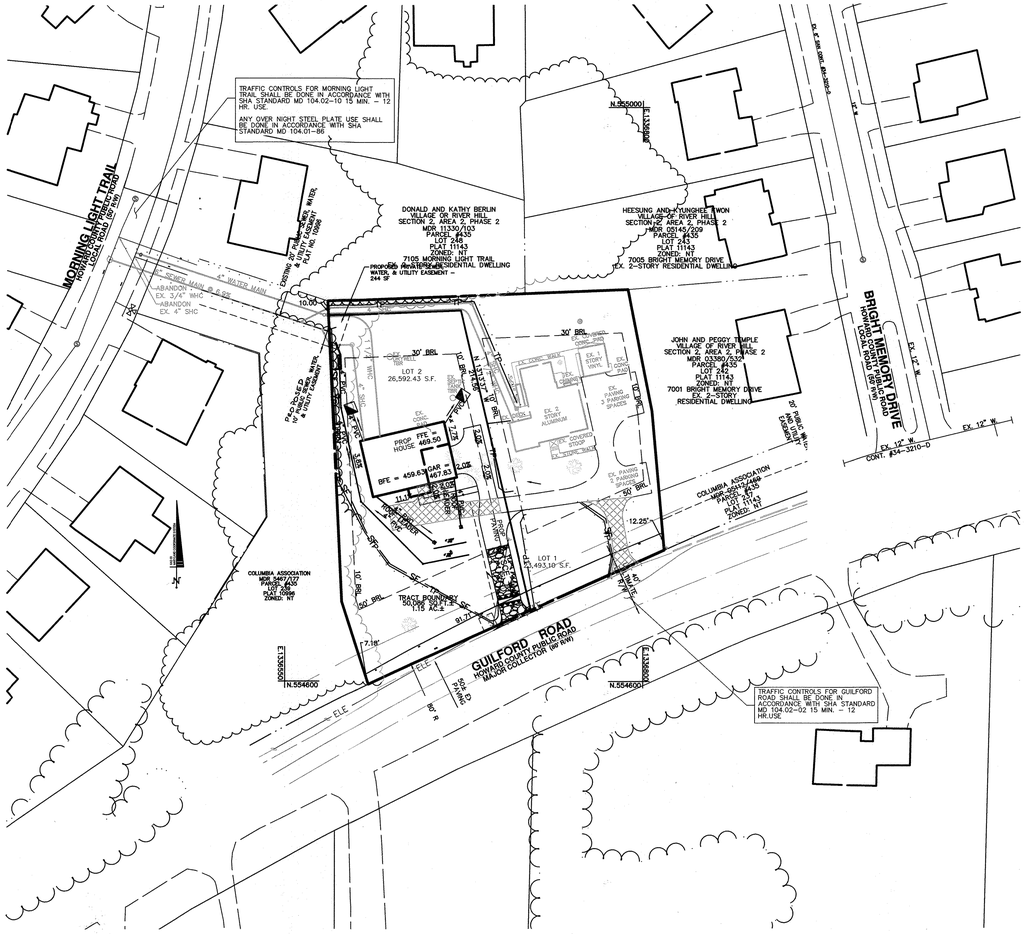
LANDSCAPE
NOTES AND DETAILS

ELECTION DISTRICT: 5 HOWARD COUNTY, MARYLAND

REVISIONS			
NO.	DESCRIPTION OF CHANGES	DRN.	REV. DATE

CO. FILE #:	DES. BY: CTS
TAX ACC. #: 05366461	DRN. BY: CTS
TAX MAP: 35	CHK. BY: BCC
BLOCK / GRID: 21	DATE: 2/13/19
PARCEL #: 0222	KCI JOB#: 271802313
ZONE / USE: R-20	SHEET NUMBER: 8 of 09
DWG. SCALE: AS SHOWN	

F# 18-118



TRAFFIC CONTROLS FOR MORNING LIGHT TRAIL SHALL BE DONE IN ACCORDANCE WITH SHA STANDARD MD 104.02–10 15 MIN. – 12 HR. USE.

ANY OVER NIGHT STEEL PLATE USE SHALL BE DONE IN ACCORDANCE WITH SHA STANDARD MD 104.01–86

TRAFFIC CONTROLS FOR GUILFORD ROAD SHALL BE DONE IN ACCORDANCE WITH SHA STANDARD MD 104.02–02 15 MIN. – 12 HR.USE

MOT NOTES

1. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SUPPLY, INSTALL, AND MAINTAIN ALL TEMPORARY TRAFFIC CONTROL EQUIPMENT FOR THE ENTIRE DURATION OF THE CONTRACT.
2. ALL TRAFFIC CONTROLS MUST ADHERE TO THE CURRENT EDITIONS OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.) AND THE MARYLAND SHA WORK ZONE TRAFFIC CONTROL STANDARDS AND HOWARD COUNTY.
3. THE CONTRACTOR SHALL MAINTAIN A MINIMUM FOUR FEET (4') WIDE PEDESTRIAN FOOTPATH OR IMPLEMENT AN APPROPRIATE PEDESTRIAN DETOUR WHILE ACTIVELY WORKING IN THE SIDEWALK IN ACCORDANCE WITH ADA GUIDELINES AND APPROPRIATE SHA AND COUNTY STANDARDS.
4. PROPOSED ROADWAY CLOSURES AND DETOURS SHALL BE COORDINATED WITH ADJACENT PROPERTY OWNERS AND APPROVED BY HOWARD COUNTY. CONTRACTOR SHALL SUPPLY FLAGGERS TO DIRECT TRAFFIC THROUGH LANE CLOSURES.
5. THE CONTRACTOR SHALL MAINTAIN AND INGRESS TO ALL LOCAL RESIDENTS.
6. ALL MOT SIGNS SHALL BE SET SEVEN (7) FEET ABOVE THE SIDEWALK, EXCEPT THOSE MOUNTED ON TYPE 1 BARRICADES.
7. PLACEMENT OF ROAD CLOSURE SIGNS SHALL BE DONE AFTER FINAL MOT PLAN APPROVAL.
8. TRAFFIC CONTROLS ON GUILFORD ROAD SHALL BE DONE IN ACCORDANCE WITH SHA STANDARD–MD 104.02–02 FOR 15 MINUTE TO 12 HOUR PER DAY USE.
9. TRAFFIC CONTROLS ON MORNING LIGHT TRAIL SHALL BE DONE IN ACCORDANCE WITH SHA STANDARD–MD 104.02–10 FOR 15 MINUTE TO 12 HOUR PER DAY USE.
10. OVERNIGHT TRENCH PROTECTION REQUIRES STEEL PLATING AND SHALL BE DONE IN ACCORDANCE WITH SHA STANDARD–MD 104.01–86.

DRAWING LEGEND

682	EXISTING MINOR CONTOUR (2' INTERVAL)
680	EXISTING MAJOR CONTOUR (10' INTERVAL)
	ADJACENT PROPERTY LINE
N 06°45'45"W 120.00'	EXISTING PROPERTY BOUNDARY
	EX. ROAD/EDGE OF PAVING
EX. 8" S. C/O	EX. SEWER LINE & MANHOLES, CLEAN-OUTS
	EX. OVERHEAD ELECTRIC & UTILITY POLES
682	PROPOSED MINOR CONTOUR (2' INTERVAL)
680	PROPOSED MAJOR CONTOUR (10' INTERVAL)
	EX. BUILDING
	PROPOSED BUILDING EXPANSION
+ 665.5	PROPOSED SPOT ELEVATION & FLOW ARROW
	EXISTING TREELINE
▨	EXISTING DRIVEWAY TO BE REMOVED
MnF NcA	SOIL DELINEATION LINE
SF	SILT FENCE
	PROPOSED LIMIT OF DISTURBANCE
TP	PROPOSED TEMPORARY TREE PROTECTION FENCE (SEE DETAIL SHEET 8)
SCE	STABILIZED CONSTRUCTION ENTRANCE W/MOUNTABLE BERM
	PROPOSED M-5 DRYWELLS
	PROPOSED M-6 MICRO-BIORETENTION
	PROPOSED OBSERVATION WELL
	PROPOSED CLEANOUT

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10-2-22

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/15/22

STANDARD DETAIL:

* METHOD '2' SHALL BE USED FOR CEMENT CONCRETE PAVEMENT SECTIONS, REGARDLESS OF SPEED.*

METHOD '2'. FOR SPEEDS EQUAL TO OR LESS THAN 40 MPH (SEE DETAIL BELOW)

APPROACH PLATE AND ENDING PLATE OF LONGITUDINAL PLACEMENT SHALL BE ATTACHED TO THE ROADWAY BY A MINIMUM OF 1 ANCHOR IN EACH CORNER OF THE PLATE. DRILL A ½ INCH DIAMETER, 5 INCH DEEP PILOT HOLE INTO THE PAVEMENT. DRIVE 1 ANCHOR INTO EACH HOLE. SUBSEQUENT PLATES ARE BUTTED TO EACH OTHER AND WELDED. ASPHALT MATERIAL SHALL BE COMPACTED TO FORM RAMPS. MAXIMUM SLOPE 8.5% WITH A MINIMUM 12 INCH TAPER TO COVER ALL EDGES OF THE STEEL PLATES. CONTRACTOR'S PROPOSED METHOD OF ANCHORING SHALL BE APPROVED BY THE ENGINEER.

STEEL PLATE DETAIL (METHOD 2, EQUAL TO OR LESS THAN 40 MPH)
NOT TO SCALE

THE FOLLOWING TABLE SHOWS THE ADVISORY MINIMAL THICKNESS OF STEEL PLATE BRIDGING REQUIRED FOR A GIVEN TRENCH (WITH A-36 GRADE STEEL):

TRENCH WIDTH	MIMIMUM PLATE THICKNESS
< 5'	1"
≥ 5'	SEE NOTE #3

NOTES

1. STEEL PLATE USAGE WILL BE INCIDENTAL TO THE WORK BEING DONE/PROTECTED UNLESS AN ITEM FOR STEEL PLATES IS INCLUDED IN THE CONTRACT SHEDULE OF PRICES.
2. STEEL PLATE INSTALLED SHALL HAVE A MAXIMUM ONE INCH DEFLECTION. STEEL PLATES SHALL BE WELDED TOGETHER BY A LICENSED WELDER.
3. FOR TRENCH WIDTHS EQUAL TO OR GREATER THAN 5 FT. STEEL PLATE AND SUPPORT SYSTEM SHALL BE DESIGNED AND STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MARYLAND AND APPROVED BY THE SHA ENGINEER.
4. STEEL PLATE BRIDGING IS NOT ALLOWED ON EXPRESSWAYS/FREEWAYS.
5. ANCHORS ARE TO BE A MIN. OF 6 IN. IN LENGTH.

SPECIFICATION	CATEGORY CODE ITEMS	
–		
APPROVED	DIRECTOR – OFFICE OF HIGHWAY DEVELOPMENT	
APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	
APPROVAL 4-12-16	APPROVAL 3-21-16	
REVISED 5-19-16	REVISED 5-6-16	
REVISED 10-20-16	REVISED 10-13-16	
REVISED	REVISED	

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

STEEL PLATE
METHOD 2, EQUAL TO OR LESS THAN 40 MPH

STANDARD NO. MD 104.01-86

TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION

IMPORTANT:
THIS DRAWING SHALL BE USED IN COMBINATION WITH THE GENERAL NOTES MD 104.00-01 – MD 104.00-18 AND STANDARD DETAILS MD 104.01-01 – MD 104.01-81

NOTES:

SHOULDER CLOSED SIGNS ARE REQUIRED IN PLACE OF SHOULDER WORK SIGNS WHEN THE SHOULDER IS CLOSED BY POSITIVE PROTECTION (TEMPORARY CONCRETE BARRIER OR SIMILAR DEVICE). REFER TO STANDARD NO. MD 104.06-18.

WHEN WORK INVOLVES A PAVEMENT EDGE DROP-OFF, REFER TO STANDARD NOS. MD 104.06-15 TO MD 104.06-19.

THERE SHALL BE A MINIMUM OF SEVEN CHANNELIZING DEVICES IN THE SHOULDER TAPER.

THE ENGINEER SHOULD CONSIDER ADDITIONAL, ADJACENT LANE CLOSURES WHEN THE POSSIBILITY OF UNPLANNED TRAVELWAY ENCROACHMENTS EXISTS.

KEY:

■ ■	CHANNELIZING DEVICES
	SIGN SUPPORT
	FACE OF SIGN
⇧	DIRECTION OF TRAFFIC
▨	WORK SITE

SPECIFICATION	CATEGORY CODE ITEMS	
104		
APPROVED	DIRECTOR – OFFICE OF TRAFFIC AND SAFETY	
APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	
APPROVAL 8-20-03	APPROVAL 9-23-03	
REVISED 8-11-10	REVISED 10-5-10	
REVISED	REVISED	
REVISED	REVISED	

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

SHOULDER WORK/2-LANE, 2-WAY
EQL/LESS THAN 40 MPH

STANDARD NO. MD 104.02-02

TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION

IMPORTANT:
THIS DRAWING SHALL BE USED IN COMBINATION WITH THE GENERAL NOTES MD 104.00-01 – MD 104.00-18 AND STANDARD DETAILS MD 104.01-01 – MD 104.01-81

NOTE:

FLAGGER SHALL NEVER BE STATIONED MORE THAN 1000' AWAY FROM THE ADVANCE FLAGGER SIGN.

THE ENGINEER SHOULD CONSIDER ADDITIONAL, ADJACENT LANE CLOSURES WHEN THE POSSIBILITY OF UNPLANNED TRAVELWAY ENCROACHMENTS EXISTS.

KEY:

■ ■	CHANNELIZING DEVICES
	SIGN SUPPORT
	FACE OF SIGN
⇧	DIRECTION OF TRAFFIC
▨	WORK SITE
	FLAGGER

SPECIFICATION	CATEGORY CODE ITEMS	
104		
APPROVED	DIRECTOR – OFFICE OF TRAFFIC AND SAFETY	
APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	
APPROVAL 8-20-03	APPROVAL 9-23-03	
REVISED 8-11-10	REVISED 7-29-10	
REVISED	REVISED	
REVISED	REVISED	

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

FLAGGING OPERATION/2-LANE, 2-WAY
EQL/LESS THAN 40 MPH

STANDARD NO. MD 104.02-10

DATA SOURCES:

INFORMATION SHOWN HEREON IS BASED ON A BOUNDARY AND TOPOGRAPHIC SURVEY PREPARED BY DEVELOPMENT DESIGN CONSULTANTS, INC. IN APRIL 2013 AND SUPPLEMENTED WITH HOWARD COUNTY GIS.

KCI TECHNOLOGIES

ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS

936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818

WILLOW NOOK
FINAL PLAN LOTS 1 & 2

MAINTENANCE OF TRAFFIC PLAN

ELECTION DISTRICT: 5 HOWARD COUNTY, MARYLAND

NO.	DESCRIPTION OF CHANGES	DRN.	REV.	DATE

CO. FILE #:	DES. BY: CTS
TAX ACC. #: 05366461	DRN. BY: CTS
TAX MAP: 35	CHK. BY: BCC
BLOCK / GRID: 21	DATE: 2/13/19
PARCEL #: 0222	KCI JOB#: 271802313
ZONE / USE: R-20	SHEET NUMBER: 9 of 09
DWG. SCALE: 1"=50'	

GRAPHIC SCALE

50 0 50 100 150

8/30/22
DATE

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. 28935, Expiration Date: 1/15/23.

MATTHEW SHENK SICHEL
No. 28935

10/27/22

F# 18–118