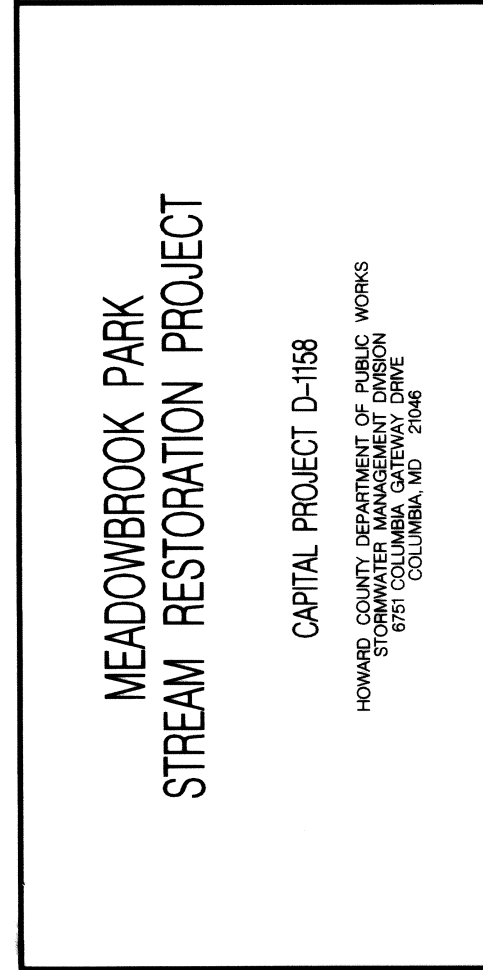


NO.	REVISIONS DESCRIPTION	DATE
1	Revised to reflect corrections to existing contours from station 0+00 to 4+00	1/4/2012
2	As-Built	4/6/2012

936 RIDGEBROOK ROAD
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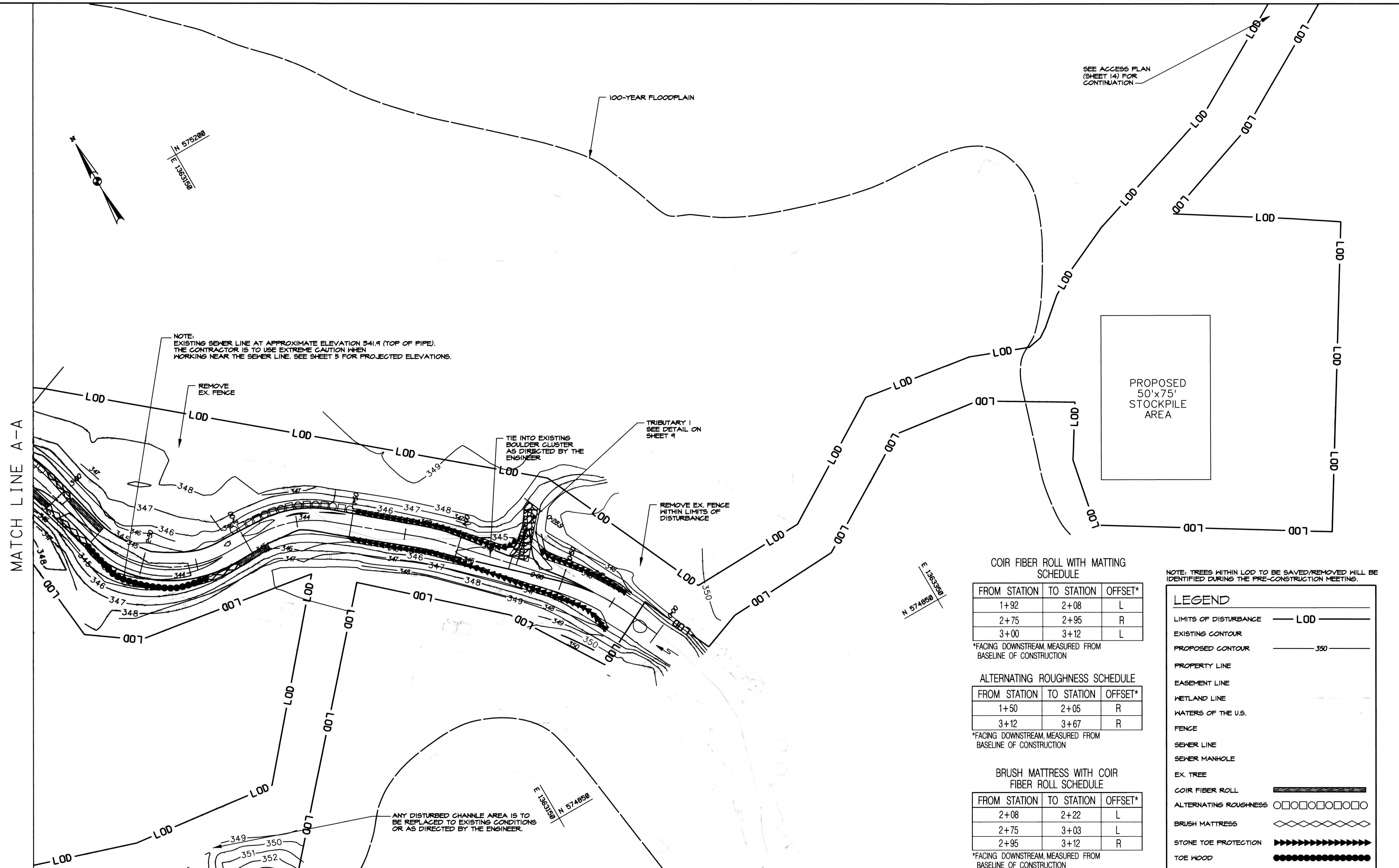
MEADOWBROOK PARK
 STREAM RESTORATION PROJECT

CAPITAL PROJECT D-1158
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 STORMWATER MANAGEMENT DIVISION
 510 COLUMBIA, MD 21046

SCALE:	HOR:20 VERT:4
DATE:	AUGUST 2011
KCI JOB NO.:	01-081795.43
CAPITAL PROJECT NO.:	D-1158
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	

NOTE: THE EXISTING GROUND SHOWN FROM STATION 0+00 TO 4+00 REFLECTS A REVISION OF +1 FOOT IN ELEVATION WHEN COMPARED TO THE ORIGINAL SURVEY DATED MARCH 2010. PLEASE NOTE THAT THE PROPOSED GRADE SHOWN REFLECTS THE ORIGINAL DESIGN AND HAS NOT BEEN ADJUSTED, BUT RATHER FIELD ADJUSTMENTS WERE MADE DURING CONSTRUCTION TO ADJUST FOR THE ERROR, WHICH IS REFLECTED IN THE AS-BUILT GRADE.

LEGEND	
EXISTING GROUND (MARCH 2010)	—————
PROPOSED GRADE	—————
THALWEG	- - - - -
AS BUILT GRADE	—————



COIR FIBER ROLL WITH MATTING SCHEDULE

FROM STATION	TO STATION	OFFSET*
1+92	2+08	L
2+75	2+95	R
3+00	3+12	L

*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

ALTERNATING ROUGHNESS SCHEDULE

FROM STATION	TO STATION	OFFSET*
1+50	2+05	R
3+12	3+67	R

*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

BRUSH MATRESS WITH COIR FIBER ROLL SCHEDULE

FROM STATION	TO STATION	OFFSET*
2+08	2+22	L
2+75	3+03	L
2+95	3+12	R

*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

STONE TOE PROTECTION SCHEDULE

FROM STATION	TO STATION	OFFSET*
0+21	0+65	R
0+75	1+50	R
0+19	1+50	L

*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

NOTE: TREES WITHIN LOD TO BE SAVED/REMOVED WILL BE IDENTIFIED DURING THE PRE-CONSTRUCTION MEETINGS.

LEGEND

LIMITS OF DISTURBANCE — LOD —

EXISTING CONTOUR — 350 —

PROPOSED CONTOUR — 350 —

PROPERTY LINE

EASEMENT LINE

WETLAND LINE

WATERS OF THE U.S.

FENCE

SEWER LINE

SEWER MANHOLE

EX. TREE

COIR FIBER ROLL

ALTERNATING ROUGHNESS

BRUSH MATRESS

STONE TOE PROTECTION

TOE WOOD

RIFFLE GRADE CONTROL

100-YEAR FLOODPLAIN

AS BUILT GRADE — 350 —

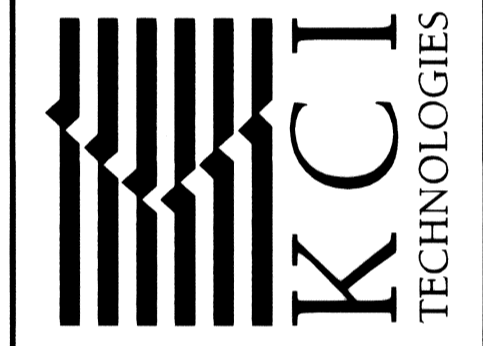
TOE WOOD SCHEDULE

FROM STATION	TO STATION	OFFSET*
2+22	2+75	L

*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

NO.	REVISIONS DESCRIPTION	DATE
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MEADOWBROOK PARK
 STREAM RESTORATION PROJECT

CAPITAL PROJECT D-1158
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 10000 WOODBURN AVENUE, SUITE 200
 COLUMBIA, MD 21046

AS BUILT
 GRADING
 PLAN

SCALE: 1" = 20'

DATE: AUGUST 2011

KCI JOB NO.: 01-081795.4.3

CAPITAL PROJECT NO.: D-1158

PERMIT ISSUE:

CONSTRUCTION ISSUE:

SHEET NO.: 6 OF 25

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 6, 2012.

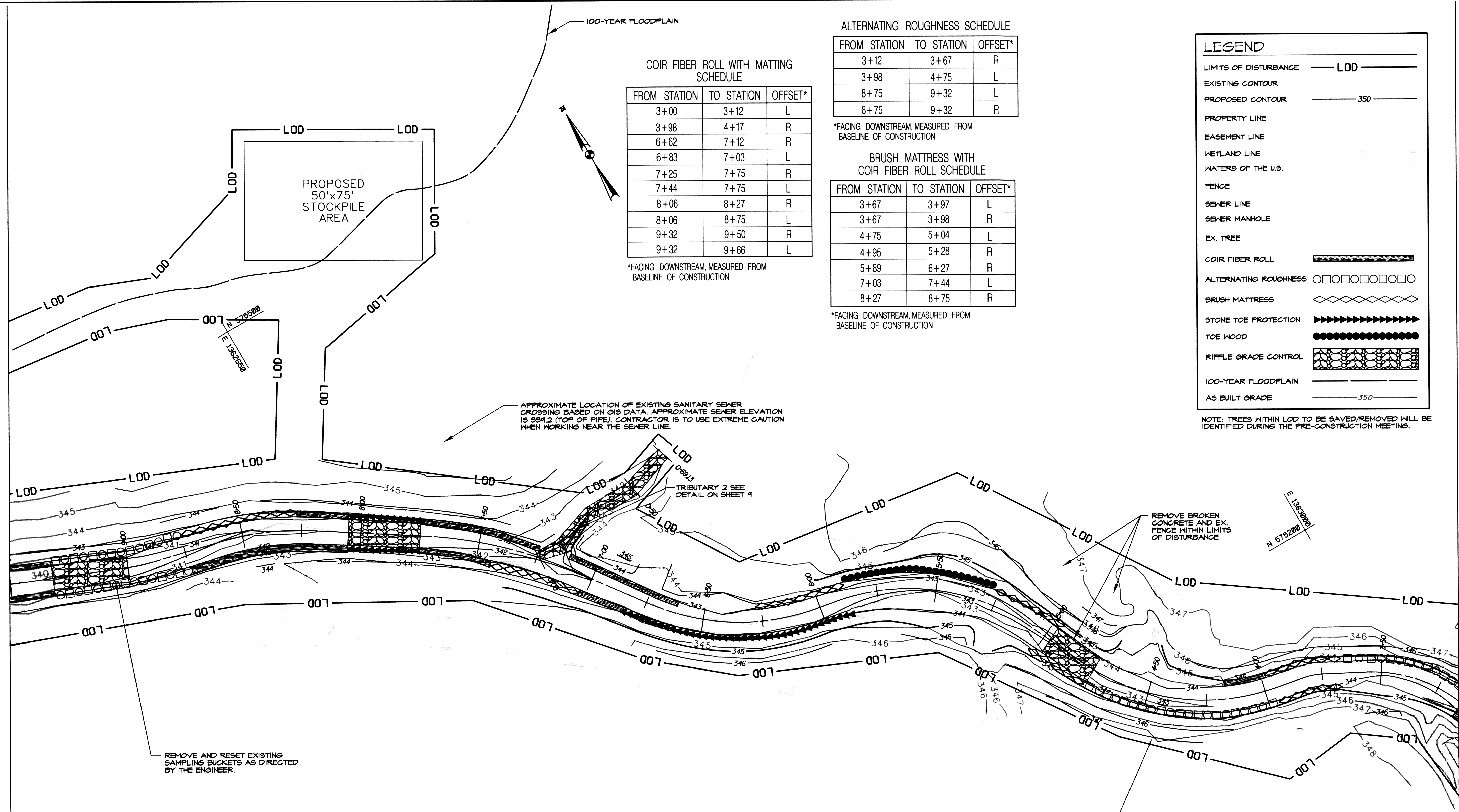
STATE OF MARYLAND
 PROFESSIONAL ENGINEER
 No. 38311
 4/6/12

NOTE: THE EXISTING CONTOURS SHOWN FROM STATION 0+00 TO 4+00, INCLUDING THE OUTFALLS AT PALOMINO AND STALLION COURT, REFLECT A REVISION OF +1 FOOT IN ELEVATION WHEN COMPARED TO THE ORIGINAL SURVEY DATED MARCH 2010. PLEASE NOTE THAT THE PROPOSED CONTOURS SHOWN REFLECT THE ORIGINAL DESIGN AND HAVE NOT BEEN ADJUSTED, BUT RATHER FIELD ADJUSTMENTS WERE MADE DURING CONSTRUCTION TO ADJUST FOR THE ERROR, WHICH IS REFLECTED IN THE AS-BUILT CONTOURS.

PLOTTED: 10:34:45 PM on Friday, April 06, 2012.
 BY: Christopher Deibel, Division: P&S, Natural Res. Emp.
 LE: M. 2005.01081795.4.3 Grading, AS-BUILT, L_Plot.mxd.dgn

MATCH LINE B-B

MATCH LINE A-A



COIR FIBER ROLL WITH MATTING SCHEDULE

FROM STATION	TO STATION	OFFSET*
3+00	3+12	L
3+98	4+17	R
6+62	7+12	R
6+83	7+03	L
7+25	7+75	R
7+44	7+75	L
8+06	8+27	R
8+06	8+75	L
9+32	9+50	R
9+32	9+66	L

ALTERNATING ROUGHNESS SCHEDULE

FROM STATION	TO STATION	OFFSET*
3+12	3+67	R
3+98	4+75	L
8+75	9+32	L
8+75	9+32	R

BRUSH MATTRESS WITH COIR FIBER ROLL SCHEDULE

FROM STATION	TO STATION	OFFSET*
3+67	3+97	L
3+67	3+98	R
4+75	5+04	L
4+95	5+28	R
5+89	6+27	R
7+03	7+44	L
8+27	8+75	R

*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

LEGEND

- LIMITS OF DISTURBANCE — LOD —
- EXISTING CONTOUR —
- PROPOSED CONTOUR — 350 —
- PROPERTY LINE —
- EASEMENT LINE —
- WETLAND LINE —
- WATERS OF THE U.S. —
- FENCE —
- SEWER LINE —
- SEWER MANHOLE —
- EX. TREE —
- COIR FIBER ROLL — [Symbol]
- ALTERNATING ROUGHNESS — [Symbol]
- BRUSH MATTRESS — [Symbol]
- STONE TOE PROTECTION — [Symbol]
- TOE WOOD — [Symbol]
- RIFFLE GRADE CONTROL — [Symbol]
- 100-YEAR FLOODPLAIN —
- AS BUILT GRADE — 350 —

NOTE: TREES WITHIN LOD TO BE SAVED/REMOVED WILL BE IDENTIFIED DURING THE PRE-CONSTRUCTION MEETING.

APPROXIMATE LOCATION OF EXISTING SANITARY SEWER CROSSING BASED ON GIS DATA. APPROXIMATE SEWER ELEVATION IS 334.2 (TOP OF PIPE). CONTRACTOR IS TO USE EXTREME CAUTION WHEN WORKING NEAR THE SEWER LINE.

TRIBUTARY 2 SEE DETAIL ON SHEET 4

REMOVE BROKEN CONCRETE AND EX. FENCE WITHIN LIMITS OF DISTURBANCE

REMOVE AND RESET EXISTING SAMPLING BUCKETS AS DIRECTED BY THE ENGINEER.

NOTE: EXISTING SEWER LINE AT APPROXIMATE ELEVATION 340.7 (TOP OF PIPE). THE CONTRACTOR IS TO USE EXTREME CAUTION WHEN WORKING NEAR THE SEWER LINE.

STONE TOE PROTECTION SCHEDULE

FROM STATION	TO STATION	OFFSET*
5+87	6+83	L
7+75	8+06	L
7+75	8+06	R

*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

RIFFLE GRADE CONTROL SCHEDULE

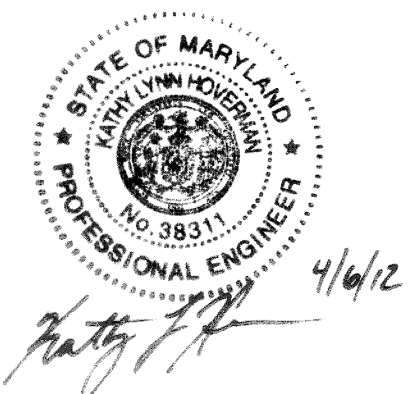
FROM STATION	TO STATION
4+75	4+97
7+75	8+06
9+00	9+32

TOE WOOD SCHEDULE

FROM STATION	TO STATION	OFFSET*
5+27	5+89	R

*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

NOTE: THE EXISTING CONTOURS SHOWN FROM STATION 0+00 TO 4+00 INCLUDING THE OUTFALLS AT PALOMINO AND STALLION COURT, REFLECT A REVISION OF ± FOOT IN ELEVATION WHEN COMPARED TO THE ORIGINAL SURVEY DATED MARCH 2010. PLEASE NOTE THAT THE PROPOSED CONTOURS SHOWN REFLECT THE ORIGINAL DESIGN AND HAVE NOT BEEN ADJUSTED, BUT RATHER FIELD ADJUSTMENTS WERE MADE DURING CONSTRUCTION TO ADJUST FOR THE ERROR, WHICH IS REFLECTED IN THE AS-BUILT CONTOURS.



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 6, 2012.

NO.	REVISIONS DESCRIPTION	DATE
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2	As-Built	4/6/2012

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MEADOWBROOK PARK
 STREAM RESTORATION PROJECT

CAPITAL PROJECT D-158
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 STORMWATER MANAGEMENT DIVISION
 100 COLUMBIA, MD 21046

AS BUILT
 GRADING
 PLAN

SCALE:	1" = 20'
DATE:	AUGUST 2011
KCI JOB NO.:	01-081795.4.3
CAPITAL PROJECT NO.:	D-1158
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	

RIFFLE GRADE CONTROL SCHEDULE

FROM STATION	TO STATION
12+93	13+12

ALTERNATING ROUGHNESS SCHEDULE

FROM STATION	TO STATION	OFFSET*
11+34	11+71	R

*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

STONE TOE PROTECTION SCHEDULE

FROM STATION	TO STATION	OFFSET*
10+50	11+02	L
12+01	12+75	L

*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

BRUSH MATTRESS WITH COIR FIBER ROLL SCHEDULE

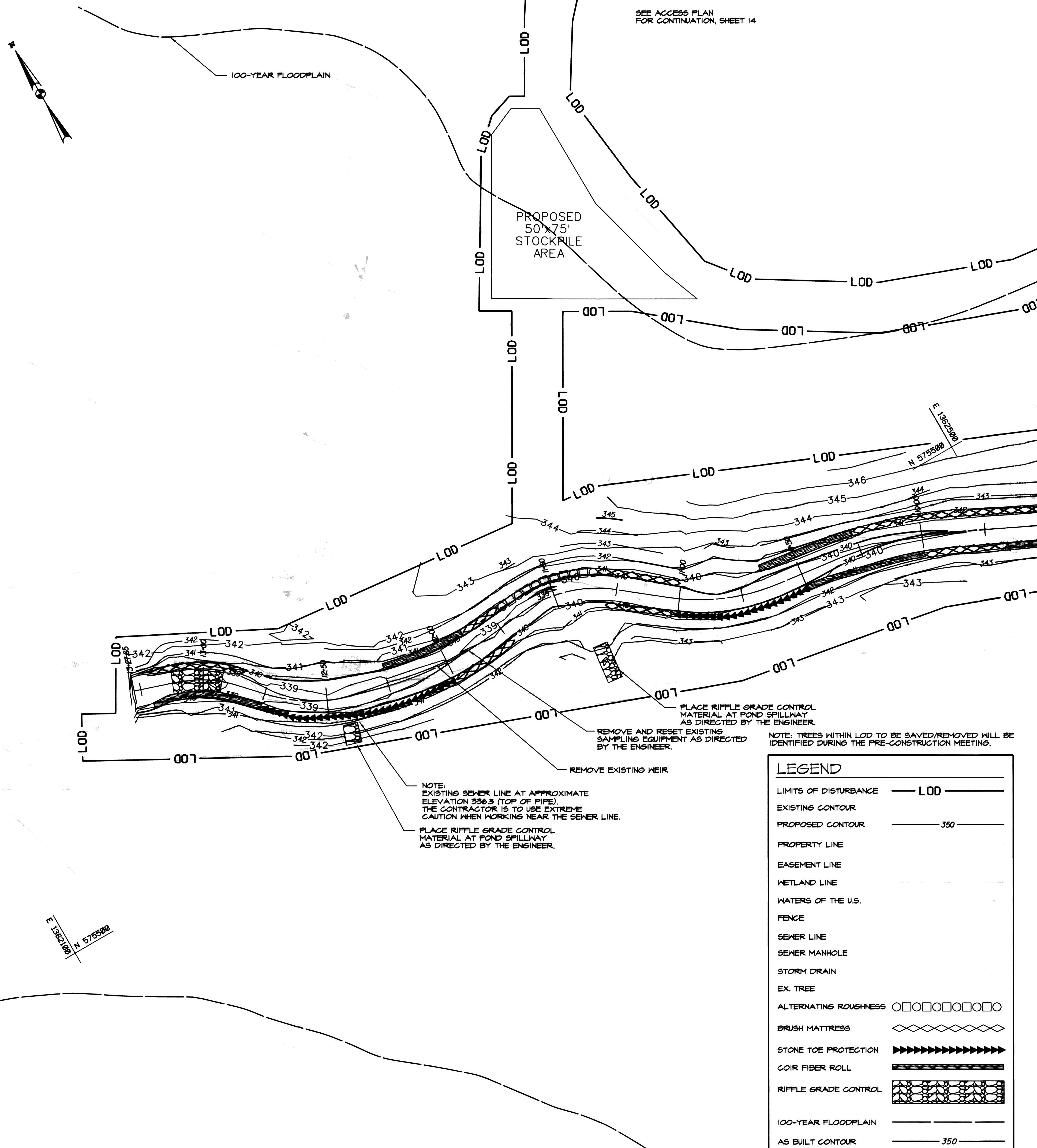
FROM STATION	TO STATION	OFFSET*
9+50	10+26	R
9+66	10+00	L
11+00	11+34	R
11+02	11+29	L
11+71	11+89	R
11+72	12+01	L
12+85	13+21	R

*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

COIR FIBER ROLL WITH MATTING SCHEDULE

FROM STATION	TO STATION	OFFSET*
9+32	9+66	L
10+00	10+50	L
10+26	10+65	R
11+89	12+25	R
12+75	13+21	L

*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION



SEE ACCESS PLAN FOR CONTINUATION, SHEET 14

N 575500
E 136200

E 136200
N 575500

NOTE: EXISTING SEWER LINE AT APPROXIMATE ELEVATION 336.5 (TOP OF PIPE). THE CONTRACTOR IS TO USE EXTREME CAUTION WHEN WORKING NEAR THE SEWER LINE.
PLACE RIFFLE GRADE CONTROL MATERIAL AT POND SPILLWAY AS DIRECTED BY THE ENGINEER.
REMOVE EXISTING WEIR
REMOVE AND RESET EXISTING SAMPLING EQUIPMENT AS DIRECTED BY THE ENGINEER.
PLACE RIFFLE GRADE CONTROL MATERIAL AT POND SPILLWAY AS DIRECTED BY THE ENGINEER.

NOTE: TREES WITHIN LOD TO BE SAVED/REMOVED WILL BE IDENTIFIED DURING THE PRE-CONSTRUCTION MEETING.

LEGEND

LIMITS OF DISTURBANCE	LOD
EXISTING CONTOUR	---
PROPOSED CONTOUR	350
PROPERTY LINE	---
EASEMENT LINE	---
WETLAND LINE	---
WATERS OF THE U.S.	---
FENCE	---
SEWER LINE	---
SEWER MANHOLE	---
STORM DRAIN	---
EX. TREE	---
ALTERNATING ROUGHNESS	□□□□□□□□
BRUSH MATTRESS	◇◇◇◇◇◇◇◇
STONE TOE PROTECTION	▶▶▶▶▶▶▶▶
COIR FIBER ROLL	▬▬▬▬▬▬
RIFFLE GRADE CONTROL	▬▬▬▬▬▬
100-YEAR FLOODPLAIN	---
AS BUILT CONTOUR	350

NOTE: THE EXISTING CONTOURS SHOWN FROM STATION 0+00 TO 4+00, INCLUDING THE OUTFALLS AT PALOMINO AND STALLION COURT, REFLECT A REVISION OF ±1 FOOT IN ELEVATION WHEN COMPARED TO THE ORIGINAL SURVEY DATED MARCH 2010. PLEASE NOTE THAT THE PROPOSED CONTOURS SHOWN REFLECT THE ORIGINAL DESIGN AND HAVE NOT BEEN ADJUSTED, BUT RATHER FIELD ADJUSTMENTS WERE MADE DURING CONSTRUCTION TO ADJUST FOR THE ERROR, WHICH IS REFLECTED IN THE AS-BUILT CONTOURS.

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Matthew J. Kelly
4/6/12

NO. REVISIONS DESCRIPTION DATE

1	Revised to reflect corrections to existing contours from station 0+00 to 4+00 and Outfalls at Palomino and Stallion Courts	1/4/2012
2	As-Built	4/6/2012

KCI FILE: M\ 2008 \ 01081795.43 \

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TECHNOLOGIES

MEADOWBROOK PARK
STREAM RESTORATION PROJECT

CAPITAL PROJECT D-1158
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
STORMWATER MANAGEMENT DIVISION
COLUMBIA, MD 21046

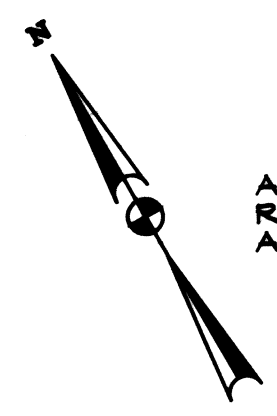
AS BUILT
GRADING
PLAN

SCALE: 1" = 20'
DATE: AUGUST 2011
KCI JOB NO.: 01-081795.43
CAPITAL PROJECT NO.: D-1158
PERMIT ISSUE:
CONSTRUCTION ISSUE:

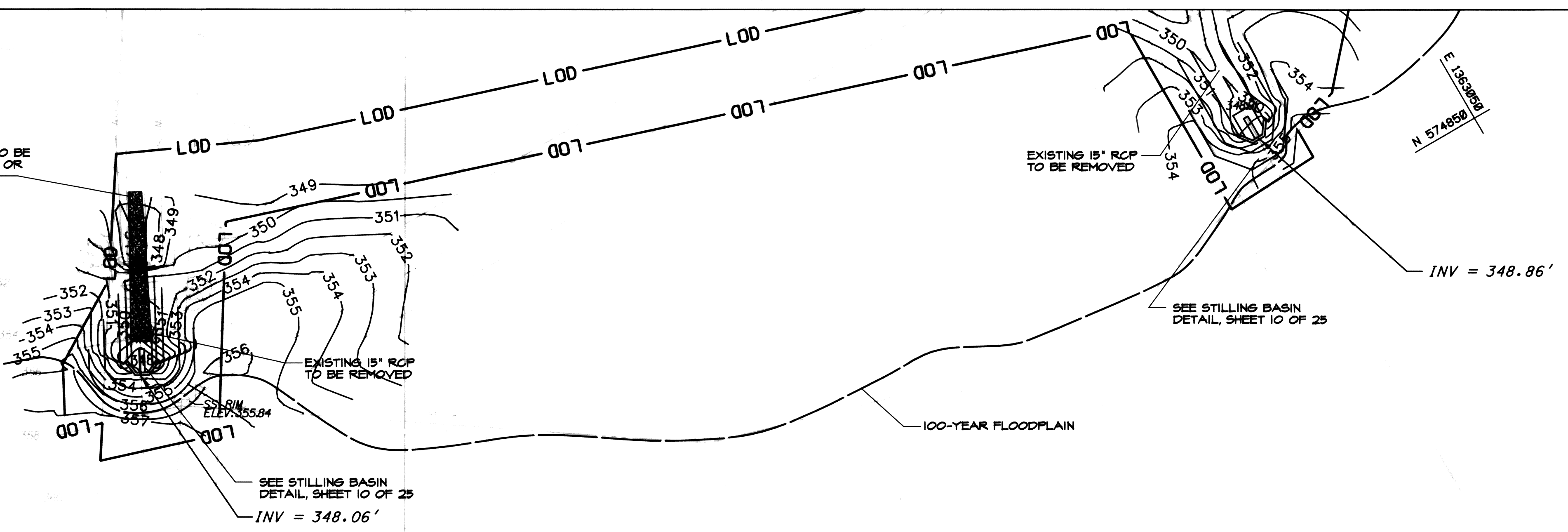
SHEET NO.: 8 OF 25

MATCH LINE B-B

MATCH LINE C-C

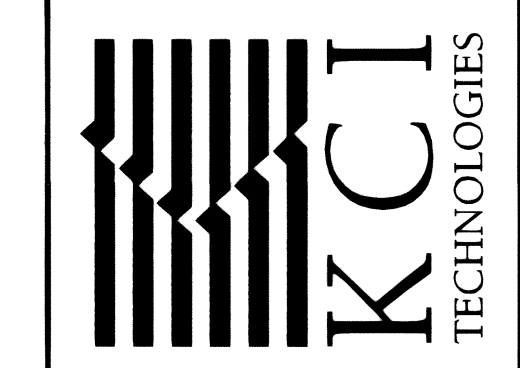


ANY DISTURBED CHANNEL AREA IS TO BE REPLACED TO EXISTING CONDITIONS OR AT THE DIRECTION OF THE ENGINEER.



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MEADOWBROOK PARK
 STREAM RESTORATION PROJECT
 CAPITAL PROJECT D-158
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 STREAM RESTORATION DIVISION
 8700 COLUMBIA CATALINA DRIVE
 COLUMBIA, MD 21046

AS BUILT
 GRADING
 PLAN

NOTE: TREES TO BE SAVED/REMOVED WILL BE IDENTIFIED DURING THE PRE-CONSTRUCTION MEETINGS.

LEGEND	
LIMITS OF DISTURBANCE	— LOD —
EXISTING CONTOUR	— 350 —
PROPOSED CONTOUR	— 350 —
PROPERTY LINE	— — — — —
EASEMENT LINE	— — — — —
WETLAND LINE	— — — — —
WATERS OF THE U.S.	— — — — —
FENCE	— — — — —
SEWER LINE	— — — — —
SEWER MANHOLE	— — — — —
EX. TREE	— — — — —
COIR FIBER ROLL	— — — — —
ALTERNATING ROUGHNESS	□□□□□□□□
BRUSH MATTRESS	◇◇◇◇◇◇◇◇
STONE TOE PROTECTION	▶▶▶▶▶▶▶▶▶▶
TOE WOOD	●●●●●●●●●●
AS BUILT GRADE	— 350 —

NOTE: THE EXISTING CONTOURS SHOWN FROM STATION 0+00 TO 4+00, INCLUDING THE OUTFALLS AT PALOMINO AND STALLION COURT, REFLECT A REVISION OF +1 FOOT IN ELEVATION WHEN COMPARED TO THE ORIGINAL SURVEY DATED MARCH 2010. PLEASE NOTE THAT THE PROPOSED CONTOURS SHOWN REFLECT THE ORIGINAL DESIGN AND HAVE NOT BEEN ADJUSTED, BUT RATHER FIELD ADJUSTMENTS WERE MADE DURING CONSTRUCTION TO ADJUST FOR THE ERROR, WHICH IS REFLECTED IN THE AS-BUILT CONTOURS.



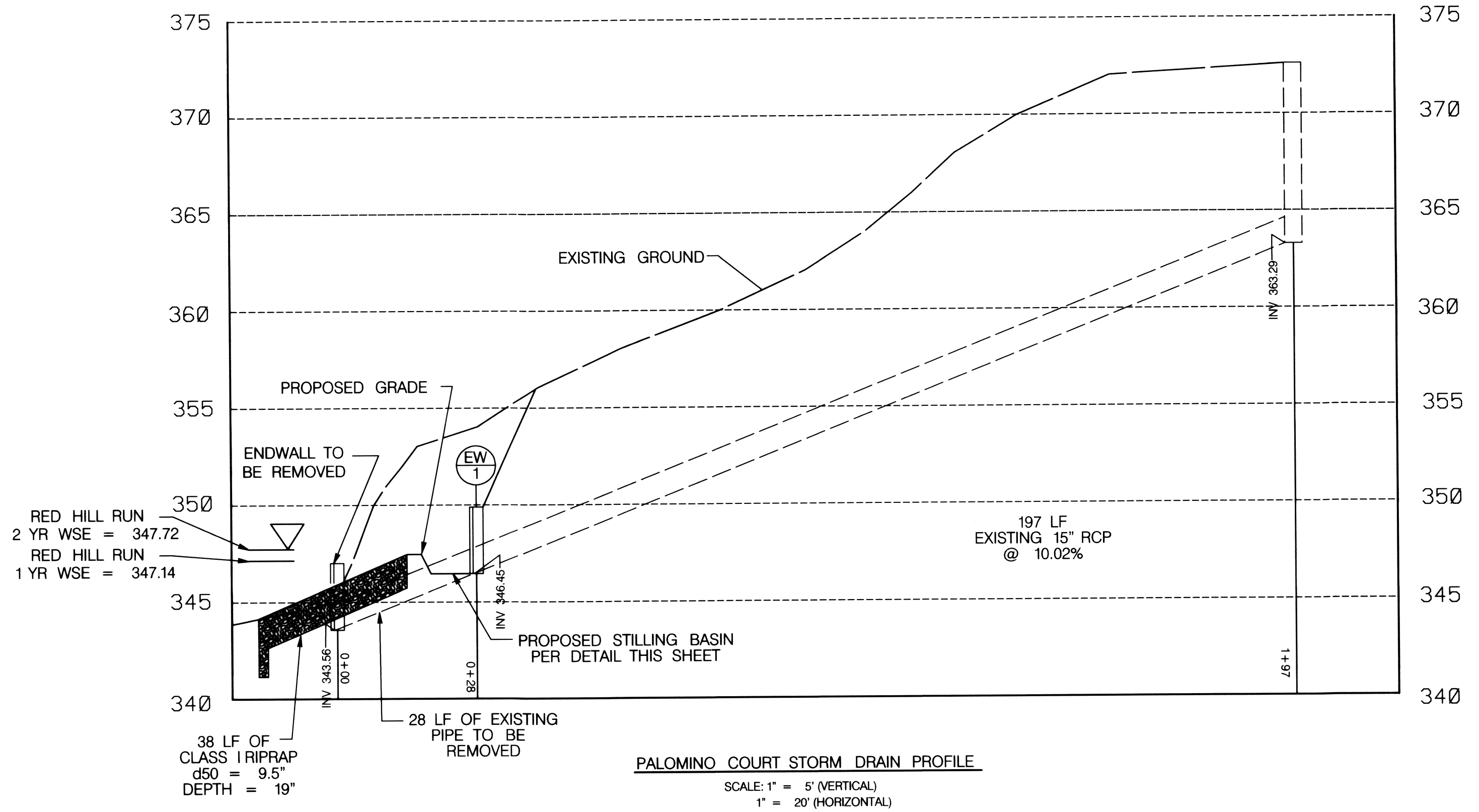
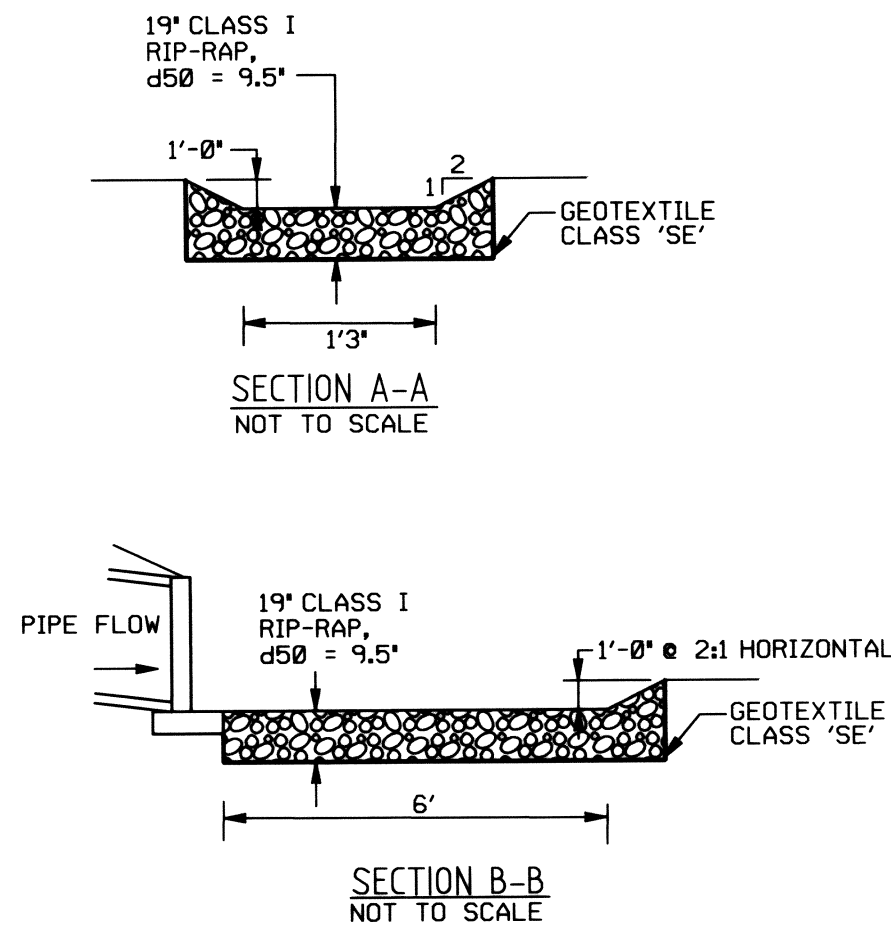
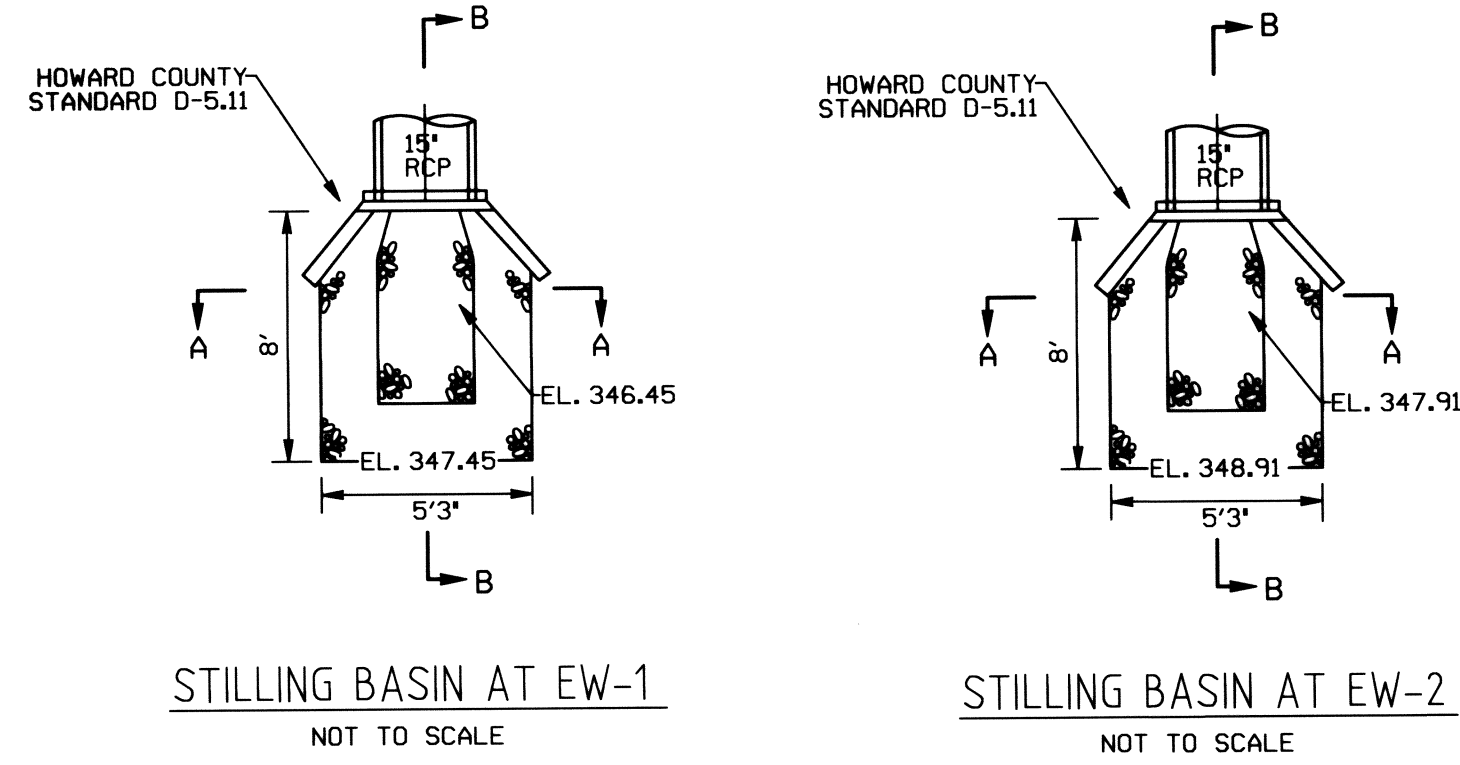
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SCALE:	1" = 20'
DATE:	AUGUST 2011
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CAPITAL PROJECT NO.:	D-158
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	

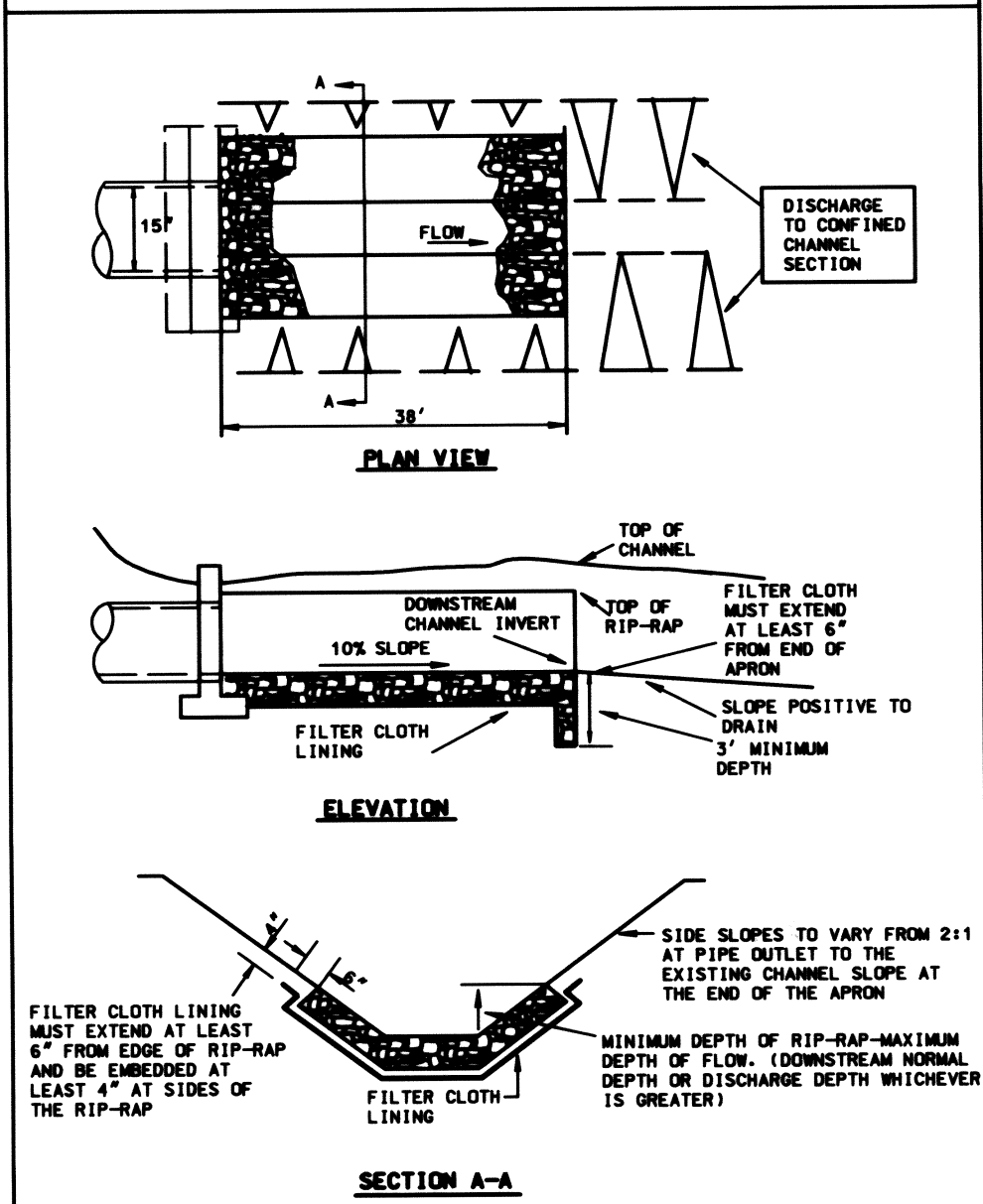
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 BY: Christopher Deibel Division: P050 Natural Res. Emp.
 D:\03\081795.43\Drawings\AS-BUILT_Plan.mxd.dgn

STORM DRAIN STRUCTURE TABLE

STRUCTURE	STD. NO.	TYPE	INVERT OUT	HEIGHT	INVERT	
					NORTHING	EASTING
EW-1	HOWARD CO. D-5.11	TYPE 'A' ENDWALL	346.45	2' 9"	1362721.2690	574964.4097
EW-2	HOWARD CO. D-5.11	TYPE 'A' ENDWALL	347.91	2' 9"	1362999.2855	574873.5262

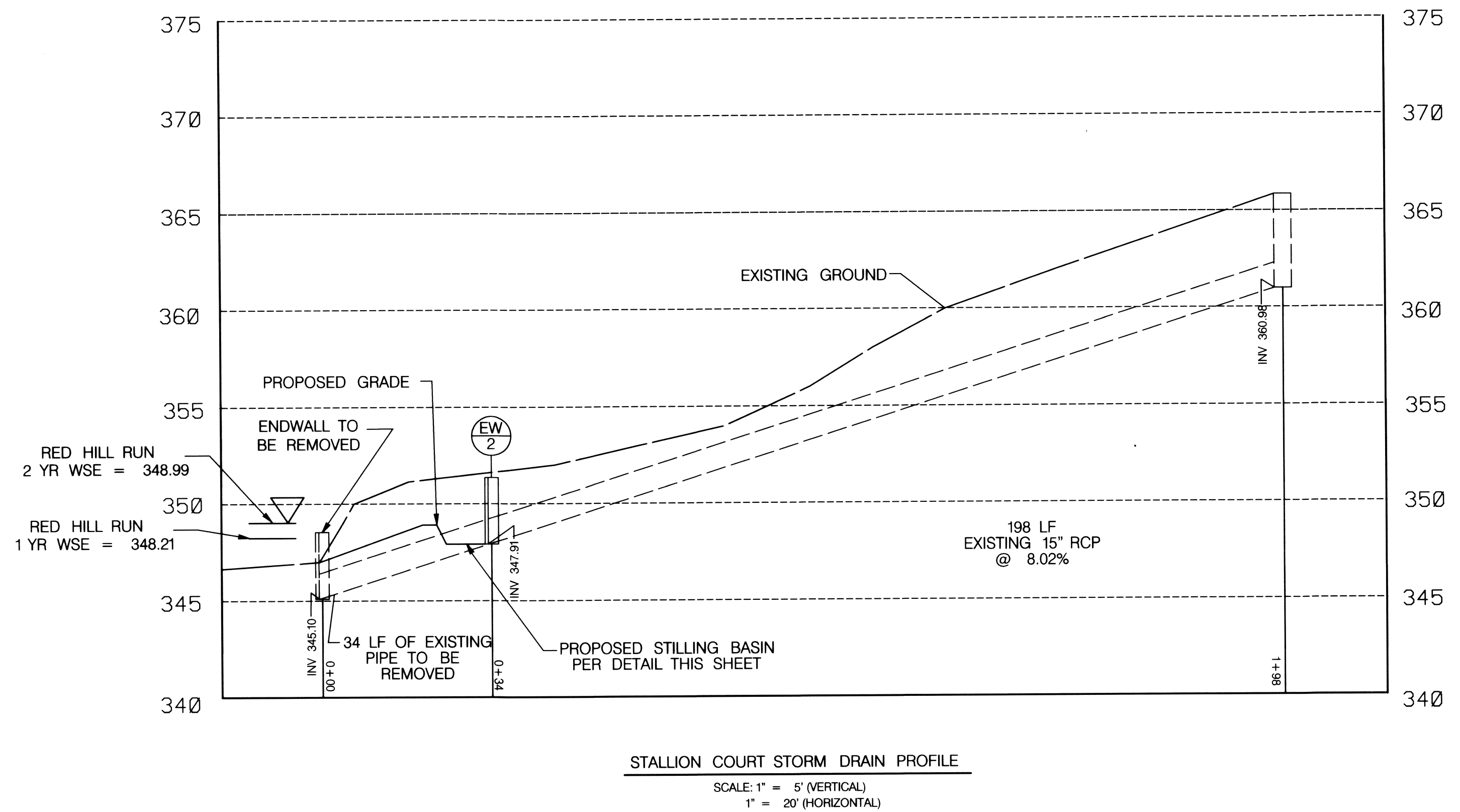


DETAIL 26 - ROCK-OUTLET PROTECTION II



ROCK-OUTLET PROTECTION II

- Construction Specifications
- The subgrade for the filter, rip-rap, or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be composed to a density of approximately that of the surrounding undisturbed material.
 - The rock or gravel shall conform to the specified grading limits when installed respectively in the rip-rap or filter.
 - Geotextile shall be protected from puncturing, cutting, or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of geotextile over the damaged part or by completely replacing the geotextile. All overlaps whether for repairs or for joining two pieces of geotextile shall be a minimum of one foot.
 - Stone for the rip-rap or gabion outlets may be placed by equipment. They shall be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The stone for rip-rap or gabion outlets shall be delivered and placed in a manner that will ensure that it is reasonably homogeneous with the smaller stones and soils filling the voids between the larger stones. Rip-rap shall be placed in a manner to prevent damage to the filter blanket or geotextile. Hand placement will be required to the extent necessary to prevent damage to the permanent works.
 - The stone shall be placed so that it blends in with the existing ground. If the stone is placed too high than the flow will be forced out of the channel and scour adjacent to the stone will occur.

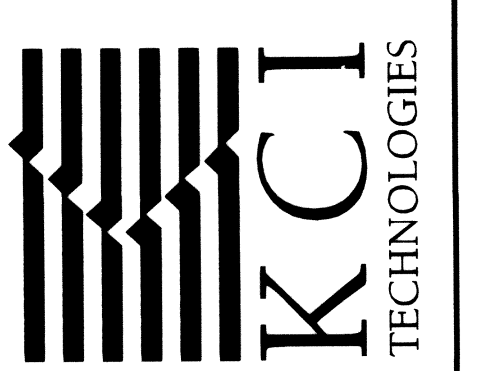


LEGEND

EXISTING GROUND	---
PROPOSED GRADE	—
EXISTING STRUCTURE	—

NO.	REVISIONS DESCRIPTION	DATE

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MEADOWBROOK PARK
STREAM RESTORATION PROJECT
CAPITAL PROJECT D-1158
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
STORMWATER MANAGEMENT DIVISION
6700 COLUMBIA, MD 21046

STORM DRAIN
DETAILS

AS SHOWN

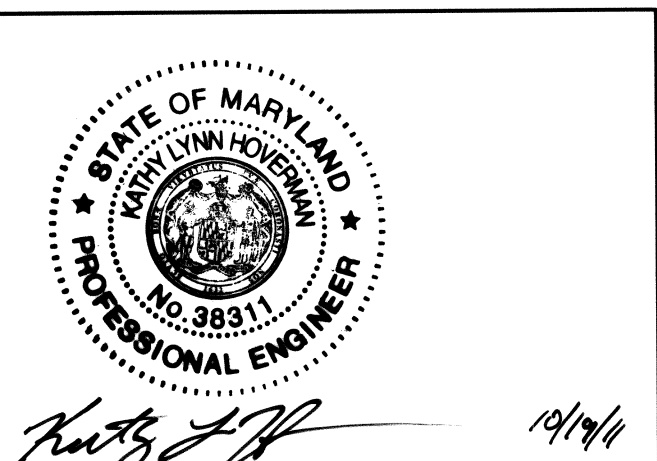
DATE: AUGUST 2011

KCI JOB NO.: 01-081795.43

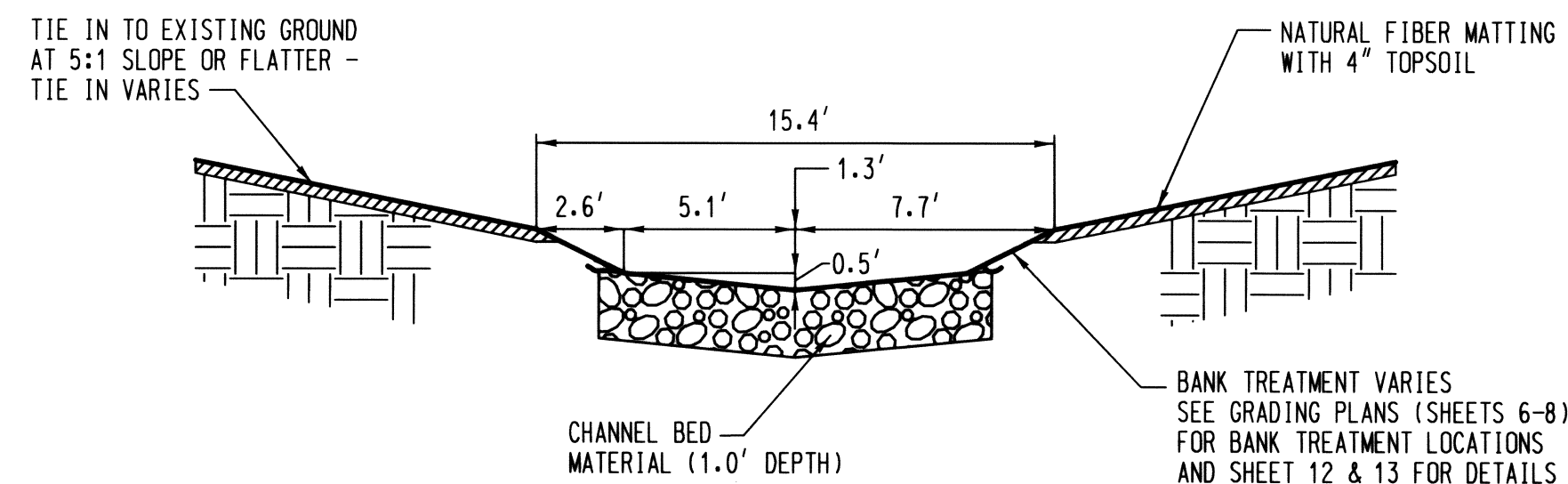
CAPITAL PROJECT NO.: D-1158

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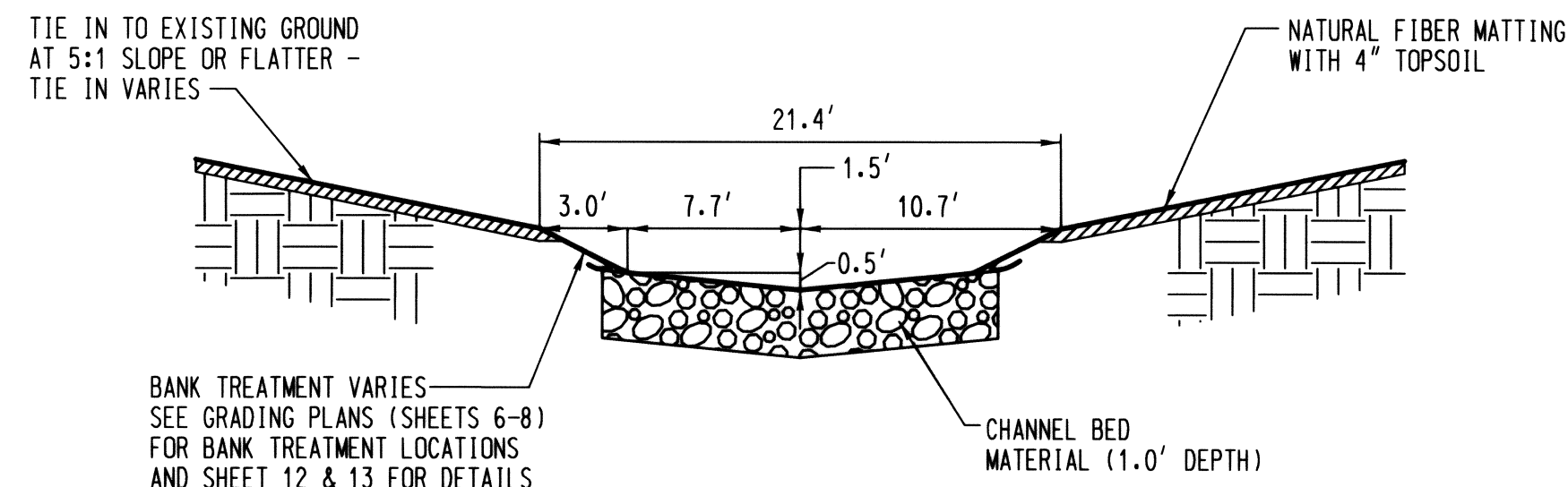
CONSTRUCTION ISSUE:



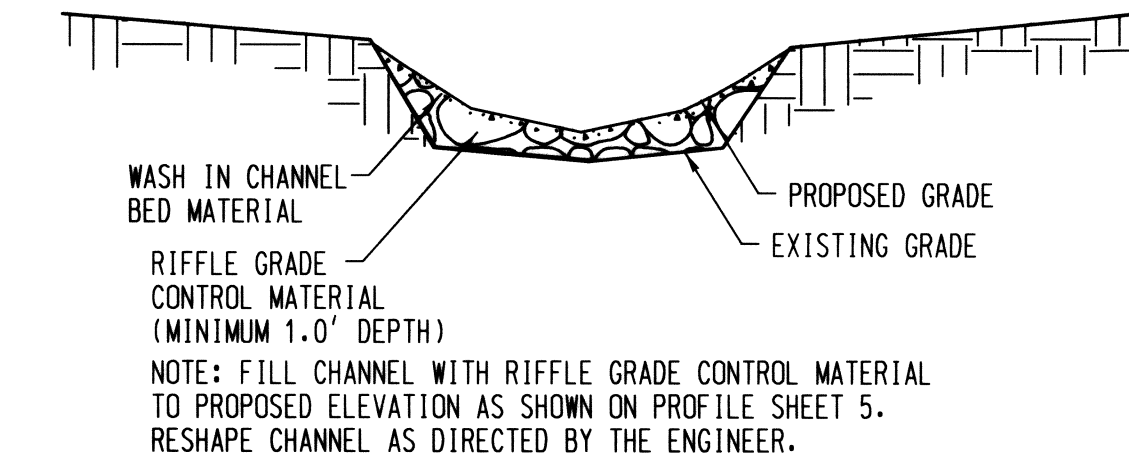
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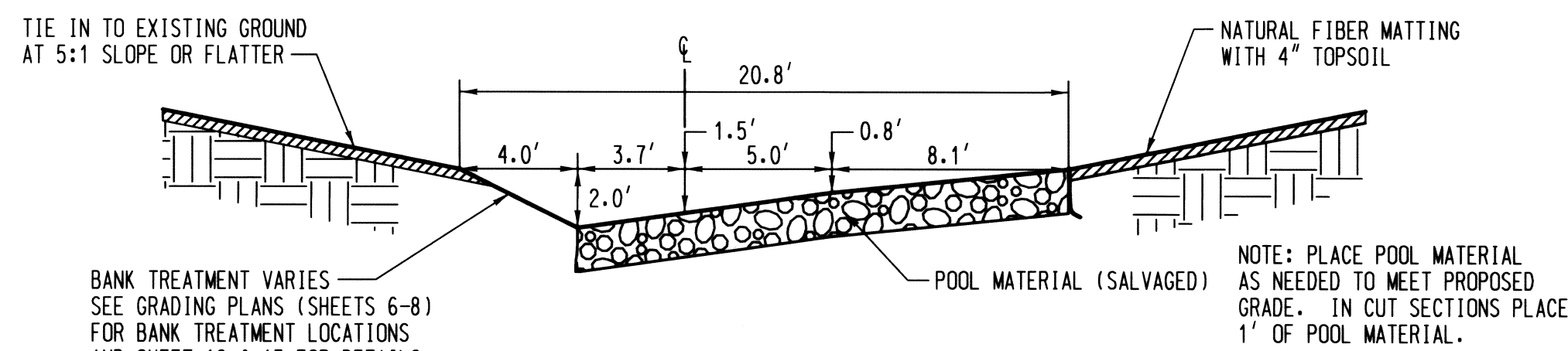
TYPICAL SECTION - RIFFLE
NOT TO SCALE



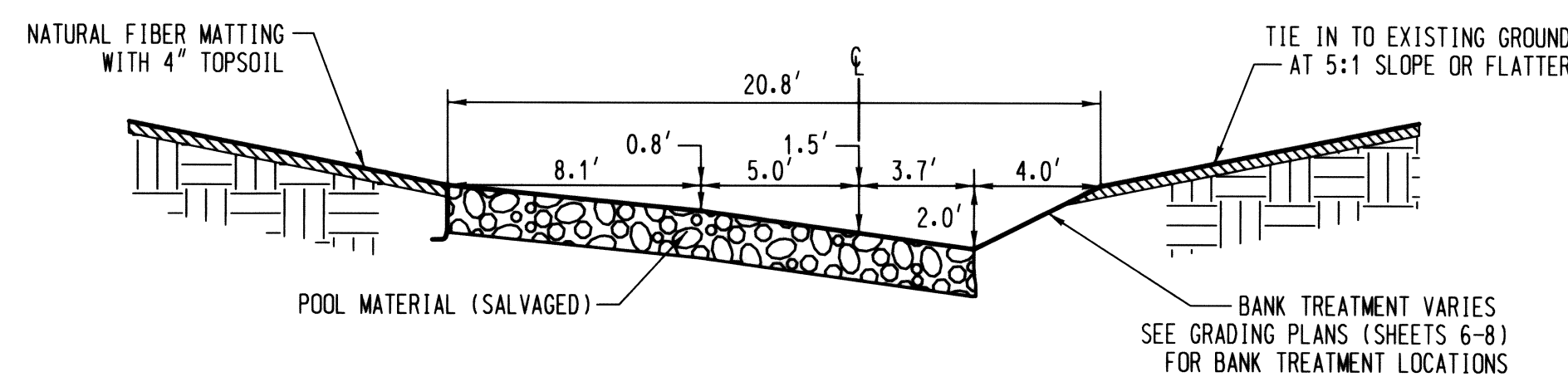
RIFFLE STATION 0+19.5
NOT TO SCALE



TYPICAL SECTION - TRIBUTARY 1 & 2
NOT TO SCALE

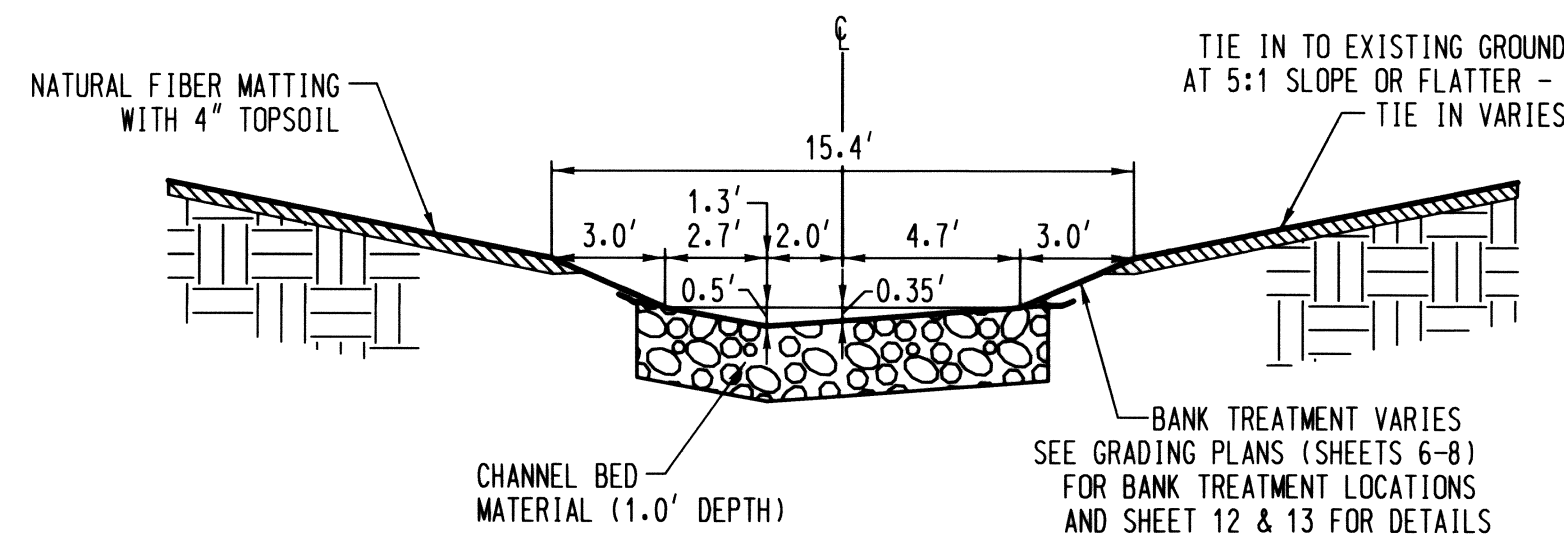


TYPICAL SECTION - POOL LEFT
NOT TO SCALE

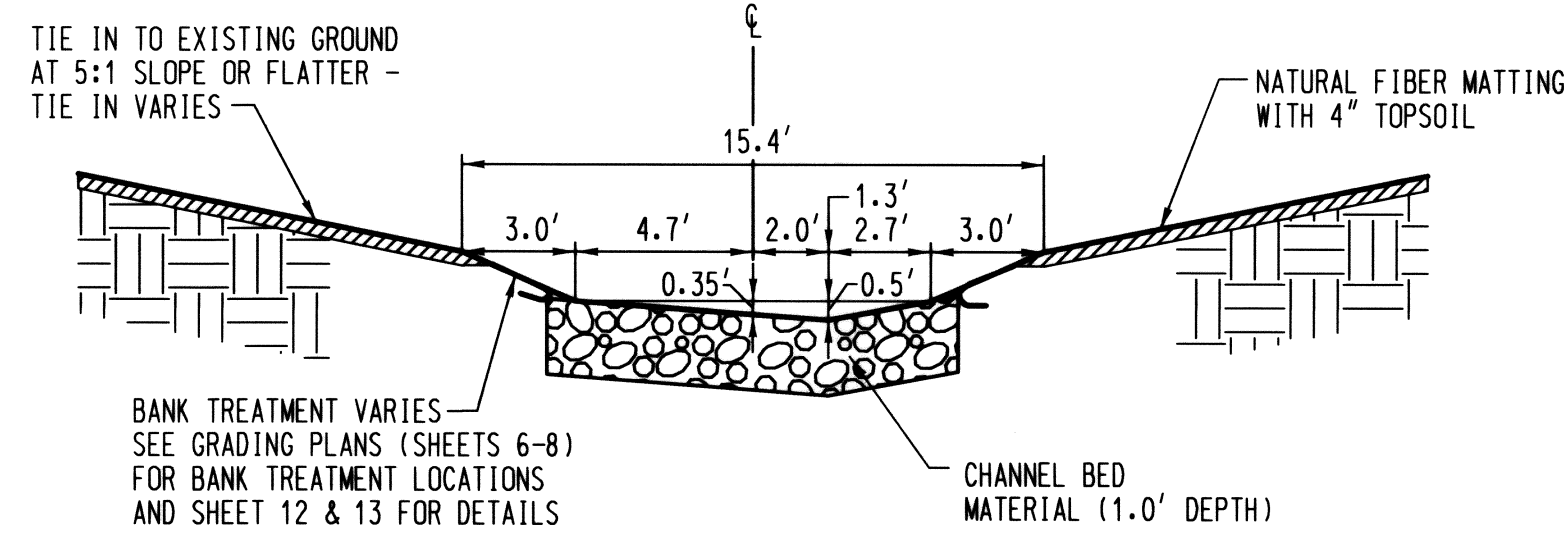


TYPICAL SECTION - POOL RIGHT
NOT TO SCALE

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



TYPICAL SECTION - TRANSITION LEFT
NOT TO SCALE

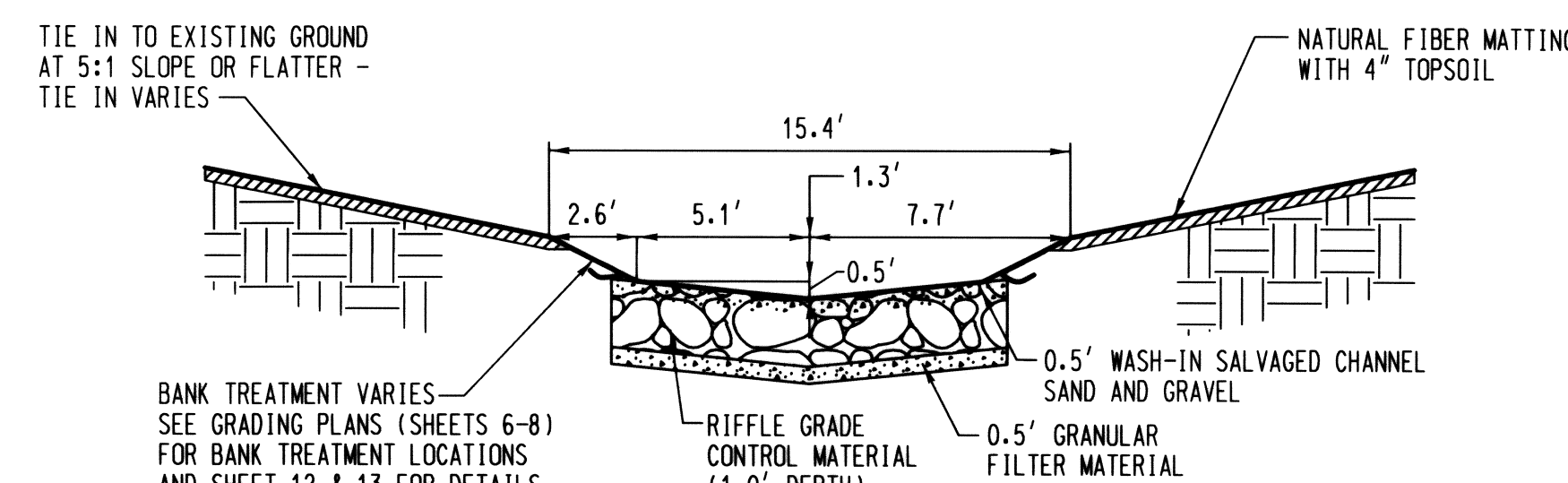


TYPICAL SECTION - TRANSITION RIGHT
NOT TO SCALE

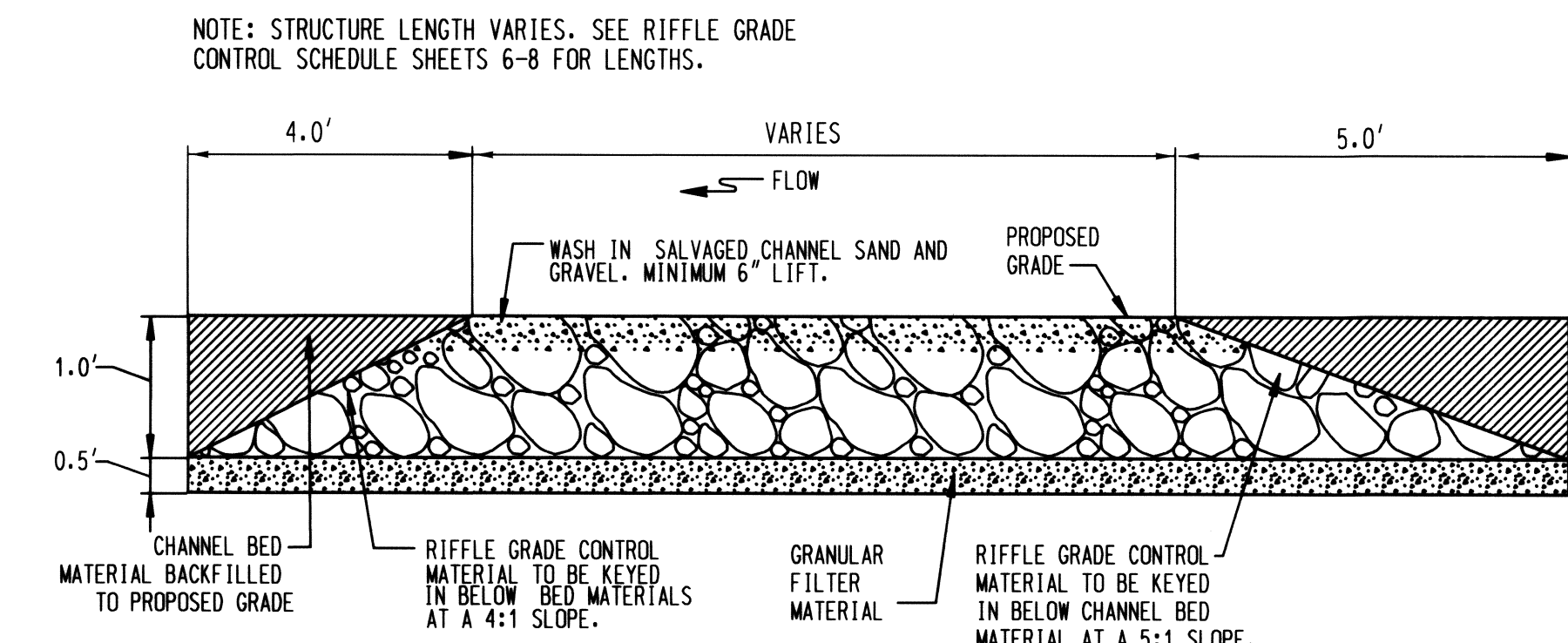
SIZES FOR STONE TYPES	
STONE TYPE	STONE SIZE
RIFFLE GRADE CONTROL MATERIAL	NATURAL ROUNDED COBBLES, D50 = 6" (NOT RIPRAP)
CHANNEL BED MATERIAL	1"-3" NATURAL STONE (NOT CRUSHED STONE)
STONE TOE PROTECTION	50% CLASS I AND 50% CLASS II RIPRAP
ROUGHNESS STONE	3' x 2' x 2'

NOTE: CHANNEL BED MATERIAL SHALL BE SALVAGED WHEN POSSIBLE. ONLY FURNISH CHANNEL BED MATERIAL WHEN SALVAGED MATERIAL IS NOT AVAILABLE. WASH IN CHANNEL SAND AND GRAVEL, AS SPECIFIED BY THE ENGINEER, WHEN PLACING FURNISHED CHANNEL BED MATERIAL.

ALL POOL MATERIAL SHALL BE SALVAGED ON SITE. ALL POOL MATERIAL SHALL CONSIST OF CHANNEL BED MATERIAL AND OTHER NATURAL SAND AND GRAVEL MATERIALS SALVAGED FROM THE CHANNEL BED AND APPROVED BY THE ENGINEER.



RIFFLE GRADE CONTROL
NOT TO SCALE

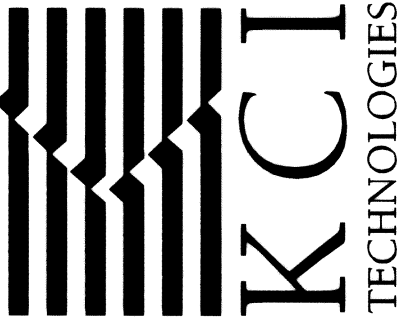


NOTES: 1. ALL RIFFLE GRADE CONTROL STRUCTURES SHALL BE CONSTRUCTED FROM DOWNSTREAM TO UPSTREAM.
2. THE RIFFLE GRADE CONTROL MATERIAL SHALL BE PLACED TO ITS FULL DEPTH MOVING FROM ONE BANK TO THE OPPOSING BANK.

TYPICAL RIFFLE GRADE CONTROL PROFILE
NOT TO SCALE

NO.	REVISIONS DESCRIPTION	DATE

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

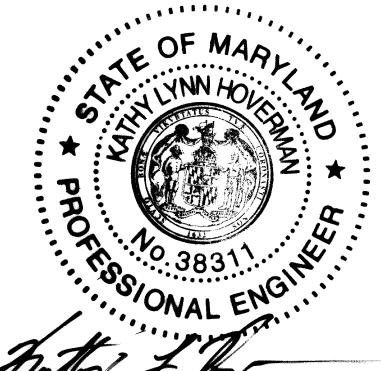


MEADOWBROOK PARK
STREAM RESTORATION PROJECT

CAPITAL PROJECT D-1158
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
STORMWATER MANAGEMENT DIVISION
675 COLUMBIA VALLEY ROAD
COLUMBIA, MD 21046

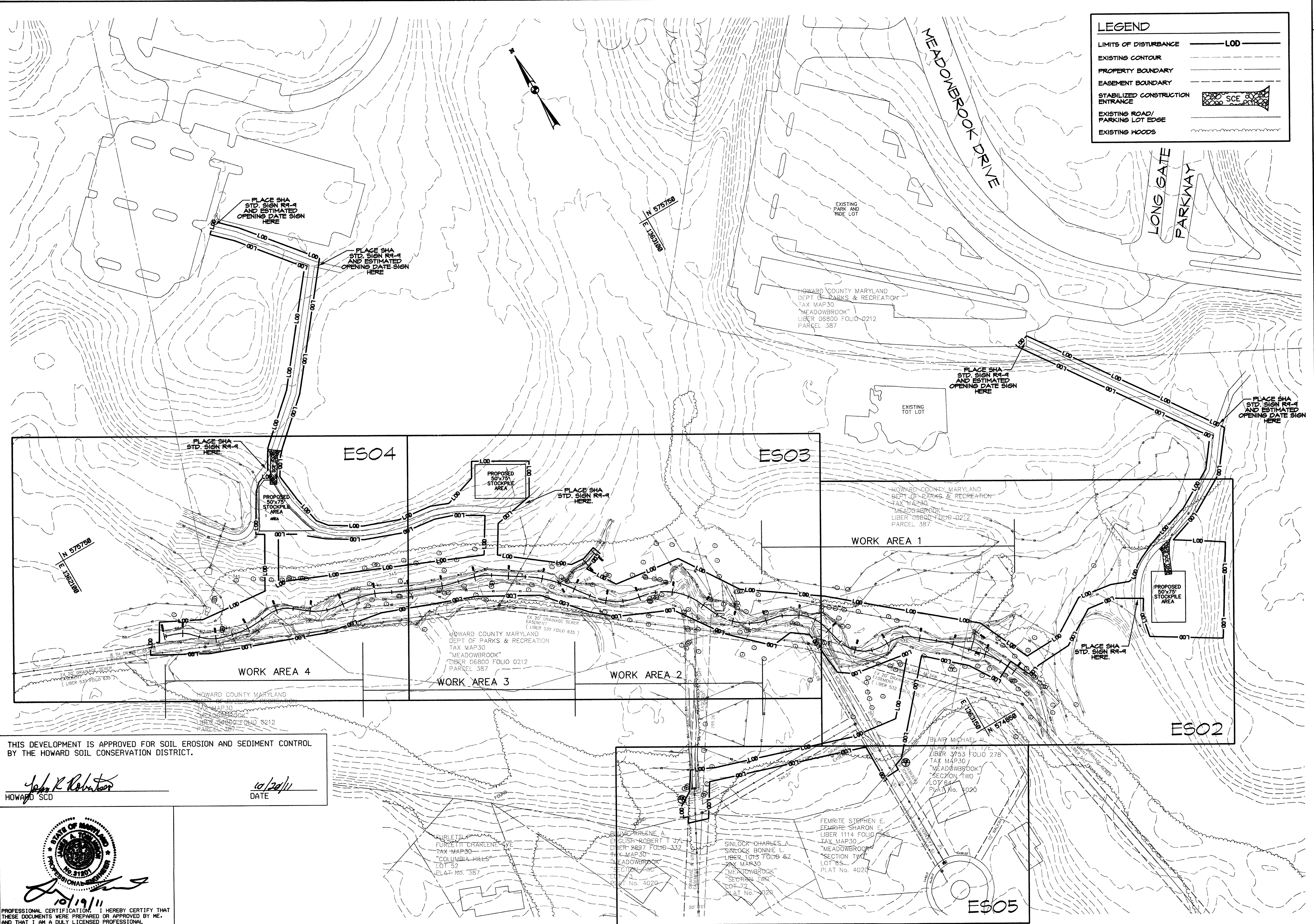
STREAM
DETAILS

SCALE:	NTS
DATE:	AUGUST 2011
KCI JOB NO.:	01-081795.43
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. 38311, EXPIRATION DATE: JANUARY 6, 2012

PLOTTED: 08/03/11 BY: J. P. ...



LEGEND

- LIMITS OF DISTURBANCE — LOD —
- EXISTING CONTOUR —
- PROPERTY BOUNDARY —
- EASEMENT BOUNDARY —
- STABILIZED CONSTRUCTION ENTRANCE SCE
- EXISTING ROAD/PARKING LOT EDGE —
- EXISTING WOODS —

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

John R. Robertson
 HOWARD SCD
 DATE 10/20/11

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, 2013

10/19/11

NO.	REVISIONS DESCRIPTION	DATE

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 SPARKS, MARYLAND 21152
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 FAX: (410) 316-7818
 www.kci.com



MEADOWBROOK PARK
 STREAM RESTORATION PROJECT

CAPITAL PROJECT D-1158
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 1000 COLLETTA ROAD
 COLLETTA, MD 21034

ACCESS PLAN

SCALE: 1" = 60'
 DATE: AUGUST 2011
 KCI JOB NO.: 01-081795.43
 CAPITAL PROJECT NO.: D-1158
 PERMIT ISSUE:
 CONSTRUCTION ISSUE:

ES01
 SHEET NO.: 14 OF 25
 EP-11-28

KCI FILE: M:\2008\01081795.43\

HOWARD COUNTY MARYLAND
DEPT. OF PARKS & RECREATION
TAX MAP 30
"MEADOWBROOK"
LIBER 06800 FOLIO 0212
PARCEL 387

WORK AREA 1

MATCHLINE A-A (SEE SHEET 16 OF 24)

MATCHLINE C-C
(SEE SHEET 17 OF 24)

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

John R. Robertson
HOWARD SCD
DATE: 10/20/11

BLAIR MICHAEL P.
BLAIR MARY T. T/E.
LIBER 3753 FOLIO 278
TAX MAP 30
"MEADOWBROOK"
SECTION TWO
LOT 64
PLAT No. 4020

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, 2013.

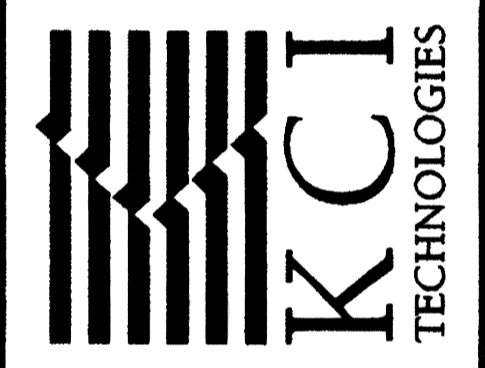
10/19/11

LEGEND

LIMITS OF DISTURBANCE	— LOD —
EXISTING CONTOUR	- - - - -
PROPOSED CONTOUR	— 345 —
ALTERNATING ROUGHNESS	□□□□□□□□
BRUSH MATRESS/ BIOENGINEERING	◇◇◇◇◇◇◇◇
STONE TOE PROTECTION	▶▶▶▶▶▶▶▶▶▶
RIFFLE GRADE CONTROL	▒▒▒▒▒▒▒▒▒▒
PROPERTY BOUNDARY	— — — — —
EASEMENT BOUNDARY	- - - - -
EXISTING TREE	⊗
EXISTING FENCE	— X —
EXISTING WATERS OF U.S.	— WUS —
EXISTING WETLANDS	— WB —
EXISTING 25' WETLAND BOUNDARY	— WB —
STABILIZED CONSTRUCTION ENTRANCE	▒▒▒▒▒▒▒▒▒▒
SILT FENCE	— SF —
SUPER SILT FENCE	— SSF —
ORANGE SAFETY FENCE	— OSF —
SANDBAG DIVERSION	○○○○○○○○○○○○○○○○
PUMP	⊗
FILTER BAG	▒
DISCHARGE HOSE	— — — — —
100-YEAR FLOODPLAIN	— — — — —

NO.	REVISIONS DESCRIPTION	DATE

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



MEADOWBROOK PARK
STREAM RESTORATION PROJECT

CAPITAL PROJECT D-1158
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
1000 COLUMBIA AVENUE
COLUMBIA, MD 21046

EROSION AND
SEDIMENT
CONTROL PLAN

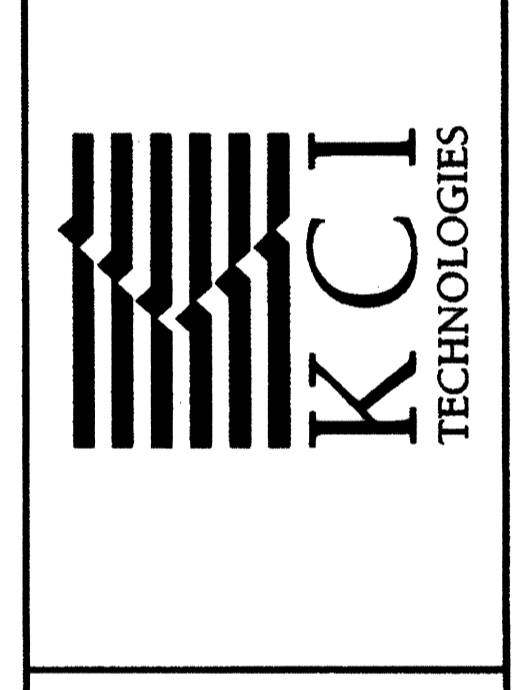
SCALE: 1" = 20'

DATE:	AUGUST 2011
KCI JOB NO.:	01-081795.43
CAPITAL PROJECT NO.:	D-1158
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	

LEGEND	
LIMITS OF DISTURBANCE	— LOD —
EXISTING CONTOUR	--- 345 ---
PROPOSED CONTOUR	— 345 —
ALTERNATING ROUGHNESS	□□□□□□□□
BRUSH MATTRESS/BIOENGINEERING	◇◇◇◇◇◇◇◇
STONE TOE PROTECTION	▶▶▶▶▶▶▶▶▶▶
RIFFLE GRADE CONTROL	▒▒▒▒▒▒▒▒▒▒
PROPERTY BOUNDARY	---
EASEMENT BOUNDARY	---
EXISTING TREE	○
EXISTING FENCE	×
EXISTING WATERS OF U.S.	— WUS —
EXISTING WETLANDS	— WB —
EXISTING 25' WETLAND BOUNDARY	— WB —
STABILIZED CONSTRUCTION ENTRANCE	▒ SCE ▒
SILT FENCE	— SF —
SUPER SILT FENCE	— SSF —
ORANGE SAFETY FENCE	— OSF —
SANDBAG DIVERSION	○○○○○○○○○○○○○○○○
PUMP	⊗
FILTER BAG	▒ FB ▒
DISCHARGE HOSE	— — — — —
100-YEAR FLOODPLAIN	---

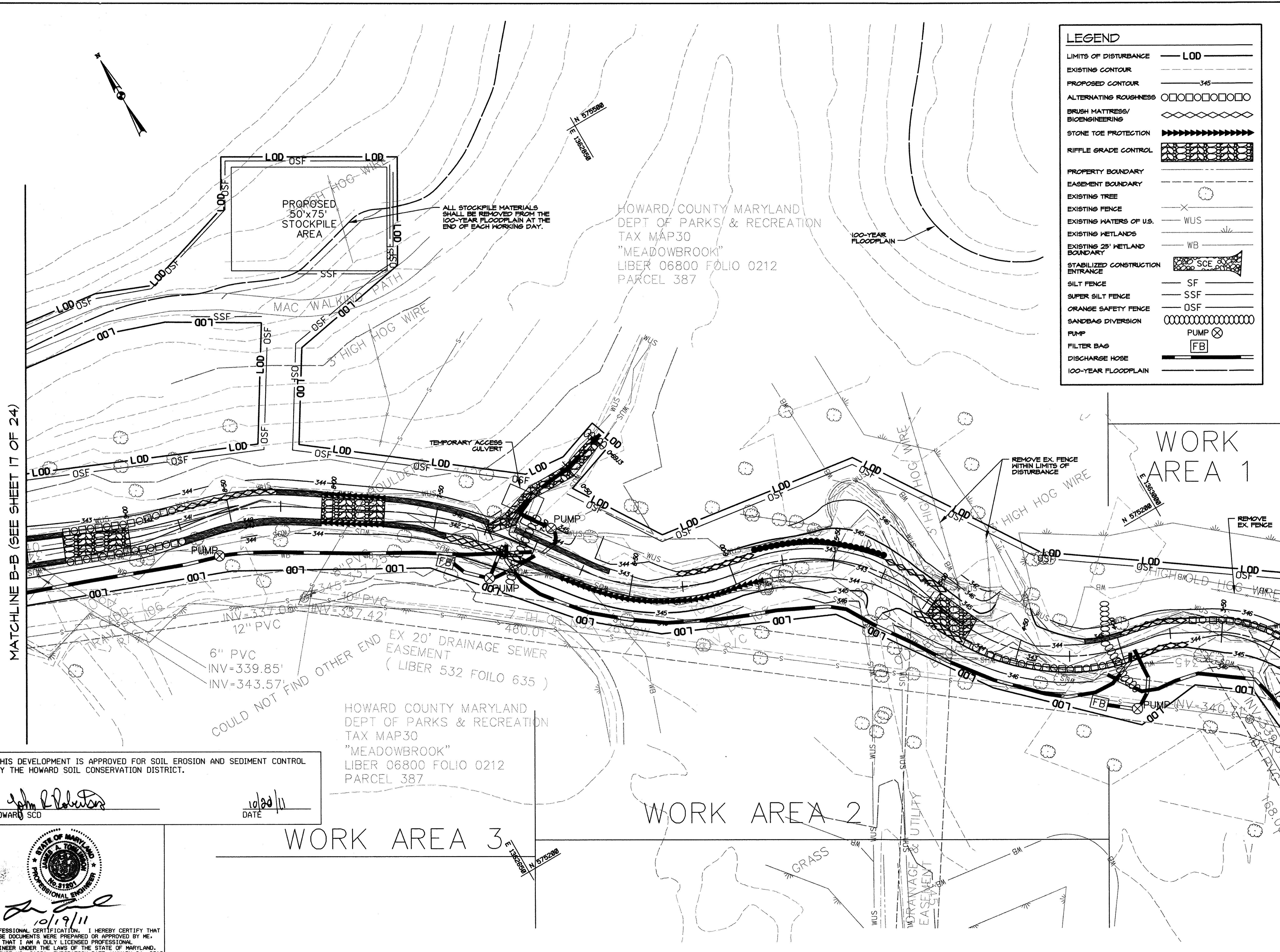
NO.	REVISIONS DESCRIPTION	DATE

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MEADOWBROOK PARK
 STREAM RESTORATION PROJECT
 CAPITAL PROJECT D-158
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 ONE COLLEGE PARK DRIVE
 COLLEGE PARK, MD 20740

EROSION AND SEDIMENT CONTROL PLAN	
SCALE:	1" = 20'
DATE:	AUGUST 2011
KCI JOB NO.:	01-081795.43
CAPITAL PROJECT NO.:	D-1158
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	
ES03	
SHEET NO.: 16 OF 25	
EP-11-28	



MATCHLINE B-B (SEE SHEET 17 OF 24)

MATCHLINE A-A (SEE SHEET 15 OF 24)

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

John R. Roberts
 HOWARD SCD
 DATE: 10/20/11

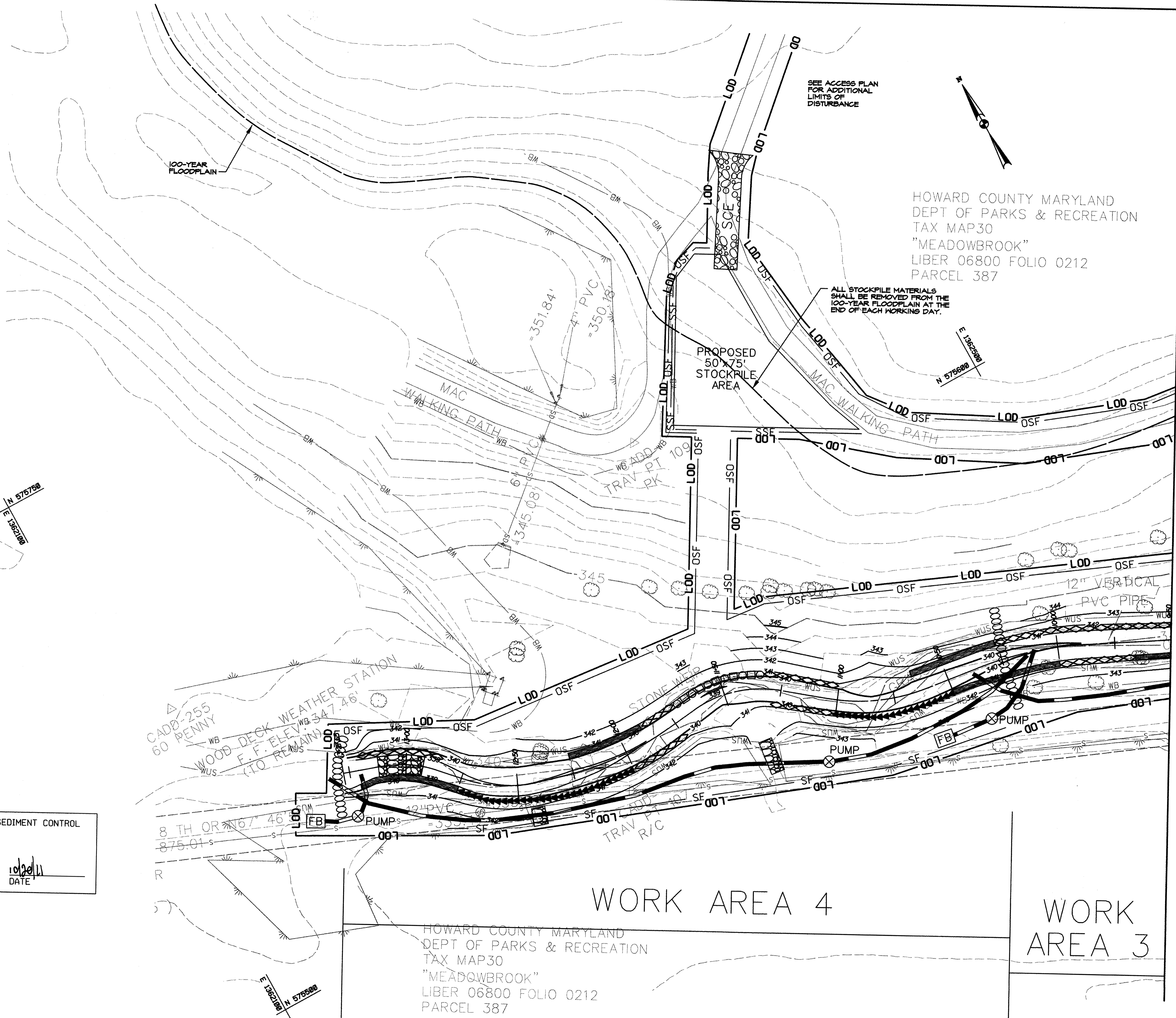
PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 31281. EXPIRATION DATE: JANUARY 24, 2013

John R. Roberts
 10/19/11

HOWARD COUNTY MARYLAND
 DEPT OF PARKS & RECREATION
 TAX MAP 30
 "MEADOWBROOK"
 LIBER 06800 FOLIO 0212
 PARCEL 387

HOWARD COUNTY MARYLAND
 DEPT OF PARKS & RECREATION
 TAX MAP 30
 "MEADOWBROOK"
 LIBER 06800 FOLIO 0212
 PARCEL 387

LEGEND	
LIMITS OF DISTURBANCE	LOD
EXISTING CONTOUR	- - - - -
PROPOSED CONTOUR	— 345 —
ALTERNATING ROUGHNESS	□□□□□□□□
BRUSH MATRESS/ BIOENGINEERING	◇◇◇◇◇◇◇◇
STONE TOE PROTECTION	▶▶▶▶▶▶▶▶
RIFFLE GRADE CONTROL	▒▒▒▒▒▒▒▒
PROPERTY BOUNDARY	— — — — —
EASEMENT BOUNDARY	- - - - -
EXISTING TREE	○
EXISTING FENCE	X
EXISTING WATERS OF U.S.	WUS
EXISTING WETLANDS	WB
EXISTING 25' WETLAND BOUNDARY	WB
STABILIZED CONSTRUCTION ENTRANCE	SCE
SILT FENCE	SF
SUPER SILT FENCE	SSF
ORANGE SAFETY FENCE	OSF
SANDBAG DIVERSION	○
PUMP	PUMP ⊗
FILTER BAG	FB
DISCHARGE HOSE	— — — — —
100-YEAR FLOODPLAIN	— — — — —



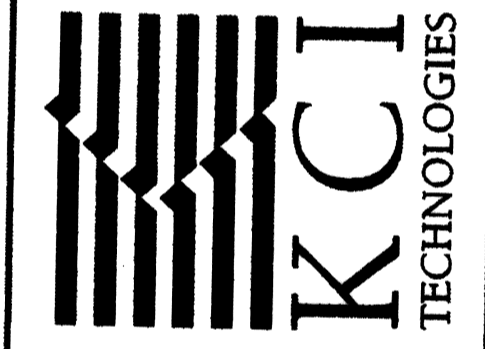
SEE ACCESS PLAN FOR ADDITIONAL LIMITS OF DISTURBANCE

HOWARD COUNTY MARYLAND
DEPT OF PARKS & RECREATION
TAX MAP 30
"MEADOWBROOK"
LIBER 06800 FOLIO 0212
PARCEL 387

ALL STOCKPILE MATERIALS SHALL BE REMOVED FROM THE 100-YEAR FLOODPLAIN AT THE END OF EACH WORKING DAY.

NO.	REVISIONS DESCRIPTION	DATE

936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818
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MATCHLINE B-B (SEE SHEET 16 OF 24)

MEADOWBROOK PARK
STREAM RESTORATION PROJECT
CAPITAL PROJECT D-1158
HOWARD COUNTY DEPARTMENT OF PARKS & RECREATION
EROSION AND SEDIMENT CONTROL DIVISION

EROSION AND
SEDIMENT
CONTROL PLAN

SCALE:	1" = 20'
DATE:	AUGUST 2011
KCI JOB NO.:	01-081795.43
CAPITAL PROJECT NO.:	D-1158
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	

ES04
SHEET NO.: 17 OF 25

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

John L. Robertson
HOWARD SCD
DATE: 10/20/11

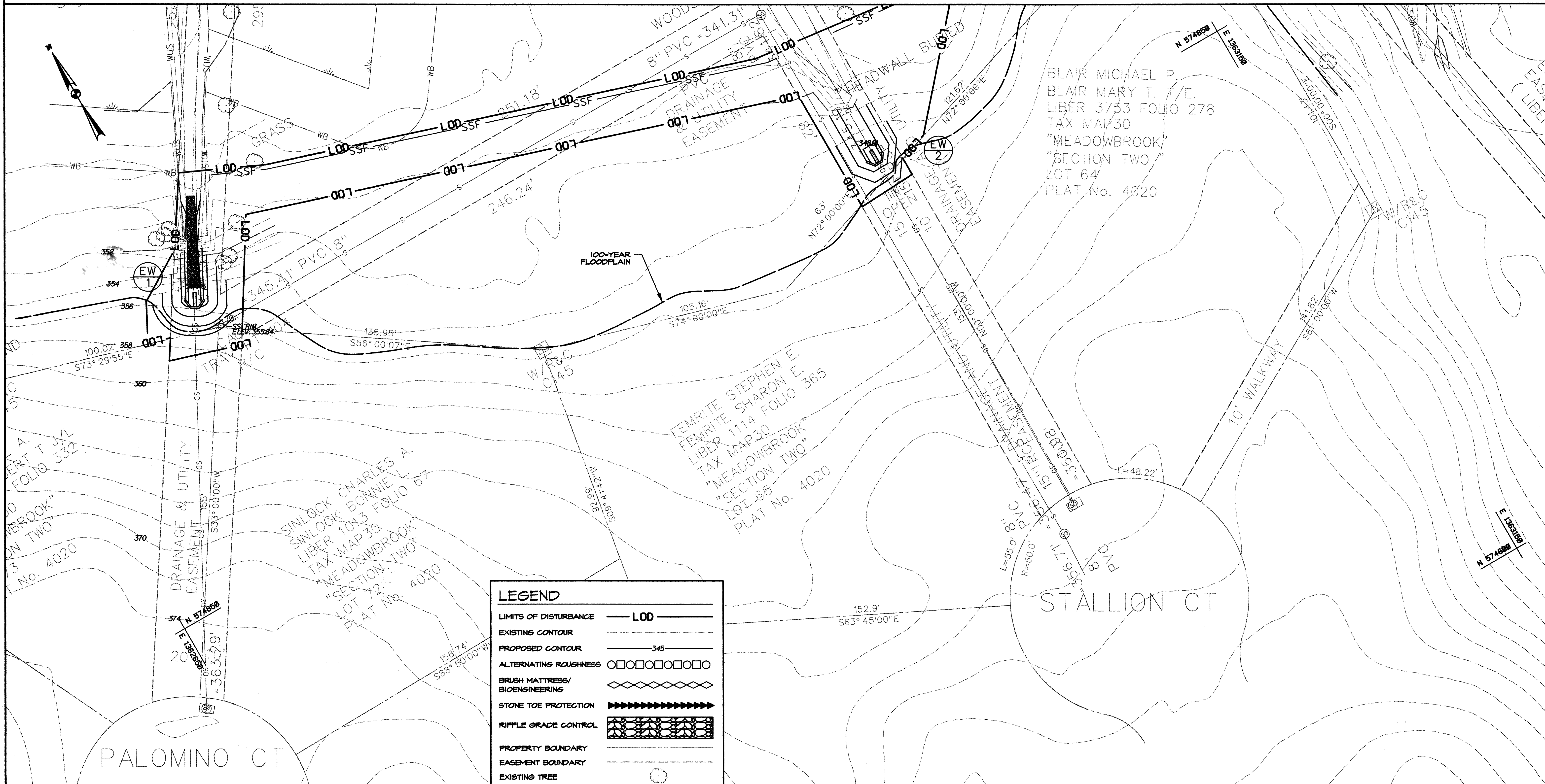
PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 31291, EXPIRATION DATE: JANUARY 24, 2013

HOWARD COUNTY MARYLAND
DEPT OF PARKS & RECREATION
TAX MAP 30
"MEADOWBROOK"
LIBER 06800 FOLIO 0212
PARCEL 387

WORK AREA 4

WORK AREA 3

MATCHLINE C-C (SEE SHEET 15 OF 24)



LEGEND	
LIMITS OF DISTURBANCE	— LOD —
EXISTING CONTOUR	— 345 —
PROPOSED CONTOUR	— 345 —
ALTERNATING ROUGHNESS	□□□□□□□□
BRUSH MATTRESS/BIOENGINEERING	◇◇◇◇◇◇◇◇
STONE TOE PROTECTION	▶▶▶▶▶▶▶▶▶▶
RIFFLE GRADE CONTROL	▒▒▒▒▒▒▒▒▒▒
PROPERTY BOUNDARY	— — — — —
EASEMENT BOUNDARY	- - - - -
EXISTING TREE	⊙
EXISTING FENCE	— X —
EXISTING WATERS OF U.S.	— WUS —
EXISTING WETLANDS	— WB —
EXISTING 25' WETLAND BOUNDARY	— WB —
STABILIZED CONSTRUCTION ENTRANCE	▒▒▒▒ SCE
SILT FENCE	— SF —
SUPER SILT FENCE	— SSF —
ORANGE SAFETY FENCE	— OSF —
SANDBAG DIVERSION	○○○○○○○○○○○○○○○○
PUMP	⊗
FILTER BAG	⊗
DISCHARGE HOSE	— FB —
100-YEAR FLOODPLAIN	— — — — —
RIPRAP OUTFALL PROTECTION	▒▒▒▒▒▒▒▒▒▒

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

John R. Roberts
HOWARD SCD

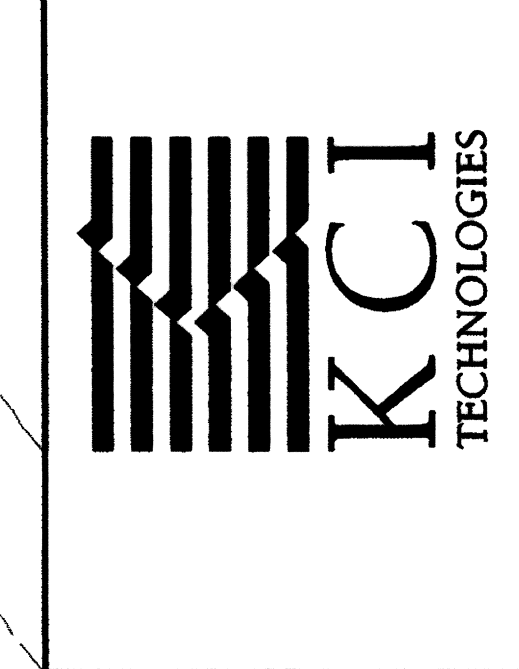
10/20/11
DATE

STATE OF MARYLAND
PROFESSIONAL ENGINEER
10/19/11

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, 2013.

NO.	REVISIONS DESCRIPTION	DATE

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TELEPHONE: (410) 316-7800
FAX: (410) 316-7818
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MEADOWBROOK PARK
STREAM RESTORATION PROJECT

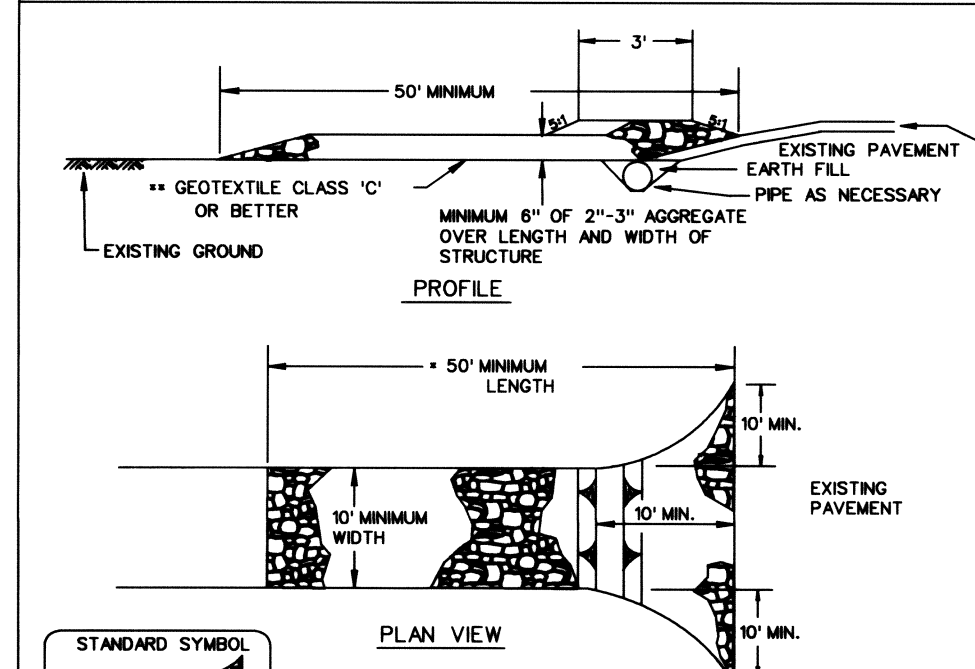
CAPITAL PROJECT D-158
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
3000 COLUMBIA AVENUE
COLUMBIA, MD 21046

EROSION AND SEDIMENT CONTROL PLAN

SCALE:	1" = 20'
DATE:	AUGUST 2011
KCI JOB NO.:	01-081795.43
CAPITAL PROJECT NO.:	D-1158
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	

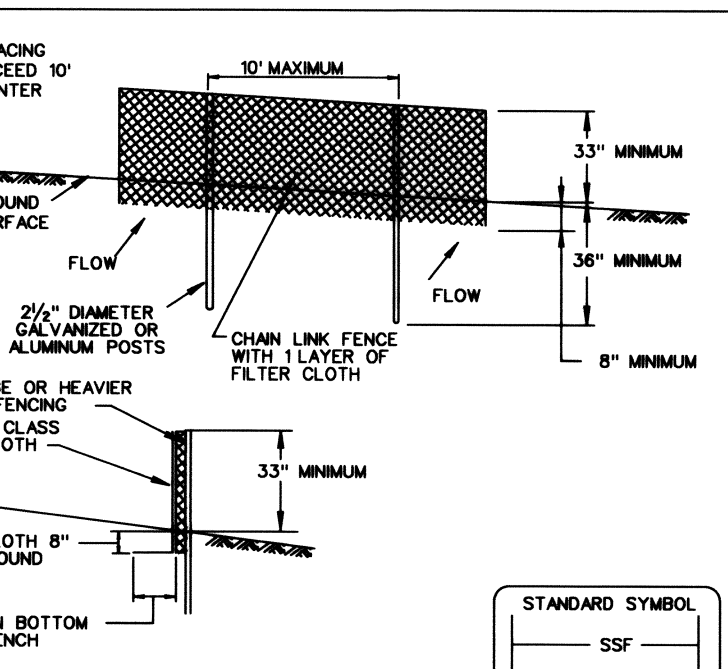
ES05
SHEET NO.: 18 OF 25
EP-11-28

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



- Construction Specifications
1. Length - minimum of 50' (+30' for single ledge 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.
4. Stone - crushed aggregate 1/2" to 3/4" or recycled concrete equivalent should be placed at least 6" deep over the length and width of the entrance.

DETAIL 33 - SUPER SILT FENCE



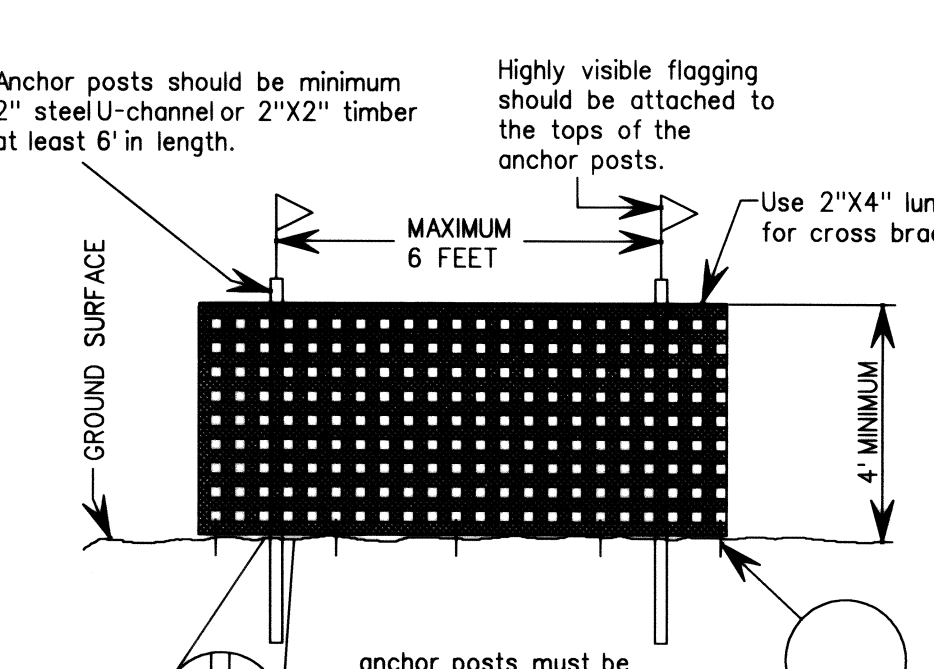
- Construction Specifications
1. Fencing shall be 42 inches in height and constructed in accordance with the latest Maryland State Highway (SHA) Details for Chain Link Fencing.
2. The posts do not need to be set in concrete.
3. Chain link fence shall be fastened securely to the fence posts with wire ties or staples.
4. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.

SUPER SILT FENCE

Design Criteria table showing Slope Steepness, Slope Length (maximum), and Silt Fence Length (maximum) for various slope conditions.

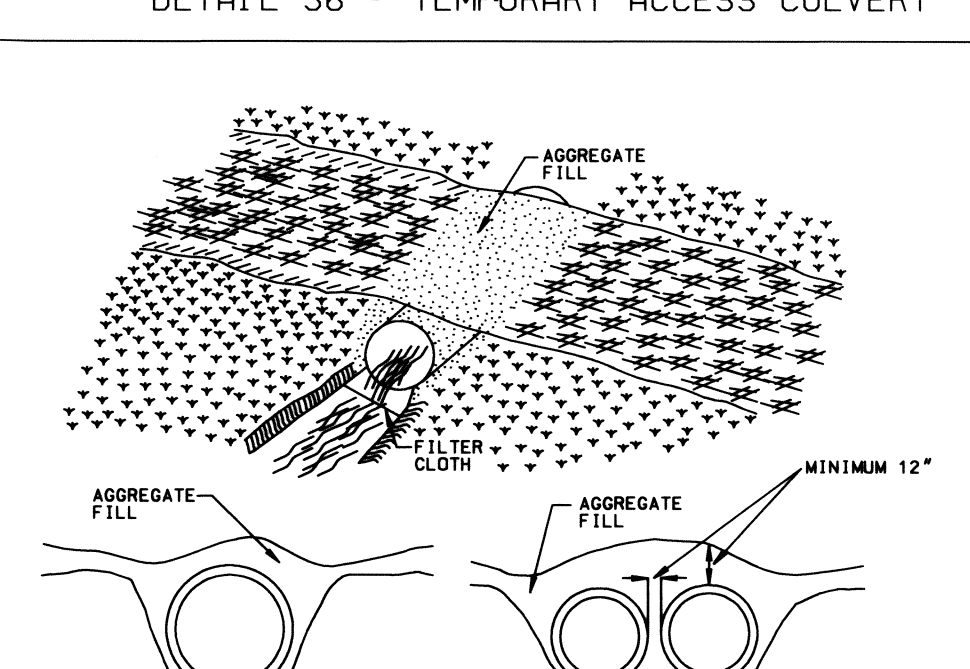
Anchor posts should be minimum 2" steel U-channel or 2"x2" timber at least 6' in length. Highly visible flagging should be attached to the tops of the anchor posts.

DETAIL FOR BLAZE ORANGE PLASTIC MESH SAFETY FENCE



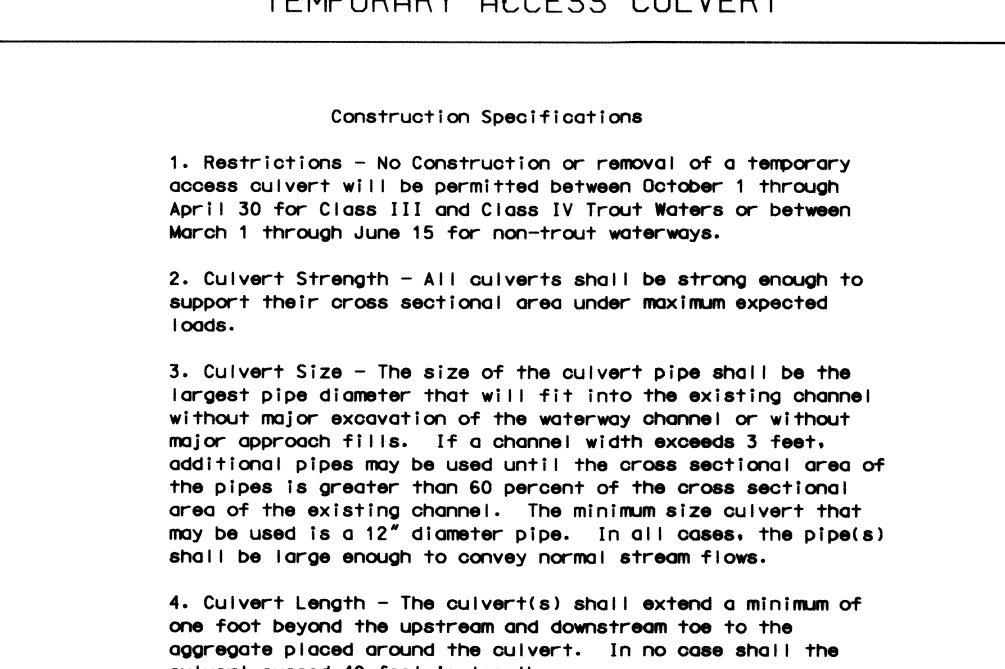
DETAIL FOR BLAZE ORANGE PLASTIC MESH SAFETY FENCE NOT TO SCALE

DETAIL 36 - TEMPORARY ACCESS CULVERT



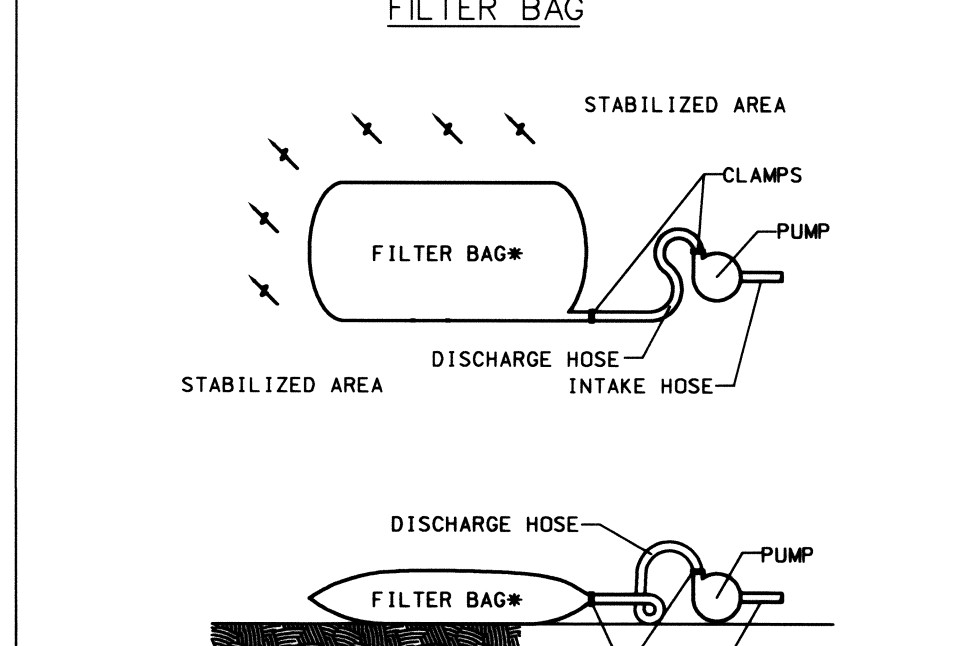
Construction Specifications
1. Restrictions - No construction or removal of a temporary access culvert will be permitted between October 1 through April 30 for Class III and Class IV Trout Waters or between March 1 through June 15 for non-trout waterways.

TEMPORARY ACCESS CULVERT



Construction Specifications
1. Restrictions - No construction or removal of a temporary access culvert will be permitted between October 1 through April 30 for Class III and Class IV Trout Waters or between March 1 through June 15 for non-trout waterways.

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

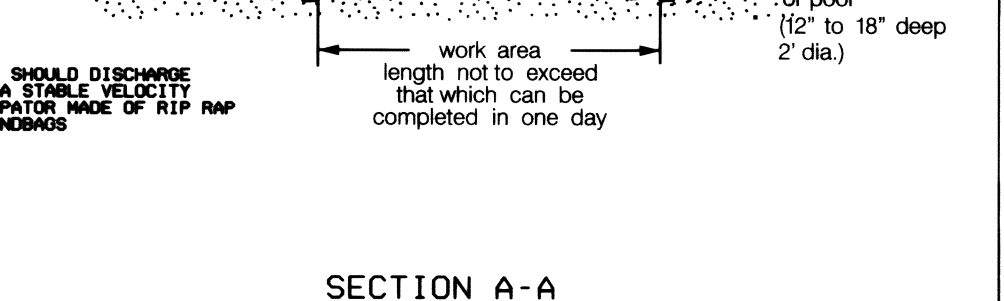
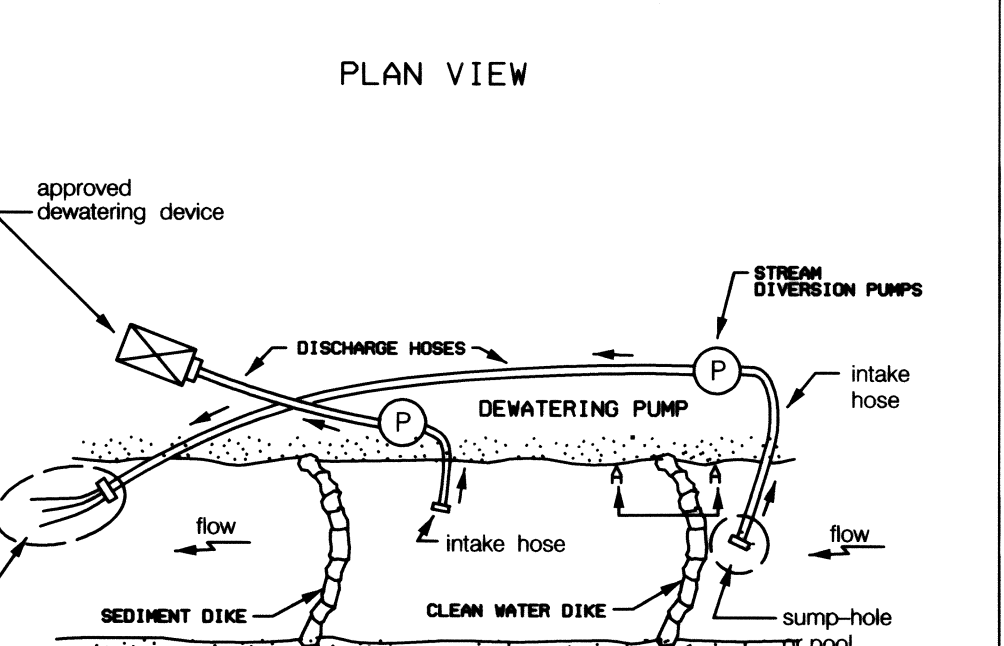
- NOTES: 1. PLACE FILTER BAGS ON STABLE OR WELL VEGETATED AREAS WHICH ARE FLATTER THAN 5% AND WILL NOT ERODE WHEN SUBJECT TO BAG DISCHARGES.
2. CLAMP PUMP DISCHARGE HOSES SECURELY INTO FILTER BAGS.
3. LIMIT PUMPING RATE TO 1/2 THE MANUFACTURER'S MAXIMUM PUMPING RATE.
4. WHEN SEDIMENTS FILL 1/2 THE VOLUME 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 LBS/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.

Table with 3 columns: PROPERTY, VALUE, and STANDARD. Properties include Weight, Grab Tensile, Puncture, Flow Rate, Permittivity (D50), UV Resistance, and Apparent Opening Size (AOS).

DETAIL 1.2+ PUMP-AROUND PRACTICE

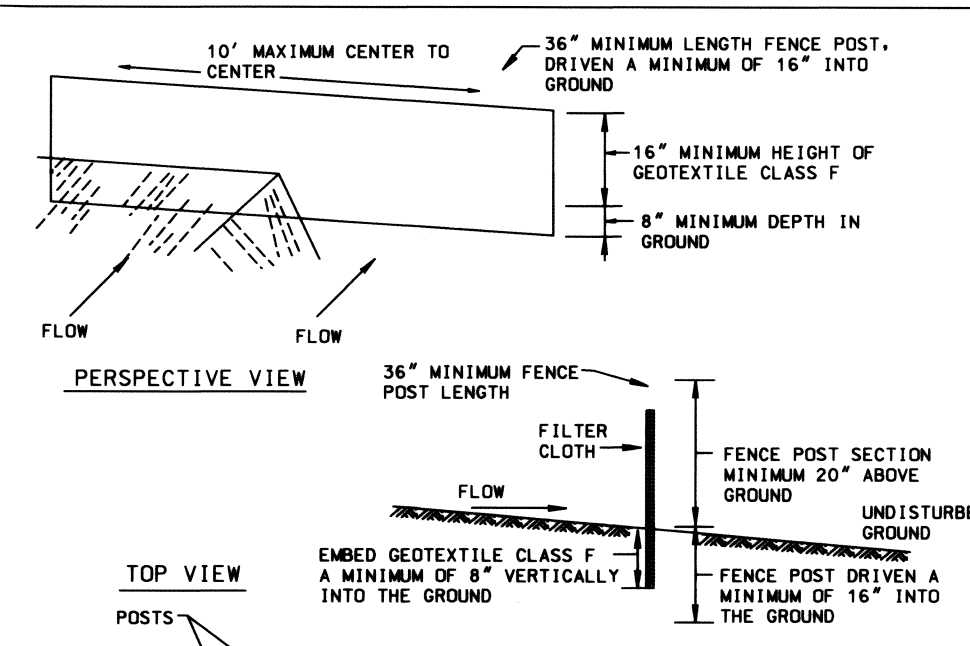


TEMPORARY INSTREAM CONSTRUCTION MEASURES REVISED NOVEMBER 2000 MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

HOWC 1.2+ PUMP-AROUND PRACTICE

- 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 practice, 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 necessary easements and/or right-of-way have been acquired.

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 1/2 x 1 1/2 square (minimum) cut, or 1 1/2 diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighing not less than 1.00 pound per linear foot.

Table with 3 columns: PROPERTY, VALUE, and TEST. Properties include Tensile Strength, Tensile Modulus, Flow Rate, and Filtering Efficiency.

SILT FENCE

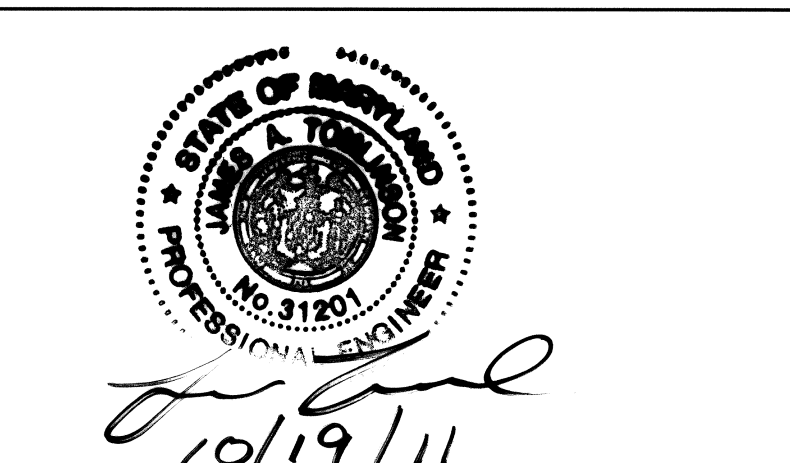
Silt Fence Design Criteria table showing Slope Steepness, Slope Length (Maximum), and Silt Fence Length (Maximum) for various slope conditions.

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.

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

Signature of Howard Soil Conservation District official.

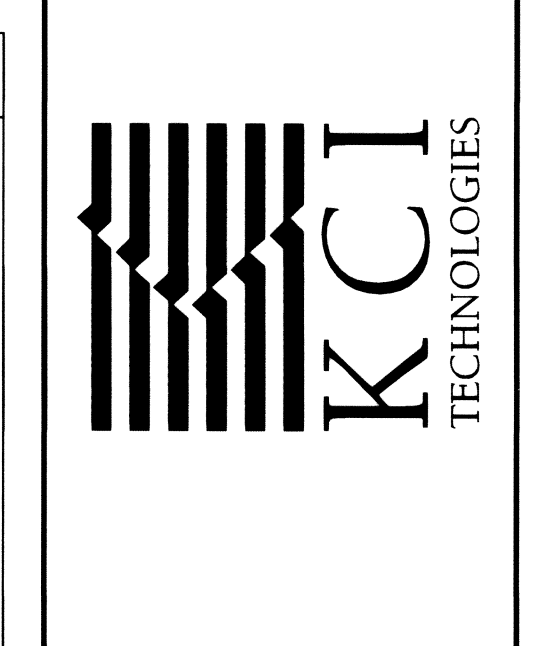
Signature and date of professional engineer.



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, 2013

Table for REVISIONS DESCRIPTION and DATE.

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



MEADOWBROOK PARK STREAM RESTORATION PROJECT CAPITAL PROJECT D-168

EROSION AND SEDIMENT CONTROL DETAILS

Table with fields for SCALE (AS SHOWN), DATE (AUGUST 2011), KCI JOB NO. (01-081795.43), CAPITAL PROJECT NO. (D-1158), CONSTRUCTION ISSUE, SHEET NO. (19 OF 25), and EP-11-28.

SEQUENCE OF CONSTRUCTION

- 1. OBTAIN GRADING PERMIT. STREAM CLOSURE PERIOD IS MARCH 1-JUNE 15, INCLUSIVE. MDE PERMIT TRACKING NO. 201160841. 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 MDE, AND A REPRESENTATIVE FROM HOWARD COUNTY CONSTRUCTION INSPECTION. (1 DAY)
3. NOTIFY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT'S NONTIDAL WETLANDS AND WATERWAYS INSPECTIONS AND COMPLIANCE DIVISION AT LEAST FIVE (5) DAYS PRIOR TO ANY EARTH MOVING CONSTRUCTION WITHIN NONTIDAL WETLANDS AND/OR THEIR BUFFERS. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST FIVE (5) WORKING DAYS PRIOR TO ANY WORK BEING DONE. THE CONTRACTOR SHALL NOTIFY THE HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION (410-313-1880) A MINIMUM OF 24 HOURS PRIOR TO THE START OF ANY CONSTRUCTION. (5 DAYS)
4. PLACE "SIDEWALK CLOSED" AND ESTIMATED OPENING DATE SIGNS AS SHOWN ON THE ACCESS PLAN. (1 DAY)
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. WORK WILL PROCEED FROM UPSTREAM TO DOWNSTREAM. PERFORM ITEMS 6-13 BELOW FOR EACH OF THE FOUR WORK AREAS AS SHOWN ON THE PLANS. WORK AREAS ARE THOSE AREAS ISOLATED FROM THE REMAINING CHANNEL BY A PUMP AROUND PRACTICE. (TOTAL: 84 DAYS)
7. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCES AS NEEDED FOR THE ACTIVE WORK AREAS AND ESTABLISH CONTROLS AROUND THE TEMPORARY STOCKPILE/STAGING AREAS. ACCESS THROUGH THE PARK TO EACH WORK AREA WILL BE PROVIDED FROM THE EXISTING PARKING AREAS ALONG THE WALKING PATHS. THE CONDITION OF THE PATHS SHALL BE MONITORED AND IF THE PATHS ARE DAMAGED OR ADJACENT AREAS ARE DISTURBED, THEN SILT FENCE WILL BE INSTALLED ALONG THE DOWN-SLOPE SIDE OF THE AFFECTED LENGTH IMMEDIATELY. (5 DAYS)
8. CLEAR AND GRUB ONLY AS NECESSARY FOR INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND DEVICES FOR THE ACTIVE WORK AREA, INCLUDING PUMP AROUND PRACTICES. (5 DAYS)
9. CONSTRUCT UPSTREAM SAND BAG DAMS WITHIN THE ACTIVE WORK AREA. THIS INCLUDES SAND BAG DAMS WITHIN THE TRIBUTARIES. PLACE PUMP AROUND HOSE ON THE CHANNEL BANK AS SHOWN ON THE PLANS. BEFORE COMMENCING ANY WORK ACTIVITIES, OBTAIN APPROVAL OF PERIMETER CONTROLS FROM THE SEDIMENT CONTROL INSPECTOR.
10. BEGIN PUMP AROUND OPERATION FOR ACTIVE WORK AREA ONLY, DISCHARGING ONTO SAND BAGS AT OUTFALL. (EACH WORK DAY)
11. CONSTRUCT DOWNSTREAM SAND BAG DAM WITHIN THE ACTIVE WORK AREA. SEDIMENT-LADEN WATER SHALL NOT BE DISCHARGED DIRECTLY INTO THE STREAM. DEWATER ENTRAPPED AREA BEHIND SAND BAGS TO A FILTER BAG DEWATERING DEVICE PRIOR TO DISCHARGE IN TO THE STREAM. (EACH WORK DAY)
12. CONSTRUCT GRADING AND RESTORATION STRUCTURES FROM UPSTREAM TO DOWNSTREAM WITHIN EACH WORK AREA. STABILIZE DISTURBED AREAS AT THE END OF EACH DAY. REMOVE SAND BAG DIVERSIONS AT THE END OF EACH WORKING DAY. WORK SHALL ONLY BE PERFORMED WITH 72 HOURS OF FORECAST DRY WEATHER. AT THE OUTFALL OFF OF PALOMINO COURT, CUT THE EXISTING OUTFALL PIPE UPSTREAM OF THE EXISTING ENDWALL AT THE LOCATION SHOWN ON PLANS. PERFORM GRADING OF NEW OUTFALL CHANNEL. INSTALL EW-1. REPEAT THIS PROCESS FOR THE OUTFALL OFF OF STALLION COURT. (2 WEEKS)
13. 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)
14. INSTALL LANDSCAPING AS SPECIFIED ON THE PLAN. (5 DAYS)
15. 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. (3 DAYS)
16. 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)
NOTE: HARVESTING AND INSTALLATION OF LIVE STAKES SHALL ONLY OCCUR DURING THE DORMANT SEASON, I.E. NOVEMBER 1 THROUGH MARCH 1.

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

Howard E. Saltzman
HOWARD SCD
DATE 10/19/11



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, 2013

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 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.
5. 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.
6. Site Analysis:
Total Area of Site 3.71 Acres
Area Disturbed 3.71 Acres
Area to be roofed or paved 0.00 Acres
Area to be vegetatively stabilized 3.71 Acres
Total Cut 502 Cu. Yds.
Total Fill 1149 Cu. Yds.
Offsite waste/borrow area location To Be Determined
7. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
8. 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.

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 bushels per 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
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.

21.0 STANDARD AND SPECIFICATIONS FOR TOPSOIL

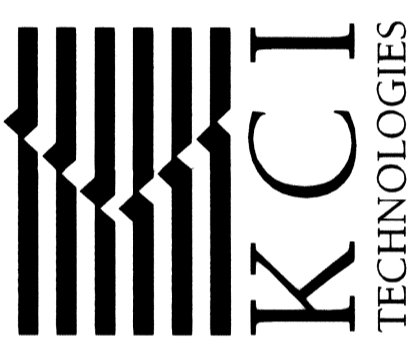
Definition
Placement of topsoil over a prepared subsoil prior to establishment of permanent vegetation.
Purpose
To provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.
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 Experiment 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, trash, or other materials larger than 1 1/2" in diameter.
ii. Topsoil must be free of plants or plant parts such as bermuda grass, quackgrass, johnsongrass, nutgrass, poison ivy, thistle, or others as specified.
iii. Where the subsoils are either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate of 4-8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil. Lime shall be disturbed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.
III. For sites having disturbed areas under 5 acres:
i. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials.
IV. For sites having disturbed areas over 5 acres:
i. On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:
a. pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.
b. Organic content of topsoil shall be not 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 as 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 subsoils are a frozen or muddy condition, when the subsoils are excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAINS

- 1. NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
2. PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
3. DO NOT USE THE EXCAVATED MATERIAL AS BACKFILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACKFILL IS REQUIRED, USE CLEAN MATERIAL FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE.
4. PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
5. REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT MODIFICATION OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, OR WATERWAYS, OR PERMANENT MODIFICATION OF THE 100-YEAR FLOODPLAIN IN EXCESS OF THAT LIST UNDER THE ORIGINALLY AUTHORIZED STRUCTURE OR FILL.
6. RECTIFY ANY NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, OR 100-YEAR FLOODPLAIN TEMPORARILY IMPACTED BY ANY CONSTRUCTION.
7. ALL STABILIZATION IN THE NONTIDAL WETLAND AND NONTIDAL WETLAND BUFFER SHALL CONSIST OF THE FOLLOWING SPECIES: Annual Ryegrass (Lolium multiflorum), Millet (Setaria italica), Barley (Hordeum sp.), Oats (Uniola sp.), AND/OR Rye (Secale cereale). THESE SPECIES WILL ALLOW FOR THE STABILIZATION OF THE SITE WHILE ALSO ALLOWING FOR THE VOLUNTARY REVEGETATION OF THE NATURAL WETLAND SPECIES. OTHER NON-PERSISTENT VEGETATION MAY BE ACCEPTABLE, BUT MUST BE APPROVED BY THE NONTIDAL WETLANDS AND WATERWAYS DIVISION, KENTUCKY 31 FESCUE SHALL NOT BE UTILIZED IN WETLAND OR BUFFER AREAS. THE AREA SHOULD BE SEEDED AND MULCHED TO REDUCE EROSION AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
8. AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST-CONSTRUCTIONS GRADES AND ELEVATIONS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS.
9. TO PROTECT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM:
USE IV WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD OF MARCH 1 THROUGH MAY 31, INCLUSIVE, DURING ANY YEAR.
10. STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.
11. CULVERTS SHALL BE CONSTRUCTED AND ANY RIPRAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER.

Table with columns: NO., REVISIONS DESCRIPTION, DATE

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



MEADOWBROOK PARK
STREAM RESTORATION PROJECT
CAPITAL PROJECT D-168
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
1001 COLUMBIA AVENUE
COLUMBIA, MD 21046

EROSION AND SEDIMENT CONTROL NOTES

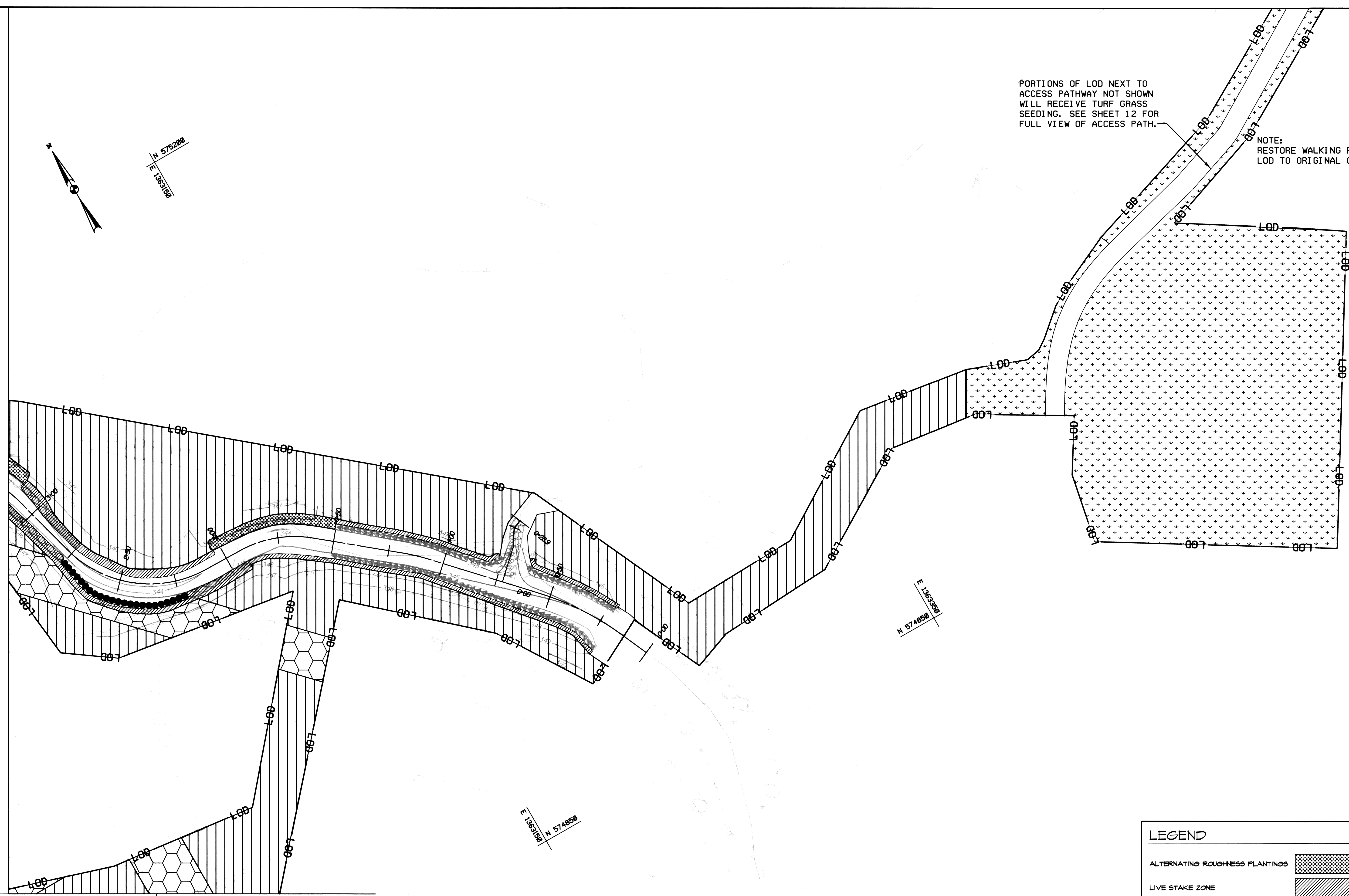
SCALE: AS SHOWN
DATE: AUGUST 2011
KCI JOB NO.: 01-081795.43
CAPITAL PROJECT NO.: D-1158
PERMIT ISSUE:
CONSTRUCTION ISSUE:

ES07
SHEET NO.: 20 OF 25
EP-11-28

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.'
Signature of Engineer: James Tomlinson, P.E.
Date: 10/19/11
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: Howard E. Saltzman
Date: 10/20/11

Plotted: 10:11 AM on Thursday, August 11, 2011
Resources: GMA, Ema
File: \\ms0208\01081795\43\Drawings\sed07.mxd

MATCH LINE A-A

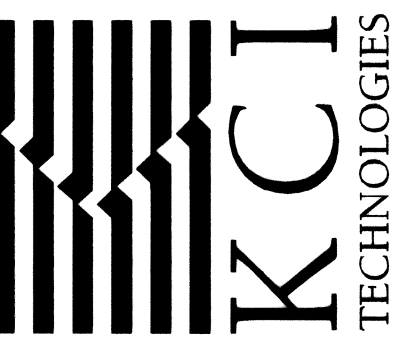


PORTIONS OF LOD NEXT TO ACCESS PATHWAY NOT SHOWN WILL RECEIVE TURF GRASS SEEDING. SEE SHEET 12 FOR FULL VIEW OF ACCESS PATH.

NOTE: RESTORE WALKING PATH WITHIN LOD TO ORIGINAL CONDITIONS

NO.	REVISIONS DESCRIPTION	DATE

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



MEADOWBROOK PARK
 STREAM RESTORATION PROJECT
 CAPITAL PROJECT D-1158
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 STORMWATER MANAGEMENT DIVISION
 600 COLUMBIA, MD 21046

LANDSCAPE PLAN

SCALE: 1" = 20'

DATE: AUGUST 2011

KCI JOB NO.: 01-081795.4.3

CAPITAL PROJECT NO.: D-1158

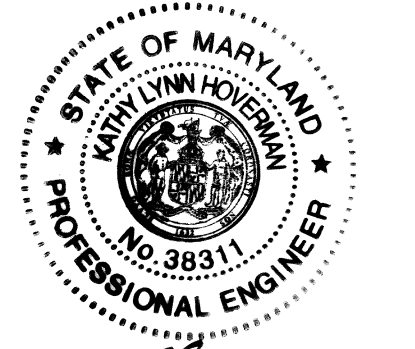
PERMIT ISSUE:

CONSTRUCTION ISSUE:

LEGEND

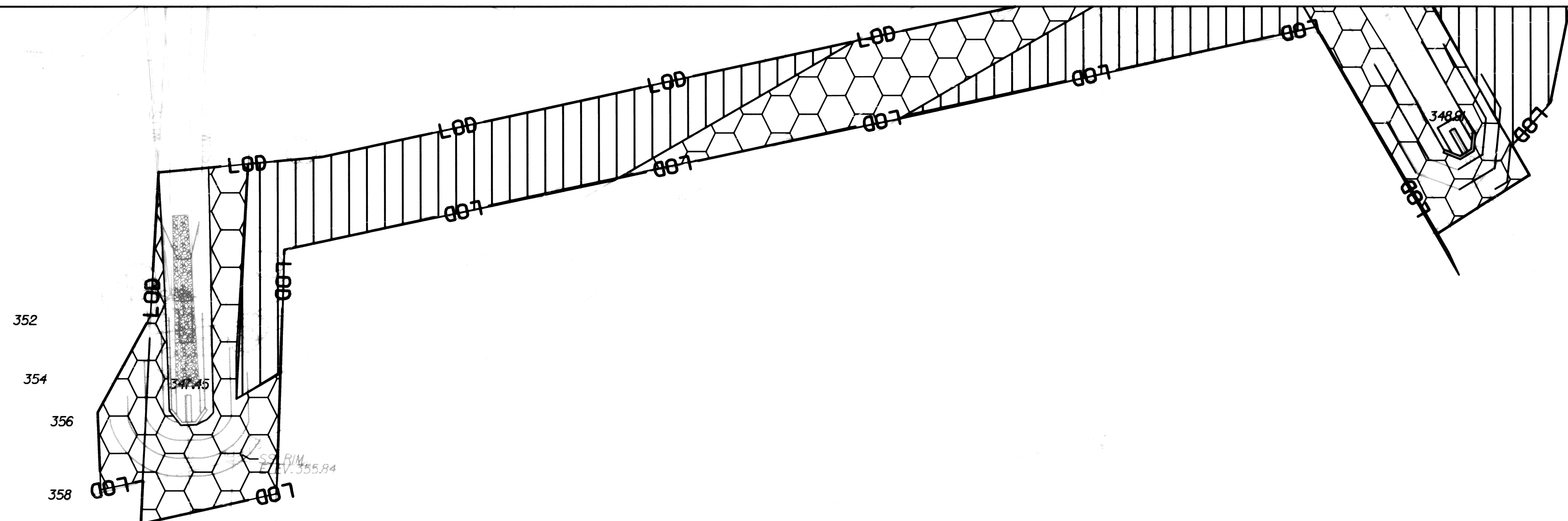
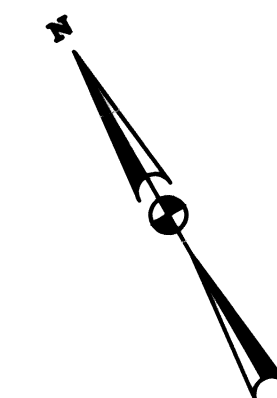
ALTERNATING ROUGHNESS PLANTINGS	
LIVE STAKE ZONE	
TURF GRASS ZONE	
RIPARIAN ZONE	
HERBACEOUS SEED ZONE	
LIVE BUNDLES	

MATCH LINE C-C



BY: Ashley Pifer, Division: P050, Notary: Rias GMA, Emp
 FILE: MZ2008.09081795.4.3.dwg, 10/11/11
 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 6, 2012

MATCH LINE C-C



N 5750000
E 1362890

E 1362890
N 5748950

E 1362890
N 5748950



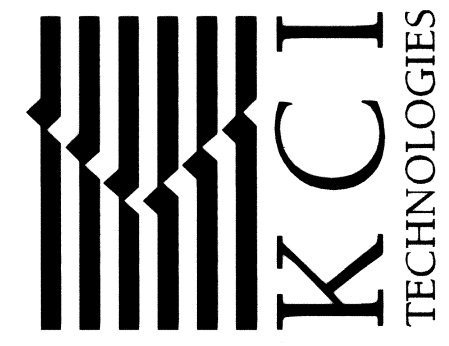
10/19/11

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LEGEND	
ALTERNATING ROUGHNESS PLANTINGS	
LIVE STAKE ZONE	
TURF GRASS ZONE	
RIPARIAN ZONE	
HERBACEOUS SEED ZONE	

NO.	REVISIONS DESCRIPTION	DATE

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



MEADOWBROOK PARK
STREAM RESTORATION PROJECT
CAPITAL PROJECT D-1158
HOWARD COUNTY DEPARTMENT OF PARKS WORKS
675 COLUMBIA WOOD PARK

LANDSCAPE PLAN

SCALE:	1" = 20'
DATE:	AUGUST 2011
KCI JOB NO.:	01-081795.43
CAPITAL PROJECT NO.:	D-1158
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	

MASTER PLANT SCHEDULE

LIVE STAKES (SHEETS 21-24 OF 25) (8493 SQ FT /0.19 AC)

Qty	Botanical Name	Common Name	Size	Form	Spacing/Rate	Deer Tolerance
531	<i>Cornus racemosa</i>	Gray Dogwood	3' Length 0.5"-1.5" dia.	Dormant stems	2' O.C.	Moderate
531	<i>Cornus amomum</i>	Silky Dogwood	3' Length 0.5"-1.5" dia.	Dormant stems	2' O.C.	High
531	<i>Salix sericea</i>	Silky Willow	3' Length 0.5"-1.5" dia.	Dormant stems	2' O.C.	High
531	<i>Salix nigra</i>	Black Willow	3' Length 0.5"-1.5" dia.	Dormant stems	2' O.C.	Moderate

RIPARIAN ZONE (SHEETS 21-24 OF 25) (65519 SQ FT /1.50 AC)

Qty	Botanical Name	Common Name	Size	Form	Spacing/Rate	Deer Tolerance
100	<i>American sycamore</i>	<i>Platanus occidentalis</i>	5'-6' Height	3 Gal. Container	11' O.C.	High
100	Black gum	<i>Nyssa sylvatica</i>	5'-6' Height	3 Gal. Container	11' O.C.	Moderate
100	Pin oak	<i>Quercus palustris</i>	5'-6' Height	3 Gal. Container	11' O.C.	High
100	Red maple	<i>Acer rubrum</i>	6' Height	3 Gal. Container	11' O.C.	High
100	American elm	<i>Ulmus americana</i>	5'-6' Height	3 Gal. Container	11' O.C.	High
41	Swamp white oak	<i>Quercus bicolor</i>	5'-6' Height	3 Gal. Container	11' O.C.	Moderate

TURF GRASS ZONE (SHEETS 21-24 OF 25) (41774 SQ FT /0.96 AC)

Qty(lbs)	Botanical Name
192	SHA Special Purpose Seed Mix 920.06.07 (b)

Application Rate of 200 lbs / ac

PERMANENT SEEDING FOR LIVE STAKES, HERBACEOUS SEED, ALTERNATING ROUGHNESS, AND RIPARIAN ZONES (SHEETS 21-24 OF 25) (89599 SQ FT /2.06 AC)

Botanical Name	Common Name	Application Rate (lbs/ac)	% of Mix	Quantity (lbs)	Remarks
<i>Panicum virgatum</i>	Switchgrass	18.0	24%	37.1	-
<i>Poa palustris</i>	Fowl Bluegrass	30.0	40%	61.8	-
<i>Panicum clandestinum</i>	Deer Tongue Grass	18.0	24%	37.1	-
<i>Bromus ciliatus</i>	Fringed Brome	9.0	12%	18.5	-

Total Application Rate of 75 lbs / ac

SEED TOTAL 154.5 lbs

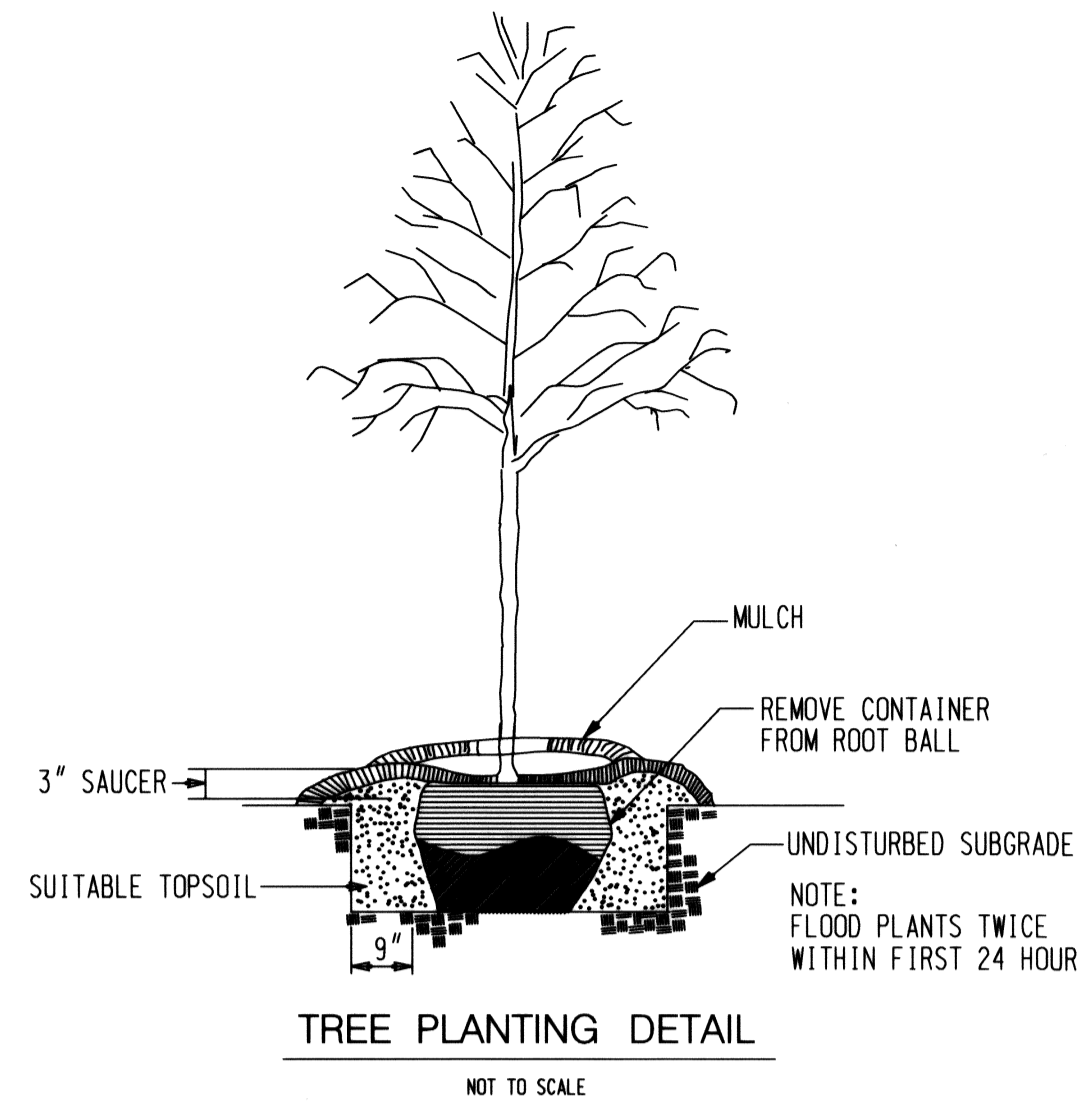
LIVE BUNDLES FOR TOE WOOD (SHEETS 21-22 OF 25) (115 LF)

Qty	Botanical Name	Common Name	Size	Form	Spacing/Rate	Deer Tolerance
7	<i>Cornus racemosa</i>	Gray Dogwood	3' Length 0.5"-1.5" dia.	Bundles of 3 dormant stems	2' O.C.	Moderate
7	<i>Cornus amomum</i>	Silky Dogwood	3' Length 0.5"-1.5" dia.	Bundles of 3 dormant stems	2' O.C.	High
7	<i>Salix sericea</i>	Silky Willow	3' Length 0.5"-1.5" dia.	Bundles of 3 dormant stems	2' O.C.	High
7	<i>Salix nigra</i>	Black Willow	3' Length 0.5"-1.5" dia.	Bundles of 3 dormant stems	2' O.C.	Moderate

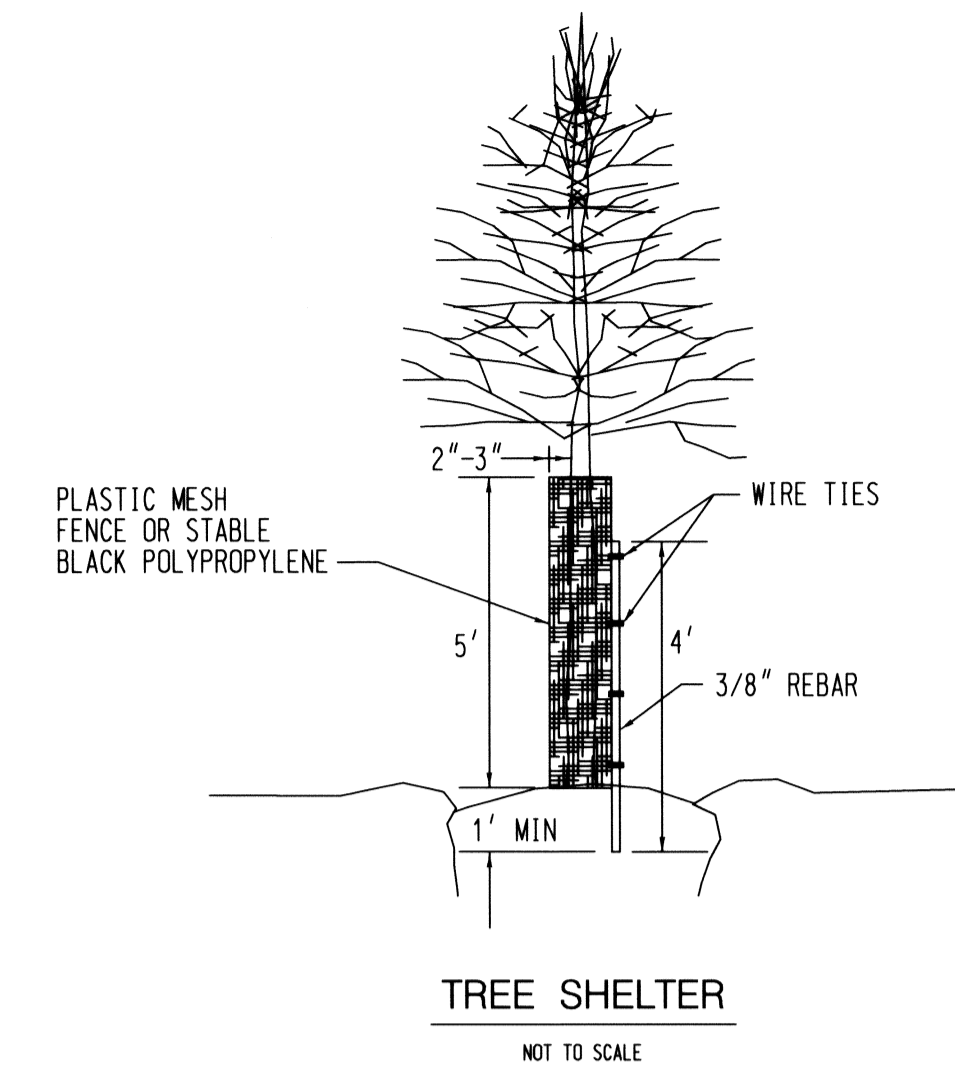
ALTERNATING ROUGHNESS PLANTINGS (SHEETS 21-24 OF 25) (2025 SQ FT /0.05 AC /357 LF)

Qty	Botanical Name	Common Name	Size	Type	Form	Spacing/Rate	Deer Tolerance
8	<i>Platanus occidentalis</i>	Sycamore	7' - 9' Height	Tree	Container	10' O.C.	High
8	<i>Acer saccharinum</i>	Silver Maple	7' - 9' Height	Tree	Container	10' O.C.	High
7	<i>Cornus amomum</i>	Silky Dogwood	3' Height	Shrub	Container	6' O.C.	High
7	<i>Alnus serrulata</i>	Smooth Alder	3' Height	Shrub	Container	6' O.C.	Moderate
447	<i>Cornus racemosa</i>	Gray Dogwood	3' Length 0.5"-1.5" dia.	Live Stake	Dormant stems	5'/cluster	Moderate
446	<i>Cornus amomum</i>	Silky Dogwood	3' Length 0.5"-1.5" dia.	Live Stake	Dormant stems	5'/cluster	High
446	<i>Salix sericea</i>	Silky Willow	3' Length 0.5"-1.5" dia.	Live Stake	Dormant stems	5'/cluster	High
446	<i>Salix nigra</i>	Black Willow	3' Length 0.5"-1.5" dia.	Live Stake	Dormant stems	5'/cluster	Moderate
179	<i>Alnus incana ssp rugosa</i>	Speckled alder	6' Length 2.5"-5.5" dia.	Live Pole	Dormant stems	1'/cluster	High
178	<i>Salix sericea</i>	Silky Willow	6' Length 2.5"-5.5" dia.	Live Pole	Dormant stems	1'/cluster	High

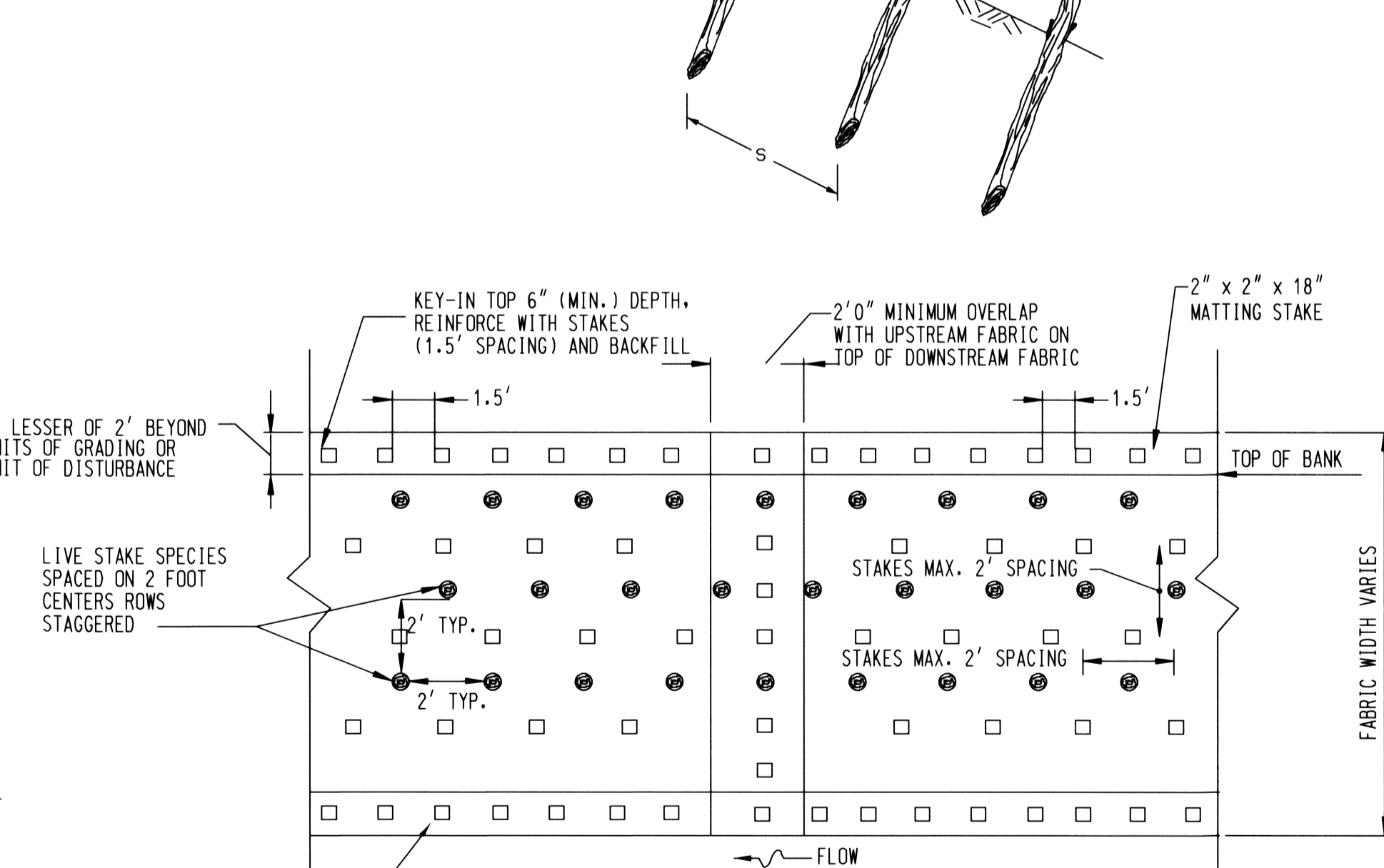
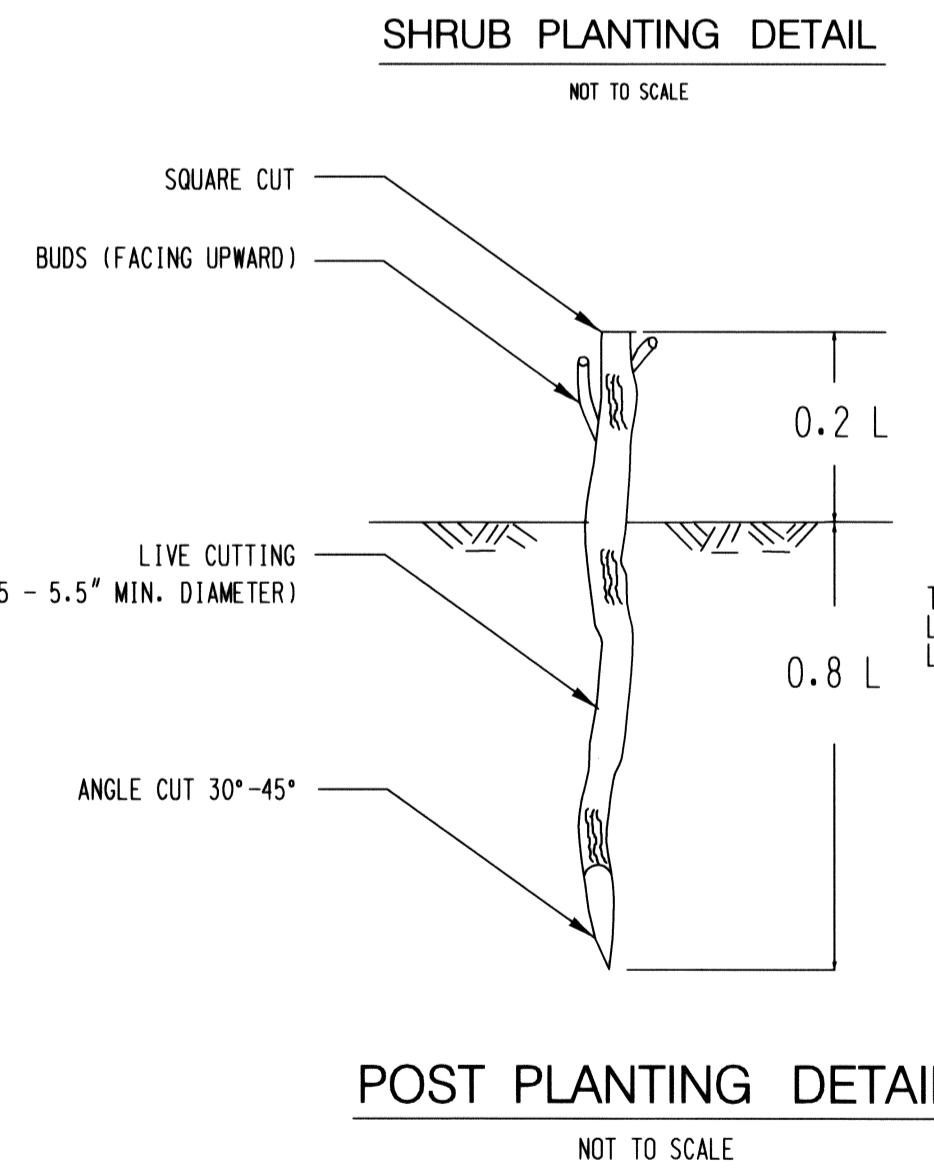
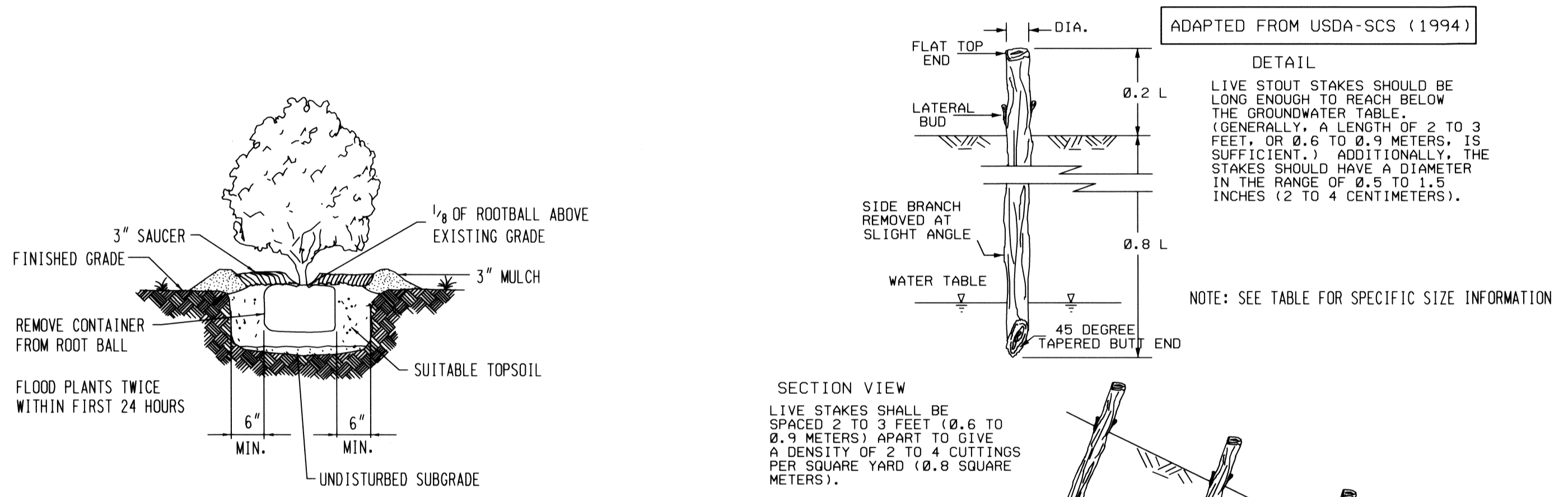
Note: Alternate Roughness Planting locations shall be staked for approval by the engineer, prior to installation.



NOTE: TREE SHELTERS TO BE ADDED TO ALL TREES PLANTED

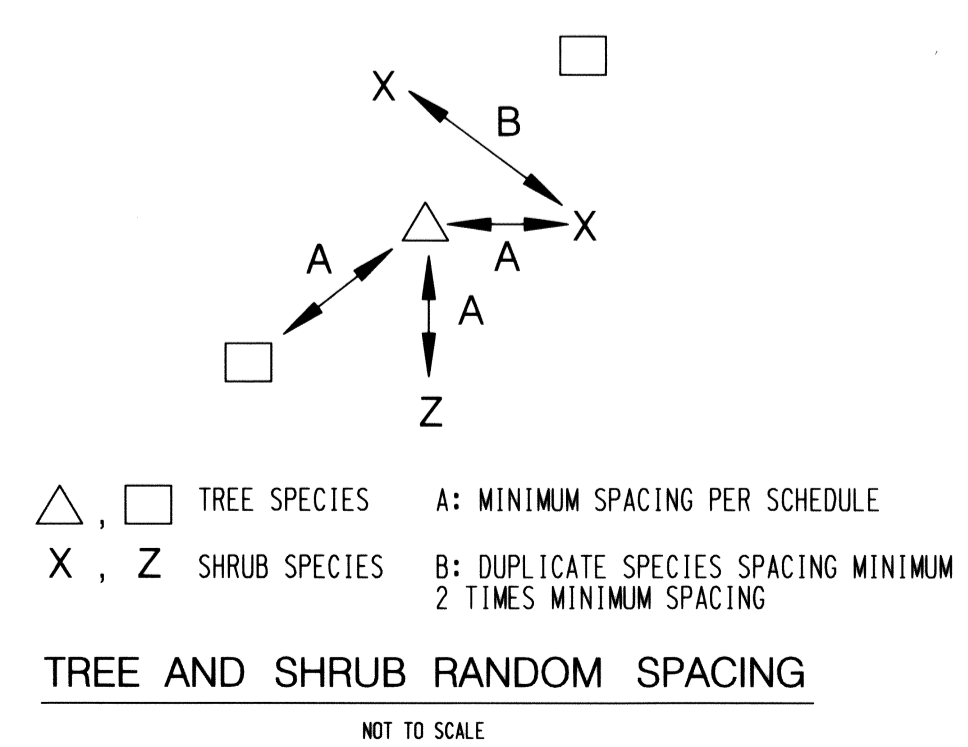


DETAIL 2.4: LIVE STAKES



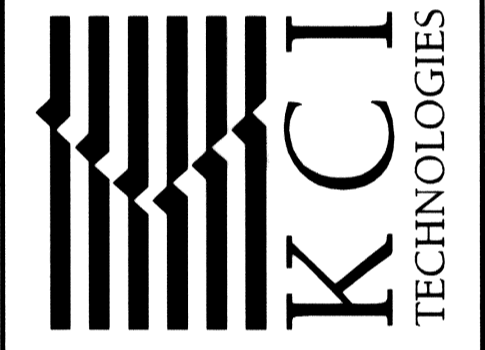
TYPICAL PLAN VIEW NATURAL FIBER MATTING WITH LIVE STAKES

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)



NO.	REVISIONS DESCRIPTION	DATE
1	ENTIRE SHEET	SEPT. 2010

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



MEADOWBROOK PARK
STREAM RESTORATION PROJECT
CAPITAL PROJECT D-158
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
1000 COLUMBIA AVENUE
BETHESDA, MARYLAND 20814

LANDSCAPE NOTES AND DETAILS

SCALE:	
DATE:	AUGUST 2011
KCI JOB NO.:	01-081795.43
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. 38311, EXPIRATION DATE: JANUARY 6, 2012