AS-BUILT SURVEY

INDEX OF SHEETS

ALLVIEW DRIVE STREAM RELOCATION MITIGATION SITE B

HOWARD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS
CAPITAL PROJECT S-6175

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- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- EXISTING 100 YEAR FLOODPLAIN
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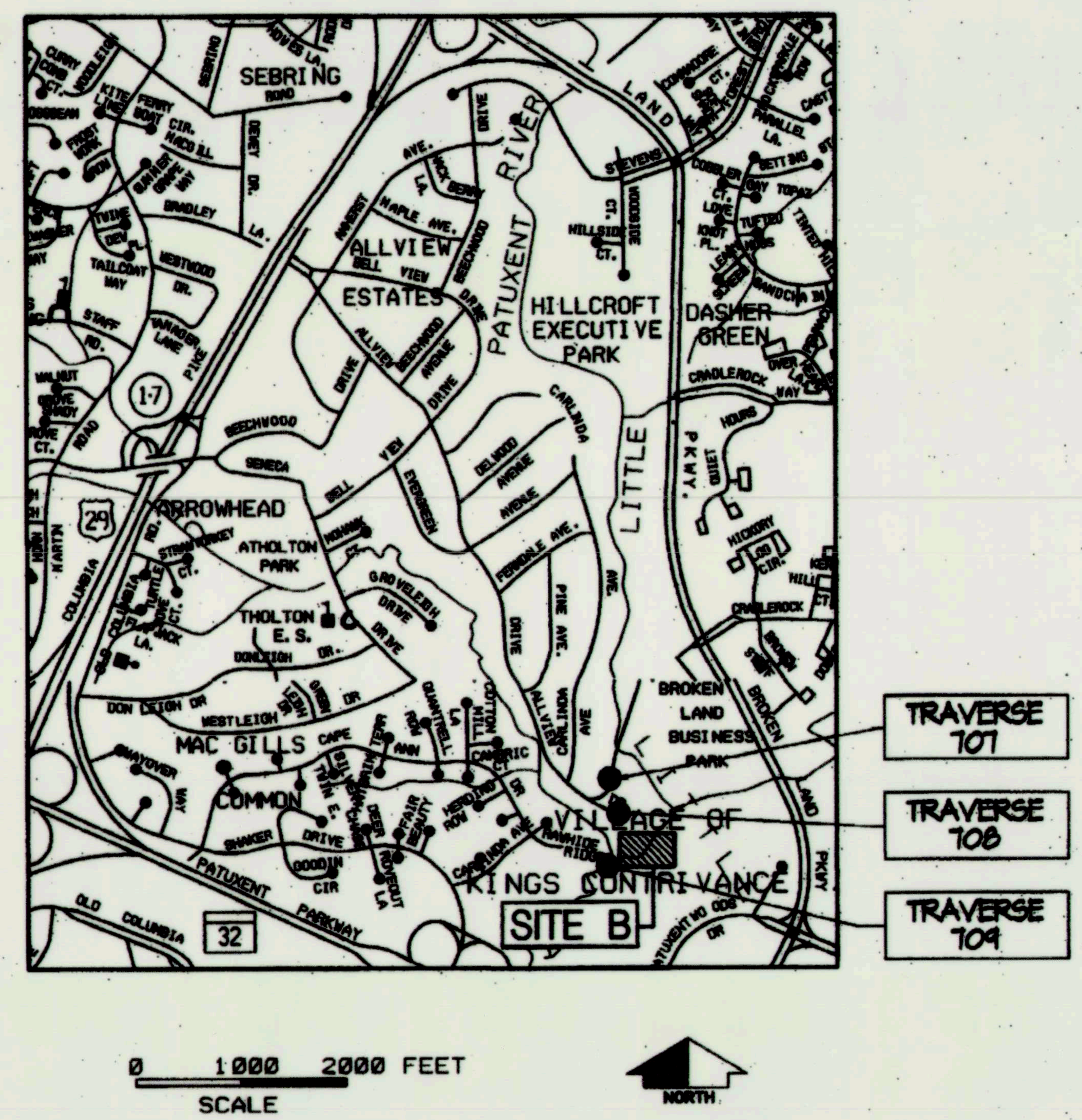
- SEWER EASEMENT LINE
- EXISTING TREE TO BE REMOVED

VICINITY MAP



ADC MAP COORD. 15 H10 AND H12
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

HOWARD COUNTY CONTROL POINTS

	NORTHING	EASTING	ELEVATION
707	1353844.609	551772.775	275.703
708	1353930.362	551444.495	273.926
709	1353826.05	550947.87	275.39

GENERAL NOTES

1. THE SUBJECT PROPERTIES ARE ZONED NT PER FEBRUARY 2, 2004 COMPREHENSIVE ZONING PLAN AND THE COMP-LITE ZONING AMENDMENTS DATED 7/28/2006.
2. 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.
3. THIS PROJECT IS NOT A SUBDIVISION, AND THEREFORE THIS PLAN IS NOT REQUIRED TO MEET THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.
4. THERE ARE NO BURIAL GROUNDS OR CEMETERY SITES LOCATED ON THE PROJECT SITE.
5. THIS PLAN MEETS THE REQUIREMENTS OF THE FOREST CONSERVATION REGULATIONS.
6. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH HOWARD COUNTY VOLUME IV DESIGN MANUAL STANDARDS, SPECIFICATIONS, AND DETAILS FOR CONSTRUCTION AND THE LATEST VERSIONS OF MARYLAND WATERWAY CONSTRUCTION GUIDELINES AND MDE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL REFERENCED HEREIN.
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 CONTROL POINTS 707, 708, AND 709 WERE 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 DRAWINGS.
14. THE PROJECT HYDROLOGY AND HYDRAULICS STUDY WAS PREPARED BY KCI TECHNOLOGIES, INC. JULY 2011 TO DEMONSTRATE NO RISE IN THE 100-YR FLOODPLAIN.
15. THE WETLANDS DELINEATION FOR THIS PROJECT WAS PERFORMED BY KCI TECHNOLOGIES IN FEBRUARY 2009.
16. THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH ONE FOOT CONTOUR INTERVALS PREPARED BY WHITMAN, REQUARDT AND ASSOCIATES, IN 2006 AND 2009.
17. ALL WORK SHALL BE CONSTRUCTED ACCORDING TO THE REQUIREMENTS OF THE NONTIDAL WETLANDS AND WATERWAYS PERMIT APPROVED OCTOBER 16, 2008 (MDE TRACKING #07-NT-3268/200764080) AND USACE PERMIT CENAB-OP-RMN (HOWARD CO. DPW/LITTLE PATUXENT PARALLEL SEWER INTERCEPTOR) 2007-07575-M04 ISSUED ON OCTOBER 16, 2008.
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. DEPARTMENT OF PLANNING AND ZONING WAVIER PETITION WP-09-001 APPROVED ON JANUARY 8, 2010.
22. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777, HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING / CONSTRUCTION INSPECTION DIVISION (410) 313-1880 AT LEAST SEVEN (7) DAYS PRIOR TO BEGINNING WORK. THE CONTRACTOR SHALL NOTIFY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) NON-TIDAL WETLANDS AND WATERWAYS INSPECTIONS, WATER MANAGEMENT ADMINISTRATION (410) 537-3510 AT LEAST FIVE (5) DAYS PRIOR TO BEGINNING OF ANY WORK.
23. OBTAIN GRADING PERMIT AND OTHER NECESSARY PERMITS FOR CONSTRUCTION FROM THE COUNTY AT THE PRE-CONSTRUCTION MEETING. STREAM CLOSURE PERIOD IS FROM MARCH 1 TO JUNE 15, INCLUSIVE. NONTIDAL WETLANDS AND WATERWAYS PERMIT APPROVED OCTOBER 16, 2008 (MDE TRACKING #07-NT-3268/200764080) AND USACE PERMIT CENAB-OP-RMN (HOWARD CO. DPW/LITTLE PATUXENT PARALLEL SEWER INTERCEPTOR) 2007-07575-M04 ISSUED ON OCTOBER 16, 2008.
24. ALL NECESSARY EASEMENTS OR RIGHTS-OF-ENTRY SHALL BE SECURED PRIOR TO THE START OF THE PROJECT.
25. THE CONTRACTOR SHALL COORDINATE AN ON-SITE PRE-CONSTRUCTION MEETING WITH THE COUNTY PROJECT MANAGER, MARYLAND DEPARTMENT OF THE ENVIRONMENT REPRESENTATIVE, HOWARD COUNTY CONSTRUCTION INSPECTION REPRESENTATIVE, AND BUREAU OF UTILITIES REPRESENTATIVE.
26. THE CONTRACTOR AND ITS DRIVERS SHALL TAKE EXTRA PRECAUTION WHEN DRIVING AND HAULING MATERIALS ON THE ACCESS ROAD, SITE AREAS AND OVER THE TEMPORARY ACCESS BRIDGE AND CHANNEL TO MINIMIZE IMPACT TO EXISITNG FEATURES, SUCH AS TREES, WETLANDS, U.S. WATERS, THE STREAM BED AND CHANNEL SLOPES AND NEWLY CONSTRUCTED FEATURES.

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

HOWARD SCD — DATE 3/20/12

STATE OF MARYLAND — KATHY LYNN HOVERMAN — No. 38311 — PROFESSIONAL ENGINEER — 3/2/12

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. 38311. EXPIRATION DATE: JANUARY 06, 2014

ENGINEER'S CERTIFICATE

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

P.E. # 38311 — DATE 3/2/12
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE)
KATHY L. HOVERMAN, PE

DEVELOPER'S CERTIFICATE

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

SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) — DATE 3/5/12

AS-BUILT SURVEY CERTIFICATION

I HEREBY CERTIFY THAT THIS AS-BUILT SURVEY IS AN ACCURATE REPRESENTATION OF THE LOCATIONS AND ELEVATIONS IN THE FIELD AS OF JANUARY 15, 2013.

THE UNDERSIGNED, BEING A LICENSED SURVEYOR IN THE STATE OF MARYLAND, PERSONALLY PREPARED OR WAS IN RESPONSIBLE CHARGE OF THE PREPARATION AND THE SURVEY WORK REFLECTED IN THIS AS-BUILT SURVEY, IN COMPLIANCE WITH THE REQUIREMENTS SET FORTH IN "COMAR" TITLE 09, SUBTITLE 13, CHAPTER 06, REGULATION .12.

ROBERT A. KUNDRICK, MARYLAND LICENSED PROFESSIONAL LAND SURVEYOR — 11046 LICENSE NUMBER, EXPIRATION DATE AUGUST 16, 2013 — JANUARY 23, 2013 DATE

STATE OF MARYLAND — ROBERT ALEXANDER KUNDRICK — NO. 11046 — PROFESSIONAL LAND SURVEYOR

STATE OF MARYLAND — KATHY LYNN HOVERMAN — No. 38311 — PROFESSIONAL ENGINEER

ENGINEER'S AS-BUILT CERTIFICATION

"I HAVE PERSONALLY OBSERVED AND INSPECTED THE CONSTRUCTION OF THIS STREAM RESTORATION PROJECT. I HAVE ALSO REVIEWED THE AS-CONSTRUCTED CONDITIONS DEPICTED ON THIS AS-BUILT SURVEY. I HEREBY CERTIFY THAT THE STREAM RESTORATION CONSTRUCTION MEETS THE DESIGN INTENT OF THIS PROJECT AND/OR THE CONSTRUCTION IS WITHIN THE ACCEPTED TOLERANCES AS NOTED ON THE PLANS AND WITHIN THE SPECIAL PROVISIONS."

P.E. # 38311 — DATE 3/13/13
SIGNATURE OF ENGINEER
KATHY L. HOVERMAN, PE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/12/12
CHIEF, BUREAU OF ENGINEERING — DATE 3/5/12
CHIEF, BUREAU OF UTILITIES — DATE
CHIEF, UTILITY DESIGN DIVISION — DATE 3/5/12

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD, SPARKS, MARYLAND 21152, TELEPHONE (410) 316-7800, FAX (410) 316-7818

DES: MDT/KLH				
DRN: JMS				
CHK: KLH				
DATE: FEBRUARY 2012	GPI	1	AS-BUILT SURVEY	1/23/13
	BY	NO.	REVISION	DATE

AS-BUILT SURVEY
TITLE SHEET

600' SCALE MAP NO. ______ BLOCK NO. ______

ALLVIEW DRIVE STREAM RELOCATION MITIGATION SITE B
CAPITAL PROJECT No. S-6175
CONTRACT No. 20-4736
ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN
SHEET AB 1 OF 4 — 1 OF 16

CURVE DATA

CURVE NO.	RADIUS	LENGTH	DELTA	TANGENT	CHORD BEARING	
C1	70.00′	72.64′	59°27′10.02″	39.97′	N 59°30′03.59″ E	69.42′
C2	100.00′	33.57′	19°14′10.33″	16.95′	S 81°09′16.23″ E	33.42′
C3	130.00′	107.94′	47°34′30.11″	57.30′	N 84°40′33.87″ E	104.87′
C4	140.00′	111.86′	45°46′44.60″	59.11′	N 37°59′56.52″ E	108.91′
C5	222.00′	64.88′	16°44′42.05″	32.67′	N 23°28′55.24″ E	64.65′

TANGENT DATA

TANGENT NO.	BEARING	DISTANCE
T1	N 29°46′28.57″ E	7.61′
T2	N 89°13′38.60″ E	24.96′
T3	S 71°32′11.07″ E	67.82′
T4	N 60°53′18.82″ E	129.17′
T5	N 15°06′34.22″ E	2.31′
T6	N 31°51′16.27″ E	6.21′

TRAVERSE COORDINATE LIST

PT #	NORTHING	EASTING	ELEVATION
709	N 550,947.87	E 1,353,825.05	275.39
KCI-105	N 551,237.33	E 1,353,970.26	273.98

TRAVERSE POINT 709
REBAR AND CAP
NOT TO SCALE

TRAVERSE POINT KCI-105
PIN AND CAP
NOT TO SCALE

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STATE OF MARYLAND — KATHY LYNN HOVERMAN — No. 38311 — PROFESSIONAL ENGINEER — 3/2/12

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/12/12	CHIEF, BUREAU OF ENGINEERING — DATE 3/5/12
CHIEF, BUREAU OF UTILITIES — DATE 3/8/12	CHIEF, UTILITY DESIGN DIVISION — DATE 3/5/12

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS — 936 RIDGEBROOK ROAD, SPARKS, MARYLAND 21152, TELEPHONE: (410) 316-7800, FAX: (410) 316-7818

DES: MDT/KLH			
DRN: JMS			
CHK: KLH			
DATE: FEBRUARY 2012	BY	NO.	REVISION / DATE

GEOMETRY SHEET

600′ SCALE MAP NO. ________ BLOCK NO. ________

ALLVIEW DRIVE STREAM RELOCATION MITIGATION SITE B

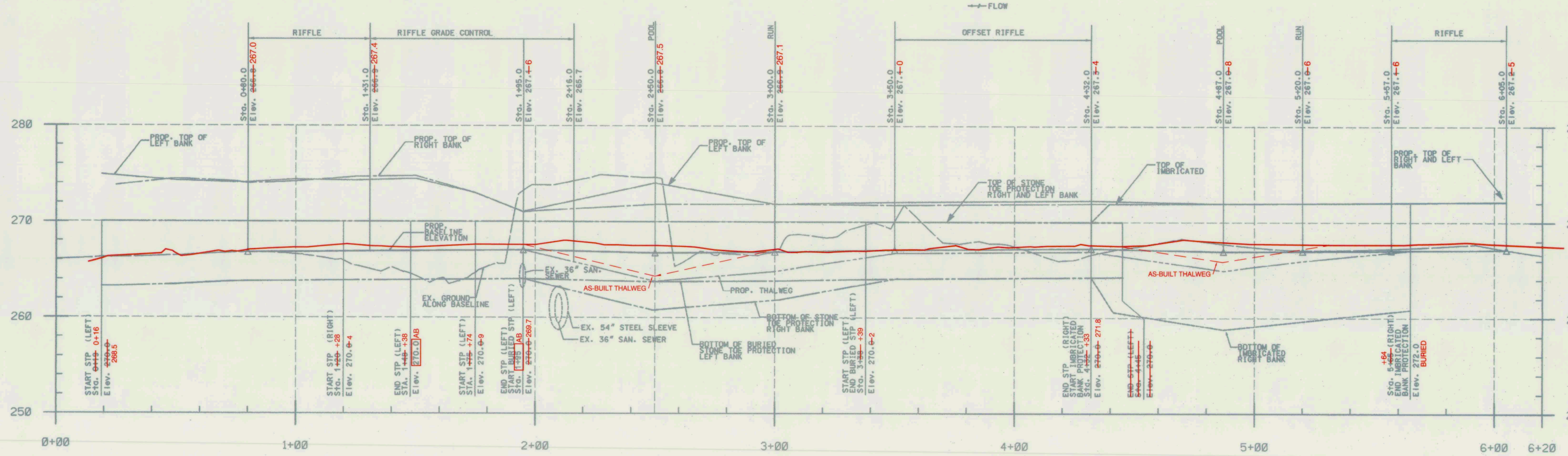
CAPITAL PROJECT No. S-6175
CONTRACT No. 20-4736

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SCALE 1" = 20′

SHEET 2 OF 16

EP-11-03



LEGEND

EXISTING GROUND ALONG BASELINE

PROPOSED BASELINE ELEVATION

PROPOSED LEFT TOP OF BANK

PROPOSED RIGHT TOP OF BANK

PROPOSED THALWEG (WHEN OFFSET FROM BASELINE)

STONE TOE PROTECTION EXTENT

IMBRICATED BANK PROTECTION EXTENT

NOTE:
POOL AND RUN SECTIONS OCCUR AT SPECIFIC LOCATIONS.
RIFFLES EXTEND BETWEEN A RANGE OF STATIONS. TRANSITIONS BETWEEN EACH PRESCRIBED CROSS SECTION TYPE SHALL BE SMOOTH AND MEET THE PROPOSED CONTOURS SHOWN ON THE PROFILE AND PLAN VIEWS.

STATE OF MARYLAND — PROFESSIONAL ENGINEER — No. 38311

3/5/12

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. 38311. EXPIRATION DATE: JANUARY 06, 2014

PLOTTED: "10:34 AM on Wednesday, February 29, 2012"

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — 3/12/12 DATE	CHIEF, BUREAU OF ENGINEERING — 3/5/12 DATE
CHIEF, BUREAU OF UTILITIES — DATE	CHIEF, UTILITY DESIGN DIVISION — 3/5/12 DATE

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DES: MDT/KLH				
DRN: JMS				
CHK: KLH				
DATE: FEBRUARY 2012	GPI	1	AS-BUILT SURVEY	1/23/13
	BY	NO.	REVISION	DATE

AS-BUILT SURVEY
PROFILE

600' SCALE MAP NO.______ BLOCK NO.______

ALLVIEW DRIVE STREAM RELOCATION
MITIGATION SITE B
CAPITAL PROJECT No. S-6175
CONTRACT No. 20-4736

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SCALE HOR. 1"=20' VERT. 1"=5'

SHEET AB 2 OF 4
3 OF 16

CONCRETE MONITORING BENCHMARK (CMB) TABLE

POINT	NORTHING	EASTING	ELEVATION
150	551266.3630	1354215.2360	275.32
151	550996.4690	1353815.6330	274.52
152	551029.9620	1353742.8100	274.68
153	551132.7350	1353707.3100	274.41
154	551110.9510	1353870.5470	272.67
155	551307.2320	1354130.4360	275.92

BENDWAY WEIR SCHEDULE

WEIR NO.	BANK STA.**	LENGTH	ANGLE*
1	1+~~23~~ 27	10	69
2	1+00 AB	15	76
3	0+~~73~~ 74	20	70
4	0+~~43~~ 44	20	70
5	0+~~21~~ 22	20	70

* ANGLE MEASURED FROM BANKLINE TO UPSTREAM WEIR BANK TIE-IN

** BANK STATION MEASURED FROM THE WEIR CENTERLINE AT THE BANK TIE-IN

NOTES:

1. CONTACTOR SHALL TAKE CARE WHEN OPERATING EQUIPMENTIN THE VICINITY OF THE EXISTING SANITARY SEWER LINES AND MANHOLES. CONTRACTOR SHALL REPAIR ANY DAMAGE TO THE SANITARY SEWER LINES AND MANHOLES AT HIS/HER OWN EXPENSE.

2. ALL BANKS NOT RECEIVING STONE TOE PROTECTION OR IMBRICATED BANK PROTECTION SHALL BE PROTECTED WITH PLACED NATURAL FIBER MATTING PER DETAIL ON SHEET 6.

3. FALLEN TREES AND OTHER DEBRIS IN THE CHANNEL SHALL BE REMOVED AND DISPOSED OF OFF-SITE.

4. THE ENTIRE AREA SHOWN IS WITHIN THE 100-YEAR FLOODPLAIN.

BURIED STONE TOE PROTECTION SCHEDULE

FROM STATION	TO STATION	OFFSET*
1+95 AB	3+~~38~~ 39	LEFT

*FACING UPSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

TOE TRENCH SCHEDULE

FROM STATION	TO STATION	OFFSET*
2+08	3+50	RIGHT
4+32	5+35	RIGHT

*FACING UPSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

STONE TOE PROTECTION SCHEDULE

FROM STATION	TO STATION	OFFSET*
0+~~19~~ 16	1+~~48~~ 44	LEFT
1+~~20~~ 28	4+~~32~~ 33	RIGHT
1+~~75~~ 71	1+95 AB	LEFT
3+~~38~~ 39	~~4+45~~ 5+12	LEFT

*FACING UPSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

IMBRICATED BANK PROTECTION SCHEDULE

FROM STATION	TO STATION	OFFSET*
4+~~32~~ 33	5+~~65~~ 66	RIGHT

*FACING UPSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

STATE OF MARYLAND — PROFESSIONAL ENGINEER — No. 38311

3/2/12

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/12/12	CHIEF, BUREAU OF ENGINEERING — DATE 3/5/12
CHIEF, BUREAU OF UTILITIES — DATE 3/8/12	CHIEF, UTILITY DESIGN DIVISION — DATE 3/5/12

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DES: MDT/KLH
DRN: JMS
CHK: KLH
DATE: FEBRUARY 2012

BY	NO.	REVISION	DATE
GPI	1	AS-BUILT SURVEY	1/23/13

600' SCALE MAP NO. ______ BLOCK NO. ______

AS-BUILT SURVEY
GRADING PLAN

ALLVIEW DRIVE STREAM RELOCATION MITIGATION SITE B

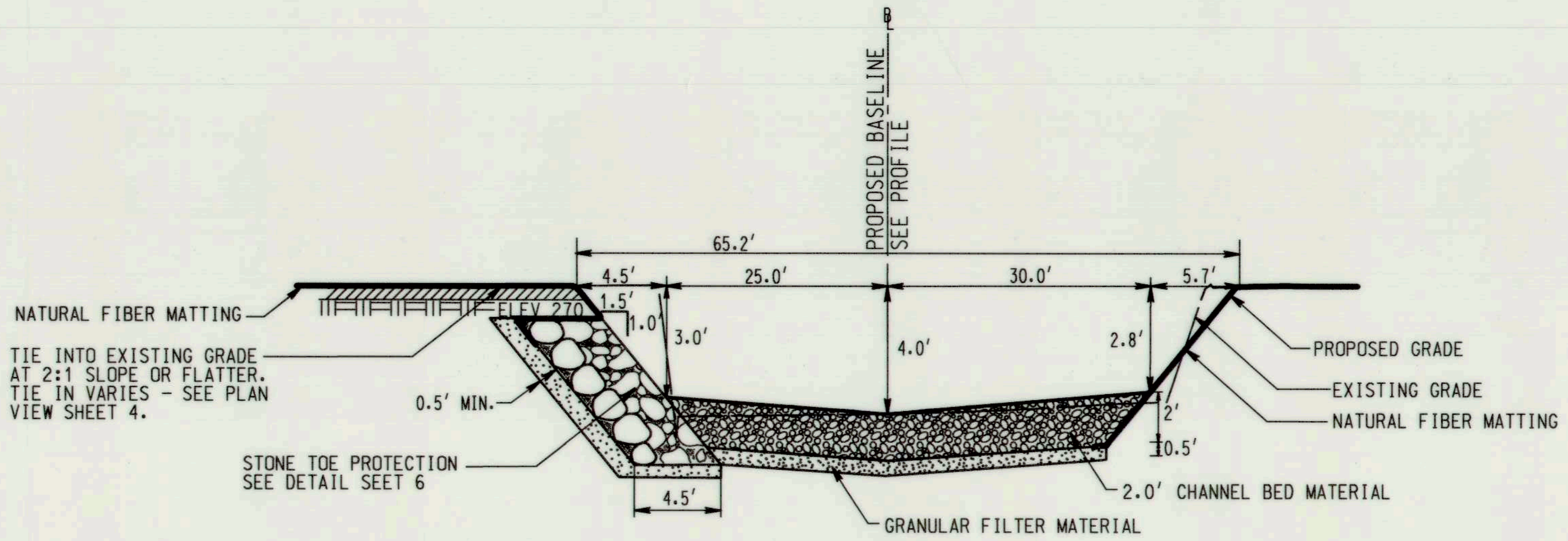
CAPITAL PROJECT No. S-6175
CONTRACT No. 20-4736

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SCALE 1" = 20'

SHEET AB 3 OF 4

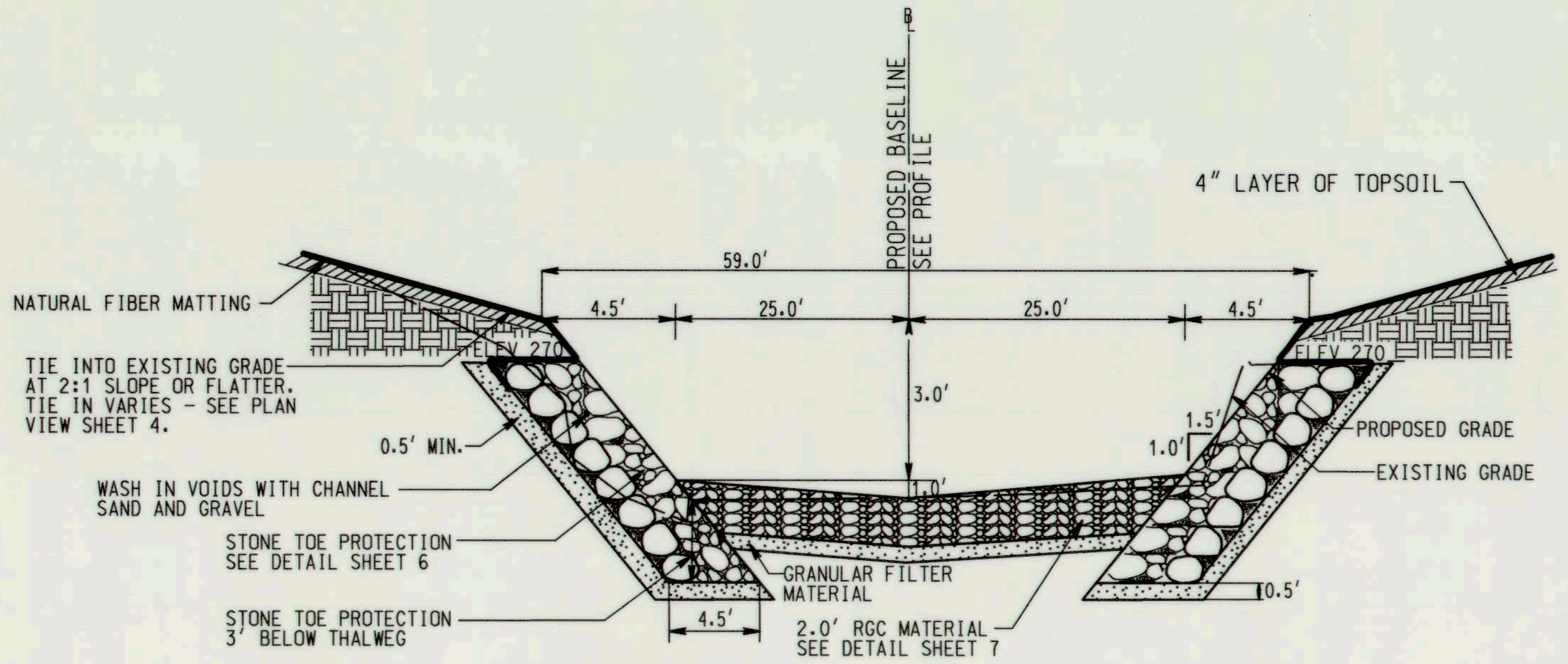
EP-11-03



BANK TREATMENTS VARY. SEE SHEET 4.

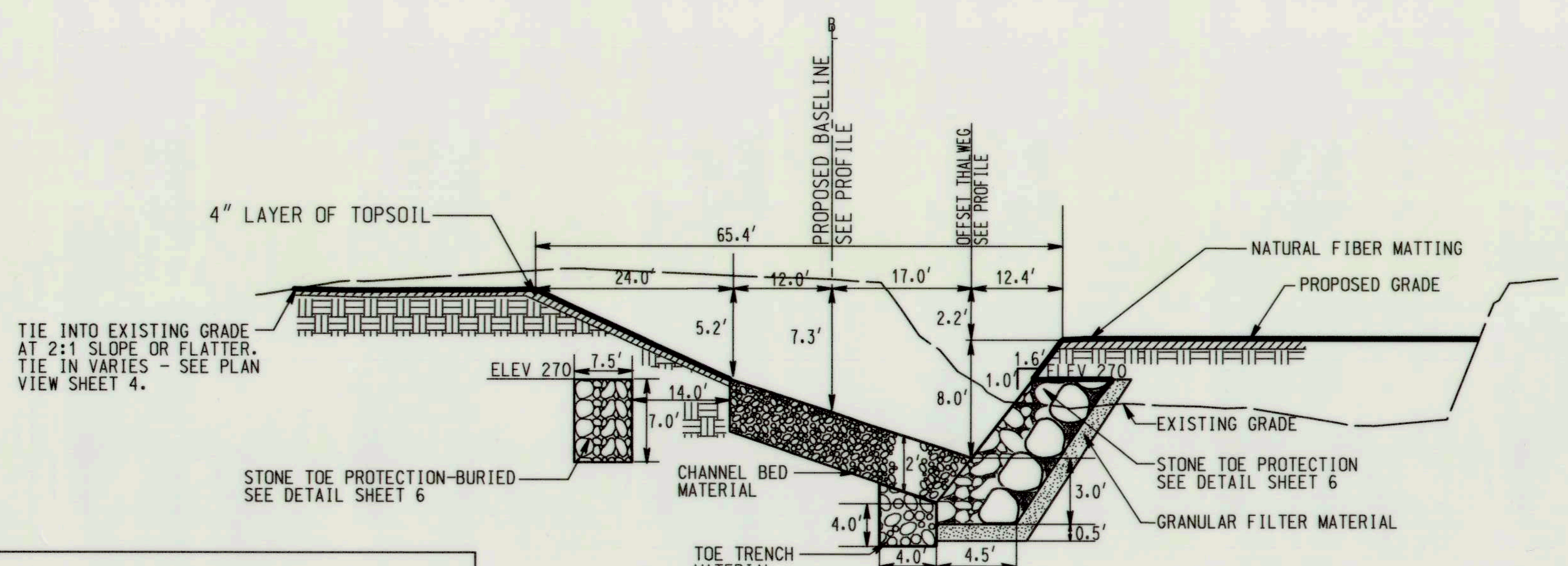
RIFFLE - STATION 0+80

FACING UPSTREAM
NOT TO SCALE



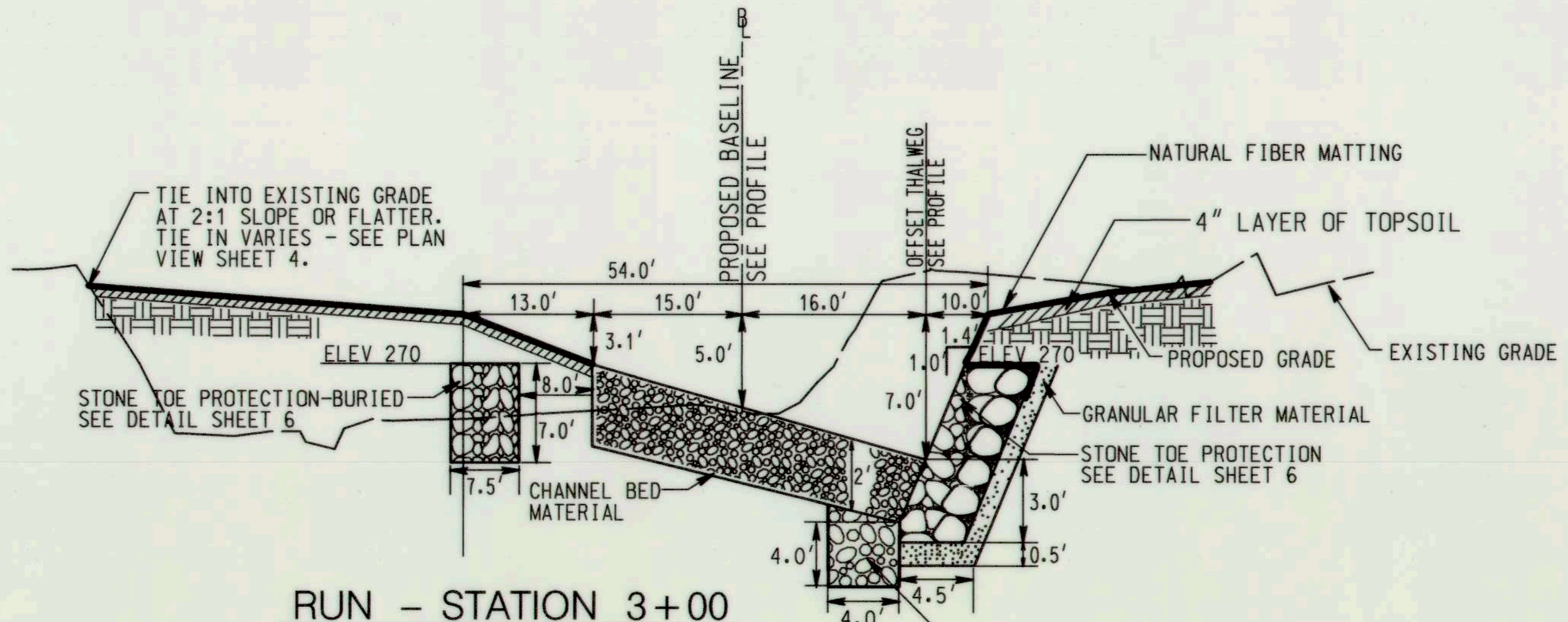
RIFFLE GRADE CONTROL - STATION 1+95

FACING UPSTREAM
NOT TO SCALE



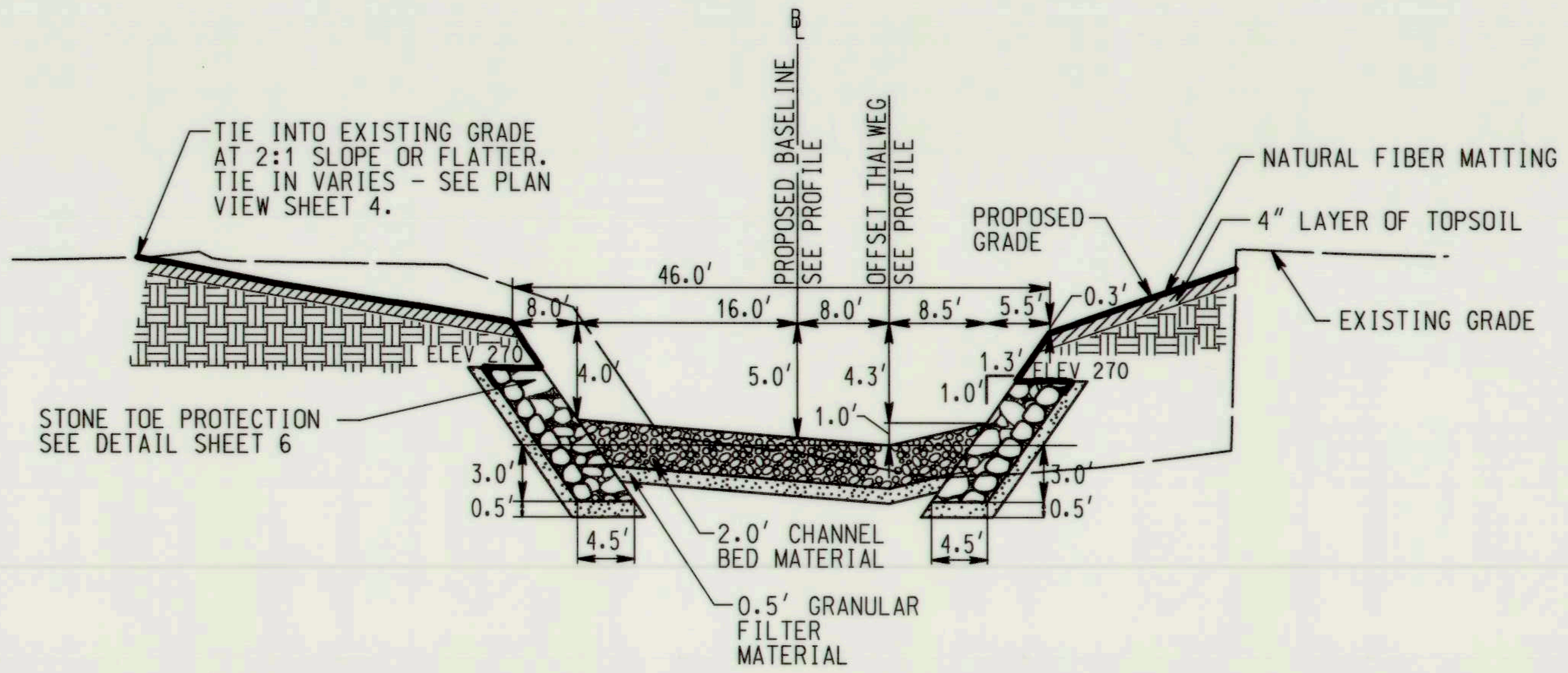
POOL - STATION 2+50

FACING UPSTREAM
NOT TO SCALE



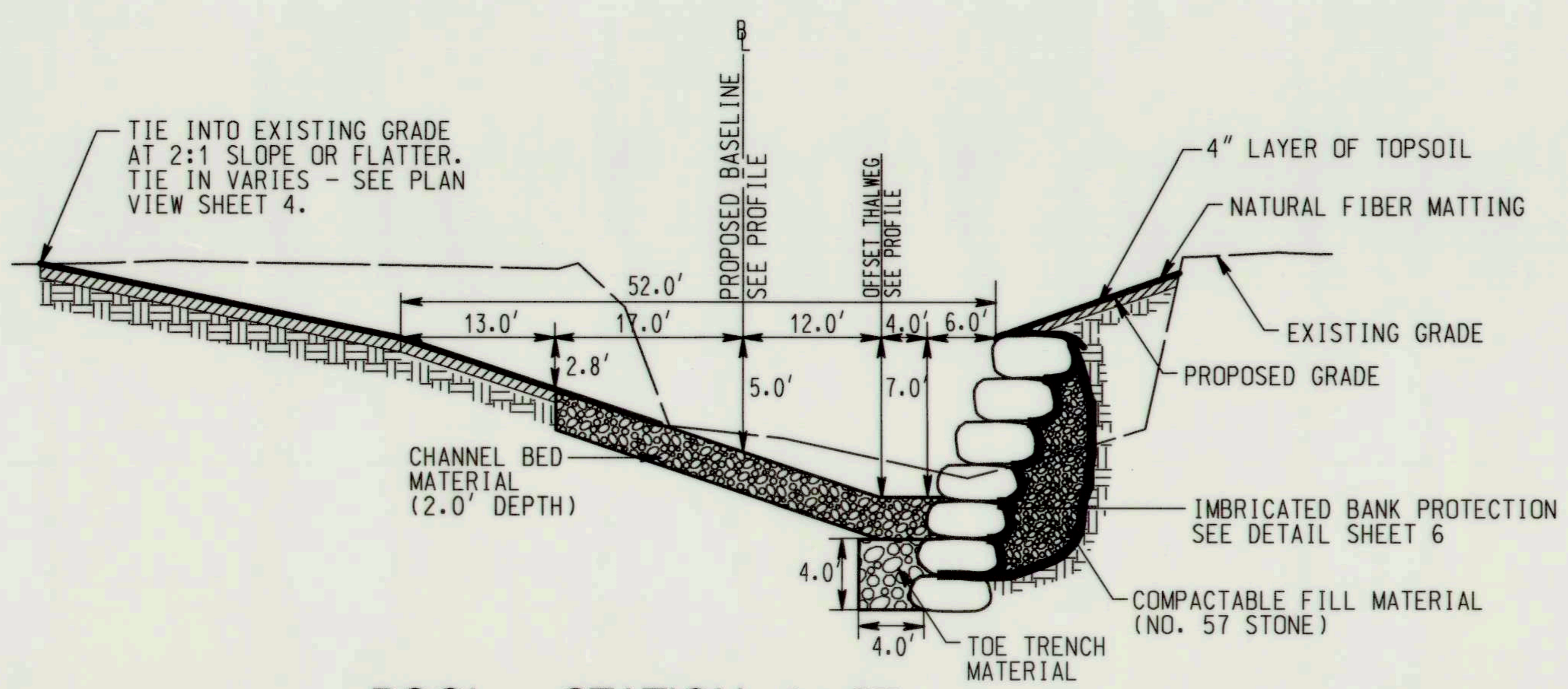
RUN - STATION 3+00

FACING UPSTREAM
NOT TO SCALE



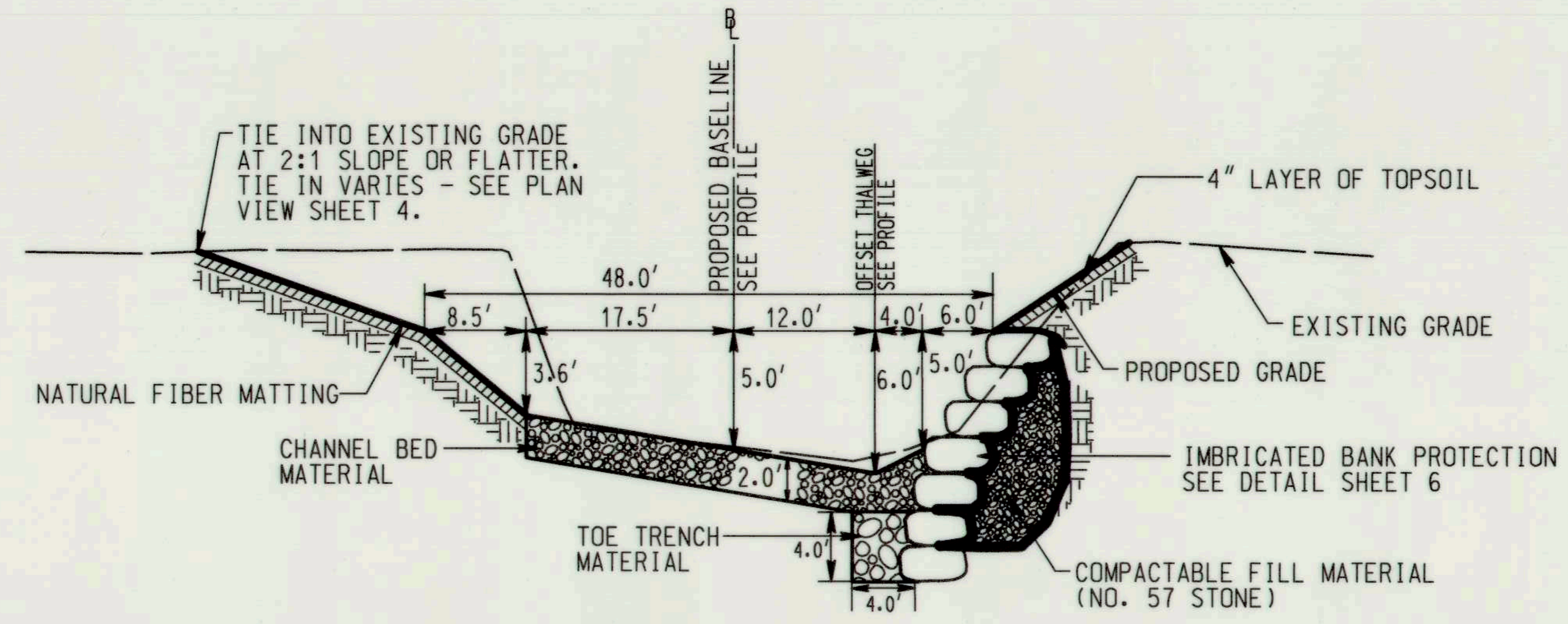
OFFSET RIFFLE - STATION 3+50 TO 4+32

FACING UPSTREAM
NOT TO SCALE



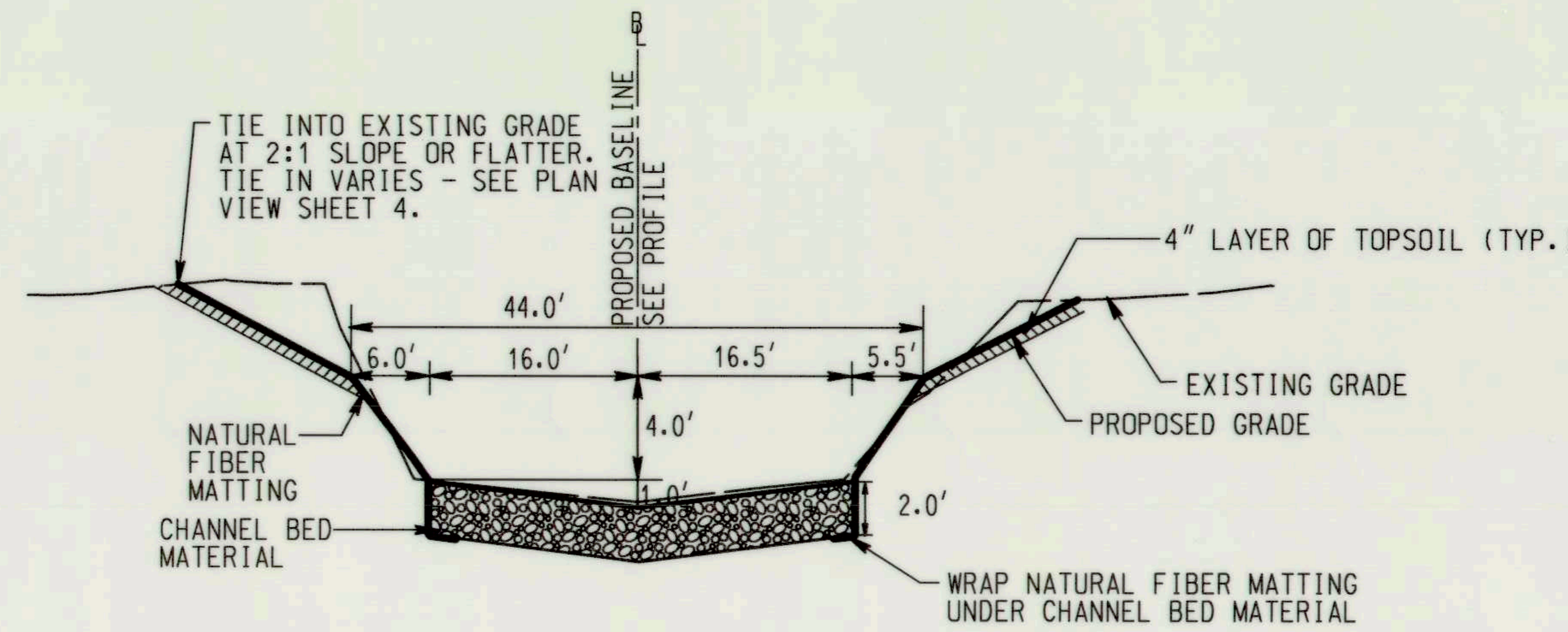
POOL - STATION 4+87

FACING UPSTREAM
NOT TO SCALE



RUN - STATION 5+20

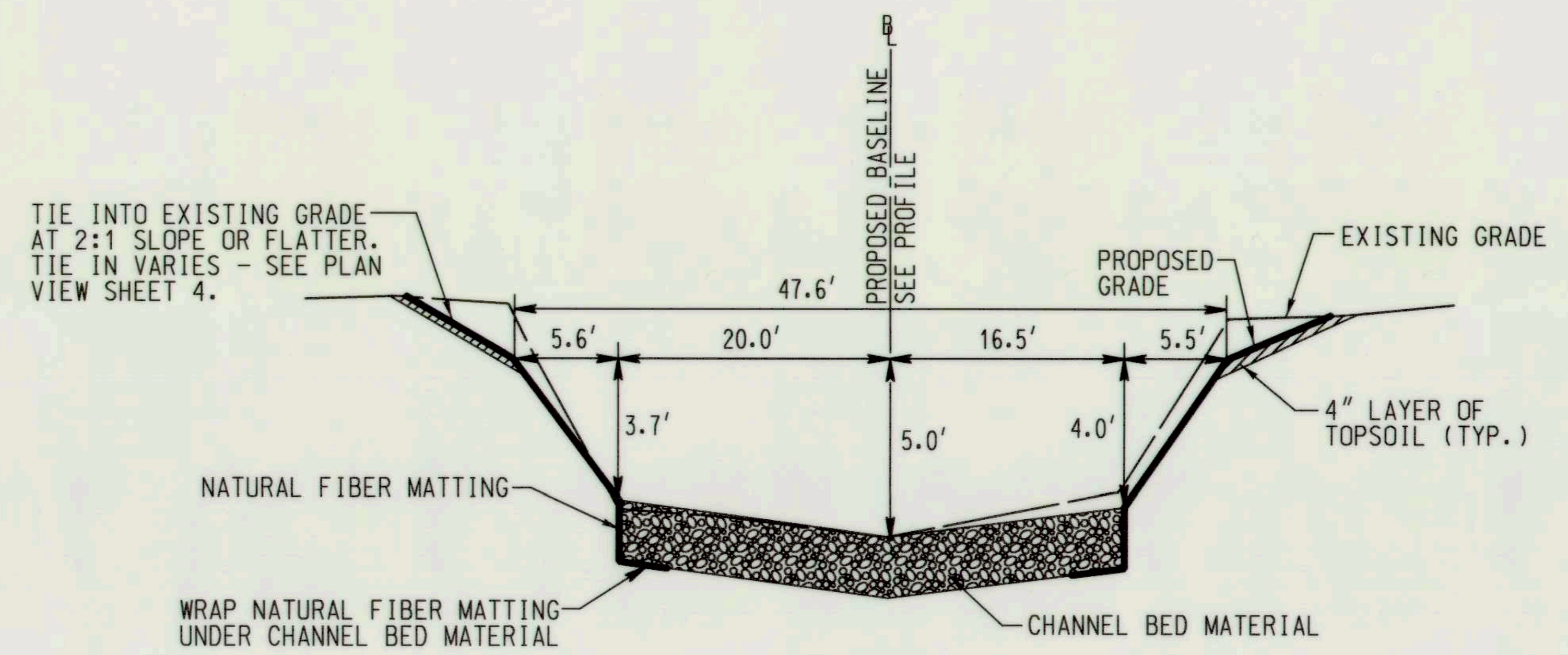
FACING UPSTREAM
NOT TO SCALE



RIFFLE - STATION 5+57

FACING UPSTREAM

NOT TO SCALE



RIFFLE - STATION 6+05

FACING UPSTREAM
NOT TO SCALE

NOTE: BANK TREATMENTS VARY.
SEE SHEETS 6 AND 16 OF 16 FOR
TYPICAL BANK TREATMENT DETAILS.

STATE OF MARYLAND
KATHY LYNN HOVERMAN
No. 38311
PROFESSIONAL ENGINEER

3/2/12

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. 38311, EXPIRATION DATE: JANUARY 06, 2014

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/6/12	CHIEF, BUREAU OF ENGINEERING — DATE 3/5/12
CHIEF, BUREAU OF UTILITIES — DATE 3/8/12	CHIEF, UTILITY DESIGN DIVISION — DATE 3/5/12

KCI TECHNOLOGIES
ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818

DES: MDT/KLH				
DRN: JMS				
CHK: KLH				
DATE: FEBRUARY 2012	BY	NO.	REVISION	DATE

TYPICAL CROSS SECTIONS

600' SCALE MAP NO.__________ BLOCK NO.__________

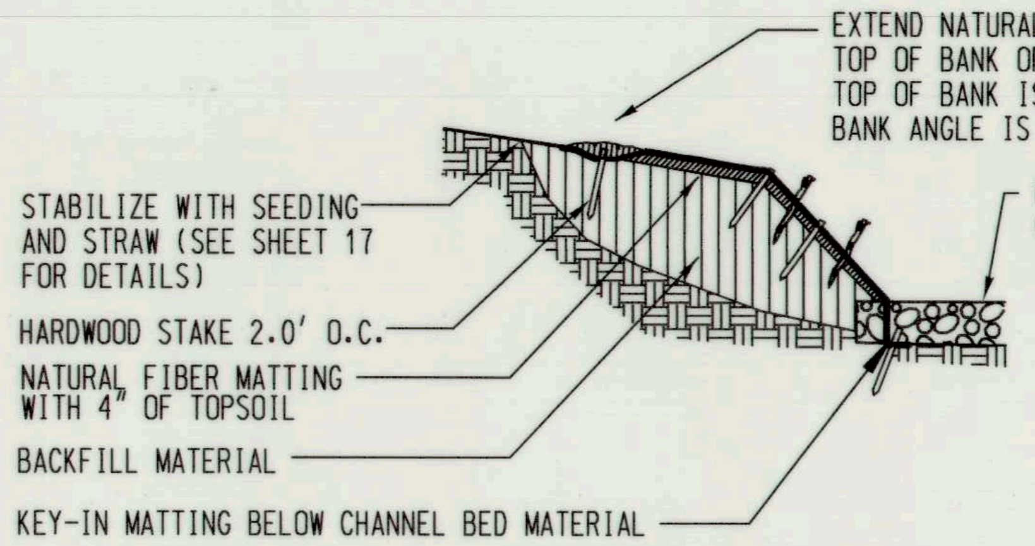
ALLVIEW DRIVE STREAM RELOCATION MITIGATION SITE B

CAPITAL PROJECT No. S-6175
CONTRACT No. 20-4736

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

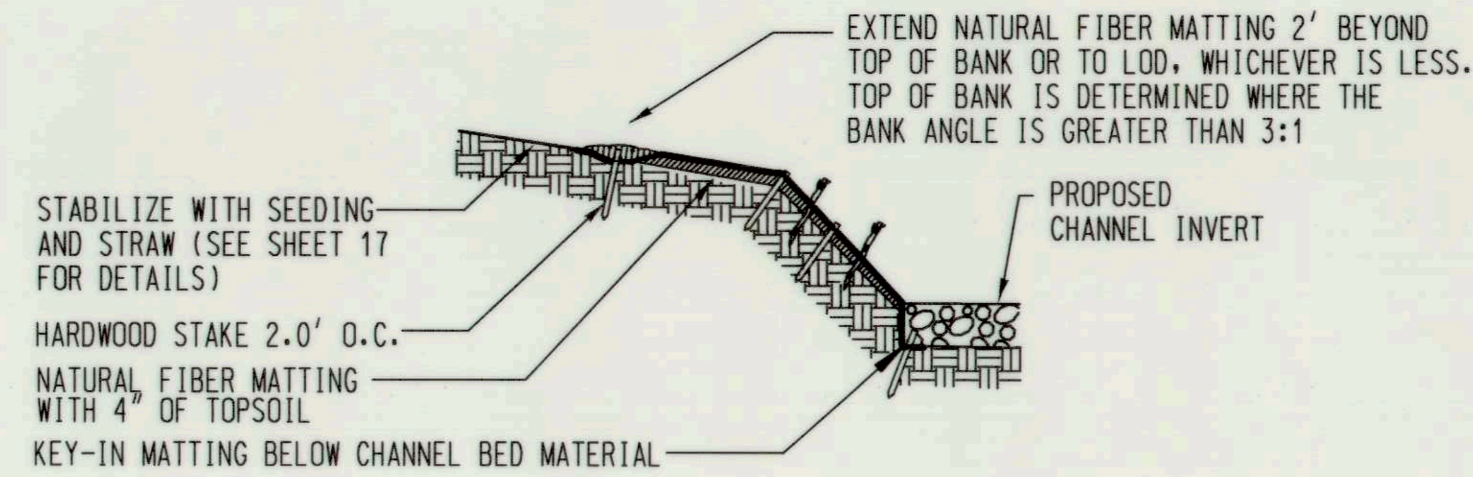
EP-11-03



TYPICAL NATURAL FIBER MATTING DETAIL IN FILL

NOT TO SCALE

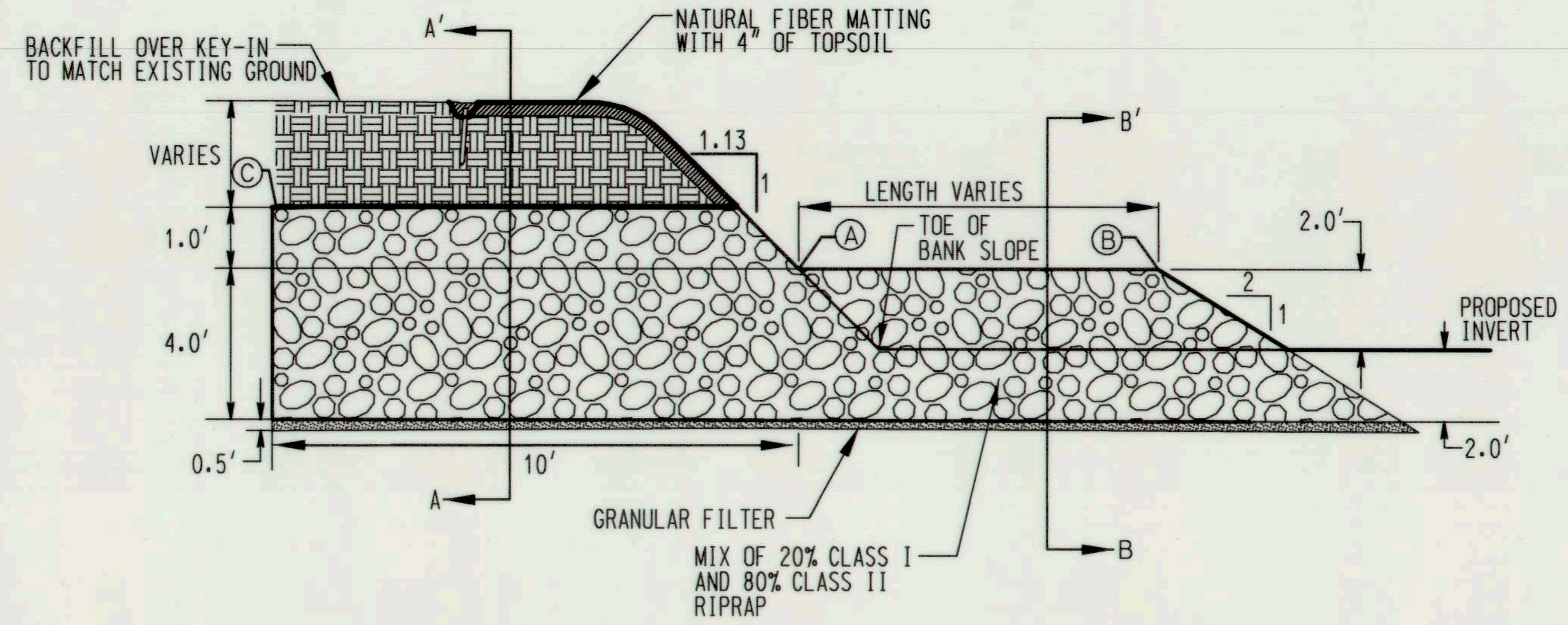
SEE SHEET 17 FOR PLANVIEW OF NATURAL FIBER MATTING WITH LIVE STAKES.



TYPICAL NATURAL FIBER MATTING DETAIL IN CUT

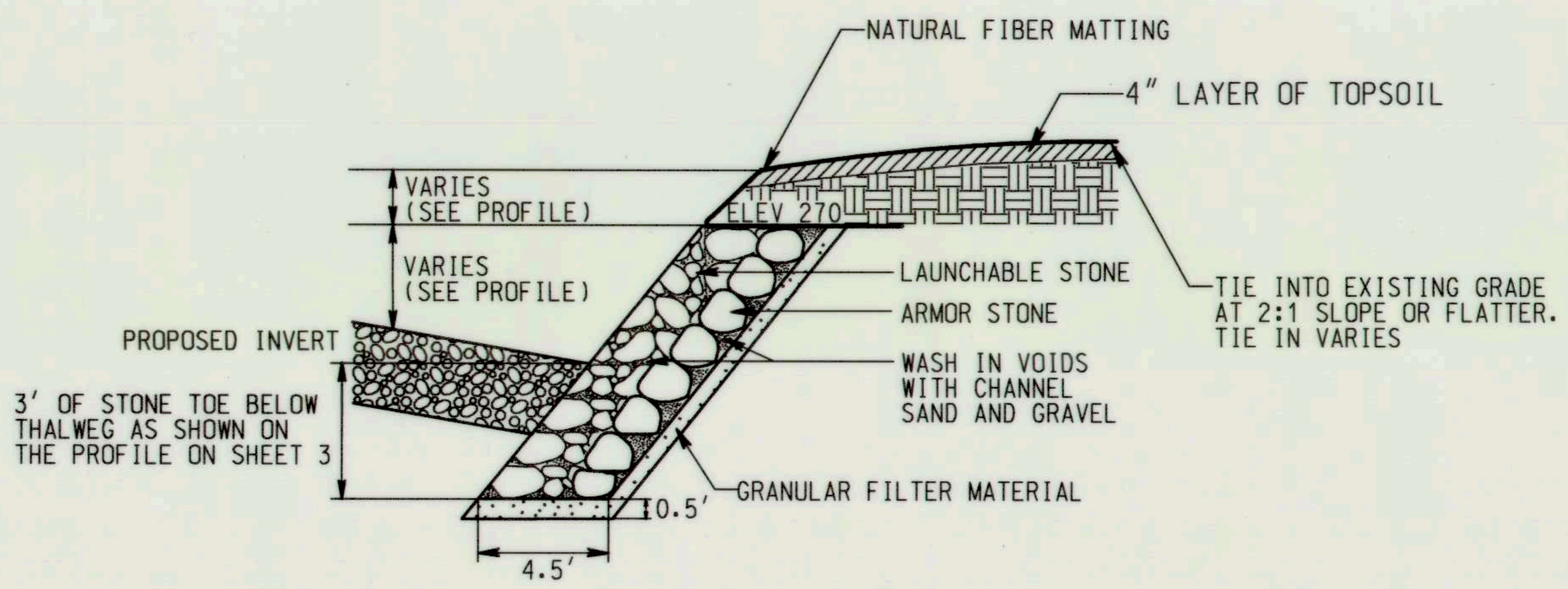
NOT TO SCALE

SEE SHEET 17 FOR PLANVIEW OF NATURAL FIBER MATTING WITH LIVE STAKES.



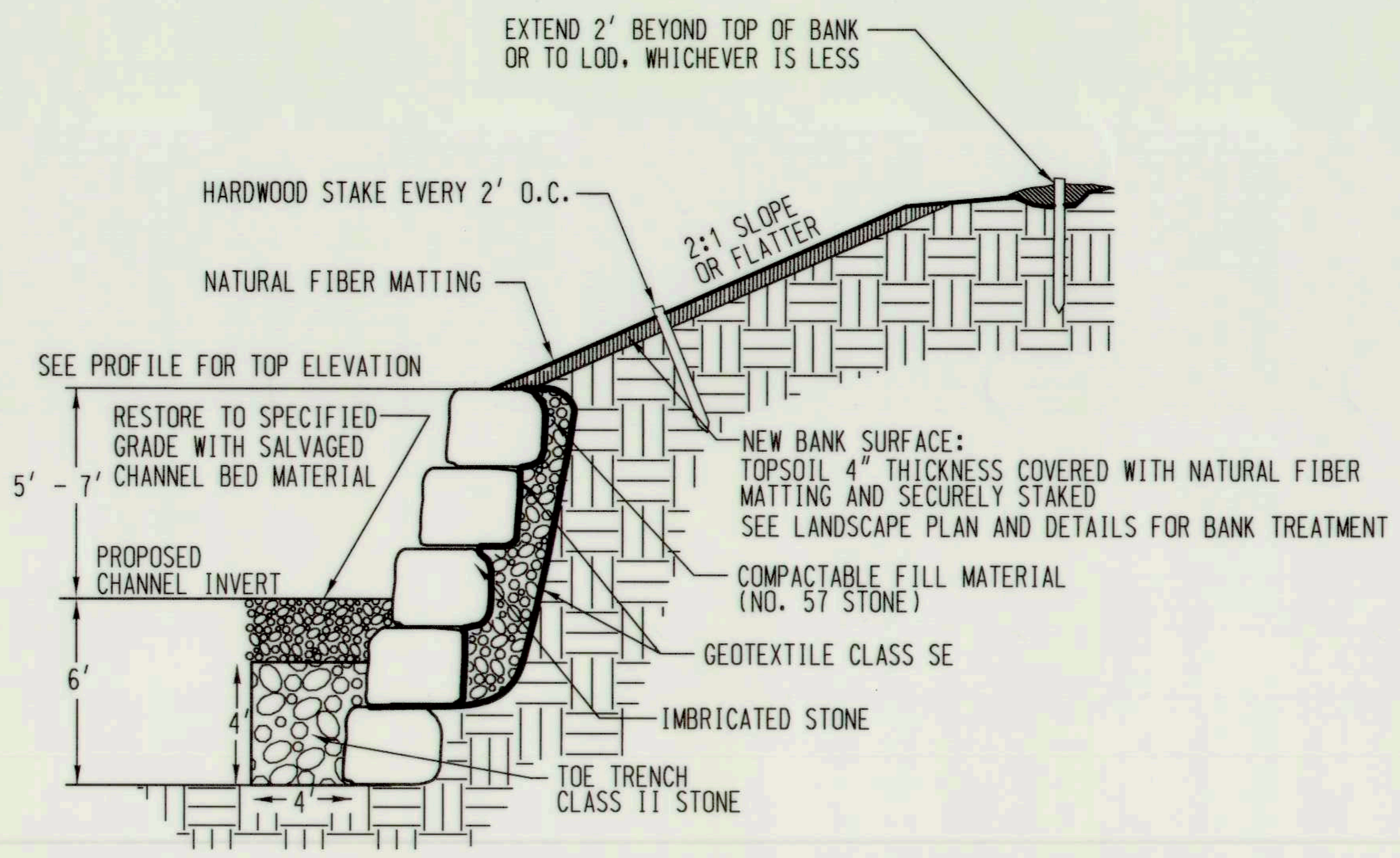
BENDWAY WEIR: PROFILE VIEW

NOT TO SCALE



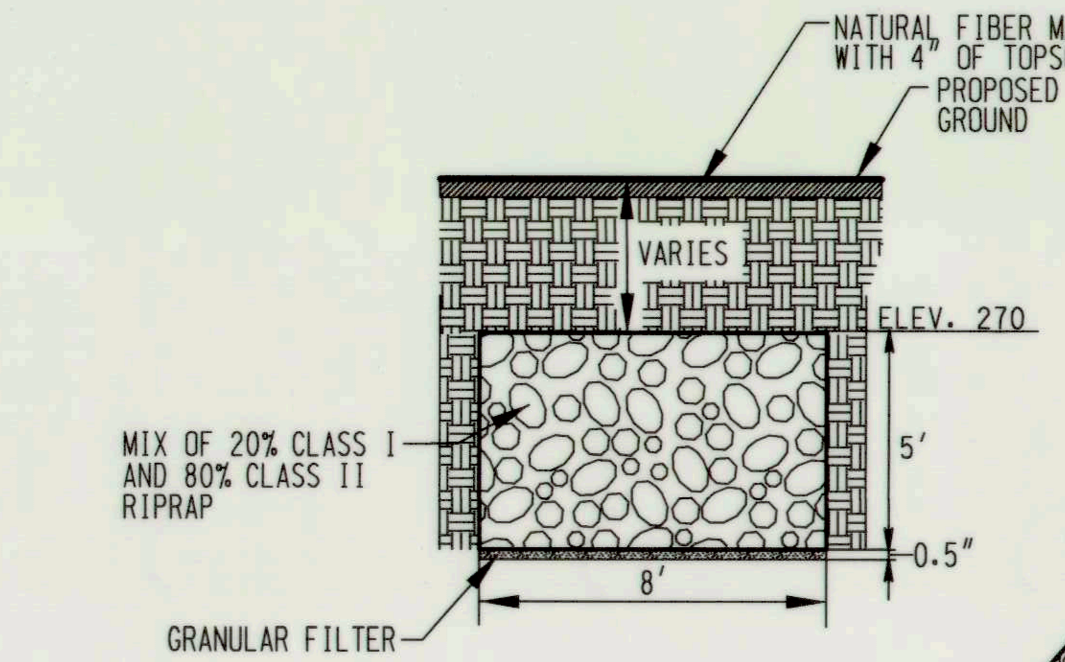
STONE TOE PROTECTION IN EXPOSED SECTION

NOT TO SCALE

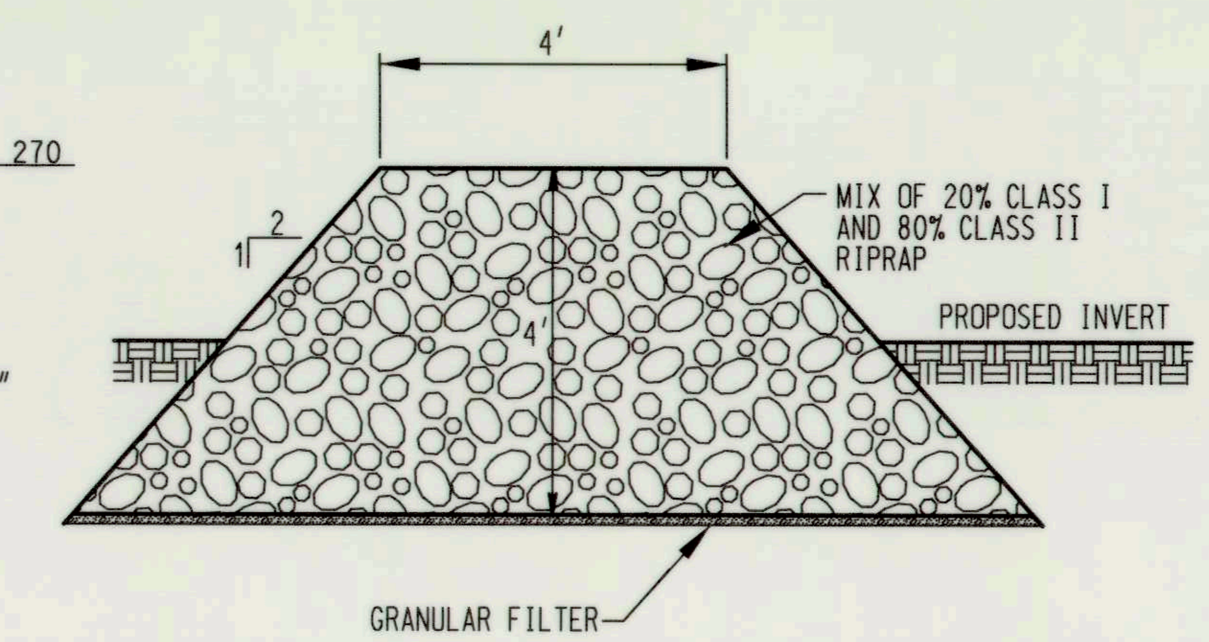


TYPICAL IMBRICATED BANK PROTECTION DETAIL WITH TOE TRENCH

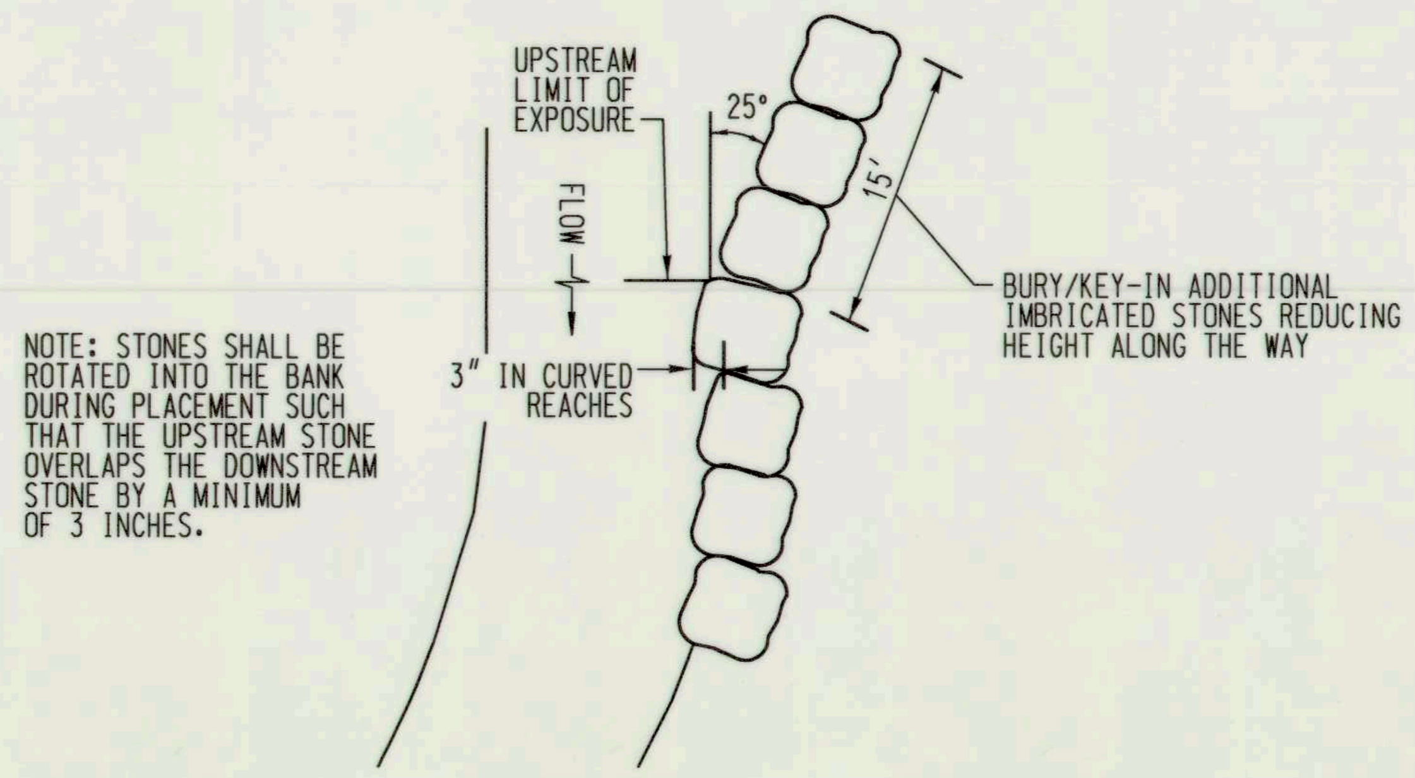
NOT TO SCALE



SECTION A - A'

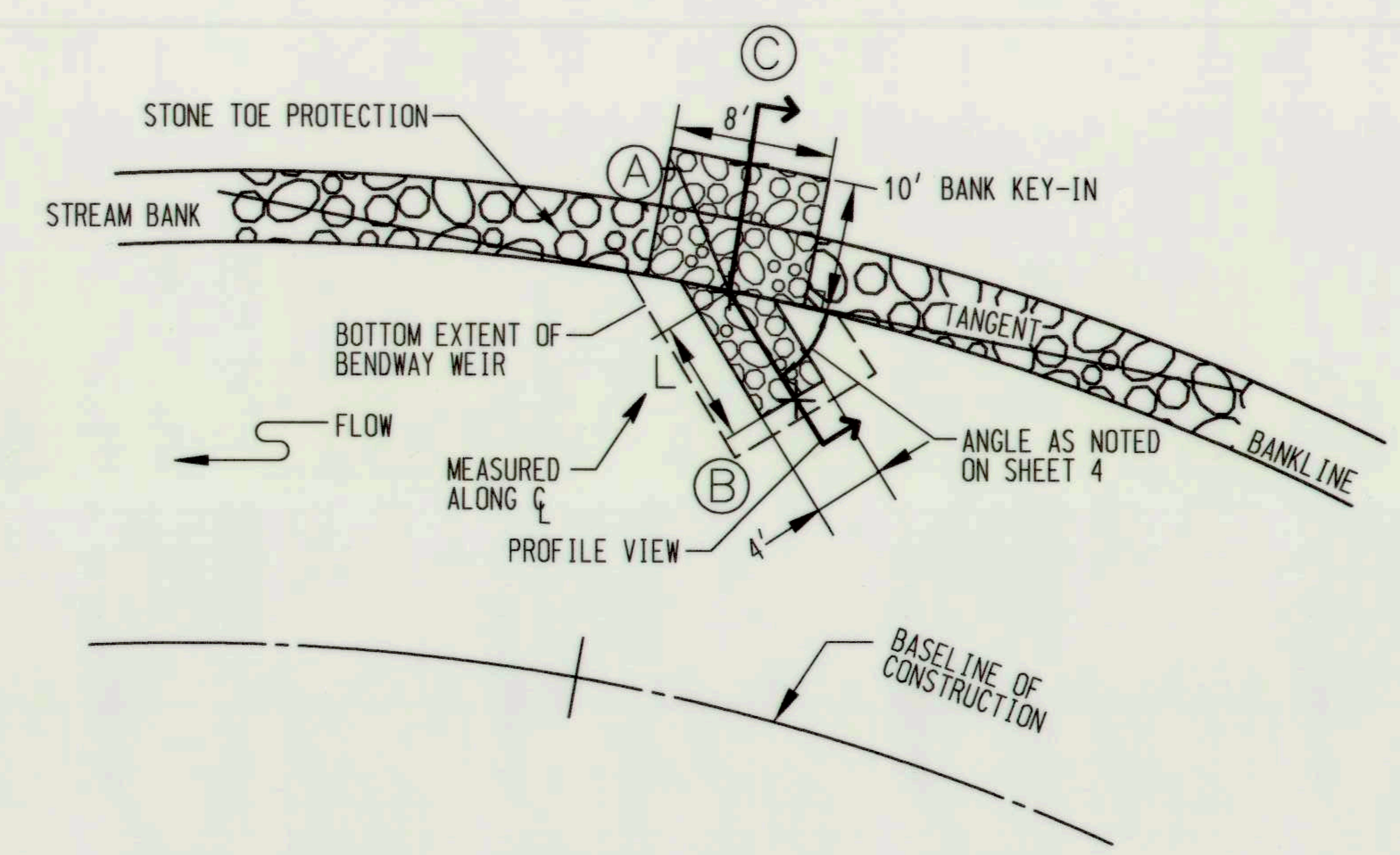


SECTION B - B'



TYPICAL PLAN VIEW IMBRICATED BANK PROTECTION

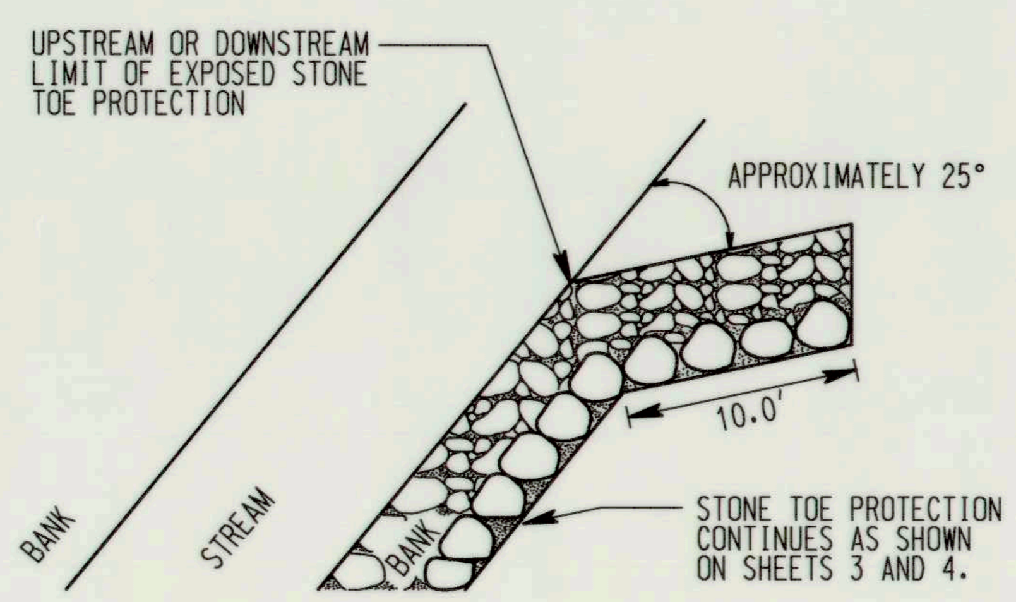
NOT TO SCALE



BENDWAY WEIR: PLAN VIEW

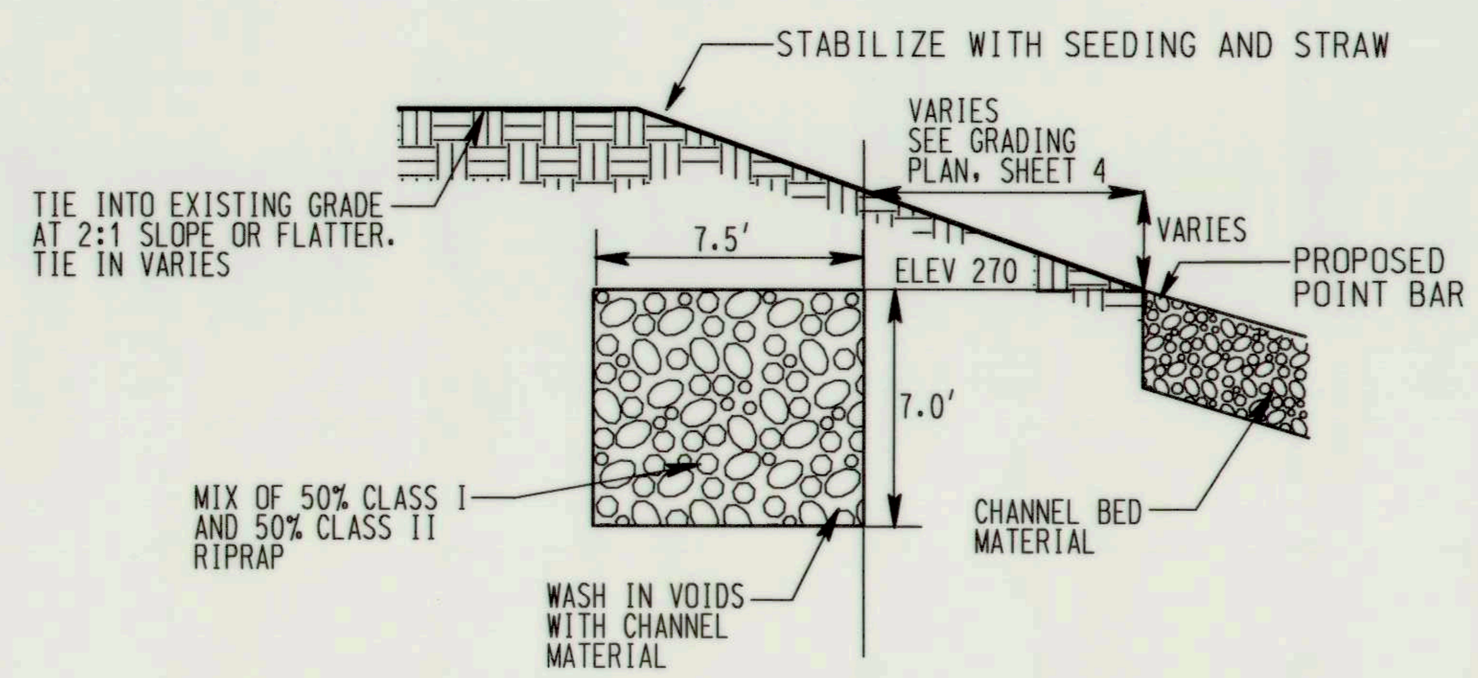
NOT TO SCALE

NOTES:
1. BENDWAY WEIRS SHALL BE BUILT PRIOR TO STONE TOE PROTECTION.
2. SEE SCHEDULE ON SHEET 4 FOR VALUES OF L.



STONE TOE PROTECTION KEY-IN

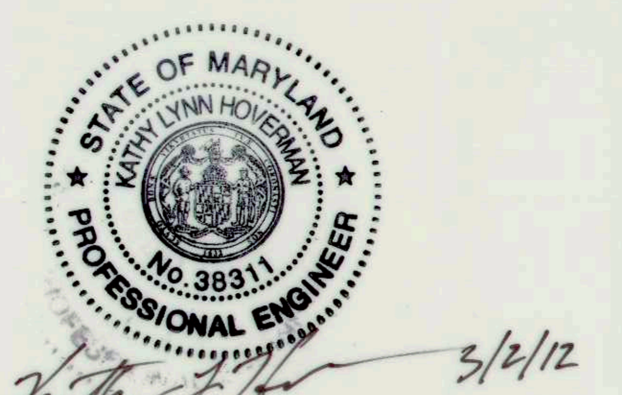
NOT TO SCALE



STONE TOE PROTECTION IN BURIED SECTION

NOT TO SCALE

NOTE: SEE SHEET 7 FOR STONE SIZING INFORMATION.



3/2/12

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. 38311. EXPIRATION DATE: JANUARY 06, 2014

PLOTTED: "10:39 AM on Wednesday, February 29, 2012"

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/6/12	CHIEF, BUREAU OF ENGINEERING — DATE 3/5/12
CHIEF, BUREAU OF UTILITIES — DATE 3/8/12	CHIEF, UTILITY DESIGN DIVISION — DATE 3/5/12

KCI TECHNOLOGIES
ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD SPARKS, MARYLAND 21152 TELEPHONE: (410) 316-7800 FAX: (410) 316-7818

DES: MDT/KLH			
DRN: JMS			
CHK: KLH			
DATE: FEBRUARY 2012	BY	NO.	REVISION	DATE

DETAILS

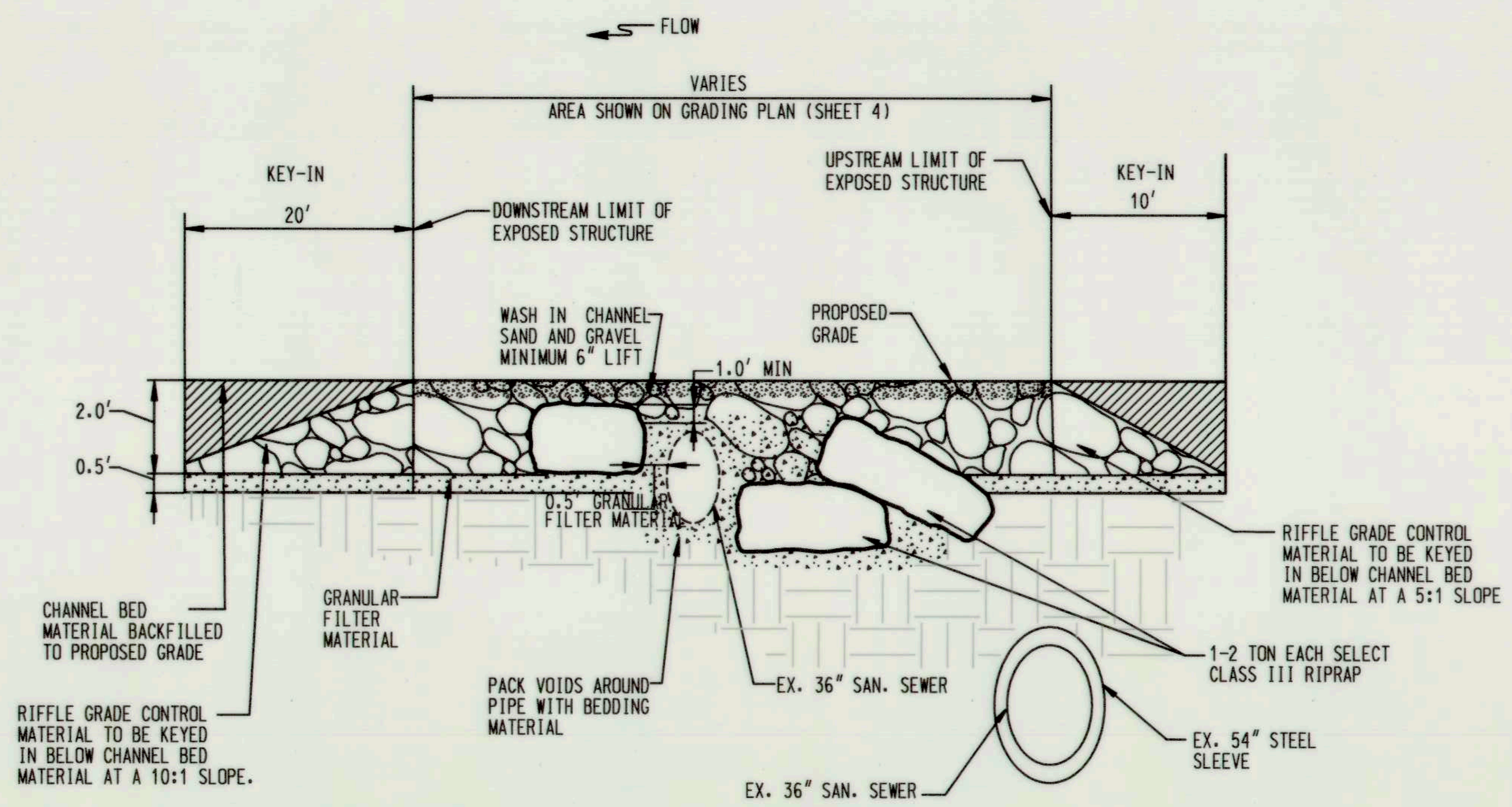
600' SCALE MAP NO.________ BLOCK NO.________

ALLVIEW DRIVE STREAM RELOCATION MITIGATION SITE B
CAPITAL PROJECT No. S-6175
CONTRACT No. 20-4736
ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN

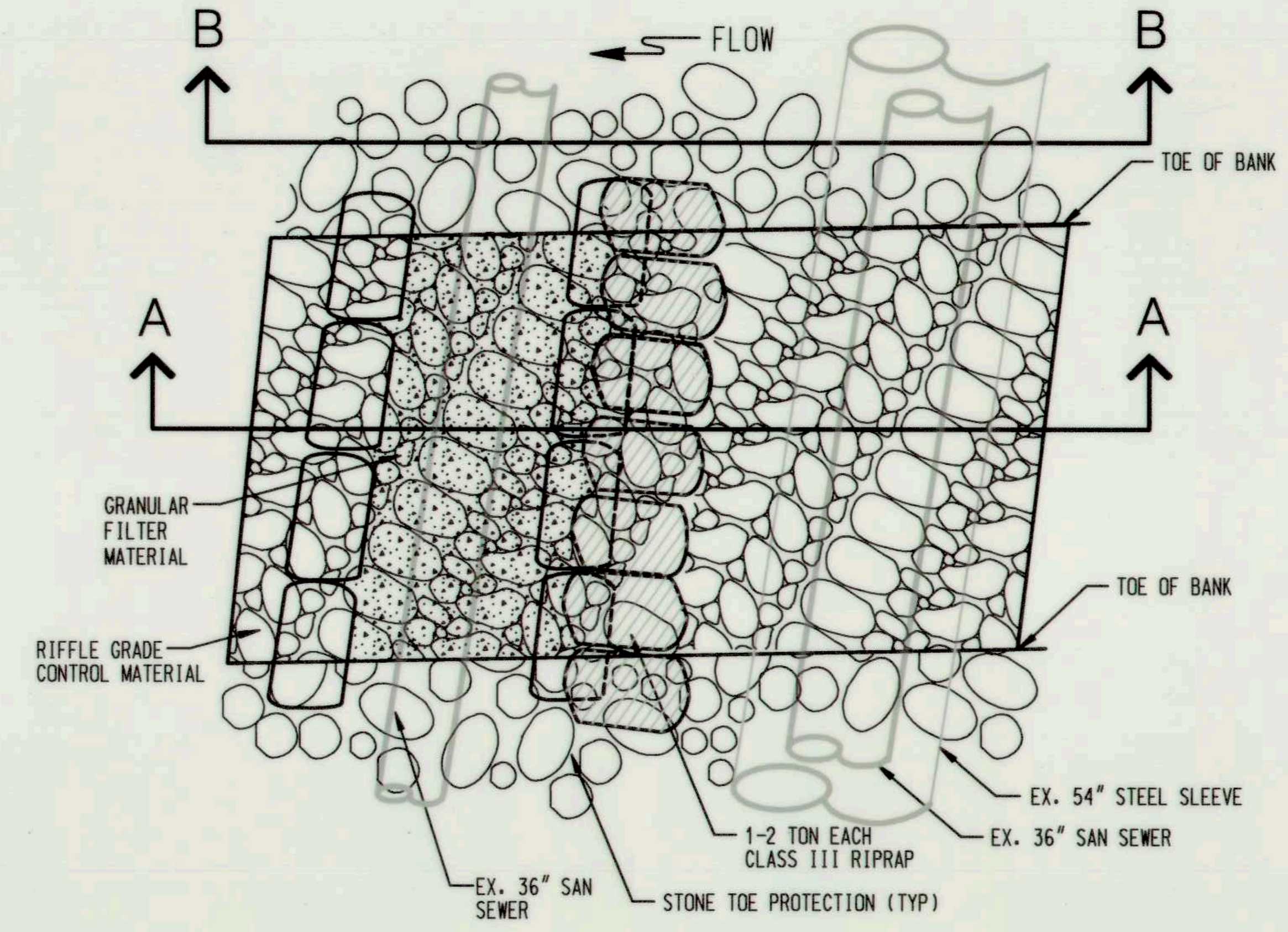
SHEET 6 OF 16

EP-11-03

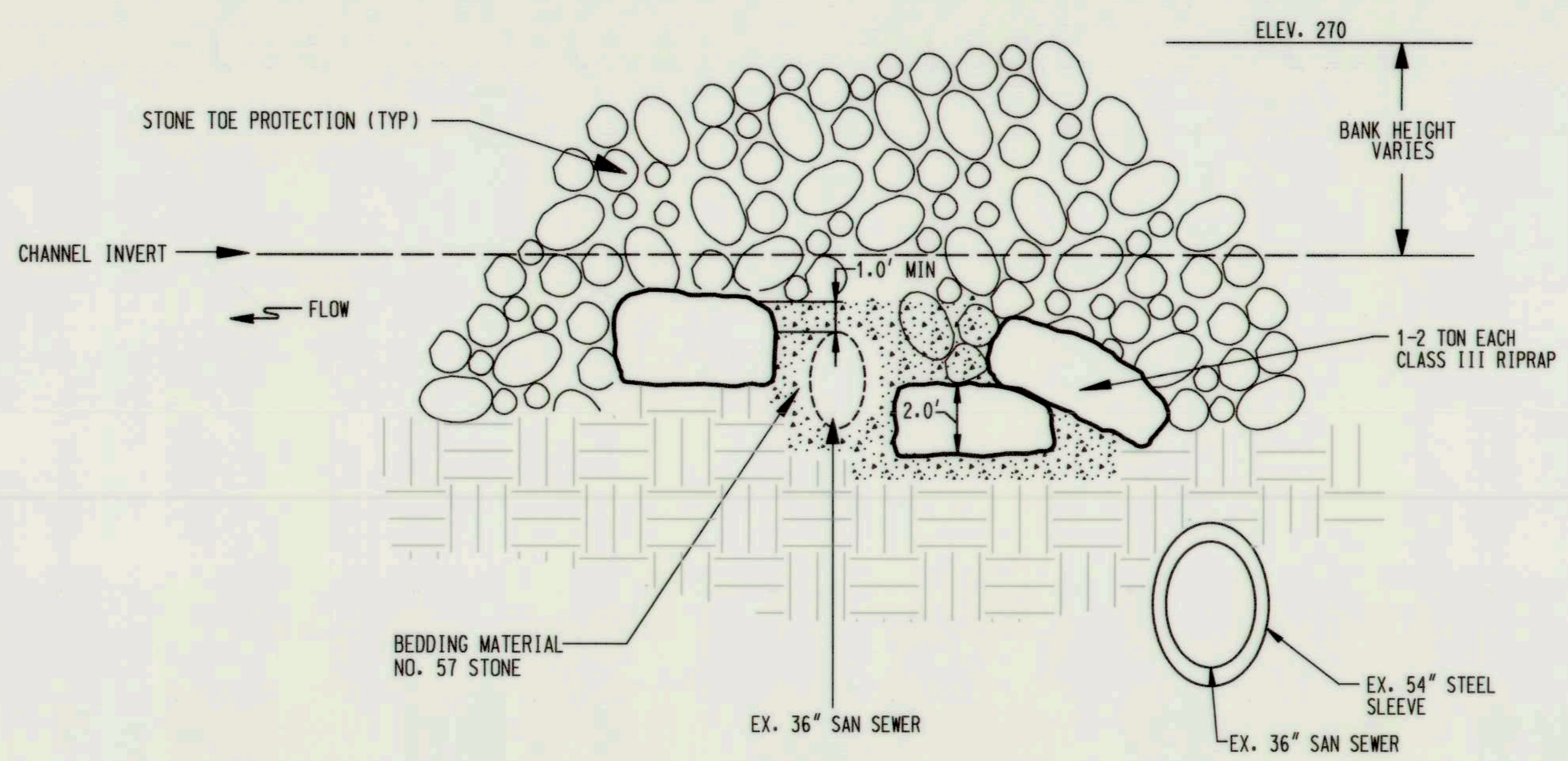


NOTES:
1. ALL RIFFLE GRADE CONTROL STRUCTURES SHALL BE CONSTRUCTED FROM DOWNSTREAM TO UPSTREAM
2. THE RIFFLE GRADE CONTROL MATERIAL SHALL BE PLACED TO ITS FULL DEPTH MOVING FROM ONE BANK TO THE OPPOSING BANK.
3. EX 36" SANITARY SEWER SHOWN ABOVE IS TO BE SURROUNDED WITH 12 INCHES OF #57 STONE AROUND ALL POINTS OF THE PIPE TO ENSURE POINT LOADING IS MINIMIZED FROM THE CLASS III RIPRAP. ANY DAMAGES TO THE EXISTING SANITARY SEWER WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. ALL FINES AND VIOLATIONS DUE TO PIPE DAMAGES AND SEWER FLOWS WILL BE THE CONTRACTOR'S SOLE RESPONSIBILITY AND WILL BE PAID BY THE CONTRACTOR.

TYPICAL GRADE CONTROL PROFILE A'–A
NOT TO SCALE



TYPICAL GRADE CONTROL – PLANVIEW
NOT TO SCALE



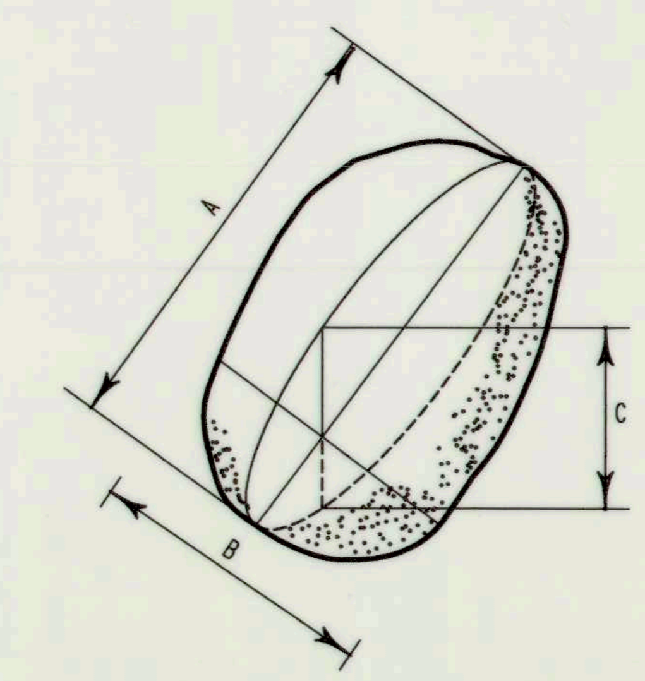
FACE VIEW– STONE TOE PROTECTION OVER SEWER B'–B
NOT TO SCALE

CHANNEL BED MATERIAL TABLE	
% less than	Size (inches)
100	2.8
84	2.5
60	1.9
50	1.4
30	0.9
10	0.2

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

CHANNEL SAND AND GRAVEL MATERIAL TABLE	
% less than	Particle Diameter Passing through Sieve (in) or Sieve No.
100	2.5 in
85	1 in
50	0.5 in
30	No. 40
16	No. 200

RIFFLE GRADE CONTROL MATERIAL TABLE	
50%	CLASS I RIPRAP
50%	CLASS II RIPRAP



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

ROCK AXIS DEFINITION
NOT TO SCALE

SIZES FOR STONE TYPES	
STONE TYPE	STONE SIZE
STONE TOE- ARMOR STONES	CLASS II RIPRAP
STONE TOE- LAUNCHABLE STONES	MIX OF 50% CLASS I AND 50% CLASS II RIPRAP
IMBRICATED STONE	3.0' x 2.0'-3.0' x 2.0'
BENDWAY WEIR STONE	MIX OF 20% CLASS I AND 80% CLASS II RIPRAP

TOE AND IMBRICATED STONES SHALL BE ANGULAR AND BLOCKY IN SHAPE, RESPECTIVELY

STATE OF MARYLAND KATHY LYNN HOVERMAN No. 38311 PROFESSIONAL ENGINEER

3/2/12

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. 38311, EXPIRATION DATE: JANUARY 06, 2014

PLOTTED: "10:42 AM on Wednesday, February 29, 2012" BY: Courtney Hugo Division P050 Natural Res Eng

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — 3/6/12 — DATE
CHIEF, BUREAU OF ENGINEERING — 3/5/12 — DATE
CHIEF, BUREAU OF UTILITIES — 3/5/12 — DATE
CHIEF, UTILITY DESIGN DIVISION — 3/5/12 — DATE

KCI TECHNOLOGIES
ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800 FAX: (410) 316-7818

DES: MDT/KLH
DRN: JMS
CHK: KLH
DATE: FEBRUARY 2012

BY	NO.	REVISION	DATE

DETAILS

600' SCALE MAP NO.________ BLOCK NO.________

ALLVIEW DRIVE STREAM RELOCATION
MITIGATION SITE B
CAPITAL PROJECT No. S-6175
CONTRACT No. 20-4736
ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 7 OF 16
EP-11-03

NOTES:

1. THE CONTRACTOR SHALL NOT UNLOAD OR DUMP MATERIALS SUCH AS RIPRAP AND IMBRICATED STONE ON TOP OF THE EXISITING SEWER LINES.
2. THE CONTRACTOR IS TO REMOVE STONE, CONCRETE, AND GRAVEL AND STABILIZE THE ACCESS ROAD AFTER CONSTRUCTION.
3. THE CONTRACTOR IS TO REMOVE STONE, CONCRETE, AND GRAVEL AND STABILIZE THE TEMPORARY STAGING AREAS AFTER CONSTRUCTION.
4. THE CONTRACTOR IS TO REMOVE ALL SEDIMENT CONTROL MEASURES UTILIZED UNDER THIS CONTRACT AT THE END OF CONSTRUCTION AND UPON COUNTY SEDIMENT CONTROL INSPECTOR APPROVAL, INCLUDING ALONG THE TEMPORARY STAGING / STOCKPILE AREAS, ACCESS ROADS, STREAM CROSSINGS AND STREAM BANKS.
5. THE EROSION SEDIMENT CONTROL (ESC) PLANS ARE PRESENTED IN 6 PHASES ON THREE SHEETS:
   a. ESC PHASES I & II – SHEET 9
   b. ESC PHASES III & IV – SHEET 10
   c. ESC PHASES VI & VI – SHEET 11
6. THE EROSION AND SEDIMENT CONTROL (ESC) NOTES AND DETAILS ARE PRESENTED ON THREE SHEETS: 12, 13 AND 14.

LEGEND

- LOD — LIMIT OF DISTURBANCE
- OSF — ORANGE SAFETY FENCE/ ORANGE CONSTRUCTION FENCE (TO BE PLACED ALONG ENTIRE LOD)
- PROPERTY LINE
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- EASEMENT LINE
- EXISTING SANITARY SEWER LINE
- WETLAND BOUNDARY
- WATERS OF THE US
- EXISTING TREE
- SCE — STABILIZED CONSTRUCTION ENTRANCE

THE PURPOSE OF THIS AS-BUILT PLAN IS TO SHOW THE FINAL GRADING OF THE ACCESS ROAD AND STAGING AREA.

STATE OF MARYLAND — PROFESSIONAL ENGINEER — NO. 38311

3/2/12

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THESE PLANS FOR SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT (HSCD) — DATE 3/20/12

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/12/12	CHIEF, BUREAU OF ENGINEERING — DATE 3/5/12
CHIEF, BUREAU OF UTILITIES — DATE 2/29/12	CHIEF, UTILITY DESIGN DIVISION — DATE 3/5/12

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS — 936 RIDGEBROOK ROAD, SPARKS, MARYLAND 21152, TELEPHONE: (410) 316-7800, FAX: (410) 316-7818

DES: RJK
DRN: JMS
CHK: JT / RJK
DATE: FEBRUARY 2012

BY	NO.	REVISION	DATE
GPI	1	AS-BUILT SURVEY	1/23/13

AS-BUILT SURVEY
SITE B ACCESS PLAN

600' SCALE MAP NO.________ BLOCK NO.________

ALLVIEW DRIVE STREAM RELOCATION MITIGATION SITE B

CAPITAL PROJECT No. S-6175
CONTRACT No. 20-4736

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SCALE 1" = 40'

SHEET AB 4 OF 4

SEQUENCE OF CONSTRUCTION SITE B

1. OBTAIN GRADING PERMIT AND OTHER NECESSARY PERMITS FOR CONSTRUCTION FROM THE COUNTY AT THE PRE-CONSTRUCTION MEETING.STREAM CLOSURE PERIOD IS FROM MARCH 1 TO JUNE 15, INCLUSIVE. NONTIDAL WETLANDS AND WATERWAYS PERMIT APPROVED OCTOBER 18, 2008 (MDE TRACKING #07-NT-3268/2007-64080) AND USACE PERMIT CENAB-OP-RMN (HOWARD CO. DPW/LITTLE PATUXENT PARALLEL SEWER INTERCEPTOR) 2007- 07575-M04 ISSUED ON OCTOBER 16, 2008.
2. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777, HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING / CONSTRUCTION INSPECTION DIVISION (410) 313-1880 AT LEAST SEVEN (7) DAYS PRIOR TO BEGINNING WORK.THE CONTRACTOR SHALL NOTIFY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) NON-TIDAL WETLANDS AND WATERWAYS INSPECTIONS, WATER MANAGEMENT ADMINISTRATION (410) 537-3510 AT LEAST FIVE (5) DAYS PRIOR TO BEGINNING OF ANY WORK.
3. ALL NECESSARY EASEMENTS OR RIGHTS-OF-ENTRY SHALL BE SECURED PRIOR TO THE START OF THE PROJECT.
4. THE CONTRACTOR SHALL COORDINATE AN ON-SITE PRE-CONSTRUCTION MEETING WITH THE COUNTY PROJECT MANAGER, MARYLAND DEPARTMENT OF THE ENVIRONMENT REPRESENTATIVE, HOWARD COUNTY CONSTRUCTION INSPECTION REPRESENTATIVE, AND BUREAU OF UTILITIES REPRESENTATIVE.
5. THE CONTRACTOR AND ITS DRIVERS SHALL TAKE EXTRA PRECAUTION WHEN DRIVING AND HAULING MATERIALS ON THE ACCESS ROAD, SITE AREAS AND OVER THE TEMPORARY ACCESS BRIDGE AND CHANNEL TO MINIMIZE IMPACT TO EXISITNG FEATURES, SUCH AS TREES, WETLANDS, U.S. WATERS, THE STREAM BED AND CHANNEL SLOPES AND NEWLY CONSTRUCTED FEATURES.

PHASE I, STAGE 1 (3 DAYS)

6. CONTRACTOR SHALL STAKE OUT THE LOD AND TREE SAVES PRIOR TO THE PRE-CONSTRUCTION MEETING.
7. CONSTRUCT THE STABILIZED ENTRANCE OFF THE END OF ALLVIEW DRIVE.
8. CLEAR AND GRUB ONLY AS NECESSARY FOR INSTALLATION OF EROSION AND SEDIMENT CONTROL DEVICES. INSTALL ORANGE SAFETY FENCE, SILT FENCE AND UTILIZE THE SEWER EASEMENT FOR TEMPORARY ACCESS DRIVE. (NOTE: THE UPPER SILT FENCE IS STILL IN PLACE FROM THE SEWER CONTRACT AND WILL BE USED AS APPROVED BY THE COUNTY EROSION CONTROL INSPECTOR.)

PHASE I, STAGE 2: (STA. 1+85 TO STA. 2+70, TEMP CHANNEL, BRIDGE (5 DAYS)

9. INSTALL SAND BAG DIVERSIONS IN THE RIVER CHANNEL ACROSS THE UPSTREAM AND DOWNSTREAM ENDS OF THE RIVER CHANNEL BOTTOM AND LEFT BANK AND TEMPORARY RIGHT DIVERSION CHANNEL TO BE CONSTRUCTED. DEWATER AREA BEHIND THE SANDBAGS.
10. EXCAVATE THE CHANNEL FROM APPROXIMATELY STATION 1+85 TO 2+70. CONSTRUCT THE PERMANENT CHANNEL BOTTOM AND LEFT BANK CHANNEL LINING, RIFFLE GRADE CONTROL LAYER AND THE LEFT BANK IMBRICATED STONE PROTECTION. INSTALL THE TEMPORARY RIGHT BANK AND LINING AND THE TEMPORARY ACCESS BRIDGE ACROSS THE CHANNEL.
11. UPON ESC INSPECTOR APPROVAL, REMOVE THE SANDBAG DIVERSIONS AROUND THE DIVERSION CHANNEL AND INSTALL THE SANDBAG DIVERSIONS DOWNSTREAM OF THE TEMPORARY ACCESS BRIDGE (STATION 0+00 TO 1+85) AND UPSTREAM (STATION 2+70 TO 4+60). DEWATER AREAS BEHIND AND CONTINUE WITH PHASE II.

PHASE II (STA. 0+00 TO STA. 4+25 RIGHT (SOUTH) BANK (2 WEEKS)

12. FILL AND GRADE THE RIGHT OVERBANK AREA AND EXISTING STREAM MEANDER. CONSTRUCT THE NEW RIGHT CHANNEL BANK AND INSTALL THE BANK LINING MATERIALS INCLUDING THE STONE TOE AND IMBRICATED BANK PROTECTION WHILE MAINTAINING THE TEMPORARY ACCESS BRIDGE.
13. INSTALL TEMPORARY IMBRICATED TIE BACK WALL RIGHT BANK, FROM STATION 4+00 TO 4+25.
14. INSTALL RIFFLE GRADE CONTROL STA. 1+30 TO 1+90.
15. UPON ESC INSPECTOR APPROVAL, CONTINUE WITH PHASE III.

LEGEND

Symbol	Description
— LOD —	LIMIT OF DISTURBANCE
— OSF —	ORANGE SAFETY FENCE/ ORANGE CONSTRUCTION FENCE (TO BE PLACED ALONG ENTIRE LOD)
— SF —	SILT FENCE
oooooooo	SAND BAG DIVERSION
	DIVERSION PIPE
SP	PUMP
PUMP	SUMP PIT
FB	FILTER BAG
	PROPERTY LINE
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	PROPOSED MINOR CONTOUR
	PROPOSED MAJOR CONTOUR
	EASEMENT LINE
	EXISTING SANITARY SEWER LINE
	WETLAND BOUNDARY
— WUS —	WATERS OF THE US
	EXISTING TREE

STATE OF MARYLAND · PROFESSIONAL ENGINEER · NO. 38311

3/2/12

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THESE PLANS FOR SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT (HSCD) 3/20/12 DATE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS 3/12/12 DATE
CHIEF, BUREAU OF ENGINEERING 3/5/12 DATE
CHIEF, BUREAU OF UTILITIES 3/8/12 DATE
CHIEF, UTILITY DESIGN DIVISION 3/5/12 DATE

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD, SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800 FAX: (410) 316-7818

DES: RJK
DRN: JMS
CHK: JT / RJK
DATE: FEBRUARY 2012

BY	NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL PLAN PHASES I & II

600' SCALE MAP NO.________ BLOCK NO.________

ALLVIEW DRIVE STREAM RELOCATION MITIGATION SITE B

CAPITAL PROJECT No. S-6175
CONTRACT No. 20-4736

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SCALE 1" = 20'

SHEET 9 OF 16

EP-11-03

PLOTTED: "02:51 PM on Wednesday, February 01, 2012"

LEGEND

- LOD — LIMIT OF DISTURBANCE
- OSF — ORANGE SAFETY FENCE/ ORANGE CONSTRUCTION FENCE (TO BE PLACED ALONG ENTIRE LOD)
- SF — SILT FENCE
- SAND BAG DIVERSION
- DIVERSION PIPE
- SP — PUMP
- PUMP — SUMP PIT
- FB — FILTER BAG
- PROPERTY LINE
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- EASEMENT LINE
- EXISTING SANITARY SEWER LINE
- WETLAND BOUNDARY
- WUS — WATERS OF THE US
- EXISTING TREE

SEQUENCE OF CONSTRUCTION SITE B (CONTINUED)

PHASE III (STA. 4+00 TO STA. 6+50 RIGHT (SOUTH) BANK (1 - 1/2 WEEKS)

15. INSTALL TEMPORARY SANDBAG DIVERSION FROM STATION 2+50 TO 6+50.
16. REMOVE THE TEMPORARY IMBRICATED WALL STATION 4+00 TO 4+25, FILL GRADE AND CONSTRUCT THE NEW RIGHT CHANNEL BANK AND INSTALL THE BANK LINING MATERIALS INCLUDING THE IMBRICATED BANK PROTECTION.
17. BEGIN DISMANTLING THE TEMPORARY ACCESS BRIDGE AND CONSTRUCTING THE RIGHT PORTION OF THE NEW RIVER CHANNEL. EXCAVATE THE NEW CHANNEL AND INSTALL RIFFLE GRADE CONTROL STATION 1+85 TO 2+15 AND TIE INTO THE EXISTING CHANNEL.
18. REMOVE THE SANDBAG DIVERSIONS ON THE UPSTREAM AND DOWNSTREAM ENDS OF THE TEMPORARY ACCESS CHANNEL AND BRIDGE. REMOVE THE TEMPORARY BRIDGE AND IMBRICATED TIEBACKS. REMOVE THE TEMPORARY RIGHT BANK OF THE TEMPORARY CHANNEL AND CONSTRUCT THE REMAINDER OF THE LEFT HALF OF THE RIVER CHANNEL BOTTOM AND RIFFLE GRADE. (STA. 1+85 TO 2+60)
19. UPON ESC INSPECTOR APPROVAL, CONTINUE WITH PHASE IV.

PHASE IV (STA. 0+00 TO STA. 1+85 LEFT (NORTH) BANK (2 WEEKS)

20. INSTALL RIFFLE GRADE CONTROL IN THE CHANNEL AT THE CONFLUENCE OF LITTLE PATUXENT RIVER AND BEAVER RUN BRANCH CHANNEL AND UTILIZE GRADE CONTROL TO CROSS BEAVER RUN BRANCH CHANNEL TO WORK ON THE LEFT BANK DOWNSTREAM OF THE CONFLUENCE.
21. INSTALL TEMPORARY SANDBAG DIVERSION FROM STATION 0+00 TO STATION 1+50 AT THE CONFLUENCE WITH BEAVER RUN BRANCH. DEWATER.
22. FILL, GRADE AND CONSTRUCT THE NEW LEFT CHANNEL BANK OF LITTLE PATUXENT RIVER, BENDWAY WEIRS AND IMPROVEMENTS ON BEAVER RUN BRANCH.
23. REMOVE THE SANDBAG DIVERSIONS.
24. UPON ESC INSPECTOR APPROVAL, CONTINUE WITH PHASE V.

STATE OF MARYLAND — KATHY LYNN HOVERMAN — No. 38311 — PROFESSIONAL ENGINEER

3/2/12

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HOWARD SOIL CONSERVATION DISTRICT (HSCD) — DATE 3/20/12

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 3/12/12	CHIEF, BUREAU OF ENGINEERING	DATE 3/5/12
CHIEF, BUREAU OF UTILITIES	DATE 3/8/12	CHIEF, UTILITY DESIGN DIVISION	DATE 3/5/12

KCI TECHNOLOGIES
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DES: RJK				
DRN: JMS				
CHK: JT / RJK				
DATE: FEBRUARY 2012	BY	NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL PLAN PHASES III & IV

600' SCALE MAP NO.________ BLOCK NO.________

ALLVIEW DRIVE STREAM RELOCATION MITIGATION SITE B

CAPITAL PROJECT No. S-6175
CONTRACT No. 20-4736

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SCALE 1" = 20'

SHEET 10 OF 16

EP-11-03

SEE SITE B ACCESS PLAN (SHEET 8)

ACCESS FROM ALLVIEW DRIVE

LIMIT OF SF

EX. 36" SAN. SEWER

EX. 36" SAN. SEWER

BEAVER RUN BRANCH

LITTLE PATUXENT RIVER

LITTLE PATUXENT RIVER

NATHAN J. BARTON
REBECCA L. BARTON
L.5525, F.242
PB.6, P.56
TM.42, P.193

LOT 2
COLUMBIA ASSOCIATION INC.
L.3324, F.191
VILLAGE OF OWEN BROWN
SECTION 5 AREA 2
PLAT# 9691
2 OF 6
TM.36, P.402

LOT 343
L.3324, F.191
COLUMBIA ASSOCIATION INC.
VILLAGE OF OWEN BROWN
LOT 343, A RESUBDIVISION OF LOT 339
PLAT#3904
TM.42, P.422

SSMH(30570)
TOP: 275.55

PHASE VI DEWATERING PRACTICE

PHASE VI IMPROVEMENTS

PHASE V IMPROVEMENTS

NOTE: MH RIM IS 2 FT. ABOVE GRADE

PHASE V SANDBAG DIVERSION TIE-IN

PHASE V DEWATERING PRACTICE

PUMP

FB

FLOW

EXISTING SANITARY SEWER LINE

EXISTING GABION BASKET TO BE REMOVED (SEE DESIGN SHEET)

WOODS

WEEDS

WOODED

MAC BIKE TRAIL

WOODEN FOOT

LOT 2
COLUMBIA ASSOCIATION INC.
L.3324, F.191
VILLAGE OF OWEN BROWN
SECTION 5 AREA 2
PLAT# 9691
1 OF 6
TM.36, P.402

LEGEND

- LOD — LIMIT OF DISTURBANCE
- OSF — ORANGE SAFETY FENCE/ ORANGE CONSTRUCTION FENCE (TO BE PLACED ALONG ENTIRE LOD)
- SF — SILT FENCE
- SAND BAG DIVERSION
- DIVERSION PIPE
- SP — PUMP
- PUMP — SUMP PIT
- FB — FILTER BAG
- PROPERTY LINE
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- EASEMENT LINE
- EXISTING SANITARY SEWER LINE
- WUS — WETLAND BOUNDARY
- WATERS OF THE US
- EXISTING TREE

SEQUENCE OF CONSTRUCTION SITE B (CONTINUED)

PHASE V (STA. 2+50 TO STA. 4+40 LEFT (NORTH) BANK (1-1/2 WEEKS)

25. INSTALL TEMPORARY SANDBAG DIVERSION FROM STATION 2+50 TO 4+40.
26. FILL AND GRADE THE LEFT OVERBANK AREA AND EXISTING STREAM MEANDER. CONSTRUCT THE NEW LEFT CHANNEL BANK AND INSTALL THE BANK LINING MATERIALS INCLUDING THE STONE TOE.
27. UPON ESC INSPECTOR APPROVAL, CONTINUE WITH PHASE VI.
28. REMOVE THE SANDBAG DIVERSIONS.

PHASE VI (STA. 4+40 TO STA. 6+50 LEFT BANK (1 - 1/2 WEEKS)

29. INSTALL TEMPORARY SANDBAG DIVERSION FROM STATION 4+40 TO 6+50.
30. FILL AND GRADE THE LEFT OVERBANK AREA AND EXISTING STREAM MEANDER. CONSTRUCT THE NEW LEFT CHANNEL BANK AND IMPROVEMENTS.
31. UPON ESC INSPECTOR APPROVAL, CONTINUE WITH FINAL ITEMS.
32. REMOVE THE SANDBAG DIVERSIONS.

FINAL

33. INSTALL LANDSCAPING AS SPECIFIED ON THE LANDSCAPE PLANS.
34. WHEN ALL AREAS ARE STABILIZED AND PERMANENT VEGETATION IS ESTABLISHED, AND WITH PERMISSION OF THE HOWARD COUNTY EROSION SEDIMENT CONTROL INSPECTOR, REMOVE ALL REMAINING EROSION AND SEDIMENT CONTROL MEASURES AND PERMANENTLY STABILIZE ANY AREAS DISTURBED BY THE REMOVAL PROCESS.
35. CONDUCT A FINAL "AS-BUILT" SURVEY OF ALL PROJECT STREAM MITIGATION MEASURES AND THE STREAM PROFILE WITHIN THE PROJECT AREA. SUBMIT "AS-BUILT" PLANS TO THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, STORMWATER MANAGEMENT DIVISION WITHIN 30 DAYS OF COMPLETION OF CONSTRUCTION.

STATE OF MARYLAND
KIMBERLY LYNN HOEHMAN
No. 38311
PROFESSIONAL ENGINEER
3/6/12

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. 38311, EXPIRATION DATE: JANUARY 06, 2014

THESE PLANS FOR SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT (HSCD) — DATE 3/26/12

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/12/12
CHIEF, BUREAU OF UTILITIES — DATE 3/9/12
CHIEF, BUREAU OF ENGINEERING — DATE 3/5/12
CHIEF, UTILITY DESIGN DIVISION — DATE 3/5/12

KCI TECHNOLOGIES
ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818

DES: RJK					
DRN: JMS					
CHK: JT / RJK					
DATE: FEBRUARY 2012	BY	NO.	REVISION	DATE	600' SCALE MAP NO. ____ BLOCK NO. ____

EROSION AND SEDIMENT CONTROL PLAN PHASES V & VI

ALLVIEW DRIVE STREAM RELOCATION MITIGATION SITE B

CAPITAL PROJECT No. S-6175
CONTRACT No. 20-4736

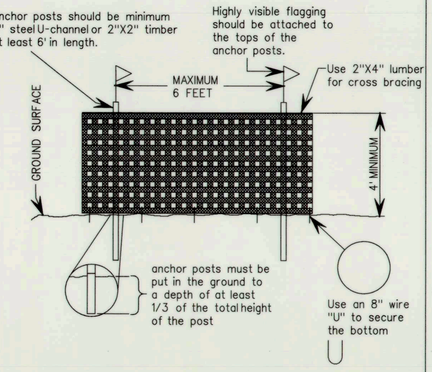
ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SCALE 1" - 20'

SHEET 11 OF 16

EP-11-03

PLOTTED: "03:01 PM on Wednesday, February 01, 2012"
BY: Christopher Debel Division: P050 Natural Res. Emp
FILE: M:\2006\06108795\03\drawings\ES04_LPAT_B.dgn

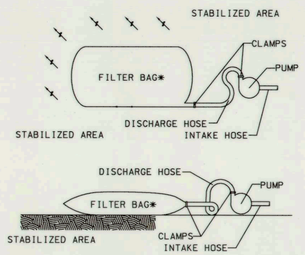


DETAIL FOR
BLAZE ORANGE PLASTIC
MESH SAFETY FENCE
NOT TO SCALE

STANDARD SYMBOL

—— OSF ——

FILTER BAG



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

SILT BAG DEWATERING DEVICE FOR PUMPED WATER
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.
2. CLAMP PUMP DISCHARGE HOSES SECURELY INTO FILTER BAGS.
3. LIMIT PUMPING RATE TO $^1/_2$ THE MANUFACTURER'S MAXIMUM PUMPING RATE.
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.

FILTER BAG SPECIFICATIONS

1. Filter bag shall be made of non-woven geotextile with a minimum surface area of 225 square feet per side.
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 bag.
7. Pumping rates shall be controlled to prevent excessive pressure within the filter bag. As the bag bcomes 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 224 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/FT2	Astm D-4491
Permitivity (SE)	1.3	Astm D-4991
UV Resistance	70%	Astm D-4355
Apparent Opening Size	40-80	Astm D4751

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.

HOWARD SOIL CONSERVATION DISTRICT

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:

1. 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.)
2. 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/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 (.05 lbs/100sq. 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 the 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 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.

** For areas within LOD with no designated planting area designations or symbols, use permanent seeding above. For areas with landscaping, refer to landscape plans for any alternative measures or mixes for permanent seeding.

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 bushel per acre of annual rye (3.2 lbs/1000 sq. ft.). For the period May 1 - August 14, seed with 3 lbs/acre of weeping lovegrass (.07 lbs/1000 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.

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

I. This practice is limited to areas having 2:1 or flatter slopes where:
   a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
   b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
   c. The original soil to be vegetated contains material toxic to plant growth.
   d. The soil is so acidic that treatment with limestone is not feasible.

II. 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

I. 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

II. Topsoil Specifications - Soil to be used as topsoil must meet the following:
   i. 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,k trash, or other materials larger than 1-1/2" in diameter.
   ii. Topsoil must be fee of plants or plant parts such as bermuda grass, quackgrass, Johnsongrass, nutsedge, poison ivy, thistle, or others as specified.
   iii. 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 uniformly over designated areas and worked into the soil in 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:
   i. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section I- Vegetative Stabilization Methods and Materials.
   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.
   b. Organic content of topsoil shall be less than 1.5 percent by weight.
   c. Topsoil having soluble salt content greater than 500 parts per million shall not be used.
   d. 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 has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.

Note: 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

   ii. 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
   i. 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.
   ii. Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4" - 8" higher in elevation.
   iii. 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.
   iv. Topsoil shall not be placed while the topsoil or subsoil is in a frozen or muddy condition, when the subsoils is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

HOWARD COUNTY CONSERVATION DISTRICT

STANDARD SEDIMENT CONTROL NOTES

1. 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).
2. 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.
3. 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 MARYAND 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.
6. All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.
7. Site Analysis:

Total Area of Site	3.20	Acres
Area Disturbed	3.20	Acres
Area to be roofed or paved	0.00	Acres
Area to be vegetatively stabilized	2.50	Acres
Total Cut	2380	Cu. Yds.
Total Fill	3317	Cu. Yds.
Offsite waste/borrow area location *		

8. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
9. Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
10. 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 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 area, if needed, shall have an approved erosion and sediment control plan and active permit.

STATE OF MARYLAND — KATHY LYNN HOWERTON — No. 38311 — PROFESSIONAL ENGINEER

3/2/12

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. 38311, EXPIRATION DATE: JANUARY 06, 2014

THESE PLANS FOR SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT (HSCD) — DATE 3/26/12

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/2/12
CHIEF, BUREAU OF ENGINEERING — DATE 3/5/12
CHIEF, BUREAU OF UTILITIES — DATE 3/5/12
CHIEF, UTILITY DESIGN DIVISION — DATE 3/5/12

KCI TECHNOLOGIES
ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818

DES: RJK
DRN: JMS
CHK: JT / RJK
DATE: FEBRUARY 2012

BY	NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL NOTES & DETAILS

600' SCALE MAP NO. _____ BLOCK NO. _____

ALLVIEW DRIVE STREAM RELOCATION MITIGATION SITE B

CAPITAL PROJECT No. S-6175
CONTRACT No. 20-4736

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 12 OF 16

EP-11-03

PLOTTED: 03:03 PM on Wednesday, February 01, 2012
By: Christopher Diebel Division P050 Natural Res. Emp
FILE: M:\2008\0108795.09\drawings\ES05_LPAT-B.dgn

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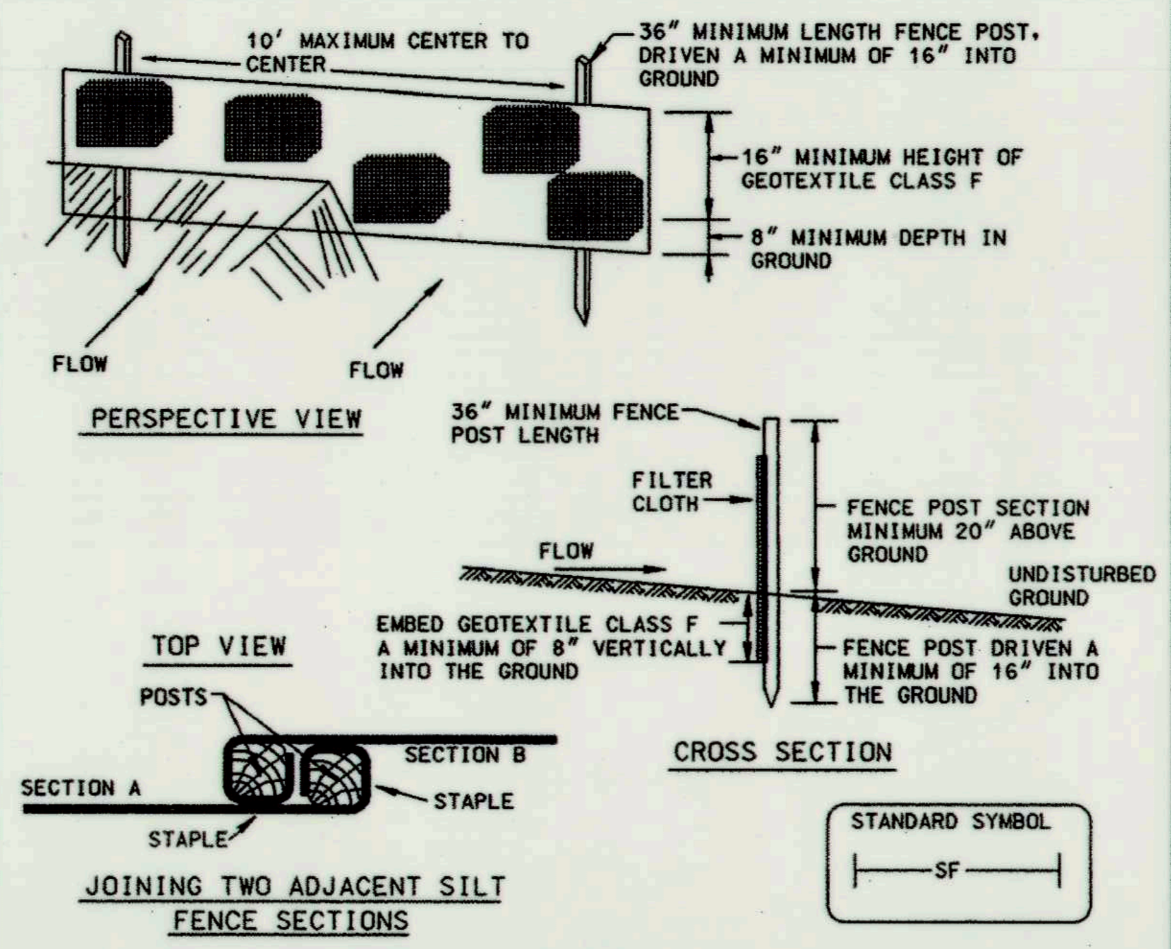
BY: Christopher Deibel Division: P050 NaturalRes Emp
FILE: M:\2008\01081795.09\drawings\ES06_LPAT-B.dgn

DETAIL 22. - SILT FENCE



Construction Specifications

1. Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be $1\frac{1}{2}$" x $1\frac{1}{2}$" square (minimum) cut, or $1\frac{3}{4}$" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighting not less than 1.00 pond per linear foot.

2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal ft^2/ minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

3. Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.

4. Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE | PAGE E - 15 - 3 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

SILT FENCE

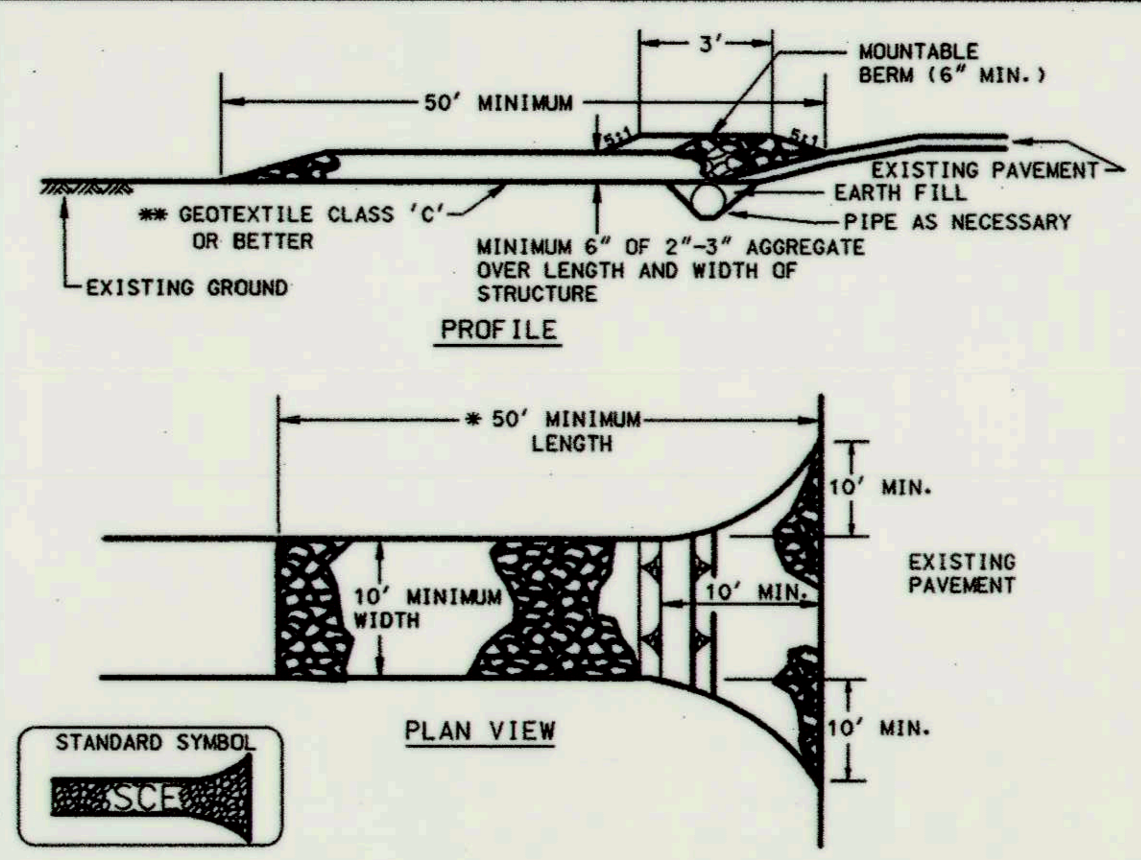
Silt Fence Design Criteria

Slope Steepness	(Maximum) Slope Length	(Maximum) Silt Fence Length
Flatter than 50:1	unlimited	unlimited
50:1 to 10:1	125 feet	1,000 feet
10:1 to 5:1	100 feet	750 feet
5:1 to 3:1	60 feet	500 feet
3:1 to 2:1	40 feet	250 feet
2:1 and steeper	20 feet	125 feet

Note: In areas of less than 2% slope and sandy soils (USDA general classification system, soil Class A) maximum slope length and silt fence length will be unlimited. In these areas a silt fence may be the only perimeter control required.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE | PAGE E - 15 - 3A | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



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

STABILIZED CONSTRUCTION ENTRANCE

Construction Specification

1. Length - minimum of 50' (*30' for single residence lot).

2. Width - 10' minimum, should be flared at the existing road to provide a turning radius.

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.

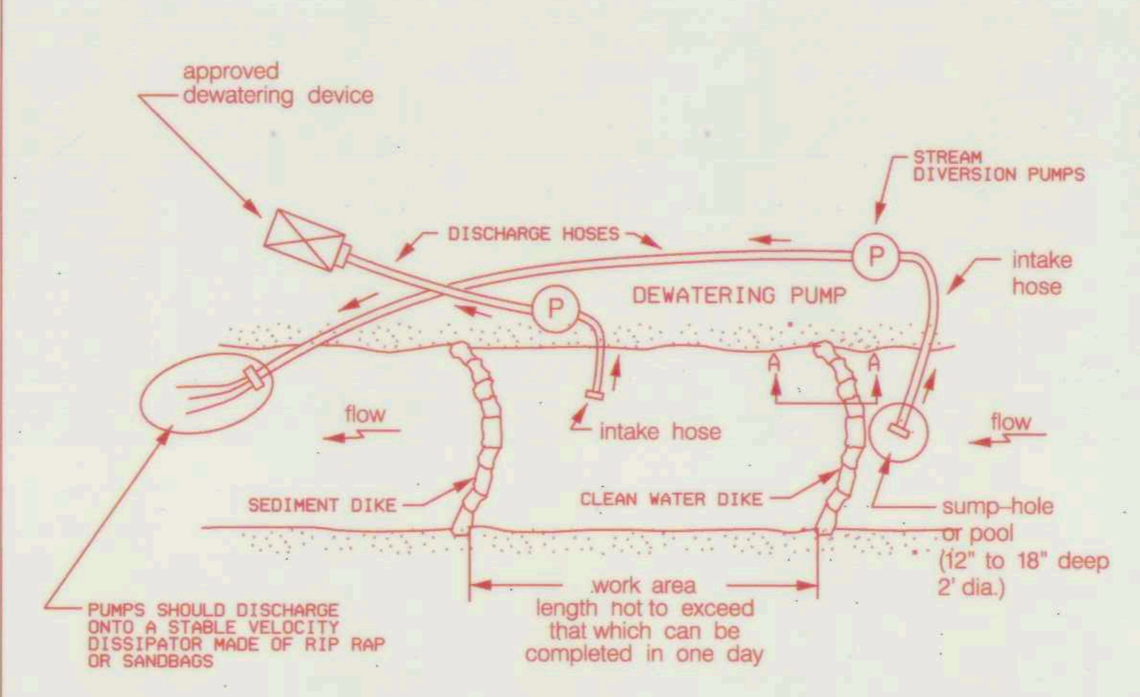
5. Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6" of stone 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.

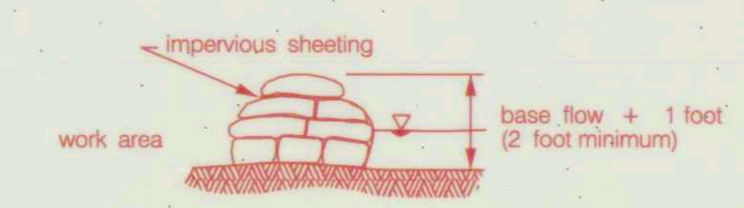
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE | PAGE F - 17 - 3A | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 1.2: PUMP-AROUND PRACTICE

PLAN VIEW



SECTION A-A



CROSS SECTION OF SANDBAG DIKE

* filter fabric shall be used in place of impervious sheeting at the downstream sand bag for each stage of work.

TEMPORARY INSTREAM CONSTRUCTION MEASURES | REVISED NOVEMBER 2000 PAGE 1.2 - 3 | MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

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 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.

2. 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 construction.

3. 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.

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 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.

6. 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.

7. 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.

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 used only when 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 matting 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. Finally, 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 pumping the stream flow around the work area. This water should discharge onto the same velocity dissipater 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 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.

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.

STATE OF MARYLAND
KATHY LYNN HOVERMAN
No. 38311
PROFESSIONAL ENGINEER

3/2/12

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. 38311. EXPIRATION DATE: JANUARY 06, 2014

10/2/12

THESE PLANS FOR SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT (HSCD) — DATE 3/20/12

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 3/12/12	CHIEF, BUREAU OF ENGINEERING	DATE 3/5/12
CHIEF, BUREAU OF UTILITIES	DATE 3/8/12	CHIEF, UTILITY DESIGN DIVISION	DATE 3/5/12

KCI TECHNOLOGIES
ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818

DES: RJK	BY	NO.	REVISION	DATE
DRN: JMS	AMP	1	Addition of standard pump around practice detail	10/02/12
CHK: JT / RJK				
DATE: FEBRUARY 2012				

EROSION AND SEDIMENT CONTROL DETAILS I

600' SCALE MAP NO.______ BLOCK NO.______

ALLVIEW DRIVE STREAM RELOCATION MITIGATION SITE B

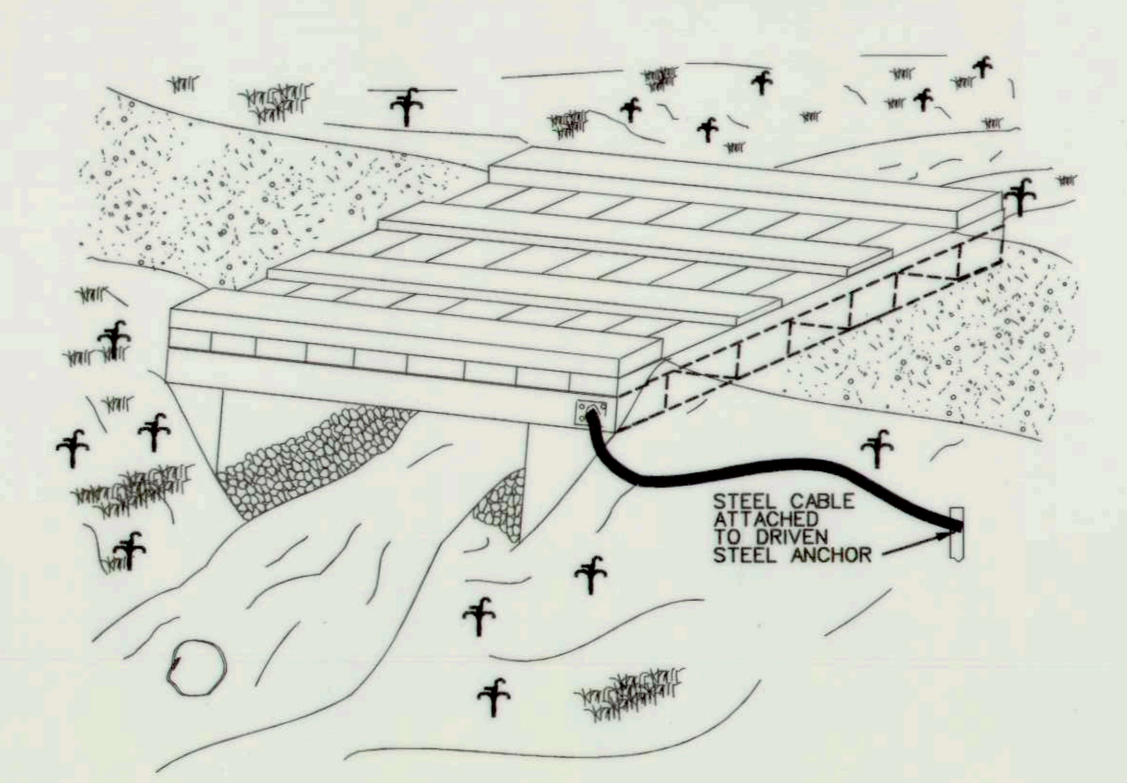
CAPITAL PROJECT No. S-6175
CONTRACT No. 20-4736

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SCALE N/A

MGWC DETAIL 4.8: TEMPORARY ACCESS BRIDGE

SKETCH



STREAM CROSSINGS	PAGE 4.8 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

MGWC DETAIL 4.8: TEMPORARY ACCESS BRIDGE

DESCRIPTION

A temporary access bridge is a stream crossing made of wood, metal, or other materials designed to limit the amount of disturbance to the stream banks and bed.

EFFECTIVE USES & LIMITATIONS

Temporary access bridges are the preferred method of waterway crossing since they typically cause the least disturbance to the waterway bed and banks, pose the least chance for interference with fish migration, and can be quickly removed and reused.

MATERIAL SPECIFICATIONS

Stringers: Stringers should either be logs, sawn timber, prestressed concrete beams, metal beams, or other approved materials. Deck Materials: Deck materials should be of sufficient strength to support the anticipated load.

CONSTRUCTION SEQUENCE

All erosion and sediment control devices, including stream diversions, should be implemented as the first order of business according to a plan approved by the WMA or local authority. Dewatering basins should be built as needed and swales or ditches should be used to prevent surface drainage from entering the stream via the bridge crossing. (See the 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control.) The proposed construction, maintenance, and removal sequence is as follows:

1. Abutments should be placed parallel to, and on, stable banks such that the structure is at or above bankfull depth to prevent the entrapment of floating materials and debris.

2. Temporary access bridges should be constructed to span the entire channel. If the bankfull channel width exceeds 8 feet (2.5 meters), then a footing, pier, or other bridge support may be constructed within the waterway. No support will be permitted within the channel for waterways less than 8 feet wide. One additional bridge support will be permitted for each additional 8-foot width of the channel.

3. All decking members should be placed perpendicularly 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.

4. Although run planks are optional, they may be necessary to properly distribute loads. One run plank should be provided for each track of the equipment wheels and should be securely fastened to the length of the span.

5. Curbs or fenders may be installed along the outer sides of the deck to provide additional safety.

6. Bridges should be securely anchored at one end using steel cable or chain to prevent the bridge from floating downstream and possibly causing an obstruction to the flow. Anchoring at only one end will prevent channel obstruction in the event that flood waters float the bridge. Acceptable anchors are large trees, boulders, or driven steel anchors.

7. All areas disturbed during installation should be stabilized within 14 calendar days in accordance with a revegetation plan approved by the WMA.

8. Periodic inspection should be performed by the user to ensure that the bridge, streambed, and stream banks are maintained and not damaged.

9. Maintenance should be performed as needed to ensure that the structure complies with all standards and specifications. This should include the removal of trapped sediment and debris which should then be disposed of and stabilized outside the floodplain.

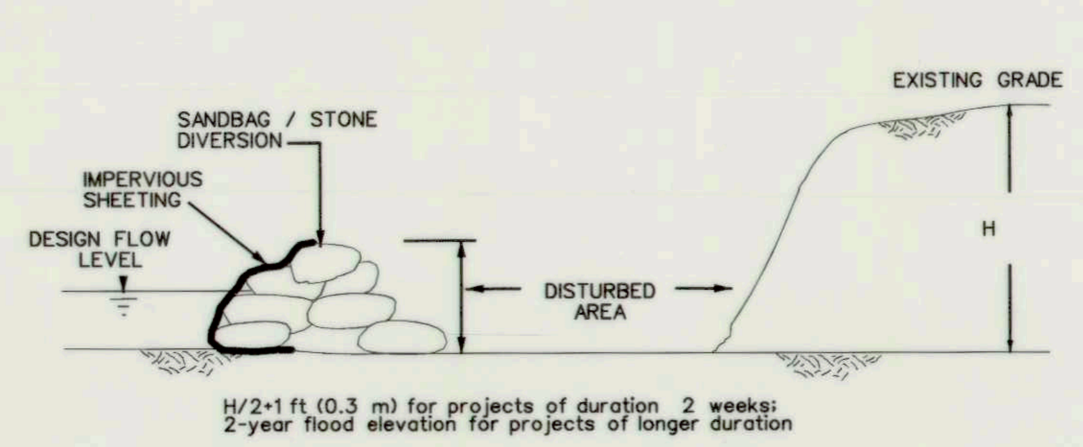
10. When the temporary bridge is no longer needed, all structures including abutments and other bridging materials should be removed within 14 calendar days. In all cases, the bridge materials should be removed within 1 year of installation. Removal of the bridge and clean-up of the area, including protection and stabilization of disturbed stream banks, should be accomplished without the use of construction equipment in the waterway.

STREAM CROSSINGS	PAGE 4.8 - 1& 2	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

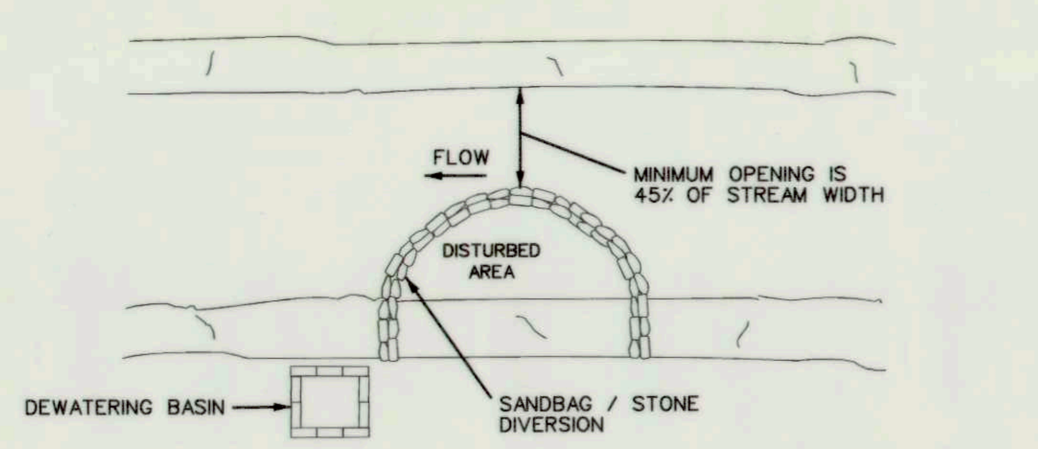
Note:
The channel width exceeds 8 feet (12 Foot).
An additional bridge support will be used.

MGWC DETAIL 1.5: SANDBAG/STONE DIVERSION

TRANSVERSE SECTION VIEW



PLAN VIEW



TEMPORARY IN-STREAM CONSTRUCTION MEASURES	REVISED NOVEMBER 2000 PAGE 1.5 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

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 isolate work areas from flow during the construction of in-stream projects. Diversions which have an insufficient flow capacity can fail and severely erode the disturbed channel section under construction. Therefore, in-channel construction activities should occur only during periods of low rainfall. This temporary measure may not be practical in large channels.

MATERIAL SPECIFICATIONS

Materials for sandbag and stone stream diversions should meet the following requirements:
47/64 Riprap: Riprap should be washed and have a minimum diameter of 6 inches (0.15 meters).
47/64 Sandbags: Sandbags should consist of materials which are resistant to ultra-violet radiation, tearing, and puncture and should be woven tightly enough to prevent leakage of the fill material (i.e., sand, fine gravel, etc.).
47/64 Sheeting: Sheeting should consist of polyethylene or other materials which are impervious and resistant to puncture and tearing.

INSTALLATION GUIDELINES

All 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, silt fence or straw bales should be installed around the perimeter of the work area.

Sandbag/stone diversions can be used independently or as components of other stream diversion techniques. Installation of this measure should proceed as follows (refer to Detail 1.5):

1. The diversion structure should be installed from upstream to downstream.

2. 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 streambank height, measured from the channel bed, plus 1 foot (0.3 meters) or bankfull height, whichever is greater. For projects of longer duration, the top of the sandbag or stone diversion should correspond to bankfull height. For diversion structures utilizing sandbags, the stream bed should be hand prepared prior to placement of the base layer of sandbags 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 authorized by the WMA.

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 meters) overlap.

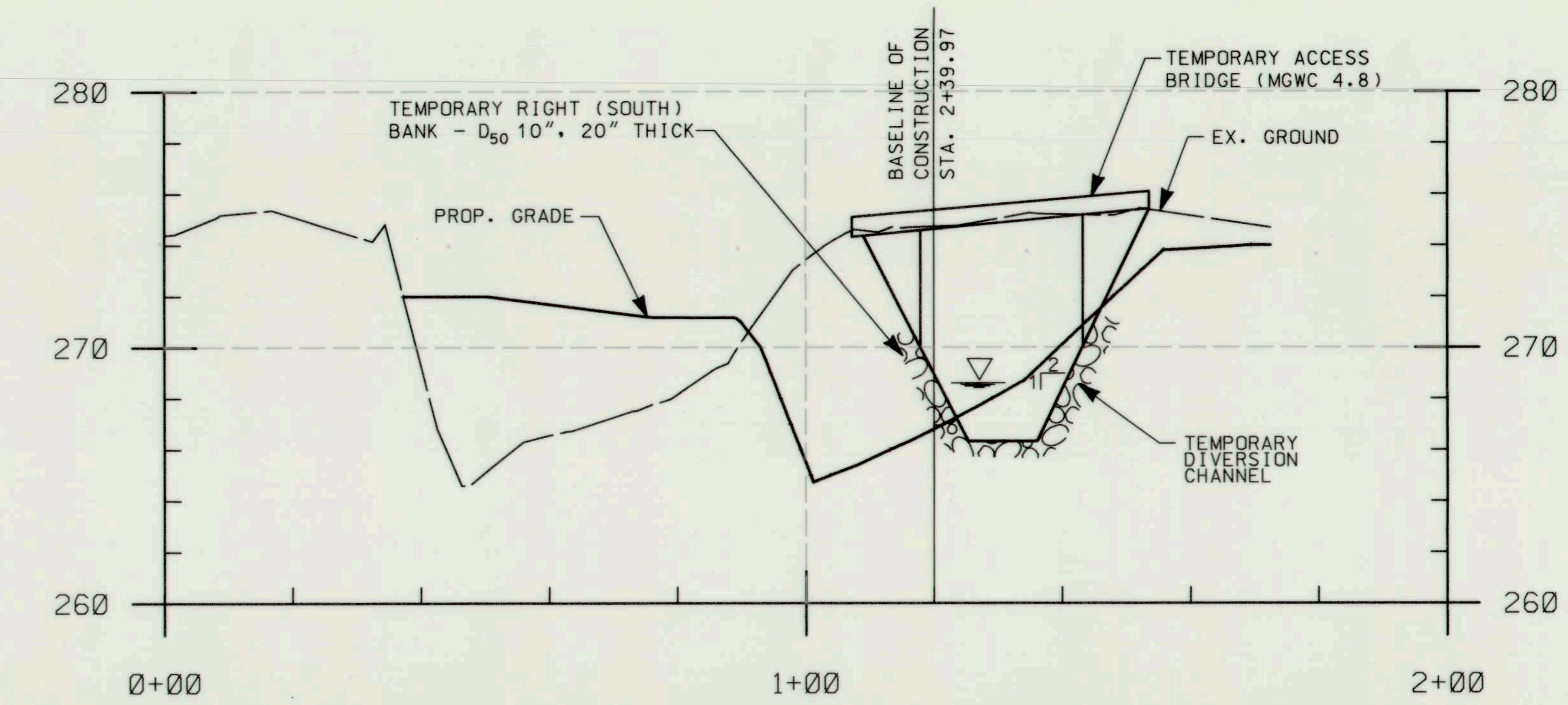
6. Sandbag or stone diversions should not obstruct more than 45% of the stream width. Additionally, bank stabilization measures should be placed in the constricted section if accelerated erosion and bank scour are observed during the construction time or if project time is expected to last more than 2 weeks.

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.

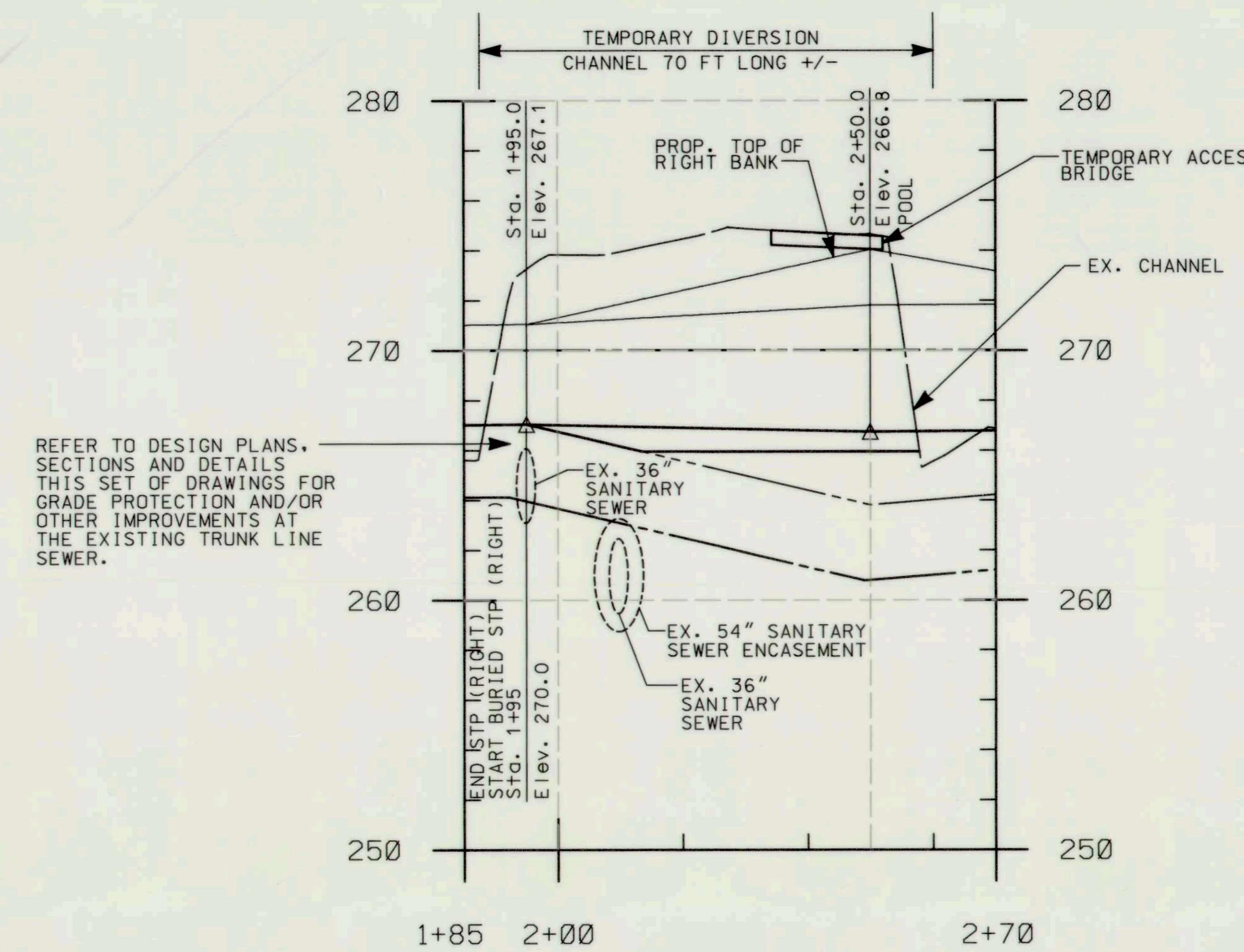
TEMPORARY IN-STREAM CONSTRUCTION MEASURES	REVISED NOVEMBER 2000 PAGE 1.5 - 1& 2	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Notes:
1. The bank height "H" is approximately 7 feet.
2. Project phasing is 2 weeks. The height of the the sandbag diversion is H / 2 + 1 ft. or 4.5 feet.



SECTION A-A

NOTES:
1. THE TEMPORARY ACCES BRIDGE AND DIVERSION CHANNEL ARE TO BE CONSTRUCTED IN PHASE I AND REMOVED AFTER PHASE III, AS SHOWN ON ESC SHEETS 9 AND 10.
2. THE TEMPORARY DIVERSION CHANNEL WILL BE TRAPEZOIDALLY SHAPED, HAVE A 12-FOOT BOTTOM WIDTH, 2:1 SIDE SLOPES, A HEIGHT OF ABOUT 7 FEET, AND FOR THE 120 CFS FLOW, A FLOW DEPTH OF 2.4 FEET, AND A VELOCITY OF 3.1 FPS.



PROFILE

TEMPORARY ACCESS BRIDGE & DIVERSION CHANNEL

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. 38311, EXPIRATION DATE, JANUARY 06, 2014

(Seal: STATE OF MARYLAND, KATHY LYNN HOVERMANN, No. 38311, PROFESSIONAL ENGINEER) 3/2/12

THESE PLANS FOR SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT (HSCD) 3/7/12 DATE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS 3/12/12 DATE
CHIEF, BUREAU OF UTILITIES 3/8/12 DATE
CHIEF, BUREAU OF ENGINEERING 3/5/12 DATE
CHIEF, UTILITY DESIGN DIVISION 3/5/12 DATE

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818

DES: RJK
DRN: JMS
CHK: JT / RJK
DATE: FEBRUARY 2012

BY	NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL DETAILS II

600' SCALE MAP NO.____ BLOCK NO.____

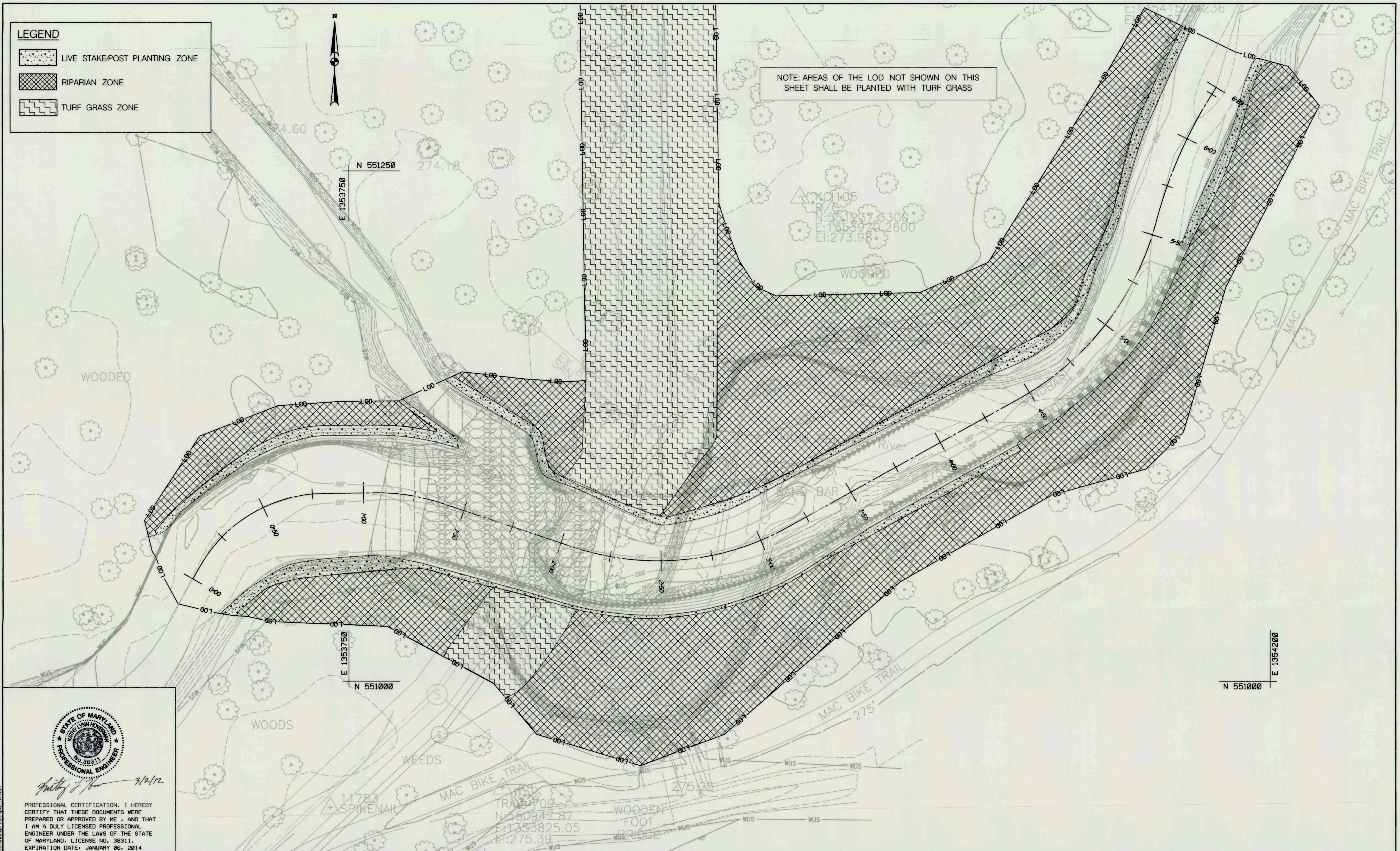
ALLVIEW DRIVE STREAM RELOCATION MITIGATION SITE B
CAPITAL PROJECT No. S-6175
CONTRACT No. 20-4736
ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SCALE N/A

SHEET 14 OF 16

EP-11-03

PLOTTED: "03:04 PM on Wednesday, February 01, 2012"
BY: Christopher Debel Division: P050 Natural Res Eng
FILE: M:\2008\01081795.09\drawings\ES07_LPAT-B.dgn



STATE OF MARYLAND · KATHY LYNN HOVERMAN · No. 38311 · PROFESSIONAL ENGINEER

3/2/12

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. 38311. EXPIRATION DATE: JANUARY 06, 2014

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/12/12	CHIEF, BUREAU OF ENGINEERING — DATE 3/5/12
CHIEF, BUREAU OF UTILITIES — DATE 3/8/12	CHIEF, UTILITY DESIGN DIVISION — DATE 3/15/12

KCI TECHNOLOGIES
ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818

DES: MDT/KLH	BY	NO.	REVISION	DATE
DRN: JMS				
CHK: KLH				
DATE: FEBRUARY 2012				

LANDSCAPE PLAN

600' SCALE MAP NO.__________ BLOCK NO.__________

ALLVIEW DRIVE STREAM RELOCATION MITIGATION SITE B

CAPITAL PROJECT No. S-6175
CONTRACT No. 20-4736

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SCALE 1" = 20'

SHEET 15 OF 16

EP-11-03

PLOTTED: "10:25 AM on Wednesday, February 29, 2012"
BY: Courtney Hugo Division: P050 NaturalRes Emp
FILE: M:\2008\01081795.09\drawings\ls01pat_B.dgn

MASTER PLANT SCHEDULE

LIVE STAKES (SHEET 15 OF 16)
(5,050 SQ FT/0.12 AC)

Site B	Botanical Name	Common Name	Size	Form	Spacing/Rate
316	Cornus racemosa	Gray dogwood	3' Length 1"-1.5" dia.	Dormant stems	2' O.C.
316	Cornus amomum	Silky dogwood	3' Length 1"-1.5" dia.	Dormant stems	2' O.C.
316	Salix sericea	Silky willow	3' Length 1"-1.5" dia.	Dormant stems	2' O.C.
316	Salix nigra	Black willow	3' Length 1"-1.5" dia.	Dormant stems	2' O.C.

POST PLANTINGS (SHEET 15 OF 16)
(1230 LF)

Site B	Botanical Name	Common Name	Size	Form	Spacing/Rate
62	Alnus incana ssp rugosa	Speckled alder	6' Length 2.5"-5.5" dia.	Dormant stems	10' O.C.
62	Salix sericea	Silky dogwood	6' Length 2.5"-5.5" dia.	Dormant stems	10' O.C.

RIPARIAN ZONE (SHEET 15 OF 16)
(59272 SQ FT/1.36 AC)

	Botanical Name	Common Name	Size	Form	Spacing/Rate
SHRUBS					
161	Lindera benzoin	Spicebush	3' Height	Container	6'-8' O.C.
161	Viburnum dentatum	Arrowwood viburnum	3' Height	Container	6'-8' O.C.
161	Amelanchier canadensis	Serviceberry	3' Height	Container	6'-8' O.C.
TREES					
98	Platanus occidentalis	Sycamore	5' Height	Container	11' O.C.
98	Quercus palustris	Pin oak	5' Height	Container	11' O.C.
98	Liriodendron tulipifera	Tulip poplar	5' Height	Container	11' O.C.

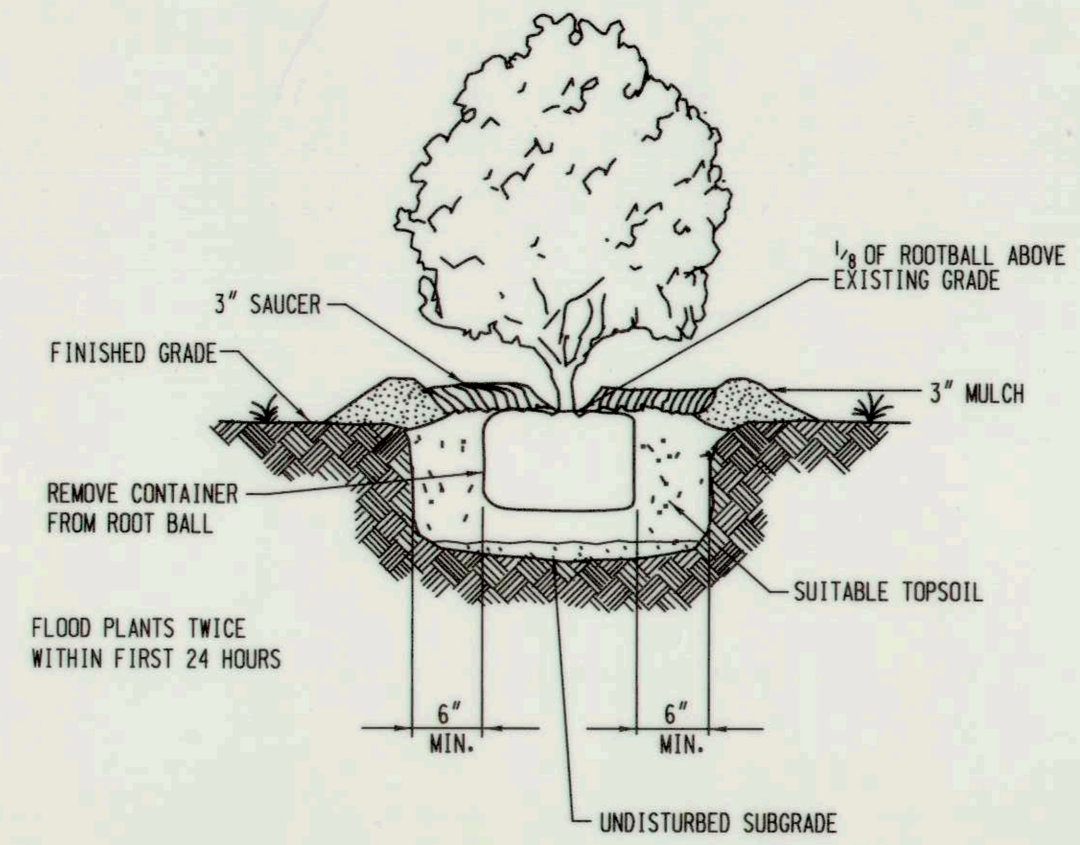
PERMANENT SEEDING FOR LIVE STAKES AND RIPARIAN ZONE (SHEET 15 OF 16)
(64322 SQ FT/1.48 AC)

Botanical Name	Common Name	Application Rate (lbs/ac)	% of Mix	Quantity (lbs)
Panicum virgatum	Switchgrass	18.0	24%	26.6
Poa palustris	Fowl bluegrass	30.0	40%	44.4
Panicum clandestinum	Deer tongue grass	18.0	24%	26.6
Bromus ciliatus	Fringed brome	9.0	12%	13.3
	TOTALS	75.0 lbs/ac		111 lbs

TURF GRASS ZONE (SHEET 15 OF 16)
(44,315 SQ FT/1.02 AC)

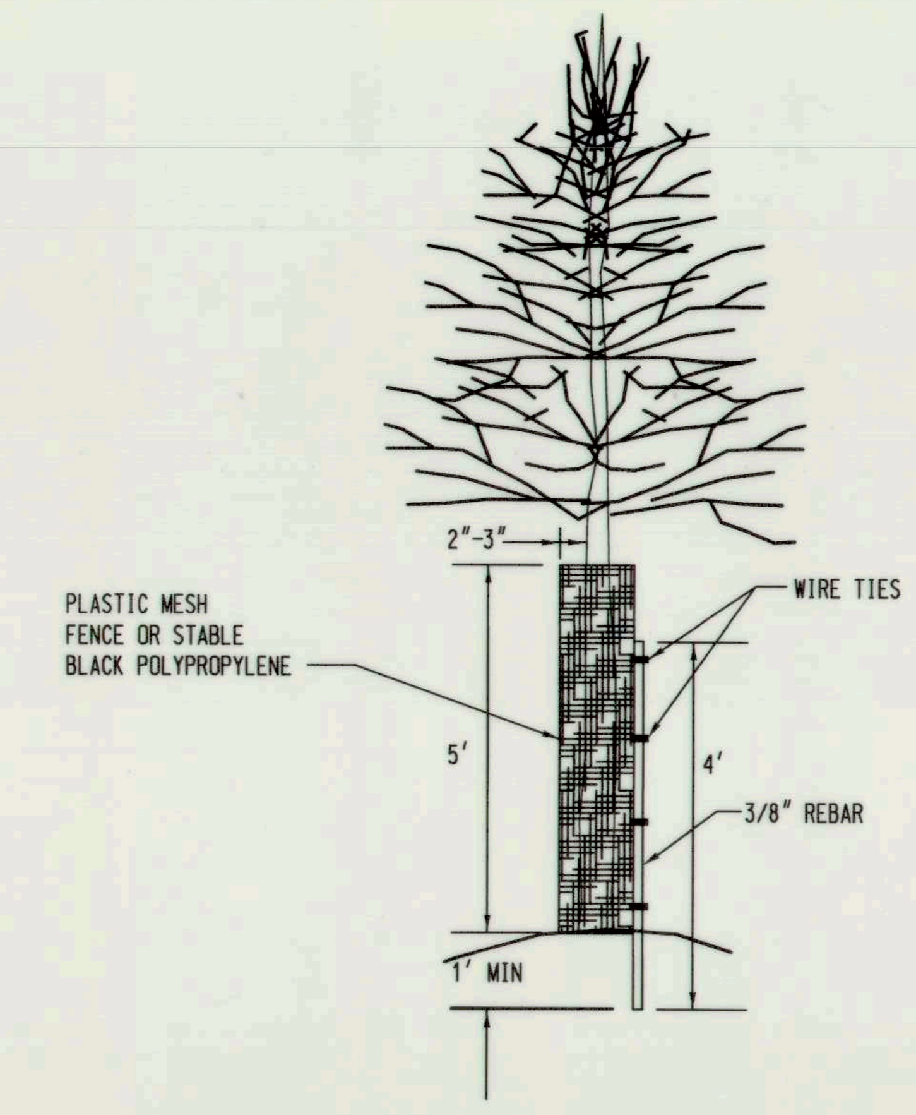
Site B Quantity (lbs)	Botanical Name
220	SHA Turf Grass Mix (920.06.07a)

Application Rate of 216 lbs/ AC



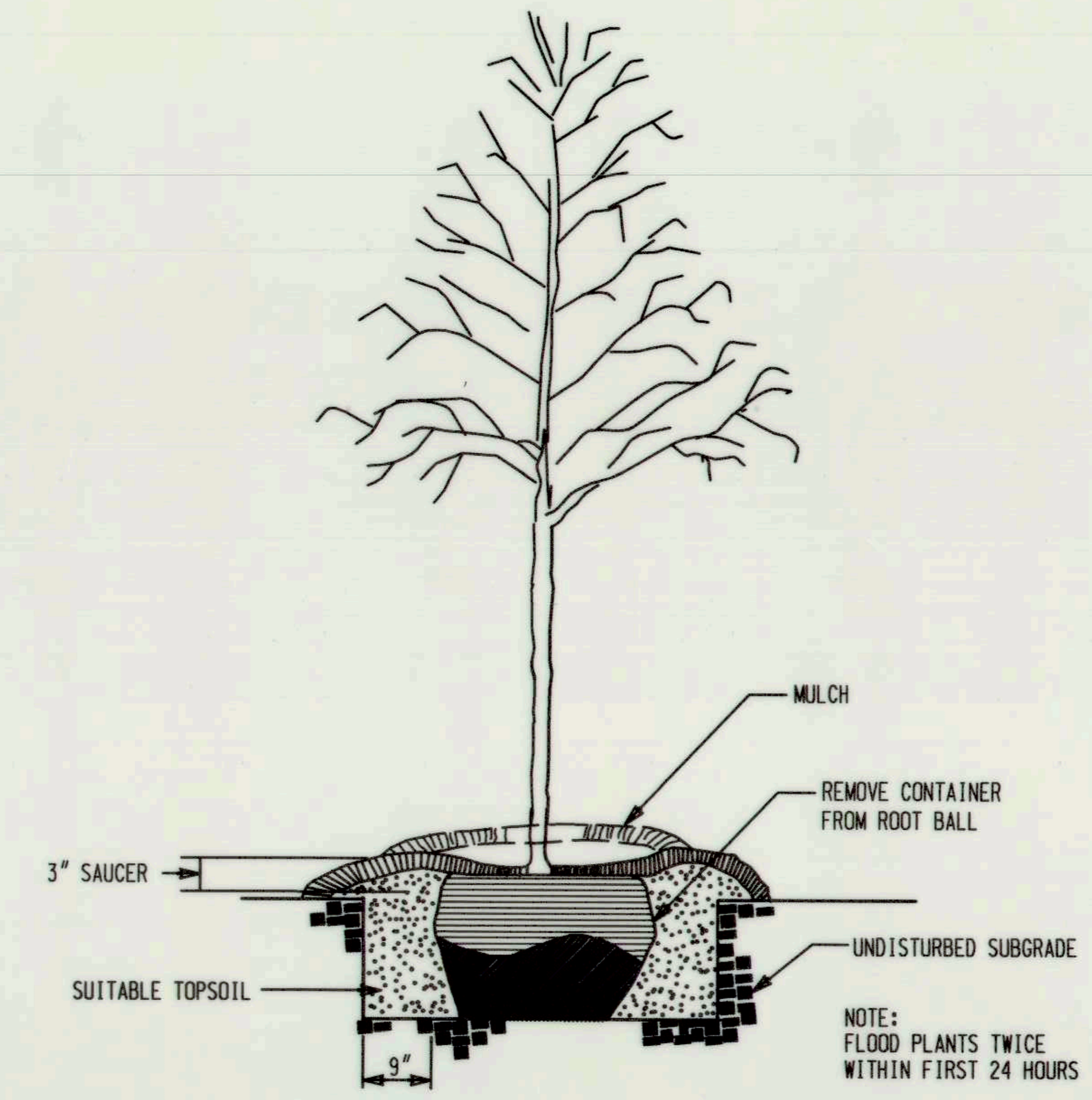
SHRUB PLANTING DETAIL

NOT TO SCALE



TREE SHELTER

NOT TO SCALE

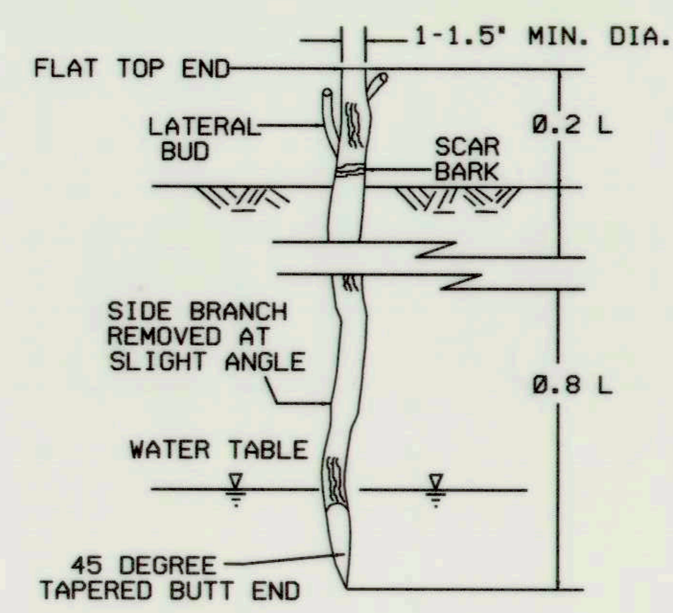


TREE PLANTING DETAIL

NOT TO SCALE

NOTE: TREE SHELTERS TO BE ADDED TO ALL TREES PLANTED

DETAIL 2.4: LIVE STAKES



ADAPTED FROM USDA-SCS (1994)

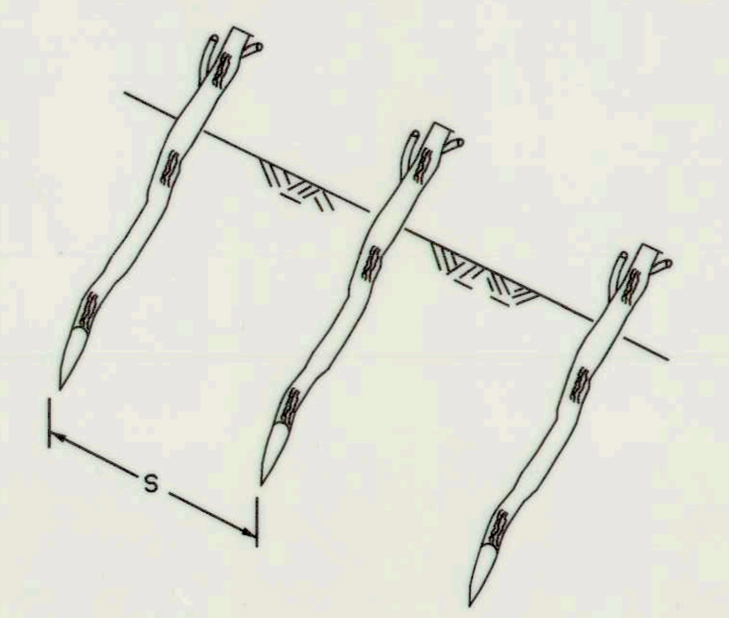
DETAIL

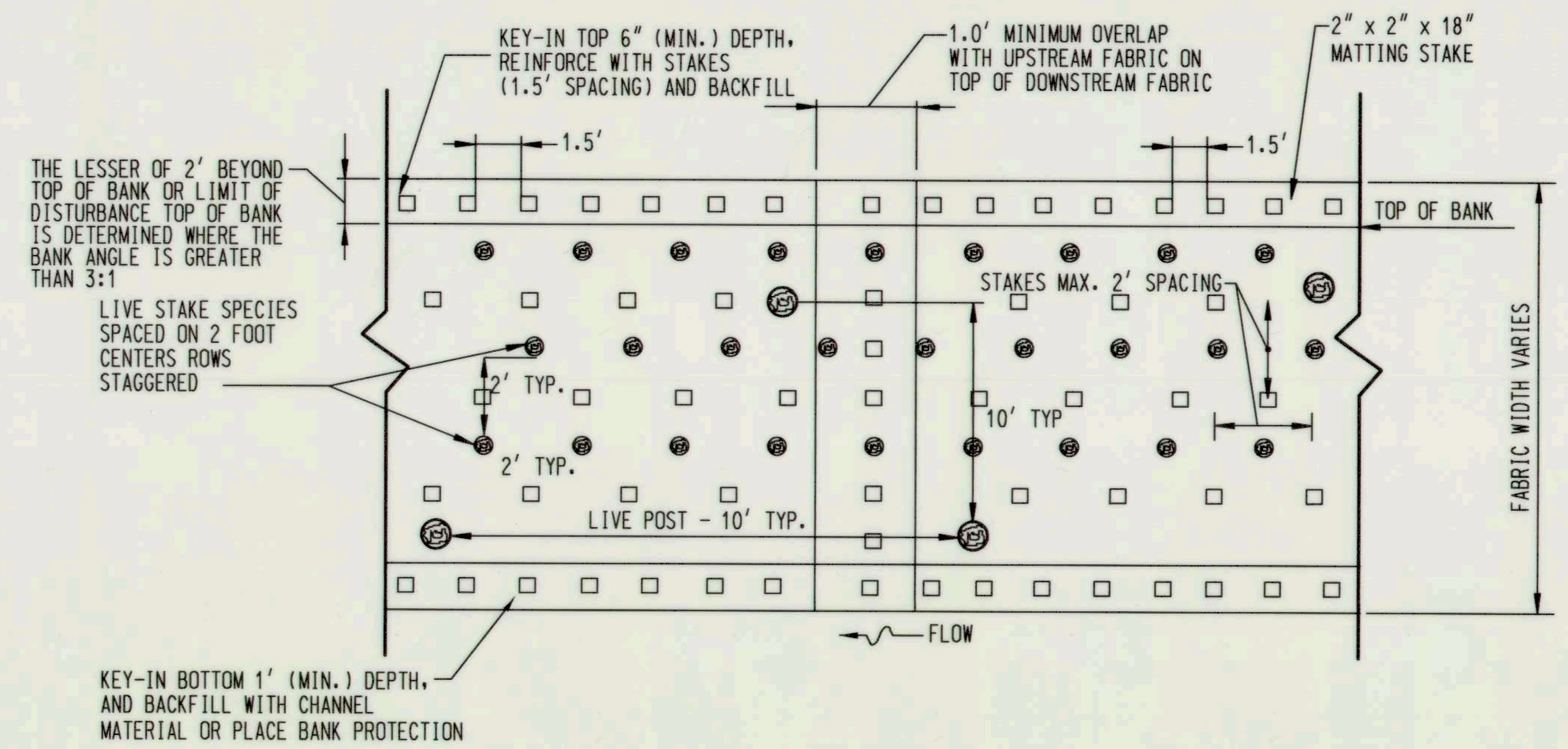
LIVE STOUT STAKES SHOULD BE LONG ENOUGH TO REACH BELOW THE GROUNDWATER TABLE. (GENERALLY, A LENGTH OF 2 TO 3 FEET, OR 0.6 TO 0.9 METERS, IS SUFFICIENT.) ADDITIONALLY, THE STAKES SHOULD HAVE A DIAMETER IN THE RANGE OF 0.5 TO 1.5 INCHES (2 TO 4 CENTIMETERS).

NOTE: SEE TABLE FOR SPECIFIC SIZE INFORMATION

SECTION VIEW

LIVE STAKES SHALL BE SPACED 2 TO 3 FEET (0.6 TO 0.9 METERS) APART TO GIVE A DENSITY OF 2 TO 4 CUTTINGS PER SQUARE YARD (0.8 SQUARE METERS).

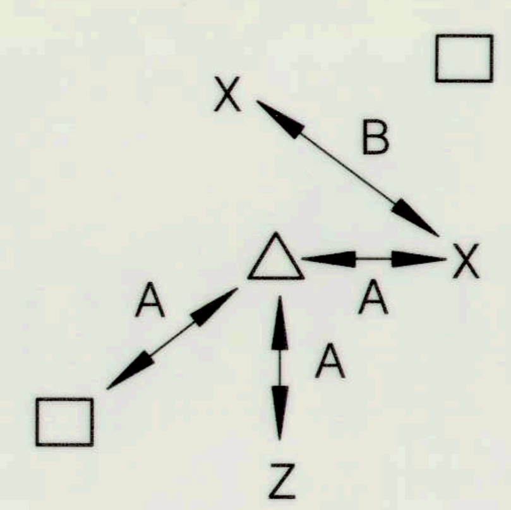




TYPICAL PLAN VIEW
NATURAL FIBER MATTING WITH LIVE STAKES AND LIVE POSTS

NOT TO SCALE

NATURAL FIBER MATTING TO BE ROLLED LENGTHWISE ALONG STREAMBANK EXTENDING TO THE BOTTOM OF TOE PROTECTION AND A MINIMUM OF TWO FEET PAST TOP OF BANK. IF MORE THAN ONE ROLL IS REQUIRED, MID-BANK OVERLAP SHOULD BE A MINIMUM OF ONE FOOT AND SECURELY FASTENED WITH STAKES. (SEE SPECIFICATIONS FOR MATERIALS)

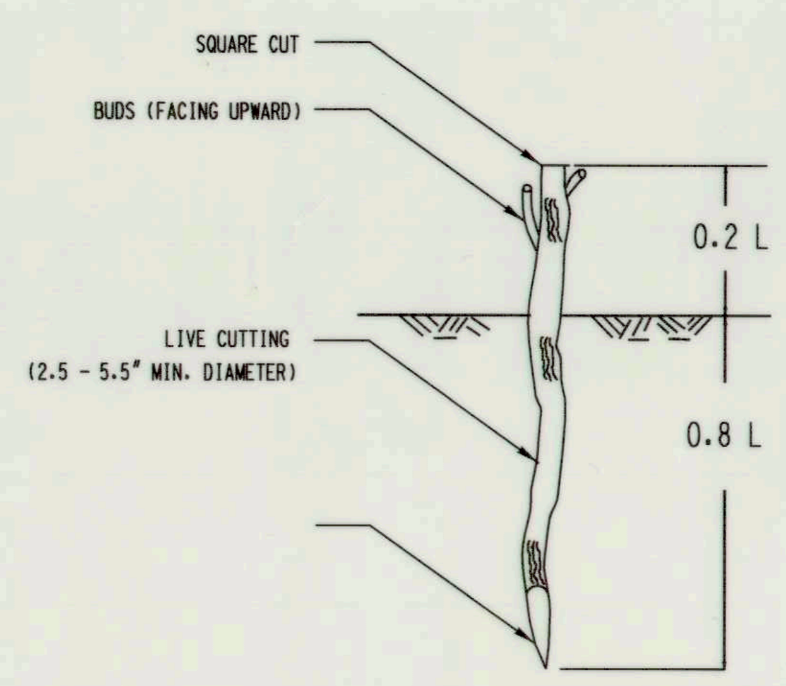


△, □ TREE SPECIES — A: MINIMUM SPACING PER SCHEDULE

X, Z SHRUB SPECIES — B: DUPLICATE SPECIES SPACING MINIMUM 2 TIMES MINIMUM SPACING

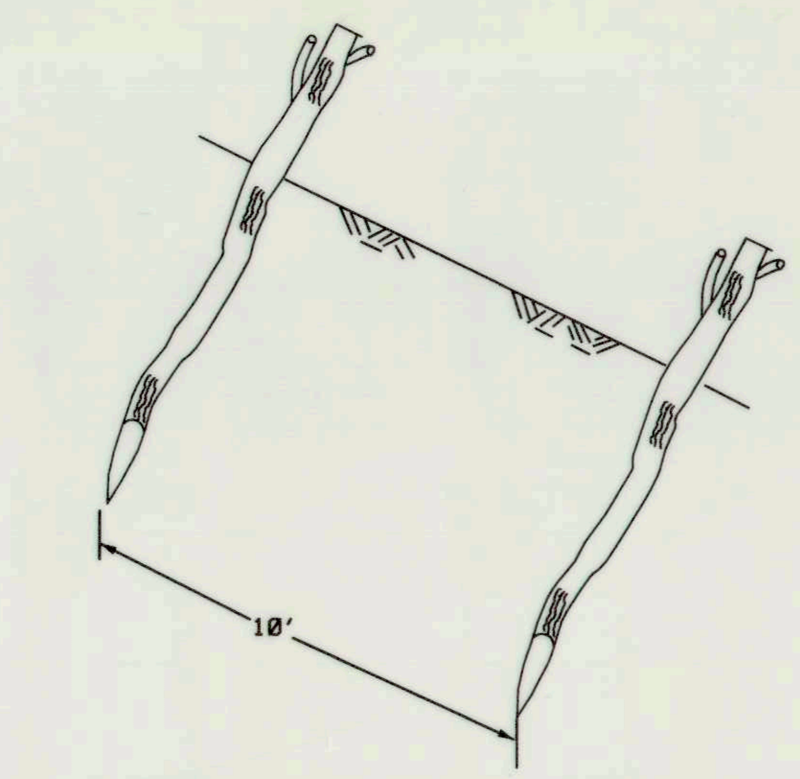
TREE AND SHRUB RANDOM SPACING

NOT TO SCALE



POST PLANTING DETAIL

NOT TO SCALE



LIVE POST PLANTING DETAIL

NOT TO SCALE

3/2/12

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PLOTTED: "10:44 AM on Wednesday, February 29, 2012"
BY: Courtney Hugo Division: P050 NaturalRes Emp
FILE: M:\2008\01081795.09\drawings\ld01lpat_B.dgn

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 3/12/12	CHIEF, BUREAU OF ENGINEERING	DATE 3/5/12
CHIEF, BUREAU OF UTILITIES	DATE 3/13/12	CHIEF, UTILITY DESIGN DIVISION	DATE 3/5/12

KCI TECHNOLOGIES
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DES: MDT/KLH
DRN: JMS
CHK: KLH
DATE: FEBRUARY 2012

BY	NO.	REVISION	DATE

LANDSCAPE DETAILS

600' SCALE MAP NO.________ BLOCK NO.________

ALLVIEW DRIVE STREAM RELOCATION
MITIGATION SITE B
CAPITAL PROJECT No. S-6175
CONTRACT No. 20-4736

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN

EP-11-03