SHEET INDEX

SHEET NO. SHEET TITLE

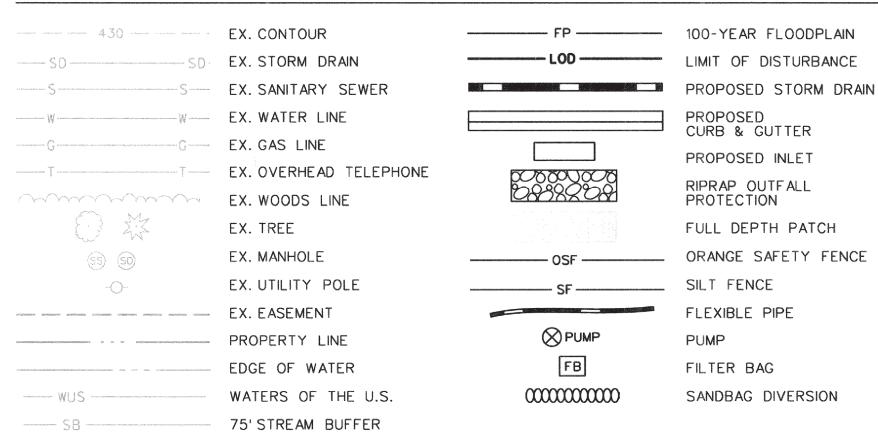
- TITLE SHEET
- ENVIRONMENTAL RESOURCES MAP
- STORMWATER MANAGEMENT PLANS
- **PROFILES**
- STORMWATER MANAGEMENT DETAILS
- STREAM DETAILS
- **EROSION & SEDIMENT CONTROL PLANS**
- EROSION & SEDIMENT CONTROL NOTES & DETAILS
- EROSION & SEDIMENT CONTROL NOTES

AS-BUILT CERTIFICATION

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS.

> 09-30-2021 DATE

LEGEND



ENGINEER'S CERTIFICATE

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

WETLAND BOUNDARY

25' WETLAND BUFFER

10-14-20 SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) JAMES G. KESTER, PE

DEVELOPER'S CERTIFICATE

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

neumer 0/20/2020 SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) Thimas J. Meunier

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

relinen

Maks. Mchmena

DIRECTOR OF RECREATION AND PARKS

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

CHIEF, STORMWATER MANAGEMENT DIVISION

DIRACTIOR OF RUBLIC WORKS

10/20/2020

DEPARTMENT OF RECREATION AND PARKS, HOWARD COUNTY, MD

- TOTAL PROJECT AREA: 0.21 ACRES
- DISTURBED AREA: 0.21 ACRES (9,336 SF).

MANOR

POSTMICK NO. 1/4 BETHGATE

PROPOSED USE FOR THE SITE: DRAINAGE IMPROVEMENTS APPLICABLE DPZ FILE REFRENCES: PB07-073, PB08-056, PB09-028A.

DESIGNATION

17 ID

SITE ANALYSIS DATA CHART

PERMIT INFORMATION CHART

1	SOBDIVISION INF	AME.		DEC III	ON/	ALC A		PARCEL"	'
	BRI	NKLEIGH				5,	_	389,	
	PLAT* or L/F	GRID *	ZONING	TAX N	MAP	NO.	ELECT. DISTR.	CENSUS	TRACT
-	25, 56, 73	0022	R20		17		02	60220	2
	WATER CODE			SEWER	R CC	ODE			ALTONOMIC MATERIAL STATE
	PUBLIC			P	UBL	.IC			

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS 9801 BROKEN LAND PARKWAY COLUMBIA, MD 21046 410-313-6444

GREENWAY DRIVE

DRAINAGE IMPROVEMENTS 2

FINAL DESIGN PLANS

HOWARD COUNTY, MARYLAND

STORMWATER MANAGEMENT DIVISION

CAPITAL PROJECT NUMBER D-1175

VICINITY MAP

SCALE: 1" - 2000'

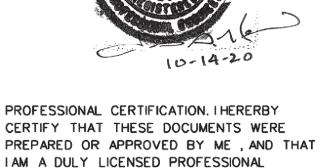
ADC MAP COORD. 5052/K7

HOWARD COUNTY SURVEY CONTROL

EASTING

590,619.889 | 1,360,443.4375 | 437.547

N/A | 589,445.668 | 1,360,778.492 | 421.164



ENGINEER UNDER THE LAWS OF THE STATE

OF MARYLAND, LICENSE NO. 20903.

EXPIRATION DATE: JULY 18, 2021

EXECUTI VE CENTER

ELEVATION

GENERAL INFORMATION

- 1. THE SUBJECT PROPERTIES ARE ZONED R-20 PER COMPREHENSIVE ZONING PLAN AND THE COMP-LITE
- 2. THERE ARE NO BURIAL GROUNDS OR CEMETERY SITES LOCATED ON THE PROJECT SITE.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY CONTAINED HEREIN PLUS MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
- 4. 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 IN ADVANCE
- 5. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- 6. THE COORDINATES SHOWN HEREON ARE BASED ON HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NUMBERS 17 HA & 17 ID WERE USED FOR THIS SITE.
- 7. WATER IS PUBLIC.
- 8. SEWER IS PUBLIC.
- 9. EXISTING UTILITIES ARE BASED ON FIELD SURVEYS AND AVAILABLE RECORD DRAWINGS.
- 10. THE WETLAND DELINEATION FOR THIS PROJECT WAS PERFORMED BY KCITECHNOLOGIES INC. NO WETLANDS ARE LOCATED WITHIN THIS PROJECT.
- 11. THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH ONE FOOT CONTOUR INTERVALS PREPARED BY AB CONSULTANTS, INC., IN JULY 2014 AND MAY 2015
- 12. ALL WORK SHALL CONFORM TO THE MDE BEST MANAGEMENT PRACTICES FOR WETLANDS AND WATERWAYS AS LISTED IN THE REQUIREMENTS OF THE NONTIDAL WETLANDS AND WATERWAYS PERMIT APPROVED ON 01/28/2019 (MDE TRACKING * 201862054/18-NT-3348).
- 13. NO TRAFFIC STUDY IS REQUIRED FOR THIS PROJECT
- AND KCITECHNOLOGIES, INC. DOES NOT WARRANT OR GUARANTEE THE CORRECTNESS OR COMPLETENESS OF THE INFORMATION GIVEN. SHOULD THE CONTRACTOR DISCOVER ANY DISCREPANCIES BETWEEN THE PLANS AND THE FIELD CONDITIONS, THE CONTRACTOR MUST VERIFY SUCH INFORMATION TO HIS OWN SATISFACTION. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY TO RESOLVE THE SITUATION. SHOULD THE CONTRACTOR MAKE FIELD CORRECTIONS OR ADJUSTMENTS WITHOUT NOTIFYING THE ENGINEER, THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR THOSE CHANGES.
- THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO THE CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
- 16. THE PROPOSED PROJECT IS LOCATED ALONG GREENWAY DRIVE, SOUTH OF ST. JOHN'S LANE.
- 17. HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS PROJECT MANAGER IS CHRISTINE LOWE, P.E. (410) 313-0522.
- 18. BUREAU OF UTILITY CONTACTS: (410) 313-4900 (WATER AND SANITARY) COMCAST: (410) 497-0232 VERIZON: (301) 282-4508 BGE: (410) 470-7863 (GAS) BGE: (410) 470-7868 (ELECTRIC)
- 19. THE STREAM IS NOT TIER II. THE STREAM IS IMPAIRED FOR SEDIMENT.
- 20. A ROADSIDE TREE PERMIT WAS ISSUED BY THE MARYLAND DEPARTMENT OF NATURAL RESOURCES ON
- 21. AN ALTERNATIVE COMPLIANCE (WP-20-107) WAS APPROVED ON OCTOBER 1, 2020 FROM SECTION 16.155(A)(1), MAKING THE PROJECT EXEMPT FROM SDP SUBMITTAL AND SECTION 16.1201(V), THAT ALLOWS THE USE OF THE AREAIN THE LOD AS THE NET TRACT AREA IN FOREST CONSERVATION CALCULATIONS. THE ALTERNATIVE COMPLIANCE IS SUBJECT TO THE FOLLOWING CONDITIONS: THE ALTERNATIVE COMPLIANCE PLAN EXHIBIT SHALL SERVE AS THE SUBSTITUTE FOR A SITE DEVLOPMENT PLAN FOR DEVELOPMENT. NO DISTURBANCE IS PERMITTED BEYOND THE 0.21-ACRE LIMIT OF DISTURBANCE AS SHOWN ON THE ALTERNATIVE COMPLIANCE EXHIBIT UNLESS IT CAN BE SUFFICIENTLY DEMONSTRATED BY THE APPLICANT TO

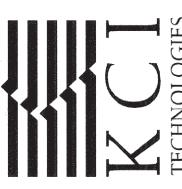
SPECIAL CONTRACTOR NOTES

- 1. 100-YEAR FLOODPLAIN ELEVATION IS SHOWN ON THE PLANS.
- 2. NO STOCKPILE OF ANY MATERIAL IS ALLOWED IN THE 100-YEAR FLOODPLAIN.
- 3. IN-STREAM WORK AT THE 18" RCP OUTFALL IS PROHIBITED FROM MARCH 1 TO MAY 31, INCLUSIVE. STREAM CLASSIFICATIONS: USE IV-P
- 4. CONTRACTOR SHALL CONTINUALLY MONITOR WEATHER FORECASTS DURING WORK ACTIVITIES AND SCHEDULE WORK DURING FAVORABLE CONDITIONS.
- 5. THE CONTRACTOR SHALL EXERCISE CARE IN ACTIVITIES INVOLVING EITHER CUT AND FILL OR GRADING IN THE VICINITY OF TREES THAT ARE TO REMAIN AT THE CONSTRUCTION SITE. ALL EARTH CUTS AND ACTIVITIES IN THE VICINITY OF TREES TO REMAIN SHALL BE MADE IN A MANNER THAT DOES NOT DISTURB THE CRITICAL ROOT ZONE WITHIN THE DRIPLINE OF THE TREE, PROTECTIVE ORANGE FENCING SHALL BE INSTALLED AROUND THE PERIMETER OF THE CRITICAL ROOT ZONE PRIOR TO CONSTRUCTION. THE LOCATION OF THE PROTECTIVE ORANGE FENCING SHALL BE APPROVED BY HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS STORMWATER MANAGEMENT DIVISION PRIOR TO CONSTRUCTION.
- 6. CONTRACTOR SHALL NOT STORE EQUIPMENT, MATERIALS AND/OR SUPPLIES BEYOND THE ORANGE FENCING
- 7. UPON COMPLETION OF THE WORK, BUT PRIOR TO DE-MOBILIZATION, THE CONTRACTOR SHALL REMOVE ALL REMNANTS OF CONSTRUCTION MATERIALS FROM THE SITE. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO A CONDITION EQUAL TO OR BETTER THAN THE PRE-CONSTRUCTION CONDITIONS.
- 8. PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES, PHOTOGRAPHS OF THE PROPOSED WORK AREA AND ACCESS SHALL BE TAKEN.
- 9. ALL TREES TO BE REMOVED SHALL BE CUT AT THE BASE WITH A SAW AND NOT PUSHED OVER. TREE STUMPS MAY BE LEFT IN PLACE, UNLESS OTHERWISE DIRECTED ON THE PLANS.
- 10. ALL MATERIAL SHALL BE REMOVED AND DISPOSED OF OFFSITE UNLESS OTHERWISE NOTED.
- 11. THE CONTRACTOR SHALL PAY CLOSE ATTENTION TO PEDESTRIANS WALKING NEAR THE WORK SITE.
- 13. CONTRACTOR MAY SPECIFY CAST-IN-PLACE DRAINAGE BOXES IF NECESSARY DURING CONSTRUCTION. THESE CHANGES MUST FIRST BE APPROVED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
- 14. THE CONTRACTOR IS TO PROVIDE TRUCK TRAFFIC SIGNS AS NECESSARY

12. WORKING HOURS ARE 7AM TO 5PM MONDAY THROUGH FRIDAY.

15. TREE PRUNING IN FRONT OF 3010 AND 3014 GREENWAY DRIVE, ELLICOTT CITY: PRUNE THE ROOTS OF ONE (1) 48" RED OAK AND ONE (1) 36" WILLOW OAK UNDER THE SUPERVISION OF A CERTIFIED ARBORIST.

ROAD 21152 6-7800 818 316--781 MARYLANI NE: (410) 3 (410) 316-SPARKS, 1v.
TELEPHONE: (4)
FAX: (410) ?



GREENWAY DRIVE JAGE IMPROVEMENT

TITLE

SHEET

AS SHOWN

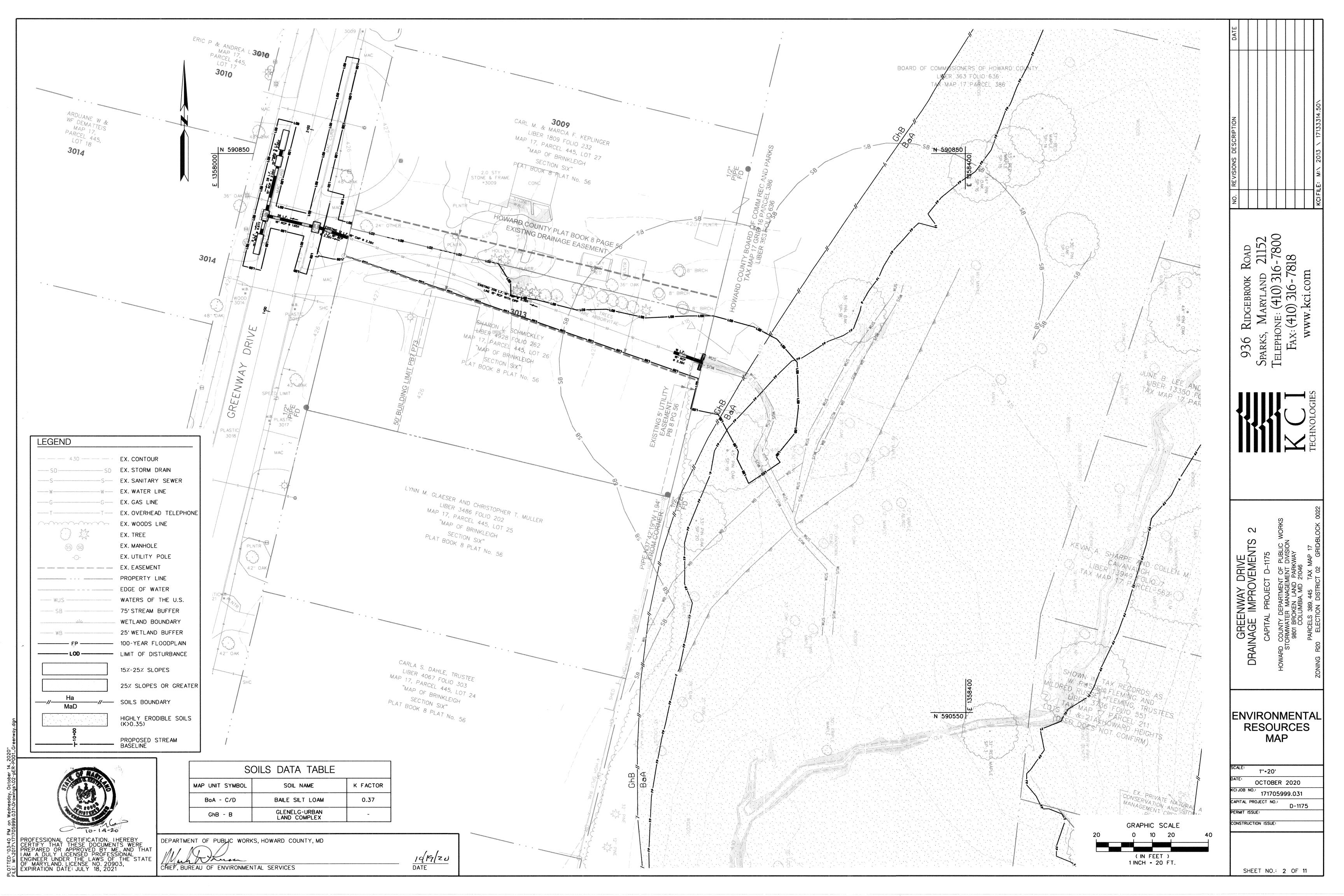
OCTOBER 2020

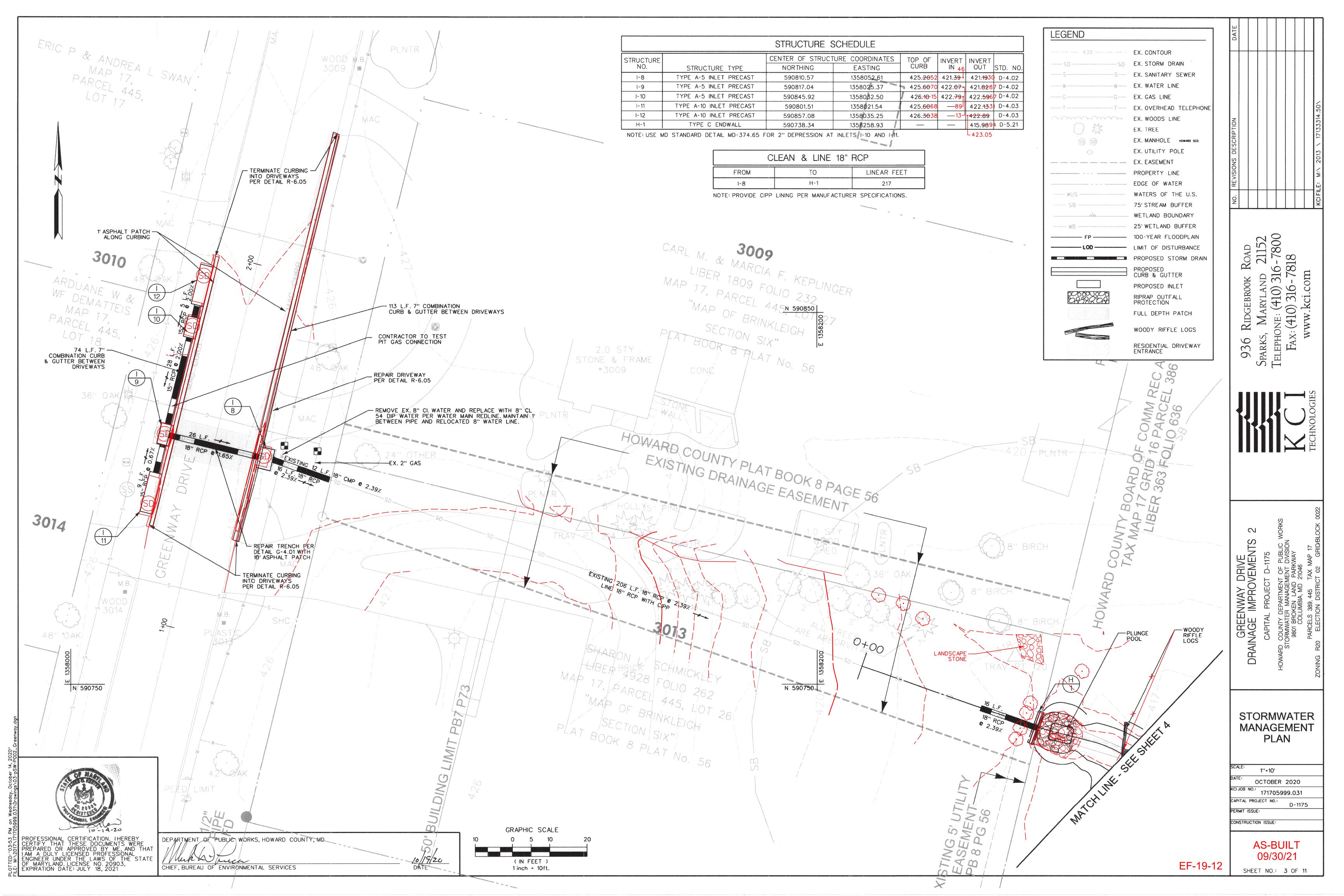
171705999.031 APITAL PROJECT NO.:

ONSTRUCTION ISSUE:

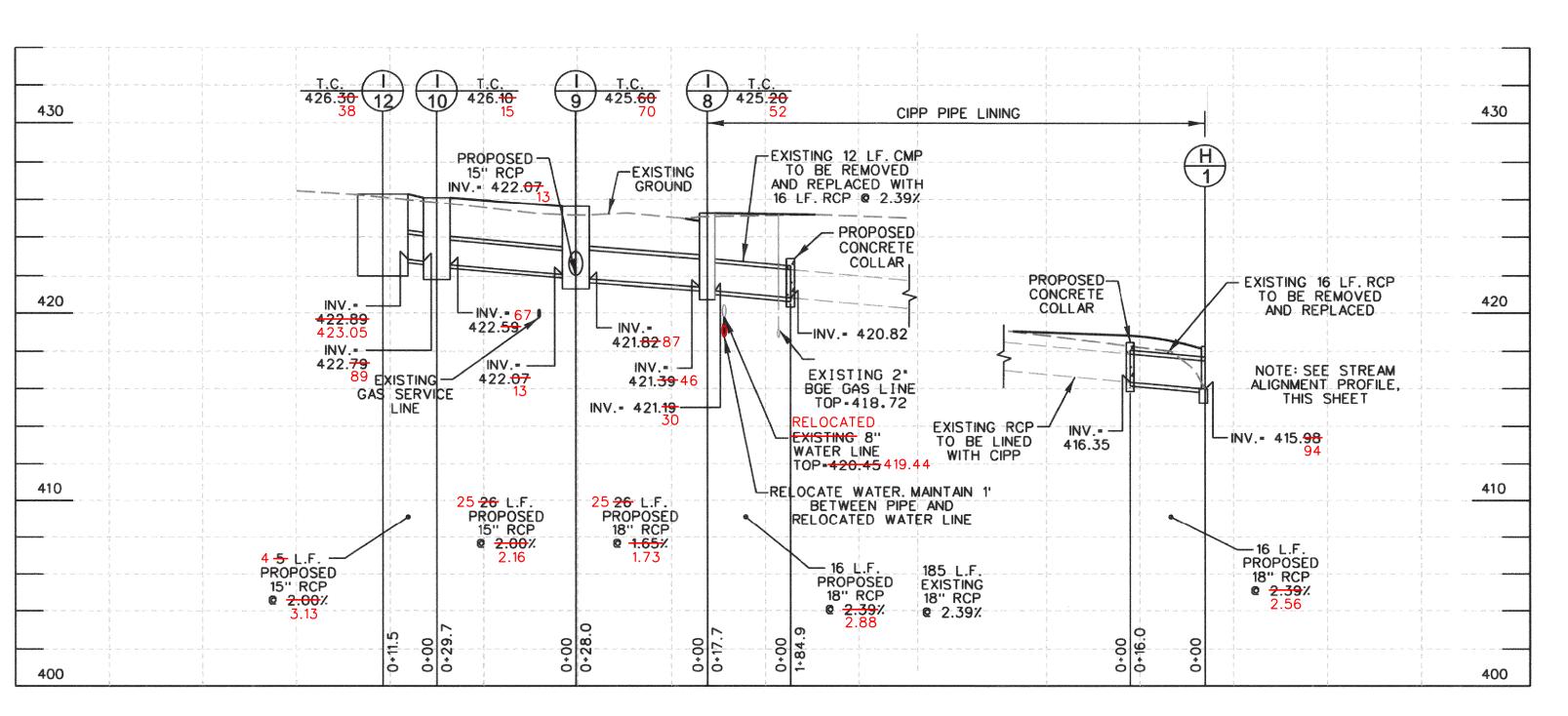
AS-BUILT 09/30/21

SHEET NO.: 1 OF 11

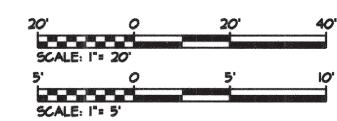


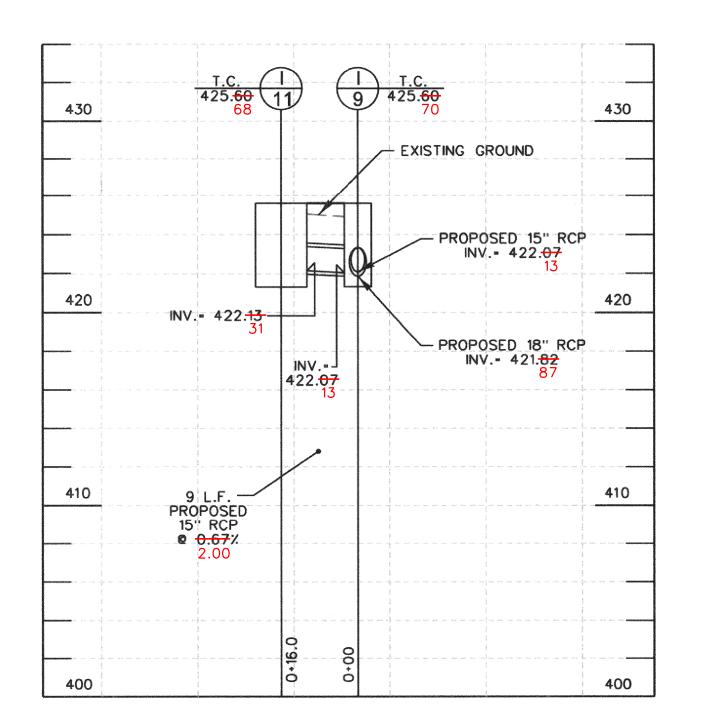




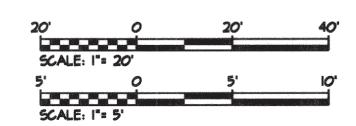


PIPE PROFILE I-12 TO H-1 SCALE: HOR: 1" = 20' VERT: 1" = 5'



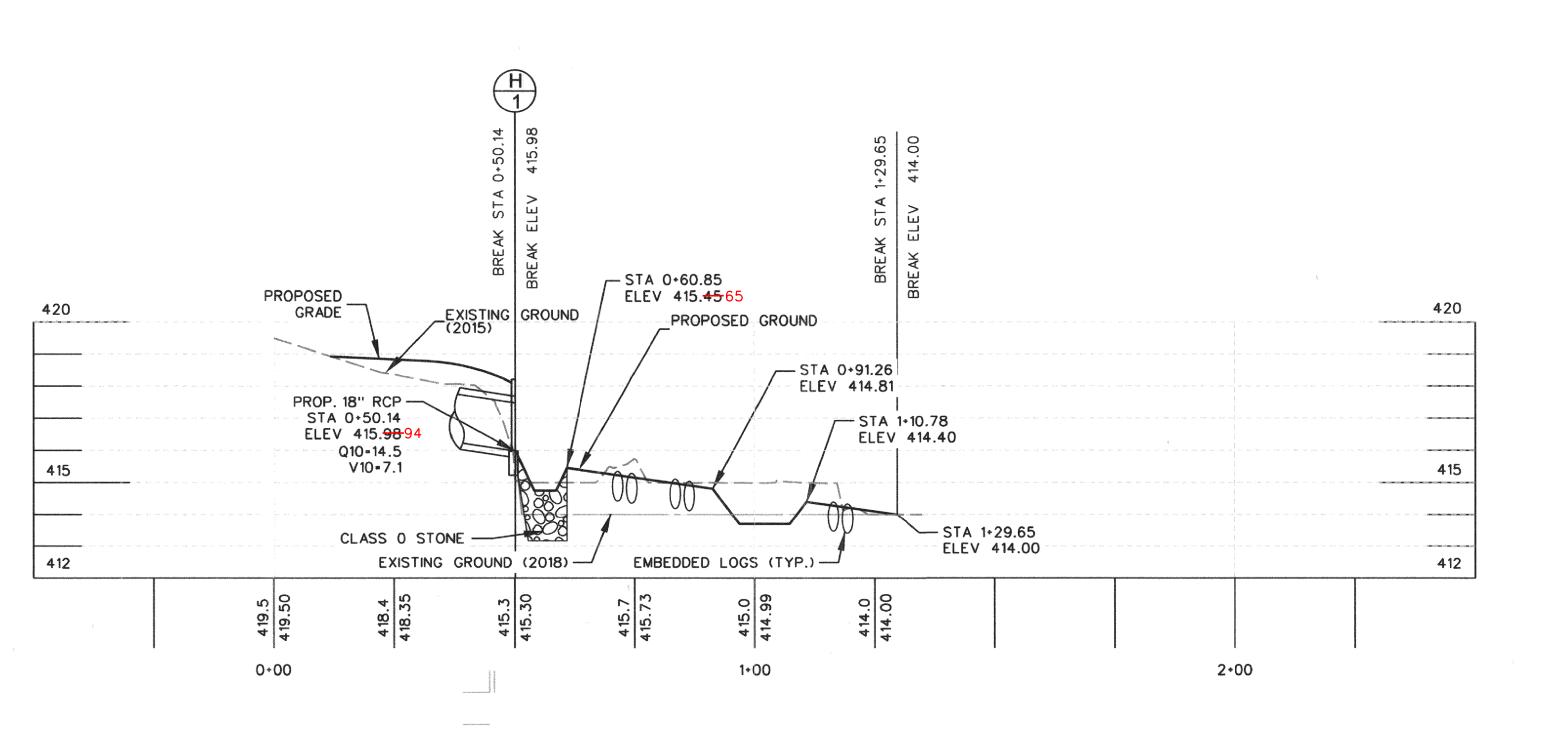


PIPE PROFILE I-11 TO I-9 SCALE: HOR: 1" = 20' VERT: 1" = 5'

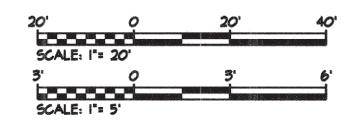


PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 20903, EXPIRATION DATE: JULY 18, 2021

DEPARTMENT OF PUBLIC, WORKS, HOWARD COUNTY, MD 10/19/20 DATE CHIEF, BUREAU OF ENVIRONMENTAL SERVICES



STREAM ALIGNMENT SCALE: HOR: 1" = 20' VERT: 1" = 3'



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



GREENWAY DRIVE DRAINAGE IMPROVEMENTS

PROFILES & DETAILS

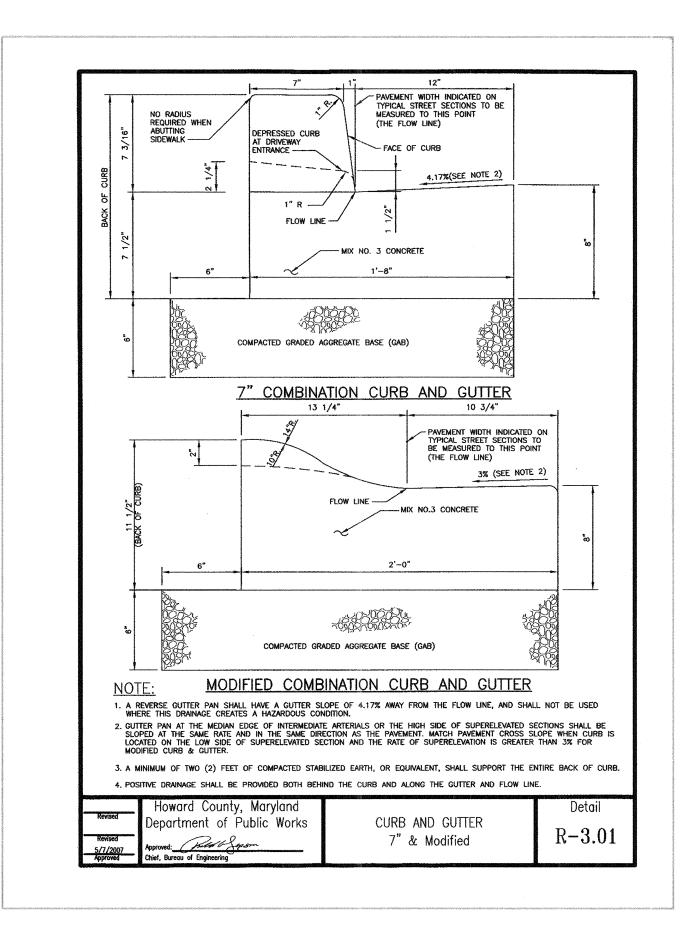
AS SHOWN OCTOBER 2020

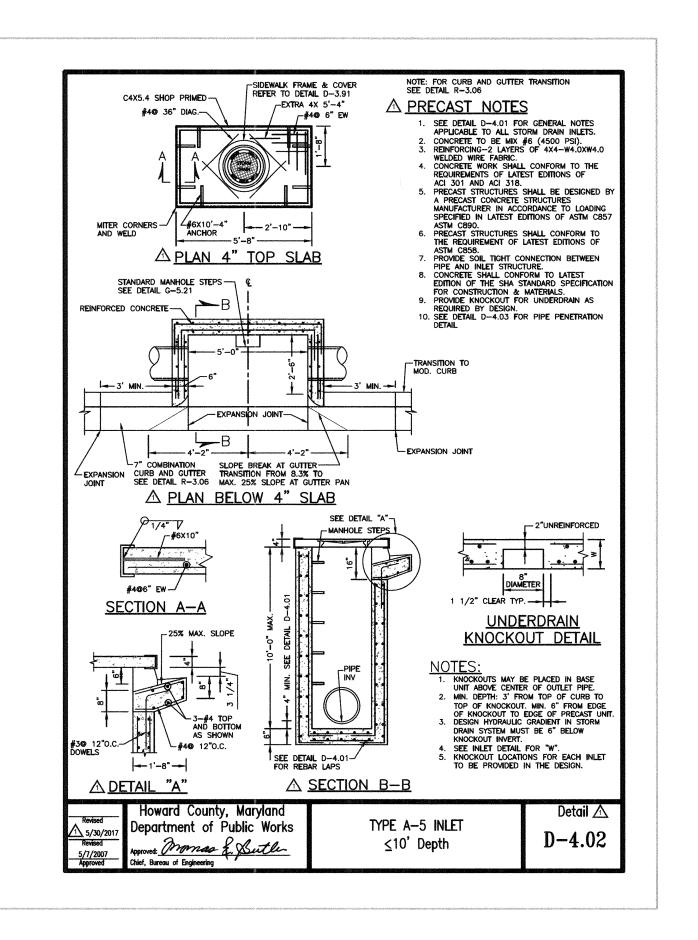
KCI JOB NO.: 171705999.031 CAPITAL PROJECT NO.: D-1175 PERMIT ISSUE:

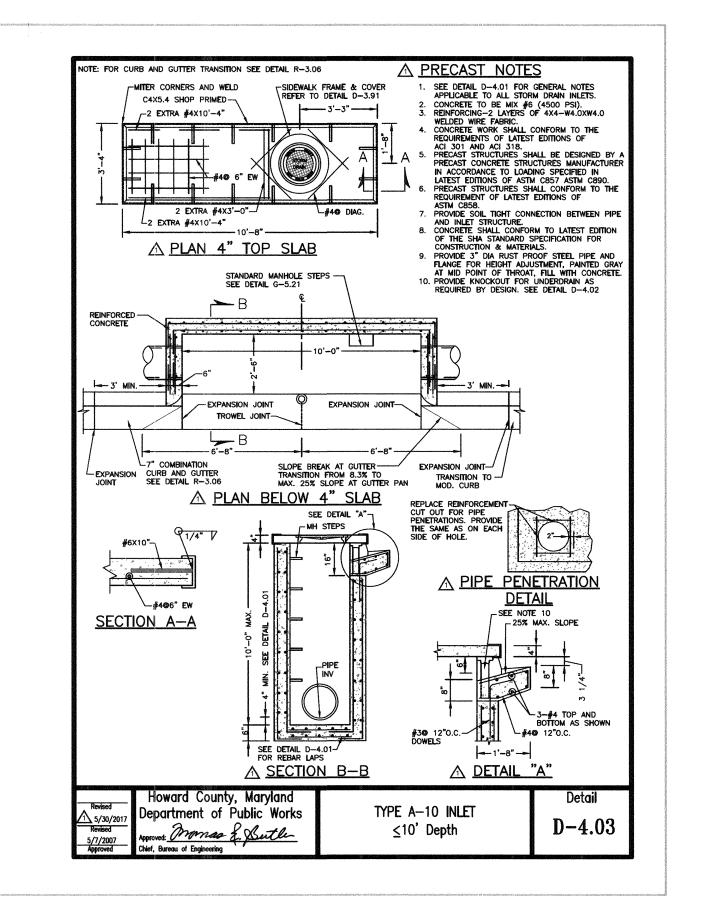
CONSTRUCTION ISSUE:

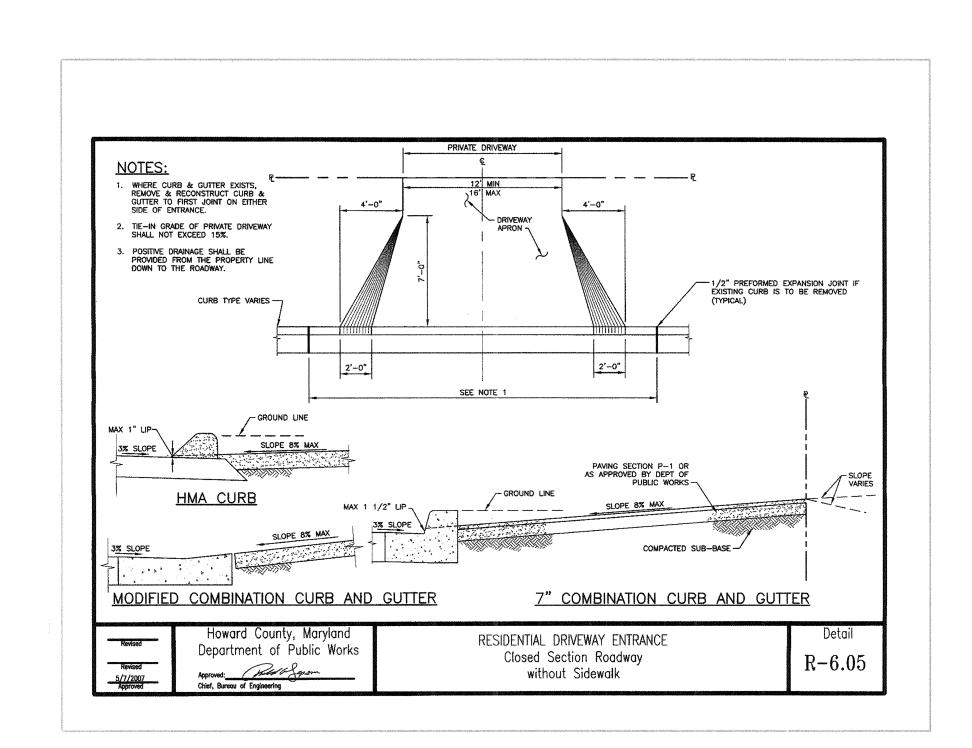
AS-BUILT 09/30/21

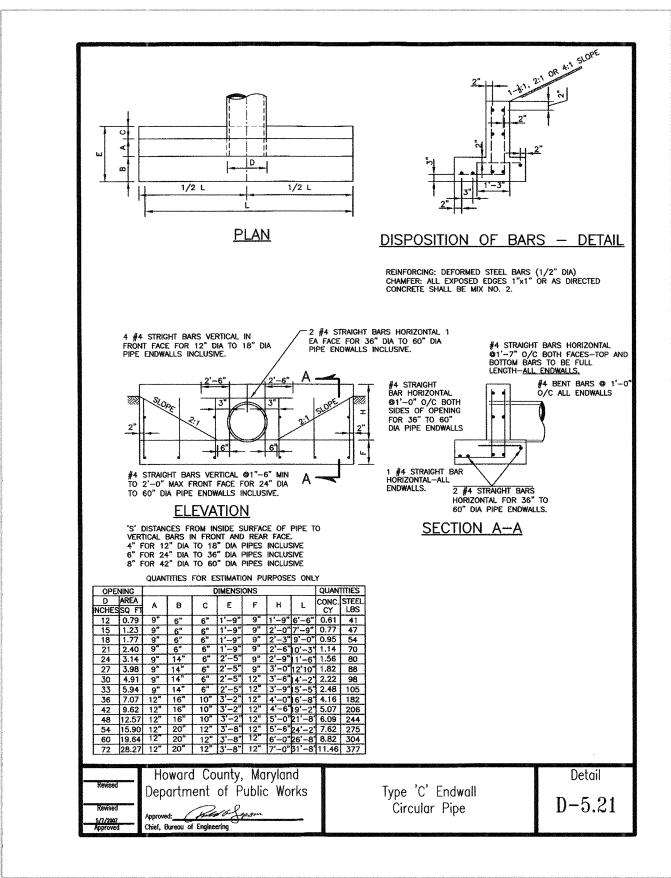
SHEET NO.: 5 OF 11

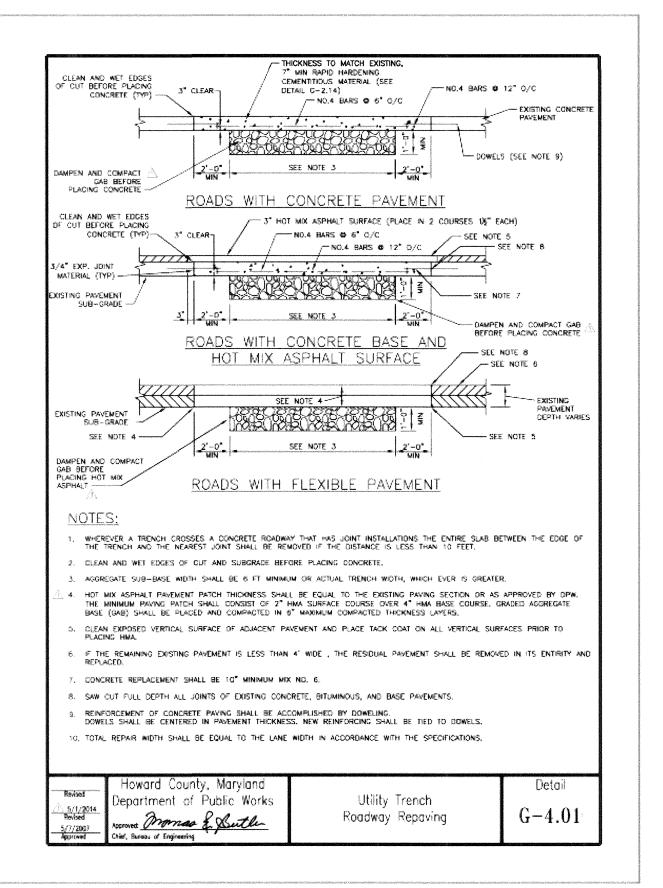


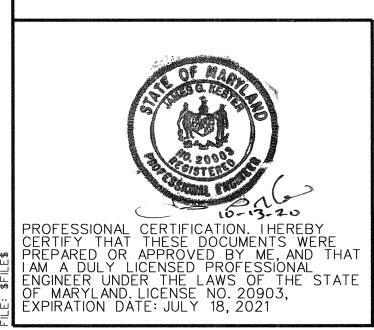




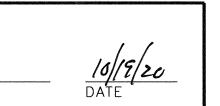








DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD CHIEF, BUREAU OF ENVIRONMENTAL SERVICES



STORMWATER **MANAGEMENT DETAILS**

 \sim

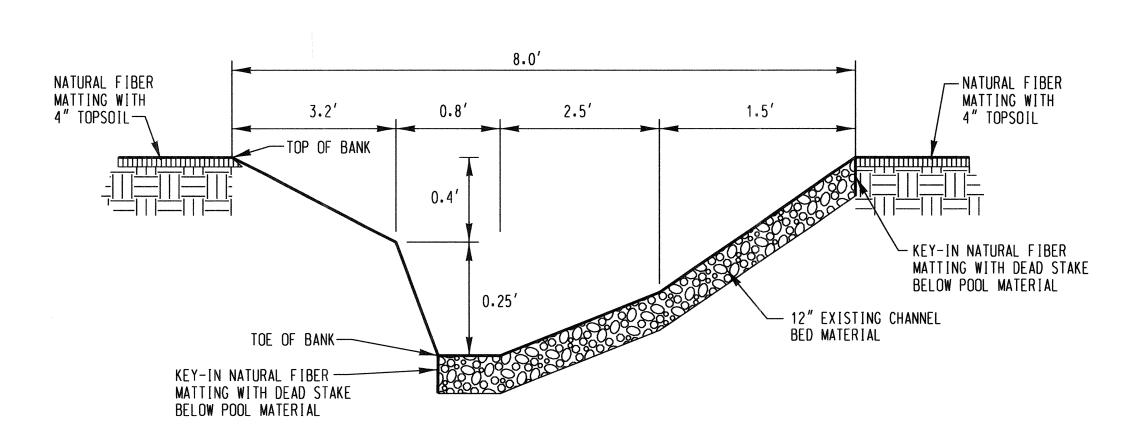
1175

GREENWAY DRIVE DRAINAGE IMPROVEMENTS

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

AS SHOWN OCTOBER 2020 171705999.031 APITAL PROJECT NO.: ERMIT ISSUE: CONSTRUCTION ISSUE:

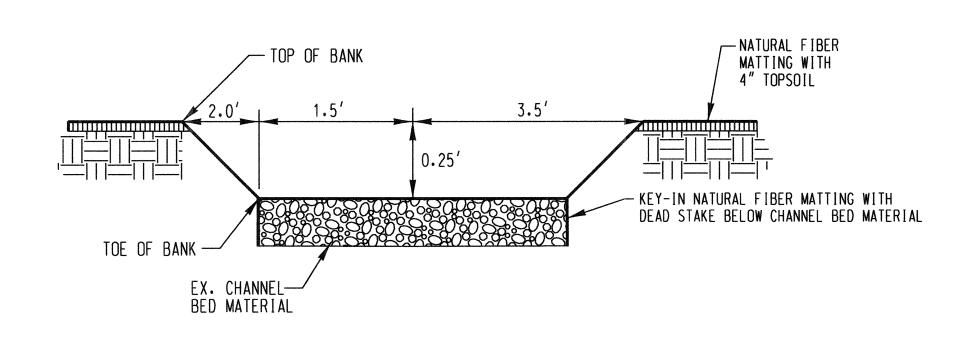
SHEET NO .: 6 OF 11



TYPICAL POOL LEFT CROSS SECTION

NOT TO SCALE

NOTE: POOL RIGHT IS A MIRROR IMAGE OF POOL LEFT



TYPICAL RIFFLE CROSS SECTION

NOT TO SCALE

ROUGHENED WOODY RIFFLE DETAILS

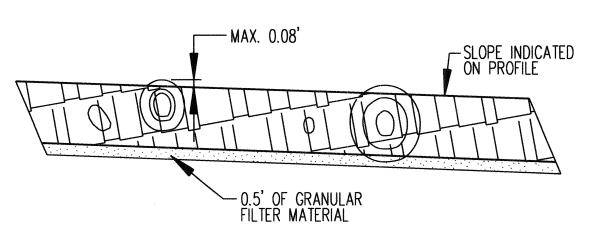
NOT TO SCALE

PLAN VIEW

NOT TO SCALE

SEE CROSS SECTION AND PROFILE VIEWS, THIS SHEET, FOR ADDITIONAL -BOTTOM OF BANK - NATURAL FIBER MATTING WITH 4" TOPSOIL TOP OF BANK CHANNEL MATERIALS — -TOP OF BANK MAX. 0.08'-EXISTING BED MATERIALS, SUPPLEMENTED WITH AVAILABLE ON SITE WOODY **DEBRIS** LOCATION 1 BOTTOM OF BANK LOG SCHEDULE APPROXIMATE STATION A OF RELATIVE LOG PLACEMEN NOT TO SCALE LOG 1 LOG 2 0+71 0+75 0+85 0+83 1+16 1+20 -KEY IN LOGS 1 FT PAST TOP OF BANK -- INCORPORATE PROFILE VIEW SMALL WOODY DEBRIS, AS AVAILABLE ON SITE NOT TO SCALE NOTES: 1. MAXIMUM HEIGHT IS RELATIVE TO PROPOSED CROSS SECTION ELEVATION AT EDGE OF EXPOSED LOG OR BOULDERS.

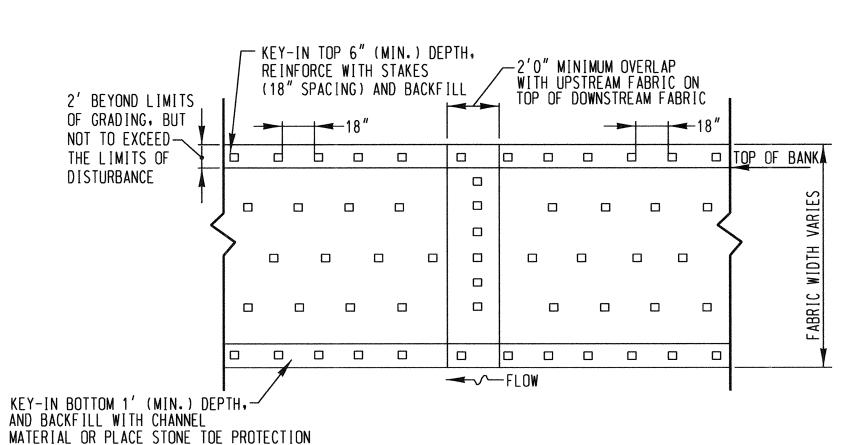
- EX. BED MATERIALS SUPPLEMENTED WITH WOODY MATERIAL, AS AVAILABLE ON SITE CROSS SECTION VIEW A-A'



-WOODEN STAKE, SEE NATURAL FIBER MATTING (TYP)

- EXTEND NATURAL FIBER MATTING TO EXTENT OF RIFFLE MATERIAL

- 2. EXACT LOCATION OF LOGS AND STONES WILL VARY BASED ON MATERIAL AND STRUCTURE LENGTH AND SHOULD BE AT THE DIRECTION OF THE ENGINEER.
- 3. THIS GRAPHIC IS A REPRESENTATION OF HOW THE ROUGHENED WOODY RIFFLE WILL BE INTEGRATED WITH BOULDERS, LOGS, AND EXISTING BED MATERIALS. ROUGHENED WOODY RIFFLES OF SHORTER OR LONGER LENGTHS SHOULD BE REDUCED OR ADDED AS DIRECTED BY THE ENGINEER.
- 4. LOGS SHALL BE SALVAGED FROM ON-SITE CLEARING ACTIVITIES AND OF A DIAMETER OF 0.5' TO 1.5' AS APPROVED BY THE ENGINEER.
- 5. THE MAXIMUM PROTRUSION HEIGHT WITHIN THE CHANNEL IS 0.08'. PROTRUSION CAN INCREASE BEYOND 0.3' BETWEEN THE BOTTOM AND TOP OF BANK EXTENTS



TYPICAL PLAN VIEW NATURAL FIBER MATTING AND REINFORCED NATURAL FIBER MATTING

NOT TO SCALE

1. NATURAL FIBER MATTING TO BE ROLLED LENGTHWISE ALONG STREAMBANK EXTENDING TO THE BOTTOM OF TOE PROTECTION AND A MINIMUM OF TWO FOOT 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.

2. NATURAL FIBER MATTING IS TO BE INSTALLED ON ALL GRADED BANK SLOPES STEEPER THAN 3H:1V THAT ARE NOT PROTECTED BY STONE TOE OR IMBRICATED BANK PROTECTIONS.

3. NATURAL FIBER MATTING. MATTING FOR THE BANK TREATMENT AREAS 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: 0.20 IN. WEIGHT: 20 OZ/SY (700 GRAMS/SM) FLOW VELOCITY: 8 FT./SEC. (2.4 M/SEC.) SHEAR STRESS: 2 LBS./SQ. FT. (96 Pa) LONGEVITY: 2 YEARS

ALL MATTING SHALL BE PULLED TIGHT AND SHALL NOT BE LOOSE OR SAGGING.

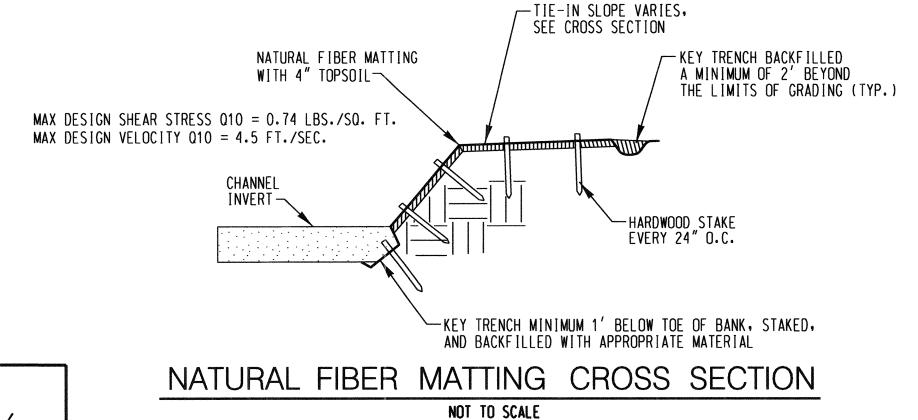
4. REINFORCED NATURAL FIBER MATTING. MATTING SHALL CONSIST OF A DOUBLE-LAYERED BIODEGRADABLE FABRIC: A BOTTOM LAYER OF JUTE FABRIC AND A TOP LAYER OF HIGH STRENGTH COIR MATTING, CONNECTED TOGETHER. REINFORCED NATURAL FIBER MATTING SHALL MEET THE FOLLOWING MINIMUM SPECIFICATIONS:

ROUGHENED RIFFLE STATION

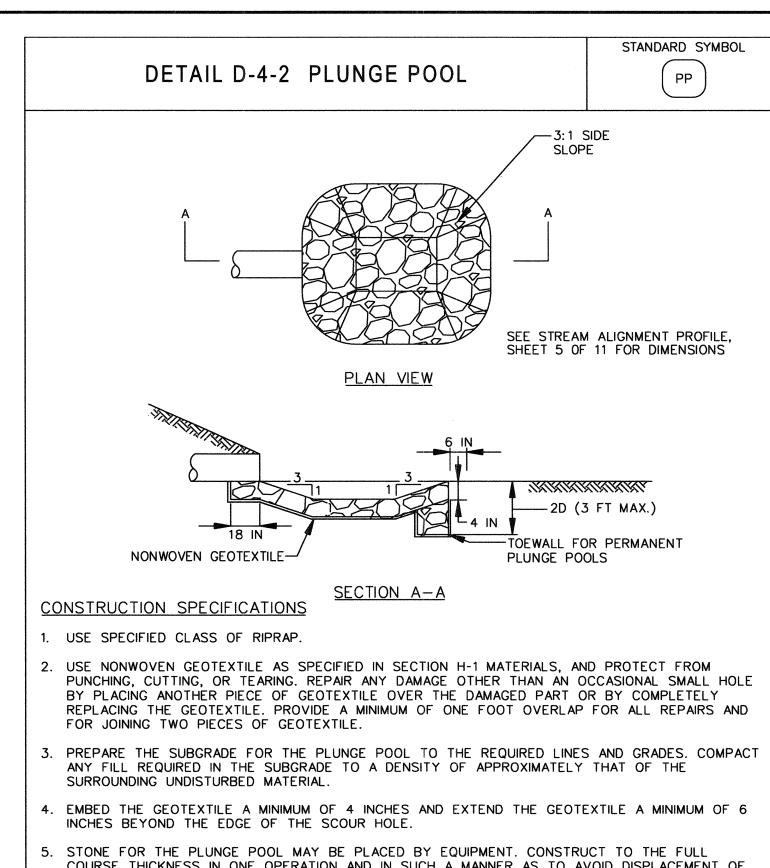
MATERIALS: WOVEN COIR FIBER (TOP LAYER) AND JUTE FABRIC (BOTTOM LAYER) THICKNESS: 0.30 IN. WEIGHT: 28 OZ/SY (900 GRAMS/SM) FLOW VELOCITY: 10 FT/SEC. (3.0 M/SEC.) SHEAR STRESS: 3 LBS./SQ. FT. (144 Pa)

5. 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



LONGEVITY: 3 YEARS



STREAM DETAILS

PUB

GREENWAY DRIVE DRAINAGE IMPROVEMENTS

MARYLAND 21152
NE: (410) 316-7800
(410) 316-7818
ww.kci.com

SPARKS, MAR. —
TELEPHONE: (410) 3
FAX: (410) 316 -

RIDGEBROOK

NOT TO SCALE OCTOBER 2020 171705999.031 APITAL PROJECT NO.: D-1175 ERMIT ISSUE:

CONSTRUCTION ISSUE:

10-14-20 PROFESSIONAL CERTIFICATION. IHEREBY 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. 20903, EXPIRATION DATE: JULY 18, 2021

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

NATURAL RESOURCES CONSERVATION SERVICE

COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. DELIVER AND PLACE THE STONE FOR THE PLUNGE POOL IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENEOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE STONE FOR THE PLUNGE POOL IN A MANNER TO PREVENT DAMAGE TO THE GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.

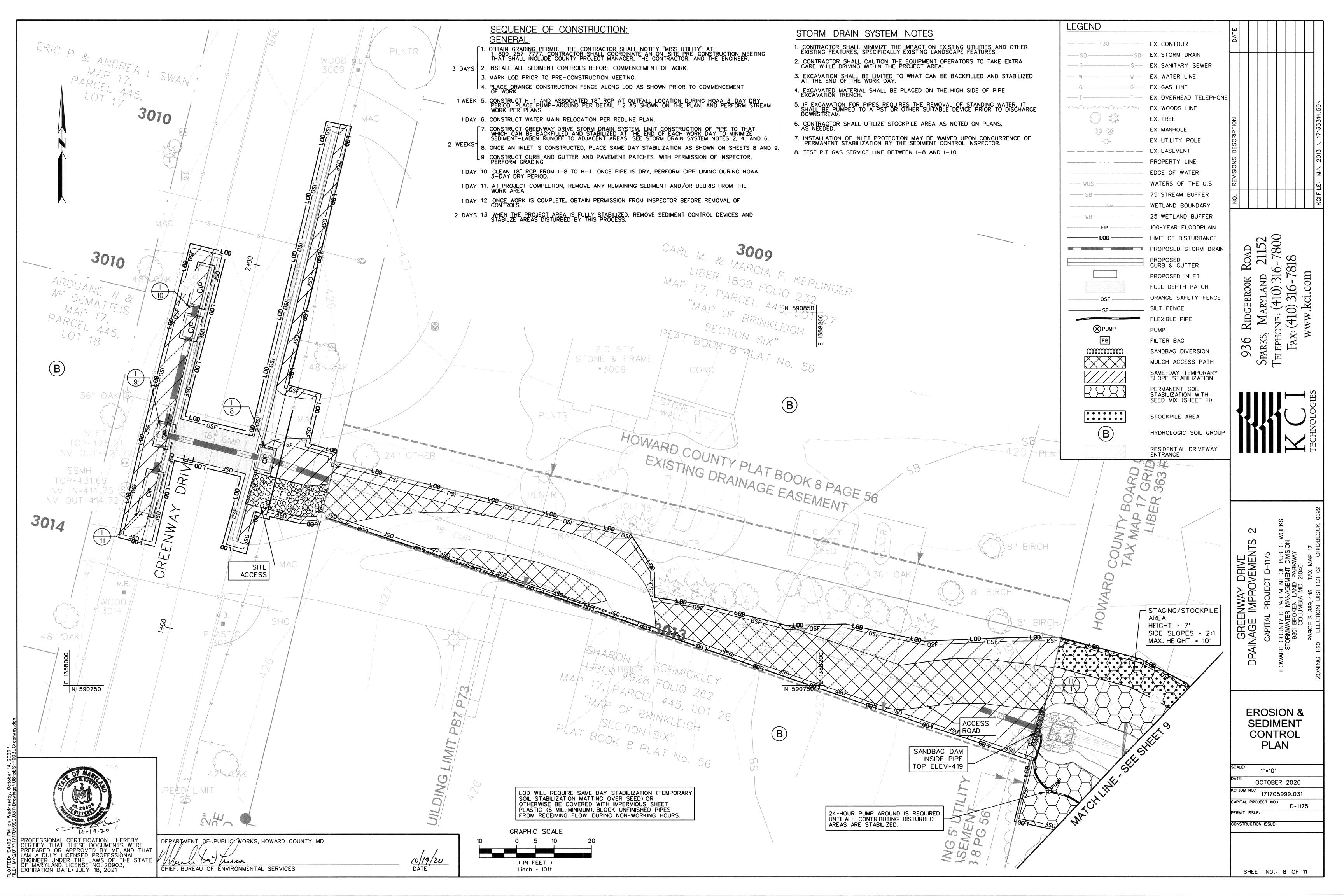
6. AT THE PLUNGE POOL OUTLET, PLACE THE STONE SO THAT IT MEETS THE EXISTING GRADE.

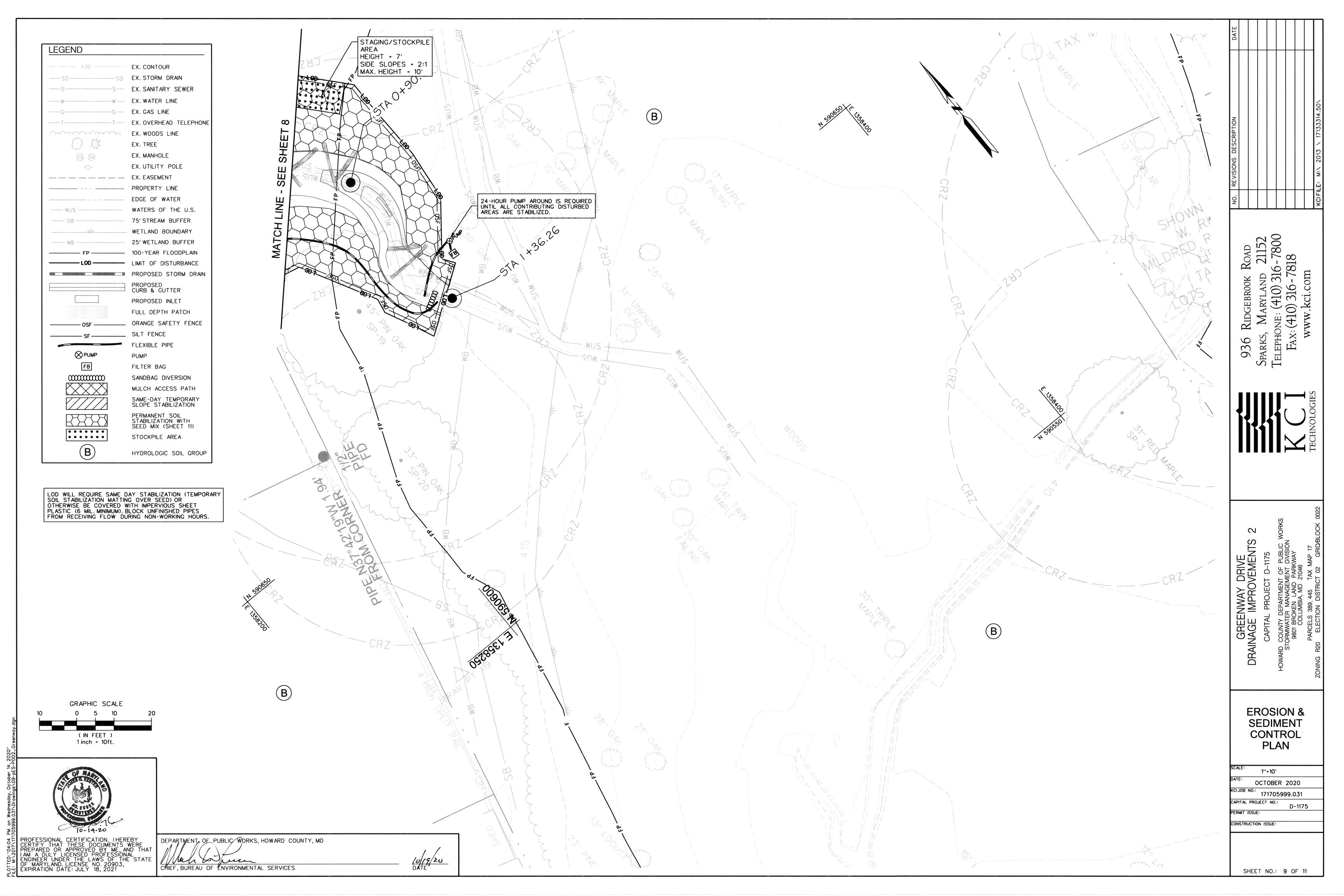
7. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

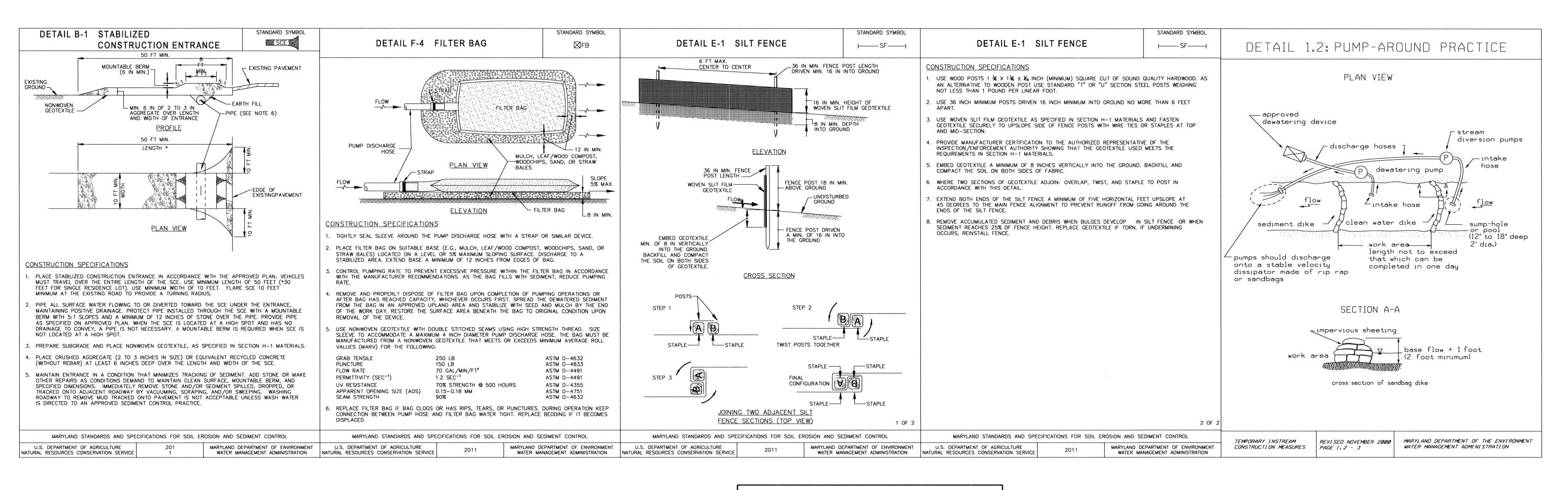
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL U.S. DEPARTMENT OF AGRICULTURE MARYLAND DEPARTMENT OF ENVIRONMENT

WATER MANAGEMENT ADMINISTRATION

SHEET NO.: 7 OF 11







HOWARD SOIL CONSERVATION DISTRICT (HSCD) STANDARD SEDIMENT CONTROL NOTES

- 1. A pre-construction meeting must occur with the Howard County Department of Public Works. Construction Inspection Division (CID), 410-313-1855 after the future LOD and protected areas are marked clearly in the field. A minimum of 48 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, 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.
- Site Analysis: Total Area of Site: Acres Area Disturbed: Acres Area to be roofed or paved: Acres 0.07 Area to be vegetatively stabilized: Acres 340 Total Cut: Cu. Yds.
 - Total Fill: Offsite waste/borrow area location:
- Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.

340

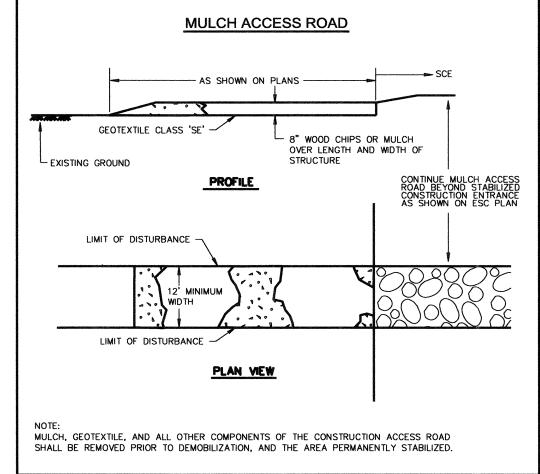
Cu. Yds.

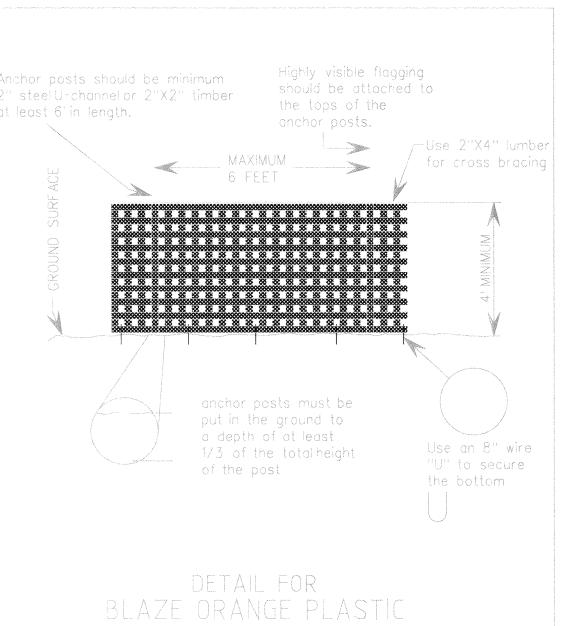
Additional sediment control must be provided, if deemed necessary by the CID. The site and all controls shall be inspected by the contractor weekly; and the next day after each rain event. A written report by the contractor, made available upon request, is part of every inspection and should include:

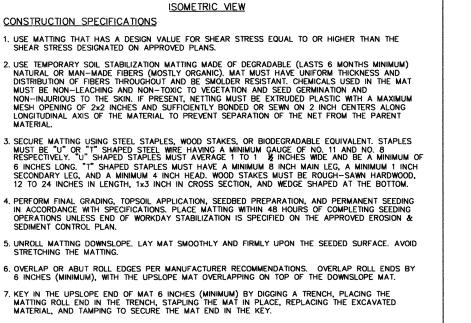
- Inspection date
- Inspection type (routine, pre-storm event, during rain event)
- Name and title of inspector
- Weather information (current conditions as well as time and amount of last recorded
- Brief description of project's status (e.g., percent complete) and/or current activities
- Evidence of 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

TOTAL DISTURBED AREA: 0.21 AC.

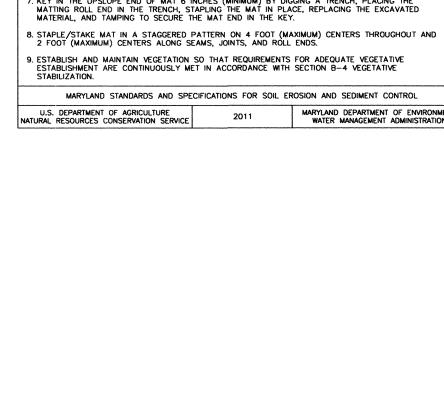
- Use IV March 1 May 31
- 16. A copy of this plan, the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, and associated permits shall be on-site and available when the site is active

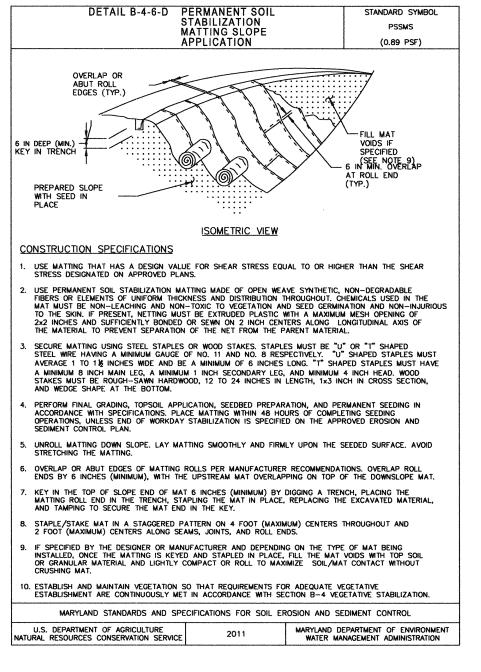


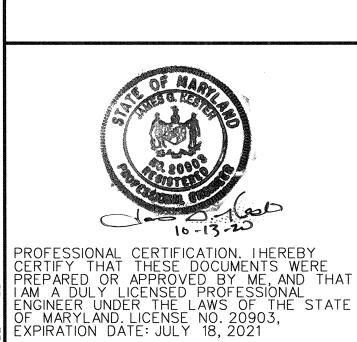




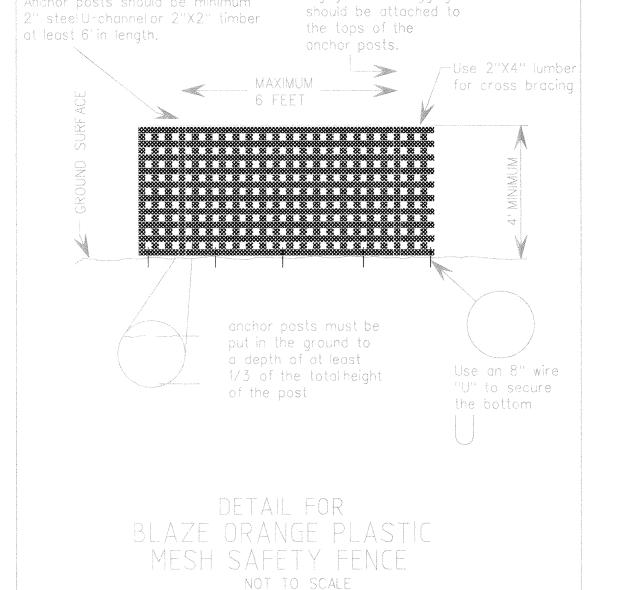
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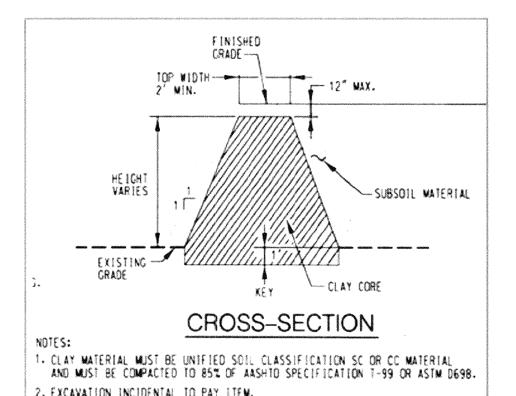






DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD CHIEF, BUREAU OF ENVIRONMENTAL SERVICES





2. EXCAVATION INCIDENTAL TO PAY ITEM. CLAY PLUG

NOT TO SCALE

GREENWAY DRIVE DRAINAGE IMPROVEMENT

1175

ROAD 21152 6-7800 818

MARY

SPARKS,

0

-9 -9 -9 -9

(410) (410) (316)

NE: \((410)\)

EROSION & SEDIMENT CONTROL NOTES & DETAILS

AS SHOWN OCTOBER 2020 CIJOB NO 171705999.031 APITAL PROJECT NO.: D-1175 ERMIT ISSUE:

ONSTRUCTION ISSUE:

SHEET NO .: 10 OF 11

INCREMENTAL STABILIZATION

<u>Definition</u>

Establishment of vegetative cover on cut and fill slopes.

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
 - 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

EXISTING GROUND -DIKE/SWALE

GROUND 15 FT MAX PHASE 1 EXCAVATION

Figure B.1: Incremental Stabilization – Cut

PHASE 2 EXCAVATION

PHASE 3 EXCAVATION

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

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.

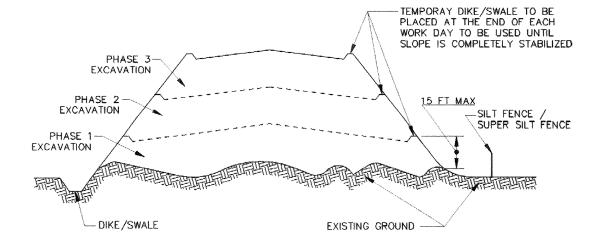


Figure B.2: Incremental Stabilization – Fill

CERTIFICATION.

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. 20903, EXPIRATION DATE: JULY 18, 2021

B-4-2 STANDARDS AND SPECIFICATIONS

SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

Definition

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

<u>Purpose</u>

<u>Criteria</u>

To provide a suitable soil medium for vegetative growth.

Conditions Where Practice Applies

Soil Preparation

1. Temporary Stabilization

Where vegetative stabilization is to be established.

- 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
- 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
- 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.

- 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

DEPJARTIMENT OF PUBLIC/WORKS, HOWARD COUNTY, MD

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

- 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.

Soil Amendments (Fertilizer and Lime Specifications)

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

B-4-3 STANDARDS AND SPECIFICATIONS

<u>FOR</u>

SEEDING AND MULCHING

<u>Purpose</u>

te application of seed and mulch to establish vegetative cover.

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

Conditions Where Practice Applies

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

- 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 each direction.
- c. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer). i. If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of soluble nitrogen; P₂O₅ (phosphorous),
- 200 pounds per acre; K₂O (potassium), 200 pounds per acre. ii. Lime: Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding
- iii. Mix seed and fertilizer on site and seed immediately and without interruption.
- iv. When hydroseeding do not incorporate seed into the soil.

- 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

B-4-4 STANDARDS AND SPECIFICATIONS

FOR

TEMPORARY STABILIZATION

Definition

To stabilize disturbed soils with vegetation for up to 6 months

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

<u>Purpose</u>

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.

<u>Criteria</u>

- 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

FROI	M TABLE 26	FERTILIZER RATE	LIME			
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEED ING DEPTHS	(10-10-10)	RATE
1	RYE	140	3/1-4/30 8/15-11/15	1-2 INCH	600 LB/AC (15 LB/1000 SF)	2 tons/ac (100 LB/ 1000 SF)
2	RYE PLUS FOXTAIL MILLET	150	3/1-4/30 5/1-8/14 8/15-11/15	1 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

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. 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 - CONTINUED

Permanent Seeding Summary

SEED MIXTURE (HARDINESS ZONE 68) FERTILIZER RATE FROM TABLE 25 (10-20-20)						LIME		
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEED ING DATES	SEED ING DEPTHS	N	P205	K20	
1 P	ALL FESCUE (85%) PERENNIAL RYEGRASS (10%) PENTUCKY BLUEGRASS (5%)	125 15 10	3/1-5/15 8/15-10/15	1-2 INCH	90 LB/AC	175 lb/ac 175 (4.0 LB/ (4.0	175 lb/ac (4.0 LB/	2 tons/oc
* H	(ENTUCKY BLUEGRASS (50%) HARD FESCUE (40%) RED TOP (10%)	150	3/1-5/15 8/15-10/15	1-2 INCH	1000 SF1	1000 SF1	1000 SF)	1000 SF)

RED TOP (10%) B. Sod: To provide quick cover on disturbed areas (2:1 grade or flatter).

the job foreman and inspector.

- 1. General Specifications

a. Class of turfgrass sod must be Maryland State Certified. Sod labels must be made available to

- b. Sod must be machine cut at a uniform soil thickness of ³/₄ inch, plus or minus ¹/₄ inch, at the time of cutting. Measurement for thickness 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 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

2. Sod Installation

- a. During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate
- the subsoil immediately prior to laying the sod. b. Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Stagger lateral joints to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to

prevent voids which would cause air drying of the roots.

- c. Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints. Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensure solid contact exists between sod roots and the underlying soil surface.
- d. Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of sod within eight hours.

3. Sod Maintenance

- a. In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.
- b. After the first week, sod watering is required as necessary to maintain adequate moisture
- 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.

B-4-5 STANDARDS AND SPECIFICATIONS

PERMANENT STABILIZATION

To stabilize disturbed soils with permanent vegetation.

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

General Use

A. Seed Mixtures

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

shown in the Permanent Seeding Summary.

- 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

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

- 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.
- 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

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. Th

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

to 70 percent. Seeding Rate: 1½ to 3 pounds per 1000 square feet.

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)

seasons, or on adverse sites.

(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

Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15

e. If soil moisture is deficient, supply new seedings with adequate water for plant growth ($\frac{1}{2}$ to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedings are made late in the planting season, in abnormally dry or hot

diameter. The resulting seedbed must be in such condition that future mowing of grasses will

PERMANENT SEEDING FOR FOR GRADED AREAS BEYOND THE CHANNEL

ERNST SEED MIX 723: 15 LBS/ACRE

ROAD 21152 6-7800 818 316-3-7818 om RIDGEBROOK]
MARYLAND
ONE: (410) 316
: (410) 316-78
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E IMPROVEMENTS

EROSION & SEDIMENT

CONTROL

AS SHOWN OCTOBER 2020 171705999.031 APITAL PROJECT NO.: RMIT ISSUE:

SHEET NO .: 11 OF 11

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NOTES

ONSTRUCTION ISSUE: