

BEECHWOOD DRIVE BANK STABILIZATION STREAM MITIGATION SITE A

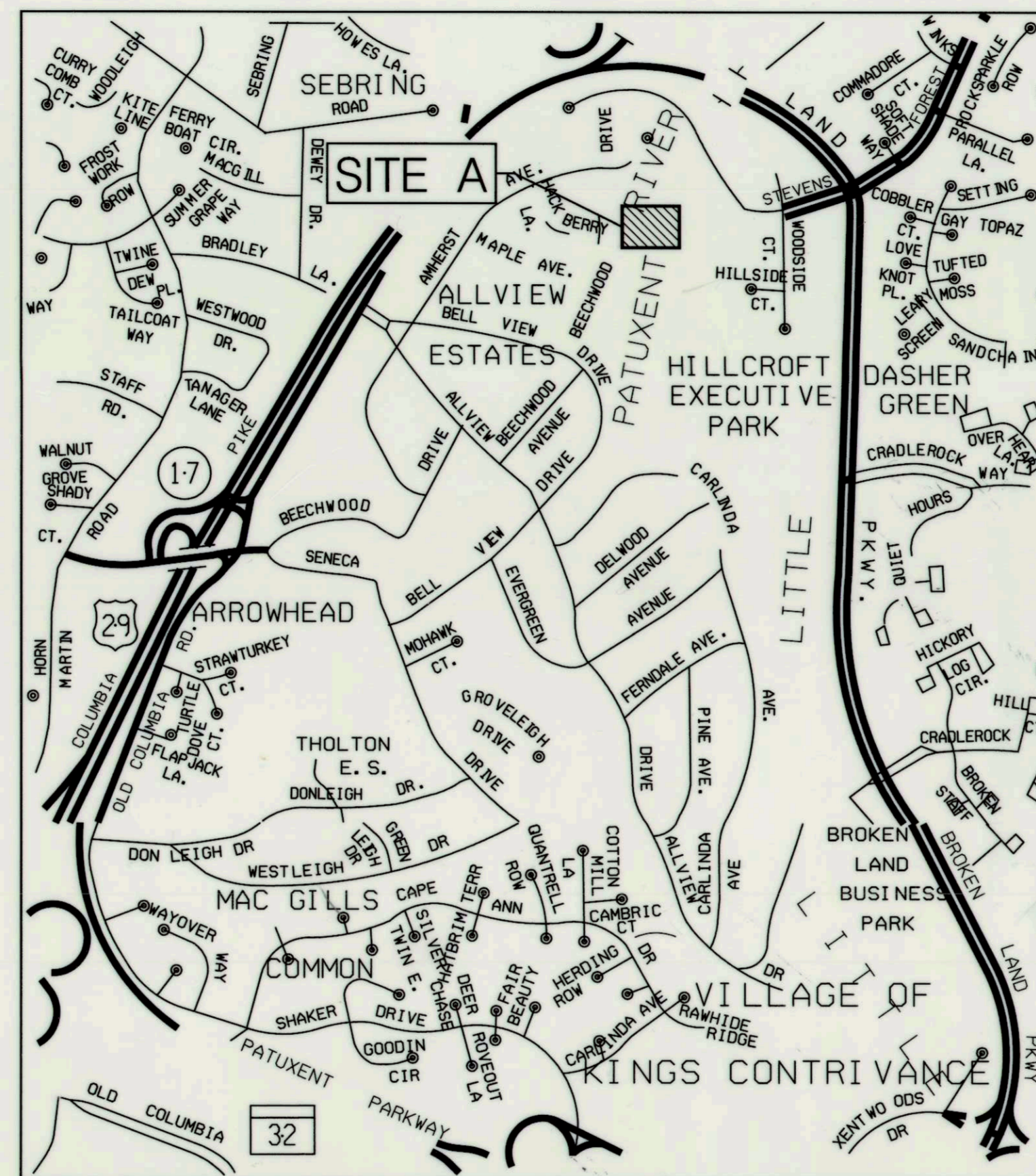
HOWARD COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS
CAPITAL PROJECT S-6175

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
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8	EROSION AND SEDIMENT CONTROL PLAN
9	EROSION & SEDIMENT CONTROL NOTES & DETAILS
10	EROSION & SEDIMENT CONTROL DETAILS
11	LANDSCAPE PLAN
12	LANDSCAPE NOTES AND DETAILS

LEGEND

SEWER CONTRACT NO.20-4538 LIMIT OF DISTURBANCE	---	LOD
LIMIT OF DISTURBANCE	---	LOD
EXISTING MAJOR CONTOURS	---	387
EXISTING MINOR CONTOURS	---	387
PROPOSED CONTOURS	---	387
EDGE OF WETLAND	---	WUS
25-FOOT WETLAND BUFFER	---	WUS
WATERS OF THE US	---	WUS
PROPERTY LINE	---	---
PROPOSED SEWER LINE	---	S
EXISTING SEWER LINE	---	S
EXISTING SEWER LINE	---	S
EXISTING STORM DRAIN	---	---
EXISTING SEWER MANHOLE	---	S
OVERHEAD ELECTRIC LINE	---	OHE
DIVERSION PIPE	---	---
SUMP PIT	---	SP
FILTER BAG	---	FB
SANDBAG DAM	---	---
PUMP	---	PUMP
SUPER SILT FENCE	---	SSF
EXISTING EASEMENT LINE	---	---
EXISTING TREE	---	---



0 500 1000 FEET
SCALE



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
36EA	169769.9192	412863.1544	108.1608
36HA	169199.8817	412816.2675	89.0674

SPECIAL CONTRACTOR NOTES

- NO STOCKPILE OF ANY MATERIAL IS ALLOWED IN THE 100-YEAR FLOODPLAIN.
- IN-STREAM WORK IS PROHIBITED FROM MARCH 1ST TO JUNE 15TH, INCLUSIVE. STREAM CLASSIFICATION: USE I-P.
- CONTRACTOR SHALL CONTINUALLY MONITOR WEATHER FORECASTS DURING WORK ACTIVITIES AND SCHEDULE WORK DURING FAVORABLE CONDITIONS.
- THE CONTRACTOR SHALL EXERCISE CARE IN ACTIVITIES INVOLVING EITHER CUT AND FILL OR GRADING IN THE VICINITY OF TREES THAT ARE TO REMAIN AT THE CONSTRUCTION SITE. ALL EARTH CUTS AND ACTIVITIES IN THE VICINITY OF TREES TO REMAIN SHALL BE MADE IN A MANNER THAT DOES NOT DISTURB THE CRITICAL ROOT ZONE WITHIN THE DRIFLINE OF THE TREE. PROTECTIVE ORANGE FENCING SHALL BE INSTALLED AROUND THE PERIMETER OF THE CRITICAL ROOT ZONE PRIOR TO CONSTRUCTION.
- UPON COMPLETION OF THE WORK, BUT PRIOR TO DE-MOBILIZATION, THE CONTRACTOR SHALL REMOVE ALL REMNANTS OF CONSTRUCTION MATERIALS FROM THE SITE. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO A CONDITION EQUAL TO OR BETTER THAN THE PRE-CONSTRUCTION CONDITIONS.
- PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES, PHOTOGRAPHS OF THE PROPOSED WORK AREA AND ACCESS SHALL BE TAKEN.
- ALL TREES TO BE REMOVED SHALL BE CUT AT THE BASE WITH A SAW AND NOT PUSHED OVER. TREE STUMPS MAY BE LEFT IN PLACE, UNLESS OTHERWISE DIRECTED ON THE PLANS.
- IF THE APPROVED SEDIMENT CONTROLS FOR SEWER CONTRACT 20 4538 (HSCD EP_08_08) ARE IN PLACE AND MAINTAINED, THE CONTRACTOR MAY MAKE USE OF THE FULL SEWER LOD IN ADDITION TO THE LIMITS SHOWN ON THESE PLANS.

GENERAL NOTES

- THE SUBJECT PROPERTIES ARE ZONED NT PER FEBRUARY 2, 2004 COMPREHENSIVE ZONING PLAN AND THE COMP-LITE ZONING AMENDMENTS DATED 7/28/2006.
- THE DEPARTMENT OF PLANNING AND ZONING AND THE HOWARD SOIL CONSERVATION DISTRICT HAVE DETERMINED THAT THE DISTURBANCES WITHIN THE 100-YEAR FLOODPLAIN, WETLANDS, STREAM AND REQUIRED BUFFERS FOR THE PROPOSED STREAM RESTORATION PROJECT ARE CONSIDERED ESSENTIAL OR NECESSARY IN ACCORDANCE WITH SECTIONS 16.115(C) AND 16.116(C) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
- THIS PROJECT 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.
- THERE ARE NO BURIAL GROUNDS OR CEMETERY SITES LOCATED ON THE PROJECT SITE.
- THIS PLAN MEETS THE REQUIREMENTS OF THE FOREST CONSERVATION REGULATIONS.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY VOLUME IV DESIGN MANUAL STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (2007) PLUS MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS, BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 24 HOURS IN ADVANCE OF ANY WORK BEING DONE.
- THE CONTRACTOR SHALL NOTIFY 'MISS UTILITY' AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- THE COORDINATES SHOWN HEREON ARE BASED ON HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENTS NUMBER 36EA AND 36HA WERE USED FOR THIS SITE.
- WATER IS PUBLIC.
- SEWER IS PUBLIC.
- STORMWATER MANAGEMENT IS NOT REQUIRED FOR THIS PROJECT SINCE THE PROJECT WILL NOT ADD IMPERVIOUS AREA NOR WILL IT CHANGE THE EXISTING HYDROLOGY OF THE SITE.
- EXISTING UTILITIES ARE BASED ON FIELD SURVEYS AND AVAILABLE RECORD DRAWINGS.
- THE PROJECT HYDROLOGY AND HYDRAULICS STUDY FOR THIS PROJECT WAS PREPARED BY KCI TECHNOLOGIES, INC. SEPTEMBER 2009 TO DEMONSTRATE NO RISE IN THE 100-YR FLOODPLAIN.
- THE WETLANDS DELINEATION FOR THIS PROJECT WAS PERFORMED BY KCI TECHNOLOGIES IN 2005.
- THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH ONE FOOT CONTOUR INTERVALS PREPARED BY WHITMAN, REQUARDT AND ASSOCIATES, IN 2006 AND 2009.
- ALL WORK SHALL BE CONSTRUCTED ACCORDING TO THE REQUIREMENTS OF THE NOTIDAL 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.
- NO TRAFFIC STUDY IS REQUIRED FOR THIS PROJECT.
- OBSTRUCTIONS SHOWN ON THIS DRAWING ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY AND KCI TECHNOLOGIES, INC. DOES NOT WARRANT OR GUARANTEE THE CORRECTNESS OR COMPLETENESS OF THE INFORMATION GIVEN. SHOULD THE CONTRACTOR DISCOVER ANY DISCREPANCIES BETWEEN THE PLANS AND THE FIELD CONDITIONS, THE CONTRACTOR MUST NOTIFY SUCH INFORMATION TO HIS OWN SATISFACTION. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY TO RESOLVE THE SITUATION. SHOULD THE CONTRACTOR MAKE FIELD CORRECTIONS OR ADJUSTMENTS WITHOUT NOTIFYING THE ENGINEER, THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR THOSE CHANGES. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO THE CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
- DEPARTMENT OF PLANNING AND ZONING WAIVER PETITION WP-10-069 WAS APPROVED ON JANUARY 8, 2010.

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

John K. Robertson
HOWARD SCD

12/14/10
DATE

ENGINEER'S CERTIFICATE

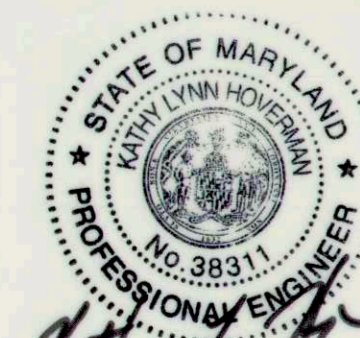
"I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD COUNTY SOIL CONSERVATION DISTRICT"

Kathy L. Hoverman P.E. • 38311 12/13/10
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) DATE
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"

Paul K. Gagnon 12/14/10
SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) DATE



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

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John K. Robertson 12/15/10
DIRECTOR OF PUBLIC WORKS DATE
Susan C. ... 12/15/10
CHIEF, BUREAU OF UTILITIES DATE

Paul K. Gagnon 12/14/10
CHIEF, BUREAU OF ENGINEERING DATE
Paul K. Gagnon 12/14/10
CHIEF, UTILITY DESIGN DIVISION DATE



OWNER:
HOWARD COUNTY
UTILITY DESIGN DIVISION
9250 BENDIX ROAD
COLUMBIA, MD 21045
410-313-2040

DES:	DRN:	CHK:	DATE:	BY:	NO.	REVISION	DATE:

TITLE SHEET

600' SCALE MAP NO. _____ BLOCK NO. _____

BEECHWOOD DRIVE BANK STABILIZATION
STREAM MITIGATION SITE A
CAPITAL PROJECT No. S-6175
CONTRACT No. _____

ELECTION DISTRICT NO. HOWARD COUNTY, MARYLAND

As-Built

SCALE
AS SHOWN
SHEET
1 of 12

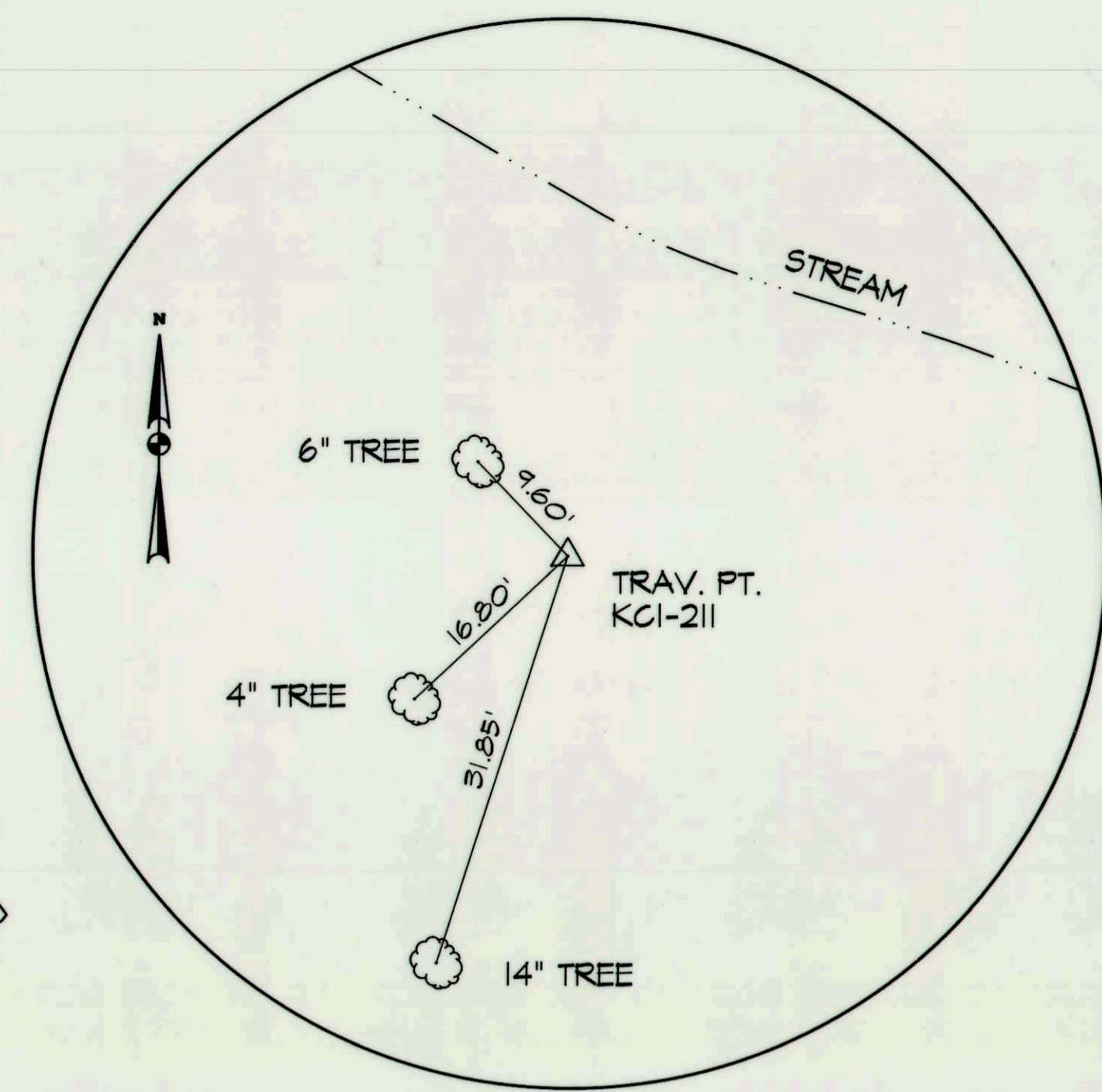
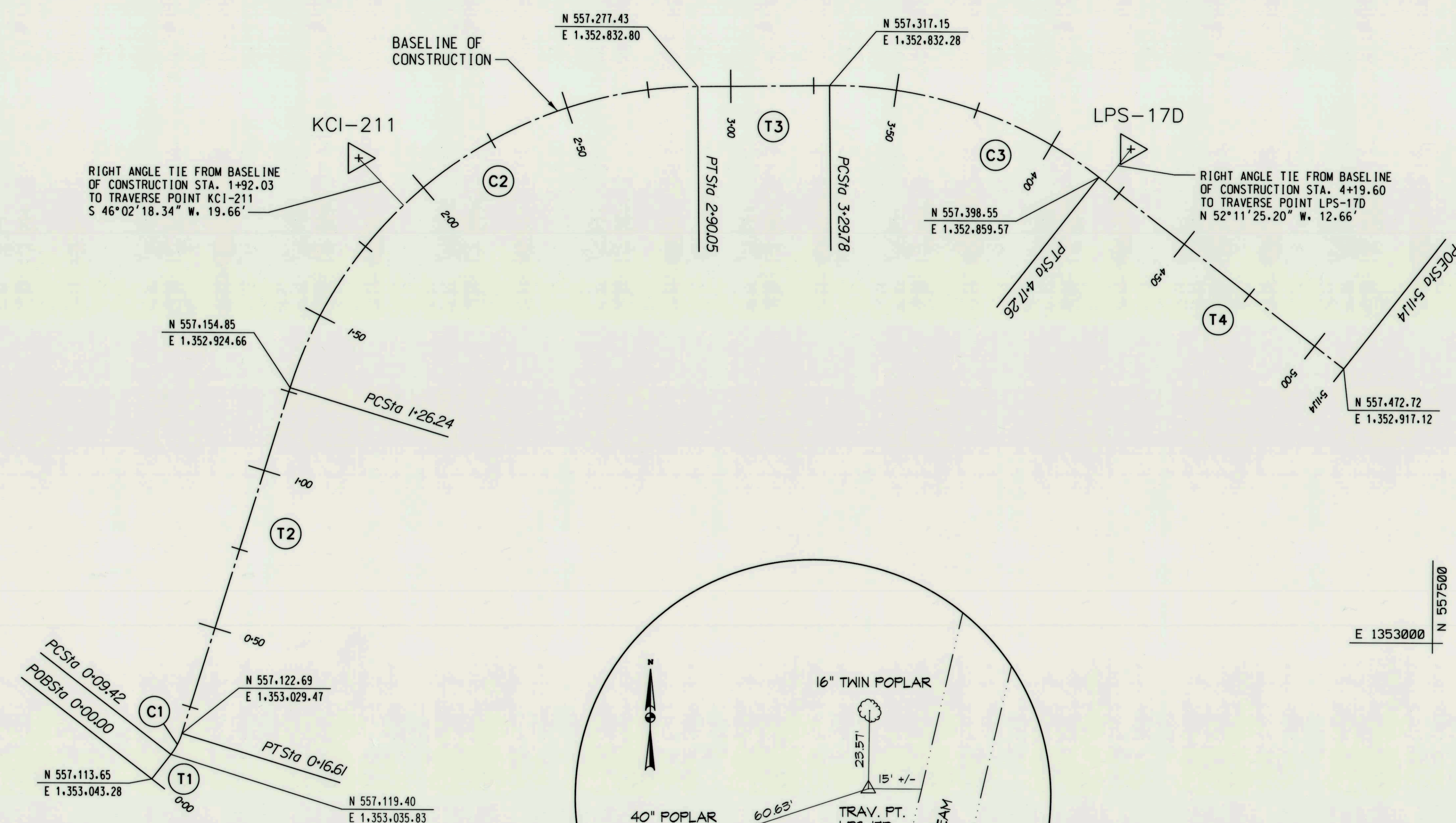
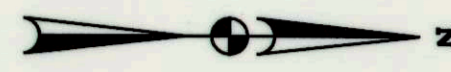
CURVE DATA						
CURVE NO.	RADIUS	LENGTH	DELTA	TANGENT	CHORD BEARING	
C1	20.00'	7.19'	20°36'38.18"	3.64'	N 62°38'24.12" W	7.16'
C2	130.00'	163.81'	72°11'49.64"	94.79'	N 36°50'48.39" W	153.19'
C3	130.00'	87.49'	38°33'28.36"	45.47'	N 18°31'50.62" E	85.84'

TANGENT DATA		
TANGENT NO.	BEARING	DISTANCE
T1	N 52°20'05.02" W	9.42'
T2	N 72°56'43.21" W	109.63'
T3	N 00°44'53.56" W	39.73'
T4	N 37°48'34.80" E	93.88'

TRAVERSE COORDINATE LIST			
PT #	NORTHING	EASTING	ELEVATION
KCI-211	N 557.175.24	E 1,352,855.07	286.60
LPS-17D	N 557.408.16	E 1,352,850.99	285.76

E 1352750

N 557500

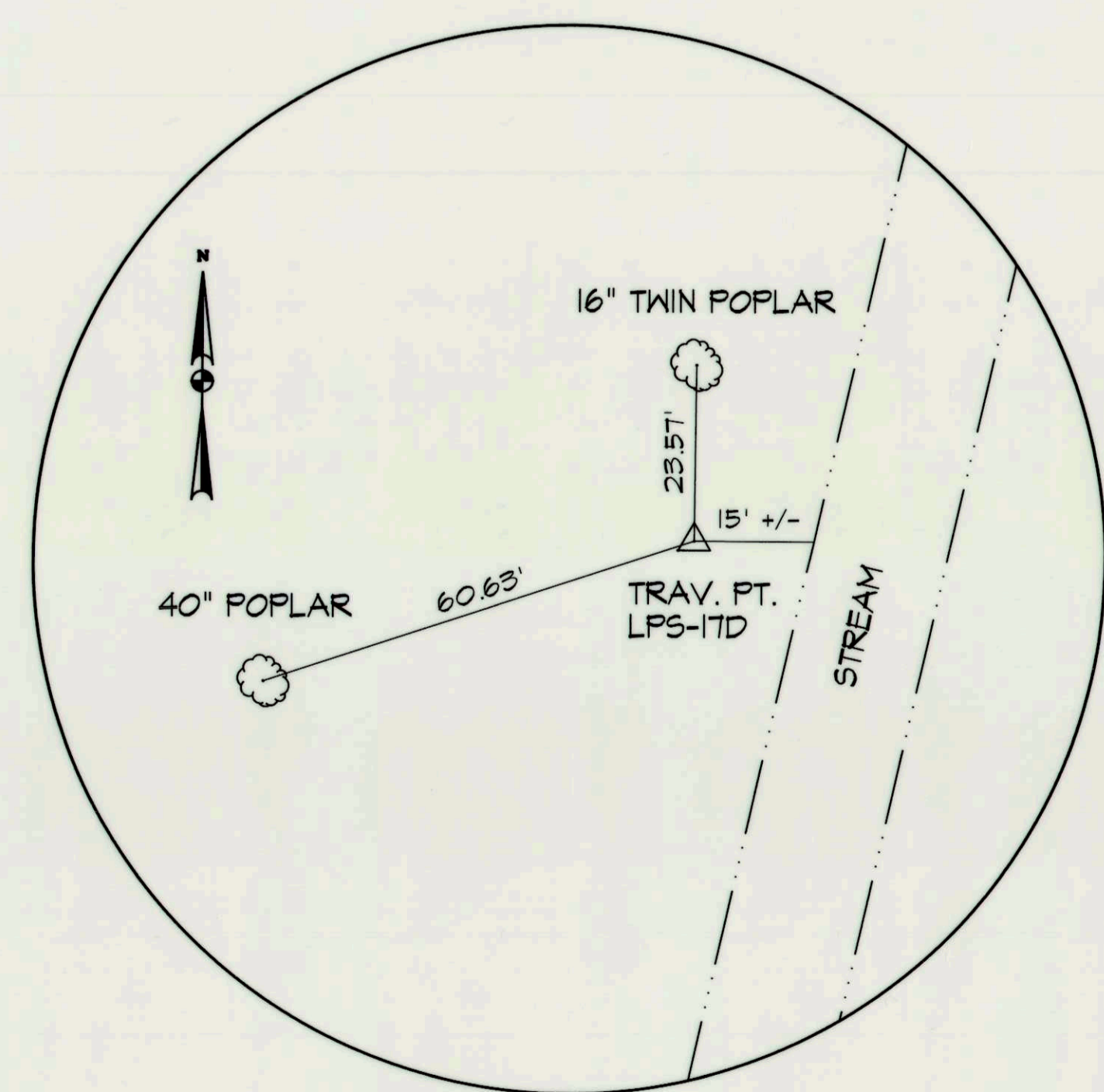


TRAVERSE POINT KCI-211
PIN AND CAP
NOT TO SCALE

NOTE: TRAVERSE POINT KCI-211 MAY HAVE BEEN DISTURBED DURING RECENT ADJACENT CONSTRUCTION WORK.

N 557000
E 1353000

N 557500
E 1353000



TRAVERSE POINT LPS-17D
3/4" REBAR W/COLLAR
NOT TO SCALE



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PLOTTED: 11:39 AM on Monday, December 13, 2010
BY: Harmony Miller, Division: P050 - Natural Res. GMA Emp
FILE: W:\2008\01081795_09_VDrawings\gd\10101.dwg

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 12/13/10
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 12/14/10
CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 12/14/10
CHIEF, UTILITY DESIGN DIVISION DATE



DES:				
DRN:				
CHK:				
DATE:	BY	NO.	REVISION	DATE

GEOMETRY SHEET

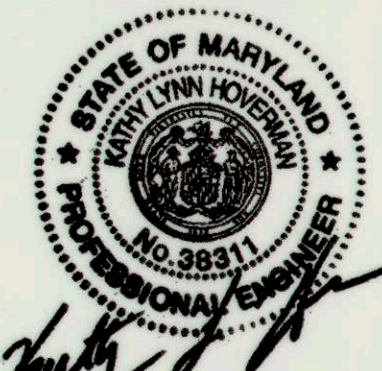
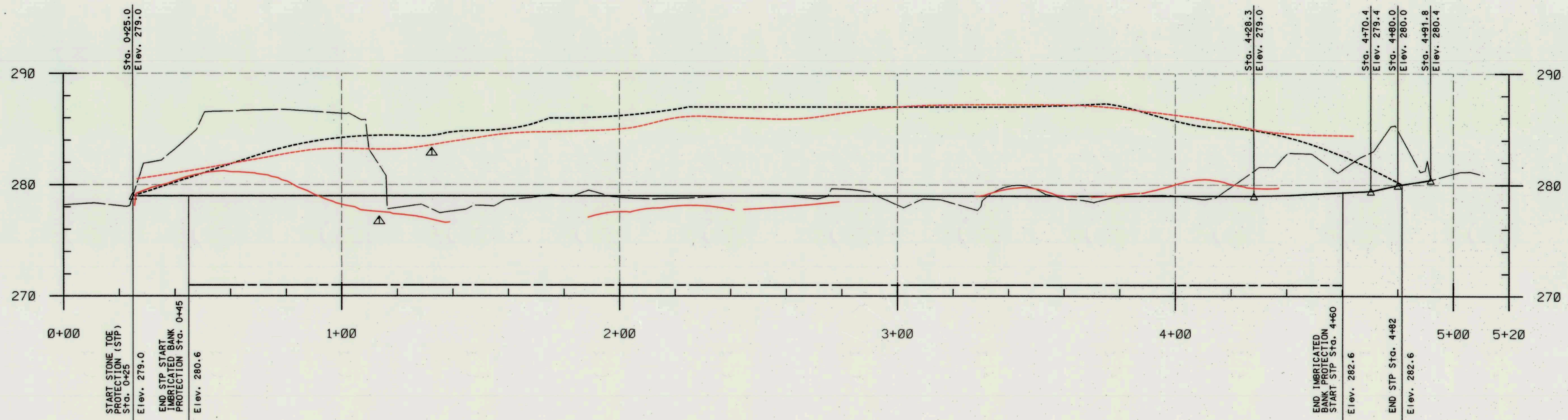
600' SCALE MAP NO. _____ BLOCK NO. _____

BEECHWOOD DRIVE BANK STABILIZATION
STREAM MITIGATION SITE A
CAPITAL PROJECT No. S-6175
CONTRACT No. _____
ELECTION DISTRICT NO. HOWARD COUNTY, MARYLAND

As-Built

SCALE
1" = 20'

SHEET
2 OF 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 6, 2012

LEGEND

- EXISTING GROUND
- PROPOSED GRADE
- TOP OF IMBRICATED BANK PROTECTION/STONE TOE PROTECTION (STP)
- BOTTOM OF IMBRICATED BANK PROTECTION
- AS-BUILT GRADE (NOVEMBER 2011)
- TOP OF IMBRICATED BANK PROTECTION/STONE TOE PROTECTION (STP) (AS-BUILT)

As-Built
AS-BUILT

PLOTTER: 11:40 AM on Monday, December 13, 2010
BY: Harmony Miller, Division: P050 Natural Resources OMA Emp
FILE: M:\2008\01081795\09\drainage\p01\p01a.dwg

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 12/13/10
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 12/14/10
CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 12/14/10
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 12/14/10
CHIEF, UTILITY DESIGN DIVISION DATE

ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS

KCI
TECHNOLOGIES

DES:	KLH		ADD AS-BUILT DATA	MARCH 2012
DRN:				
CHK:				
DATE:	BY	NO.	REVISION	DATE

PROFILE

600' SCALE MAP NO. _____ BLOCK NO. _____

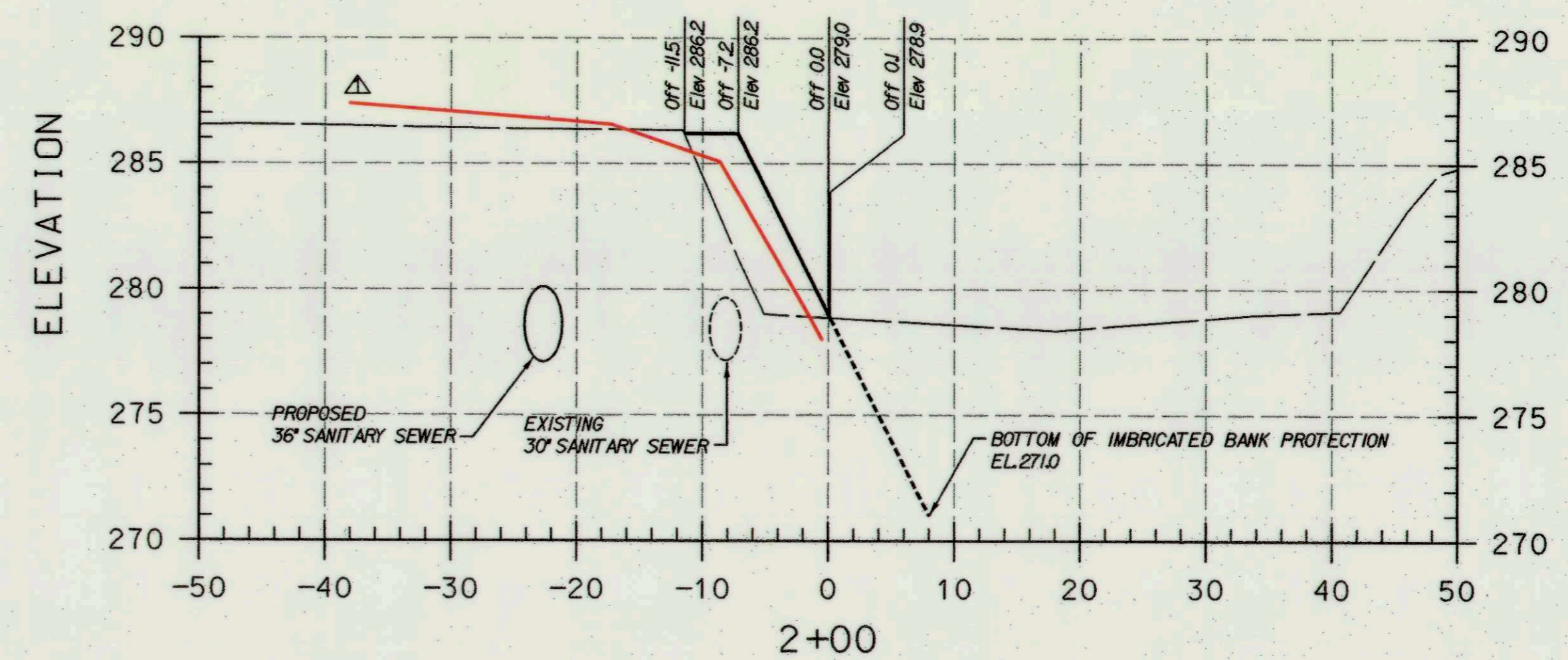
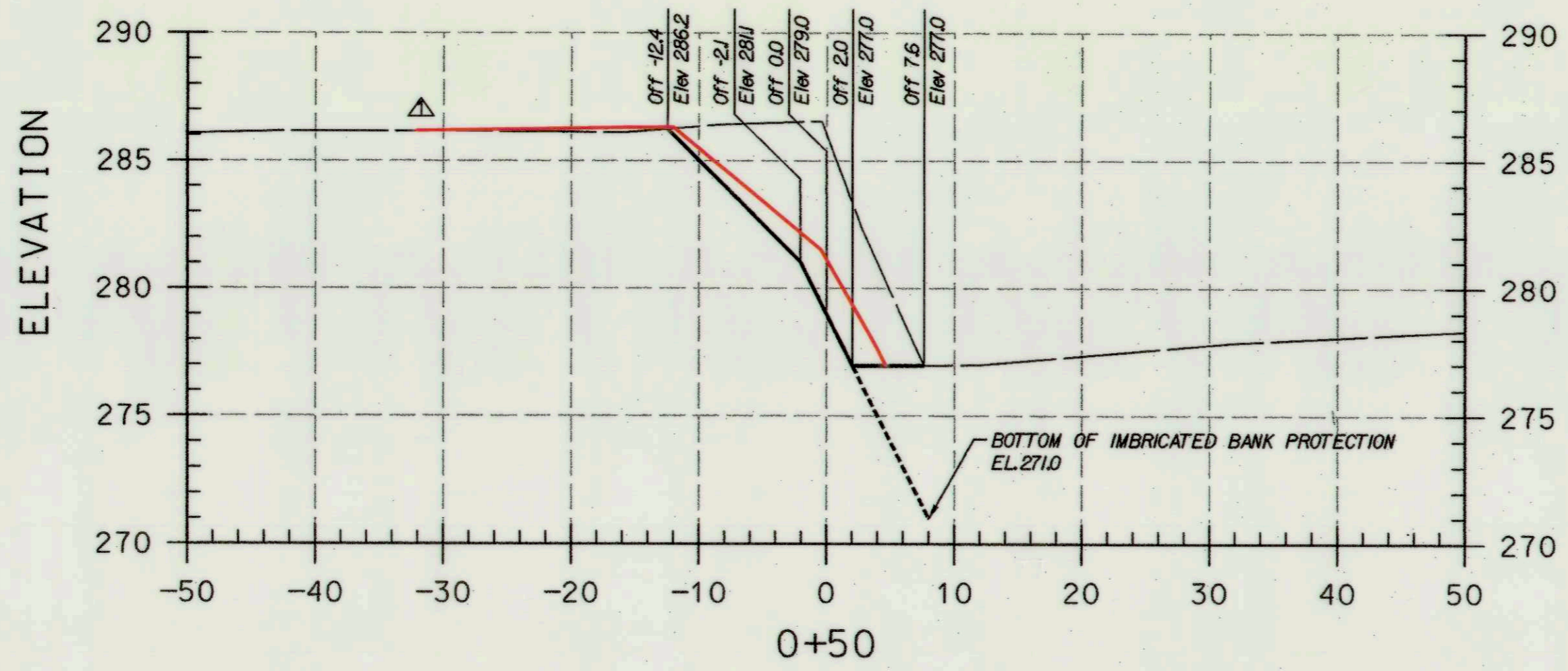
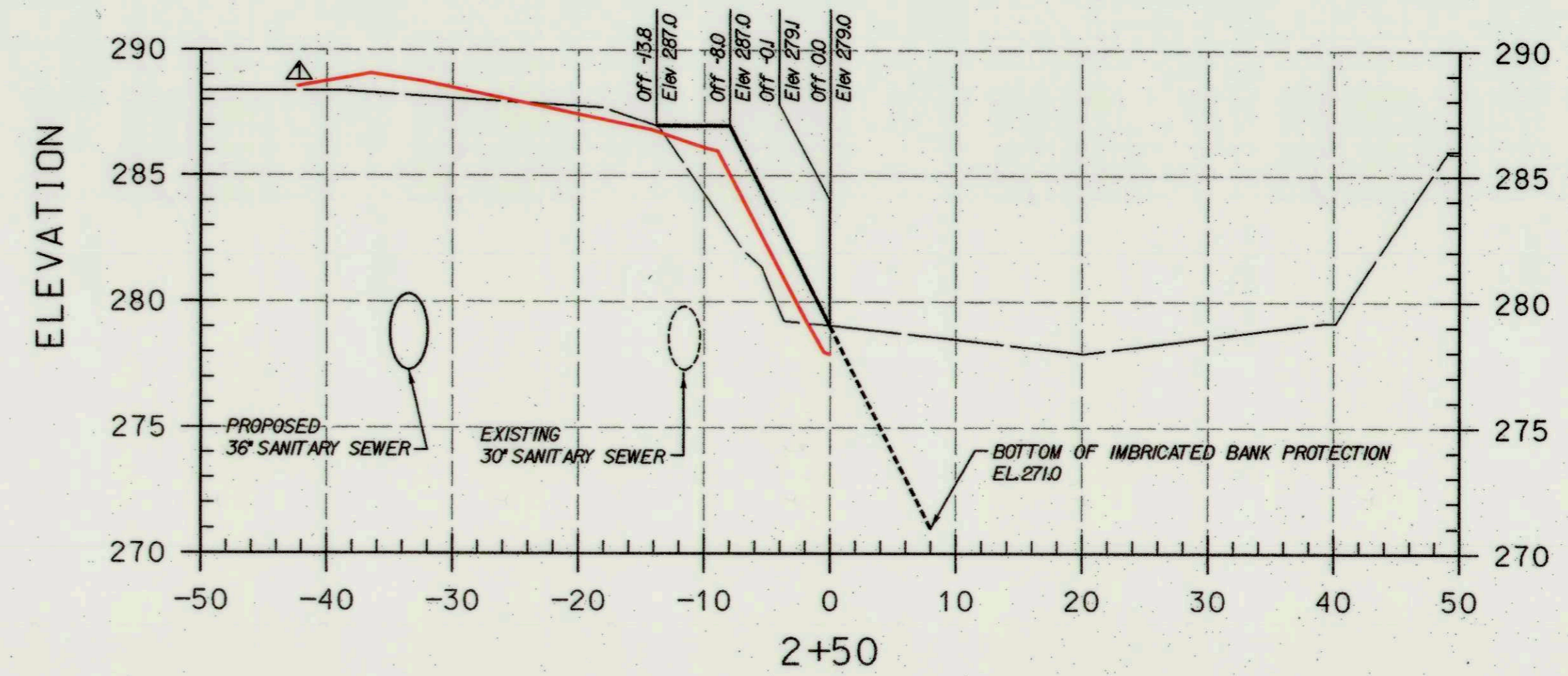
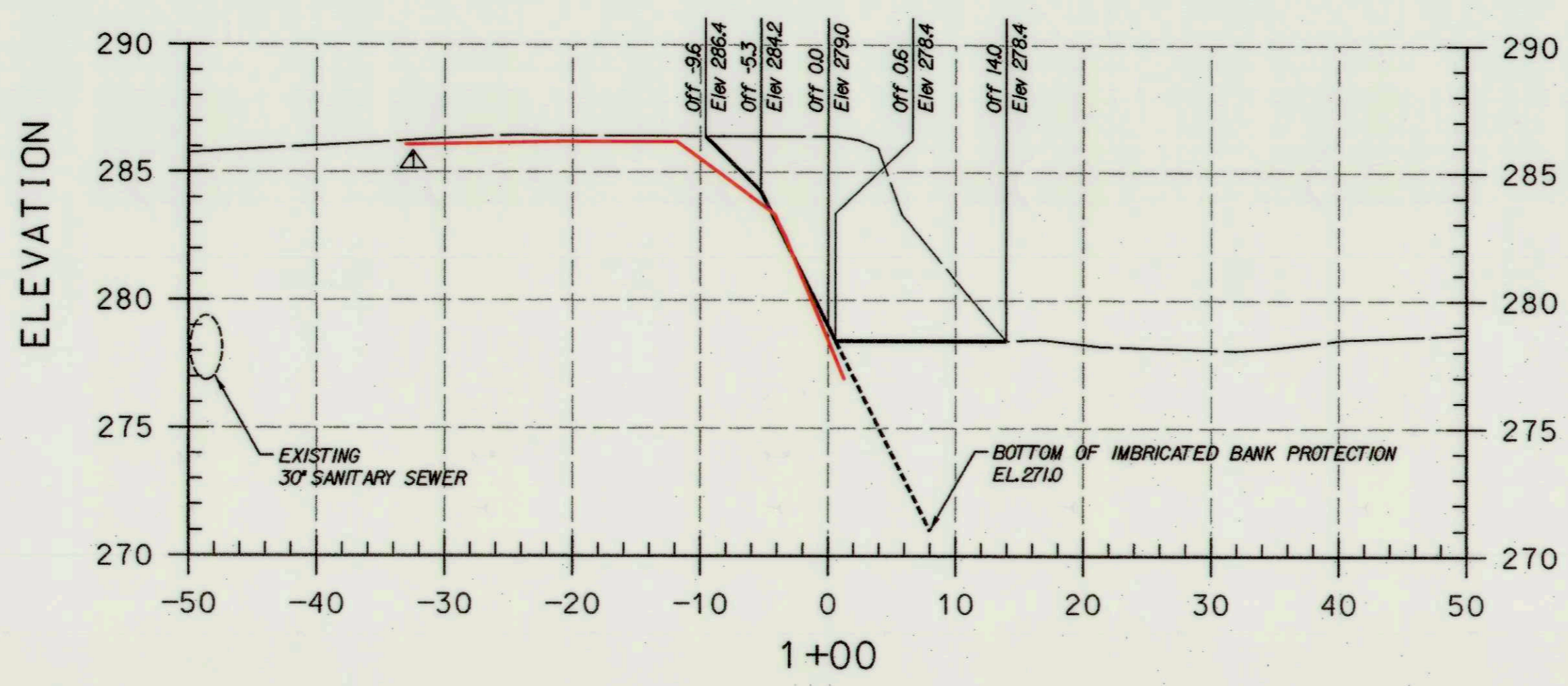
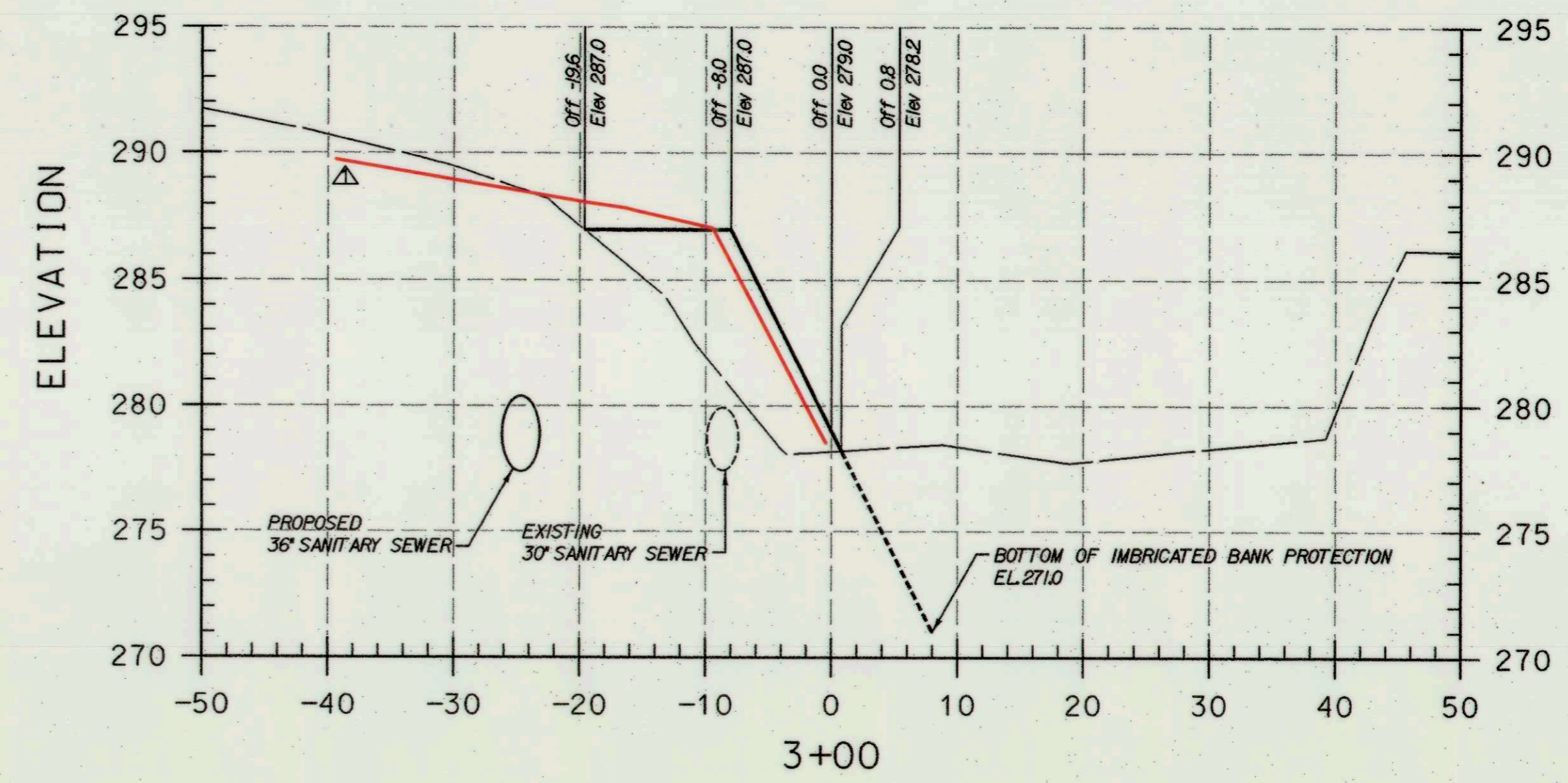
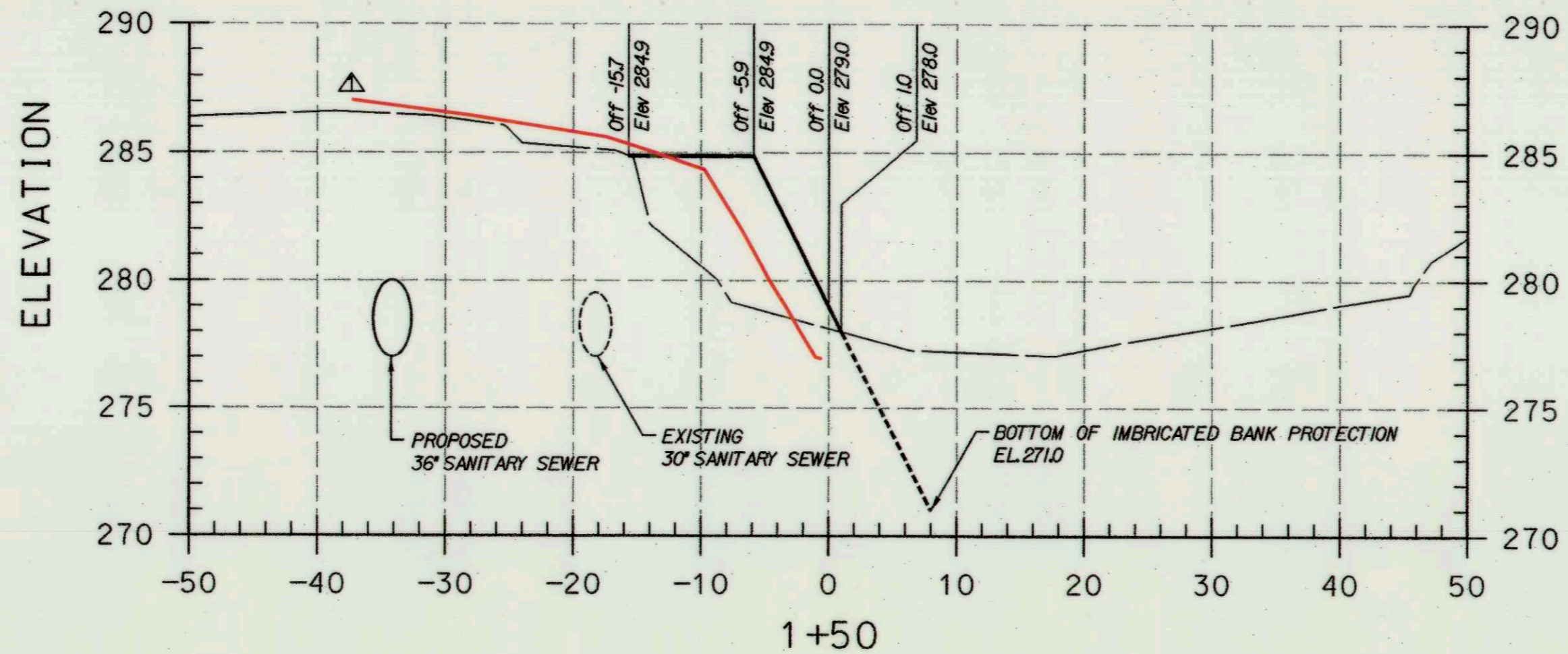
**BEECHWOOD DRIVE BANK STABILIZATION
STREAM MITIGATION SITE A**

CAPITAL PROJECT No. S-6175
CONTRACT No. _____

ELECTION DISTRICT NO. HOWARD COUNTY, MARYLAND

SCALE
HOR. 1"=50'
VERT. 1"=5'

SHEET
3 OF 12



LEGEND

EXISTING GROUND _____

PROPOSED GRADE _____

PROPOSED 36" SAN. ○

EXISTING 30" SAN. ○

STATE OF MARYLAND
 PROFESSIONAL ENGINEER
 No. 38311
 12/13/10

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▲ AS-BUILT GRADE (NOVEMBER 2011)

As-Built
 AS-BUILT

PLOTTED: 11:41 AM on Monday, December 13, 2010
 BY: Harrison Miller Division: P050 Natural Res GMA Emp
 FILE: M:\2008\0818795\3\Drawings\AS-Built.dwg

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Director of Public Works: [Signature] 12/15/10
 Chief, Bureau of Engineering: [Signature] 12/14/10
 Chief, Bureau of Utilities: [Signature] 12/14/10
 Chief, Utility Design Division: [Signature] 12/14/10

ENGINEERS
 PLANNERS
 SCIENTISTS
 CONSTRUCTION MANAGERS

KCI TECHNOLOGIES

DES:	KLH	▲	ADD AS-BUILT DATA	MARCH 2012
DRN:				
CHK:				
DATE:	BY	NO.	REVISION	DATE

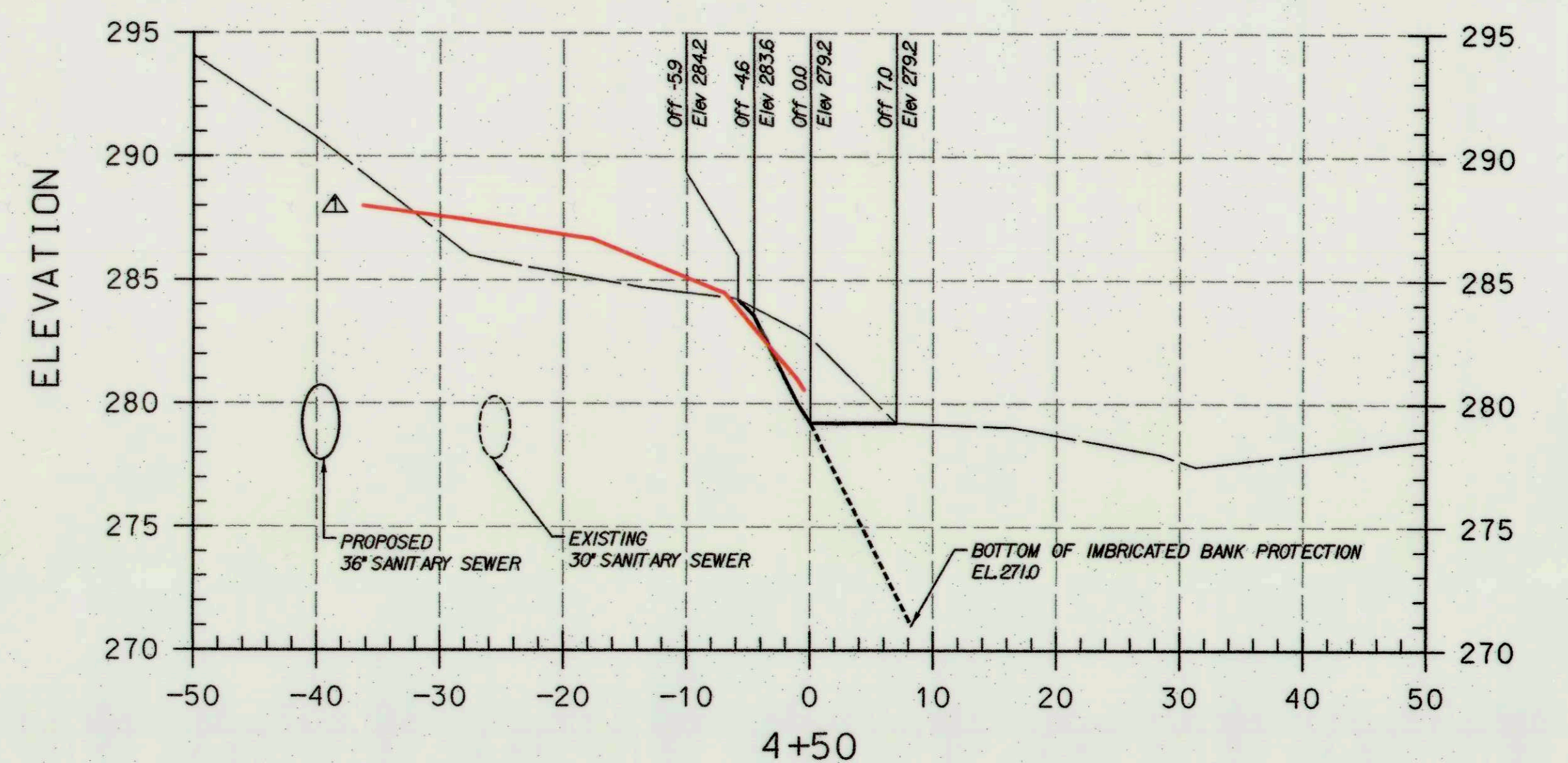
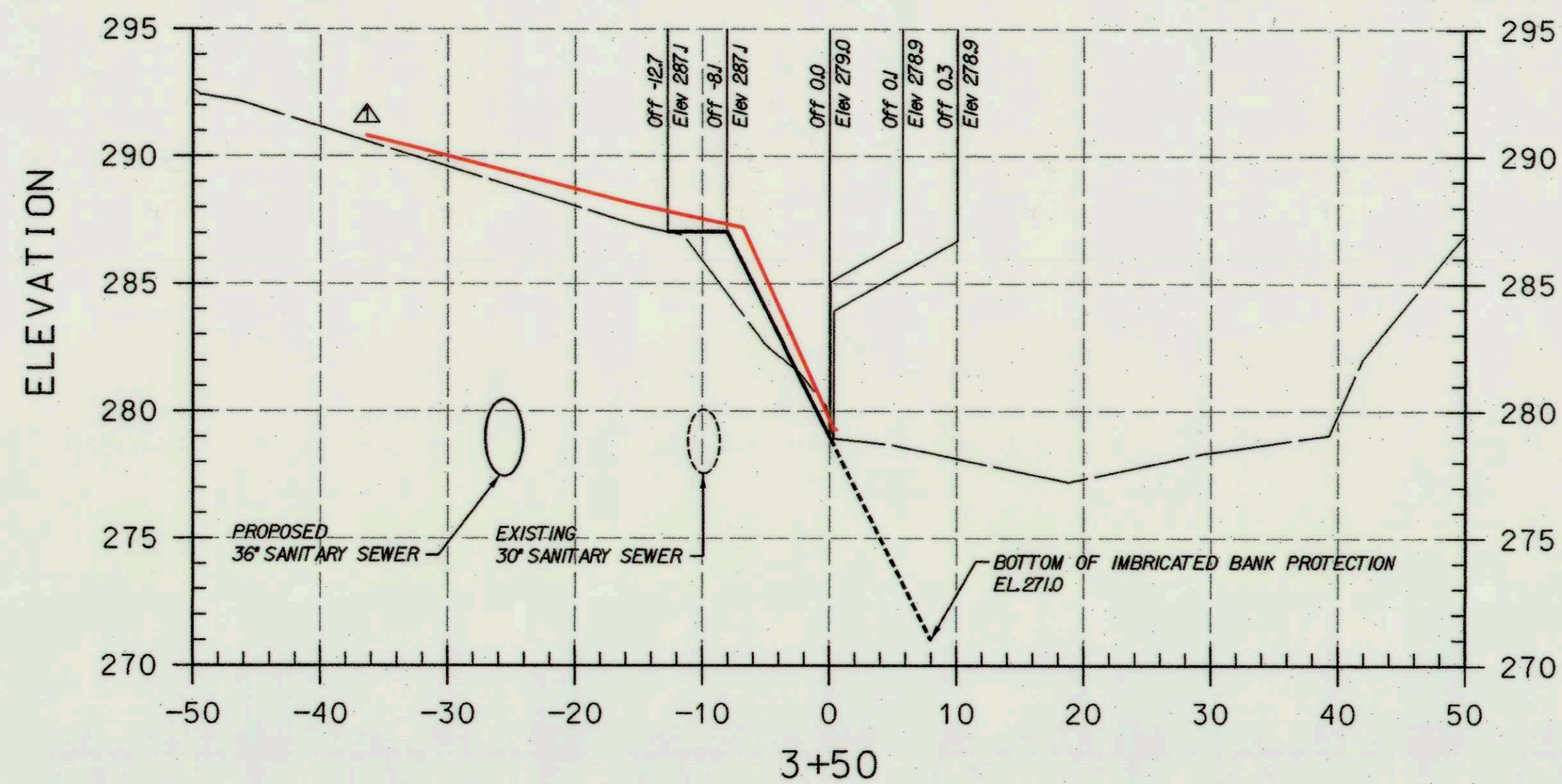
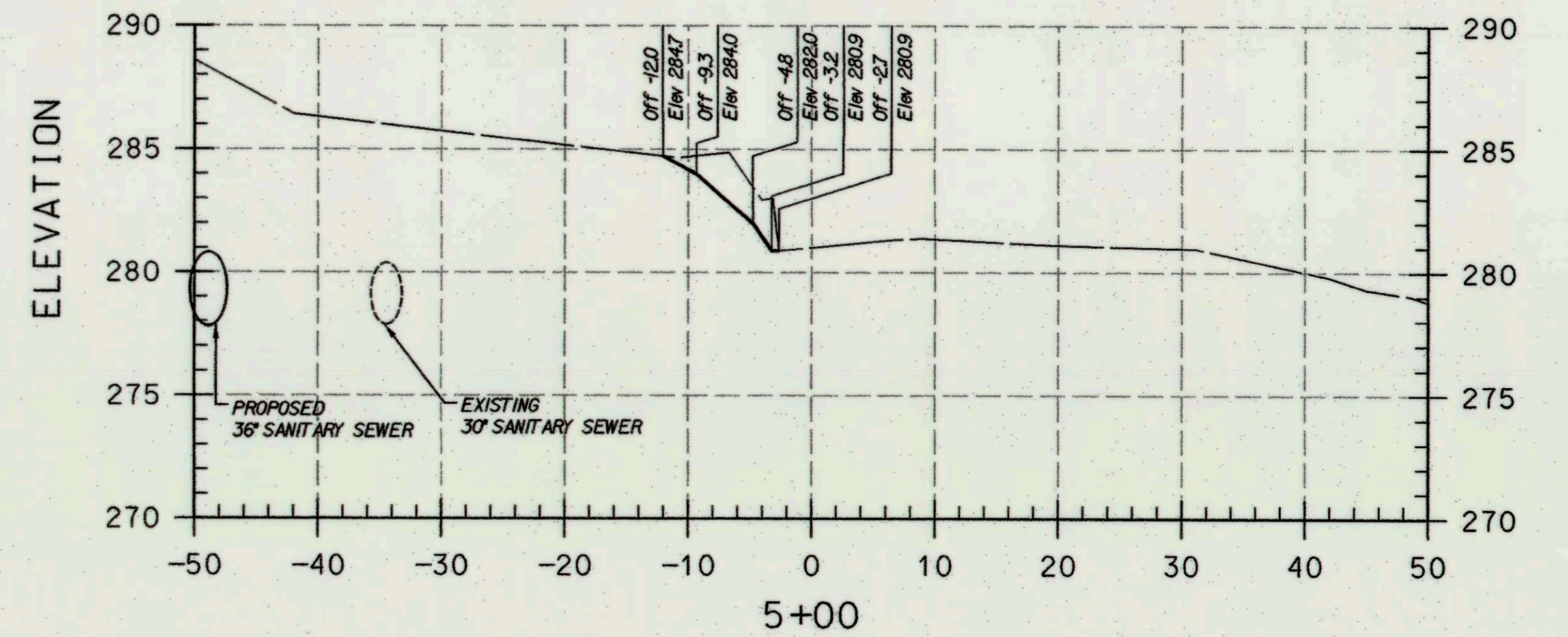
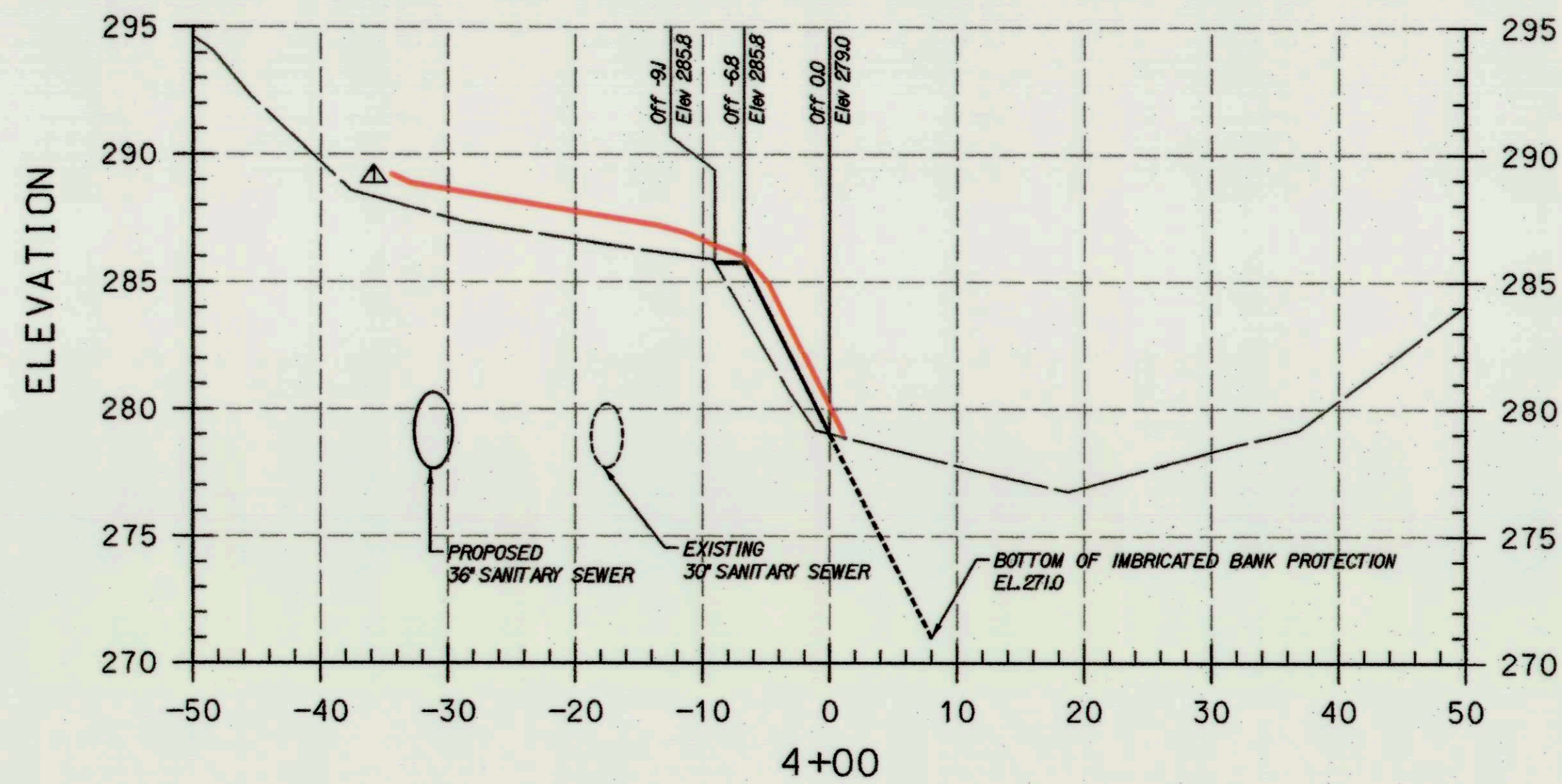
CROSS SECTIONS

600' SCALE MAP NO. _____ BLOCK NO. _____

BEECHWOOD DRIVE BANK STABILIZATION
 STREAM MITIGATION SITE A
 CAPITAL PROJECT No. S-6175
 CONTRACT No. _____
 ELECTION DISTRICT NO. HOWARD COUNTY, MARYLAND

SCALE
 HOR: 1"=10'
 VERT: 1"=5'

SHEET
 4 OF 12



LEGEND

- EXISTING GROUND
- PROPOSED GRADE
- PROPOSED 36" SAN.
- EXISTING 30" SAN.

AS-BUILT GRADE
(NOVEMBER 2011)

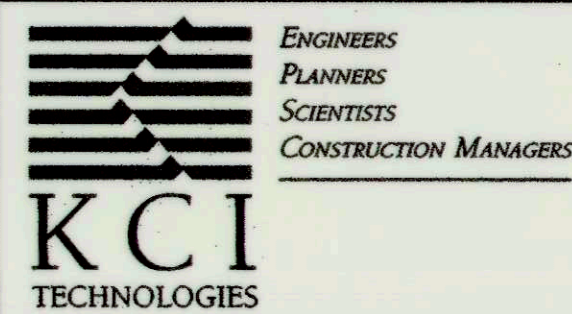


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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 12/14/10
DIRECTOR OF PUBLIC WORKS DATE
[Signature] 12/14/10
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 12/14/10
CHIEF, BUREAU OF ENGINEERING DATE
[Signature] 12/14/10
CHIEF, UTILITY DESIGN DIVISION DATE



DES:	KLH		ADD AS-BUILT DATA	MARCH 2012
DRN:				
CHK:				
DATE:	BY	NO.	REVISION	DATE

CROSS SECTIONS

**BEECHWOOD DRIVE BANK STABILIZATION
STREAM MITIGATION SITE A**
CAPITAL PROJECT No. S-6175
CONTRACT No.
ELECTION DISTRICT NO. HOWARD COUNTY, MARYLAND

SCALE
HOR. 1"=10'
VERT. 1"=5'
SHEET
5 OF 12

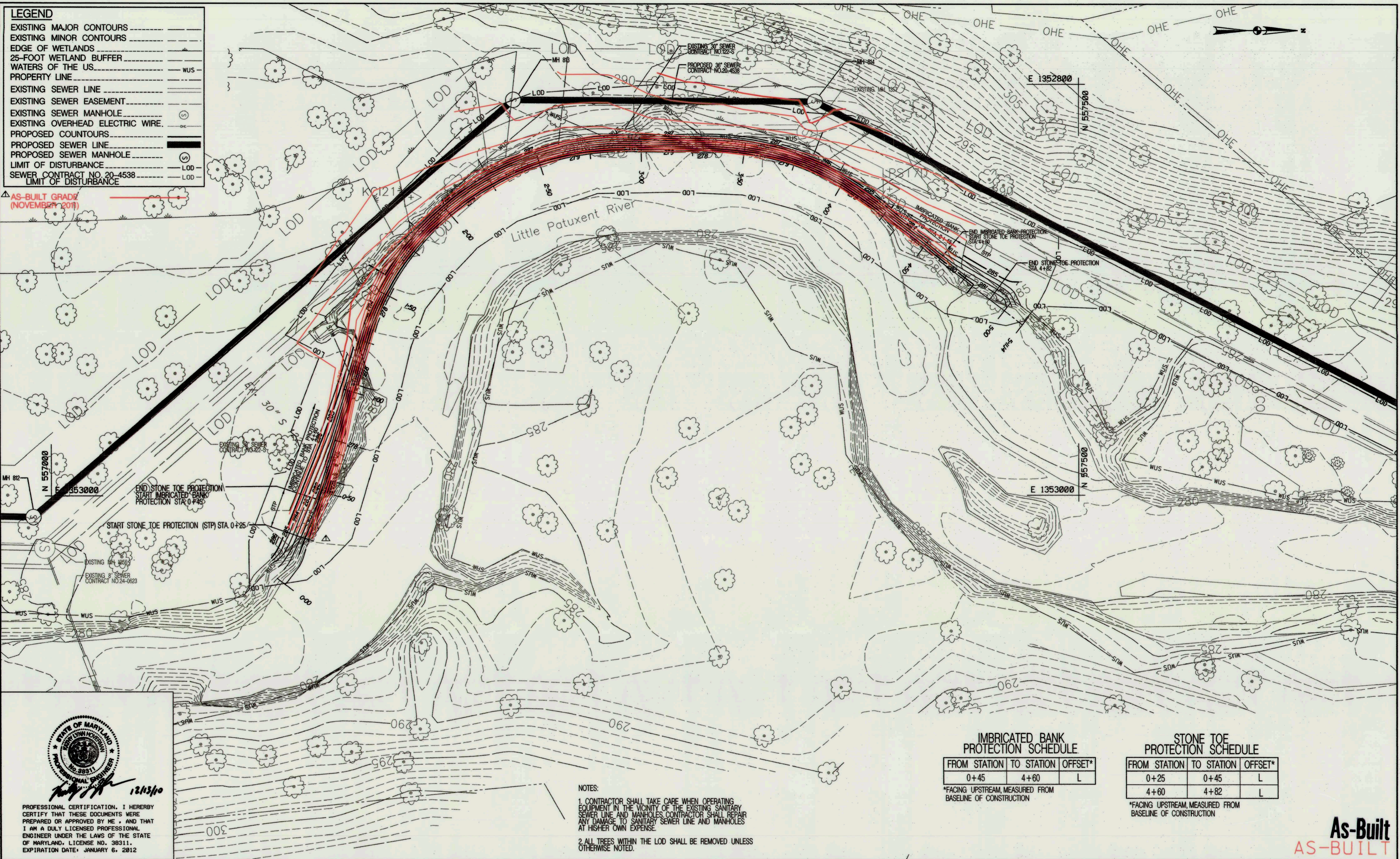
**As-Built
AS-BUILT**

PLOTTED: 11:41 AM on Monday, December 13, 2010
 BY: Harmony Miller Division: P050 Natural Resources GMA Emp
 FILE: M:\2008\00081795_09.dwg

LEGEND

EXISTING MAJOR CONTOURS	---
EXISTING MINOR CONTOURS	---
EDGE OF WETLANDS	---
25-FOOT WETLAND BUFFER	---
WATERS OF THE US	---
PROPERTY LINE	---
EXISTING SEWER LINE	---
EXISTING SEWER EASEMENT	---
EXISTING SEWER MANHOLE	⊙
EXISTING OVERHEAD ELECTRIC WIRE	---
PROPOSED COUNTOURS	---
PROPOSED SEWER LINE	---
PROPOSED SEWER MANHOLE	⊙
LIMIT OF DISTURBANCE	---
SEWER CONTRACT NO. 20-4538	---
LIMIT OF DISTURBANCE	---

AS-BUILT GRADEZ (NOVEMBER 2011)



IMBRICATED BANK PROTECTION SCHEDULE

FROM STATION	TO STATION	OFFSET*
0+45	4+60	L

*FACING UPSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

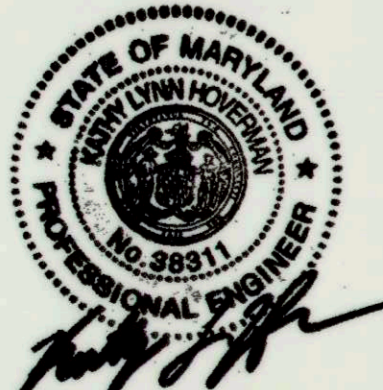
STONE TOE PROTECTION SCHEDULE

FROM STATION	TO STATION	OFFSET*
0+25	0+45	L
4+60	4+82	L

*FACING UPSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

NOTES:

- CONTRACTOR SHALL TAKE CARE WHEN OPERATING EQUIPMENT IN THE VICINITY OF THE EXISTING SANITARY SEWER LINE AND MANHOLES. CONTRACTOR SHALL REPAIR ANY DAMAGE TO SANITARY SEWER LINE AND MANHOLES AT HIS/HER OWN EXPENSE.
- ALL TREES WITHIN THE LOD SHALL BE REMOVED UNLESS OTHERWISE NOTED.

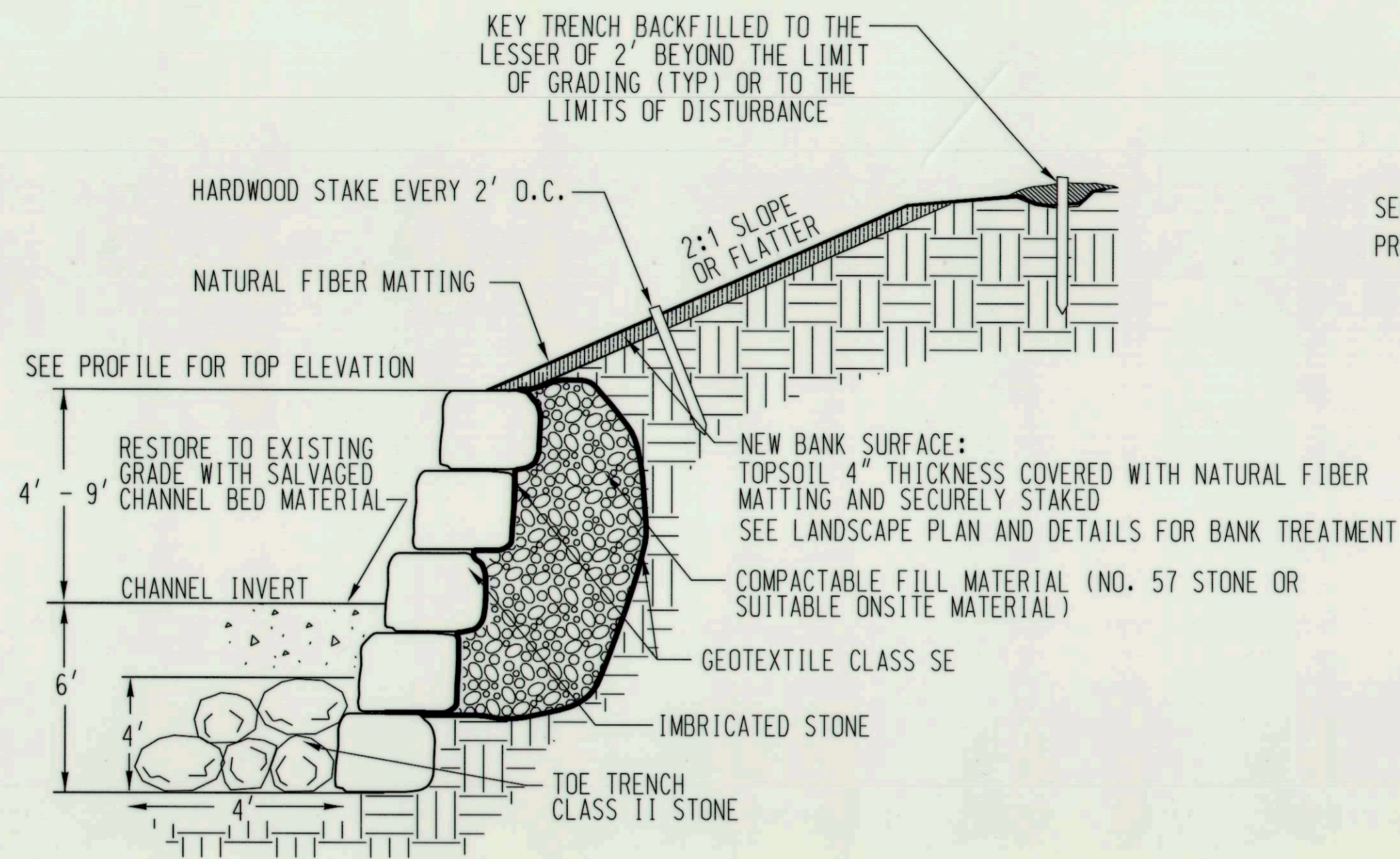


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As-Built
AS-BUILT

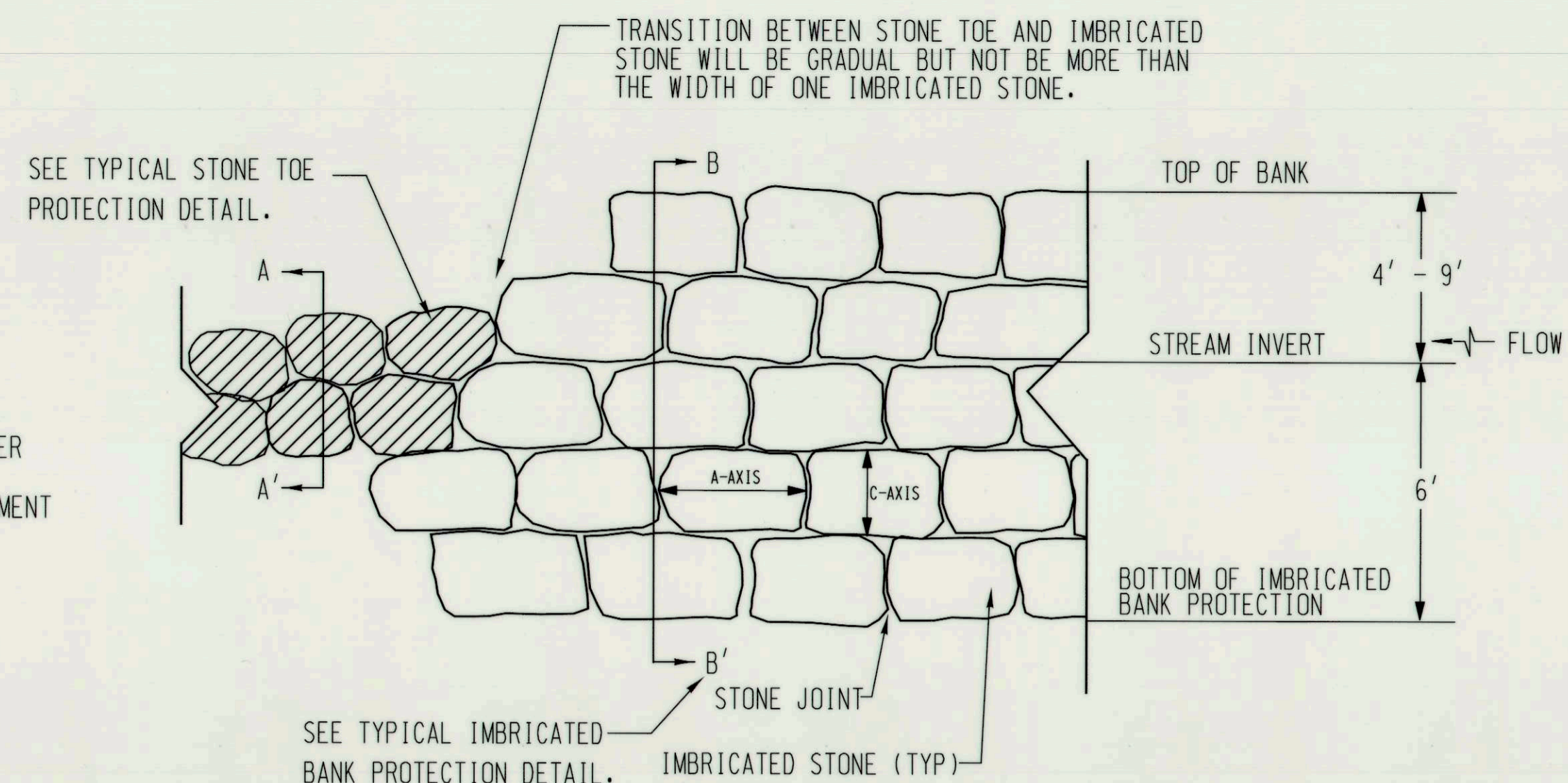
PLOTTED: 10:40 PM on Monday, December 13, 2011
BY: Harmony Miller, Division: P&S, Natural Resources
FILE: M:\2008\10\18\1795_08.dwg, at: c:\windows\system32\cmd.exe

<p>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND</p> <p><i>[Signature]</i> 12/16/10 DIRECTOR OF PUBLIC WORKS DATE</p> <p><i>[Signature]</i> 12/14/10 CHIEF, BUREAU OF ENGINEERING DATE</p> <p><i>[Signature]</i> 12/14/10 CHIEF, UTILITY DESIGN DIVISION DATE</p>	<p>ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>DES:</td><td>KLH</td><td>ADD AS-BUILT DATA</td><td>MARCH 2012</td></tr> <tr><td>DRN:</td><td></td><td></td><td></td></tr> <tr><td>CHK:</td><td></td><td></td><td></td></tr> <tr><td>DATE:</td><td>BY NO.</td><td>REVISION</td><td>DATE</td></tr> </table>	DES:	KLH	ADD AS-BUILT DATA	MARCH 2012	DRN:				CHK:				DATE:	BY NO.	REVISION	DATE	<p>GRADING SHEET</p>	<p>BEECHWOOD DRIVE BANK STABILIZATION STREAM MITIGATION SITE A</p> <p>CAPITAL PROJECT No. S-6175 CONTRACT No.</p> <p>ELECTION DISTRICT NO. HOWARD COUNTY, MARYLAND</p>	<p>SCALE 1" = 20'</p> <p>SHEET 6 OF 12</p>
DES:	KLH	ADD AS-BUILT DATA	MARCH 2012																		
DRN:																					
CHK:																					
DATE:	BY NO.	REVISION	DATE																		



TYPICAL IMBRICATED BANK PROTECTION DETAIL (B-B')

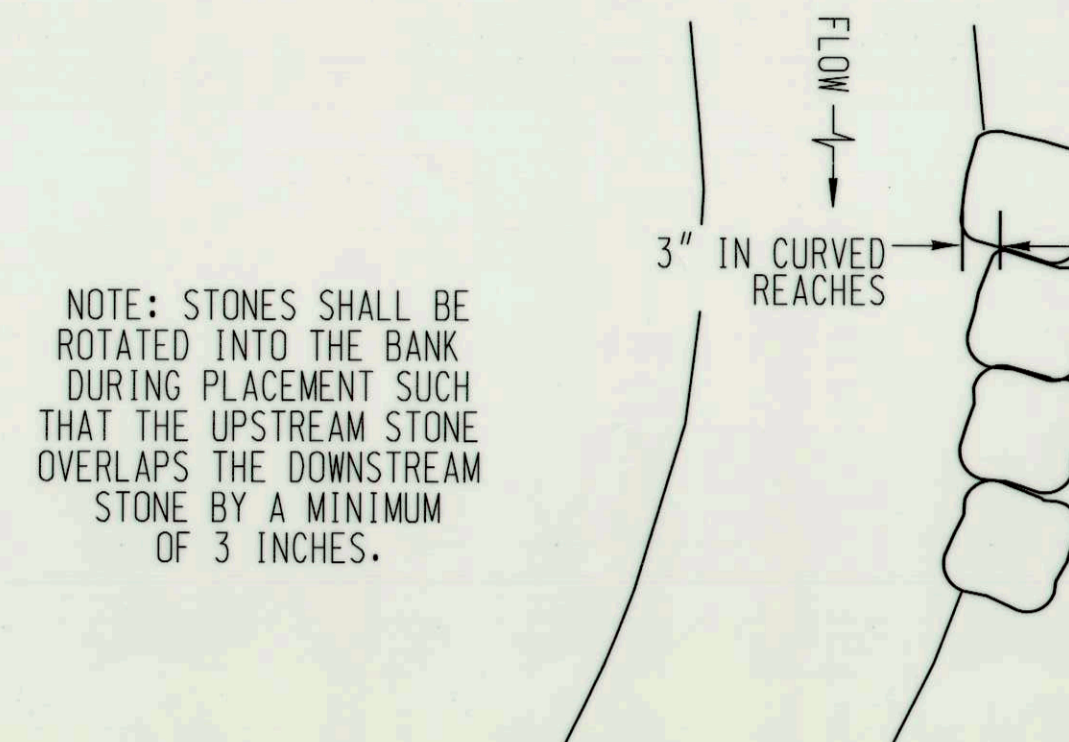
NOT TO SCALE



TYPICAL STONE TOE AND IMBRICATED BANK PROTECTION TRANSITION DETAIL (FACE VIEW)

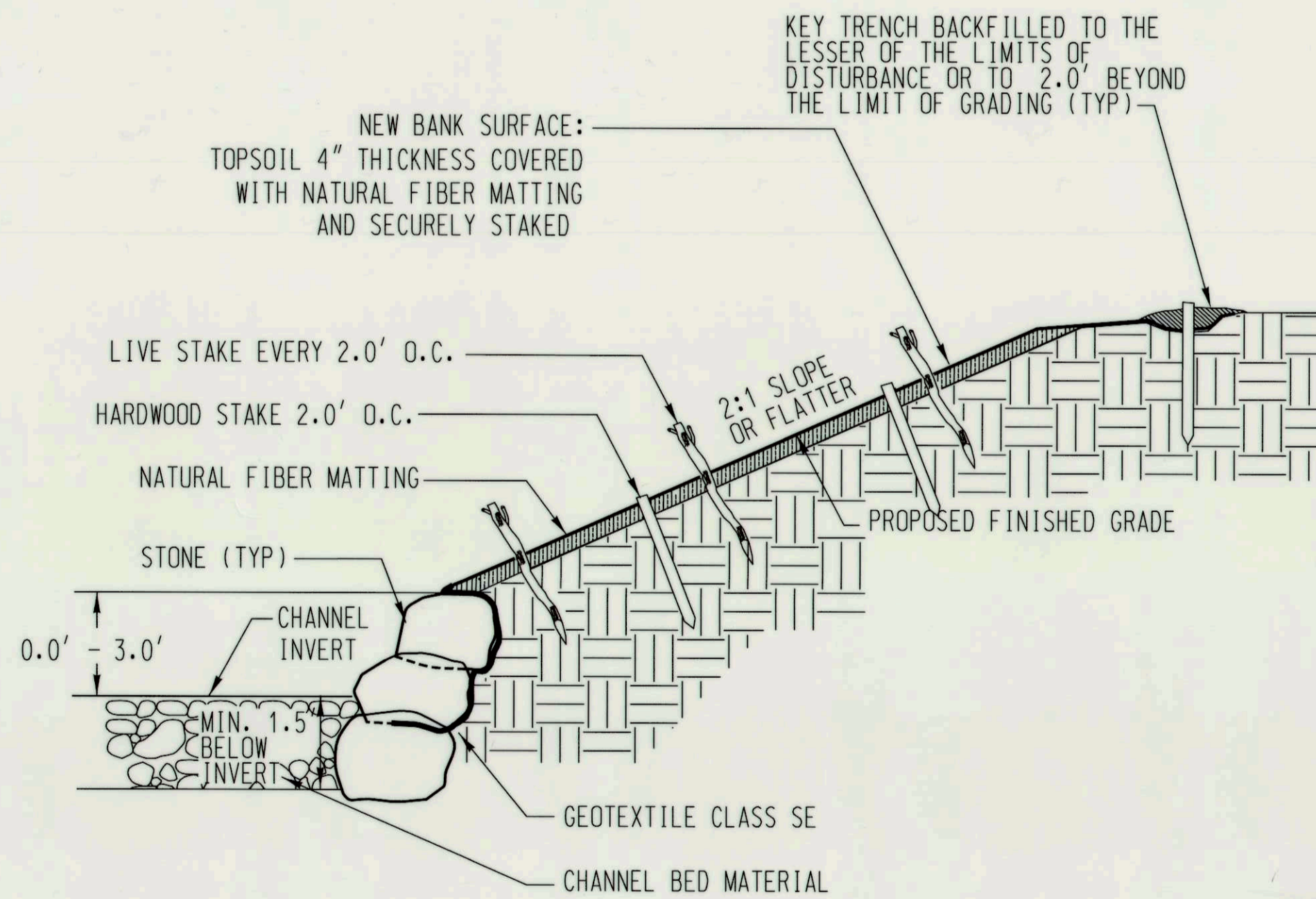
NOT TO SCALE

- NOTES:
1. SEE STONE DIMENSION TABLE FOR SPECIFICS.
 2. ALL STONE LAYERS SHALL BE NEATLY STACKED WITH STAGGERED JOINTS SO THAT EACH STONE RESTS FIRMLY ON TWO STONES IN THE LAYER BELOW.
 3. CHINK ALL VOIDS WITH SMALLER STONE.
 4. FOOTER STONES SHALL BE SET ON SOLID BEDROCK OR SUITABLE MATERIAL A MINIMUM OF 6' BELOW THE CHANNEL INVERT.
 5. WHEN TIEING INTO STONE TOE PROTECTION, TAPER WALL HEIGHT DOWN TO HEIGHT OF STONE TOE PROTECTION.



TYPICAL PLAN VIEW IMBRICATED BANK PROTECTION

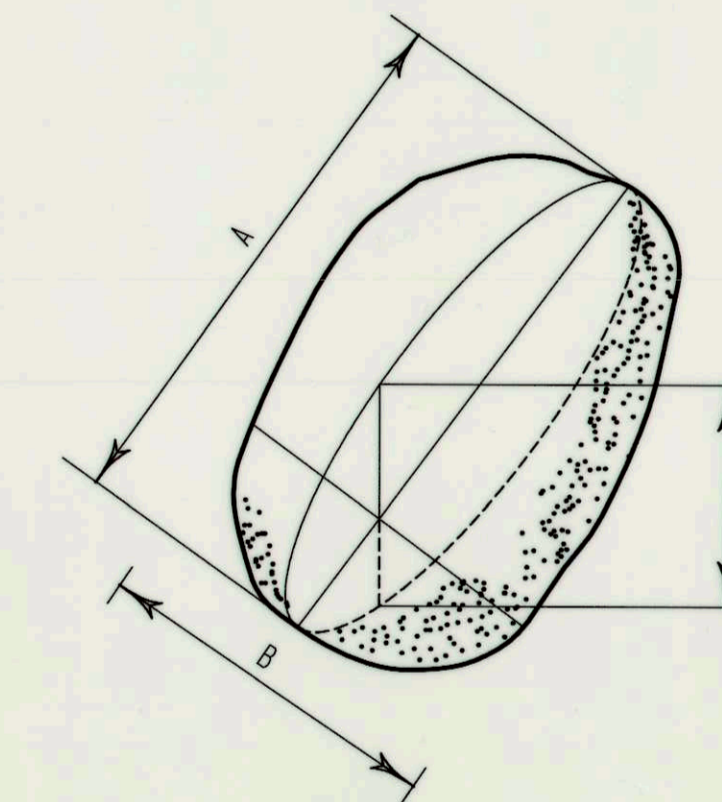
NOT TO SCALE



TYPICAL STONE TOE PROTECTION DETAIL (A-A')

NOT TO SCALE

NOTE: NATURAL FIBER MATTING TO BE INSTALLED ON ALL GRADED SLOPES AND KEYED IN 2.0' BEYOND LIMITS OF GRADING. SEE LANDSCAPE DETAILS (SHEET 12) FOR INSTALLATION DETAILS.



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

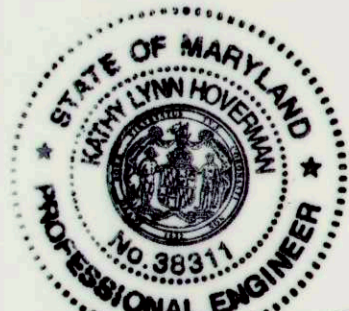
ROCK AXIS DEFINITION

NOT TO SCALE

SIZES FOR STONE TYPES

AXIS	A (LONGEST)	B (INTERMEDIATE)	C (SHORTEST)
STONE TYPE	MAX.	RANGE	MIN.
STONE TOE	2.5'	1.5' - 2.0'	1.0'
IMBRICATED STONE	3.0'	2.0' - 3.0'	2.0'

TOE AND IMBRICATED STONES SHALL BE ANGULAR AND BLOCKY IN SHAPE.



Kurtz 12/14/10
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PLOTTED: 11:42 AM on Monday, December 13, 2010
BY: Harmony Miller, Division: P030, Natural Res. GMA Emp
FILE: M:\2008\01081795_09\Drawings\cfd\101.dwg

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND		 ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS	
 DIRECTOR OF PUBLIC WORKS DATE: 12/15/10	 CHIEF, BUREAU OF ENGINEERING DATE: 12/14/10	 CHIEF, BUREAU OF UTILITIES DATE: 12/14/10	 CHIEF, UTILITY DESIGN DIVISION DATE: 12/14/10

DES:				
DRN:				
CHK:				
DATE:	BY	NO.	REVISION	DATE

DETAILS
600' SCALE MAP NO. _____ BLOCK NO. _____

As-Built

**BEECHWOOD DRIVE BANK STABILIZATION
STREAM MITIGATION SITE A**

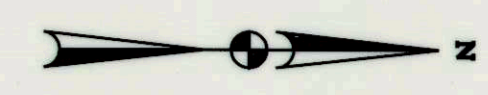
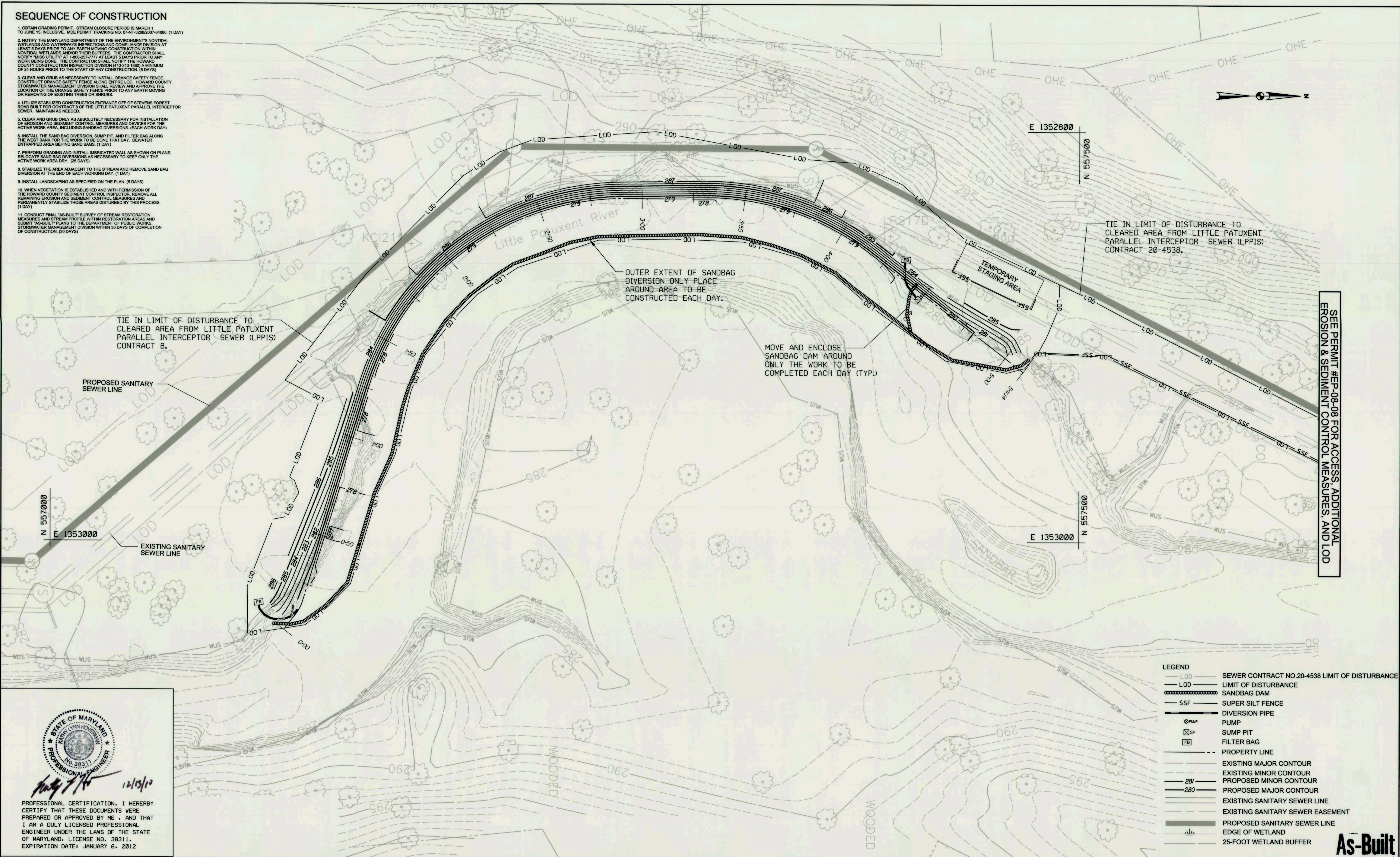
CAPITAL PROJECT No. S-6175
CONTRACT No. _____

ELECTION DISTRICT NO. HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 7 OF 12

SEQUENCE OF CONSTRUCTION

- OBTAIN GRADING PERMIT. STREAM CLOSURE PERIOD IS MARCH 1 TO JUNE 15, INCLUSIVE. MDE PERMIT TRACKING NO. 07-NT-3268/2007-54080. (1 DAY)
- NOTIFY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT'S NONTIDAL WETLANDS AND WATERWAYS INSPECTIONS AND COMPLIANCE DIVISION AT LEAST 5 DAYS PRIOR TO ANY EARTH MOVING CONSTRUCTION WITHIN NONTIDAL WETLANDS AND/OR THEIR BUFFERS. THE CONTRACTOR SHALL NOTIFY MISS UTILITY AT 1-800-527-7777 AT LEAST 5 DAYS PRIOR TO ANY WORK BEING DONE. THE CONTRACTOR SHALL NOTIFY THE HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION (410-315-1880) A MINIMUM OF 24 HOURS PRIOR TO THE START OF ANY CONSTRUCTION. (5 DAYS)
- CLEAR AND GRUB AS NECESSARY TO INSTALL ORANGE SAFETY FENCE. CONSTRUCT ORANGE SAFETY FENCE ALONG ENTIRE LOD. 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.
- UTILIZE STABILIZED CONSTRUCTION ENTRANCE OFF OF STEVENS FOREST ROAD BUILT FOR CONTRACT 8 OF THE LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER. MAINTAIN AS NEEDED.
- CLEAR AND GRUB ONLY AS ABSOLUTELY NECESSARY FOR INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND DEVICES FOR THE ACTIVE WORK AREA, INCLUDING SANDBAG DIVERSIONS. (EACH WORK DAY)
- INSTALL THE SAND BAG DIVERSION, SUMP PIT, AND FILTER BAG ALONG THE WEST BANK FOR THE WORK TO BE DONE THAT DAY. DEWATER ENTRAPPED AREA BEHIND SAND BAGS. (1 DAY)
- PERFORM GRADING AND INSTALL IMPERMEABLE WALL AS SHOWN ON PLANS. RELOCATE SAND BAG DIVERSIONS AS NECESSARY TO KEEP ONLY THE ACTIVE WORK AREA DRY. (25 DAYS)
- STABILIZE THE AREA ADJACENT TO THE STREAM AND REMOVE SAND BAG DIVERSION AT THE END OF EACH WORKING DAY. (1 DAY)
- INSTALL LANDSCAPING AS SPECIFIED ON THE PLAN. (5 DAYS)
- WHEN VEGETATION IS ESTABLISHED AND WITH PERMISSION OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, REMOVE ALL REMAINING EROSION AND SEDIMENT CONTROL MEASURES AND PERMANENTLY STABILIZE THOSE AREAS DISTURBED BY THIS PROCESS. (1 DAY)
- 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)



SEE PERMIT #EP-08-08 FOR ACCESS, ADDITIONAL EROSION & SEDIMENT CONTROL MEASURES, AND LOD

- LEGEND**
- LOD — SEWER CONTRACT NO.20-4538 LIMIT OF DISTURBANCE
 - LOD — LIMIT OF DISTURBANCE
 - SANDBAG DAM
 - SSF — SUPER SILT FENCE
 - DIVERSION PIPE
 - ⊗ PUMP
 - ⊠ SUMP PIT
 - ⊡ FILTER BAG
 - PROPERTY LINE
 - EXISTING MAJOR CONTOUR
 - EXISTING MINOR CONTOUR
 - 281 --- PROPOSED MINOR CONTOUR
 - 280 --- PROPOSED MAJOR CONTOUR
 - EXISTING SANITARY SEWER LINE
 - EXISTING SANITARY SEWER EASEMENT
 - PROPOSED SANITARY SEWER LINE
 - EDGE OF WETLAND
 - 25-FOOT WETLAND BUFFER



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PLOTTED: 10:40 PM on Monday, December 13, 2010
BY: Harmony, Miller, Division: P050 Natural Res. GMA Emp
FILE: M:\2008\01081795\Drawings\as-built.dwg

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Handwritten signature and date: 12/14/10
DIRECTOR OF PUBLIC WORKS DATE

Handwritten signature and date: 12/14/10
CHIEF, BUREAU OF UTILITIES DATE

Handwritten signature and date: 12/14/10
CHIEF, UTILITY DESIGN DIVISION DATE

ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS

KCI
TECHNOLOGIES

DES:					
DRN:					
CHK:					
DATE:	BY	NO.	REVISION	DATE	

EROSION AND SEDIMENT CONTROL PLAN

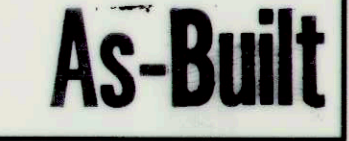
SCALE 600' SCALE MAP NO. BLOCK NO.

**BEECHWOOD DRIVE BANK STABILIZATION
STREAM MITIGATION SITE A**

CAPITAL PROJECT No. S-8175
CONTRACT No.

ELECTION DISTRICT NO. HOWARD COUNTY, MARYLAND

SCALE 1" = 20'
SHEET 8 OF 12



HOWARD COUNTY CONSERVATION DISTRICT
STANDARD SEDIMENT CONTROL NOTES

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, Johnson grass, 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 to the placement of topsoil. Lime shall be distributed 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 - 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 has elapsed (14 days min.) to permit dissipation of phytotoxic materials.
 - ii. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section - Vegetative Stabilization Methods and 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.

V. Topsoil Application

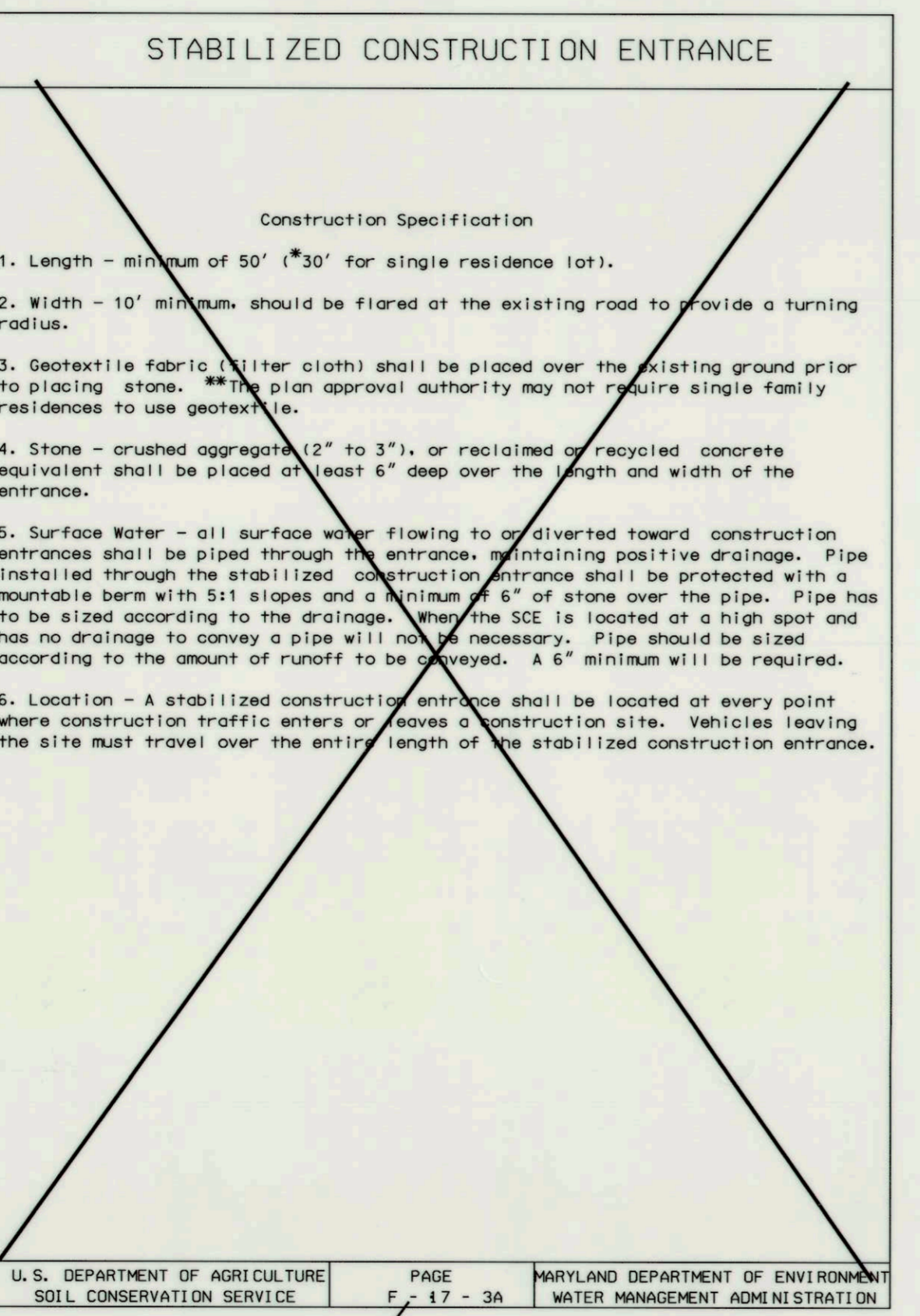
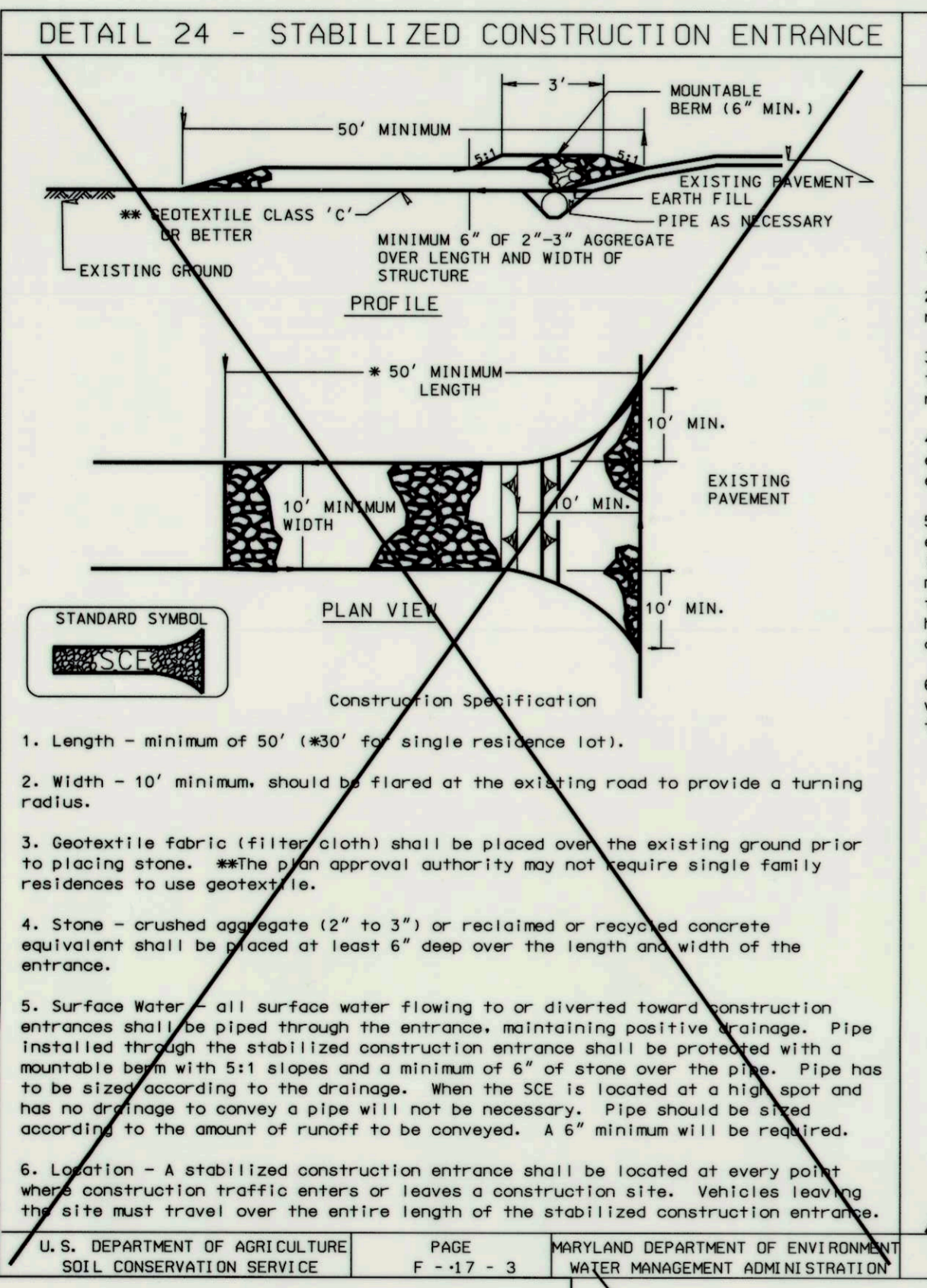
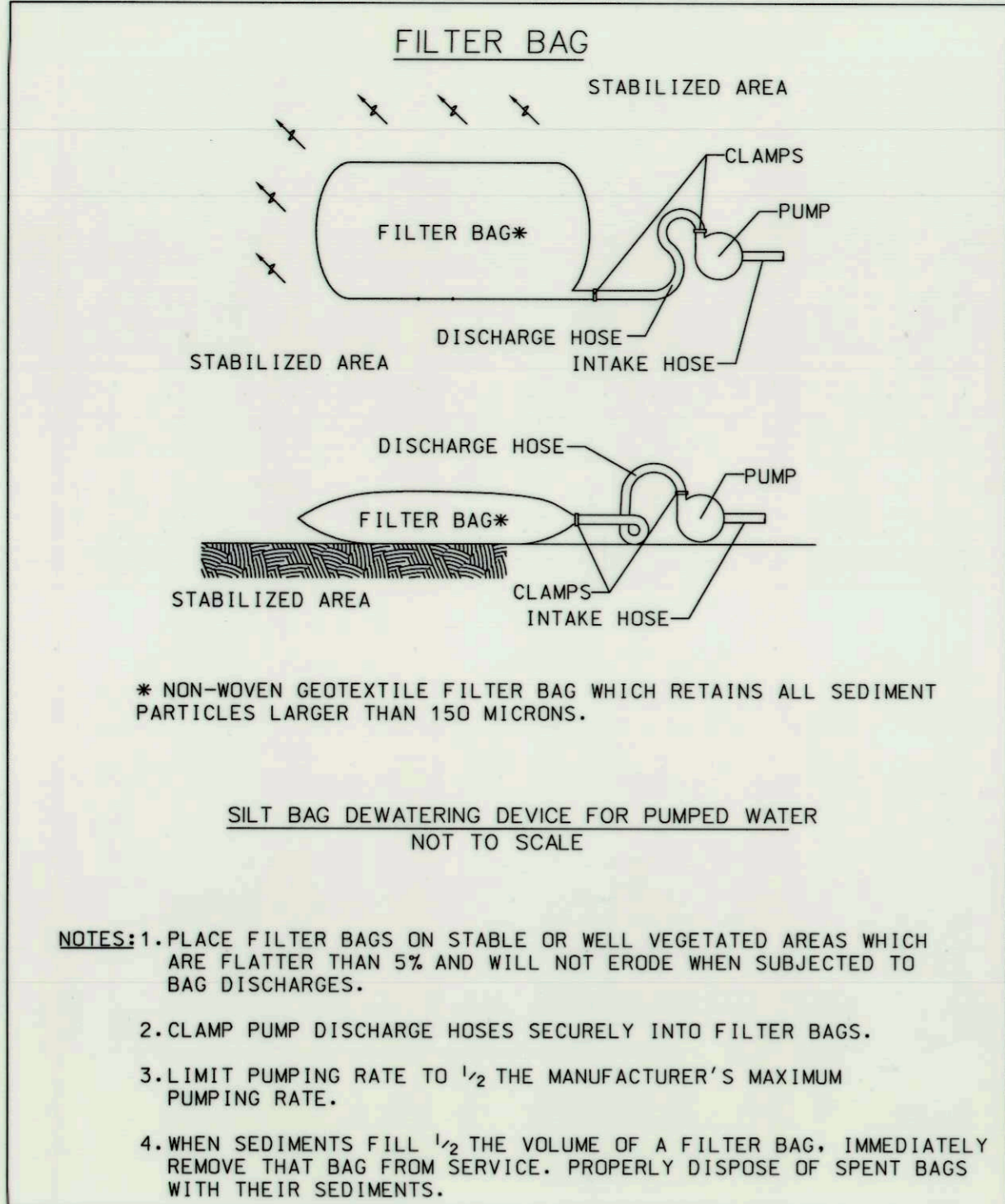
- i. When topsoiling, maintain needed erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Slope Silt Fence and Sediment Traps and Basins.
- ii. Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 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 subsoil is excessively wet or in a condition that my otherwise be detrimental to proper grading and seedbed preparation.

(For areas within LOD with no designated planting area symbol use permanent seeding below. For all areas denoted by symbol see sheet LS-3 for permanent seeding.)

Seeding - For the periods March 1 - April 30, and August 1 - October 15, seed with 60 lbs/acre (14 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/1000sq. 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.



PERMANENT SEEDING

SEED MIXTURE #5 (HARDINESS ZONE 6B) FROM TABLE 25		FERTILIZER RATE (10-20-20) **	LIME RATE
%	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES
85	TALL FESCUE	125	3/1-5/15 8/15-10/15
10	PERENNIAL RYE GRASS	10	
5	KENTUCKY BLUEGRASS	10	1/4"-1/2"
		90 LB/AC 2.0 LB/1000 SF	175 LB/AC 4.0 LB/1000 SF
		175 LB/AC 4.0 LB/1000 SF	2 TONS/AC 100.0 LB/1000 SF
83	TALL FESCUE	110	3/1-5/15 5/16-8/14
2	WEEPING LOVEGRASS	3	
15	BERECIA LESPEDEZA	20	8/15-10/15

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.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE F-17-3

MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE F-17-3A

MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

NOTE: STABILIZED CONSTRUCTION ENTRANCE PROVIDED UNDER APPROVED PERMIT #EP-08-08 FOR LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER (LPPIS) CONTRACT 8

STATE OF MARYLAND PROFESSIONAL ENGINEER No. 38311

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

12/15/10
DIRECTOR OF PUBLIC WORKS

12/14/10
CHIEF, BUREAU OF ENGINEERING

12/14/10
CHIEF, UTILITY DESIGN DIVISION

12/15/10
CHIEF, BUREAU OF UTILITIES

ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS

KCI TECHNOLOGIES

DES:				
DRN:				
CHK:				
DATE:	BY	NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL NOTES & DETAILS

600' SCALE MAP NO. _____ BLOCK NO. _____

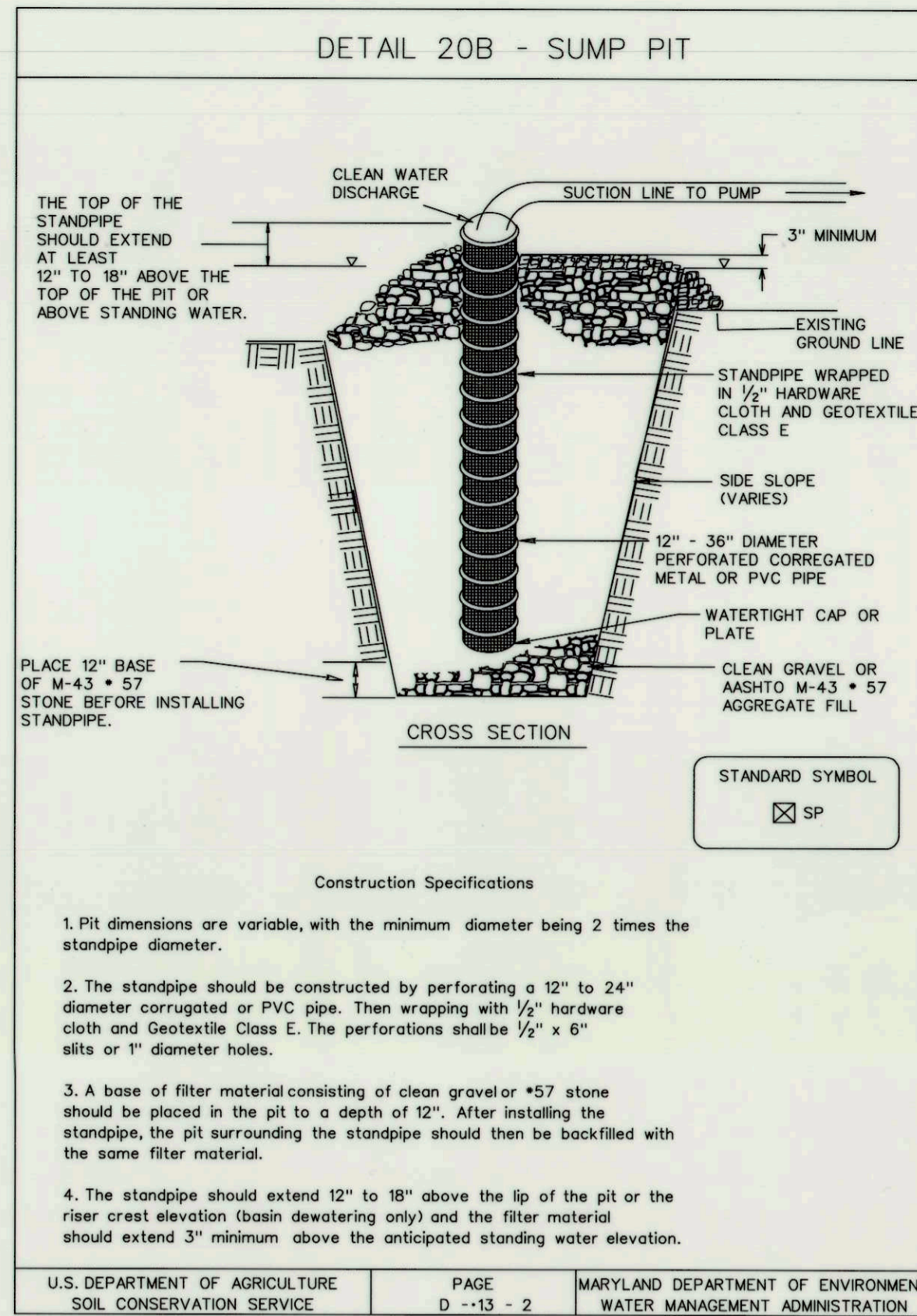
BEECHWOOD DRIVE BANK STABILIZATION
STREAM MITIGATION SITE A

CAPITAL PROJECT No. S-6175
CONTRACT No.

ELECTION DISTRICT NO. HOWARD COUNTY, MARYLAND

SCALE N/A
SHEET 9 of 12

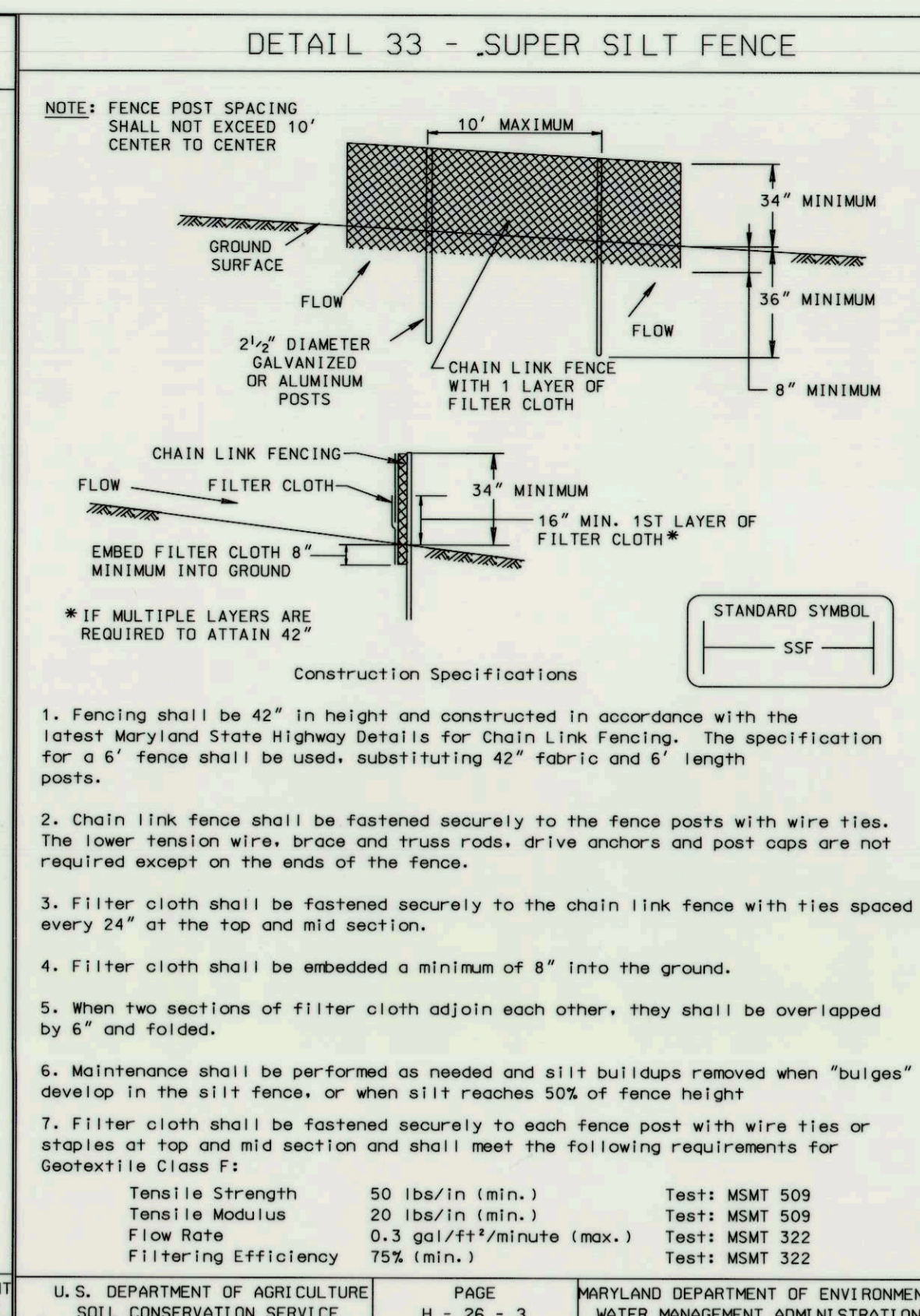
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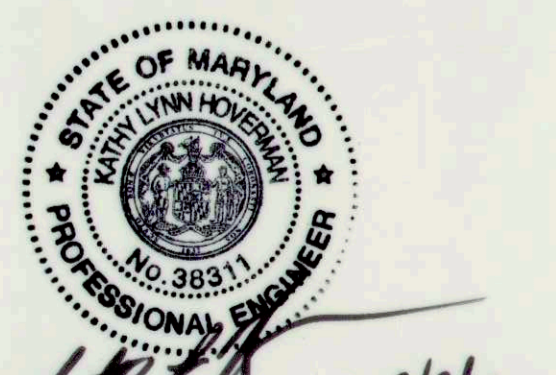
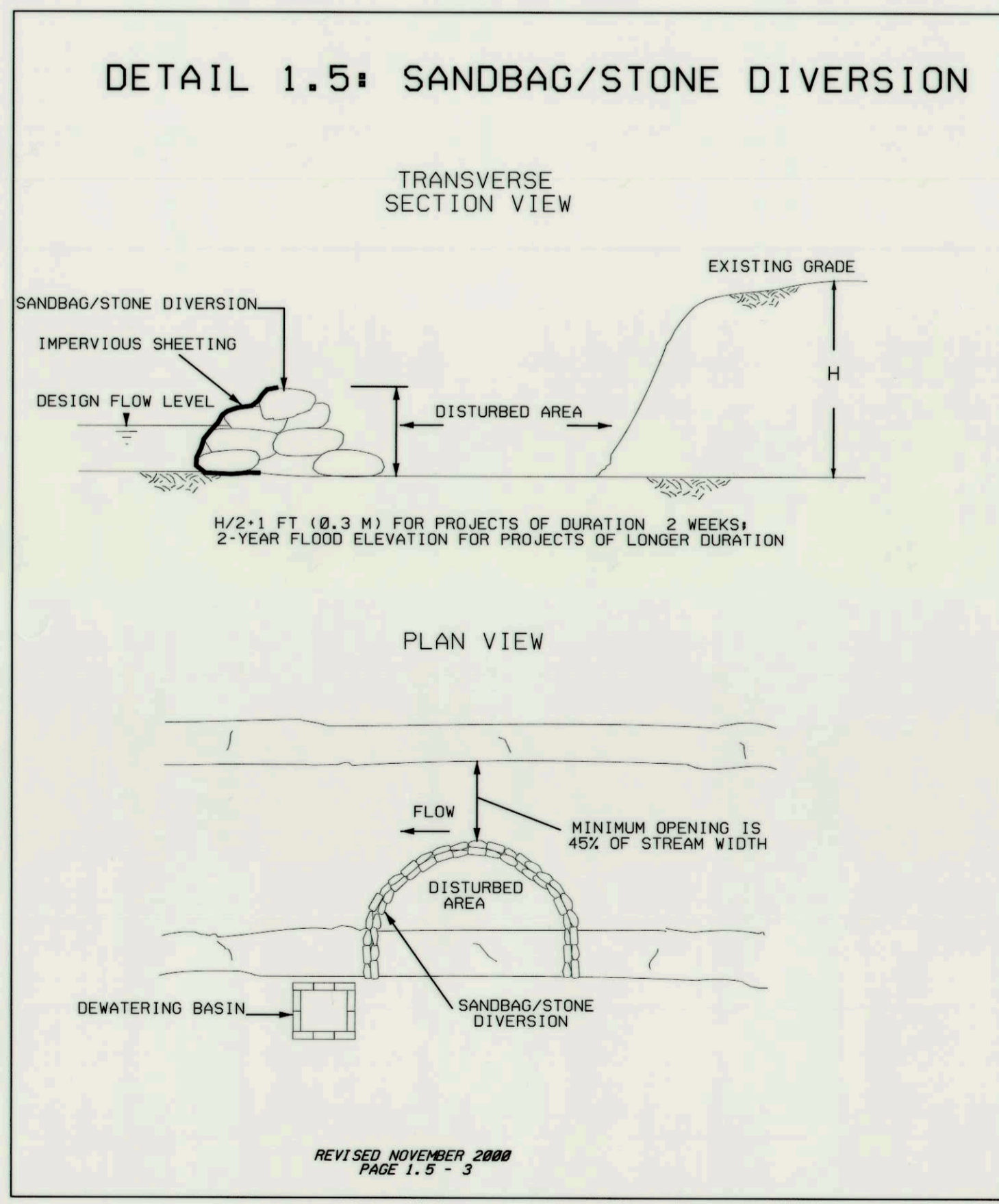
SUPER SILT FENCE

Design Criteria

Slope	Slope Steepness	Slope Length (maximum)	Silt Fence Length (maximum)
0 - 10%	0 - 10:1	Unlimited	Unlimited
10 - 20%	10:1 - 5:1	200 feet	1,500 feet
20 - 33%	5:1 - 3:1	100 feet	1,000 feet
33 - 50%	3:1 - 2:1	100 feet	500 feet
50% +	2:1 +	50 feet	250 feet



U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE D - 13 - 2	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION	U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE H - 26 - 3A	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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FILE: M:\2008\09\081795_09\Drawings\esd\esd13.spl_A.dgn

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND [Signature] 12/15/10 DIRECTOR OF PUBLIC WORKS DATE	[Signature] 12/14/10 CHIEF, BUREAU OF ENGINEERING DATE
[Signature] 12/15/10 CHIEF, BUREAU OF UTILITIES DATE	[Signature] 12/14/10 CHIEF, UTILITY DESIGN DIVISION DATE



DES:			
DRN:			
CHK:			
DATE:	BY	NO.	REVISION

EROSION AND SEDIMENT CONTROL DETAILS

600' SCALE MAP NO. _____ BLOCK NO. _____

**BEECHWOOD DRIVE BANK STABILIZATION
STREAM MITIGATION SITE A**




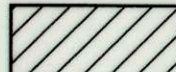
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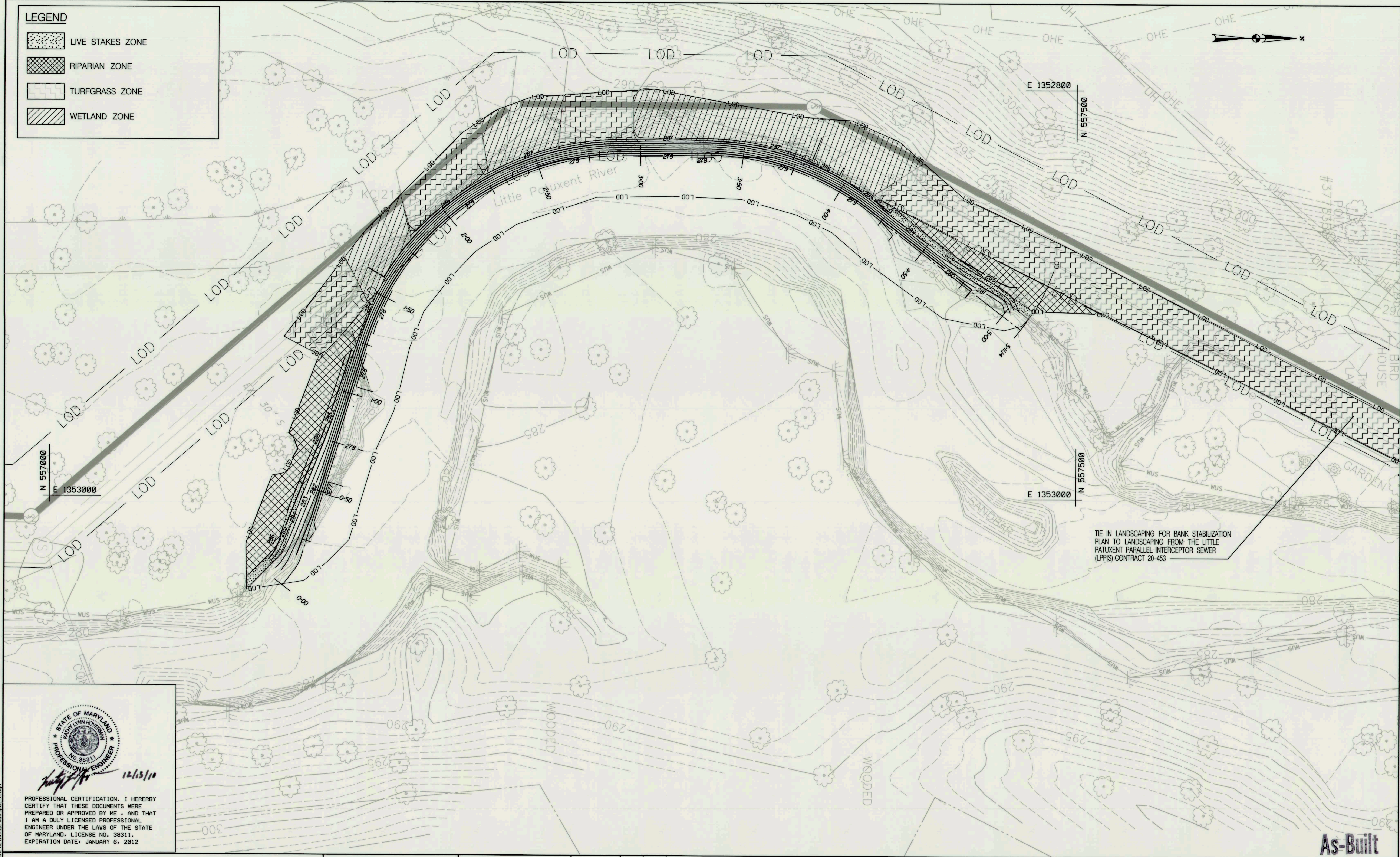
ELECTION DISTRICT NO. HOWARD COUNTY, MARYLAND

SCALE N/A
SHEET 10 OF 12



LEGEND

-  LIVE STAKES ZONE
-  RIPARIAN ZONE
-  TURFGRASS ZONE
-  WETLAND ZONE



TIE IN LANDSCAPING FOR BANK STABILIZATION PLAN TO LANDSCAPING FROM THE LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER (LPPIS) CONTRACT 20-453



12/13/10

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FILE: W:\2008\03\08\17\25\03\Drawings\10\10\10\10.dwg

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 12/15/10
DIRECTOR OF PUBLIC WORKS DATE

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 ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS

DES:				
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LANDSCAPE PLAN

600' SCALE MAP NO. _____ BLOCK NO. _____

As-Built

BEECHWOOD DRIVE BANK STABILIZATION
STREAM MITIGATION SITE A

CAPITAL PROJECT No. S-6175
CONTRACT No. _____

ELECTION DISTRICT NO. HOWARD COUNTY, MARYLAND

SCALE: 1" = 20'
SHEET: 11 OF 12

MASTER PLANT SCHEDULE

LIVE STAKES (SHEET 11 OF 12) (567 SQ FT/0.01 AC)

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

RIPARIAN ZONE (SHEET 11 OF 12) (6,675 SQ FT/0.15 AC)

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

WETLAND ZONE (SHEET 11 OF 12) (4,959 SQ FT/0.11 AC)

% OF MIX	Botanical Name	Common Name
23	Carex vulpinoidea	Fox sedge
20	Elmys virginica	Virginia wild rye
10	Sparganium eurycarpum	Giant bur reed
5	Carex crinita	Fringed (nodding) sedge
5	Carex gynandra	Nodding sedge
5	Carex lurida	Lurid (shallow) sedge
5	Juncus effusus	Soft rush
5	Scirpus cyperinus	Wool grass
5	Sparganium americanum	Eastern bur reed
4	Carex scoparia	Blunt broom sedge
4	Glyceria grandis	American mannagrass
3	Verbena hastata	Blue vervain
2	Carex comosa	Cosmos (bristly) sedge
2	Carex lupulina	Hop sedge
1	Glyceria canadensis	Rattlesnake grass
1	Leersia oryzoides	Rice cutgrass

TOTAL QUANTITY: 2.5 LBS.
Application rate of 0.5 LBS/1,000 SF

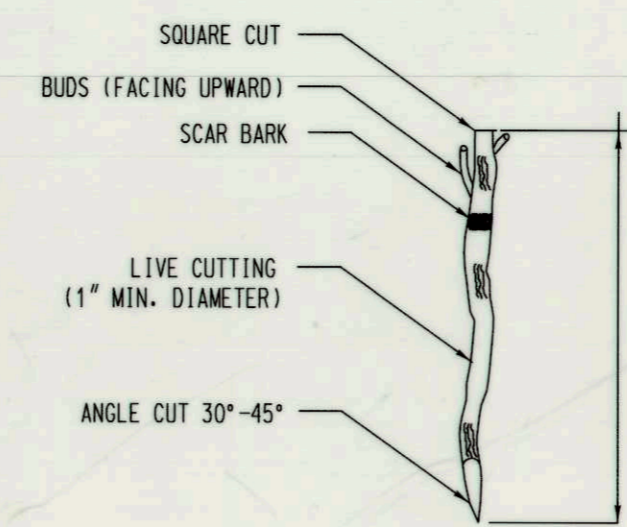
PERMANENT SEEDING FOR LIVE STAKES AND RIPARIAN ZONE (SHEET 11 OF 12) (7,242 SQ FT/0.17 AC)

Botanical Name	Common Name	Application Rate (lbs/ac)	% of Mix	Quantity (lbs)
Panicum virgatum	Switchgrass	18.0	25%	3.1
Poa palustris	Fowl bluegrass	30.0	40%	5.1
Panicum clandestinum	Deer tongue grass	18.0	25%	3.1
Bromus ciliatus	Fringed brome	9.0	10%	1.5
TOTALS		75.0 lbs/ac		12.8 lbs

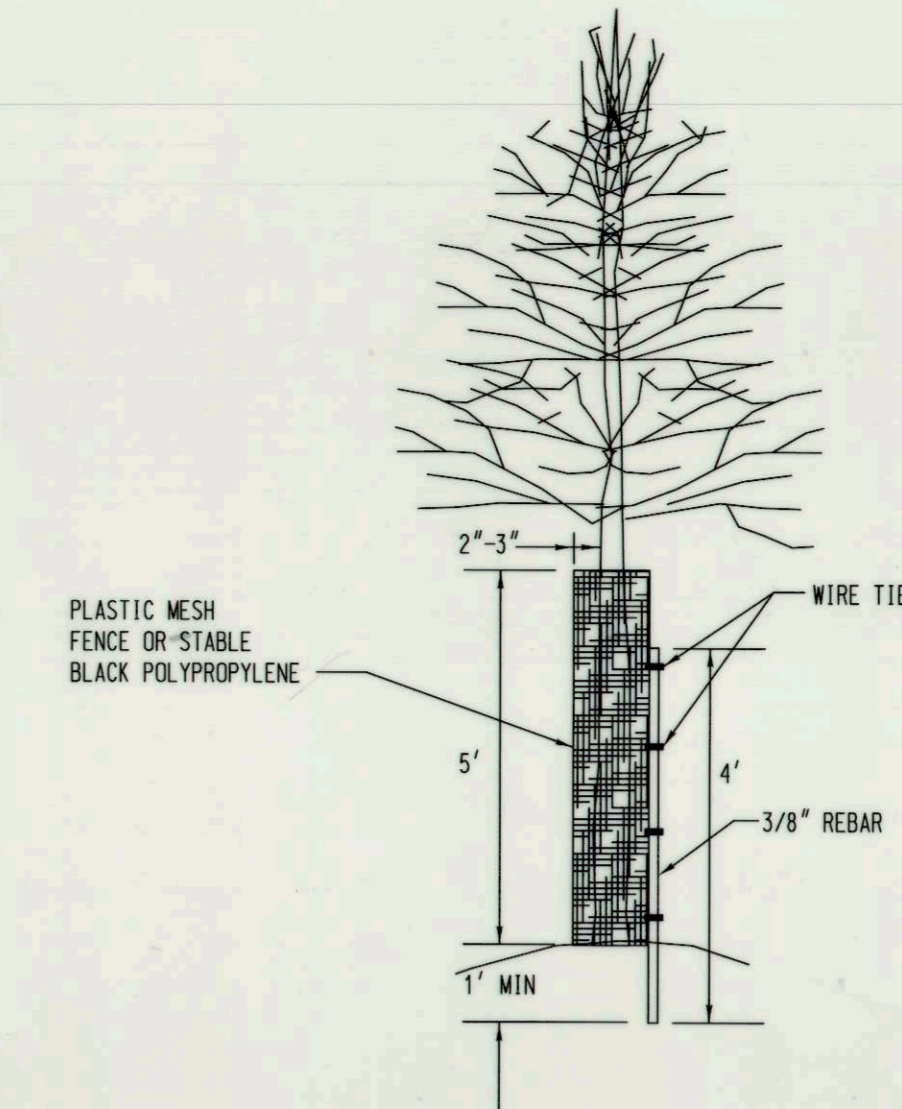
TURF GRASS ZONE (SHEET 11 OF 12) (24,959 SQ FT/0.57 AC)

Quantity (lbs)	Botanical Name
123	SHA Turf Grass Mix (920.06.07a)

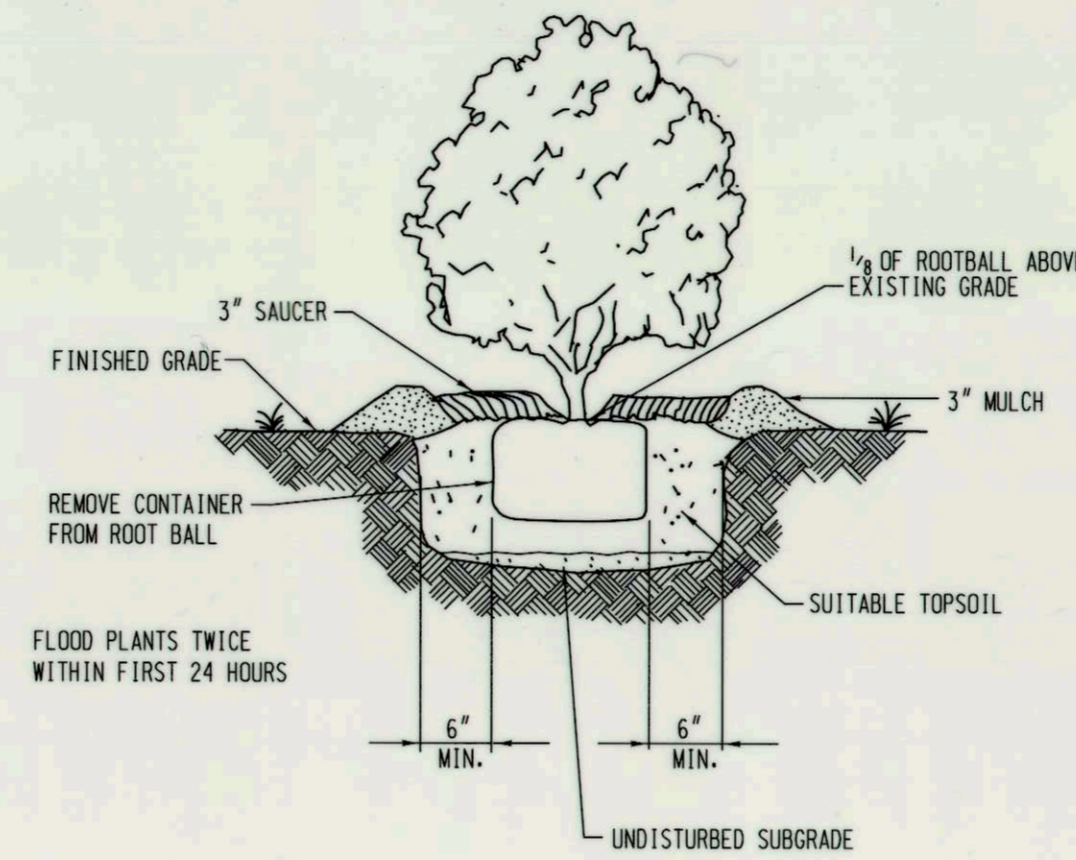
Application Rate of 216 lbs/ AC



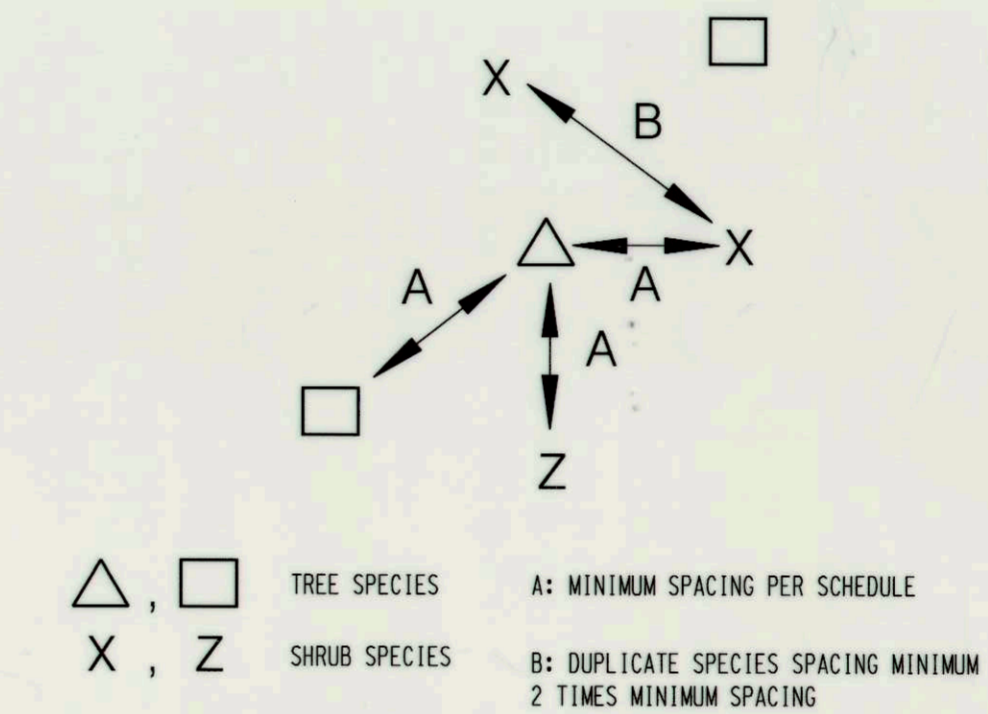
LIVE STAKE DETAIL
NOT TO SCALE



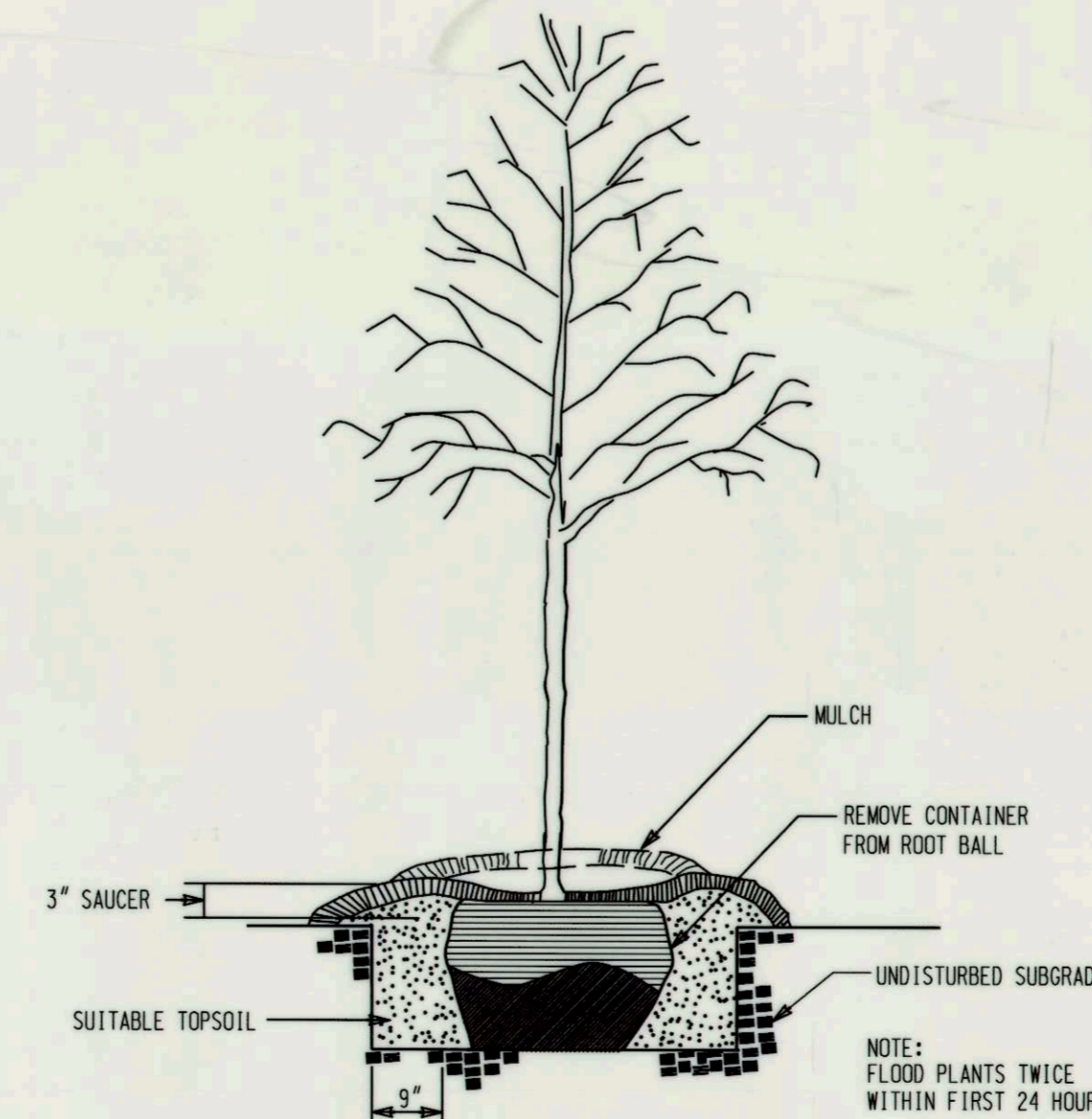
TREE SHELTER
NOT TO SCALE



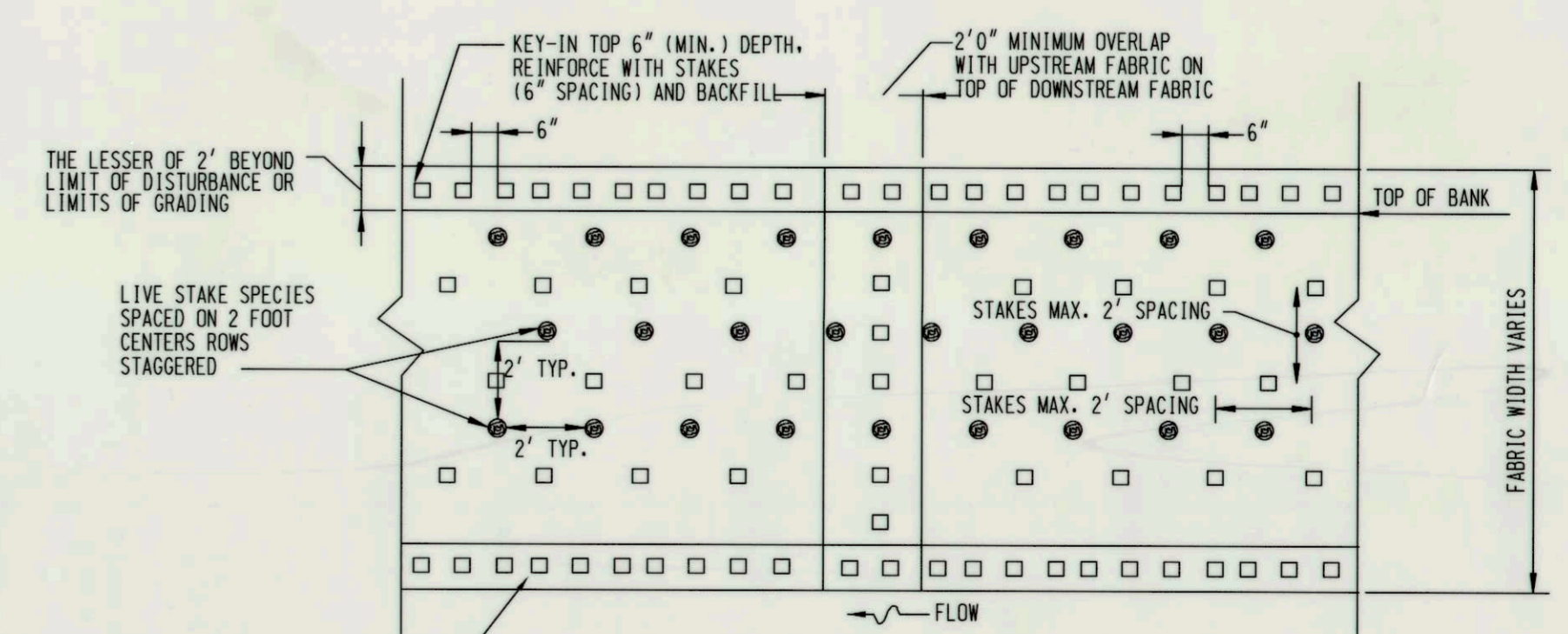
SHRUB PLANTING DETAIL
NOT TO SCALE



TREE AND SHRUB RANDOM SPACING
NOT TO SCALE



TREE PLANTING DETAIL
NOT TO SCALE



TYPICAL PLAN VIEW
NATURAL FIBER MATTING WITH LIVE STAKES
NOT TO SCALE

NATURAL FIBER MATTING TO BE ROLLED LENGTHWISE ALONG STREAMBANK EXTENDING TO THE BOTTOM OF TOE PROTECTION AND A MINIMUM OF ONE FOOT 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)

As-Built

PLOTTED: 12:01 PM on Monday, December 13, 2010
BY: Harmony Miller, Division: P050 - Natural Resources, GMA Emp
FILE: W:\2008\01081795_09\Drawings\ld\lplp1_A.dgn

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

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

12/15/10
DIRECTOR OF PUBLIC WORKS

12/15/10
CHIEF, BUREAU OF ENGINEERING

12/14/10
CHIEF, UTILITY DESIGN DIVISION

ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS

DES:	DRN:	CHK:	DATE:

NOTE: TREE SHELTERS TO BE ADDED TO ALL TREES PLANTED

LANDSCAPE DETAILS

600' SCALE MAP NO. _____ BLOCK NO. _____

BEECHWOOD DRIVE BANK STABILIZATION
STREAM MITIGATION SITE A

CAPITAL PROJECT No. S-6175
CONTRACT No. _____

ELECTION DISTRICT NO. HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 12 OF 12