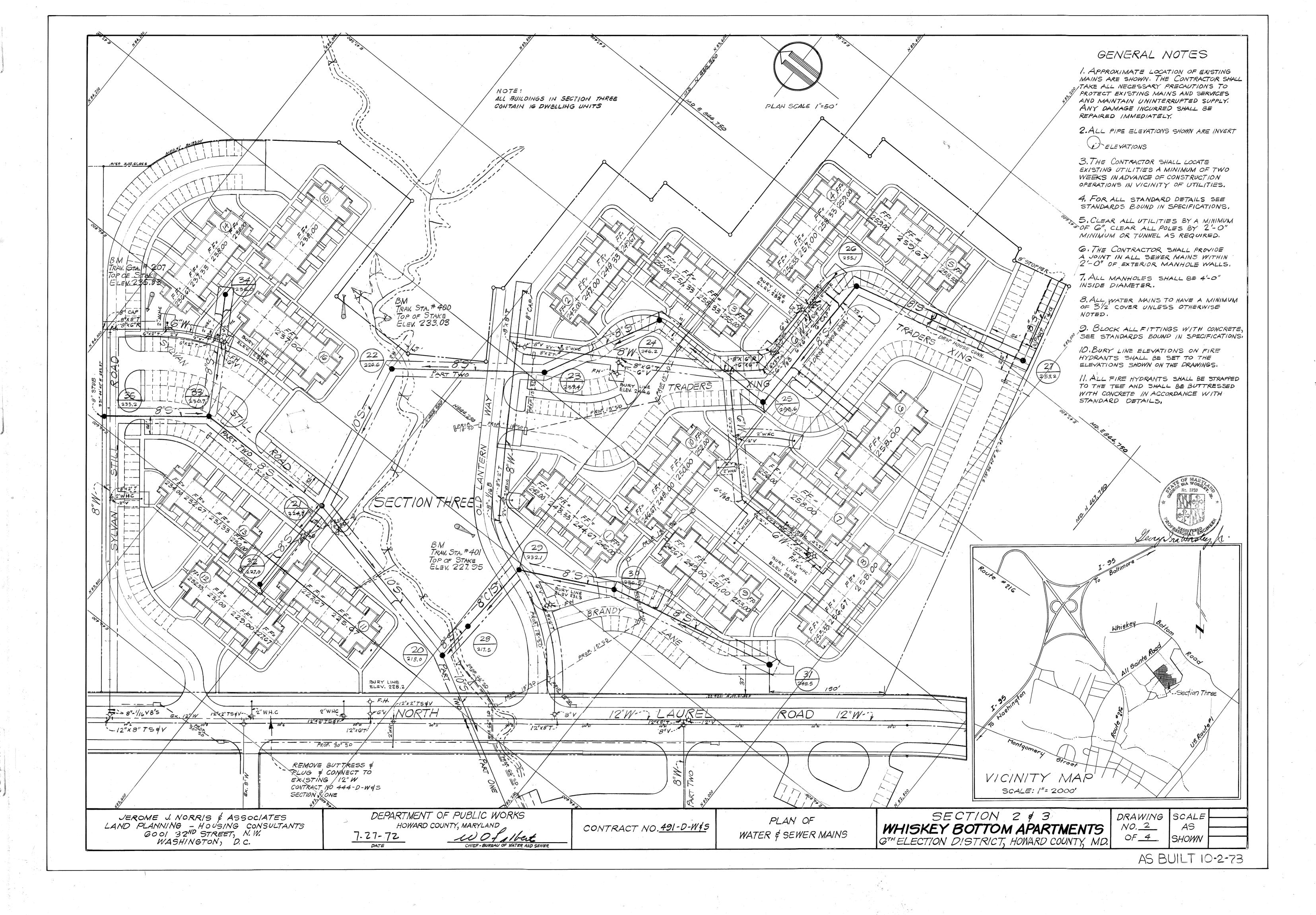
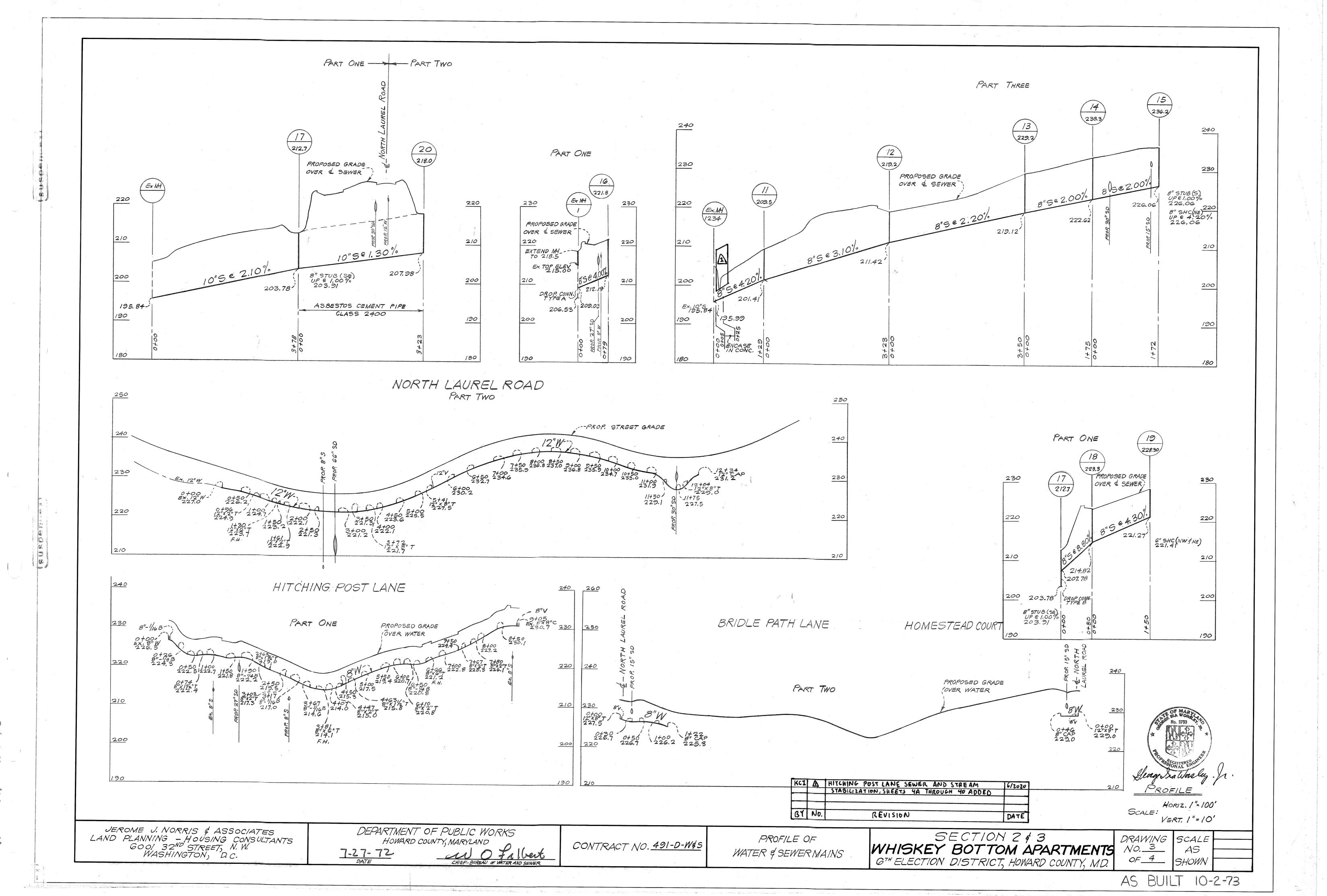
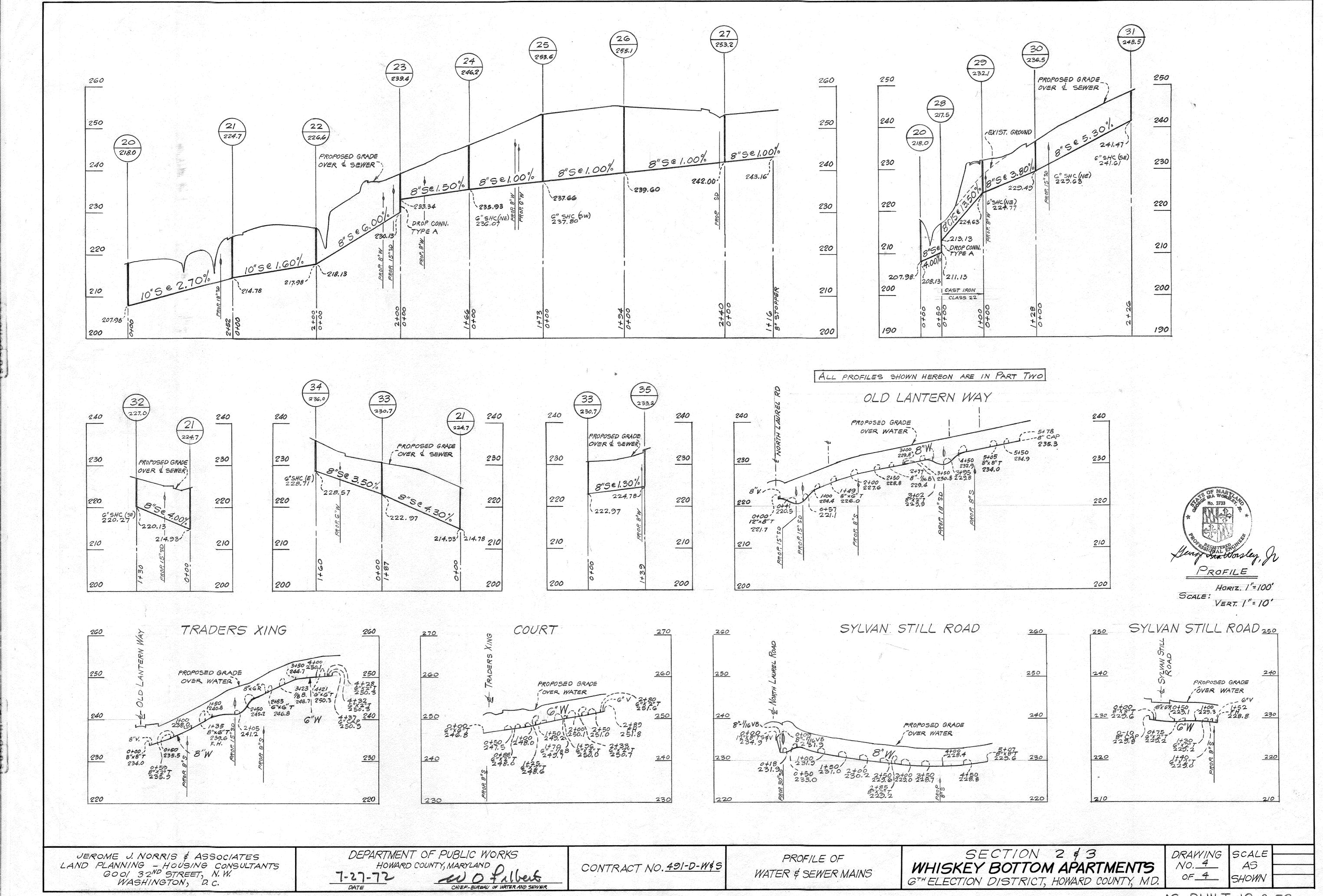
AS BUILT 10-2-73







AS BUILT 10-2-73

PURPOSE OF PROJECT

THIS PROJECT WILL INSTALL STREAM BED AND BANK STABILIZATION STRUCTURES TO ADDRESS AN EXPOSED SEWER LINE CROSSING IN A SEVERELY ERODED STREAM CHANNEL BETWEEN HITCHING POST LANE AND BRIDLE PATH LANE. THE STABILIZATION WILL BEGIN UPSTREAM OF AND CONTINUE OVER THE EXPOSED SEWER, AND TIE INTO THE EXISTING CHANNEL GRADE AT A RELATIVELY STABLE LOCATION.

NO IMPROVEMENTS TO THE REACH DRAINAGE AREA ARE PROPOSED, THEREFORE WATER QUALITY VOLUME REQUIREMENTS ARE NOT APPLICABLE. NO IMPERVIOUS AREA WITHIN THE SITE TO BE ALTERED, THEREFORE, IMPLEMENTATION OF ESD PRACTICES IS NOT APPLICABLE. COMPREHENSIVE EROSION AND SEDIMENT CONTROL WILL BE REQUIRED FOR THE DURATION OF THE PROJECT. WATER HANDLING MEASURES WILL INVOLVE DIVERTING BASEFLOW AROUND THE WORK AREA USING A COMBINATION OF SANDBAG DIKES AND PUMP-AROUND PRACTICES TO A FILTER BAG. PERIMETER CONTROLS WILL BE INSTALLED DIRECTLY DOWNSTREAM OF STAGING AND STOCKPILE AREAS AND CONSTRUCTION ACCESS ROADS. ACCESS WILL BE VIA A STABILIZED CONSTRUCTION ENTRANCE FROM THE ADJACENT CONDOMINIUM COMPLEX PARKING LOT.

GENERAL NOTES

- 1. APPROXIMATE LOCATIONS OF EXISTING MAINS ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING MAINS AND SERVICES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
- 2. THE EXISTING TOPOGRAPHY IS FROM FIELD RUN SURVEY WITH ONE FOOT CONTOUR INTERVALS PREPARED BY KCI TECHNOLOGIES, INC., ON JULY 12 THROUGH JULY 19, AND JULY 31, 2018.
- 3. HORIZONTAL AND VERTICAL SURVEY CONTROLS:
 THE COORDINATES SHOWN ON THE DRAWINGS ARE BASED ON MARYLAND STATE REFERENCE SYSTEM NAD 83/ 2011 AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL. HOWARD COUNTY MONUMENT NUMBERS 47GC, 47H2, & 47HG WERE USED FOR THIS SITE. ALL VERTICAL CONTROLS ARE BASED ON NAVD 88.
- 4. ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS UNLESS OTHERWISE NOTED ON THE PLANS.
- 5. CLEAR ALL UTILITIES BY A MINIMUM OF 12 INCHES. CLEAR ALL POLES BY 5 -0 MINIMUM OR TUNNEL AS REQUIRED UNLESS OTHERWISE NOTED. THE OWNER HAS CONTACTED THE UTILITY COMPANIES AND HAS MADE ARRANGEMENTS FOR BRACING OF POLES AS SHOWN ON THE DRAWINGS. IN THE EVENT THE CONTRACTOR S WORK REQUIRES THE BRACING OF ADDITIONAL POLES, ANY COST INCURRED BY THE OWNER FOR THE BRACING OF ADDITIONAL POLES OR DAMAGES SHALL BE DEDUCTED FROM MONIES OWED THE CONTRACTOR. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES TO SCHEDULE THE BRACING OF THE POLES.
- 6. FOR DETAILS NOT SHOWN ON THE DRAWING, 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.
- 7. WHERE TEST PITS HAVE BEEN MADE ON EXISTING UTILITIES, THEY ARE NOTED BY THE SYMBOL AT THE LOCATIONS OF THE TEST PITS. A NOTE OR NOTES CONTAINING THE RESULTS OF THE TEST PIT OR PITS ARE 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.
- 8. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES OR AGENCIES AT LEAST FIVE WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:

AT&T	1-800-252-1133
BGE (CONSTRUCTION SERVICES)	
BGE (EMERGENCY)	410-685-0123
BUREAU OF UTILITIES	
COLONIAL PIPELINE CO	
MISS UTILITY	
STATE HIGHWAY ADMINISTRATION	
VERIZON	1-800-743-00

- 9. 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.
- 10. THE CONTRACTOR SHALL REMOVE TREES, STUMPS AND ROOTS ALONG THE LINE OF EXCAVATION. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONSTRUCTION OF THE MAIN.
- 11. THE CONTRACTOR SHALL NOTIFY THE BUREAU OF HIGHWAYS, HOWARD COUNTY, AT (410)-313-7450 AT LEAST FIVE WORKING DAYS BEFORE OPEN CUTTING OR BORING/JACKING OF ANY COUNTY ROAD FOR LAYING WATER/SEWER MAINS OR HOUSE CONNECTIONS. THE APPROVAL OF THESE DRAWINGS WILL CONSTITUTE COMPLIANCE WITH DPW REQUIREMENTS PER SECTION 18.114(A) OF THE HOWARD COUNTY CODE.

SEWER GENERAL NOTES

- 1. ALL SEWER MAINS SHALL BE D.I.P. OR P.V.C. UNLESS OTHERWISE NOTED.
- 2. ALL MANHOLES SHALL BE 4'-0" INSIDE DIAMETER UNLESS OTHERWISE NOTED.
- 3. FORCE MAINS SHALL BE D.I.P. ONLY.
- 4. MANHOLES SHOWN WITH 12" AND 16" WALLS ARE FOR BRICK MANHOLES ONLY.
- 5. MANHOLES DESIGNATED W.T. IN PLAN AND PROFILE SHALL HAVE WATERTIGHT FRAME AND COVER, STANDARD DETAIL G5.52. WHERE WATERTIGHT MANHOLE FRAMES AND COVERS ARE USED, SET TOP OF FRAME 1'-6" ABOVE FINISHED GRADE UNLESS OTHERWISE NOTED ON THE DRAWINGS.
- 6. HOUSE(S) WITH THE SYMBOL "C.N.S." INDICATES THAT THE CELLAR CANNOT BE SERVED.

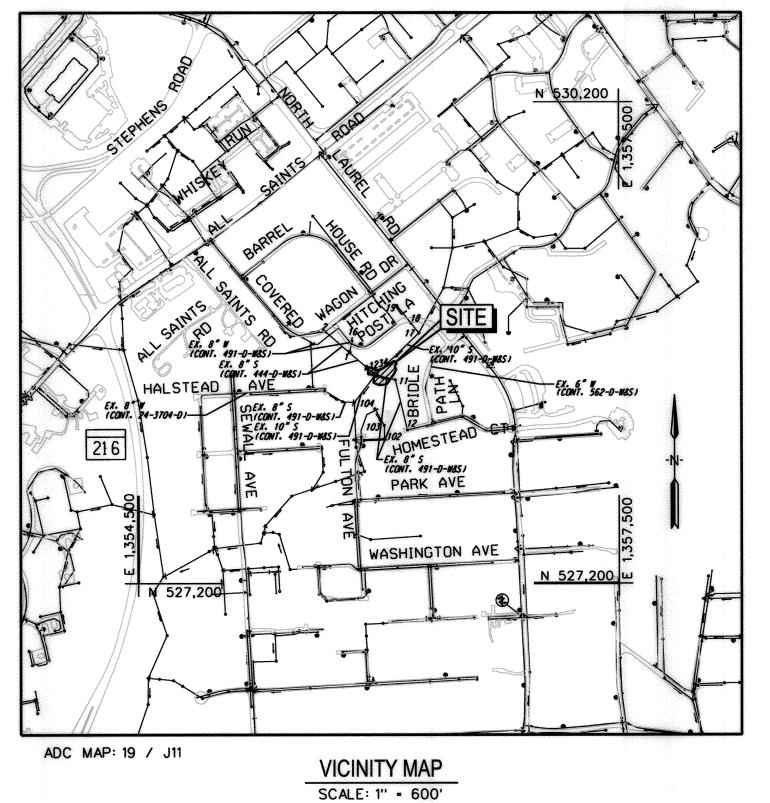
		QUANTITIES		
ITEM	ESTIMATED	COUANTITIES	AS-BUILT TYPE	SUPPLIER
8" SEWER	24 L.F.	24'	D.I.P.	

606906

STABILIZATION HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS CAPITAL PROJECT S6268 CONTRACT NO. 0491–D

HITCHING POST LANE

SEWER AND STREAM



TYPE OF BUILDING: N/A NUMBER OF PARCELS: N/A NUMBER OF SEWER HOUSE CONNECTIONS: N/A

HORIZONTAL: NAD 1983 VERTICAL: NAVD 1988

DRAINAGE AREA: MIDDLE PATUXENT TREATMENT PLANT: LITTLE PATUXENT

THE HORIZONTAL AND VERTICAL DATUM SHOWN HEREON ARE BASED ON THE FOLLOWING HOWARD COUNTY SURVEY CONTROL SYSTEM:

HOWARD	COUNTY	SURVEY C	ONTROL
DESIGNATION	NORTHING	EASTING	ELEVATION
47HG	531085.007	1357060.425	294.55
47GC	528939.703	1354223.637	226.31
47H2	529706.408	1355445.416	256.09
	E		

DESIGN INFORMATION				
WATERSHED ID	021311040940			
IMPERVIOUS AREA (AC)	60.3			
IMPERVIOUS TREATED (AC)	0.00*			
DRAINAGE AREA (AC)	96			
WATER QUALITY VOLUME (CF)	0.00*			
% TREATED	0.00*			

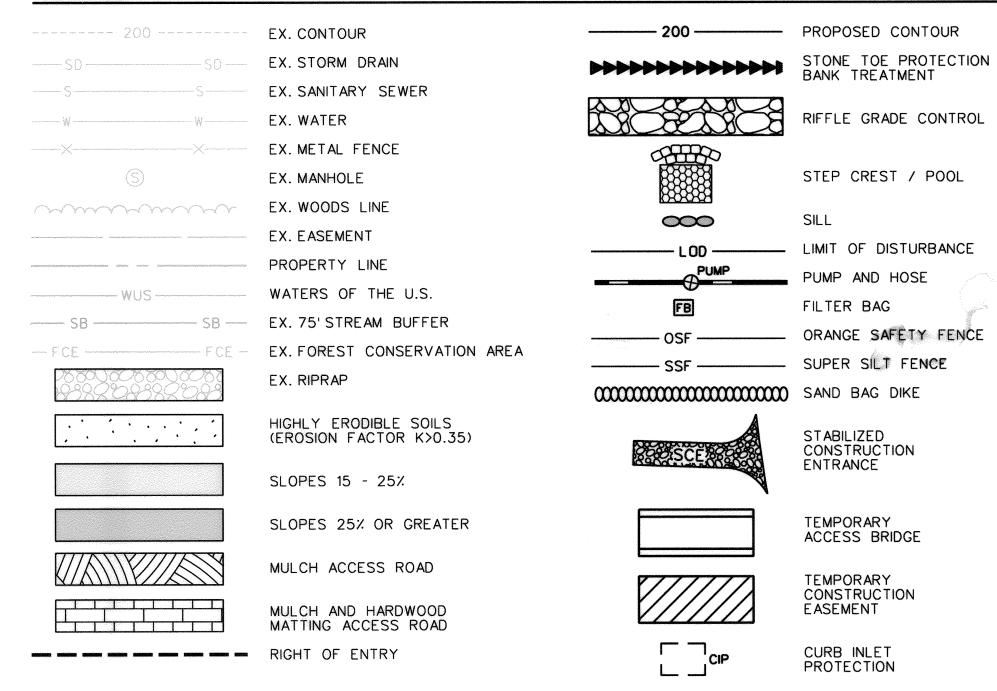
SITE ANALYSIS DATA				
SITE AREA (AC)	0.33			
WETLAND AREA (AC)	0.00			
WETLAND BUFFER (AC)	0.00			
FLOODPLAIN AREA (AC)	0.00			
FOREST LIMITS (AC)	0.00			
STEEP SLOPE AREA >15% (AC)	0.13			
ERODIBLE SOILS (AC)	0.00			
LIMIT OF DISTURBANCE (AC)	0.33			
PROPOSED SITE USE	SEWER AND STREAM STABILIZATION			
PROPOSED IMPERVIOUS AREA (AC)	0.00			

SHEET INDEX

DWG. NO. SHEET NO. SHEET TITLE

TI-01	4 A	TITLE SHEET
ER-01	4B	ENVIRONMENTAL RESOURCES MAP
GS-01	4°C	GEOMETRY PLAN
GR-01	4D	GRADING PLAN
DE-01 - DE03	4E-4G	STREAM DETAILS
PR-01	4H	PROFILE
ES-01	41	EROSION & SEDIMENT CONTROL PLAN
ESD-01 - ESD-02	4J-4K	EROSION & SEDIMENT CONTROL DETAILS
ESN-01 - ESN-02	4L-4M	EROSION & SEDIMENT CONTROL NOTES
LS-01	4N	LANDSCAPE PLAN
LD-01	40	LANDSCAPE DETAILS

LEGEND



OWNER'S/DEVELOPER'S CERTIFICATION

"I/WE CERTIFY THAT ALL 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 OF EROSION AND SEDIMENT PRIOR TO THE BEGINNING OF THE PROJECT, I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE."

OWNERS / DEVELOPERS SIGNATURE

PRINTED NAME & TITLE

2020-6-

DESIGN CERTIFICATION

"I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED THE 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 AWAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

DESIGNERS SIGNATUR

MD REGISTRATION NO. 33079

(P.E.), R.L.S. OR R.L.A. (CIRCLE ONE)

SILVER CHAI PROJECT MANAGER

HOWARD SOIL CONSERVATION DISTRICT CERTIFICATION

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



"Thereby certify, by my seal, that to the best of my knowledge and belief the features shown on this plan

were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and Specifications."

SHANNON LUCAS Designer/Consultant (print name) Seal & Signature

License Number

33079



HITCHING POST LANE SEWER AND STREAM STABILIZATION

> **CAPITAL PROJECT S6268** CONTRACT No. 0491-D

HOWARD COUNTY, MARYLAND 44 OF 15

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

PERMIT INFORMATION CHART

PUBLIC

CHIEF, BUREAU OF ENGINEERING

HOWARD COUNTY

410-313-6444

COLUMBIA, MD 21046

DEPARTMENT OF PUBLIC WORKS

7125 RIVERWOOD DRIVE, SUITE B



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

* SEE DESIGN NARRATIVE THIS SHEET

of the State Of Maryland, License No. 33079 , Expiration Date 01-16-2021 DES: SC DRN: CD, JS 2020 BY NO. REVISION

DATE 600' SCALE MAP NO. 47, 50 BLOCK NO. 3, 21

ADDENDUM

TITLE SHEET

ELECTION DISTRICT NO. 6

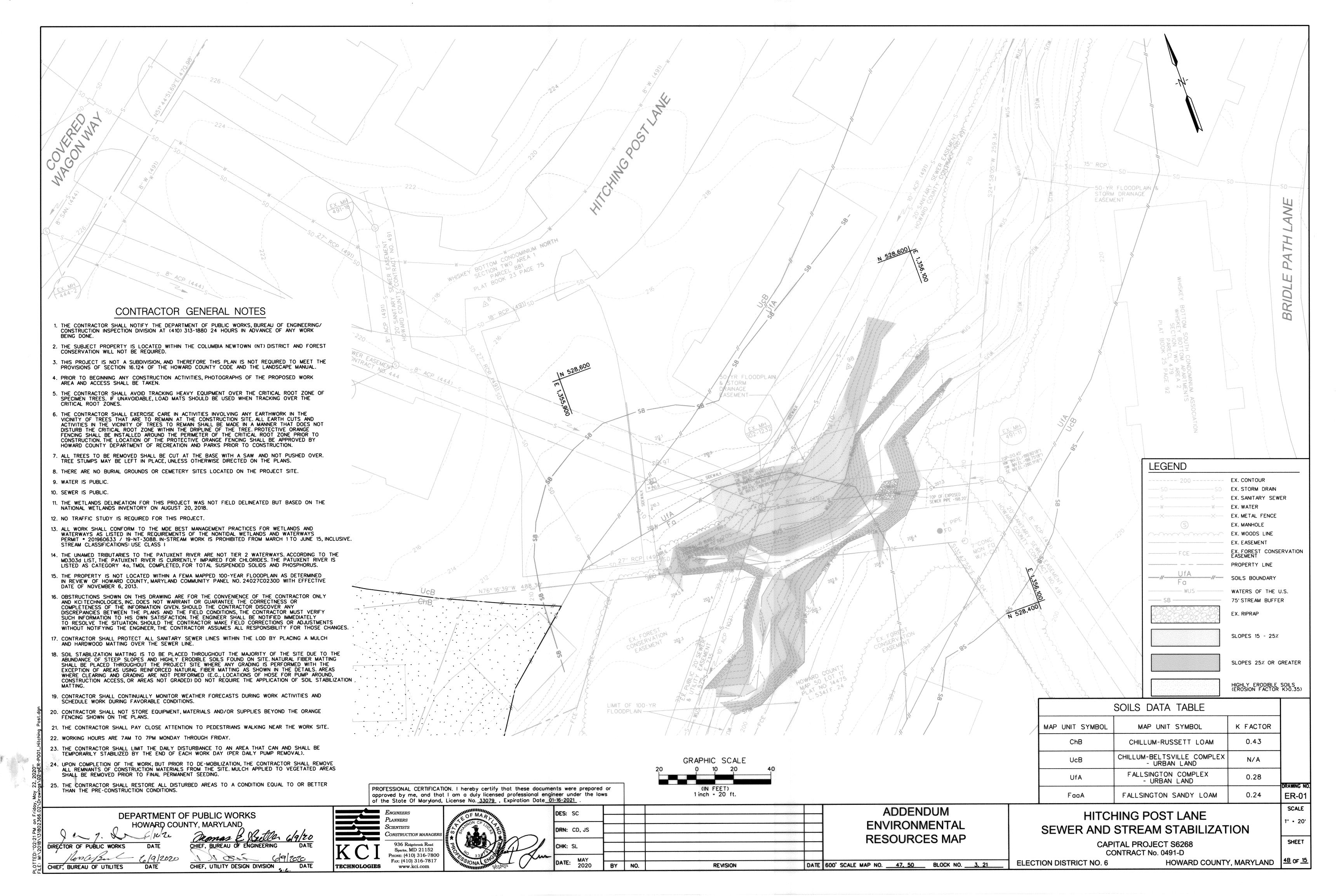
SHEET

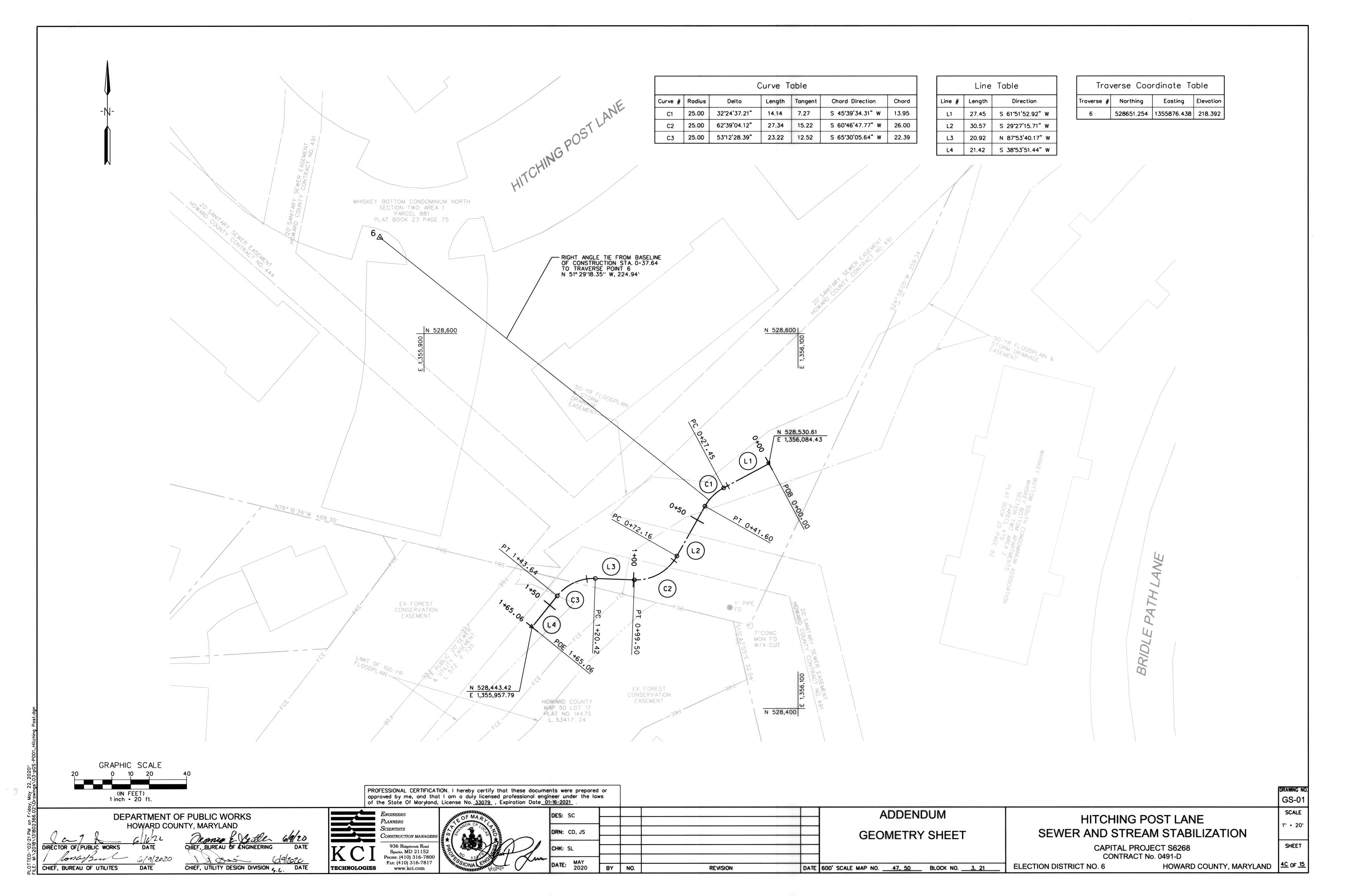
TI-01

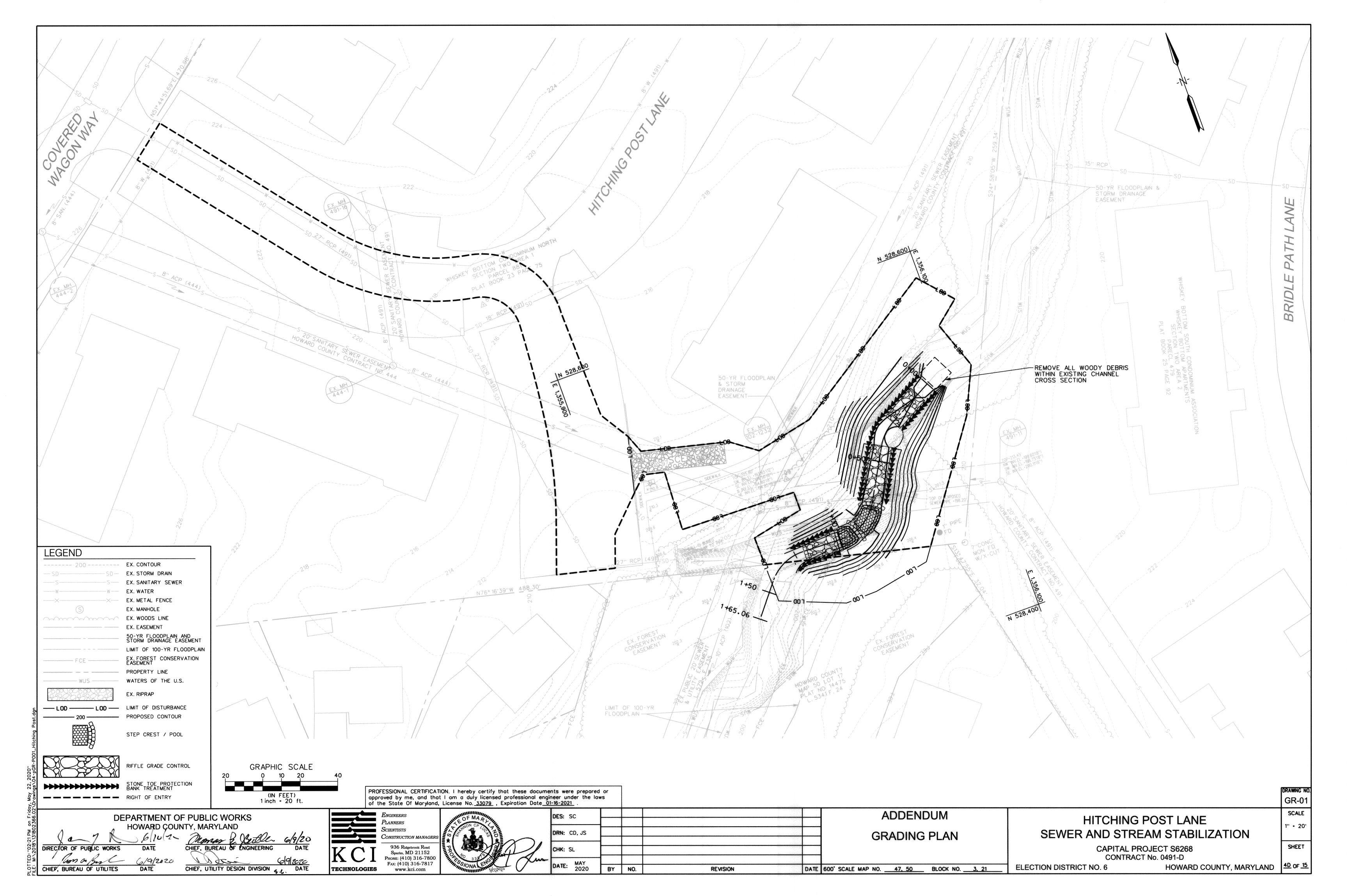
SCALE

AS SHOWN

CONSTRUCTION MANAGER 936 Ridgebrook Road Sparks, MD 21152 PHONE: (410) 316-7800 Fax: (410) 316-7817 CHIEF, UTILITY DESIGN DIVISION TECHNOLOGIES







TYPICAL POOL LEFT CROSS SECTION NOT TO SCALE

TYPICAL POOL								
PROFILE FEATURE	Α	В	С	D	E	F	G	Н
POOL STA. 0+27.45 TO 0+41.60	2.5′	1.5′	2.5′	1.0′	8.5′	1.0′	1.0′	0.8′

CROSS SECTION DESIGN PARAMETERS AT Q10										
Q ₄₀ d _{10 MAX} STONE SIZE VE				VELO	CITY (fps)	SHEAR (lb/ft')				
LOCATION	FEATURE	TREATMENT	Q ₁₀ (cfs)	DEPTH (ft)	D ₅₀ (inches)	CLASS	MAXIMUM DESIGN	PERMISSIBLE	MAXIMUM DESIGN	PERMISSIBLE
STA. 0+10 to 0+27, & 0+42 to 0+72 & 1+08 TO 1+20	RIFFLE	RGC	260	2.8	16	CLASS II	8.5	12-16	3.1	7.0
STA. 0+74 TO 0+89 & 0+91 TO 1+06	STEP POOL	POOL PAVEMENT	260	3.5	16	CLASS II	7.8	12-16	3.1	7.0

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NOTE: POOL MATERIAL SHALL BE SALVAGED WHEN POSSIBLE. ONLY FURNISH POOL MATERIAL WHEN SALVAGED IS NOT AVAILABLE. MATERIAL SHALL NOT BE COMPRISED OF RIPRAP BUT OF A NATURAL STREAM MATERIAL. POOL MATERIAL SHALL BE PLACED IN ALL POOLS FROM THE UPSTREAM TO DOWNSTREAM EXTENTS AS SHOWN ON THE PROFILE SHEETS.

RIFFLE GRADE CONTROL, STEP POOL PAVEMENT MATERIAL				
% LESS THAN	DIAMETER (IN.)			
100	20.0			
84	19.0			
60	17.0			
50	16.0			
30	13.8			
10	8.0			

NOTE: RIFFLE GRADE CONTROL MATERIAL SHALL BE SALVAGED WHEN POSSIBLE. ONLY FURNISH RIFFLE GRADE CONTROL MATERIAL WHEN SALVAGED IS NOT AVAILABLE. MATERIAL CAN BE COMPRISED OF CLASS II RIPRAP WELL MIXED TO CONFORM TO THE SPECIFIED GRADATION.

SIZES FOR STONE TYPES					
AXIS	A (LONGEST)	B (INTERMEDIATE)	C (SHORTEST)		
STONE TYPE	MAX.	RANGE	MIN.		
CREST AND FOOTER STONES	3.0'	1.5'- 2.5'	1.5′		
STONE TOE PROTECTION (SELECT CLASS II RIPRAP)	2.0'	1.2'- 1.5'	1.0′		

* CREST AND FOOTER STONES SHALL BE BLOCKY IN SHAPE.
ALL STONES SHALL BE GREY OR BROWN IN COLOR.

A = LONGEST AXIS (LENGTH)

B = INTERMEDIATE AXIS (WIDTH)

C = SHORTEST AXIS (THICKNESS)

ROCK AXIS DEFINITION

NOT TO SCALE

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF ENGINEERING DATE Con a Bent 6/9/2020 CHIEF, UTILITY DESIGN DIVISION & ... DATE CHIEF, BUREAU OF UTILITES

TECHNOLOGIES

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. 33079, Expiration Date 01-16-2021. 936 Ridgebrook Road Sparks, MD 21152 PHONE: (410) 316-7800 Fax: (410) 316-7817

www.kci.com



	DATE: MAY 2020	BY	NO.	REVISION
-	MAY	1		
	CHK: SL			
- 1				
- 2	DRN: CD, JS			
	DES: SC			

ADDENDUM DETAILS

DATE 600' SCALE MAP NO. 47, 50 BLOCK NO. 3, 21

HITCHING POST LANE SEWER AND STREAM STABILIZATION

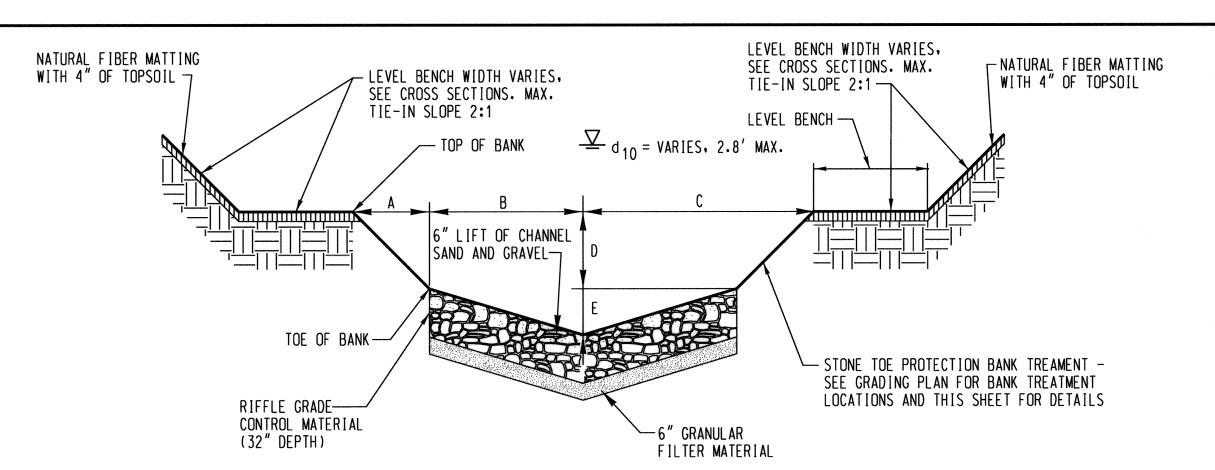
CAPITAL PROJECT S6268 CONTRACT No. 0491-D

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

AS SHOWN SHEET

DE-01

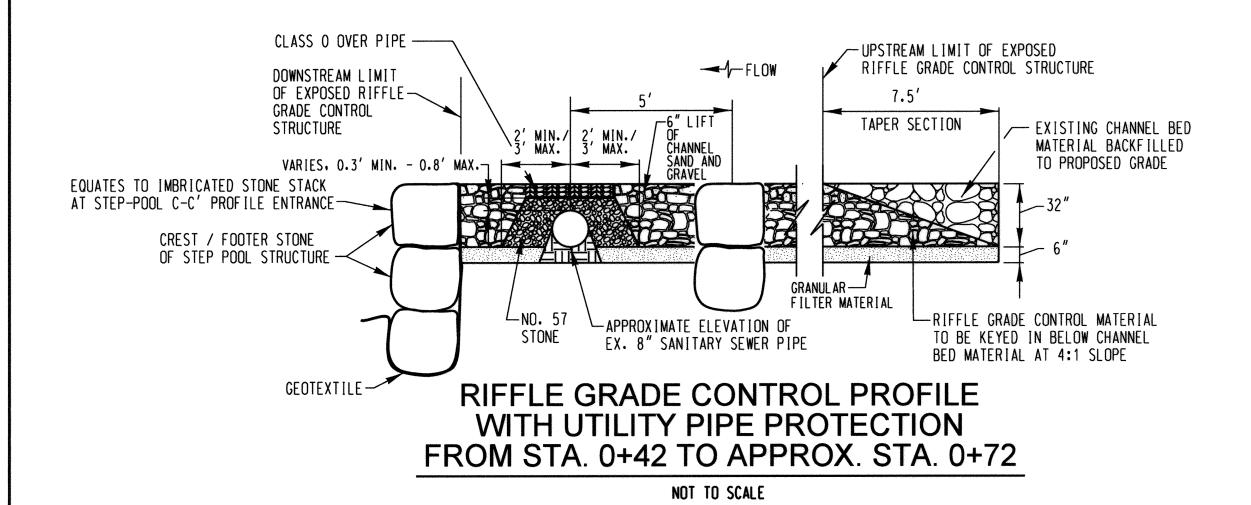
SCALE

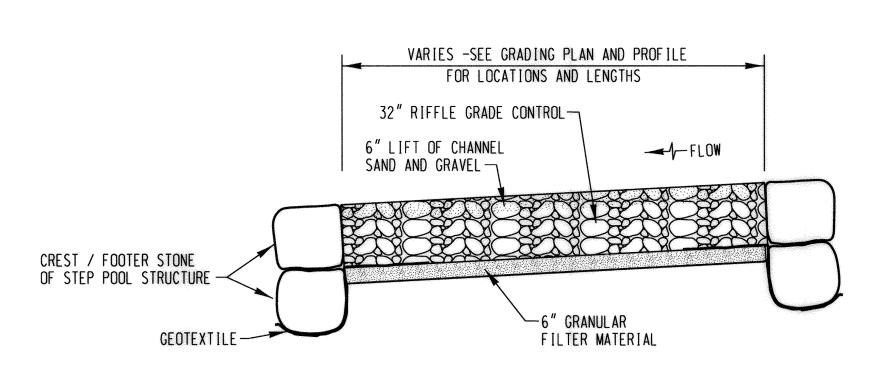


RIFFLE GRADE CONTROL CROSS SECTION

NOT TO SCALE

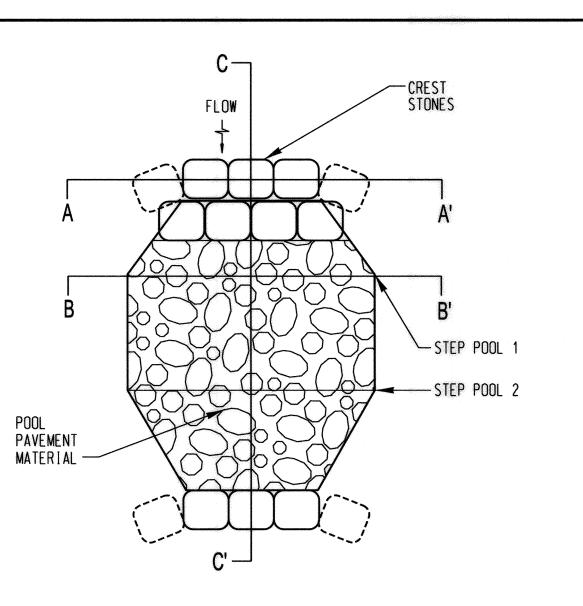
RIFFLE GRADE CO	NTROL	CROSS	S SECT	ION	
PROFILE FEATURE	A	В	С	D	E
RIFFLE GRADE CONTROL	2.5′	4.0'	6.5′	1.0′	0.3′





TYPICAL RIFFLE GRADE CONTROL PROFILE FROM APPROX. STA. 1+08 TO APPROX. STA. 1+20

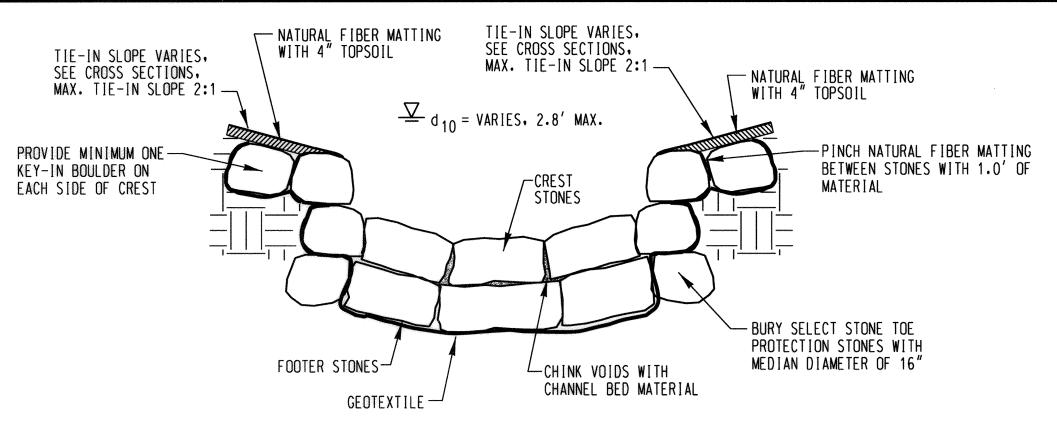
NOT TO SCALE



TYPICAL PLAN VIEW OF STEP-POOL

NOT TO SCALE

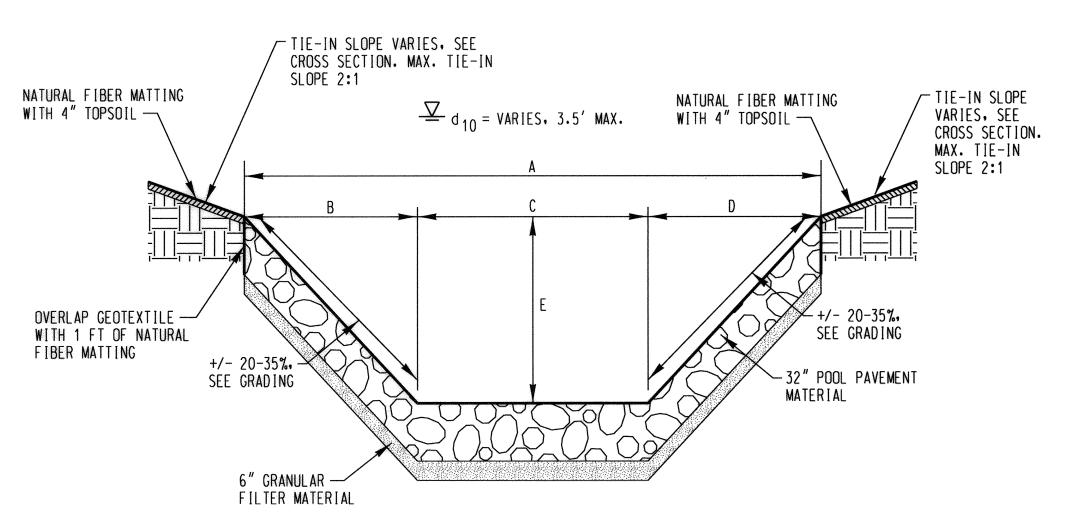
S	TEP-PC	OL			
PROFILE FEATURE	Α	В	С	D	E
STEP-POOL 1 STA. 0+77 AND STA. 0+92	13.0′	3.5′	6.0′	3.5′	3.3′
STEP-POOL 2 STA. 0+81 AND STA. 0+96	13.0′	3.5′	6.0′	3.5′	3.1′



STEP-POOL CREST A-A' STA. 0+72, 0+89 AND 1+06

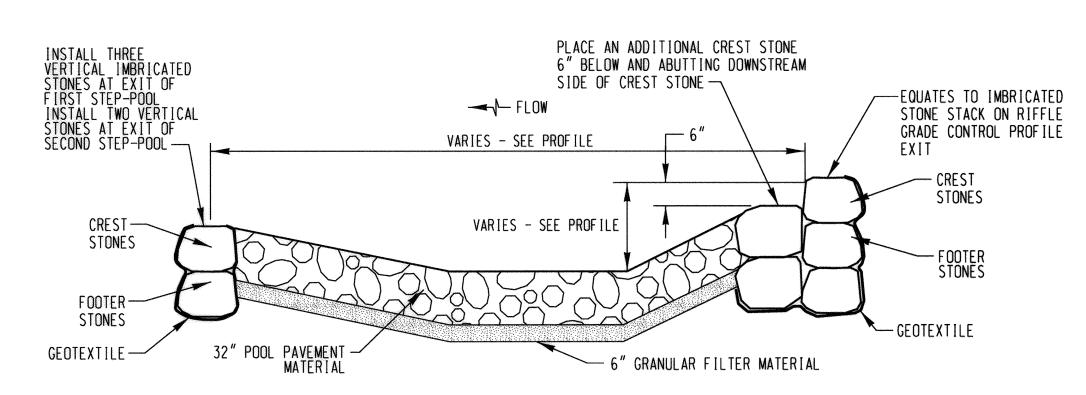
NOT TO SCALE

NOTE: FOR CROSS SECTION DIMENSIONS SEE RIFFLE GRADE CONTROL CROSS SECTION DETAIL THIS SHEET



STEP-POOL B-B' STA. 0+77 AND 0+94

NOT TO SCALE



STEP-POOL C-C' PROFILE NOT TO SCALE

GRADE CONTROL VARIES -SEE GRADING PLAN AND PROFILE -UPSTREAM LIMIT OF EXPOSED STRUCTURE — FOR LOCATIONS AND LENGTHS RIFFLE GRADE CONTROL STRUCTURE CHANNEL BED MAT BACKFILLED TO PROPOSED GRADE TAPER SECTION TAPER SECTION -GRANULAR FILTER MATERIAL RIFFLE GRADE CONTROL MATERIAL TO BE KEYED IN BELOW CHANNEL BED MATERIAL AT 4:1 SLOPE RIFFLE GRADE CONTROL MATERIAL TO BE KEYED IN BELOW CHANNEL BED MATERIAL AT 4:1 SLOPE -

→ FLOW

TYPICAL RIFFLE GRADE CONTROL PROFILE FROM STA. 0+10 TO STA. 0+27

NOT TO SCALE

1. ALL RIFFLE GRADE CONTROL STRUCTURES SHALL BE CONSTRUCTED FROM DOWNSTREAM TO UPSTREAM. 2. THE RIFFLE GRADE CONTROL MATERIAL SHALL BE PLACED TO ITS FULL DEPTH MOVING FROM ONE BANK TO THE OPPOSING BANK. 3. DO NOT EXCAVATE EXISTING SOIL BENEATH OR ON EITHER SIDE OF EXISTING UTILITY PIPE IF THE SOIL IS IN PLACE AND STABLE.

DOWNSTREAM LIMIT

OF EXPOSED RIFFLE

VOIDS NEAR UTILITY PIPE TO BE FILLED WITH NO. 57 STONE.

4. WHERE THE FINAL COVER OVER THE EXISTING UTILITY PIPE IS LESS THAN 1.0 FOOT THE FOLLOWING SPECIFICATIONS MUST BE MET: A. NO LESS THAN 0.3' FEET OF NO. 57 STONE SHALL COVER THE UTILITY PIPE AND THE REMAINING MATERIAL REQUIRED TO MEE THE PROPOSED GRADE SHALL CONSIST OF CLASS O RIPRAP.

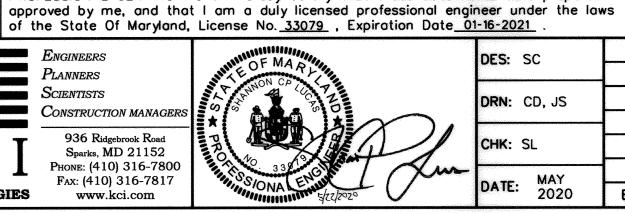
5. ANY DAMAGES TO THE EXISTING UTILITY PIPES WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. ALL FINES AND VIOLATIONS DUE TO PIPE DAMAGES AND/OR MATERIAL FLOW STOPPAGES WILL BE THE CONTRACTOR'S SOLE RESPONSIBILITY AND WILL BE PAID BY THE CONTRACTOR.

6. THE UTILITY PIPE PROTECTION INSTALLATION AT THE PIPE CROSSING MUST BE COORDINATED WITH THE COUNTY DPW REPRESENTATIVE AND THE ENGINEER AT THE TIME OF THE INSTALLATION.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND DIRECTOR OF PUBLIC WORKS DATE CHIEF, BUREAU OF ENGINEERING

CHIEF, UTILITY DESIGN DIVISION G.C. DATE





PROFESSIONAL CERTIFICATION. I hereby certify that these documents were prepared or

CHK: SL	
// law a	
DRN: CD, JS	
DES: SC	

ADDENDUM DETAILS

BLOCK NO. ____3, 21

DATE 600' SCALE MAP NO. ____47, 50___

HITCHING POST LANE SEWER AND STREAM STABILIZATION

CAPITAL PROJECT S6268 CONTRACT No. 0491-D HOWARD COUNTY, MARYLAND **ELECTION DISTRICT NO. 6**

SHEET

DRAWING NO.

DE-02

SCALE

AS SHOWN

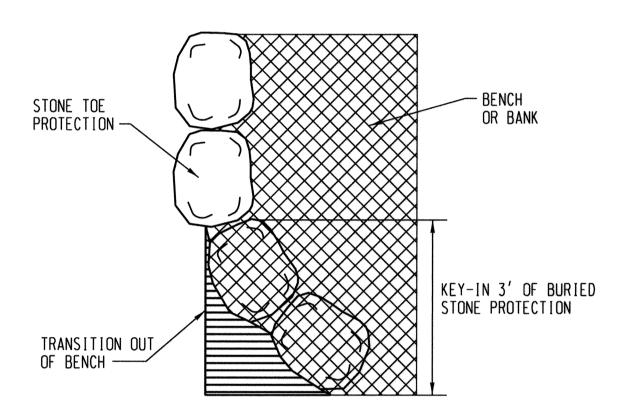
CHIEF, BUREAU OF UTILITES

TYPICAL STONE TOE PROTECTION CROSS SECTION

NOT TO SCALE

1. STONE TOE PROTECTION SHALL BE STACKED IN POOLS AND AS SIDE SLOPES PERMIT. DUMPED STONE TOE PROTECTION MAY BE ALLOWED IN RIFFLES WITH SIDE SLOPES OF 2:1 OR LESS.

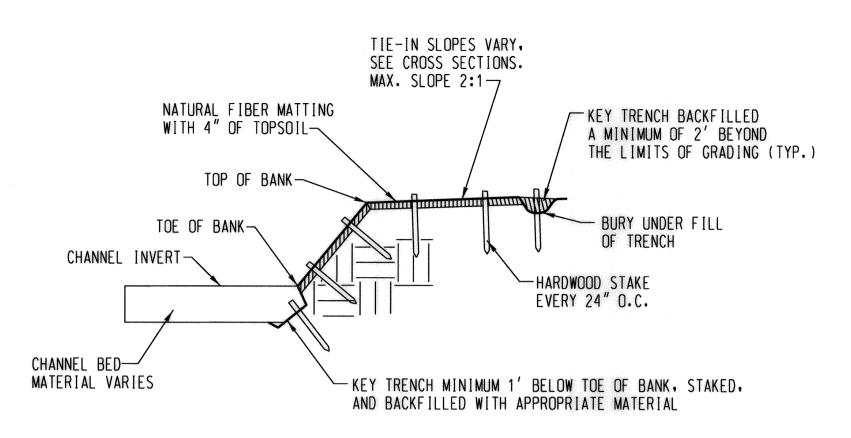
2. KEY-IN STONES SHOULD ALSO BE ADDED TO STONE TOE PROTECTION AT ANY LOCATION WHERE NO OTHER BANK PROTECTION IS ABUTTING THE TREATMENT. 3 FEET OF KEY-IN STONE SHOULD BE USED AND TAPER BACK AND DOWN INTO THE BANK. ONE LESS STONE SHOULD BE USED WITH EACH TAPER STONE. SEE DETAIL THIS SHEET.



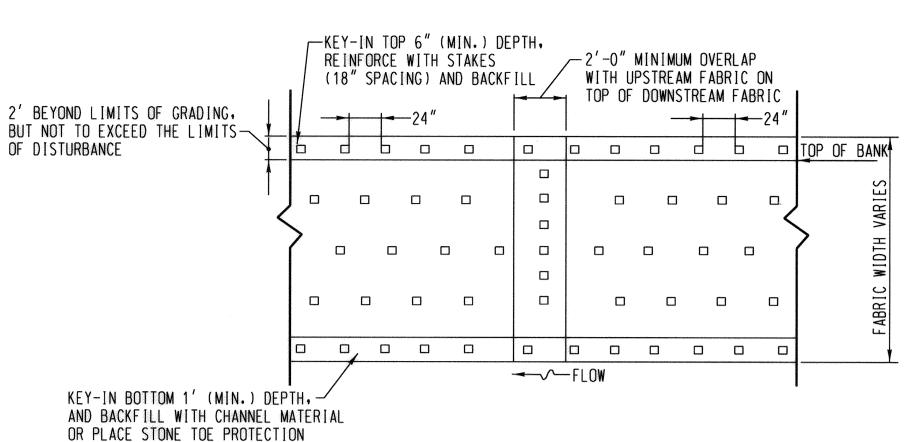
STONE TOE PROTECTION KEY-IN

NOT TO SCALE

KEY-IN SHALL BE APPLIED AT UP AND DOWNSTREAM EXTENTS WHEN NO OTHER BANK TREATMENT IS PRESCRIBED. STONE TOE PROTECTION KEY IN ELEVATION SHALL BE TAPERED DOWN WITH GRADE WHEN NO OTHER BANK TREATMENT IS PRESCRIBED.



NATURAL FIBER MATTING CROSS SECTION NOT TO SCALE



TYPICAL PLAN VIEW NATURAL FIBER MATTING AND REINFORCED NATURAL FIBER MATTING

NOT TO SCALE

NOTES FOR NATURAL AND REINFORCED NATURAL FIBER MATTING:

- 1. NATURAL FIBER MATTING TO BE ROLLED LENGTHWISE ALONG STREAMBANK EXTENDING FROM UNDER THE BANK PROTECTION STRUCTURE MATERIAL(S) TO A MINIMUM OF TWO FEET PAST THE LIMITS OF GRADING. IF MORE THAN ONE ROLL IS REQUIRED, MID-BANK OVERLAP SHOULD BE A MINIMUM OF ONE FOOT AND SECURELY FASTENED WITH STAKES. AT ANY TRANSITION BETWEEN NATURAL FIBER MATTING AND REINFORCED NATURAL FIBER MATTING, MATTING SHOULD BE OVERLAPPED A MINIMUM OF ONE FOOT AND SECURELY FASTENED WITH STAKES.
- 2. NATURAL FIBER MATTING IS TO BE INSTALLED ON ALL GRADED SLOPES LESS THAN 2H:1V. HIGHLY ERODIBLE SOILS (SEE SHEET 2), AND WETLAND AREAS.
- 3. NATURAL FIBER MATTING, MATTING SHALL CONSIST OF A MACHINE PRODUCED MAT OF DEGRADABLE NATURAL FIBERS AND SHALL MEET THE FOLLOWING MINIMUM SPECIFICATIONS:

MATERIAL: WOVEN COIR FIBER YARN OR TWINE THICKNESS: 0.25 IN. ELONGATION (DRY/WET): 29%/35% WEIGHT: 20 OZ/SY OPEN AREA: 50% SIZE: 6 FT. WIDE X 150 FT IN LENGTH (100 SY PER ROLL) SHEAR STRESS: 3.0 PSF FLOW VELOCITY: 8 FT./SEC.

LIFE EXPECTANCY: 3 YEARS

4. REINFORCED NATURAL FIBER MATTING. MATTING SHALL CONSIST OF A MACHINE PRODUCED MAT OF DOUBLE-LAYERED BIODEGRADABLE FABRIC: A BOTTOM LAYER OF JUTE FABRIC AND A TOP LAYER OF HIGH STRENGTH COIR MATTING, CONNECTED TOGETHER. REINFORCED NATURAL FIBER MATTING SHALL MEET THE FOLLOWING MINIMUM SPECIFICATIONS:

MATERIALS: WOVEN COIR FIBER (TOP LAYER) AND JUTE FABRIC (BOTTOM LAYER) THICKNESS: 0.35 IN. ELONGATION (DRY/WET): 30%/26% (TOP LAYER) AND 8%/9% (BOTTOM LAYER) WEIGHT: 33.3 OZ/SY SHEAR STRESS: 4.5 PSF FLOW VELOCITY: 12 FT/SEC PERMEABILITY: 1.03 IN/SEC

- 5. REINFORCED NATURAL FIBER MATTING SHOULD BE PLACED AS DESCRIBED ABOVE AND AS SHOWN ON THE LANDSCAPE PLAN SHEET (ALL SLOPES EXCEEDING 2H:1V).
- 6. MATTING STAKES. STAKES FOR SECURING THE MATTING ALONG OTHER PORTIONS OF THE MATTING MATERIAL ABOVE THE TOE TRENCH AND FOR THE KEY-IN TRENCH AT THE TOP OF THE SLOPE SHALL CONSIST OF 1-1/2" X 1-1/2" HARDWOOD STAKES. 18-INCHES IN LENGTH, TAPERED AT THE BOTTOM END FOR EASY INSERTION INTO THE SOIL AND FLAT AT THE TOP END FOR HAMMERING.

SHEAR STRESS: 4.5 PSF FLOW VELOCITY: 12 FT./SEC.

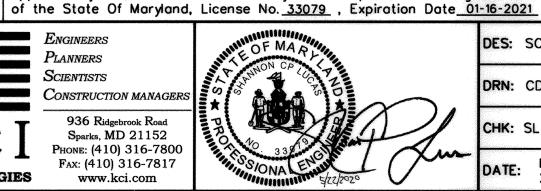
LIFE EXPECTANCY: 3 YEARS IN REINFORCED NATURAL FIBER MATTING

7. SEE DETAIL ON THIS SHEET FOR ADDITIONAL INFORMATION ON INSTALLATION.

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

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND Demas & Buttle 6/9/20 CHIEF, BUREAU OF ENGINEERING DIRECTOR OF PUBLIC WORKS Rossaffuel 6/4/2020 CHIEF, UTILITY DESIGN DIVISION 4.4. DATE CHIEF, BUREAU OF UTILITES

TECHNOLOGIES



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ADDENDUM DETAILS

HITCHING POST LANE SEWER AND STREAM STABILIZATION

CAPITAL PROJECT S6268 CONTRACT No. 0491-D

4G OF 15

DRAWING NO

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SCALE

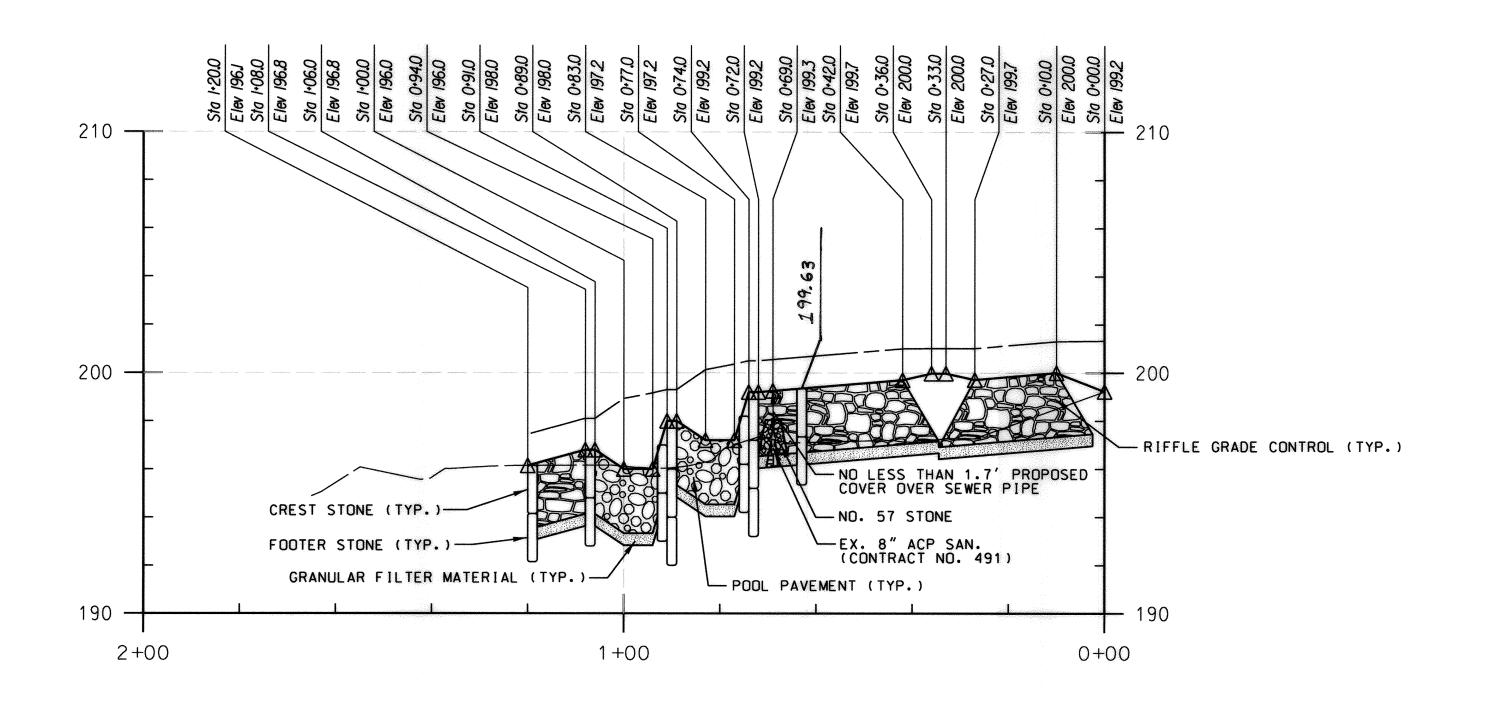
AS SHOWN

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600' SCALE MAP NO. 47, 50 BLOCK NO. 3, 21

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SHEET



<u>LEGEND</u> EXISTING GROUND -PROPOSED GRADE PROPOSED TOP OF BANK

PROFILE DEPICTS ELEVATIONS OVER BASELINE (CENTERLINE), NOT CHANNEL INVERT (THALWEG)

DEPARTMENT OF PUBLIC WORKS

DIRECTOR OF PUBLIC WORKS fign a But 6/9/2020 CHIEF, BUREAU OF UTILITES

HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF ENGINEERING DATE CHIEF, UTILITY DESIGN DIVISION 4.6. DATE

TECHNOLOGIES

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. 33079, Expiration Date 01-16-2021. 936 Ridgebrook Road Sparks, MD 21152 PHONE: (410) 316-7800 Fax: (410) 316-7817 www.kci.com

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DATE: MAY 2020	BY	NO.	REVISION	DATE	600' SCALE MAP NO.	47, 50	BLOCK NO	3, 21
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ADDENDUM PROFILE

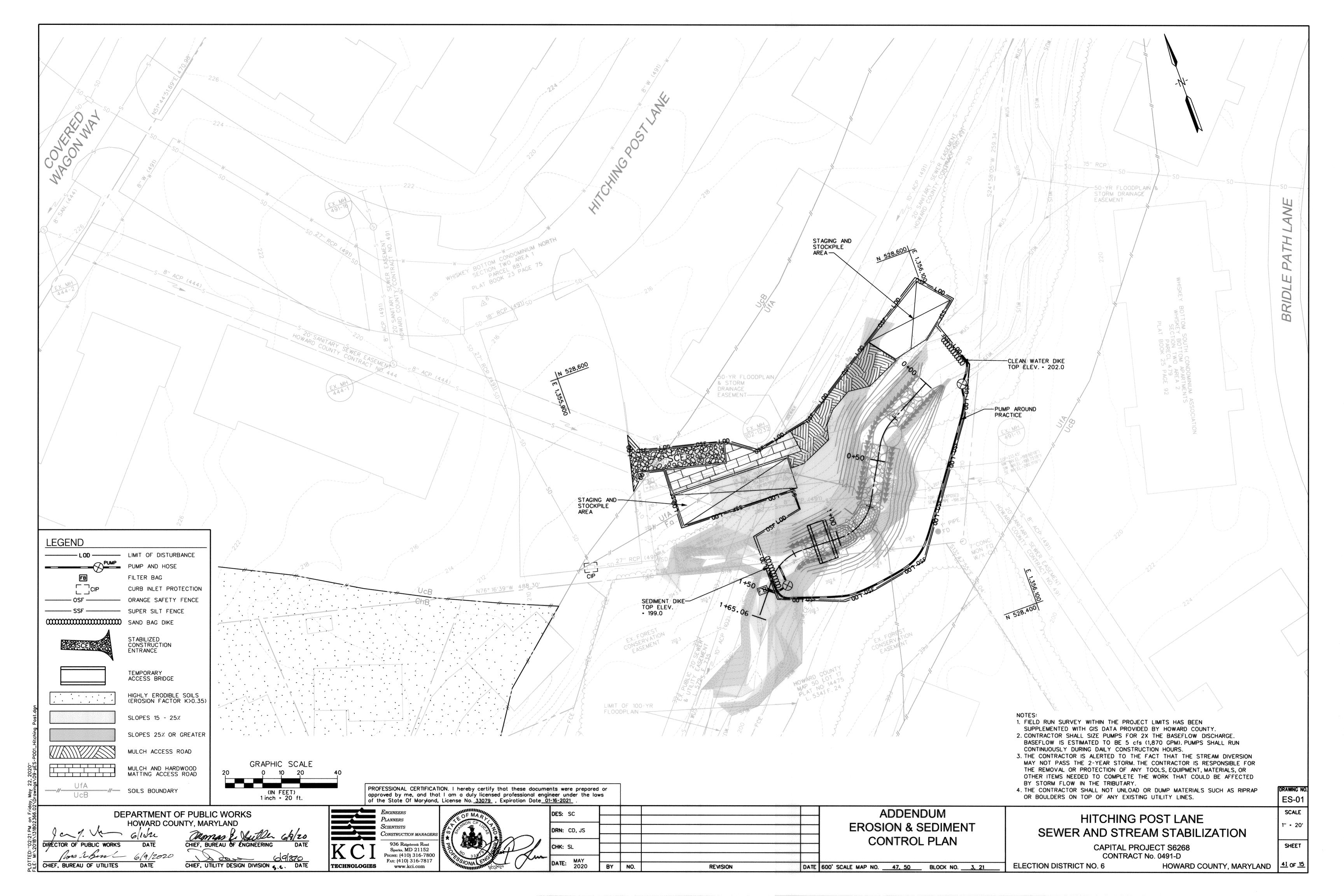
HITCHING POST LANE SEWER AND STREAM STABILIZATION

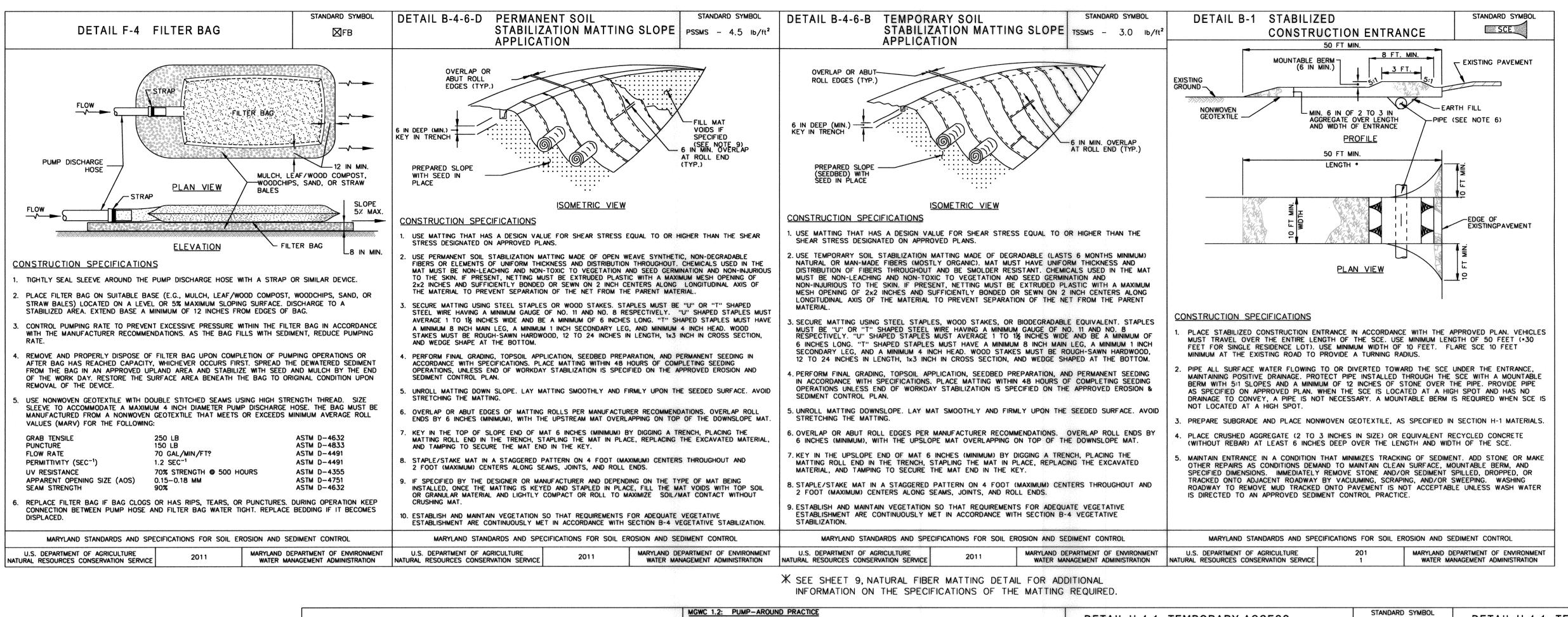
CAPITAL PROJECT S6268 CONTRACT No. 0491-D HOWARD COUNTY, MARYLAND **ELECTION DISTRICT NO. 6**

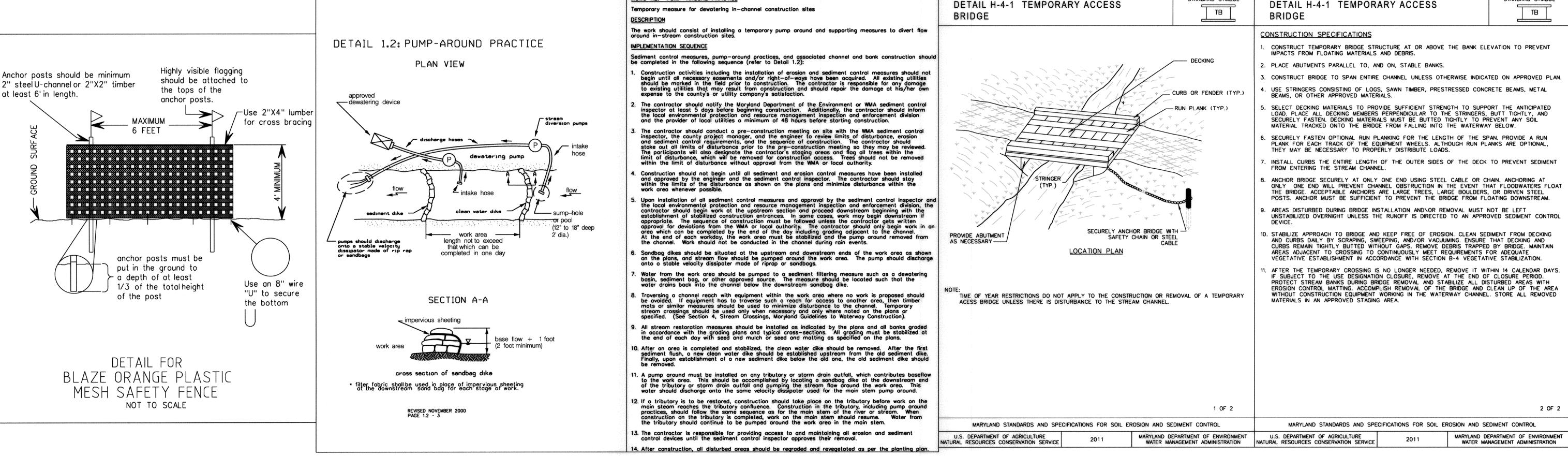
SCALE HOR. 1"-20' VERT. 1"-4' SHEET

DRAWING NO.

PR-01







STANDARD SYMBOL

SCALE

AS SHOWN

SHEET

HITCHING POST LANE

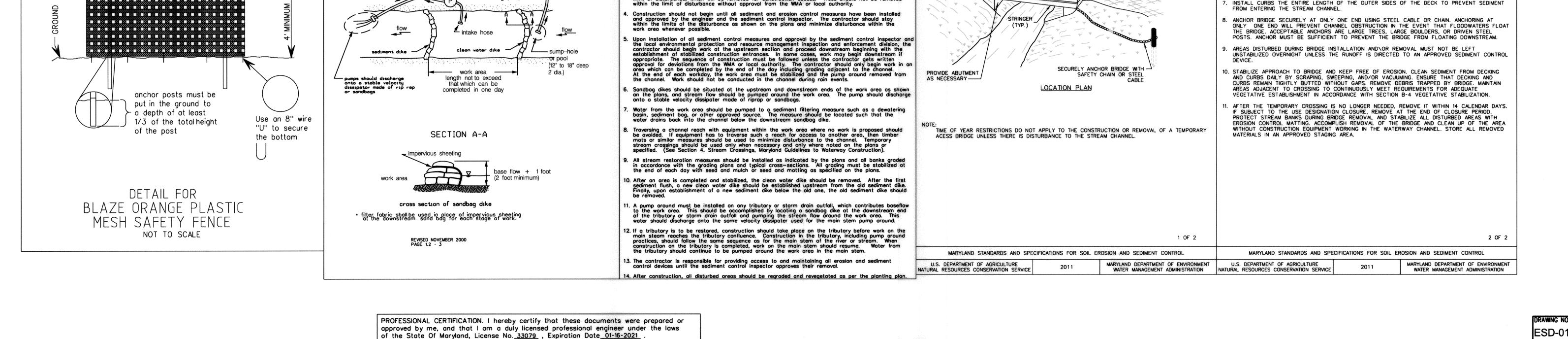
SEWER AND STREAM STABILIZATION

CAPITAL PROJECT S6268

CONTRACT No. 0491-D

HOWARD COUNTY, MARYLAND

ELECTION DISTRICT NO. 6



REVISION

DES: SC

DRN: CD, JS

2020

BY

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PLANNERS

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DEPARTMENT OF PUBLIC WORKS

HOWARD COUNTY, MARYLAND

6/9/2020

DATE

DIRECTOR OF PUBLIC WORKS

CHIEF, BUREAU OF UTILITES

CHIEF, BUREAU OF ENGINEERING DATE

CHIEF, UTILITY DESIGN DIVISION G. C. DATE

ADDENDUM

EROSION & SEDIMENT

CONTROL DETAILS

DATE 600' SCALE MAP NO. 47, 50 BLOCK NO. 3. 21

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

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE MARYLAND DEPARTMENT OF ENVIRONMENT

B-4-8 STANDARDS AND SPECIFICATIONS

FOR

STOCKPILE AREA <u>Definition</u>

A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

Purpose

To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

Conditions Where Practice Applies

Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

- 1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
- 2. The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.
- 3. Runoff from the stockpile area must drain to a suitable sediment control practice.
- 4. Access the stockpile area from the upgrade side.
- 5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
- 6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
- 7. Stockpiles must be stabilized in accordance with the 3/7 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization.
- 8. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable

Maintenance

The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 30 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.

B.43

B-47 STANDARDS AND SPECIFICATIONS

HEAVY USE AREA PROTECTION

The stabilization of areas frequently and intensively used by surfacing with suitable materials (e.g., mulch and

To provide a stable, non-eroding surface for areas frequently used and to improve the water quality from the runoff of these areas.

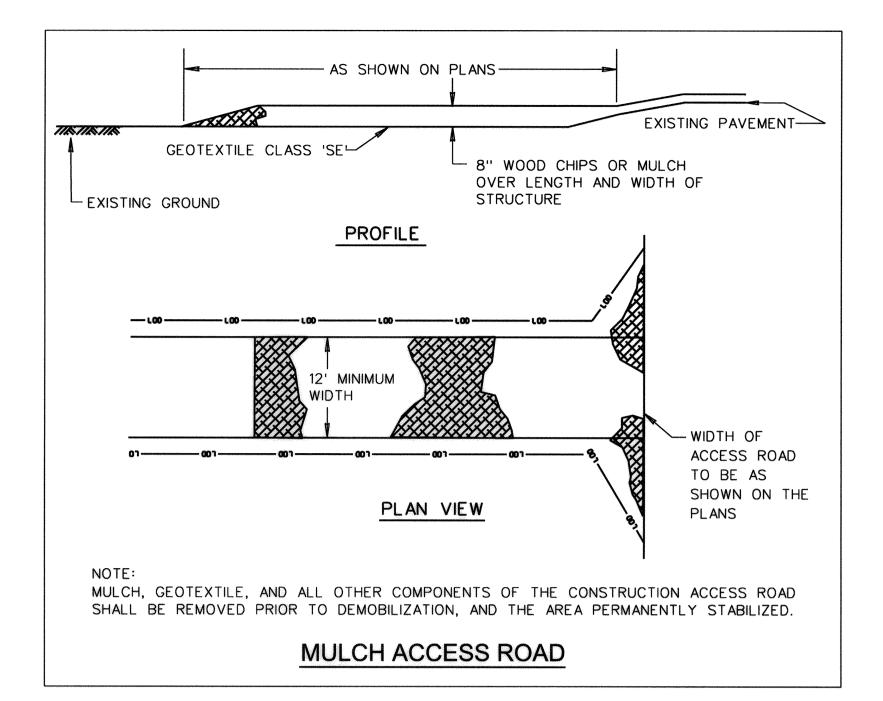
Conditions Where Practice Applies

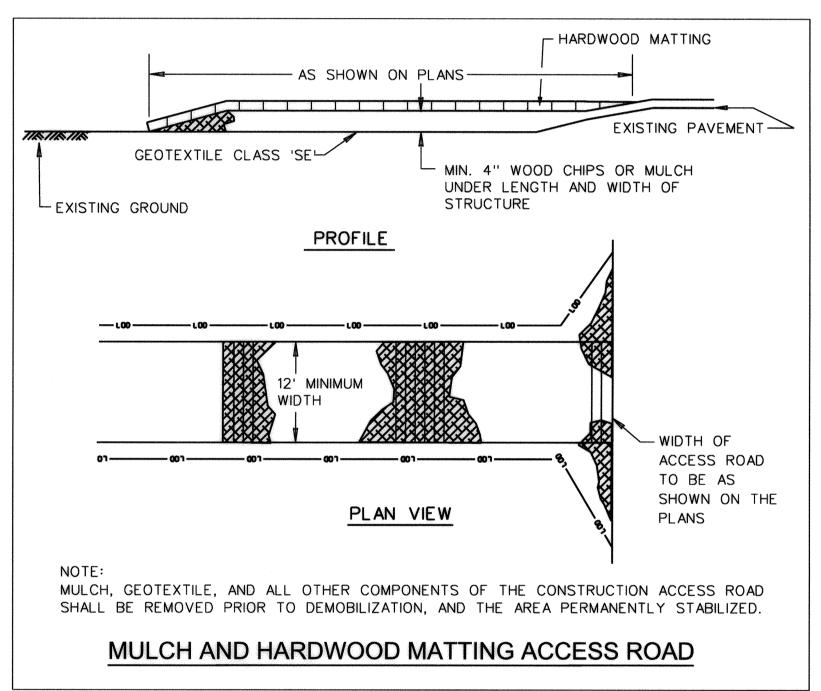
This practice applies to intensively used areas (e.g., equipment and material storage, staging areas, heavily used travel lanes).

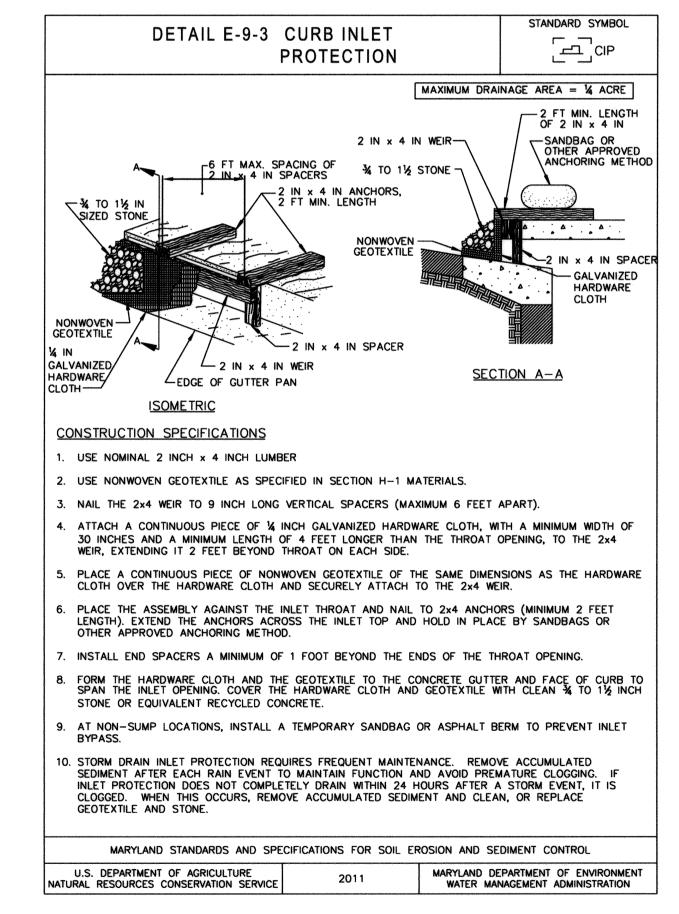
- 1. A minimum 4-inch base course of crushed stone or other suitable materials including wood chips over nonwoven geotextile should be provided as specified in Section H-1 Materials.
- Select the stabilizing material based on the intended use, desired maintenance frequency, and runoff
- 3. The transport of sediments, mutrients, oils, chemicals, particulate matter associated with vehicular traffic and equipment, and material storage needs to be considered in the selection of material. Additional control measures may be necessary to control some of these potential pollutants.
- 4. Surface erosion can be a problem on large heavy use areas. In these situations, measures to reduce the flow length of runoff or erosive velocities need to be considered.

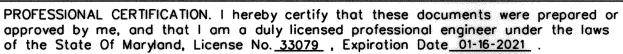
The heavy use areas must be maintained in a condition that minimizes erosion. This may require adding suitable material, as specified on the approved plans, to maintain a clean surface.

B.42





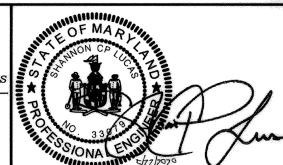






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: MAY 2020	BY	NO.	REVISION		DATE	600' SCALE MAP NO47, 50 BLOCK NO

HITCHING POST LANE SEWER AND STREAM STABILIZATION

CAPITAL PROJECT S6268 CONTRACT No. 0491-D **ELECTION DISTRICT NO. 6**

HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS 6/9/2020 CHIEF, BUREAU OF UTILITES

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND momas E. Sutle CHIEF, BUREAU OF ENGINEERING CHIEF, UTILITY DESIGN DIVISION 4.6. DATE PHONE: (410) 316-7800 Fax: (410) 316-7817

TECHNOLOGIES

DATE 600' SCALE MAP NO. ____47, 50__ BLOCK NO. 3, 21

SHEET <u>4K</u> of <u>15</u>

DRAWING NO

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SCALE

AS SHOWN

HOWARD SOIL CONSERVATION DISTRICT (HSCD) 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:
 - a. Prior to the start of earth disturbance,
 - b. Upon completion of the installation of perimeter erosion and sediment controls, but before
 - proceeding with any other earth disturbance or grading, c. Prior to the start of another phase of construction or opening of another grading unit,
 - d. Prior to the removal or modification of sediment control practices.

Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made. Other related state and federal permits shall be referenced, to ensure coordination and to avoid conflicts with this plan.

- 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 alone can only be applied between the fall and spring seeding dates if the ground is frozen. Incremental stabilization (Sec. B-4-1) specifications shall be enforced in areas with >15' of cut and/or fill. Stockpiles (Sec. B-4-8) in excess of 20 ft. must be benched with stable outlet. All concentrated flow, steep slope, and highly erodible areas shall receive soil stabilization matting (Sec. B-4-6).
- All sediment control structures are to remain in place, and are to be maintained in operative condition until permission for their removal has been obtained from the CID.
- 6. Site Analysis:

Total Area of Site:	$_{-0.33}$	Acres
Area Disturbed:	$_{0.33}$	Acres
Area to be roofed or paved:	0.0	Acres
Area to be vegetatively stabilized:	0.33	Acres
Total Cut:	222	Cu. Yds.
Total Fill:	81	Cu. Yds.
Offsite waste/borrow area location:	TO SIT	E WITH AN
	ACTIVE	GRADING PERMIT

- 7. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
- Additional sediment control must be provided, if deemed necessary by the CID. The site and all controls shall be inspected by the contractor weekly; and the next day after each rain event. A written report by the contractor, made available upon request, is part of every inspection and should include:
 - Inspection date
 - Inspection type (routine, pre-storm event, during rain event)
 - Name and title of inspector
 - Weather information (current conditions as well as time and amount of last recorded precipitation)
 - Brief description of project's status (e.g., percent complete) and/or current activities • Evidence of sediment discharges
 - Identification of plan deficiencies
 - Identification of sediment controls that require maintenance
 - Identification of missing or improperly installed sediment controls
 - Compliance status regarding the sequence of construction and stabilization requirements Photographs
 - Monitoring/sampling
 - Maintenance and/or corrective action performed
 - Other inspection items as required by the General Permit for Stormwater Associated with Construction Activities (NPDES, MDE).
- Trenches for the construction of utilities is limited to three pipe lengths or that which can and shall be back-filled and stabilized by the end of each workday, whichever is shorter.
- 10. Any major changes or revisions to the plan or sequence of construction must be reviewed and approved by the HSCD prior to proceeding with construction. Minor revisions may allowed by the CID per the list of HSCD-approved field changes.
- 11. Disturbance shall not occur outside the L.O.D. A project is to be sequenced so that grading activities begin on one grading unit (maximum acreage of 20 ac. per grading unit) at a time. Work may proceed to a subsequent grading unit when at least 50 percent of the disturbed area in the preceding grading unit has been stabilized and approved by the CID. Unless otherwise specified and approved by the CID, no more than 30 acres cumulatively may be disturbed at a given time.
- 12. Wash water from any equipment, vehicles, wheels, pavement, and other sources must be treated in a sediment basin or other approved washout structure.
- 13. Topsoil shall be stockpiled and preserved on-site for redistribution onto final grade.
- 14. All Silt Fence and Super Silt Fence shall be placed on-the-contour, and be imbricated at 25' minimum intervals, with lower ends curled uphill by 2' in elevation.
- 15. Stream channels must not be disturbed during the following restricted time periods (inclusive):
 - Use I and IP March 1 June 15 • Use III and IIIP October 1 - April 30
 - Use IV March 1 May 31
- 16. A copy of this plan, the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, and associated permits shall be on-site and available when the site is active.

1. WORK AREAS SHALL BE PERMANENTLY STABILIZED DAILY BEFORE LEAVING THE WORK SITE.

2. THE CONTRACTOR IS TO REMOVE STONE, CONCRETE, AND GRAVEL AND STABILIZE THE SCE, ACCESS ROAD AND TEMPORARY STAGING / STOCKPILING AREAS AFTER CONSTRUCTION IS COMPLETED.

3. THE CONTRACTOR IS TO REMOVE ALL SEDIMENT CONTROL MEASURES ALONG THE TEMPORARY STAGING / STOCKPILING AREAS, ACCESS ROADS, STREAM CROSSINGS AND STREAM BANKS AFTER CONSTRUCTION IS COMPLETED.

I. PERMANENT STABILIZATION CONSISTING OF, AT A MINIMUM, NATURAL FIBER MATTING (TEMPORARY SOIL STABILIZATION MATTING, TSSM) AND SEEDING, SHALL BE INSTALLED IN ALL AREAS DISTURBED BY THE WORK. NATURAL FIBER SHALL BE USED UNLESS REINFORCED NATURAL FIBER MATTING (PERMANENT SOIL STABILIZATION MATTING, PSSM) IS SPECIFICALLY CALLED FOR BASED ON THE CONTRACT DRAWINGS (I.E., IN SLOPES GREATER THAN H2:V1). AREAS WHERE CLEARING AND GRADING IS NOT PERFORMED (E.G., LOCATIONS OF HOSE FOR PUMP AROUNDS) DO NOT REQUIRE THE APPLICATION OF SOIL STABILIZATION MATTING.

DEPARTMENT OF PUBLIC WORKS

HOWARD COUNTY, MARYLAND

B-4-1 STANDARDS AND SPECIFICATIONS

<u>FOR</u>

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.

<u>Criteria</u>

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
- 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.

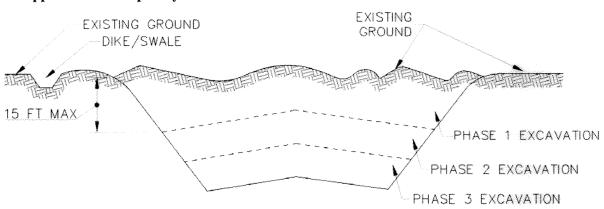


Figure B.1: Incremental Stabilization – Cut

B.10

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
- 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.

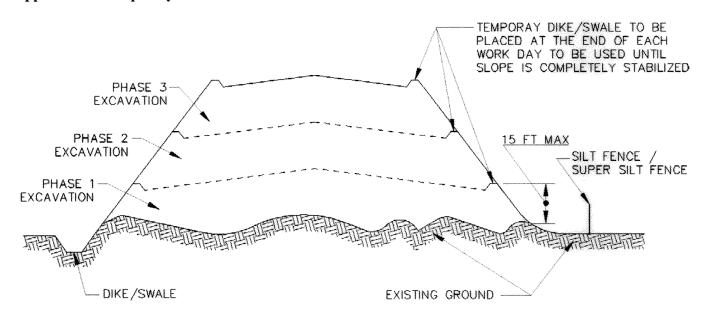


Figure B.2: Incremental Stabilization - Fill

of the State Of Maryland, License No. 33079 , Expiration Date 01-16-2021

B-4-2 STANDARDS AND SPECIFICATIONS

FOR

SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

Definition

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

Purpose

To provide a suitable soil medium for vegetative growth.

Conditions Where Practice Applies

Where vegetative stabilization is to be established.

Criteria

A. Soil Preparation

1. Temporary Stabilization

- a. Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.
- b. Apply fertilizer and lime as prescribed on the plans.
- c. Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.
- 2. Permanent Stabilization
- a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
- i. Soil pH between 6.0 and 7.0.
- ii. Soluble salts less than 500 parts per million (ppm).
- iii. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if lovegrass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
- iv. Soil contains 1.5 percent minimum organic matter by weight.
- v. Soil contains sufficient pore space to permit adequate root penetration.
- b. Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
- c. Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches
- d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil
- e. Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.

Topsoiling

- 1. Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.
- 2. Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.
- 3. Topsoiling is limited to areas having 2:1 or flatter slopes where:
- a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
- b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
- c. The original soil to be vegetated contains material toxic to plant growth.
- d. The soil is so acidic that treatment with limestone is not feasible.
- 4. Areas having slopes steeper than 2:1 require special consideration and design.
- 5. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:
- a. Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1½ inches in diameter.
- b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.
- c. Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil
- 6. Topsoil Application
- a. Erosion and sediment control practices must be maintained when applying topsoil.

b. Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.

c. Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

C. Soil Amendments (Fertilizer and Lime Specifications)

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

BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS. WATERWAYS, AND 100-YEAR FLOODPLAINS

- No excess fill, construction material, or debris shall be stockpiled or stored in nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
- Place materials in a location and manner which does not adversely impact surface or subsurface water flow into or out of nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year
- 3) Do not use the excavated material as backfill if it contains waste metal products, unsightly debris, toxic material, or any other deleterious substance. If additional backfill is required, use clean material free of waste metal products, unsightly debris, toxic material, or any other deleterious
- 4) Place heavy equipment on mats or suitably operate the equipment to prevent damage to nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
- Repair and maintain any serviceable structure or fill so there is no permanent loss of nontidal wetlands, nontidal wetland buffers, or waterways, or permanent modification of the 100-year floodplain in excess of that lost under the originally authorized structure or fill.
- 6) Rectify any nontidal wetlands, wetland buffers, waterways, or 100-year floodplain temporarily impacted by any construction.
- All stabilization in the nontidal wetland and nontidal wetland buffer shall consist of the following species: Annual Ryegrass (Lolium multiflorum), Millet (Setaria italica), Barley (Hordeum sp.), Oats (Uniola sp.), and/or Rye (Secale cereale). These species will allow for the stabilization of the site while also allowing for the voluntary revegetation of natural wetland species. Other nonpersistent vegetation may be acceptable, but must be approved by the Nontidal Wetlands and Waterways Division, Kentucky 31 fescue shall not be utilized in wetland or buffer areas. The area should be seeded and mulched to reduce erosion after construction activities have been
- completed. After installation has been completed, make post-construction grades and elevations the same as
- the original grades and elevations in temporarily impacted areas. 9) To protect aquatic species, in-stream work is prohibited as determined by the classification of the

Use I waters: In-stream work shall not be conducted during the period March 1 through June 15, inclusive, during any year. Use III waters: In-stream work shall not be conducted during the period October through April 30, inclusive, during any year. Use IV waters: In-stream work shall not be conducted during the period March 1

- 10) Stormwater runoff from impervious surfaces shall be controlled to prevent the washing of debris
- into the waterway. 11) Culverts shall be constructed and any riprap placed so as not to obstruct the movement of aquatic species, unless the purpose of the activity is to impound water.

SEQUENCE OF CONSTRUCTION

AREA SHALL BE TAKEN. (1 DAY)

1. OBTAIN GRADING PERMIT AND OTHER NECESSARY PERMITS FOR CONSTRUCTION FROM THE COUNTY AT THE PRE-CONSTRUCTION MEETING. STREAM IS USE CLASS 1 WITH CLOSURE PERIOD FROM MARCH 1 TO JUNE 15, INCLUSIVE, MDE PERMIT TRACKING NO. 201960633 / 19-NT-3088. PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES, A VIDEOTAPE AND PHOTOGRAPHS OF THE PROPOSED WORK

2. CONTRACTOR SHALL COORDINATE AN ON-SITE PRE-CONSTRUCTION MEETING THAT SHALL INCLUDE, BUT NOT BE LIMITED TO, THE COUNTY PROJECT MANAGER THE ENGINEER AND A REPRESENTATIVE FROM HOWARD COUNTY CONSTRUCTION INSPECTION. THE LIMIT OF DISTURBANCE SHALL BE STAKED PRIOR TO THE MEETING. (1 DAY)

through May 31, inclusive, during any year.

3. NOTIFY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT'S NONTIDAL WETLANDS AND WATERWAYS INSPECTIONS AND COMPLIANCE DIVISION AT LEAST FIVE (5) DAYS PRIOR TO ANY EARTH MOVING CONSTRUCTION WITHIN NONTIDAL WETLANDS AND/OR THEIR BUFFERS. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST FIVE (5) WORKING DAYS PRIOR TO ANY WORK BEING DONE. THE CONTRACTOR SHALL NOTIFY THE HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION (410-313-1880) A MINIMUM OF 24 HOURS PRIOR TO THE START OF ANY CONSTRUCTION. (5 DAYS)

4. CLEAR AND GRUB ONLY AS NECESSARY FOR INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND DEVICES. INSTALL THE STABILIZED CONSTRUCTION ENTRANCE AT HITCHING POST LANE, TEMPORARY ACCESS BRIDGE, AND SILT FENCE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. THE ACCESS PATH SHALL BE STABILIZED OR LINED WITH SILT FENCE AT THE INSPECTOR'S DISCRETION. WITH PERMISSION FROM INSPECTOR, CONTRACTOR SHALL PROCEED WITH THE WORK. (5 DAYS)

5. INSTALL PUMP-AROUND PRACTICES AS SHOWN ON SHEET ES-01. WITH APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, COMMENCE WORK. (1 DAY)

6. PERFORM BANK GRADING AND SEWER AND STREAM STABILIZATION WORK ON CHANNEL AS SHOWN ON PLANS, AND STABILIZE ALL DISTURBED AREAS AT FINAL GRADE, PUMP-AROUNDS MAY BE SHIFTED AS NECESSARY TO PERFORM GRADING AND STREAM WORK WITH APPROVAL OF THE SEDIMENT CONTROL INSPECTOR. CONTRACTOR SHALL DISTURB ONLY THAT MUCH AREA THAT CAN BE BROUGHT TO FINAL GRADE AND STABILIZED BY THE END OF EACH DAY. (2 WEEKS)

7. PERMANENTLY STABILIZE WORK AREA. (2 DAYS)

8. WHEN VEGETATION IS ESTABLISHED AND WITH PERMISSION OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, REMOVE ALL REMAINING EROSION AND SEDIMENT CONTROL MEASURES AND PERMANENTLY STABILIZE THOSE AREAS DISTURBED BY THIS PROCESS.

9. CONDUCT FINAL "AS-BUILT" SURVEY OF SEWER AND STREAM STABILIZATION MEASURES, AND STREAM PROFILE WITHIN STABILIZATION AREA. AND SUBMIT "AS-BUILT" PLANS TO THE DEPARTMENT OF PUBLIC WORKS, UTILITY DIVISION WITHIN 30 DAYS OF COMPLETION OF CONSTRUCTION.

PLANNERS



	DES: SC
- ~	DRN: CD, J
1/	CHK: SL
Jun	DATE: MAY

NO.

ADDENDUM EROSION & SEDIMENT CONTROL NOTES

HITCHING POST LANE SEWER AND STREAM STABILIZATION

CAPITAL PROJECT S6268 CONTRACT No. 0491-D

SHEET

DRAWING NO

ESN-0

SCALE

AS SHOWN

DIRECTOR OF PUBLIC WORKS

con april CHIEF, BUREAU OF UTILITES

CHIEF, UTILITY DESIGN DIVISION

CHIEF. BUREAU OF ENGINEERING

Tromas E. Sulle 6/9/20

Scientists **TECHNOLOGIES**



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

DATE 600' SCALE MAP NO. 47, 50 BLOCK NO. 3, 21 REVISION

ELECTION DISTRICT NO. 6

HOWARD COUNTY, MARYLAND

SEEDING AND MULCHING

<u>Definition</u>

The application of seed and mulch to establish vegetative cover.

<u>Purpose</u>

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

Conditions Where Practice Applies

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

A. Seeding

1. Specifications

- a. All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject to re-testing by a recognized seed laboratory. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be available upon request to the inspector to verify type of seed and seeding rate.
- b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.
- c. Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.
- d. Sod or seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.

2. Application

- a. Dry Seeding: This includes use of conventional drop or broadcast spreaders.
- i. Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries.
- ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with a weighted roller to provide good seed to soil
- b. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
- i. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seedbed must be firm after planting.
- ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in
- c. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer).
- i. If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of soluble nitrogen; P₂O₅ (phosphorous), 200 pounds per acre; K₂O (potassium), 200 pounds per acre.
- ii. Lime: Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding.
- iii. Mix seed and fertilizer on site and seed immediately and without interruption.
- iv. When hydroseeding do not incorporate seed into the soil.

B. Mulching

- 1. Mulch Materials (in order of preference)
- a. Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably bright in color. Straw is to be free of noxious weed seeds as specified in the Maryland Seed Law and not musty, moldy, caked, decayed, or excessively dusty. Note: Use only sterile straw mulch in areas where one species of grass is desired.
- b. Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state.
- i. WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
- ii. WCFM, including dye, must contain no germination or growth inhibiting factors.
- iii. WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material must form a blotter-like ground cover, on application, having moisture absorption and percolation properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
- iv. WCFM material must not contain elements or compounds at concentration levels that will
- v. WCFM must conform to the following physical requirements: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 1.6 percent maximum and water holding capacity of 90 percent minimum.

2. Application

- a. Apply mulch to all seeded areas immediately after seeding.
- b. When straw mulch is used, spread it over all seeded areas at the rate of 2 tons per acre to a uniform loose depth of 1 to 2 inches. Apply mulch to achieve a uniform distribution and depth so that the soil surface is not exposed. When using a mulch anchoring tool, increase the application rate to 2.5 tons per acre.
- c. Wood cellulose fiber used as mulch must be applied at a net dry weight of 1500 pounds per acre. Mix the wood cellulose fiber with water to attain a mixture with a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.

3. Anchoring

- a. Perform mulch anchoring immediately following application of mulch to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon the size of the area and erosion hazard:
- i. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of 2 inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should follow the contour.
- ii. Wood cellulose fiber may be used for anchoring straw. Apply the fiber binder at a net dry weight of 750 pounds per acre. Mix the wood cellulose fiber with water at a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
- iii. Synthetic binders such as Acrylic DLR (Agro-Tack), DCA-70, Petroset, Terra Tax II, Terra Tack AR or other approved equal may be used. Follow application rates as specified by the manufacturer. Application of liquid binders needs to be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. Use of asphalt binders is strictly
- 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.

<u>Purpose</u>

To use fast growing vegetation that provides cover on disturbed soils.

Conditions Where Practice Applies

Exposed soils where ground cover is needed for a period of 6 months or less. For longer duration of time, permanent stabilization practices are required.

Criteria

- 1. Select one or more of the species or seed mixtures listed in Table B.1 for the appropriate Plant Hardiness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. If this Summary is not put on the plan and completed, then Table B.1 plus fertilizer and lime rates must be put on the plan.
- 2. For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.
- 3. When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3.A.1.b and maintain until the next seeding season.

Temporary Seeding Summary

	INESS ZONE (FROM) MIXTURE (FROM TA	FERTILIZER RATE	LIME				
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEED ING DATES	SEED ING DEPTHS	(10-20-20)	RATE	
1	CEREAL RYE	112	3/15-5/15 8/1-11/15	1 INCH	436 LB/AC (10 LB/1000 SF)	2 tons/ac (90 LB/ 1000 SF)	
2	FOXTAIL MILLET	20	5/16-7/31	1/2 INCH			

1/ Seeding rates for the warm-season grasses are in pounds of Pure Live Seed (PLS). Actual planting rates shall be adjusted to reflect percent seed germination and purity, as tested. Adjustments are usually not needed for the cool-season grasse

Seeding rates listed above are for temporary seedings, when planted alone. When planted as a nurse crop with permanent seed mixes, use 1/3 of the seeding rate listed above for barley, oats, and wheat. For smaller-seeded grasses (annual ryegrass, pearl millet, foxtail millet), do not exceed more than 5% (by weight) of the overall permanent seeding mix. Cereal rye generally should not be used as a nurse crop, unless planting will occur in very late fall beyond the seeding dates for other temporary seedings. Cereal rye has allelopathic properties that inhibit the germination and growth of other plants. If it must be used as a nurse crop, seed at 1/3 of the rate listed above.

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

2/ For sandy soils, plant seeds at twice the depth listed above. 3/ The planting dates listed are averages for each Zone and may require adjustment to reflect local conditions, especially near the boundaries of the zone.

B-4-5 STANDARDS AND SPECIFICATIONS

<u>FOR</u>

PERMANENT STABILIZATION

Definition

To stabilize disturbed soils with permanent vegetation.

<u>Purpose</u>

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

Seed Mixtures

1. General Use

- a. Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
- b. Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guide, Section 342 - Critical Area Planting.
- c. For sites having disturbed area over 5 acres, use and show the rates recommended by the soil
- d. For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 ½ pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary.

Turfgrass Mixtures

- a. Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.
- b. Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan.
- i. Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
- ii. Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
- iii. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade Recommended mixture includes: Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.
- iv. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes; Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1½ to 3 pounds per 1000 square feet.

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

Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line

c. Ideal Times of Seeding for Turf Grass Mixtures

Western MD: March 15 to June 1, August 1 to October 1 (Hardiness Zones: 5b, 6a)

Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6b)

Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 7a, 7b)

- d. Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 1½ inches in diameter. The resulting seedbed must be in such condition that future moving of grasses will pose no difficulty.
- e. If soil moisture is deficient, supply new seedings with adequate water for plant growth (½ to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

PERMANENT SEEDING SUMMARY

	INESS ZONE (FROM FIGUR MIXTURE (FROM TABLE B				FERTILIZER RATE			LIME		
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEED ING DATES	SEED ING DEPTHS	N	P205	K20			
	SWITCH GRASS CREEPING RED FESCUE BUSH CLOVER	10 15 2	3/1-5/15 5/16-6/15	1/4-1/2 INCH	45 LB/AC (1.0 LB/ 1000 SF)					
7	CREEPING RED FESCUE KENTUCKY BLUEGRASS	60 15	3/1-5/15 8/1-10/15	1/4-1/2 INCH		(1.0 LB/	90 lb/ac (2.0 LB/	90 lb/ac (2.0 LB/	(2.0 LB/	2 tons/a
11	CREEPING RED FESCUE CHEWINGS FESCUE KENTUCKY BLUEGRASS	30 30 20	3/1-5/15 8/1-10/15	1/4-1/2 INCH		1000 SF)	1000 SF)	1000 SF)		
	ERNST SEED MIX ERNMX-722 MD LOWER MIDLAND RIPARIAN MIX	15	2/15-10/31	1 INCH	NONE	NONE	NONE	NONE		

NOTE: ERNST SEED MIX TO BE USED IN FORESTED AREAS AS SHOWN ON THE LANDSCAPE PLANS. THE REMAINING MIXES ARE SUITABLE OUTSIDE OF FOREST AND TURF ZONES.

Sod: To provide quick cover on disturbed areas (2:1 grade or flatter).

1. General Specifications

- a. Class of turfgrass sod must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector.
- b. Sod must be machine cut at a uniform soil thickness of 34 inch, plus or minus 1/4 inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and torn or uneven ends will not be acceptable.
- c. Standard size sections of sod must be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the
- d. Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
- e. Sod must be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period must be approved by an agronomist or soil scientist prior to its installation.

Sod Installation

- a. During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the sod.
- b. Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Stagger lateral joints to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.
- c. Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints. Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensure solid contact exists between sod roots and the underlying soil surface.
- d. Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of sod within eight hours.

3. Sod Maintenance

- a. In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.
- b. After the first week, sod watering is required as necessary to maintain adequate moisture content.
- c. Do not mow until the sod is firmly rooted. No more than ½ of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless otherwise specified.

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. 33079 , Expiration Date 01-16-2021 936 Ridgebrook Road

DES: SC DRN: CD, JS MAY 2020

BY NO. DATE 600' SCALE MAP NO. ____47, 50____ BLOCK NO. ___3, 21_ REVISION

ADDENDUM EROSION & SEDIMENT CONTROL NOTES

HITCHING POST LANE SEWER AND STREAM STABILIZATION

CAPITAL PROJECT S6268 CONTRACT No. 0491-D **ELECTION DISTRICT NO. 6** HOWARD COUNTY, MARYLAND

SHEET 4M OF 15

DRAWING NO.

IESN-02

SCALE

AS SHOWN

CHIEF, BUREAU OF UTILITES

6/9/2020

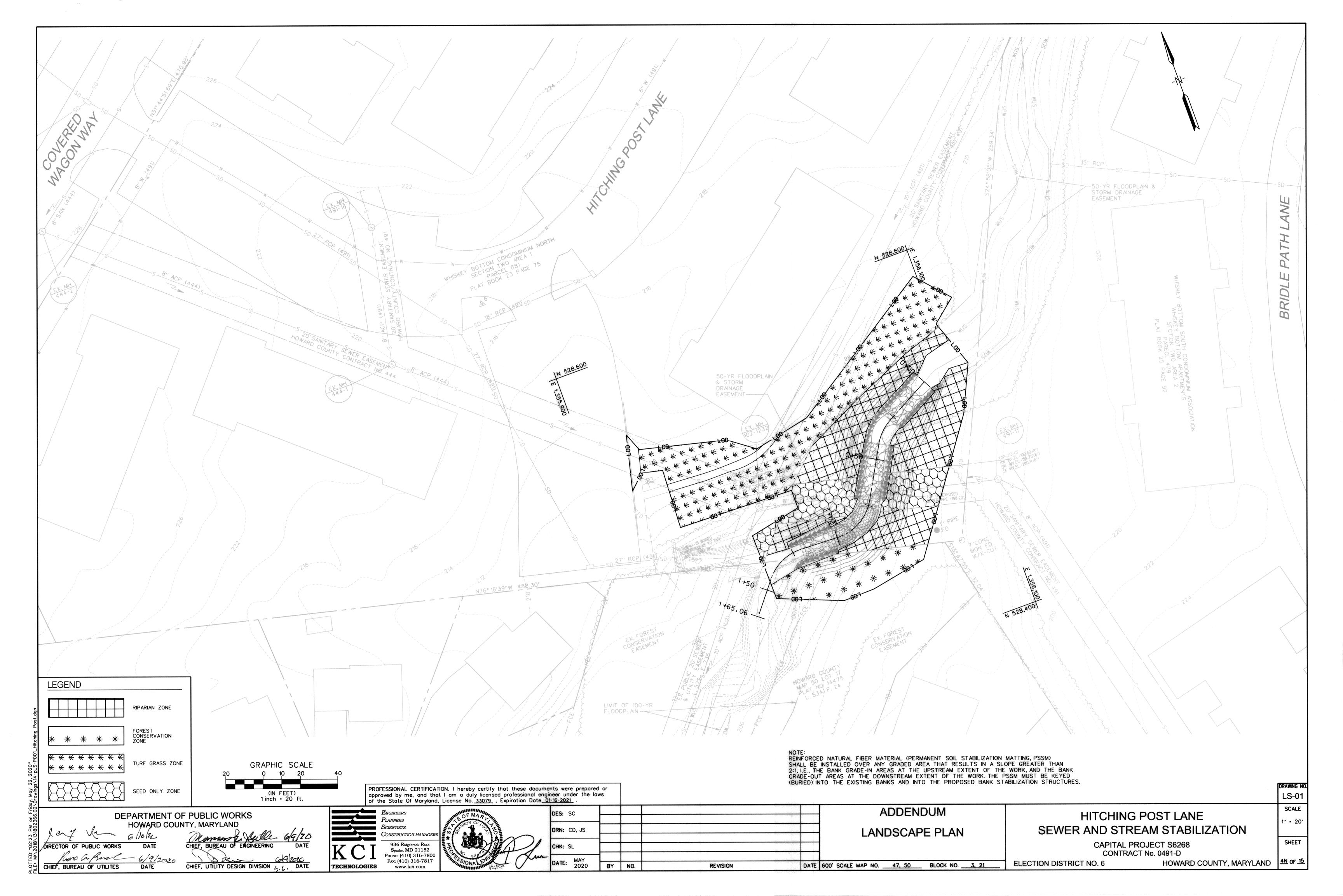
DEPARTMENT OF PUBLIC WORKS

HOWARD COUNTY, MARYLAND

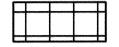
Orman & Buttle 6/9/20 CHIEF, BUREAU OF ENGINEERING CHIEF, UTILITY DESIGN DIVISION 4.6. DATE

TECHNOLOGIES

Sparks, MD 21152 PHONE: (410) 316-7800 Fax: (410) 316-7817 www.kci.com



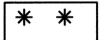
MASTER PLANT SCHEDULE +



RIPARIAN ZONE

(3,992 SQ FT / 0.09 AC)

Qty	Botanical Name	Common Name	Size	Form	Spacing/Rate
TREES					
2	Quercus rubra	Northern Red Oak	5' Height	Container	20' O.C.
2	Quercus palustris	Pin Oak	5' Height	Container	20' O.C.
2	Acer rubrum	Red Maple	5' Height	Container	20' O.C.
1	Quercus alba	White Oak	5' Height	Container	20' O.C.
1	Nyssa sylvatica	Black Gum	5' Height	Container	20' O.C.
8	Carpinus caroliniana	Musclewood	5' Height	Container/Single stem	6'-8' O.C.
8	Cornus florida	Flowering Dogwood	5' Height	Container/Single Stem	6'-8' O.C.



CONSERVATION EASEMENT ZONE

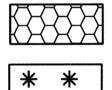
(1,444 SQ FT / 0.03 AC)

Qty	Botanical Name	Common Name	Size	Form	Spacing/Rate
TREES					
2	Quercus rubra	Northern Red Oak	5' Height	Container	11' O.C.
2	Quercus palustris	Pin Oak	5' Height	Container	11' O.C.
2	Acer rubrum	Red Maple	5' Height	Container	11' O.C.
2	Quercus alba	White Oak	5' Height	Container	11' O.C.
2	Nyssa sylvatica	Black Gum	5' Height	Container	11' O.C.
3	Carpinus caroliniana	Musclewood	5' Height	Container/Single stem	6'-8' O.C.
3	Cornus florida	Flowering Dogwood	5' Height	Container/Single Stem	6'-8' O.C.



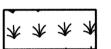
PERMANENT SEEDING FOR RIPARIAN ZONE, FCE ZONE & SEED ONLY ZONE

(6,891 SQ FT / 0.16 AC)



ERNMX-722 OR EQUIVALENT

*Seeding shall be applied at a 15 lbs/AC seeding rate.



TURF GRASS ZONE

(4.529 SQ FT / 0.10 AC)

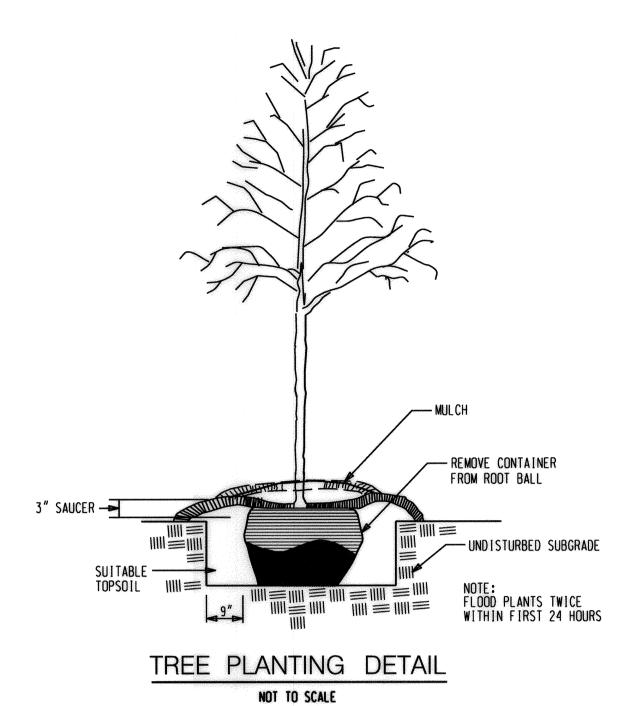
Qty(lbs)*	Seed Mix		
20.0	SHA Seed mix No. 1 (920.06.07 a)		

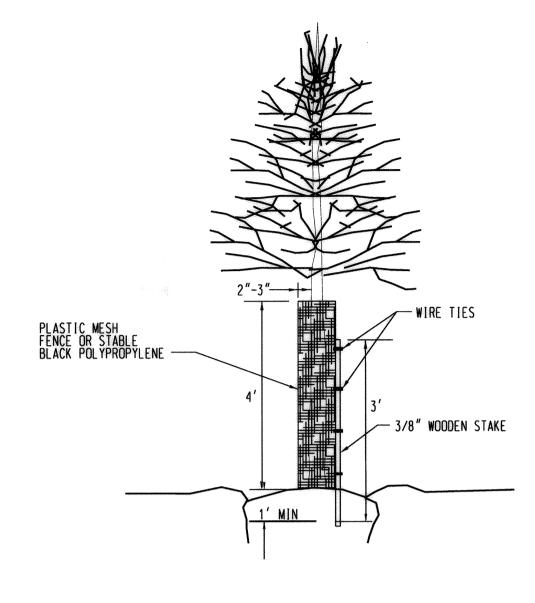
*Seeding shall be applied at a 200 lbs/AC seeding rate.

+ NOTES:

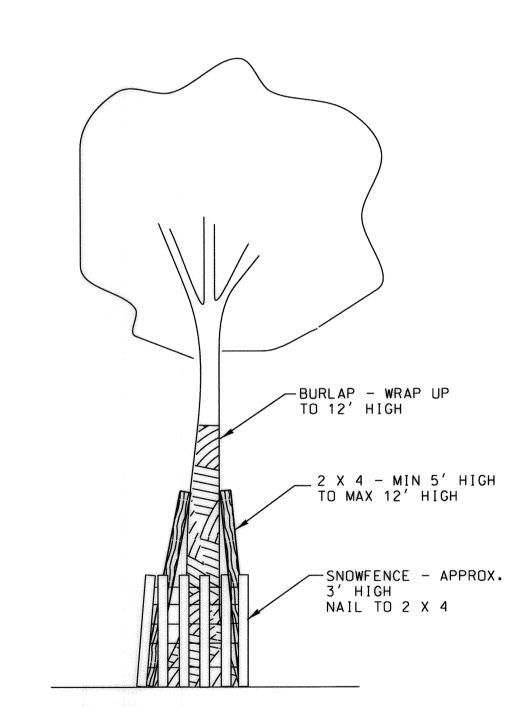
- 1. 4 INCHES OF TOPSOIL SHALL BE PLACED THROUGHOUT THE SITE EXCEPT
- IN EXISTING WETLANDS TO INCREASE SOIL FERTILITY.

 2. ALL PLANT MATERIAL EXCEPT TEMPORARY SEEDING SHOULD BE INSTALLED AFTER CONSTRUCTION DURING THE DORMANT PERIOD (BEGINNING MID-AUGUST).





TREE SHELTER DETAIL NOT TO SCALE



TREE PROTECTION PLANKING DETAIL

REVISION

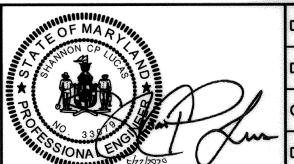
- 1. 12'x4' PLANKS SHALL BE PLACED NO MORE THAN 6 INCHES APART, LESS FOR TREES WITH 12 INCH DIAMETER OR LESS.

2. THE SNOWFENCE SHOULD COMPLETELY WRAP AROUND THE PLANKING.

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. 33079, Expiration Date 01-16-2021.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF ENGINEERING DATE 6/9/2020

Sparks, MD 21152 PHONE: (410) 316-7800 Fax: (410) 316-7817



Zun	DATE: MAY 2020	BY NO.
//	CHK: SL	
	DRN: CD, JS	
	UES: SC	
	DES: SC	

ADDENDUM LANDSCAPE DETAILS

DATE 600' SCALE MAP NO. ____47, 50___ BLOCK NO. ___3, 21__

HITCHING POST LANE SEWER AND STREAM STABILIZATION

CAPITAL PROJECT S6268 CONTRACT No. 0491-D **ELECTION DISTRICT NO. 6**

SHEET HOWARD COUNTY, MARYLAND 40 OF 15

LD-01

SCALE

AS SHOWN

DIRECTOR OF PUBLIC WORKS CHIEF, BUREAU OF UTILITES DATE

CHIEF, UTILITY DESIGN DIVISION 4.4. DATE

TECHNOLOGIES

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