	INDEX OF SHEETS
NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND, NOTES, AND DETAILS
3	EXISTING PLAN AND PROFILE
4	EXISTING PLAN AND PROFILE
5	EXISTING PLAN AND PROFILE
6	EXISTING PLAN AND PROFILE
7	EXISTING PLAN AND PROFILE
8	EXISTING AND PROPOSED PLAN AND PROFILE AT MANHOLE 128
9	STRUCTURE SCHEDULE
10	PROPOSED BILLING FLOW METER — PLANS AND SECTIONS
11	ELECTRICAL PLAN, DETAILS AND NOTES
12	EROSION AND SEDIMENT CONTROL DETAILS AND NOTES
13	EROSION AND SEDIMENT CONTROL NOTES
14	MAINTENANCE OF TRAFFIC
15	MAINTENANCE OF TRAFFIC
16	MAINTENANCE OF TRAFFIC

	BILL OF	MATERIALS	3	
ITEMS	QUANTITIES		AS-	-BUILT
LIEWIO	ESTIMATED	QUANTITIES	UNITS	PRODUCT MANUFACTURER.
INSTALL MANHOLE INSERT	32 EA			
MH WALL GROUT INJECTION	14 EA			
EPOXY/POLYURETHANE MH INTERIOR RESURFACING	33 EA			
OPEN CUT 12" SEWER POINT REPAIR — 13 LINEAR FEET	6 EA			
OPEN CUT 12" SEWER POINT REPAIR — ADDITIONAL REPAIR LENGTH	39 EA			
GROUT MAINLINE SEWER PIPE JOINT	8 EA			
LATERAL SEWER POINT REPAIR	1 EA			
GROUT LATERAL SEWER PIPE JOINT	3 EA			
12" PVC SEWER PIPE	47 LF			
16" PVC SEWER PIPE NEW 5' DIAMETER PRECAST MANHOLE	25 LF			
NEW 5' DIAMETER PRECAST MANHOLE INSTALLATION	2 EA		ĺ	
INSTALLATION  NEW 5' DIAMETER PRECAST DOGHOUSE MANHOLE INSTALLATION	1 EA			
NEW 5' DIAMETER PRECAST MANHOLE INSTALLATION — ADDITIONAL DEPTH FLOW METER REPLACE MANHOLE COVER REPLACE MH STEPS NAME OF UTILITY CONTRACTOR:	6 VLF			
FLOW METER	1 EA			
REPLACE MANHOLE COVER	1 EA			
REPLACE MH STEPS	285 EA			
NAME OF UTILITY CONTRACTOR:				

CHECKBOX Sediment control measures for this contract will be implemented in accordance with Section 308 AS-BUILT DATE of the Specifications and as shown on these SURVEY AND DRAFTING DIVISION

This plan is approved for soil erosion and sediment control by the Howard Soil Conservation District EP-19-30.

ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL OF EROSION AND SEDIMENT PRIOR TO THE BEGINNING OF THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE. 1/19/20

Siever Chei 01/06/202/ DEVELOPER/OWNER DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND /

BY THE OWNER / DEVELOPER:

CHIEF. BUREAU OF ENGINEERING CHIEF, UTILITY DESIGN DIVISION &



I/WE CERTIFY THAT ALL CLEARING, GRADING, CONSTRUCTION OR DEVELOPMENT WILL BE DONE

PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE

PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND

MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION



BY THE ENGINEER

**ENGINEER** 

DES: WMG DRN: JWB CHK: AWW BY NO. DATE 600 SCALE MAP NO. 31

01/04/2021

TITLE SHEET

### **GENERAL NOTES**

- 1. Approximate locations of existing mains are shown. The contractor shall take all necessary precautions to protect existing mains and services and maintain uninterrupted service. Any damage incurred shall be repaired immediately to the satisfaction of the Engineer at the Contractor's expense.
- 2. Topographic field surveys were performed during May and June, 2017, by C.C. Johnson & Malhotra, P.C. for the areas from existing MH 101 to existing MH 098 and for the area from existing MH 127 to existing MH 3503—1. Howard County GIS topography is used in all other areas.
- 3. Horizontal and Vertical Survey Controls:

BALTIMORE COUNTY

CONTR. 145-S

N 575,000

SCALE: 1" = 600'

TYPE OF BUILDING: N/A

DRAINAGE AREA: PATAPSCO TREATMENT PLANT: PATAPSCO

NUMBER OF NON-BUILDABLE

NUMBER OF W.H.C.: N/A

NUMBER OF S.H.C.: N/A

NUMBER OF BUILDABLE LOTS: N/A

LOTS: N/A

The coordinates shown on the drawings are based on Maryland State Reference System NAD '83 / '91 and the vertical controls shown on the drawings are based on NAVD '88 as projected by the following Howard County Geodetic Control Stations:

31BA - N 575987.759, E 1375729.958, Elev. 376.098 31DA - N 571982.665, E 1372145.130, Elev. 481.603 31EA - N 569641.138, E 1374816.086, Elev. 468.877 31EB - N 568730.995, E 1376273.635, Elev. 452.657 0081 - N 572335.338, E 1377504.092, Elev. 477.919

- 4. All pipe elevations shown are invert elevations unless otherwise noted on the plans.
- 5. Maintain a minimum of ten (10) feet horizontal and eighteen (18) inches vertical separation (outside diameter to outside diameter) from all water mains. Clear all other utilities by a minimum of 12 inches. Clear all poles by 5'-0" minimum or tunnel as required unless otherwise noted. The owner has contacted the utility companies and has made arrangements for bracing of poles as shown on the drawings. In the event the contractor's work requires the bracing of additional poles, any cost incurred by the owner for the bracing of additional poles or damages shall be deducted from monies owed the contractor. The contractor shall coordinate with the utility companies to schedule the bracing of the poles.
- 6. For details not shown on the drawings, and for materials and construction methods, use Howard County Design Manual, Volume IV, Standard Specifications and Details for Construction (Latest Edition). The contractor shall have a copy of Volume IV on the job.
- 7. Where test pits have been made on existing utilities, they are noted by the symbol (1) at the locations of the test pits. A note or notes containing the results of the test pit or pits is included on the drawings. Existing utilities in the vicinity of the proposed work for which test pits have not been dug shall be located by the contractor two weeks in advance of construction operations at his own expense.
- 8. The contractor shall notify the following utility companies or agencies at least five working days before starting work shown on these plans:

**BGE** (Construction Services) BGE (Emergency) Bureau of Utilities Colonial Pipeline Co. COMCAST Miss Utility State Highway Administration 1-800-743-0033 / 410-224-9210

- 9. Trees within the temporary construction strips and temporary construction easements shall not be removed or damaged by the contractor. Shrubs within the temporary construction strips and temporary construction easements shall be protected from damage to the maximum extent possible.
- 10. The contractor shall remove trees, stumps and roots along the line of excavation. Payment for such removal shall be included in the bid item prices for contingent Tree Removal and Clearing and Grubbing.
- 11. The contractor shall notify the Bureau of Highways, Howard County, at 410-313-7450 at least five working days before open cutting or boring/jacking of any County road for laying water/sewer mains or house connections. The approval of these drawings will constitute compliance with DPW requirements per Section 18.114(a) of the Howard County Code.

### PROJECT PURPOSE

The purpose of this Capital Project is to rehabilitate 30 existing Manholes of Contract 417-S, make various point repairs to existing Sanitary Sewer Pipe, provide a smoother transition of flow from Contract No. 3503-S to Contract No. 417-S at existing Manhole 128, and replace the existing Billing Flow Meter and Vault with a new Billing Flow Meter and Vault at

# BONNIE BRANCH INTERCEPTOR SEWER IMPROVEMENTS CAPITAL PROJECT S6282 **CONTRACT NO. 10-5034** HOWARD COUNTY, MARYLAND

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH

CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS AND

STANDARDS. THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY

PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE

WITH THE REQUIREMENTS OF THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.

VICINITY MAP

CONTRACT NO.

10-5034

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. 30875, EXPIRATION DATE NOVEMBER 29

BLOCK NO.

W. MARK GARDOCKY, VP.E.

BONNIE BRANCH INTERCEPTOR SEWER IMPROVEMENTS

CONTRACT NO. 10-5034 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

<u>01</u> OF <u>16</u>

SCALE

SHOWN

1-800-252-1133

410-850-4620

410-685-1400

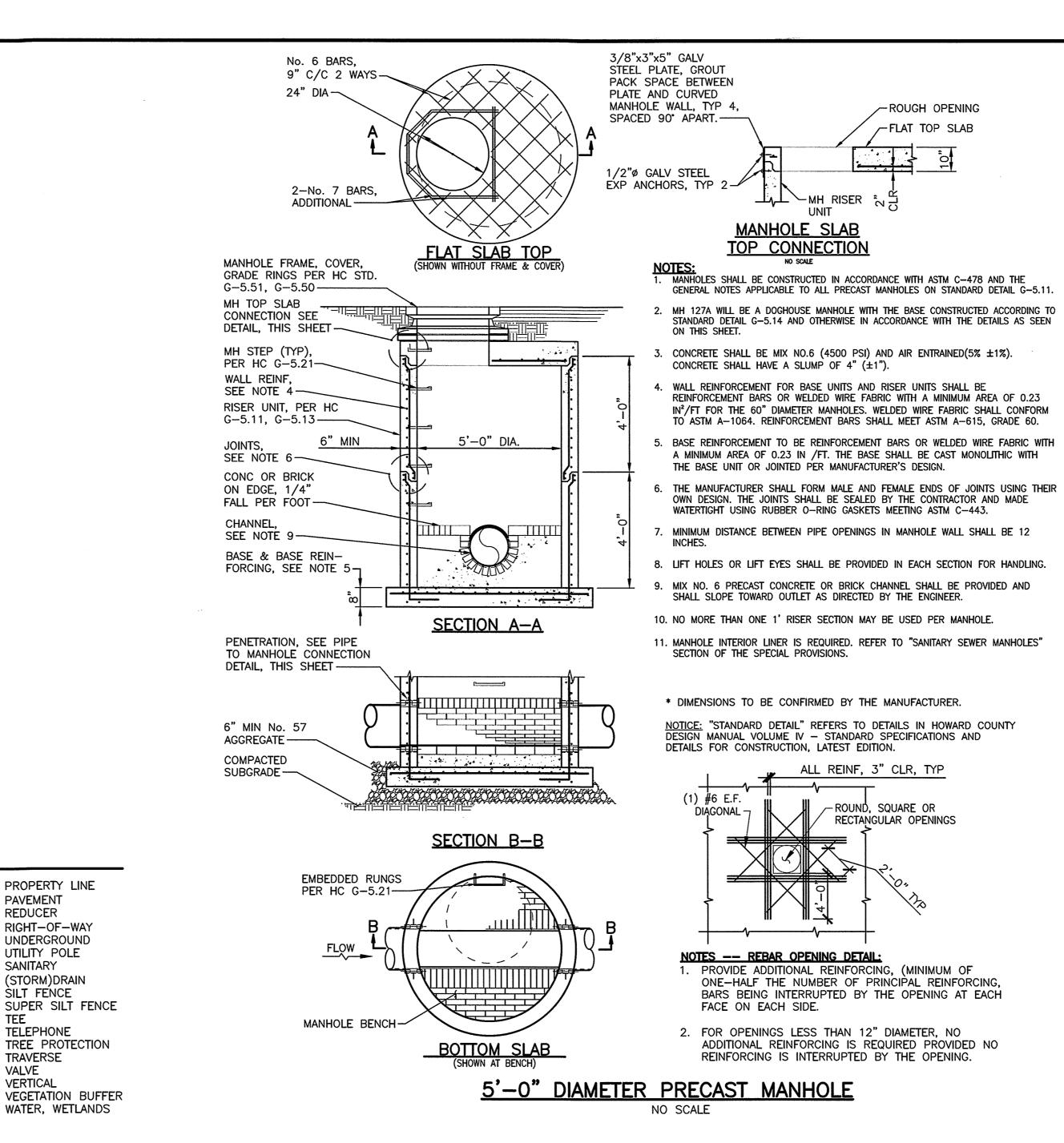
410-313-4900

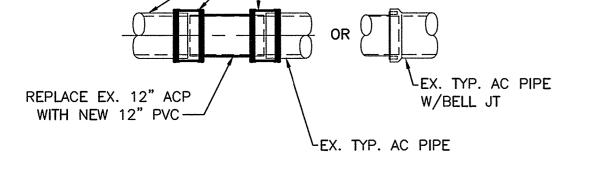
410-795-1390

410-531-5533

1-888-987-8600

1-800-257-7777





EX. TYP. STANDARD

AC PIPE-

12"x12" RCPxC900 PVC

SMITH BLAIR MODEL 441 COUPLING

### TYPICAL OPEN CUT POINT REPAIR DETAILS NOT TO SCALE

UTILITY - EXISTING ==== -s===(S) -- S -- SANITARY SEWER; =>12", MH, <12" =-== □= □ □ - D - STORM DRAIN; =>12", MH, <12"

==w-=w=(W)--- - W --- WATER MAIN; =>12", MH, <12" REDUCER, TEE, FIRE HYDRANT, VALVE — — W — W — WATER MAIN VALVE VAULT UNDERGROUND ELECTRIC, MH OVERHEAD UTILITY (ELEC., TEL., CTV) — - G - - G - - CG -GAS MAIN, MH UTILITY POLE (ELEC., TEL., CTV)

//---// ABANDONED UTILITY UTILITY - EXISTING REHABILITATION

**SANITARY SEWER; =>12", MH, <12"** UTILITY - PROPOSED

— SANITARY SEWER; =>12", MH, <12"</p>

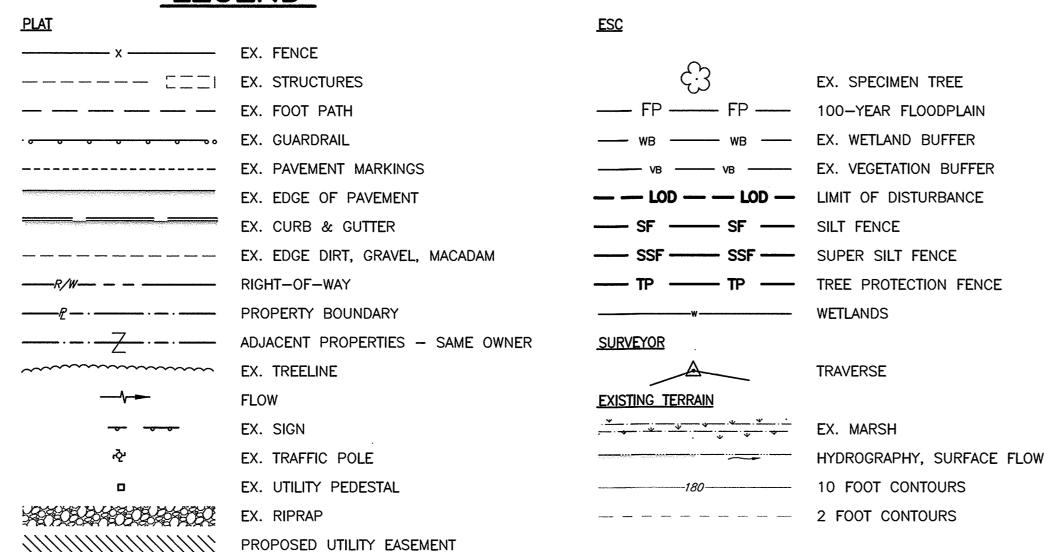
**ABBREVIATIONS** AB'D,ABAND ABANDONED P/L,PL PROPERTY LINE C/L,Q CENTERLINE PVM'T PAVEMENT CO CPLG **CLEANOUT** RED, RDCR REDUCER COUPLING R/W,ROW RIGHT-OF-WAY DIA,Ø DIAMETER UNDERGROUND E.EL.ELEC ELECTRIC UTILITY POLE EDGE OF PAVEMENT SANITARY EASEMENT ESM'T SD (STORM)DRAIN **EXISTING** SILT FENCE FIRE HYDRANT SSF SUPER SILT FENCE FIRE HYDRANT TEE FLOOD PLAIN TELEPHONE TREE PROTECTION HORIZONTAL TRAVERSE LIMIT-OF-DISTURBANCE VALVE LIGHT POLE VT, VERT VERTICAL

**LEGEND** 

MANHOLE

OVERHEAD

PEDESTAL



PROJECT NOTES

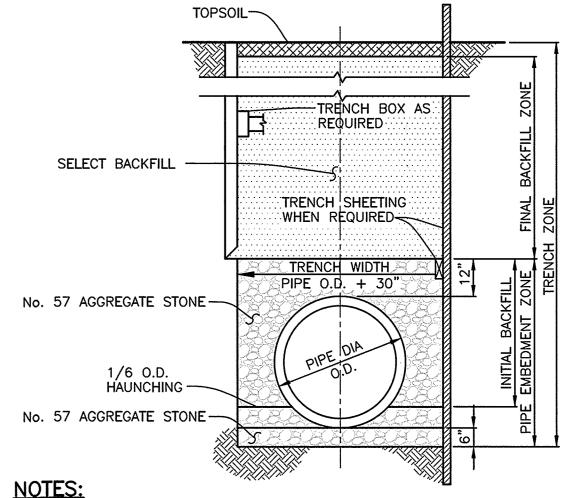
- 1. Spoil from trenching operations is to be placed on the uphill side of the trench.
- 2. The contractor shall be responsible for acquiring any additional staging and/or stockpile areas that the contractor deems necessary.
- 3. The contractor shall be responsible for repairing and replacing any existing fences, signs, concrete curb, driveways, paving, curb and gutter pan, walkways, etc., damaged or removed during construction. All disturbed areas shall be returned to their original or better condition.
- 4. This project is exempt from Forest Conservation requirements under section 16.1202.b.1.x of the Howard County Forest Conservation Code.
- 5. The site is not located within a Tier II watershed.
- 6. The site is located within an impaired waterway with respect to total suspended solids, sulfates and chlorides.
- 7. Work shall be limited to that which can be stabilized in the same day. Soil stabilization matting shall be used as appropriate per Table B.7 Soil Stabilization on Slopes on Sheet 13.

### SEWER NOTES

- 1. All sewer mains shall be AWWA C-900 / DR-25 PVC unless otherwise
- 2. All manholes shall be 4'-0" or 5'-0" inside diameter as noted in the Existing Manhole Schedule and Proposed Manhole Schedule.
- 3. Manholes designated W.T. in profile shall have watertight frames and covers. Where watertight manhole frames and covers are used, set top of manhole with embedded frame 1'-6" above finished grade unless otherwise noted on the drawings.
- 4. The existing sewer shall remain in service at all times and be protected during construction.
- 5. Contractor shall CCTV the pipe prior to any excavation to verify repair location.

### HANDLING ASBESTOS CONTAINING MATERIAL

- 1. The existing water main is asbestos cement pipe (ACP). It must be removed in accordance with applicable federal, state, and local regulations, including but not limited to, 29CFR1926.1101, 40CFR61, 262, and 263 and COMAR 26.11.21. This work requires submission and acceptance of an asbestos abatement work plan that describes in detail the methods the contractor will use to comply with applicable regulations including training, respiratory protection, and waste disposal. This item also includes design and implementation of engineering controls and dust control measures to reduce visible emissions while performing asbestos abatement. The contractor shall dispose of all ACP in a permitted facility.
- 2. The work may require entry into permit-required confined spaces. The contractor is responsible for complying with applicable regulations including 29CFR1910.146.



- 1. CONTRACTOR TO STRICTLY ADHERE TO SECTION 1000.03.05, "EXCAVATION AND SUBGRADE PREPARATION", OF THE STANDARD SPECIFICATIONS AND DETAILS OF CONSTRUCTION, VOLUME IV.
- 2. TRENCH BACKFILL IN THE FINAL BACKFILL ZONE, FROM 12 INCHES ABOVE THE CROWN OF PIPE TO 6 INCHES BELOW THE FINAL GRADE, SHALL CONSIST OF SELECT BACKFILL.
- 3. ALL TRENCHING IN ASPHALT ROADS SHALL BE RESTORED ACCORDING TO STANDARD DETAIL G-4.01 FOR ROADS WITH FLEXIBLE PAVEMENT.

TRENCH DETAIL NO SCALE

DEPARTMENT OF PUBLIC WORKS

HOWARD COUNTY, MARYLAND 1/8/2021 PUBLIC WORKS DATE CHIEF, BUREAU OF ENGINEERING DATE DATE CHIEF, UTILITY DESIGN DIVISION S.C. DATE



| | | | | | | | | PROPOSED CONSTRUCTION EASEMENT



WATER, WETLANDS

DES: WMG					
DRN: BRW					LEGEND, NOTES, AND DETAILS
CHK: AWW					, , , , , , , , , , , , , , , , , ,
DATE: 12/2020	BY	NO.	REVISION	DATE	600 SCALE MAP NO. <u>31</u> BLOCK NO. <u>4</u>

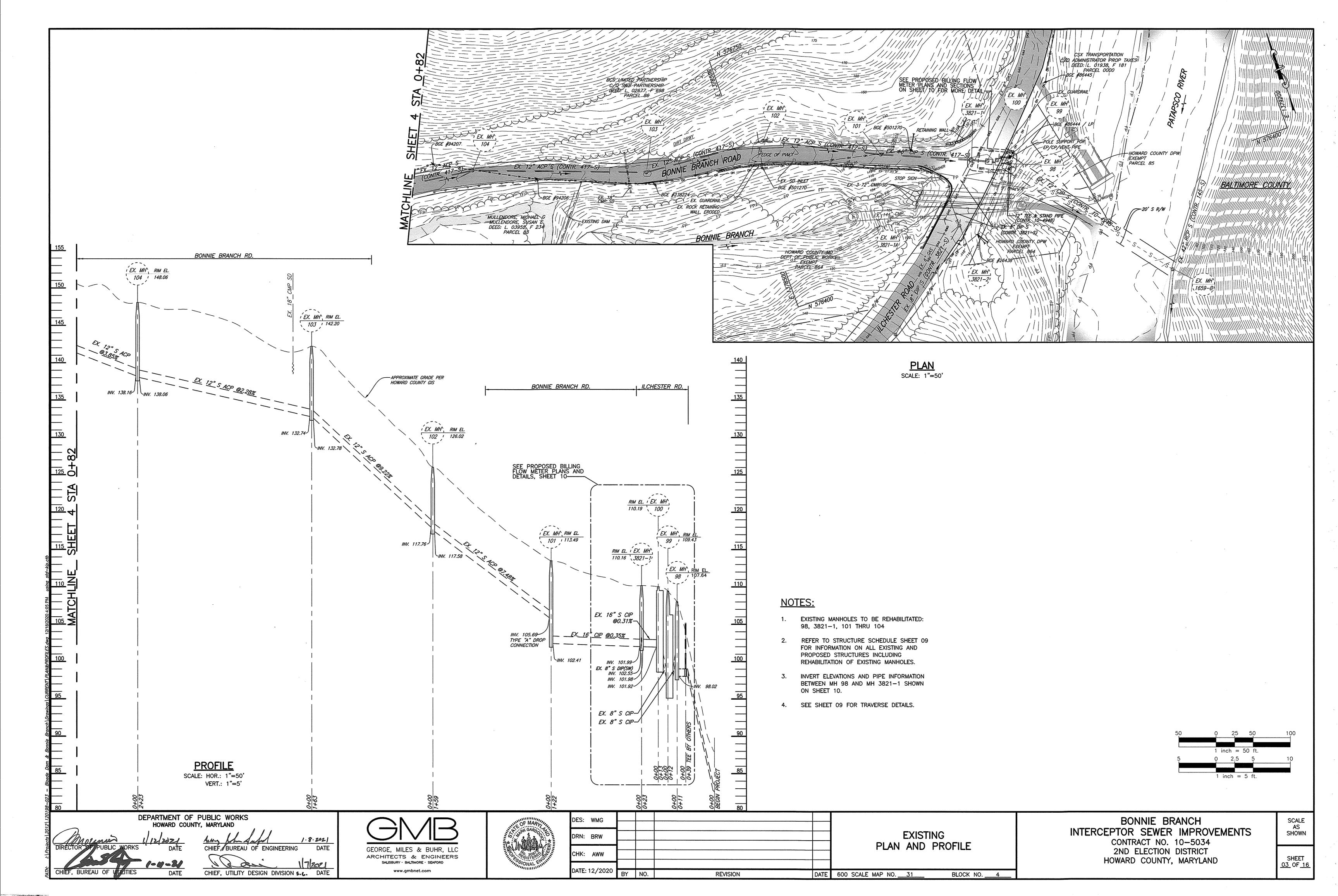
**BONNIE BRANCH** INTERCEPTOR SEWER IMPROVEMENTS CONTRACT NO. 10-5034 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

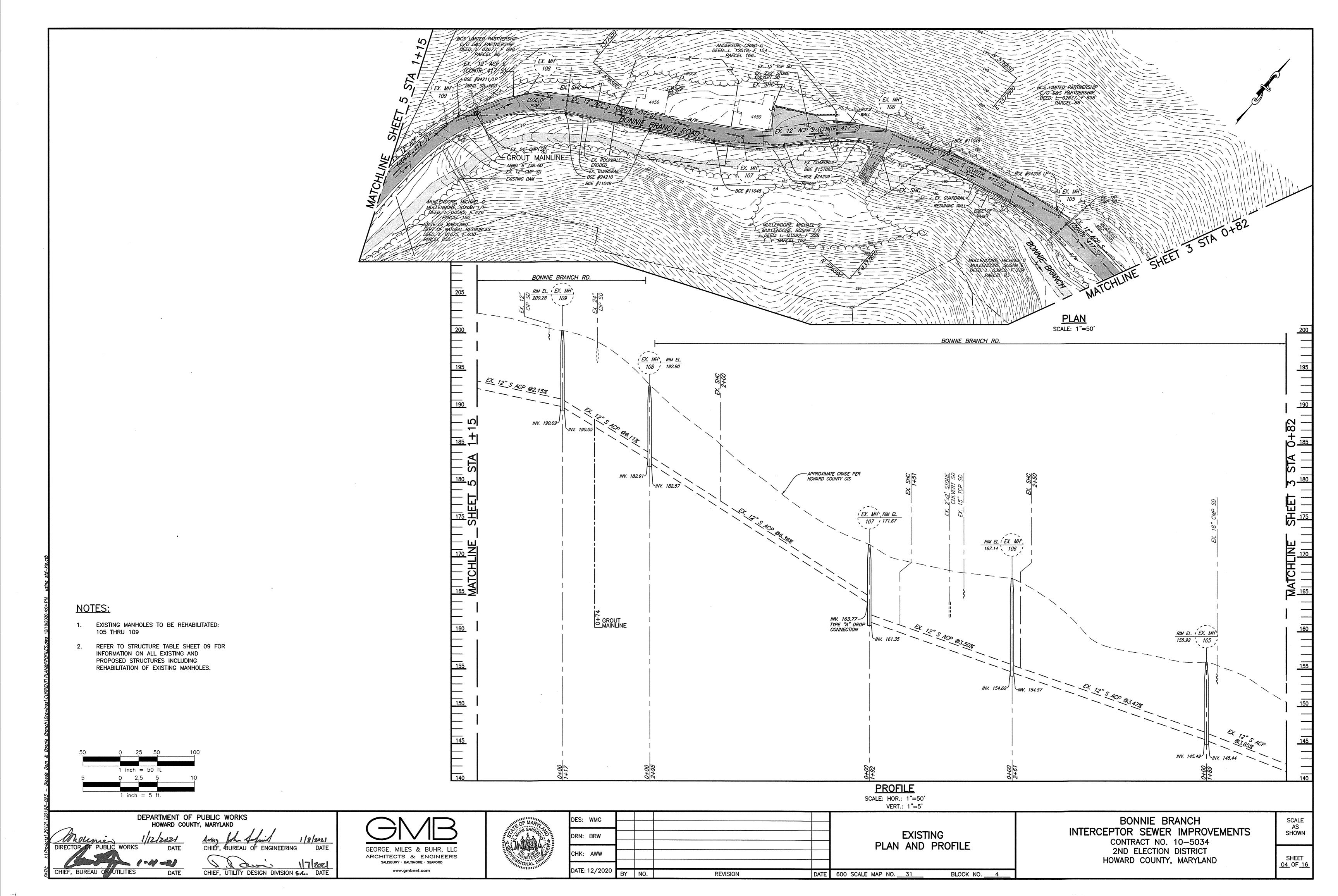
SCALE

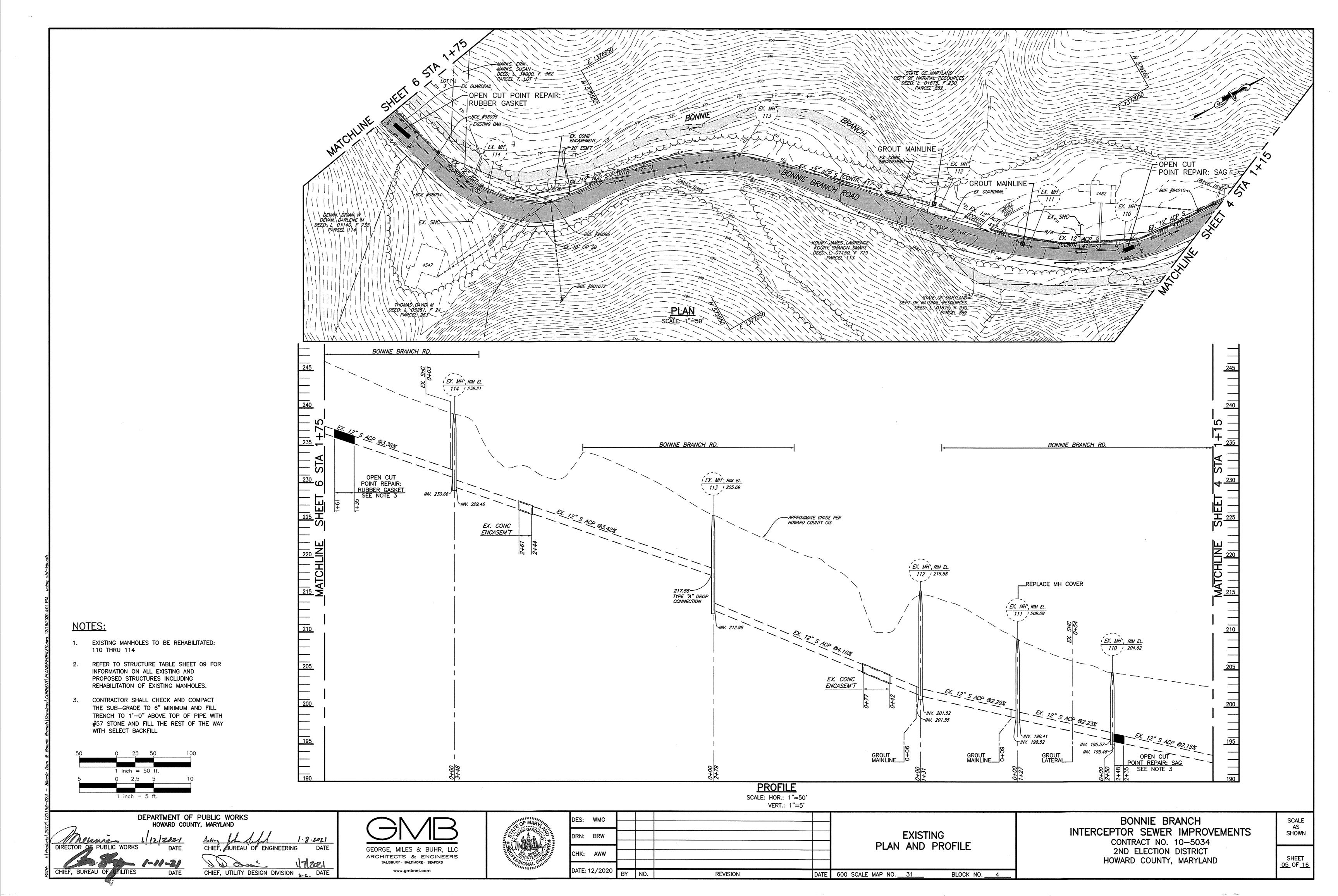
AS

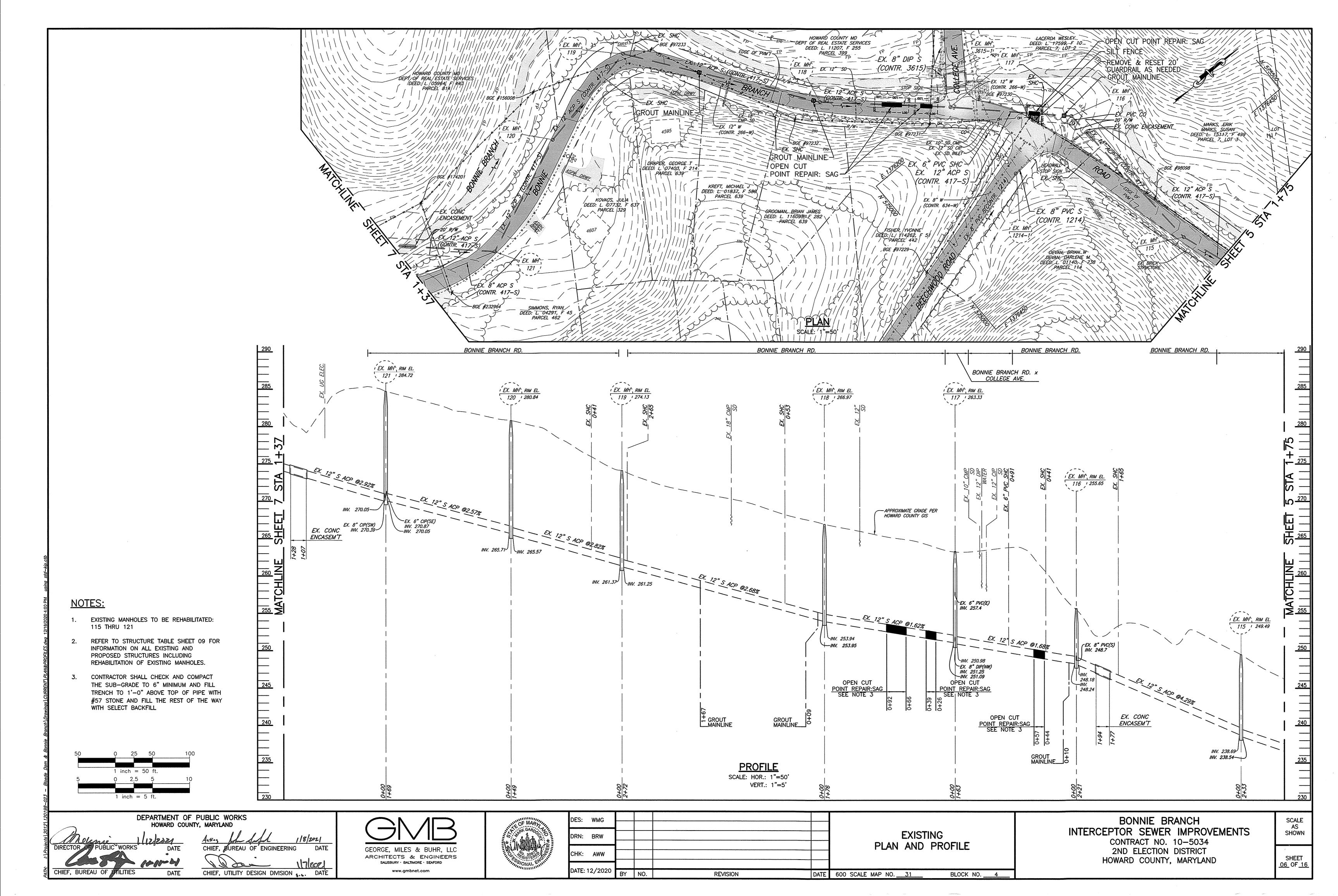
SHOWN

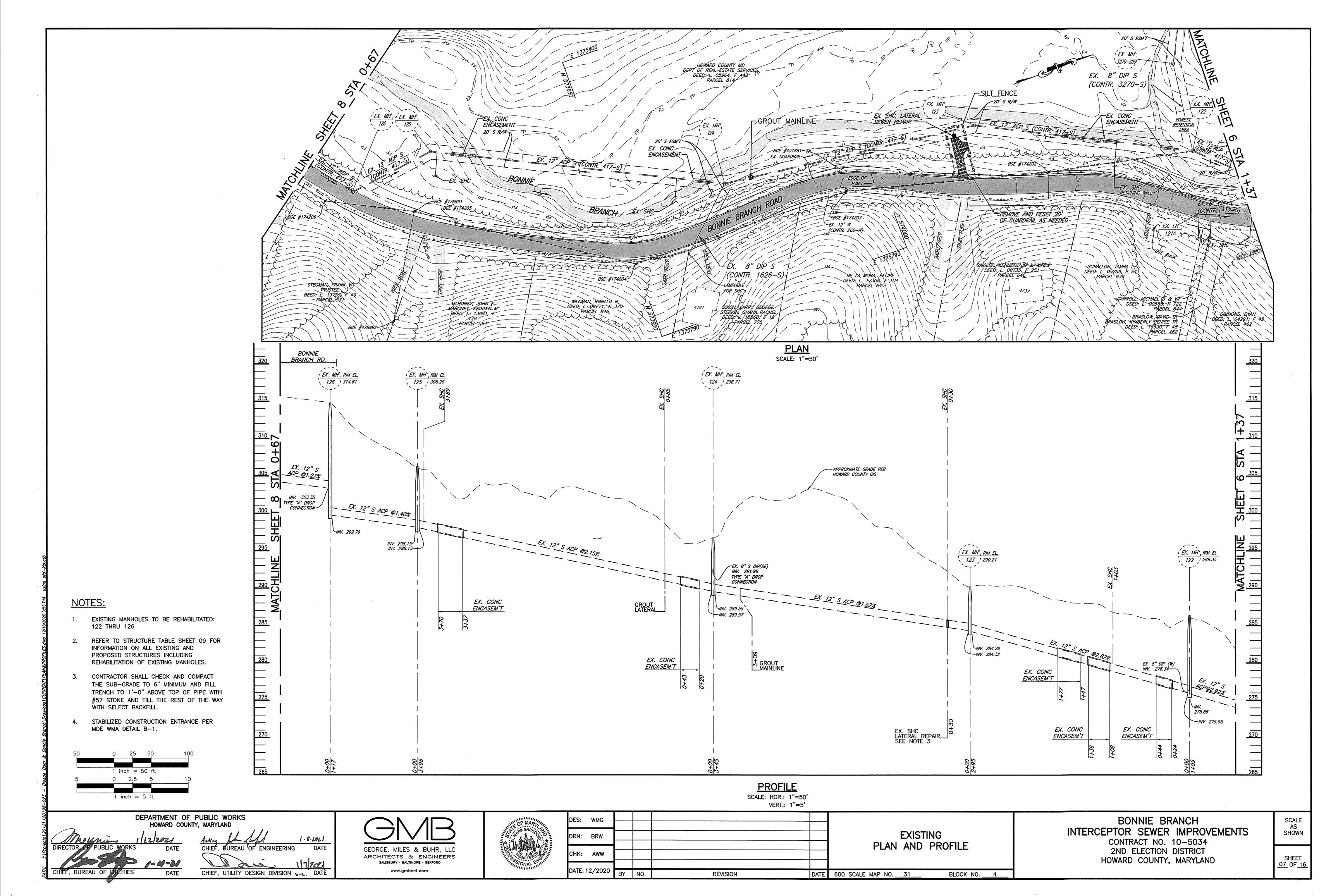
02 OF 16

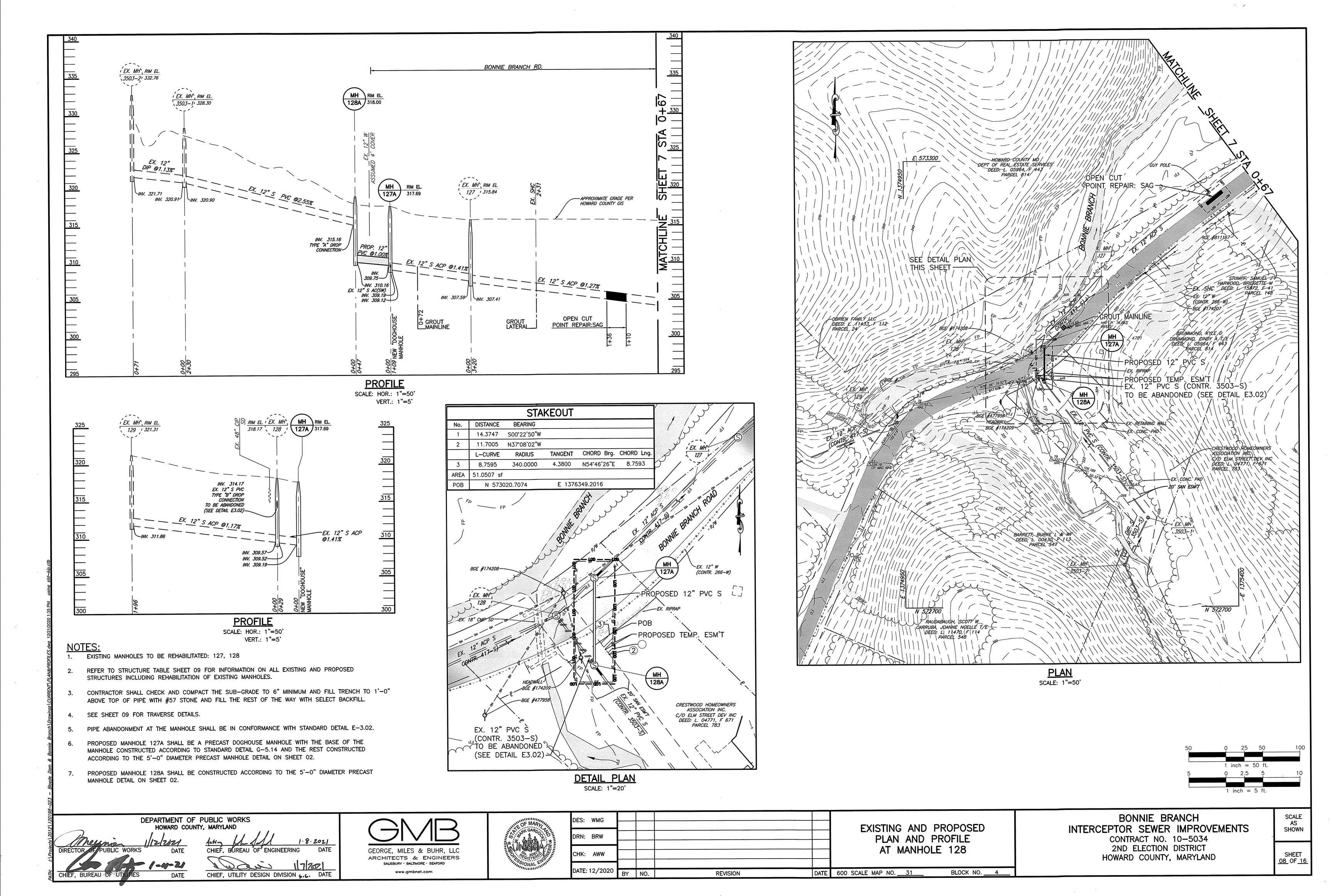


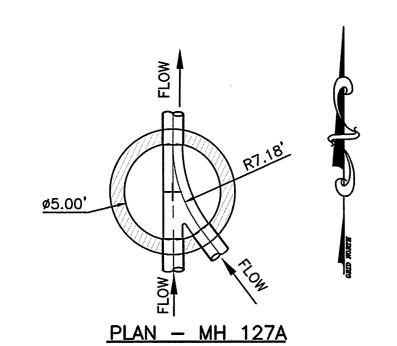


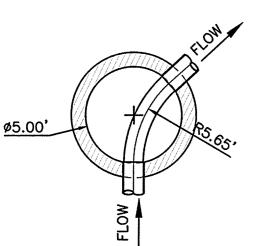




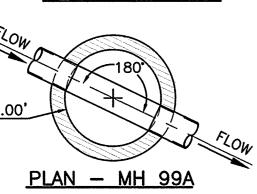












### NOTES:

1. THE CENTERLINE OF ALL PIPES ENTERING A MANHOLE SHALL INTERSECT WITHIN 1"± OF THE LONGITUDINAL AXIS OF THE MANHOLE BARREL (CENTER).

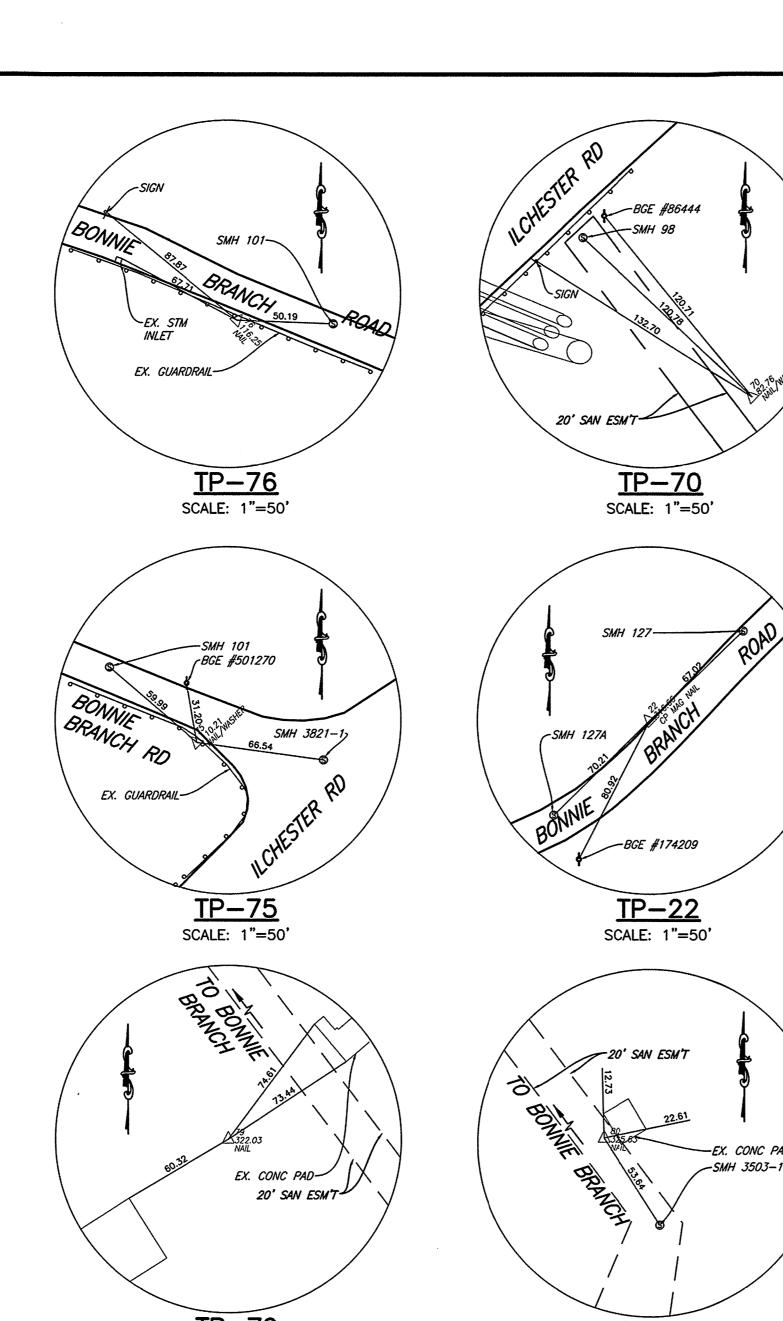
2. MANHOLE CHANNEL AND BENCH SHALL BE PRECAST OR FORMED USING SEWER BRICK (ASTM DESIGNATION C32-73, GRADE SM, SIZE NO. 1).

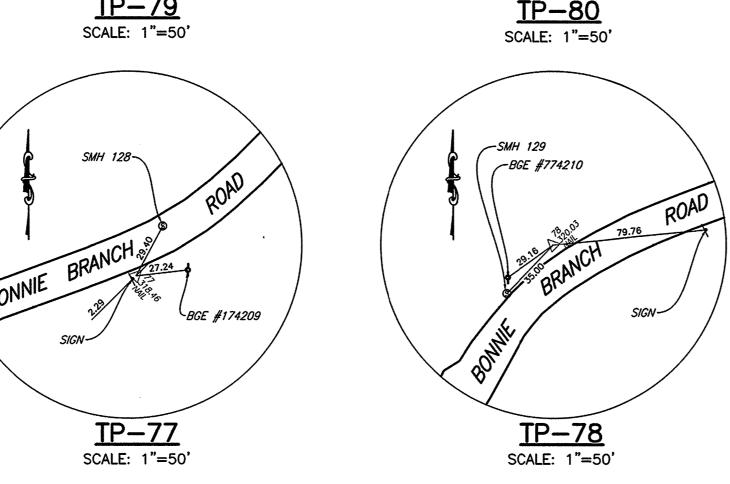
3. CHANNEL SHALL PROVIDE SMOOTH HYDRAULIC TRANSITION BETWEEN PIPES.

4. MINIMUM CENTERLINE CHANNEL RADIUS SHALL BE 2.5  $\times$  OUTLET PIPE DIAMETER.

# MANHOLE CHANNEL CONFIGURATION DETAILS SCALE: 1"=5'

	TRAVERSE	TABLE
TP No.	NORTHING	EASTING
BONNIE	BRANCH ROAD + ILCH	ESTER ROAD, SHEET 03
70	576401.10	1378918.57
75	576514.57	1378719.56
76	576555.60	1378623.76
SOUTH TRIE	BUTARY TO BONNIE BRA	ANCH TO MH128, SHEET 08
80	572394.59	1374319.93
79	572393.98	1374124.22
77	572156.64	1374127.97
ALONG	BONNIE BRANCH ROAD	AT MH128, SHEET 08
78	572172.82	1374345.39
22	572611.04	1374344.02





				<del>(1997</del> -1997)		V00/Enu		E	IANHOLE SCHEDULE								
Sheet			Northing Easting	Manhole Rim	Outgoing Invert	Incoming Invert	Secondary Incoming	Description of Secondary	Manhole	Manhole Manhole Man				Coat Base to 6 V.F.	Additional Coating	Replace Manhole	Install Manhole
Number			Coordinate Coordinate	Elevation I	Elevation	Elevation	Inv. Elev.	Incoming Line	Depth	Dimension	Cover	Site	Grouting	Epoxy-Polyurethane	Added	Rungs	Insert
(-)	<u>(-)</u> 417	98	(-) (-) 576,484.83 1,378,831.0	(ft) 9 107.64	(ft) 98.02	(ft) 98.37	<u>(ft)</u> 	(-)	<u>(ft)</u> - 9.62	( ft ) 4.00	( - ) Standard	(-) Off-Road	<u>(-)</u> -	<u>( - )</u> Yes	( Vertical ft ) 3.62	8	1
3	417	99	576,492.94 1,378,818.6		97.13	97.13	_				0-Inch Water-Tight	Pavement	-	N/A	N/A	N/A	N/A
3	417	100	576,496.39 1,378,806.5		99.04	101.92	_	Outgoing Elevation from As	;- 11 15	5.00 X 7.00	Standard	Pavement	-	N/A	N/A	N/A	N/A
3	3821	1	576,505.60 1,378,785.6		101.99		102.55	Buil 8-Inch Branc	It		Standard	Pavement	-	Yes	2.17	7	1
3	417	101	576,553.59 1,378,673.8	<del> </del>	102.41				- 11.08		andard with Insert	Pavement	-	Yes	5.08	10	 1
3	417	102	576,625.07 1,378,531.8		117.58		_		- 8.44		andard with Insert	Grass	Yes	Yes	2.44	7	1
3	417	103	576,638.69 1,378,369.4		132.78		_		- 9.42		andard with Insert	Pavement	103	Yes	3.42	8	1
3	417	104	576,721.11 1,378,150.7		138.06		_		- 10.00		andard with Insert	Pavement	_	Yes	4.00	9	1
	417	105	576,745.74 1,377,963.0	<del></del>					- 10.00 		andard with Insert	Pavement		Yes	4.48	9	 1
4	417												Voc		6.57	12	
4		106	576,682.75 1,377,709.3		154.57	154.62	_		- 12.57		andard with Insert Pa		Yes	Yes			1
4	417	107	576,553.02 1,377,567.7				-		- 10.32		andard with Insert	Pavement	- V	Yes	4.32	9	1
4	417	108	576,411.82 1,377,308.2	<del></del>					- 10.33			Off-Road Gutter	Yes	Yes	4.33	9	1
4	417	109	576,309.15 1,377,252.2				_	•	- 10.23			avement (Edge)	-	Yes	4.23	9	1
5	417	110	576,060.68 1,377,223.5				_		- 9.16		tandard with Insert	Pavement	Yes	Yes	3.16	8	1
5	417	111	575,953.67 1,377,154.5		198.41		_		- 10.68		Standard	Pavement	Yes	Yes	4.68	10	1
5	417	112	575,878.49 1,377,047.4	<del> </del> -			-	Bottom of Mainline Dro	– 14.06	·	tandard with Insert	Off-Road		Yes	8.06	13	1
5	417	113	575,677.96 1,376,853.7	5 225.69	212.99	217.55	212.95	Connectio	12.70	4.00	Standard	Pavement	-	Yes	6.70	12	1
5	417	114	575,349.67 1,376,738.7	239.21	229.46	230.66	-		- 9.75	4.00	Standard	Pavement	Yes	Yes	3.75	9	1
6	417	115	575,272.88 1,376,518.4	5 249.49	238.54	238.69	-		- 10.95	4.00	Standard	Pavement	-	Yes	4.95	10	1
6	417	116	575,261.46 1,376,297.3	255.65	248.18	248.24	248.70	8-Inch Branc	h 7.47	4.00	Standard, Bolted	Off-Road	Yes	Yes	1.47	6	1
6	417	117	575,144.64 1,376,183.2	263.33	250.98	251.09	251.25 / 257.40 8	3-Inch Branch / 6-Inch Branc	h 12.35	4.00	Standard	Pavement	Yes	Yes	6.35	11	1
6	417	118	575,014.56 1,376,065.1	4 266.97	253.94	253.95	_		- 13.03	4.00	Standard	Pavement	-	Yes	7.03	12	1
6	417	119	574,852.91 1,375,846.1	274.13	261.25	261.37	-		- 12.88	4.00	Standard	Pavement	Yes	Yes	6.88	12	1
6	417	120	574,706.53 1,375,873.3	280.84	265.57	265.71	-		– 15.27 –––––	4.00	Standard P	avement (Edge)	Yes	Yes	9.27	14	1
6	417	121	574,550.63 1,375,937.4	284.72	270.05	270.05	270.39 / 270.87	8-Inch / 6-Inch Branc	h 14.67	4.00	Standard	Pavement	Yes	Yes	8.67	14	1
7	417	122	574,405.89 1,375,800.7	286.35	275.86	275.95	276.34	6-Inch Branc	h 10.49	4.00	Standard, Bolted	Off-Road	Yes	Yes	4.49	9	1
7	417	123	574,141.96 1,375,667.9	290.21	284.28	284.32			- 5.93	4.00 S	tandard with Insert	Off-Road	-	Yes	0	5	1
7	417	124	573,799.31 1,375,626.3	3 296.71	289.55	289.57	291.96	8-Inch Branc	h 7.16	4.00	Water-Tight	Off-Road	Yes	Yes	1.16	6	0
7	417	125	573,442.40 1,375,450.8	306.29	298.13	298.15	-		- 8.16	4.00	Standard	Off-Road	Yes	Yes	2.16	7	1
7	417	126	573,326.01 1,375,465.9	314.61	299.79	303.35	299.84	Bottom of Mainline Dro Connectio	. 17 83	4.00	Standard P	avement / Grass	-	Yes	8.82	14	1
8	417	127	573,125.42 1,375,217.2	315.84	307.41	307.59	-		- 8.43	4.00	Standard	Pavement	-	Yes	2.43	8	1
8	417	128	573,030.18 1,375,118.7	8 318.17	309.52	309.57	314.17 / 309.57	Bottom of Mainline Dro Connection / 10-Inch Branc	' ጸ 65	4.00	Standard	Pavement		Yes	2.65	8	1
	<b></b>	<del></del> ,								<b> </b>				Totals:	137.34	285	29
								DI	ROPOSED NA	WHUIE SUPER	MILF						
	Manhole Outgoing Incoming Secondary Description of							Manhole				Coat Base	Additional	Replace	Install		
Sheet Number	Contract	Manhole	Northing Easting Coordinate Coordinate	Rim e Elevation	Invert Elevation	Invert Elevation	Incoming Inv. Elev.	Secondary Incoming Line	Manhole Depth	Wall Dimension	Manhole Cover	Site	Manhole Grouting	to 6 V.F. Epoxy-Polyurethane	Coating Added	Manhole Rungs	Manhole Insert
(-)	(-)	(-)	(-) (-)	(ft)	(ft)	(ft)	<u>(ft)</u>	(-)	(ft)	(ft)	(-)	(-)	(-)	( <u>-</u> )	( Vertical ft )	(-)	(-)
10	5034	99A	576,490.92 1,378,817.6		101.87	101.87	200.04	***	- 7.59		Standard	Pavement	<del>-</del>	Yes	1.59	N/A	1
8	5034	127A	573,053.78 1,375,143.4		309.04	309.64	309.04	12-Inch from MH 12 Bottom of Mainline Dro	n		Standard	Pavement	-	Yes	1.32	N/A	1
8	5034	128A	572,997.77 1,375,143.0 	318.21	310.16	315.21	310.17	Connectio	8.05	5.00	Standard	Off-Road		Yes	2.05	N/A	1
														Totals:	4.96	0	3

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

1.8.2021 CHIEF, BUREAU OF ENGINEERING CHIEF, UTILITY DESIGN DIVISION S.C. DATE



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DES: WMG					
DRN: BRW					STRUCTURE
CHK: AWW					SINOOTONE
DATE: 12/2020					<u> </u>
57 (1 <b>2</b> ) (12)	BY	NO.	REVISION	DATE	600 SCALE MAP NO. <u>31</u>

BONNIE BRANCH INTERCEPTOR SEWER IMPROVEMENTS

CONTRACT NO. 10-5034

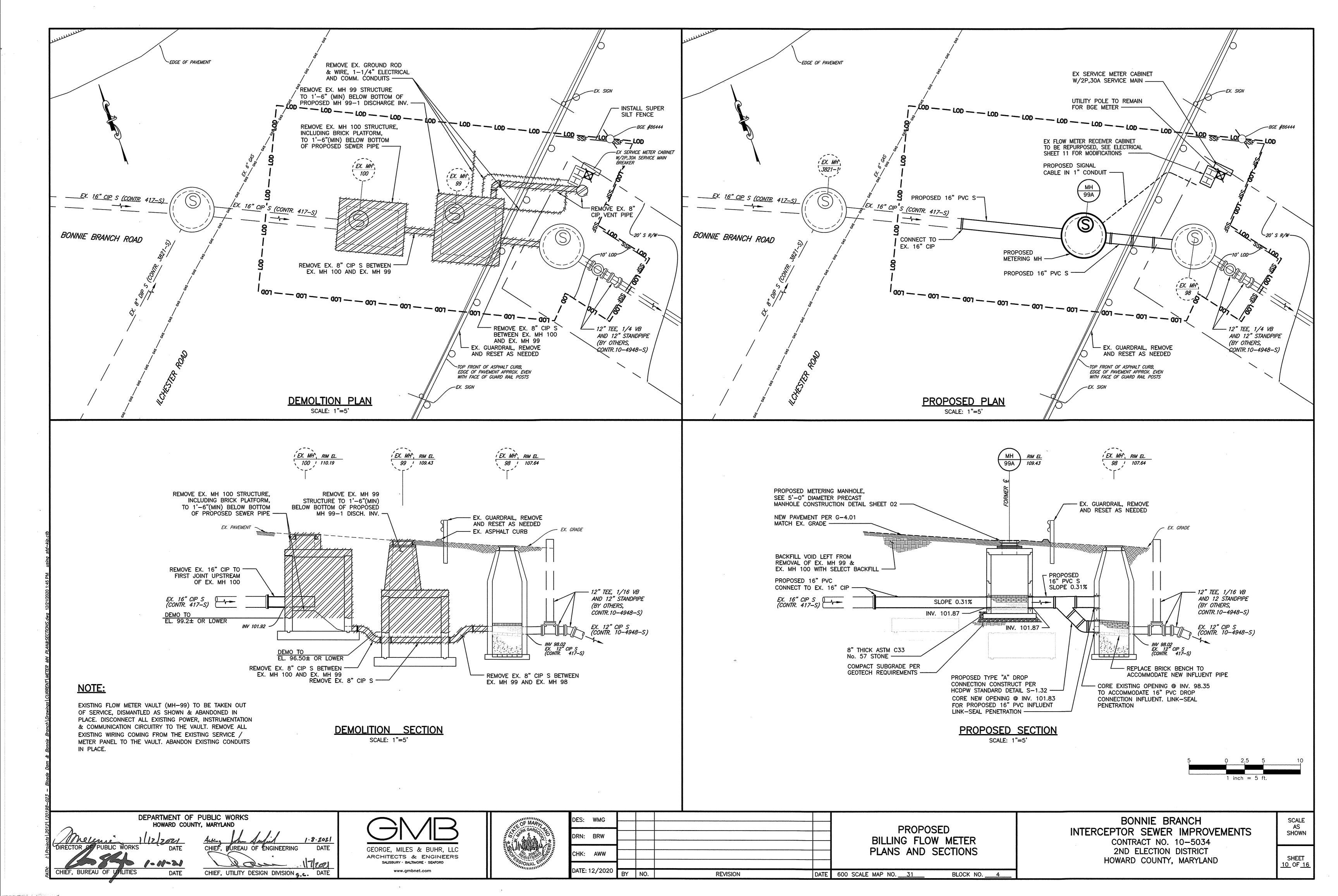
2ND ELECTION DISTRICT

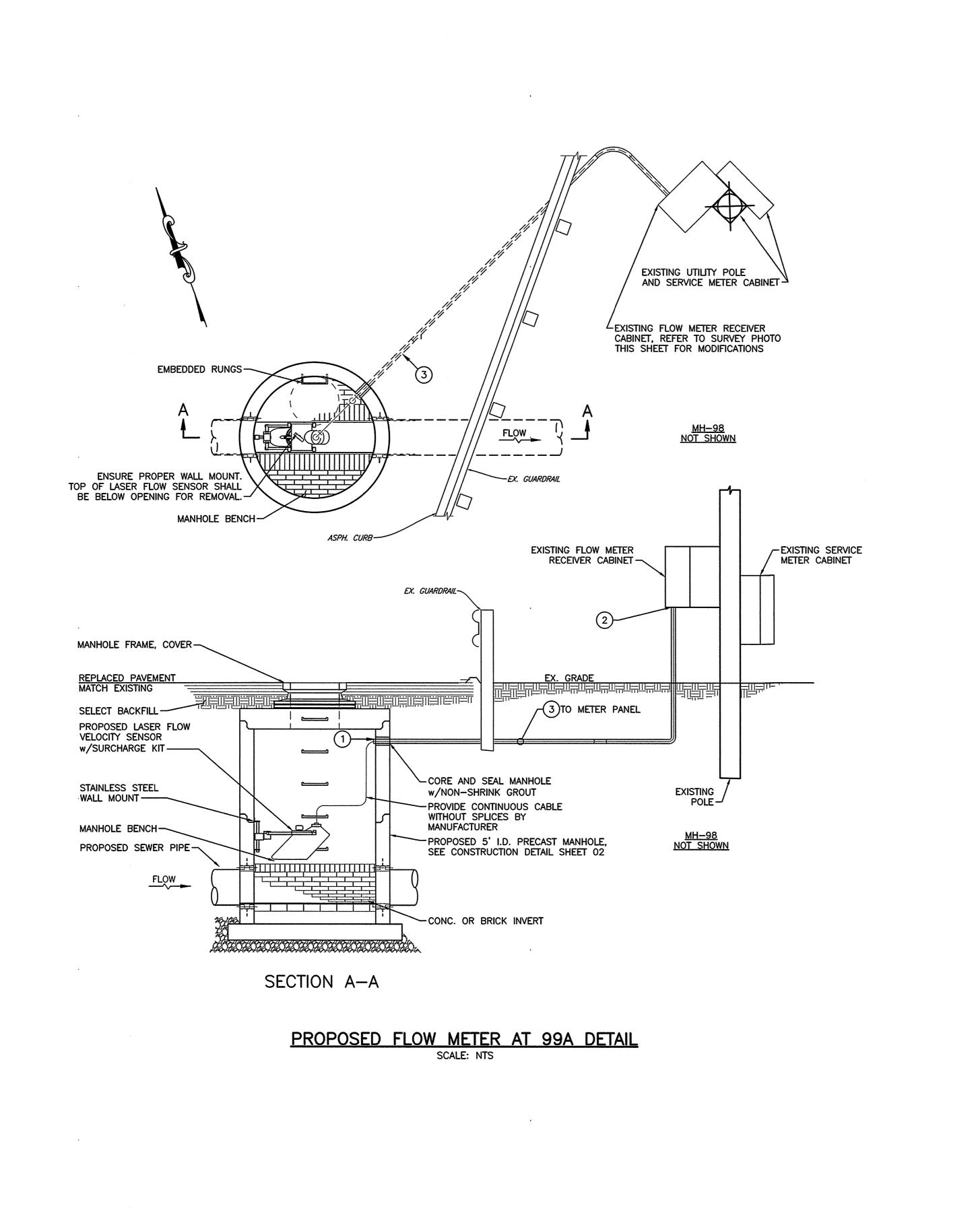
HOWARD COUNTY, MARYLAND STRUCTURE SCHEDULE

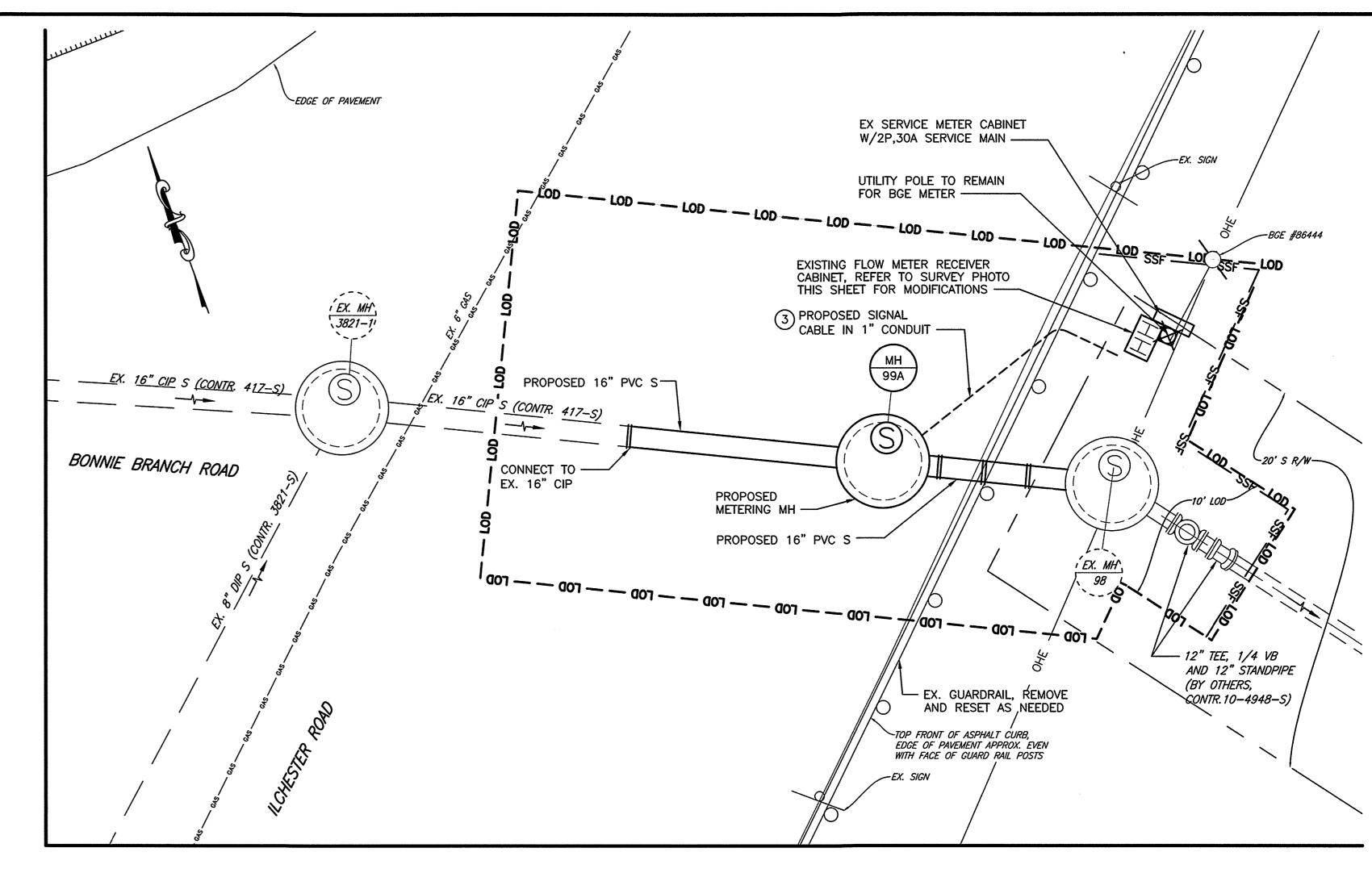
BLOCK NO. 4

SCALE AS SHOWN

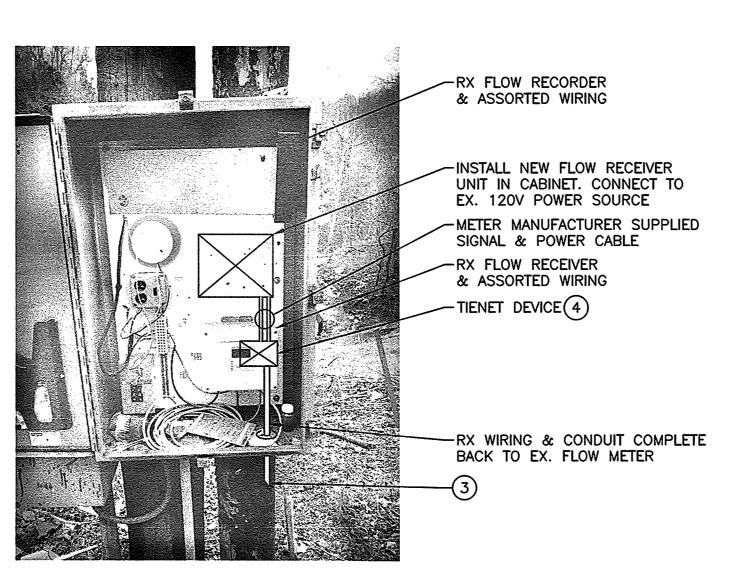
SHEET <u>09</u> OF <u>16</u>







# PROPOSED PLAN SCALE: 1"=5'



**SHEET NOTES:** 

TERMINATE CONDUIT 3" BEYOND INTERIOR FACE OF MANHOLE. PROVIDE INSULATED BUSHING & STAINLESS STEEL CABLE STRAIN RELIEF DEVICE.

- 2 PROVIDE SEALING FITTING PRIOR TO CONDUIT ENTRY INTO JUNCTION BOX. SEALING FITTING SHALL BE COMPOUND FILLED.
- 3 INSTALL SIGNAL CABLE SUPPLIED BY METER MANUFACTURER IN 1"C. FROM MANHOLE TO TIENET DEVICE in EXISTING FLOW METER RECEIVER CABINET.
- INSTALL TIENET DEVICE IN EXISTING FLOW METER RECEIVER CABINET. UTILIZE CORD—GRIP FITTINGS SUPPLIED BY FLOW METER MANUFACTURER FOR ALL CABLE CONNECTIONS TO TIENET DEVICE.

### **ELECTRICAL LEGEND:**

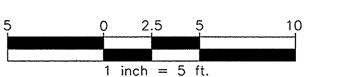
A. AMPERES
C. CONDUIT
EX EXISTING
JB JUNCTION BOX
MFR MANUFACTURER
RX REMOVE EXISTING

V VOLTS

SPECIAL DEVICE AS NOTED

# DENOTES REFERENCE TO SHEET NOTE NUMBER.

CONDUIT - UNDERGROUND
IN PLAN



EXISTING FLOW METER
RECEIVER CABINET
(SURVEY PHOTO 2017–12–12)

DEPARTMENT OF PUBLIC WORKS

HOWARD COUNTY, MARYLAND

ALLO ALLO

ORKS

DATE

CHIEF, BUREAU OF ENGINE

DATE

CHIEF, UTILITY DESIGN DIVISION S.C. DATE





DES:	WMG									
DRN:	BRW									LEC
							PLAN	١,	DE	TAII
CHK:	AWW									
DATE: 1	2/2020									
DATE: 1	2/2020	BY	NO.	REVISION	DATE	600	SCALE MA	AP N	10	31

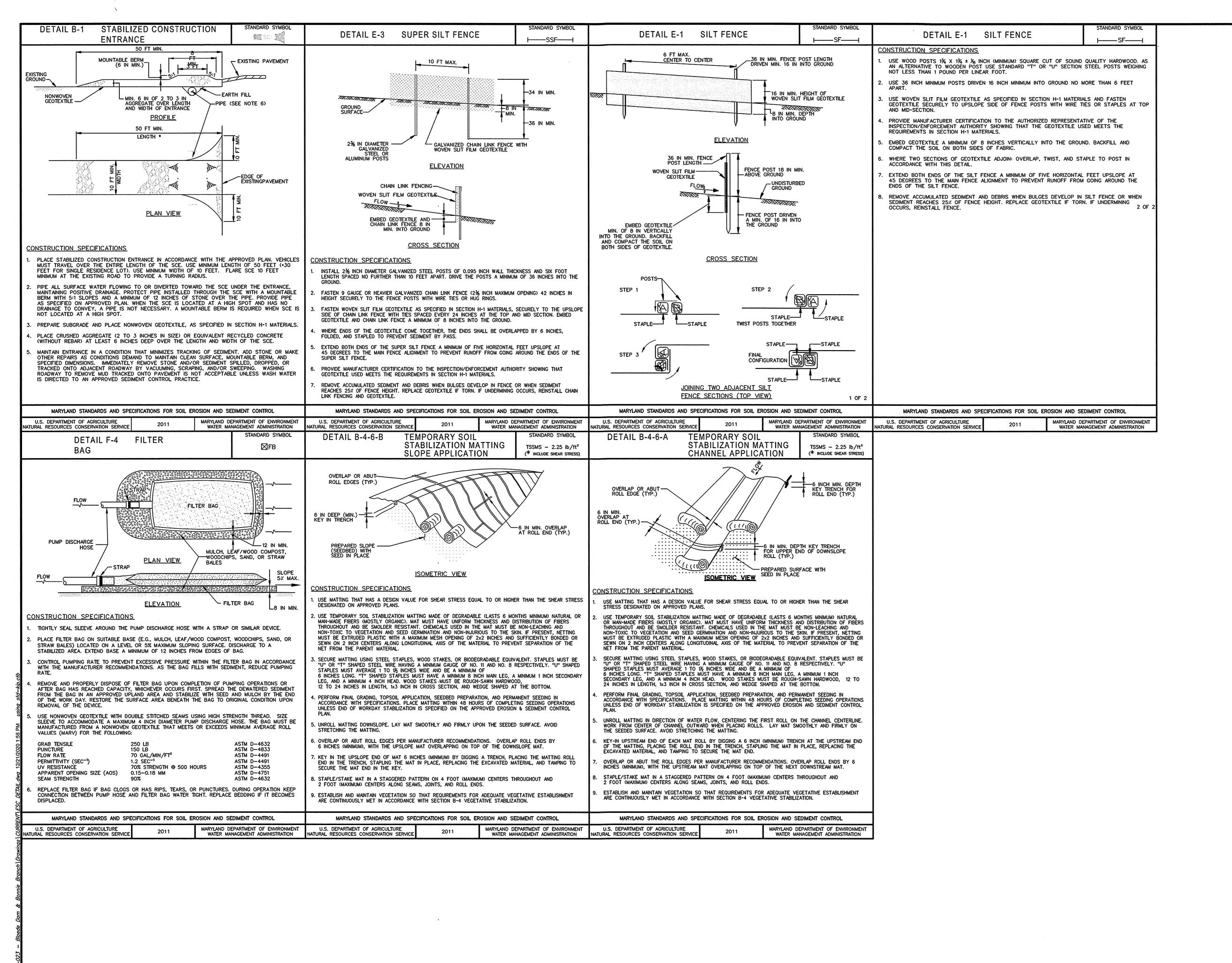
ELECTRICAL PLAN, DETAILS AND NOTES

BLOCK NO. 4

BONNIE BRANCH
INTERCEPTOR SEWER IMPROVEMENTS
CONTRACT NO. 10-5034
2ND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 11 OF 16



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

1. No excess fill, construction material, or debris shall be stockpiled or stored in nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.

2. Place materials in a location and manner which does not adversely impact surface or

subsurface water flow into or out of nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.

3. Do not use the excavated material as backfill if it contains waste metal products, unsightly debris, toxic material, or any other deleterious substance. if additional backfill is required, use clean material free of waste metal products, unsightly debris, toxic material, or any other deleterious substance.

4. Place heavy equipment on mats or suitably operate the equipment to prevent damage to nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.

5. Repair and maintain any serviceable structure or fill so there is no permanent loss of nontidal wetlands, nontidal wetland buffers, or waterways, or permanent modification of the 100-year flood plain in excess of that lost under the originally authorized structure

6. Rectify any nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year flood plain temporarily impacted by any construction.

7. All stabilization in the nontidal wetland and nontidal wetland buffer shall consist of the following species: annual ryegrass (lolium multiflorum), millet (setaria italica), barley (hordeum sp.), oats (uniola sp.), and/or rye (secale cereale). these species will allow for stabilization of the site while also allowing for the voluntary revegetation of natural wetland species. other non-persistent vegetation may be acceptable, but must be approved by the nontidal wetlands and waterways division. kentucky 31 fescue shall not be utilized in wetland or buffer areas. the area should be seeded and mulched to reduce erosion after construction activities have been completed.

8. After installation has been completed, make post-construction grades and elevations the same as the original grades and elevations in temporarily impacted areas.

9. To protect aquatic species, in-stream work is prohibited as determined by classification of the stream:

1 through june 15, inclusive, during any year.

Use I waters: in-stream work shall not be conducted during the period of march

10.Stormwater runoff from impervious surfaces shall be controlled to prevent the washing of debris into the waterway.

11. Culverts shall be constructed and any riprap placed so as not to obstruct the

movement of the aquatic species, unless the purpose of the activity is to impound

### SEQUENCE OF CONSTRUCTION

EROSION AND SEDIMENT CONTROL SETUP - 5 DAYS

1. (DAY 1) THE CONTRACTOR SHALL STAKE OUT THE LIMITS OF DISTURBANCE AS SHOWN ON THE PLANS AND OBTAIN GRADING PERMIT.

2. (DAY 1) NOTIFY MISS UTILITY (1-800-257-7777) AT LEAST 48 HOURS PRIOR TO BEGINNING WORK.

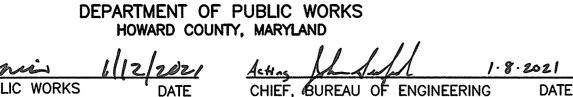
3. (DAY 2) THE CONTRACTOR SHALL CONDUCT A PRE-CONSTRUCTION MEETING ONSITE WITH THE SEDIMENT CONTROL INSPECTOR AND ENGINEER TO REVIEW THE LIMITS OF DISTURBANCE, STRUCTURE STAKEOUT, EROSION AND SEDIMENT CONTROL REQUIREMENTS, AND THE SEQUENCE OF CONSTRUCTION. THE PARTICIPANTS WILL ALSO VERIFY THE LOCATION OF ANY NECESSARY STAGING AREA AND FLAG ANY TREES WITHIN THE LIMITS OF DISTURBANCE WHICH WILL BE REMOVED FOR CONSTRUCTION ACCESS AND GRADING.

4. (DAY 3) THE CONTRACTOR SHALL INSTALL PERIMETER EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN ON THE PLAN INCLUDING THE SILT FENCE .

5. (DAY 5) THE HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION SHALL BE NOTIFIED UPON COMPLETION OF CONTROLS. UPON COMPLETION OF CONTROL INSTALLATION, AND WITH APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, THE CONTRACTOR MAY BEGIN OPERATIONS. CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH THE SEQUENCE OF CONSTRUCTION AND GRADING PLANS, AND EROSION AND SEDIMENT CONTROL STANDARD DETAILS AND NOTES. WORK SHALL BE LIMITED TO THAT WHICH CAN BE BACKFILLED AND STABILIZED IN ONE DAY. SOIL STABILIZATION MATTING SHALL BE USED AS APPROPRIATE PER TABLE B.7:SOIL STABILIZATION ON SLOPES ON SHEET 13.

6. (DAY 85) FOLLOWING COMPLETION OF THE CONSTRUCTION, THE CONTRACTOR MAY REMOVE EROSION AND SEDIMENT CONTROL MEASURES UPON RECEIVING APPROVAL FROM THE SEDIMENT CONTROL INSPECTOR.

CONSTRUCTION - 90 DAYS



DATE

CHIEF, UTILITY DESIGN DIVISION S.C. DATE





DES: WMG					
DRN: BRW					EROSION AND SEDIMENT
CHK: AWW					CONTROL DETAILS AND NOTES
DATE: 12/2020	BY	NO.	REVISION	DATE	600 SCALE MAP NO. 31 BLOCK NO. 4

**BONNIE BRANCH** INTERCEPTOR SEWER IMPROVEMENTS CONTRACT NO. 10-5034

2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND SHOWN

SCALE

AS

<u>12</u> OF <u>16</u>

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

Using vegetation as cover to protect exposed soil from erosion.

Purpose
To promote the establishment of vegetation on exposed soil On all disturbed areas not stabilized by other methods. This specification is

divided into sections on incremental stabilization; soil preparation, soil amendments and topsoiling; seeding and mulching; temporary stabilization; and permanent stabilization. Effects on Water Quality and Quantity Stabilization practices are used to promote the establishment of vegetation or exposed soil. When soil is stabilized with vegetation, the soil is less likely to

erode and more likely to allow infiltration of rainfall, thereby reducing sediment

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

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

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

### Inspect seeded areas for vegetative establishment and make necessary repairs,

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

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

<u>Definition</u>
Establishment of vegetative cover on cut and fill slopes.

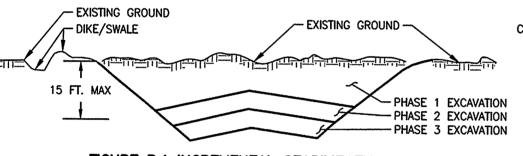
To provide timely vegetative cover on cut and fill slopes as work progresses. Conditions Where Practice Applies Any cut or fill slope greater than 15 feet in height. This practice also applies to stockpiles.

Incremental Stabilization - Cut Slopes

subsequent plant growth.

- 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
- Construction sequence example (refer to figure b.1): a. Construct and stabilize all temporary swales or dikes that will be used to convey runoff around the excavation.
- b. Perform phase 1 excavation, prepare seedbed, and stabilize. c. Perform phase 2 excavation, prepare seedbed, and stabilize. overseed phase 1 areas as necessary.
- d. Perform final phase excavation, prepare seedbed, and stabilize. overseed previously seeded areas as necessary.

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

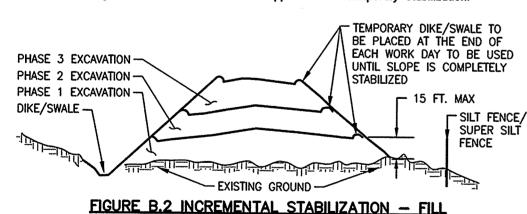


### FIGURE B.1 INCREMENTAL STABILIZATION - CUT

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): a. Construct and stabilize all temporary swales or dikes that will be used to divert runoff around the fill. Construct silt fence on low side of fill unless other
- methods shown on the plans address this area. b. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a
- c. Place phase 1 fill, prepare seedbed, and stabilize.
- d. Place phase 2 fill, prepare seedbed, and stabilize. e. Place final phase fill, prepare seedbed, and stabilize. overseed previously seeded

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



# B-4-2 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION. TOPSOILING. AND SOIL

<u>Definition:</u> The process of preparing the soils to sustain adequate vegetative <u>Purpose:</u> To provide a suitable soil medium for vegetative growth.

Conditions Where Practice Applies:

Where vegetative stabilization is to be established

Mules

PUBLIC WORKS

### Criteria: A. Soil Preparation

Temporary stabilization

- a. Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.
- b. Apply fertilizer and lime as prescribed on the plans. c. Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.

### B-4-2 continued.

2. Permanent stabilization

- a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are: i. Soil ph between 6.0 and 7.0.
- ii. Soluble salts less than 500 parts per million (PPM). Soil contains less than 40 percent clay but enough fine grained material(greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if lovegrass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable. iii. Soil contains 1.5 percent minimum organic matter by weight.
- vi. Soil contains sufficient pore space to permit adequate root penetration b. Application of amendments or topsoil is required if on-site soils do not meet the above conditions
- c. Graded areas must be maintained in a true and even grade, as specified on the approved plan, then scarified or otherwise loosened to a depth of 3
- d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test. e. Mix soil amendments into the top 3 to 5 inches of soil by disking or other
- suitable means. RAke lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.

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

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

- 3. Topsoiling is limited to areas having 2:1 or flatter slopes where: a. the texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
- b. the soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant
- 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 1½ inches in diameter. b. Topsoil must be free of noxious plants or plant parts such as bermuda grass, quack grass, johnson grass, nut sedge, poison ivy, thistle, or others
- as specified. c. Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
- 6. Topsoil application a. Erosion and sediment control practices must be maintained when applying
- b. Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
- 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 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
- 2. Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority, fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.
- 3. Lime materials must be ground limestone (Hydrated or burnt lime may be substituted except when hydroseeding) which contains at least 50 percent total oxides (Calcium Oxide plus Magnesium Oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 98 to 100 percent will pass through a #20 mesh sieve.
- 4. Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disking or other suitable means. 5. Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

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

Conditions Where Practice Applies: To the surface of all perimeter controls, slopes,

Definition: The application of seed and mulch to establish vegetative cover Purpose: To protect disturbed soils from erosion during and at the end of

and any disturbed area not under active grading

200 pounds per acre.

1. Specifications a. All seed must meet the requirements of the maryland state seed law. All seed must be subject to re-testing by a recognized seed laboratory. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to table B.4 regarding the quality of seed, seed tags must be available upon request t the inspector to verify type of seed and seeding rate.

b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen, the appropriate seeding mixture must be applied when the around thaws. c. Inoculants: the inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package, use four times the recommended rate when hydroseeding. Note: It is very important to keep

inoculant as cool as possible until used, temperatures above 75 to 80 degrees fahrenheit can weaken bacteria and make the inoculant less d. Sod or seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has

elapsed (14 days min.) to permit dissipation of phyto-toxic materials. a. Dry seeding: This includes use of conventional drop or broadcast spreaders i. Incorporate seed into the subsoil at the rates prescribed on temporary seeding table B.1, permanent seeding table B.3, or site-specific seeding

ii. Apply seed in two directions, perpendicular to each other. apply half the seeding rate in each direction. roll the seeded area with a weighted roller to provide good seed to soil contact.

b. Drill or cultipacker seeding: mechanized seeders that apply and cover seed i. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering, seedbed must be firm after

ii. Apply seed in two directions, perpendicular to each other. apply half the

seeding rate in each direction c. Hydroseeding: apply seed uniformly with hydroseeder (slurry includes seed and i. If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of

soluble nitrogen; p2o5 (phosphorous), 200 pounds per acre; k2o (potassium),

### B-4-3 continued.

ii. Lime: use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when

iii.Mix seed and fertilizer on site and seed immediately and without interruption. iv. WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.

1. Mulch materials (In order of preference) a. Straw consisting of thoroughly threshed wheat, rye, oat, or barley and

reasonably bright in color. Straw is to be free of noxious weed seeds as specified in the maryland seed law and not musty, moldy, caked, decayed or excessively dusty. <u>Note:</u> use only sterile straw mulch in areas where one species of grass is desired. b. Wood cellulose fiber mulch (WCFM) consisting of specially prepared wood

cellulose processed into a uniform fibrous physical state. i. WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly ii. WCFM, including dye, must contain no germination or growth inhibiting

iii.WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material must form a blotter-like ground cover, on application, having moisture absorption and percolation properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.

iv.WCFM material must not contain elements or compounds at concentration levels that will be phyto-toxic. v. WCFM must conform to the following physical requirements: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, PH range of 4.0 to 8.5, ash content of 1.6 percent maximum and water holding capacity of 90 percent minimum.

a. Apply mulch to all seeded areas immediately after seeding. b. When straw mulch is used, spread it over all seeded areas at the rate of 2 tons per acre to a uniform loose depth of 1 to 2 inches. Apply mulch to achieve a uniform distribution and depth so that the soil surface is not exposed, when using a mulch anchoring tool, increase the application rate to 2.5 tons per acre. c. Wood cellulose fiber used as mulch must be applied at a net dry weight of

1500 pounds per acre. mix the wood cellulose fiber with water to attain a

mixture with a maximum of 50 pounds of wood cellulose fiber per 100 aglions of water. a.Perform mulch anchoring immediately following application of mulch to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon the size of the area and

i. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of 2 inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should follow the contour. ii. Wood cellulose fiber may be used for anchoring straw. Apply the fiber

binder at a net dry weight of 750 pounds per acre. Mix the wood cellulose

fiber with water at a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water. iii. Synthetic binders such as acrylic dlr (AGRO-TACK), DCA-70, PETROSET. TERRA TAX II. TERRA TACK AR or other approved equal may be used. Follow application rates as specified by the manufacturer, application of liquid binders needs to be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. Use of asphalt binders is strictly

v. Lightweight plastic netting may be stapled over the mulch according to manufacturer recommendations. Netting is usually available in rolls 4 to 15 feet wide and 300 to 3,000 feet long.

### —4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY

<u>Definition:</u> 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.

1. 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.

2.For sites having soil tests performed, use and show the recommended the testing agency, soil tests are not required for temporary seeding. 3. When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in section B-4-3.A.1.B and maintain until the next seeding season.

			TEMPOR	ARY SE	EDING	SUMMARY	
	<u>\$</u>	EED MIXT	URE (HARDIN FROM TABLE	FERTILIZER	:.		
1	No.	Species Application rate(lb/ac) Seeding Dates		Seeding Depths	<u>RATE</u> (10–10–10)	LIME RATE	
	1	Annual Ryegrass 40		2/15-4/30 8/15-11/30	surface		
	2	Barley	96	2/15-4/30 8/15-11/30	surface	436 lb/ac (10lb/1000sf)	2 tons/ac. (90lb/1000sf)
	3	Foxtail Millet	30	5/1-8/14	surface		

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

<u>Definition:</u> To stabilize disturbed soils with permanent vegetation. <u>Purpose:</u> To use long-lived perennial grasses and legumes to establish permanent around cover on disturbed soils. Conditions Where Practice Applies: Exposed soils where ground cover is needed for 6 months or more.

## A. Seed mixtures

1. General use

a. Select one or more of the species or mixtures listed in table B.3 for the appropriate plant hardiness zone (from figure B.3) and based on the site condition or purpose found on table b.2. enter selected mixture(s), application rates, and seeding dates in the permanent seeding summary. the summary is to be placed on the plan.

b. Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in usda-nrcs technical field office auide, section 342 - critical area planting. c. For sites having disturbed area over 5 acres, use and show the rates recommended by the soil testing agency.

d. For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 ½ pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the permanent seeding summary.

### B-4-5 CONTINUED.

- 2. Turfgrass mixtures a. Areas where turfarass may be desired include lawns, parks. playgrounds, and commercial sites which will receive a medium to
- high level of maintenance. b. Select one or more of the species or mixtures listed below based on the site conditions or purpose, enter selected mixture(s), application rates, and seeding dates in the permanent seeding
- summary. The summary is to be placed on the plan. i. Kentucky Bluegrass: full sun mixture: for use in greas 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. ii. Kentucky Bluegrass/Perennial Rye: full sun mixture: for use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management, certified Perennial Ryegrass cultivars/certified Kentucky Bluegrass seeding rate: 2 pounds mixture per 1000 square feet, choose a minimum of three Kentucky Bluegrass cultivars with each ranging from 10 to 35
- iii. Tall Fescue/Kentucky Bluegrass: full sun mixture: for use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade, recommended mixture includes; certified Tall Fescue cultivars 95 to 100 percent, certified Kentucky Bluegrass cultivars 0 to 5 percent. seeding rate: 5 to 8 pounds per 1000 square feet, one or more cultivars may be
- iv. Kentucky Bluegrass/Fine Fescue: shade mixture: for use in areas with shade in Bluearass lawns, for establishment in high quality, intensively managed turf area. mixture includes; certified Kentucky Bluearass cultivars 30 to 40 percent and certified Fine Fescue and 60 to 70 percent, seeding rate: 1½ to 3 pounds per 1000 square

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

percent of the total mixture by weight.

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

c. Ideal times of seeding for turf grass mixtures

Western MD: March 15 to June 1, August 1 to October 1 (Hardiness zone: 5b, Central MD: March 1 to May 15, August 15 to October 15 (Hardiness zone: 6b)

Southern MD. Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardiness zones: 7A, 7B) d. Till areas to receive seed by disking or other approved methods to a depth of 2 to

4 inches, level and rake the areas to prepare a proper seedbed. remove stones and debris over 1½ inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty. e. If soil moisture is deficient, supply new seedings with adequate water for plant growth (½ to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedings are made late in the

### planting season, in abnormally dry or hot seasons, or on adverse sites. B. Sod: to provide quick cover on disturbed areas (2:1 grade or flatter).

1. General specifications a. Class of Turfgrass sod must be Maryland state certified. Sod labels must be made available to the job foreman and inspector.

b. Sod must be machine cut at a uniform soil thickness of 3/4 inch, plus or minus & inch, at the time of cutting. Measurement for thickness must exclude top growth of thatch. broken pads and torn or uneven ends will not be acceptable. c. 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. d. sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.

e. 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. a. During periods of excessively high temperature or in areas having dry subsoil, lightly

irrigate the subsoil immediately prior to laying the sod. b. 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

c. 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 d. 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

a. 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

must be removed by the initial cutting or subsequent cuttings, maintain a grass

sod during the heat of the day to prevent wilting. b. After the first week, sod watering is required as necessary to maintain adequate moisture content. c. Do not mow until the sod is firmly rooted. no more than 1/3 of the grass leaf

height of at least 3 inches unless otherwise specified.

PERMANENT SEEDING SUMMARY

	<u>SEED MIXTURE</u> FRO	(HARDINESS M TABLE 25	7A) <u>FERTILIZER_RATE</u> (10–20–20)											
No.	Species	Application Rates(lb/ac)	Seeding Depths	N	P205	K20	LIME RATE							
1	SWITCH GRASS CREEPING RED FESCUE PARTRIDGE PEA	10 15 4	2/15-4/30 5/1-5/31	1/12" TO 1/4"										
2	BIG BLUESTEM INDIAN GRASS LITTLE BLUESTEM CREEPING RED FESCUE PARTRIDGE PEA	6 6 4 15 4	2/15-4/30 5/1-5/31	1/12" TO 1/4"	45 lb/ac (1.0 lb/ 1000sf.)	90 lb/ac (2.0 lb/ 1000sf.)	90 lb/ac (2.0 lb/ 1000sf.)	2 tons/ac (90.0 lb/ 1000sf.)						
5	HARD FESCUE PERENNIAL RYEGRASS FLATPEA	20 10 15	2/15-4/30 8/15-10/31 11/11-11/31	1/12" TO 1/4"										

### B-4-6 STANDARDS AND SPECIFICATIONS FOR SOIL STABILIZATION MATTING

<u>Definition:</u> Material used to temporarily or permanently stabilize channels or steep slopes until groundcover is established. Purpose: To protect the soils until vegetation is established Conditions Where Practice Applies: On newly seeded surfaces to prevent the applied seed from washing out; in channels and on steep slopes where the flow has erosive velocities or conveys clear water; on temporary swales, earth dikes, and perimeter dike swales as required by the respective design standard; and, on stream banks where moving water is likely to wash

out new vegetative plantings.

The soil stabilization matting that is used must withstand the flow velocities and shear stresses determined for the area, based on the 2-year, 24-hour frequency storm for temporary applications and the 10-year, 24-hour frequency storm for permanent applications. Designate on the plan the type of soil stabilization matting using the standard symbol and include the calculated shear stress for the respective treatment area.

- Matting is required on permanent channels where the runoff velocity exceeds two and half feet per second (2.5 fps) or the shear stress exceeds two pounds per square foot (2 lbs/ft2). On temporary channels discharging to a sediment trapping practice, provide matting where the runoff velocity exceeds four feet per second (4 fps).
- Temporary soil stabilization matting is made with degradable (lasts 6 months minimum), natural, or manmade fibers of uniform thickness and distribution of fibers throughout and is smolder resistant. The maximum permissible velocity for temporary matting is 6 feet per second.
- 4. Permanent soil stabilization matting is an open weave, synthetic material consisting of non-degradable fibers or elements of uniform thickness and distribution of weave throughout. The maximum permissible velocity for permanent matting is 8.5 feet per second.
- 5. Calculate channel velocity and shear stress using the following procedure:

Shear Stress (t) is a measure of the force of moving water against the substrate and is calculated as

= weight density of water (62.4 lb/ft<sup>3</sup>) = average water depth (hydraulic radius)(ft)  $S_w$  = average surface slope (ft/ft)

 $t = y * R * S_W$  where:  $t = \text{shear stress (lb/ft}^2)$ 

v = (1.486 \* R^3 \* s^2) / n where: v = velocity (ft/sec)

Velocity (v) measures the rate of flow through a defined area and is calculated as

s = channel slope (ft/ft)Use Table B.7 to assist in selecting the appropriate soil stabilization matting for slope applications based on the slope, the slope length, and

n = Manning's roughness coefficient

R = hydraulic radius (ft)

Vegetation must be established and maintained so that the requirements for Adequate Vegetative Establishment are continuously met in accordance with Section B-4 Vegetative Stabilization.

### HOWARD SOIL CONSERVATION DISTRICT (HSCD) STANDARD SEDIMENT CONTROL NOTES

- 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

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.
- 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.
- 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 around 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

Site Analysis:	
Total Area of Site:	3.88_Acres(gross)
Area Disturbed:	0.20_Acres
Area to be roofed or paved:	0.03_Acres
Area to be vegetatively stabilized:	0.09_Acres
Total Cut:	1028_Cu. Yds.
Total Fill:	1028_Cu. Yds.
Offsite waste/borrow area location:	

- 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 type (routine, pre-storm event, during rain event)

Site Analysis:

- 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
- 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
- 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 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
- 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 HSCD, no more than 30 acres cumulatively may be disturbed at a given time.

unit) at a time. Work may proceed to a subsequent grading unit when at least 50

- 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 IP March 1 - June 15 • Use III and IIIP 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

### TABLE B.7: SOIL STABILIZATION ON SLOPES

available when the site is active.

									)						
SLOPE	20:1 OR FLATTER (<=5%)			<20:1 TO 4:1 (>5-25%)			<4:1 TO 3:1 (>25-33%)				3:1 TO 2. >33 - 40		<2.5:1 TO 2:1** (>40-50%)		
SLOPE LENGTH (FEET)*	0-30	30-60	60-120	0-30	30-60	60-120	0-30	30-60	60-120	0-30	30-60	60-120	0-30	30-60	60-120
STRAW MULCH/WOOD CELLULOSE FIBER					FOR	K<= 0.	35***								00 120
TEMPORARY MATTING WITH DESIGN STRESS >= 1.5 PSF				***************************************											
TEMPORARY MATTING WITH DESIGN SHEAR STRESS >= 1.75 PSF															
TEMPORARY MATTING WITH DESIGN SHEAR STRESS >= 2.0 PSF															
TEMPORARY MATTING WITH DESIGN SHEAR STRESS >= 2.25 PSF													Χ		
* SLOPE LENGTH INCLUDES CONTRI	BUTING FL	OW LENG	TH			·						Language secretaristics (Lea			

\*\*\* SOIL HAVING A K FACTOR LESS THAN OR EQUAL TO 0.35 CAN BE STABILIZED EFFECTIVELY WITH STRAW MULCH OR WOOD CELLULOSE FIBER WHEN LOCATED ON SLOPES

STEEPER THAN 5%. SOIL STBAILIZATION MATTING IS REQUIRED ON ALL SLOPES STEEPER THAN 5% THAT HAVE SOIL WITH A K FACTOR GREATER THAN 0.35.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

12021 1.8.2021 DATE CHIEF, BUREAU OF ENGINEERING 1717071 CHIEF, UTILITY DESIGN DIVISION ... DATE GEORGE, MILES & BUHR, LLC ARCHITECTS & ENGINEERS SALISBURY . BALTIMORE . SEAFORD

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DES: WMG DRN: BRW CHK: AWW DATE: 12/2020 REVISION DATE 600 SCALE MAP NO. 31

**EROSION AND SEDIMENT** CONTROL NOTES

\*\* SLOPES STEEPER THAN 2:1 MUST BE ENGINEERED

BLOCK NO. 4

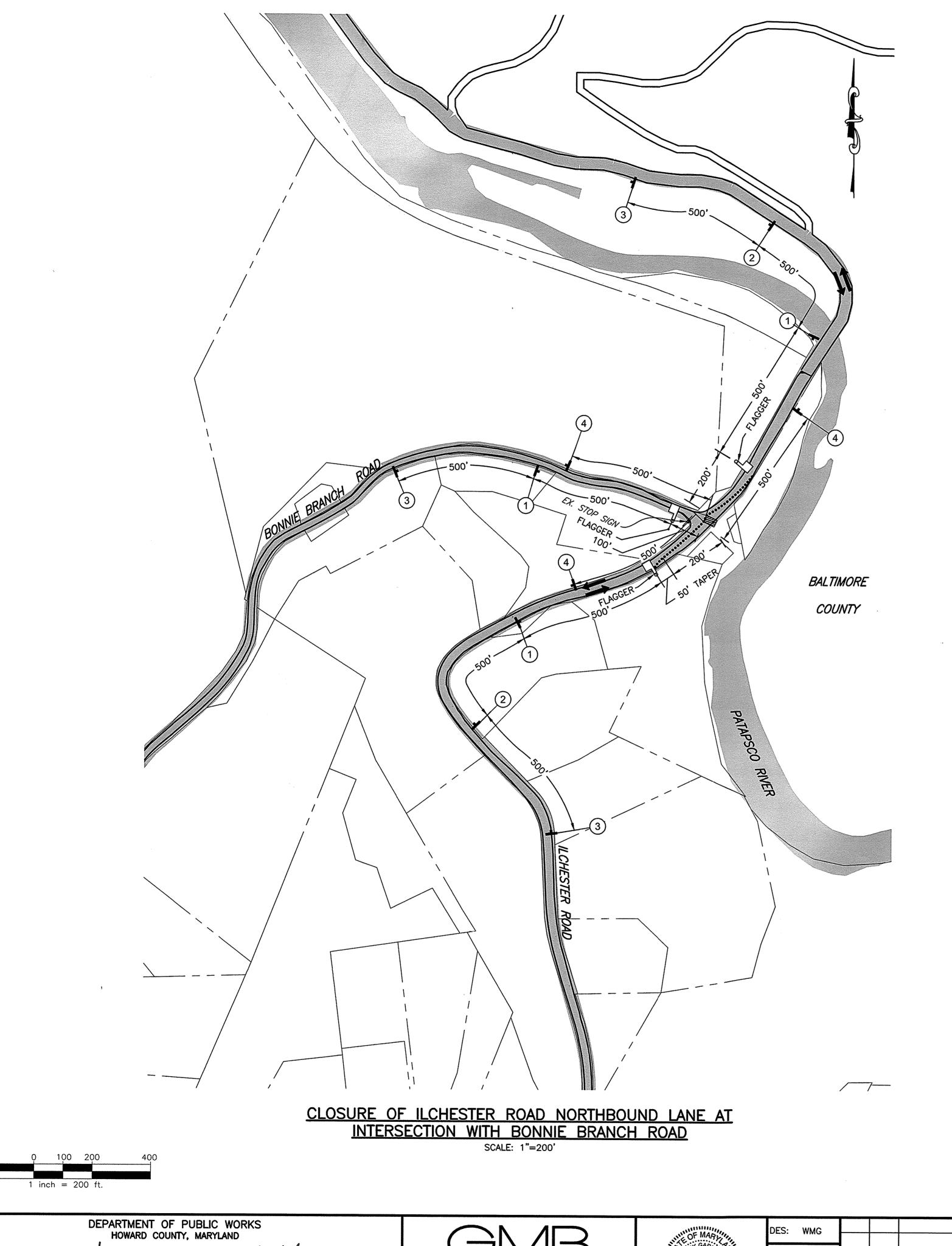
BONNIE BRANCH INTERCEPTOR SEWER IMPROVEMENTS CONTRACT NO. 10-5034

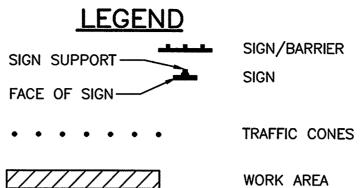
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

SHEET <u>13</u> OF <u>16</u>

SCALE AS

SHOWN





# DIRECTION OF TRAFFIC

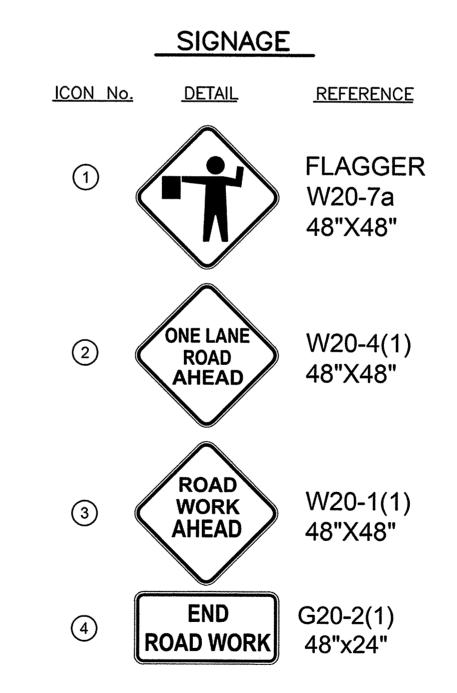
FLAGGER

## **SEQUENCE OF CONSTRUCTION:**

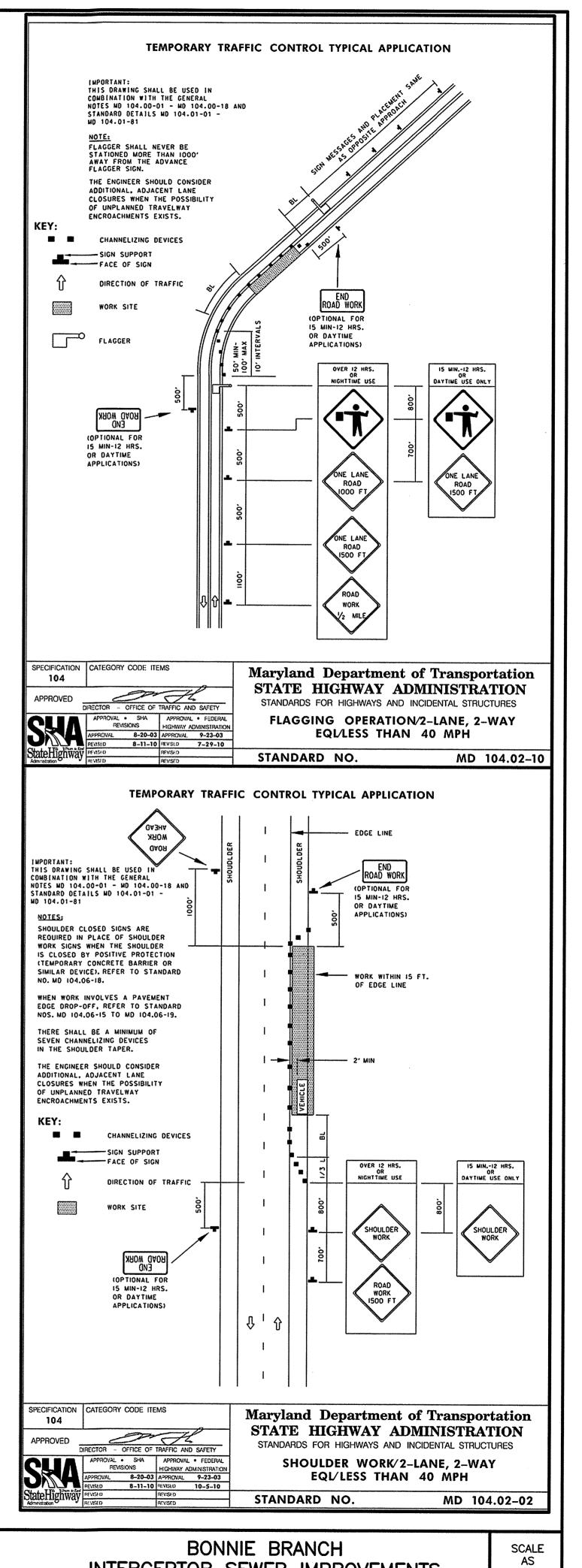
THE CONTRACTOR SHALL UTILIZE A FLAGGING OPERATION ON ILLCHESTER ROAD PER MD STD. 104.02-10 AND THESE PLANS.

### **GENERAL NOTES:**

- 1. THE CONTRACTOR SHALL ADHERE TO THE 2011 MDOT SHA MUTCD OR LATEST ADDITION.
- 2. THE CONTRACTOR SHALL ADHERE TO THE LATEST EDITION OF THE MDOT SHA BOOK OF STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES.
- 3. PARKING IS TO BE RESTRICTED FOR 72 HOURS.
- 4. CONTRACTOR SHALL ASSIST ANY AND ALL PEDESTRIANS THROUGH THE WORK ZONE.
- 5. TRAVEL LANES MUST REMAIN AT A MINIMUM 11'-0" WIDTH.
- 6. LANE CLOSURE HOURS SHALL BE LIMITED TO 9:00AM 3:00PM.
- 7. SIGNS NO LONGER REQUIRED OR APPLICABLE SHALL BE REMOVED, COVERED OR TURNED AWAY.
- 8. SIGNS SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF ALL WORK AND REMOVED IMMEDIATELY AFTER COMPLETION OF
- 9. ACCESS TO ALL ROADWAYS & DRIVEWAYS MUST BE MAINTAINED AT ALL TIMES.
- 10. THE CONTRACTOR SHALL PROVIDE AN ADEQUATE WORK ZONE BUFFER PER MD STD. 104.01-81 AND THESE PLANS.
- 11. THE CONTRACTOR SHALL INSTALL AND REMOVE TRAFFIC CONTROL DEVICES PER MD STD. 104.06-01 THROUGH 104.06-04.
- 12. THE CONTRACTOR SHALL INSTALL CHANNELIZING DEVICES PER MD STD. 104.01-30B AND 104.01-30D WHILE REFERENCING MD STD. 104.00-09 AND 104.00-10.



BLOCK NO. 4



1.8.2021 DATE

CHIEF, UTILITY DESIGN DIVISION 6.10.

DATE

ARCHITECTS & ENGINEERS SALISBURY · BALTIMORE · SEAFORD

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DRN: BRW MAINTENANCE OF TRAFFIC CHK: AWW DATE: 12/2020 BY NO. **REVISION** DATE 600 SCALE MAP NO. 31

INTERCEPTOR SEWER IMPROVEMENTS CONTRACT NO. 10-5034

2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

14 OF 16

SHOWN

