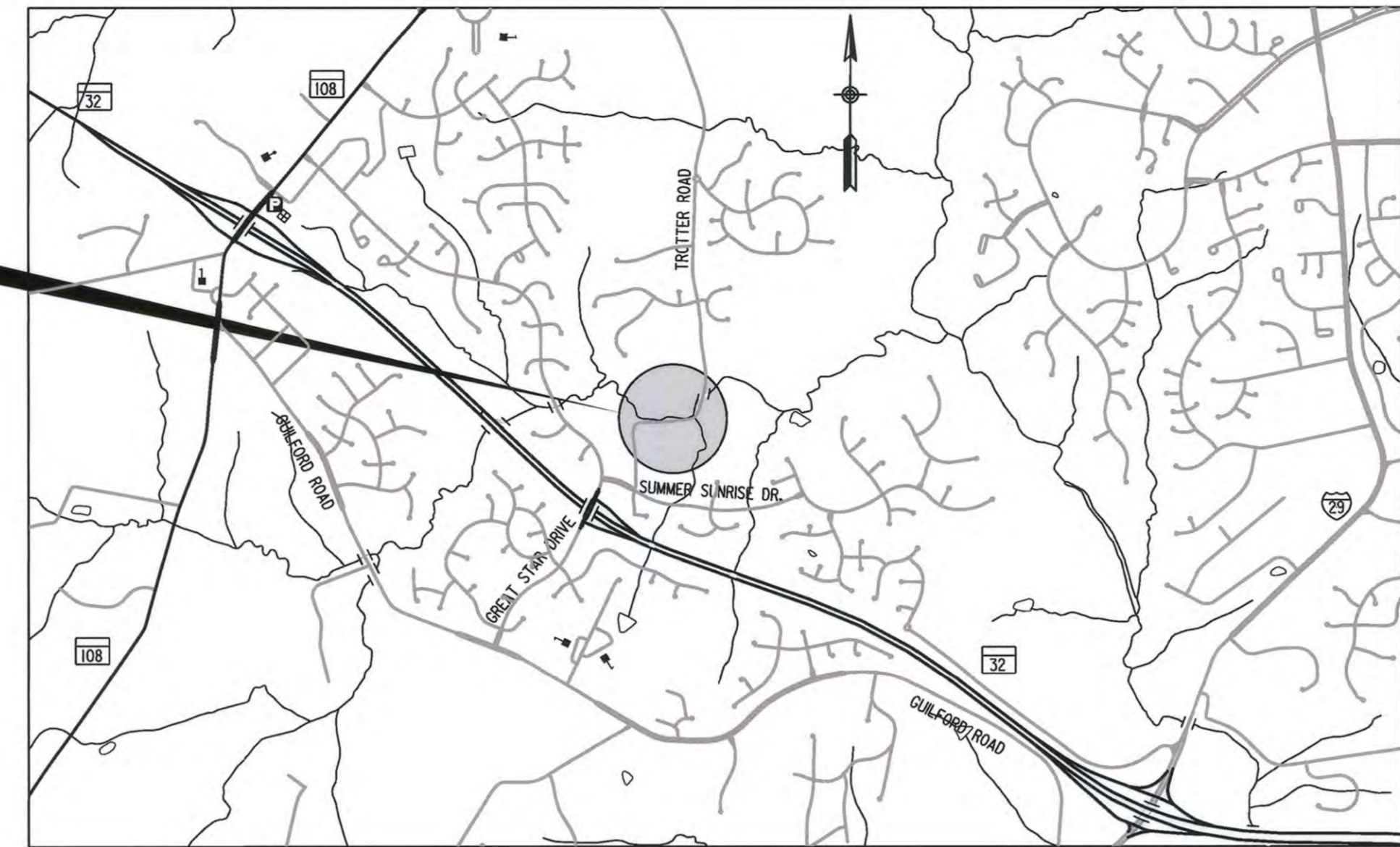


INDEX OF SHEETS

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1	TITLE SHEET
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5	WALL ELEVATION PLAN
6	CROSS SECTIONS
7	MAINTENANCE OF TRAFFIC NOTES
8	DETOUR PLAN FOR FULL CLOSURE
9	DETOUR PLAN FOR NORTHBOUND CLOSURE
10	MAINTENANCE OF TRAFFIC PLAN
11	EROSION AND SEDIMENT CONTROL NOTES
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PROJECT SITE  
CAPITAL PROJECT NO. D-II63  
TROTTER ROAD  
STREAM BANK STABILIZATION  
HOWARD COUNTY, MD



LOCATION MAP  
SCALE 1" = 2000'

CAPITAL PROJECT NO. D-II63  
**TROTTER ROAD  
STREAM BANK STABILIZATION**

HOWARD COUNTY, MARYLAND  
DEPARTMENT OF PUBLIC WORKS

GENERAL NOTES

- ALL INFORMATION AND DETAILS ON THESE DRAWINGS SHALL BE CONSTRUCTED AS PER THE PLANS OR AS DIRECTED BY THE HOWARD COUNTY ENGINEER.
- ALL STATIONING AND DIMENSIONING ARE TO BE FIELD VERIFIED BY THE CONTRACTOR.
- APPROXIMATE LOCATIONS OF EXISTING UTILITIES ARE SHOWN. THESE LOCATIONS ARE FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE ENGINEER BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE (5) DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS.
  - AT&T ..... 1-800-252-1133
  - COMCAST ..... 410-461-1362
  - BC&E (CONTRACTOR SERVICES) ..... 410-850-4620
  - BC&E (UNDERGROUND DRAINAGE CONTROL) ..... 410-787-9068
  - MISS UTILITY ..... 1-800-257-7777
  - HOWARD COUNTY BUREAU OF UTILITIES ..... 410-313-4900
  - HOWARD COUNTY DIVISION OF CONSTRUCTION INSPECTION ..... 410-313-1880
  - VERIZON ..... 1-800-743-0033/410-224-9210
- THE CONTRACTOR SHALL CONTACT THE HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION OF ENGINEERING FOR VERIFICATION AND/OR INFORMATION REGARDING:
  - A. PROPOSED/EXISTING RIGHT-OF-WAY.
  - B. UTILITY RELOCATION.
  - C. MAINTENANCE OF TRAFFIC DURING CONSTRUCTION.
  - D. EROSION/SEDIMENT CONTROL CERTIFICATION AND PERMIT.
  - E. HORIZONTAL/VERTICAL SURVEY CONTROL.
  - F. GRADING PERMIT.
- SEE HOWARD COUNTY STANDARD DETAILS NO'S G-1.01 AND G-1.02 FOR STANDARD SYMBOLS.
- HORIZONTAL COORDINATES ARE BASED ON MD NAD 83/91 DATUM AND VERTICAL ELEVATIONS ARE BASED ON NAVD 1988 ELEVATIONS.
- THE EXISTING TOPOGRAPHY IN AREAS #1 AND #2 IS TAKEN FROM FIELD RUN SURVEY WITH ONE FOOT CONTOUR INTERVALS. THE SURVEY IN AREA #1 WAS PERFORMED BY HOWARD COUNTY IN SEPTEMBER, 2009. AREA #2 WAS SURVEYED BY JMT IN OCTOBER, 2010. GIS CONTOURS WITH TWO FOOT INTERVALS BASED OFF OF BARE EARTH LIDAR MASS POINTS COLLECTED IN SPRING, 2004 IS USED THROUGHOUT THE BALANCE OF THE PROJECT.
- BORINGS AND BORING LOGS PERFORMED BY E2CR, JUNE 2009.
- THE SUBJECT PROPERTIES ARE ZONED R-ED (LOW DENSITY RESIDENTIAL) PER FEBRUARY 2, 2004 COMPREHENSIVE ZONING PLAN AND THE COMP-LITE ZONING AMENDMENTS DATED 7/28/2006.
- THE DEPARTMENT OF PLANNING AND ZONING AND THE HOWARD SOIL CONSERVATION DISTRICT HAVE DETERMINED THAT THE DISTURBANCES WITHIN THE 100-YR FLOODPLAIN, WETLANDS, STREAM AND REQUIRED BUFFERS FOR THE PROPOSED STREAM BANK STABILIZATION PROJECT ARE CONSIDERED ESSENTIAL OR NECESSARY IN ACCORDANCE WITH SECTIONS 16.116(C) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
- THIS PROJECT IS NOT A SUBDIVISION, AND THEREFORE THIS PLAN IS NOT REQUIRED TO MEET THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.
- THERE ARE NO BURIAL GROUNDS OR CEMETARY SITES LOCATED ON THE PROJECT SITE.
- THIS PLAN MEETS THE REQUIREMENTS OF THE FOREST CONSERVATION REGULATIONS.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS, BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 24 HRS IN ADVANCE OF ANY WORK BEING PERFORMED.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HRS PRIOR TO ANY EXCAVATION WORK BEING PERFORMED.
- THE COORDINATES SHOWN HEREON ARE BASED ON HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM.
- WATER IS PUBLIC.
- SEWER IS PUBLIC.
- STORMWATER MANAGEMENT IS NOT REQUIRED FOR THIS PROJECT SINCE THE PROJECT WILL NOT ADD IMPERVIOUS AREA NOR WILL IT CHANGE THE HYDROLOGY OF THE SITE.
- EXISTING UTILITIES ARE BASED ON FIELD SURVEYS. THE LOCATIONS OF ALL UTILITIES IS APPROXIMATE.
- THE FLOODPLAIN STUDY FOR THIS PROJECT WAS PREPARED BY JMT AND WAS APPROVED ON DECEMBER 19, 2011.
- THE WETLANDS DELINEATION FOR THIS PROJECT WAS PERFORMED BY JMT ON OCTOBER 20, 2010.
- ALL WORK SHALL BE CONSTRUCTED ACCORDING TO THE REQUIREMENTS OF THE NONTIDAL WETLANDS AND WATERWAYS PERMIT DATED DECEMBER 19, 2011. THE MDE PERMIT TRACKING NUMBER IS 20160805/11-NT-0191.
- NO TRAFFIC STUDY IS REQUIRED FOR THIS PROJECT.
- OBSTRUCTIONS SHOWN ON THESE DRAWINGS ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. JMT DOES NOT WARRANT OR GUARANTEE THE CORRECTNESS OR COMPLETENESS OF THE INFORMATION GIVEN. SHOULD THE CONTRACTOR DISCOVER ANY DISCREPANCIES BETWEEN THE PLANS AND THE FIELD CONDITIONS, THE CONTRACTOR MUST VERIFY SUCH INFORMATION TO HIS OWN SATISFACTION. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY TO RESOLVE THE SITUATION. SHOULD THE CONTRACTOR MAKE FIELD CORRECTIONS OR ADJUSTMENTS WITHOUT NOTIFYING THE ENGINEER, THE CONTRACTOR ASSUMES RESPONSIBILITY FOR THOSE CHANGES.
- THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO THE CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
- HOWARD SOIL CONSERVATION DISTRICT TRACKING # EP-12-13.
  - ( ) (WP-15-127)
  - ( ) (WP-15-127)
- A WAIVER PETITION (WP-12-119) FROM SUBSECTION 16.155(a)(1)(ii) WAS APPROVED ON MARCH 6, 2012 THAT ALLOWS THE GRADING PERMITS TO BE OBTAINED FOR THE PROJECT WITHOUT FIRST SUBMITTING SITE DEVELOPMENT PLANS TO DPZ FOR APPROVAL. THE WAIVER APPROVAL IS SUBJECT TO THE FOLLOWING CONDITIONS:
  - 1. PETITIONER SHALL OBTAIN AUTHORIZATION FROM THE MARYLAND DEPARTMENT OF THE ENVIRONMENT AND U.S. ARMY CORPS OF ENGINEERS FOR ACTIVITIES IN REGULATED AREAS ASSOCIATED WITH THE PROJECT. THE PETITIONER SHALL OBTAIN ALL NECESSARY PERMITS FROM MDE AND DLP.
  - 2. PETITIONER SHALL OBTAIN AUTHORIZATION FROM THE OWNER(S) OF T.M. 35, P-23 FOR ACTIVITIES PROPOSED ON THAT PROPERTY PRIOR TO START OF WORK.
  - 3. PETITIONER SHALL SUBMIT A COMPLETED FOREST CONSERVATION DATA SUMMARY TO THE DPZ, DIVISION OF LAND DEVELOPMENT, ATTN: DAVE BOELLNER.

CONVENTIONAL SIGNS

MAILBOX	M.B.	PROPOSED PIPE/CULVERT	
EXISTING FENCE LINE	X	EXISTING PIPE/CULVERT	
EXISTING RIGHT OF WAY LINE	X	UTILITY POLE	
BASE LINE	500	HEDGE / TREE LINE	
FIRE HYDRANT	F.H.	BUSH / TREE	
PROPOSED FULL DEPTH PAVEMENT		CONIFEROUS TREE	
PROPOSED GRINDING & HMA PAVEMENT OVERLAY		RIP-RAP	
PROPOSED CONCRETE SIDEWALK, DRIVEWAY ENTR.		GIS EXISTING CONTOUR	320
WATER LINE		SURVEYED MAJOR CONTOUR	320
GAS LINE		SURVEYED MINOR CONTOUR	
SAN. SEWER		WATERS OF THE US	WUS
UG ELECTRIC		EDGE OF WATER	
UG TV CABLE		STREAM CENTER LINE	
FILL LINE		IMBRICATED RIPRAP WALL	
CUT LINE		WETLAND BOUNDARY	
BORING		WETLAND BUFFER BOUNDARY	
SANITARY SEWER MANHOLE		100-YR FLOODPLAIN	

SPECIAL CONTRACTOR NOTES

- 100-YR FLOODPLAIN ELEVATION IS SHOWN ON THE PLANS.
- STREAM DESIGNATED USE: IV-P. IN-STREAM WORK IS PROHIBITED FROM MARCH 1ST TO MAY 31ST, INCLUSIVE.
- CONTRACTOR SHALL CONTINUALLY MONITOR WEATHER FORECASTS DURING WORK ACTIVITIES AND SCHEDULE WORK DURING FAVORABLE CONDITIONS.
- THE CONTRACTOR SHALL EXERCISE CARE IN ACTIVITIES INVOLVING EITHER CUT AND FILL OR GRADING IN THE VICINITY OF TREES TO REMAIN AT THE CONSTRUCTION SITE. ALL EARTH CUTS AND ACTIVITIES IN THE VICINITY OF TREES TO REMAIN SHALL BE MADE IN A MANNER THAT DOES NOT DISTURB THE CRITICAL ROOT ZONE WITHIN THE DRIPLINE OF THE TREE. PROTECTIVE ORANGE FENCING SHALL BE INSTALLED AROUND THE PERIMETER OF THE CRITICAL ROOT ZONE WITHIN THE DRIPLINE OF THE TREE. THE LOCATION OF THE PROTECTIVE ORANGE FENCING SHALL BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
- UPON COMPLETION OF THE WORK, BUT PRIOR TO DE-MOBILIZATION, THE CONTRACTOR SHALL REMOVE ALL REMNANTS OF CONSTRUCTION MATERIALS FROM THE SITE. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO A CONDITION EQUAL TO OR BETTER THAN THE PRE-CONSTRUCTION CONDITIONS.
- PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES, PHOTOGRAPHS OF THE PROPOSED WORK AREA AND ACCESS LOCATIONS SHALL BE TAKEN.
- ALL TREES TO BE REMOVED SHALL BE CUT AT THE BASE WITH A SAW AND NOT PUSHED OVER. TREE STUMPS MAY BE LEFT IN PLACE, UNLESS OTHERWISE DIRECTED ON THE PLANS.
- ALL MATERIAL SHALL BE REMOVED AND DISPOSED OF OFFSITE. REMOVED TREES AND BRUSH MAY BE RE-DISTRIBUTED ON SITE AT THE DISCRETION OF THE ENGINEER.

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
Approved: *Paul F. Clement*  
Howard SCD 6/16/15

ENGINEER'S CERTIFICATE

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

*Paul F. Clement* P.E. # 15466 6/16/15  
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE)  
PAUL F. CLEMENT, P.E. DATE

DEVELOPER'S CERTIFICATE

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

*Mark S. Richmond* 6/16/15  
SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE)  
Mark S. Richmond DATE

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

*Mark S. Richmond* 6/16/15  
CHIEF, STORMWATER MANAGEMENT DIVISION DATE

*Mark S. Richmond* 6/16/15  
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

*Mark S. Richmond* 6/16/15  
DIRECTOR OF PUBLIC WORKS DATE



PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 15466. EXPIRATION DATE: JULY 15, 2017.

NO.	REVISIONS DESCRIPTION	DATE
1	DPZ WAIVER PETITION	5/18/2015
2	W-BEAM AREA #2	6/8/2015

JOHNSON, MIRMIRAN & THOMPSON  
Engineering A Brighter Future  
72 Lovington Circle, Baltimore, Maryland 21152-0949

TROTTER ROAD  
STREAM BANK STABILIZATION

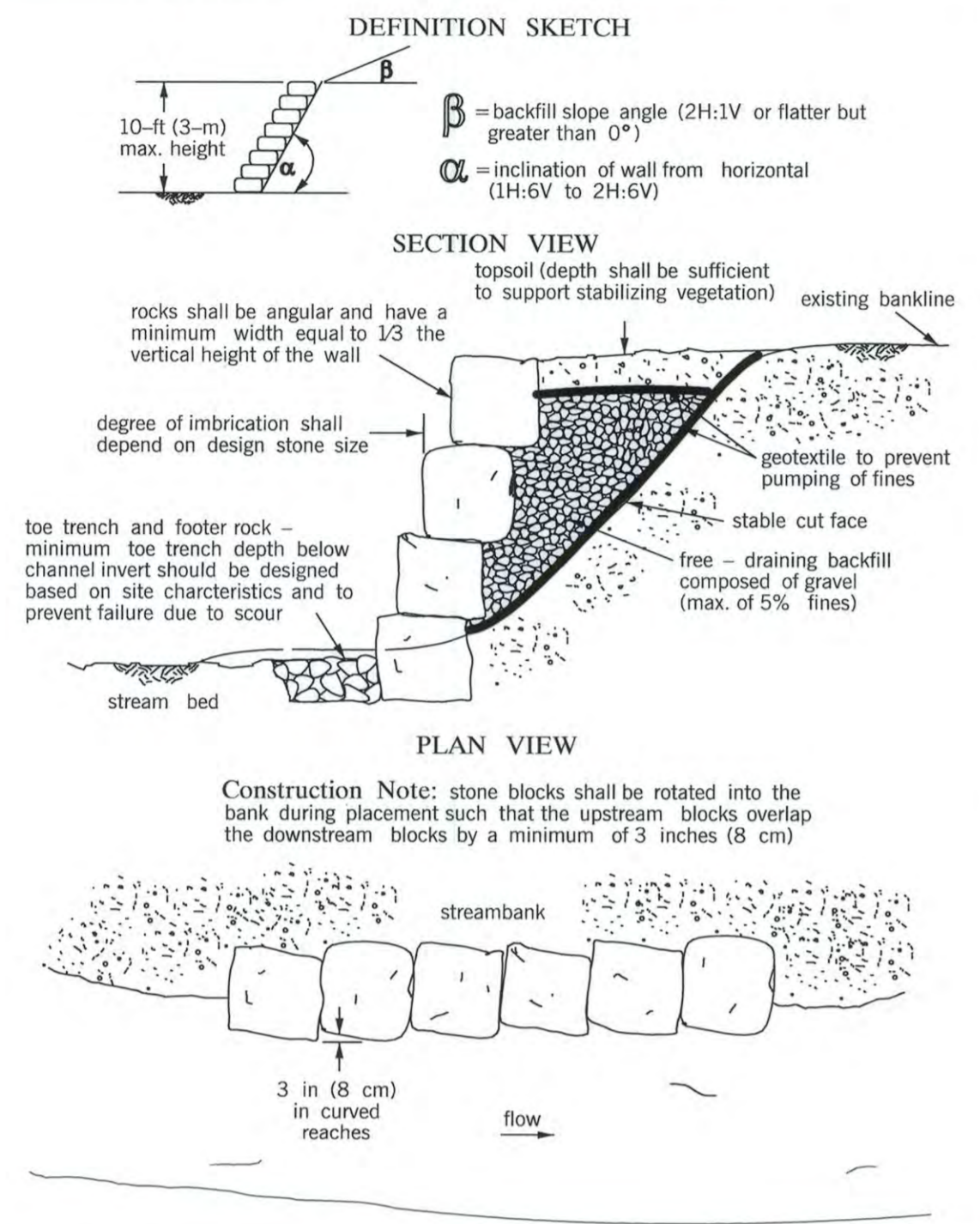
TITLE SHEET

SCALE:	AS SHOWN
DATE:	JUNE 8, 2015
JMT JOB NO.:	09-2356-003/012
CAPITAL PROJECT NO.:	D-II63
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	

TI-1  
SHEET NO.: 1 OF 15

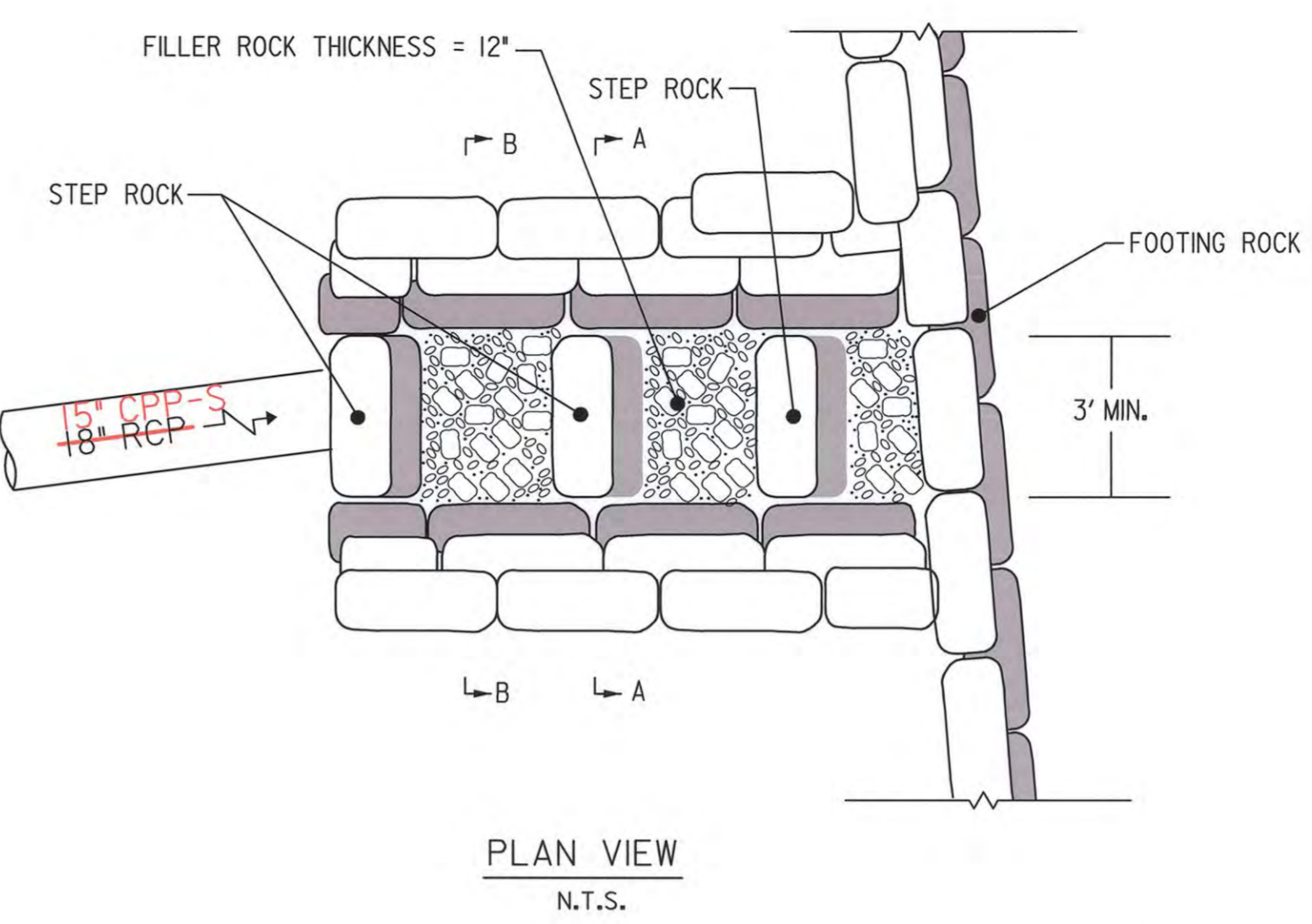
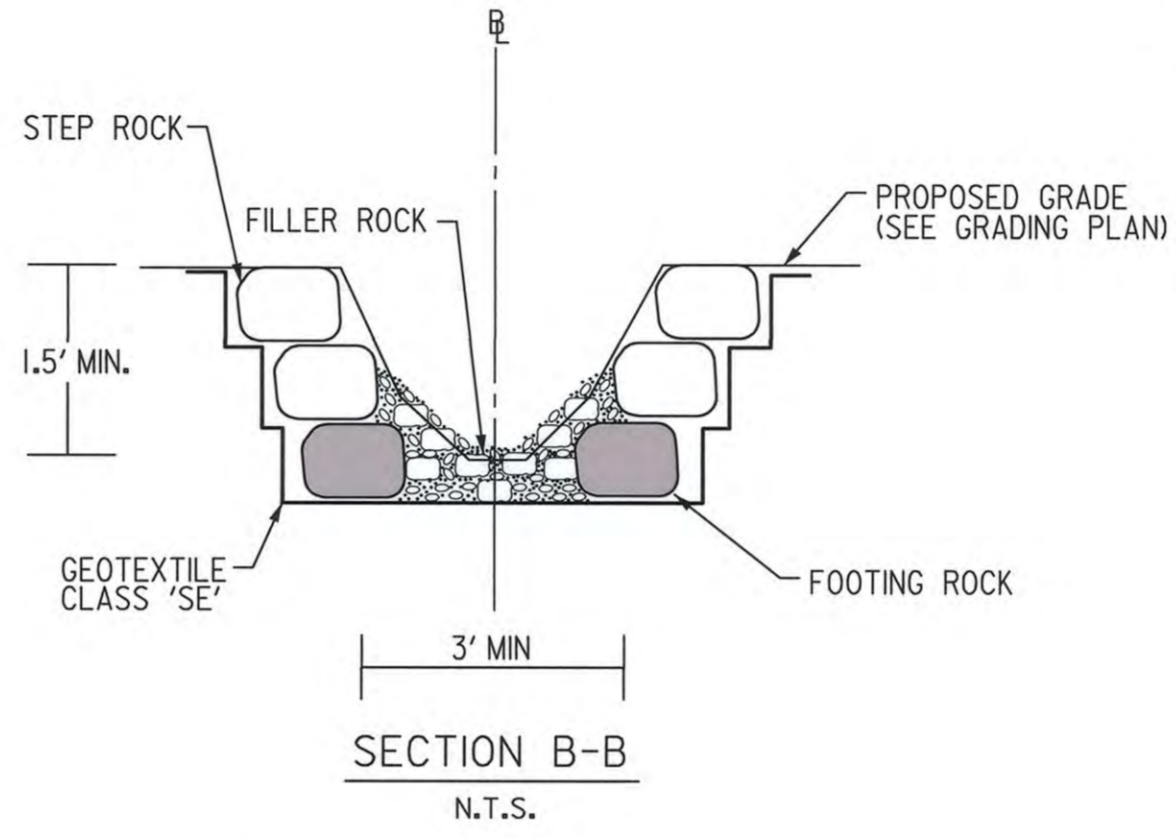
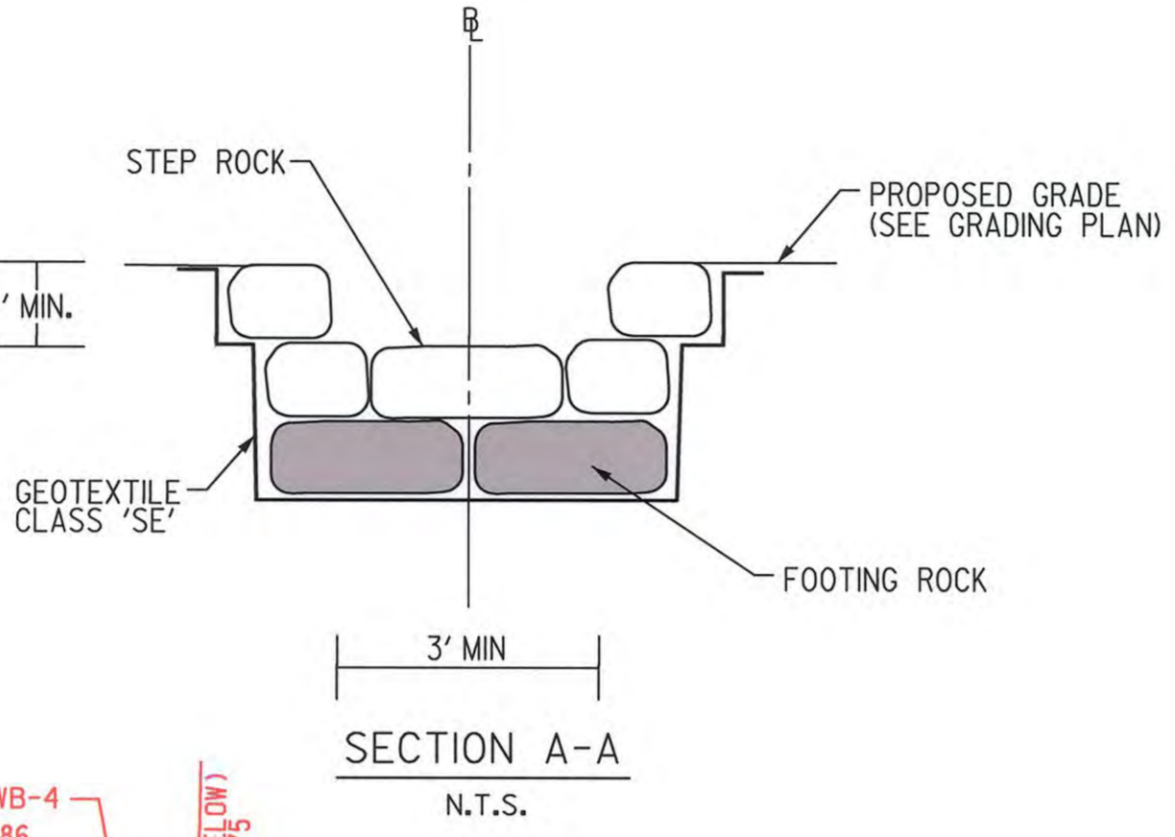
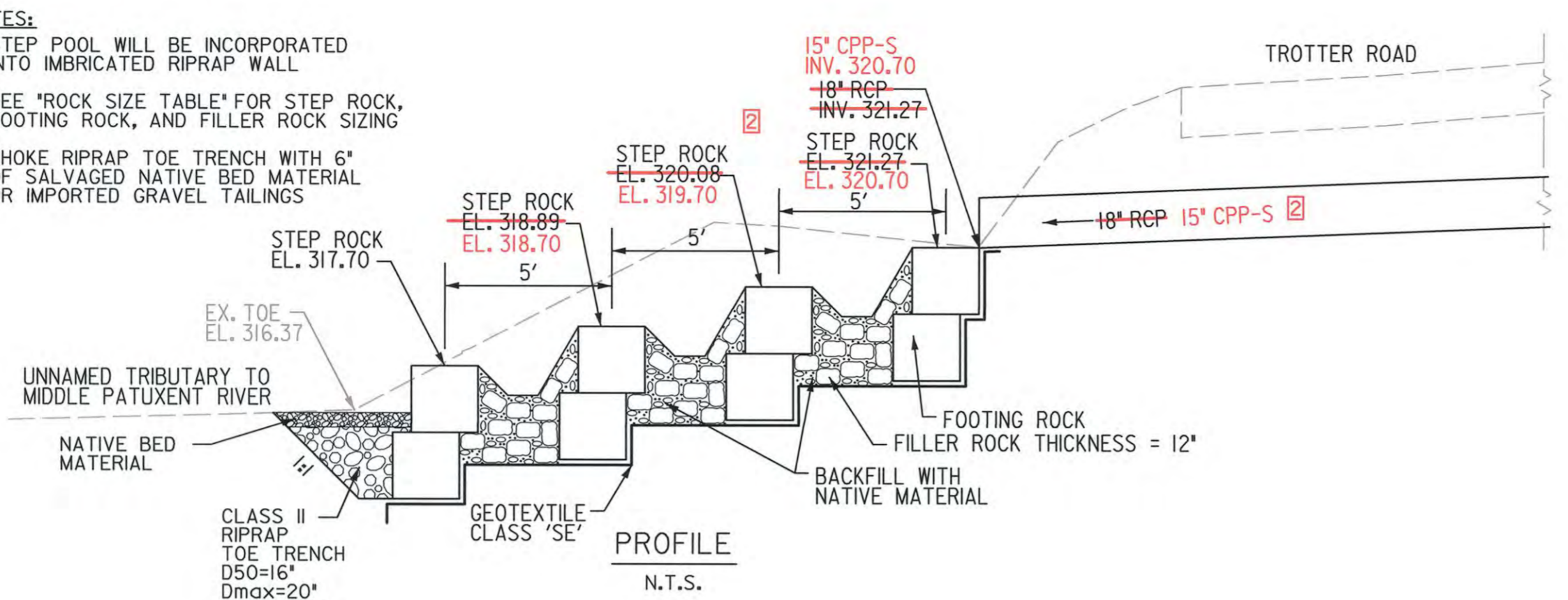
EP-12-13

Maryland's Guidelines To Waterway Construction  
**DETAIL 2.2: IMBRICATED RIPRAP**



CONSTRUCTION NOTE: stone blocks shall be rotated into the bank during placement such that the upstream blocks overlap the downstream blocks by a minimum of 3 inches (8 cm)

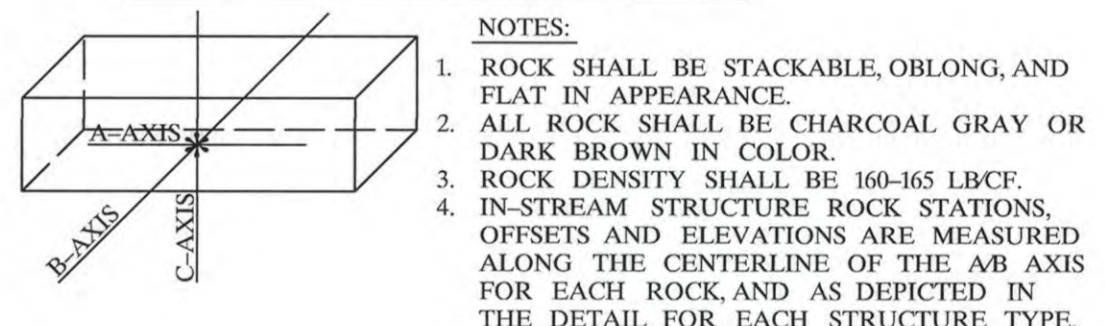
- NOTES:  
 1. STEP POOL WILL BE INCORPORATED INTO IMBRICATED RIPRAP WALL  
 2. SEE "ROCK SIZE TABLE" FOR STEP ROCK, FOOTING ROCK, AND FILLER ROCK SIZING  
 3. CHOKE RIPRAP TOE TRENCH WITH 6" OF SALVAGED NATIVE BED MATERIAL OR IMPORTED GRAVEL TAILINGS



ROCK SIZE TABLE	
ROCK TYPE	SIZE
IMBRICATED RIPRAP WALL	SEE "ROCK SIZING DETAIL FOR IMBRICATED RIPRAP"
STEP POOL - STEP ROCK AND FOOTING ROCK	SEE "ROCK SIZING DETAIL FOR IMBRICATED RIPRAP"
STEP POOL - FILLER ROCK	3"-12" GRAVEL TAILINGS
RIPRAP TOE TRENCH	CLASS II RIPRAP

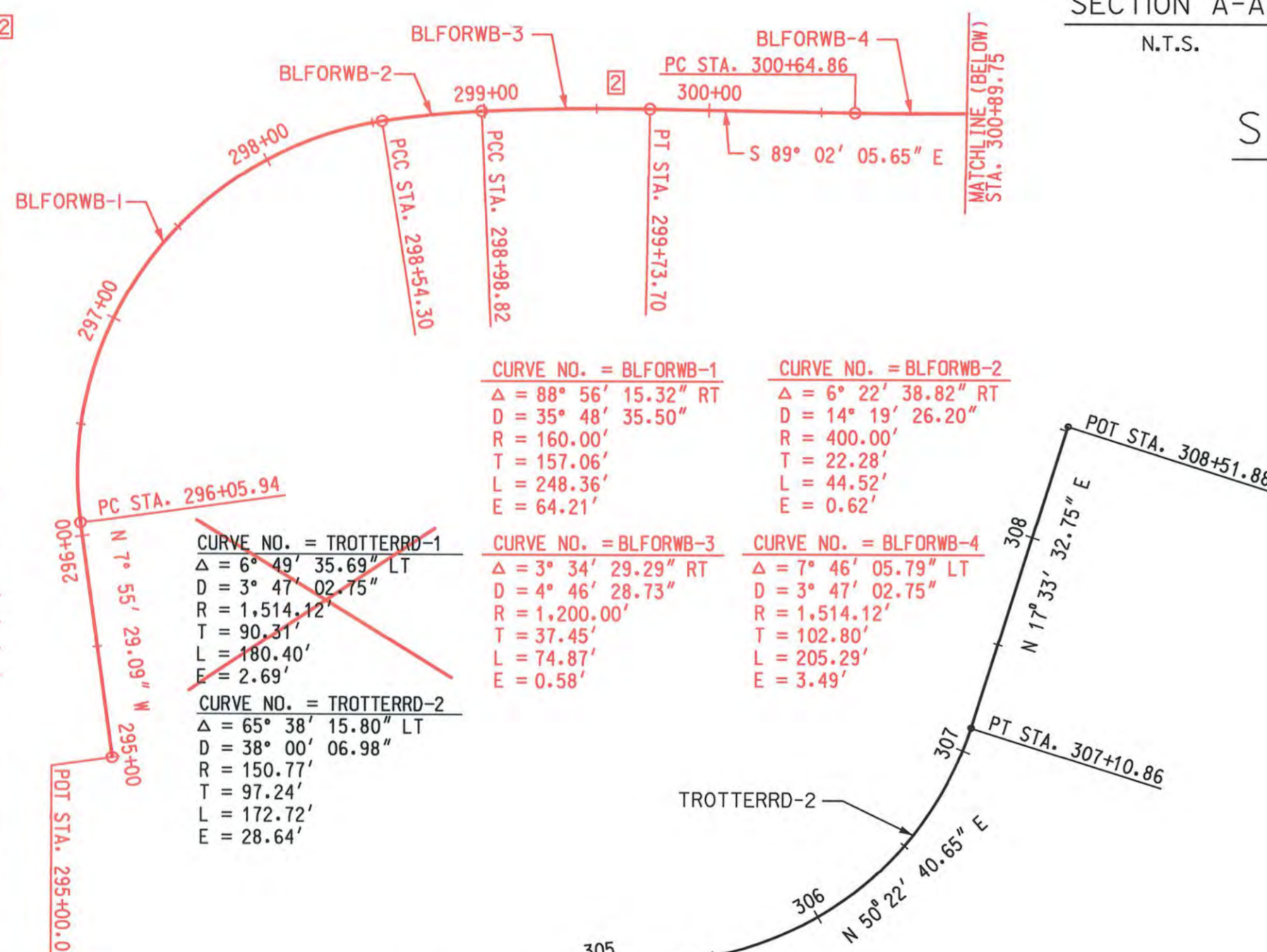
ROCK SIZING DETAIL FOR IMBRICATED RIPRAP

ROCK SIZE	A-axis	B-axis	C-axis
MIN. SIZE (ft)	3	2	1
MAX. SIZE (ft)	4	3	2

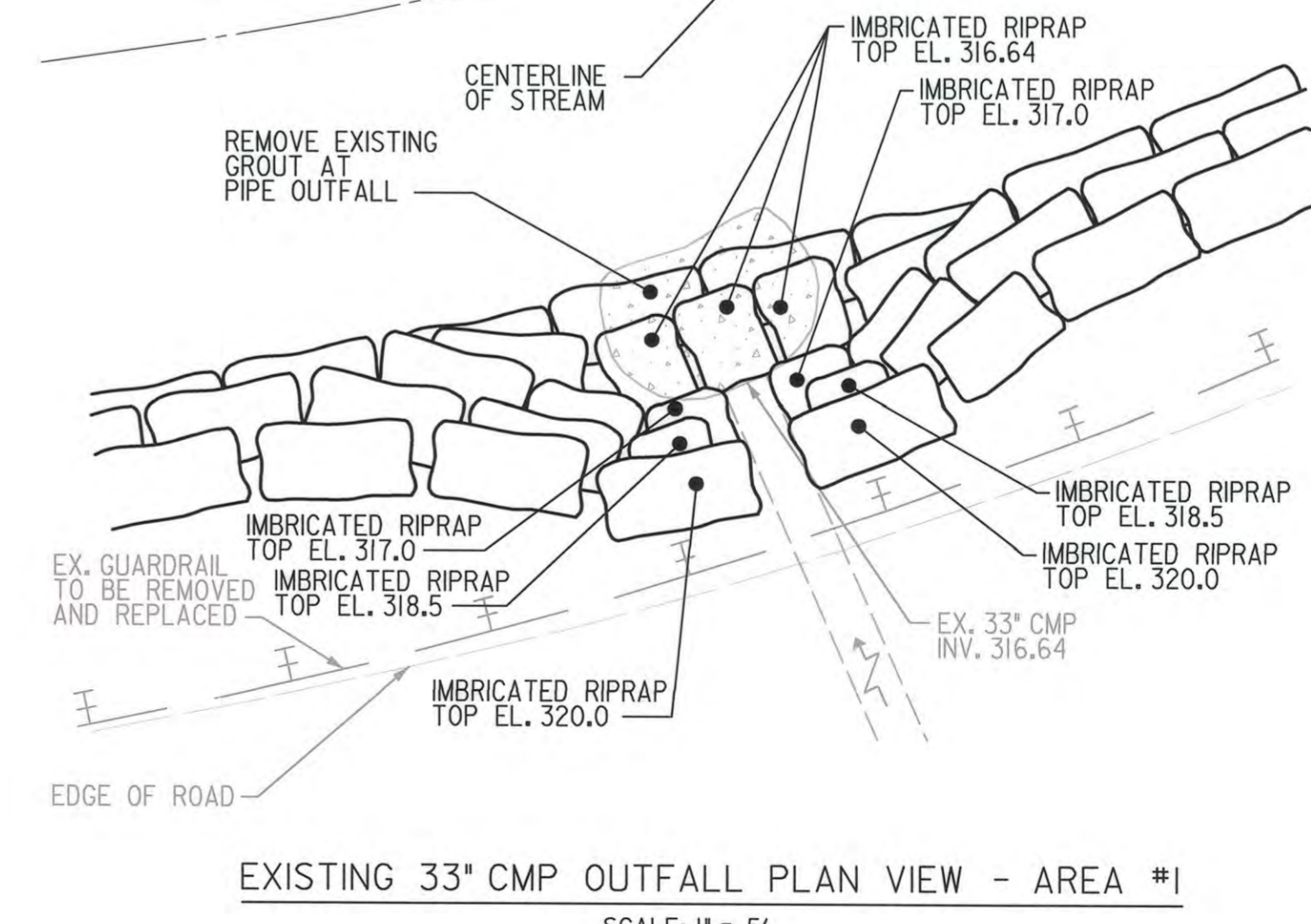
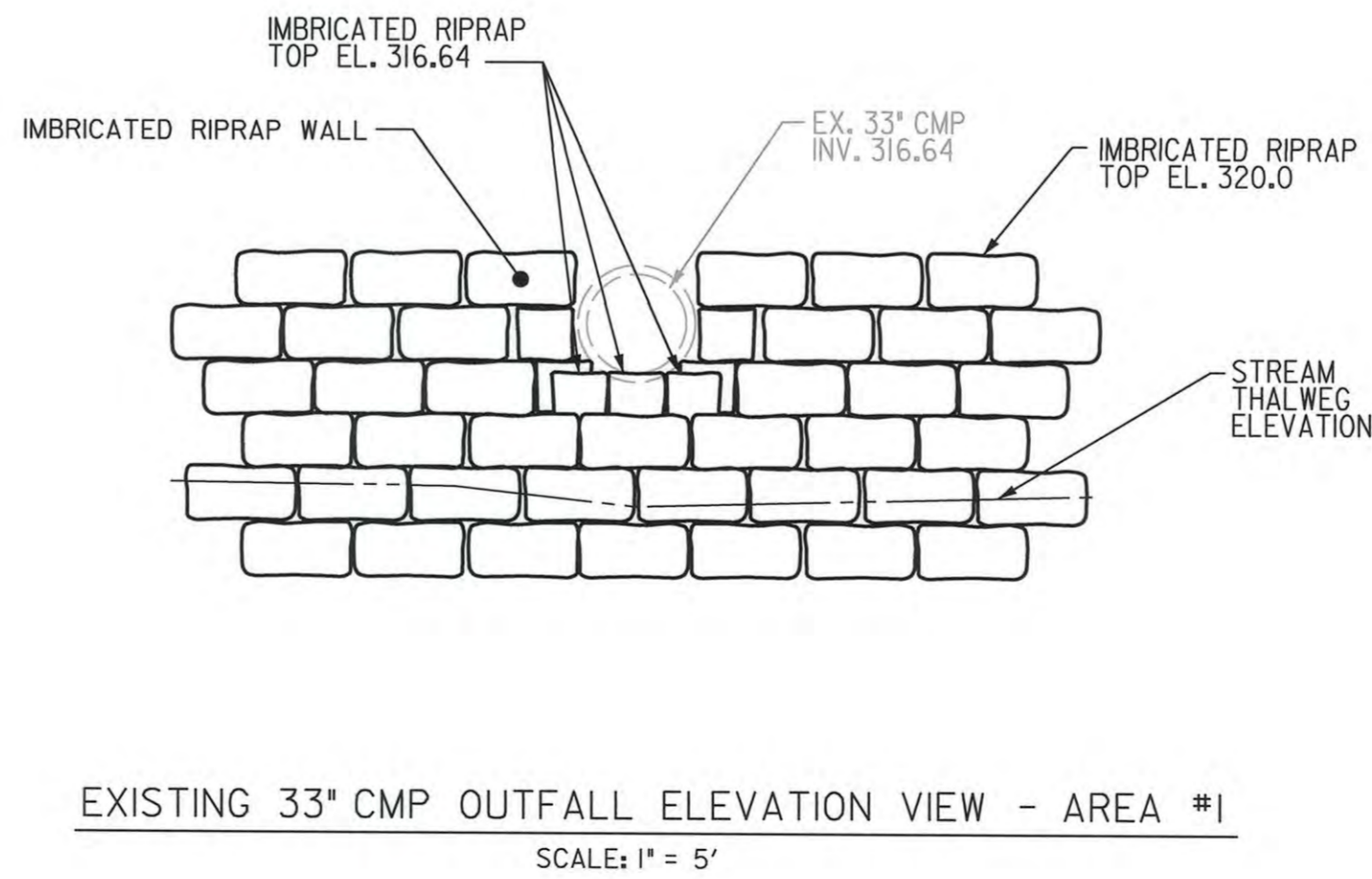
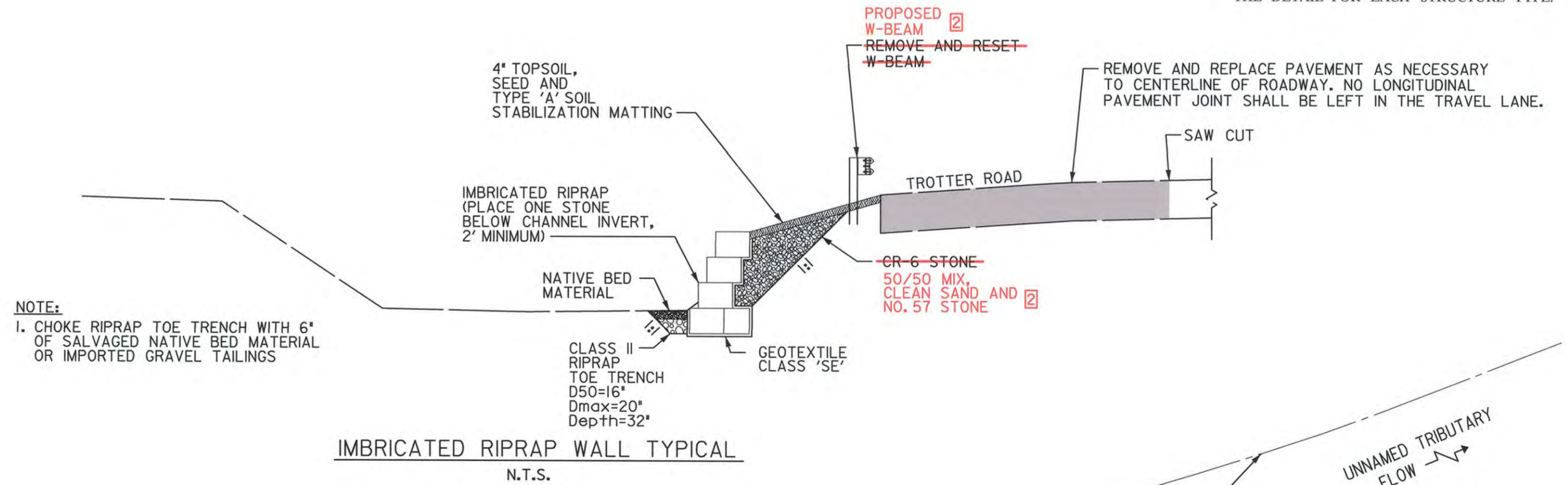


BASELINE CONTROL COORDINATES			
TYPE	STATION/CURVE	NORTHING	EASTING
POT	295+00.00	558,117.5232	1,334,406.4586
PC	296+05.94	558,222.4528	1,334,391.8522
PI	BLFORWB-1	558,378.0132	1,334,370.1980
CC		558,244.5124	1,334,550.3242
PCC	298+54.30	558,402.5481	1,334,525.3301
PCC	298+54.30	558,402.5481	1,334,525.3301
PI	BLFORWB-2	558,406.0293	1,334,547.3411
CC		558,007.4588	1,334,587.8154
PCC	298+98.82	558,407.0439	1,334,569.6025
PCC	298+98.82	558,407.0439	1,334,569.6025
PI	BLFORWB-3	558,408.7490	1,334,607.0110
CC		557,208.2885	1,334,624.2412
PT	299+73.70	558,408.1182	1,334,644.4531
PC	300+64.86	558,406.5827	1,334,735.6061
PI	BLFORWB-4	558,404.8512	1,334,838.3928
CC		559,920.4880	1,334,761.1089

BASELINE CONTROL COORDINATES			
TYPE	STATION/CURVE	NORTHING	EASTING
POT	300+00.00	558,406.4047	1,334,670.7437
PC	300+89.75	558,406.3680	1,334,760.4905
PI	TROTTERRD-1	558,406.3312	1,334,850.7983
CC		559,920.4880	1,334,761.1089
PT	302+70.15	558,417.0289	1,334,940.4702
PC	305+38.14	558,448.7752	1,335,206.5767
PI	TROTTERRD-2	558,460.2936	1,335,303.1274
CC		558,598.4843	1,335,188.7166
PT	307+10.86	558,552.9984	1,335,332.4623
POT	308+51.88	558,687.4401	1,335,375.0041



STEP POOL DETAIL - AREA #2



NO.	REVISIONS DESCRIPTION	DATE
1	W-BEAM AREA #2	6/8/2015

TROTTER ROAD  
 STREAM BANK STABILIZATION

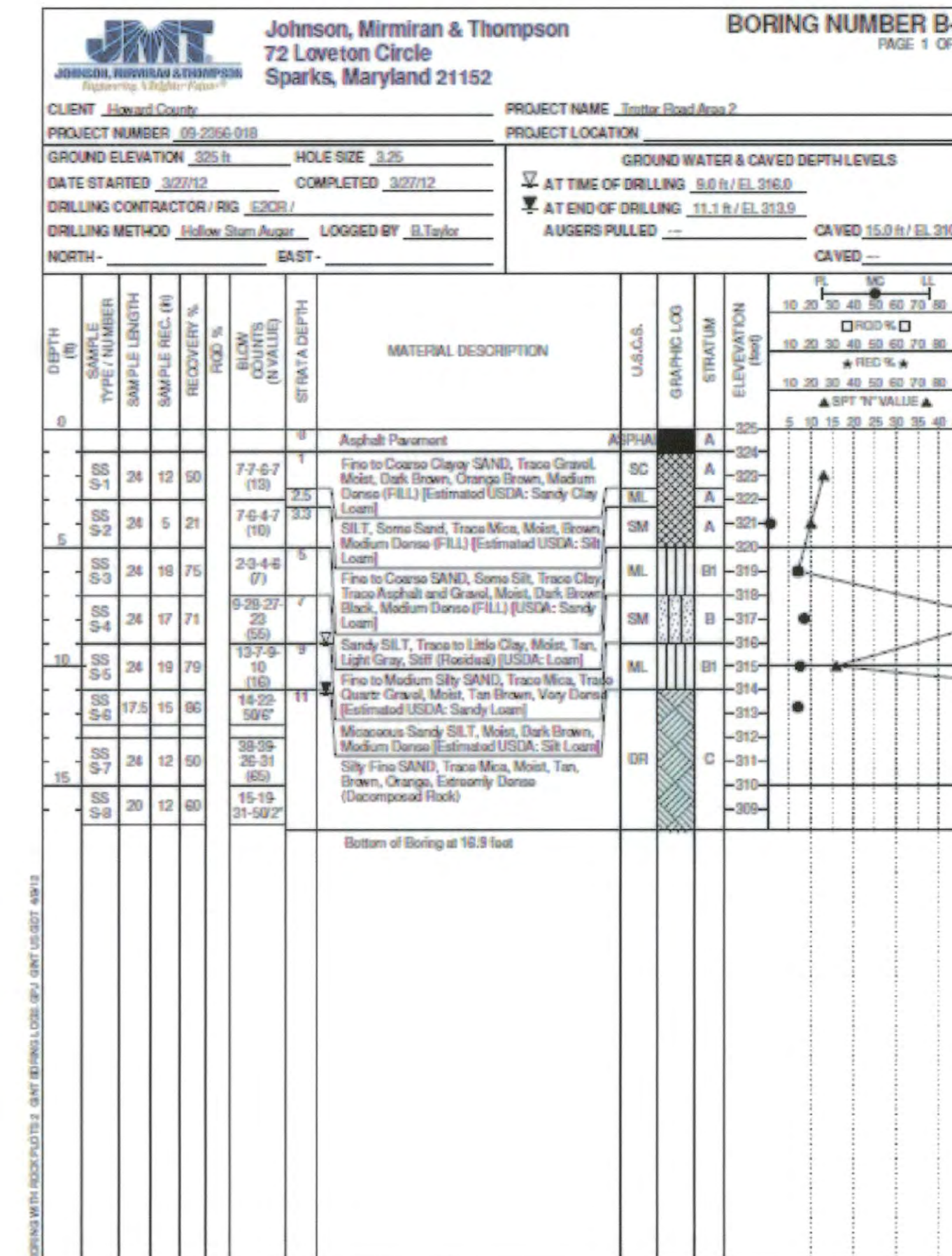
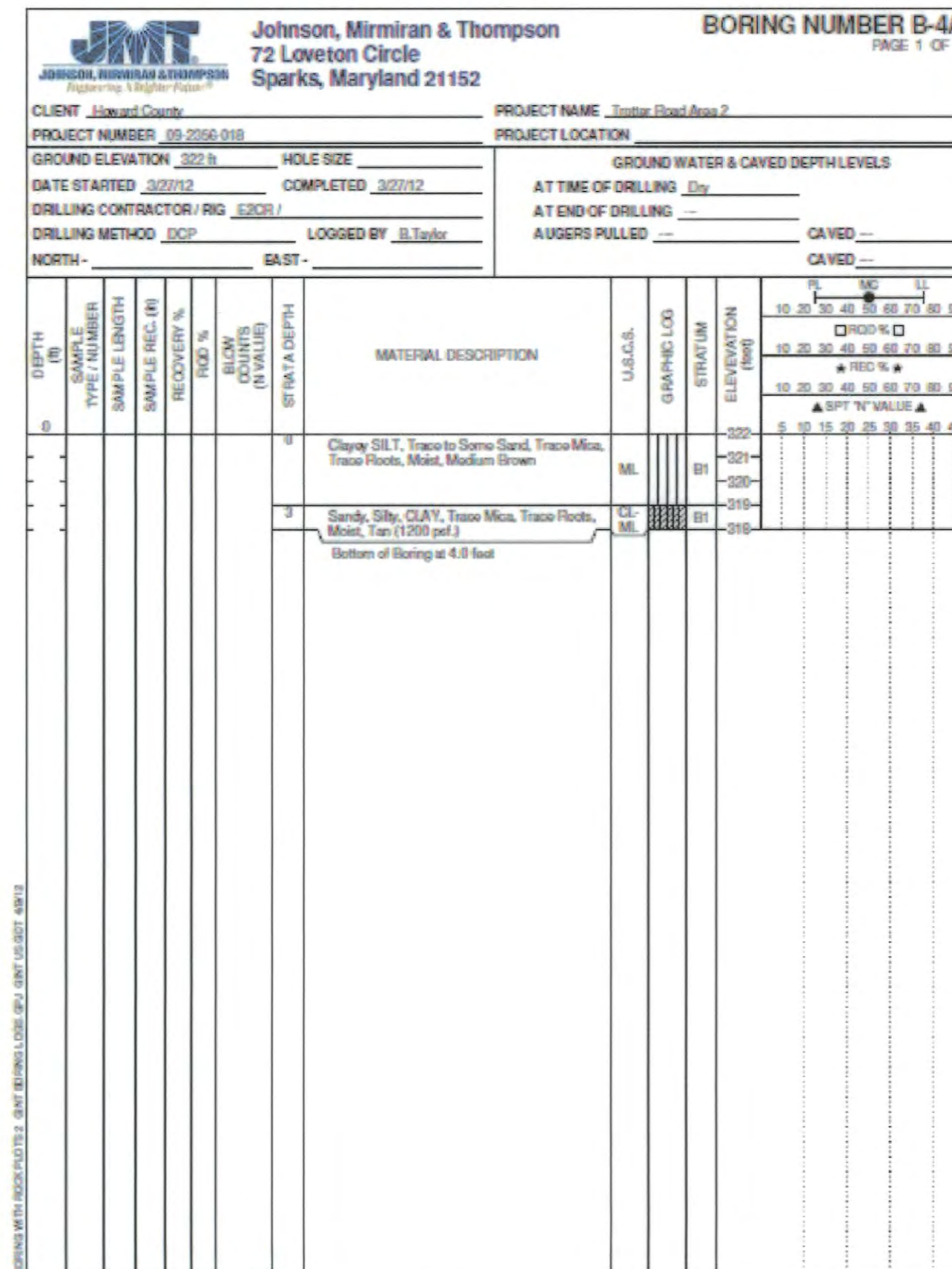
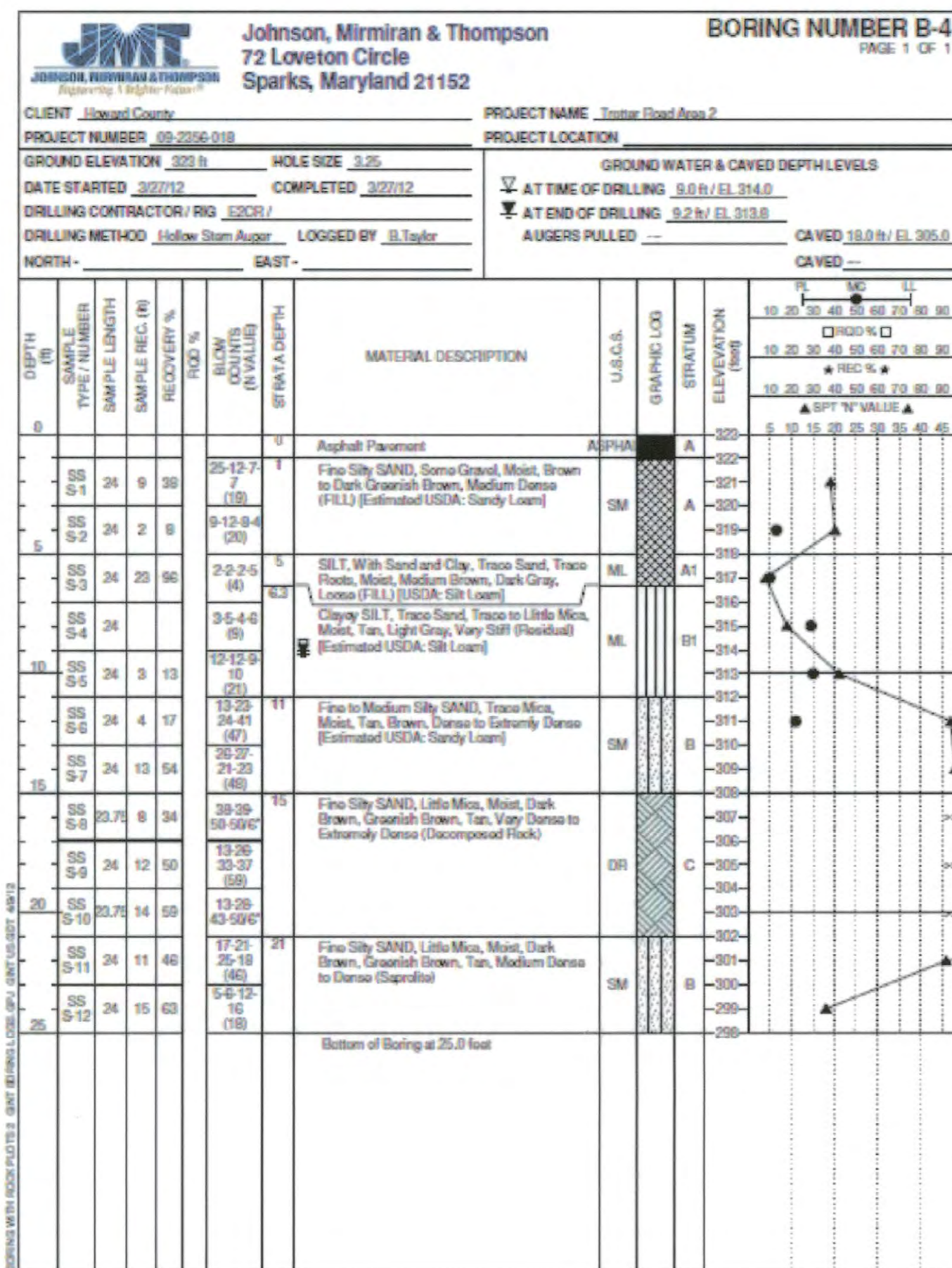
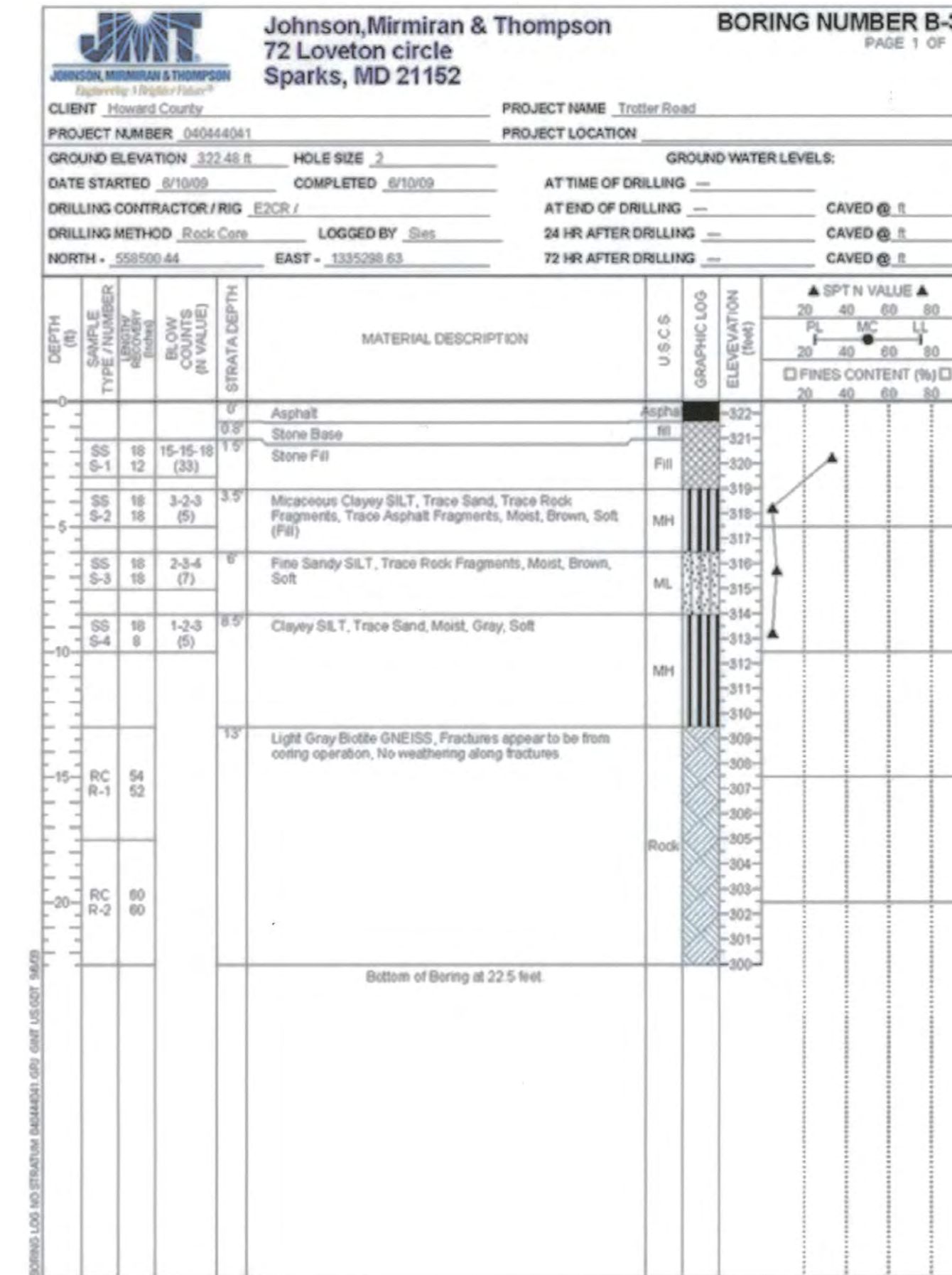
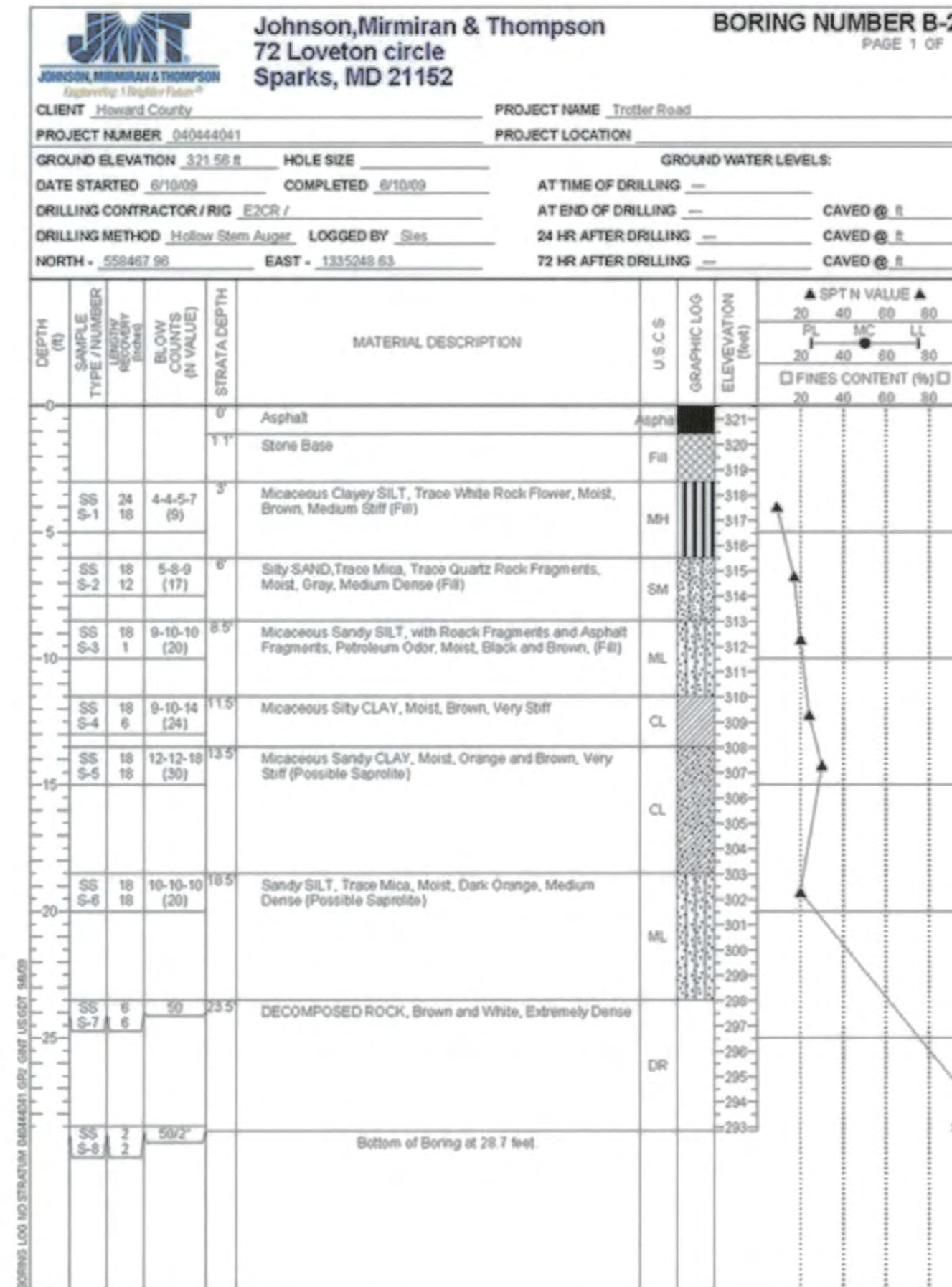
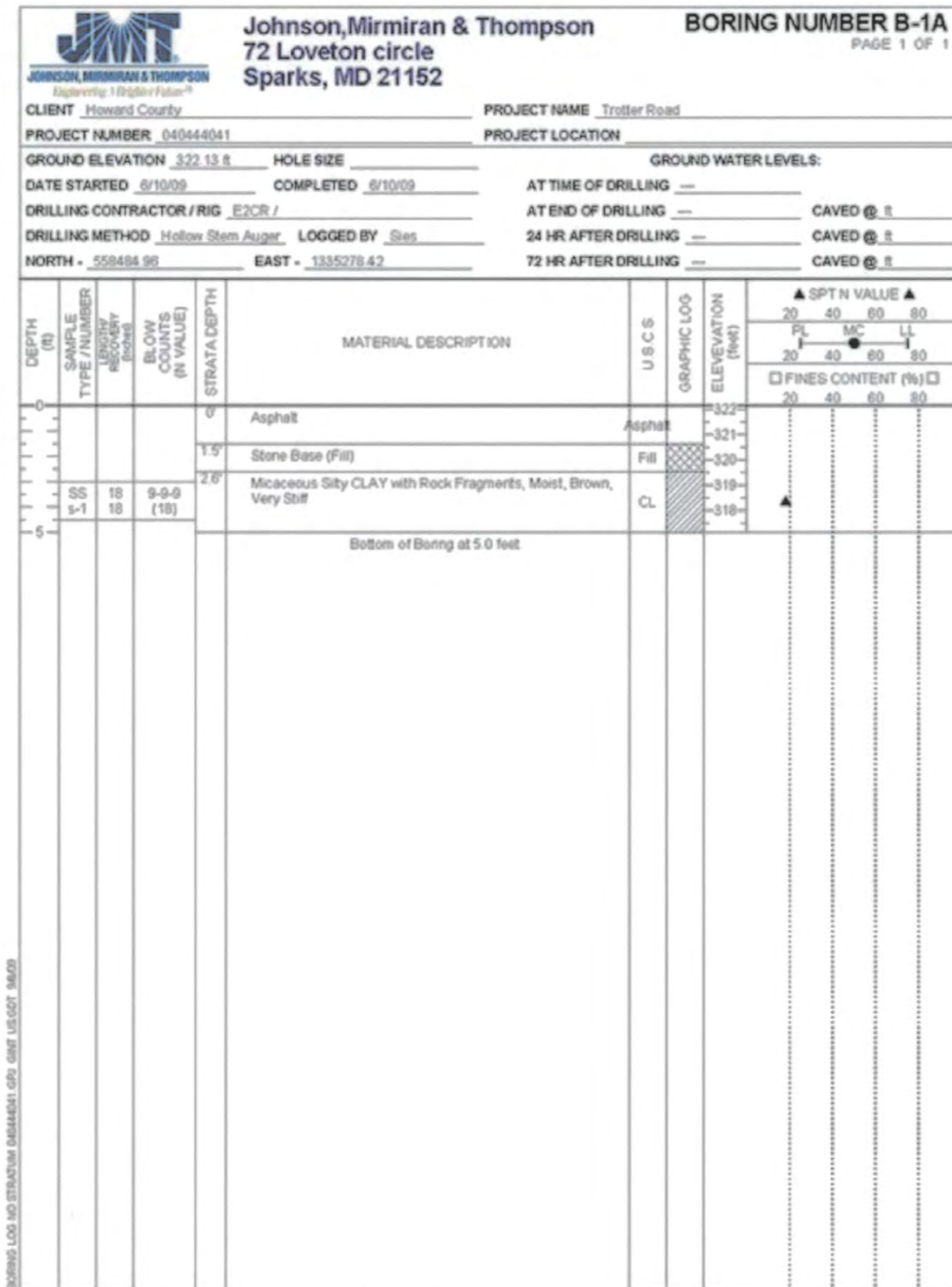
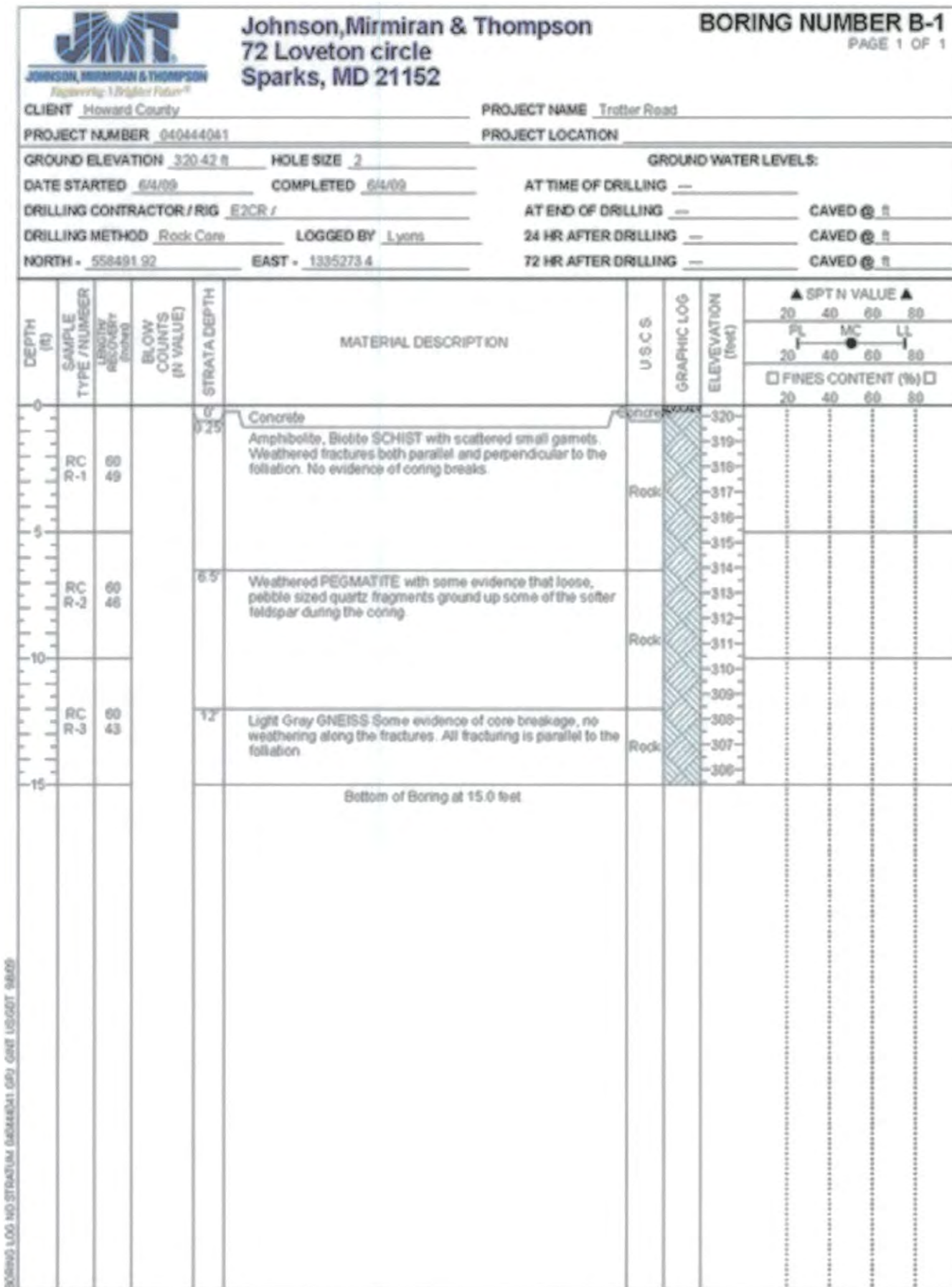
TYPICAL DETAILS

SCALE:	AS SHOWN
DATE:	JUNE 8, 2015
DMT JOB NO.:	09-2356-003/012
CAPITAL PROJECT NO.:	D-1163
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	

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. 15468, EXPIRATION DATE: JULY 15, 2017.



APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS  
 [Signature]  
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES  
 6/12/15



STATE OF MARYLAND  
PAUL FRANKLIN CEMENT  
1015486  
04/11/12

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 15466, EXPIRATION DATE: JULY 15, 2013.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

*Evelyn I. Joad* 4/12/12  
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

NO.	REVISIONS DESCRIPTION	DATE



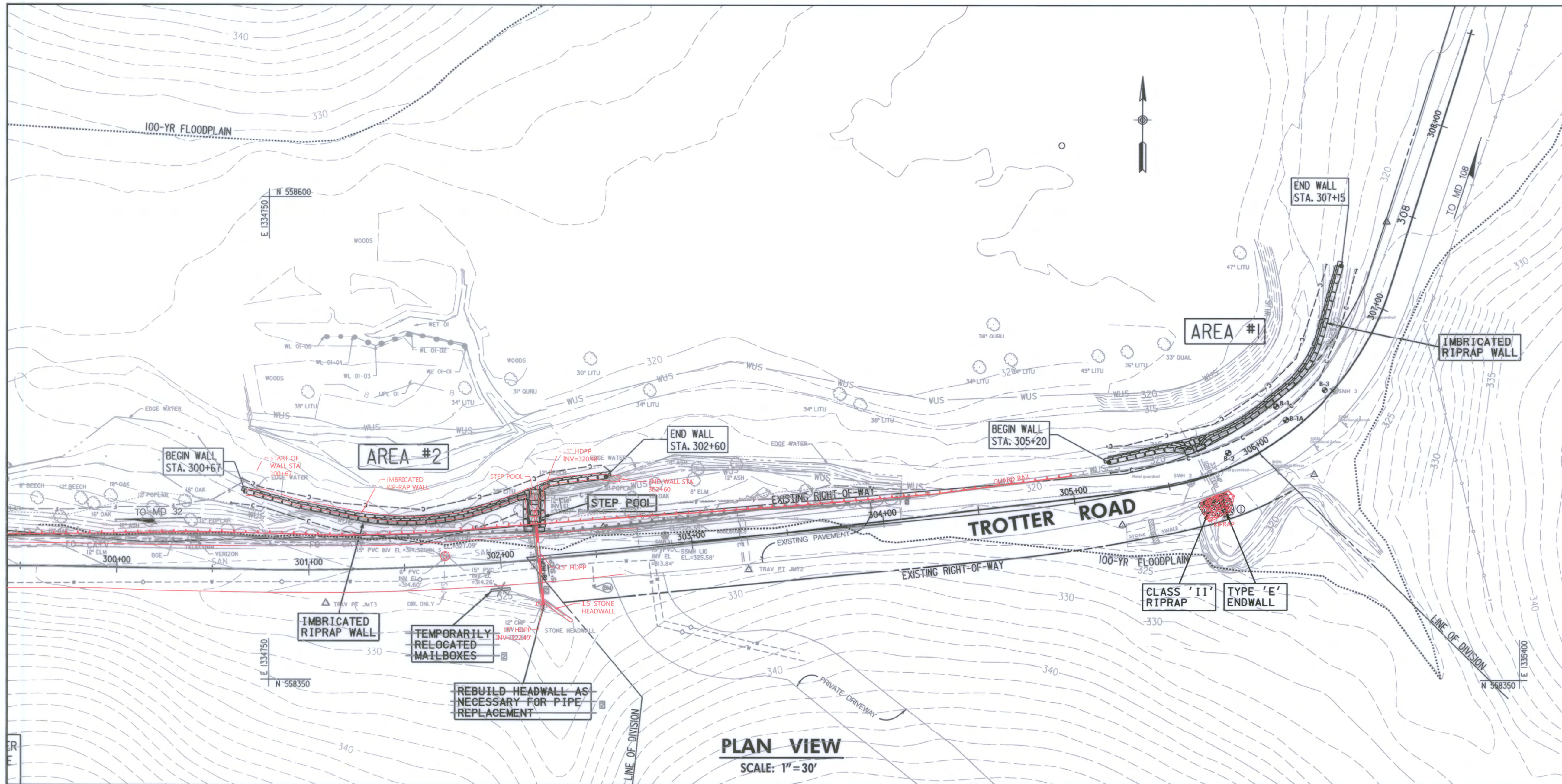
TROTTER ROAD  
STREAM BANK STABILIZATION

CAPITAL PROJECT D-165  
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
1015486, 04/11/12, 09-2356-001, 001

**BORING LOGS**

SCALE: AS SHOWN  
DATE: APRIL 9, 2012  
JMT JOB NO.: 09-2356-003/012  
CAPITAL PROJECT NO.: D-1163  
PERMIT ISSUE:  
CONSTRUCTION ISSUE:

**BL-1**  
SHEET NO.: 3 OF 15



**PLAN VIEW**  
SCALE: 1" = 30'

**IMBRICATED ROCK WALL SCHEDULE**  
AREA #1

STATION	OFFSET
305+20	16.5', LT.
305+25	17.1', LT.
305+50	18.9', LT.
305+67	14.7', LT.
305+71	14.7', LT.
305+75	15.4', LT.
306+00	17.0', LT.
306+25	18.0', LT.
306+50	17.9', LT.
306+75	23.0', LT.
307+00	26.9', LT.
307+15	27.6', LT.

NOTE:  
STATION/OFFSETS GIVEN AT CENTERLINE OF TOP ROCK ON WALL (SEE ROCK SIZING DETAIL, SHEET 2).

**33" OUTFALL TAPER SCHEDULE**  
AREA #1

STATION	OFFSET
305+68	18.9', LT.

NOTE:  
STATION/OFFSETS GIVEN AT CENTERLINE OF CREST ROCK (SEE ROCK SIZING DETAIL, SHEET 2).

**SANITARY SEWER**

<b>SMH 1</b>
TOP EL. = 325.55
INV. EL. (IN) = 314.04
INV. EL. (IN) = 314.38
INV. EL. (OUT) = 313.99
<b>SMH 2</b>
TOP EL. = 321.75
INV. EL. (IN) = 313.26
INV. EL. (IN) = 313.32
INV. EL. (OUT) = 313.12
<b>SMH 3</b>
TOP EL. = 322.74
INV. EL. (IN) = 312.82
INV. EL. (OUT) = 313.82
<b>SMH 4</b>
TOP EL. = 320.48
INV. EL. (IN) = 311.95
INV. EL. (OUT) = 311.93
<b>SMH 5</b>
TOP EL. = 327.09
INV. EL. (IN) = 314.60
INV. EL. (IN) = 314.32
INV. EL. (OUT) = 314.26

**IMBRICATED ROCK WALL SCHEDULE**  
AREA #2

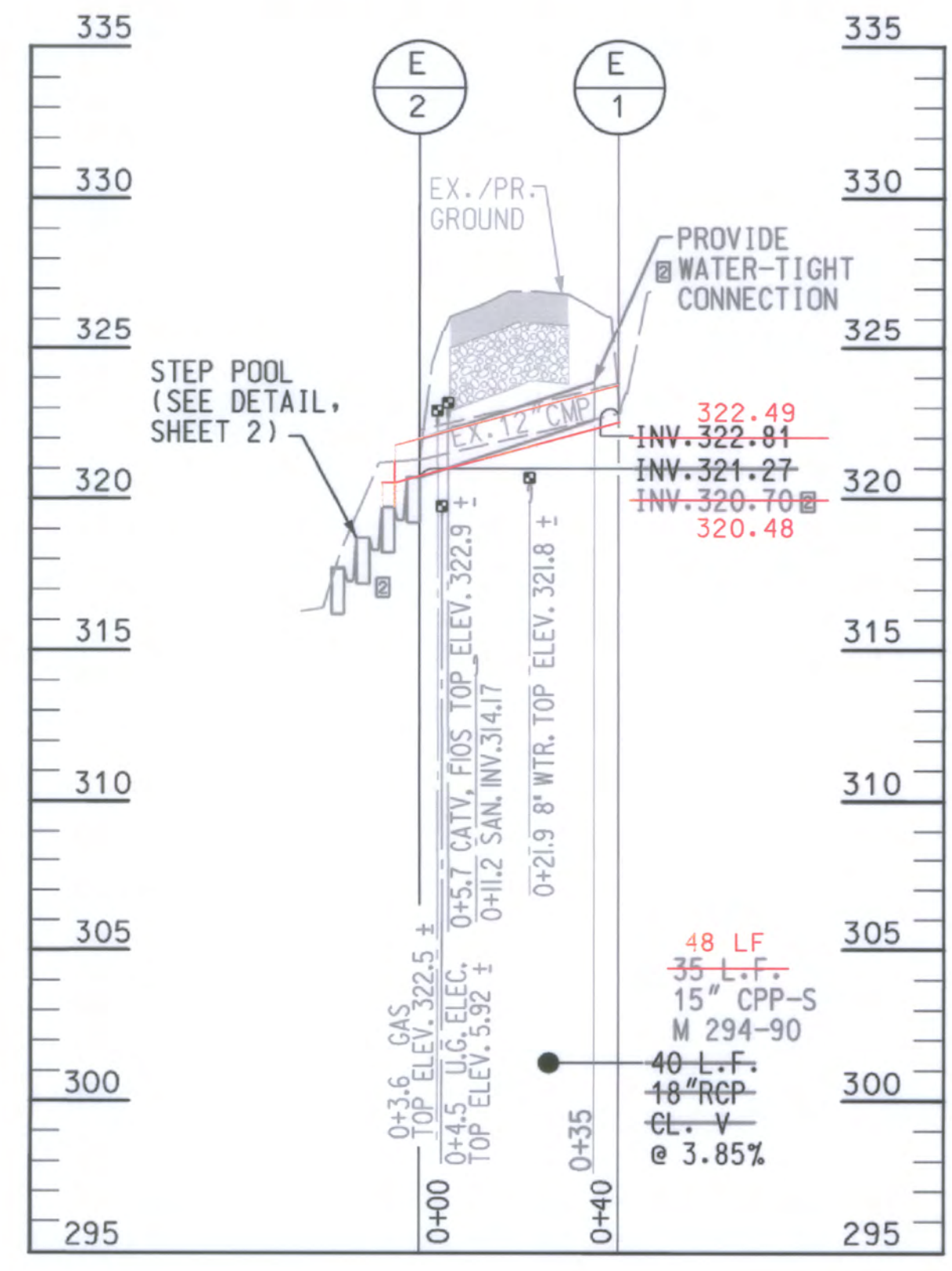
STATION	OFFSET
300+67	41.1', LT.
300+75	38.9', LT.
301+00	32.5', LT.
301+25	26.8', 27.4', LT.
301+50	23.3', 23.6', LT.
301+75	24.5', 24.4', LT.
302+00	29.4', LT.
302+25	37.0', LT.
302+50	39.6', LT.
302+60	39.8', LT.

NOTE:  
STATION/OFFSETS GIVEN AT CENTERLINE OF TOP ROCK ON WALL (SEE ROCK SIZING DETAIL, SHEET 2).

**STEP POOL SCHEDULE**  
AREA #2

STATION	OFFSET
302+19	19.1', LT.
302+20	24.6', LT.
302+20	30.0', LT.
302+21	35.5', LT.

NOTE:  
STATION/OFFSETS GIVEN AT CENTERLINE OF CREST ROCK (SEE ROCK SIZING DETAIL, SHEET 2).



- NOTES:**
- THE LOCATION OF ALL SHOWN UTILITIES IS APPROXIMATE. ADDITIONAL TEST PITS MAY BE NECESSARY PRIOR TO CONSTRUCTION TO DETERMINE THE ACTUAL LOCATIONS.
  - LIMITS OF WALL MAY NEED TO BE ADJUSTED IN THE FIELD TO TIE INTO NATURAL FEATURES AT THE DIRECTION OF THE ENGINEER.
  - CONTRACTOR SHALL REPAIR OR REPLACE DAMAGED PAVEMENT AT THE DIRECTION OF THE ENGINEER. CONTRACTOR SHALL BE PAID PER UNIT PRICE BID FOR PAVEMENT REPAIR.
  - ACTUAL LOCATION OF THE RELOCATED MAILBOXES SHALL BE COORDINATED WITH THE USPS POSTMASTER.
  - TREE-SAVES ARE TO BE IDENTIFIED AT THE PRE-CONSTRUCTION MEETING. TREE-SAVES ARE TO BE PROTECTED WITH ORANGE TREE PROTECTION FENCING PRIOR TO ANY CLEARING AND GRUBBING.

33' TYPE 'E' ENDWALL (MD 356.01)		CLASS 'II' RIPRAP	
STATION	OFFSET	LOCATION	QUANTITY
305+71	13.1', RT.	33' TYPE 'E' ENDWALL	16 S.Y.

NOTE:  
STATION/OFFSET GIVEN AT CENTERLINE OF PIPE AT UPSTREAM END.

**AS-BUILT CERTIFICATION**

"I HEREBY CERTIFY THAT THE STREAMBANK STABILIZATION PRACTICE, PIPE & ENDWALL SHOWN ON THE PLANS HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PLANS INCLUDED UNDER THE HOWARD SOIL CONSERVATION DISTRICT APPROVAL, #EP-12-13, EXCEPT AS NOTED IN RED ON THIS 'AS-BUILT' DRAWING."

"CERTIFY" MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED ON SUFFICIENT AND APPROPRIATE ONSITE INSPECTIONS AND MATERIAL OBSERVATIONS CONDUCTED DURING CONSTRUCTION.

**SOIL BORING SUMMARY TABLE**

BORING B-1	EL. = 320.42	N 558,491.92	E 1,335,273.40
BORING B-1A	EL. = 322.13	N 558,484.96	E 1,335,278.42
BORING B-2	EL. = 321.56	N 558,467.96	E 1,335,248.63
BORING B-3	EL. = 322.48	N 558,500.44	E 1,335,298.63
BORING B-4	EL. = 323	N 558,418.82	E 1,334,865.26
BORING B-4A	EL. = 322	N 558,430.31	E 1,334,864.98
BORING B-5	EL. = 325	N 558,416.21	E 1,334,815.30

NOTE: SEE SHEET DD-2 FOR SOIL BORING LOGS

**TEST PIT SUMMARY**

TEST PIT	UTILITY TYPE	TOP DEPTH
TEST PIT TH-2	1" ELECTRIC CABLE	5.92'
TEST PIT TH-3	2" PLASTIC GAS PIPE	2.58'
TEST PIT TH-4	(2) 1-1/2" FIOS INNERDUCTS & (1) 1-1/2" CABLE TV LINE	2.98'
TEST PIT TH-5	8" DUCTILE IRON WATER PIPE	5.14'



APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

*Paul F. Clement*  
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES  
6/12/15  
DATE

*Paul F. Clement*  
SIGNATURE  
PAUL F. CLEMENT  
PRINT NAME

15466  
P.E. NO.  
11/19/15  
DATE



NO.	REVISIONS DESCRIPTION	DATE
2	W-BEAM AREA #2	6/8/2015
1	ENDWALL AREA #1	6/28/2015

FILE: XXXXXXXXX

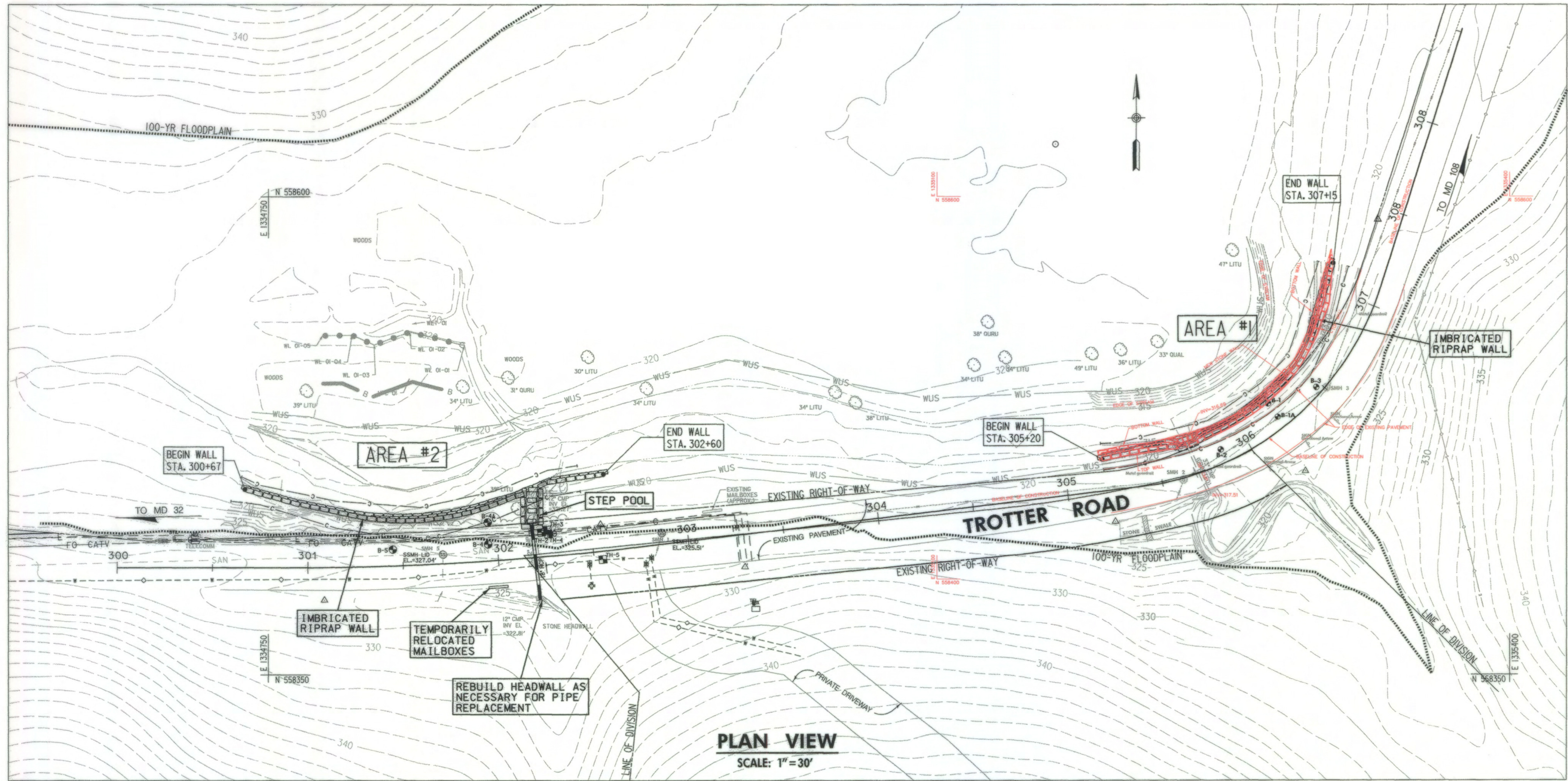
**JOHNSON, MIRIRAN & THOMPSON**  
Engineering A Brighter Future  
72 Lovston Circle, Baltimore, Maryland 21152-0949

TROTTER ROAD  
STREAM BANK STABILIZATION

PLAN SHEET

SCALE: AS SHOWN  
DATE: JUNE 8, 2015  
JOB NO.: 09-2356-003/012  
CAPITAL PROJECT NO.: D-1163  
PERMIT ISSUE:  
CONSTRUCTION ISSUE:

PS-1  
SHEET NO.: 4 OF 15



**IMBRICATED ROCK WALL SCHEDULE**

AREA 1	
STATION	OFFSET
305+20	16.5', LT.
305+25	17.1', LT.
305+50	18.9', LT.
305+67	14.7', LT.
305+71	14.7', LT.
305+75	15.4', LT.
306+00	17.0', LT.
306+25	18.0', LT.
306+50	17.9', LT.
306+75	23.0', LT.
307+00	26.9', LT.
307+15	27.6', LT.

**NOTE:**  
STATION/OFFSETS GIVEN AT CENTERLINE OF TOP ROCK ON WALL (SEE ROCK SIZING DETAIL, SHEET 2).

**33' OUTFALL TAPER SCHEDULE**

AREA #1	
STATION	OFFSET
305+68	18.9', LT.

**NOTE:**  
STATION/OFFSETS GIVEN AT CENTERLINE OF CREST ROCK (SEE ROCK SIZING DETAIL, SHEET 2).

**SANITARY SEWER**

**SMH 1**  
TOP EL. = 325.55  
INV. EL. (IN) = 314.04  
INV. EL. (OUT) = 314.38  
INV. EL. (OUT) = 313.99

**SMH 2**  
TOP EL. = 321.75  
INV. EL. (IN) = 313.26  
INV. EL. (IN) = 313.32  
INV. EL. (OUT) = 313.12

**SMH 3**  
TOP EL. = 322.74  
INV. EL. (IN) = 312.82  
INV. EL. (OUT) = 313.82

**SMH 4**  
TOP EL. = 320.48  
INV. EL. (IN) = 311.95  
INV. EL. (OUT) = 311.93

**SMH 5**  
TOP EL. = 327.09  
INV. EL. (IN) = 314.60  
INV. EL. (IN) = 314.32  
INV. EL. (OUT) = 314.26

**SOIL BORING SUMMARY TABLE**

BORING	EL.	N	E
BORING B-1	EL. = 320.42	N 558,491.92	E 1,335,273.40
BORING B-1A	EL. = 322.13	N 558,484.96	E 1,335,278.42
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**NOTE:** SEE SHEET DD-2 FOR SOIL BORING LOGS

**TEST PIT SUMMARY**

TEST PIT	UTILITY TYPE	TOP DEPTH
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TEST PIT TH-5	8" DUCTILE IRON WATER PIPE	5.14'

**IMBRICATED ROCK WALL SCHEDULE**

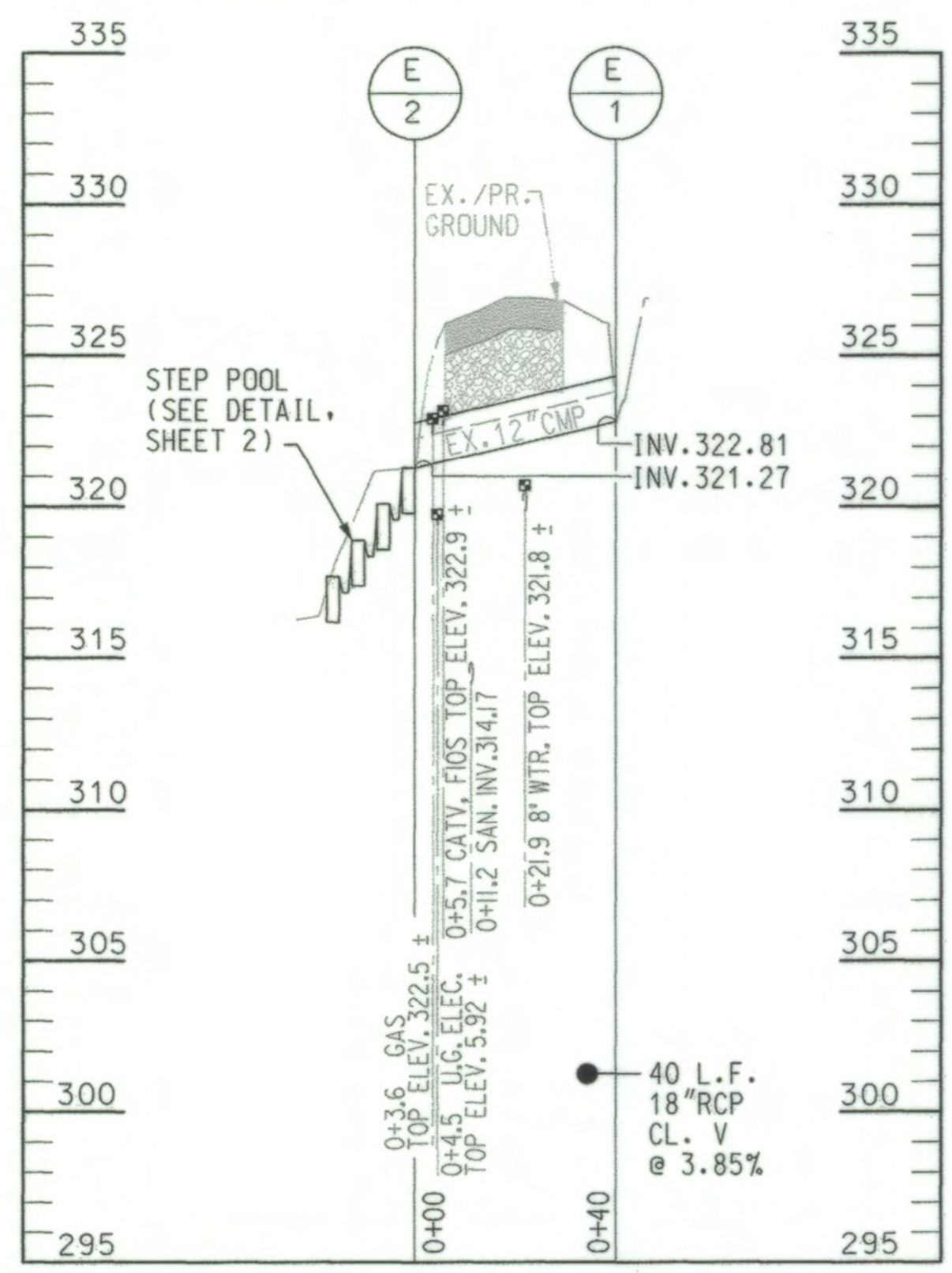
AREA #2	
STATION	OFFSET
300+67	41.1', LT.
300+75	38.9', LT.
301+00	32.5', LT.
301+25	27.1', LT.
301+50	23.6', LT.
301+75	24.4', LT.
302+00	29.4', LT.
302+25	37.0', LT.
302+50	39.6', LT.
302+60	39.8', LT.

**NOTE:**  
STATION/OFFSETS GIVEN AT CENTERLINE OF TOP ROCK ON WALL (SEE ROCK SIZING DETAIL, SHEET 2).

**STEP POOL SCHEDULE**

AREA #2	
STATION	OFFSET
302+19	19.1', LT.
302+20	24.6', LT.
302+20	30.0', LT.
302+21	35.5', LT.

**NOTE:**  
STATION/OFFSETS GIVEN AT CENTERLINE OF CREST ROCK (SEE ROCK SIZING DETAIL, SHEET 2).



- NOTES:**
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  - LIMITS OF WALL MAY NEED TO BE ADJUSTED IN THE FIELD TO TIE INTO NATURAL FEATURES AT THE DIRECTION OF THE ENGINEER.
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**AS-BUILT CERTIFICATION**

"HEREBY CERTIFY THAT THE STREAMBANK STABILIZATION PRACTICE SHOWN ON THE PLANS HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PLANS INCLUDED UNDER THE HOWARD COUNTY SOIL CONSERVATION DISTRICT APPROVAL, \*EP-12-13, EXCEPT AS NOTED IN RED ON THIS "AS-BUILT" DRAWING."

"CERTIFY" MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED ON SUFFICIENT AND APPROPRIATE ONSITE INSPECTIONS AND MATERIAL OBSERVATIONS CONDUCTED DURING CONSTRUCTION.

*Paul F. Clement*  
SIGNATURE

**PAUL F. CLEMENT**  
PRINT NAME

15466  
P.E. NO.

07/18/12  
DATE



**TROTTER ROAD  
STREAM BANK STABILIZATION**

PLAN SHEET

SCALE: AS SHOWN  
DATE: APRIL 9, 2012  
JOB NO.: 09-2356-003/012  
CAPITAL PROJECT NO.: D-1163  
PERMIT ISSUE:  
CONSTRUCTION ISSUE:

PS-1A

SHEET NO.: 4A OF 15

NO. REVISIONS DESCRIPTION

NO.	REVISIONS DESCRIPTION	DATE

FILE: XXXXXXXX

**JOHNSON, MIRMIRAN & THOMPSON**  
Engineering A Brighter Future

72 Lovatton Circle, Baltimore, Maryland 21152-0949

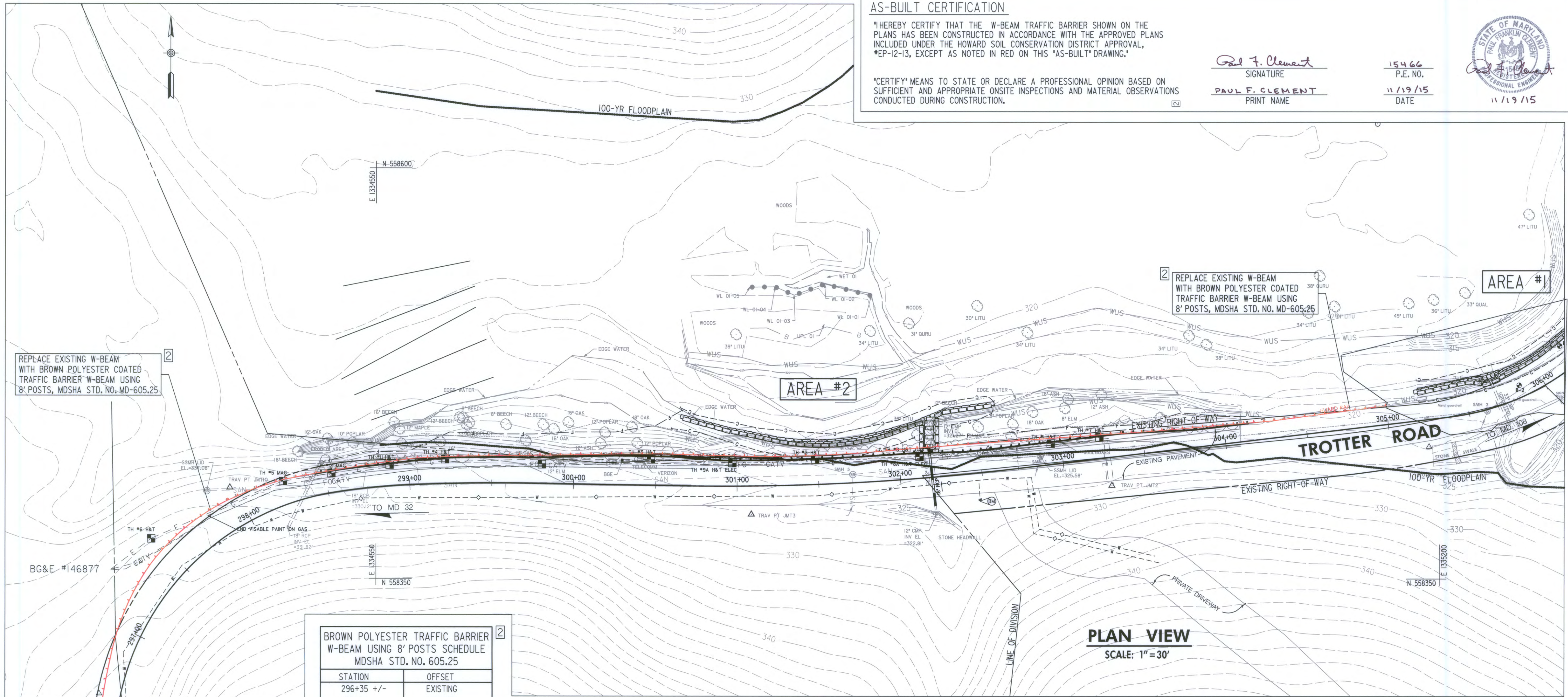


APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

*Evelyn E. Inal*  
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

4/12/12  
DATE

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 15466, EXPIRATION DATE: JULY 15, 2013.



**AS-BUILT CERTIFICATION**

"HEREBY CERTIFY THAT THE W-BEAM TRAFFIC BARRIER SHOWN ON THE PLANS HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PLANS INCLUDED UNDER THE HOWARD SOIL CONSERVATION DISTRICT APPROVAL, \*EP-12-13, EXCEPT AS NOTED IN RED ON THIS 'AS-BUILT' DRAWING."

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*Paul F. Clement*  
SIGNATURE

**PAUL F. CLEMENT**  
PRINT NAME

15466  
P.E. NO.

11/19/15  
DATE



2 REPLACE EXISTING W-BEAM WITH BROWN POLYESTER COATED TRAFFIC BARRIER W-BEAM USING 8' POSTS, MDSA STD. NO. MD-605.25

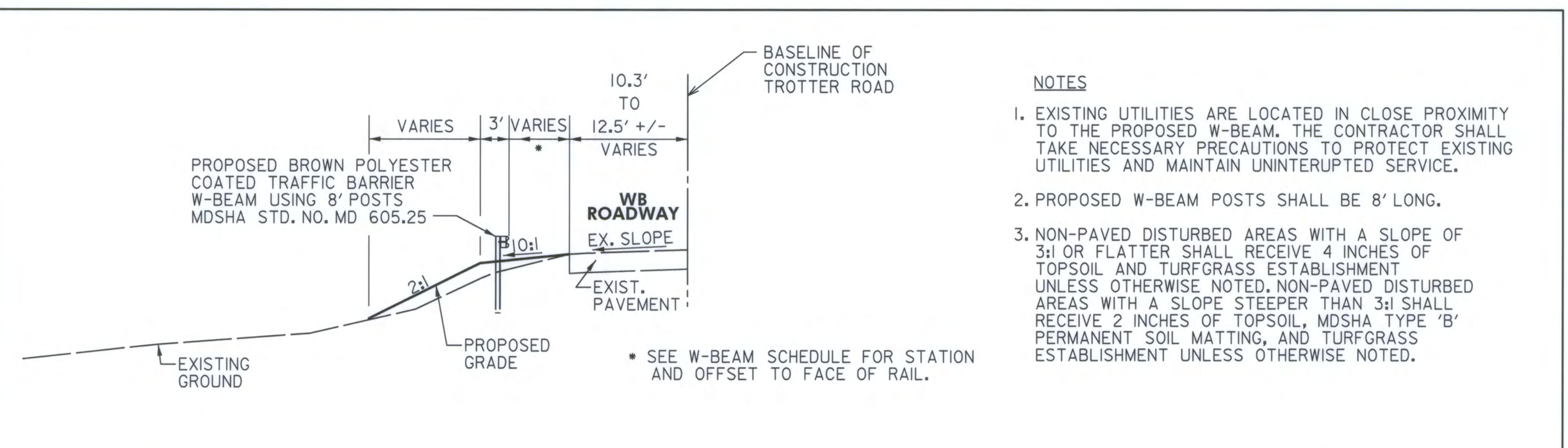
2 REPLACE EXISTING W-BEAM WITH BROWN POLYESTER COATED TRAFFIC BARRIER W-BEAM USING 8' POSTS, MDSA STD. NO. MD-605.25

2 REPLACE EXISTING END TREATMENT WITH BROWN POLYESTER COATED TYPE 'G' END TREATMENT MDSA STD. NO. MD-605.08

2 BROWN POLYESTER TRAFFIC BARRIER W-BEAM USING 8' POSTS SCHEDULE MDSA STD. NO. 605.25

STATION	OFFSET
296+35 +/-	EXISTING
298+50	EXISTING
298+60	13.0', LT.
298+75	13.0', LT.
299+25	15.5', LT.
299+75	15.5', LT.
300+25	17.5', LT.
300+60	17.5', LT.
300+90	15.5', LT.
302+10	15.5', LT.
302+40	13.5', LT.
303+37	13.5', LT.
303+82	10.5', LT.
304+00	10.5', LT.
304+15	EXISTING
305+10 +/-	EXISTING

NOTE:  
STATION/OFFSETS GIVEN AT FACE OF BARRIER



**TROTTER ROAD W-BEAM TRAFFIC BARRIER TYPICAL SECTION**

STA. 298+50 TO STA. 304+15\*\*

\*\* REPLACE EXISTING W-BEAM TRAFFIC BARRIER AT EXISTING OFFSET FROM APPROX. STA. 296+35 TO STA. 298+50 AND STA. 304+15 TO APPROX. STA. 305+10 WITH PROPOSED BROWN POLYESTER COATED W-BEAM TRAFFIC BARRIER USING 8' POSTS.



APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

*Mark D. Luca*  
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES  
6/12/15  
DATE

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16468, EXPIRATION DATE: JULY 16, 2017.

NO.	REVISIONS DESCRIPTION	DATE
1	W-BEAM AREA #2	6/8/2015
2		
3		
4		
5		
6		
7		
8		
9		
10		

FILE: XXXXXXXXX

**JOHNSON, MIRMIRAN & THOMPSON**  
Engineering A Brighter Future

72 Loveston Circle, Baltimore, Maryland 21152-0949

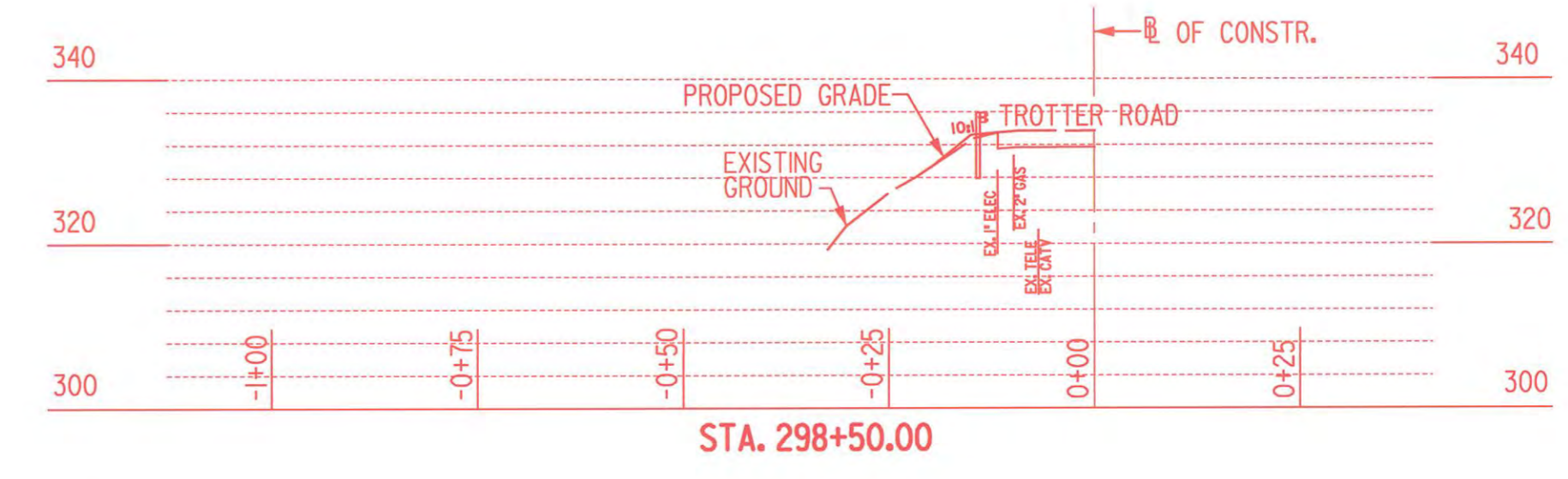
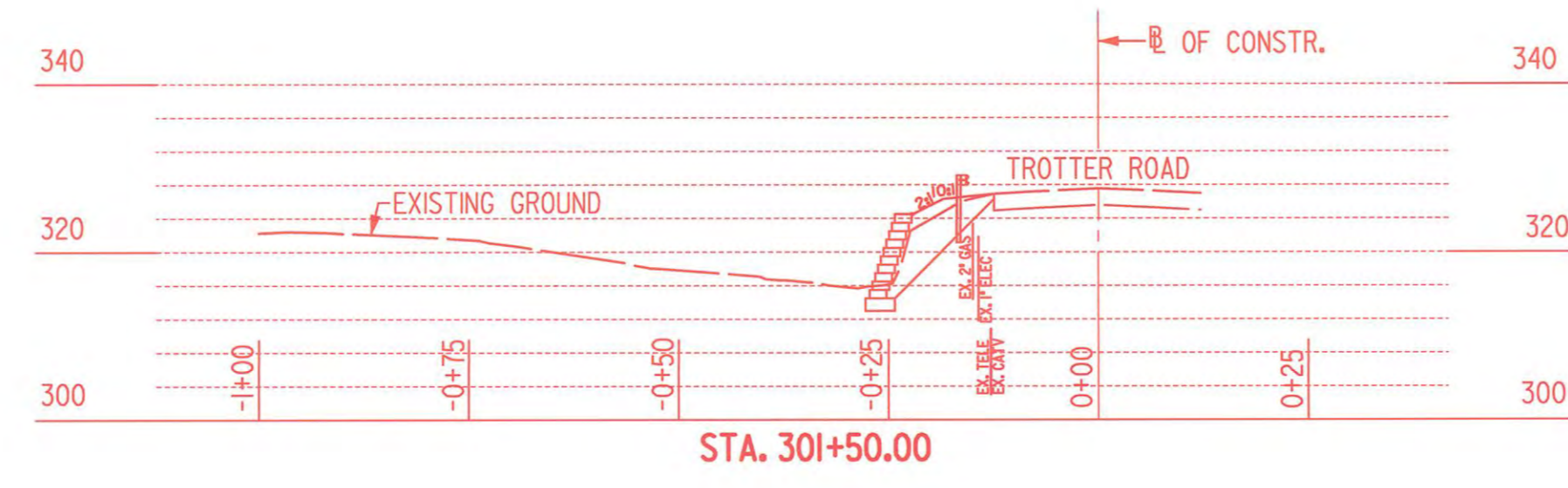
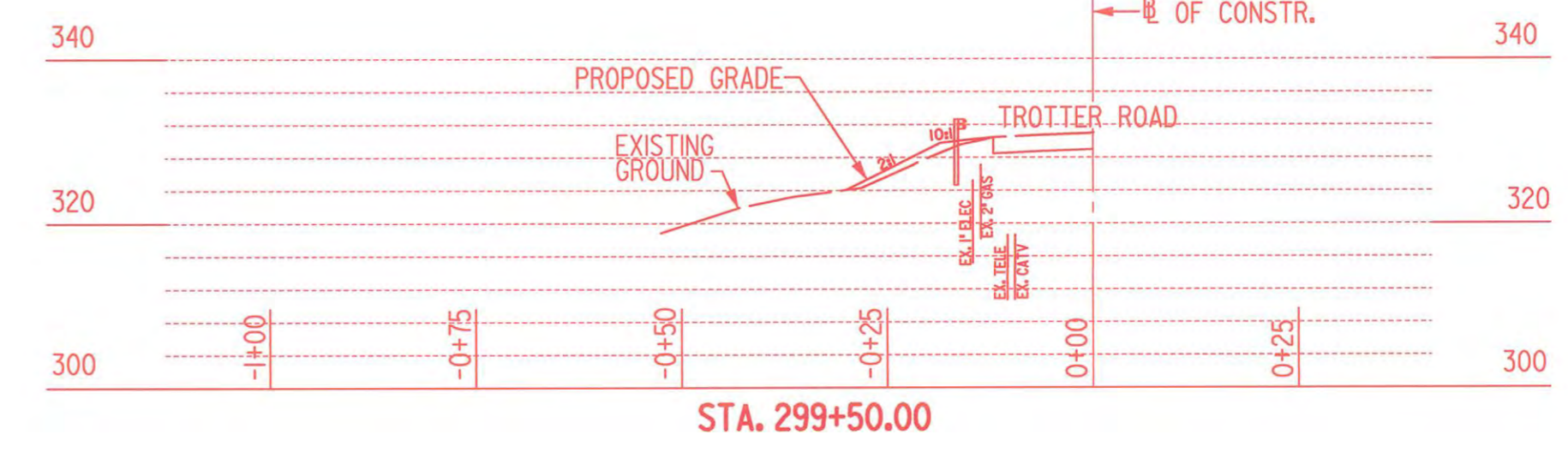
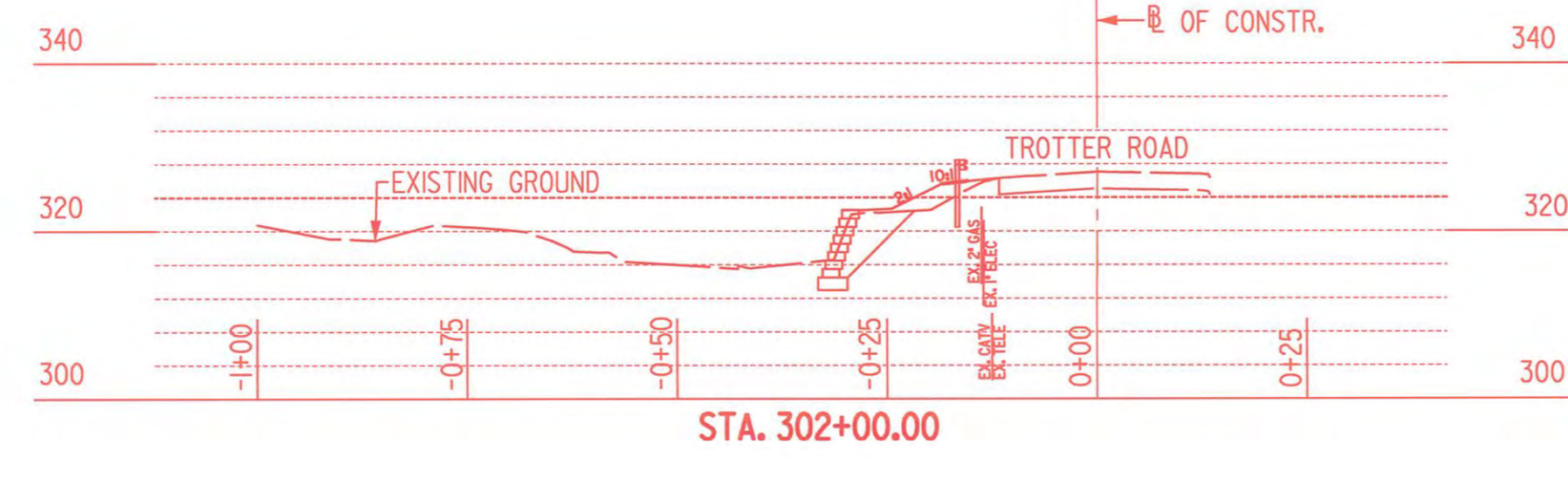
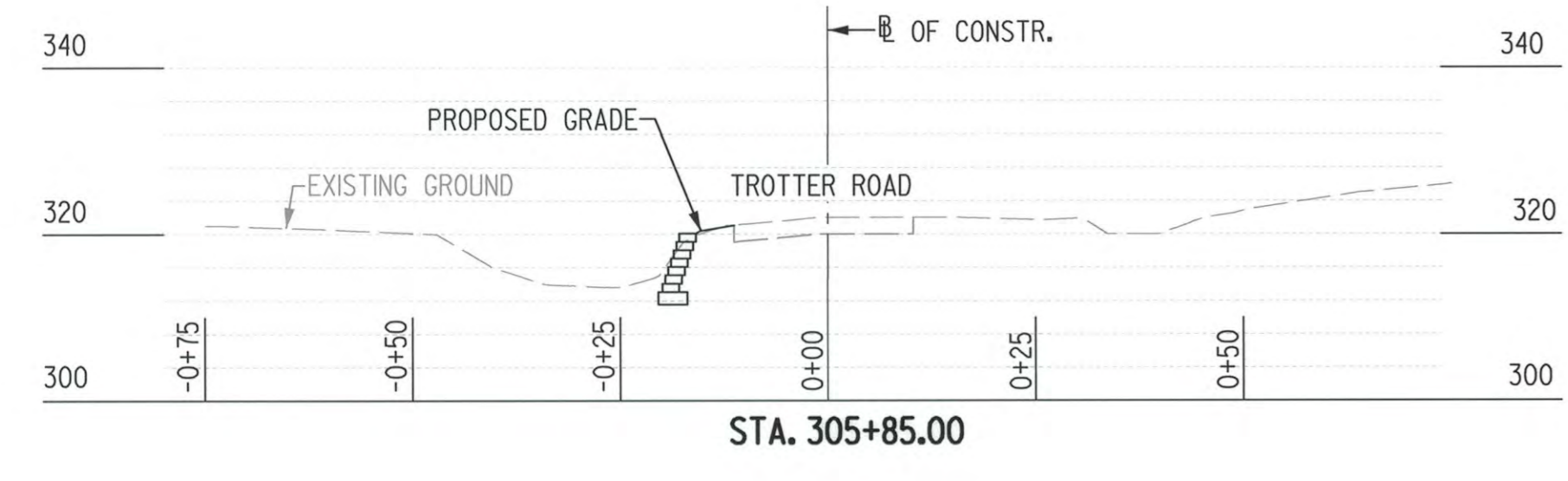
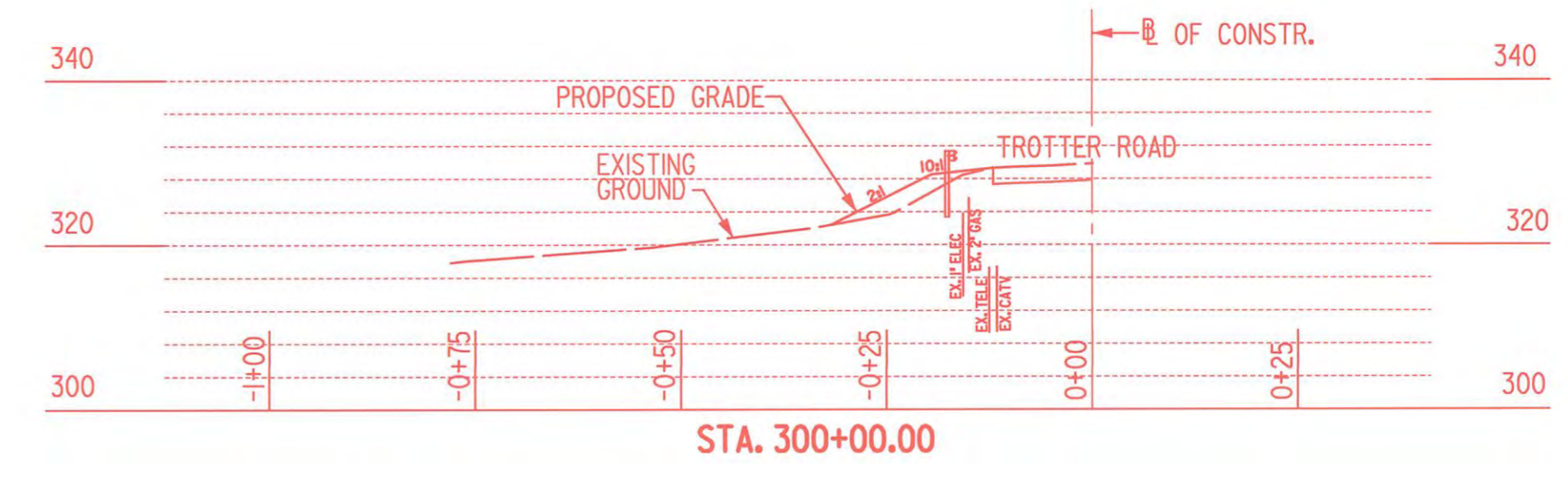
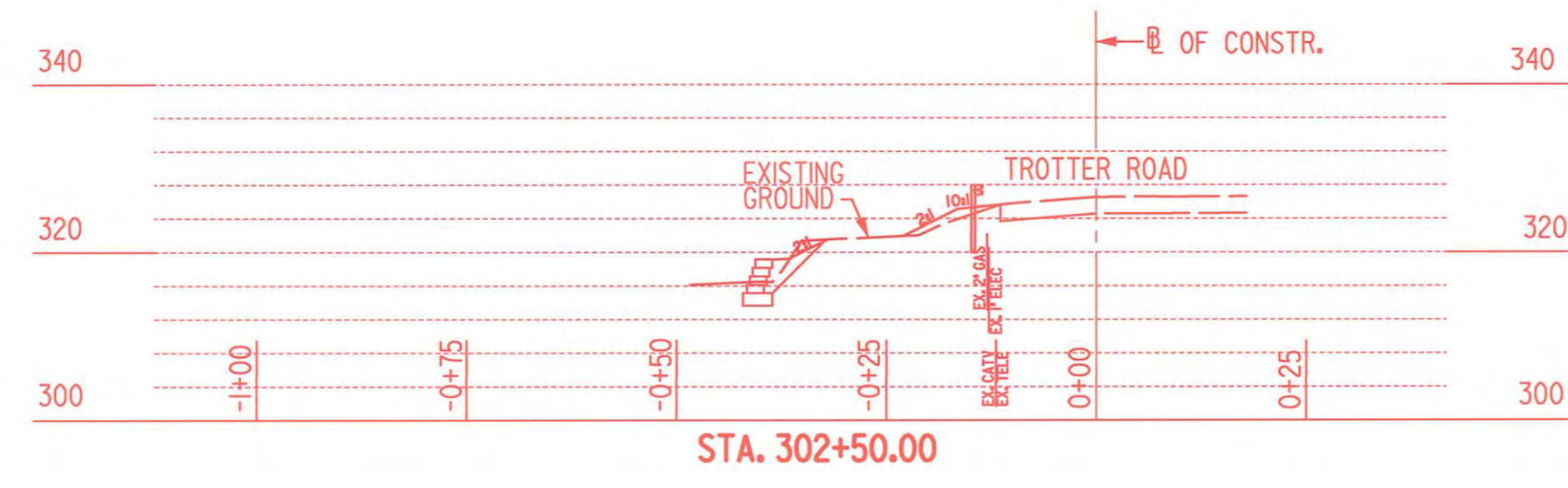
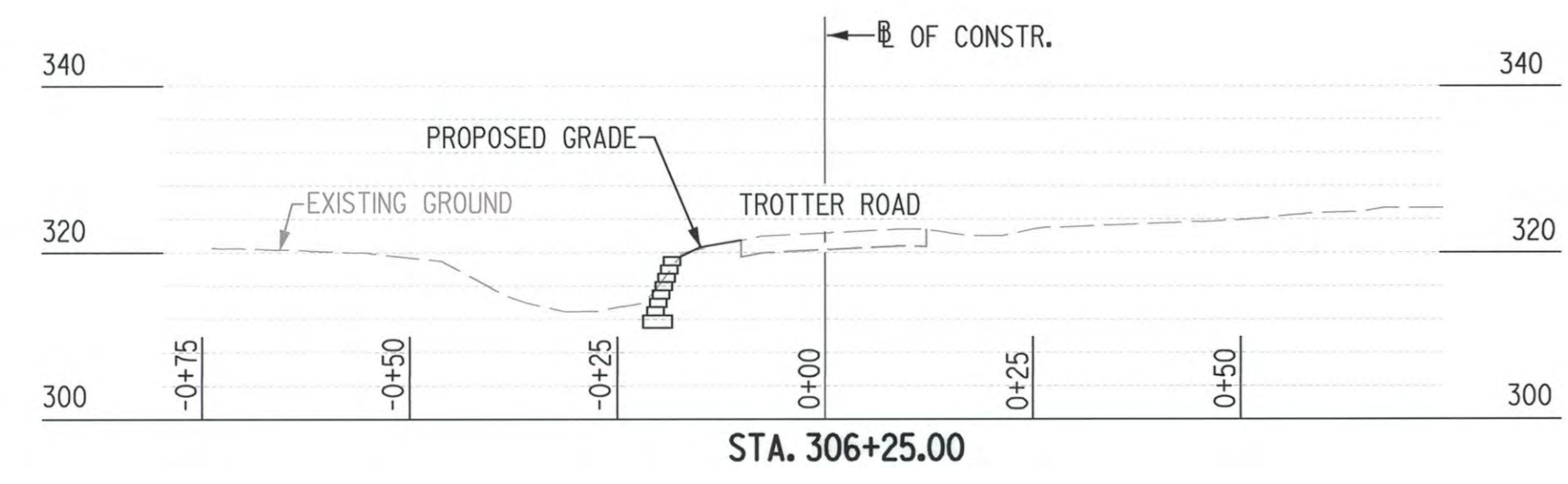
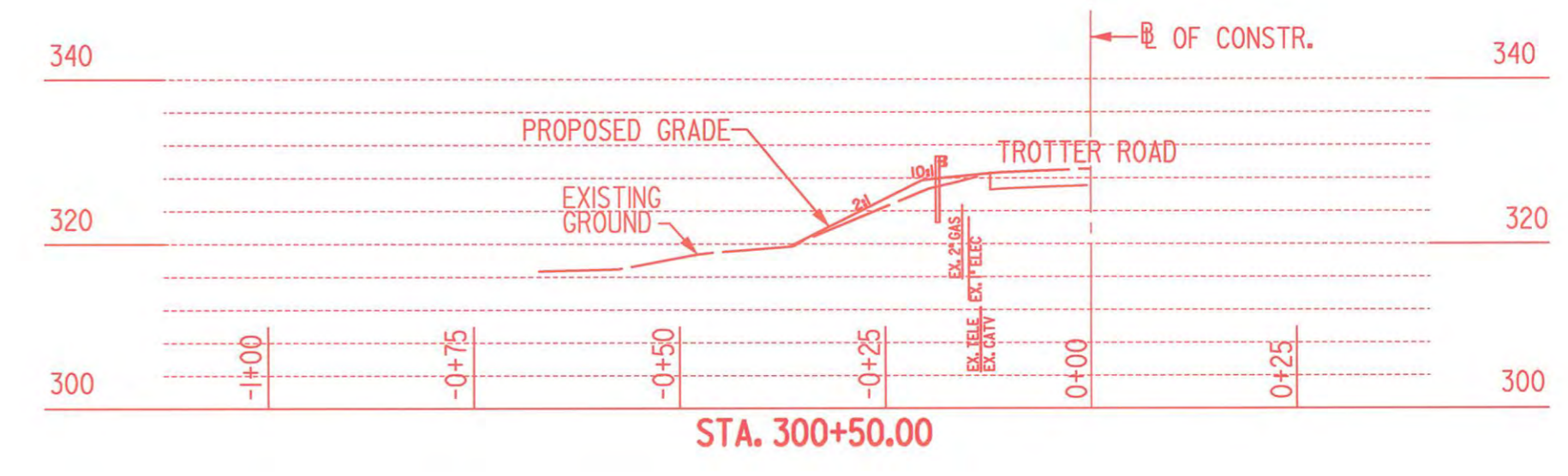
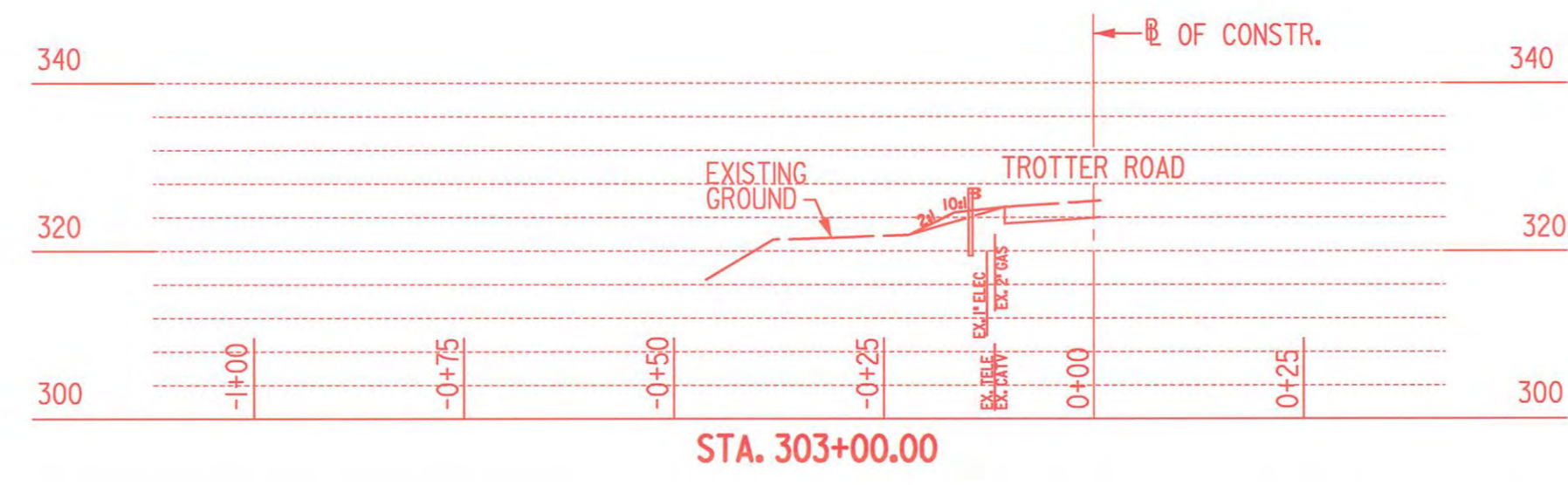
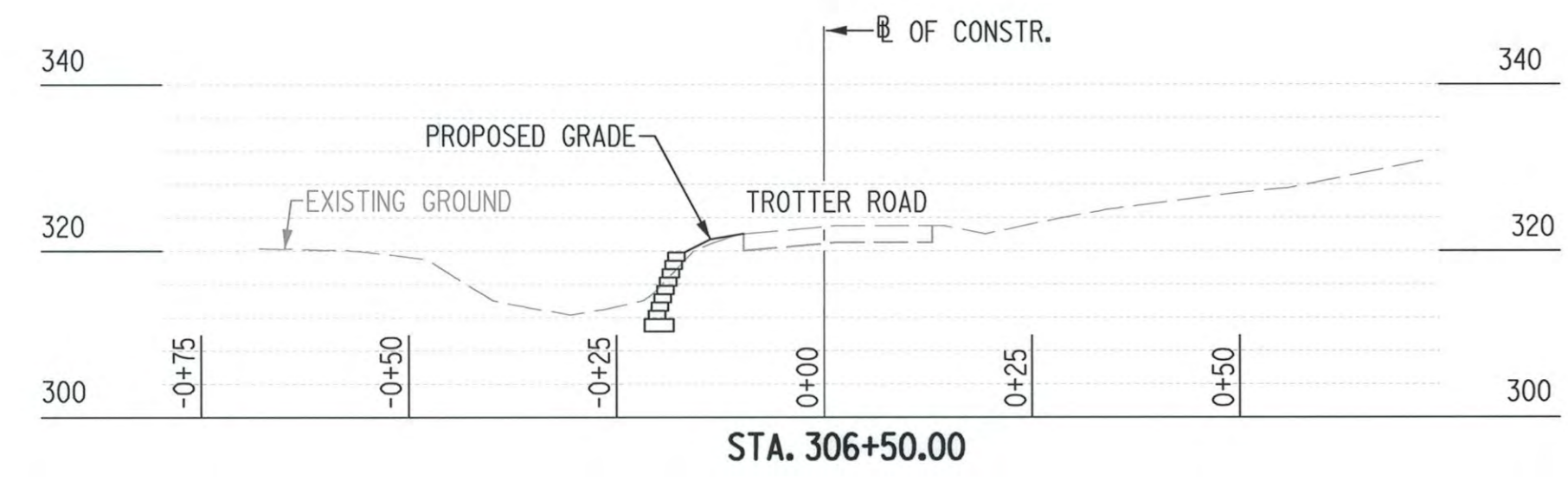
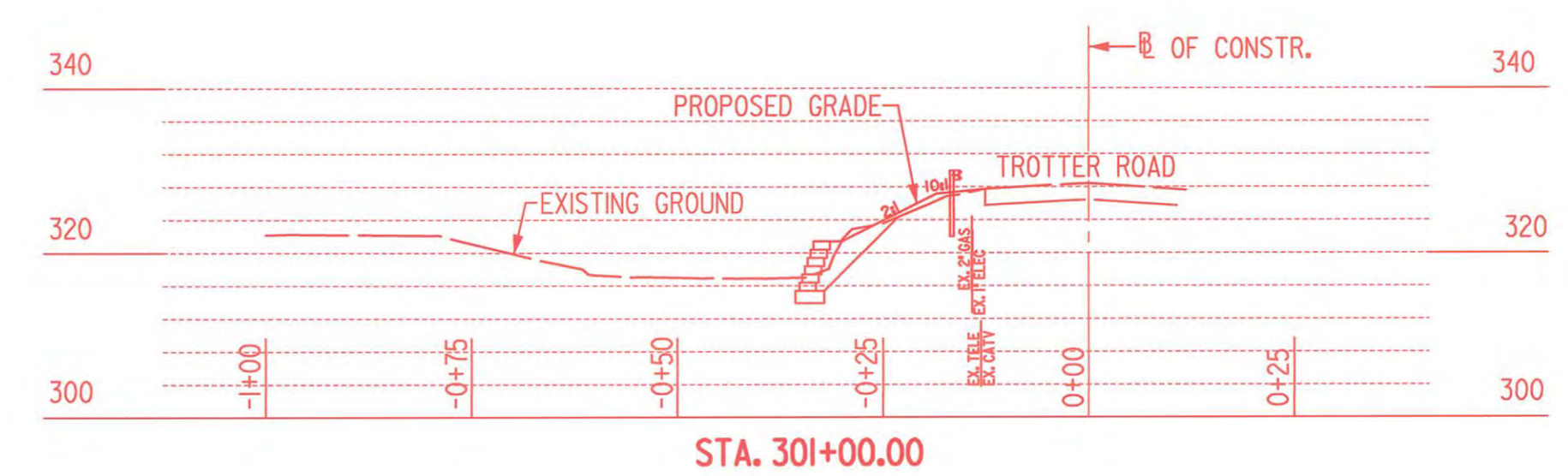
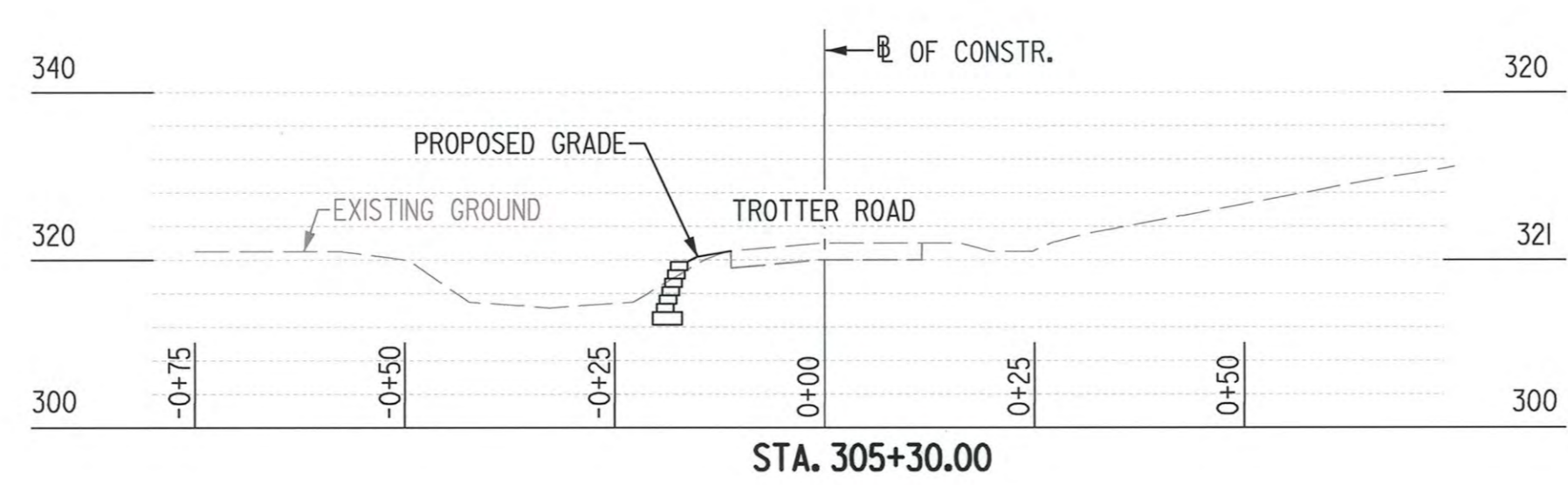
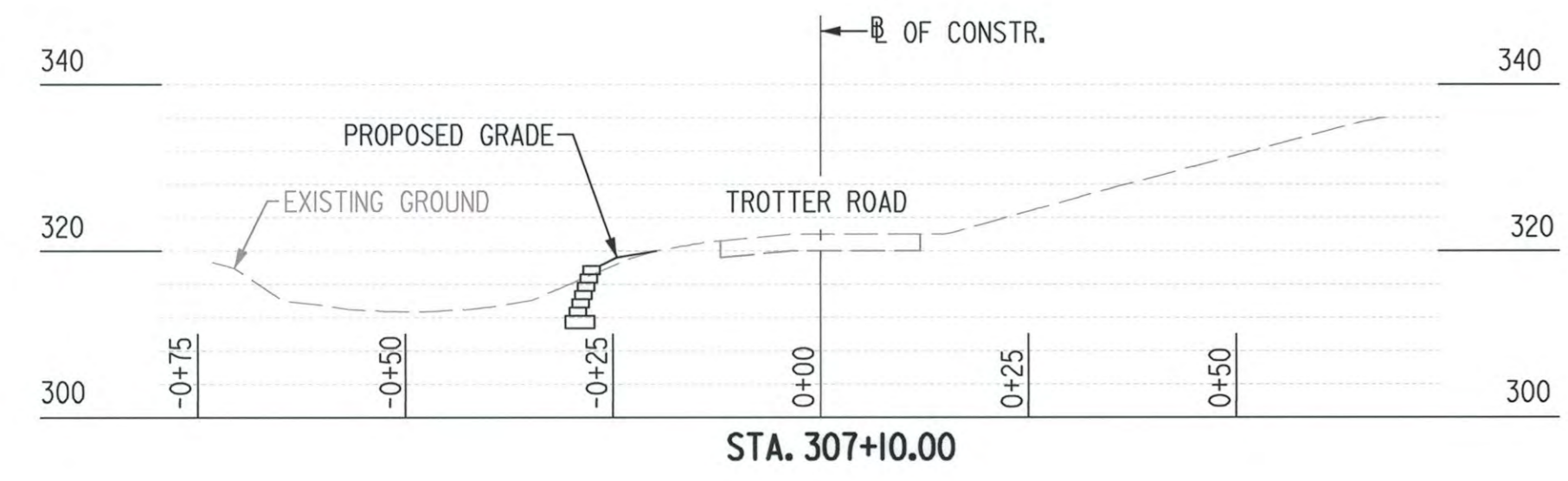
TROTTER ROAD  
STREAM BANK STABILIZATION

PLAN SHEET  
W-BEAM INSTALLATION

SCALE:	AS SHOWN
DATE:	JUNE 8, 2015
JMT JOB NO.:	09-2356-003/012
CAPITAL PROJECT NO.:	D-1163
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	

**PS-1G**  
SHEET NO.: 46 OF 15





CROSS SECTIONS <sup>2</sup>  
 SCALE: HOR. 1" = 20'  
 VERT. 1" = 20'

FILE: W:\SUN\232556\_003\_Trotter\_Road\_Slope\_SACADD\_PIC-0001\_TrotterRd.Reel.mxd



APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

*M. D. [Signature]* 6/12/15  
 CHEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 15468, EXPIRATION DATE: JULY 15, 2017.

NO.	REVISIONS DESCRIPTION	DATE
2	W-BEAM AREA #2	6/8/2015



TROTTER ROAD  
 STREAM BANK STABILIZATION

CAPITAL PROJECT D-118  
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 STREAM BANK STABILIZATION DIVISION  
 601 COLUMBIA, MD 21046

CROSS SECTIONS

SCALE: AS SHOWN  
 DATE: JUNE 8, 2015  
 IGT JOB NO.: 09-2356-003/012  
 CAPITAL PROJECT NO.: D-1163  
 PERMIT ISSUE:  
 CONSTRUCTION ISSUE:

XS-1

SHEET NO.: 6 OF 15



TRAFFIC CONTROL NOTES

1. ALL TEMPORARY TRAFFIC SIGNS, BARRICADES AND OTHER TRAFFIC CONTROL DEVICES USED FOR MAINTENANCE OF TRAFFIC SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, AND THE MARYLAND STATE HIGHWAY ADMINISTRATION BOOK OF STANDARDS AND SPECIFICATIONS.
2. ALL TEMPORARY TRAFFIC SIGNS SHALL BE INSTALLED IN ACCORDANCE TO MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION ON MATERIALS, SECTION 104.08
3. ALL DETOUR SIGNS SHALL BE PLACED SO THAT THEY DO NOT OBSTRUCT EXISTING TRAFFIC CONTROL DEVICES.
4. ANY CORRECTIONS, MODIFICATIONS, OR ADDITIONS TO THE PLAN SHALL BE APPROVED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, TRAFFIC DIVISION.
5. MISS UTILITY SHALL BE NOTIFIED PRIOR TO PLACEMENT OF SIGNING, IF MOUNTING ON POSTS.
6. HOWARD COUNTY BUREAU OF ENGINEERING/TRANSPORTATION PROJECTS DIVISION (410-313-2014) SHALL BE NOTIFIED 24 HOURS PRIOR TO ANY WORK.
7. THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS TRAFFIC DIVISION RESERVES THE RIGHT TO MODIFY OR ADJUST THE PLAN TO FIT SITE CONDITIONS AT ANY TIME.
8. ADVANCE NOTICE SIGN SHALL BE PLACED AT THE POINT OF ROAD CLOSURE TWO (2) WEEKS PRIOR TO CLOSURE. IF CLOSURE DOES NOT TAKE PLACE WITHIN ONE (1) WEEK OF THE DATE STATED ON SIGN, THE DATE SHALL BE CHANGED TO REFLECT THE CORRECT CLOSURE DATE AT NO ADDITIONAL COST.
9. SIGN INSTALLATION SHALL NOT LAST ANY LONGER THAN 15 MINUTES PER LOCATION. IF LONGER THAN 15 MINUTES APPROPRIATE TRAFFIC CONTROL AND PERMITS SHALL BE USED.
10. TRAFFIC ENGINEER SHALL DETERMINE EXACT PLACEMENT OF THE TYPE III BARRICADES.
11. ALL SIGNS SHALL CONFORM TO CURRENT MSHA MATERIAL AND REFLECTIVITY REQUIREMENTS.
12. ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS UNLESS PERMISSION FOR CLOSURE IS GRANTED BY THE PROPERTY OWNER/MANAGER. HOWEVER, ACCESSIBILITY FOR EMERGENCY VEHICLES SHALL BE MAINTAINED AT ALL TIMES.
13. ALL FLAGGERS SHALL BE CERTIFIED BY THE AMERICAN TRAFFIC SAFETY SERVICES ASSOCIATION.
14. ALL TRAFFIC CONTROL DEVICES ARE TO BE REMOVED FROM VIEW TO ONCOMING WHEN NOT IN USE.
15. NO HAZARDOUS MATERIALS SHALL BE STORED WITHIN PUBLIC RIGHT-OF-WAY.
16. ANY TEMPORARY TRAFFIC SIGNING AND MARKINGS THAT MAY CONFLICT WITH NORMAL TRAFFIC FLOW SHALL BE REMOVED OR COVERED AT THE END OF EACH DAY DURING CONSTRUCTION ON THIS PROJECT.
17. ALL EXISTING TRAFFIC CONTROL DEVICES THAT MUST BE REMOVED SHALL BE REPLACED IN THEIR PROPER LOCATION PRIOR TO THE COMPLETION OF THE PROJECT. COST FOR THE REPLACEMENT AND/OR REPAIR OF DEVICES DAMAGED AS A RESULT OF THE PROJECT SHALL BE ASSESSED TO THE CONTRACTOR.
18. AT THE COMPLETION OF THE PERMITTED WORK ACTIVITY, CONDITIONS WITHIN THE PUBLIC SPACE SHALL BE FULLY RESTORED TO THOSE WHICH EXISTED PRIOR TO THE WORK ACTIVITY.
19. WHEN PAVEMENT MARKINGS HAVE BEEN OBLITERATED BY THE WORK ACTIVITY, THE CONTRACTOR SHALL INSTALL ANY CRITICAL INTERIM PAVEMENT MARKING PRIOR TO THE END OF THE WORK DAY.
20. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL TRAFFIC CONTROL DEVICES. AT ANYTIME THE CONTRACTOR DOES NOT MAKE NECESSARY REPAIRS WITHIN 24 HOURS OF NOTIFICATION, APPROXIMATE WORK TIME REDUCTION AND/OR FINES MAY BE APPLIED.

FLAGGING OPERATION

1. FLAGGERS TO BE USED TO MAINTAIN TRAFFIC DURING THE INSTALLATION OF W-BEAM WITHIN THE WORK ZONE.
2. FLAGGING OPERATION SHALL BE LIMITED TO OFF-PEAK PERIODS.
3. FLAGGERS SHALL BE UTILIZED IN ACCORDANCE WITH MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS AND MATERIALS, SECTION 104.15 AND SECTION 9.0 ON MARYLAND STANDARD MD 104.00-11 AND MD 104.00-12.
4. ALL NECESSARY MOT DEVICES, TRAFFIC DRUMS, ADVANCED WARNING SIGNS, SIGN SPACING, AND FLAGGER LOCATIONS TO BE PER MARYLAND STANDARD 104.02-10.

ROADWAY CLOSURE NOTIFICATION

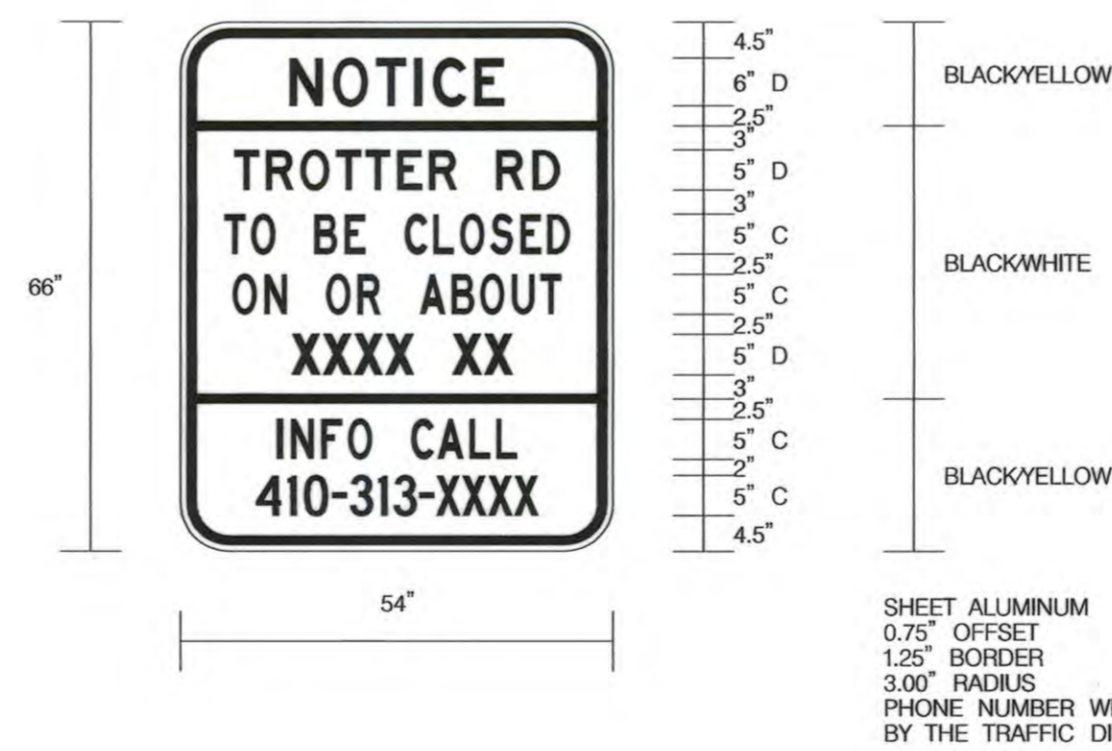
THE CONTRACTOR MUST NOTIFY THE FOLLOWING AGENCIES AT LEAST FOUR WEEKS IN ADVANCE OF THE ROAD CLOSURE:

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/TRANSPORTATION PROJECTS DIVISION - STEVE SHARAR 410-313-2014  
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS/BUREAU OF HIGHWAYS/TRAFFIC DIVISION 410-313-2430  
 HOWARD COUNTY PUBLIC SCHOOLS/TRANSPORTATION DIVISION - CHRIS FRITZ 410-313-6732  
 HOWARD COUNTY TRANSIT SERVICES - LOUIS FARBER 301-957-3620  
 HOWARD COUNTY BUREAU OF ENVIRONMENTAL SERVICES 410-313-6470  
 HOWARD COUNTY EMERGENCY COMMUNICATIONS/911 CENTER - ADMINISTRATIVE NUMBER 410-313-2300

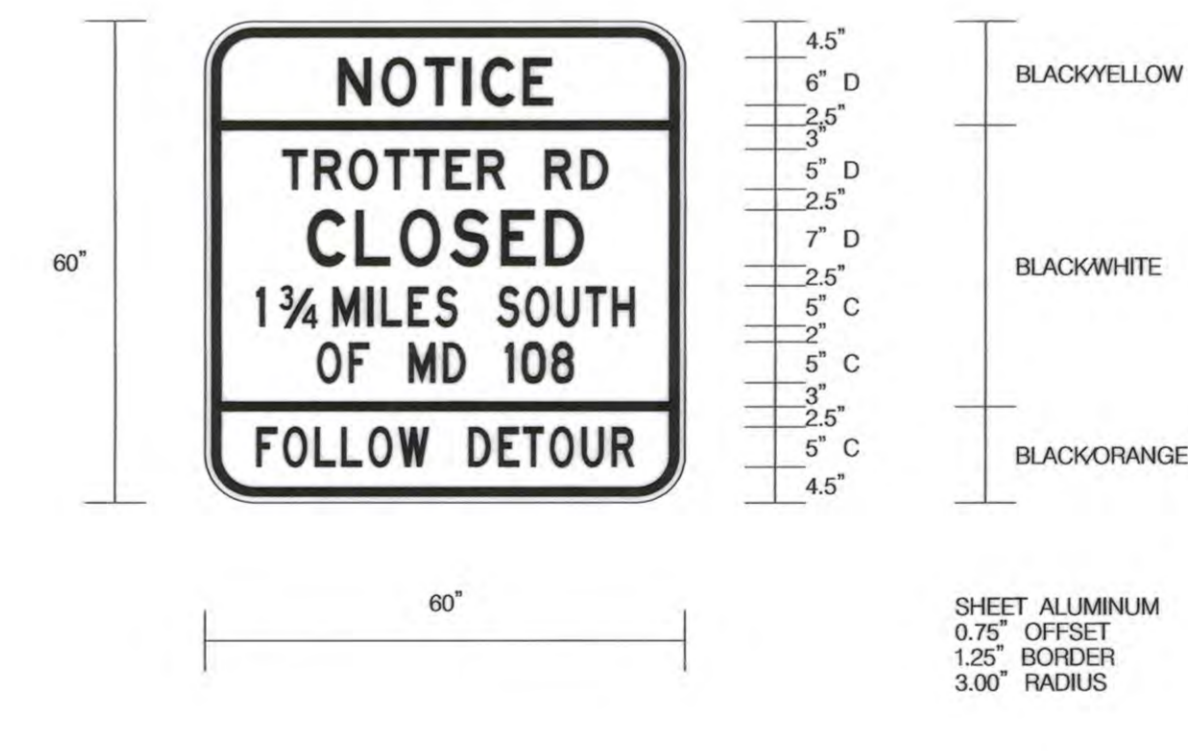
DETOUR NOTES

1. SIGN (A) TO BE INSTALLED 14 DAYS PRIOR TO APPROVED DAY OF ROAD CLOSURE.
2. SIGN (A) SHALL BE REMOVED AS SOON AS ROADWAY IS CLOSED.
3. THE USE OF SIGN (A) OR A VARIABLE MESSAGE SIGN (VMS) TO ALERT MOTORISTS OF THE CLOSURE TO BE DETERMINED BY THE TRAFFIC ENGINEER.
4. ALL SIGN LOCATIONS ARE APPROXIMATE.
5. ALL SIGN LOCATIONS SHALL BE MARKED AND/OR APPROVED BY HOWARD COUNTY TRAFFIC (410-313-2430) PRIOR TO THE INSTALLATION OF ANY SIGNS.
6. ALL SIGNS SHALL BE COVERED WITH OPAQUE MATERIAL UNTIL ROAD IS CLOSED.
7. THE TYPE III BARRICADE LOCATIONS SHALL BE DETERMINED BY THE TRAFFIC ENGINEER AND CONTRACTOR.
8. SEE TEMPORARY TRAFFIC CONTROL SIGN TABLE FOR SIGN SUPPORT INFORMATION. ALL SUPPORTS SHALL BE BREAKAWAY WITH DRILLED HOLES PER MARYLAND STANDARD MD 812.01.
9. ACCESS SHALL BE MAINTAINED TO CRICKET CREEK LANE AT ALL TIMES. ACCESS SHALL ALSO BE PROVIDED TO THE MAILBOXES AT CRICKET CREEK LANE AT ALL TIMES. IF NECESSARY, MAILBOXES MAY BE ABLE TO BE TEMPORARILY RELOCATED. ANY MAILBOX ADJUSTMENTS MUST BE COORDINATED WITH AND APPROVED BY THE UNITED STATES POSTAL SERVICE PRIOR TO ANY MODIFICATIONS.
10. DETOUR PLAN FOR FULL ROAD CLOSURE SHALL BE UTILIZED WHILE TROTTER ROAD IS CLOSED IN BOTH DIRECTIONS WHILE CONSTRUCTION IS COMPLETED.
11. FULL CLOSURE SHALL BE IMPLEMENTED AT THE BEGINNING OF SUMMER AFTER SCHOOL IS OUT OF SESSION. DURATION OF FULL DETOUR SHALL BE LIMITED TO ONE MONTH. ANY ADDITIONAL WORK REQUIRED AFTER ROADWAY IS RE-OPENED SHALL BE COMPLETED UNDER SINGLE LANE FLAGGING OPERATION. SEE FLAGGING OPERATION NOTES.

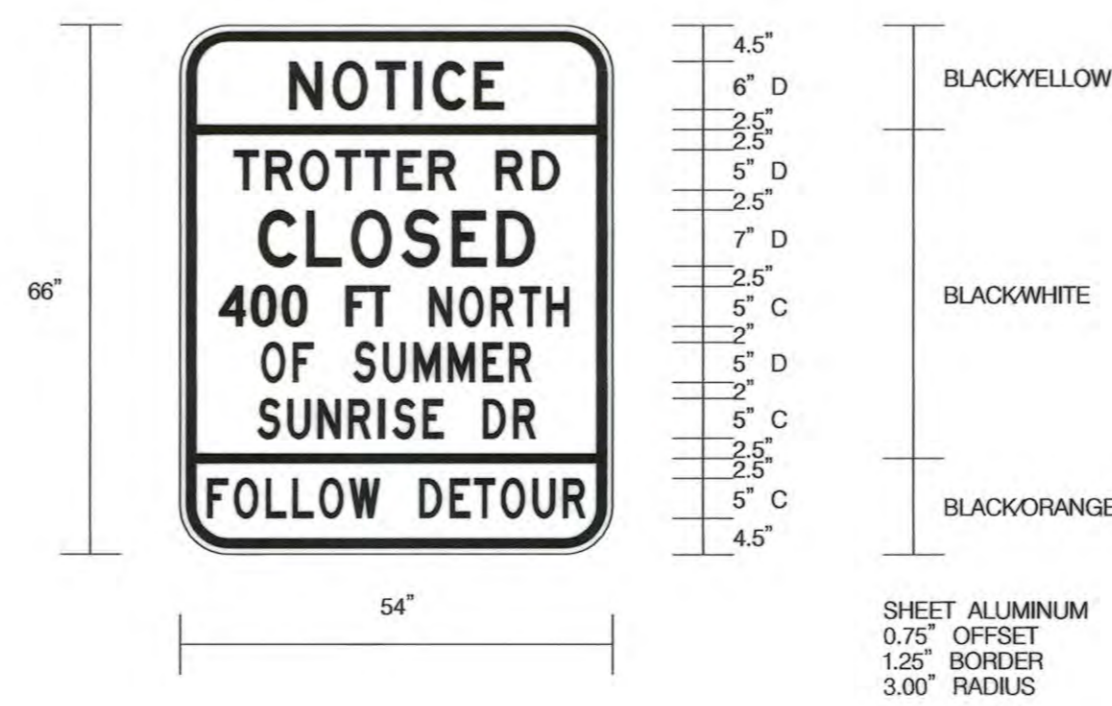
NOTICE SIGN (A)



NOTICE SIGN (B)



NOTICE SIGN (C)



NOTICE SIGN (D)



APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS  
 [Signature] 6/12/15  
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES  
 DATE

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 15466, EXPIRATION DATE, JULY 15, 2017.

NO.	REVISIONS DESCRIPTION	DATE
1	W/B BEAM AREA #2 - SHEET REPLACED	6/8/2015



TROTTER ROAD  
 STREAM BANK STABILIZATION

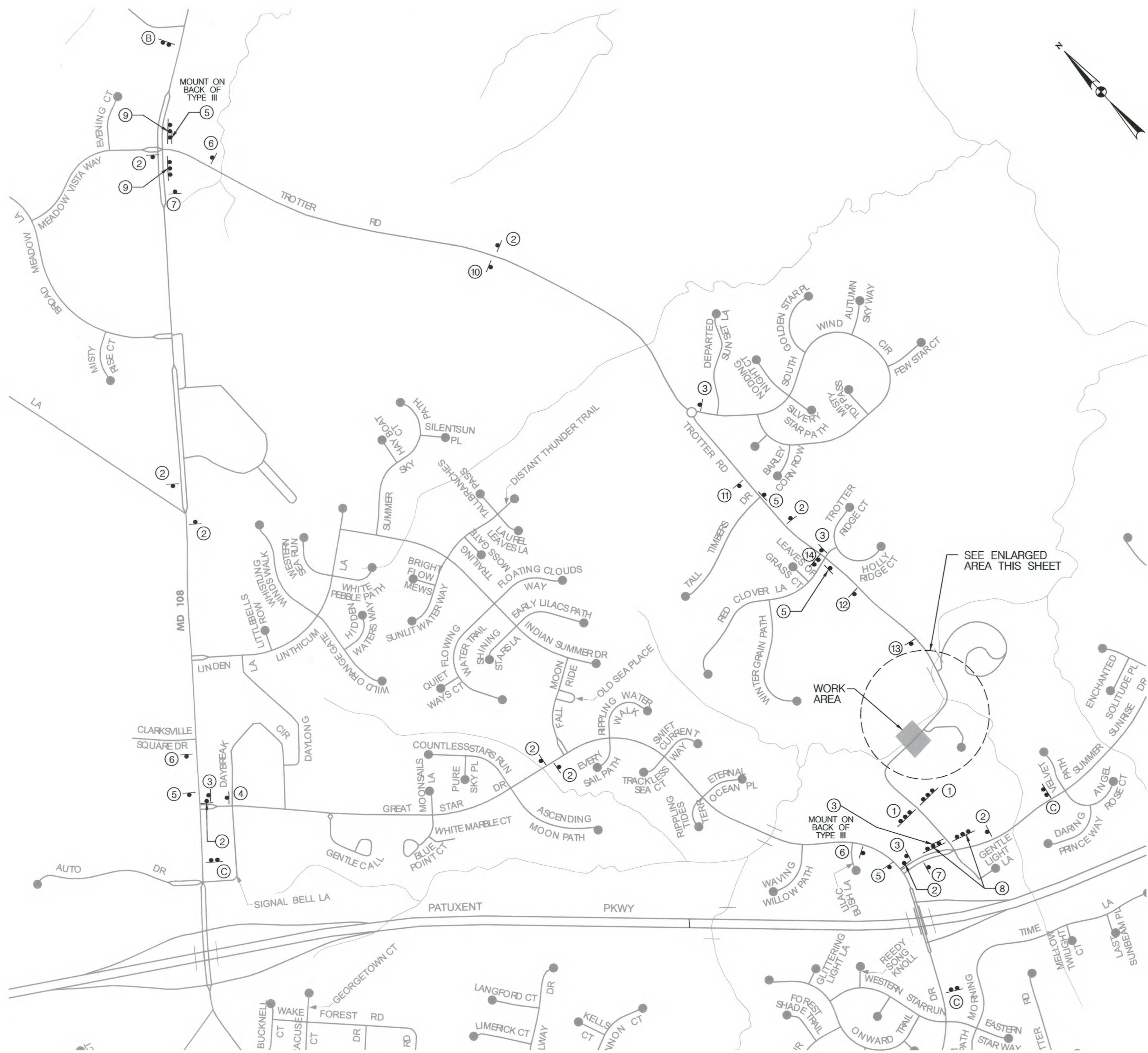
CAPITAL PROJECT D-1163  
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 TRANSPORTATION MANAGEMENT DIVISION  
 670 COLUMBIA, MD 21046

MAINTENANCE OF  
 TRAFFIC NOTES

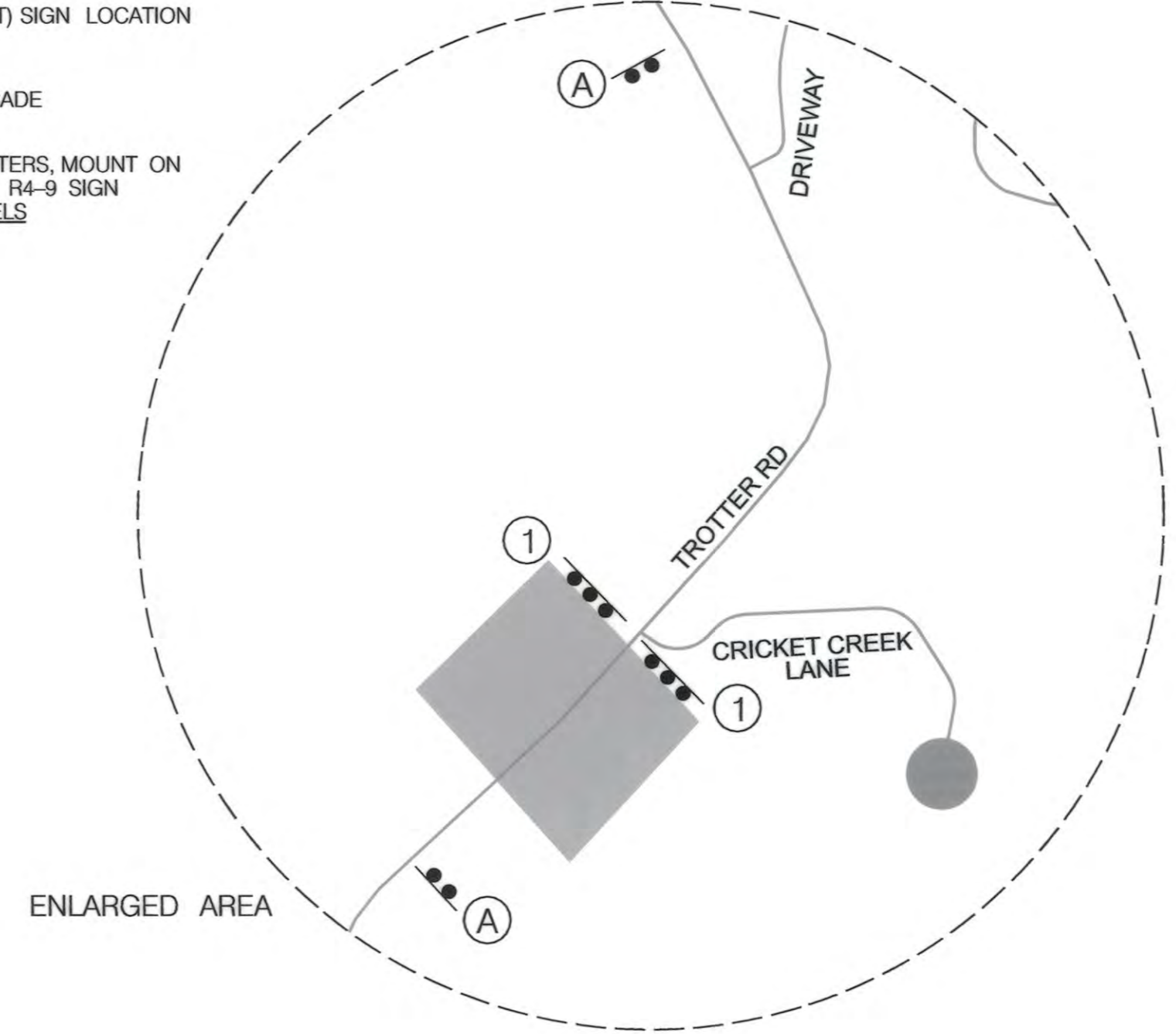
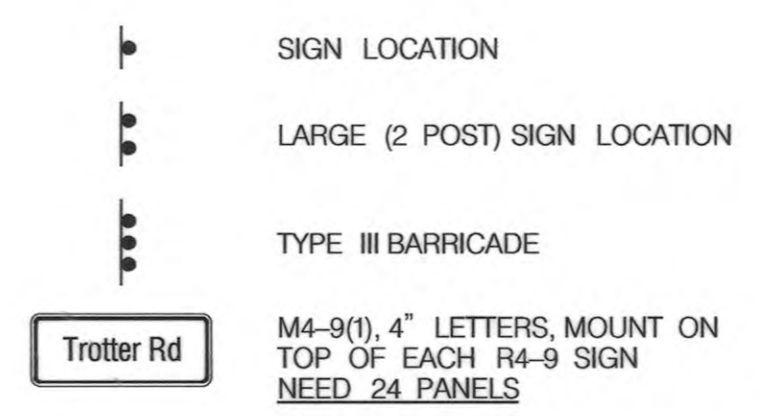
N.T.S.

SCALE:	AS SHOWN
DATE:	MARCH 18, 2015
MT JOB No.:	09-2356-003/012
CAPITAL PROJECT No.:	D-1163
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	

MT-1  
 SHEET NO.: 7 OF 15



TEMPORARY TRAFFIC CONTROL SIGN TABLE							
SYMBOL	MUTCD DESIGNATION	MESSAGE	SIZE	QUANTITY	COLOR		SUPPORT
					BACKGROUND	CHARACTERS	
①	R11-2	ROAD CLOSED	48" x 30"	4	WHITE	BLACK	TYPE III BARRICADE
②	M4-9 W/ROAD NAME PANEL M4-9(1)		30" x 12" 30" x 24"	10	WHITE	BLACK	(1) 4" x 6" WOOD
					ORANGE	BLACK	
③	M4-9R W/ROAD NAME PANEL M4-9(1)		30" x 12" 30" x 24"	5	WHITE	BLACK	(1) 4" x 6" WOOD
					ORANGE	BLACK	
④	M4-9R (MOD. ARROW) W/ROAD NAME PANEL M4-9(1)		30" x 12" 30" x 24"	1	WHITE	BLACK	(1) 4" x 6" WOOD
					ORANGE	BLACK	
⑤	M4-9L W/ROAD NAME PANEL M4-9(1)		30" x 12" 30" x 24"	5	WHITE	BLACK	(1) 4" x 6" WOOD
					ORANGE	BLACK	
⑥	M4-9L (MOD. ARROW) W/ROAD NAME PANEL M4-9(1)		30" x 12" 30" x 24"	3	WHITE	BLACK	(1) 4" x 6" WOOD
					ORANGE	BLACK	
⑦	M4-8A	END DETOUR	48" x 30"	2	WHITE	BLACK	(2) 4" x 6" WOOD
⑧	R11-3		60" x 30"	2	WHITE	BLACK	TYPE III BARRICADE
	W/M4-10L		48" x 18"	2	ORANGE	BLACK	
⑨	R11-3		60" x 30"	2	WHITE	BLACK	TYPE III BARRICADE
	W/M4-10R		48" x 18"	2	ORANGE	BLACK	
⑩	W20-3		48" x 48"	1	ORANGE	BLACK	(2) 4" x 6" WOOD
⑪	W20-3		48" x 48"	1	ORANGE	BLACK	(2) 4" x 6" WOOD
⑫	W20-3		48" x 48"	1	ORANGE	BLACK	(2) 4" x 6" WOOD
⑬	W20-3		48" x 48"	1	ORANGE	BLACK	(2) 4" x 6" WOOD
⑭	SPECIAL (SEE SIGN DETAILS)	(SEE SIGN DETAILS)	—	1	WHITE	BLACK	(2) 4" x 6" WOOD
A	NOTICE SIGN (SEE SIGN DETAILS)	(SEE SIGN DETAILS)	—	2	YELLOW WHITE YELLOW	BLACK	(2) 4" x 6" WOOD
B	NOTICE SIGN (SEE SIGN DETAILS)	(SEE SIGN DETAILS)	—	1	YELLOW WHITE ORANGE	BLACK	(2) 4" x 6" WOOD
C	NOTICE SIGN (SEE SIGN DETAILS)	(SEE SIGN DETAILS)	—	3	YELLOW WHITE ORANGE	BLACK	(2) 4" x 6" WOOD



DETOUR PLAN  
FOR FULL CLOSURE OF TROTTER  
ROAD BEFORE CRICKET CREEK LANE



APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS  
*Mark D. P...* 6/12/15  
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES  
 DATE

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 15466, EXPIRATION DATE: JULY 15, 2017.

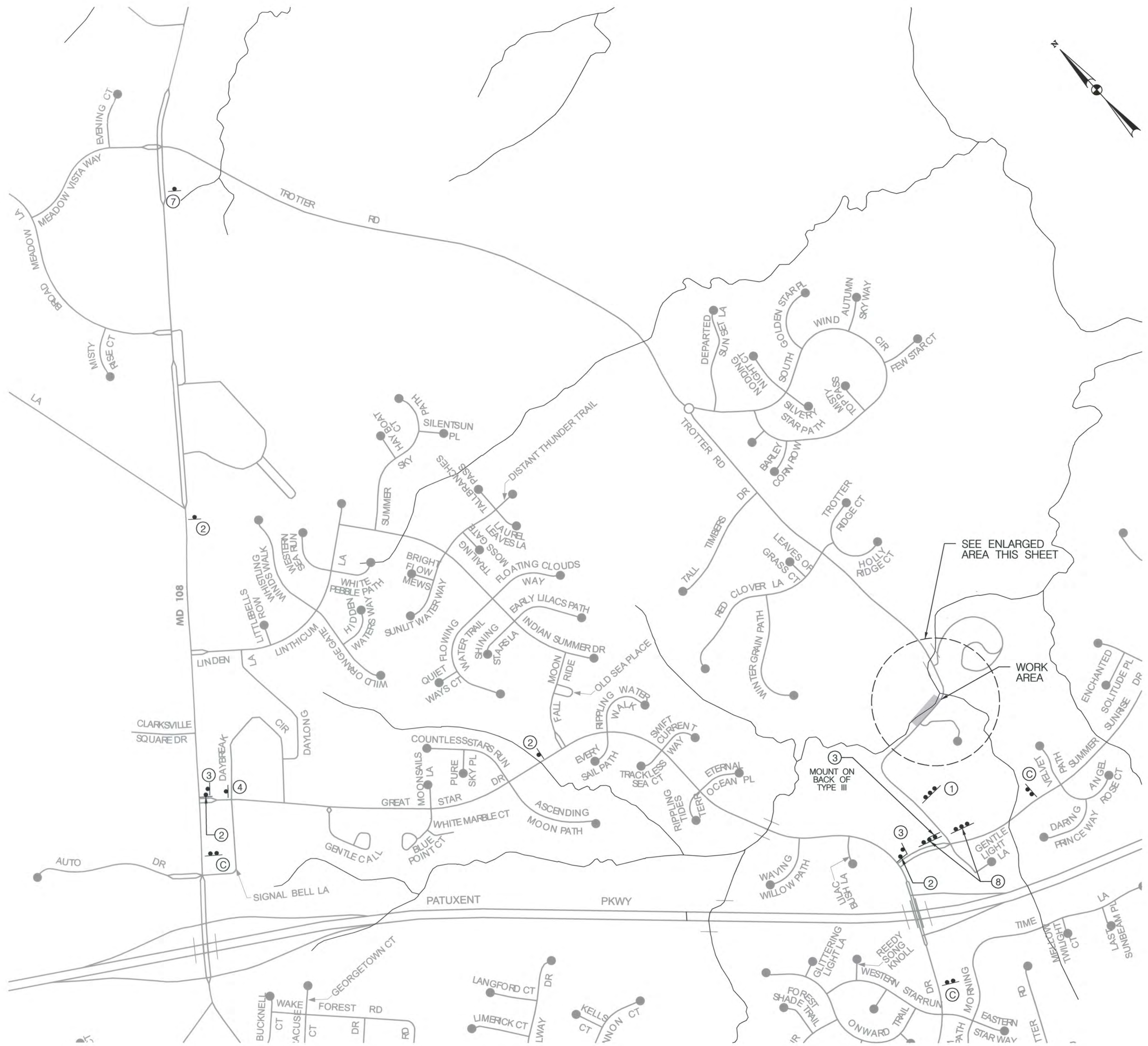
NO.	REVISIONS DESCRIPTION	DATE
1	W/BEAM AREA #2 - SHEET REPLACED	6/8/2015

**JOHNSON, MIRIRAN & THOMPSON**  
 Engineering A Brighter Future  
 72 Lovatton Circle, Baltimore, Maryland 21152-0343

TROTTER ROAD  
 STREAM BANK STABILIZATION

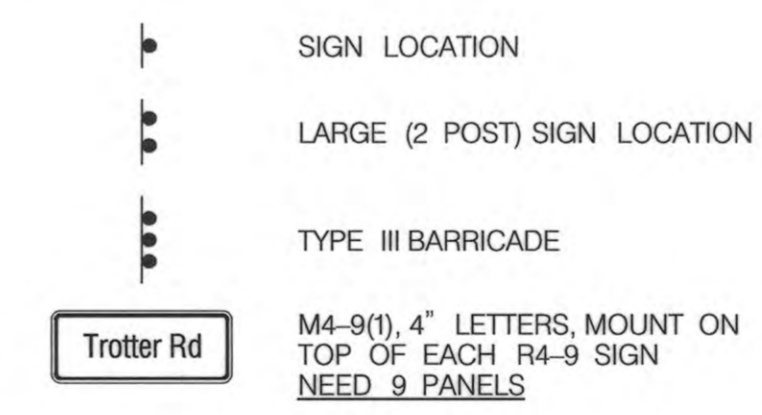
DETOUR PLAN

1" = 500'  
 SCALE: AS SHOWN  
 DATE: JUNE 8, 2015  
 JMT JOB NO.: 09-2356-003/012  
 CAPITAL PROJECT NO.: D-1163  
 PERMIT ISSUE:  
 CONSTRUCTION ISSUE:

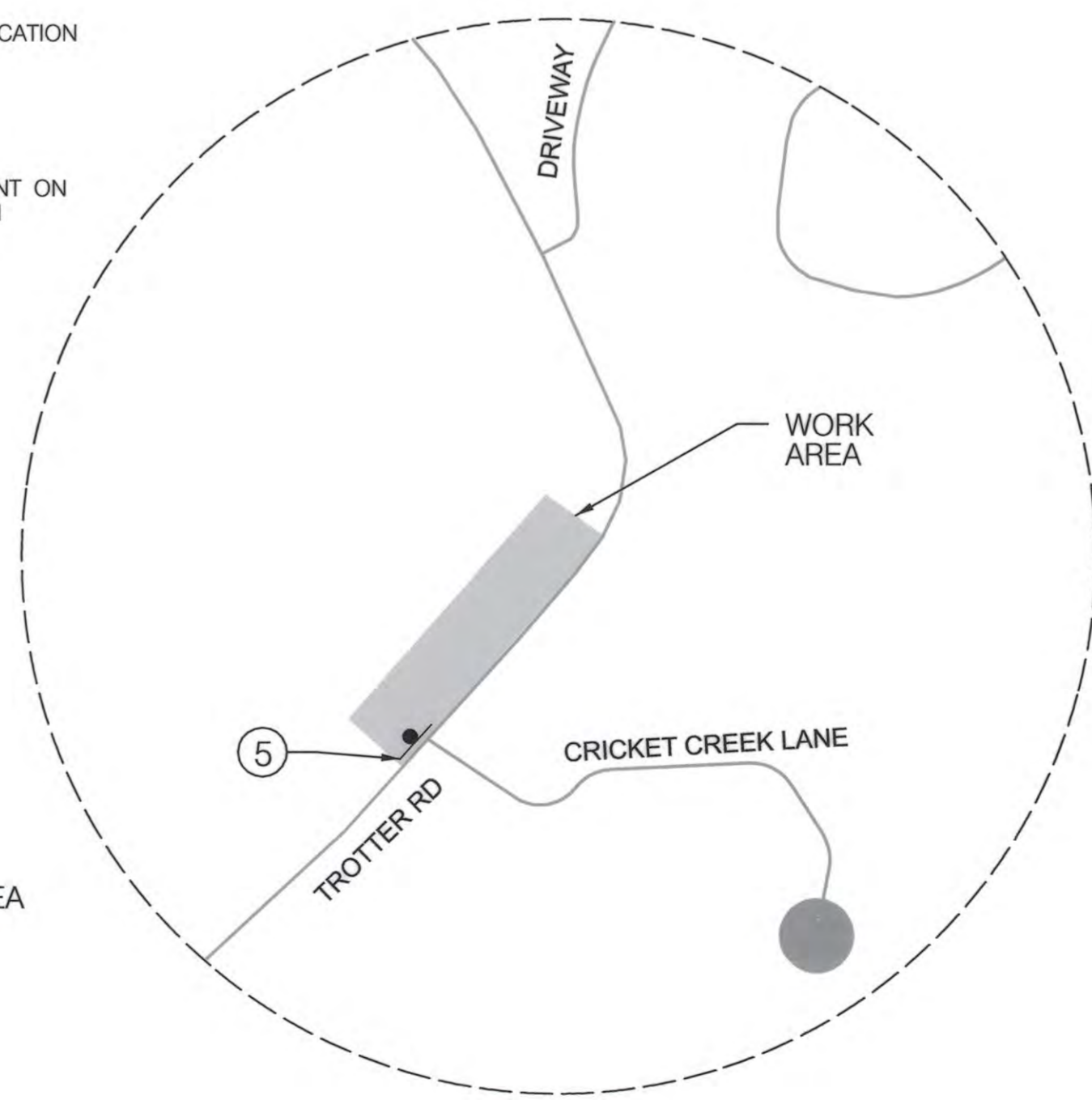


TEMPORARY TRAFFIC CONTROL SIGN TABLE

SYMBOL	MUTCD DESIGNATION	MESSAGE	SIZE	QUANTITY	COLOR		SUPPORT
					BACKGROUND	CHARACTERS	
①	R11-2	ROAD CLOSED	48" x 30"	1	WHITE	BLACK	TYPE III BARRICADE
②	M4-9 W/ROAD NAME PANEL M4-9(1)	[Detour Sign]	30" x 12" 30" x 24"	4	WHITE	BLACK	(1) 4' x 6' WOOD
					ORANGE	BLACK	
③	M4-9R W/ROAD NAME PANEL M4-9(1)	[Detour Sign]	30" x 12" 30" x 24"	3	WHITE	BLACK	(1) 4' x 6' WOOD
					ORANGE	BLACK	
④	M4-9R (MOD. ARROW) W/ROAD NAME PANEL M4-9(1)	[Detour Sign]	30" x 12" 30" x 24"	1	WHITE	BLACK	(1) 4' x 6' WOOD
					ORANGE	BLACK	
⑤	M4-9L W/ROAD NAME PANEL	[Detour Sign]	30" x 12" 30" x 24"	1	WHITE	BLACK	(1) 4' x 6' WOOD
					ORANGE	BLACK	
⑥	M4-9L (MOD. ARROW) W/ROAD NAME PANEL M4-9(1)	[Detour Sign]	30" x 12" 30" x 24"	0	WHITE	BLACK	(1) 4' x 6' WOOD
					ORANGE	BLACK	
⑦	M4-8A	END DETOUR	48" x 30"	1	WHITE	BLACK	(2) 4' x 6' WOOD
⑧	M4-10L W/R11-3	[Barricade Sign]	M4-10R W/R11-3	2	ORANGE	BLACK	TYPE III BARRICADE
					WHITE	BLACK	
⑨	M4-10R W/R11-3	[Barricade Sign]	M4-10R W/R11-3	0	ORANGE	BLACK	TYPE III BARRICADE
					WHITE	BLACK	
⑩	W20-3	[Road Closed Sign]	48" x 48"	0	ORANGE	BLACK	(2) 4' x 6' WOOD
⑪	W20-3	[Road Closed Sign]	48" x 48"	0	ORANGE	BLACK	(2) 4' x 6' WOOD
⑫	W20-3	[Road Closed Sign]	48" x 48"	0	ORANGE	BLACK	(2) 4' x 6' WOOD
⑬	W20-3	[Road Closed Sign]	48" x 48"	0	ORANGE	BLACK	(2) 4' x 6' WOOD
⑭	SPECIAL (SEE SIGN DETAILS)	(SEE SIGN DETAILS)	—	0	WHITE	BLACK	(2) 4' x 6' WOOD
A	NOTICE SIGN (SEE SIGN DETAILS)	(SEE SIGN DETAILS)	—	0	YELLOW	BLACK	(2) 4' x 6' WOOD
					WHITE	BLACK	
					YELLOW	BLACK	
B	NOTICE SIGN (SEE SIGN DETAILS)	(SEE SIGN DETAILS)	—	0	YELLOW	BLACK	(2) 4' x 6' WOOD
					WHITE	BLACK	
					ORANGE	BLACK	
C	NOTICE SIGN (SEE SIGN DETAILS)	(SEE SIGN DETAILS)	—	3	YELLOW	BLACK	(2) 4' x 6' WOOD
					WHITE	BLACK	
					ORANGE	BLACK	



- NOTES:
- MESSAGE ON SIGN 8 IS MODIFIED FROM MESSAGE SHOWN ON FULL CLOSURE DETOUR PLAN.
  - SEE MAINTENANCE OF TRAFFIC PLAN FOR ADDITIONAL INFORMATION.



DETOUR PLAN  
FOR NORTHBOUND CLOSURE  
OF TROTTER ROAD

04/11/12

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 15466, EXPIRATION DATE: JULY 15, 2013.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

*Edwin J. Jank* 4/12/12  
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

NO.	REVISIONS DESCRIPTION	DATE

72 Lovston Circle, Baltimore, Maryland 21152 0943

TROTTER ROAD  
STREAM BANK STABILIZATION

CAPITAL PROJECT D-1163  
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
STATION: 09-2356-003/OI2  
COLUMBIA, MD 21046

DETOUR PLAN

1" = 500'

SCALE: AS SHOWN

DATE: JANUARY 16, 2012

JMT JOB NO.: 09-2356-003/OI2

CAPITAL PROJECT NO.: D-1163







PERMIT ISSUE:

CONSTRUCTION ISSUE:



MT-3

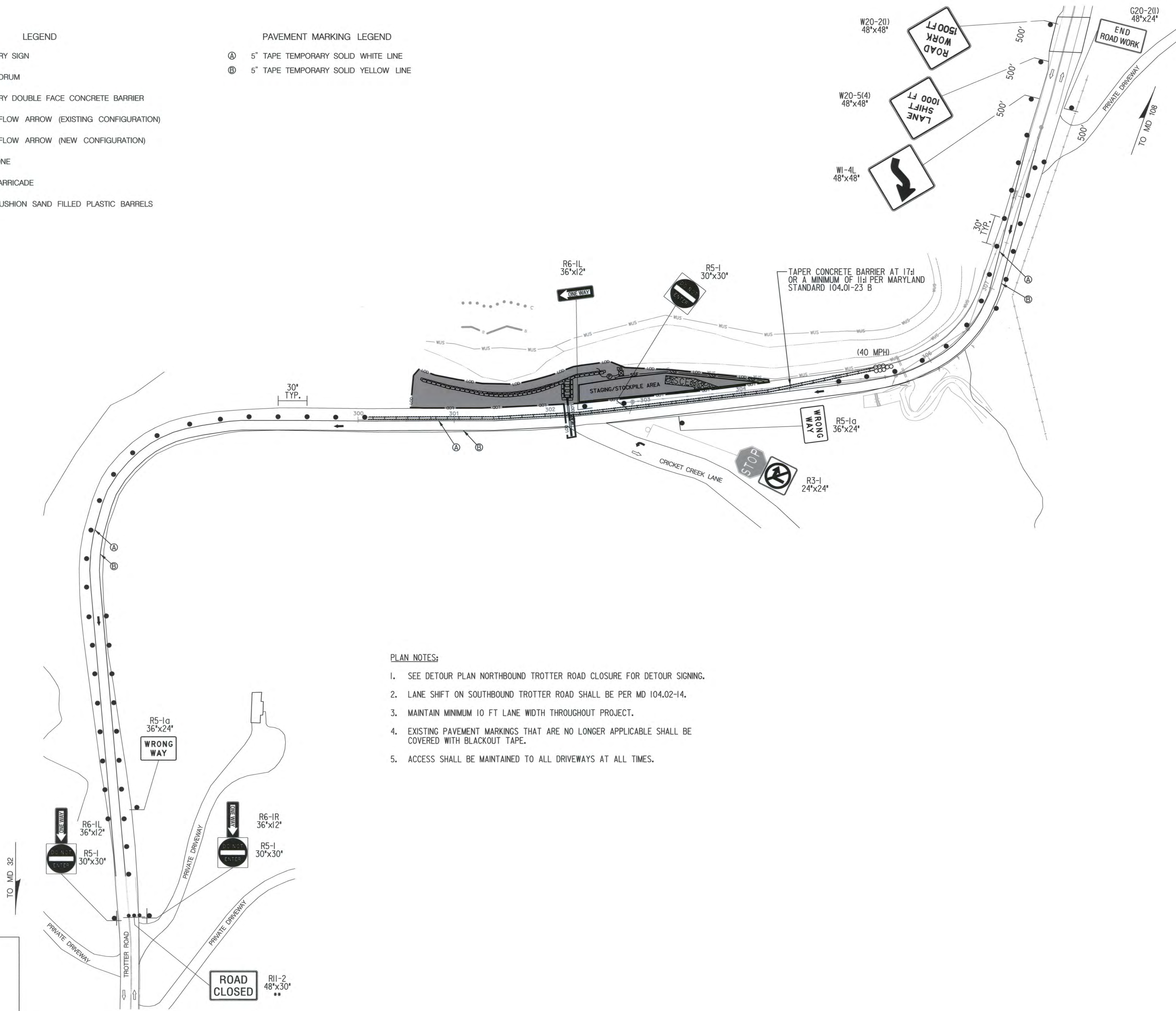
SHEET NO.: 9 OF 15

LEGEND

-  TEMPORARY SIGN
-  TRAFFIC DRUM
-  TEMPORARY DOUBLE FACE CONCRETE BARRIER
-  TRAFFIC FLOW ARROW (EXISTING CONFIGURATION)
-  TRAFFIC FLOW ARROW (NEW CONFIGURATION)
-  WORK ZONE
-  TYPE III BARRICADE
-  CRASH CUSHION SAND FILLED PLASTIC BARRELS (SPEED)

PAVEMENT MARKING LEGEND

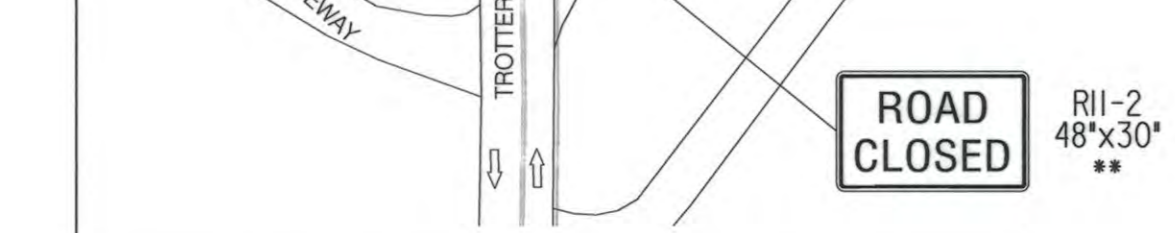
-  5" TAPE TEMPORARY SOLID WHITE LINE
-  5" TAPE TEMPORARY SOLID YELLOW LINE



PLAN NOTES:

1. SEE DETOUR PLAN NORTHBOUND TROTTER ROAD CLOSURE FOR DETOUR SIGNING.
2. LANE SHIFT ON SOUTHBOUND TROTTER ROAD SHALL BE PER MD 104.02-14.
3. MAINTAIN MINIMUM 10 FT LANE WIDTH THROUGHOUT PROJECT.
4. EXISTING PAVEMENT MARKINGS THAT ARE NO LONGER APPLICABLE SHALL BE COVERED WITH BLACKOUT TAPE.
5. ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS AT ALL TIMES.

TO MD 32



APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

*Edgys E. Jovel* 4/12/12  
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

\*\* - MOUNTED ON TYPE III BARRICADE



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NO.	REVISIONS DESCRIPTION	DATE

**JOHNSON, MIRMAN & THOMPSON**  
 Engineering. A Brighter Future.  
 72 Lovston Circle, Baltimore, Maryland 21152-0343

TROTTER ROAD  
 STREAM BANK STABILIZATION

CAPITAL PROJECT D-1163  
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 8101 COLUMBIA GATEWAY DRIVE  
 COLUMBIA, MD 21046

MAINTENANCE OF  
 TRAFFIC PLAN

SCALE: AS SHOWN  
 DATE: JANUARY 16, 2012  
 JMT JOB NO.: 09-2356-003/012  
 CAPITAL PROJECT NO.: D-1163  
 PERMIT ISSUE:  
 CONSTRUCTION ISSUE:

**SEQUENCE OF CONSTRUCTION**

- THE CONTRACTOR SHALL OBTAIN GRADING PERMIT FROM HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSES AND PERMITS PRIOR TO BEGINNING CONSTRUCTION. HOWARD SOIL CONSERVATION DISTRICT # IS EP-12-13. THE MDE TRACKING # IS 20160805/11-NT-0191.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HRS PRIOR TO ANY EXCAVATION WORK BEING PERFORMED.
- THE CONTRACTOR SHALL CONTACT HOWARD COUNTY DIVISION OF CONSTRUCTION INSPECTION AT (410) 313-1880 TO SCHEDULE A PRE-CONSTRUCTION MEETING AT LEAST 72 HOURS BEFORE CONSTRUCTION IS TO BEGIN.
- STABILIZED CONSTRUCTION ENTRANCE AND STAGING/STOCKPILE AREA IS SHOWN FOR INFORMATIONAL PURPOSES ONLY. EXACT LOCATION TO BE DETERMINED IN THE FIELD WITH THE APPROVAL OF THE C.J.D. INSPECTOR.
- PRIOR TO BEGINNING CONSTRUCTION, PERFORM TEST PITS ON EXISTING UTILITIES IN AREA #2 AS NECESSARY FOR WALL AND PIPE CONSTRUCTION.

**PHASE 1**

- INSTALL SANDBAG DIVERSION SBD-2 ALONG THE WORK AREA. UTILIZE DEWATERING BAG DB-2 TO DEWATER THE WORK AREA AS NECESSARY. OUTFALL DEWATERING BAG TO STABLE OUTFALL CONDITION DOWNSTREAM FROM THE WORK AREA.
- CONSTRUCT IMBRICATED RIPRAP RETAINING WALL AS SHOWN ON THE PLANS. WALL CONSTRUCTION WILL OCCUR USING A TOP-DOWN APPROACH BY UTILIZING THE ROADWAY FOR EQUIPMENT ACCESS AND TEMPORARY STOCKPILING OF MATERIAL.
- STABILIZE THE WORK AREA WITH TOPSOIL, SEED AND SOIL STABILIZATION MATTING. PERFORM LANDSCAPING OPERATIONS PER THE LANDSCAPING PLAN.
- AFTER WORK AREA IS STABILIZED AND WITH THE APPROVAL OF THE C.J.D. INSPECTOR, REMOVE MAINTENANCE OF STREAM FLOW AND EROSION AND SEDIMENT CONTROL DEVICES FOR PHASE 1 CONSTRUCTION.
- STABILIZE THOSE AREAS DISTURBED BY THE REMOVAL OF MAINTENANCE OF STREAM FLOW AND EROSION AND SEDIMENT CONTROL DEVICES.

**PHASE 2**

- INSTALL STABILIZED CONSTRUCTION ENTRANCE SCE-1.
- CLEAR AND GRUB FOR AND INSTALL SUPER SILT FENCE SSF-1.
- INSTALL SANDBAG DIVERSION SBD-1 ALONG THE WORK AREA. UTILIZE DEWATERING BAG DB-1 TO DEWATER THE WORK AREA AS NECESSARY. OUTFALL DEWATERING BAG TO STABLE OUTFALL CONDITION DOWNSTREAM FROM THE WORK AREA.
- CONSTRUCT IMBRICATED RIPRAP RETAINING WALL, 18" RCP, AND STEP POOL AS SHOWN ON THE PLANS.
- STABILIZE THE WORK AREA WITH TOPSOIL, SEED AND SOIL STABILIZATION MATTING. PERFORM LANDSCAPING OPERATIONS PER THE LANDSCAPING PLAN.
- AFTER WORK AREA IS STABILIZED AND WITH THE APPROVAL OF THE C.J.D. INSPECTOR, REMOVE MAINTENANCE OF STREAM FLOW AND EROSION AND SEDIMENT CONTROL DEVICES FOR PHASE 2 CONSTRUCTION.
- STABILIZE THOSE AREAS DISTURBED BY THE REMOVAL OF MAINTENANCE OF STREAM FLOW AND EROSION AND SEDIMENT CONTROL DEVICES.

**MAINTENANCE OF STREAM FLOW NOTES**

- THE CONTRACTOR HAS THE OPTION TO PROVIDE A CLEAR WATER "PUMP AROUND" METHOD IN-LIEU OF TEMPORARY SANDBAG DIVERSION FOR MAINTAINING STREAM FLOWS DURING CONSTRUCTION FOR BASE FLOW STREAM CONDITIONS. THIS MAY BE PROVIDED AT THE CONTRACTOR'S OWN RISK AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR THIS OPTION. IN THE EVENT THAT A STORM EVENT IS FORECASTED, OR NO WORK IS ANTICIPATED TO OCCUR DURING AN EXTENDED PERIOD OF TIME (24 HOURS OR MORE), CONTRACTOR MUST INSTALL TEMPORARY SANDBAG DIVERSION AS SHOWN ON THE PLANS. THE COST OF THE CLEAR WATER PUMP AROUND DIVERSION AND THE REMOVAL AND INSTALLATION SHALL BE INCIDENTAL TO THE COST OF MAINTENANCE OF STREAM FLOW.
- THE MAXIMUM DEPTH OF FLOW RESULTING FROM A 2-YR STORM EVENT (609 CFS) IS ESTIMATED TO BE APPROXIMATELY 3.8'. PLEASE NOTE THAT THIS DEPTH DOES NOT CONSIDER THE CHANNEL CONSTRUCTION RESULTING FROM THE PLACEMENT OF THE STREAM DIVERSION.

**SEQUENCE OF CONSTRUCTION (CONT.)**

**AREA #2 W-BEAM INSTALLATION**

- CLEAR AND GRUB FOR AND INSTALL SUPER SILT FENCE AS NECESSARY FOR W-BEAM INSTALLATION.
- INSTALL W-BEAM TRAFFIC BARRIER PER THE PLANS.
- STABILIZE THE WORK AREA WITH TOPSOIL, SEED AND SOIL STABILIZATION MATTING.
- AFTER WORK AREA IS STABILIZED AND WITH THE APPROVAL OF THE C.J.D. INSPECTOR, REMOVE EROSION AND SEDIMENT CONTROL DEVICES FOR AREA #2 W-BEAM INSTALLATION.
- STABILIZE THOSE AREAS DISTURBED BY THE REMOVAL OF EROSION AND SEDIMENT CONTROL DEVICES.

**AREA #1 ENDWALL CONSTRUCTION**

- INSTALL SANDBAG DIVERSION SBD-3 AND 18" TEMPORARY HDPE PIPE. OUTFALL 18" HDPE INTO UPSTREAM END OF EX. 33" CMP TO MAINTAIN STREAMFLOW DURING CONSTRUCTION. UTILIZE DEWATERING BAG DB-3 TO DEWATER THE WORK AREA AS NECESSARY. OUTFALL DEWATERING BAG TO STABLE OUTFALL CONDITION.
- REMOVE EXISTING GROUTED HEADWALL AND REPLACE WITH TYPE 'E' ENDWALL AS SHOWN ON PLANS.
- INSTALL CLASS 'II' RIPRAP AS SHOWN ON PLANS. REMOVE SANDBAG DIVERSION AS NECESSARY FOR RIPRAP CONSTRUCTION AND STABILIZE ALL DISTURBED AREAS IMMEDIATELY.
- AFTER WORK AREA IS STABILIZED AND WITH THE APPROVAL OF THE C.J.D. INSPECTOR, REMOVE MAINTENANCE OF STREAM FLOW AND EROSION AND SEDIMENT CONTROL DEVICES FOR ENDWALL CONSTRUCTION.
- STABILIZE THOSE AREAS DISTURBED BY THE REMOVAL OF MAINTENANCE OF STREAM FLOW AND EROSION AND SEDIMENT CONTROL DEVICES.



06/10/15

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

*[Signature]* 6/12/15  
 CHEF, BUREAU OF ENVIRONMENTAL SERVICES

**BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YR 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 THE NONTIDAL WETLAND, 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 THE 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 (UNIOLOA 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 IV-P WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 - 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.

**HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES**

- A minimum of 48 hours notice must be given to the Howard County Department of Inspections, Licenses and Permits, Sediment Control Division prior to the start of any construction (410) 313-1855.
- All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL and revisions thereto.
- Following initial soil disturbance or re-disturbance, permanent or temporary stabilization shall be completed within: a) 3 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1, b) 7 days as to all other disturbed or graded areas on the project site.
- All disturbed areas must be stabilized within the time period specified above in accordance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seeding (Sec. B-4-5), temporary seeding (Sec. B-4-4) and mulching (Sec. B-4-3). Temporary stabilization with mulch alone can only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.
- All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.
- Site Analysis:
 

Total Area of Site	1.41	Acres
Area Disturbed	0.42 - 0.33	Acres
Area to be roofed or paved	0.00	Acres
Area to be vegetatively stabilized	0.24 - 0.15	Acres
Total Cut	600	Cu. Yds.
Total Fill	50 - 25	Cu. Yds.
Off-site waste/borrow area locations:	UNKNOWN	
- Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
- Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
- On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.
- Trenches for the construction of utilities is limited to three pipe lengths or that which shall be back-filled and stabilized by the end of each workday, whichever is shorter.
- Any changes or revisions to the sequence of construction must be reviewed and approved by the plan approval authority prior to proceeding with construction.
- A project is to be sequenced so that grading activities begin on one grading unit (maximum acreage of 20 ac. per 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 the enforcement authority. Unless otherwise specified and approved by the approval authority, no more than 30 acres cumulatively may be disturbed at a given time.

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

*[Signature]* 6/10/15  
 HOWARD SCD

**B-4-4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION**

- Definition**  
 To stabilize disturbed soils with vegetation for up to 6 months.
- Purpose**  
 To use fast growing vegetation that provides cover on disturbed soils.
- Conditions Where Practice Applies**  
 Exposed soils where ground cover is needed for a period of 6 months or less. For longer duration of time, permanent stabilization practices are required.
- Criteria**
- Select one or more of the species or seed mixtures listed in Table B.I for the appropriate Plant Hardness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. If this Summary is not put on the plan and completed, then Table B.I plus fertilizer and lime rates must be put on the plan.
  - For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.
  - When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3.A.I.b and maintain until the next seeding season.

**Temporary Seeding Summary**

Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	Fertilizer Rate (10-20-20)		Lime Rate
				N	P <sub>2</sub> O <sub>5</sub>	
Annual Ryegrass	40	3-1 to 5-15 and 8-1 to 10-15	0.5 in.	436 lb/ac (10lb/1000 sf)	90 lb/ac (2.0lb/1000 sf)	2 tons/ac (90 lb/1000 sf)
Foxtail Millet	30	5-16 to 7-31	0.5 in.			
Pearl Millet	20	5-16 to 7-31	0.5 in.			

**B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION**

- Definition**  
 To stabilize disturbed soils with permanent vegetation.
- Purpose**  
 To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils.
- Conditions Where Practice Applies**  
 Exposed soils where ground cover is needed for 6 months or more.
- Criteria**
- A. Seeding Mixtures
- General Use
    - Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
    - Additional planting specifications for exceptional sites such as shorelines, stream banks or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guide, Section 342 - Critical Area Planting.
    - For sites having disturbed area over 5 acres, use and show the rates recommended by the soil testing agency.
    - For areas receiving low maintenance, apply urea form Fertilizer (46-0-0) at 3 1/2 pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary.

**Permanent Seeding Summary**

Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	Fertilizer Rate (10-20-20)			Lime Rate
				N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	
Switch Grass	10	3-1 to 5-15 and 5-16 to 6-15	0.5 in.	45 lb/ac (1.0lb/1000 sf)	90 lb/ac (2.0lb/1000 sf)	90 lb/ac (2.0lb/1000 sf)	2 tons /ac (90 lb/1000 sf)
Creeping Red Fescue	15	3-1 to 5-15 and 5-16 to 6-15	0.5 in.				
Partridge Pea	4	3-1 to 5-15 and 5-16 to 6-15	0.5 in.				

- Turfgrass Mixtures
  - Areas where turfgrass may be desired include lawns, parks, playgrounds and commercial sites which will receive a medium to high level of maintenance.
  - Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
    - Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.

NO.	REVISIONS DESCRIPTION	DATE
1	W-BEAM AREA #2	6/18/2015
2	ENDWALL AREA #1	6/28/2015

**JOHNSON, MIRMIRAN & THOMPSON**  
 Engineering - A Brighter Future

72 Lovston Circle, Baltimore, Maryland 21152-0949

TROTTER ROAD  
 STREAM BANK STABILIZATION

CAPITAL PROJECT D-118  
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 STORMWATER MANAGEMENT DIVISION  
 100 COLUMBIA, MD 21046

**EROSION & SEDIMENT CONTROL NOTES**

SCALE: N.T.S.

DATE: JUNE 8, 2015

INT. JOB NO.: 09-2356-003/012

CAPITAL PROJECT NO.: D-1163

PERMIT ISSUE:

CONSTRUCTION ISSUE:

BY: BARRANGER PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 15466. EXPIRATION DATE: JULY 15, 2017.

- ii. Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total moisture by weight.
- iii. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes: Certified Tall Fescue Cultivars 95 to 100 percent; Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.
- iv. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes: Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1 1/2 to 3 pounds per 1000 square feet.

Notes:  
Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Memo #77 "Turfgrass Cultivar Recommendations for Maryland"

Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection, and assures a pure genetic line.

- c. Ideal Times of Seeding for Turf Grass Mixtures  
Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6B)
- d. Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 1/2 inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty.
- e. If soil moisture is deficient, supply new seedlings with adequate water for plant growth (1/2 to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedlings are made late in the planting season, in abnormally dry or hot seasons or on adverse sites.

### B-4-1 STANDARDS AND SPECIFICATIONS FOR INCREMENTAL STABILIZATION

**Definition**  
Establishment of vegetative cover on cut and fill slopes

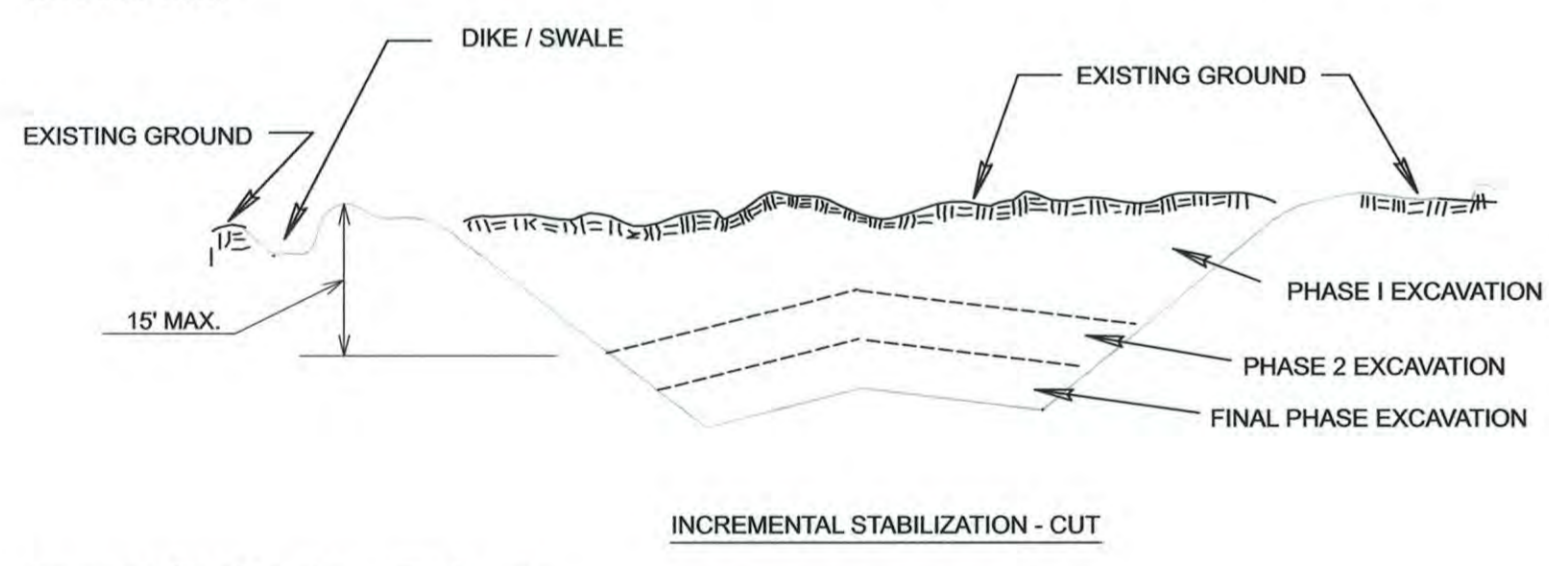
**Purpose**  
To provide timely vegetative cover on cut and fill slopes as work progresses.

**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 I 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.

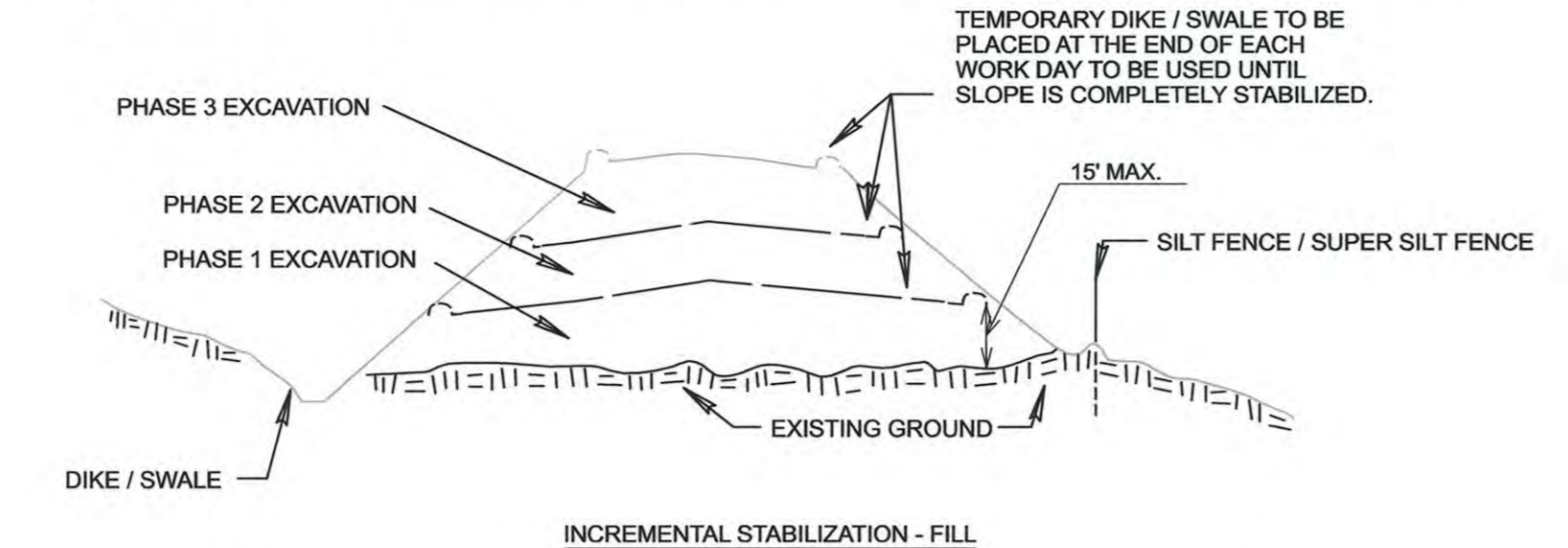


- B. Incremental Stabilization - Fill Slopes
1. Construct and stabilize fill slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all slopes as the work progresses.
  2. Stabilize slopes immediately when the vertical height of a lift reaches 15 feet, or when 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.



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. 15466. EXPIRATION DATE: JULY 15, 2015.

- 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.



### 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-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 lovegrass will 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.
- 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 cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1 1/2 inches in diameter. 5/64 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.

### 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 hydrosowing.

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.

By the Developer:

I/We certify that all development and construction will be done according to this plan, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of the Environment approved Training Program for the Control of Sediment and Erosion before beginning the project. I also authorize periodic on-site inspection by the Howard Soil Conservation District.

*Mark S. Richmond* 4/22/14  
Signature of Developer Date

Mark S. Richmond  
Print name below Signature

By the Engineer:

I certify that this plan for erosion and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District.

*Paul F. Clement* 04/16/14  
Signature of Engineer Date

PAUL F. CLEMENT  
Print name below Signature

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

*Mark S. Richmond* 4/24/14  
DATE

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

*John L. Robertson* 4/15/14  
DATE

DATE			
NO.	REVISIONS DESCRIPTION		
FILE:		XXXXXXX	



TROTTER ROAD  
STREAM BANK STABILIZATION

CAPITAL PROJECT D-1163  
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
STORMWATER MANAGEMENT DIVISION  
678 COLUMBIA AVENUE  
COLUMBIA, MD 21046

### EROSION & SEDIMENT CONTROL NOTES

SCALE: N.T.S.

DATE: APRIL 10, 2014

UNIT JOB NO.: 09-2356-003/012

CAPITAL PROJECT NO.: D-1163

PERMIT ISSUE:

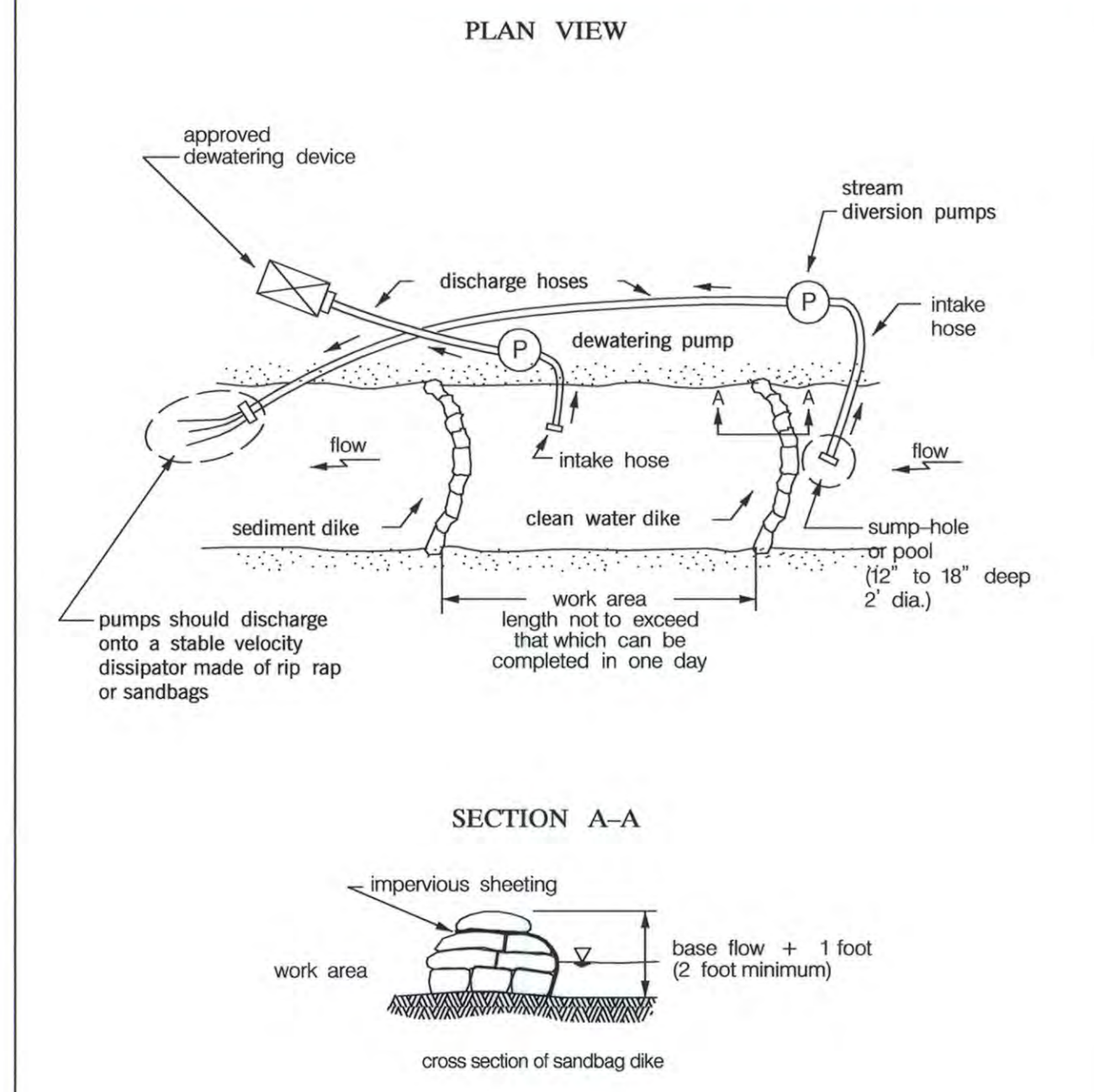
CONSTRUCTION ISSUE:

**EN-1A**

SHEET NO.: 11A OF 15

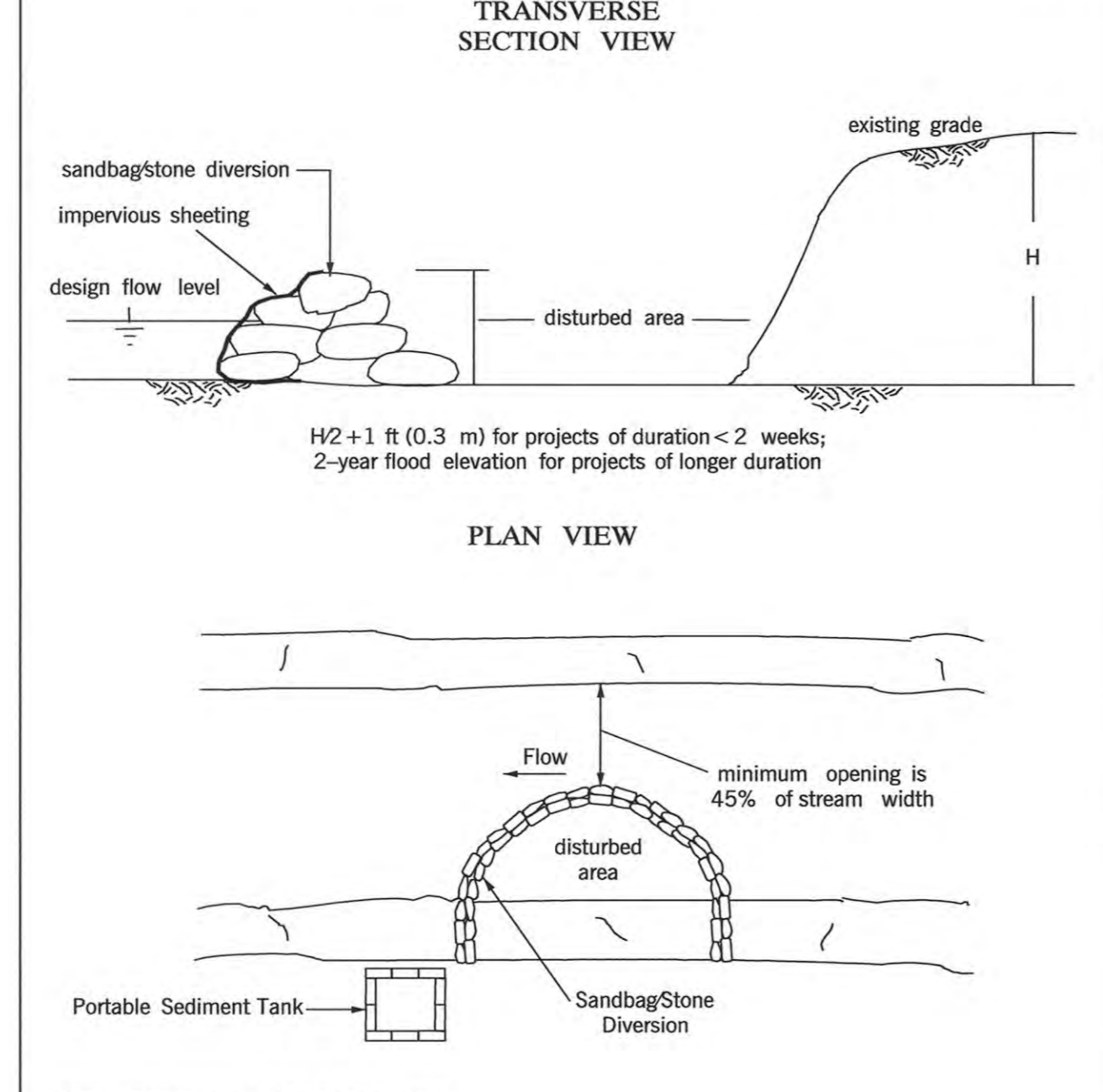
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**DETAIL 1.2: PUMP-AROUND PRACTICE**



TEMPORARY IN-STREAM CONSTRUCTION MEASURES	REVISED NOVEMBER 2000 PAGE 12 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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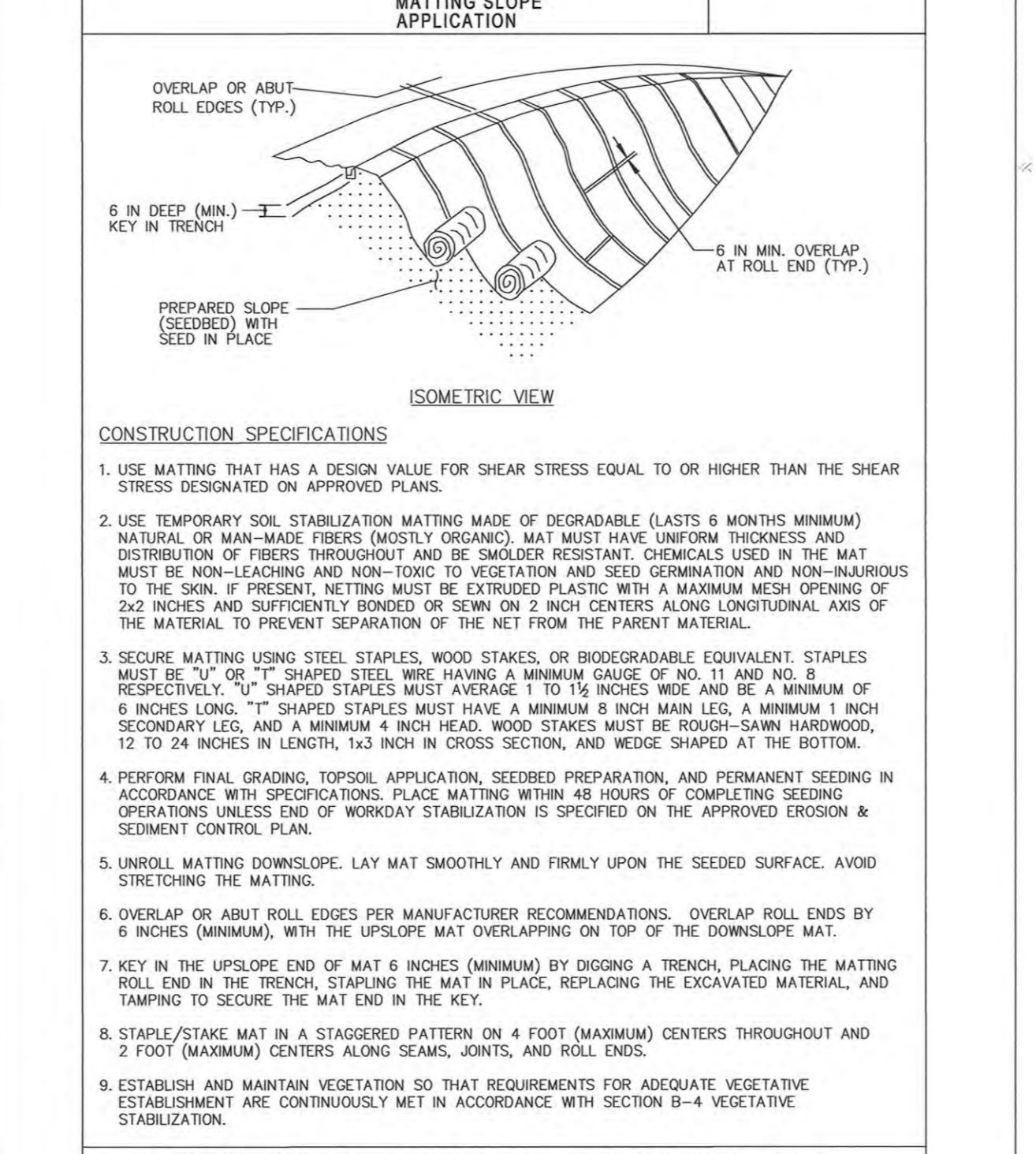
**DETAIL 1.5: SANDBAG/STONE DIVERSION**



**FOR INFORMATION PURPOSES ONLY:**  
 APPROXIMATE 2-YEAR FLOOD DEPTH IS 3.8 FEET. CONTRACTOR SHALL BE RESPONSIBLE FOR ACTUAL FIELD CONDITIONS AND SHALL SIZE THE DIVERSION TO HIS AND THE E&S INSPECTOR'S SATISFACTION.

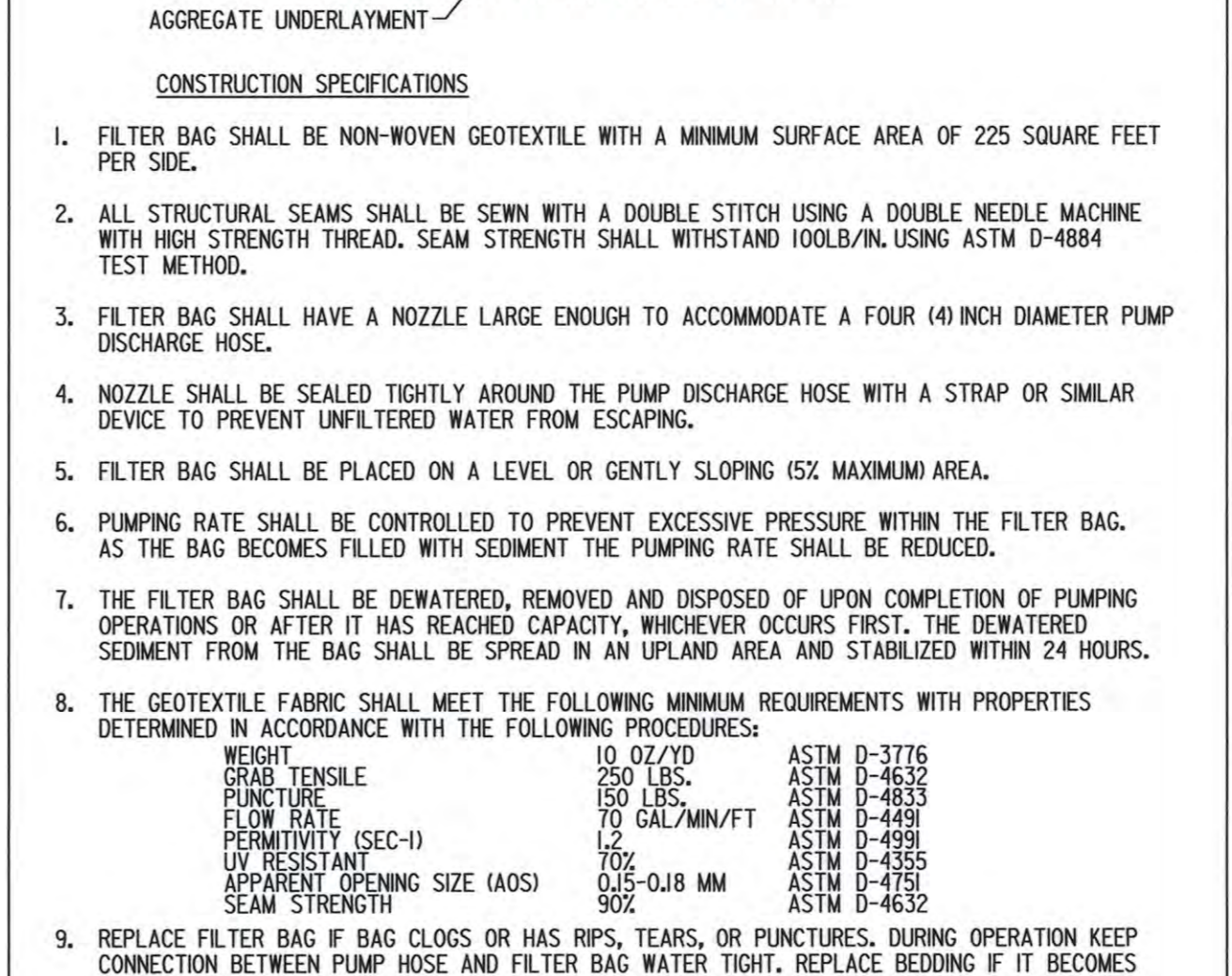
TEMPORARY IN-STREAM CONSTRUCTION MEASURES	REVISED NOVEMBER 2000 PAGE 15 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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**DETAIL B-4-B-8 TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION**



U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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**DEWATERING BAG DETAIL FOR CONTROL OF SEDIMENT IN PUMPED WATER**



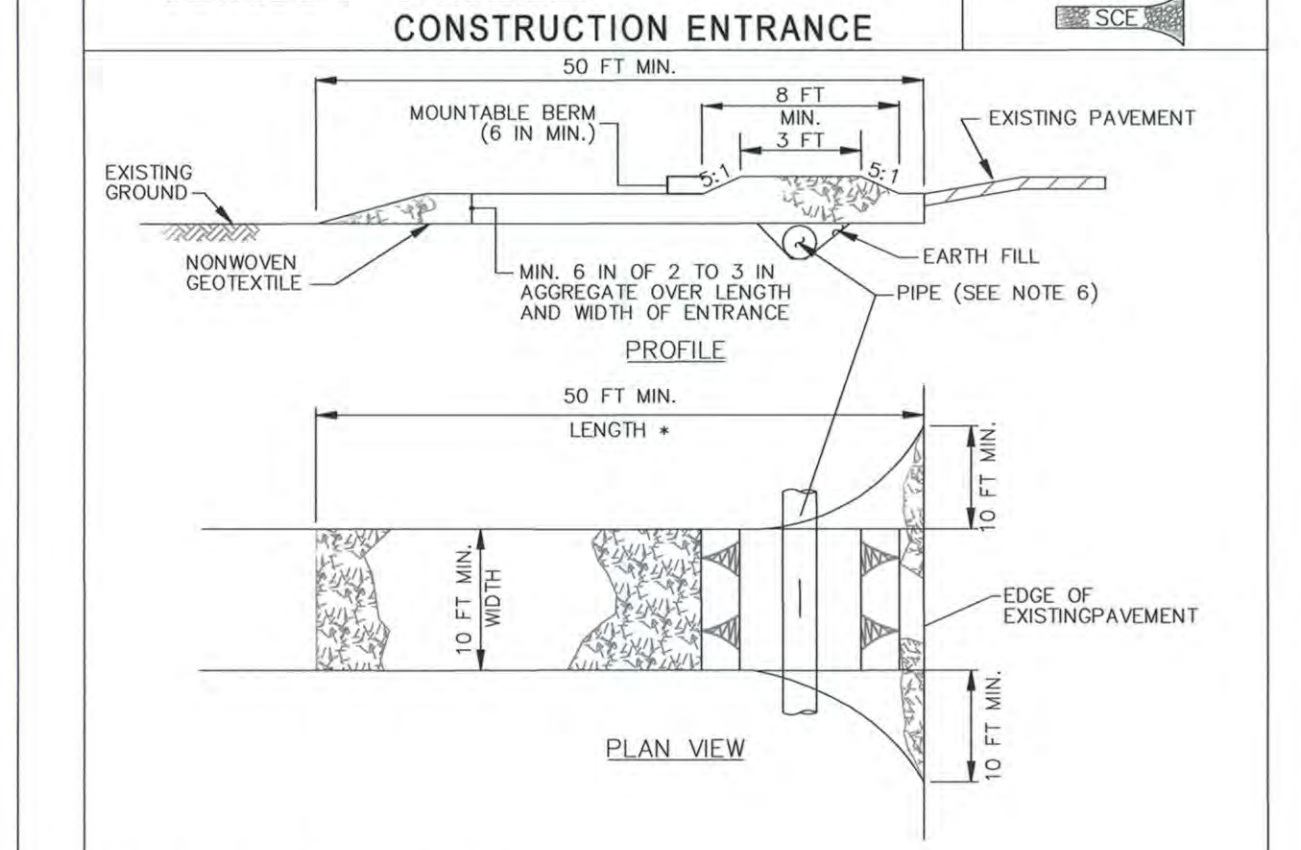
**CONSTRUCTION SPECIFICATIONS**

1. FILTER BAG SHALL BE NON-WOVEN GEOTEXTILE WITH A MINIMUM SURFACE AREA OF 225 SQUARE FEET PER SIDE.
2. ALL STRUCTURAL SEAMS SHALL BE SEWN WITH A DOUBLE STITCH USING A DOUBLE NEEDLE MACHINE WITH HIGH STRENGTH THREAD. SEAM STRENGTH SHALL WITHSTAND 100LBS/IN. USING ASTM D-4884 TEST METHOD.
3. FILTER BAG SHALL HAVE A NOZZLE LARGE ENOUGH TO ACCOMMODATE A FOUR (4) INCH DIAMETER PUMP DISCHARGE HOSE.
4. NOZZLE SHALL BE SEALED TIGHTLY AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE TO PREVENT UNFILTERED WATER FROM ESCAPING.
5. FILTER BAG SHALL BE PLACED ON A LEVEL OR GENTLY SLOPING (5% MAXIMUM) AREA.
6. PUMPING RATE SHALL BE CONTROLLED TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG. AS THE BAG BECOMES FILLED WITH SEDIMENT THE PUMPING RATE SHALL BE REDUCED.
7. THE FILTER BAG SHALL BE DEWATERED, REMOVED AND DISPOSED OF UPON COMPLETION OF PUMPING OPERATIONS OR AFTER IT HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. THE DEWATERED SEDIMENT FROM THE BAG SHALL BE SPREAD IN AN UPLAND AREA AND STABILIZED WITHIN 24 HOURS.
8. THE GEOTEXTILE FABRIC SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS WITH PROPERTIES DETERMINED IN ACCORDANCE WITH THE FOLLOWING PROCEDURES:
 

WEIGHT	10 OZ/YD	ASTM D-3776
TENSILE	200 LBS	ASTM D-4632
PUNCTURE	150 LBS	ASTM D-4833
FLOW RATE	70 GAL/MIN/FT	ASTM D-4998
PERMITIVITY (SEC-1)	1.2	ASTM D-4998
UV RESISTANT	70%	ASTM D-4355
APPERTURE OPENING SIZE (AOS)	0.18 MM	ASTM D-4355
SEAM STRENGTH	90%	ASTM D-4632
9. REPLACE FILTER BAG IF BAG CLOSURE HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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**DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE**

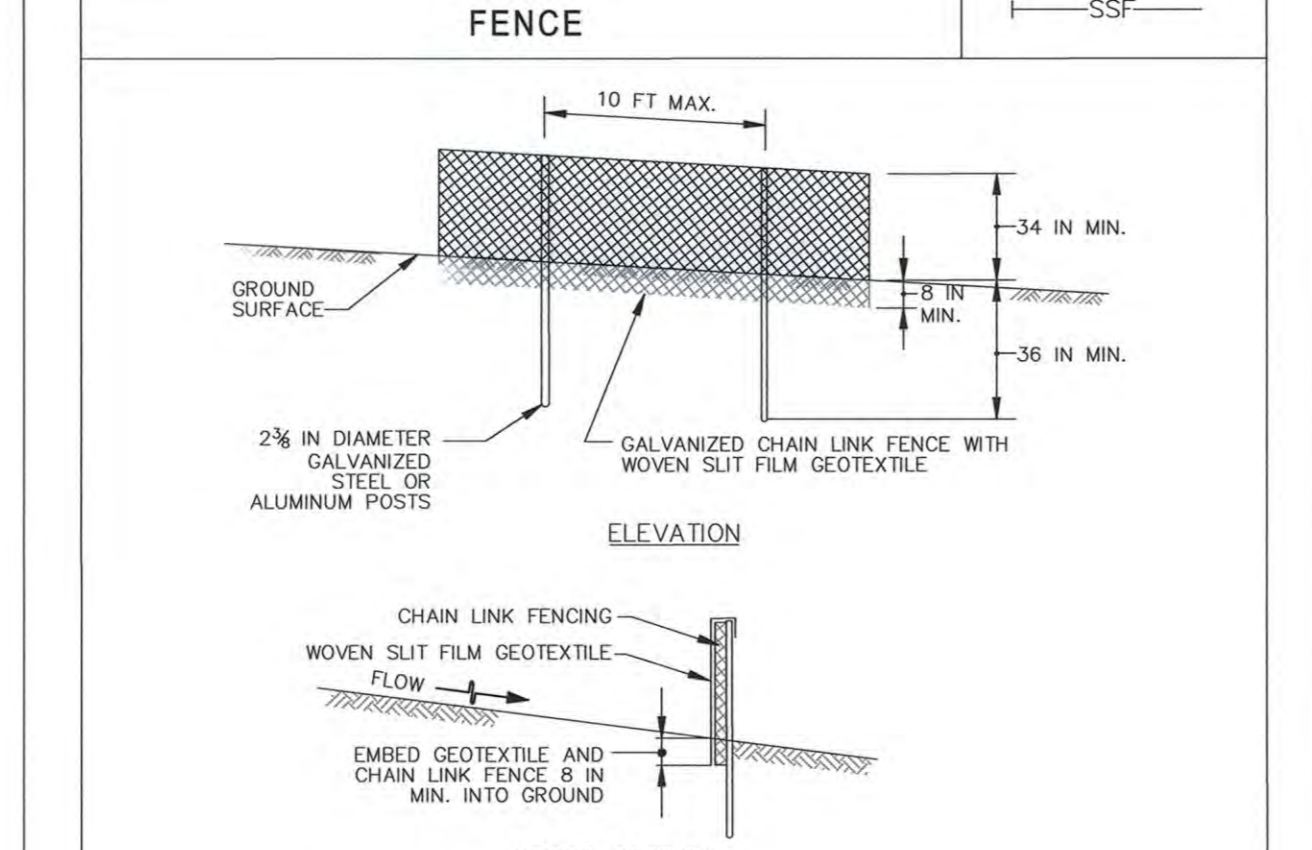


**CONSTRUCTION SPECIFICATIONS**

1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (+30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE TO 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE: ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE. MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT, ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY WACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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**DETAIL E-3 SUPER SILT FENCE**

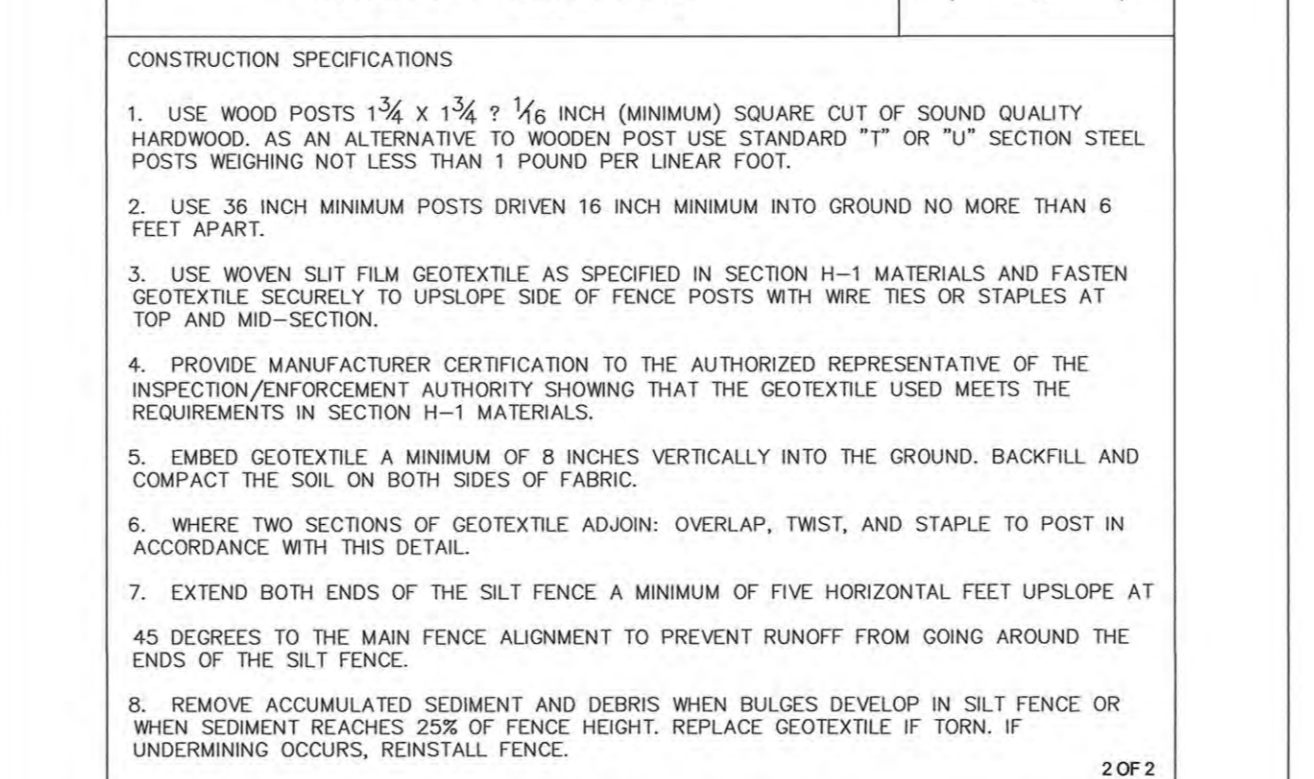


**CONSTRUCTION SPECIFICATIONS**

1. INSTALL 2 1/2 INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2 1/2 INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
3. FASTEN WOVEN SILT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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**DETAIL E-1 SILT FENCE**



**CONSTRUCTION SPECIFICATIONS**

1. USE WOOD POSTS 1 1/2 x 1 1/2 x 1 1/2 INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. USE WOVEN SILT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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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. 15466. EXPIRATION DATE: JULY 15, 2015.

04/10/14

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

John C. Robertson  
 CHEF, BUREAU OF ENVIRONMENTAL SERVICES

4/24/14  
 DATE

4/15/14  
 DATE

DATE: \_\_\_\_\_

NO. \_\_\_\_\_

REVISIONS DESCRIPTION \_\_\_\_\_

FILE: XXXXXXXX

**JOHNSON, MIRIRAN & THOMPSON**  
 Engineering, A Brighter Future

72 Lovston Circle, Baltimore, Maryland 21152 0949

TROTTER ROAD  
 STREAM BANK STABILIZATION

EROSION & SEDIMENT CONTROL DETAILS

SCALE: N.T.S.

DATE: APRIL 10, 2014

MIT JOB NO.: 09-2356-003/012

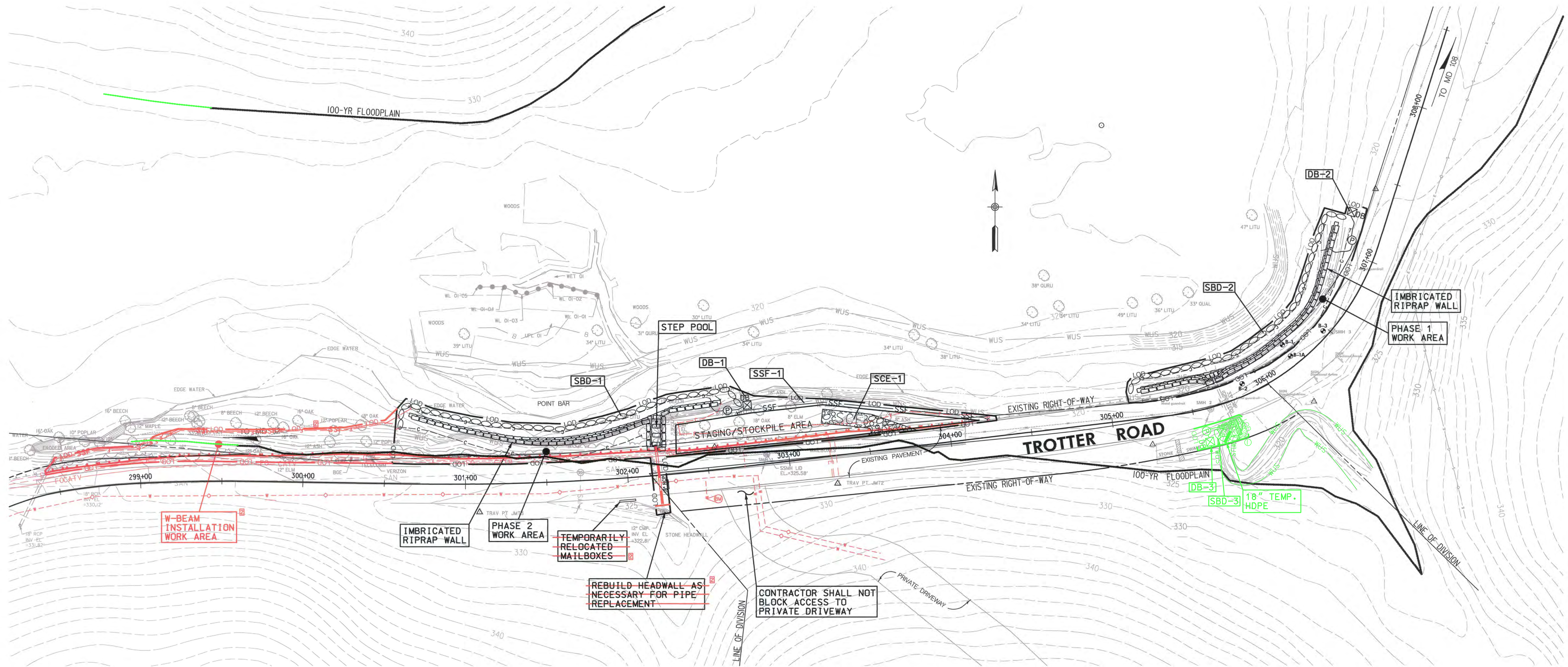
CAPITAL PROJECT NO.: D-1163

PERMIT ISSUE:

CONSTRUCTION ISSUE:

**ED-1**

SHEET NO.: 12 OF 15



**PLAN VIEW**  
SCALE: 1" = 30'

**NOTES:**

1. THE LOCATION OF ALL SHOWN UTILITIES IS APPROXIMATE. ADDITIONAL TEST PITS MAY BE NECESSARY PRIOR TO CONSTRUCTION TO DETERMINE THE ACTUAL LOCATIONS.
2. LIMITS OF WALL MAY NEED TO BE ADJUSTED IN THE FIELD TO TIE INTO NATURAL FEATURES.
3. ACTUAL LOCATION OF THE RELOCATED MAILBOXES SHALL BE COORDINATED WITH THE USPS POSTMASTER.
4. TREE-SAVES ARE TO BE IDENTIFIED AT THE PRE-CONSTRUCTION MEETING. TREE-SAVES ARE TO BE PROTECTED WITH ORANGE TREE PROTECTION FENCING PRIOR TO ANY CLEARING AND GRUBBING.

**LEGEND**

GIS EXISTING CONTOUR	---	320
SURVEYED MAJOR CONTOUR	---	320
SURVEYED MINOR CONTOUR	---	
TOP OF BANK LINE	---	
BOTTOM OF BANK LINE	---	
CHANNEL THALWEG	---	
IMBRICATED RIPRAP WALL		
DEWATERING BAG		DB
SUPER SILT FENCE		SSF
CUT/FILL LINE		C/F
SANDBAG DIVERSION		
100-YEAR FLOODPLAIN		

NO.	REVISIONS DESCRIPTION	DATE
1	W-BEAM AREA #2	6/8/2015
2	ENDWALL AREA #1	6/28/2015

**JOHNSON, MIRMAN & THOMPSON**  
Engineering. A Brighthouse Future.  
72 Lovston Circle, Baltimore, Maryland 21152-0949

TROTTER ROAD  
STREAM BANK STABILIZATION

CAPITAL PROJECT D-1163  
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
STORMWATER MANAGEMENT DIVISION  
470 COLUMBIA, MD 21046

EROSION & SEDIMENT CONTROL PLAN

SCALE: AS SHOWN  
DATE: JUNE 8, 2015  
JOB NO. 09-2356-003/012  
CAPITAL PROJECT NO. D-1163

**EP-1**  
SHEET NO.: 13 OF 15



06/10/15

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. 15466, EXPIRATION DATE: JULY 15, 2017.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

*Maureen A. ...* 6/12/15  
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

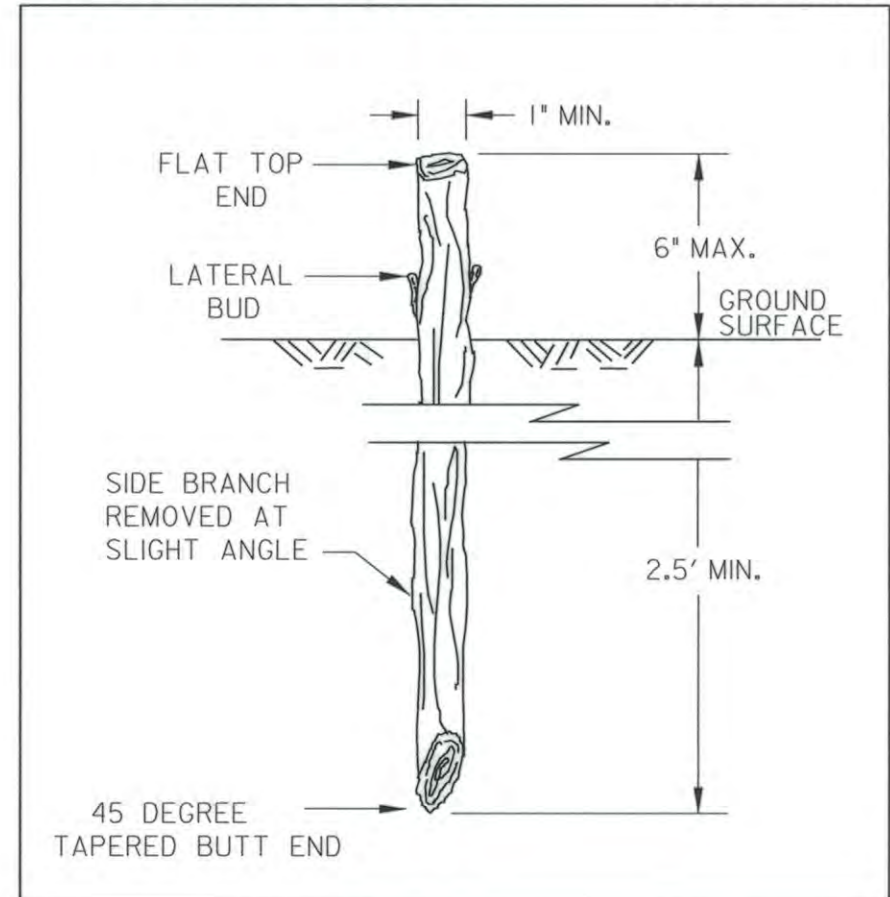
THIS DEVELOPMENT IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

*John R. Rolinson* 6/16/15  
HOWARD SCD DATE

BY: BARRANGER ... 092956\_003\_Trotter\_Road\_Slope\_SV\_CADD\SES-PD01\_WBeam\_TrotterRd\_RedIn2.dgn

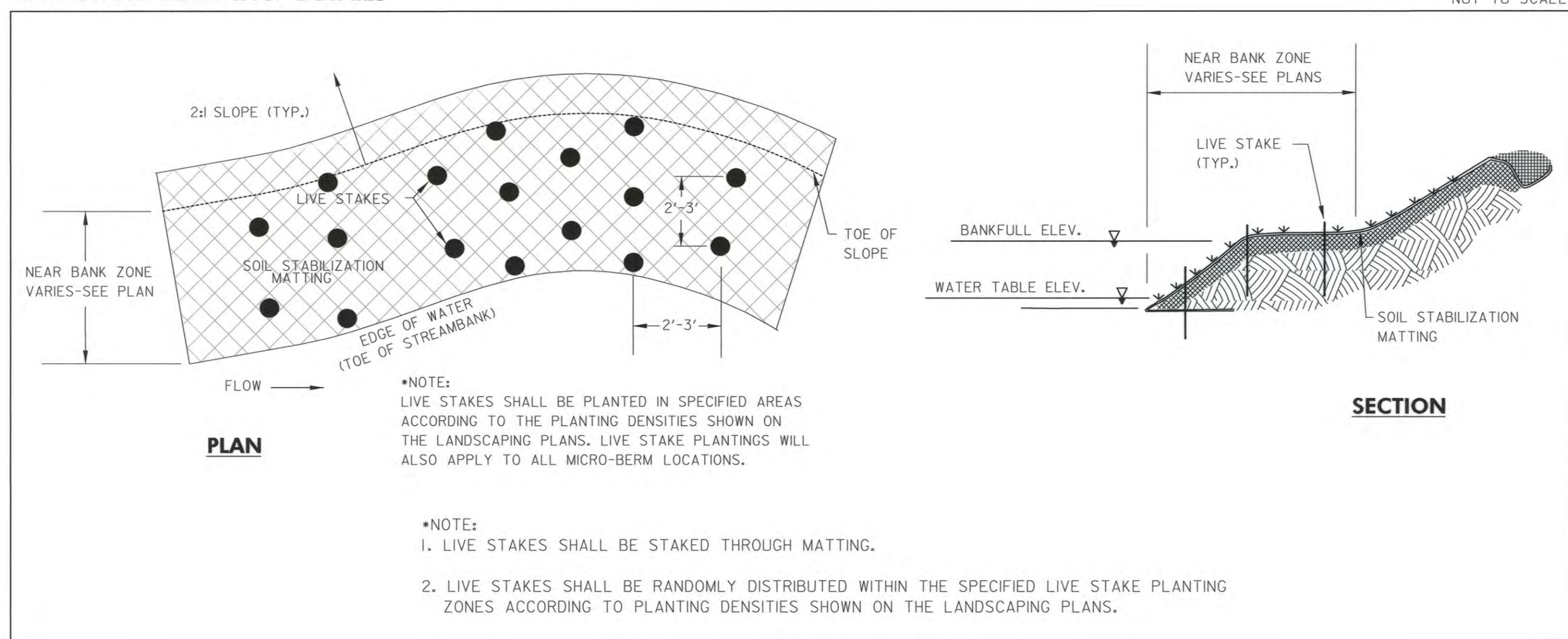


**LIVE STAKE DETAIL** NOT TO SCALE

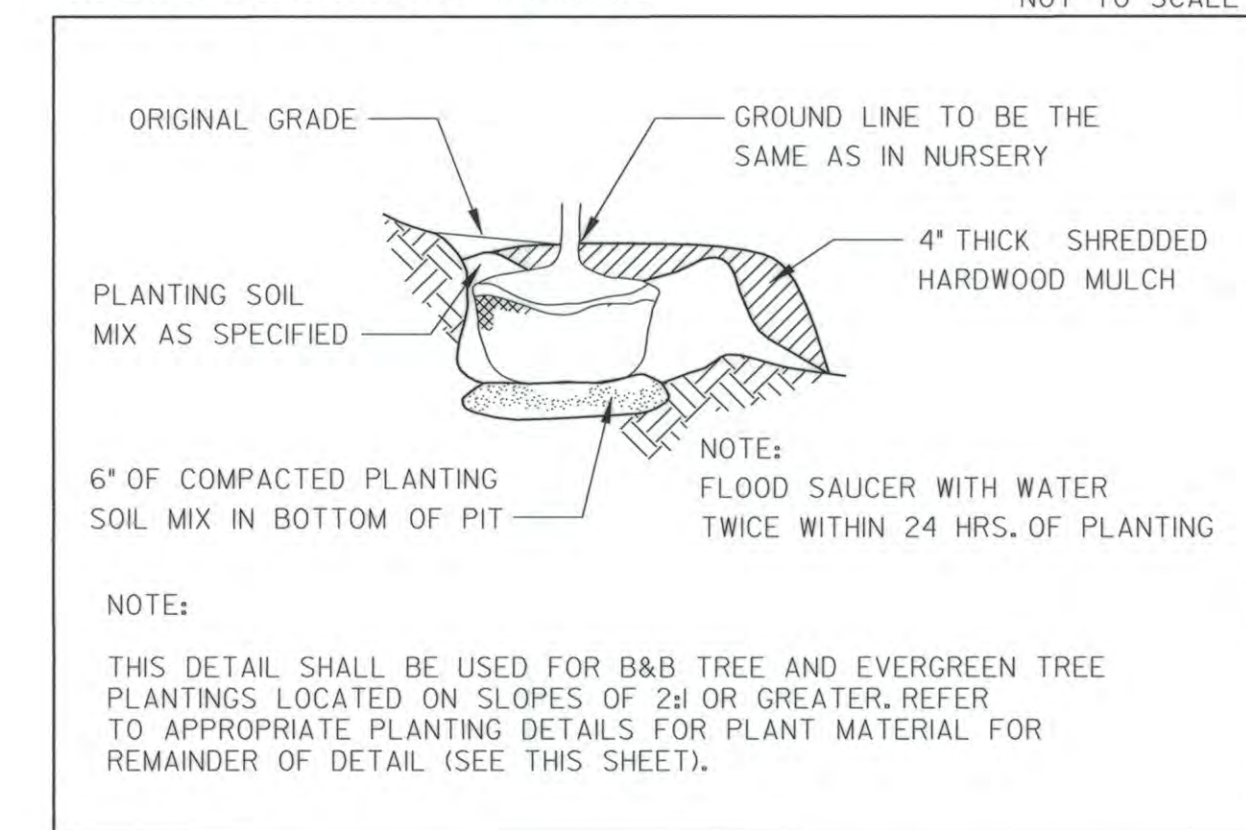


ADAPTED FROM DETAIL 2.4: LIVE STAKES (MWWCG) AND USDA-SCS (1994)

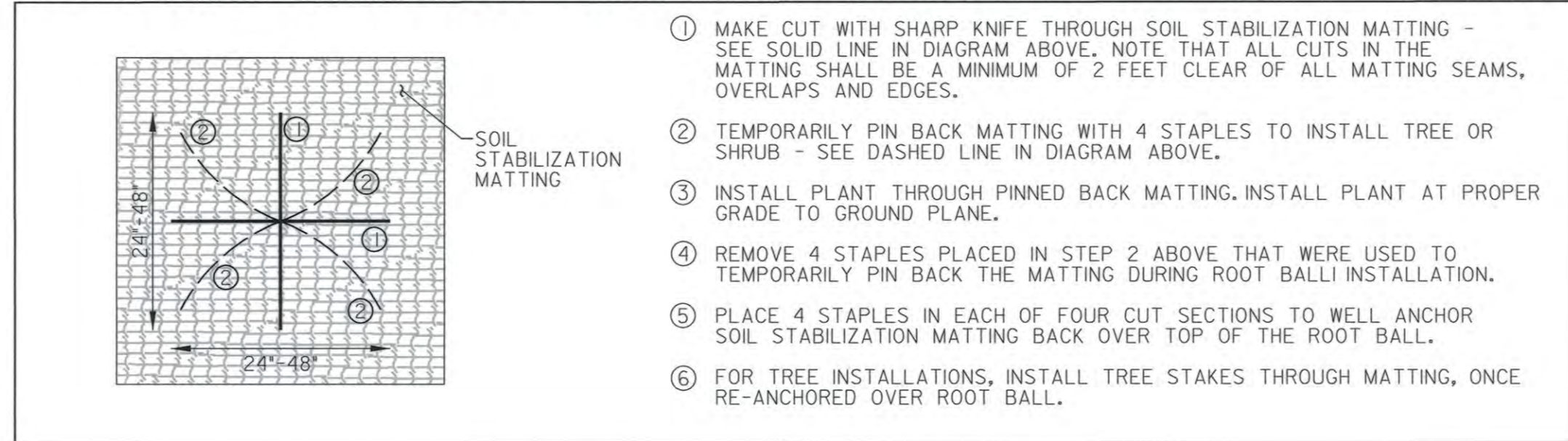
**LIVE STAKE PLANTING DETAILS**



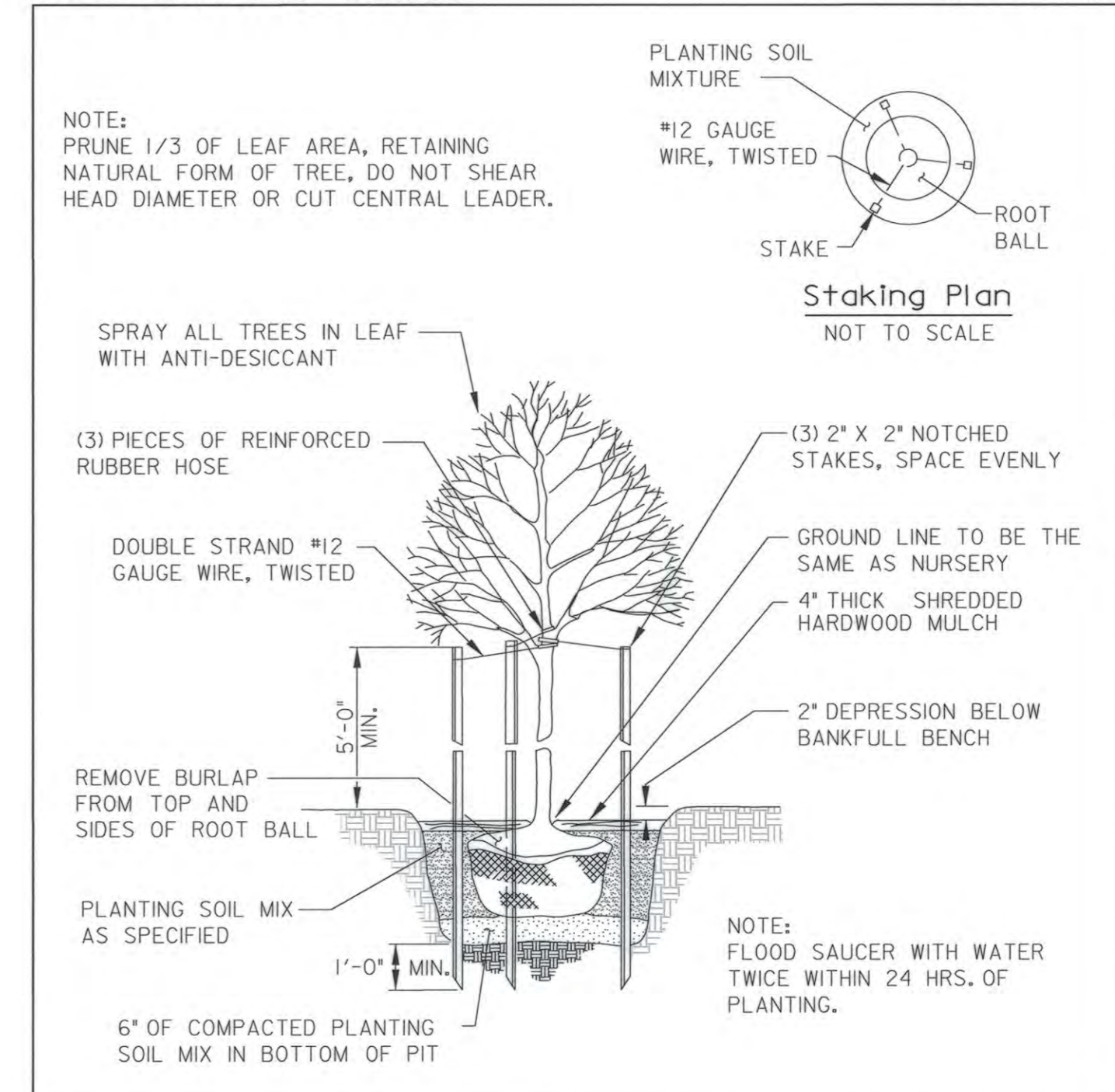
**SLOPE PLANTING DETAIL** NOT TO SCALE



**TREE & SHRUB INSTALLATION THROUGH SOIL STABILIZATION MATTING** NOT TO SCALE

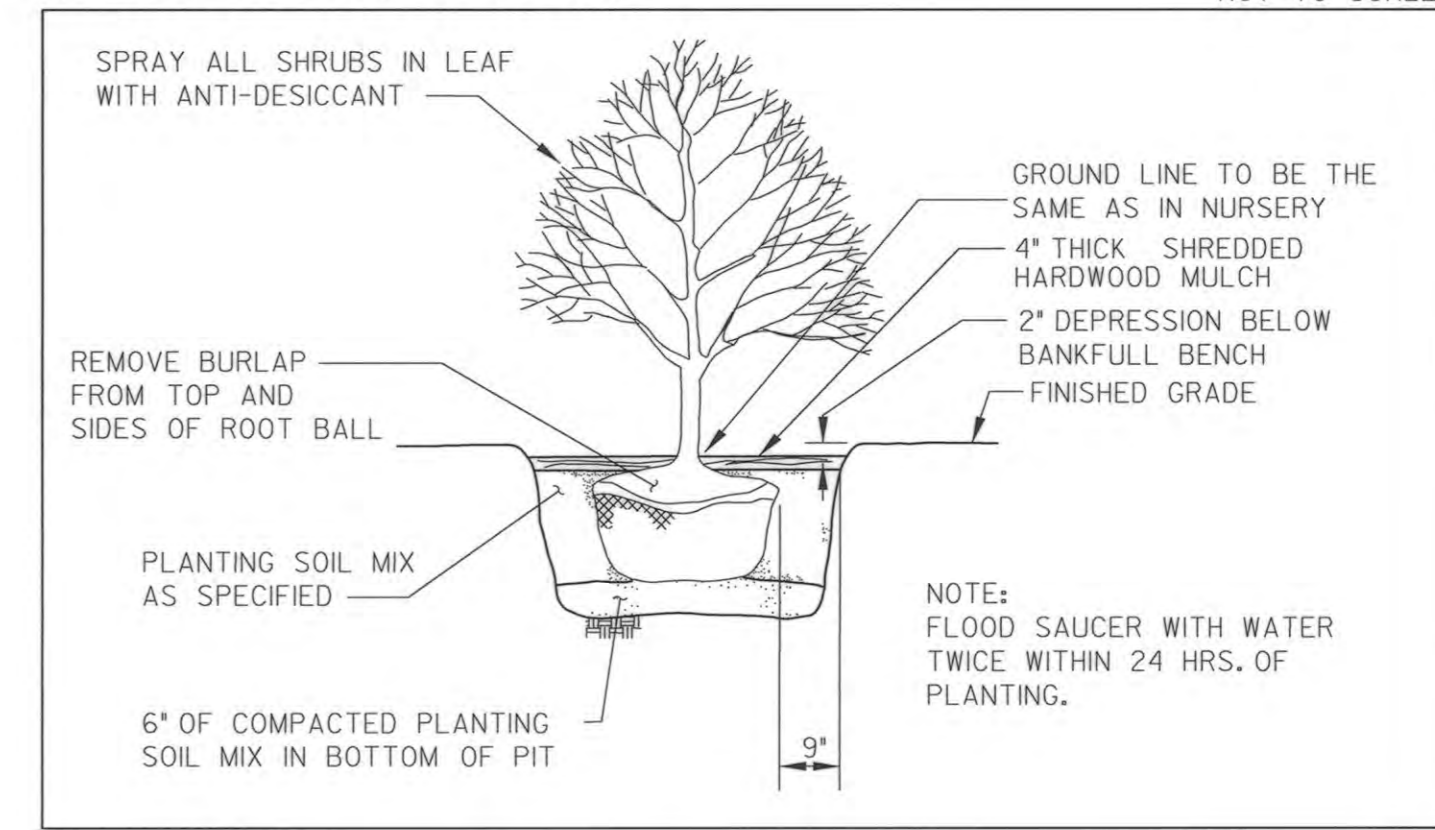


**TREE PLANTING DETAIL** NOT TO SCALE



\*NOTES: 1. ALL TREES ARE TO BE STAKED. 2. TREE SHELTERS ARE REQUIRED ON ALL NEW TREES.

**SHRUB PLANTING DETAIL** NOT TO SCALE

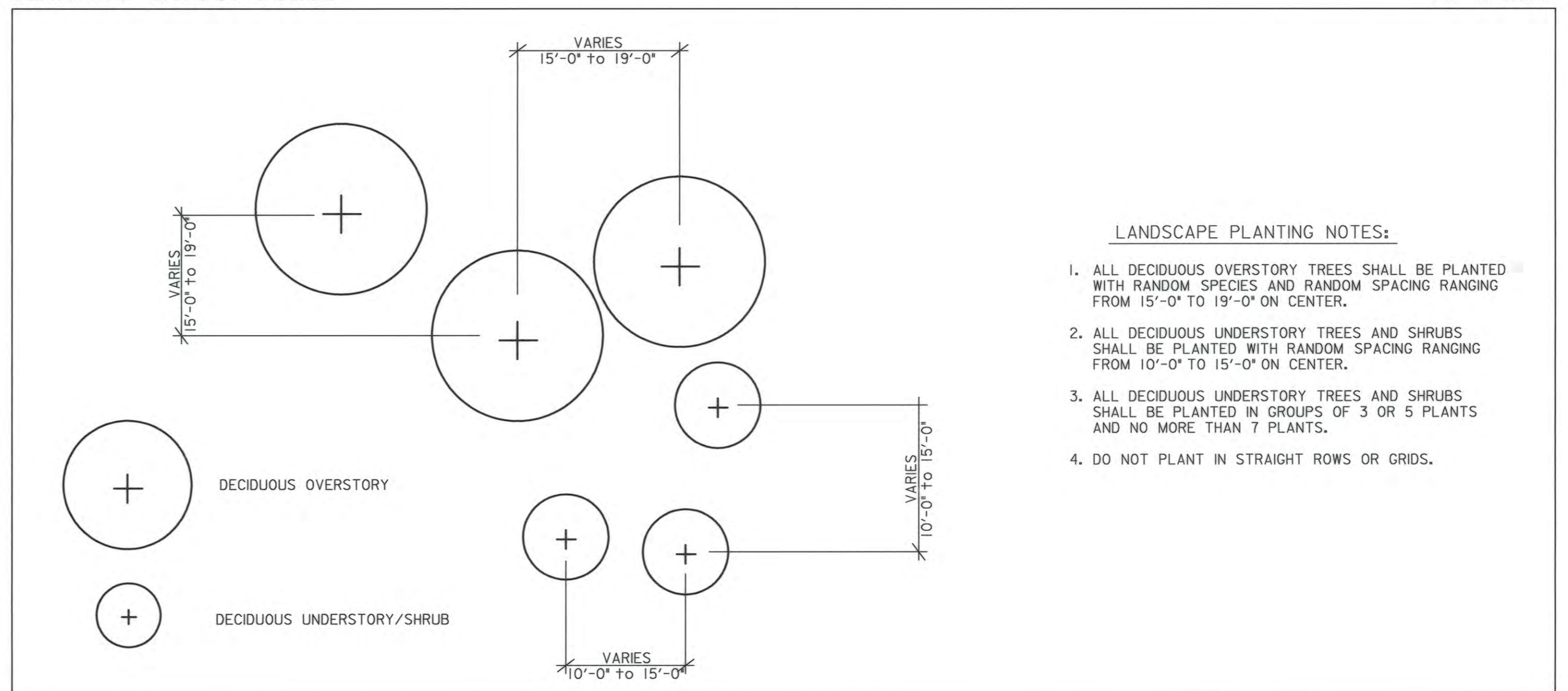


**PLANTING NOTES:**

- QUALITY AND SIZE OF PLANTS, SPREAD OF ROOTS, AND SIZE OF BALLS SHALL BE IN ACCORDANCE WITH THE STANDARDS OF THE AMERICAN ASSOCIATION OF NURSERYMEN, "AMERICAN STANDARDS FOR NURSERY STOCK."
- ALL PLANTINGS SHALL BE MONITORED FOR SURVIVAL AND REPLACED AS NECESSARY FOR A PERIOD OF 2 GROWING SEASONS FOLLOWING INSTALLATION. A GUARANTEE OF PLANT SURVIVAL SHALL BE PROVIDED BY THE CONTRACTOR AS FOLLOWS:
 

PLANTINGS	SURVIVAL RATE
2"-2.5" CAL. TREES	100%
SHRUBS (24" HT.)	75%
- CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO UTILITIES AND MAY MAKE MINOR ADJUSTMENTS IN SPACING AND/OR LOCATION OF PLANT MATERIALS. CONTRACTOR TO VERIFY "AS BUILT" LOCATION OF ALL UTILITIES.
- NO SUBSTITUTIONS SHALL BE MADE WITHOUT THE APPROVAL OF THE LANDSCAPE ARCHITECT. PLANT LOCATIONS MAY BE ALTERED IN ACCORDANCE WITH SUBTLE TOPOGRAPHY CHANGES ON-SITE.
- FOR ALL TREES AND SHRUBS PLANTED IN AREAS COVERED WITH SOIL STABILIZATION MATTING, AN "X" PATTERN SHALL CAREFULLY BE CUT IN THE MATTING, LAYING BACK THE MATTING IN AN AREA LARGE ENOUGH TO ALLOW FOR EXCAVATION OF THE PLANTING PIT. AFTER INSTALLATION OF THE PLANT, THE MATTING SHALL BE RE-STAPLED AROUND THE BASE OF THE PLANT. ALL AREAS NOT STABILIZED IN PLANT MATERIALS SHALL BE STABILIZED WITH SEED AND SOIL STABILIZATION MATTING OR MULCH.
- ALL SHADE TREES SHALL BRANCH A MINIMUM OF 6'-0" ABOVE GROUND LEVEL. TREES SHALL BE PLANTED AND STAKED IN ACCORDANCE WITH THE PLANTING DETAIL SHOWN.
- PLANTING SOIL MIX: 2/3 EXISTING SOIL (EXCAVATED FROM PLANT PIT) AND 1/3 PEAT HUMUS.
- ALL GROUND COVER AND SHRUB BEDS SHALL RECEIVE 2" TOPSOIL THOROUGHLY WORKED INTO THE TOP 6" OF EXISTING SOIL. ALL BEDS TO BE MULCHED, USING ONLY SHREDDED HARDWOOD MULCH, AS PINE MULCH OR OTHER WOOD CHIPS WILL FLOAT, TO A 3" DEPTH WHEN PLANT INSTALLATION IS COMPLETE.
- ALL PLANT PIT LOCATIONS SHALL BE EXCAVATED TO DEPTH AND DIMENSIONS INDICATED ON APPROPRIATE PLANTING DETAILS. ALL NATIVE SOIL EXCAVATED FROM PLANTING PITS (NOT USEABLE FOR PLANTING PURPOSES) SHALL BE REMOVED. PLANTING PITS SHALL BE BACKFILLED WITH PLANT SOIL MIXTURE AS SPECIFIED IN NOTE 7 ABOVE.
- PLANT SPACINGS ARE SHOWN ON THE PLAN AS THEY PERTAIN TO THE AREA NOTED. PLANTS SHALL BE INSTALLED ACCORDING TO THE PLANTING ZONES SHOWN ON THE PLANS. PLANT LOCATIONS SHOULD NOT INTERFERE WITH EXISTING TREES TO REMAIN WITHIN THE WORK AREA.
- ALL DISTURBED AREAS SHALL BE STABILIZED WITH THE SEED AND MULCH BY THE END OF EACH WORK DAY.

**PLANTING LAYOUT DETAIL** NOT TO SCALE



**LANDSCAPE PLANTING NOTES:**

- ALL DECIDUOUS OVERSTORY TREES SHALL BE PLANTED WITH RANDOM SPECIES AND RANDOM SPACING RANGING FROM 15'-0" TO 19'-0" ON CENTER.
- ALL DECIDUOUS UNDERSTORY TREES AND SHRUBS SHALL BE PLANTED WITH RANDOM SPACING RANGING FROM 10'-0" TO 15'-0" ON CENTER.
- ALL DECIDUOUS UNDERSTORY TREES AND SHRUBS SHALL BE PLANTED IN GROUPS OF 3 OR 5 PLANTS AND NO MORE THAN 7 PLANTS.
- DO NOT PLANT IN STRAIGHT ROWS OR GRIDS.



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. 15466, EXPIRATION DATE: JULY 15, 2013.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

*E. J. Jank* 4/12/12  
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

NO.	REVISIONS DESCRIPTION	DATE



TROTTER ROAD  
STREAM BANK STABILIZATION

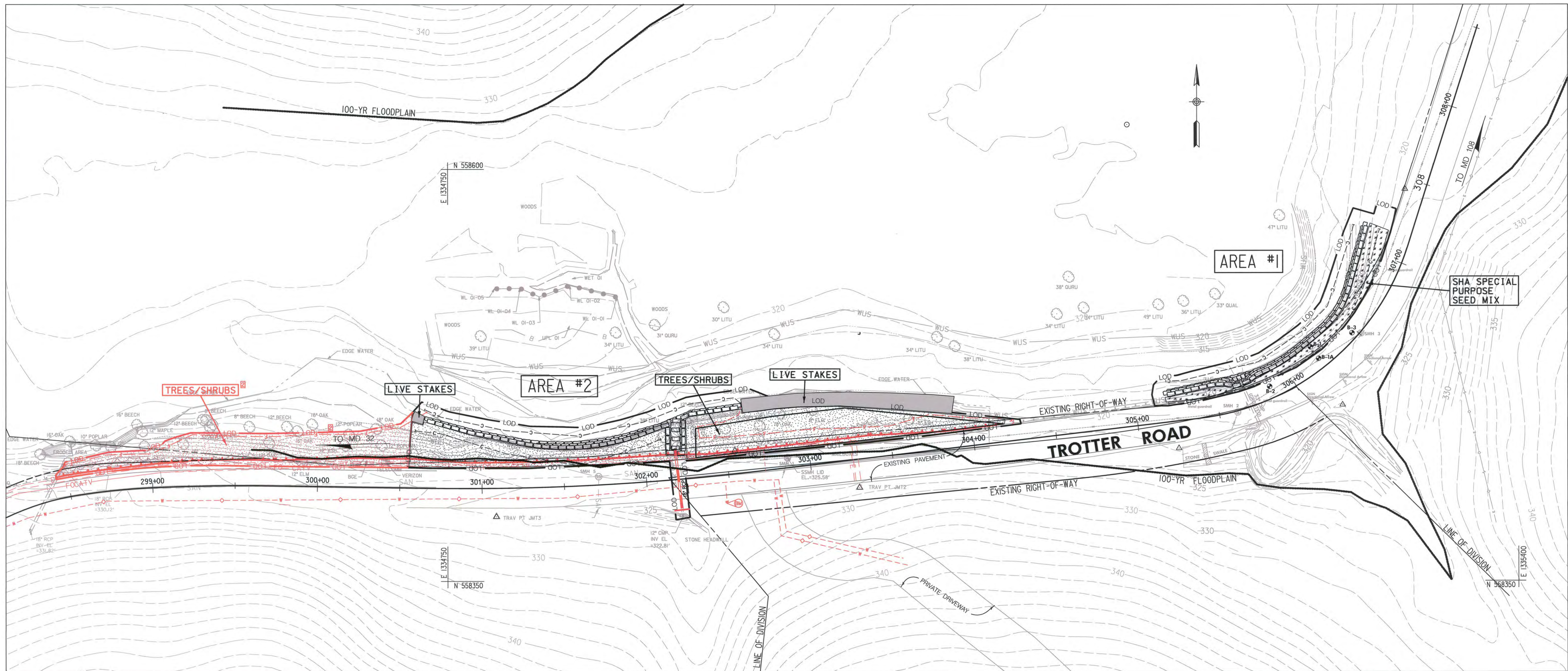
CAPITAL PROJECT D-183  
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
STORMWATER MANAGEMENT DIVISION  
615 COLUMBIA AVE  
COLUMBIA, MD 21046

**LANDSCAPING DETAILS**

SCALE:	AS SHOWN
DATE:	APRIL 9, 2012
DMT JOB NO.:	09-2356-003/012
CAPITAL PROJECT NO.:	D-1163
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	



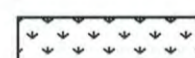
**LD-1**

SHEET NO.: 14 OF 15



**PLAN VIEW**  
SCALE: 1" = 30'

**LANDSCAPE LEGEND**

-  DECIDUOUS TREE/SHRUB PLANTING ZONE
-  LIVE STAKE PLANTING ZONE
-  SHA SPECIAL PURPOSE SEED MIX

TREE/SHRUB PLANTING SCHEDULE		
SCIENTIFIC / COMMON NAME	SIZE	
ACER NEGUNDO / BOX ELDER	2" CAL.	
ACER RUBRUM / RED MAPLE	2" CAL.	
DIOSPYROS VIRGINIANA / PERSIMMON	2" CAL.	
QUERCUS ALBA / WHITE OAK	2" CAL.	
VACCINIUM CORYMBOSUM / BLUEBERRY	24" HT.	
CEPHALANTHUS OCCIDENTALIS / BUTTONBUSH	24" HT.	
CORNUS AMOMUM / SILKY DOGWOOD	24" HT.	
ILEXVERTICILLATA / WINTERBERRY HOLLY	24" HT.	
LINDERA BENZOIN / SPICEBUSH	24" HT.	

SHA SPECIAL PURPOSE SEED MIX		
MIX %	SCIENTIFIC NAME	COMMON NAME
75	Festuca brevipila Tracey	Hard fescue
20	Festuca rubra L. ssp. fallax (Thull.) Nyman	Chewing fescue
5	Poa pratensis L. ssp. pratensis	Kentucky bluegrass

APPLIED @ 200 LBS/ACRE

LIVESTAKE SCHEDULE		
SCIENTIFIC / COMMON NAME	WETLAND INDICATOR	
CORNUS SERICEA / RED-OSIER DOGWOOD	FACW	
CORNUS AMOMUM / SILKY DOGWOOD	FACW	
VIBURNUM RECOGNITUM / NORTHERN ARROWWOOD	FAC	
SALIX NIGRA / BLACK WILLOW	FACW+	
SALIX SERICEA / SILKY WILLOW	OBL	



APPROVED: HOWARD COUNTY-DEPT. OF PUBLIC WORKS

*Mark Wilson*  
CHEF, BUREAU OF ENVIRONMENTAL SERVICES  
DATE: 6/12/15

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NO.	REVISIONS DESCRIPTION	DATE
2	W-BEAM AREA #2	6/8/2015

**JOHNSON, MIRIRAN & THOMPSON**  
Engineering. A Brighter Future

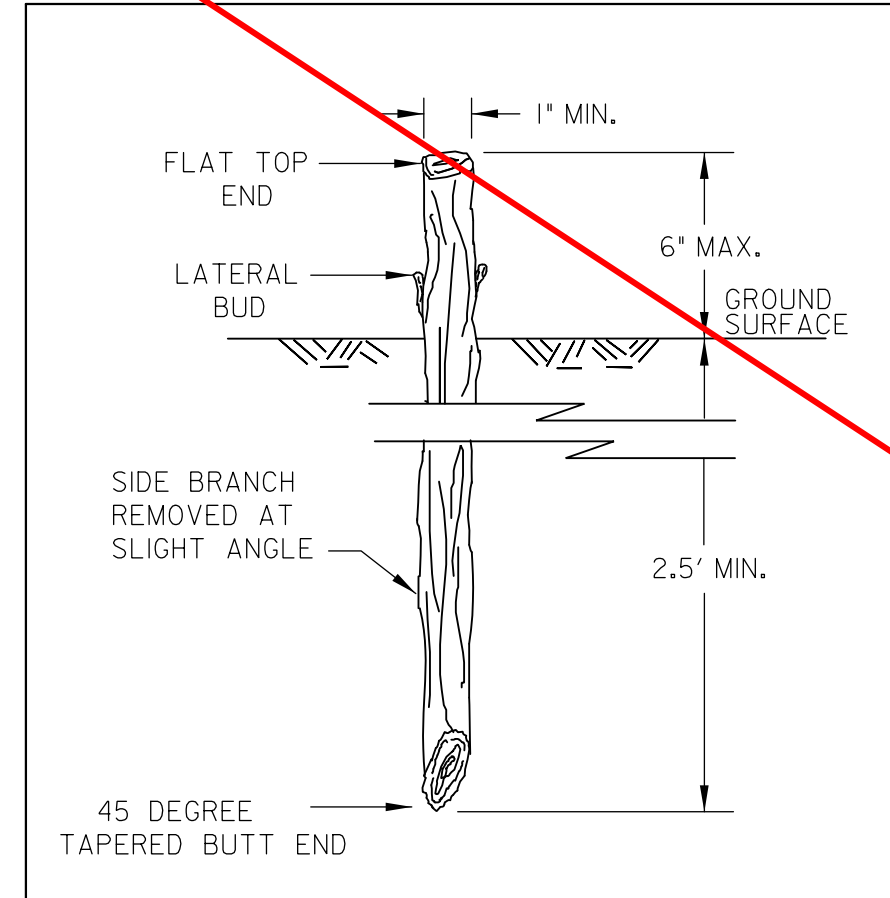
72 Lovickon Circle, Baltimore, Maryland 21152-0949

TROTTER ROAD  
STREAM BANK STABILIZATION

LANDSCAPING PLAN

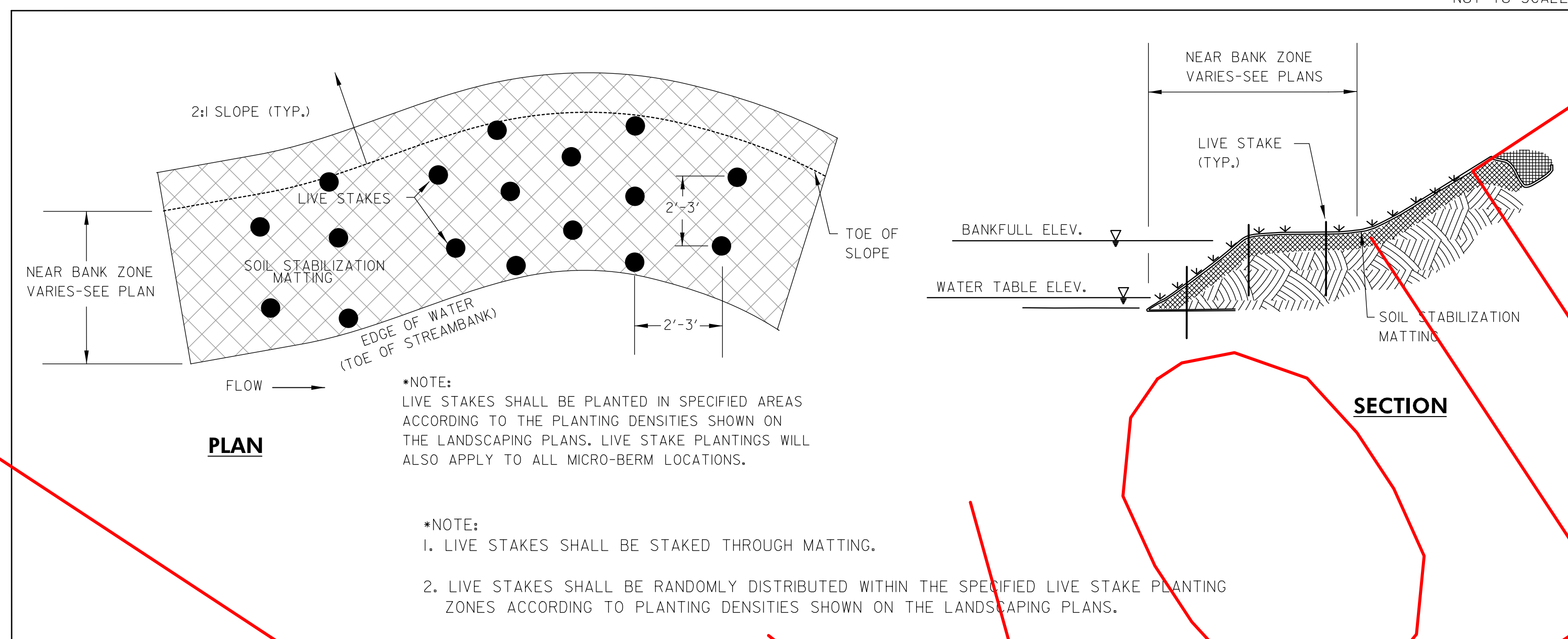
SCALE:	AS SHOWN
DATE:	JUNE 8, 2015
JMT JOB NO.:	09-2356-003/012
CAPITAL PROJECT NO.:	D-1163
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	
<b>LP-1</b>	
SHEET NO.: 15 OF 15	

**LIVE STAKE DETAIL** NOT TO SCALE

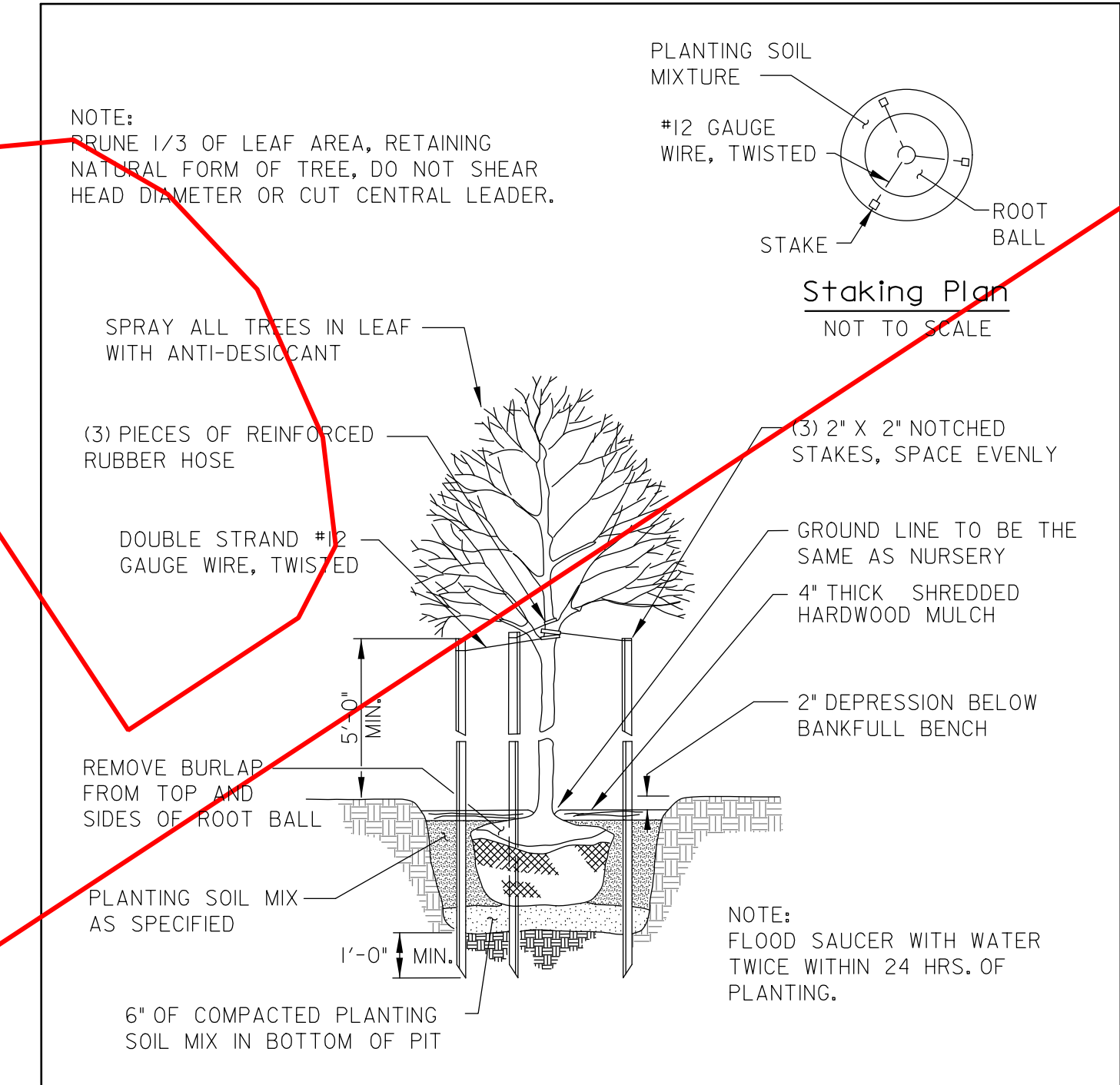


ADAPTED FROM DETAIL 2.4:  
LIVE STAKES (MMWCC) AND USDA-SCS (1994)

**LIVE STAKE PLANTING DETAILS**

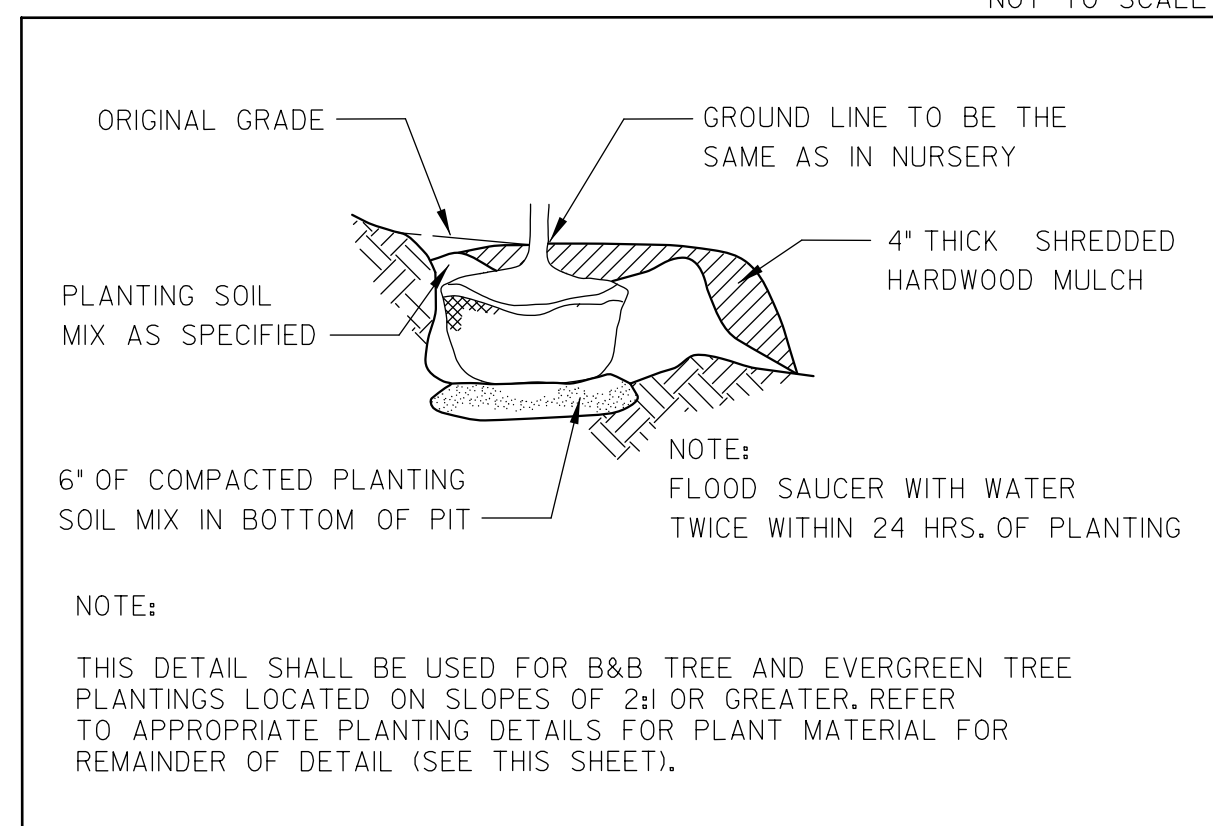


**TREE PLANTING DETAIL** NOT TO SCALE

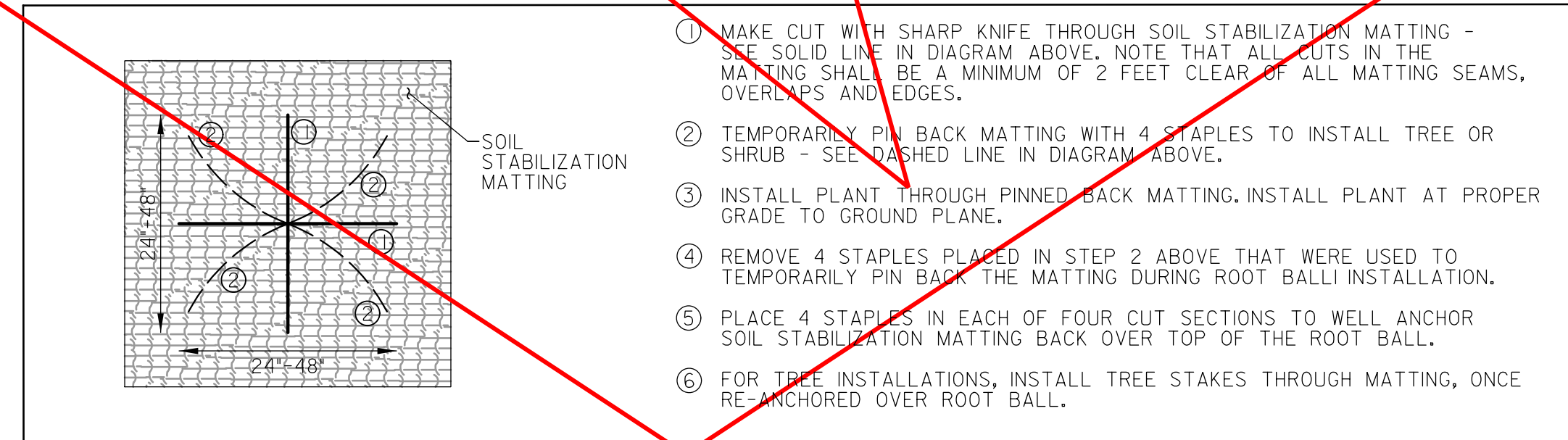


\*NOTES: 1. ALL TREES ARE TO BE STAKED.  
2. TREE SHELTERS ARE REQUIRED ON ALL NEW TREES.

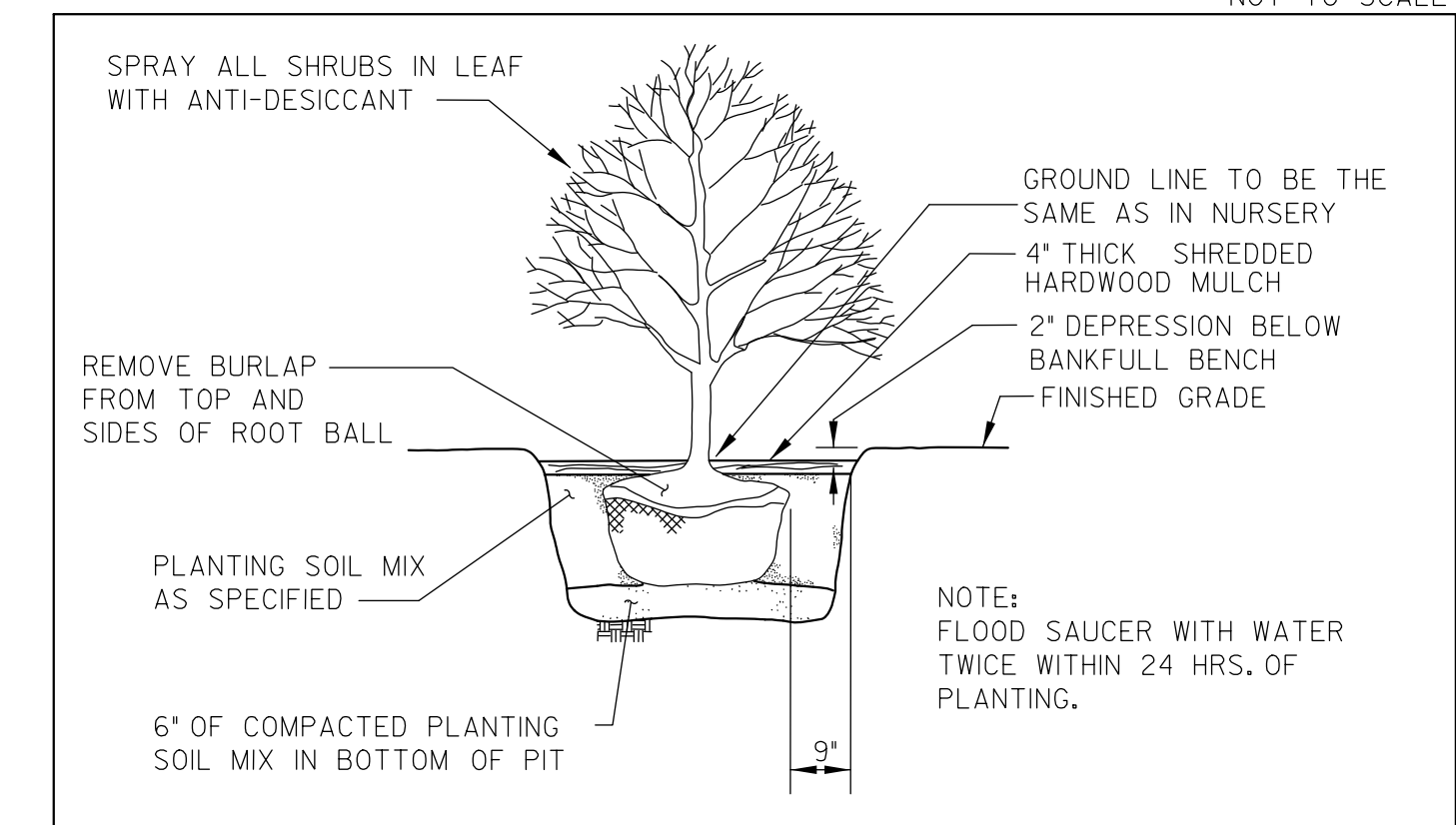
**SLOPE PLANTING DETAIL** NOT TO SCALE



**TREE & SHRUB INSTALLATION THROUGH SOIL STABILIZATION MATTING** NOT TO SCALE



**SHRUB PLANTING DETAIL** NOT TO SCALE

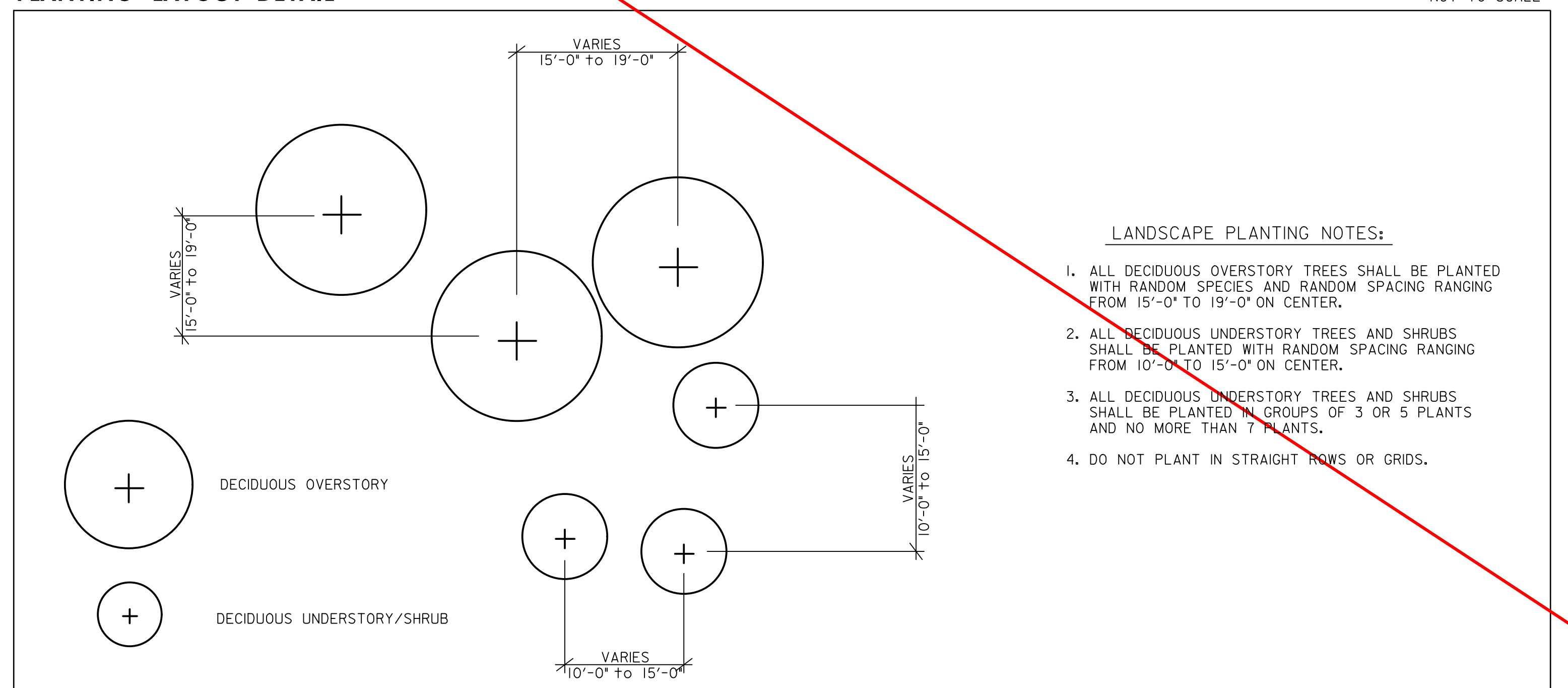


**PLANTING NOTES:**

- QUALITY AND SIZE OF PLANTS, SPREAD OF ROOTS, AND SIZE OF BALLS SHALL BE IN ACCORDANCE WITH THE STANDARDS OF THE AMERICAN ASSOCIATION OF NURSERYMEN, "AMERICAN STANDARDS FOR NURSERY STOCK."
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PLANTINGS	SURVIVAL RATE
2"-2.5" CAL. TREES	100%
SHRUBS (24" HT.)	75%
- CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO UTILITIES AND MAY MAKE MINOR ADJUSTMENTS IN SPACING AND/OR LOCATION OF PLANT MATERIALS. CONTRACTOR TO VERIFY 'AS BUILT' LOCATION OF ALL UTILITIES.
- NO SUBSTITUTIONS SHALL BE MADE WITHOUT THE APPROVAL OF THE LANDSCAPE ARCHITECT. PLANT LOCATIONS MAY BE ALTERED IN ACCORDANCE WITH SUBTLE TOPOGRAPHY CHANGES ON-SITE.
- FOR ALL TREES AND SHRUBS PLANTED IN AREAS COVERED WITH SOIL STABILIZATION MATTING, AN "X" PATTERN SHALL CAREFULLY BE CUT IN THE MATTING, LAYING BACK THE MATTING IN AN AREA LARGE ENOUGH TO ALLOW FOR EXCAVATION OF THE PLANTING PIT. AFTER INSTALLATION OF THE PLANT, THE MATTING SHALL BE RE-STAPLED AROUND THE BASE OF THE PLANT. ALL AREAS NOT STABILIZED IN PLANT MATERIALS SHALL BE STABILIZED WITH SEED AND SOIL STABILIZATION MATTING OR MULCH.
- ALL SHADE TREES SHALL BRANCH A MINIMUM OF 6'-0" ABOVE GROUND LEVEL. TREES SHALL BE PLANTED AND STAKED IN ACCORDANCE WITH THE PLANTING DETAIL SHOWN.
- PLANTING SOIL MIX: 2/3 EXISTING SOIL (EXCAVATED FROM PLANT PIT) AND 1/3 PEAT HUMUS.
- ALL GROUND COVER AND SHRUB BEDS SHALL RECEIVE 2" TOPSOIL THOROUGHLY WORKED INTO THE TOP 6" OF EXISTING SOIL. ALL BEDS TO BE MULCHED, USING ONLY SHREDDED HARDWOOD MULCH, AS PINE MULCH OR OTHER WOOD CHIPS WILL FLOAT TO A 3" DEPTH WHEN PLANT INSTALLATION IS COMPLETE.
- ALL PLANT PIT LOCATIONS SHALL BE EXCAVATED TO DEPTH AND DIMENSIONS INDICATED ON APPROPRIATE PLANTING DETAILS. ALL NATIVE SOIL EXCAVATED FROM PLANTING PITS (NOT USEABLE FOR PLANTING PURPOSES) SHALL BE REMOVED. PLANTING PITS SHALL BE BACKFILLED WITH PLANT SOIL MIXTURE AS SPECIFIED IN NOTE 7 ABOVE.
- PLANT SPACINGS ARE SHOWN ON THE PLAN AS THEY PERTAIN TO THE AREA NOTED. PLANTS SHALL BE INSTALLED ACCORDING TO THE PLANTING ZONES SHOWN ON THE PLANS. PLANT LOCATIONS SHOULD NOT INTERFERE WITH EXISTING TREES TO REMAIN WITHIN THE WORK AREA.
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**PLANTING LAYOUT DETAIL** NOT TO SCALE



**LANDSCAPE PLANTING NOTES:**

- ALL DECIDUOUS OVERSTORY TREES SHALL BE PLANTED WITH RANDOM SPECIES AND RANDOM SPACING RANGING FROM 15'-0" TO 19'-0" ON CENTER.
- ALL DECIDUOUS UNDERSTORY TREES AND SHRUBS SHALL BE PLANTED WITH RANDOM SPACING RANGING FROM 10'-0" TO 15'-0" ON CENTER.
- ALL DECIDUOUS UNDERSTORY TREES AND SHRUBS SHALL BE PLANTED IN GROUPS OF 3 OR 5 PLANTS AND NO MORE THAN 7 PLANTS.
- DO NOT PLANT IN STRAIGHT ROWS OR GRIDS.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

\_\_\_\_\_  
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

DATE	09/03/15
NO.	2
REVISIONS DESCRIPTION	REVISION - LANDSCAPE UPDATES
FILE:	XXXXXXXX

**JOHNSON, MIRIRAN & THOMPSON**  
Engineering - A Brighter Future  
72 Loveston Circle, Baltimore, Maryland 21152-0943

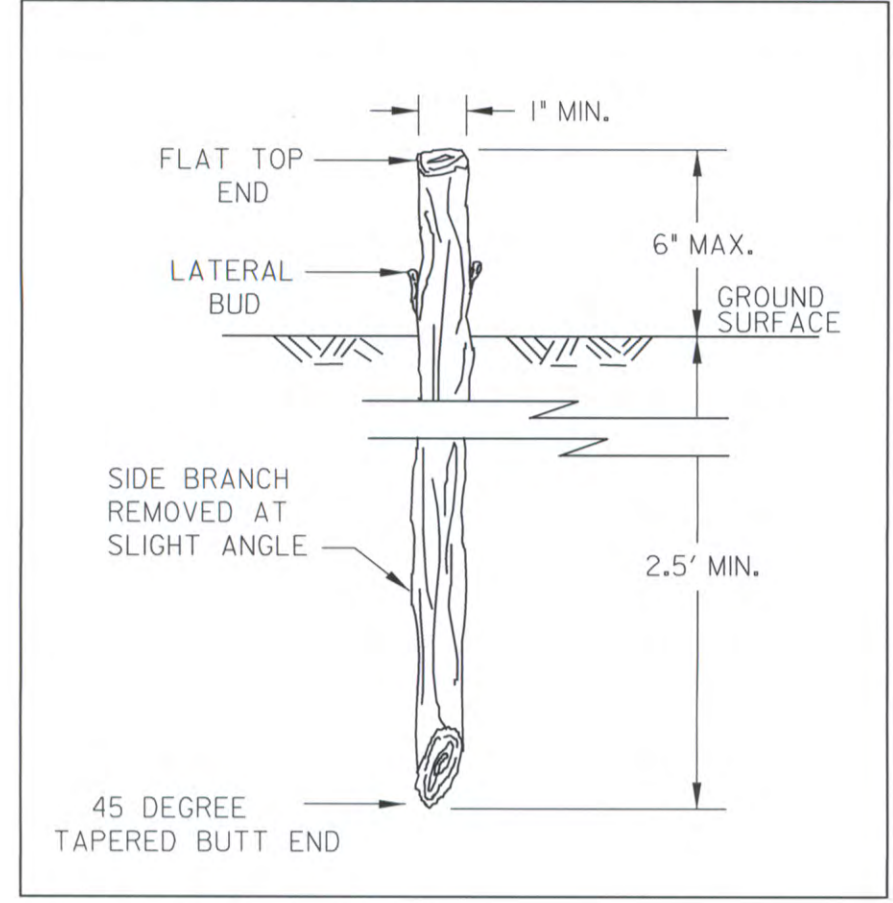
TROTTER ROAD  
STREAM BANK STABILIZATION

**LANDSCAPING DETAILS**

SCALE:	AS SHOWN
DATE:	APRIL 10, 2014
INT. JOB NO.:	09-2356-003/012
CAPITAL PROJECT NO.:	D-1163
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	

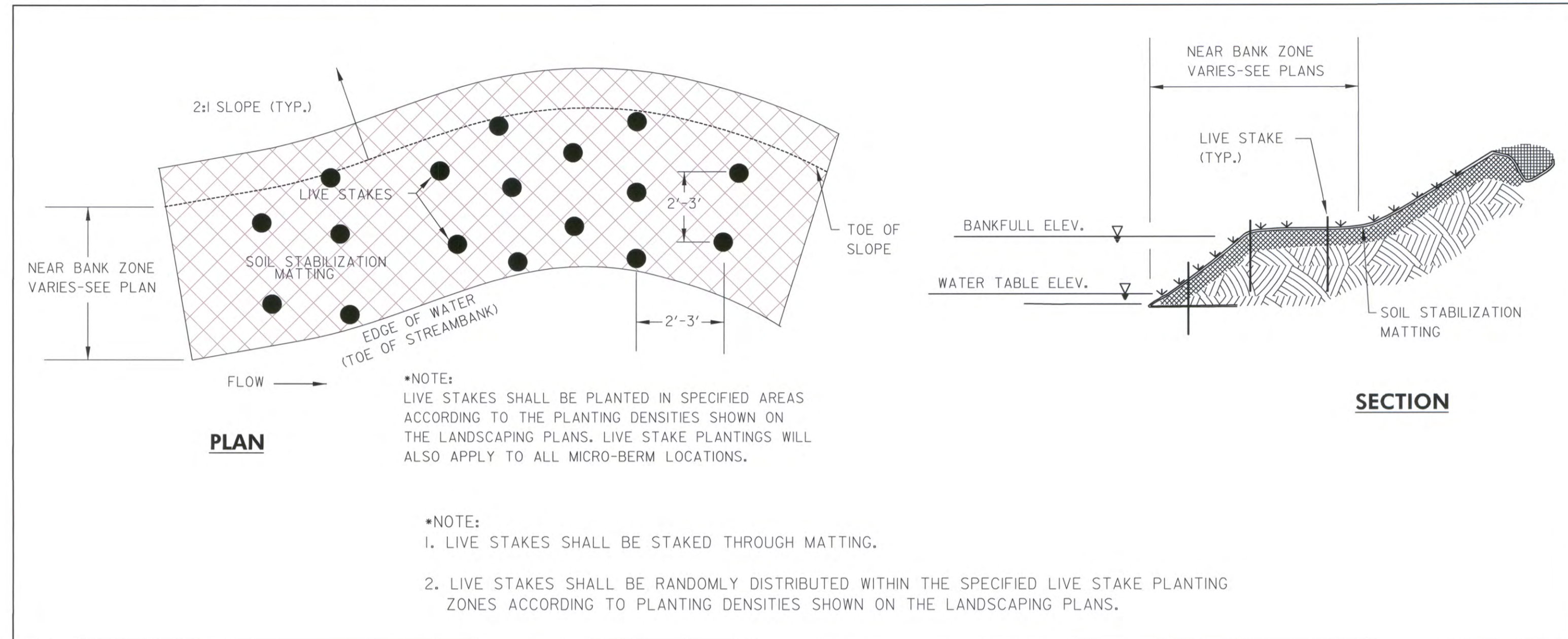
PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 15466, EXPIRATION DATE: JULY 15, 2015.

**LIVE STAKE DETAIL** NOT TO SCALE

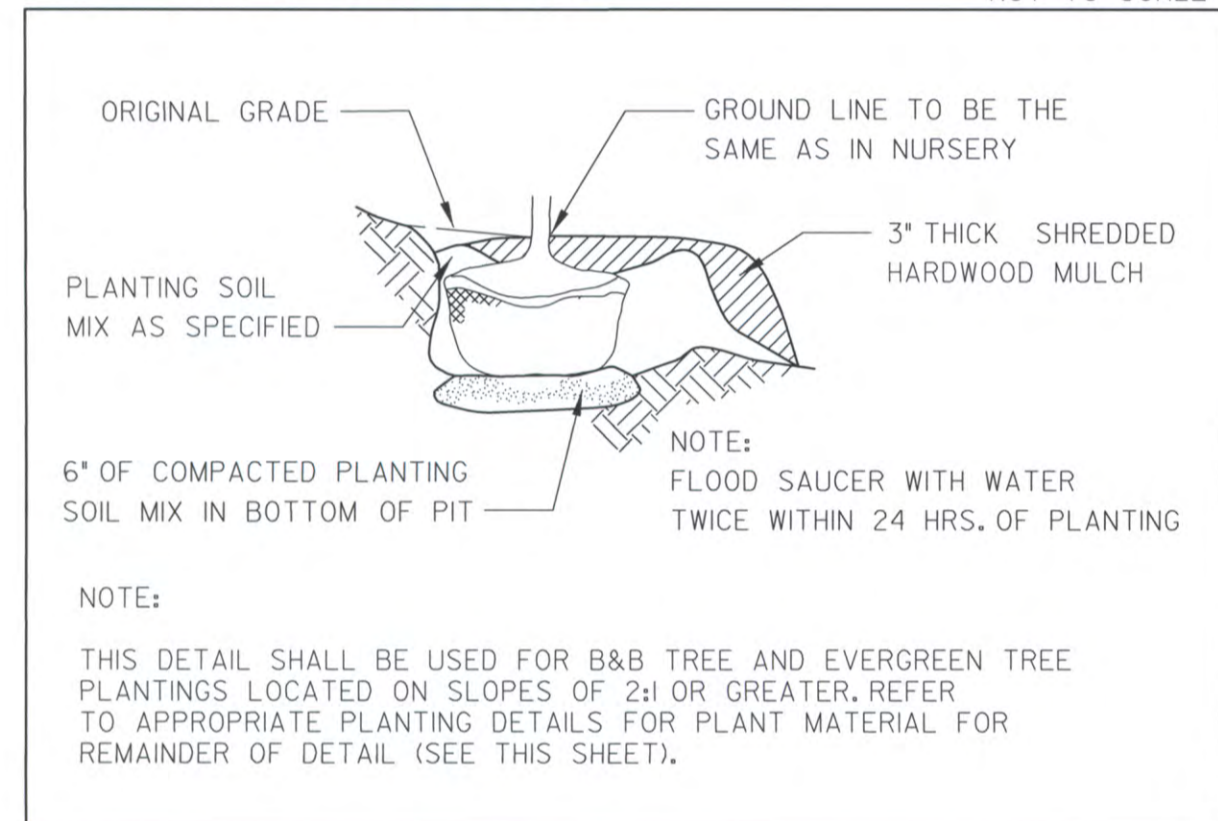


ADAPTED FROM DETAIL 2.4: LIVE STAKES (MWWCG) AND USDA-SCS (1994)

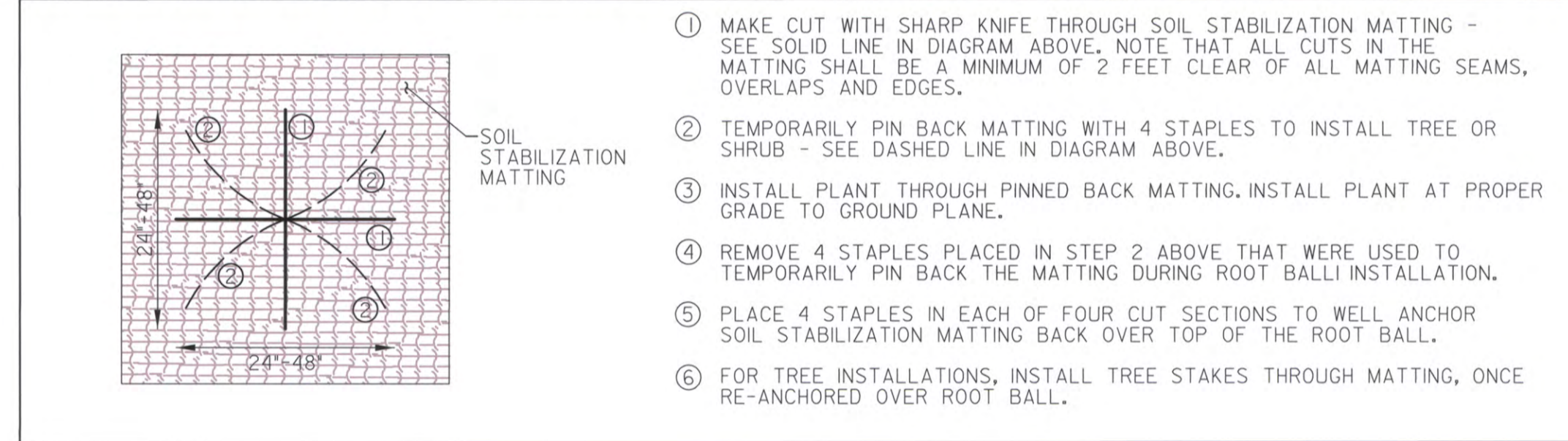
**LIVE STAKE PLANTING DETAILS** NOT TO SCALE



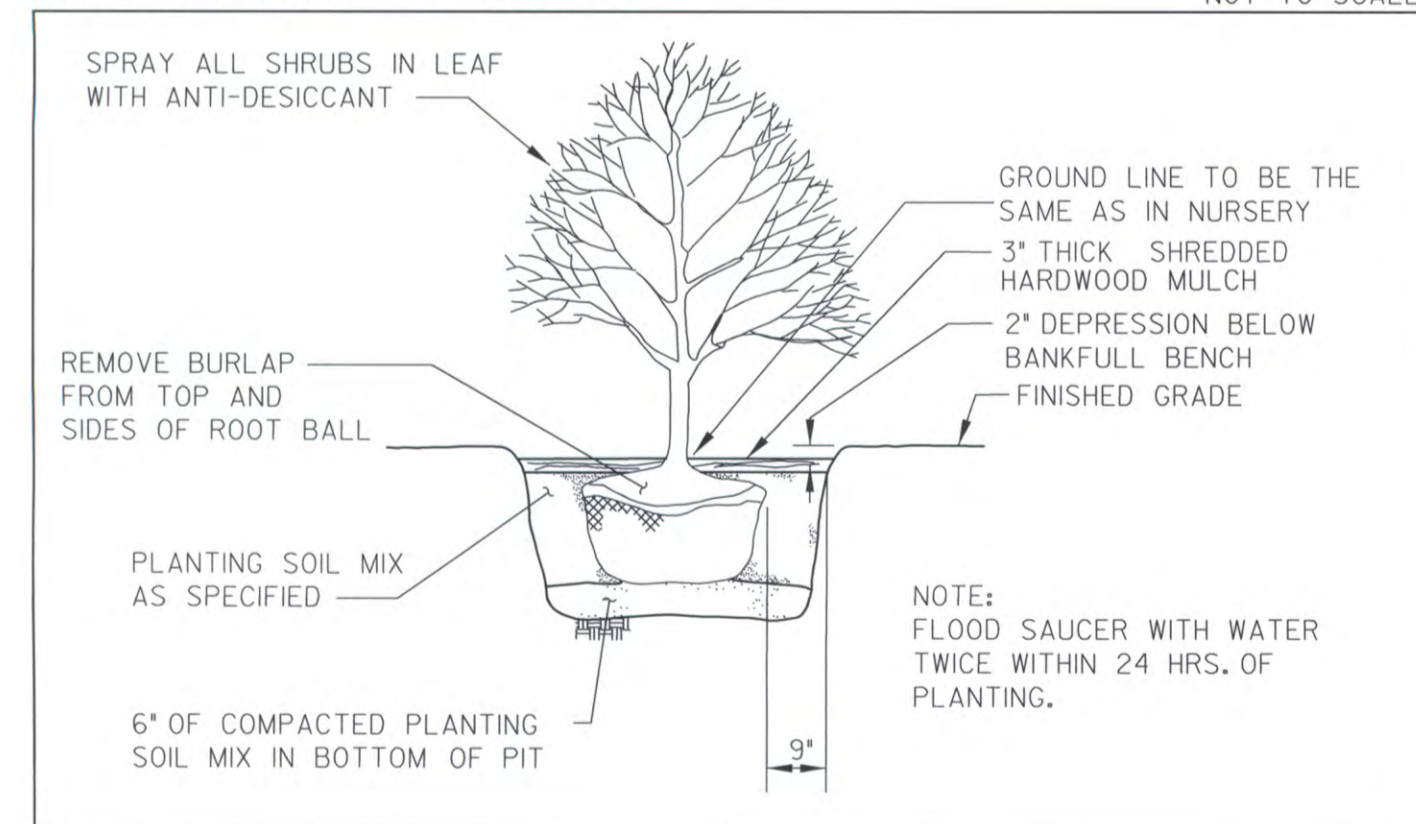
**SLOPE PLANTING DETAIL** NOT TO SCALE



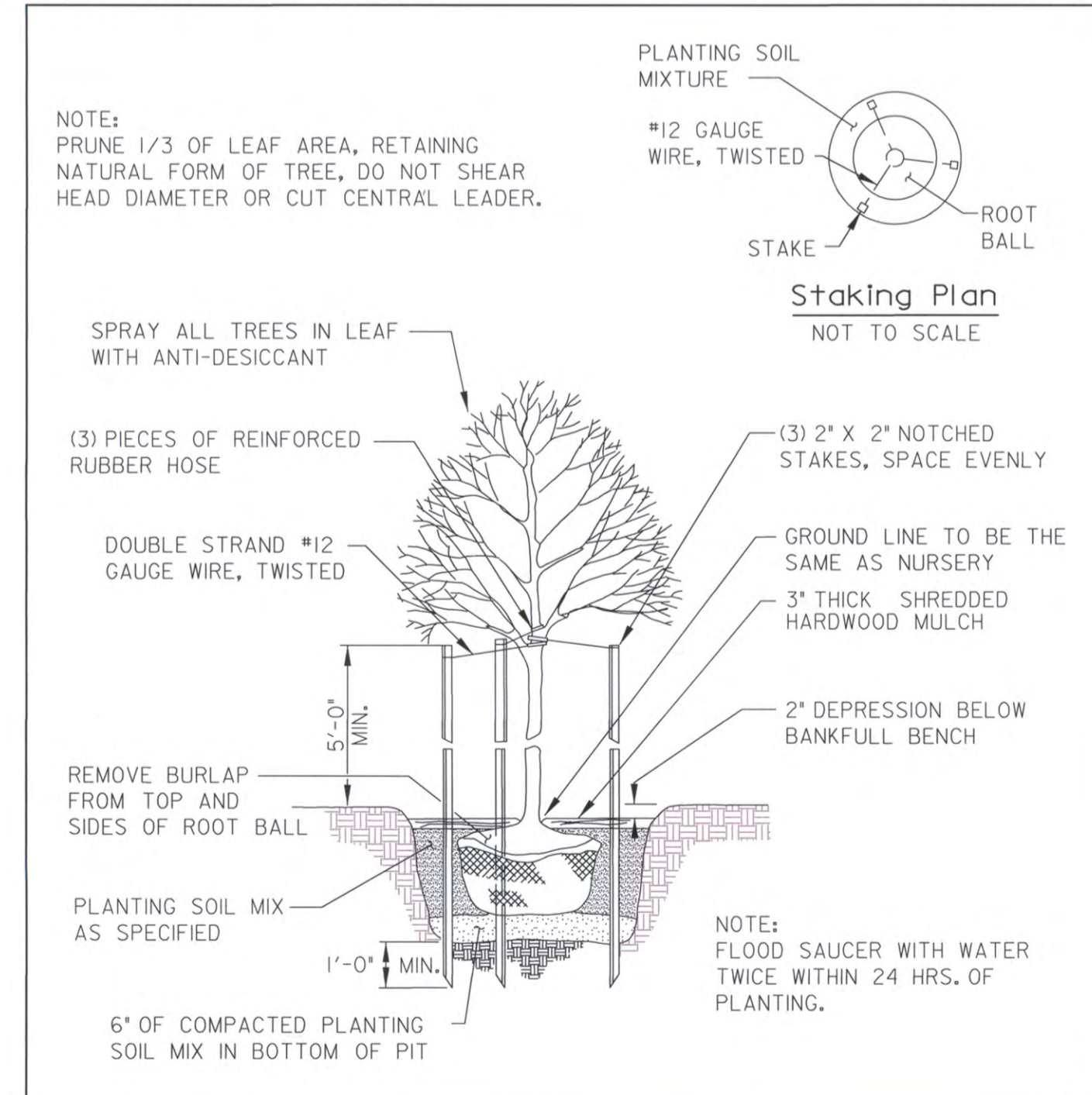
**TREE & SHRUB INSTALLATION THROUGH SOIL STABILIZATION MATTING** NOT TO SCALE



**SHRUB PLANTING DETAIL** NOT TO SCALE



**TREE PLANTING DETAIL** NOT TO SCALE



**PLANTING NOTES:**

- QUALITY AND SIZE OF PLANTS, SPREAD OF ROOTS, AND SIZE OF BALLS SHALL BE IN ACCORDANCE WITH THE STANDARDS OF THE AMERICAN ASSOCIATION OF NURSERYMEN. \*AMERICAN STANDARDS FOR NURSERY STOCK.
- ALL PLANTINGS SHALL BE MONITORED FOR SURVIVAL AND REPLACED AS NECESSARY FOR A PERIOD OF 2 GROWING SEASONS FOLLOWING INSTALLATION. A GUARANTEE OF PLANT SURVIVAL SHALL BE PROVIDED BY THE CONTRACTOR AS FOLLOWS:
 

PLANTINGS	SURVIVAL RATE
2"-2.5" CAL. TREES	100%
SHRUBS (24" HT.)	75%
- CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO UTILITIES AND MAY MAKE MINOR ADJUSTMENTS IN SPACING AND/OR LOCATION OF PLANT MATERIALS. CONTRACTOR TO VERIFY "AS BUILT" LOCATION OF ALL UTILITIES.
- NO SUBSTITUTIONS SHALL BE MADE WITHOUT THE APPROVAL OF THE LANDSCAPE ARCHITECT. PLANT LOCATIONS MAY BE ALTERED IN ACCORDANCE WITH SUBTLE TOPOGRAPHY CHANGES ON-SITE.
- FOR ALL TREES AND SHRUBS PLANTED IN AREAS COVERED WITH SOIL STABILIZATION MATTING, AN "X" PATTERN SHALL CAREFULLY BE CUT IN THE MATTING, LAYING BACK THE MATTING IN AN AREA LARGE ENOUGH TO ALLOW FOR EXCAVATION OF THE PLANTING PIT. AFTER INSTALLATION OF THE PLANT, THE MATTING SHALL BE RE-STAPLED AROUND THE BASE OF THE PLANT. ALL AREAS NOT STABILIZED IN PLANT MATERIALS SHALL BE STABILIZED WITH SEED AND SOIL STABILIZATION MATTING OR MULCH.
- ALL SHADE TREES SHALL BRANCH A MINIMUM OF 6'-0" ABOVE GROUND LEVEL. TREES SHALL BE PLANTED AND STAKED IN ACCORDANCE WITH THE PLANTING DETAIL SHOWN.
- PLANTING SOIL MIX: 2/3 EXISTING SOIL (EXCAVATED FROM PLANT PIT) AND 1/3 PEAT HUMUS.
- ALL GROUND COVER AND SHRUB BEDS SHALL RECEIVE 2" TOPSOIL THOROUGHLY WORKED INTO THE TOP 6" OF EXISTING SOIL. ALL BEDS TO BE MULCHED, USING ONLY SHREDDED HARDWOOD MULCH, AS PINE MULCH OR OTHER WOOD CHIPS WILL FLOAT, TO A 3" DEPTH WHEN PLANT INSTALLATION IS COMPLETE.
- ALL PLANT PIT LOCATIONS SHALL BE EXCAVATED TO DEPTH AND DIMENSIONS INDICATED ON APPROPRIATE PLANTING DETAILS. ALL NATIVE SOIL EXCAVATED FROM PLANTING PITS (NOT USEABLE FOR PLANTING PURPOSES) SHALL BE REMOVED. PLANTING PITS SHALL BE BACKFILLED WITH PLANT SOIL MIXTURE AS SPECIFIED IN NOTE 7 ABOVE.
- PLANT SPACINGS ARE SHOWN ON THE PLAN AS THEY PERTAIN TO THE AREA NOTED. PLANTS SHALL BE INSTALLED ACCORDING TO THE PLANTING ZONES SHOWN ON THE PLANS. PLANT LOCATIONS SHOULD NOT INTERFERE WITH EXISTING TREES TO REMAIN WITHIN THE WORK AREA.
- ALL DISTURBED AREAS SHALL BE STABILIZED WITH THE SEED AND MULCH BY THE END OF EACH WORK DAY.

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 2086. EXPIRATION DATE: JANUARY 6, 2017.

09/03/15

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

NO.	REVISIONS DESCRIPTION	DATE
13	REDLINE REVISION - LANDSCAPE UPDATES	09/03/15

**JMT**  
**JOHNSON, MIRMAN & THOMPSON**  
*Engineering A Brighter Future*  
 72 Lovston Circle, Baltimore, Maryland 21152-0949  
 FILE: XXXXXXXX

TROTTER ROAD  
 STREAM BANK STABILIZATION

CAPITAL PROJECT D-118  
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 STORMWATER MANAGEMENT DIVISION  
 400 COLUMBIA, MD 21048

LANDSCAPE DETAILS

SCALE: AS SHOWN

DATE: SEPTEMBER 3, 2015

JMT JOB NO.: 09-2356-003/012

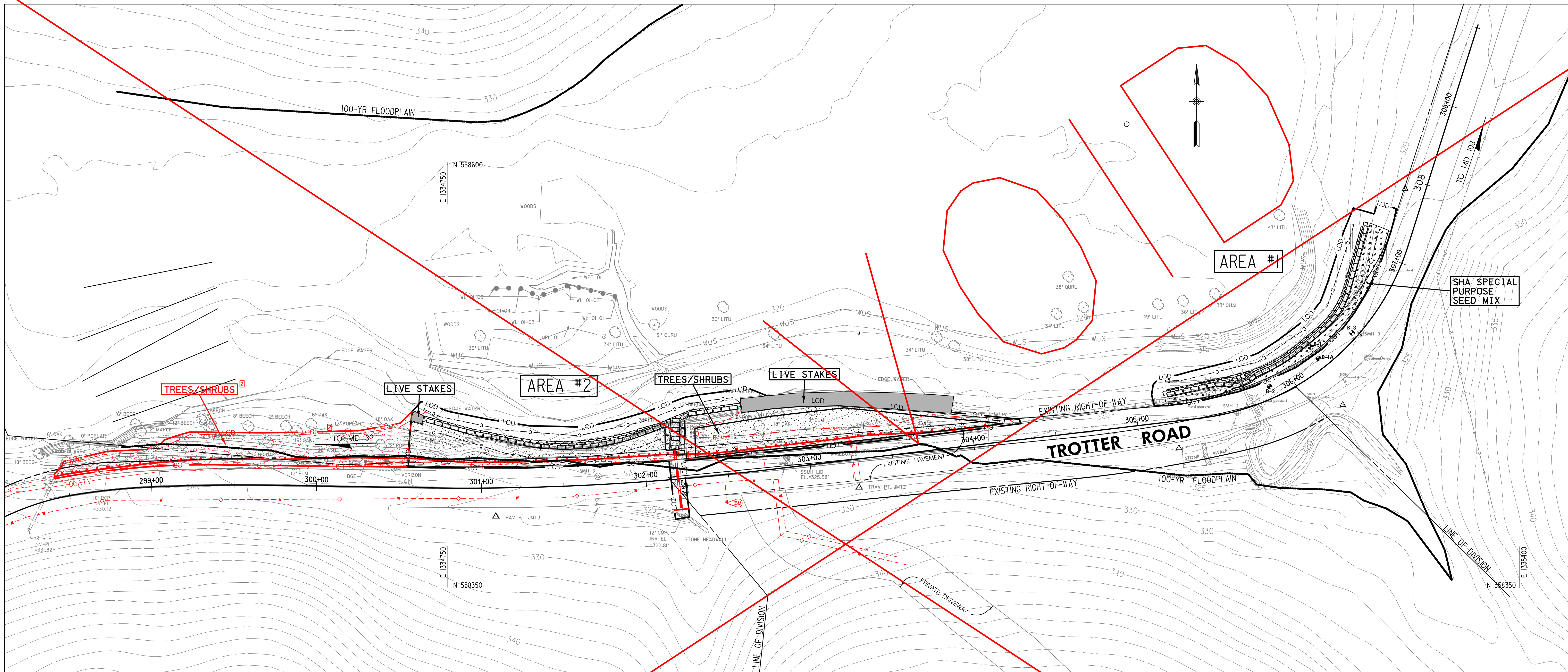
CAPITAL PROJECT NO.: D-1163

PERMIT ISSUE:

CONSTRUCTION ISSUE:

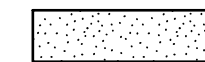


**LD-1**

SHEET NO.: 14 OF 15



**PLAN VIEW**  
SCALE: 1" = 30'

**LANDSCAPE LEGEND**

-  DECIDUOUS TREE/SHRUB PLANTING ZONE
-  LIVE STAKE PLANTING ZONE
-  SHA SPECIAL PURPOSE SEED MIX

TREE/SHRUB PLANTING SCHEDULE		
SCIENTIFIC / COMMON NAME	SIZE	
ACER NEGUNDO / BOX ELDER	2" CAL.	
ACER RUBRUM / RED MAPLE	2" CAL.	
DIOSPYROS VIRGINIANA / PERSIMMON	2" CAL.	
QUERCUS ALBA / WHITE OAK	2" CAL.	
VACCINIUM CORYMBOSUM / BLUEBERRY	24" HT.	
CEPHALANTHUS OCCIDENTALIS / BUTTONBUSH	24" HT.	
CORNUS AMOMUM / SILKY DOGWOOD	24" HT.	
ILEXVERTICILLATA / WINTERBERRY HOLLY	24" HT.	
LINDERA BENZOIN / SPICEBUSH	24" HT.	

LIVESTAKE SCHEDULE		
SCIENTIFIC / COMMON NAME	WETLAND INDICATOR	
CORNUS SERICEA / RED-OSIER DOGWOOD	FACW	
CORNUS AMOMUM / SILKY DOGWOOD	FACW	
VIBURNUM RECOGNITUM / NORTHERN ARROWWOOD	FAC	
SALIX NIGRA / BLACK WILLOW	FACW+	
SALIX SERICEA / SILKY WILLOW	OBL	

SHA SPECIAL PURPOSE SEED MIX SPECIES		
MIX %	SCIENTIFIC NAME	COMMON NAME
75	Festuca brevipila Tracey	Hard fescue
20	Festuca rubra L. ssp. fallax (Thuill.) Nyman	Chewing fescue
5	Poa pratensis L. ssp. pratensis	Kentucky bluegrass

APPLIED @ 200 LBS/ACRE

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

\_\_\_\_\_  
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

NO.	REVISIONS DESCRIPTION	DATE
3	REDLINE REVISION - LANDSCAPE UPDATE	09/03/15



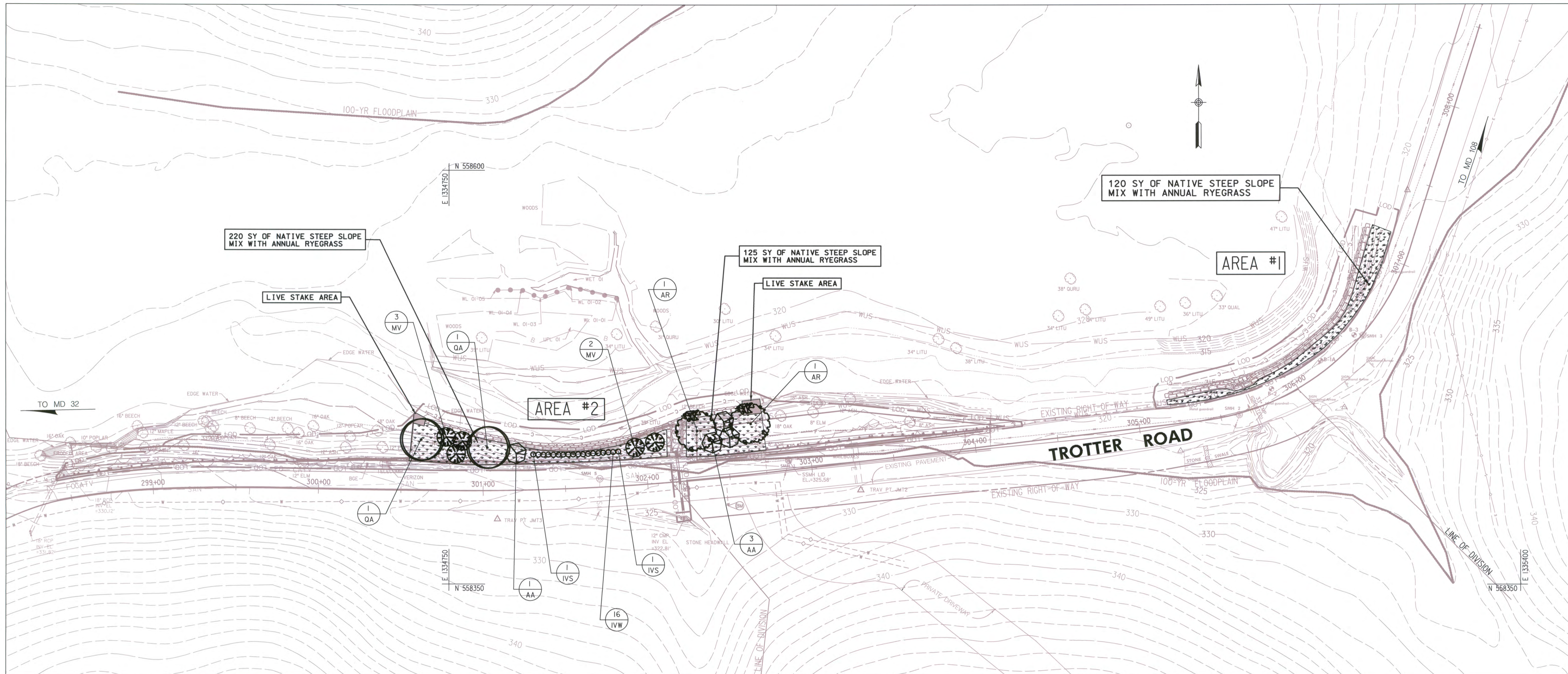
**JOHNSON, MIRMAN & THOMPSON**  
Engineering. A Brighter Future  
72 Loveston Circle, Baltimore, Maryland 21152-0943

TROTTER ROAD  
STREAM BANK STABILIZATION

**LANDSCAPING PLAN**

SCALE: AS SHOWN  
DATE: JUNE 8, 2015  
JMT JOB NO.: 09-2356-003/012  
CAPITAL PROJECT NO.: D-1163

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. 15466, EXPIRATION DATE: JULY 15, 2017.  
 B:\r\rbucci\jmt\092356-003\Trotter\_Road\_Slope\_S\CAD\092356-003\_Trotter\_Road\_Slope\_S\CAD\092356-003\_Trotter\_Road\_Slope\_S.dgn



**PLAN VIEW**  
SCALE: 1" = 30'

**LANDSCAPE LEGEND**

- LIVE STAKE PLANTING AREA
- NATIVE STEEP SLOPE MIX WITH ANNUAL RYEGRASS

**TREE AND SHRUB PLANT SCHEDULE (TOTAL)**

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING/REMARKS
AR	2	Acer rubrum 'October Glory'	October Glory Red Maple	2' cal.	B & B	As Shown
AA	4	Amelanchier arborea	Downy Serviceberry	6' ht.	B & B	As Shown, Multi-stem
IVS	2	Ilex verticillata 'Southern Gentleman'	Southern Gentleman Winterberry Holly	30' ht.	B & B	3' o.c., Male
IVW	16	Ilex verticillata 'Winter Red'	Winter Red Winterberry Holly	30' ht.	B & B	3' o.c., Female
MV	5	Magnolia virginiana	Sweet Bay Magnolia	1.5' cal.	B & B	As Shown, Single-stem
QA	2	Quercus alba	White Oak	2' cal.	B & B	As Shown

**LIVE STAKE PLANT SCHEDULE (TOTAL)**

QUANTITY	BOTANICAL NAME	COMMON NAME	LENGTH OF LIVE STAKE	DIAMETER OF LIVE STAKE
9	Cornus amomum	Silky Dogwood	3' to 3.5'	1"
9	Cornus sericea	Red-osier Dogwood	3' to 3.5'	1"
9	Salix nigra	Black Willow	3' to 3.5'	1"
9	Salix sericea	Silky Willow	3' to 3.5'	1"

NOTE: SEE SHEET LD-1 FOR LIVE STAKE PLANTING DETAILS

**NATIVE STEEP SLOPE MIX WITH ANNUAL RYEGRASS**

MIX %	SPECIES	
	SCIENTIFIC NAME	COMMON NAME
32.2	Sorghastrum nutans	Indiangrass
20.0	Lolium multiflorum	Annual Ryegrass
17.0	Elymus virginicus	Virginia Wildrye
8.0	Andropogon gerardii 'Southlow'	Big Bluestem 'Southlow'
6.0	Agrostis perennans	Autumn Bentgrass
3.0	Panicum virgatum 'Shawnee'	Switchgrass 'Shawnee'
2.5	Echinacea purpurea	Purple Coneflower
2.0	Agrostis scabra	Ticklegrass
2.0	Tridens flavus	Purpletop
2.0	Chamaecrista fasciculata	Partridge Pea
1.0	Coreopsis lanceolata	Lanceleaf Coreopsis
1.0	Helopsis helianthoides	Oxeye Sunflower
1.0	Rudbeckia hirta	Blackeyed Susan
0.7	Lespedeza virginica	Slender Bushclover
0.6	Liatris spicata	Marsh (Dense) Blazing Star
0.5	Monarda fistulosa	Wild Bergamot
0.4	Aster novae-angliae	New England Aster
0.1	Pycnanthemum tenuifolium	Slender Mountainmint

APPLIED @ 60 LBS/ACRE



PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 2088, EXPIRATION DATE: JANUARY 5, 2017.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

NO.	REVISIONS DESCRIPTION	DATE
13	REDLINE REVISION - LANDSCAPE UPDATES	09/03/15

**JMT**  
**JOHNSON, MIRIRAN & THOMPSON**  
Engineering & Architecture  
72 Loveston Circle, Baltimore, Maryland 21152-0549

TROTTER ROAD  
STREAM BANK STABILIZATION

**LANDSCAPE PLAN**

SCALE: AS SHOWN  
DATE: SEPTEMBER 3, 2015  
JMT JOB NO.: 09-2356-003/012  
CAPITAL PROJECT NO.: D-1163  
PERMIT ISSUE:  
CONSTRUCTION ISSUE:

**LP-1**

SHEET NO.: 15 OF 15