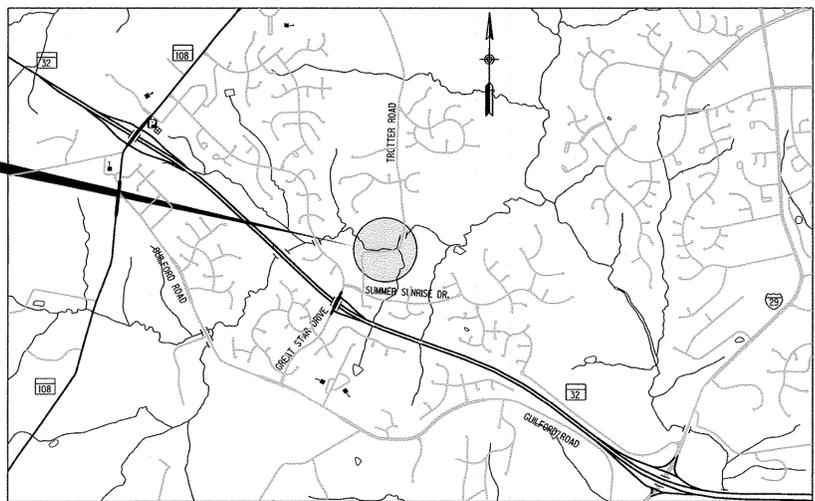


INDEX OF SHEETS

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1	TITLE SHEET
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5	WALL ELEVATION PLAN
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PROJECT SITE  
CAPITAL PROJECT NO. D-1163  
TROTTER ROAD  
STREAM BANK STABILIZATION  
HOWARD COUNTY, MD



LOCATION MAP  
SCALE 1" = 2000'

CAPITAL PROJECT NO. D-1163  
**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:
  - PROPOSED/EXISTING RIGHT-OF-WAY.
  - UTILITY RELOCATION.
  - MAINTENANCE OF TRAFFIC DURING CONSTRUCTION.
  - EROSION/SEDIMENT CONTROL CERTIFICATION AND PERMIT.
  - HORIZONTAL/VERTICAL SURVEY CONTROL.
  - 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 2011060805/11-NI-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.
- A WAIVER PETITION (WP-12-119) FROM SUBSECTION 16.155(6)(iii) 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:
  - 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 DILP.
  - 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.
  - PETITIONER SHALL SUBMIT A COMPLETED FOREST CONSERVATION DATA SUMMARY TO THE DPZ DIVISION OF LAND DEVELOPMENT, ATTN: DAVE BOELLNER.

CONVENTIONAL SIGNS

MAILBOX		PROPOSED PIPE/CULVERT	
EXISTING FENCE LINE		EXISTING PIPE/CULVERT	
EXISTING RIGHT OF WAY LINE		UTILITY POLE	
BASE LINE		HEDGE / TREE LINE	
FIRE HYDRANT		BUSH / TREE	
PROPOSED FULL DEPTH PAVEMENT		CONIFEROUS TREE	
PROPOSED GRINDING & HMA PAVEMENT OVERLAY		RIP-RAP	
PROPOSED CONCRETE SIDEWALK, DRIVEWAY ENTR.		GIS EXISTING CONTOUR	
WATER LINE		SURVEYED MAJOR CONTOUR	
GAS LINE		SURVEYED MINOR CONTOUR	
SAN. SEWER		WATERS OF THE US	
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*  
Paul F. Clement, P.E.  
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*  
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE)  
PAUL F. CLEMENT, P.E. P.E. # 15466 DATE 06/10/15

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

*Mark J. Richmond*  
SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE)  
Mark J. Richmond DATE 6/12/15

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

*Mark J. Richmond* 6/12/15  
CHIEF, STORMWATER MANAGEMENT DIVISION DATE

*Mark J. Richmond* 6/12/15  
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

*Paul F. Clement* 6/12/15  
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	D/PZ WAIVER PETITION	5/18/2015
2	W-BEAM AREA #2	6/8/2015

JOHNSON, MIRMIRAN & THOMPSON  
Engineering A Brighter Future  
72 Loveston Circle, Baltimore, Maryland 21152-0849

TROTTER ROAD  
STREAM BANK STABILIZATION

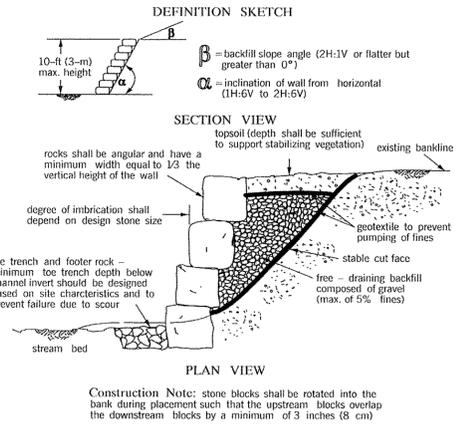
TITLE SHEET

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

TI-1  
SHEET NO.: 1 OF 15

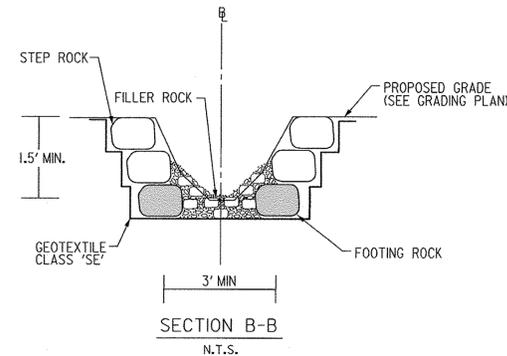
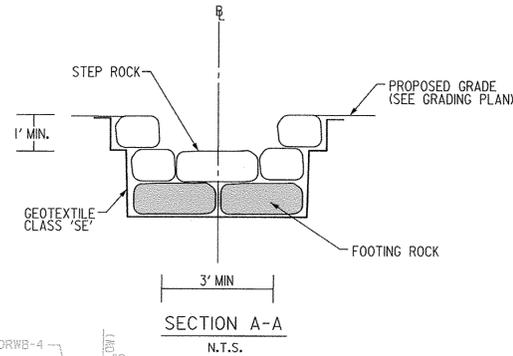
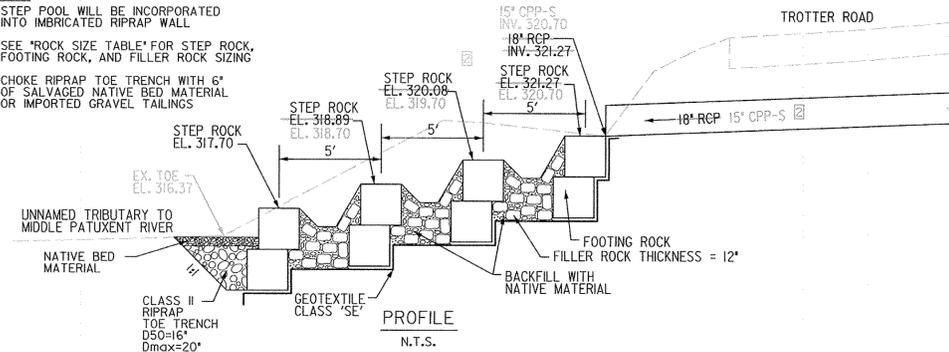
EP-12-13

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



ROCK PROTECTION AND STABILIZATION TECHNIQUES  
 REVISED NOVEMBER 2009  
 MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

- 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

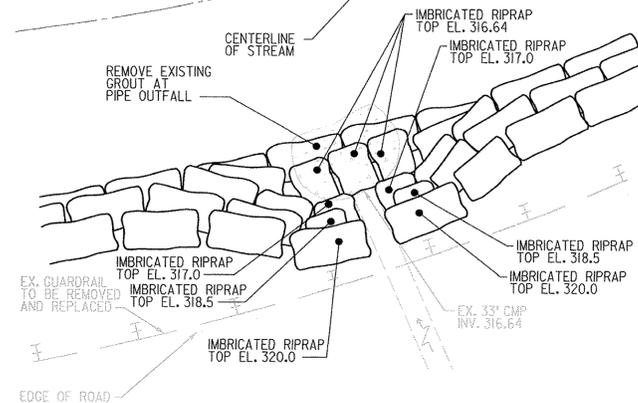
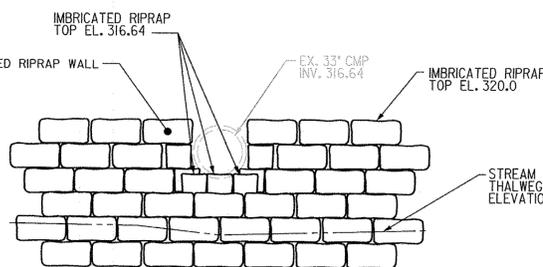
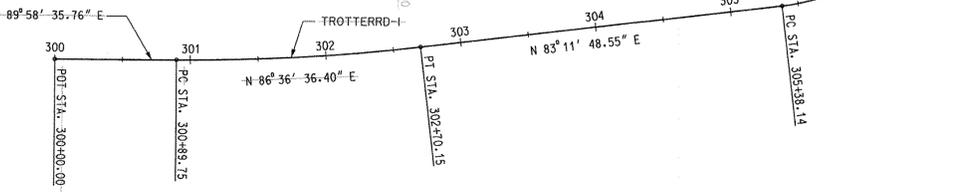


**STEP POOL DETAIL - AREA #2**

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		557,208.2895	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

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

**BASELINE CONSTRUCTION GEOMETRY**  
 1" = 60'



**ROCK SIZE TABLE**

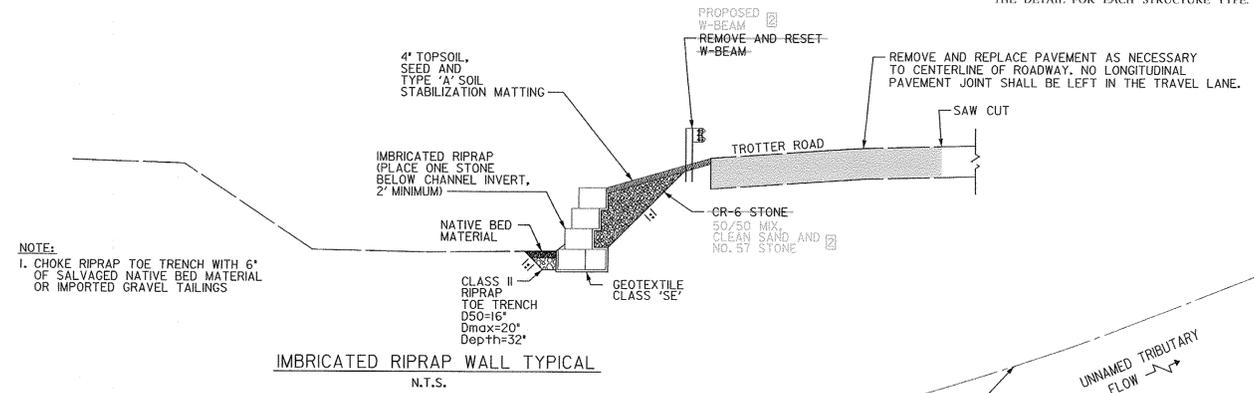
ROCK TYPE	SIZE
IMBRICATED RIPRAP WALL	SEE 'ROCK SIZING DETAIL FOR IMBRICATED RIPRAP'
STEP POOL - STEP ROCK AND FOOTING ROCK	SEE 'ROCK SIZING DETAIL FOR IMBRICATED RIPRAP'
STEP POOL - FILLER ROCK	3"-12" GRAVEL TAILINGS
RIPRAP TOE TRENCH	CLASS II RIPRAP

**ROCK SIZING DETAIL FOR IMBRICATED RIPRAP**

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



- NOTES:**  
 1. ROCK SHALL BE STACKABLE, OBLONG, AND FLAT IN APPEARANCE.  
 2. ALL ROCK SHALL BE CHARCOAL GRAY OR DARK BROWN IN COLOR.  
 3. ROCK DENSITY SHALL BE 160-165 LB/CF.  
 4. IN-STREAM STRUCTURE ROCK STATIONS, OFFSETS AND ELEVATIONS ARE MEASURED ALONG THE CENTERLINE OF THE AB-AXIS FOR EACH ROCK AND AS DEPICTED IN THE DETAIL FOR EACH STRUCTURE TYPE.



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.

6/12/15

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS  
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

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

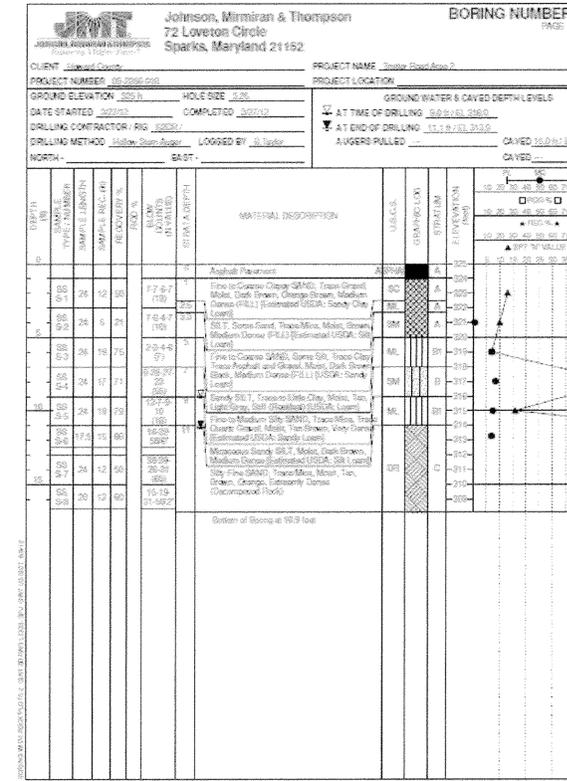
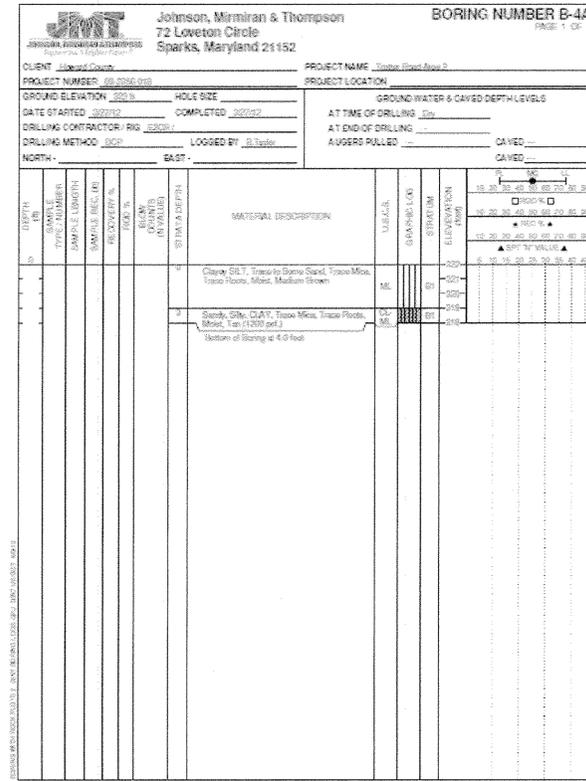
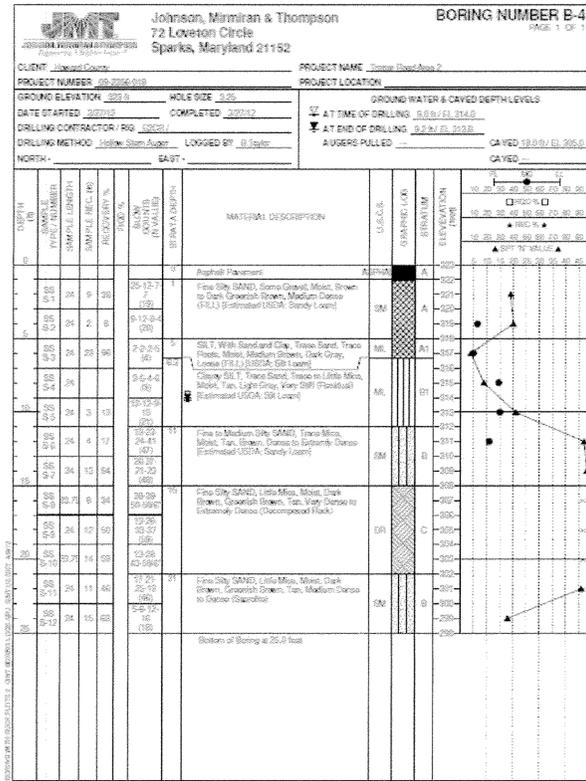
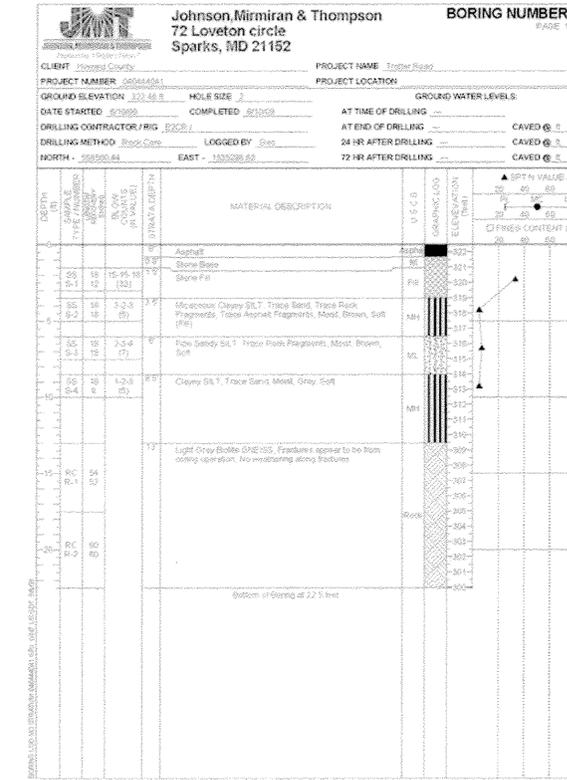
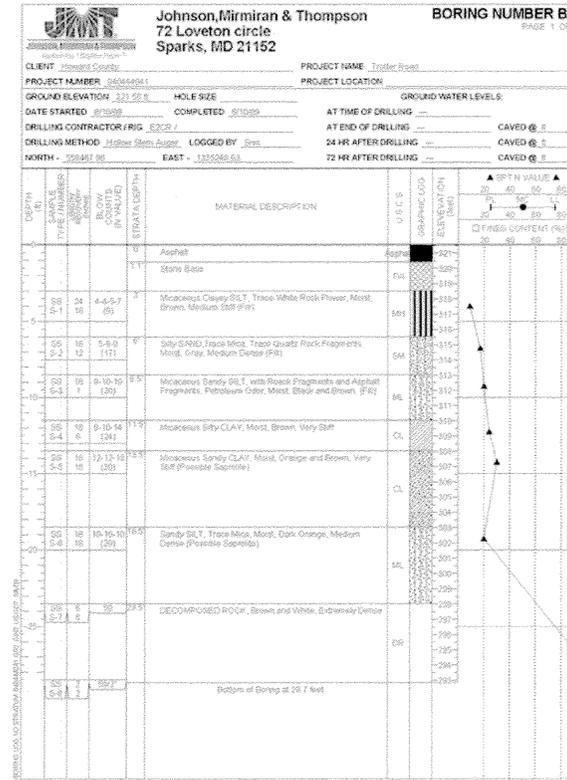
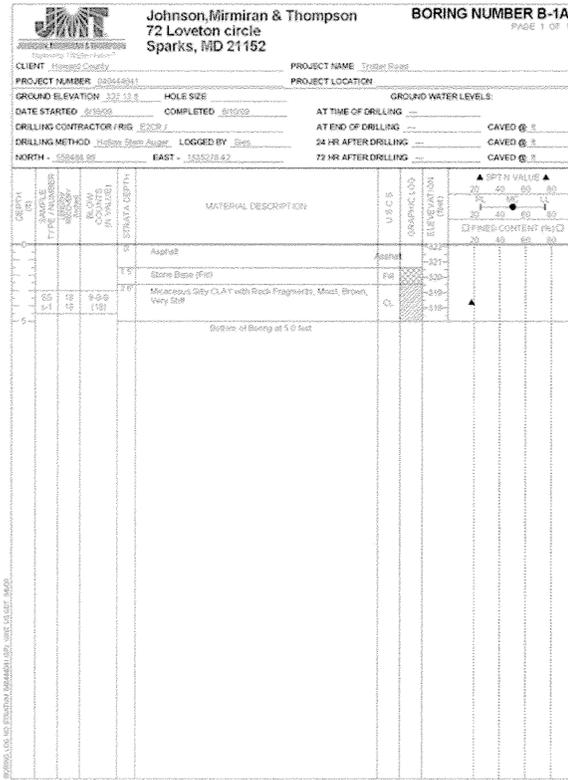
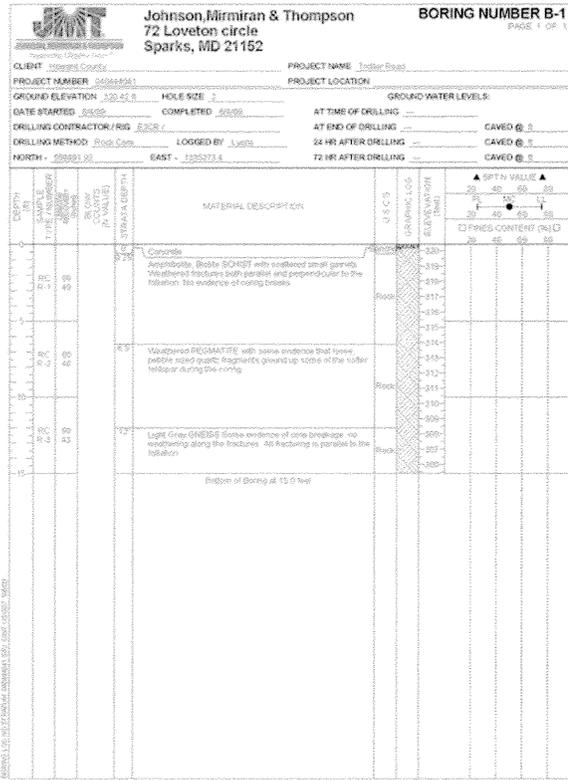
**JOHNSON, MIRMIRAN & THOMPSON**  
 Engineering A Brighter Future  
 72 Lovelton Circle, Baltimore, Maryland 21152-0949

TROTTER ROAD  
 STREAM BANK STABILIZATION

TYPICAL DETAILS

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

**DD-1**  
 SHEET NO.: 2 OF 15



APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

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

4/12/12  
DATE

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.

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

NO. REVISIONS: \_\_\_\_\_ DESCRIPTION: \_\_\_\_\_

FILE: XXXXXXXX

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

72 Loveton Circle, Baltimore, Maryland 21152 0949

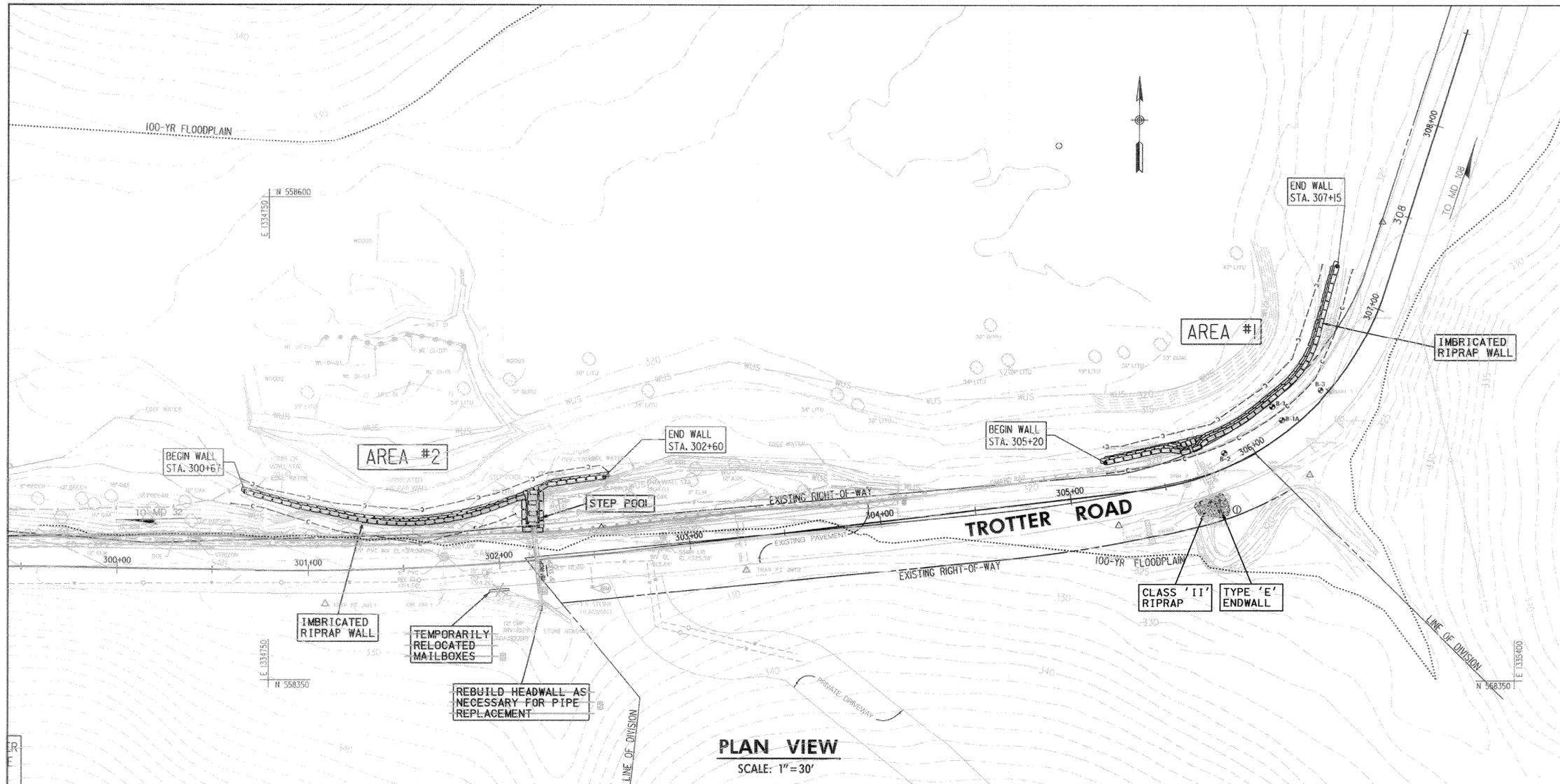
TROTTER ROAD  
STREAM BANK STABILIZATION

BORING LOGS

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

BL-1

SHEET NO.: 3 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+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. (DN) = 314.38 INV. EL. (OUT) = 313.99
<b>SMH 2</b>	TOP EL. = 321.75 INV. EL. (IN) = 313.26 INV. EL. (DN) = 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. (DN) = 314.32 INV. EL. (OUT) = 314.26

**IMBRICATED ROCK WALL SCHEDULE**

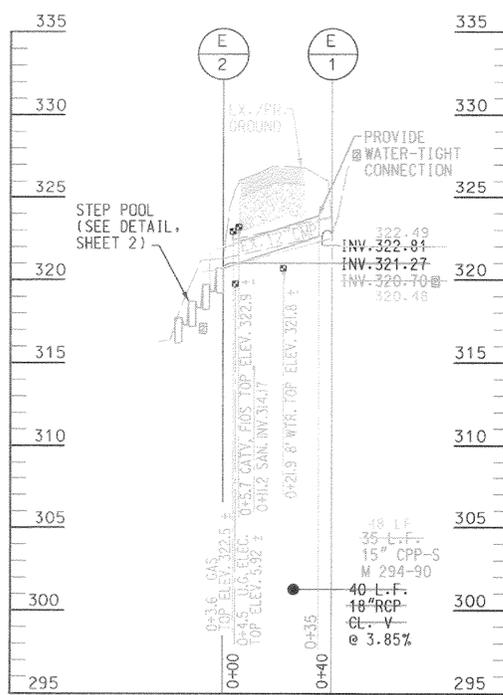
AREA #2	
STATION	OFFSET
300+67	41.1', LT.
300+75	38.9', LT.
301+00	32.5', LT.
301+25	26.8', 27.4', LT.
301+50	23.3', 23.6', LT.
301+75	24.5', 24.4', LT.
302+00	29.4', LT.
302+25	37.0', LT.
302+50	39.6', LT.
302+60	39.8', LT.

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)**

AREA #1	
STATION	OFFSET
305+71	13.1', RT.

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

**CLASS 'II' RIPRAP**

AREA #1	
LOCATION	QUANTITY
33' TYPE 'E' ENDWALL	16 S.Y.

**AS-BUILT CERTIFICATION**

"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'

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. 15488. EXPIRATION DATE: JULY 15, 2017.

*Paul F. Clement*  
06/10/15

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

*Mark D. Luce*  
06/12/15

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

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

DATE: 6/28/2015  
NO. REVISIONS DESCRIPTION: 1 6/28/2015  
2 6/28/2015

FILE: XXXXXXXX

**JOHNSON, MIRMAN & THOMPSON**  
Engineering & Architects  
72 Landon Circle, Baltimore, Maryland 21152-0949

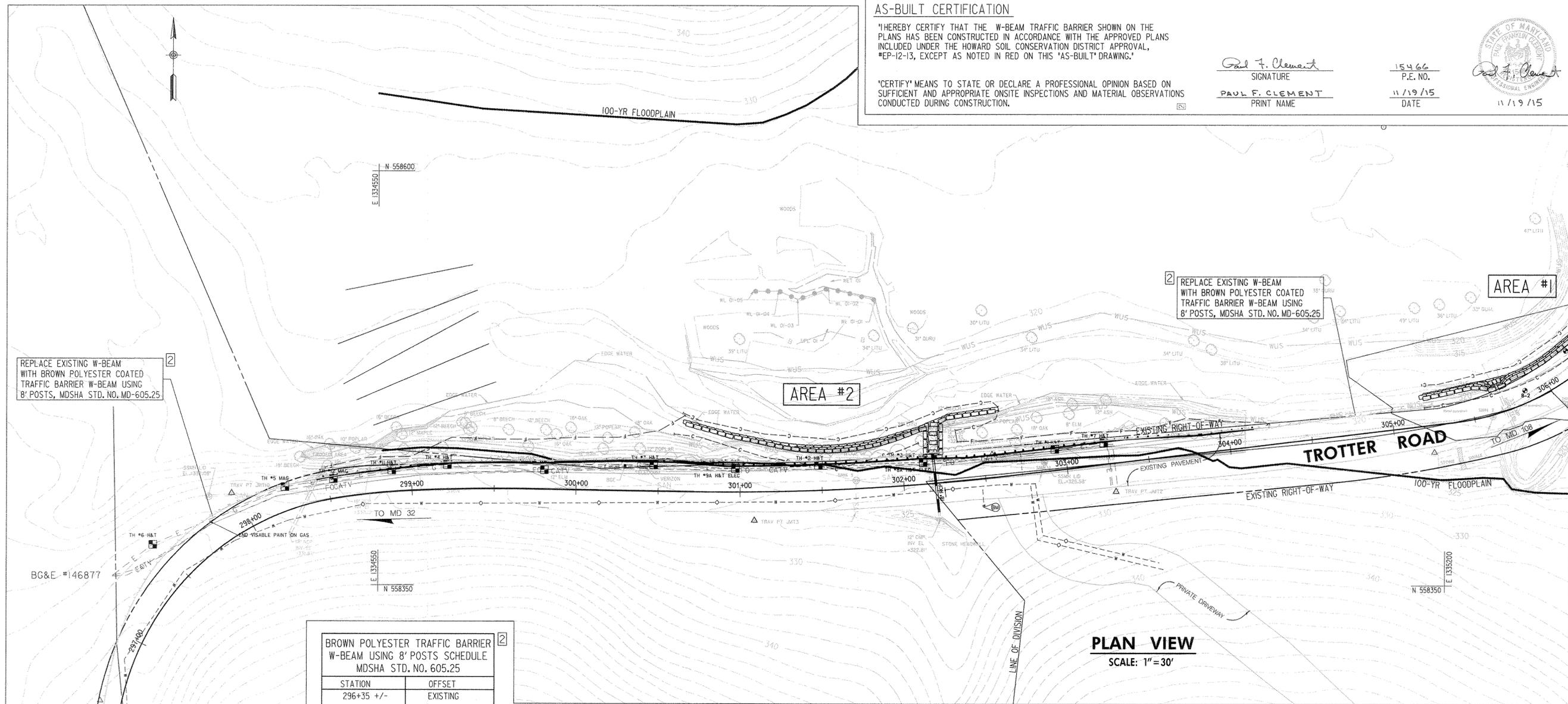
TROTTER ROAD  
STREAM BANK STABILIZATION

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





**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."

"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.  
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

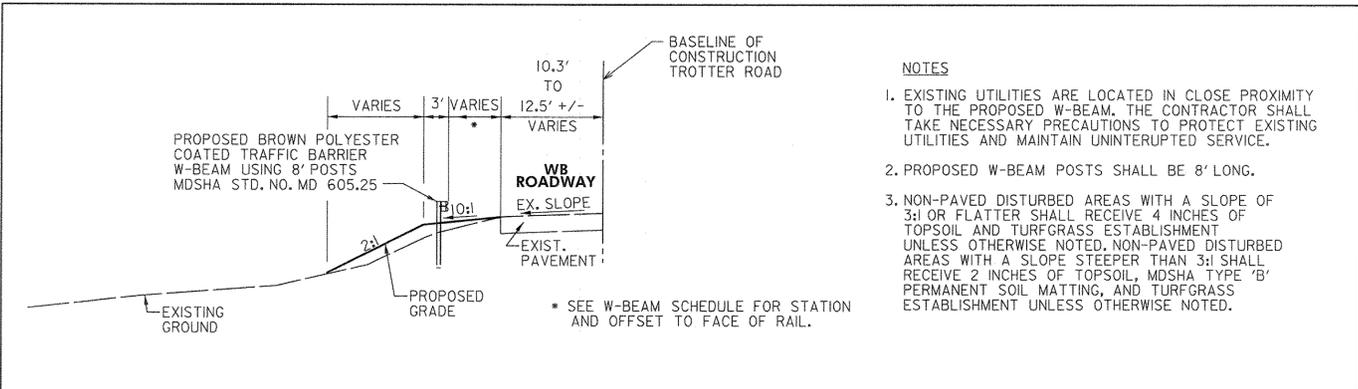
2 REPLACE EXISTING W-BEAM WITH BROWN POLYESTER COATED TRAFFIC BARRIER W-BEAM USING 8' POSTS, MDSA STD. NO. MD-605.25

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

**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.

- NOTES**
- EXISTING UTILITIES ARE LOCATED IN CLOSE PROXIMITY TO THE PROPOSED W-BEAM. THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE.
  - PROPOSED W-BEAM POSTS SHALL BE 8' LONG.
  - NON-PAVED DISTURBED AREAS WITH A SLOPE OF 3:1 OR FLATTER SHALL RECEIVE 4 INCHES OF TOPSOIL AND TURFGRASS ESTABLISHMENT UNLESS OTHERWISE NOTED. NON-PAVED DISTURBED AREAS WITH A SLOPE STEEPER THAN 3:1 SHALL RECEIVE 2 INCHES OF TOPSOIL. MDSA TYPE 'B' PERMANENT SOIL MATTING AND TURFGRASS ESTABLISHMENT UNLESS OTHERWISE NOTED.



APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS  
*Mark D. Luce*  
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. 15466. EXPIRATION DATE: JULY 16, 2017.

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

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

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:	











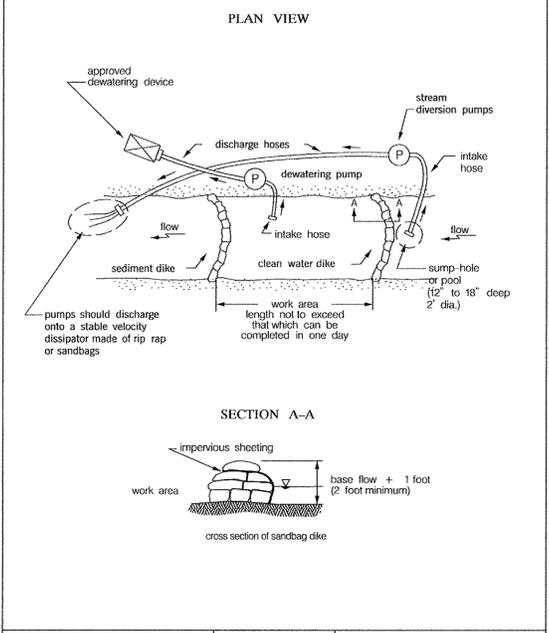






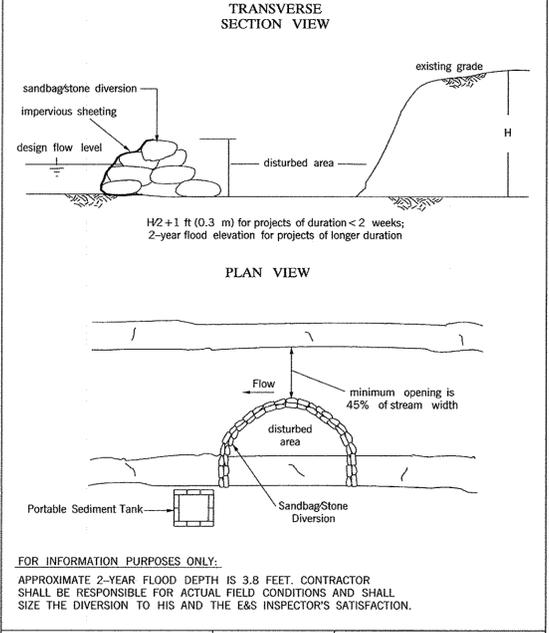


**DETAIL 1.2: PUMP-AROUND PRACTICE**



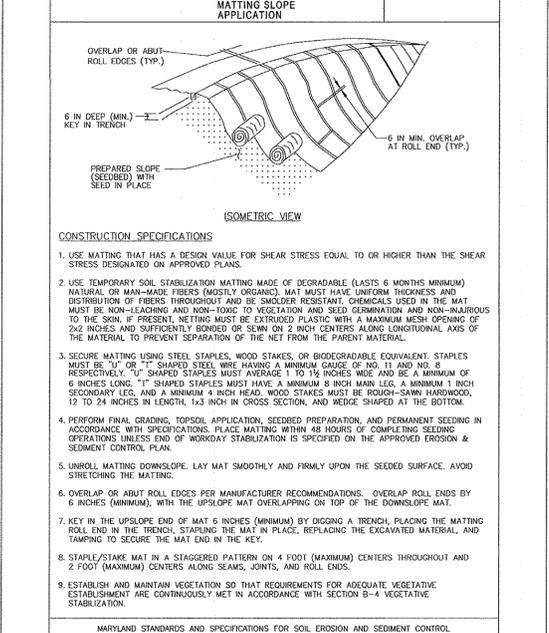
TEMPORARY IN-STREAM CONSTRUCTION MEASURES	REVISED NOVEMBER 2000 PAGE 12 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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**DETAIL 1.5: SANDBAG/STONE DIVERSION**



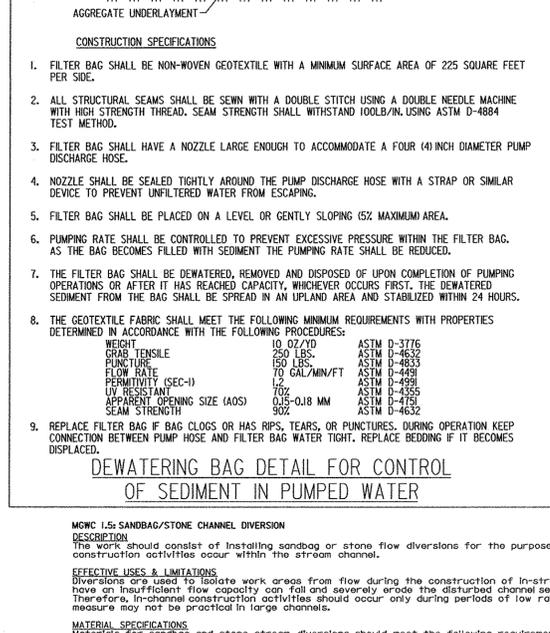
TEMPORARY IN-STREAM CONSTRUCTION MEASURES	REVISED NOVEMBER 2000 PAGE 12 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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**DETAIL B-4-B TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION**



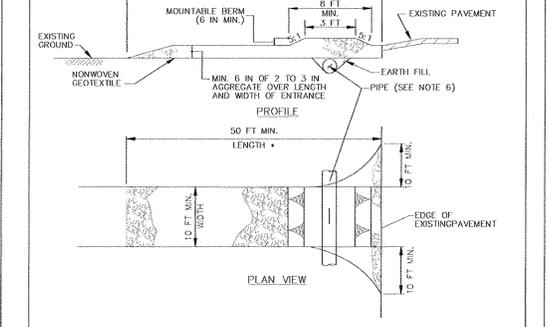
U.S. DEPARTMENT OF AGRICULTURE NATIONAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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**DEWATERING BAG DETAIL FOR CONTROL OF SEDIMENT IN PUMPED WATER**



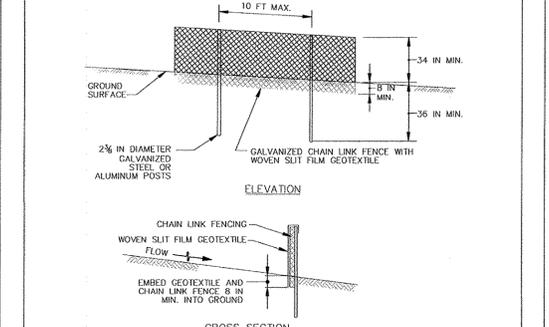
U.S. DEPARTMENT OF AGRICULTURE NATIONAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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**DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE**



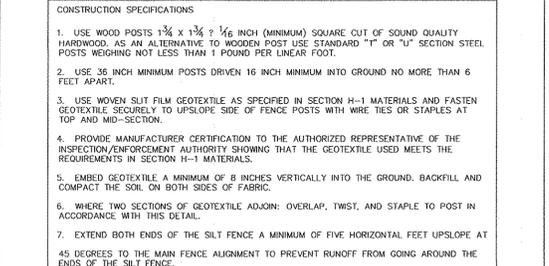
U.S. DEPARTMENT OF AGRICULTURE NATIONAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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**DETAIL E-3 SUPER SILT FENCE**



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



U.S. DEPARTMENT OF AGRICULTURE NATIONAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
---	------	---

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APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

4/24/14

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

4/15/14

**DEWATERING BAG DETAIL FOR CONTROL OF SEDIMENT IN PUMPED WATER**

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 100LB./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	250 LBS.	ASTM D-4632
PUNCTURE	150 LBS.	ASTM D-4633
FLOW RATE	70 GAL/MIN/FT	ASTM D-4634
PERMITIVITY (SEC-1)	702	ASTM D-4991
UV RESISTANT	702	ASTM D-4355
APPERT OPENING SIZE (AOS)	0.18 MM	ASTM D-4632
SEAM STRENGTH	90Z	ASTM D-4632
9. REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

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

72 Lovett Circle Baltimore, Maryland 21152-0949

TROTTER ROAD  
STREAM BANK STABILIZATION

EROSION & SEDIMENT CONTROL DETAILS

SCALE: N.T.S.

DATE: APRIL 10, 2014

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

CAPITAL PROJECT NO.: D-1163

PERMIT ISSUE:

CONSTRUCTION ISSUE:

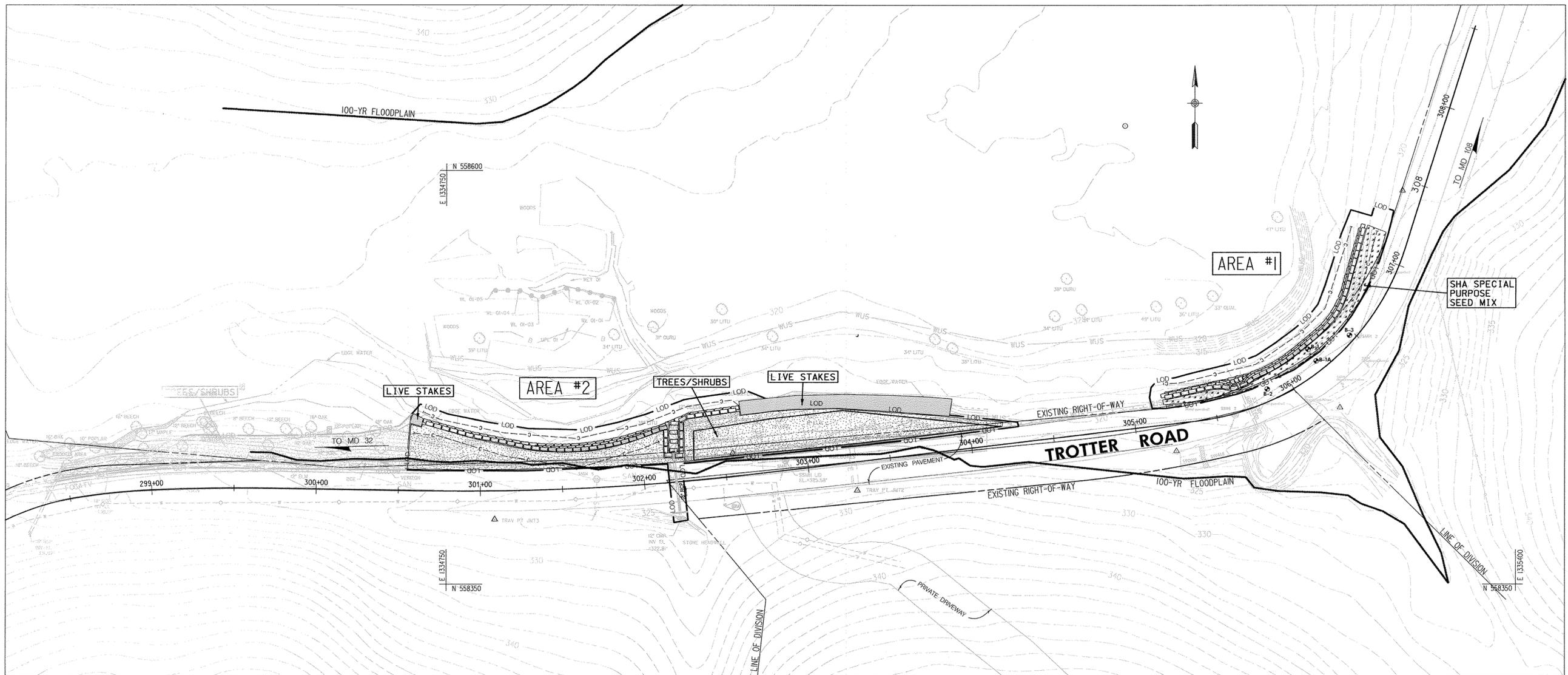
ED-1

SHEET NO.: 12 OF 15









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

**LANDSCAPE LEGEND**

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

TREE/SHRUB PLANTING SCHEDULE		SIZE
SCIENTIFIC / COMMON NAME		
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 (Thuill.) Nyman	Chewing fescue
5	Poa pratensis L. ssp. pratensis	Kentucky bluegrass

APPLIED @ 200 LBS/ACRE

LIVESTAKE SCHEDULE		WETLAND INDICATOR
SCIENTIFIC / COMMON NAME		
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

NO.	REVISIONS DESCRIPTION	DATE
1	ISSUE	6/8/2015
2	BEAM AREA	7/2

FILE: XXXXXXXX

**JOHNSON, MIRMAN & THOMPSON**  
Engineering, Inc.  
72 Lovetton Circle, Baltimore, Maryland 21152-0943

TROTTER ROAD  
STREAM BANK STABILIZATION

CAPITAL PROJECT D-1163  
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
PERMITTING AND ENVIRONMENTAL SERVICES  
100 COLLEGE PARK AVENUE  
COLLEGE PARK, MARYLAND 20746

LANDSCAPING PLAN

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

Paul F. Clement  
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

6/12/15  
DATE

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES