

INDEX OF SHEETS

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GENERAL NOTES

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY STANDARDS AND SPECIFICATIONS IF APPLICABLE.
- 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.
- STORM DRAINAGE SLOPES ARE TO BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE HOWARD COUNTY ENGINEER.
- APPROXIMATE LOCATIONS OF EXISTING UTILITIES ARE SHOWN. THESE LOCATIONS ARE BASED ON UTILITY PLANS OR TOPOGRAPHIC SURVEYS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO RESOLVE ANY DISCREPANCIES BETWEEN THE UTILITY LOCATIONS SHOWN ON THE PLANS AND THE ACTUAL UTILITY LOCATIONS. 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.

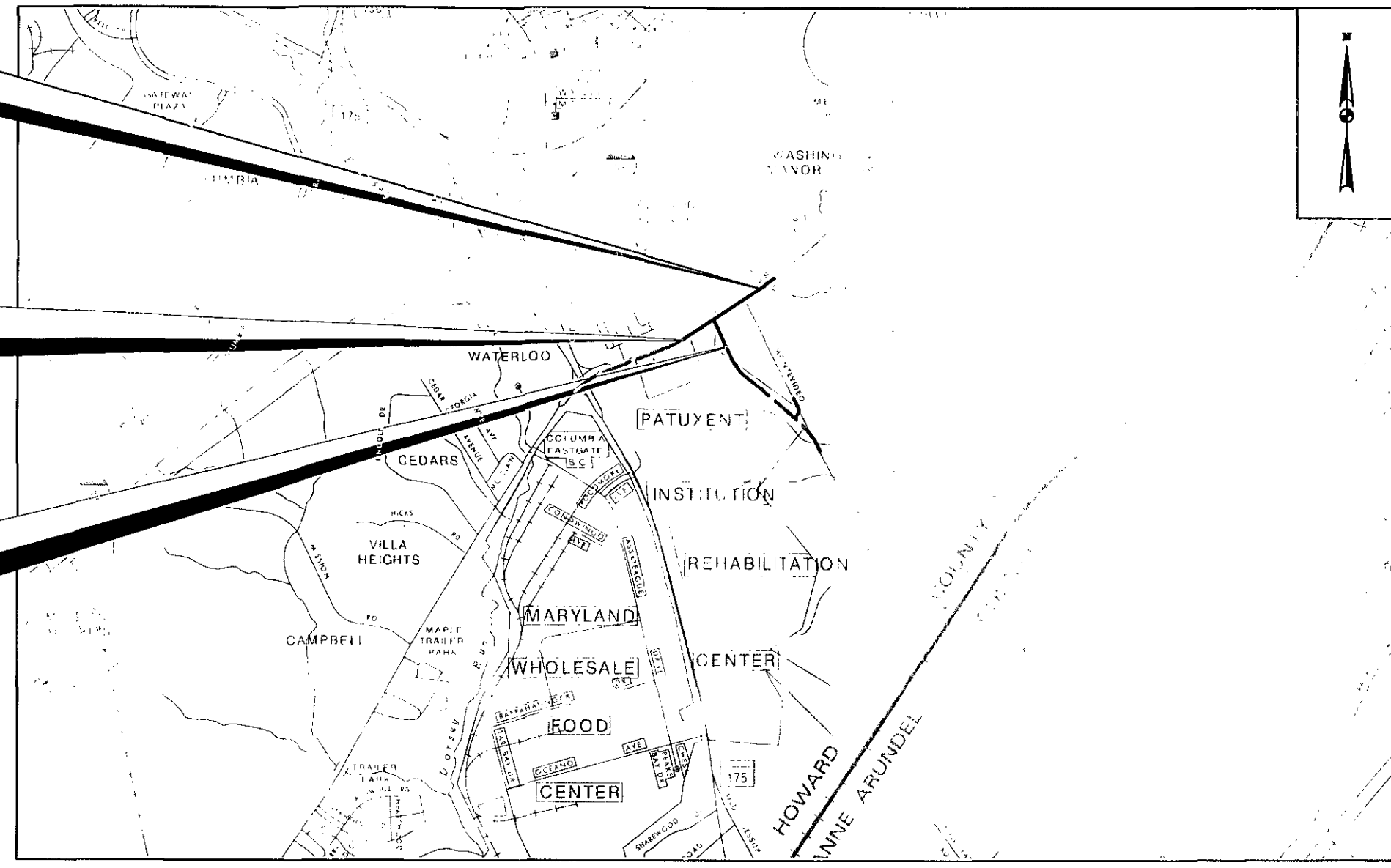
COMCAST 410-461-1362  
 BGE (CONTRACTOR SERVICES) 410-850-4620  
 BGE (UNDERGROUND DAMAGE CONTROL) 410-787-9068  
 MISS UTILITY 1-800-257-7777  
 HOWARD COUNTY BUREAU OF UTILITIES 410-313-4900  
 HOWARD COUNTY DIVISION OF CONSTRUCTION INSPECTION 410-313-1880  
 VERIZON 1-800-743-0033 / 410-224-9210

- SEE HOWARD COUNTY STANDARD DETAILS NO'S G-1.01 AND G-1.02 FOR STANDARD SYMBOLS AND ABBREVIATIONS.
- HORIZONTAL COORDINATES ARE BASED ON MD NAD 83/91 HORIZONTAL DATUM AND VERTICAL ELEVATIONS ARE BASED ON NAVD 1988 VERTICAL DATUM, TRANSFERRED FROM NATIONAL GEODETIC SURVEY CONTROL STATIONS; GSC 43BC, GSC 43BM2, AND GSC 43EM2.  
 GSC 43BC: N 549,592.070      GSC 43BM2: ELEV. 193.633      GSC 43EM2: ELEV. 231.404  
 E 1,375,466.711  
 ELEV. 214.124
- A STAGING AND STOCKPILE AREA WILL BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE HOWARD COUNTY ENGINEER.
- TOPOGRAPHY SURVEY INFORMATION BASED ON SURVEY PERFORMED BY JOHNSON, MIRMIRAN & THOMPSON DATED MAY AND AUGUST 2011.
- TOP OF CURB (T.C.) FOR CURB OPENING INLETS SHALL APPLY TO CENTERLINE OF INLET BASE UNIT AT TOP OF CURB. TOP OF RIM (T.R.) MANHOLE ELEVATIONS SHALL APPLY TO CENTER OF MANHOLE COVER. TOP OF GRATE (T.G.) FOR GRATE TYPE INLETS SHALL APPLY TO CENTER OF GRATE.
- ADJUST EXISTING UTILITIES AS REQUIRED FOR PROPOSED CONSTRUCTION.
- SIDEWALK CROSS-SLOPE SHALL NOT EXCEED 2%. SIDEWALK RAMP RUNNING SLOPE SHALL NOT EXCEED 12% RELATIVE GRADE.
- SEE SHA. PLAT NO. 34754, 53413, 55419, AND 58801 FOR EXISTING RIGHT OF WAY ALONG US ROUTE 1.
- FOR ALL MD SHA STANDARDS REFERRED TO ON THE PLANS THE CONTRACTOR MUST GO TO THE MD SHA BOOK OF STANDARDS WHICH WILL HAVE THE MOST CURRENT VERSION. THE MD SHA BOOK OF STANDARDS CAN BE ACCESSED AT: <http://apps.roads.maryland.gov/businesswithsha/bizStdSpecs/desManualStdPub/publicationsonline/ohd/bookstd/index.asp> ALL MD SHA ITEMS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT VERSION OF THE REFERENCED STANDARD AT THE TIME OF CONSTRUCTION.

**LIMIT OF WORK**  
 CAPITAL PROJECT NO. J-4206-1A  
 US ROUTE 1  
 STA. 128 + 25.00

**LIMIT OF WORK**  
 CAPITAL PROJECT NO. J-4206-1A  
 US ROUTE 1  
 STA. 116 + 78.12

**LIMIT OF WORK**  
 CAPITAL PROJECT NO. J-4206-1A  
 RELOCATED MONTEVIDEO ROAD  
 114 + 75.00



LOCATION MAP  
 SCALE 1" = 2000'

CAPITAL PROJECT NO. J-4206-1A

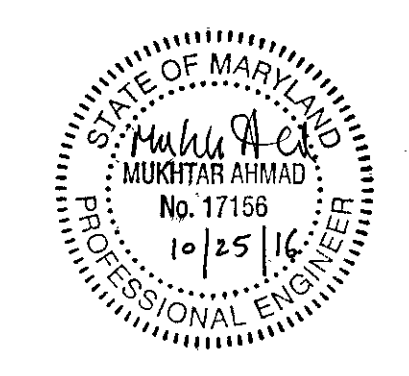
**RELOCATED MONTEVIDEO ROAD**  
**PHASE 1, SEGMENT A**  
 HOWARD COUNTY, MARYLAND  
 DEPARTMENT OF PUBLIC WORKS

CONVENTIONAL SIGNS

DRAINAGE AREA BOUNDARY	-----	TEST PIT	TP-4
EXISTING SIGN	-----	PROPOSED HMA PAVEMENT MILL AND OVERLAY	-----
LIMIT OF GRADING	-----	PROPOSED HMA PAVEMENT OVERLAY	-----
ELECTRICAL HAND BOX - SIGNALS	H.B.	PROPOSED FULL DEPTH HMA PAVEMENT	-----
PROPOSED MEDIAN BARRIER	-----	PROPOSED RIPRAP	-----
BURIED UTILITY LINES & NO. OF CABLES	-----	EXISTING CULVERT	-----
STATE, COUNTY OR CITY LINES	-----	PROPOSED CULVERT	-----
PROPOSED TRAFFIC BARRIER	-----	EXISTING DROP INLET	-----
EXISTING TRAFFIC BARRIER	-----	UTILITY POLE	-----
FENCE LINE	-----	MARSH	-----
RIGHT OF WAY LINE	-----	HEDGE	-----
EXISTING ROADWAY	-----	GROUND ELEVATION	DATUM LINE
RAILROAD	-----	GRADE ELEVATION	DATUM LINE
BASE OR SURVEY LINE	-----		
FIRE HYDRANT	-----		

\*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. 32600, EXPIRATION DATE: JANUARY 19, 2018

By the Engineer:  
 'I certify that this plan for erosion and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District.'  
 Mukhtar Ahmad      10-25-16  
 Date  
 Mukhtar Ahmad  
 Signature of Engineer  
 Print name below Signature



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.'  
 Brandon N. Low      10-17-16  
 Date  
 Brandon N. Low  
 Signature of Developer  
 Print name below Signature

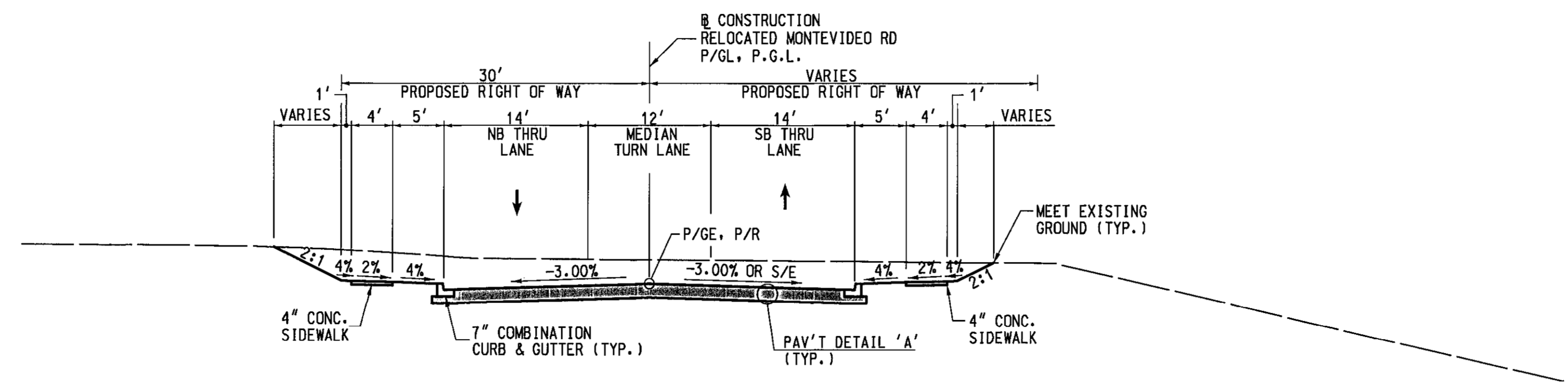
APPROVED: FOR STORM DRAINAGE SYSTEMS AND PUBLIC ROADS, HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 Brandon N. Low      10-17-16  
 DATE  
 CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

THIS DEVELOPMENT IS APPROVED FOR EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
 Howard Soil Conservation District      10/26/16  
 Date  
 EP16-38

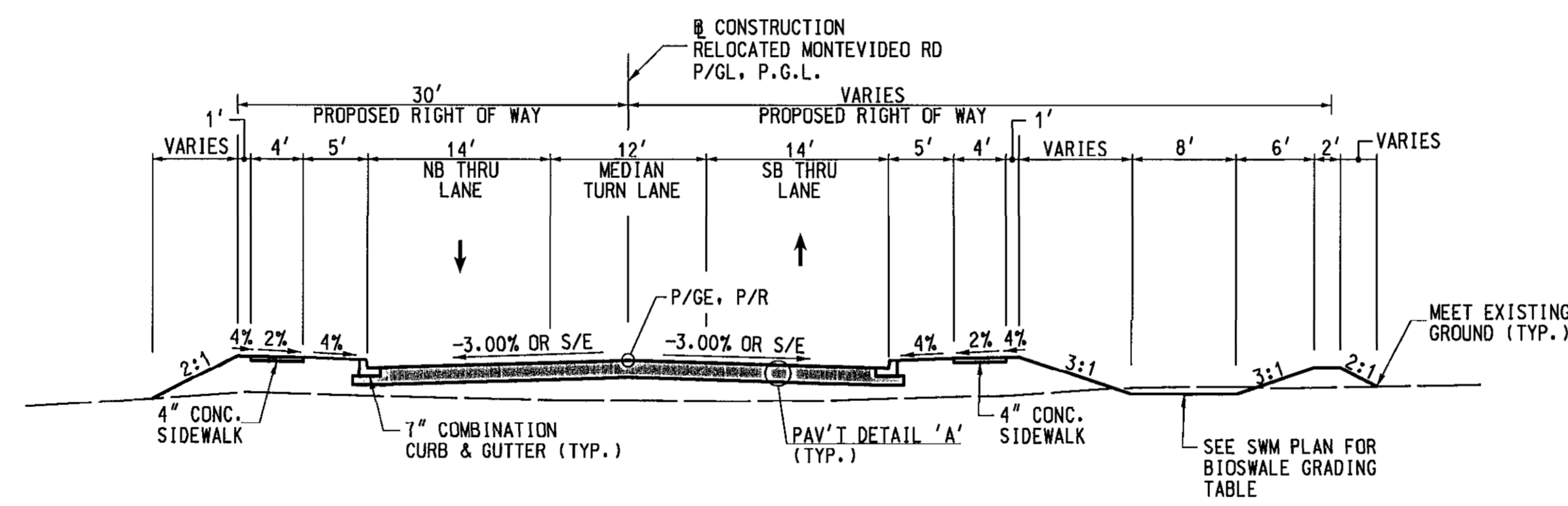
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND Helge Seligson 10-18-16 DIRECTOR OF PUBLIC WORKS Brandon N. Low 10-17-16 CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION		JOHNSON, MIRMIRAN & THOMPSON Engineering A Brighter Future® 72 Loveton Circle Baltimore, Maryland 21152-0949		STATE OF MARYLAND PROFESSIONAL ENGINEER No. 32600 10/14/16		DES: BWM DRN: CWV CHK: SER DATE: 10/2016		CAPITAL PROJECT NO. J-4206-1A		TITLE SHEET RELOCATED MONTEVIDEO ROAD PHASE 1, SEGMENT A		SCALE AS SHOWN SHEET 1 OF 45	
				MAP NO.		BLOCK NO.		ELECTION DISTRICT 2		HOWARD COUNTY, MARYLAND			

**NOTES:**

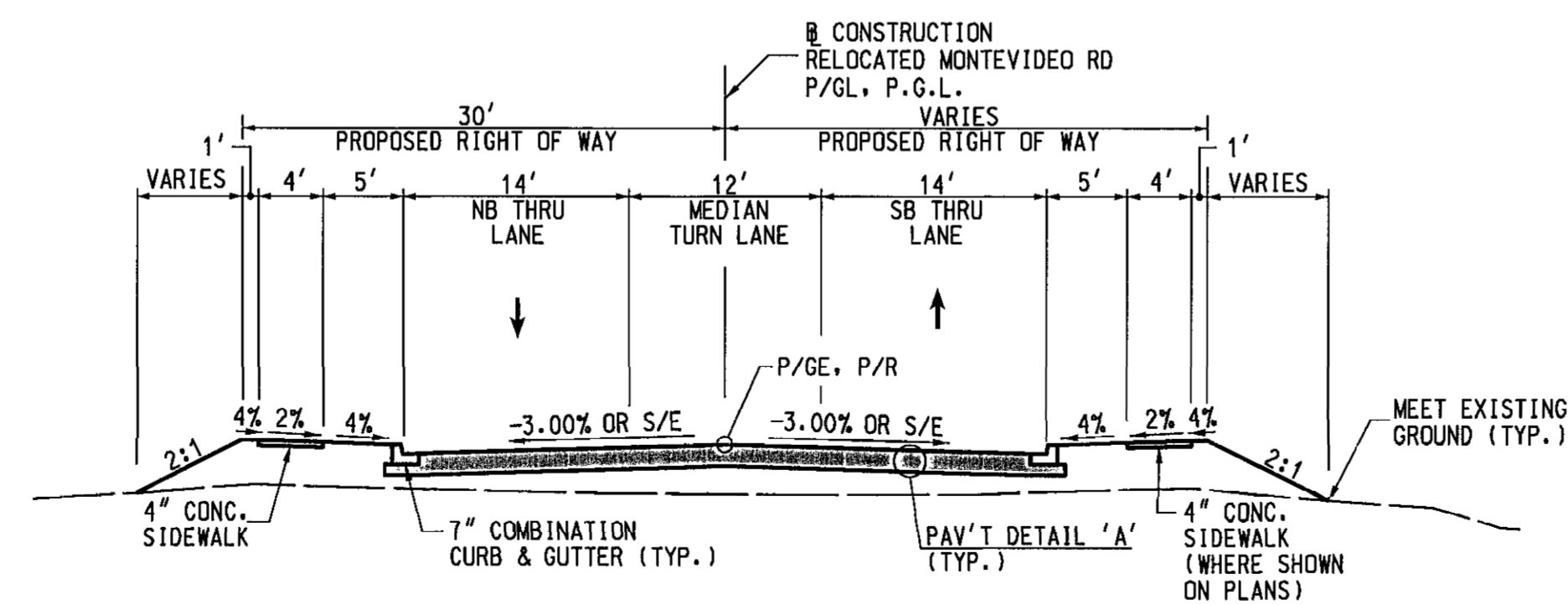
1. FOR S/E RATES, SEE DWG. DE-1
2. ALL FULL DEPTH SAWCUTS SHALL BE A MINIMUM 1 FOOT FROM THE EDGE OF EXISTING PAVEMENT. ALL FULL DEPTH SAW CUTS REQUIRED WILL NOT BE MEASURED BUT THE COST WILL BE INCIDENTAL TO THE CONTRACT UNIT PRICE FOR THE PAVEMENT ITEMS.
3. THE GAB PLACED UNDER AND BEHIND THE CURB AND GUTTER WILL NOT BE MEASURED BUT THE COST WILL BE INCIDENTAL TO THE CONTRACT UNIT PRICE FOR THE CURB ITEM.
4. UNLESS SPECIFIED OTHERWISE, ALL EXCAVATION REQUIRED FOR THE CONSTRUCTION OF THE PROPOSED PAVEMENT, SIDEWALKS, DRIVEWAYS, AND GUTTER SHALL BE CONSIDERED CLASS 1 EXCAVATION AND WILL BE PAID FOR AT THE CUBIC YARD UNIT PRICE BID FOR CLASS 1 EXCAVATION.
5. 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 AND TURFGRASS ESTABLISHMENT UNLESS OTHERWISE NOTED.



**RELOCATED MONTEVIDEO ROAD  
TYPICAL SECTION**  
STA. 114+00 TO STA. 114+35



**RELOCATED MONTEVIDEO ROAD  
TYPICAL SECTION**  
STA. 111+50 TO STA. 114+00



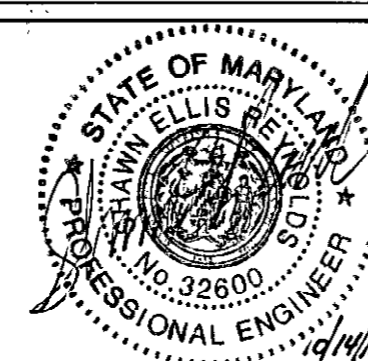
**RELOCATED MONTEVIDEO ROAD  
TYPICAL SECTION**  
STA. 110+25 TO STA. 111+50

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. 32600, EXPIRATION DATE: JANUARY 19, 2018

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Alger Scavano* 10-18-16  
DIRECTOR OF PUBLIC WORKS  
*David Lee* 10-17-16  
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

*Thomas P. Butler* 10/17/16  
CHIEF, BUREAU OF ENGINEERING  
*Mevin* 10/18/2016  
CHIEF, BUREAU OF HIGHWAYS



DES:	BY:	NO.:	DATE:
BWM			
DRN:	CWW		
CHK:	SER		
DATE:	10/2016		

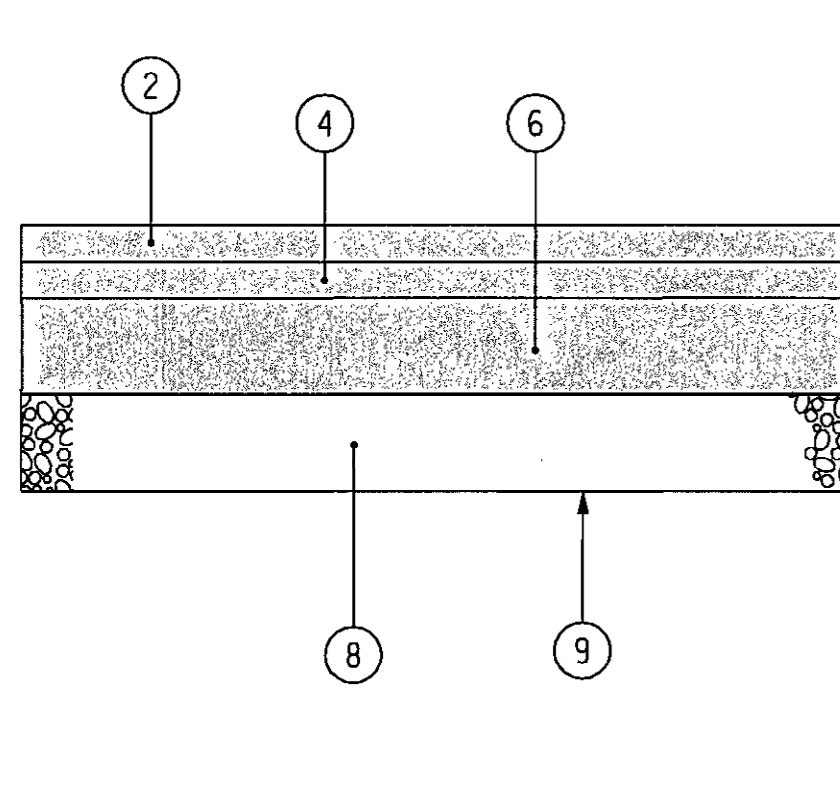
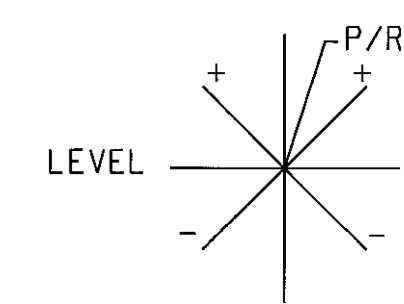
CAPITAL PROJECT NO.  
**J-4206-1A**

MAP NO. BLOCK NO.

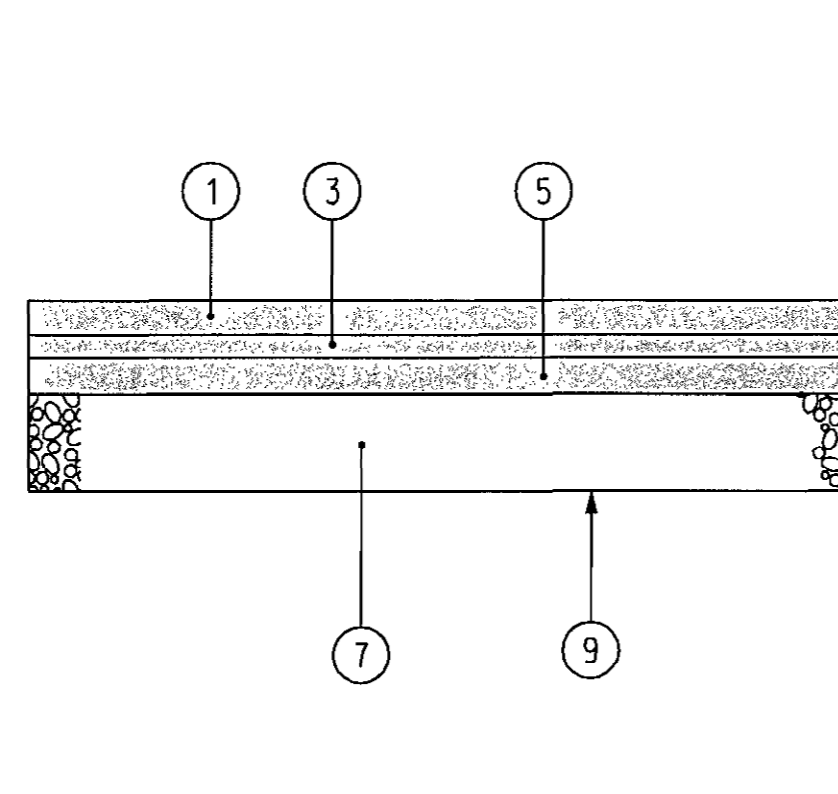
TYPICAL SECTIONS  
**RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A**  
ELECTION DISTRICT 2 HOWARD COUNTY, MARYLAND

TS-1 OF 1  
SCALE NOT TO SCALE  
SHEET 2 OF 45

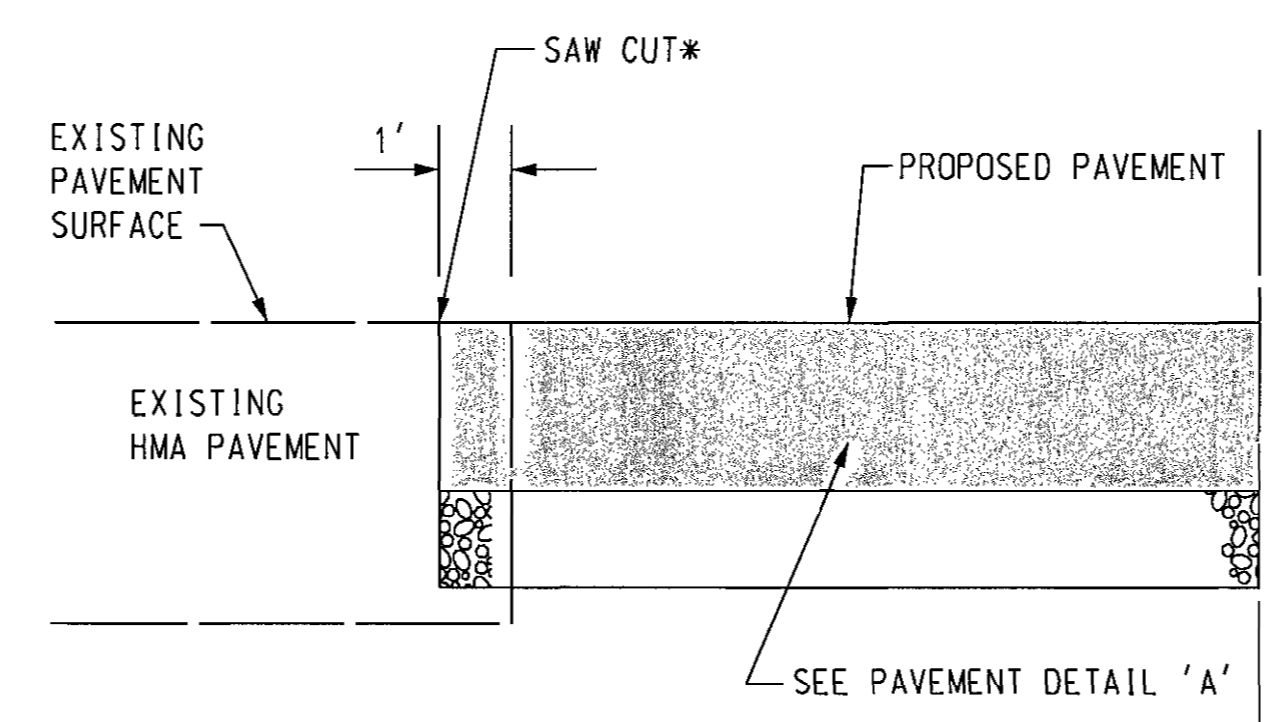




**DETAIL 'A'**  
**FULL-DEPTH CONSTRUCTION**  
**RELOCATED MONTEVIDEO ROAD**

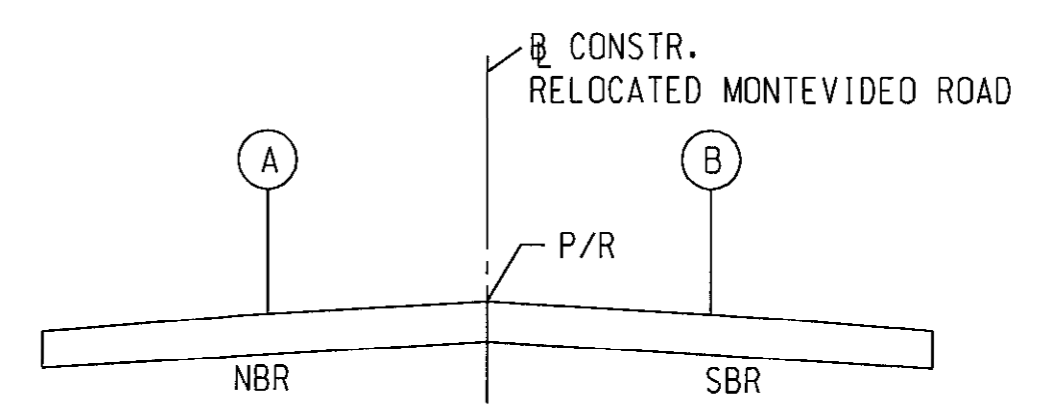


**DETAIL 'B'**  
**FULL-DEPTH CONSTRUCTION**  
**DRIVEWAY**



\*SAW CUT SHALL BE FULL DEPTH. SAW CUTS WILL NOT BE MEASURED BUT THE COST WILL BE INCIDENTAL TO THE CONTRACT UNIT PRICE FOR THE PAVEMENT ITEMS.

**PAVEMENT TIE-IN**



DS= 40 MPH		emax = 6%		c=0.00038 <sup>FT./FT./FT.</sup>	
STATION	A	B	REMARKS		
POT 110+00.00	-	-			
110+25.00	-0.79%	+0.79%	Meet Existing US Rte 1		
110+51.63	-0.79%	+0.79%	Meet Future US Rte 1 Widening		
110+72.42	-1.58%	+0.00%	Level B		
111+09.79	-3.00%	-1.42%	First Normal A		
111+51.37	-3.00%	-3.00%	First Normal B		
114+27.27	-3.00%	-3.00%	Last Normal B		
114+35.00	-3.00%	-2.71%	END PHASE 1, SEGMENT A		

**PAVEMENT LEGEND**

- ① 1.5" HOT-MIX ASPHALT SUPERPAVE 9.5 mm FOR SURFACE- PG 64-22, LEVEL-1
- ② 2.0" HOT-MIX ASPHALT SUPERPAVE 12.5 mm FOR SURFACE- PG 64-22, LEVEL-2
- ③ 1.0" HOT-MIX ASPHALT SUPERPAVE 9.5 mm FOR INTERMEDIATE SURFACE - PG 64-22, LEVEL-1
- ④ 2.0" HOT-MIX ASPHALT SUPERPAVE 12.5 mm FOR INTERMEDIATE SURFACE - PG 64-22, LEVEL-2
- ⑤ 3.5" HOT-MIX ASPHALT SUPERPAVE 19.0 mm FOR BASE - PG 64-22, LEVEL-1
- ⑥ 6.0" HOT-MIX ASPHALT SUPERPAVE 19.0 mm FOR BASE - PG 64-22, LEVEL-2
- ⑦ 4.0" GRADED AGGREGATE BASE
- ⑧ 6.0" GRADED AGGREGATE BASE
- ⑨ TOP OF SUBGRADE AND LIMIT OF CLASS 1 EXCAVATION

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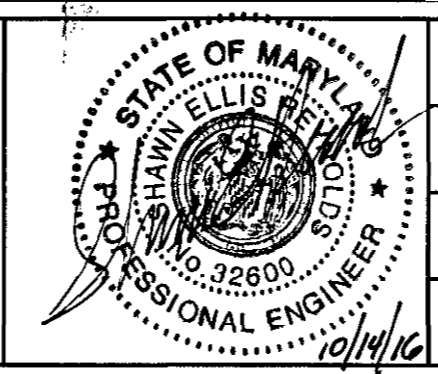
DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Hilger Sassman* 10-18-16  
DIRECTOR OF PUBLIC WORKS

*Thomas B. Butler* 10/17/16  
CHIEF, BUREAU OF ENGINEERING

*Maunick* 10/18/2016  
CHIEF, BUREAU OF HIGHWAYS

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



DES:	BY	NO.	DATE
BWM			
DRN:	CWW		
CHK:	SER		
DATE:	10/2016		

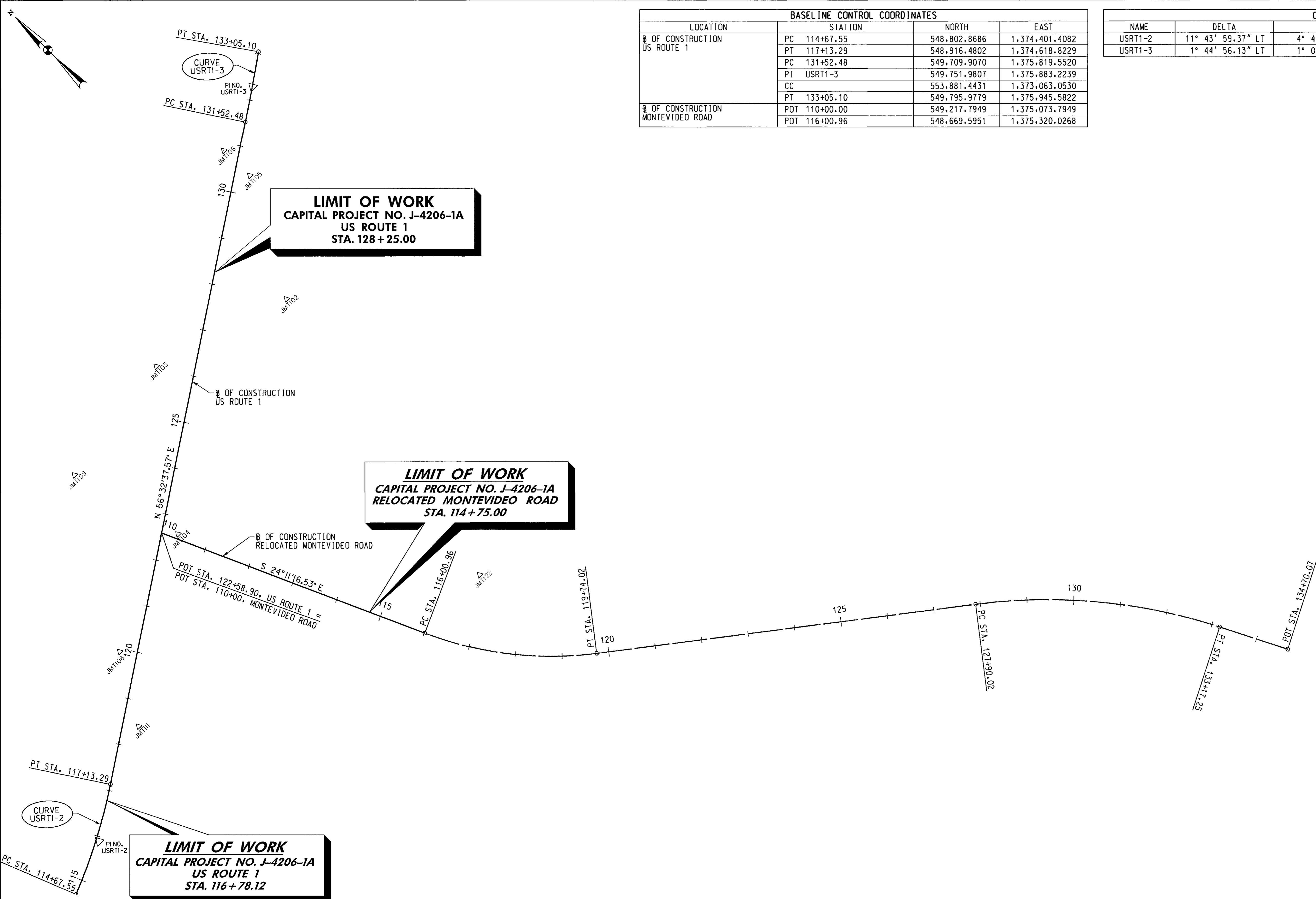
CAPITAL PROJECT NO.  
**J-4206-1A**

DETAILS AND SUPERELEVATION CHART  
**RELOCATED MONTEVIDEO ROAD**  
**PHASE 1, SEGMENT A**

ELECTION DISTRICT 2  
HOWARD COUNTY, MARYLAND

DE-1 OF 1  
SCALE  
NONE  
SHEET  
3 OF 45

C:\pwork\091816-01\_montevideo\_road\cadd\p1d-000\_montevideo.dwg 10/13/2016 10:27:04 AM



BASELINE CONTROL COORDINATES			
LOCATION	STATION	NORTH	EAST
B OF CONSTRUCTION US ROUTE 1	PC 114+67.55	548,802.8686	1,374,401.4082
	PT 117+13.29	548,916.4802	1,374,618.8229
	PC 131+52.48	549,709.9070	1,375,819.5520
	PI USRTI-3	549,751.9807	1,375,883.2239
	CC	553,881.4431	1,373,063.0530
B OF CONSTRUCTION MONTEVIDEO ROAD	PT 133+05.10	549,795.9779	1,375,945.5822
	POT 110+00.00	549,217.7949	1,375,073.7949
	POT 116+00.96	548,669.5951	1,375,320.0268

CURVE DATA						
NAME	DELTA	Dc	RADIUS	TANGENT	LENGTH	EXT.
USRTI-2	11° 43' 59.37" LT	4° 46' 28.73"	1,200.00'	123.30'	245.74'	6.32'
USRTI-3	1° 44' 56.13" LT	1° 08' 45.30"	5,000.00'	76.32'	152.62'	0.58'

NOTE:  
1. SEE DWG. GS-2 FOR TRAVERSE POINT REFERENCES.

DATUM: NAD 8391 Horizontal  
NAVD 88 Vertical

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DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

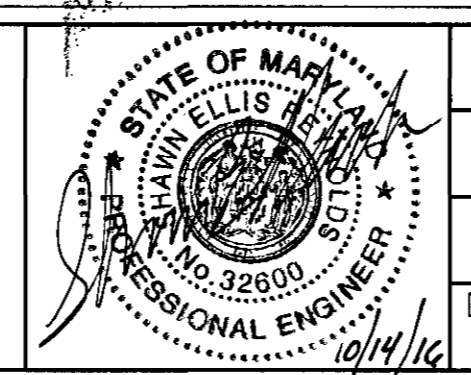
*Allen Secor* 10-18-16  
DIRECTOR OF PUBLIC WORKS

*Thomas E. Butler* 10/12/16  
CHIEF, BUREAU OF ENGINEERING

*Michael* 10/18/2016  
CHIEF, BUREAU OF HIGHWAYS

CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

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



DES:	BWM	BY	NO.	DATE
DRN:	CWW			
CHK:	SER			
DATE:	10/2016			

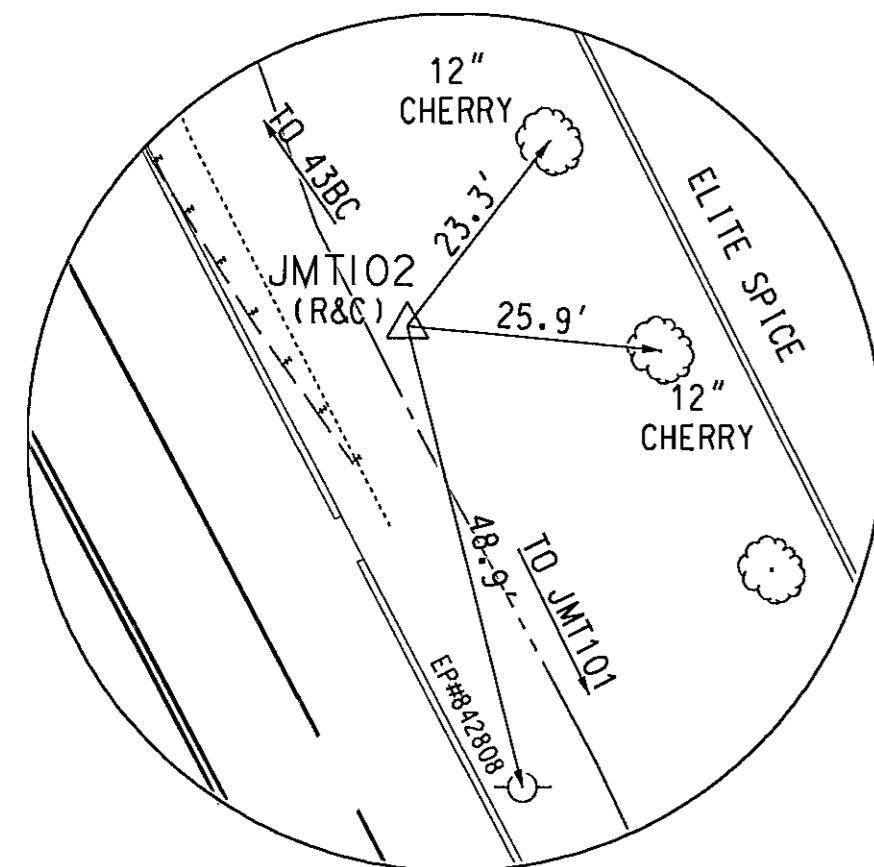
CAPITAL PROJECT NO.  
**J-4206-1A**

GEOMETRY SHEET  
**RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A**

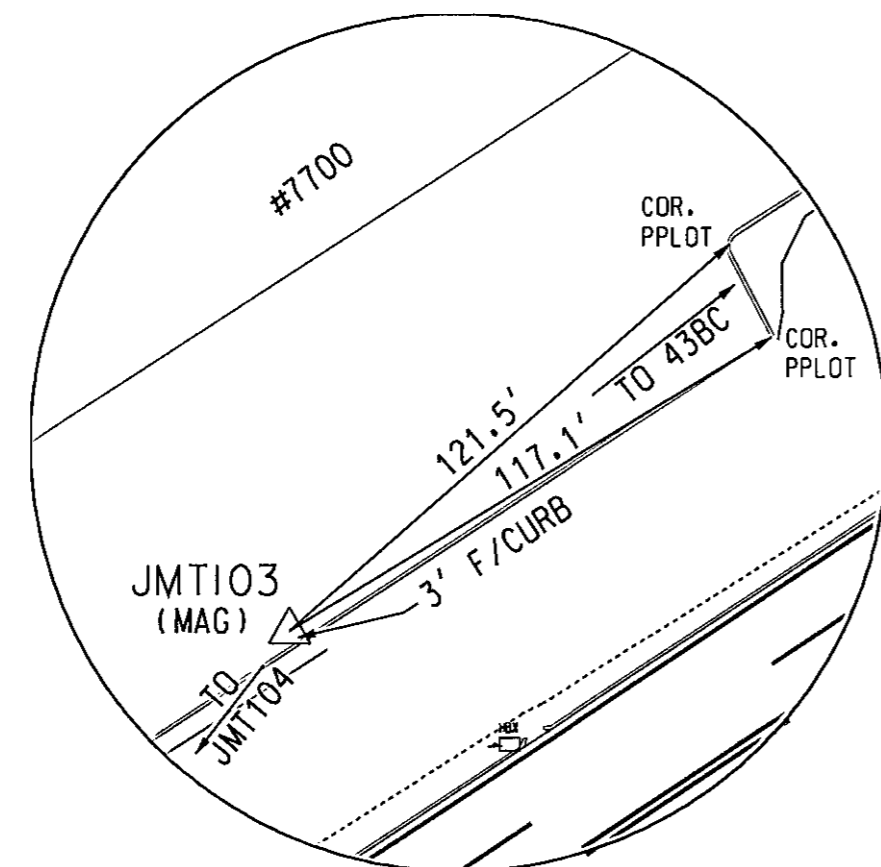
ELECTION DISTRICT 2  
HOWARD COUNTY, MARYLAND

SCALE  
1"=100'

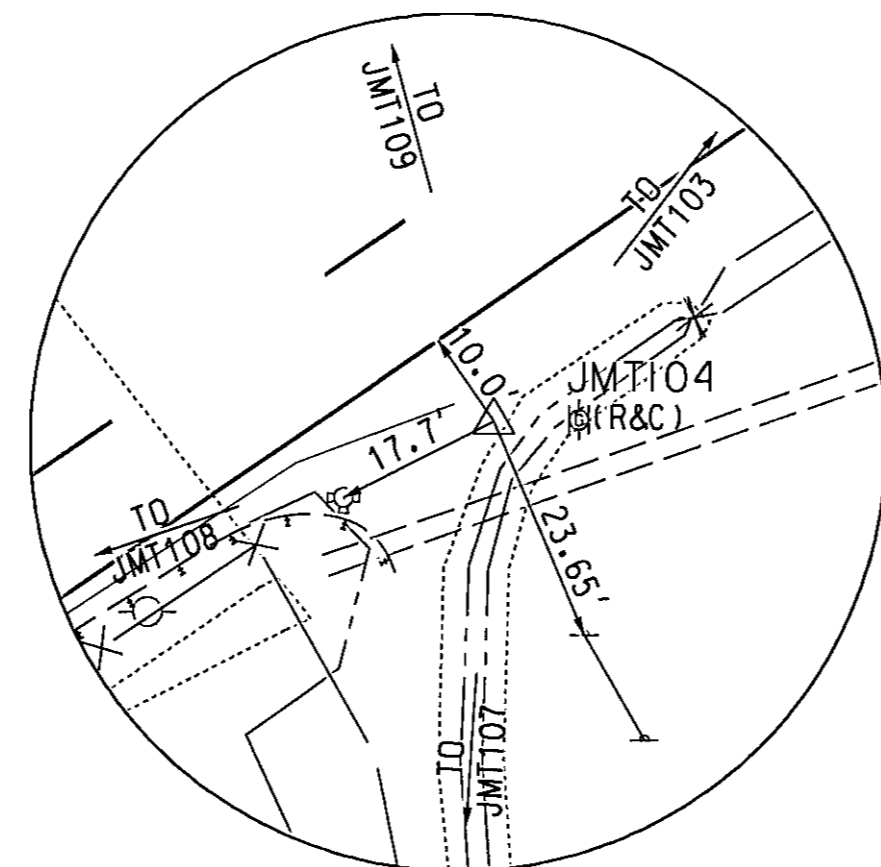
SHEET  
4 OF 45



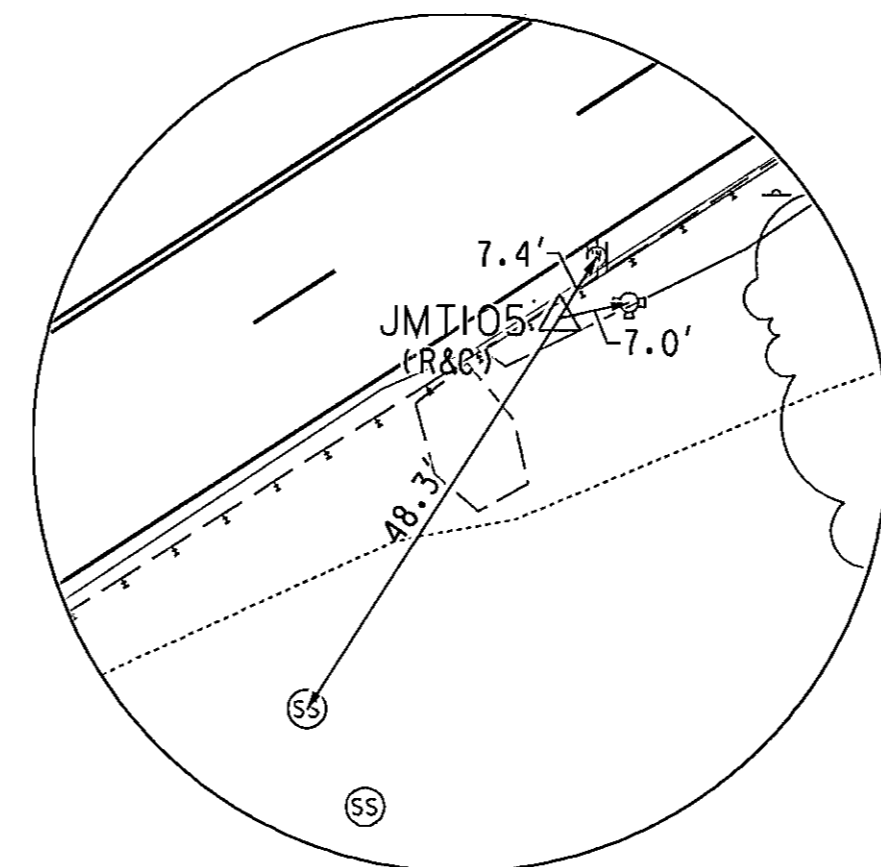
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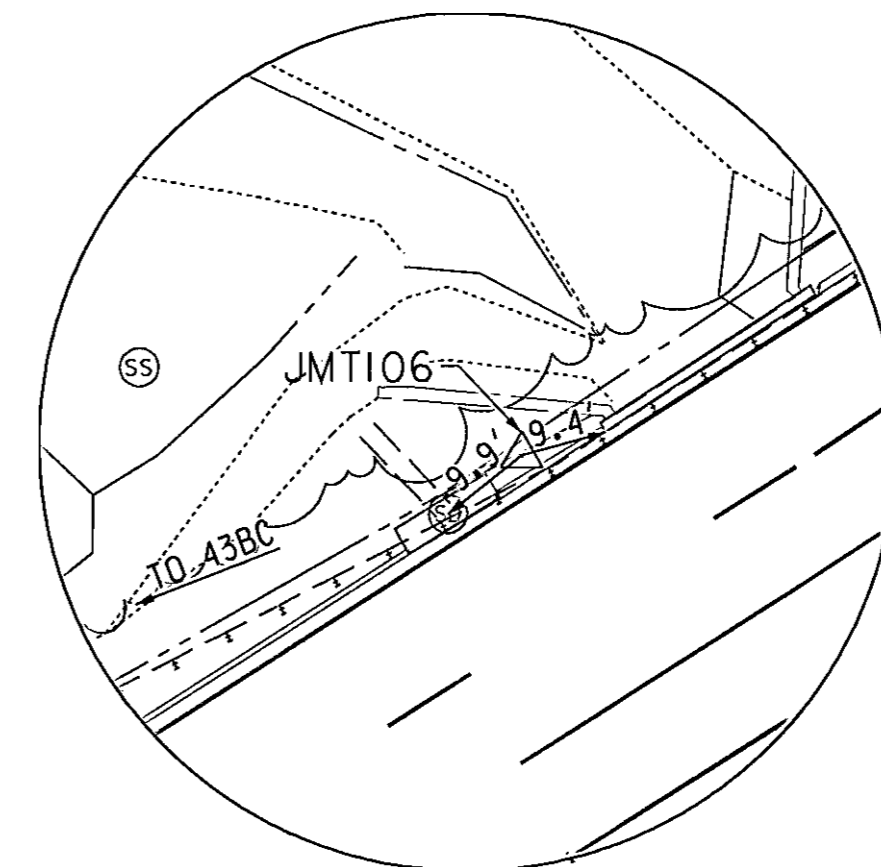
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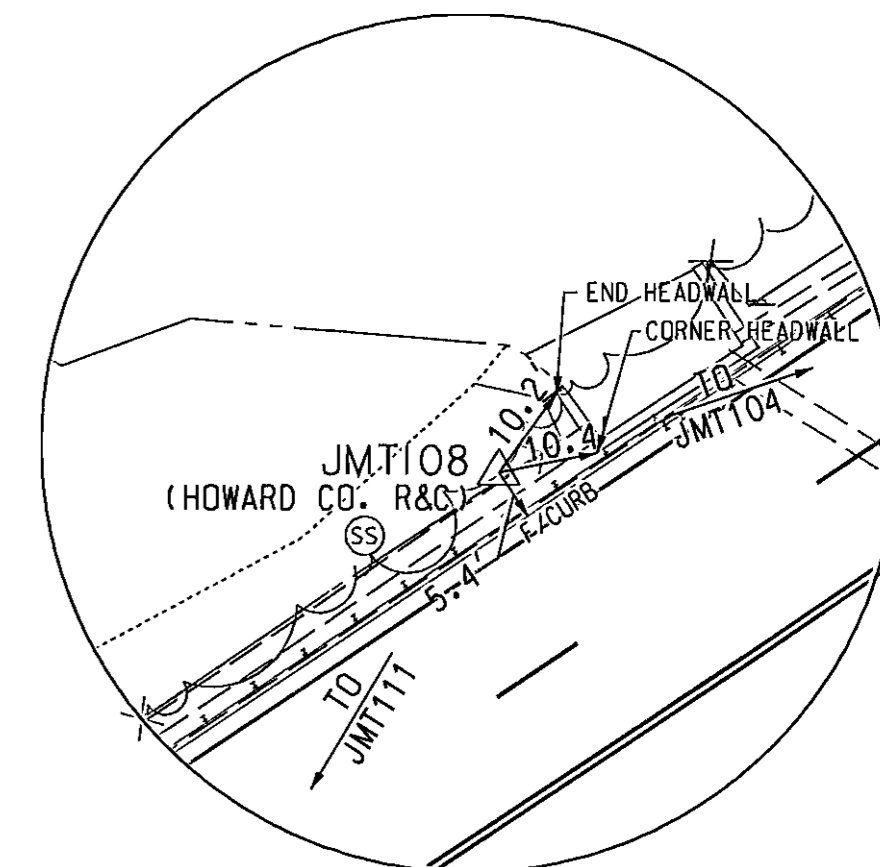
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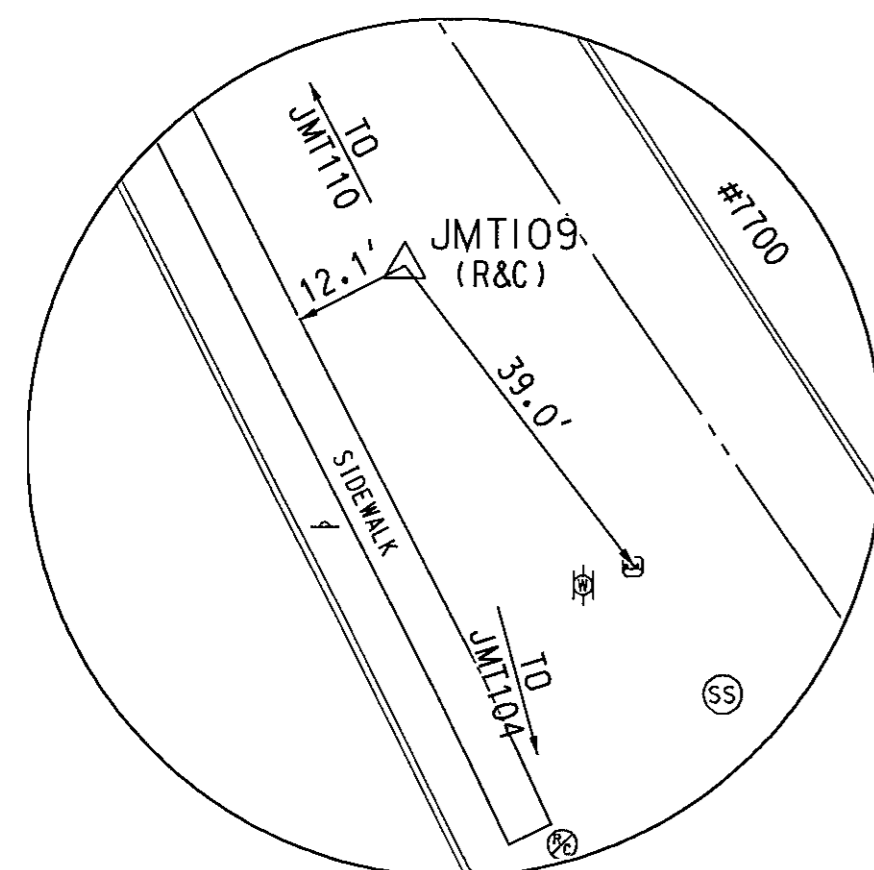
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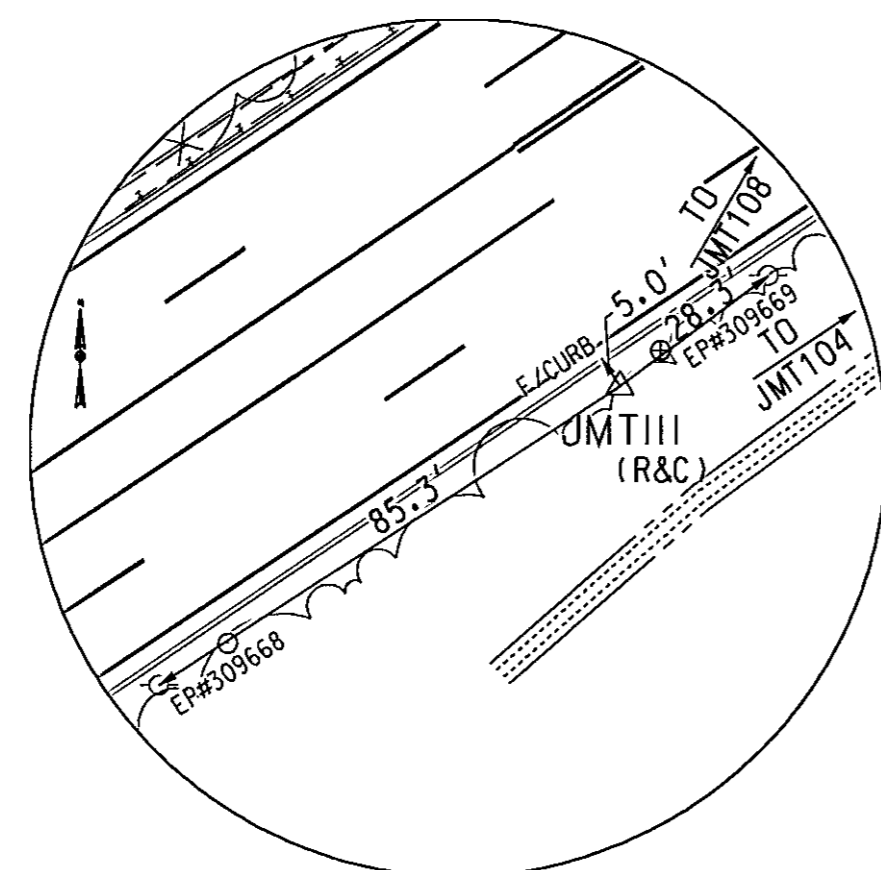
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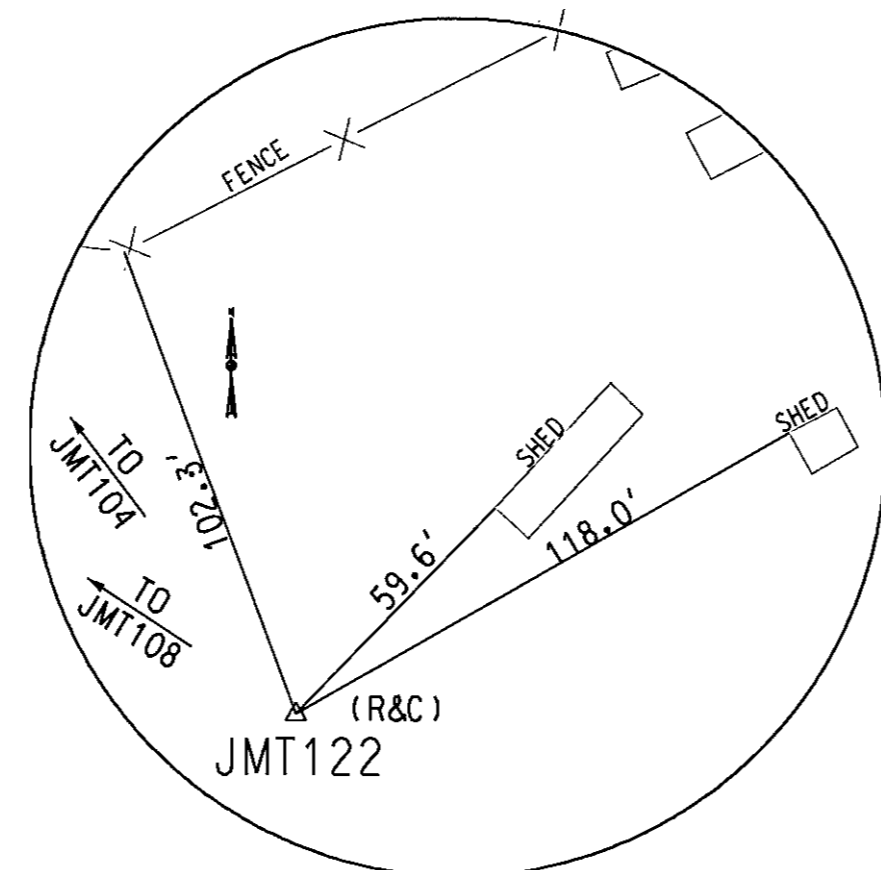
TRAV PT 108



TRAV PT 109



TRAV PT III



TRAV PT 122

TRAVERSE POINTS				
POINT	NORTH	EAST	ELEVATION	DESCRIPTION
JMT102	549380.93495	1375615.48408	198.09683	TRAV.R&C
JMT103	549476.04955	1375317.43646	215.10059	CTRAV
JMT104	549190.93202	1375097.38367	202.96769	TRAV.R&C
JMT105	549622.08231	1375745.71820	184.39808	TRAV.R&C
JMT106	549698.89424	1375743.96254	182.97932	TRAV.R&C
JMT108	549102.04149	1374832.39717	208.50390	TRAV.R&C(HOWARD CO.)
JMT109	549436.57253	1375030.24337	211.74026	TRAV.R&C
JMT111	548961.12876	1374748.69989	215.08980	TRAV.R&C
JMT122	548674.20180	1375490.47480	214.42700	TRAV.R&C

\*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. 32600, EXPIRATION DATE: JANUARY 19, 2018

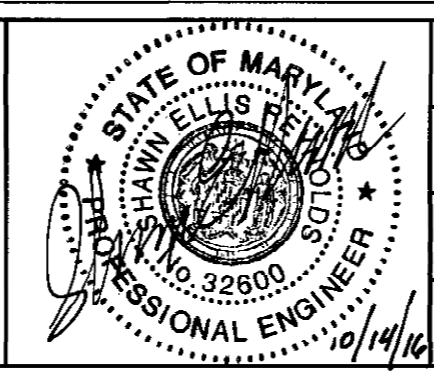
DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Alan Seaman* 10-18-16  
DIRECTOR OF PUBLIC WORKS

*Thomas E. Butler* 10/17/16  
CHIEF, BUREAU OF ENGINEERING

*Bradley* 10-17-16  
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

*Maureen* 10/18/2016  
CHIEF, BUREAU OF HIGHWAYS



DES:	BWM	BY	NO.	DATE
DRN:	CWW			
CHK:	SER			
DATE:	10/2016			

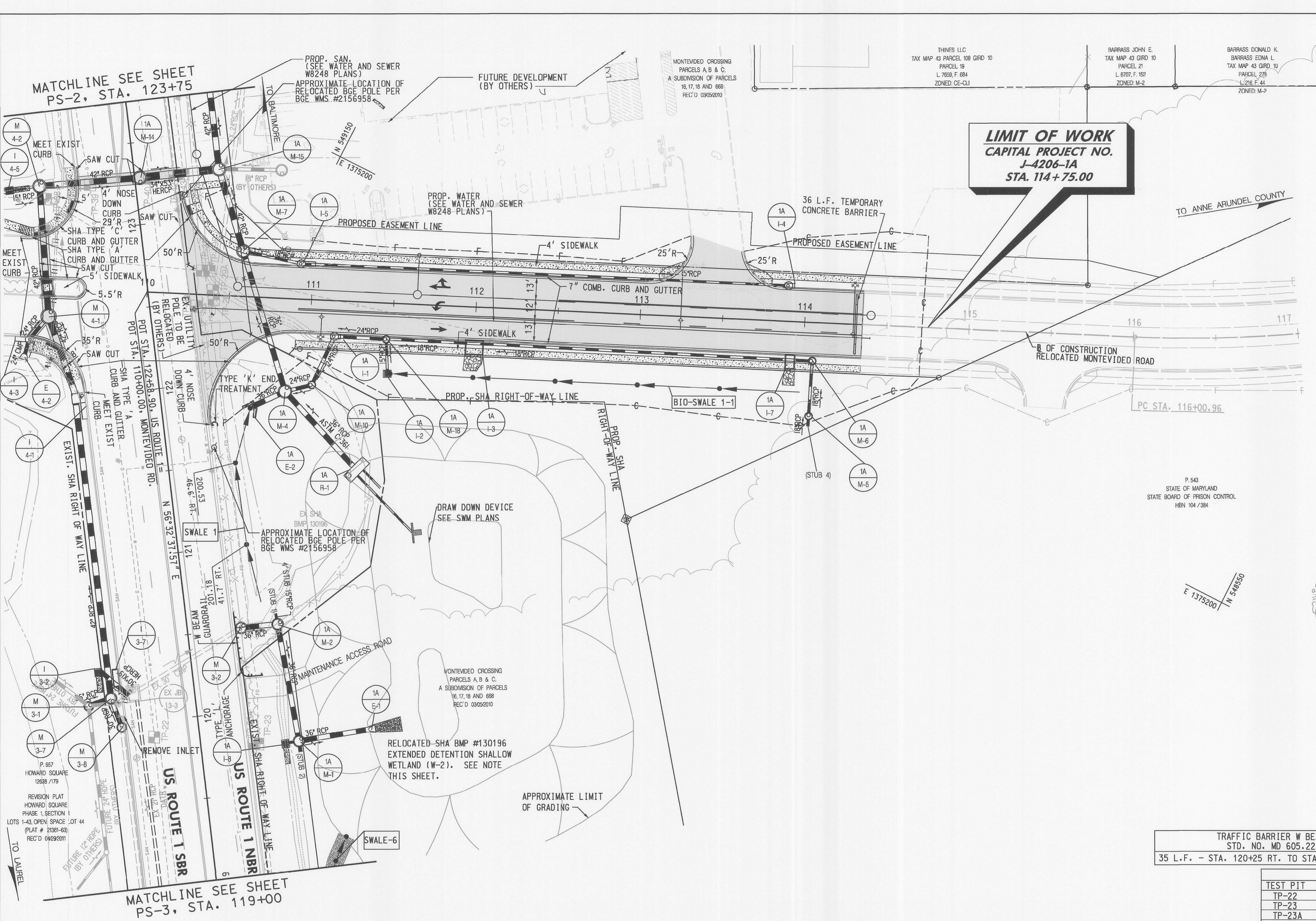
CAPITAL PROJECT NO.  
**J-4206-1A**

GEOMETRY SHEET  
**RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A**

ELECTION DISTRICT 2  
HOWARD COUNTY, MARYLAND

GS-2 OF 2  
SCALE NOT TO SCALE  
SHEET 5 OF 45





**LIMIT OF WORK**  
**CAPITAL PROJECT NO.**  
**J-4206-1A**  
**STA. 114+75.00**

- MD SHA STD. TYPE 'A' CURB  
STD. NO. MD 620.02  
32 L.F.- STA. 122+10 LT. TO STA. 122+32 LT.
- MD SHA STD. TYPE 'A' COMBINATION CURB AND GUTTER  
12 INCH GUTTER PAN, 8 INCH DEPTH  
STD. NO. MD 620.02  
58 L.F.- STA. 122+03 LT. TO STA. 122+42 LT.  
62 L.F.- STA. 122+61 LT. TO STA. 122+75 LT.  
18 L.F.- STA. 123+01 LT. TO STA. 123+03 LT.  
30 L.F.- STA. 123+12 LT. TO STA. 123+40 LT.  
87 L.F.- STA. 121+74 RT. TO STA. 122+25 RT.  
71 L.F.- STA. 122+67 RT. TO STA. 123+18 RT.
- MD SHA STD. TYPE 'C' COMBINATION CURB AND GUTTER  
12 INCH GUTTER PAN, 8 INCH DEPTH  
STD. NO. MD 620.02-01  
17 L.F.- STA. 123+02 LT. TO STA. 123+11 LT.
- 7" COMBINATION CURB AND GUTTER  
STD. NO. (R 3.01)  
280 L.F.- STA. 110+68 LT. TO STA. 113+29 LT.  
85 L.F.- STA. 113+61 LT. TO STA. 114+35 LT.  
344 L.F.- STA. 110+91 RT. TO STA. 114+35 RT.
- MD SHA STD. 5" CONCRETE SIDEWALK  
284 S.F.- STA. 122+11 LT. TO STA. 122+40 LT.  
29 S.F.- STA. 122+63 LT. TO STA. 122+70 LT.  
317 S.F.- STA. 123+05 LT. TO STA. 123+30 LT.
- 4" CONCRETE SIDEWALK  
STD. NO. (R 3.05)  
1395 S.F.- STA. 110+23 LT. TO STA. 113+20 LT.  
298 S.F.- STA. 113+52 LT. TO STA. 114+35 LT.  
1375 S.F.- STA. 110+46 RT. TO STA. 114+35 RT.

SIDEWALK RAMPS			
LOCATION	TYPE	DETECTABLE WARNING SURFACE (S.F.)	MD SHA STD. 655.40
STA. 122+34, LT.	MD SHA STD. 655.12	18	
STA. 122+63, LT.	MD SHA STD. 655.21	21	
(MEDIAN)			
STA. 123+02, LT.	MD SHA STD. 655.12	18	
STA. 123+15, LT.	MD SHA STD. 655.12	17	
STA. 123+05, RT.	MD SHA STD. 655.12	12	
STA. 113+20, LT.	MD SHA STD. 655.11	-	
STA. 113+70, LT.	MD SHA STD. 655.11	-	

- TYPE 'K' TRAFFIC BARRIER END TREATMENT  
STD. NO. MD 605.10  
1 EA. - STA. 121+74 RT.
- TYPE 'L' TRAFFIC BARRIER ANCHORAGE  
STD. NO. MD 605.13  
1 EA. - STA. 120+25 RT.
- REMOVAL OF GUARDRAIL  
69 L.F. - STA. 119+91 RT. TO STA. 120+60 RT.  
82 L.F. - STA. 121+74 RT. TO STA. 122+47 RT.

TRAFFIC BARRIER W BEAM  
STD. NO. MD 605.22  
35 L.F. - STA. 120+25 RT. TO STA. 120+60 RT.

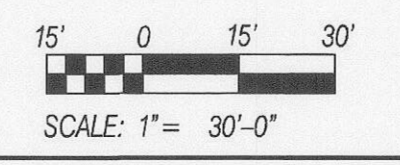
TEST PIT LOCATION COORDINATES					
TEST PIT	NORTHING	EASTING	UTILITY	UTIL. ELEV.	SURF. ELEV.
TP-22	549092.35	1374834.77	10" GAS	202.96	208.46
TP-23	549034.13	1374859.72	2" FIBER OPTIC	206.83	209.53
TP-23A	549036.39	1374858.71	UNKNOWN	206.01	209.79
TP-29	549179.49	1375088.03	27" STORM DRAIN	199.58	202.88
TP-29A	549182.57	1375092.73	DRY	N/A	203.56
TP-29B	549189.69	1375102.35	DRY	N/A	203.67
TP-30	549186.95	1375079.77	6" WATER	198.94	203.76
TP-31	549193.81	1375100.23	1.25" GAS	200.48	203.22
TP-37	549290.53	1375078.80	2" GAS	199.86	204.82
TP-38	549298.31	1375096.49	10" WATER	196.65	203.92
TP-39	549278.13	1375116.23	10" GAS	199.54	203.48
TP-40	549247.72	1375135.72	12" TELEPHONE	199.65	203.97
TP-42	549234.93	1375144.66	10" WATER	198.42	203.14
TP-43	549230.50	1375147.60	2" FIBER OPTIC	195.41	202.81

NOTE: UTIL. ELEVATION REPRESENTS THE TOP OF THE UTILITY BASED ON THE INFORMATION IN THE TEST HOLE LOG. SEE TEST HOLE LOGS FOR MORE DETAILED INFORMATION.

**PAVING LEGEND**

	FULL DEPTH HMA PAVEMENT
	OVERLAY
	CONCRETE SIDEWALK

\*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. 32600, EXPIRATION DATE: JANUARY 19, 2018



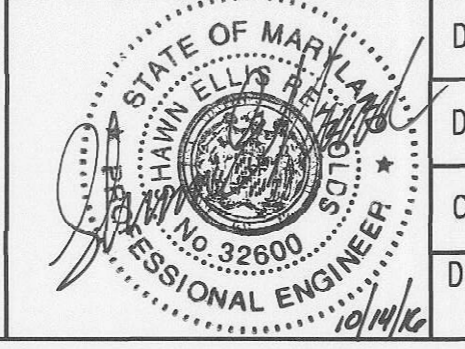
DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

*Hilga Stevens* 10/18/16  
 DIRECTOR OF PUBLIC WORKS

*Thomas E. Butler* 10/17/16  
 CHIEF, BUREAU OF ENGINEERING

*Bradford* 10-17-16  
 CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

*Almeida* 10/18/2016  
 CHIEF, BUREAU OF HIGHWAYS



DES:	BWM	BY	NO.		DATE
DRN:	CWW				
CHK:	SER				
DATE:	10/2016				

CAPITAL PROJECT NO.  
**J-4206-1A**

PLAN SHEET  
**RELOCATED MONTEVIDEO ROAD**  
**PHASE 1, SEGMENT A**

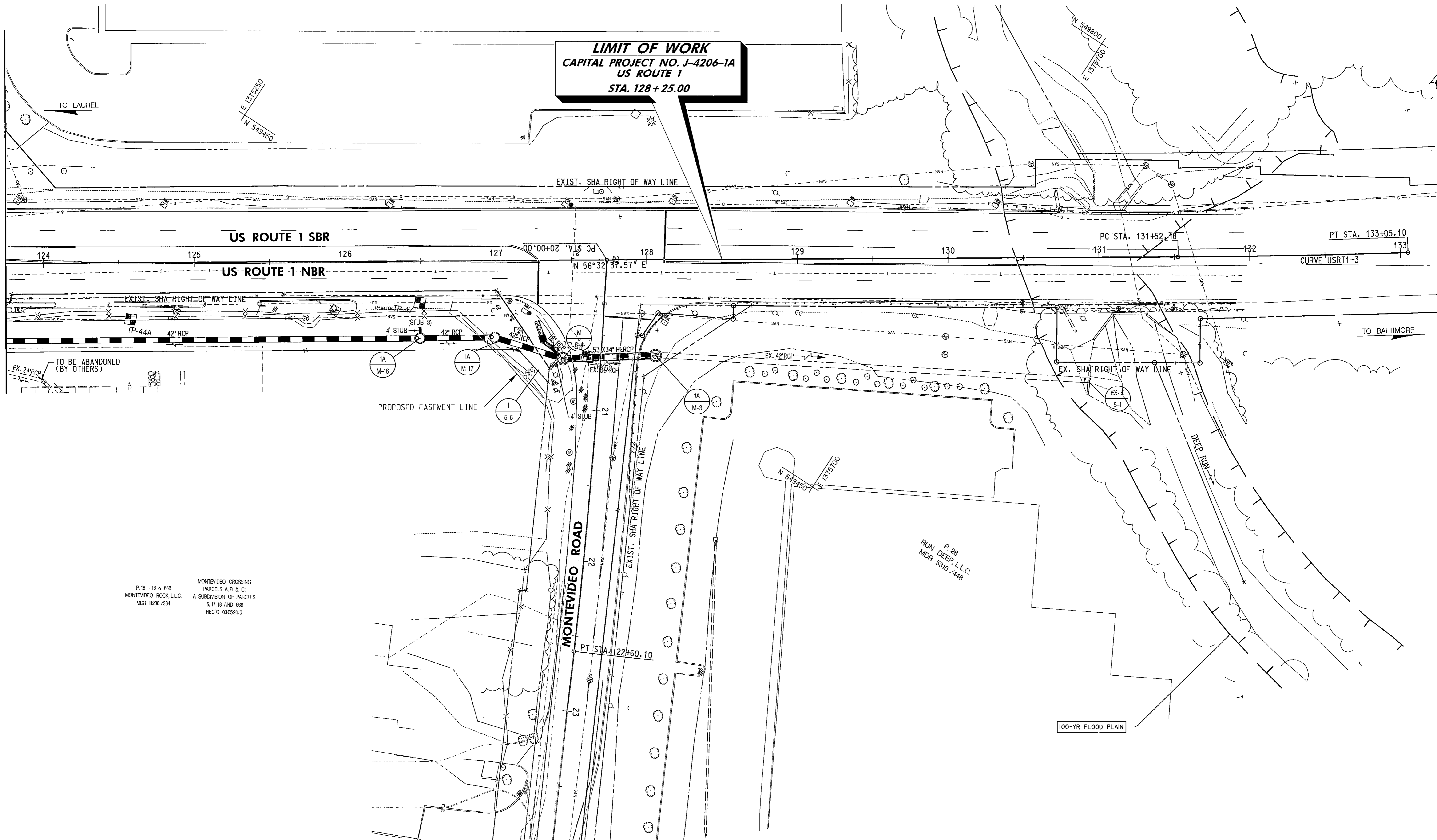
ELECTION DISTRICT 2  
 HOWARD COUNTY, MARYLAND

SCALE: 1"=30'  
 SHEET: 6 OF 45



MATCHLINE SEE SHEET PS-1, STA. 123+75

**LIMIT OF WORK**  
**CAPITAL PROJECT NO. J-4206-1A**  
**US ROUTE 1**  
**STA. 128+25.00**

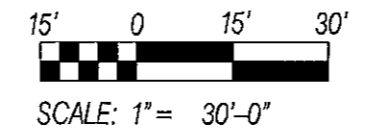


P. 16 - 18 & 668  
 MONTEVIDEO ROCK, L.L.C.  
 MDR 11236 / 364

MONTEVIDEO CROSSING  
 PARCELS A, B & C;  
 A SUBDIVISION OF PARCELS  
 16, 17, 18 AND 668  
 REC'D 03/05/2010

- PAVING LEGEND**
- FULL DEPTH HMA PAVEMENT
  - OVERLAY
  - CONCRETE SIDEWALK

"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. 32600, EXPIRATION DATE: JANUARY 19, 2018"



TEST PIT LOCATION COORDINATES					
TEST PIT	NORTHING	EASTING	UTILITY	UTIL. ELEV.	SURF. ELEV.
TP-44A	549295.47	1375260.61	8" SANITARY	191.68	200.24
TP-52	549440.74	1375528.52	4" GAS	187.72	191.03
TP-53	549440.03	1375527.51	10" WATER	186.41	190.99

CURVE NO. USRT1-3  
 $\Delta = 1^\circ 44' 56.13''$  LT  
 $D = 1^\circ 08' 45.30''$   
 $R = 5,000.00'$   
 $T = 76.32'$   
 $L = 152.62'$   
 $E = 0.58'$

PS-2 OF 3

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

*Thomas E. Butler* 10/17/16  
 CHIEF, BUREAU OF ENGINEERING

*Thomas E. Butler* 10/17/16  
 CHIEF, BUREAU OF HIGHWAYS



DES:	BY:	NO.:	DATE:
BWM			
DRN:	CWW		
CHK:	SER		
DATE:	10/2016		

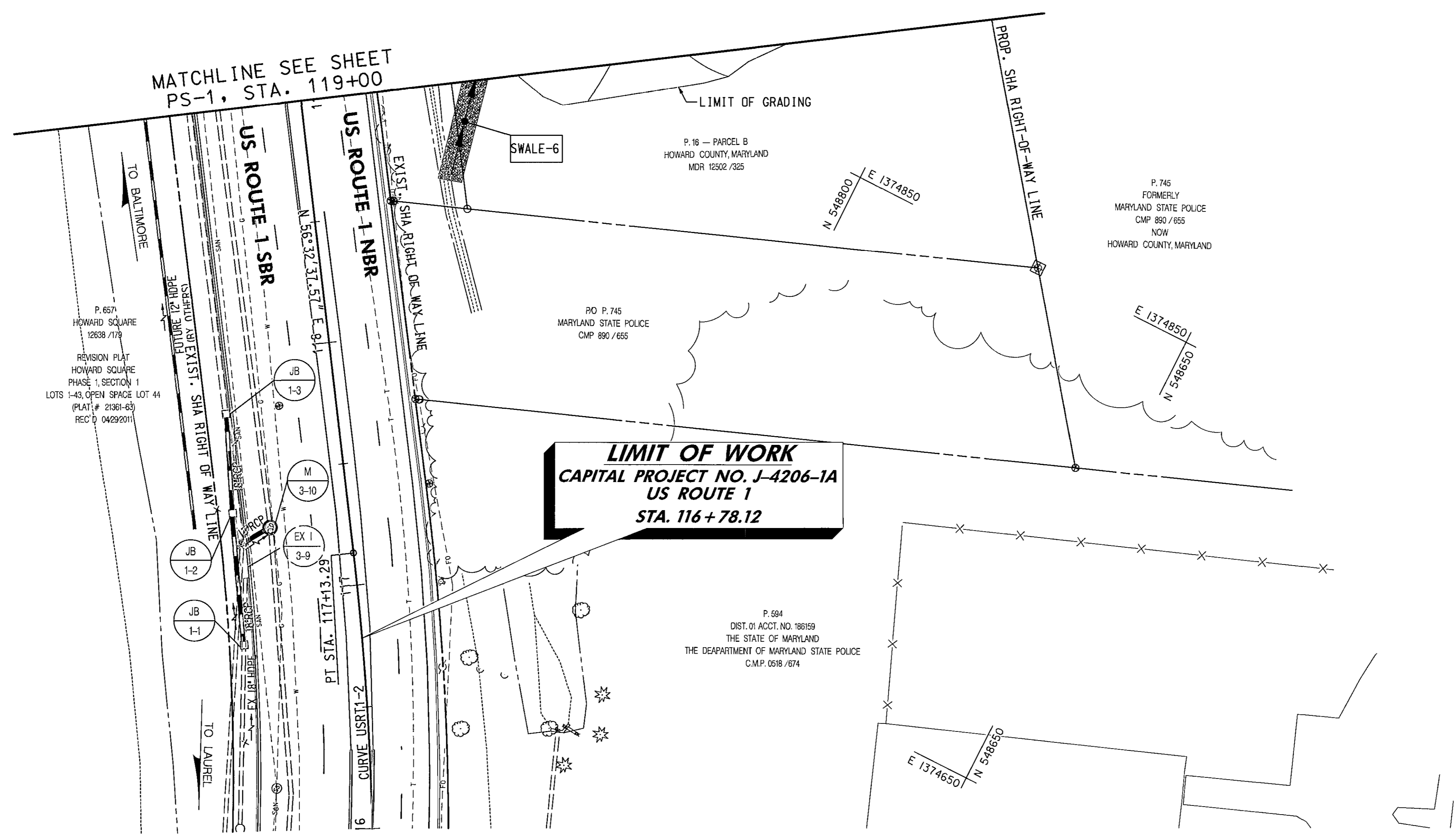
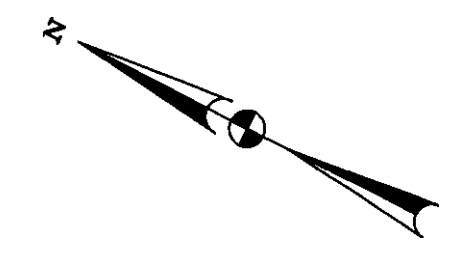
CAPITAL PROJECT NO.  
**J-4206-1A**

PLAN SHEET  
**RELOCATED MONTEVIDEO ROAD**  
**PHASE 1, SEGMENT A**

ELECTION DISTRICT 2  
 HOWARD COUNTY, MARYLAND

SCALE  
 1"=30'

SHEET  
 7 OF 45



MATCHLINE SEE SHEET  
PS-1, STA. 119+00

**LIMIT OF WORK**  
CAPITAL PROJECT NO. J-4206-1A  
US ROUTE 1  
STA. 116 + 78.12

P. 657  
HOWARD SQUARE  
12638 / 172  
REVISION PLAT  
HOWARD SQUARE  
PHASE 1, SECTION 1  
LOTS 1-43, OPEN SPACE LOT 44  
(PLAT # 21361-63)  
REC'D 04/29/2011

P. 16 - PARCEL B  
HOWARD COUNTY, MARYLAND  
MDR 12502 / 325

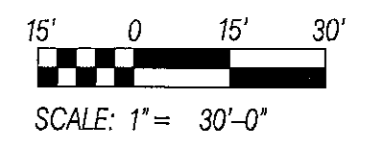
P. 745  
FORMERLY  
MARYLAND STATE POLICE  
CMP 890 / 655  
NOW  
HOWARD COUNTY, MARYLAND

PO P. 745  
MARYLAND STATE POLICE  
CMP 890 / 655

P. 694  
DIST. 01 ACCT. NO. 180159  
THE STATE OF MARYLAND  
THE DEPARTMENT OF MARYLAND STATE POLICE  
C.M.P. 0518 / 674

\*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. 32600, EXPIRATION DATE: JANUARY 19, 2018

CURVE NO. USRT1-2  
Δ = 11° 43' 59.37" LT  
D = 4° 46' 28.73"  
R = 1,200.00'  
T = 123.30'  
L = 245.74'  
E = 6.32'



DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Hilga Sereno* 10.18.16  
DIRECTOR OF PUBLIC WORKS

*Thomas E. Butler* 10/17/16  
CHIEF, BUREAU OF ENGINEERING

*Maureen* 10/18/2016  
CHIEF, BUREAU OF HIGHWAYS



DES:	BY	NO.	DATE
BWM			
DRN:	CWW		
CHK:	SER		
DATE:	10/2016		

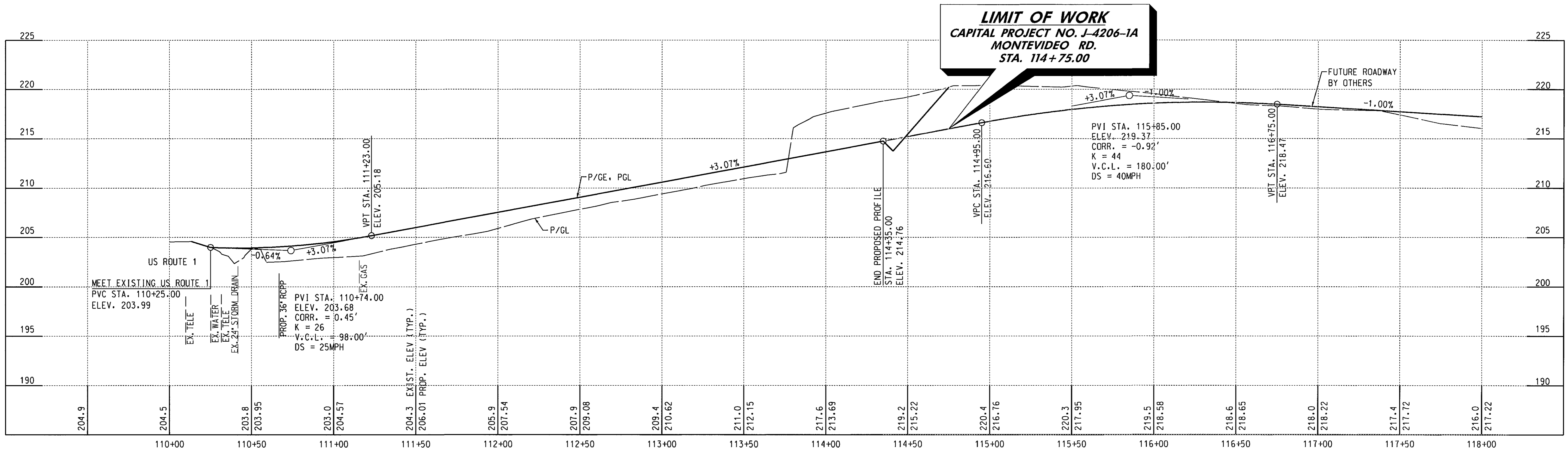
CAPITAL PROJECT NO.  
**J-4206-1A**

PLAN SHEET  
**RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A**

ELECTION DISTRICT 2  
HOWARD COUNTY, MARYLAND

PS-3 OF 3  
SCALE 1"=30'  
SHEET  
8 OF 45





RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A

\*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. 32600, EXPIRATION DATE: JANUARY 19, 2018

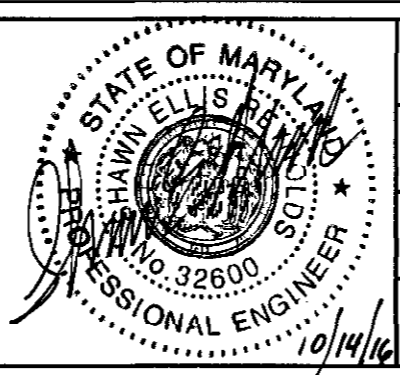
DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Hubert Stevens* 10-18-16  
DIRECTOR OF PUBLIC WORKS

*Bradley* 10-17-16  
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

*Maria E. Butler* 10/17/16  
CHIEF, BUREAU OF ENGINEERING

*Moskoni* 10/28/2016  
CHIEF, BUREAU OF HIGHWAYS



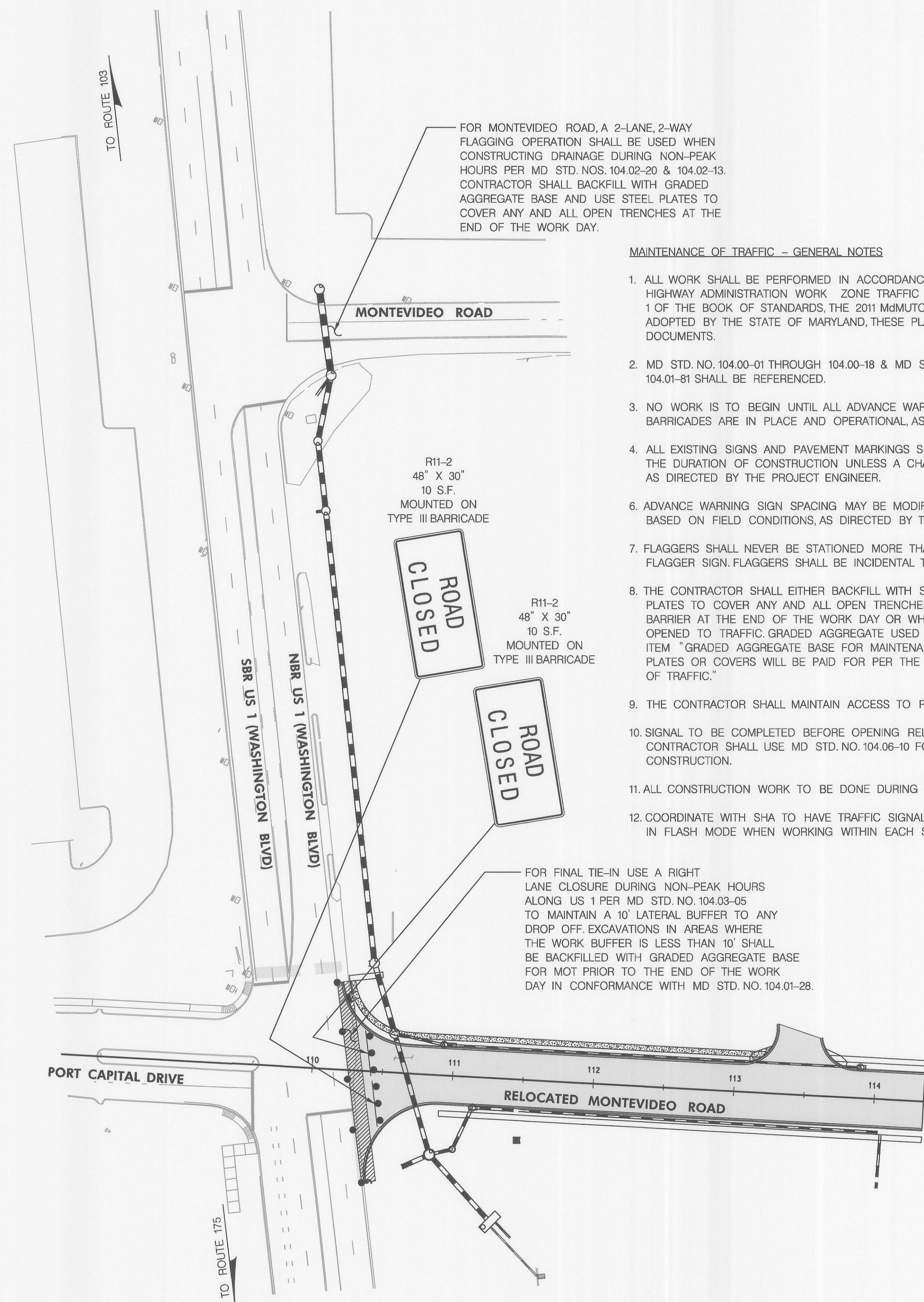
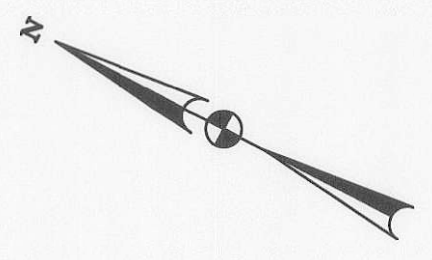
DES:	BWM	BY	NO.	DATE
DRN:	CWW			
CHK:	SER			
DATE:	10/2016			

CAPITAL PROJECT NO.  
**J-4206-1A**

PROFILE SHEET  
RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A

ELECTION DISTRICT 2  
HOWARD COUNTY, MARYLAND





FOR MONTEVIDEO ROAD, A 2-LANE, 2-WAY FLAGGING OPERATION SHALL BE USED WHEN CONSTRUCTING DRAINAGE DURING NON-PEAK HOURS PER MD STD. NOS. 104.02-20 & 104.02-13. CONTRACTOR SHALL BACKFILL WITH GRADED AGGREGATE BASE AND USE STEEL PLATES TO COVER ANY AND ALL OPEN TRENCHES AT THE END OF THE WORK DAY.

**MAINTENANCE OF TRAFFIC - GENERAL NOTES**

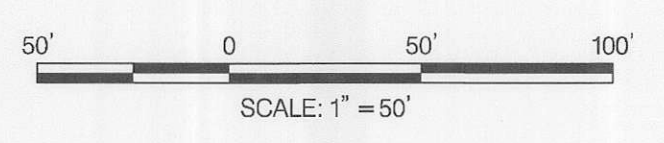
1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE TO THE MARYLAND STATE HIGHWAY ADMINISTRATION WORK ZONE TRAFFIC CONTROL TYPICALS IN CATEGORY 1 OF THE BOOK OF STANDARDS, THE 2011 MdMUTCD AND SUBSEQUENT REVISIONS ADOPTED BY THE STATE OF MARYLAND, THESE PLANS AND THE OTHER CONTRACT DOCUMENTS.
2. MD STD. NO. 104.00-01 THROUGH 104.00-18 & MD STD. NO. 104.01-01 THROUGH 104.01-81 SHALL BE REFERENCED.
3. NO WORK IS TO BEGIN UNTIL ALL ADVANCE WARNING SIGNS, DRUMS, AND BARRICADES ARE IN PLACE AND OPERATIONAL, AS APPROVED BY THE ENGINEER.
4. ALL EXISTING SIGNS AND PAVEMENT MARKINGS SHALL BE MAINTAINED THROUGHOUT THE DURATION OF CONSTRUCTION UNLESS A CHANGE IS SHOWN ON THE PLAN OR AS DIRECTED BY THE PROJECT ENGINEER.
6. ADVANCE WARNING SIGN SPACING MAY BE MODIFIED FROM STD. DETAILS AS REQUIRED BASED ON FIELD CONDITIONS, AS DIRECTED BY THE ENGINEER.
7. FLAGGERS SHALL NEVER BE STATIONED MORE THAN 1000 FEET FROM THE ADVANCE FLAGGER SIGN. FLAGGERS SHALL BE INCIDENTAL TO THE MAINTENANCE OF TRAFFIC ITEM.
8. THE CONTRACTOR SHALL EITHER BACKFILL WITH SELECT FILL MATERIAL OR USE STEEL PLATES TO COVER ANY AND ALL OPEN TRENCHES NOT PROTECTED BY TEMPORARY CONCRETE BARRIER AT THE END OF THE WORK DAY OR WHEN ALL LANES OF TRAFFIC ARE TO BE OPENED TO TRAFFIC. GRADED AGGREGATE USED FOR BACKFILL WILL BE PAID FOR PER THE ITEM "GRADED AGGREGATE BASE FOR MAINTENANCE OF TRAFFIC." HMA USED FOR TRENCHES, PLATES OR COVERS WILL BE PAID FOR PER THE ITEM "HOT MIX ASPHALT FOR MAINTENANCE OF TRAFFIC."
9. THE CONTRACTOR SHALL MAINTAIN ACCESS TO PRIVATE PROPERTIES AND ROADWAYS AT ALL TIMES.
10. SIGNAL TO BE COMPLETED BEFORE OPENING RELOCATED MONTEVIDEO ROAD TO TRAFFIC. CONTRACTOR SHALL USE MD STD. NO. 104.06-10 FOR MAINTENANCE OF TRAFFIC DURING SIGNAL CONSTRUCTION.
11. ALL CONSTRUCTION WORK TO BE DONE DURING NIGHTTIME OFF PEAK HOURS 9:00 PM TO 5:00 AM.
12. COORDINATE WITH SHA TO HAVE TRAFFIC SIGNALS AT MONTEVIDEO ROAD AND PORT CAPITAL DRIVE PUT IN FLASH MODE WHEN WORKING WITHIN EACH SECTION.

FOR FINAL TIE-IN USE A RIGHT LANE CLOSURE DURING NON-PEAK HOURS ALONG US 1 PER MD STD. NO. 104.03-05 TO MAINTAIN A 10' LATERAL BUFFER TO ANY DROP OFF. EXCAVATIONS IN AREAS WHERE THE WORK BUFFER IS LESS THAN 10' SHALL BE BACKFILLED WITH GRADED AGGREGATE BASE FOR MOT PRIOR TO THE END OF THE WORK DAY IN CONFORMANCE WITH MD STD. NO. 104.01-28.

**SEQUENCE OF CONSTRUCTION - PHASE 1**

- PLACE AND MAINTAIN TEMPORARY SIGNS, BARRICADES, AND DRUMS IN ACCORDANCE WITH MD STD. NOS. 104.02-09 & 104.02-13 FOR FLAGGING OPERATION AT AN INTERSECTION WITH SPEED GREATER THAN 40 MPH AND MD STD. NO. 104.03-05 FOR RIGHT LANE CLOSURE WITH SPEED GREATER THAN 40 MPH. WORK ON RELOCATED MONTEVIDEO ROAD AND EXISTING MONTEVIDEO ROAD MAY BE COMPLETED CONCURRENTLY. HOWEVER, DRAINAGE CONSTRUCTION ON EXISTING MONTEVIDEO ROAD MUST FOLLOW THIS SEQUENCE. FINAL TIE-IN AND DRAINAGE WORK SHALL ONLY BE COMPLETED DURING NIGHTTIME OFF-PEAK HOURS FROM 9:00 PM TO 5:00 AM.
1. BEGIN ONE-LANE TWO-WAY FLAGGING OPERATIONS ON MONTEVIDEO ROAD. SHIFTING ALL TRAFFIC TO THE SOUTHBOUND LANE DURING NON-PEAK HOURS.
  2. CONSTRUCT THE PROPOSED DRAINAGE PIPE CROSSING NORTHBOUND LANE OF MONTEVIDEO ROAD DURING NON-PEAK HOURS.
  3. BEGIN ONE-LANE TWO-WAY FLAGGING OPERATIONS ON MONTEVIDEO ROAD. SHIFTING ALL TRAFFIC TO THE NORTHBOUND LANE DURING NON-PEAK HOURS.
  4. CONSTRUCT THE PROPOSED DRAINAGE PIPE CROSSING SOUTHBOUND LANE OF MONTEVIDEO ROAD DURING NON-PEAK HOURS.
  5. BEGIN RIGHT LANE CLOSURE ON US 1 TO MAINTAIN A 10' LATERAL BUFFER TO RELOCATED MONTEVIDEO ROAD TIE-IN DURING NON-PEAK HOURS.
  6. PERFORM TIE-IN OF RELOCATED MONTEVIDEO ROAD TO US 1.
  7. CONSTRUCT RELOCATED MONTEVIDEO ROAD TO STA. 119+00.
  8. SEE MT-2 TO MT-6 FOR PIPE CROSSING MAINTENANCE OF TRAFFIC.

"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. 33928, EXPIRATION DATE: JAN 15, 2017"



**MAINTENANCE OF TRAFFIC LEGEND**

	DRUM
	TYPE III BARRICADE
	WORK ZONE
	ARROW PANEL
	SIGN
	FLAGGER

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Hyge Seawans* 10/18/16  
DIRECTOR OF PUBLIC WORKS

*Thomas E. Butler* 10/17/16  
CHIEF, BUREAU OF ENGINEERING

*Michael* 10/18/2016  
CHIEF, BUREAU OF HIGHWAYS

*Wade* 10-17-16  
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION



DES:	BY:	NO.	DATE
CHH			
DRN:	CHH		
CHK:	GAB		
DATE:	10/2016		

CAPITAL PROJECT NO.  
**J-4206-1A**

MAP NO.      BLOCK NO.

MAINTENANCE OF TRAFFIC  
RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A

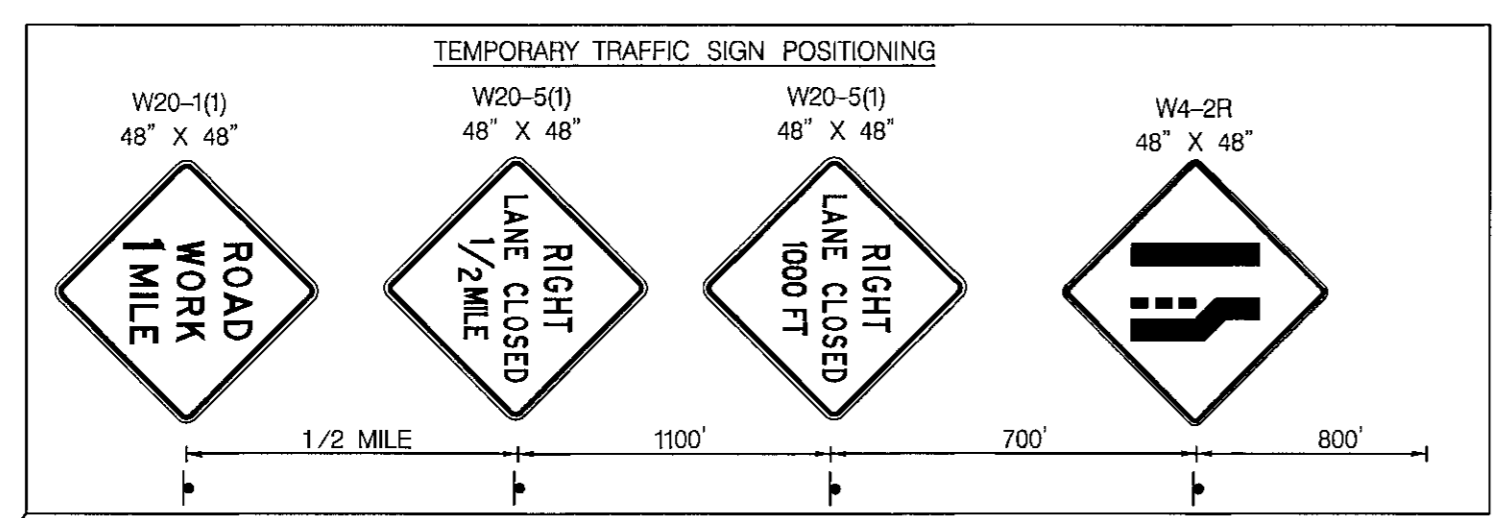
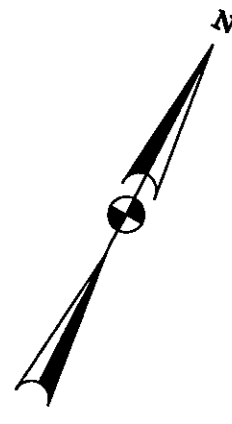
ELECTION DISTRICT 2      HOWARD COUNTY, MARYLAND

MT-1 OF 6

SCALE  
1"=50'

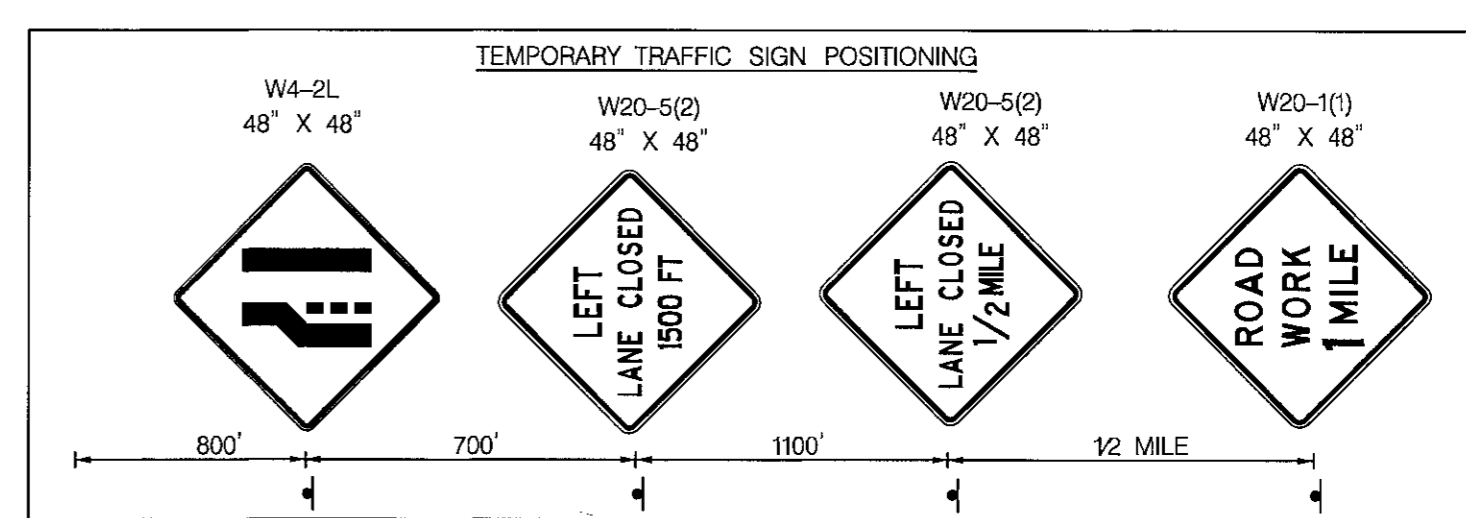
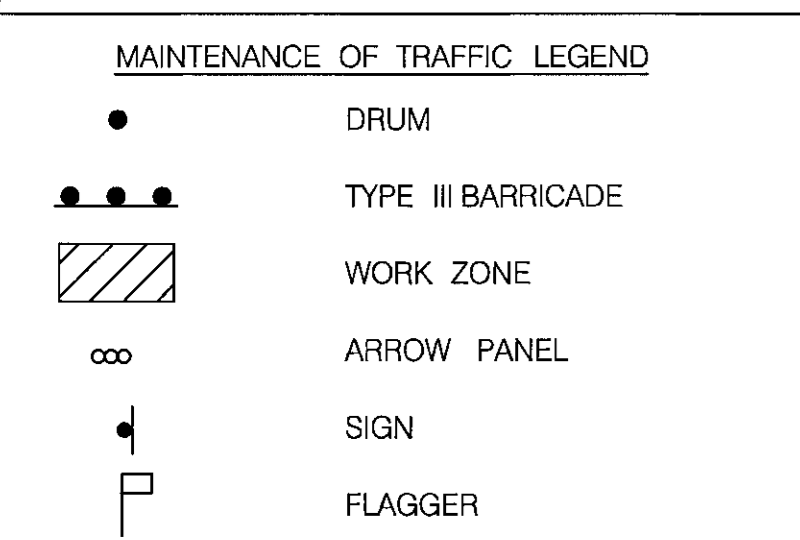
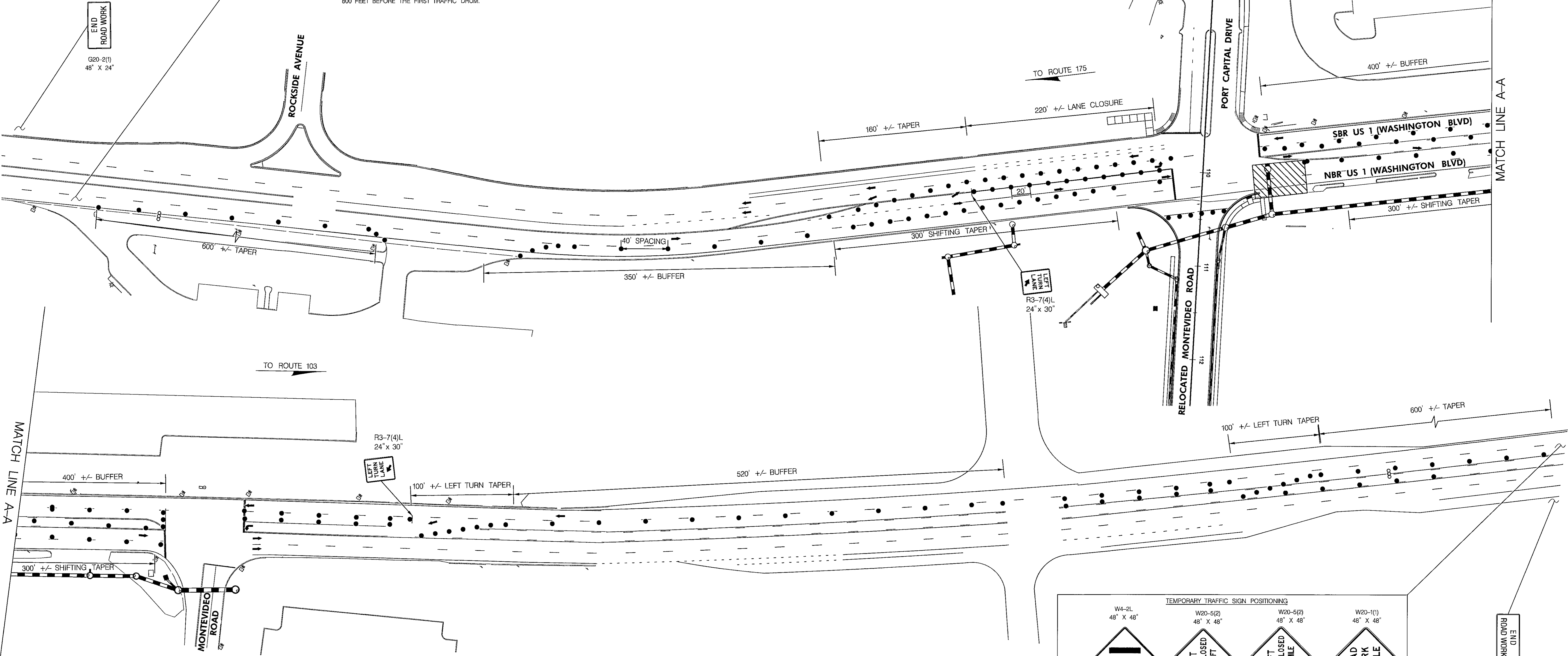
SHEET  
10 OF 45





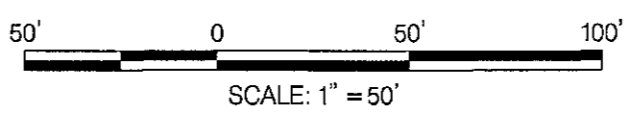
PLACE END ROAD WORK (G20-2(1)) SIGN 500 FEET PAST THE FIRST TRAFFIC DRUM.

PLACE RIGHT LANE CLOSED (W20-5(1)) SIGN 800 FEET BEFORE THE FIRST TRAFFIC DRUM.



PLACE LEFT LANE CLOSED (W20-5(2)) SIGN 800 FEET BEFORE THE FIRST TRAFFIC DRUM.

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. 33928, EXPIRATION DATE: JAN 15, 2017



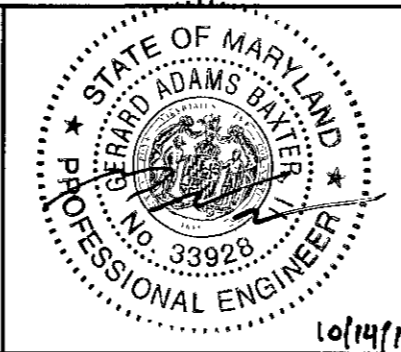
DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Alger Sevens* 10.18.16  
DIRECTOR OF PUBLIC WORKS

*Thomas Suttler* 10/17/16  
CHIEF, BUREAU OF ENGINEERING

*James* 10.18.16  
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

*James* 10/18/2016  
CHIEF, BUREAU OF HIGHWAYS



DES:	CHH	BY	NO.		DATE
DRN:	CHH				
CHK:	GAB				
DATE:	10/2016				

CAPITAL PROJECT NO.  
**J-4206-1A**

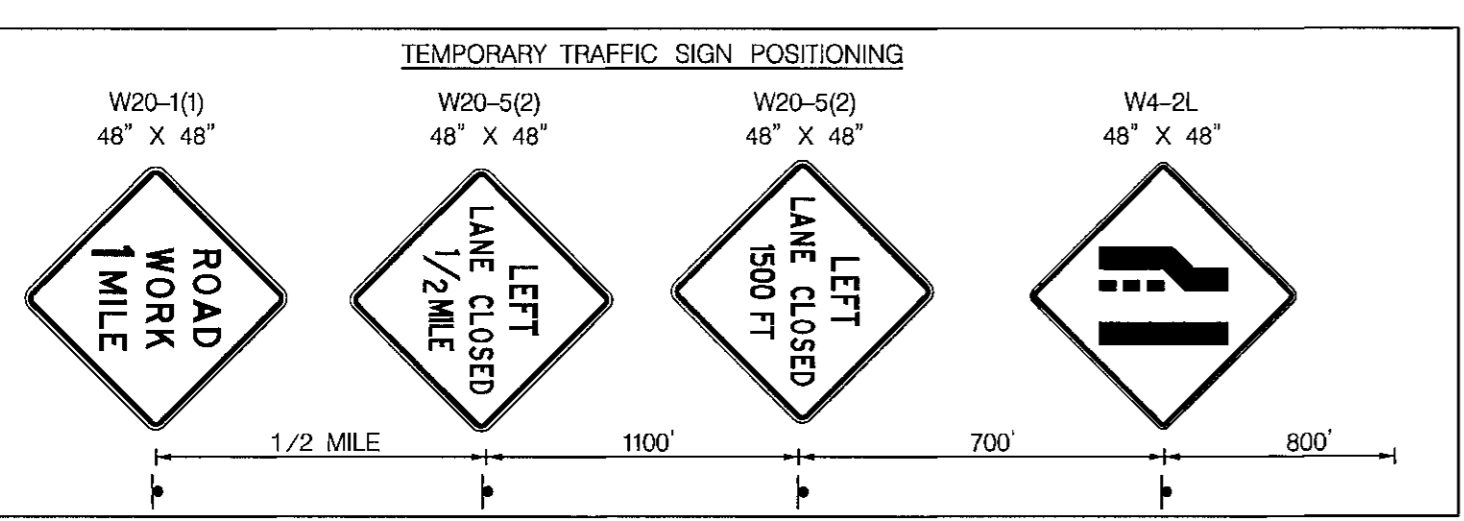
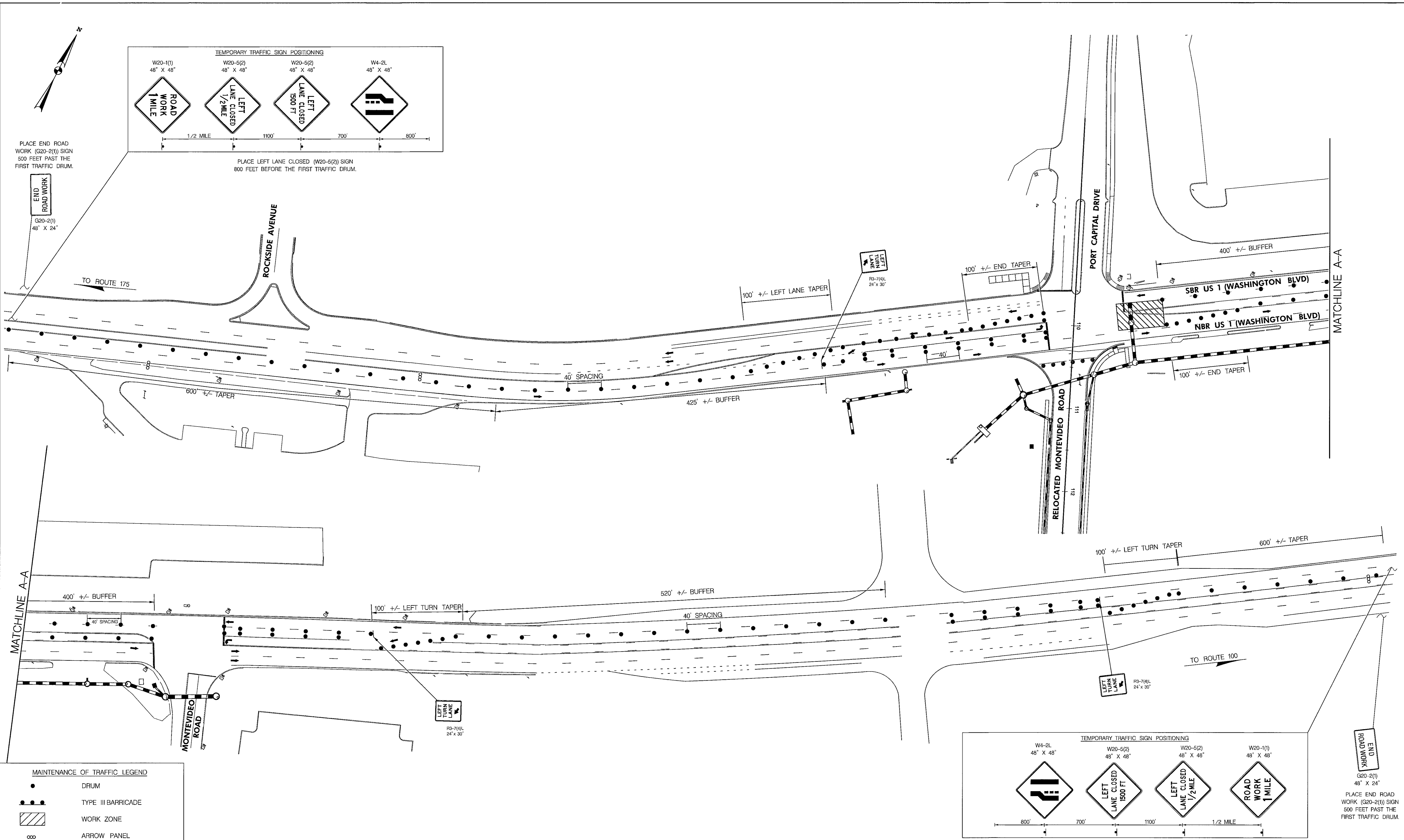
MT-2 OF 6

SCALE  
1"=50'

SHEET  
11 OF 45

ELECTION DISTRICT 2  
HOWARD COUNTY, MARYLAND





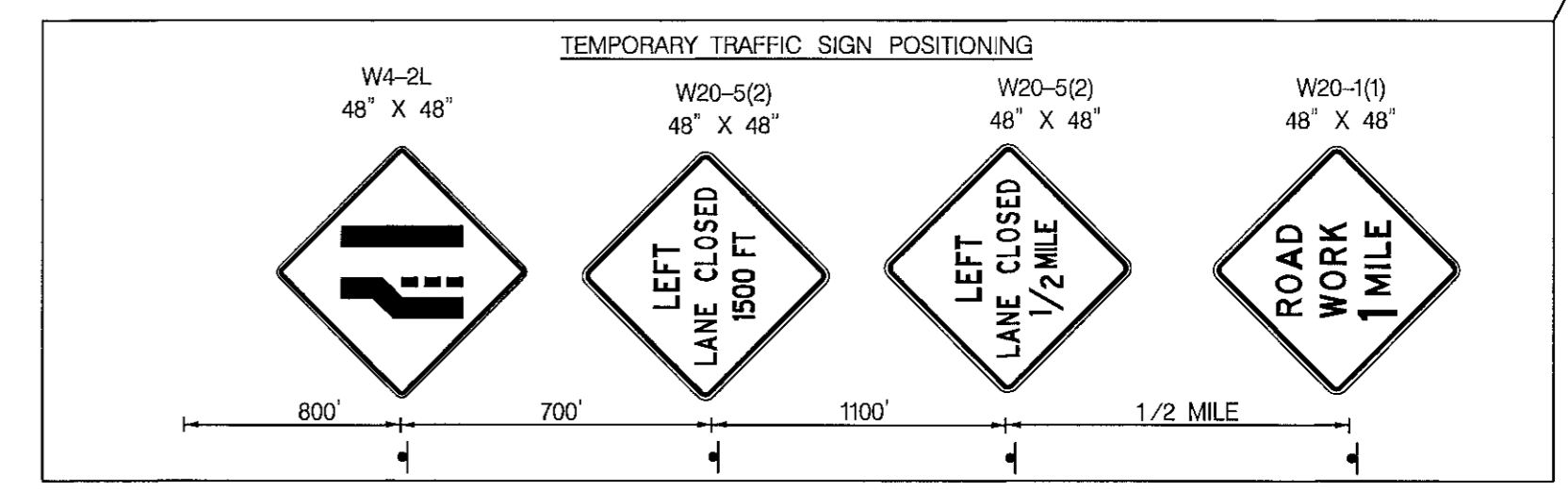
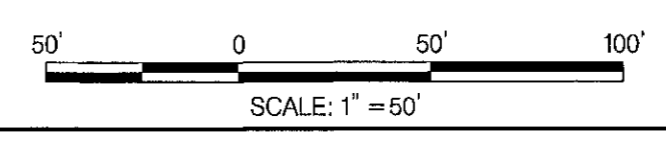
PLACE END ROAD WORK (G20-2(1)) SIGN 500 FEET PAST THE FIRST TRAFFIC DRUM.

PLACE LEFT LANE CLOSED (W20-5(2)) SIGN 800 FEET BEFORE THE FIRST TRAFFIC DRUM.

MAINTENANCE OF TRAFFIC LEGEND

●	DRUM
●●●	TYPE III BARRICADE
▨	WORK ZONE
↔	ARROW PANEL
⊠	SIGN
⊞	FLAGGER

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. 33928, EXPIRATION DATE: JAN 15, 2017

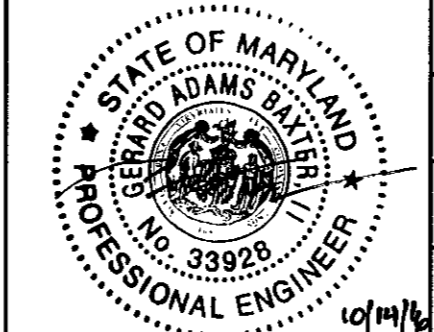


DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Halger Seeman* 10.18.16  
DIRECTOR OF PUBLIC WORKS

*Thomas E. Butler* 10/17/16  
CHIEF, BUREAU OF ENGINEERING

*Thomas E. Butler* 10/18/2016  
CHIEF, BUREAU OF HIGHWAYS



DES:	CHH	BY	NO.	DATE
DRN:	CHH			
CHK:	GAB			
DATE:	10/2016			

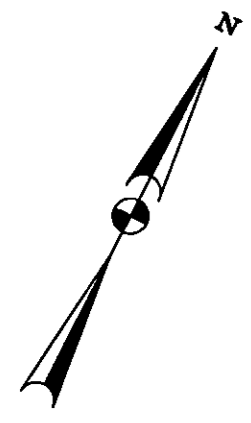
CAPITAL PROJECT NO.  
**J-4206-1A**

MAP NO.      BLOCK NO.

ELECTION DISTRICT 2      HOWARD COUNTY, MARYLAND

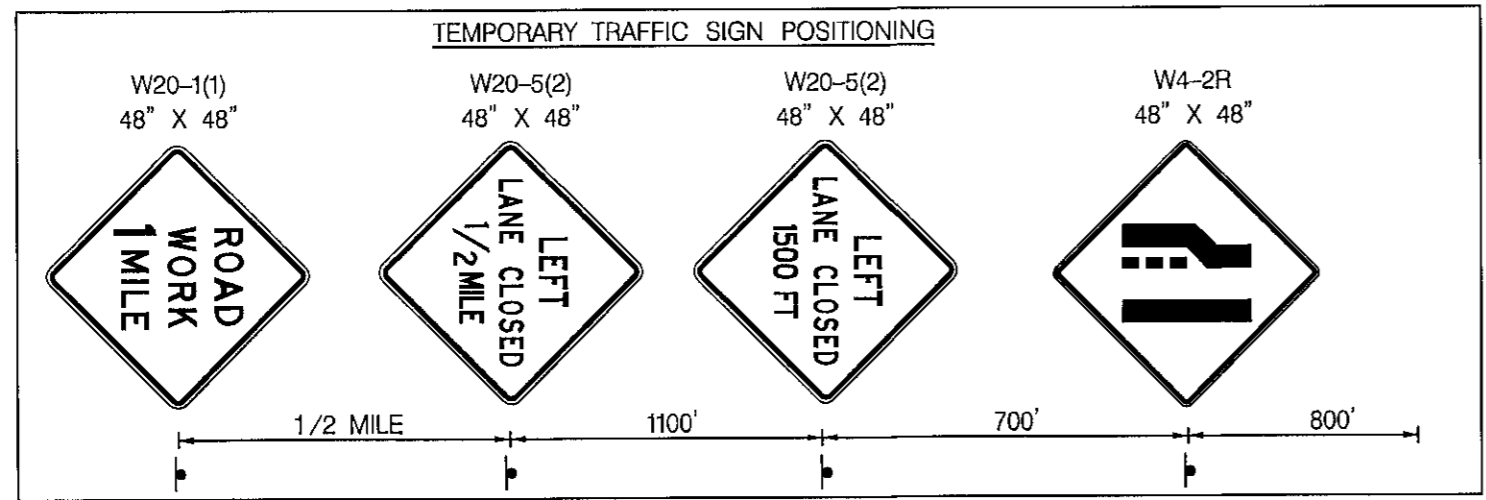
MAINTENANCE OF TRAFFIC  
RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A

MT-3 OF 6  
SCALE 1"=50'  
SHEET 12 OF 45

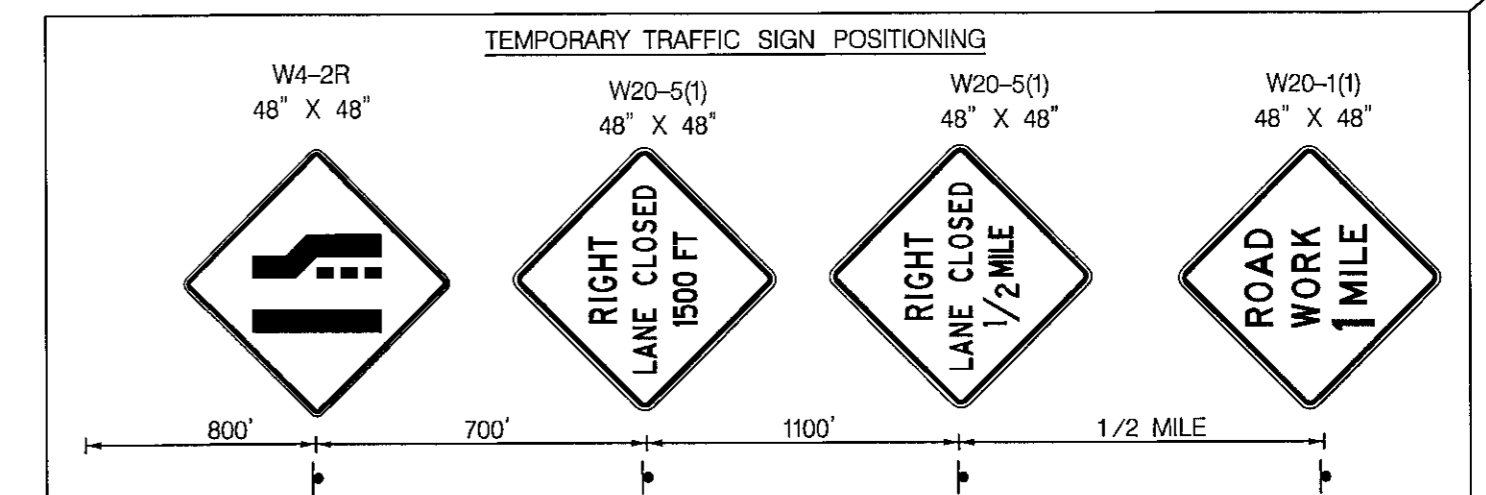
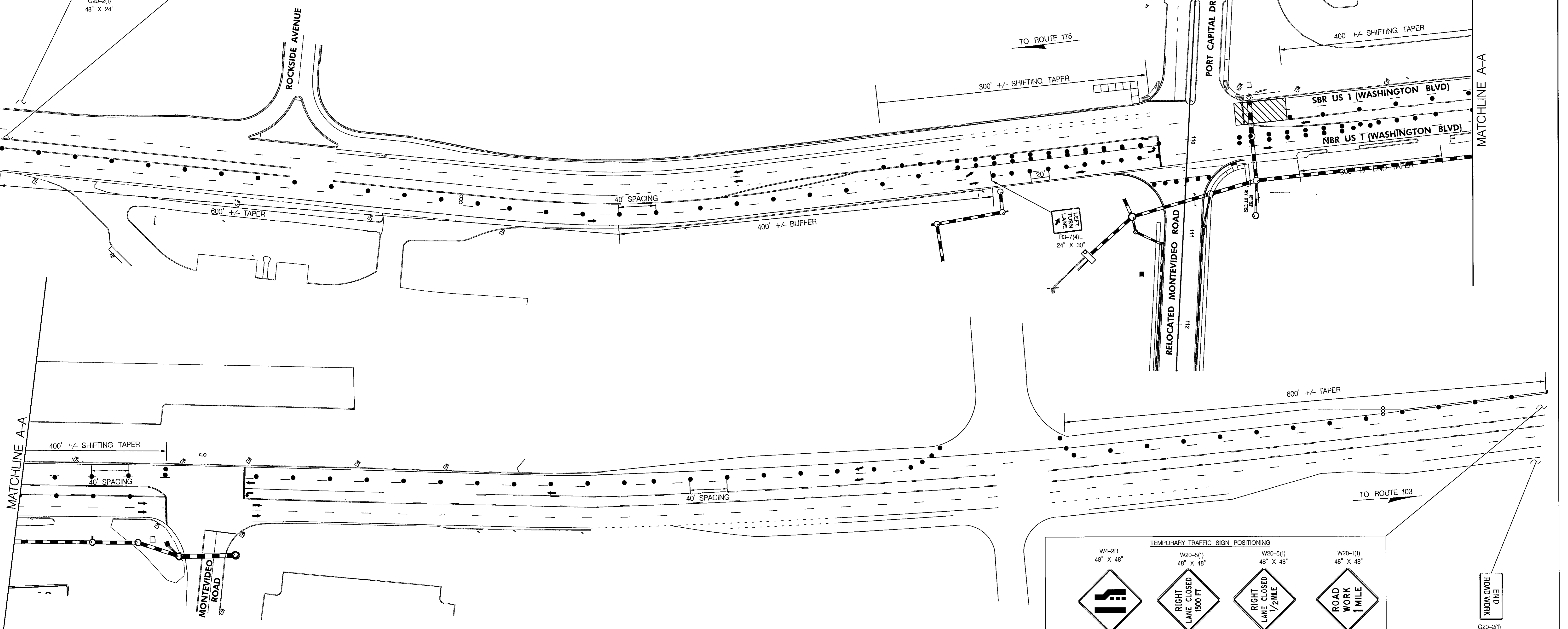


PLACE END ROAD WORK (G20-2(1)) SIGN  
500 FEET PAST THE FIRST TRAFFIC DRUM.

END  
ROAD WORK  
G20-2(1)  
48" X 24"



PLACE LEFT LANE CLOSED (W20-5(2)) SIGN  
800 FEET BEFORE THE FIRST TRAFFIC DRUM.

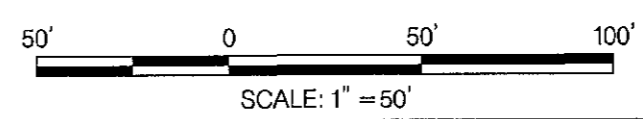


PLACE RIGHT LANE CLOSED (W20-5(1)) SIGN  
800 FEET BEFORE THE FIRST TRAFFIC DRUM.

MAINTENANCE OF TRAFFIC LEGEND

- DRUM
- TYPE III BARRICADE
- WORK ZONE
- ARROW PANEL
- SIGN
- FLAGGER

\*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. 33928, EXPIRATION DATE: JAN 15, 2017.



DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

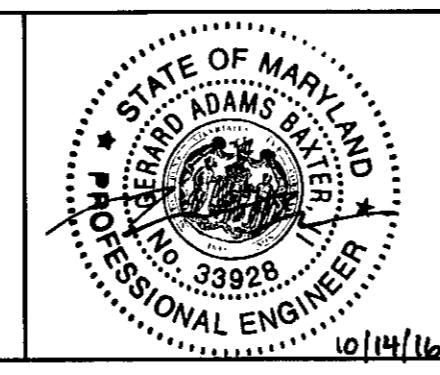
*Holger Seaman* 10-18-16  
for DIRECTOR OF PUBLIC WORKS

*Thomas P. Butler* 10/17/16  
CHIEF, BUREAU OF ENGINEERING

*Merwin* 10/18/2016  
CHIEF, BUREAU OF HIGHWAYS

*John J. ...* 10-17-16  
CHIEF, TRANSPORTATION AND  
SPECIAL PROJECTS DIVISION

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



DES:	CHH	BY	NO.		DATE
DRN:	CHH				
CHK:	GAB				
DATE:	10/2016				

CAPITAL PROJECT NO.  
**J-4206-1A**

MAP NO.    BLOCK NO.

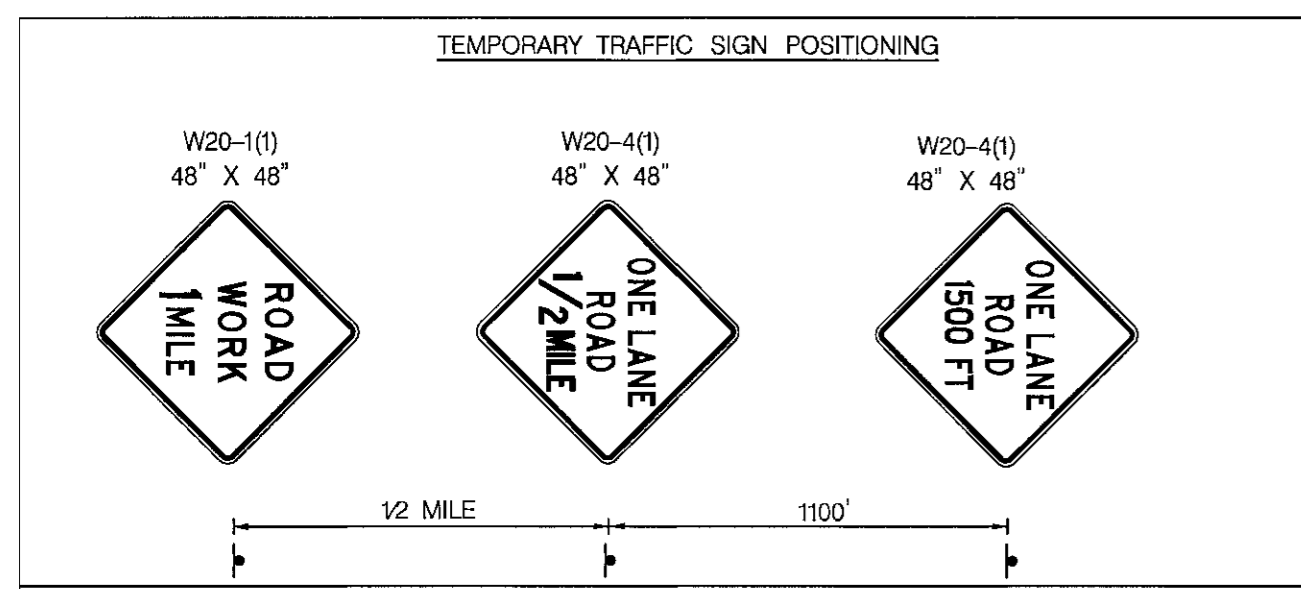
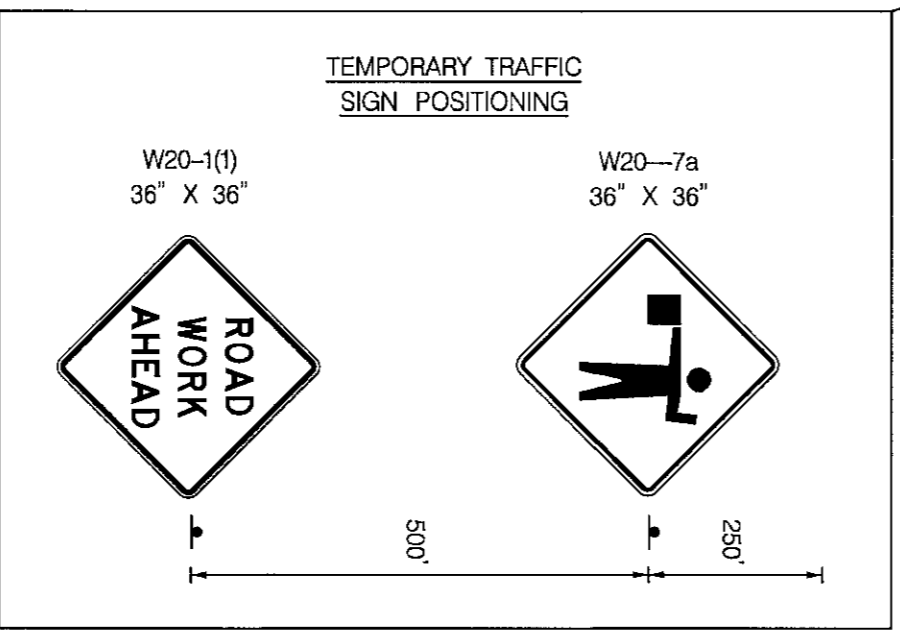
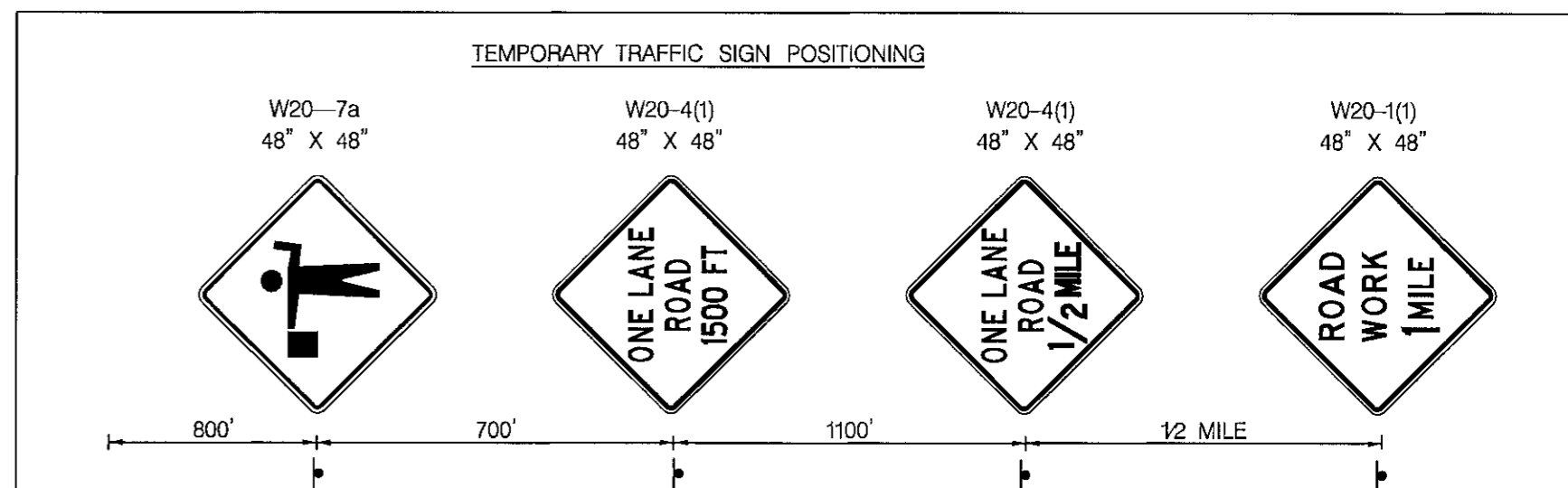
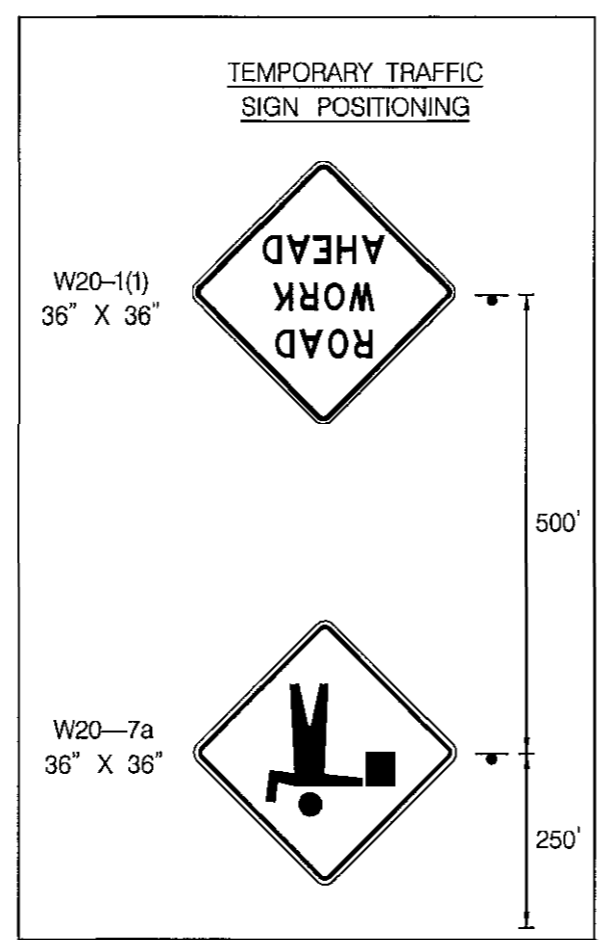
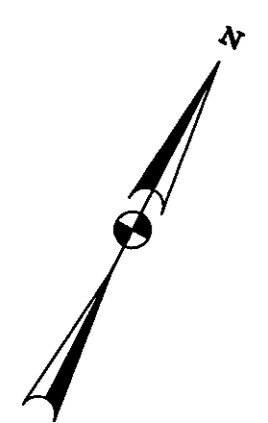
MT-4 OF 6

SCALE  
1"=50'

SHEET  
13 OF 45

MAINTENANCE OF TRAFFIC  
RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A

ELECTION DISTRICT 2    HOWARD COUNTY, MARYLAND

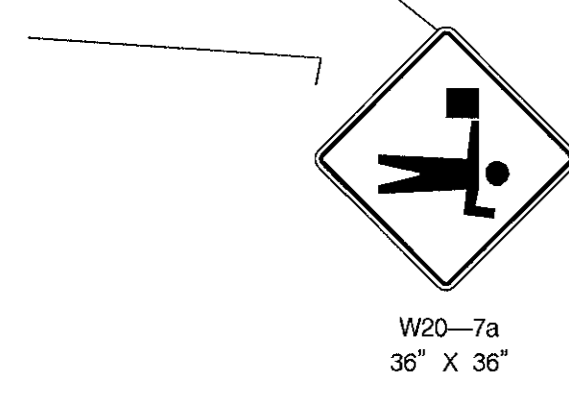


PLACE ONE LANE ROAD 1500 FT (W20-4(1)) SIGN 800 FEET BEFORE THE FLAGGER (W20-7a) SIGN.

TO ROUTE 175

PLACE FLAGGER (W20-7a) SIGN 800 FEET BEFORE THE INTERSECTION.

PLACE FLAGGER (W20-7a) SIGN 250 FEET BEFORE THE INTERSECTION.

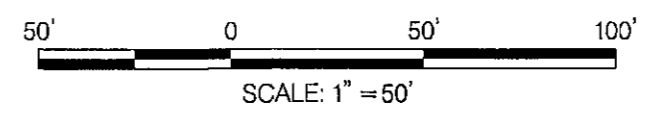


**MAINTENANCE OF TRAFFIC LEGEND**

	DRUM
	TYPE III BARRICADE
	WORK ZONE
	ARROW PANEL
	SIGN
	FLAGGER

- NOTE**
- FOR ALL WORK DONE USE MARYLAND STANDARD NO. MD. 104.02-13 FOR INTERSECTION FLAGGING OPERATION 2-LANE, 2-WAY GREATER THAN 40 MPH.
  - FOR ALL WORK DONE USE MARYLAND STANDARD NO. MD. 104.02-14 FOR INTERSECTION FLAGGING OPERATION 2-LANE, 2-WAY EQUAL OR LESS THAN 40 MPH.
  - PROVIDE ACCESSIBLE PEDESTRIAN ACCESS ACROSS PORT CAPITAL DRIVE DURING WORK.
  - COORDINATE WITH SHA TO HAVE TRAFFIC SIGNAL AT PORT CAPITAL DRIVE PUT IN FLASH MODE WHEN WORKING.

"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. 33928, EXPIRATION DATE: JAN 15, 2017"

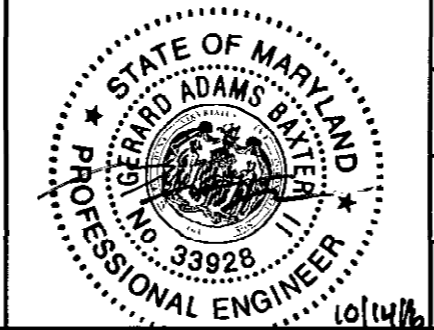


DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Holger Severan* 10-18-16  
DIRECTOR OF PUBLIC WORKS

*Dennis P. Butler* 10/17/16  
CHIEF, BUREAU OF ENGINEERING

*M. M. M. M.* 10/18/2016  
CHIEF, BUREAU OF HIGHWAYS



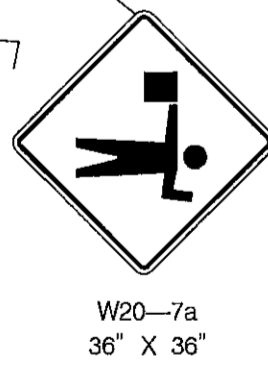
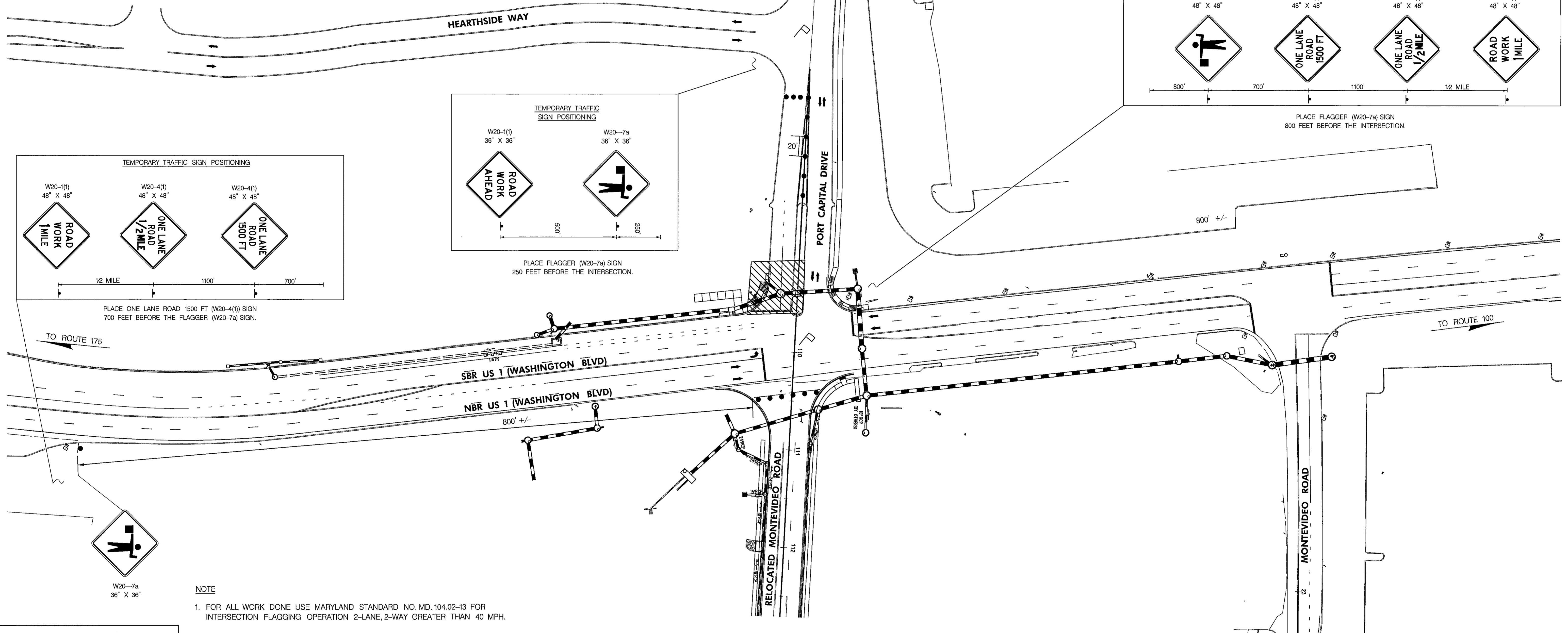
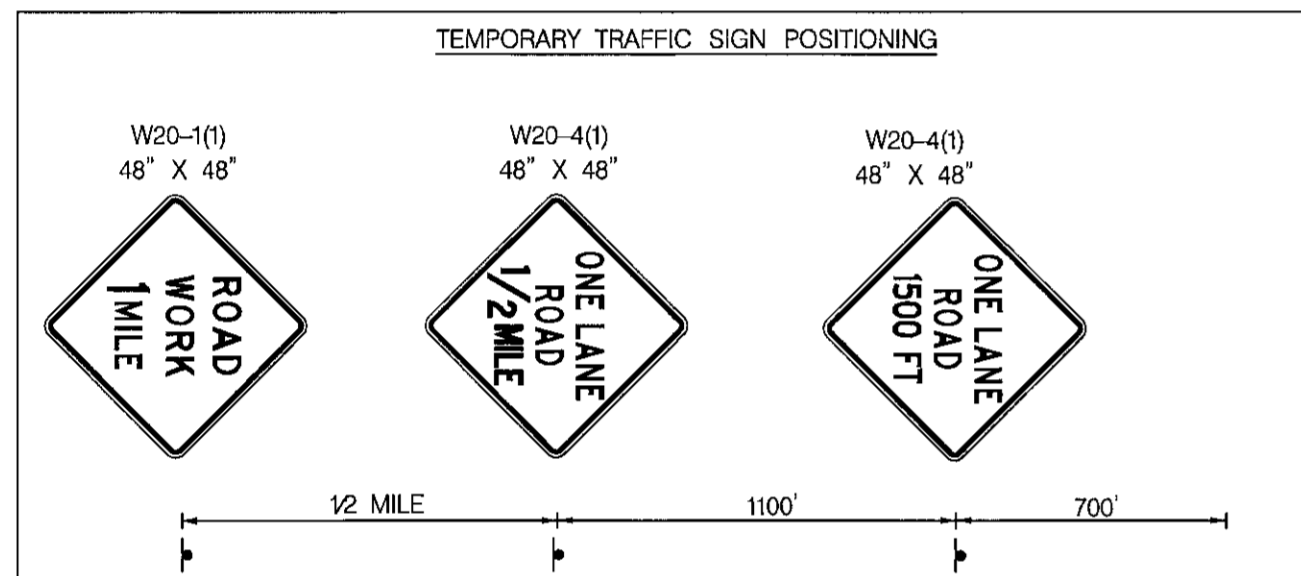
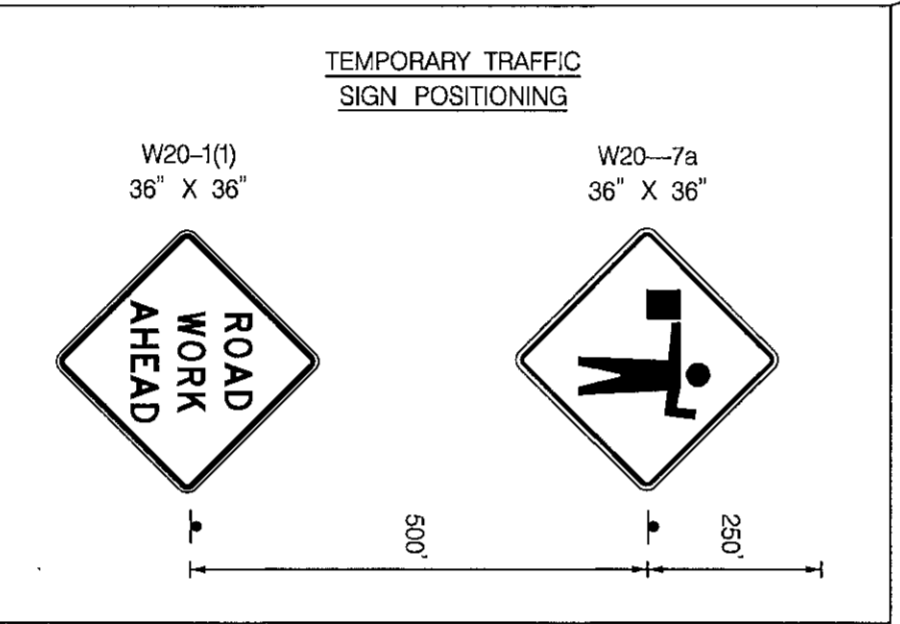
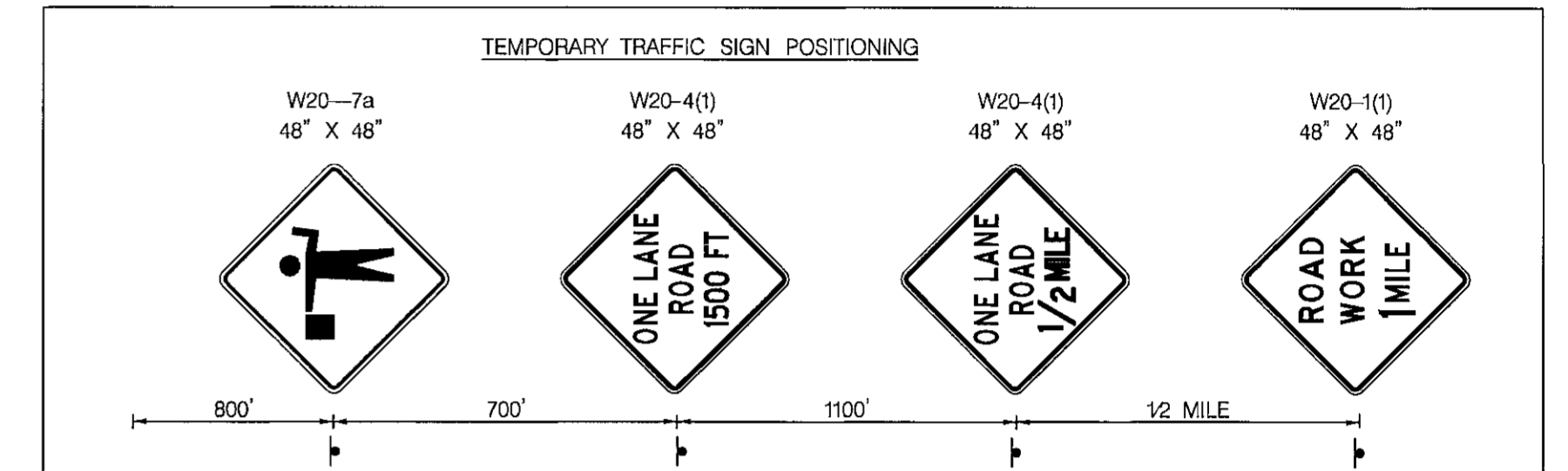
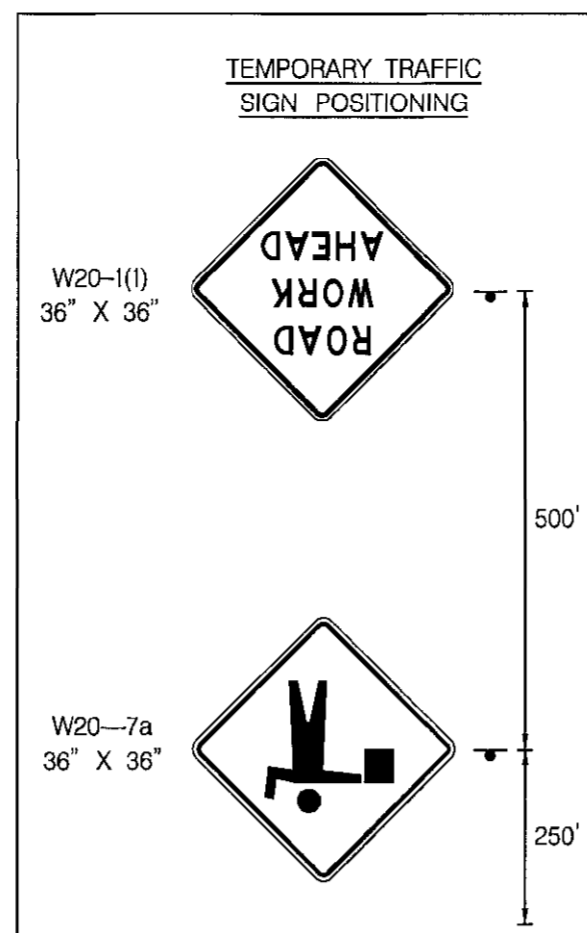
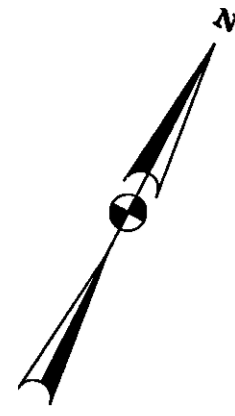
DES:	BY:	NO.:	DATE:
CHH			
DRN:	CHH		
CHK:	GAB		
DATE:	10/2016		

CAPITAL PROJECT NO.  
**J-4206-1A**

MAINTENANCE OF TRAFFIC  
RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A

ELECTION DISTRICT 2  
HOWARD COUNTY, MARYLAND



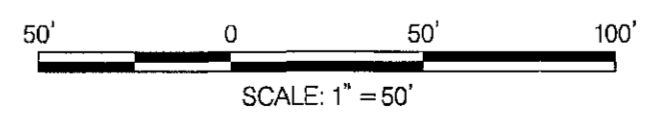


- NOTE**
- FOR ALL WORK DONE USE MARYLAND STANDARD NO. MD.104.02-13 FOR INTERSECTION FLAGGING OPERATION 2-LANE, 2-WAY GREATER THAN 40 MPH.
  - FOR ALL WORK DONE USE MARYLAND STANDARD NO. MD.104.02-14 FOR INTERSECTION FLAGGING OPERATION 2-LANE, 2-WAY EQUAL OR LESS THAN 40 MPH.
  - PROVIDE ACCESSIBLE PEDESTRIAN ACCESS ACROSS PORT CAPITAL DRIVE DURING WORK.
  - PROVIDE ACCESSIBLE PEDESTRIAN ACCESS TO BUS STOP DURING WORK.
  - COORDINATE WITH SHA TO HAVE TRAFFIC SIGNAL AT PORT CAPITAL DRIVE PUT IN FLASH MODE WHEN WORKING.
  - CONSTRUCT THE PROPOSED DRAINAGE PIPE ALONG SOUTHBOUND US 1 WHILE CLOSING THE ACCELERATION LANE AND RIGHT LANE OF SOUTHBOUND US 1 DURING NON-PEAK HOURS PER MD STD. 104.03-05.

**MAINTENANCE OF TRAFFIC LEGEND**

	DRUM
	TYPE III BARRICADE
	WORK ZONE
	ARROW PANEL
	SIGN
	FLAGGER

\*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. 33928, EXPIRATION DATE: JAN 15, 2017



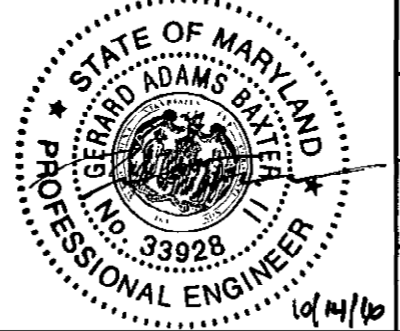
DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Halga Secans* 10.18.16  
DIRECTOR OF PUBLIC WORKS

*Thomas J. Butler* 10/17/16  
CHIEF, BUREAU OF ENGINEERING

*Albrecht* 10.18.2016  
CHIEF, BUREAU OF HIGHWAYS

CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION



DES:	BY	NO.	DATE
CHH			
DRN:	CHH		
CHK:	GAB		
DATE:	10/2016		

CAPITAL PROJECT NO.  
**J-4206-1A**

MAINTENANCE OF TRAFFIC  
RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A

ELECTION DISTRICT 2  
HOWARD COUNTY, MARYLAND

MT-6 OF 6  
SCALE 1"=50'  
SHEET 15 OF 45



DRAINAGE STRUCTURE SCHEDULE - PS-1 / PS-3						
NO.	BASELINE	STATION	OFFSET	TYPE	STD. NO.	DEPTH
M 3-8	US-1	119+99	46.5', LT.	60" DIA. PRECAST MANHOLE	MD-384.03	7.01
M 3-1	US-1	120+14	64.9', LT.	60" DIA. PRECAST MANHOLE	MD-384.03	6.87
M 3-7	US-1	120+17	50.9', LT.	72" DIA. PRECAST MANHOLE	MD-384.05	9.31
I 3-2	US-1	120+34	56.7', LT.	PRECAST STD. SINGLE TYPE 'K' INLET OEG	MD-378.03	3.89
I 3-7	US-1	120+29	45.0', LT.	PRECAST OR CAST-IN-PLACE COG OPENING 10' THROAT	MD-374.68	N/A
I 4-1	US-1	122+00	45.4', LT.	PRECAST OR CAST-IN-PLACE SQUARE & RECTANGLE COG INLET 15' TROUGH **	MD-374.51	6.64
M 4-1	US-1	122+52	61.7', LT.	96" DIA. PRECAST MANHOLE	MD-384.09	6.26
I 4-3	US-1	122+40	74.8', LT.	PRECAST OR CAST IN PLACE CIRCULAR COG INLET 10' TROUGH	D-4.03	5.37
E 4-2	US-1	122+31	78.3', LT.	STD. METAL END SECTION - 24" CMP	MD-370.01	N/A
I 4-5	US-1	123+30	76.4', LT.	PRECAST STD. DBL TYPE 'K' INLET OEG	MD-378.03	6.11
M 4-2	US-1	123+31	58.0', LT.	84" DIA. PRECAST MANHOLE	MD-384.07	7.85
IA M-14	US-1	123+28	3.12', RT.	84" DIA. PRECAST MANHOLE	MD-384.07	11.10
IA M-15	US-1	123+28	51.5', RT.	84" DIA. PRECAST MANHOLE	MD-384.07	12.00
IA M-7	US-1	122+77	60.4', RT.	84" DIA. PRECAST MANHOLE	MD-384.07	11.52
IA M-4	US-1	121+89	75.6', RT.	84" DIA. PRECAST MANHOLE	MD-384.07	10.61
IA E-2	US-1	121+83	55.4', RT.	PRECAST TYPE 'F' ENDWALL - 36" RCP	MD-358.01	N/A
M 3-2	US-1	120+50	32.5', RT.	72" DIA. PRECAST MANHOLE***	MD-384.05	4.34
IA M-2	US-1	120+50	54.8', RT.	72" DIA. PRECAST MANHOLE	MD-384.05	4.33
IA I-8	US-1	119+78	51.1', RT.	PRECAST STD. SINGLE TYPE 'K' INLET - OEG	MD-378.03	6.08
IA M-1	US-1	119+78	59.5', RT.	72" DIA. PRECAST MANHOLE	MD-384.05	7.81
IA E-1	US-1	119+80	100.3', RT.	STD. CONCRETE END SECTION - 36" RCP	MD-368.01	N/A
IA M-10	US-1	121+91	92.2', RT.	48" DIA. PRECAST MANHOLE	MD-384.01	7.74
IA I-1	*	111+15	20.0', RT.	PRECAST TYPE A-5 INLET < 10' DEPTH	D-4.01	7.30
IA M-18	*	111+46	21.8', RT.	48" DIA. PRECAST MANHOLE	G-5.12	5.56
IA I-3	*	112+00	20.0', RT.	PRECAST OR CAST-IN-PLACE COG OPENING 10' THROAT	MD-374.68	N/A
IA I-7	*	113+92	20.0', RT.	PRECAST OR CAST-IN-PLACE COG OPENING 5' THROAT	MD-374.68	N/A
IA M-5	*	114+05	56.9', RT.	48" DIA. PRECAST MANHOLE	G-5.12	8.06
IA M-6	*	114+05	23.4', RT.	48" DIA. PRECAST MANHOLE	G-5.12	7.43
IA I-4	*	113+89	20.0', LT.	PRECAST TYPE A-5 INLET < 10' DEPTH	D-4.01	8.01
IA I-5	*	110+93	20.0', LT.	PRECAST TYPE A-10 INLET < 10' DEPTH	D-4.03	4.08
JB I-1	US-1	116+80	48.4', LT.	STD. JUNCTION BOX	MD-386.11	5.19
JB I-2	US-1	117+35	47.2', LT.	STD. JUNCTION BOX	MD-386.11	3.72
JB I-3	US-1	117+76	45.2', LT.	STD. JUNCTION BOX	MD-386.11	4.43
M 3-10	US-1	117+28	32.8', LT.	48" DIA. PRECAST MANHOLE	MD-384.01	5.70
IA I-2	**	111+48	42.8', RT.	MODIFIED YARD INLET	N/A	5.19

\* RELOCATED MONTEVIDEO ROAD  
 \*\*W' AND 'Y' DIMENSION ON STD DETAIL TO BE MODIFIED TO 8' AND 6'  
 \*\*\* CONTRACTOR TO VERIFY DOWNSTREAM INVERT OF EXISTING 30" CMP PRIOR TO ORDERING PRECAST MANHOLE M 3-2. WITH THE APPROVAL OF THE ENGINEER, ADJUST INVERT OF PROPOSED 36" RCP LEAVING M 3-2 TO ENSURE POSITIVE DRAINAGE.

DRAINAGE STRUCTURE SCHEDULE - PS-2						
NO.	BASELINE	STATION	OFFSET	TYPE	STD. NO.	DEPTH
IA M-16	US-1	126+49	51.3', RT.	72" DIA. PRECAST MANHOLE	MD-384.05	12.61
IA M-17	US-1	126+99	50.9', RT.	72" DIA. PRECAST MANHOLE	MD-384.05	11.73
M 5-4	US-1	127+44	65.2', RT.	84" DIA. PRECAST MANHOLE	MD-384.07	9.01
I 5-5	US-1	127+31	51.8', RT.	PRECAST STD. DBL OPENING TYPE 'K' INLET - OEG	MD-378.11	4.17
IA M-3	US-1	128+06	63.4', RT.	84" DIA. PRECAST MANHOLE	MD-384.07	10.09

RIPRAP OUTLET PROTECTION SCHEDULE												
PLAN SHT.	NO.	BASELINE	STATION	OFFSET	CLASS	LENGTH (FT)	WIDTH (FT)	BOT. CUTOFF WALL (FT)	SIDE CUTOFF WALL (FT)	Q <sub>10</sub> (CFS)	V <sub>10</sub> (FPS)	d <sub>50</sub> (FT)
I	IA E-1	US-1	119+80	106.4', RT.	I	16	9	9	N/A	19.38	6.47	1.32
I	IA I-3	*	112+00	33.8', RT.	I	10	12	12	10	0.87	3.70	0.40
I	IA I-7	*	113+93	33.3', RT.	I	10	8	8	10	0.22	2.68	0.40

\* RELOCATED MONTEVIDEO ROAD

DITCH LINING SCHEDULE										
PLAN SHT.	NO.	BASELINE	FROM	TO	SSI H <sub>1</sub> V	SSI H <sub>2</sub> V	d (FT)	w (FT)	TYPE	QUANTITY (SY)
I	SWALE-1	US-1	120+63, RT.	121+83, RT.	2	2	1	4	SOIL STABILIZATION MATTING, TYPE 'A'	113
I	SWALE-6	US-1	118+60, RT.	119+18, RT.	3	3	1	6	CLASS I RIPRAP, 19" MIN. DEPTH	68

\* RELOCATED MONTEVIDEO ROAD

EXISTING PIPE ABANDONMENT SCHEDULE				
BASELINE	TYPE	FROM	TO	LENGTH
US-1	15" HDPE	STA. 122+21, 66', LT.	STA. 122+25, 63', LT.	6 L.F.
US-1	18" HDPE	STA. 122+26, 63', LT.	STA. 123+29, 47', LT.	148 L.F.
US-1	36" RCP	STA. 127+36, 71', RT.	STA. 127+43, 65', RT.	14 L.F.

**DRAINAGE STRUCTURE LOCATIONS**

SEE DRAINAGE STRUCTURE SCHEDULES AND THE FOLLOWING FOR STRUCTURE LOCATIONS:

- STATIONS FOR SHA PRECAST STD. CIRCULAR COG/COS INLETS ARE GIVEN TO THE GEOMETRIC CENTER OF THE STRUCTURE, OFFSETS ARE GIVEN TO THE FACE OF CURB, TOP ELEVATIONS ARE GIVEN TO THE TOP OF THE CURB (T.C.).
- STATIONS FOR SHA PRECAST CIRCULAR COG OPENINGS ARE GIVEN TO THE GEOMETRIC CENTER OF THE STRUCTURE, OFFSETS ARE GIVEN TO THE FACE OF CURB, TOP ELEVATIONS ARE GIVEN TO THE TOP OF CURB (T.C.).
- STATIONS AND OFFSETS FOR SHA PRECAST STD. TYPE 'K', TYPE 'S' AND YARD INLETS ARE GIVEN TO THE GEOMETRIC CENTER OF THE STRUCTURE, TOP ELEVATIONS ARE GIVEN TO THE TOP OF CURB (T.C.).
- STATIONS AND OFFSETS FOR SHA PRECAST STD. MANHOLES ARE GIVEN TO THE GEOMETRIC CENTER OF THE STRUCTURE, TOP ELEVATIONS ARE GIVEN TO THE RIM (T.R.).
- STATIONS AND OFFSETS FOR SHA PRECAST STD. END-SECTIONS ARE GIVEN TO THE CENTER OF THE FACE OF THE END-SECTION.
- STATIONS AND OFFSETS FOR SHA PRECAST STD. ENDWALLS ARE GIVEN TO THE FRONT FACE OF THE ENDWALL.
- STATIONS, OFFSETS AND TOP ELEVATIONS FOR EXISTING DRAINAGE STRUCTURES ARE GIVEN ACCORDING TO THE SAME RULES APPLIED TO PROPOSED STRUCTURES OF THE SAME CATEGORIES.

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

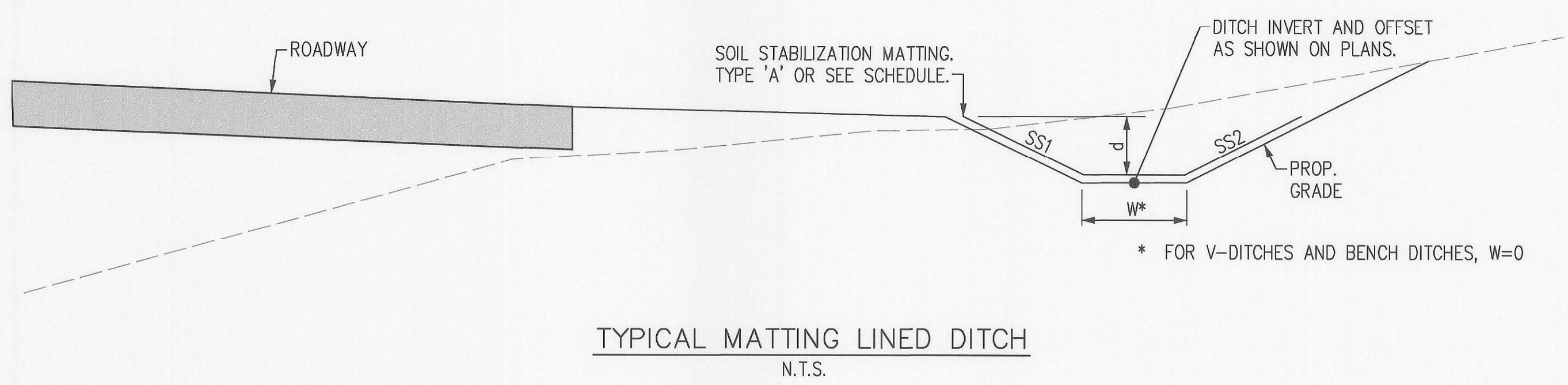
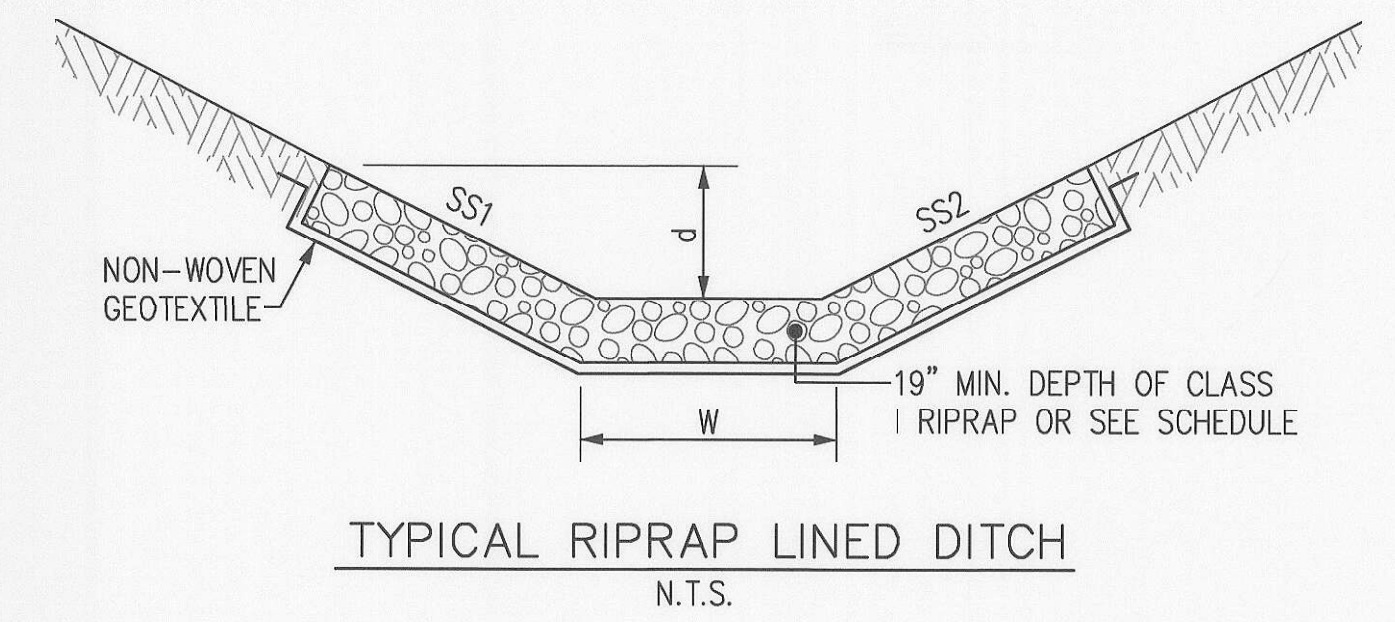
GENERAL NOTE:  
 OFFSETS FOR RIPRAP ARE GIVEN TO WHERE THE RIPRAP PAD MEETS THE END OF THE ENDSECTION OR THE FRONT FACE OF THE ENDWALL.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND <i>Halley Sevens</i> 10/18/16 DIRECTOR OF PUBLIC WORKS <i>Thomas P. Butler</i> 10/17/16 CHIEF OF ENGINEERING <i>Blaine</i> 10/18/2016 CHIEF, BUREAU OF HIGHWAYS				DES: HL / JRB BY: JMB NO.: DATE: 10/2016	CAPITAL PROJECT NO. <b>J-4206-1A</b>	DRAINAGE SCHEDULE AND DETAILS <b>RELOCATED MONTEVIDEO ROAD          PHASE 1, SEGMENT A</b>	SCALE NONE SHEET 16 OF 45
				MAP NO.	BLOCK NO.	ELECTION DISTRICT 2	HOWARD COUNTY, MARYLAND

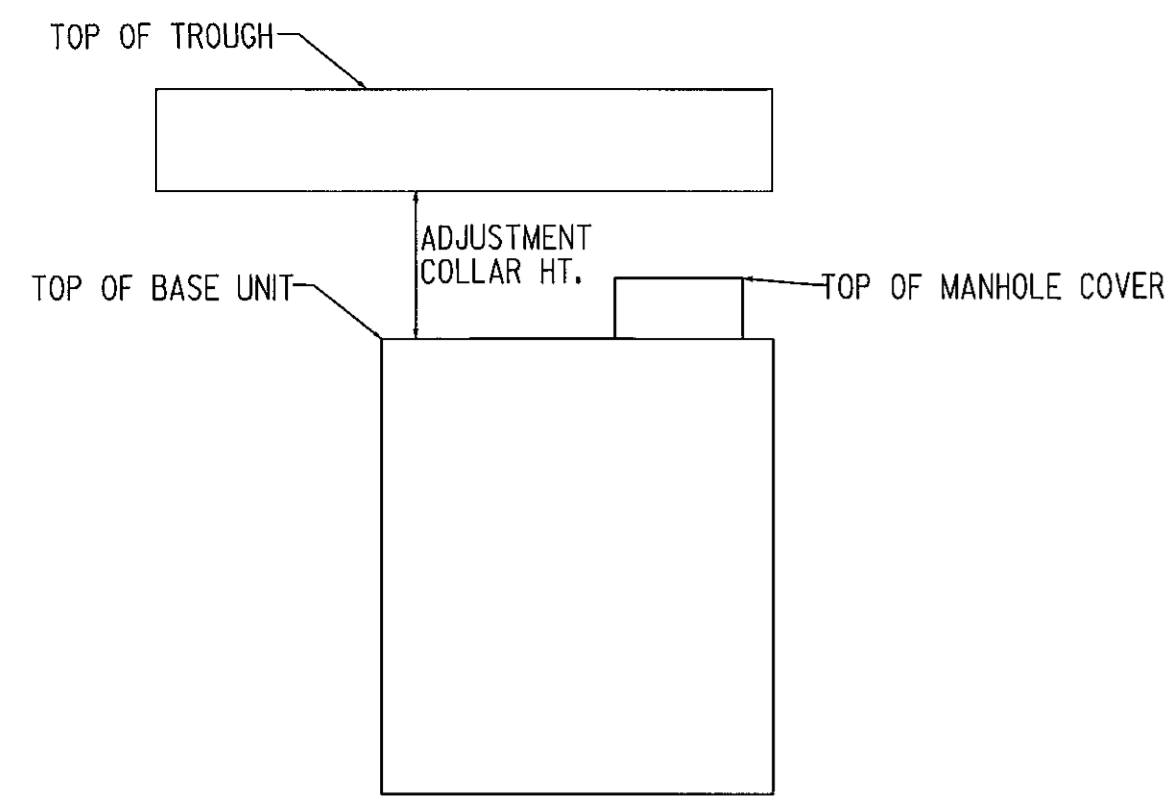
PIPE SCHEDULE - PS-1 / PS-3						
FROM	TO	TYPE	LENGTH	UPSTREAM INV.	DOWNSTREAM INV.	
M 3-8	M 3-7	30" RCP, CL. IV	13 L.F.	201.58	201.51	
M 3-1	M 3-7	36" RCP, CL. IV	9 L.F.	201.60	201.51	
I 3-2	EX JB 3-3	30"X19" HERCP, CL. IV	23 L.F.	204.19	204.07	
M 3-7	I 4-1	42" RCP, CL. IV	177 L.F.	199.69	198.81	
I 4-1	M 4-1	42" RCP, CL. IV	46 L.F.	198.71	198.48	
E 4-2	I 4-3	24" CMP (GAUGE 16)	6 L.F.	203.00	202.40	
I 4-3	M 4-1	24" RCP, CL. IV	12 L.F.	200.21	200.15	
M 4-1	M 4-2	42" RCP, CL. IV	72 L.F.	198.38	198.02	
I 4-5	M 4-2	15" RCP, CL. IV	13 L.F.	198.44	198.30	
M 4-2	IA M-14	42" RCP, CL. IV	54 L.F.	197.15	196.82	
IA M-14	IA M-15	34"X53" HERCP, CL. IV	41 L.F.	192.79	192.40	
IA M-7	IA M-15	42" RCP, CL. IV	45 L.F.	193.16	190.40	
IA M-4	IA M-7	36" RCP, CL. IV	82 L.F.	194.39	193.60	
IA E-2	IA M-4	36" RCP, CL. IV	18 L.F.	200.50	199.46	
IA M-10	IA M-4	24" RCP, CL. IV	11 L.F.	197.66	197.60	
IA I-1	IA M-10	24" RCP, CL. IV	28 L.F.	197.90	197.76	
IA M-18	IA I-1	24" RCP, CL. IV	27 L.F.	200.24	200.08	
IA I-2	IA M-18	15" RCP, CL. IV	17 L.F.	200.43	200.34	
IA M-6	IA M-18	18" RCP, CL. IV	255 L.F.	206.57	200.78	
IA M-5	IA M-6	18" RCP, CL. IV	30 L.F.	208.74	206.67	
IA I-4	IA I-5	15" RCP, CL. IV	292 L.F.	205.33	200.56	
IA I-5	IA M-7	18" RCP, CL. IV	30 L.F.	200.46	200.00	
M 3-2	IA M-2	36" RCP, CL. IV	16 L.F.	201.80	201.72	
IA M-2	IA M-1	36" RCP, CL. IV	66 L.F.	201.62	201.29	
IA I-8	IA M-1	15" RCP, CL. IV	4 L.F.	203.00	202.96	
IA M-1	IA E-1	36" RCP, CL. IV	38 L.F.	201.19	201.00	
STUB 2	IA M-1	24" RCP, CL. IV *	4 L.F.	202.48	202.38	
STUB 1	IA M-2	15" RCP, CL. IV *	4 L.F.	203.15	203.13	
JB I-1	JB I-2	18" RCP, CL. IV	51 L.F.	215.41	214.70	
JB I-2	JB I-3	18" RCP, CL. IV	38 L.F.	214.60	212.63	
EX 13-9	M 3-10	18" RCP, CL. IV	9 L.F.	214.20	214.00	
STUB 4	IA M-5	18" RCP, CL. IV	4 L.F.	209.04	208.84	

\* STUB TO BE SEALED WITH BRICK AND MORTAR

5" CONCRETE DITCH (VALLEY GUTTER)				
INLET NO.	BASELINE	STATION	OFFSET	QUANTITY (S.Y.)
IA I-8	US-1	119+78	59.5', RT.	3.5
I 3-2	US-1	120+34	56.7', LT.	3.5
I 4-5	US-1	123+30	76.4', LT.	7.0
I 5-5	US-1	127+31	51.8', RT.	7.0



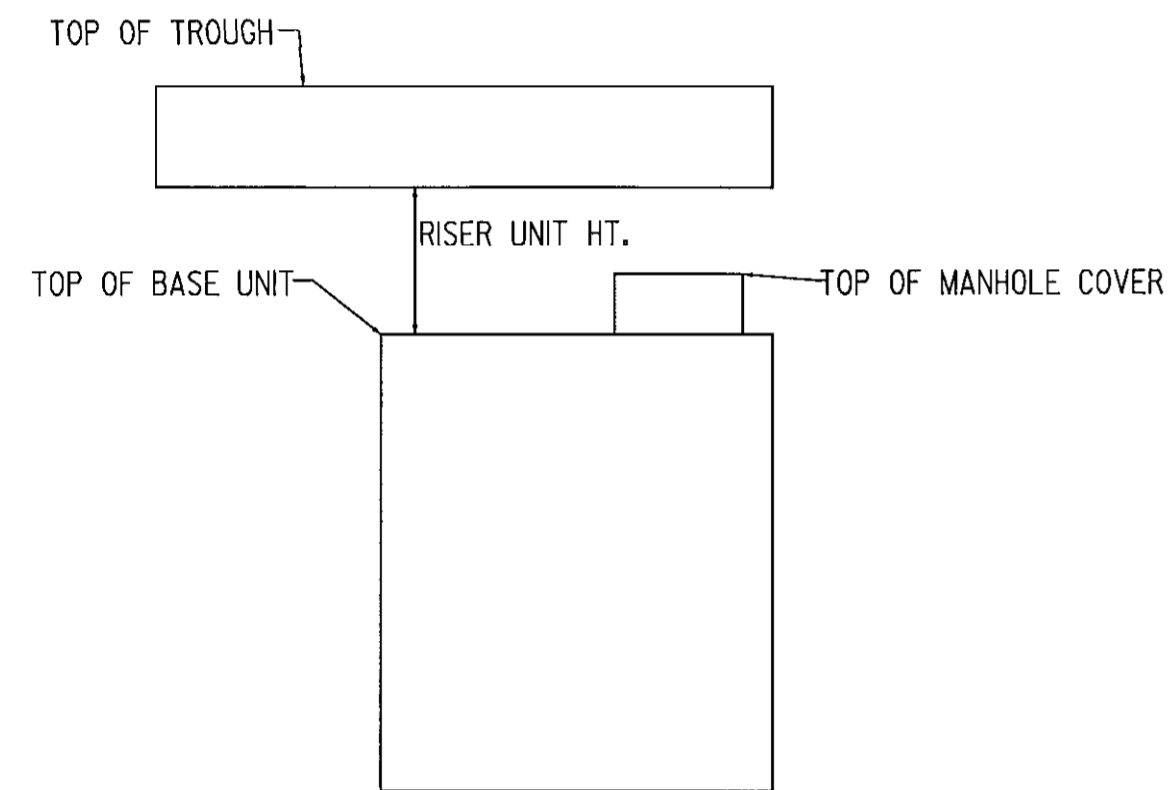




MANHOLES INSTALLED UNDER J-4206 TO BE CONVERTED TO COG INLETS UNDER J-4241					
TOP OF MANHOLE RIM (J-4206-1A)	TOP OF BASE UNIT (J-4206-1A)	MANHOLE STR. ID (J-4206-1A)	INLET STR. ID (J-4241)	TOP OF TROUGH (J-4241)	ADJUSTMENT COLLAR HEIGHT (J-4241)
195.91	194.49	1A M-16	14-15	196.22	1.73
194.60	193.18	1A M-17	15-4	194.71	1.53

CONVERSION OF PROPOSED MANHOLES 1A M-16 AND 1A M-17  
CONSTRUCTED UNDER J-4206-1A TO FUTURE COG INLET UNDER J-4241  
NOT TO SCALE

**NOTE:**  
MANHOLES 1A M-16 AND 1A M-17 WILL BE CONSTRUCTED UNDER J-4206-1A. UNDER J-4241 THESE MANHOLES WILL BE CONVERTED TO COG INLETS BY REMOVING THE MANHOLE COVER AND FRAM AND INSTALLING THE ADJUSTMENT COLLAR AND TROUGH UNIT.



MANHOLES INSTALLED UNDER J-4206 TO BE CONVERTED TO COG INLETS UNDER J-4241					
TOP OF MANHOLE RIM (J-4206-1A)	TOP OF BASE UNIT (J-4206-1A)	MANHOLE STR. ID (J-4206-1A)	INLET STR. ID (J-4241)	TOP OF TROUGH (J-4241)	RISER UNIT HEIGHT (J-4241)
203.89	202.47	1A M-14	14-9	205.19	2.72
202.30	200.88	1A M-15	14-13	204.32	3.44

CONVERSION OF PROPOSED MANHOLES 1A M-15 AND 1A M-14  
CONSTRUCTED UNDER J-4206-1A TO FUTURE COG INLET UNDER J-4241  
NOT TO SCALE

**NOTE:**  
MANHOLES 1A M-14 AND 1A M-15 WILL BE CONSTRUCTED UNDER J-4206-1A. UNDER J-4241 THESE MANHOLES WILL BE CONVERTED TO COG INLETS BY REMOVING THE MANHOLE COVER AND FRAM AND TOP SLAB OF THE BASE UNIT AND INSTALLING A RISER UNIT AND TROUGH UNIT.

\*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

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Halga Secora* 10-18-16  
DIRECTOR OF PUBLIC WORKS

*Thomas E. Butler* 10/17/16  
CHIEF, BUREAU OF ENGINEERING

*Michael* 10/18/2016  
CHIEF, BUREAU OF HIGHWAYS

*Rod* 10-17-16  
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

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



DES: HL / JRB	BY	NO.	DATE
DRN: JMB			
CHK: RS			
DATE: 10/2016			

CAPITAL PROJECT NO.  
**J-4206-1A**

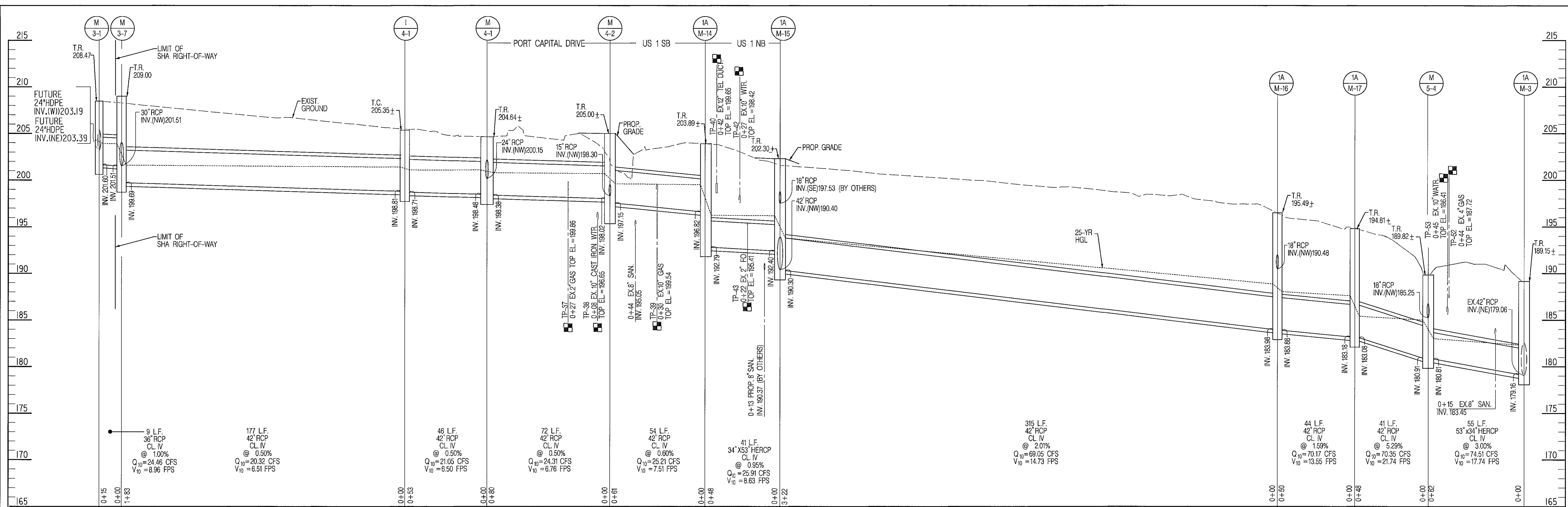
MAP NO. BLOCK NO.

DRAINAGE SCHEDULE AND DETAILS  
RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A  
ELECTION DISTRICT 2  
HOWARD COUNTY, MARYLAND

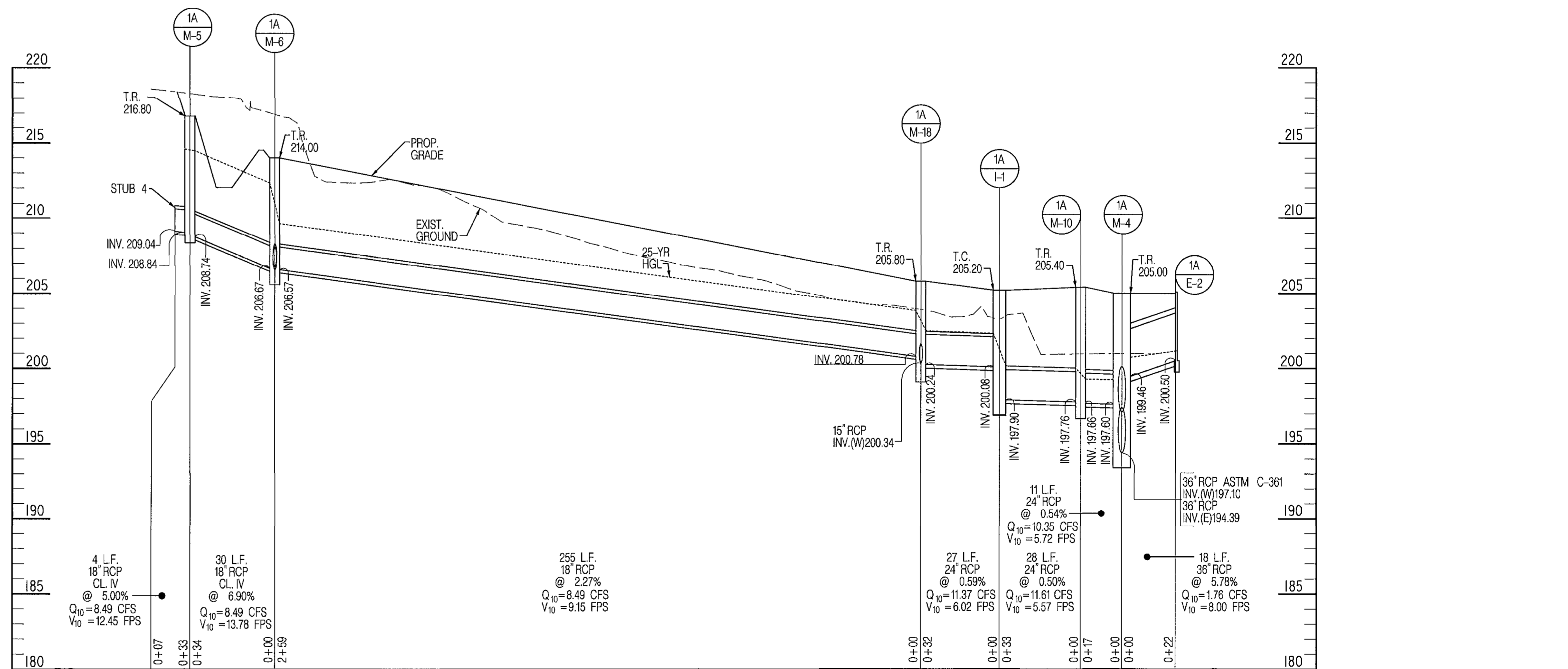
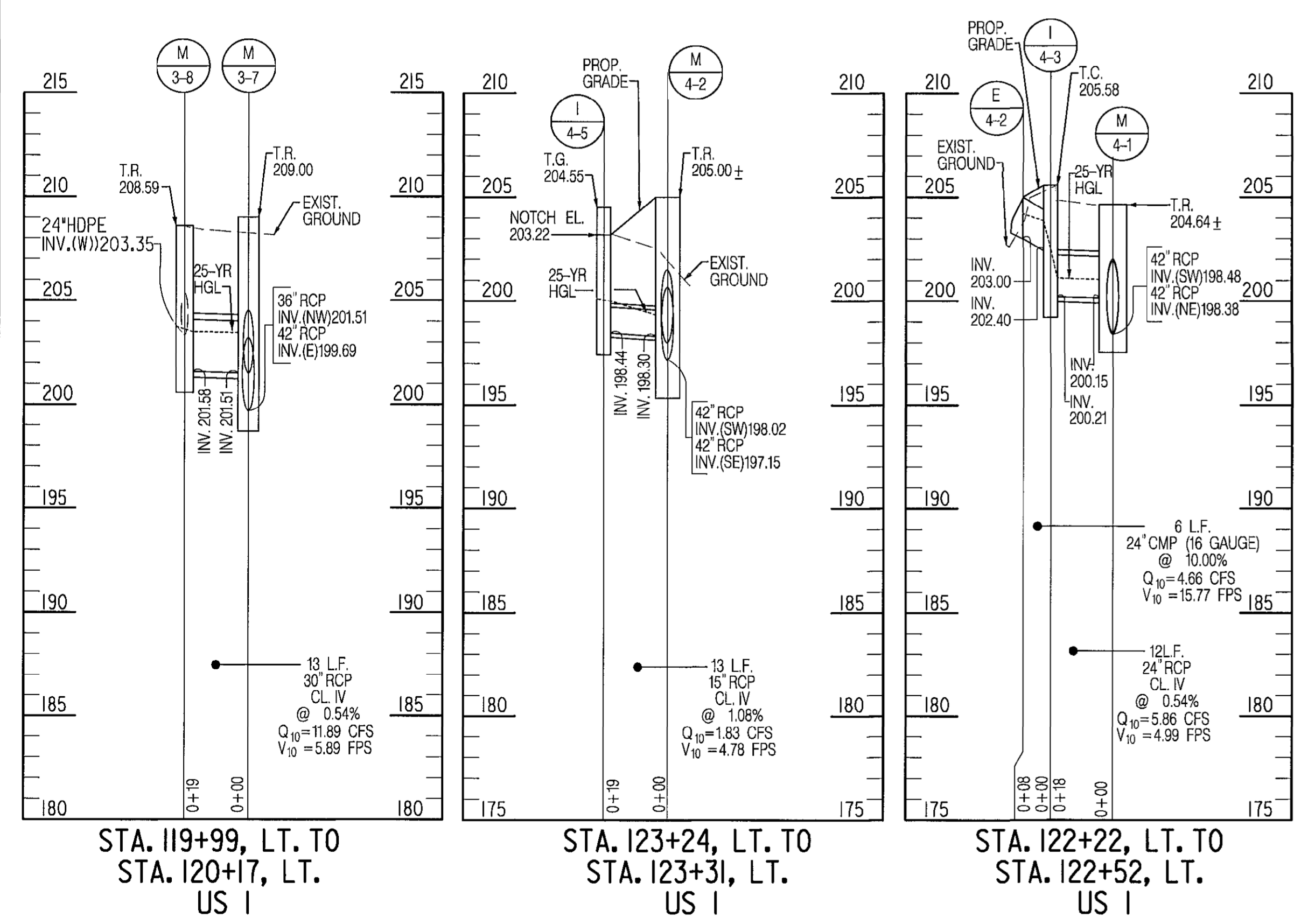
DS-2 OF 2

SCALE  
NONE

SHEET  
17 OF 45



STA. I20+I4, LT. TO STA. I28+06, LT. - US I



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

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND  
*Hogan Senawo* 10-18-16  
 DIRECTOR OF PUBLIC WORKS  
*Thomas P. Butler* 10/17/16  
 CHIEF, BUREAU OF ENGINEERING  
*Michael* 10/18/2016  
 CHIEF, BUREAU OF HIGHWAYS  
 SPECIAL PROJECTS DIVISION

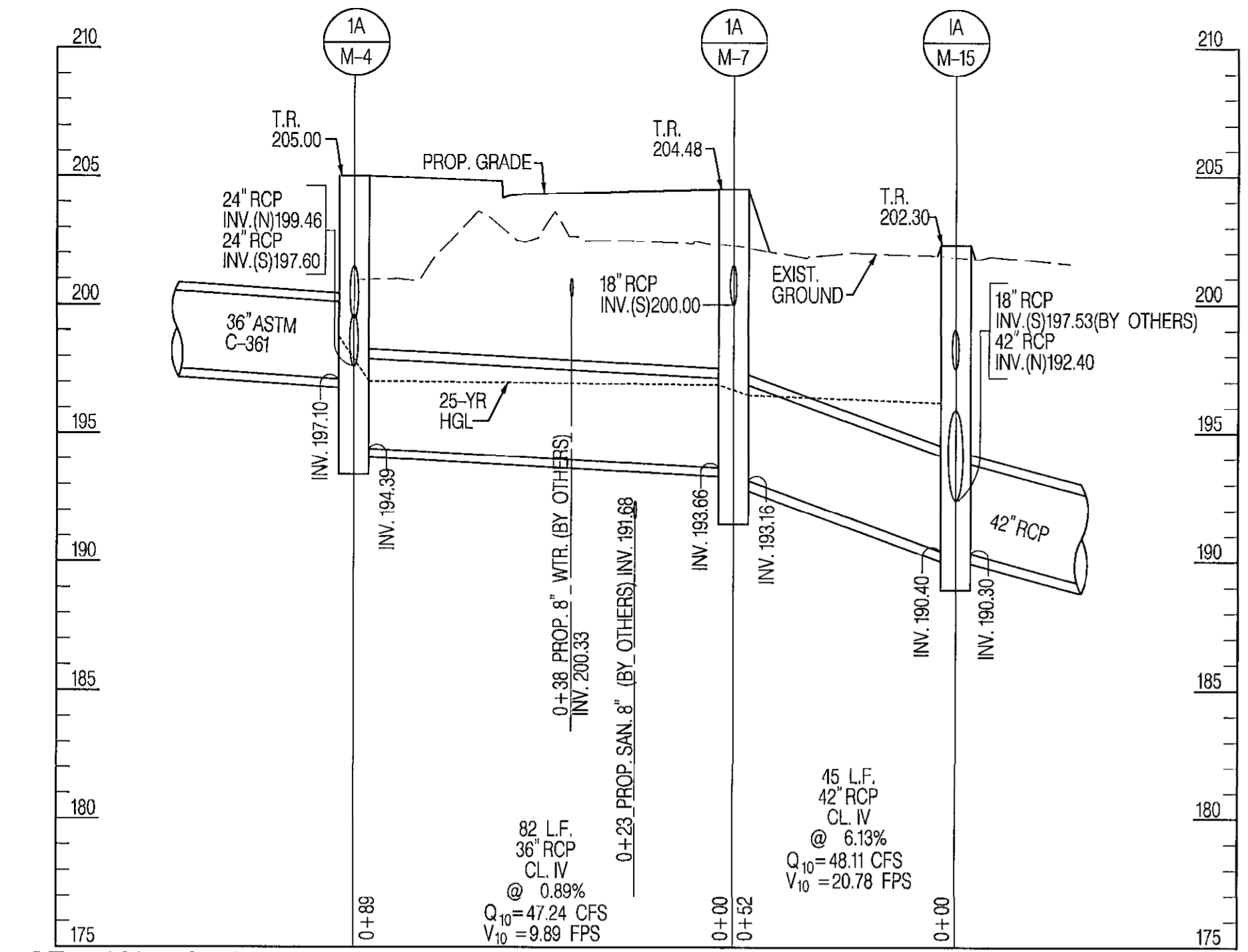


DES: HL / JRB	BY: _____	NO. _____	DATE: _____
DRN: JMB	CHK: RS	DATE: 10/2016	

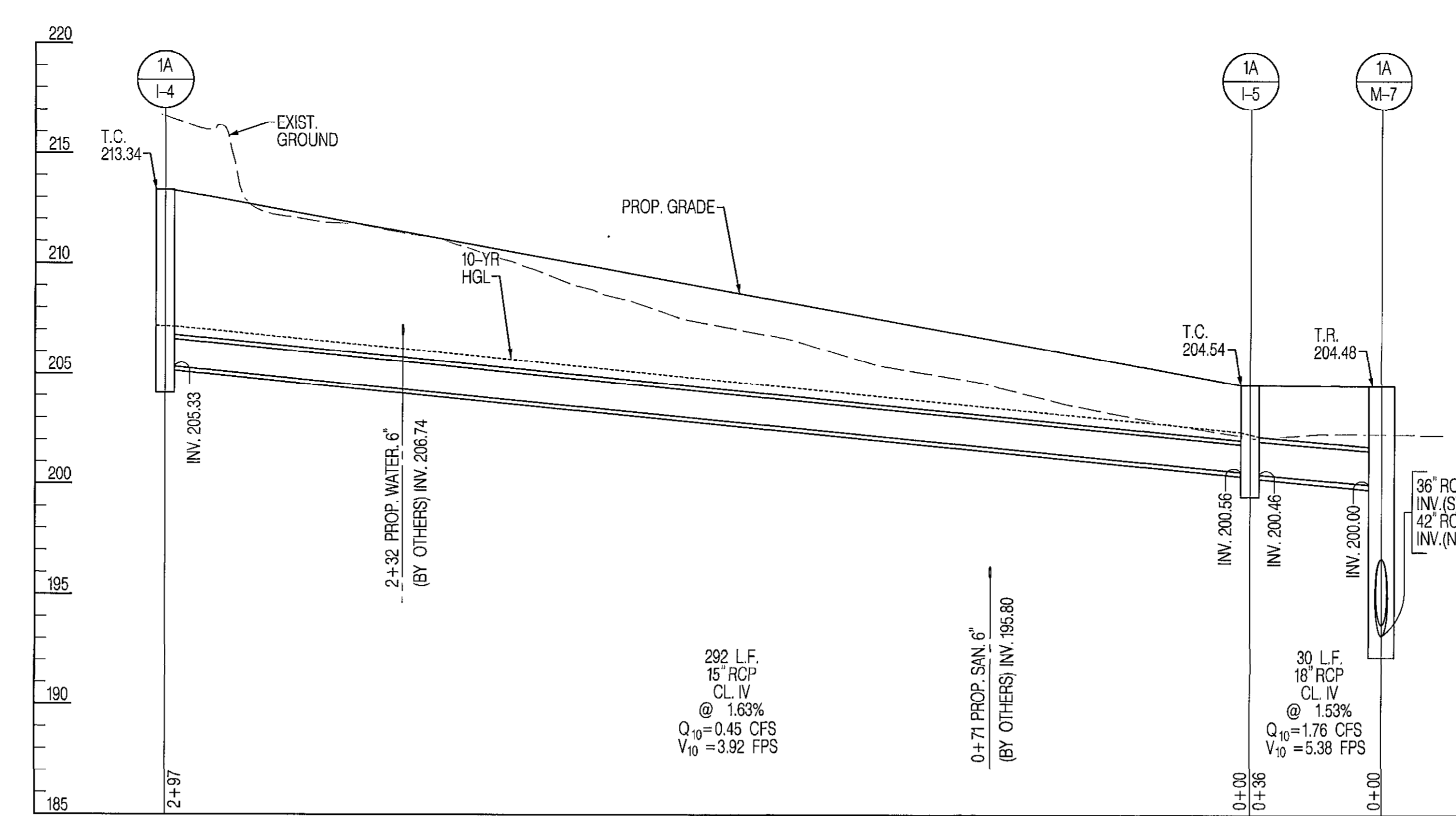
CAPITAL PROJECT NO.  
**J-4206-1A**

STORM DRAIN PIPE PROFILE SHEETS  
**RELOCATED MONTEVIDEO ROAD  
 PHASE 1, SEGMENT A**  
 ELECTION DISTRICT 2  
 HOWARD COUNTY, MARYLAND

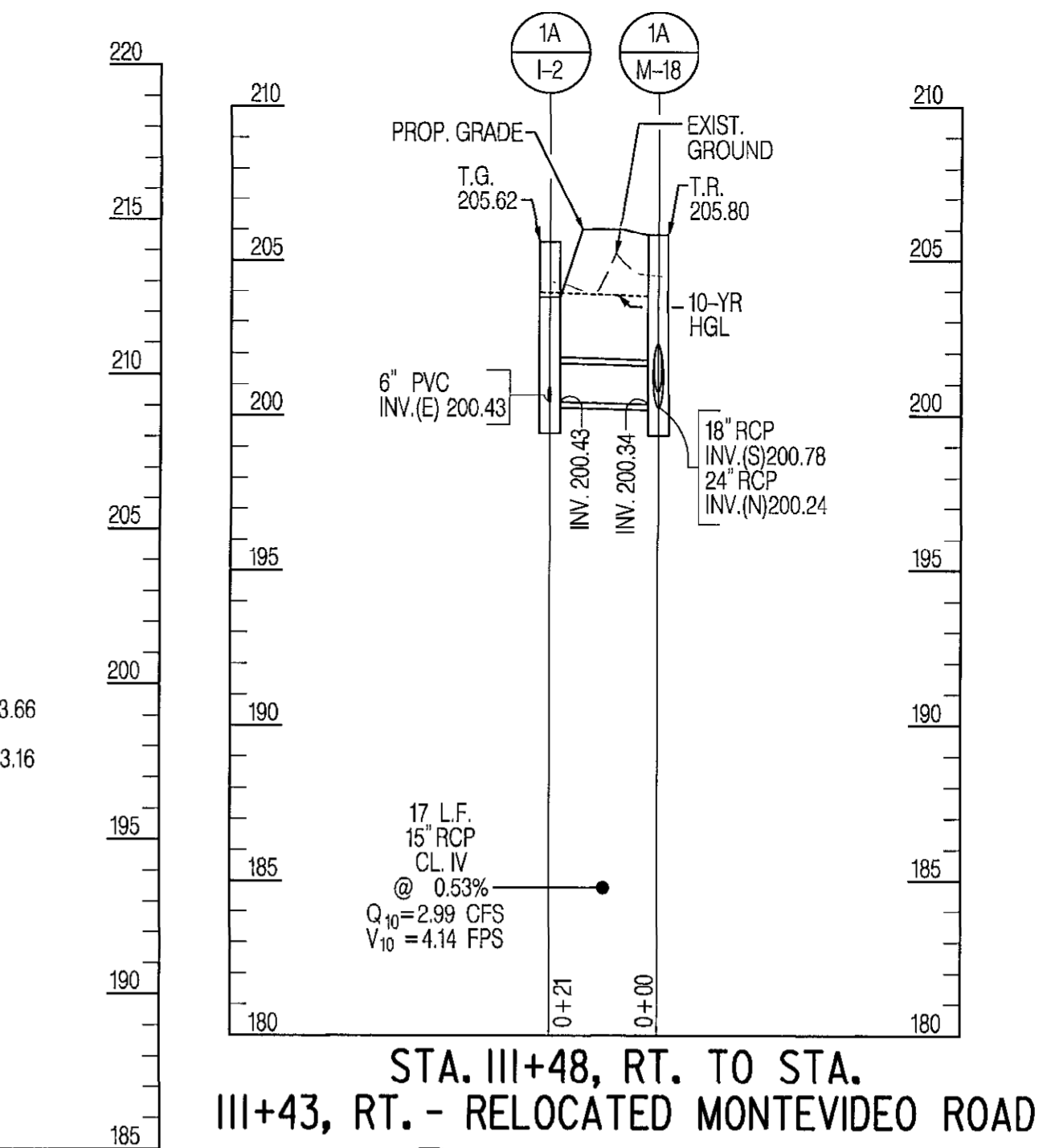




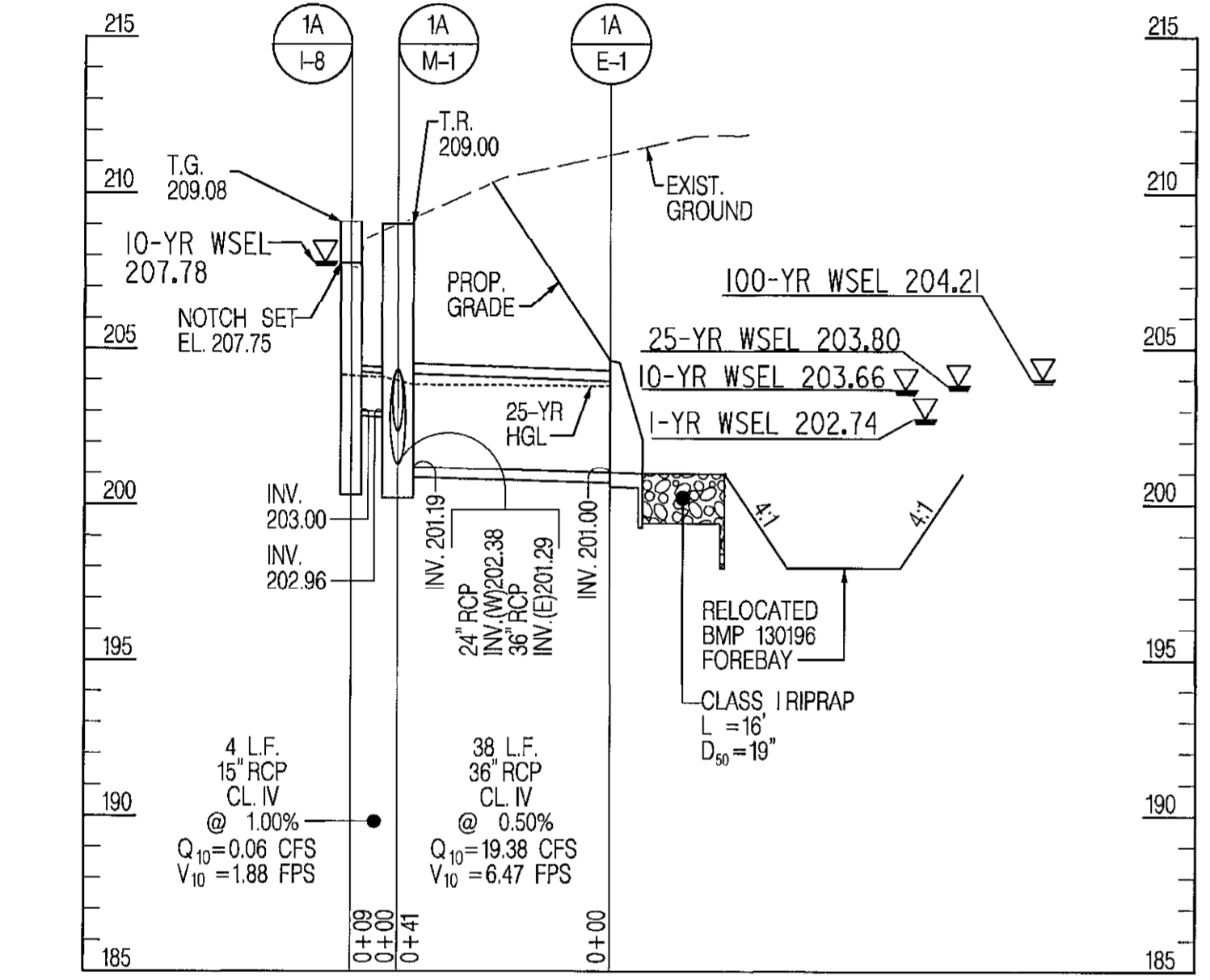
STA. 121+89, RT. - RELOCATED MONTEVIDEO ROAD TO STA. 123+28, RT. - US 1



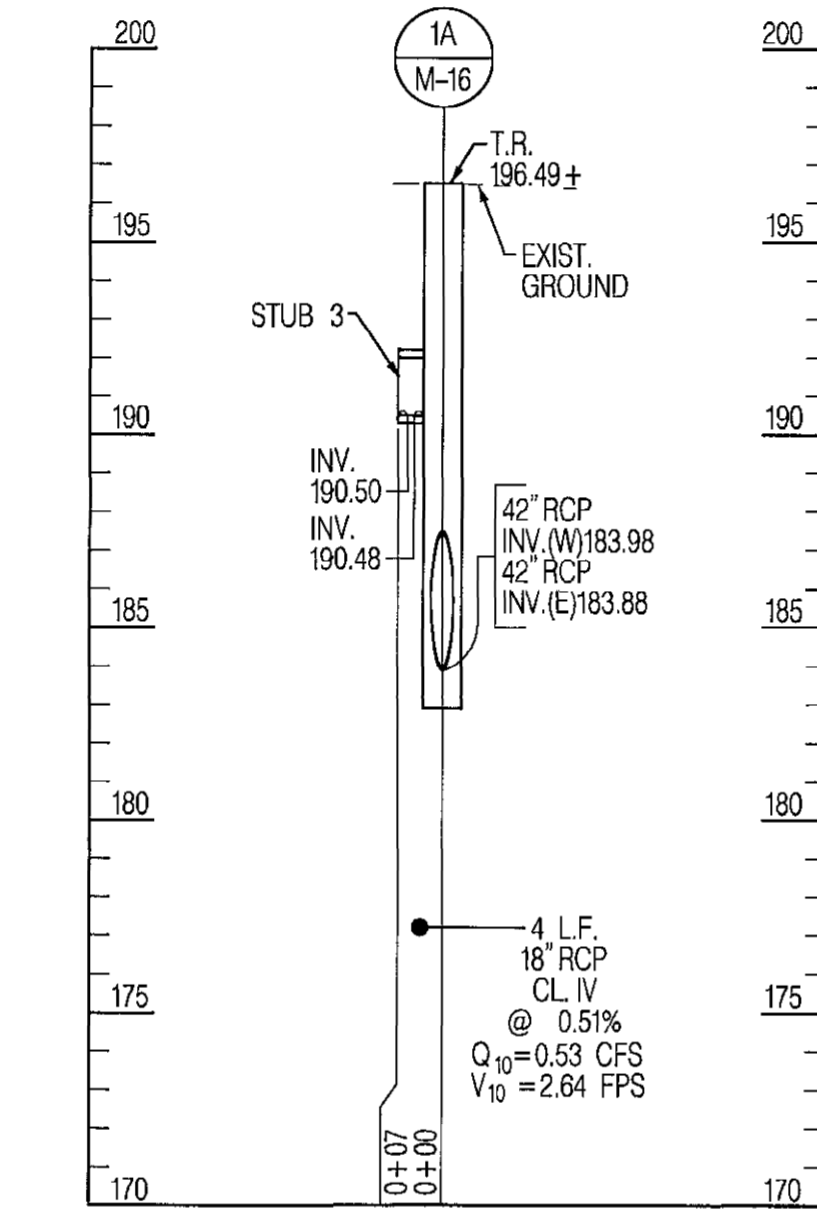
STA. 113+89, LT. - RELOCATED MONTEVIDEO ROAD TO STA. 122+77, RT. - US 1



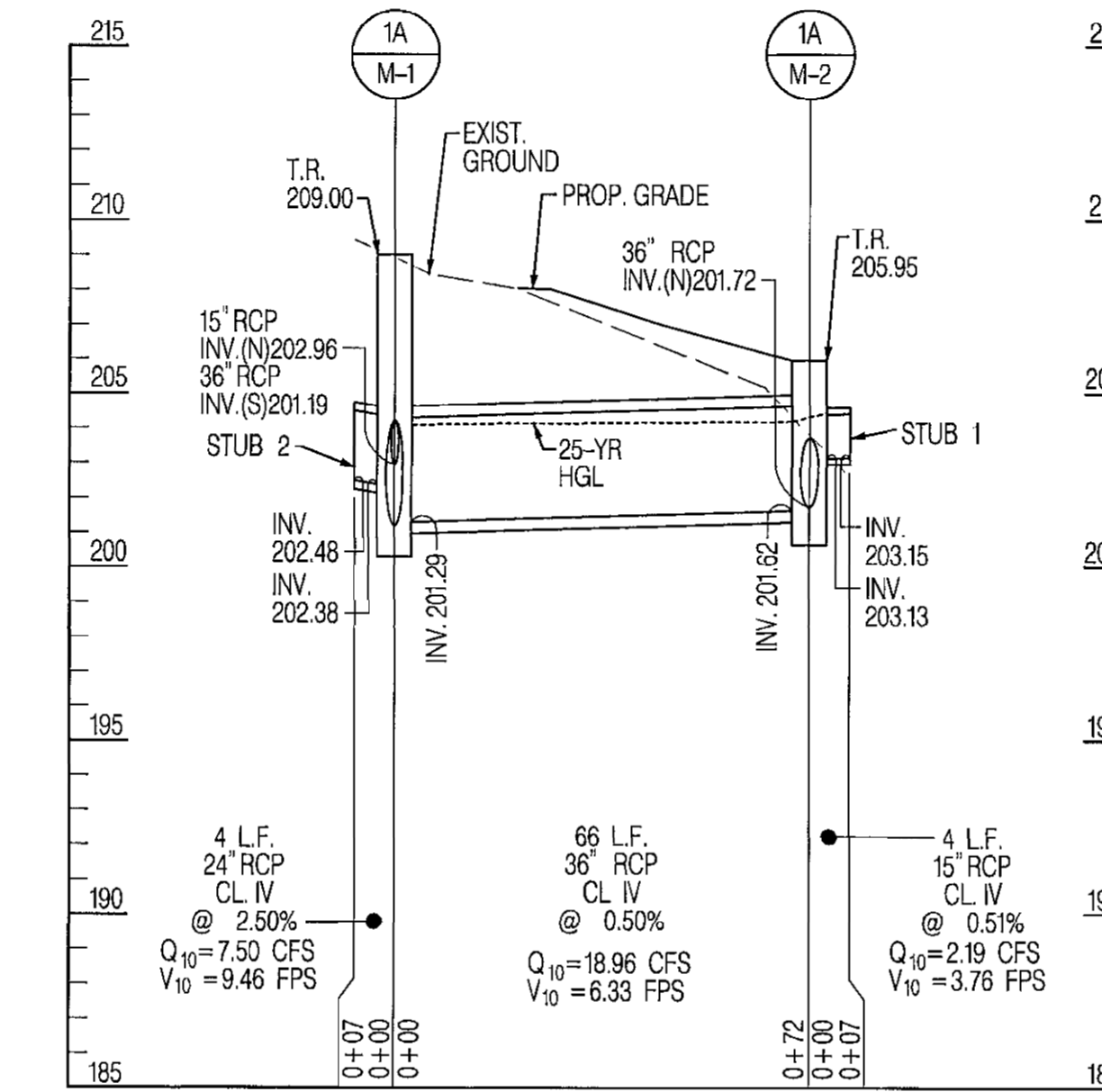
STA. 111+48, RT. TO STA. 111+43, RT. - RELOCATED MONTEVIDEO ROAD



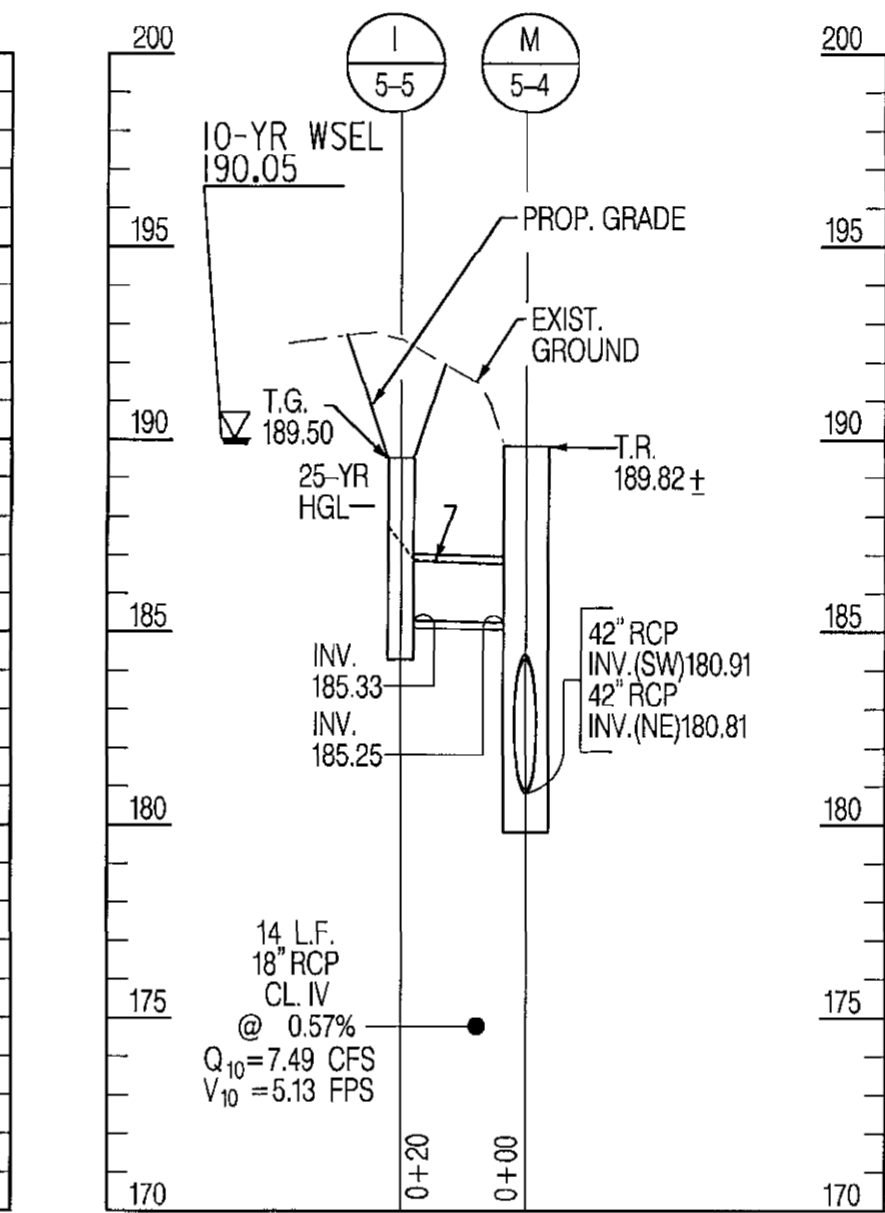
STA. 119+77, RT. TO STA. 119+81, RT. - US 1



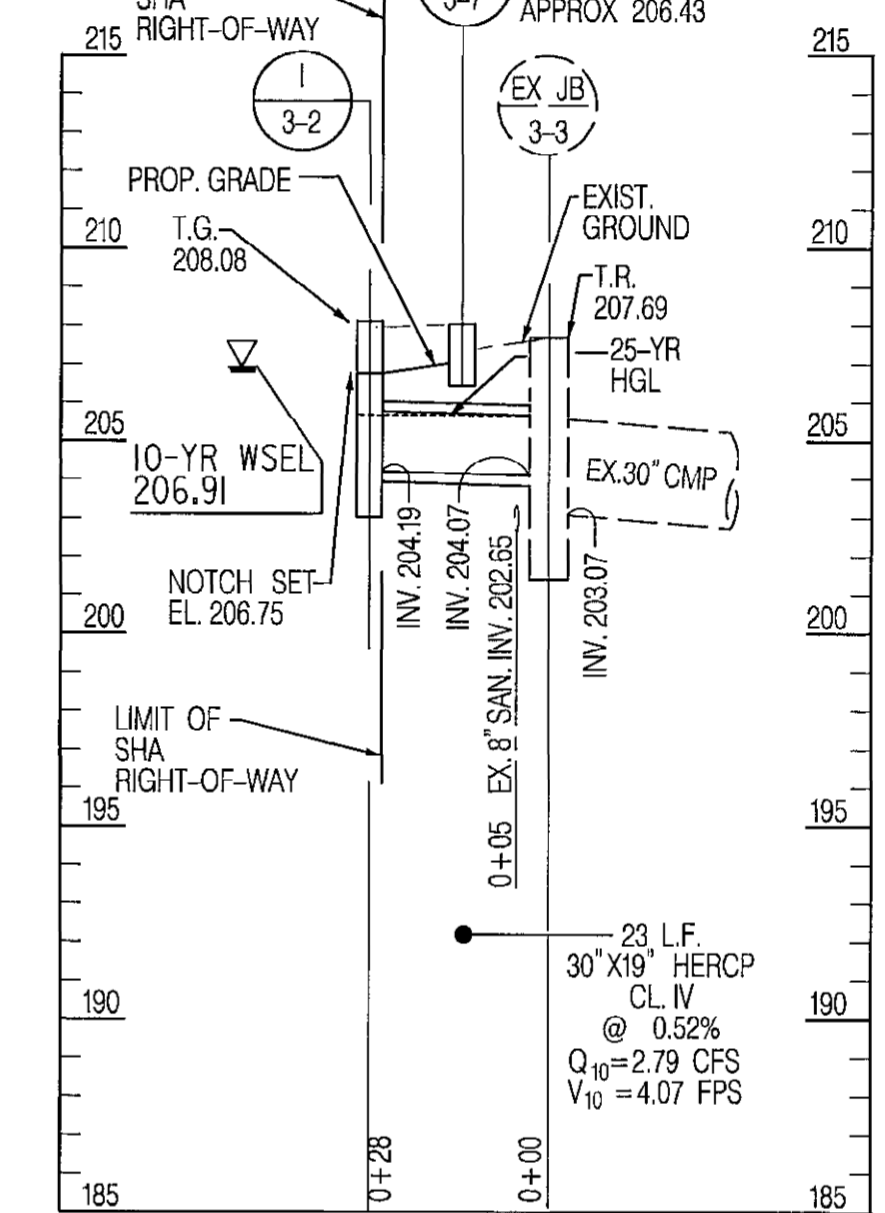
STA. 126+49, RT. TO STA. 126+49, RT. - US 1



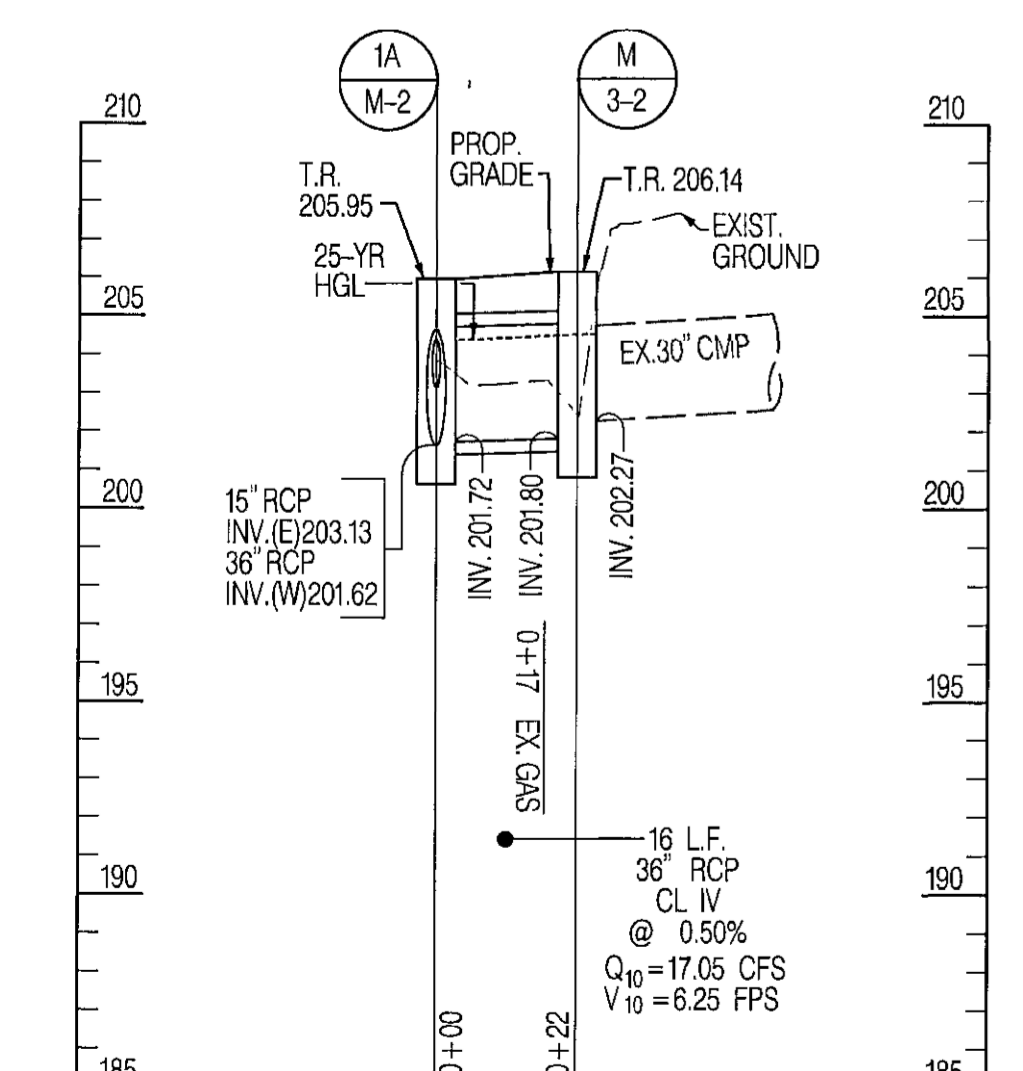
STA. 119+73, RT. TO STA. 120+56, RT. - US 1



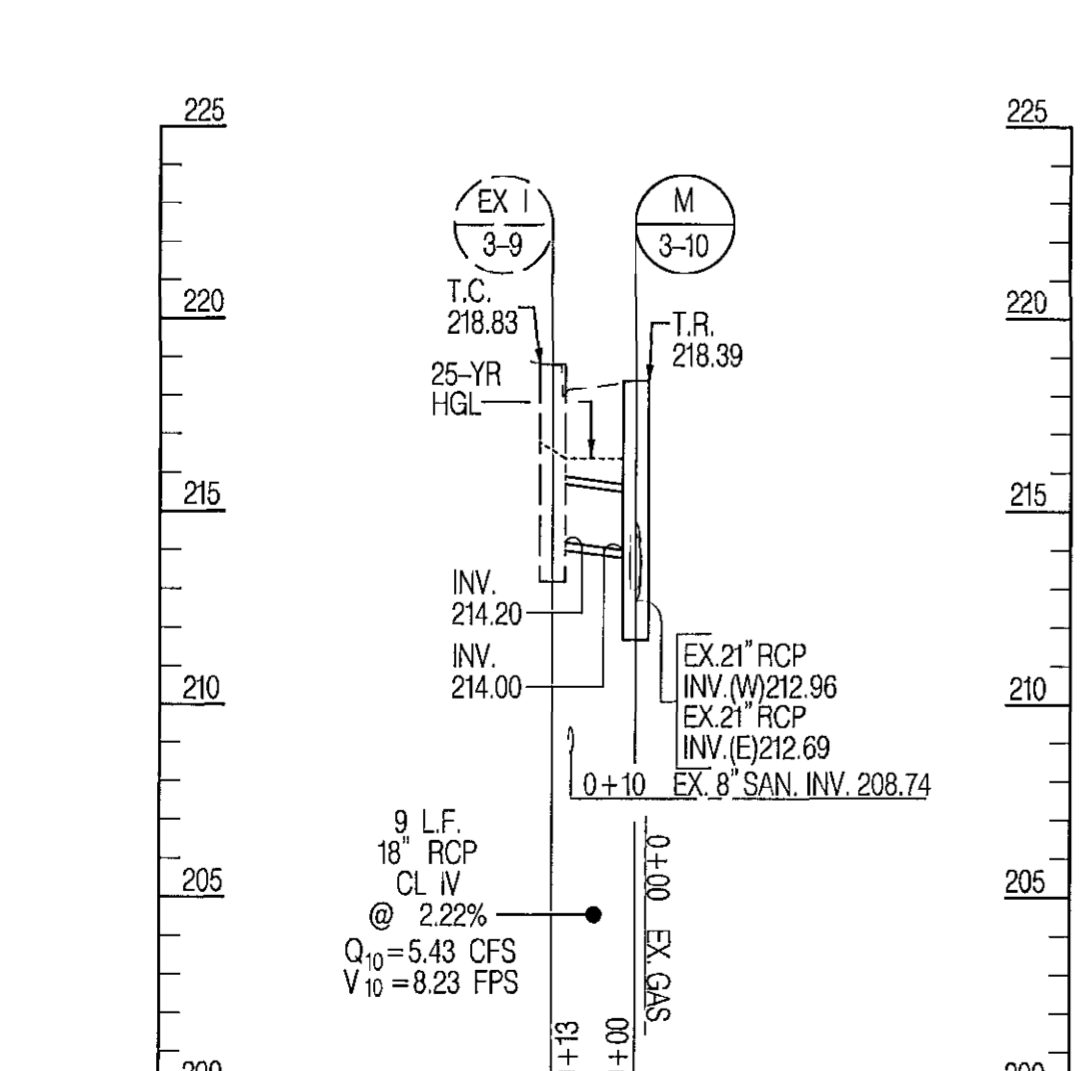
STA. 127+31, RT. TO STA. 127+44, RT. - US 1



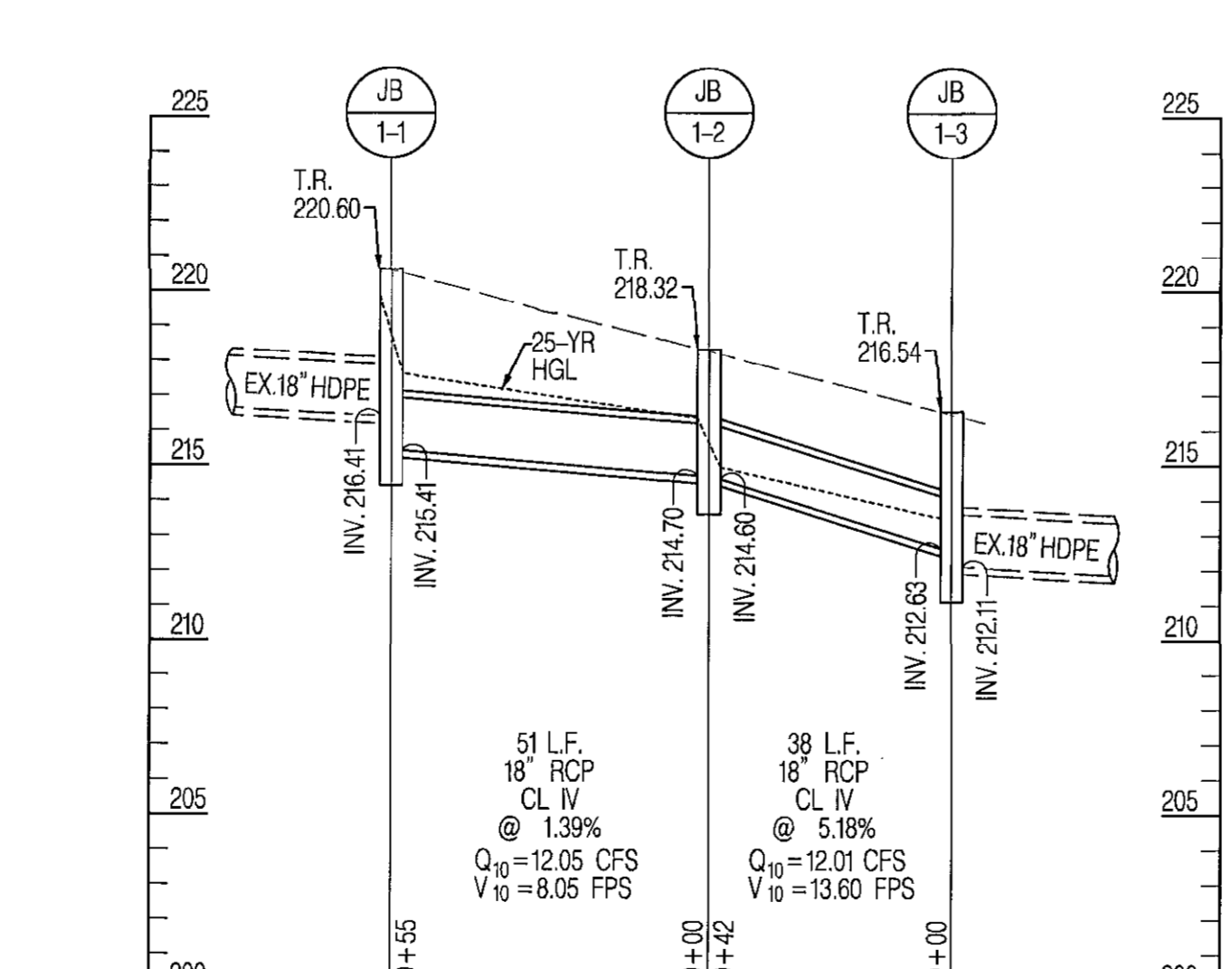
STA. 120+35, LT. TO STA. 120+19, LT. - US 1



STA. 120+50, RT. TO STA. 120+50, RT. - US 1



STA. 117+22, LT. TO STA. 117+28, LT. - US 1



STA. 116+80, LT. TO STA. 117+76, LT. - US 1

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

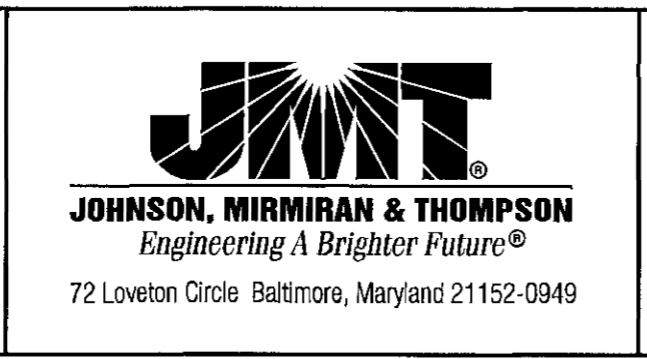
E:\WORKING\04-MonteVideo\Road\CAD\VP-1002\_MonteVideo.dwg 10/28/16 10:28 AM

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Halcy Semans* 10-18-16  
DIRECTOR OF PUBLIC WORKS

*Monica Butler* 10/17/16  
CHIEF, BUREAU OF ENGINEERING

*Chelmer* 10/18/2016  
CHIEF, BUREAU OF HIGHWAYS



DES: HL / JRB	BY	NO.	DATE
DRN: JMB			
CHK: RS			
DATE: 10/2016			

CAPITAL PROJECT NO.  
**J-4206-1A**

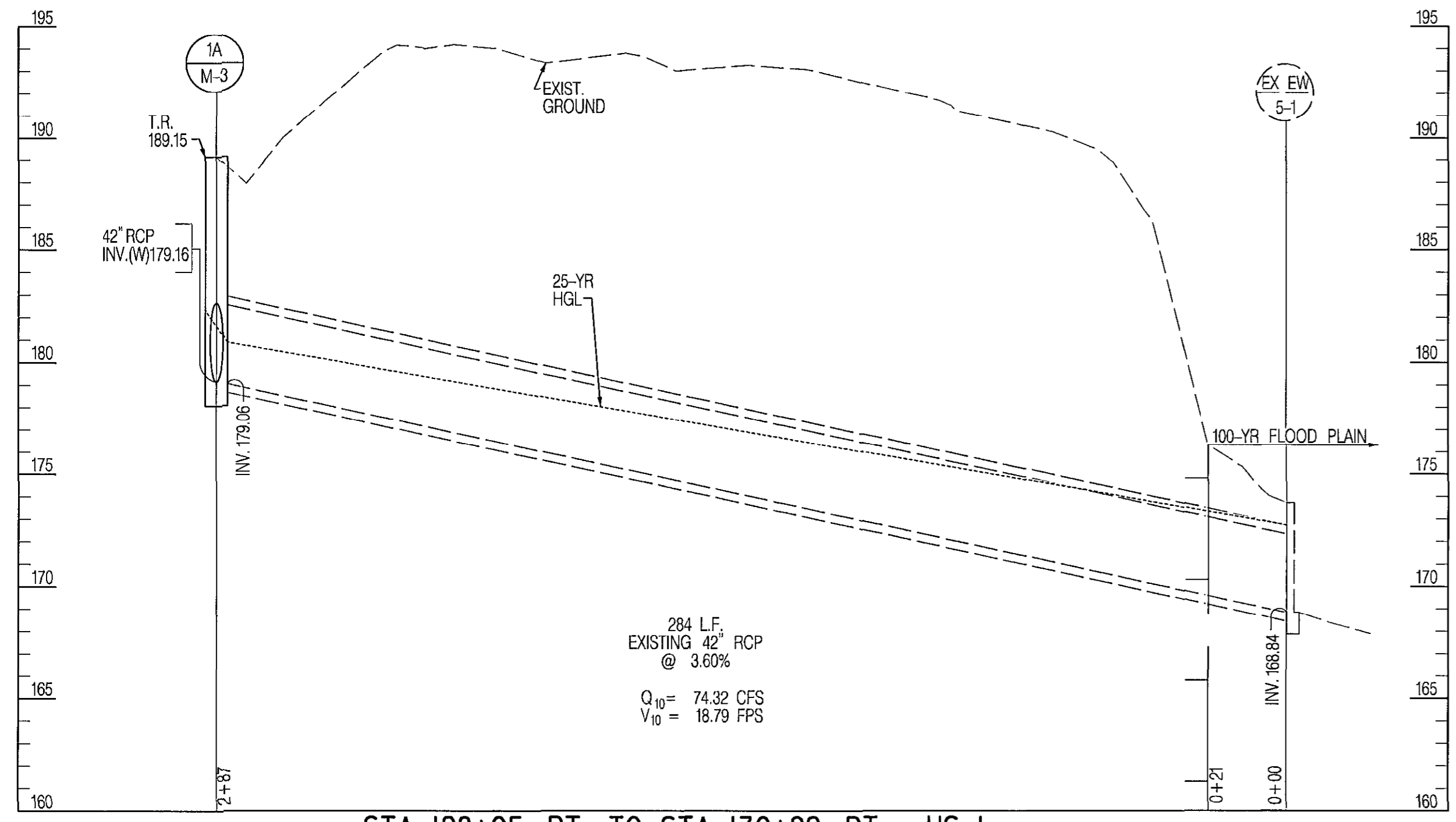
STORM DRAIN PIPE PROFILES  
**RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A**

ELECTION DISTRICT 2  
HOWARD COUNTY, MARYLAND

SCALE  
HOR. 1"=30'  
VERT. 1"=5'

SHEET  
19 OF 45





STA. 128+05, RT. TO STA. 130+92, RT. - US 1

284 L.F.  
EXISTING 42" RCP  
@ 3.60%

$Q_{10} = 74.32$  CFS  
 $V_{10} = 18.79$  FPS

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

PP-3 OF 3

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Holger Senano* 10.18.16  
DIRECTOR OF PUBLIC WORKS

*Wade J.* 10.17.16  
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

*Manuel Butler* 10/17/16  
CHIEF, BUREAU OF ENGINEERING

*Miriam* 10/18/2016  
CHIEF, BUREAU OF HIGHWAYS

**JMT**  
**JOHNSON, MIRMAN & THOMPSON**  
Engineering A Brighter Future®  
72 Loveton Circle Baltimore, Maryland 21152-0949



DES:	HL / JRB	BY	NO.	DATE
DRN:	JMB			
CHK:	RS			
DATE:	10/2016			

CAPITAL PROJECT NO.  
**J-4206-1A**

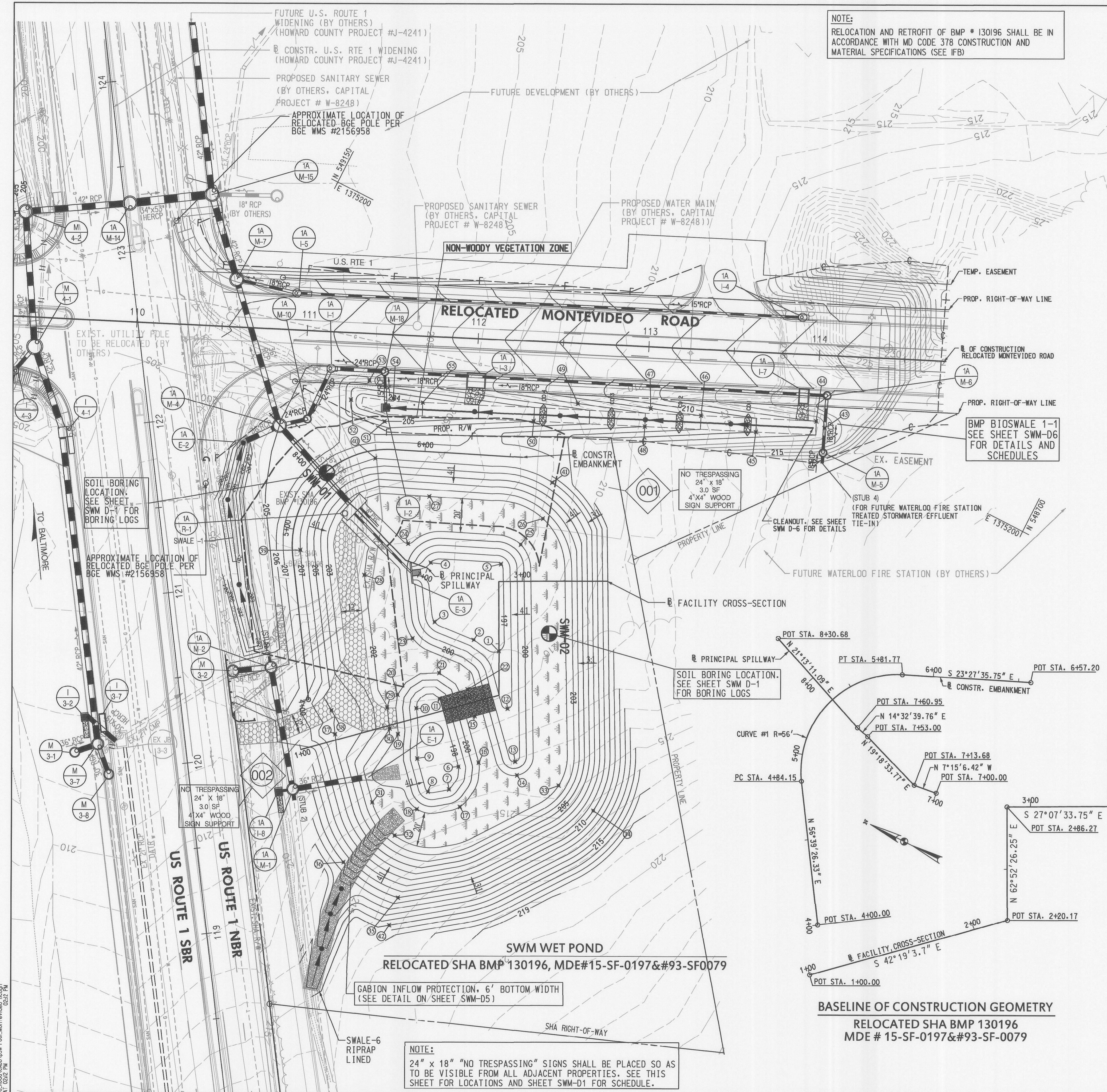
MAP NO. BLOCK NO.

STORM DRAIN PIPE PROFILES  
**RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A**

ELECTION DISTRICT 2 HOWARD COUNTY, MARYLAND

SCALE  
HOR. 1"=30'  
VERT. 1"=5'  
SHEET  
20 OF 45





**NOTE:**  
RELOCATION AND RETROFIT OF BMP # 130196 SHALL BE IN ACCORDANCE WITH MD CODE 378 CONSTRUCTION AND MATERIAL SPECIFICATIONS (SEE IFB)

**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

**BIO-SWALE 1-1 GRADING TABLE**

NO.	NORTHING	EASTING	ELEV.
43	548,830.90	1,375,200.99	212.00
44	548,837.07	1,375,202.30	211.00
45	548,865.74	1,375,180.76	210.00
46	548,898.72	1,375,174.71	209.00
47	548,926.89	1,375,165.07	209.00
48	548,925.14	1,375,154.08	208.00
49	548,966.26	1,375,148.76	208.00
50	548,984.53	1,375,127.40	206.00
51	549,062.19	1,375,087.92	205.00
52	549,085.60	1,375,090.45	205.00
53	549,080.96	1,375,105.07	206.00
54	549,063.87	1,375,102.33	204.00
55	549,047.41	1,375,107.92	204.00

**BASELINE CONTROL COORDINATES-RELOCATED SHA BMP 130196**

LOCATION	STATION	NORTHING	EASTING
CONSTR. EMBANKMENT	POT 4+00.00	549,028.19	1,374,923.21
	PC 4+84.15	549,074.44	1,374,993.51
	PT 5+81.77	549,049.95	1,375,075.67
POT 6+57.20	548,980.77	1,375,105.69	
CONSTR. PRINCIPAL SPILLWAY	POT 7+00.00	549,001.08	1,375,023.03
	POT 7+13.68	549,014.65	1,375,021.30
	POT 7+53.00	549,051.75	1,375,034.31
	POT 7+60.95	549,059.46	1,375,036.30
POT 8+30.68	549,124.46	1,375,061.54	
FACILITY X-SECTION	POT 1+00.00	549,018.97	1,374,895.10
	POT 2+20.17	548,930.11	1,374,976.00
	POT 2+86.27	548,960.25	1,375,034.84
POT 3+49.86	548,903.67	1,375,063.83	

**GRADING TABLE-RELOCATED SHA BMP 130196**

NO.	NORTHING	EASTING	ELEV.	NO.	NORTHING	EASTING	ELEV.
1	548,941.91	1,374,998.61	197.00	22	548,948.03	1,374,970.51	201.00
2	548,957.96	1,374,997.98	197.00	23	548,990.21	1,374,982.67	201.00
3	548,983.15	1,374,997.03	197.00	24	549,017.63	1,375,030.78	201.00
4	549,000.85	1,375,026.76	197.00	25	548,958.63	1,375,059.81	201.00
5	548,963.68	1,375,004.63	197.00	26	548,953.92	1,375,079.28	202.00
6	548,932.30	1,374,927.90	198.00	27	549,019.01	1,375,060.79	202.00
7	548,931.19	1,374,913.69	198.00	28	549,032.12	1,375,002.65	202.00
8	548,941.58	1,374,906.94	198.00	29	548,985.22	1,374,939.89	202.00
9	548,956.10	1,374,921.37	198.00	30	548,978.39	1,374,929.70	202.00
10	548,969.81	1,374,947.33	198.00	31	548,967.80	1,374,886.69	202.00
11	548,960.20	1,374,958.54	198.00	32	548,947.40	1,375,875.46	202.00
12	548,922.19	1,374,971.19	198.00	33	548,875.07	1,375,944.66	202.00
13	548,904.18	1,374,945.47	199.00	34	548,850.30	1,374,940.87	210.00
14	548,899.59	1,374,938.91	201.00	35	548,929.17	1,374,843.99	210.00
15	548,937.30	1,374,958.64	201.00	36	548,967.02	1,374,848.02	210.00
16	548,922.91	1,374,935.42	201.00	37	549,005.25	1,374,912.30	205.00
17	548,920.93	1,374,907.49	201.00	38	549,013.52	1,374,923.72	205.00
18	548,942.76	1,374,895.00	201.00	39	549,072.09	1,374,998.75	207.00
19	548,972.60	1,374,929.04	201.00	40	549,057.26	1,375,066.26	207.00
20	548,983.15	1,374,949.37	201.00	41	548,958.56	1,375,100.46	207.00
21	548,967.15	1,374,971.60	201.00	42	548,926.49	1,374,827.33	214.00

**STORMWATER MAINTENANCE SCHEDULE PONDS**

Inspection Item	Frequency of Inspection	Inspection Requirements	Remedial Action
Principal Spillway	Seasonally and after a major storm	Check for trash, debris, and sediment clogging at all openings	Remove debris. Trash and debris must be disposed of in an acceptable manner according to current regulations.
Debris and Trash	Check condition.	Check for evidence of cracks, spalling, joint failures and seepage around spillway pipe. Water tightness is necessary.	Repair or replace to good working condition.
Trash Rack	Check operation. Keep drain chained and locked.	Check for evidence of cracks, spalling, joint failures and seepage around spillway pipe. Water tightness is necessary.	Repair according to the approved plans.
Pond Drain	Check for evidence of cracks, spalling, joint failures and seepage around spillway pipe. Water tightness is necessary.	Check for excessive vegetation blocking orifice openings. Woody vegetation must be less than 5' from the barrel and less than 25' from the riser.	Repair to achieve operation in accordance with the approved plans.
Riser and Barrel	Check for evidence of cracks, spalling, joint failures and seepage around spillway pipe. Water tightness is necessary.	Check for missing manhole covers or inlet gates. Check for concrete and structural integrity.	Repair or restore function in accordance with the approved plans.
Vegetation	Check for excessive vegetation blocking orifice openings. Woody vegetation must be less than 5' from the barrel and less than 25' from the riser.	Check for missing manhole covers or inlet gates. Check for concrete and structural integrity.	Remove vegetation and roots as necessary.
Other structural components	Check for missing manhole covers or inlet gates. Check for concrete and structural integrity.	Check for missing manhole covers or inlet gates. Check for concrete and structural integrity.	Repair according to the approved plans.
Pond Outlet	Seasonally and after a major storm	Check for trash and debris in and around the outlet.	Remove trash and debris.
Debris and Trash	Check for trash and debris in and around the outlet.	Check for displacement, low out, and erosion below the outlet. Stable conveyance must be provided.	Repair and restore function in accordance with the approved plans.
Riprap Outlet Protection	Check for displacement, low out, and erosion below the outlet. Stable conveyance must be provided.	Check for erosion, cracks and seepage.	Repair as needed.
Abutments	Check for erosion, cracks and seepage.	Check for accessibility to pond and riser.	Prevent excessive vegetative growth and erosion on the access road. Repair and maintain access road in good condition.
Pond Embankment	Annually	Check that there is no woody vegetation on embankment and ground cover is in good condition. Check for wetland type vegetation.	Remove woody vegetation as necessary. Re-seed bare areas according to plan specifications requirements. Presence of wetland vegetation on the embankment may indicate seepage and structural concerns.
Vegetation	Check that there is no woody vegetation on embankment and ground cover is in good condition. Check for wetland type vegetation.	Check upstream face and downstream face for soft spots and boggy areas, both at the toe, scullin, depressions and bays, signs of erosion, animal burrows, slope failures and seepage.	Repair and stabilize in accordance with the approved plans. MDE Sediment and Stormwater Plan Review Division must be contacted for review and approval of any major pond repairs.
Embankment Integrity	Check upstream face and downstream face for soft spots and boggy areas, both at the toe, scullin, depressions and bays, signs of erosion, animal burrows, slope failures and seepage.	Check for unhealthy vegetation and unwanted species.	Remove unwanted vegetation and re-seed or re-plant according to approved plan design.
Sediment Accumulation	Check for unhealthy vegetation and unwanted species.	Check for excessive sediment in the wetland area.	Check out sediment and restore elevation to approved plan design.
Wetland Pool Elevation	Check for excessive sediment in the wetland area.	Check for adequate water volume, sustained wet conditions, varied pond depths and seasonal depth fluctuations.	Regrading in wetland may be necessary, contact MDE to restore wetland function to approved design.

**STORMWATER MAINTENANCE SCHEDULE PONDS**

Pool/Basin Area	Frequency	Inspection Requirements	Remedial Action
Permanent Pool	Annually	Check sediment accumulation stagnant pool areas and isolated pond areas.	Clean out sediments and remove debris to approved plan design.
Vegetation	Check for trash and debris in and around the outlet.	Check for trash and debris in and around the outlet.	Remove debris.
Debris and Trash	Check for trash and debris in and around the outlet.	Check for erosion, cracks and seepage.	Repair as needed.
Pond Inlet Conveyance System	Seasonally and after a major storm	Check for erosion, blockages, and stable conveyance.	Repair as needed.
Endwall/Headwalls	Check for erosion, cracks and seepage.	Check for displacement, low out, unstable conveyance and erosion below the outlet.	Repair and restore function in accordance with the approved plans.
Open Channels	Check for erosion, blockages, and stable conveyance.	Check for sediment accumulation in the forebay.	Clean out the forebay when depth is less than 30% of the design depth. Restore to approved plan design.
Riprap Protection	Check for displacement, low out, unstable conveyance and erosion below the outlet.	Check for presence of algae and unwanted vegetation.	Remove unwanted vegetation and re-seed or re-plant according to approved plan design.
Forebays and Microponds	Seasonally and after a major storm	Check for sediment accumulation in the forebay.	Clean out the forebay when depth is less than 30% of the design depth. Restore to approved plan design.
Sediment Accumulation	Check for sediment accumulation in the forebay.	Check for presence of algae and unwanted vegetation.	Remove unwanted vegetation and re-seed or re-plant according to approved plan design.
Vegetation	Check for presence of algae and unwanted vegetation.	Check for presence of excessive vegetation obstructing flow or trees in the conveyance channel.	Mow or remove trees as necessary.
Emergency Spillway	Annually	Check for evidence of erosion, soft or wet areas, or obstructions to stable conveyance.	Stabilize erosion and remove obstructions as necessary.
Spillway Channel	Check for evidence of erosion, soft or wet areas, or obstructions to stable conveyance.	Check for presence of excessive vegetation obstructing flow or trees in the conveyance channel.	Mow or remove trees as necessary.
Vegetation	Check for presence of excessive vegetation obstructing flow or trees in the conveyance channel.	Check for accessibility to pond and riser.	Prevent excessive vegetative growth and erosion on the access road. Repair and maintain access road in good condition.
Maintenance Access	Annually	Check for accessibility to pond and riser.	Prevent excessive vegetative growth and erosion on the access road. Repair and maintain access road in good condition.
General	Check for accessibility to pond and riser.	Check for accessibility to pond and riser.	Prevent excessive vegetative growth and erosion on the access road. Repair and maintain access road in good condition.
Overall Function of the Facility	Annually	Check for accessibility to pond and riser.	Prevent excessive vegetative growth and erosion on the access road. Repair and maintain access road in good condition.
Vegetation	Check for accessibility to pond and riser.	Check for unhealthy vegetation and unwanted species.	Remove unwanted vegetation and re-seed or re-plant according to approved plan design.
Sediment Accumulation	Check for unhealthy vegetation and unwanted species.	Check for excessive sediment in the wetland area.	Check out sediment and restore elevation to approved plan design.
Wetland Pool Elevation	Check for excessive sediment in the wetland area.	Check for adequate water volume, sustained wet conditions, varied pond depths and seasonal depth fluctuations.	Regrading in wetland may be necessary, contact MDE to restore wetland function to approved design.

**BASELINE OF CONSTRUCTION GEOMETRY**  
RELOCATED SHA BMP 130196  
MDE # 15-SF-0197 & #93-SF-0079

Howard SCD Signature Block:  
This plan is approved for small pond construction, and soil erosion and sediment control by the Howard Soil Conservation District.  
*Howard Soil Conservation District*  
Date: 10/26/16  
EP-16-58

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND  
Hector Serrano 10-18-16  
DIRECTOR OF PUBLIC WORKS  
Thomas E. Suttler 10/17/16  
CHIEF, BUREAU OF ENGINEERING  
Rashad 10-17-16  
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION  
Maureen 10/18/2016  
CHIEF, BUREAU OF HIGHWAYS



DES:	HL	BY:	NO.	DATE:
DRN:	JMB			
CHK:	SAM			
DATE:	10/2016			

CAPITAL PROJECT NO.  
J-4206-1A  
MAP NO. BLOCK NO.

STORMWATER MANAGEMENT PLAN  
RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A  
ELECTION DISTRICT 2  
HOWARD COUNTY, MARYLAND  
SCALE 1"=30'  
SHEET 21 OF 45

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# RELOCATED SHA BMP 130196

## Pond Construction Checklist

ACTIVITY	ON SITE INSPECTION DATE	INSPECTOR INITIALS	ACCEPTANCE DATE
Runoff diverted	6/20/17 - 9/19/17	DGP mse	6/19/16
Drainage area stabilized prior to conversion from sediment basin, if applicable	N/A	N/A	N/A
Facility area cleared/Subgrade prepared	Same 2017	DGP mse	6/19/16
Facility location staked out		mse	
Pipe spillway installed properly with correct elevation, grade and watertight connections*		mse	
Core trench (if required) has correct dimensions and compaction rate*	July 2017	DGP mse	6/19/16
Anti-seep collars or diaphragms properly installed*	July 2017	DGP mse	6/19/16
Riser located within embankment	6/21/17	DGP mse	6/19/16
Riser placed on dry and stable subgrade to design elevation		mse	
Diameter and material of pipe as designed*		mse	
Required dimensions between water control structures (orifices, weirs, etc.) as designed		mse	
Low Flow Orifice adequately protected from clogging by an external trash rack or other device	July 2017	DGP mse	6/19/16
Diameter may be reduced by 1 inch if internal orifice is used		mse	
Proper fill material and compaction constructed for embankment*	July 2017	DGP mse	6/19/16
Embankment has correct side slopes, top width, and design elevation (plus allowance for settlement)*	July 2017	DGP mse	6/19/16
Inlet pipes have outfall protection	July 2017	DGP mse	6/19/16
Forebay(s) constructed as designed		mse	
2 pond benches constructed with combined minimum width of 15 ft. (as shown on plans)		mse	
Emergency spillway constructed to proper cross-section, side slopes, bottom width and elevation		mse	
Outfall securely in place and properly backfilled.*	July-Aug 2017	DGP mse	6/19/16
Filter fabric in place (Class "SE" or better)	July-Aug 2017	DGP mse	6/19/16
Apron/channel excavated to design cross-section		mse	
Riprap placed as designed with proper size thickness	July-Aug 2017	DGP mse	6/19/16
Trash rack device secured to outlet structure	July 2017	DGP mse	6/19/16
Riser opening do not permit unauthorized access	July 2017	DGP mse	6/19/16
Access road constructed according to plan and details	July 2017	DGP mse	6/19/16
No woody vegetation installed on embankment or within 15 ft. of embankment toe	July 2017	DGP mse	6/19/16
No woody vegetation installed with 25 ft. of riser or weir structure	July 2017	DGP mse	6/19/16
Proper landscaping as designated on plans	July 2017	DGP mse	6/19/16
Pond drain installed (waived for Eastern Shore)		mse	
Final grading and permanent stabilization completed*		mse	
As-built documentation	Sept 2017	DGP mse	6/19/16
Minimum 50% survival rate of wetland plantings 1 year after installation (710.03.06)*		mse	

\* AB Inspector required to perform inspection on site for these steps as required by COMAR 26.17.02.10.

**KEA-Hillis-Lomas Engineering Associates**  
**DGP - David G. Petron, PE #17664**  
**MSE - Michael Shane Edwards, PLS #21171**

UNIFIED SIZING CRITERIA VOLUMES (CF)	REQUIRED	PROVIDED
WQv	11,631	14,872
CPv	39,204	41,251

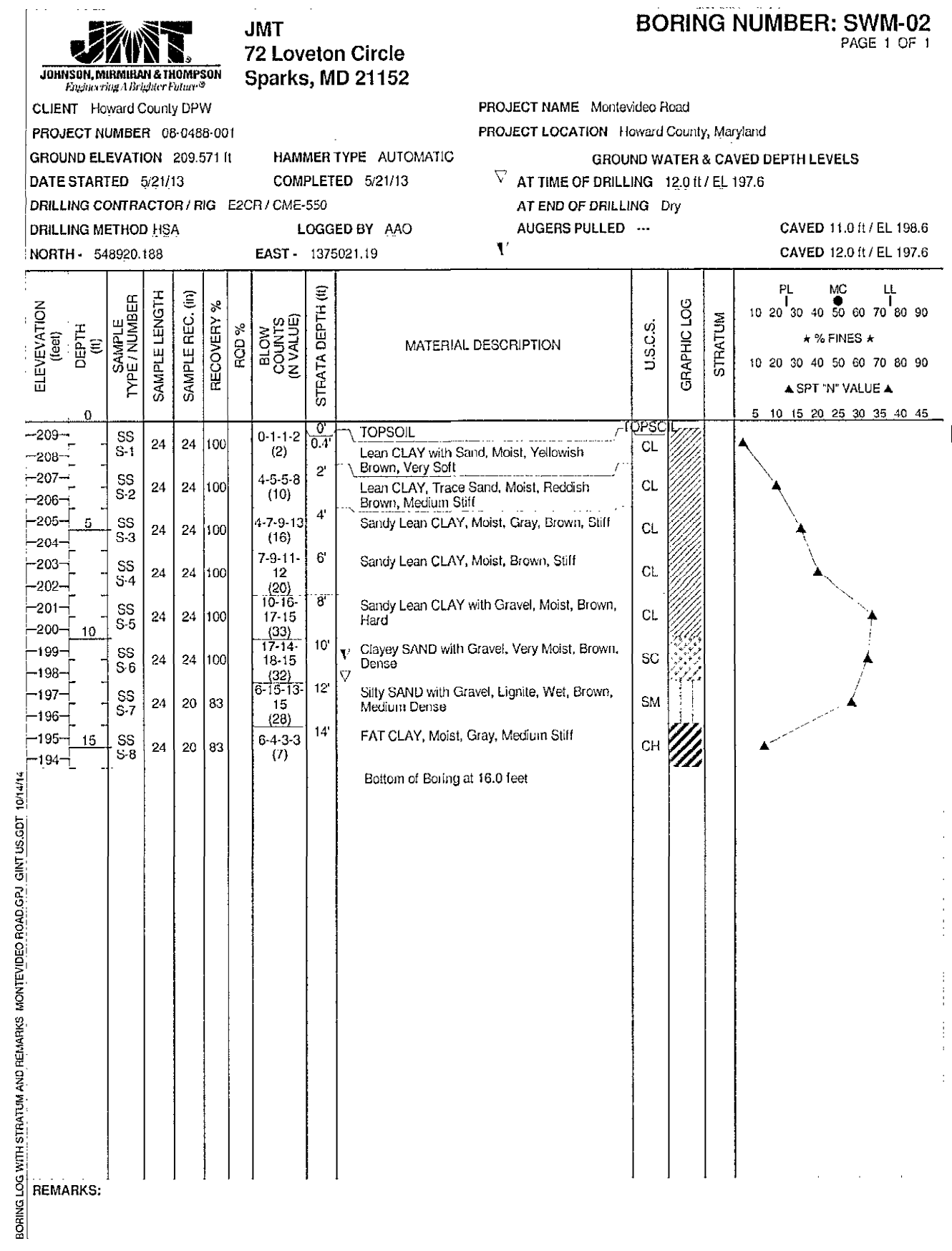
STORM DRAIN PIPE SCHEDULE			
FROM STRUCTURE	TO STRUCTURE	SIZE & TYPE	LENGTH
1A / R-1	1A / M-4	36" RCPP, C-361 ASTM	58 L.F.

ROCK WINDOW DETAILS				
LENGTH	WIDTH	CREST EL.	TOP OF BERM	BOTTOM
30'	16'	201.0	202.0	198.00

RIPRAP FOR ROCK WINDOW			
NORTHING	EASTING	TYPE	QUANTITY
548,944.17	1,374,963.20	CLASS 'O' RIPRAP	53 TONS

STONE FOR ROCK WINDOW			
NORTHING	EASTING	TYPE	QUANTITY
548,944.17	1,374,963.20	NO.57 STONE	7.0 CY

STABILIZED MAINTENANCE ACCESS ROAD NO.7 STONE		
LOCATION	QUANTITY	REMARK
AS SHOWN	26 CY	SEE SWM DETAIL



### STORMWATER MANAGEMENT AS-BUILT CERTIFICATION

"I HEREBY CERTIFY THAT THE STORMWATER BEST MANAGEMENT FACILITIES (FACILITIES) SHOWN ON THE PLANS AND INDIVIDUALLY IDENTIFIED BELOW HAS (HAVE) BEEN CONSTRUCTED IN ACCORDANCE WITH THE PLANS INCLUDED UNDER THE MARYLAND DEPARTMENT OF THE ENVIRONMENT APPROVAL, NUMBER MDE# 15-SF-0197 EXCEPT AS NOTED IN RED ON THE "AS-BUILT" DRAWINGS. FURTHER MORE, THE GREEN-NOTED EXCEPTIONS DO NOT ADVERSELY AFFECT THE DESIGN AND/OR THE INTENDED PERFORMANCE OF THE FACILITY (FACILITIES).

**STATE OF MARYLAND**  
**DEPARTMENT OF THE ENVIRONMENT**  
**PROFESSIONAL ENGINEER**  
**DAVID G. PETRON**  
 LICENSE NO. 17664  
 EXPIRATION DATE 2019

**STATE OF MARYLAND**  
**DEPARTMENT OF THE ENVIRONMENT**  
**PROFESSIONAL LAND SURVEYOR**  
**MICHAEL SHANE EDWARDS**  
 LICENSE NO. 21171  
 EXPIRATION DATE 2019

NAME (PRINTED): **David G. Petron**  
 SIGNATURE: *David G. Petron*  
 MARYLAND REGISTRATION NUMBER: **17664**  
 DATE: **2019**

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. 17664, EXPIRATION DATE 2019."

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

NOTE: AS-BUILT CHECKLISTS CONTAINED IN THE CONTRACT DRAWINGS SHALL BE COMPLETED BY THE AS-BUILT INSPECTORS AND SUBMITTED TO THE SHA ALONG WITH THIS CERTIFICATION.

**Howard SCD Signature Block:**  
 This plan is approved for small pond construction, and soil erosion and sediment control by the Howard Soil Conservation District.  
*Howard SCD Signature*  
 Date: *10/20/16*

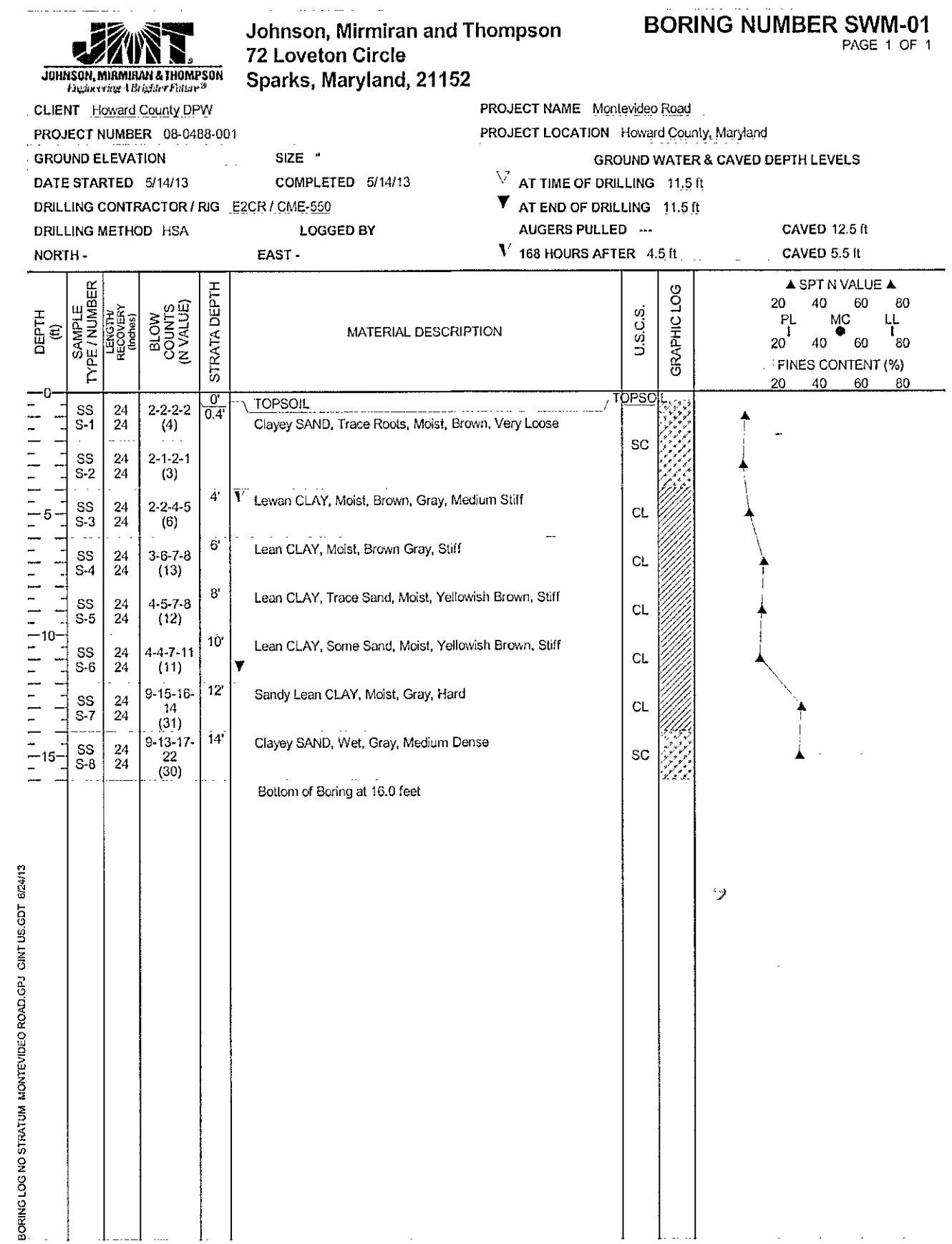
### AS-BUILT INSPECTION TABULATIONS/CHECKLIST FOR BMP NUMBER: SHA BMP 130196

ACTIVITY	DESIGNED	AS-BUILT	DIFFERENCE	INSPECTOR INITIALS	ACCEPTANCE DATE
As-Built Survey	N/A	Yes		mse	
WQ Storage Elevation	200.0	200.0	0	mse	
WQ Storage Volume	0.341 ac-ft	0.349	0.008	mse	
CPv Storage Elevation	202.70	202.60	-0.1	mse	
CPv Storage Volume	0.947 ac-ft	0.905	-0.042	mse	
CPv Discharge (CFS)	1.6	1.67	0.07	mse	
CPv Control Opening/Elevation	12" WEIR/202.70	11.8/202.60	0.2/-0.10	mse	
10 YR Storage Elevation	203.72	203.62	-0.1	mse	
10 YR Storage Volume	1.558 ac-ft	1.497	-0.061	mse	
10 YR Discharge (CFS)	38.3	36.8	-1.5	mse	
100 YR Storage Elevation	204.36	204.26	-0.1	mse	
100 YR Storage Volume	1.972 ac-ft	1.693	-0.279	mse	
100 YR Discharge (CFS)	57.5	49.37	-8.13	mse	
Principal Spillway: Elev. Out/Diameter/Slope	197.63 / 36" RCPP / 0.91%	197.63 / 36" / 0.88%		mse	
Emergency Spillway: Width /Length /Elevation	N/A				
Embankment: Elevation	207.00	207.10	0.1	mse	
100 Yr. Freeboard Provided	2.64 ft	2.84	0.2	mse	

DRAINAGE STRUCTURE SCHEDULE				
STRUCTURE NO.	NORTHING	EASTING	TYPE	STD. REF.
1A / R-1	549,055.74	1,375,035.15	CONCRETE RISER	SEE DETAIL

RELOCATED SHA BMP 130196(SWM WET POND)DESIGN SUMMARY, ULTIMATE CONDITIONS						
DESIGN STORM	POND INFLOW* (CFS)	POND OUTFLOW (CFS)	WATER SURFACE ELEV. (CFS)	STORGEAE VOLUME (AC-FT)	EXIST. CONDITIONS DISCHARGE AT POI #1	ULTIMATE CONDITIONS DISCHARGE AT POI #1
1-YR	24.3	2.1	202.77	0.987	56.5 CFS	35.9 CFS
10-YR	57.8	38.3	203.72	1.558	125.3 CFS	101.7 CFS
100-YR	86.6	57.5	204.36	1.972	183.9 CFS	163.7 CFS

RELOCATED SHA BMP 130196(SWM WET POND)DESIGN SUMMARY, PROPOSED CONDITIONS						
DESIGN STORM	POND INFLOW* (CFS)	POND OUTFLOW (CFS)	WATER SURFACE ELEV. (CFS)	STORGEAE VOLUME (AC-FT)	EXIST. CONDITIONS DISCHARGE AT POI #1	PROPOSED CONDITIONS DISCHARGE AT POI #1
1-YR	24.4	3.7	202.86	1.039	56.5 CFS	35.0 CFS
10-YR	55.5	39.7	203.75	1.577	125.3 CFS	101.2 CFS
100-YR	82.4	56.8	204.31	1.939	183.9 CFS	158.4 CFS



SHA BMP 130196 "NO TRESPASSING" SIGN SCHEDULE							
SHEET NO.	SIGN REMARKS	SIGN SUPPORT	SIGN QUANTITY		SUPPORT QUANTITY		
			CAT. CODE	DESCRIPTION	QUANTITY (SF)	CAT. CODE	QUANTITY (LF)
001	"NO TRESPASSING" [24" x 18"]	ONE (1) - 4"X4" WOOD SUPPORT	801605	SHEET ALUMINUM SIGNS	3.0	801104	13.5
002	"NO TRESPASSING" [24" x 18"]	ONE (1) - 4"X4" WOOD SUPPORT	801605	SHEET ALUMINUM SIGNS	3.0	801104	13.5
TOTAL					6.0		27.0

**DEPARTMENT OF PUBLIC WORKS**  
 HOWARD COUNTY, MARYLAND

*Holger Serrano* 10/18/16  
 CHIEF, BUREAU OF ENGINEERING

*Marcus E. Suttler* 10/17/16  
 CHIEF, BUREAU OF ENGINEERING

*Michael* 10/18/2014  
 CHIEF, BUREAU OF HIGHWAYS

*Robert* 10/17/16  
 CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

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

**STATE OF MARYLAND**  
**PROFESSIONAL ENGINEER**  
**DAVID G. PETRON**  
 LICENSE NO. 17664  
 EXPIRATION DATE 2019

DES: HL  
 BY: NO.  
 DATE: 10/2016

DRN: JMB  
 CHK: SAM

DATE: 10/2016

CAPITAL PROJECT NO.  
**J-4206-1A**

MAP NO. BLOCK NO.

STORMWATER MANAGEMENT DETAIL AND SOIL BORING LOG

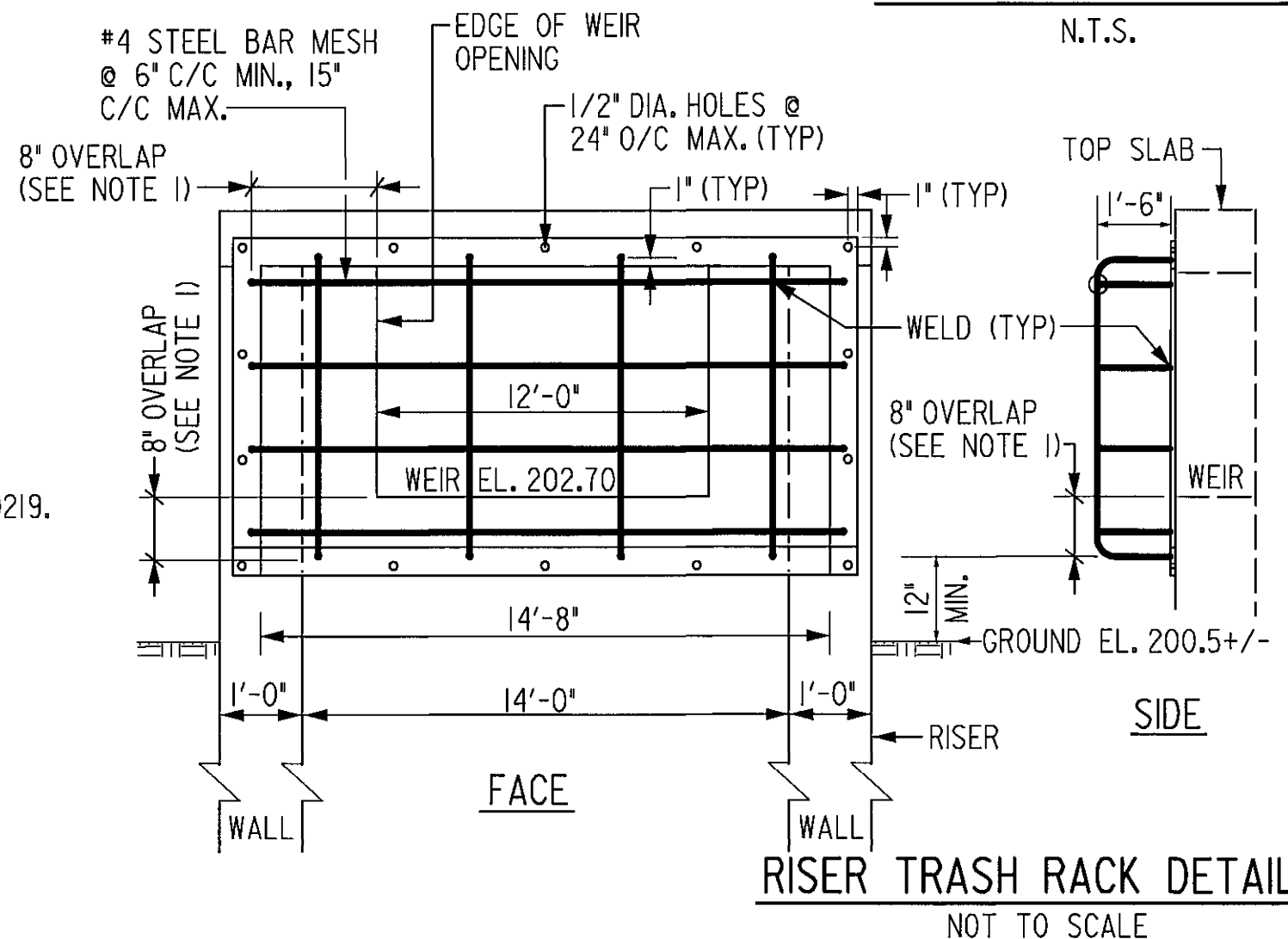
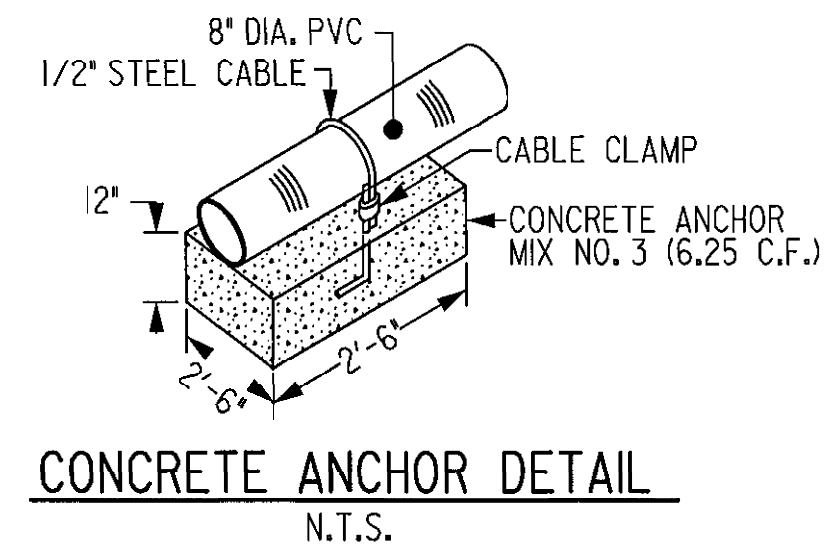
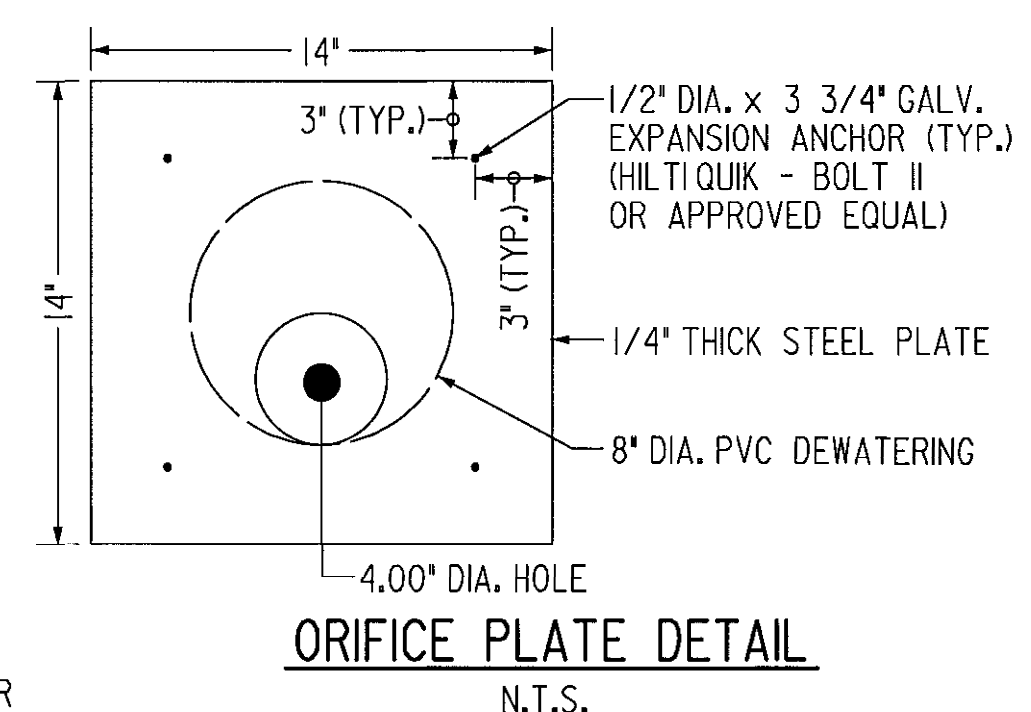
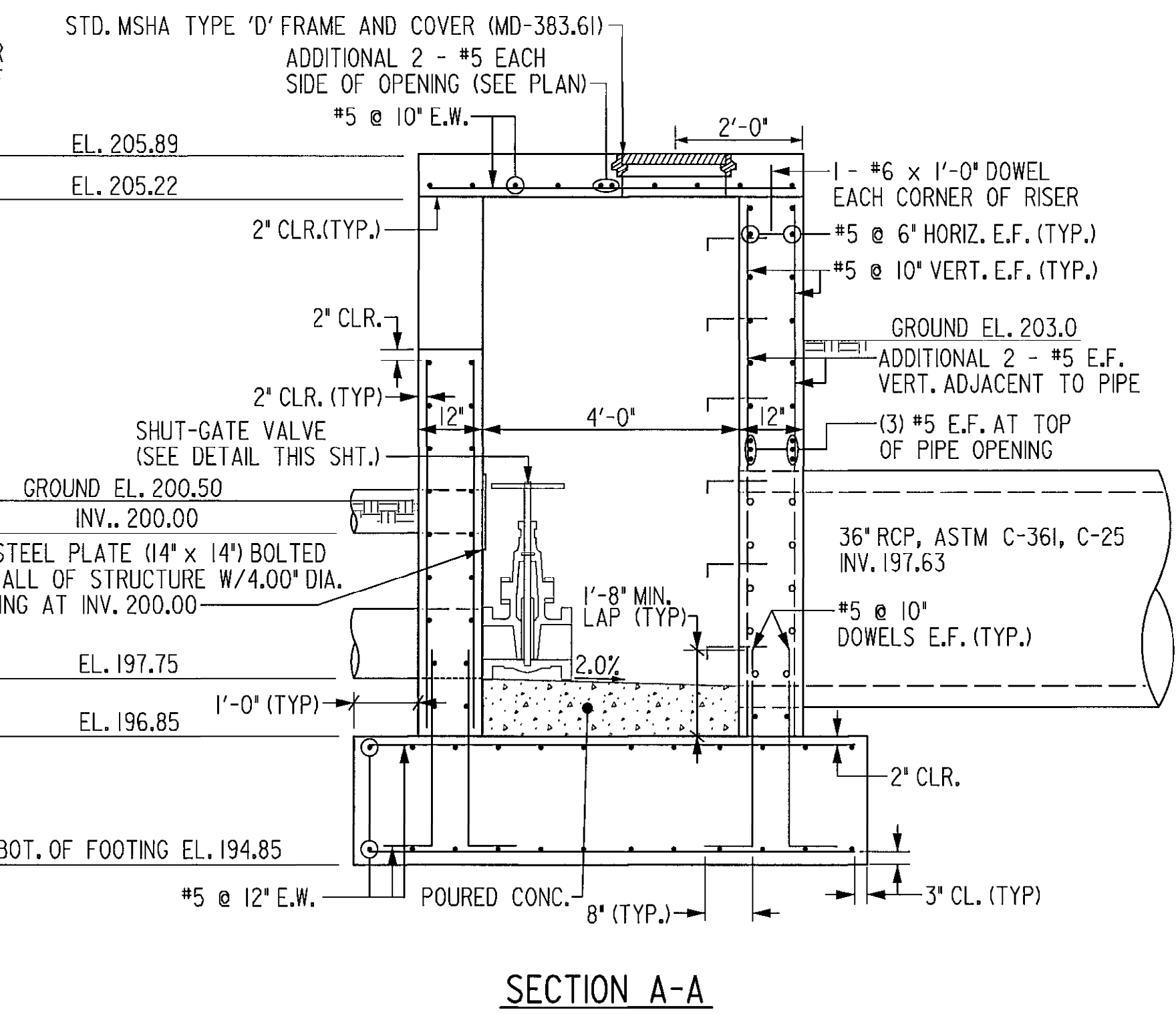
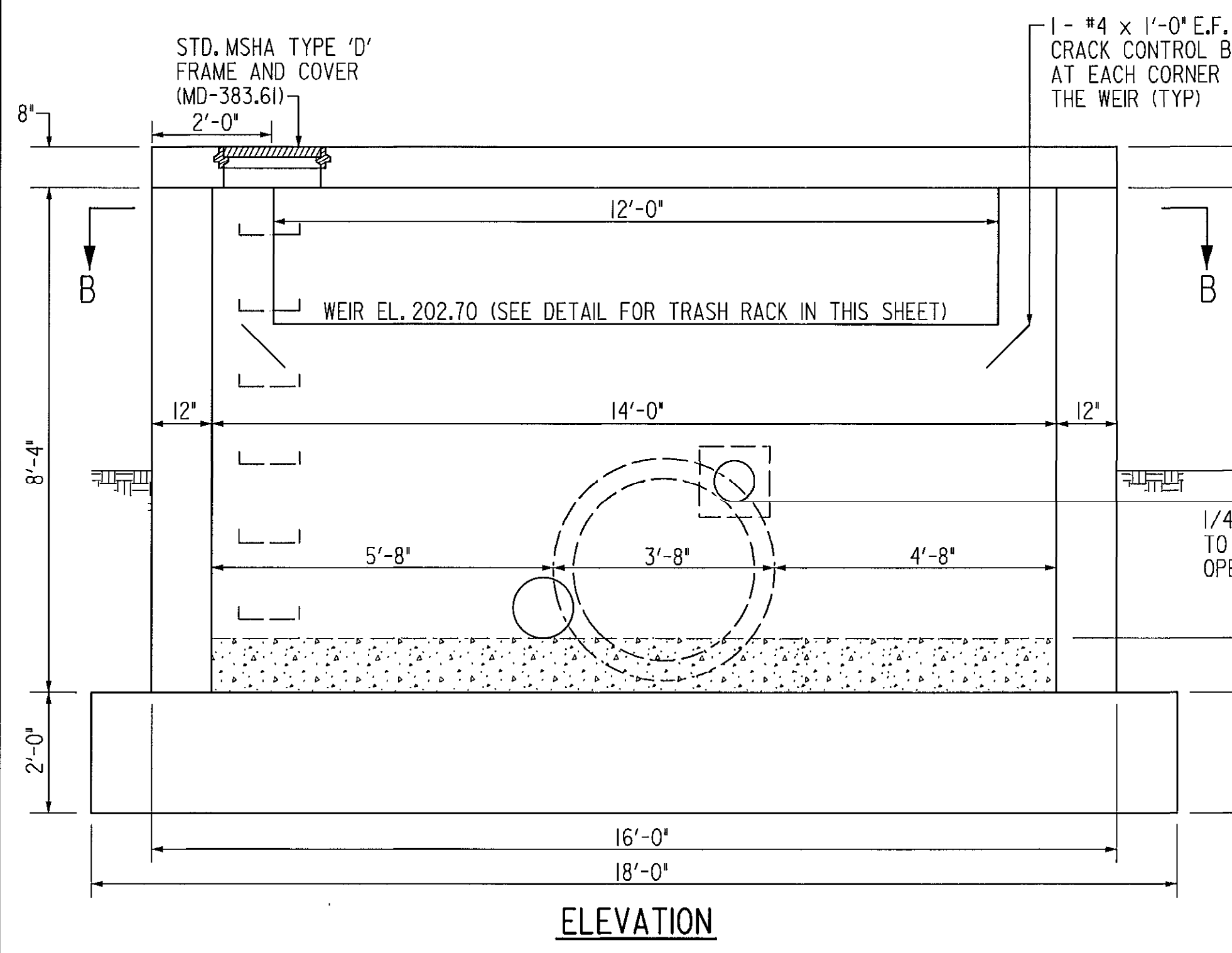
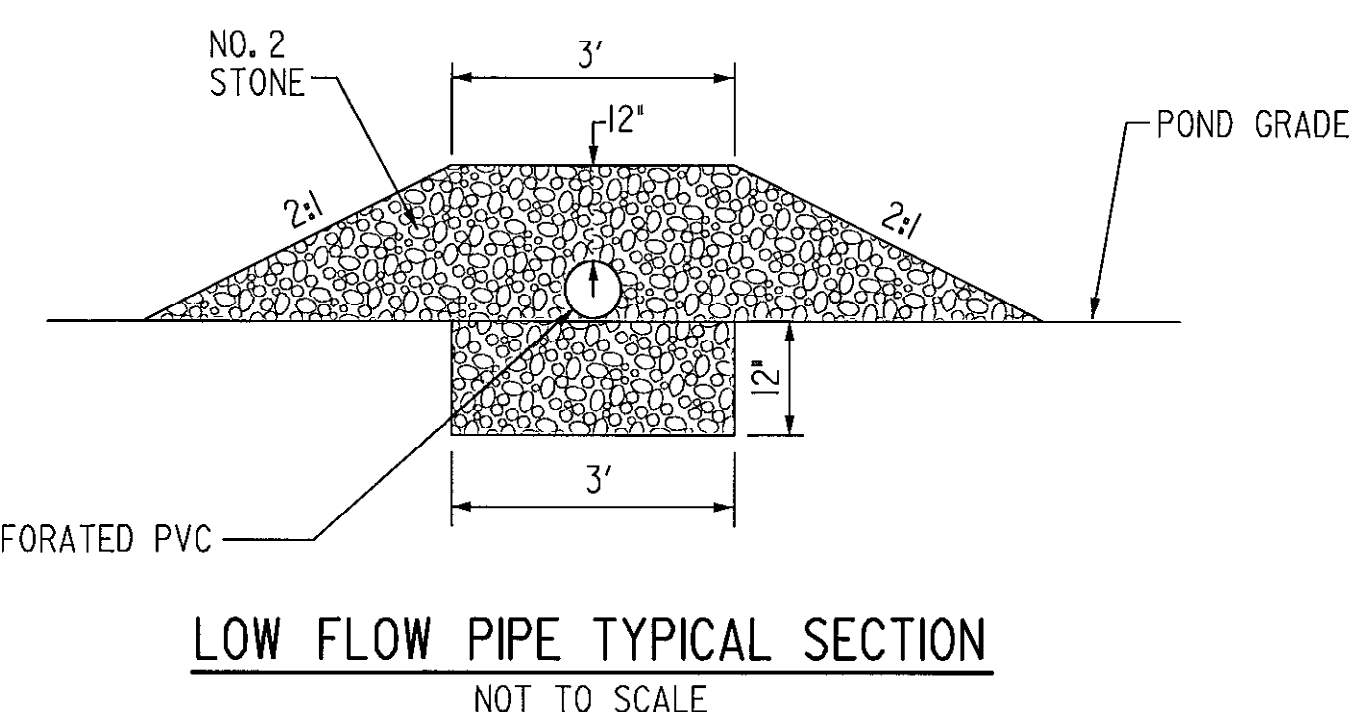
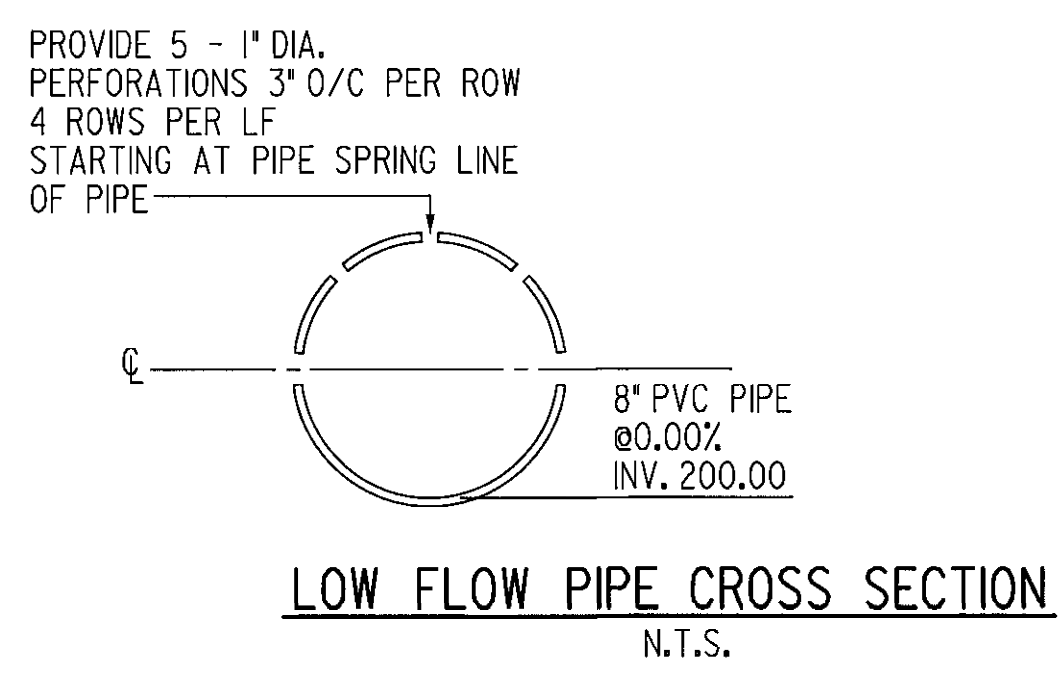
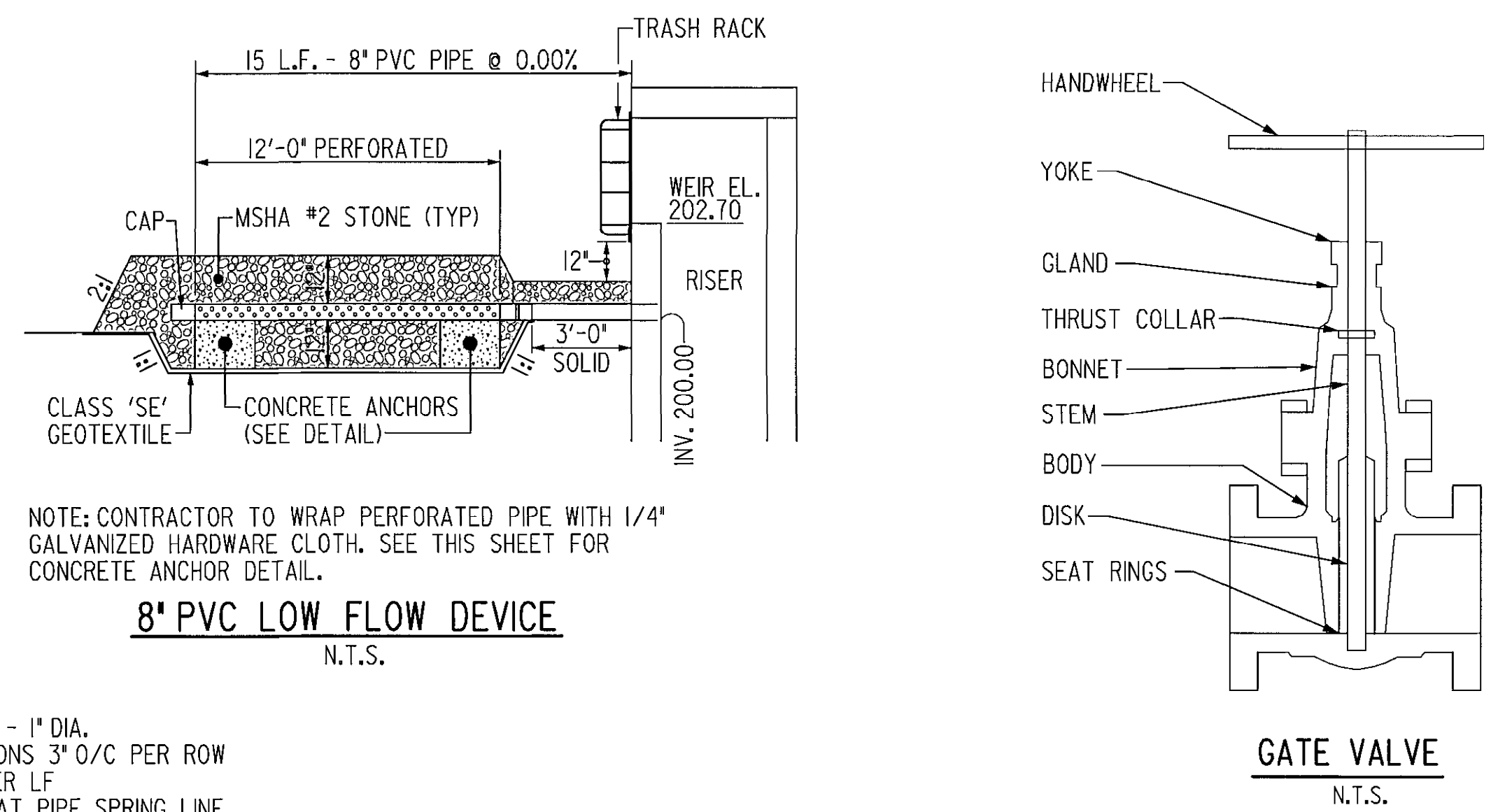
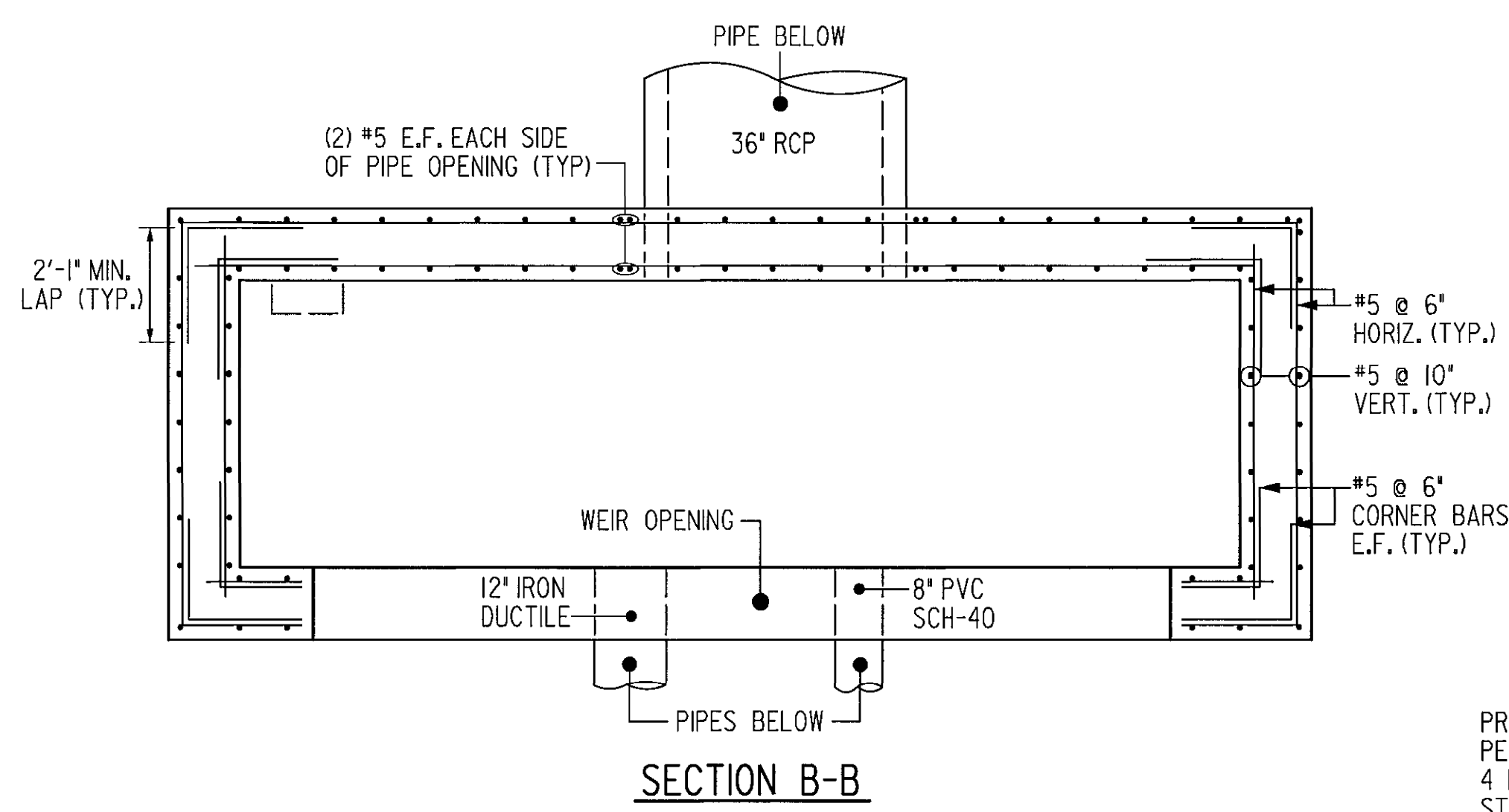
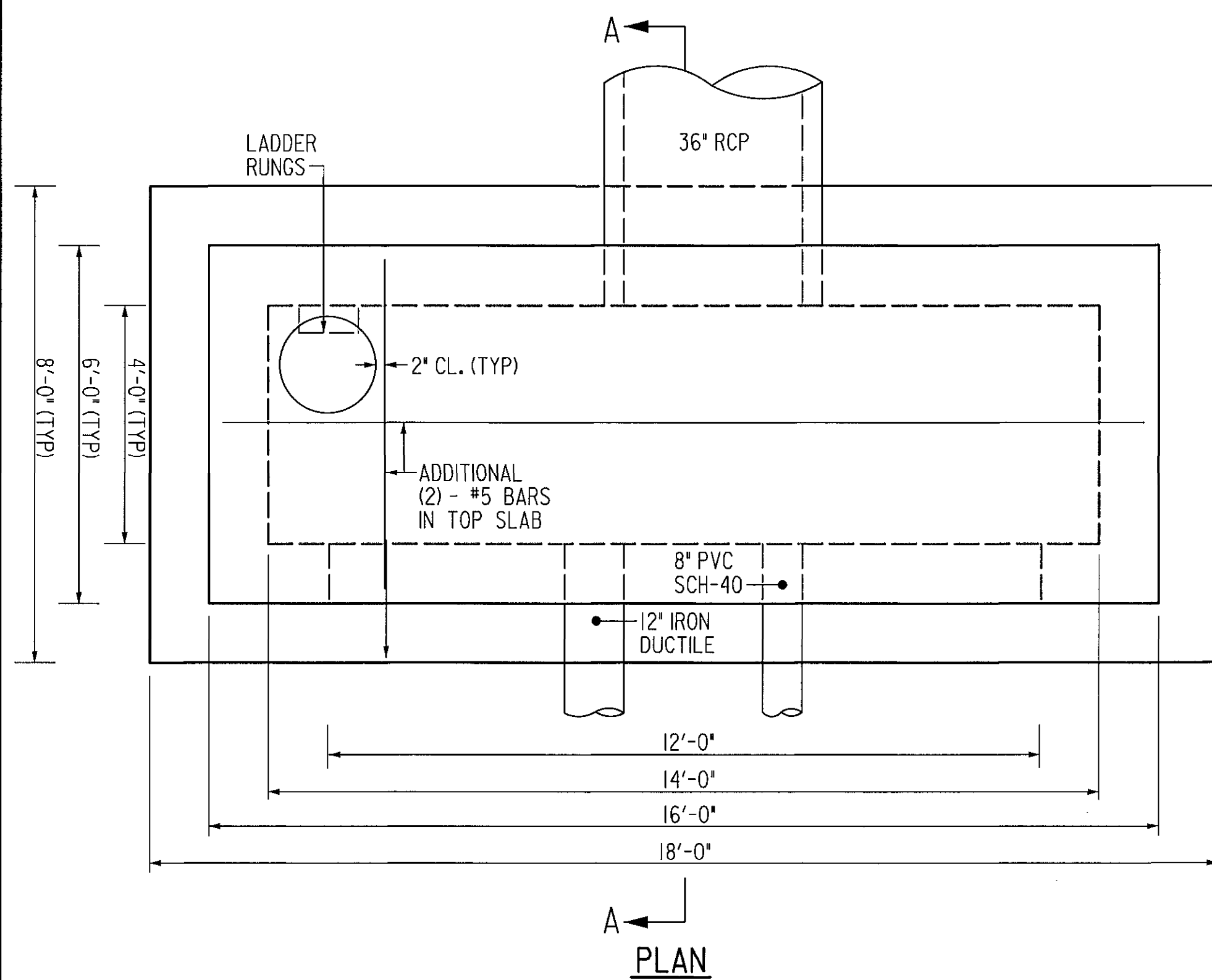
**RELOCATED MONTEVIDEO ROAD**  
**PHASE 1, SEGMENT A**

ELECTION DISTRICT 2  
 HOWARD COUNTY, MARYLAND

SCALE: 1"=30'  
 SHEET: 22 OF 45

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**NOTES:**

- TRASH RACK TO BE INSTALLED OVER RISER OPENING WITH A MINIMUM OF 8" OVERLAP IN BOTTOM AND SIDES.
- 1' MINIMUM CLEARANCE TO BE MAINTAINED BETWEEN THE POND BOTTOM AND TRASH RACK
- NO. 4 STEEL BARS TO CONFORM TO ASTM A-36
- 3" x 3" x 1/2" STEEL TO CONFORM TO ASTM A-123.
- TRASH RACK SHALL BE ATTACHED USING 2" x 1/2" LAG BOLTS. ALL TRASH RACKS SHALL BE HOT DIPPED GALVANIZED.

Howard SCD Signature Block:  
This plan is approved for small pond construction, and soil erosion and sediment control by the Howard Soil Conservation District.

*Howard SCD Signature*  
Howard Soil Conservation District

*10/26/16*  
Date

**GENERAL NOTES:**

**SPECIFICATIONS:**..... SHA SPECIFICATIONS DATED 2008 REVISIONS THEREOF AND ADDITIONS THERETO AND SPECIAL PROVISIONS FOR MATERIALS AND CONSTRUCTION.

**CONCRETE:**..... ALL CONCRETE SHALL BE MIX NO. 3 (3500 PSI) UNLESS OTHERWISE NOTED.

**REINFORCING STEEL:**..... SHALL BE EPOXY COATED AND CONFORM TO ASTM DESIGNATION A-615, GRADE 60. ALL SPLICES NOT SHOWN SHALL BE LAPPED AS PER BAR LAP CHARTS. MINIMUM COVER FOR ANY BAR SHALL BE 2" UNLESS OTHERWISE NOTED, WITH THE EXCEPTION OF BARS AT THE BOTTOM AND SIDES OF ALL FOOTINGS WHICH SHALL HAVE 3" MINIMUM COVER.

**NOTES:**

- PROVIDE TYPE 'A' LADDER RUNGS ON INSIDE WALLS OF RISER STRUCTURE PER STD. NO. MD-383.92. PROPOSED LOCATION OF LADDER RUNGS SHALL BE SPECIFIED ON STRUCTURE SHOP DRAWINGS.
- PROVIDE VERTICAL TRASH RACK ON ALL WEIR OPENINGS PER THE TYPICAL DETAIL INCLUDED ON THIS SHEET.
- CONCRETE RISER SHALL BE STAINED MEETING FEDERAL STD. 595B COLORS: 30277 OR 30219.
- RISER SHALL HAVE MIX NO. 3 POURED CONCRETE INVERT.
- FOOTING SUBGRADES SHALL BE INSPECTED BY THE GEOTECHNICAL ENGINEER PRIOR TO POURING CONCRETE. ANY SOFT SOIL ENCOUNTERED BELOW FOOTING SUBGRADE SHALL BE REMOVED AND REPLACED WITH COMPACTED FILL.

**RELOCATED SHA BMP 130196 RISER (IA/R-1) STRUCTURE DETAIL**

SCALE: 1/2" = 1'

\*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

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Holger Sevans 10.13.16*  
DIRECTOR OF PUBLIC WORKS

*Thomas E. Butler 10/17/16*  
CHIEF, BUREAU OF ENGINEERING

*Monroe 10/18/2016*  
CHIEF, BUREAU OF HIGHWAYS

*10-17-16*  
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

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

STATE OF MARYLAND  
REGISTERED PROFESSIONAL ENGINEER  
16

DES: HL	BY	NO.	DATE
DRN: HL			
CHK: RS			
DATE: 10/2016			

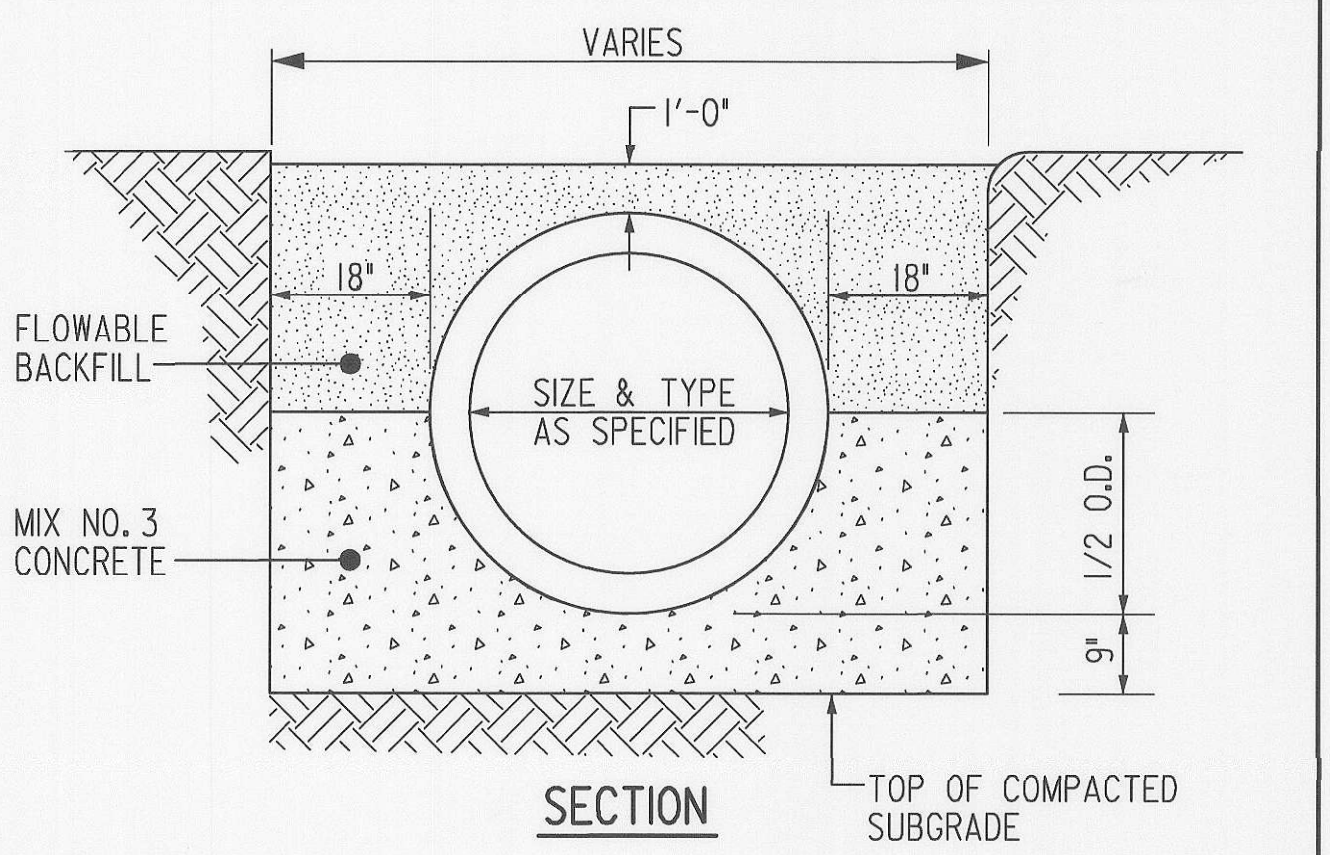
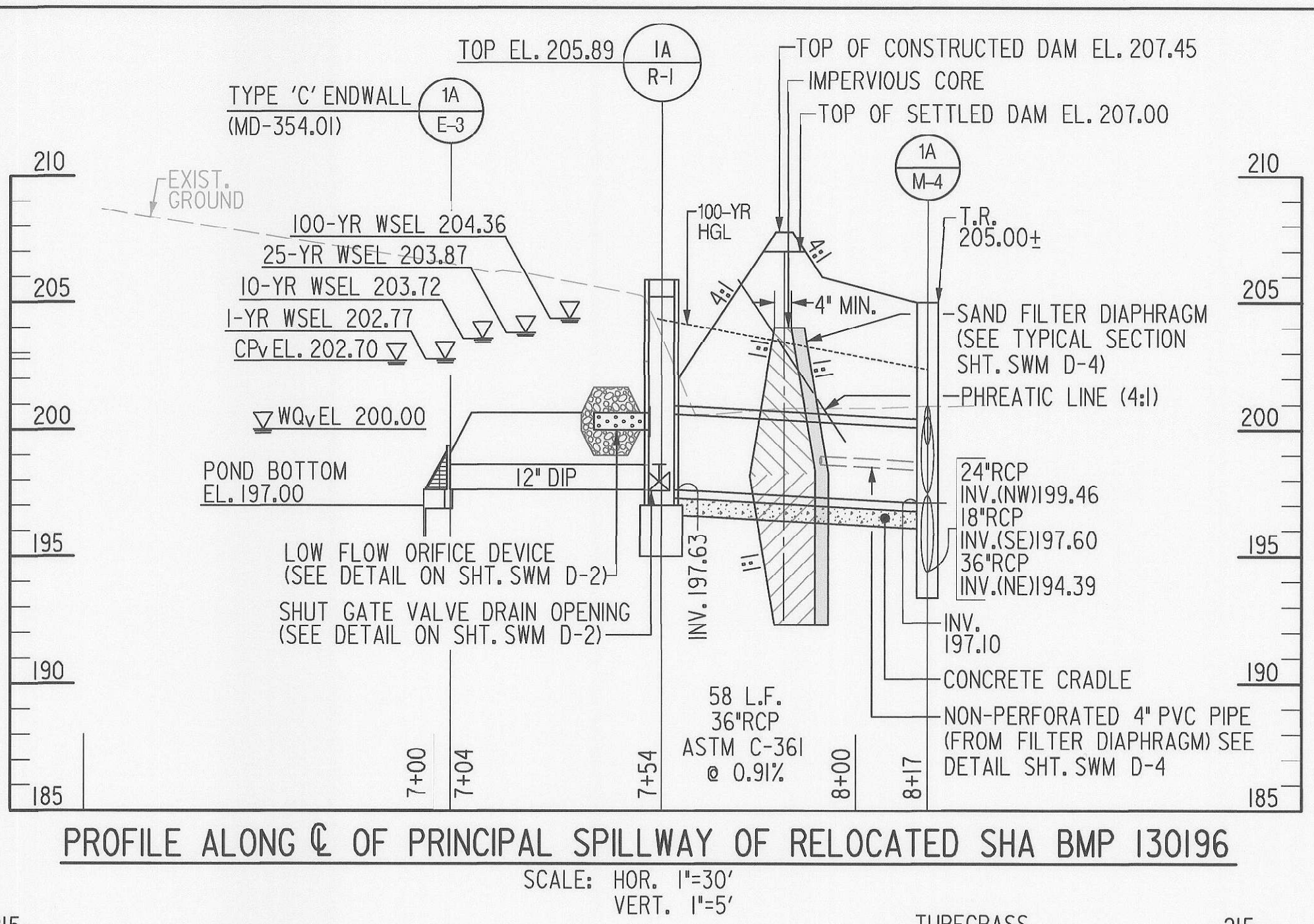
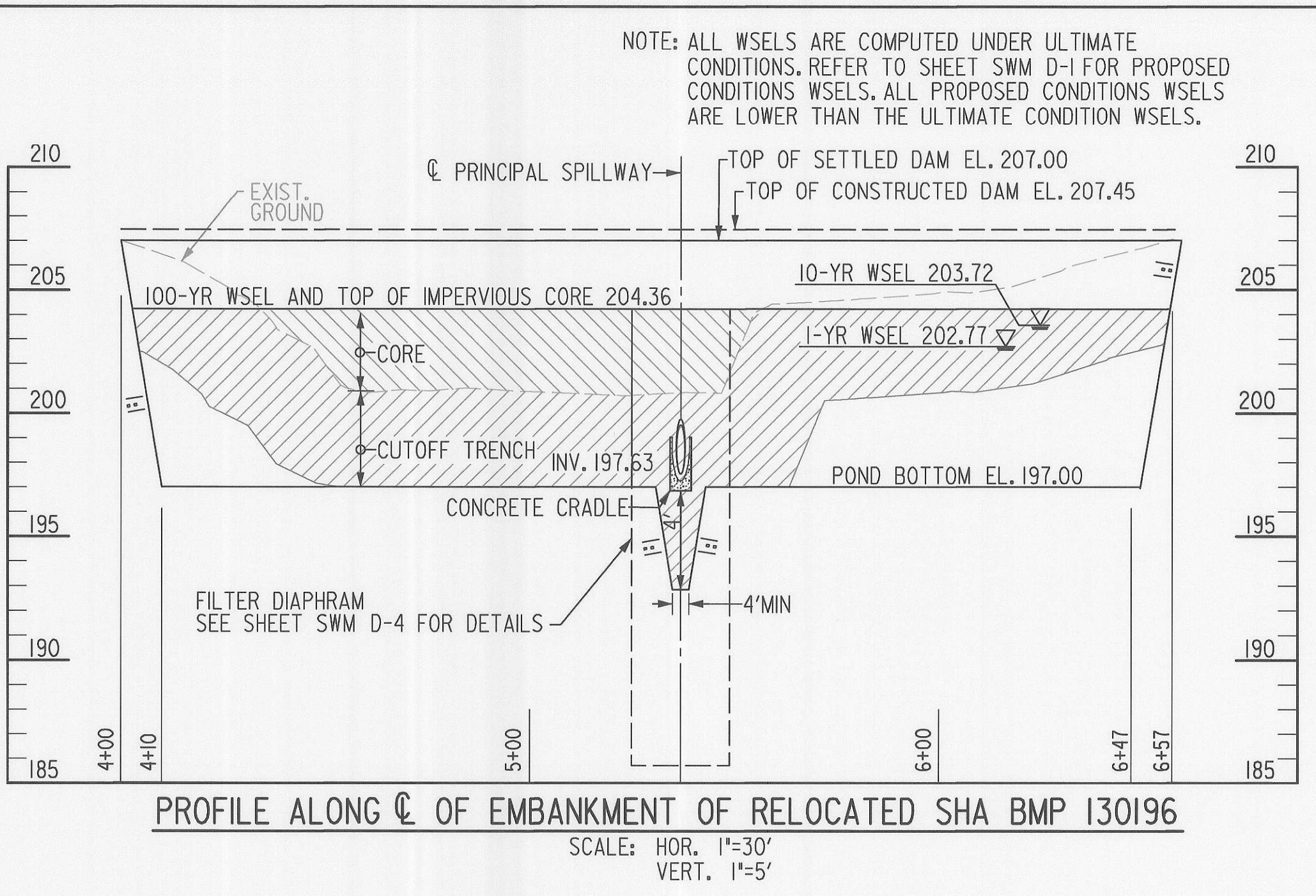
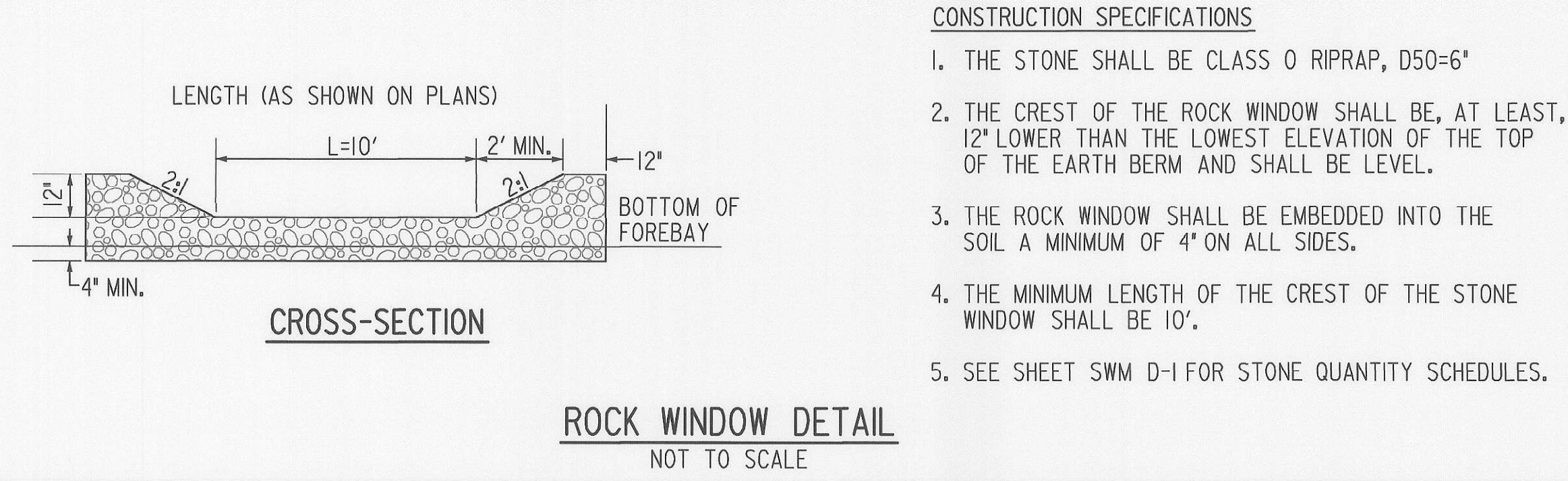
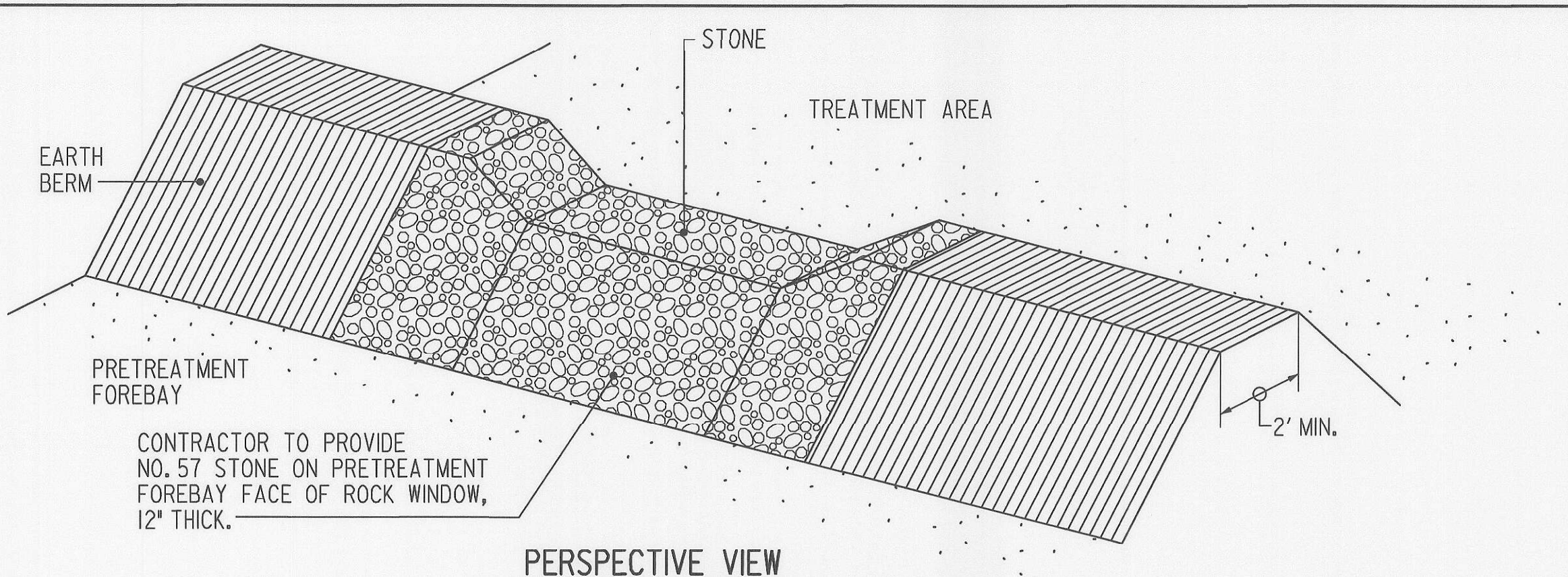
CAPITAL PROJECT NO.  
**J-4206-1A**

STORMWATER MANAGEMENT DETAIL  
**RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A**

ELECTION DISTRICT 2  
HOWARD COUNTY, MARYLAND

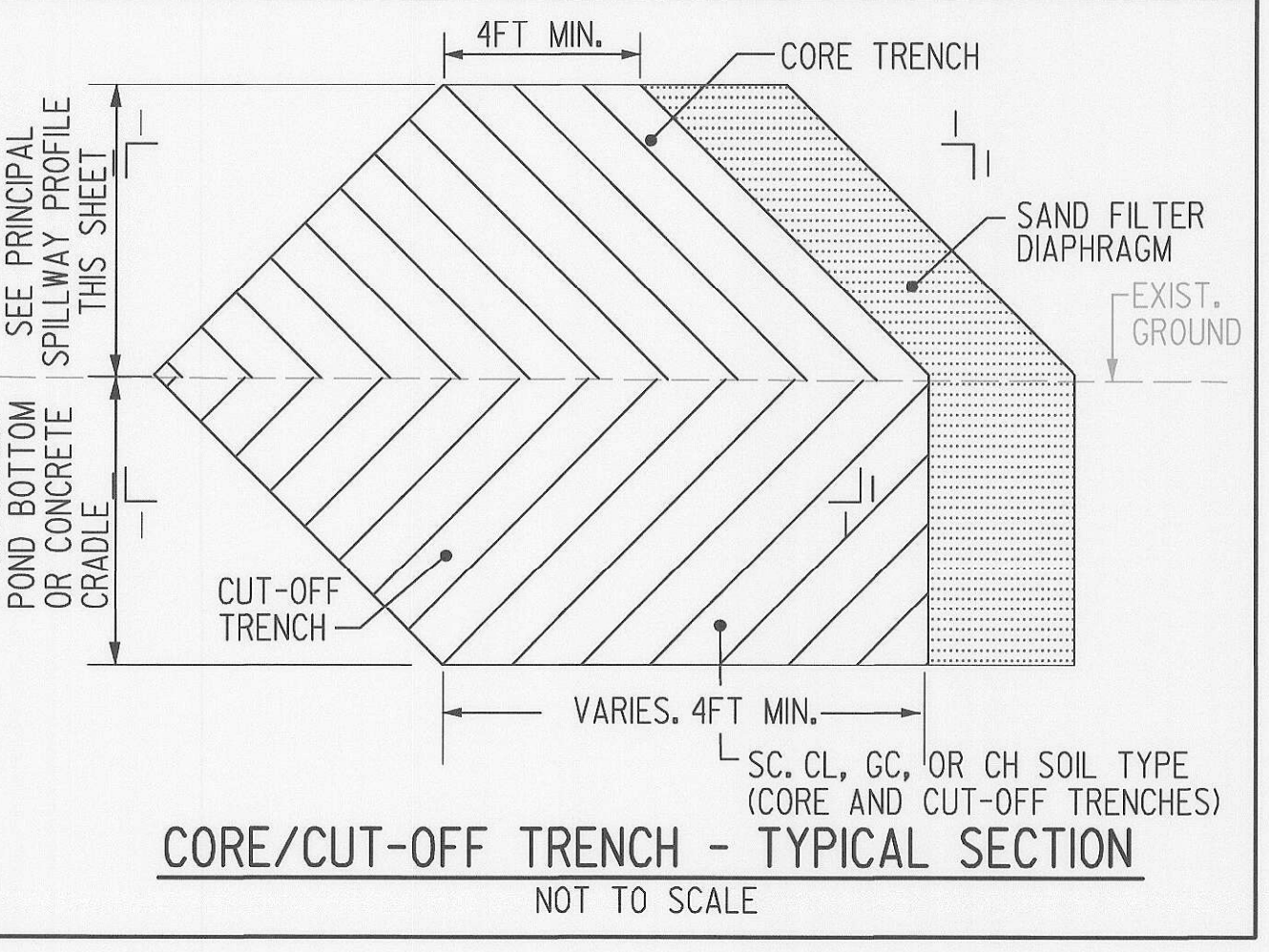
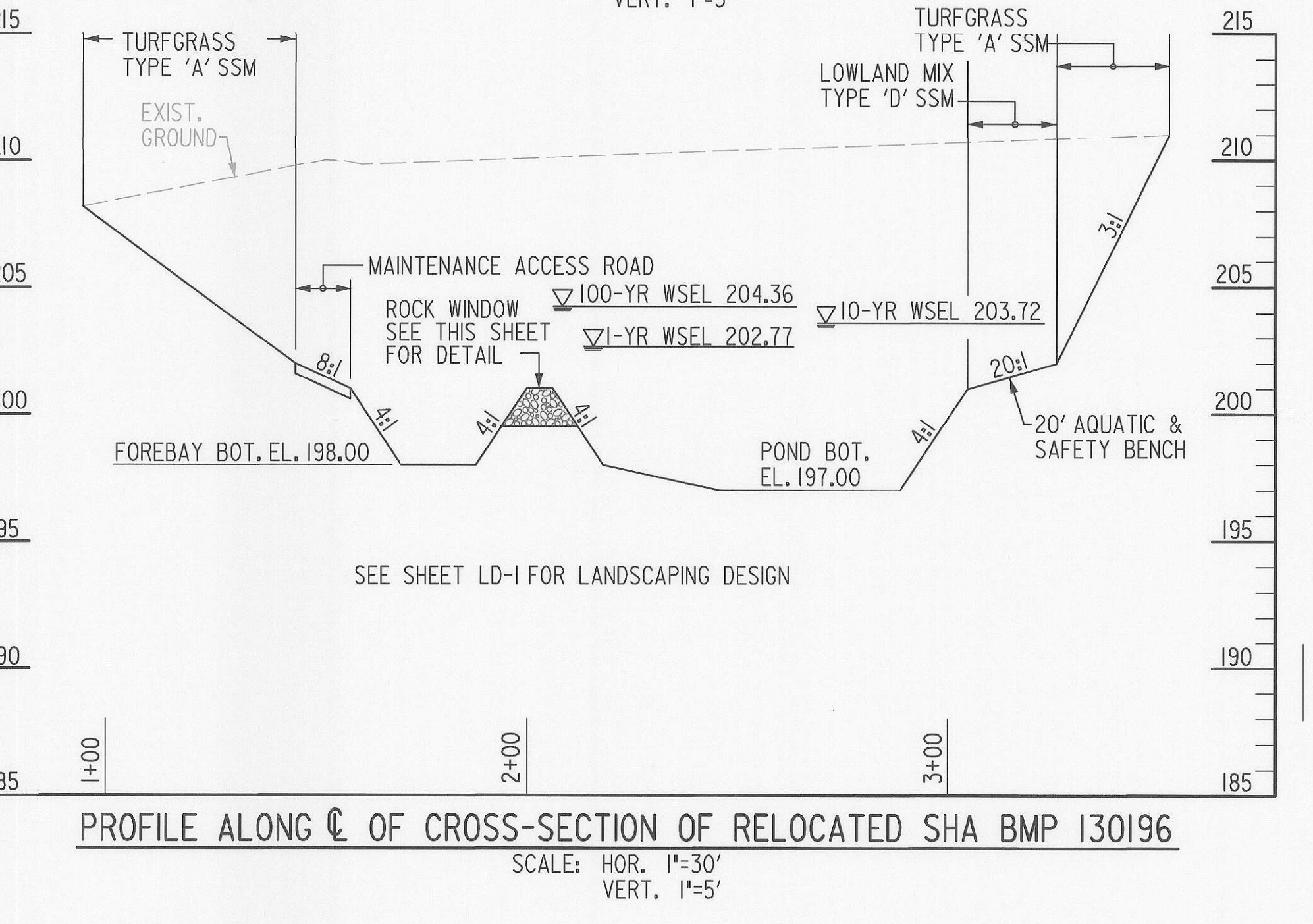
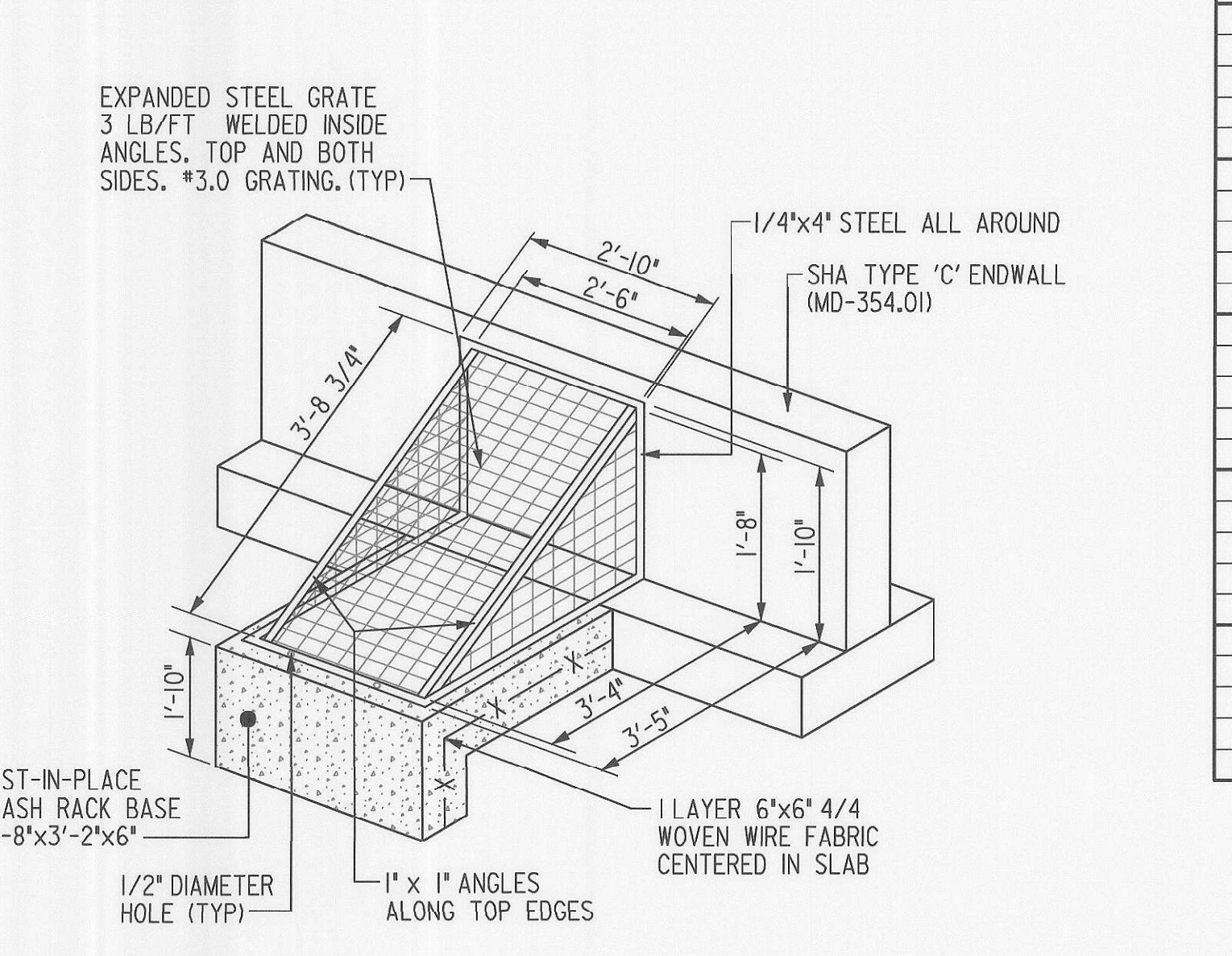
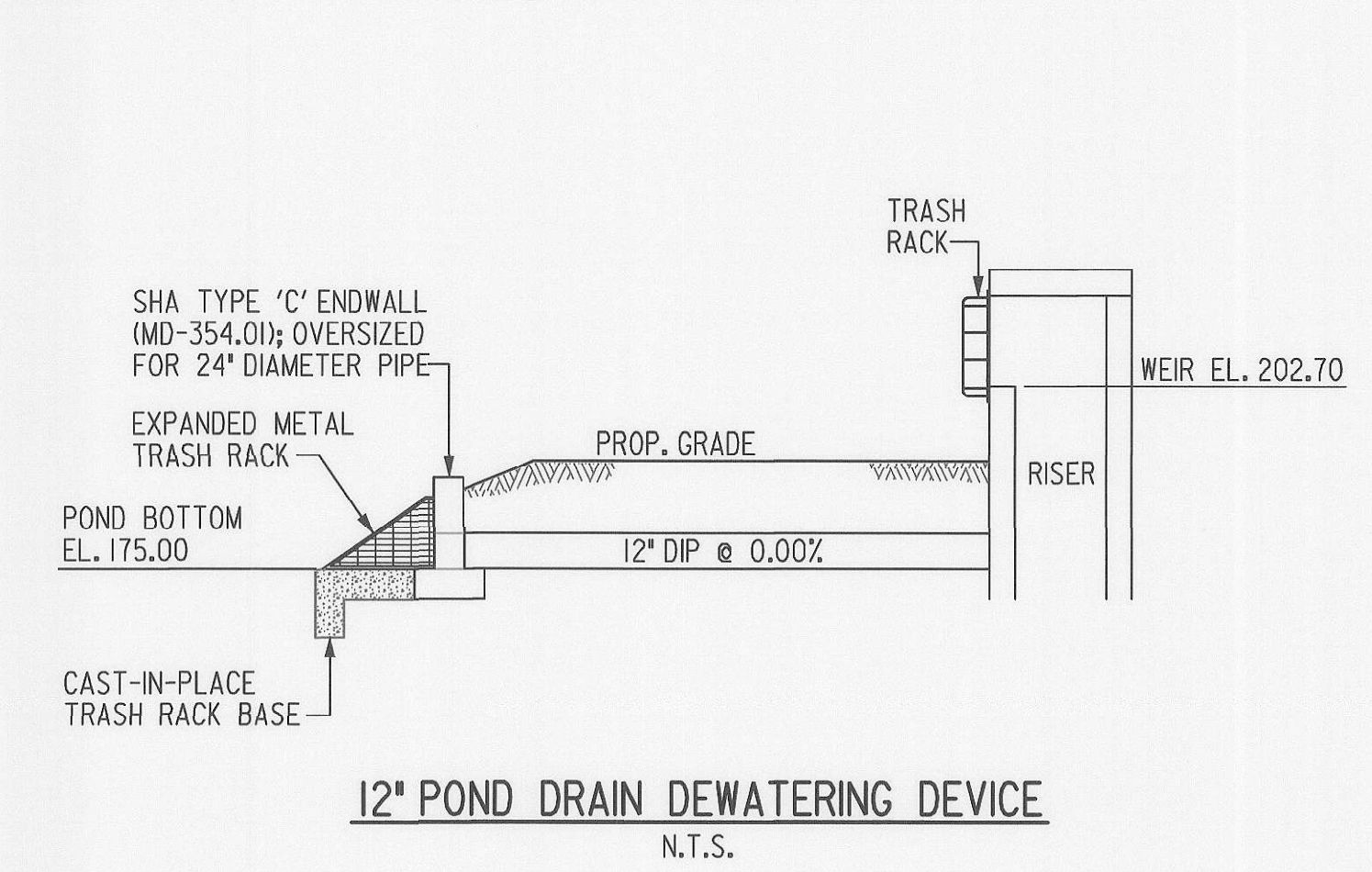
SCALE AS SHOWN  
SHEET 23 OF 45





- NOTES:**
1. DEWATER TRENCH AS REQUIRED DURING CONSTRUCTION.
  2. ALL CONCRETE SHALL BE MIX NO. 3 CONCRETE AS SPECIFIED IN THE CONTRACT DOCUMENTS.
  3. FLOWABLE BACKFILL WILL BE PLACED IN ACCORDANCE WITH THE SPECIFICATIONS.

**CONCRETE PIPE CRADLE**  
NOT TO SCALE



Howard SCD Signature Block:  
This plan is approved for small pond construction, and soil erosion and sediment control by the Howard Conservation District.

*Howard SCD Signature*  
Howard Conservation District

*10/20/16*  
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.

DETAILS  
SHA BMP 130196  
MDE# 15-SF-0197  
SWM D-3

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Hilga Senano* 10-18-16  
for DIRECTOR OF PUBLIC WORKS

*Thomas E. Butler* 10/18/16  
CHIEF, BUREAU OF ENGINEERING

*Thomas E. Butler* 10/18/2016  
CHIEF, BUREAU OF HIGHWAYS

*Thomas E. Butler* 10-17-16  
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

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

STATE OF MARYLAND  
PAUL J. CLARK  
PROFESSIONAL ENGINEER  
10/18/16

DES:	HL	BY:	NO.	DATE:
DRN:	JMB			
CHK:	RS			
DATE:	10/2016			

CAPITAL PROJECT NO.  
**J-4206-1A**

STORMWATER MANAGEMENT DETAIL  
**RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A**

ELECTION DISTRICT 2  
HOWARD COUNTY, MARYLAND

SCALE  
AS SHOWN

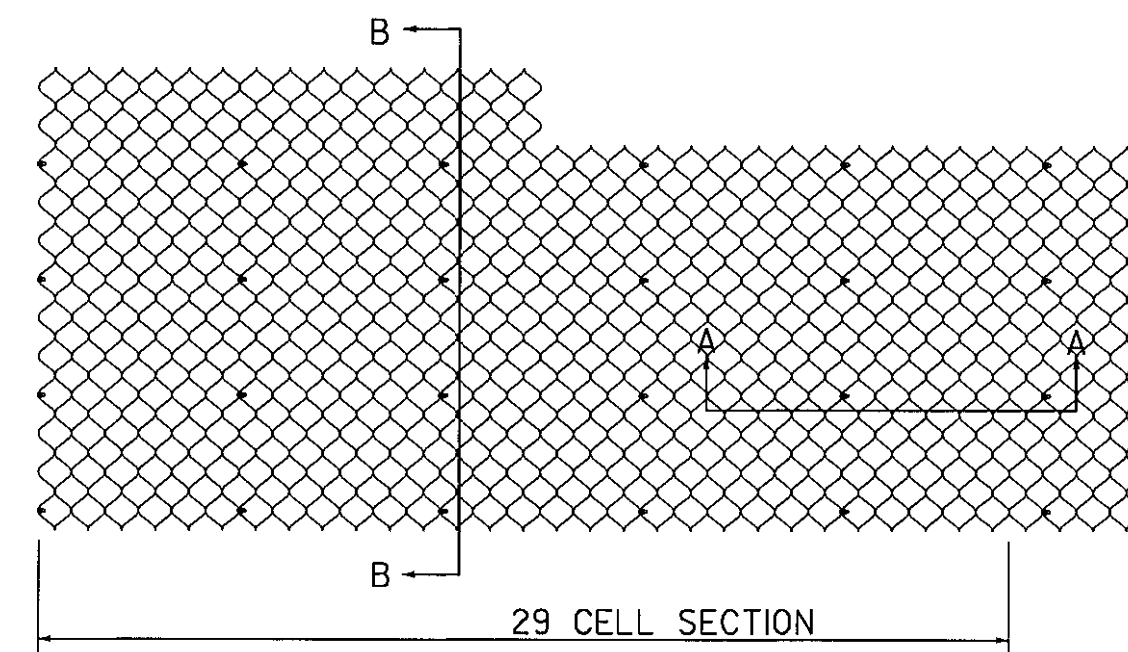
SHEET  
24 OF 45



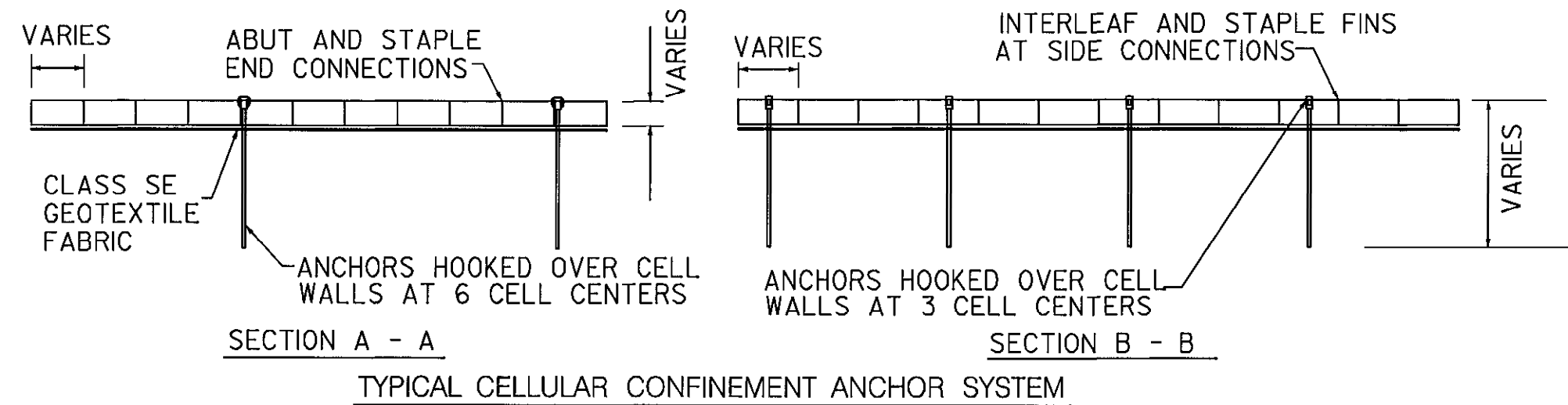
STEP 1 - POSITION STAKE NEXT TO 'UP-SLOPE' CELL WALL  
STEP 2 - DRIVE STAKE INTO GROUND UNTIL FLUSH WITH THE TOP OF THE CELL WALLS

EXAMPLES

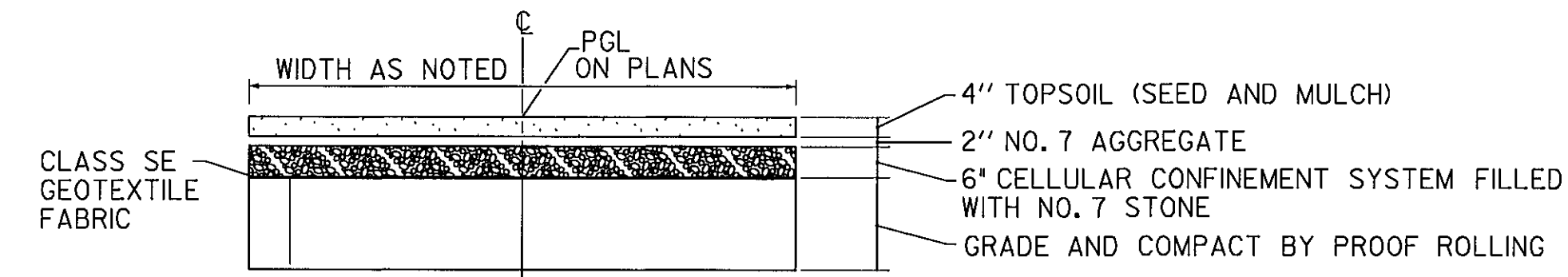
STAKE ANCHOR INSTALLATION  
NO TENDONS



PLAN

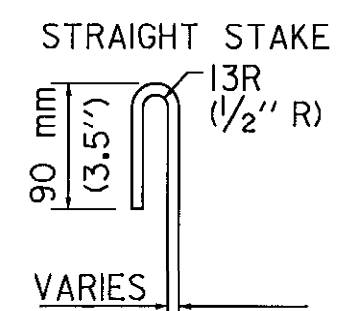


TYPICAL CELLULAR CONFINEMENT ANCHOR SYSTEM

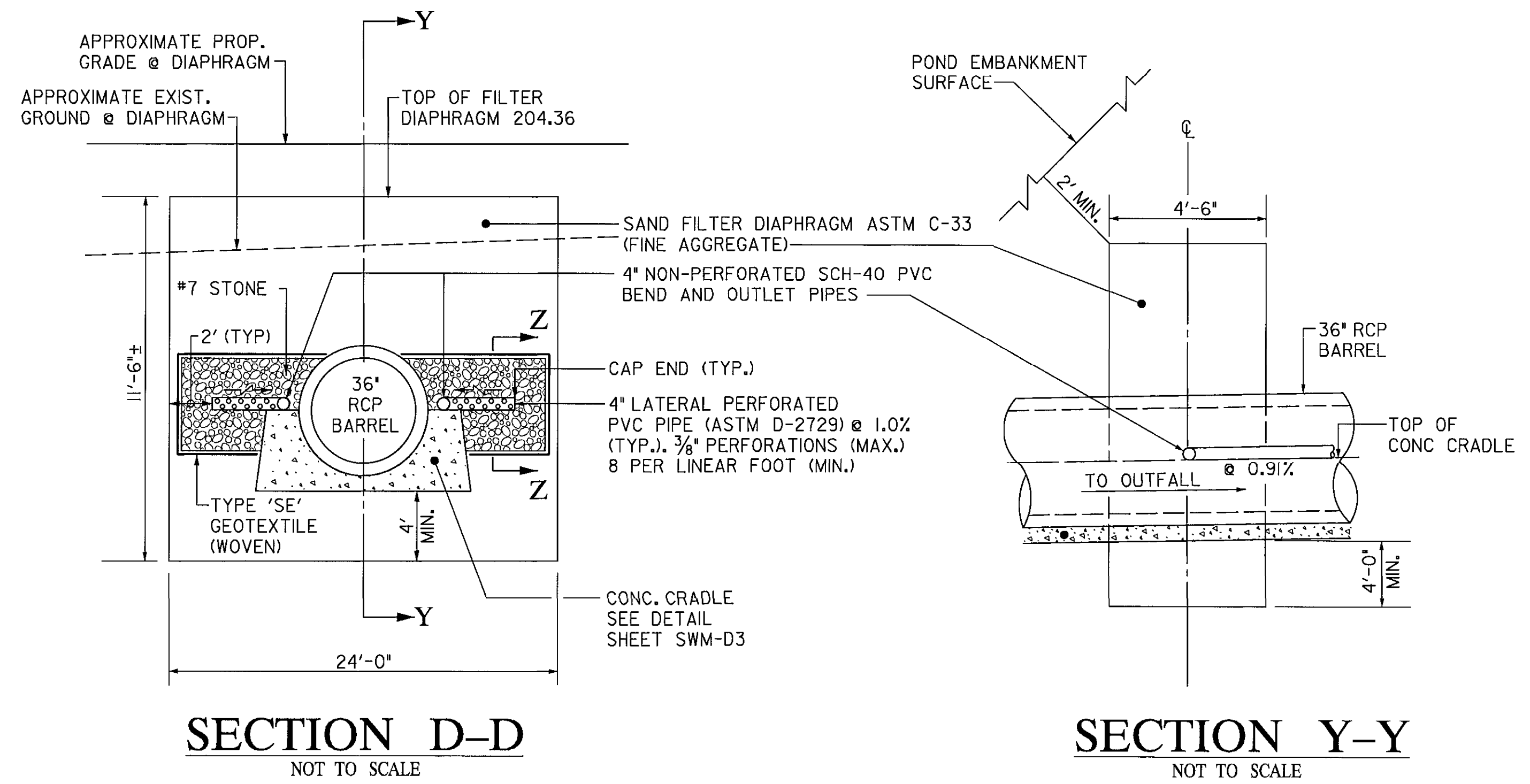


**ACCESS ROAD SECTION**

STORMWATER MANAGEMENT ACCESS ROAD  
CELLULAR CONFINEMENT LOAD SUPPORT SYSTEM  
NOT TO SCALE

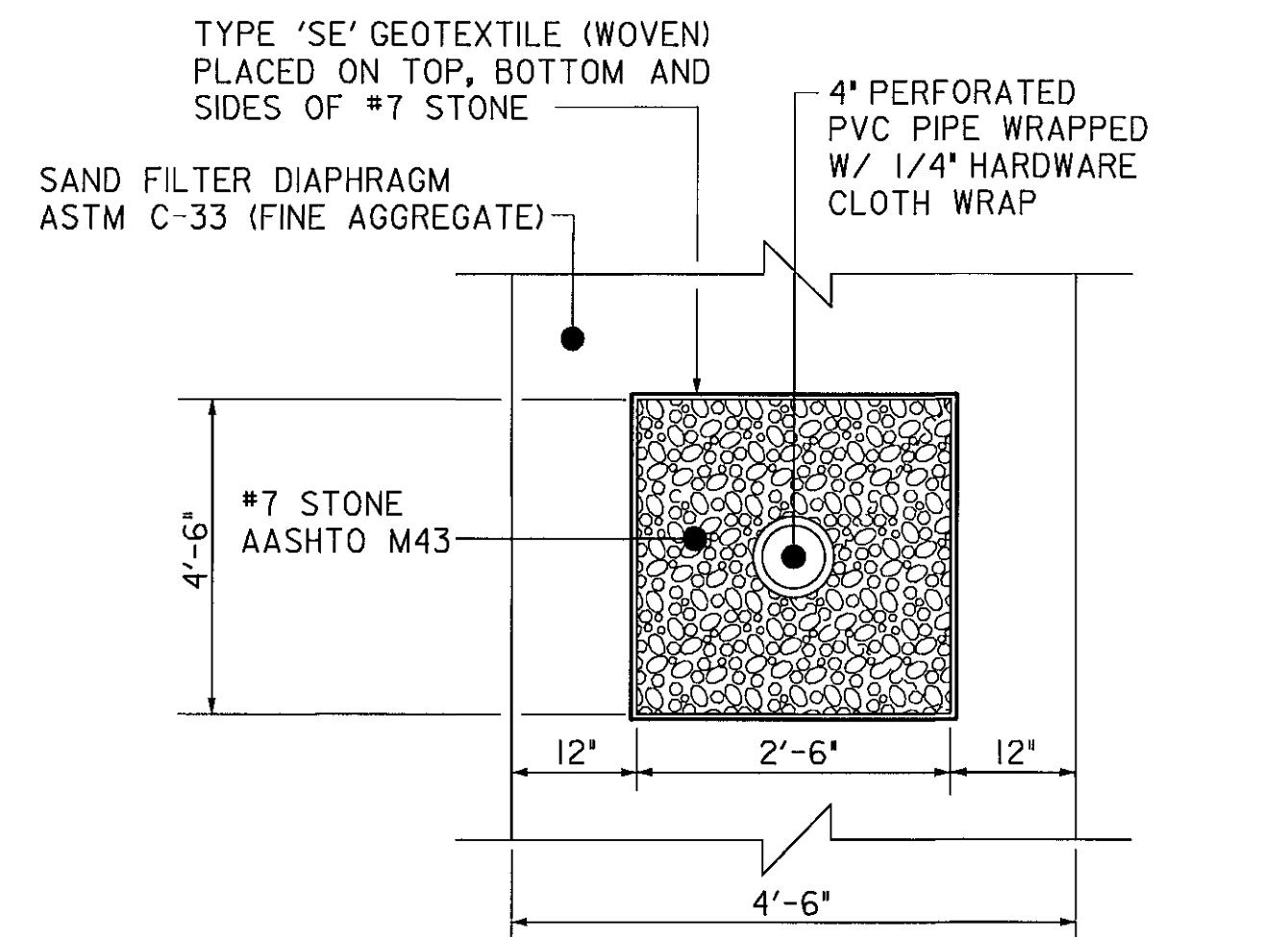


TYPICAL STAKE DETAILS  
MILD STEEL  
OPTIONAL GALVANIZED (AASHTO M-218)  
J-PIN

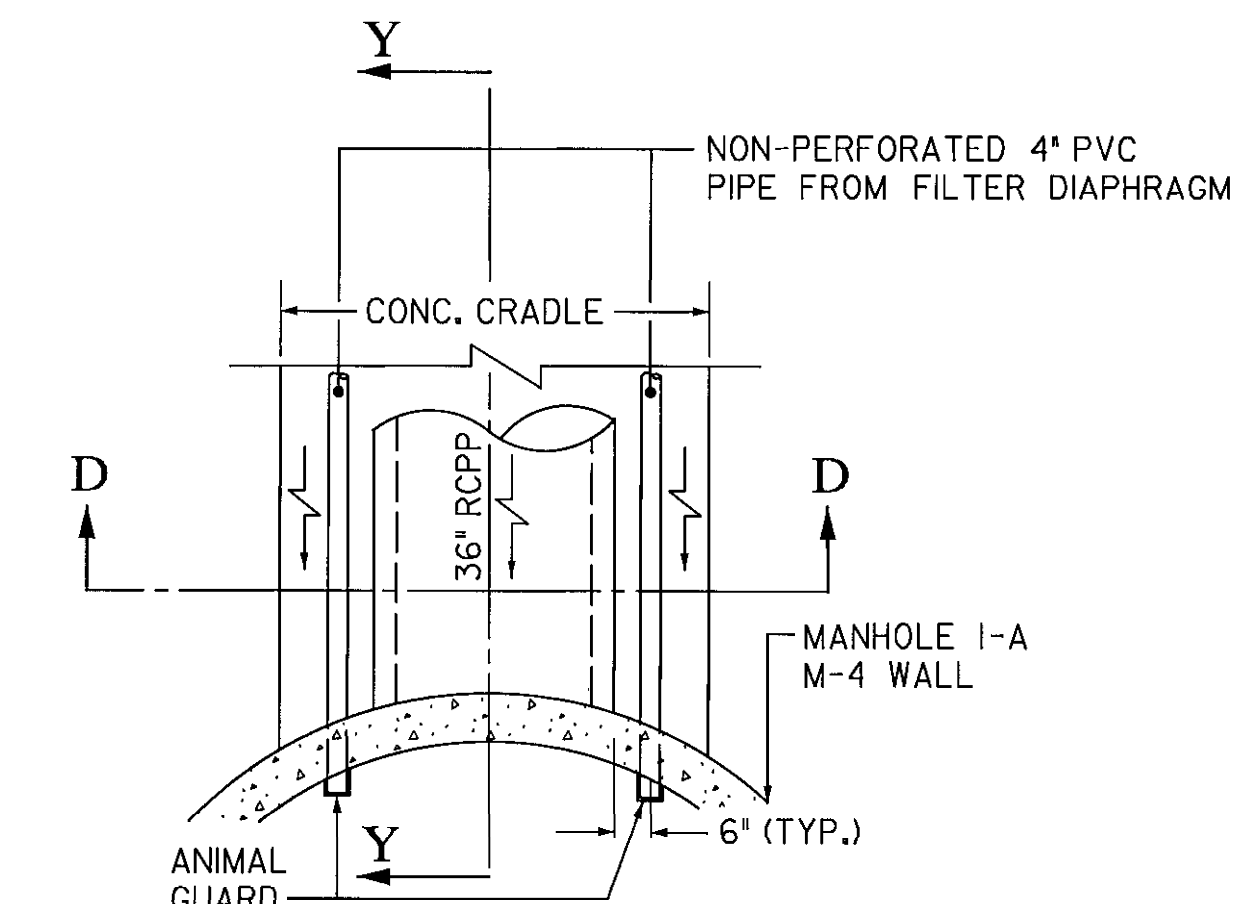


**SECTION D-D**  
NOT TO SCALE

**SECTION Y-Y**  
NOT TO SCALE



**SECTION Z-Z**  
**PVC LATERAL DETAIL**  
NOT TO SCALE



**DIAPHRAGM OUTLET @ MANHOLE**  
NOT TO SCALE

**FILTER-DRAINAGE DIAPHRAGM NOTES:**

THE FILTER-DRAINAGE DIAPHRAGM SHALL BE CONSTRUCTED IN ACCORDANCE WITH THIS SECTION AND AS SHOWN ON THE PLANS. THE MATERIAL SHALL BE PLACED IN CONTINUOUS, APPROXIMATELY HORIZONTAL LAYERS NOT MORE THAN 12 INCHES IN LOOSE THICKNESS. THE WATER CONTENT OF THE DRAINAGE MATERIAL BEFORE AND DURING COMPACTION SHALL BE UNIFORM THROUGHOUT EACH LAYER OF THE MATERIAL. THE WATER CONTENT SHALL BE SUFFICIENT TO ATTAIN THE REQUIRED DENSITY OF THE MATERIAL IN PLACE WHEN COMPACTED. THE MATERIAL SHALL BE COMPACTED AS SPECIFIED IN 'EARTH FILL'. THE DIAPHRAGM SHALL BE THOROUGHLY FLOODED UPON COMPLETION AND THE OUTLET DRAINS OBSERVED FOR PROPER FUNCTION. CARE SHOULD BE TAKEN SO THAT THE DRAINAGE MATERIAL DOES NOT BECOME CONTAMINATED. CONTAMINATED DRAINAGE MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE MATERIAL. DURING PERIODS OF SHUTDOWN AND AT ALL EQUIPMENT CROSSINGS, THE DRAINAGE MATERIAL SHOULD BE PROTECTED BY PROTECTIVE

COVERING MATERIAL SUCH AS POLYETHYLENE SHEETING, PVC SHEETING OR EQUAL. AT EQUIPMENT CROSSINGS, THE SHEETING MATERIAL SHALL BE COVERED WITH A SUFFICIENT DEPTH OF EMBANKMENT MATERIAL TO PREVENT DAMAGE TO THE SHEETING BY THE EQUIPMENT, OR A MINIMUM OF 12 INCHES, WHICHEVER PROVIDES GREATER PROTECTION. PRIOR TO PLACING ADDITIONAL DRAINAGE MATERIAL AFTER SHUTDOWN AT EQUIPMENT CROSSINGS, THE CONTRACTOR SHALL REMOVE ANY TEMPORARY PROTECTIVE COVERINGS AND REPLACE ANY MATERIAL THAT MAY HAVE BECOME CONTAMINATED. 4 INCH PVC OUTLET DRAIN TO PROJECT A MINIMUM OF 4 INCHES FROM THE FACE OF ENDWALL OR DOWNSTREAM MAN HOLE WALL. A REMOVABLE ANIMAL GUARD (AGRIDRAIN RATGUARD OR EQUAL) IS TO BE ATTACHED TO THE OUTLET END OF THE 4 INCH PVC DRAINS. AN ALTERNATIVE IS A GEOTECHNICAL HARDWARE CLOTH ATTACHED WITH STAINLESS STEEL HOSE CLAMP. A GEOTECHNICAL ENGINEER SHALL BE PRESENT DURING CONSTRUCTION.

**FILTER DIAPHRAGM DETAILS**  
NOT TO SCALE

DETAILS  
SHA BMP 130196  
MDE# 15-SF-0197

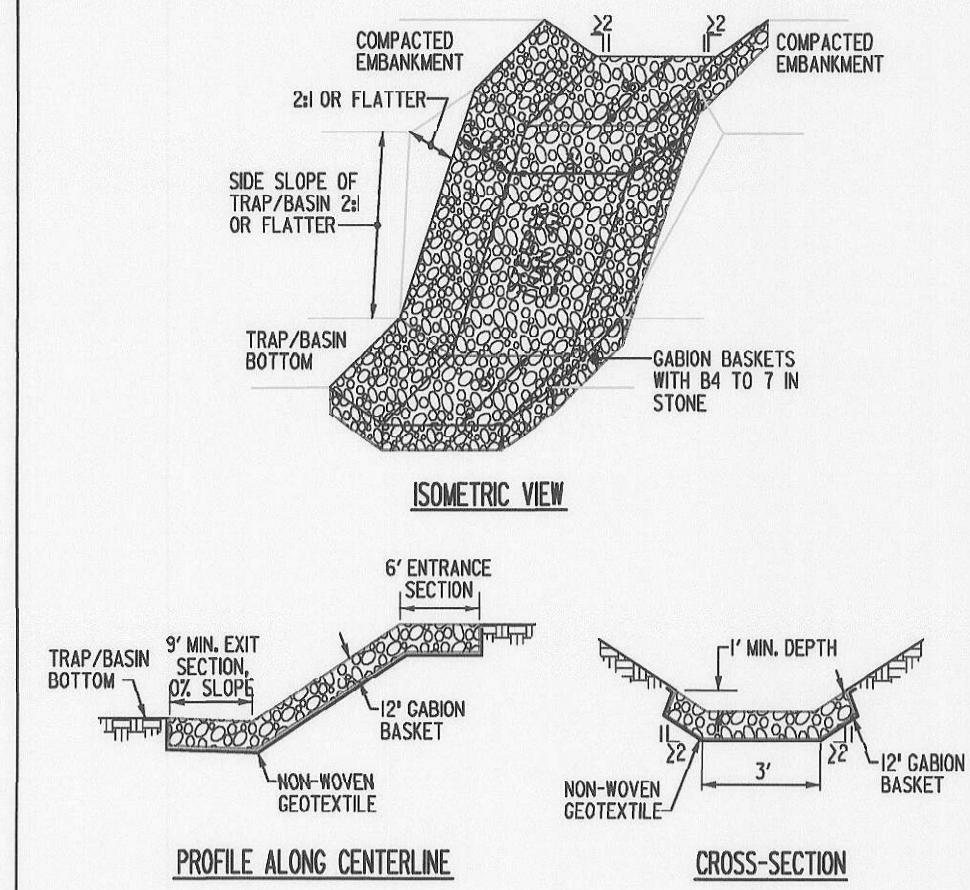
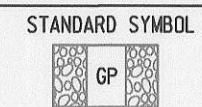
Howard SCD Signature Block:  
This plan is approved for small pond construction, and soil erosion and sediment control by the Howard Soil Conservation District.  
*[Signature]* 10/26/16  
Howard Soil Conservation District

\*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

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND <i>[Signature]</i> 10-13-16 CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION				<i>[Signature]</i> 10/17/16 CHIEF, BUREAU OF ENGINEERING				<i>[Signature]</i> 10/18/2016 CHIEF, BUREAU OF HIGHWAYS				JOHNSON, MIRIRAN & THOMPSON Engineering A Brighter Future® 72 Loveton Circle Baltimore, Maryland 21152-0949				STATE OF MARYLAND PAUL FRANKLIN CLEMENT PROFESSIONAL ENGINEER No. 15466				DES: HL BY: NO. DATE: 10/2016 DRN: JMB CHK: RS				CAPITAL PROJECT NO. <b>J-4206-1A</b>				STORMWATER MANAGEMENT DETAIL - SWM WET POND <b>RELOCATED MONTEVIDEO ROAD          PHASE 1, SEGMENT A</b>				SWM D-4 SCALE AS SHOWN SHEET 25 OF 45			
MAP NO. BLOCK NO.				ELECTION DISTRICT 2				HOWARD COUNTY, MARYLAND																											



DETAIL D-3-2 GABION INFLOW PROTECTION



CONSTRUCTION SPECIFICATIONS

1. PROVIDE NON-WOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, UNDER ALL THE BOTTOM AND ALONG SIDES OF ALL GABOR BASKETS.
2. USE BASKETS MADE OF MINIMUM #11 GAUGE WIRE.
3. CONSTRUCT GABOR INFLOW PROTECTION BY ARRANGING 24x36 FOOT GABOR BASKETS TO FORM A TRAPEZOIDAL SECTION WITH A 3 FOOT BOTTOM WIDTH, 1 FOOT MINIMUM DEPTH, 3 FOOT SIDE WALLS AND 24 OR FLATTER SIDE SLOPES. FILL GABOR BASKETS WITH 4 TO 7 INCH STONE OR EQUIVALENT RECYCLES CONCRETE WITHOUT REBAR OR WIRE MESH.
4. INSTALL ENTRANCE AND EXIT SECTIONS AS SHOWN ON THE PROFILE.
5. INSTALL GABORS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
6. BLEND GABORS INTO EXISTING GROUND.
7. MAINTAIN LINE, GRADE AND CROSS-SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. KEEP POINTS OF INFLOW AND OUTFLOW FREE OF EROSION.

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

Howard SCD Signature Block:  
 This plan is approved for small pond construction, and soil erosion and sediment control by the Howard Soil Conservation District.  
  
 Howard Soil Conservation District Date

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DETAILS  
 SHA BMP 130196  
 MDE# 15-SF-0197

SWM D-5

U.S. GOVERNMENT PRINTING OFFICE: 2015 O 353 974  
 GSA FPMR (41 CFR) 101-11.6  
 PURCHASE FROM NATIONAL ARCHIVES AND RECORDS SERVICE  
 OCT 2008 14 2016 2023 974

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

*Hulga Senano* 10-13-16  
 DIRECTOR OF PUBLIC WORKS

*Bradford* 10-17-16  
 CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

*Dennis S. Bullock* 10/17/16  
 CHIEF, BUREAU OF ENGINEERING

*Chheemin* 10/18/2016  
 CHIEF, BUREAU OF HIGHWAYS

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



DES: HL	BY	NO.	DATE
DRN: JMB			
CHK: RS			
DATE: 10/2016			

CAPITAL PROJECT NO.  
**J-4206-1A**

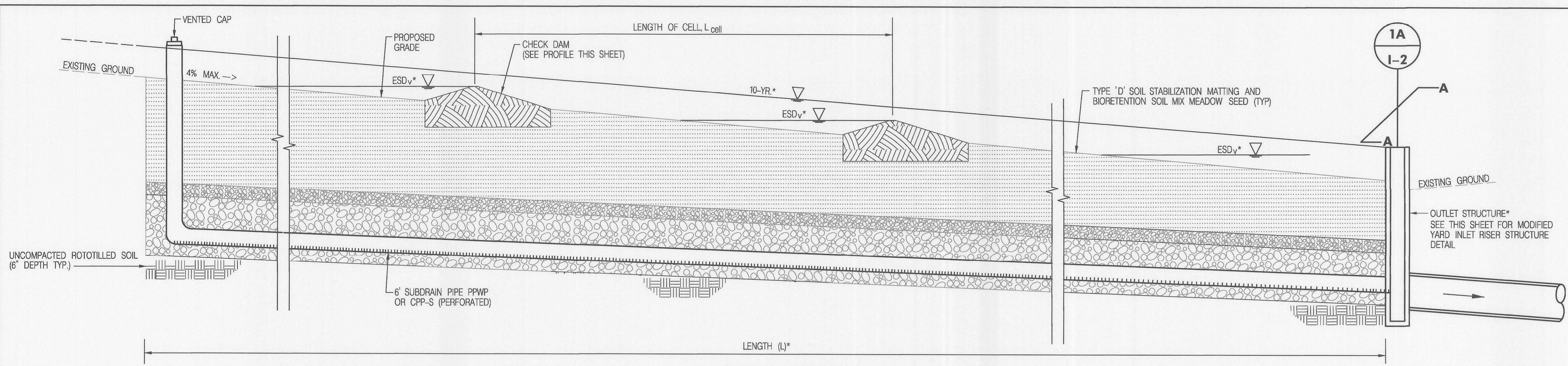
MAP NO. BLOCK NO.

STORMWATER MANAGEMENT DETAIL  
 RELOCATED MONTEVIDEO ROAD  
 PHASE 1, SEGMENT A

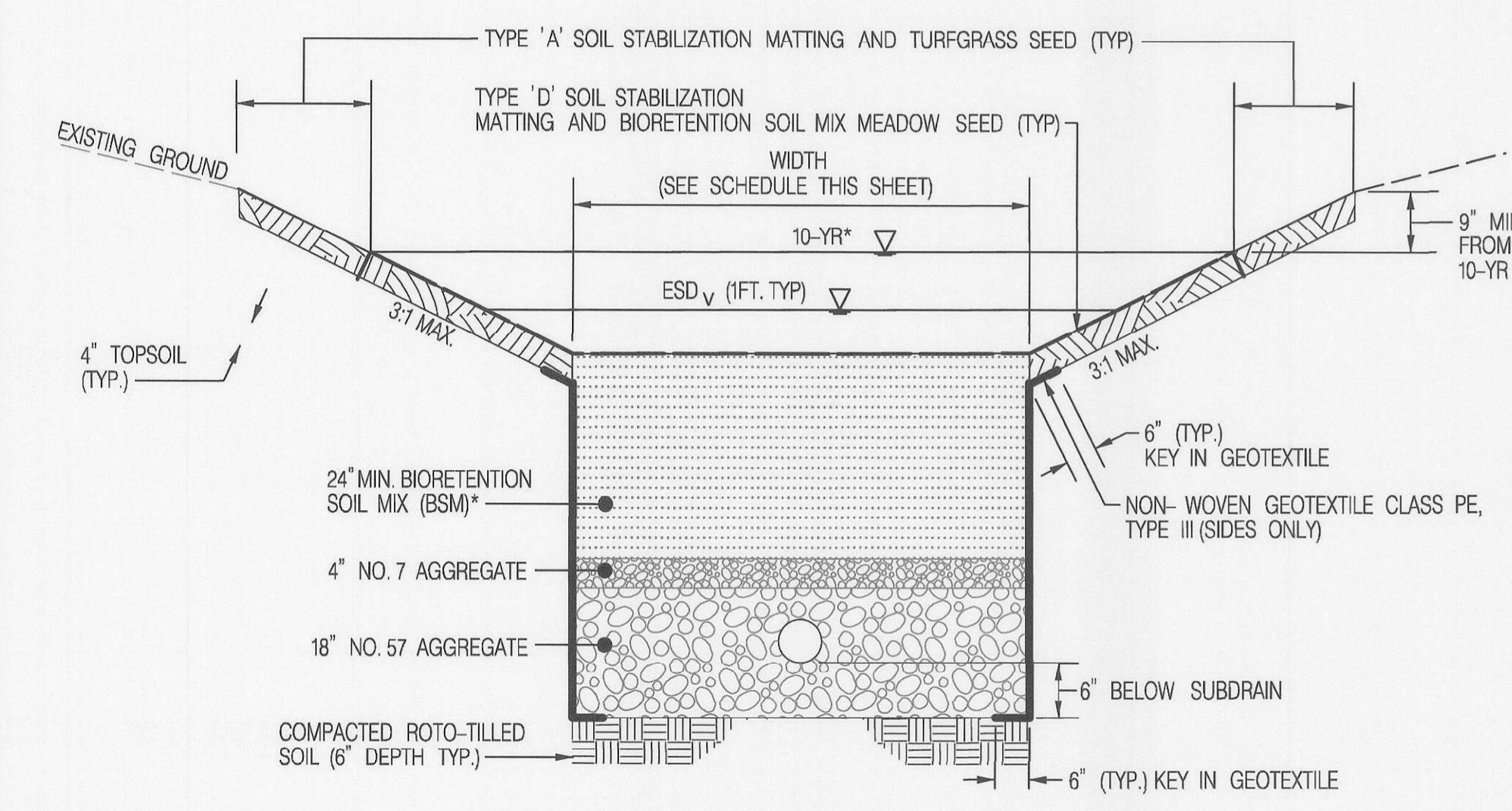
ELECTION DISTRICT 2 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
 SHEET 26 OF 45



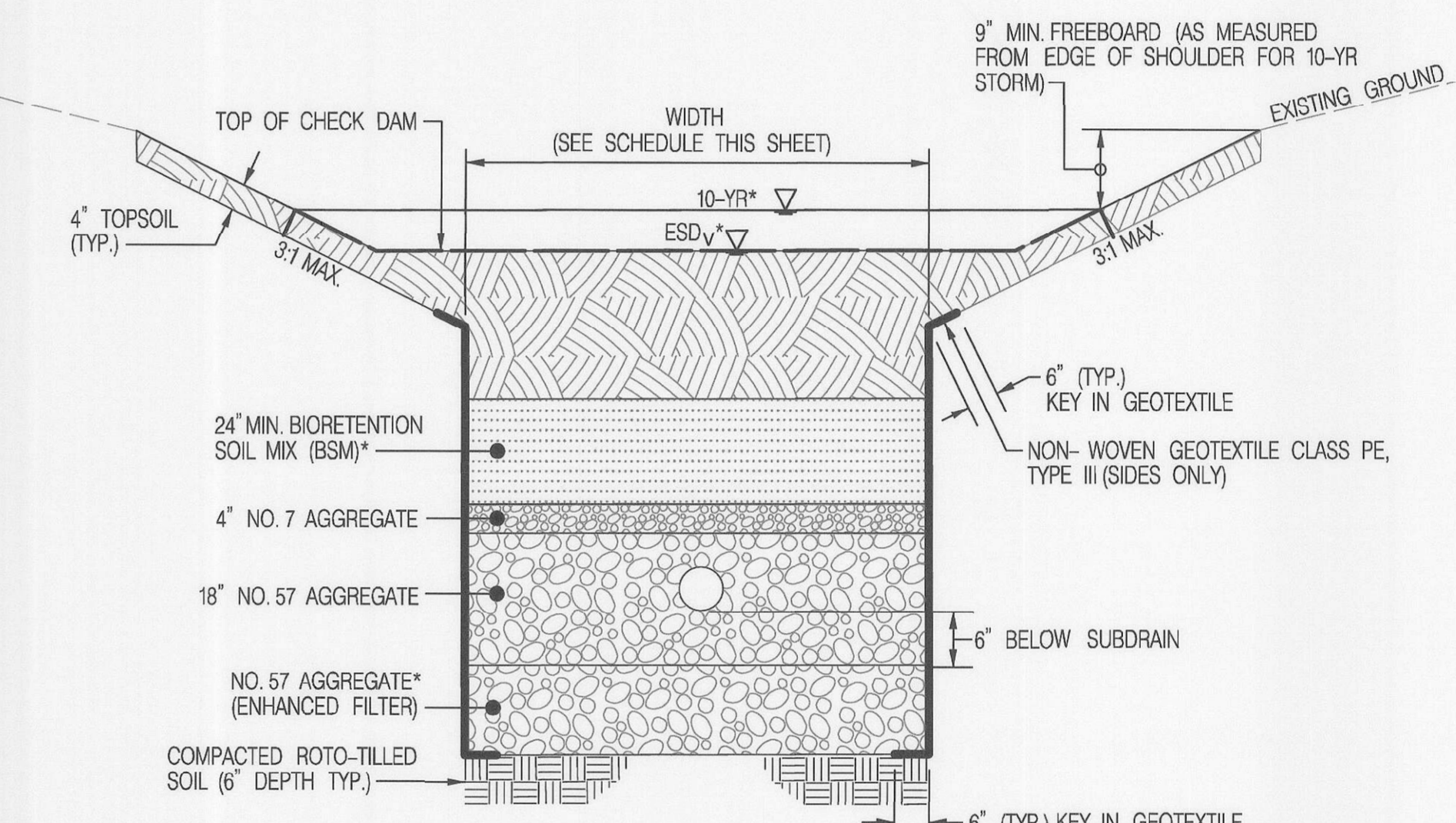


**BIO-SWALE PROFILE**  
N.T.S.

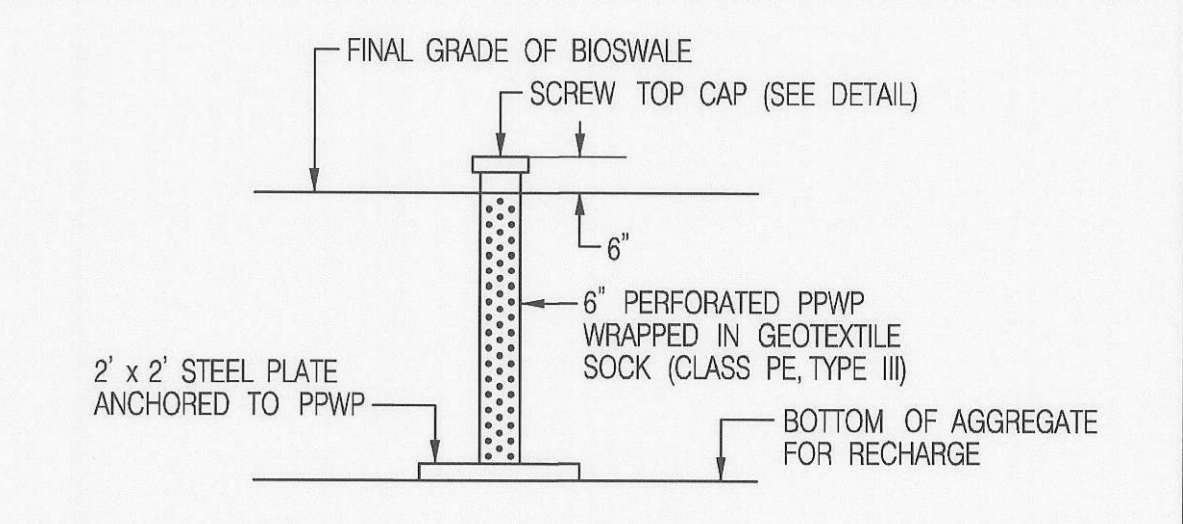


**BIO-SWALE TYPICAL SECTION**  
N.T.S.

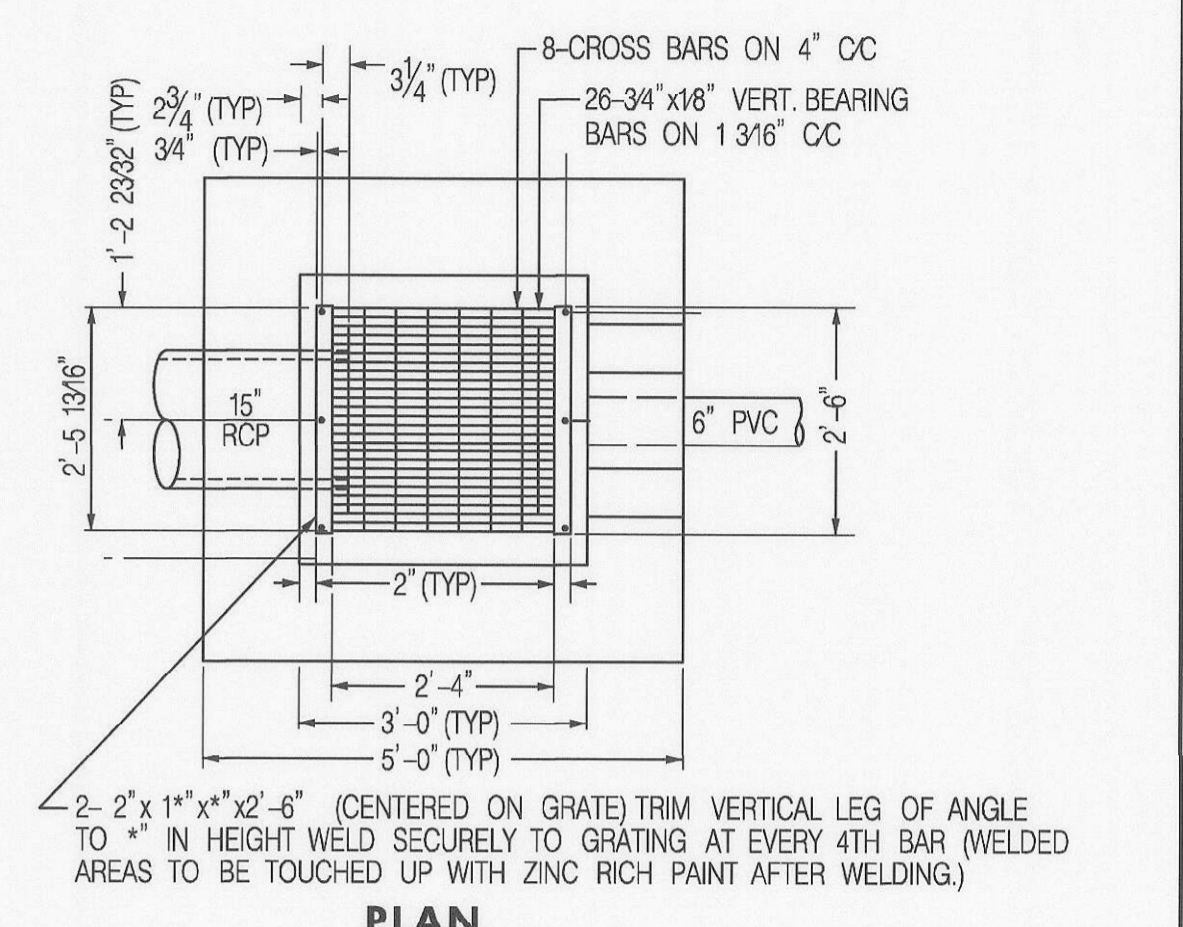
- NOTES:**
- REFER TO SPECIAL PROVISION INSERT SECTION 316 OF THE MSHA STANDARD SPECIFICATIONS FOR MORE INFORMATION.
  - DESIGN SWALES TO CONVEY 10-YR FLOW AT NON-EROSIVE VELOCITIES (<5 FPS).
  - SIDE SLOPES NO STEEPER THAN 3:1.
  - PLACE CHECK DAMS NO CLOSER THAN 50' APART.
  - BOTTOM WIDTH 8'.
  - CONNECT SUBDRAIN TO OUTLET STRUCTURE OR OUTFALL PROVIDE RODENT CONTROL SCREEN WHEN SUBDRAIN DAYLIGHTS TO OUTFALL.
  - SEE LANDSCAPE PLANS FOR PLANTINGS. THE TYPICAL COVER IS BIOTENTION MEADOW ESTABLISHMENT WITH TYPE 'D' SOIL STABILIZATION MATTING AND TURFGRASS WITH TYPE 'A' MATTING.



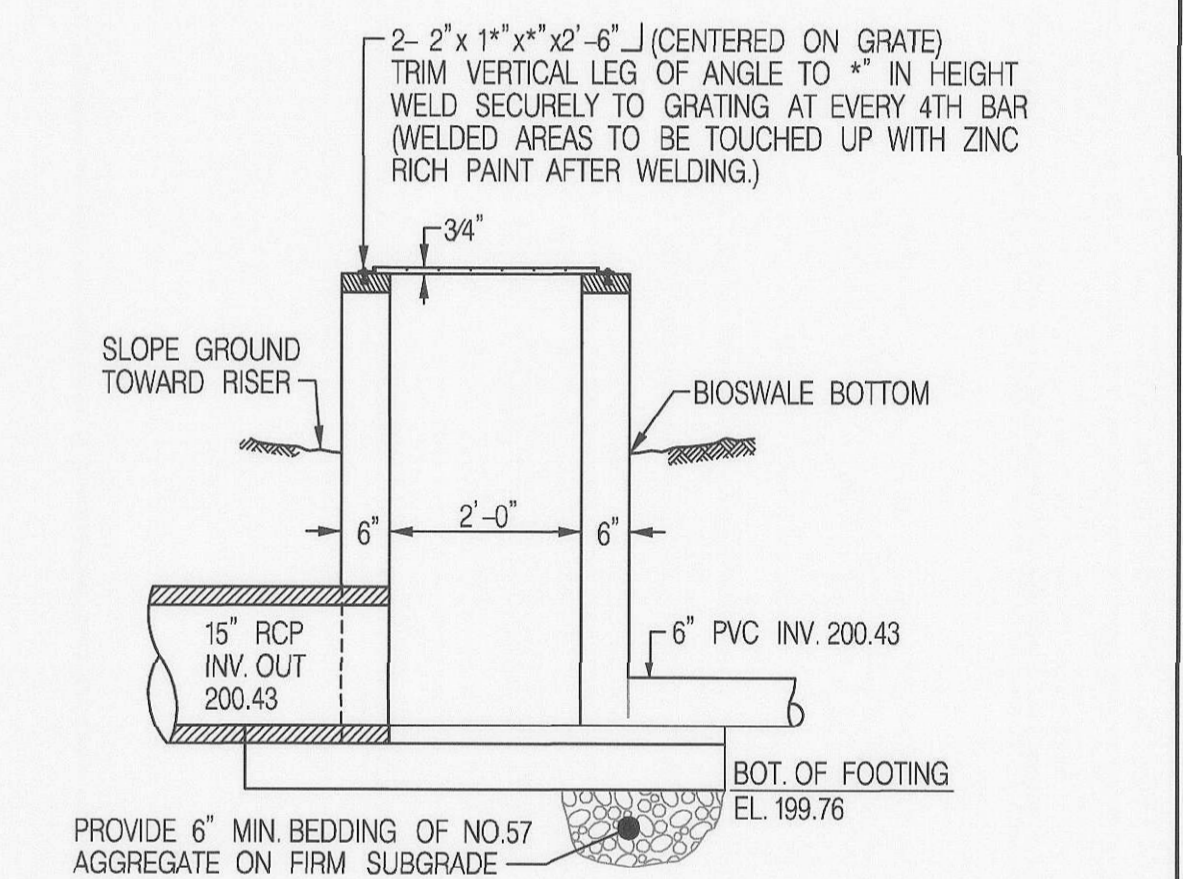
**BIO-SWALE TYPICAL SECTION AT CHECK DAM**  
N.T.S.



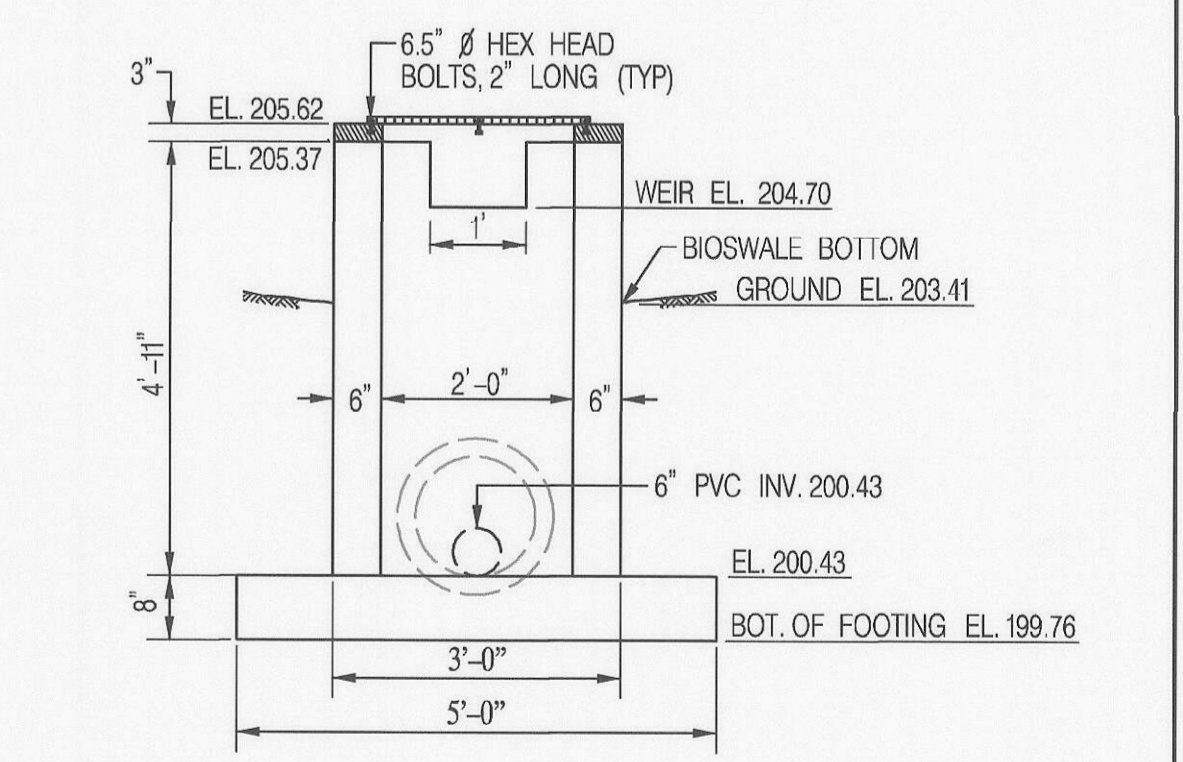
**OBSERVATION WELL DETAIL - BIOSWALE**  
N.T.S.



**PLAN**



**PROFILE**



**SECTION A-A**

**MODIFIED YARD INLET RISER STRUCTURE DETAIL (1A 1-2)**  
N.T.S.

\* DETERMINED BY DESIGN

UNIFIED SIZING CRITERIA VOLUMES (CF)	PROVIDED
ESDv	1,744
CPv	0

CLEANOUT AND OBSERVATION WELL SCHEDULE		
STRUCTURE TYPE	LENGTH (LF)	STD. REFERENCE
CLEANOUT*	6	SEE DETAIL THIS SHEET
OBSERVATION WELL	6	SEE DETAIL THIS SHEET

\* CLEANOUT SHALL BE CONNECTED TO BIO-SWALE SUBDRAIN

BIO-SWALE 1-1 DESIGN SUMMARY					
DESIGN STORM	SWALE INFLOW (CFS)	LT. SIDE SLOPE	RT. SIDE SLOPE	BOTTOM WIDTH (FT)	FREEBOARD (FT)
10-YR	3.09	3:1	3:1	8	0.8

BIO-SWALE 1-1 MATTING SCHEDULE AND QUANTITIES						
LENGTH	LT. SIDE SLOPE	RT. SIDE SLOPE	BOTTOM WIDTH (FT)	DESIGN DEPTH (FT)	TYPE	QUANTITY (SQ. YD.)
250 FT	3:1	3:1	8	1	'D'	398

CHECK DAM SCHEDULE				
NO.	BASELINE	STATION	OFFSET	TOP EL.
CD-1	RELOCATED MONTEVIDEO ROAD	113+80	42.7	210.82
CD-2	RELOCATED MONTEVIDEO ROAD	113+20	42.7	209.80
CD-3	RELOCATED MONTEVIDEO ROAD	112+80	42.7	208.39
CD-4	RELOCATED MONTEVIDEO ROAD	112+40	42.7	207.16

\*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

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Alga Serrano* 10-18-16  
DIRECTOR OF PUBLIC WORKS

*Thomas E. Butler* 10/17/16  
CHIEF, BUREAU OF ENGINEERING

*Jim Macari* 10/18/2016  
CHIEF, BUREAU OF HIGHWAYS

CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

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



DES:	BY:	NO.:	DATE:
HL	JMB		10/2016
RS			

CAPITAL PROJECT NO.  
**J-4206-1A**

STORMWATER MANAGEMENT DETAIL - BIOSWALE  
RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A

ELECTION DISTRICT 2  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET 21 OF 45

DETAIL BMP BIO-SWALE 1-1  
SWM D-6



# EROSION AND SEDIMENT CONTROL – GENERAL NOTES

## HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

1. A pre-construction meeting must occur with the Howard County Department of Public Works, Construction Inspection Division (CID), 410-313-1855 after the future LOD and protected areas are marked clearly in the field. A minimum of 48 hour notice to CID must be given at the following stages:
  - a. Prior to the start of earth disturbance,
  - b. Upon completion of the installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading,
  - c. Prior to the start of another phase of construction or opening of another grading unit,
  - d. Prior to the removal or modification of sediment control practices.
- Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made. Other related state and federal permits shall be referenced, to ensure coordination and to avoid conflicts with this plan.
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 is required within three (3) calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes steeper than 3 horizontal to 1 vertical (3:1); and seven (7) calendar days as to all other disturbed areas on the project site except for those areas under active grading.
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 topsoil (Sec. B-4-2), 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 applied between the fall and spring seeding dates if the ground is frozen. Incremental stabilization (Sec. B-4-1) specifications shall be enforced in areas with >15' of cut and/or fill. Stockpiles (Sec. B-4-8) in excess of 20 ft. must be benched with stable outlet. All concentrated flow, steep slope, and highly erodible areas shall receive soil stabilization matting (Sec. B-4-6).
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 CID.
6. Site Analysis:
 

Total Area of Site:	3.48 Acres
Area Disturbed:	3.48 Acres
Area to be roofed or paved:	0.50 Acres
Area to be vegetatively stabilized:	2.98 Acres
Total Cut:	11,350 Cu. Yds.
Total Fill:	1,954 Cu. Yds.
Offsite waste/borrow area location:	SITE WITH AN ACTIVE GRADING PERMIT
7. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
8. Additional sediment control must be provided, if deemed necessary by the CID. The site and all controls shall be inspected by the contractor weekly; and the next day after each rain event. A written report by the contractor, made available upon request, is part of every inspection and should include:
  - inspection date
  - inspection type (routine, pre-storm event, during rain event)
  - Name and title of Inspector
  - Weather information (current conditions as well as time and amount of last recorded precipitation)
  - Brief description of project's status (e.g., percent complete) and/or current activities
  - Evidence of sediment discharges
  - Identification of plan deficiencies
  - Identification of sediment controls that require maintenance
  - Identification of missing or improperly installed sediment controls
  - Compliance status regarding the sequence of construction and stabilization requirements
  - Photographs
  - Monitoring/sampling
  - Maintenance and/or corrective action performed
  - Other inspection items as required by the General Permit for Stormwater Associated with Construction Activities (NPDES, MDE).
9. Trenches for the construction of utilities is limited to three pipe lengths or that which can and shall be back-filled and stabilized by the end of each workday, whichever is shorter.
10. Any major changes or revisions to the plan or sequence of construction must be reviewed and approved by the HSCD prior to proceeding with construction. Minor revisions may be allowed by the CID per the list of HSCD-approved field changes.
11. Disturbance shall not occur outside the L.O.D. 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 CID. Unless otherwise specified and approved by the CID, no more than 30 acres cumulatively may be disturbed at a given time.
12. Wash water from any equipment, vehicles, wheels, pavement, and other sources must be treated in a sediment basin or other approved washout structure.
13. Topsoil shall be stockpiled and preserved on-site for redistribution onto final grade.
14. All Silt Fence and Super Silt Fence shall be placed on-the-contour, and be imbricated at 25' minimum intervals, with lower ends curled uphill by 2' in elevation.
15. Stream channels must not be disturbed during the following restricted time periods (inclusive):
  - Use I and II: March 1 - June 15
  - Use III and III-P: October 1 - April 30
  - Use IV: March 1 - May 31
16. A copy of this plan, the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, and associated permits shall be on-site and available when the site is active.

## STANDARD SYMBOLS

AT-GRADE INLET PROTECTION		REMOVABLE PUMPING STATION		DRAINAGE BOUNDARY	
BAFFLE BOARDS		RIPRAP INFLOW PROTECTION		EXISTING CONTOURS	
BENCHING		RIPRAP OUTLET SEDIMENT TRAP ST III		PROPOSED CONTOURS	
CATCH BASIN INSERT		ROCK OUTLET PROTECTION I		TREE PROTECTION FENCE	
CLEAR WATER DIVERSION PIPE		ROCK OUTLET PROTECTION II		WETLAND	
CLEAR WATER PIPE THROUGH SILT FENCE		ROCK OUTLET PROTECTION III		WETLAND BUFFER	
COMBINATION INLET PROTECTION		SILT FENCE		100-YEAR FLOODPLAIN	
CONCRETE WASHOUT STRUCTURE		SILT FENCE ON PAVEMENT		FULL DEPTH PAVEMENT	
CURB INLET PROTECTION		SOD		SANDBAGS	
DIVERSION FENCE		STABILIZED CONSTRUCTION ENTRANCE		SAME DAY STABILIZATION	
EARTH DIKE		STANDARD INLET PROTECTION		PUMP	
EMERGENCY SPILLWAY		STONE CHECK DAM		NRCS SOIL BOUNDARY	
FILTER BAG		STONE/RIPRAP OUTLET SEDIMENT TRAP ST II		NRCS SOIL RATING	
FILTER BERM		SUBSURFACE DRAINS			
FILTER LOG		SUMP PIT			
GABION INFLOW PROTECTION		SUPER SILT FENCE			
GABION INLET PROTECTION		TEMPORARY ACCESS BRIDGE			
HORIZONTAL DRAW-DOWN DEVICE		TEMPORARY ACCESS CULVERT			
LIMIT OF DISTURBANCE		TEMPORARY ASPHALT BERM			
MEDIAN INLET PROTECTION		TEMPORARY BARRIER DIVERSION			
MEDIAN SUMP INLET PROTECTION		TEMPORARY GABION OUTLET STRUCTURE			
MOUNTABLE BERM		TEMPORARY SOIL STABILIZATION MATTING-TYPE A			
PERIMETER DIKE/SWALE		TEMPORARY SOIL STABILIZATION MATTING-TYPE E			
PERMANENT SOIL STABILIZATION MATTING-TYPE B		TEMPORARY SOIL STABILIZATION MATTING-TYPE D			
PERMANENT SOIL STABILIZATION MATTING-TYPE C		TEMPORARY STONE OUTLET STRUCTURE			
PIPE OUTLET SEDIMENT TRAP ST I		TEMPORARY SWALE			
PIPE SLOPE DRAIN		WASH RACK OPTION			
PLUNGE POOL		CHESAPEAKE BAY CRITICAL AREA			
PORTABLE SEDIMENT TANK					

**DESIGN CERTIFICATION**

I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL OF EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

6-16-16  
 DATE  
  
 DESIGNER'S SIGNATURE

MARYLAND REGISTRATION NO. 17156  
 P.E., R.L.S. OR R.L.A. (circle one)  
 MUKHTAR AHMAD  
 PRINTED NAME

**PROFESSIONAL ENGINEER CERTIFICATION**

I HEREBY CERTIFY THAT THIS 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. 17156, EXPIRATION DATE: NOVEMBER 28, 2016

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

HOWARD SOIL CONSERVATION DISTRICT

10/26/16  
 DATE  
 EP-16-38

<p style="text-align: center;">DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND</p> <p>           10-18-16          DIRECTOR OF PUBLIC WORKS       </p> <p>           10/16/16          CHIEF, BUREAU OF ENGINEERING       </p> <p>           10/18/2016          CHIEF, BUREAU OF HIGHWAYS       </p>	 <b>ATHAVALE, LYSTAD &amp; ASSOCIATES INC.</b> Consulting Engineers Rockville, Maryland		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>DES:</td> <td>JK</td> <td>BY:</td> <td></td> <td>NO.:</td> <td></td> <td>DATE:</td> <td></td> </tr> <tr> <td>DRN:</td> <td>VAN</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CHK:</td> <td>MA</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>DATE:</td> <td>3/2016</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	DES:	JK	BY:		NO.:		DATE:		DRN:	VAN							CHK:	MA							DATE:	3/2016							<p>CAPITAL PROJECT NO.</p> <p style="font-size: 2em;">J-4206-1A</p>	<p>RELOCATED MONTEVIDEO ROAD          PHASE 1, SEGMENT A  <b>EROSION AND SEDIMENT CONTROL          NOTES AND DETAILS</b></p>	<p>SCALE N.T.S.</p> <p>SHEET 28 OF 45</p>
DES:	JK	BY:		NO.:		DATE:																																
DRN:	VAN																																					
CHK:	MA																																					
DATE:	3/2016																																					
			MAP NO.		BLOCK NO.		ELECTION DISTRICT 2		HOWARD COUNTY, MARYLAND																													



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

**Definition**

To stabilize disturbed soils with permanent vegetation.

**Purpose**

To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils.

**Conditions Where Practice Applies**

Exposed soils where ground cover is needed for 6 months or more.

**Criteria**

**A. Seeding Mixtures**

**1. General Use**

- 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 mixtures, application rates and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
- Additional planting specifications for exceptional sites such as shorelines, stream banks or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guide, Section 342 - Critical Area Planting.
- For sites having disturbed area over 5 acres, use and show the rates recommended by the soil testing agency.
- For areas receiving low maintenance, apply urea form Fertilizer (46-0-0) at 3 1/2 pounds per 1000 square feet (50 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary.

Permanent Seeding Summary

Hardness Zone (from Figure B.3): <u>6B</u>				Fertilizer Rate (10-20-20)			Lime Rate
Seed Mixture (from Table B.3):				N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	
Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths				
Switch Grass	10	3-1 to 5-15 and 5-16 to 6-15	0.5 in.				
Creeping Red Fescue	15	3-1 to 5-15 and 5-16 to 6-15	0.5 in.	45 lb/ac (1.0lb/1000 sf)	90 lb/ac (2.0lb/1000 sf)	90 lb/ac (2.0lb/1000 sf)	2 tons /ac (90 lb/1000 sf)
Wild Indigo	2	3-1 to 5-15 and 5-16 to 6-15	0.5 in.				
Tall Fescue	100	3-1 to 5-15 and 8-1 to 10-15	0.5 in.				

**2. Turfgrass Mixtures**

- Areas where turfgrass may be desired include lawns, parks, playgrounds and commercial sites which will receive a medium to high level of maintenance.
- Select one or more of the species or mixtures listed below based on the site conditions of purpose. Enter selected mixtures, application rates and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
  - Kentucky Bluegrass/Full Sun Mixture:** For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
  - 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 mixture by weight.
  - 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.
  - Kentucky Bluegrass/Fine Fescue/ Shade Mixture:** For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1/2 to 3 pounds per 1000 square feet.

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

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

March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6B)

**c. Ideal Times of Seeding for Turf Grass Mixtures**

Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6B)

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

B. Sod: To provide quick cover on disturbed areas (2d grade or flatter).

**1. General Specifications**

- Class of turfgrass sod must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector.
- Sod must be machine cut at a uniform soil thickness of 6/64 inch, plus or minus 5/64 inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and torn or uneven ends will not be acceptable.
- Standard size sections of sod must be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.
- Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
- Sod must be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period must be approved by an agronomist or soil scientist prior to its installation.

**2. Sod Installation**

- During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the sod.
- Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Stagger lateral joints to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.
- Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints. Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensure solid contact exists between sod roots and the underlying soil surface.
- Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of sod within eight hours.

**3. Sod Maintenance**

- In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.
- After the first week, sod watering is required as necessary to maintain adequate moisture content.
- Do not mow until the sod is firmly rooted. No more than 1/3 of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless otherwise specified.

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

**Definition**

To stabilize disturbed soils with vegetation for up to 6 months.

**Purpose**

To use fast growing vegetation that provides cover on disturbed soils.

**Conditions Where Practice Applies**

Exposed soils where ground cover is needed for a period of 6 months or less. For longer duration of time, permanent stabilization practices are required.

**Criteria**

- Select one or more of the species or seed mixtures listed in Table B.1 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.1 plus fertilizer and lime rates must be put on the plan.
- For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.
- When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3.A.1.b and maintain until the next seeding season.

Temporary Seeding Summary

Hardness Zone (from Figure B.3): <u>6B</u>				Fertilizer Rate (10-20-20)	Lime Rate
Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths		
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 (1.0lb/1000 sf)	2 tons/ac (90 lb/1000 sf)
Pearl Millet	20	5-16 to 7-31	0.5 in.		
Cereal Rye	112	3-1 to 5-15 and 8-1 to 11-15	1.0 in.		

PROFESSIONAL ENGINEER CERTIFICATION  
I HEREBY CERTIFY THAT THIS 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. 17156, EXPIRATION DATE: NOVEMBER 28, 2016

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

*Shirley W. Kelly*  
HOWARD SOIL CONSERVATION DISTRICT

*10/24/16*  
DATE

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

**Definition**

Establishment of vegetative cover on cut and fill slopes

**Purpose**

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

**Conditions Where Practice Applies**

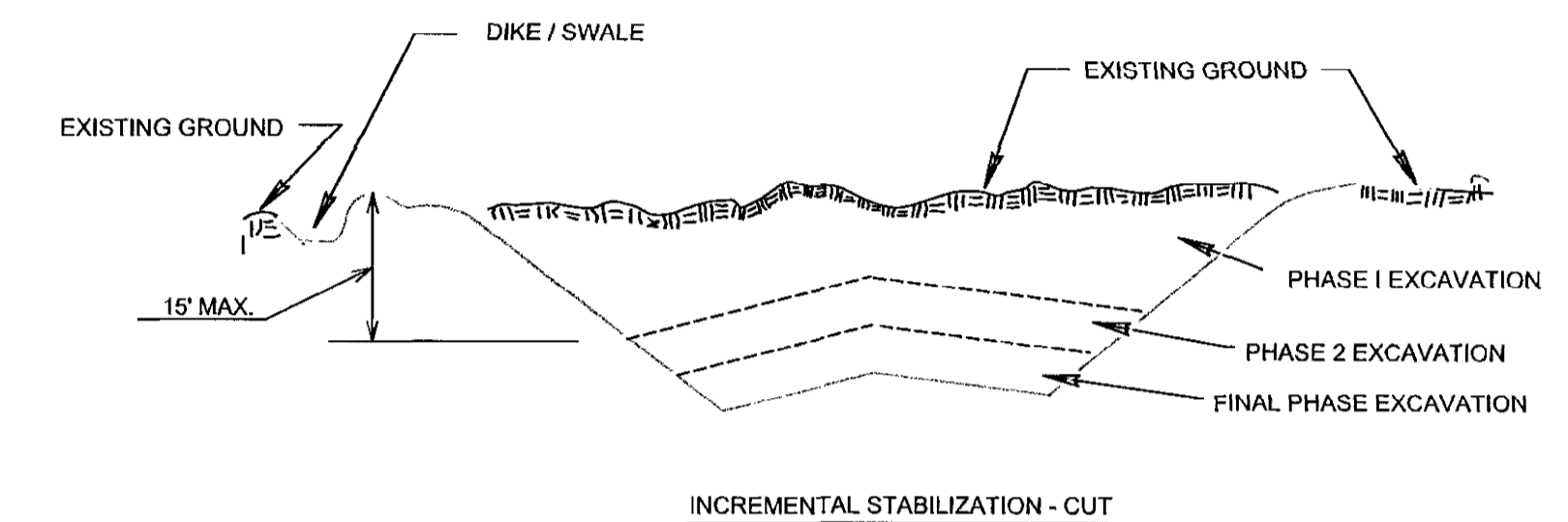
Any cut or fill slope greater than 15 feet in height. This practice also applies to stockpiles.

**Criteria**

**A. Incremental Stabilization - Cut Slopes**

- 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.
- Construction sequence example (Refer to Figure B.1):
  - Construct and stabilize all temporary swales or dikes that will be used to convey runoff around the excavation.
  - Perform Phase 1 excavation, prepare seedbed, and stabilize.
  - Perform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase 1 areas as necessary.
  - Perform final phase excavation, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

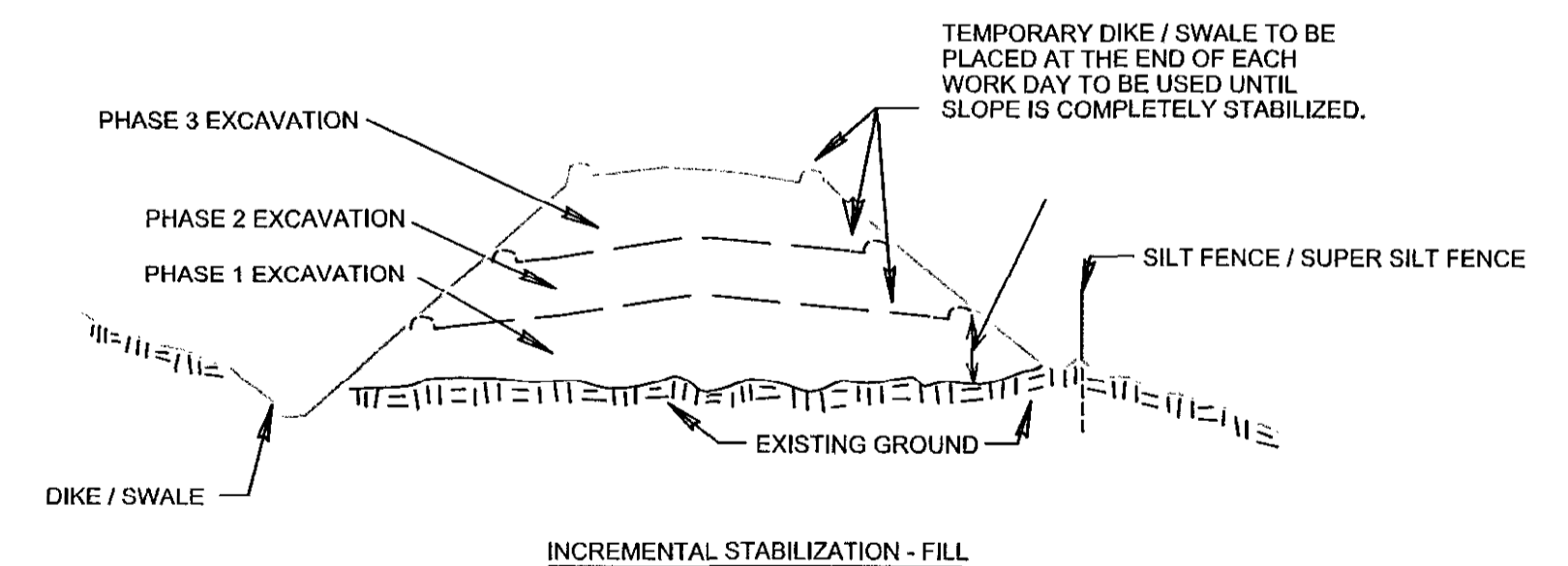
Note: Once excavation has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application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



**B. Incremental Stabilization - Fill Slopes**

- 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.
- Stabilize slopes immediately when the vertical height of a lift reaches 15 feet, or when the grading operation ceases as prescribed in the plans.
- 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.
- Construction sequence example (Refer to Figure B.2):
  - 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.
  - 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.
  - Place Phase 1 fill, prepare seedbed, and stabilize.
  - Place Phase 2 fill, prepare seedbed, and stabilize.
  - Place final phase fill, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

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



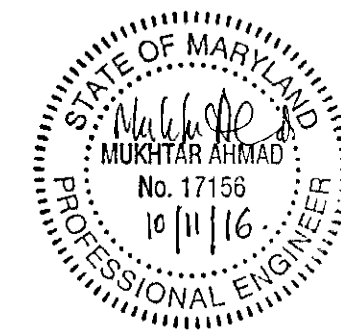
ED-2 OF 5

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Helen Swann* 10-18-16  
DIRECTOR OF PUBLIC WORKS  
*Brandon* 10-17-16  
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

*Thomas P. Butler* 10/17/16  
CHIEF, BUREAU OF ENGINEERING  
*J. McCombs* 10/18/2016  
CHIEF, BUREAU OF HIGHWAYS

**ALA**  
ATHAVALE, LYSTAD & ASSOCIATES INC.  
Consulting Engineers Rockville, Maryland



DES:	JK	BY	NO.	DATE
DRN:	VAN			
CHK:	MA			
DATE:	3/2016			

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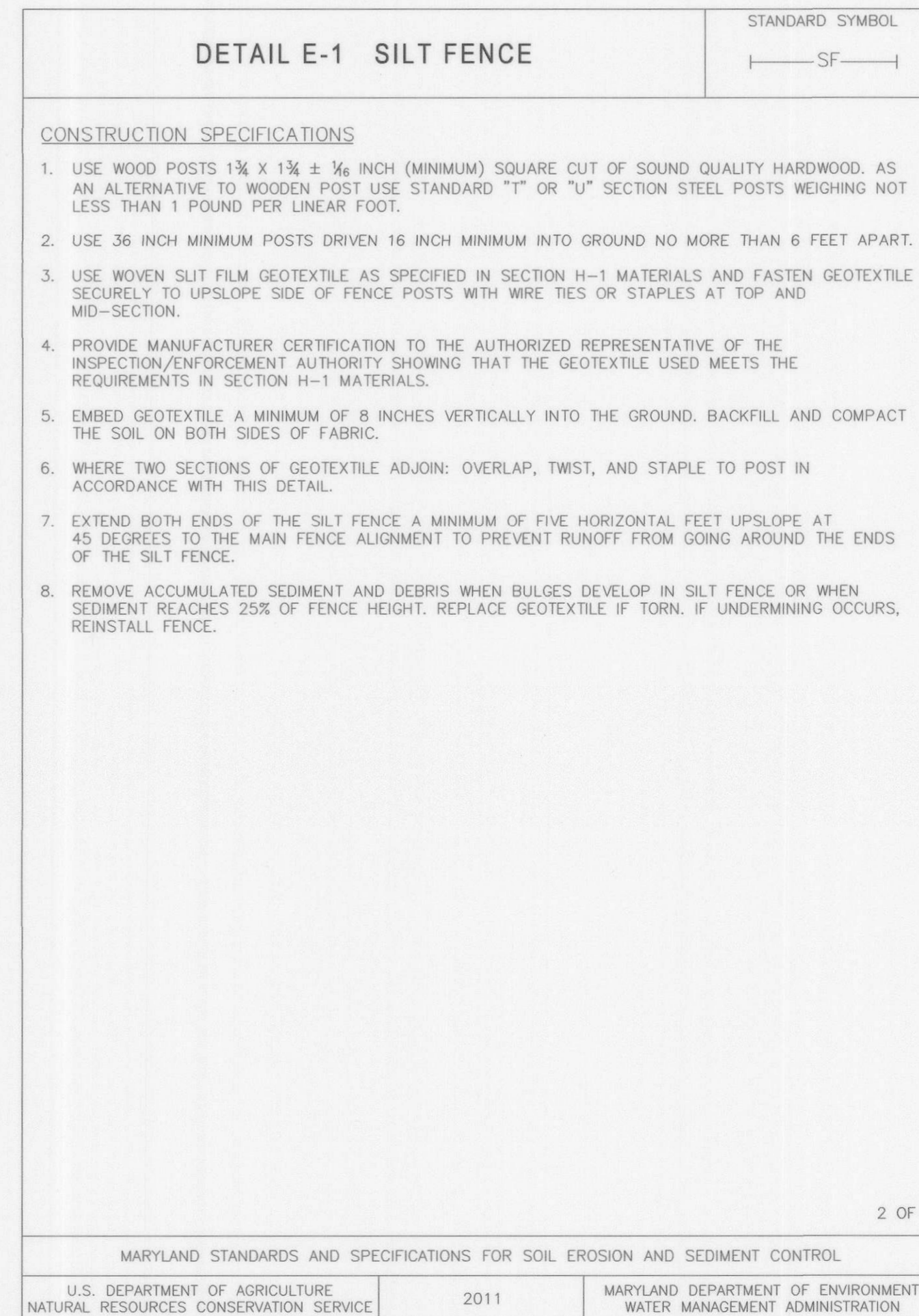
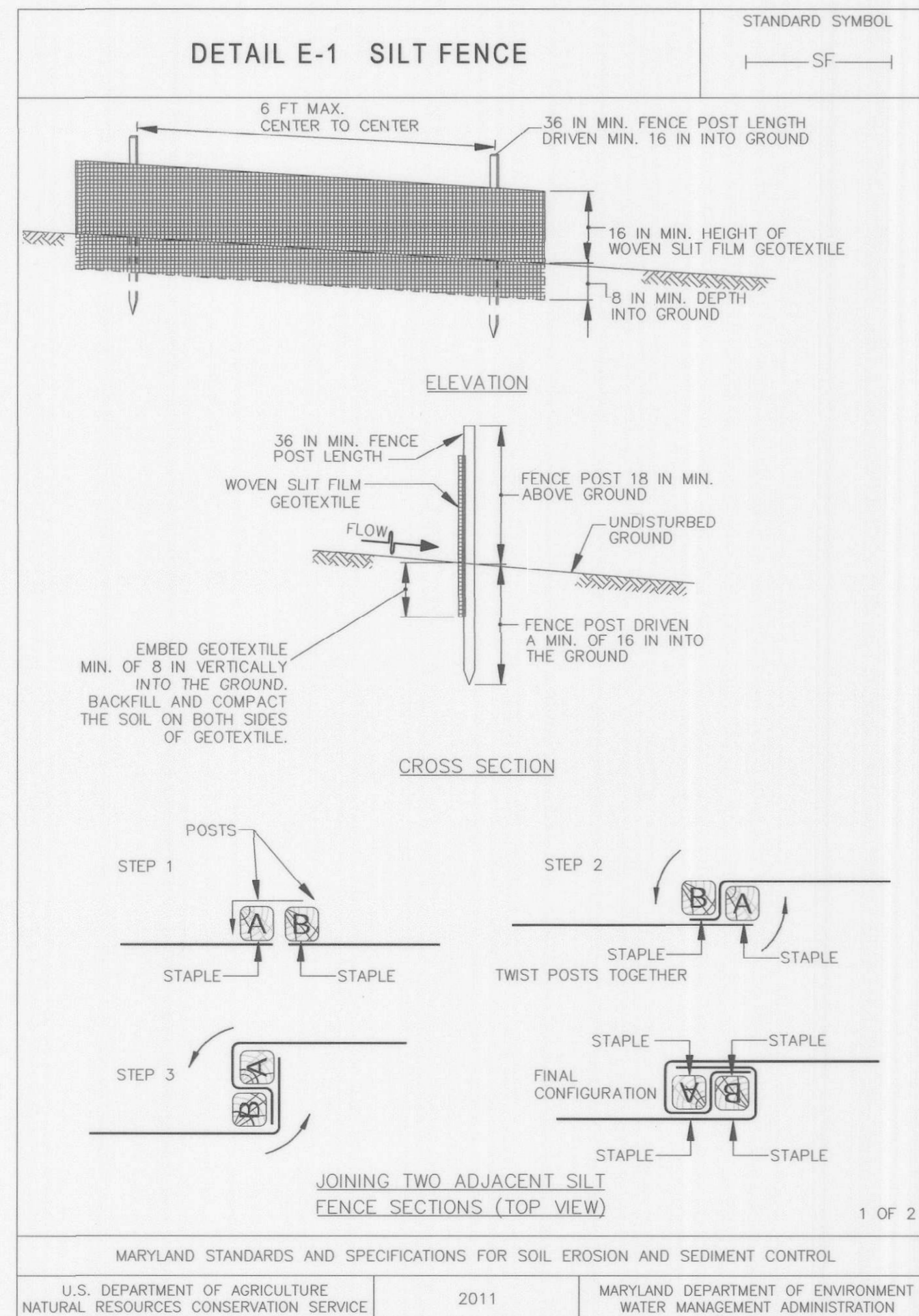
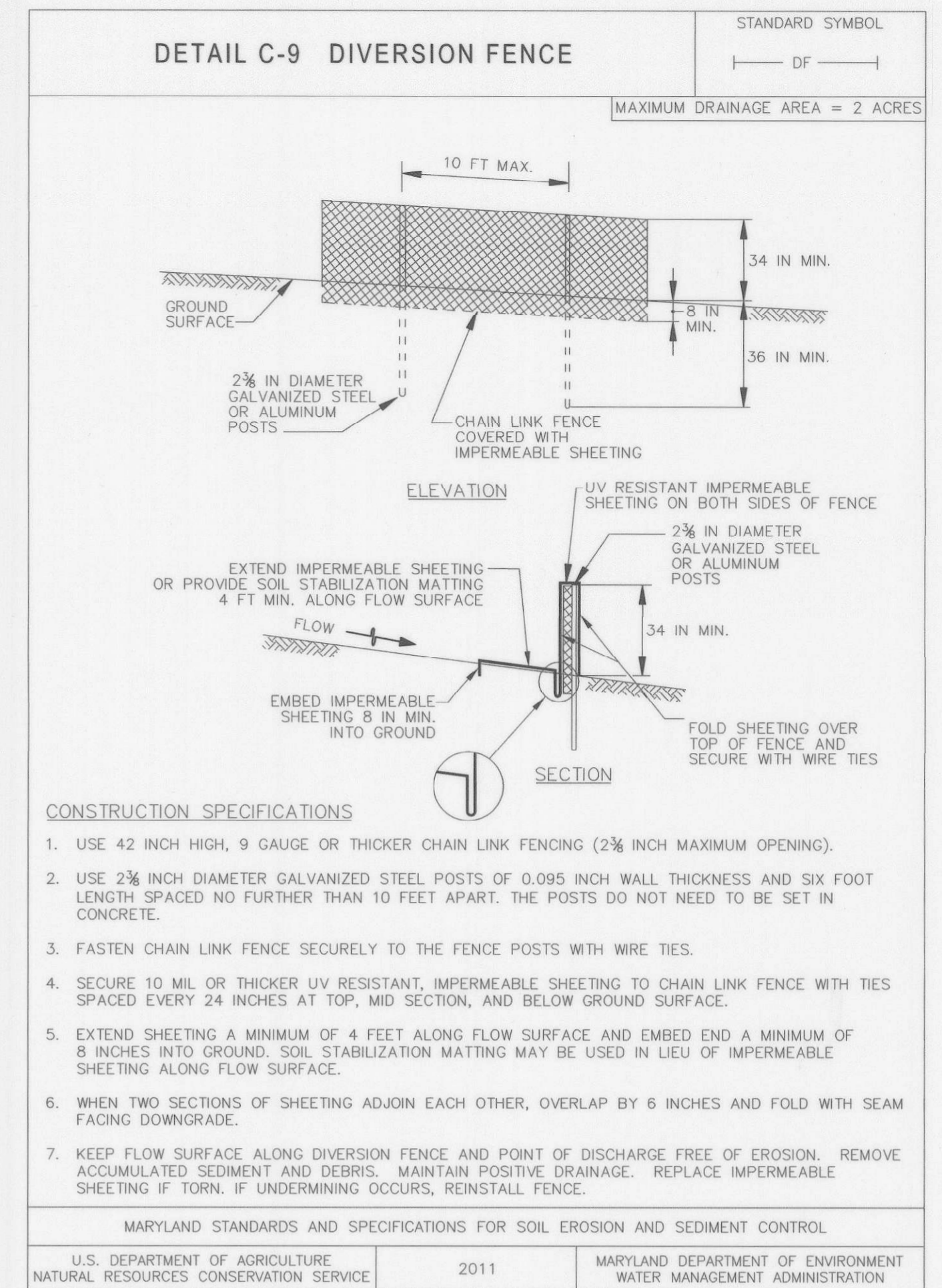
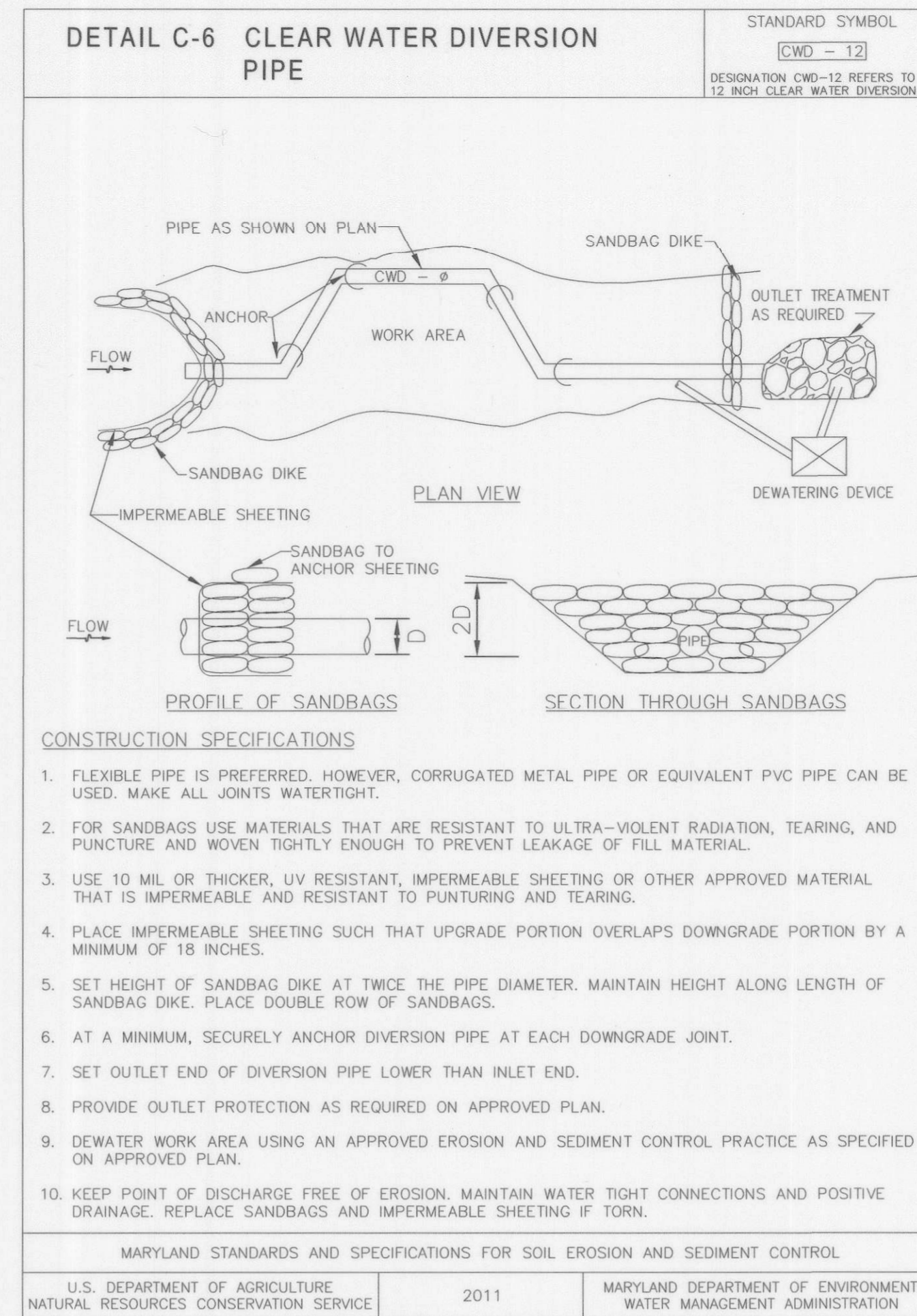
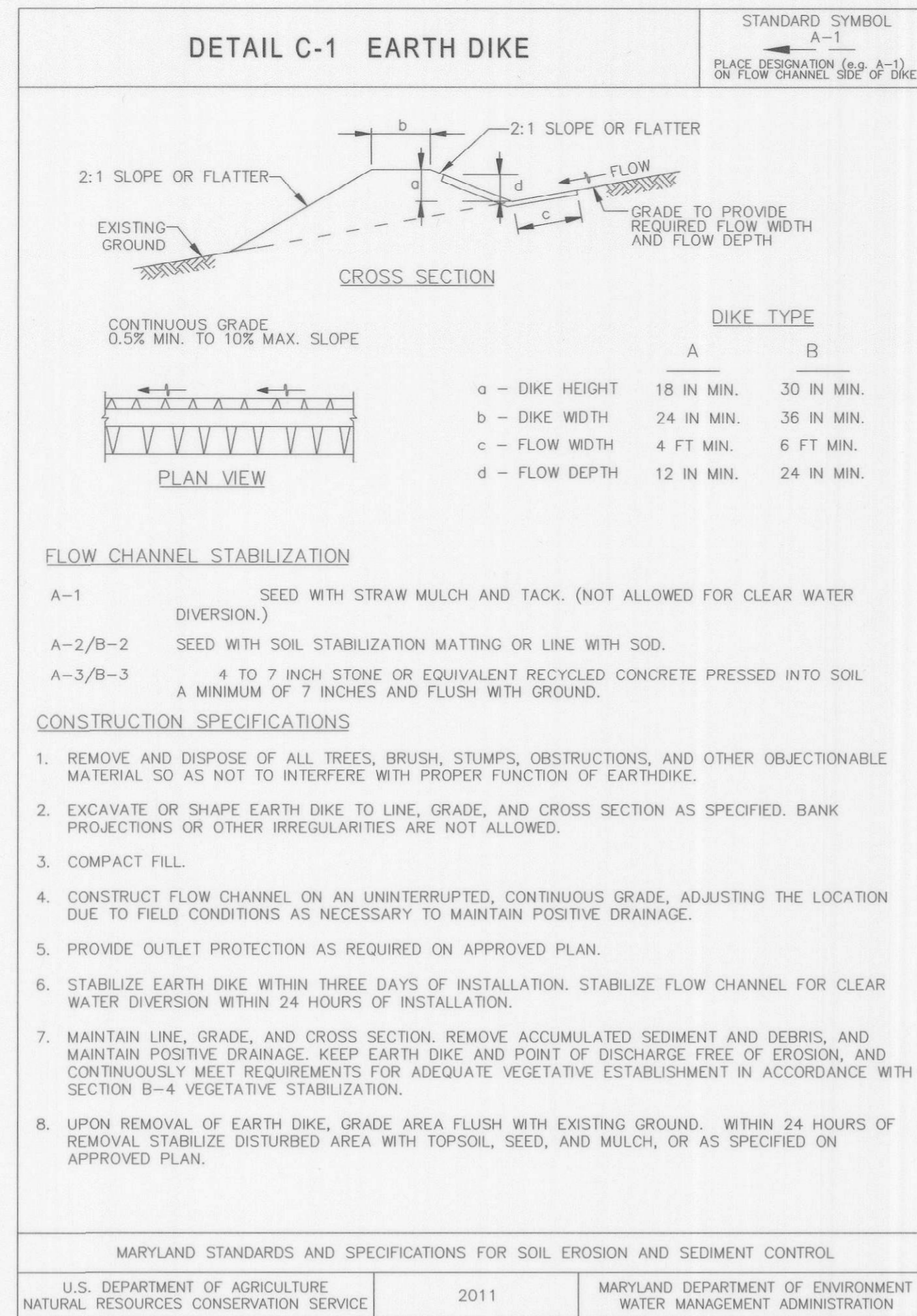
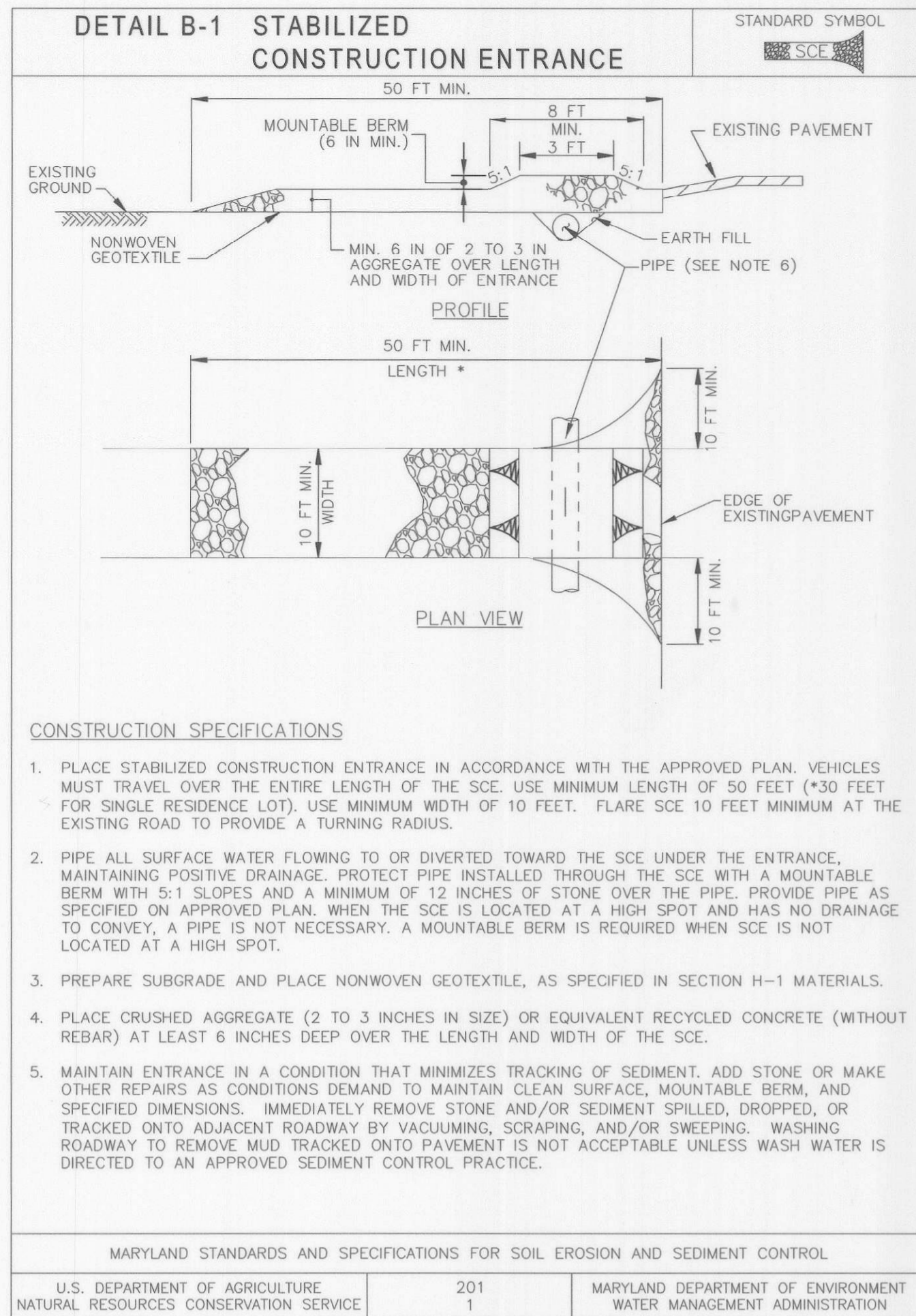
RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A  
EROSION & SEDIMENT CONTROL  
NOTES AND DETAILS

ELECTION DISTRICT 2

HOWARD COUNTY, MARYLAND

SCALE  
N.T.S.  
SHEET  
29 OF 45





DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

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*Randy* 10/17/16  
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*Thomas S. Butler* 10/17/16  
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*McKenna* 10/18/2016  
CHIEF, BUREAU OF HIGHWAYS

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Rockville, Maryland

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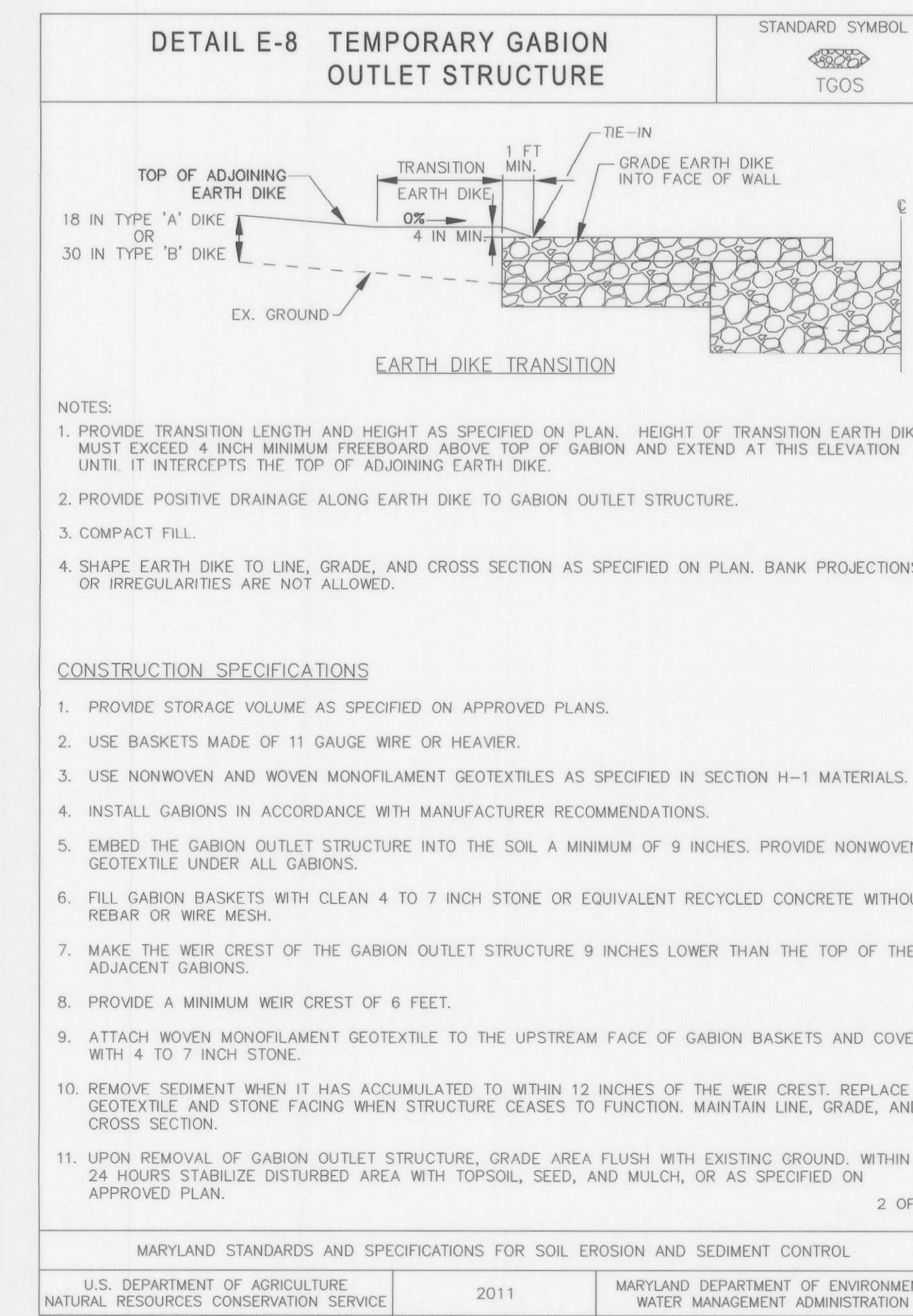
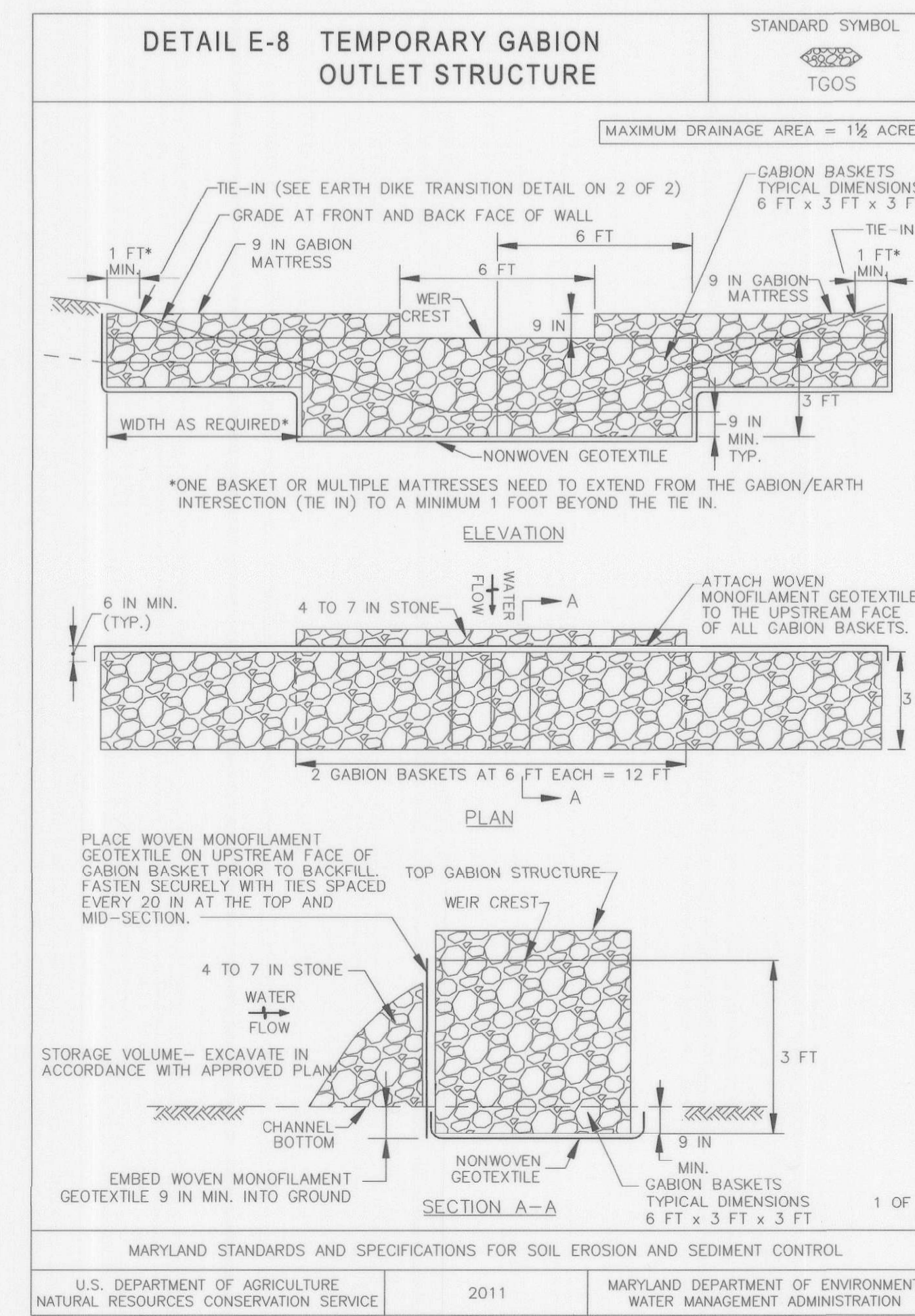
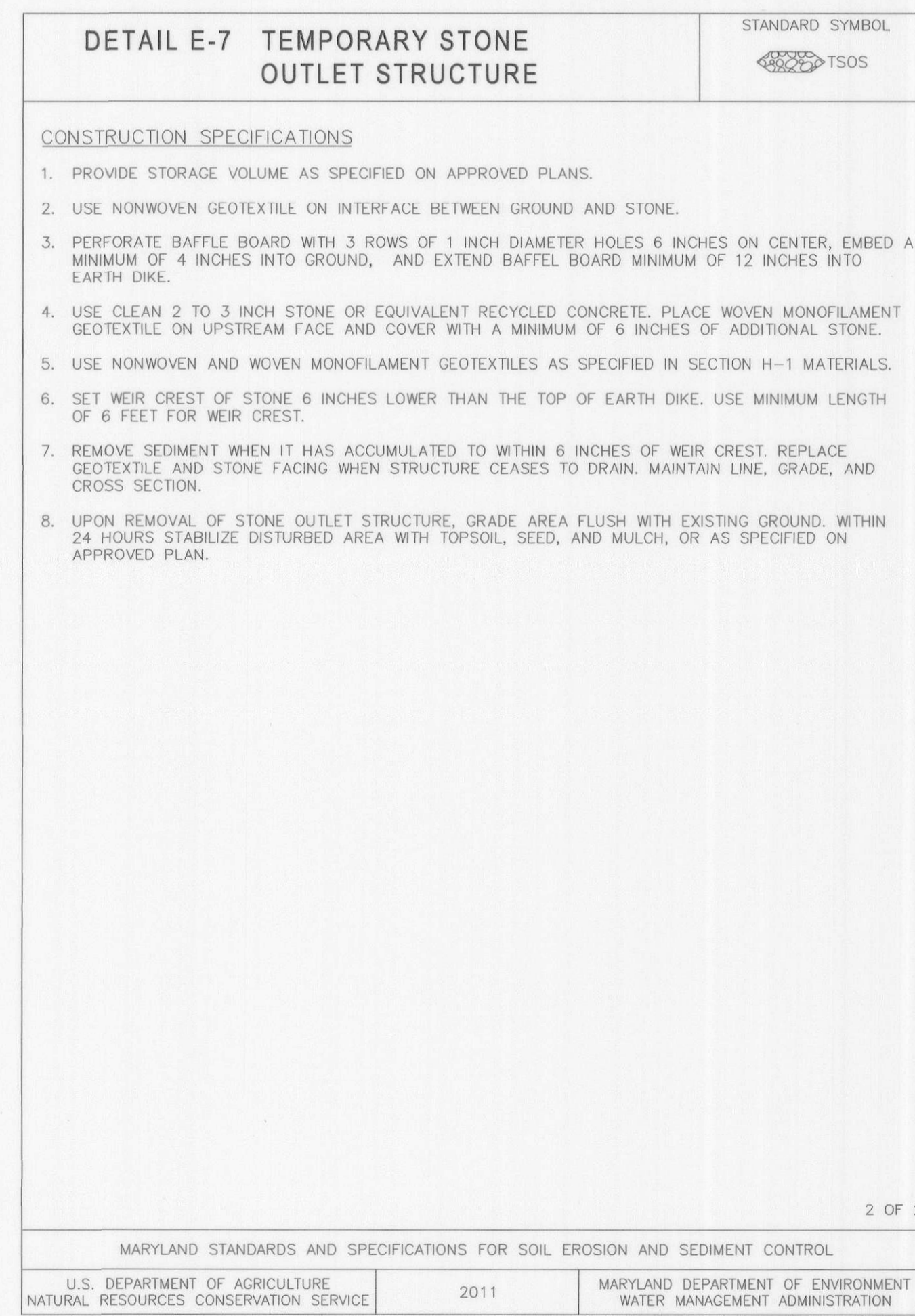
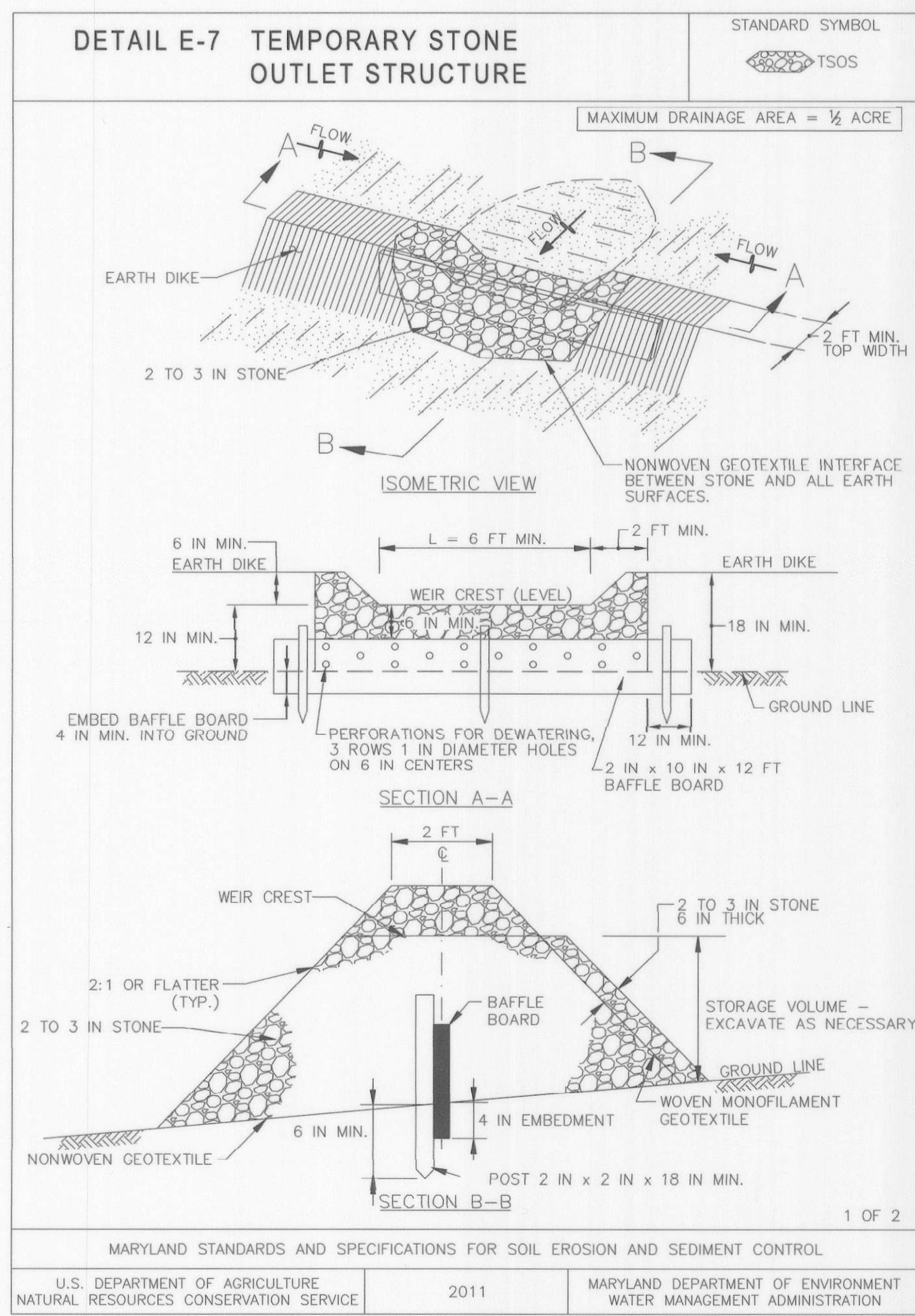
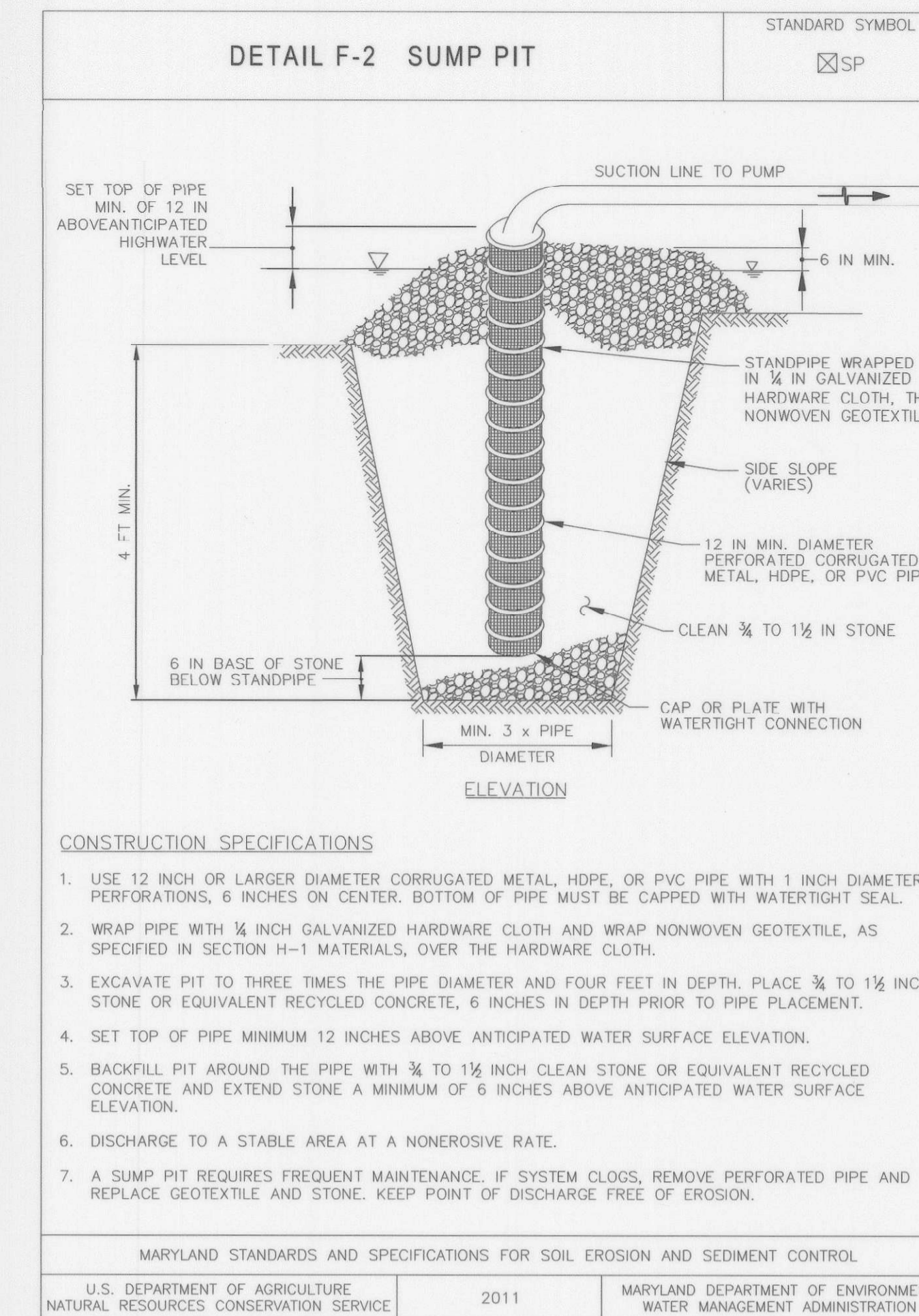
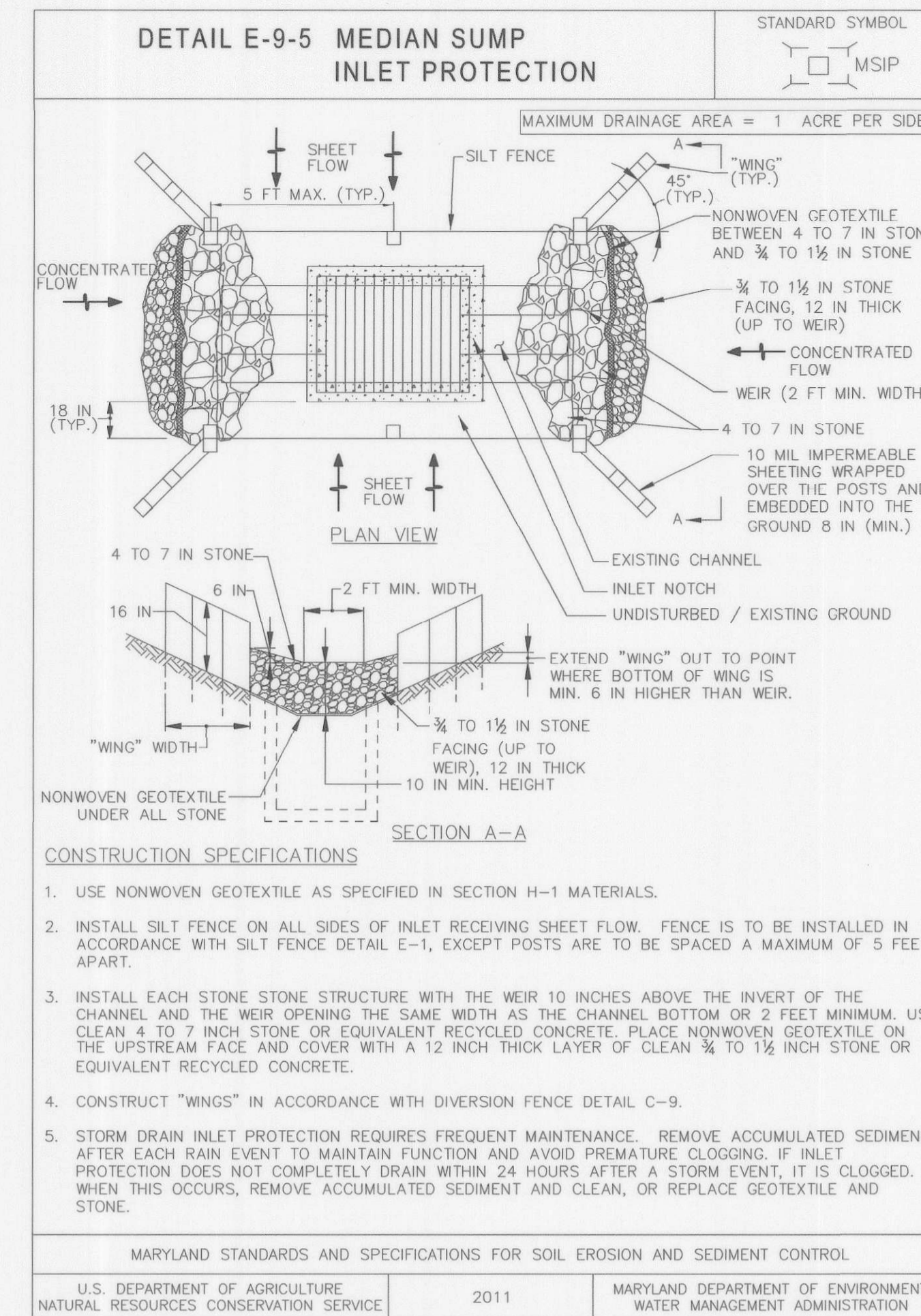
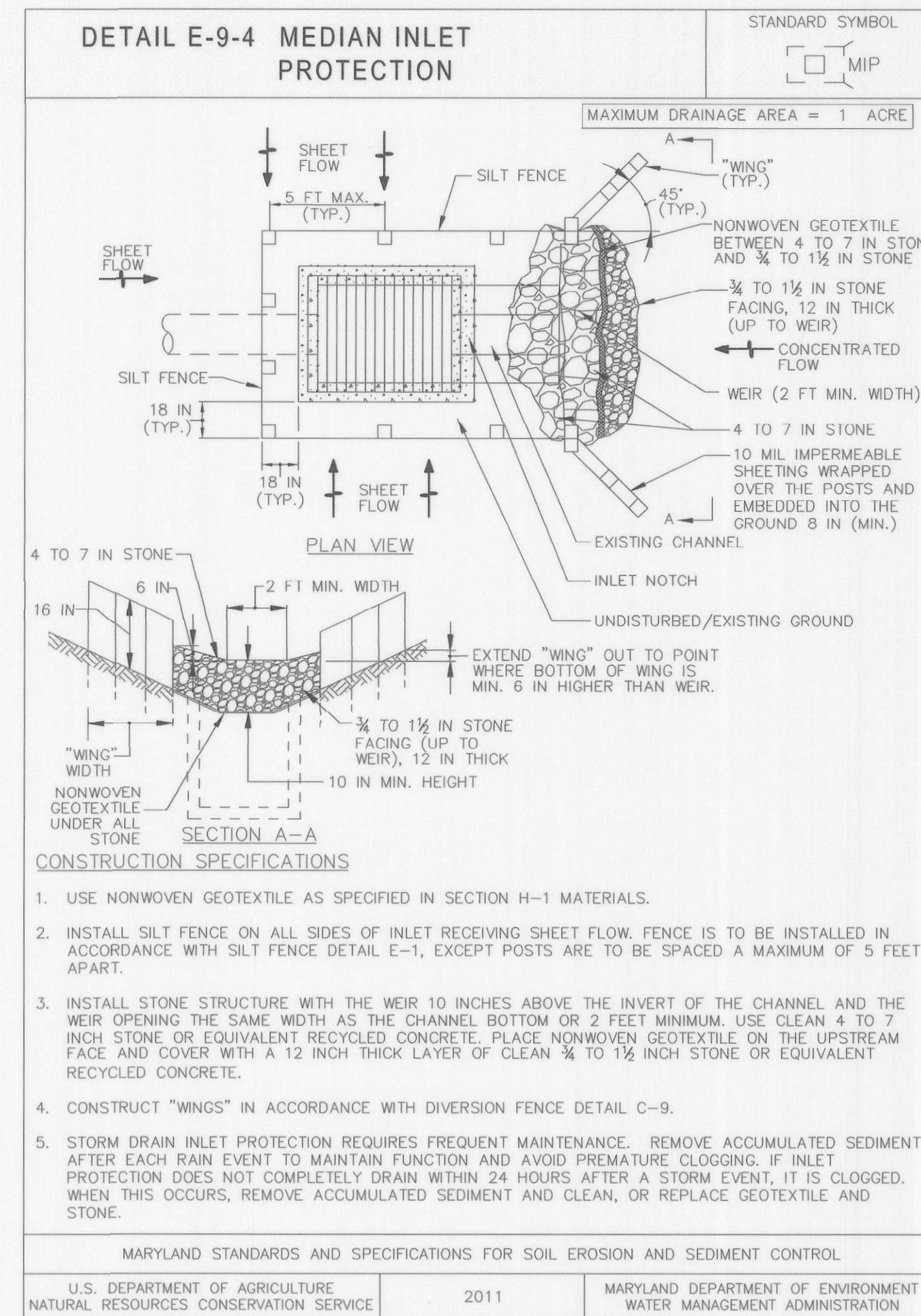
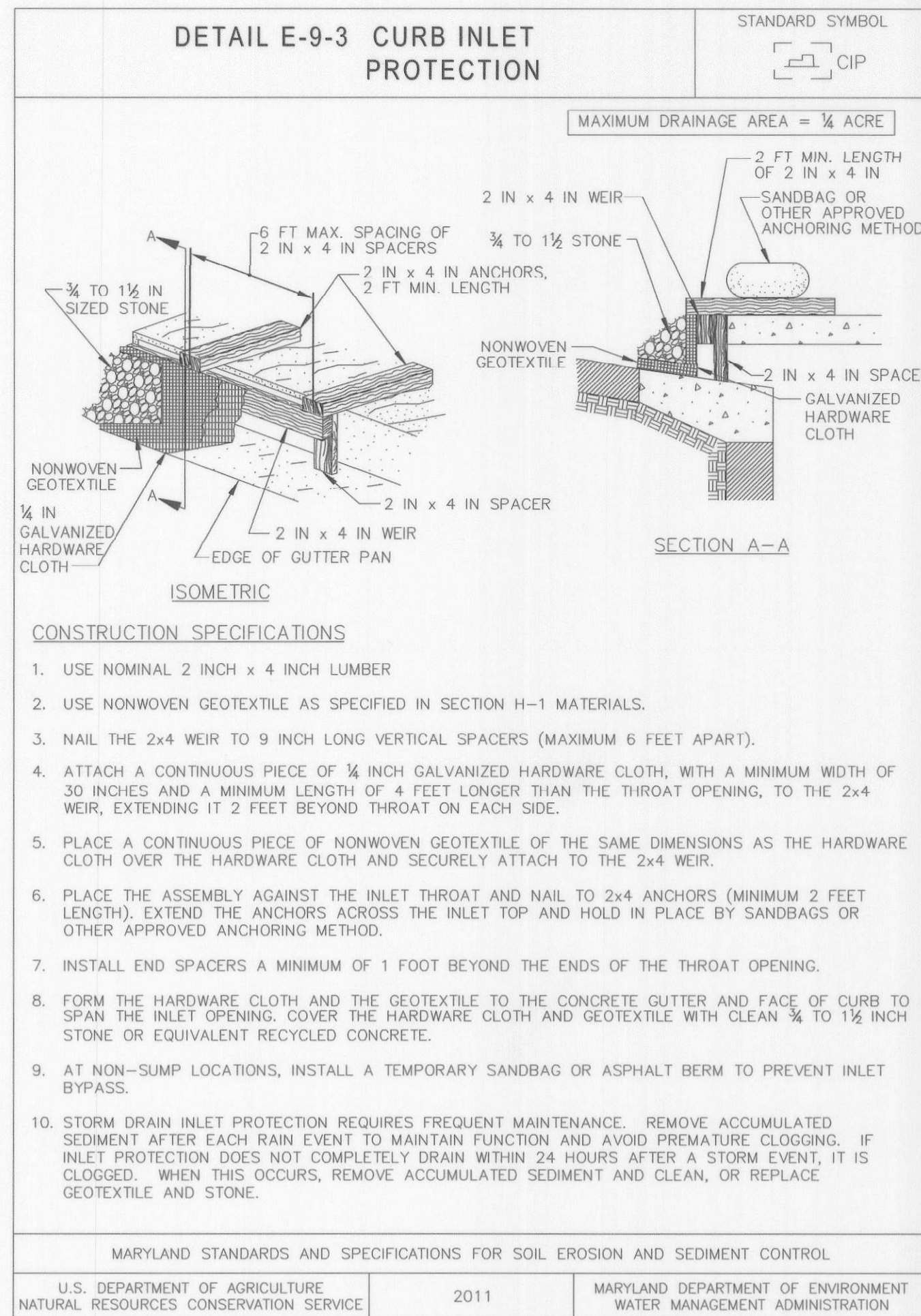
RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A  
EROSION & SEDIMENT CONTROL  
NOTES AND DETAILS

ELECTION DISTRICT 2

HOWARD COUNTY, MARYLAND

ED 3 OF 5  
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SHEET  
30 OF 45





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 HOWARD COUNTY, MARYLAND

*Holger Sevens* 10-18-16  
 DIRECTOR OF PUBLIC WORKS

*Thomas E. Butler* 10/17/16  
 CHIEF, BUREAU OF ENGINEERING

*Bob A.* 10-17-16  
 CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

*M. Meenan* 10/18/2016  
 CHIEF, BUREAU OF HIGHWAYS

**ALA**  
 ATHAVALE, LYSTAD & ASSOCIATES INC.  
 Consulting Engineers Rockville, Maryland

DES:	JK	BY:	NO.	DATE:
DRN:	VAN			
CHK:	MA			
DATE:	3/2016			

CAPITAL PROJECT NO.  
**J-4206-1A**

MAP NO. BLOCK NO.

**RELOCATED MONTEVIDEO ROAD  
 PHASE 1, SEGMENT A  
 EROSION & SEDIMENT CONTROL  
 NOTES AND DETAILS**

ELECTION DISTRICT 2 HOWARD COUNTY, MARYLAND



**DETAIL B-4-6-B TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION**

STANDARD SYMBOL: TSSMS - \* lb/sf (\* INCLUDE SHEAR STRESS)

**CONSTRUCTION SPECIFICATIONS**

- USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
- USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
- SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 1/2 INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
- PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.
- UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDBED SURFACE. AVOID STRETCHING THE MATTING.
- OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
- KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
- STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
- ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

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

TSSMS - TYPE A  
TSSMS - TYPE D

**DETAIL B-4-6-A TEMPORARY SOIL STABILIZATION MATTING CHANNEL APPLICATION**

STANDARD SYMBOL: TSSMC - \* lb/sf (\* INCLUDE SHEAR STRESS)

**CONSTRUCTION SPECIFICATIONS**

- USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
- USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
- SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 1/2 INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
- PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
- UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTERLINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MAT SMOOTHLY AND FIRMLY ON THE SEEDBED SURFACE. AVOID STRETCHING THE MATTING.
- KEY-IN UPSTREAM END OF EACH MAT ROLL BY DIGGING A 6 INCH (MINIMUM) TRENCH AT THE UPSLOPE END OF THE MATTING, PLACING THE ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END.
- OVERLAP OR ABUT THE ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE NEXT DOWNSLOPE MAT.
- STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
- ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

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

TSSMC - TYPE A  
TSSMC - TYPE D

**DETAIL H-4-2 TEMPORARY ACCESS CULVERT**

STANDARD SYMBOL: [Symbol]

**CONSTRUCTION SPECIFICATIONS**

- CONSTRUCTION OR REMOVAL OF A TEMPORARY ACCESS CULVERT WILL NOT BE PERMITTED DURING THE FOLLOWING PERIODS:
 

USE I AND IP	MARCH 1 - JUNE 15
USE II	JUNE 1 - SEPTEMBER 30 AND DECEMBER 16 - MARCH 14
USE III AND IIIIP	OCTOBER 1 - APRIL 30
USE IV	MARCH 1 - MAY 31
SAVA (ALL FLOWING STREAMS)	APRIL 15 - OCTOBER 15
- EXTEND THE CULVERT(S) A MINIMUM OF ONE FOOT BEYOND THE UPSTREAM AND DOWNSTREAM TOE OF THE AGGREGATE PLACED AROUND THE CULVERT.
- PLACE NONWOVEN GEOTEXTILE ON THE STREAM BED AND STREAM BANKS PRIOR TO PLACEMENT OF THE PIPE CULVERT(S) AND AGGREGATE. COVER THE STREAM BED WITH THE GEOTEXTILE AND EXTEND IT A MINIMUM SIX INCHES AND A MAXIMUM OF ONE FOOT BEYOND THE END OF THE CULVERT AND BEDDING MATERIAL. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS. GEOTEXTILE REDUCES SETTLEMENT AND IMPROVES CROSSING STABILITY.
- PLACE CULVERT(S) ON THE NATURAL STREAM BED GRADE TO MINIMIZE INTERFERENCE WITH FISH PASSAGE.
- COVER THE CULVERT WITH A MINIMUM OF ONE FOOT OF WASHED AGGREGATE. FOR MULTIPLE CULVERTS PROVIDE AT LEAST 12 INCHES OF COMPACTED AGGREGATE FILL BETWEEN CULVERTS.
- STABILIZE ALL AREAS DISTURBED DURING CULVERT INSTALLATION WITHIN 24 HOURS OF THE DISTURBANCE IN ACCORDANCE WITH STANDARDS FOR PERMANENT STABILIZATION, SECTION B-4-5, OR TEMPORARY STABILIZATION, SECTION B-4-4, AS APPLICABLE.
- STABILIZE APPROACH TO CROSSING AND KEEP FREE OF EROSION. REPLACE DISPLACED STONE, AND MAINTAIN HIGH FLOW AREAS. REMOVE DEBRIS TRAPPED BY CULVERT. REPLACE DAMAGED PIPE(S). MAINTAIN AREAS ADJACENT TO CROSSING TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
- AFTER THE TEMPORARY CROSSING IS NO LONGER NEEDED, REMOVE IT WITHIN 14 CALENDAR DAYS. IF SUBJECT TO THE USE DESIGNATION CLOSURE, REMOVE AT THE END OF CLOSURE PERIOD. PROTECT STREAM BANKS DURING CULVERT REMOVAL AND STABILIZE ALL DISTURBED AREAS WITH EROSION CONTROL MATTING. ACCOMPLISH REMOVAL OF THE CULVERT AND CLEAN UP OF THE AREA WITHOUT CONSTRUCTION EQUIPMENT WORKING IN THE WATERWAY CHANNEL. STORE ALL REMOVED MATERIALS IN AN APPROVED STAGING AREA.

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

**DETAIL H-4-2 TEMPORARY ACCESS CULVERT**

STANDARD SYMBOL: [Symbol]

**CONSTRUCTION SPECIFICATIONS**

- CONSTRUCTION OR REMOVAL OF A TEMPORARY ACCESS CULVERT WILL NOT BE PERMITTED DURING THE FOLLOWING PERIODS:
 

USE I AND IP	MARCH 1 - JUNE 15
USE II	JUNE 1 - SEPTEMBER 30 AND DECEMBER 16 - MARCH 14
USE III AND IIIIP	OCTOBER 1 - APRIL 30
USE IV	MARCH 1 - MAY 31
SAVA (ALL FLOWING STREAMS)	APRIL 15 - OCTOBER 15
- EXTEND THE CULVERT(S) A MINIMUM OF ONE FOOT BEYOND THE UPSTREAM AND DOWNSTREAM TOE OF THE AGGREGATE PLACED AROUND THE CULVERT.
- PLACE NONWOVEN GEOTEXTILE ON THE STREAM BED AND STREAM BANKS PRIOR TO PLACEMENT OF THE PIPE CULVERT(S) AND AGGREGATE. COVER THE STREAM BED WITH THE GEOTEXTILE AND EXTEND IT A MINIMUM SIX INCHES AND A MAXIMUM OF ONE FOOT BEYOND THE END OF THE CULVERT AND BEDDING MATERIAL. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS. GEOTEXTILE REDUCES SETTLEMENT AND IMPROVES CROSSING STABILITY.
- PLACE CULVERT(S) ON THE NATURAL STREAM BED GRADE TO MINIMIZE INTERFERENCE WITH FISH PASSAGE.
- COVER THE CULVERT WITH A MINIMUM OF ONE FOOT OF WASHED AGGREGATE. FOR MULTIPLE CULVERTS PROVIDE AT LEAST 12 INCHES OF COMPACTED AGGREGATE FILL BETWEEN CULVERTS.
- STABILIZE ALL AREAS DISTURBED DURING CULVERT INSTALLATION WITHIN 24 HOURS OF THE DISTURBANCE IN ACCORDANCE WITH STANDARDS FOR PERMANENT STABILIZATION, SECTION B-4-5, OR TEMPORARY STABILIZATION, SECTION B-4-4, AS APPLICABLE.
- STABILIZE APPROACH TO CROSSING AND KEEP FREE OF EROSION. REPLACE DISPLACED STONE, AND MAINTAIN HIGH FLOW AREAS. REMOVE DEBRIS TRAPPED BY CULVERT. REPLACE DAMAGED PIPE(S). MAINTAIN AREAS ADJACENT TO CROSSING TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
- AFTER THE TEMPORARY CROSSING IS NO LONGER NEEDED, REMOVE IT WITHIN 14 CALENDAR DAYS. IF SUBJECT TO THE USE DESIGNATION CLOSURE, REMOVE AT THE END OF CLOSURE PERIOD. PROTECT STREAM BANKS DURING CULVERT REMOVAL AND STABILIZE ALL DISTURBED AREAS WITH EROSION CONTROL MATTING. ACCOMPLISH REMOVAL OF THE CULVERT AND CLEAN UP OF THE AREA WITHOUT CONSTRUCTION EQUIPMENT WORKING IN THE WATERWAY CHANNEL. STORE ALL REMOVED MATERIALS IN AN APPROVED STAGING AREA.

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

**B-4-1 STANDARDS AND SPECIFICATIONS**

**FOR**

**SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS**

**Definition**

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

**Purpose**

To provide a suitable soil medium for vegetative growth.

**Conditions Where Practice Applies**

Where vegetative stabilization is to be established.

**Criteria**

**A. Soil Preparation**

**1. Temporary Stabilization**

- 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.
- Apply fertilizer and lime as prescribed on the plans.
- Incorporate lime and fertilizer into the top 3 to 5 inches of soil by dicking or other suitable means.

**2. Permanent Stabilization**

- A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
  - Soil pH between 6.0 and 7.0.
  - Soluble sales less than 500 parts per million (ppm).
  - 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 low grass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
  - Soil contains 1.5 percent minimum organic matter by weight.
  - Soil contains sufficient pore space to permit adequate root penetration.
- Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
- Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.

B.12

**B. Topsoiling**

1. Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.

2. Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.

3. Topsoiling is limited to areas having 2:1 or flatter slopes where:

- The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
- 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.
- The original soil to be vegetated contains material toxic to plant growth.
- The soil is so acidic that treatment with limestone is not feasible.

4. Areas having slopes steeper than 2:1 require special consideration and design.

5. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:

- Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1 1/2 inches in diameter.
  - 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.
  - Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
6. Topsoil Application
- Erosion and sediment control practices must be maintained when applying topsoil.
  - Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
  - Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading

B.13

**and seedbed preparation**

**C. Soil Amendments (Fertilizer and Lime Specifications)**

- Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analysis.
- Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Blame may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.
- Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydroseeding) which contains at least 90 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 90 percent will pass through a #100 mesh sieve and 98 to 100 percent will pass through a #200 mesh sieve.
- Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by dicking or other suitable means.
- Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

B.14

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND



DES:	JK	BY	NO.	DATE
DRN:	VAN			
CHK:	MA			
DATE:	3/2016			

CAPITAL PROJECT NO.  
**J-4206-1A**

**RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A  
EROSION & SEDIMENT CONTROL  
NOTES AND DETAILS**

ELECTION DISTRICT 2

HOWARD COUNTY, MARYLAND

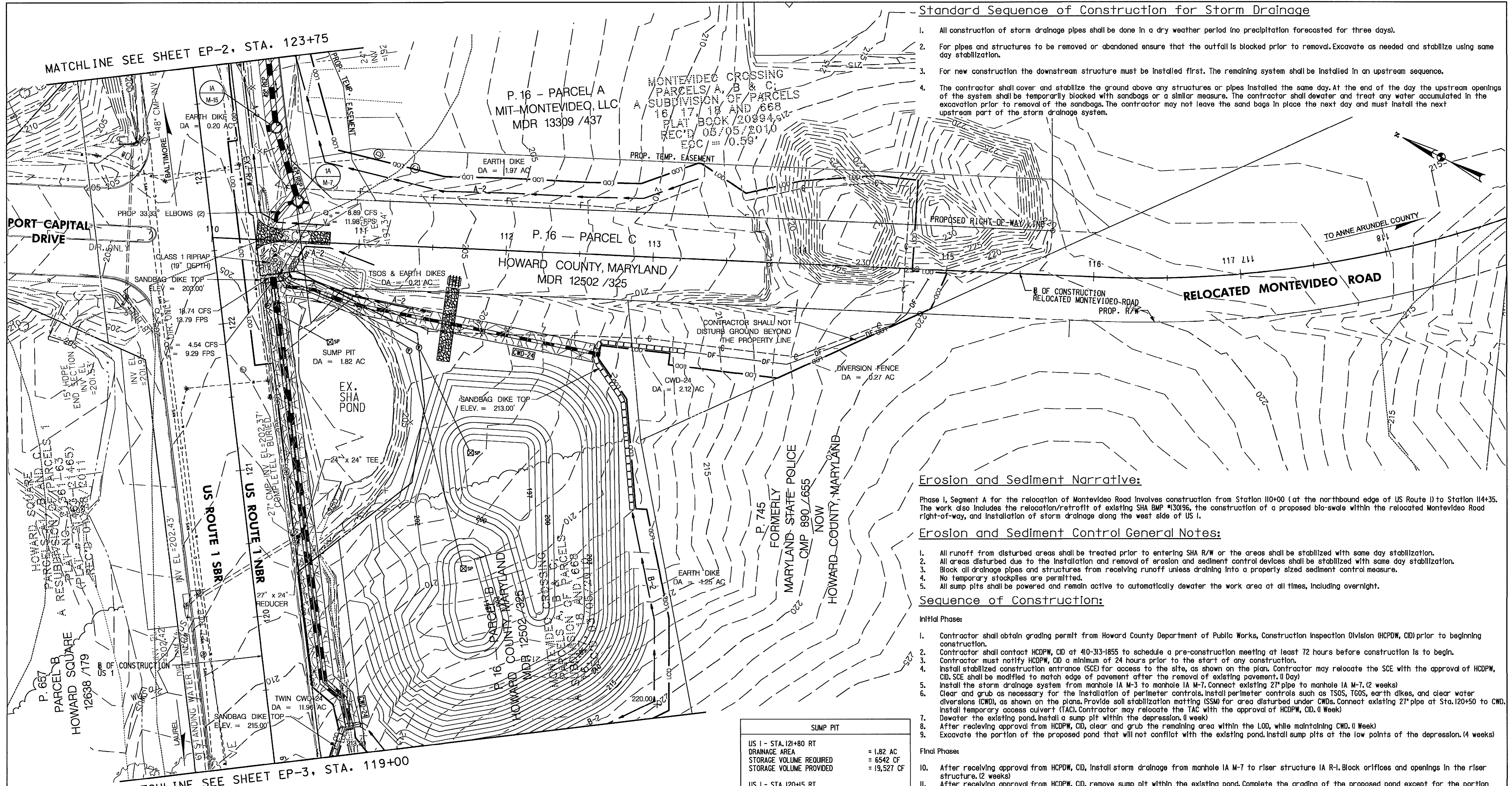
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31



Standard Sequence of Construction for Storm Drainage

- All construction of storm drainage pipes shall be done in a dry weather period (no precipitation forecasted for three days).
- For pipes and structures to be removed or abandoned ensure that the outfall is blocked prior to removal. Excavate as needed and stabilize using same day stabilization.
- For new construction the downstream structure must be installed first. The remaining system shall be installed in an upstream sequence.
- The contractor shall cover and stabilize the ground above any structures or pipes installed the same day. At the end of the day the upstream openings of the system shall be temporarily blocked with sandbags or a similar measure. The contractor shall dewater and treat any water accumulated in the excavation prior to removal of the sandbags. The contractor may not leave the sand bags in place the next day and must install the next upstream part of the storm drainage system.



Erosion and Sediment Narrative:

Phase I, Segment A for the relocation of Montevideo Road involves construction from Station 110+00 (at the northbound edge of US Route 1) to Station 114+35. The work also includes the relocation/retrofit of existing SHA BMP #130196, the construction of a proposed bio-swale within the relocated Montevideo Road right-of-way, and installation of storm drainage along the west side of US 1.

Erosion and Sediment Control General Notes:

- All runoff from disturbed areas shall be treated prior to entering SHA R/W or the areas shall be stabilized with same day stabilization.
- All areas disturbed due to the installation and removal of erosion and sediment control devices shall be stabilized with same day stabilization.
- Block all drainage pipes and structures from receiving runoff unless draining into a properly sized sediment control measure.
- No temporary stockpiles are permitted.
- All sump pits shall be powered and remain active to automatically dewater the work area at all times, including overnight.

Sequence of Construction:

Initial Phase:

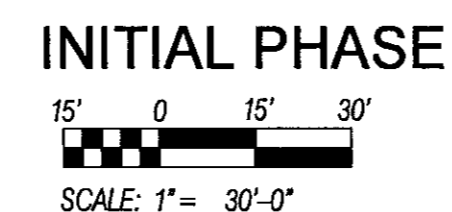
- Contractor shall obtain grading permit from Howard County Department of Public Works, Construction Inspection Division (HCDPW, CID) prior to beginning construction.
- Contractor shall notify HCDPW, CID at 410-313-1855 to schedule a pre-construction meeting at least 72 hours before construction is to begin.
- Contractor must notify HCDPW, CID a minimum of 24 hours prior to the start of any construction.
- Install stabilized construction entrance (SCE) for access to the site, as shown on the plan. Contractor may relocate the SCE with the approval of HCDPW, CID. SCE shall be modified to match edge of pavement after the removal of existing pavement. (1 Day)
- Install the storm drainage system from manhole IA M-3 to manhole IA M-7. Connect existing 27" pipe to manhole IA M-7. (2 weeks)
- Clear and grub as necessary for the installation of perimeter controls such as TSOS, TGS, earth dikes, and clear water diversions (CWD), as shown on the plans. Provide soil stabilization matting (SSM) for area disturbed under CWDs. Connect existing 27" pipe at Sta. 120+50 to CWD. Install temporary access culvert (TAC). Contractor may relocate the TAC with the approval of HCDPW, CID. (1 Week)
- Dewater the existing pond. Install a sump pit within the depression. (1 week)
- After receiving approval from HCDPW, CID, clear and grub the remaining area within the LOD, while maintaining CWD. (1 Week)
- Excavate the portion of the proposed pond that will not conflict with the existing pond. Install sump pits at the low points of the depression. (4 weeks)

Final Phase:

- After receiving approval from HCDPW, CID, install storm drainage from manhole IA M-7 to riser structure IA R-1. Block orifices and openings in the riser structure. (2 weeks)
- After receiving approval from HCDPW, CID, remove sump pit within the existing pond. Complete the grading of the proposed pond except for the portion upstream of the twin CWD-24. Place SSM as indicated on plans. (3 weeks)
- Install storm drainage from endwall IA E-2 to manhole IA M-4. Grade ditch upstream of endwall IA E-2 and stabilize using same day stabilization. (2 weeks)
- Install storm drainage system from proposed end section IA E-1 to manhole M 3-2. Remove temporary connection from existing 27" pipe to the CWD prior to installing manhole M 3-2. (1 Week)
- Install proposed storm drain across US 1 and construct proposed storm drain structures, piping, sidewalk, etc. along southbound US 1 using same day stabilization and SSM - removing/abandoning the existing storm drain beneath Port Capital Drive. Install inlet protection and silt fence for installation of Inlet 14-5 and manhole M 4-2; providing SSM for grading of the upstream area. (6 Weeks)
- Modify twin CWD pipes along US 1 to connect to endwall IA E-2. Modify CWD along relocated Montevideo Road to connect to manhole IA M-4. Modify pump outflow lines to outlet at endwall IA E-2. Block flow into existing 27" pipe at Sta. 110+45 RT and remove connection from the pipe to manhole IA M-7. Remove adjacent TSOS, dikes, and silt fence. Remove/abandon existing 27" pipe as needed. (1 week)
- After receiving approval from HCDPW, CID, construct relocated Montevideo Road, proposed sidewalk, and associated proposed storm drain systems utilizing inlet protection and TGS. (6 Weeks)
- After stabilization of contributing drainage area, construct proposed bio-swale along eastbound relocated Montevideo Road. (1 Week)
- After the SWM pond has been stabilized, remove twin CWD-24 and associated earth dike. Grade swale and remaining portion of SWM pond. The contractor shall not perform more work than what can be stabilized the same day. Stabilization will be done with SSM. Contractor shall do this work under dry weather conditions for 5 days. (1 week)
- After all disturbed areas have been stabilized, remove all remaining erosion/sediment control measures with the approval of HCDPW, CID. (2 Days)

SUMP PIT	
US 1 - STA. 121+80 RT	= 1.82 AC
DRAINAGE AREA	= 6542 CF
STORAGE VOLUME REQUIRED	= 19,527 CF
US 1 - STA. 120+45 RT	= 0.21 AC
US 1 - STA. 120+95 RT	= 1.21 AC
DRAINAGE AREA (COMBINED)	= 205.00'
TOP OF EMBANKMENT (INTERIM GRADE)	= 205.00'
STORAGE VOLUME REQUIRED	= 4372 CF
STORAGE VOLUME PROVIDED	= 119,848 CF

TEMPORARY STONE OUTLET STRUCTURE (TSOS)	
RELOCATED MONTEVIDEO ROAD - STA. 110+55 RT	= 0.21 AC
DRAINAGE AREA	= 201.00'
BOTTOM ELEVATION	= 202.00'
WEIR CREST ELEVATION	= 202.00'
STORAGE VOLUME REQUIRED	= 382 CF
STORAGE VOLUME PROVIDED	= 396 CF
TOP ELEVATION	= 202.50'



PROFESSIONAL ENGINEER CERTIFICATION  
 I HEREBY CERTIFY THAT THIS 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. 17156, EXPIRATION DATE: NOVEMBER 28, 2016

FOR THE HOWARD SOIL CONSERVATION DISTRICT:  
 THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
 [Signature]  
 HOWARD SOIL CONSERVATION DISTRICT  
 DATE: 10/26/16

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

for [Signature] 10-13-16  
 DIRECTOR OF PUBLIC WORKS

[Signature] 10-17-16  
 CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

[Signature] 10/18/2016  
 CHIEF, BUREAU OF ENGINEERING

[Signature] 10/18/2016  
 CHIEF, BUREAU OF HIGHWAYS

**ALA**  
 ATHAVALE, LYSTAD & ASSOCIATES INC.  
 Consulting Engineers  
 Rockville, Maryland

STATE OF MARYLAND  
 MUKHTAR AHMAD  
 No. 17156  
 10/13/16  
 PROFESSIONAL ENGINEER

DES:	JK	BY:	NO.	DATE:
DRN:	VAN			
CHK:	MA			
DATE:	3/2016			

CAPITAL PROJECT NO.  
**J-4206-1A**

RELOCATED MONTEVIDEO ROAD  
 PHASE 1, SEGMENT A  
 EROSION AND SEDIMENT CONTROL PLAN

MAP NO. BLOCK NO. ELECTION DISTRICT 2 HOWARD COUNTY, MARYLAND

SCALE 1"=30'  
 SHEET 33 OF 45  
 EP-1 OF 6



P. 14 PARCEL B  
 BLUE STREAM LLC  
 MDR 4389 /156  
 BLUE STREAM  
 CORPORATE CENTER  
 PARCELS A-G  
 RESUBDIVISION OF BLUE STREAM PROPERTY  
 NON-BUILDABLE (PARCEL B AND  
 A SUBDIVISION OF PARCELS 14 AND 558  
 PLAT BOOKS 17024-17024  
 REC'D. DATE 11/5/2004

P. 644 LOT 1  
 6601 LITTLE RIVER TURNPIKE, LLC  
 MDR 9011 /349

P. 32  
 MUSIC FAIR ROAD LIMITED PARTNERSHIP  
 MDR 10774 /647  
 ORIEN-ELKRIDGE  
 PARCEL A  
 PLAT BOOK 21424-21426  
 REC'D. DATE 01/07/2011

P. 28  
 RUN DEEP, L.L.C.  
 MDR 5315 /448

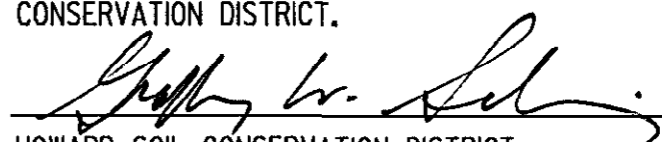
P. 16 - PARCEL A  
 MIT-MONTEVIDEO, LLC  
 MDR 13309 /437

MONTEVIDEO CROSSING  
 PARCELS A, B & C;  
 A SUBDIVISION OF PARCELS  
 16, 17, 18 AND 868  
 PLAT BOOK 20884  
 REC'D 03/05/2010  
 ECC = 0.59'

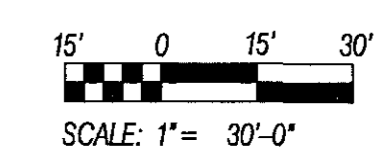
TEMPORARY GABION OUTLET STRUCTURE (TGOS)	
US ROUTE 1 - STA. 124+90 RT	= 0.90 AC
DRAINAGE AREA	= 199.50'
BOTTOM ELEVATION	= 201.75'
WEIR CREST ELEVATION	= 1622 CF
STORAGE VOLUME REQUIRED	= 4617 CF
STORAGE VOLUME PROVIDED	= 202.50'
TOP ELEVATION	= 202.87'
TRANSITION DIKE HEIGHT	= 95 LF
TRANSITION DIKE LENGTH (NORTH)	= 165 LF
TRANSITION DIKE LENGTH (SOUTH)	= 165 LF

• NO EXCAVATION REQUIRED

PROFESSIONAL ENGINEER CERTIFICATION  
 I HEREBY CERTIFY THAT THIS 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. 17158 • EXPIRATION DATE: NOVEMBER 28, 2016

FOR THE HOWARD SOIL CONSERVATION DISTRICT:  
 THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL  
 CONSERVATION DISTRICT.  
  
 HOWARD SOIL CONSERVATION DISTRICT  
 DATE: 10/24/16

INITIAL PHASE

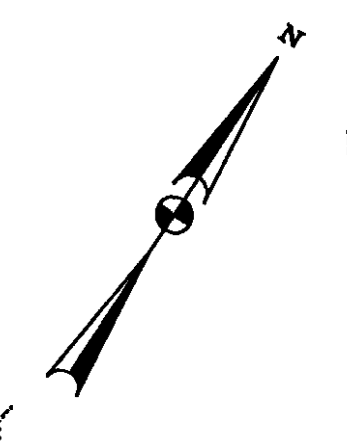


EP-2 OF 6


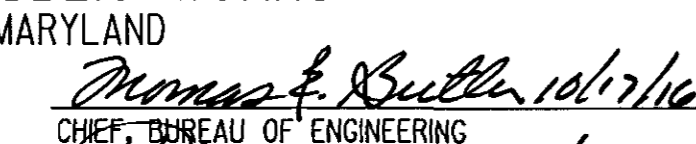

MATCHLINE SEE SHEET EP-1, STA. 123+75

TO LAUREL


TO BALTIMORE



P:\2016\MonteVideo\LA\Initial.dwg

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  DIRECTOR OF PUBLIC WORKS 10-18-16		 CHIEF, BUREAU OF ENGINEERING  CHIEF, BUREAU OF HIGHWAYS 10/18/2016	
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**ALA**  
 ATHAVALE, LYSTAD & ASSOCIATES INC.  
 Consulting Engineers  
 Rockville, Maryland

STATE OF MARYLAND  
  
 M. A. M.  
 No. 17158  
 11/28/2016  
 PROFESSIONAL ENGINEER

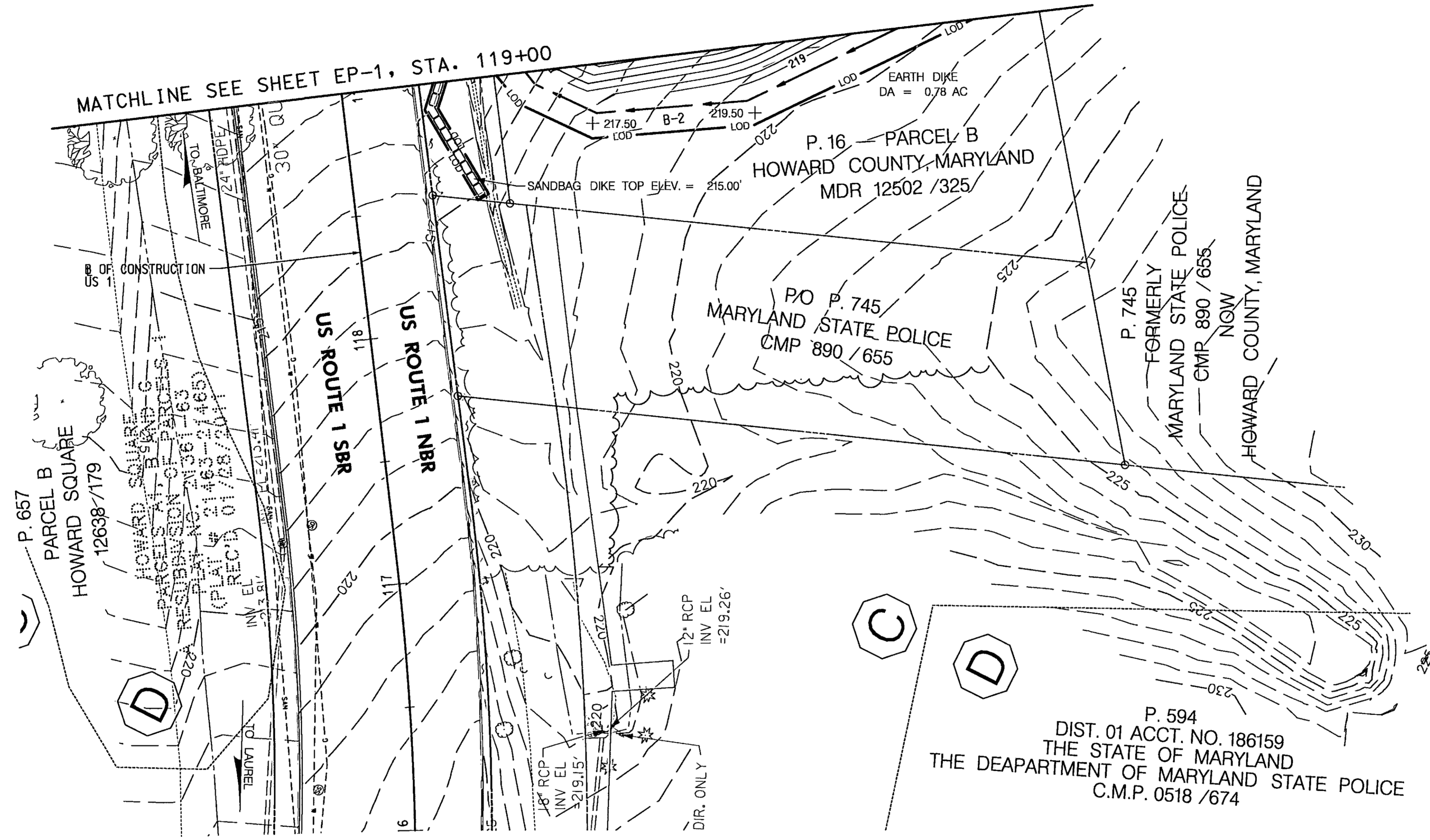
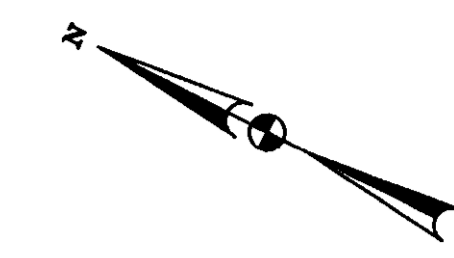
DES:	JK	BY:		NO.		DATE:	
DRN:	VAN	CHK:	MA	DATE:	3/2016		

CAPITAL PROJECT NO.  
**J-4206-1A**

RELOCATED MONTEVIDEO ROAD  
 PHASE 1, SEGMENT A  
**EROSION AND SEDIMENT CONTROL PLAN**  
 ELECTION DISTRICT 2  
 HOWARD COUNTY, MARYLAND

SCALE  
 1"=30'  
 SHEET  
 34 OF 45

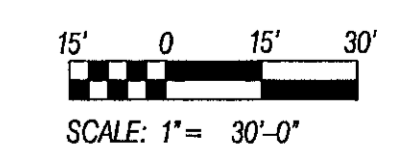




PROFESSIONAL ENGINEER CERTIFICATION  
 I HEREBY CERTIFY THAT THIS DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND LICENSE NO. 17156, EXPIRATION DATE: NOVEMBER 28, 2016

FOR THE HOWARD SOIL CONSERVATION DISTRICT:  
 THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
*[Signature]*  
 HOWARD SOIL CONSERVATION DISTRICT DATE 10/20/16

INITIAL PHASE



EP-3 OF 6

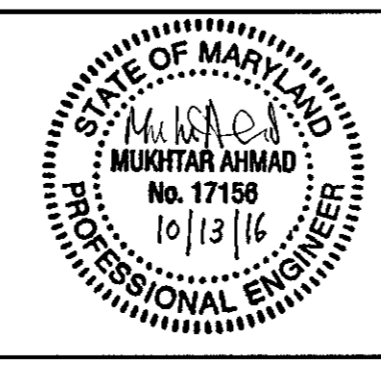
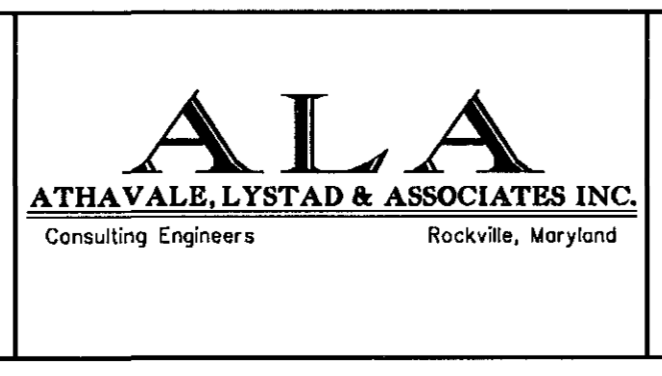
DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

*[Signature]* 10.18.16  
 DIRECTOR OF PUBLIC WORKS

*[Signature]* 10.17.16  
 CHIEF, BUREAU OF ENGINEERING

*[Signature]* 10.17.16  
 CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

*[Signature]* 10/18/2016  
 CHIEF, BUREAU OF HIGHWAYS



DES:	BY:	NO.	DATE
JK			
DRN:	VAN		
CHK:	MA		
DATE:	3/2016		

CAPITAL PROJECT NO.  
 J-4206-1A

MAP NO. BLOCK NO.

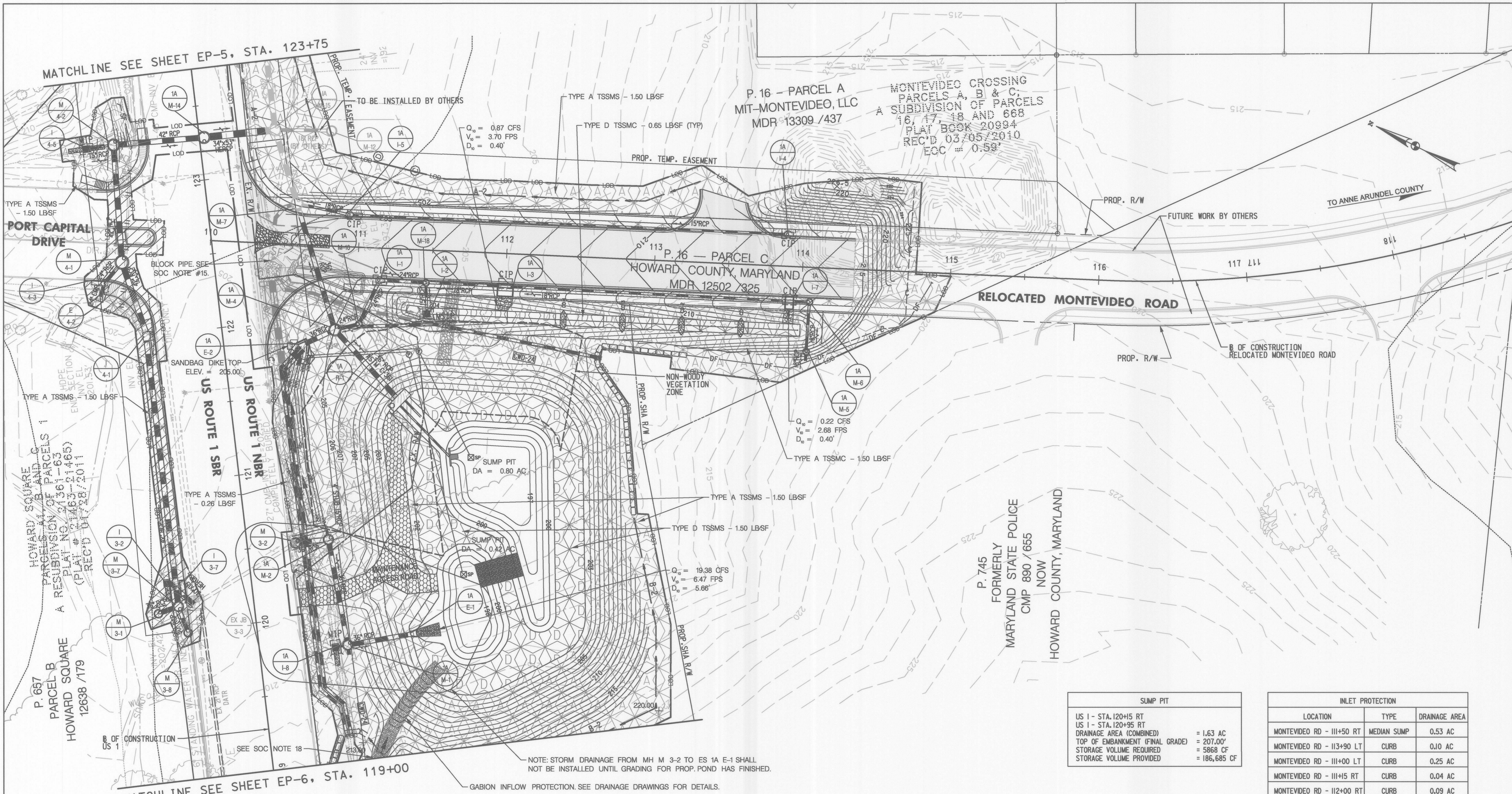
RELOCATED MONTEVIDEO ROAD  
 PHASE 1, SEGMENT A  
 EROSION AND SEDIMENT CONTROL PLAN

ELECTION DISTRICT 2 HOWARD COUNTY, MARYLAND

SCALE 1"=30'  
 SHEET 35 OF 45

EP-3003 Montevideo-HL.mxd.dgn 10/17/2016





MATCHLINE SEE SHEET EP-5, STA. 123+75

MATCHLINE SEE SHEET EP-6, STA. 119+00

P. 16 - PARCEL A  
MIT-MONTEVIDEO, LLC  
MDR 13309 / 437

P. 16 - PARCEL C  
HOWARD COUNTY, MARYLAND  
MDR 12502 / 325

P. 745  
FORMERLY  
MARYLAND STATE POLICE  
CMP 890 / 655  
NOW  
HOWARD COUNTY, MARYLAND

MONTEVIDEO CROSSING  
PARCELS A, B & C,  
A SUBDIVISION OF PARCELS  
16, 17, 18 AND 668  
PLAT BOOK 20994  
REC'D 03/05/2010  
ECC = 0.58'

$Q_p = 0.87$  CFS  
 $V_p = 3.70$  FPS  
 $D_p = 0.40'$

$Q_p = 0.22$  CFS  
 $V_p = 2.68$  FPS  
 $D_p = 0.40'$

$Q_p = 19.38$  CFS  
 $V_p = 6.47$  FPS  
 $D_p = 5.66'$

NOTE: STORM DRAINAGE FROM MH M 3-2 TO ES 1A E-1 SHALL NOT BE INSTALLED UNTIL GRADING FOR PROP. POND HAS FINISHED.

GABION INFLOW PROTECTION. SEE DRAINAGE DRAWINGS FOR DETAILS.

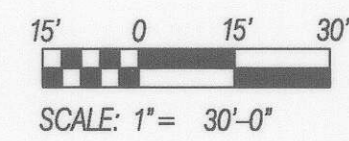
SUMP PIT	
US 1 - STA. 120+5 RT	
US 1 - STA. 120+95 RT	
DRAINAGE AREA (COMBINED)	= 1.63 AC
TOP OF EMBANKMENT (FINAL GRADE)	= 207.00'
STORAGE VOLUME REQUIRED	= 5868 CF
STORAGE VOLUME PROVIDED	= 186,685 CF

INLET PROTECTION		
LOCATION	TYPE	DRAINAGE AREA
MONTEVIDEO RD - 111+50 RT	MEDIAN SUMP	0.53 AC
MONTEVIDEO RD - 113+90 LT	CURB	0.10 AC
MONTEVIDEO RD - 111+00 LT	CURB	0.25 AC
MONTEVIDEO RD - 111+5 RT	CURB	0.04 AC
MONTEVIDEO RD - 112+00 RT	CURB	0.09 AC
MONTEVIDEO RD - 113+90 RT	CURB	0.10 AC
US 1 - 119+80 RT	MEDIAN	0.07 AC
US 1 - 123+30 LT	MEDIAN	0.52 AC

PROFESSIONAL ENGINEER CERTIFICATION  
I HEREBY CERTIFY THAT THIS 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. 17156, EXPIRATION DATE: NOVEMBER 28, 2016

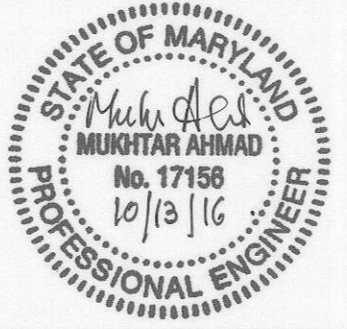
FOR THE HOWARD SOIL CONSERVATION DISTRICT:  
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
*Shelly W. Selig*  
HOWARD SOIL CONSERVATION DISTRICT DATE 10/20/16

FINAL PHASE



EP-4 OF 6

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND  
Helen Scurran 10-13-16  
DIRECTOR OF PUBLIC WORKS  
Thomas P. Butler 10/17/16  
CHIEF, BUREAU OF ENGINEERING  
10-17-16  
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION  
CHIEF, BUREAU OF HIGHWAYS



DES:	BY:	NO.	DATE
JK			
DRN:	VAN		
CHK:	MA		
DATE:	3/2016		

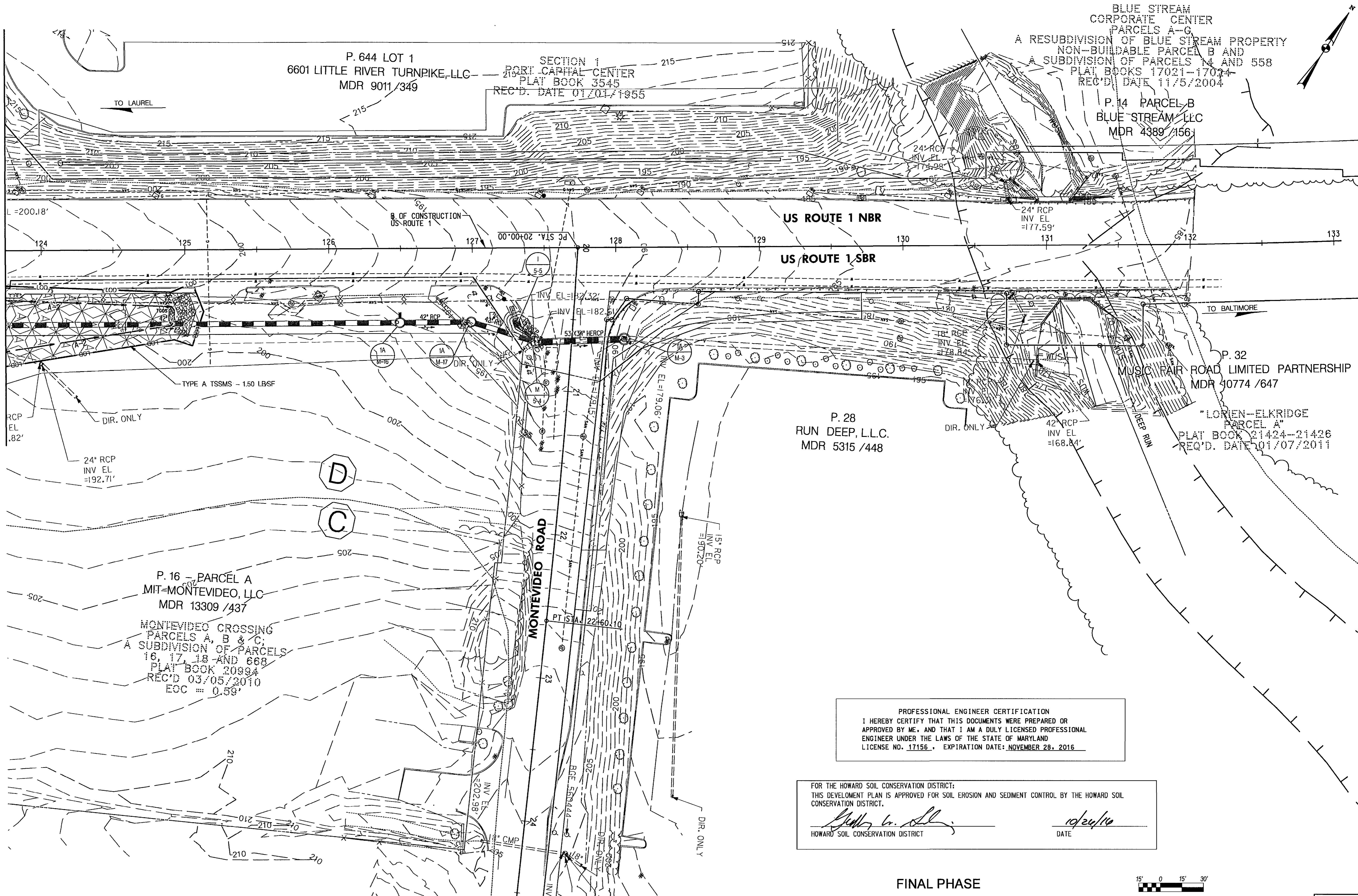
CAPITAL PROJECT NO.  
J-4206-1A

RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A  
EROSION AND SEDIMENT CONTROL PLAN  
ELECTION DISTRICT 2  
HOWARD COUNTY, MARYLAND

SCALE  
1"=30'  
SHEET  
36 OF 45



MATCHLINE SEE SHEET EP-4, STA. 123+75



BLUE STREAM CORPORATE CENTER PARCELS A-G  
A RESUBDIVISION OF BLUE STREAM PROPERTY  
NON-BUILDABLE PARCEL B AND  
A SUBDIVISION OF PARCELS M AND 55B  
PLAT BOOKS 17021-17024  
REC'D. DATE 11/5/2004

P. 644 LOT 1  
6601 LITTLE RIVER TURNPIKE, LLC  
MDR 9011 /349

SECTION 1  
ROBEI CAPITAL CENTER  
PLAT BOOK 3545  
REC'D. DATE 01/01/1955

P. 14 PARCEL B  
BLUE STREAM LLC  
MDR 4389 /156

US ROUTE 1 NBR  
US ROUTE 1 SBR

P. 32  
MUSIC FAIR ROAD LIMITED PARTNERSHIP  
MDR 40774 /647

P. 28  
RUN DEEP, L.L.C.  
MDR 5315 /448

"LOREN-ELKRIDGE  
PARCEL A"  
PLAT BOOK 21424-21428  
REC'D. DATE 01/07/2011

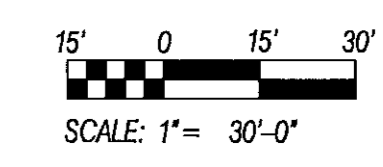
P. 16 - PARCEL A  
MIT-MONTEVIDEO, LLC  
MDR 13309 /437

MONTEVIDEO CROSSING  
PARCELS A, B & C;  
A SUBDIVISION OF PARCELS  
16, 17, 18 AND 66B  
PLAT BOOK 20894  
REC'D 03/05/2010  
ECC = 0.59'

PROFESSIONAL ENGINEER CERTIFICATION  
I HEREBY CERTIFY THAT THIS 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. 17156, EXPIRATION DATE: NOVEMBER 28, 2016

FOR THE HOWARD SOIL CONSERVATION DISTRICT:  
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL  
CONSERVATION DISTRICT.  
*[Signature]*  
HOWARD SOIL CONSERVATION DISTRICT  
DATE: 10/24/16

FINAL PHASE



EP-5 OF 6

15  
10/13/2016

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Halgan Seaman* 10.13.16  
DIRECTOR OF PUBLIC WORKS

*Thomas E. Butler* 10/13/16  
CHIEF, BUREAU OF ENGINEERING

*Michelle* 10/18/2016  
CHIEF, BUREAU OF HIGHWAYS

**ALA**  
ATHAVALE, LYSTAD & ASSOCIATES INC.  
Consulting Engineers  
Rockville, Maryland

STATE OF MARYLAND  
MUKHTAR AHMAD  
No. 17156  
10/13/16  
PROFESSIONAL ENGINEER

DES:	JK	BY	NO.	DATE
DRN:	VAN			
CHK:	MA			
DATE:	3/2016			

CAPITAL PROJECT NO.  
**J-4206-1A**

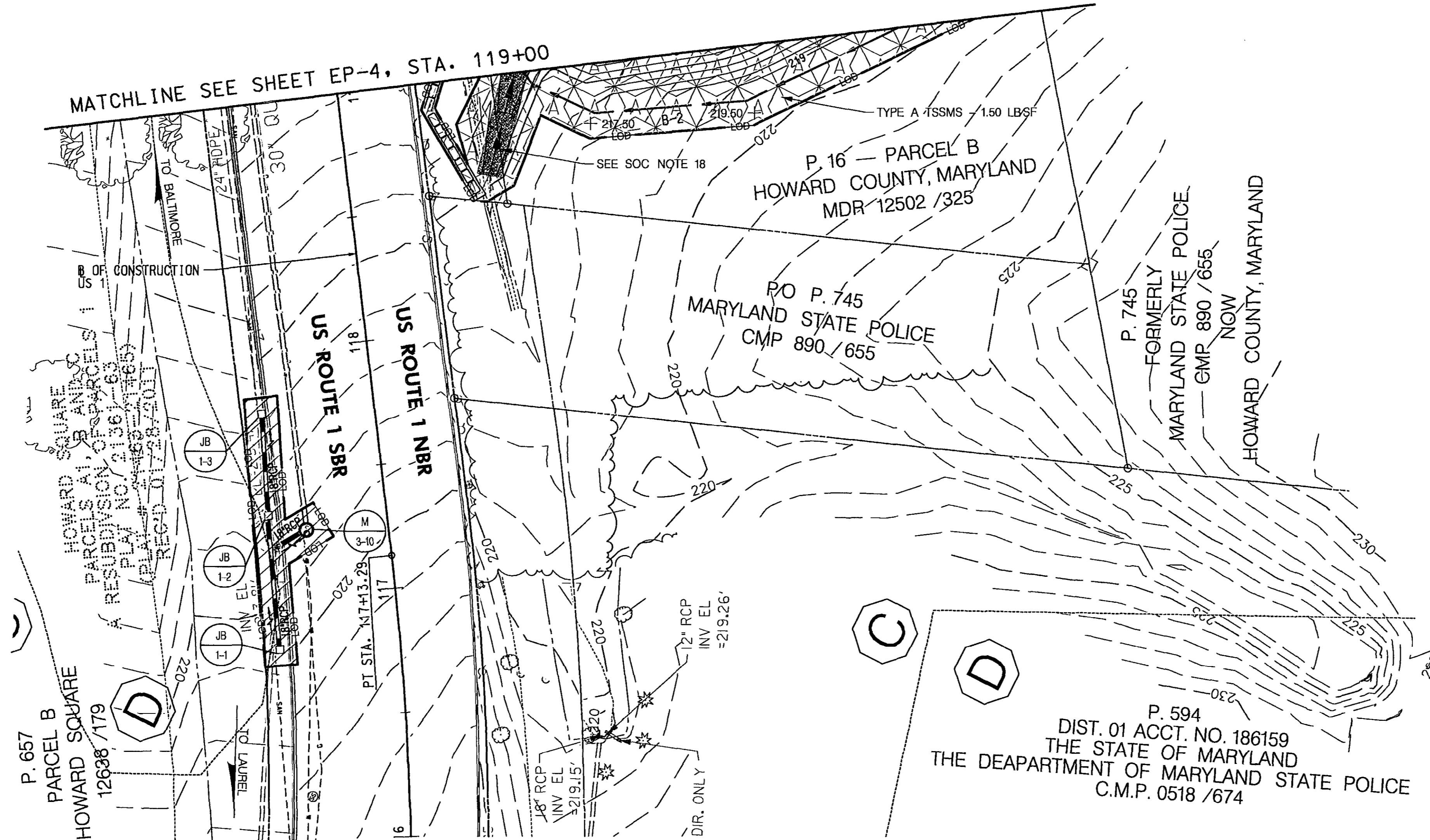
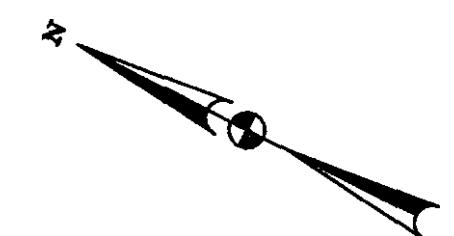
RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A  
EROSION AND SEDIMENT CONTROL PLAN

ELECTION DISTRICT 2  
HOWARD COUNTY, MARYLAND

SCALE  
1"=30'

SHEET  
37 OF 45





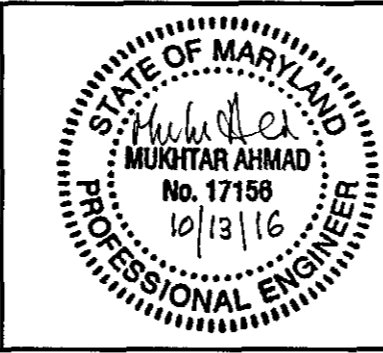
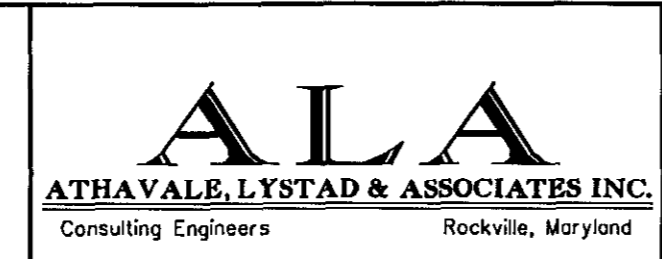
PROFESSIONAL ENGINEER CERTIFICATION  
 I HEREBY CERTIFY THAT THIS DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND LICENSE NO. 17156, EXPIRATION DATE: NOVEMBER 28, 2016

FOR THE HOWARD SOIL CONSERVATION DISTRICT:  
 THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
*[Signature]*  
 HOWARD SOIL CONSERVATION DISTRICT DATE: 10/20/16

FINAL PHASE  
 SCALE: 1" = 30'-0"

EP-6 OF 6

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND  
*[Signature]* 10-18-16  
 DIRECTOR OF PUBLIC WORKS  
*[Signature]* 10-17-16  
 CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION  
*[Signature]* 10/17/16  
 CHIEF, BUREAU OF ENGINEERING  
*[Signature]* 10/18/2016  
 CHIEF, BUREAU OF HIGHWAYS



DES:	JK	BY	NO.	DATE
DRN:	VAN			
CHK:	MA			
DATE:	3/2016			

CAPITAL PROJECT NO.  
 J-4206-1A

RELOCATED MONTEVIDEO ROAD  
 PHASE 1, SEGMENT A  
 EROSION AND SEDIMENT CONTROL PLAN  
 ELECTION DISTRICT 2  
 HOWARD COUNTY, MARYLAND

SCALE  
 1"=30'  
 SHEET  
 38 OF 45



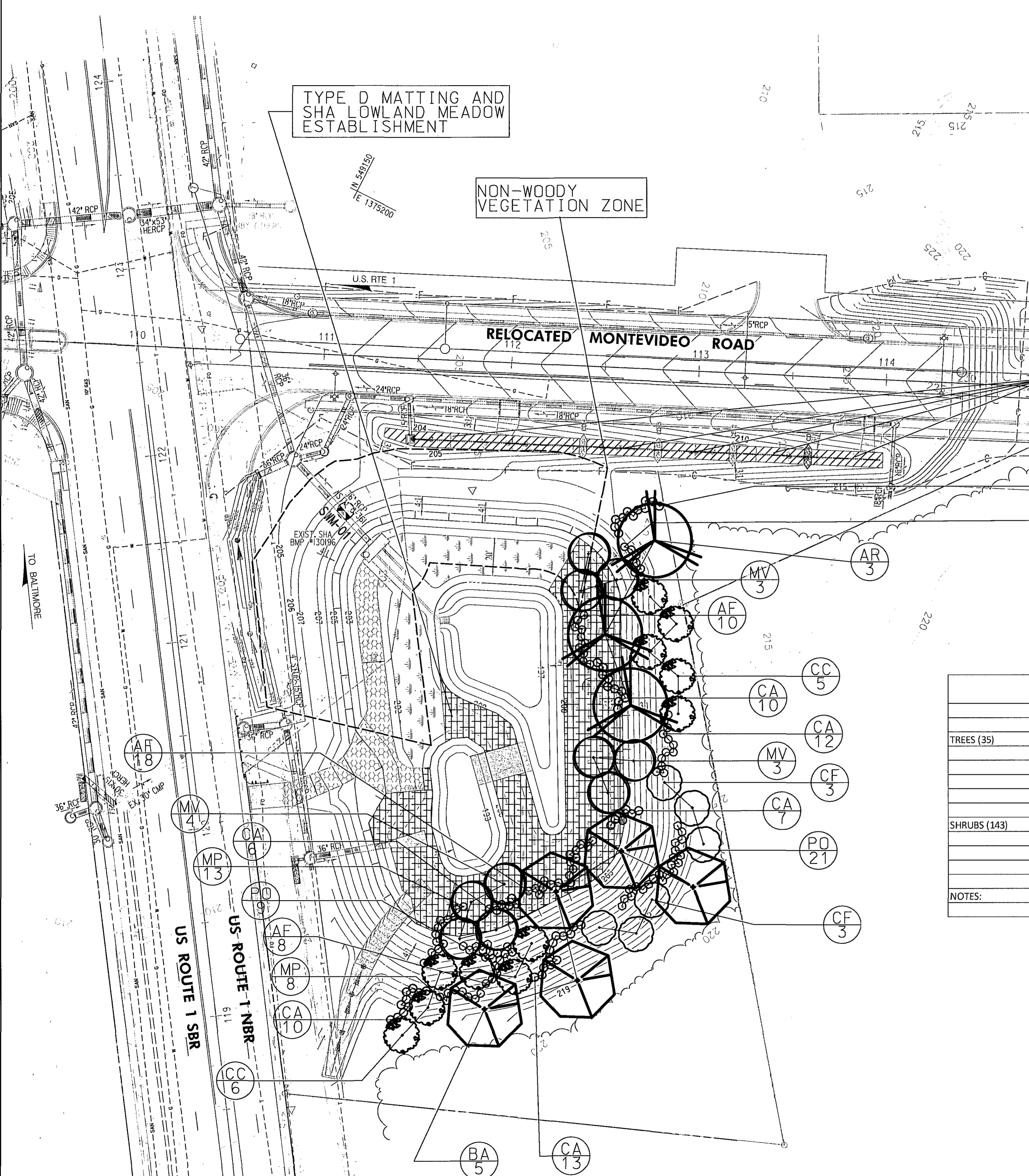
PROFESSIONAL CERTIFICATION:  
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.  
 LICENSE NO. 15466, EXPIRATION DATE: JULY 15, 2017

TYPE D MATTING AND SHA LOWLAND MEADOW ESTABLISHMENT

NON-WOODY VEGETATION ZONE

SHA BSM MEADOW ESTABLISHMENT WITH TYPE D MATTING; SEE SWM D-6 FOR QUANTITIES

RELOCATED MONTEVIDEO ROAD



PLANTING SCHEDULE							
	KEY	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING/REMARKS
TREES (35)	AR	3	<i>Acer rubrum</i> 'October Glory'	OCTOBER GLORY RED MAPLE	2" CAL.	B&B	40' O.C.
	BN	5	<i>Betula nigra</i>	RIVER BIRCH	2" CAL.	B&B	40' O.C.
	CC	11	<i>Cercis canadensis</i>	EASTERN REDBUD	1.5" CAL.	B&B	20' O.C.
	CF	6	<i>Cornus florida</i>	FLOWERING DOGWOOD	1.5" CAL.	B&B	20' O.C.
	MV	10	<i>Magnolia virginiana</i>	SWEETBAY MAGNOLIA	1.5" CAL.	B&B	20' O.C.
SHRUBS (143)	AF	36	<i>Amorpha fruticosa</i>	FALSE INDIGO BUSH	36" HGT	NO. 5 CONTAINER GROWN	4' O.C.
	CA	49	<i>Cornus amomum</i>	SILKY DOGWOOD	36" HGT	NO. 5 CONTAINER GROWN	4' O.C.
	MP	28	<i>Morella pensylvanica</i>	NORTHERN BAYBERRY	36" HGT	NO. 5 CONTAINER GROWN	4' O.C.
	PO	30	<i>Physocarpus opulifolius</i>	COMMON NINEBARK	36" HGT	NO. 5 CONTAINER GROWN	4' O.C.
NOTES:	BSMME	220 S.Y.		SHA BSM MEADOW ESTABLISHMENT			SEE PLAN FOR EXTENTS
	LME	1200 S.Y.		SHA LOWLAND MEADOW ESTABLISHMENT			SEE PLAN FOR EXTENTS

LEGEND	
	LOD
	PERMANENT WATER ELEVATION
	10 YEAR WATER ELEVATION
	SHA BIORETENTION SOIL MIX MEADOW ESTABLISHMENT (BSMME)
	SHA LOWLAND MEADOW ESTABLISHMENT (LME)

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND  
 Director of Public Works: *Holger Seciano* 10/18/16  
 Chief, Bureau of Engineering: *Thomas E. Buller* 10/17/16  
 Chief, Transportation and Special Projects Division: *[Signature]* 10-17-16  
 Chief, Bureau of Highways: *Meunier* 10/18/2016



DES: TLK	BY	NO.	DATE
DRN: AMP			
CHK: SJR			
DATE: 10/2016			

CAPITAL PROJECT NO.  
 J-4206-1A

STORMWATER MANAGEMENT LANDSCAPE PLAN  
 RELOCATED MONTEVIDEO ROAD  
 PHASE 1, SEGMENT A  
 ELECTION DISTRICT 2  
 HOWARD COUNTY, MARYLAND

LD-1  
 SCALE 1"=30'  
 SHEET 39 OF 45




SHA LANDSCAPE NOTES

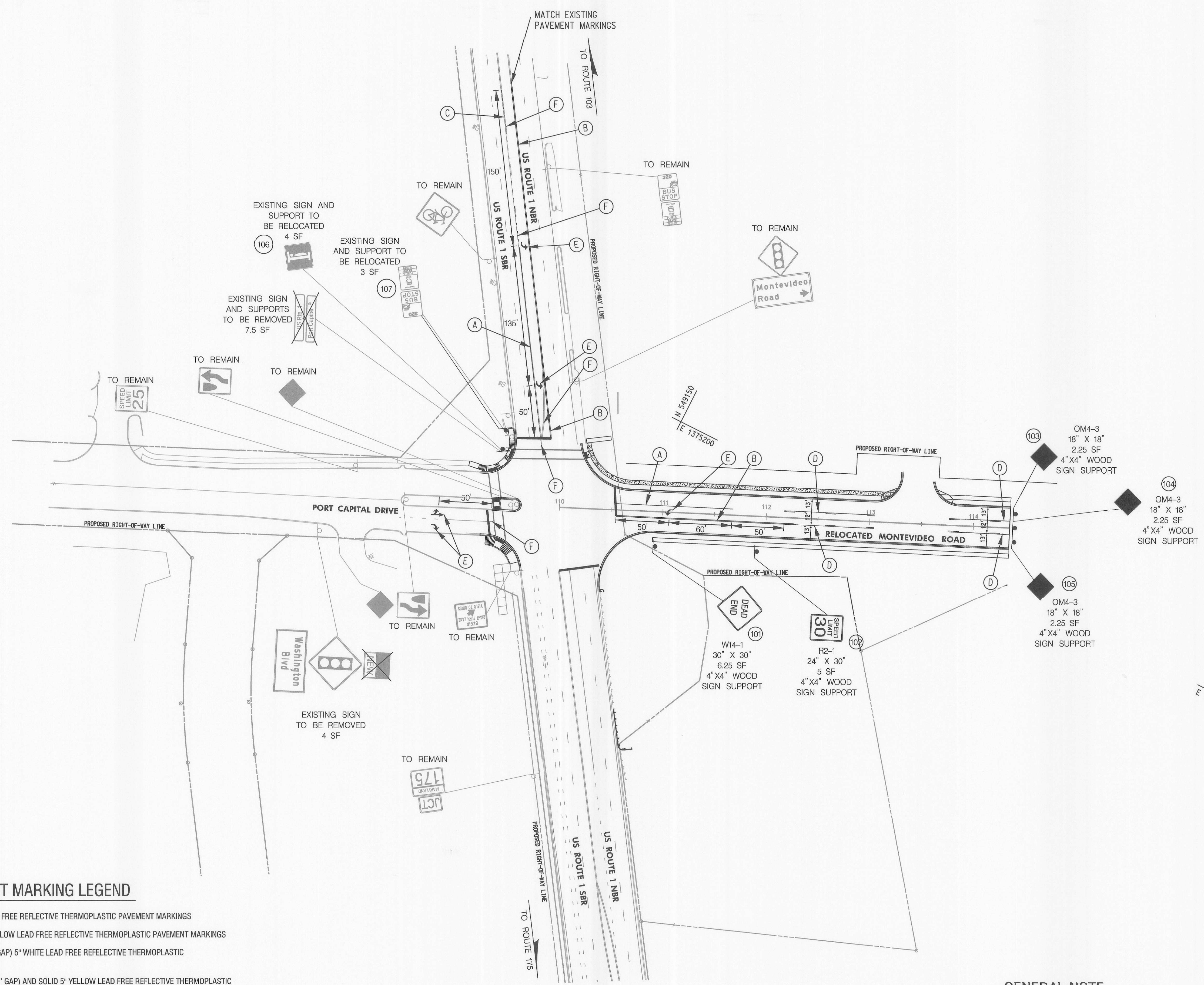
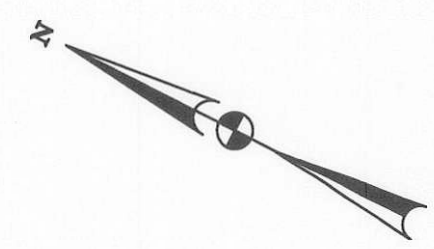
- 7.1 SHA LANDSCAPE NOTES. *Landscape construction within the right of way of the Maryland State Highway Administration (SHA) shall conform to these Notes. For guidance regarding plan adjustments, refer to SHA Landscape Design Guide and SHA Landscape Estimating Manual at <http://www.roads.maryland.gov/index.aspx?PageId=25>*
- 7.2 SHA Standard Specifications. *Landscape construction shall conform to Sections 701 through 716, and landscape materials shall conform to Section 920 of the SHA 2008 Standard Specifications for Construction and Materials, including all revisions and supplements, and as specified in these notes. These requirements shall supersede all other specifications for work within the SHA right of way.*
- All SHA specifications for landscaping and landscape materials published in 2008 have been repealed. Current Specifications are at <http://www.roads.maryland.gov/index.aspx?PageId=44>*
- 7.3 Erosion and Sediment Control Manager (ESCM). *Soil disturbance such as grading, excavation, soil placement or other activities that involve soil disturbance within the SHA right of way shall be supervised by an ESCM with a valid SHA "Yellow Card" in conformance with SHA 2008 Specifications for Construction and Materials and any applicable Erosion and Sediment Control Permit.*
- 7.4 SHA Standard Details for Trees, Shrubs and Planting Beds. *The installation of trees, shrubs, planting beds and other landscape construction in the SHA right of way related to Section 710 of the SHA Standard Specifications shall conform to the "SHA Book of Standards for Highway & Incidental Structures - Category 7." Current SHA Standard Details are at <http://apps.roads.maryland.gov/BusinessWithSHA/bizstds/Specs/desManualStdPub/publicationsonline/ohd/books/tdtoccat7.asp>*
- 7.5 Temporary Stabilization shall be installed in conformance with Section 704 to ensure that areas of soil disturbance are protected from wind, rainfall and flowing water until permanent stabilization is installed.
1. *Temporary Mulch, either as temporary straw mulch or temporary matting mulch, shall be installed at the end of each working day to provide "same day stabilization" unless other approved stabilization is installed.*
  2. *Temporary straw mulch shall be installed on areas and slopes flatter than 4:1; temporary matting mulch shall be applied on slopes 4:1 and steeper, and to areas within channels.*
  3. *Temporary Seed shall be installed in lieu of Temporary Mulch when soil redisturbance is expected more than 30 days after soil disturbance. The required application rate of 15-30-15 fertilizer shall be reduced to 150 lbs per acre.*
- 7.7 Excavation and Debris Removal. *Debris related to the demolition of sidewalks, driveways, curbs, trees, stumps, roots, fencing, pipes, and other materials that may interfere with landscape installation or future maintenance within the SHA right of way shall be excavated as necessary for their complete removal and disposal.*

- 7.8 Soil Restoration. *Areas of pavement removal, excavation or drilling in landscaped areas shall remove excavated debris and restore the subgrade with the approved subsoil and topsoil placed in conformance with Section 701 of the SHA Standard Specifications.*
1. *A layer of approved topsoil at least 4 inch depth shall be placed on all disturbed areas flatter than 2:1 and in all channels prior to seeding, sodding or other landscaping, unless otherwise specified.*
  2. *A layer of approved topsoil at least 2 inch depth shall be placed on all disturbed areas 2:1 and steeper prior to seeding, sodding or other landscaping, unless otherwise specified.*
- 7.10 Turfgrass Establishment shall be performed in all disturbed areas of the SHA right of way, or within the areas indicated in the plans, in conformance with Section 705 of the SHA Standard Specifications. *The required application rate of 20-16-12 fertilizer shall be reduced to 200 lbs per acre, and no fertilizer shall be applied from Nov. 15 to Mar 1.*
- 7.11 Soil Stabilization Matting shall be installed in conformance with Section 709 of the SHA Standard Specifications, in conjunction with Turfgrass Establishment per Section 705 or Meadow Establishment as follows:
1. *Areas Flatter than 6:1. Type A or Type E matting may be installed in lieu of straw mulch and hydromulch binder in conjunction with Turfgrass Establishment.*
  2. *Areas Steeper than 6:1 and Flatter than 4:1. Type A or Type E matting shall be installed in lieu of straw mulch and hydromulch binder in conjunction with Turfgrass Establishment, unless delineated and noted otherwise on the plans.*
  3. *Channels, Stormwater Management Facilities, and Slopes 4:1 and Steeper. Type A soil stabilization matting shall be installed in lieu of straw mulch and hydromulch binder in conjunction with Turfgrass Establishment, unless delineated and noted otherwise on the plans.*
  4. *In areas of Meadow Establishment with Type D Soil Stabilization Matting, the matting shall be installed in lieu of straw mulch and hydromulch binder within the delineated areas.*
- 7.12 Meadow Establishment or Shrub Seeding Establishment shall be performed in areas of the SHA right of way as indicated in the plan, in conformance with Section 706 and 707 of the SHA Standard Specifications.
- 7.15 Trees and Other Plant Material Installation. *Trees, shrubs, perennials, annuals, bulbs, landscape beds and similar materials installed in the SHA right of way shall be installed in conformance with Section 710 and 711 of the SHA Standard Specifications. Tree and shrubs shall be pruned at the time of installation to ensure sidewalk clearance for pedestrians is maintained to a height of 8 feet. No tree or shrub shall be installed within 3 feet of curbs, sidewalks, or pavement edges.*

C:\SWI\01846\01846.dwg (16/10/2016 10:23:53 AM)

<p>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND</p> <p><i>Holger Senano</i> 10-18-16 DIRECTOR OF PUBLIC WORKS</p> <p><i>Thomas R. Butler</i> 10/17/16 CHIEF, BUREAU OF ENGINEERING</p> <p><i>M. Muenier</i> 10/18/2016 CHIEF, BUREAU OF HIGHWAYS</p>		 <b>JOHNSON, MIRMIRAN &amp; THOMPSON</b> <i>Engineering A Brighter Future®</i> 72 Loveton Circle Baltimore, Maryland 21152-0949		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>DES:</td><td>CSD</td><td>BY</td><td>NO.</td><td>DATE</td></tr> <tr> <td>DRN:</td><td>CSD</td><td></td><td></td><td></td></tr> <tr> <td>CHK:</td><td>SJR</td><td></td><td></td><td></td></tr> <tr> <td>DATE:</td><td>10/2016</td><td></td><td></td><td></td></tr> </table>		DES:	CSD	BY	NO.	DATE	DRN:	CSD				CHK:	SJR				DATE:	10/2016				CAPITAL PROJECT NO. <h1 style="font-size: 2em;">J-4206-1A</h1>		LANDSCAPE NOTES <b>RELOCATED MONTEVIDEO ROAD PHASE 1, SEGMENT A</b>		LD-2  SCALE AS SHOWN  SHEET 40 OF 45
DES:	CSD	BY	NO.	DATE																										
DRN:	CSD																													
CHK:	SJR																													
DATE:	10/2016																													
						ELECTION DISTRICT 2	HOWARD COUNTY, MARYLAND																							





E 1375550  
N 548550

E 1375200  
N 548550

**SIGNING LEGEND**

	EXISTING GROUND MOUNTED SIGN
	PROPOSED GROUND MOUNTED SIGN
	EXISTING SIGN AND SUPPORT
	EXISTING SIGN AND SUPPORT TO BE REMOVED
	PROPOSED SIGN

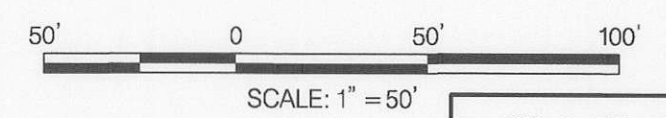
**PAVEMENT MARKING LEGEND**

(A)	5 IN. SOLID WHITE LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS
(B)	5 IN. SOLID DOUBLE YELLOW LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS
(C)	DASHED (3' STRIPE, 9' GAP) 5" WHITE LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS
(D)	DASHED (10' STRIPE, 30' GAP) AND SOLID 5" YELLOW LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS
(E)	WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LEGENDS AND SYMBOLS
(F)	REMOVE EXISTING MARKINGS

"PROFESSIONAL CERTIFICATION, 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. 33928, EXPIRATION DATE: JAN 15, 2017"

**GENERAL NOTE**

- FOR MODIFICATIONS TO THE SIGNS ALONG US 1 SEE THE TRAFFIC SIGNAL PLAN.
- FOR PAVEMENT MARKINGS AT THE INTERSECTION OF US 1 AND PORT CAPITAL DRIVE SEE THE TRAFFIC SIGNAL PLAN.
- OBJECT MARKERS (OM4-3) TO BE INSTALLED AT A FOUR (4) FOOT MOUNTING HEIGHT.



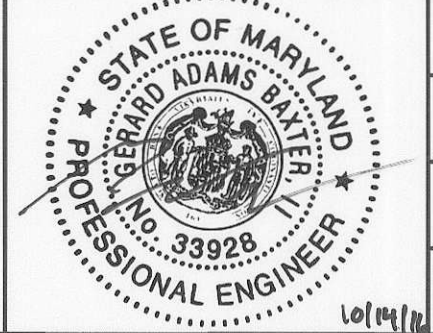
DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Alga Sevens* 10.18.16  
DIRECTOR OF PUBLIC WORKS

*Thomas E. Butler* 10/16/16  
CHIEF, BUREAU OF ENGINEERING

*[Signature]* 10-17-16  
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

*[Signature]*  
CHIEF, BUREAU OF HIGHWAYS



DES:	CHH	BY	NO.	DATE
DRN:	CHH			
CHK:	GAB			
DATE:	10/2016			

CAPITAL PROJECT NO.  
**J-4206-1A**

SIGNING AND PAVEMENT MARKING  
RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A

ELECTION DISTRICT 2  
HOWARD COUNTY, MARYLAND

SCALE  
1"=50'

SHEET  
41 OF 45

D:\S\10\030406-001\_Montevideo\_Road\_CAD\DWG\SPV\_Plan\_Montevideo.dwg  
 Friday, October 14, 2016, 4:08:04 AM



SHEET NO.	REMARKS	SUPPORT	CODE NUMBERS *																			
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
101	W14-1 [30' x30']	ONE (1) - 4"X4" WOOD SUPPORT	15.5	6.3																		
102	R2-1 [24' x30']	ONE (1) - 4"X4" WOOD SUPPORT	14.5	5																		
103	OM4-3 [18' x18']	ONE (1) - 4"X4" WOOD SUPPORT	11.3	2.3																		
104	OM4-3 [18' x18']	ONE (1) - 4"X4" WOOD SUPPORT	11.3	2.3																		
105	OM4-3 [18' x18']	ONE (1) - 4"X4" WOOD SUPPORT	11.3	2.3																		
106	EXISTING SIGN AND SUPPORT TO BE RELOCATED	EXISTING SUPPORT			4																	
107	EXISTING SIGN AND SUPPORT TO BE RELOCATED	EXISTING SUPPORT			3																	
	REMOVE EXISTING GROUND MOUNTED SIGN AND SUPPORT					11.5																
	PAVEMENT MARKINGS						340	1400	110	500												
TOTAL			64	19	7	12	340	1400	110	500												

\* CODE NUMBER DESCRIPTION & UNIT

CODE NUMBERS	CAT. CODE	DESCRIPTION	UNIT	CODE NUMBERS	CAT. CODE	DESCRIPTION	UNIT
1	801104	WOOD SIGN SUPPORT 4 INCH X 4 INCH	LF	11			
2	801605	SHEET ALUMINUM SIGNS	SF	12			
3	813023	RELOCATE EXISTING GROUND MOUNTED SIGNS	SF	13			
4	801711	REMOVE EXISTING GROUND MOUNTED SIGNS AND SUPPORTS	SF	14			
5	585405	5 INCH WHITE LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS	LF	15			
6	585407	5 INCH YELLOW LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS	LF	16			
7	585627	WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LEGENDS AND SYMBOLS	SF	17			
8	585700	REMOVAL OF EXISTING PAVEMENT LINE MARKINGS, ANY WIDTH	LF	18			
				19			
				20			

\*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. 33928, EXPIRATION DATE: JAN 15, 2017

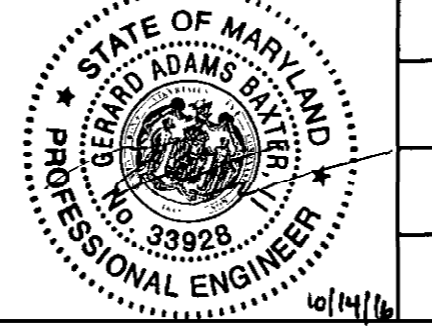
DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Halger Secano* 10-13-16  
DIRECTOR OF PUBLIC WORKS

*Thomas E. Sullivan* 10/17/16  
CHIEF, BUREAU OF ENGINEERING

*Mark* 10-17-16  
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

*Mark* 10/18/2016  
CHIEF, BUREAU OF HIGHWAYS



DES:	CHH	BY	NO.	DATE
DRN:	CHH			
CHK:	GAB			
DATE:	10/2016			

CAPITAL PROJECT NO.  
**J-4206-1A**

MAP NO. BLOCK NO.

SIGNING AND PAVEMENT MARKING  
RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A

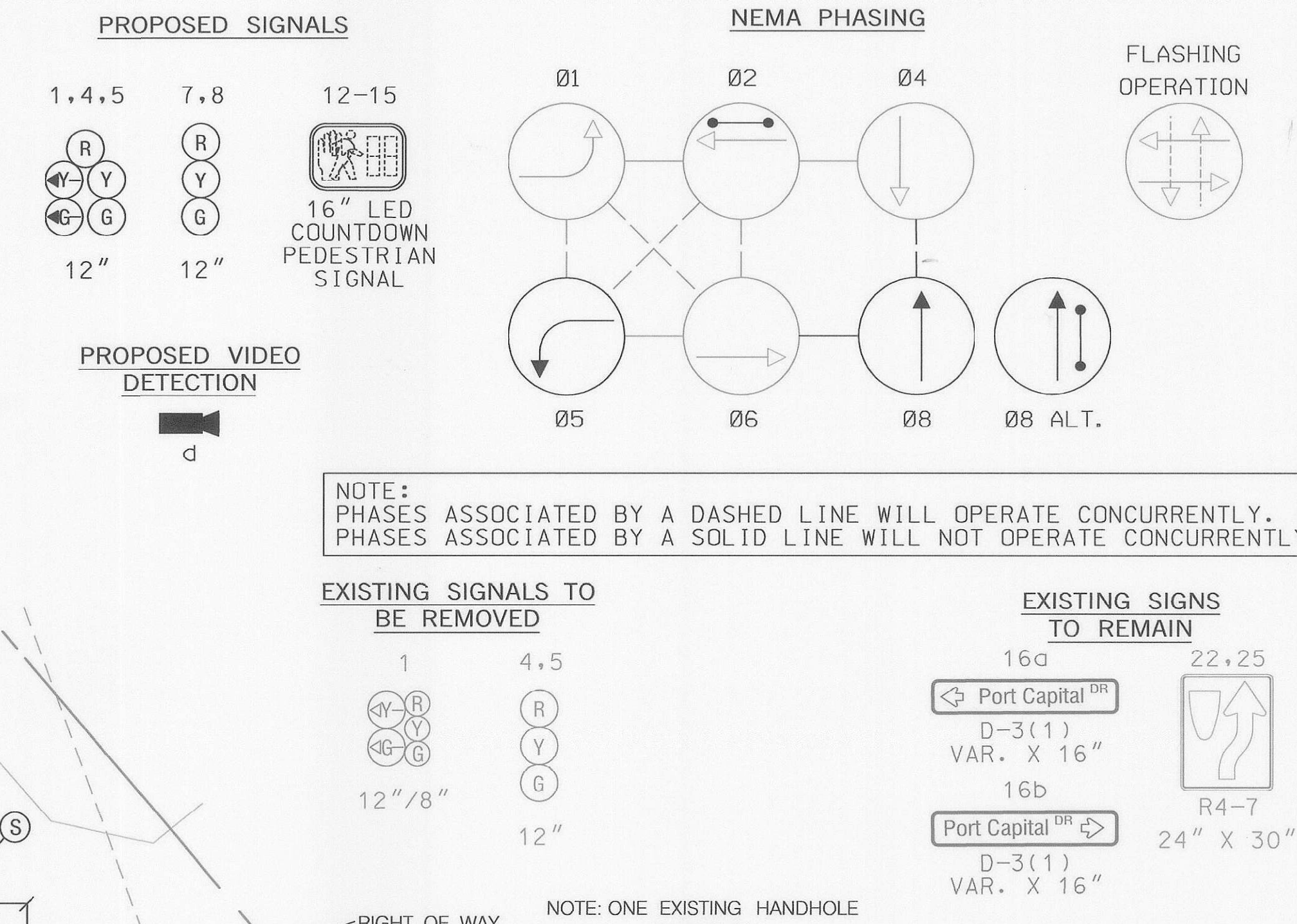
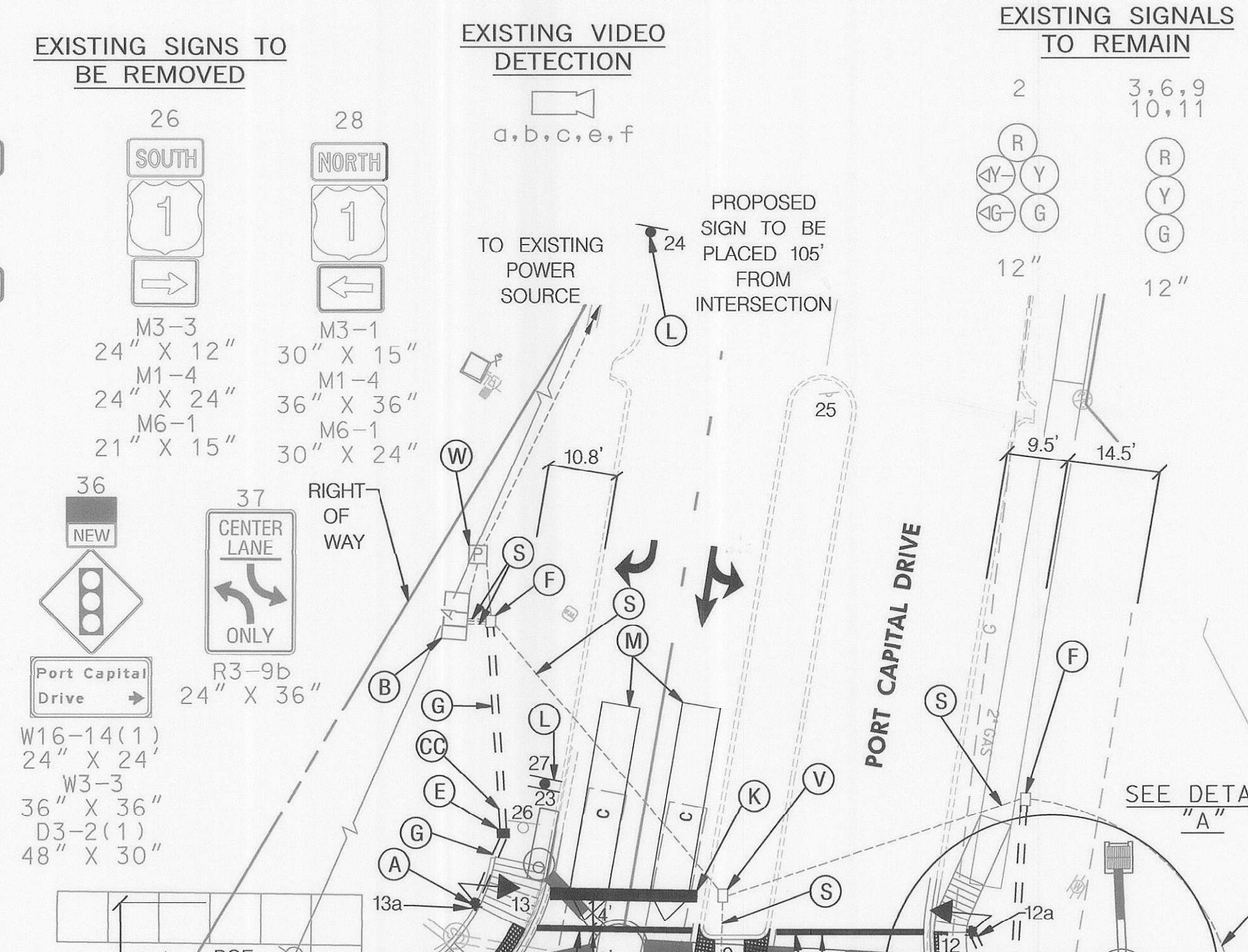
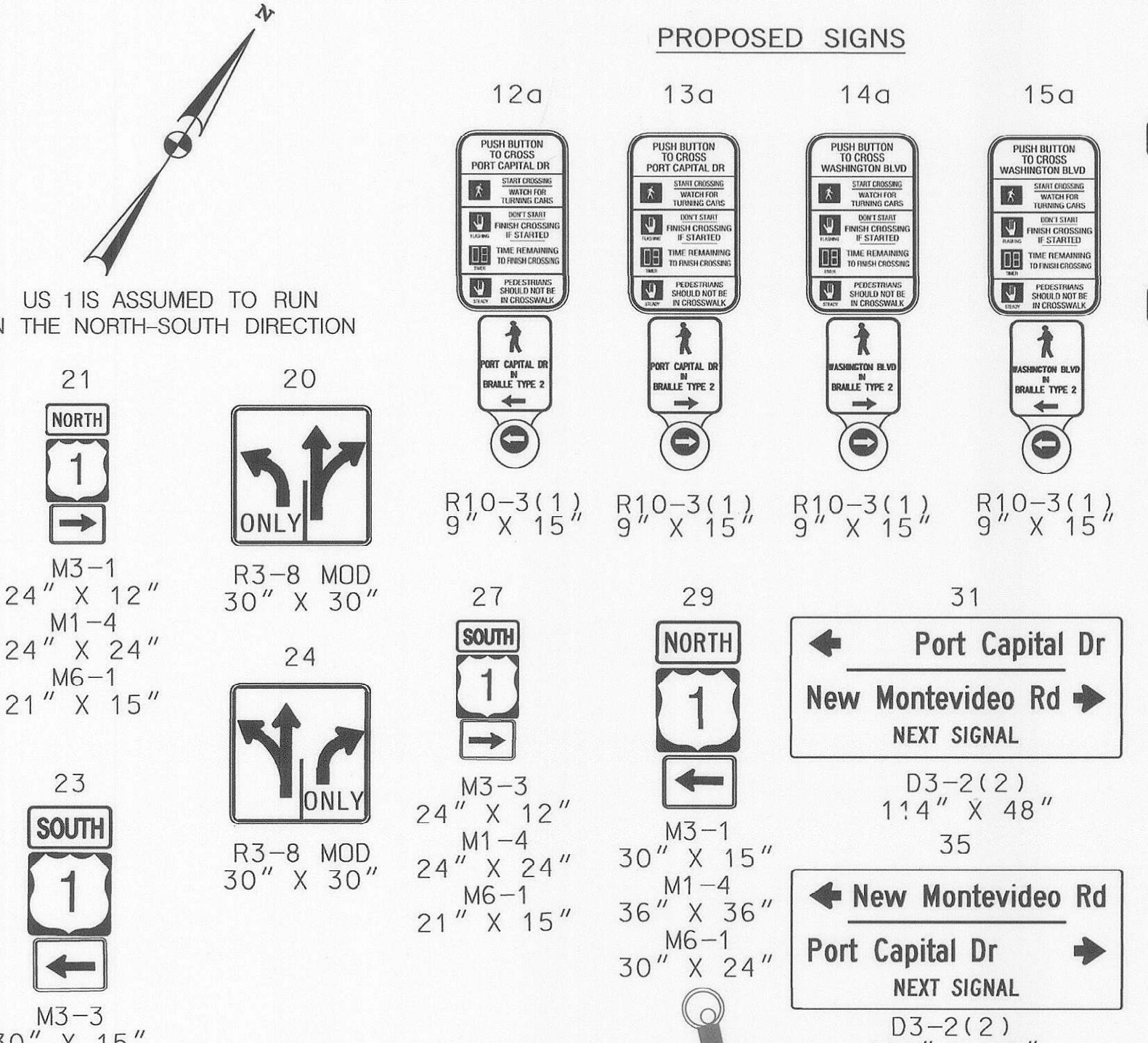
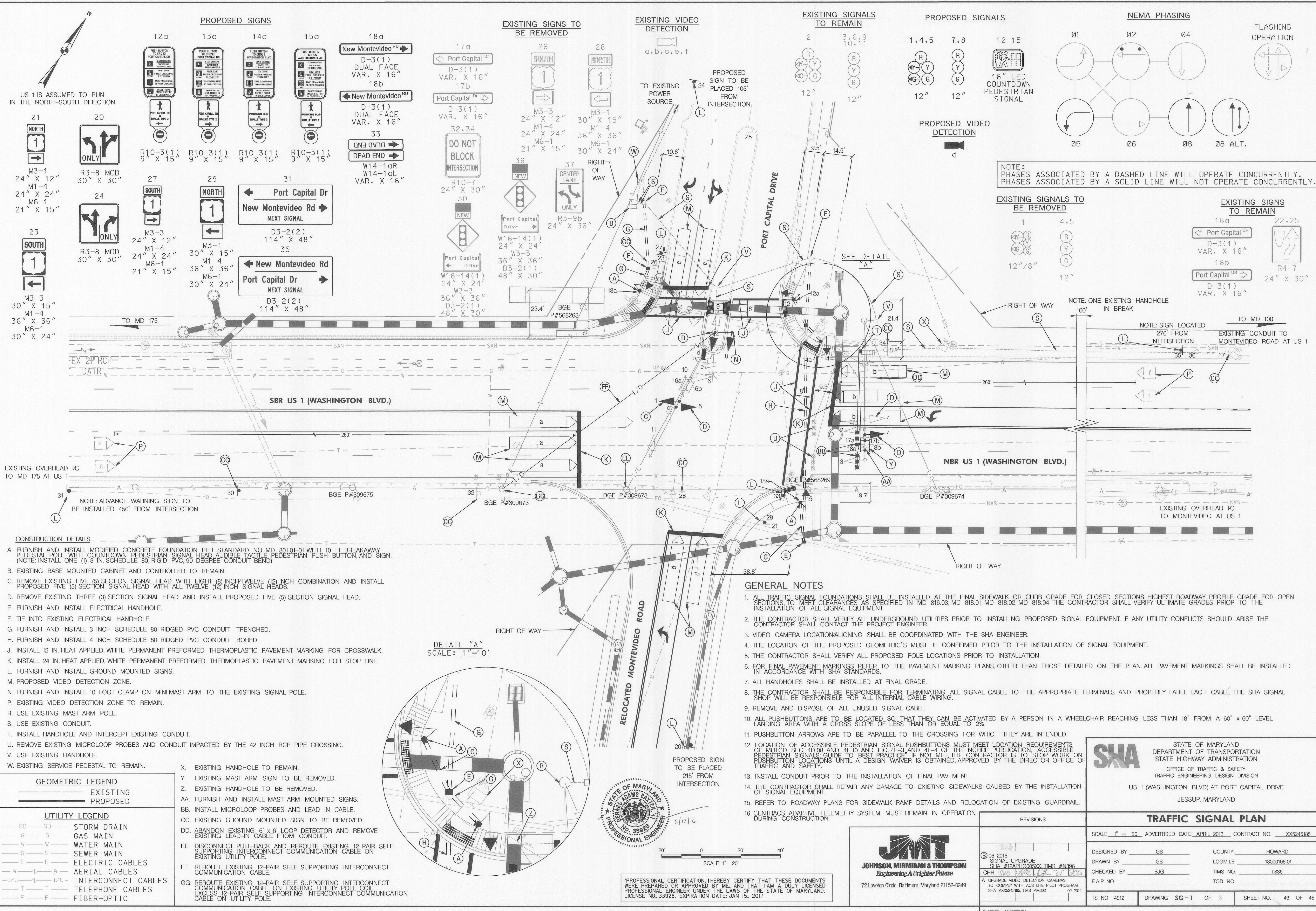
ELECTION DISTRICT 2  
HOWARD COUNTY, MARYLAND

G:\3110\3110-0001-MonteVideo-Road\3110-0001-SN-PROJ-MonteVideo.dwg 10/14/16



BY: Baxter

DRILL HOLES

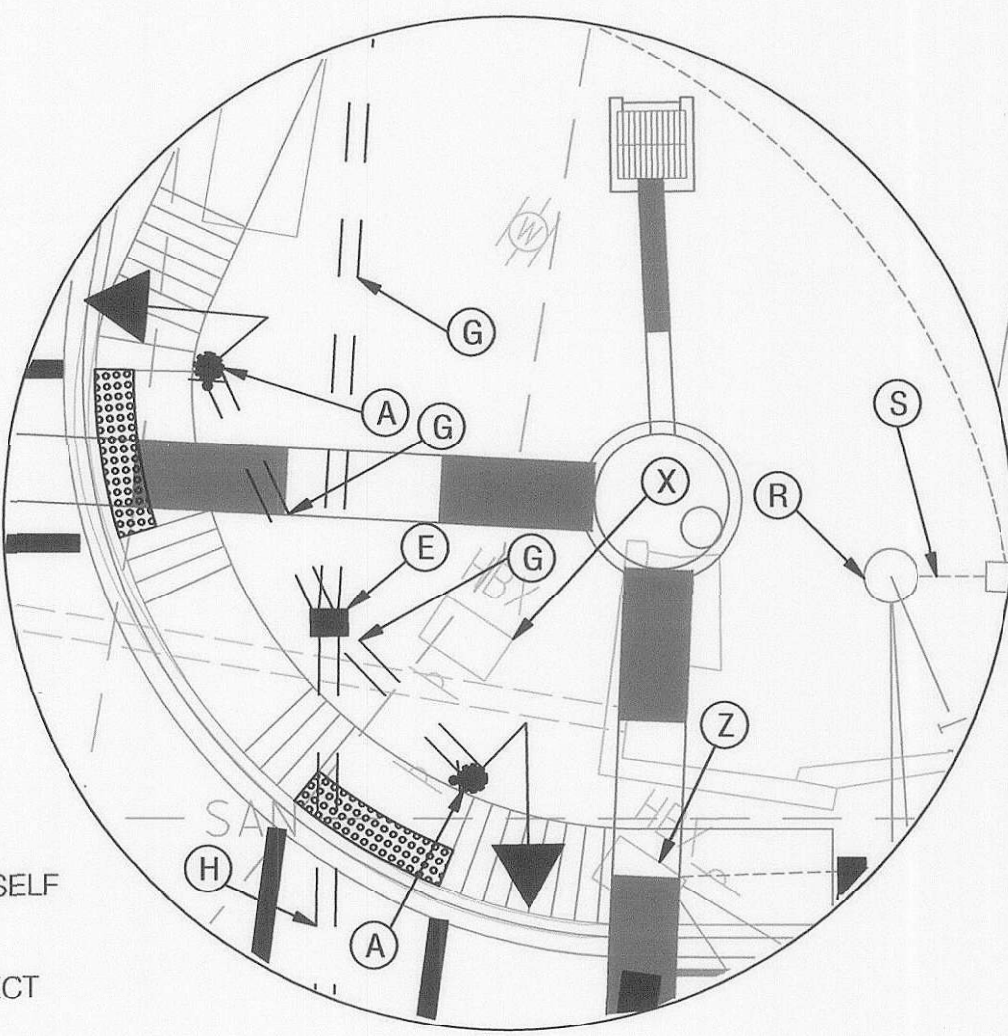


NOTE: PHASES ASSOCIATED BY A DASHED LINE WILL OPERATE CONCURRENTLY. PHASES ASSOCIATED BY A SOLID LINE WILL NOT OPERATE CONCURRENTLY.



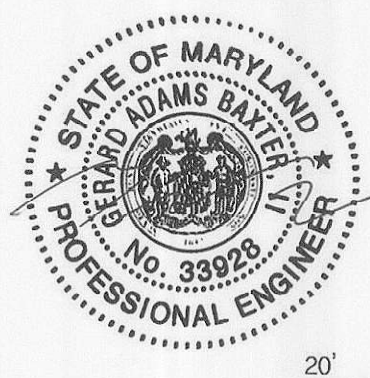
- CONSTRUCTION DETAILS**
- A. FURNISH AND INSTALL MODIFIED CONCRETE FOUNDATION PER STANDARD NO. MD 801.01-01 WITH 10 FT. BREAKAWAY PEDESTAL POLE WITH COUNTDOWN PEDESTRIAN SIGNAL HEAD, AUDIBLE TACTILE PEDESTRIAN PUSH BUTTON, AND SIGN. (NOTE: INSTALL ONE (1)-3 IN. SCHEDULE 80, RIGID PVC, 90 DEGREE CONDUIT BEND)
  - B. EXISTING BASE MOUNTED CABINET AND CONTROLLER TO REMAIN.
  - C. REMOVE EXISTING FIVE (5) SECTION SIGNAL HEAD WITH EIGHT (8) INCH TWELVE (12) INCH COMBINATION AND INSTALL PROPOSED FIVE (5) SECTION SIGNAL HEAD WITH ALL TWELVE (12) INCH SIGNAL HEADS.
  - D. REMOVE EXISTING THREE (3) SECTION SIGNAL HEAD AND INSTALL PROPOSED FIVE (5) SECTION SIGNAL HEAD.
  - E. FURNISH AND INSTALL ELECTRICAL HANDHOLE.
  - F. TIE INTO EXISTING ELECTRICAL HANDHOLE.
  - G. FURNISH AND INSTALL 3 INCH SCHEDULE 80 RIDGED PVC CONDUIT TRENCHED.
  - H. FURNISH AND INSTALL 4 INCH SCHEDULE 80 RIDGED PVC CONDUIT BORED.
  - J. INSTALL 12 IN. HEAT APPLIED, WHITE PERMANENT PREFORMED THERMOPLASTIC PAVEMENT MARKING FOR CROSSWALK.
  - K. INSTALL 24 IN. HEAT APPLIED, WHITE PERMANENT PREFORMED THERMOPLASTIC PAVEMENT MARKING FOR STOP LINE.
  - L. FURNISH AND INSTALL GROUND MOUNTED SIGNS.
  - M. PROPOSED VIDEO DETECTION ZONE.
  - N. FURNISH AND INSTALL 10 FOOT CLAMP ON MINIMAST ARM TO THE EXISTING SIGNAL POLE.
  - P. EXISTING VIDEO DETECTION ZONE TO REMAIN.
  - R. USE EXISTING MAST ARM POLE.
  - S. USE EXISTING CONDUIT.
  - T. INSTALL HANDHOLE AND INTERCEPT EXISTING CONDUIT.
  - V. REMOVE EXISTING MICROLOOP PROBES AND CONDUIT IMPACTED BY THE 42 INCH RCP PIPE CROSSING.
  - U. USE EXISTING HANDHOLE.
  - W. EXISTING SERVICE PEDESTAL TO REMAIN.
  - X. EXISTING HANDHOLE TO REMAIN.
  - Y. EXISTING MAST ARM SIGN TO BE REMOVED.
  - Z. EXISTING HANDHOLE TO BE REMOVED.
  - AA. FURNISH AND INSTALL MAST ARM MOUNTED SIGNS.
  - BB. INSTALL MICROLOOP PROBES AND LEAD IN CABLE.
  - CC. EXISTING GROUND MOUNTED SIGN TO BE REMOVED.
  - DD. ABANDON EXISTING 6' x 6' LOOP DETECTOR AND REMOVE EXISTING LEAD-IN CABLE FROM CONDUIT.
  - EE. DISCONNECT, PULL BACK AND REROUTE EXISTING 12-PAIR SELF SUPPORTING INTERCONNECT COMMUNICATION CABLE ON EXISTING UTILITY POLE.
  - FF. REROUTE EXISTING 12-PAIR SELF SUPPORTING INTERCONNECT COMMUNICATION CABLE.
  - GG. REROUTE EXISTING 12-PAIR SELF SUPPORTING INTERCONNECT COMMUNICATION CABLE ON EXISTING UTILITY POLE EXCESS 12-PAIR SELF SUPPORTING INTERCONNECT COMMUNICATION CABLE ON UTILITY POLE.

DETAIL "A"  
SCALE: 1"=10'



**GENERAL NOTES**

1. ALL TRAFFIC SIGNAL FOUNDATIONS SHALL BE INSTALLED AT THE FINAL SIDEWALK OR CURB GRADE FOR CLOSED SECTIONS, HIGHEST ROADWAY PROFILE GRADE FOR OPEN SECTIONS TO MEET CLEARANCES AS SPECIFIED IN MD 816.03, MD 818.01, MD 818.02, MD 818.04. THE CONTRACTOR SHALL VERIFY ULTIMATE GRADES PRIOR TO THE INSTALLATION OF ALL SIGNAL EQUIPMENT.
2. THE CONTRACTOR SHALL VERIFY ALL UNDERGROUND UTILITIES PRIOR TO INSTALLING PROPOSED SIGNAL EQUIPMENT. IF ANY UTILITY CONFLICTS SHOULD ARISE THE CONTRACTOR SHALL CONTACT THE PROJECT ENGINEER.
3. VIDEO CAMERA LOCATION ALIGNING SHALL BE COORDINATED WITH THE SHA ENGINEER.
4. THE LOCATION OF THE PROPOSED GEOMETRIC'S MUST BE CONFIRMED PRIOR TO THE INSTALLATION OF SIGNAL EQUIPMENT.
5. THE CONTRACTOR SHALL VERIFY ALL PROPOSED POLE LOCATIONS PRIOR TO INSTALLATION.
6. FOR FINAL PAVEMENT MARKINGS REFER TO THE PAVEMENT MARKING PLANS, OTHER THAN THOSE DETAILED ON THE PLAN. ALL PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH SHA STANDARDS.
7. ALL HANDHOLES SHALL BE INSTALLED AT FINAL GRADE.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TERMINATING ALL SIGNAL CABLE TO THE APPROPRIATE TERMINALS AND PROPERLY LABEL EACH CABLE. THE SHA SIGNAL SHOP WILL BE RESPONSIBLE FOR ALL INTERNAL CABLE WIRING.
9. REMOVE AND DISPOSE OF ALL UNUSED SIGNAL CABLE.
10. ALL PUSHBUTTONS ARE TO BE LOCATED SO THAT THEY CAN BE ACTIVATED BY A PERSON IN A WHEELCHAIR REACHING LESS THAN 18" FROM A 60" x 60" LEVEL LANDING AREA WITH A CROSS SLOPE OF LESS THAN OR EQUAL TO 2%.
11. PUSHBUTTON ARROWS ARE TO BE PARALLEL TO THE CROSSING FOR WHICH THEY ARE INTENDED.
12. LOCATION OF ACCESSIBLE PEDESTRIAN SIGNAL PUSHBUTTONS MUST MEET LOCATION REQUIREMENTS OF MUTCD SEC. 4D.08 AND 4E.10 AND FIG. 4E-3 AND 4E-4 OF THE NCHRP PUBLICATION, ACCESSIBLE PEDESTRIAN SIGNALS: GUIDE TO BEST PRACTICE. IF NOT MET, THE CONTRACTOR IS TO STOP WORK ON PUSHBUTTON LOCATIONS UNTIL A DESIGN WAIVER IS OBTAINED, APPROVED BY THE DIRECTOR, OFFICE OF TRAFFIC AND SAFETY.
13. INSTALL CONDUIT PRIOR TO THE INSTALLATION OF FINAL PAVEMENT.
14. THE CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING SIDEWALKS CAUSED BY THE INSTALLATION OF SIGNAL EQUIPMENT.
15. REFER TO ROADWAY PLANS FOR SIDEWALK RAMP DETAILS AND RELOCATION OF EXISTING GUARDRAIL.
16. CENTRACS ADAPTIVE TELEMETRY SYSTEM MUST REMAIN IN OPERATION DURING CONSTRUCTION.



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. 33928, EXPIRATION DATE: JAN 15, 2017



**SHA** STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF TRAFFIC & SAFETY TRAFFIC ENGINEERING DESIGN DIVISION

US 1 (WASHINGTON BLVD) AT PORT CAPITAL DRIVE JESSUP, MARYLAND

REVISIONS		TRAFFIC SIGNAL PLAN	
05-2016	SIGNAL UPGRADE	DESIGNED BY	GS
06-2016	SHA #12APH0005XX TMS #N396	DRAWN BY	GS
07-2016	CHH [Signature]	CHECKED BY	BJG
	A UPGRADE VIDEO DETECTION CAMERAS TO COMPLY WITH ACS LITE PILOT PROGRAM SHA #20050615, TMS #N396	F.A.P. NO.	
		COUNTY	HOWARD
		LOGMILE	13000106.01
		TMS NO.	1836
		TOD NO.	
TS NO. 4912	DRAWING	SG-1	OF 3
		SHEET NO.	43 OF 45



BY: Baxler

DRILL HOLES

DRILL HOLES

### PROJECT DESCRIPTION

#### GENERAL

I. THIS PROJECT INVOLVES UPGRADING THE EXISTING TRAFFIC CONTROL SIGNAL DUE TO GEOMETRIC IMPROVEMENTS AT THE INTERSECTION OF US 1 (WASHINGTON BLVD) AT PORT CAPITAL DRIVE IN HOWARD COUNTY. A FOURTH INTERSECTION LEG IS BEING ADDED PERPENDICULAR TO THE US 1 NORTHBOUND ROADWAY, AS WELL AS A LEFT TURN LANE OF THE SOUTHBOUND DIRECTION OF US 1. VIDEO DETECTION SHALL BE USED FOR ALL APPROACHES. US 1 (WASHINGTON BLVD) IS ASSUMED TO RUN IN THE NORTH-SOUTH DIRECTION.

#### II. INTERSECTION OPERATION

1. THE INTERSECTION IS TO OPERATE IN A NEMA SIX-PHASE FULLY ACTUATED MODE WITH THE US 1 (WASHINGTON BLVD) APPROACHES RUNNING CONCURRENTLY. AN EXCLUSIVE/PERMISSIVE LEFT TURN PHASE SHALL BE PROVIDED FOR BOTH APPROACHES OF US 1 (WASHINGTON BLVD). THE PORT CAPITAL DRIVE/NEW MONTEVIDEO ROAD APPROACHES SHALL RUN CONCURRENTLY WITH PERMISSIVE PHASING.

2. INSTALLATION OF CONDUIT AND ALL ASSOCIATED CABLE REQUIRED FOR THE NEW INTERSECTION EQUIPMENT SHALL BE CONNECTED TO THE EXISTING TYPE "S" BASE-MOUNTED CABINET.

#### III. TYPICAL MESSAGES FOR ACCESSIBLE PEDESTRIAN SIGNALS

1. TO CROSS WASHINGTON BOULEVARD FROM PORT CAPITAL DRIVE WHEN PEDESTRIAN LOCATES AND PRESSES PUSHBUTTON FOR AN EXTENDED TIME, THE PUSHBUTTON UNIT MESSAGE WILL BE "WAIT TO CROSS WASHINGTON AT PORT CAPITAL". WHEN WALK PHASE BEGINS, THE MESSAGE WILL BE A RAPID TICK WHICH WILL LAST FOR THE DURATION OF THE WALK PHASE.

2. TO CROSS WASHINGTON BOULEVARD FROM NEW MONTEVIDEO ROAD WHEN PEDESTRIAN LOCATES AND PRESSES PUSHBUTTON FOR AN EXTENDED TIME, THE PUSHBUTTON UNIT MESSAGE WILL BE "WAIT TO CROSS WASHINGTON AT NEW MONTEVIDEO". WHEN WALK PHASE BEGINS, THE MESSAGE WILL BE A RAPID TICK WHICH WILL LAST FOR THE DURATION OF THE WALK PHASE.

3. TO CROSS PORT CAPITAL DRIVE FROM WASHINGTON BOULEVARD WHEN PEDESTRIAN LOCATES AND PRESSES PUSHBUTTON FOR AN EXTENDED TIME, THE PUSHBUTTON UNIT MESSAGE WILL BE "WAIT TO CROSS PORT CAPITAL AT WASHINGTON". WHEN WALK PHASE BEGINS, THE MESSAGE WILL BE A RAPID TICK WHICH WILL LAST FOR THE DURATION OF THE WALK PHASE.

#### NOTES

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR TERMINATING ALL SIGNAL CABLE TO THE APPROPRIATE TERMINALS AND PROPERLY LABELING EACH CABLE.
- THE CONTRACTOR SHALL MAINTAIN THE CONTINUOUS OPERATION OF ALL INTERCONNECT, VEHICULAR, PEDESTRIAN DETECTORS, AND LIGHTING DEVICES. IF ANY DEVICE IS DAMAGED BY THE CONTRACTOR, IT SHALL BE REPAIRED WITHIN 72 HOURS BY THE CONTRACTOR AT NO COST TO THE ADMINISTRATION AFTER NOTIFICATION BY THE ENGINEER.
- ALL UNDERGROUND AND OVERHEAD UTILITIES SHOWN ON THESE PLANS ARE SCHEMATIC ONLY AND MAY NOT BE COMPLETE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING MISS UTILITY PRIOR TO CONSTRUCTION SO THAT ALL UTILITIES MAY BE LOCATED IN THE FIELD. IF THE CONTRACTOR PERCEIVES THAT A CONFLICT BETWEEN THE UTILITIES AND THE TRAFFIC SIGNAL WILL OCCUR, THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER IMMEDIATELY SO THAT THE CONFLICT MAY BE RESOLVED.

#### CONTACTS

MR. JOHN CONCANNON  
ASSISTANT DISTRICT ENGINEER-TRAFFIC  
PHONE: (301) 624-8140/8141

MR. MARC MANDEL  
ASSISTANT DISTRICT ENGINEER - CONSTRUCTION  
PHONE: (301) 624-8201

MR. ED RODENHIZER  
CHIEF SIGNAL OPERATIONS  
(410) 787-7650

MS. SUSAN PALMER  
ASSISTANT DISTRICT ENGINEER - MAINTENANCE  
PHONE: (301) 624-8105/8106

MS. CORREN JOHNSON  
CHIEF, TRAFFIC OPERATIONS  
(410) 787-7630

MR. EUGENE BAILEY  
CHIEF, SIGN OPERATIONS  
(410) 787-7676

#### EQUIPMENT LIST

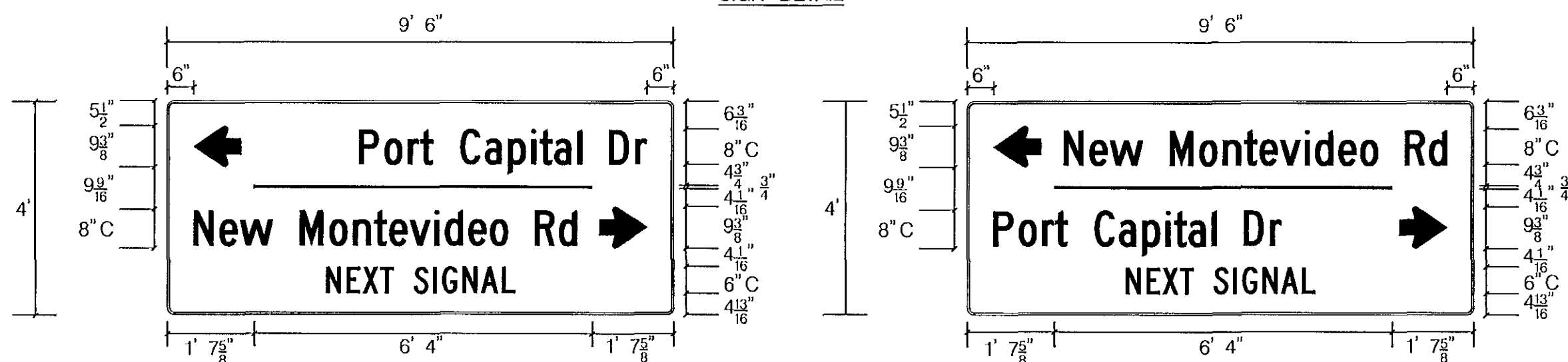
A. EQUIPMENT TO BE FURNISHED BY THE STATE AND INSTALLED BY THE CONTRACTOR.

ITEM NO. CAT CODE	UNITS	QUANTITY	DESCRIPTION
NONE			

B. EQUIPMENT TO BE FURNISHED AND/OR INSTALLED BY CONTRACTOR.

ITEM NO. CAT CODE	UNITS	QUANTITY	DESCRIPTION
203030	CY	2	TEST PIT EXCAVATION
585621	LF	240	12 INCH WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINES
585625	LF	130	24 INCH WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINES
800000	EA	1	10" CLAMP ON MINIMAST ARM FOR SIGNAL ATTACHMENT
801004	CY	1	CONCRETE FOR SIGNAL FOUNDATION
801106	LF	135	WOOD SIGN SUPPORTS 4 INCH X 6 INCH
801605	SF	156	SHEET ALUMINUM SIGNS
801711	SF	88	REMOVE EXISTING GROUND MOUNTED SIGN AND SUPPORTS
802501	LF	400	NO. 6 AWG STRANDED BARE COPPER GROUND WIRE
805118	LF	110	4 INCH SCHEDULE 80 RIGID PVC CONDUIT-BORED
805160	LF	15	1 INCH LIQUID TIGHT FLEXIBLE NON-METALLIC CONDUIT FOR DETECTOR SLEEVE
805135	LF	120	3 INCH SCHEDULE 80 RIGID PVC CONDUIT-TRENCHED
810555	EA	2	MICROLOOP PROBE, 1000 FOOT LEAD IN CABLE
811001	EA	4	FURNISH AND INSTALL ELECTRICAL HANDHOLE
811002	EA	1	REMOVE ELECTRICAL HANDHOLE
812002	LF	65	WOOD SIGN SUPPORT 6 INCH X 6 INCH
816002	EA	1	IP-BASED VIDEO DETECTION CAMERA & ANY LENGTH LEAD-IN CABLE
818004	EA	4	10 FOOT BREAKAWAY PEDESTAL POLE
822510	LF	300	DISCONNECT, PULL-BACK AND REROUTE CABLES
837001	EA	3	GROUND ROD - 3/4" DIAMETER X 10 FOOT LENGTH
860284	EA	21	12 INCH LED VEHICULAR TRAFFIC SIGNAL HEAD SECTION
860285	EA	4	16 INCH LED COUNTDOWN PEDESTRIAN SIGNAL HEAD
861103	LF	700	ELECTRICAL CABLE 2-CONDUCTOR (NO. 14 AWG)
861107	LF	720	ELECTRICAL CABLE 5-CONDUCTOR (NO. 14 AWG)
861108	LF	150	ELECTRICAL CABLE 7-CONDUCTOR (NO. 14 AWG)
862102	LF	100	SAW CUT FOR SIGNAL (LOOP DETECTOR)
865210	EA	4	AUDIBLE/TACTILE PEDESTRIAN PUSHBUTTON STATION AND SIGNS
865300	EA	1	2-WIRE APS CENTRAL CONTROL UNIT
873002	LS	1	REMOVE AND DISPOSE OF EXISTING SIGNAL EQUIPMENT

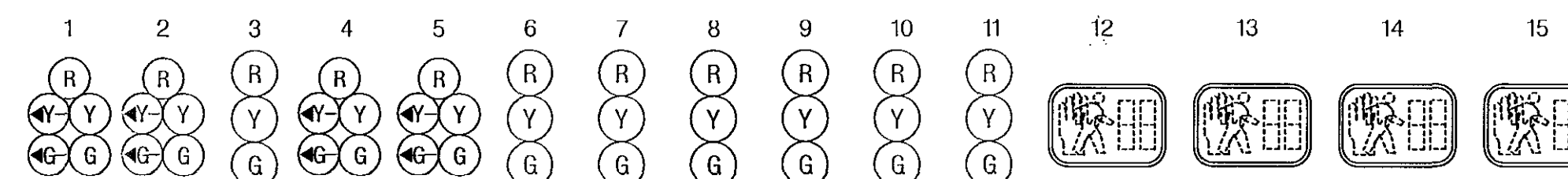
#### SIGN DETAIL



SIGN NO.	SIGN SIZE (WXH)	SHEET NO.	POST SIZE	BW OR NBW	SUPPORT L-1	SUPPORT L-2	SUPPORT L-3	LATERAL CLEARANCE		SUPPORT SPACING FROM LEFT EDGE OF SIGN
								OFFSET	OBJECT**	
31	9.5' X 4'	SG-1	6" X 6"	BW	10' - 3' 12"	9' - 11"		2'	FOC	1'-0" / 7'-6" / 1'-0"
35	9.5' X 4'	SG-1	6" X 6"	BW	12' - 7' 12"	10' - 9' 6"		2'	FOC	1'-0" / 7'-6" / 1'-0"

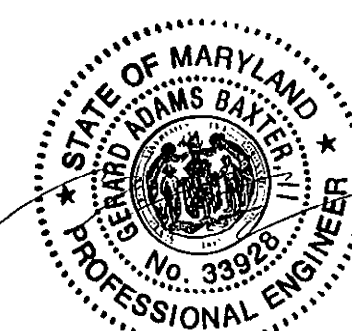
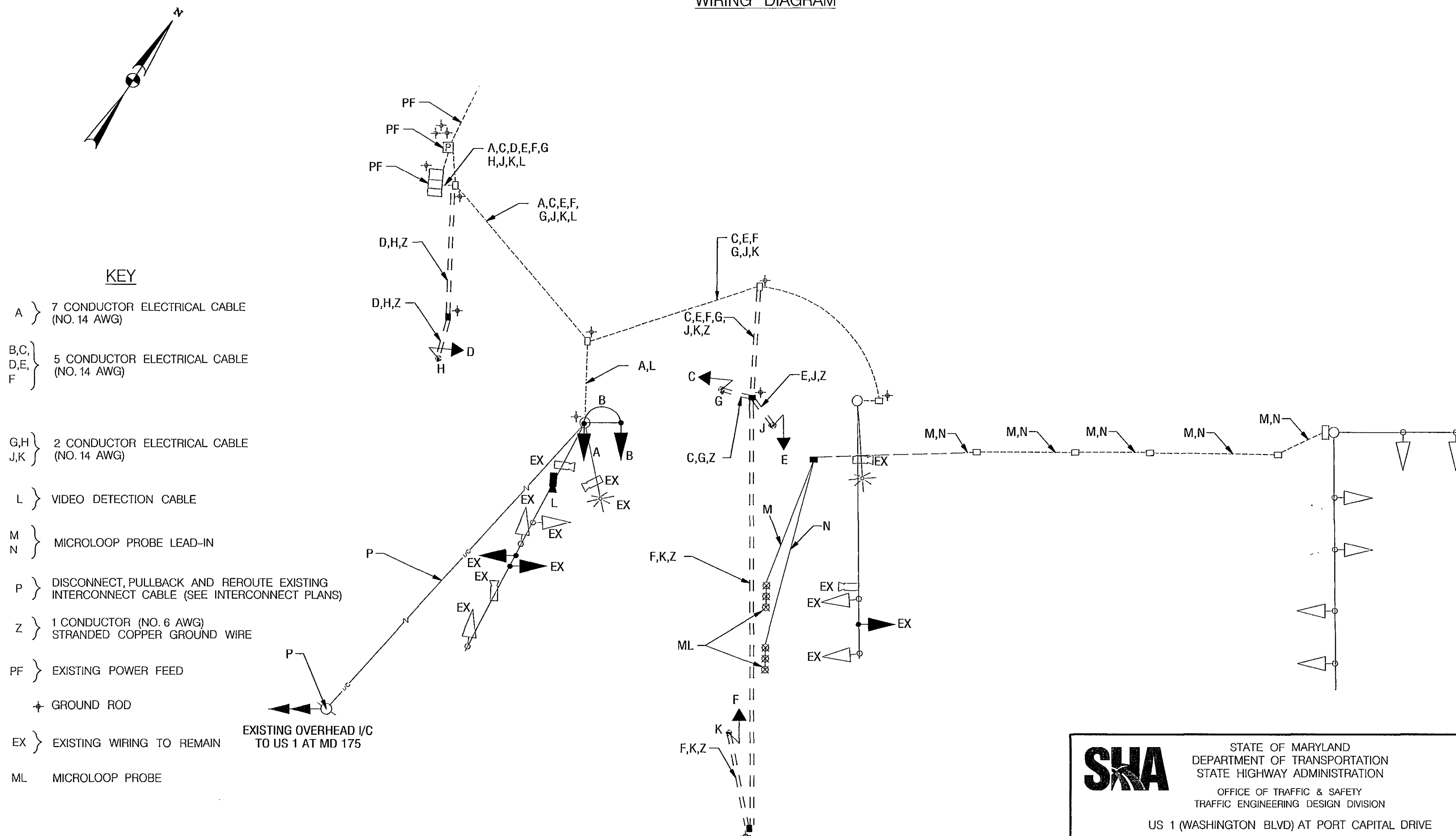
BW = BREAKAWAY NBW = NON-BREAKAWAY FOC = FACE OF CURB  
L-1 AND L-2 ARE LENGTHS OF SUPPORT FROM THE TOP OF THE SIGN PANEL TO THE GROUND. LENGTHS DO NOT INCLUDE EMBEDMENT DEPTH.

### PHASE CHART



PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PHASE 1 AND 5	G-/R	G-/R	R	G-/R	G-/R	R	R	R	R	R	R	DW	DW	DW	DW
1 AND 5 CHANGE	Y-/R	Y-/R	R	Y-/R	Y-/R	R	R	R	R	R	R	DW	DW	DW	DW
PHASE 2 AND 6	G	G	G	G	G	G	R	R	R	R	R	WK	WK	DW	DW
PED CLEARANCE	G	G	G	G	G	G	R	R	R	R	R	FLDW	FLOW	DW	DW
2 AND 6 CHANGE	Y	Y	Y	Y	Y	Y	R	R	R	R	R	DW	DW	DW	DW
PHASE 4 AND 8	R	R	R	R	R	R	G	G	G	G	G	DW	DW	DW	DW
PHASE 4 AND 8 CHANGE	R	R	R	R	R	R	Y	Y	Y	Y	Y	DW	DW	DW	DW
PHASE 4 AND 8 ALT	R	R	R	R	R	R	G	G	G	G	G	DW	DW	WK	WK
PED CLEARANCE	R	R	R	R	R	R	G	G	G	G	G	DW	DW	FLOW	FLOW
4 AND 8 ALT CHANGE	R	R	R	R	R	R	Y	Y	Y	Y	Y	DW	DW	DW	DW
FLASHING OPERATION	FL/Y	FL/Y	FL/Y	FL/Y	FL/Y	FL/Y	FL/R	FL/R	FL/Y	FL/R	FL/R	DARK	DARK	DARK	DARK

### WIRING DIAGRAM



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. 33928, EXPIRATION DATE: JAN 15, 2017

**SNA** STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION  
OFFICE OF TRAFFIC & SAFETY  
TRAFFIC ENGINEERING DESIGN DIVISION  
US 1 (WASHINGTON BLVD) AT PORT CAPITAL DRIVE  
JESSUP, MARYLAND

#### TRAFFIC SIGNAL PLAN

SCALE: N.T.S. ADVERTISED DATE: JUNE 2016 CONTRACT NO. J-4206-1-A

DESIGNED BY: CHH	COUNTY: HOWARD
DRAWN BY: CHH	LOGMILE: 13000106.01
CHECKED BY: AEZ	TMS NO. N396
F.A.P. NO.	TOD NO.

TS NO. 4912 DRAWING SG-2 OF 3 SHEET NO. 44 OF 45

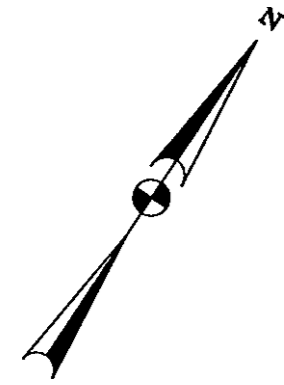
**JMT**  
JOHNSON, MIRMIRAN & THOMPSON  
Engineering A Brighter Future  
72 Loveton Circle, Baltimore, Maryland 21152-0949

PLOTTED:



BORDER REV. DATE: June 1, 2004

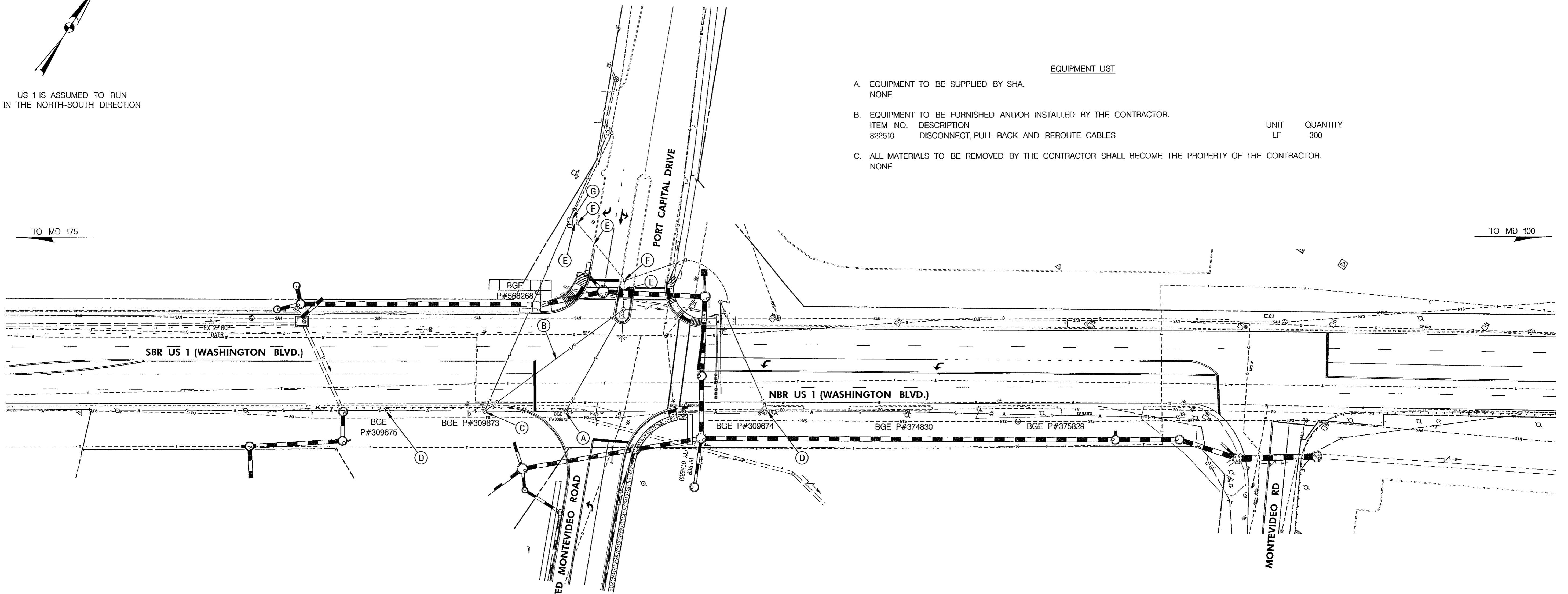
BY: Baxter



US 1 IS ASSUMED TO RUN IN THE NORTH-SOUTH DIRECTION

TO MD 175

TO MD 100



EQUIPMENT LIST

- A. EQUIPMENT TO BE SUPPLIED BY SHA.  
NONE
- B. EQUIPMENT TO BE FURNISHED AND/OR INSTALLED BY THE CONTRACTOR.  
ITEM NO. DESCRIPTION UNIT QUANTITY  
822510 DISCONNECT, PULL-BACK AND REROUTE CABLES LF 300
- C. ALL MATERIALS TO BE REMOVED BY THE CONTRACTOR SHALL BECOME THE PROPERTY OF THE CONTRACTOR.  
NONE

CONSTRUCTION DETAILS

- A. DISCONNECT, PULL-BACK AND REROUTE EXISTING 12-PAIR SELF SUPPORTING INTERCONNECT COMMUNICATION CABLE ON EXISTING UTILITY POLE.
- B. REROUTE EXISTING 12-PAIR SELF SUPPORTING INTERCONNECT COMMUNICATION CABLE.
- C. REROUTE EXISTING 12-PAIR SELF SUPPORTING INTERCONNECT COMMUNICATION CABLE ON EXISTING UTILITY POLE. COIL EXCESS 12-PAIR SELF SUPPORTING INTERCONNECT COMMUNICATION CABLE ON UTILITY POLE.
- D. EXISTING 12-PAIR SELF SUPPORTING INTERCONNECT COMMUNICATION CABLE TO REMAIN.
- E. USE EXISTING CONDUIT.
- F. USE EXISTING HANDHOLE.
- G. USE EXISTING CABINET AND CONTROLLER.

GENERAL NOTES

1. UNDERGROUND UTILITIES SHOWN ON THESE PLANS ARE SCHEMATIC ONLY AND MAY NOT BE COMPLETE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING "MISS UTILITY" PRIOR TO CONSTRUCTION SO THAT ALL UTILITIES MAY BE LOCATED IN THE FIELD. IF THE CONTRACTOR PERCEIVES THAT A CONFLICT BETWEEN THE UTILITIES AND THE TRAFFIC SIGNAL WILL OCCUR, THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER IMMEDIATELY SO THAT THE CONFLICT MAY BE RESOLVED.
2. 10 FT. OF SLACK SHALL BE PROVIDED IN EACH HANDHOLE FOR INTERCONNECT.
3. SEE TRAFFIC SIGNAL PLANS FOR TRAFFIC SIGNAL EQUIPMENT AND CONDUIT DETAILS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TERMINATING ALL INTERCONNECT CABLES TO THE APPROPRIATE TERMINALS AND PROPERLY LABELING EACH CABLE.
5. DO NOT CUT EXISTING INTERCONNECT CABLE. COIL INTERCONNECT CABLE SLACK ON UTILITY POLES AND IN HANDHOLES.

GEOMETRIC LEGEND

EXISTING  
PROPOSED

UTILITY LEGEND

- SD STORM DRAIN
- G GAS MAIN
- W WATER MAIN
- S SEWER MAIN
- E ELECTRIC CABLES
- A AERIAL CABLES
- I/C INTERCONNECT CABLES
- T TELEPHONE CABLES
- F FIBER-OPTIC



\*PROFESSIONAL CERTIFICATION, 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. 35926, EXPIRATION DATE: JAN 15, 2017

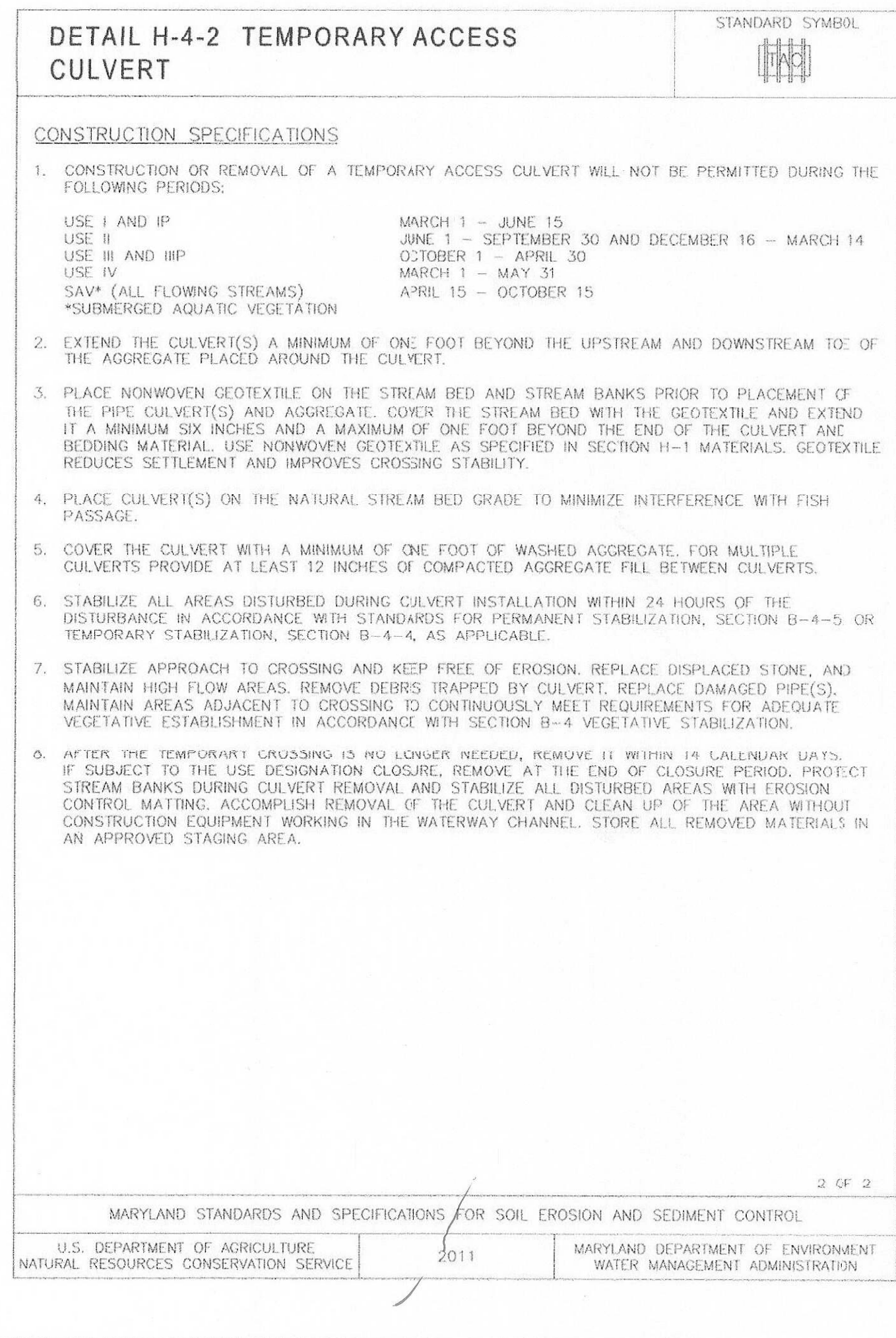
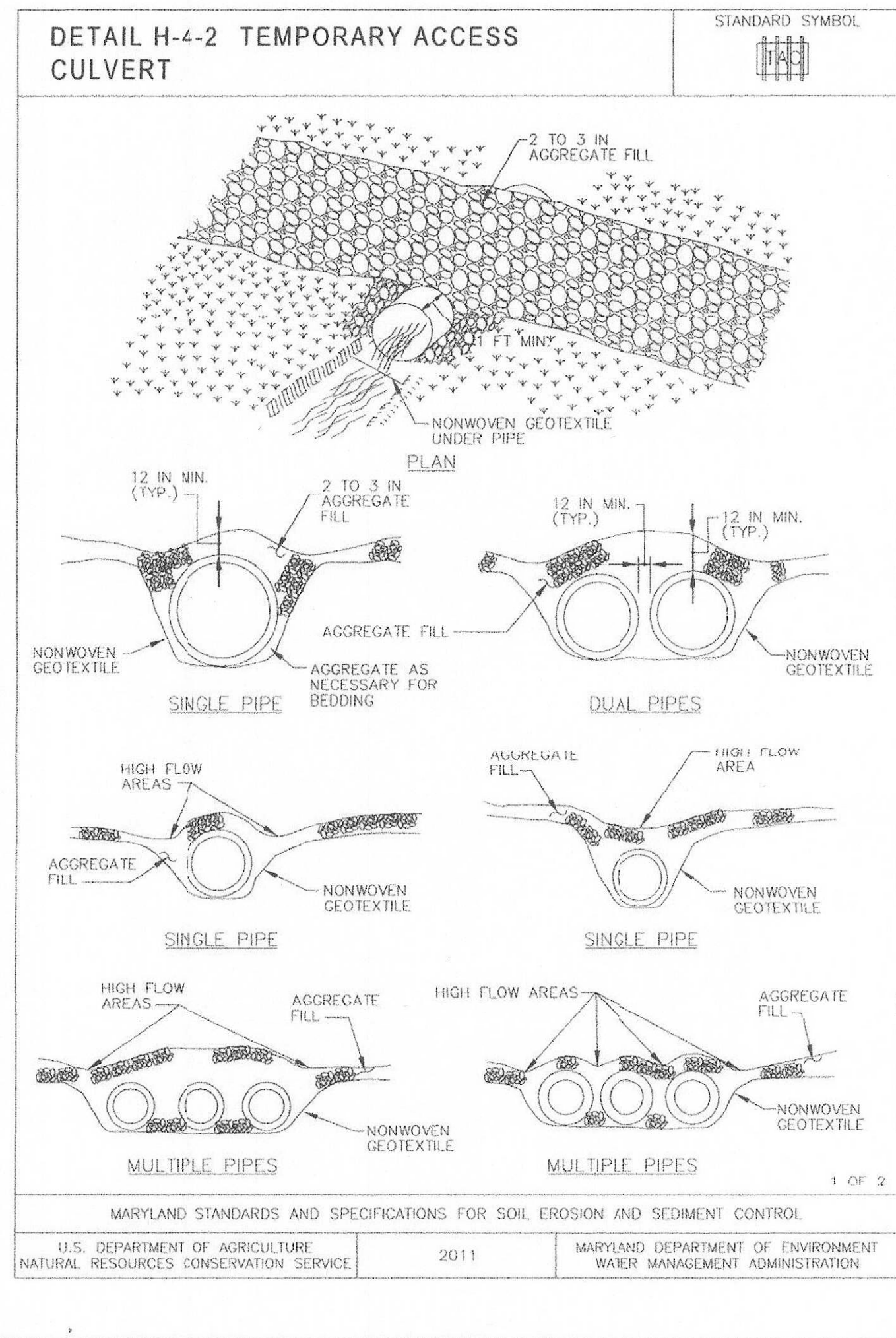
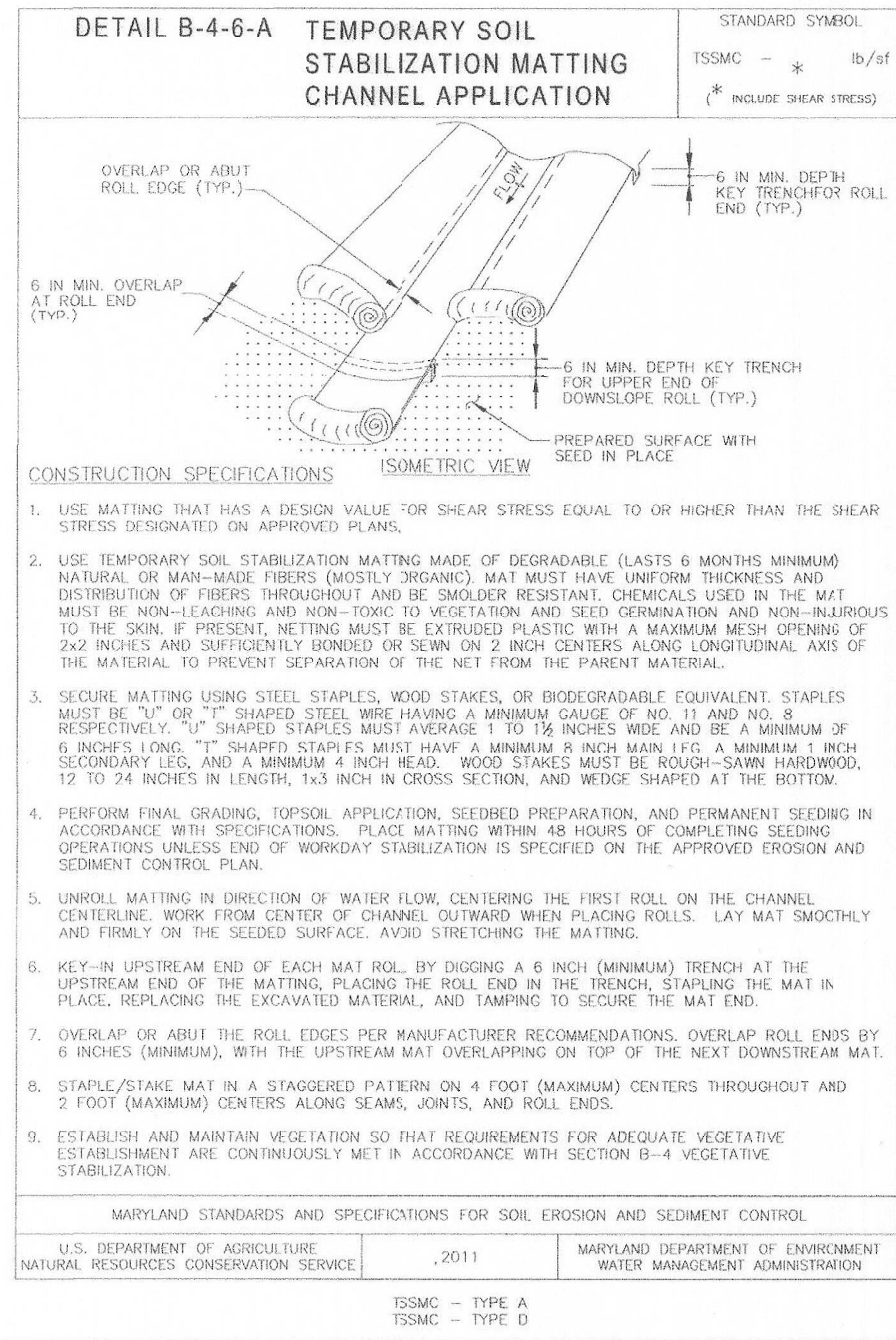
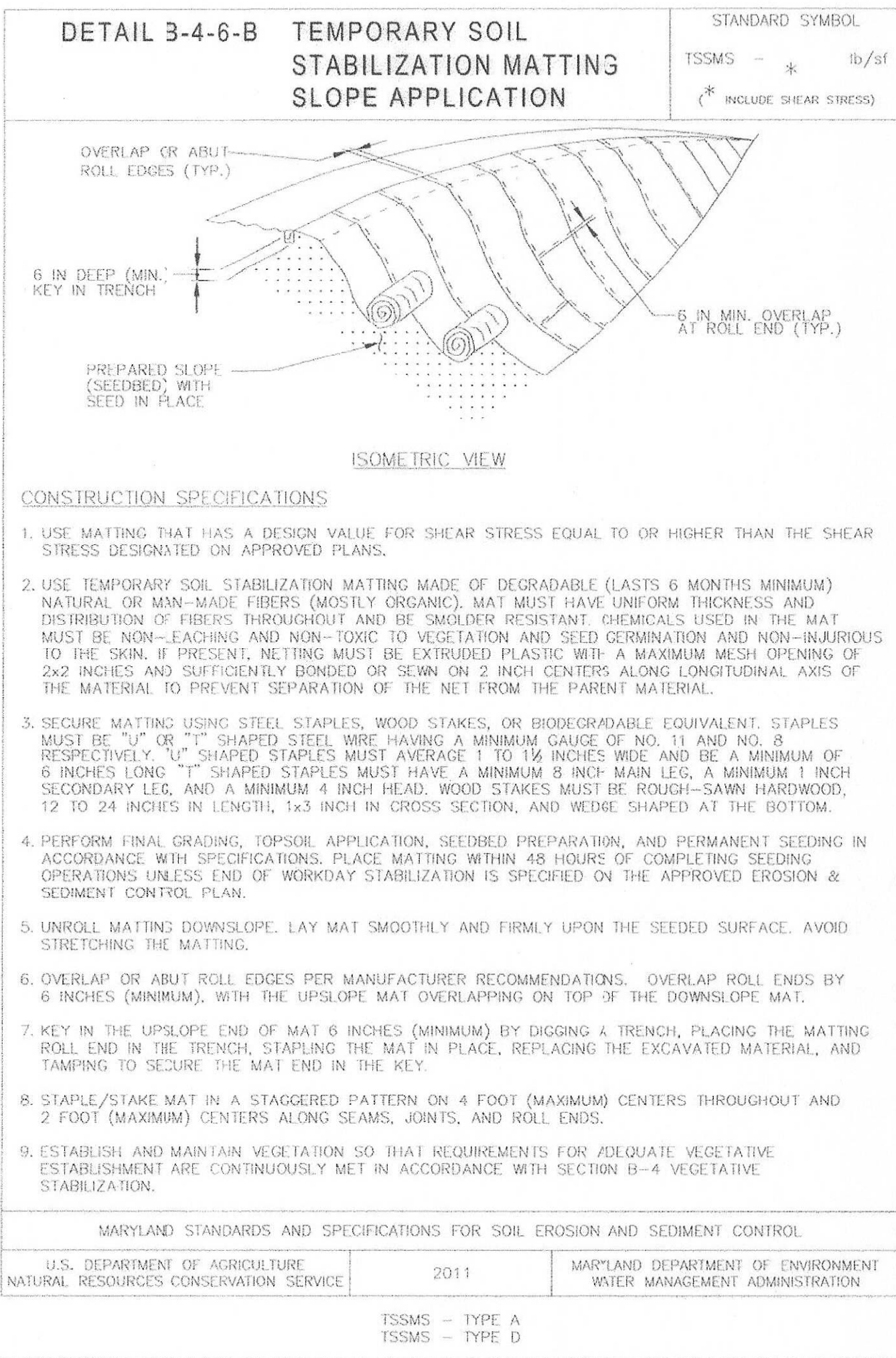
SCALE: 1" = 40'



REVISIONS		INTERCONNECT PLAN SHEET	
SCALE: 1" = 40'		ADVERTISED DATE: APRIL 2013	CONTRACT NO.: XX52451B5
DESIGNED BY: GS	COUNTY: HOWARD		
DRAWN BY: GS	LOGMILE: 13000106.01		
CHECKED BY: BJK	TIMS NO.: L836		
F.A.P. NO.:	TOD NO.:		
TS NO. 4912-IC	DRAWING SG-3	OF 3	SHEET NO. 45 OF 45

PLOTTED: 5/24/2016  
FILE: Q:\SMD\080488-001\_MonteVideo\_Road\CADD\p5SG-P6201\_MonteVideo.dgn





### B-4-2 STANDARDS AND SPECIFICATIONS

FOR  
SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

Definition  
The process of preparing the soil to maintain adequate vegetative stabilization.

Purpose  
To provide a suitable soil medium for vegetative growth.

Conditions Where Practice Applies  
Where vegetative stabilization is to be established.

Criteria

A. Soil Preparation

- Temporary Stabilization
  - Seeded 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 chain plows or ripper mounted on construction equipment. After the soil is loosened, it must not be rolled or clumped 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.
  - Apply fertilizer and lime as prescribed on the plans.
  - Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.
- Permanent Stabilization
  - A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
    - Soil pH between 6.0 and 7.0.
    - Solids calc less than 500 parts per million (ppm).
    - Soil contains less than 40 percent clay but enough fine grained material (greater than 20 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if legumes will be planted, then a sandy soil (less than 90 percent silt plus clay) would be acceptable.
    - Soil contains 1.5 percent minimum organic matter by weight.
    - Soil contains sufficient pore space to permit adequate root penetration.
  - Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
  - Graded areas must be maintained in a true and even grade as specified on the approved plan, then courted or otherwise loosened to a depth of 3 to 5 inches.

B. Topsoiling

- 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.
- Topsoil salvaged from an existing site may be provided it meets the standards 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.
- Topsoiling is limited to areas having 2:1 or flatter slopes where:
  - The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
  - The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish containing supplies of moisture and plant nutrients.
  - The original soil to be vegetated contains material toxic to plant growth.
  - The soil is so acidic that treatment with limestone is not feasible.
- Areas having slopes steeper than 2:1 require special consideration and design.

3. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:

- 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 compacted textured subsoils and must contain less than 3 percent by volume of cinders, stones, slag, coarse fragments, gravel, rocks, roots, trash, or other materials larger than 1 1/2 inches in diameter.
- 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.
- Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.

6. Topsoil Application

- Erosion and sediment control practices must be maintained when applying topsoil.
- Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
- Topsoil must not be placed if the topsoil or subsoil is in a frozen or starchy condition, when the subsoil is excessively wet or it is a condition that may otherwise be detrimental to proper grading and seeded preparation.

C. Soil Amendment (Fertilizer and Lime Specifications)

- Soil test must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analysis.
- Fertilizer must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Mixing may be authorized for fertilizers with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and quantity of the producer.
- Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydroseeding) which contains at least 50 percent total solids (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 90 percent will pass through a #100 mesh sieve and 98 to 100 percent will pass through a #200 mesh sieve.
- Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disking or other suitable means.
- When the subsoil is either highly acidic or composed of heavy clay, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

### B-4-2 STANDARDS AND SPECIFICATIONS

FOR  
SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

Definition  
The process of preparing the soil to maintain adequate vegetative stabilization.

Purpose  
To provide a suitable soil medium for vegetative growth.

Conditions Where Practice Applies  
Where vegetative stabilization is to be established.

Criteria

A. Soil Preparation

- Temporary Stabilization
  - Seeded 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 chain plows or ripper mounted on construction equipment. After the soil is loosened, it must not be rolled or clumped 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.
  - Apply fertilizer and lime as prescribed on the plans.
  - Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.
- Permanent Stabilization
  - A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
    - Soil pH between 6.0 and 7.0.
    - Solids calc less than 500 parts per million (ppm).
    - Soil contains less than 40 percent clay but enough fine grained material (greater than 20 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if legumes will be planted, then a sandy soil (less than 90 percent silt plus clay) would be acceptable.
    - Soil contains 1.5 percent minimum organic matter by weight.
    - Soil contains sufficient pore space to permit adequate root penetration.
  - Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
  - Graded areas must be maintained in a true and even grade as specified on the approved plan, then courted or otherwise loosened to a depth of 3 to 5 inches.

B. Topsoiling

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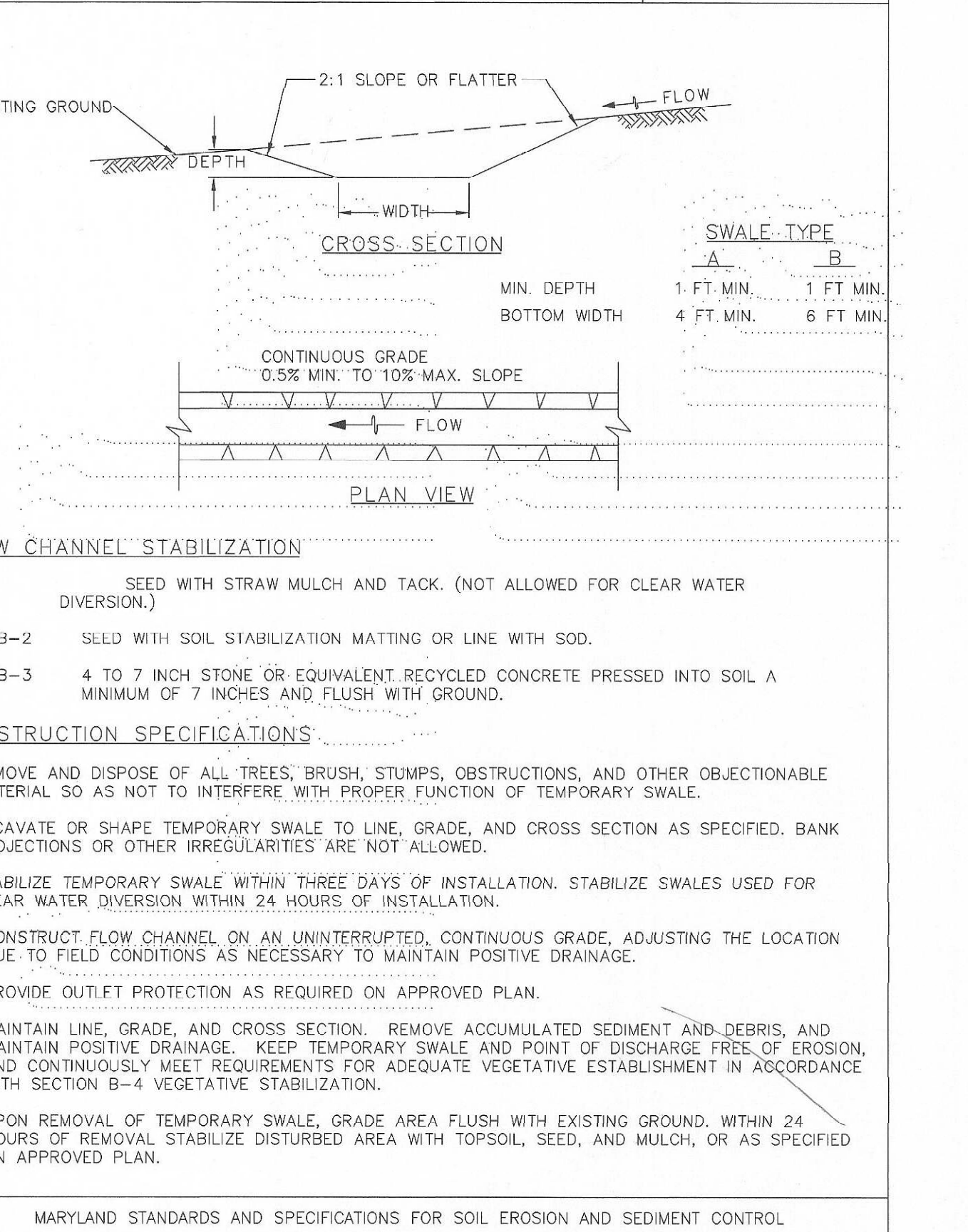
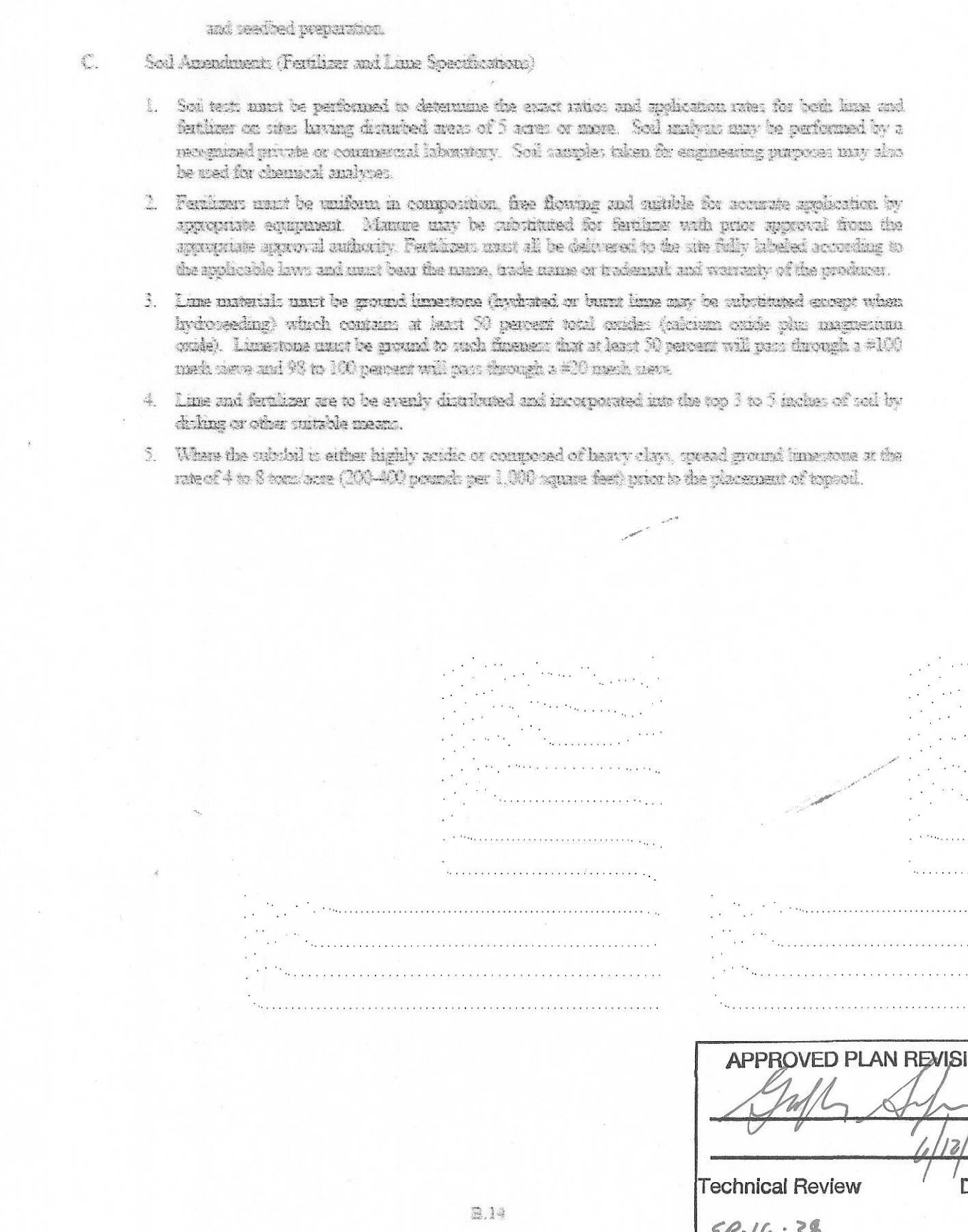
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- Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
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- When the subsoil is either highly acidic or composed of heavy clay, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.



DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Hulga Secor* 10/18/16  
DIRECTOR OF PUBLIC WORKS

*Thomas B. Butler* 10/17/16  
CHIEF, BUREAU OF ENGINEERING

*Draceni* 10/18/2016  
CHIEF, BUREAU OF HIGHWAYS

10-7-16

ALA  
ATHAVALE, LYSTAD & ASSOCIATES INC.  
Consulting Engineers Rockville, Maryland

DES: JK  
BY: RL  
NO: 3  
DATE: 3/2016

DRN: VAN  
CHK: MA

DATE: 3/2016

APPROVED PLAN REVISION  
*Hulga Secor*  
4/13/17  
Technical Review Date  
EP-16-38 3

CAPITAL PROJECT NO.  
J-4206-1A

MAP NO. BLOCK NO.

RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A  
EROSION & SEDIMENT CONTROL  
NOTES AND DETAILS

ELECTION DISTRICT 2 HOWARD COUNTY, MARYLAND

SCALE  
N.T.S.

SHEET  
32 OF 45

ED 5 OF 5



Standard Sequence of Construction for Storm Drainage

1. All construction of storm drainage pipes shall be done in a dry weather period (no precipitation forecasted for three days).
2. For pipes and structures to be removed or abandoned ensure that the outfall is blocked prior to removal. Excavate as needed and stabilize using same day stabilization.
3. For new construction the downstream structure must be installed first. The remaining system shall be installed in an upstream sequence.
4. The contractor shall cover and stabilize the ground above any structures or pipes installed the same day. At the end of the day the upstream openings of the system shall be temporarily blocked with sandbags or a similar measure. The contractor shall dewater and treat any water accumulated in the excavation prior to removal of the sandbags. The contractor may not leave the sand bags in place the next day and must install the next upstream part of the storm drainage system.

9. GRADE DITCH UPSTREAM OF ENDWALL IA E-2 AND STABILIZE USING SAME DAY STABILIZATION. (1 WEEK)
10. INSTALL STORM DRAINAGE UPSTREAM FROM MANHOLE IA M-7. CONNECT CWD ALONG US ROUTE 1 TO ENDWALL IA E-2. CONNECT CWD ALONG RELOCATED MONTEVIDEO ROAD TO INLET IA R-1. MODIFY PUMP OUTFLOW LINES TO OUTLET AT ENDWALL IA E-2. BLOCK ORIFICES AND OPENING IN THE RISER STRUCTURE IA R-1. INSTALL INLET PROTECTIONS. (4 WEEKS)
11. CONNECT MANHOLE IA M-7 TO MANHOLE IA M-5. BLOCK FLOW INTO EXISTING 27" PIPE AT STA. 110+45 RT AND REMOVE THE CONNECTION FROM THE PIPE TO MANHOLE IA M-7. REMOVE/ABANDON EXISTING 27" PIPE AS NEEDED (3 DAYS)
12. AFTER RECEIVING APPROVAL FROM HCDPW, CID CONSTRUCT RELOCATED MONTEVIDEO ROAD INCLUDING THE PROPOSED SIDEWALK AND THE PRELIMINARY GRADING FOR THE BIO-SWALE. PROVIDE CURB OPENINGS BEFORE THE INTERSECTION WITH US 1 TO ALLOW SEDIMENT LADEN WATER TO FLOW TOWARDS THE SUMP PIT OR TGS. (5 WEEKS)

FINAL PHASE:

13. AFTER RECEIVING APPROVAL FROM HCDPW, CID EXCAVATE THE PROPOSED POND EXCEPT FOR THE PORTION UPSTREAM OF THE TWIN CWD-24. INSTALL SUMP PITS AT THE LOW POINTS OF THE DEPRESSION. (6 WEEKS)

Erosion and Sediment Narrative:

Phase I, Segment A for the relocation of Montevideo Road involves construction from Station 110+00 (at the northbound edge of US Route 1) to Station 114+35. The work also includes the relocation/retrofit of existing SHA BMP #130196, the construction of a proposed bio-swale within the relocated Montevideo Road right-of-way, and installation of storm drainage along the west side of US 1.

Erosion and Sediment Control General Notes:

1. All runoff from disturbed areas shall be treated prior to entering SHA R/W or the areas shall be stabilized with same day stabilization.
2. All areas disturbed due to the installation and removal of erosion and sediment control devices shall be stabilized with same day stabilization.
3. Block all drainage pipes and structures from receiving runoff unless draining into a properly sized sediment control measure.
4. No temporary stockpiles are permitted.
5. All sump pits shall be powered and remain active to automatically dewater the work area at all times, including overnight.

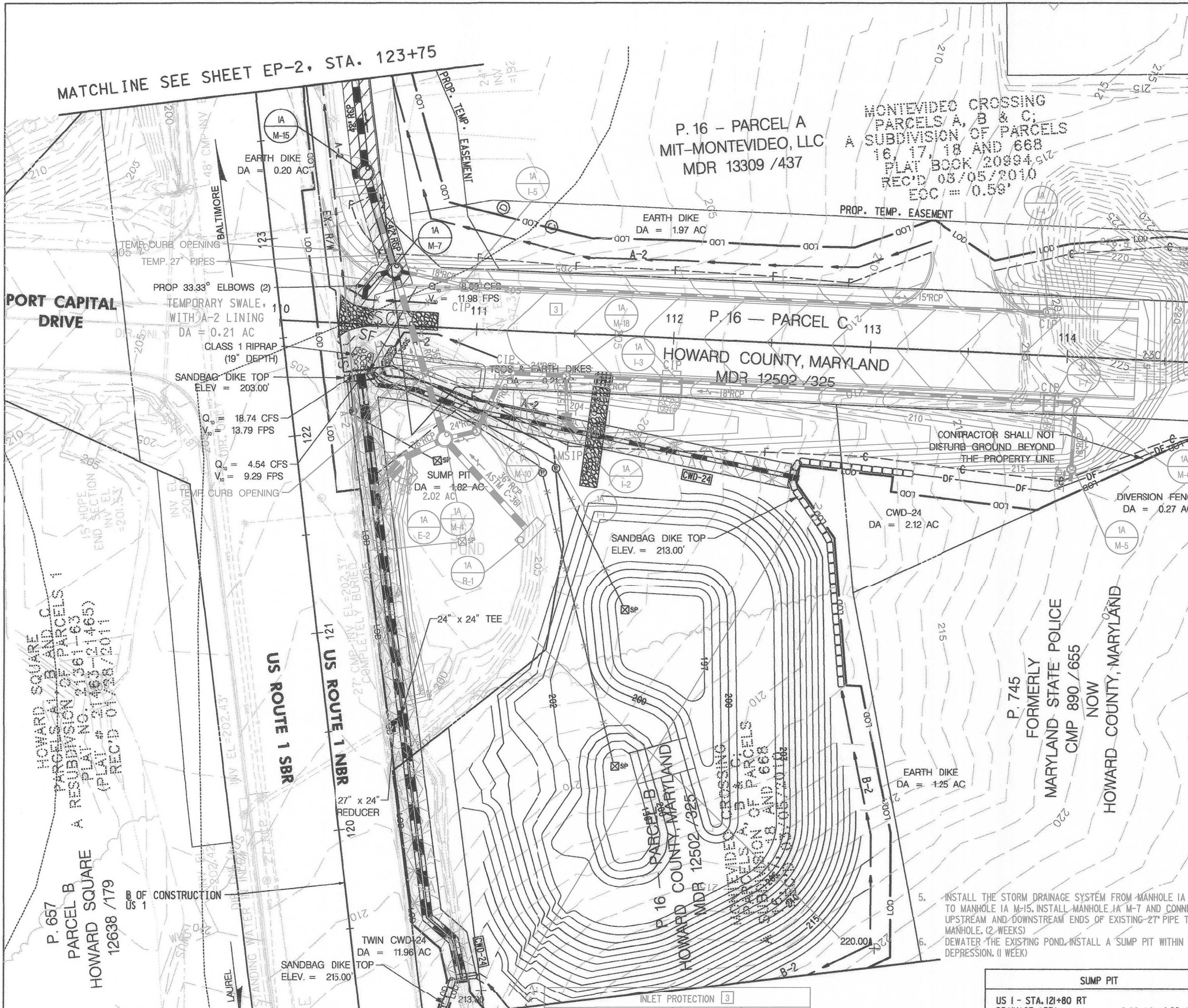
Sequence of Construction:

Initial Phase:

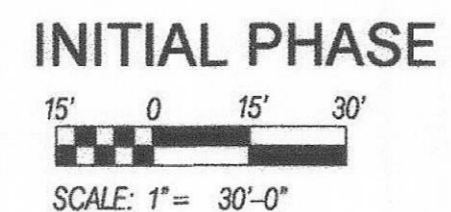
1. Contractor shall obtain grading permit from Howard County Department of Public Works, Construction Inspection Division (HCDPW, CID) prior to beginning construction.
2. Contractor shall contact HCDPW, CID at 410-313-1855 to schedule a pre-construction meeting at least 72 hours before construction is to begin.
3. Contractor must notify HCDPW, CID a minimum of 24 hours prior to the start of any construction.
4. Install stabilized construction entrance (SCE) for access to the site, as shown on the plan. Contractor may relocate the SCE with the approval of HCDPW, CID. SCE shall be modified to match edge of pavement after the removal of existing pavement. (1 Day) A MOUNTABLE BERM SHALL BE PROVIDED ON THE SCE.
5. Install the storm drainage system from manhole IA M-3 to manhole IA M-7. Connect existing 27" pipe to manhole IA M-7. (2 weeks)
6. Clear and grub as necessary for the installation of perimeter controls. Install perimeter controls such as TSOS, TGS, earth dikes, and clear water diversions (CWD), as shown on the plans. Provide soil stabilization matting (SSM) for area disturbed under CWDs. Connect existing 27" pipe at Sta. 120+50 to CWD. Install temporary access culvert (TAC). Contractor may relocate the TAC with the approval of HCDPW, CID. (1 Week)
7. Dewater the existing pond, install a sump pit within the depression. (1 week)
8. After receiving approval from HCDPW, CID, clear and grub the remaining area within the LOD, while maintaining CWD. (1 Week) TOWARDS THE SUMP PIT OR TGS.
9. Excavate the portion of the proposed pond that will not conflict with the existing pond. Install sump pits at the low points of the depression. (4 weeks)

Final Phase:

10. After receiving approval from HCDPW, CID, install storm drainage from manhole IA M-7 to riser structure IA R-1. Block orifices and openings in the riser structure. (2 weeks)
11. After receiving approval from HCDPW, CID, remove sump pit within the existing pond. Complete the grading of the proposed pond except for the portion upstream of the twin CWD-24. Place SSM as indicated on plans. (3 weeks)
12. Install storm drainage from endwall IA E-2 to manhole IA M-4. Grade ditch upstream of endwall IA E-2 and stabilize using same day stabilization. (2 weeks)
13. Install storm drainage system from proposed end section IA E-1 to manhole M 3-2. Remove temporary connection from existing 27" pipe to manhole IA M-7. Install manhole M 3-2. (1 week)
14. Install proposed storm drain across US 1 and construct proposed storm drain structures, piping, sidewalk, etc. along southbound US 1 using same day stabilization and SSM - removing/abandoning the existing storm drain beneath Port Capital Drive. Install inlet protection and silt fence for installation of Inlet IA-5 and manhole M 4-2 providing SSM for grading of the upstream area. (6 Weeks)
15. Modify twin CWD pipes along US 1 to connect to endwall IA E-2. Modify CWD along relocated Montevideo Road to connect to manhole IA M-4. Modify pump outflow lines to outlet at endwall IA E-2. Block flow into existing 27" pipe at Sta. 110+45 RT and remove connection from the pipe to manhole IA M-7. Remove adjacent TSOS, dikes, and silt fence. Remove/abandon existing 27" pipe as needed. (1 week)
16. After receiving approval from HCDPW, CID, construct relocated Montevideo Road, proposed sidewalk, and associated proposed storm drain systems utilizing inlet protection and TGS. (6 Weeks)
17. After stabilization of contributing drainage area, construct proposed bio-swale along eastbound relocated Montevideo Road. (1 Week)
18. After the SSM pond has been stabilized, remove twin CWD-24 and associated earth dike. Grade swale and remaining portion of SSM pond. The contractor shall not perform more work than what can be stabilized the same day. Stabilization will be done with SSM. Contractor shall do this work under dry weather conditions for 5 days. (1 week)
19. After all disturbed areas have been stabilized, remove all remaining erosion/sediment control measures with the approval of HCDPW, CID. (2 Days)



LOCATION	TYPE	DRAINAGE AREA
MONTEVIDEO RD - 111+50 RT	MEDIAN SUMP	0.53 AC
MONTEVIDEO RD - 113+90 LT	CURB	0.10 AC
MONTEVIDEO RD - 111+00 LT	CURB	0.25 AC
MONTEVIDEO RD - 111+15 RT	CURB	0.04 AC
MONTEVIDEO RD - 112+00 RT	CURB	0.09 AC
MONTEVIDEO RD - 113+90 RT	CURB	0.10 AC



SUMP PIT	
US 1 - STA. 121+80 RT	2.02 AC = 1.82 AC
DRAINAGE AREA	7272 CF = 6542 CF
STORAGE VOLUME REQUIRED	= 19,527 CF
STORAGE VOLUME PROVIDED	
US 1 - STA. 120+55 RT	
DRAINAGE AREA (COMBINED)	= 1.21 AC
TOP OF EMBANKMENT (INTERIM GRADE)	= 205.00'
STORAGE VOLUME REQUIRED	= 4372 CF
STORAGE VOLUME PROVIDED	= 119,848 CF

TEMPORARY STONE OUTLET STRUCTURE (TSOS)	
RELOCATED MONTEVIDEO ROAD - STA. 110+55 RT	
DRAINAGE AREA	= 0.21 AC
BOTTOM ELEVATION	= 201.00'
WEIR CREST ELEVATION	= 202.00'
STORAGE VOLUME REQUIRED	= 382 CF
STORAGE VOLUME PROVIDED	= 396 CF
TOP ELEVATION	= 202.50'

MATCHLINE SEE SHEET EP-2, STA. 123+75

MATCHLINE SEE SHEET EP-3, STA. 119+00

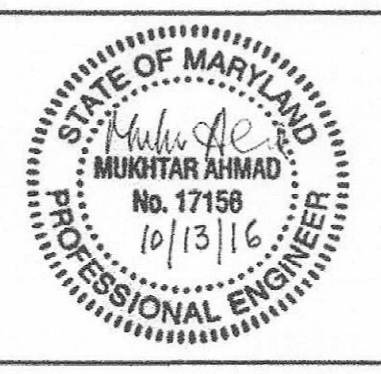
PROFESSIONAL ENGINEER CERTIFICATION  
I HEREBY CERTIFY THAT THIS DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND  
LICENSE NO. 17156, EXPIRATION DATE: NOVEMBER 28, 2016

FOR THE HOWARD SOIL CONSERVATION DISTRICT:  
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
DATE: 10/26/16

APPROVED PLAN REVISION  
Date: 4/12/14

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND  
DIRECTOR OF PUBLIC WORKS  
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

ATHA VALE, LYSTAD & ASSOCIATES INC.  
Consulting Engineers  
Rockville, Maryland



DES:	BY:	NO.	DATE:
JK	RL	3	5/17
DRN:	VAN		
CHK:	MA		
DATE:	3/2016		

CAPITAL PROJECT NO.  
J-4206-1A

RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A  
EROSION AND SEDIMENT CONTROL PLAN  
ELECTION DISTRICT 2  
HOWARD COUNTY, MARYLAND

EP-1 OF 6  
SCALE: 1"=30'  
SHEET: 33 OF 45



P. 14 PARCEL B  
 BLUE STREAM LLC  
 MDR 4389 /156  
 BLUE STREAM  
 CORPORATE CENTER  
 PARCELS A-G  
 A RESUBDIVISION OF BLUE STREAM PROPERTY  
 NON-BUILDABLE PARCEL B AND  
 A SUBDIVISION OF PARCELS 14 AND 558  
 PLAT BOOKS 17021-17024  
 REC'D. DATE 11/5/2004

P. 644 LOT 1  
 6601 LITTLE RIVER TURNPIKE, LLC  
 MDR 9011 /349

SECTION 1  
 PORT CAPITAL CENTER  
 PLAT BOOK 3545  
 REC'D. DATE 01/01/1985

P. 32  
 MUSIC FAIR ROAD LIMITED PARTNERSHIP  
 MDR 10774 /647

LORIE-ELKRIDGE  
 PARCEL A  
 PLAT BOOK 21424-21426  
 REC'D. DATE 01/07/2011

P. 28  
 RUN DEEP, L.L.C.  
 MDR 5315 /448

P. 16 - PARCEL A  
 MIT-MONTEVIDEO, LLC  
 MDR 13309 /437

MONTEVIDEO CROSSING  
 PARCELS A, B & C,  
 A SUBDIVISION OF PARCELS  
 16, 17, 18 AND 668  
 PLAT BOOK 20994  
 REC'D. 03/05/2010  
 EOC = 0.59'

TEMPORARY GABION OUTLET STRUCTURE (TGOS)	
US ROUTE 1 - STA. 124+90 RT	
DRAINAGE AREA	= 0.90 AC
BOTTOM ELEVATION	= 199.50'
WEIR CREST ELEVATION	= 201.75'
STORAGE VOLUME REQUIRED	= 1622 CF
STORAGE VOLUME PROVIDED	= 4617 CF
TOP ELEVATION	= 202.50'
TRANSITION DIKE HEIGHT	= 202.87'
TRANSITION DIKE LENGTH (NORTH)	= 95 LF
TRANSITION DIKE LENGTH (SOUTH)	= 165 LF

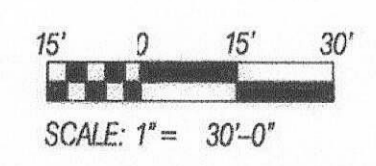
• NO EXCAVATION REQUIRED

APPROVED PLAN REVISION  
*[Signature]*  
 Technical Review Date 4/12/12

PROFESSIONAL ENGINEER CERTIFICATION  
 I HEREBY CERTIFY THAT THIS 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. 17156, EXPIRATION DATE: NOVEMBER 28, 2016

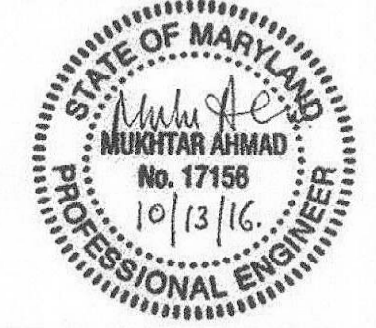
FOR THE HOWARD SOIL CONSERVATION DISTRICT:  
 THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
*[Signature]*  
 HOWARD SOIL CONSERVATION DISTRICT DATE 10/24/16

INITIAL PHASE



EP-2 OF 6

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND  
*Hulga Seawans* 10-18-16  
 DIRECTOR OF PUBLIC WORKS  
*Thomas A. Butler* 10/17/16  
 CHIEF, BUREAU OF ENGINEERING  
*[Signature]* 10/18/2016  
 CHIEF, BUREAU OF HIGHWAYS



DES:	JK	BY:	NO.	DATE:
DRN:	VAN	RL	3	5/17
CHK:	MA			
DATE:	3/2016			

CAPITAL PROJECT NO.  
**J-4206-1A**

RELOCATED MONTEVIDEO ROAD  
 PHASE 1, SEGMENT A  
 EROSION AND SEDIMENT CONTROL PLAN  
 ELECTION DISTRICT 2  
 HOWARD COUNTY, MARYLAND

SCALE  
 1"=30'  
 SHEET  
 34 OF 45

MATCHLINE SEE SHEET EP-1, STA. 123+75

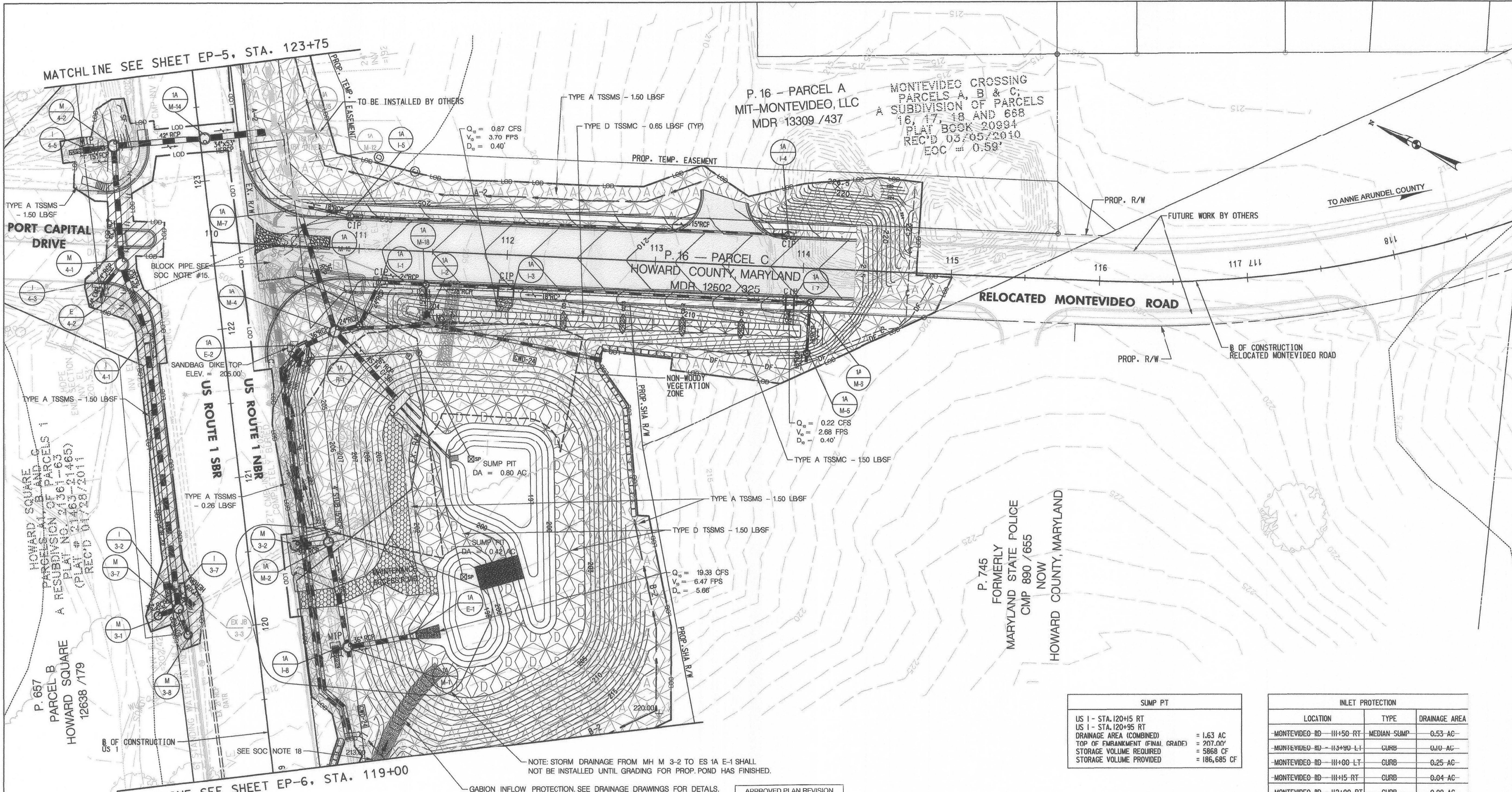
TO LAUREL

TO BALTIMORE

MONTEVIDEO ROAD

SEP-1002-MonteVideo-1A.dwg 10/17/2016





P. 16 - PARCEL A  
MIT-MONTEVIDEO, LLC  
MDR 13309 / 437

MONTEVIDEO CROSSING  
PARCELS A, B & C;  
A SUBDIVISION OF PARCELS  
16, 17, 18 AND 655  
PLAT BOOK 20894  
REC'D 03/05/2010  
ECC = 0.58'

P. 16 - PARCEL C  
HOWARD COUNTY, MARYLAND  
MDR 12502 / 325

P. 745  
FORMERLY  
MARYLAND STATE POLICE  
CMP 890 / 655  
NOW  
HOWARD COUNTY, MARYLAND

SUMP PIT	
US 1 - STA. 120+15 RT	
US 1 - STA. 120+95 RT	
DRAINAGE AREA (COMBINED)	= 1.63 AC
TOP OF EMBANKMENT (FINAL GRADE)	= 207.00'
STORAGE VOLUME REQUIRED	= 5868 CF
STORAGE VOLUME PROVIDED	= 186,685 CF

INLET PROTECTION			
LOCATION	TYPE		DRAINAGE AREA
MONTEVIDEO RD - 111+50 RT	MEDIAN-SUMP		0.53 AC
MONTEVIDEO RD - 113+90 LT	CURB		0.10 AC
MONTEVIDEO RD - 111+00 LT	CURB		0.25 AC
MONTEVIDEO RD - 111+15 RT	CURB		0.04 AC
MONTEVIDEO RD - 112+00 RT	CURB		0.09 AC
MONTEVIDEO RD - 113+90 RT	CURB		0.10 AC
US 1 - 119+80 RT	MEDIAN		0.07 AC
US 1 - 123+30 LT	MEDIAN		0.52 AC

NOTE: STORM DRAINAGE FROM MH M 3-2 TO ES 1A E-1 SHALL NOT BE INSTALLED UNTIL GRADING FOR PROP. POND HAS FINISHED.

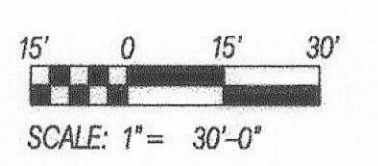
GABION INFLOW PROTECTION. SEE DRAINAGE DRAWINGS FOR DETAILS.

APPROVED PLAN REVISION  
*[Signature]*  
Technical Review Date

PROFESSIONAL ENGINEER CERTIFICATION  
I HEREBY CERTIFY THAT THIS 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. 17156, EXPIRATION DATE: NOVEMBER 28, 2016

FOR THE HOWARD SOIL CONSERVATION DISTRICT:  
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
*[Signature]* 10/24/16  
HOWARD SOIL CONSERVATION DISTRICT DATE

FINAL PHASE



EP-4 OF 6

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

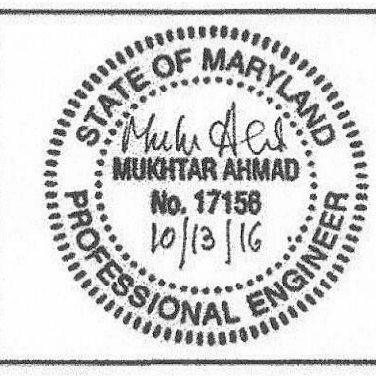
*[Signature]* 10-13-16  
DIRECTOR OF PUBLIC WORKS

*[Signature]* 10-17-16  
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

*[Signature]* 10/17/16  
CHIEF, BUREAU OF ENGINEERING

*[Signature]* 10/19/2016  
CHIEF, BUREAU OF HIGHWAYS

**ALA**  
ATHAVALE, LYSTAD & ASSOCIATES INC.  
Consulting Engineers Rockville, Maryland



DES:	BY	NO.	DATE
JK	RL	3	5/17
DRN:	VAN		
CHK:	MA		
DATE:			3/2016

REVISION TO SEQUENCE OF CONSTRUCTION

CAPITAL PROJECT NO.  
**J-4206-1A**

MAP NO. BLOCK NO.

**RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A**

**EROSION AND SEDIMENT CONTROL PLAN**

ELECTION DISTRICT 2 HOWARD COUNTY, MARYLAND

SCALE  
1"=30'

SHEET  
36 OF 45



**DETAIL B-4-6-B TEMPORARY SOIL STABILIZATION MATTING STAPLE APPLICATION**

STANDARD SYMBOL

ISSMS - \* lb/sf  
(\* INCLUDE SHEAR STRESS)

OVERLAP OR ABUT ROLL EDGES (TYP.)

6 IN DEEP (MIN.) KEY IN TRENCH

6 IN MIN. OVERLAP AT ROLL END (TYP.)

PREPARED SLOPE (SEEDBED) WITH SEED IN PLACE

ISOMETRIC VIEW

**CONSTRUCTION SPECIFICATIONS**

- USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
- USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SHEDDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2/2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
- SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 1/2 INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 3 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
- PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
- UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDBED SURFACE. AVOID STRETCHING THE MATTING.
- OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
- KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
- STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
- ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

ISSMS - TYPE A  
ISSMS - TYPE D

**DETAIL B-4-6-A TEMPORARY SOIL STABILIZATION MATTING CHANNEL APPLICATION**

STANDARD SYMBOL

ISSMC - \* lb/sf  
(\* INCLUDE SHEAR STRESS)

OVERLAP OR ABUT ROLL EDGE (TYP.)

6 IN MIN. OVERLAP AT ROLL END (TYP.)

6 IN MIN. DEPTH KEY TRENCH FOR UPPER END OF DOWNSLOPE ROLL (TYP.)

PREPARED SURFACE WITH SEED IN PLACE

ISOMETRIC VIEW

**CONSTRUCTION SPECIFICATIONS**

- USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
- USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SHEDDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2/2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
- SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 1/2 INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 3 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
- PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
- UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTERLINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MAT SMOOTHLY AND FIRMLY ON THE SEEDBED SURFACE. AVOID STRETCHING THE MATTING.
- KEY-IN UPSLOPE END OF EACH MAT ROLL BY DIGGING A 6 INCH (MINIMUM) TRENCH AT THE UPSLOPE END OF THE MATTING, PLACING THE ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END.
- OVERLAP OR ABUT THE ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE NEXT DOWNSLOPE MAT.
- STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
- ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

ISSMC - TYPE A  
ISSMC - TYPE D

**DETAIL H-4-2 TEMPORARY ACCESS CULVERT**

STANDARD SYMBOL

2 TO 3 IN AGGREGATE FILL

NONWOVEN GEOTEXTILE

PLAN

12 IN MIN. (TYP.)

AGGREGATE FILL

NONWOVEN GEOTEXTILE

SINGLE PIPE

DUAL PIPES

HIGH FLOW AREAS

AGGREGATE FILL

NONWOVEN GEOTEXTILE

SINGLE PIPE

SINGLE PIPE

HIGH FLOW AREAS

AGGREGATE FILL

NONWOVEN GEOTEXTILE

MULTIPLE PIPES

MULTIPLE PIPES

1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

**DETAIL H-4-2 TEMPORARY ACCESS CULVERT**

STANDARD SYMBOL

**CONSTRUCTION SPECIFICATIONS**

- CONSTRUCTION OR REMOVAL OF A TEMPORARY ACCESS CULVERT WILL NOT BE PERMITTED DURING THE FOLLOWING PERIODS:  
 USE I AND IP: MARCH 1 - JUNE 15  
 USE II: JUNE 1 - SEPTEMBER 30 AND DECEMBER 16 - MARCH 14  
 USE III AND III P: OCTOBER 1 - APRIL 30  
 USE IV: MARCH 1 - MAY 31  
 SAV (ALL FLOWING STREAMS): \*SUBMERGED AQUATIC VEGETATION: APRIL 15 - OCTOBER 15
- EXTEND THE CULVERT(S) A MINIMUM OF ONE FOOT BEYOND THE UPSLOPE AND DOWNSLOPE TOE OF THE AGGREGATE PLACED AROUND THE CULVERT.
- PLACE NONWOVEN GEOTEXTILE ON THE STREAM BED AND STREAM BANKS PRIOR TO PLACEMENT OF THE PIPE CULVERT(S) AND AGGREGATE. COVER THE STREAM BED WITH THE GEOTEXTILE AND EXTEND IT A MINIMUM SIX INCHES AND A MAXIMUM OF ONE FOOT BEYOND THE END OF THE CULVERT AND BEDDING MATERIAL. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS. GEOTEXTILE REDUCES SETTLEMENT AND IMPROVES CROSSING STABILITY.
- PLACE CULVERT(S) ON THE NATURAL STREAM BED GRADE TO MINIMIZE INTERFERENCE WITH FISH PASSAGE.
- COVER THE CULVERT WITH A MINIMUM OF ONE FOOT OF WASHED AGGREGATE. FOR MULTIPLE CULVERTS PROVIDE AT LEAST 12 INCHES OF COMPACTED AGGREGATE FILL BETWEEN CULVERTS.
- STABILIZE ALL AREAS DISTURBED DURING CULVERT INSTALLATION WITHIN 24 HOURS OF THE DISTURBANCE IN ACCORDANCE WITH STANDARDS FOR PERMANENT STABILIZATION, SECTION B-4-5 OR TEMPORARY STABILIZATION, SECTION B-4-4, AS APPLICABLE.
- STABILIZE APPROACH TO CROSSING AND KEEP FREE OF EROSION. REPLACE DISPLACED STONE, AND MAINTAIN HIGH FLOW AREAS. REMOVE DEBRIS TRAPPED BY CULVERT. REPLACE DAMAGED PIPE(S). MAINTAIN AREAS ADJACENT TO CROSSING TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
- AFTER THE TEMPORARY CROSSING IS NO LONGER NEEDED, REMOVE IT WITHIN 14 CALENDAR DAYS. IF SUBJECT TO THE USE DESIGNATION CLOSURE, REMOVE AT THE END OF CLOSURE PERIOD. PROTECT STREAM BANKS DURING CULVERT REMOVAL AND STABILIZE ALL DISTURBED AREAS WITH EROSION CONTROL MATTING. ACCOMPLISH REMOVAL OF THE CULVERT AND CLEAN UP OF THE AREA WITHOUT CONSTRUCTION EQUIPMENT WORKING IN THE WATERWAY CHANNEL. STORE ALL REMOVED MATERIALS IN AN APPROVED STAGING AREA.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

2 OF 2

**B-4-1 STANDARDS AND SPECIFICATIONS**

**SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS**

**Definition**

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

**Purpose**

To provide a suitable soil medium for vegetative growth.

**Conditions Where Practice Applies**

Where vegetative stabilization is to be established.

**Criteria**

**A. Soil Preparation**

**1. Temporary Stabilization**

- Seeded 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 chain plows or rippers mounted on construction equipment. After the soil is loosened, it must be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be treated with ridges running parallel to the contour of the slope.
- Apply fertilizer and lime as specified on the plans.
- Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.

**2. Permanent Stabilization**

- A soil test is required for any such disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative stabilization are:
  - Soil pH between 6.0 and 7.0
  - Soluble salts less than 500 parts per million (ppm)
  - 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 topsoil will be placed, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
  - Soil contains 1.5 percent minimum organic matter by weight
  - Soil contains sufficient pore space to permit adequate root penetration.
- Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
- Graded areas must be maintained in a true and even grade as specified on the approved plan, then seeded or otherwise covered to a depth of 3 to 5 inches.

**B. Topsoiling**

- Topsoil to be 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, unstable toxic to plants, and/or unacceptable soil gradation.
- Topsoil salvaged from an existing site may be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.
- Topsoiling is limited to areas having 2:1 or flatter slopes where:
  - The nature of the exposed subsoil parent material is not adequate to produce vegetative growth
  - 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.
  - The original soil to be replaced contains material toxic to plant growth.
  - The soil is so acidic that treatment with limestone is not feasible.
- Areas having slopes steeper than 2:1 require special consideration and design.

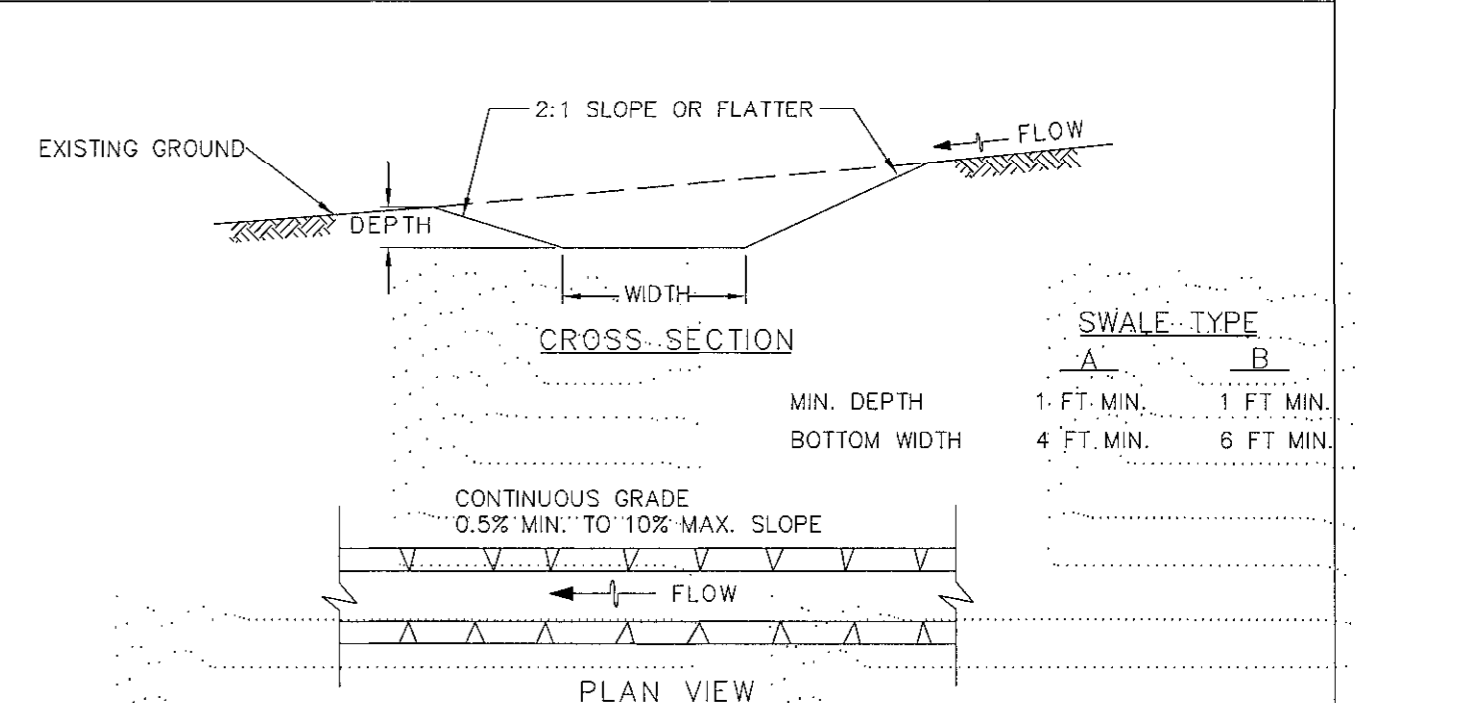
**3. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:**

- 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, twigs, or other materials larger than 1 1/2 inches in diameter.
- Topsoil must be free of noxious plants or plant parts such as Barren grass, quack grass, Johnson grass, rat tail, poison ivy, thistle, or other as specified.
- Topsoil substrates 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.
- Topsoil Application:
  - Erosion and sediment control practices must be maintained when applying topsoil.
  - Uniformly distribute topsoil as a 3 to 5 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that ridding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
  - Topsoil must not be placed if the topsoil or subsoil is in a frozen or stony condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

**C. Soil Amendment (Fertilizer and Lime Specifications)**

- Soil tests must be performed to determine the exact rates and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analyses may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
- Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.
- Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydroseeding) which contains at least 50 percent total oxidized calcium oxide plus magnesium oxide. Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 95 to 100 percent will pass through a #200 mesh sieve.
- Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disking or other suitable means.
- Where the subsoil is either highly acidic or composed of heavy clay, spread ground limestone at the rate of 4 to 8 tons (200-500 pounds per 1,000 square feet) prior to the placement of topsoil.

**DETAIL C-2 TEMPORARY SWALE**



**FLOW CHANNEL STABILIZATION**

- A-1 SEED WITH STRAW MULCH AND TACK. (NOT ALLOWED FOR CLEAR WATER DIVERSION.)
- A-2/B-2 SEED WITH SOIL STABILIZATION MATTING OR LINE WITH SOIL.
- A-3/B-3 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO SOIL A MINIMUM OF 7 INCHES AND FLUSH WITH GROUND.

**CONSTRUCTION SPECIFICATIONS**

- REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF TEMPORARY SWALE.
- EXCAVATE OR SHAPE TEMPORARY SWALE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.
- STABILIZE TEMPORARY SWALE WITHIN THREE DAYS OF INSTALLATION. STABILIZE SWALES USED FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.
- CONSTRUCT FLOW CHANNEL ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.
- PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
- MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS, AND MAINTAIN POSITIVE DRAINAGE. KEEP TEMPORARY SWALE AND POINT OF DISCHARGE FREE OF EROSION, AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
- UPON REMOVAL OF TEMPORARY SWALE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

ED 5 OF 5

885-5005 (www.dpw.state.md.us)

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Halgan Seaman 10/18/16*  
DIRECTOR OF PUBLIC WORKS

*Monica Butler 10/17/16*  
CHIEF, BUREAU OF ENGINEERING

*Michael 10/18/2016*  
CHIEF, BUREAU OF HIGHWAYS

**ALA**  
ATHAYALE, LYSTAD & ASSOCIATES, INC.  
Consulting Engineers Rockville, Maryland

DES: JK  
BY: RL  
NO: 3  
DATE: 5/17

DRN: VAN  
CHK: MA  
DATE: 3/2016

DETAIL ADDED

APPROVED PLAN REVISION

*[Signature]*  
6/12/17

Technical Review Date

EP-16-38

CAPITAL PROJECT NO.  
J-4206-1A

MAP NO. BLOCK NO.

RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A  
EROSION & SEDIMENT CONTROL  
NOTES AND DETAILS

ELECTION DISTRICT 2 HOWARD COUNTY, MARYLAND

SCALE  
N.T.S.

SHEET  
32 OF 49



Standard Sequence of Construction for Storm Drainage

- All construction of storm drainage pipes shall be done in a dry weather period (no precipitation forecasted for three days).
- For pipes and structures to be removed or abandoned ensure that the outfall is blocked prior to removal. Excavate as needed and stabilize using same day stabilization.
- For new construction the downstream structure must be installed first. The remaining system shall be installed in an upstream sequence.
- The contractor shall cover and stabilize the ground above any structures or pipes installed the same day. At the end of the day the upstream openings of the system shall be temporarily blocked with sandbags or a similar measure. The contractor shall dewater and treat any water accumulated in the excavation prior to removal of the sandbags. The contractor may not leave the sand bags in place the next day and must install the next upstream part of the storm drainage system.

- GRADE DITCH UPSTREAM OF ENDWALL IA E-2 AND STABILIZE USING SAME DAY STABILIZATION. (1 WEEK)
- INSTALL STORM DRAINAGE UPSTREAM FROM MANHOLE IA M-7. CONNECT CWD ALONG US ROUTE 1 TO ENDWALL IA E-2. CONNECT CWD ALONG RELOCATED MONTEVIDEO ROAD TO INLET IA I-2. MODIFY PUMP OUTFLOW LINES TO OUTLET AT ENDWALL IA E-2. BLOCK ORIFICES AND OPENING IN THE RISER STRUCTURE IA R-1. INSTALL INLET PROTECTIONS. (4 WEEKS)
- CONNECT MANHOLE IA M-7 TO MANHOLE IA M-15. BLOCK FLOW INTO EXISTING 27" PIPE AT STA. 110+45 RT AND REMOVE THE CONNECTION FROM THE PIPE TO MANHOLE IA M-7. REMOVE/ABANDON EXISTING 27" PIPE AS NEEDED (3 DAYS)
- AFTER RECEIVING APPROVAL FROM HCDPW, CID CONSTRUCT RELOCATED MONTEVIDEO ROAD INCLUDING THE PROPOSED SIDEWALK AND THE PRELIMINARY GRADING FOR THE BIO-SWALE. PROVIDE CURB OPENINGS BEFORE THE INTERSECTION WITH US 1 TO ALLOW SEDIMENT LADEN WATER TO FLOW TOWARDS THE SUMP PIT OR TGO'S. (5 WEEKS)

- FINAL PHASE:
- AFTER RECEIVING APPROVAL FROM HCDPW, CID EXCAVATE THE PROPOSED POND EXCEPT FOR THE PORTION UPSTREAM OF THE TWIN CWD-24. INSTALL SUMP PITS AT THE LOW POINTS OF THE DEPRESSION. (6 WEEKS)

Erosion and Sediment Narrative:

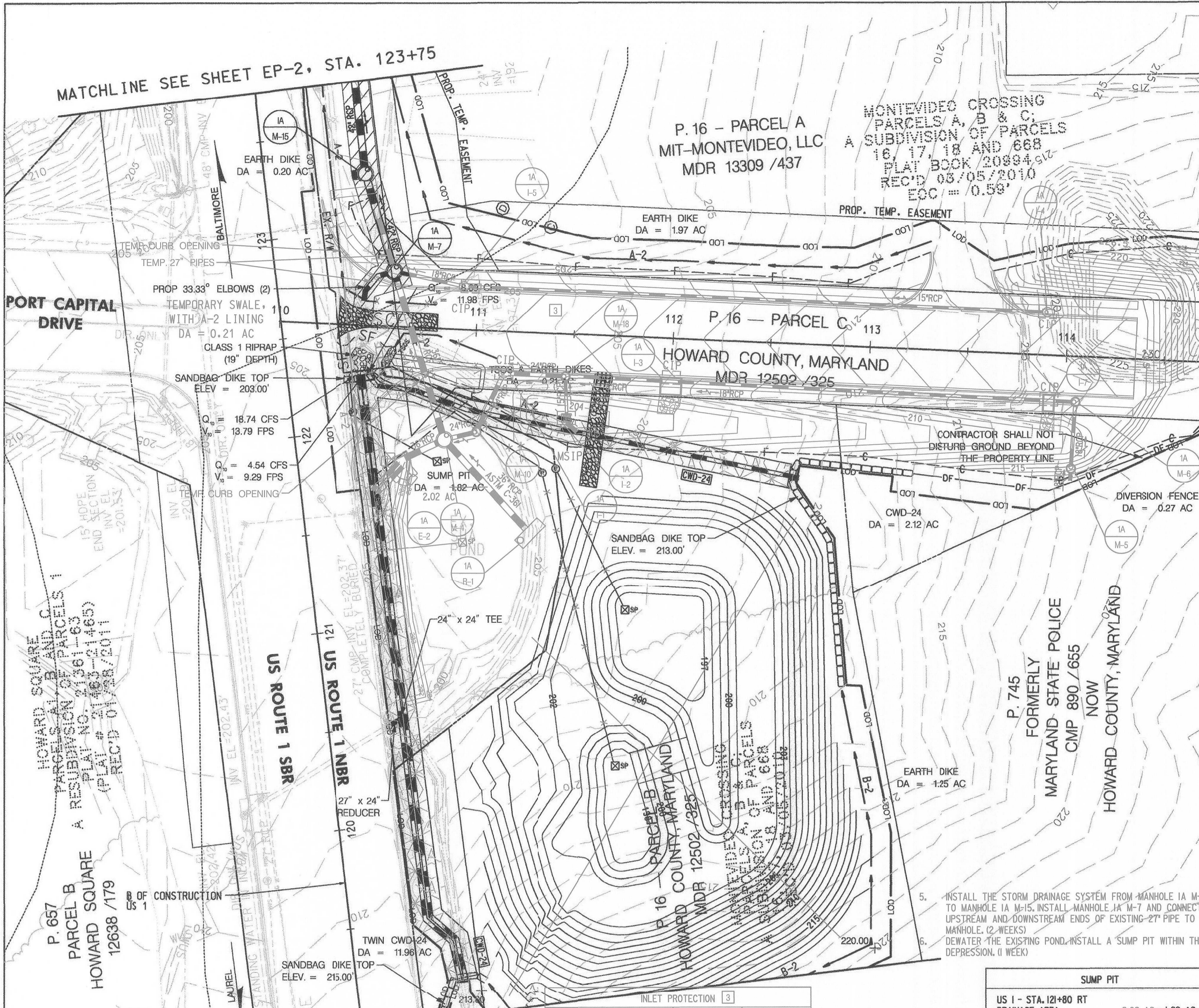
Phase I, Segment A for the relocation of Montevideo Road involves construction from Station 110+00 (at the northbound edge of US Route 1) to Station 114+35. The work also includes the relocation/retrofit of existing SHA BMP #30196, the construction of a proposed bio-swale within the relocated Montevideo Road right-of-way, and installation of storm drainage along the west side of US 1.

Erosion and Sediment Control General Notes:

- All runoff from disturbed areas shall be treated prior to entering SHA R/W or the areas shall be stabilized with same day stabilization.
- All areas disturbed due to the installation and removal of erosion and sediment control devices shall be stabilized with same day stabilization.
- Block all drainage pipes and structures from receiving runoff unless draining into a properly sized sediment control measure.
- No temporary stockpiles are permitted.
- All sump pits shall be powered and remain active to automatically dewater the work area at all times, including overnight.

Sequence of Construction:

- Initial Phase:
- Contractor shall obtain grading permit from Howard County Department of Public Works, Construction Inspection Division (HCDPW, CID) prior to beginning construction.
  - Contractor shall contact HCDPW, CID at 410-313-1855 to schedule a pre-construction meeting at least 72 hours before construction is to begin.
  - Contractor must notify HCDPW, CID a minimum of 24 hours prior to the start of any construction.
  - Install stabilized construction entrance (SCE) for access to the site, as shown on the plan. Contractor may relocate the SCE with the approval of HCDPW, CID. SCE shall be modified to match edge of pavement after the removal of existing pavement. (1 Day) A MOUNTABLE BERM SHALL BE PROVIDED ON THE SCE.
  - Install the storm drainage system from manhole IA M-3 to manhole IA M-7. Connect existing 27" pipe to manhole IA M-7. (2 weeks)
  - Clear and grub as necessary for the installation of perimeter controls. Install perimeter controls such as TSO's, TGO's, earth dikes, and clear water diversions (CWD), as shown on the plans. Provide soil stabilization matting (SSM) for area disturbed under CWD's. Connect existing 27" pipe at Sta. 120+50 to CWD. Install temporary access culvert (TAC). Contractor may relocate the TAC with the approval of HCDPW, CID. (1 Week)
  - Dewater the existing pond; install a sump pit within the depression. (1 week)
  - After receiving approval from HCDPW, CID, clear and grub the remaining area within the LOD, while maintaining CWD. (1 Week) TOWARDS THE SUMP PIT OR TGO'S.
  - Excavate the portion of the proposed pond that will not conflict with the existing pond; install sump pits at the low points of the depression. (4 weeks)
- Final Phase:
- After receiving approval from HCDPW, CID, install storm drainage from manhole IA M-7 to riser structure IA R-1. Block orifices and openings in the riser structure. (2 weeks)
  - After receiving approval from HCDPW, CID, remove sump pit within the existing pond. Complete the grading of the proposed pond except for the portion upstream of the twin CWD-24. Place SSM as indicated on plans. (3 weeks)
  - Install storm drainage from endwall IA E-2 to manhole IA M-4. Grade ditch upstream of endwall IA E-2 and stabilize using same day stabilization. (2 weeks)
  - Install storm drainage system from proposed end section IA E-1 to manhole M 3-2. Remove temporary connection from existing 27" pipe to the CWD prior to installing manhole M 3-2. (1 Week)
  - Install proposed storm drain across US 1 and construct proposed storm drain structures, piping, sidewalk, etc. along southbound US 1 using same day stabilization and SSM - removing/abandoning the existing storm drain beneath Port Capital Drive. Install inlet protection and silt fence for installation of Inlet 1A-5 and manhole M 4-2 providing SSM for grading of the upstream area. (6 Weeks)
  - Modify twin CWD pipes along US 1 to connect to endwall IA E-2. Modify CWD along relocated Montevideo Road to connect to manhole IA M-4. Modify pump outflow lines to outlet at endwall IA E-2. Block flow into existing 27" pipe at Sta. 110+45 RT and remove connection from the pipe to manhole IA M-7. Remove adjacent TSO's, dikes, and silt fence. Remove/abandon existing 27" pipe as needed. (1 week)
  - After receiving approval from HCDPW, CID, construct relocated Montevideo Road, proposed sidewalk, and associated proposed storm drain systems utilizing inlet protection and TGO's. (6 Weeks)
  - After stabilization of contributing drainage area, construct proposed bio-swale along eastbound relocated Montevideo Road. (1 Week)
  - After the SWM pond has been stabilized, remove twin CWD-24 and associated earth dike. Grade swale and remaining portion of SWM pond. The contractor shall not perform more work than that can be stabilized the same day. Stabilization will be done with SSM. Contractor shall do this work under dry weather conditions for 5 days. (1 week)
  - After all disturbed areas have been stabilized, remove all remaining erosion/sediment control measures with the approval of HCDPW, CID. (2 Days)



LOCATION	TYPE	DRAINAGE AREA
MONTEVIDEO RD - 111+50 RT	MEDIAN SUMP	0.53 AC
MONTEVIDEO RD - 113+90 LT	CURB	0.10 AC
MONTEVIDEO RD - 111+00 LT	CURB	0.25 AC
MONTEVIDEO RD - 111+15 RT	CURB	0.04 AC
MONTEVIDEO RD - 112+00 RT	CURB	0.09 AC
MONTEVIDEO RD - 113+90 RT	CURB	0.10 AC

**INITIAL PHASE**

US 1 - STA. 121+80 RT	2.02 AC = 1.82 AC
DRAINAGE AREA	7272 CF = 6542 CF
STORAGE VOLUME REQUIRED	= 19,527 CF
STORAGE VOLUME PROVIDED	
US 1 - STA. 120+15 RT	= 1.21 AC
US 1 - STA. 120+95 RT	= 202.00'
WEIR CREST ELEVATION	= 202.00'
STORAGE VOLUME REQUIRED	= 4372 CF
STORAGE VOLUME PROVIDED	= 119,846 CF

**SUMP PIT**

US 1 - STA. 121+80 RT	2.02 AC = 1.82 AC
DRAINAGE AREA	7272 CF = 6542 CF
STORAGE VOLUME REQUIRED	= 19,527 CF
STORAGE VOLUME PROVIDED	

**TEMPORARY STONE OUTLET STRUCTURE (TSOS)**

RELOCATED MONTEVIDEO ROAD - STA. 110+55 RT	
DRAINAGE AREA	= 0.21 AC
BOTTOM ELEVATION	= 201.00'
WEIR CREST ELEVATION	= 202.00'
STORAGE VOLUME REQUIRED	= 382 CF
STORAGE VOLUME PROVIDED	= 396 CF
TOP ELEVATION	= 202.50'

MATCHLINE SEE SHEET EP-2, STA. 123+75

MATCHLINE SEE SHEET EP-3, STA. 119+00

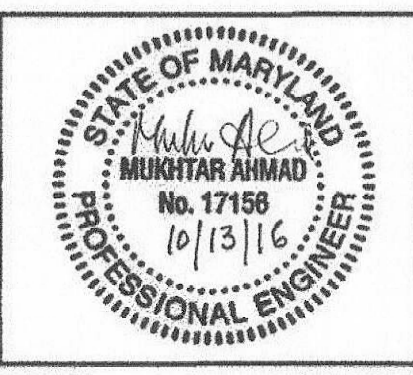
APPROVED PLAN REVISION  
 [Signature]  
 Technical Review Date 10/12/16

PROFESSIONAL ENGINEER CERTIFICATION  
 I HEREBY CERTIFY THAT THIS 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. 17156, EXPIRATION DATE: NOVEMBER 28, 2016

FOR THE HOWARD SOIL CONSERVATION DISTRICT:  
 THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
 [Signature]  
 HOWARD SOIL CONSERVATION DISTRICT DATE 10/26/16

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND  
 [Signature] 10-13-16  
 DIRECTOR OF PUBLIC WORKS  
 [Signature] 10-17-16  
 CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION  
 [Signature] 10/17/16  
 CHIEF, BUREAU OF ENGINEERING  
 [Signature] 10/18/2016  
 CHIEF, BUREAU OF HIGHWAYS

**ALA**  
 ATHAVALE, LYSTAD & ASSOCIATES INC.  
 Consulting Engineers Rockville, Maryland



DES:	BY:	NO.	DATE
JK	RL	3	5/17
DRN:	VAN		
CHK:	MA		
DATE:			3/2016

CAPITAL PROJECT NO.  
**J-4206-1A**

**RELOCATED MONTEVIDEO ROAD  
 PHASE 1, SEGMENT A  
 EROSION AND SEDIMENT CONTROL PLAN**

ELECTION DISTRICT 2 HOWARD COUNTY, MARYLAND

SCALE 1"=30'  
 SHEET 33 OF 45



MATCHLINE SEE SHEET EP-1, STA. 123+75

P. 14 PARCEL B  
 BLUE STREAM LLC  
 MDR 4389 /156  
 BLUE STREAM  
 CORPORATE CENTER  
 PARCELS A-C  
 A RESUBDIVISION OF BLUE STREAM PROPERTY  
 NON-BUILDABLE PARCEL B AND  
 A SUBDIVISION OF PARCELS 14 AND 558  
 PLAT BOOKS 17021-17024  
 REC'D. DATE 11/5/2004

P. 644 LOT 1  
 6601 LITTLE RIVER TURNPIKE, LLC  
 MDR 9011 /349

SECTION 1  
 PORT CAPITAL CENTER  
 PLAT BOOK 3545  
 REC'D. DATE 01/01/1955

P. 32  
 MUSIC FAIR ROAD LIMITED PARTNERSHIP  
 MDR 10774 /647

LORIAN-ELKRIDGE  
 PARCEL A  
 PLAT BOOK 21424-21426  
 REC'D. DATE 01/07/2011

P. 28  
 RUN DEEP, L.L.C.  
 MDR 5315 /448

P. 16 - PARCEL A  
 MIT-MONTEVIDEO, LLC  
 MDR 13309 /437

MONTEVIDEO CROSSING  
 PARCELS A, B & C,  
 A SUBDIVISION OF PARCELS  
 16, 17, 18 AND 668  
 PLAT BOOK 20984  
 REC'D 03/05/2010  
 EOC = 0.59'

TEMPORARY GABION OUTLET STRUCTURE (TGOS)	
US ROUTE 1 - STA. 124+90 RT	= 0.90 AC
DRAINAGE AREA	= 199.50'
BOTTOM ELEVATION	= 201.75'
WEIR CREST ELEVATION	= 1622 CF*
STORAGE VOLUME REQUIRED	= 202.50'
TOP ELEVATION	= 202.87'
TRANSITION DIKE HEIGHT	= 95 LF
TRANSITION DIKE LENGTH (NORTH)	= 165 LF
TRANSITION DIKE LENGTH (SOUTH)	= 1674 CF

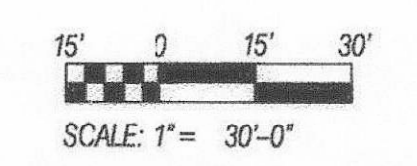
\* NO EXCAVATION REQUIRED

APPROVED PLAN  
 [Signature]  
 Technical Review Date 6/2/17

PROFESSIONAL ENGINEER CERTIFICATION  
 I HEREBY CERTIFY THAT THIS 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. 17156, EXPIRATION DATE: NOVEMBER 28, 2016

FOR THE HOWARD SOIL CONSERVATION DISTRICT:  
 THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
 [Signature]  
 HOWARD SOIL CONSERVATION DISTRICT DATE 10/24/16

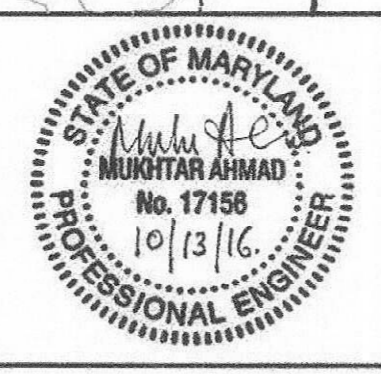
INITIAL PHASE



EP-2 OF 6

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND  
 Halger Seaman 10-18-16  
 DIRECTOR OF PUBLIC WORKS  
 Thomas E. Butler 10/17/16  
 CHIEF, BUREAU OF ENGINEERING  
 10-17-16  
 CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION  
 CHIEF, BUREAU OF HIGHWAYS

**ALA**  
 ATHAVALE, LYSTAD & ASSOCIATES INC.  
 Consulting Engineers  
 Rockville, Maryland



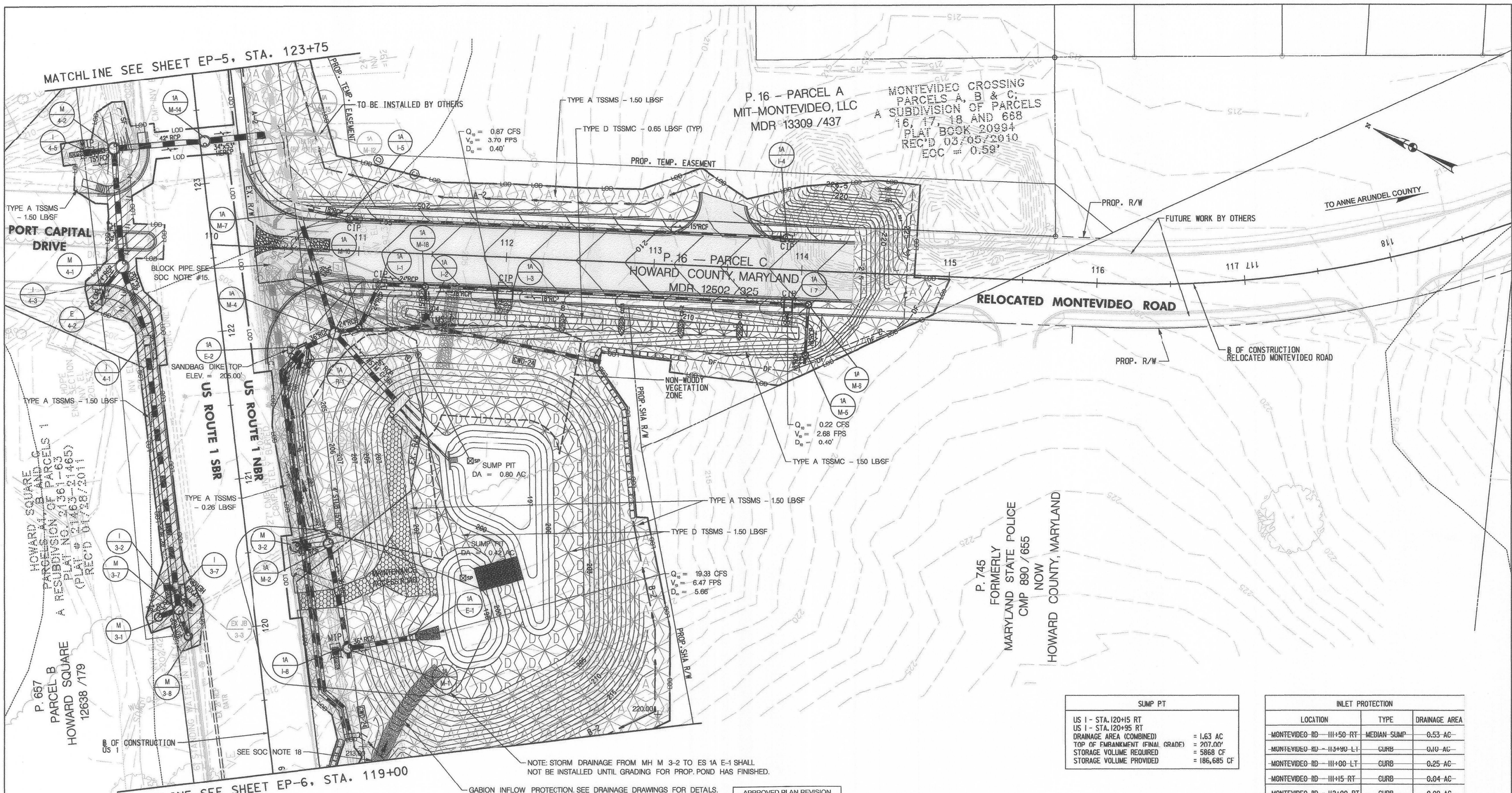
DES:	BY:	NO.:	DATE:
JK	RL	3	5/17
DRN:	VAN		
CHK:	MA		
DATE:	3/2016		

CAPITAL PROJECT NO.  
**J-4206-1A**

**RELOCATED MONTEVIDEO ROAD  
 PHASE 1, SEGMENT A**  
**EROSION AND SEDIMENT CONTROL PLAN**  
 ELECTION DISTRICT 2  
 HOWARD COUNTY, MARYLAND

SCALE  
 1"=30'  
 SHEET  
 34 OF 45





P. 16 - PARCEL A  
MIT-MONTEVIDEO, LLC  
MDR 13309 /437

MONTEVIDEO CROSSING  
PARCELS A, B & C;  
A SUBDIVISION OF PARCELS  
16, 17, 18 AND 688  
PLAT BOOK 20984  
REC'D 03/05/2010  
ECC = 0.58'

P. 16 - PARCEL C  
HOWARD COUNTY, MARYLAND  
MDR 12502 /325

P. 745  
FORMERLY  
MARYLAND STATE POLICE  
CMP 890 / 655  
NOW  
HOWARD COUNTY, MARYLAND

SUMP PT	
US 1 - STA. 120+15 RT	
US 1 - STA. 120+95 RT	
DRAINAGE AREA (COMBINED)	= 1.63 AC
TOP OF EMBANKMENT (FINAL GRADE)	= 207.00'
STORAGE VOLUME REQUIRED	= 5868 CF
STORAGE VOLUME PROVIDED	= 186,685 CF

INLET PROTECTION		
LOCATION	TYPE	DRAINAGE AREA
MONTEVIDEO RD - 111+50 RT	MEDIAN SUMP	0.53 AC
MONTEVIDEO RD - 113+90 LT	CURB	0.10 AC
MONTEVIDEO RD - 111+00 LT	CURB	0.25 AC
MONTEVIDEO RD - 111+15 RT	CURB	0.04 AC
MONTEVIDEO RD - 112+00 RT	CURB	0.09 AC
MONTEVIDEO RD - 113+90 RT	CURB	0.10 AC
US 1 - 119+80 RT	MEDIAN	0.07 AC
US 1 - 123+30 LT	MEDIAN	0.52 AC

MATCHLINE SEE SHEET EP-6, STA. 119+00

NOTE: STORM DRAINAGE FROM MH M 3-2 TO ES 1A E-1 SHALL NOT BE INSTALLED UNTIL GRADING FOR PROP. POND HAS FINISHED.

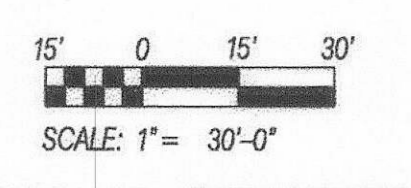
GABION INFLOW PROTECTION. SEE DRAINAGE DRAWINGS FOR DETAILS.

APPROVED PLAN REVISION  
*[Signature]*  
9/27/17  
Technical Review Date

PROFESSIONAL ENGINEER CERTIFICATION  
I HEREBY CERTIFY THAT THIS 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. 17156, EXPIRATION DATE: NOVEMBER 28, 2016

FOR THE HOWARD SOIL CONSERVATION DISTRICT:  
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
*[Signature]* 10/29/16  
HOWARD SOIL CONSERVATION DISTRICT DATE

FINAL PHASE



EP-4 OF 6

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

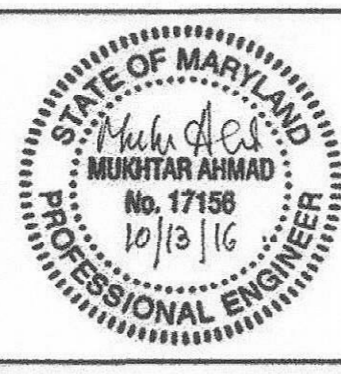
*[Signature]* 10-13-16  
DIRECTOR OF PUBLIC WORKS

*[Signature]* 10-17-16  
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

*[Signature]* 10/17/16  
CHIEF, BUREAU OF ENGINEERING

*[Signature]* 10/19/2016  
CHIEF, BUREAU OF HIGHWAYS

**ALA**  
ATHAVALE, LYSTAD & ASSOCIATES INC.  
Consulting Engineers Rockville, Maryland



DES:	JK	BY	NO.	DATE
DRN:	VAN	RL	3	5/17
CHK:	MA			
DATE:	3/2016			

CAPITAL PROJECT NO.  
**J-4206-1A**

**RELOCATED MONTEVIDEO ROAD  
PHASE 1, SEGMENT A**

**EROSION AND SEDIMENT CONTROL PLAN**

ELECTION DISTRICT 2  
HOWARD COUNTY, MARYLAND

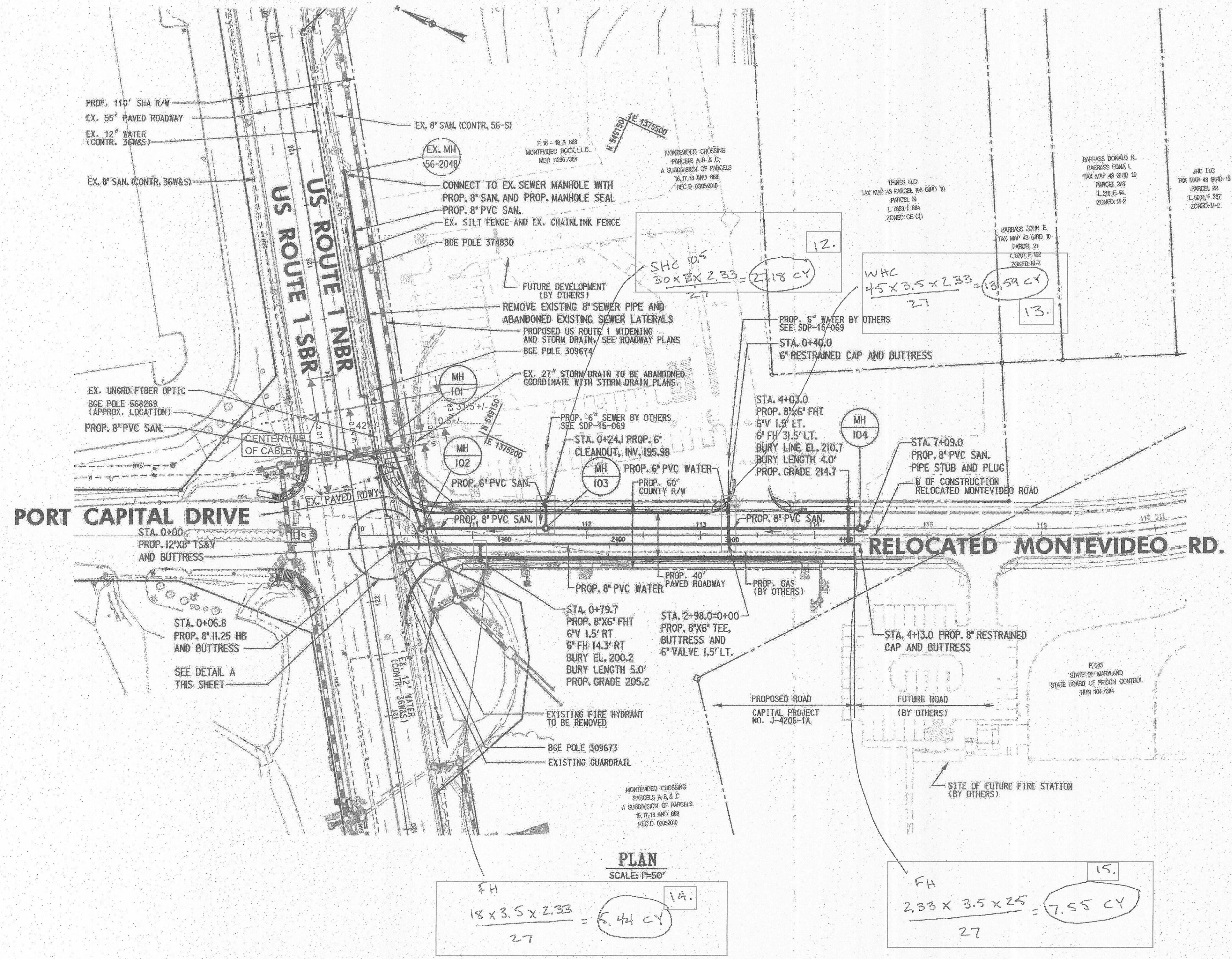
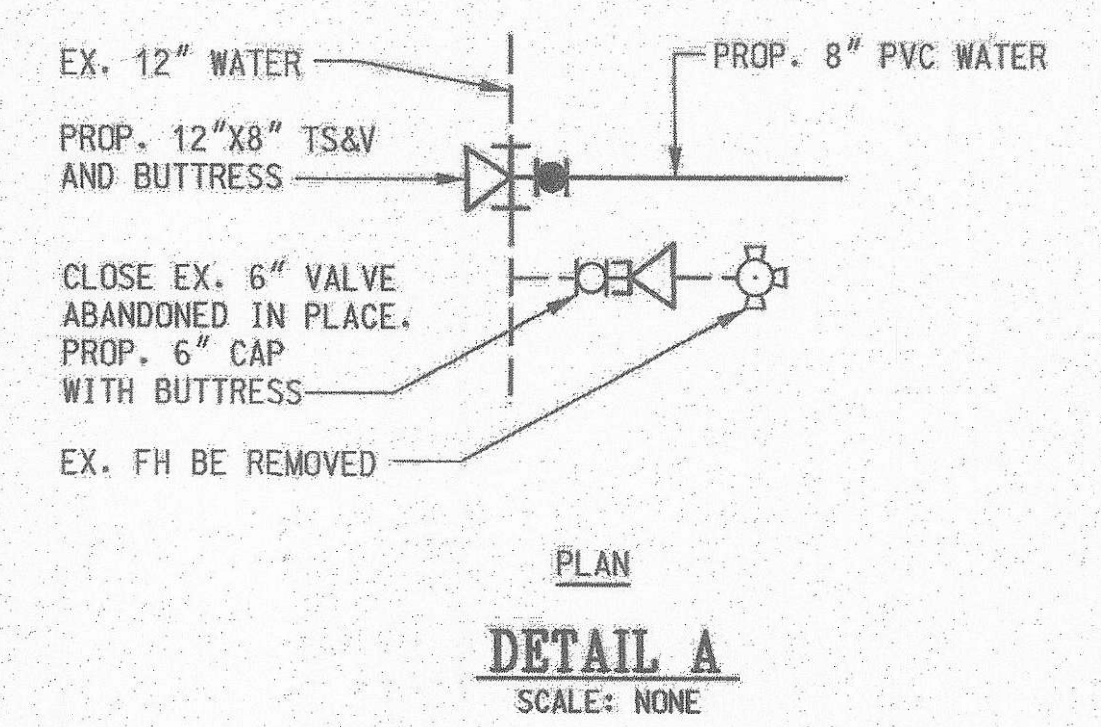
SCALE  
1"=30'  
SHEET  
36 OF 45



WATER MAIN STAKEOUT COORDINATE SCHEDULE				
STATION	FITTING	INVERT	NORTHING	EASTING
0+00	12"x8" TS&V	199.2+/-	549189.39	1375076.19
0+06.8	8" 11.25' HB	199.4	549183.85	1375080.27
0+09.3	8" 11.25' VB	199.5	549181.57	1375081.30
0+12.8	8" 11.25' VB	200.2	549178.37	1375082.73
0+79.7	8"x6" FHT	200.2	549117.34	1375110.16
0+86.2	8" HD COUPLING	200.3	549111.59	1375112.73
1+31.5	8" HD COUPLING	200.9	549070.27	1375131.29
2+98.0	8"x6" FHT	206.5	548918.44	1375199.48
4+03.0	8"x6" FHT	210.4	548822.63	1375242.53
4+13.0	8" CAP	210.5	548813.15	1375246.78

SEWER MAIN STAKEOUT COORDINATE SCHEDULE						
MH NO.	RIM EL.	INV. IN	INV. OUT	NORTHING	EASTING	STD. DTL. NO.
EX. MH 56-2048	198.0	189.30+/-	189.30+/-	549359.62	1375357.35	
101	202.7	190.62	190.52	549228.63	1375162.01	G-5.12
102	204.0	191.04	190.94	549170.17	1375101.66	G-5.12
103	206.4	194.96/195.03	194.86	549070.53	1375146.41	G-5.12
104	214.2	204.72	204.62	548818.24	1375259.46	G-5.12

- CORROSION CONTROL GENERAL NOTES (PVC):**
- ALL NEW DUCTILE IRON FITTINGS, VALVES, TAPPING SLEEVES, AND FIRE HYDRANT PIPE ALONG THE PVC WATER MAIN ARE TO BE PROVIDED WITH CORROSION PROTECTION, SEE DETAILS C-5.01, -5.03, C-5.04, 5-5.05, C-5.07, C-5.08, AND C-5.09.
  - FOR THERMITE WELD TO CONNECTOR PLATE, SEE DETAIL C-5.13.
  - FOR HORIZONTAL THERMITE WELDS TO DUCTILE IRON PIPE, SEE DETAIL C-3.04. FOR VERTICAL THERMITE WELDS TO DUCTILE IRON PIPE, SEE DETAIL C-3.05.
  - FOR PLACEMENT OF ANODES, SEE DETAILS C-5.14 OR C-5.15.
  - DO NOT MAKE THERMITE WELDS TO PVC PIPE.
  - POLYETHYLENE ENCASUREMENT SHALL NOT BE INSTALLED ON NEW DUCTILE IRON WATER PIPING.
  - DUCTILE IRON PIPE THAT WILL BE IN DIRECT CONTACT WITH POURED CONCRETE, SUCH AS AT THRUST BLOCKS, ETC., SHALL BE FIELD COATED WITH 20 MILS OF MASTIC (ROYSTON R28 OR APPROVED EQUAL). THE MASTIC COATING SHALL BE APPLIED IN TWO COATS, EACH COAT TO BE A MINIMUM OF 10 MILS IN THICKNESS.
  - INSTALL SEPARATOR MESH ON WATER MAIN AT EXISTING UTILITY CROSSINGS IF THERE IS LESS THAN 12 INCHES OF SPACING BETWEEN THEM, SEE DETAIL C-4.06.
  - CONTRACTOR TO NOTIFY ENGINEER 72 HOURS PRIOR TO INSTALLATION OF CORROSION CONTROL COMPONENTS.

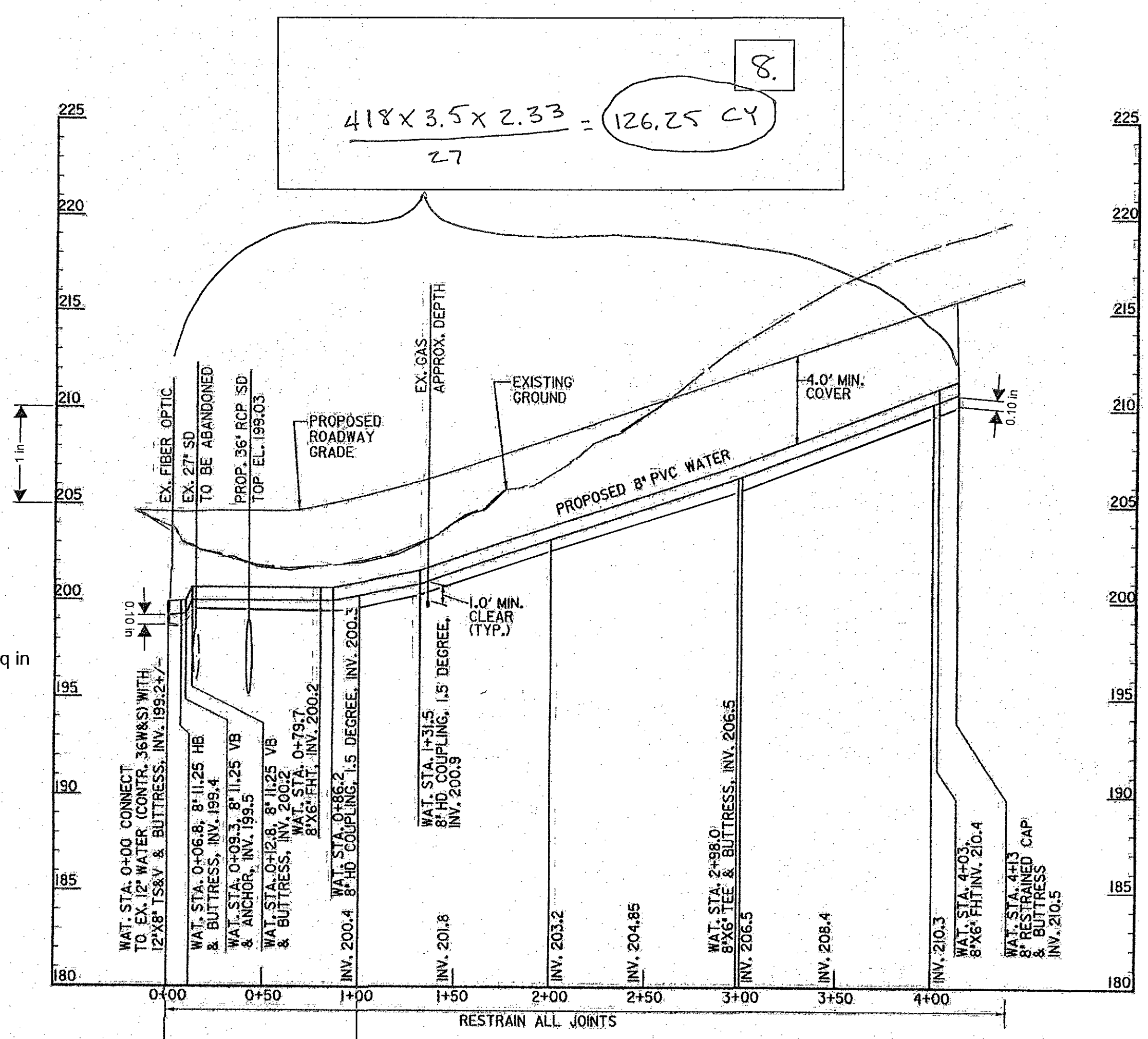


PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 25630, EXPIRATION DATE: 02/05/2017.

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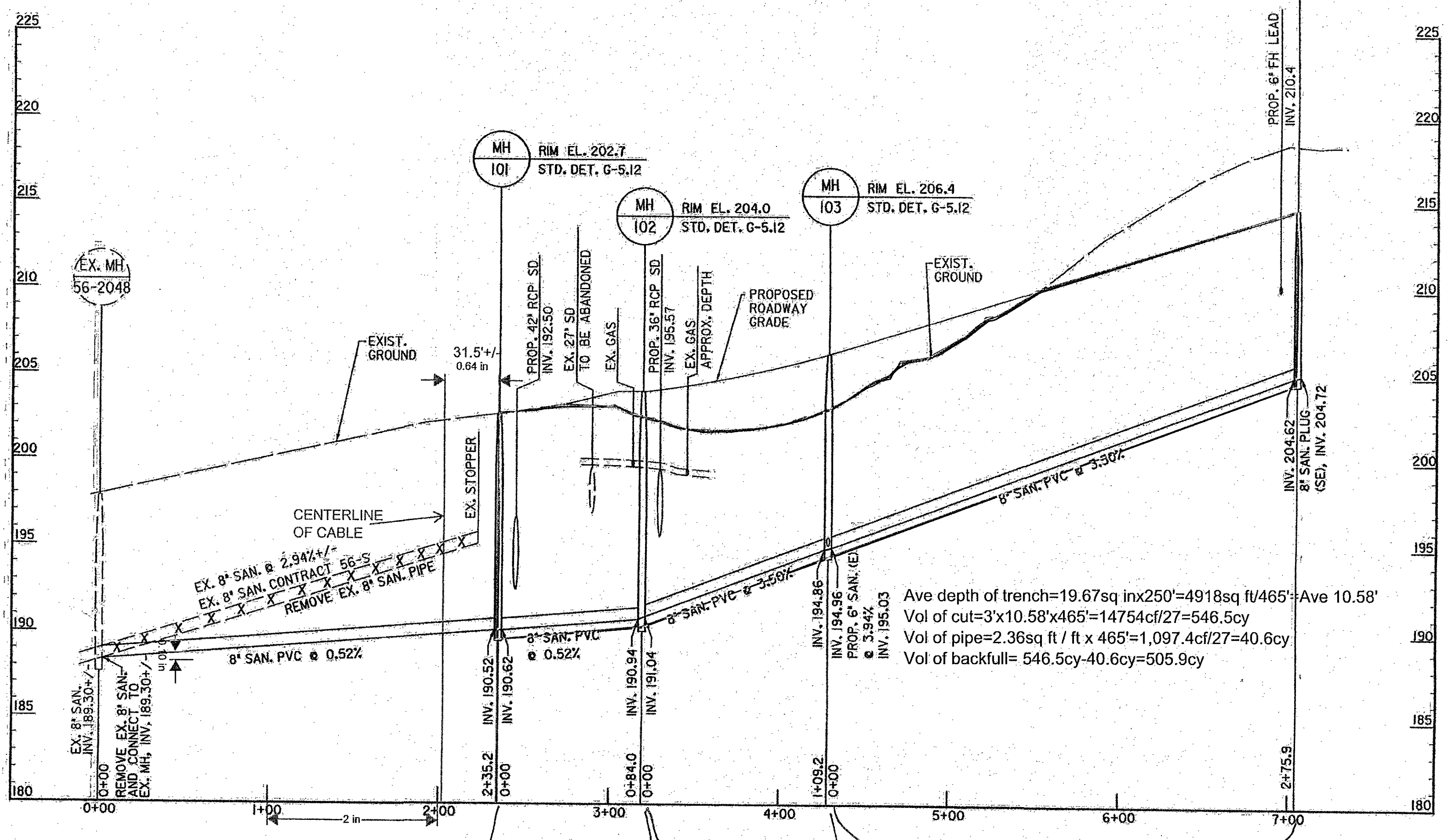
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND Director of Public Works: <i>[Signature]</i> 3/10/16 Chief, Bureau of Engineering: <i>[Signature]</i> 3/9/16 Chief, Utility Design Division: <i>[Signature]</i> 3/9/16		JOHN J. MIRMIRAN & THOMPSON Engineering A Brighter Future 72 Loveton Circle Baltimore, Maryland 21152-0949		DES: RAF DRN: RAF CHR: LAF DATE: 3/7/2016 BY NO.	PLAN DATE 600' SCALE MAP NO. 43 BLOCK NO. 9	RELOCATED MONTEVIDEO ROAD WATER AND SEWER PLANS PHASE I, SEGMENT A CAPITAL PROJECT No. W8248 CONTRACT No. 14-4852 ELECTION DISTRICT 2 HOWARD COUNTY, MARYLAND	UT-2 OF 3 SCALE AS SHOWN SHEET 2 OF 3
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**WATER PROFILE**  
SCALE: HORIZONTAL 1"=50'  
VERTICAL 1"=5'

Area=6.98sq inches  
Ave depth of cut=250sq ft / sq in x 6.98'=1745sq ft/413'=4.23'  
Vol of cut = 3'x4.23'x413'=2,984cu ft=110.5cy  
Vol of pipe = 8" x 1.006" = 9.006" DIA/12 = 0.7505' = 2.36SQ FT/FT x 413' = 310CF/27 = 11.18CU YD.  
Vol of backfill = 110.5cy - 11.2cy = 99cy



**SEWER PROFILE**  
SCALE: HORIZONTAL 1"=50'  
VERTICAL 1"=5'

Ave depth of trench = 19.67sq in x 250' = 4918sq ft/465' = Ave 10.58'  
Vol of cut = 3' x 10.58' x 465' = 14754cf/27 = 546.5cy  
Vol of pipe = 2.36sq ft / ft x 465' = 1,097.4cf/27 = 40.6cy  
Vol of backfill = 546.5cy - 40.6cy = 505.9cy

$$\frac{84 \times \frac{9.58 + 10.56}{2} \times 4.33}{27} = 36.65 \text{ CY}$$

$$\frac{275.9 \times \frac{8.94 + 7.5}{2} \times 4.33}{27} = 365.47 \text{ CY}$$

TOTAL VOL OF 9,10&11=672.7cy

$$\frac{109.2 \times \frac{10.46 + 9.04}{2} \times 4.33}{27} = 170.75 \text{ CY}$$

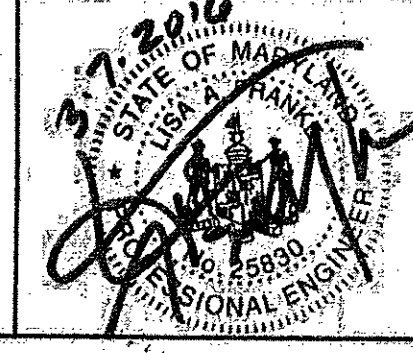
PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 25830, EXPIRATION DATE: 02/05/2017.

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*James R. Butler*  
DIRECTOR OF PUBLIC WORKS  
3/16/16

*Thomas S. Butler*  
ENGINEER, BUREAU OF ENGINEERING  
3/16/16  
CHIEF, UTILITY DESIGN DIVISION

**JMT**  
JOHNSON, MIRMIRAN & THOMPSON  
Engineering A Brighter Future  
72 Lovett Circle Baltimore, Maryland 21162-0949



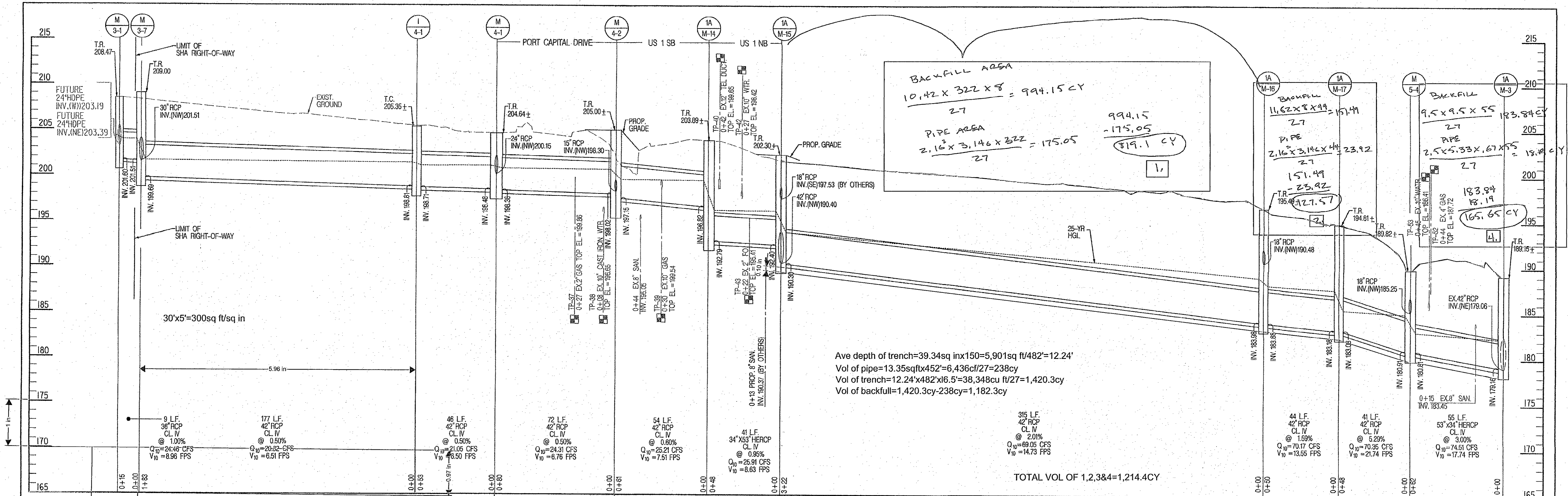
DES:	RAF
DRN:	RAF
CHK:	LAF
DATE:	3/1/2016
BY:	NO.
DATE:	600' SCALE MAP NO. 43 BLOCK NO. 9

**PROFILES**

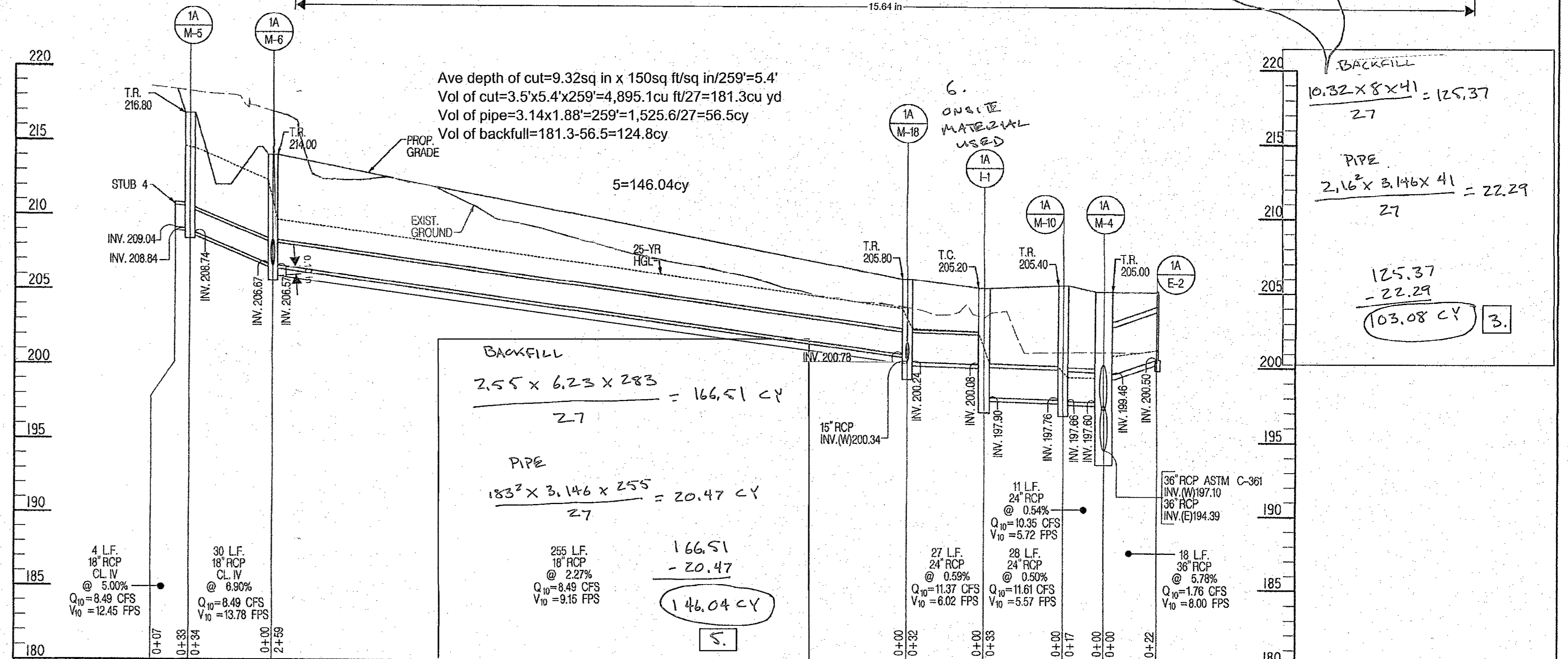
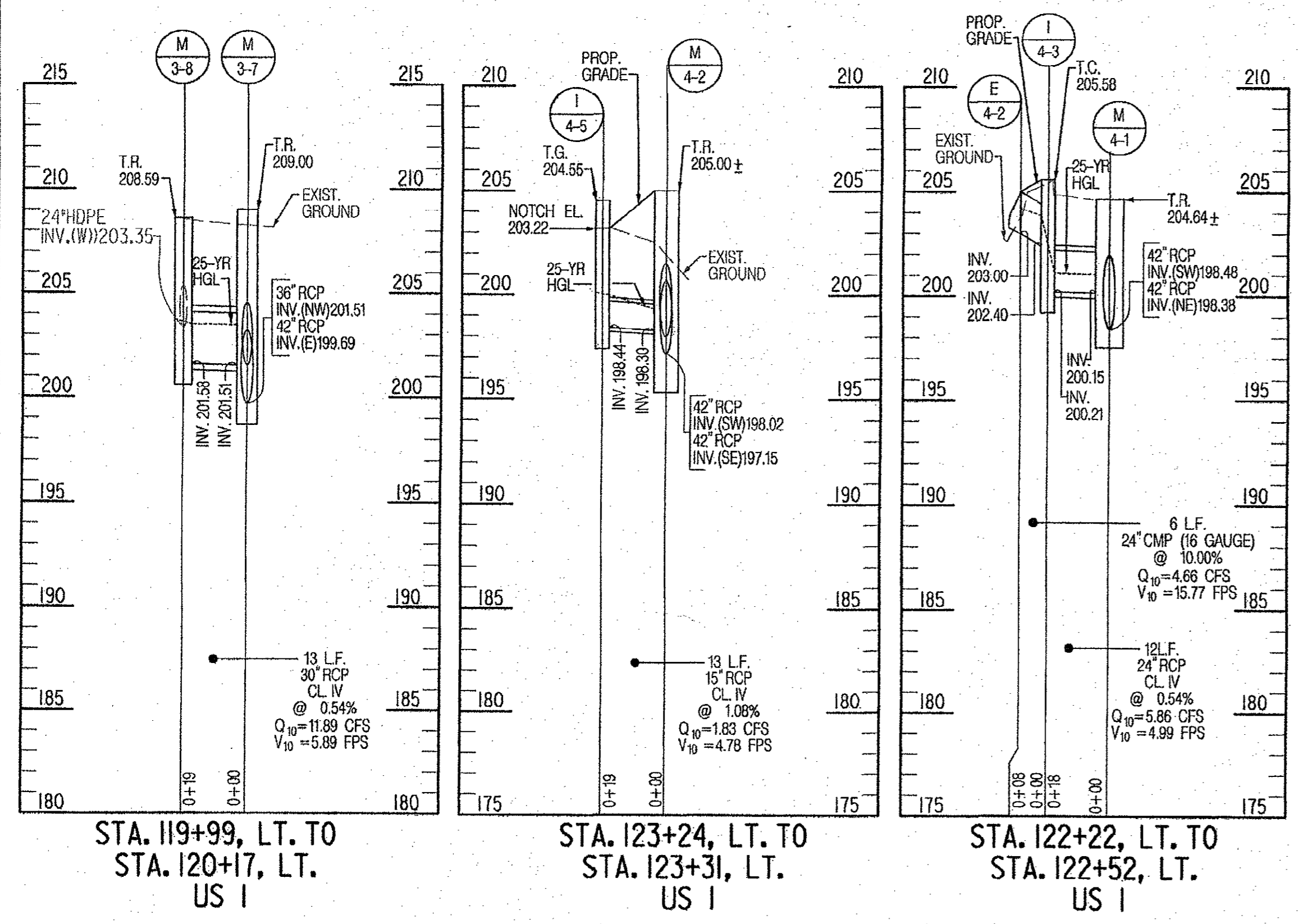
**RELOCATED MONTEVIDEO ROAD  
WATER AND SEWER PLANS  
PHASE I, SEGMENT A**

CAPITAL PROJECT No. W8248  
CONTRACT No. 14-4852  
ELECTION DISTRICT 2  
HOWARD COUNTY, MARYLAND



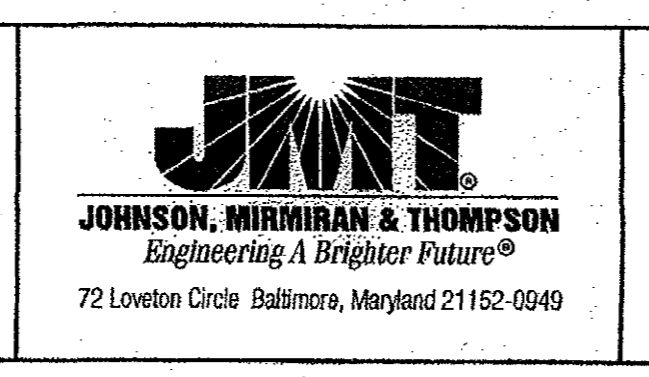


STA. 120+14, LT. TO STA. 128+06, LT. - US I



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.

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND  
 Holger Senars 10-18-16  
 Director of Public Works  
 Thomas S. Suller 10/18/16  
 Chief, Bureau of Engineering  
 Michael S. 10/18/2016  
 Chief, Transportation and Special Projects Division  
 Chief, Bureau of Highways



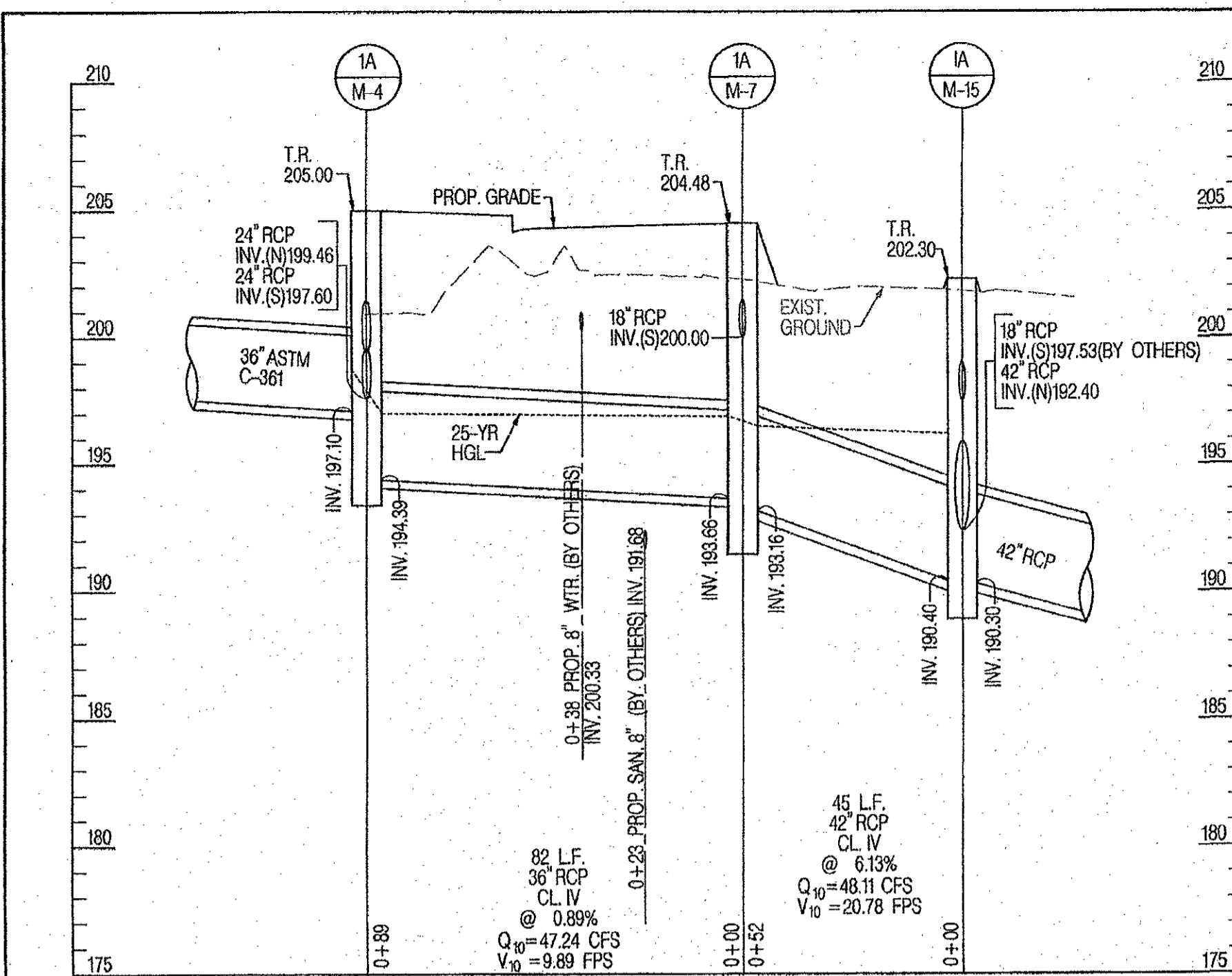
DES:	HL / JRB	BY	NO.	DATE
DRN:	JMB			
CHK:	RS			
DATE:	10/2016			

CAPITAL PROJECT NO.  
**J-4206-1A**

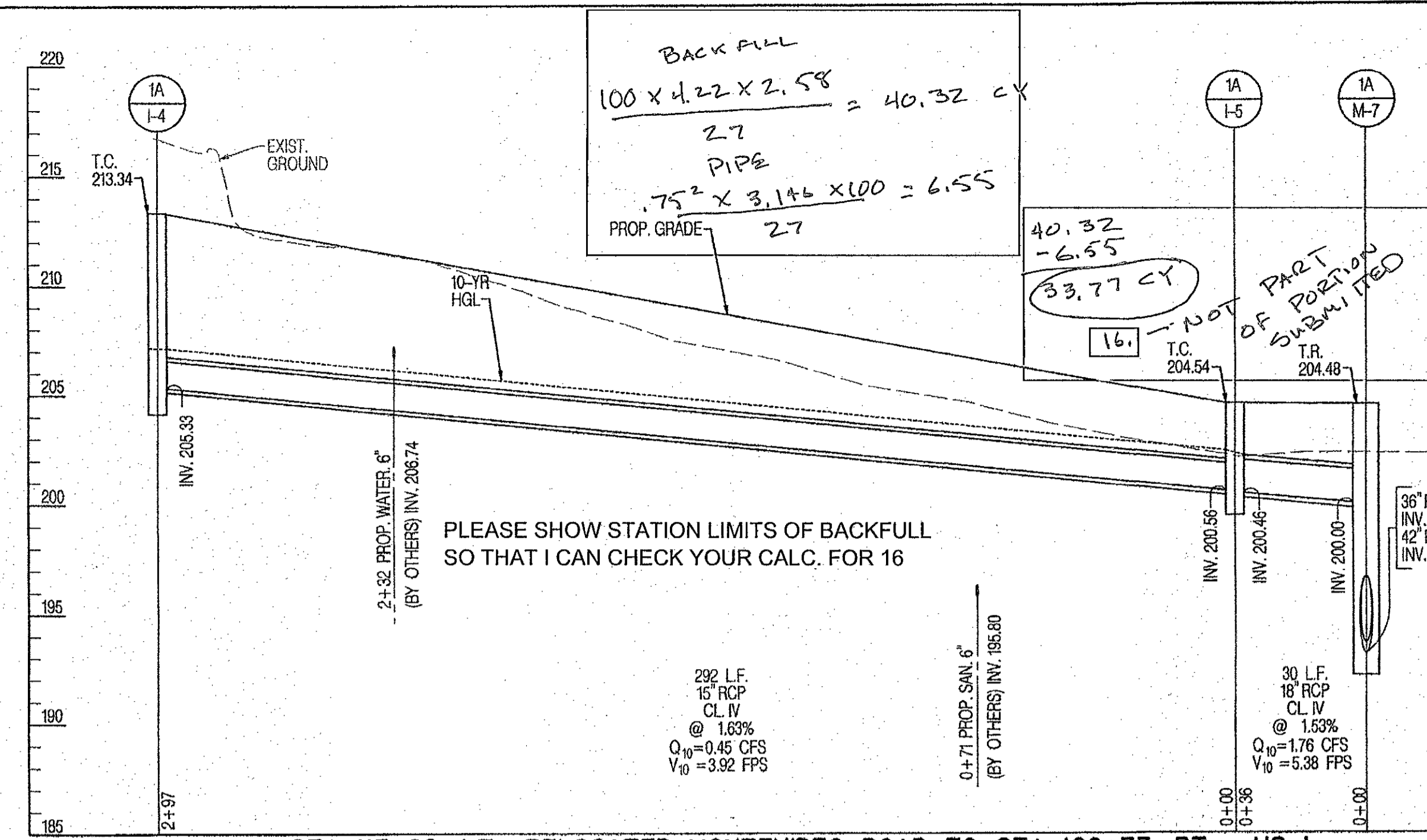
STORM DRAIN PIPE PROFILE SHEETS  
**RELOCATED MONTEVIDEO ROAD  
 PHASE 1, SEGMENT A**

PP-1 OF 3  
 SCALE  
 HOR. 1"=30'  
 VERT. 1"=5'  
 SHEET  
 18 OF 45

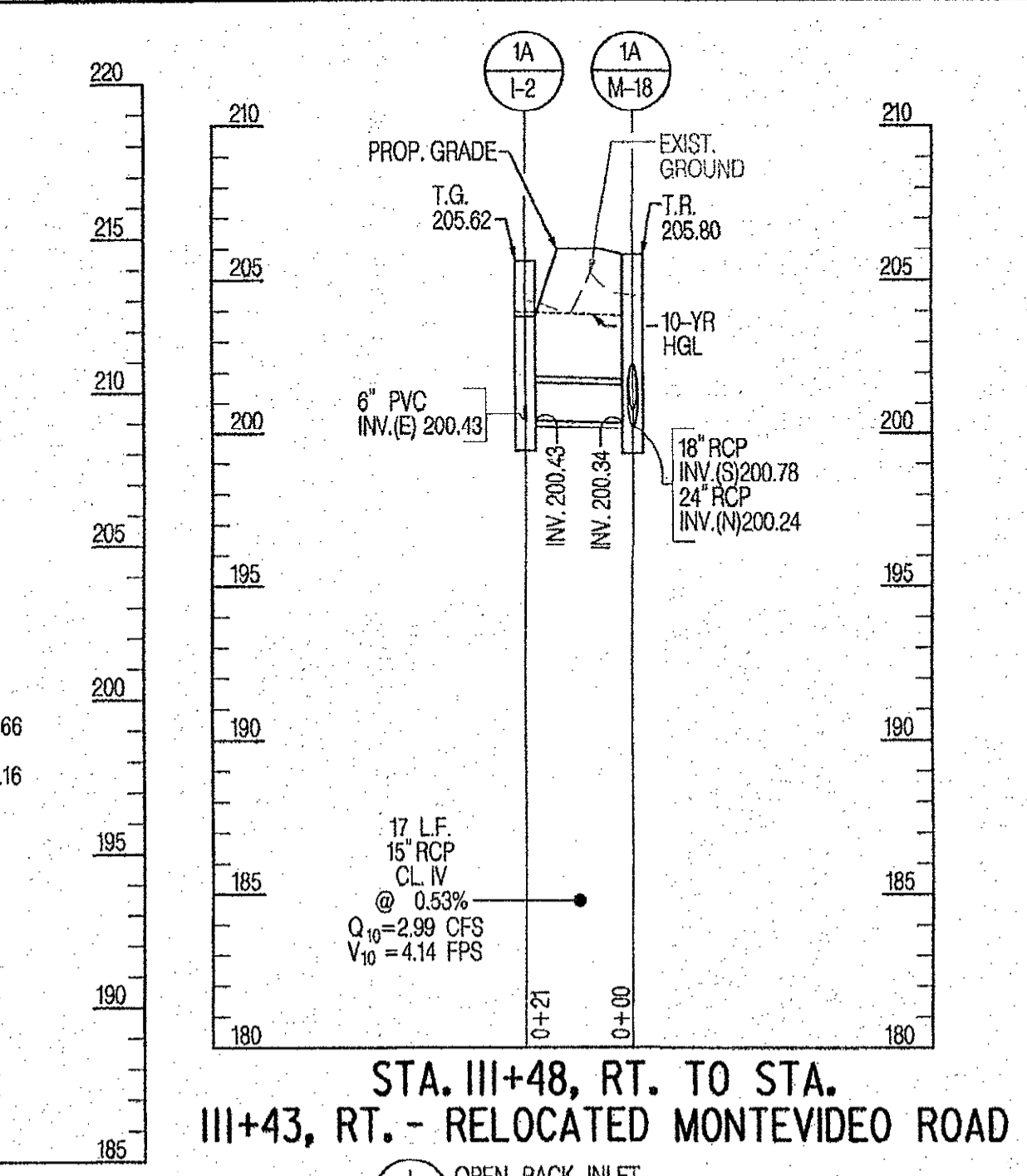




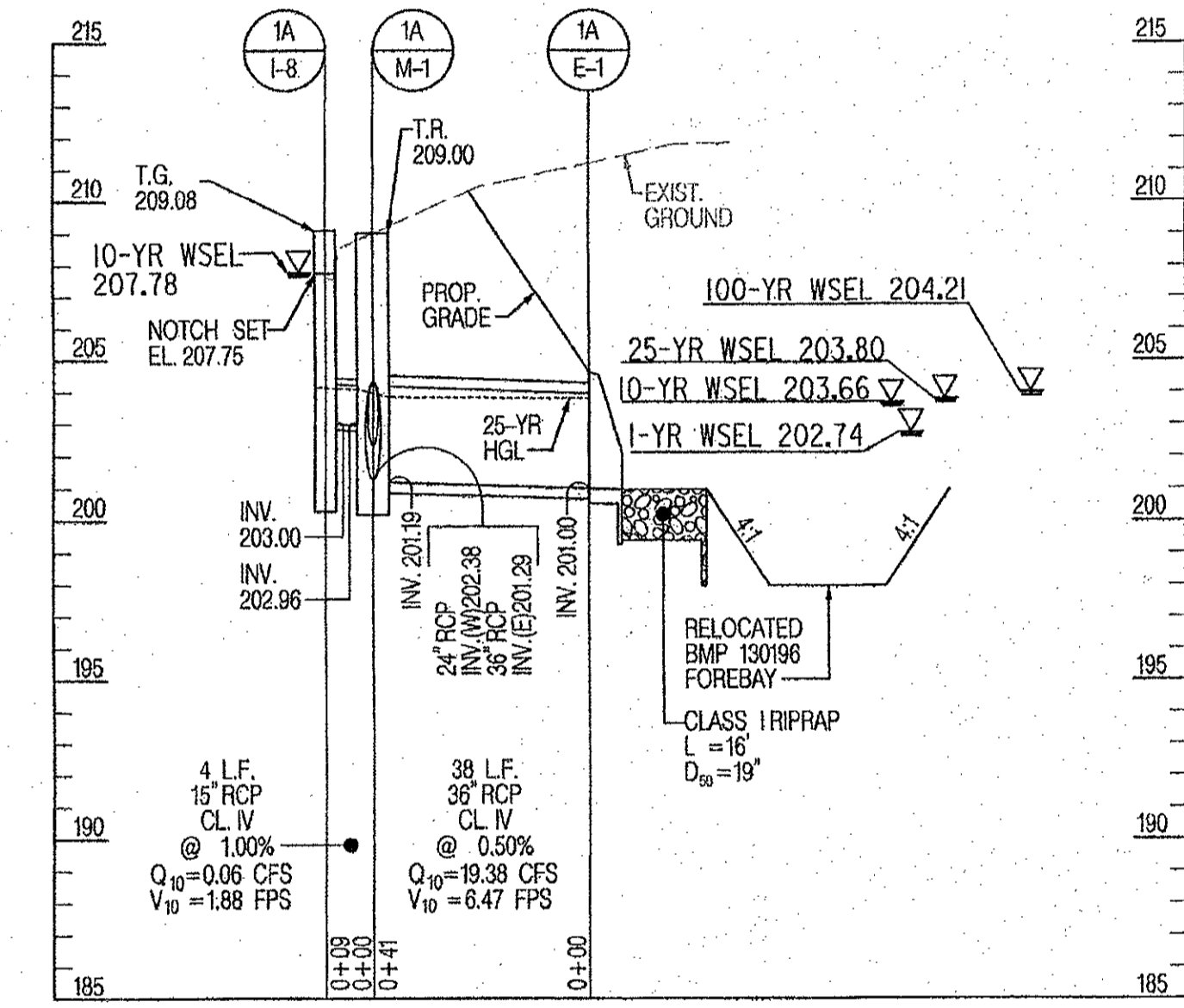
STA. 121+89, RT. -RELOCATED MONTEVIDEO ROAD TO STA. 123+28, RT. - US I



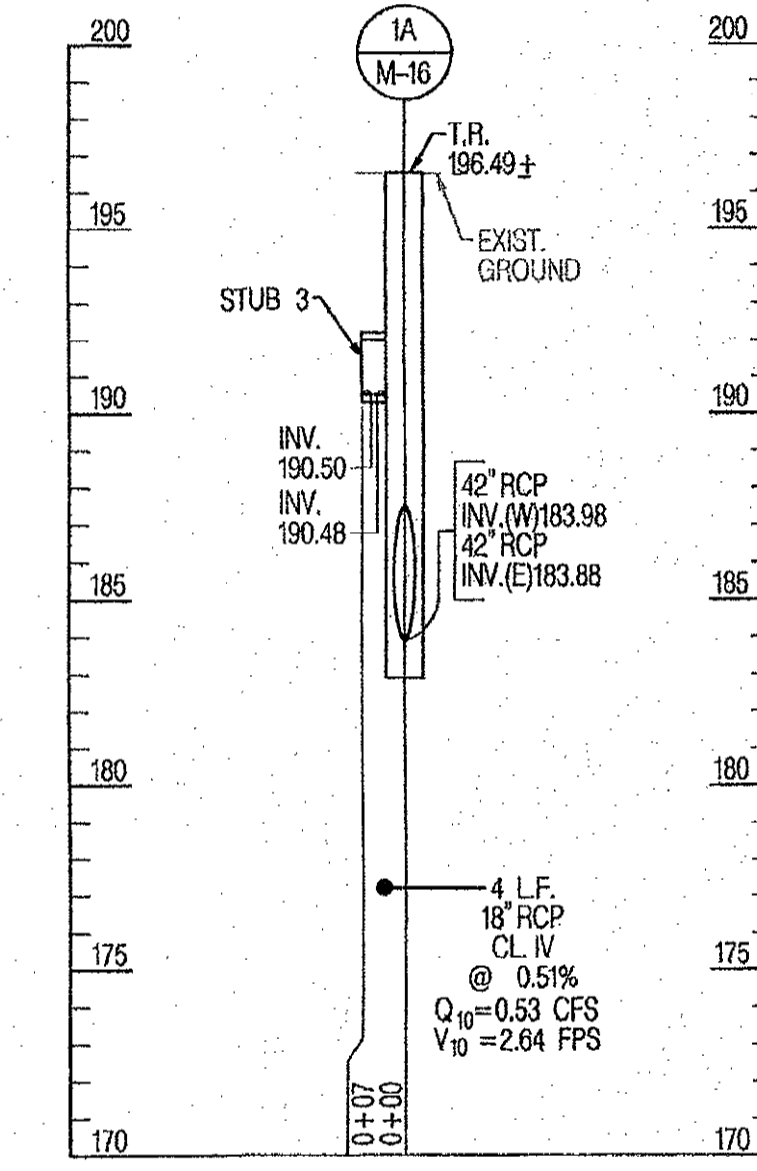
STA. 113+89, LT. -RELOCATED MONTEVIDEO ROAD TO STA. 122+77, RT. - US I



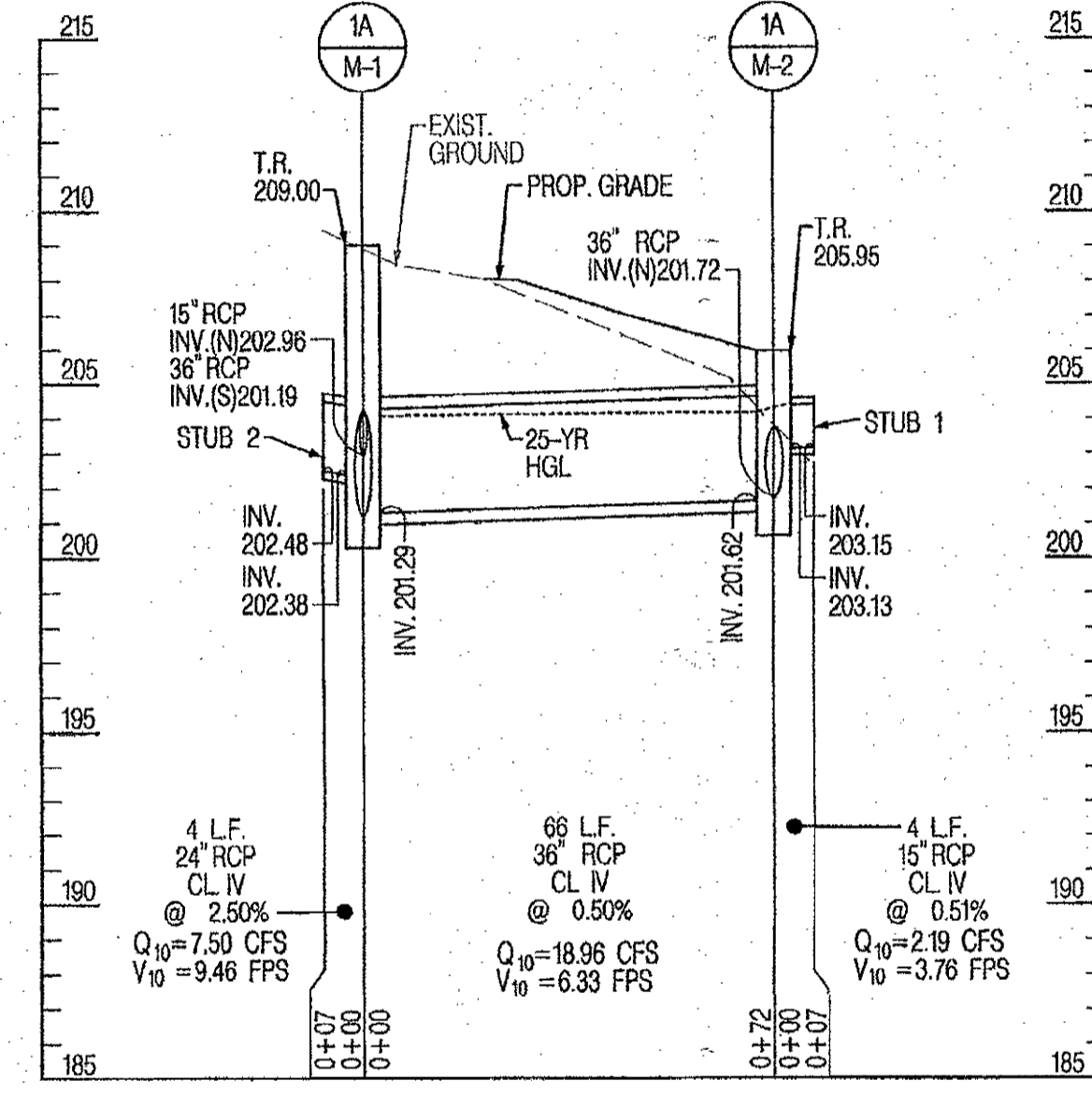
STA. 111+48, RT. TO STA. 111+43, RT. - RELOCATED MONTEVIDEO ROAD



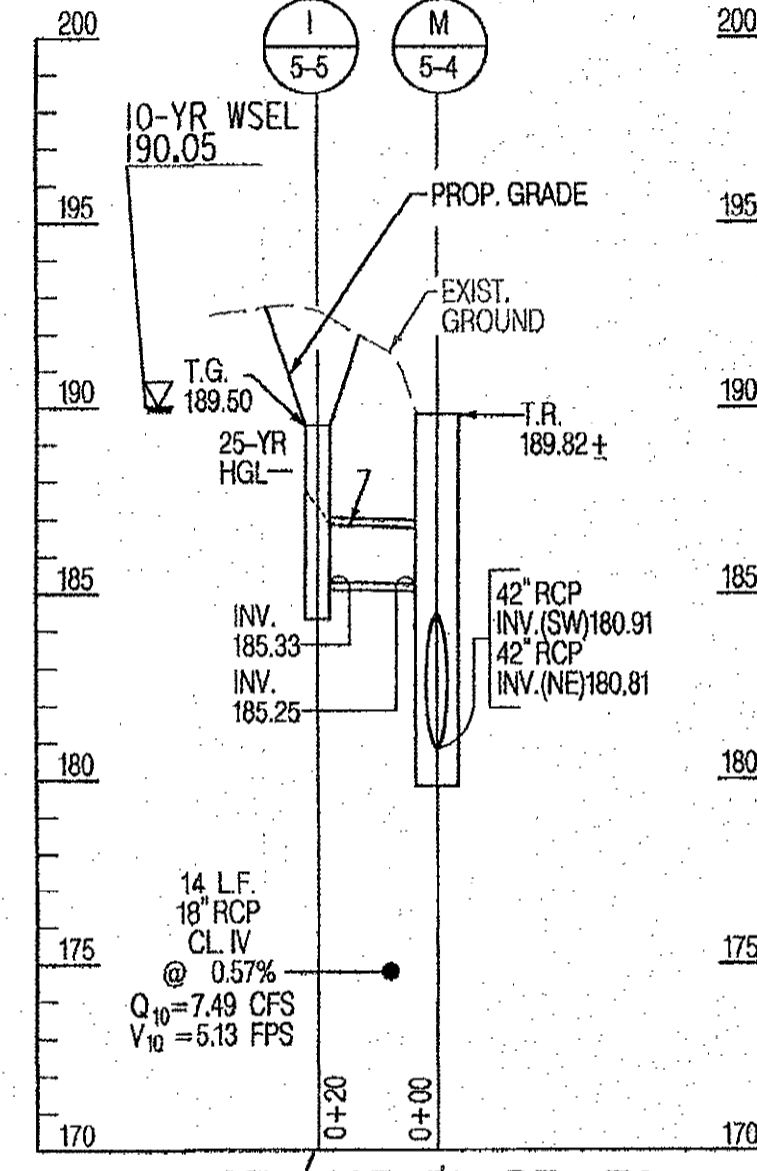
STA. 119+77, RT. TO STA. 119+81, RT.- US I



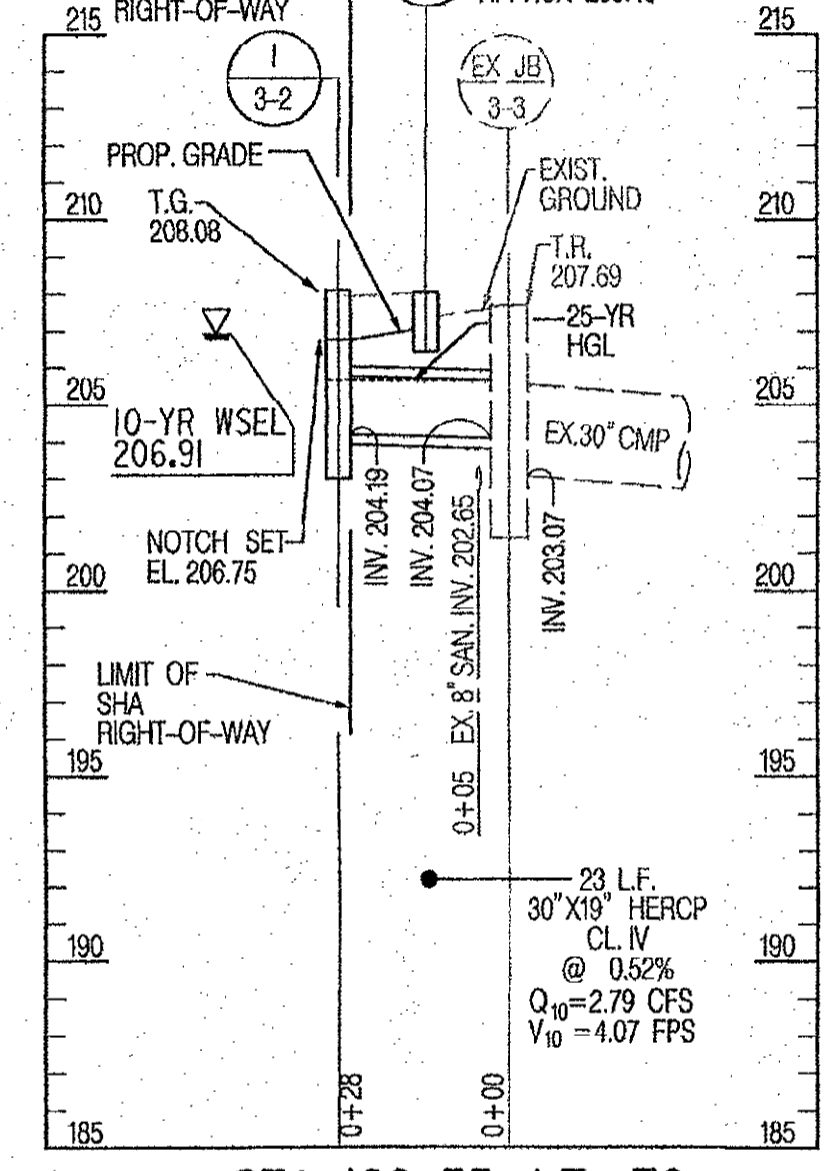
STA. 126+49, RT. TO STA. 126+49, RT.- US I



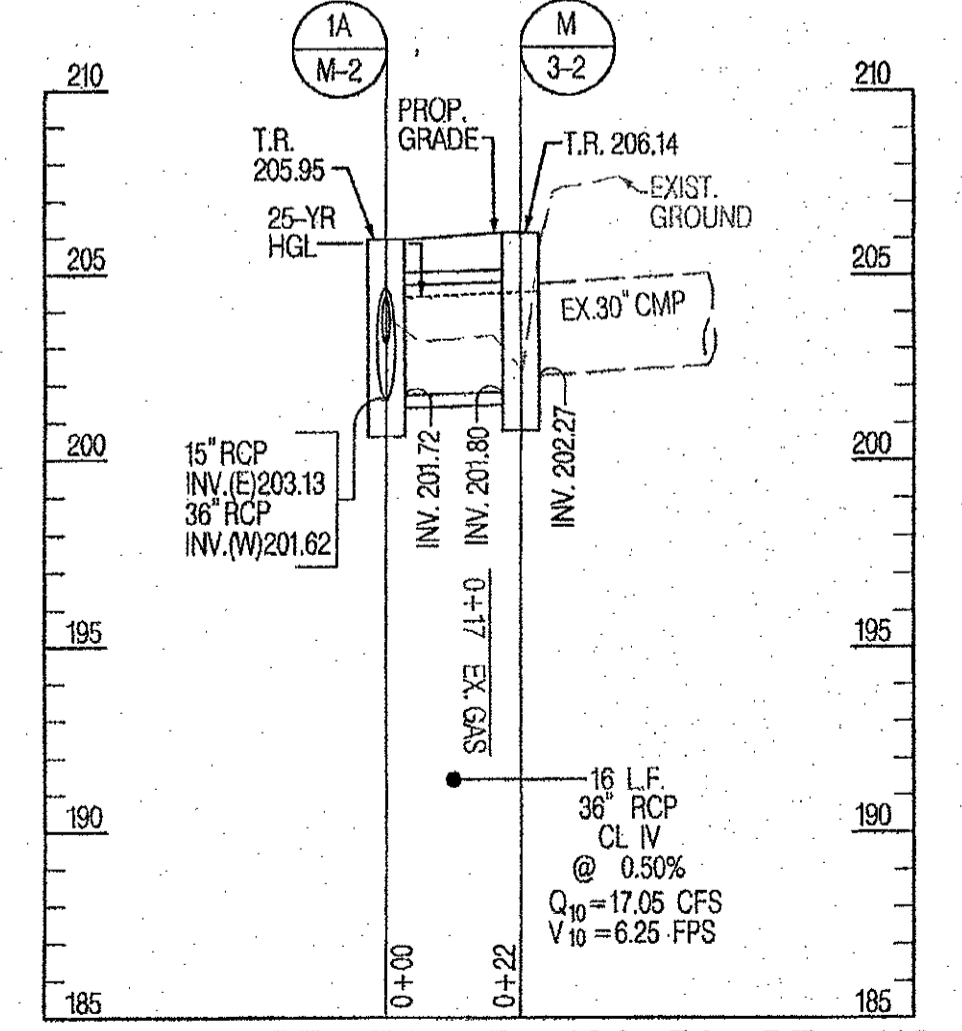
STA. 119+73, RT. TO STA. 120+56, RT.- US I



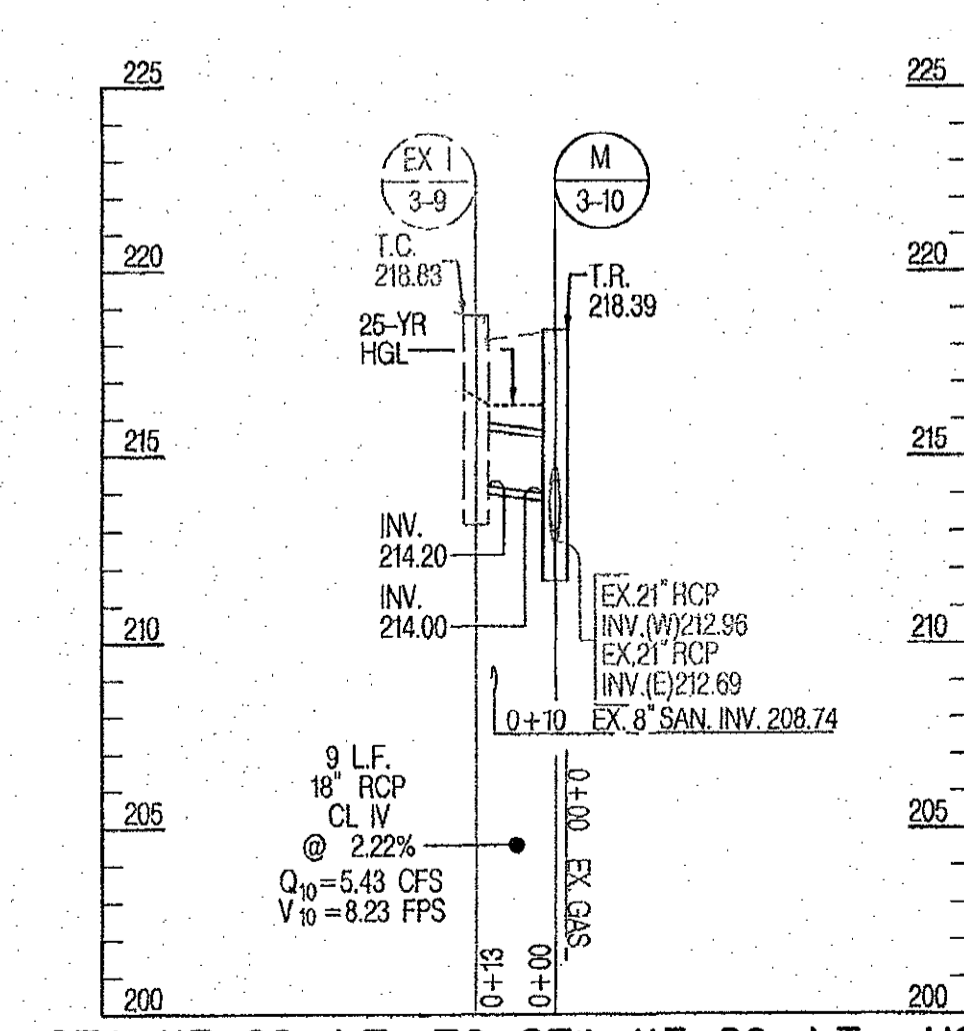
STA. 127+31, RT. TO STA. 127+44, RT.- US I



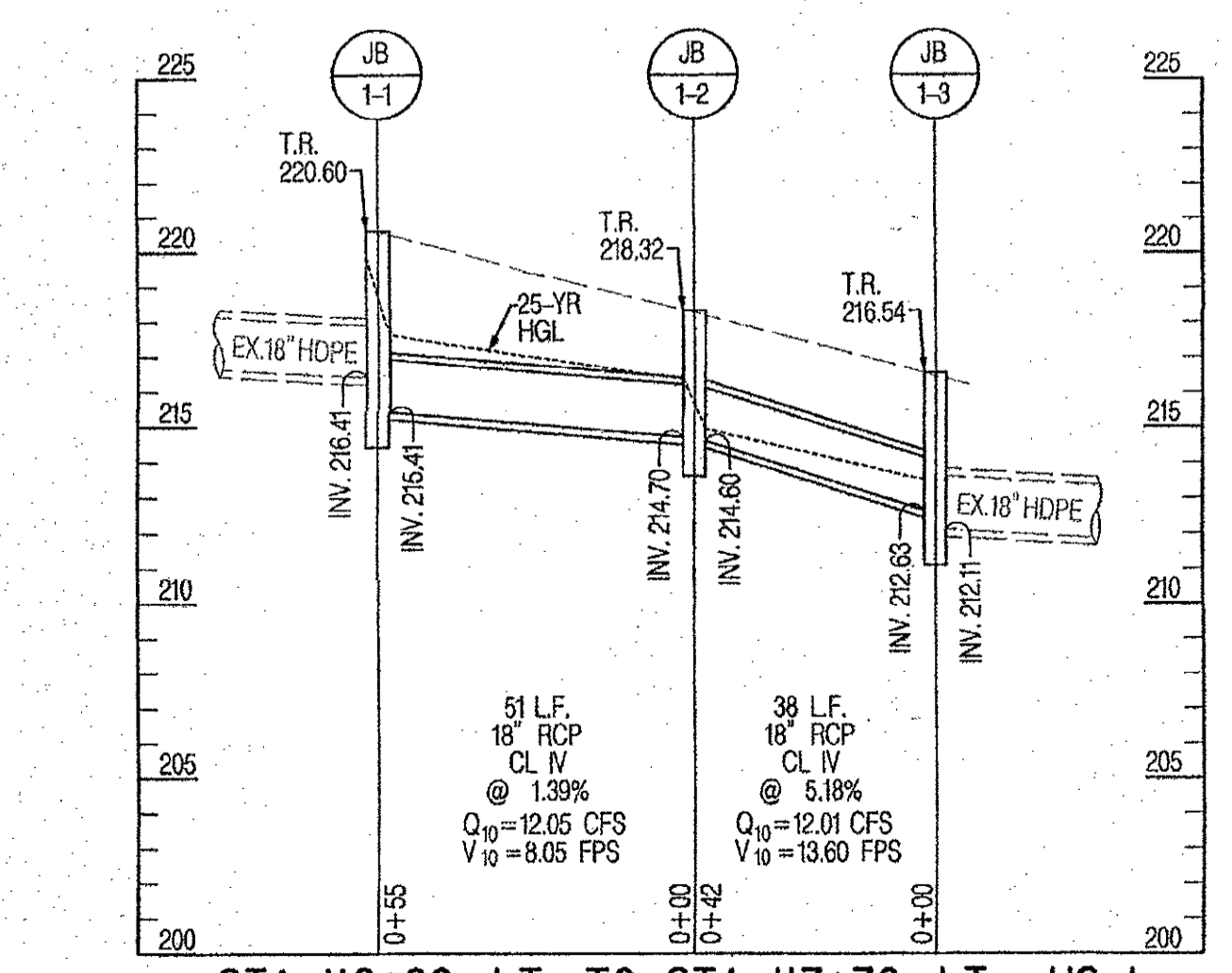
STA. 120+35, LT. TO STA. 120+19, LT.- US I



STA. 120+50, RT. TO STA. 120+50, RT.- US I



STA. 117+22, LT. TO STA. 117+28, LT.- US I



STA. 116+80, LT. TO STA. 117+76, LT.- US I

BACKFILL  
 $4.37 \times 14 \times 4.83 = 10.94 \text{ CY}$   
 2.7  
 PIPE  
 $.83^2 \times 3.14 \times 14 = 1.12 \text{ CY}$   
 2.7  
 10.94  
 1.12  
 9.82 CY

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

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND  
 Halger Semans 10-13-16  
 DIRECTOR OF PUBLIC WORKS  
 Thomas B. Butler 10/17/16  
 CHIEF, BUREAU OF ENGINEERING  
 Michael A. Williams 10/18/2016  
 CHIEF, BUREAU OF HIGHWAYS



DES: HL / JRB	BY: NO.	DATE:
DRN: JMB		
CHK: RS		
DATE: 10/2016		

CAPITAL PROJECT NO.  
 J-4206-1A

STORM DRAIN PIPE PROFILES  
 RELOCATED MONTEVIDEO ROAD  
 PHASE 1, SEGMENT A  
 ELECTION DISTRICT 2  
 HOWARD COUNTY, MARYLAND