INDEX OF SHEETS

SHEET DESCRIPTION NO. TITLE SHEET GEOMETRY SHEET PROFILE SHEET GRADING PLAN STREAM DETAILS AND TYPICAL SECTIONS STEEP SLOPES

EROSION AND SEDIMENT CONTROL PLAN

EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

FOREST CONSERVATION PLAN NOTES AND DETAILS

LIMIT OF DISTURBANCE -----

EXISTING MAJOR CONTOURS ______ EXISTING MINOR CONTOURS ______

PROPOSED CONTOURS _____

EXISTING TREE TO BE SAVED ______

EDGE OF TREELINE

WATERS OF THE US______

PROPERTY LINE_____

EXISTING DRAINAGE AND UTILITY EASEMENT _____

EXISTING ROAD EDGE ______

EXISTING FENCE _____

EXISTING TREE _____

WETLAND _____

25' WETLAND BUFFER ______

EXISTING SANITARY SEWER LINE______

EXISTING STORM DRAIN ______

EXISTING STORM DRAIN MANHOLE _____

STONE SILL

CLAY CHANNEL PLUG______

STONE TOE PROTECTION ______

RIFFLE GRADE CONTROL ______

PUMP _____

SILT BAG DEWATERING DEVICE _____

SAND BAG DAM ______

ORANGE SAFETY FENCE_____

PROP. 100 YEAR FLOODPLAIN______

EXISTING SANITARY SEWER EASEMENT _____

EXISTING PROPERTY LINE ______

EXISTING SANITARY SEWER EASEMENT______

EXISTING DRAINAGE & UTILITY EASEMENT_____

STABILIZED CONSTRUCTION ENTRANCE ______SCE

SILT FENCE _____ SF ____

LANDSCAPE NOTES AND DETAILS FOREST CONSERVATION PLAN

ANDSCAPE PLAN

LEGEND

RED HILL BRANCH STREAM STABILIZATION HOWARD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS

CAPITAL PROJECT D-1158

SITE ANALYSIS DATA CHART

1. TOTAL PROJECT AREA: 0.61 ACRES (26,482 SF). 2. DISTURBED AREA: 0.61 ACRES (26,482 SF). 3. PRESENT ZONING DESIGNATION: R-20

4. PROPOSED USE FOR THE SITE: STABILIZE EXISTING

- BANK/CHANNEL EROSION 5. OPEN SPACE ON SITE: Ø.57 AC, 93% OF GROSS
- 6. APPLICABLE DPZ FILE REFERENCES: F-81-90, F-88-162

ADDRESS CHART

LOT/PARCEL #	STREET ADDRESS	PLAT #
11 / 15 1-21 / A 21 / NA	4841 RED HILL WAY OPEN SPACE LOT OPEN SPACE LOT	49Ø9 49Ø9 8161

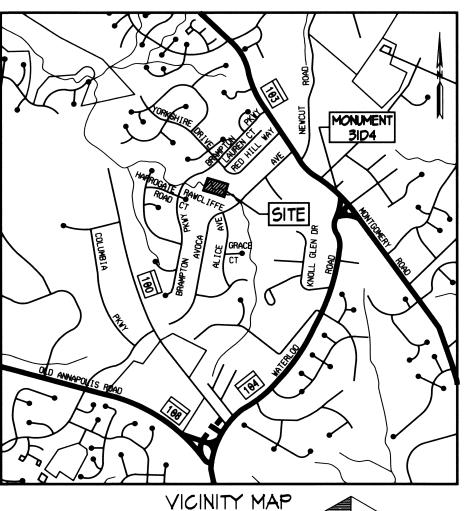
9/10/10

SPECIAL CONTRACTOR NOTES

- 1. 100-YEAR FLOODPLAIN BOUNDARY IS
- 2. IN-STREAM WORK IS PROHIBITED FROM MARCH 1ST TO JUNE 15TH, INCLUSIVE. STREAM CLASSIFICATION: USE I-P.

- 6. 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.
- 7. PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES, PHOTOGRAPHS OF THE PROPOSED
- 8. ALL TREES TO BE REMOVED SHALL BE CUT TREE STUMPS MAY BE LEFT IN PLACE, UNLESS
- 9. ALL MATERIAL SHALL BE REMOVED AND DISPOSED OF OFFSITE.

- SHOWN ON THE PLANS.
- 3. CONTRACTOR SHALL CONTINUALLY MONITOR WEATHER FORECASTS DURING WORK ACTIVITIES AND SCHEDULE WORK DURING FAVORABLE CONDITIONS
- 4. 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 THE ENGINEER OR HIS/HER
- REPRESENTATIVE PRIOR TO CONSTRUCTION. 5. CONTRACTOR SHALL NOT STORE EQUIPMENT MATERIALS AND/OR SUPPLIES BEYOND THE ORANGE FENCING SHOWN ON THE PLANS.
- WORK AREA AND ACCESS SHALL BE TAKEN.
- AT THE BASE WITH A SAW AND NOT PUSHED OVER. OTHERWISE DIRECTED ON THE PLANS.



ADC MAP NO. 4815 GRID E-2

THE HORIZONTAL AND VERTICAL DATUM SHOWN HEREON N.G.S.TRAVERSE POINTS HORIZONTAL NAD 1983/91 VERTICAL NAVD 1988

TRAVERSE COORDINATE LIST NORTHING EASTING ELEVATION N 572,054.35 E 1,367,145.79 404.64

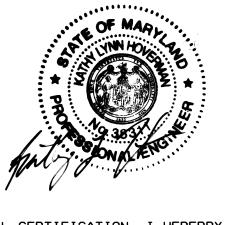
1369606.3482 5717**00.**6929

ELEVATION 494.421

GENERAL NOTES

- THE SUBJECT PROPERTIES ARE ZONED R-20 PER FEBRUARY 2, 2004 COMPREHENSIVE ZONING PLAN AND THE COMP-LITE ZONING AMENDMENTS DATED
- THE DEPARTMENT OF PLANNING AND ZONING AND THE HOWARD SOIL CONSERVATION DISTRICT HAVE DETERMINED THAT THE DISTURBANCES WITHIN THE 100-YEAR RESTORATION PROJECT ARE CONSIDERED ESSENTIAL OR NECESSARY IN ACCORDANCE WITH SECTIONS 16.115(C) AND 16.116(C) OF THE SUBDIVISION AND LAND
- THIS PROJECT WILL MEET THE PURPOSE AND INTENT OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL BY ALTERNATIVE COMPLIANCE.
- 4. THERE ARE NO BURIAL GROUNDS OR CEMETERY SITES LOCATED ON THE PROJECT SITE. 5. THIS PLAN MEETS THE REQUIREMENTS OF FOREST CONSERVATION, WHICH INCLUDES 0.0 ACRES OF RETENTION AND 0.23 ACRES OF PROPOSED REFORESTATION PLANTING WITHIN THE LIMIT OF DISTURBANCE. THE REFORESTATION EXCEEDS THE REQUIRED 0.04 ACRES OF REFORESTATION. REFER TO FOREST CONSERVATION PLAN SHEETS 13 AND 14.
- 6. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
- 7. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS. BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-
- 1880 24 HOURS IN ADVANCE OF ANY WORK BEING DONE. 8. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- 9. THE COORDINATES SHOWN HEREON ARE BASED ON HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NUMBER 31D4 WAS USED FOR THIS SITE.
- 10. WATER IS PUBLIC.
- 11. SEWER IS PUBLIC. 12. STORMWATER MANAGEMENT IS NOT REQUIRED FOR THIS PROJECT SINCE THE PROJECT WILL NOT ADD IMPERVIOUS AREA NOR WILL IT CHANGE THE EXISTING HYDROLOGY OF THE SITE.
- 13. EXISTING UTILITIES ARE BASED ON FIELD SURVEYS AND AVAILABLE RECORD
- 14. THE FLOODPLAIN STUDY FOR THIS PROJECT WAS PREPARED BY KCI TECHNOLOGIES, INC.
- 15. THE WETLANDS DELINEATION FOR THIS PROJECT WAS PERFORMED BY KCI TECHNOLOGIES, INC. IN OCTOBER 2009.
- 16. THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH ONE FOOT CONTOUR INTERVALS PREPARED BY AB CONSULTANTS, INC., IN NOVEMBER 2009. 17. ALL WORK SHALL BE CONSTRUCTED ACCORDING TO THE REQUIREMENTS OF THE NONTIDAL WETLANDS AND WATERWAYS PERMIT APPROVED 08/03/2010.
- (MDE TRACKING *10-NT-0145/201060524). 18. NO TRAFFIC STUDY IS REQUIRED FOR THIS PROJECT.
- 19. OBSTRUCTIONS SHOWN ON THIS DRAWING ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY AND KCI TECHNOLOGIES, 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.
- 20. 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.
- 21. A WAIVER PETITION (WP-10-162) FROM SECTION 16.155(A)(1)(II),16.1201(N) AND 16.1205(A)(7), WAS APPROVED ON JUNE 30, 2010. THE WAIVER APPROVAL GRANTS RELIEF FROM THE REQUIREMENT TO SUBMIT A SITE DEVELOPMENT PLAN, ALLOWS THE USE OF THE PROJECT LIMIT-OF-DISTURBANCE AS THE NET TRACT AREA FOR COMPUTATION OF FOREST CONSERVATION OBLIGATIONS, AND ALLOWS THE REMOVAL OF A SPECIMEN TREE AS PART OF THE PROJECT

NOTE: AS-BUILTS COMPLETED IN JANUARY 2011 AND PROVIDED ON SHEET 3 AND NEW SHEET 4A.



PROFESSIONAL CERTIFICATION. I HERERBY 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. ICENSE NO. 38311. EXPIRATION DATE: JANUARY 6, 2012

DEPARTMENT OF, PUBLIC WORKS, HOWARD COUNTY, MD

DEPARTMENT OF RECREATION AND PARKS, HOWARD COUNTY, MD

mmmmmm

PERMIT INFORMATION CHART LOT/PARCEL*
SEE ADDRESS BROOKVIEW ESTATES MONTGOMERY ESTATES PLAT* or L/F GRID * ZONING TAX MAP NO. ELECT. DISTR. CENSUS TRACT SEE ADDRESS 7 R-20 31 Ø1 SEWER CODE PUBLIC PUBLIC

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS 6751 COLUMBIA GATEWAY DRIVE COLUMBIA, MD 21046

ENGINEER'S CERTIFICATE

DEVELOPER'S CERTIFICATE

INVE 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

THE CONTROL OF SEDIMENT AND EROSION BEFORE THE BEGINNING OF THE PROJECT. LALSO AUTHORIZE PERIODIC

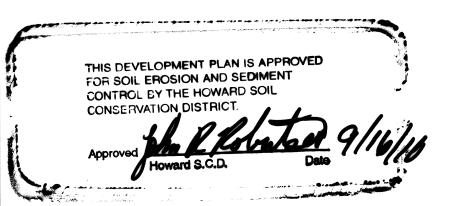
HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR

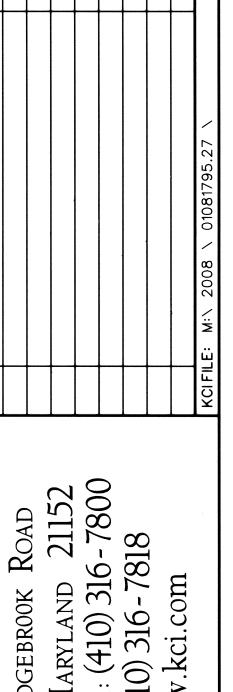
"ICERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN

BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH

THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT"

ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT





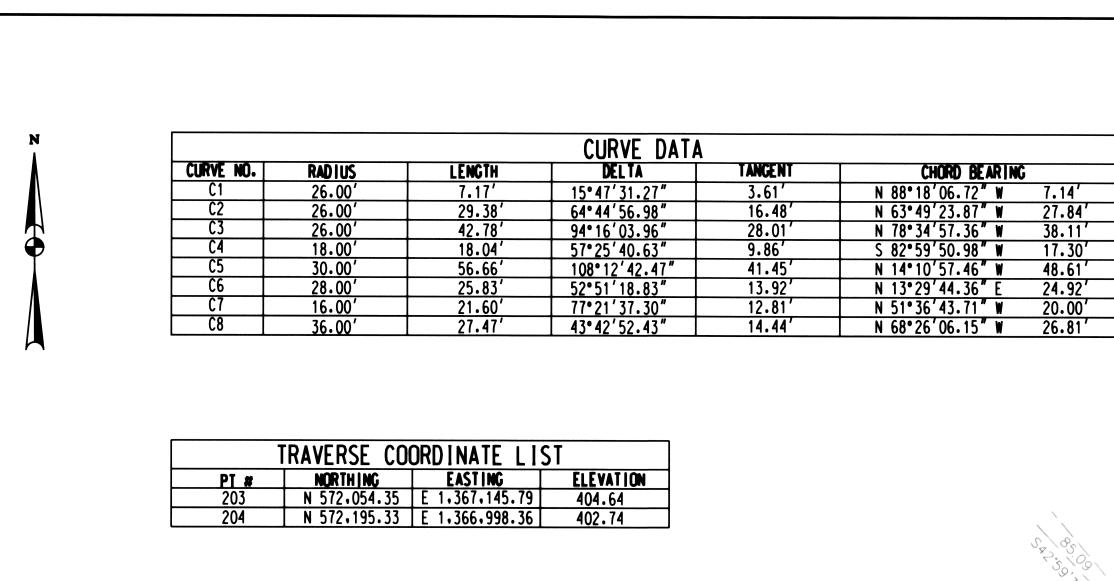
RED HILL BRANCH STREAM STABILIZATION

0 0.25 0.5 1.0 INCHES

SEPTEMBER 2010 CI JOB NO.: 01-081795.27 APITAL PROJECT NO.:

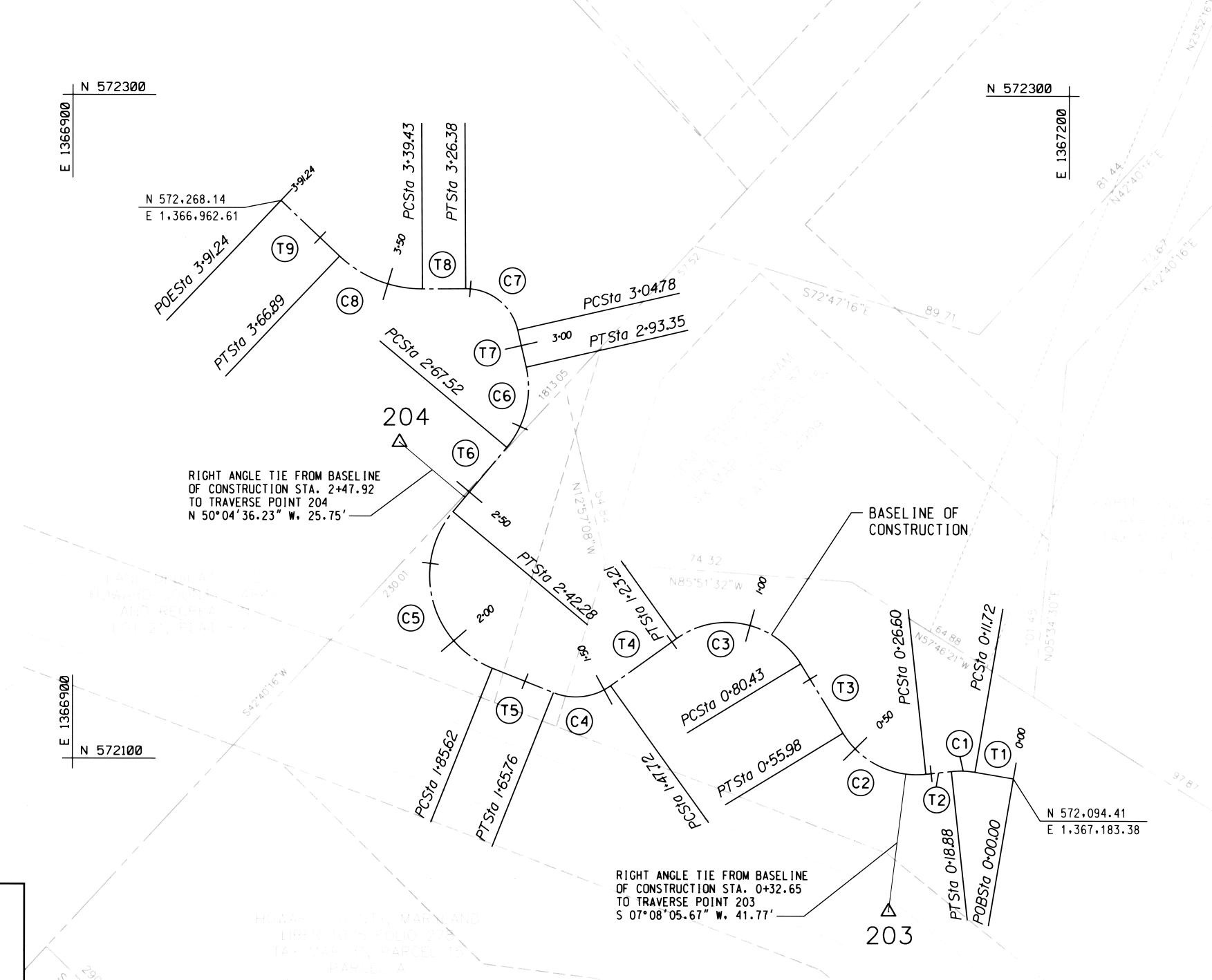
CONSTRUCTION ISSUE:

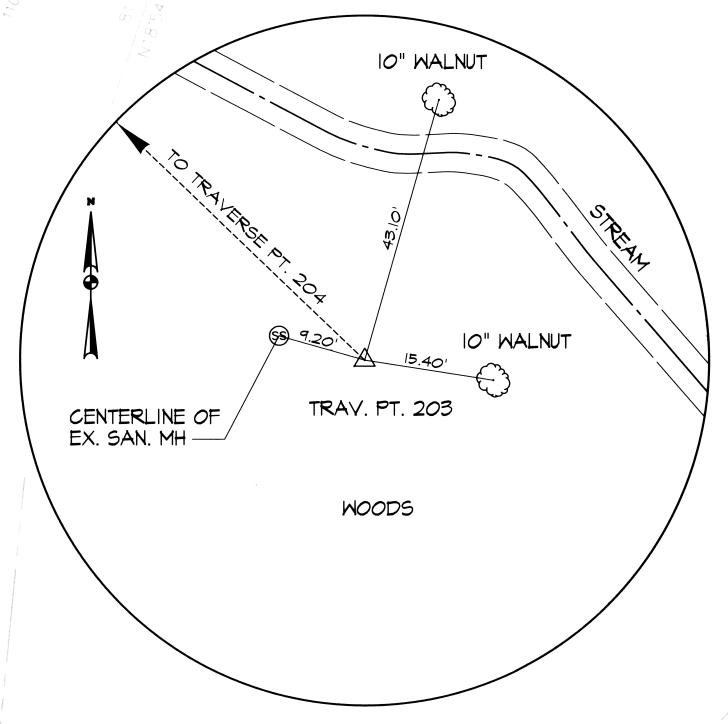
SHEET NO.: 1 OF 14



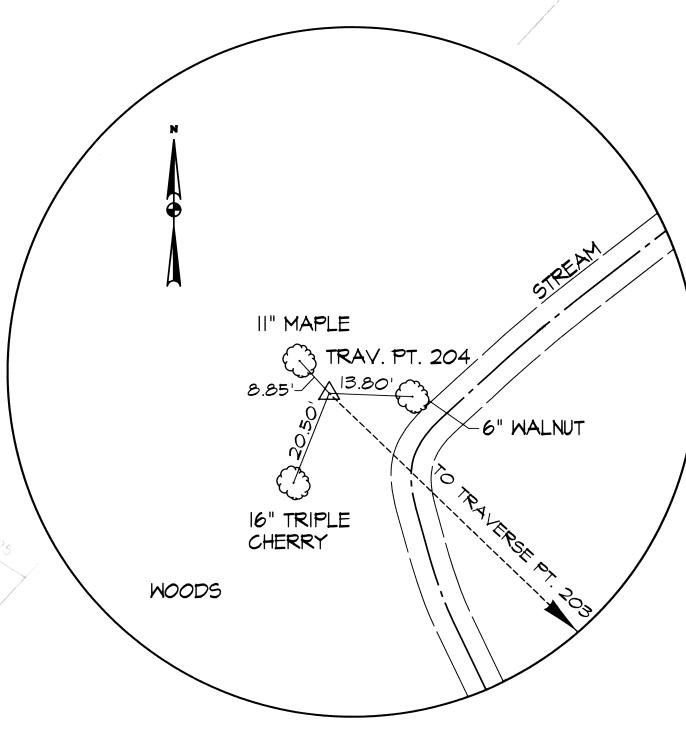
PROFESSIONAL CERTIFICATION. I HERERBY CERTIFY THAT
THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME,
AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER
UNDER THE LAWS OF THE STATE OF MARYLAND,
LICENSE NO. 38311. EXPIRATION DATE: JANUARY 6, 2012

TANGENT DATA				
TANGENT NO.	BEARING	DISTANCE		
T1	N 80°24'21.08" W	11.72		
T2	S 83°48′07.64″ W	7.72'		
T3	N 31°26′55.37″ W	24.45		
T4	S 54°17′00.66″ W	24.51		
T5	N 68°17′18.70″ W	19.85		
T6	N 39°55′23.77″ E	25.25		
T7	N 12°55′55.06″ W	11.42		
T8	S 89°42′27.64″ W	13.05′		
T9	N 46°34′39.93″ W	24.34		





TRAVERSE POINT 203 PIN AND CAP NOT TO SCALE



TRAVERSE POINT 204
PIN AND CAP
NOT TO SCALE

936 RIDGEBROOK ROAD SPARKS, MARYLAND 211, TELEPHONE: (410) 316-78 FAX: (410) 316-7818 www.kci.com

RED HILL BRANCH STREAM STABILIZATION

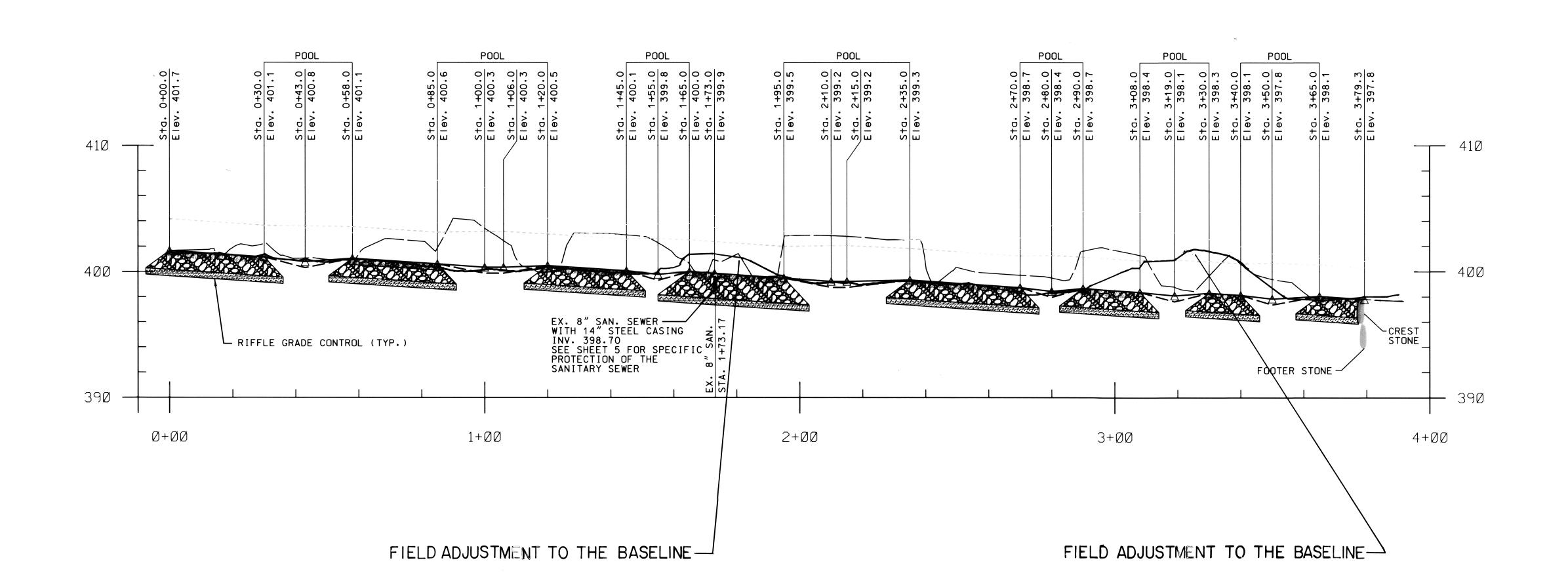
GEOMETRY SHEET

0 0.25 0.5 1.0 INCHES 1" - 20' SEPTEMBER 2010 01-081795.27 CAPITAL PROJECT NO.:

SHEET NO.: 2 OF 14

CONSTRUCTION ISSUE:

EP-10-44



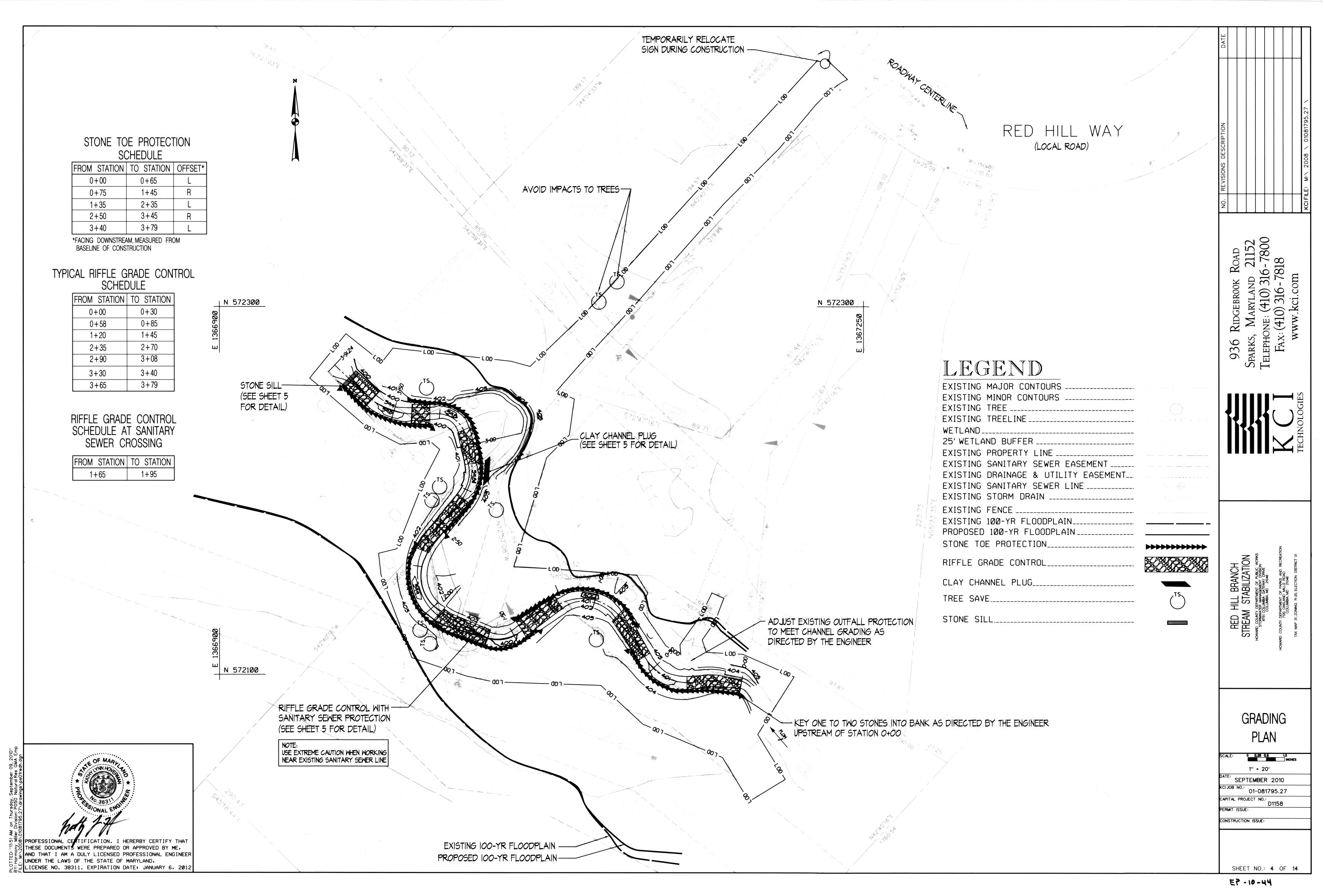
LEGEND		
EXISTING GROUND		AS-BUILT GRADE
PROPOSED GRADE		
PROPOSED 100-YR WSEL	entalisated decorrections with the second se	
EXISTING 100-YR WSEL		
PROPOSED TOP OF BANK	More size size in the real real part and the size was size and size are	
EXISTING SOUTH TOP OF BANK		
EXISTING NORTH TOP OF BANK		
PROPOSED POOL THALWEG		

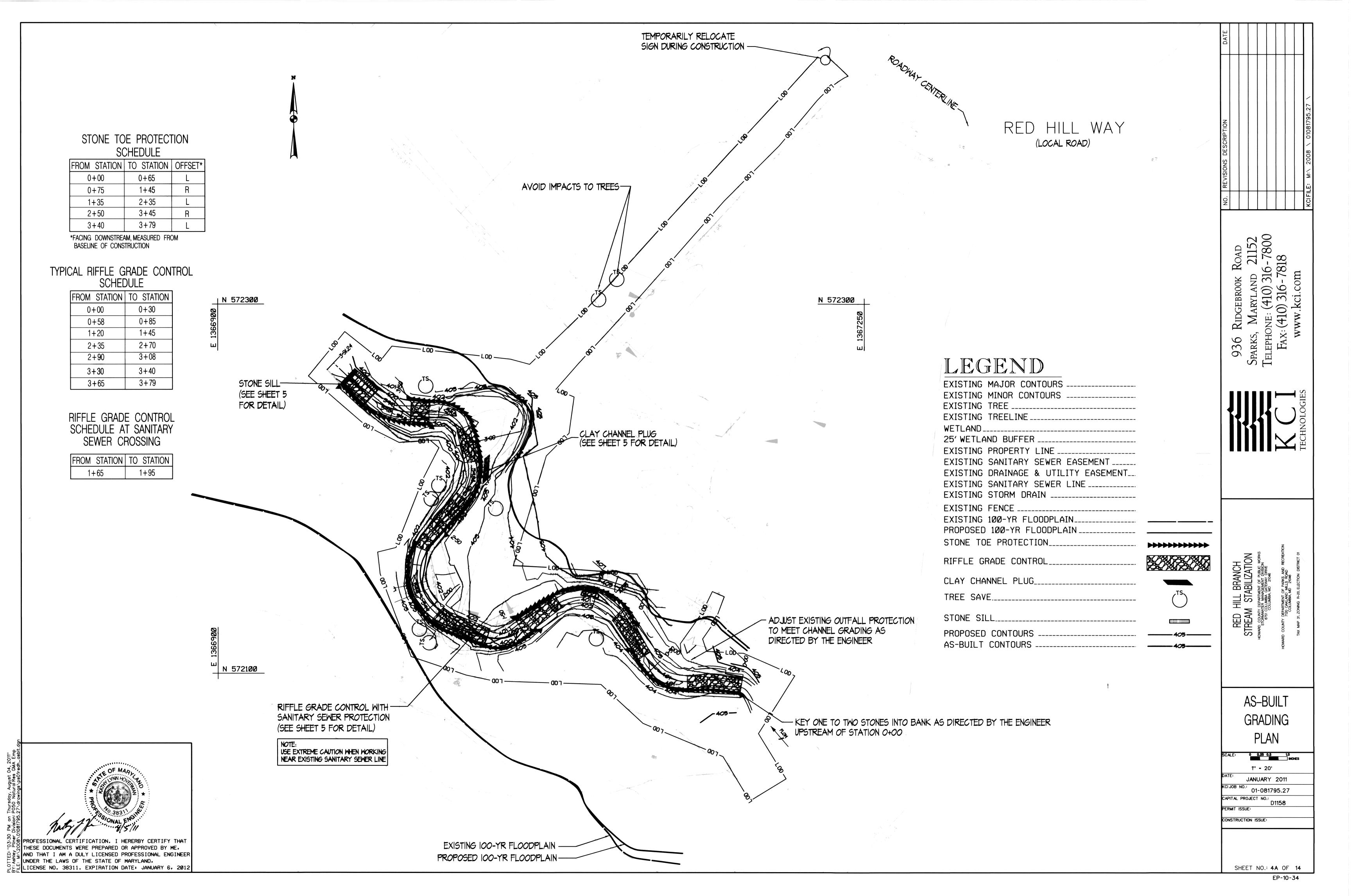
1 986	MARYLAND 21152	(10) 216 7000	ELEPHONE: (TIU) SIO- / OUO	(410) 316-7818		com mos
1 986		(110) 316 7900	HONE: (+IU) 5IO- 7000	$\overline{}$		com
RED HILL BRANCH STREAM STARII IZATION	SPARKS.			FAX		FECHNOLOGIES WWW.KCI.COM
		HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS STORMWATER MANAGEMENT DIVISION A751 COLI IMBIA GATEWAY DRIVE	COLUMBIA, MD 21046	HOWARD COUNTY DEPARTMENT OF PARKS AND RECREATION	COLUMBIA, MD 21046	TAX MAP 31, ZONING R-20, ELECTION DISTRICT 01
	-			LE	-	
SCALE:		RC)FI		10	ES
DATE: SEPT KCIJOB NO.:	PF)FI	20' - 5'	1.0] INCH	

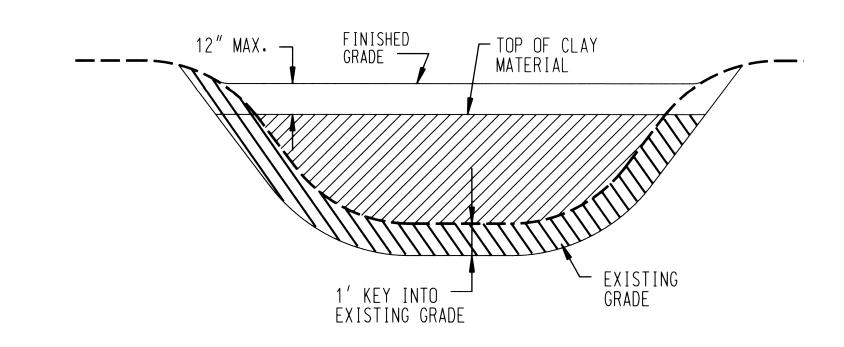
SHEET NO.: 3 OF 14

PERMIT ISSUE:

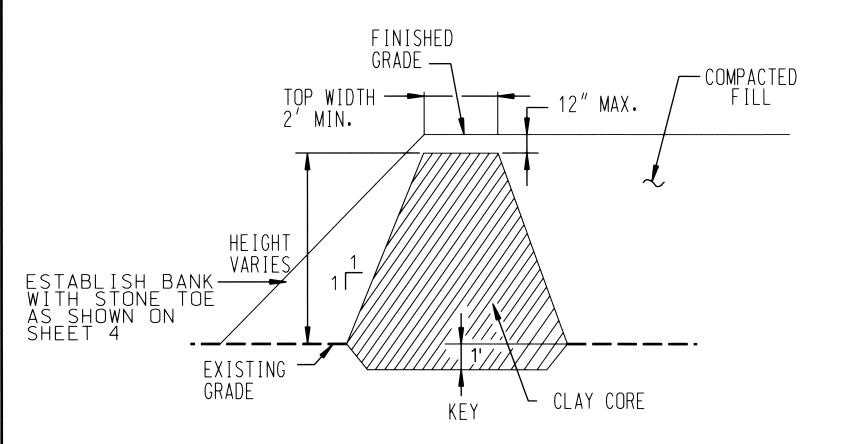
CONSTRUCTION ISSUE:







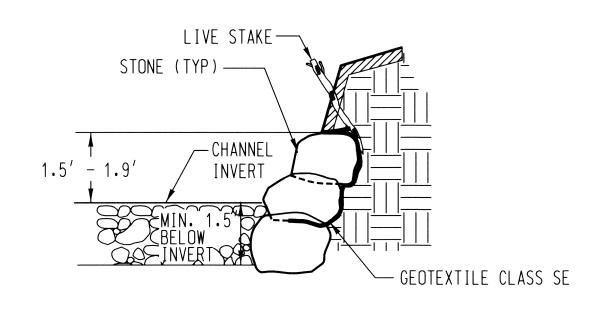
ELEVATION



CROSS-SECTION

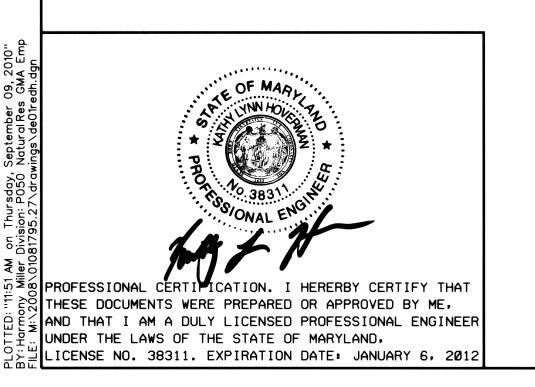
- 1. CLAY MATERIAL MUST BE UNIFIED SOIL CLASSIFICATION SC OR CC MATERIAL AND MUST BE COMPACTED TO 85% OF AASHTO SPECIFICATION T-99 OR ASTM D698.
- 2. COMPACTED FILL MUST BE COMPACTED TO 95% OF AASHTO SPECIFICATION T-99 OR ASTM D698.
- 3. EXCAVATION INCIDENTAL TO PAY ITEM.

CLAY CHANNEL BLOCK NOT TO SCALE

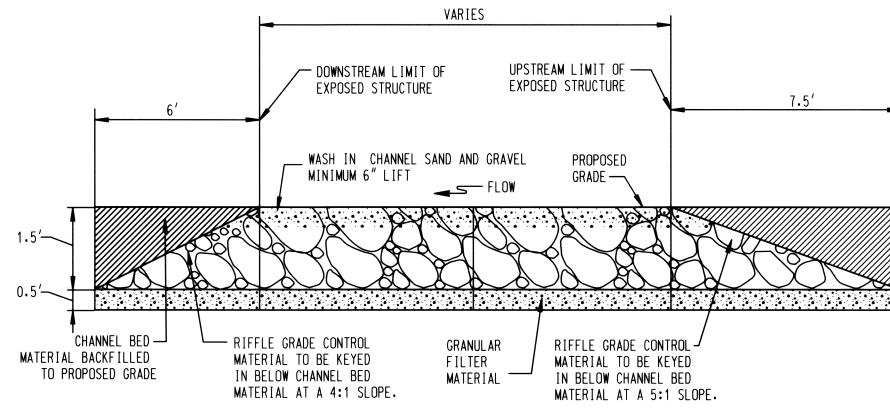


TYPICAL STONE TOE PROTECTION DETAIL

NOT TO SCALE



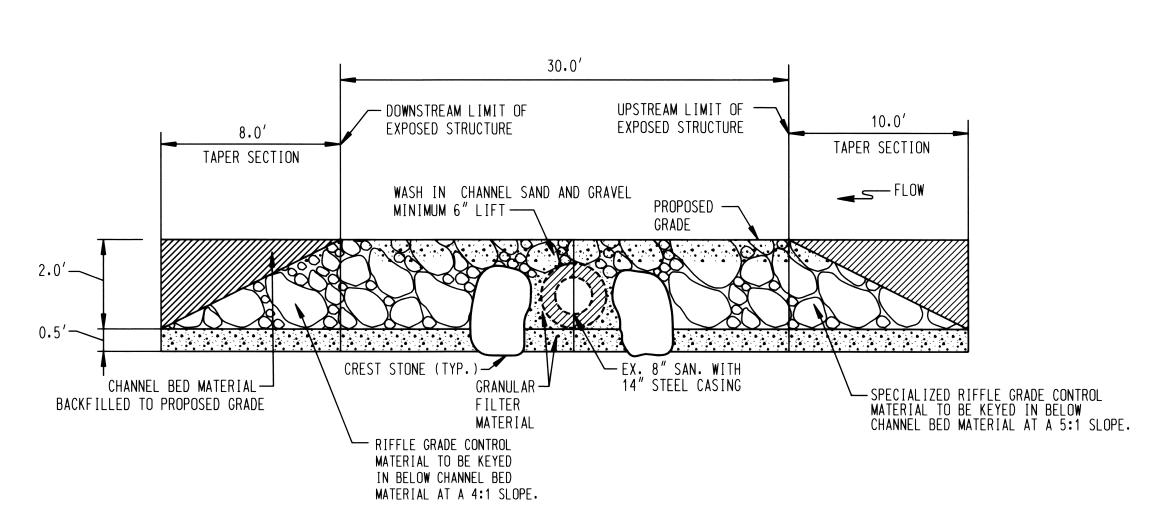
NOTE: STRUCTURE LENGTH VARIES. SEE RIFFLE GRADE CONTROL SCHEDULE SHEET 4 FOR LENGTHS.



NOTES: 1. ALL RIFFLE GRADE CONTROL STRUCTURES SHALL BE CONSTRUCTED FROM DOWNSTREAM TO UPSTREAM SO THAT IT IS

- 2. THE RIFFLE GRADE CONTROL MATERIAL SHALL BE PLACED TO ITS FULL DEPTH MOVING FROM ONE BANK TO THE OPPOSING BANK
- 3. SEE SHEET 4 FOR STATIONING

TYPICAL RIFFLE GRADE CONTROL PROFILE NOT TO SCALE



RIFFLE GRADE CONTROL PROFILE WITH SANITARY SEWER PROTECTION STATION 1+65 TO 1+95

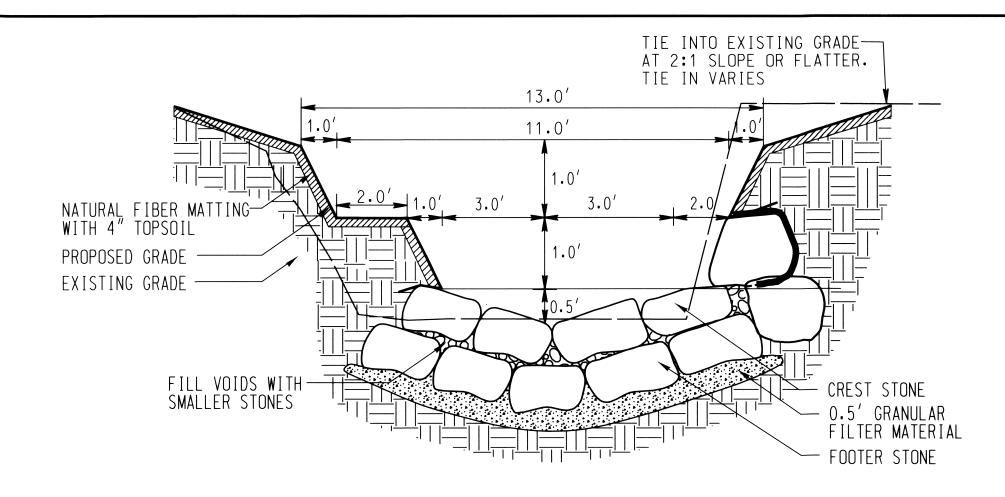
NOT TO SCALE

TIE INTO EXISTING GRADE— AT 2:1 SLOPE OR FLATTER. TIE IN VARIES 13.0' 11.0 NATURAL FIBER MATTING-WITH 4" TOPSOIL PROPOSED GRADE GEOTEXTILE CLASS SE EXISTING GRADE -— STONE TOE PROTECTION RIFFLE GRADE CONTROL — MATERIAL SHOULD EXTEND 1.5' BEYOND THE BANK -CHANNEL SAND AND GRAVEL - 0.5′ GRANULAR FILTER MATERIAL

TYPICAL RIFFLE GRADE CONTROL

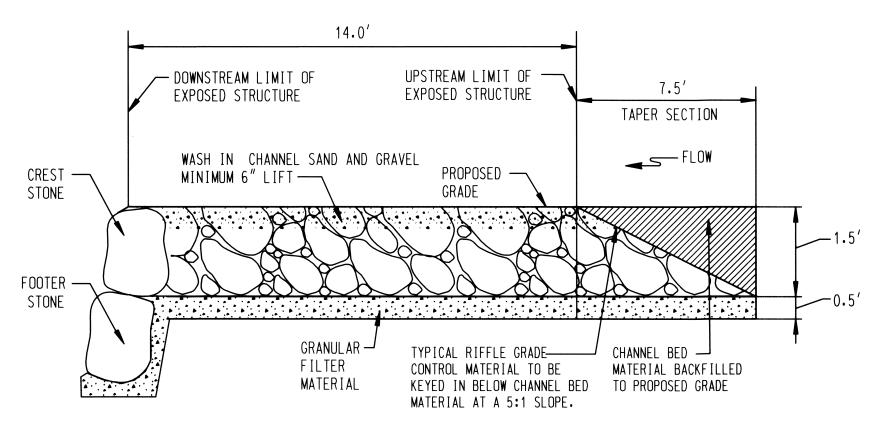
-RIFFLE GRADE CONTROL MATERIAL

NOT TO SCALE NOTE: RIFFLE GRADE CONTROLS ARE TO BE PLACED AS SHOWN ON SHEET 3.



TYPICAL SILL STRUCTURE STA. 3 + 79

NOT TO SCALE



NOTES: 1. ALL RIFFLE GRADE CONTROL STRUCTURES SHALL BE CONSTRUCTED FROM DOWNSTREAM TO UPSTREAM SO THAT IT IS

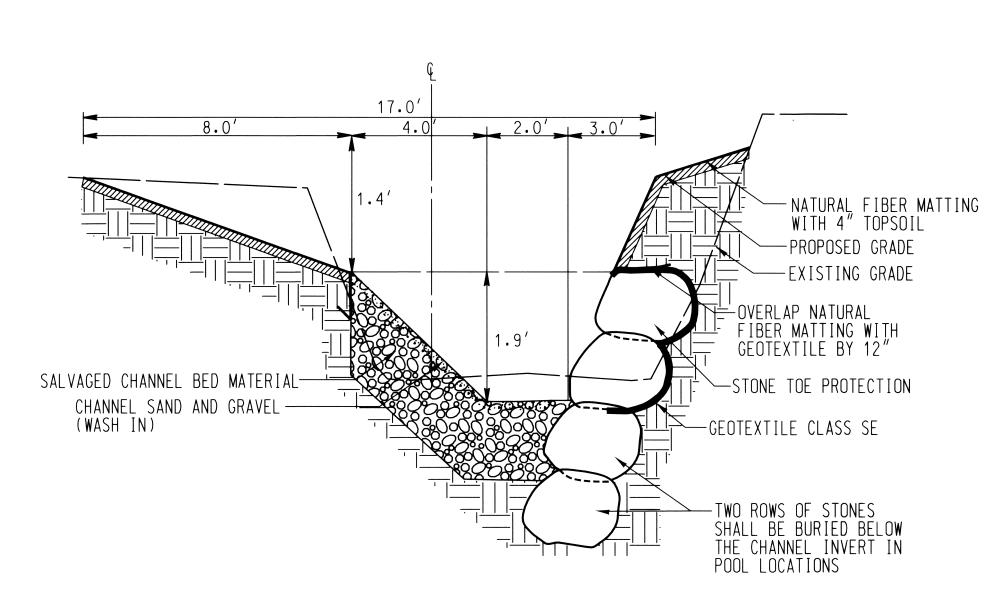
SHINGLED IN THE DOWNSTREAM DIRECTION.

2. THE RIFFLE GRADE CONTROL MATERIAL SHALL BE PLACED TO ITS FULL DEPTH MOVING FROM ONE BANK TO THE OPPOSING BANK.

3. A SILL SHALL BE PLACED ALONG THE DOWNSTREAM EDGE OF THE RIFFLE GRADE CONTROL.

TYPICAL RIFFLE GRADE CONTROL PROFILE WITH SILL STATION 3+65 TO 3+79

NOT TO SCALE



TYPICAL POOL

NOT TO SCALE NOTE: POOL LOCATIONS ARE LABLED ON SHEET 3. **DETAILS**

OK ROAD ND 21152)316-7800)-7818

(410) 3) 316

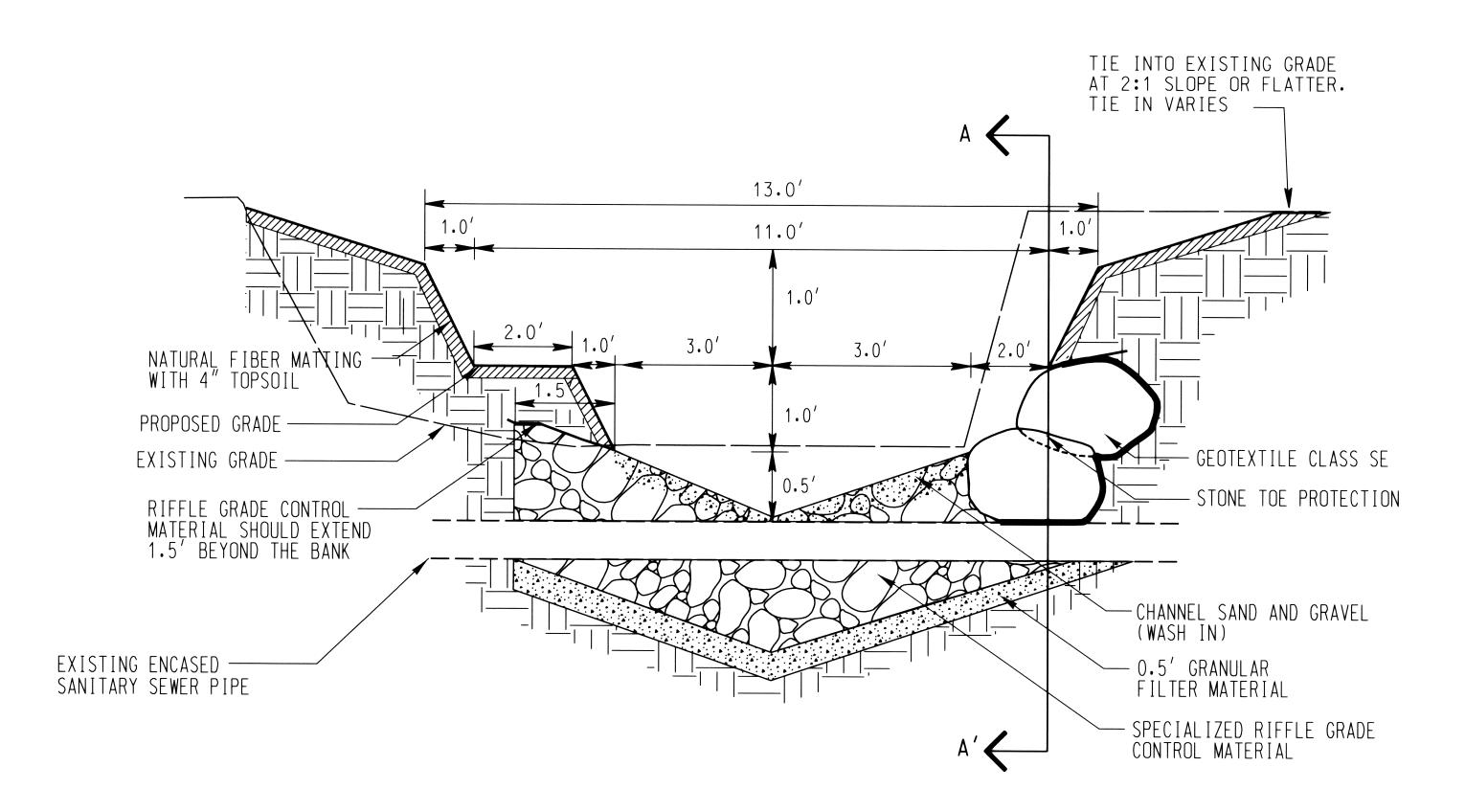
SPARKS, MARY
TELEPHONE: (4
FAX: (410)

936

0 0.25 0.5 1.0 INCHES NOT TO SCALE SEPTEMBER 2010 O1-081795.27 CAPITAL PROJECT NO.: D1158 CONSTRUCTION ISSUE:

SHEET NO.: 5 OF 14

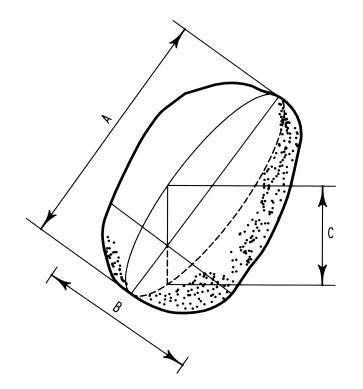
EP-10-44



RIFFLE GRADE CONTROL AT SANITARY SEWER CROSSING, STA. 1+73

NOT TO SCALE

NOTE: ADJUST GRANULAR FILTER AND RIFFLE GRADE CONTROL MATERIAL AS NEEDED AROUND SANITARY SEWER PIPE.



A = LONGEST AXIS (LENGTH) B = INTERMEDIATE AXIS (WIDTH) C = SHORTEST AXIS (THICKNESS)

ROCK AXIS DEFINITION NOT TO SCALE

SIZES FOR STONE TYPES						
SIZES FUR STUNE TIPES						
AXIS	A (LONGEST)	B (INTERMEDIATE)	C (SHORTEST)			
STONE TYPE	MAX.	RANGE	MIN.			
STONE TOE	CLASS II	CLASS II	CLASS II			
CREST STONE	3.0'	2.0'- 3.0'	2.0′			
FOOTER STONE	3.0'	2.0'- 3.0'	2.0′			

TOE, CREST, AND FOUNDATION SHALL BE ANGULAR AND BLOCKY IN SHAPE

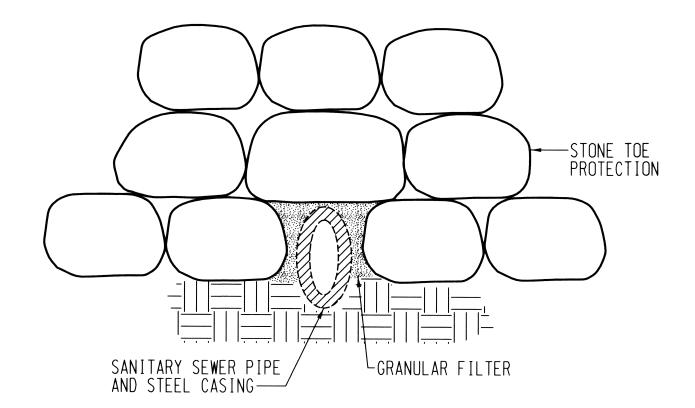
GRANULAR FILTER MATERIAL					
% LESS THAN	US STD SIEVE				
100	2.5 in				
85-100	1.0 in				
60-100	0.5 in				
35-70	No. 10				
20-50	No. 40				
3-20	No. 200				

	IFFLE GRADE MATERIAL
% LESS THAN	SIZE (INCHES)
10	1.3
30	4.5
50	6.7
60	8.0
84	10.2
100	13.4

SFF	SHFFT	4	FNR	STATIONING	

% LESS THAN SIZE (INCHES)
10 1.8
30 6.1
50 9.1
60 10.5
84 14.0
100 18.2

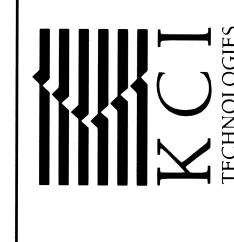
* SEE SHEET 4 FOR STATIONING



STONE TOE PROTECTION SECTION A-A', STA. 1+73

NOT TO SCALE

NOTE: CONFIGURE STONES SUCH THAT FOOTERS CARRY LOAD OF STP.



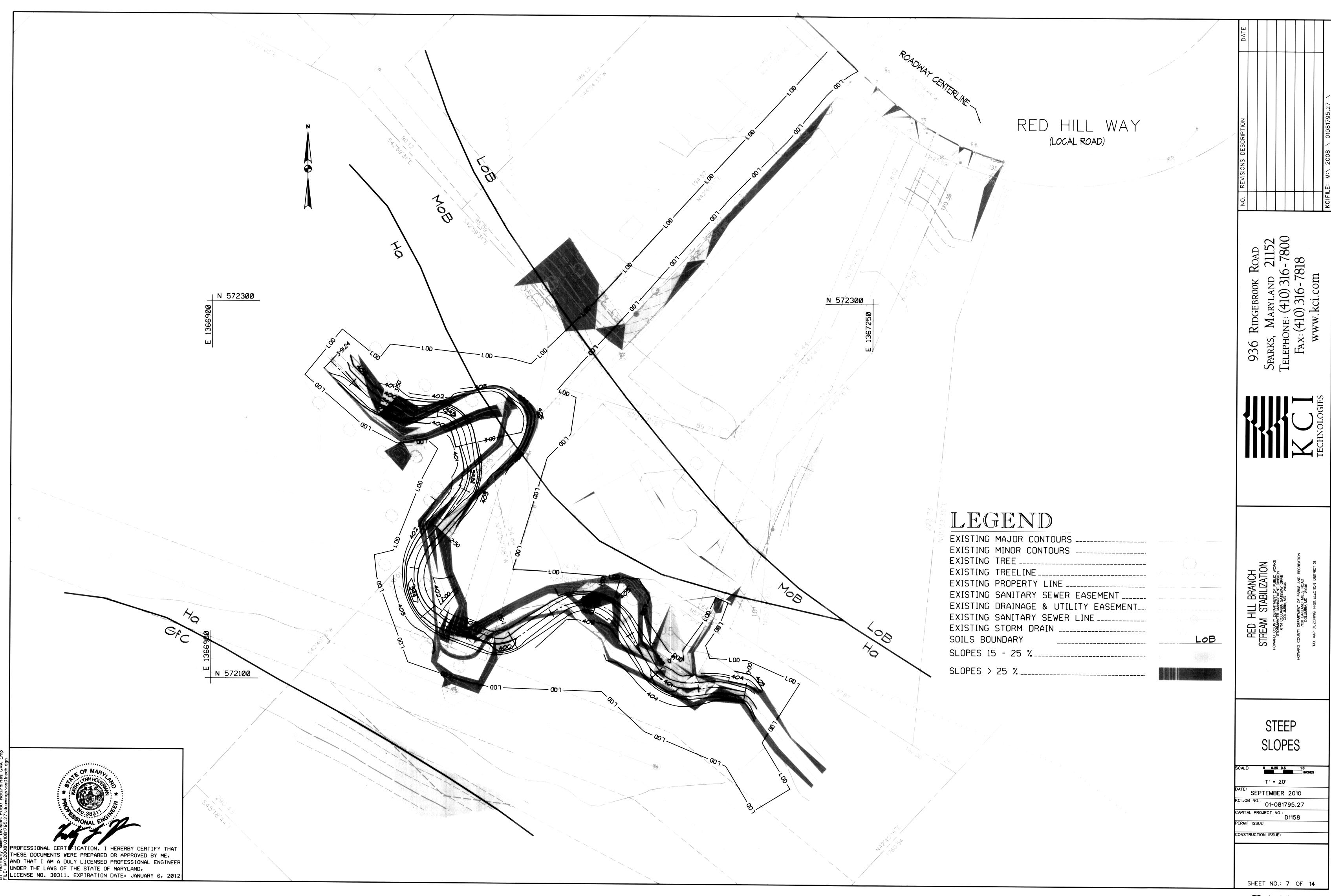
936 RIDGEBROOK ROAD SPARKS, MARYLAND 21152 TELEPHONE: (410) 316-7800 FAX: (410) 316-7818 www.kci.com

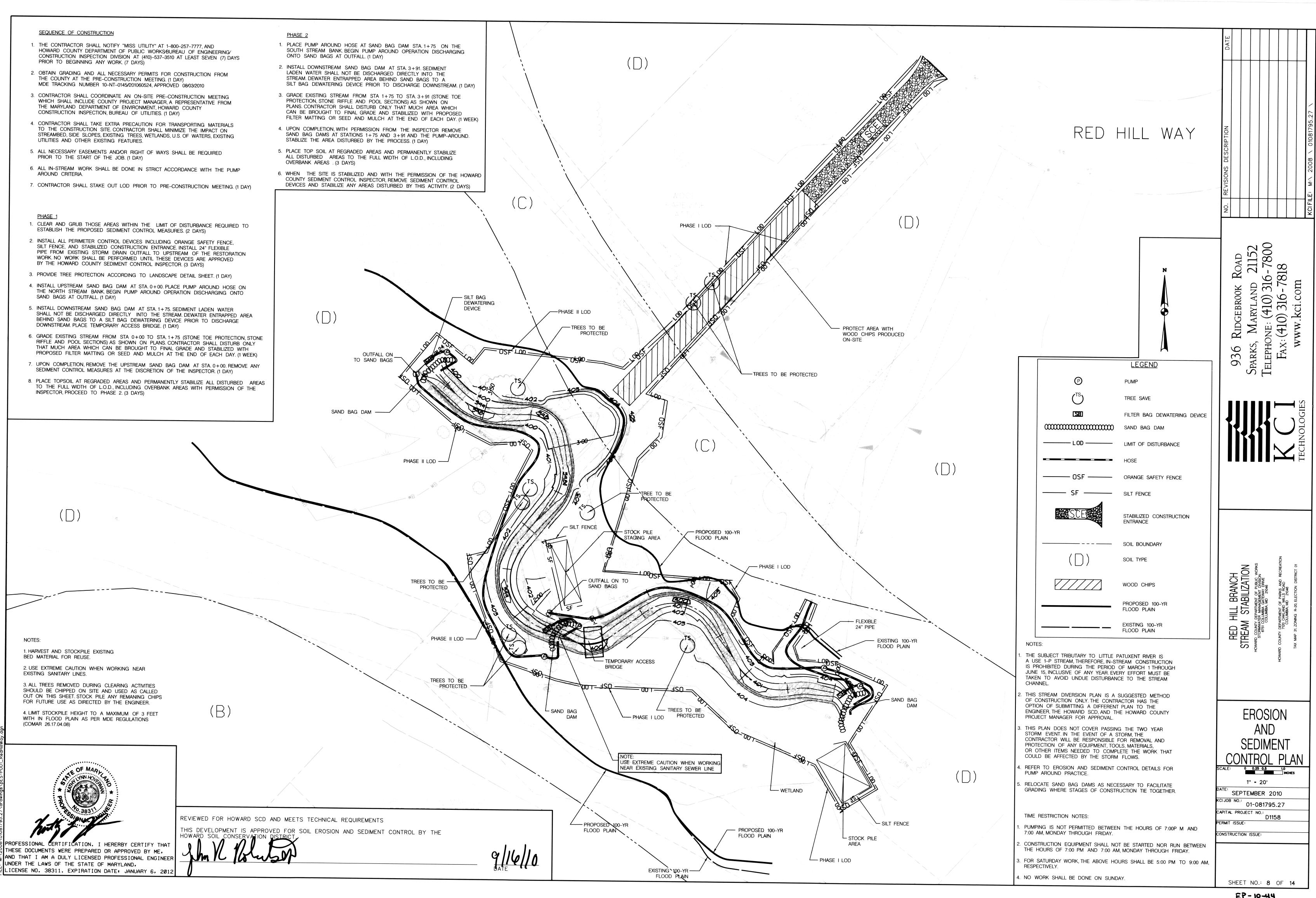
DETAILS

0 0.25 0.5 1.0 INCHES NOT TO SCALE SEPTEMBER 2010 (CI JOB NO.: 01-081795.27 CAPITAL PROJECT NO.: D1158 CONSTRUCTION ISSUE:

SHEET NO.: 6 OF 14

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. 38311. EXPIRATION DATE: JANUARY 6, 2012





REVISED NOVEMBER 2000

CONSTRUCTION MEASURES

MARYLAND DEPARTMENT OF THE ENVIRONMENT

WATER MANAGEMENT ADMINISTRATION

MGWC 1.2: PUMP-AROUND PRACTICE

Temporary measure for dewatering inchannel construction sites

DESCRIPTION

The work should consist of installing a temporary pump around and supporting measures to divert flow around in-stream construction sites. IMPLEMENTATION SEQUENCE

Sediment control measures, pump-around practices, and associated channel and bank construction should be completed in the following sequence (refer to Detail 1.2):

Construction activities including the installation of erosion and sediment control measures should not begin until all necessary easements and/or right-of-ways have been acquired. All existing utilities should be marked in the field prior to construction. The contractor is responsible for any damage to existing utilities that may result from construction and should repair the damage at his/her own expense to the county's or utility company's satisfaction.

The contractor should notify the Maryland Department of the Environment or WMA sediment control inspector at least 5 days before beginning construction. Additionally, the contractor should inform the local environmental protection and resource management inspection and enforcement division and the provider of local utilities a minimum of 48 hours before starting

The contractor should conduct a pre-construction meeting on site with the WMA sediment control inspector, the county project manager, and the engineer to review limits of disturbance, erosion and sediment control requirements, and the sequence of construction. The contractor should stake out all limits of disturbance prior to the pre-construction meeting so they may be reviewed. The participants will also designate the contractor's staging areas and flag all trees within the limit of disturbance, which will be removed for construction access. Trees should not be removed within the limit of disturbance without approval from the WMA or local authority.

Construction should not begin until all sediment and erosion control_measures have been installed and approved by the engineer and the sediment control inspector. The contractor should stay within the limits of the disturbance as shown on the plans and minimize disturbance within the work area whenever possible.

Upon installation of all sediment control measures and approval by the sediment control inspector and the local environmental protection and resource management inspection and enforcement division, the contractor should begin work at the upstream section and proceed downstream beginning with the establishment of stabilized construction entrances. In some cases, work may begin downstream if appropriate. The sequence of construction must be followed unless the contractor gets written approval for deviations from the WMA or local authority. The contractor should only begin work in an area which can be completed by the end of the day including grading adjacent to the channel. At the end of each workday, the work area must be stabilized and the pump around removed from the channel. Work should not be conducted in the channel during rain events.

Sandbag dikes should be situated at the upstream and downstream ends_of the work area as shown on the plans, and stream flow should be pumped around the work area. The pump should discharge onto a stable velocity dissipater made of riprap or sandbags.

Water from the work area should be pumped to a sediment filtering measure such as a dewatering basin, sediment bag, or other approved source. The measure should be located such that the water drains back into the channel below the downstream sandbag dike.

Traversing a channel reach with equipment within the work area where no work is proposed should be avoided. If equipment has to traverse such a reach for access to another area, then timber mats or similar measures should be used to minimize disturbance to the channel. Temporary stream crossings should be used only when necessary and only where noted on the plans or specified. (See Section 4, Stream Crossings, Maryland Guidelines to Waterway Construction).

All stream restoration measures should be installed as indicated by the plans and all banks graded in accordance with the grading plans and typical cross-sections. All grading must be stabilized at the end of each day with seed and mulch or seed and matting as specified on the plans.

After an area is completed and stabilized, the clean water dike should be removed. After the first sediment flush, a new clean water dike should be established upstream from the old sediment dike. Finally, upon establishment of a new sediment dike below the old one, the old sediment dike should be removed.

A pump around must be installed on any tributary or storm drain outfall, which contributes baseflow to the work area. This should be accomplished by locating a sandbag dike at the downstream end of the tributary or storm drain outfall and pumping the stream flow around the work area. This water should discharge onto the same velocity dissipater used for the main stem pump around.

If a tributary is to be restored, construction should take place on the tributary before work on the main steam reaches the tributary confluence. Construction in the tributary, including pump around practices, should follow the same sequence as for the main stem of the river or stream. When construction on the tributary is completed, work on the main stem should resume. Water from the tributary should continue to be pumped around the work area in the main stem.

The contractor is responsible for providing access to and maintaining all erosion and sediment control devices until the sediment control inspector approves their removal.

After construction, all disturbed areas should be regraded and revegetated as per the planting plan.

Maryland Department of the Environment Best Management Practices for Working in Nontidal Wetlands. the Nontidal Wetland Buffer, Waters of the State and the 100-Year Floodplain

1. No excess fill, construction material, or debris shall be stockpiled or stored in nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.

2. Place materials in a location and manner that does not adversely impact surface or subsurface water flow into or out of nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.

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 substance.

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.

5. 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.

7. 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 non-persistent 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.

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

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.

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS LOPMENT IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE

21.0 STANDARD AND SPECIFICATIONS

Definition

Placement of topsoil over a prepared subsoil prior to establishment of permanent vegetation.

FOR TOPSOIL
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.

Conditions Where Practice Applies

I. This practice is limited to areas having 2:1 or flatter slopes

a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth. 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. 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.

For the purpose of these Standards and Specifications, areas having slopes steeper than 2:1 require special consideration and design for adequate stabilization. Areas having slopes steeper than 2:1 shall have the appropriate stabilization shown on the

Construction and Material Specifications

Topsoil salvaged from the existing site may be used provided that 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-SCS in cooperation with Maryland Agricultural Experimental Station.

Topsoil Specifications - Soil to be used as topsoil must meet the following: Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Regardless, topsoil shall not be a mixture of contrasting textured subsoils and shall contain less than 5% by volume of cinders, stones,

slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1 1/2" in diameter.
Topsoil must be free of plants or plant parts such as bermuda grass, quackgrass, Johnsongrass, nutsedge, poison ivy, thistle, or others as specified.

Where the subsoil is either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate of 4-8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil. Lime shall be disturbed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.

III. For sites having disturbed areas under 5 acres:
i. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section I -

Vegetative Stabilization Methods and Materials.

IV. For sites having disturbed areas over 5 acres: On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following: a. pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to

6.5 or higher.
Organic content of topsoil shall be not less than 1.5 percent by weight. Topsoil having soluble salt content greater than 500 parts per million shall not be used.

No sod or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time as elapsed (14 days min.) to permit dissipation of phyto-toxic materials.

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. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section I -Vegetative Stabilization Methods and Materials.

V. Topsoil Application When topsoiling, maintain needed erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Slope Silt Fence and Sediment Traps and Basins.

Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4'' - 8''nigher in elevation.

Topsoil shall be uniformly distributed in a 4" - 8" layer and lightly compacted to a minimum thickness of 4". Spreading shall be performed in such a manner that sodding or seeding can proceed with a minmum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets. water pockets.

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

HOWARD SOIL CONSERVATION DISTRICT

PERMANANT SEEDING NOTES **

Apply to graded or cleared areas not subject to immediate further disturbance where a permanent long-lived vegetative cover is needed.

Seedbed Preparation: Loosen upper three inches of soil by raking, disking or other acceptable means before seeding, if not previously loosened.

Soil Amendments: In lieu of soil test recommendations, use one of the following schedules:

Preferred -- Apply 2 tons/acre dolomitic limestone (92 lbs/1000 sq. ft.) and 600 lbs/acre 10-10-10 fertilizer (14 lbs/1000 sq. ft.) before seeding. Harrow or disk into upper three inches of soil. At time of seeding, apply 400 lbs/acre 30-0-0 ureaform fertilizer (9 lbs/1000 sq. ft.)

Acceptable -- Apply 2 tons/acre dolomitic limestone (92 lbs/1000 sq. ft.) and 1000 lbs/acre 10-10-10 fertilizer (23 lbs/1000 sq. ft.) before seeding. Harrow or disk into upper three inches of soil.

Seeding - For the periods March 1 - April 30, and August 1 - October 15, seed with 60 lbs/core // 4 lbs/core 15, seed with 60 lbs/acre (1.4 lbs/1000 sq. ft.) of Kentucky 31 Tall Fescue For the period May 1 - July 31, seed with 60 lbs Kentucky 31 Tall Fescue per acre and 2 lbs/acre (0.05 lbas/ 100 sq. ft.) of weeping lovegrass. During the period of October 16 - February 28, protect site by: Option 1 - Two tons per acre of well anchored straw mulch and seed as soon as possible in Spring. Option 2 - Use sod. Option 3 - Seed with 60 lbs/acre Kentucky 31 Tall

Fescue and mulch with 2 tons/acre well anchored straw. Mulching - Apply 1-1/2 to 2 tons per acre (70 to 90 lbs/1000 sq. ft.) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool. No asphaltemulsion shall be used for anchoring. Only a non-toxic, latex tackingmaterial is allowed.

 $\underline{\text{Maintenance}}$ - Inspect all seeding areas and make needed repairs, replacements and reseedings.

** Contractor shall perform a soil test at the site as a first order ofbusiness. The results shall be reviewed by Department of Recreationand Parks to determine appropriate soil amendments and fertilization needs for this project. No fertilizer or soil amendments shall be addedwithout approval

of Department of Recreation and Parks.

HOWARD SOIL CONSERVATION DISTRICT

TEMPORARY SEEDING NOTES **

Apply to graded or cleared areas likely to be re-disturbed where a short-term vegetative cover is needed.

Seedbed preparation: -- Loosen upper three inches of soil by raking, disking or other acceptable means before seeding, if not previously loosened.

Soil Amendments: -- Apply 600 lbs/acre 10-10-10 fertilizer (14 lbs/1000 sq. ft.).

Only a non-toxic, latex backing material is allowed.

Seeding: -- Refer to MDE Best Management Practices in the General Notes and Details on sheet 7 of 19 of these plans.

Mulching: -- Apply 1-1/2 to 2 tons/acre (70 to 90 lbs/1000 sq. ft.) of unrotted weed-free, small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool. No asphalt emulsion shall be used for anchoring.

**Refer to the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for additional rates and methods not covered.

HOWARD COUNTY CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

A minimum of 48 hours notice must be given to the Howard County Department of Inspections, Licenses and Permits, Sediment Control Division prior to the start of any construction (313-1855).

All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the most current MARYLAND STANDARDS AND SPECIFICATION FOR SOIL EROSION AND SEDIMENT CONTROL and revisions thereto.

Following initial soil disturbance or re-disturbance, permanent or temporary stabilization shall be completed within: a) 7 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1, b) 14 days as to all other disturbed or graded areas on the project site.

4. All sediment traps/basins shown must be fenced and warning signs posted around their perimeter in accordance with Vol 1, Chapter 12 of the HOWARD COUNTY DESIGN MANUAL, Storm Drainage.

5. All disturbed areas must be stabilized within the time period specified above in accordance with the 1994 MARYLAND STANDARDS AND SPECIFICATION FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seeding (Sec. 51), sod (Sec. 54), temporary seeding (Sec. 50) and mulching (Sec. 52). Temporary stabilization with mulch alone can only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.

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 Howard County Sediment Control Inspector.

Site Analysis: Total Area of Site

0.61 Acres Area Disturbed 0.61 Acres Area to be roofed or paved 0.00 Acres Area to be vegetatively stabilized 0.44 Acres

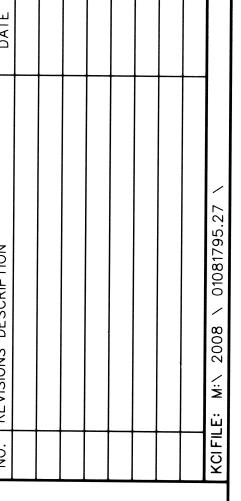
215.6 Cu. Yds. 284.4 Cu. Yds. Offsite waste/borrow area location To Be Determined*

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 Howard County Sediment Control Inspector.

On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.

11. Trenches for the construction of utilities is limited to three pipe lengths or that which shall be back-filled and stabilized by the end of each work day, whichever is shorter. *Offsite waste/borrow site shall have an approved sediment control plan.



ROAD 21152 6-7800 818 6-818 RIDGEBROOK (410) (410) (316) ЕРНО 9 PARK 3 0 S



RED HILL BRANCH
TREAM STABILIZATION
AND COUNTY DEPARTMENT OF PUBLIC WORKS
STORINWATER MANAGEMENT DIVISION
6751 COLUMBIA, MD 20046

EROSION &

NOT TO SCALE

SEPTEMBER 2010 01-081795.27 APITAL PROJECT NO .:

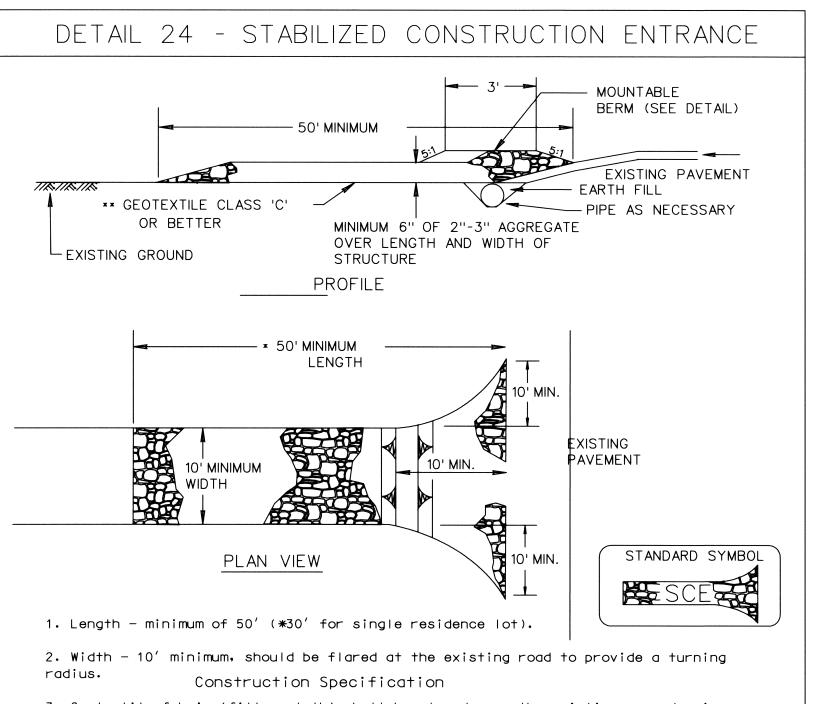
ERMIT ISSUE: CONSTRUCTION ISSUE:

SHEET NO .: 9 OF 14

EP -10 -44

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. 38311. EXPIRATION DATE: JANUARY 6, 2012



3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior

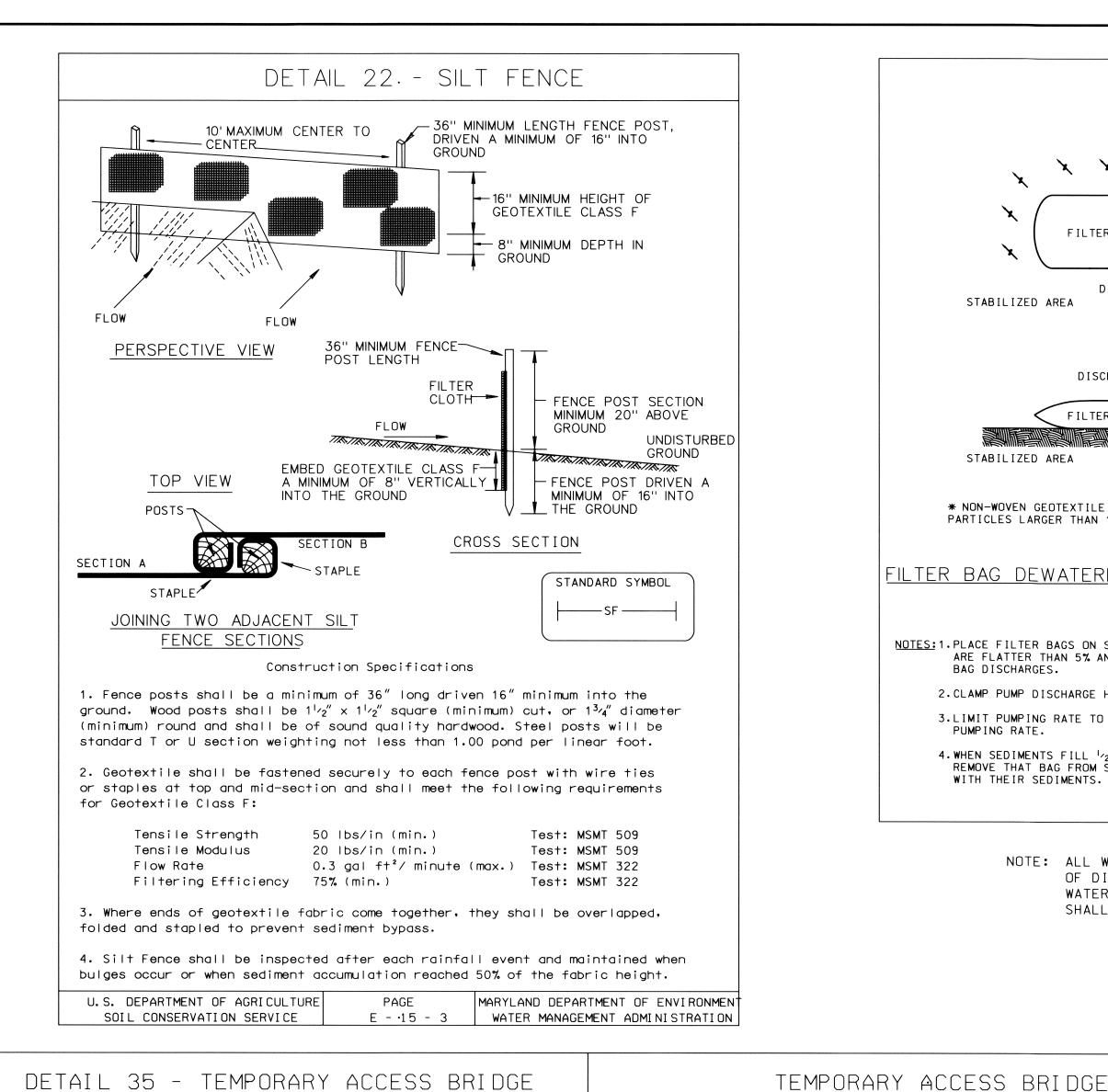
to placing stone. **The plan approval authority may not require single family residences to use geotextile.

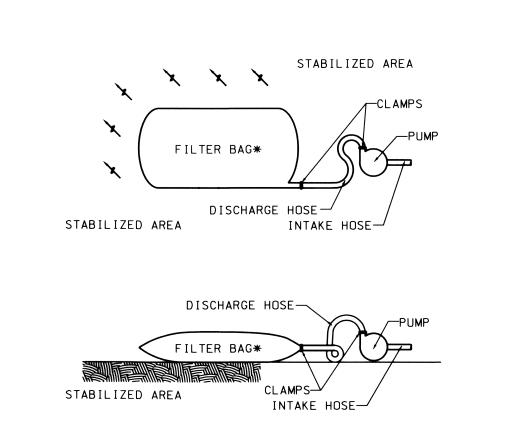
4. Stone - crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.

5. Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.

6. Location - A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.

U.S. DEPARTMENT OF AGRICULTURE MARYLAND DEPARTMENT OF ENVIRONMENT SOIL CONSERVATION SERVICE F - 17 - 3 WATER MANAGEMENT ADMINISTRATION





* NON-WOVEN GEOTEXTILE FILTER BAG WHICH RETAINS ALL SEDIMENT PARTICLES LARGER THAN 150 MICRONS.

<u>FILTER BAG DEWATERING DEVICE FOR PUMPED WATER</u> NOT TO SCALE

NOTES: 1. PLACE FILTER BAGS ON STABLE OR WELL VEGETATED AREAS WHICH ARE FLATTER THAN 5% AND WILL NOT ERODE WHEN SUBJECTED TO BAG DISCHARGES.

3. LIMIT PUMPING RATE TO 1/2 THE MANUFACTURER'S MAXIMUM

PUMPING RATE.

2. CLAMP PUMP DISCHARGE HOSES SECURELY INTO FILTER BAGS.

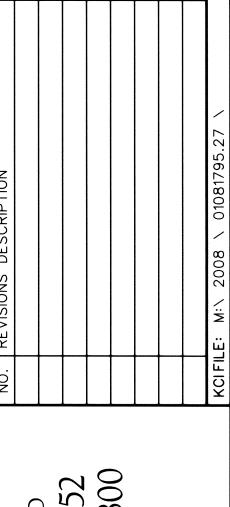
4. WHEN SEDIMENTS FILL $^{1}\!\!_{2}$ THE VOLUME OF A FILTER BAG, IMMEDIATELY REMOVE THAT BAG FROM SERVICE. PROPERLY DISPOSE OF SPENT BAGS WITH THEIR SEDIMENTS.

> NOTE: ALL WATER COLLECTED WITHIN THE LIMIT OF DISTURBANCE (WITH THE EXCEPTION OF WATER DIVERTED AROUND THE WORK AREA) SHALL BE PUMPED THROUGH THE FILTER BAG.

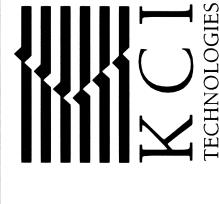
FILTER BAG SPECIFICATIONS

- 1. SILT BAG SHALL BE MADE OF NON-WOVEN GEOTEXTILE WITH A MINIMUM SURFACE AREA OF 225 SQUARE FEET PER
- 2. ALL STRUCTURAL SEAMS SHALL BE SEWN WITH A DOUBLE STITCH USING A DOUBLE NEEDLE MACHINE WITH HIGH STRENGTH THREAD. SEAM STRENGTH SHALL WITHSTAND
- 100 LB/IN USING ASTM D-4884 TEST METHOD. 3. FILTER BAG SHALL HAVE A NOZZLE LARGE ENOUGH TO ACCOMMODATE A FOUR(4) INCH DIAMETER PUMP DISCHARGE HOSE
- 4. NOZZLE SHALL BE SEALED TIGHTLY AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE TO PREVENT UNFILTERED WATER FROM ESCAPING.
- 5. FILTER BAG SHALL BE PLACED ON A LEVEL OR GENTLY SLOPING (5% MAXIMUM) AREA.
- 6. FILTER BAG SHALL BE PLACED UPON A BASE OF STRAW BALES OR THREE (3) INCHES OF CLEAN STONE TO PROMOTE DEWATERING THROUGH BOTTOM SURFACE OF THE FILTER
- 7. PUMPING RATES SHALL BE CONTROLLED TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG. AS THE BAG BECOMES FILLED WITH SEDIMENT THE PUMPING RATE SHALL BE REDUCED.
- 8. THE FILTER BAG SHALL BE DEWATERED, REMOVED AND DISPOSED OF UPON COMPLETION OF PUMPING OPERATIONS OR AFTER IT HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. THE DEWATERED SEDIMENT FROM THE BAG SHALL BE SPREAD IN AN UPLAND AREA AND STABILIZED WITHIN 24 HOURS.
- 9. THE GEOTEXTILE FABRIC SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS WITH PROPERTIES DETERMINED IN ACCORDANCE WITH THE FOLLOWING PROCEDURES:

WEIGHT	10 OZ/YD	ASTM D-3776
GRAB TENSILE	210 LBS.	ASTM D-4632
PUNCTURE	150 LBS.	ASTM D-4833
FLOW RATE	70 GAL/MIN/SF	ASTM D-4491
PERMITIVITY (SEC)	1.3 SEC-1	ASTM D-4991
UV RESISTANCE	70% STRENGTH	ASTM D-4355
	AT 500 HRS	
APPARENT OPENING SIZE	0.15-0.18 MM	ASTM D-4751
/ A O C \		



OK ROAD
ND 21152
316-7800
6-7818 RIDGEBROOK (410) (410) (410) (410) (410)MA 36 PARK 0



EROSION & SEDIMENT **DETAILS**

NOT TO SCALE

SEPTEMBER 2010 01-081795.27 CAPITAL PROJECT NO.: PERMIT ISSUE:

CONSTRUCTION ISSUE:

SHEET NO.: 10 OF 14

DETAIL 35 - TEMPORARY ACCESS BRIDGE

Construction Specifications

1. Restriction - Construction, use, or removal of a temporary access bridge will not normally have any time of year restrictions since construction, use, or removal should not affect the stream or its banks, unless the bridge is built with a pier(s) in the water.

2. Bridge Placement - A temporary bridge structure shall be constructed at or above the bank elevation to prevent the entrapment of floating materials and debris.

3. Abutments - Abutments shall be placed parallel to, and on, stable banks.

4. Bridge Span - Bridges shall be constructed to span the entire channel. If the channel width exceeds 8', (as measured from top-of-bank to top-of-bank), then a footing. pier, or bridge support may be constructed within the waterway. One additional footing, pier, or bridge support will be permitted for each additional 8' width of the channel. However, no footing, pier, or bridge support will be permitted within the channel for waterways less than 8'

5. Stringers - Stringers shall either be logs, sawn timber, prestressed concrete beams, metal beams, or other approved

6. Deck Material - Decking materials shall be of sufficient strength to support the anticipated load. All decking members shall be placed perpendicular to the stringers, butted tightly, and securely fastened to the stringers. Decking materials must be butted tightly to prevent any soil material tracked onto the bridge from falling into the waterway below.

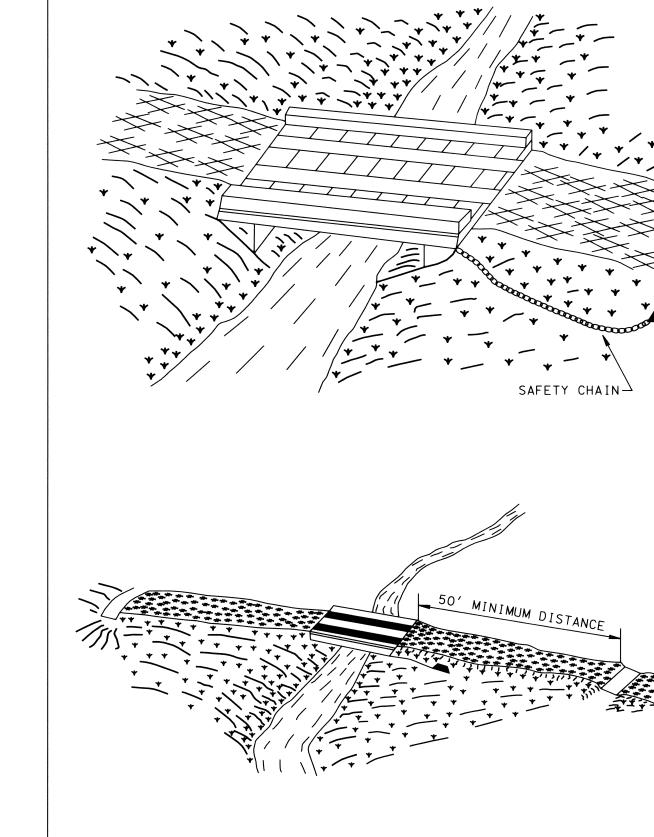
7. Run Planks (optional) - Run planking shall be securely fastened to the length of the span. One run plank shall be provided for each track of the equipment wheels. Although run planks are optional, they may be necessary to properly distribute loads.

8. Curbs or fenders - Curbs or fenders may be installed along the outer sides of the deck. Curbs or fenders are an option

9. Bridge Anchors - Bridges shall be securely anchored at only one end using steel cable or chain. Anchoring at only one end will prevent channel obstruction in the event that floodwaters float the bridge. Acceptable anchors are large trees, large boulders, or driven steel anchors. Anchoring shall be sufficient to prevent the bridge from floating downstream and possibly causing an obstruction to the flow.

TEMPORARY ACCESS BRIDGE

10. Stabilization - All areas disturbed during installation shall be stabilized within 14 calendar days of the disturbance in accordance with the Standard for "Critical Area Stabilization With Permanent Seeding."



-SECURE ANCHOR POINT

which will provide additional safety.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE H - 29 - 9

U.S. DEPARTMENT OF AGRICULTURE MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION SOIL CONSERVATION SERVICE

H - 29 - 9A

MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

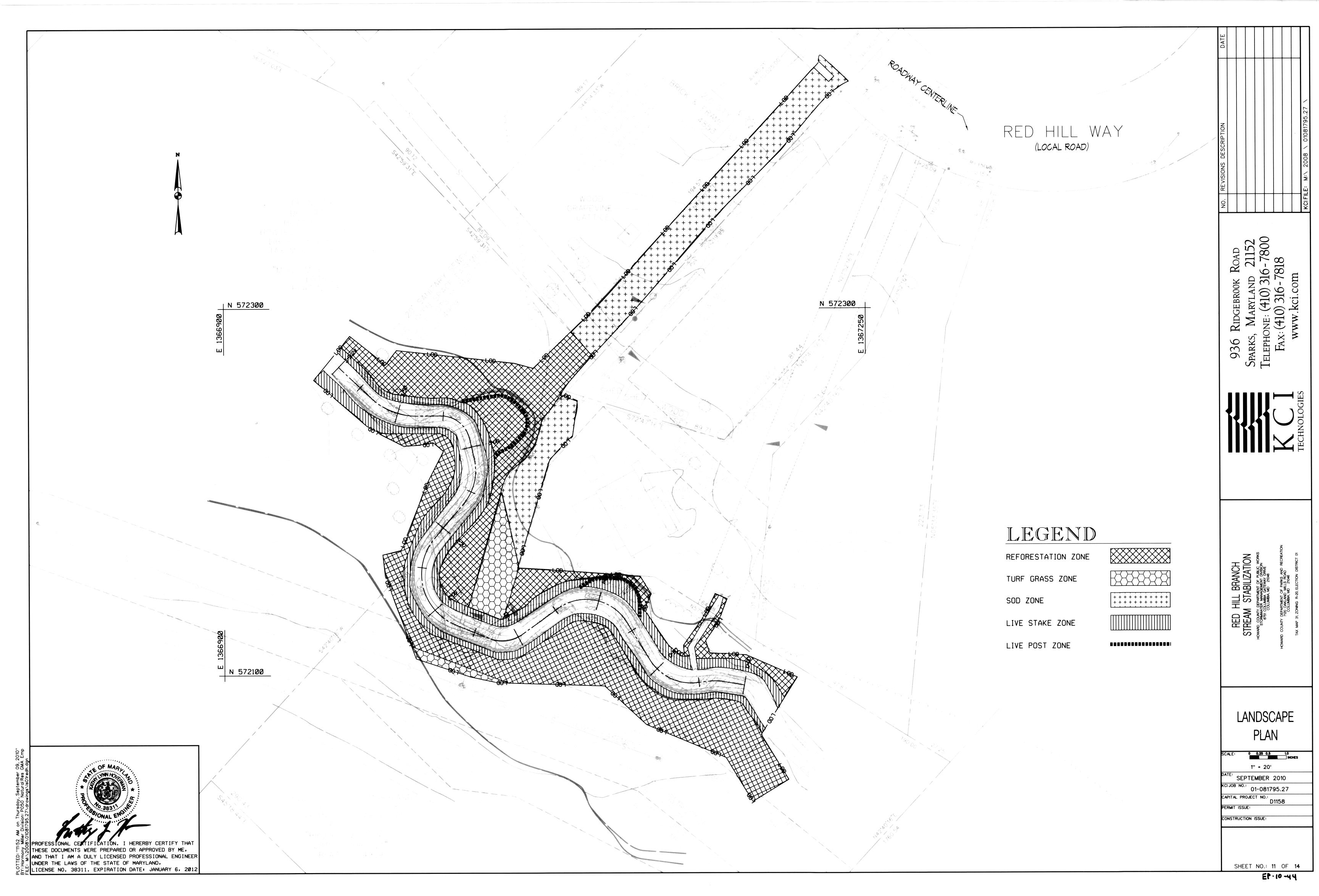
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

H - 29 - 9B

MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

FOR SOIL EROSION AND SEDIMENT CONTROL BY THE

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS



MASTER PLANT SCHEDULE

LIVE STAKES (SHEET 11 OF 14)
(3630 SQ FT /0.08 AC)

Qty	Botanical Name	Common Name	Size	Form	Spacing/Rate
227	Cornus racemosa	Gray Dogwood	3' Length 1''-1.5'' dia.	Dormant stems	2' O.C.
227	Cornus amomum	Silky Dogwood	3' Length 1''-1.5'' dia.	Dormant stems	2' O.C.
227	Salix sericea	Silky Willow	3' Length 1''-1.5'' dia.	Dormant stems	2' O.C.
227	Salix nigra	Black Willow	3' Length 1''-1.5'' dia.	Dormant stems	2' O.C.

POST PLANTINGS (SHEET 11 OF 14)

Qty	Botanical Name	Common Name	Size	Form	Spacing/Rate
15	Alnus incana ssp rugosa	Speckled alder	6' Length 2.5"-5.5" dia.	Dormant stems	6' O.C.
15	Salix sericea	Silky Willow	6' Length 2.5"-5.5" dia.	Dormant stems	6' O.C.

REFORESTATION ZONE (SHEET 11 OF 14) (11425 SQ FT /0.26 AC)

Qty	Botanical Name	Common Name	Size	Form	Spacing/Rate
31	Lindera benzoin	spicebush	3' Height	Container	6'-8' O.C.
31	Viburnum dentatum	arrowwood viburnum	3' Height	Container	6'-8' O.C.
31	Amelanchier canadensis	serviceberry	3' Height	Container	6'-8' O.C.
12	Platanus occidentalis	sycamore	5' Height	Container	11' O.C.
12	Quercus palustris	pin oak	5' Height	Container	11' O.C.
11	Liriodendron tulipifera	tulip poplar	5' Height	Container	11' O.C.
11	Acer rubrum	red maple	5' Height	Container	11' O.C.
11	Liquidambar styraciflua	sweet gum	5' Height	Container	11' O.C.

PERMANENT SEEDING FOR LIVE STAKES,
POST PLANTING, AND REFORESTATION ZONES (SHEET 11 OF 14)

(SHEET 11 OF 14)

Botanical Name	Common Name	Application Rate (lbs/ac)	% of Mix	Quantity (lbs)	Remarks
Panicum virgatum	Switchgrass	18.0	24%	6.3	-
Poa palustris	Fowl Bluegrass	30.0	40%	10.5	-
Panicum clandestinum	Deer Tongue Grass	18.0	24%	6.3	-
Bromus ciliatus	Fringed Brome	9.0	12%	3.2	_
	TOTALS	75.0	100%	26.3	-

TURF GRASS ZONE (SHEET 11 OF 14)

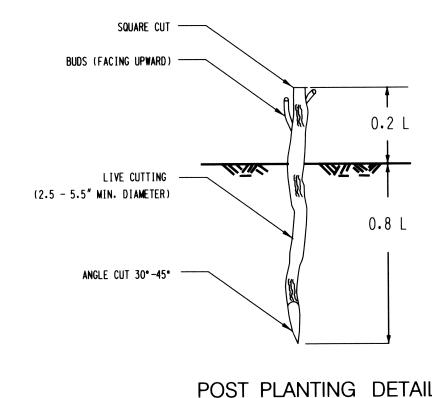
(964SQ F1 /0.02 AC)				
Qty(lbs)	Mix			
4	SHA Special Purpose Seed Mix 920.06.07 (b)			

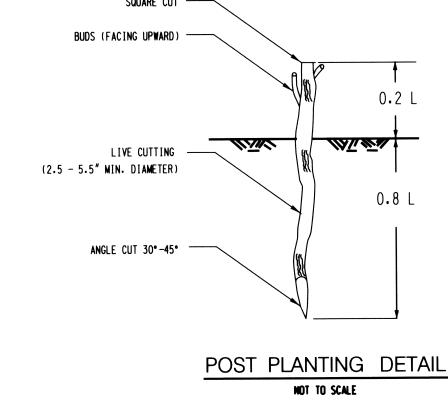
Application Rate of 200 lbs / ac

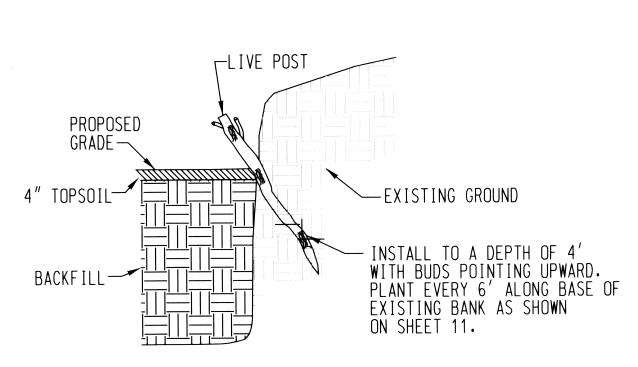
SOD ZONE

(4545 SQ FT /0.10 AC)

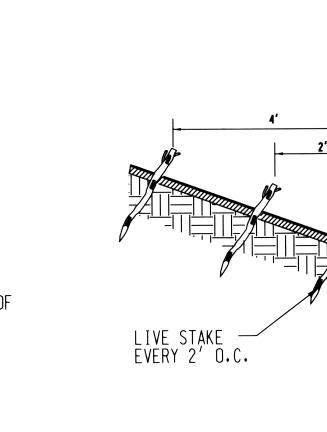
Qty(sy)	Common Name
505	Tall fescue



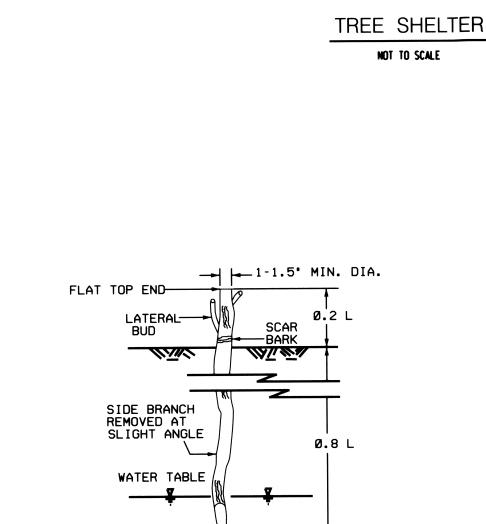




NOT TO SCALE



TYPICAL LIVE STAKE



PLASTIC MESH Fence or Stable Black Polypropylene -

NOT TO SCALE

--- REMOVE CONTAINER FROM ROOT BALL

TREE PLANTING DETAIL

NOT TO SCALE

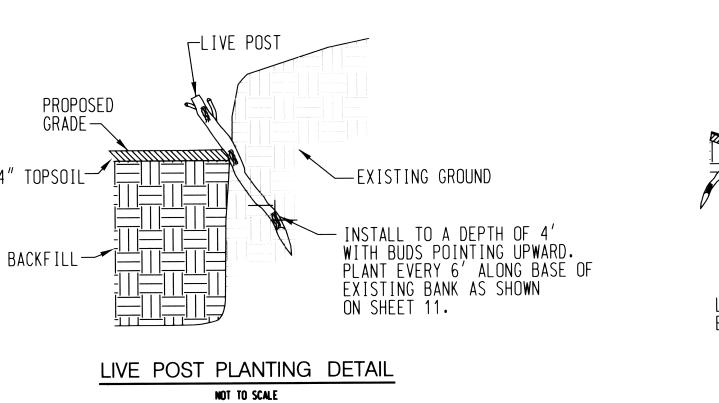
NOTE: TREE SHELTERS TO BE ADDED TO ALL TREES PLANTED

LIVE STAKE DETAIL NOT TO SCALE

NATURAL FIBER MATTING-WITH 4" TOPSOIL LIVE STAKE — EVERY 2' O.C.

> TYPICAL LIVE STAKE PLACEMENT IN A RIFFLE

> > NOT TO SCALE



PLACEMENT IN A POOL

NOT TO SCALE

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. 38311. EXPIRATION DATE: JANUARY 6, 2012

SHEET NO.: 12 OF 14

936

E7-10-44

LANDSCAPE

NOTES AND

DETAILS

SEPTEMBER 2010

CAPITAL PROJECT NO.:

CONSTRUCTION ISSUE:

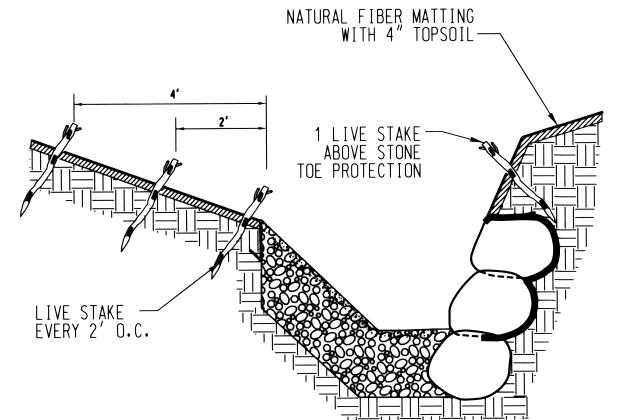
0 0.25 0.5 1.0 NCHES

NOT TO SCALE

01-081795.27

A: MINIMUM SPACING PER SCHEDULE B: DUPLICATE SPECIES SPACING MINIMUM 2 TIMES MINIMUM SPACING TREE AND SHRUB RANDOM SPACING

NOT TO SCALE



1/8 OF ROOTBALL ABOVE EXISTING GRADE

2'0" MINIMUM OVERLAP
WITH UPSTREAM FABRIC ON
TOP OF DOWNSTREAM FABRIC

TYPICAL PLAN VIEW

NOT TO SCALE

NATURAL FIBER MATTING WITH LIVE STAKES

REMOVE CONTAINER -FROM ROOT BALL

FLOOD PLANTS TWICE WITHIN FIRST 24 HOURS

LIVE STAKE SPECIES SPACED ON 2 FOOT CENTERS ROWS STAGGERED

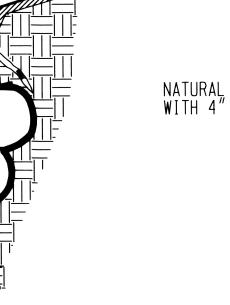
KEY-IN BOTTOM 1' (MIN.) DEPTH,

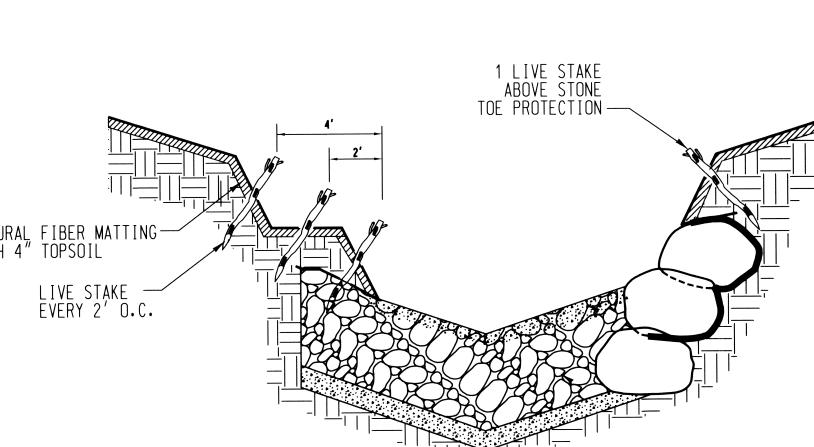
AND BACKFILL WITH CHANNEL
MATERIAL OR PLACE STONE TOE PROTECTION

SHRUB PLANTING DETAIL

NOT TO SCALE

- KEY-IN TOP 6" (MIN.) DEPTH, REINFORCE WITH STAKES (6" SPACING) AND BACKFILL——





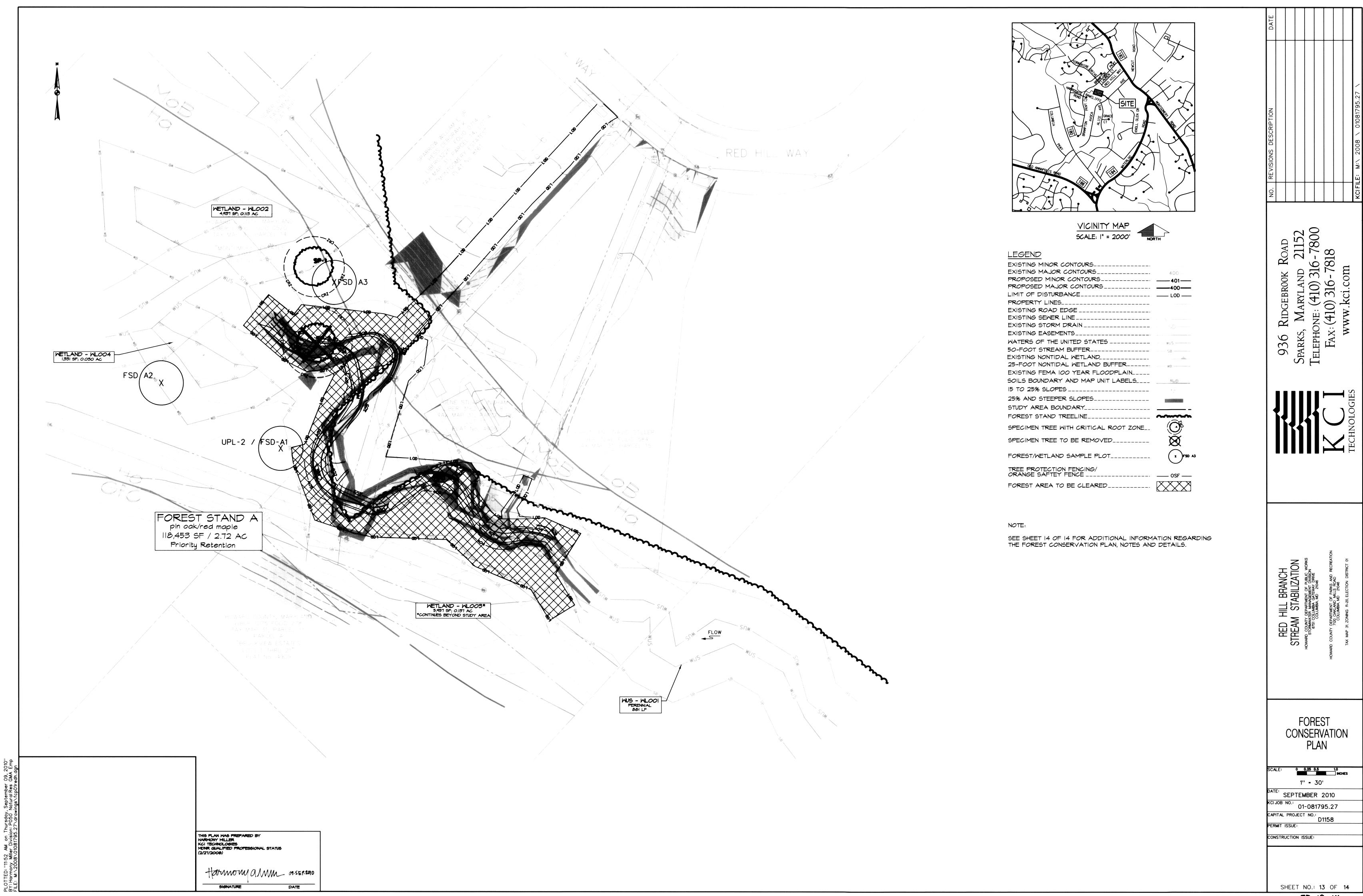


TABLE I. SPECIMEN TREES					
SPECIMEN TREE ID	SCIENTIFIC NAME	COMMON NAME	DBH (")	VIGOR	
SP-I	Acer rubrum	red maple	31	600D	
SP-2	Liriodendron tulipifera	tulip poplar	34	600D	

TABLE 2. SOILS				
MAPPING UNIT	DESCRIPTION	KP VALUE	HYDRIC STATUS	
GFC	Gladstone-Urban land complex	None listed	N	
На	Hatboro-Codorous silt loams, O to 3% slope	0.37	Y	
LoB	Legore-Montalto-Urban land complex, 0-8% slope	0.02	N	
МоВ	Mount Lucas silt loam, 3-8% slope, stony	0.32	Y	

GENERAL NOTES:

- TOPOGRAPHICAL SURVEY DATA PROVIDED BY AB CONSULTANTS.
- WAS COMPLETED IN NOVEMBER 2009.

 2. THE EXISTING LAND USE IS OPEN SPACE LAND DEEDED TO HOWARD COUNTY
- AND SURROUNDING LAND USE IS RESIDENTIAL.
- EXISTING ZONING IS RESIDENTIAL SINGLE (R20).
 CRITICAL HABITATS CONSIST OF NON-TIDAL WETLANDS, THEIR BUFFERS, STEEP SLOPES, AND RED HILL BRANCH.

NO RARE, THREATENED OR ENDANGERED SPECIES WERE ENCOUNTERED DURING
THE FIELD INVESTIGATIONS. INQUIRY LETTERS WERE SENT TO THE THE MARYLAND HISTORIC TRUST
REGARDING THE POTENTIAL PRESENCE OF HISTORIC RESOURCES WITHIN THE STUDY AREA. IN ADDITION,
INQUIRY LETTERS WERE SENT TO THE U.S. FISH & WILDLIFE SERVICE AND

MARYLAND DEPARTMENT OF NATURAL RESOURCES REGARDING THE POTENTIAL FOR RARE, THREATENED OR ENDANGERED SPECIES. RESPONSES INDICATE THERE ARE NO HISTORICAL RESOURCES OR RARE, THREATENED OR ENDANGERED SPECIES PRESENT WITHIN THE STUDY AREA.

WATER RESOURCES NOTES:

- 1. WATERS OF THE UNITED STATES (WUS) WERE DELINEATED BY KCI IN OCTOBER 2009.
- 2. WETLANDS SHOWN REPRESENT THE UNVERIFIED REGULATED WUS BOUNDARIES.
- 3. THREE NONTIDAL WETLANDS AND ONE WUS WERE LOCATED WITHIN THE STUDY AREA.
 4. THE FEMA 100-YEAR FLOODPLAIN WITHIN THE LOD TOTALS 20,662 SF; 0.47 AC.
 5. THE TOTAL AREA OF WATERS OF THE UNITED STATES WITHIN THE STUDY AREA IS 12,225 SF; 0.28 AC.
- 6. TOTAL LINEAR FEET OF STREAMS WITHIN THE STUDY AREA 881 LF.

FOREST RESOURCES NOTES:

PLOTTED: "11:52 AM on Thursday, September 09, 2010" BY: Harmony Miller Division: P050 Natural Res GMA Emp FILE: M:\2008\01081795.27\drawings\fcp02redh_Note

- I. THE STUDY AREA BOUNDARY IS A 200-FOOT CORRIDOR CENTERED ON THE RED HILL BRANCH TRIBUTARY.
- FOREST STANDS EXTEND BEYOND THE STUDY AREA BOUNDARY.
 ONE FOREST STAND WAS OBSERVED DURING FIELD INVESTIGATIONS AND IS CLASSIFIED AS
- PRIORITY RETENTION.

 4. TWO SPECIMEN TREES WERE LOCATED DIRING FIELD INVESTIGATIONS (SEE TABLE LITTLE GUEET)
- 4. TWO SPECIMEN TREES WERE LOCATED DURING FIELD INVESTIGATIONS (SEE TABLE I, THIS SHEET).
 5. SEE NOTE 21 ON SHEET I OF 14 REGARDING THE WAIVER PETITION AND THE USE OF THE LOD AS THE NET TRACT AREA.
- 6. THE TOTAL GROSS TRACT AREA IS 26,360 SF; 0.61 AC.
 7. THE TOTAL NET TRACT AREA IS 0.14 AC.
- 7. THE TOTAL NET TRACT AREA IS 0.14 AC.
 8. TOTAL FORESTED AREA WITHIN LOD IS 16,545 SF; 0.39 AC.
- 9. TOTAL FORESTED AREA WITHIN LOD 15 16,545 SF; 0.34 AC.
 9. TOTAL FORESTED AREA WITHIN THE FLOODPLAIN WITHIN THE LOD IS 15,641 SF; 0.36 AC.
- 10. THE PLANTING REQUIREMENT SHALL BE MET THROUGH REPLANTING AND STABILIZATION WITHIN THE LOD.

THIS PLAN WAS PREPARED BY

HARMONY MILLER KCI TECHNOLOGIES MONR GUALIFIED PROFESSIONAL STATUS

tarmorm a. MML 09.SEP.2010

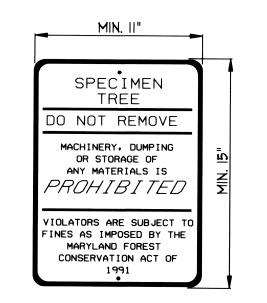
DATE

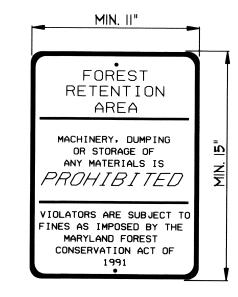
SEE SHEETS II - 12 OF 14 FOR LANDSCAPE PLANS AND RELATED NOTES AND DETAILS.
 THE TOTAL AREA TO BE REPLANTED IS 9,887 SF; 0.23 AC.

KCI Technologies, Inc. 9/9/2010 Forest Conservation Worksheet Total Tract Area A= 0.61 ac. B= 0.47 ac. C= 0.00 ac. D= 0.14 ac. Area within 100-year Floodplain Area to Remain In Agricultural Production Net Tract Area (D=(A-B-B1-C)) Land Use Category: Residential - Rural Medium Density Conservation Threshold Existing Forest Cover G= 0.02 ac. H= 0.00 ac. I= 0.00 ac. Existing Forest Cover (excluding floodplain) Area of Forest Above Afforestation Threshold Area of Forest Above Conservation Threshold Break Even Point Forest Retention Above Threshold with no Mitigation (1) If I>0 then J=(0.2 xl)+F, go to K (2) If I=0, J=0, go to L Clearing Permitted Without Mitigation (K=G-J) K= 0.00 ac. Proposed Forest Clearing L= 0.02 ac. M= 0.00 ac. Total Area of Forest to be Cleared Total Area of Forest to be Retained (M=G-L) N= 0.00 ac. P= 0.04 ac. Q= 0.00 ac. R= 0.04 ac. S= 0.00 ac. T= 0.04 ac. Reforestation for Clearing Above the Conservation Threshold Reforestation for Clearing Below the Conservation Threshold Credit for Retention Above the Conservation Threshold **Total Reforestation Required Total Afforestation Required** Total Reforestation and Afforestation Requirement T=(R+S)

RedHill_StateFCW.xls

Page 1 of 1





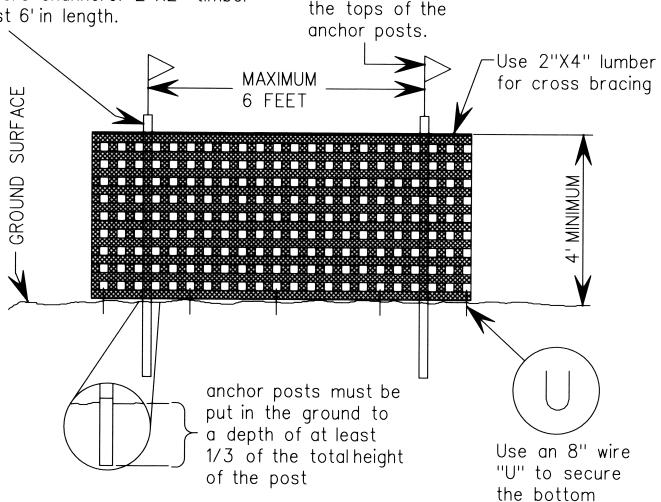
FOREST CONSERVATION SIGNAGE

NOT TO SCALE

NOTES:

- BOTTOM OF SIGN TO BE HIGHER THAN TREE PROTECTION FENCE.
- 2. SIGNS TO BE PLACED 50 TO 100' APART. CONDITION ON SITE AFFECTING VISIBILITY MAY WARRANT PLACING SIGNS CLOSER OR FARTHER APART WITHIN THE ACCEPTABLE NOTED RANGE.
- 3. ATTACHMENT OF SIGNS TO TREES IS PROHIBITED.
- 4. SIGNS MAY BE REMOVED FROM RESIDENTIAL LOTS UPON ISSUANCE OF USE AND OCCUPANCY RETENTION FOREST ONLY.
- 5. ALL SIGNAGE MUST REMAIN DURING THE MAINTENANCE PERIOD.
- 6. THE SIGNS NOTIFY CONSTRUCTION WORKERS AND FUTURE RESIDENTS OF THE NEWLY PLANTED MATERIAL, IMPROVING THE TREES' SURVIVAL RATES
- 7. SIGNS MAY BE ADAPTED BY RESIDENTS FOR IDENTIFICATION OF FOREST RETENTION AREAS.

Anchor posts should be minimum 2" steel U-channel or 2"X2" timber at least 6' in length.



Highly visible flagging

should be attached to

BLAZE ORANGE PLASTIC MESH SAFETY FENCE DETAL

NOT TO SCALE

PLACEMENT OF ORANGE HIGH VISIBILITY FENCE:

- ORANGE HIGH VISIBILITY FENCE SHALL BE MANUALLY INSTALLED ALONG THE LIMITS OF DISTURBANCE, WHERE THAT LIMIT IS WITHIN 50' OF THE FOREST CONSERVATION/FOREST BUFFER EASEMENTS AND SHALL FUNCTION AS A FOREST PROTECTION DEVICE.
- 2. RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
- BOUNDARIES OF THE RETENTION AREA SHALL BE STAKES AND FLAGGED PRIOR TO INSTALLING THE DEVICE.
- 4. ROOT DAMAGE SHALL BE AVOIDED.
 - PROTECTIVE SIGNAGE MAY ALSO BE USED.
- 6. DEVICE SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.

RIDGEBROOK ROAD

MARYLAND 21152

ONE: (410) 316-7800
(410) 316-7818

WW.kci.com

KCIFILE: M:\ 2008 \ O1081795 27 \

SPARKS, MARYLAND
TELEPHONE: (410) 316
FAX: (410) 316-78
www.kci.com

STREAM STABILIZATION
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
STORMWATER MANAGEMENT DIVISION
6751 COLUMBIA, MD 21046
COLUMBIA, MD 21046
COLUMBIA, MD 21046
COLUMBIA, MD 21046

FOREST CONSERVATION

PLAN

NOTES & DETAILS

SCALE:

0 0.25 0.5 1.0 NCHES

1" = 30'

DATE:
SEPTEMBER 2010

KCI JOB NO.:
01-081795.27

CAPITAL PROJECT NO.:
D1158

PERMIT ISSUE:

CONSTRUCTION ISSUE:

SHEET NO.: 14 OF 14

