

# 2.5 MG GUILFORD ELEVATED WATER TANK

## HOWARD COUNTY, MARYLAND

### DEPARTMENT OF PUBLIC WORKS

#### CAPITAL PROJECT NO. W8262

#### CONTRACT NO. 44-5122

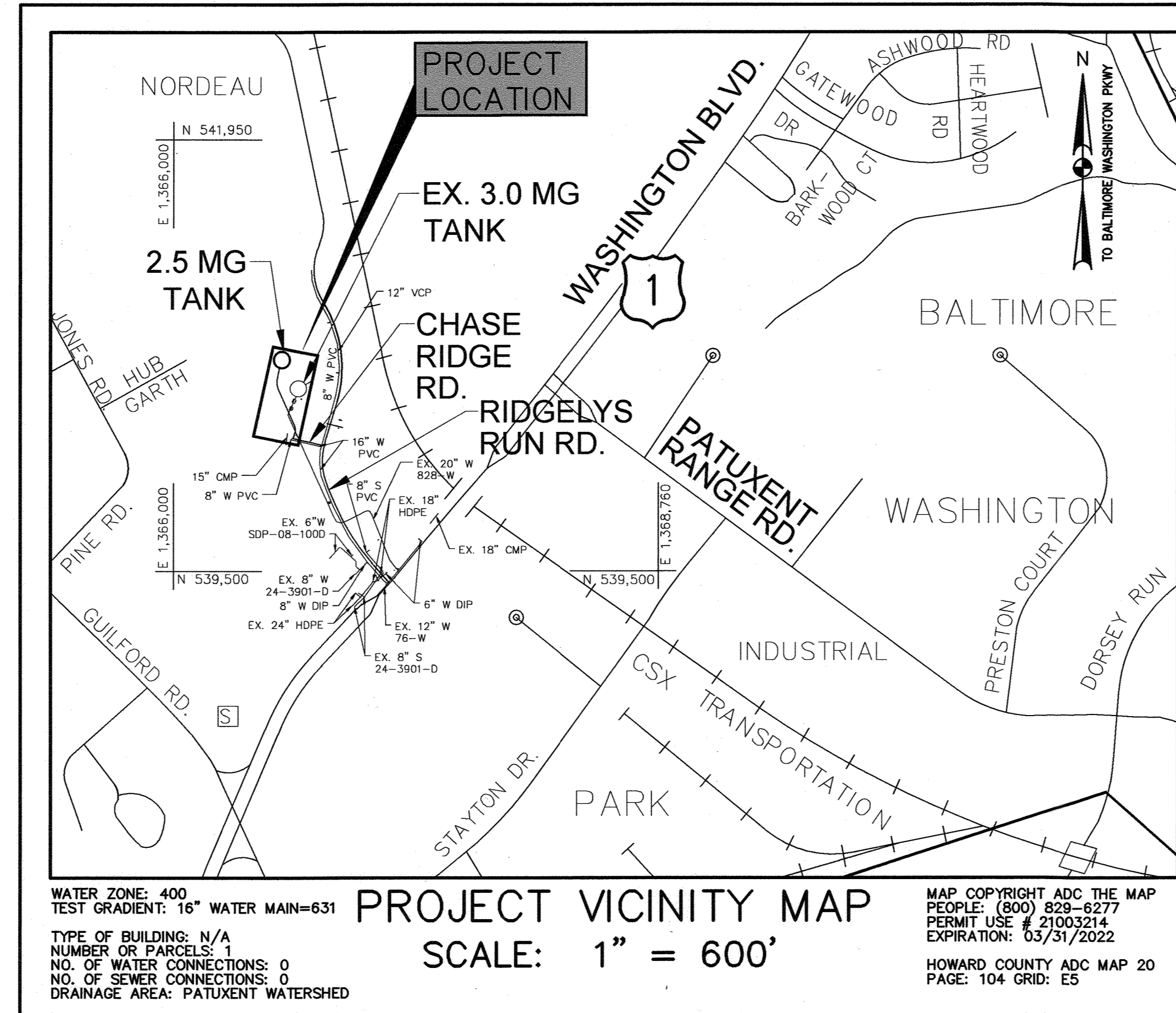
**GENERAL NOTES:**

- APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN FROM SELECTED AVAILABLE RECORDS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SOLICIT ALL UTILITY RECORDS AND VERIFY ALL EXISTING UTILITIES, INCLUDING THE USE OF TEST PITS. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING UTILITIES AND SERVICES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
- COORDINATES SHOWN HEREON ARE BASED ON MARYLAND STATE PLANE NAD 1983/91 AND NAVD 88. HOWARD COUNTY CONTROL MONUMENTS: 421A & 421B.
- ALL TOPOGRAPHIC SURVEY WAS 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.
- ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS UNLESS OTHERWISE NOTED ON THE PLANS.
- CLEAR ALL UTILITIES BY MINIMUM OF 12 INCHES. CLEAR ALL POLES BY 5 FEET MINIMUM OR TUNNEL AS REQUIRED UNLESS NOTED OTHERWISE.
- FOR DETAILS NOT SHOWN ON THE DRAWINGS, AND FOR MATERIALS AND CONSTRUCTION METHODS, USE HOWARD COUNTY DESIGN MANUAL VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (LATEST EDITION). THE CONTRACTOR SHALL HAVE A COPY OF VOLUME IV ON THE JOB. HOWARD COUNTY DESIGN MANUAL SHALL GOVERN WHERE APPLICABLE.
- WHERE TEST PITS HAVE BEEN MADE ON EXISTING UTILITIES, THEY ARE NOTED BY THE SYMBOL PIT  AT THE LOCATION OF THE TEST PIT. A NOTE OR NOTES CONTAINING THE RESULTS OF THE TEST PIT OR PITS IS INCLUDED ON THE DRAWINGS. EXISTING UTILITIES IN THE VICINITY OF THE PROPOSED WORK FOR WHICH TEST PITS HAVE NOT BEEN DUG SHALL BE LOCATED BY THE CONTRACTOR TWO WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS AT HIS OWN EXPENSE.
- 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(DPW)	410-313-4900
MISS UTILITY	800-257-7777
STATE HIGHWAY ADMINISTRATION	410-531-5533
VERIZON	410-224-9210
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS—BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION AT 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
- 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.
- THE 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.
- IN ACCORDANCE WITH CODE OF MARYLAND REGULATIONS (COMAR) 26.04.01.33, DIRECT AND INDIRECT ADDITIVES, SUPPLIERS OF WATER SHALL ONLY USE PRODUCTS (ANY MATERIALS THAT COME IN CONTACT WITH WATER INTENDED FOR USE IN PUBLIC WATER SUPPLY) THAT MEET THE APPLICABLE AMERICAN NATIONAL STANDARDS INSTITUTE/NSF INTERNATIONAL (ANSI/NSF) STANDARDS FOR DIRECT OR INDIRECT DRINKING WATER ADDITIVES. THE PRODUCTS CAN ALSO BE CERTIFIED BY AN ORGANIZATION ACCREDITED BY THE ANSI FOR SUCH TESTING (I.E., INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS RESEARCH AND TESTING, ONTARIO CA, UNDERWRITERS LABORATORY, NORTHBROOK IL, AND WATER QUALITY ASSOCIATION, LISLE IL).
- IN COMPLIANCE WITH COMAR 09.20.01.03 AND THE SAFE DRINKING WATER ACT (SECTION 1417(a)(4)(B)), MATERIALS THAT COME IN CONTACT WITH WATER INTENDED FOR USE IN PUBLIC WATER SUPPLY SHALL COMPLY WITH THE REDUCTION OF LEAD IN DRINKING WATER ACT, WHICH WENT INTO EFFECT IN MARYLAND IN JANUARY 2012.
- THE COMPLETED WATER MAINS MUST BE DISINFECTED AND TESTED IN ACCORDANCE WITH THE LATEST VESION OF AWWA STANDARD C651.
- THE CONTRACTOR SHALL PROVIDE SURVEY CONSTRUCTION STAKEOUT FOR ALL NECESSARY LINES, GRADES AND ELEVATIONS OF THE PROPOSED WORK.

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**PURPOSE STATEMENT**

CONTRACT 44-5122 WILL COMPLETE A NEW 2.5 MG ELEVATED WATER STORAGE TANK, ALONG WITH NEW 16" WATER MAIN, NEW UTILITY SERVICES AND SWM IMPROVEMENTS. THE NEW TANK WILL BE LOCATED NORTH OF THE EXISTING GUILFORD TANK. THIS CONTRACT WILL CONNECT THE NEW WATER TANK TO THE EXISTING WATER MAIN ON CHASE RIDGE ROAD. THIS PROJECT IS REQUIRED UNDER THE HOWARD COUNTY MASTER PLAN.

**WATER NOTES:**

- UNLESS OTHERWISE NOTED, ALL BURIED WATER MAINS SHALL BE ZINC COATED DUCTILE IRON PIPE CLASS 54 WITH A BITUMINOUS TOPCOAT, IN ACCORDANCE WITH THE LATEST REVISION OF ANSI/AWWA C150/A21.50 AND C151/A21.51. MAXIMUM DEFLECTION OF THE PIPE JOINTS SHALL NOT EXCEED 80% OF THE MANUFACTURER'S RECOMMENDATION.
- ALL NEW DUCTILE IRON FITTINGS SHALL BE IN ACCORDANCE WITH THE LATEST REVISION OF ANSI/AWWA C110/A21.10 OR ANSI/AWWA C153/A21.53, AND SHALL HAVE PRESSURE RATING OF 350 PSI. ALL DUCTILE IRON FITTINGS SHALL BE FURNISHED ZINC COATED WITH A BITUMINOUS TOP-COATING OR WITH A FUSION-BONDED EPOXY COATING ON ALL INTERIOR AND EXTERIOR SURFACES. FUSION-BONDED EPOXY COATING SHALL BE IN ACCORDANCE WITH ANSI/AWWA C116/21.16 AND SHALL BE SIX TO EIGHT (6-8) MIL IN THICKNESS, OR AS RECOMMENDED BY THE MANUFACTURER OF THE FITTING.
- ALL NEW DUCTILE IRON PIPES AND FITTINGS SHALL BE INSTALLED WITH V-BIO ENHANCED POLYETHYLENE ENCASEMENT. POLYETHYLENE ENCASEMENT SHALL MEET ALL THE REQUIREMENTS FOR ANSI/AWWA C105/A21.5. DUCTILE IRON PIPE AND THE POLYETHYLENE ENCASEMENT SHALL BE INSTALLED IN ACCORDANCE WITH ANSI/AWWA C600 AND ANSI/AWWA C105/A21.5 AND ALSO IN ACCORDANCE WITH ALL RECOMMENDATIONS AND PRACTICES OF THE AWWA MANUAL M41. REFER TO THE CONTRACT SPECIFICATIONS FOR DETAILS.
- TOPS OF ALL WATER MAINS SHALL HAVE A MINIMUM OF 4' OF COVER UNLESS OTHERWISE NOTED.
- VALVES ADJACENT TO TEES SHALL BE STRAPPED TO TEES.
- ALL FITTINGS SHALL BE BUTTRESSED OR ANCHORED WITH CONCRETE IN ACCORDANCE WITH STANDARD DETAILS UNLESS OTHERWISE PROVIDED FOR ON THE DRAWING.
- FIRE HYDRANTS SHALL BE SET TO THE BURY LINE ELEVATIONS SHOWN ON THE DRAWINGS AND INSTALLED IN ACCORDANCE WITH HOWARD COUNTY STANDARD DETAILS W-1.11, ~~AND~~ ~~5-500~~. ALL FIRE HYDRANTS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD DETAILS. FIRE HYDRANT LEADS SHALL BE DUCTILE IRON PIPE CLASS 54. THE SOIL AROUND THE FIRE HYDRANT SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 1000 AND SECTION 1005 OF THE STANDARD SPECIFICATIONS.
- THE CONTRACTOR SHALL NOT OPERATE ANY WATER MAIN VALVES ON THE EXISTING WATER SYSTEM.
- TRACER WIRES AND CONTINUITY TEST STATIONS SHALL BE INSTALLED ON ALL DIP AND PVC WATER MAINS IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL.
- ALL TIE-IN TO EXISTING WATER MAINS SHALL BE COORDINATED WITH HOWARD COUNTY BUREAU OF UTILITIES AT LEAST 10 WORKING DAYS PRIOR TO SCHEDULING THE WORK.
- NO WATER SHALL BE DISCHARGED FROM THE EXISTING WATER MAIN TO THE ENVIRONMENT WITHOUT FIRST DECHLORINATING. THE CONTRACTOR SHALL SUBMIT THE DECHLORINATION METHOD TO THE ENGINEER FOR REVIEW.

**QUANTITIES TABLE—BURIED PIPING & FITTINGS**

NAME OF UTILITY CONTRACTOR: \_\_\_\_\_  
SURVEY AND DRAFTING DIVISION AS-BUILT DATE: \_\_\_\_\_

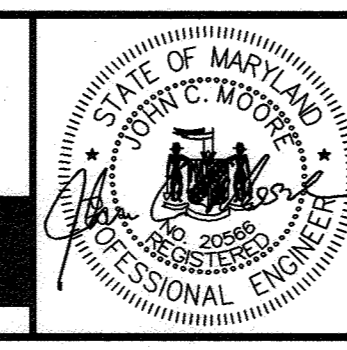
ITEM	UNIT	ESTIMATED QUANTITY	AS-BUILT	
			QUANTITY	MANUFACTURER
16" ZINC COATED DIP CL. 54	LF	452		
16" GATE VALVE	EA	1		
6" FIRE HYDRANT ASSEMBLY	EA	1		
16" 45" DI HB	EA	2		
16" FLEXIBLE EXPANSION JOINT	EA	1		
16" SLEEVE COUPLING	EA	1		
16" 90" DI VB	EA	1		

**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 09/06/2022.

**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

9/29/2021  
9/29/2021

**RK&K**  
P: 410.728.2900  
700 East Pratt Street, Suite 500 | Baltimore, MD 21202  
www.rk.com  
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DES:	BY:	NO.:	REVISION	DATE
NZ	KM	1	PRE-BID REVISIONS	2/22
DRN:	KMR			
CHK:	EDJ			
DATE:	SEPTEMBER 2021			

600' SCALE MAP NO. 48  
BLOCK NO. 1

**TITLE SHEET, GENERAL NOTES AND INDEX OF DRAWINGS**

**GUILFORD ELEVATED WATER TANK**

CAPITAL PROJECT NO. W8262  
CONTRACT NO. 44-5122

ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET NO. 01 OF 26

FILE PATH: \\baler-v06\2018\2018\18285\_Guilford\CADD\Plans-Tank\p06-TD00\_DPW\_GuilfordTank.dwg DATE: 9/20/2021 USER: nzhang



# 2.5 MG GUILFORD ELEVATED WATER TANK

## SITE DEVELOPMENT PLAN

### HOWARD COUNTY, MARYLAND

### DEPARTMENT OF PUBLIC WORKS

### CAPITAL PROJECT NO. W8262

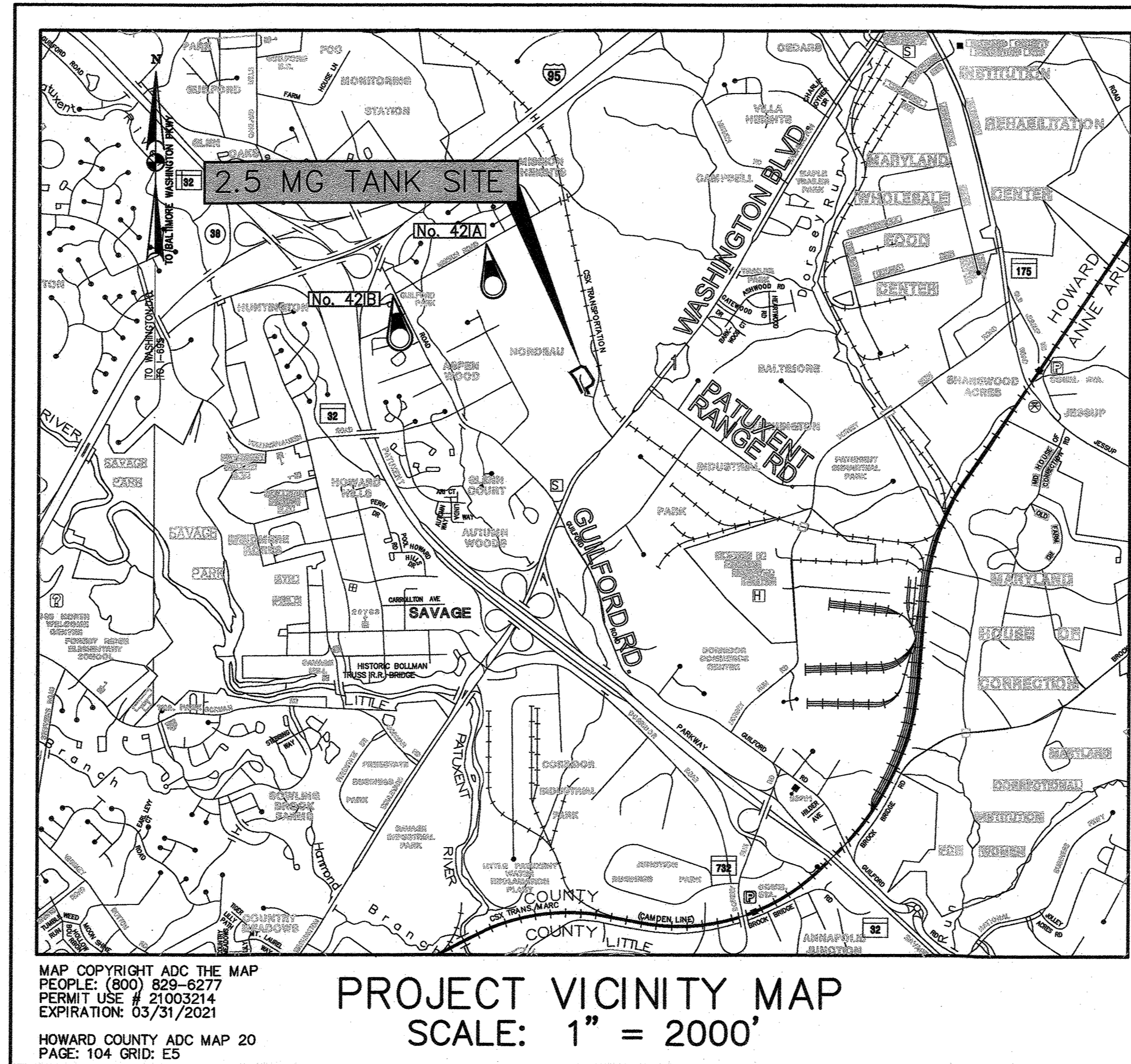
### SDP-20-032

#### INDEX OF DRAWINGS

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FC-2	FOREST CONSERVATION NOTES, TABLES & DETAILS
FC-3	FOREST CONSERVATION EXHIBIT

#### SITE DEVELOPMENT PLAN NOTES

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY AND MSHA 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:  
42IA: N 543,390.386 E 1,364,912.654 ELEVATION 312.653  
42IB: 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(g)(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	
<p>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.</p>	
<p><i>Kerr Dinsmore</i> OWNER / DEVELOPER SIGNATURE</p>	<p>4/29/2021 DATE</p>
<p>ENGINEER'S CERTIFICATION</p> <p>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.</p>	
<p>HOWARD COUNTY SOIL CONSERVATION DISTRICT CERTIFICATION</p> <p>THIS DEVELOPMENT IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.</p>	
<p><i>John C. Moore</i> DATE</p> <p>700 EAST PRATT STREET, SUITE 500 BALTIMORE, MARYLAND 21202 (410) 728-2900</p>	<p>6/3/21 DATE</p>

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. 20596, 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

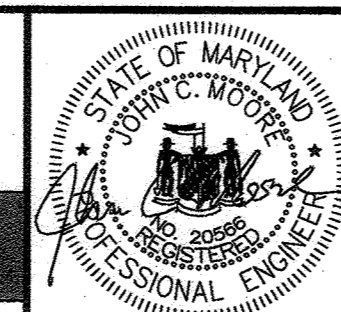
#### DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND

*John C. Moore*  
PLANNING DIRECTOR  
DATE: 6/17/21

*John C. Moore*  
CHIEF, DIVISION OF LAND DEVELOPMENT  
DATE: 6/17/21

*John C. Moore*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE: 6/17/21

**RK&K**  
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DES:	BY:	NO.:	REVISION:	DATE:
DRN:	KMR			
CHK:	EDJ			
DATE:	DECEMBER 2020			

#### SITE DEVELOPMENT PLAN TITLE SHEET

600' SCALE MAP NO. 48 BLOCK NO. 1

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. 02 OF 26
ELECTION DISTRICT NO. 6		HOWARD COUNTY, MARYLAND

FILE PATH: \\baler\06\2018\2018\18265\_Guilford\CADD\Plans-Tank\p61-7000\_SDP\_GuilfordTank.dwg DATE: 12/17/2020 USER: mzhong

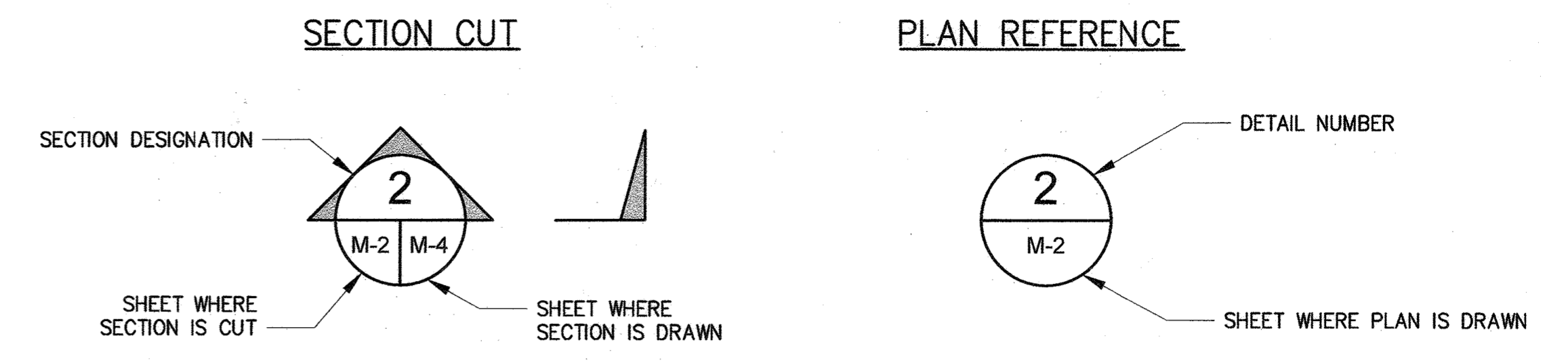


**LEGEND**

EXISTING	
SANITARY SEWER	X" S
SANITARY SEWERS 12" & OVER	X" S
SANITARY SEWER FORCE MAIN	FM
WATER	W
STORM DRAIN	D
STORM DRAIN INLET	D
OVERHEAD ELECTRIC	OH
UNDERGROUND ELECTRIC	E
UNDERGROUND FIBER OPTIC	FO
UNDERGROUND TELEPHONE	T
UNDERGROUND CABLE	C
GAS	G
PROPERTY LINE	
UTILITY EASEMENT	
SETBACK	
MINOR CONTOURS	492
MAJOR CONTOURS	490
100-YEAR FLOODPLAIN	
WETLAND BOUNDARY	WB
25' WETLAND BUFFER	WB
STREAM BUFFER	SB
WATERS OF THE US	WUS
FENCE	X
GUARDRAIL	
RAILROAD TRACKS	
WATER FIRE HYDRANT	
WATER VALVE	
GAS METER	
ELECTRIC POLE GUY	
ELECTRIC POLE	
UTILITY MARKER	UTL
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
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
UTILITY TO BE ABANDONED	
UTILITY TO BE REMOVED	

**DRAWING SYMBOLS**



FILE PATH: \\balderv06\2018\2018\18265\_Guilford\CADD\Plans-Tank\p6N-7001\_SDP\_GuilfordTank.dwg DATE: 12/15/2020 USER: nzhang

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. 20596, EXPIRATION DATE 09/06/2022.

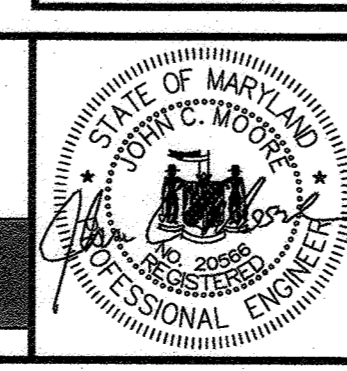
DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

*[Signature]*  
PLANNING DIRECTOR  
DATE: 4/29/21

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

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

**RK&K**  
P: 410.728.2900  
700 East Pratt Street, Suite 500 | Baltimore, MD 21202  
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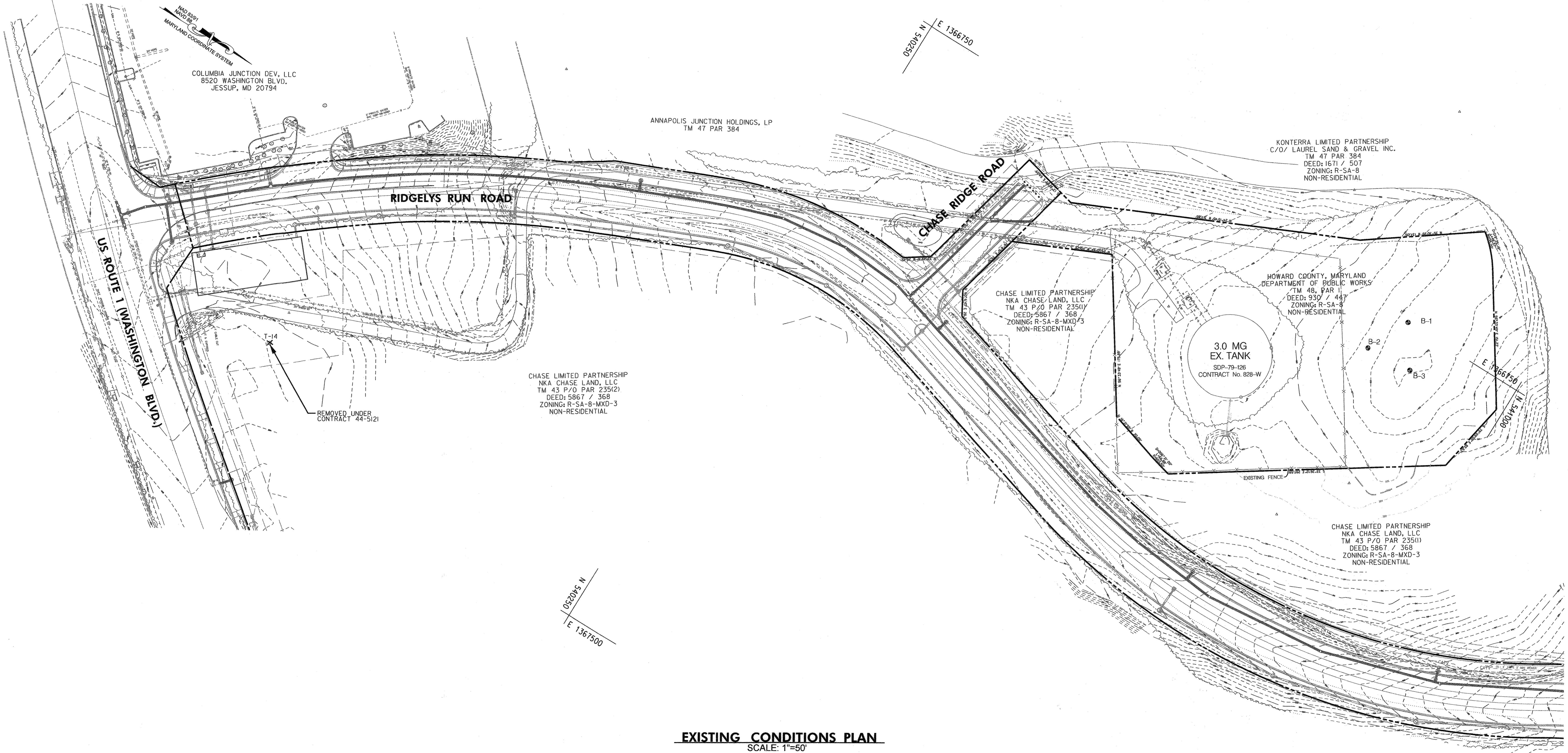


DES:	BY:	NO.:	REVISION	DATE
NZ				
DRN:	KMR			
CHK:	EDJ			
DATE:	DECEMBER 2020			

LEGEND AND STANDARD SYMBOLS

60' 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. 03 OF 26
HOWARD COUNTY, MARYLAND		



FILE PATH: \\baird06\2018\18265\_Guilford\CADD\Ref-Tank\Support\XBL-0000\_SDP\_Guilford\_Tank.dwg DATE: 5/7/2020 USER: rzhong

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

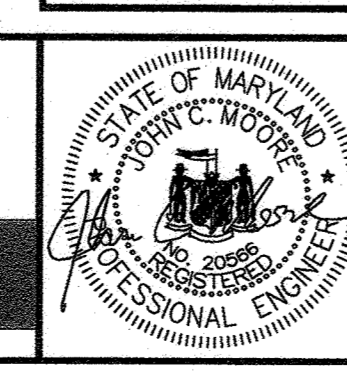
DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

*John Conner*  
PLANNING DIRECTOR  
DATE: 6/29/21

*Alister*  
CHIEF, DIVISION OF LAND DEVELOPMENT  
DATE: 6/29/21

*Del Shuck*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE: 6/29/21

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

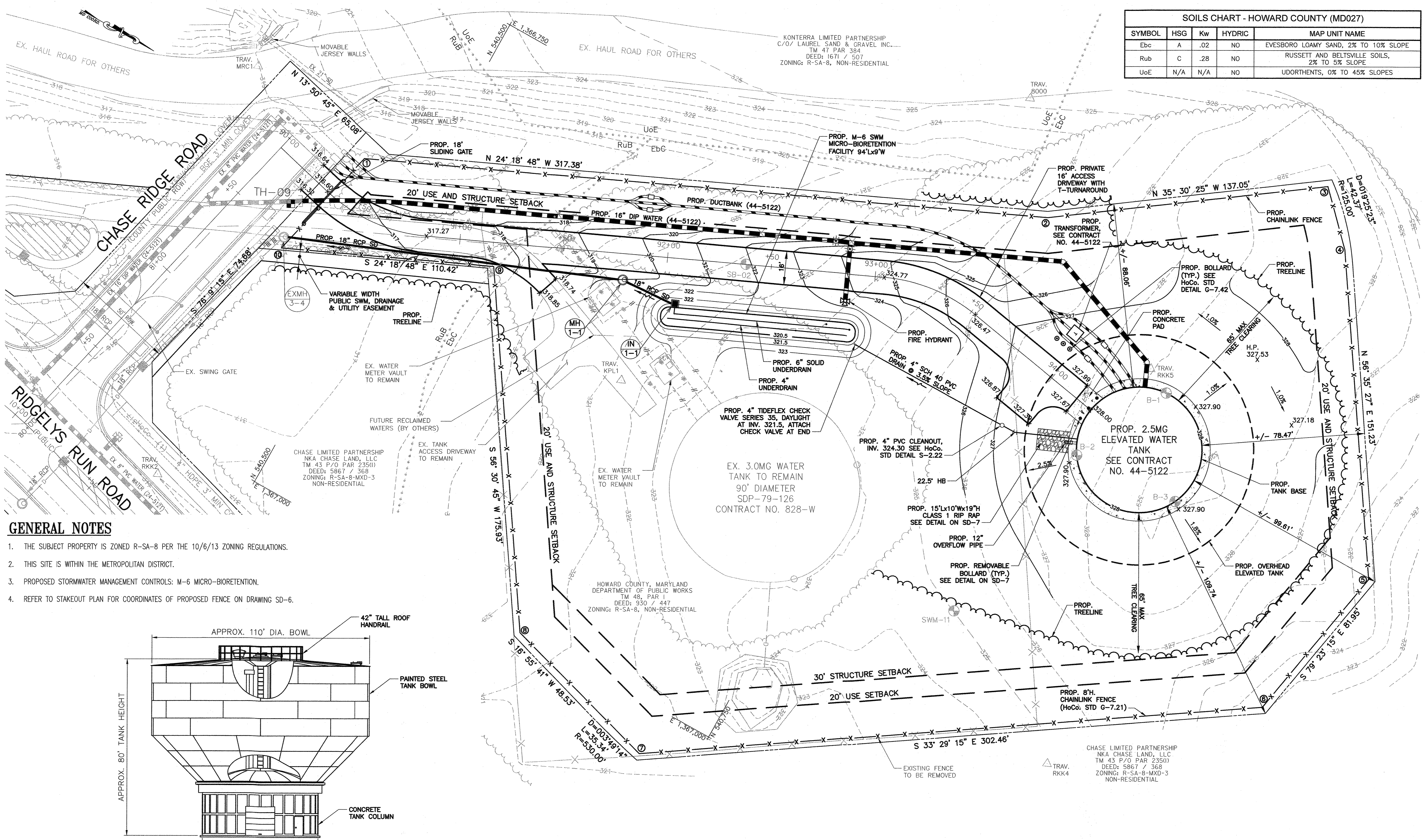
EXISTING CONDITIONS PLAN

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. 04 OF 26
HOWARD COUNTY, MARYLAND		SDP-20-032

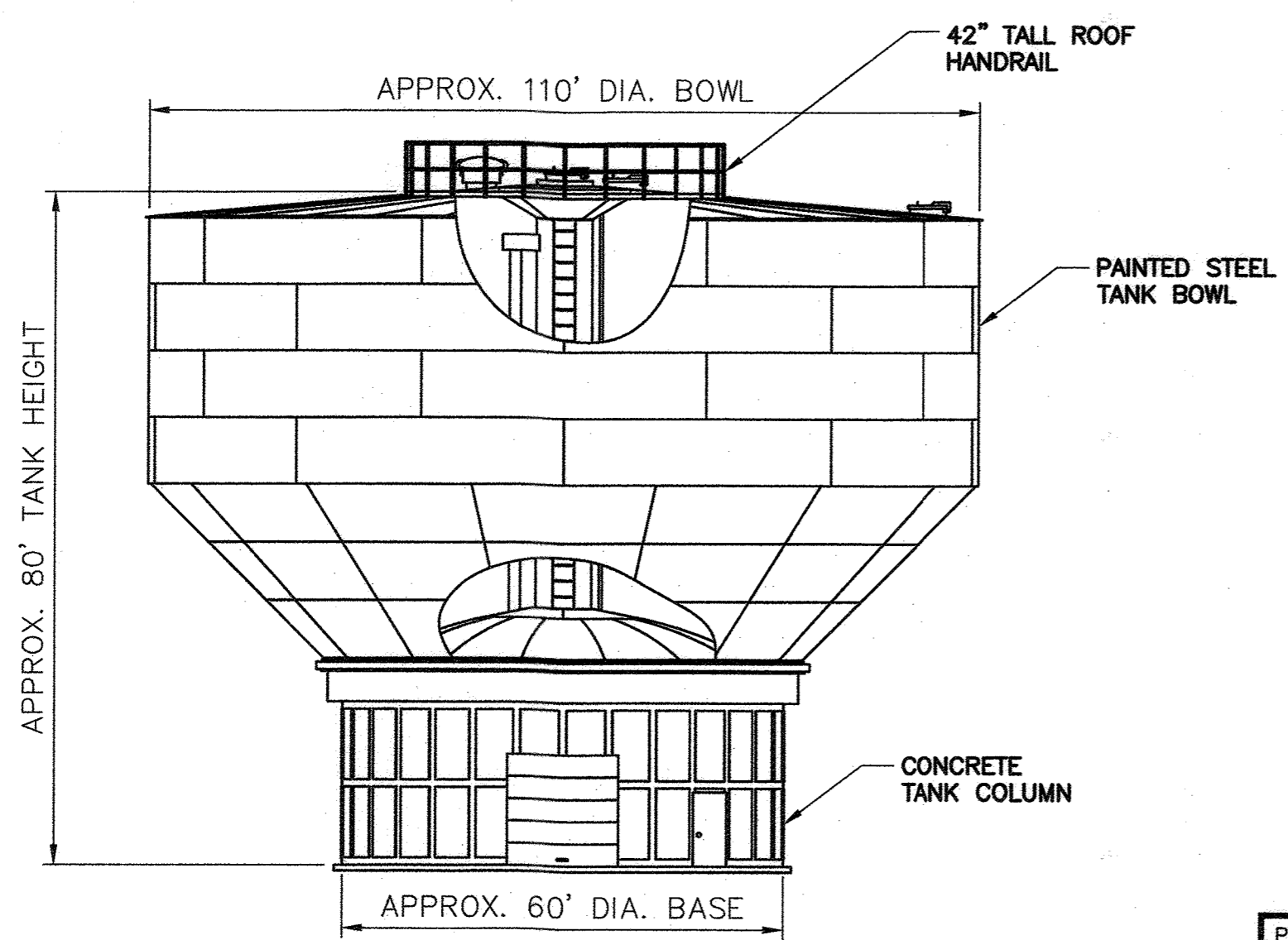


SOILS CHART - HOWARD COUNTY (MD027)				
SYMBOL	HSG	Kw	HYDRIC	MAP UNIT NAME
Ebc	A	.02	NO	EVESBORO LOAMY SAND, 2% TO 10% SLOPE
Rub	C	.28	NO	RUSSETT AND BELTSVILLE SOILS, 2% TO 5% SLOPE
UoE	N/A	N/A	NO	UDORTHERTS, 0% TO 45% SLOPES



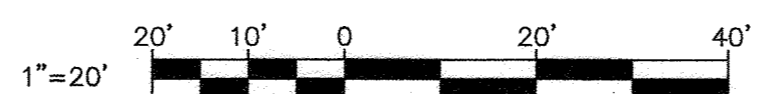
**GENERAL NOTES**

1. THE SUBJECT PROPERTY IS ZONED R-SA-8 PER THE 10/6/13 ZONING REGULATIONS.
2. THIS SITE IS WITHIN THE METROPOLITAN DISTRICT.
3. PROPOSED STORMWATER MANAGEMENT CONTROLS: M-6 MICRO-BIORETENTION.
4. REFER TO STAKEOUT PLAN FOR COORDINATES OF PROPOSED FENCE ON DRAWING SD-6.



**PROPOSED 2.5MG COMPOSITE TANK**  
NOT TO SCALE

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DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

*[Signature]*  
PLANNING DIRECTOR

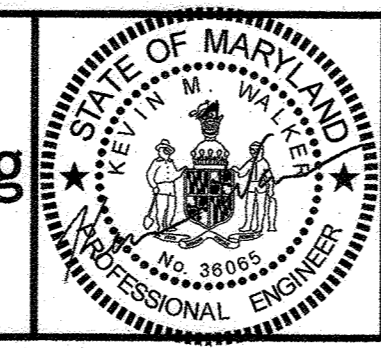
*[Signature]*  
CHIEF, DIVISION OF LAND DEVELOPMENT

DATE: 6/23/21

DATE: 6/17/21

**Phoenix Engineering**

21132 Old York Road  
Parkton, MD 21120  
410.328.1150  
www.phoenix-eng.com



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

**SITE DEVELOPMENT PLAN**

600' SCALE MAP NO. 48 BLOCK NO. 1

TAX MAP 48 GRID 0001,0019 PARCEL 0001,0235 SD-4

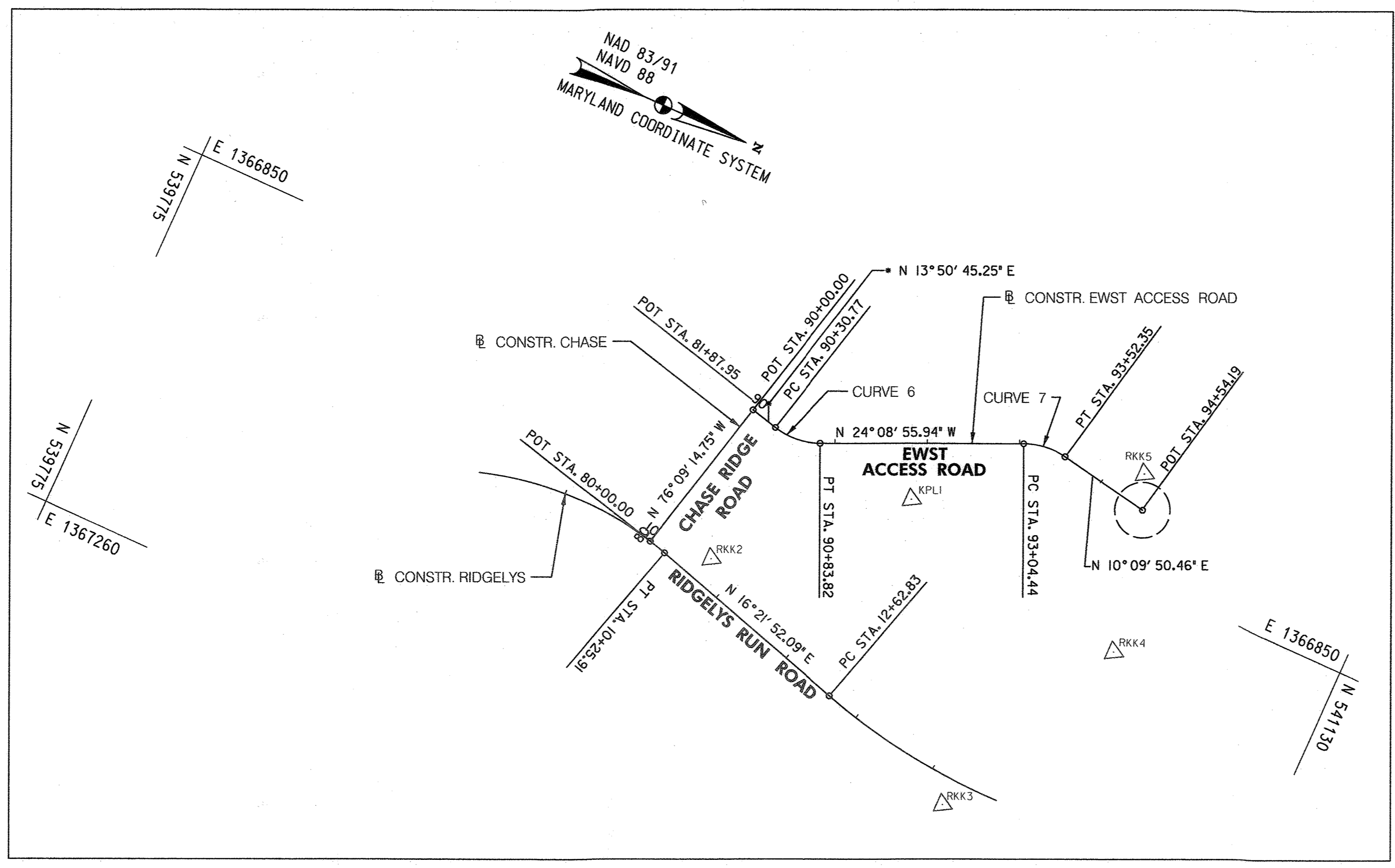
**GUILFORD ELEVATED WATER TANK**  
SITE DEVELOPMENT PLAN  
CAPITAL PROJECT NO. W8262  
SDP-20-032

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SCALE 1" = 20'  
SHEET NO. 05 OF 28

FILE PATH: G:\19-016 Guilford Water Tank and Roadway\CAD\DWG\WT-PO01\_Guilford\_Site\_Tank.dwg DATE: 12/15/2020 USER: 1714

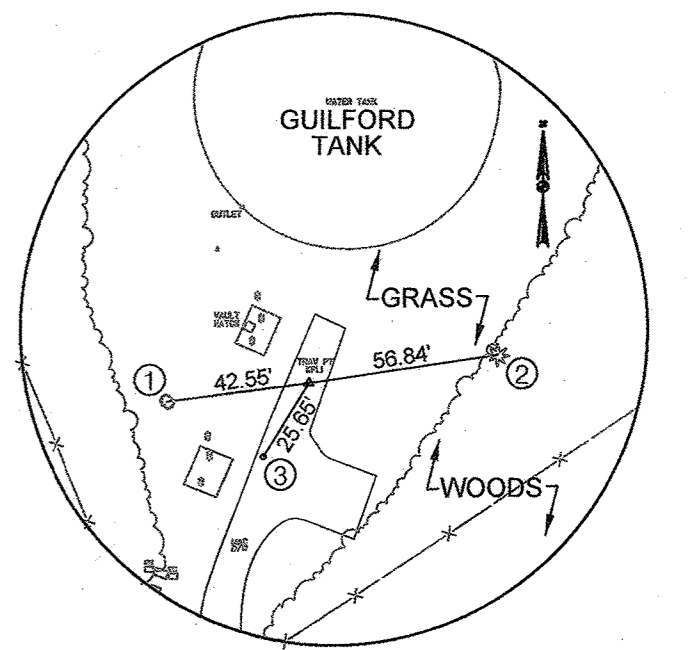




**SURVEY REFERENCES**

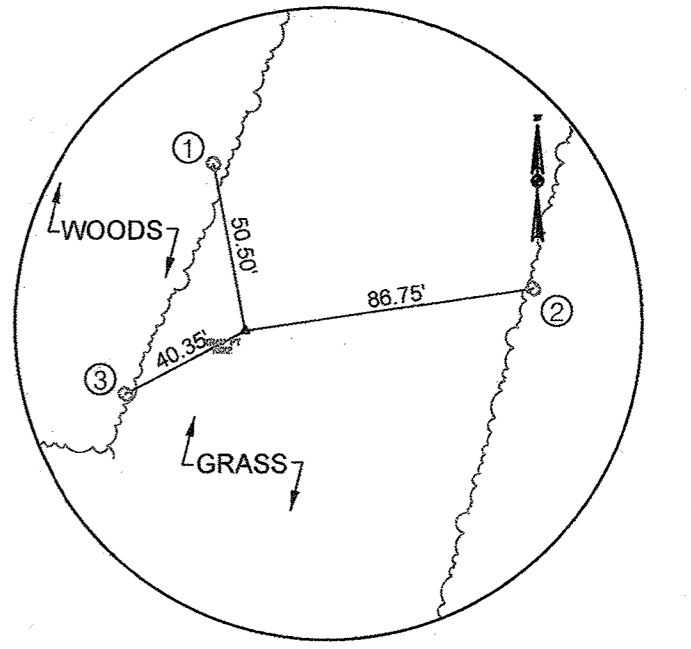
**TRAV PT. KPL1**

- 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'



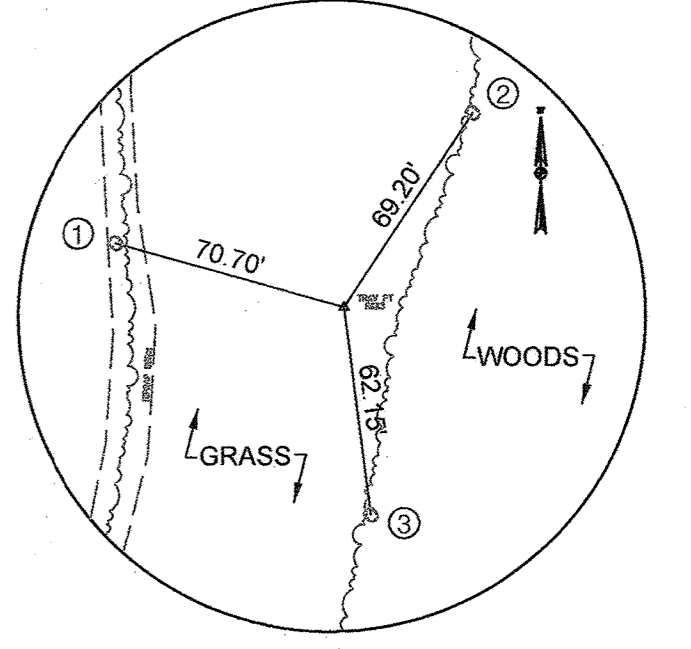
**TRAV PT. RKK2**

- 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'



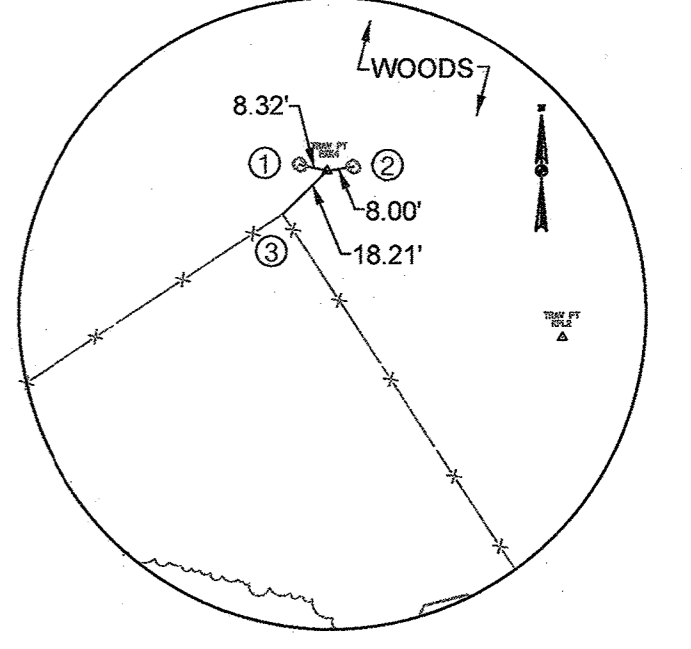
**TRAV PT. RKK3**

- ① N/C IN 10" OAK
  - ② N/C IN 20" OAK
  - ③ N/C IN 8" PIN OAK
- N 540,796.6402  
E 1,367,157.7258  
ELEV. 315.49'



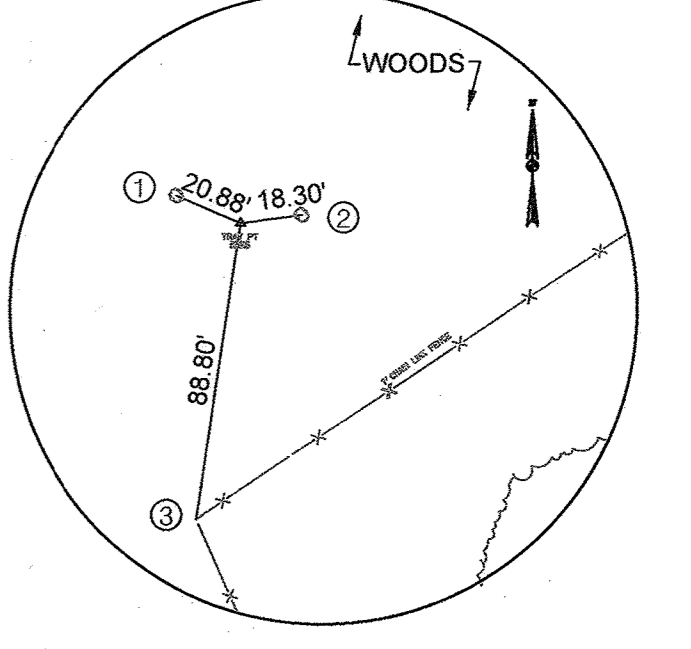
**TRAV PT. RKK4**

- 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 1,368,931.5410  
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 1,368,743.1209  
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

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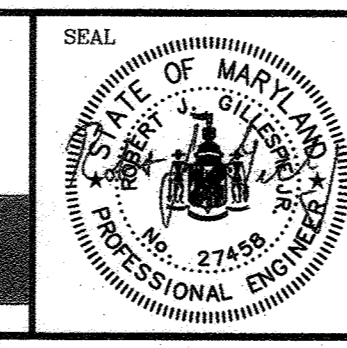
DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

PLANNING DIRECTOR: *[Signature]* DATE: 6/25/21

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

CHIEF, DEVELOPMENT ENGINEERING DIVISION: *[Signature]* DATE: 6/22/21

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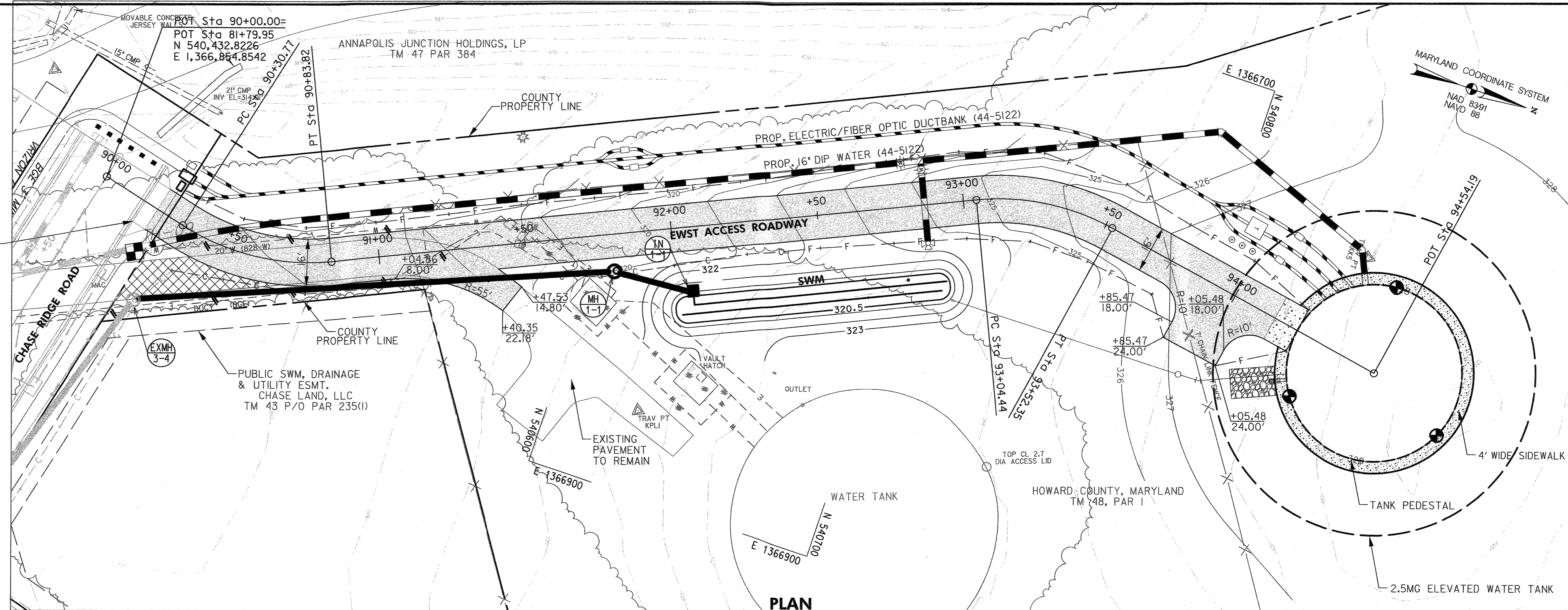
DES:	BY:	NO.:	REVISION:	DATE:
TMB				
DRN:	BB			
CHK:	RJG			
DATE:	DECEMBER 2020			

**SURVEY CONTROL AND STAKEOUT PLAN**

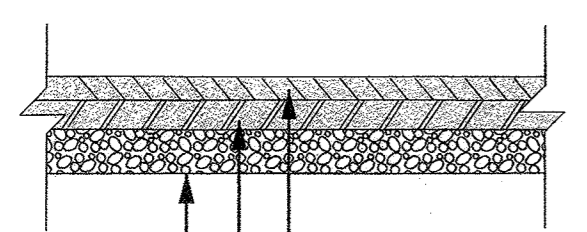
600' SCALE MAP NO. 48 BLOCK NO. 1

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. 06 OF 26
HOWARD COUNTY, MARYLAND		





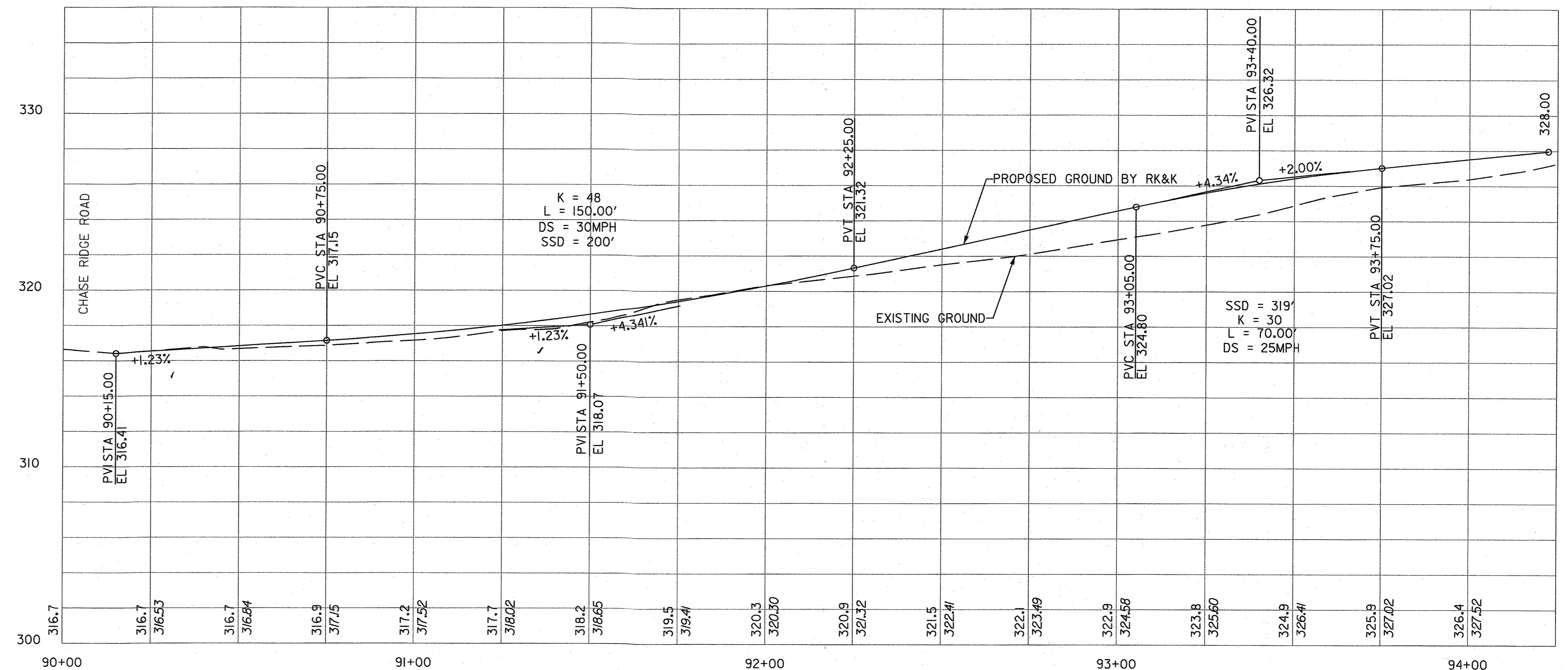
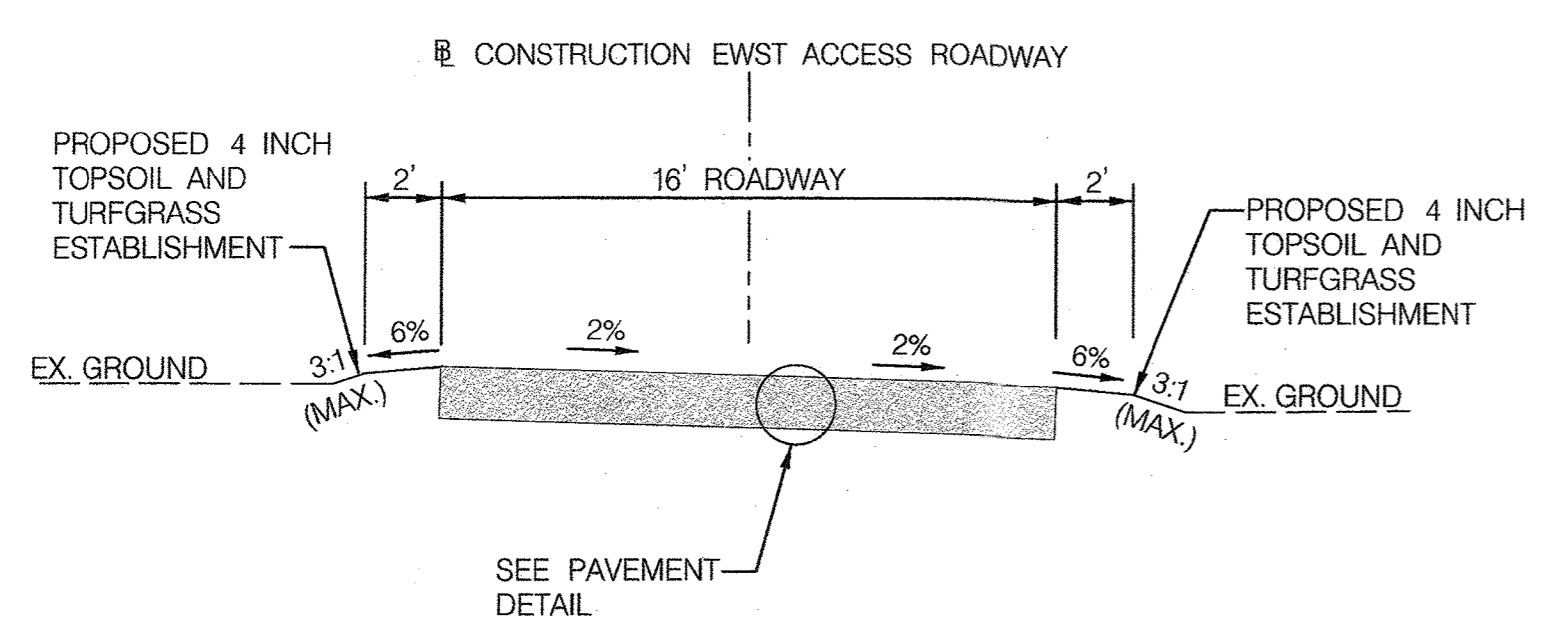
CONCRETE APRON TO BE INSTALLED BY OTHERS PRIOR TO START OF CONSTRUCTION



2.5 INCH ASPHALT SUPERPAVE FOR SURFACE 9.5MM, PG64S-22, LEVEL 1 (1.5" LIFT AND 1" LIFT)  
4.5 INCH ASPHALT SUPERPAVE FOR BASE 19.0MM, PG64S-22, LEVEL 1 (2" LIFT AND 2.5" LIFT)  
6 INCH GRADED AGGREGATE BASE

**FULL DEPTH PAVEMENT DETAIL**

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



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

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

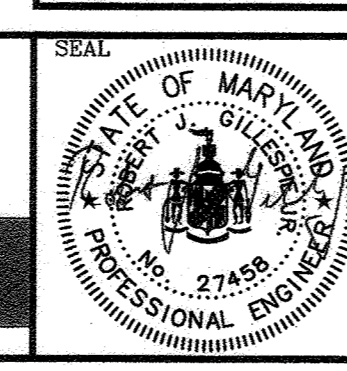
**SITE ACCESS ROAD PLAN**

TAX MAP 48	GRID 0001, 0019 PARCEL 0001, 0235	SD-6
<b>GUILFORD ELEVATED WATER TANK</b>		
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. 07 OF 26

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

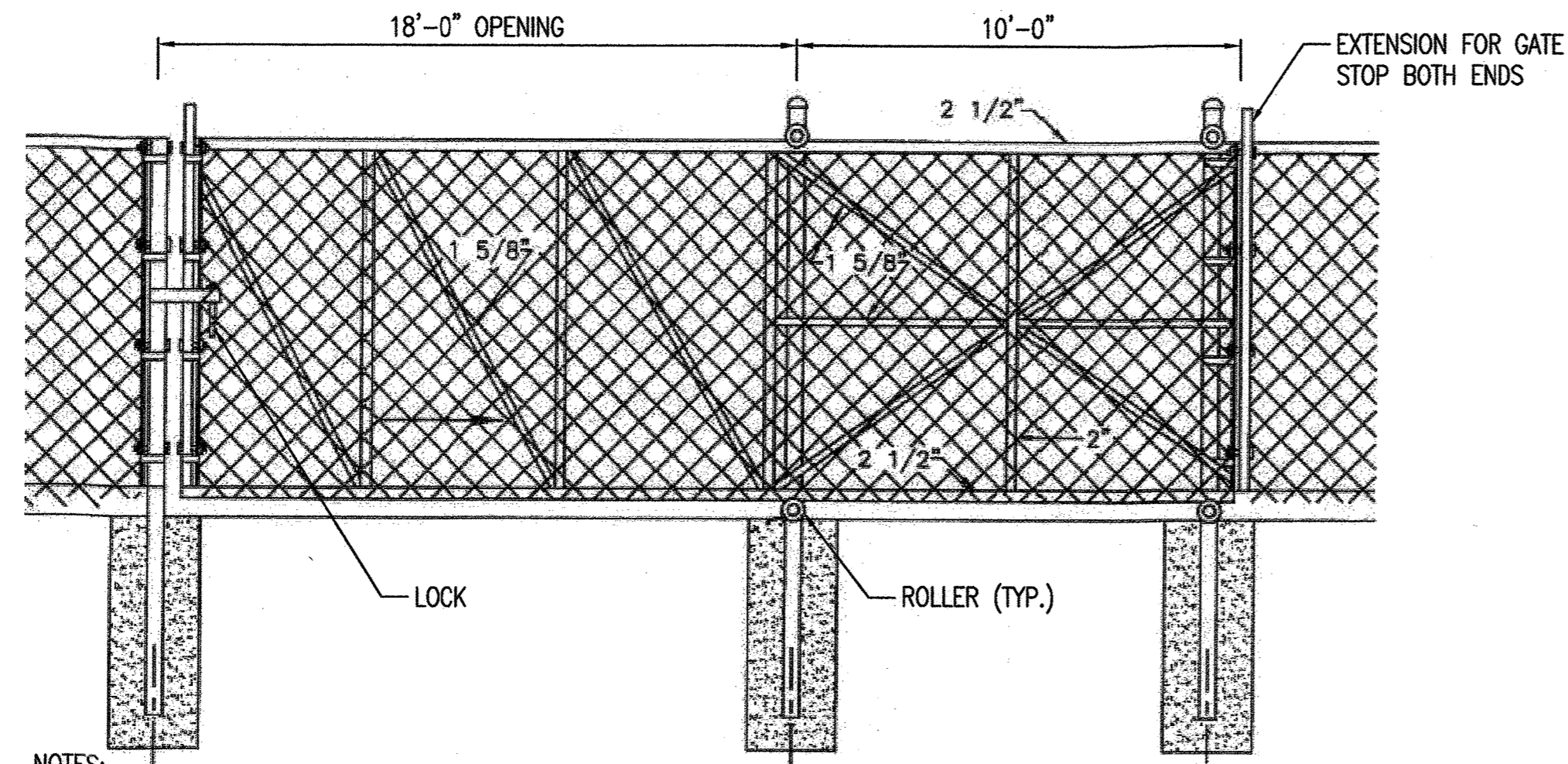
DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND	
 PLANNING DIRECTOR DATE: 6/29/21	 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 6/17/21

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60' SCALE MAP NO. 48 BLOCK NO. 1

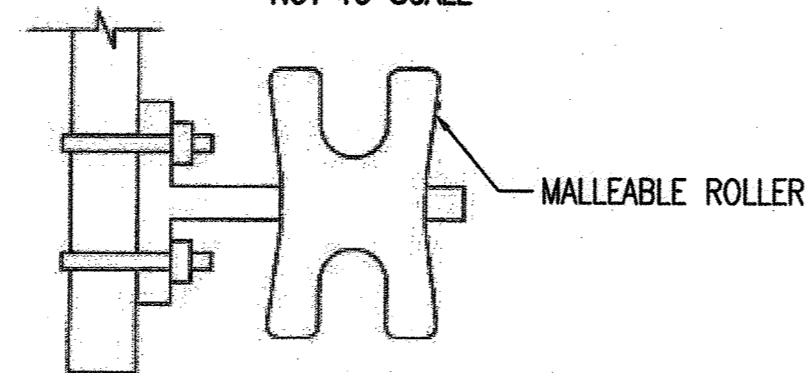




- NOTES:
- MOVABLE GATE FRAMING TO BE ALUMINUM.
  - SEE HoCo. STD DETAIL G-7.21 FOR CHAIN LINK FENCE DETAIL.
  - GATE SHALL BE BLACK VINYL COATED. REFER TO TECHNICAL SPECIFICATION 02830.

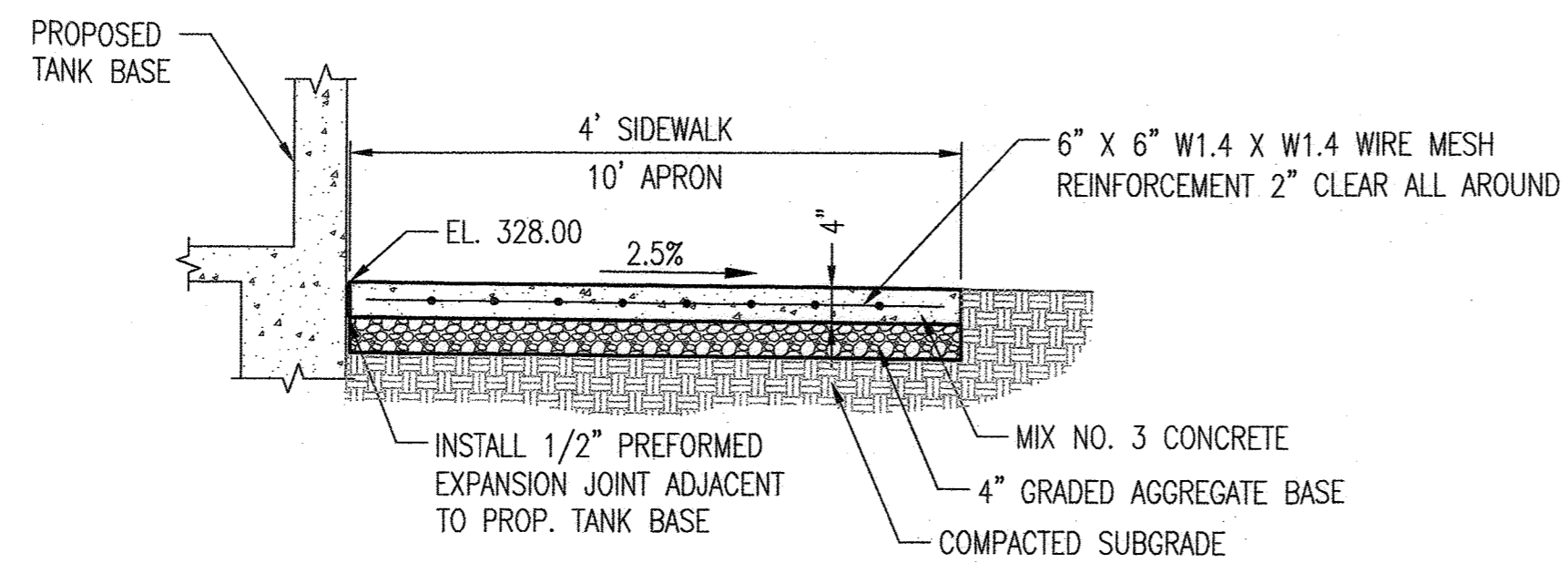
**CANTILEVER SLIDING GATE**

NOT TO SCALE



**TYPICAL ROLLER ASSEMBLY**

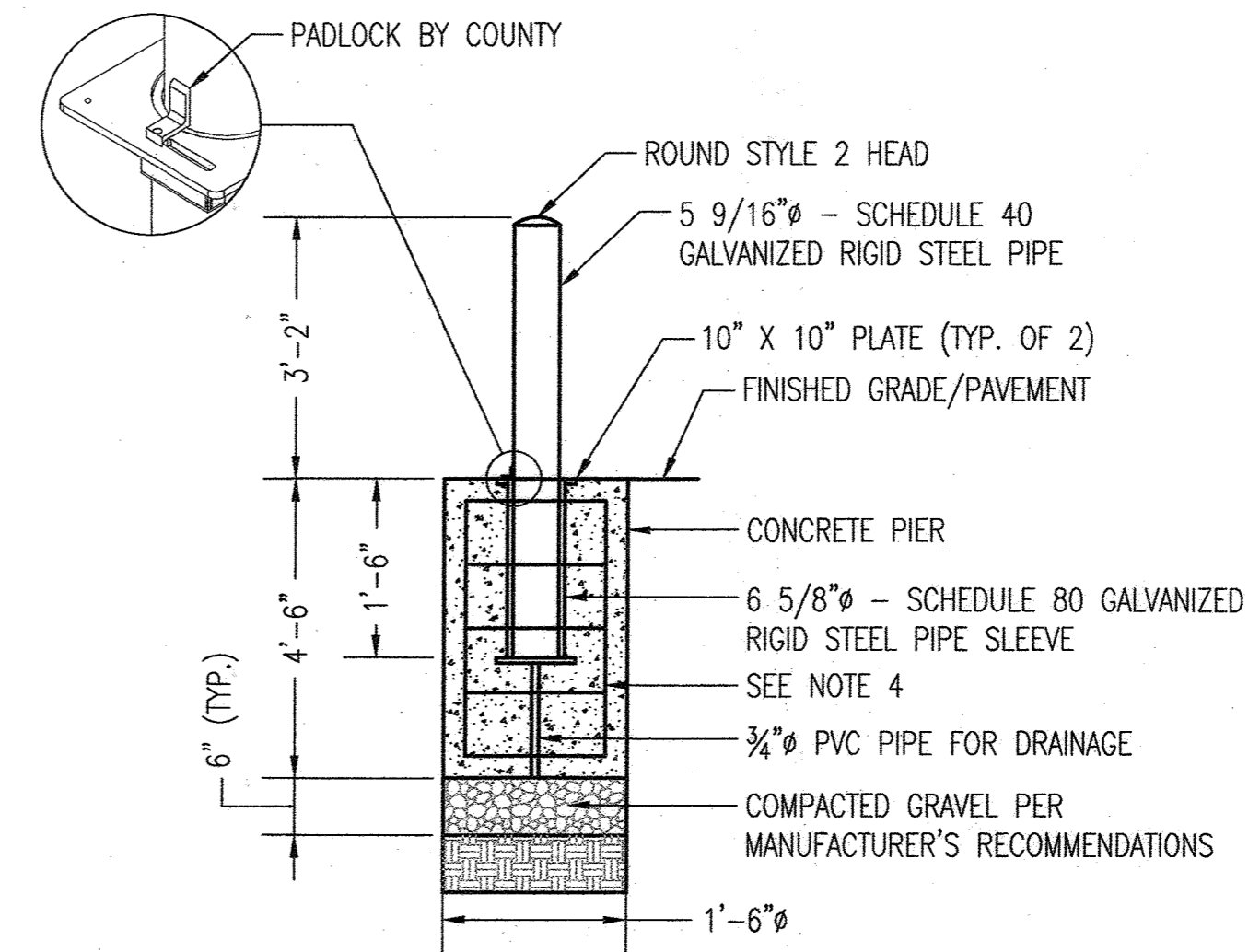
NOT TO SCALE



- 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 DETAIL**

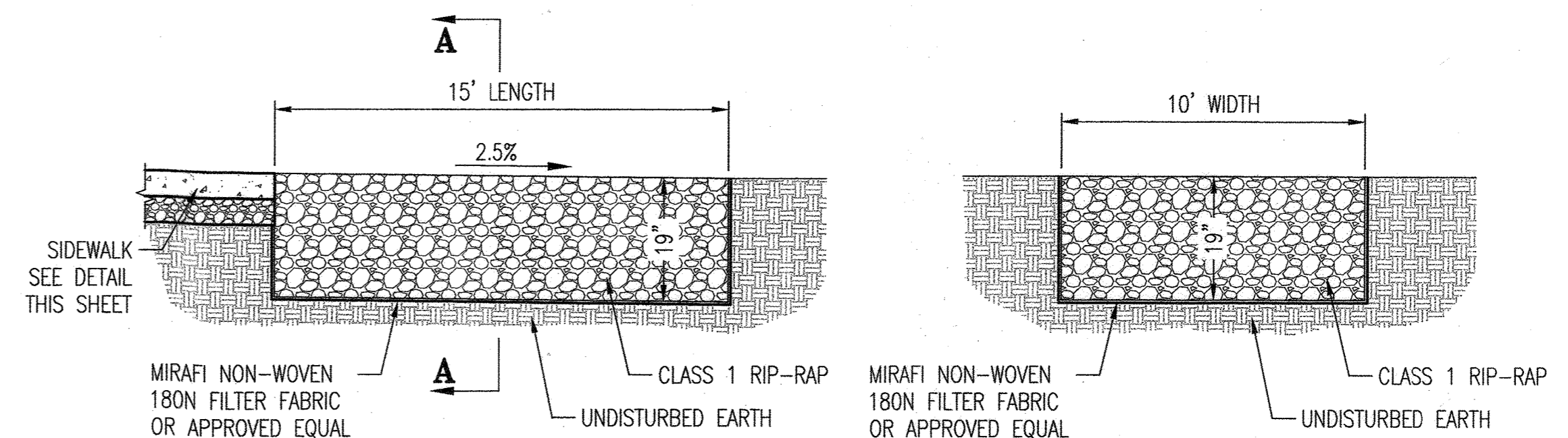
NOT TO SCALE



- 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**

NOT TO SCALE



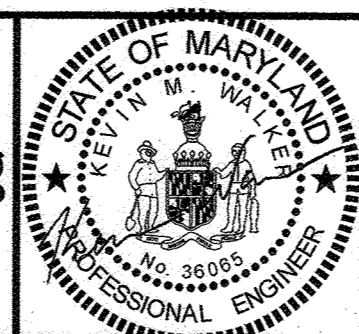
**RIP-RAP OUTFALL DETAIL**

NOT TO SCALE

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DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

PLANNING DIRECTOR: *Steve Gorman* DATE: 6/28/21  
CHIEF, DIVISION OF LAND DEVELOPMENT: *Clayton* DATE: 6/27/21  
CHIEF, DEVELOPMENT ENGINEERING DIVISION: *John* DATE: 6/27/21



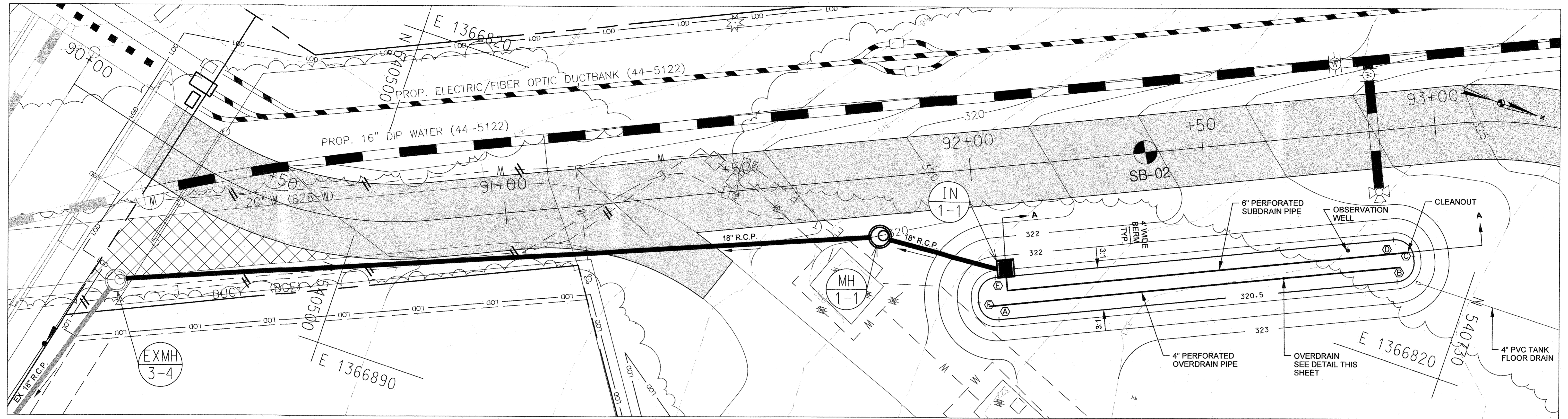
DES:	BY:	NO.:	REVISION:	DATE:
DKS				
DRN:	DKS			
CHK:	KMW			
DATE:	DECEMBER 2020			

SITE NOTES AND DETAILS

600' SCALE MAP NO. 48 BLOCK NO. 1

TAX MAP 48	GRID 0001, 0019 PARCEL 0001, 0235	SD-7
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 26
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

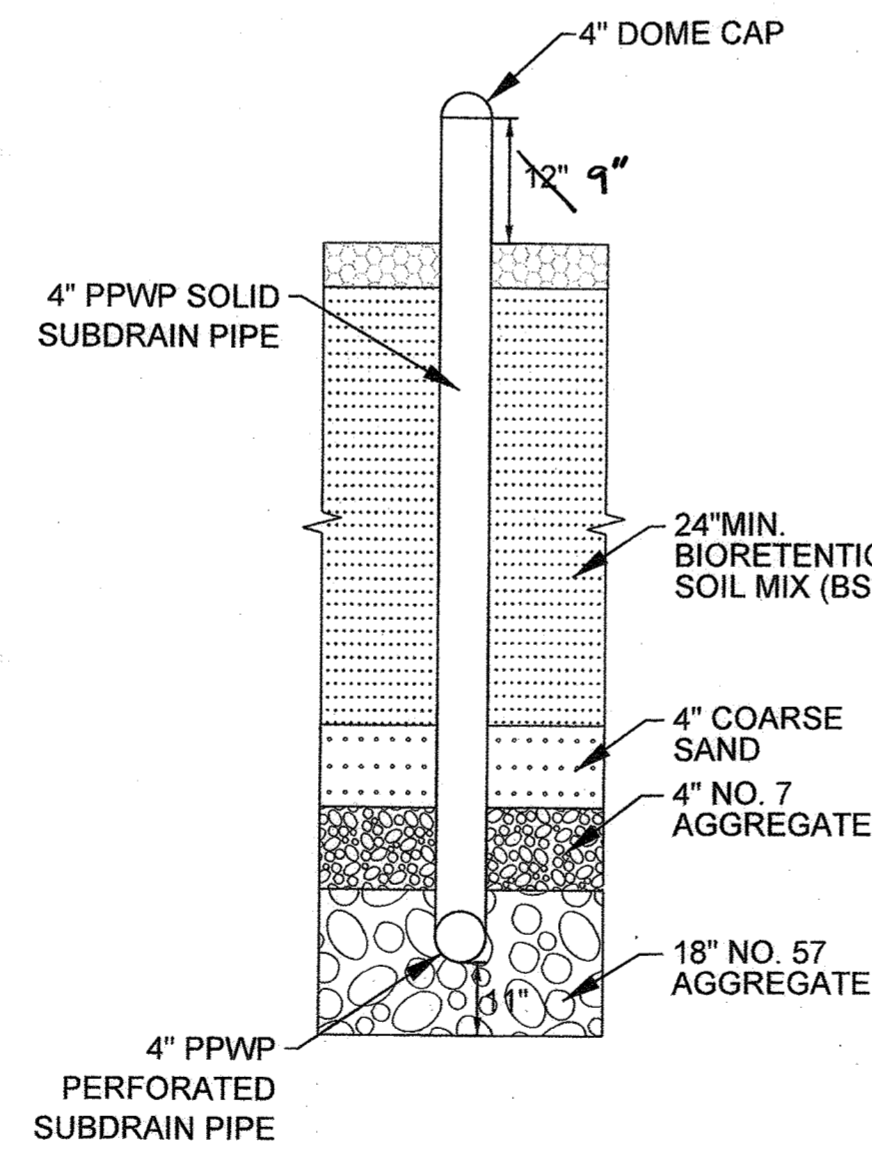
**NOTES**  
1. PLANTS TO BE PLACED WITHIN THE BOTTOM FOOTPRINT OF THE MICRO-BIORETENTION FACILITY. PLANTS SHOULD BE SPACED 18" ON CENTER AND THE SAME SPECIES GROUPED TOGETHER IN GROUPS OF 9 TO 30 PLANTS.

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

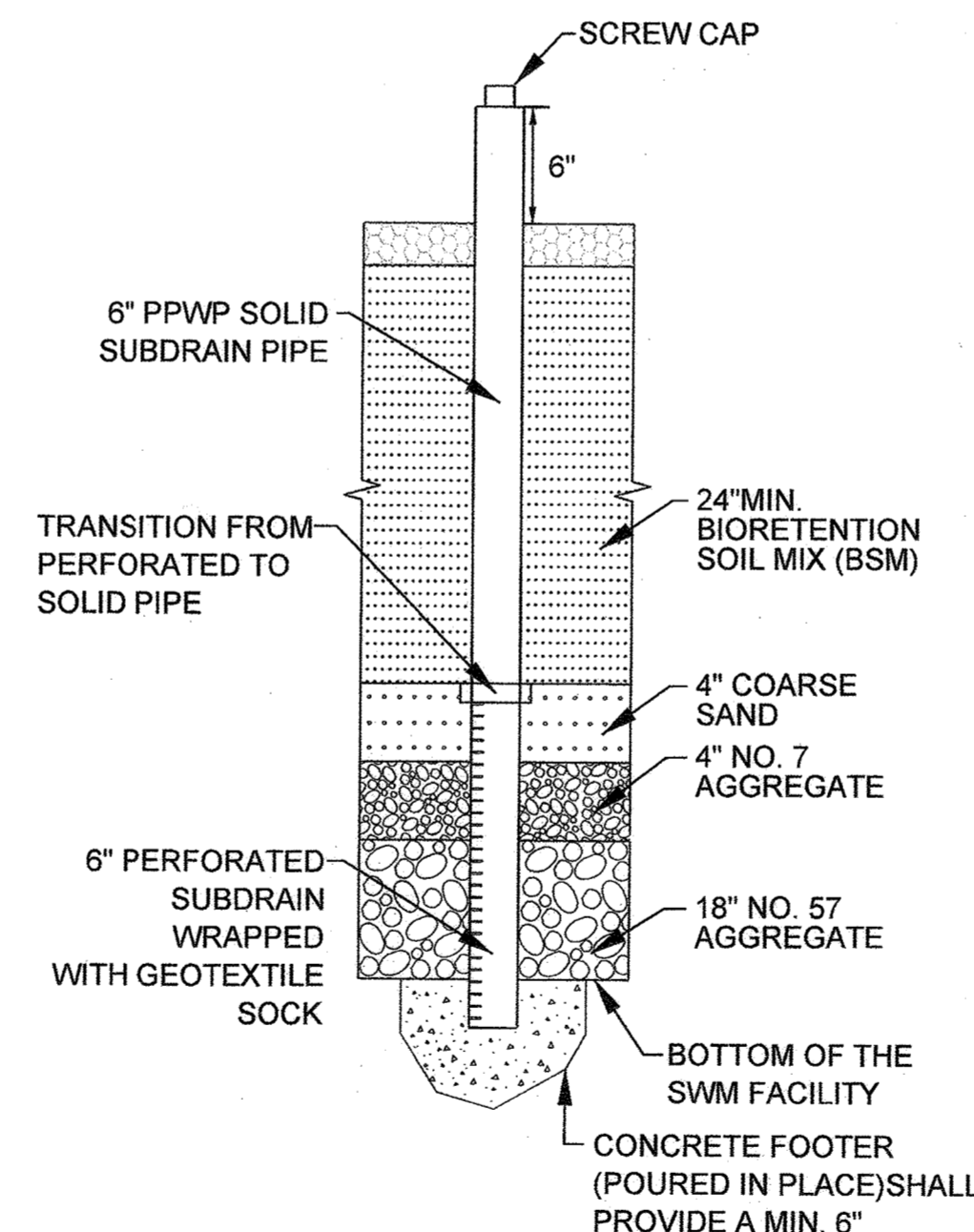
- A. THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE 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 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)**

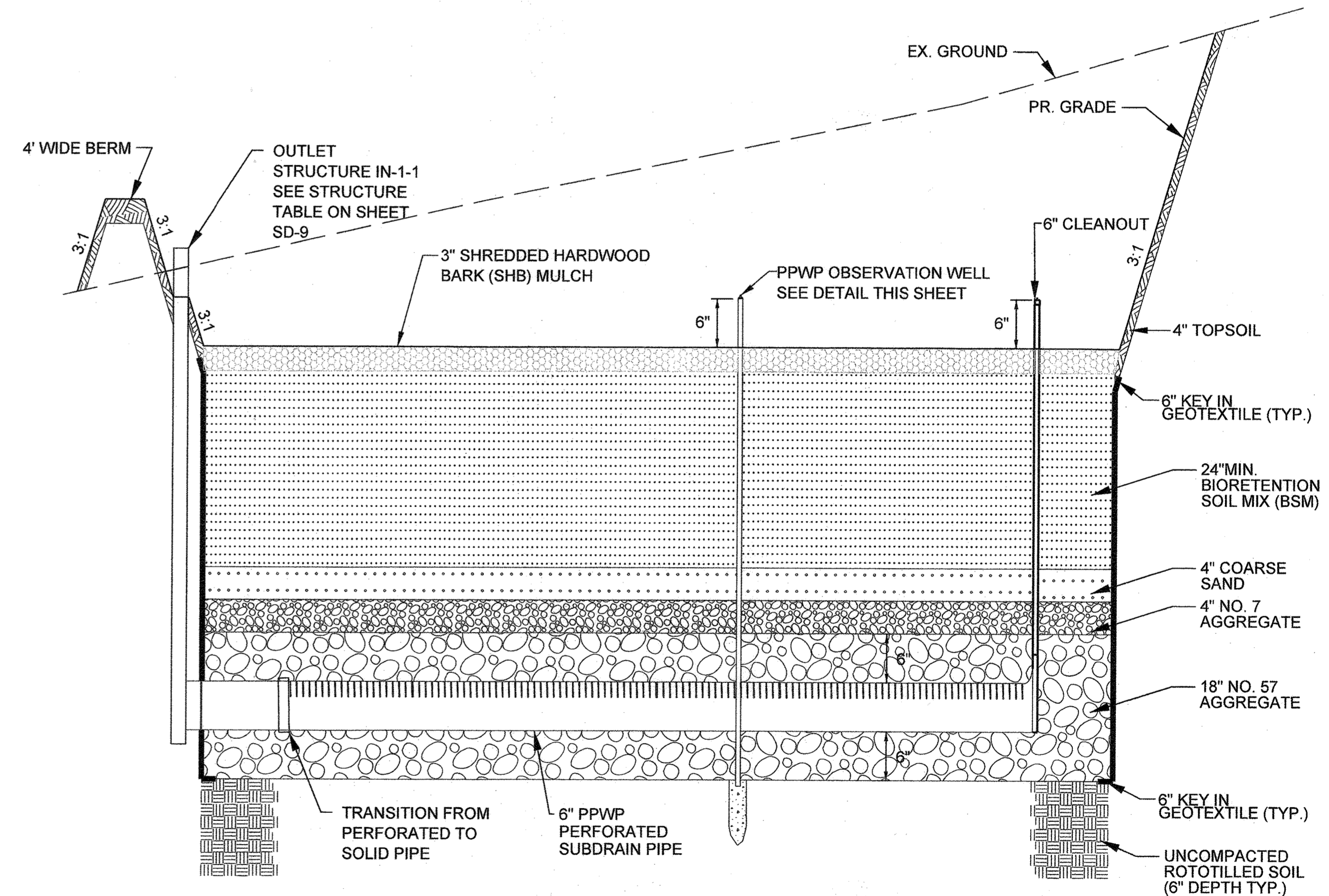
- A. MAINTENANCE OF AREAS RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPED AREAS. THE AREAS RECEIVING RUNOFF SHOULD BE PROTECTED FROM FUTURE COMPACTION OR DEVELOPMENT OF IMPERVIOUS AREA. IN COMMERCIAL AREAS, FOOT TRAFFIC SHOULD BE DISCOURAGED AS 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: 6/25/21  
CHIEF, DIVISION OF LAND DEVELOPMENT: *[Signature]* DATE: 6/22/21  
CHIEF, DEVELOPMENT ENGINEERING DIVISION: *[Signature]* DATE: 6/22/21



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Engineers | Construction Managers | Planners | Scientists  
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DES:	BY:	NO.:	REVISION:	DATE:
DES	DES			
CHK:	MBS			
DATE:	DECEMBER 2020			

STORMWATER MANAGEMENT PLAN & DETAILS

60' SCALE MAP NO. 48 BLOCK NO. 1

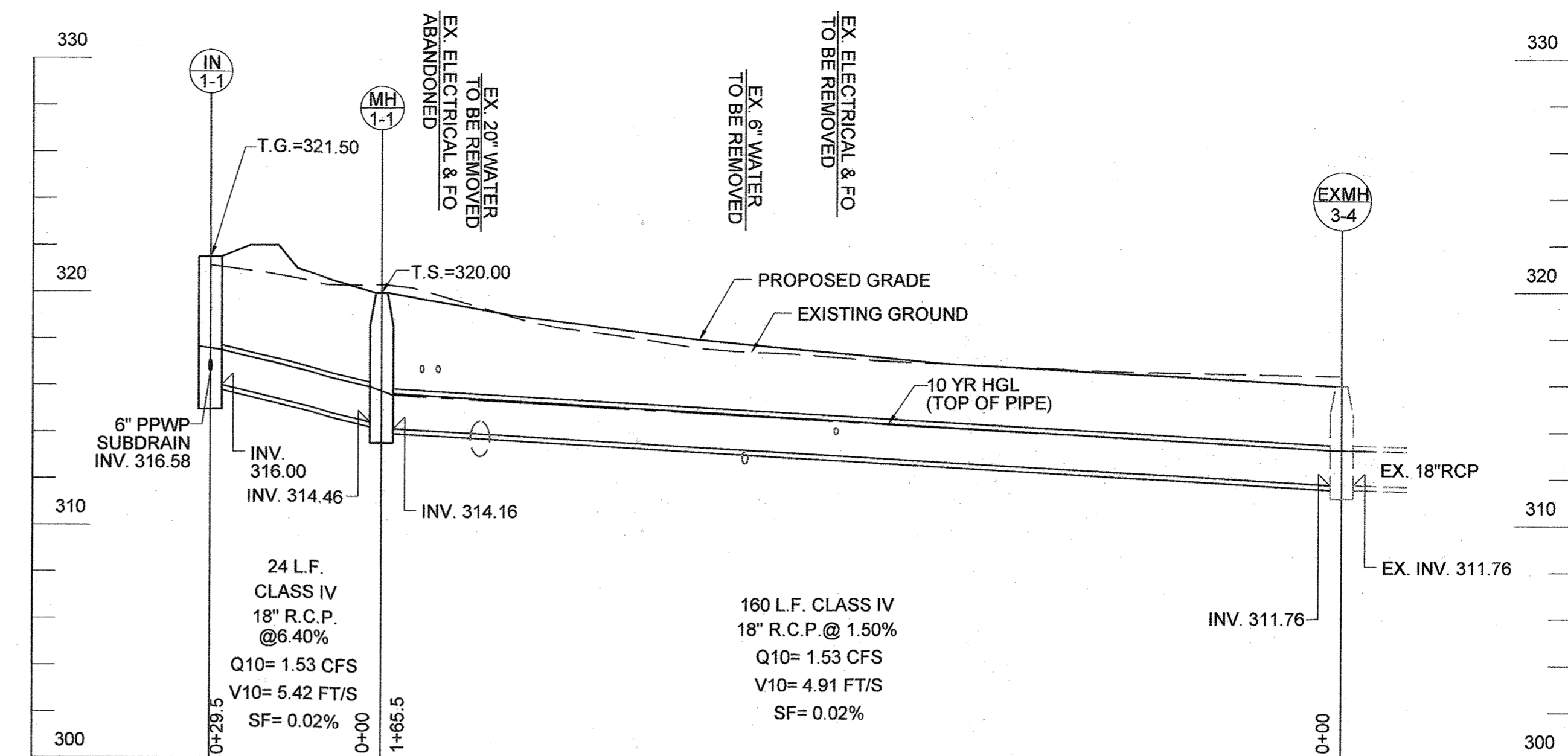
TAX MAP 48	GRID 0001.0019 PARCEL 0001.0235	SD-8
GUILFORD ELEVATED WATER TANK SITE DEVELOPMENT PLAN CAPITAL PROJECT NO. W8262 SDP-20-032		SCALE AS SHOWN
ELECTION DISTRICT NO. 6		SHEET NO. 09 OF 26
HOWARD COUNTY, MARYLAND		SDP - 20 - 032

FILE PATH: \\bolsr\02\2018\18265\_Guilford\CADD\Ref-Tank\_Support\XBL-0000\_SDP\_Guilford\_Tank.dwg DATE: 5/7/2020 USER: nzhong



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.

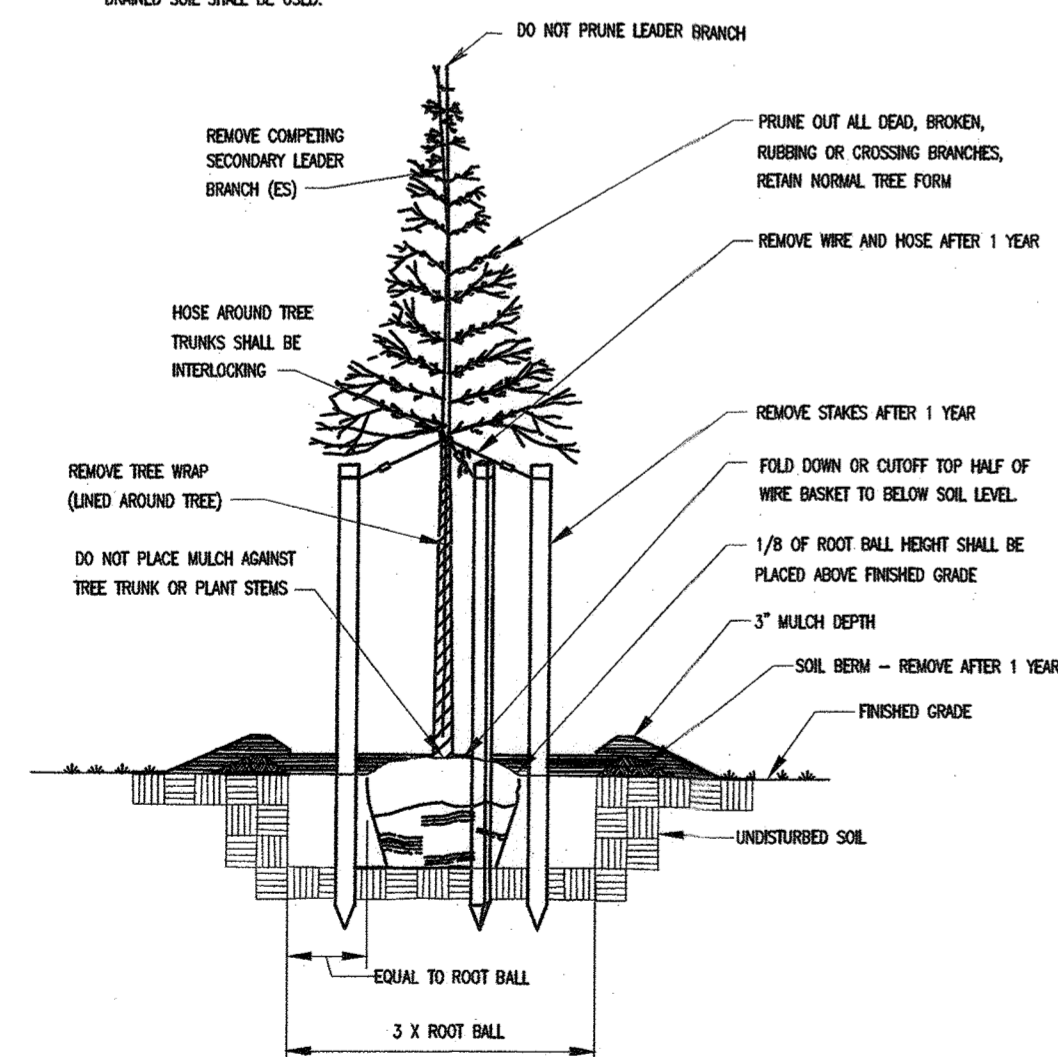
NOTE: CONTRACTOR TO BLOCK FLOW FROM ENTERING EX MH 3-4 UNTIL AFTER STORMWATER IS INSTALLED AND STABILIZED AND PERMISSION IS GRANTED BY THE INSPECTOR.

**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 SHAW.
- FOLD DOWN OR CUT OFF HALF OF WIRE BASKET TO BELOW SOIL LEVEL.
- PIPE DIAMETER SHALL BE THREE TIMES THE DIAMETER OF THE ROOT BALL.
- ROOT BALLS SHALL HAVE 1/8" OF HEIGHT ABOVE GRADE.
- SOIL BERMS 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.

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



Revised 5/26/2017 Approved 5/17/2020 Approved	Howard County, Maryland Department of Public Works  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-bioretenation

FEATURE	DESIGN	AS-BUILT*
BOTTOM WIDTH (FT)	9	
BOTTOM LENGTH (FT)	93	
LEFT SIDE SLOPE (H:V) - MAY NOT BE STEEPER THAN	3:1	
RIGHT SIDE SLOPE (H:V) - MAY NOT BE STEEPER THAN	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	

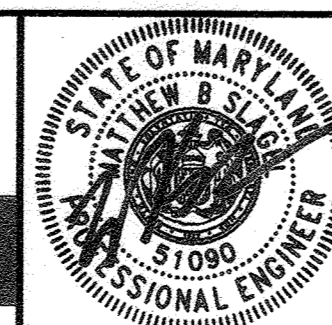
\* TO BE COMPLETED BY THE CONTRACTOR'S SURVEYOR AND THE COUNTY'S RESIDENT INSPECTOR

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

DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

PLANNING DIRECTOR  
 4/20/21  
 DATE  
  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 6.02.21  
 DATE

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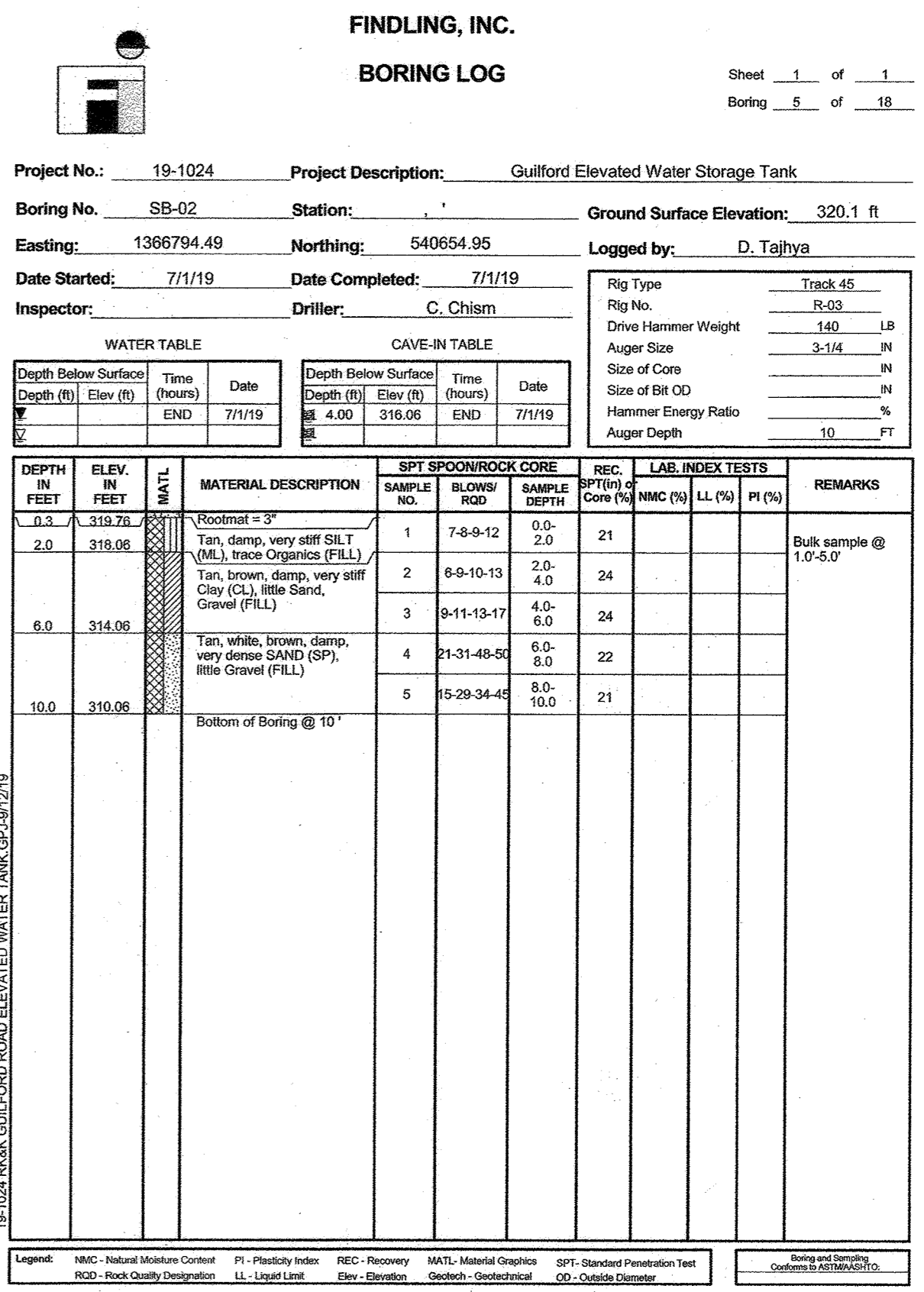
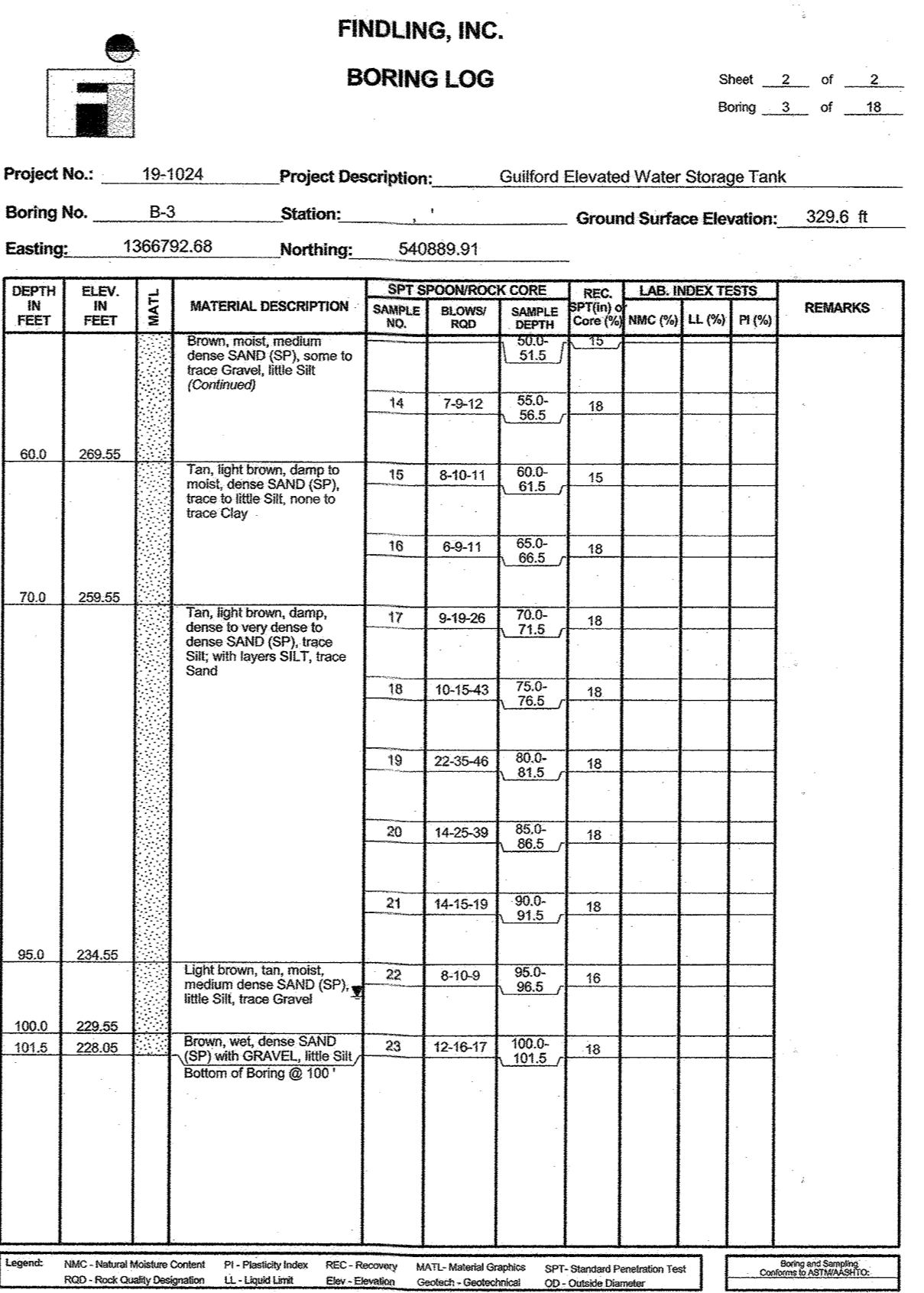
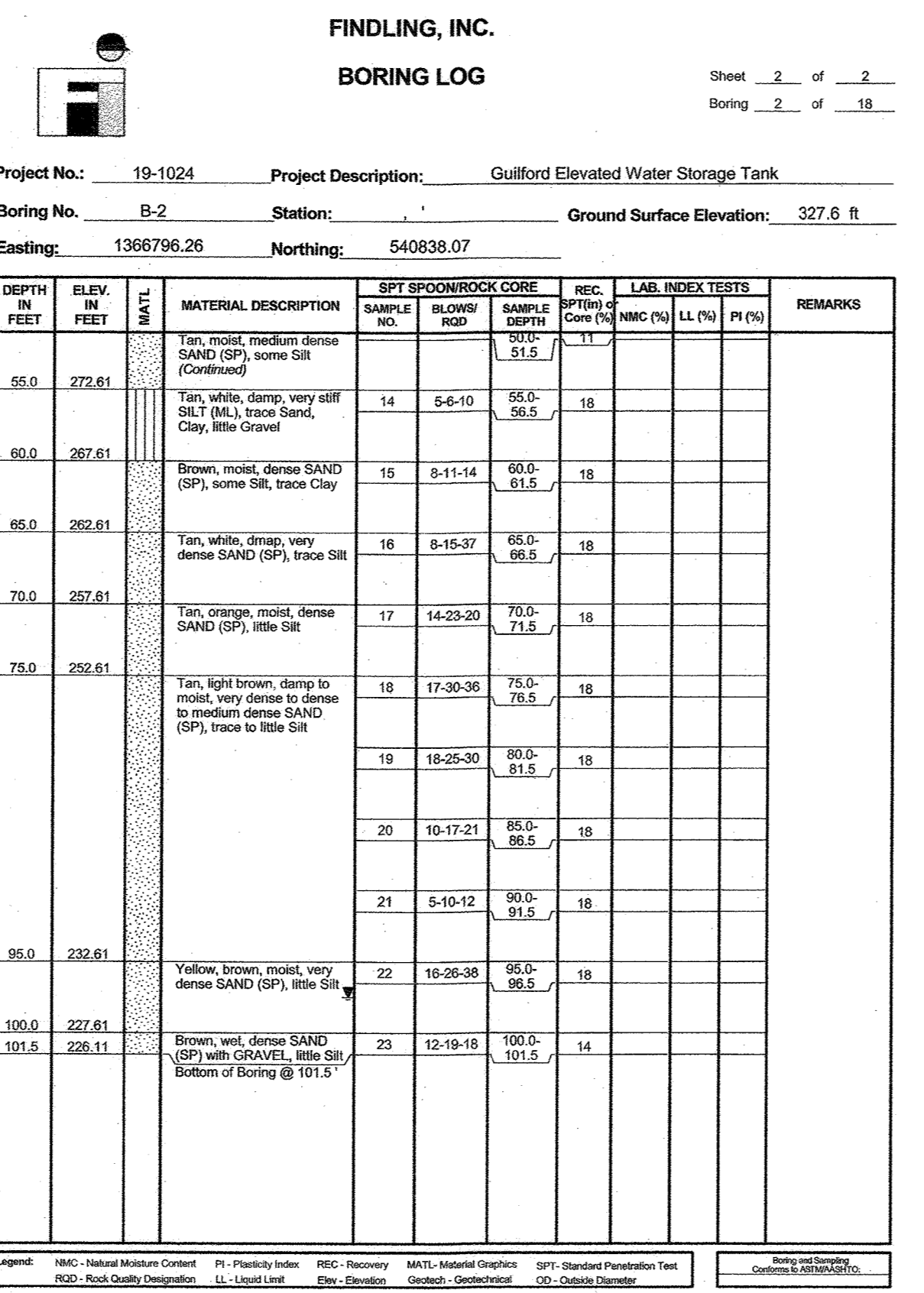
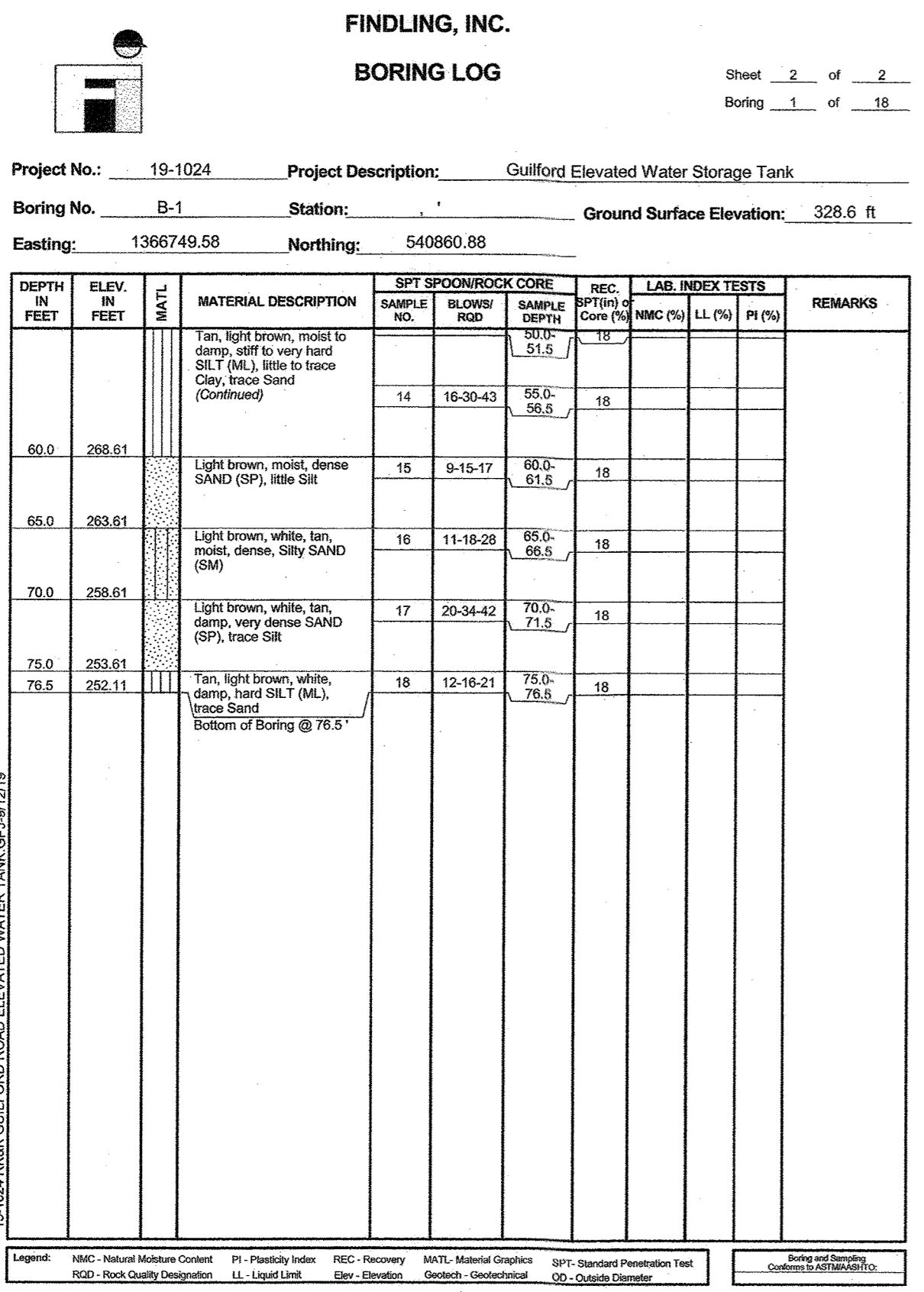
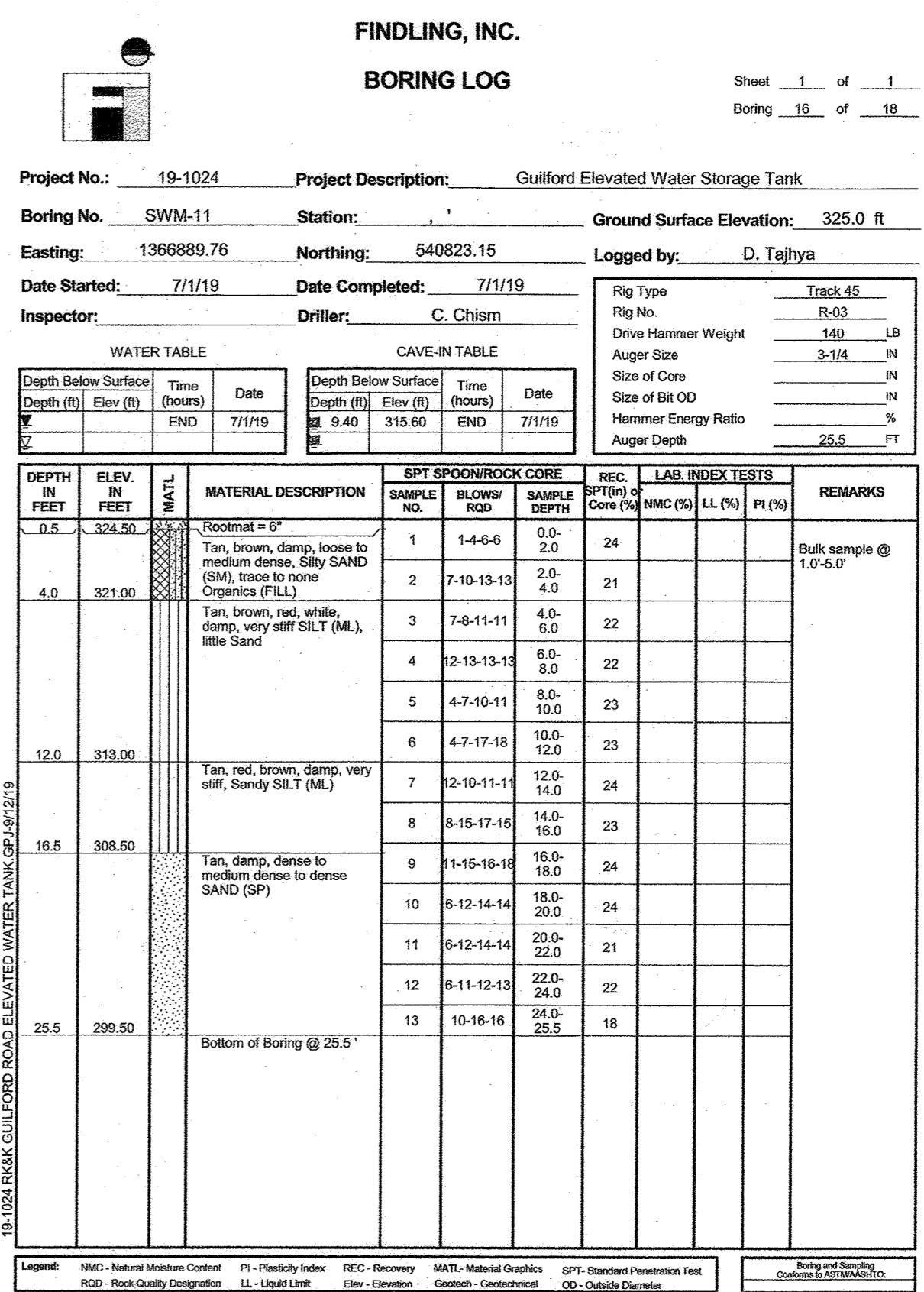
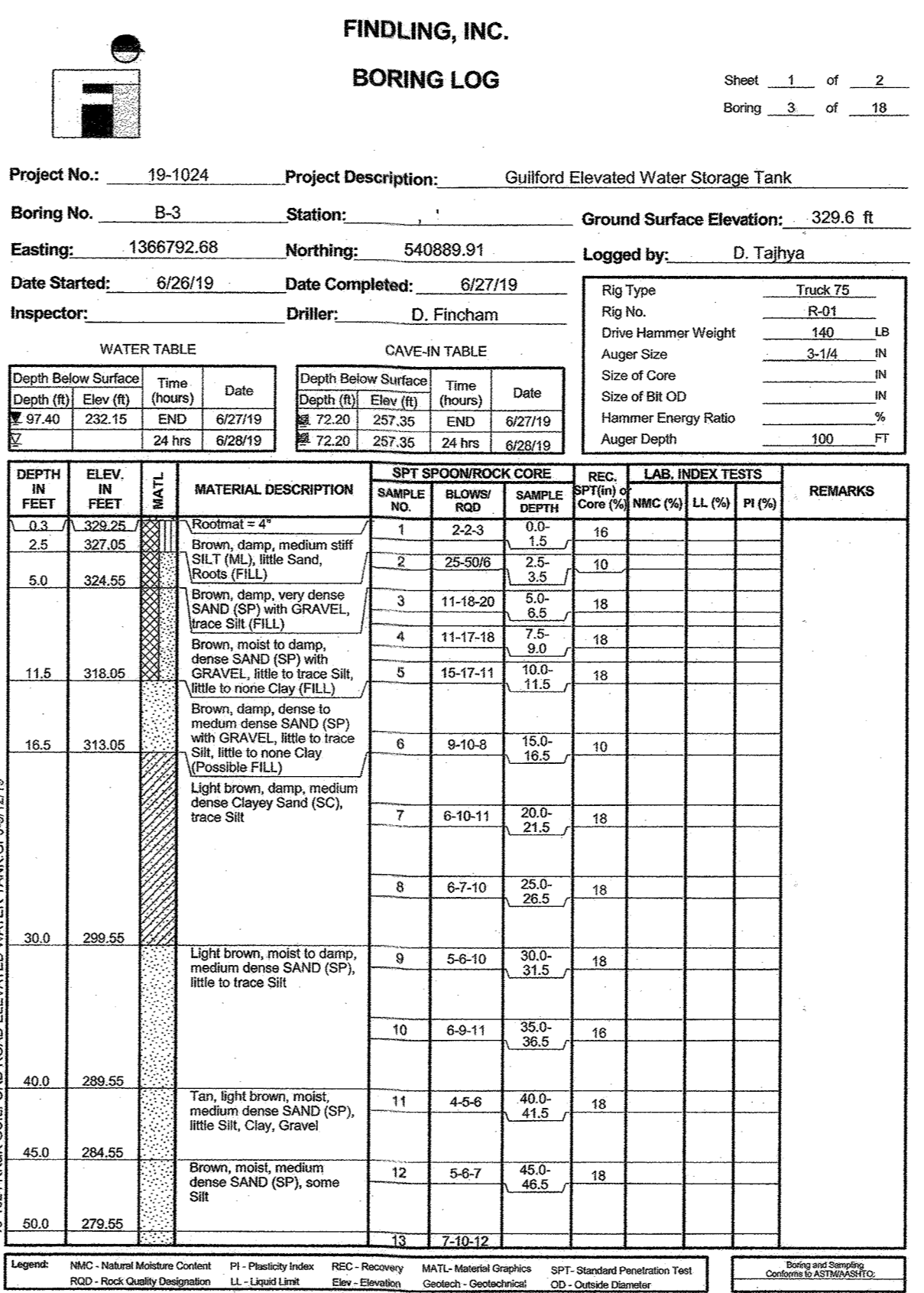
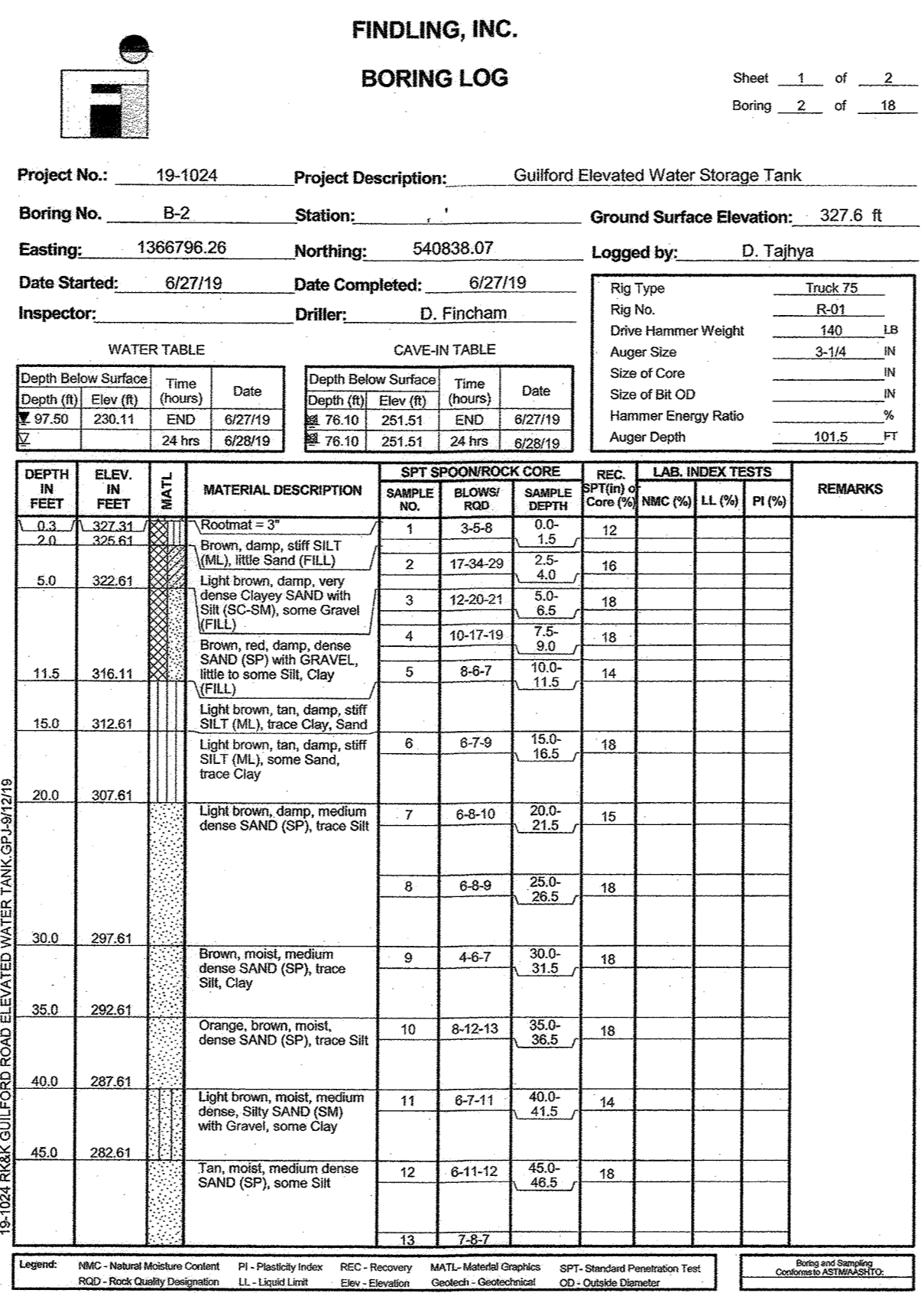
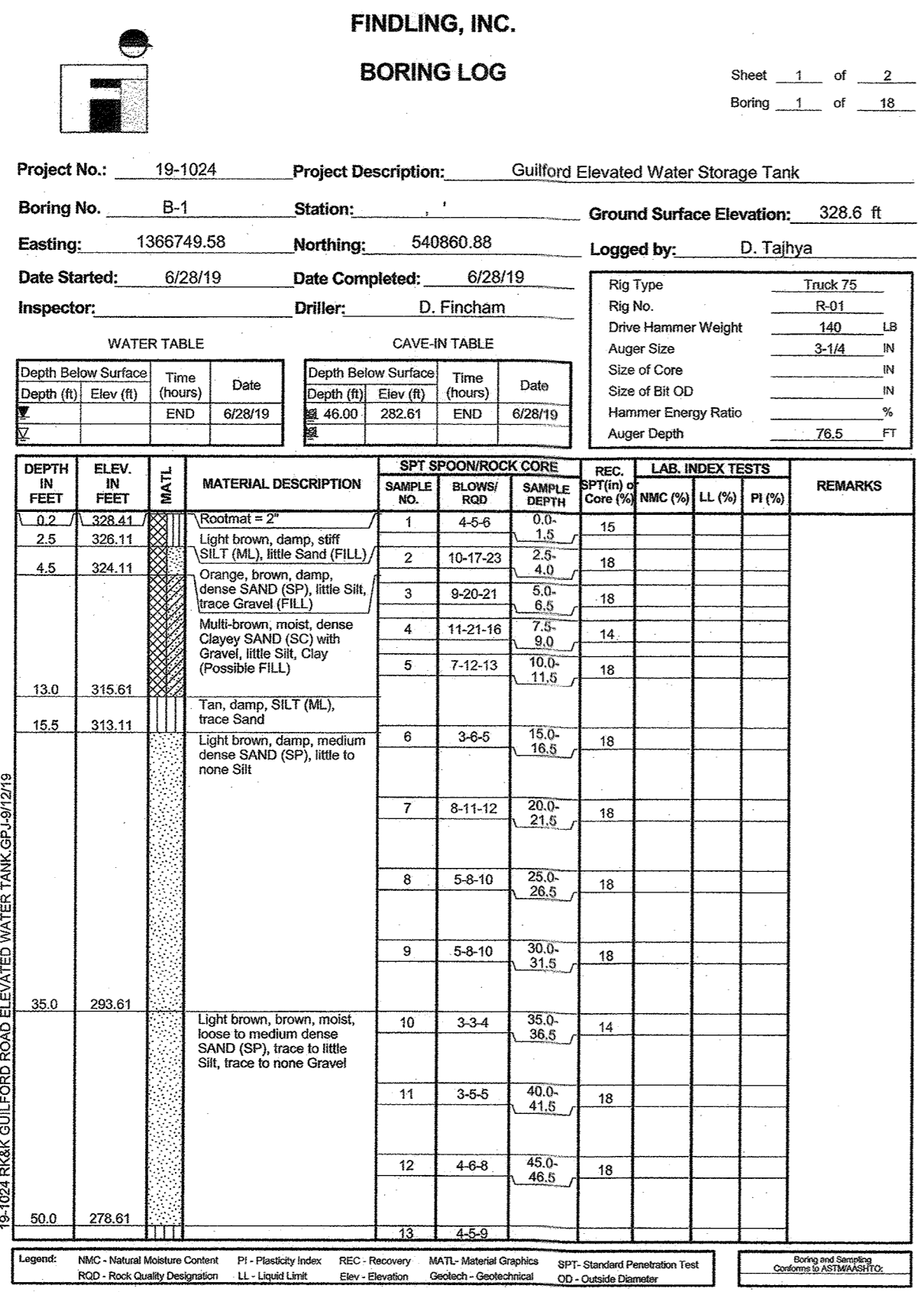


DES:	BY:	NO.:	REVISION	DATE
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DRN				
CHK	MBS			
DATE:	DECEMBER	2020		

DRAINAGE & LANDSCAPE DETAILS  
600' SCALE MAP NO. 48 BLOCK NO. 1

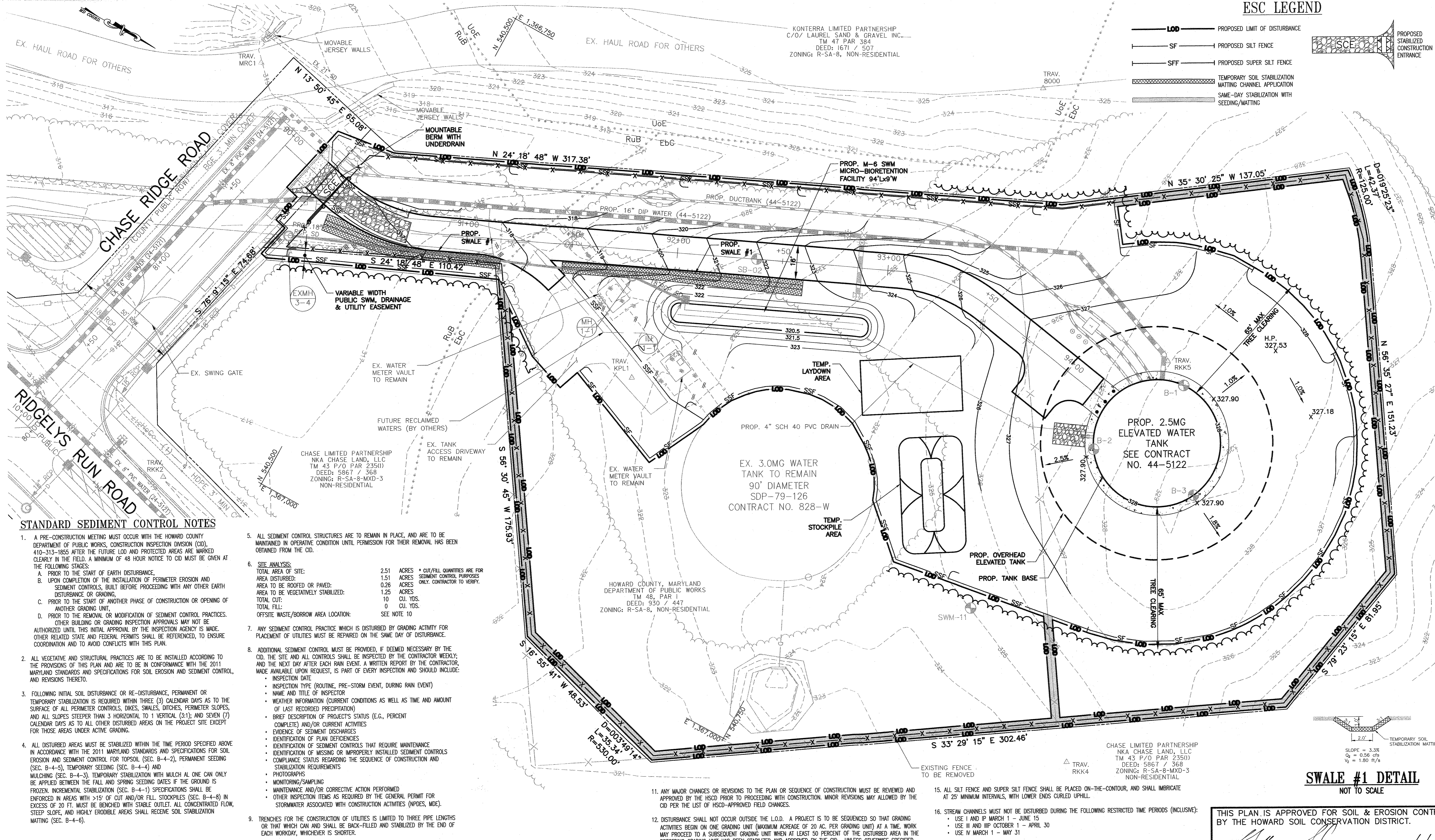
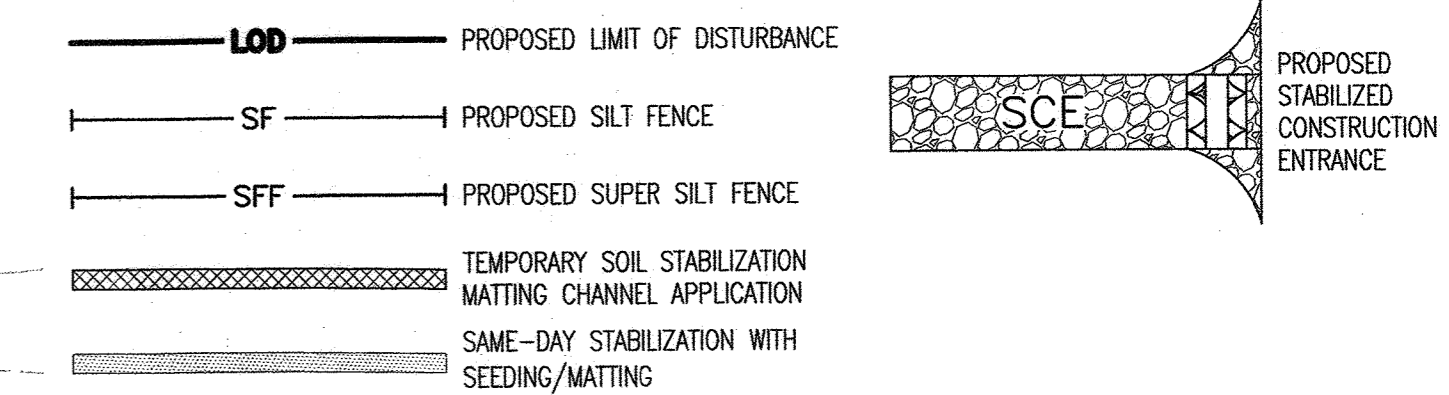
TAX MAP 48	GRID 0001,0019 PARCEL 0001,0235	SD-9
GUILFORD ELEVATED WATER TANK SITE DEVELOPMENT PLAN CAPITAL PROJECT NO. W8262 SDP-20-032		SCALE AS SHOWN SHEET NO. 10 OF 26
ELECTION DISTRICT NO. 6	HOWARD COUNTY, MARYLAND	







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 LOD AND PROTECTED AREAS ARE MARKED CLEARLY IN THE FIELD. A MINIMUM OF 48 HOUR NOTICE TO CID MUST BE GIVEN AT THE FOLLOWING STAGES:
  - 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).
- 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.
- 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:
 

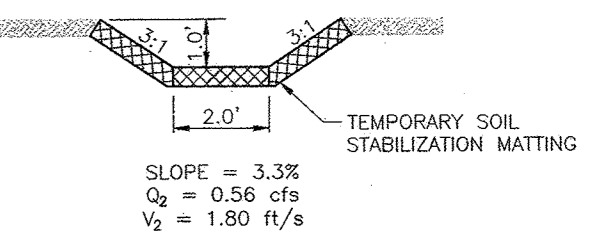
TOTAL AREA OF SITE:	2.51 ACRES	* CUT/FILL QUANTITIES ARE FOR AREA DISTURBED:	1.51 ACRES	SEDIMENT CONTROL PURPOSES ONLY. CONTRACTOR TO VERIFY.
AREA TO BE ROOFED OR PAVED:	0.26 ACRES	AREA TO BE VEGETATIVELY STABILIZED:	1.25 ACRES	
TOTAL CUT:	10 CU. YDS.	TOTAL FILL:	0 CU. YDS.	
OFFSITE WASTE/BORROW AREA 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).
- 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 IP MARCH 1 - JUNE 15
  - USE III AND BP 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. 36055, EXPIRATION DATE 6/28/2022.

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

SWALE #1 DETAIL  
NOT TO SCALE



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

Signature: [Signature]  
DATE: 6/3/21  
HOWARD SOIL CONSERVATION DISTRICT

DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND  
PLANNING DIRECTOR: [Signature]  
CHIEF, DIVISION OF LAND DEVELOPMENT: [Signature]  
CHIEF, DEVELOPMENT ENGINEERING DIVISION: [Signature]

Phoenix Engineering  
21132 Old York Road  
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DES:	BY:	NO.:	REVISION:	DATE:
KPM	DKS			
	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  
ES-1  
SCALE 1" = 20'  
SHEET NO. 12 OF 26  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND  
SDP-20-032

FILE PATH: G:\1919-016 Guilford Water Tank and Roadway\CAD\ES-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 SEEDING 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 SEEDED AREAS AS NECESSARY.

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

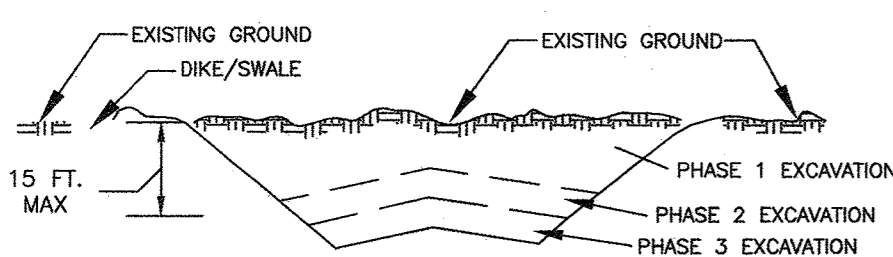


FIGURE B.1 INCREMENTAL STABILIZATION - CUT

**B. INCREMENTAL STABILIZATION - FILL SLOPES**

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

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

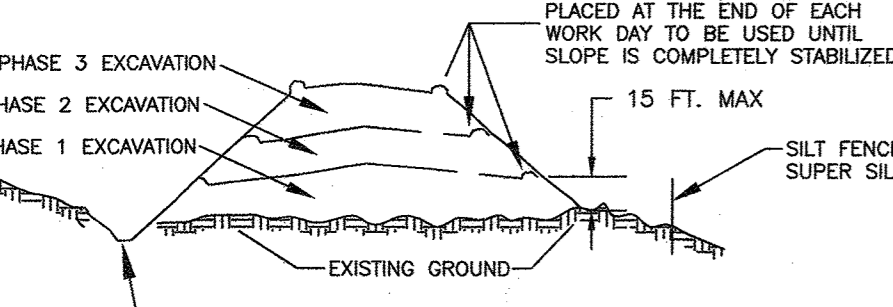


FIGURE B.2 INCREMENTAL STABILIZATION - FILL

**B-4-2 STANDARDS AND SPECIFICATIONS FOR 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 ROLLERS MOUNTED ON CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSENED, IT MUST NOT BE ROLLED OR DRAGGED SMOOTH BUT LEFT IN THE HOUGHENED CONDITION. SLOPES 3:1 OR FLATTER ARE TO BE TRACKED WITH RIGIDS RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE.
  - b. APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS.
  - c. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.
2. PERMANENT STABILIZATION
  - a. A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:
    - i. SOIL PH BETWEEN 6.0 AND 7.0.
    - ii. SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM).
    - iii. SOIL CATIONS 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 PLANS. UNLESS OTHERWISE NOTED, THE SURFACE OF THE UNIFORM SPREAD SLURRY.
  - 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 AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:
    - i. SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.
    - ii. APPLICATION OF AMENDMENTS OR TOPSOIL IS REQUIRED IF ON-SITE SOILS DO NOT MEET THE ABOVE CONDITIONS.
  - f. 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 AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:
    - i. SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.
    - ii. APPLICATION OF AMENDMENTS OR TOPSOIL IS REQUIRED IF ON-SITE SOILS DO NOT MEET THE ABOVE CONDITIONS.

**B. TOPSOILING**

1. TOPSOILING IS PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION. THE PURPOSE IS TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.
2. SOIL SALVAGE 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 TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:
  - a. TOPSOIL MUST BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, OR LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. TOPSOIL MUST NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND MUST CONTAIN LESS THAN 5 PERCENT BY VOLUME OF CONDEMS, STONES, SLAG, COARSE FRAGMENTS, GRASS, 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 SEEDING.

**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 ANALYSIS.
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 BURNED 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 SOIL 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:**

1. SEEDING 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 TESTS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY THE 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 INOCULATING. NOTE: IT IS VERY IMPORTANT TO KEEP INOCULANT AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75 TO 80 DEGREES FAHRENHEIT CAN WEAKEN BACTERIA AND MAKE THE INOCULANT LESS EFFECTIVE.
  - d. SOD OR SEED MUST NOT BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.

**2. APPLICATION**

- a. DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS
- i. INCORPORATE SEED INTO THE SUBSOIL AT THE RATES PRESCRIBED ON TEMPORARY SEEDING TABLE B.1, PERMANENT SEEDING TABLE B.3, OR SITE-SPECIFIC SEEDING SUMMARIES.
- ii. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION. ROLL THE SEEDING AREA WITH A WEIGHTED ROLLER TO PROVIDE GOOD SEED TO SOIL CONTACT.
- b. DRILL OR CULTIPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL.
- i. CULTIPACKING SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 1/4 INCH OF SOIL COVERING. SEEDS 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; K2O (POTASSIUM), 200 POUNDS PER ACRE.
- ii. LIME: USE ONLY GROUND AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE MAY BE APPLIED BY HYDROSEEDING), NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME WHEN HYDROSEEDING.
- iii. MIX SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION.
- iv. WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.

**B. MULCH**

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 MUST BE MOIST, NOT 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 CLUE TO FACILITATE VISUAL INSPECTION OF THE UNIFORM SPREAD SLURRY.
  - ii. WCFM INCLUDING DYE MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS.
  - iii. WCFM MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED, FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL MUST BE A FLOTTER-LIKE GROUND COVER, ON APPLICATION, HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND MUST FORM 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 DEPTH OF 1 TO 2 INCHES. APPLY MULCH TO ACHIEVE A UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED, WHEN USING A MULCH ANCHORING TOOL, INCREASE THE APPLICATION RATE TO 2.5 TONS PER ACRE.
  - c. WOOD CELLULOSE FIBER USED AS MULCH MUST BE APPLIED AT A NET DRY WEIGHT OF 1500 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER TO ATTAIN A MIXTURE WITH A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.

**3. ANCHORING**

- a. PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS (LISTED BY PREFERENCE), DEPENDING UPON THE SIZE OF THE AREA AND EROSION HAZARD:
  - i. A MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE A MINIMUM OF 2 INCHES. THIS PRACTICE IS MOST EFFECTIVE ON LARGE AREAS, BUT IS LIMITED TO FLATTER SLOPES WHERE EQUIPMENT CAN OPERATE SAFELY. IF USED ON SLOPING LAND, THIS PRACTICE SHOULD FOLLOW THE CONTOUR.
  - ii. WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER AT A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
  - iii. SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRO-TACK), DCA-70, PETROSEAL, TERRA TACK II, TERRA TACK AR OR OTHER APPROVED EQUAL MAY BE USED. FOLLOW APPLICATION RATES AS SPECIFIED BY THE MANUFACTURER. APPLICATION OF LIQUID BINDERS SHOULD BE HEAVIER AT THE EDGES WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON GREGTS OF BANKS. USE OF ASPHALT BINDERS IS STRICTLY PROHIBITED.
  - iv. LIGHTWEIGHT PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER RECOMMENDATIONS. NETTING IS USUALLY AVAILABLE IN ROLLS 4 TO 15 FEET WIDE AND 300 TO 3,000 FEET LONG.

**B-4-4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION**

**DEFINITION:** TO STABILIZE DISTURBED SOILS WITH VEGETATION FOR UP TO 6 MONTHS. **PURPOSE:** TO USE FAST GROWING VEGETATION THAT PROVIDES COVER ON DISTURBED SOILS. **CONDITIONS WHERE PRACTICE APPLIES:** EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR A PERIOD OF 6 MONTHS OR LESS. FOR LONGER DURATION OF TIME, PERMANENT STABILIZATION PRACTICES ARE REQUIRED.

**CRITERIA:**

1. SELECT ONE OR MORE OF THE SPECIES OR SEED MIXTURES LISTED IN TABLE B.1 FOR THE APPROPRIATE PLANT 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 SEASON, APPLY SEED AND MULCH OR STRAW MULCH ALONE AS PRESCRIBED IN SECTION B-4-3.1.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	LBS/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 vulgare)	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). ACTUAL PLANTING RATES SHOULD BE ADJUSTED TO REFLECT PERCENT SEED GERMINATION AND PURITY, AS TESTED. ADJUSTMENTS ARE USUALLY NOT NEEDED FOR THE COOL-SEASON GRASSES.

SEEDING RATES LISTED ABOVE ARE FOR TEMPORARY SEEDINGS, WHEN PLANTED ALONE, WHEN PLANTED AS A NURSE CROP WITH PERMANENT SEED MIXES, USE 1/3 OF THE SEEDING RATE LISTED ABOVE FOR EACH OF THE PERMANENT SEED MIXES. SEEDING RATES LISTED ABOVE ARE FOR PERMANENT SEEDING MIXES. DO NOT EXCEED MORE THAN 5% (BY WEIGHT) OF THE OVERALL PERMANENT SEEDING MIX. CEREAL RYE GENERALLY SHOULD NOT BE USED AS A NURSE CROP, UNLESS PLANTING WILL OCCUR IN VERY LATE SPRING OR EARLY SUMMER. SEEDING RATES FOR OTHER TEMPORARY SEEDING MIXES ARE ALLOPATHIC 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-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS. **CONDITIONS WHERE PRACTICE APPLIES:** EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR 6 MONTHS OR MORE.

**CRITERIA:**

- A. SEED MIXTURES
  1. GENERAL USE
    - a. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE B.3 FOR THE APPROPRIATE PLANT 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 SHORELINES, STREAM BANKS, OR DUNES OR FOR SPECIAL PURPOSES SUCH AS WILDLIFE OR AESTHETIC TREATMENT MAY BE FOUND IN USDA-NRCS TECHNICAL GUIDE SECTION 342 - CRITICAL AREA PLANTING.
    - c. FOR SITES HAVING DISTURBED AREA OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY.
    - d. FOR AREAS RECEIVING LOW MAINTENANCE, APPLY UREA FORM FERTILIZER (46-0-0) AT 3 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 INCLUDING LAWNS, 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.
  3. 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.
  4. 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/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.
  5. 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 5 TO 5 PERCENT. SEEDING RATE: 5 TO 8 POUNDS PER 1000 SQUARE FEET. ONE OR MORE CULTIVARS MAY BE BLENDED.
  6. 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 #7, "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 (HARDNESS ZONES: 5B, 6A)

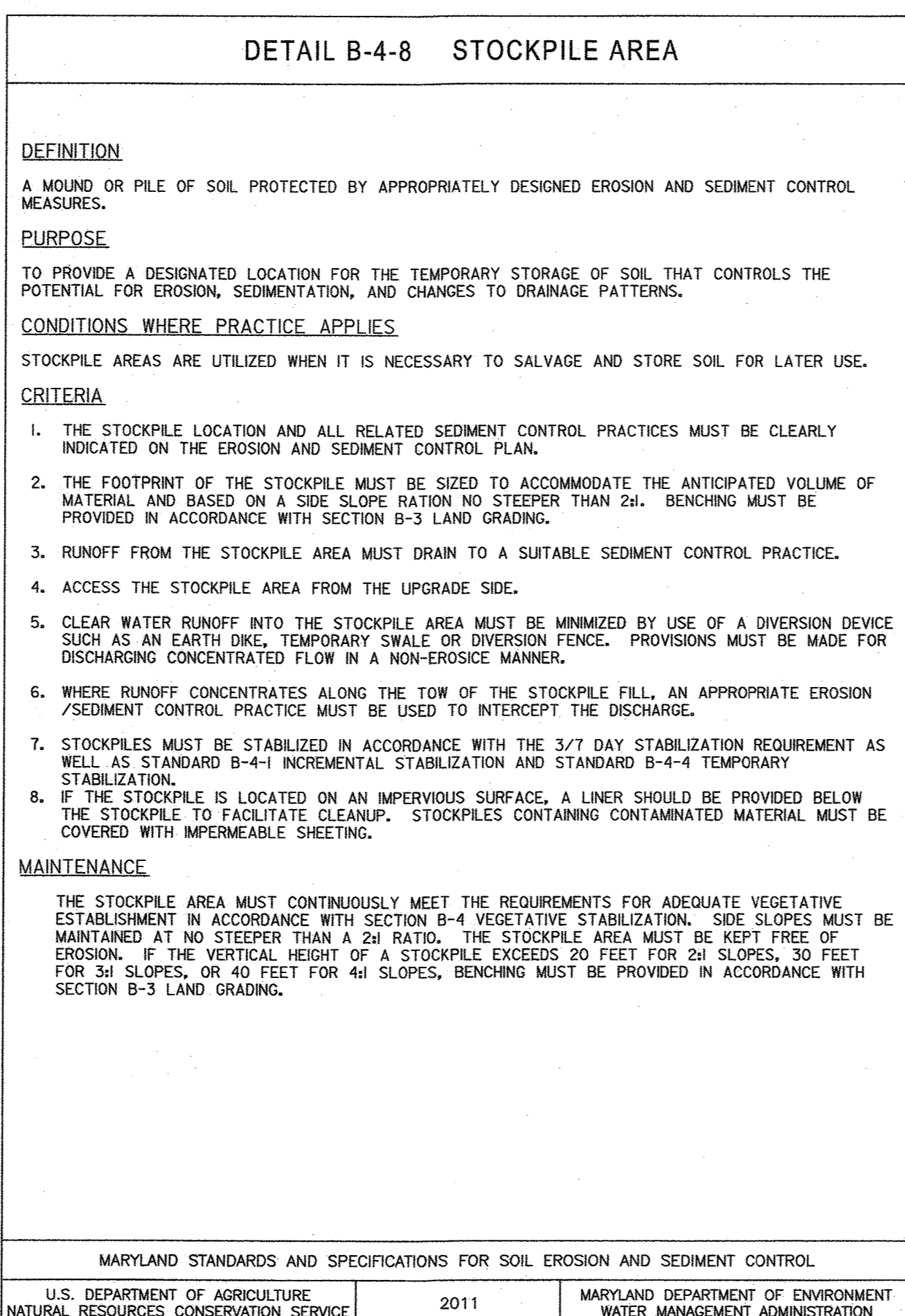
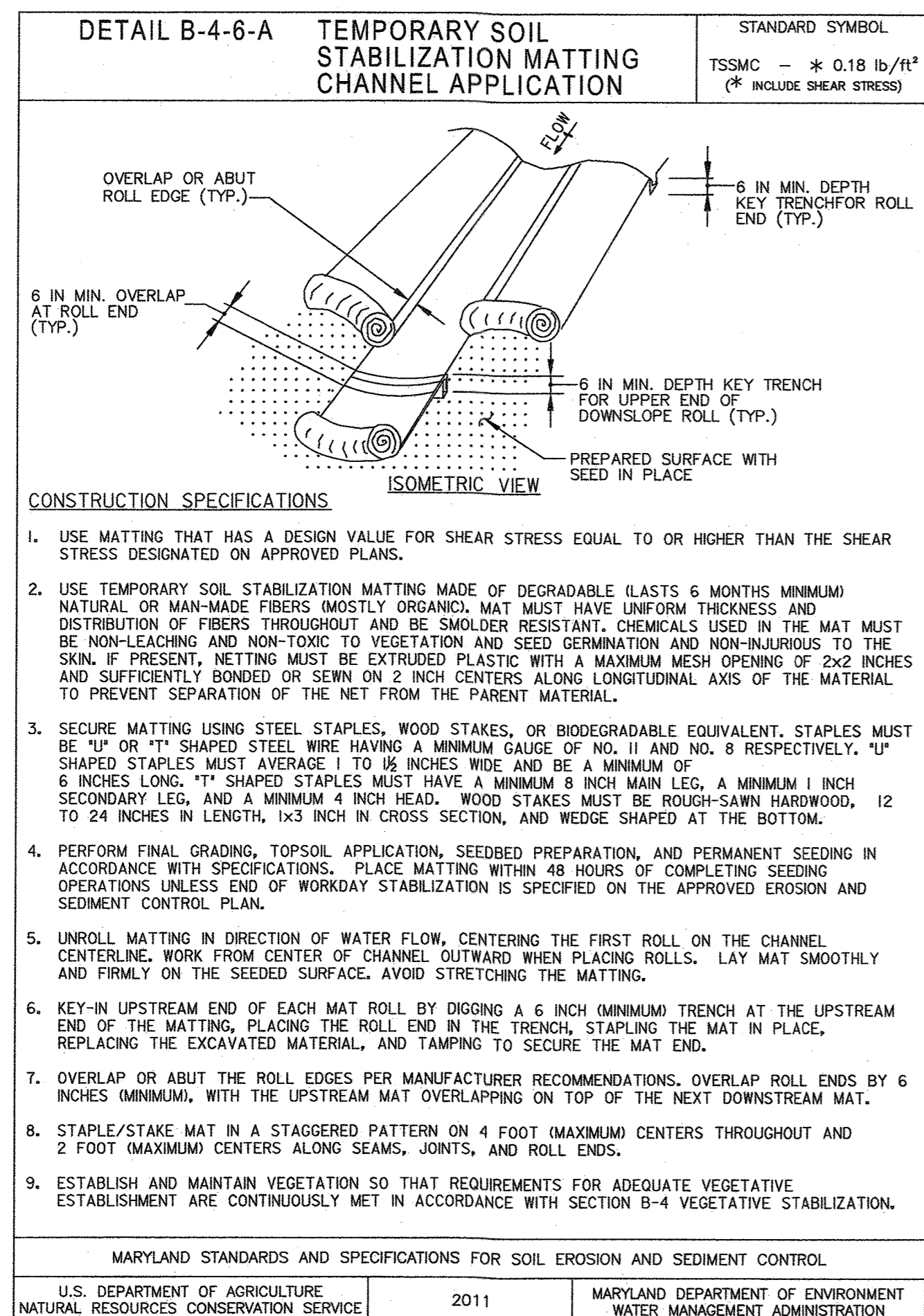
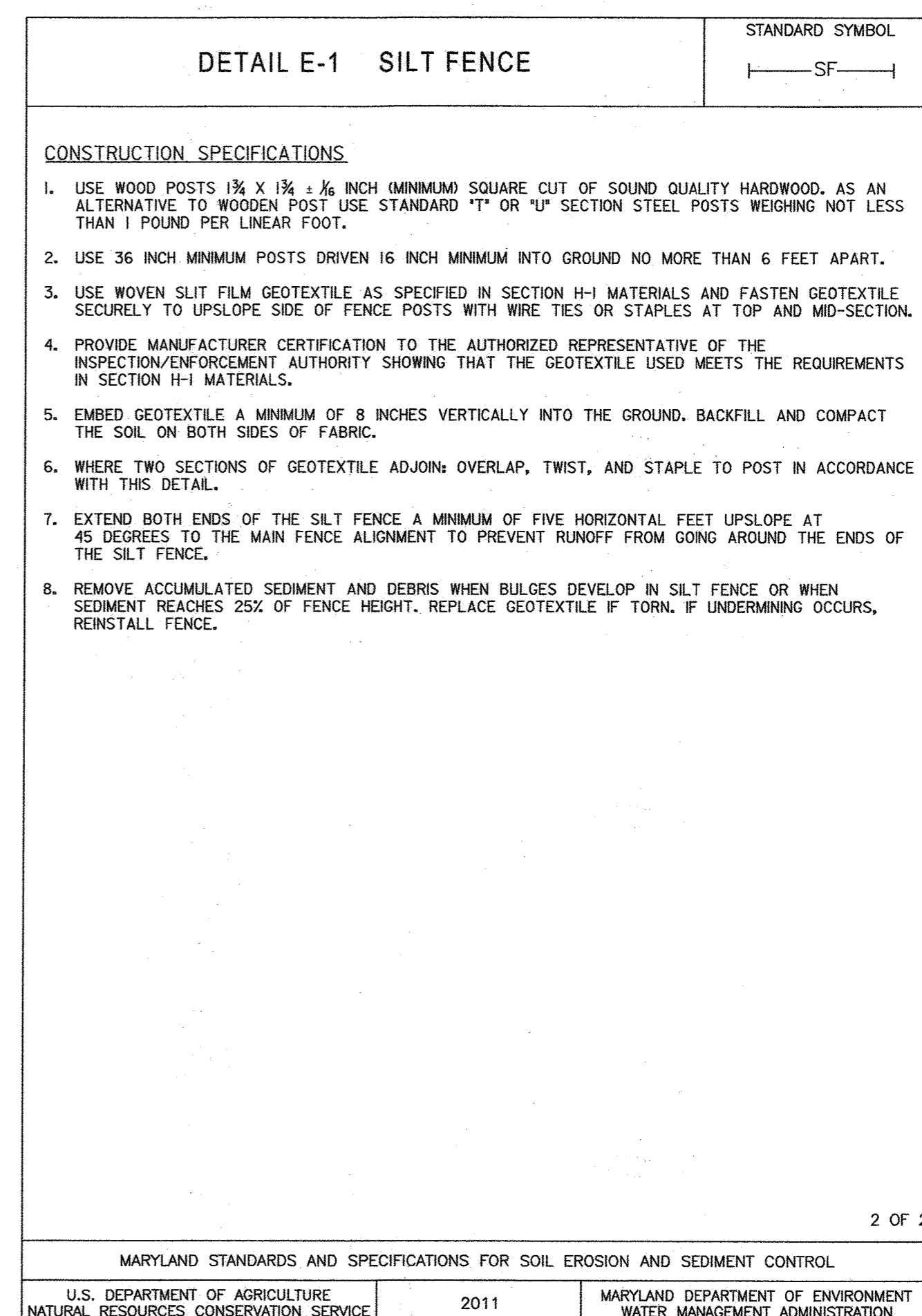
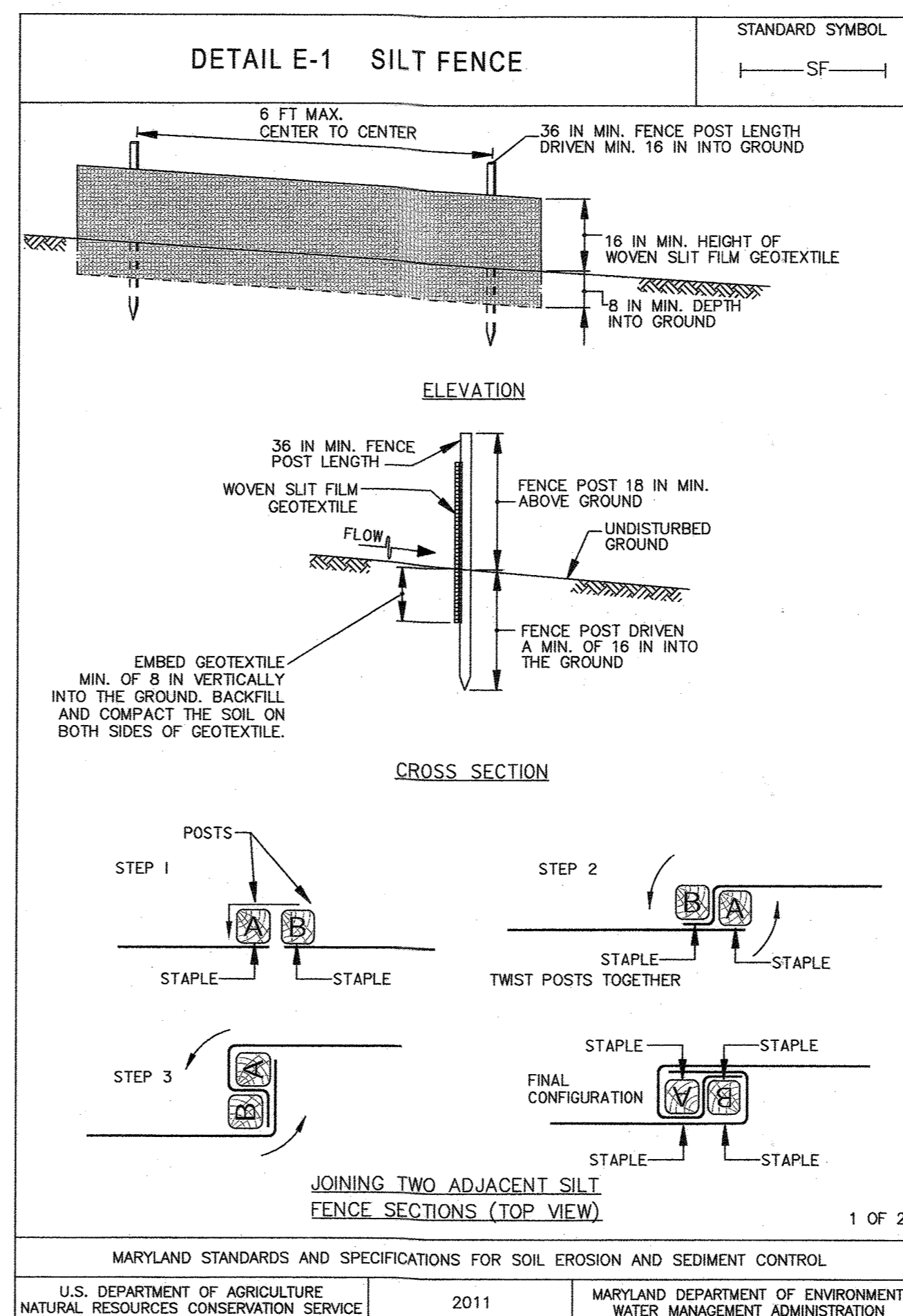
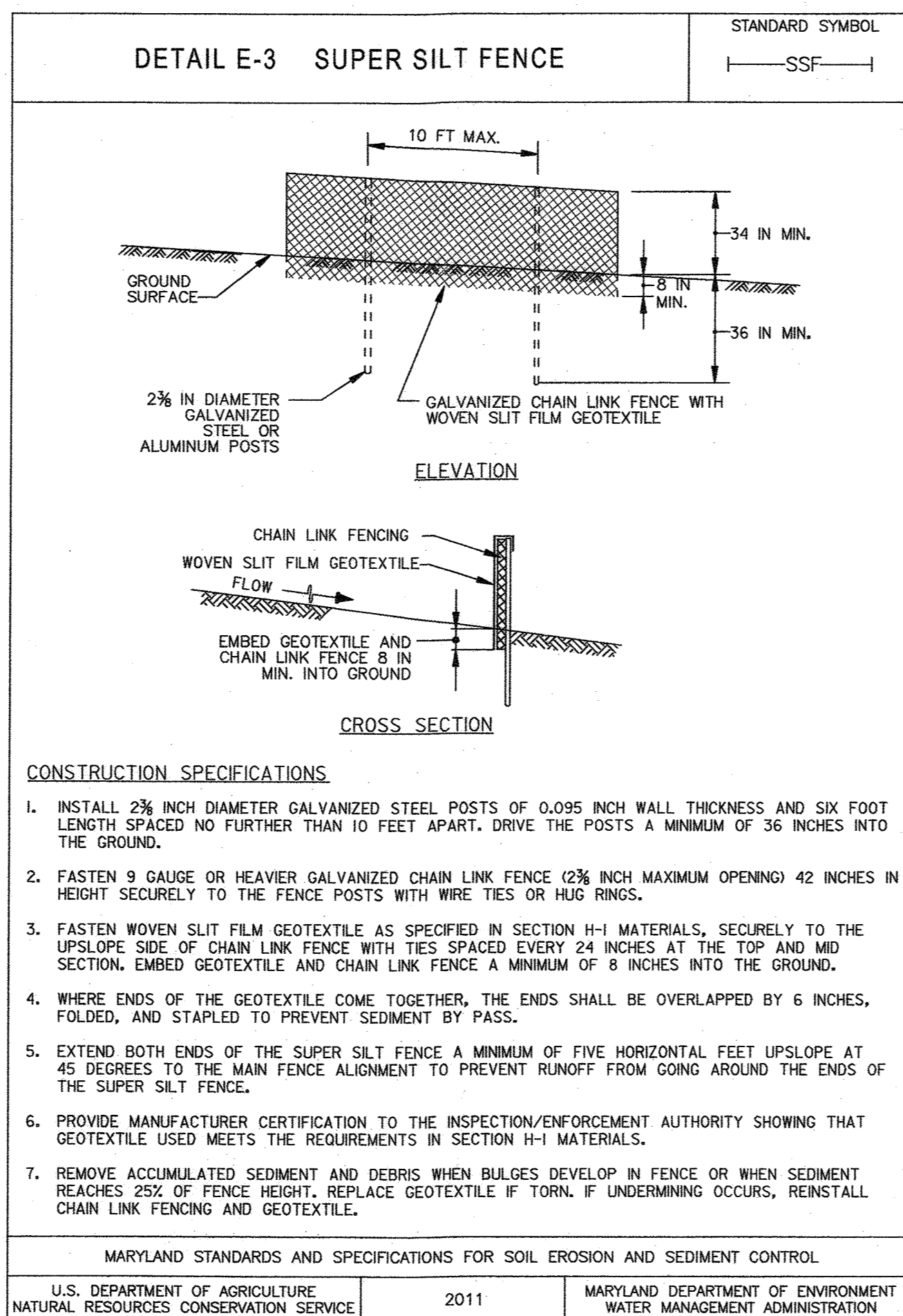
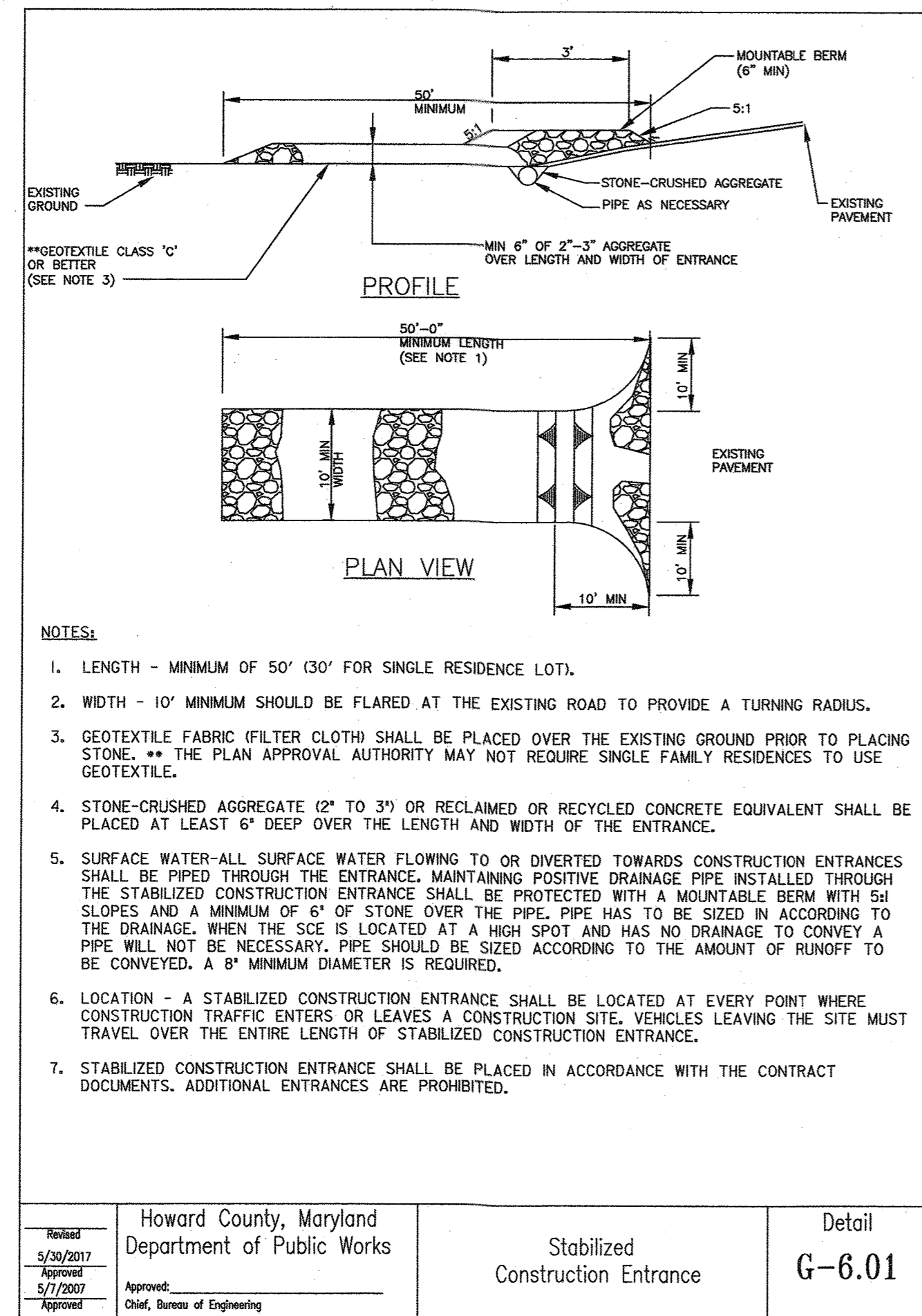
CENTRAL MD: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDNESS ZONE: 6B)

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

d. TILL 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 1/2 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) UNT





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. 36055, EXPIRATION DATE 6/28/2022.

THIS PLAN IS APPROVED FOR SOIL & EROSION CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT. *[Signature]* 6/5/21 DATE

FILE PATH: G:\19\19-016 Guilford Water Tank and Roadway\CAD\VES-PO03\_Guilford\_ESC\_Tank.dwg DATE: 12/9/2020 USER: 1714

DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND  
*[Signature]* 6/28/21 DATE  
PLANNING DIRECTOR  
*[Signature]* 6/17/21 DATE  
CHIEF, DIVISION OF LAND DEVELOPMENT  
CHIEF, DEVELOPMENT ENGINEERING DIVISION



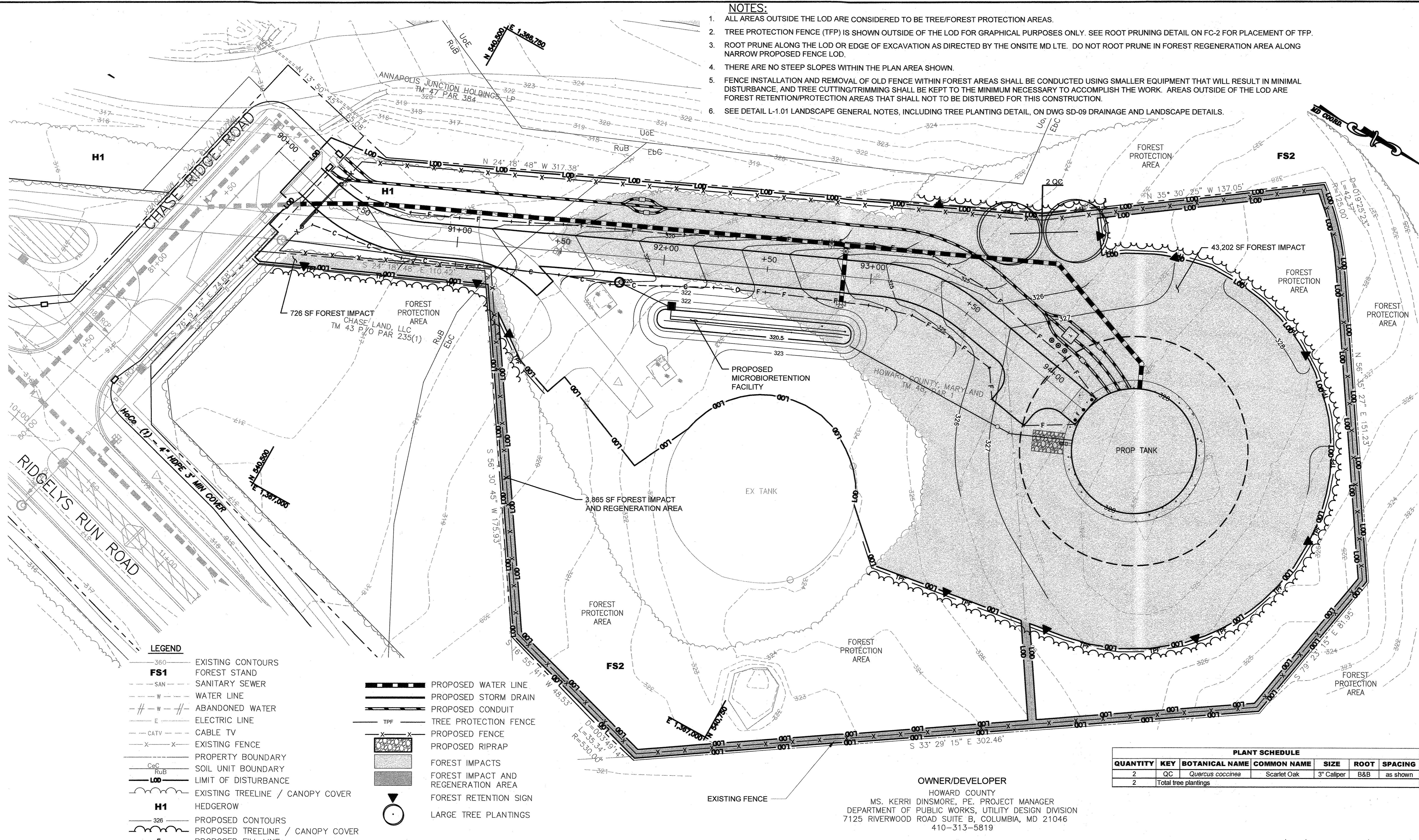
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KPM				
DKS				
KMW				
DATE: DECEMBER 2020				

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  
ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND  
SCALE N/A SHEET NO. 14 OF 28 SDP - 20 - 032



- 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.



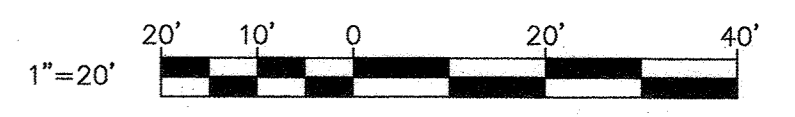
- LEGEND**
- 360 --- EXISTING CONTOURS
  - FS1 --- FOREST STAND
  - SAN --- SANITARY SEWER
  - W --- WATER LINE
  - ABANDONED WATER
  - E --- ELECTRIC LINE
  - CATV --- CABLE TV
  - X-X --- EXISTING FENCE
  - CeC --- PROPERTY BOUNDARY
  - RuB --- SOIL UNIT BOUNDARY
  - LOD --- LIMIT OF DISTURBANCE
  - H1 --- 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
  - TPF --- TREE PROTECTION FENCE
  - X-X --- 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	Quercus coccinea	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: \\walser06\2018\18265\_Guilford\Plans-Tank\pfc-P001\_GuilfordTank.dwg DATE: 12/15/2020 USER: puerto

DEPARTMENT OF PLANNING AND ZONING  
 HOWARD COUNTY, MARYLAND

*Tom Gowen*  
 PLANNING DIRECTOR  
 DATE 12/22/20

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

*...*  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE 7

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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

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

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN SHEET NO. 15 OF 26 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  $\geq 0.35$ ) (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	Udorthents, 0 to 45 percent slopes, Gravel Pits	-	0	No
Utd	Urban land-Udorthents complex, 0 to 15 percent slopes	-	0	No

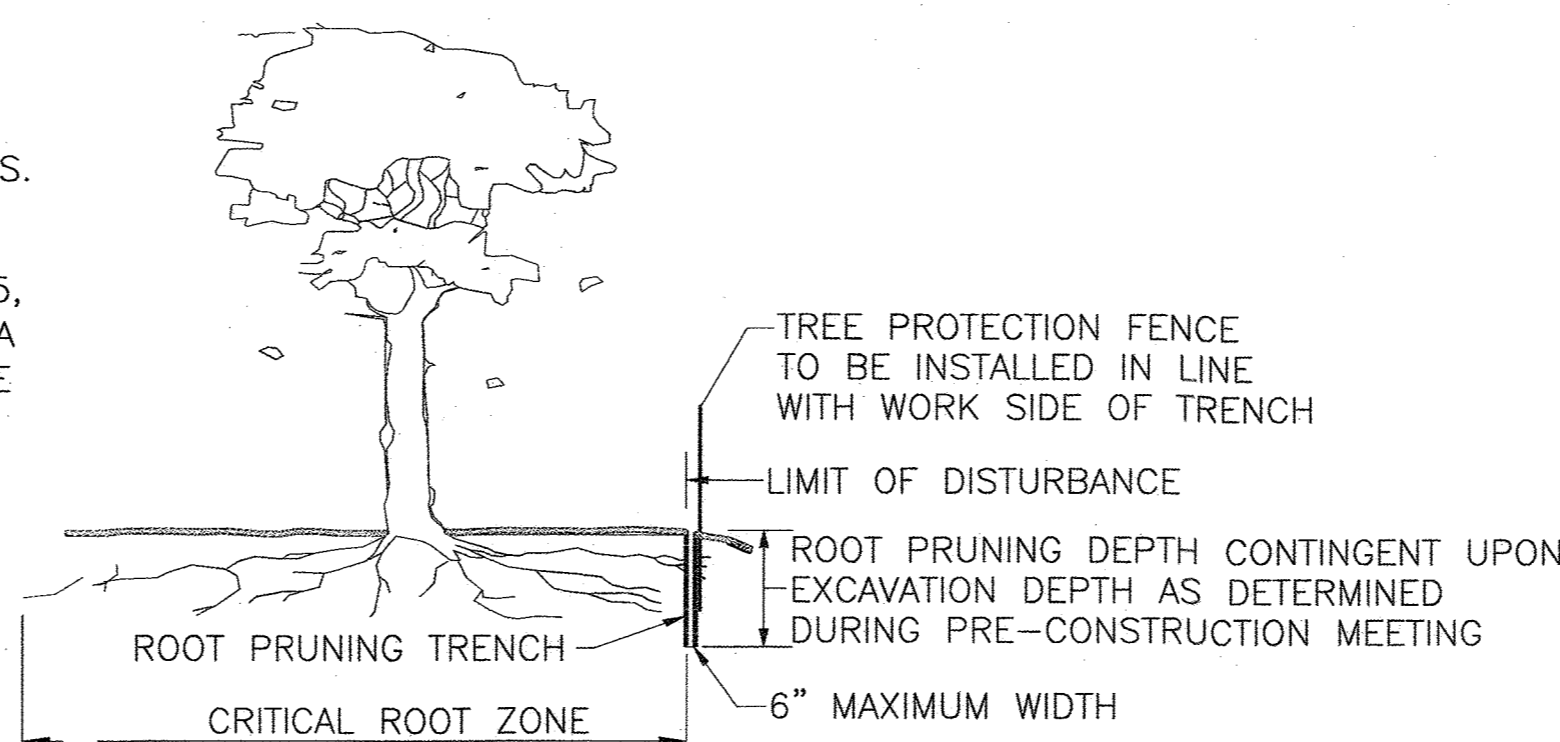
**Soils Table Notes:**

- 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.
- Rank 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 NRIFSD 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**

Item	Acres
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. Rural LD	Resid. Rural MD	Resid. Suburban	Inst./Linear	Retail/Ind./Office	Mixed Use/PUD	E	F
0	0	0	1	0	0	E = 0.40	F = 0.60

**Existing Forest Cover**

Item	Acres
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**

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

**Proposed Forest Clearing**

Item	Acres
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**

Item	Acres
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**

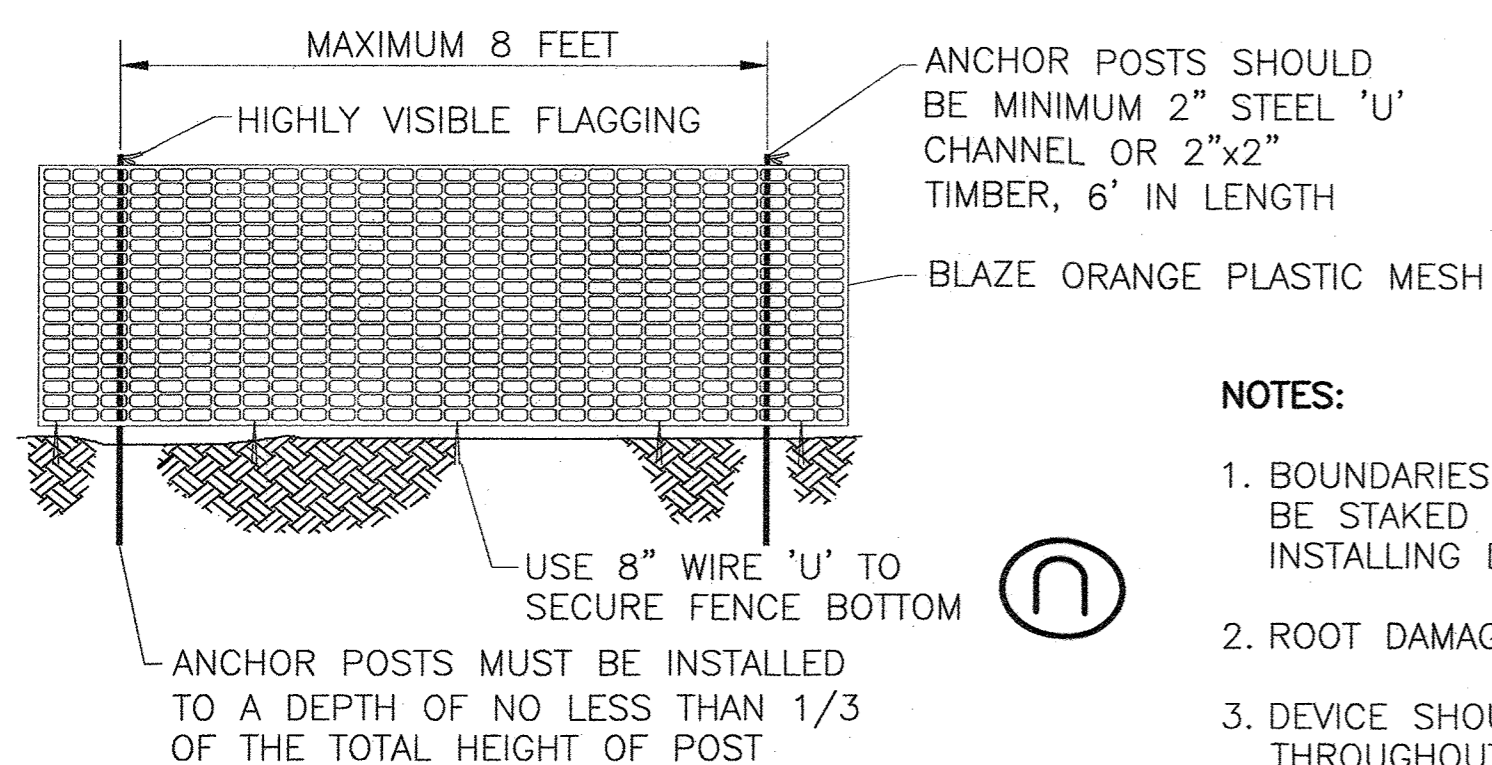
Item	Acres
W. Total Planting within Development Site Watershed (Tank fence regeneration)	W = 0.09
X. Total Afforestation Required	X = 0.00
Y. Remaining Planting within Watershed for Reforestation Credit	Y = 0.10
Z. Reforestation for Clearing above the Reforestation Threshold	Z = 1.40
AA. Reforestation 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.

Reforestation 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>

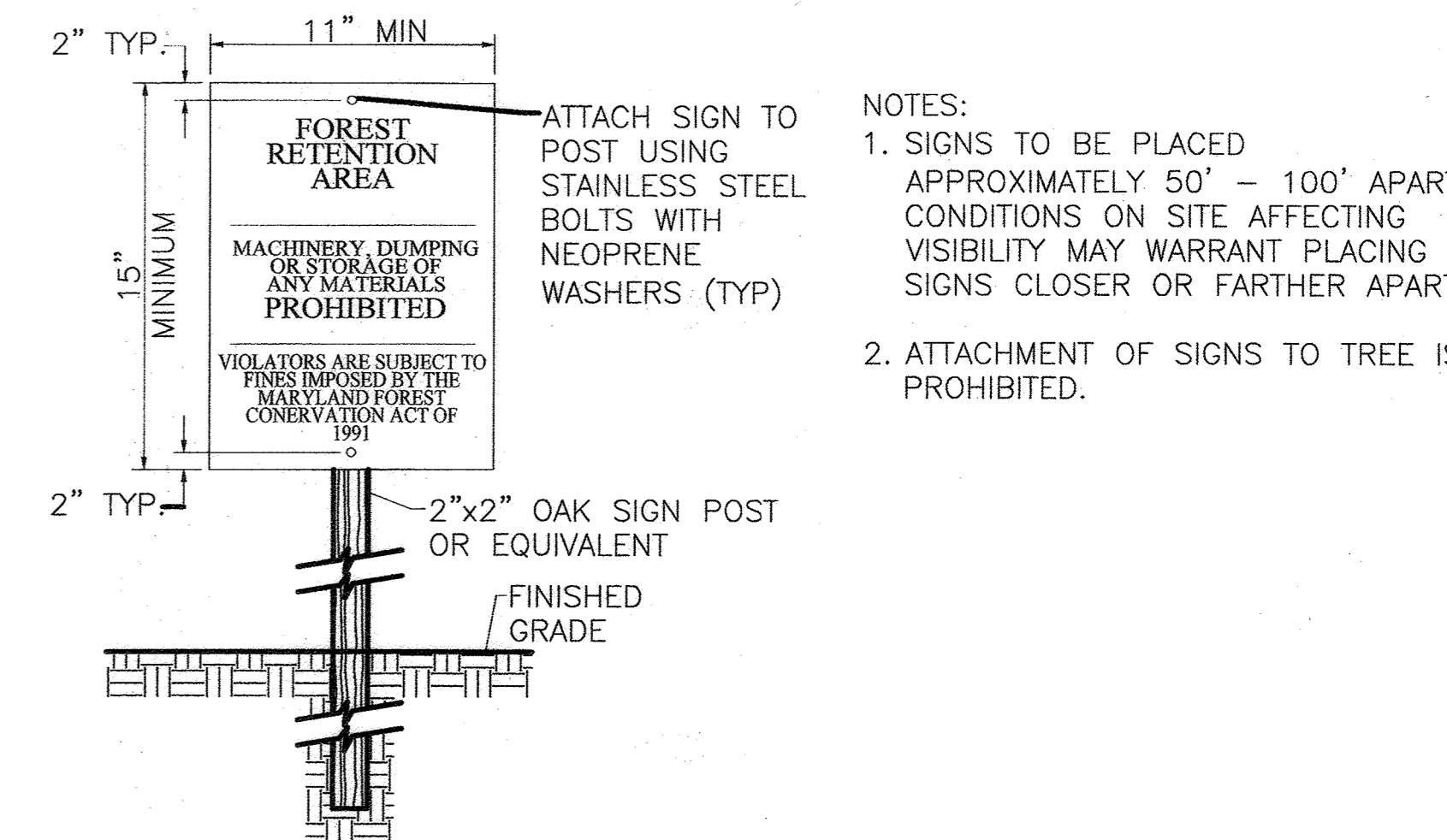


**NOTES:**

- 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: \\balsr06\2018\2018\18265\_Guilford\Plans-Tank\pFC-P002\_GuilfordTank.dwg DATE: 12/15/2020 USER: juerto

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

DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

*Wm. Gowan*  
PLANNING DIRECTOR  
DATE: 6/28/21

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

*Paul*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE: 6/17/21

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

**FOREST CONSERVATION NOTES, TABLES AND DETAILS**


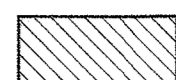
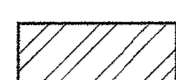


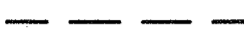

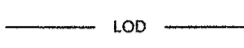
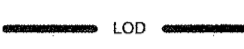

600' SCALE MAP NO. 48 BLOCK NO. 1

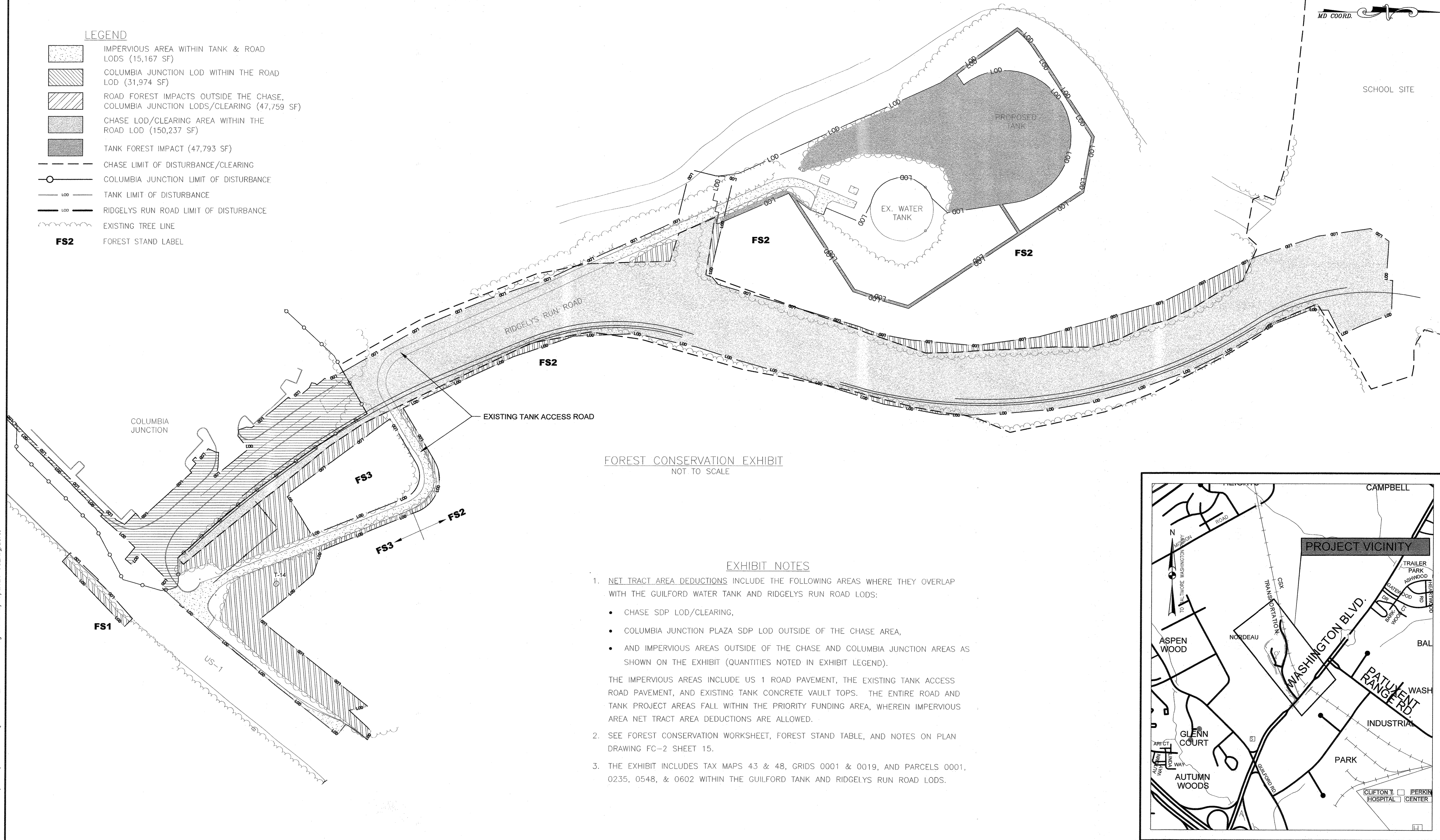
TAX MAP 48	GRID 0001, 0019 PARCEL 0001, 0235	FC-2
<b>GUILFORD ELEVATED WATER TANK SITE DEVELOPMENT PLAN CAPITAL PROJECT NO. W8262 SDP-20-032</b>		SCALE AS SHOWN
		SHEET NO. 16 OF 28
ELECTION DISTRICT NO. 6		HOWARD COUNTY, MARYLAND



SCHOOL SITE

**LEGEND**

-  IMPERVIOUS AREA WITHIN TANK & ROAD LODS (15,167 SF)
-  COLUMBIA JUNCTION LOD WITHIN THE ROAD LOD (31,974 SF)
-  ROAD FOREST IMPACTS OUTSIDE THE CHASE, COLUMBIA JUNCTION LODS/CLEARING (47,759 SF)
-  CHASE LOD/CLEARING AREA WITHIN THE ROAD LOD (150,237 SF)
-  TANK FOREST IMPACT (47,793 SF)
-  CHASE LIMIT OF DISTURBANCE/CLEARING
-  COLUMBIA JUNCTION LIMIT OF DISTURBANCE
-  TANK LIMIT OF DISTURBANCE
-  RIDGELYS RUN ROAD LIMIT OF DISTURBANCE
-  EXISTING TREE LINE
- FS2** FOREST STAND LABEL

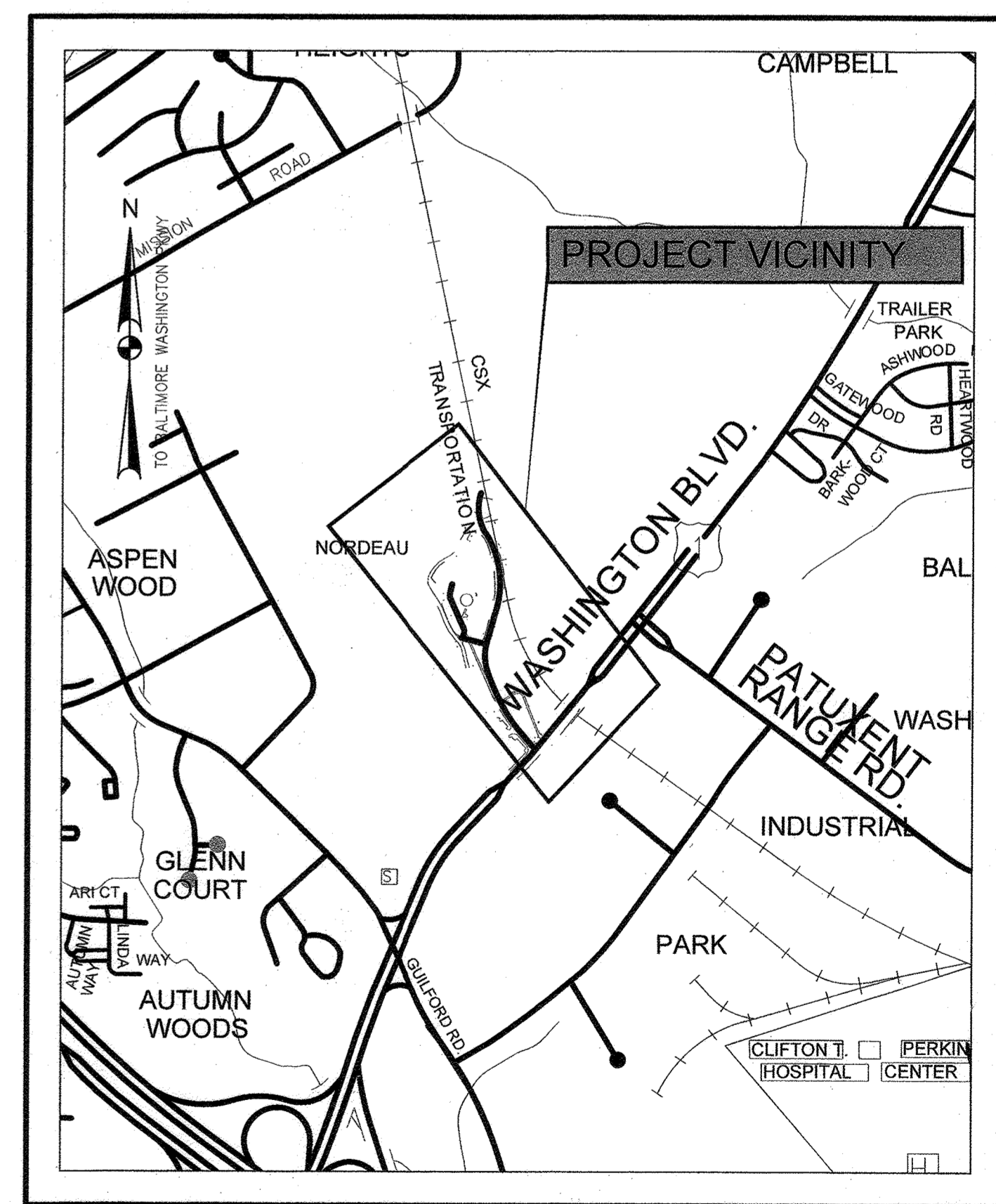


**FOREST CONSERVATION EXHIBIT**  
NOT TO SCALE

**EXHIBIT NOTES**

1. NET TRACT AREA DEDUCTIONS INCLUDE THE FOLLOWING AREAS WHERE THEY OVERLAP WITH THE GUILFORD WATER TANK AND RIDGELYS RUN ROAD LODS:
  - CHASE SDP LOD/CLEARING,
  - COLUMBIA JUNCTION PLAZA SDP LOD OUTSIDE OF THE CHASE AREA,
  - AND IMPERVIOUS AREAS OUTSIDE OF THE CHASE AND COLUMBIA JUNCTION AREAS AS SHOWN ON THE EXHIBIT (QUANTITIES NOTED IN EXHIBIT LEGEND).

THE IMPERVIOUS AREAS INCLUDE US 1 ROAD PAVEMENT, THE EXISTING TANK ACCESS ROAD PAVEMENT, AND EXISTING TANK CONCRETE VAULT TOPS. THE ENTIRE ROAD AND TANK PROJECT AREAS FALL WITHIN THE PRIORITY FUNDING AREA, WHEREIN IMPERVIOUS AREA NET TRACT AREA DEDUCTIONS ARE ALLOWED.
2. SEE FOREST CONSERVATION WORKSHEET, FOREST STAND TABLE, AND NOTES ON PLAN DRAWING FC-2 SHEET 15.
3. THE EXHIBIT INCLUDES TAX MAPS 43 & 48, GRIDS 0001 & 0019, AND PARCELS 0001, 0235, 0548, & 0602 WITHIN THE GUILFORD TANK AND RIDGELYS RUN ROAD LODS.



**PROJECT VICINITY MAP**  
SCALE: 1" = 1000'

*Greg K. Kichter*  
MARYLAND DNR QUALIFIED PROFESSIONAL      12/22/20      DATE

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: 6/17/21

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SJK				
DRN:	CP			
CHK:	GRO			
DATE:	DECEMBER 2020			

**FOREST CONSERVATION EXHIBIT**

600' SCALE MAP NO. 48      BLOCK NO. 1

TAX MAP 48	GRID 0001, 0019 PARCEL 0001, 0235	FC-3
<b>GUILFORD ELEVATED WATER TANK</b> SITE DEVELOPMENT PLAN CAPITAL PROJECT NO. W8262 SDP-20-032		SCALE AS SHOWN
ELECTION DISTRICT NO. 6      HOWARD COUNTY, MARYLAND		SHEET NO. 17 OF 28

FILE PATH: \\baird06\2018\2018\18265\_Guilford\CADD\Plans-Tank\pFC-PO03\_Guilford\tank.dwg DATE: 12/15/2020 USER: jpuerto



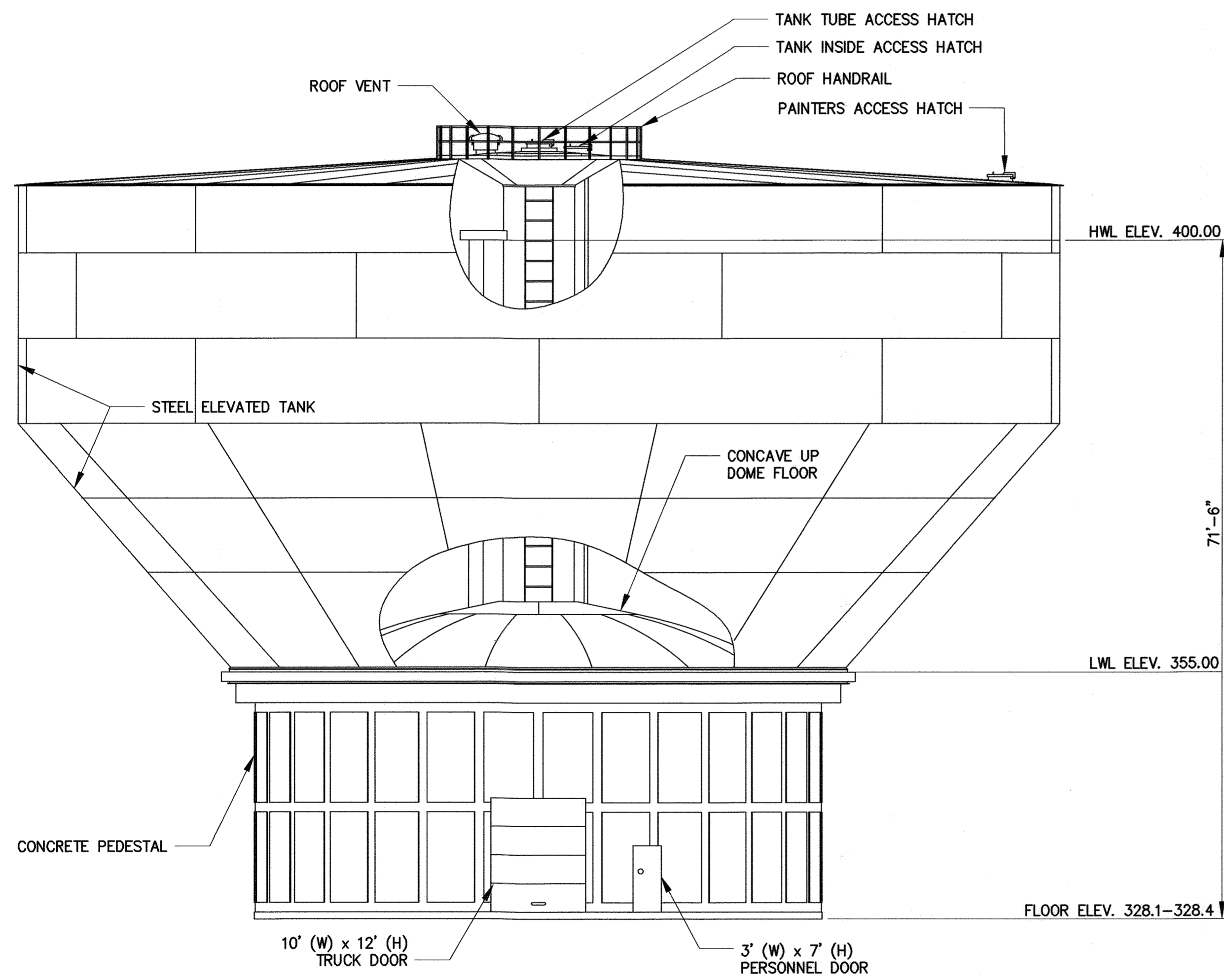




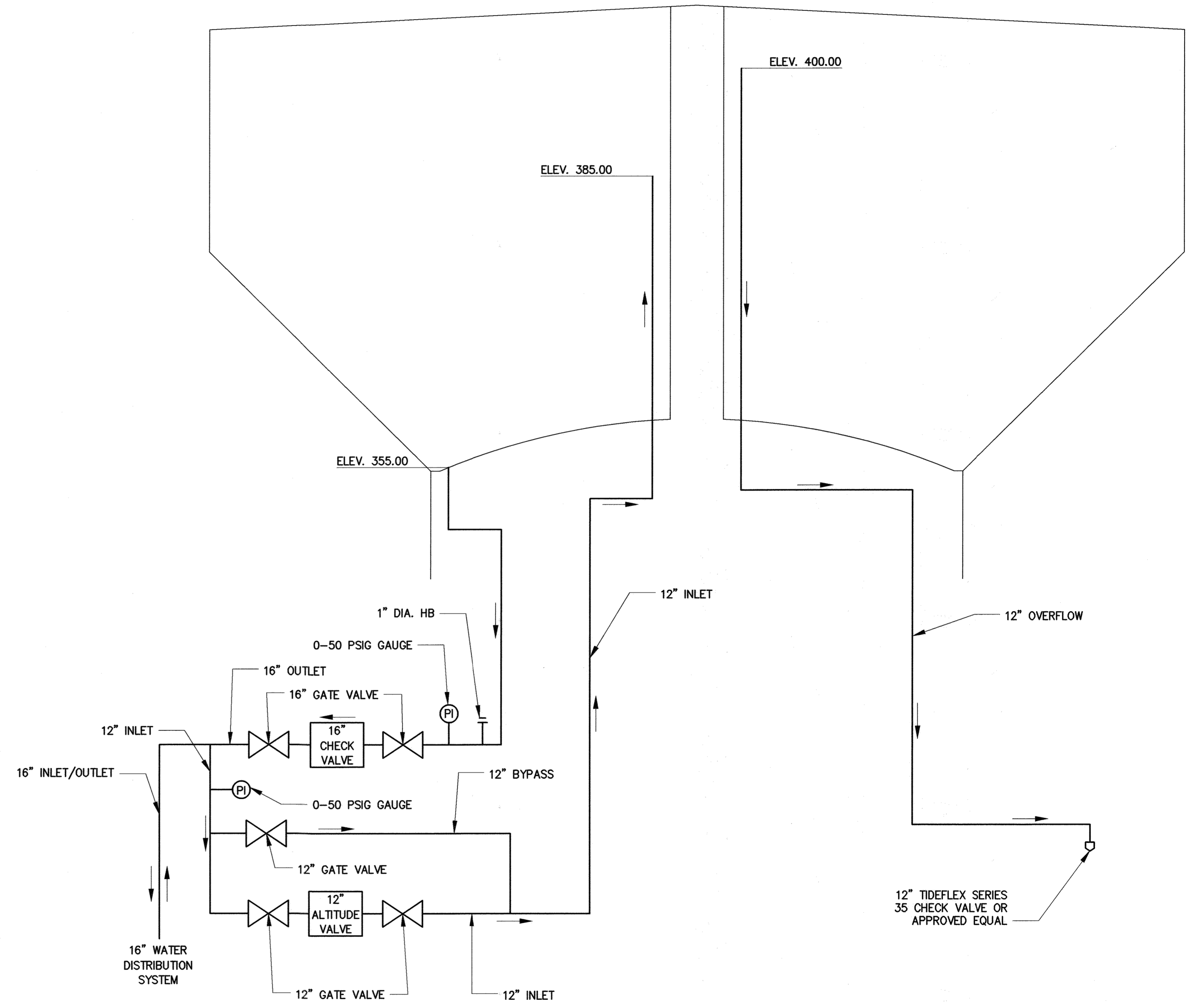
**GENERAL NOTES:**

- OPERATING PARAMETERS FOR THE ELEVATED COMPOSITE STORAGE TANK SHALL FOLLOW THE DESIGN REQUIREMENTS BELOW:  

MINIMUM CAPACITY WITHIN OPERATING RANGE	2.5 MILLION GALLON
MAXIMUM OPERATING RANGE	45 FEET
OVERFLOW/TOP CAPACITY ELEVATION	400 FEET
GRADE FLOOR SLAB	328.1-328.4 FEET
- THE DESIGN OF TANK FOUNDATION, TANK PEDESTAL, AND THE ELEVATED TANK TO BE PROVIDED BY THE TANK MANUFACTURER AND SUBMITTED TO THE ENGINEER FOR APPROVAL.
- ALL INTERIOR VALVES INSIDE THE TANK SHALL OPEN TO THE LEFT, COUNTER-CLOCKWISE. VALVES SHALL BE AS SPECIFIED IN DIVISION 15 OF THE CONTRACT SPECIFICATIONS.

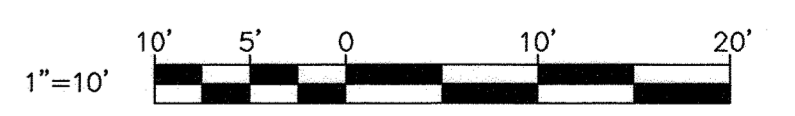


**1** 2.5 MG COMPOSITE ELEVATED TANK ELEVATION  
 M-1 SCALE: 1" = 10'



**2** ELEVATED TANK FLOW CONTROL SYSTEM AND PIPING SCHEMATIC  
 M-1 NOT TO SCALE

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 09/06/2022.



FILE PATH: \\balt06\2018\2018\18285\_Guilford\Tank-Plans-Tank\pmp-001\_GuilfordTank.dwg DATE: 9/20/2021 USER: rzhong

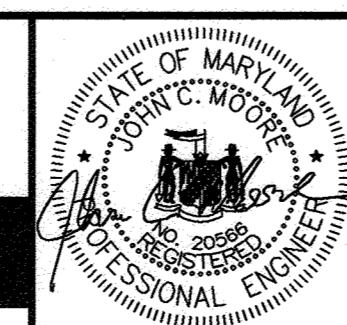
DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

*M. M. M.* 9/29/2021  
 DIRECTOR OF PUBLIC WORKS DATE

*[Signature]* 9/29/2021  
 CHIEF, BUREAU OF ENGINEERING DATE

*[Signature]* 9/29/2021  
 CHIEF, UTILITY DESIGN DIVISION DATE

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DATE:	SEPTEMBER 2021			

ELEVATED TANK ELEVATION AND SCHEMATIC

600' SCALE MAP NO. 48 BLOCK NO. 1

GUILFORD ELEVATED WATER TANK  
 CAPITAL PROJECT NO. W8262  
 CONTRACT NO. 44-5122

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

M-1  
 SCALE AS SHOWN  
 SHEET NO.  
 19 OF 26



FUTURE SODIUM HYPOCHLORITE SOLUTION TANK AND MIXING EQUIPMENT

LADDER ACCESS TO TANK C/W SAFETY RAIL

CLIMBING EQUIPMENT STORAGE BOX

LIMIT OF 12" THICK CONCRETE SLAB

4" WIDE CONCRETE SIDEWALK, SEE DRAWING SD-7 FOR DETAILS

16" OUTLET RISER PIPE

12" INLET RISER PIPE

4" SCH. 40 PVC DRAIN @ 2% SLOPE

4" SCH. 40 PVC DRAIN @ 3.5% SLOPE

4" SCH. 40 PVC DRAIN @ 3.5% SLOPE

16" INLET/OUTLET PIPE

LIMIT OF 12" CONCRETE SLAB

12" OVERFLOW RISER PIPE

12" OVERFLOW PIPE

10'(W)x12'(H) OVERHEAD ROLL-UP VEHICLE DOOR

16' X 9' CONCRETE APRON, 6" THICK CONCRETE SLAB WITH #4 BARS 9" C/C EACH WAY

ACCESS ROADWAY

3'x7' PERSONNEL DOOR

CONCRETE PIPE SADDLE, SEE DETAIL THIS SHEET

CLASS I RIP RAP (D50=9.5", 19" THICK), SEE DETAILS ON SHEET SD-5

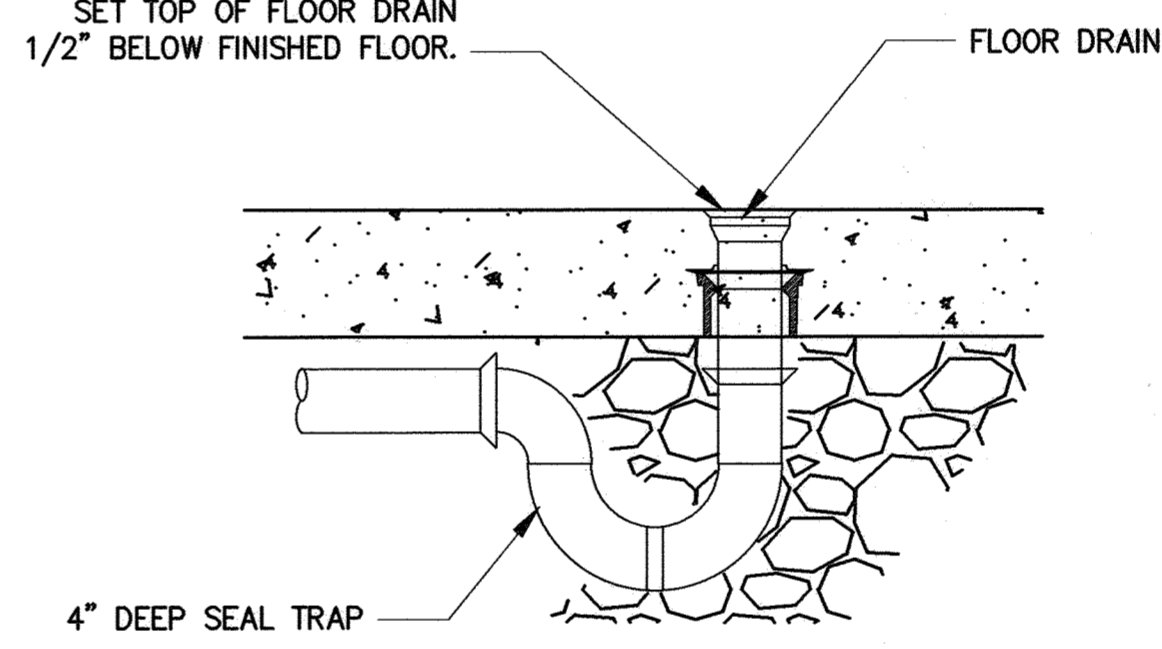
**GENERAL NOTES:**

1. THE SIZES AND LOCATIONS OF THE EQUIPMENT PADS AND PEDESTALS, AS WELL AS EQUIPMENT RELATED FLOOR AND SLAB OPENINGS ARE DEPENDENT UPON THE ACTUAL EQUIPMENT FURNISHED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY AND COORDINATE ALL SUCH ITEMS. NO DIMENSIONS INDICATED ON THESE DRAWINGS SHALL BE ALTERED WITHOUT THE ENGINEER'S APPROVAL. ALL EQUIPMENT PADS AND OTHER EQUIPMENT SUPPORTS REQUIRED MAY NOT HAVE BEEN SHOWN ON THE STRUCTURAL DRAWINGS. REFER TO CIVIL, MECHANICAL AND ELECTRICAL DRAWINGS FOR SIZES AND LOCATIONS OF SUCH PADS AND SUPPORTS.
2. LOCATIONS OF BORINGS ARE SHOWN ON CIVIL DRAWINGS.
3. SLOPE FLOOR SLAB AS SHOWN ON THIS DRAWING.
4. PROVIDE THRUST RESTRAINT AND SUPPORT AS REQUIRED.
5. FLOOR DRAIN SHALL HAVE CAST IRON BODY AND FLASHING COLLAR, ADJUSTABLE TOP AND BAR GRATE WITH SEDIMENT BUCKET, AND BOTTOM OUTLET CONNECTION.
6. ALL INTERIOR NON-BURIED GATE VALVES INSIDE THE TANK PEDESTAL SHALL OPEN TO THE LEFT, COUNTER-CLOCKWISE, VALVES SHALL BE SPECIFIED IN DIVISION 15 OF THE CONTRACT SPECIFICATIONS.
7. REFER TO THE GEOTECHNICAL REPORT FOR RECOMMENDATIONS REGARDING ALLOWABLE BEARING CAPACITY, FOUNDATION SYSTEM, FOUNDATION, AND VALVES AND PIPES BASE PIERS DESIGN. ALL DESIGN SHOULD BE IN ACCORDANCE WITH THE LATEST EDITION OF AWWA D100 AND ACI 318.
8. INLET, OUTLET AND OVERFLOW PIPING BELOW ELEV. 338.00 SHALL BE CLASS 54 DIP, WHICH WILL BE SHOP COATED AND FIELD PAINTED IN ACCORDANCE WITH SECTION 09900 - PAINTING. INLET, OUTLET AND OVERFLOW RISER PIPING ABOVE ELEV. 338.00 SHALL BE TYPE 304L STAINLESS STEEL. INSTALL DIP TO STEEL PIPE ADAPTER AT ELEV. 338.00 FOR TRANSITIONING.
9. ALL INFLUENT AND EFFLUENT PIPING, VALVES AND FITTINGS LOCATED IN THE BASE OF THE TANK SHALL BE INSULATED IN ACCORDANCE WITH SECTION 15501 - HEAT TRACING AND PIPE INSULATION. OVERFLOW PIPING SHALL NOT BE INSULATED.

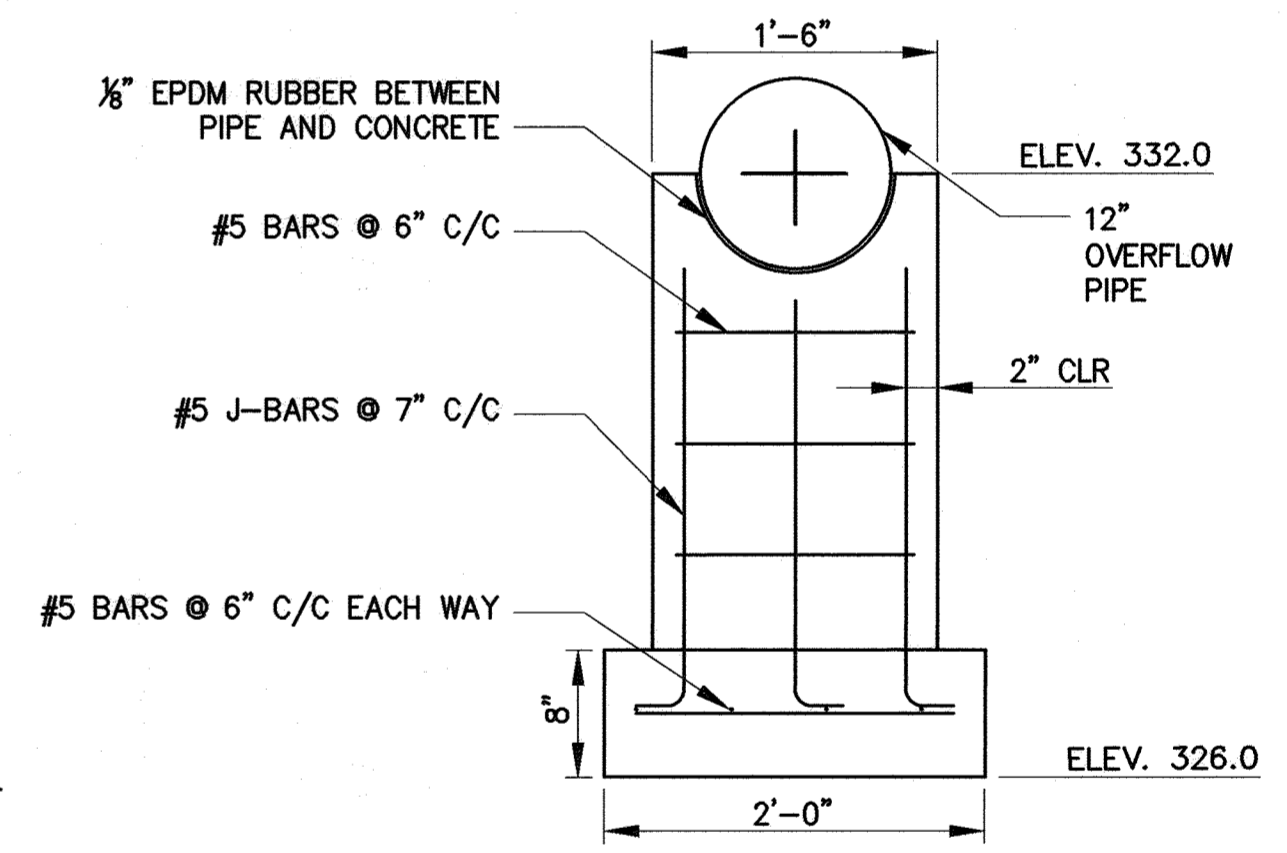
**CODE NOTES:**

- |                                 |  |
|---------------------------------|--|
| ① 16" X 12" FLANGED TEE         | ⑧ 12" FLANGED 90-DEG ELBOW                     |
| ② 16" RESILIENT SEAT GATE VALVE | ⑨ 12" DISMANTLING JOINT                        |
| ③ 16" SWING CHECK VALVE         | ⑩ 12" FLEXIBLE COUPLING WITH TIE-RODS          |
| ④ 16" DISMANTLING JOINT         | ⑪ 12" SINGLE ACTING ALTITUDE VALVE             |
| ⑤ CONCRETE PIPE SUPPORT         | ⑫ 0-50 PSIG. PRESSURE GAUGE (TYP.)             |
| ⑥ 12" X 12" FLANGED TEE         | ⑬ 1" DIA. HOSE BIB                             |
| ⑦ 12" RESILIENT SEAT GATE VALVE | ⑭ 4" FLOOR DRAIN (TYP.). SEE DETAIL THIS SHEET |

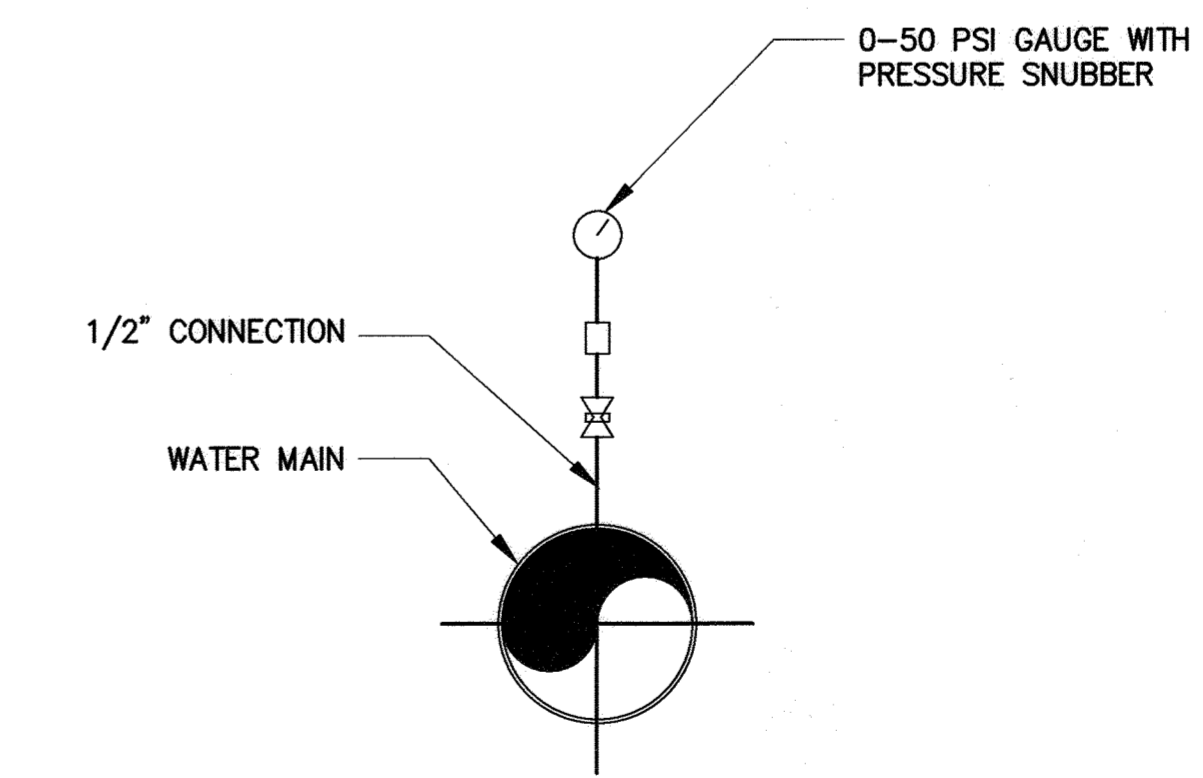
SET TOP OF FLOOR DRAIN 1/2" BELOW FINISHED FLOOR.



2 TYPICAL FLOOR DRAIN DETAIL  
SCALE: NTS



4 CONCRETE PIPE SADDLE  
SCALE: NTS



3 PI GAUGE DETAIL  
SCALE: NTS

1 TANK LOWER PEDESTAL FLOOR PLAN  
SCALE: 1/4" = 1'-0"

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FILE PATH: \\balisr\06\2018\18265\_Guilford\Tank\Plans-Tank\MP-P002\_GuilfordTank.dwg DATE: 9/20/2021 USER: rzhong

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND		
Director of Public Works [Signature] 9/29/2021	Chief, Bureau of Engineering [Signature] 9/29/2021	
Chief, Bureau of Utilities [Signature] 9/29/2021	Chief, Utility Design Division [Signature] 9/29/2021	
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NZ	KMR			
	EDJ			
DATE: SEPTEMBER 2021				

LOWER PEDESTAL FLOOR PLAN

600' SCALE MAP NO. 48 BLOCK NO. 1

GUILFORD ELEVATED WATER TANK

CAPITAL PROJECT NO. W8262  
CONTRACT NO. 44-5122

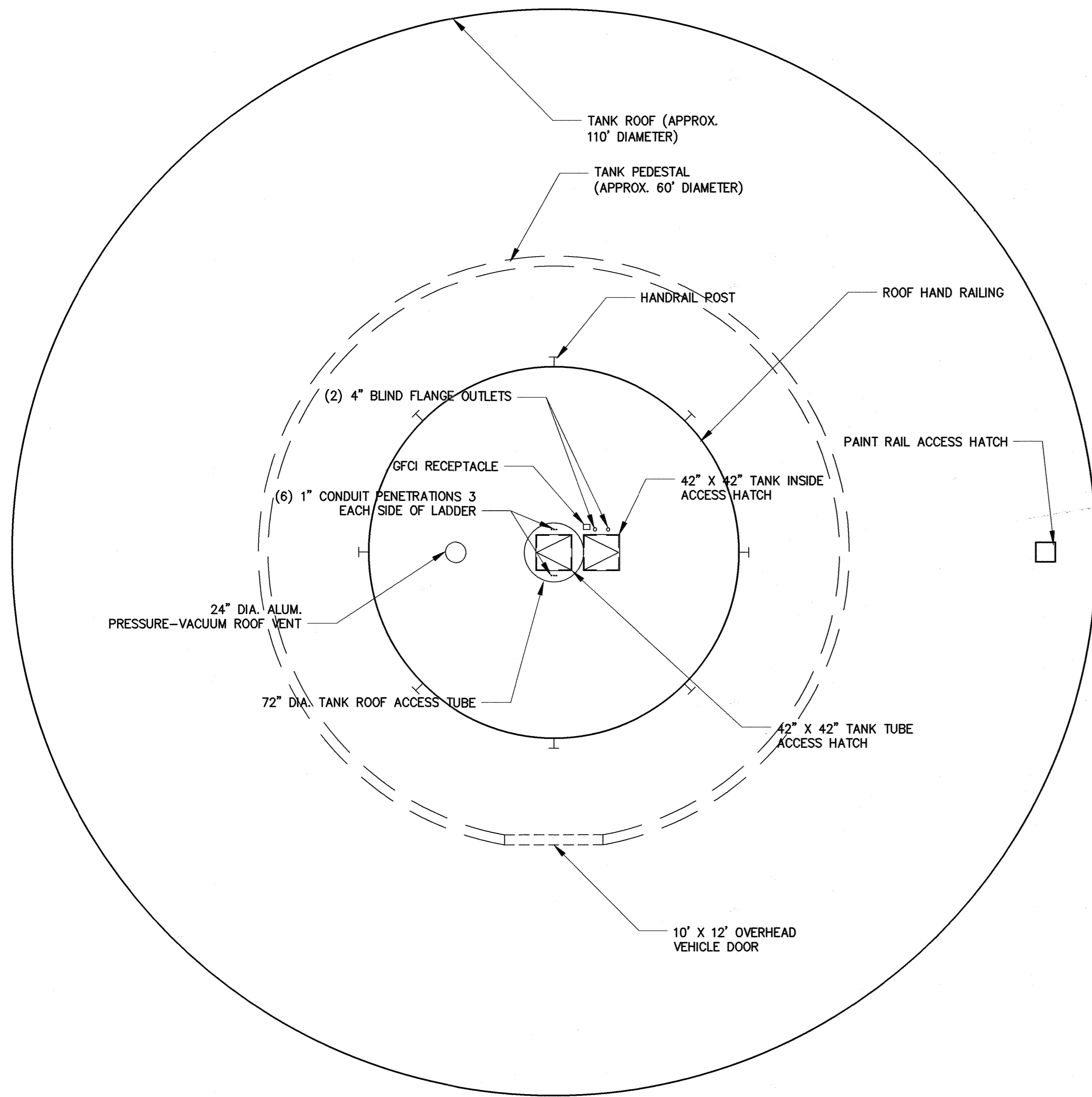
ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

M-2  
SCALE AS SHOWN  
SHEET NO. 20 OF 26

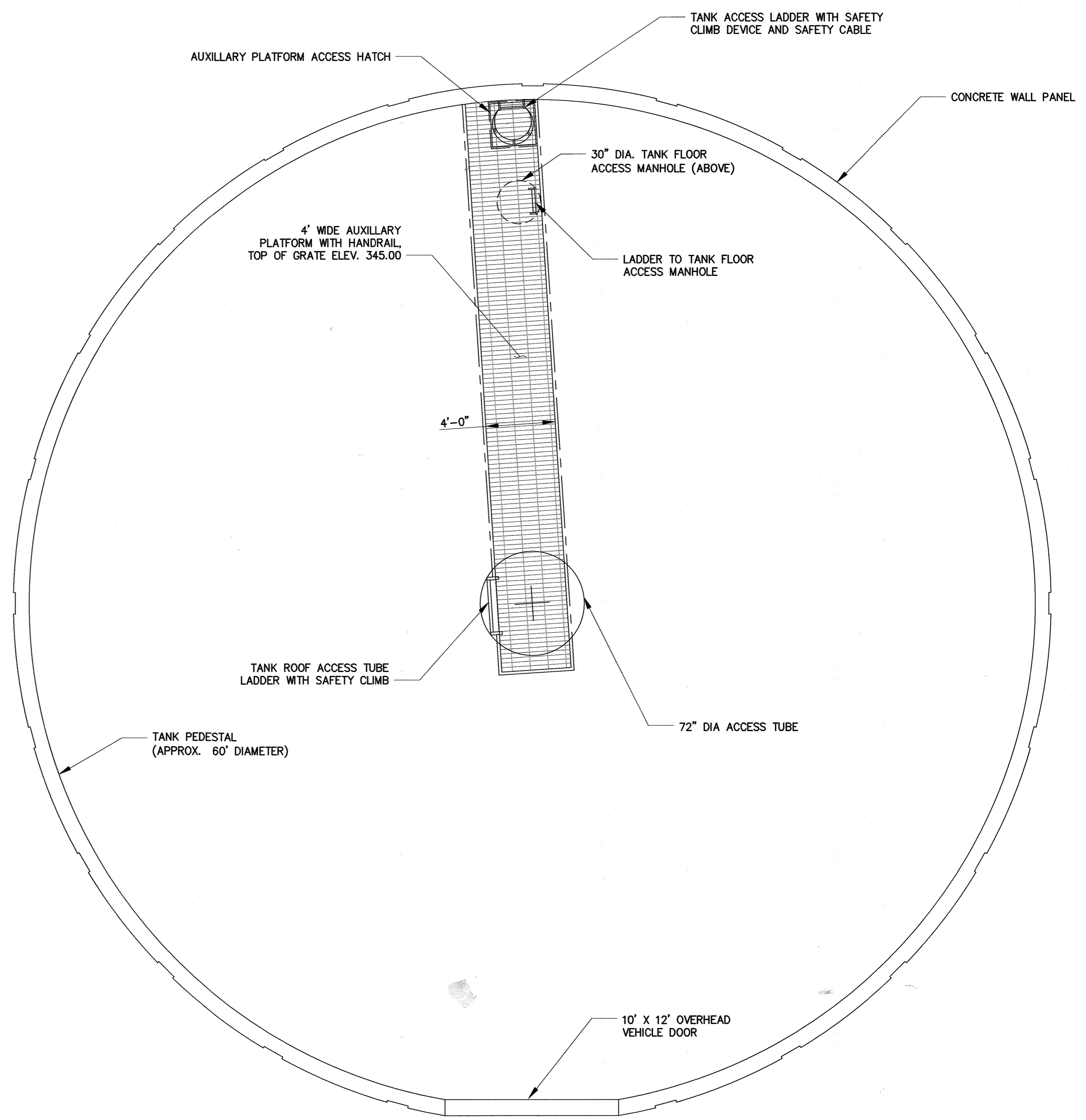


**NOTE:**

1. ROOF SHALL BE DESIGNED BY TANK MANUFACTURER AND APPROVED BY THE ENGINEER.
2. AUXILIARY PLATFORM SHALL BE DESIGNED FOR A MINIMUM LIVE LOAD OF 60 PSF BY THE TANK MANUFACTURER. AUXILIARY PLATFORM SHALL BE SPECIFIED IN DIVISION 13 OF CONTRACT SPECIFICATIONS.

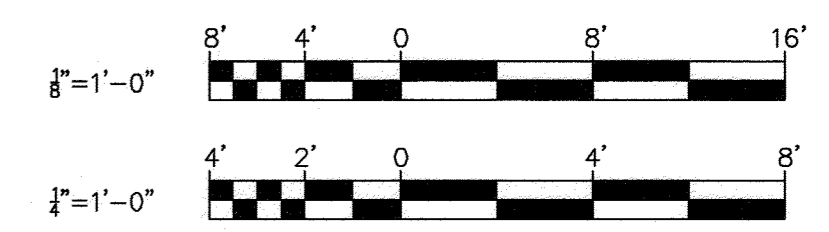


**1**  
M-3  
**ROOF PLAN**  
SCALE: 1/8" = 1'



**2**  
M-3  
**AUXILIARY PLATFORM PLAN**  
SCALE: 1/4" = 1'

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FILE PATH: \\bolster06\2018\2018\18265\_GuilfordTank.dwg DATE: 9/20/2021 USER: nzhong

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HOWARD COUNTY, MARYLAND

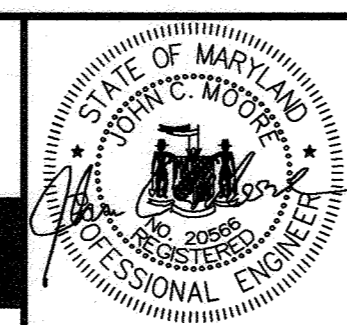
*[Signature]* 7/29/2021  
DIRECTOR OF PUBLIC WORKS DATE

*[Signature]* 9/29/2021  
CHIEF, BUREAU OF UTILITIES DATE

*[Signature]* 09-21-21  
CHIEF, BUREAU OF ENGINEERING DATE

*[Signature]* 9/29/2021  
CHIEF, UTILITY DESIGN DIVISION DATE

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DATE:	SEPTEMBER 2021			

**TANK ROOF PLAN AND AUXILIARY PLATFORM PLAN**

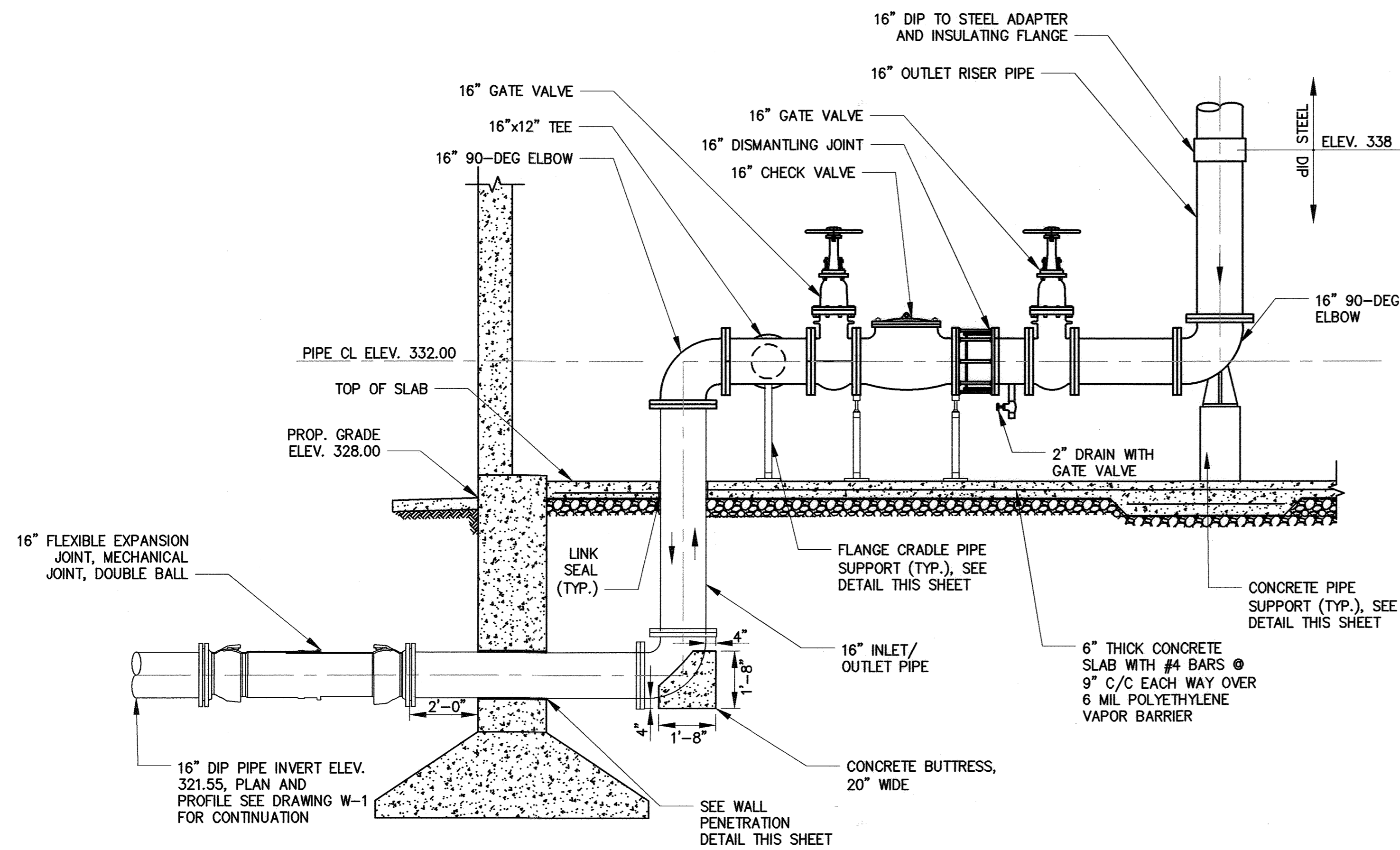
600' SCALE MAP NO. 48 BLOCK NO. 1

**GUILFORD ELEVATED WATER TANK**  
CAPITAL PROJECT NO. W8262  
CONTRACT NO. 44-5122

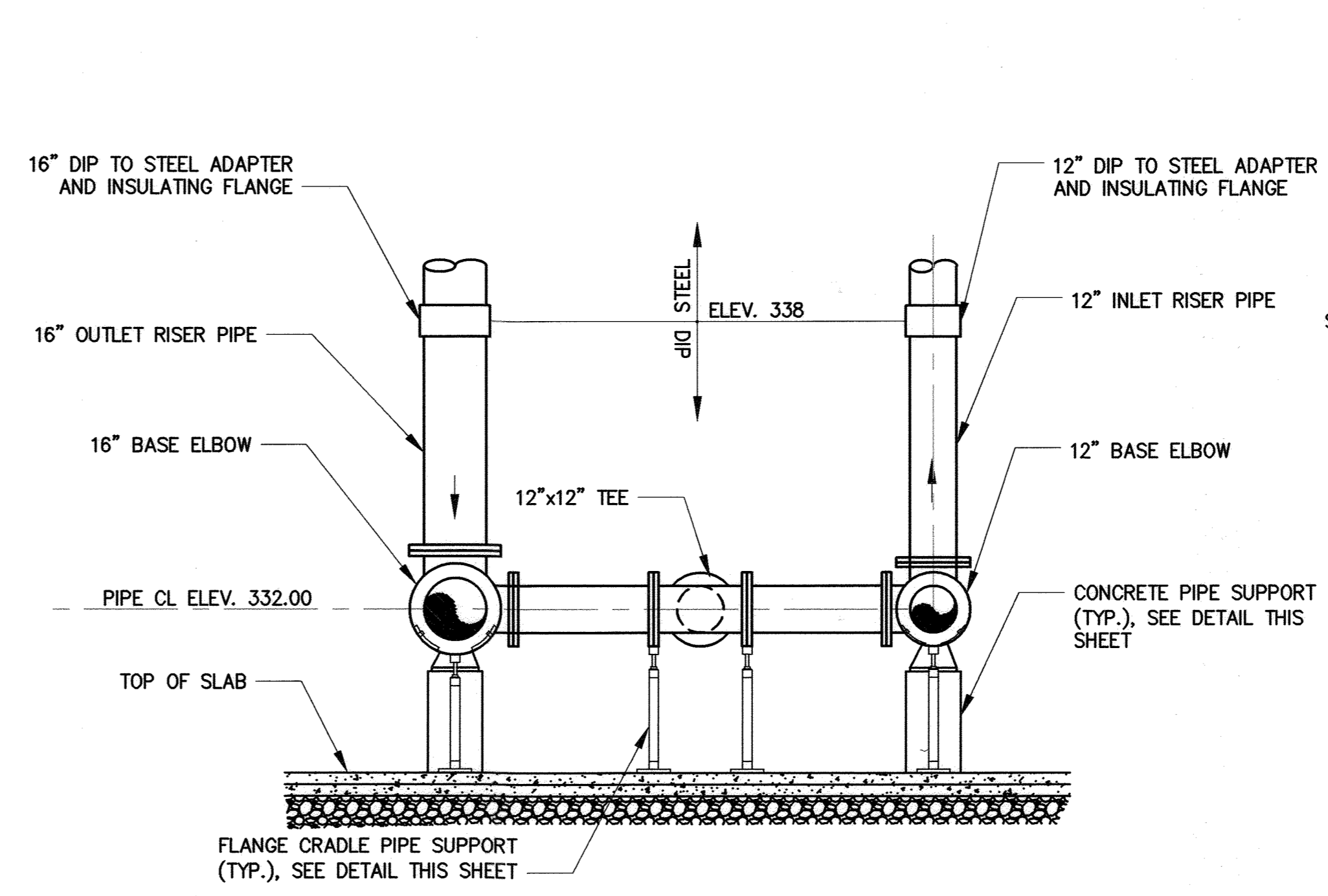
ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

M-3  
SCALE AS SHOWN  
SHEET NO.  
21 OF 26

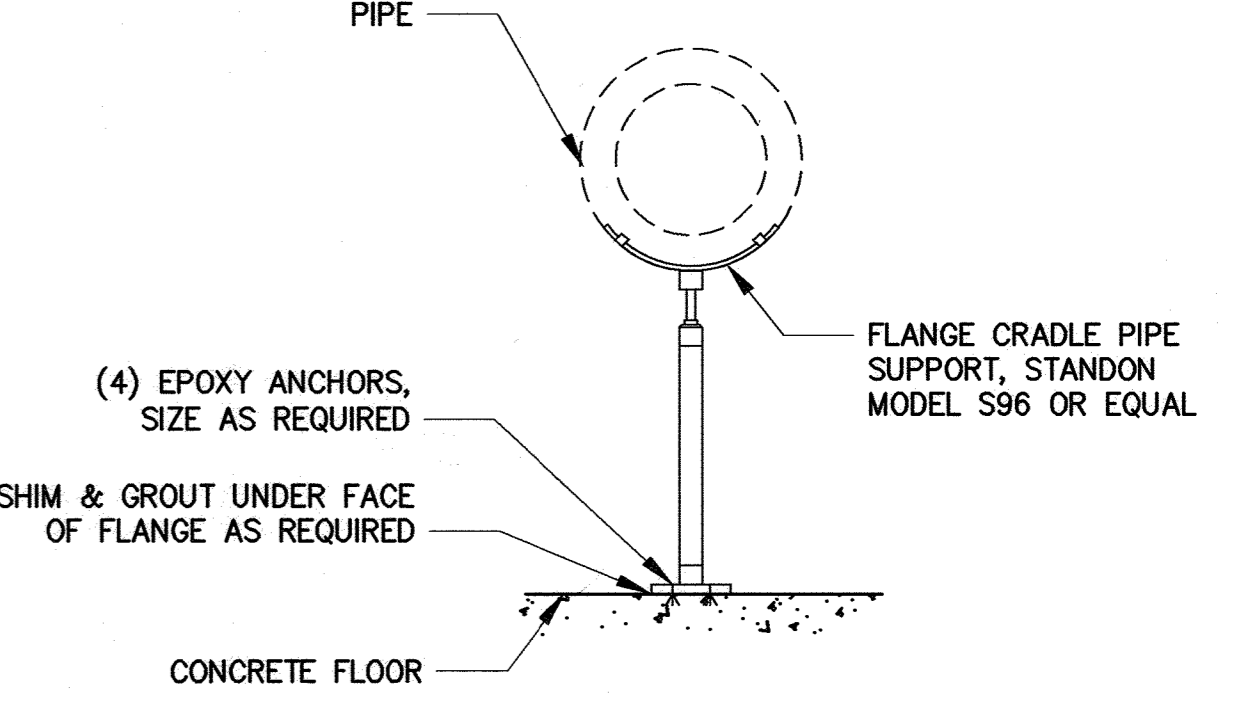




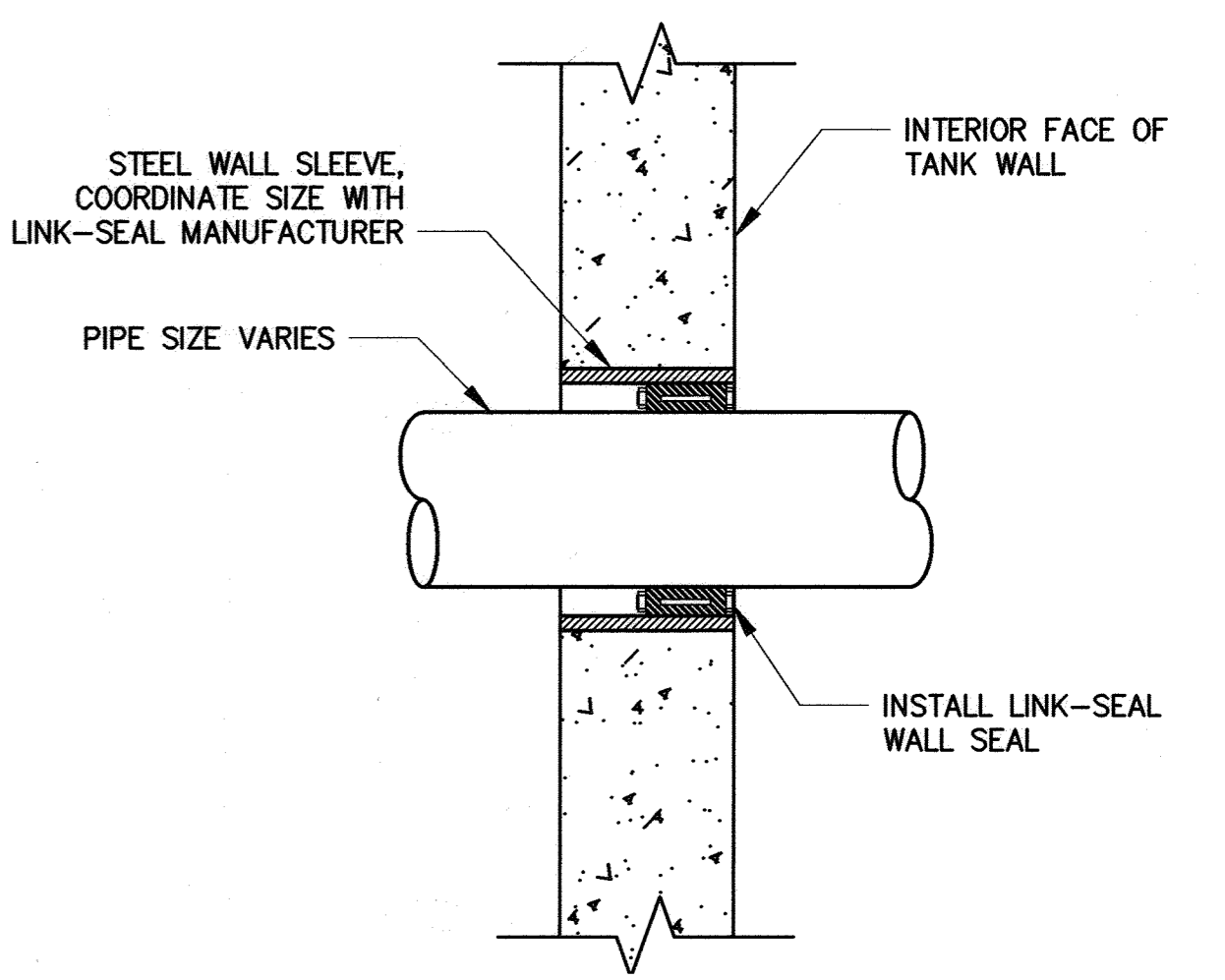
**1**  
M-2 M-4  
**OUTLET PIPING SECTION**  
SCALE: 3/8" = 1'-0"



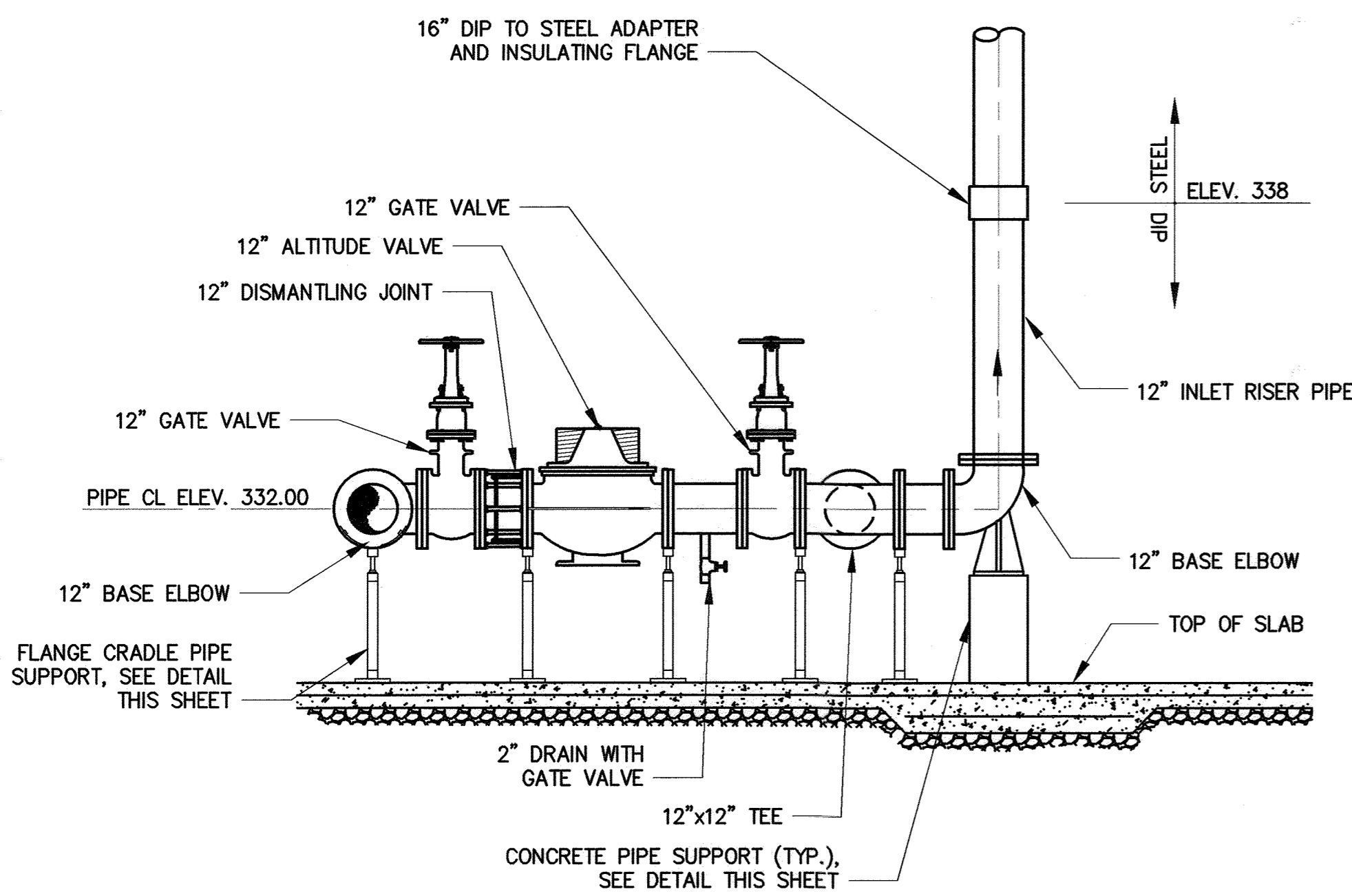
**2**  
M-2 M-4  
**INLET/OUTLET PIPING SECTION**  
SCALE: 3/8" = 1'-0"



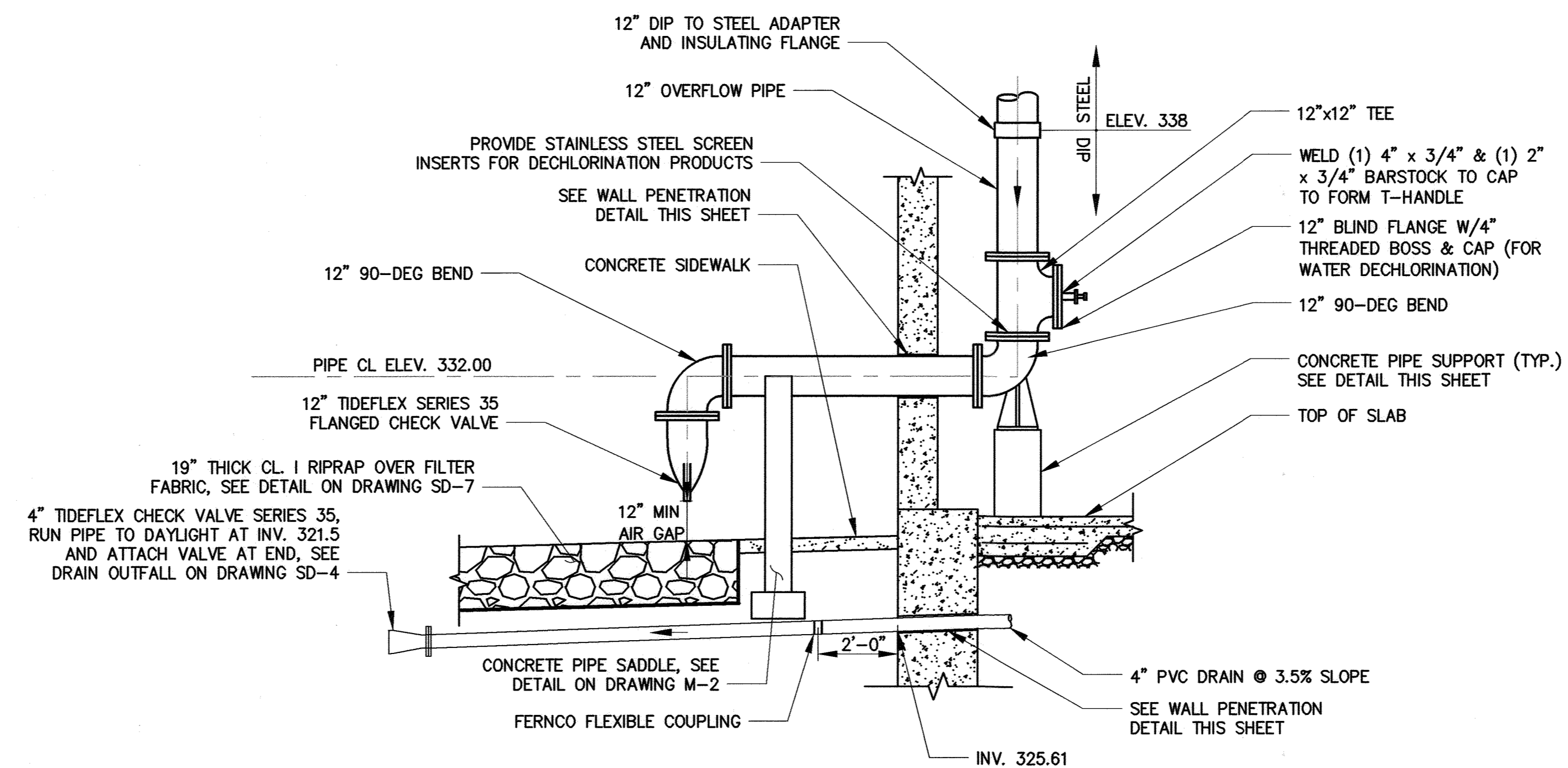
**5**  
M-4  
**FLANGE CRADLE PIPE SUPPORT**  
SCALE: NTS



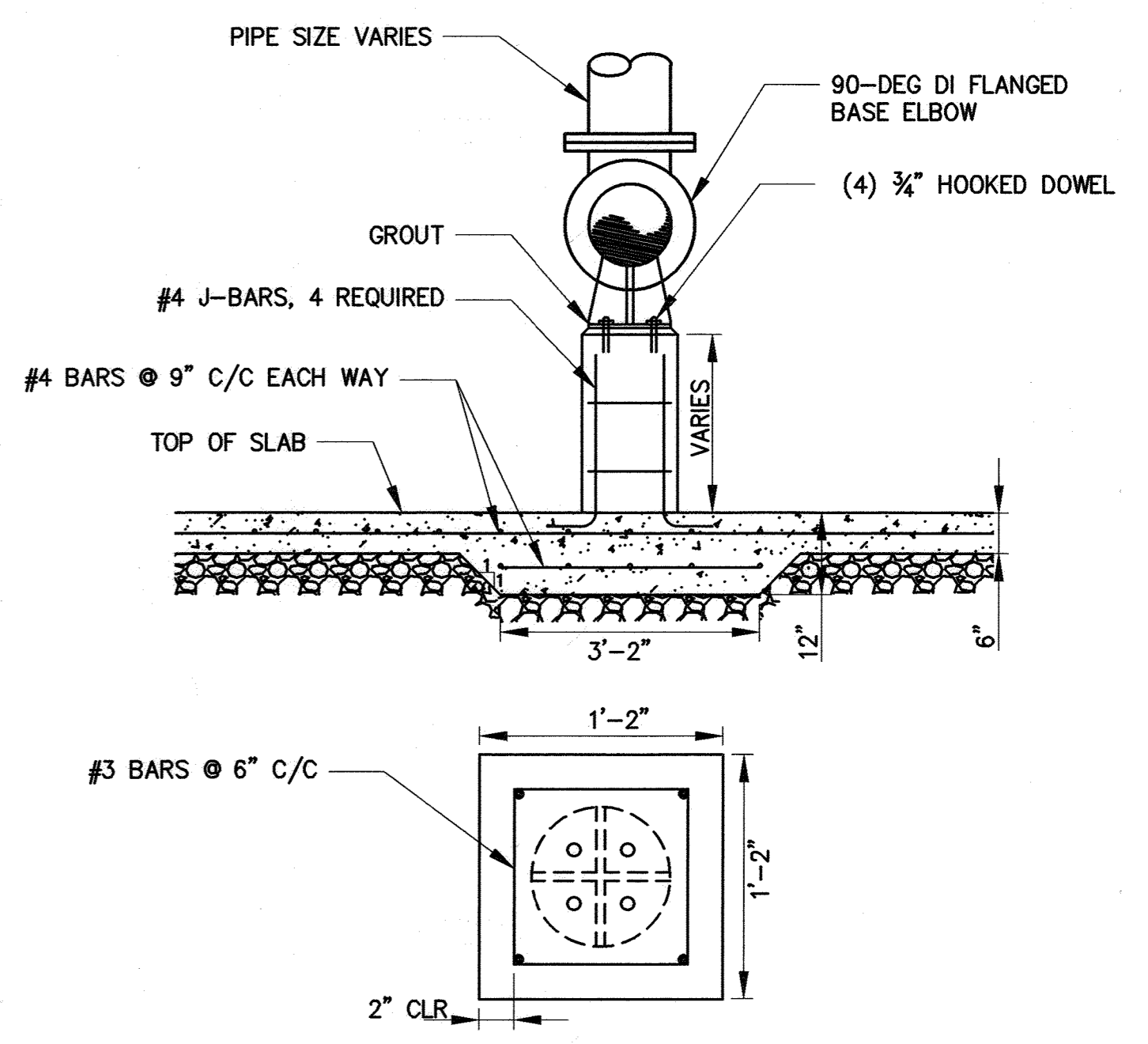
**6**  
M-4  
**WALL PENETRATION DETAIL**  
SCALE: NTS



**3**  
M-2 M-4  
**INLET PIPING SECTION**  
SCALE: 3/8" = 1'-0"

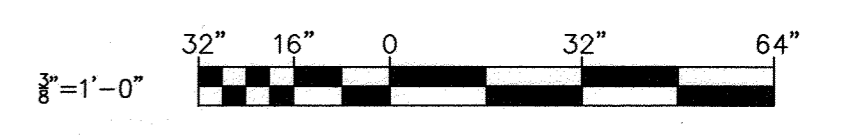


**4**  
M-2 M-4  
**OVERFLOW STRUCTURE SECTION**  
SCALE: 3/8" = 1'-0"



**7**  
M-4  
**CONCRETE PIPE SUPPORT DETAIL**  
SCALE: NTS

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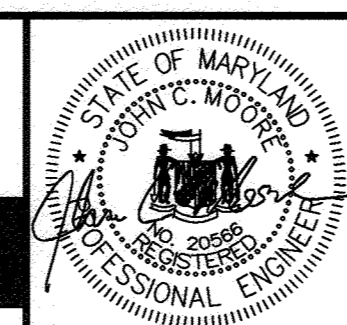
*[Signature]* 9/29/2021  
DIRECTOR OF PUBLIC WORKS DATE

*[Signature]* 9/29/2021  
CHIEF, BUREAU OF UTILITIES DATE

*[Signature]* 9/28/21  
CHIEF, BUREAU OF ENGINEERING DATE

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CHIEF, UTILITY DESIGN DIVISION DATE

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DATE: SEPTEMBER 2021				

**TANK PIPE DETAILS**

600' SCALE MAP NO. 48

BLOCK NO. 1

**GUILFORD ELEVATED WATER TANK**

CAPITAL PROJECT NO. W8262  
CONTRACT NO. 44-5122

ELECTION DISTRICT NO. 6

HOWARD COUNTY, MARYLAND

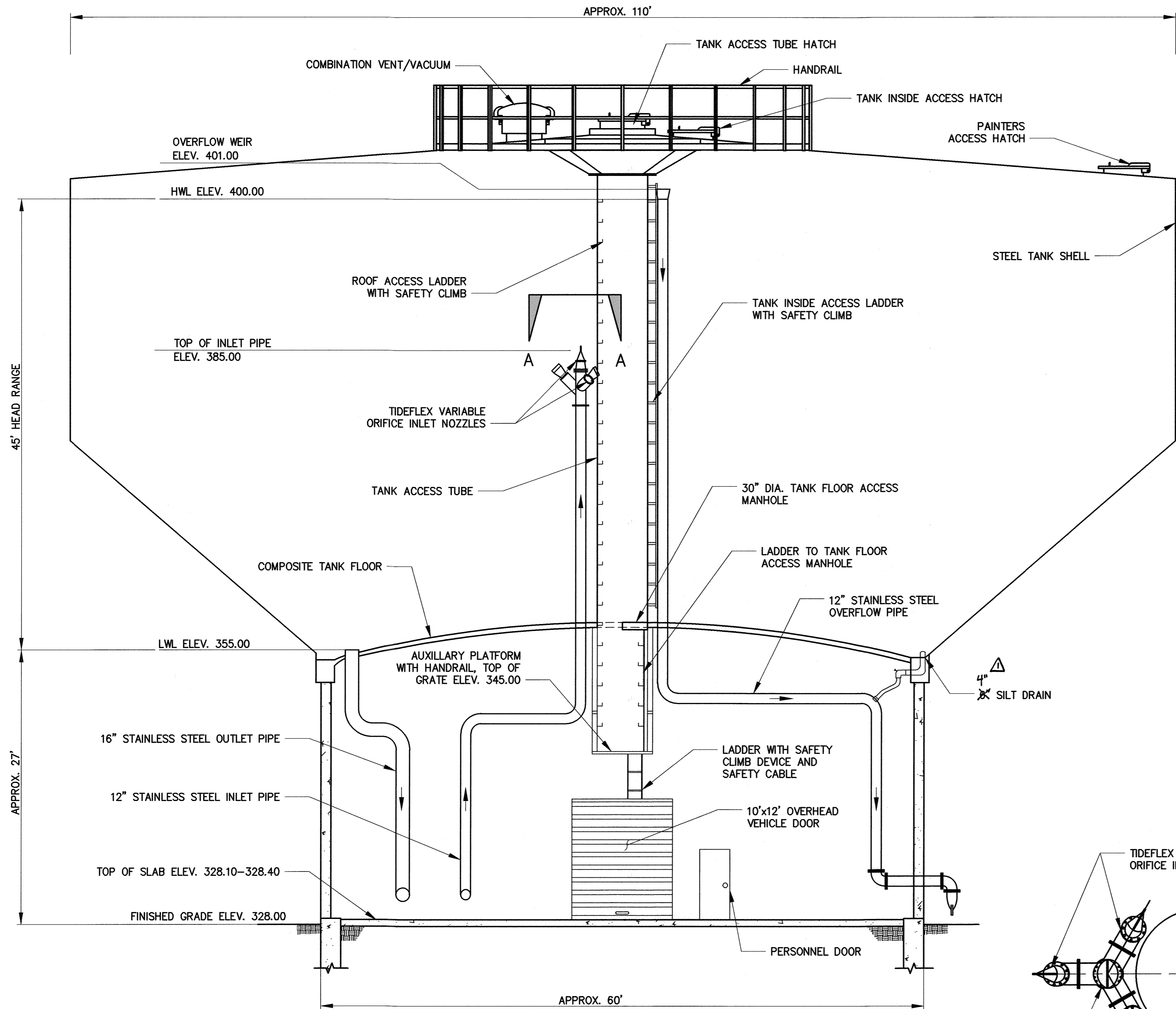
M-4

SCALE AS SHOWN

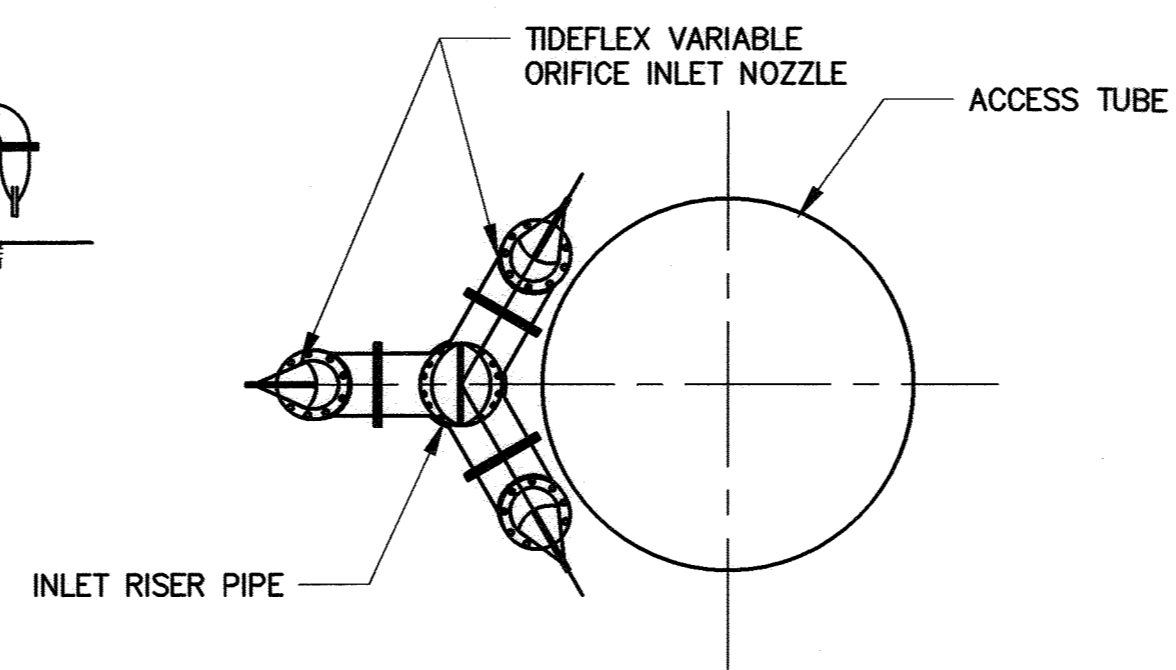
SHEET NO. 22 OF 26



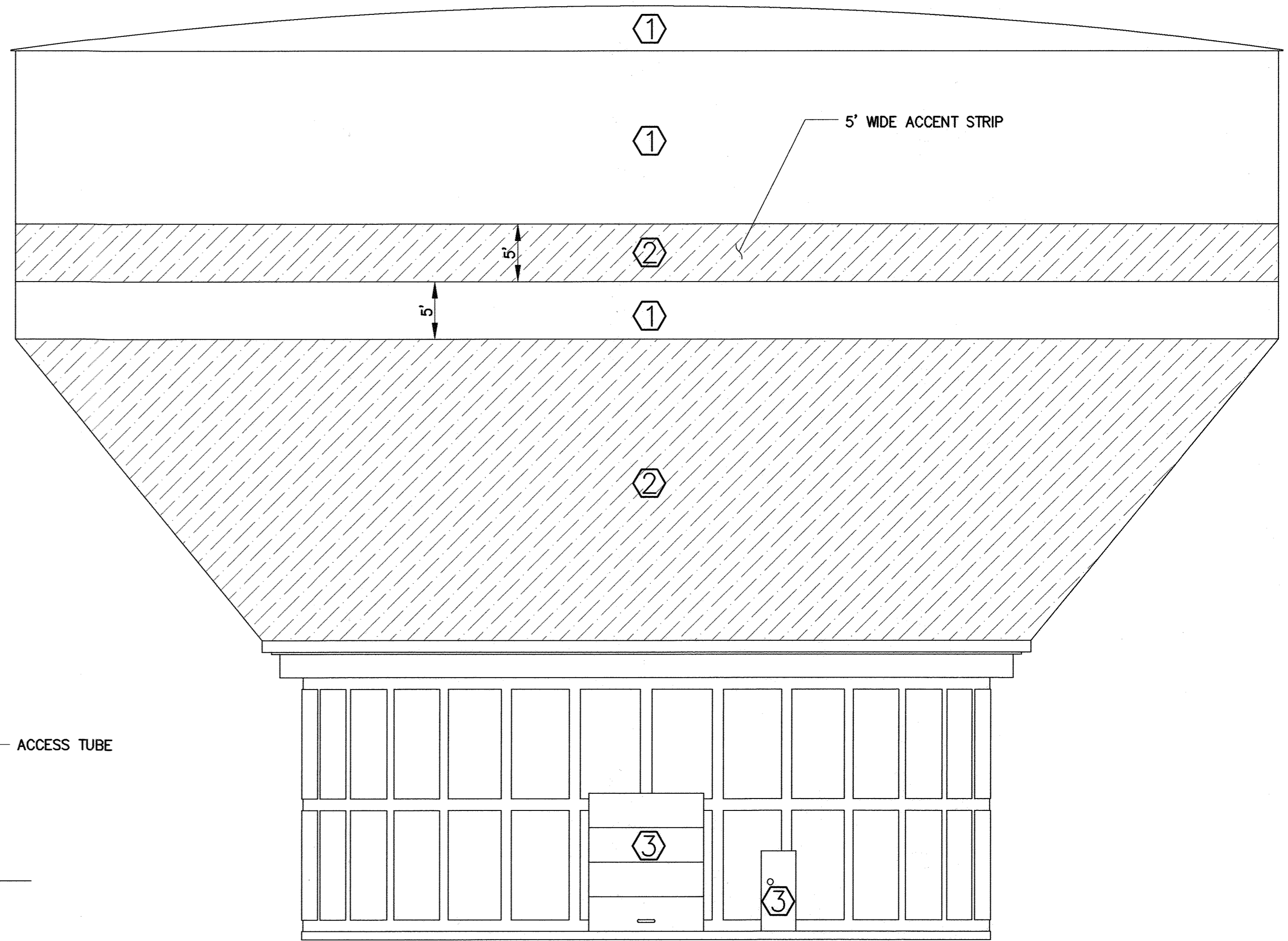
FILE PATH: \\bolster-06\2018\18285\_GuilfordTank.dwg DATE: 9/20/2021 USER: nzhong



1 TANK SECTION  
SCALE: NTS



3 VIEW A-A  
SCALE: NTS



2 TANK PAINTING COLOR SCHEME  
SCALE: NTS

MARK	COLOR	MANUFACTURER
①	DIVING BOARD BLUE	TNEMEC
②	REFLECTION POOL	TNEMEC
③	REFER TO SPECIFICATIONS	

- GENERAL NOTES:**
1. PROVIDE ADEQUATE FREEBOARD TO ENSURE ROOF PROJECTIONS AND PAINTER'S RAIL REMAIN ABOVE THE HIGH WATER LEVEL.
  2. STEEL TANK COATING SHALL BE SPECIFIED IN DIVISION 9 OF CONTRACT SPECIFICATIONS.
  3. INLET, OUTLET AND OVERFLOW PIPING BELOW ELEV. 338.00 SHALL BE CLASS 54 DIP, WHICH WILL BE SHOP COATED AND FIELD PAINTED IN ACCORDANCE WITH SECTION 09900 - PAINTING. INLET, OUTLET AND OVERFLOW RISER PIPING ABOVE ELEV. 338.00 SHALL BE TYPE 304L STAINLESS STEEL. INSTALL DIP TO STEEL PIPE ADAPTER AT ELEV. 338.00 FOR TRANSITIONING.
  4. ALL PIPING SHALL BE SUITABLY RESTRAINED TO PREVENT MOVEMENT. ALL PIPES SHALL BE SUPPORTED FROM THE WALL OR FLOOR OR CEILING.
  5. ALL LADDERS AND LANDINGS SHALL BE GALVANIZED STEEL.
  6. PROVIDE GALVANIZED STEEL SAFETY RAILS ON ALL LADDERS.

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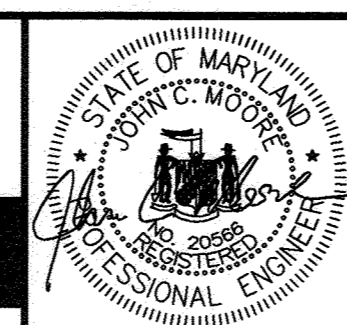
*Mecum* 9/20/21  
DIRECTOR OF PUBLIC WORKS DATE

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CHIEF, BUREAU OF UTILITIES DATE

*[Signature]* 9/20/21  
CHIEF, BUREAU OF ENGINEERING DATE

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KMR				
EDJ				
DATE: SEPTEMBER 2021				

TANK SECTION AND PAINTING COLOR SCHEME

600' SCALE MAP NO. 48 BLOCK NO. 1

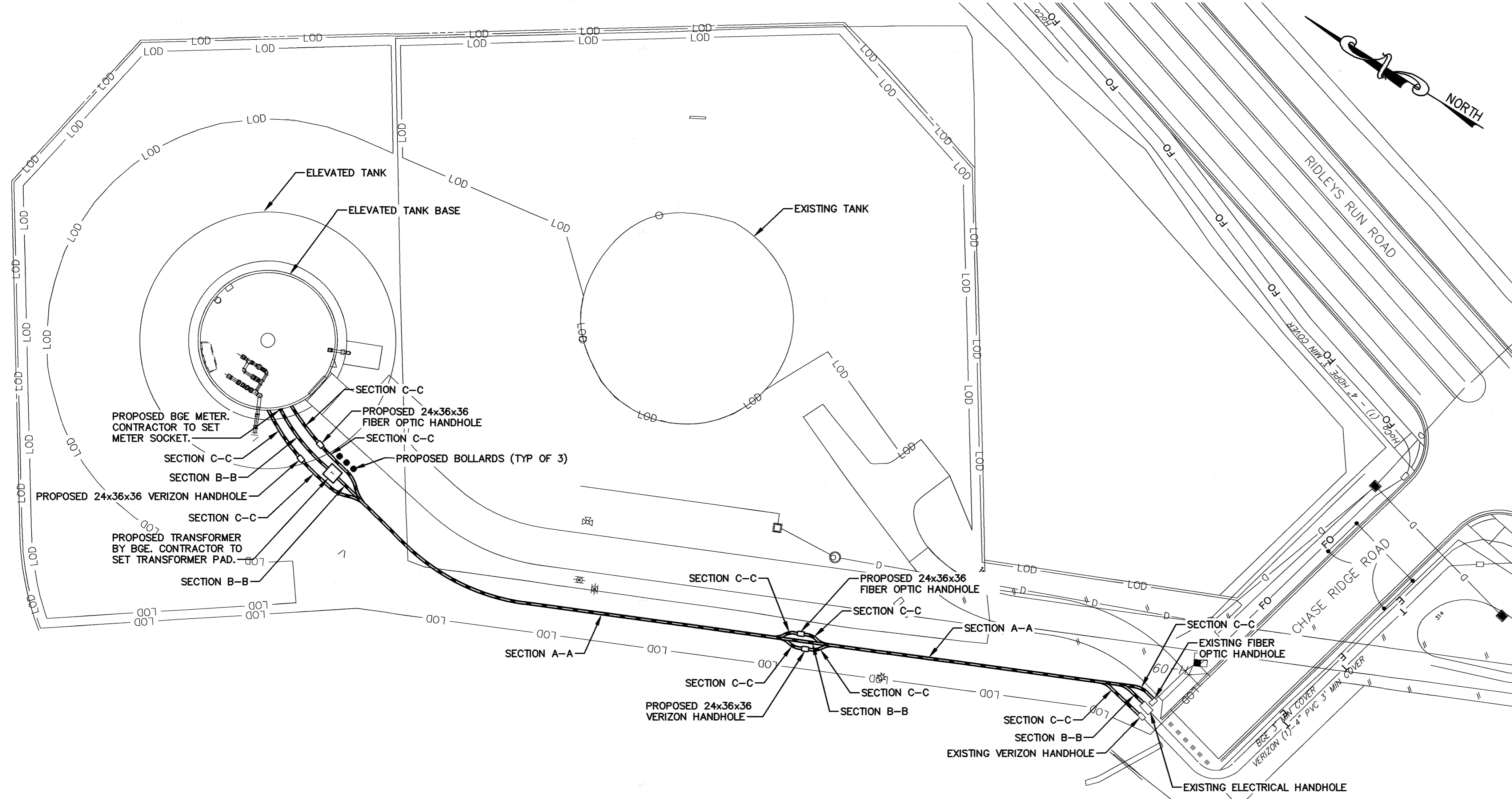
GUILFORD ELEVATED WATER TANK  
CAPITAL PROJECT NO. W8262  
CONTRACT NO. 44-5122

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

M-5  
SCALE AS SHOWN  
SHEET NO.  
23 OF 26



FILE PATH: \\baird\06\2018\2018\18285\_Guilford\CADD\Plans-Tank\Electrical\Plans-Tank\E3.dwg DATE: 9/23/2021 USER: mrobinson



### ELECTRICAL LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	LIGHTING FIXTURE - CEILING OR STEM MOUNTED - TYPE AS INDICATED		CONDUIT - ON CEILING OR WALLS
	LIGHTING FIXTURE - WALL MOUNTED - TYPE AS INDICATED		CONDUIT - UNDER GROUND
	BATTERY POWERED EMERGENCY UNIT WITH INTEGRAL CHARGER - No. OF HEADS AS INDICATED		HOMERUN TO PANEL - No. OF ARROWS INDICATES No. OF CIRCUITS AND No. OF CROSSLINES INDICATES No. OF #12 CONDUCTORS (NOT INCLUDING GROUND) - WHERE NO CROSSLINES APPEAR #12 CONDUCTORS ARE IMPLIED
	EXIT SIGN		DISCONNECT SWITCH - TYPE AS INDICATED
	SWITCH - SINGLE POLE OR AS INDICATED BY SUBSCRIPT - MH 48" AFF		THERMOSTAT
	DUPLEX GFI RECEPTACLE - 20A, 125V - MH 48" AFF UNLESS NOTED OTHERWISE; PROVIDE WEATHERPROOF METAL WHILE-IN-USE COVER		FREEZESTAT
	CIRCUIT BREAKER		DUCTBANK
	JUNCTION BOX - SIZE PER NEC OR AS INDICATED		
	PANELBOARD - TYPE AS NOTED - MH 6'-6" AFF TO TOP		

### ABBREVIATIONS

A	AMPERE	HOA	HAND-OFF-AUTOMATIC	PCP	PUMP CONTROL PANEL
AFF	ABOVE FINISHED FLOOR	KVA	KILO-VOLT-AMPERES	PSI	POUNDS PER SQUARE INCH
ATS	AUTOMATIC TRANSFER SWITCH	LO	LOCKOUT	PVC	POLYVINYL CHLORIDE
AUX	AUXILIARY	LOR	LOCKOUT RELAY	PFC	POWER FACTOR CORRECTION
C	CONDUIT	MCB	MAIN CIRCUIT BREAKER	RVSS	REDUCED VOLTAGE SOLID-STATE
CT	CURRENT TRANSFORMER	MCC	MOTOR CONTROL CENTER	SEC	SECOND
CKT	CIRCUIT	MFR	MANUFACTURER	SF	SUPPLY FAN
CB	CIRCUIT BREAKER	MH	MOUNTING HEIGHT	SW	SWITCH
D	DAMPER	MOD	MOTOR OPERATED DAMPER	TYP	TYPICAL
DN	DOWN	NEC	NATIONAL ELECTRICAL CODE	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
DWG	DRAWING	No.,#	NUMBER	UGE	UNDERGROUND ELECTRIC
EF	EXHAUST FAN	OIT	OPERATOR INTERFACE TERMINAL	V	VOLTS
FVNR	FULL VOLTAGE NON-REVERSING	OHE	OVERHEAD ELECTRIC	WP	WEATHER PROOF
GRD,G	GROUND	OL	OVERLOAD	XP	EXPLOSION PROOF
HP	HORSEPOWER	P	POLE	XFMR	TRANSFORMER

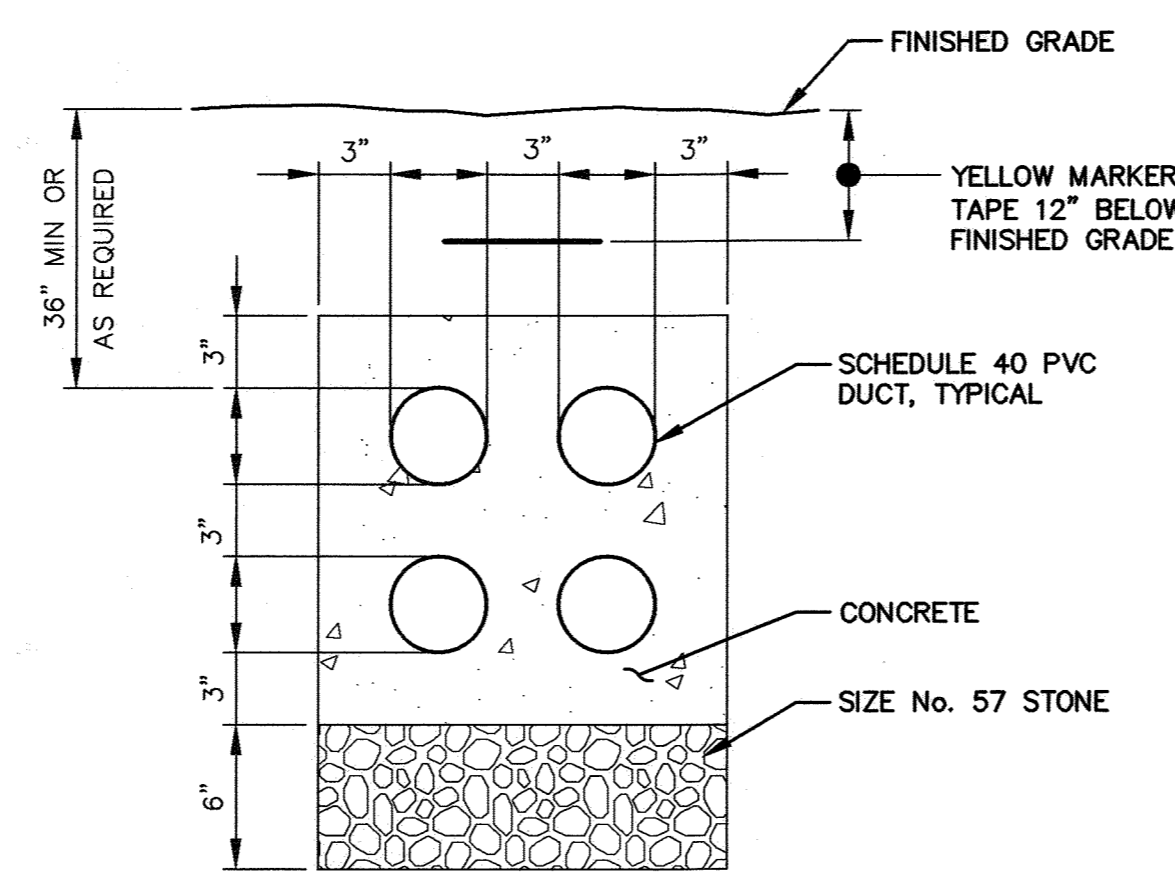
- ### SERVICE NOTES:
- CONTRACTOR TO COORDINATE WITH BGE FOR INSTALLATION OF NEW TRANSFORMER AND METERING. CONTRACTOR TO INSTALL NEW CONDUITS FROM EXISTING HANDHOLE TO METER AS SHOWN.
  - CONTRACTOR SHALL PROVIDE ALL WORK REQUIRED BY BGE TO INSTALL SERVICE IN ACCORDANCE WITH BGE STANDARDS INCLUDING CONDUIT, PADS, CT CABINETS, GROUNDING, METER SOCKETS, VAULTS, ETC.
  - CONTRACTOR SHALL CLOSELY COORDINATE THE EXECUTION AND SCHEDULING OF ALL WORK WITH BGE AND SHALL COMPLY WITH ALL APPLICABLE BGE STANDARDS.
  - EXACT LOCATIONS OF METERING TO BE COORDINATED WITH AND APPROVED BY HOWARD COUNTY, THE ENGINEER AND BGE PRIOR TO INSTALLATION.
  - ALL COORDINATION WITH BGE IS THE RESPONSIBILITY OF THE CONTRACTOR.
  - CONTRACTOR TO PROVIDE SPARE CONDUIT FOR FUTURE VERIZON USE.
  - CONTRACTOR SHALL PROVIDE ALL COORDINATION NECESSARY FOR THE INSTALLATION OF HOWARD COUNTY FIBER OPTIC COMMUNICATION SERVICE.

- ### GENERAL NOTES:
- A GREEN INSULATED GROUNDING CONDUCTOR SHALL BE PROVIDED IN EVERY CONDUIT RUN TO FORM A CONTINUOUS GROUNDING SYSTEM FROM PANEL TO ALL UTILIZATION, CONTROL AND SWITCHING EQUIPMENT.
  - ALL WIRING SHALL BE IN CONDUIT UNLESS WRITTEN APPROVAL IS GIVEN BY ENGINEER.
  - WIRE AND CABLE SHALL BE CONTINUOUS FROM SOURCE TO LOAD. SPLICES SHALL ONLY BE MADE WHERE APPROVED BY THE OWNER/ENGINEER.
  - CONTRACTOR SHALL SUBMIT DETAILED CONDUIT ROUTING PLANS SHOWING ALL CONDUITS FOR APPROVAL PRIOR TO INSTALLATION.

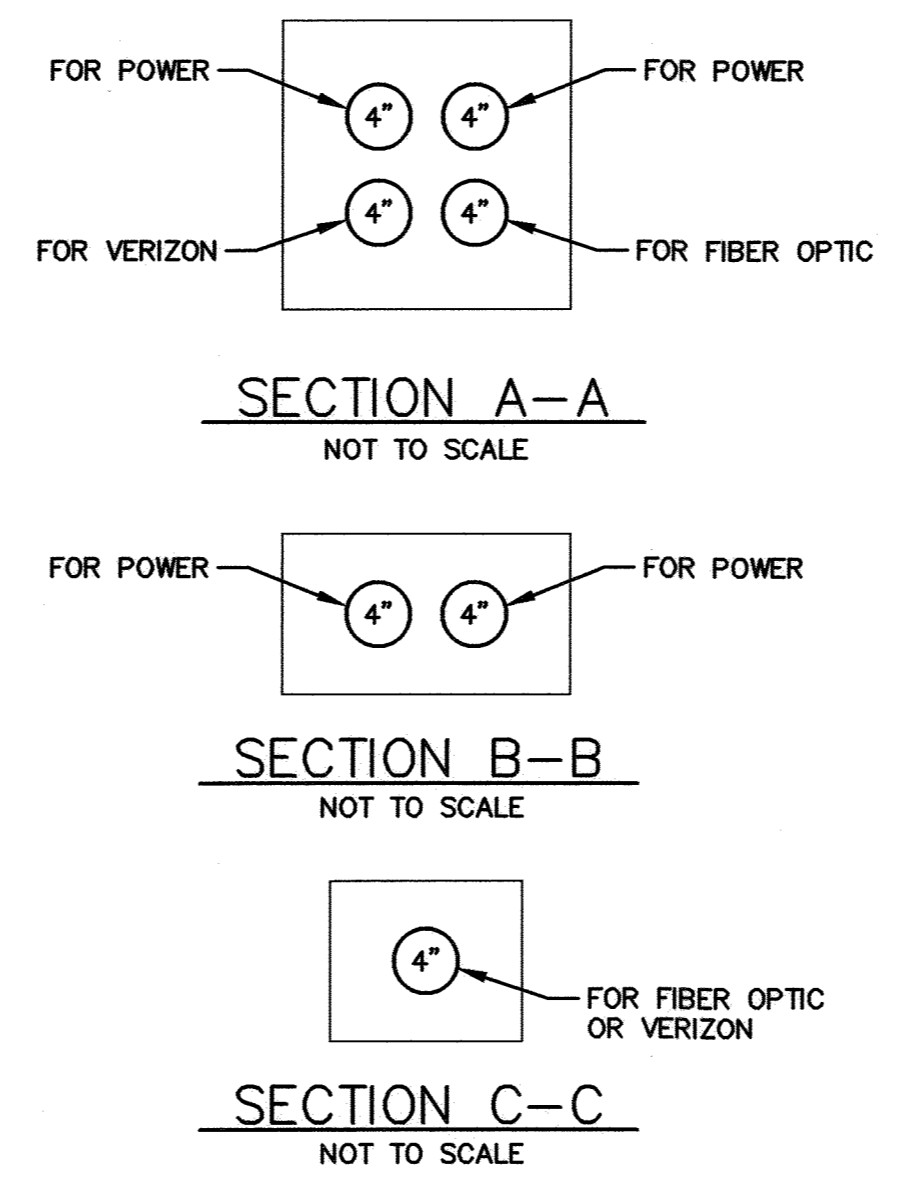
### SERVICE GROUND NOTE:

A COMPLETELY NEW GROUNDING SYSTEM SHALL BE PROVIDED FOR THE TANK ELECTRICAL SYSTEM. GROUND RODS SHALL BE COPPER CLAD STEEL. EXOTHERMIC CONNECTIONS SHALL BE USED. PROVIDE ADDITIONAL GROUND RODS AS REQUIRED TO OBTAIN RESISTANCE LOWER THAN ALLOWABLE MAXIMUM SPECIFIED RESISTANCE UNDER DRY CONDITIONS (NO RAINFALL WITHIN 72 HOURS OF TEST). PROVIDE A MINIMUM OF 3 GROUND RODS, EVENLY SPACED A MINIMUM OF 10 FEET APART. CONTRACTOR SHALL SUBMIT PROPOSED GROUND ROD LOCATIONS FOR APPROVAL PRIOR TO INSTALLATION AS PART OF THE REQUIRED CONDUIT ROUTING SUBMITTAL.

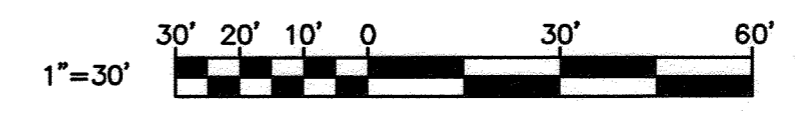
**ELECTRICAL SITE PLAN**  
SCALE: 1"=30'-0"



**TYPICAL CONCRETE ENCASED DUCTBANK DETAIL**  
NOT TO SCALE



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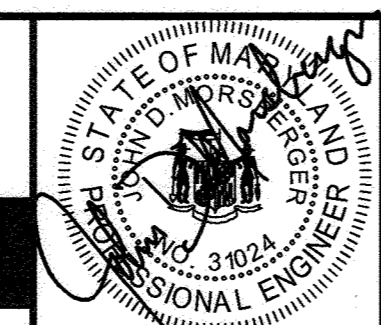
*M. Lewis* 9/29/2021  
DIRECTOR OF PUBLIC WORKS DATE

*J. Davis* 09-29-21  
CHIEF, BUREAU OF ENGINEERING DATE

*H. Smith* 9/29/2021  
CHIEF, BUREAU OF UTILITIES DATE

*J. Davis* 9/29/2021  
CHIEF, UTILITY DESIGN DIVISION DATE

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JDM				
DATE: SEPTEMBER 2021				

**ELECTRICAL SITE PLAN, LEGEND AND DETAILS**

600' SCALE MAP NO. 48 BLOCK NO. 1

**GUILFORD ELEVATED WATER TANK**

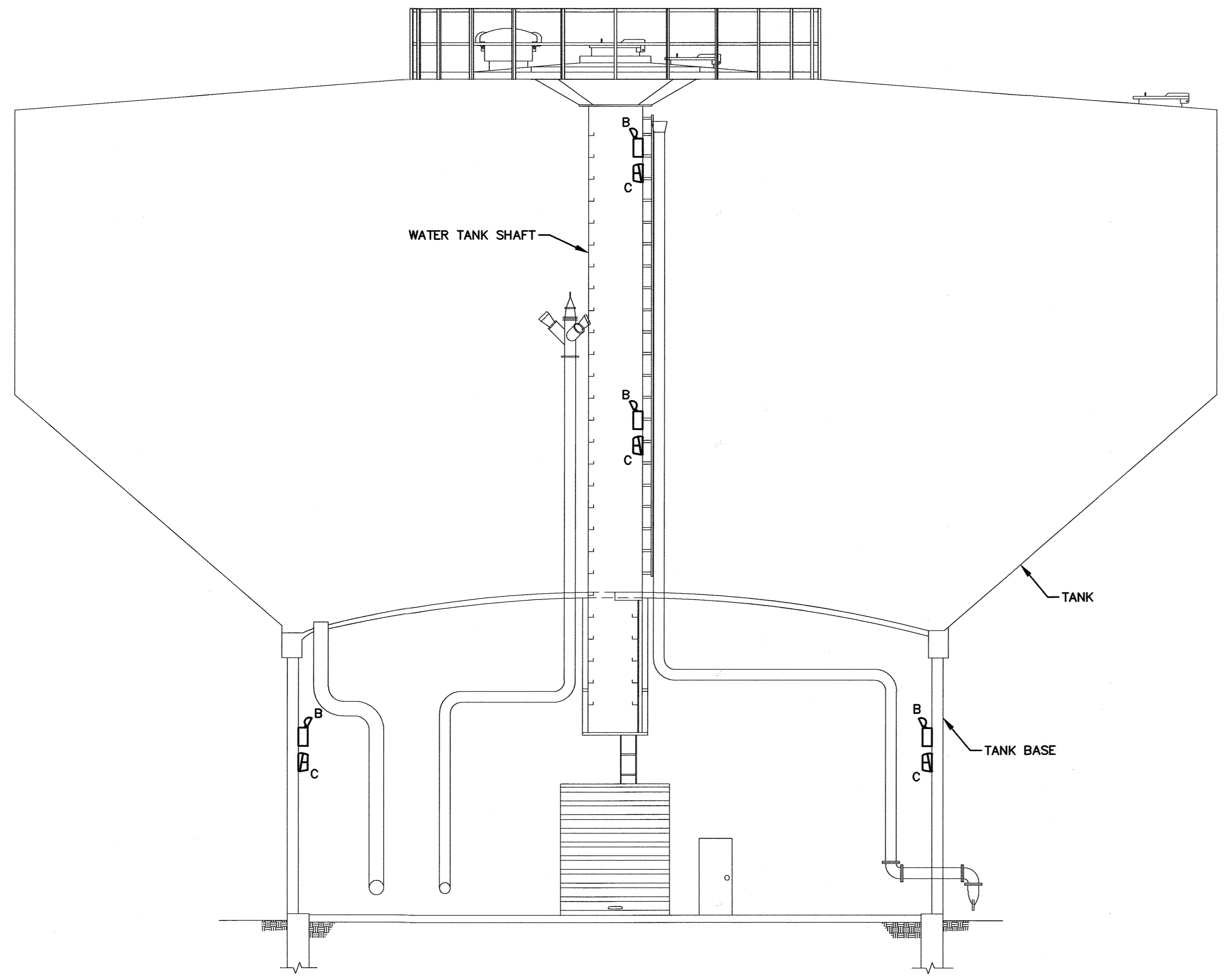
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CONTRACT NO. 44-5122

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

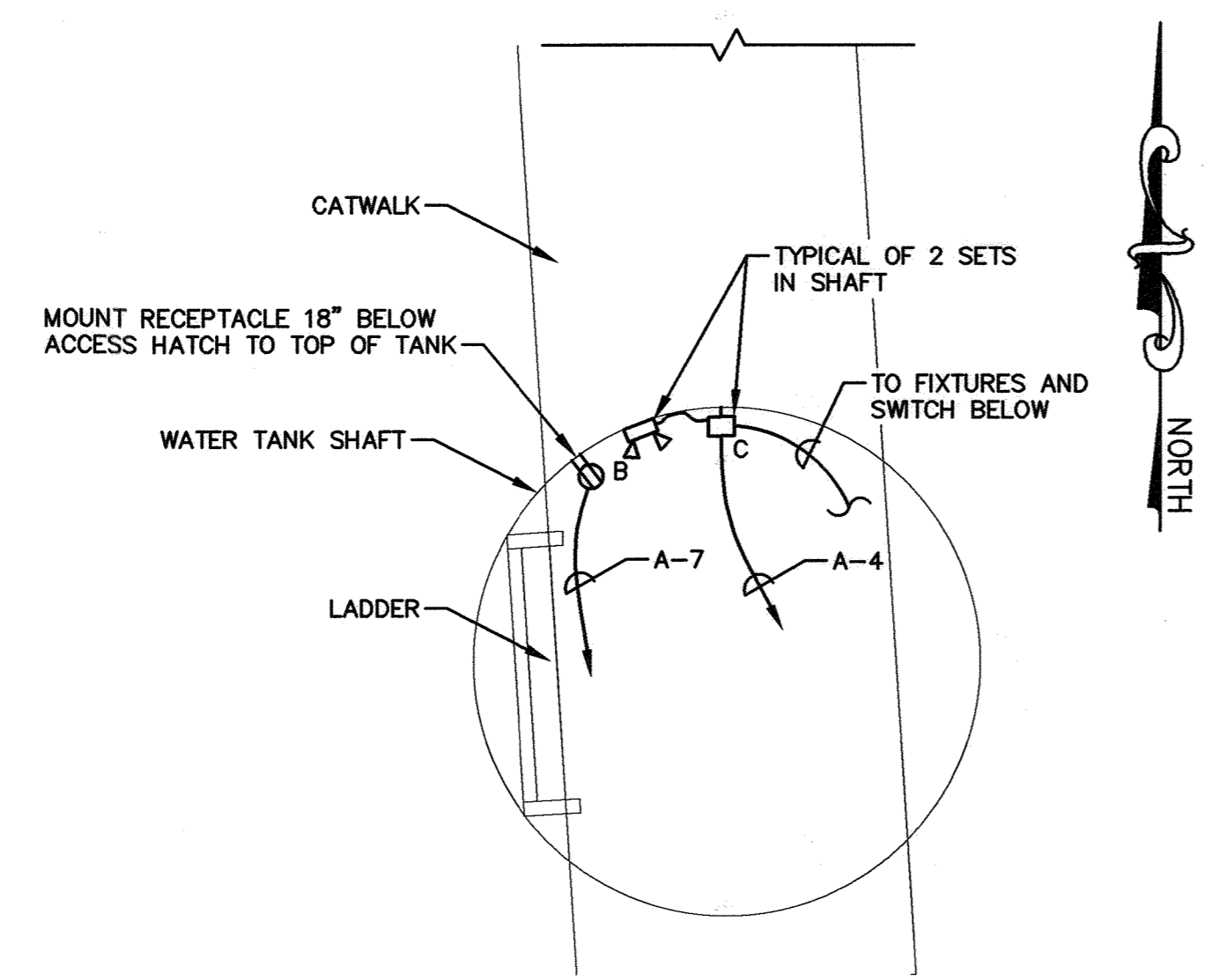
E-1
SCALE AS SHOWN
SHEET NO.
24 OF 26



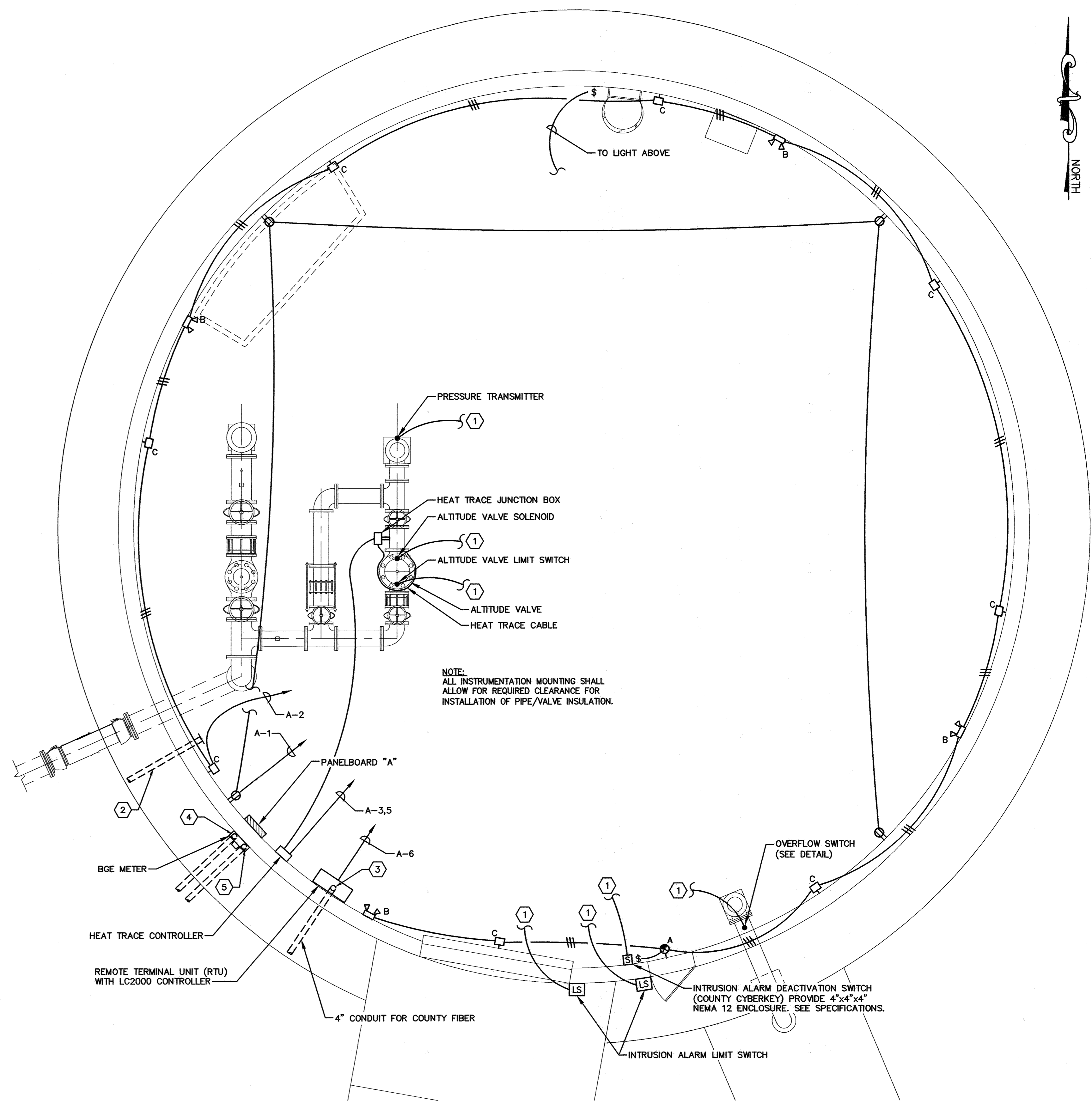
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**TANK ELEVATION PLAN - LIGHTING**  
SCALE: 1/8"=1'-0"



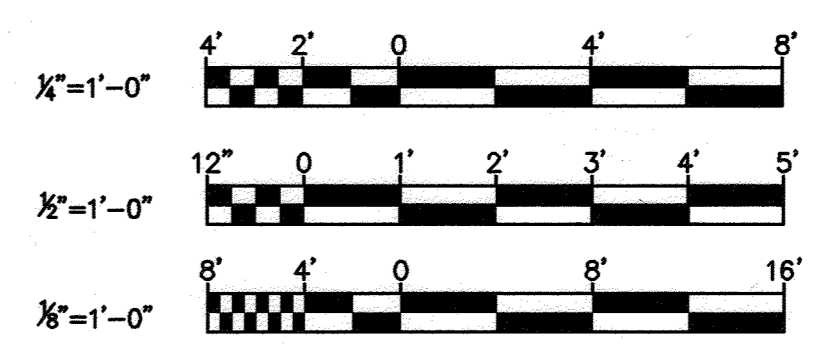
**TANK SHAFT PLAN - POWER/LIGHTING**  
SCALE: 1/2"=1'-0"



**TANK BASE PLAN - LIGHTING AND POWER**  
SCALE: 1/4"=1'-0"

**DRAWING NOTES:**

- ① SEE MONITORING AND CONTROL WIRING SCHEDULE FOR SIGNALS TO/FROM RTU.
- ② 4" CONDUIT FOR FUTURE VERIZON USE. CAP 6" ABOVE SLAB OR GRADE.
- ③ REDUCE CONDUIT TO 1-1/2" SIZE FOR COUNTY FIBER ENTRY INTO RTU ENCLOSURE.
- ④ REDUCE CONDUIT PER BGE REQUIREMENTS FOR ENTRY INTO METER ENCLOSURE.
- ⑤ CUT AND CAP SPARE BGE CONDUIT 6" ABOVE GRADE.



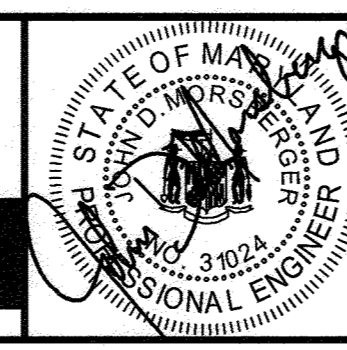
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DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Melvin* 9/29/2021 09-20-21  
DIRECTOR OF PUBLIC WORKS DATE CHIEF, BUREAU OF ENGINEERING DATE

*Monica* 9/29/2021 9/29/2021  
CHIEF, BUREAU OF UTILITIES DATE CHIEF, UTILITY DESIGN DIVISION DATE

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DATE: SEPTEMBER 2021				

**ELECTRICAL POWER AND LIGHTING PLANS**

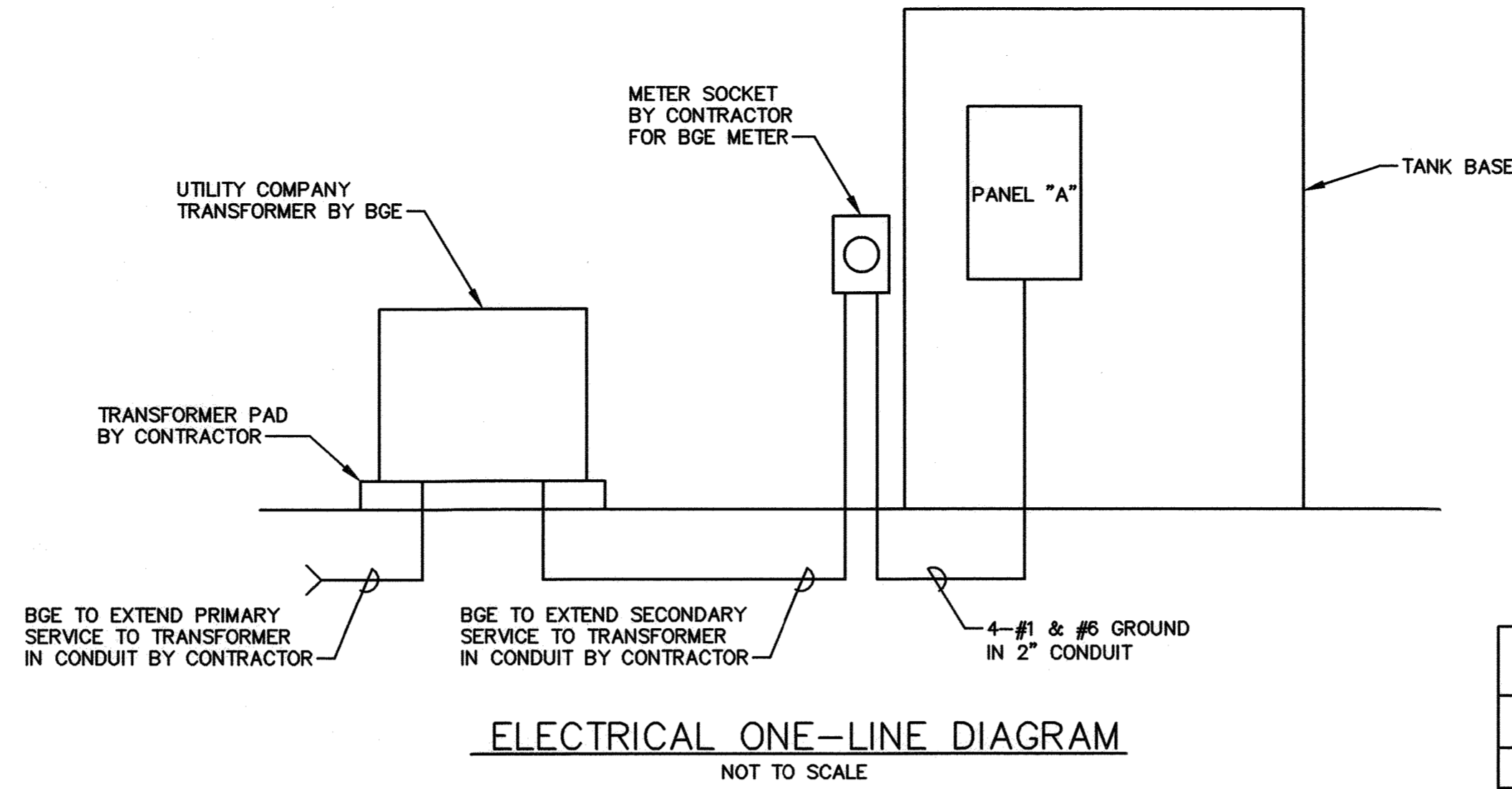
600' SCALE MAP NO. 48 BLOCK NO. 1

**GUILFORD ELEVATED WATER TANK**  
CAPITAL PROJECT NO. W8262  
CONTRACT NO. 44-5122

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND



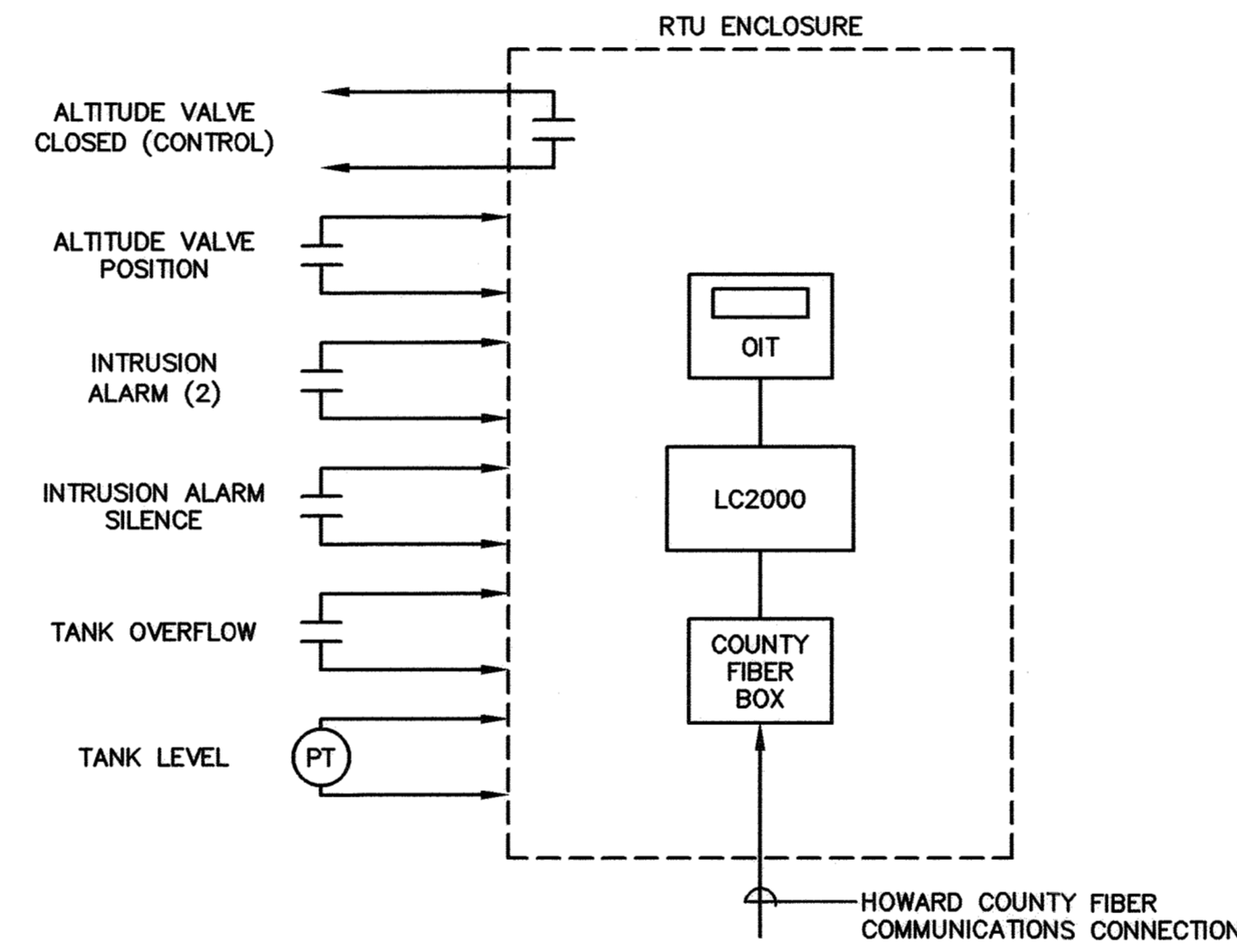
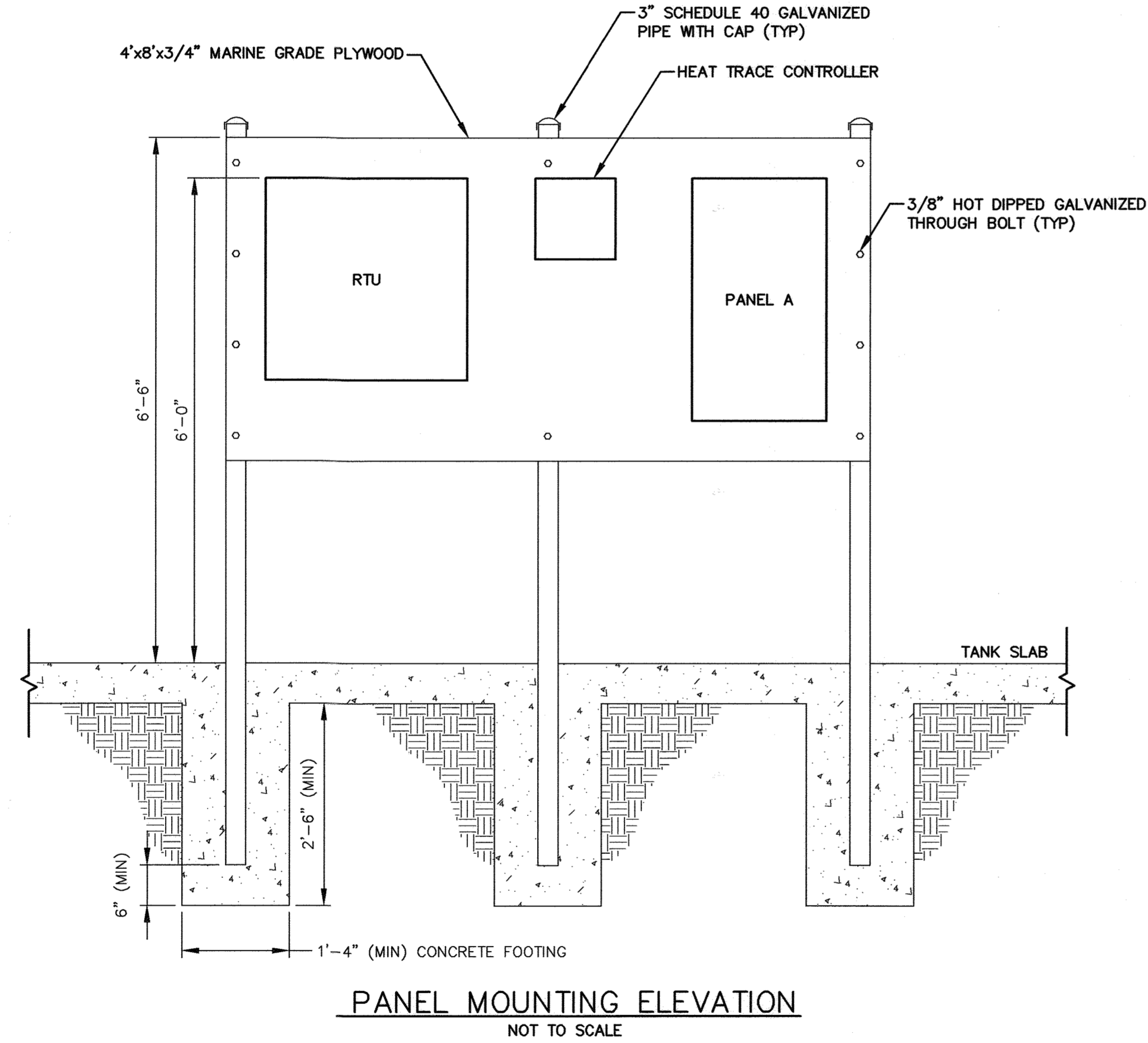
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LIGHT FIXTURE SCHEDULE					
TYPE	DESCRIPTION	VOLTAGE	LAMPS	MOUNTING HEIGHT	MANUFACTURER OR EQUAL
A	WET LOCATION EXIT SIGN WITH BLACK HOUSING AND BRUSHED ALUMINUM STENCIL AND GREEN FIBERGLASS PANEL. CONNECT AHEAD OF SWITCH	120/277	LED	WALL MOUNTED 8'-0" ABOVE FINISHED FLOOR OR AS NOTED	McPHILBEN ER60MLD1GBA
B	9.6 VOLT LIGHTING UNIT WITH EMERGENCY BATTERY PACK, UL LISTED FOR WET LOCATION. OPERATION SHALL BE FULLY AUTOMATIC AND THE EMERGENCY POWER UNIT SHALL BE CAPABLE OF PROVIDING POWER FOR TWO LED LAMPS FOR A MINIMUM OF 90 MINUTES. FEATURES SHALL INCLUDE A SEALED NICKEL CADMIUM LONG LIFE BATTERY, SOLID STATE CHARGER, AN AUTOMATIC TURN ON CIRCUIT AND TEST SWITCH TO SIMULATE EMERGENCY OPERATION. CONNECT AHEAD OF SWITCH.	120/277	LED	WALL MOUNTED 8'-0" ABOVE FINISHED FLOOR	LITHONIA MLTULED
C	WET LABEL WALL PACK	120	67W LED	WALL MOUNTED 12'-0" ABOVE GRADE	LITHONIA TWPLED30C70050KT3M 120DDBXD

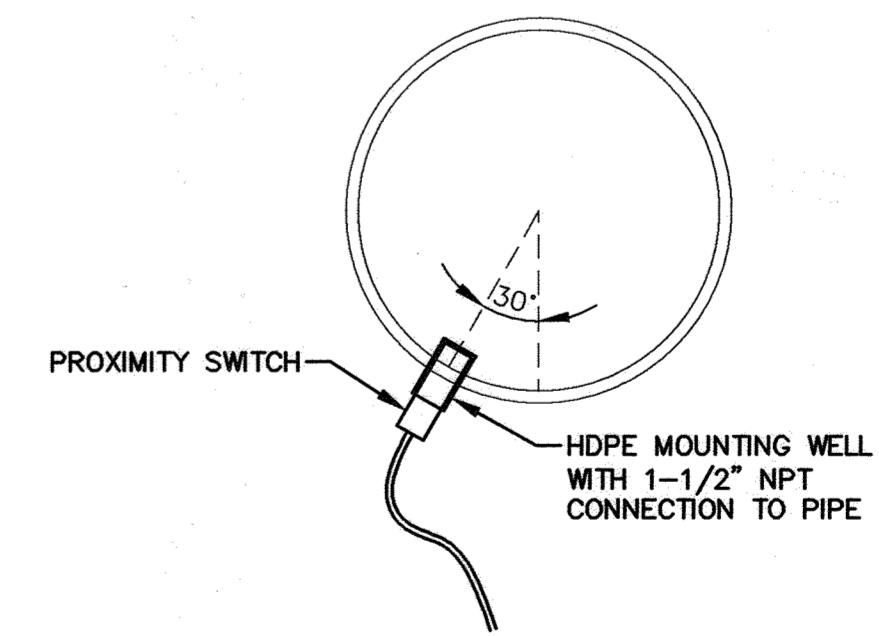
NOTE: CONTRACTOR TO VERIFY AND SUBMIT MOUNTING HEIGHTS TO ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.

MONITORING AND CONTROL WIRING SCHEDULE					
I/O SIGNAL	TYPE	FROM	TO	WIRING	REMARKS
ALTITUDE VALVE CONTROL CLOSE	DISCRETE	RTU	ALTITUDE VALVE SOLENOID	2-#14	
ALTITUDE VALVE POSITION	DISCRETE	ALTITUDE VALVE LIMIT SWITCH	RTU	2-#14	
INTRUSION ALARM	DISCRETE	INTRUSION ALARM LIMIT SWITCH	RTU	2-#14	TYPICAL OF 2
INTRUSION ALARM SILENCE	DISCRETE	INTRUSION ALARM DEACTIVATION SWITCH	RTU	2-#14	
TANK OVERFLOW	DISCRETE	OVERFLOW SWITCH	RTU	2-#14	
TANK LEVEL	ANALOG	PRESSURE TRANSMITTER	RTU	TSP	#18 TWISTED SHIELDED PAIR



- NOTES:**
- SCADA SUPPLIER SHALL ALLOW SPACE IN RTU PANEL FOR COUNTY FIBER BOX AND PROVIDE 24VDC POWER FROM RTU POWER SUPPLY. BOX IS APPROXIMATELY 7"x7"x1.5" DEEP. SCADA SUPPLIER SHALL CONFIRM ACTUAL SIZE PRIOR TO PANEL FABRICATION.
  - NOT ALL RTU COMPONENTS ARE SHOWN. REFER TO SPECIFICATIONS. OIT IS MOUNTED ON OUTSIDE OF DOOR.
  - CONTRACTOR SHALL PROVIDE ALL COORDINATION NECESSARY FOR THE INSTALLATION OF HOWARD COUNTY FIBER OPTIC COMMUNICATION SERVICE.
  - REFER TO SPECIFICATION 17500 FOR REQUIRED SYSTEM-WIDE CONTROL DESCRIPTION OF OPERATION.

PANELBOARD "A" SCHEDULE																		
VOLTAGE: 120/240V, 1PH, 3W MAIN BUS BARS AND LUGS: 125A MAIN BREAKER: 100A-2P								PANEL TYPE: SURFACE MOUNTED MIN. A.I.C. RATING: 22,000 LOCATION: TANK BASE										
LOADS SERVED	WIRE SIZE	COND	LOAD KVA		POLE	BKR TRIP	PHASE		BKR TRIP	POLE	LOAD KVA		COND	WIRE SIZE	LOADS SERVED			
			A	B			A	B			A	B						
RECEPTACLES	12	3/4"	.72		1	20	1	2	20	1	0.6		3/4"	12	LIGHTING			
HEAT TRACE	12	3/4"		.19	2	20	3	4	20	1		0.1	3/4"	12	LIGHTING			
				.19			5	6	20	1	0.2		3/4"	12	RTU			
RECEPTACLE			.18		1	20	7	8	20	1		0.0			SPARE			
SPARE			0.0		1	20	9	10	20	1	0.0				SPARE			
SPARE			0.0		1	20	11	12	20	1	0.0				SPARE			
SPACE							13	14							SPACE			
SPACE							15	16							SPACE			
SPACE							17	18							SPACE			
SPACE							19	20							SPACE			
SPACE							21	22							SPACE			
SPACE							23	24							SPACE			
											0.9	0.4		0.8	0.1			
CONNECTED KVA: 2.18																		



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HOWARD COUNTY, MARYLAND

*M. J. Roberts* 9/29/2021  
DIRECTOR OF PUBLIC WORKS

*J. A. ...* 09-28-21  
CHIEF, BUREAU OF ENGINEERING

*...* 9/29/2021  
CHIEF, BUREAU OF UTILITIES

*...* 9/29/2021  
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ELECTRICAL SCHEDULES,  
ONE-LINE DIAGRAM AND DETAILS

600' SCALE MAP NO. 48 BLOCK NO. 1

GUILFORD ELEVATED WATER TANK  
CAPITAL PROJECT NO. W8262  
CONTRACT NO. 44-5122

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET NO. 26 OF 26