

# 2.5 MG GUILFORD ELEVATED WATER TANK

## SITE DEVELOPMENT PLAN

### HOWARD COUNTY, MARYLAND

### DEPARTMENT OF PUBLIC WORKS

### CAPITAL PROJECT NO. W8262

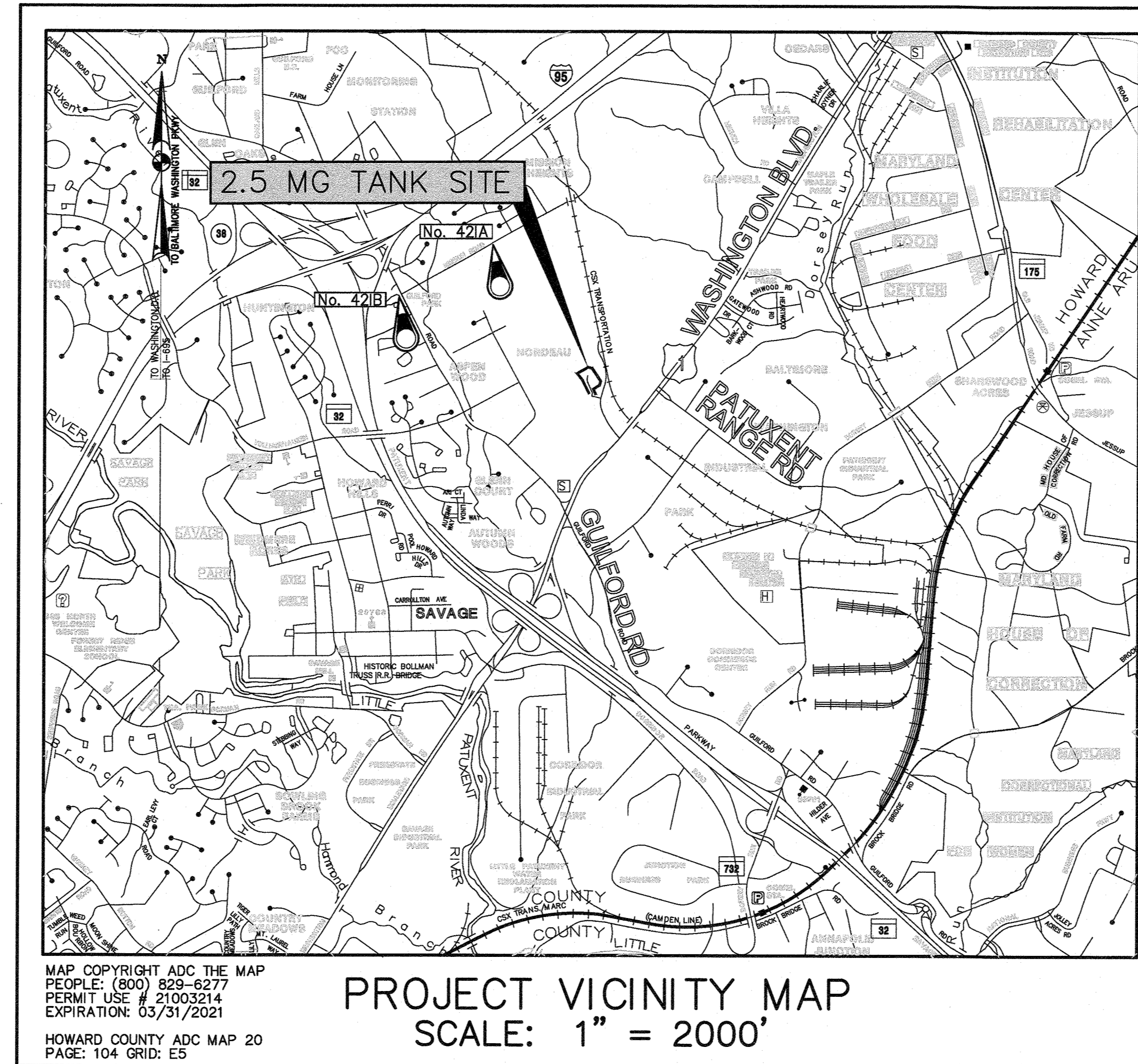
### SDP-20-032




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#### SITE DEVELOPMENT PLAN NOTES

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY AND MDSA STANDARDS AND SPECIFICATION IF APPLICABLE.
- COORDINATES SHOWN HEREON ARE BASED ON MARYLAND STATE PLANE NAD 1983/91 AND ELEVATIONS ARE BASED ON NAVD 88 VERTICAL DATUM. AS BASED ON HOWARD COUNTY CONTROL MONUMENTS BELOW:  
 421A: N 543,390.386 E 1,364,912.654 ELEVATION 312.653  
 421B: N 542,366.879 E 1,363,076.001 ELEVATION 283.105
- ALL TOPOGRAPHIC SURVEY PROVIDED BY RK&K (JAN, 2019) AND TIED INTO THE SURVEY CONTROL PREPARED BY FISHER COLLINS CARTER WHO PREPARED THE ALTA SURVEY AND PROPERTY SURVEY. A SUPPLEMENTAL TOPOGRAPHIC SURVEY WAS PROVIDED BY RK&K APRIL 2019.
- TREES AND SHRUBS ARE TO BE PROTECTED FROM DAMAGE TO THE MAXIMUM EXTENT PRACTICAL.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/ BUREAU OF ENGINEERING/ CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
- THE CONTRACT SHALL PROVIDE SURVEY CONSTRUCTION STAKEOUT FOR ALL NECESSARY LINES, GRADES AND ELEVATION OF THE PROPOSED FACILITY.
- CONTRACTOR SHALL REMOVE TREES, STUMPS AND ROOTS ALONG THE LINE OF CLEARING AND CONSTRUCTION. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONSTRUCTION OF RESPECTIVE FEATURES AND FACILITIES SHOWN HEREIN.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO AN EXCAVATION WORK TO BE DONE.
- ALL PLAN DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
- WATER IS PUBLIC. AS DEFINED IN CONTRACT No. 44-5121 AND 44-5122. DRAINAGE AREA: LITTLE PATUXENT.
- THERE IS NO EXISTING OR PROPOSED SEWER ON THE PROJECT SITE.
- STORMWATER MANAGEMENT SHALL BE REQUIRED. STORMWATER WILL BE PROVIDED BY A MICRO-BIORETENTION FACILITY, AND SHALL BE MAINTAINED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
- EXISTING UTILITIES ARE BASED ON CONTRACT No. 828-W.
- THERE IS NO FLOOD PLAIN ON THIS SITE.
- THERE ARE NO WETLANDS ON THIS SITE.
- NO TRAFFIC STUDY IS REQUIRED FOR THIS PROJECT.
- THE SUBJECT PROPERTY IS ZONED R-SA-8 AND R-SA-8-MXD-3 PER THE 2013 COMPREHENSIVE ZONING PLAN.
- THIS PROJECT IS ASSOCIATED WITH HOWARD COUNTY PROJECT ECP-20-0004 (ENVIRONMENTAL CONCEPT PLAN) AND WP-20-070 (ALTERNATIVE COMPLIANCE FOR FOREST CONSERVATION (FC)) APPROVED 8/12/2020 FOR VARIANCE TO SECTIONS 16.1201(v) & 16.1205(a)(3) TO UTILIZE THE LOD FOR SATISFYING FC REQUIREMENTS AND FOR REMOVAL OF ONE SPECIMEN TREE. APPROVAL IS SUBJECT TO THE FOLLOWING CONDITIONS:
  - A 35-FOOT ENVIRONMENTAL BRL SHALL BE PROVIDED FROM THE ENVIRONMENTAL BUFFER AND FOREST CONSERVATION EASEMENTS (FROM WHICHEVER EXTENDS FURTHER INTO THE LOTS).
  - THE SPECIMEN TREE REMOVAL IS SUBJECT ONLY TO THE REQUESTED TREE T-14. ANOTHER ALTERNATIVE COMPLIANCE REQUEST MUST BE SUBMITTED TO PROPOSE THE REMOVAL OF ANY ADDITIONAL SPECIMEN TREES ASSOCIATED WITH THE ELEVATED WATER TANK PROJECT IF AT ALL POSSIBLE. SPECIMEN TREES SHOULD BE PRESERVED, AND TREE PROTECTION MEASURES PROVIDED DURING CONSTRUCTION FOR OTHER SPECIMEN TREES ON SITE. PROVIDE (2) REPLACEMENT TREES WITH DBH OF AT LEAST 3" ON SITE IN ADDITION TO THE REQUIRED LANDSCAPING IN PLACE OF THE REMOVED TREE AS MITIGATION.
  - THE ALTERNATIVE COMPLIANCE FILE NUMBER, REQUESTED SECTIONS, DECISION DATE AND CONDITIONS OF APPROVAL SHALL BE INDICATED ON THE PLAT AS A GENERAL NOTE.
  - THE WORK TO REPLACE THE 40-YEAR-OLD FENCE WILL BE PERFORMED USING SMALLER EQUIPMENT TO MINIMIZE SITE DISTURBANCE. DISTURBANCE TO EXISTING FORESTED CONDITIONS WILL BE KEPT TO A MINIMUM IN ORDER TO INSTALL THE PROPOSED FENCING. THE ENTIRE FENCE AREA OF THE SITE WILL BE STABILIZED AND RETURNED TO A NATURAL STATE ONCE THE FENCE INSTALLATION HAS BEEN COMPLETED.
  - ADD A NOTE TO THE PLANS SPECIFYING, "FENCE INSTALLATION AND REMOVAL OF OLD FENCE WITHIN FOREST AREAS SHALL BE CONDUCTED USING SMALLER EQUIPMENT THAT WILL RESULT IN MINIMAL DISTURBANCE, AND TREE CUTTING/TRIMMING SHALL BE KEPT TO THE MINIMUM NECESSARY TO ACCOMPLISH THE WORK. AREAS OUTSIDE OF THE LOD ARE FOREST RETENTION/PROTECTION AREAS THAT SHALL NOT TO BE DISTURBED FOR THIS CONSTRUCTION."



OWNER / DEVELOPER CERTIFICATION	
I / WE CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.	
 OWNER / DEVELOPER SIGNATURE	4/29/2021 DATE
<b>ENGINEER'S CERTIFICATION</b> I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.	<b>HOWARD SOIL CONSERVATION DISTRICT CERTIFICATION</b>  THIS DEVELOPMENT IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
 S.C. MOORE 5.0.2021 DATE	 4/3/21 DATE
RK&K 700 EAST PRATT STREET, SUITE 500 BALTIMORE, MARYLAND 21202 (410) 728-2900	

TANK SITE ANALYSIS DATA SHEET	
ENVIRONMENTAL AREA	SIZE OR USE
SITE AREA	2.51 ACRES +/-
WETLANDS AND THEIR BUFFER	NONE
STREAMBANKS AND THEIR BUFFER	NONE
FLOODPLAINS	NONE
FORESTS AREA	1.11 ACRES +/-
SLOPES 15% < x < 20%	NONE
SLOPES GREATER THAN 20%	NONE
LIMIT OF DISTURBANCE	1.51 ACRES +/-
PROPOSED IMPERVIOUS AREA	0.38 ACRES +/-

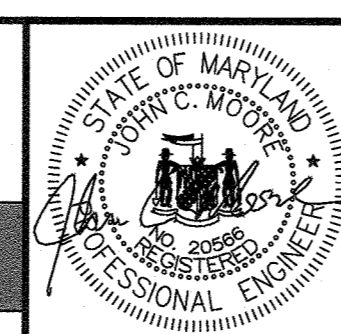
**PROFESSIONAL CERTIFICATION:** I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.  
 LICENSE NO. 20566 EXPIRATION DATE 09/08/2022

#### OWNER/DEVELOPER

HOWARD COUNTY  
 MS. KERRI DINSMORE, PE, PROJECT MANAGER  
 DEPARTMENT OF PUBLIC WORKS, UTILITY DESIGN DIVISION  
 7125 RIVERWOOD ROAD SUITE B, COLUMBIA, MD 21046  
 410-313-5819

#### SITE DEVELOPMENT PLAN TITLE SHEET


TAX MAP 48	GRID 0001,0019 PARCEL 0001,0235	SD-1
<b>GUILFORD ELEVATED WATER TANK</b> SITE DEVELOPMENT PLAN CAPITAL PROJECT NO. W8262 SDP-20-032		SCALE AS SHOWN  SHEET NO. 01 OF 16
ELECTION DISTRICT NO. 6		HOWARD COUNTY, MARYLAND





DES:	NZ	BY	NO.	REVISION	DATE
DRN:	KMR				
CHK:	EDJ				
DATE:	DECEMBER				2020

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DEPARTMENT OF PLANNING AND ZONING  
 HOWARD COUNTY, MARYLAND

  
 PLANNING DIRECTOR

  
 CHIEF, DIVISION OF LAND DEVELOPMENT

  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

4/29/21  
 DATE

6/17/21  
 DATE

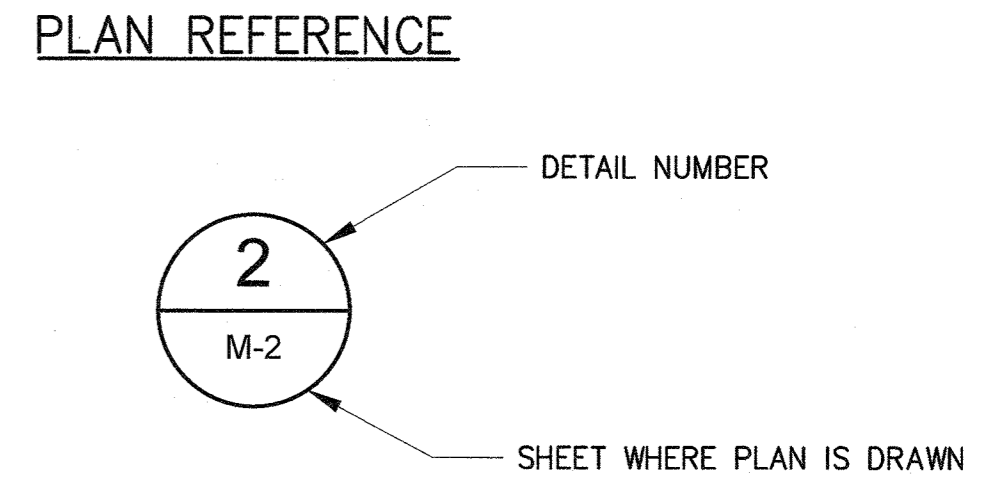
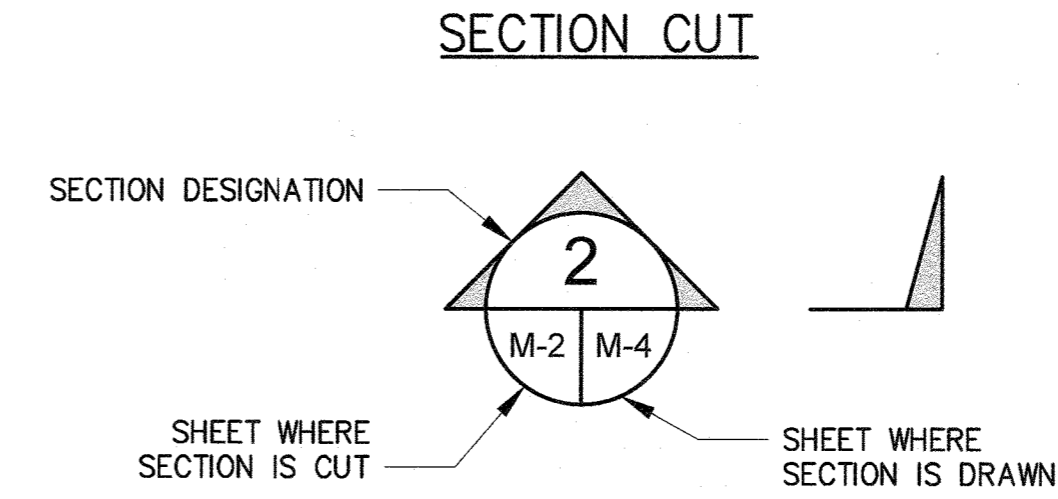


**LEGEND**

**DRAWING SYMBOLS**

EXISTING	
SANITARY SEWER	X" S
SANITARY SEWERS 12" & OVER	X" S
SANITARY SEWER FORCE MAIN	FM FM
WATER	W W W
STORM DRAIN	D D
STORM DRAIN INLET	I
OVERHEAD ELECTRIC	OH
UNDERGROUND ELECTRIC	E E E
UNDERGROUND FIBER OPTIC	FO FO
UNDERGROUND TELEPHONE	T T
UNDERGROUND CABLE	C C C C
GAS	G G
PROPERTY LINE	---
UTILITY EASEMENT	---
SETBACK	---
MINOR CONTOURS	492
MAJOR CONTOURS	490
100-YEAR FLOODPLAIN	---
WETLAND BOUNDARY	---
25' WETLAND BUFFER	WB WB WB
STREAM BUFFER	SB SB
WATERS OF THE US	WUS
FENCE	X X X
GUARDRAIL	---
RAILROAD TRACKS	---
WATER FIRE HYDRANT	⊕
WATER VALVE	⊕
GAS METER	⊕
ELECTRIC POLE GUY	⊕
ELECTRIC POLE	⊕
UTILITY MARKER	⊕
SIGN	⊕
MAILBOX	M.B.
SANITARY SEWER MANHOLE	⊕
STORM DRAIN MANHOLE	⊕
BORING	B-3
TRAVERSE LOCATION	MRC1
TEST PIT LOCATION	TP-01
EXISTING GATE	⊕
EXISTING TREE LINE	---

PROPOSED	
WATER MAIN	---
WATER VALVE	⊕
FIRE HYDRANT	⊕
SANITARY SEWER PIPE	S S
SANITARY SEWER MANHOLE	⊕
UNDERGROUND ELECTRIC/FIBER	---
STORM DRAIN	---
STORM DRAIN RISER STRUCTURE	⊕
PROPOSED RIP-RAP OVERFLOW PROTECTION	---
MINOR CONTOURS	492
MAJOR CONTOURS	490
CONCRETE SIDEWALK	---
FULL DEPTH ASPHALT	---
PAVEMENT REMOVAL	---
LIMIT OF CUT	C
LIMIT OF FILL	F
PROPOSED TREE LINE	---
PROPOSED REMOVABLE BOLLARDS	⊕
PROPOSED NON-REMOVABLE BOLLARDS	⊕
PROPOSED FENCE	X X
UTILITY TO BE ABANDONED	---
UTILITY TO BE REMOVED	---



FILE PATH: \\nasr06\2018\18265\_Guilford\CADD\Plans-Tank\GN-T001\_SDP\_GuilfordTank.dwg DATE: 12/15/2020 USER: nzhong

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. 20568, EXPIRATION DATE 09/08/2022

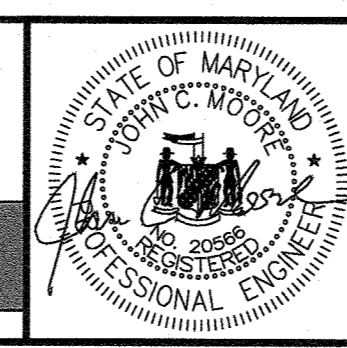
DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

*[Signature]*  
PLANNING DIRECTOR  
DATE: 4/27/21

*[Signature]*  
CHIEF, DIVISION OF LAND DEVELOPMENT  
DATE: 6/17/21

*[Signature]*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE: 6/17/21

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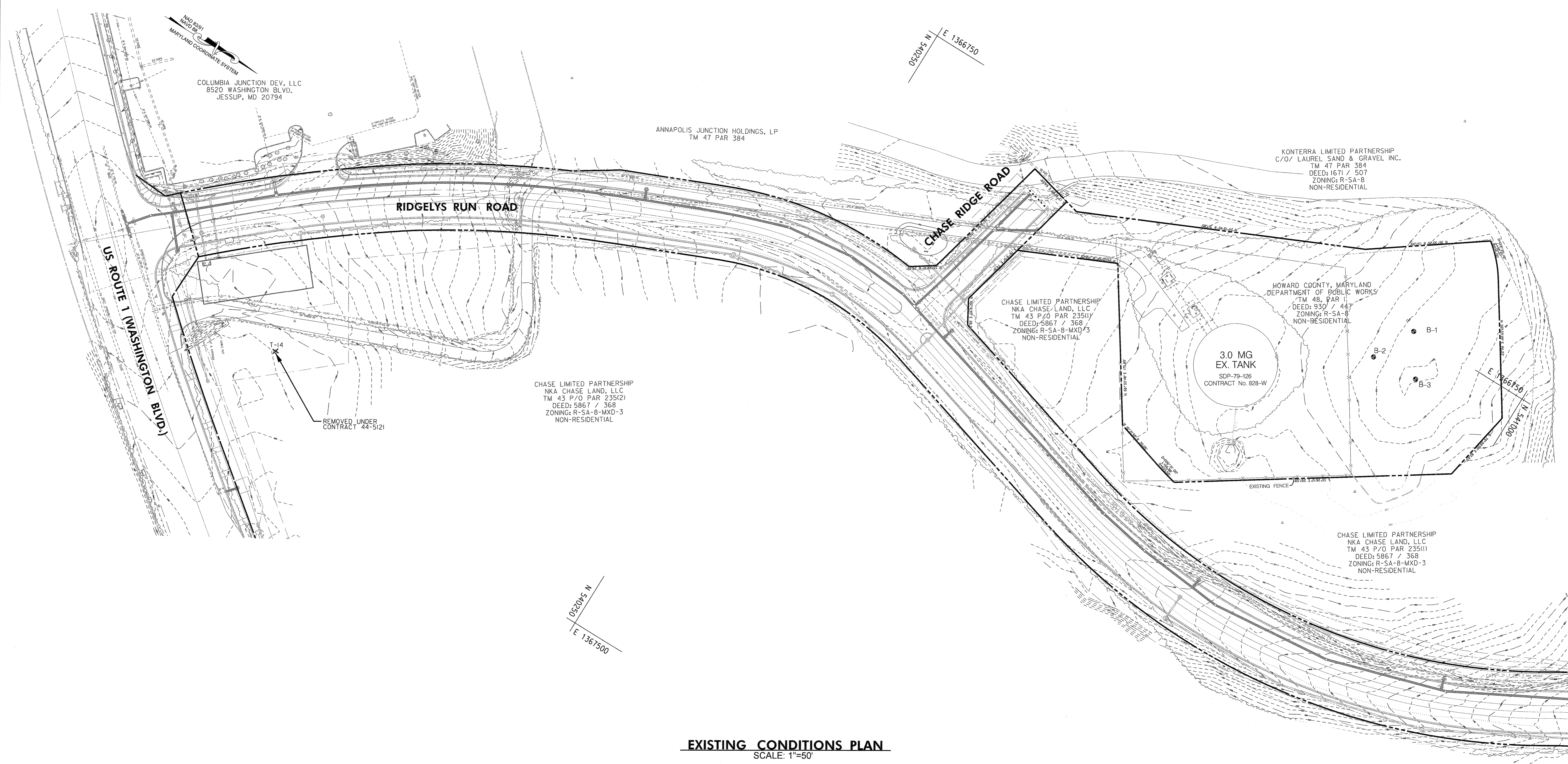
DES:	BY:	NO.:	REVISION:	DATE:
NZ	KMR			
EDJ				
DECEMBER 2020				

LEGEND AND STANDARD SYMBOLS

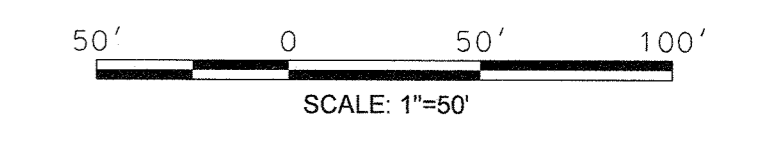
600' SCALE MAP NO. 48 BLOCK NO. 1

TAX MAP 48	GRID 0001, 0019 PARCEL 0001, 0235	SD-2
GUILFORD ELEVATED WATER TANK SITE DEVELOPMENT PLAN CAPITAL PROJECT NO. W8262 SDP-20-032		SCALE AS SHOWN
ELECTION DISTRICT NO. 6		SHEET NO. 02 OF 16
HOWARD COUNTY, MARYLAND		

FILE PATH: \\baird\06\2018\18265\_Guilford\CADD\Ref-Tank\Support\XBL-0000\_SDP\_Guilford\_Tank.dwg DATE: 5/7/2020 USER: nzhong



**EXISTING CONDITIONS PLAN**  
SCALE: 1"=50'



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. 20586 EXPIRATION DATE 09/08/2022

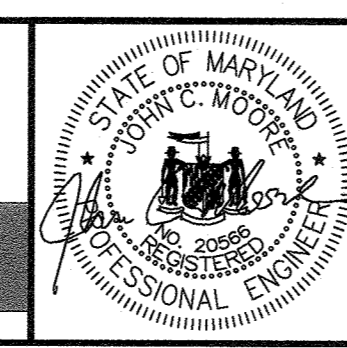
DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

*Wm. Conner* 6/23/21  
PLANNING DIRECTOR DATE

*Chester* 6/17/21  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Ed. Blum*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

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DES:	BY:	NO.	REVISION	DATE
NZ				
DRN:	KMR			
CHK:	EDJ			
DATE:	DECEMBER 2020			

**EXISTING CONDITIONS PLAN**

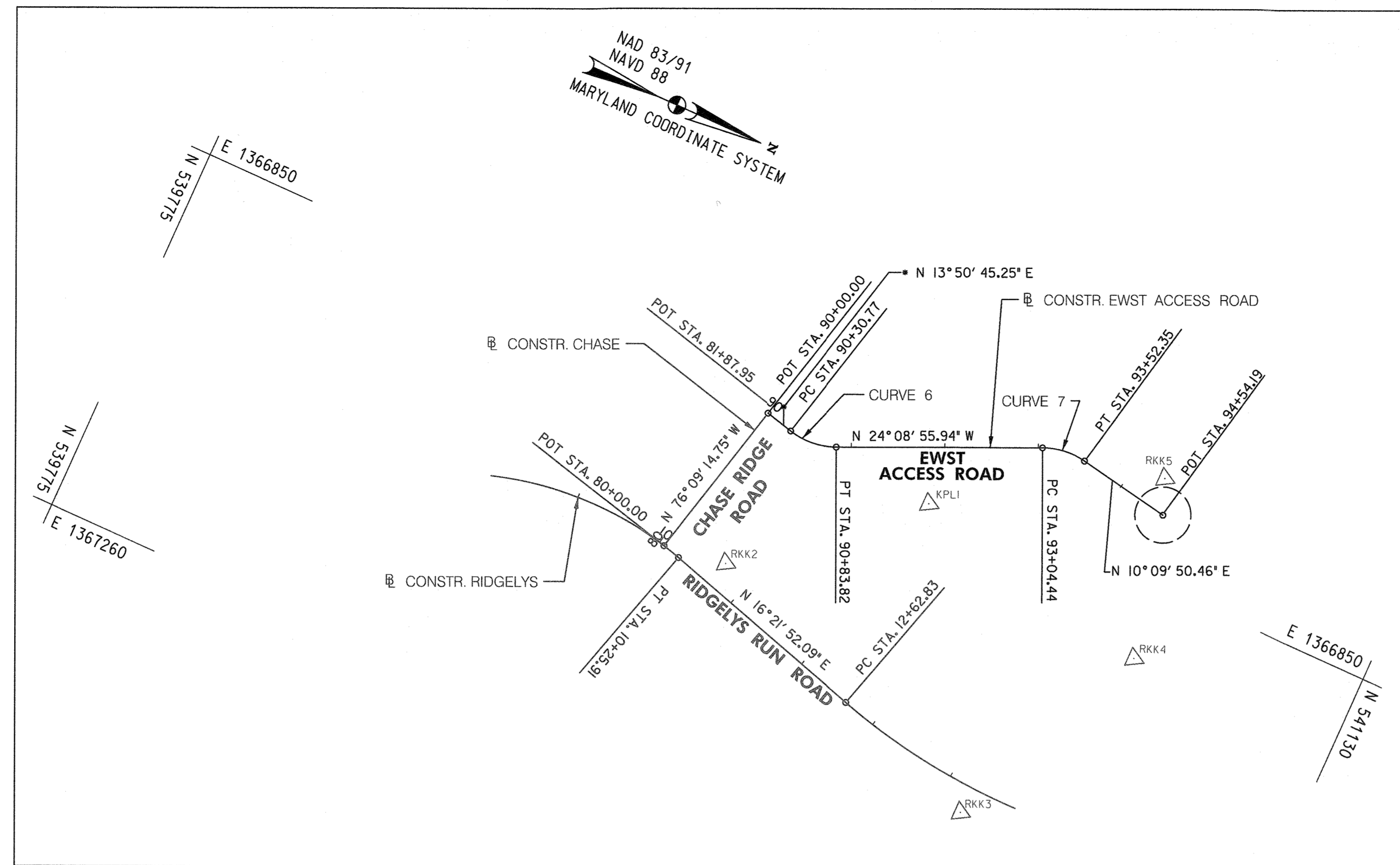
600' SCALE MAP NO. 48 BLOCK NO. 1

TAX MAP 48	GRID 0001, 0019 PARCEL 0001, 0235	SD-3
<b>GUILFORD ELEVATED WATER TANK</b> SITE DEVELOPMENT PLAN CAPITAL PROJECT NO. W8262 SDP-20-032		SCALE 1"=50'
ELECTION DISTRICT NO. 6		SHEET NO. 03 OF 16
HOWARD COUNTY, MARYLAND		





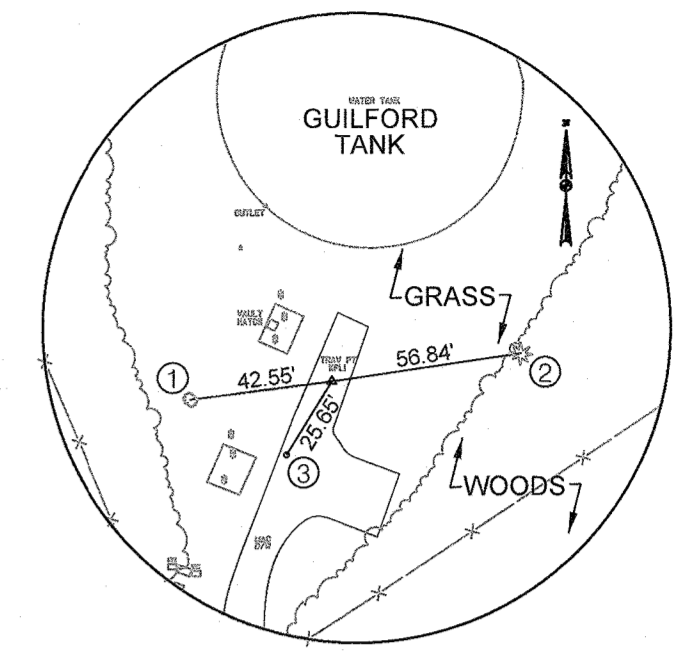




**SURVEY REFERENCES**

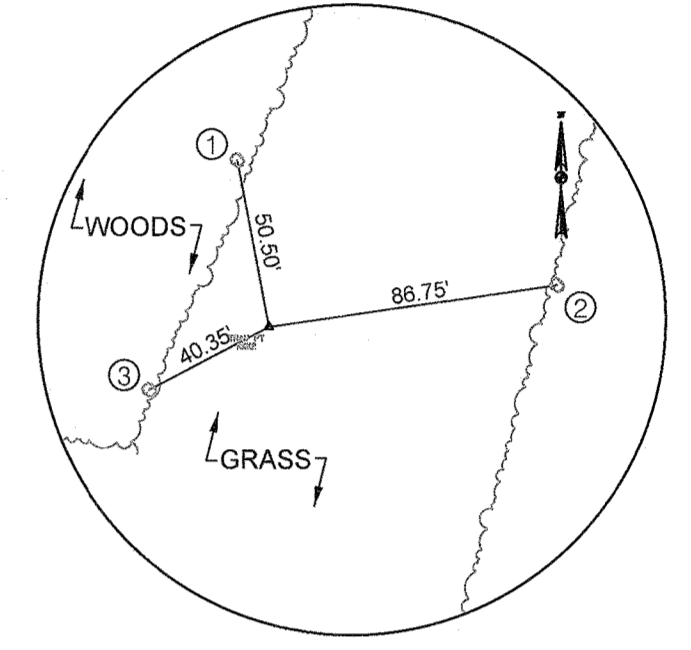
**TRAV PT. KPL1**

- ① N/C IN 10" OAK
  - ② N/C IN 8" PINE
  - ③ MAC. NAIL WITH PLASTIC SHINER
- N 540,629.8255  
E 1,366,871.9541  
ELEV. 321.41'



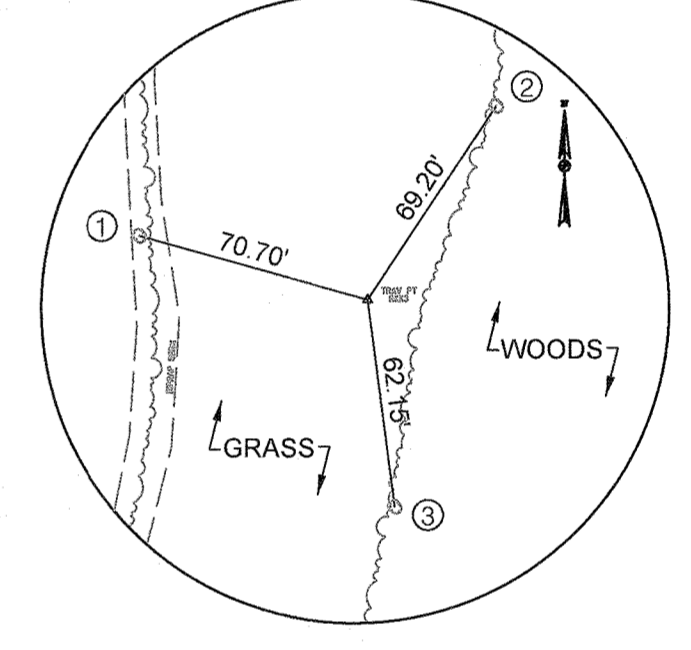
**TRAV PT. RKK2**

- ① N/C IN 14" PIN OAK
  - ② N/C IN 8" POPLAR
  - ③ N/C IN 8" TREE
- N 540,457.7020  
E 1,367,019.6261  
ELEV. 318.01'



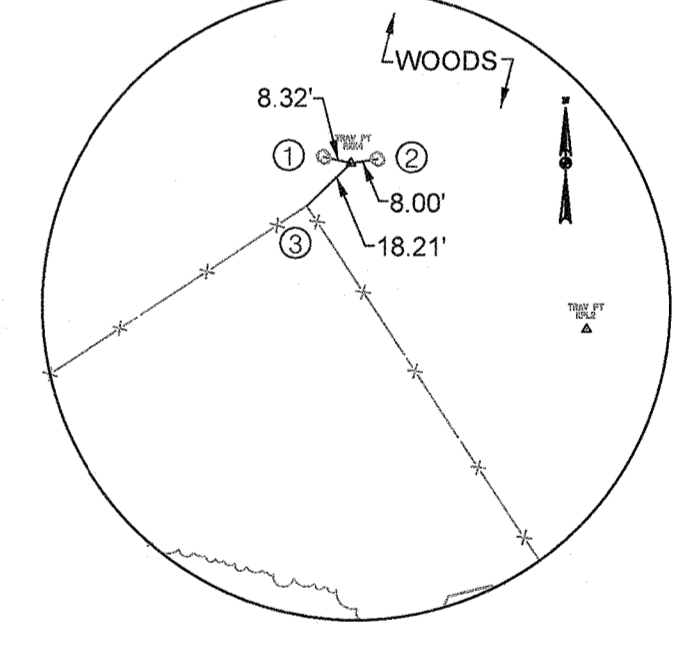
**TRAV PT. RKK3**

- ① N/C IN 10" OAK
  - ② N/C IN 20" OAK
  - ③ N/C IN 6" PIN OAK
- N 540,796.6402  
E 1,367,157.7258  
ELEV. 315.49'



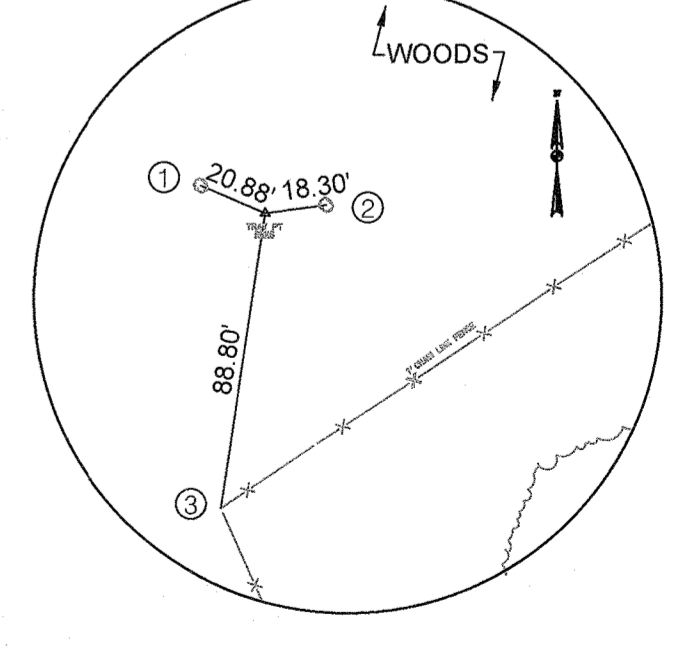
**TRAV PT. RKK4**

- ① N/C IN 12" POPLAR
  - ② N/C IN 15" POPLAR
  - ③ 1' ABOVE GROUND, FACE OF POST, CORNER FENCE
- N 540,897.9555  
E 1,366,931.5410  
ELEV. 324.69'



**TRAV PT. RKK5**

- ① N/C IN 8" TWIN POPLAR
  - ② N/C IN 12" POPLAR
  - ③ 3' ABOVE GROUND, FACE OF POST, CORNER FENCE
- N 540,848.7292  
E 1,366,743.1209  
ELEV. 328.33'



TRAVERSE POINTS			
POINT NO.	NORTH	EAST	ELEVATION
KPL1	540,629.8255	1,366,871.9541	321.41'
RKK2	540,457.7020	1,367,019.6261	318.01'
RKK3	540,796.6402	1,367,157.7258	315.49'
RKK4	540,897.9555	1,366,931.5410	324.69'
RKK5	540,848.7293	1,366,743.1209	328.33'

EWST ACCESS ROAD				
CURVE	POINT NO.	STATION	NORTH	EAST
6	POT	90+00.00	540,432.8226	1,366,854.8542
	PC	90+30.77	540,462.6966	1,366,862.2173
	PI	90+58.31	540,489.4384	1,366,868.8085
	PT	90+83.82	540,514.5702	1,366,857.5407
7	PC	93+04.44	540,715.8817	1,366,767.2836
	PI	93+29.14	540,738.4178	1,366,757.1796
	PT	93+52.35	540,762.7277	1,366,761.5379
	POT	94+54.19	540,862.9519	1,366,779.5061

CURVE DATA						
CURVE	DELTA	Dc	RADIUS	TANGENT	LENGTH	EXTERNAL
6	37° 59' 41.19" (LT)	71° 37' 11.01"	80.00'	27.5421'	53.0507'	4.6083'
7	34° 18' 46.40" (RT)	71° 37' 11.01"	80.00'	24.6975'	47.9098'	3.7255'

FENCE STAKEOUT TABLE		
CORNER No.	NORTH	EAST
1	540,470.4645	1,366,839.7214
2	540,770.4031	1,366,704.2049
3	540,880.3662	1,366,625.7491
4	540,902.2953	1,366,648.0652
5	540,989.3917	1,366,779.6535
6	540,974.7702	1,366,857.7638
7	540,724.7310	1,367,023.1831
8	540,646.5198	1,367,000.5738
9	540,549.7988	1,366,854.3465
10	540,456.4667	1,366,896.5138

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. 27458. EXPIRATION DATE 2022-07-03.

DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

*[Signature]* 6/28/21  
PLANNING DIRECTOR DATE

*[Signature]* 6/17/21  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*[Signature]* 6/17/21  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

**RK&K**  
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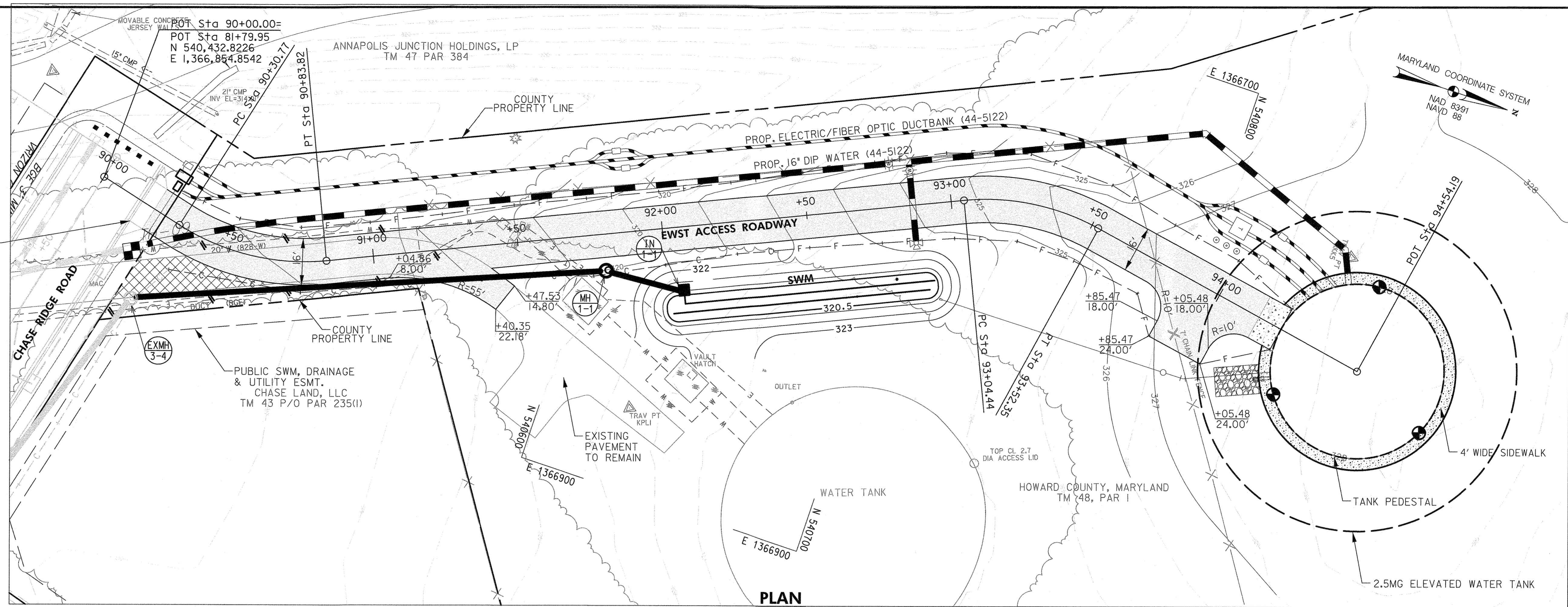
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DES: TMB	BY NO.	REVISION	DATE
DRN: BB			
CHK: RJG			
DATE: DECEMBER 2020			

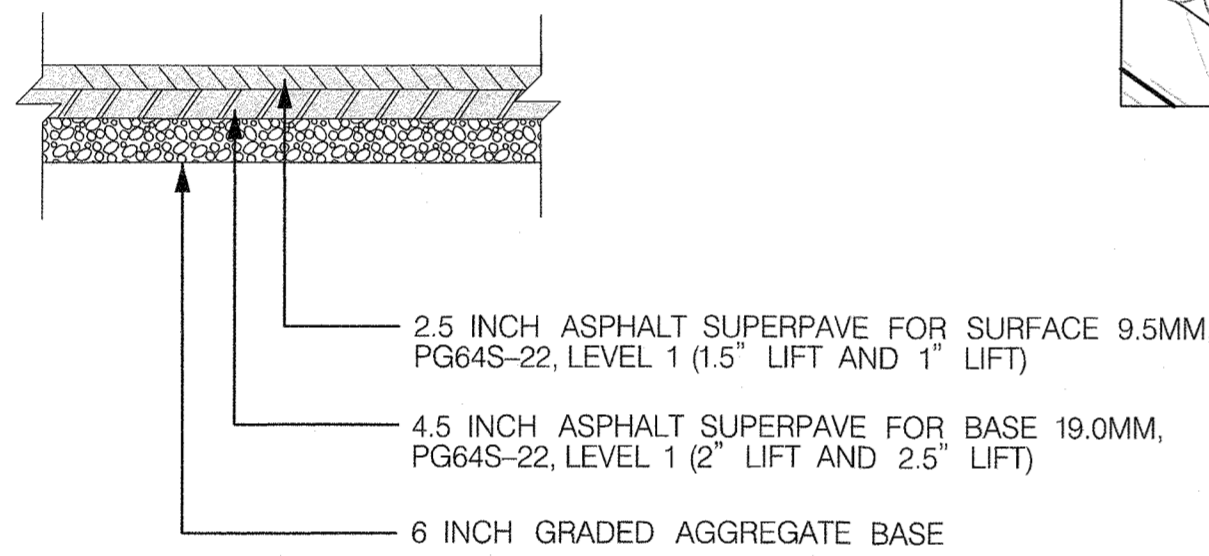
**SURVEY CONTROL AND STAKEOUT PLAN**

600' SCALE MAP NO. 48 BLOCK NO. 1

TAX MAP 48	GRID 0001.0019 PARCEL 0001.0235	SD-5
<b>GUILFORD ELEVATED WATER TANK</b> SITE DEVELOPMENT PLAN CAPITAL PROJECT NO. W8262 SDP-20-032		SCALE 1"=100'
ELECTION DISTRICT NO. 6		SHEET NO. 05 OF 16
HOWARD COUNTY, MARYLAND		SDP - 20 - 032

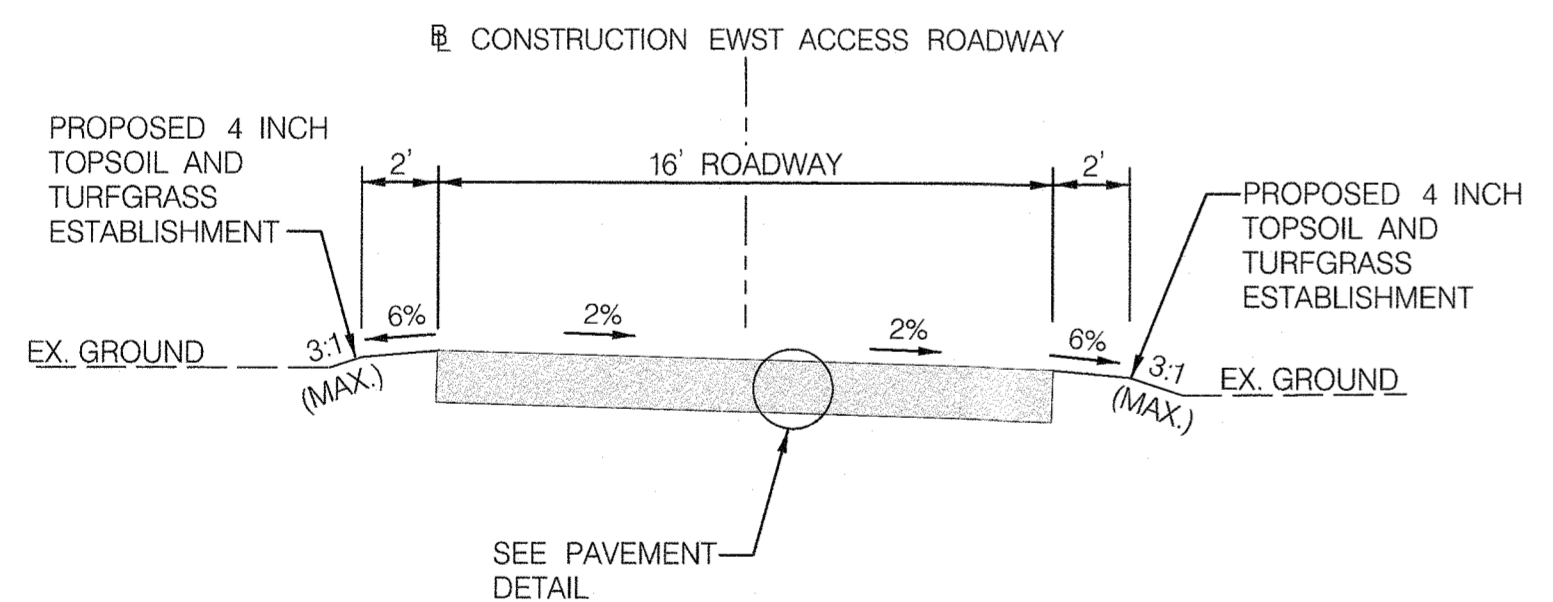


PLAN  
SCALE: 1"=20'

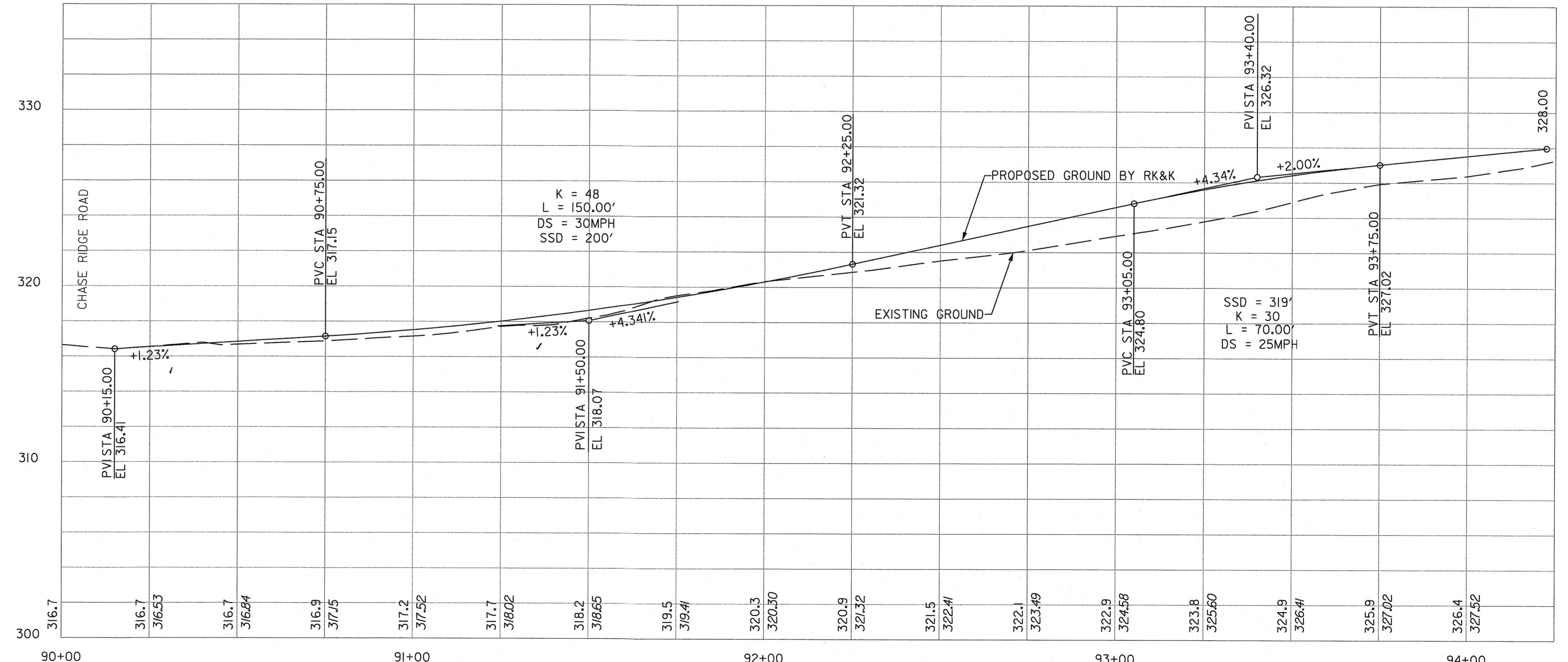


FULL DEPTH PAVEMENT DETAIL

NOTE: MATCH COUNTY PAVING SECTION P-3 (DETAIL R-2.01) WITH CBR 3 TO <5 (CONSTANT GAB)



TYPICAL SECTION



EWST ACCESS ROAD - PROFILE  
SCALE: 1"=20'

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. 27458, EXPIRATION DATE 2022-07-03.

FILE PATH: \\bdrsv06\2018\18265\_Guilford\CADD\Ref-Tank\Support\XBL-0000\_SDP\_Guilford\_Tank.dwg DATE: 5/7/2020 USER: nzhong

DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND  
PLANNING DIRECTOR  
6/29/21  
CHIEF, DIVISION OF LAND DEVELOPMENT  
DATE  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE

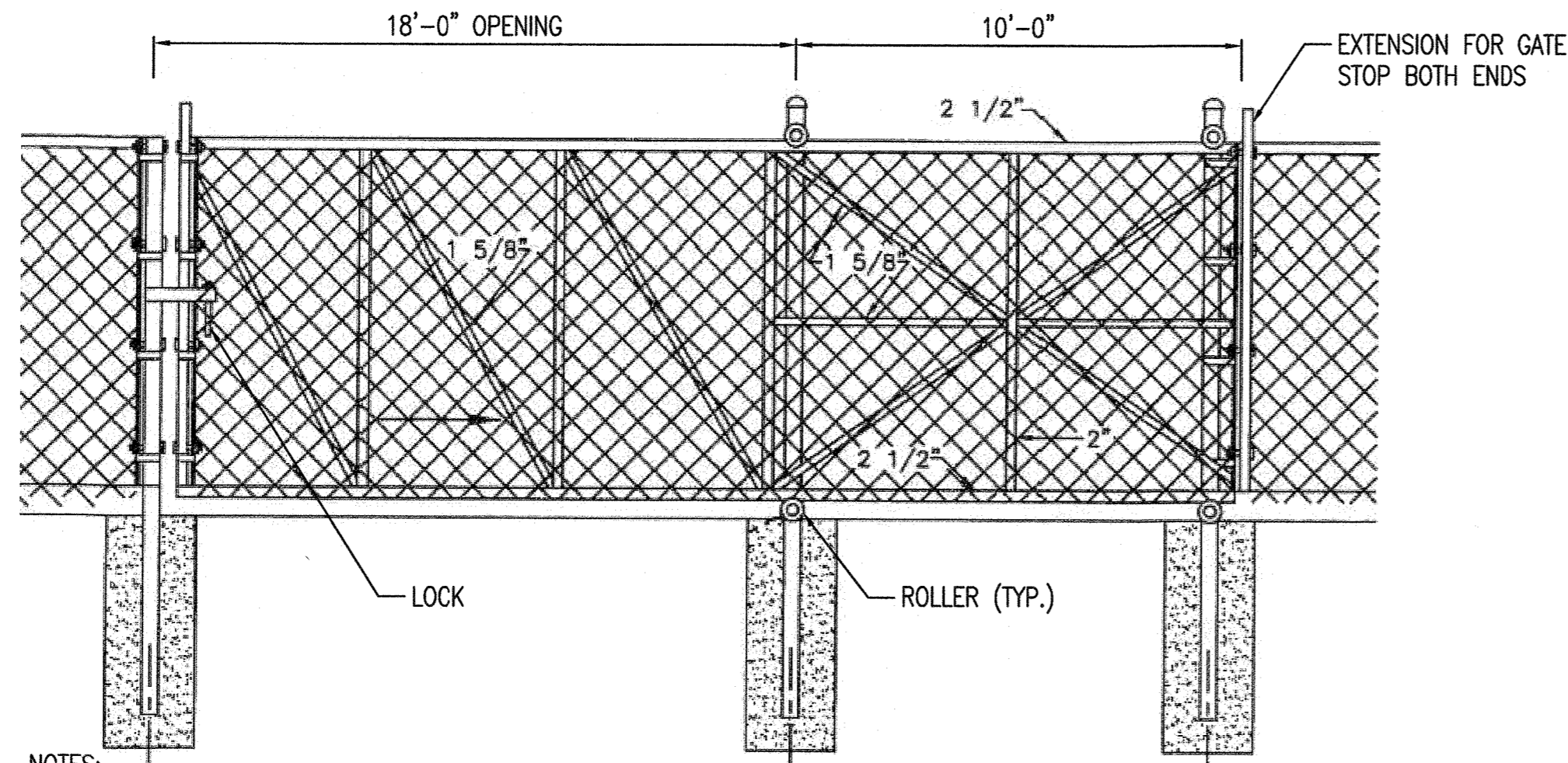
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DES: TMB	BY: NO.	REVISION	DATE
DRN: BB			
CHK: RJG			
DATE: DECEMBER 2020			

SITE ACCESS ROAD PLAN  
600' SCALE MAP NO. 48 BLOCK NO. 1

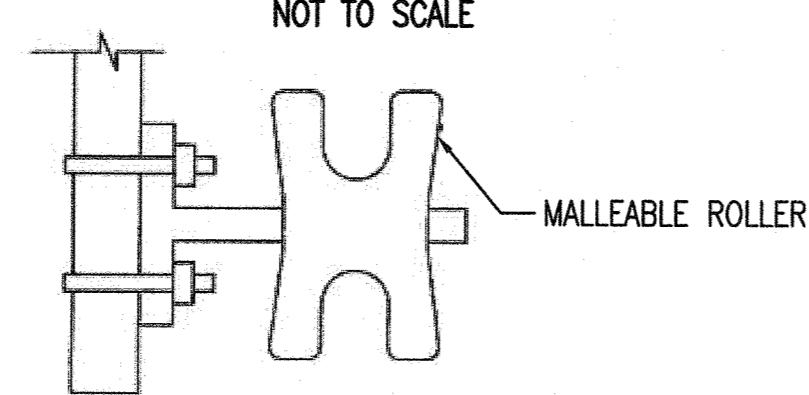
TAX MAP 48 GRID 0001, 0019 PARCEL 0001, 0235 SD-6  
GUILFORD ELEVATED WATER TANK  
SITE DEVELOPMENT PLAN  
CAPITAL PROJECT NO. W8262  
SDP-20-032  
ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND  
SCALE  
HOR: 1"=20'  
VER: 1"=4'  
SHEET NO.  
06 OF 16  
SDP - 20 - 032



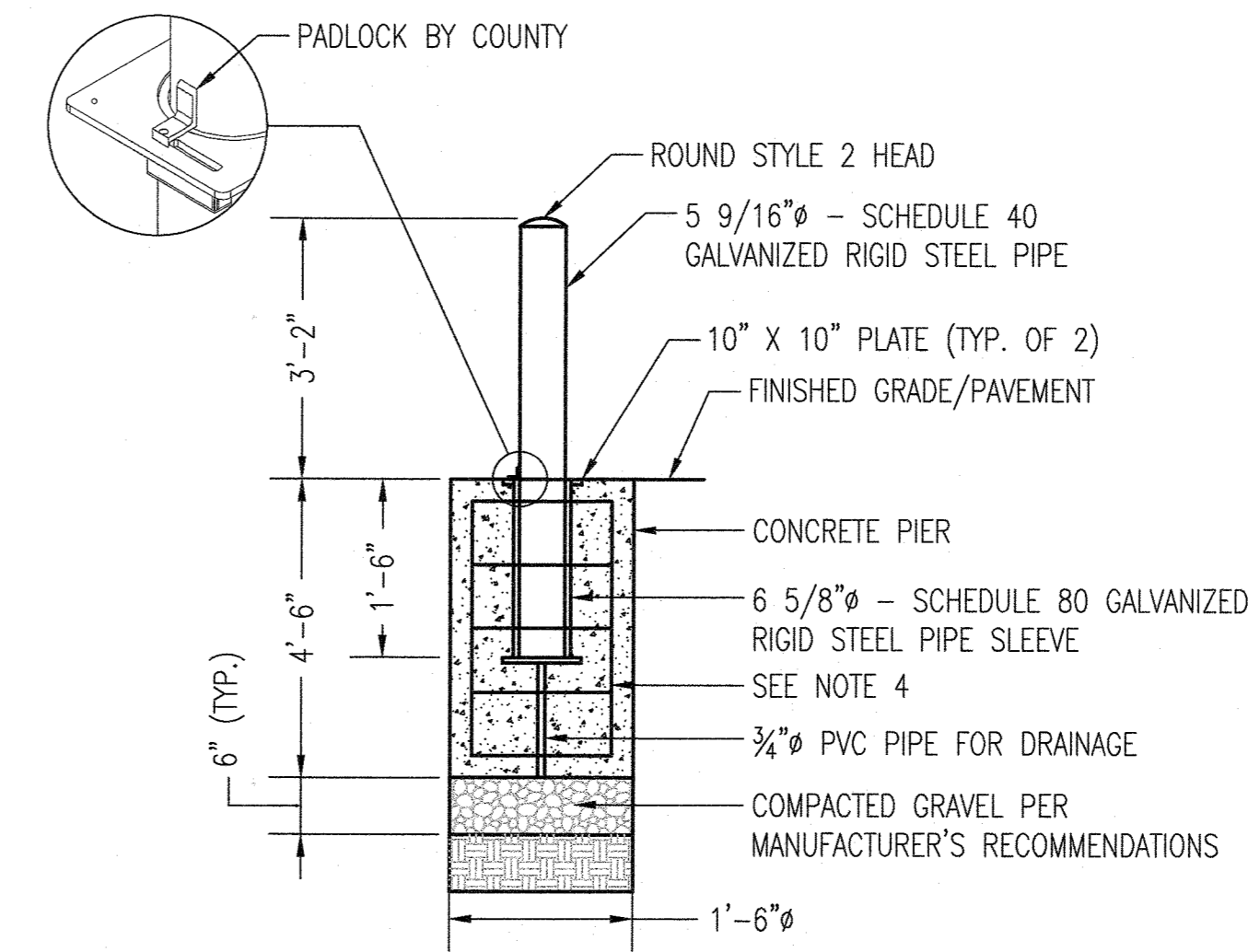


- NOTES:
- MOVABLE GATE FRAMING TO BE ALUMINUM.
  - SEE HoCo. STD DETAIL G-7.21 FOR CHAIN LINK FENCE DETAIL.
  - GATE SHALL BE BLACK VINYL COATED. REFER TO TECHNICAL SPECIFICATION 02830.

**CANTILEVER SLIDING GATE**

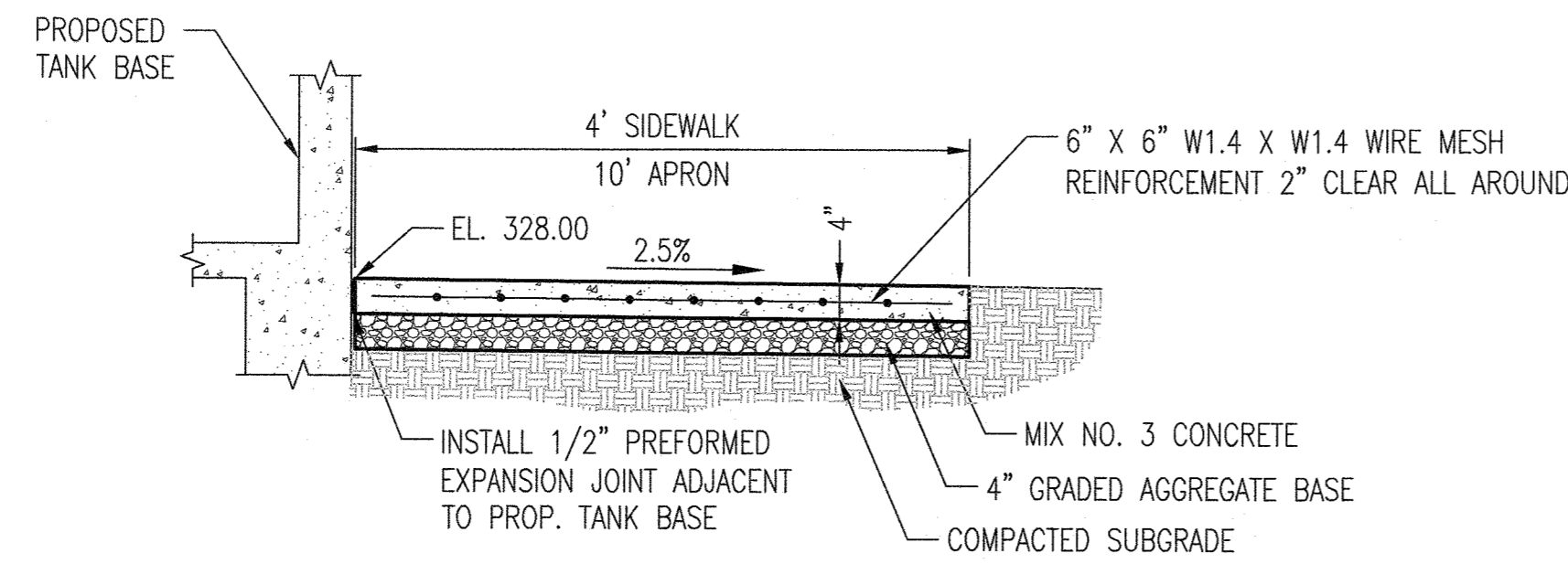


**TYPICAL ROLLER ASSEMBLY**



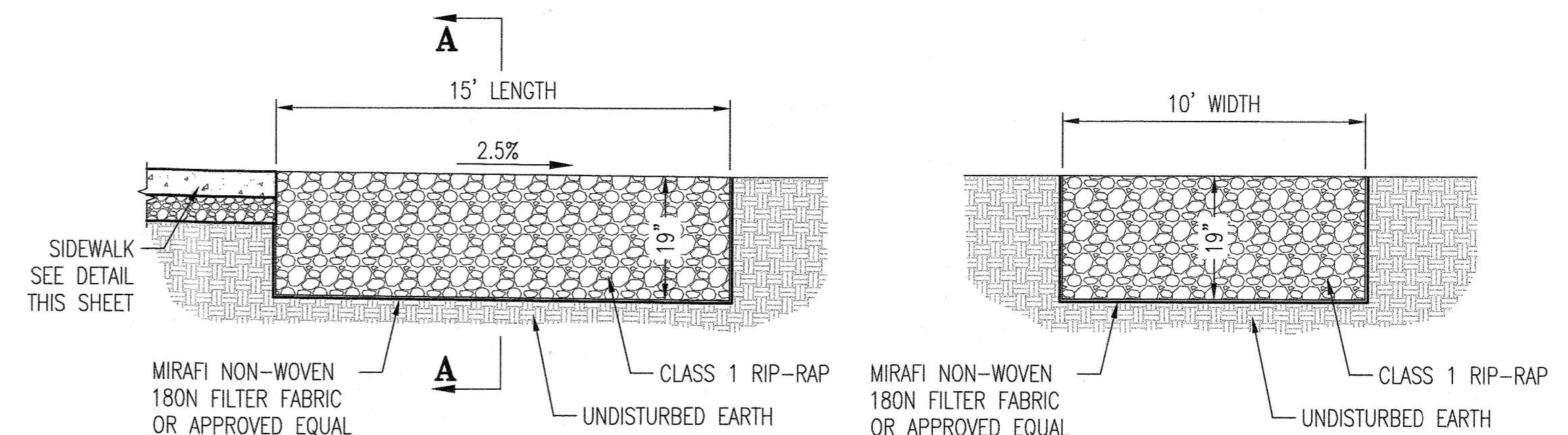
- NOTES:
- BOLLARD SHALL BE SECURED TO THE PIPE SLEEVE ASSEMBLY BY A PADLOCK. PADLOCKS WILL BE PROVIDED BY THE COUNTY.
  - BOLLARD SHALL RECEIVE A FACTORY APPLIED HOT DIP GALVANIZED & POWDER COATING, AND SHALL BE SAFETY YELLOW.
  - REMOVABLE BOLLARD AND BASE ASSEMBLY SHALL BE MODEL MRHP-RS2-HD5 AS MANUFACTURED BY MAXIFORCE, OR APPROVED EQUAL.
  - CONCRETE PIER REINFORCEMENT STEEL SHALL BE FOUR (4) #4 VERTICAL BARS, #3 HOOP TIES AT 12" SPACING, WITH TWO (2) #3 HOOP TIES AT TOP AND BOTTOM OF PIER.

**REMOVABLE BOLLARD DETAIL**



- NOTES:
- SIDEWALK TO BE SCRIBED IN 4'-0" MAXIMUM SQUARES.
  - EXPANSION JOINTS ACROSS THE SIDEWALK NOT TO BE MORE THAN 16' APART.
  - CONCRETE TO BE MIX #3.

**CONCRETE SIDEWALK AND APRON DETAIL**



**SECTION A-A**

**RIP-RAP OUTFALL DETAIL**

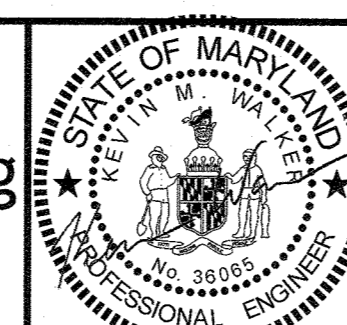
PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 38065, EXPIRATION DATE 6/28/2022.

DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

*Walter*  
PLANNING DIRECTOR  
DATE: 6/28/21

*Walter*  
CHIEF, DIVISION OF LAND DEVELOPMENT  
DATE: 6/17/21

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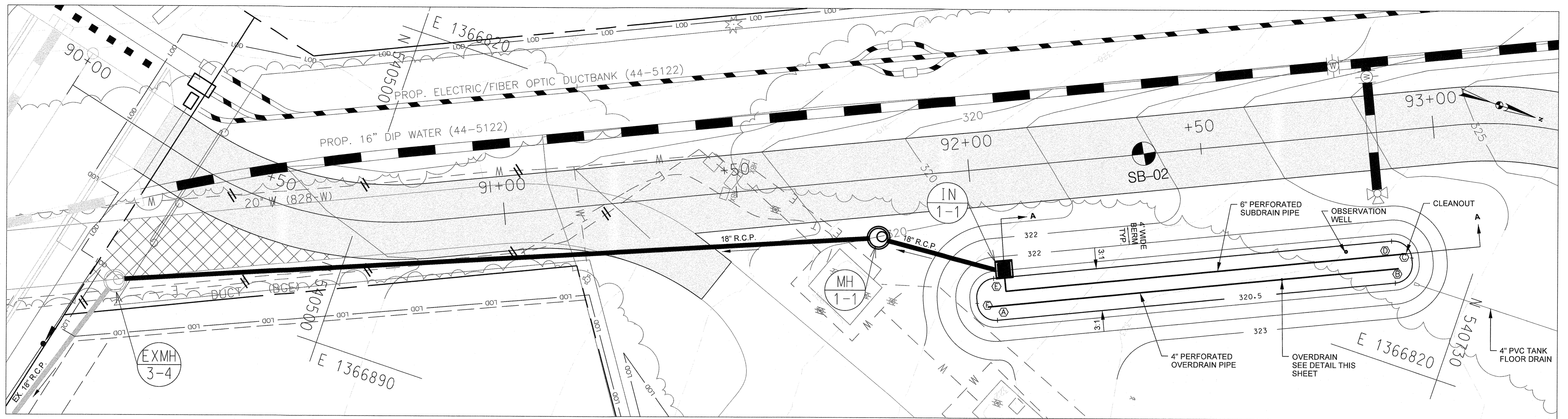
DES:	BY:	NO.:	REVISION:	DATE:
DKS				
DKS				
KMW				
DATE: DECEMBER 2020				

**SITE NOTES AND DETAILS**

60' SCALE MAP NO. 48 BLOCK NO. 1

TAX MAP 48	GRID 0001.0019 PARCEL 0001.0235	SD-7
<b>GUILFORD ELEVATED WATER TANK</b> SITE DEVELOPMENT PLAN CAPITAL PROJECT NO. W8262 SDP-20-032		SCALE AS SHOWN
		SHEET NO. 07 OF 16
ELECTION DISTRICT NO. 8		HOWARD COUNTY, MARYLAND





**PLAN**  
SCALE: 1"=10'

MBR 1-1 STAKEOUT			
ID	NORTHING	EASTING	ELEVATION
A	540,636.8	1,366,838.3	320.50
B	540,715.0	1,366,803.2	320.50
C	540,716.6	1,366,797.1	320.50
D	540,711.3	1,366,795.0	320.50
E	540,633.1	1,366,830.1	320.50
F	540,631.5	1,366,836.3	320.50

MBR LANDSCAPE QUANTITY TABLE				
QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
123	CHELONE GLABRA	WHITE TURTLEHEAD	SP#4 CONT	18" OC
123	EUPATORIUM DUBIUM	JOE PYE WEED	SP#4 CONT	18" OC
123	SCIRPUS CYPERINUS	WOOLGRASS	SP#4 CONT	18" OC

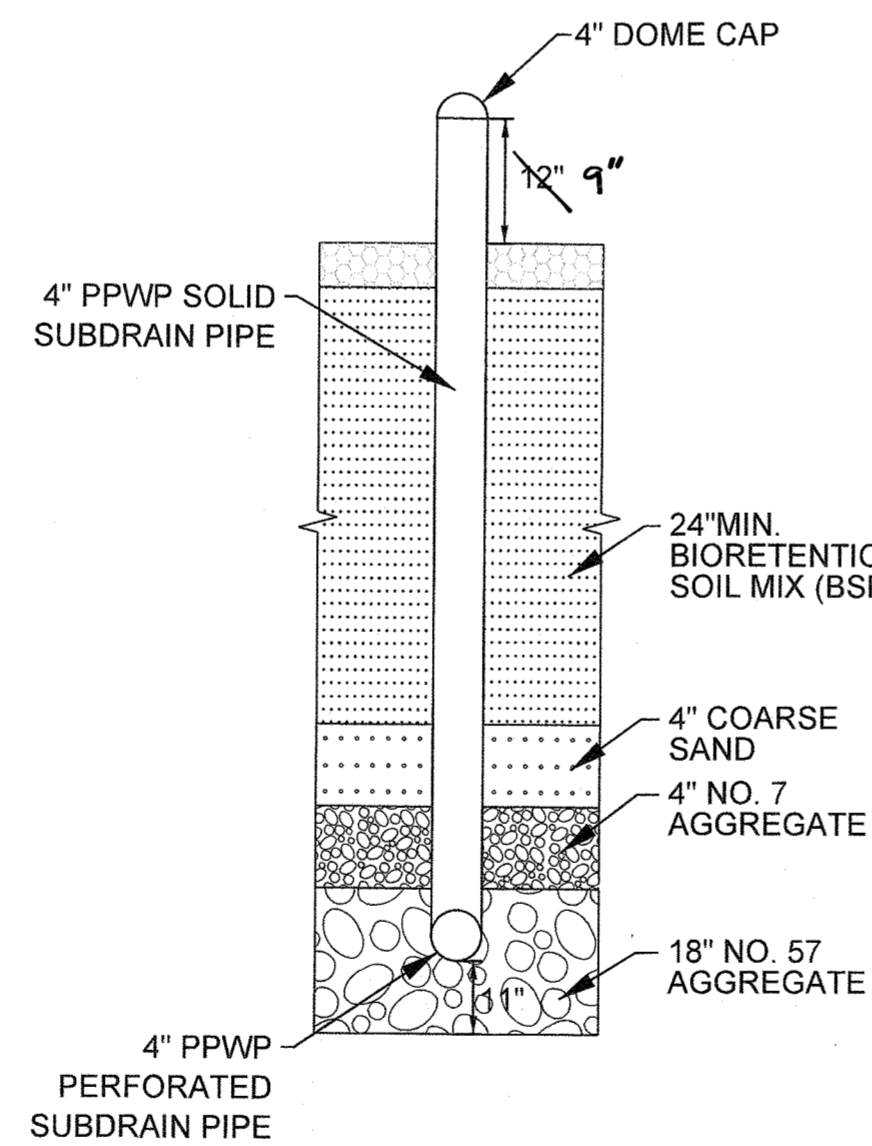
**NOTES**  
1. PLANTS TO BE PLACED WITHIN THE BOTTOM FOOTPRINT OF THE MICRO-BIORETENTION FACILITY. PLANTS SHOULD BE SPACED 18" ON CENTER AND THE SAME SPECIES GROUPED TOGETHER IN GROUPS OF 9 TO 30 PLANTS.

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

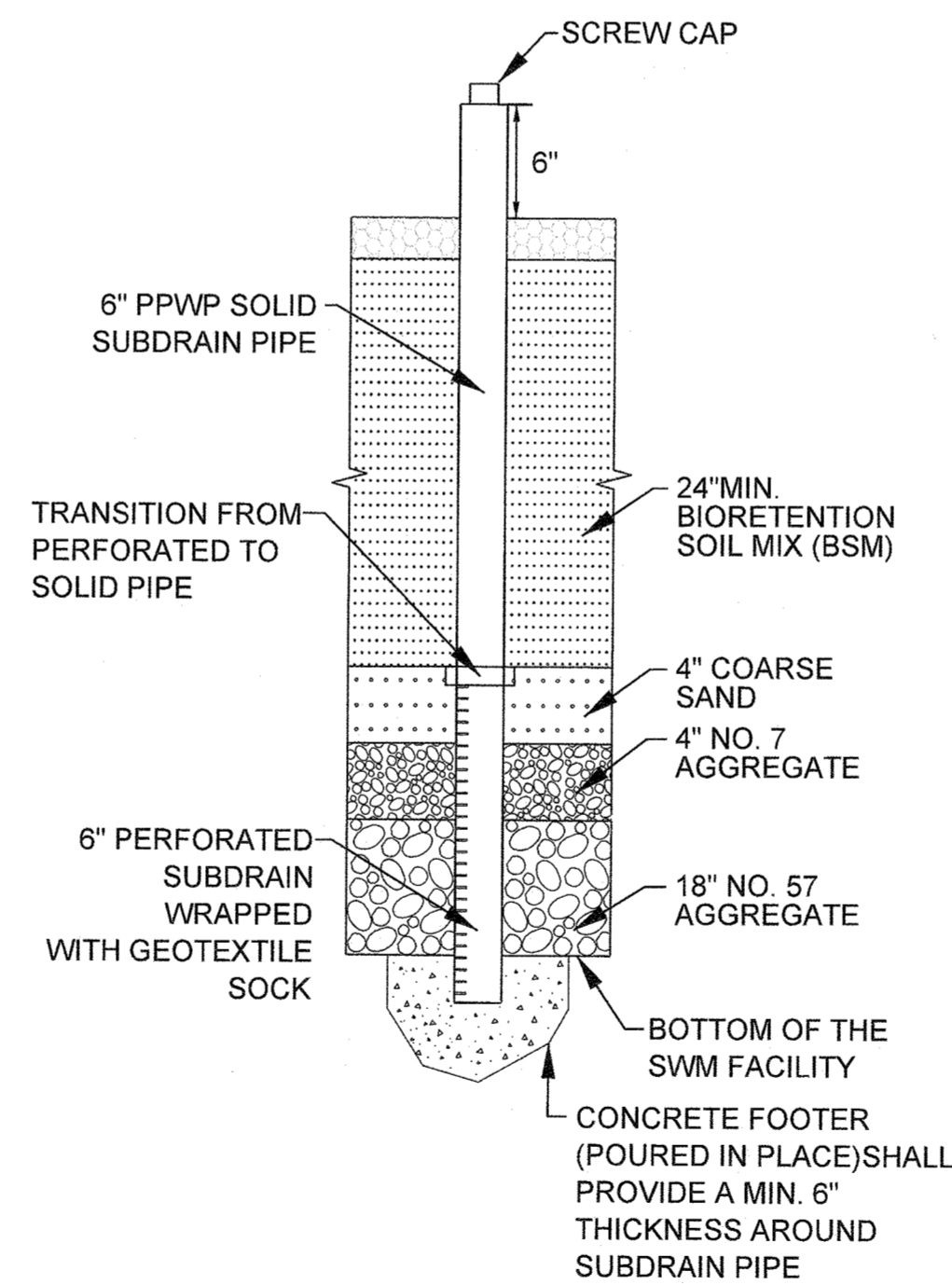
- A. THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II, TABLE A.4.1 AND 2.
- B. THE OWNER SHALL PERFORM A PLANT INSPECTION IN THE SPRING AND IN THE FALL OF EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLANT MATERIAL, TREAT DISEASED TREES AND SHRUBS, AND REPLACE ALL DEFICIENT STAKES AND WIRES.
- C. THE OWNER SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.
- D. THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

**OPERATION AND MAINTENANCE SCHEDULE FOR DISCONNECTION OF ROOFTOP RUNOFF (N-1), DISCONNECTION OF NON-ROOFTOP RUNOFF (N-2)**

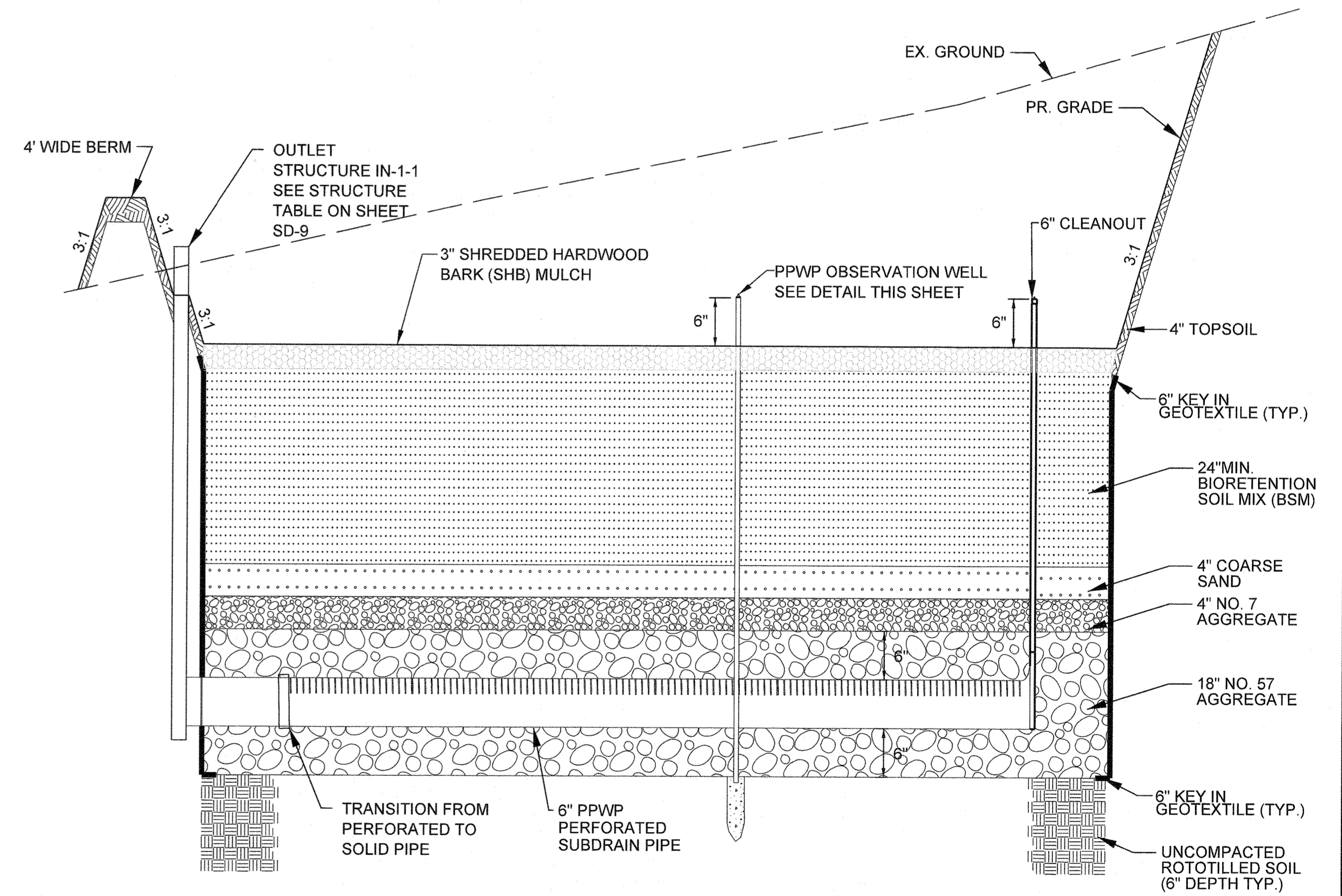
- A. MAINTENANCE OF AREAS RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPED AREAS. THE AREAS RECEIVING RUNOFF SHOULD BE PROTECTED FROM FUTURE COMPACTION OR DEVELOPMENT OF IMPERVIOUS AREA. IN COMMERCIAL AREAS, FOOT TRAFFIC SHOULD BE DISCOURAGED AS WELL.



**OVERDRAIN DETAIL**  
NOT TO SCALE



**OBSERVATION WELL DETAIL**  
NOT TO SCALE



**MICRO-BIORETENTION PROFILE SECTION A-A**  
SCALE: 1"=10' HORIZ.  
1"=1" VERT.

- NOTES**
- REFER TO SECTION 317 OF THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS DESIGN MANUAL, VOLUME IV FOR MATERIALS AND INSTALLATION SPECIFICATIONS.
  - DO NOT PLACE SOD OR SSM ON THE BOTTOM SURFACE OF THE FACILITY.

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. 51090, EXPIRATION DATE 06-13-2021

DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

PLANNING DIRECTOR: *[Signature]* DATE: 6/22/21  
CHIEF, DIVISION OF LAND DEVELOPMENT: *[Signature]* DATE: 6/17/21  
CHIEF, DEVELOPMENT ENGINEERING DIVISION: *[Signature]* DATE: *[Signature]*

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DES:	BY:	NO.:	REVISION:	DATE:
DES				
DRN:				
CHK:	MBS			
DATE:	DECEMBER 2020			

STORMWATER MANAGEMENT PLAN & DETAILS

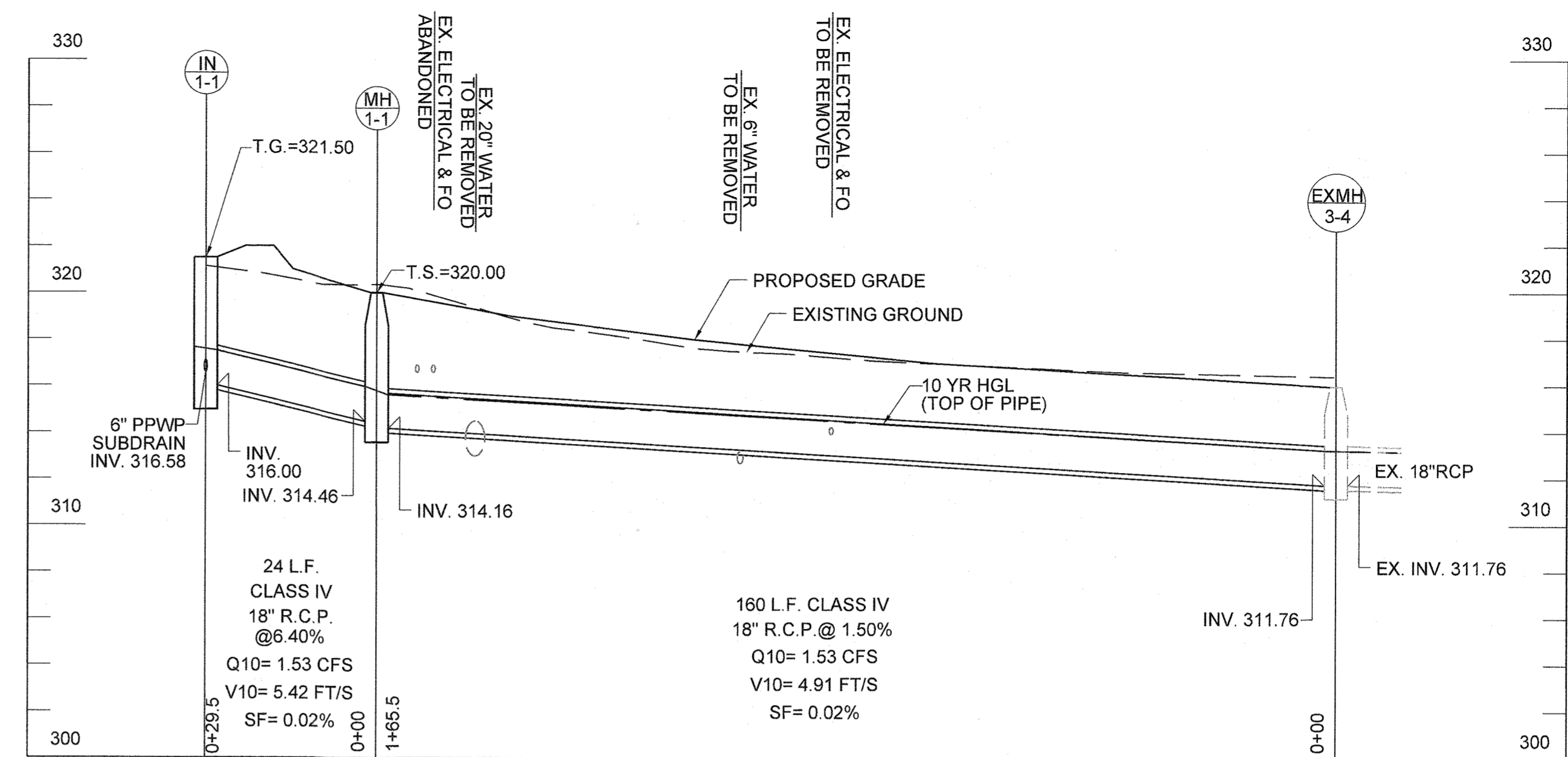
60' SCALE MAP NO. 48 BLOCK NO. 1

TAX MAP 48	GRID 0001, 0019 PARCEL 0001, 0235	SD-8
GUILFORD ELEVATED WATER TANK SITE DEVELOPMENT PLAN CAPITAL PROJECT NO. W8262 SDP-20-032		SCALE AS SHOWN
ELECTION DISTRICT NO. 6		SHEET NO. 08 OF 16
HOWARD COUNTY, MARYLAND		



STORM DRAIN PIPE SCHEDULE			
FROM	TO	SIZE & TYPE	LENGTH
IN-1-1	MH-1-1	18" RCP, CLASS IV	24 L.F.
MH-1-1	EXMH-3-4	18" RCP, CLASS IV	160 L.F.

DRAINAGE STRUCTURE SCHEDULE					
STRUCTURE NO.	BASELINE	STATION	OFFSET	TYPE	STD. REF.
MH-1-1	EWST ACCESS ROAD	91+80.5	12.46	PRECAST MANHOLE: STANDARD AND SHALLOW 4'-0"	G-5.12
IN-1-1	EWST ACCESS ROAD	92+07.7	22.50	TYPE D INLET, WITH BEEHIVE GRATE	D-4.11



**PROFILE**  
SCALE: 1"=20' HORIZ.  
1"=4' VERT.

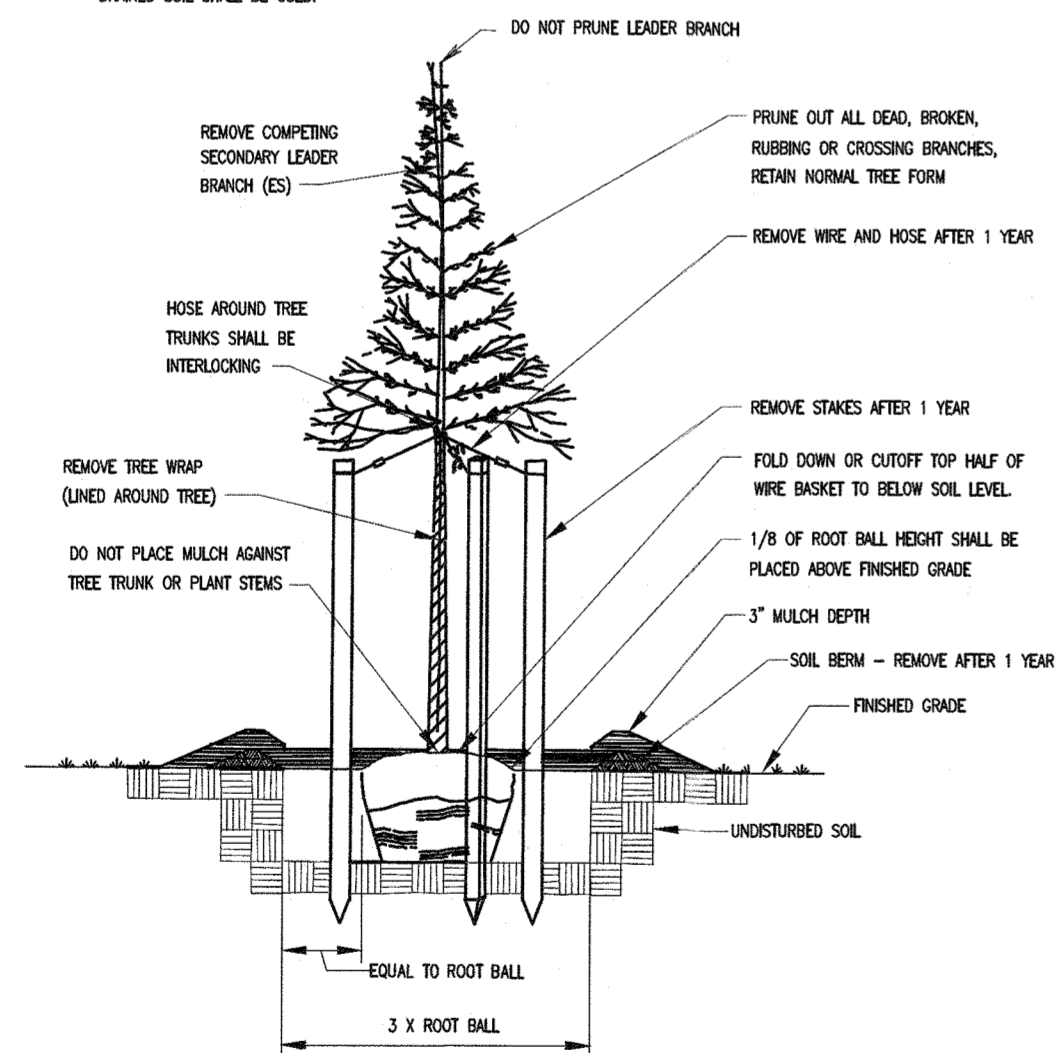
NOTE: CONTRACTOR TO BLOCK FLOW FROM ENTERING EX MH 3-4 UNTIL AFTER STORMWATER IS INSTALLED AND STABILIZED AND PERMISSION IS GRANTED BY THE INSPECTOR.

**GENERAL NOTES APPLICABLE TO ALL LANDSCAPING DETAILS:**

- HOSE FOR USE AROUND TREE TRUNKS SHALL BE INTERLOCKING.
- TREE SUPPORTS INCLUDING WIRES, STAKES AND HOSE SHALL BE REMOVED AFTER 1 YEAR TO ALLOW TREES TO SWAY.
- FOLD DOWN OR CUT OFF HALF OF WIRE BASKET TO BELOW SOIL LEVEL.
- PIT DIAMETER SHALL BE THREE TIMES THE DIAMETER OF THE ROOT BALL.
- ROOT BALLS SHALL HAVE 1/3" OF HEIGHT ABOVE GRADE.
- SOIL BERM SHALL BE REMOVED AFTER 1 YEAR.
- MULCH SHALL NOT BE DIRECTLY PLACED AGAINST TREE TRUNKS OR PLANT STEMS.
- PRUNING PATTERNS SHALL BE AS FOLLOWS:

PRUNE TO REMOVE BROKEN, DEAD AND DAMAGED BRANCHES. ON TREES WITH DOMINANT LEADERS, REMOVE COMPETING SECONDARY LEADERS. ALL PRUNING SHALL BE AS APPROVED BY THE ENGINEER.

- SHA ROOT COLLAR HEIGHT DETAIL FOR PLANTING IN WELL-DRAINED SOIL SHALL NOT BE USED. ONLY ROOT HEIGHT DETAILS FOR COMPACTED SOIL OR POORLY DRAINED SOIL SHALL BE USED.



Revised 5/30/2017 Approved 6/7/2017 Approved	Howard County, Maryland Department of Public Works Approved: <i>[Signature]</i> Chief, Bureau of Engineering	Detail Landscaping General Notes L-1.01
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PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 51090, EXPIRATION DATE 06-13-2021.

**SWM FACILITY AS-BUILT CERTIFICATION DATA TABLE FOR M-6 MICRO-BIORETENTION**

MAY ONLY BE CERTIFIED BY THE AS-BUILT ENGINEER (ABE) AS REQUIRED BY COMAR 26.17.02.10.

SWM FACILITY NUMBER  
Micro-bioretenion

FEATURE	DESIGN	AS-BUILT*
BOTTOM WIDTH (FT)	9	
BOTTOM LENGTH (FT)	93	
LEFT SIDE SLOPE (H:V) - MAY NOT BE STEEPER THAN 3:1	3:1	
RIGHT SIDE SLOPE (H:V) - MAY NOT BE STEEPER THAN 3:1	3:1	
OBSERVATION WELL PIPE DIAMETER (IN.) - MAY NOT DIFFER FROM VALUE SPECIFIED	6	
TOTAL THICKNESS OF NO. 57 AGGREGATE (IN.) - MAY NOT BE LESS THAN 18 IN.	18	
THICKNESS OF NO. 7 AGGREGATE (IN.) - MAY NOT BE LESS THAN 4 IN.	4	
THICKNESS OF COARSE SAND (IN.) - MAY NOT BE LESS THAN 4 IN.	4	
THICKNESS OF BSM (IN.) - MAY NOT BE LESS THAN 24 IN.	24	
SUB-DRAIN PIPE DIAMETER (IN.) - MAY NOT DIFFER FROM VALUE SPECIFIED	6	
SUB-DRAIN OUTLET INVERT ELEVATION (FT)	316.58	
THICKNESS OF SHREDDED HARDWOOD BARK MULCH (IN.) - MAY NOT DIFFER FROM VALUE SPECIFIED	3	

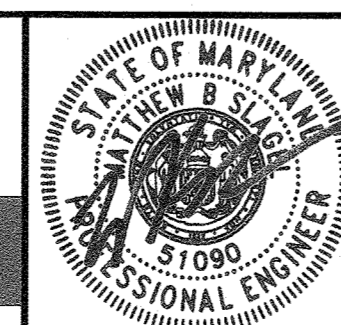
\* TO BE COMPLETED BY THE CONTRACTOR'S SURVEYOR AND THE COUNTY'S RESIDENT INSPECTOR

SWM FACILITY AS-BUILT CERTIFICATION ACCEPTANCE APPROVING AUTHORITY: Howard County  
ACCEPTED BY: \_\_\_\_\_ (NAME) DATE: \_\_\_\_\_

DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND



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DES				
DRN:				
CHK:				
DATE:	DECEMBER	2020		

DRAINAGE & LANDSCAPE DETAILS

600' SCALE MAP NO. 48 BLOCK NO. 1

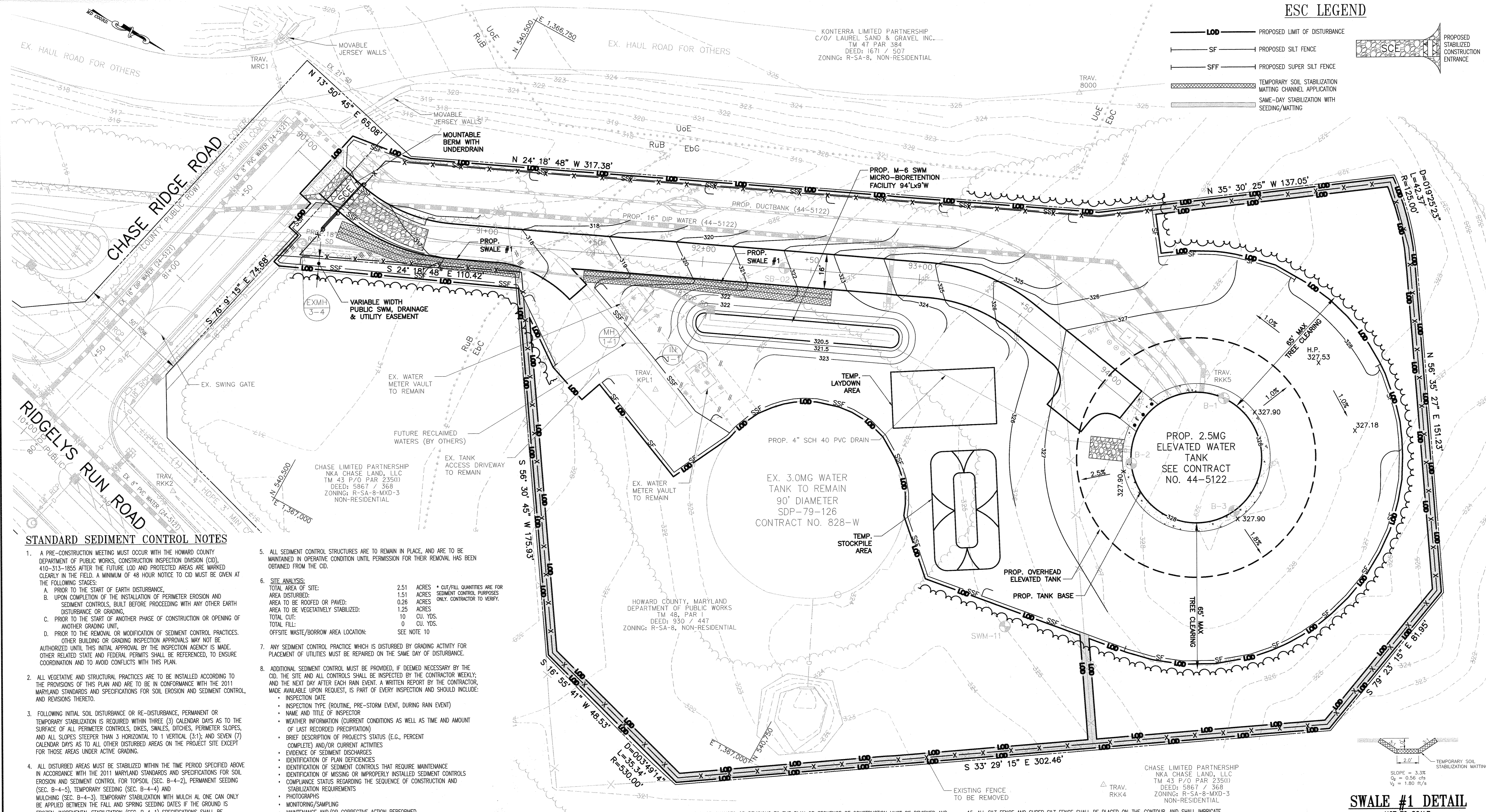
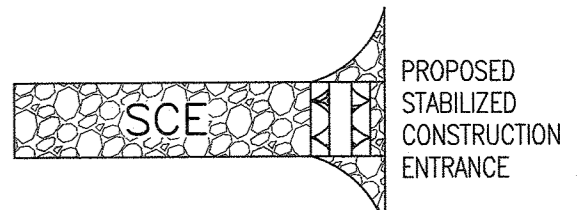
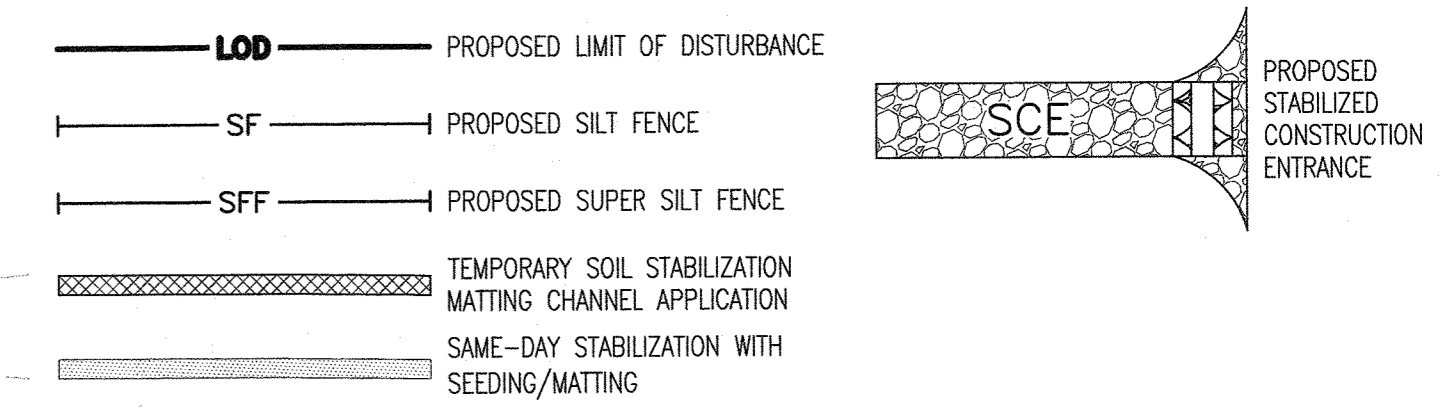
TAX MAP 48	GRID 0001, 0019 PARCEL 0001, 0235	SD-9
GUILFORD ELEVATED WATER TANK SITE DEVELOPMENT PLAN CAPITAL PROJECT NO. W8262 SDP-20-032		SCALE AS SHOWN SHEET NO. 09 OF 16
ELECTION DISTRICT NO. 6	HOWARD COUNTY, MARYLAND	







**ESC LEGEND**



**STANDARD SEDIMENT CONTROL NOTES**

- A PRE-CONSTRUCTION MEETING MUST OCCUR WITH THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION (CID), 410-313-1855 AFTER THE FUTURE LDD AND PROTECTED AREAS ARE MARKED CLEARLY IN THE FIELD. A MINIMUM OF 48 HOUR NOTICE TO CID MUST BE GIVEN AT THE FOLLOWING STAGES:
  - PRIOR TO THE START OF EARTH DISTURBANCE.
  - UPON COMPLETION OF THE INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUILT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING.
  - PRIOR TO THE START OF ANOTHER PHASE OF CONSTRUCTION OR OPENING OF ANOTHER GRADING UNIT.
  - 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.
- 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.
- 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.
- 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 AL ONE CAN ONLY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES IF THE GROUND IS FROZEN. INCREMENTAL STABILIZATION (SEC. B-4-1) SPECIFICATIONS SHALL BE ENFORCED IN AREAS WITH >15' OF CUT AND/OR FILL. STOCKPILES (SEC. B-4-8) IN EXCESS OF 20 FT. MUST BE BENCHED WITH STABLE OUTLET. ALL CONCENTRATED FLOW, STEEP SLOPE, AND HIGHLY ERODIBLE AREAS SHALL RECEIVE SOIL STABILIZATION MATTING (SEC. B-4-6).
- 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.
- SITE ANALYSIS:**

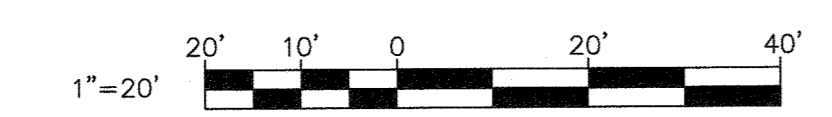
TOTAL AREA OF SITE:	2.51 ACRES	* CUT/FILL QUANTITIES ARE FOR SEDIMENT CONTROL PURPOSES ONLY. CONTRACTOR TO VERIFY.
AREA TO BE ROOFED OR PAVED:	1.51 ACRES	
AREA TO BE VEGETATIVELY STABILIZED:	0.26 ACRES	
TOTAL CUT:	10 CU. YDS.	
TOTAL FILL:	0 CU. YDS.	
OFFSITE WASTE/BORROW AREA LOCATION:	SEE NOTE 10	
- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE CID. THE SITE AND ALL CONTROLS SHALL BE INSPECTED BY THE CONTRACTOR WEEKLY; AND THE NEXT DAY AFTER EACH RAIN EVENT. A WRITTEN REPORT BY THE CONTRACTOR, MADE AVAILABLE UPON REQUEST, IS PART OF EVERY INSPECTION AND SHOULD INCLUDE:
  - INSPECTION DATE
  - INSPECTION TYPE (ROUTINE, PRE-STORM EVENT, DURING RAIN EVENT)
  - NAME AND TITLE OF INSPECTOR
  - WEATHER INFORMATION (CURRENT CONDITIONS AS WELL AS TIME AND AMOUNT OF LAST RECORDED PRECIPITATION)
  - BRIEF DESCRIPTION OF PROJECT'S STATUS (E.G., PERCENT COMPLETE) AND/OR CURRENT ACTIVITIES
  - EVIDENCE OF SEDIMENT DISCHARGES
  - IDENTIFICATION OF PLAN DEFICIENCIES
  - IDENTIFICATION OF SEDIMENT CONTROLS THAT REQUIRE MAINTENANCE
  - IDENTIFICATION OF MISSING OR IMPROPERLY INSTALLED SEDIMENT CONTROLS
  - COMPLIANCE STATUS REGARDING THE SEQUENCE OF CONSTRUCTION AND STABILIZATION REQUIREMENTS
  - PHOTOGRAPHS
  - MONITORING/SAMPLING
  - MAINTENANCE AND/OR CORRECTIVE ACTION PERFORMED
  - OTHER INSPECTION ITEMS AS REQUIRED BY THE GENERAL PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES (NPDES, MDE).
- 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.
- OFFSITE WASTE / BORROW SITE SHALL HAVE AN APPROVED SEDIMENT CONTROL PLAN AND PERMIT.

- ANY MAJOR CHANGES OR REVISIONS TO THE PLAN OR SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE HSCD PRIOR TO PROCEEDING WITH CONSTRUCTION. MINOR REVISIONS MAY ALLOWED BY THE CID PER THE LIST OF HSCD-APPROVED FIELD CHANGES.
- 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.
- WASH WATER FROM ANY EQUIPMENT, VEHICLES, WHEELS, PAVEMENT, AND OTHER SOURCES MUST BE TREATED IN A SEDIMENT BASIN OR OTHER APPROVED WASHOUT STRUCTURE.
- TOPSOIL SHALL BE STOCKPILED AND PRESERVED ON-SITE FOR REDISTRIBUTION ONTO FINAL GRADE.
- ALL SILT FENCE AND SUPER SILT FENCE SHALL BE PLACED ON-THE-CONTOUR, AND SHALL IMBRICATE AT 25' MINIMUM INTERVALS, WITH LOWER ENDS CURLED UPHILL.
- STREAM CHANNELS MUST NOT BE DISTURBED DURING THE FOLLOWING RESTRICTED TIME PERIODS (INCLUSIVE):
  - USE I AND IIP MARCH 1 - JUNE 15
  - USE III AND IIP OCTOBER 1 - APRIL 30
  - USE IV MARCH 1 - MAY 31
- A COPY OF THIS PLAN, THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND ASSOCIATED PERMITS SHALL BE ON-SITE AND AVAILABLE WHEN THE SITE IS ACTIVE.

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. 38085, EXPIRATION DATE 6/28/2022.

THIS PLAN IS APPROVED FOR SOIL & EROSION CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

*[Signature]* 6/5/21  
HOWARD SOIL CONSERVATION DISTRICT DATE



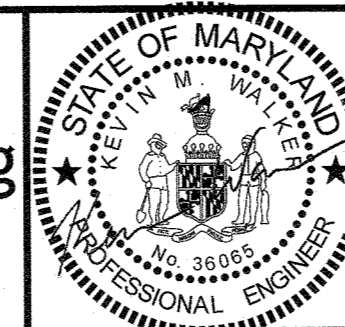
DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

*[Signature]* 6/5/21  
PLANNING DIRECTOR DATE

*[Signature]* 6-17-21  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*[Signature]*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

**Phoenix Engineering**  
21132 Old York Road  
Parkton, MD 21120  
410.329.1150  
www.phoenix-eng.com



DES:	BY:	NO.:	REVISION:	DATE:
KPM				
DRN:	DKS			
CHK:	KMW			
DATE:	DECEMBER			2020

**EROSION AND SEDIMENT CONTROL PLAN**

600' SCALE MAP NO. 48 BLOCK NO. 1

TAX MAP 48 GRID 0001, 0019  
PARCEL 0001, 0235

**GUILFORD ELEVATED WATER TANK**  
SITE DEVELOPMENT PLAN  
CAPITAL PROJECT NO. W8262  
SDP-20-032

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SCALE 1" = 20'  
SHEET NO. 11 OF 16  
ES-1

FILE PATH: G:\19\19-016 Guilford Water Tank and Roadway\CAD\DES-P001\_Guilford\_ESC\_Tank.dwg DATE: 12/16/2020 USER: 1714



**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 GROUND COVER.
2. IF AN AREA HAS LESS THAN 40 PERCENT GROUND COVER, RESTABILIZE FOLLOWING THE ORIGINAL RECOMMENDATIONS FOR LIME, FERTILIZER, SEEDBED PREPARATION, AND SEEDING.
3. IF AN AREA HAS BETWEEN 40 AND 94 PERCENT GROUND COVER, OVER-SEED AND FERTILIZE USING HALF OF THE RATES ORIGINALLY SPECIFIED.
4. MAINTENANCE FERTILIZER RATES FOR PERMANENT SEEDING ARE SHOWN IN TABLE B.6.

**B-4.1 STANDARDS AND SPECIFICATIONS FOR INCREMENTAL STABILIZATION**

**DEFINITION:** ESTABLISHMENT OF VEGETATIVE COVER ON CUT AND FILL SLOPES.  
**PURPOSE:** TO PROVIDE TIMELY VEGETATIVE COVER ON CUT AND FILL SLOPES AS WORK PROGRESSES.  
**CONDITIONS WHERE PRACTICE APPLIES:** ANY CUT OR FILL SLOPE GREATER THAN 15 FEET IN HEIGHT. THIS PRACTICE ALSO APPLIES TO STOCKPILES.

**CRITERIA:**

**A. INCREMENTAL STABILIZATION - CUT SLOPES**

1. EXCAVATE AND STABILIZE CUT SLOPES IN INCREMENTS NOT TO EXCEED 15 FEET IN HEIGHT. PREPARE SEEDBED AND APPLY SEED AND MULCH ON ALL CUT SLOPES AS THE WORK PROGRESSES.
2. CONSTRUCTION SEQUENCE EXAMPLE (REFER TO FIGURE B.1):
  - a. CONSTRUCT AND STABILIZE ALL TEMPORARY SWALES OR DIKES THAT WILL BE USED TO CONVEY RUNOFF AROUND THE EXCAVATION.
  - b. PERFORM PHASE 1 EXCAVATION, PREPARE SEEDBED, AND STABILIZE.
  - c. PERFORM PHASE 2 EXCAVATION, PREPARE SEEDBED, AND STABILIZE. OVERSEED PHASE 1 AREAS AS NECESSARY.
  - d. PERFORM FINAL PHASE EXCAVATION, PREPARE SEEDBED, AND STABILIZE. OVERSEED PREVIOUSLY SEEDBED AREAS AS NECESSARY.

NOTE: ONCE EXCAVATION HAS BEGUN THE OPERATION SHOULD BE CONTINUOUS FROM GRUBBING THROUGH THE COMPLETION OF GRADING AND PLACEMENT OF TOPSOIL (IF REQUIRED) AND PERMANENT SEED AND MULCH. ANY INTERRUPTIONS IN THE OPERATION OR COMPLETING THE OPERATION OUT OF THE SEEDING SEASON WILL NECESSITATE THE APPLICATION OF TEMPORARY STABILIZATION.

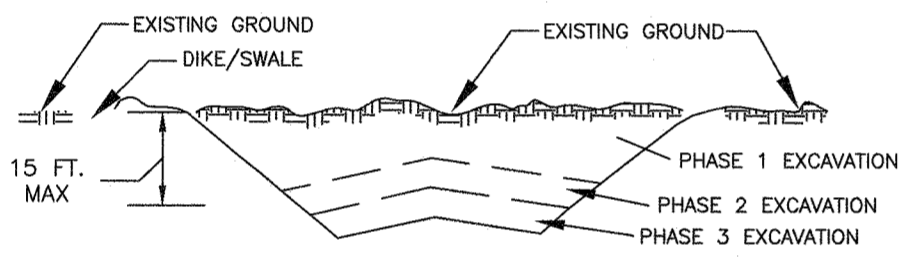


FIGURE B.1 INCREMENTAL STABILIZATION - CUT

**B. INCREMENTAL STABILIZATION - FILL SLOPES**

1. CONSTRUCT AND STABILIZE FILL SLOPES IN INCREMENTS NOT TO EXCEED 15 FEET IN HEIGHT. PREPARE SEEDBED AND APPLY SEED AND MULCH ON ALL SLOPES AS THE WORK PROGRESSES.
2. STABILIZE SLOPES IMMEDIATELY WHEN THE VERTICAL HEIGHT OF A LIFT REACHES 15 FEET, OR WHEN THE GRADING OPERATION CEASES AS PRESCRIBED IN THE PLANS.
3. AT THE END OF EACH DAY, INSTALL TEMPORARY WATER CONVEYANCE PRACTICE(S), AS NECESSARY, TO INTERCEPT SURFACE RUNOFF AND CONVEY IT DOWN THE SLOPE IN A NON-EROSIVE MANNER.
4. CONSTRUCTION SEQUENCE EXAMPLE (REFER TO FIGURE B.2):
  - a. CONSTRUCT AND STABILIZE ALL TEMPORARY SWALES OR DIKES THAT WILL BE USED TO DIVERT RUNOFF AROUND THE FILL. CONSTRUCT SILT FENCE ON LOW SIDE OF FILL UNLESS OTHER METHODS SHOWN ON THE PLANS ADDRESS THIS AREA.
  - b. AT THE END OF EACH DAY, INSTALL TEMPORARY WATER CONVEYANCE PRACTICE(S), AS NECESSARY, TO INTERCEPT SURFACE RUNOFF AND CONVEY IT DOWN THE SLOPE IN A NON-EROSIVE MANNER.
  - c. PLACE PHASE 1 FILL, PREPARE SEEDBED, AND STABILIZE.
  - d. PLACE PHASE 2 FILL, PREPARE SEEDBED, AND STABILIZE.
  - e. PLACE FINAL PHASE FILL, PREPARE SEEDBED, AND STABILIZE. OVERSEED PREVIOUSLY SEEDBED AREAS AS NECESSARY.

NOTE: ONCE THE PLACEMENT OF FILL HAS BEGUN THE OPERATION SHOULD BE CONTINUOUS FROM GRUBBING THROUGH THE COMPLETION OF GRADING AND PLACEMENT OF TOPSOIL (IF REQUIRED) AND PERMANENT SEED AND MULCH. ANY INTERRUPTIONS IN THE OPERATION OR COMPLETING THE OPERATION OUT OF THE SEEDING SEASON WILL NECESSITATE THE APPLICATION OF TEMPORARY STABILIZATION.

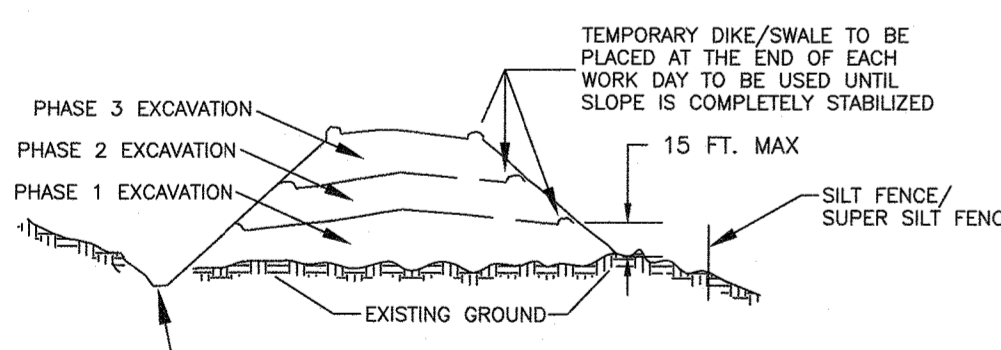


FIGURE B.2 INCREMENTAL STABILIZATION - FILL

**B-4.2 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS**

**DEFINITION:** THE PROCESS OF PREPARING THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.

**PURPOSE:** TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH.

**CONDITIONS WHERE PRACTICE APPLIES:** WHERE VEGETATIVE STABILIZATION IS TO BE ESTABLISHED.

**CRITERIA:**

**A. SOIL PREPARATION**

**1. TEMPORARY STABILIZATION**

a. SEEDBED PREPARATION CONSISTS OF LOOSENING SOIL TO A DEPTH OF 3 TO 5 INCHES BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT, SUCH AS DISC HARROWS OR CHISEL PLOWS OR RIPPERS MOUNTED ON CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSENED, IT MUST NOT BE ROLLED OR DRAGGED SMOOTH BUT LEFT IN THE ROUGHENED CONDITION. SLOPES 3:1 OR FLATTER ARE TO BE TRACKED WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE.

b. APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS.

c. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.

d. 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.

e. FERTILIZERS MUST BE UNIFORM IN COMPOSITION, FINE 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.

f. 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.

g. 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.

h. 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.

i. EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING TOPSOIL.

j. UNIFORMLY DISTRIBUTED 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.

k. 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.

l. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)

m. 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.

n. FERTILIZERS MUST BE UNIFORM IN COMPOSITION, FINE 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.

o. 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.

p. 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.

q. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, SPREAD GROUND LIMESTONE AT THE RATE OF 4 TO 8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.

**B-4.3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING**

**DEFINITION:** THE APPLICATION OF SEED AND MULCH TO ESTABLISH VEGETATIVE COVER.

**PURPOSE:** TO PROTECT DISTURBED SOILS FROM EROSION DURING AND AT THE END OF CONSTRUCTION.

**CONDITIONS WHERE PRACTICE APPLIES:** TO THE SURFACE OF ALL PERIMETER CONTROLS, SLOPES, AND ANY DISTURBED AREA NOT UNDER ACTIVE GRADING.

**CRITERIA:**

**A. SEEDING**

1. SPECIFICATIONS

a. ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED USED MUST HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON ANY PROJECT. REFER TO TABLE B.4 REGARDING THE QUANTITY OF SEED. SEED TAGS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY DATE OF SEED AND SEEDING RATE.

b. MULCH ALONE MAY BE APPLIED THROUGH 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

b. DRILL OR CULTIPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL. 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.

c. HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER).

d. IF FERTILIZER IS BEING APPLIED AT THE TIME OF SEEDING, THE APPLICATION RATES SHOULD NOT EXCEED THE FOLLOWING: NITROGEN, 100 POUNDS PER ACRE TOTAL OF SOLUBLE NITROGEN; P2O5 (PHOSPHOROUS), 200 POUNDS PER ACRE; K2O (POTASSIUM), 200 POUNDS PER ACRE.

e. 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.

f. MIX SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION.

g. WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.

h. MULCHING

1. 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, MOLLY, CAKED, DECAYED, OR EXCESSIVELY DUSTY.

b. WOOD CELLULOSE FIBER MULCH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE.

c. 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.

d. WCFM, INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS.

e. WCFM MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED, FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL MUST FORM A BLOTTER-LIKE GROUND COVER, ON APPLICATION, HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND MUST COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS.

f. WCFM MATERIAL MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE PHYTO-TOXIC.

g. 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 1.5 PERCENT MAXIMUM AND WATER HOLDING CAPACITY OF 90 PERCENT MINIMUM.

h. APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.

i. 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.

j. WOOD CELLULOSE FIBER USED AS MULCH MUST BE APPLIED AT A NET DRY WEIGHT OF 1500 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER TO ATTAIN A MIXTURE WITH A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.

k. SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (ACRO-TACK), DCA-70, PETROSECT, TERRA TALL II, TERRA TACK AIR OR OTHER APPLICATION EQUIPMENT MAY BE USED. FOLLOW APPLICATION RATES AS SPECIFIED BY THE MANUFACTURER. APPLICATION OF LIQUID BINDERS NEED 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.

l. LIGHTWEIGHT PLASTIC NETTING IS USUALLY AVAILABLE IN ROLLS 4 TO 15 FEET WIDE AND 300 TO 3,000 FEET LONG.

**B-4.4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION**

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

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

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

**CRITERIA:**

1. SELECT ONE OR MORE OF THE SPECIES OR SEED MIXTURES LISTED IN TABLE B.1 FOR THE APPROPRIATE PLANT HARDNESS 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 PERIOD, APPLY SEED AND MULCH OR STRAW MULCH ALONE AS PRESCRIBED IN SECTION B-4-3A.1.B AND MAINTAIN UNTIL THE NEXT SEEDING SEASON.

TABLE B.1: TEMPORARY SEEDING FOR SITE STABILIZATION

PLANT SPECIES	SEEDING RATES *		SEEDING DEPTH (INCHES)**	RECOMMENDED SEEDING DATES BY PLANT HARDNESS ZONE ***
	LB/AC	LSB/1000 FT <sup>2</sup>		
COOL-SEASON GRASSES				6b
ANNUAL RYEGRASS (LOLIUM PERENNE SSP. MULTIFLORUM)	40	1.0	0.5	MAR 1 TO MAY 15 AUG 1 TO OCT 15
BARLEY (HORDEUM VILGARE)	96	2.2	1.0	MAR 1 TO MAY 15 AUG 1 TO OCT 15
OATS (Avena SATIVA)	72	1.7	1.0	MAR 1 TO MAY 15 AUG 1 TO OCT 15
WHEAT (TRITICUM AESTIVUM)	120	2.8	1.0	MAR 1 TO MAY 15 AUG 1 TO OCT 15
CEREAL RYE (SECALE CEREALE)	112	2.8	1.0	MAR 1 TO MAY 15 AUG 1 TO NOV 15
WARM-SEASON GRASSES				
FOXTAIL MILLET (SETARIA ITALICA)	30	0.7	0.5	MAY 16 TO JUL 31
PEARL MILLET (PENNISETUM GLAUCUM)	20	0.5	0.5	MAY 16 TO JUL 31

\* SEEDING RATES FOR THE WARM-SEASON GRASSES ARE IN POUNDS OF PURE LIVE SEED (PLS). ADJUST SEEDING RATES SHOWN TO REFLECT PERCENT SEED GERMINATION AND PURITY, AS TESTED. ADJUSTMENTS ARE USUALLY NOT NEEDED FOR THE COOL-SEASON GRASSES.

SEEDING RATES LISTED ABOVE ARE FOR TEMPORARY SEEDINGS, WHEN PLANTED ALONE. WHEN PLANTED AS A NURSE CROP WITH PERMANENT SEED MIXES, USE 1/3 OF THE SEEDING RATE LISTED ABOVE FOR BARLEY, OATS, AND WHEAT. FOR SMALLER-SEEDED GRASSES (ANNUAL RYEGRASS, PEARL MILLET, AND CEREAL RYE), USE 1/2 OF THE SEEDING RATE LISTED ABOVE FOR THE OVERALL PERMANENT SEEDING MIX. CEREAL RYE GENERALLY SHOULD NOT BE USED AS A NURSE CROP, UNLESS PLANTING WILL OCCUR IN VERY LATE FALL BEYOND THE SEEDING DATES FOR OTHER TEMPORARY SEEDINGS. CEREAL RYE HAS ALLELOPATHIC PROPERTIES THAT INHIBIT THE GERMINATION AND GROWTH OF OTHER PLANTS. IF IT MUST BE USED AS A NURSE CROP, SEED AT 1/3 OF THE RATE LISTED ABOVE.

OATS ARE THE RECOMMENDED NURSE CROP FOR WARM-SEASON GRASSES.

\*\* FOR SANDY SOILS, PLANT SEEDS AT TWICE THE DEPTH LISTED ABOVE.  
\*\*\* THE PLANTING DATES LISTED ARE AVERAGES FOR EACH ZONE AND MAY REQUIRE ADJUSTMENT TO REFLECT LOCAL CONDITIONS, ESPECIALLY NEAR THE BOUNDARIES OF THE ZONE.

**B-4.5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION**

**DEFINITION:** TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION

**PURPOSE:** TO USE LONG-LEAVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS

**CRITERIA:**

**A. SEED MIXTURES**

1. GENERAL USE

a. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE B.3 FOR THE APPROPRIATE PLANT HARDNESS 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 BORELINES, 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 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.

e. AREAS WHERE TURFGRASSES MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, AND COMMERCIAL SITES WHICH WILL RECEIVE A MEDIUM TO HIGH LEVEL OF MAINTENANCE.

f. 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 MIXTURE INCLUDES CERTIFIED TALL FESCUE CULTIVARS 95 TO 100 PERCENT, CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 0 TO 5 PERCENT. SEEDING RATE: 5 TO 8 POUNDS PER 1000 SQUARE FEET. ONE OR MORE CULTIVARS MAY BE BLENDED.

iii. TALL FESCUE/KENTUCKY BLUEGRASS: FULL SUN MIXTURE; FOR USE IN DROUGHT PRONE AREAS AND/OR FOR AREAS RECEIVING LOW TO MEDIUM MANAGEMENT IN FULL SUN TO MEDIUM SHADE. RECOMMENDED MIXTURE INCLUDES CERTIFIED TALL FESCUE CULTIVARS 95 TO 100 PERCENT, CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 0 TO 5 PERCENT. SEEDING RATE: 1 1/2 TO 3 POUNDS PER 1000 SQUARE FEET.

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 1000 SQUARE FEET.

NOTES: SELECT TURFGRASS VARIETIES FROM THOSE LISTED IN THE MOST CURRENT UNIVERSITY OF MARYLAND PUBLICATION, AGRONOMY MEMO #77, "TURFGRASS CULTIVAR RECOMMENDATIONS FOR MARYLAND"

CHOOSE CERTIFIED MATERIAL. CERTIFIED MATERIAL IS THE BEST GUARANTEE OF CULTIVAR PURITY. THE CERTIFICATION PROGRAM OF THE MARYLAND DEPARTMENT OF AGRICULTURE, TURF AND SEED SECTION, PROVIDES A RELIABLE MEANS OF CONSUMER PROTECTION AND ASSURES A PURE GENETIC LINE.

IDEAL TIMES OF SEEDING FOR TURF GRASS MIXTURES WESTERN MD: MARCH 15 TO JUNE 1, AUGUST 1 TO OCTOBER 1 (HARDNESS ZONES: 5B, 6A)

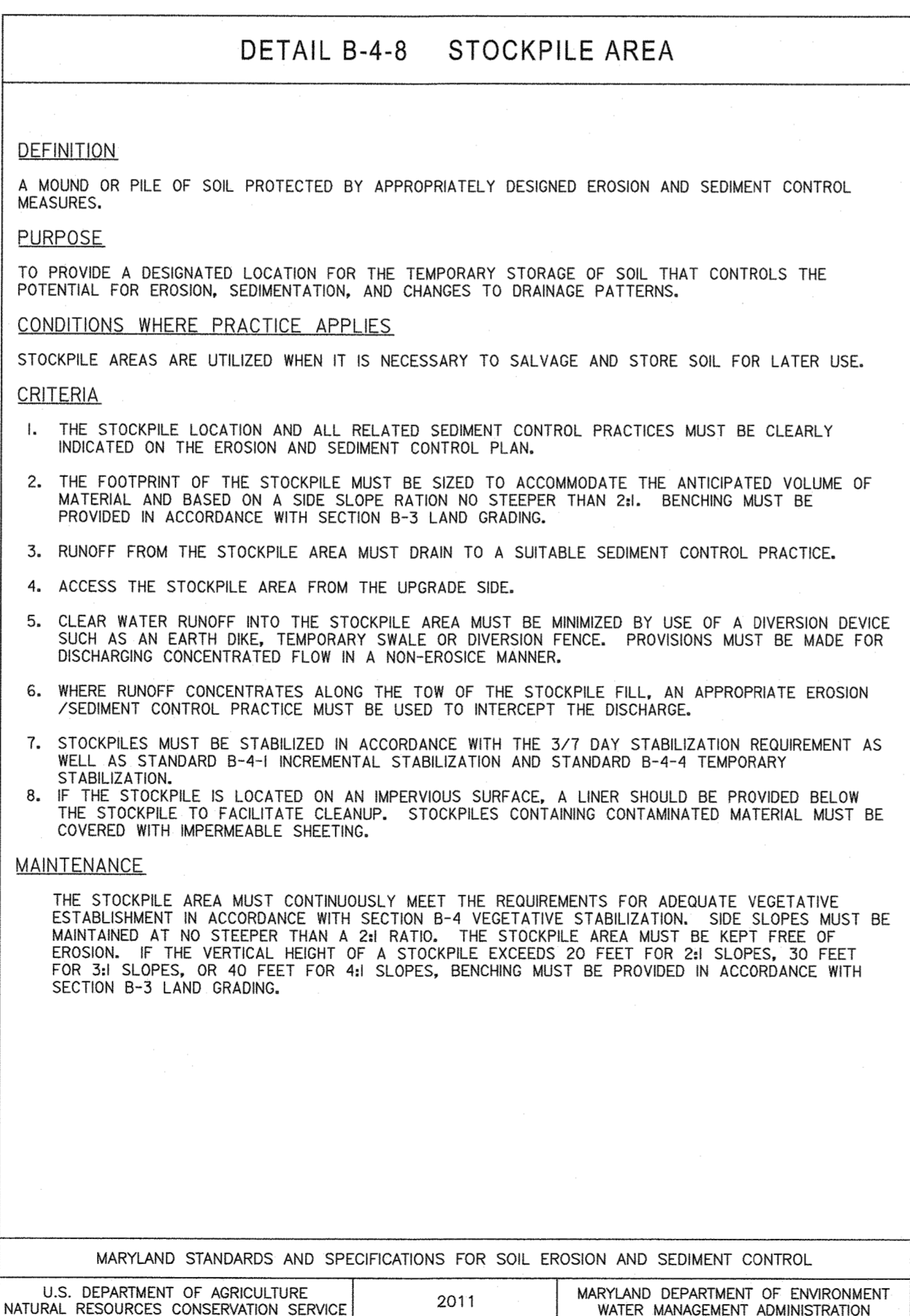
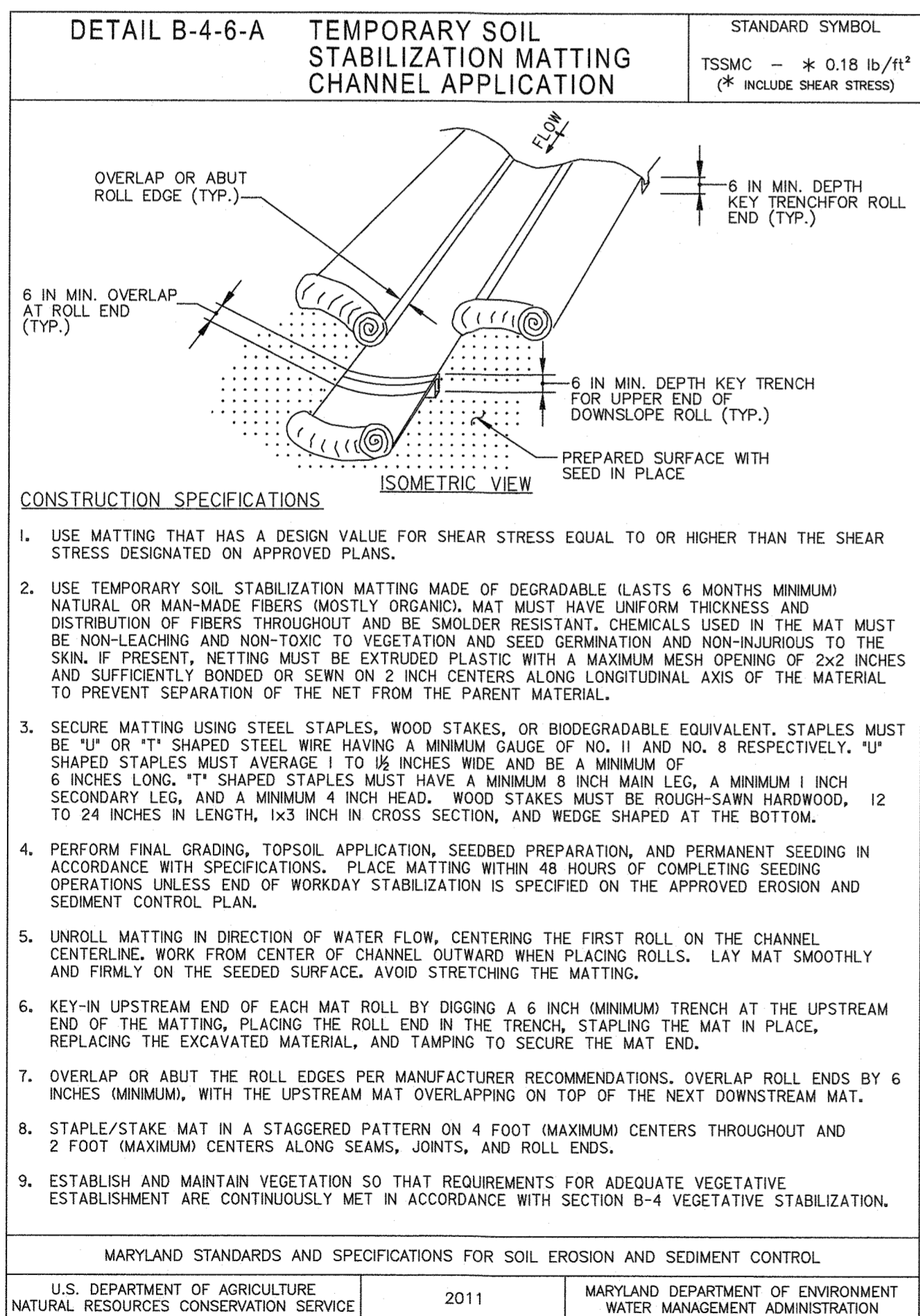
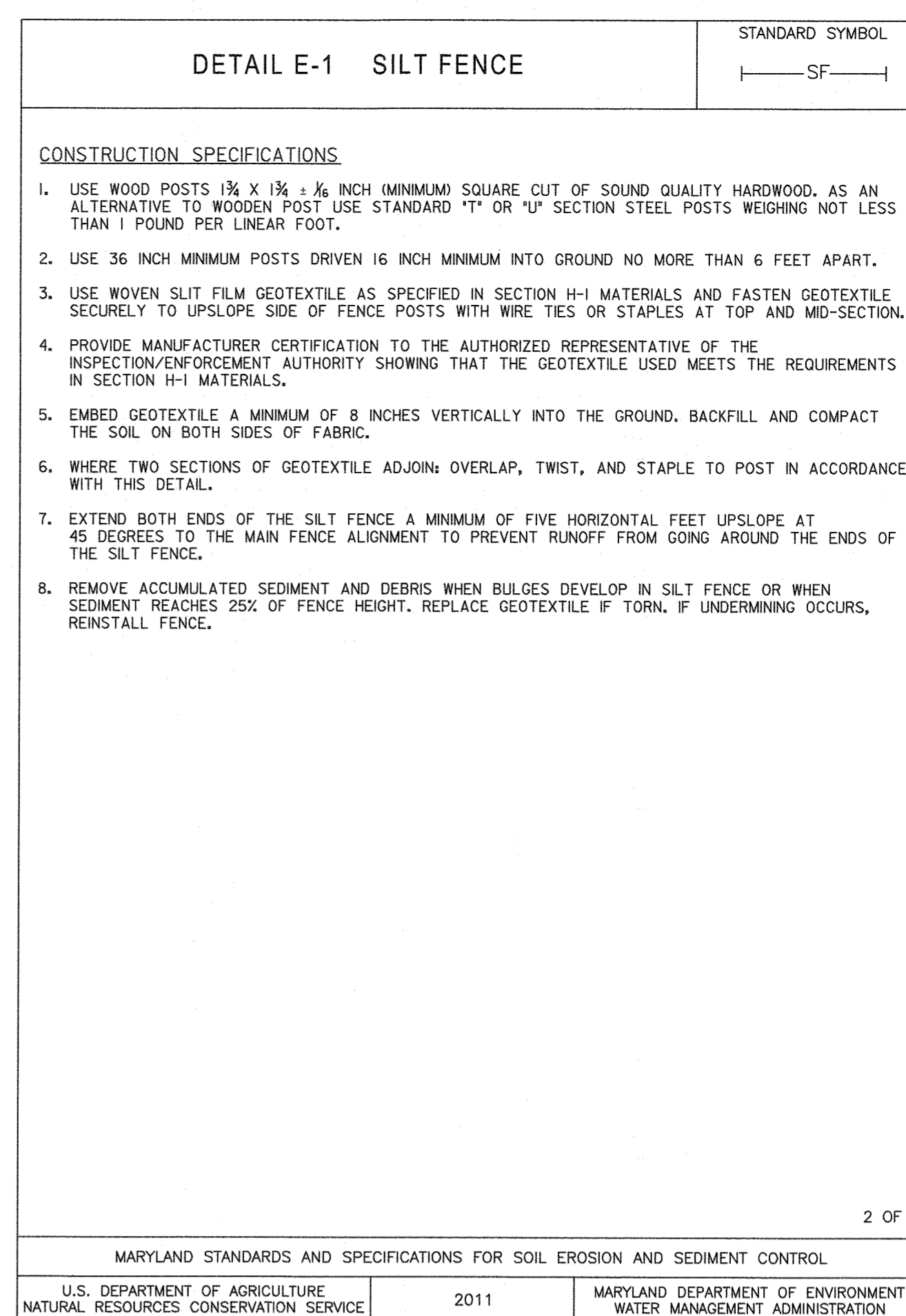
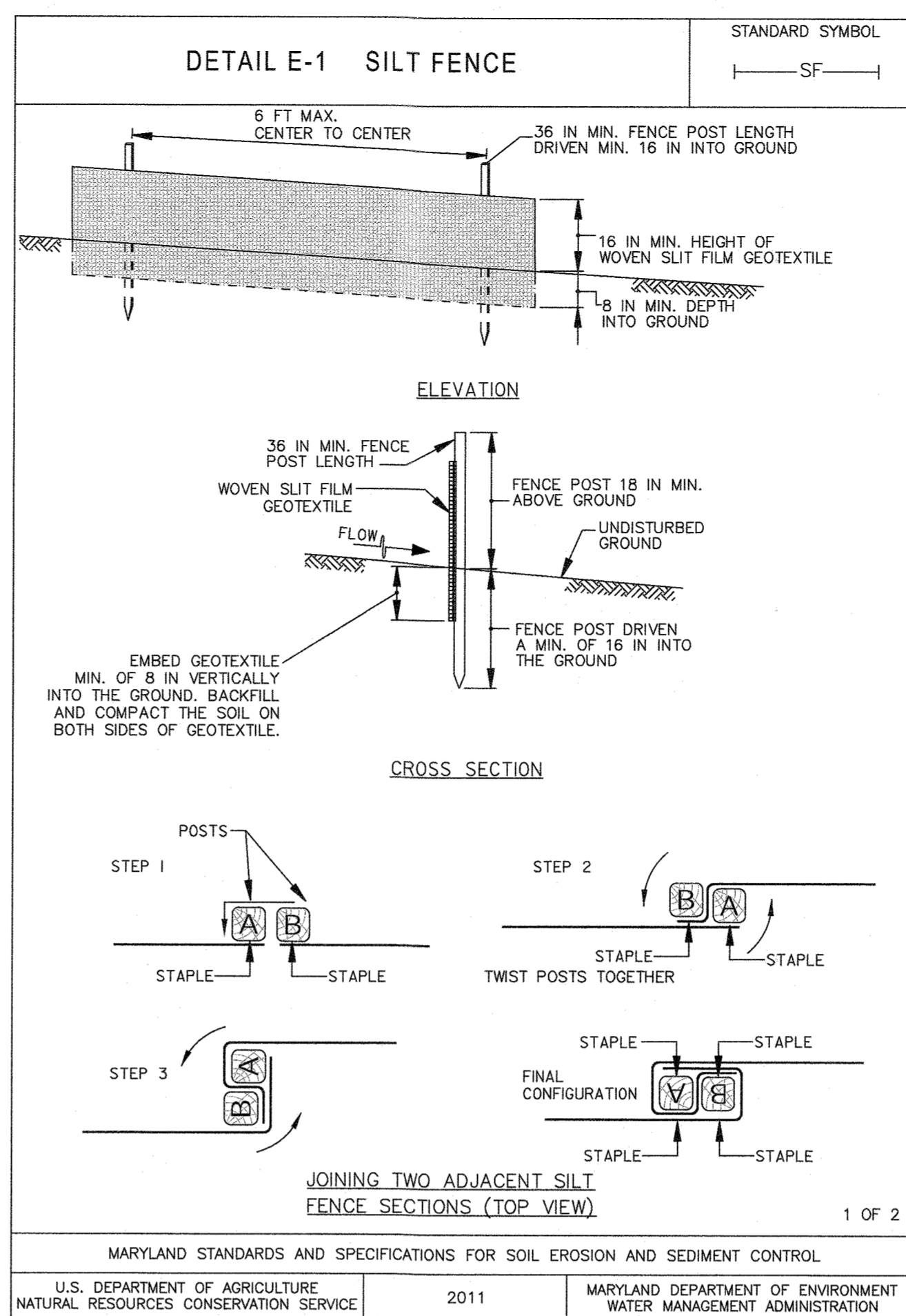
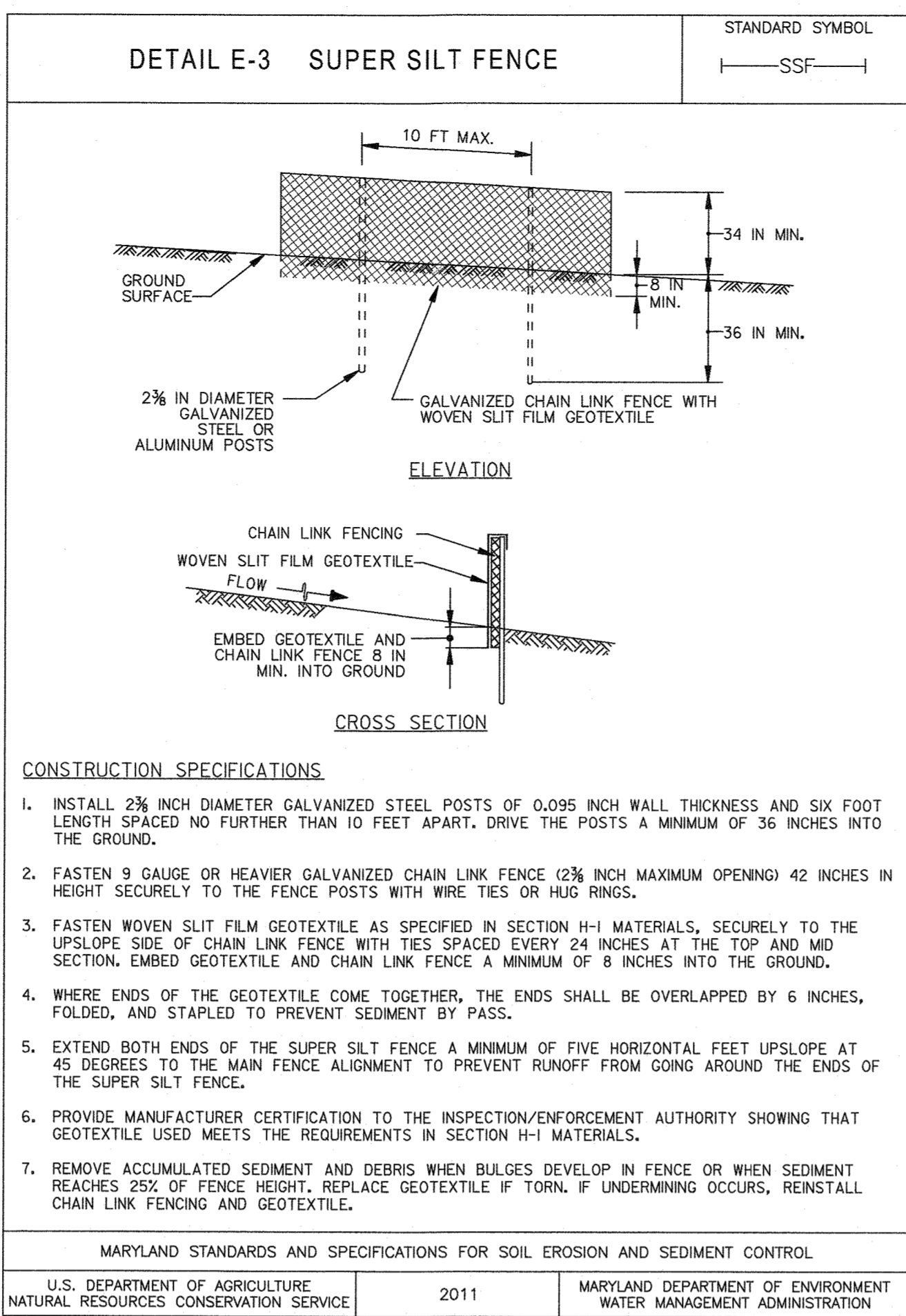
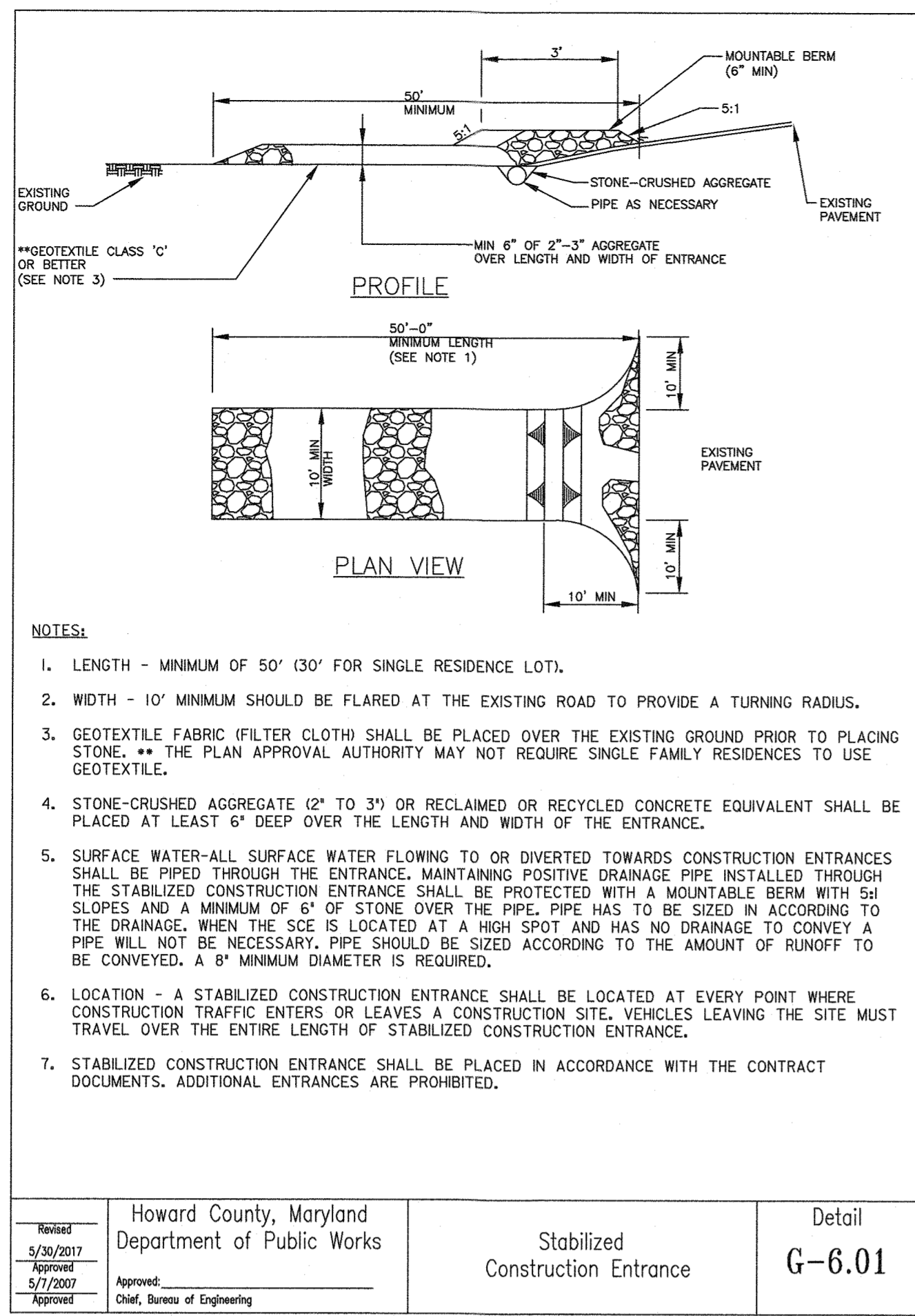
CENTRAL MD: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDNESS ZONE: 6B)

SOUTHERN MD, EASTERN SHORE: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDNESS ZONES: 7A, 7B)

d. TILL RATES AND 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 NEST 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 AN ABNORM





THIS PLAN IS APPROVED FOR SOIL & EROSION CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

*[Signature]* 6/3/21  
HOWARD SOIL CONSERVATION DISTRICT 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. 38065, EXPIRATION DATE 6/26/2022.

FILE PATH: G:\19\19-016 Guilford Water Tank and Roadway\CAD\pES-0003\_Guilford\_ESC\_Tank.dwg DATE: 12/19/2020 USER: 1714

DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

*[Signature]* 6/18/21  
PLANNING DIRECTOR DATE

*[Signature]* 6/17/21  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*[Signature]* 6/17/21  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

**Phoenix Engineering**

21132 Old York Road  
Parkton, MD 21120  
410.329.1150  
www.phoenix-eng.com

DES: KPM	BY	NO.	REVISION	DATE
DRN: DKS				
CHK: KMW				
DATE: DECEMBER 2020				

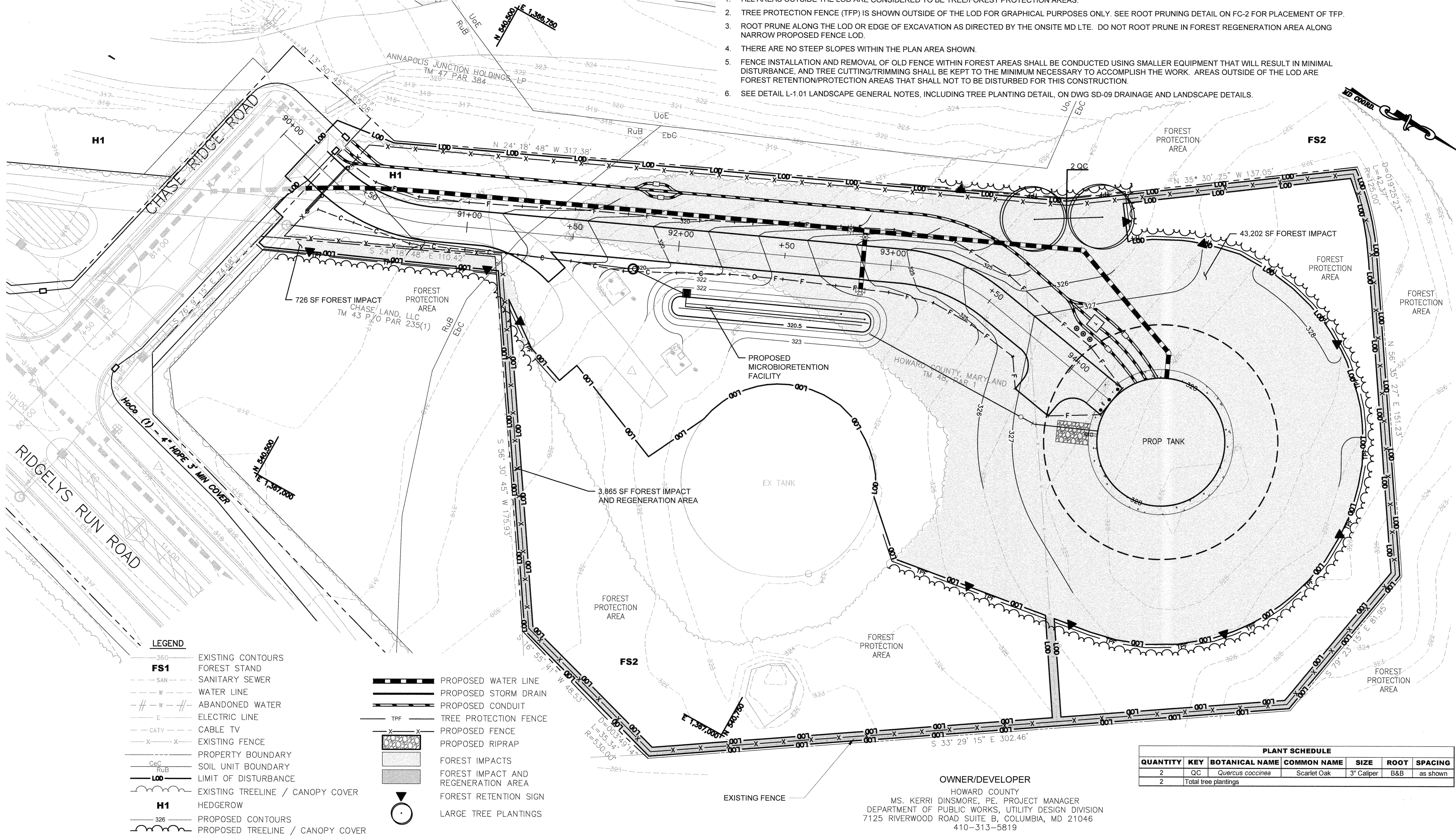
EROSION AND SEDIMENT CONTROL DETAILS

600' SCALE MAP NO. 48 BLOCK NO. 1

TAX MAP 48	GRID 0001.0019 PARCEL 0001.0235	ES-3
GUILFORD ELEVATED WATER TANK SITE DEVELOPMENT PLAN CAPITAL PROJECT NO. W8262 SDP-20-032		SCALE N/A
ELECTION DISTRICT NO. 6		SHEET NO. 13 OF 16
HOWARD COUNTY, MARYLAND		



- NOTES:**
1. ALL AREAS OUTSIDE THE LOD ARE CONSIDERED TO BE TREE/FORREST PROTECTION AREAS.
  2. TREE PROTECTION FENCE (TFP) IS SHOWN OUTSIDE OF THE LOD FOR GRAPHICAL PURPOSES ONLY. SEE ROOT PRUNING DETAIL ON FC-2 FOR PLACEMENT OF TFP.
  3. ROOT PRUNE ALONG THE LOD OR EDGE OF EXCAVATION AS DIRECTED BY THE ONSITE MD LTE. DO NOT ROOT PRUNE IN FOREST REGENERATION AREA ALONG NARROW PROPOSED FENCE LOD.
  4. THERE ARE NO STEEP SLOPES WITHIN THE PLAN AREA SHOWN.
  5. FENCE INSTALLATION AND REMOVAL OF OLD FENCE WITHIN FOREST AREAS SHALL BE CONDUCTED USING SMALLER EQUIPMENT THAT WILL RESULT IN MINIMAL DISTURBANCE, AND TREE CUTTING/TRIMMING SHALL BE KEPT TO THE MINIMUM NECESSARY TO ACCOMPLISH THE WORK. AREAS OUTSIDE OF THE LOD ARE FOREST RETENTION/PROTECTION AREAS THAT SHALL NOT TO BE DISTURBED FOR THIS CONSTRUCTION.
  6. SEE DETAIL L-1.01 LANDSCAPE GENERAL NOTES, INCLUDING TREE PLANTING DETAIL, ON DWG SD-09 DRAINAGE AND LANDSCAPE DETAILS.



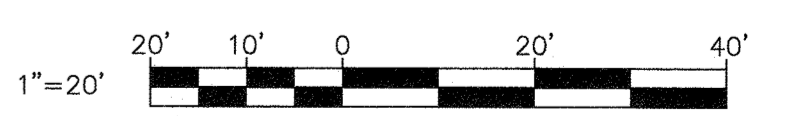
- LEGEND**
- 360 --- EXISTING CONTOURS
  - FS1 --- FOREST STAND
  - SAN --- SANITARY SEWER
  - W --- WATER LINE
  - W --- ABANDONED WATER
  - E --- ELECTRIC LINE
  - CATV --- CABLE TV
  - X --- EXISTING FENCE
  - C --- PROPERTY BOUNDARY
  - CeC --- SOIL UNIT BOUNDARY
  - RuB --- LIMIT OF DISTURBANCE
  - LOD --- LIMIT OF DISTURBANCE
  - EXISTING TREELINE / CANOPY COVER
  - H1 --- HEDGEROW
  - 326 --- PROPOSED CONTOURS
  - PROPOSED TREELINE / CANOPY COVER
  - F --- PROPOSED FILL LINE
  - C --- PROPOSED CUT LINE
  - E --- PROPOSED ELECTRIC LINE
  - FO --- PROPOSED FIBER OPTIC LINE

- PROPOSED WATER LINE
- PROPOSED STORM DRAIN
- PROPOSED CONDUIT
- TFP --- TREE PROTECTION FENCE
- PROPOSED FENCE
- PROPOSED RIPRAP
- FOREST IMPACTS
- FOREST IMPACT AND REGENERATION AREA
- FOREST RETENTION SIGN
- LARGE TREE PLANTINGS

**PLANT SCHEDULE**

QUANTITY	KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING
2	QC	<i>Quercus coccinea</i>	Scarlet Oak	3" Caliper	B&B	as shown
2	Total tree plantings					

**OWNER/DEVELOPER**  
 HOWARD COUNTY  
 MS. KERRI DINSMORE, PE. PROJECT MANAGER  
 DEPARTMENT OF PUBLIC WORKS, UTILITY DESIGN DIVISION  
 7125 RIVERWOOD ROAD SUITE B, COLUMBIA, MD 21046  
 410-313-5819



*Sgt. K. Richter*  
 MARYLAND DNR QUALIFIED PROFESSIONAL  
 DATE: 12/22/20

FILE PATH: \\vaia\06\2018\2018\18265\_Guilford\CADD\Plans-Tank\pFC-P001\_GuilfordTank.dwg DATE: 12/15/2020 USER: jpuerto

DEPARTMENT OF PLANNING AND ZONING  
 HOWARD COUNTY, MARYLAND  
*Vin Gowan*  
 PLANNING DIRECTOR  
 DATE: 6/28/21  
*Chief*  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 6/17/21

**RK&K**  
 P. 410.728.2800  
 700 East Pratt Street, Suite 500 | Baltimore, MD 21202  
 Engineers | Construction Managers | Planners | Scientists  
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DES:	BY:	NO.:	REVISION:	DATE:
SJK				
DRN: CP				
CHK: GRO				
DATE: DECEMBER 2020				

**FOREST CONSERVATION PLAN**  
 600' SCALE MAP NO. 48  
 BLOCK NO. 1

TAX MAP 48	GRID 0001, 0019 PARCEL 0001, 0235	FC-1
<b>GUILFORD ELEVATED WATER TANK</b> SITE DEVELOPMENT PLAN CAPITAL PROJECT NO. W8262 SDP-20-032		SCALE AS SHOWN
ELECTION DISTRICT NO. 6		SHEET NO. 14 OF 16
HOWARD COUNTY, MARYLAND		SDP - 20 - 032



FCP NOTES:

- FCP PLANS PREPARED BY SALLY KISHTER, QP USING FIELD DATA COLLECTED BY SALLY KISHTER AND ANITA ALEXANDER, RK&K ON NOVEMBER 27, 2018.
- THE PROJECT IS LOCATED NEAR THE EXISTING WATER TANK OFF US ROUTE 1 JUST NORTH OF GUILFORD ROAD IN JESSUP, MARYLAND. THE PROJECT PURPOSE IS TO CONSTRUCT A NEW 2.5 MILLION GALLON (MG) ELEVATED WATER STORAGE TANK (EWST) TO SERVE THE 400-PRESSURE ZONE, VARIOUS UTILITIES, AND APPROXIMATELY 2,000 LINEAR FEET OF NEW PUBLIC ROADWAY (RIDGELYS RUN ROAD).
- CHASE SDP-17-064 AND COLUMBIA JUNCTION SDP-08-100 (APPROVED 2017) COVER AREAS OUTSIDE OF THE FIELD STUDY AREA AND WITHIN THE PROJECT AREA. THE EXISTING WATER TANK AREA AND ACCESS WAS PREVIOUSLY COVERED BY SDP-79-126.
- TREE DIAMETERS WERE MEASURED AT BREAST HEIGHT (4.5') USING A FORESTRY DIAMETER TAPE. THE TREE INVENTORY IDENTIFIED ONE SPECIMEN TREE (>30" OR 75% OF STATE CHAMPIONS).
- THE USDA-NRCS WEB SOIL SURVEY FOR HOWARD COUNTY IDENTIFIED FIVE MAPPED SOIL UNITS WITHIN THE STUDY AREA. ALL SOIL UNITS ARE CLASSIFIED AS NON-HYDRIC. ONE HIGHLY ERODIBLE SOIL (K-FACTOR ≥ 0.35) (CHILLUM LOAM) IS SHOWN WITHIN THE STUDY AREA.
- STEEP SLOPES (15-25% AND >25%) SURROUND THE ROADWAY EMBANKMENT ON THE SOUTHERN PORTION OF ROUTE ONE (WASHINGTON BLVD) AND BERMED AREA WEST OF THE WATER TANK ACCESS ROAD JUST NORTH OF THE COLUMBIA JUNCTION SHOPPING PLAZA. THERE ARE NO STEEP SLOPES WITHIN THE TANK LOD.
- THE PROJECT AREA IS LOCATED OUTSIDE OF THE FEMA 100-YEAR FLOODPLAIN.
- NO STREAMS OR WETLANDS WERE DELINEATED WITHIN THE PROJECT STUDY AREA. DNR WETLAND INVENTORY MAPPING INDICATED THAT THERE IS A FRESHWATER POND ON THE EDGE OF THE STUDY AREA, BUT IT WAS NOT PRESENT IN THE FIELD. NWI WETLAND INVENTORY MAPPING INDICATES THAT THERE ARE NO WETLANDS OR WATERS WITHIN THE STUDY AREA.
- THE PROJECT IS LOCATED WITHIN THE LITTLE PATUXENT RIVER WATERSHED (02131105).
- CURRENT LAND USE IS PRIMARILY UNDEVELOPED RESIDENTIAL AND GOVERNMENT & INSTITUTIONAL, WITH SOME UNDEVELOPED COMMERCIAL AND MIXED USE. CURRENT ZONING IS PRIMARILY R-SA-8 AND R-SA-8-MXD-3, WITH SOME R-SC-MXD-3 AND B-2.
- ON JANUARY 24, 2019, THE MARYLAND DEPARTMENT OF NATURAL RESOURCES WILDLIFE AND HERITAGE SERVICE (MDNR W&H) DETERMINED THAT THERE ARE NO OFFICIAL STATE OR FEDERAL RECORDS FOR LISTED PLANT OR ANIMAL SPECIES WITHIN THE AREA SHOWN ON THE MAP PROVIDED. THERE ARE NO SPECIFIC CONCERNS REGARDING POTENTIAL IMPACTS OR RECOMMENDATIONS FOR PROTECTION MEASURES.
- ACCORDING TO A U.S. FISH AND WILDLIFE (USFWS) IPAC ONLINE DATABASE QUERY RUN ON JANUARY 30, 2019, THERE ARE NO OFFICIAL STATE OR FEDERAL RECORDS FOR LISTED PLANT OR ANIMAL SPECIES WITHIN THE PROJECT STUDY AREA.
- NO RTE'S WERE OBSERVED ON SITE.
- ON FEBRUARY 12, 2019, THE MARYLAND HISTORICAL TRUST (MHT) DETERMINED THAT THERE ARE NO HISTORIC PROPERTIES AFFECTED BY THIS UNDERTAKING.
- THIS PLAN COMPLIES WITH THE REQUIREMENTS OF SECTION 16.200 OF THE HOWARD COUNTY CODE FOR FOREST CONSERVATION BY MINIMIZING FOREST DISTURBANCE AS FEASIBLE, PROVIDING TREE PROTECTION FOR TREES TO REMAIN, AND USING DPW FOREST CONSERVATION BANK CREDITS (SDP-19-006) FOR FOREST IMPACTS NOT COVERED BY PREVIOUS SDPS (SEE NOTE 3 ABOVE, 16 BELOW, & ASSOCIATED ALTERNATIVE COMPLIANCE PACKAGE FOR MORE DETAILS). FOREST CONSERVATION BANK IS BEING USED FOR THIS CAPITAL PROJECT, SINCE DPW MAY NEED TO DEVELOP OTHER SECTIONS OF THE TANK PARCEL IN THE FUTURE TO MEET PUBLIC WATER DEMANDS, AND PLACEMENT OF CONSERVATION EASEMENTS WOULD ENCUMBER THAT PROCESS. THERE IS NOT ROOM FOR REFORESTATION WITHIN THE RIDGELYS RUN ROAD ROW, DPW DOES NOT OWN THE ADJACENT PROPERTIES, AND THERE IS DEVELOPMENT PLANNED FOR SOME ADJACENT AREAS. IN ADDITION, OFFSITE SEARCHES AND PLANTING WOULD DELAY THESE CAPITAL PROJECTS NEEDED FOR THE PUBLIC WATER SUPPLY AND PUBLIC-SCHOOL ACCESS.
- THE PROPOSED LOD WAS REDUCED TO MINIMIZE FOREST IMPACTS AND MAINTAIN A FORESTED BUFFER AROUND MOST OF THE SITE, INCLUDING BY THE NEW SCHOOL ACCESS ROAD. THE 40 FEET OF CLEARING AROUND THE PROPOSED TANK WILL PROVIDE ACCESS FOR CONSTRUCTION AND A CLEAR ZONE TO REDUCE THE POTENTIAL FOR DAMAGE TO THE NEW WATER TANK FROM FALLING TREES OR BRANCHES. ADDITIONAL LOD FOR STORMWATER MANAGEMENT TO PROVIDE SITE WATER QUALITY AND CONSTRUCTION STAGING AND STORAGE WAS PLACED IN THE EXISTING CLEARED AREA AS MUCH AS FEASIBLE, AND A MINIMAL FIVE-FOOT WIDTH LOD WAS PROVIDED FOR FENCE INSTALLATION ALONG THE PROPERTY BOUNDARY. THERE ARE NO PRIORITY FOREST IMPACTS FROM FOREST CONSERVATION SUBTITLE 12, SECTION 16.1205, EXCEPT FOR ~150 FEET OF FOREST BUFFER BETWEEN THE NEW TANK ACCESS ROAD AND THE EXISTING SAVAGE STONE HAUL ROAD (NOT A SCENIC ROAD AND THERE ARE PROPOSED UTILITIES OUTSIDE THE PROPOSED ROAD, SEE PLAN DRAWING FC-01). OTHERWISE, FOREST/TREE PROPERTY BUFFERS ARE MAINTAINED. THERE ARE NO ONSITE SENSITIVE AREAS WITHIN THE LOD FOR THIS NON-RESIDENTIAL PROJECT.

**FOREST STAND ANALYSIS TABLE**

Stand ID	Type of Community	Dominant Species	Dominant Size Class	Condition	Retention Value	Notes	Acres in LOD*
FS1	Bradford Pear / Roadside Stand	Bradford pear	2-6"	Fair to poor	Low	early successional; 60% canopy closure, inclusions of Eastern red cedar and white pine; high levels of invasive species	0.03
FS2	Mixed Oak Association	Chestnut oak and white oak	12-20"	Good	Moderate to high	mid-successional; 85% canopy closure, inclusions of tulip poplar, Southern red oak, scarlet oak, pin oak, and loblolly pine; low levels of invasive species	1.48
FS3	Virginia Pine Association	Bradford pear, American sycamore, Virginia pine, and sweetgum	6-11"	Fair to poor	Low to moderate	early to mid-successional; 70% canopy closure; moderate levels of invasive species, moderate vine coverage	0.69

\*Acres of forest impact outside of the clearing permitted under the Chase SDP-17-064 & Columbia Junction SDP-08-100 (approved 2017).

**SOILS TABLE**

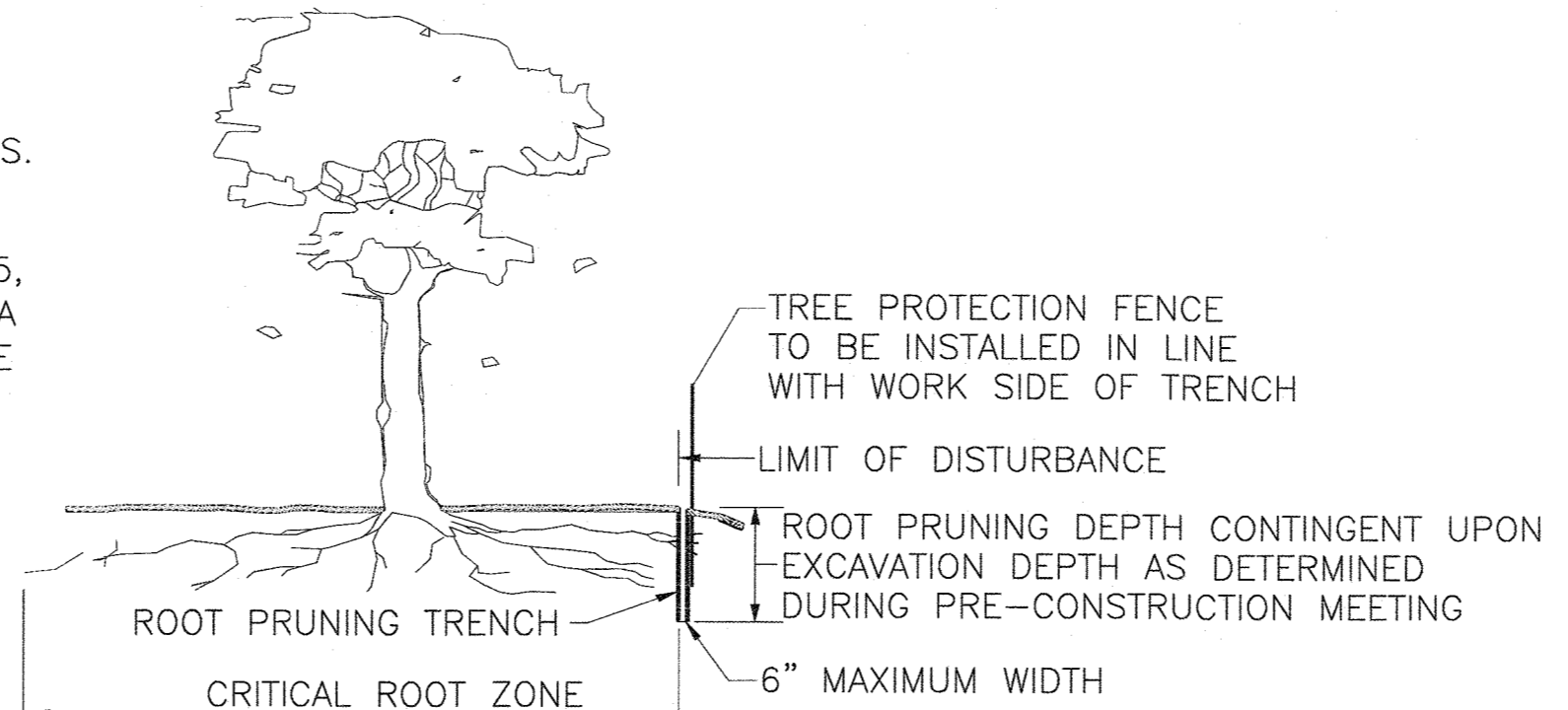
Map Unit Symbol	Map Unit Name	K-Factor <sub>1</sub>	Hydric Rating <sub>2</sub>	Hydric Conditions
CeC	Chillum loam, 5 to 10 percent slopes	0.43	0	No
EbC	Eyesboro loamy sand, 2 to 10 percent slopes	0.02	0	No
RuB	Russett and Beltsville soils, 2 to 5 percent slopes	0.28	0	No
UoE	Udortheints, 0 to 45 percent slopes, Gravel Pits	-	0	No
UtD	Urban land-Udortheints complex, 0 to 15 percent slopes	-	0	No

- Soils Table Notes:**
- Erodibility Coefficient (whole soil)**  
- Value assigned to soil types by NRCS. K > 0.35 are considered to be highly erodible soils
  - Hydric Rating**- Value is based on the percentage of hydric soils within the soil type.  
Non-hydric soils have a value of 0, predominantly non-hydric soils 0 - 33, partially hydric soils 33 - 66, predominantly hydric soils 66 - 99, and hydric soils have a value of 100.
  - Tank Site** is primarily soil EbC, with inclusions of CeC and RuB within the LOD.

**GUILFORD EWST & ROADWAY SPECIMEN TREE TABLE**

Tree No.	Removal	Common Name	Scientific Name	DBH, in.	Condition	Comments	Mitigation
T14	Yes	Sycamore	<i>Platanus occidentalis</i>	32	Fair	Plus 2 ~20' other stems, vines into canopy, included bark, mod. lower dead branches	two 3" trees as shown on FC-1

NOTES: 1. Specimen tree T14 will be removed prior to tank construction as part of the Ridgelys Run Road construction.  
T14 is located northeast of the intersection of US 1 and the existing tank access road, as shown in the Forest Conservation Exhibit on sheet 20/FC-3 and FS-03 of the NR/IFSD plan, Capital Project W8262.  
2. T14 is the only specimen tree identified on the Guilford tank and road projects.



- NOTES:
- RETENTION AREAS TO BE ESTABLISHED AS PART OF THE FOREST CONSERVATION PLAN REVIEW PROCESS.
  - BOUNDARIES OF RETENTION AREAS TO BE STAKED, FLAGGED AND/OR FENCED PRIOR TO TRENCHING.
  - EXACT LOCATION OF TRENCH SHOULD BE IDENTIFIED.
  - TRENCH SHOULD BE IMMEDIATELY BACKFILLED WITH SOIL REMOVED OR ORGANIC SOIL.
  - ROOTS SHOULD BE CLEANLY CUT USING VIBRATORY KNIFE OR OTHER ACCEPTABLE EQUIPMENT.
  - IN SOME INSTANCES, IT MAY BE BENEFICIAL TO PERFORM ROOT PRUNING AT THE EDGE OF THE EXCAVATION RATHER THAN AT THE LOD, PROVIDED THE ROOTS BETWEEN THE EDGE OF EXCAVATION AND THE LOD ARE PROTECTED DURING CONSTRUCTION.

**ROOT PRUNING DETAIL**  
NOT TO SCALE

SOURCE:  
ADAPTED FROM STEVE CLARK & ASSOCIATES/ACRT, INC, AND FOREST CONSERVATION MANUAL, 1991

**FOREST CONSERVATION WORKSHEET FOR Guilford Elevated Water Storage Tank & Public Roadway, Capital Project W8262**

**Net Tract Area**

A. Total (Gross) Tract Area	A = 7.49
B. Area within 100-year Floodplain	B = 0.00
C. Other Deductions (Area within Chase & Col.Junc. SDPs plus ex. impervious *)	C = 4.53
D. Net Tract Area	D = 2.96

**Land Use Category**  
Insert the number "1" under the appropriate land use (limit to only one entry)

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

E. Afforestation Threshold (Net Tract Area x 15%) E = 0.40  
F. Reforestation Threshold (Net Tract Area x 20%) F = 0.60

**Existing Forest Cover**

G. Existing Forest Cover within the Net Tract Area	G = 2.19
H. Area of Forest above Afforestation Threshold	H = 1.80
I. Area of Forest above Reforestation Threshold	I = 1.60

**Break Even Point**

J. Break Even Point	J = 1.13
K. Forest Clearing Permitted without Mitigation	K = 1.06

**Proposed Forest Clearing**

L. Total Area of Forest to be Cleared	L = 2.19
M. Total Area of Forest to be Retained	M = 0.00

**Planting Requirements Inside Watershed**

N. Reforestation for Clearing above the Reforestation Threshold	N = 0.80
P. Reforestation for Clearing below the Reforestation Threshold	P = 1.20
Q. Credit for Retention above the Reforestation Threshold	Q = 0.00
R. Total Reforestation Required	R = 2.00
S. Total Afforestation Required	S = 0.00
T. Total Reforestation and Afforestation Requirement	T = 2.00
U. 75% of Total Obligation (Retention + Planting)	U = 1.50
V. Planting Required Onsite to meet 75% Obligation	V = 1.50

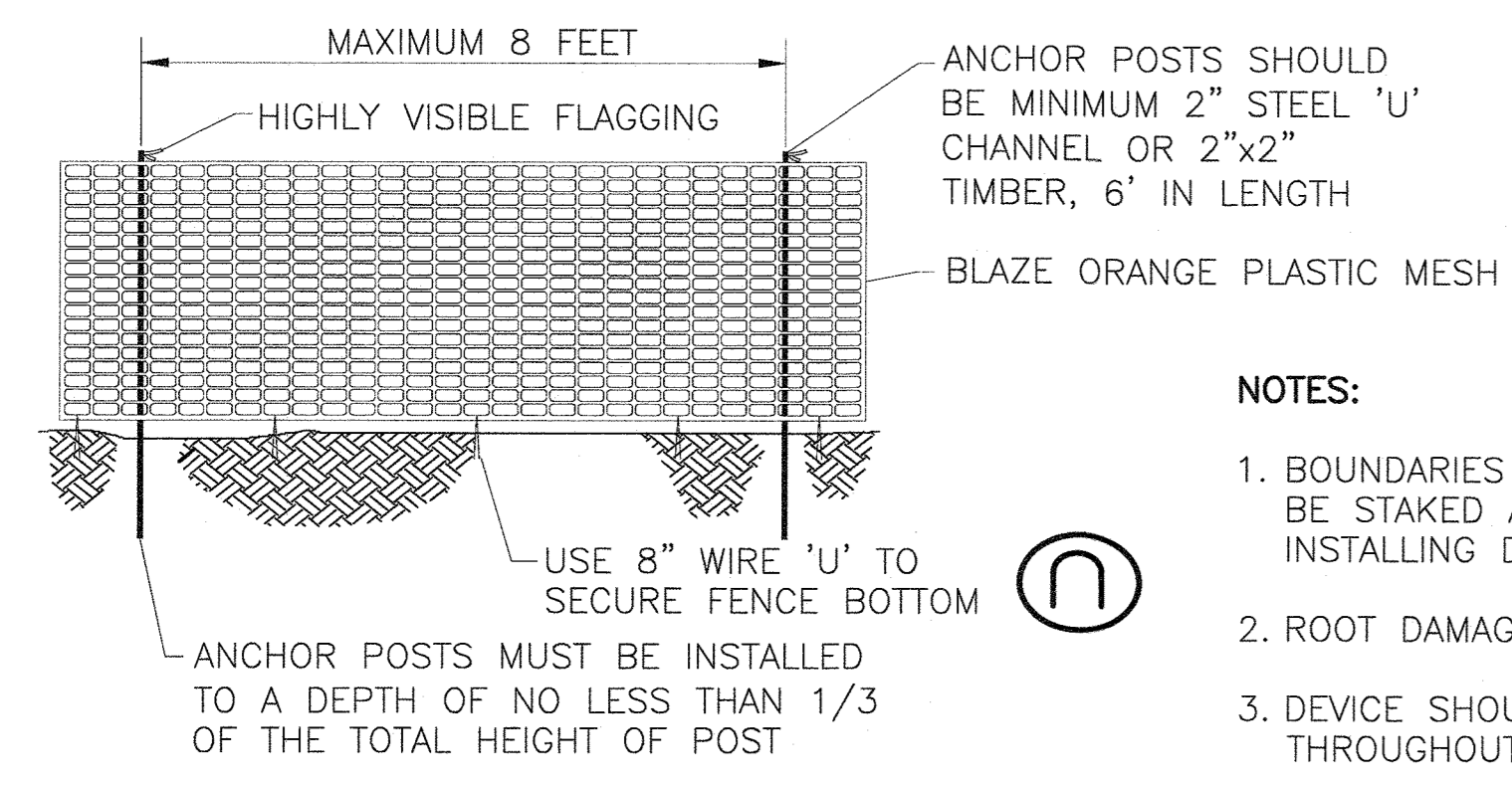
**Planting Requirements Outside Watershed**

W. Total Planting within Development Site Watershed (Tank fence regeneration)	W = 0.09
X. Total Afforestation Required	X = 0.00
Y. Remaining Planting within Watershed for Reforestation Credit	Y = 0.10
Z. Reforestation for Clearing above the Reforestation Threshold	Z = 1.40
AA. Reforestation for Clearing below the Reforestation Threshold	AA = 1.80
BB. Credit for Retention above the Reforestation Threshold	BB = 0.00
CC. Total Reforestation Required	CC = 3.20
DD. Total Afforestation and Reforestation Requirement	DD = 3.20

Total Afforestation and Reforestation (SF): 139,392  
Date: 12/2/2020

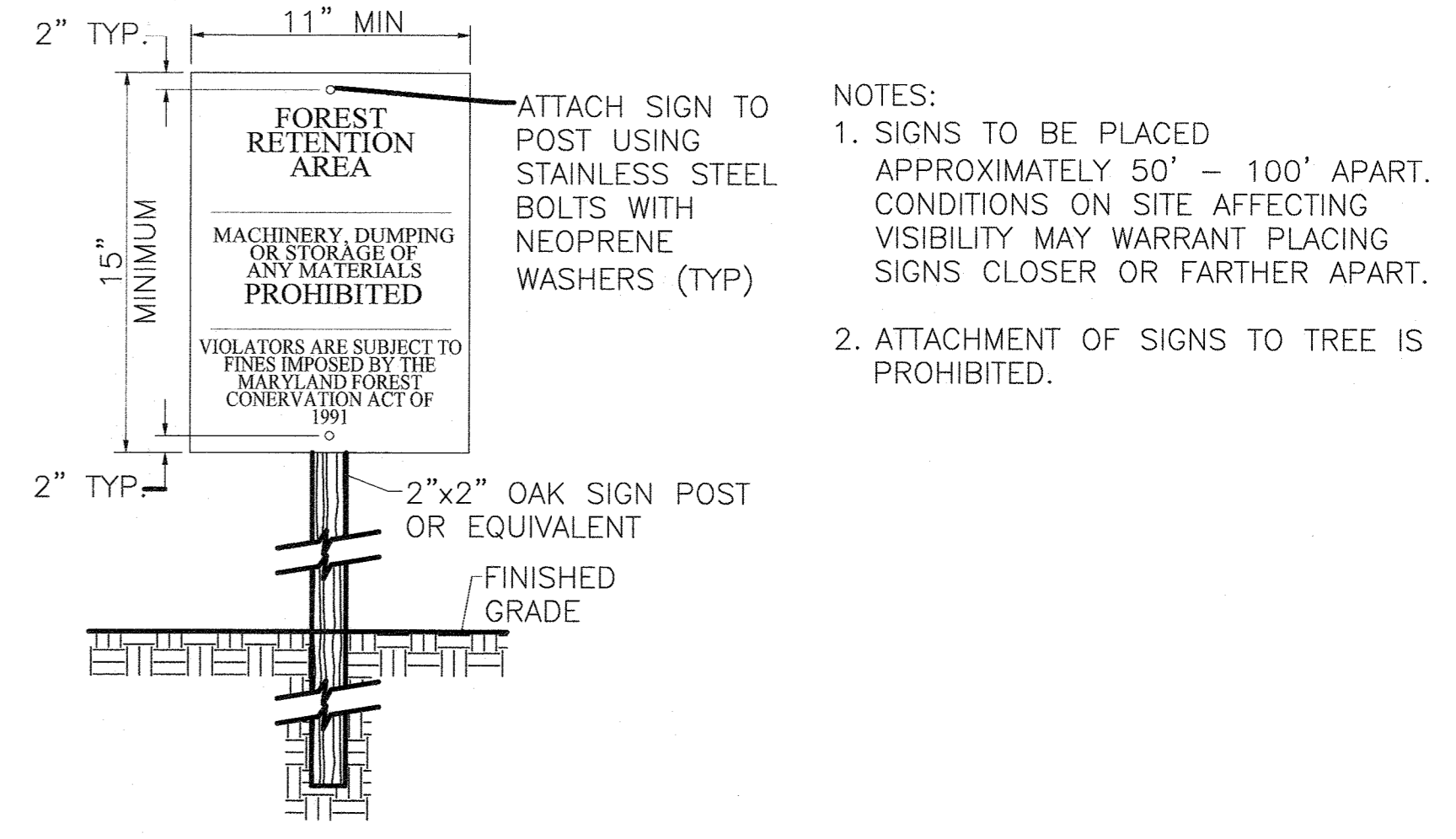
**\*Net Tract Deduction Note:**  
See Forest Conservation Exhibit on plan drawing FC-3 for net tract deduction details.

Restoration Mitigation:	SF	Acres
Regeneration credit	3,865	0.09
FC Bank SDP-19-006	135,527	3.11
<b>Mitigation Totals:</b>	<b>139,392</b>	<b>3.20</b>



- NOTES:
- BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
  - ROOT DAMAGE SHOULD BE AVOIDED.
  - DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION.

**TREE PROTECTION FENCE (ORANGE PROTECTION FENCE)**  
NOT TO SCALE



**FOREST RETENTION AREA SIGN DETAIL**  
NOT TO SCALE

FILE PATH: \\vaistr06\2018\2018\18265\_Guilford\CAUD\Plans-Tank\pFC-P002\_GuilfordTank.dwg DATE: 12/15/2020 USER: jpuert

Sally Kистер  
MARYLAND DNR QUALIFIED PROFESSIONAL  
12/22/20  
DATE

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DES:	BY:	NO.	REVISION	DATE
SJK				
DRN	CP			
CHK:	GRO			
DATE:	DECEMBER			2020

**FOREST CONSERVATION NOTES, TABLES AND DETAILS**

600' SCALE MAP NO. 48 BLOCK NO. 1

TAX MAP 48	GRID 0001, 0019 PARCEL 0001, 0235	<b>FC-2</b>
<b>GUILFORD ELEVATED WATER TANK SITE DEVELOPMENT PLAN CAPITAL PROJECT NO. W8262 SDP-20-032</b>		SCALE AS SHOWN
		SHEET NO. 15 OF 16
ELECTION DISTRICT NO. 6		HOWARD COUNTY, MARYLAND



