

PLAN SHEET - W-BEAM INSTALLATION [Z]

CAPITAL PROJECT NO. D-1163 TROTTER ROAD STREAM BANK STABILIZATION HOWARD COUNTY, MD

CAPITAL PROJECT NO. D-1163

LOCATION MAP

SCALE | = 2000'

# TROTTER ROAD STREAM BANK STABILIZATION

HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS

#### SPECIAL CONTRACTOR NOTES

- 1. 100-YR FLOODPLAIN ELEVATION IS SHOWN ON THE PLANS.
- 2. STREAM DESIGNATED USE: IV-P., IN-STREAM WORK IS PROHIBITED FROM MARCH IST TO MAY 3IST, INCLUSIVE.
- 3. CONTRACTOR SHALL CONTINUALLY MONITOR WEATHER FORECASTS DURING WORK ACTIVITIES AND SCHEDULE WORK DURING FAVORABLE
- 4. 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.
- 5. 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.
- 6. PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES, PHOTOGRAPHS OF THE PROPOSED WORK AREA AND ACCESS LOCATIONS SHALL BE TAKEN.
- 7. 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.
- 8. 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.

PERFORMED WORK.

#### GENERAL NOTES

- ALL INFORMATION AND DETAILS ON THESE DRAWINGS SHALL BE CONSTRUCTED AS PER THE PLANS OR AS DIRECTED BY THE HOWARD
- 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 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

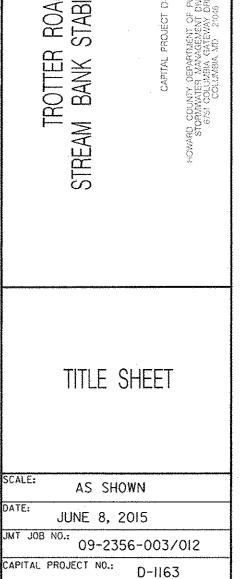
AT&T	1-800-252-113
COMCAST	410-461-136
BG&E (CONTRACTOR SERVICES)	410-850-462
BG&E (UNDERGROUND DRAINAGE CONTROL)	410-787-906
MISS UTILITY	1-800-257-777
MISS UTILITY OF PERMISSION	410-313-490
HOWARD COUNTY BUREAU OF UTILITIES	1001-212-01V
HOWARD COUNTY DIVISION OF CONSTRUCTION INSPECTION	10017CICTOIP
VERIZON	1-800-143-0033/410-224-921

- 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-I.OI AND G-I.O2 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
- 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.
- 13. THIS PLAN MEETS THE REQUIREMENTS OF THE FOREST CONSERVATION REGULATIONS.
- 14. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
- 15. 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.
- 16. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HRS PRIOR TO ANY EXCAVATION WORK BEING
- 17. THE COORDINATES SHOWN HEREON ARE BASED ON HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM.
- 18. WATER IS PUBLIC.
- 19. SEWER IS PUBLIC.
- 20. 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.
- 21. EXISTING UTILITIES ARE BASED ON FIELD SURVEYS. THE LOCATIONS OF ALL UTILITIES IS APPROXIMATE.
- 22. THE FLOODPLAIN STUDY FOR THIS PROJECT WAS PREPARED BY JMT AND WAS APPROVED ON DECEMBER 19, 2011.
- 23. THE WETLANDS DELINEATION FOR THIS PROJECT WAS PERFORMED BY JMT ON OCTOBER 20, 2010.
- 24. 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 201160805/11-NT-0191.
- 25. NO TRAFFIC STUDY IS REQUIRED FOR THIS PROJECT.
- 26. 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.
- 27. 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.
- 28. HOWARD SOIL CONSERVATION DISTRICT TRACKING # EP-12-13.

OF LAND DEVELOPMENT, ATTN: DAVE BOELLNER.

PRIOR TO COMPLETION OF THE WORK, ALL GRADED AND DISTURBED AREAS -I. PETITIONER-SHALL-OBTAIN AUTHORIZATION FROM THE MARYLAND DEPARTMENT OF THE ENVIRONMENT-

- 29. A WAIVER PETITION (WP-12-119) FROM SUBSECTION 16.155(a)(I)(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:
- WITHIN THE PUBLIC AND PRIVATE SPACE SHALL BE STABILIZED AND FULLY 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.
- 2. THE PETITIONER SHALL COMPLY WITH ALL APPLICABLE COUNTY AND STATE --- PROPOSED ON THAT PROPERTY PRIOR TO START OF WORK.
- 2. PETITIONER SHALL OBTAIN AUTHORIZATION FROM THE OWNER(S) OF T.M. 35, P. 23 FOR ACTIVITIES 3, PETITIONER SHALL SUBMIT A COMPLETED FOREST CONSERVATION DATA SUMMARY TO THE DPZ, DIVISION



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MAILBOX —————————

EXISTING RIGHT OF WAY I INF ----

FIRE HYDRANT —————————

PROPOSED FULL DEPTH PAVEMENT — — — —

PROPOSED GRINDING & HMA PAVEMENT OVERLAY —

PROPOSED CONCRETE SIDEWALK, DRIVEWAY ENTR.—

GAS I INF

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 /Commend CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

**CONVENTIONAL SIGNS** 

EXISTING PIPE/CULVERT — — — —

STREAM CENTER LINE ----

IMBRICATED RIPRAP WALL \_\_\_\_\_

WETLAND BUFFER BOUNDARY — — — 8 —

100-YR FLOODPLAIN - - - - THIS DEVELOPMENT PLAN

Wark S. Kickmone

OF DEVELOPER (PRINT NAME BELOW SIGNATURE)

UTILITY POLE ——————

HEDGE / TREE LINE —————

BUSH / TREE -----

CONIFEROUS TREE -----

RIP-RAP ——————

GIS EXISTING CONTOUR — — — —

SURVEYED MAJOR CONTOUR — — —

ENGINEER'S CERTIFICATE \*ICERTIFY 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 7. Clement SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) PAUL F. CLEMENT, P.E.

IS APPROVED FOR SOIL

**EROSION AND SEDIMENT** 

CONTROL BY THE HOWARD

SOIL CONSERVATION

Approved Jahn R Bylanton

Ward SCD 6/16/15

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, LALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT'

6/12/15

06/10/15

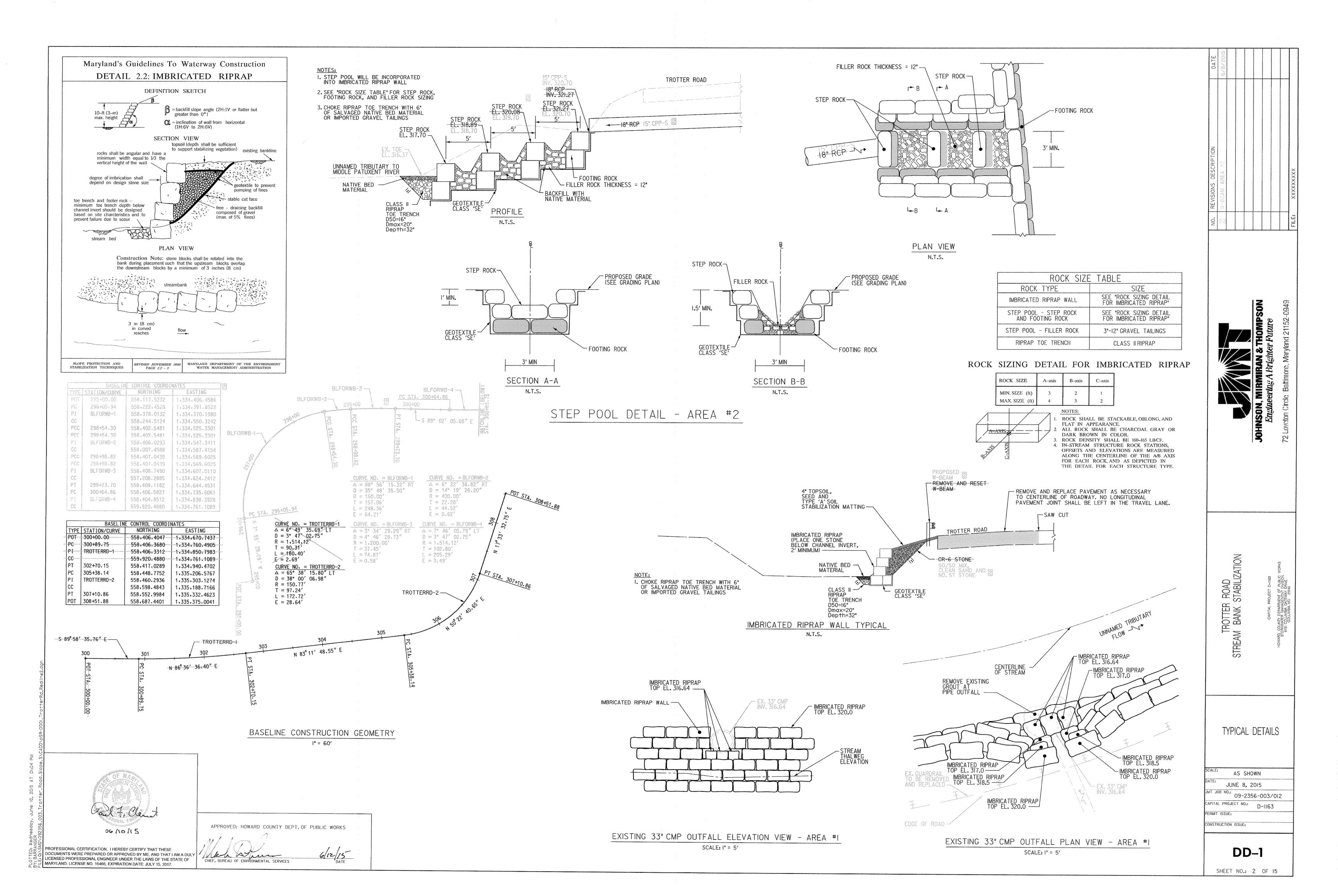
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EP-12-13

SHEET NO.: | OF 15

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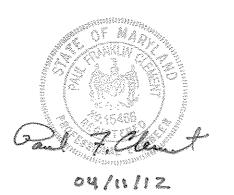
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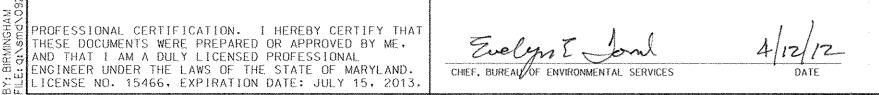
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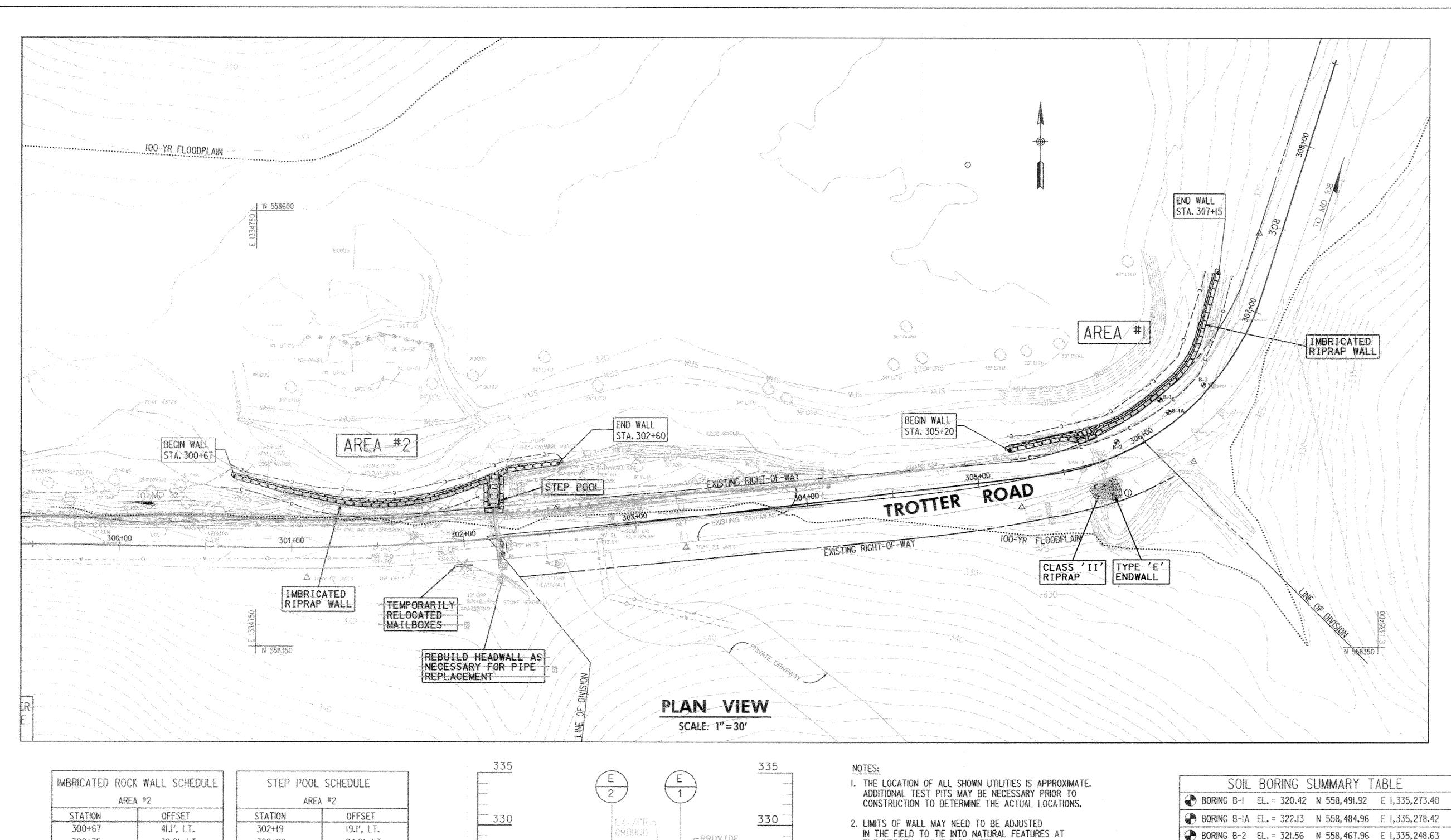




APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

AS SHOWN
AS SHOWN
APRIL 9, 2012
NO.: 09-2356-003/012
PROJECT NO.: D-1163
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SHEET NO.: 3 OF 15



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IMBRICATED ROCK WALL SCHEDUL

OF TOP ROCK ON WALL (SEE ROCK SIZING DETAIL, SHEET 2).

isplinicak Paphariakespanisisph	33" OUTFALL	TAPER	SCHEDULE
repplemateroUnited roots	Ā	REA #I	
	STATION		OFFSET
and the second	305÷68		18.9', LT.

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

# SANITARY SEWER

<u>SMH 1</u> TOP EL. = 325.55 INV. EL. (IN) = 314.04 INV. EL. (IN) = 314.38 INV. EL. (OUT) = 313.99

<u>SMH 2</u> TOP EL. = 321.75 INV. EL. (IN) = 313.26 INV. EL. (IN) = 313.32 INV. EL. (OUT) = 313.12

TOP EL. = 322.74 INV. EL. (IN) = 312,82 INV. EL. (OUT) = 313.82

> <u>SMH\_4</u> TOP EL. = 320.48 INV. EL. (IN) = 311.95 INV. EL. (OUT) = 311.93

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

- IN THE FIELD TO TIE INTO NATURAL FEATURES AT THE DIRECTION OF THE ENGINEER.
- 3. CONTRACTOR SHALL REPAIR OR REPLACE DAMAGED PAVEMENT AT THE DIRECTION OF THE ENGINEER. CONTRACTOR SHALL BE PAID PER UNIT PRICE BID FOR PAVEMENT REPAIR.
- -4. ACTUAL LOCATION OF THE RELOCATED MAILBOXES -SHALL BE COORDINATED WITH THE USPS POSTMASTER.
- 5. 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' ENDWA	LL (MD 356.01)	CLASS 'II' RIF	'RAP
AREA #		AREA #1	
STATION	OFFSET	LOCATION	QUANTITY
305+71	13.1', RT.	33" TYPE 'E' ENDWALL	16 S.Y.
OTE:			

012				
TATION/OFFSET	<b>GIVEN</b>	AT	CENTERLINE	
F PIPE AT UPST	REAM	FND		

## AS-BUILT CERTIFICATION

"I HEREBY CERTIFY THAT THE STREAMBANK STABILIZATION PRACTICE, PIPE & ENDWALL SHOWN ON THE PLANS HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE APPROVEDPLANS 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.

# SIGNATURE

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

N 558,430.3I E 1,334,864.98

TOP DEPTH

5.92'

2.58'

2.98

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-5 EL. = 325 N 558,416.21 E 1,334,815.30

TEST PIT SUMMARY

UTILITY TYPE

I\* ELECTRIC CABLE

2" PLASTIC GAS PIPE

(2) 1-1/2\* FIOS INNERDUCTS & (1) 1-1/2\* CABLE TV LINE

8" DUCTILE IRON WATER PIPE

NOTE: SEE SHEET DD-2 FOR SOIL BORING LOGS

→ BORING B-4A EL. = 322



PLAN SHEET

ROAD STABILIZATION

STREAM BANK S

AS SHOWN JUNE 8, 2015 (JM? JOB NO.: 09-2356-003/012 CAPITAL PROJECT NO.: 0-1163 PERMIT ISSUE:

PS-1

COMSTRUCTION ISSUE:

SHEET NO.: 4 OF 15

06/10/15

STATION/OFFSETS GIVEN AT CENTERLINE

OF TOP ROCK ON WALL (SEE ROCK SIZING

300+75

301+00

301+25

301+50

301+75

302+00

302+25

302+50

302+60

DETAIL. SHEET 2).

LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF

MARYLAND, LICENSE NO. 15466, EXPIRATION DATE: JULY 18, 2017.

38.9', LT.

32.5', LT.

26.84**.27.4**4, LT.

3.3 **23.6**; LT.

4.5 **24.4**, LT.

29.4', LT.

37.0', LT.

39.6', LT.

39.8', LT.

DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULLY

302+20

302+20

302+21

DETAIL, SHEET 2).

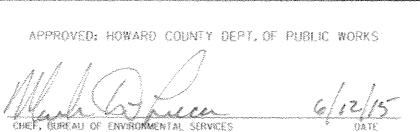
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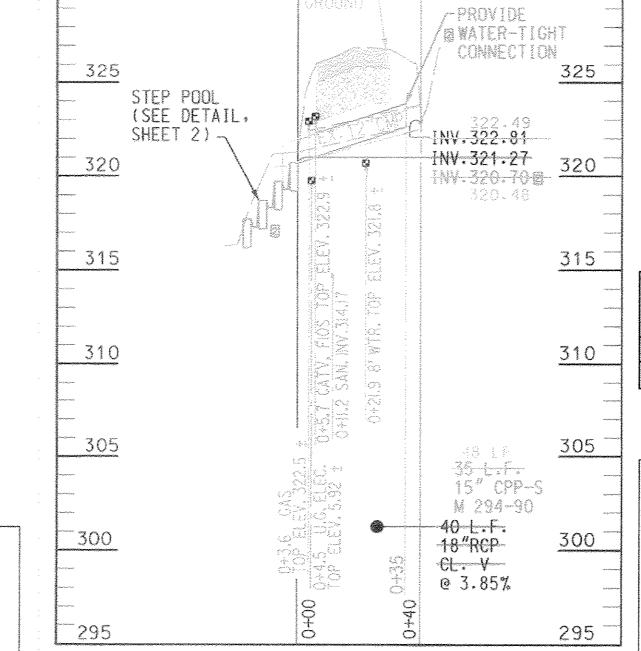
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STATION/OFFSETS GVEN AT CENTERLINE

OF CREST ROCK (SEE ROCK SIZING





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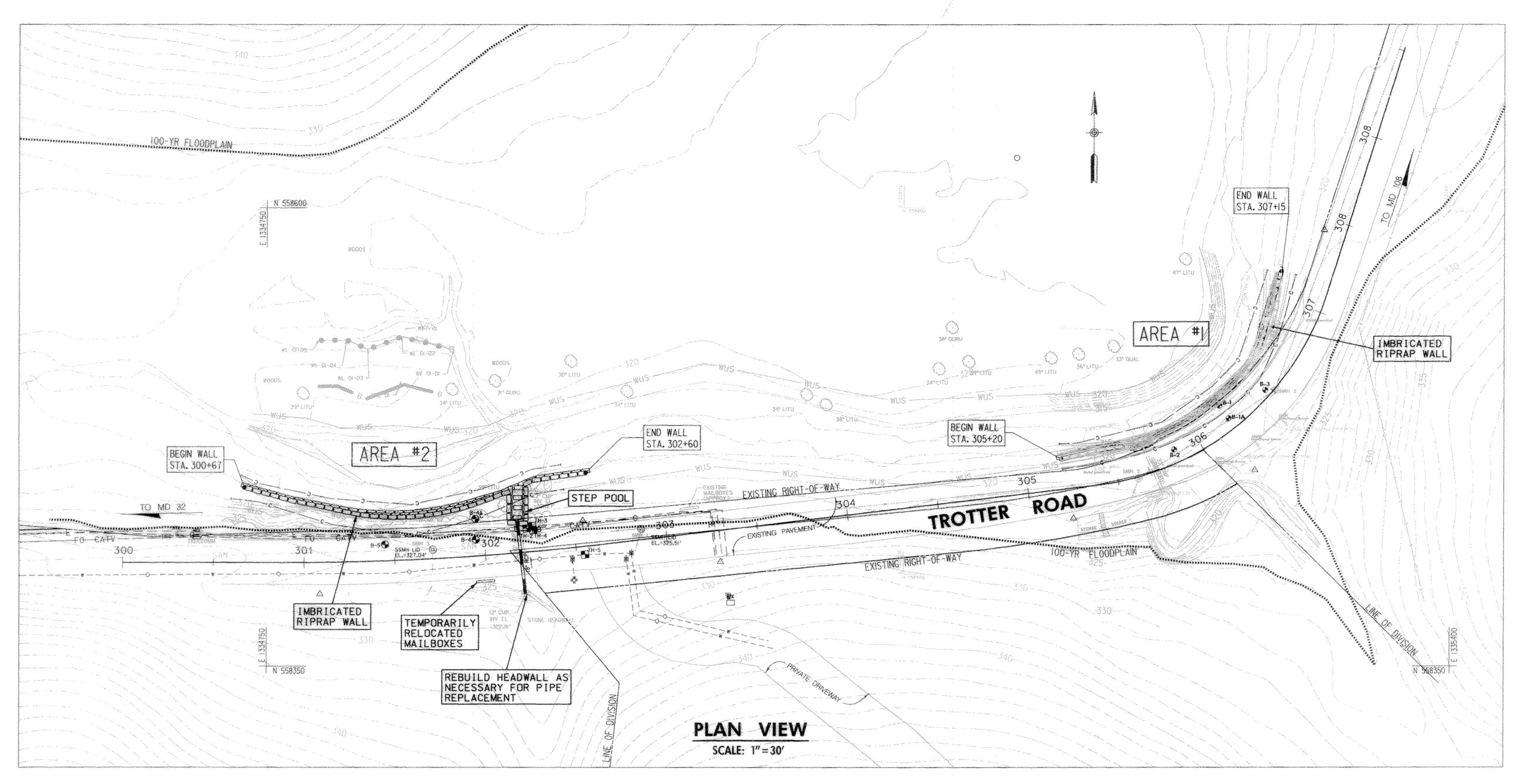
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TEST PIT TH-2

TEST PIT TH-3

TEST PIT TH-4

TEST PIT TH-5



IMBRICATED	ROCK	WALL	SCHEDULE
	AREA	#2	
STATION		OF	
300+67		41	H, LT.
300+75	in discossing and the section of the	38	1.9', LT.
301+00		32	.5/, LT.
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301+75	edia menengajanjan	24	14, LT.
302+00	in the state of th	29	4.
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302+60 W/iE:

gangan nganganggan sa gangan ngangan sa	بريد
Gal F. Cleant	
64 /H/12	

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME.

ZICENSE NO. 15466, EXPIRATION DATE: JULY 15. 2013.

AND THAT I AM A BULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

STATION/OFFSETS GIVEN AT COMPANY OF TOP ROCK ON WALL (SEE FORTAL, SHEET 2).	ENTERLINE POCK SIZING	
	echiculation one stability that of plaintness associated as the stability of the stability	

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS ENERGY ELINE
CHEF, BYPAU OF ENVIRONMENTAL SERVICES 4/12/12

STEP POOL SCHEDULE

AREA #2

OFFSET

19.1', LT.

24.6', LT.

30.0', LT.

35.5', LT.

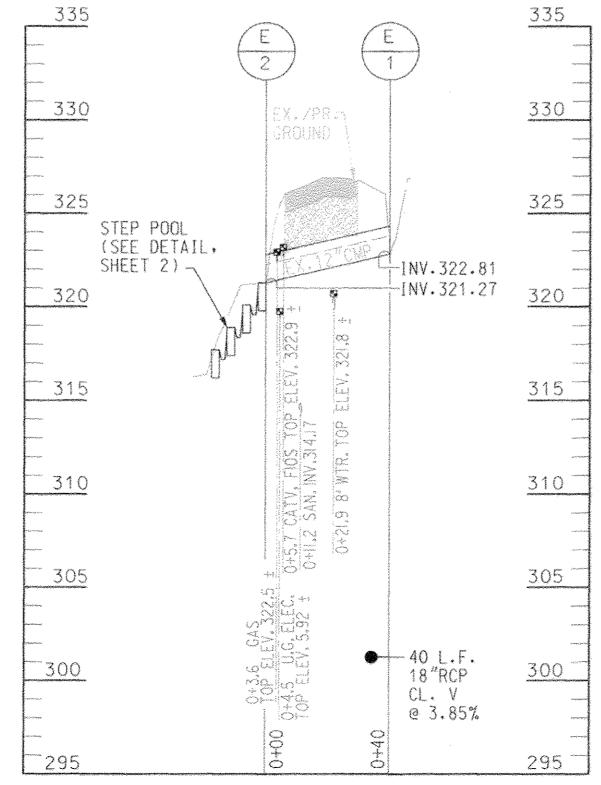
STATION

302+19

302+20

302+20

302+21



- I. 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 AT THE DIRECTION OF THE ENGINEER.
- 3. CONTRACTOR SHALL REPAIR OR REPLACE DAMAGED PAVEMENT AT THE DIRECTION OF THE ENGINEER. CONTRACTOR SHALL BE PAID PER UNIT PRICE BID FOR PAVEMENT REPAIR.
- 4. ACTUAL LOCATION OF THE RELOCATED MAILBOXES SHALL BE COORDINATED WITH THE USPS POSTMASTER.
- 5. 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.

/		J C/ 12	DVI	C UNIT		MMARY T	A Color Logo
	BORING	8-1		320.42	N	558,491.92	E 1,335,273.40
0	BORING	8-IA	State of the state	322.13	N	558, 484.96	E 1,335,278.42
0	BORING	B-2		321.56	N	558, 467.96	E 1,335,248,63
0	BORING	B-3		322.48	N	558,500.44	E 1,335,298.63
0	BORING	8-4		323	N.	558, 418.82	E 1,334,865.26
<b>3</b>	BORING	B-4A	£	322	N	558, 430,31	E 1,334,864.98
0	BORING	8-5	Annie godina	325	no.	558, 416.21	E 1,334,815,30

			Property and the second	EST PIT SUMMARY	
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	TEST	PIT	TH-2	I* ELECTRIC CABLE	5.92'
5	TEST	PIT		2" PLASTIC GAS PIPE	2.58′
	TEST	Pitter	A Company	(2) 1-1/2" FIOS INNERDUCTS & (1) 1-1/2" CABLE TV LINE	2.98′
N,	TEST	PIT	TH-5	8" DUCTILE IRON WATER PIPE	5,14'

#### IMBRICATED ROCK WALL SCHEDULE OFFSET STATION 305+20 16.5', LT. 17.1', LT. 305+25 18.9', LT. 305+50 14.7', LT. 305+67 14.7', LT. 305+71 305+75 15.4', LT. 17.0', LT. 306+00 18.0', LT. 306+25 17.9', LT. 306+50 23.0', LT. 306+75 26.9', LT. 307+00 307+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
AF	REA #1	
STATION		OFFSET
305+68		18.9', LT.

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

### SANITARY SEWER

SMH I TOP EL. = 325,55 INV. EL. (IN) = 314,04 INV. EL. (IN) = 314,38 INV. EL. (OUT) = 313,99

TOP EL. = 321,75 INV. EL. (IN) = 313.26 INV. EL. (IN) = 313.32 INV. EL. (OUT) = 313.12

<u>SMH 3</u> TOP EL. = 322,74 NV. EL. (IN) = 312,82 INV. EL. (OUT) = 313,82

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) = 314.32INV. EL. (OUT) = 314.26

S-B	Action of the Control	T C	FRI	<b>IFIC</b>	ATION

"HEREBY CERTIFY THAT THE STREAMBANK STABILIZATION PRACTICE 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 7, Clewnt SIGNATURE

PAUL F, CLEMENT

PRINT NAME

15466 P.E. NO. 07/18/12 DATE





PERMIT ISSUE: CONSTRUCTION ISSUE:

PS-1A

PLAN SHEET

AS SHOWN

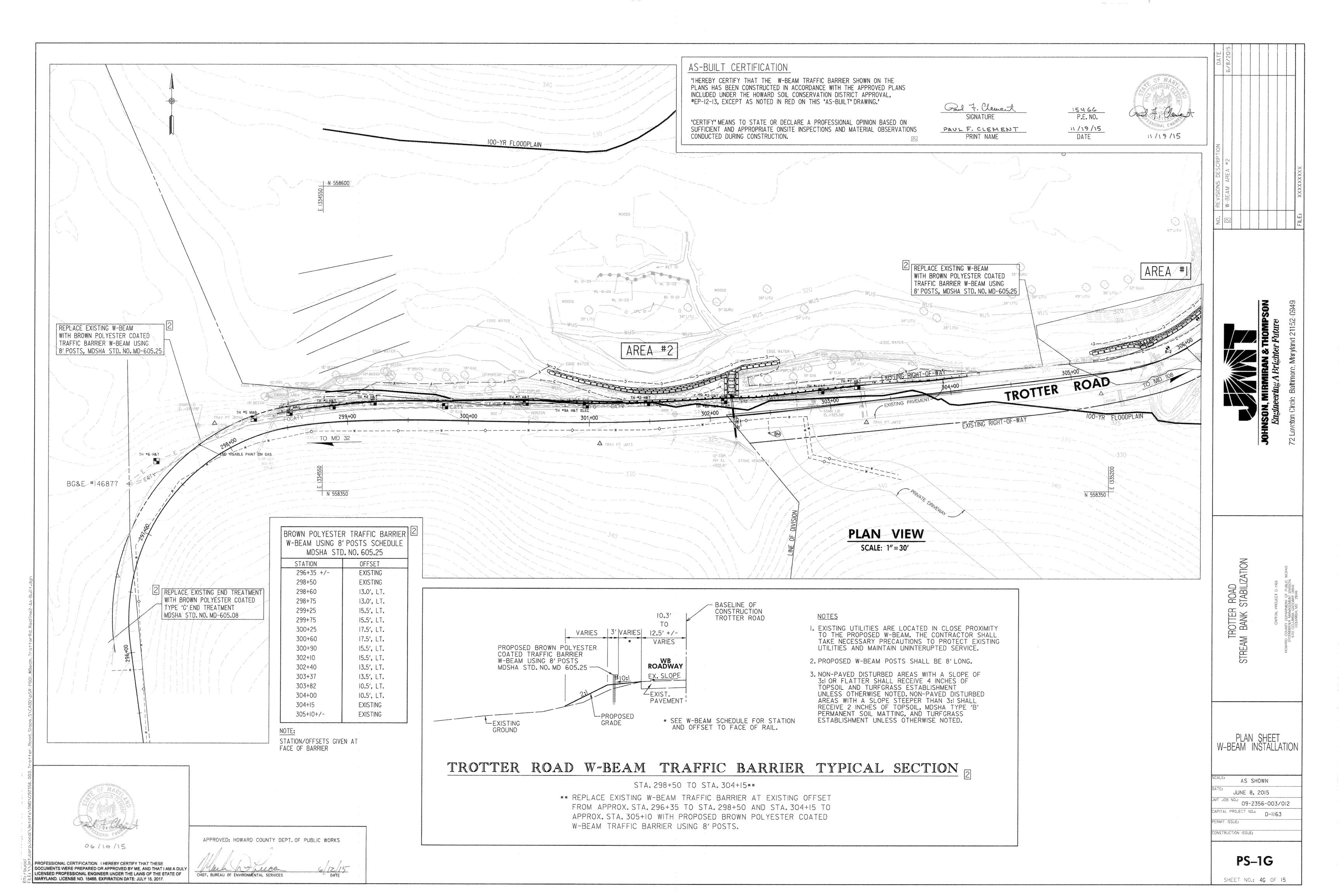
APRIL 9, 2012

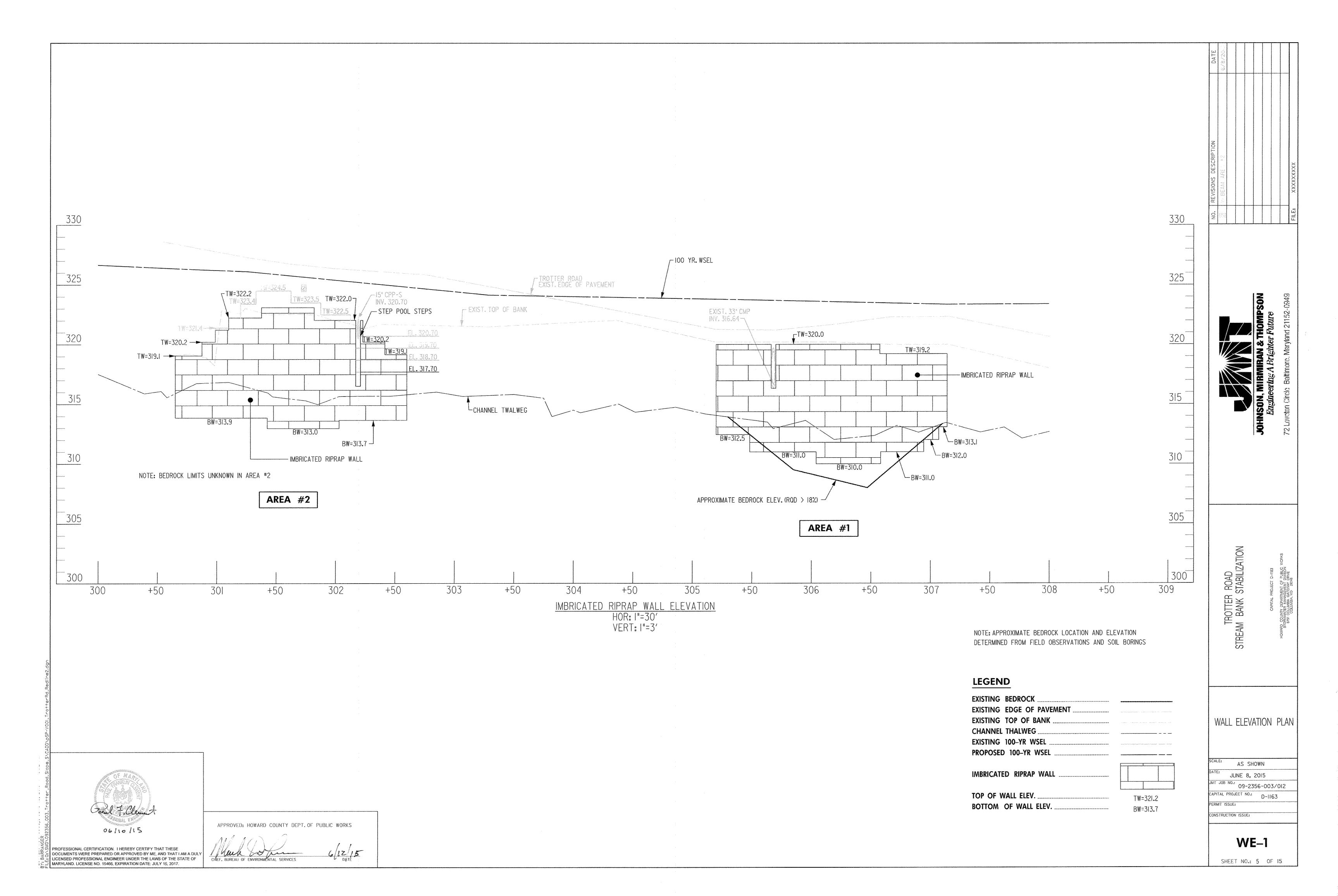
JMT JOB NO.1 09-2356-003/012 CAPITAL PROJECT NO.: D-1/63

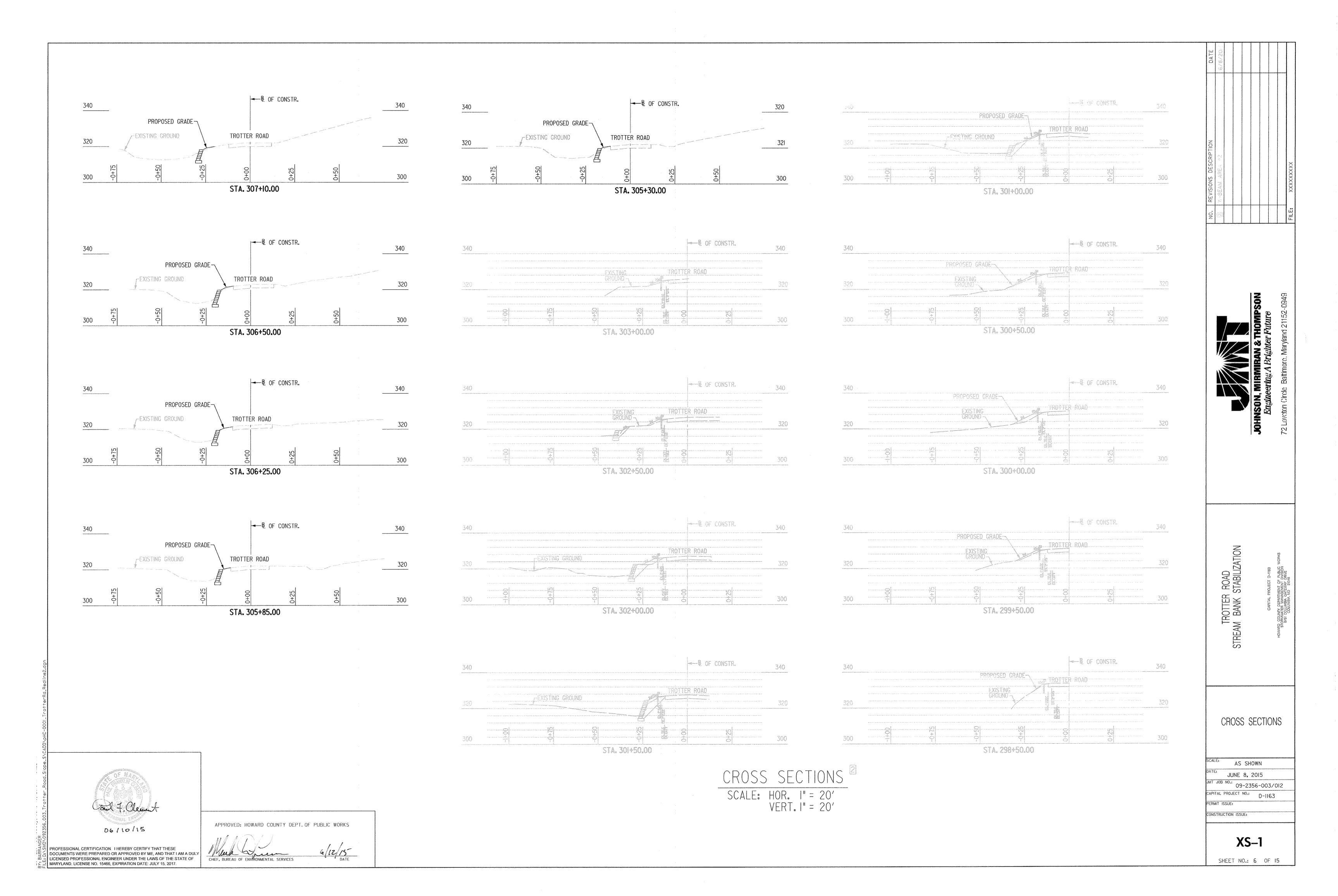
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STREAM BANK S

SHEET NO.: 44 OF 15







#### TRAFFIC CONTROL NOTES

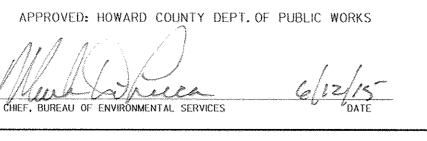
- ALL TEMPORARY TRAFFIC SIGNS, BARRICADES AND OTHER TRAFFIC CONTROL DEVICES USED FOR MAINTENANCE OF TRAFFIC SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, AND THE MARYLAND STATE HIGHWAY ADMINISTRATION BOOK OF STANDARDS AND SPECIFICATIONS.
- 2. 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 (I) 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.
- II. ALL SIGNS SHALL CONFORM TO CURRENT MDSHA 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.



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.



#### ROADWAY CLOSURE NOTIFICATION

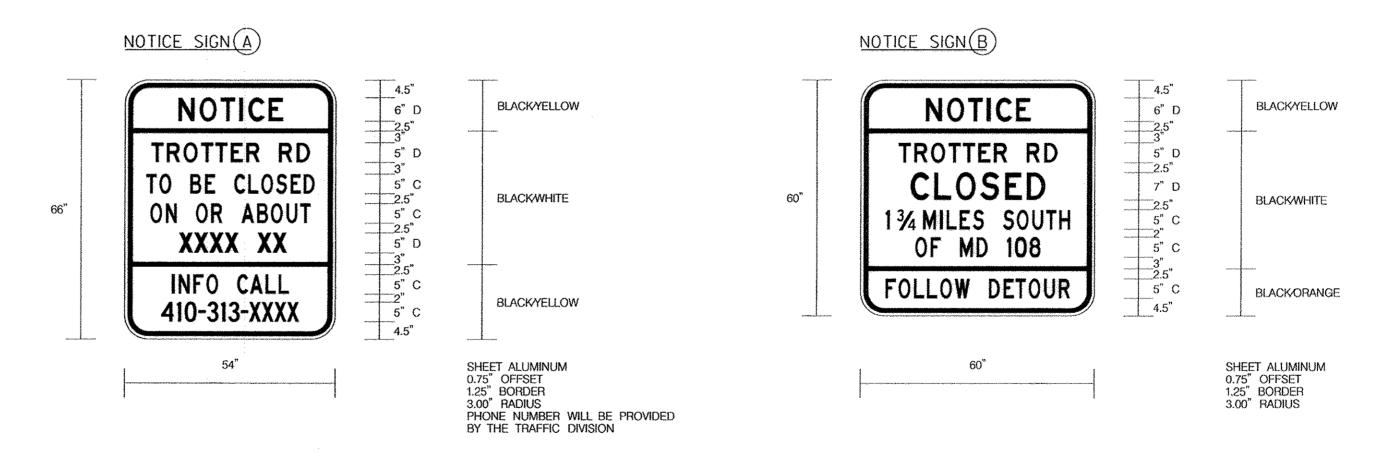
THE CONTRACTOR MUST NOTIFY THE FOLLOWING AGENCIES AT LEAST FOUR WEEKS IN ADVANCE OF THE ROAD CLOSURE:

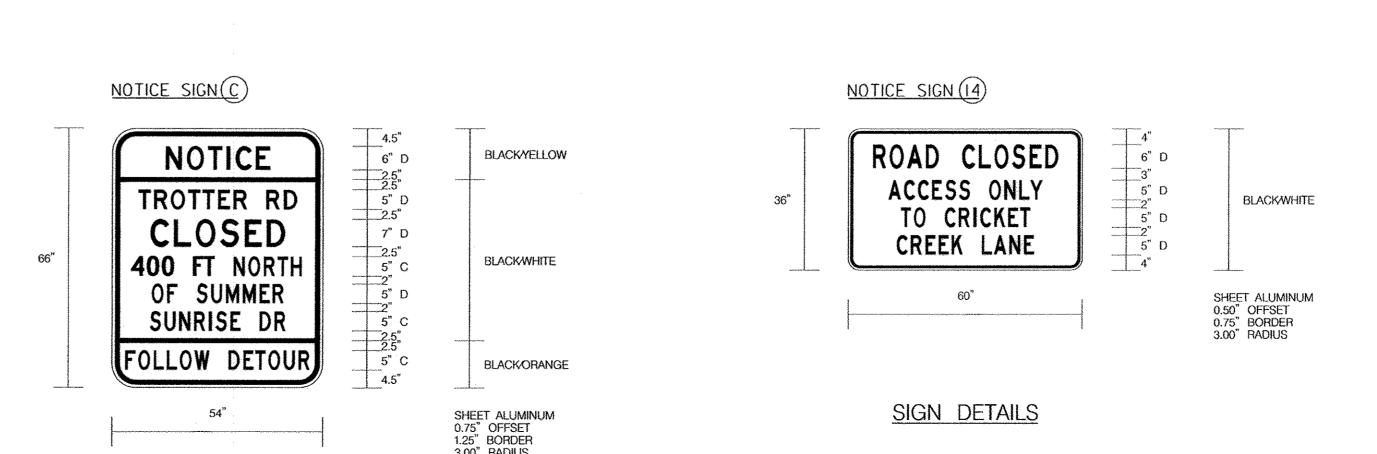
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/TRANSPORTATION PROJECTS DIVISION - STEVE SHARAR
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS/BUREAU OF HIGHWAYS/TRAFFIC DIVISION
HOWARD COUNTY PUBLIC SCHOOLS/TRANSPORTATION DIVISION - CHRIS FRITZ
HOWARD COUNTY TRANSIT SERVICES - LOUIS FARBER
HOWARD COUNTY BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY EMERGENCY COMMUNICATIONS/9II CENTER - ADMINISTRATIVE NUMBER

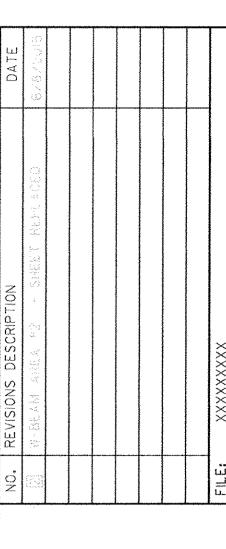
410-313-2300

#### DETOUR NOTES

- I. 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.
- II. 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.









STREAM BANK STABILIZATION

MAINTENANCE OF TRAFFIC NOTES

N.T.S.

SCALE: AS SHOWN

DATE: MARCH 18, 2015

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

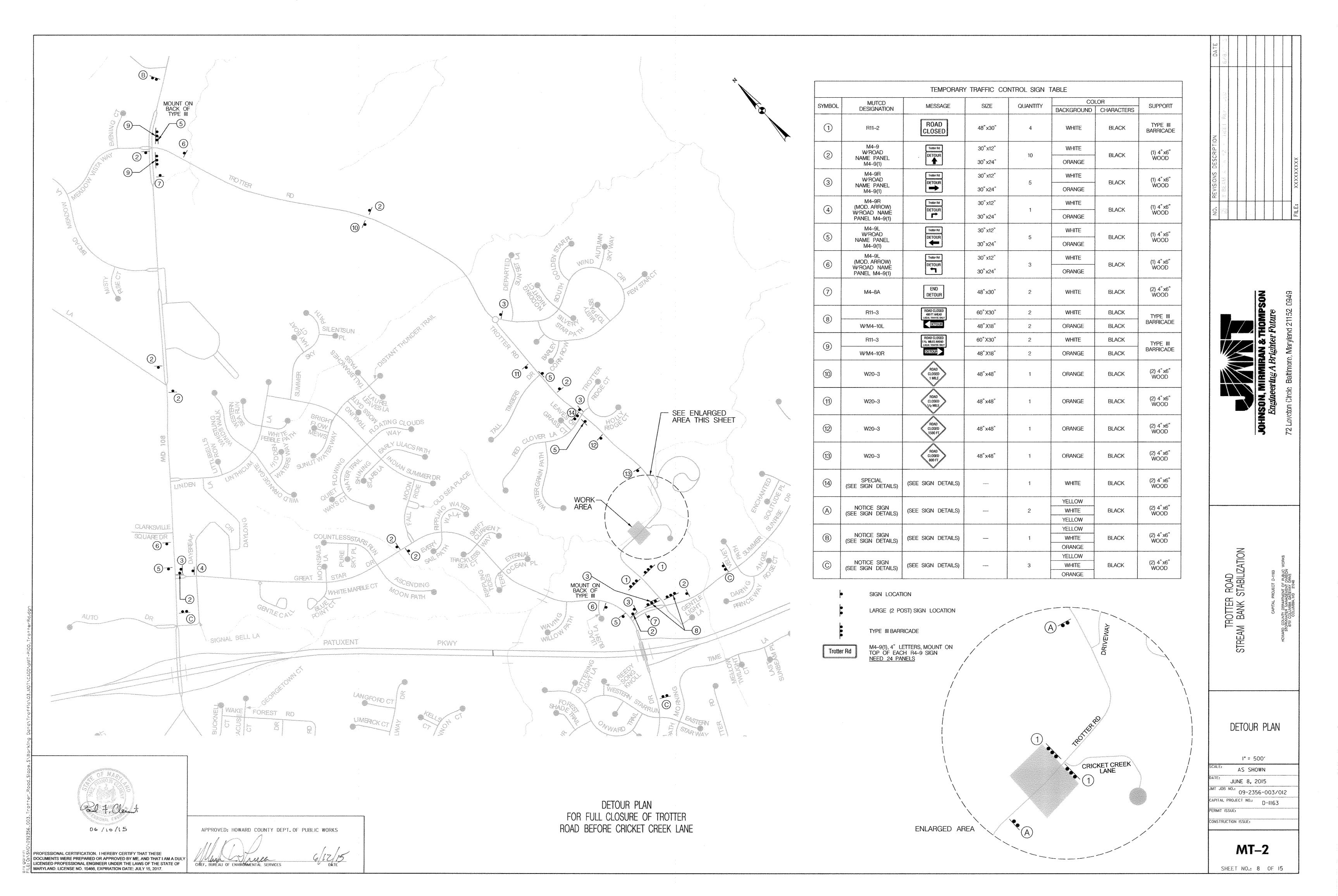
CAPITAL PROJECT NO.: D-1163

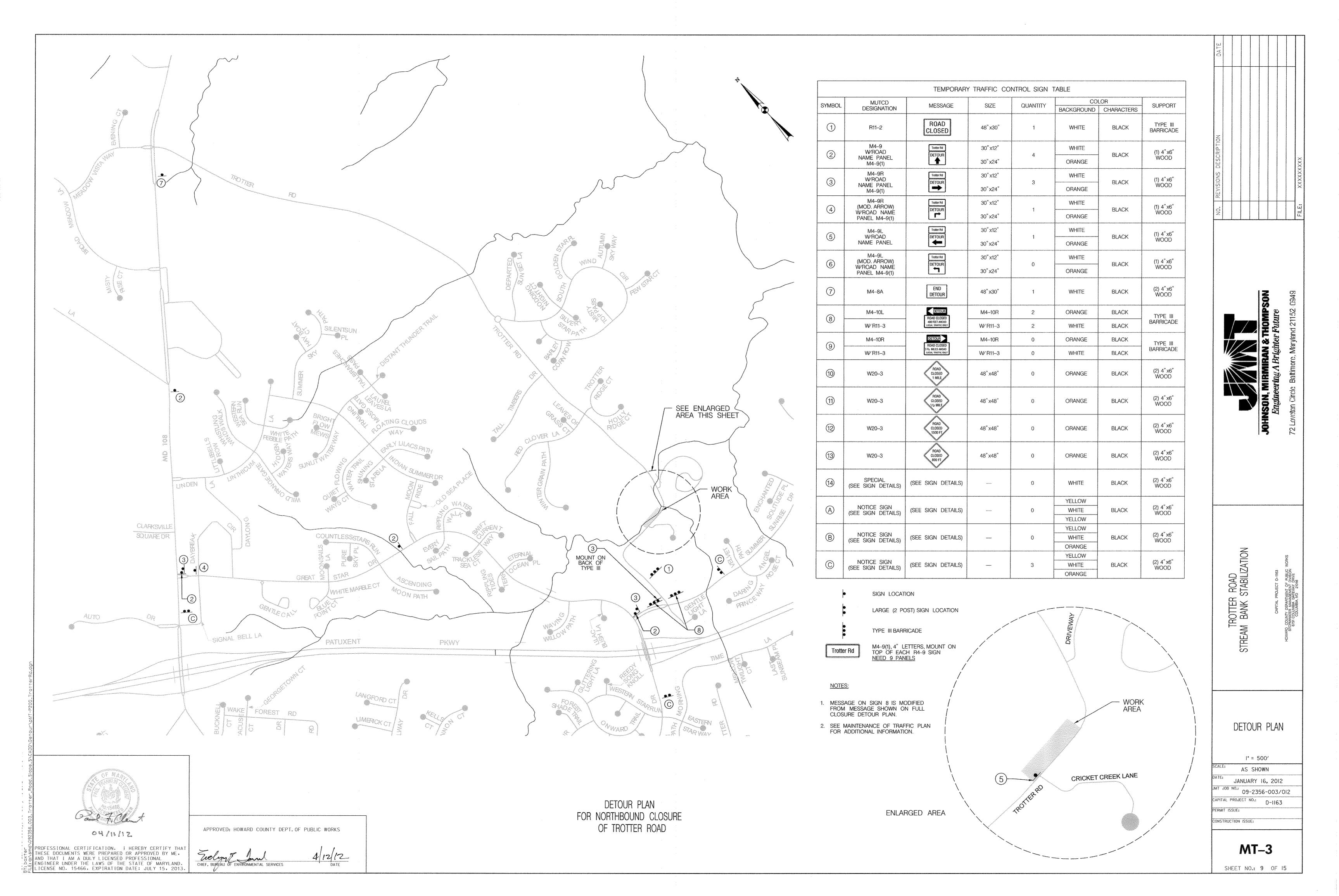
PERMIT ISSUE:

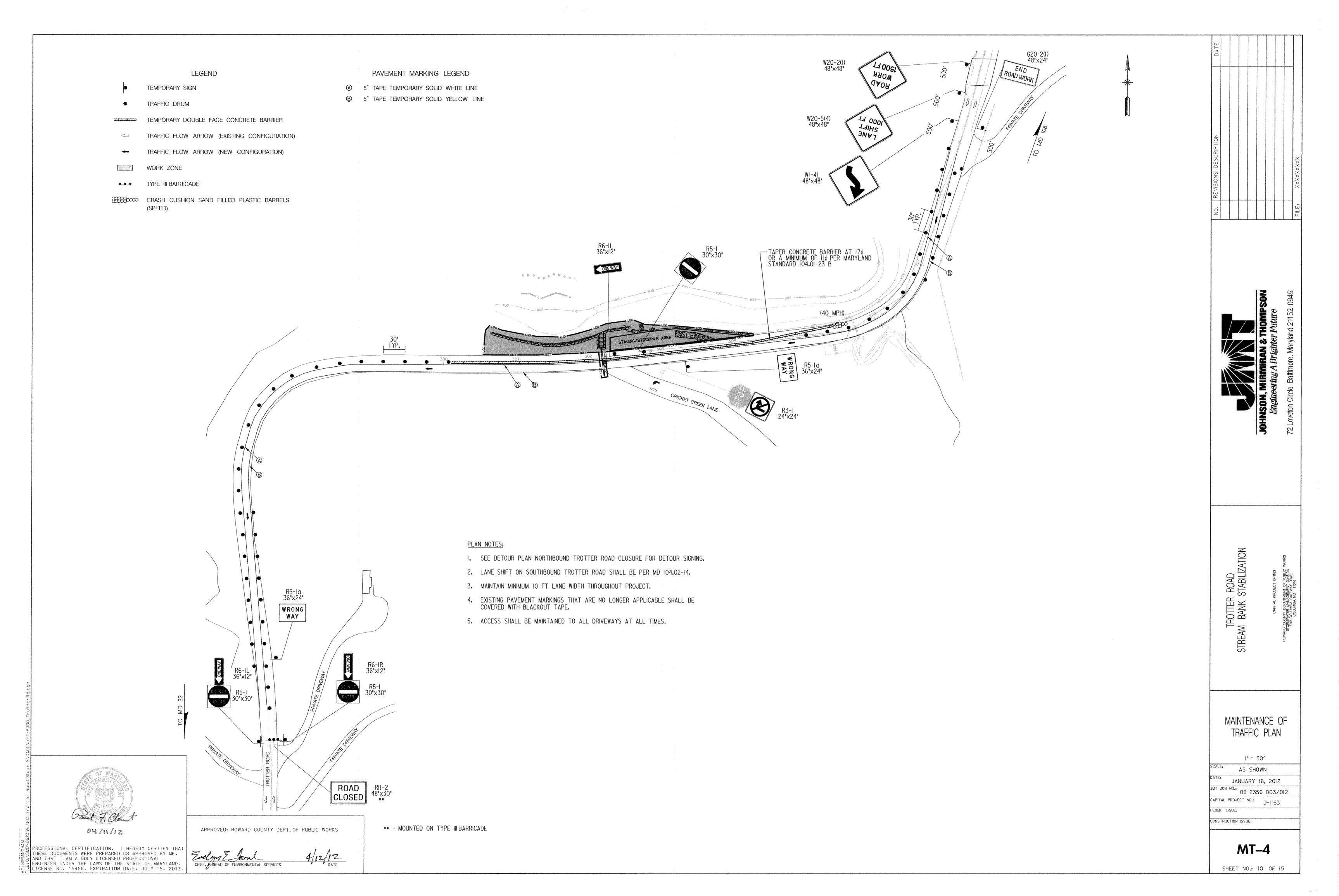
CONSTRUCTION ISSUE:

I-TM

SHEET NO .: 7 OF 15







### SEQUENCE OF CONSTRUCTION

- I. THE CONTRACTOR SHALL OBTAIN GRADING PERMIT FROM HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSES AND PERMITS PRIOR TO BEGINNING CONSTRUCTION. HOWARD SOIL SOIL CONSERVATION DISTRICT # IS EP-I2-I3. THE MDE TRACKING # IS 20160805/II-NT-0191.
- 2. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HRS PRIOR TO ANY EXCAVATION WORK BEING PERFORMED.
- 3. 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.
- 4. 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.I.D. INSPECTOR.
- 5. PRIOR TO BEGINNING CONSTRUCTION, PERFORM TEST PITS ON EXISTING UTILITIES IN AREA #2 AS NECESSARY FOR WALL AND PIPE CONSTRUCTION.

#### PHASE I

- 6. 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.
- 7. 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.
- 8. STABILIZE THE WORK AREA WITH TOPSOIL, SEED AND SOIL STABILIZATION MATTING. PERFORM LANDSCAPING OPERATIONS PER THE LANDSCAPING PLAN.
- 9. AFTER WORK AREA IS STABILIZED AND WITH THE APPROVAL OF THE C.L.D. INSPECTOR, REMOVE MAINTENANCE OF STREAM FLOW AND EROSION AND SEDIMENT CONTROL DEVICES FOR PHASE I CONSTRUCTION.
- 10. STABILIZE THOSE AREAS DISTURBED BY THE REMOVAL OF MAINTENANCE OF STREAM FLOW AND EROSION AND SEDIMENT CONTROL DEVICES.
- II. PROCEED TO PHASE 2 CONSTRUCTION.

#### PHASE 2

- 12. INSTALL STABILIZED CONSTRUCTION ENTRANCE SCE-I.
- 13. CLEAR AND GRUB FOR AND INSTALL SUPER SILT FENCE SSF-I.
- 14. INSTALL SANDBAG DIVERSION SBD-FALONG THE WORK AREA. UTILIZE DEWATERING BAG DB-I TO DEWATER THE WORK AREA AS NECESSARY. OUTFALL DEWATERING BAG TO STABLE OUTFALL CONDITION DOWNSTREAM FROM THE WORK AREA.
- 15. CONSTRUCT IMBRICATED RIPRAP RETAINING WALL, 18" RCP, AND STEP POOL AS SHOWN ON THE PLANS.
- 16. STABILIZE THE WORK AREA WITH TOPSOIL, SEED AND SOIL STABILIZATION MATTING. PERFORM LANDSCAPING OPERATIONS PER THE LANDSCAPING PLAN.
- 17. AFTER WORK AREA IS STABILIZED AND WITH THE APPROVAL OF THE C.L.D. INSPECTOR, REMOVE MAINTENANCE OF STREAM FLOW AND EROSION AND SEDIMENT CONTROL DEVICES FOR PHASE 2 CONSTRUCTION.
- 18. 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.
- 2. 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 CONSTRICTION RESULTING FROM THE PLACEMENT OF THE STREAM DIVERSION.

#### LITUENCE OF CONSTRUCTION (CONT.)

#### AREA \*2 W-BEAM INSTALLATION

- 19. CLEAR AND GRUB FOR AND INSTALL SUPER SILT FENCE AS NECESSARY FOR W-BEAM INSTALLATION.
- 20. MSTALL WHEAM TRAFFIC BARBER PER THE PLANS.
- THE NEASENTE THE WORK AREA WITH TOPSOIL, SEED AND SOIL STABILIZATION MATTING.
- 22. AFTER WORK AREA IS STABILIZED AND WITH THE APPROVAL OF THE C.L.D. INSPECTOR, REMOVE EROSION AND SEDIMENT CONTROL DEVICES FOR AREA \*2 W-BEAM INSTALLATION.
- REAL \*LENGWALL CONSTRUCTION
- 24. INSTALL SANDBAG DIVERSION SBD-3 AND 18' TEMPORARY HOPE PIPL, OUTFALL 18' HOPE 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.
- 25. REMOVE EXISTING CROUTED HEADWALL AND REPLACE WITH TYPE 'E' ENDWALL AS SHOWN ON PLANS.
- 26. INSTALL CLASS 18 RIPRAP AS SHOWN ON PLANS. REMOVE SANDHAG DIVERSION AS NECESSARY FOR RIPRAP CONSTRUCTION AND STABILIZE ALL DISTURBED AREAS IMMEDIATELY.



06/10/15

DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE

MARYLAND, LICENSE NO. 15466, EXPIRATION DATE: JULY 15, 2017

7. AFTER WORK AREA IS STABILIZED AND WITH THE APPROVAL OF THE CLID, INSPECTOR, REMOVE MAINTENANCE OF STREAM FLOW AND EROSION AND SEDIMENT CONTROL DEVICES FOR ENDWALL CONSTRUCTION.

28. STABILIZE THOSE AREAS DISTURBED BY THE REMOVAL OF MAINTENANCE OF STREAM FLOW AND EROSION AND SEDIMENT CONTROL DEVICES.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

(4/12/15
DATE

COLIZIS HOVE

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

- I. NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
- 2. PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF THE NONTIDAL WETLAND, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
- 3. DO NOT USE THE EXCAVATED MATERIAL AS BACKFILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACKFILL IS REQUIRED, USE CLEAN MATERIAL FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE.
- 4. PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO THE NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
- 5. REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT 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.
- 6. RECTIFY ANY NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, OR 100-YEAR FLOODPLAIN TEMPORARILY IMPACTED BY ANY CONSTRUCTION.
- 7. ALL STABILIZATION IN THE NONTIDAL WETLAND AND NONTIDAL WETLAND BUFFER SHALL CONSIST OF THE FOLLOWING SPECIES: ANNUAL RYEGRASS (LOLIUM MULTIFLORUM), MILLET (SETARIA ITALICA), BARLEY (HORDEUM SP.), OATS (UNIOLA SP.), AND/OR RYE (SECALE CEREALE). THESE SPECIES WILL ALLOW FOR THE STABILIZATION OF THE SITE WHILE ALSO ALLOWING FOR THE VOLUNTARY REVEGETATION OF NATURAL WETLAND SPECIES. OTHER NON-PERSISTENT VEGETATION MAY BE ACCEPTABLE, BUT MUST BE APPROVED BY THE NONTIDAL WETLANDS AND WATERWAYS DIVISION. KENTUCKY 31 FESCUE SHALL NOT BE UTILIZED IN WETLAND OR BUFFER AREAS. THE AREA SHOULD BE SEEDED AND MULCHED TO REDUCE EROSION AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
- 8. AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST-CONSTRUCTION GRADES AND ELEVATIONS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS.
- 9. TO PROTECT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM: USE IV-P WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH I MAY 31, INCLUSIVE, DURING ANY YEAR.
- IO. STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.
- II. 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

- 1. A minimum of 48 hours notice must be given to the Howard County Department of Inspections, Licenses and Permits, Sediment Control Division prior to the start of any construction (410) 313-1855.
- 2. All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL and revisions thereto.
- 3. Following initial soil disturbance or re-disturbance, permanent or temporary stabilization shall be completed within: a) 3 calender 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.
- 4. 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.
- 5. All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.
- 6. Site Analysis:

Total Area of Site
Area Disturbed

Area to be roofed or paved
Area to be vegetatively stabilized
Total Cut
Total Fill

Off-site waste/borrow area locations:

I.41

Acres

0.00
Acres

600
Cu. Yds.
UNKNOWN

- 7. 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.
- 10. 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.
- II. Any changes or revisions to the sequence of construction must be reviewed and approved by the plan approval authority prior to proceeding with construction.
- 12. 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.

Jehn Robertson HOYARD SCD

8/16/15 DATE

## B-4-4 STANDARDS AND SPECIFICATIONS

## 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

- 1. Select one or more of the species or seed mixtures listed in Table B.I for the appropriate Plant Hardiness 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.
- 2. For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.
- 3. 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

Hardiness Zone	(from Figure B.3	:6B		Fertlizer		
Species	Application Rate )lb/ac)	Seeding Seeding Dates Depths		Rate (10-20-20)	Lime Rate	
Annual Ryegrass	40	3-1 to 5-15 and 8-1 to 10-15	0.5 in.			
Foxtail Millet	30	5-16 to 7-31	0.5 in.	436 lb/ac (101b/1000 sf)	2 tons/ac (90 lb/1000 sf)	
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.

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

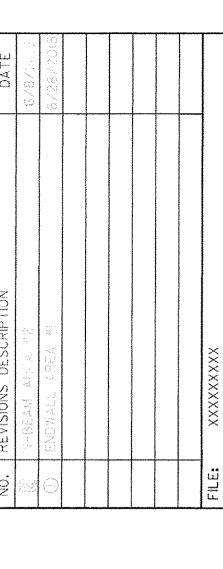
### Seeding Mixtures

- I. General Use
- a. Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness 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.
- b. 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.
- c. For sites having disturbed area over 5 acres, use and show the rates recommended by the soil testing agency.
- d. For areas receiving low maintenance, apply urea form Fertilizer (46-0-0) at 3  $\frac{1}{2}$  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

	Hardiness Zone (from Figure B.3): 68  Seed Mixture (from Table B.3):					FertlizerRate (10-20-20)		
	Species	Application Rate (1b/ac)	Seeding Dates	Seeding Depths	N	ŖQ	KΩ	Rate
	Switch Grass	10	3-1, to 5-15 and 5-16 to 6-15	0.5 în.	(1.015/	90 lb/ac (2.0lb/ 1000 sf)	(2.01b/ 1000 sf)	
And the state of t	Creeping Red Fescue	15	3-1 to 5-15 and 5-16 to 6-15	0.5 in.				2 tons /ac (90 lb/ 1000 sf)
	Partridge Pea	4	3-1 to 5-15 and 5-16 to 6-15	0,5 in.				

- 2. Turfgrass Mixtures
- a. Areas where turfgrass may be desired include lawns, parks, playgrounds and commercial sites which will receive a medium to high level of maintenance.
- b. Select one or more of the species or mixtures listed below based on the site conditions of purpose. Enter selected mixture(s), application rates and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
- i. 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.





TROTTER ROAD STREAM BANK STABILIZATION

EROSION & SEDIMENT CONTROL NOTES

N.T.S.

DATE: JUNE 8, 2015

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

CAPITAL PROJECT NC.: D-1163

PERMIT ISSUE:

EN-1

CONSTRUCTION ISSUE:

SHEET NO .: 11 OF 15

- 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 maisture
- 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 auglity, intensively managed turf grea. Mixture includes: Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 11/2 to 3 pounds per 1000 square feet.

Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Memo

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

\*77 'Turfgrass Cultivar Recommendations for Maryland'

Central MD: March I 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 1½inches in diameter. The resulting seedbed must be in such condition that future moving of grasses will pose no difficulty.
- e. If soil moisture is deficient, supply new seedings 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 seedings are made late in the planting season, in abnormally dry or hot seasons or on adverse sites.

### B-4-I STANDARDS AND SPECIFICATIONS 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

I. 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.I):

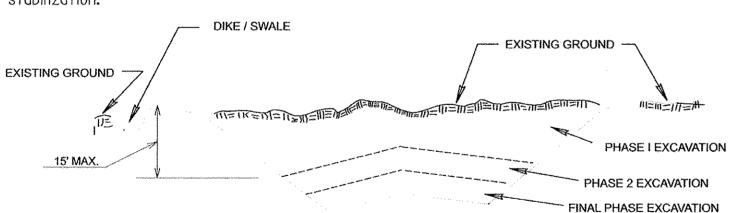
a. Construct and stabilize all temporary swales or dikes that will be used to convey runoff around the

b. Perform Phase Lexcavation, prepare seedbed, and stabilize.

c. Perform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase Lareas as necessary.

d. Perform final phase excavation, prepare seedbed, and stabilize. Overseed previously seeded greas as

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



#### **INCREMENTAL STABILIZATION - CUT**

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 I fill, prepare seedbed, and stabilize. d. Place Phase 2 fill, prepare seedbed, and stabilize.

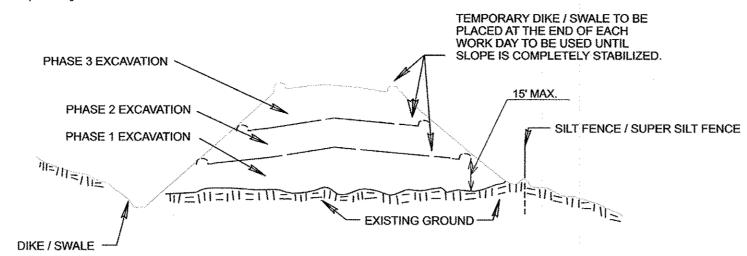


APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

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

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



#### **INCREMENTAL STABILIZATION - FILL**

#### B-4 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

Using vegetation as cover to protect exposed soil from erosion.

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 arowth.

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

I. 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.

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 arade 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 I to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.

B. Topsoiling

I. 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: 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% inches in diameter. 3%4 inches in diameter.

b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.

c. Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.

#### B-4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

The application of seed and mulch to establish vegetative cover.

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

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

Criteria

A. Seeding

1. Specifications

a. All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject to re-testing by a recognized seed laboratory. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be available upon request

to the inspector to verify type of seed and seeding rate. b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.

c. Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. Use four times the recommended rate when hydroseeding.

Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less

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 phyto-toxic 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."

4/22/14

04/10/14

Erehmond Mark S. Richmond

Signature of Developer Print name below Signature

By the Engineer:

"Icertify 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."

7. Clem

Signature of Engineer Print name below Signature

PAUL F. CLEMENT

ROAD STABILIZATION ROTTER BANK (

**EROSION & SEDIMENT** CONTROL NOTES

N.T.S. APRIL 10, 2014 JMT JOB NO.: 09-2356-003/012 APITAL PROJECT NO.: D-1163 ERMIT ISSUE:

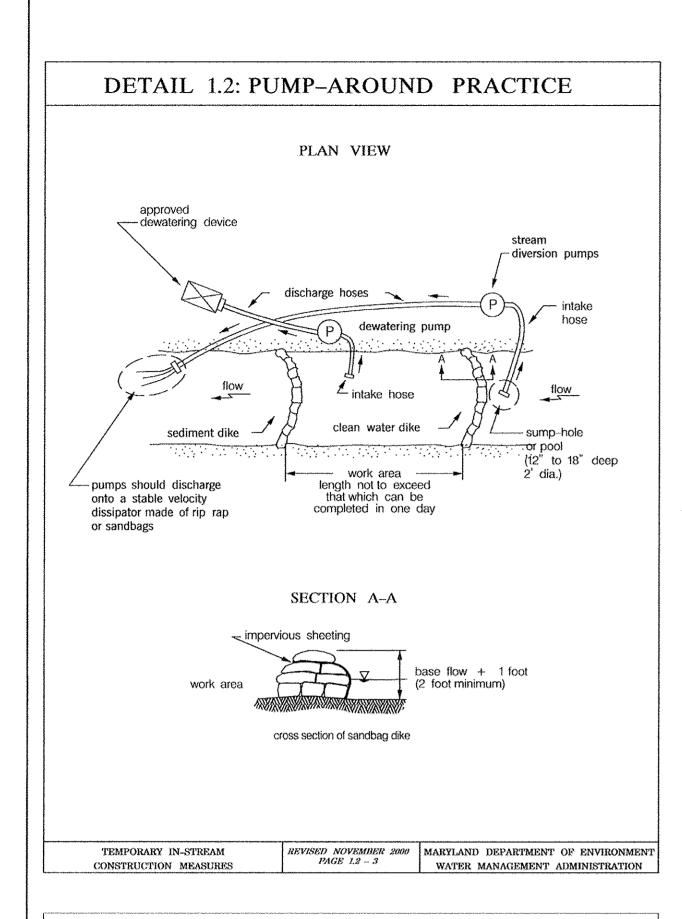
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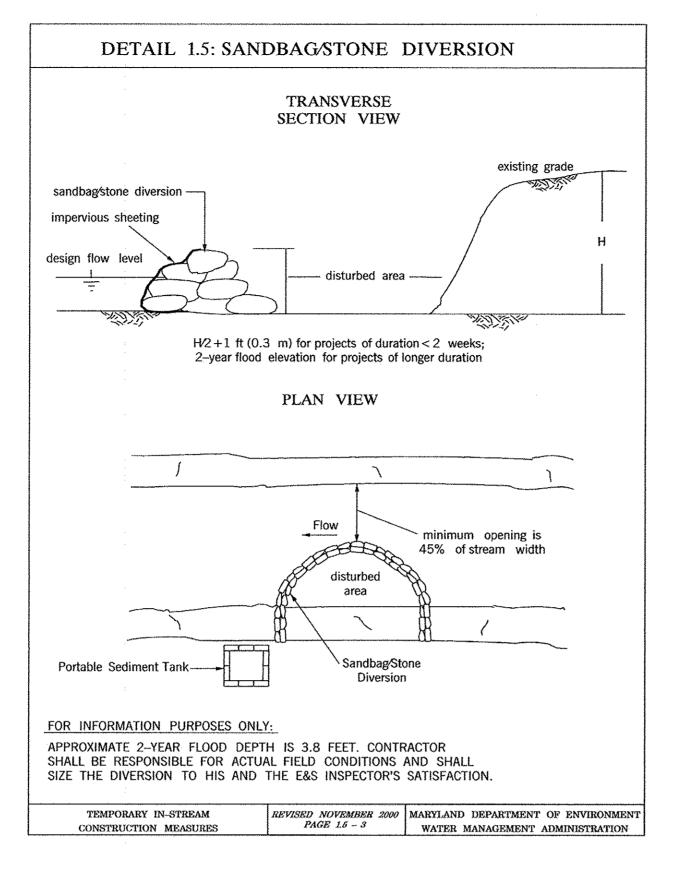
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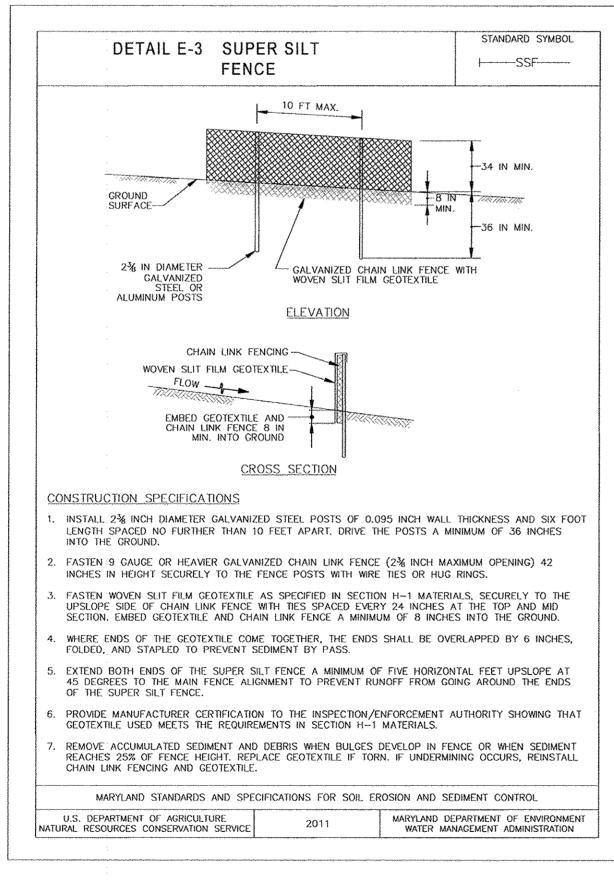
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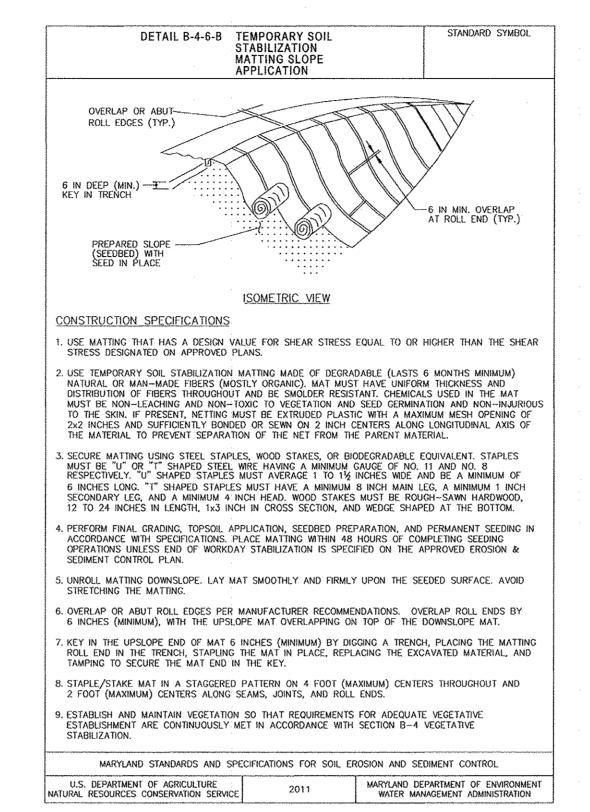
PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME. AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

ICENSE NO. 15466, EXPIRATION DATE: JULY 15, 2015.









DETAIL E-1 SILT FENCE

POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.

USE WOOD POSTS 134 X 134 ? 16 INCH (MINIMUM) SQUARE CUT OF SQUAD QUALITY

HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL

. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6

3. USE WOVEN SLIT 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

EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND

6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN

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

3. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT

2011

WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE

INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE

CONSTRUCTION SPECIFICATIONS

REQUIREMENTS IN SECTION H-1 MATERIALS.

ACCORDANCE WITH THIS DETAIL.

TURAL RESOURCE'S CONSTRUCTION SERVICE

COMPACT THE SOIL ON BOTH SIDES OF FABRIC.

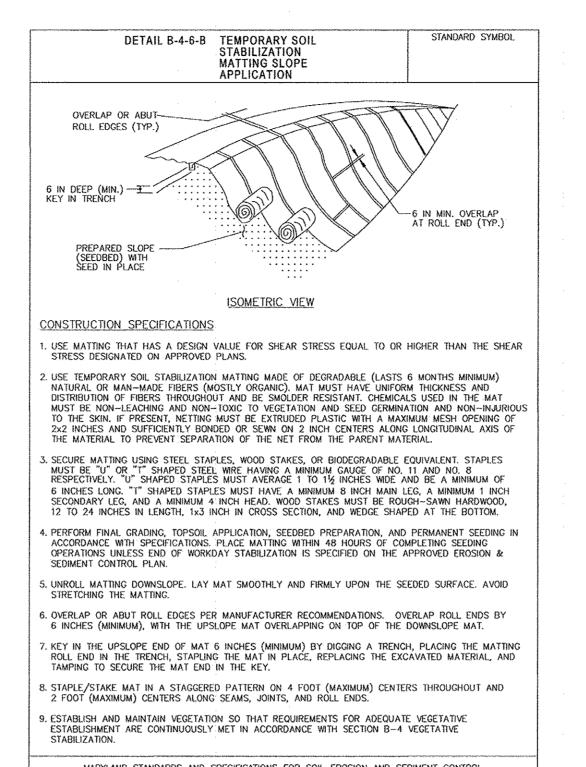


STANDARD SYMBOL

|-----SF------|

MARYLAND DEPARTMENT OF

WATER MANAGEMENT ADMINISTRATION



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. 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. . 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: GAL/MIN/FT OPENING SIZE (AOS) . 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 DEWATERING BAG DETAIL FOR CONTROL OF SEDIMENT IN PUMPED WATER MGWC 1.5: SANDBAG/STONE CHANNEL DIVERSION DESCRIPTION
The work should consist of installing sandbag or stone flow diversions for the purpose of erosion control when construction activities occur within the stream channel. EFFECTIVE USES & LIMITATIONS
Diversions are used to isolate work areas from flow during the construction of in-stream projects. Diversions which have an insufficient flow capacity can fall and severely erode the disturbed channel section under construction. Therefore, in-channel construction activities should occur only during periods of low rainfall. This temporary measure may not be practical in large channels. MATERIAL SPECIFICATIONS
Materials for sandbag and stone stream diversions should meet the following requirements:
Riprap: Riprap should be washed and have a minimum diameter of 6 inches (0.15 meters). Sandbags: Sandbags should consist of materials which are resistant to ultra-violet radiation, tearing, and puncture and should be woven tightly enough to prevent leakage of the fill material (i.e., sand, fine gravel, etc.). Sheeting: Sheeting should consist of polyethylene or other materials which are impervious and resistant to INSTALLATION GUIDELINES

All erosion and sediment control devices, including dewatering basins, should be implemented as the first order of business according to a plan approved by the WMA or local authority. Installation should proceed from upstream to downstream during periods of low flow. If necessary, silt fence or straw bales should be installed around the Sandbag/stone diversions can be used independently or as components of other stream diversion techniques. Installation of this measure should proceed as follows (refer to Detail 1.5): 1. The diversion structure should be installed from upstream to downstream. 2. The height of the sandbag/stone diversion should be a function of the duration of the project in the stream reach. For projects with a duration less than 2 weeks, the height of the diversion should be one half the streambank height, measured from the channel bed, plus I foot (0.3 meters) or bankfull height, whichever is greater. For projects of longer duration, the top of the sandbag or stone diversion should correspond to bankfull height. For diversion structures utilizing sandbags, the stream bed should be hand prepared prior to placement of the base layer of sandbags in order to ensure a water tight fit Additionally, it may be precessory to prepare the back in a layer of sandbags in order to ensure a water tight fit. Additionally, it may be necessary to prepare the bank in a 3. All excavated material should be deposited and stabilized in an approved area outside the 100-year floodplain unless otherwise authorized by the WMA. 4. Sediment-laden water from the construction area should be pumped to a dewatering basin. 5. Sheeting on the diversion should be positioned such that the upstream portion covers the downstream portion with at least a 18-inch (0.45 meters) overlap. 6. Sandbag or stone diversions should not obstruct more than 45% of the stream width. Additionally, bank stabilization measures should be placed in the constricted section if accelerated erosion and bank scour are observed during the construction time or if project time is expected to last more than 2 weeks. 7. Prior to removal of these temporary structures, any accumulated sediment should be removed, deposited and stabilized in an approved area outside the 100-year floodplain unless authorized by the WMA. 8. Sediment control devices are to remain in place until all disturbed areas are stabilized in accordance with an approved sediment and erosion control plan and the inspecting authority approves their removal. MGWC 1.2: PUMP-AROUND PRACTICE The work should consist of installing a temporary pump around and supporting measures to divert flow around in-stream IMPLEMENTATION SEQUENCE
Sediment control measures, pump-around practices, and associated channel and bank construction should be completed in the following sequence (refer to Detail 1.2). 1. Construction activities including the installation of erosion and sediment control measures should not begin until all necessary easements and/or Right-Of-Ways have been acquired. All existing utilities should be marked in the field prior to construction. The contractor is responsible for any damage to existing utilities that may result from construction and should repair the damage at his/her own expense to the county's or utility 2. The contractor should notify the Maryland Department of the Environment or WMA sediment control inspector at least 5 days before beginning construction. Additionally, the contractor should inform the local environmental protection and resource management inspection and enforcement division and the provider of local utilities a minimum of 48 hours before starting construction. 3. The contractor should conduct a pre-construction meeting on site with the WMA sediment control inspector, the county project manager and the engineer to review limits of disturbance, erosion and sediment control requirements, and the sequence of construction. The contractor should stake out all limits of disturbance prior to the pre-construction meeting so they may be reviewed. The participants will also designate the contractor's staging areas and flag all trees within the limit of disturbance which will be removed for construction access. Trees should not be removed within the limit of disturbance without approval from the WMA or local authority. 4. Construction should not begin until all sediment and erosion control measures have been installed and approved by the engineer and the sediment control inspector. The contractor should stay within the limits of the disturbance as shown on the plans and minimize disturbance within the work area whenever possible. 5. Upon installation of the sediment control measures and approval by the sediment control inspector and the local environmental protection and resource management inspection and enforcement division, the contractor should begin work at the upstream section and proceed downstream beginning with the establishment of stabilized construction entrances. In some cases, work may begin downstream if appropriate. The sequence of construction must be followed unless the contractor gets written approval for deviations from the WMA or local authority. The contractor should only begin work in an area which can be completed by the end if the day, including grading adjacent to the channel. At the end of each work day, the work area must be stabilized and the pump-around removed from the channel. Work should not be conducted in the channel during rain events.

II. A pump-around must be installed on any tributary or storm drain outfall which contributes baseflow to the work area. This should be accomplished by locating a sandbag dike at the downstream end of the tributary or storm drain outfall and pumping the stream flow around the work area. This water should discharge onto the same velocity dissipator used for the main pump-around.

12. If a tributary is to be restored, construction should take place on the tributary before work on the main stem

reaches the tributary confluence. Construction in the tributary, including pump-around practices, should follow the same sequence as for the main stem of the river or stream. When construction on the tributary is completed, work on the main stem should resume. Water from the tributary should continue to be pumped around the work

13. The contractor is responsible for providing access to and maintaining all erosion and sediment control devices

14. After construction, all disturbed areas should be regraded and revegetated as per the planting plan

PUMP DISCHARGE HOSE

-DEWATERING BAG

FILTER BAG SHALL BE NON-WOVEN GEOTEXTILE WITH A MINIMUM SURFACE AREA OF 225 SQUARE FEET

2. ALL STRUCTURAL SEAMS SHALL BE SEWN WITH A DOUBLE STITCH USING A DOUBLE NEEDLE MACHINE

WITH HIGH STRENGTH THREAD. SEAM STRENGTH SHALL WITHSTAND IOOLB/IN. USING ASTM D-4884

3. FILTER BAG SHALL HAVE A NOZZLE LARGE ENOUGH TO ACCOMMODATE A FOUR (4) INCH DIAMETER PUMP

5% MAX

AGGREGATE UNDERLAYMENT

CONSTRUCTION SPECIFICATIONS

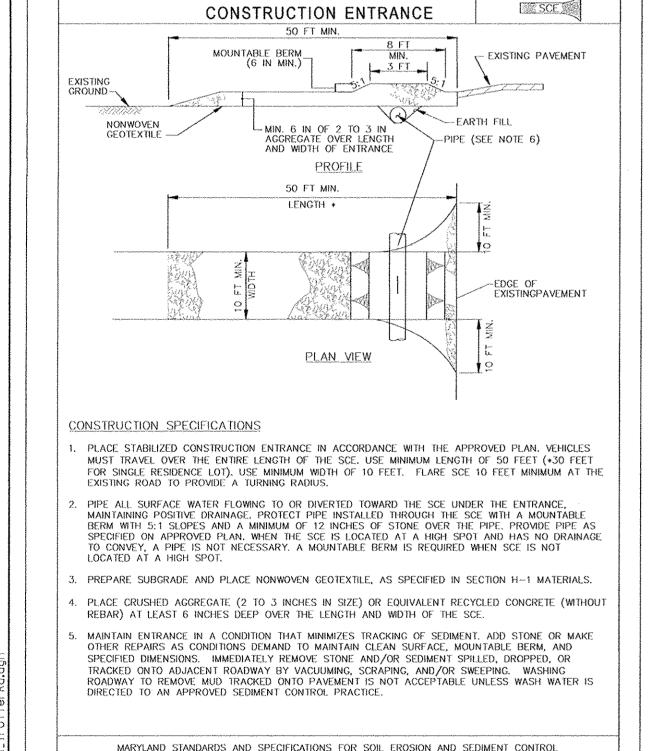
OTTER BANK

**EROSION & SEDIMEN** CONTROL DETAILS

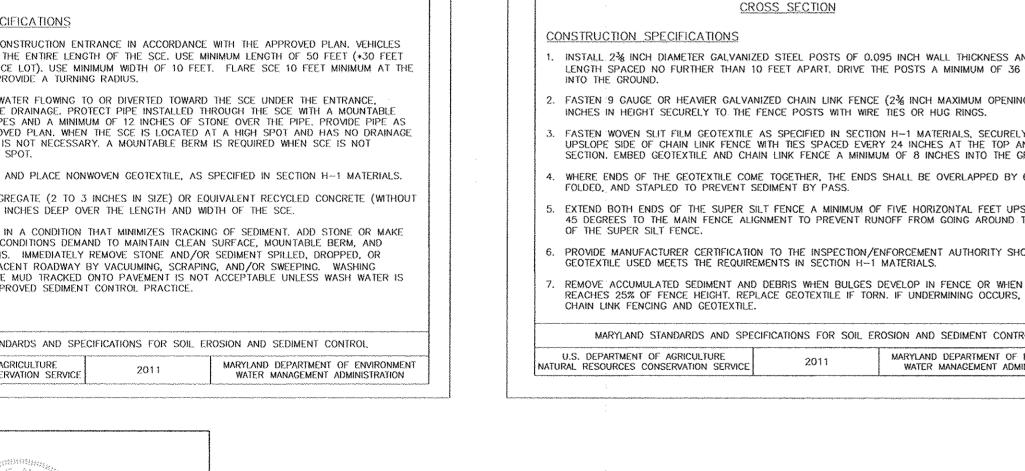
N.T.S. APRIL 10, 2014 JMT JOB NO.: 09-2356-003/012 CAPITAL PROJECT NO.: D-1163 ERMIT ISSUE: ONSTRUCTION ISSUE:

ED-1

SHEET NO.: 12 OF 15



DETAIL B-1 STABILIZED



NATURAL RESOURCES CONSERVATION SERVICE 04/10/14

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT

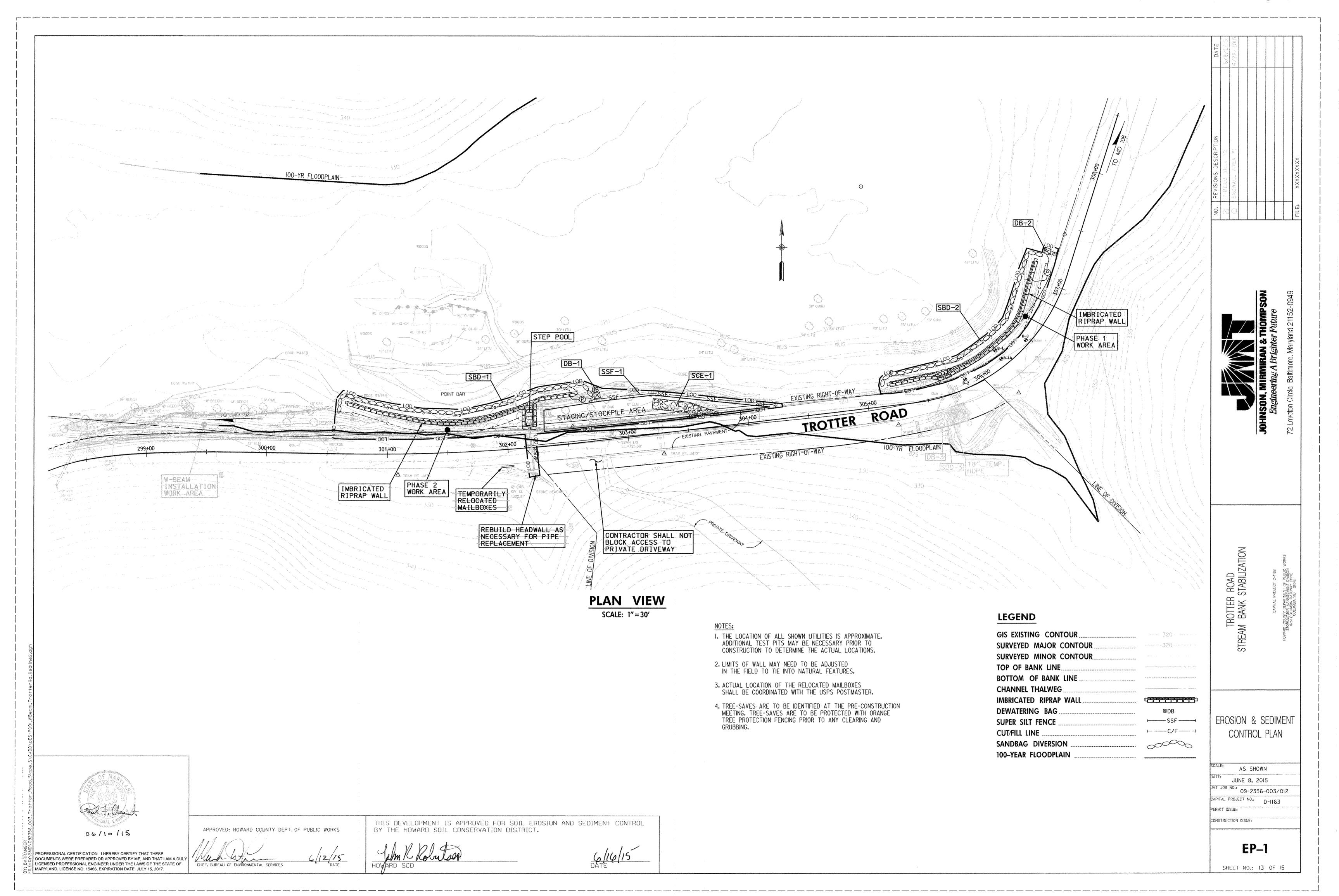
THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME. AND THAT I AM A DULY LICENSED PROFESSIONAL

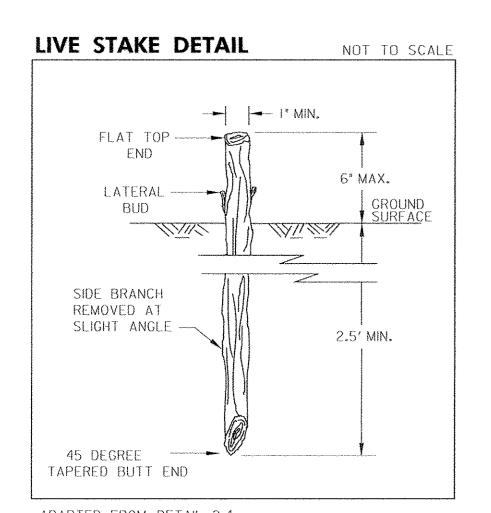
ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 15466, EXPIRATION DATE: JULY 15, 2015. APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

STANDARD SYMBOL

woman.

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





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

#### LIVE STAKE PLANTING DETAILS NOT TO SCALE NEAR BANK ZONE VARIES-SEE PLANS 2:1 SLOPE (TYP.) LIVE STAKE (TYP.) BANKFULL ELEV. TOE OF SLOPE NEAR BANK ZONE VARIES-SEE PLAN WATER TABLE ELEV. SOIL STABILIZATION MATTING FLOW -LIVE STAKES SHALL BE PLANTED IN SPECIFIED AREAS **SECTION** ACCORDING TO THE PLANTING DENSITIES SHOWN ON THE LANDSCAPING PLANS. LIVE STAKE PLANTINGS WILL **PLAN** ALSO APPLY TO ALL MICRO-BERM LOCATIONS. \*NOTE: I. LIVE STAKES SHALL BE STAKED THROUGH MATTING. 2. LIVE STAKES SHALL BE RANDOMLY DISTRIBUTED WITHIN THE SPECIFIED LIVE STAKE PLANTING ZONES ACCORDING TO PLANTING DENSITIES SHOWN ON THE LANDSCAPING PLANS.

STABILIZATION

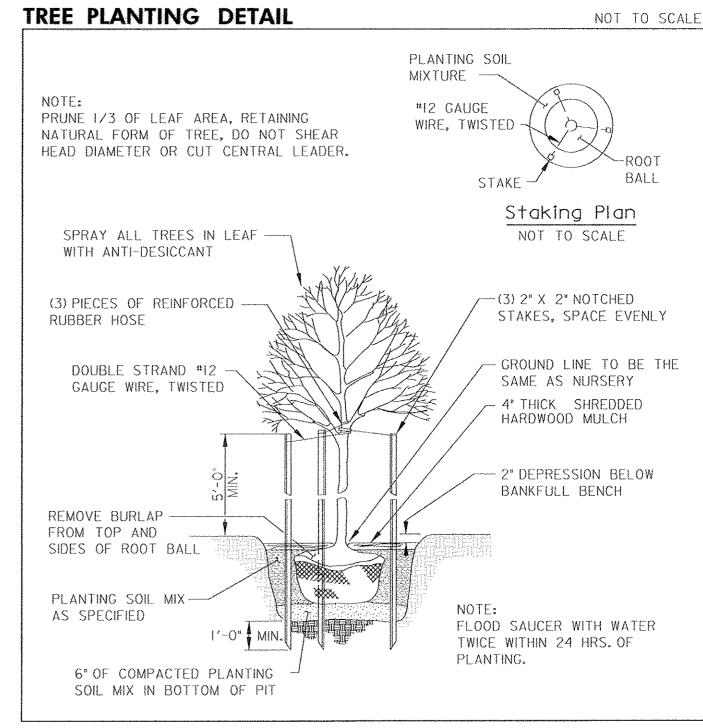
SLOPE PLANTING DETAIL NOT TO SCALE -GROUND LINE TO BE THE ORIGINAL GRADE -----SAME AS IN NURSERY 4" THICK SHREDDED HARDWOOD MULCH PLANTING SOIL MIX AS SPECIFIED 6" OF COMPACTED PLANTING FLOOD SAUCER WITH WATER SOIL MIX IN BOTTOM OF PIT TWICE WITHIN 24 HRS. OF PLANTING NOTE: THIS DETAIL SHALL BE USED FOR B&B TREE AND EVERGREEN TREE PLANTINGS LOCATED ON SLOPES OF 2:1 OR GREATER, REFER TO APPROPRIATE PLANTING DETAILS FOR PLANT MATERIAL FOR REMAINDER OF DETAIL (SEE THIS SHEED.

### TREE & SHRUB INSTALLATION THROUGH SOIL STABILIZATION MATTING

OVERLAPS AND EDGES.

NOT TO SCALE (1) MAKE CUT WITH SHARP KNIFE THROUGH SOIL STABILIZATION MATTING SEE SOLID LINE IN DIAGRAM ABOVE. NOTE THAT ALL CUTS IN THE MATTING SHALL BE A MINIMUM OF 2 FEET CLEAR OF ALL MATTING SEAMS,

- (2) TEMPORARILY PIN BACK MATTING WITH 4 STAPLES TO INSTALL TREE OR SHRUB - SEE DASHED LINE IN DIAGRAM ABOVE.
- (3) INSTALL PLANT THROUGH PINNED BACK MATTING. INSTALL PLANT AT PROPER GRADE TO GROUND PLANE.
- 4 REMOVE 4 STAPLES PLACED IN STEP 2 ABOVE THAT WERE USED TO EMPORARILY PIN BACK THE MATTING DURING ROOT BALLI INSTALLATION.
- (5) PLACE 4 STAPLES IN EACH OF FOUR CUT SECTIONS TO WELL ANCHOR SOIL STABILIZATION MATTING BACK OVER TOP OF THE ROOT BALL.
- (6) FOR TREE INSTALLATIONS, INSTALL TREE STAKES THROUGH MATTING, ONCE RE-ANCHORED OVER ROOT BALL.



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

#### SHRUB PLANTING DETAIL NOT TO SCALE SPRAY ALL SHRUBS IN LEAF WITH ANTI-DESICCANT GROUND LINE TO BE THE SAME AS IN NURSERY - 4" THICK SHREDDED HARDWOOD MULCH - 2" DEPRESSION BELOW BANKFULL BENCH REMOVE BURLAP -FINISHED GRADE FROM TOP AND SIDES OF ROOT BALL PLANTING SOIL MIX AS SPECIFIED -FLOOD SAUCER WITH WATER TWICE WITHIN 24 HRS. OF PLANTING. 6" OF COMPACTED PLANTING SOIL MIX IN BOTTOM OF PIT

## **PLANTING NOTES:**

- 1. 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
- 2. 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 2"-2.5" CAL. TREES

100% 75%

SURVIVAL RATE

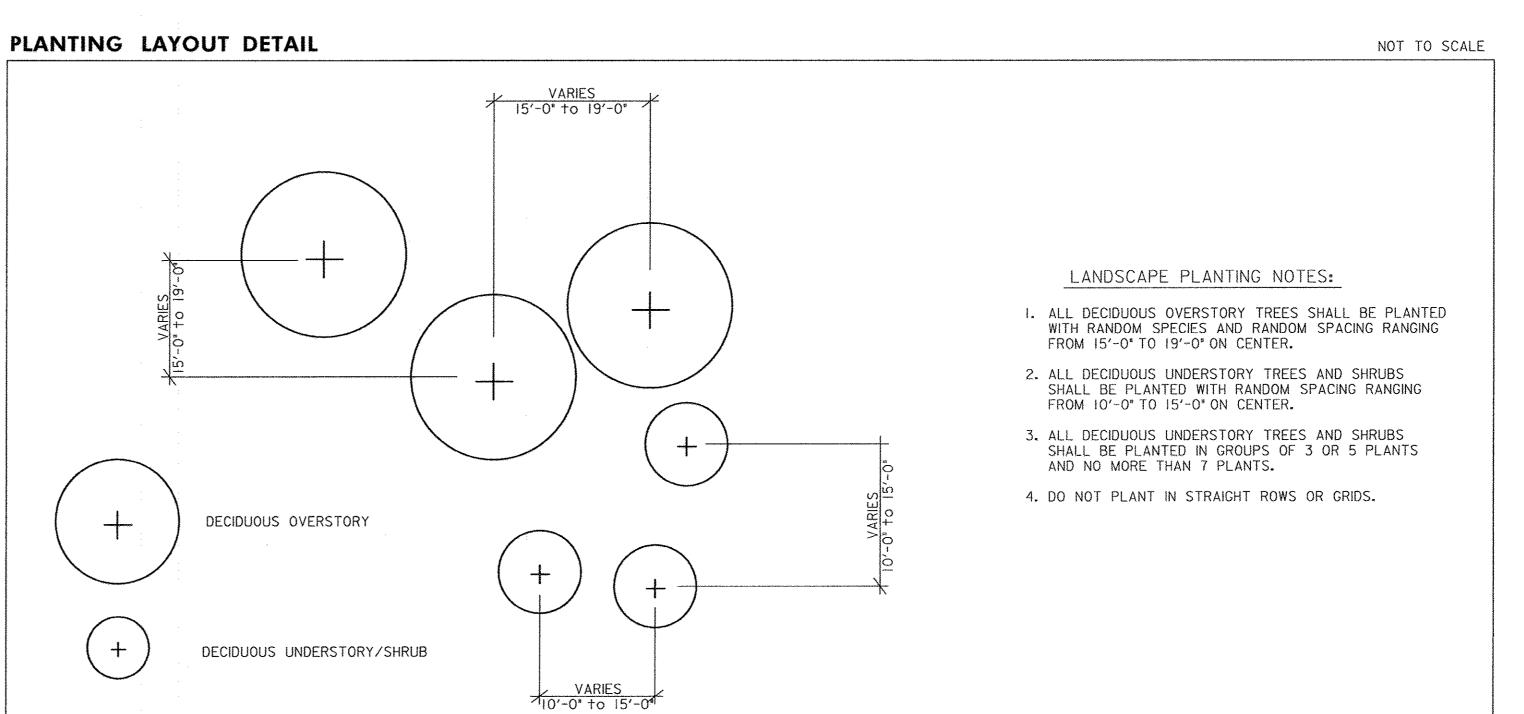
SHRUBS (24" HT.) 3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO UTILITIES AND MAY MAKE MINOR ADJUSTMENTS IN SPACING AND/OR LOCATION OF PLANT MATERIALS, CONTRACTOR TO VERIFY 'AS BUILT' LOCATION OF ALL UTILITIES.

- 4. 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.
- 5. 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.
- 6. 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.
- 7. PLANTING SOIL MIX: 2/3 EXISTING SOIL (EXCAVATED FROM PLANT PIT) AND 1/3 PEAT HUMUS.
- 8. ALL GROUNDCOVER 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.
- 10. 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.
- 11. ALL DISTURBED AREAS SHALL BE STABILIZED WITH THE SEED AND MULCH BY THE END OF EACH WORK DAY.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS 4/12/12 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

21/11/12

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. ICENSE NO. 15466, EXPIRATION DATE: JULY 15, 2013.



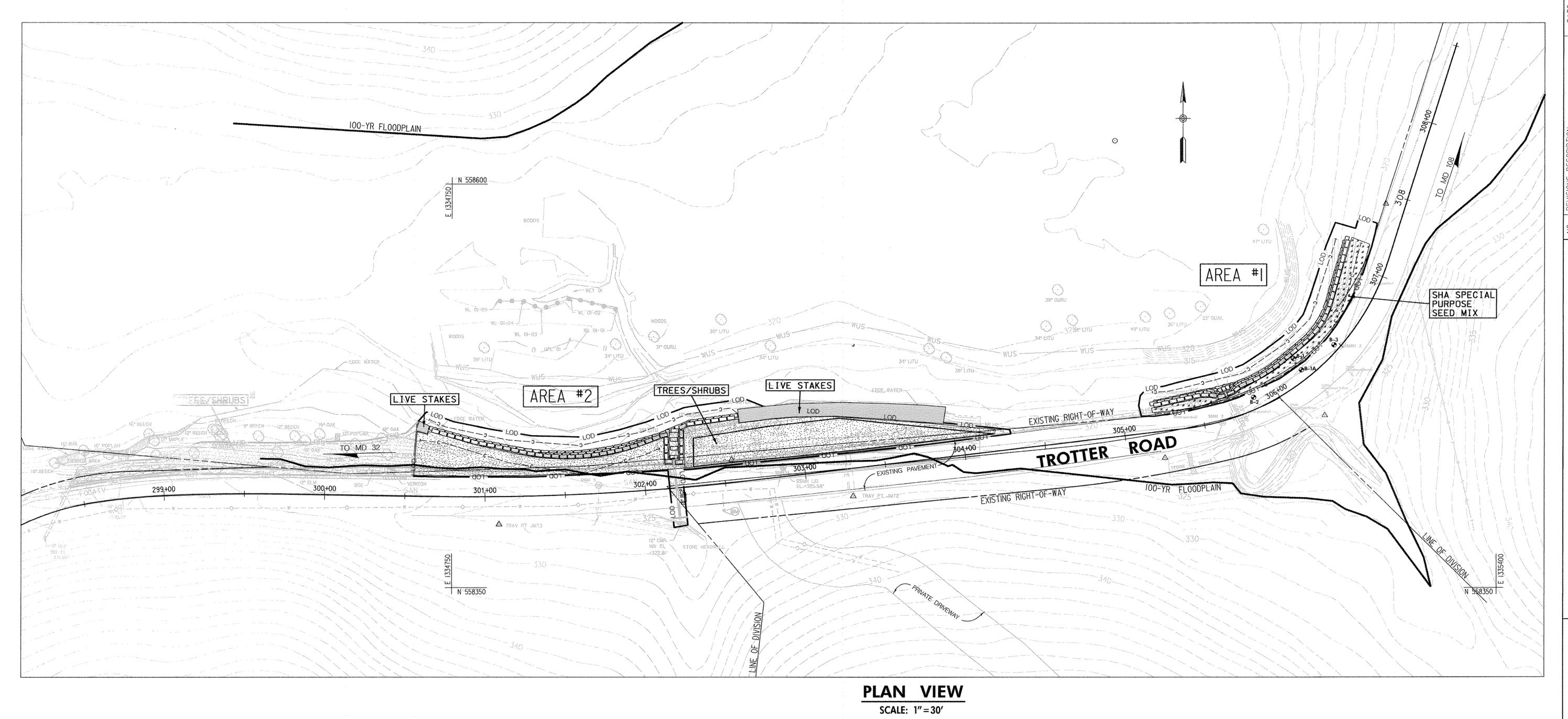
LANDSCAPING DETAILS

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

ROTTER BANK

LD-1

SHEET NO.: 14 OF 15



### 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

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

LANDSCAPING PLAN

AS SHOWN JUNE 8, 2015

JMT JOB NO.: 09-2356-003/012 CAPITAL PROJECT NO.: D-1163 CONSTRUCTION ISSUE:

TROTTER ROAD STREAM BANK STABILIZATION

LP-1

SHEET NO.: 15 OF 15

06/10/15

APPROVED: HOWARD COUNTY-DEPT. OF PUBLIC WORKS

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.

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES