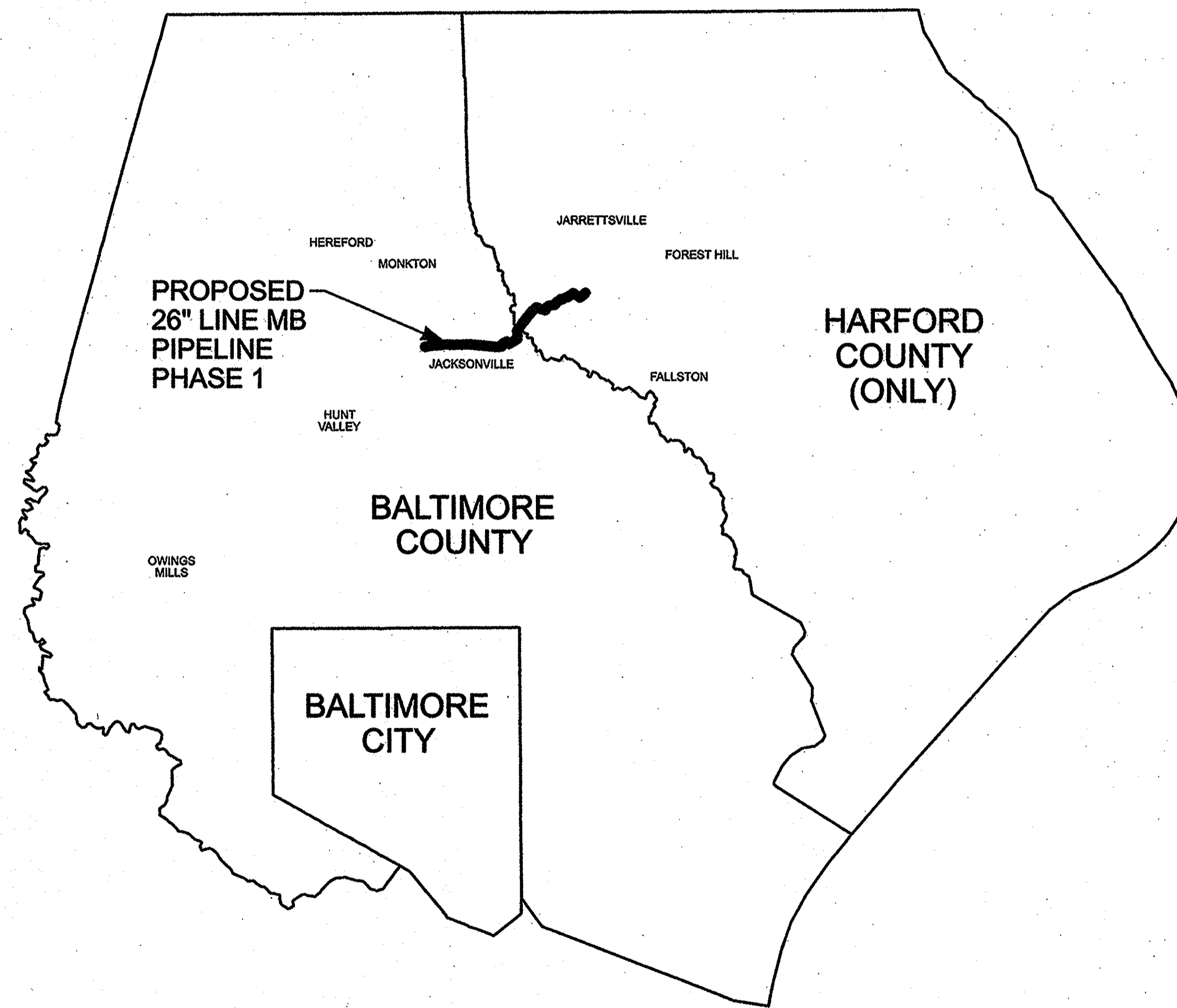


# HARFORD COUNTY GRADING \ EROSION AND SEDIMENT CONTROL PLAN COLUMBIA GAS TRANSMISSION, LLC LINE MB EXTENSION PROJECT BALTIMORE & HARFORD COUNTIES, MARYLAND

## SHEET INDEX

T-2.0	TITLE SHEET - HARFORD COUNTY
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PP-15 TO PP-17	LINE MB PROFILE AT STREAM CROSSINGS - HARFORD COUNTY
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ECD-2.00 TO ECD-2.23A	EROSION AND SEDIMENT CONTROL DETAILS - HARFORD COUNTY
PO-2.0	PROPERTY OWNERS CHART - HARFORD COUNTY

GENERAL LEGEND	
600	EX. CONTOUR
600	PROP. CONTOUR
SD	EX. STORM DRAIN
S	EX. SANITARY LINE
o CO.	EX. CLEANOUT
W	EX. WATER LINE
FO	EX. FIBER OPTIC LINE
//	EX. FOREIGN PIPELINE
OH	EX. OVERHEAD ELECTRIC
E	EX. UNDERGROUND ELECTRIC
T	EX. UNDERGROUND TELEPHONE
MA	EX. LINE MA GAS LINE
MB	PROPOSED LINE MB NATURAL GAS PIPELINE
X	EX. WOODS LINE
X	EX. FENCE
Tree Symbol	EX. TREES
Stream Symbol	EX. STREAM
Property Line Symbol	PROPERTY LINE
Easement Symbol	EX. EASEMENT
Line MB Permanent Right-of-Way Symbol	LINE MB PERMANENT RIGHT-OF-WAY
Line MB Temporary Workspace Symbol	LINE MB TEMPORARY WORKSPACE
Line MB Additional Temporary Workspace Symbol	LINE MB ADDITIONAL TEMPORARY WORKSPACE
Existing Line MA Right-of-Way Symbol	EXISTING LINE MA RIGHT-OF-WAY
Proposed Access Road Centerline Symbol	PROPOSED ACCESS ROAD CENTERLINE
Proposed Contractor Staging Area Symbol	PROPOSED CONTRACTOR STAGING AREA
MdB2-B	100 YEAR FEMA FLOODPLAIN
Soils Delineation Symbol	SOILS DELINEATION - HSG
Slopes 15-25% Symbol	SLOPES 15-25%
Slopes 25% or Greater Symbol	SLOPES 25% OR GREATER
WUS	FIELD DELINEATED WATERS OF THE U.S.
NRD	NATURAL RESOURCE DISTRICT
Non-Tidal Wetland Symbol	NON-TIDAL WETLAND
WB	25' MDE REGULATED WETLAND BUFFER
Forest Stand Tree Line Symbol	FOREST STAND TREE LINE
FB	FOREST BUFFER
XB	TIER II EXPANDED RIPARIAN BUFFER
EX. Edge of Pavement Symbol	EX. EDGE OF PAVEMENT
LOD	LIMIT OF DISTURBANCE
Highly Erodible Soils Symbol	HIGHLY ERODIBLE SOILS
Building Symbol	EX. BUILDING
LNMAW0000	WETLAND ID
LNMA0000	STREAM ID
AR-0000	ACCESS ROAD ID
MP 0	MILEPOST
MD-HA-001.530	PROPERTY TRACT NUMBER



**LOCATION MAP**  
NOT TO SCALE

COLUMBIA SHALL, AT ITS EXPENSE, PREPARE A NEW PLAT, IN ACCORDANCE WITH THE HARFORD COUNTY SUBDIVISION REGULATIONS, OF ANY PROPERTY IN THE UNLIKELY EVENT THE EASEMENT FOR COLUMBIA'S GAS PIPELINE OVERLAPS ANY PORTION OF THE PROPERTY'S SEPTIC RESERVE AREA.

## GENERAL NOTES

- TOPOGRAPHICAL SURVEY DATA WAS PROVIDED BY BALTIMORE AND HARFORD COUNTIES IN 2012. (BALTIMORE COUNTY TOPOGRAPHIC CONTOUR DATA FROM 2005.) (HARFORD COUNTY TOPOGRAPHIC CONTOUR DATA FROM 2008.)
- BASE MAPPING SHOWN IS FROM A COMBINATION OF SOURCES BY OTHER FIRMS RESPONSIBLE FOR THE DESIGN OF THE PIPELINE. PROFESSIONAL RESPONSIBILITY OF KCI TECHNOLOGIES, INC. IS SOLELY THE CONSISTENCY OF THE EROSION CONTROL PLAN WITH THE BASE FILES PROVIDED, AND NOT THE ACCURACY OF THE BASE FILES THEMSELVES.
- ALL DISTURBED AREA IS INCLUDED WITHIN A TIER II WATERSHED.
- ALL DISTURBED AREA WITHIN THE TIER II EXPANDED RIPARIAN BUFFER IS WITHIN THE STREAMSIDE MANAGEMENT ZONE.
- EROSION AND SEDIMENT CONTROL PLANS FOR 2014 CONSTRUCTION WERE PREPARED PER THE DIRECTION OF COLUMBIA GAS TRANSMISSION, LLC.
- PROPERTY TRACT NUMBERS ARE SHOWN ON THE GRADING / EROSION AND SEDIMENT CONTROL PLAN DWG. NO'S EC-60 THROUGH EC-72. DETAILED INFORMATION FOR INDIVIDUAL PROPERTIES IS PROVIDED ON THE PROPERTY OWNERS CHART DWG. NO. PO-2.0.

## OWNER'S CERTIFICATION

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN FOR EROSION AND SEDIMENT CONTROL, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF NATURAL RESOURCES APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON SITE INSPECTION BY THE HARFORD SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS AS ARE DEEMED NECESSARY."

SIGNATURE Jennifer Franco DATE 1/9/2014  
 ENVIRONMENTAL COORDINATOR  
 NISOURCE/COLUMBIA GAS TRANSMISSION, LLC.  
 1700 MacCORKLE AVE, SE  
 CHARLESTON, WV 25314  
 304-357-2040

## ENGINEER'S CERTIFICATION

"I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL AND STORMWATER MANAGEMENT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL."

SIGNATURE Karen Powell DATE Jan 9 2014  
 NAME (PRINT) KAREN POWELL MD LICENSE NO. 14942  
 KCI TECHNOLOGIES INC.  
 936 RIDGEBROOK ROAD  
 SPARKS, MD 21152  
 410-316-7800

REVISIONS TO THESE PLANS HAVE BEEN APPROVED  
 HSCD TECHNICAL CONCURRENCE  
 1/21/14  
 HSCD APPROVAL  
 ORIGINAL APPROVAL DATE OF 2/3/14 HAS NOT CHANGED

SWM PLAN NO. 91476

**EROSION AND SEDIMENT CONTROL  
PLAN # 52275**

RECOMMENDED FOR APPROVAL:  
[Signature] 1-30-14  
 HARFORD COUNTY, DPW  
 TECHNICAL CONCURRENCE:  
[Signature] 1-31-14  
 HARFORD SOIL CONSERVATION DISTRICT  
 APPROVED:  
[Signature] 2/3/14  
 HARFORD SOIL CONSERVATION DISTRICT



## OWNER/APPLICANT

NISOURCE / COLUMBIA GAS TRANSMISSION, LLC  
 1700 MacCORKLE AVE, SE  
 CHARLESTON, WV 25314  
 TELE: (304) 357-2040  
 CONTACT: JENNIFER L. FRANCO

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. 14942  
 EXPIRATION DATE: 6/01/2014



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

**Columbia Gas Transmission**  
 A NiSource Company

REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	JAN. 2014
1	7-2014	REVISED SHEET INDEX	RP	AS SHOWN
				DESIGNED BY
				JS
				DRAWN BY
				JS

S.W.M. PLAN NO. 91476  
 SEDIMENT CONTROL PLAN NO. 52275

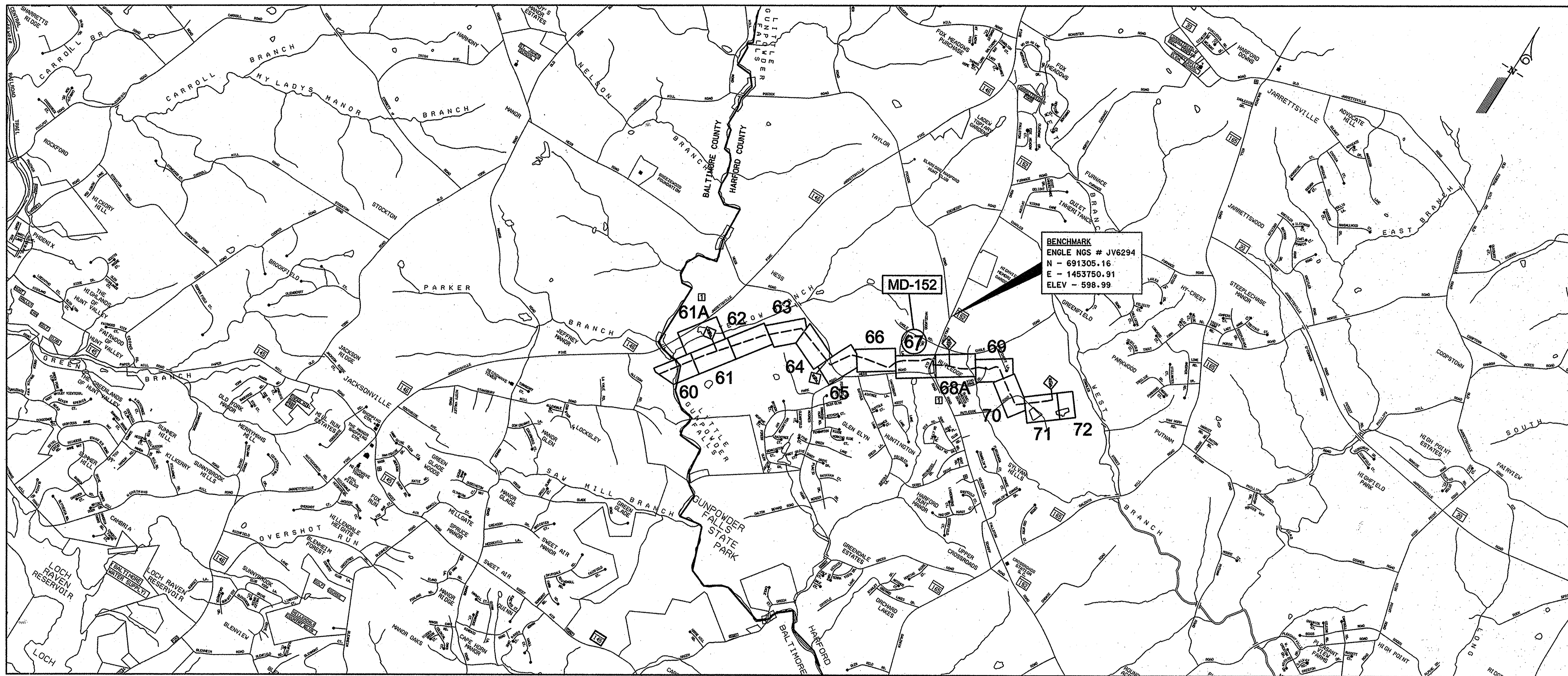
DESIGN & DRAWING BASED ON MARYLAND STATE COORDINATE SYSTEM - HORIZ: NAD 83 (ADL 07) - VERT: NAVD 88

**HARFORD COUNTY  
GRADING / EROSION AND SEDIMENT CONTROL PLAN  
FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT**  
BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO.  
**T-2.0**  
SHEET 1 OF 44  
KCI JOB NUMBER  
16-121649

PLOTTED: 10:42:28 PM on Friday, December 20, 2013  
 BY: Kelsey Poley, Division: PDS3, Water Res. GMA Emp.  
 FILE: MA\_2013\_16121649.dwg; VRS: 01 - TITLE - SHEET - ESC - HC.dwg

ID	U	V1	V	W	X
GRADING UNIT	0.92	0.01	0.50	0.63	0.16



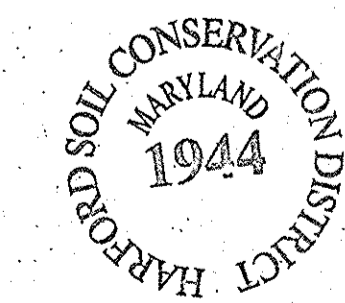
**NOTE:**  
PLEASE REFER TO PLAN SHEETS EC-60 THROUGH EC-72 WHEN USING THE SHEET REFERENCE NUMBERS LISTED ABOVE.

**VICINITY MAP**  
1" = 2000'

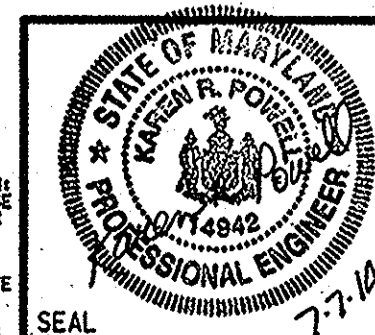
**LEGEND**

- ① — PROPOSED LINE MB NATURAL GAS PIPELINE
- ② — PLAN SHEET INCLUDES BOTH STATE AND COUNTY PROPERTY
- ③ — PLAN SHEET INCLUDES COUNTY PROPERTY ONLY

**HDD ALTERNATE**



S.W.M. PLAN NO. 91476  
SEDIMENT CONTROL PLAN NO. 62276



**KCI TECHNOLOGIES**  
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PLANNERS  
SCIENTISTS  
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TELEPHONE: (410) 316-7800  
FAX: (410) 316-7818

**Columbia Gas Transmission**  
A NiSource Company

NO.	DATE	REVISIONS	BY	DATE
1	JULY 2014	ADDED 61A; REPLACED 68 WITH 68A; REVISED GRADING UNIT 'U'	RB	JAN. 2014

**HARFORD COUNTY VICINITY MAP**  
FOR  
**COLUMBIA GAS TRANSMISSION, LLC**  
LINE MB EXTENSION PROJECT  
BALTIMORE & HARFORD COUNTIES, MARYLAND

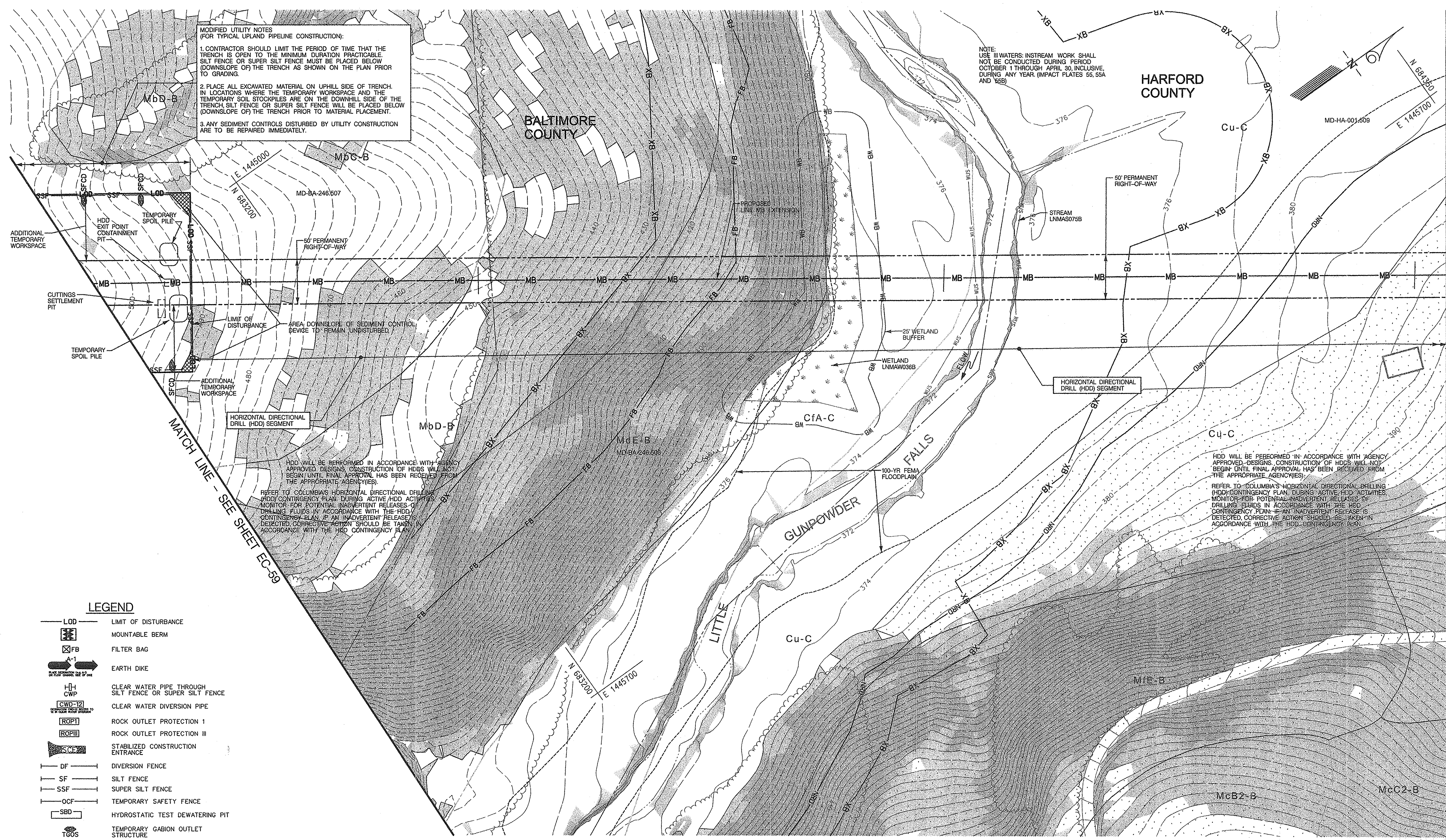
**VIC-2.0**  
SHEET 2 OF 44  
KCI JOB NUMBER 16-121849

PLOTTED: 02:41 PM on Monday, June 30, 2014  
FILE: \\P050\WORK\PROJECTS\2014\16-121849\PLAN-ESC.dwg

**MODIFIED UTILITY NOTES  
(FOR TYPICAL UPLAND PIPELINE CONSTRUCTION):**

1. CONTRACTOR SHOULD LIMIT THE PERIOD OF TIME THAT THE TRENCH IS OPEN TO THE MINIMUM DURATION PRACTICABLE. SILT FENCE OR SUPER SILT FENCE MUST BE PLACED BELOW (DOWNSLOPE OF) THE TRENCH AS SHOWN ON THE PLAN PRIOR TO GRADING.
2. PLACE ALL EXCAVATED MATERIAL ON UPHILL SIDE OF TRENCH. IN LOCATIONS WHERE THE TEMPORARY WORKSPACE AND THE TEMPORARY SOIL STOCKPILES ARE ON THE DOWNHILL SIDE OF THE TRENCH SILT FENCE OR SUPER SILT FENCE WILL BE PLACED BELOW (DOWNSLOPE OF) THE TRENCH PRIOR TO MATERIAL PLACEMENT.
3. ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

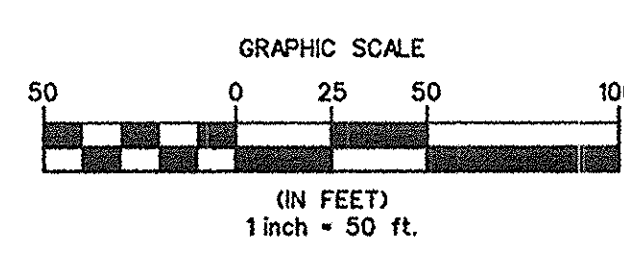
NOTE:  
USE IN WATERS: INSTREAM WORK SHALL NOT BE CONDUCTED DURING PERIOD OCTOBER 1 THROUGH APRIL 30, INCLUSIVE, DURING ANY YEAR. (IMPACT PLATES 55, 55A AND 55B)



MATCH LINE - SEE SHEET EC-59

MATCH LINE - SEE SHEET EC-61

- LEGEND**
- LOD — LIMIT OF DISTURBANCE
  - ▣ MOUNTABLE BERM
  - ⊠ FB FILTER BAG
  - A-1 — EARTH DIKE
  - H-H — CLEAR WATER PIPE THROUGH SILT FENCE OR SUPER SILT FENCE
  - CWD-12 — CLEAR WATER DIVERSION PIPE
  - ROP1 — ROCK OUTLET PROTECTION 1
  - ROP3 — ROCK OUTLET PROTECTION 3
  - SCE — STABILIZED CONSTRUCTION ENTRANCE
  - DF — DIVERSION FENCE
  - SF — SILT FENCE
  - SSF — SUPER SILT FENCE
  - OCF — TEMPORARY SAFETY FENCE
  - SBD — HYDROSTATIC TEST DEWATERING PIT
  - TSO — TEMPORARY GABION OUTLET STRUCTURE
  - TSO — TEMPORARY STONE OUTLET STRUCTURE
  - ○ — SANDBAGS
  - ○ — SANDBAG DAM
  - P — PUMP
  - PDS-1 — PERIMETER DIKE/SWALE
  - — — WOOD MATTING ACCESS ROAD
  - — — TEMPORARY ACCESS BRIDGE



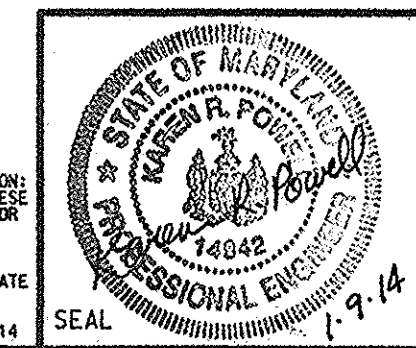
HDD WILL BE PERFORMED IN ACCORDANCE WITH AGENCY APPROVED DESIGNS. CONSTRUCTION OF HDDS WILL NOT BEGIN UNTIL FINAL APPROVAL HAS BEEN RECEIVED FROM THE APPROPRIATE AGENCY(IES).  
REFER TO COLUMBIA'S HORIZONTAL DIRECTIONAL DRILLING (HDD) CONTINGENCY PLAN. DURING ACTIVE HDD ACTIVITIES, MONITOR FOR POTENTIAL INADVERTENT RELEASES OF DRILLING FLUIDS IN ACCORDANCE WITH THE HDD CONTINGENCY PLAN. IF AN INADVERTENT RELEASE IS DETECTED, CORRECTIVE ACTION SHOULD BE TAKEN IN ACCORDANCE WITH THE HDD CONTINGENCY PLAN.

HDD WILL BE PERFORMED IN ACCORDANCE WITH AGENCY APPROVED DESIGNS. CONSTRUCTION OF HDDS WILL NOT BEGIN UNTIL FINAL APPROVAL HAS BEEN RECEIVED FROM THE APPROPRIATE AGENCY(IES).  
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**HDD ALTERNATE**

S.W.M. PLAN NO. 91476  
SEDIMENT CONTROL PLAN NO. 52275

PLOTTED: 09:32 AM on Thursday, January 23, 2014  
FILE: \\K1\012\1821845\drawings\WR\_ESS\_Plan\_EC-61.dwg



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

**Columbia Gas Transmission**  
A NISOURCE COMPANY

REVISIONS			
NO.	DATE	DESCRIPTION	BY

DATE  
JAN. 2014  
SCALE  
1" = 50'  
DESIGNED BY  
JS  
DRAWN BY  
JS

HARFORD COUNTY  
GRADING / EROSION AND SEDIMENT CONTROL PLAN  
FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT  
BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO.  
**EC-60**  
SHEET 3 OF 44  
KCI JOB NUMBER  
16-121849

MATCH LINE - SEE SHEET EC-61A

**MODIFIED UTILITY NOTES**  
(FOR TYPICAL UPLAND PIPELINE CONSTRUCTION):

1. CONTRACTOR SHOULD LIMIT THE PERIOD OF TIME THAT THE TRENCH IS OPEN TO THE MINIMUM DURATION PRACTICABLE. SILT FENCE OR SUPER SILT FENCE MUST BE PLACED BELOW (DOWNSLOPE OF) THE TRENCH AS SHOWN ON THE PLAN PRIOR TO GRADING.
2. PLACE ALL EXCAVATED MATERIAL ON UPHILL SIDE OF TRENCH. IN LOCATIONS WHERE THE TEMPORARY WORKSPACE AND THE TEMPORARY SOIL STOCKPILES ARE ON THE DOWNHILL SIDE OF THE TRENCH, SILT FENCE OR SUPER SILT FENCE WILL BE PLACED BELOW (DOWNSLOPE OF) THE TRENCH PRIOR TO MATERIAL PLACEMENT.
3. ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

**DAILY STABILIZATION NOTES** (FOR UNPAVED TEMPORARY ACCESS ROADS):

CONTRACTOR SHALL ONLY DISTURB THAT AREA WHICH CAN BE COMPLETED AND STABILIZED BY THE END OF EACH WORKING DAY.

1. FOR INSTALLATION, THE APPLICATION OF STONE BASE OR WOOD MATTING.
2. UPON REMOVAL, THE AREA WILL BE VEGETATIVELY STABILIZED.

A. PERMANENT SEED AND SOIL STABILIZATION MATTING OR SOD FOR ALL STEEP SLOPES CHANNELS OR SWALES.

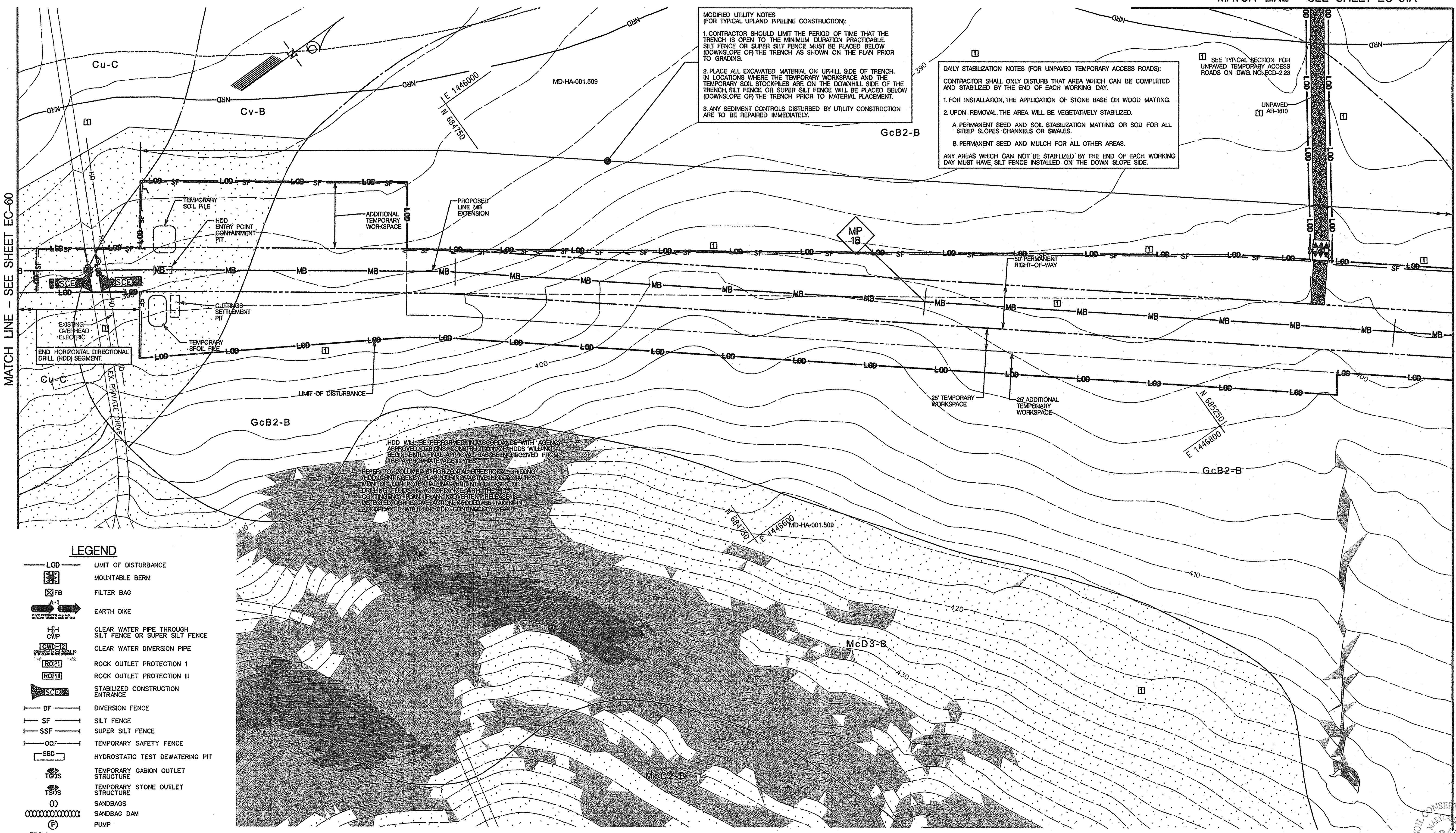
B. PERMANENT SEED AND MULCH FOR ALL OTHER AREAS.

ANY AREAS WHICH CAN NOT BE STABILIZED BY THE END OF EACH WORKING DAY MUST HAVE SILT FENCE INSTALLED ON THE DOWN SLOPE SIDE.

SEE TYPICAL SECTION FOR UNPAVED TEMPORARY ACCESS ROADS ON DWG. NO. ECD-2.23

MATCH LINE - SEE SHEET EC-60

MATCH LINE - SEE SHEET EC-62

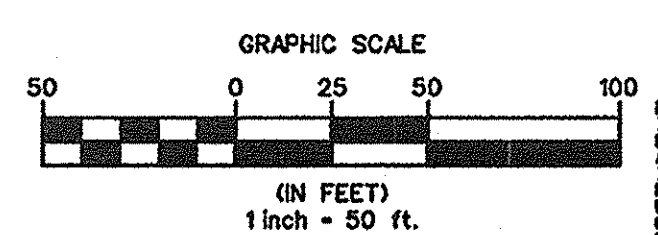


HDD WILL BE PERFORMED IN ACCORDANCE WITH AGENCY APPROVED DESIGNS. CONSTRUCTION OF HDDS WILL NOT BEGIN UNTIL FINAL APPROVAL HAS BEEN RECEIVED FROM THE APPROPRIATE AGENCIES.

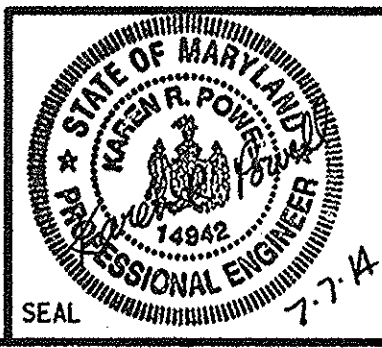
REFER TO COLUMBIA'S HORIZONTAL DIRECTIONAL DRILLING (HDD) CONTINGENCY PLAN. DURING ACTIVE HDD ACTIVITIES, MONITOR FOR POTENTIAL UNEXPECTED RELEASES OF DRILLING FLUIDS IN ACCORDANCE WITH THE HDD CONTINGENCY PLAN. IF AN UNEXPECTED RELEASE IS DETECTED, CORRECTIVE ACTION SHOULD BE TAKEN IN ACCORDANCE WITH THE HDD CONTINGENCY PLAN.

**LEGEND**

- LOD LIMIT OF DISTURBANCE
- MOUNTABLE BERM
- FB FILTER BAG
- A-1 EARTH DIKE
- H-1 CLEAR WATER PIPE THROUGH SILT FENCE OR SUPER SILT FENCE
- CWD-12 CLEAR WATER DIVERSION PIPE
- ROP1 ROCK OUTLET PROTECTION 1
- ROP3 ROCK OUTLET PROTECTION III
- SCE STABILIZED CONSTRUCTION ENTRANCE
- DF DIVERSION FENCE
- SF SILT FENCE
- SSF SUPER SILT FENCE
- OCF TEMPORARY SAFETY FENCE
- SBD HYDROSTATIC TEST DEWATERING PIT
- TSOS TEMPORARY GABION OUTLET STRUCTURE
- TSUS TEMPORARY STONE OUTLET STRUCTURE
- SANDBAGS
- SANDBAG DAM
- PUMP
- PDS-1 PERIMETER DIKE/SWALE
- WOOD MATTING ACCESS ROAD
- TEMPORARY ACCESS BRIDGE



PROFESSIONAL CERTIFICATION  
I HEREBY CERTIFY THAT THESE DOCUMENTS, WITH EXCEPTED WORK, WERE PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.  
LICENSE NO. 14942  
EXPIRATION DATE: 6/01/2016



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

**Columbia Gas Transmission**  
A NISource Company

REVISIONS				DATE	
NO.	DATE	DESCRIPTION	BY	SCALE	
1	JULY 2014	REVISED ACCESS AR-1780, ADDED ACCESS AR-1810, REVISED LOD, SF, AND MB.	RB	1" = 50'	

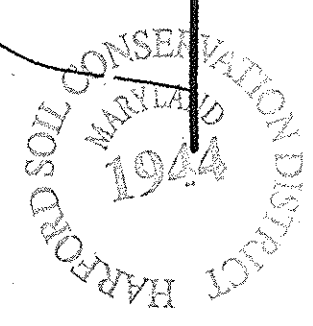
S.W.M. PLAN NO. 91476  
SEDIMENT CONTROL PLAN NO. 52275

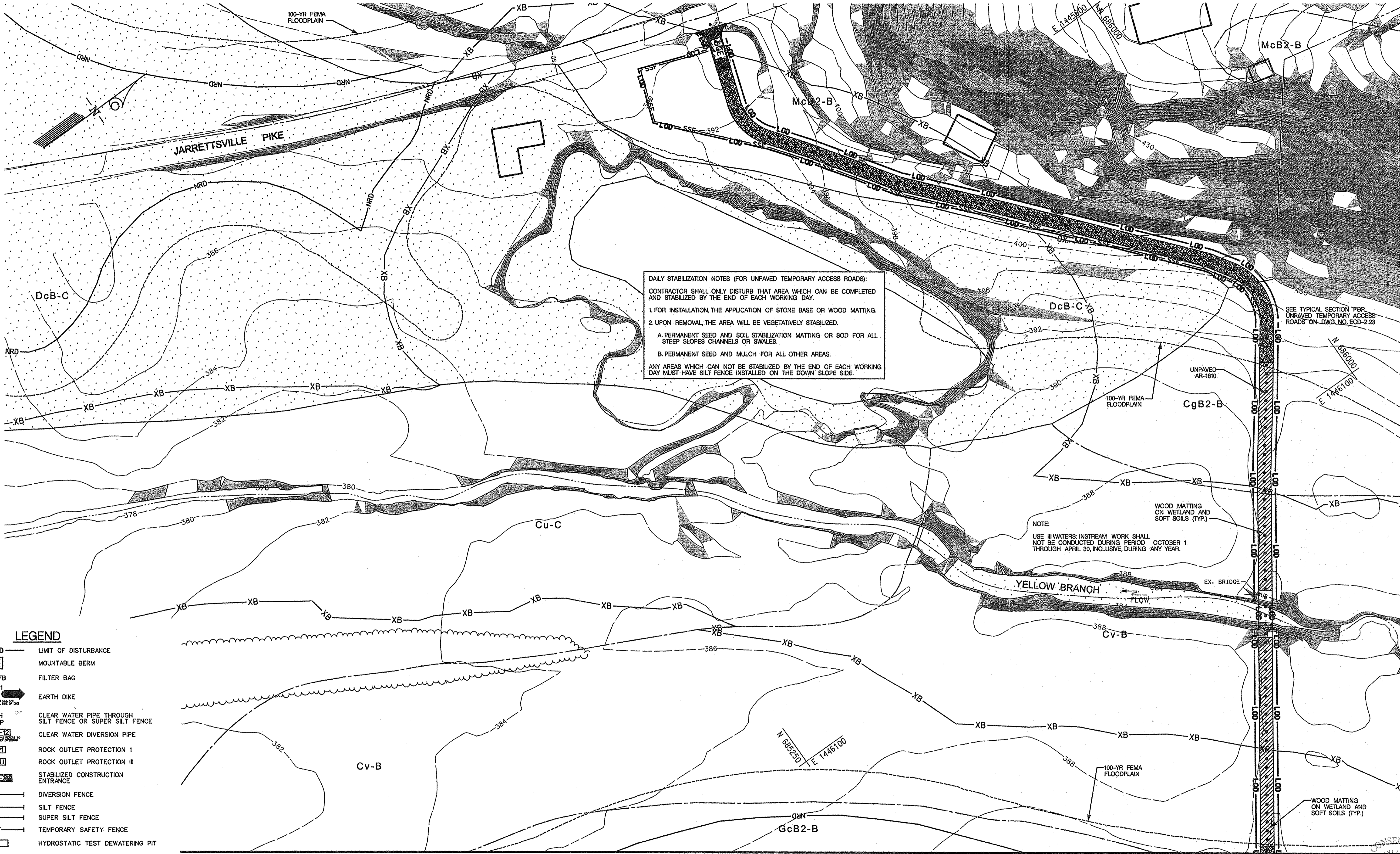
DESIGN & DRAWING BASED ON MARYLAND STATE COORDINATE SYSTEM - HORIZ: NAD 83 (ADJ. '07) VERT: NAVD 88

**HARFORD COUNTY GRADING / EROSION AND SEDIMENT CONTROL PLAN**  
FOR  
**COLUMBIA GAS TRANSMISSION, LLC**  
**LINE MB EXTENSION PROJECT**  
BALTIMORE & HARFORD COUNTIES, MARYLAND

**EC-61**  
SHEET 4 OF 44  
RCI JOB NUMBER 16-121849

PLOTTED: 11:34 AM on Monday, June 30, 2014  
 FILE: M:\2014\16121849\columbia\_gas\_transmission\_vbr\ESCP\_Plan\_EC-61.dwg





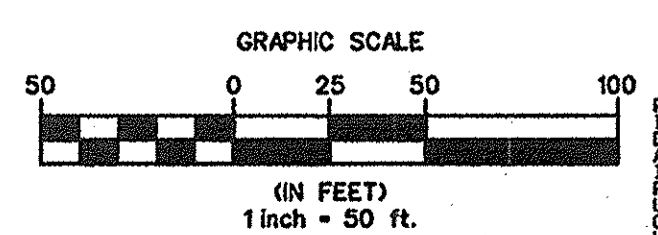
DAILY STABILIZATION NOTES (FOR UNPAVED TEMPORARY ACCESS ROADS):  
 CONTRACTOR SHALL ONLY DISTURB THAT AREA WHICH CAN BE COMPLETED AND STABILIZED BY THE END OF EACH WORKING DAY.  
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SEE TYPICAL SECTION FOR UNPAVED TEMPORARY ACCESS ROADS ON DWG. NO. ECD-2.23

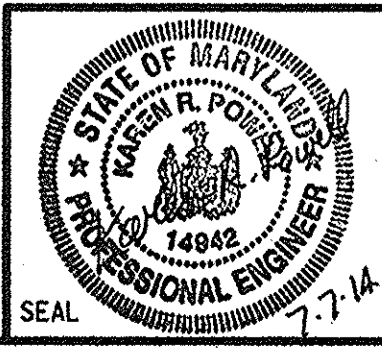
NOTE:  
 USE III WATERS: INSTREAM WORK SHALL NOT BE CONDUCTED DURING PERIOD OCTOBER 1 THROUGH APRIL 30, INCLUSIVE, DURING ANY YEAR.

**LEGEND**

- LOD LIMIT OF DISTURBANCE
- MOUNTABLE BERM
- FB FILTER BAG
- A-1 EARTH DIKE
- CWP CLEAR WATER PIPE THROUGH SILT FENCE OR SUPER SILT FENCE
- CWP-12 CLEAR WATER DIVERSION PIPE
- ROP1 ROCK OUTLET PROTECTION I
- ROP3 ROCK OUTLET PROTECTION III
- SCF STABILIZED CONSTRUCTION ENTRANCE
- DF DIVERSION FENCE
- SF SILT FENCE
- SSF SUPER SILT FENCE
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- SANDBAGS
- SANDBAG DAM
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- PDS-1 PERIMETER DIKE/SWALE
- WOOD MATTING ACCESS ROAD
- TEMPORARY ACCESS BRIDGE



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 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME OR THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.  
 LICENSE NO. 14942  
 EXPIRATION DATE: 6/01/2016



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

**Columbia Gas Transmission, LLC**  
 A NISOURCE COMPANY

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	JULY 2014	THIS NEW SHEET ADDED TO SHOW NEW ACCESS AR-1810	RB

S.W.M. PLAN NO. 91476  
 SEDIMENT CONTROL PLAN NO. 52275

MATCH LINE - SEE SHEET EC-61

**HDD ALTERNATE**

HARFORD COUNTY  
 GRADING / EROSION AND SEDIMENT CONTROL PLAN  
 FOR  
 COLUMBIA GAS TRANSMISSION, LLC  
 LINE MB EXTENSION PROJECT  
 BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO. **EC-61A**  
 SHEET 48 OF 44  
 KCI JOB NUMBER 16-121849

PLOTTED: 11:55 AM on Tuesday, July 01, 2014  
 FILE: N:\2013\15121849\Drawings\HDD\EC-61A.dwg

MATCH LINE - SEE SHEET EC-61

MATCH LINE - SEE SHEET EC-63

**MODIFIED UTILITY NOTES**  
(FOR TYPICAL UPLAND PIPELINE CONSTRUCTION):

1. CONTRACTOR SHOULD LIMIT THE PERIOD OF TIME THAT THE TRENCH IS OPEN TO THE MINIMUM DURATION PRACTICABLE. SILT FENCE OR SUPER SILT FENCE MUST BE PLACED BELOW (DOWNSLOPE OF) THE TRENCH AS SHOWN ON THE PLAN PRIOR TO GRADING.
2. PLACE ALL EXCAVATED MATERIAL ON UPHILL SIDE OF TRENCH. IN LOCATIONS WHERE THE TEMPORARY WORKSPACE AND THE TEMPORARY SOIL STOCKPILES ARE ON THE DOWNHILL SIDE OF THE TRENCH SILT FENCE OR SUPER SILT FENCE WILL BE PLACED BELOW (DOWNSLOPE OF) THE TRENCH PRIOR TO MATERIAL PLACEMENT.
3. ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

**NOTE:**  
USE: "WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING PERIOD OCTOBER 1 THROUGH APRIL 30, INCLUSIVE, DURING ANY YEAR." (IMPACT PLATE 56)  
SEE LINE MB PROFILE AT STREAM CROSSINGS DWG. NO. PP-16.

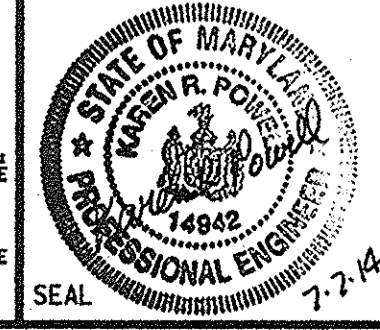
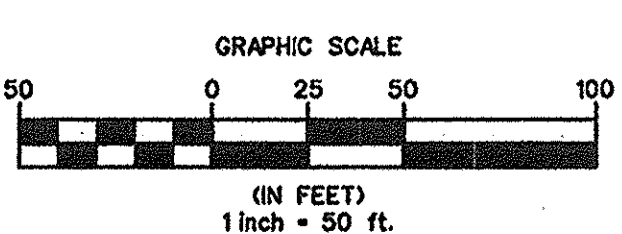
RESTORATION PLANTING IS PROPOSED AT THIS STREAM CROSSING REFERENCE COUNTY APPROVED FOREST CONSERVATION PLAN FOR DETAIL.

**SEQUENCE OF CONSTRUCTION FOR STREAM CROSSING**

1. FOLLOWING INSTALLATION OF ALL PERIMETER CONTROLS AND WITH THE APPROVAL OF THE HARFORD COUNTY DPW SEDIMENT CONTROL INSPECTOR, AND THE MDE WMA SEDIMENT CONTROL INSPECTOR, ALL IN-STREAM WORK AND THE SUPERVISION OF RELATED STREAM CROSSING ACTIVITIES WILL OCCUR AT OR BELOW BASE FLOW LEVELS AND WILL BE PERFORMED CONTINUOUSLY UNTIL THE STREAM CROSSING IS ENTIRELY COMPLETE.
2. AS A FIRST ORDER OF WORK, THE CONTRACTOR WILL INSTALL THE TEMPORARY ACCESS BRIDGE, MOUNTABLE BERMS, AND WOOD MATTING.
3. THE ACTUAL STREAM CROSSING OF LINE MB SHALL BE COMPLETED DURING A NOAA EXTENDED THREE-DAY DRY WEATHER FORECAST. THE CONTRACTOR SHALL PROVIDE AND SUPERVISE THE PUMP-AROUND AND DEWATERING PRACTICE AT ALL TIMES. ONCE IN-STREAM CONSTRUCTION ACTIVITIES BEGIN, WORK MUST BE PERFORMED IN A CONTINUOUS MANNER UNTIL THE CROSSING HAS BEEN COMPLETED. THE CHANNEL RESTORED AND PERMANENTLY STABILIZED AND THE PUMP-AROUND AND DEWATERING PRACTICES ARE REMOVED. AT NO TIME IS IT ACCEPTABLE FOR THE PUMP-AROUND PRACTICE TO REMAIN UNATTENDED. ALL DISCHARGE MUST BE ACCOMPLISHED IN A NON-EROSIVE MANNER. NO SEDIMENT LADEN DISCHARGE IS PERMITTED.
4. UPON COMPLETION OF THE STREAM CROSSING, INSTALL THE REMAINDER OF LINE MB.

**LEGEND**

- LOD LIMIT OF DISTURBANCE
- MOUNTABLE BERM
- FB FILTER BAG
- A-1 EARTH DIKE
- CWP CLEAR WATER PIPE THROUGH SILT FENCE OR SUPER SILT FENCE
- CWD-12 CLEAR WATER DIVERSION PIPE
- ROP-1 ROCK OUTLET PROTECTION 1
- ROP-III ROCK OUTLET PROTECTION III
- SCE STABILIZED CONSTRUCTION ENTRANCE
- DF DIVERSION FENCE
- SF SILT FENCE
- SSF SUPER SILT FENCE
- OCF TEMPORARY SAFETY FENCE
- SBD HYDROSTATIC TEST DEWATERING PIT
- TSOS TEMPORARY STONE OUTLET STRUCTURE
- TSOS TEMPORARY STONE OUTLET STRUCTURE
- SANDBAGS
- SANDBAG DAM
- PUMP
- PDS-1 PERIMETER DIKE/SWALE
- WOOD MATTING ACCESS ROAD
- TEMPORARY ACCESS BRIDGE



**ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS**

**KCI TECHNOLOGIES**

936 RIDGEBANK ROAD  
SHARPS, MARYLAND 21152  
TELEPHONE: (410) 316-7800  
FAX: (410) 316-7818

**Columbia Gas Transmission**  
A NISource Company

REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	SCALE
(1)	JULY 2014	REVISED LOD, SF, SSF, DF, PDS-1, AND TSOS. ADDED ONE NEW PDS-1 WITH TSOS.	RB	1" = 50'

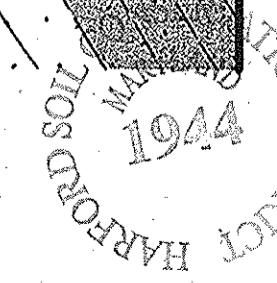
S.W.M. PLAN NO. 91476  
SEDIMENT CONTROL PLAN NO. 62275

**HARFORD COUNTY GRADING / EROSION AND SEDIMENT CONTROL PLAN FOR COLUMBIA GAS TRANSMISSION, LLC LINE MB EXTENSION PROJECT**  
BALTIMORE & HARFORD COUNTIES, MARYLAND

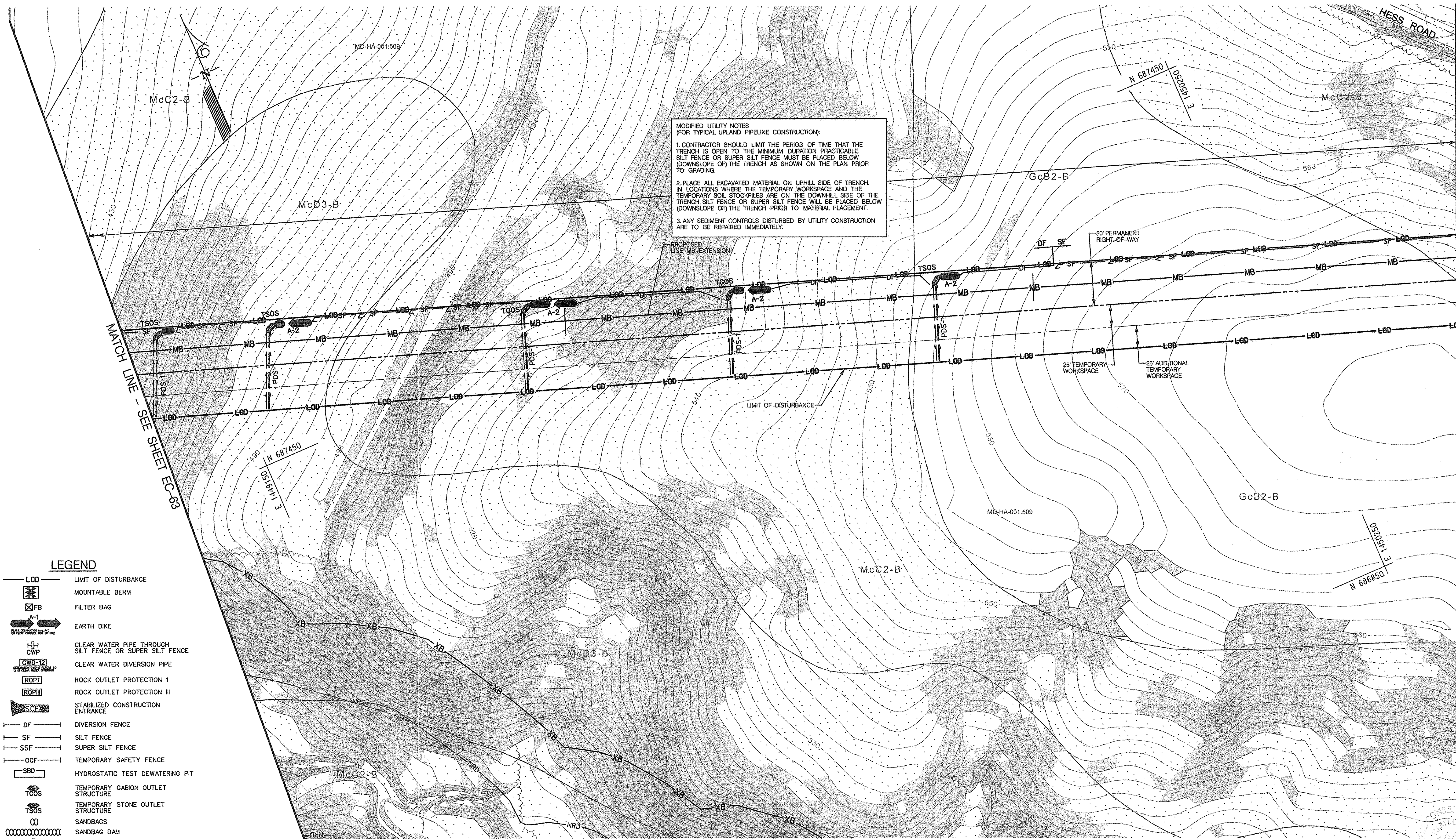
**EC-62**

SHEET 5 OF 44  
KCI JOB NUMBER  
16-121849

PLOTTED: 11:38 AM on Monday, June 30, 2014  
 File: C:\Users\p050\OneDrive\Projects\16-121849\16-121849.dwg  
 Plot File: 16-121849.dwg





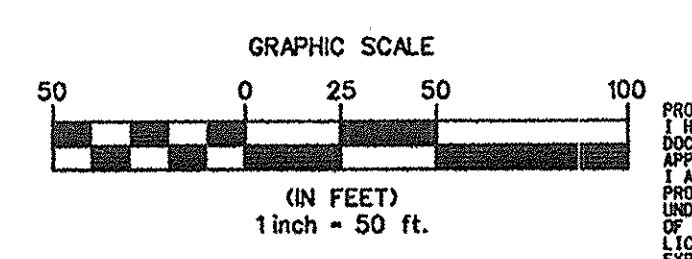


**MODIFIED UTILITY NOTES  
(FOR TYPICAL UPLAND PIPELINE CONSTRUCTION):**

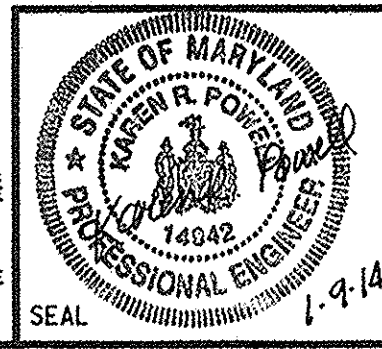
1. CONTRACTOR SHOULD LIMIT THE PERIOD OF TIME THAT THE TRENCH IS OPEN TO THE MINIMUM DURATION PRACTICABLE. SILT FENCE OR SUPER SILT FENCE MUST BE PLACED BELOW (DOWNSLOPE OF) THE TRENCH AS SHOWN ON THE PLAN PRIOR TO GRADING.
2. PLACE ALL EXCAVATED MATERIAL ON UPHILL SIDE OF TRENCH. IN LOCATIONS WHERE THE TEMPORARY WORKSPACE AND THE TEMPORARY SOIL STOCKPILES ARE ON THE DOWNHILL SIDE OF THE TRENCH, SILT FENCE OR SUPER SILT FENCE WILL BE PLACED BELOW (DOWNSLOPE OF) THE TRENCH PRIOR TO MATERIAL PLACEMENT.
3. ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

**LEGEND**

- L60 LIMIT OF DISTURBANCE
- MOUNTABLE BERM
- FB FILTER BAG
- A-1 EARTH DIKE
- H-1 CLEAR WATER PIPE THROUGH SILT FENCE OR SUPER SILT FENCE
- CWP CLEAR WATER DIVERSION PIPE
- ROPT I ROCK OUTLET PROTECTION I
- ROPT III ROCK OUTLET PROTECTION III
- SCCE STABILIZED CONSTRUCTION ENTRANCE
- DF DIVERSION FENCE
- SF SILT FENCE
- SSF SUPER SILT FENCE
- OCF TEMPORARY SAFETY FENCE
- SBD HYDROSTATIC TEST DEWATERING PIT
- TGOS TEMPORARY GABION OUTLET STRUCTURE
- TSOS TEMPORARY STONE OUTLET STRUCTURE
- SANDBAGS SANDBAG DAM
- PUMP
- PDS-1 PERIMETER DIKE/SWALE
- WOOD MATTING ACCESS ROAD
- TEMPORARY ACCESS BRIDGE



PROFESSIONAL CERTIFICATION  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.  
LICENSE NO. 14942  
EXPIRATION DATE: 6/30/2014



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

**Columbia Gas Transmission**  
A NiSource Company

REVISIONS			DATE
NO.	DATE	DESCRIPTION	BY

S.W.M. PLAN NO. 91476  
SEDIMENT CONTROL PLAN NO. 52275

HARFORD COUNTY  
GRADING / EROSION AND SEDIMENT CONTROL PLAN  
FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT  
BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO.  
**EC-64**  
SHEET 7 OF 44  
RCT JOB NUMBER  
16-121849

PLOTTED: 03:12 PM on Monday, January 20, 2014  
BY: K. Powers, P. Potter, P. Jones, P. S. Water, R. G. B. Emp.  
FILE: \\C:\Users\KRPowers\Documents\2014\16-121849\16-121849-01.dwg



MATCH LINE - SEE SHEET EC-64

**MODIFIED UTILITY NOTES**  
(FOR TYPICAL UPLAND PIPELINE CONSTRUCTION):

1. CONTRACTOR SHOULD LIMIT THE PERIOD OF TIME THAT THE TRENCH IS OPEN TO THE MINIMUM DURATION PRACTICABLE. SILT FENCE OR SUPER SILT FENCE MUST BE PLACED BELOW (DOWNSLOPE OF) THE TRENCH AS SHOWN ON THE PLAN PRIOR TO GRADING.
2. PLACE ALL EXCAVATED MATERIAL ON UPHILL SIDE OF TRENCH. IN LOCATIONS WHERE THE TEMPORARY WORKSPACE AND THE TEMPORARY SOIL STOCKPILES ARE ON THE DOWNHILL SIDE OF THE TRENCH, SILT FENCE OR SUPER SILT FENCE WILL BE PLACED BELOW (DOWNSLOPE OF) THE TRENCH PRIOR TO MATERIAL PLACEMENT.
3. ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

RESTORATION PLANTING IS PROPOSED AT THIS STREAM CROSSING. REFERENCE COUNTY APPROVED FOREST CONSERVATION PLAN FOR DETAIL.

NOTE: USE III WATERS. IN-STREAM WORK SHALL NOT BE CONDUCTED DURING PERIOD OCTOBER 1 THROUGH APRIL 30, INCLUSIVE DURING ANY YEAR. (IMPACT PLATE 58)

RESTORATION PLANTING IS PROPOSED AT THIS STREAM CROSSING. REFERENCE COUNTY APPROVED FOREST CONSERVATION PLAN FOR DETAIL.

NOTE: USE III WATERS. IN-STREAM WORK SHALL NOT BE CONDUCTED DURING PERIOD OCTOBER 1 THROUGH APRIL 30, INCLUSIVE DURING ANY YEAR. (IMPACT PLATE 59)

RESTORATION PLANTING IS PROPOSED AT THIS STREAM CROSSING. REFERENCE COUNTY APPROVED FOREST CONSERVATION PLAN FOR DETAIL.

NOTE: USE III WATERS. IN-STREAM WORK SHALL NOT BE CONDUCTED DURING PERIOD OCTOBER 1 THROUGH APRIL 30, INCLUSIVE DURING ANY YEAR. (IMPACT PLATE 59)

RESTORATION PLANTING IS PROPOSED AT THIS STREAM CROSSING. REFERENCE COUNTY APPROVED FOREST CONSERVATION PLAN FOR DETAIL.

NOTE: USE III WATERS. IN-STREAM WORK SHALL NOT BE CONDUCTED DURING PERIOD OCTOBER 1 THROUGH APRIL 30, INCLUSIVE DURING ANY YEAR. (IMPACT PLATE 59)

RESTORATION PLANTING IS PROPOSED AT THIS STREAM CROSSING. REFERENCE COUNTY APPROVED FOREST CONSERVATION PLAN FOR DETAIL.

NOTE: USE III WATERS. IN-STREAM WORK SHALL NOT BE CONDUCTED DURING PERIOD OCTOBER 1 THROUGH APRIL 30, INCLUSIVE DURING ANY YEAR. (IMPACT PLATE 59)

RESTORATION PLANTING IS PROPOSED AT THIS STREAM CROSSING. REFERENCE COUNTY APPROVED FOREST CONSERVATION PLAN FOR DETAIL.

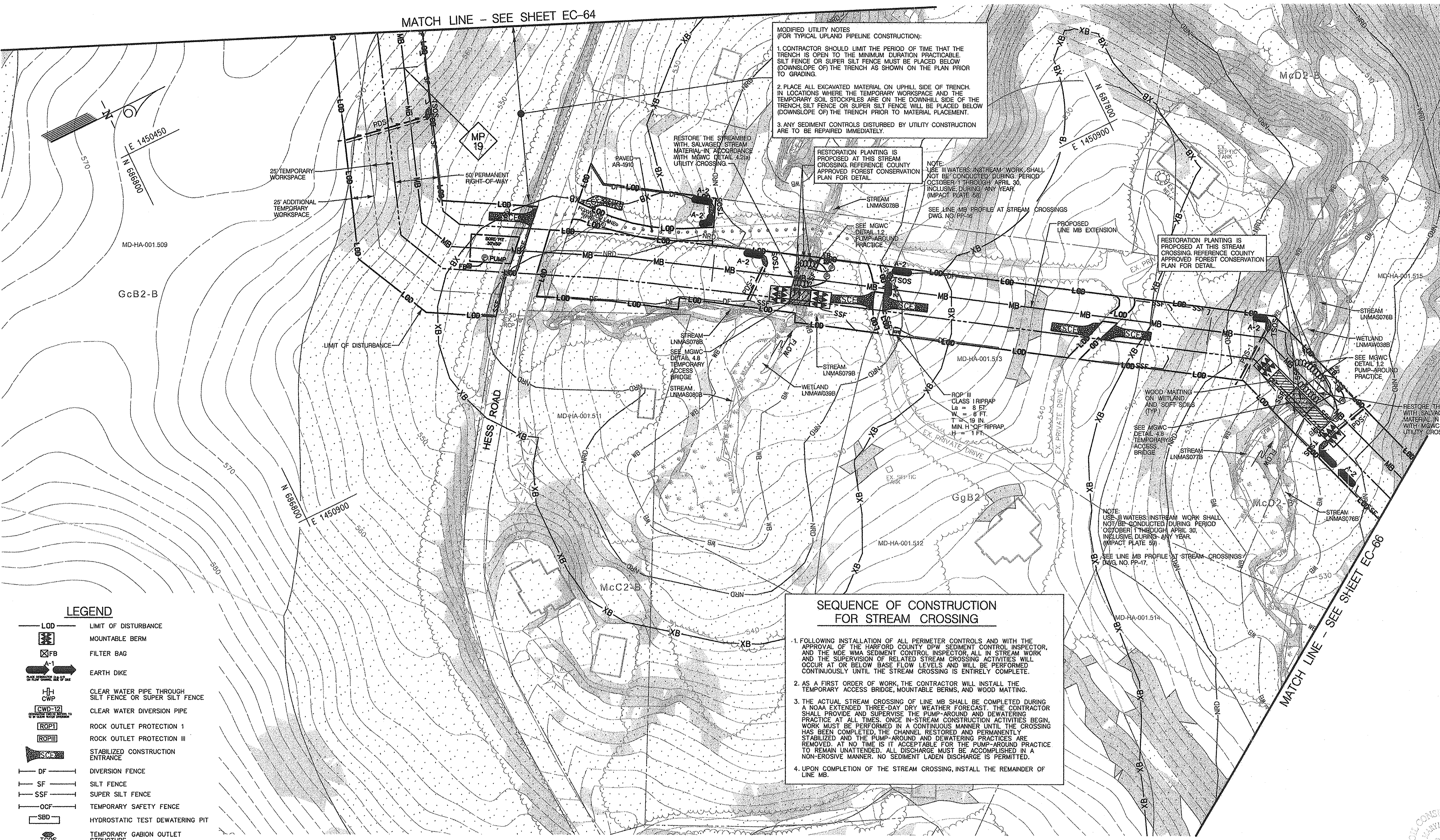
NOTE: USE III WATERS. IN-STREAM WORK SHALL NOT BE CONDUCTED DURING PERIOD OCTOBER 1 THROUGH APRIL 30, INCLUSIVE DURING ANY YEAR. (IMPACT PLATE 59)

RESTORATION PLANTING IS PROPOSED AT THIS STREAM CROSSING. REFERENCE COUNTY APPROVED FOREST CONSERVATION PLAN FOR DETAIL.

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RESTORATION PLANTING IS PROPOSED AT THIS STREAM CROSSING. REFERENCE COUNTY APPROVED FOREST CONSERVATION PLAN FOR DETAIL.

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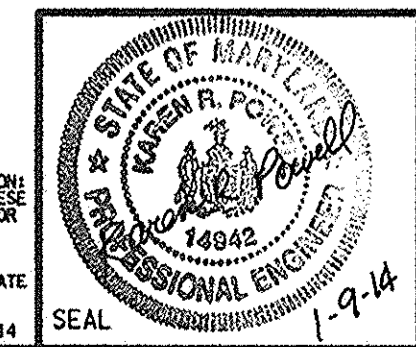
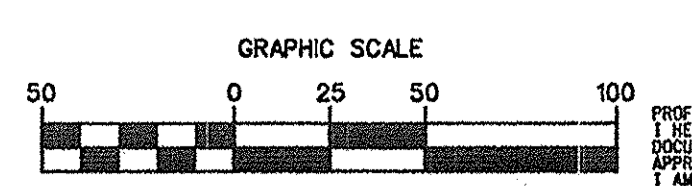


**LEGEND**

- LOD LIMIT OF DISTURBANCE
- MOUNTABLE BERM
- FB FILTER BAG
- A-1 EARTH DIKE
- CWP CLEAR WATER PIPE THROUGH SILT FENCE OR SUPER SILT FENCE
- CWD-12 CLEAR WATER DIVERSION PIPE
- ROP1 ROCK OUTLET PROTECTION 1
- ROP3 ROCK OUTLET PROTECTION III
- SCE STABILIZED CONSTRUCTION ENTRANCE
- DF DIVERSION FENCE
- SF SILT FENCE
- SSF SUPER SILT FENCE
- OCF TEMPORARY SAFETY FENCE
- SBD HYDROSTATIC TEST DEWATERING PIT
- TGOS TEMPORARY GABION OUTLET STRUCTURE
- TSOS TEMPORARY STONE OUTLET STRUCTURE
- SANDBAGS
- SANDBAG DAM
- PUMP
- PDS-1 PERIMETER DIKE/SWALE
- WOOD MATTING ACCESS ROAD
- TEMPORARY ACCESS BRIDGE

**SEQUENCE OF CONSTRUCTION FOR STREAM CROSSING**

1. FOLLOWING INSTALLATION OF ALL PERIMETER CONTROLS AND WITH THE APPROVAL OF THE HARFORD COUNTY DPW SEDIMENT CONTROL INSPECTOR, AND THE MDE WMA SEDIMENT CONTROL INSPECTOR, ALL IN-STREAM WORK AND THE SUPERVISION OF RELATED STREAM CROSSING ACTIVITIES WILL OCCUR AT OR BELOW BASE FLOW LEVELS AND WILL BE PERFORMED CONTINUOUSLY UNTIL THE STREAM CROSSING IS ENTIRELY COMPLETE.
2. AS A FIRST ORDER OF WORK, THE CONTRACTOR WILL INSTALL THE TEMPORARY ACCESS BRIDGE, MOUNTABLE BERMS, AND WOOD MATTING.
3. THE ACTUAL STREAM CROSSING OF LINE MB SHALL BE COMPLETED DURING A NOAA EXTENDED THREE-DAY DRY WEATHER FORECAST. THE CONTRACTOR SHALL PROVIDE AND SUPERVISE THE PUMP-AROUND AND DEWATERING PRACTICE AT ALL TIMES. ONCE IN-STREAM CONSTRUCTION ACTIVITIES BEGIN, WORK MUST BE PERFORMED IN A CONTINUOUS MANNER UNTIL THE CROSSING HAS BEEN COMPLETED, THE CHANNEL RESTORED AND PERMANENTLY STABILIZED AND THE PUMP-AROUND AND DEWATERING PRACTICES ARE REMOVED. AT NO TIME IS IT ACCEPTABLE FOR THE PUMP-AROUND PRACTICE TO REMAIN UNATTENDED. ALL DISCHARGE MUST BE ACCOMPLISHED IN A NON-EROSIVE MANNER. NO SEDIMENT LADEN DISCHARGE IS PERMITTED.
4. UPON COMPLETION OF THE STREAM CROSSING, INSTALL THE REMAINDER OF LINE MB.



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



REVISIONS			
NO.	DATE	DESCRIPTION	BY

S.W.M. PLAN NO. 91476  
SEDIMENT CONTROL PLAN NO. 52275

HARFORD COUNTY  
GRADING / EROSION AND SEDIMENT CONTROL PLAN  
FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT  
BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO.  
**EC-65**  
SHEET 8 OF 44  
KCI JOB NUMBER  
16-121849

PLOTTED: 03:12 PM on Monday, January 20, 2014  
 FILE: \\M:\2013\1621849\DWG\CONTR\WRES-PLAN-ES.dwg



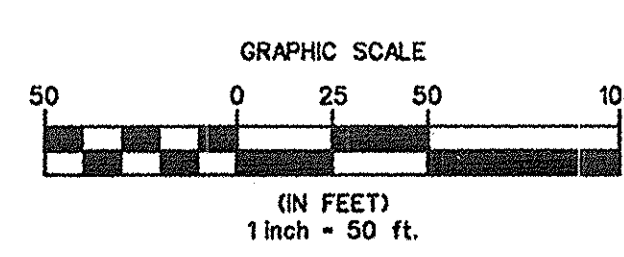
**CLEAR WATER DIVERSION NOTE:**  
 CLEAR WATER DIVERSION (CWD) PIPES WILL BE INSTALLED AFTER TEMPORARY GRADING ACTIVITIES (AT THE BEGINNING OF CONSTRUCTION). ONCE ACTIVE TRENCHING ACTIVITIES BEGIN CWD PIPES WILL BE REMOVED BUT KEPT ON-SITE. THE CONTRACTOR WILL MONITOR CURRENT WEATHER FORECASTS AND THE PIPES WILL ONLY BE REINSTALLED WHEN WEATHER FORECASTS A 0.5 INCH OR GREATER RAINFALL EVENT. ONCE ACTIVE TRENCHING HAS BEEN COMPLETED CWD PIPES WILL BE REINSTALLED AND REMAIN IN PLACE UNTIL STABILIZATION HAS BEEN REACHED. WHEN THE PIPES ARE REMOVED SEEDING AND SOIL STABILIZATION MATTING WILL BE PROVIDED FOR IMMEDIATE STABILIZATION OF ANY BARE GROUND.

**MODIFIED UTILITY NOTES (FOR TYPICAL UPLAND PIPELINE CONSTRUCTION):**  
 1. CONTRACTOR SHOULD LIMIT THE PERIOD OF TIME THAT THE TRENCH IS OPEN TO THE MINIMUM DURATION PRACTICABLE. SILT FENCE OR SUPER SILT FENCE MUST BE PLACED BELOW (DOWNSLOPE OF) THE TRENCH AS SHOWN ON THE PLAN PRIOR TO GRADING.  
 2. PLACE ALL EXCAVATED MATERIAL ON UPHILL SIDE OF TRENCH. IN LOCATIONS WHERE THE TEMPORARY WORKSPACE AND THE TEMPORARY SOIL STOCKPILES ARE ON THE DOWNHILL SIDE OF THE TRENCH SILT FENCE OR SUPER SILT FENCE WILL BE PLACED BELOW (DOWNSLOPE OF) THE TRENCH PRIOR TO MATERIAL PLACEMENT.  
 3. ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

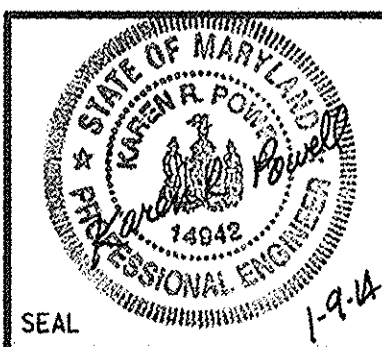
MATCH LINE - SEE SHEET EC-65

MATCH LINE - SEE SHEET EC-67

- LEGEND**
- LIMIT OF DISTURBANCE
  - MOUNTABLE BERM
  - FILTER BAG
  - EARTH DIKE
  - CLEAR WATER PIPE THROUGH SILT FENCE OR SUPER SILT FENCE
  - CLEAR WATER DIVERSION PIPE
  - ROCK OUTLET PROTECTION I
  - ROCK OUTLET PROTECTION III
  - STABILIZED CONSTRUCTION ENTRANCE
  - DIVERSION FENCE
  - SILT FENCE
  - SUPER SILT FENCE
  - TEMPORARY SAFETY FENCE
  - HYDROSTATIC TEST DEWATERING PIT
  - TEMPORARY GABION OUTLET STRUCTURE
  - TEMPORARY STONE OUTLET STRUCTURE
  - SANDBAGS
  - SANDBAG DAM
  - PUMP
  - PERIMETER DIKE/SWALE
  - WOOD MATTING ACCESS ROAD
  - TEMPORARY ACCESS BRIDGE



PROFESSIONAL CERTIFICATION  
 I HEREBY CERTIFY THAT THESE  
 DRAWINGS WERE PREPARED BY  
 ME OR UNDER MY CLOSE PERSONAL  
 SUPERVISION AND THAT I AM A  
 LICENSED PROFESSIONAL ENGINEER  
 UNDER THE LAWS OF THE STATE  
 OF MARYLAND.  
 LICENSE NO. 14942  
 EXPIRATION DATE: 6/30/2014



**KCI TECHNOLOGIES**  
 ENGINEERS  
 PLANNERS  
 SCIENTISTS  
 CONSTRUCTION MANAGERS  
 936 RIDGEBROOK ROAD  
 SHARPS, MARYLAND 21152  
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**Columbia Gas Transmission**  
 A NiSource Company

REVISIONS			
NO.	DATE	DESCRIPTION	BY

S.W.M. PLAN NO. 91476  
 SEDIMENT CONTROL PLAN NO. 52275

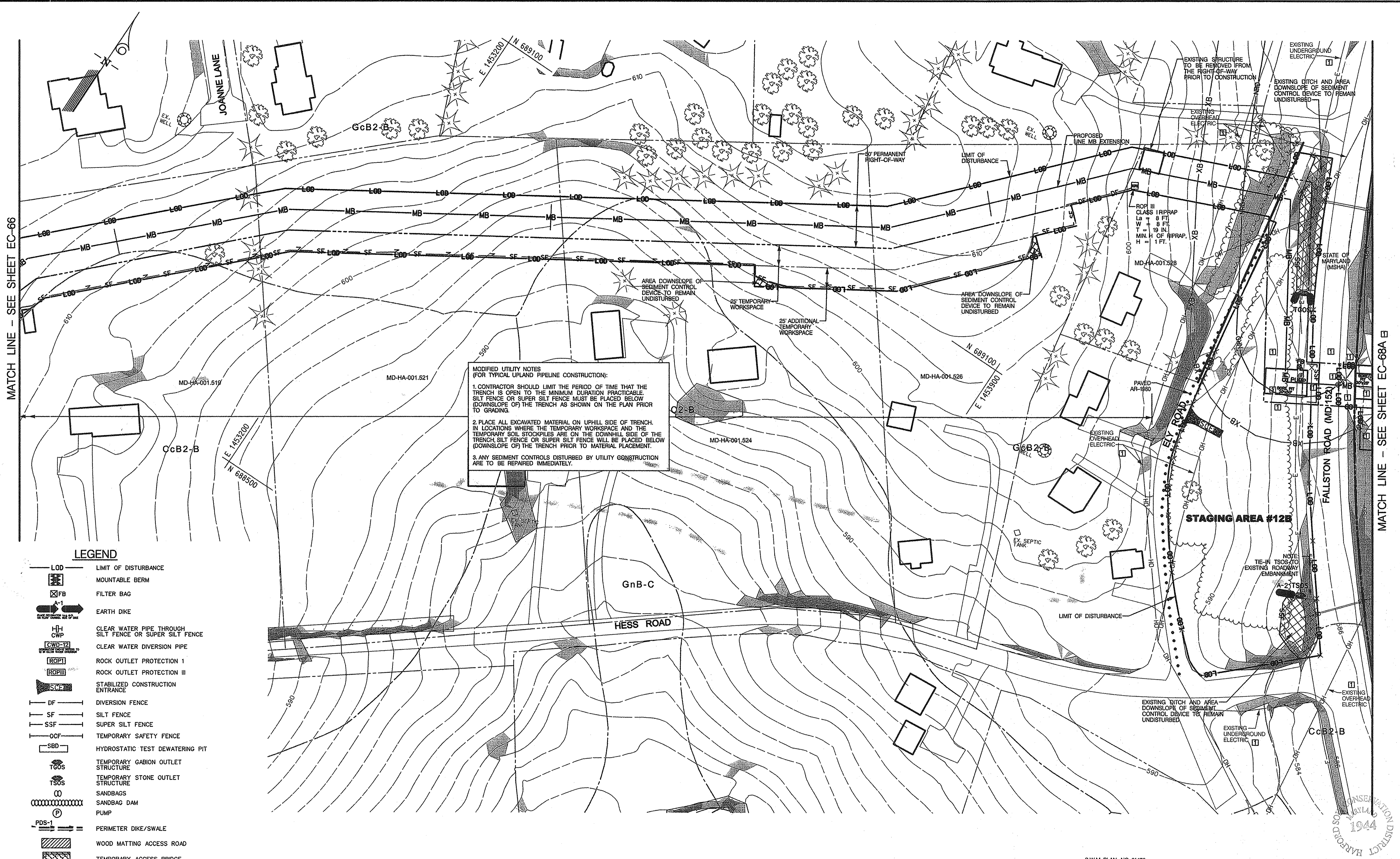
HARFORD COUNTY  
 GRADING / EROSION AND SEDIMENT CONTROL PLAN  
 FOR  
 COLUMBIA GAS TRANSMISSION, LLC  
 LINE MB EXTENSION PROJECT  
 BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO.  
**EC-66**  
 SHEET 9 OF 44  
 KCI JOB NUMBER  
 16-121849

PLOTTED: 03:12 PM on Monday, January 20, 2014  
 FILE: \\KCI\2013\16-121849\Drawings\WKS\ESC-PLAN.dwg

MATCH LINE - SEE SHEET EC-66

MATCH LINE - SEE SHEET EC-68A B

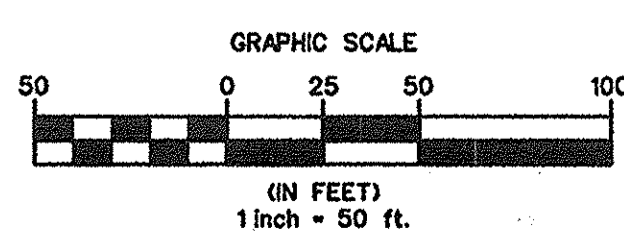


**MODIFIED UTILITY NOTES**  
(FOR TYPICAL UPLAND PIPELINE CONSTRUCTION):

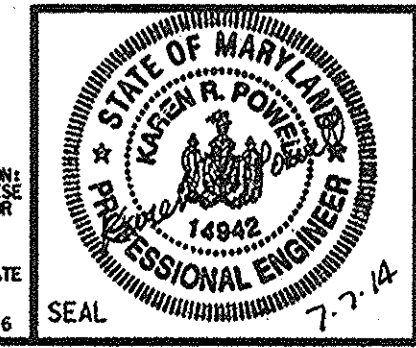
1. CONTRACTOR SHOULD LIMIT THE PERIOD OF TIME THAT THE TRENCH IS OPEN TO THE MINIMUM DURATION PRACTICABLE. SILT FENCE OR SUPER SILT FENCE MUST BE PLACED BELOW (DOWNSLOPE OF) THE TRENCH AS SHOWN ON THE PLAN PRIOR TO GRADING.
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3. ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

**LEGEND**

- LOD LIMIT OF DISTURBANCE
- MOUNTABLE BERM
- FB FILTER BAG
- E-DI EARTH DIKE
- H-CWP CLEAR WATER PIPE THROUGH SILT FENCE OR SUPER SILT FENCE
- CWD-12 CLEAR WATER DIVERSION PIPE
- ROPI ROCK OUTLET PROTECTION I
- ROPIII ROCK OUTLET PROTECTION III
- SCFE STABILIZED CONSTRUCTION ENTRANCE
- DF DIVERSION FENCE
- SF SILT FENCE
- SSF SUPER SILT FENCE
- OCF TEMPORARY SAFETY FENCE
- SBD HYDROSTATIC TEST DEWATERING PIT
- TOOS TEMPORARY GABION OUTLET STRUCTURE
- TSOS TEMPORARY STONE OUTLET STRUCTURE
- SANDBAGS
- SANDBAG DAM
- PUMP
- PDS-1 PERIMETER DIKE/SWALE
- WOOD MATTING ACCESS ROAD
- TEMPORARY ACCESS BRIDGE



PROFESSIONAL CERTIFICATION  
I HEREBY CERTIFY THAT THESE DRAWINGS WERE PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.  
LICENSE NO. 14842  
EXPIRATION DATE: 6/01/2016



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

**Columbia Gas Transmission**  
A NISource Company

REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	DATE
11	JULY 2014	ESC PLAN IS REVISED FOR REVISED MB ALIGNMENT AT MD 152. ADDED EXISTING UTILITIES AT STAGING AREA #12B	RB	JAN. 2014
				SCALE 1" = 50'
				DESIGNED BY JS
				DRAWN BY JS

S.W.M. PLAN NO. 91476  
SEDIMENT CONTROL PLAN NO. 52275

**HARFORD COUNTY**  
GRADING / EROSION AND SEDIMENT CONTROL PLAN  
FOR  
**COLUMBIA GAS TRANSMISSION, LLC**  
LINE MB EXTENSION PROJECT  
BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO. **EC-67**  
SHEET 10 OF 44  
KCI JOB NUMBER 16-121849

PLOTTED: 01/31/14 PM 01:34 on Wednesday, July 02, 2014  
BY: Christopher Deibel/Division: P030 Action of Res. Emp.  
FILE: \\N:\2013\16121849\Drawings\WR\ESC-PLAN\_67.dwg



MATCH LINE - SEE SHEET EC-67

MATCH LINE - SEE SHEET EC-69

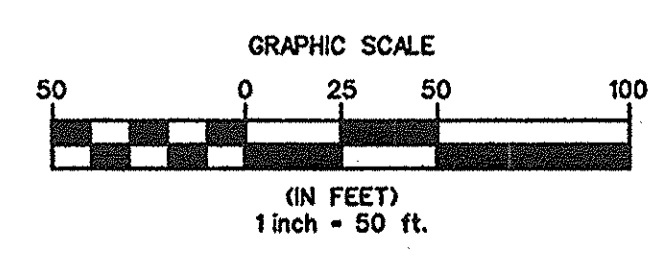
**CLEAR WATER DIVERSION NOTE:**  
 CLEAR WATER DIVERSION (CWD) PIPES WILL BE INSTALLED AFTER TEMPORARY GRADING ACTIVITIES AT THE BEGINNING OF CONSTRUCTION. ONCE ACTIVE TRENCHING ACTIVITIES BEGIN, CWD PIPES WILL BE REMOVED BUT KEPT ON-SITE. THE CONTRACTOR WILL MONITOR CURRENT WEATHER FORECASTS AND THE PIPES WILL ONLY BE REINSTALLED WHEN WEATHER FORECASTS A 0.5 INCH OR GREATER RAINFALL EVENT. ONCE ACTIVE TRENCHING HAS BEEN COMPLETED, CWD PIPES WILL BE REINSTALLED AND REMAIN IN PLACE UNTIL STABILIZATION HAS BEEN REACHED. WHEN THE PIPES ARE REMOVED, SEEDING AND SOIL STABILIZATION MATTING WILL BE PROVIDED FOR IMMEDIATE STABILIZATION OF ANY BARE GROUND.

**UTILITY NOTES (FOR STOVE PIPE CONSTRUCTION):**  
 1. CONTRACTOR SHOULD OPEN ONLY THAT SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED EACH DAY. IF TRENCH MUST REMAIN OPEN LONGER THAN ONE DAY, SILT FENCE SHALL BE PLACED BELOW (DOWNSLOPE OF) THE TRENCH.  
 2. PLACE ALL EXCAVATED MATERIAL ON UPHILL SIDE OF TRENCH.  
 3. ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.  
**DAILY STABILIZATION NOTES (FOR STOVE PIPE CONSTRUCTION):**  
 CONTRACTOR SHALL ONLY DISTURB THAT AREA WHICH CAN BE COMPLETED AND STABILIZED BY THE END OF EACH WORKING DAY. STABILIZATION SHALL BE AS FOLLOWS:  
 1. FOR AREAS TO BE PAVED, THE APPLICATION OF STONE BASE.  
 2. FOR AREAS TO BE VEGETATIVELY STABILIZED:  
 A. PERMANENT SEED AND SOIL STABILIZATION MATTING OR SOD FOR ALL STEEP SLOPES, CHANNELS OR SWALES.  
 B. PERMANENT SEED AND MULCH FOR ALL OTHER AREAS.  
 ANY AREAS WHICH CAN NOT BE STABILIZED BY THE END OF EACH WORKING DAY MUST HAVE SILT FENCE INSTALLED ON THE DOWNSLOPE SIDE OF THE DISTURBED AREA.

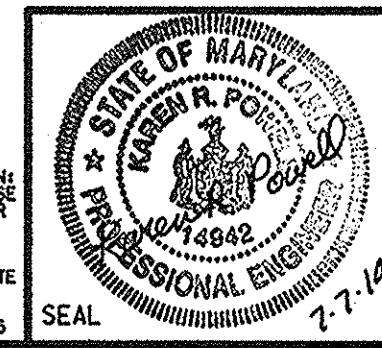
**SEQUENCE OF CONSTRUCTION FOR STREAM CROSSING**  
 1. FOLLOWING INSTALLATION OF ALL PERIMETER CONTROLS AND WITH THE APPROVAL OF THE HARFORD COUNTY DPW SEDIMENT CONTROL INSPECTOR, AND THE SUPERVISION OF RELATED STREAM CROSSING ACTIVITIES WILL OCCUR AT OR BELOW BASE FLOW LEVELS AND WILL BE PERFORMED CONTINUOUSLY UNTIL THE STREAM CROSSING IS ENTIRELY COMPLETE.  
 2. AS A FIRST ORDER OF WORK, THE CONTRACTOR WILL INSTALL THE TEMPORARY ACCESS BRIDGE, MOUNTABLE BERMS, AND WOOD MATTING.  
 3. THE ACTUAL STREAM CROSSING OF LINE MB SHALL BE COMPLETED DURING A NOAA EXTENDED THREE-DAY DRY WEATHER FORECAST. THE CONTRACTOR SHALL PROVIDE AND SUPERVISE THE PUMP-AROUND AND DEWATERING PRACTICE AT ALL TIMES. ONCE IN-STREAM CONSTRUCTION ACTIVITIES BEGIN, WORK MUST BE PERFORMED IN A CONTINUOUS MANNER UNTIL THE CROSSING HAS BEEN COMPLETED. THE CHANNEL RESTORED AND PERMANENTLY STABILIZED AND THE PUMP-AROUND AND DEWATERING PRACTICES ARE REMOVED. AT NO TIME IS IT ACCEPTABLE FOR THE PUMP-AROUND PRACTICE TO REMAIN UNATTENDED. ALL DISCHARGE MUST BE ACCOMPLISHED IN A NON-EROSIVE MANNER. NO SEDIMENT LOADED DISCHARGE IS PERMITTED.  
 4. UPON COMPLETION OF THE STREAM CROSSING, INSTALL THE REMAINDER OF LINE MB.

COLUMBIA SHALL, AT ITS EXPENSE, PREPARE A NEW PLAT, IN ACCORDANCE WITH THE HARFORD COUNTY SUBDIVISION REGULATIONS, OF ANY PROPERTY IN THE UNLIKELY EVENT THE EASEMENT FOR COLUMBIA'S GAS PIPELINE OVERLAPS ANY PORTION OF THE PROPERTY'S SEPTIC RESERVE AREA.

- LEGEND**
- LOD — LIMIT OF DISTURBANCE
  - MOUNTABLE BERM
  - FB — FILTER BAG
  - A-1 — EARTH DIKE
  - CWP — CLEAR WATER PIPE THROUGH SILT FENCE OR SUPER SILT FENCE
  - CWD-12 — CLEAR WATER DIVERSION PIPE
  - ROP I — ROCK OUTLET PROTECTION I
  - ROP III — ROCK OUTLET PROTECTION III
  - SCPE — STABILIZED CONSTRUCTION ENTRANCE
  - DF — DIVERSION FENCE
  - SF — SILT FENCE
  - SSF — SUPER SILT FENCE
  - CCF — TEMPORARY SAFETY FENCE
  - SBD — HYDROSTATIC TEST DEWATERING PIT
  - TOS — TEMPORARY GABION OUTLET STRUCTURE
  - TSOS — TEMPORARY STONE OUTLET STRUCTURE
  - O — SANDBAGS
  - OOOOOOOOOOOOO — SANDBAG DAM
  - P — PUMP
  - PDS-1 — PERIMETER DIKE/SWALE
  - W — WOOD MATTING ACCESS ROAD
  - B — TEMPORARY ACCESS BRIDGE
  - S — STONE CHECK DAM



PROFESSIONAL CERTIFICATION  
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.  
 LICENSE NO. 14842  
 EXPIRATION DATE: 6/01/2016



**KCI TECHNOLOGIES**  
 ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS  
 936 ROCKCROFT ROAD  
 SHARPS, MARYLAND 21152  
 TELEPHONE: (410) 216-7800  
 FAX: (410) 316-7818

**Columbia Gas Transmission**  
 A NISource Company

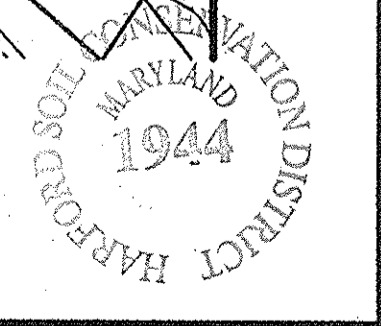
NO.	DATE	REVISIONS	DESCRIPTION	BY	DATE
1	JULY 2014	ESC PLAN IS REVISED FOR REVISED MB ALIGNMENT.	RB	SCALE	JULY 2014
		THIS NEW DWG. NO. EC-68A REPLACES DWG. NO. EC-68.		1" = 50'	
		DWG. NO. EC-68 IS REMOVED.		DESIGNED BY	
				CW	
				DRAWN BY	
				CD	

S.W.M. PLAN NO. 91476  
 SEDIMENT CONTROL PLAN NO. 52275

**HARFORD COUNTY GRADING / EROSION AND SEDIMENT CONTROL PLAN**  
 FOR  
**COLUMBIA GAS TRANSMISSION, LLC**  
**LINE MB EXTENSION PROJECT**  
 BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO. **EC-68A**  
 SHEET 11 OF 44  
 KCI JOB NUMBER 16-121849

PLOTTED: 12:08 PM on Monday, July 07, 2014  
 BY: Kristy Potter, Division P053 Water Res. GMA, Emp. # 1111  
 FILE: W:\2013\16121849\Drawings\WRR\ESC-EC-68A.dwg



UTILITY NOTES (FOR STOVE PIPE CONSTRUCTION):

1. CONTRACTOR SHOULD OPEN ONLY THAT SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED EACH DAY. IF TRENCH MUST REMAIN OPEN LONGER THAN ONE DAY, SILT FENCE SHALL BE PLACED BELOW (DOWNSLOPE OF) THE TRENCH.
2. PLACE ALL EXCAVATED MATERIAL ON UPHILL SIDE OF TRENCH.
3. ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

DAILY STABILIZATION NOTES (FOR STOVE PIPE CONSTRUCTION):

CONTRACTOR SHALL ONLY DISTURB THAT AREA WHICH CAN BE COMPLETED AND STABILIZED BY THE END OF EACH WORKING DAY. STABILIZATION SHALL BE AS FOLLOWS:

1. FOR AREAS TO BE PAVED, THE APPLICATION OF STONE BASE.
2. FOR AREAS TO BE VEGETATIVELY STABILIZED:
  - A. PERMANENT SEED AND SOIL STABILIZATION MATTING OR SOD FOR ALL STEEP SLOPES, CHANNELS OR SWALES.
  - B. PERMANENT SEED AND MULCH FOR ALL OTHER AREAS.

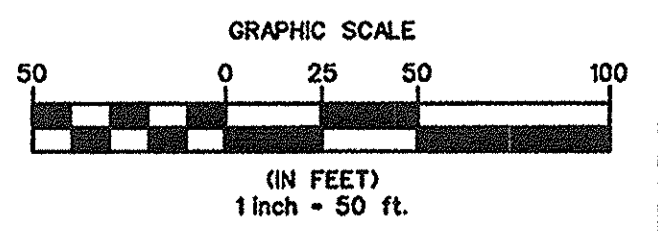
ANY AREAS WHICH CAN NOT BE STABILIZED BY THE END OF EACH WORKING DAY MUST HAVE SILT FENCE INSTALLED ON THE DOWNSLOPE SIDE OF THE DISTURBED AREA.

MATCH LINE - SEE SHEET EC-68A

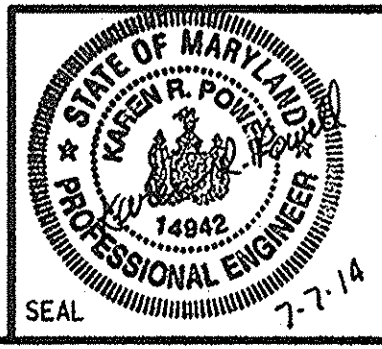
MATCH LINE - SEE SHEET EC-70

- LEGEND**
- LOD LIMIT OF DISTURBANCE
  - MOUNTABLE BERM
  - FB FILTER BAG
  - EARTH DIKE
  - H-H CLEAR WATER PIPE THROUGH SILT FENCE OR SUPER SILT FENCE
  - CWP CLEAR WATER DIVERSION PIPE
  - ROP1 ROCK OUTLET PROTECTION 1
  - ROP3 ROCK OUTLET PROTECTION III
  - SC STABILIZED CONSTRUCTION ENTRANCE
  - DF DIVERSION FENCE
  - SF SILT FENCE
  - SSF SUPER SILT FENCE
  - OCF TEMPORARY SAFETY FENCE
  - SBD HYDROSTATIC TEST DEWATERING PIT
  - TGS TEMPORARY GABION OUTLET STRUCTURE
  - TSOS TEMPORARY STONE OUTLET STRUCTURE
  - SANDBAGS
  - SANDBAG DAM
  - P PUMP
  - PDS-1 PERIMETER DIKE/SWALE
  - WOOD MATTING ACCESS ROAD
  - TEMPORARY ACCESS BRIDGE

COLUMBIA SHALL, AT ITS EXPENSE, PREPARE A NEW PLAT, IN ACCORDANCE WITH THE HARFORD COUNTY SUBDIVISION REGULATIONS, OF ANY PROPERTY IN THE UNLIKELY EVENT THE EASEMENT FOR COLUMBIA'S GAS PIPELINE OVERLAPS ANY PORTION OF THE PROPERTY'S SEPTIC RESERVE AREA.



PROFESSIONAL CERTIFICATION  
I, KAREN R. POLESKY, REGISTERED PROFESSIONAL ENGINEER, STATE OF MARYLAND, LICENSE NO. 14842, EXPIRATION DATE 6/01/2016



ENGINEERS  
PLANNERS  
SCIENTISTS  
CONSTRUCTION MANAGERS

**KCI**  
TECHNOLOGIES

936 RIDGEBANK ROAD  
SHARPS, MARYLAND 21152  
TELEPHONE: (410) 316-7800  
FAX: (410) 316-7818

**Columbia Gas Transmission**  
A NiSource Company

NO.	DATE	DESCRIPTION	BY	DATE
1	JULY 2014	ESC PLAN IS REVISED FOR REVISED MB ALIGNMENT	RB	JAN. 2014

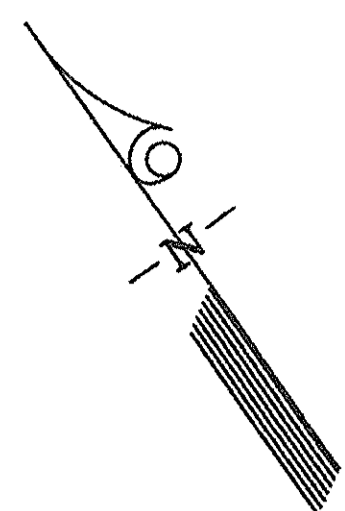
S.W.M. PLAN NO. 91476  
SEDIMENT CONTROL PLAN NO. 52275

HARFORD COUNTY  
GRADING / EROSION AND SEDIMENT CONTROL PLAN  
FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT  
BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO.  
**EC-69**  
SHEET 12 OF 44  
KCI JOB NUMBER  
16-121849



PLOTTED: 05:10 PM on Tuesday, July 01, 2014  
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**UTILITY NOTES (FOR STOVE PIPE CONSTRUCTION):**

- CONTRACTOR SHOULD OPEN ONLY THAT SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED EACH DAY. IF TRENCH MUST REMAIN OPEN LONGER THAN ONE DAY, SILT FENCE SHALL BE PLACED BELOW (DOWNSLOPE OF) THE TRENCH.
- PLACE ALL EXCAVATED MATERIAL ON UPHILL SIDE OF TRENCH.
- ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

**DAILY STABILIZATION NOTES (FOR STOVE PIPE CONSTRUCTION):**

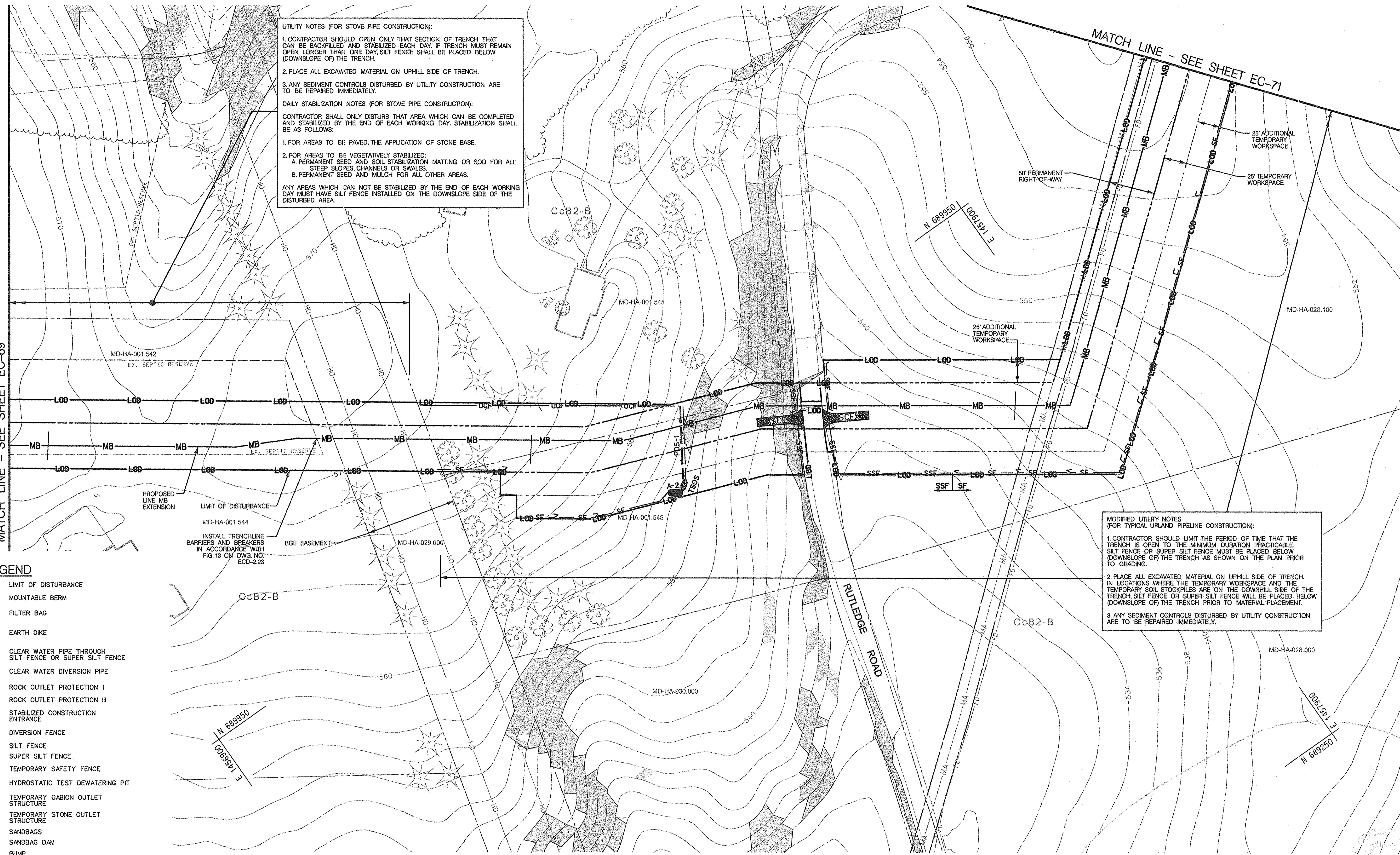
CONTRACTOR SHALL ONLY DISTURB THAT AREA WHICH CAN BE COMPLETED AND STABILIZED BY THE END OF EACH WORKING DAY. STABILIZATION SHALL BE AS FOLLOWS:

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- FOR AREAS TO BE VEGETATIVELY STABILIZED:
  - PERMANENT SEED AND SOIL STABILIZATION MATTING OR SOD FOR ALL STEEP SLOPES, CHANNELS OR SWALES.
  - PERMANENT SEED AND MULCH FOR ALL OTHER AREAS.

ANY AREAS WHICH CAN NOT BE STABILIZED BY THE END OF EACH WORKING DAY MUST HAVE SILT FENCE INSTALLED ON THE DOWNSLOPE SIDE OF THE DISTURBED AREA.

MATCH LINE - SEE SHEET EC-71

MATCH LINE - SEE SHEET EC-69



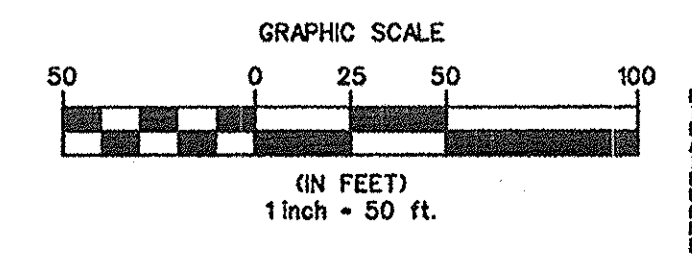
**MODIFIED UTILITY NOTES (FOR TYPICAL UPLAND PIPELINE CONSTRUCTION):**

- CONTRACTOR SHOULD LIMIT THE PERIOD OF TIME THAT THE TRENCH IS OPEN TO THE MINIMUM DURATION PRACTICABLE. SILT FENCE OR SUPER SILT FENCE MUST BE PLACED BELOW (DOWNSLOPE OF) THE TRENCH AS SHOWN ON THE PLAN PRIOR TO GRADING.
- PLACE ALL EXCAVATED MATERIAL ON UPHILL SIDE OF TRENCH. IN LOCATIONS WHERE THE TEMPORARY WORKSPACE AND THE TEMPORARY SOIL STOCKPILES ARE ON THE DOWNHILL SIDE OF THE TRENCH, SILT FENCE OR SUPER SILT FENCE WILL BE PLACED BELOW (DOWNSLOPE OF) THE TRENCH PRIOR TO MATERIAL PLACEMENT.
- ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

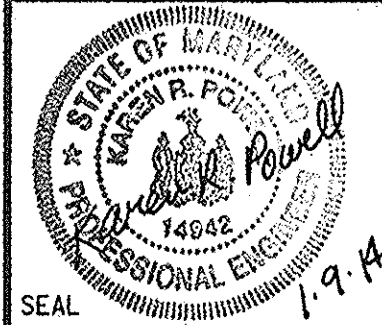
**LEGEND**

- LOD LIMIT OF DISTURBANCE
- MB MOUNTABLE BERM
- FB FILTER BAG
- A-1 EARTH DIKE
- H-CWP CLEAR WATER PIPE THROUGH SILT FENCE OR SUPER SILT FENCE
- CWD-12 CLEAR WATER DIVERSION PIPE
- ROP1 ROCK OUTLET PROTECTION I
- ROP2 ROCK OUTLET PROTECTION II
- SCE STABILIZED CONSTRUCTION ENTRANCE
- DF DIVERSION FENCE
- SF SILT FENCE
- SSF SUPER SILT FENCE
- OCF TEMPORARY SAFETY FENCE
- SBD HYDROSTATIC TEST DEWATERING PIT
- TGOS TEMPORARY GABION OUTLET STRUCTURE
- TSOS TEMPORARY STONE OUTLET STRUCTURE
- SANDBAG DAM
- PUMP
- PDS-1 PERIMETER DIKE/SWALE
- WOOD MATTING ACCESS ROAD
- TEMPORARY ACCESS BRIDGE

COLUMBIA SHALL, AT ITS EXPENSE, PREPARE A NEW PLAT, IN ACCORDANCE WITH THE HARFORD COUNTY SUBDIVISION REGULATIONS, OF ANY PROPERTY IN THE UNLIKELY EVENT THE EASEMENT FOR COLUMBIA'S GAS PIPELINE OVERLAPS ANY PORTION OF THE PROPERTY'S SEPTIC RESERVE AREA.



PROFESSIONAL CERTIFICATION I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 14942 EXPIRATION DATE: 6/01/2014



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

**Columbia Gas Transmission**  
 A NiSource Company

REVISIONS			
NO.	DATE	DESCRIPTION	BY

DATE: JAN. 2014  
 SCALE: 1" = 50'  
 DESIGNED BY: JS  
 DRAWN BY: JS

S.W.M. PLAN NO. 91476  
 SEDIMENT CONTROL PLAN NO. 52275

**HARFORD COUNTY**  
 GRADING / EROSION AND SEDIMENT CONTROL PLAN  
 FOR  
**COLUMBIA GAS TRANSMISSION, LLC**  
 LINE MB EXTENSION PROJECT  
 BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO. **EC-70**  
 SHEET 13 OF 44  
 KCI JOB NUMBER 16-121649

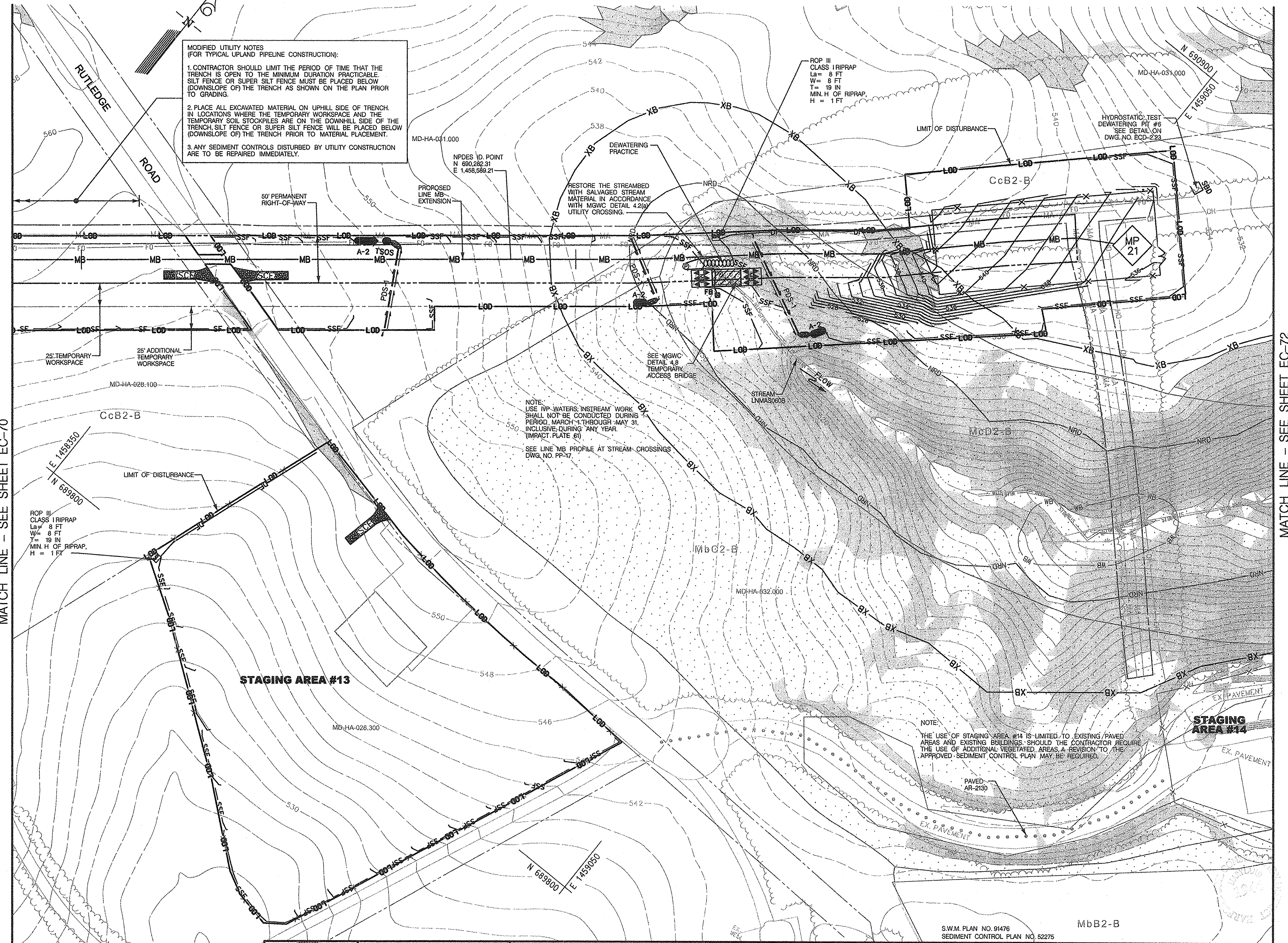
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### SEQUENCE OF CONSTRUCTION FOR STREAM CROSSING

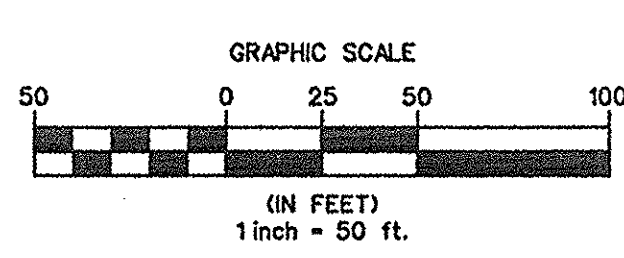
- FOLLOWING INSTALLATION OF ALL PERIMETER CONTROLS AND WITH THE APPROVAL OF THE HARFORD COUNTY DPW SEDIMENT CONTROL INSPECTOR, AND THE MDE WMA SEDIMENT CONTROL INSPECTOR, ALL IN-STREAM WORK AND THE SUPERVISION OF RELATED STREAM CROSSING ACTIVITIES WILL OCCUR AT OR BELOW BASE FLOW LEVELS AND WILL BE PERFORMED CONTINUOUSLY UNTIL THE STREAM CROSSING IS ENTIRELY COMPLETE.
- AS A FIRST ORDER OF WORK, THE CONTRACTOR WILL INSTALL THE TEMPORARY ACCESS BRIDGE AND MOUNTABLE BERMS.
- THE ACTUAL STREAM CROSSING OF LINE MB SHALL BE COMPLETED DURING A NOAA EXTENDED THREE-DAY DRY WEATHER FORECAST. THE CONTRACTOR SHALL PROVIDE AND SUPERVISE THE PUMP-AROUND AND DEWATERING PRACTICE AT ALL TIMES. ONCE IN-STREAM CONSTRUCTION ACTIVITIES BEGIN, WORK MUST BE PERFORMED IN A CONTINUOUS MANNER UNTIL THE CROSSING HAS BEEN COMPLETED. THE CHANNEL RESTORED AND PERMANENTLY STABILIZED AND THE PUMP-AROUND AND DEWATERING PRACTICES ARE REMOVED. AT NO TIME IS IT ACCEPTABLE FOR THE PUMP-AROUND PRACTICE TO REMAIN UNATTENDED. ALL DISCHARGE MUST BE ACCOMPLISHED IN A NON-EROSIVE MANNER. NO SEDIMENT LADEN DISCHARGE IS PERMITTED.
- UPON COMPLETION OF THE STREAM CROSSING, INSTALL THE REMAINDER OF LINE MB.

**MODIFIED UTILITY NOTES**  
(FOR TYPICAL UPLAND PIPELINE CONSTRUCTION):

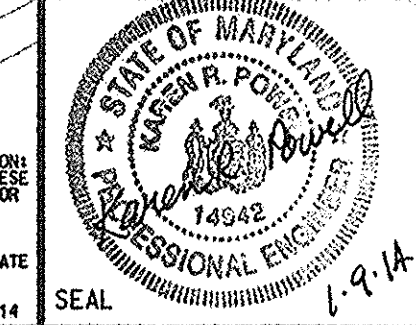
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- ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.



- LEGEND**
- LOD LIMIT OF DISTURBANCE
  - MB MOUNTABLE BERM
  - FB FILTER BAG
  - A-1 EARTH DIKE
  - CWP CLEAR WATER PIPE THROUGH SILT FENCE OR SUPER SILT FENCE
  - CWD-12 CLEAR WATER DIVERSION PIPE
  - ROP1 ROCK OUTLET PROTECTION 1
  - ROP3 ROCK OUTLET PROTECTION 3
  - SCE STABILIZED CONSTRUCTION ENTRANCE
  - DF DIVERSION FENCE
  - SF SILT FENCE
  - SSF SUPER SILT FENCE
  - OCF TEMPORARY SAFETY FENCE
  - SBD HYDROSTATIC TEST DEWATERING PIT
  - TGOS TEMPORARY GABION OUTLET STRUCTURE
  - TSOS TEMPORARY STONE OUTLET STRUCTURE
  - SANDBAGS SANDBAG DAM
  - P PUMP
  - PDS-1 PERIMETER DIKE/SWALE
  - WOOD MATTING ACCESS ROAD
  - TEMPORARY ACCESS BRIDGE



PLOTTED: 03:13 PM on Monday, January 20, 2014  
 FILE: \\K1\022\1827843\CONTR\WES\EC-PLAN.dwg



**KCI TECHNOLOGIES**  
 ENGINEERS  
 PLANNERS  
 SCIENTISTS  
 CONSTRUCTION MANAGERS  
 936 RIDGEBROOK ROAD  
 SPARKS, MARYLAND 21152  
 TELEPHONE: (410) 316-7800  
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**Columbia Gas Transmission**  
 A NiSource Company

REVISIONS			
NO.	DATE	DESCRIPTION	BY

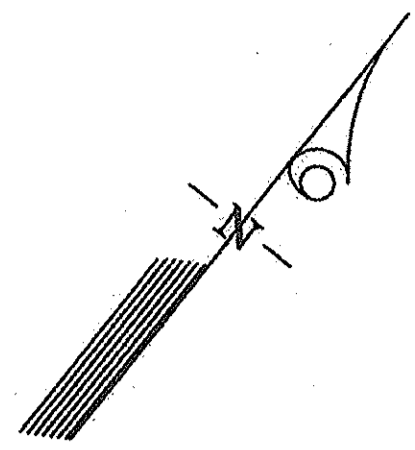
DATE: JAN. 2014  
 SCALE: 1" = 50'  
 DESIGNED BY: JS  
 DRAWN BY: JS

S.W.M. PLAN NO. 91476  
 SEDIMENT CONTROL PLAN NO. 52275  
**HARFORD COUNTY**  
**GRADING / EROSION AND SEDIMENT CONTROL PLAN**  
 FOR  
**COLUMBIA GAS TRANSMISSION, LLC**  
**LINE MB EXTENSION PROJECT**  
 BALTIMORE & HARFORD COUNTIES, MARYLAND

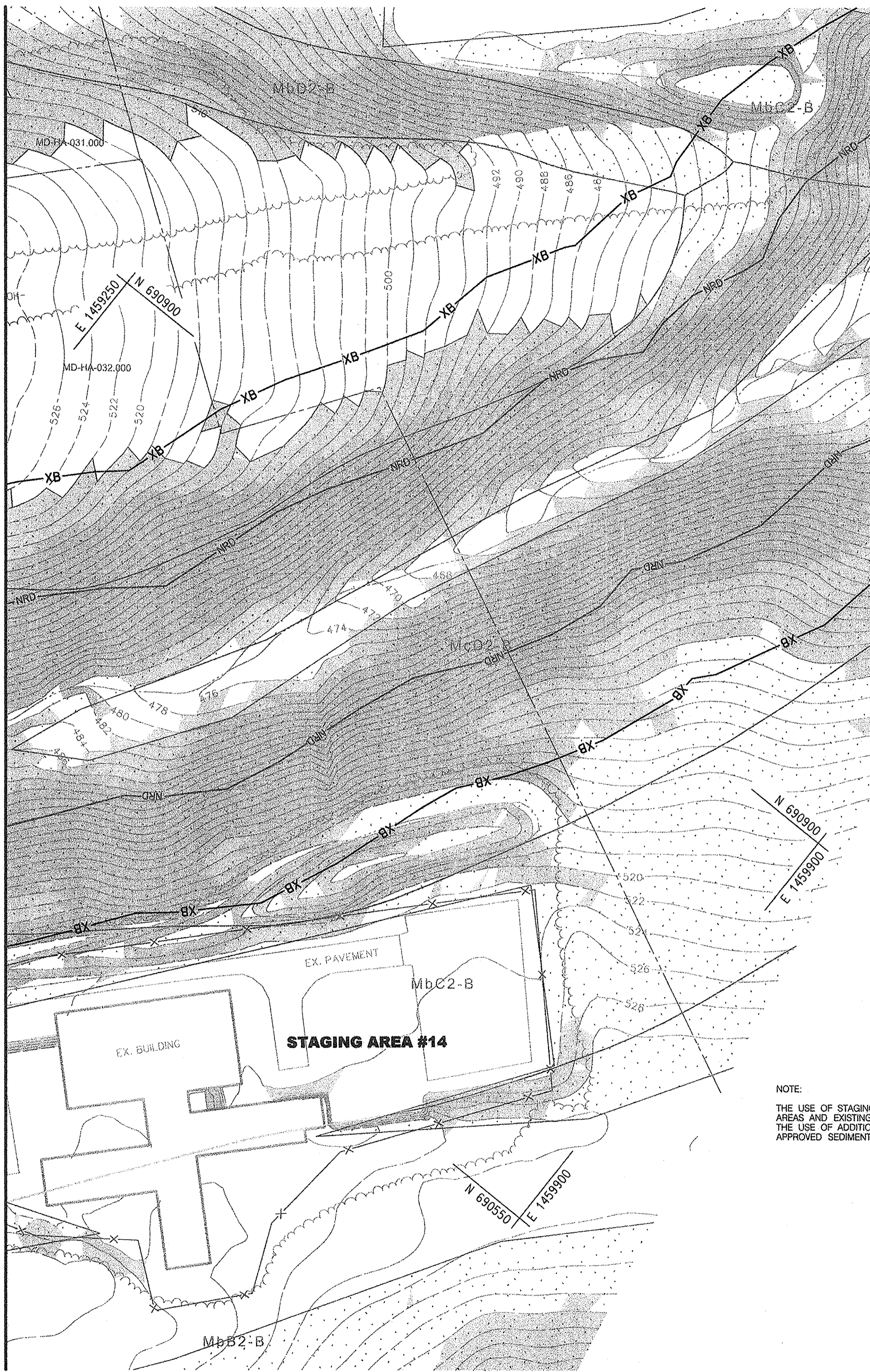
DRAWING NO.  
**EC-71**  
 SHEET 14 OF 44  
 KCI JOB NUMBER  
 16-121849

MATCH LINE - SEE SHEET EC-70

MATCH LINE - SEE SHEET EC-72



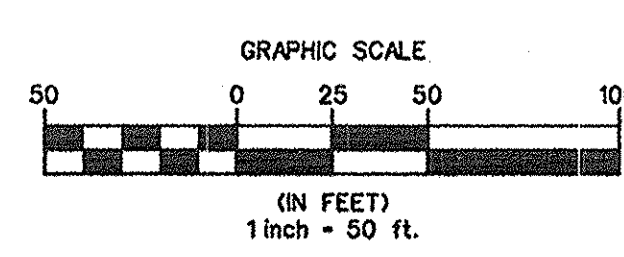
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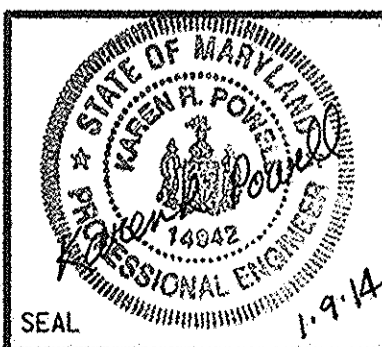
**LEGEND**

- LOD** LIMIT OF DISTURBANCE
- MOUNTABLE BERM
- FB** FILTER BAG
- A-1** EARTH DIKE
- CWP** CLEAR WATER PIPE THROUGH SILT FENCE OR SUPER SILT FENCE
- CWD-12** CLEAR WATER DIVERSION PIPE
- ROPI** ROCK OUTLET PROTECTION I
- ROPIII** ROCK OUTLET PROTECTION III
- SCE** STABILIZED CONSTRUCTION ENTRANCE
- DF** DIVERSION FENCE
- SF** SILT FENCE
- SSF** SUPER SILT FENCE
- OSF** TEMPORARY SAFETY FENCE
- SBD** HYDROSTATIC TEST DEWATERING PIT
- T60S** TEMPORARY GABION OUTLET STRUCTURE
- TS0S** TEMPORARY STONE OUTLET STRUCTURE
- SANDBAGS
- SANDBAG DAM
- PUMP
- PDS-1** PERIMETER DIKE/SWALE
- WOOD MATTING ACCESS ROAD
- TEMPORARY ACCESS BRIDGE

**NOTE:**  
THE USE OF STAGING AREA #14 IS LIMITED TO EXISTING PAVED AREAS AND EXISTING BUILDINGS. SHOULD THE CONTRACTOR REQUIRE THE USE OF ADDITIONAL VEGETATED AREAS, A REVISION TO THE APPROVED SEDIMENT CONTROL PLAN MAY BE REQUIRED.



PROFESSIONAL CERTIFICATION  
I HEREBY CERTIFY THAT THESE  
DOCUMENTS WERE PREPARED OR  
APPROVED BY ME, AND THAT  
I AM A FULLY LICENSED  
PROFESSIONAL ENGINEER  
UNDER THE LAWS OF THE STATE  
OF MARYLAND.  
LICENSE NO. 14942  
EXPIRATION DATE: 6/30/2014



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

**Columbia Gas Transmission**  
A NISource Company

REVISIONS			
NO.	DATE	DESCRIPTION	BY

S.W.M. PLAN NO. 91476  
SEDIMENT CONTROL PLAN NO. 62275

HARFORD COUNTY  
GRADING / EROSION AND SEDIMENT CONTROL PLAN  
FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT  
BALTIMORE & HARFORD COUNTIES, MARYLAND

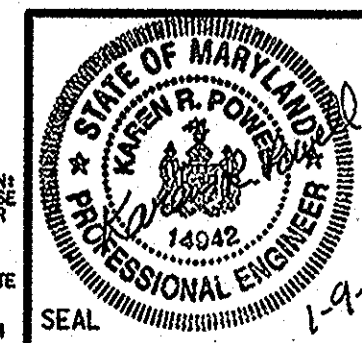
DRAWING NO.  
**EC-72**  
SHEET 15 OF 44  
KCI JOB NUMBER  
16-121849

PLOT: 10:31:13 PM on Monday, January 20, 2014  
FILE: \\MVA\2012\1621849\Drawings\WRES-PLAN-1621849.dgn



PLOTTED: 04:31 PM on Friday, December 20, 2013  
 BY: Kristy Potter, Division: P053, Water Res. CMA, Emp.  
 FILE: M:\2012\16121849\Drawings\WKS\STREAM\PLAN-PP-15-HC.dgn

PROFESSIONAL CERTIFICATION  
 I HEREBY CERTIFY THAT THESE  
 DOCUMENTS WERE PREPARED OR  
 APPROVED BY ME, AND THAT  
 I AM A FULLY LICENSED  
 PROFESSIONAL ENGINEER  
 UNDER THE LAWS OF THE STATE  
 OF MARYLAND.  
 LICENSE NO. 14042  
 EXPIRATION DATE: 6/01/2014



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

**Columbia Gas Transmission**  
 A NiSource Company

REVISIONS				DATE	
NO.	DATE	DESCRIPTION	BY	JAN. 2014	SCALE
					AS SHOWN
					DESIGNED BY
					JS
					DRAWN BY
					JS

S.W.M. PLAN NO. 91476  
 SEDIMENT CONTROL PLAN NO. 52275

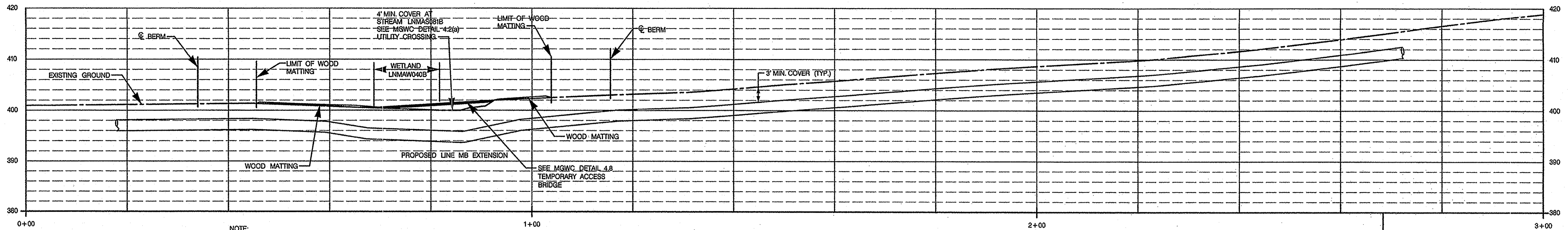
HARFORD COUNTY  
 LINE MB PROFILE AT STREAM CROSSINGS  
 FOR  
 COLUMBIA GAS TRANSMISSION, LLC  
 LINE MB EXTENSION PROJECT  
 BALTIMORE & HARFORD COUNTIES, MARYLAND



**HDD ALTERNATE**

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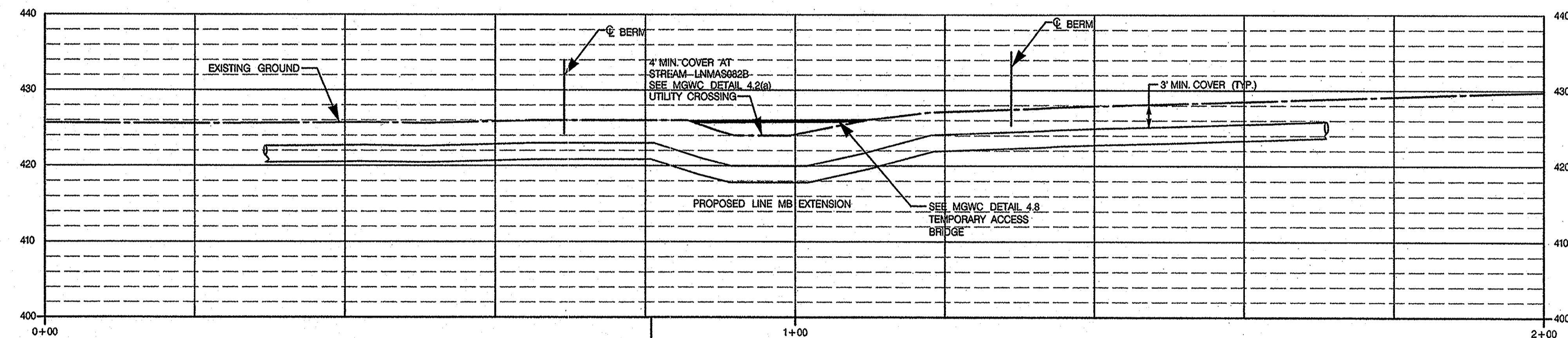
DRAWING NO.  
**PP-15**  
 SHEET 16 OF 44  
 KCI JOB NUMBER  
 16-121849



1"=10'-0" H  
1"=10'-0" V

**NOTE:**  
RESTORE THE STREAMBED WITH SALVAGED STREAM MATERIAL IN ACCORDANCE WITH MGWC DETAIL 4.2(a) UTILITY CROSSING.  
  
SEE GRADING/EROSION AND SEDIMENT CONTROL PLAN DWG. NO. EC-62

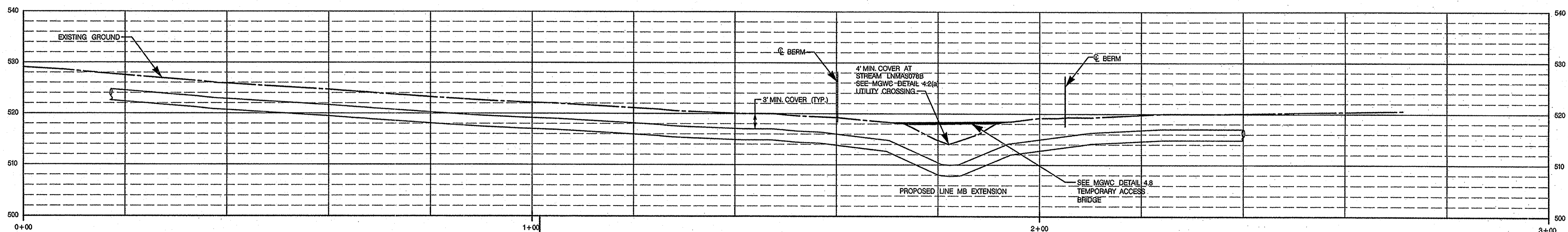
IMPACT PLATE 56  
M.P. 18.15 TO M.P. 18.21



1"=10'-0" H  
1"=10'-0" V

**NOTE:**  
RESTORE THE STREAMBED WITH SALVAGED STREAM MATERIAL IN ACCORDANCE WITH MGWC DETAIL 4.2(a) UTILITY CROSSING.  
  
SEE GRADING/EROSION AND SEDIMENT CONTROL PLAN DWG. NO. EC-63

IMPACT PLATE 57  
M.P. 18.58 TO M.P. 18.62



1"=10'-0" H  
1"=10'-0" V

**NOTE:**  
RESTORE THE STREAMBED WITH SALVAGED STREAM MATERIAL IN ACCORDANCE WITH MGWC DETAIL 4.2(a) UTILITY CROSSING.  
  
SEE GRADING/EROSION AND SEDIMENT CONTROL PLAN DWG. NO. EC-65

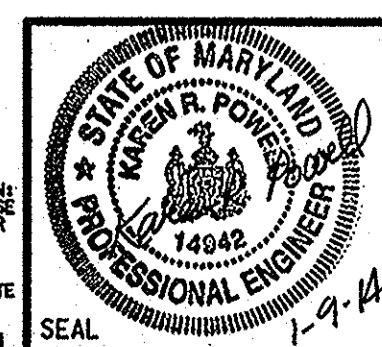
IMPACT PLATE 58  
M.P. 19.08 TO M.P. 19.14



S.W.M. PLAN NO. 91476  
SEDIMENT CONTROL PLAN NO. 62275

PLOTTER: 09:45 AM on Monday, December 23, 2013  
BY: X:\Sun Division\053 Water Res GMA Emp  
FILE: M:\2012\1821819\Drawings\WATER\STREAM\PLAN-PP-16.dwg

PROFESSIONAL CERTIFICATION  
I HEREBY CERTIFY THAT THE  
APPROVED BY ME AND THAT  
I AM A FULL LICENSED  
PROFESSIONAL ENGINEER  
UNDER THE LAWS OF THE STATE  
OF MARYLAND, LICENSE NO. 14942  
EXPIRATION DATE: 6/01/2014



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

**Columbia Gas Transmission**  
A NISource Company

REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	JAN. 2014

HARFORD COUNTY  
LINE MB PROFILE AT STREAM CROSSINGS  
FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT  
BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO.  
**PP-16**  
SHEET 17 OF 44  
PCT JOB NUMBER  
16-121849



**HARFORD COUNTY STANDARD SEDIMENT CONTROL NOTES**

- A grading unit of 20 acres is the maximum contiguous area allowed to be graded at a given time.
- A project is to be sequenced so that grading activities begin on one grading unit at a time. Work may proceed to a subsequent grading unit when at least 50 percent of the disturbed area in the preceding grading unit has been stabilized and approved by DPW. No more than thirty acres cumulatively may be disturbed at any given time.
- The contractor/owner is responsible for obtaining all necessary permits. Further, no construction activity shall take place until all required permits have been obtained.
- The limits of disturbance shall be clearly delineated in the field prior to grading of the site to ensure compliance with approved plans. All Forest Retention areas will be delineated with Blaze Orange Fence as well as any SWM infiltration practice prior to any clearing. Work beyond the limits of disturbance and in any area inside the Forest Retention and SWM infiltration area is considered to be a violation of this plan.
- All sediment control practices must be installed prior to any construction activity. Upon completion of the installation of perimeter sediment control practices the site must be inspected by the Department of Public Works (DPW). No additional construction activity will be authorized without the approval from DPW.
- All points of ingress and egress shall be protected to prevent tracking of mud into public ways. During construction, every means will be taken to control soil erosion and siltation. If necessary a wash rack may need to be established.
- Earth dikes, sediment traps, etc. will be located as shown on these drawings. Field changes and minor adjustments are permissible as long as the installation functions and conforms to specifications. The site inspector prior to installation must approve all such changes. Major changes to the approved plan will require re-approval by the Harford Soil Conservation District.
- Following initial soil disturbance or re-disturbance permanent or temporary stabilization shall be completed within:
  - Three calendar days on slopes greater than 3:1, all waterways and to the surface of all perimeter controls.
  - Seven calendar days as to all other disturbed or graded areas of the project site.
- Dust Control must be managed as part of all Sediment Control plans. Failure to do so is a violation of this plan.
- Sediment basins must be built to design specifications shown on the plan. If the basin is to be used as a future SWM facility, the basin will be built in accordance with the latest MD-378 standards and specifications. Specified materials must be used. No changes or modifications will be made without written authorization of the Harford Soil Conservation District.
- Temporary fencing shall be placed around all sediment basins, traps, and ponds during construction and site grading.
- At the end of each working day all sediment control practices will be inspected and left operational. A weekly log will be kept in accordance with NOI/NPDES regulations. A copy of the approved sediment control plans shall be available at the site at all times.
- Ensure positive drainage to all road inlets during all phases of road construction to ensure positive flow to traps and/or basins.
- Cut and/or fill shall be done in conformance with 2011 Erosion and Sediment Control Standards and Specifications for land grading.
- Surface flows over cut and fill slopes shall be controlled by either redirecting flows from traversing the slopes or by installing mechanical devices to safely convey water down slopes without causing erosion.
- Off-site waste or borrow areas shall have an approved erosion and sediment control plan prior to the import or export of material to/from the project site.
- All material originating from the development of the property and deposited on the public right-of-way shall be immediately removed.
- Storm drain inlets and outlets shall be protected per 2011 Erosion and Sediment Control standards and specifications.
- Topsoil, liming, fertilizing, seeding, mulching, sod, etc. are all essential parts of the sediment control plan and must be completed along with all other practices.
- Traps to be removed shall be dewatered as per the 2011 Erosion and Sediment Control standards and specifications.
- Prior to removal of traps or conversion of sediment basins to SWM facilities, the storm drains will be flushed.
- Sediment control practices will be maintained until all disturbed areas for which the practices were installed have been stabilized. Sediment control practices may be removed only with the authorization of the DPW inspector. All disturbed areas resulting from the removal of sediment control devices shall be stabilized immediately. Removal prior to inspector's approval constitutes a violation.

**STABILIZED CONSTRUCTION ENTRANCE (SCE) NOTE:**

THE LOCATIONS OF THE STABILIZED CONSTRUCTION ENTRANCES SHOWN ON THE PLAN SHEETS ARE APPROXIMATE. THE CONTRACTOR SHALL DETERMINE EXACT LOCATIONS IN THE FIELD AND RELOCATE AS NEEDED, IN ACCORDANCE WITH HARFORD COUNTY STANDARD SEDIMENT CONTROL NOTE NO. 6 AND WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR.

**FILTER BAG NOTES**

- APPROXIMATE LOCATIONS OF FILTER BAGS ARE SHOWN AT ALL STREAM CROSSINGS ON THE PLAN SHEETS. THE CONTRACTOR SHALL DETERMINE EXACT LOCATIONS IN THE FIELD AND RELOCATE AS NEEDED, IN ACCORDANCE WITH THE FILTER BAG DETAIL NOTE 2 AND WITH THE APPROVAL OF THE HARFORD COUNTY SEDIMENT CONTROL INSPECTOR.
- SHOULD IT BECOME NECESSARY TO DEWATER THE TRENCH IN UPLAND AREAS, A STANDARD F-4 FILTER BAG WILL TREAT THE DISCHARGE PRIOR TO RELEASE. THE CONTRACTOR SHALL DETERMINE EXACT LOCATIONS IN THE FIELD AND RELOCATE AS NEEDED, IN ACCORDANCE WITH THE FILTER BAG DETAIL NOTE 2 AND WITH THE APPROVAL OF THE HARFORD COUNTY SEDIMENT CONTROL INSPECTOR. TRENCH DEWATERING SHALL BE DONE IN A MANNER THAT DOES NOT CAUSE EROSION, DOES NOT RESULT IN SILT-ADJUVEN WATER DISCHARGING FROM THE WORK AREA, AND WHERE WATER WILL NOT DRAIN TO DISTURBED AREAS.

**Site Analysis:**

Total Site Area	2,062,566.00 / 47.35	Sq. Ft./Ac.
Total disturbed Area	1,925,711.69 / 44.21	Sq. Ft./Ac.
Area to be paved	NONE	Sq. Ft./Ac.
Area to be stabilized	1,925,711.69 / 44.21	Sq. Ft./Ac.
Cut	387	Cu. Yd.
Fill	1,691	Cu. Yd.
Topsoil	307	Cu. Yd.

NPDES ID PT. N: 690.282.31 E: 1.458.589.21

**Note:**

The purpose of this plan is to address sediment control for mass grading, road and utility construction only. Individual or collective home/commercial building construction will require a separate sediment control plan. The developer/contractor shall comply with all stabilization requirements of this plan. Temporary buildings may be permitted with the approval of the Harford County DPW.

**12-NT-0433/201261660**

**BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAINS**

- NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
- 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.
- 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.
- 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.
- REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, OR WATERWAYS, OR PERMANENT MODIFICATION OF THE 100-YEAR FLOODPLAIN IN EXCESS OF THAT LOST UNDER THE ORIGINALLY AUTHORIZED STRUCTURE OR FILL.
- RECTIFY ANY NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, OR 100-YEAR FLOODPLAIN TEMPORARILY IMPACTED BY ANY CONSTRUCTION.
- 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 (UNIOIA SP.), AND/OR RYE (SECALE CEREALE). THESE SPECIES WILL ALLOW FOR THE STABILIZATION OF THE SITE WHILE ALSO ALLOWING FOR THE VOLUNTARY REVEGETATION OF NATURAL WETLAND SPECIES. OTHER NON-PERSISTENT VEGETATION MAY BE ACCEPTABLE, BUT MUST BE APPROVED BY THE NONTIDAL WETLANDS AND WATERWAYS DIVISION. KENTUCKY 31 FESCUE SHALL NOT BE UTILIZED IN WETLAND OR BUFFER AREAS. THE AREA SHOULD BE SEEDED AND MULCHED TO REDUCE EROSION AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
- AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST-CONSTRUCTION GRADES AND ELEVATIONS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS.
- TO PROTECT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM:
  - USE I WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.
  - USE II WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD OCTOBER 1 THROUGH APRIL 30, INCLUSIVE, DURING ANY YEAR.
  - USE IV WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH MAY 31, INCLUSIVE, DURING ANY YEAR.
- STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.
- 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.

**COLUMBIA GAS**

**BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS AND 100-YEAR FLOODPLAINS**

- DISCONNECT OR OTHERWISE PROTECT ALL HOSES FROM DAMAGE BY CROSSING EQUIPMENT. FILTER BAG FOR DEWATERING MUST BE PLACED WITHIN THE LOD.
- STREAMS WITH NO PERCEIVABLE FLOW AT THE TIME OF CROSSING WILL BE CROSSED USING THE OPEN-CUT CROSSING METHOD WITH NO WATER DIVERSION. A DIVERSION PIPE WILL BE KEPT ON SITE AND INSTALLED IN ACCORDANCE WITH MGWC 1.4 IF FLOW BEGINS. THE CONTRACTOR WILL UTILIZE THE DAM AND PUMP (PUMP-AROUND) METHOD FOR ALL PERENNIAL STREAMS AND INTERMITTENT STREAMS WITH SIGNIFICANT FLOW IN ACCORDANCE WITH MGWC 1.2.
- THE PLACEMENT OF TIMBER MATS WITHIN THE 100-YEAR FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOODPLAIN IS SHOWN ON THE PLAN. HOWEVER, COLUMBIA MAY REQUEST THAT THE APPROVING AGENCIES REDEFINE THE PLAN TO INDICATE THAT NO MATTING IS NEEDED.
- STREAMS IDENTIFIED WITHIN THE LINE MB EXTENSION PROJECT SURVEY CORRIDOR ARE NOT DESIGNATED AS TIER I OR TIER II STREAMS BY THE CODE OF MARYLAND REGULATIONS (COMAR) SECTIONS 26.08.02.04-1, AS OUTLINED IN THE COMAR. ALL WATERBODIES NOT LISTED AS TIER I OR TIER II WATERS ARE TIER I AS SUCH. ALL WATERBODIES IDENTIFIED WITHIN THE LINE MB EXTENSION PROJECT SURVEY CORRIDOR ARE TIER I STREAMS. HOWEVER, THE PROPOSED PROJECT WILL CROSS TIER II WATERSHEDS. IN ORDER TO LIMIT POTENTIAL IMPACTS TO TIER II WATERSHEDS, COLUMBIA WILL USE CONSTRUCTION AND EROSION CONTROL METHODS AS SPECIFIED IN THE FERG PLAN AND PROCEDURES AND COLUMBIA'S ECS MANUAL. ADDITIONALLY, COLUMBIA WILL UTILIZE ENHANCED BMPs AS REQUIRED FOR CONSTRUCTION ACTIVITIES IN TIER II WATERSHEDS. EXAMPLES OF ENHANCED BMPs INCLUDE ACCELERATED STABILIZATION, ENHANCED SCHEDULING (E.G. REVIEWING THE WEATHER FORECAST TO AVOID WORK DURING TIMES OF HIGH SEDIMENT TRANSPORT RISK), ENHANCED INSPECTIONS, AND USING SUPER SILT FENCE IN PLACE OF SILT FENCE. ENHANCED BMPs HAVE BEEN INCORPORATED INTO THE PROJECT PLAN WHICH WILL BE SUBMITTED TO MDE FOR REVIEW AND APPROVAL.
- BLASTING WILL BE CONDUCTED UNDER A SPECIFIC BLASTING PLAN AS APPROVED BY MDE, WHICH INCLUDES INFORMATION ON AVOIDING AND STRICTLY MINIMIZING SURFACE DISTURBANCE. BLASTING WILL BE OVERSEEN BY A CERTIFIED PERSON/PROJECT MANAGER. BLASTING DESIGN, BMPs, AND MONITORING WILL ENSURE THAT NO SIGNIFICANT VIBRATIONS, EXCESSIVE SOUND WAVES, OR DISTURBANCES OF SIGNIFICANCE OCCUR WITHIN THE WATER COLUMN OF THE STREAM. STREAM DIVERSIONS, DRILLING PROCEDURES, CAPPING OF HOLES, MATTING, ETC. WILL BE UTILIZED TO AVOID BLASTING IMPACTS TO THE FLOWING STREAM.
- UTILITY STREAM CROSSINGS SHALL BE IN ACCORDANCE WITH THE MARYLAND GUIDELINES FOR WATERWAY CONSTRUCTION (MGWC) DETAIL 4.2(a). SEE DWG. NO. ECD-2.19

**SUMMARY OF GRADING UNITS**

ID	FROM	TO	LOD Area (sf)	LOD Area (ac)	GRADING UNIT (20 ac)
U	County Line	EC-60 Hess Rd	798,806.00	18.34	0.92
V	Hess Rd	EC-65 SR 152 (Fallston Rd)	431,853.00	9.91	0.50
V1		Foxwood Lane	5,645.35	0.13	0.01
W	SR 152 (Fallston Rd)	EC-67 MP 21.0	552,206.00	12.68	0.63
X		Staging Area #13	137,201.34	3.15	0.16
		TOTAL	1,925,711.69	44.21	2.21

**GENERAL SEQUENCE OF CONSTRUCTION**

- A PRE-CONSTRUCTION MEETING SHALL BE HELD WITH THE HARFORD COUNTY DPW; MARYLAND DEPARTMENT OF THE ENVIRONMENT, COMPLIANCE PROGRAM (410-537-3510) AND NONTIDAL WETLANDS DIVISION (410-537-3911); AND US ARMY CORPS OF ENGINEERS (410-962-6080) PRIOR TO BEGINNING ANY LAND DISTURBING ACTIVITY.
- CLEAR THE WORKSPACE AS NECESSARY.
- INSTALL AND STABILIZE ALL PERIMETER CONTROLS IMMEDIATELY FOLLOWING TREE CLEARING.
- UPON COMPLETION OF THE INSTALLATION AND STABILIZATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, AND WITH THE APPROVAL OF THE HARFORD COUNTY DPW INSPECTOR, BEGIN GRADING AND TRENCHING THE REMAINDER OF THE SITE. ONCE UTILITY INSTALLATION REACHES A STREAM CROSSING, INSTALL THE PUMP-AROUND SYSTEM. WITH THE APPROVAL OF THE COUNTY INSPECTOR, MARYLAND DEPARTMENT OF ENVIRONMENT COMPLIANCE INSPECTOR, 410-537-3510 AND US ARMY CORPS OF ENGINEERS, 410-962-6080, BEGIN UTILITY INSTALLATION ACROSS THE STREAM. IN-STREAM CONSTRUCTION SHALL INCLUDE 24-HOUR PUMPING UNTIL WORK WITHIN THE STREAM IS COMPLETED.
- INSTALL LINE MB.
- BACKFILL THE TRENCH, FINE GRADE AND PERMANENTLY STABILIZE ALL DISTURBED AREAS.
- WITH THE APPROVAL OF THE DPW INSPECTOR, REMOVE ALL SEDIMENT CONTROLS AND STABILIZE ALL AREAS DISTURBED BY THIS PROCESS.

**ENHANCED BEST MANAGEMENT PRACTICES FOR WORKING IN TIER II WATERSHEDS**

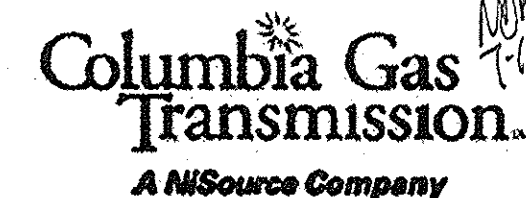
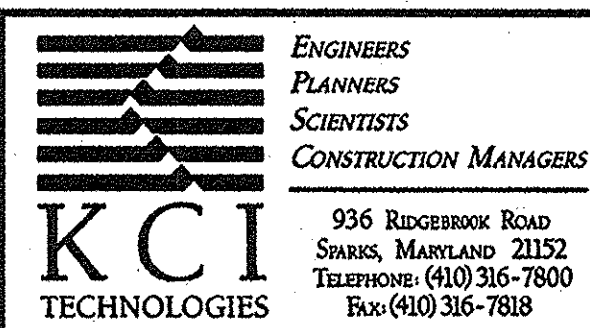
- AT A MINIMUM, THE CONTRACTOR MUST INSPECT ALL SEDIMENT CONTROL MEASURES AND DEVICES ONCE EVERY SEVEN (7) CALENDAR DAYS, AND WITHIN 24 HOURS OF THE OCCURRENCE OF A STORM EVENT OF 0.25 INCHES OR GREATER. THE CONTRACTOR SHALL PREPARE A WRITTEN INSPECTION REPORT FOR EACH INSPECTION, AND MAINTAIN A LOG BOOK FOR ALL REPORTS. ALL CORRECTIVE ACTION SHOULD BE INITIATED WITHIN 24 HOURS AND COMPLETED WITHIN 72 HOURS OF BEING NOTED.
- THE CONTRACTOR MUST INSPECT ALL SEDIMENT CONTROL MEASURES AND DEVICES PRIOR TO A NOAA FORECAST EVENT OF 0.25 INCHES OR GREATER. THE CONTRACTOR SHALL PERFORM REPAIRS AND MAINTENANCE TO THE MAXIMUM EXTENT PRACTICABLE TO ASSURE ALL DEVICES ARE IN GOOD WORKING ORDER PRIOR TO THE EVENT.
- ALL POINTS OF INGRESS AND EGRESS TO THE TIER II WATERSHED WILL BE CLEARLY MARKED AS SUCH.
- ALL WETLANDS, WATERWAYS, AND 100-YR FLOODPLAINS SHALL BE CLEARLY MARKED AS SUCH. VEHICLES OPERATING WITHIN 100 FT OF THESE AREAS SHALL CARRY EMERGENCY SPILL KITS.
- ALL FOREST CONSERVATION AREAS SHALL BE CLEARLY MARKED AS SUCH.
- WITHIN THE EXPANDED RIPARIAN BUFFER (XB), CUT VEGETATION OFF JUST ABOVE GROUND LEVEL, LEAVING THE EXISTING ROOT SYSTEMS IN PLACE, AND REMOVE VEGETATION FROM THE XB FOR DISPOSAL. MINIMIZE GRADING WITHIN THE XB TO ONLY WHAT IS REQUIRED TO SAFELY AND EFFICIENTLY OPERATE EQUIPMENT. LIMIT PULLING OF TREE STUMPS AND GRADING ACTIVITIES TO DIRECTLY OVER THE TRENCHLINE EXCEPT WHERE THE CHIEF INSPECTOR AND ENVIRONMENTAL INSPECTOR DETERMINE THAT SAFETY RELATED CONSTRUCTION CONSTRAINTS REQUIRE REMOVAL OF TREE STUMPS FROM UNDER THE WORKING SIDE OF THE CONSTRUCTION WORK AREA.
- MULCH DEPTH APPLICATION SHALL NOT EXCEED 6 INCHES.
- STOCKPILES WILL BE LOCATED WITHIN THE LOD AND SHALL DRAIN TO AN APPROPRIATE EROSION AND SEDIMENT CONTROL DEVICE (I.E., SILT FENCE). STOCKPILES THAT ARE LOCATED WITHIN 100 FT. OF STREAM RESOURCES AND ARE INACTIVE (THOSE UNTOUCHED FOR SEVEN (7) DAYS OR LONGER) WILL BE SEEDED OR COVERED WITH AN IMPERMEABLE COVER WHEN INACTIVE.
- REDUNDANT CONTROLS SHALL BE USED FOR DEWATERING DISCHARGES WITHIN THE XB (I.E., FILTER BAG SURROUNDED WITH SILT FENCE OR HAY BALE STRUCTURE).
- HYDROSEEDING SHALL BE CONDUCTED WITH LIQUID MULCH BINDERS IN AREAS OF 15% SLOPE OR GREATER, WITHIN 100-FT OF WETLANDS OR WATERBODIES, BINDER MUST BE CERTIFIED ENVIRONMENTALLY NON-TOXIC BY THE APPROPRIATE STATE OR FEDERAL AGENCY.

**HDD ALTERNATE**

**EROSION AND SEDIMENT CONTROL WILL BE STRICTLY ENFORCED.**

S.W.M. PLAN NO. 91476  
SEDIMENT CONTROL PLAN NO. 62275

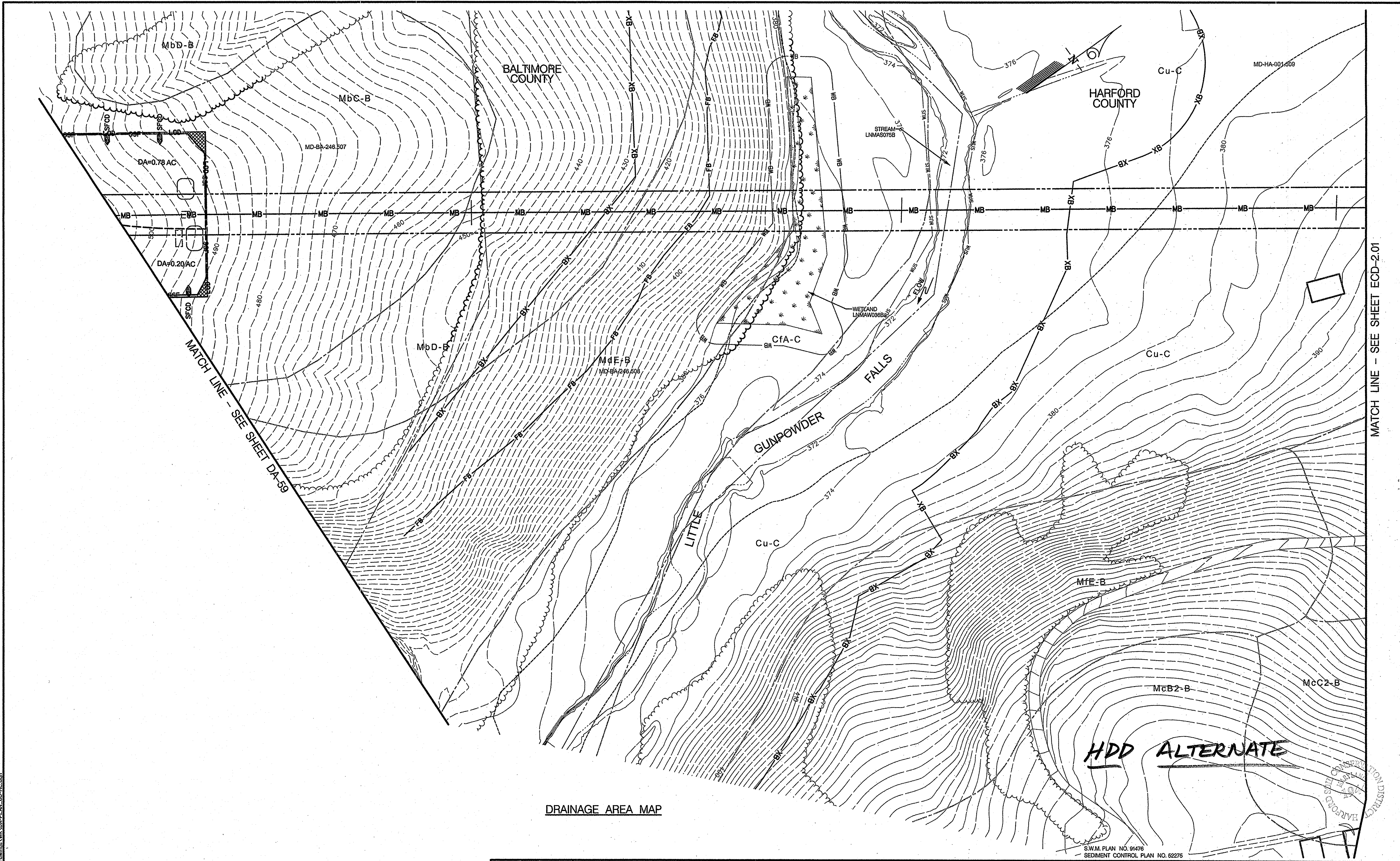
PLOTTED: 11/05/14 AM on Thursday, July 17, 2014  
BY: KIMMY WOLTER, Director PDS3 Water Erosion Control  
FILE: \\HARFORD\GIS\Projects\2014\12-NT-0433\201261660.dwg



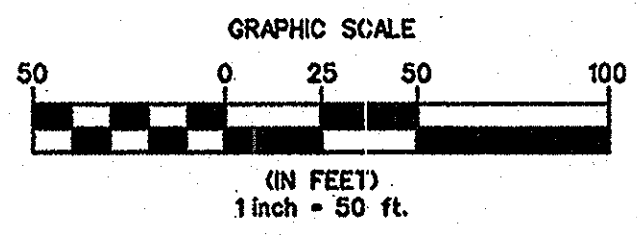
REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	SCALE
01	JULY 2014	REVISED SITE ANALYSIS AND SUMMARY OF GRADING UNITS; REVISED NOTE 8 FOR STOCKPILES	RB	N.T.S.

HARFORD COUNTY  
EROSION AND SEDIMENT CONTROL NOTES  
FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT  
BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO.  
**ECN-2.0**  
SHEET 19 OF 44  
KCI JOB NUMBER  
16-121849



DRAINAGE AREA MAP



PROFESSIONAL CERTIFICATION  
I HEREBY CERTIFY THAT THESE  
DOCUMENTS WERE PREPARED OR  
I AM A FULLY LICENSED  
PROFESSIONAL ENGINEER  
UNDER THE LAWS OF THE STATE  
OF MARYLAND, LICENSE NO. 14942  
EXPIRATION DATE 6/01/2014



**KCI**  
TECHNOLOGIES

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PLANNERS  
SCIENTISTS  
CONSTRUCTION MANAGERS

936 RIDGEBROOK ROAD  
SPARKS, MARYLAND 21152  
TELEPHONE (410) 316-7800  
FAX (410) 316-7818

**Columbia Gas Transmission**  
A NiSource Company

REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	DATE

HARFORD COUNTY  
EROSION AND SEDIMENT CONTROL DETAILS  
FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT  
BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO. **ECD-2.00**

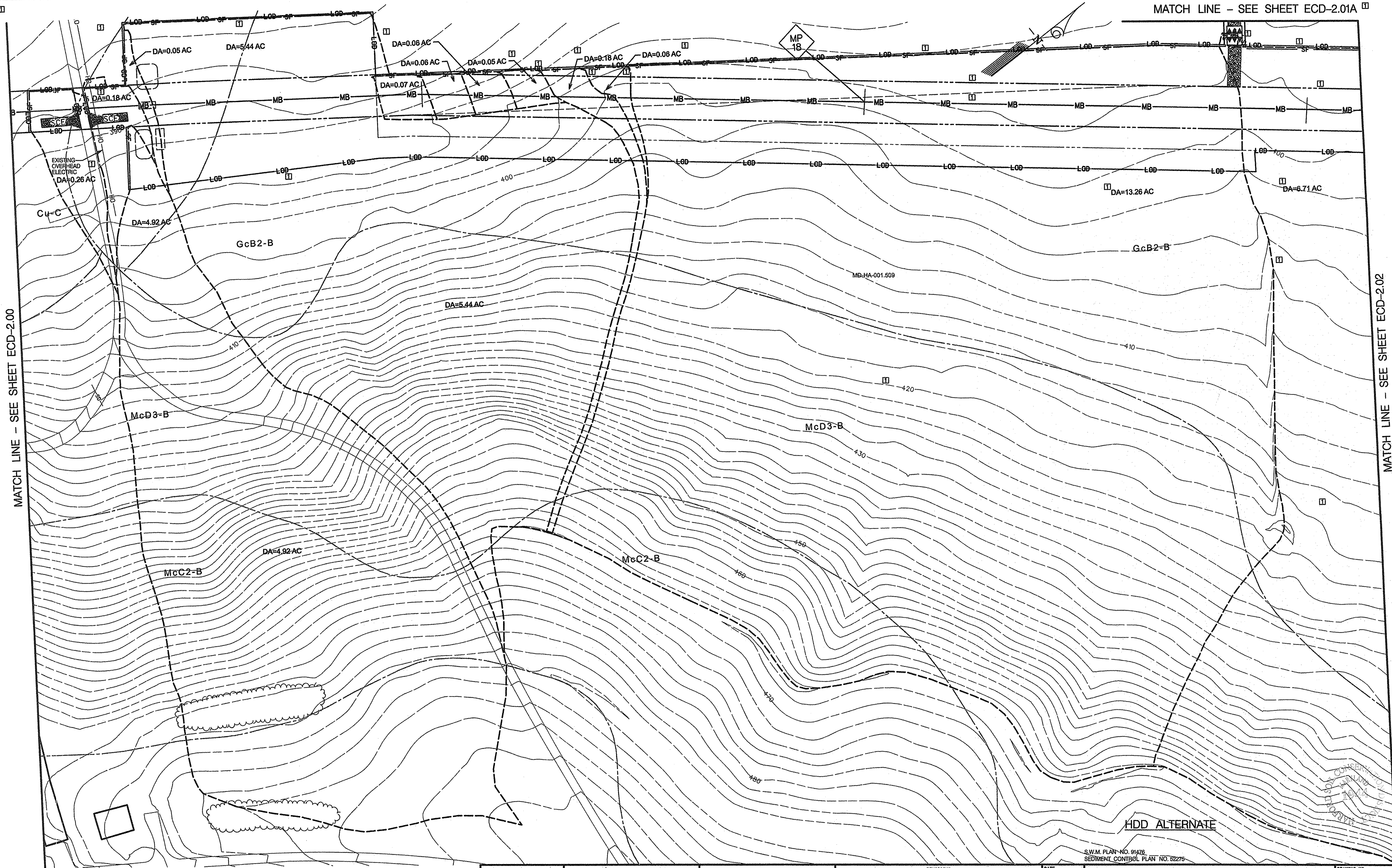
SHEET 20 OF 44  
KCI JOB NUMBER  
16-121849

PLOTTED: 04:32 PM on Friday, December 20, 2013  
BY: Katelyn Fowler, Division: P053, Water Res. GMA Emp.  
FILE: M:\2013\16121849.dwg  
DRAWING: WRF-DA-PI-AN-60-Hd.dwg

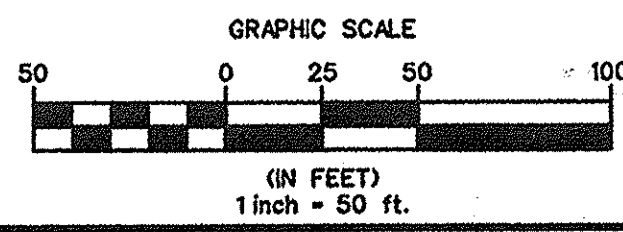
MATCH LINE - SEE SHEET ECD-2.01A

MATCH LINE - SEE SHEET ECD-2.00

MATCH LINE - SEE SHEET ECD-2.02



DRAINAGE AREA MAP



PROFESSIONAL CERTIFICATION:  
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DOCUMENTS WERE PREPARED OR  
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PROFESSIONAL ENGINEER  
UNDER THE LAWS OF THE STATE  
OF MARYLAND.  
LICENSE NO. 14942  
EXPIRATION DATE: 6/01/2016



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PLANNERS  
SCIENTISTS  
CONSTRUCTION MANAGERS

936 RIDGEBROOK ROAD  
SHARPS, MARYLAND 21152  
TELEPHONE: (410) 316-7800  
FAX: (410) 316-7818

**Columbia Gas Transmission**  
A NISource Company

REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	DATE
1	JULY 2014	REMOVED ACCESS AR-1780, ADDED ACCESS AR-1810 DA MAP IS REVISED FOR REVISED LOD, SF, SSF, AND MB	RB	JAN. 2014
				SCALE
				1" = 50'
				DESIGNED BY
				JS
				DRAWN BY
				JS

S.W.M. PLAN NO. 91476  
SEDIMENT CONTROL PLAN NO. 92275

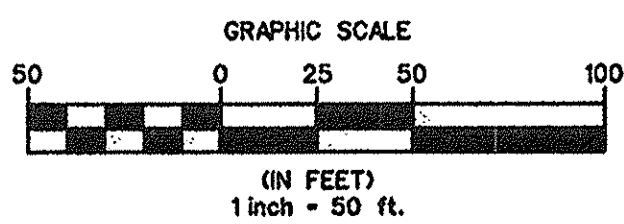
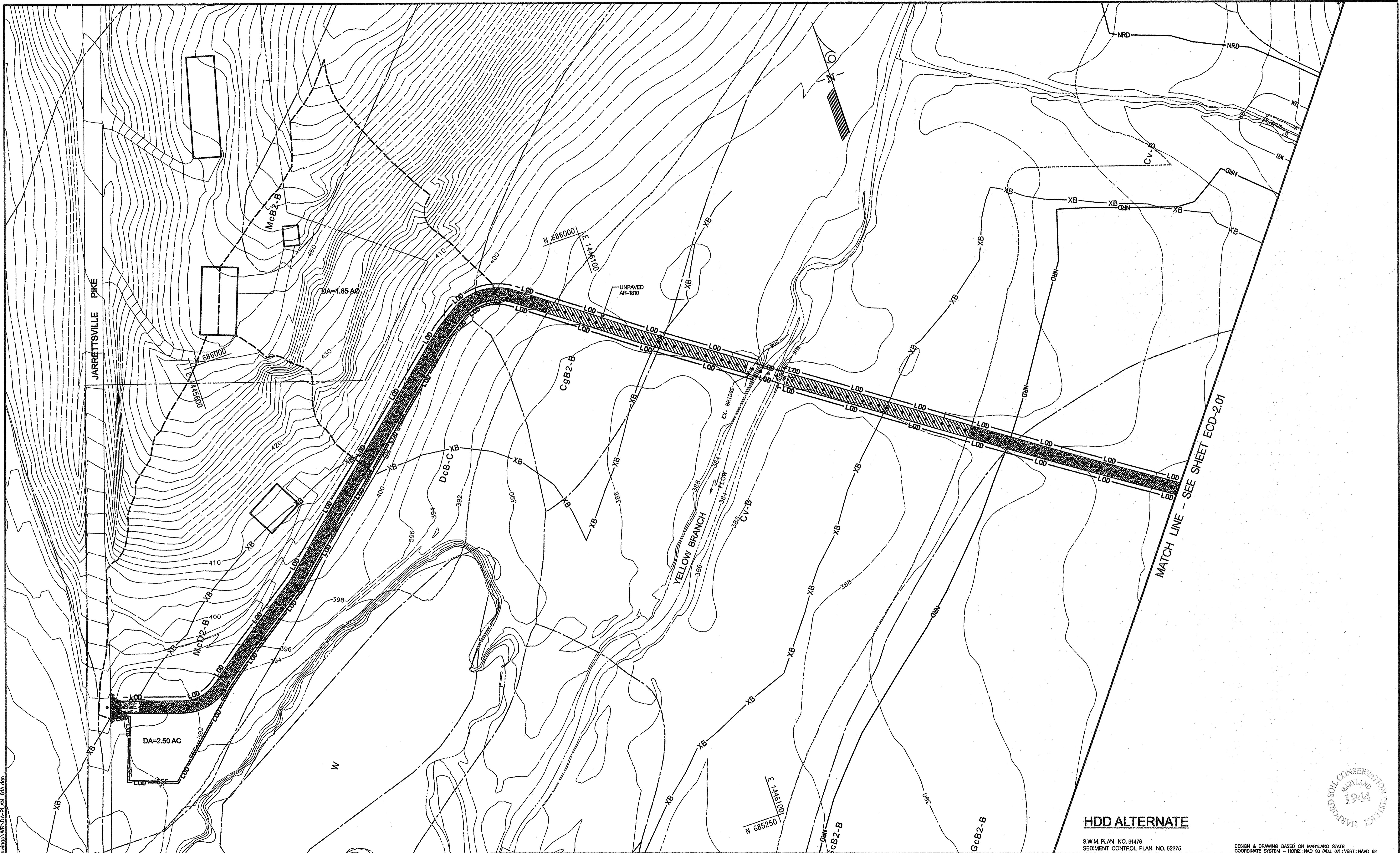
HARFORD COUNTY  
EROSION AND SEDIMENT CONTROL DETAILS  
FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT  
BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO.  
**ECD-2.01**

SHEET 21 OF 44  
KCI JOB NUMBER  
16-121849

PLOTTED: 03/23 PM on Tuesday, July 01, 2014  
By: Christopher Deibel Division: P050 Natural Res Erip  
FILE: M:\2014\16121849.dwg

PLOTTED: 05:57 PM on Tuesday, July 01, 2014  
 FILE: M:\2013\16121843\Drawings\HDDA-PLAN-51A.dwg



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 DOCUMENTS WERE PREPARED OR  
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 FIRM A FULLY LICENSED  
 PROFESSIONAL ENGINEER,  
 UNDER THE LAWS OF THE STATE  
 OF MARYLAND.  
 LICENSE NO. 14842  
 EXPIRATION DATE: 6/01/2016



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 936 RIDGEBROOK ROAD  
 SUITES, MARYLAND 21152  
 TELEPHONE: (410) 316-7800  
 FAX: (410) 316-7818

**Columbia Gas Transmission**  
 A NiSource Company

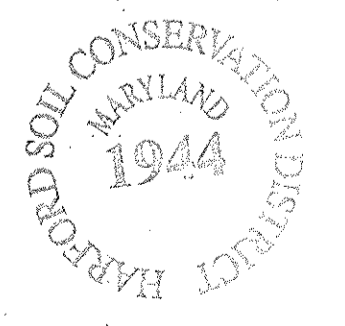
REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	JULY 2014	THIS NEW SHEET ADDED TO SHOW NEW ACCESS AR-1810	RB

**HDD ALTERNATE**

S.W.M. PLAN NO. 91476  
 SEDIMENT CONTROL PLAN NO. 52275

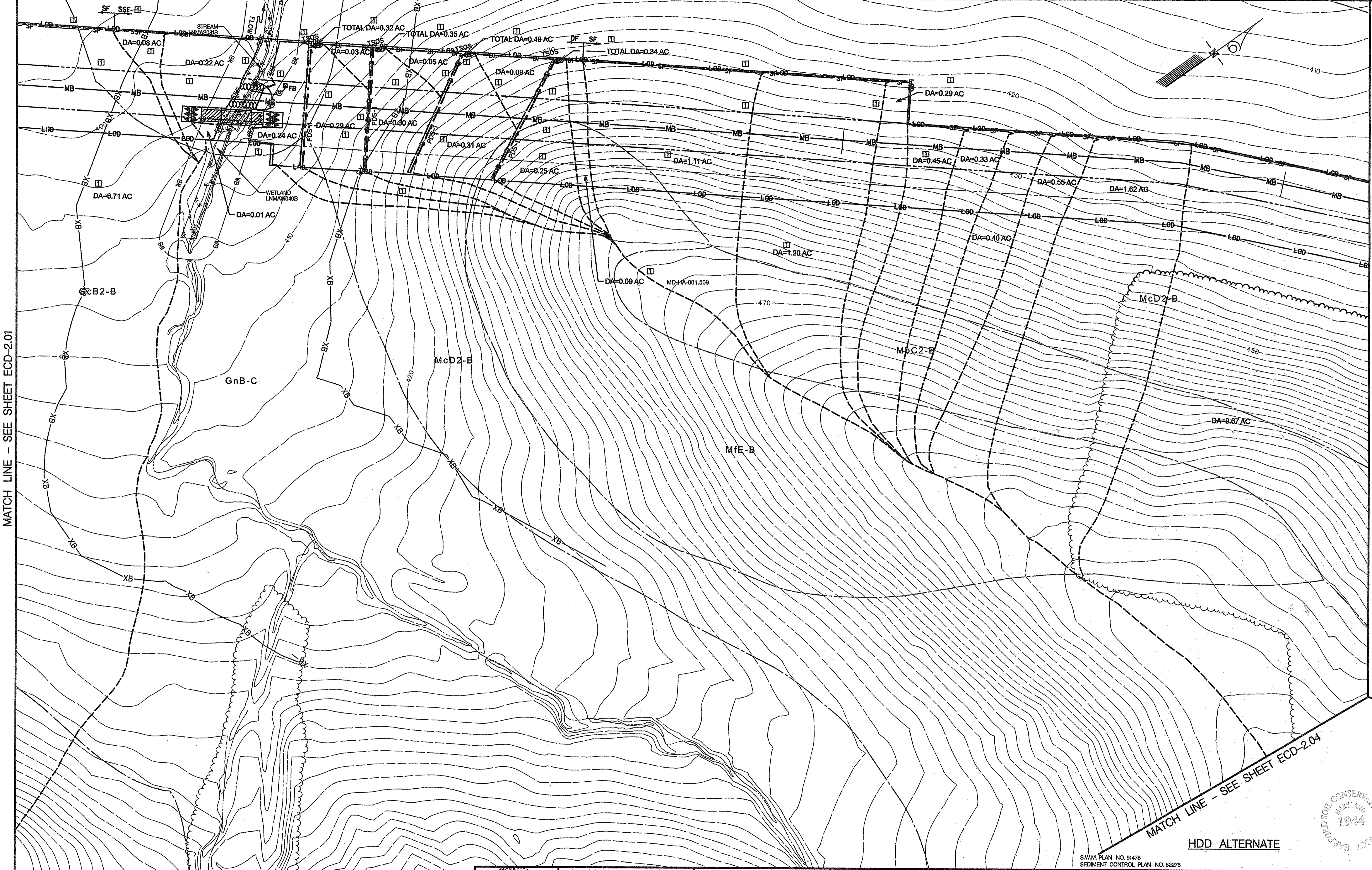
DESIGN & DRAWING BASED ON MARYLAND STATE  
 COORDINATE SYSTEM - HORIZ: NAD 83 (ADL 07); VERT: NAVD 88

HARFORD COUNTY  
 GRADING / EROSION AND SEDIMENT CONTROL PLAN  
 FOR  
 COLUMBIA GAS TRANSMISSION, LLC  
 LINE MB EXTENSION PROJECT  
 BALTIMORE & HARFORD COUNTIES, MARYLAND



DRAWING NO. **ECD-2.01A**  
 SHEET 218 OF 44  
 PCT JOB NUMBER 16-121849

PLOTTED: 03:42 PM on Tuesday, July 01, 2014  
 BY: Christopher Deibel/Division: P650, Natural Res. Emp  
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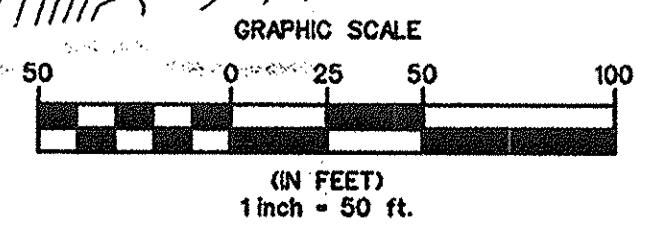


MATCH LINE - SEE SHEET ECD-2.01

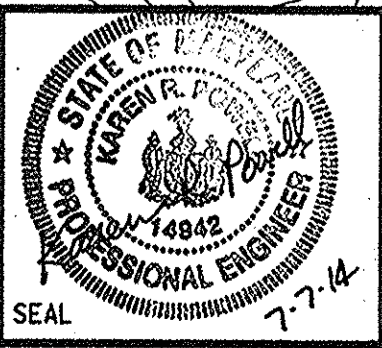
MATCH LINE - SEE SHEET ECD-2.03

MATCH LINE - SEE SHEET ECD-2.04

**DRAINAGE AREA MAP**



PROFESSIONAL CERTIFICATION  
 STATE OF MARYLAND  
 PROFESSIONAL ENGINEER  
 LICENSE NO. 14842  
 EXPIRATION DATE: 6/31/2016



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 SINGERS, MARYLAND 21152  
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 FAX: (410) 316-7818

**Columbia Gas Transmission**  
 A NISOURCE Company

REVISIONS				DATE	
NO.	DATE	DESCRIPTION	BY	DATE	SCALE
1	JULY 2014	DA MAP IS REVISED FOR REVISED LOO, SF, SSF, DF, PDS-1, AND TSOS ADDED ONE NEW PDS-1 WITH TSOS	RB	JAN. 2014	1" = 50'
				DESIGNED BY	JS
				DRAWN BY	JS

S.W.M. PLAN NO. 91476  
 SEDIMENT CONTROL PLAN NO. 52275

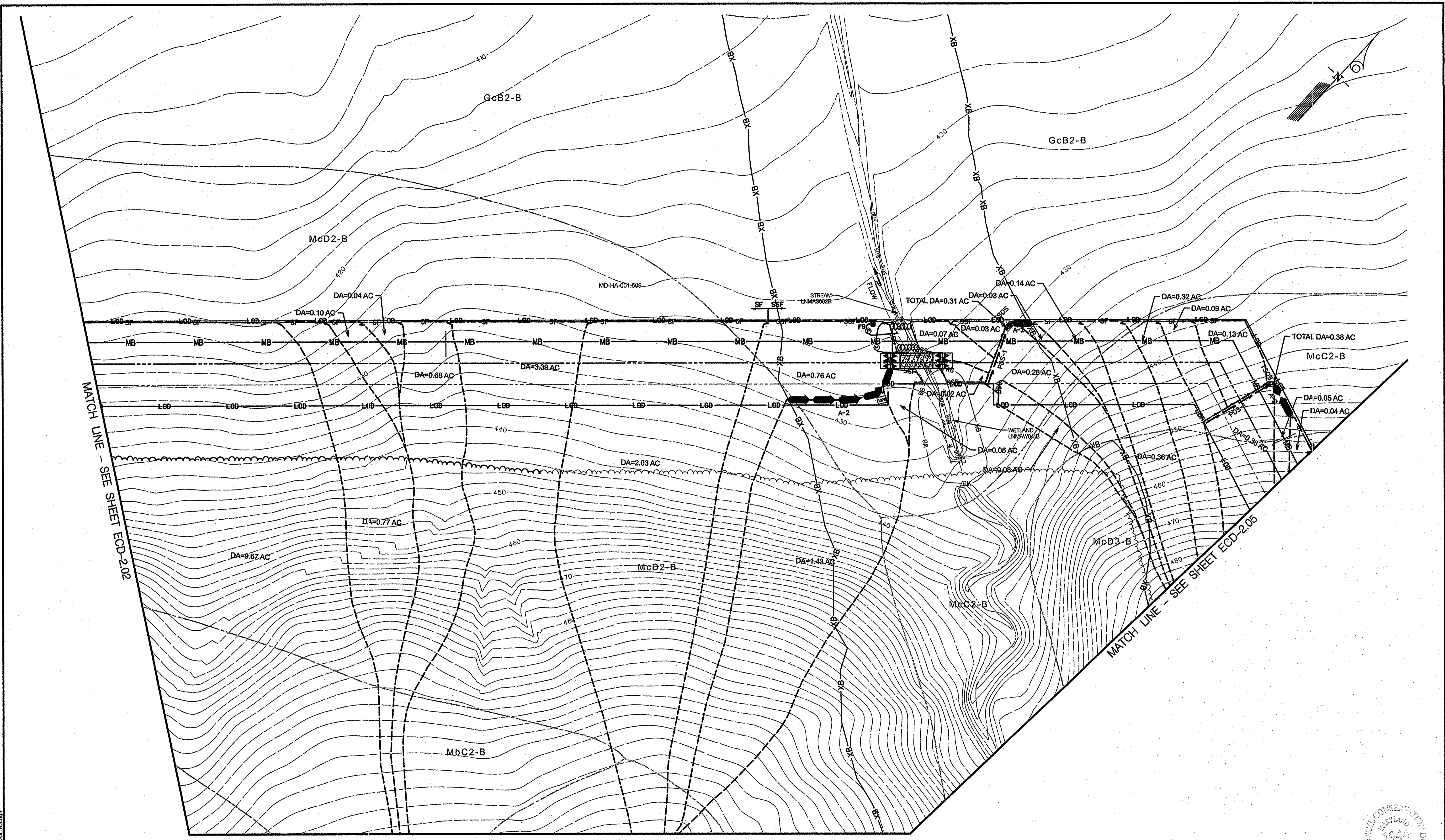
**HDD ALTERNATE**

**HARFORD COUNTY  
 EROSION AND SEDIMENT CONTROL DETAILS  
 FOR  
 COLUMBIA GAS TRANSMISSION, LLC  
 LINE MB EXTENSION PROJECT  
 BALTIMORE & HARFORD COUNTIES, MARYLAND**

DRAWING NO.  
**ECD-2.02**  
 SHEET 22 OF 44  
 KCI JOB NUMBER  
 16-121849

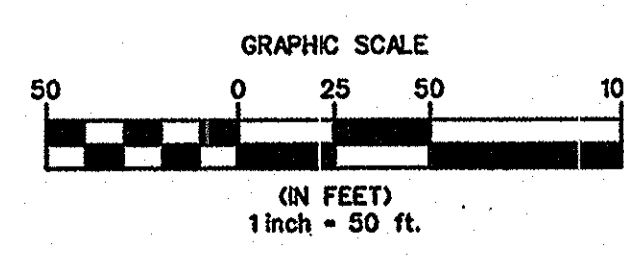




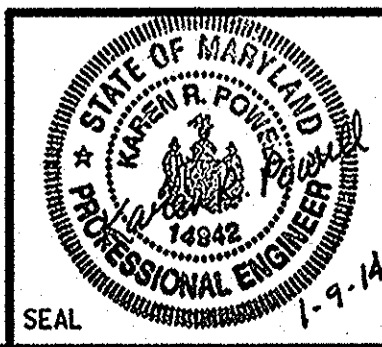


MATCH LINE - SEE SHEET ECD-2.04

DRAINAGE AREA MAP



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DOCUMENTS WERE PREPARED OR  
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I AM A FULLY LICENSED  
PROFESSIONAL ENGINEER  
GENERAL IN THE STATE  
OF MARYLAND, LICENSE NO. 14942,  
EXPIRATION DATE 6/01/2014



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SCIENTISTS  
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936 RIDGEBROOK ROAD  
SHARPS, MARYLAND 21152  
TELEPHONE: (410) 316-7800  
FAX: (410) 316-7818

**Columbia Gas Transmission**  
A NiSource Company

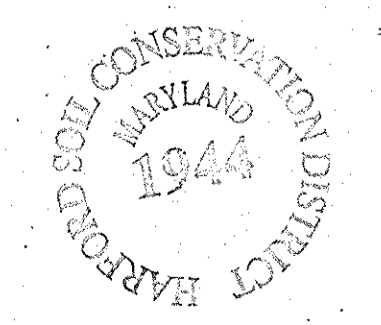
REVISIONS			
NO.	DATE	DESCRIPTION	BY

S.W.M. PLAN NO. 91476  
SEDIMENT CONTROL PLAN NO. 52275

HARFORD COUNTY  
EROSION AND SEDIMENT CONTROL DETAILS  
FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT  
BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO.  
**ECD-2.03**

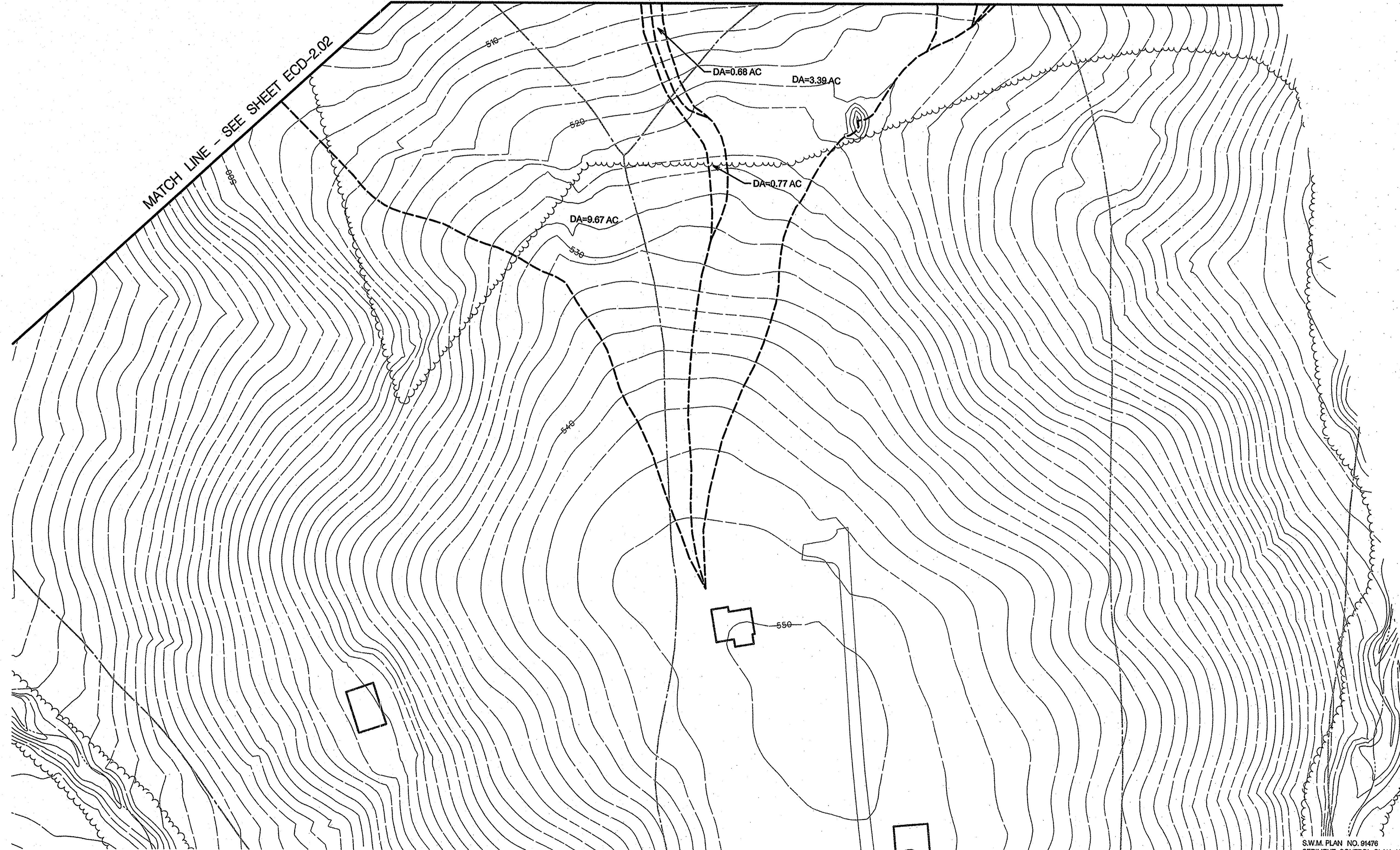
SHEET 23 OF 44  
KCI JOB NUMBER  
16-121849



PLOTTED: 04:33 PM on Friday, December 20, 2013  
 FILE: H:\A\2013\16121849\KCI\CD\16-121849-ECD-2.03.dwg  
 PLOT: 16-121849-ECD-2.03.dwg

MATCH LINE - SEE SHEET ECD-2.03

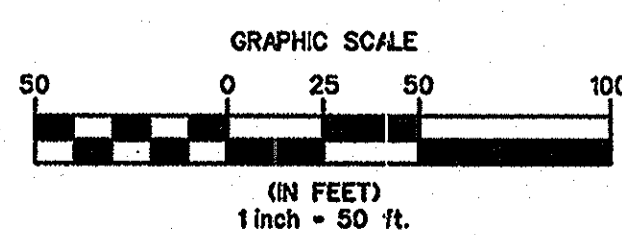
MATCH LINE - SEE SHEET ECD-2.02



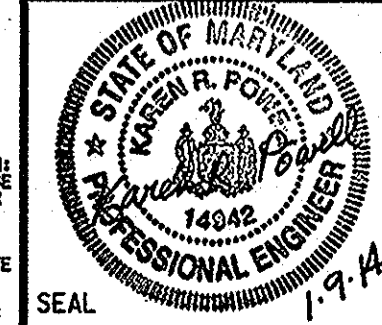
S.W.M. PLAN NO. 91476  
SEDIMENT CONTROL PLAN NO. 62275



**DRAINAGE AREA MAP**



PROFESSIONAL CERTIFICATION  
I HEREBY CERTIFY THAT THESE  
DRAWINGS WERE PREPARED OR  
APPROVED BY ME, AND THAT  
I AM A FULLY LICENSED  
PROFESSIONAL ENGINEER  
UNDER THE LAWS OF THE STATE  
OF MARYLAND.  
LICENSE NO. 14942  
EXPIRATION DATE: 6/01/2014



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936 RIDGESBROOK ROAD  
SWANSMAN, MARYLAND 21152  
TELEPHONE: (410) 316-7800  
FAX: (410) 316-7818

**Columbia Gas Transmission**  
A NiSource Company

REVISIONS			
NO.	DATE	DESCRIPTION	BY

HARFORD COUNTY  
EROSION AND SEDIMENT CONTROL DETAILS  
FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT  
BALTIMORE & HARFORD COUNTIES, MARYLAND

DESIGNED BY  
JS

DRAWN BY  
JS

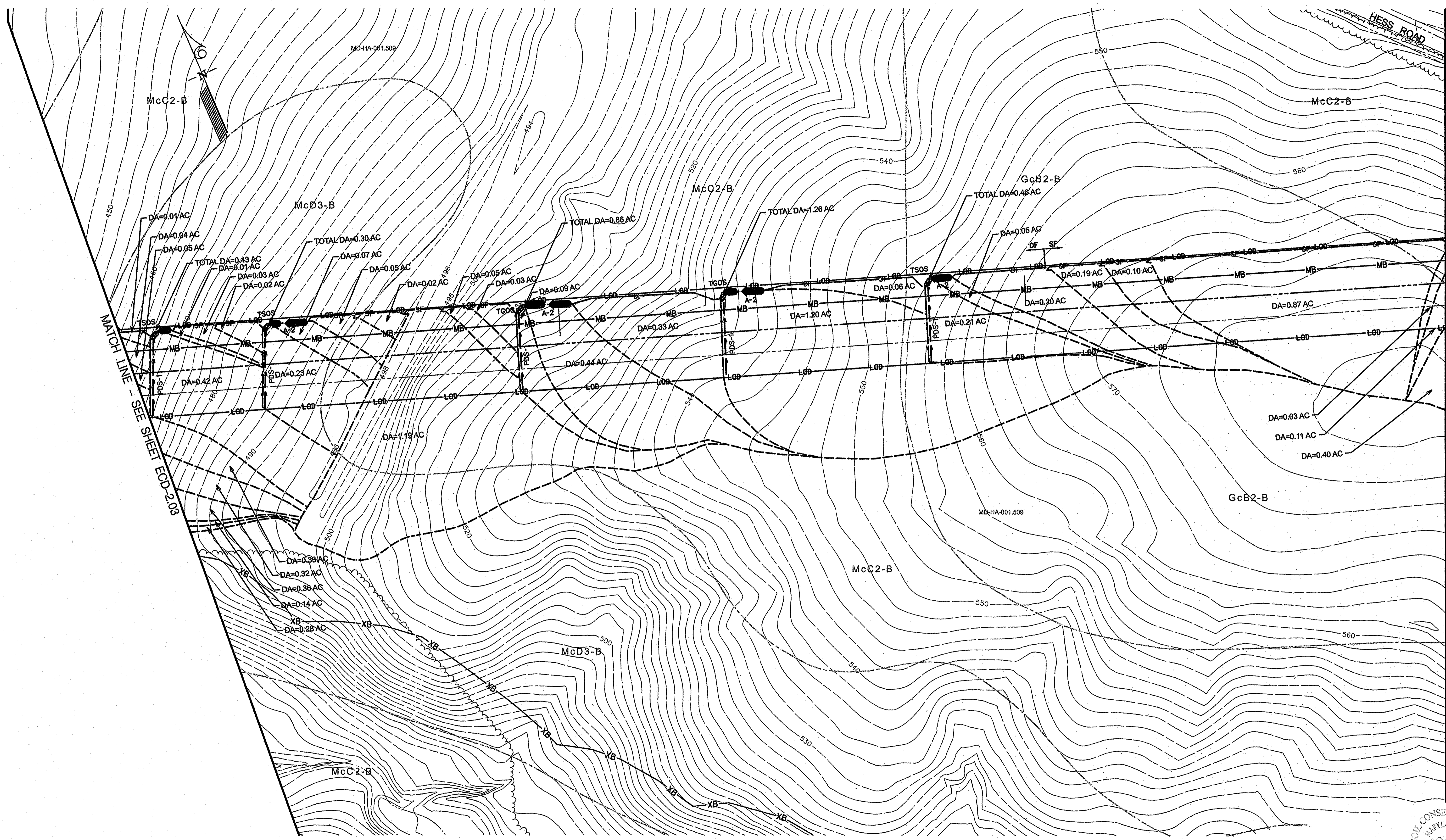
DATE  
JAN. 2014

SCALE  
1" = 50'

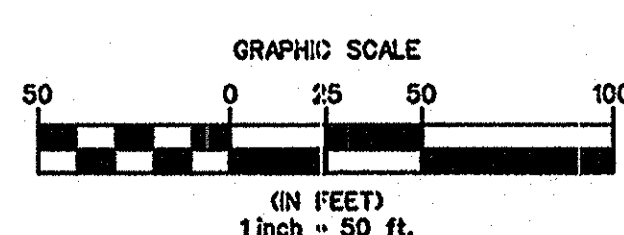
DRAWING NO.  
**ECD-2.04**

SHEET 24 OF 44  
KCI JOB NUMBER  
16-121849

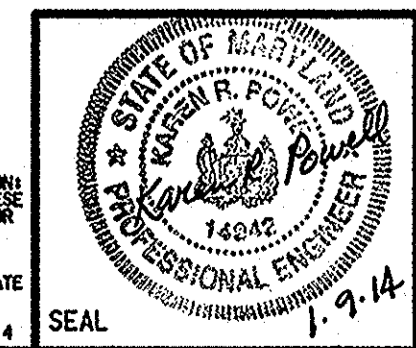
PLOTTED: 04:33 PM on Friday, December 20, 2013  
BY: Kristy Potter, Division: P053, Water Res. GMA Emp.  
FILE: M:\2013\121849\Drawings\WR-DRAIN-651.dgn



DRAINAGE AREA MAP



PROFESSIONAL CERTIFICATION  
I HEREBY CERTIFY THAT THESE  
PLANS AND SPECIFICATIONS WERE  
PREPARED BY ME OR UNDER MY  
SUPERVISION AND THAT I AM A  
LICENSED PROFESSIONAL ENGINEER  
UNDER THE LAWS OF THE STATE  
OF MARYLAND. LICENSE NO. 14842  
EXPIRATION DATE: 6/30/2014



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936 RIDGEWAY ROAD  
SARASOTA, MARYLAND 21152  
TELEPHONE: (410) 316-7800  
FAX: (410) 316-7818

**Columbia Gas Transmission**  
A NiSource Company

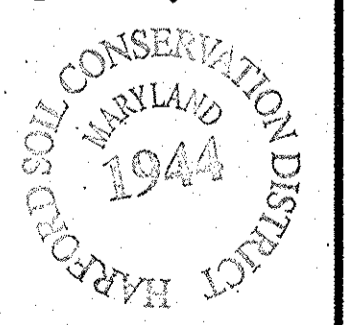
REVISIONS			
NO.	DATE	DESCRIPTION	BY

S.W.M. PLAN NO. 91476  
SEDIMENT CONTROL PLAN NO. 52275

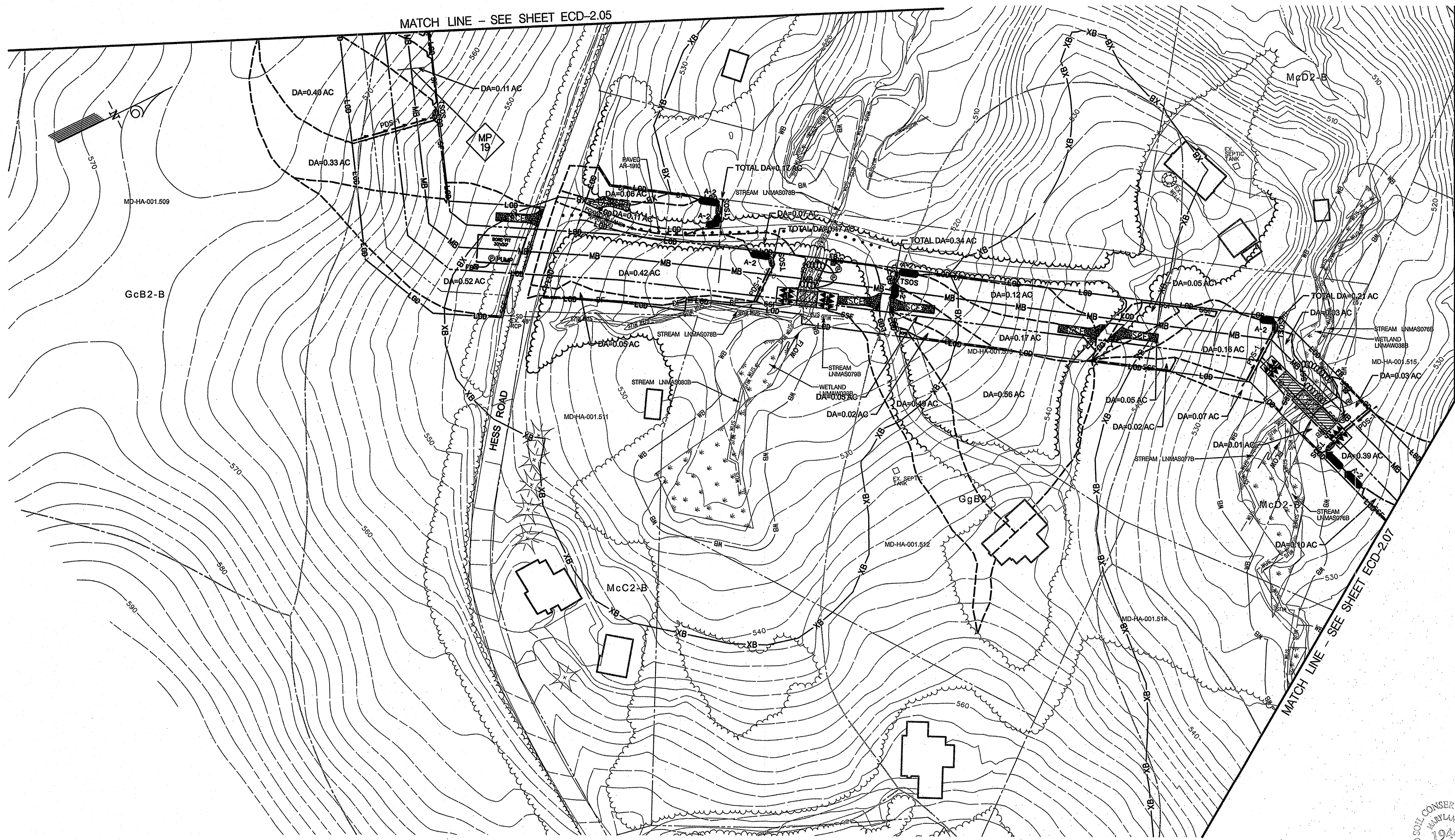
HARFORD COUNTY  
EROSION AND SEDIMENT CONTROL DETAILS  
FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT  
BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO.  
**ECD-2.05**  
SHEET 25 OF 44  
KCI JOB NUMBER  
16-121849

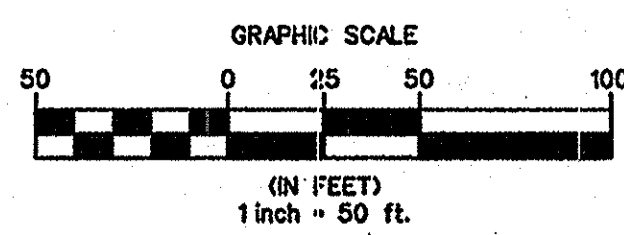
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 BY: KCI - P:\Users\jpross\My Documents\GVA\_Emp  
 FILE: M:\2013\16121849.dwg, 16-121849.dwg, 16-121849.dwg



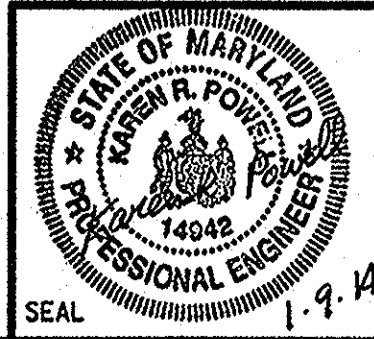
MATCH LINE - SEE SHEET ECD-2.05



DRAINAGE AREA MAP



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DOCUMENTS WERE PREPARED OR  
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PROFESSIONAL ENGINEER  
OF THE STATE OF MARYLAND  
LICENSE NO. 14842  
EXPIRATION DATE: 6/01/2014



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936 RODGERSON ROAD  
SUNNYSIDE, MARYLAND 21152  
TELEPHONE: (410) 316-7800  
FAX: (410) 316-7818

**Columbia Gas Transmission**  
A NiSource Company

REVISIONS			
NO.	DATE	DESCRIPTION	BY

S.W.M. PLAN NO. 91476  
SEDIMENT CONTROL PLAN NO. 62275

HARFORD COUNTY  
EROSION AND SEDIMENT CONTROL DETAILS  
FOR  
COLUMBIA GAS TRANSMISSION, L.L.C  
LINE MB EXTENSION PROJECT  
BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO.  
**ECD-2.06**

SHEET 26 OF 44  
KCI JOB NUMBER  
16-121849



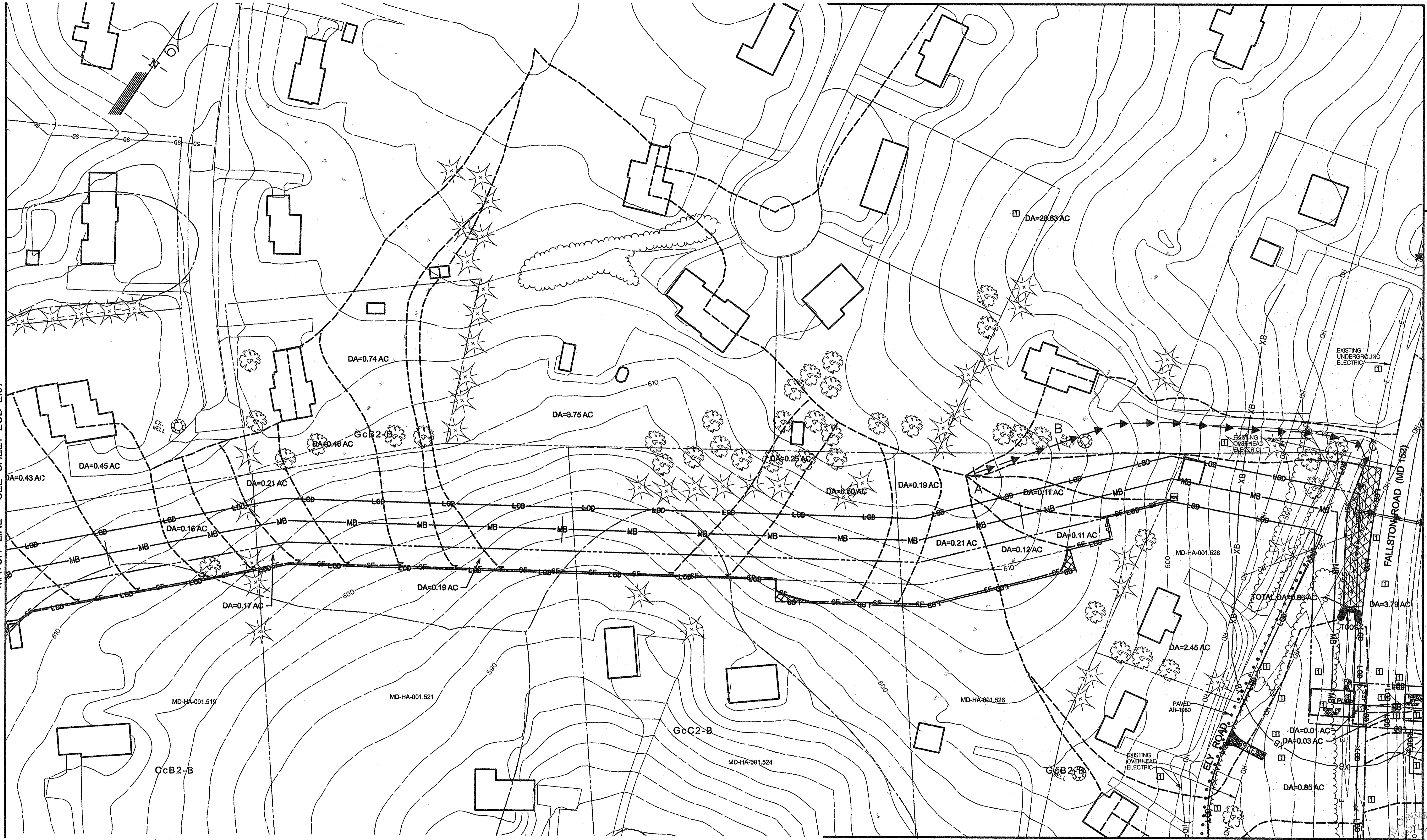
PLOTTED: 10/13/13 PM on Friday, December 20, 2013  
BY: KIMBERLY POTTER, Division PDS3, Water Res. CMA, Epp  
FILE: \\MDCORP\16121849.drowings\WR DA-PLAN\_65.dwg



MATCH LINE - SEE SHEET ECD-2.09

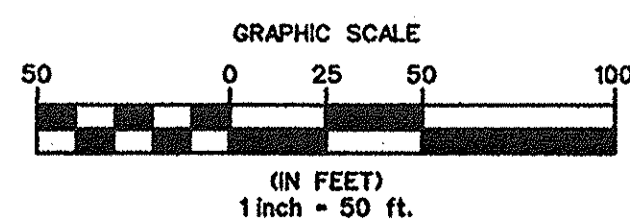
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MATCH LINE - SEE SHEET ECD-2.07



MATCH LINE - SEE SHEET ECD-2.11

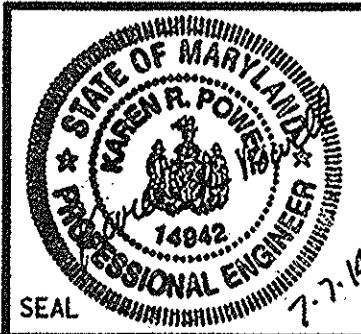
DRAINAGE AREA MAP



S.W.M. PLAN NO. 91476  
SEDIMENT CONTROL PLAN NO. 52275

PLOTTED: 10/13/14 BY: J. W. H. DATE: 10/13/14  
BY: Christopher Deibel Division: P&S, Natural Resources  
FILE: M:\2014\101314\101314.dwg

PROFESSIONAL CERTIFICATION  
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DOCUMENTS WERE PREPARED OR  
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LICENSED IN THE STATE OF  
MARYLAND, LICENSE NO. 14942  
EXPIRES 06/01/2016



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936 RIDGEBROOK ROAD  
SILVER SPRING, MARYLAND 21152  
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FAX: (410) 316-7818

**Columbia Gas Transmission**  
A NISOURCE Company

NO.	DATE	REVISIONS	DESCRIPTION	BY	DATE
1	JULY 2014	ESC PLAN AND DA MAP ARE REVISED FOR REVISION	MB ALIGNMENT AT MD 152.	RB	JAN. 2014
		ADDED EXISTING UTILITIES AT STAGING AREA #12B			

SCALE  
1" = 50'

DESIGNED BY  
JS

DRAWN BY  
JS

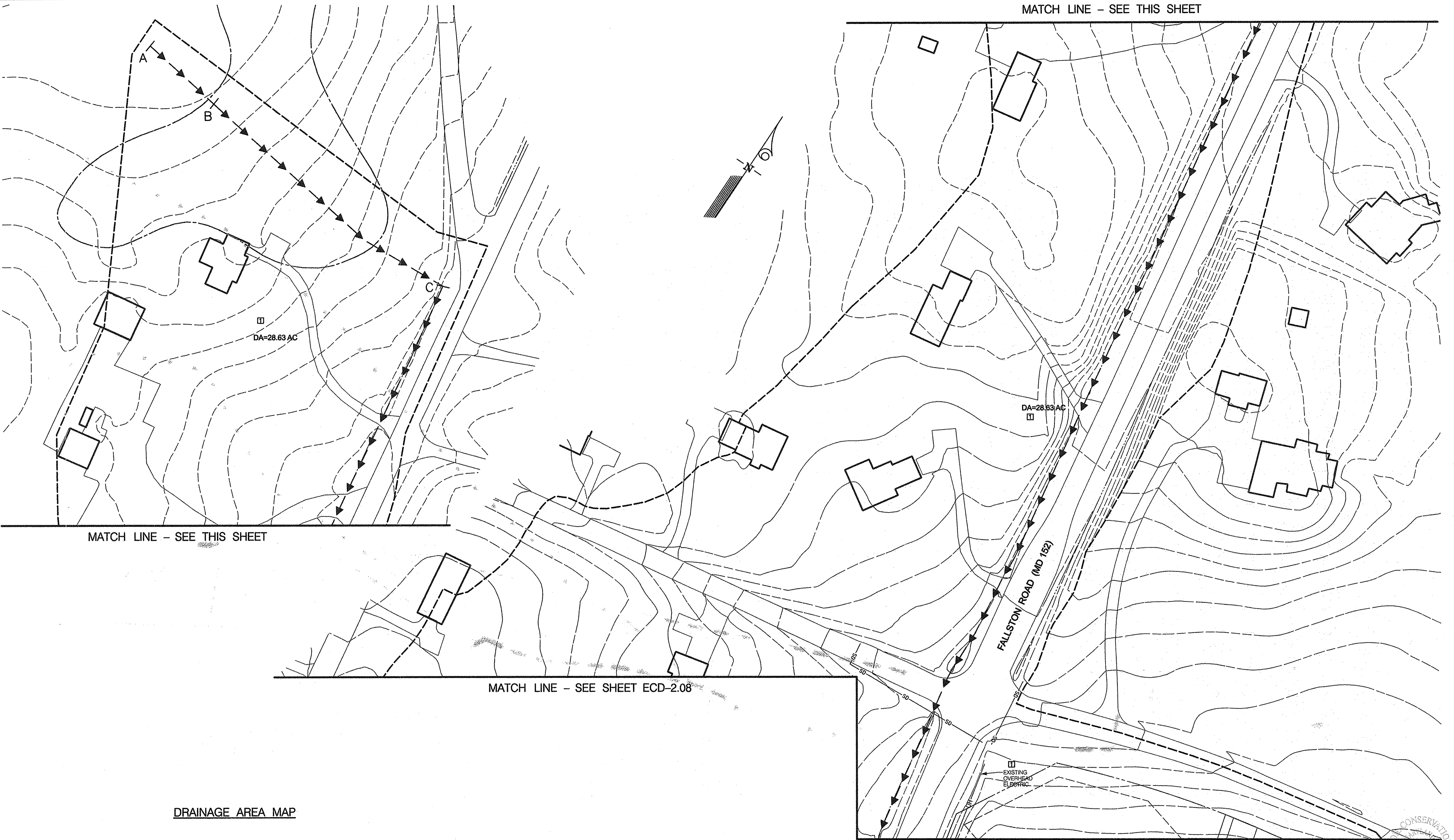
HARFORD COUNTY  
EROSION AND SEDIMENT CONTROL DETAILS

FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT  
BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO.  
**ECD-2.08**

SHEET 28 OF 44  
PLOT JOB NUMBER  
16-121849

MATCH LINE - SEE THIS SHEET

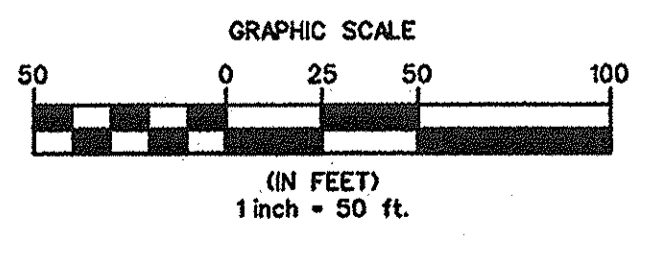


MATCH LINE - SEE THIS SHEET

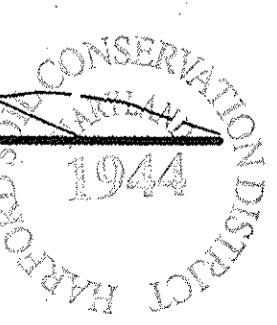
MATCH LINE - SEE SHEET ECD-2.08

MATCH LINE - SEE SHEET ECD-2.10A

**DRAINAGE AREA MAP**

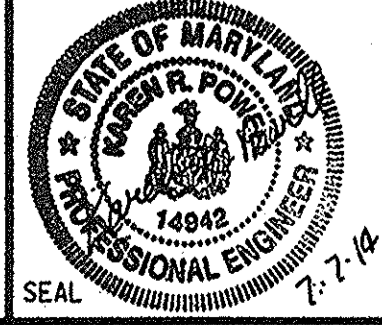


S.W.M. PLAN NO. 91476  
SEDIMENT CONTROL PLAN NO. 52275



PLOTTED: 03:55 PM on Tuesday, July 01, 2014  
 BY: C:\Users\p1040\AppData\Local\Temp\16121849.dwg  
 FILE: M:\2014\16121849.dwg

PROFESSIONAL CERTIFICATION  
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 DOCUMENTS WERE PREPARED OR  
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 PROFESSIONAL ENGINEER  
 UNDER THE LAWS OF THE STATE  
 OF MARYLAND.  
 LICENSE NO. 14942  
 EXPIRATION DATE: 6/01/2016



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 CONSTRUCTION MANAGERS  
 936 RIDGEBROOK ROAD  
 SINGAS, MARYLAND 21152  
 TELEPHONE: (410) 316-7800  
 FAX: (410) 316-7818

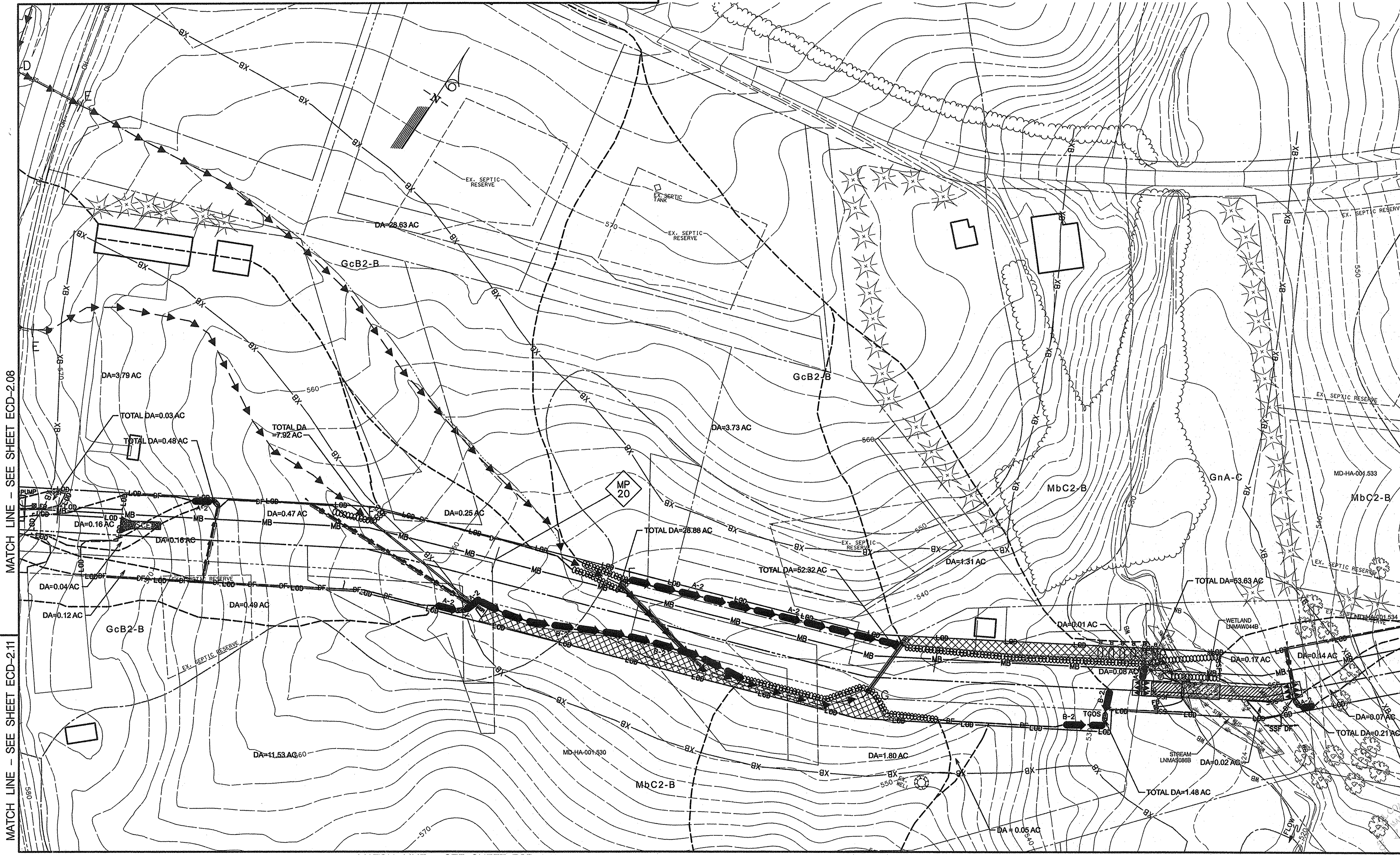
**Columbia Gas Transmission**  
 A NiSource Company

REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	DATE
1	JULY 2014	ESC PLAN AND DA MAP ARE REVISED FOR REVISED MB ALIGNMENT	RB	JAN. 2014

HARFORD COUNTY  
 EROSION AND SEDIMENT CONTROL DETAILS  
 FOR  
 COLUMBIA GAS TRANSMISSION, LLC  
 LINE MB EXTENSION PROJECT  
 BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO.  
**ECD-2.09**  
 SHEET 29 OF 44  
 RCT JOB NUMBER  
 16-121849

MATCH LINE - SEE SHEET ECD-2.09



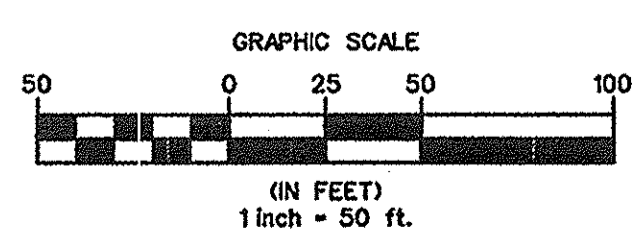
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MATCH LINE - SEE SHEET ECD-2.11

MATCH LINE - SEE SHEET ECD-2.12

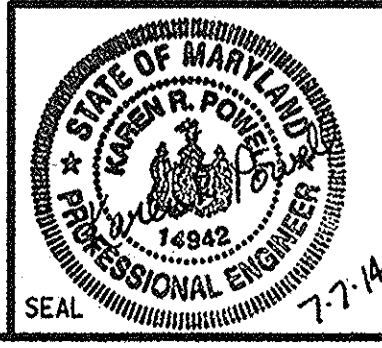
MATCH LINE - SEE SHEET ECD-2.11

S.W.M. PLAN NO. 91476  
SEDIMENT CONTROL PLAN NO. 52275



### DRAINAGE AREA MAP

PROFESSIONAL CERTIFICATION  
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DOCUMENTS WERE PREPARED OR  
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I AM A FULLY LICENSED  
PROFESSIONAL ENGINEER  
UNDER THE LAWS OF THE STATE  
OF MARYLAND.  
LICENSE NO. 14942  
EXPIRATION DATE: 8/01/2016



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CONSTRUCTION MANAGERS

936 RIDGEBROOK ROAD  
SHARPS, MARYLAND 21152  
TELEPHONE: (410) 316-7800  
FAX: (410) 316-7818

**Columbia Gas Transmission**  
A NiSource Company

REVISIONS				DATE	
NO.	DATE	DESCRIPTION	BY	DATE	
1	JULY 2014	ESC PLAN AND DA MAP ARE REVISED FOR REVISED MB ALIGNMENT. THIS NEW DWG. NO. ECD-2.10A REPLACES DWG. NO. ECD-2.10. DWG. NO. ECD-2.10 IS REMOVED.	RB	JULY 2014	

HARFORD COUNTY  
EROSION AND SEDIMENT CONTROL DETAILS  
FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT  
BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO. **ECD-2.10A**

SHEET 30 OF 44  
KCI JOB NUMBER  
16-121849

PLOTTED: 11:08 PM on Monday, July 07, 2014  
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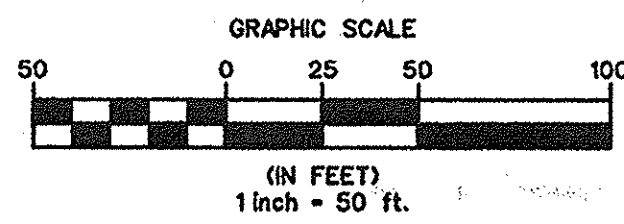


MATCH LINE - SEE SHEET ECD-2.08

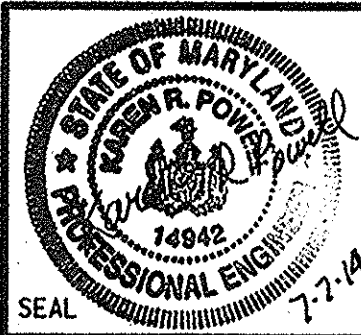
MATCH LINE - SEE SHEET ECD-2.10A



DRAINAGE AREA MAP



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. 14942  
 EXPIRATION DATE: 6/01/2016



**KCI**  
 TECHNOLOGIES

ENGINEERS  
 PLANNERS  
 SCIENTISTS  
 CONSTRUCTION MANAGERS

936 RIDGEBROOK ROAD  
 SPARKS, MARYLAND 21152  
 TELEPHONE: (410) 316-7800  
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**Columbia Gas Transmission**  
 A NiSource Company

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NO.	DATE	DESCRIPTION	BY	DATE	SCALE	DESIGNED BY	DRAWN BY
[1]	JULY 2014	ESC PLAN AND DA MAP ARE REVISED FOR REVISED MB ALIGNMENT	RB	JAN. 2014	1" = 50'	JS	JS

S.W.M. PLAN NO. 91476  
 SEDIMENT CONTROL PLAN NO. 52275

HARFORD COUNTY  
 EROSION AND SEDIMENT CONTROL DETAILS  
 FOR  
**COLUMBIA GAS TRANSMISSION, LLC**  
 LINE MB EXTENSION PROJECT  
 BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO.  
**ECD-2.11**  
 SHEET 31 OF 44  
 KCI JOB NUMBER  
 16-121849



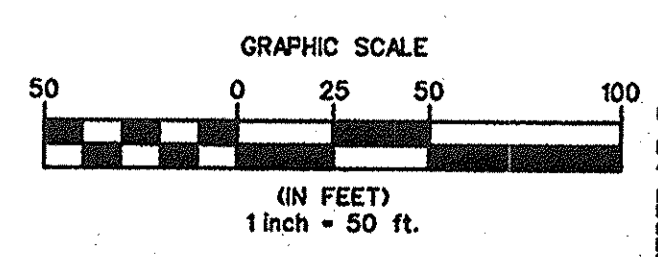
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MATCH LINE - SEE SHEET ECD-2.10A

MATCH LINE - SEE SHEET ECD-2.13

DRAINAGE AREA MAP



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EXPIRATION DATE: 6/01/2016



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DRAWN BY: JS

S.W.M. PLAN NO. 91476  
SEDIMENT CONTROL PLAN NO. 62275

HARFORD COUNTY  
EROSION AND SEDIMENT CONTROL DETAILS  
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LINE MB EXTENSION PROJECT  
BALTIMORE & HARFORD COUNTIES, MARYLAND

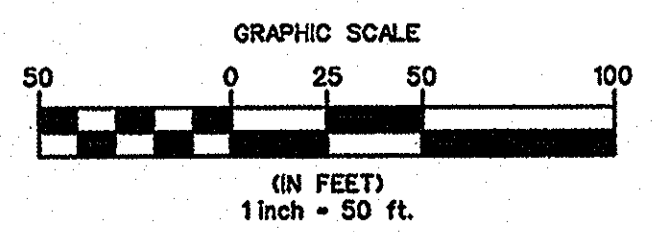
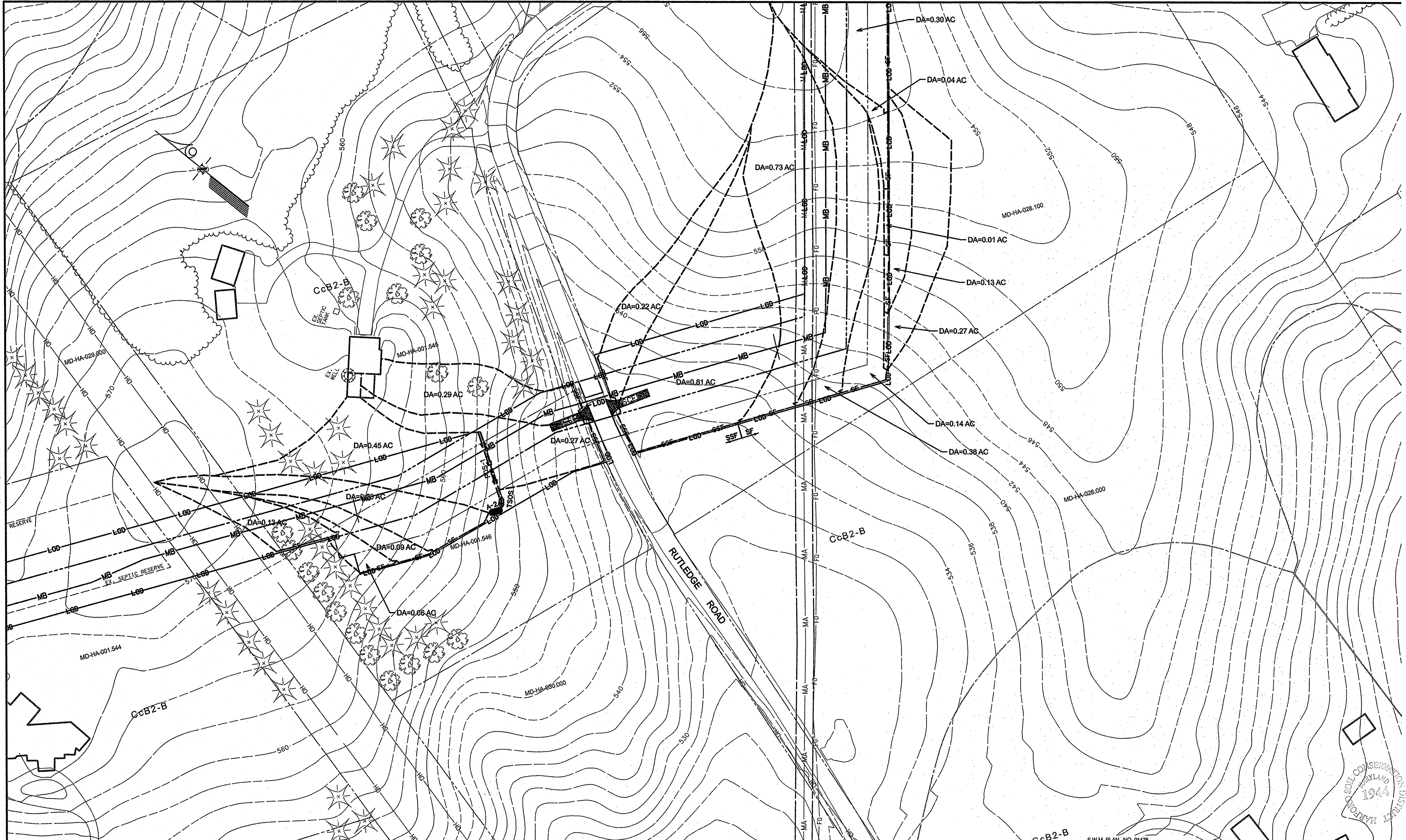
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SHEET 32 OF 44  
KCI JOB NUMBER  
16-121849



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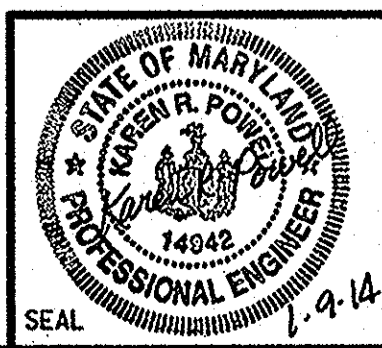
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MATCH LINE - SEE SHEET ECD-2.12



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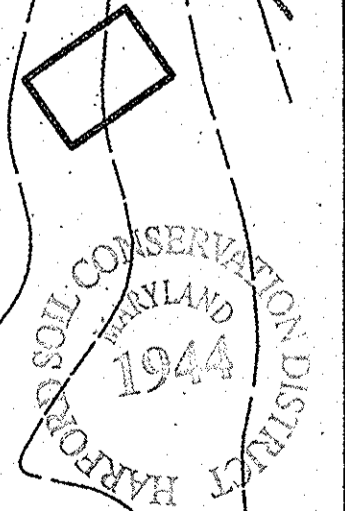
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SEDIMENT CONTROL PLAN NO. 62275

HARFORD COUNTY  
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COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT  
BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO.  
**ECD-2.13**  
SHEET 33 OF 44  
KCI JOB NUMBER  
16-121849

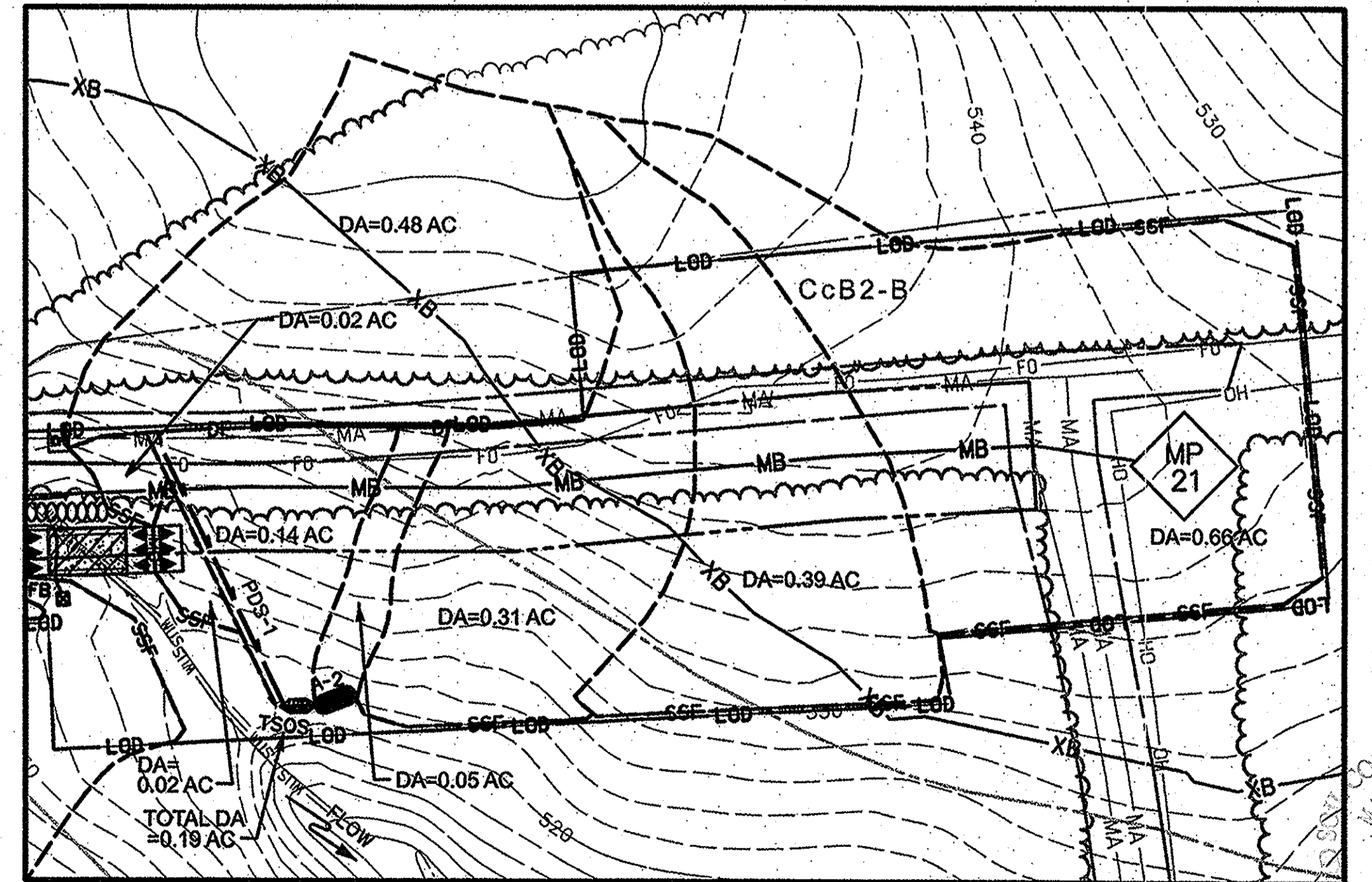
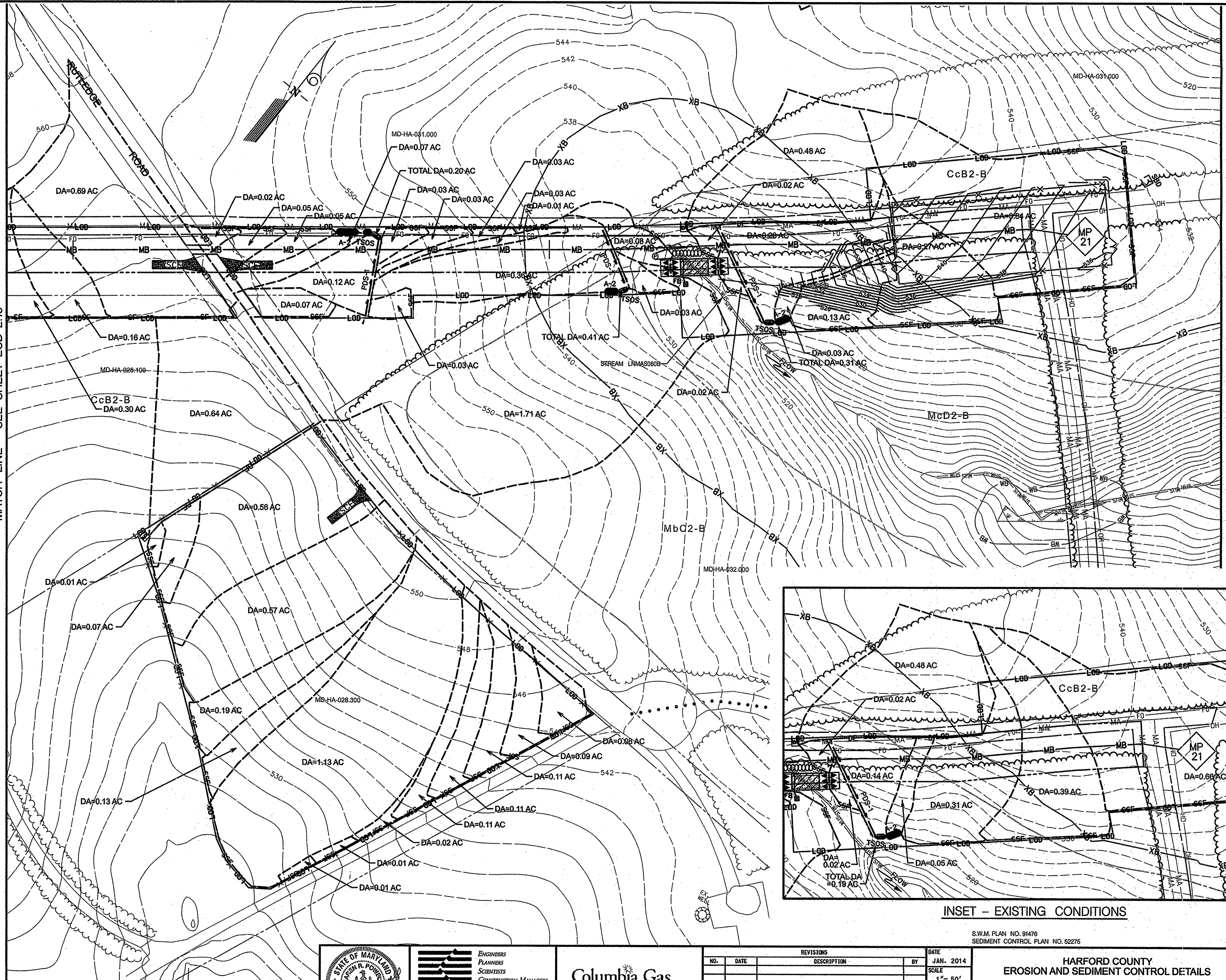
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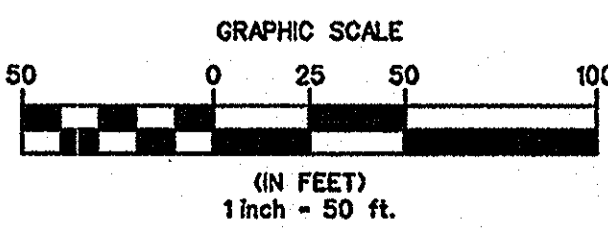
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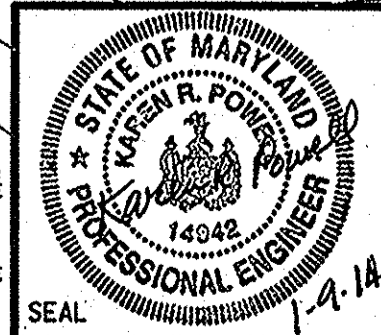


INSET - EXISTING CONDITIONS



DRAINAGE AREA MAP

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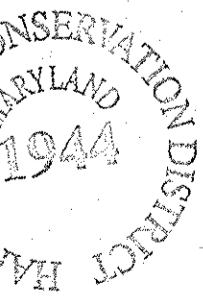
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NO.	DATE	REVISIONS DESCRIPTION	BY	DATE

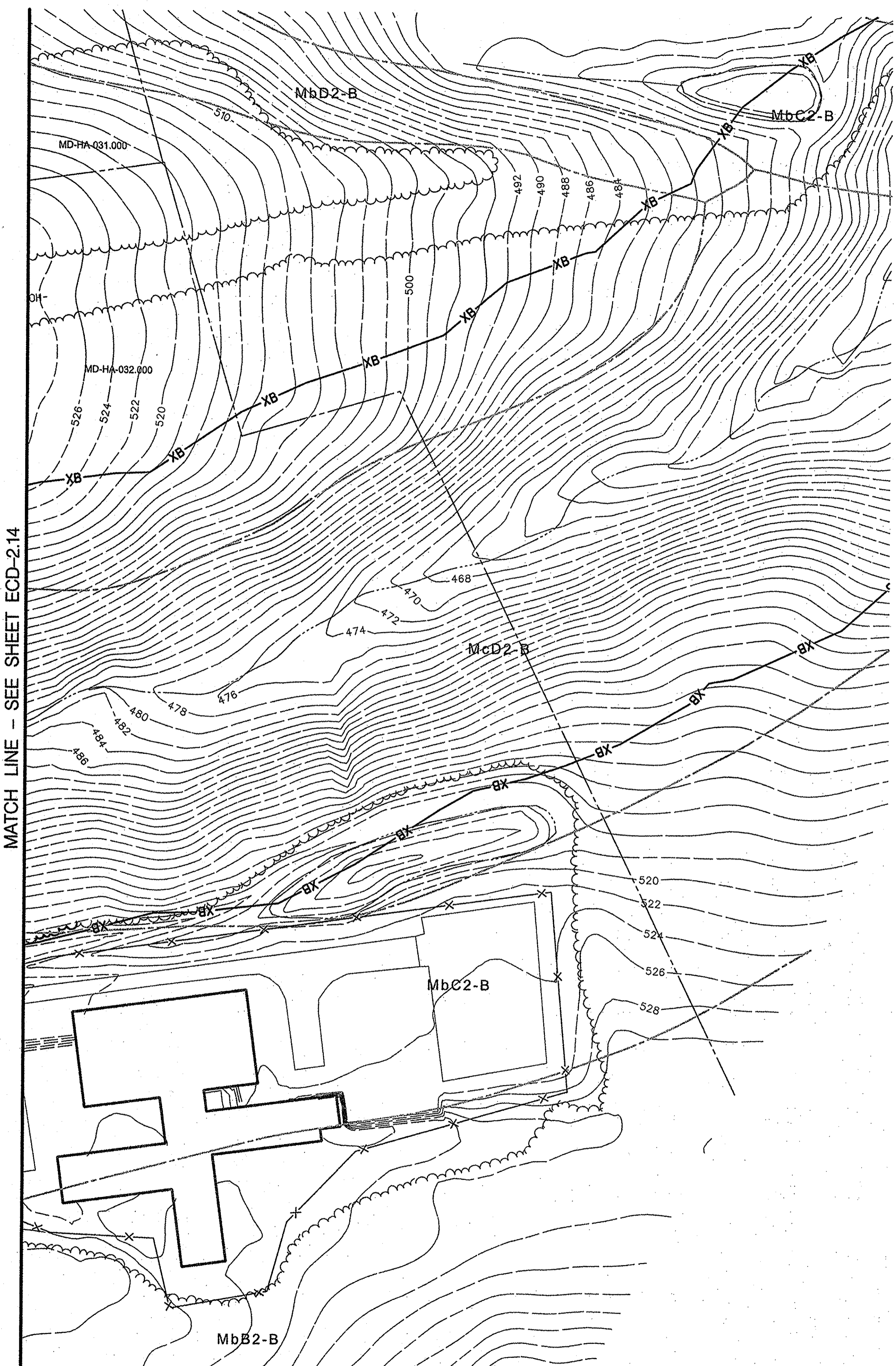
S.W.M. PLAN NO. 91476  
 SEDIMENT CONTROL PLAN NO. 52275

**HARFORD COUNTY**  
**EROSION AND SEDIMENT CONTROL DETAILS**  
 FOR  
**COLUMBIA GAS TRANSMISSION, LLC**  
**LINE MB EXTENSION PROJECT**  
 BALTIMORE & HARFORD COUNTIES, MARYLAND

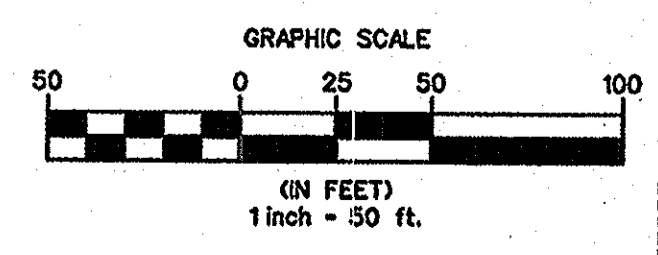


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 SHEET 34 OF 44  
 KCI JOB NUMBER  
 16-121849

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DRAINAGE AREA MAP



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 FAX: (410) 316-7818

**Columbia Gas Transmission**  
 A NiSource Company

REVISIONS			
NO.	DATE	DESCRIPTION	BY

S.W.M. PLAN NO. 91476  
 SEDIMENT CONTROL PLAN NO. 52275

HARFORD COUNTY  
 EROSION AND SEDIMENT CONTROL DETAILS  
 FOR  
 COLUMBIA GAS TRANSMISSION, LLC  
 LINE MB EXTENSION PROJECT  
 BALTIMORE & HARFORD COUNTIES, MARYLAND



DRAWING NO.  
**ECD-2.15**  
 SHEET 35 OF 44  
 RCT JOB NUMBER  
 16-121849

B-4 STANDARDS AND SPECIFICATIONS

FOR VEGETATIVE STABILIZATION

Definition

Using vegetation as cover to protect exposed soil from erosion.

Purpose

To promote the establishment of vegetation on exposed soil.

Conditions Where Practice Applies

On all disturbed areas not stabilized by other methods. This specification is divided into sections on incremental stabilization; soil preparation, soil amendments and topsoiling; seeding and mulching; temporary stabilization; and permanent stabilization.

Effects on Water Quality and Quantity

Stabilization practices are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, thereby reducing sediment loads and runoff to downstream areas.

Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Over time, vegetation will increase organic matter content and improve the water holding capacity of the soil and subsequent plant growth.

Vegetation will help reduce the movement of sediment, nutrients, and other chemicals carried by runoff to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present within the root zone.

Sediment control practices must remain in place during grading, seedbed preparation, seeding, mulching, and vegetative establishment.

Adequate Vegetative Establishment

Inspect seeded areas for vegetative establishment and make necessary repairs, replacements, and reseedings within the planting season.

- 1. Adequate vegetative stabilization requires 95 percent groundcover.
2. If an area has less than 40 percent groundcover, restabilize following the original recommendations for lime, fertilizer, seedbed preparation, and seeding.
3. If an area has between 40 and 94 percent groundcover, over-seed and fertilize using half of the rates originally specified.
4. Maintenance fertilizer rates for permanent seeding are shown in Table B.6.

B.9

B-4.1 STANDARDS AND SPECIFICATIONS

FOR INCREMENTAL STABILIZATION

Definition

Establishment of vegetative cover on cut and fill slopes.

Purpose

To provide timely vegetative cover on cut and fill slopes as work progresses.

Conditions Where Practice Applies

Any cut or fill slope greater than 15 feet in height. This practice also applies to stockpiles.

Criteria

- A. Incremental Stabilization - Cut Slopes
1. Excavate and stabilize cut slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all cut slopes as the work progresses.
2. Construction sequence example (Refer to Figure B.1):
a. Construct and stabilize all temporary swales or dikes that will be used to convey runoff around the excavation.
b. Perform Phase 1 excavation, prepare seedbed, and stabilize.
c. Perform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase 1 areas as necessary.
d. Perform final phase excavation, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once excavation has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

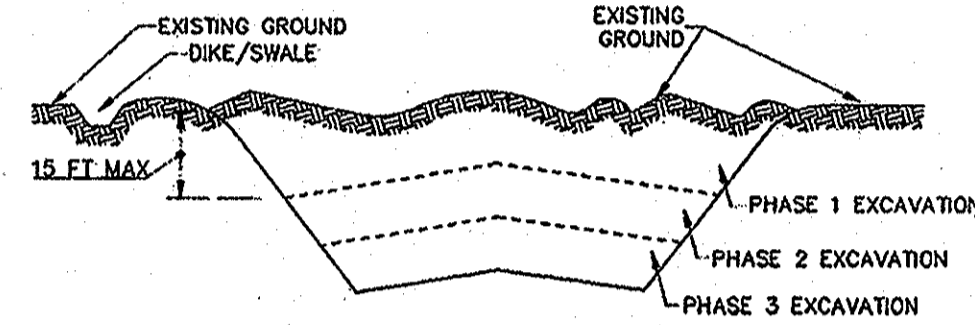


Figure B.1: Incremental Stabilization - Cut

B.10

B. Incremental Stabilization - Fill Slopes

- 1. Construct and stabilize fill slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all slopes as the work progresses.
2. Stabilize slopes immediately when the vertical height of a lift reaches 15 feet, or when the grading operation ceases as prescribed in the plans.
3. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
4. Construction sequence example (Refer to Figure B.2):
a. Construct and stabilize all temporary swales or dikes that will be used to divert runoff around the fill. Construct silt fence on low side of fill unless other methods shown on the plans address this area.
b. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
c. Place Phase 1 fill, prepare seedbed, and stabilize.
d. Place Phase 2 fill, prepare seedbed, and stabilize.
e. Place final phase fill, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once the placement of fill has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

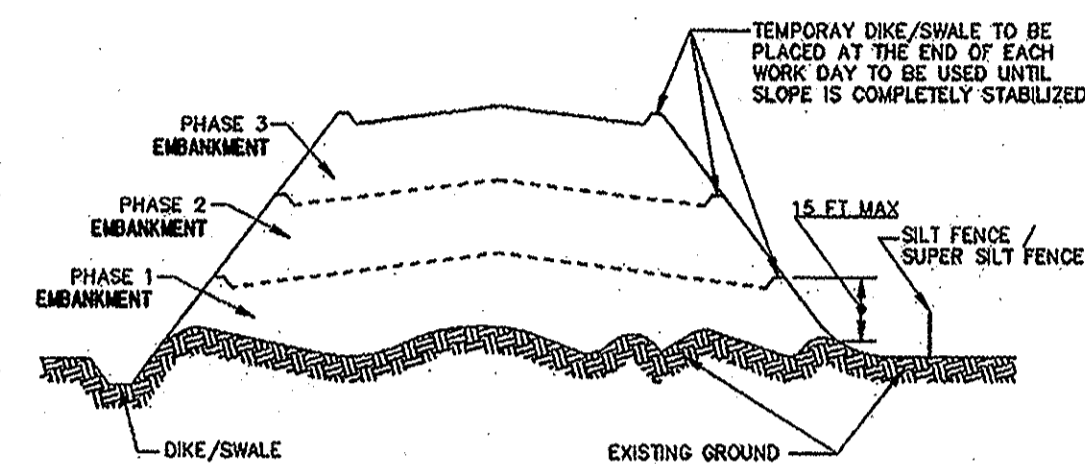


Figure B.2: Incremental Stabilization - Fill

B.11

B-4.2 STANDARDS AND SPECIFICATIONS

FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

Definition

The process of preparing the soils to sustain adequate vegetative stabilization.

Purpose

To provide a suitable soil medium for vegetative growth.

Conditions Where Practice Applies

Where vegetative stabilization is to be established.

Criteria

- A. Soil Preparation
1. Temporary Stabilization
a. Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.
b. Apply fertilizer and lime as prescribed on the plans.
c. Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.
2. Permanent Stabilization
a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
i. Soil pH between 6.0 and 7.0.
ii. Soluble salts less than 500 parts per million (ppm).
iii. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: If loess is to be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
iv. Soil contains 1.5 percent minimum organic matter by weight.
v. Soil contains sufficient pore space to permit adequate root penetration.
b. Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
c. Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.

B.12

- d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.
e. Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.

B. Topsoiling

- 1. Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is 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.
2. Topsoil salvaged from an existing site may be used provided 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-NRCS.
3. Topsoiling 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.
4. Areas having slopes steeper than 2:1 require special consideration and design.
5. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:
a. Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of clinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1 1/4 inches in diameter.
b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.
c. 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.
6. Topsoil Application
a. Erosion and sediment control practices must be maintained when applying topsoil.
b. Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to 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 must be corrected in order to prevent the formation of depressions or water pockets.
c. Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading

B.13

and seedbed preparation.

C. Soil Amendments (Fertilizer and Lime Specifications)

- 1. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
2. Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.
3. Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydroseeding) which contains at least 30 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 98 to 100 percent will pass through a #20 mesh sieve.
4. Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disking or other suitable means.
5. Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

B.14

B-4.3 STANDARDS AND SPECIFICATIONS

FOR SEEDING AND MULCHING

Definition

The application of seed and mulch to establish vegetative cover.

Purpose

To protect disturbed soils from erosion during and at the end of construction.

Conditions Where Practice Applies

To the surface of all perimeter controls, slopes, and any disturbed area not under active grading.

Criteria

- A. Seeding
1. Specifications
a. All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject to re-testing by a recognized seed laboratory. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be available upon request to the inspector to verify type of seed and seeding rate.
b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.
c. Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.
d. Sod or seed must not 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.
2. Application
a. Dry Seeding: This includes use of conventional drop or broadcast spreaders.
i. Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries.
ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with a weighted roller to provide good seed to soil contact.

B.15

- b. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
i. Cultipacker seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seedbed must be firm after planting.
ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction.
c. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer).
i. If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of soluble nitrogen; P2O5 (phosphorous), 200 pounds per acre; K2O (potassium), 200 pounds per acre.
ii. Lime: Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding.
iii. Mix seed and fertilizer on site and seed immediately and without interruption.
iv. When hydroseeding do not incorporate seed into the soil.

B. Mulching

- 1. Mulch Materials (in order of preference)
a. Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably bright in color. Straw is to be free of noxious weed seeds as specified in the Maryland Seed Law and not musty, moldy, caked, decayed, or excessively dusty. Note: Use only sterile straw mulch in areas where one species of grass is desired.
b. Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state.
i. WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
ii. WCFM, including dye, must contain no germination or growth inhibiting factors.
iii. WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material must form a blotter-like ground cover, on application, having moisture absorption and percolation properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
iv. WCFM material must not contain elements or compounds at concentration levels that will be phytotoxic.
v. WCFM must conform to the following physical requirements: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 1.6 percent maximum and water holding capacity of 90 percent minimum.

B.16

S.W.M. PLAN NO. 91476 SEDIMENT CONTROL PLAN NO. 52275

HARFORD COUNTY EROSION AND SEDIMENT CONTROL DETAILS FOR COLUMBIA GAS TRANSMISSION, LLC LINE MB EXTENSION PROJECT BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO. ECD-2.16 SHEET 36 OF 44 RCT JOB NUMBER 16-121849

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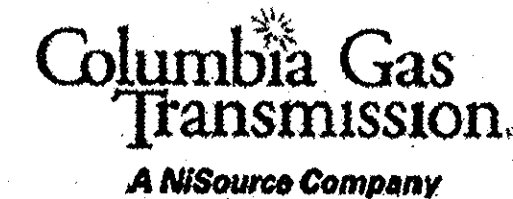
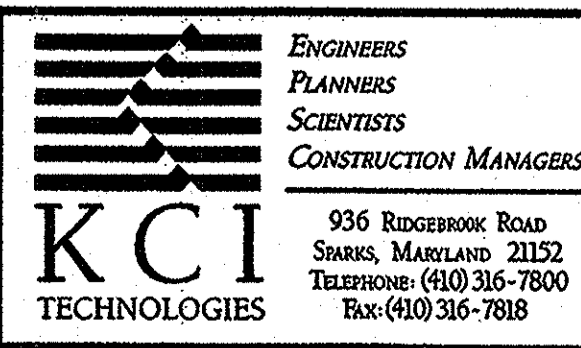
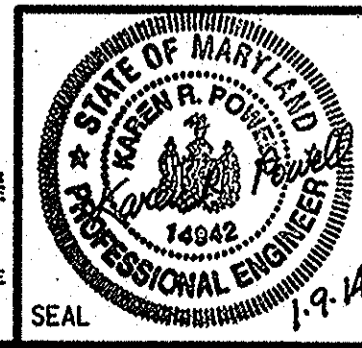


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DRAWING NO. ECD-2.16 SHEET 36 OF 44 RCT JOB NUMBER 16-121849



**MGWC 1.2: PUMP-AROUND PRACTICE**

Temporary measure for dewatering in-channel construction sites

**DESCRIPTION**

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

**IMPLEMENTATION SEQUENCE**

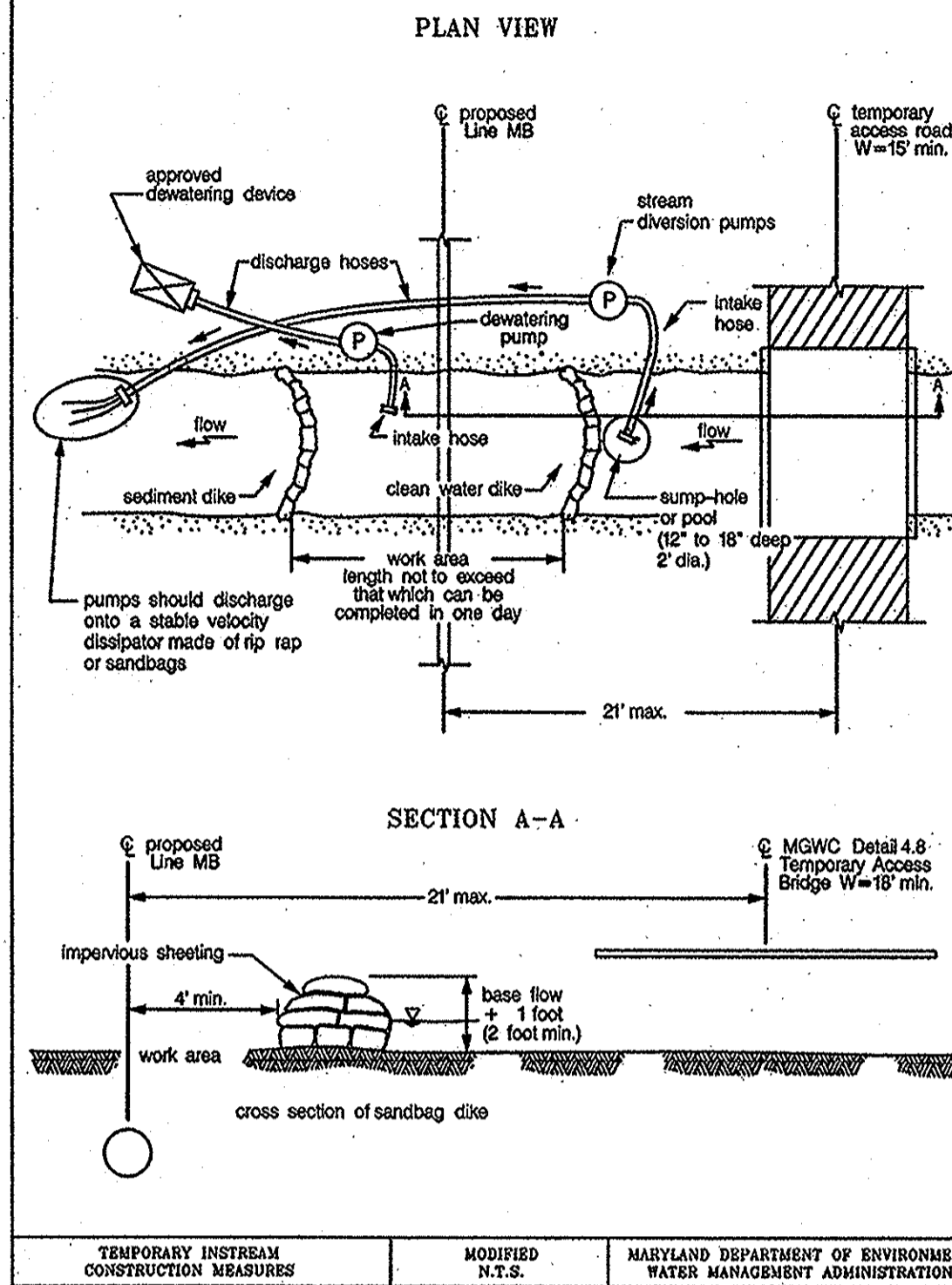
Sediment control measures, pump-around practice, and associated channel and bank construction should be completed in the following sequence (refer to Detail 1.2):

1. Construction activities including the installation of erosion and sediment control measures should not begin until all necessary easements and/or right-of-ways have been acquired. All existing utilities should be marked in the field prior to construction. The contractor is responsible for any damage to existing utilities that may result from construction and should repair the damage at his/her own expense to the county's or utility company's satisfaction.
2. The contractor should notify the Maryland Department of the Environment or WMA sediment control inspector at least 3 days before beginning construction. Additionally, the contractor should inform the local environmental protection and resource management inspection and enforcement division and the provider of local utilities a minimum of 48 hours before starting construction.
3. The contractor should conduct a pre-construction meeting on site with the WMA sediment control inspector, the county project manager, and the engineer to review limits of disturbance, erosion and sediment control requirements, and the sequence of construction. The contractor should stake out all limits of disturbance prior to the pre-construction meeting so they may be reviewed. The participants will also designate the contractor's staging areas and flag all trees within the limit of disturbance which will be removed for construction access. Trees should not be removed within the limit of disturbance without approval from the WMA or local authority.
4. Construction should not begin until all sediment and erosion control measures have been installed and approved by the engineer and the sediment control inspector. The contractor should stay within the limits of the disturbance as shown on the plans and minimize disturbance within the work area whenever possible.
5. Upon installation of all sediment control measures and approval by the sediment control inspector and the local environmental protection and resource management inspection and enforcement division, the contractor should begin work at the upstream section and proceed downstream beginning with the establishment of stabilized construction entrances. In some cases, work may begin downstream if appropriate. The sequence of construction must be followed unless the contractor gets written approval for deviations from the WMA or local authority. The contractor should only begin work in an area which can be completed by the end of the day including grading adjacent to the channel. At the end of each work day, the work area must be stabilized and the pump around removed from the channel. Work should not be conducted in the channel during rain events.
6. Sandbag dikes should be situated at the upstream and downstream ends of the work area as shown on the plans, and stream flow should be pumped around the work area. The pump should discharge onto a stable velocity dissipater made of riprap or sandbags.

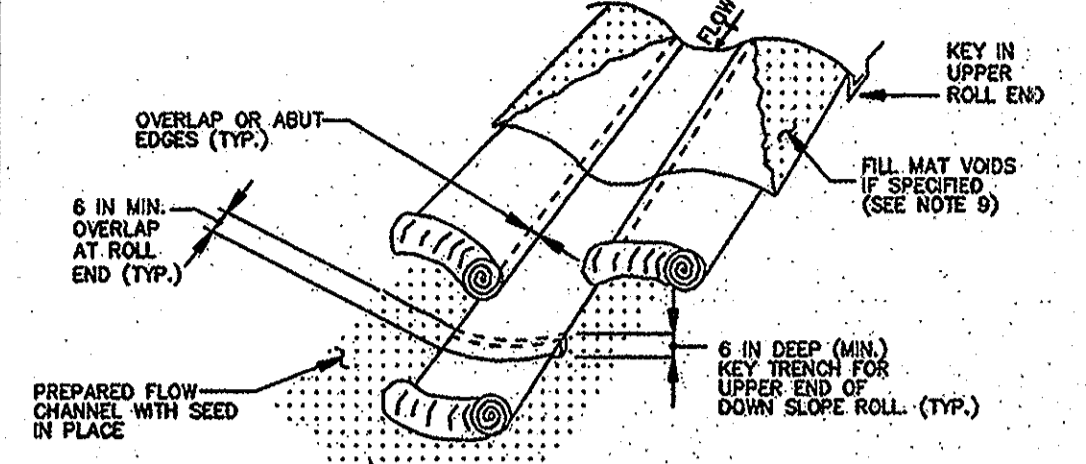
**MGWC 1.2: PUMP-AROUND PRACTICE**

7. Water from the work area should be pumped to a sediment filtering measure such as a dewatering basin, sediment bag, or other approved source. The measure should be located such that the water drains back into the channel below the downstream sandbag dike.
8. Traversing a channel reach with equipment within the work area where no work is proposed should be avoided. If equipment has to traverse such a reach for access to another area, then timber mats or similar measures should be used to minimize disturbance to the channel. Temporary stream crossings should be used only when necessary and only where noted on the plans or specified. (See Section 4, Stream Crossings, Maryland Guidelines to Waterway Construction).
9. All stream restoration measures should be installed as indicated by the plans and all banks graded in accordance with the grading plans and typical cross-sections. All grading must be stabilized at the end of each day with seed and mulch or seed and matting as specified on the plans.
10. After an area is completed and stabilized, the clean water dike should be removed. After the first sediment flush, a new clean water dike should be established upstream from the old sediment dike. Finally, upon establishment of a new sediment dike below the old one, the old sediment dike should be removed.
11. A pump around must be installed on any tributary or storm drain outfall which contributes baseflow to the work area. This should be accomplished by locating a sandbag dike at the downstream end of the tributary or storm drain outfall and pumping the stream flow around the work area. This water should discharge onto the same velocity dissipater used for the main stem pump around.
12. If a tributary is to be restored, construction should take place on the tributary before work on the main stem reaches the tributary confluence. Construction in the tributary, including pump around practices, should follow the same sequence as for the main stem of the river or stream. When construction on the tributary is completed, work on the main stem should resume. Water from the tributary should continue to be pumped around the work area in the main stem.
13. The contractor is responsible for providing access to and maintaining all erosion and sediment control devices until the sediment control inspector approves their removal.
14. After construction, all disturbed areas should be regraded and revegetated as per the planting plan.

Maryland's Guidelines To Waterway Construction  
**DETAIL 1.2: PUMP-AROUND PRACTICE**



**DETAIL B-4-6-C PERMANENT SOIL STABILIZATION MATTING CHANNEL APPLICATION**



- CONSTRUCTION SPECIFICATIONS:**
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
  2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-HARMFUL TO THE SOIL. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2/32 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
  3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 1/2 INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1/3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
  4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
  5. UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTER LINE, WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDBED SURFACE. AVOID STRETCHING THE MATTING.
  6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
  7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
  8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
  9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEVED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
  10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

**MGWC 1.5: SANDBAG/STONE CHANNEL DIVERSION**

Temporary measure for dewatering in-channel construction sites

**DESCRIPTION**

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

**EFFECTIVE USES & LIMITATIONS**

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

**MATERIAL SPECIFICATIONS**

Materials for sandbag and stone stream diversions should meet the following requirements:

- **Riprap:** Riprap should be washed and have a minimum diameter of 6 inches (0.15 meters).
- **Sandbags:** Sandbags should consist of materials which are resistant to ultra-violet radiation, tearing, and puncture and should be woven tightly enough to prevent leakage of the fill material (i.e., sand, fine gravel, etc.).
- **Sheeting:** Sheeting should consist of polyethylene or other materials which are impervious and resistant to puncture and tearing.

**INSTALLATION GUIDELINES**

All erosion and sediment control devices, including dewatering basins, should be implemented as the first order of business according to a plan approved by the WMA or local authority. Installation should proceed from upstream to downstream during periods of low flow. If necessary, silt fence or straw bales should be installed around the perimeter of the work area.

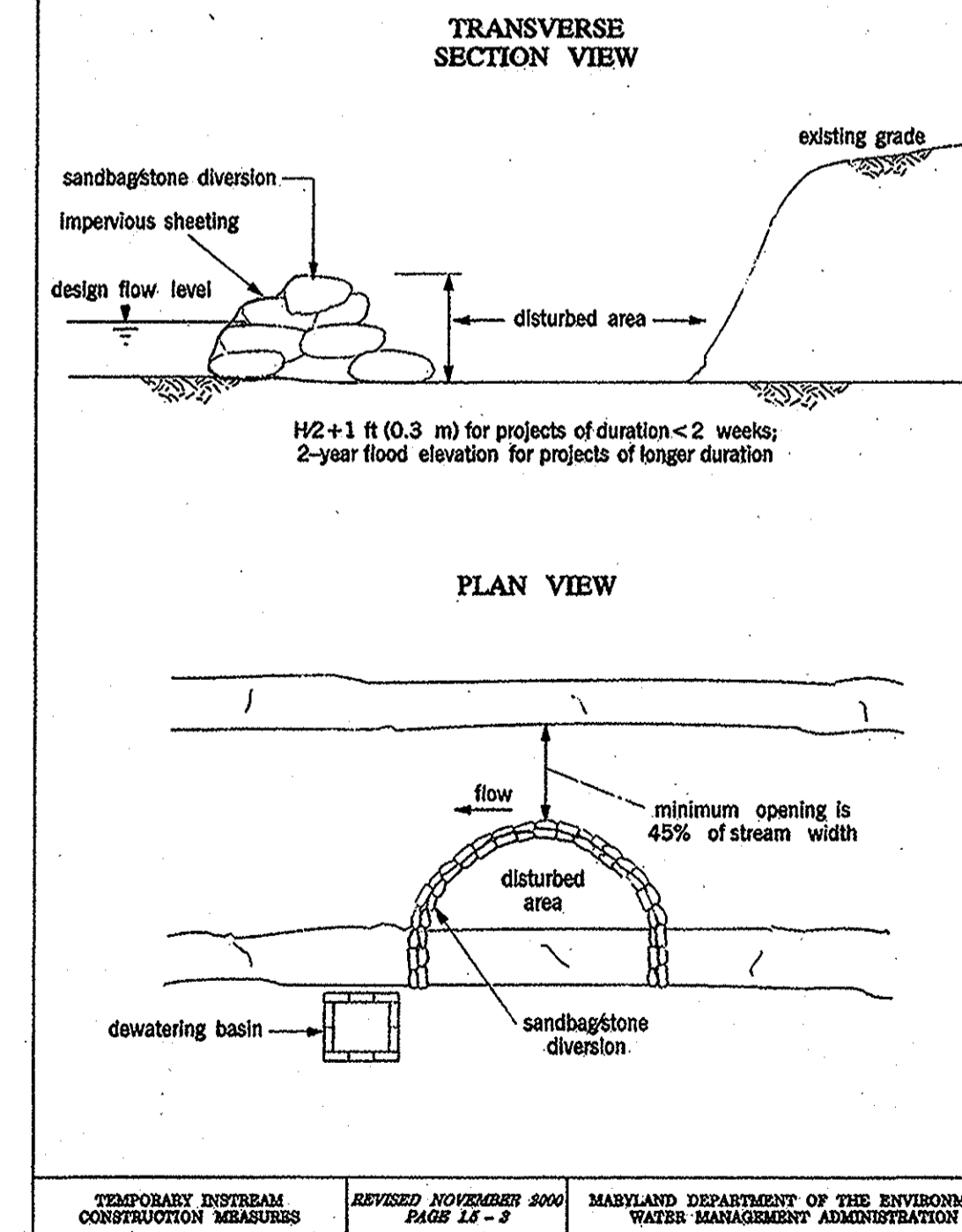
Sandbag/stone diversions can be used independently or as components of other stream diversion techniques. Installation of this measure should proceed as follows (refer to Detail 1.5):

1. The diversion structure should be installed from upstream to downstream.
2. The height of the sandbag/stone diversion should be a function of the duration of the project in the stream reach. For projects with a duration less than 2 weeks, the height of the diversion should be one half the streambank height, measured from the channel bed, plus 1 foot (0.3 meters) or bankfull height, whichever is greater. For projects of longer duration, the top of the sandbag or stone diversion should correspond to bankfull height. For diversion structures utilizing sandbags, the stream bed should be hand prepared prior to placement of the base layer of sandbags in order to ensure a water tight fit. Additionally, it may be necessary to prepare the bank in a similar fashion.
3. All excavated material should be deposited and stabilized in an approved area outside the 100-year floodplain unless otherwise authorized by the WMA.
4. Sediment-laden water from the construction area should be pumped to a dewatering basin.

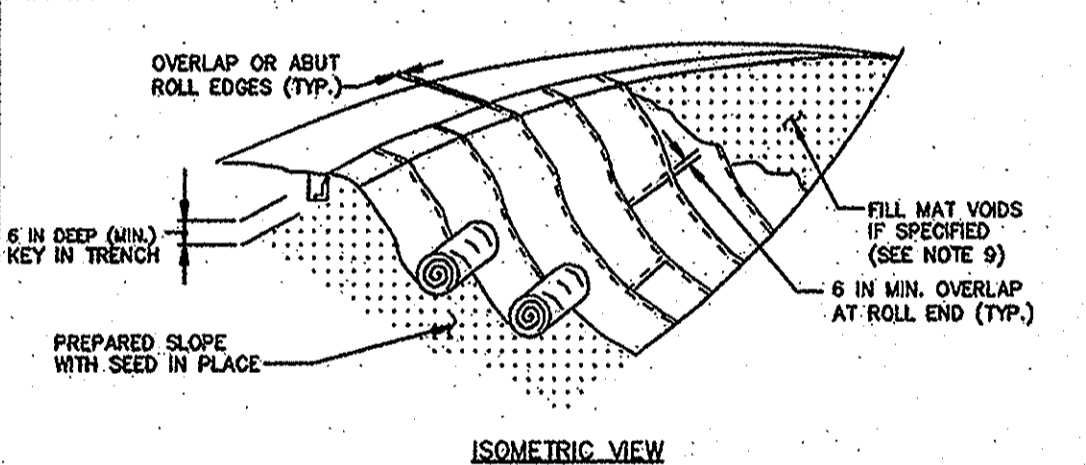
**MGWC 1.5: SANDBAG/STONE CHANNEL DIVERSION**

5. Sheeting on the diversion should be positioned such that the upstream portion covers the downstream portion with at least a 18-inch (0.45 meters) overlap.
6. Sandbag or stone diversions should not obstruct more than 45% of the stream width. Additionally, bank stabilization measures should be placed in the constricted section if accelerated erosion and bank scour are observed during the construction time or if project time is expected to last more than 2 weeks.
7. Prior to removal of these temporary structures, any accumulated sediment should be removed, deposited and stabilized in an approved area outside the 100-year floodplain unless authorized by the WMA.
8. Sediment control devices are to remain in place until all disturbed areas are stabilized in accordance with an approved sediment and erosion control plan and the inspecting authority approves their removal.

Maryland's Guidelines To Waterway Construction  
**DETAIL 1.5: SANDBAG/STONE DIVERSION**



**DETAIL B-4-6-D PERMANENT SOIL STABILIZATION MATTING SLOPE APPLICATION**



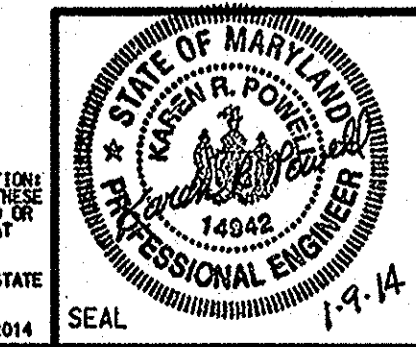
- CONSTRUCTION SPECIFICATIONS:**
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
  2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-HARMFUL TO THE SOIL. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2/32 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
  3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 1/2 INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1/3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
  4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
  5. UNROLL MATTING DOWN SLOPE. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDBED SURFACE. AVOID STRETCHING THE MATTING.
  6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
  7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
  8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
  9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEVED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
  10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

S.W.M. PLAN NO. 91476  
SEDIMENT CONTROL PLAN NO. 62275

HARFORD COUNTY  
EROSION AND SEDIMENT CONTROL DETAILS  
FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT  
BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO.  
**ECD-2.18**  
SHEET 38 OF 44  
KCI JOB NUMBER  
16-121849

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BY: Kiley Foster, Division P053, Water Reg. CMA, Emp.  
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ENGINEERS  
PLANNERS  
SCIENTISTS  
CONSTRUCTION MANAGERS

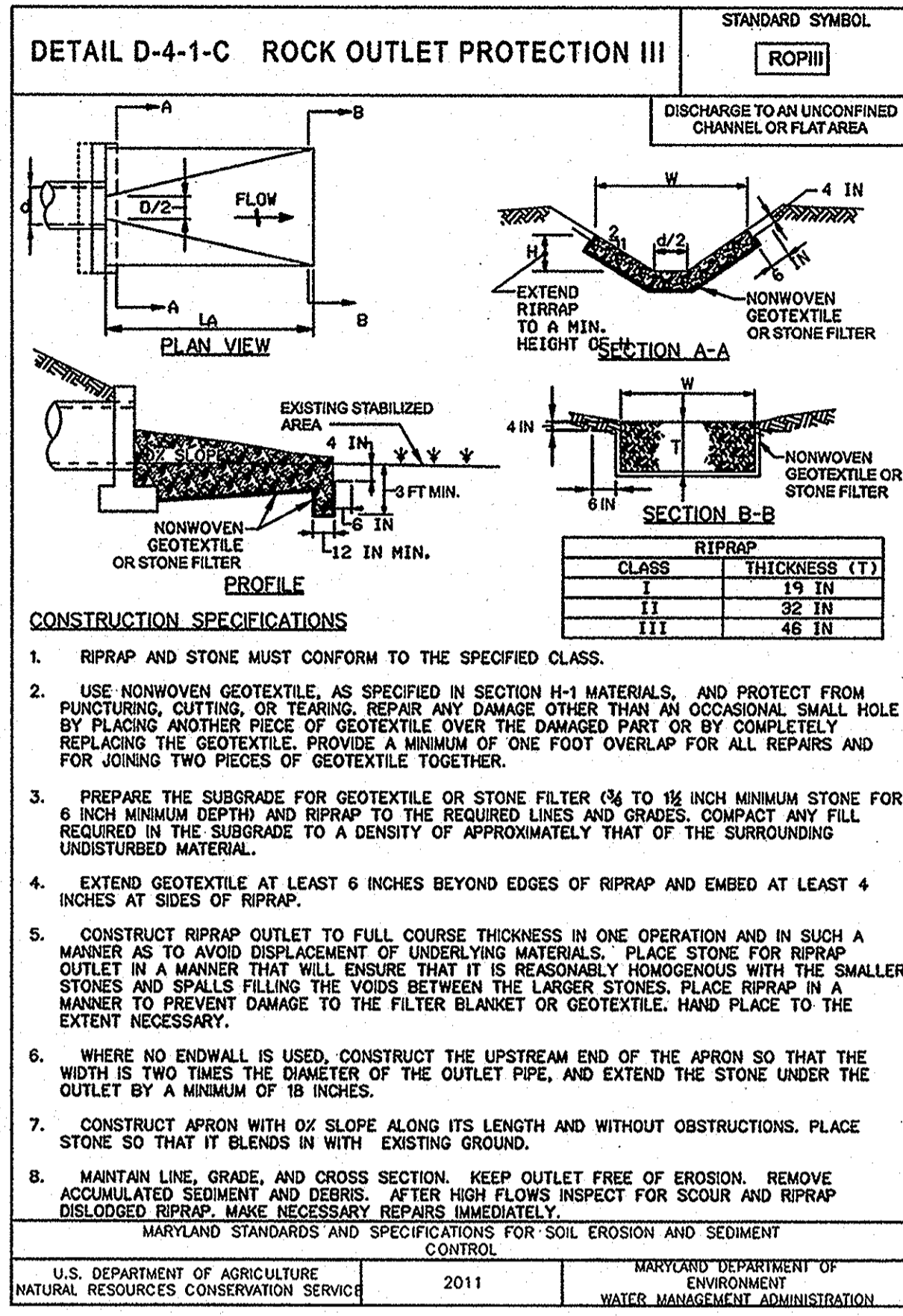
**KCI**  
TECHNOLOGIES

936 RUDENSKY ROAD  
SHWES, MARYLAND 21152  
TELEPHONE: (410) 316-7800  
FAX: (410) 316-7818

**Columbia Gas Transmission**  
A NiSource Company

REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	JAN. 2014





**MGWC 4.2: UTILITY CROSSING**

**Temporary in-stream construction**

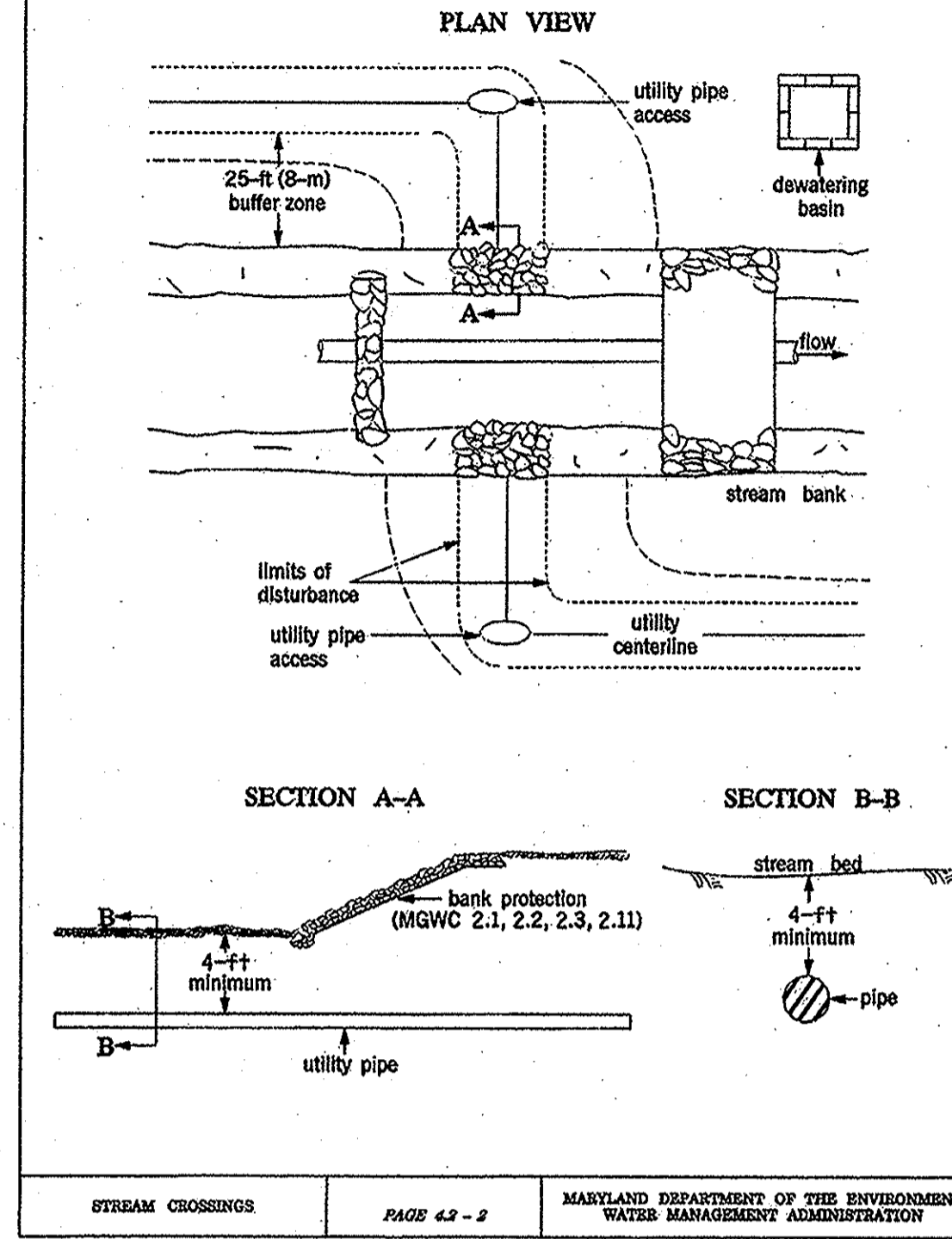
**DESCRIPTION**  
The work should consist of installing erosion control devices in and adjacent to the construction of utility crossings.

**INSTALLATION GUIDELINES**  
All erosion and sediment control devices, including dewatering basins, should be implemented as the first order of business according to a plan approved by the WMA or local authority. (See the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control.) The proposed construction sequence is as follows (refer to Detail 4.2):

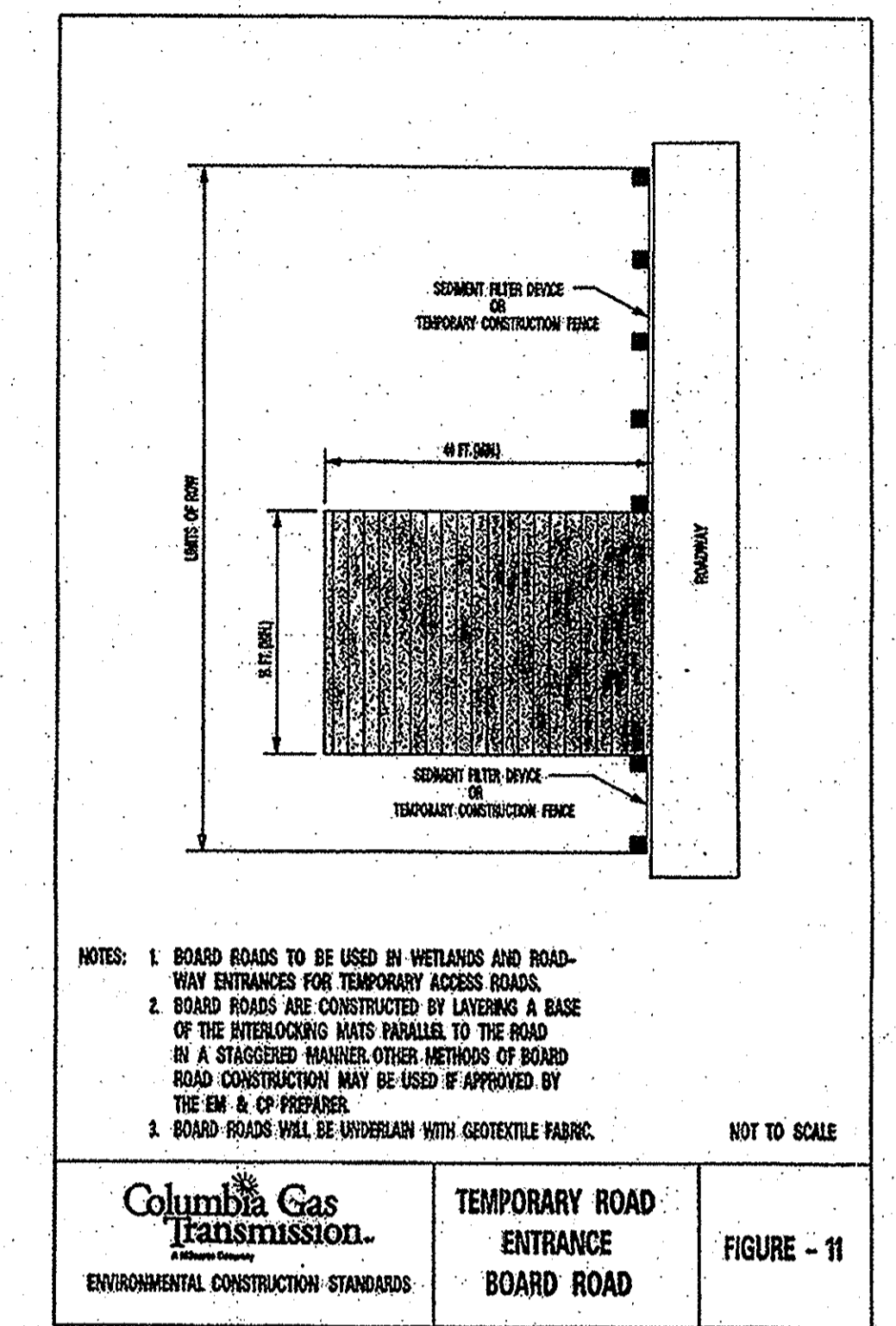
- The contractor should insure that a continuous perimeter control barrier is in place to minimize the amount of pollutants entering the flow. A diversion pipe as shown in MGWC 1.4: Diversion Pipe or other measure should be installed and sandbag or stone barriers as shown in MGWC 1.5: Sandbag/Stone Diversion should be constructed according to specifications to divert the streamflow.
- Excavated topsoil and subsoil should be kept separate, placed on the upland side of the excavation, and replaced in their natural order.
- All construction should take place during stream low flows. The length of construction time should be limited to a maximum of 5 consecutive days for each crossing.
- Line MB will be installed at a minimum of 4 feet below the streambed, which exceeds the minimum 3 feet of cover required by USDOT/PHMSA. Upon backfill, the streambed will be restored with original stream materials.
- The stream should be diverted by an approved temporary stream diversion, the construction area should be dewatered, and any disturbed banks should be stabilized. The contractor may elect to construct the utility crossing in two stages. In this case, a WMA approved flow barrier may be constructed to keep the construction area dry.
- Once the crossing is completed, the diversion should be removed from upstream to downstream. Sediment control devices, including perimeter erosion controls, are to remain in place until all disturbed areas are stabilized in accordance with an approved sediment and erosion control plan and the inspection authority approves their removal.

\* MODIFIED  
STREAM CROSSINGS MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES REVISED NOVEMBER 2000  
PAGE 4.2 - 1

**Maryland's Guidelines To Waterway Construction  
DETAIL 4.2(a): UTILITY CROSSING**



**Figure 11 - Temporary Road Entrance Board Road**



**MGWC 4.8: TEMPORARY ACCESS BRIDGE**

**Temporary stream crossing intended for minimum corridor disturbance**

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

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

**MATERIAL SPECIFICATIONS**

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

**CONSTRUCTION SEQUENCE**  
All erosion and sediment control devices, including stream diversions, should be implemented as the first order of business according to a plan approved by the WMA or local authority. Dewatering basins should be built as needed and swales or ditches should be used to prevent surface drainage from entering the stream via the bridge crossing. (See the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control.) The proposed construction, maintenance, and removal sequence is as follows:

- Abutments should be placed parallel to, and on, stable banks such that the structure is at or above bankfull depth to prevent the entrapment of floating materials and debris.
- Temporary access bridges should be constructed to span the entire channel. If the bankfull channel width exceeds 8 feet (2.5 meters), then a floating, pier, or other bridge support may be constructed within the waterway. No support will be permitted within the channel for waterways less than 8 feet wide. One additional bridge support will be permitted for each additional 8-foot width of the channel.
- All decking members should be placed perpendicular to the stringers, butted tightly, and securely fastened to the stringers. Decking materials must be butted tightly to prevent any soil material tracked onto the bridge from falling into the waterway.
- Although run planks are optional, they may be necessary to properly distribute loads. One run plank should be provided for each track of the equipment wheels and should be securely fastened to the length of the span.
- Curbs or fenders may be installed along the outer sides of the deck to provide additional safety.
- Bridges should be securely anchored at one end using steel cable or chain to prevent the bridge from floating downstream and possibly causing an obstruction to the flow. Anchoring at only one end will prevent channel obstruction in the event that flood waters float the bridge. Acceptable anchors are large trees, boulders, or driven steel anchors.

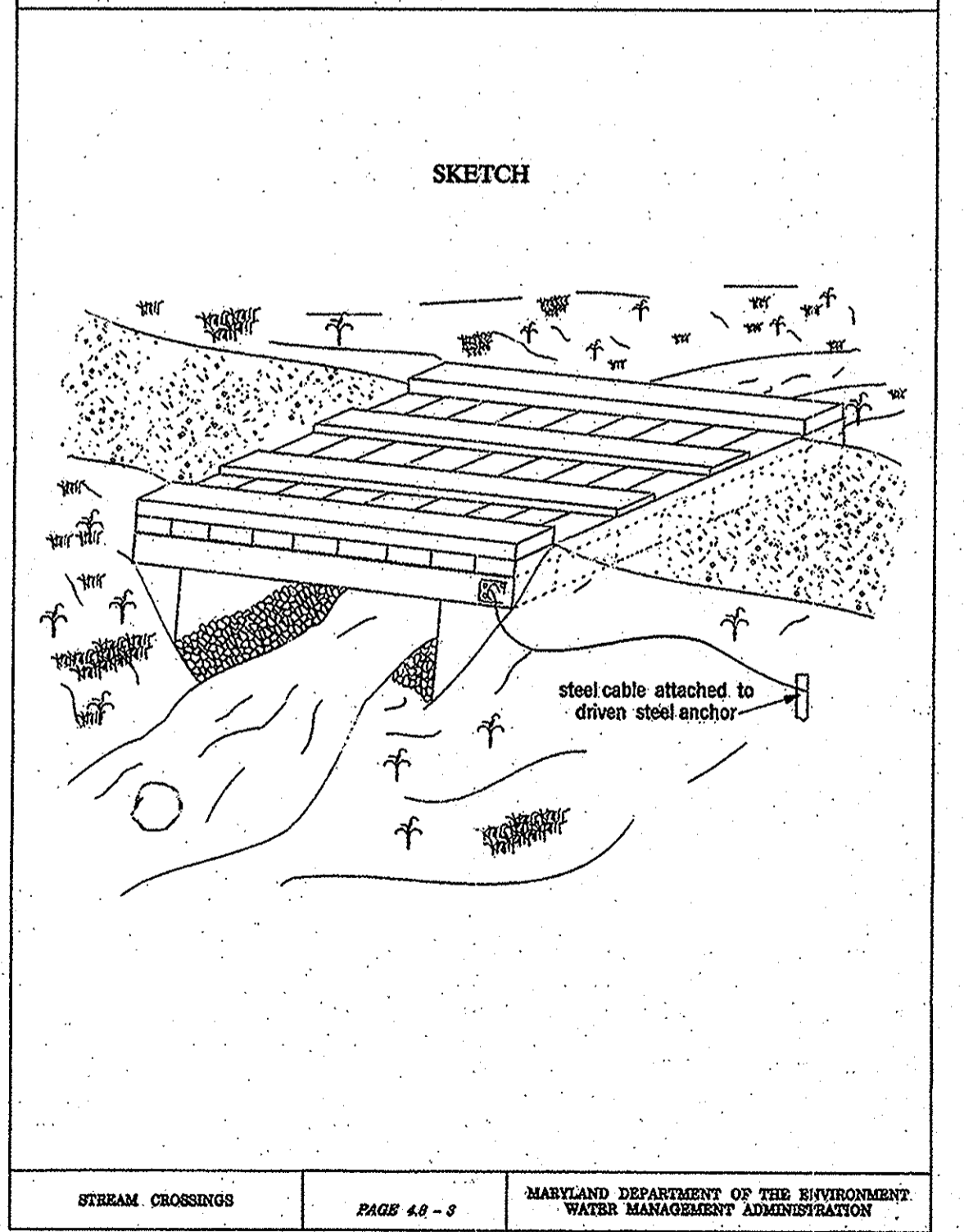
STREAM CROSSINGS MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES REVISED NOVEMBER 2000  
PAGE 4.8 - 1

**MGWC 4.8: TEMPORARY ACCESS BRIDGE**

- All areas disturbed during installation should be stabilized within 14 calendar days in accordance with a revegetation plan approved by the WMA.
- Periodic inspection should be performed by the user to ensure that the bridge, streambed, and stream banks are maintained and not damaged.
- Maintenance should be performed as needed to ensure that the structure complies with all standards and specifications. This should include the removal of trapped sediment and debris which should then be disposed of and stabilized outside the floodplain.
- When the temporary bridge is no longer needed, all structures including abutments and other bridging materials should be removed within 14 calendar days. In all cases, the bridge materials should be removed within 1 year of installation. Removal of the bridge and clean-up of the area, including protection and stabilization of disturbed stream banks, should be accomplished without the use of construction equipment in the waterway.

STREAM CROSSINGS MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES REVISED NOVEMBER 2000  
PAGE 4.8 - 2

**Maryland's Guidelines To Waterway Construction  
DETAIL 4.8: TEMPORARY ACCESS BRIDGE**



S.W.M. PLAN NO. 91476  
SEDIMENT CONTROL PLAN NO. 52275

PLOTTED: 03:00 PM on Wednesday, January 15, 2014  
BY: Kristy Patten, Division P053, Water Res. & Mgt. Emp.  
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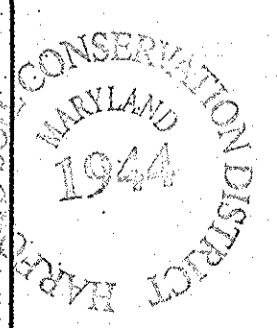
**KCI TECHNOLOGIES**  
ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS  
936 RIDGEBROOK ROAD  
SPRINGFIELD, MARYLAND 21152  
TELEPHONE: (410) 316-7800  
FAX: (410) 316-7818

**Columbia Gas Transmission**  
A NiSource Company

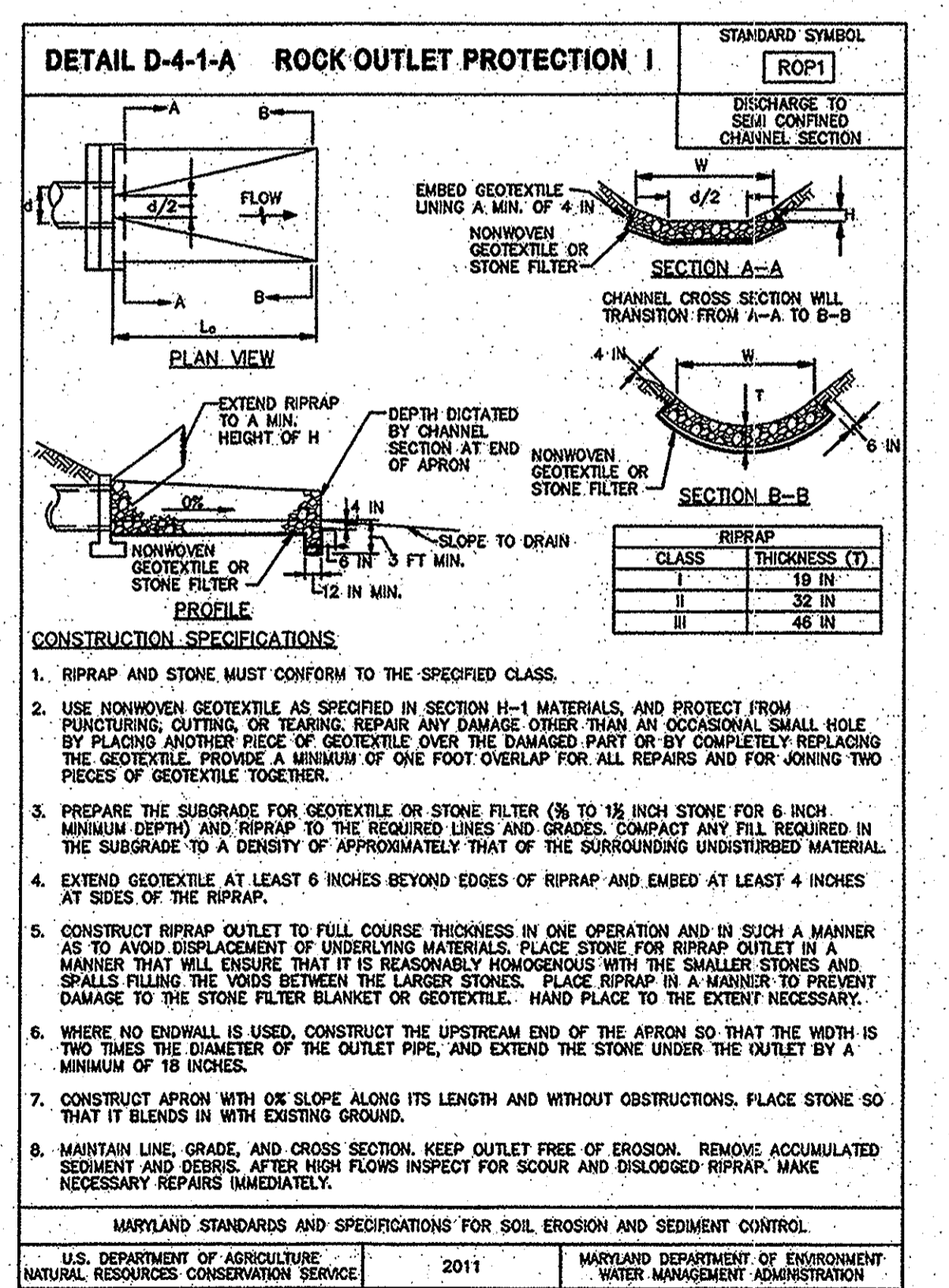
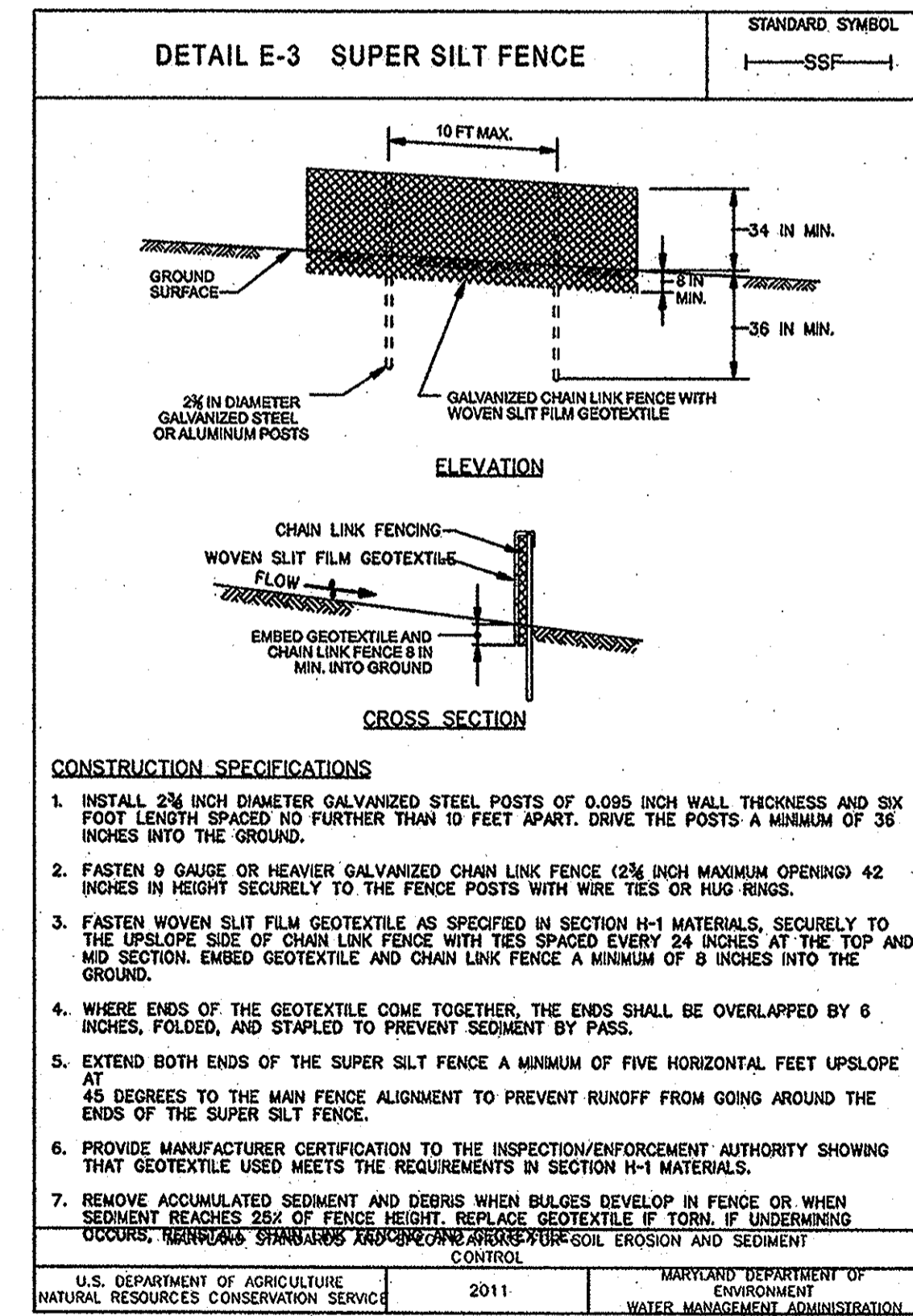
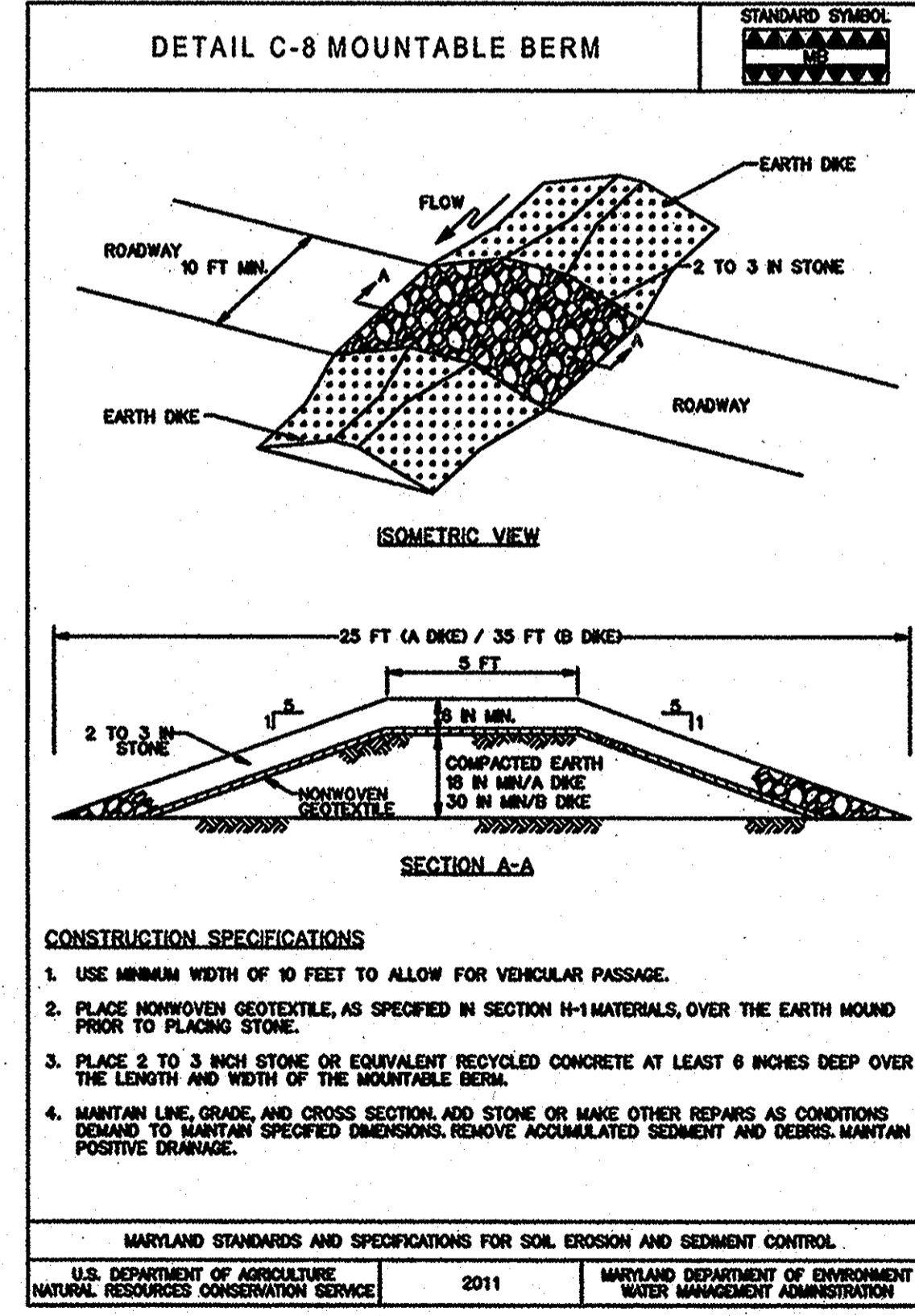
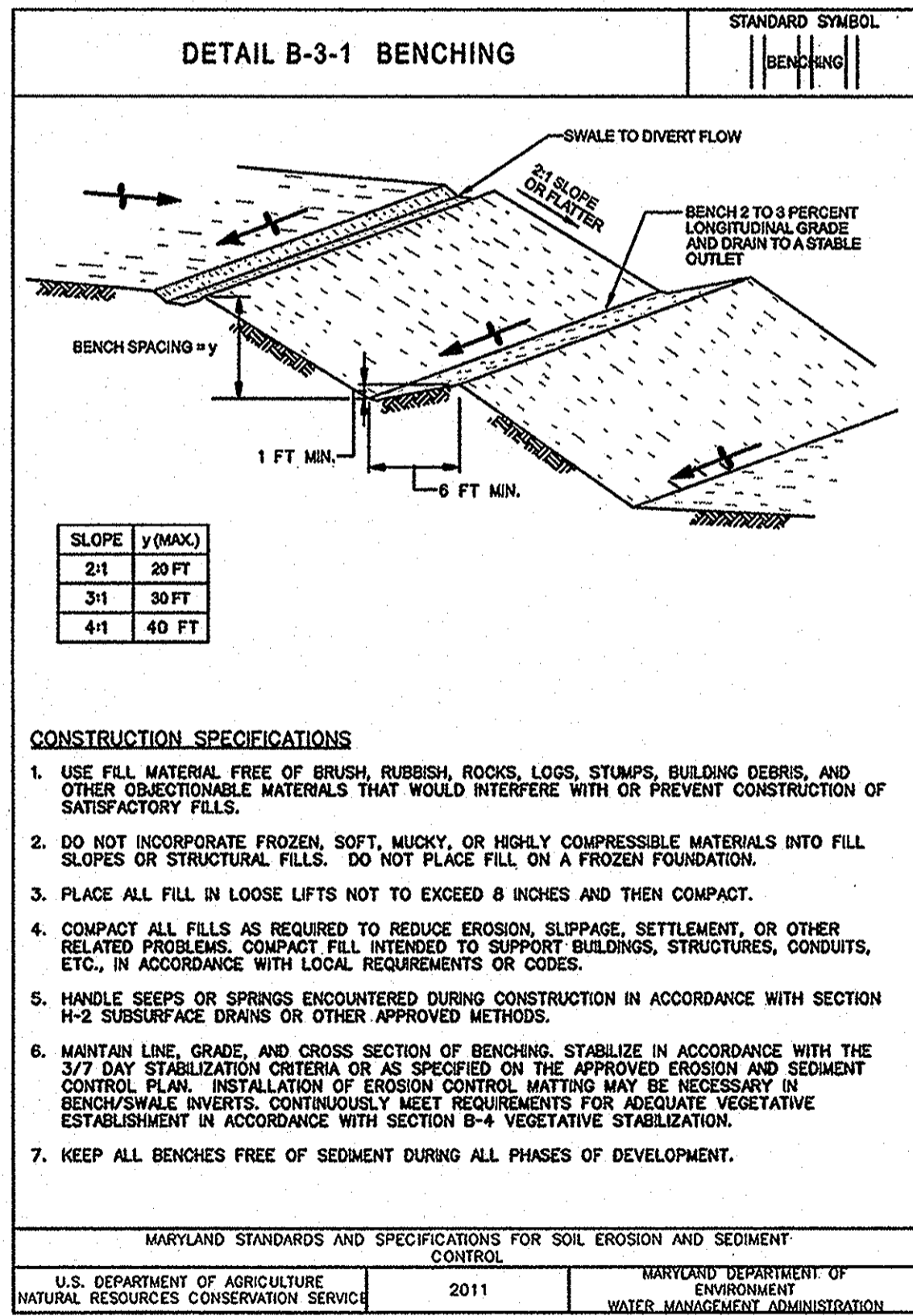
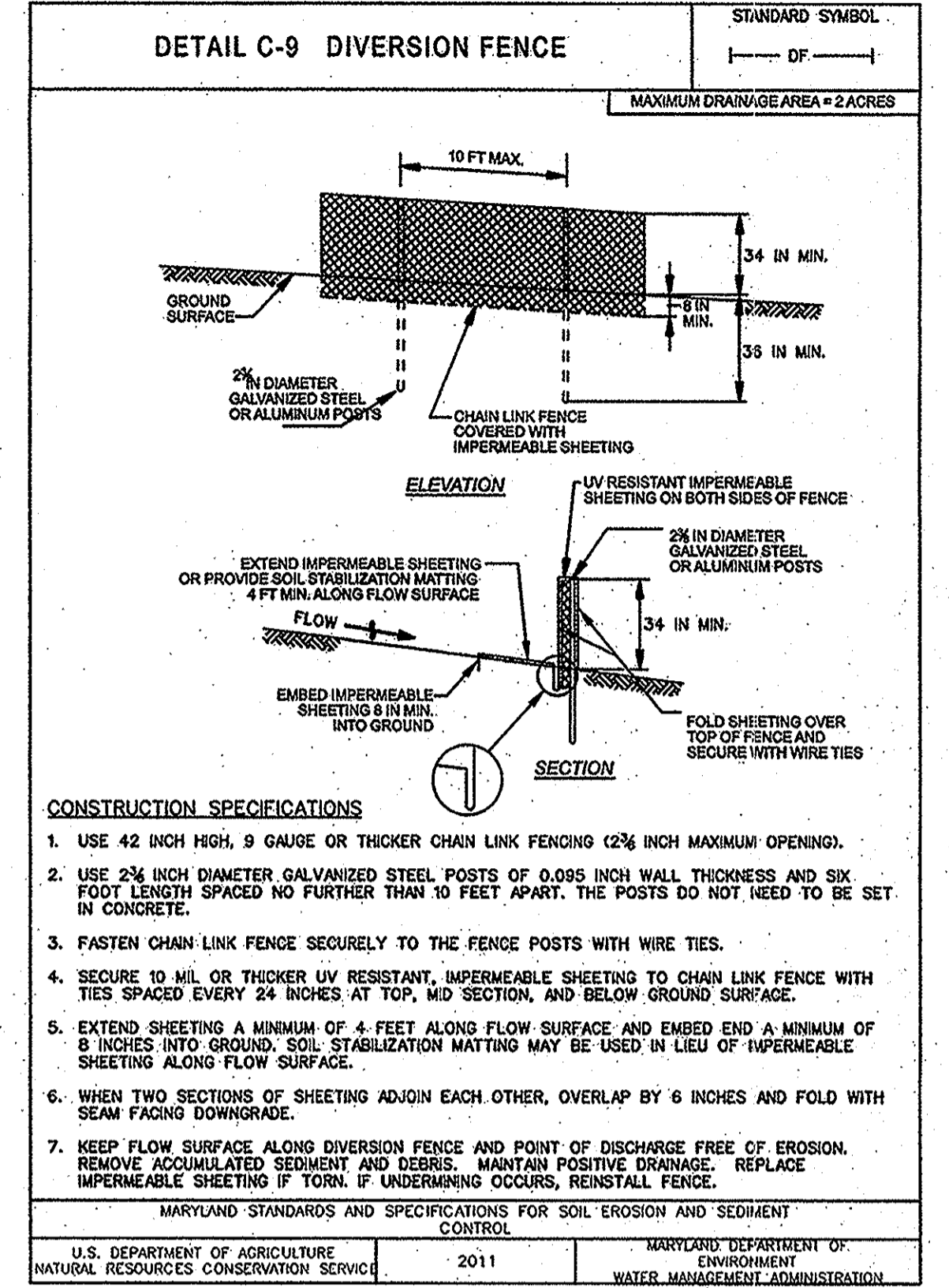
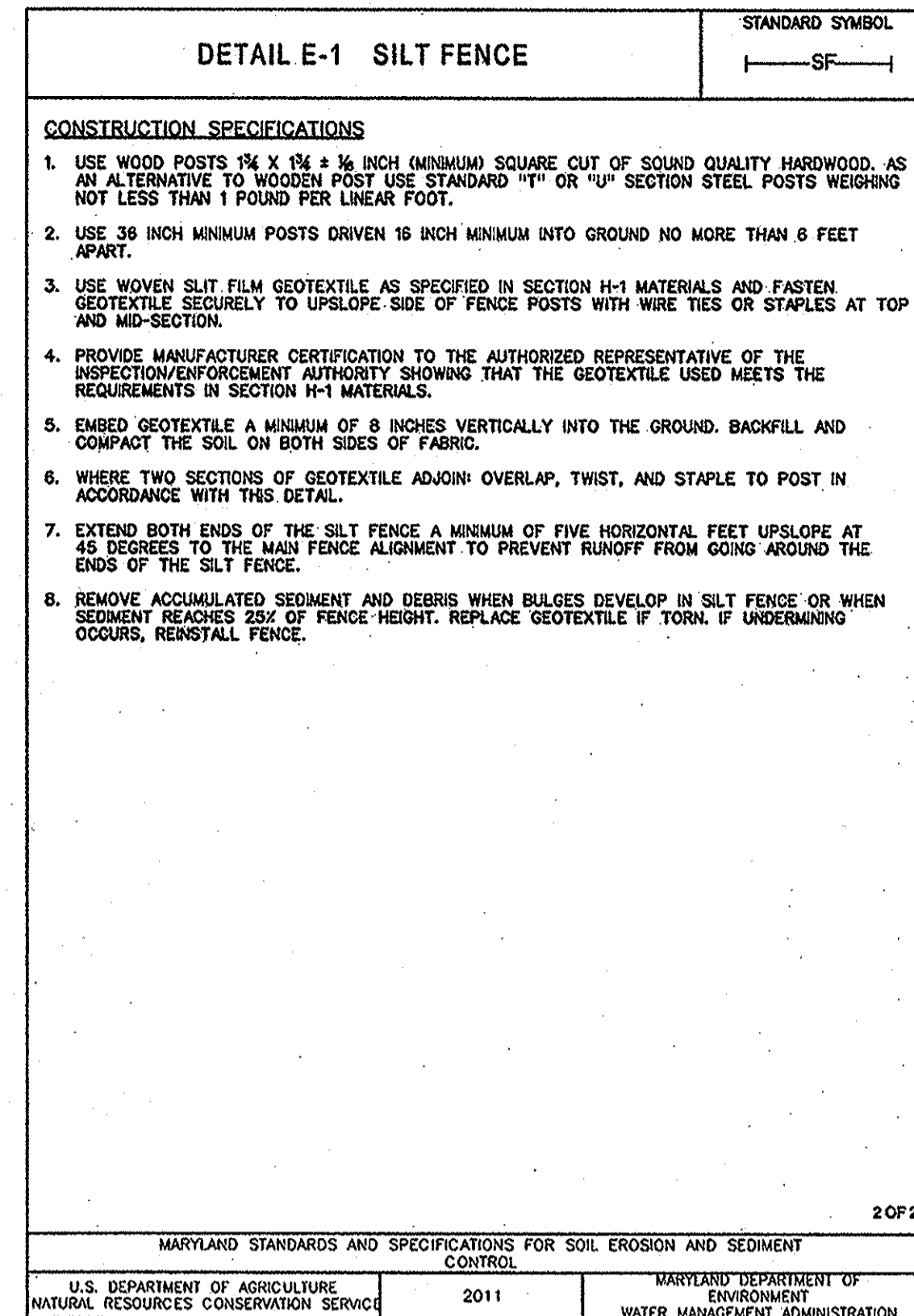
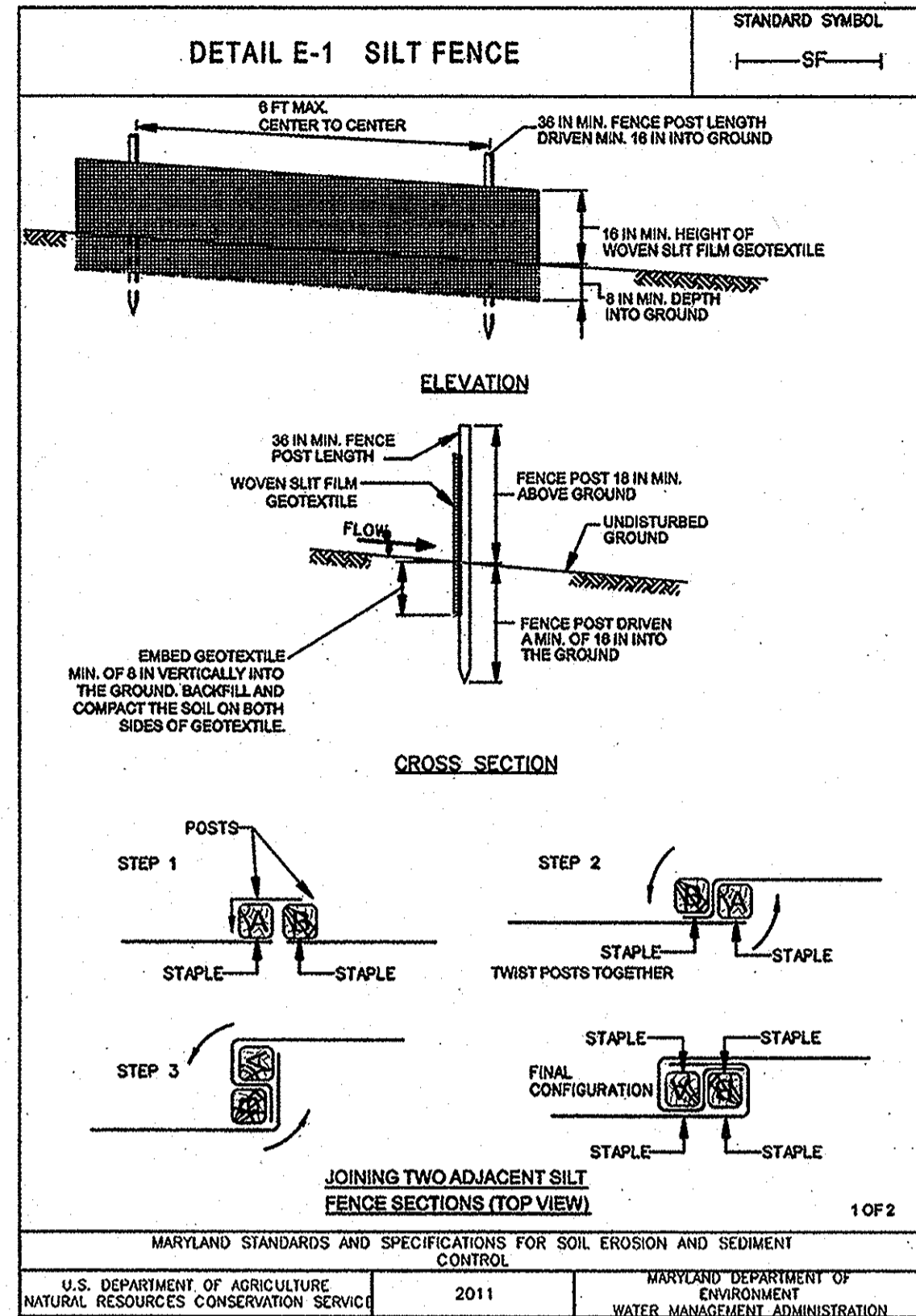
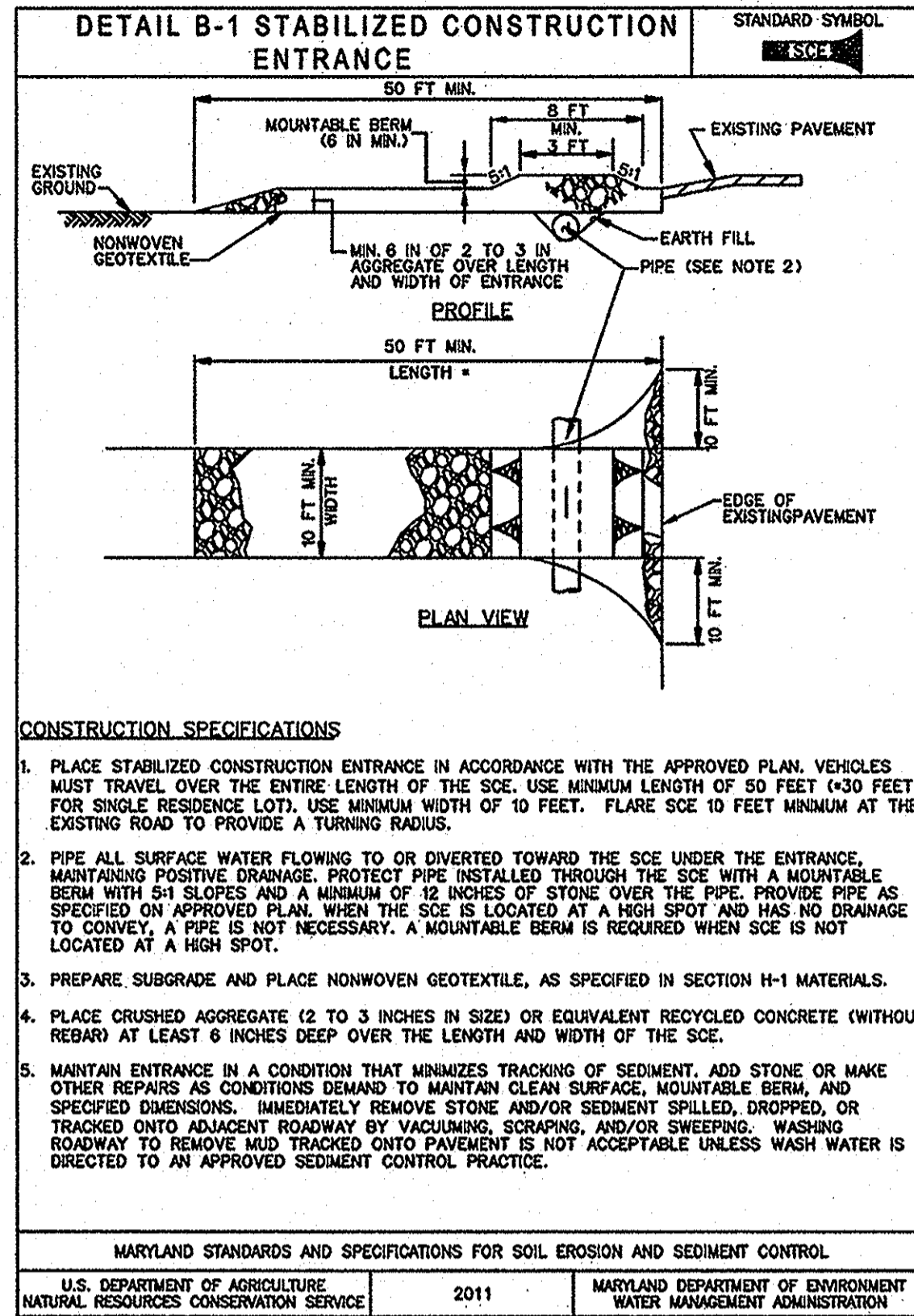
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HARFORD COUNTY  
EROSION AND SEDIMENT CONTROL DETAILS  
FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT  
BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO.  
**ECD-2.19**  
SHEET 39 OF 44  
RCT JOB NUMBER  
16-121849

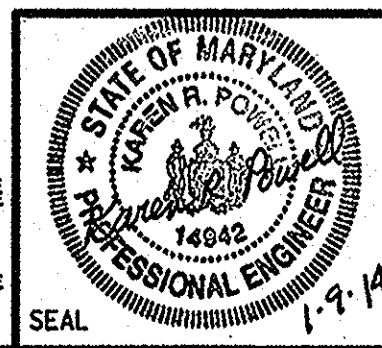






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PROFESSIONAL CERTIFICATION  
 I HEREBY CERTIFY THAT THESE  
 PLANS WERE PREPARED BY ME OR  
 UNDER MY CLOSE PERSONAL SUPERVISION  
 AND THAT I AM A LICENSED PROFESSIONAL  
 ENGINEER UNDER THE LAWS OF THE STATE  
 OF MARYLAND.  
 LICENSE NO. 14942  
 EXPIRATION DATE: 6/30/2014



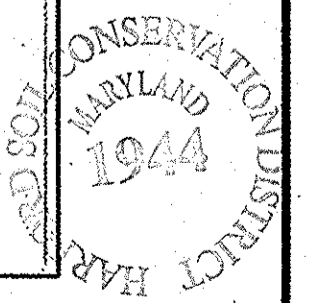
**ENGINEERS  
PLANNERS  
SCIENTISTS  
CONSTRUCTION MANAGERS**  
**KCI TECHNOLOGIES**  
 936 RIDGEBROOK ROAD  
 SPARKS, MARYLAND 21152  
 TELEPHONE: (410) 316-7800  
 FAX: (410) 316-7818

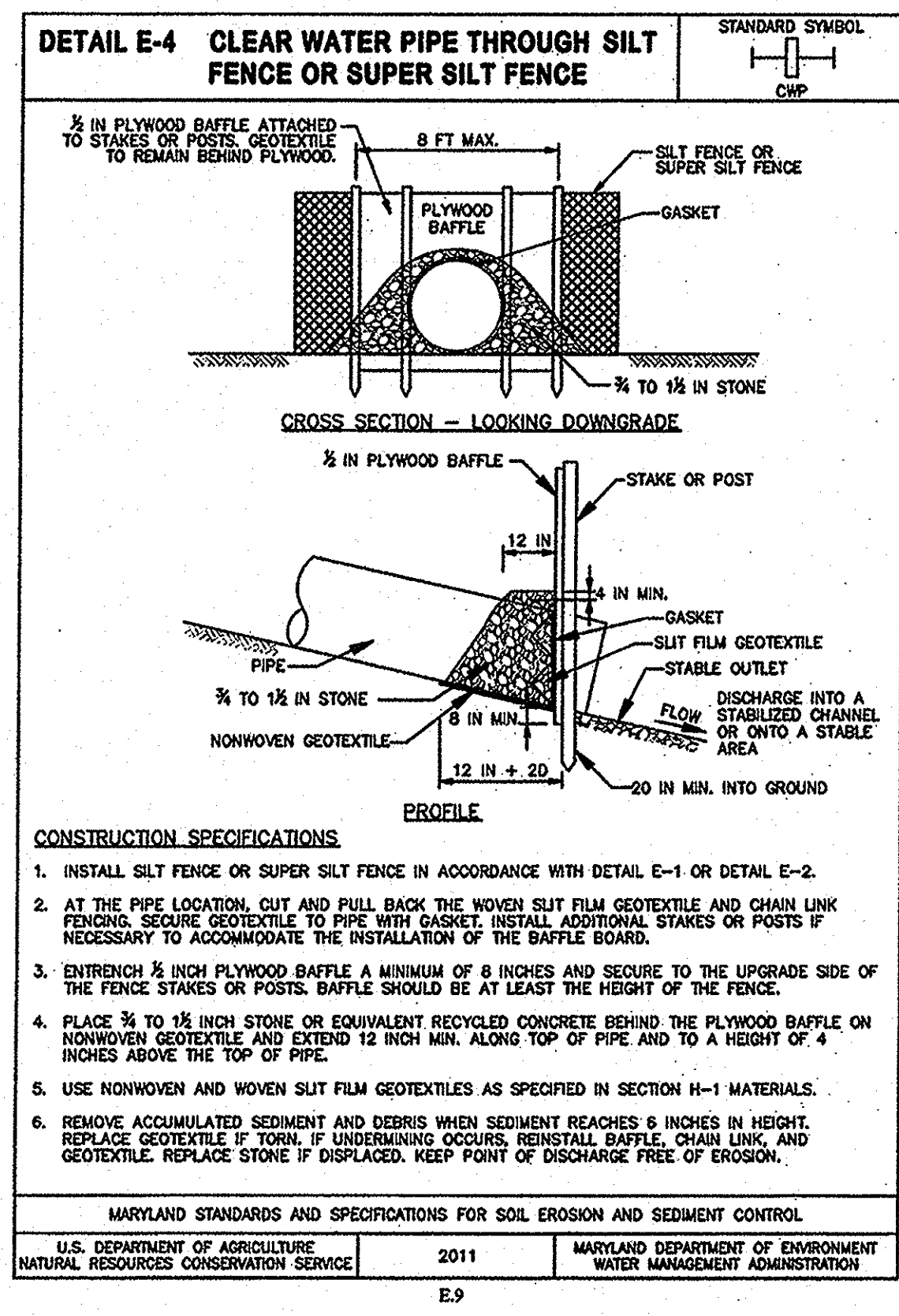
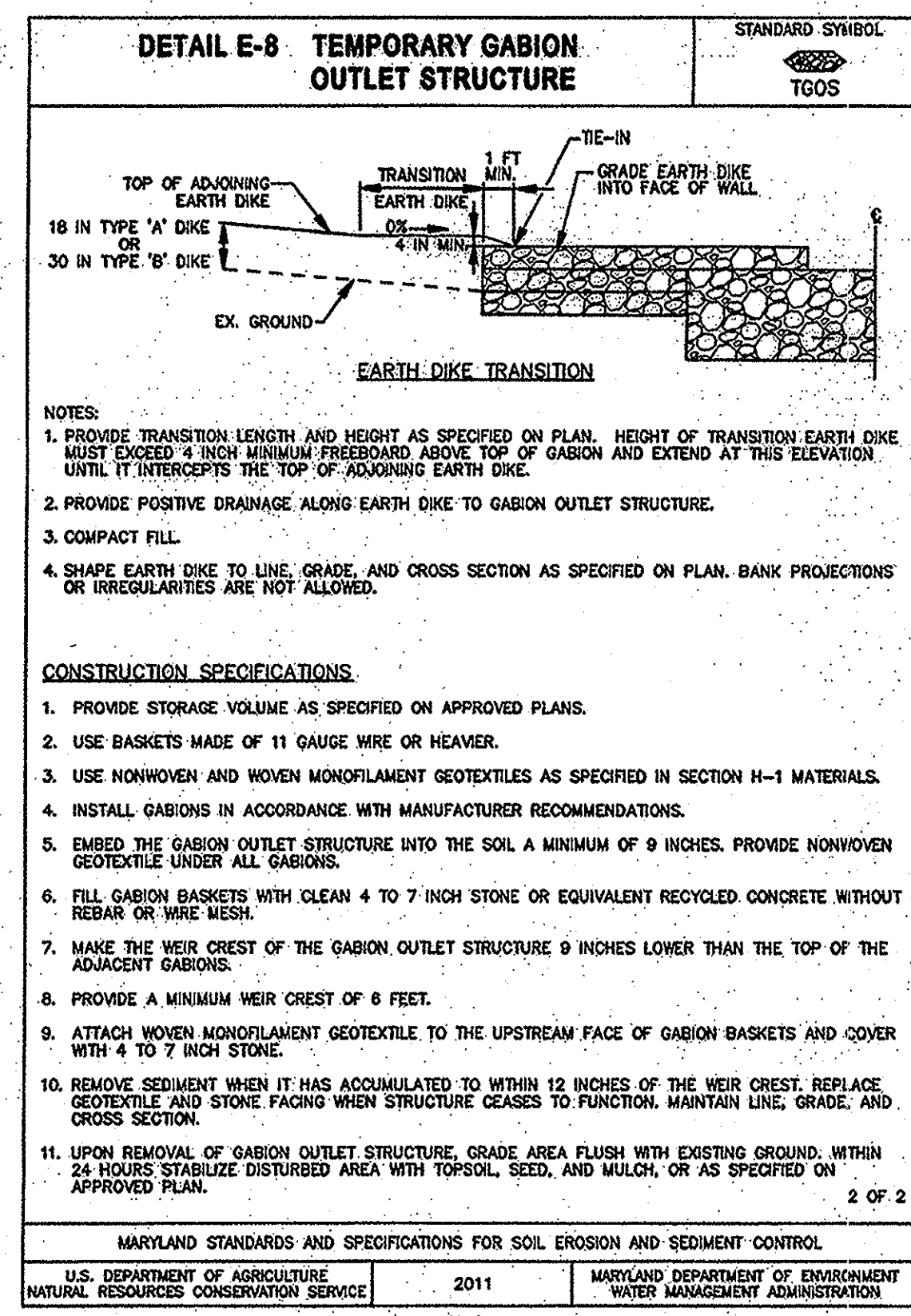
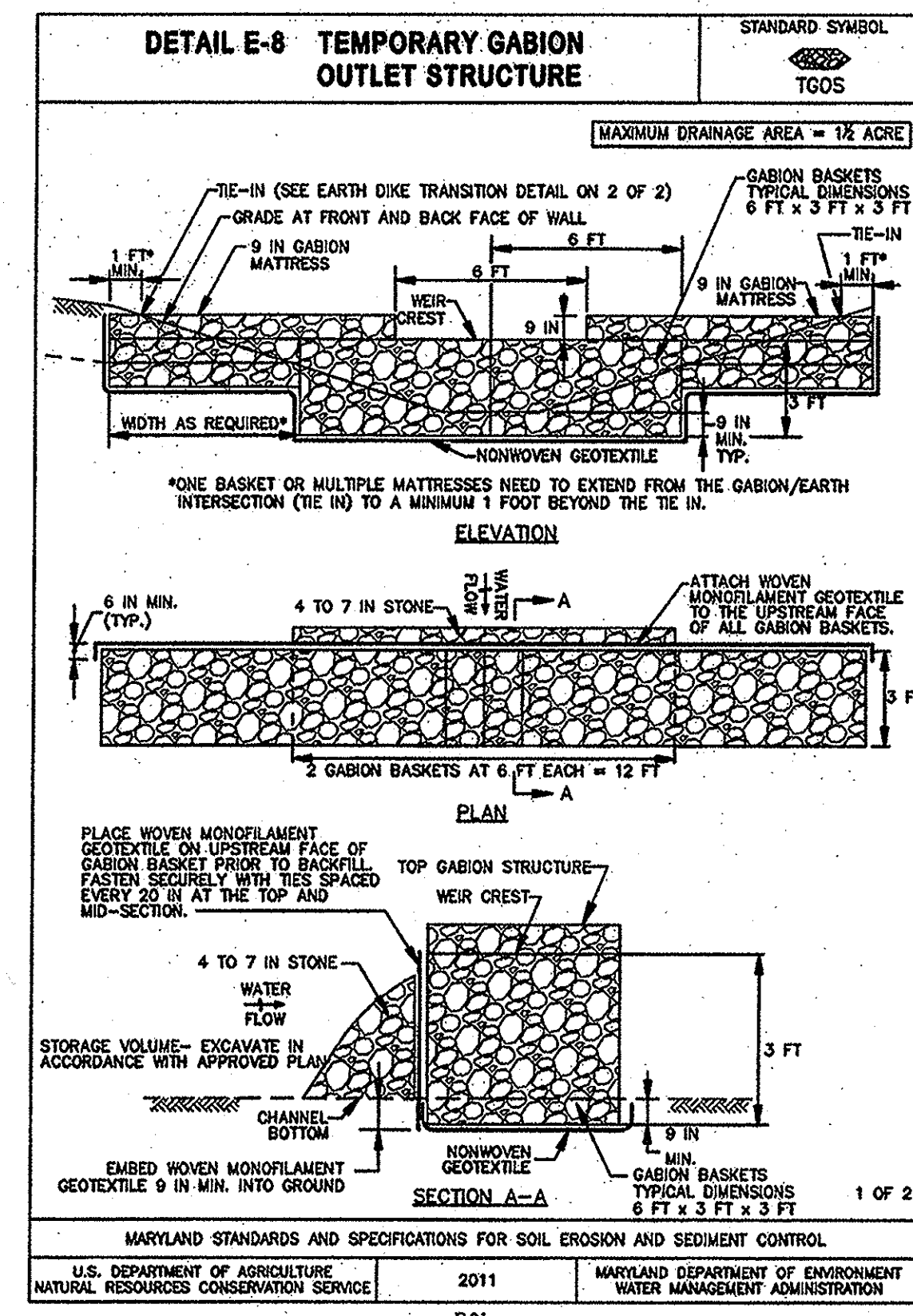
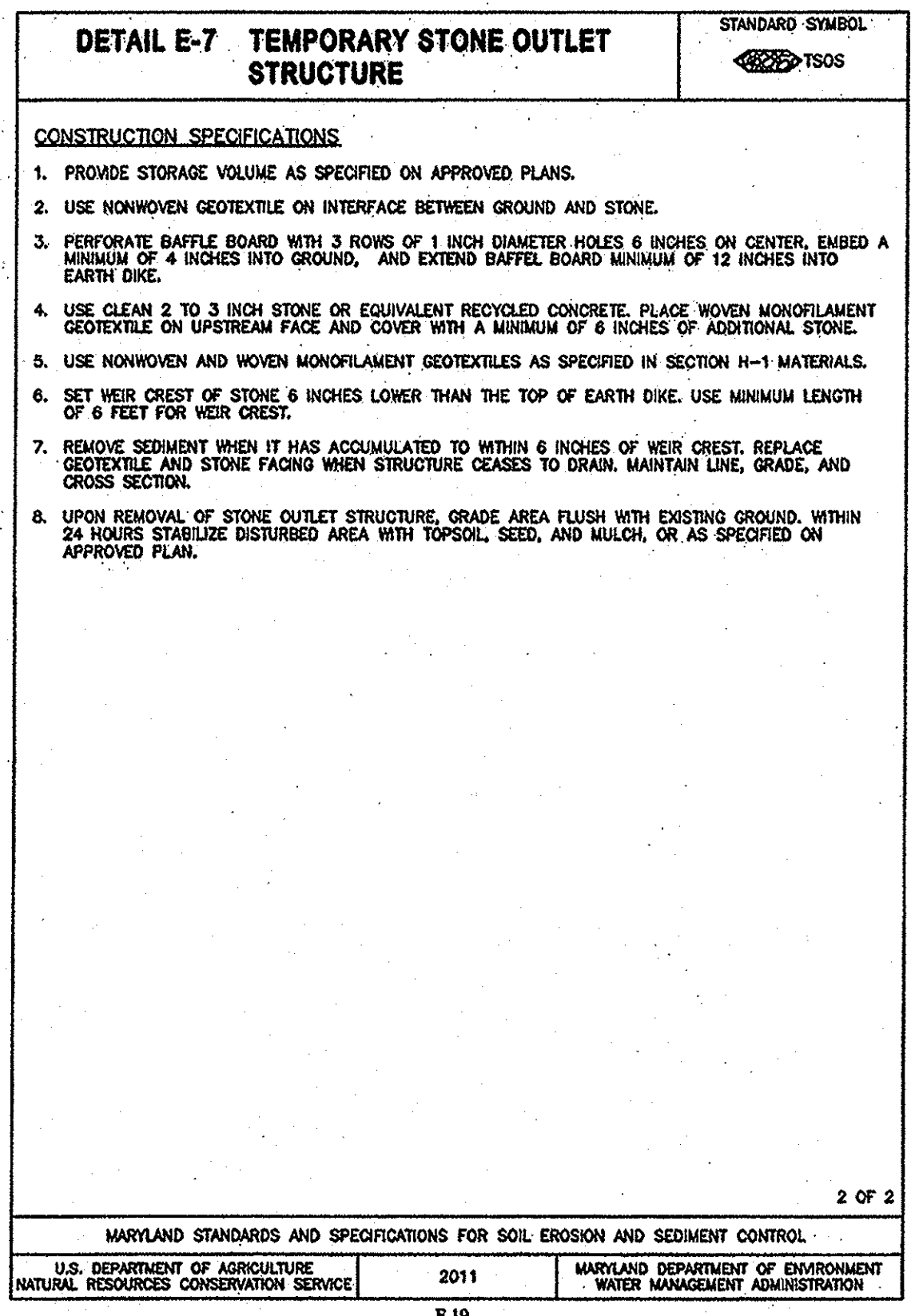
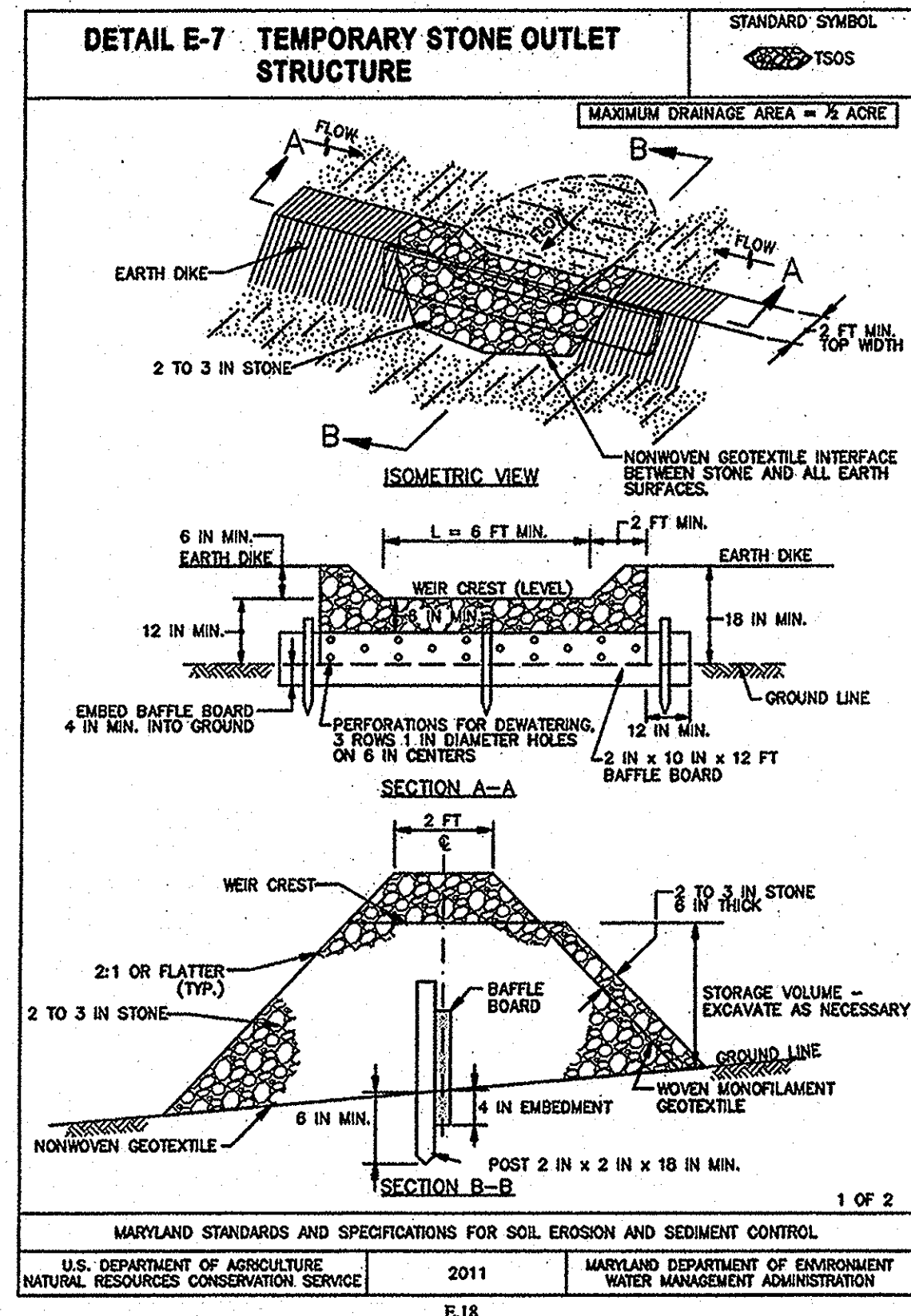
**Columbia Gas Transmission**  
 A NiSource Company

NO.	DATE	DESCRIPTION	BY	REVISIONS	
				DATE	DESCRIPTION
				JAN. 2014	
				N.T.S.	
			DESIGNED BY	JS	
			DRAWN BY	JS	

S.W.M. PLAN NO. 81476  
 SEDIMENT CONTROL PLAN NO. 62275  
**HARFORD COUNTY**  
**EROSION AND SEDIMENT CONTROL DETAILS**  
 FOR  
**COLUMBIA GAS TRANSMISSION, LLC**  
**LINE MB EXTENSION PROJECT**  
 BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO.  
**ECD-2.21**  
 SHEET 41 OF 44  
 KCI JOB NUMBER  
 16-121649





H-1 STANDARDS AND SPECIFICATIONS FOR MATERIALS

Table H.1: Geotextile Fabrics

PROPERTY	TEST METHOD	MINIMUM AVERAGE ROLL VALUE <sup>1</sup>					
		WOVEN SPLIT FILM GEOTEXTILE		WOVEN MONOFILAMENT GEOTEXTILE		NONWOVEN GEOTEXTILE	
		MD	CD	MD	CD	MD	CD
Grab Tensile Strength	ASTM D-4632	200 lb	200 lb	370 lb	250 lb	200 lb	200 lb
Grab Tensile Elongation	ASTM D-4632	15%	10%	15%	15%	50%	50%
Trapezoidal Tear Strength	ASTM D-4533	75 lb	75 lb	100 lb	60 lb	80 lb	80 lb
Puncture Strength	ASTM D-6241	450 lb		900 lb		450 lb	
Apparent Opening Size <sup>2</sup>	ASTM D-4751	U.S. Sieve 30 (0.59 mm)		U.S. Sieve 70 (0.21 mm)		U.S. Sieve 70 (0.21 mm)	
Permittivity	ASTM D-4491	0.05 sec <sup>-1</sup>		0.28 sec <sup>-1</sup>		1.1 sec <sup>-1</sup>	
Ultraviolet Resistance Retained at 500 hours	ASTM D-4555	70% strength		70% strength		70% strength	

<sup>1</sup> All numeric values except apparent opening size (AOS) represent minimum average roll values (MARV). MARV is calculated as the typical minus two standard deviations. MD is machine direction; CD is cross direction.

<sup>2</sup> Values for AOS represent the average maximum opening.

Geotextiles must be evaluated by the National Transportation Product Evaluation Program (NTPPEP) and conform to the values in Table H.1.

The geotextile must be inert to commonly encountered chemicals and hydrocarbons and must be rot and mildew resistant. The geotextile must be manufactured from fibers consisting of long chain synthetic polymers and composed of a minimum of 95 percent by weight of polyolefins or polyesters, and formed into a stable network so the filaments or yarns retain their dimensional stability relative to each other, including selvages.

When more than one section of geotextile is necessary, overlap the sections by at least one foot. The geotextile must be pulled taut over the applied surface. Equipment must not run over exposed fabric. When placing riprap on geotextile, do not exceed a one foot drop height.

Table H.2: Stone Size

TYPE	SIZE RANGE	d <sub>10</sub>	d <sub>50</sub>	AASHTO	MESIZE WEIGHT <sup>1</sup>
NUMBER 57 <sup>2</sup>	3/8 to 1 1/2 inch	1/2 in	1 1/2 in	M-43	N/A
NUMBER 1	2 to 3 inch	2 1/2 in	3 in	M-43	N/A
RIPRAP <sup>3</sup> (CLASS 0)	4 to 7 inch	5 1/2 in	7 in	N/A	N/A
CLASS I	N/A	9 1/2 in	15 in	N/A	40 lb
CLASS II	N/A	16 in	24 in	N/A	200 lb
CLASS III	N/A	23 in	34 in	N/A	600 lb

<sup>1</sup> This classification is to be used on the upstream face of stone outlets and check dams.

<sup>2</sup> This classification is to be used for gabions.

<sup>3</sup> Optimum gradation is 50 percent of the stone being above and 50 percent below the midsize.

Stone must be composed of a well graded mixture of stone sized so that fifty (50) percent of the pieces by weight are larger than the size determined by using the charts. A well graded mixture, as used herein, is defined as a mixture composed primarily of larger stone sizes but with a sufficient mixture of other sizes to fill the smaller voids between the stones. The diameter of the largest stone in such a mixture must not exceed the respective d<sub>50</sub> selected from Table H.2. The d<sub>50</sub> refers to the median diameter of the stones. This is the size for which 50 percent, by weight, will be smaller and 50 percent will be larger.

Note: Recycled concrete equivalent may be substituted for all stone classifications for temporary control measures only. Concrete broken into the sizes meeting the appropriate classification, containing no steel reinforcement, and having a minimum density of 150 pounds per cubic foot may be used as an equivalent.

H-5 STANDARDS AND SPECIFICATIONS FOR DIST CONTROL

Controlling the suspension of dust particles from construction activities.

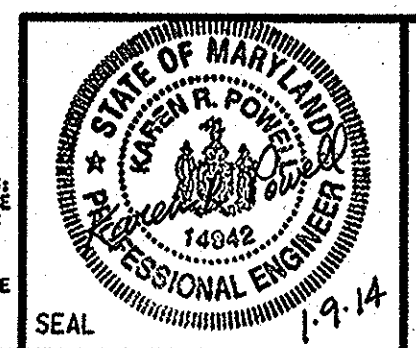
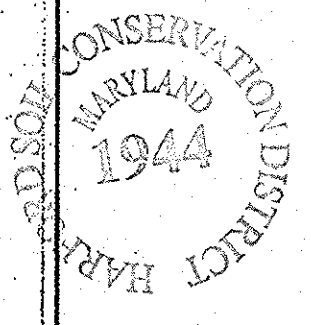
Purpose: To prevent blowing and movement of dust from exposed soil surfaces to reduce on and off-site damage including health and traffic hazards.

Conditions Where Practice Applies: Areas subject to dust blowing and movement where on and off-site damage is likely without treatment.

Specifications:

- Mulches: See Section B-4-2 Soil Preparation, Topsoiling, and Soil Amendments, Section E-4-3 Seeding and Mulching, and Section B-4-4 Temporary Stabilization. Mulch must be anchored to prevent blowing.
- Vegetative Cover: See Section B-4-4 Temporary Stabilization.
- Tillage: Till to roughen surface and bring clods to the surface. Begin plowing on windward side of site. Chisel-type plows spaced about 12 inches apart, spring-toothed harrows, and similar plows are examples of equipment that may produce the desired effect.
- Irrigation: Sprinkle site with water until the surface is moist. Repeat as needed. The site must not be irrigated to the point that runoff occurs.
- Barriers: Solid board fences, silt fences, snow fences, burlap fences, straw bales, and similar material can be used to control air currents and soil blowing.
- Chemical Treatment: Use of chemical treatment requires approval by the appropriate plan review authority.

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 BY: Kristy Potter, Division P-053 Water Reg. GMA Emp.  
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ENGINEERS  
 PLANNERS  
 SCIENTISTS  
 CONSTRUCTION MANAGERS

KCI  
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 SUITE 21152  
 SHAWNS MARYLAND 21152  
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 FAX: (410) 316-7818

Columbia Gas Transmission  
 A NISource Company

REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	JAN. 2014

S.W.M. PLAN NO. 91476  
 SEDIMENT CONTROL PLAN NO. 62276

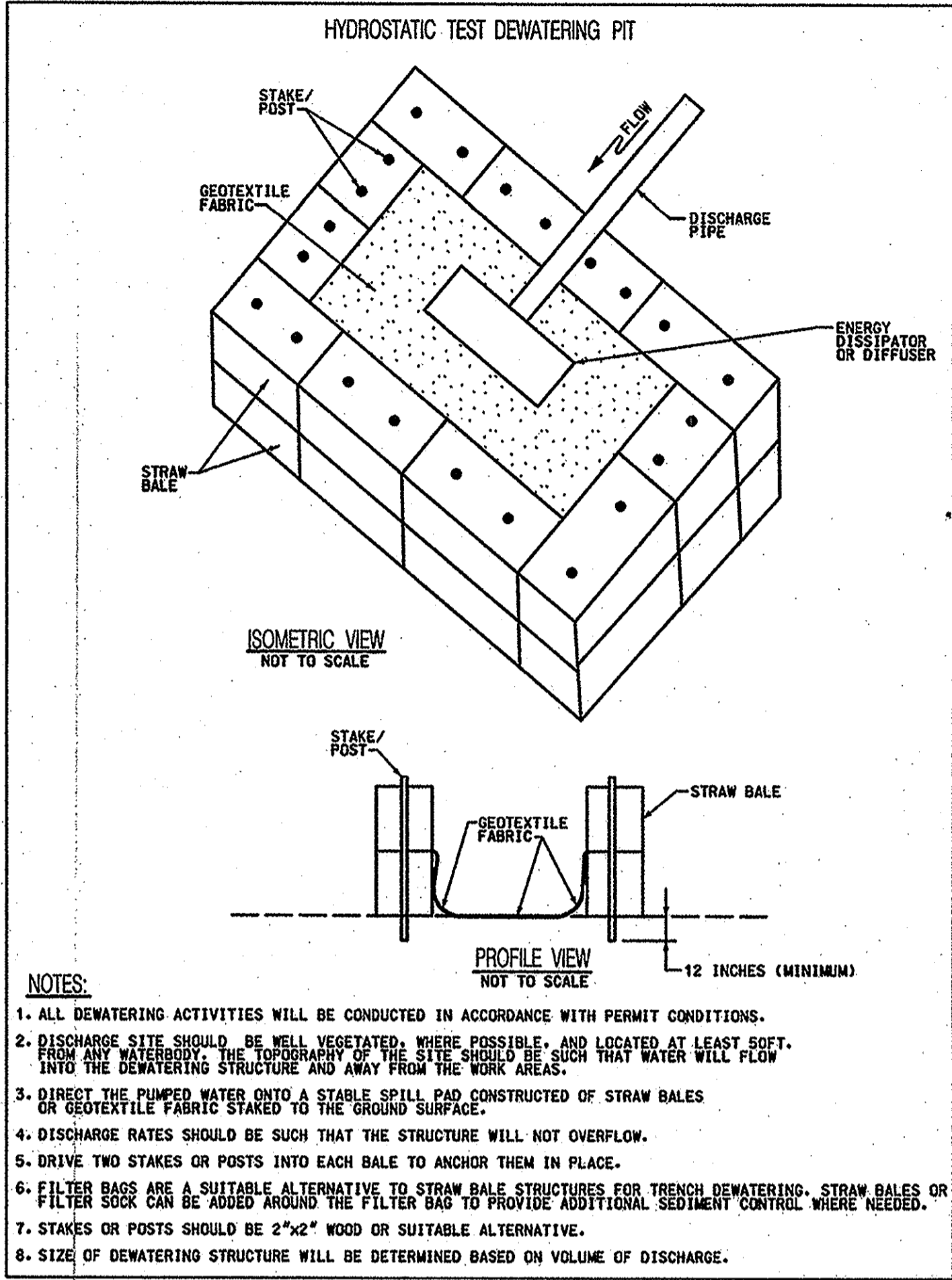
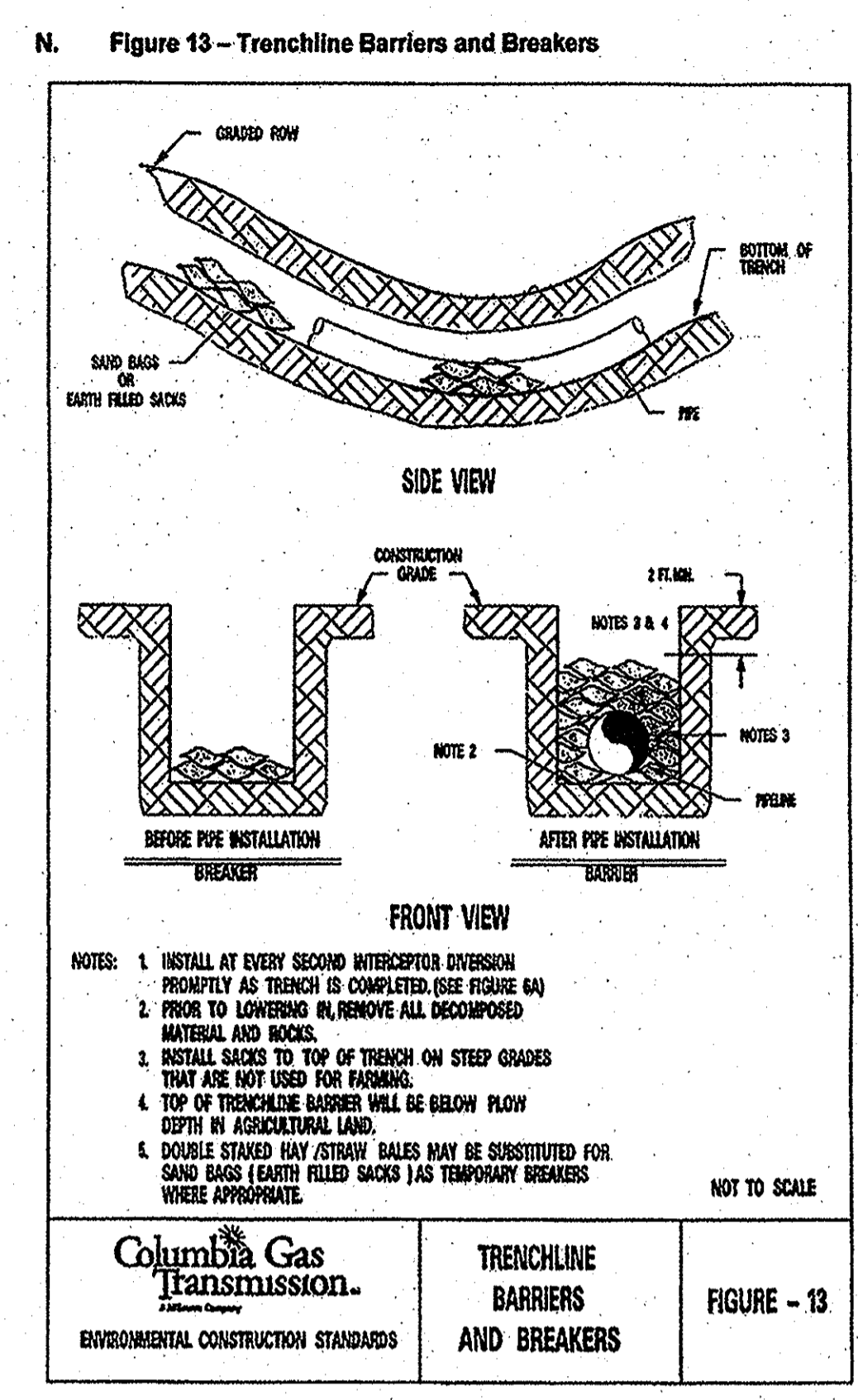
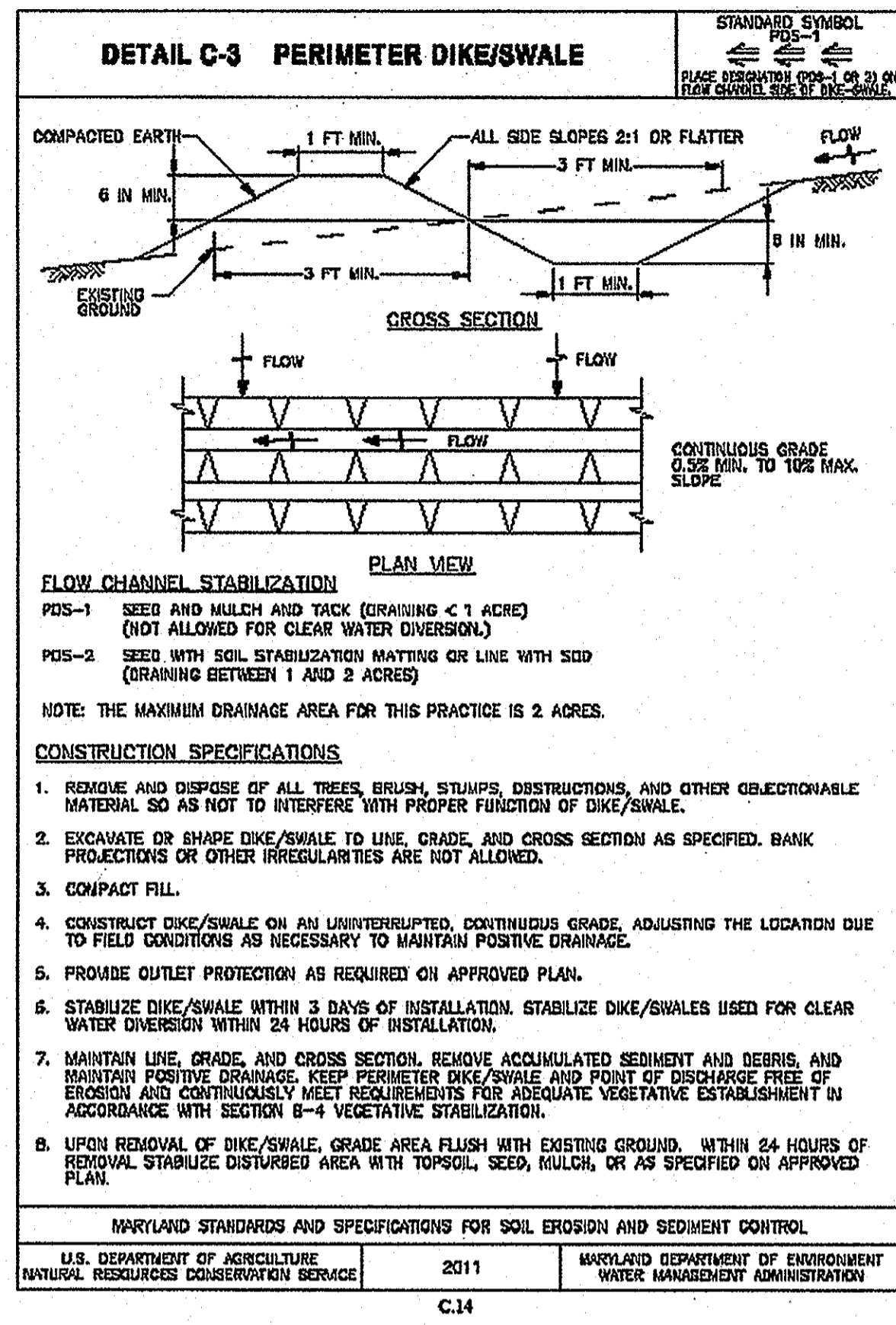
HARFORD COUNTY  
 EROSION AND SEDIMENT CONTROL DETAILS

FOR  
 COLUMBIA GAS TRANSMISSION, LLC  
 LINE MB EXTENSION PROJECT

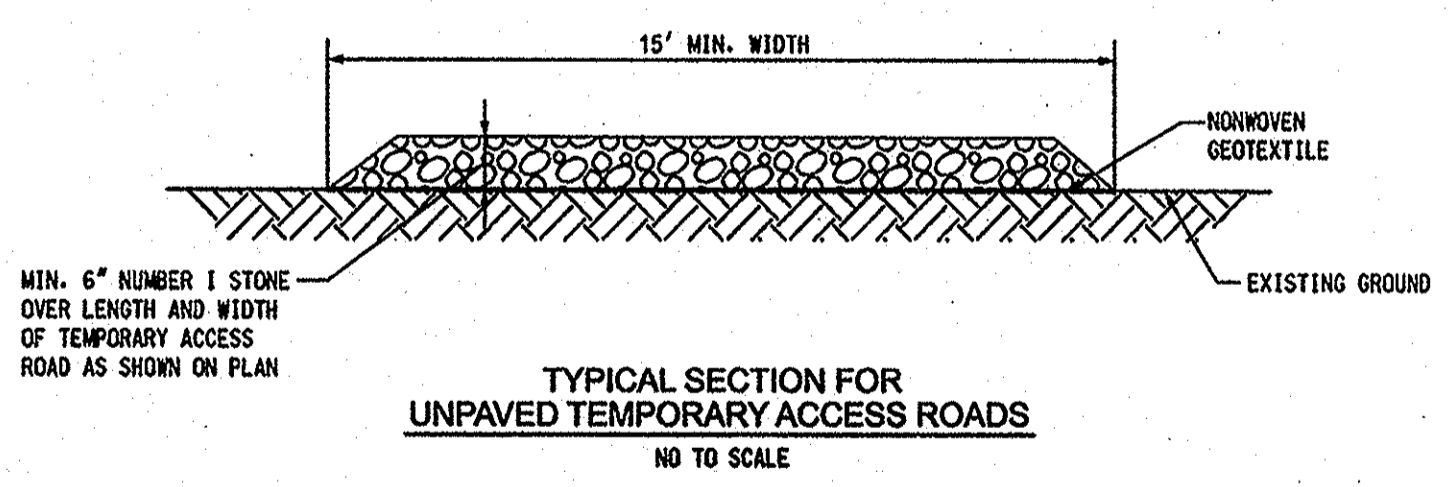
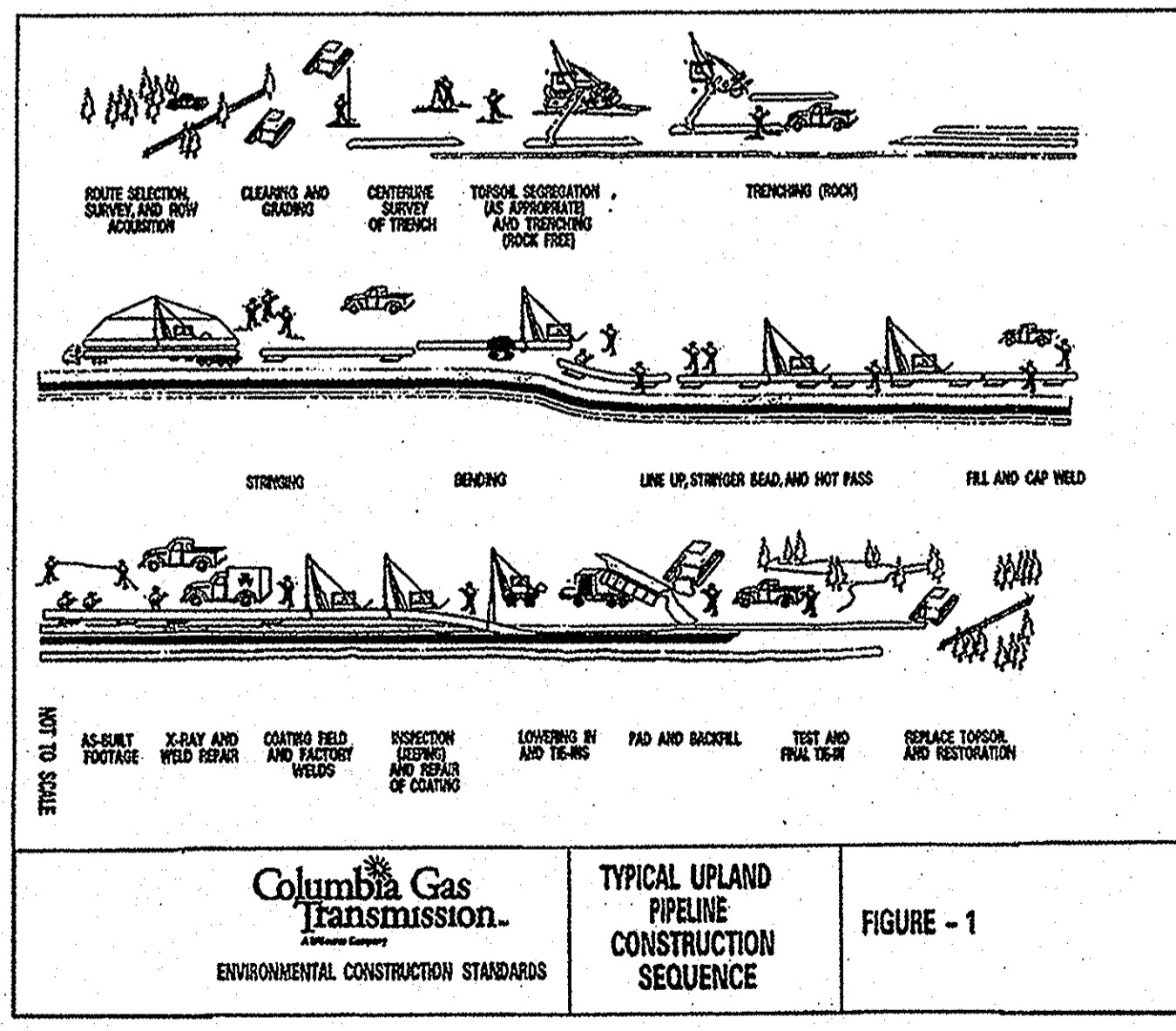
BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO.  
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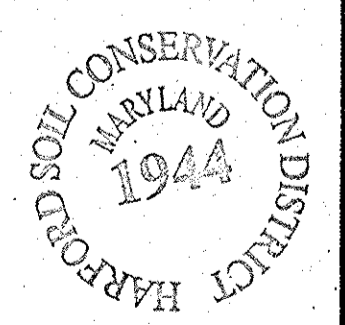
SHEET 42 OF 44  
 RCT JOB NUMBER  
 16-121849



**A. Figure 1 - Typical Upland Pipeline Construction Sequence**



**HDD ALTERNATE**



S.W.M. PLAN NO. 91476  
 SEDIMENT CONTROL PLAN NO. 52275

**PROFESSIONAL CERTIFICATION**  
 I HEREBY CERTIFY THAT THESE DRAWINGS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.  
 LICENSE NO. 14942  
 EXPIRATION DATE: 6/01/2014

**STATE OF MARYLAND**  
 PROFESSIONAL ENGINEER  
 14942

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

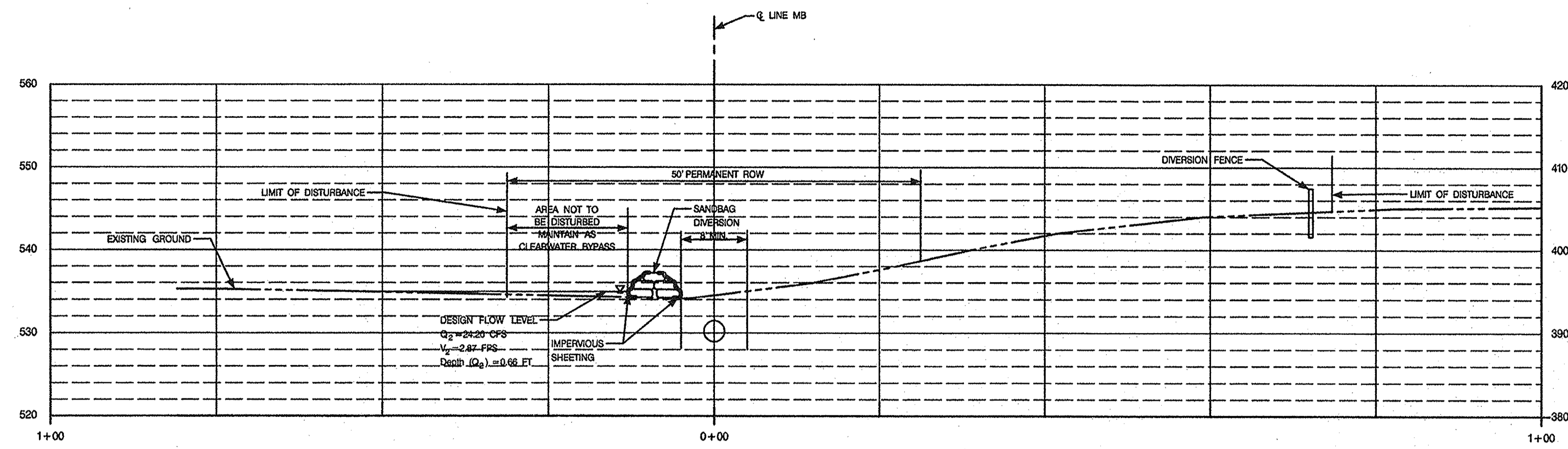
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NO.	DATE	DESCRIPTION	BY	JAN. 2014
				SCALE
				N.T.S.
				DESIGNED BY
				JS
				DRAWN BY
				JS

**HARFORD COUNTY**  
**EROSION AND SEDIMENT CONTROL DETAILS**  
 FOR  
**COLUMBIA GAS TRANSMISSION, LLC**  
**LINE MB EXTENSION PROJECT**  
 BALTIMORE & HARFORD COUNTIES, MARYLAND

**DRAWING NO.**  
**ECD-2.23**

SHEET 43 OF 44  
 KCI JOB NUMBER  
 16-121849

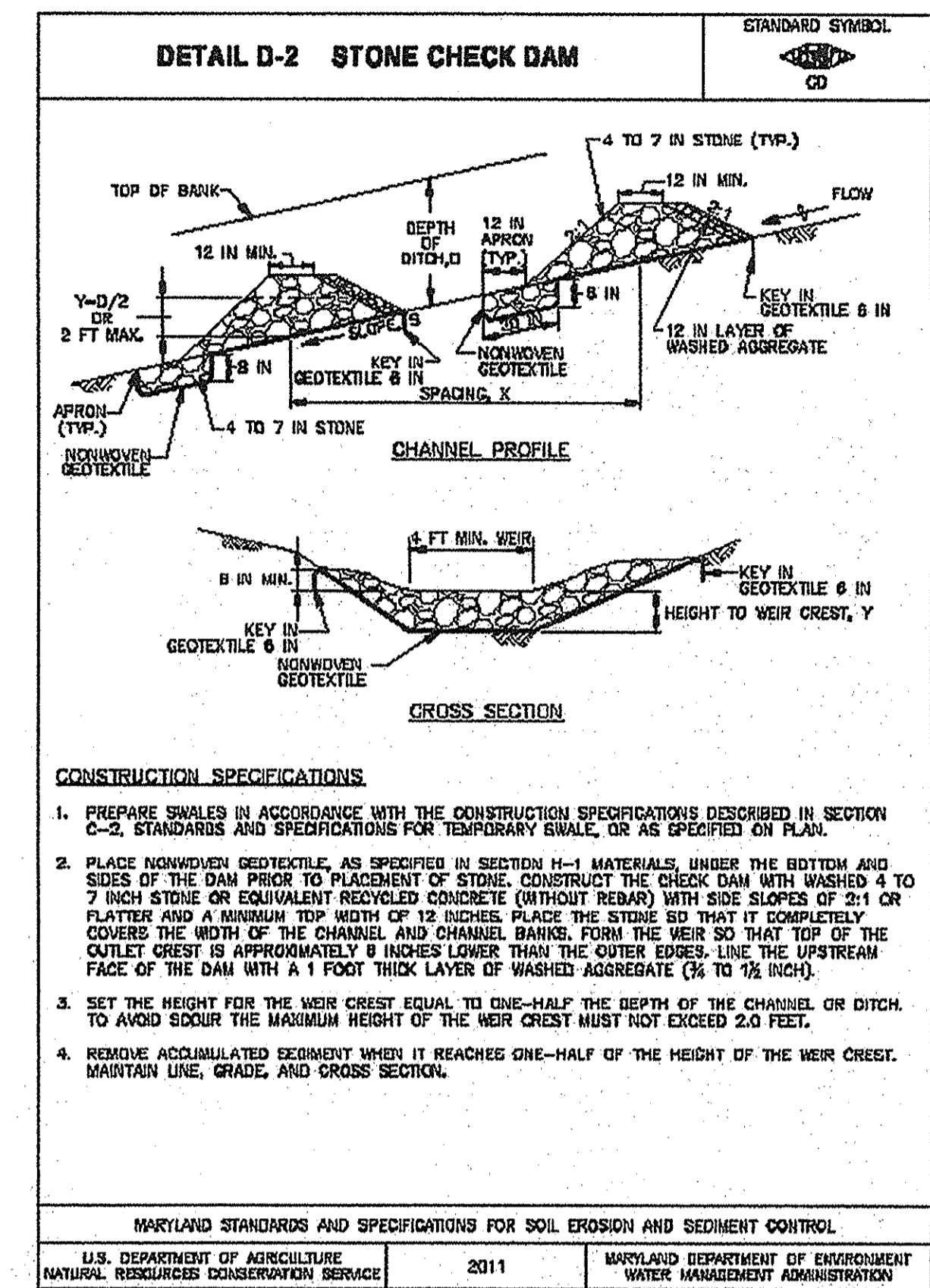
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1"=10'-0" V

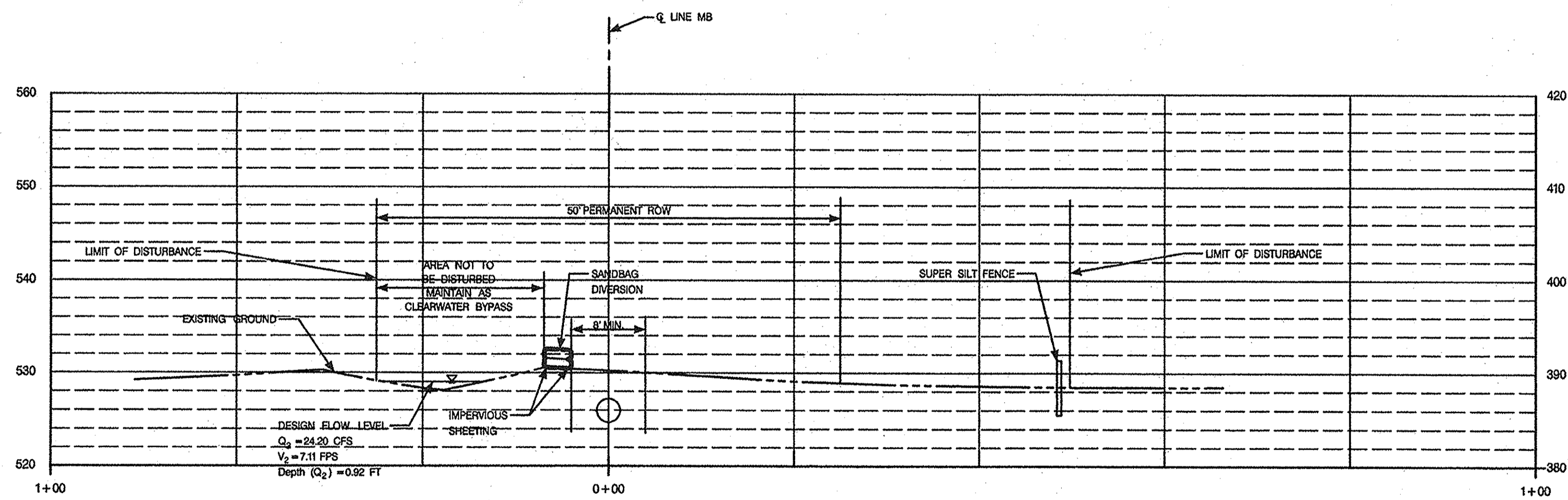
SECTION A-A'

NOTE:  
SEE GRADING /EROSION AND SEDIMENT CONTROL PLAN DWG. NO. EC-88A



- CONSTRUCTION SPECIFICATIONS**
1. PREPARE SWALES IN ACCORDANCE WITH THE CONSTRUCTION SPECIFICATIONS DESCRIBED IN SECTION C-2, STANDARDS AND SPECIFICATIONS FOR TEMPORARY SWALE, OR AS SPECIFIED ON PLAN.
  2. PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, UNDER THE BOTTOM AND SIDES OF THE DAM PRIOR TO PLACEMENT OF STONE. CONSTRUCT THE CHECK DAM WITH WASHED 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) WITH SIDE SLOPES OF 2:1 OR FLATTER AND A MINIMUM TOP WIDTH OF 12 INCHES. PLACE THE STONE SO THAT IT COMPLETELY COVERS THE WIDTH OF THE CHANNEL AND CHANNEL BANKS. FORM THE WEIR SO THAT TOP OF THE CREST IS APPROXIMATELY 8 INCHES LOWER THAN THE OUTER EDGES. LINE THE UPSTREAM FACE OF THE DAM WITH A 1 FOOT THICK LAYER OF WASHED AGGREGATE (3/4 TO 1 1/2 INCH).
  3. SET THE HEIGHT FOR THE WEIR CREST EQUAL TO ONE-HALF THE DEPTH OF THE CHANNEL OR DITCH. TO AVOID SOUR THE MAXIMUM HEIGHT OF THE WEIR CREST MUST NOT EXCEED 2.0 FEET.
  4. REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES ONE-HALF OF THE HEIGHT OF THE WEIR CREST. MAINTAIN LINE, GRADE, AND CROSS SECTION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL  
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION  
D.8



1"=10'-0" H  
1"=10'-0" V

SECTION B-B'

NOTE:  
SEE GRADING /EROSION AND SEDIMENT CONTROL PLAN DWG. NO. EC-88A

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By: Christopher Deibel/Division: P&O/Natural Resources/Emp.  
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PROFESSIONAL CERTIFICATION  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.  
LICENSE NO. 14942  
EXPIRATION DATE: 6/01/2016



**KCI TECHNOLOGIES**  
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**Columbia Gas Transmission**  
A NISource Company

REVISIONS		DATE
NO.	DATE	DESCRIPTION
1	JULY 2014	THIS NEW SHEET ADDED TO SHOW ADDITIONAL SECTIONS AND NEW DETAILS
		BY RB
		SCALE AS SHOWN
		DESIGNED BY CW
		DRAWN BY CD

S.W.M. PLAN NO. 91476  
SEDIMENT CONTROL PLAN NO. 62275

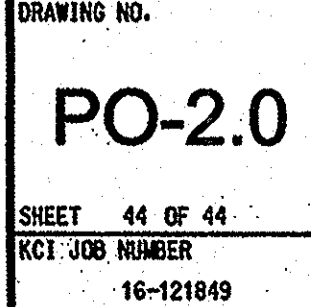
HARFORD COUNTY  
EROSION AND SEDIMENT CONTROL DETAILS  
FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT  
BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO. **ECD-2.23A**  
SHEET 438 OF 44  
KCI JOB NUMBER 16-121849



TRACT NUMBER	DISTRICT - ACCOUNT #	OWNER	CONTACT ADDRESS	TAX MAP	GRID	PARCEL	LOT	DEED REFERENCE / PLAT REF.	ZONING
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<b>EC 63</b>									
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MD-HA-001.509	04 - 065409	CAROLINE C STAUTBERG	3103 JARRETTSVILLE PIKE MONKTON MD 21111-2310	43	1C	2		08972/ 00074 / N/A	AG
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MD-HA-001.509	04 - 065409	CAROLINE C STAUTBERG	3103 JARRETTSVILLE PIKE MONKTON MD 21111-2310	43	1C	2		08972/ 00074 / N/A	AG
MD-HA-001.511	04 - 007840	GERALD J & WF BROOKHART	2608 HESS ROAD FALLSTON MD 21047-1126	38	4E	80		00884/ 00997 / N/A	AG
MD-HA-001.512	04 - 037499	MARGARET H KENNEY	3305 FOXWOOD LN FALLSTON MD 21047-1130	38	3E	133	3	01697/ 00046 / N/A	AG
MD-HA-001.513	04 - 037502	MARGARET H KENNEY	3305 FOXWOOD LN FALLSTON MD 21047-1130	38	3E	133	2	03107/ 00480 / N/A	AG
MD-HA-001.514	04 - 075412	ROBERT K DE GRAW	2520 HESS RD FALLSTON MD 21047-1125	38	4E	98		02729/ 00319 / N/A	AG
MD-HA-001.515	04 - 075420	ROBERT E BOYER JR	3823 ROCKBERRY ROAD BALTIMORE MD 21234-4248	38	3E	99	7	01304/ 00677 / N/A	AG
<b>EC 66</b>									
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MD-HA-001.515	04 - 075420	ROBERT E BOYER JR	3823 ROCKBERRY ROAD BALTIMORE MD 21234-4248	38	3E	99	7	01304/ 00677 / N/A	AG
MD-HA-001.516	04 - 089841	WILFRED L & NANCY E TURK JR	2510 HESS RD FALLSTON MD 21047-1125	38	3E	135		00958/ 00739 / N/A	AG
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MD-HA-001.518	04 - 072801	LAMBERT G BOYCE JR	2500 HESS RD FALLSTON MD 21047-1143	38	3E	36	4	01850/ 00131 / 917202	AG
MD-HA-001.519	04 - 058949	DONALD J ROCKER	2440 HESS RD FALLSTON MD 21047-1128	38	3E	16		01085/ 00888 / N/A	AG
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MD-HA-001.521	04 - 070534	JOHN THOMAS REED	2430 HESS RD FALLSTON MD 21047-1128	38	3D	130		03322/ 00708 / N/A	AG
MD-HA-001.522	04 - 028683	JOHN H HAGAN	2420 HESS RD FALLSTON MD 21047-1138	38	3F	115		01139/ 00199 / N/A	AG
MD-HA-001.526	04 - 044703	JACQUELINE MAE ANDERSON	2217 SA SADA WA ST SE OLYMPIA WA 98513-9441	38	3F	79		04832/ 00884 / N/A	AG
MD-HA-001.528	04 - 026857	JOHN S CLOTWORTHY	3306 ELY ROAD FALLSTON MD 21047-1120	38	3F	51		02185/ 00166 / N/A	AG
<b>EC 68</b>									
MD-HA-001.530	04 - 058224	MGM FARMS LLC	2316 KINGS ARMS DR FALLSTON MD 21047-1247	38	3F	156	5	09709/ 00208 / 130/ 100	RR
MD-HA-001.533	04 - 080181	WILLIAM R COLE	2308 KING'S ARMS DR FALLSTON MD 21047-1247	38	3F	154	8	08316/ 00350 / 52117	AG
MD-HA-001.534	04 - 080173	FRANK A TEDESCHI	2308 KING'S ARMS DRIVE FALLSTON MD 21047-1247	38	3F	154	7	02383/ 00098 / 52117	AG
<b>EC 69</b>									
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MD-HA-001.534	04 - 080173	FRANK A TEDESCHI	2308 KING'S ARMS DRIVE FALLSTON MD 21047-1247	38	3F	154	7	02383/ 00098 / 52117	AG
MD-HA-001.536	04 - 080282	ARTHUR A SHELLHOUSE, JR	2305 KING'S ARMS DRIVE FALLSTON MD 21047-1248	38	3F	154	14	02025/ 00394 / 52117	AG
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MD-HA-001.540	04 - 087968	EDWARD W O'LOUGHLIN	3308 PRITCHETT LANE FALLSTON MD 21047-1054	38	2F	42	3	01910/ 00916 / 71004	RR
MD-HA-001.541	04 - 087976	JOSEPH VINCENT ZITO	3304 PRITCHETT LN FALLSTON MD 21047-1054	38	2F	42	4	02724/ 00368 / 71004	RR
MD-HA-001.542	04 - 087984	ANTHONY LEE NASCO	3302 PRITCHETT LN FALLSTON MD 21047-1054	38	2F	42	5	02334/ 00430 / 71004	RR
MD-HA-001.544	04 - 080114	BRENDA K RUSH	2308 KING'S ARMS DR FALLSTON MD 21047-1248	38	3F	153	16	04538/ 00354 / 64009	AG
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MD-HA-001.544	04 - 080114	BRENDA K RUSH	2308 KING'S ARMS DR FALLSTON MD 21047-1248	38	3F	153	16	04538/ 00354 / 64009	AG
MD-HA-001.545	04 - 005503	NEALE R BIERER	2238 RUTLEDGE RD FALLSTON MD 21047-1242	38	3A	329	1	03232/ 00459 / 99090	AG
MD-HA-001.546	04 - 097815	NEALE R BIERER	2238 RUTLEDGE RD FALLSTON MD 21047-1242	39	3A	329	PAR B	03232/ 00465 / 99090	AG
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MD-HA-028.100	04 - 107020	BLANE M. TREBES	7400 MILARDO DR KINGSVILLE MD 21087-1710	39	0003A	232	1	08324/ 00458 / 132040	AG
MD-HA-028.300	04 - 091191	BLANE M. TREBES	2009 RUTLEDGE RD FALLSTON MD 21047-1253	39	0003A	32	3	08168/ 00358 / 77022	AG
MD-HA-031.000	04 - 079140	JOAN G. PARRIS	2226 RUTLEDGE RD FALLSTON MD 21047-1242	39	0002A	135	3	07587/ 00410 / 51055	AG
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<b>EC 72</b>									
MD-HA-031.000	04 - 079140	JOAN G. PARRIS	2226 RUTLEDGE RD FALLSTON MD 21047-1242	39	0002A	135	3	07587/ 00410 / 51055	AG
MD-HA-032.000	04 - 076080	COLUMBIA GAS TRANSMISSION CORPORATION	PO BOX 10146 FAIRFAX VA 22030-8046	39	0003A	28	1	01181/ 00100 / 77005	AG

NOTE: REFER TO GRADING / EROSION AND SEDIMENT CONTROL PLAN DWG. NOS. EC-60 THROUGH EC-72 FOR THE PROPERTY TRACT NUMBERS AND THE LOCATION OF INDIVIDUAL PROPERTIES.



S.W.M. PLAN NO. 91476  
SEDIMENT CONTROL PLAN NO. 52275

**Columbia Gas Transmission**  
A NiSource Company

NO.	DATE	REVISIONS DESCRIPTION	BY	DATE
				JAN. 2014
				SCALE
				DESIGNED BY
				JS
				DRAWN BY
				JS

HARFORD COUNTY  
PROPERTY OWNERS CHART  
FOR  
COLUMBIA GAS TRANSMISSION, LLC  
LINE MB EXTENSION PROJECT  
BALTIMORE & HARFORD COUNTIES, MARYLAND

DRAWING NO.  
**PO-2.0**  
SHEET 44 OF 44  
KCI JOB NUMBER  
16-121849