

# SITE DEVELOPMENT PLAN GRAY ROCK FARMS SECTIONS 3 & 4 STREAM STABILIZATION

## HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS CAPITAL PROJECT D-1158

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### LEGEND

LIMIT OF DISTURBANCE	LOD
EXISTING MAJOR CONTOURS	385
EXISTING MINOR CONTOURS	
PROPOSED CONTOURS	387
EXISTING TREE TO BE SAVED	⊙
EXISTING TREE TO BE REMOVED	⊗
EDGE OF TREELINE	~
WATERS OF THE US	WUS
PROPERTY LINE	---
EXISTING ROAD EDGE	---
EXISTING SEWER LINE	S
EXISTING STORM DRAIN	SD
EXISTING SEWER MANHOLE	⊙
EXISTING STORM DRAIN MANHOLE	⊙
IMBRICATED BANK PROTECTION	▣
SINGLE STONE TOE PROTECTION	▣
RIFFLE GRADE CONTROL	▣
SANDBAG DAM	▣
PUMP	⊗
FILTER BAG	FB
SUMP PIT	⊗
ORANGE SAFETY FENCE	OSF
SILT FENCE	SF
SUPER SILT FENCE	SSF
DIVERSION PIPE	---
STABILIZED CONSTRUCTION ENTRANCE	▣
EXISTING FENCE	X
EXISTING EASEMENT LINE	---
OUTFALL PROTECTION	▣
NON-DISTURBANCE AREA	▣
GLIDE TRANSITION	▣
EX. 100 YEAR FLOODPLAIN	▣
PROP. 100 YEAR FLOODPLAIN	▣

### SITE ANALYSIS DATA CHART

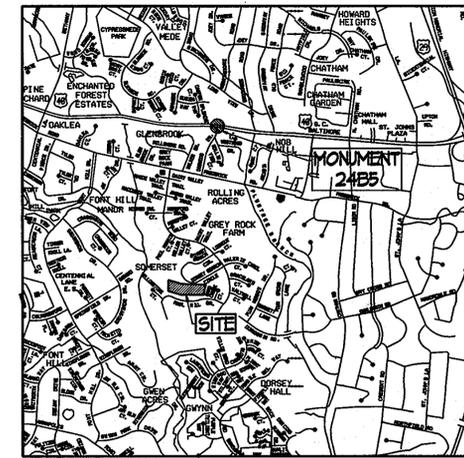
- TOTAL PROJECT AREA: 0.83 ACRES (36,312 SF).
- DISTURBED AREA: 0.83 ACRES (36,312 SF).
- PRESENT ZONING DESIGNATION: R-20
- PROPOSED USE FOR THE SITE: STABILIZE EXISTING BANK/CHANNEL EROSION
- OPEN SPACE ON SITE: 0.51 AC, 62% OF GROSS AREA
- APPLICABLE DPZ FILE REFERENCES: S-77-83, P-78-35, P-86-30, F-86-143, F-88-24, P-87-75, S-77-83, F-88-77, WP-10-045

### ADDRESS CHART

LOT/PARCEL #	STREET ADDRESS	PLAT #
131 / 1178	3768 DORSEY SEARCH CIRCLE	6788
132 / 1178	3772 DORSEY SEARCH CIRCLE	6788
133 / 1178	3776 DORSEY SEARCH CIRCLE	6788
134 / 1178	3780 DORSEY SEARCH CIRCLE	6788
193 / 1178	3826 PAUL MILL ROAD	7703
194 / 1178	3830 PAUL MILL ROAD	7703
195 / 1178	3834 PAUL MILL ROAD	7703
196 / 1178	3840 PAUL MILL ROAD	7704
223 / 1178	PAUL MILL ROAD	7703

### SPECIAL CONTRACTOR NOTES

- 100-YEAR FLOODPLAIN BOUNDARY IS SHOWN ON THE PLANS.
- NO STOCKPILE OF ANY MATERIAL IS ALLOWED IN THE 100-YEAR FLOODPLAIN.
- IN-STREAM WORK IS PROHIBITED FROM MARCH 1ST TO JUNE 15TH, INCLUSIVE.
- STREAM CLASSIFICATION: USE I.
- CONTRACTOR SHALL CONTINUALLY MONITOR WEATHER FORECASTS DURING WORK ACTIVITIES AND SCHEDULE WORK DURING FAVORABLE CONDITIONS.
- 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.
- CONTRACTOR SHALL NOT STORE EQUIPMENT, MATERIALS AND/OR SUPPLIES BEYOND THE ORANGE FENCING SHOWN ON THE PLANS.
- 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.
- PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES, PHOTOGRAPHS OF THE PROPOSED WORK AREA AND ACCESS SHALL BE TAKEN.
- 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.
- ALL MATERIAL SHALL BE REMOVED AND DISPOSED OFF-SITE. REMOVED TREES AND BRUSH MAY BE REDISTRIBUTED ON SITE AT THE DISCRETION OF THE ENGINEER OR HIS/HER REPRESENTATIVE.
- CONTRACTOR TO NOTIFY COLONIAL PIPELINE COMPANY AT 410-970-2138 AT LEAST ONE WEEK PRIOR TO BEGINNING CONSTRUCTION, TO ENSURE THAT A COLONIAL PIPELINE COMPANY INSPECTOR IS PRESENT DURING ANY CONSTRUCTION OVER OR NEAR THE EXISTING GAS PIPELINE AT THE PROJECT SITE.



VICINITY MAP  
SCALE: 1" = 2000'

ADC MAP NO. 4815 GRID E-8  
THE HORIZONTAL AND VERTICAL DATUM SHOWN HEREON ARE BASED ON GPS OBSERVATIONS FROM THE FOLLOWING N.G.S. TRAVERSE POINTS  
HORIZONTAL NAD 1983/91  
VERTICAL NAVD 1988

TRaverse	COORDINATE LIST	ELEVATION	
PT #	NORTHING	EASTING	
101	N 582,696.87	E 1,355,377.14	347.33
102	N 582,691.76	E 1,355,686.34	354.04
103	N 582,573.17	E 1,355,819.58	356.74

HOWARD COUNTY CONTROL POINTS	NORTH	EAST	ELEVATION
24BS	586956.275	1356590.785	390.18

### GENERAL NOTES

- THE SUBJECT PROPERTIES ARE ZONED R-20 PER FEBRUARY 2, 2004 COMPREHENSIVE ZONING PLAN AND THE COMP-LITE ZONING AMENDMENTS DATED 7/28/2006.
- THE DEPARTMENT OF PLANNING AND ZONING AND THE HOWARD SOIL CONSERVATION DISTRICT HAVE DETERMINED THAT THE DISTURBANCES WITHIN THE 100-YEAR FLOODPLAIN, WETLANDS, STREAM AND REQUIRED BUFFERS FOR THE PROPOSED STREAM RESTORATION PROJECT ARE CONSIDERED ESSENTIAL OR NECESSARY IN ACCORDANCE WITH SECTIONS 16.115(C) AND 16.116(C) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
- THIS PROJECT WILL MEET THE PURPOSE AND INTENT OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL BY ALTERNATIVE COMPLIANCE.
- THERE ARE NO BURIAL GROUNDS OR CEMETERY SITES LOCATED ON THE PROJECT SITE.
- THIS PLAN MEETS THE REQUIREMENTS OF THE FOREST CONSERVATION, WHICH INCLUDES 0 ACRES OF RETENTION AND 0.02 ACRES OF REFORESTATION. THESE REQUIREMENTS SHALL BE MET THROUGH A TOTAL OF 0.58 ACRES OF PROPOSED REFORESTATION PLANTING WITHIN THE LIMIT OF DISTURBANCE. REFER TO FOREST CONSERVATION PLAN SHEETS 18-20.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
- 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.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- 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 24BS WAS USED FOR THIS SITE.
- WATER IS PUBLIC.
- SEWER IS PUBLIC.
- 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.
- EXISTING UTILITIES ARE BASED ON FIELD SURVEYS AND AVAILABLE RECORD DRAWINGS.
- THE FLOODPLAIN STUDY FOR THIS PROJECT WAS PREPARED BY KCI TECHNOLOGIES, INC. AND WAS APPROVED ON MARCH 8, 2010 BY THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING, DEED.
- THE WETLANDS DELINEATION FOR THIS PROJECT WAS PERFORMED BY KCI TECHNOLOGIES, INC. IN FEBRUARY 2009. NO WETLANDS WERE OBSERVED AT THAT TIME.
- THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH ONE FOOT CONTOUR INTERVALS PREPARED BY AB CONSULTANTS, INC., IN MARCH 2009.
- ALL WORK SHALL BE CONSTRUCTED ACCORDING TO THE REQUIREMENTS OF THE NONTIDAL WETLANDS AND WATERWAYS PERMIT APPROVED 11/23/2009. (MDE TRACKING #200962422/09-NT-0254).
- NO TRAFFIC STUDY IS REQUIRED FOR THIS PROJECT.
- 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 NOTIFY 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.
- A WAIVER PETITION (WP-10-045) FROM SECTION 16.1202, 16.1203, 16.1205(C), AND 16.1207(C) WAS APPROVED ON 11/16/09 THAT ALLOWS THE USE OF THE AREA INSIDE THE LIMIT OF DISTURBANCE AS THE NET TRACT AREA IN THE FOREST CONSERVATION CALCULATIONS SUBJECT TO THE FOLLOWING CONDITIONS: COMPLIANCE WITH ALL OTHER REQUIREMENTS OF THE HOWARD COUNTY FOREST CONSERVATION MANUAL AND RECENTLY ADOPTED, APPLICABLE MARYLAND DEPARTMENT OF NATURAL RESOURCES FOREST CONSERVATION REQUIREMENTS.
- CONTRACTOR SHALL COORDINATE DIRECTLY WITH THE COLONIAL PIPELINE COMPANY AND PERFORM TEST PITS AS NECESSARY TO FULLY AND DEFINITELY IDENTIFY BOTH THE HORIZONTAL AND VERTICAL LOCATION OF THE ON-SITE PIPELINES PRIOR TO BEGINNING ANY WORK WITHIN THE PIPELINE EASEMENT.

**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 SOIL CONSERVATION DISTRICT"

*James Tomlinson, P.E.* P.E. • 31201 DATE: 4/30/10

**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 SOIL CONSERVATION DISTRICT"

*Howard E. Saltzman* SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) DATE: 5/6/10

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

*Janet K. Stelcu* DIRECTOR OF PUBLIC WORKS DATE: 5/6/10

*Evelyn E. Lamb* CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE: 5/6/10

*Howard E. Saltzman* CHIEF, STORMWATER MANAGEMENT DIVISION DATE: 5/6/10

DEPARTMENT OF RECREATION AND PARKS, HOWARD COUNTY, MD

*James W. Whitherspoon (acting)* DIRECTOR OF RECREATION AND PARKS DATE: 5/12/10

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

*William D. ...* CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 4/1/10

*William D. ...* CHIEF, DIVISION OF LAND DEVELOPMENT DATE: 6/08/10

*Thomas G. Butler* DIRECTOR DATE: 4/8/10

**PERMIT INFORMATION CHART**

SUBDIVISION NAME GRAY ROCK FARMS	SECTION/AREA SECT. 3 & 4	LOT/PARCEL # SEE ADDRESS
PLAT # OF L/P SEE ADDRESS	GRID # 9	ZONING R-20
TAX MAP NO. 24	ELECT. DIST. 01	CENSUS TRACT 602305
WATER CODE PUBLIC	SEWER CODE PUBLIC	

OWNER:  
HOWARD COUNTY  
DEPARTMENT OF PUBLIC WORKS  
6751 COLUMBIA GATEWAY DRIVE  
COLUMBIA, MD 21046  
410-313-6444

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. 31201, EXPIRATION DATE: JANUARY 24, 2011



**TITLE SHEET**

SCALE: 0" = 0.5' = 1" = 10 FEET

DATE: APRIL 2010

KCI JOB NO.: 01-081795.08

CAPITAL PROJECT NO.: D-1158

PERMIT ISSUE:

CONSTRUCTION ISSUE:

SHEET NO.: 1 OF 20

SDP-10-032

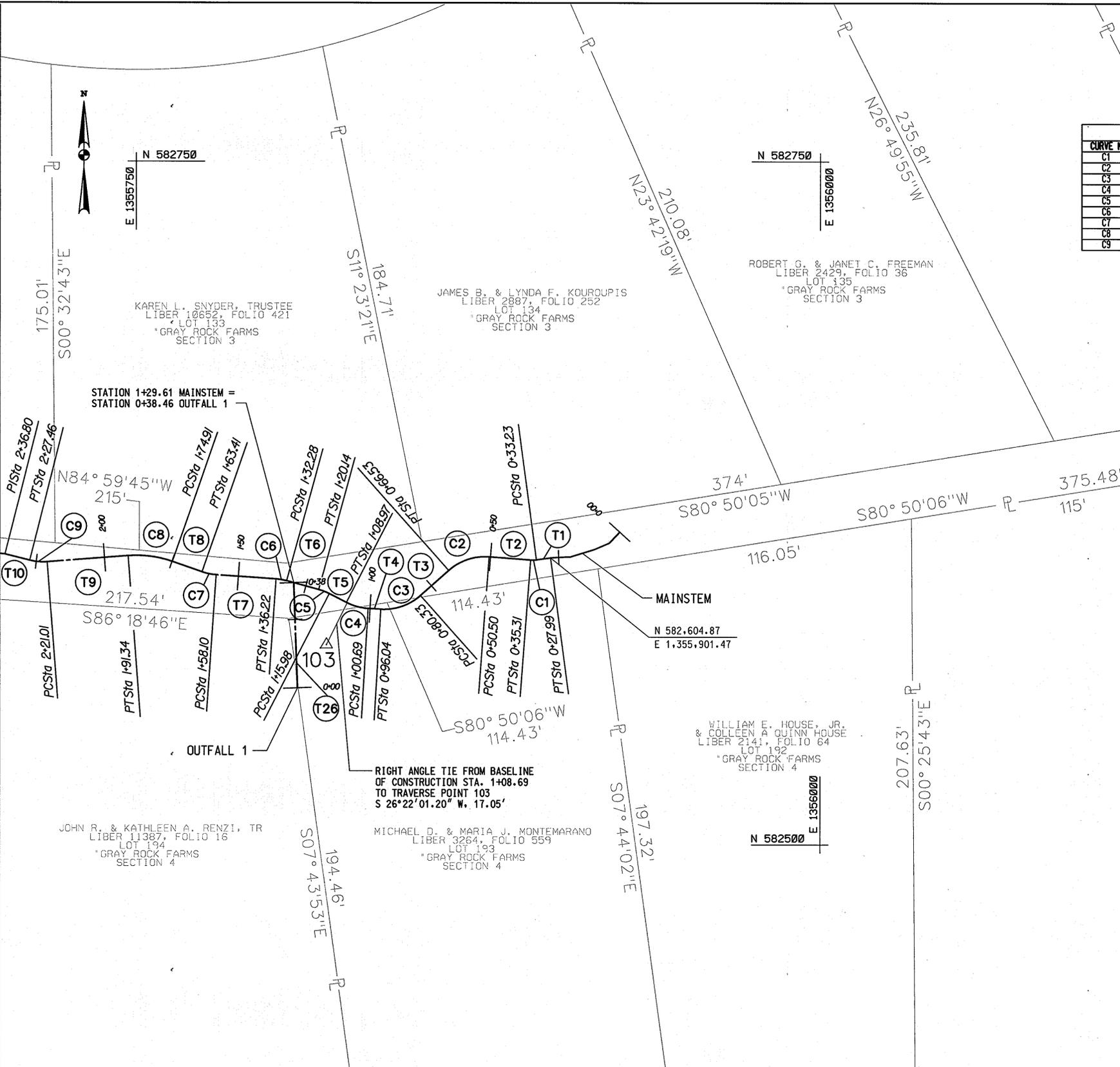
936 RIDGEBROOK ROAD  
SPARKS, MARYLAND 21152  
TELEPHONE: (410) 316-7800  
FAX: (410) 316-7818  
www.kci.com

KCI TECHNOLOGIES

GRAY ROCK FARMS  
STREAM STABILIZATION  
SECTION 3 & 4  
CAPITAL PROJECT D-1158  
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
6751 COLUMBIA GATEWAY DRIVE  
COLUMBIA, MD 21046  
HOWARD COUNTY DEPARTMENT OF PARKS AND RECREATION  
1000 COLUMBIA AVENUE  
COLUMBIA, MD 21046  
PARCEL 1178 MAP 84 ZONING R-20 ELECTION DISTRICT 01

KCI FILE: MA\_2008 \ 01081795.08 \

MATCHLINE A-A (SEE SHEET 3)

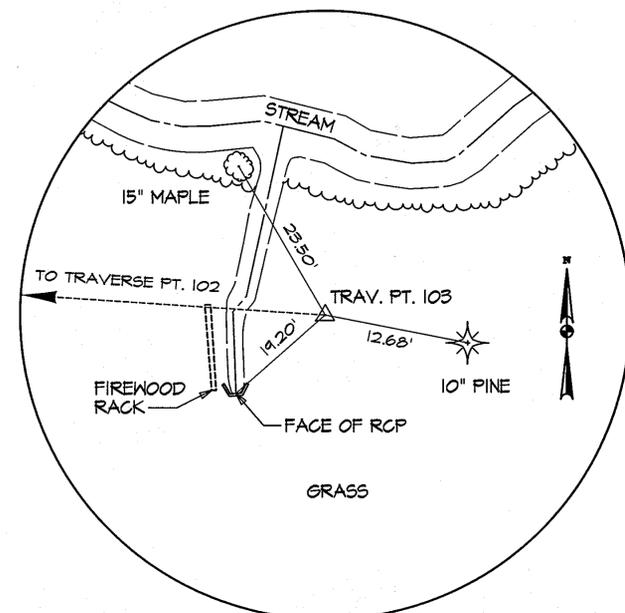


CURVE DATA - MAINSTEM					
CURVE NO.	RADIUS	LENGTH	DELTA	TANGENT	CHORD BEARING
C1	10.00'	2.08'	11°53'32.00"	1.04'	S 88°23'13.47" W 2.07'
C2	20.00'	16.03'	45°55'01.52"	8.47'	S 71°22'28.71" W 15.60'
C3	20.00'	15.71'	45°01'04.20"	8.29'	S 70°55'30.05" W 15.31'
C4	20.00'	8.29'	23°44'27.67"	4.20'	N 74°41'44.02" W 8.23'
C5	20.00'	4.16'	11°55'19.33"	2.09'	N 68°47'09.86" W 4.15'
C6	20.00'	3.93'	11°16'14.64"	1.97'	N 80°22'56.85" W 3.93'
C7	20.00'	5.30'	15°11'44.01"	2.67'	N 78°25'12.16" W 5.29'
C8	40.00'	16.43'	23°32'09.50"	8.33'	N 82°35'24.91" W 16.32'
C9	20.00'	6.45'	18°28'27.36"	3.25'	N 85°07'15.98" W 6.42'

TANGENT DATA - MAINSTEM		
TANGENT NO.	BEARING	DISTANCE
T1	S 82°26'27.47" W	5.24'
T2	N 85°40'00.53" W	15.19'
T3	S 48°24'57.95" W	13.80'
T4	N 86°33'57.86" W	4.64'
T5	N 62°49'30.19" W	7.00'
T6	N 74°44'49.52" W	12.14'
T7	N 86°01'04.17" W	21.89'
T8	N 70°49'20.16" W	11.50'
T9	S 85°38'30.34" W	29.67'
T10	N 75°53'02.30" W	9.34'

TANGENT DATA - OUTFALL 1		
TANGENT NO.	BEARING	DISTANCE
T26	N 02°02'12.22" W	38.46'

TRAVERSE COORDINATE LIST			
PT #	NORTHING	EASTING	ELEVATION
103	N 582,513.17	E 1,355,819.58	356.74



TRAVERSE POINT 103  
PIN AND CAP  
NOT TO SCALE

NO.	REVISIONS DESCRIPTION	DATE

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



GRAY ROCK FARMS  
STREAM STABILIZATION  
SECTION 3 & 4  
CAPITAL PROJECT D-1158  
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
10000 COLUMBIA AVENUE  
COLUMBIA, MD 21046  
HOWARD COUNTY DEPARTMENT OF PARKS AND RECREATION  
1700 COLUMBIA AVENUE  
COLUMBIA, MD 21046  
PARCEL 175, TAX MAP 24, ZONING R-30, ELECTION DISTRICT 01

GEOMETRY SHEET

SCALE:	0 25 50 100 1" = 20'
DATE:	APRIL 2010
KCI JOB NO.:	01-081795.08
CAPITAL PROJECT NO.:	D-1158
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	

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. 31201. EXPIRATION DATE: JANUARY 24, 2011.

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

*John Vanman* 6/7/10  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Neil Sandusky* 6/28/10  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Thomas E. Stottle* 6/8/10  
DIRECTOR DATE

135.61'  
S82°16'07"W  
PAUL MILL ROAD  
(LOCAL ROAD)  
50' RIGHT OF WAY







**RIFFLE GRADE CONTROL SCHEDULE**

FROM STATION	TO STATION
0+72.4	0+85.4
1+05.4	1+20.4
1+40.4	1+50.4
1+72.4	1+82.4
2+04.4	2+24.4

**STONE TOE PROTECTION SCHEDULE**

FROM STATION	TO STATION	OFFSET*
0+30	0+87	R
0+26	1+42	L
1+03	1+70	R

\*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

**IMBRICATED BANK PROTECTION SCHEDULE**

FROM STATION	TO STATION	OFFSET*
1+68	2+04	R

\*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

**STEP POOL CREST SCHEDULE**

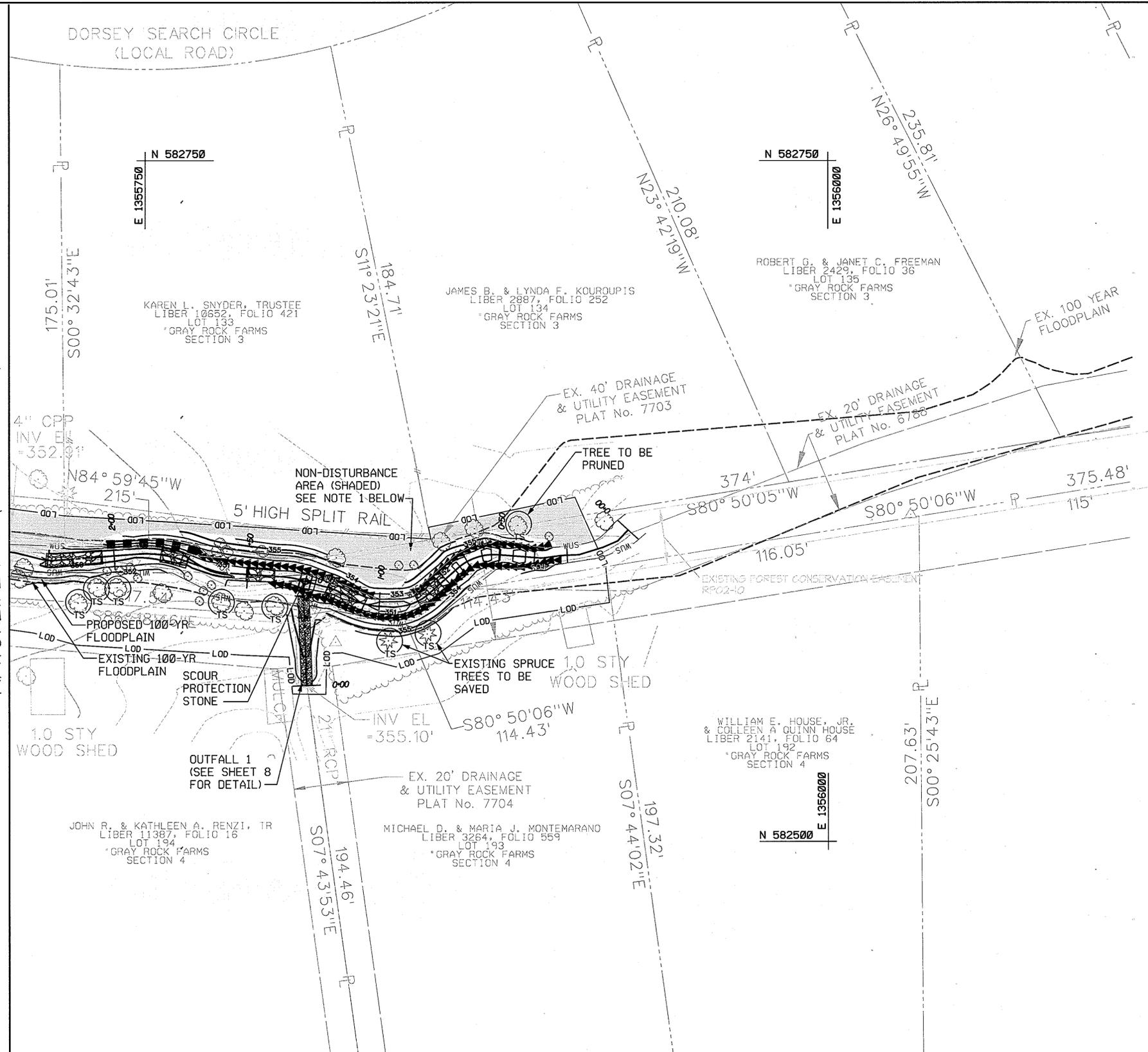
FROM STATION	TO STATION	FEATURE
0+34.4	0+36.4	CREST
0+46.4	0+48.4	CREST
0+58.4	0+60.4	CREST
0+70.4	0+72.4	CREST

**LEGEND**

- LIMIT OF DISTURBANCE
- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- PROPOSED CONTOURS
- EXISTING TREE TO BE SAVED
- EXISTING TREE
- EDGE OF TREELINE
- WATERS OF THE US
- PROPERTY LINE
- EXISTING STORM DRAIN
- IMBRICATED BANK PROTECTION
- SINGLE STONE TOE PROTECTION
- RIFFLE GRADE CONTROL
- EXISTING FENCE
- EXISTING EASEMENT LINE
- NON-DISTURBANCE AREA
- GLIDE TRANSITION
- EX. 100 YEAR FLOODPLAIN
- PROP. 100 YEAR FLOODPLAIN<sup>1</sup>
- EX. PETROLEUM PIPELINE
- SCOUR PROTECTION STONE
- OUTFALL PROTECTION

<sup>1</sup>PROPOSED FLOODPLAIN ONLY SHOWN WHERE IT DIFFERS FROM EXISTING

MATCHLINE A-A (SEE SHEET 6)



**NOTES:**

1. THE NON-DISTURBANCE AREA IS DESIGNATED FOR EROSION AND SEDIMENT CONTROL MEASURES ONLY. NO MECHANIZED EQUIPMENT IS PERMITTED WITHIN THE NON-DISTURBANCE AREA UNLESS DIRECTED BY THE ENGINEER, CONTRACTOR TO SAVE EXISTING VEGETATION IN THESE AREAS TO THE EXTENT POSSIBLE.
2. TREES LOCATED WITHIN THE LIMIT OF DISTURBANCE, THAT ARE NOT DESIGNATED TO BE SAVED, ARE SUBJECT TO PRUNING OR REMOVAL.
3. CONTRACTOR SHALL LOCATE AND EXTEND ROOF DRAINS AS REQUIRED TO TIE-IN TO PROPOSED GRADE.



PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 31201, EXPIRATION DATE: JANUARY 24, 2011

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

*James A. Tomlinson* 6/7/10  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Keith Sedorek* 6/08/10  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Thomas E. Suttler* 6/8/10  
 DIRECTOR DATE

NO.	REVISIONS DESCRIPTION	DATE

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



GRAY ROCK FARMS  
 STREAM STABILIZATION  
 SECTION 3 & 4  
 CAPITAL PROJECT D-1158  
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 515 WEST COLUMBIA UNIVERSITY PARK  
 COLUMBIA, MARYLAND 21046  
 HOWARD COUNTY DEPARTMENT OF PARKS AND RECREATION  
 100 COLUMBIA UNIVERSITY PARK  
 COLUMBIA, MARYLAND 21046  
 PARCEL TTR, TTR, MAP 24, ZONING R-26, ELECTION DISTRICT 01

**GRADING PLAN**

SCALE: 0 0.25 0.5 1.0 INCHES  
 1" = 20'

DATE: APRIL 2010  
 KCI JOB NO.: 01-081795.08  
 CAPITAL PROJECT NO.: D-1158  
 PERMIT ISSUE:  
 CONSTRUCTION ISSUE:

SHEET NO.: 5 OF 20  
 SDP-10-032

NOTES:  
 1. THE NON-DISTURBANCE AREA IS DESIGNATED FOR EROSION AND SEDIMENT CONTROL MEASURES ONLY. NO MECHANIZED EQUIPMENT IS PERMITTED WITHIN THE NON-DISTURBANCE AREA UNLESS DIRECTED BY THE ENGINEER. CONTRACTOR TO SAVE EXISTING VEGETATION IN THESE AREAS TO THE EXTENT POSSIBLE.  
 2. TREES LOCATED WITHIN THE LIMIT OF DISTURBANCE, THAT ARE NOT DESIGNATED TO BE SAVED, ARE SUBJECT TO PRUNING OR REMOVAL.

3. TWO (2) SCEs ARE TO BE USED TO MINIMIZE TRAFFIC OVER THE EXISTING PETROLEUM PIPELINE.  
 4. CONTRACTOR SHALL LOCATE AND EXTEND ROOF DRAINS AS REQUIRED TO TIE-IN TO PROPOSED GRADE.  
 5. ANY DAMAGE TO PAUL MILL ROAD OR THE ASSOCIATED CURB AND GUTTER, AS A RESULT OF CONSTRUCTION ACTIVITIES, SHALL BE REPAIRED PRIOR TO PROJECT COMPLETION.  
 6. CONTRACTOR TO NOTIFY COLONIAL PIPELINE COMPANY AT 410-970-2138 AT LEAST ONE WEEK PRIOR TO BEGINNING CONSTRUCTION, TO ENSURE THAT A COLONIAL PIPELINE COMPANY INSPECTOR IS PRESENT DURING ANY CONSTRUCTION OVER OR NEAR THE EXISTING GAS PIPELINE AT THE PROJECT SITE.

**STEP POOL CREST SCHEDULE**

FROM STATION	TO STATION	FEATURE
3+10	3+12	CREST
6+41.1	6+43.1	CREST

**STONE TOE PROTECTION SCHEDULE**

FROM STATION	TO STATION	OFFSET*
2+93	3+98	R
2+93	3+41	L
3+56	3+98	L
5+88.2	6+56	R
5+88.2	6+49	L

\*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

**IMBRICATED BANK PROTECTION SCHEDULE**

FROM STATION	TO STATION	OFFSET*
6+49	6+81	L

\*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

**BACKWATER CREST SCHEDULE**

FROM STATION	TO STATION
3+00	3+02

**RIFFLE GRADE CONTROL SCHEDULE**

FROM STATION	TO STATION
3+25	3+40
3+60	3+70
5+88.2	6+23.1



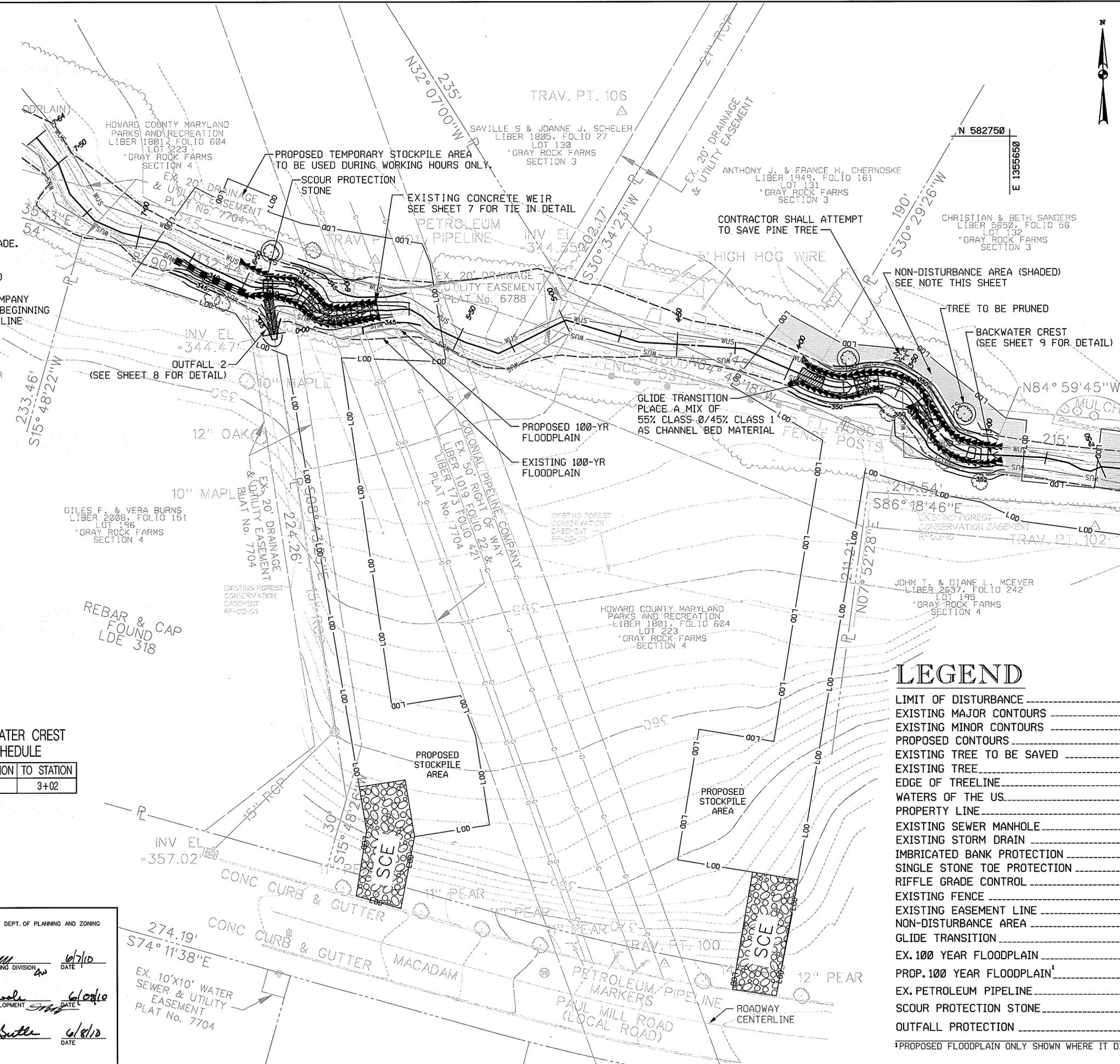
APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

Mr. Danum  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 6/10/10

Val Seidman  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 6/10/10

Thomas A. Tomlinson  
 DIRECTOR  
 DATE: 6/8/10

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. 31291. EXPIRATION DATE: JANUARY 24, 2011



MATCHLINE A-A (SEE SHEET 5)

**LEGEND**

- LIMIT OF DISTURBANCE
- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- PROPOSED CONTOURS
- EXISTING TREE TO BE SAVED
- EXISTING TREE
- EDGE OF TREELINE
- WATERS OF THE US
- PROPERTY LINE
- EXISTING SEWER MANHOLE
- EXISTING STORM DRAIN
- IMBRICATED BANK PROTECTION
- SINGLE STONE TOE PROTECTION
- RIFFLE GRADE CONTROL
- EXISTING FENCE
- EXISTING EASEMENT LINE
- NON-DISTURBANCE AREA
- GLIDE TRANSITION
- EX. 100 YEAR FLOODPLAIN
- PROP. 100 YEAR FLOODPLAIN
- EX. PETROLEUM PIPELINE
- SCOUR PROTECTION STONE
- OUTFALL PROTECTION

\*PROPOSED FLOODPLAIN ONLY SHOWN WHERE IT DIFFERS FROM EXISTING

NO.	REVISIONS DESCRIPTION	DATE

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

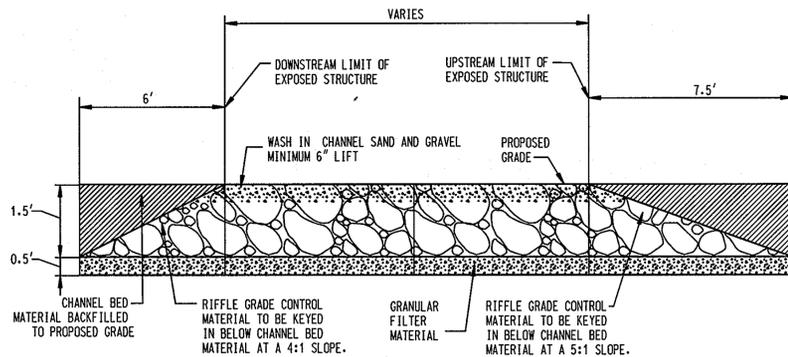


GRAY ROCK FARMS  
 STREAM STABILIZATION  
 SECTION 3 & 4  
 CAPITAL PROJECT D-1158  
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 500 WEST COLLETTA DRIVE  
 COLUMBIA, MD 21046

**GRADING PLAN**

SCALE: 0 0.25 0.5 1.0 INCHES  
 1" = 20'  
 DATE: APRIL 2010  
 KCI JOB NO.: 01-081795.08  
 CAPITAL PROJECT NO.: D-1158  
 PERMIT ISSUE:  
 CONSTRUCTION ISSUE:  
 SHEET NO.: 6 OF 20  
 SDP-10-032

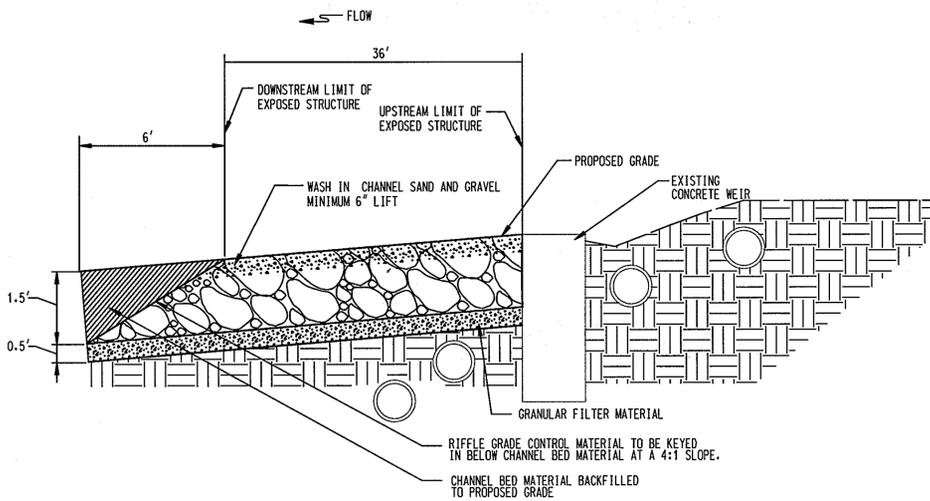
NOTE: STRUCTURE LENGTH VARIES  
SEE RIFFLE GRADE CONTROL SCHEDULE  
THIS SHEET FOR LENGTHS.



NOTES: 1. ALL RIFFLE GRADE CONTROL STRUCTURES SHALL BE CONSTRUCTED FROM DOWNSTREAM TO UPSTREAM  
2. THE RIFFLE GRADE CONTROL MATERIAL SHALL BE PLACED TO ITS FULL DEPTH MOVING FROM ONE BANK TO THE OPPOSING BANK.

**TYPICAL RIFFLE GRADE CONTROL PROFILE**

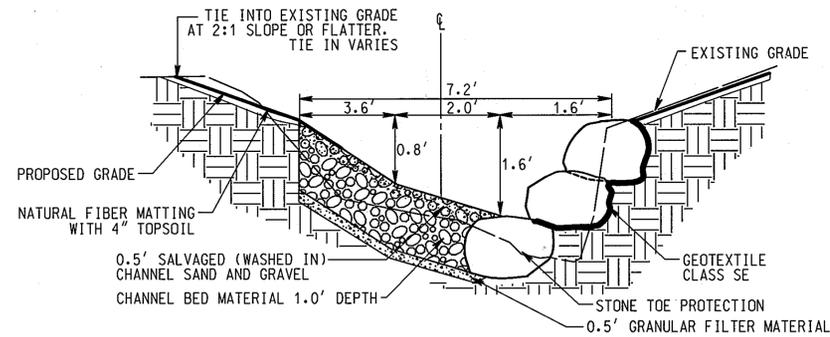
NOT TO SCALE



NOTES: 1. ALL RIFFLE GRADE CONTROL STRUCTURES SHALL BE CONSTRUCTED FROM DOWNSTREAM TO UPSTREAM.  
2. THE RIFFLE GRADE CONTROL MATERIAL SHALL BE PLACED TO ITS FULL DEPTH MOVING FROM ONE BANK TO THE OPPOSING BANK.  
3. ALL NEW GRAVEL TYPE MATERIAL ON THE RIGHT OF WAY SHALL BE PLACED AND NOT DUMPED.  
4. ALL COMPACTION SHALL BE DONE IN LAYERS NOT EXCEEDING 12 INCHES IN THICKNESS AND USING MANUALLY OPERATED EQUIPMENT UP TO A DEPTH OF COVER OF 4 FT OVER THE TOP OF THE PIPELINE.  
5. LOCATIONS OF PIPELINES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL VERIFY THESE LOCATIONS.

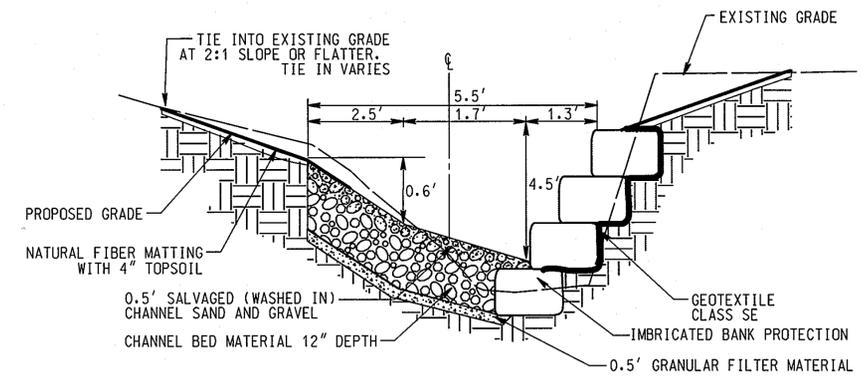
**TYPICAL RIFFLE GRADE CONTROL PROFILE  
STATION 5+88.2 TO 6+23.1**

NOT TO SCALE



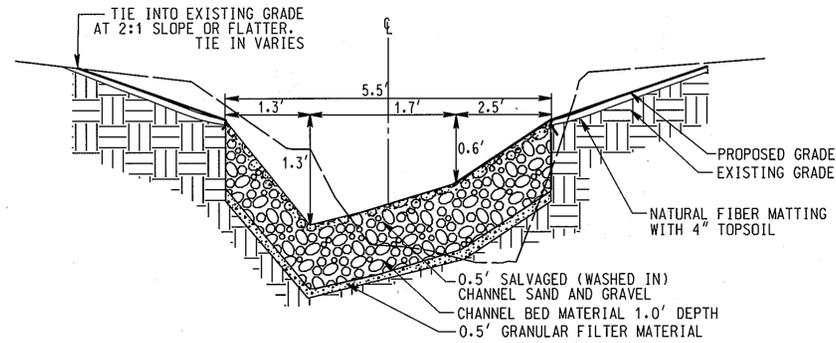
**OFFSET POOL RIGHT - STATION 3+50**

FACING DOWNSTREAM  
NOT TO SCALE



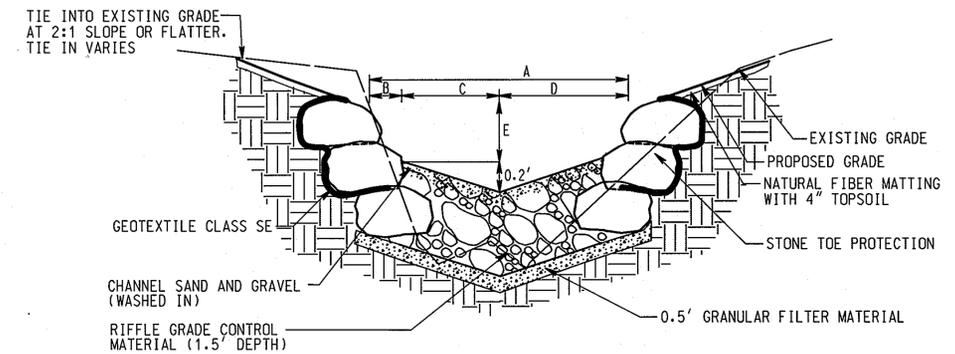
**OFFSET POOL RIGHT - STATION 1+92.4**

FACING DOWNSTREAM  
NOT TO SCALE



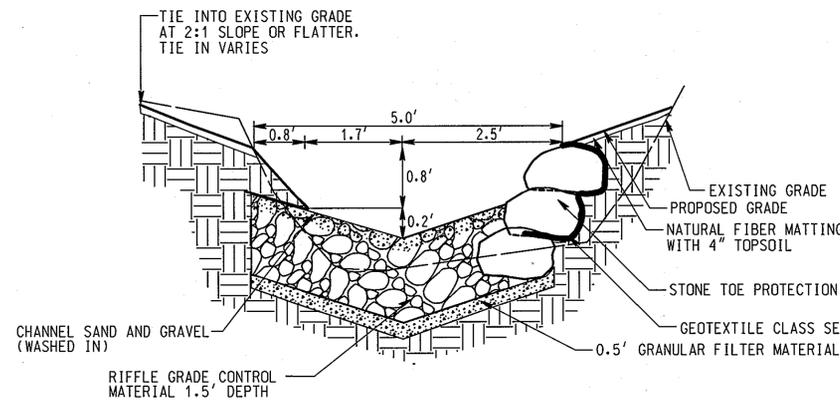
**OFFSET POOL LEFT - STATION 1+60.4**

FACING DOWNSTREAM  
NOT TO SCALE



**TYPICAL SECTION - RIFFLE**

NOT TO SCALE



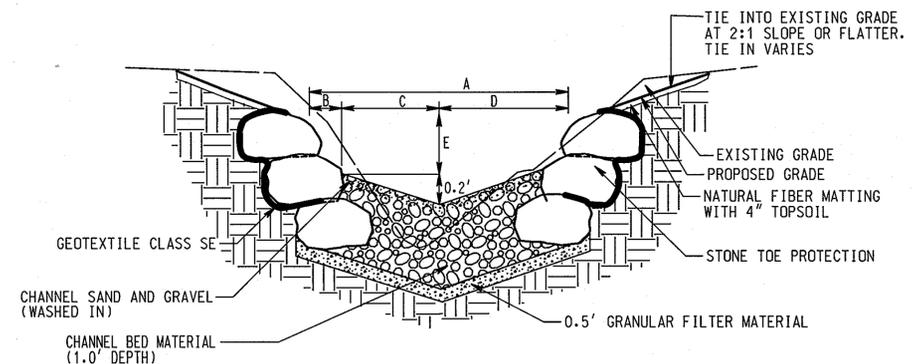
**RIFFLE - STATION 1+40.4 TO 1+50.4,  
1+72.4 TO 1+82.4, 2+04.4 TO 2+24.4**

NOT TO SCALE

TYPICAL RIFFLE SECTION SCHEDULE

FROM STATION*	TO STATION*	A	B	C	D	E
0+72.4	0+85.4	5.0'	0.8'	1.7'	2.5'	0.8'
1+05.4	1+20.4	5.0'	0.8'	1.7'	2.5'	0.8'
3+60	3+70	6.0'	0.8'	2.2'	3.0'	0.8'
3+25	3+40	5.0'	0.8'	1.7'	2.5'	0.8'

\*SEE PROFILE SHEET FOR SPECIFIC LOCATIONS OF RIFFLE SECTION



**TYPICAL SECTION - POOL (ON ALIGNMENT)**

NOT TO SCALE

TYPICAL POOL (ON ALIGNMENT) SCHEDULE

FROM STATION	TO STATION	A	B	C	D	E
0+85.4	1+05.4	6.2'	1.4'	1.7'	3.1'	1.4'
1+20.4	1+40.4	6.2'	1.4'	1.7'	3.1'	1.4'
3+12	3+25	7'	1.3'	2.2'	3.5'	1.6'
3+70	3+90	7'	1.3'	2.2'	3.5'	1.6'

NOTE: FROM STATION 1+26.6 TO 1+32.6 THE 12" OF CHANNEL BED MATERIAL IS REPLACED BY SCOUR PROTECTION STONE. SEE DETAIL SHEET 8.

SIZES FOR STONE TYPES

STONE TYPE	MATERIAL	SIZE
TYPICAL RIFFLE GRADE CONTROL MATERIAL	SHA CLASS 0	SHA CLASS 0
RIFFLE GRADE CONTROL MATERIAL (STA. 5+87)	SHA CLASS I	SHA CLASS I
CHANNEL BED MATERIAL	GABION STONE	3" - 6"

NOTE: ALL STONE SHALL BE BROWN OR GREY COLORED (WHITE STONE WILL NOT BE APPROVED)

NO.	REVISIONS DESCRIPTION	DATE

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



GRAY ROCK FARMS  
STREAM STABILIZATION  
SECTION 3 & 4  
CAPITAL PROJECT D-1158  
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
500 WEST COLUMBIA COUNTRY DRIVE  
COLUMBIA, MD 21046

**STREAM DETAILS  
AND  
TYPICAL SECTIONS**

SCALE: 0 0.25 0.5 1 TO INCHES  
NOT TO SCALE  
DATE: APRIL 2010  
KCI JOB NO.: 01-081795.08  
CAPITAL PROJECT NO.: D-1158  
PERMIT ISSUE:  
CONSTRUCTION ISSUE:

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

*Michael J. ...* 6/7/10  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

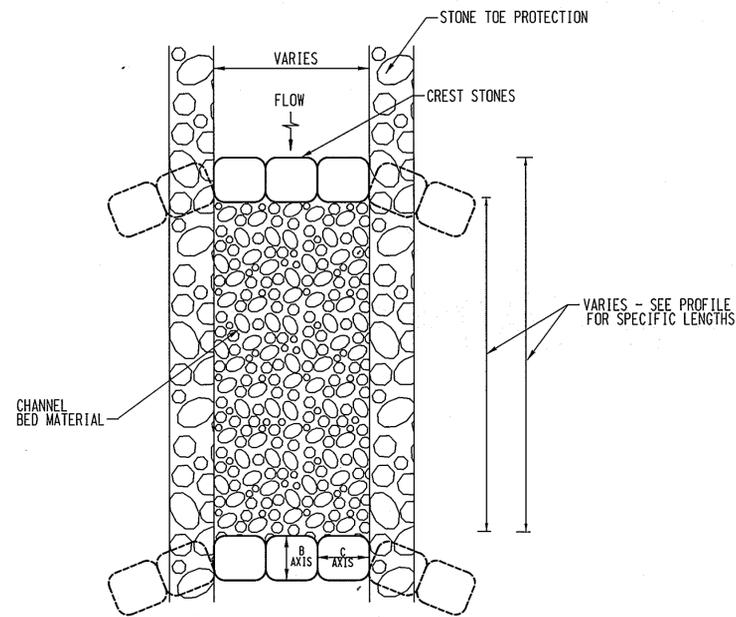
*Neil S. ...* 6/08/10  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Monica G. ...* 6/8/10  
DIRECTOR DATE

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 31201, EXPIRATION DATE: JANUARY 24, 2011

BY: Ashley Truitt, Division: PD&S, Natural Resources GMA Emp  
FILE: M:\2008\01081795.08\Drawings\sdp10a.dgn





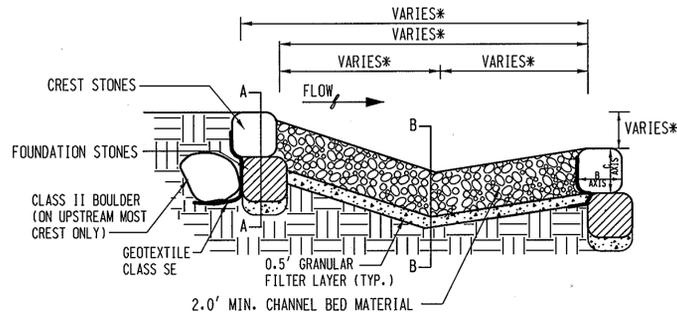
- NOTES:
1. WASH IN CHANNEL SAND & GRAVEL TO FILL VOID SPACE OF POOL PAVEMENT
  2. POOL LENGTHS VARY. SEE PROFILES FOR LENGTHS.

PLAN VIEW OF TYPICAL STEP-POOL SYSTEM  
NOT TO SCALE

TYPICAL STEP-POOL SYSTEM SCHEDULE

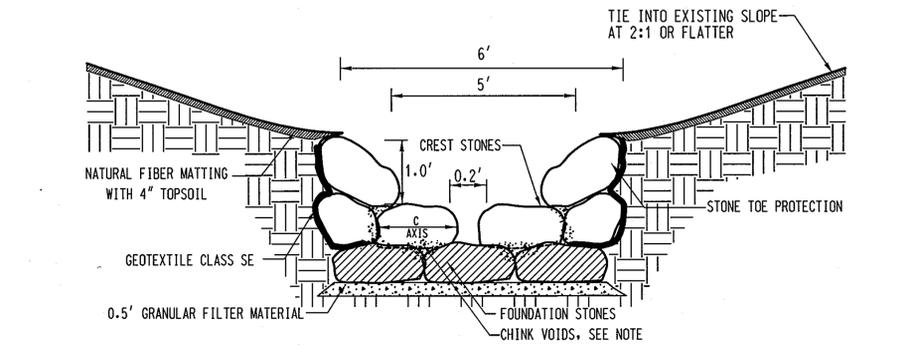
STATION	A TOP WIDTH	B BOTTOM WIDTH	C DEPTH	FEATURE TYPE
0+34.4	6.0	4.0	1.0	CREST
0+42.4	8.6	4.0	2.3	POOL
0+46.4	6.0	4.0	1.0	CREST
0+54.4	8.6	4.0	2.3	POOL
0+58.4	6.0	4.0	1.0	CREST
0+66.4	8.6	4.0	2.3	POOL
0+70.4	6.0	4.0	1.0	CREST
3+07	8.8	4.0	2.4	POOL
3+10	7.0	5.0	1.0	CREST
6+31.1	7.4	4.0	1.7	POOL
6+41.1	5.5	3.5	1.0	CREST

NOTE: FROM STATION 6+36.9 TO 6+42.9 THE CHANNEL BED MATERIAL IS REPLACED BY SCOUR PROTECTION STONE. SEE DETAIL SHEET 8.



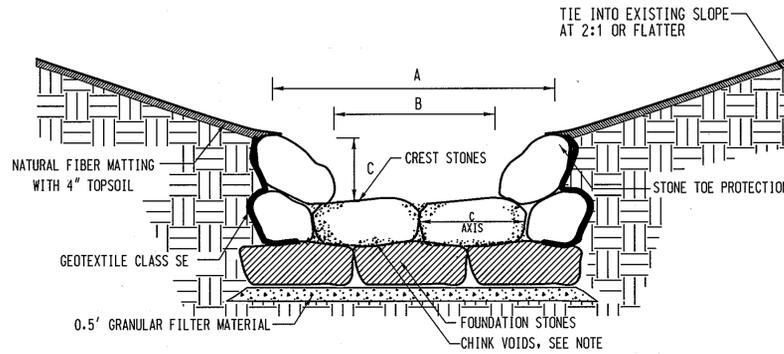
\*SEE PROFILE FOR APPROPRIATE VALUES

TYPICAL PROFILE THROUGH STEP-POOL AND BACKWATER CREST  
NOT TO SCALE



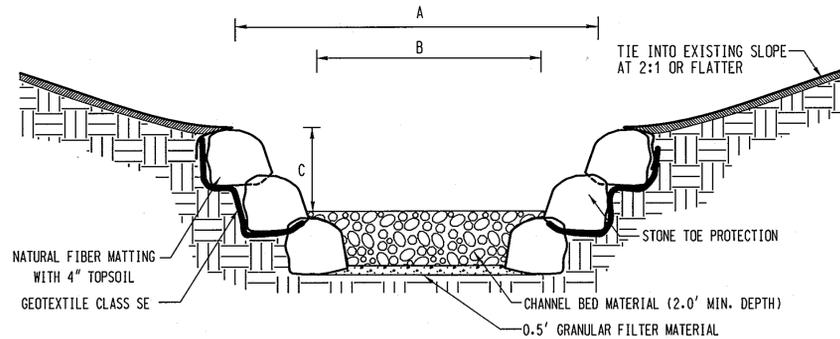
NOTE: CHINKING MATERIAL SHALL CONSIST OF USING THE LARGEST POSSIBLE STONE(S) TO SECURELY FILL THE VOID. VOIDS SHALL NOT EXCEED 2" IN DIAMETER.

CROSS SECTION OF BACKWATER CREST AT STATION 3+00  
NOT TO SCALE



NOTE: CHINKING MATERIAL SHALL CONSIST OF USING THE LARGEST POSSIBLE STONE(S) TO SECURELY FILL THE VOID. VOIDS SHALL NOT EXCEED 2" IN DIAMETER.

TYPICAL CROSS SECTION OF STEP-POOL CREST A-A  
NOT TO SCALE



NOTE: WASH IN CHANNEL SAND & GRAVEL TO FILL VOID SPACE OF RIPRAP

TYPICAL CROSS SECTION OF POOL B-B  
NOT TO SCALE



APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

*Chris Williams* 6/7/10  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Keith Heilman* 6/08/10  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Thomas J. Butler* 6/8/10  
DIRECTOR DATE

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 31281. EXPIRATION DATE: JANUARY 24, 2011

NO.	REVISIONS DESCRIPTION	DATE

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



GRAY ROCK FARMS  
STREAM STABILIZATION  
SECTION 3 & 4  
CAPITAL PROJECT D-1158  
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
5700 COLUMBIA UNIVERSITY DRIVE  
COLUMBIA, MD 21046  
HOWARD COUNTY DEPARTMENT OF PARKS AND RECREATION  
700 COLUMBIA UNIVERSITY DRIVE  
COLUMBIA, MD 21046  
PARCEL: 11R TAX MAP 24 ZONING R-20 ELECTION DISTRICT 01

STREAM DETAILS AND TYPICAL SECTIONS

SCALE: 0 0.25 0.5 1.0 INCHES  
NOT TO SCALE

DATE: APRIL 2010

KCI JOB NO.: 01-081795-08

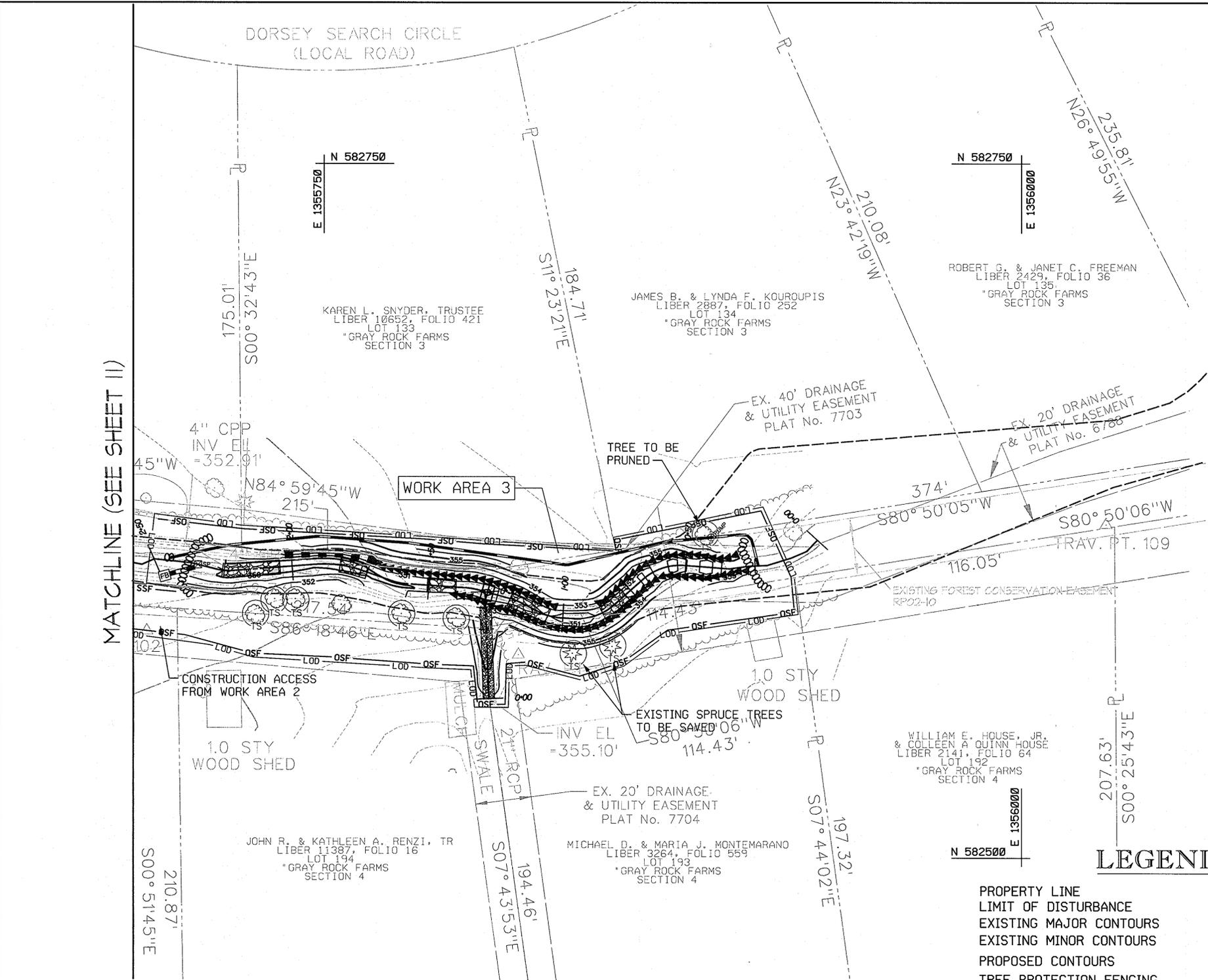
CAPITAL PROJECT NO.: D-1158

PERMIT ISSUE:

CONSTRUCTION ISSUE:







- SEQUENCE OF CONSTRUCTION**
1. OBTAIN GRADING PERMIT. STREAM CLOSURE PERIOD IS MARCH 1-JUNE 15, INCLUSIVE. MDE PERMIT TRACKING NO. 200962422/09-NT-0254. PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES, A VIDEOTAPE AND PHOTOGRAPHS OF THE PROPOSED WORK AREA SHALL BE TAKEN. (1 DAY)
  2. CONTRACTOR SHALL COORDINATE AN ON-SITE PRE-CONSTRUCTION MEETING WHICH SHALL INCLUDE, BUT NOT BE LIMITED TO, THE COUNTY PROJECT MANAGER, THE ENGINEER, A REPRESENTATIVE FROM COLONIAL PIPELINE COMPANY, AND A REPRESENTATIVE FROM HOWARD COUNTY CONSTRUCTION INSPECTION. (1 DAY)
  3. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST FIVE (5) WORKING DAYS PRIOR TO ANY WORK BEING DONE. THE CONTRACTOR SHALL NOTIFY THE HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION (410-313-1880) A MINIMUM OF 24 HOURS PRIOR TO THE START OF ANY CONSTRUCTION. (5 DAYS)  
NOTE: TIME RESTRICTION NOTES ON THIS SHEET.
  4. ALL WORK CONDUCTED IN THE VICINITY OF THE EXISTING PIPELINE SHALL BE PERFORMED UNDER THE SUPERVISION OF THE COLONIAL PIPELINE COMPANY. CONTACT THE COLONIAL PIPELINE COMPANY AT (410) 970-2138 AT LEAST FIVE (5) DAYS PRIOR TO BEGINNING ANY WORK WITHIN 10 FEET OF THE PIPELINE.
  5. CONSTRUCT ORANGE SAFETY FENCE AS SHOWN ON THE PLANS. HOWARD COUNTY STORMWATER MANAGEMENT DIVISION SHALL REVIEW AND APPROVE THE LOCATION OF THE ORANGE SAFETY FENCE PRIOR TO ANY EARTH MOVING OR REMOVING OF EXISTING TREES OR SHRUBS. (1 WEEK)
  6. CONSTRUCT EITHER OF THE STABILIZED CONSTRUCTION ENTRANCES. THE WESTERN CONSTRUCTION ENTRANCE SHALL BE USED FOR WORK AREA 1. THE EASTERN CONSTRUCTION ENTRANCE AND STOCKPILE AREA SHALL BE USED FOR WORK AREAS 2 AND 3. ACCESS TO WORK AREA 3 IS ALONG SOUTH BANK OF WORK AREA 2. WORK MAY PROCEED IN ANY WORK AREA FIRST, BUT CONSTRUCTION SHALL NOT BE CONDUCTED IN MORE THAN ONE WORK AREA AT A TIME. (4 DAYS)
  7. CLEAR AND GRUB ONLY AS ABSOLUTELY NECESSARY FOR INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND DEVICES FOR THE ACTIVE WORK AREA, INCLUDING SANDBAG DIVERSIONS. (9 DAYS)
  8. CONSTRUCT UPSTREAM SAND BAG DAM WITHIN THE ACTIVE WORK AREA (WORK AREA 1: STATION 5+67, WORK AREA 2: STATION 2+92, WORK AREA 3: STATION 0+27). PLACE PUMP AROUND HOSE ON THE NORTH BANK. BEGIN PUMP AROUND OPERATION FOR ACTIVE WORK AREA ONLY, DISCHARGING ONTO SAND BAGS AT OUTFALL. (EACH WORK DAY)
  9. CONSTRUCT DOWNSTREAM SAND BAG DAM WITHIN THE ACTIVE WORK AREA (WORK AREA 1: STATION 6+84, WORK AREA 2: STATION 4+03, WORK AREA 3: STATION 2+37). SEDIMENT LADEN WATER SHALL NOT BE DISCHARGED DIRECTLY INTO THE STREAM. DEWATER ENTRAPPED AREA BEHIND SAND BAGS TO A SILT BAG DEWATERING DEVICE PRIOR TO DISCHARGE IN TO THE STREAM. (EACH WORK DAY)
  10. IN WORK AREA 1, INSTALL THE TEMPORARY ACCESS CULVERT. CONSTRUCT GRADING AND RESTORATION STRUCTURES FROM DOWNSTREAM TO UPSTREAM WITHIN EACH WORK AREA. PERFORM RESTORATION WORK AROUND THE TEMPORARY ACCESS CULVERT IN WORK AREA 1 FROM NORTH BANK. STABILIZE DISTURBED AREAS AT THE END OF EACH DAY. REMOVE SAND BAG DIVERSIONS AT THE END OF EACH WORKING DAY. (6 WEEKS)
  11. IN WORK AREA 1, REMOVE TEMPORARY ACCESS CULVERT AND PERFORM RESTORATION WORK IN THE AREA OF THE CULVERT. UPON COMPLETION OF CONSTRUCTION ACTIVITIES IN EACH WORK AREA, AND WITH APPROVAL FROM THE SEDIMENT CONTROL INSPECTOR, REMOVE ALL SEDIMENT CONTROLS AND BEGIN WORK IN THE NEXT WORK AREA. (1 DAY)
  12. REPEAT STEPS 6 THROUGH 11 FOR EACH WORK AREA.
  13. INSTALL LANDSCAPING AS SPECIFIED ON THE PLAN. (3 DAYS)
  14. WHEN VEGETATION IS ESTABLISHED AND WITH PERMISSION OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, REMOVE ALL REMAINING EROSION AND SEDIMENT CONTROL MEASURES AND PERMANENTLY STABILIZE THOSE AREAS DISTURBED BY THIS PROCESS. (1 DAY)
  15. CONDUCT FINAL "AS-BUILT" SURVEY OF STREAM RESTORATION MEASURES AND STREAM PROFILE WITHIN RESTORATION AREAS AND SUBMIT "AS-BUILT" PLANS TO THE DEPARTMENT OF PUBLIC WORKS, STORMWATER MANAGEMENT DIVISION WITHIN 30 DAYS OF COMPLETION OF CONSTRUCTION. (30 DAYS)

- TIME RESTRICTION NOTES**
1. PUMPING IS NOT PERMITTED BETWEEN THE HOURS OF 7:00 PM AND 7:00 AM, MONDAY THROUGH FRIDAY.
  2. CONSTRUCTION EQUIPMENT SHALL NOT BE STARTED NOR RUN BETWEEN THE HOURS OF 7:00 PM AND 7:00 AM, MONDAY THROUGH FRIDAY.
  3. FOR SATURDAY WORK, THE ABOVE HOURS SHALL BE 5:00 PM AND 9:00 AM, RESPECTIVELY.
  4. NO WORK SHALL BE DONE ON SUNDAY.
- NOTE:**
1. TREES LOCATED WITHIN THE LIMIT OF DISTURBANCE, THAT ARE NOT DESIGNATED TO BE SAVED, ARE SUBJECT TO PRUNING OR REMOVAL.

**LEGEND**

- PROPERTY LINE
- LIMIT OF DISTURBANCE
- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- PROPOSED CONTOURS
- TREE PROTECTION FENCING
- EDGE OF TREELINE
- EXISTING FENCE
- EXISTING EASEMENT LINE
- SANDBAG DAM
- PUMP
- FILTER BAG
- SUMP PIT
- ORANGE SAFETY FENCE
- SILT FENCE
- SUPER SILT FENCE
- DIVERSION PIPE
- STABILIZED CONSTRUCTION ENTRANCE
- EX. 100 YEAR FLOODPLAIN
- PROP. 100 YEAR FLOODPLAIN<sup>1</sup>

<sup>1</sup>PROPOSED FLOODPLAIN ONLY SHOWN WHERE IT DIFFERS FROM EXISTING

NO.	REVISIONS DESCRIPTION	DATE

936 RIDGEBROOK ROAD  
SPARKS, MARYLAND 21152  
TELEPHONE: (410) 316-7800  
FAX: (410) 316-7818  
WWW.KCI.COM



GRAY ROCK FARMS  
STREAM STABILIZATION  
SECTION 3 & 4  
CAPITAL PROJECT D-1158  
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
STORMWATER MANAGEMENT DIVISION  
675 COLUMBIA, MD 21046  
HOWARD COUNTY DEPARTMENT OF PARKS AND RECREATION  
100 COLUMBIA, MD 21046  
PARCEL: 170, TAX MAP 24, ZONING R-40, ELECTION DISTRICT 04

**EROSION AND SEDIMENT CONTROL PLAN**

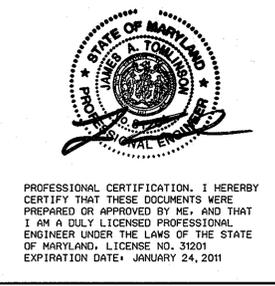
SCALE: 0 5 10 FEET  
1" = 20'

DATE: APRIL 2010  
KCIJOB NO.: 01-081795.08  
CAPITAL PROJECT NO.: D-1158  
PERMIT ISSUE:  
CONSTRUCTION ISSUE:

SHEET NO.: 12 OF 20  
SDP-10-032

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

*John R. Roberts*  
HOWARD SCD  
DATE: 4/27/10

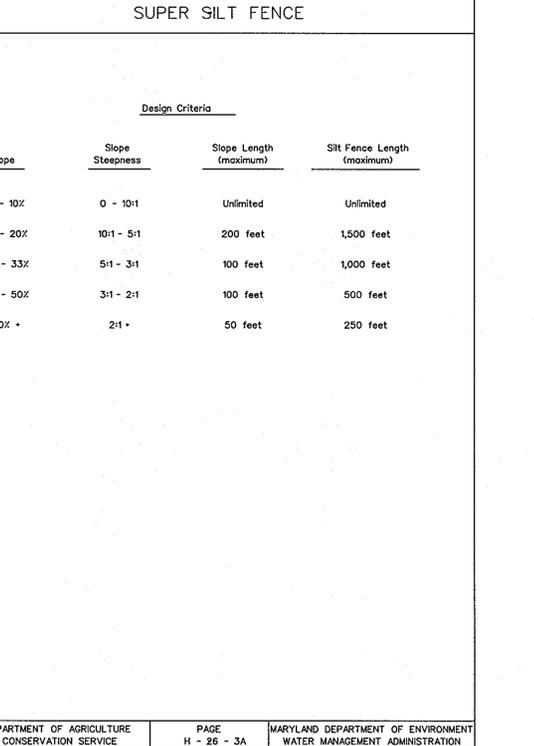
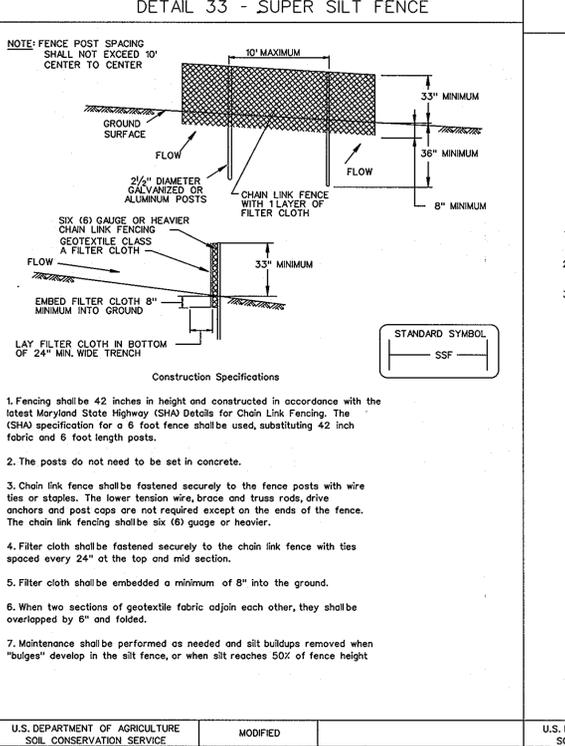
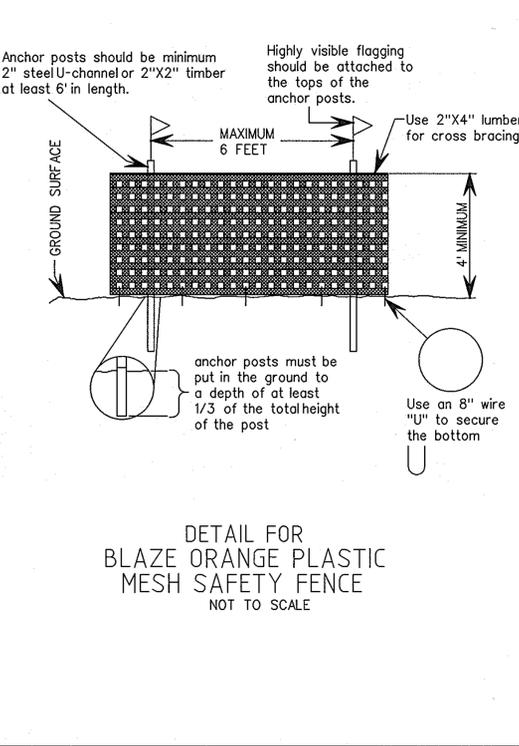
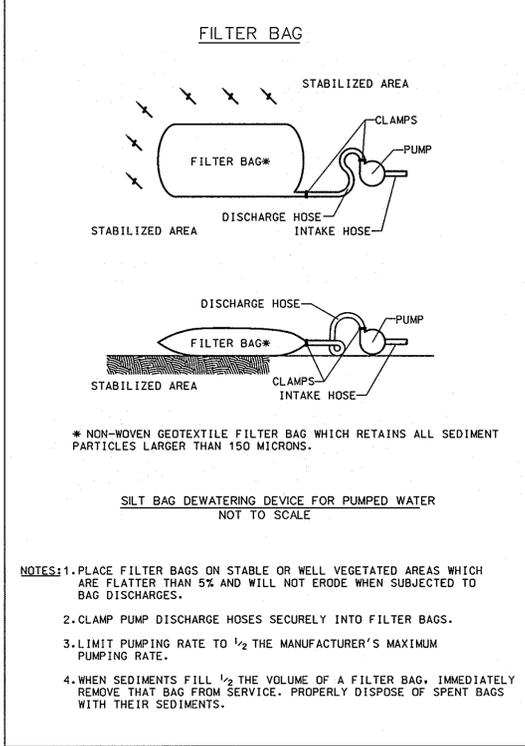
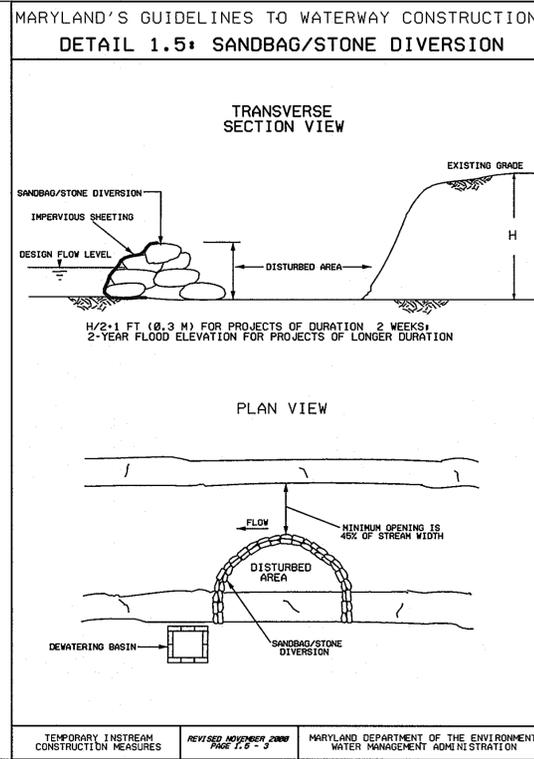
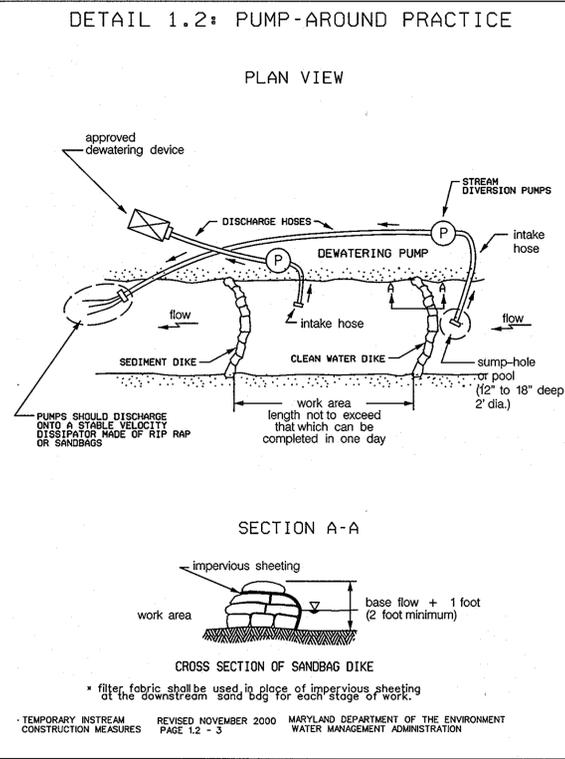
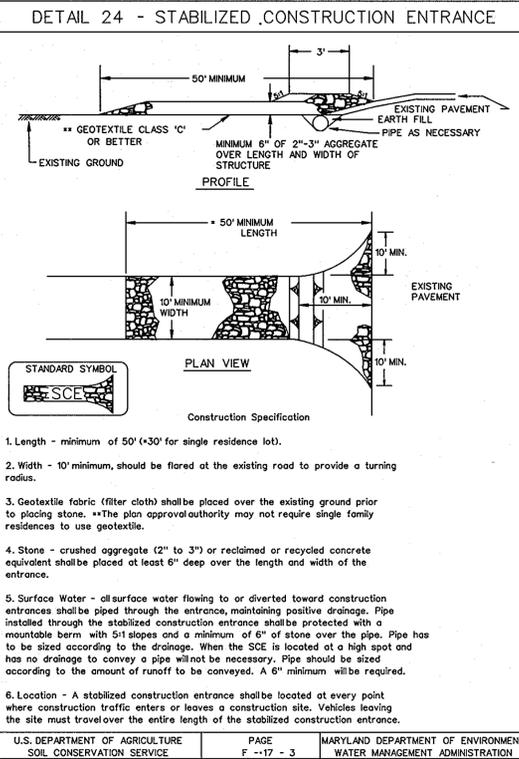
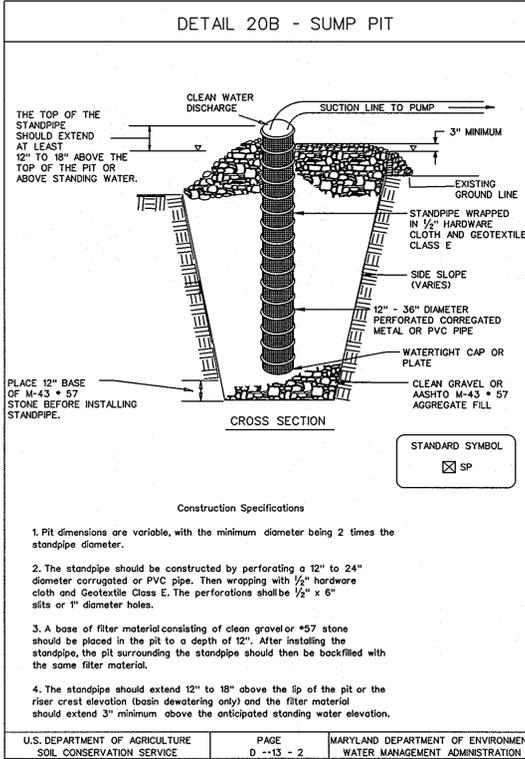


APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

*John R. Roberts*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE: 4/27/10

*W. S. DeLoach*  
CHIEF, DIVISION OF LAND DEVELOPMENT  
DATE: 6/08/10

*Thomas E. Butler*  
DIRECTOR  
DATE: 6/8/10



### MGWC 1.5: SANDBAG/STONE CHANNEL DIVERSION

**DESCRIPTION**  
The work should consist of installing sandbag or stone flow diversions for the purpose of erosion control when construction activities occur within the stream channel.

**EFFECTIVE USES & LIMITATIONS**  
Diversions are used to divert stream flow from the construction of in-stream projects. Diversions which have an insufficient flow capacity can fail and severely erode the disturbed channelization under construction. Therefore, in-stream diversions should occur only during periods of low rainfall. This temporary measure may not be practical in large channels.

**MATERIAL SPECIFICATIONS**  
1. Material for sandbag diversions should meet the following requirements:  
a. Material should be made of a heavy-duty woven polypropylene or similar material.  
b. Sandbags should consist of materials which are resistant to ultra-violet radiation, tearing, and abrasion.  
c. Sandbags should be made of a material which is resistant to mold and mildew.  
d. Sandbags should be made of a material which is resistant to fire.  
e. Sandbags should consist of polyethylene or other materials which are impervious and resistant to puncture or tearing.

**INSTALLATION GUIDELINES**  
1. Erosion and sediment control devices, including dewatering basins, should be implemented as the first order of business according to a plan approved by the WMA or local authority. Installation should proceed from upstream to downstream during periods of low flow. If necessary, all fence or straw bales should be located around the perimeter of the work area.  
2. Sandbag/stone diversions can be used independently or as components of other stream diversion techniques. Installation of the measure should proceed as follows:  
a. The diversion structure should be installed from upstream to downstream.  
b. The height of the sandbag/stone diversion should be a function of the duration of the project in the stream reach. For projects with a duration less than 2 weeks, the height of the diversion should be one-half the stream depth (measured from the channel bed plus 1 foot (0.3 meter) or less). For projects of longer duration, the top of the sandbag or stone diversion should correspond to bankfull height. For diversion structures in streams, the structure should be placed in the stream bed and placement of the base layer of the diversion structure should be done in order to ensure a water tight fit. Additionally, it may be necessary to prepare the bank in a similar fashion.  
3. All excavated material should be deposited and stabilized in an approved area outside the 100-year floodplain unless otherwise indicated by the WMA or local authority.  
4. Sediment-laden water from the construction area should be pumped to a dewatering basin.  
5. Sheeting on the diversion should be positioned such that the upstream portion covers the downstream portion with at least a 18-inch (0.45 meter) overlap.  
6. Sandbag or stone diversions should not obstruct more than 45% of the stream width. Additionally, bank stabilization measures should be placed in the construction section if accelerated erosion and bank scour are observed during the construction period. The stream bed should be marked and monitored for placement of the diversion structure.  
7. Prior to removal of these temporary structures, any accumulated sediment should be removed, deposited and stabilized in an approved area outside the 100-year floodplain unless authorized by the WMA.  
8. Sediment control devices are to remain in place until all disturbed areas are stabilized in accordance with an approved sediment and erosion control plan and the inspecting authority approves their removal.

**MGWC 1.2: PUMP-AROUND PRACTICE**  
Temporary measure for dewatering in-channel 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):

1. Construction activities including the installation of erosion and sediment control measures should not begin until all necessary permits and/or right-of-way 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 or utility company's satisfaction.
2. The contractor should notify the Maryland Department of the Environment or WMA sediment control measures at least 3 days before beginning construction. Additionally, the contractor should notify the local environmental protection and monitoring agency and obtain their placement of the diversion and the provider of local utilities a minimum of 48 hours before starting construction.
3. The contractor should conduct a pre-construction meeting on site with the WMA sediment control measures, erosion and sediment control measures, and the engineer's review of the diversion. The contractor should also attend a disturbance prior to the pre-construction meeting as they may be reviewed. The participants will also designate the contractor's staging area 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.
4. 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.
5. 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 agency, 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 approved by the engineer and the WMA or local authority. The contractor should obtain written approval for deviations from the WMA or local authority. The contractor should only work on the stream bank if the work 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.
6. Sandbag dikes should be situated at the upstream and downstream ends of the work area as shown on the plans. The stream flow should be pumped around the work area. The pump should discharge onto a stable velocity dissipator made of riprap or sandbags.
7. Water from the work area should be pumped to a sediment filtering measure such as a dewatering basin and/or other approved source. The measure should be located such that the water drains back into the channel below the downstream sandbag dike.
8. 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 installed only where necessary and only where noted on the plans or specified. (See Section 4, Stream Crossings, Maryland Guidelines to Waterway Construction.)
9. 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 mulch as specified on the plans.
10. 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. Fluffy, upon establishment of a new sediment dike below the old one, the old sediment dike should be removed.
11. 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 the stream flow around the work area. This water should discharge onto the same velocity dissipator used for the main stem pump around.
12. If a tributary is to be restored, construction should take place on the tributary before work on the main stem 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 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 main stem.
13. The contractor is responsible for providing access to and maintaining all erosion and sediment control devices until the sediment control inspector approves their removal.
14. After construction, all disturbed areas should be regraded and revegetated as per the planting plan.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE I-8-3 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DATE

NO. REVISIONS DESCRIPTION

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

KCI TECHNOLOGIES

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

*Michael J. ...* 10/7/10  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Victor ...* 6/28/10  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Thomas ...* 6/8/10  
DIRECTOR DATE

PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 31201 EXPIRATION DATE: JANUARY 24, 2011

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

*John R. ...* 5/27/10  
HOWARD SCD DATE

GRAY ROCK FARMS  
STREAM STABILIZATION  
SECTION 3 & 4  
CAPITAL PROJECT D-1158  
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
SPRINGWATER MANAGEMENT DISTRICT  
1000 COLUMBIA, MD 21046  
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS AND RECREATION  
1000 COLUMBIA, MD 21046  
PARCEL: 1714, TAX MAP: 24, ZONING: P-30, ELECTION DISTRICT: 01

EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

SCALE: 0 2.5 5 10 FEET

DATE: APRIL 2010

KCI JOB NO.: 01-081795.08

CAPITAL PROJECT NO.: D-1158

PERMIT ISSUE:

CONSTRUCTION ISSUE:

SHEET NO.: 13 OF 20

SDP-10-032

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 (410 313-1855).
  - 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 SPECIFICATIONS 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.
  - All disturbed areas must be stabilized within the time period specified above in accordance with the 1994 MARYLAND STANDARDS AND SPECIFICATIONS 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	0.83 Acres
Area Disturbed	0.83 Acres
Area to be roofed or paved	0.00 Acres
Area to be vegetatively stabilized	0.83 Acres
Total Cut	131 Cu. Yds.
Total Fill	114.0 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.
- \* Offsite waste/ borrow area, if needed, shall have an approved erosion and sediment control plan and active permit.

21.0 STANDARD AND SPECIFICATIONS FOR TOPSOIL

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

**Purpose**  
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**

- This practice is limited to areas having 2:1 or flatter slopes where:
  - The texture of the exposed subsoil/parent materials 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.
  - 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 plans.

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

- 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" higher 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 minimum 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.
  - 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 may otherwise be detrimental to proper grading and seeded preparation.

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.).

**Seeding:** -- For periods March 1 - April 30 and from August 15 - October 15, seed with 2-1/2 bushelper acre of annual ryegrass (3.2 lbs/1000 sq. ft.). For the period May 1 - August 14, seed with 3 lbs/acre of weeping lovegrass (.07 lbs/1000 sq. ft.). For the period November 16 - February 28, protect site by applying 2 tons/acre of well anchored straw mulch and seed as soon as possible in the spring, or use sod.

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

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

HOWARD SOIL CONSERVATION DISTRICT (For areas within LOD with no designated planting area symbol use permanent seeding below. For all areas denoted by symbol see Sheet 17 for permanent seeding.)  
PERMANENT 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.

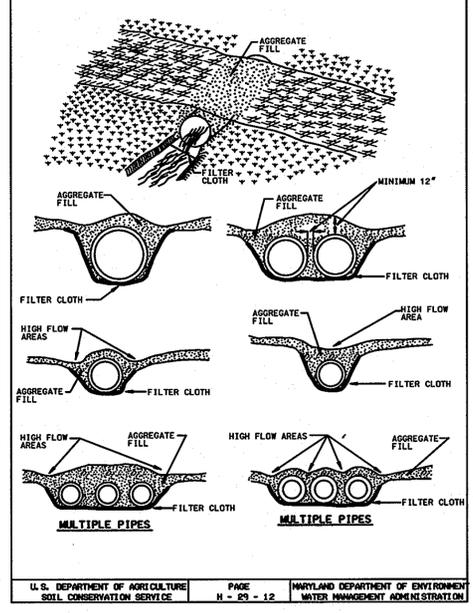
**Soil Amendments:** In lieu of soil test recommendations, use one of the following schedules:

- 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.

**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 asphalt emulsion shall be used for anchoring. Only a non-toxic, latex backing material is allowed.

**Maintenance** - Inspect all seeding areas and make needed repairs, replacements and reseedings.

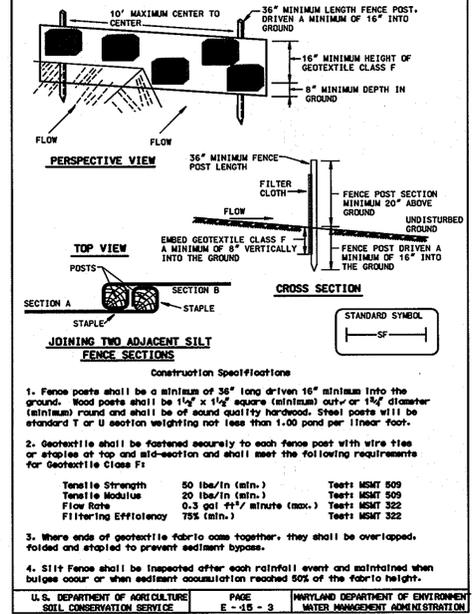
DETAIL 36 - TEMPORARY ACCESS CULVERT



TEMPORARY ACCESS CULVERT

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE N-29-12 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 22 - SILT FENCE



SILT FENCE

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE E-18-3A MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

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

HOWARD SCD *[Signature]* 5/27/10 DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

*[Signature]* 5/27/10 DATE  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

*[Signature]* 6/23/10 DATE  
CHIEF, DIVISION OF LAND DEVELOPMENT

*[Signature]* 6/18/10 DATE  
DIRECTOR

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. 31201 EXPIRATION DATE: JANUARY 24, 2011

NO.	REVISIONS DESCRIPTION	DATE

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



GRAY ROCK FARMS  
STREAM STABILIZATION  
SECTION 3 & 4  
CAPITAL PROJECT D-1188  
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
10000 COLUMBIAN AVENUE  
COLUMBIAN, MD 21046

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS AND REGISTRATION  
10000 COLUMBIAN AVENUE  
COLUMBIAN, MD 21046  
PARCEL: 1000 WPK MAP 24 ZONING R-26 ELECTION DISTRICT 01

EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

SCALE: \_\_\_\_\_

DATE: APRIL 2010

KCI JOB NO.: 01-081795-08

CAPITAL PROJECT NO.: D-1158

PERMIT ISSUE: \_\_\_\_\_

CONSTRUCTION ISSUE: \_\_\_\_\_

SHEET NO.: 14 OF 20  
SDP-10-032





MATCHLINE A-A (SEE SHEET 15)



NO.	REVISIONS DESCRIPTION	DATE

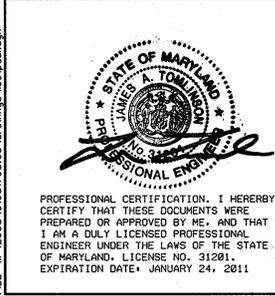
936 RIDGEBROOK ROAD  
 SPARKS, MARYLAND 21152  
 TELEPHONE: (410) 316-7800  
 FAX: (410) 316-7818  
 www.kci.com



GRAY ROCK FARMS  
 STREAM STABILIZATION  
 SECTION 3 & 4  
 CAPITAL PROJECT D-1158  
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 SUBWATER MANAGEMENT DIVISION  
 1000 COLUMBIA AVE. 2ND FLOOR  
 COLUMBIA, MD 21046

LANDSCAPE PLAN

SCALE:	0 0.25 0.5 1.0 INCHES
DATE:	APRIL 2010
KCI JOB NO.:	01-081795.08
CAPITAL PROJECT NO.:	D-1158
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	
SHEET NO.:	16 OF 20



APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

*James A. Tomlinson* 6/7/10  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

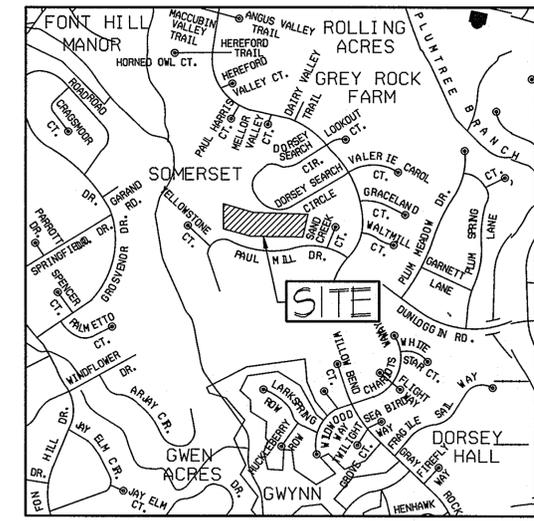
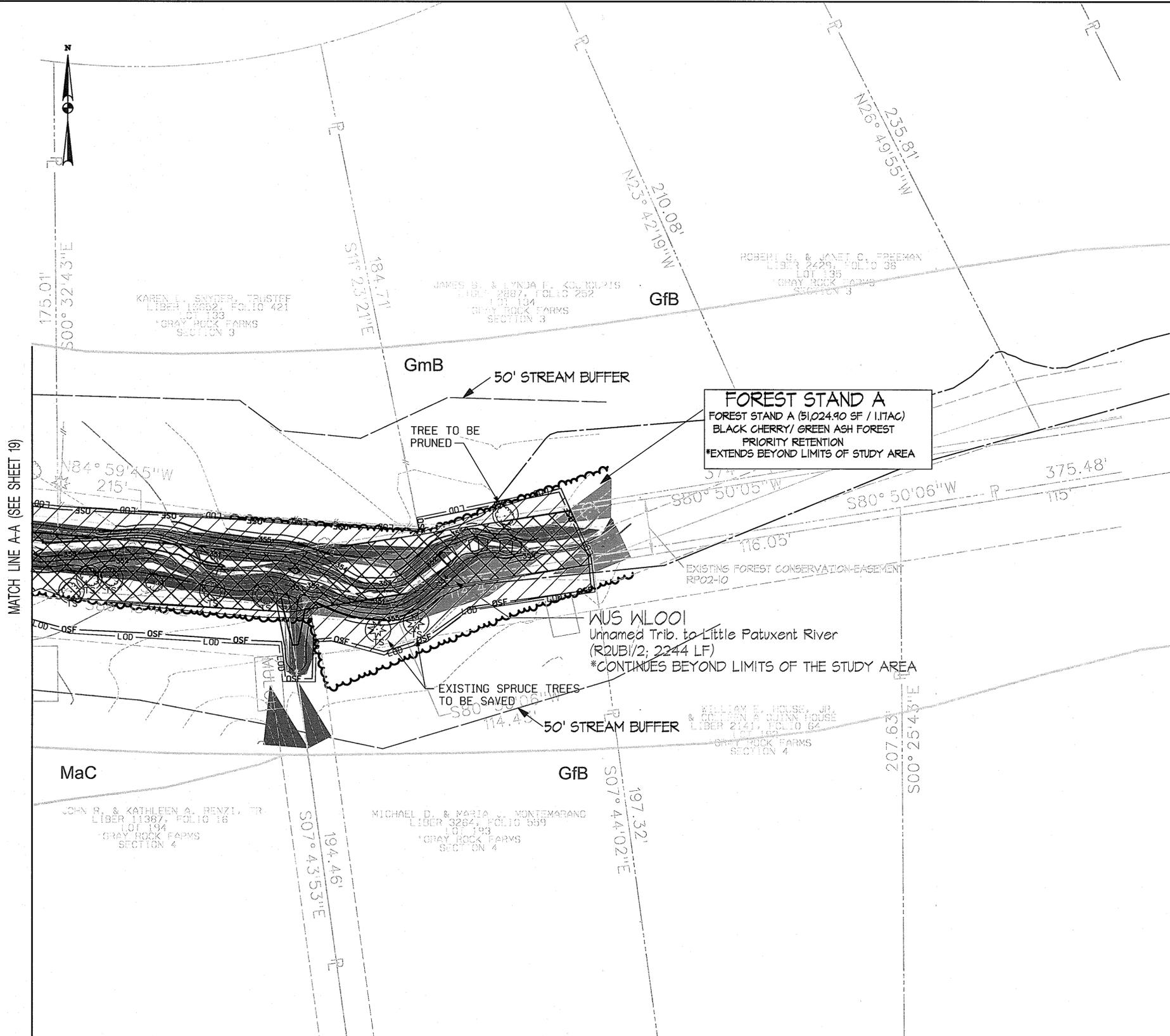
*Robert Shindler* 6/08/10  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Thomas G. Jester* 6/8/10  
 DIRECTOR DATE

**LEGEND**

REFORESTATION ZONE	
TURF GRASS ZONE	
LIVE STAKE ZONE	

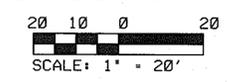




VICINITY MAP  
SCALE: 1" = 1000'

LEGEND	
WATERS OF THE US	— WUS —
WATERS OF THE US BUFFER	—
100 YEAR FLOODPLAIN	—
EXISTING TREE LINE	—
EXISTING MAJOR CONTOUR	—275—
EXISTING MINOR CONTOUR	—
PROPERTY LINE	—
RIGHT-OF-WAY	—
EXISTING EASEMENT	—
SOIL BOUNDARY WITH MAP UNIT	GfB
EXISTING FOREST CONSERVATION EASEMENT	—
EXISTING TREE	⊙
EXISTING TREE TO SAVE	⊙
SPECIMEN TREE WITH CRITICAL ROOT ZONE	⊙ SP-1
FOREST TO BE CLEARED	▨
FOREST TO BE CLEARED (WITHIN EXISTING FOREST CONSERVATION EASEMENT)	▩
PROPOSED CONTOURS	—355—
LIMIT OF DISTURBANCE	— LOD —
TREE PROTECTION FENCING/ ORANGE SAFETY FENCE	— OSF —
SLOPES 15%-25%	▨
SLOPES >25%	▩

- NOTES:
1. NO FEMA REGULATED FLOODPLAINS ARE WITHIN THE STUDY AREA.
  2. NO CRITICAL HABITAT AREAS ARE WITHIN THE STUDY AREA.
  3. SEE SHEET 20 OF 20 FOR SPECIMEN TREES AND SOILS DATA.
  4. NO FOREST AREA WITHIN THE LOD IS TO BE RETAINED.
  5. THIS SITE IS WITHIN MEDIUM DENSITY RESIDENTIAL ZONING.



NO.	REVISIONS DESCRIPTION	DATE

936 RIDGEBROOK ROAD  
SPARKS, MARYLAND 21152  
TELEPHONE: (410) 316-7800  
FAX: (410) 316-7818  
WWW.KCI.COM



GRAY ROCK FARMS  
STREAM STABILIZATION  
SECTION 3 & 4  
CAPITAL PROJECT D-1158  
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
SOLID WASTE MANAGEMENT DIVISION  
OFFICE: COLUMBIA, MD 21046  
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS AND RECREATION  
100 COLUMBIA AVENUE, SUITE 100  
PAROLE: 10% TAX MAP 24, ZONING P-65, ELECTION DISTRICT 01

FOREST CONSERVATION PLAN

SCALE: 1" = 20'
DATE: APRIL 2010
KCIJOB NO.: 01-081795-08
CAPITAL PROJECT NO.: D-1158
PERMIT ISSUE:
CONSTRUCTION ISSUE:
SHEET NO.: 18 OF 20

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

*John D. Butler* 6/2/10  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*West Sheehy* 6/2/10  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*John D. Butler* 6/2/10  
DIRECTOR DATE

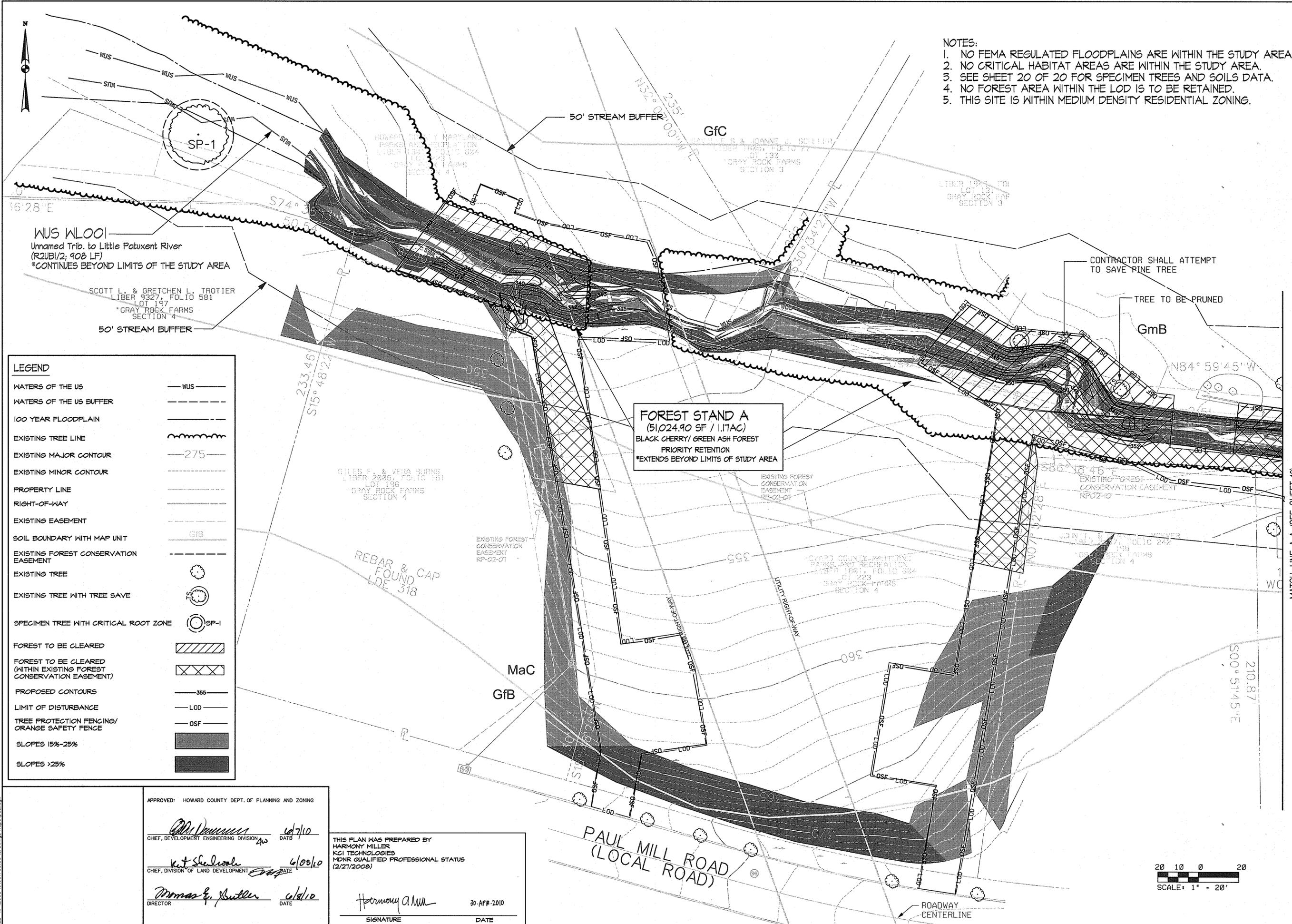
THIS PLAN WAS PREPARED BY  
HARMONY MILLER  
KCI TECHNOLOGIES  
MDNR QUALIFIED PROFESSIONAL STATUS  
(2/21/2008)

*Harmony Miller* 30-APR-2010  
SIGNATURE DATE

PAUL MILL ROAD  
(LOCAL ROAD)  
50' RIGHT OF WAY

P:\Projects\2010\01-081795-08\Drawings\Fcp02.dwg  
 PLOT: 11/11/2010 10:06:25 AM  
 FILE: M:\2008\01081795-08\Drawings\Fcp02.dwg

KCI FILE: M:\2008\01081795-08\



- NOTES:
1. NO FEMA REGULATED FLOODPLAINS ARE WITHIN THE STUDY AREA.
  2. NO CRITICAL HABITAT AREAS ARE WITHIN THE STUDY AREA.
  3. SEE SHEET 20 OF 20 FOR SPECIMEN TREES AND SOILS DATA.
  4. NO FOREST AREA WITHIN THE LOD IS TO BE RETAINED.
  5. THIS SITE IS WITHIN MEDIUM DENSITY RESIDENTIAL ZONING.

**LEGEND**

WATERS OF THE US	— WUS —
WATERS OF THE US BUFFER	---
100 YEAR FLOODPLAIN	---
EXISTING TREE LINE	~ ~ ~
EXISTING MAJOR CONTOUR	— 275 —
EXISTING MINOR CONTOUR	— 275 —
PROPERTY LINE	---
RIGHT-OF-WAY	---
EXISTING EASEMENT	---
SOIL BOUNDARY WITH MAP UNIT	GfB
EXISTING FOREST CONSERVATION EASEMENT	---
EXISTING TREE	⊙
EXISTING TREE WITH TREE SAVE	⊙
SPECIMEN TREE WITH CRITICAL ROOT ZONE	⊙ SP-1
FOREST TO BE CLEARED	▨
FOREST TO BE CLEARED (WITHIN EXISTING FOREST CONSERVATION EASEMENT)	▨
PROPOSED CONTOURS	— 355 —
LIMIT OF DISTURBANCE	— LOD —
TREE PROTECTION FENCING/ ORANGE SAFETY FENCE	— OSF —
SLOPES 15%-25%	▒
SLOPES >25%	▒

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

*John J. Demers* 4/7/10  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*W. T. Sheehan* 4/9/10  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Thomas E. Butler* 4/8/10  
 DIRECTOR DATE

THIS PLAN WAS PREPARED BY  
 HARMONY MILLER  
 KCI TECHNOLOGIES  
 MDNR QUALIFIED PROFESSIONAL STATUS  
 (2/21/2008)

*Harmony Miller* 30 APR 2010  
 SIGNATURE DATE

NO.	REVISIONS DESCRIPTION	DATE

936 RIDGEBROOK ROAD  
 SPARKS, MARYLAND 21152  
 TELEPHONE: (410) 316-7800  
 FAX: (410) 316-7818  
 WWW.KCI.COM

**KCI TECHNOLOGIES**

GRAY ROCK FARMS  
 STREAM STABILIZATION  
 SECTION 3 & 4  
 CAPITAL PROJECT D-1158

HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 PERMIT NO. D-1158  
 PARCEL 103, TAX MAP 24, ZONING PD-ELECTION, DISTRICT 01

**FOREST CONSERVATION PLAN**

SCALE: 1" = 20'

DATE: APRIL 2010  
 KCI JOB NO.: 01-081795-08  
 CAPITAL PROJECT NO.: D-1158  
 PERMIT ISSUE:  
 CONSTRUCTION ISSUE:

SHEET NO.: 19 OF 20  
 SDP-10-032

SOILS TABLE

Soil Symbol	Soil Unit Name	Percent Slope	K <sub>f</sub> value	Hydric (Y/N)
GfB	Gladstone-Urban land complex	0 to 8	0.24 - 0.32	N
GfC	Gladstone-Urban land complex	8 to 15	0.24 - 0.32	N
GmB	Glennville silt loam	3 to 8	0.37 - 0.43	Y
MaC	Manor loam	8 to 15	0.24 - 0.37	N

SPECIMEN TREE TABLE

Number	Species	Common Name	Size, DBH (in)	Condition
SP-1	<i>Juglans nigra</i>	Black Walnut	31.5	Good

KCI Technologies, Inc. 4/28/2010

Forest Conservation Worksheet

<b>Net Tract Area</b>			
A.	Total Tract Area	A=	0.83 ac.
B.	Area within 100-year Floodplain	B=	0.22 ac.
B1.	Area within existing Forest Conservation Easement*	B1=	0.12 ac.
C.	Area to Remain in Agricultural Production	C=	0.00 ac.
D.	Net Tract Area (D=A-B-B1-C)	D=	0.49 ac.
<b>Land Use Category: Residential - Rural Medium Density</b>			
E.	Afforestation Threshold (D x 15%)	E=	0.07 ac.
F.	Conservation Threshold (D x 20%)	F=	0.10 ac.
<b>Existing Forest Cover</b>			
G.	Existing Forest Cover (excluding floodplain)	G=	0.26 ac.
H.	Area of Forest Above Afforestation Threshold	H=	0.19 ac.
I.	Area of Forest Above Conservation Threshold	I=	0.18 ac.
<b>Break Even Point</b>			
J.	Forest Retention Above Threshold with no Mitigation (1) If I>0 then J=(0.2 x I) + F, go to K (2) If I=0, J=0, go to L	J=	0.13 ac.
K.	Clearing Permitted Without Mitigation (K=J-I)	K=	0.13 ac.
<b>Proposed Forest Clearing</b>			
L.	Total Area of Forest to be Cleared	L=	0.14 ac.
M.	Total Area of Forest to be Retained (M=G-L)	M=	0.12 ac.
<b>Planting Requirements</b>			
N.	Reforestation for Clearing Above the Conservation Threshold	N=	0.04 ac.
P.	Reforestation for Clearing Below the Conservation Threshold	P=	0.00 ac.
Q.	Credit for Retention Above the Conservation Threshold	Q=	0.02 ac.
R.	Total Reforestation Required	R=	0.02 ac.
S.	Total Afforestation Required	S=	0.00 ac.
T.	Total Reforestation and Afforestation Requirement T=(R+S)	T=	0.02 ac.

\*Value calculated to exclude area within the floodplain. Clearing within the existing Forest Conservation Easement will be replanted as specified by the Howard County Department of Parks and Recreation.

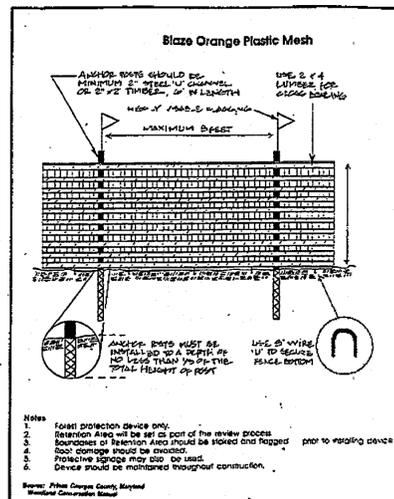
NOTES:

- SEE NOTE 22 ON SHEET 1 OF 20 REGARDING WAIVER PETITION AND THE USE OF THE LIMIT OF DISTURBANCE AS THE NET TRACT AREA.
- PLANTING REQUIREMENT SHALL BE MET THROUGH REPLANTING AND STABILIZATION WITHIN THE LIMIT OF DISTURBANCE. A TOTAL OF 0.58 AC. OF REFORESTATION PLANTING IS PROPOSED WITHIN THE LIMIT OF DISTURBANCE.
- SEE SHEETS 16-18 OF 20 FOR LANDSCAPE PLANS AND LANDSCAPE NOTES AND DETAILS.

PaulMiller\_StateFCW\_print.xls

Page 1 of 1

EXHIBIT G - 12



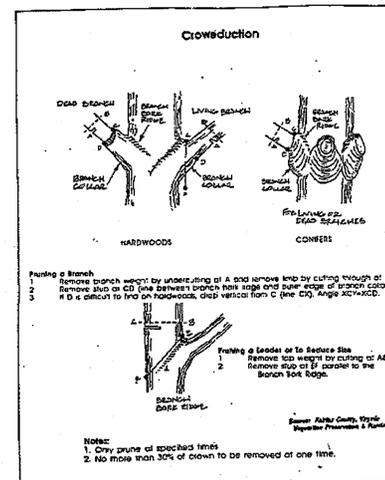
TREE PROTECTION FENCING/  
ORANGE SAFETY FENCE

NOT TO SCALE

SUMMARY:

- Total area of water resources: +/- 0.13 acres
- Total linear feet of perennial and intermittent streams: +/- 591 feet
- Total forested area within limits of disturbance: +/- 0.48 acres
- Existing Zoning: R-20
- Existing land use: Forest land deeded to Howard County Dept. of Recreation and Parks.
- No rare, threatened or endangered species were encountered during the field investigations. In addition, correspondence with the Maryland Historic Trust, the U.S. Fish and Wildlife Service, and the Maryland Department of Natural Resources indicate there are no records of historic resources or sensitive natural resources within the affected area.
- Base data provided by AB Consultants, Inc., surveyed in March 2009.
- Wetlands were delineated by KCI Technologies, Inc., February 2009. No wetlands were delineated within the project area.

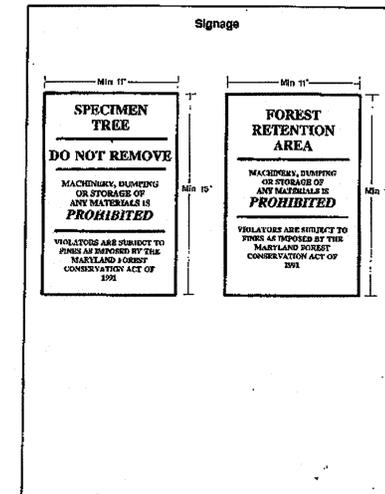
EXHIBIT G - 14



CROWN REDUCTION

NOT TO SCALE

EXHIBIT G - 17



FOREST CONSERVATION SIGNAGE

NOT TO SCALE

NO.	REVISIONS DESCRIPTION	DATE

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



GRAY ROCK FARMS  
STREAM STABILIZATION  
SECTION 3 & 4  
CAPITAL PROJECT D-1158  
HOWARD COUNTY DEPARTMENT OF PARKS AND RECREATION  
1000 COLLEGE BLVD. SUITE 2000  
COLUMBIA, MD 21046  
PANEL 117A, 117B, 117C, 117D, 117E, 117F, 117G, 117H, 117I, 117J, 117K, 117L, 117M, 117N, 117O, 117P, 117Q, 117R, 117S, 117T, 117U, 117V, 117W, 117X, 117Y, 117Z

FOREST CONSERVATION PLAN NOTES & DETAILS

SCALE:	0 0.25 0.5 1 2 4 8 16 32 FEET 1" = 20'
DATE:	APRIL 2010
KCIJOB NO.:	01-081795-08
CAPITAL PROJECT NO.:	D-1158
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

*Harmony Miller* 4/27/10  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Kevin Sheehy* 4/28/10  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Thomas E. Suttler* 4/8/10  
DIRECTOR DATE

THIS PLAN WAS PREPARED BY  
HARMONY MILLER  
KCI TECHNOLOGIES  
MDNR QUALIFIED PROFESSIONAL STATUS  
(2/27/2008)

*Harmony Miller* 30 APR 2010  
SIGNATURE DATE