

STORMWATER HGL CALCULATIONS

Proposed Hydraulic Grade Line Calculations															Project: Columbia Pike Multimodal - Segment F Client: Arlington County Project Number: 110010073 Date: 8/31/2021 Designed By/Checked: Derik Doughty, P.E. / Mike Albright, P.E.									
VDOT LD-347															Kimley»Horn									
INLET	Q <sub>o</sub>	L <sub>o</sub>	S <sub>fo</sub>	H <sub>i</sub>	JUNCTION LOSS												FINAL H	INLET WSE	RIM ELEV	AVAILABLE FREEBOARD				
					V <sub>o</sub>	H <sub>o</sub>	Q <sub>i</sub>	V <sub>i</sub>	QV <sub>i</sub>	$V_i^2$ 2g	H <sub>1</sub>	Angle	H <sub>2</sub>	H <sub>3</sub>	1.3 H <sub>3</sub>	0.5 H <sub>3</sub>								
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)					
OUTFALL #1																								
16994	6.59	64.4	0.112	7.21	15.12	0.89	1.43	1.01	1.44	0.02	0.01	7.82	0.00	0.89	0.89	0.45	7.66	131.26	139.61	8.35				
17008	1.43	53.5	0.082	4.39	8.65	0.29	1.44	3.43	4.94	0.18	0.06	90.06	0.13	0.48	0.48	0.24	4.63	135.92	140.53	4.61				
16981	1.44	40.0	0.089	3.56	9.45	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.35	0.17	3.73	139.65	142.16	2.51				
16967	5.22	33.1	0.014	0.46	7.41	0.21	4.77	4.74	22.61	0.35	0.12	4.72	0.02	0.36	0.36	0.18	0.64	135.98	144.65	8.67				
16905	4.77	88.2	0.062	5.47	11.42	0.51	3.98	4.14	16.48	0.27	0.09	0.49	0.00	0.60	0.60	0.30	5.77	141.81	145.03	3.22				
0010	3.98	94.7	0.010	0.95	5.54	0.12	4.00	3.26	13.04	0.17	0.06	71.61	0.10	0.28	0.28	0.14	1.09	142.90	149.14	6.24				
0009	4.00	69.5	0.059	4.10	11.91	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.55	0.55	0.28	4.38	149.56	154.62	5.06				
OUTFALL #2																								
0014	4.82	12.9	0.052	0.67	10.89	0.46	3.35	3.27	10.95	0.17	0.06	0.11	0.00	0.52	0.52	0.26	0.93	131.50	140.43	8.93				
0013	1.17	12.1	0.025	0.30	7.07	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.19	0.10	0.40	132.99	140.19	7.20				
0032	0.37	5.5	0.013	0.07	3.84	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.03	0.10	135.30	140.12	4.82				
16775	3.35	58.4	0.052	3.04	9.84	0.38	2.35	3.24	7.61	0.16	0.06	84.79	0.11	0.54	0.54	0.27	3.31	134.81	139.67	4.86				
0015	1.05	6.2	0.018	0.11	6.86	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.18	0.09	0.20	135.01	139.54	4.53				
0016	2.35	75.6	0.020	1.51	6.31	0.15	1.23	2.25	2.77	0.08	0.03	4.67	0.00	0.19	0.19	0.09	1.61	136.41	140.36	3.95				
0018	1.23	172.8	0.050	8.64	7.18	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.20	0.10	8.74	145.15	148.69	3.54				
OUTFALL #3																								
16717	15.75	73.7	0.049	3.61	14.21	0.78	12.64	7.15	90.38	0.79	0.28	0.17	0.00	1.06	1.06	0.53	4.14	135.90	139.90	4.00				
23676	3.20	13.2	0.034	0.45	10.96	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.47	0.23	0.68	137.44	139.84	2.40				
0017	12.64	58.7	0.027	1.58	11.01	0.47	11.15	6.31	70.36	0.62	0.22	0.16	0.00	0.69	0.69	0.34	1.93	137.83	139.99	2.16				
16681	11.15	60.5	0.026	1.57	10.71	0.45	9.80	7.99	78.30	0.99	0.35	92.30	0.70	1.50	1.50	0.75	2.32	140.15	141.26	1.11				
16666	9.80	28.9	0.023	0.66	7.99	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.25	0.12	0.79	140.94	141.69	0.75				
16675	1.86	40.8	0.006	0.24	6.77	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.18	0.09	0.33	140.49	143.44	2.95				
OUTFALL #4																								
16732	35.38	14.2	0.022	0.31	14.19	0.78	35.40	11.27	398.96	1.97	0.69	20.67	0.49	1.97	1.97	0.98	1.29	133.03	141.42	8.39				
0012	35.40	24.9	0.085	2.12	22.06	1.89	30.89	9.83	303.65	1.50	0.53	89.57	1.05	3.46	3.46	1.73	3.85	136.88	142.33	5.45				
0011	3.57	7.8	0.003	0.02	9.77	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.37	0.19	0.21	137.09	142.16	5.07				
16804	30.89	120.5	0.088	10.60	21.31	1.76	20.71	7.05	146.01	0.77	0.27	4.44	0.04	2.08	2.08	1.04	11.64	148.52	149.01	0.49				
16843	20.71	82.6	0.059	4.87	16.32	1.03	18.27	6.84	124.97	0.73	0.25	77.05	0.47	1.76	1.76	0.88	5.75	154.28	154.91	0.63				
16847	2.65	21.8	0.017	0.37	7.99	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.25	0.12	0.49	154.77	156.78	2.01				
EX044	18.27	62.5	0.007	0.44	6.88	0.18	18.36	10.39	190.76	1.68	0.59	75.82	1.08	1.85	1.85	0.92	1.36	155.64	156.20	0.56				
EX045	18.36	188.1	0.045	8.46	14.70	0.84	18.44	10.76	198.41	1.80	0.63	1.29	0.03	1.50	1.50	0.75	9.21	164.85	169.58	4.73				
EX046	18.44	168.1	0.040	6.72	14.17	0.78	8.72	4.94	43.08	0.38	0.13	80.44	0.25	1.16	1.16	0.58	7.31	172.16	180.81	8.65				
0008	8.72	68.0	0.033	2.24	12.28	0.59	6.55	5.34	34.98	0.44	0.15	80.61	0.29	1.03	1.03	0.52	2.76	175.97	181.25	5.28				
0007	6.55	210.5	0.035	7.37	10.07	0.39	6.58	5.37	35.33	0.45	0.16	88.74	0.31	0.86	0.86	0.43	7.80	184.44	188.34	3.90				
0006	6.58	47.0	0.018	0.85	8.12	0.26	0.86	0.80	0.69	0.01	0.00	89.53	0.01	0.27	0.27	0.13	0.98	185.42	191.23	5.81				
0005	0.86	38.0	0.041	1.56	6.69	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.17	0.09	1.64	187.06	191.56	4.50				
OUTFALL #5																								
16614	24.20	300.8	0.056	16.84	17.63	1.21	24.21	17.77	430.21	4.90	1.72	0.30	0.02	2.94	2.94	1.47	18.32	154.32	162.41	8.09				
0026	24.21	6.3	0.013	0.08	14.74	0.84	22.76	7.25	165.01	0.82	0.29	89.85	0.57	1.70	1.70	0.85	0.93	158.55	162.29	3.74				
0025	1.20	120.2	0.020	2.40	5.95	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.14	0.07	2.47	161.02	169.57	8.55				
16574	22.78	57.1	0.038	2.17	14.52	0.82	21.70	6.91	149.95	0.74	0.26	88.69	0.52	1.59	1.59	0.80	2.97	161.52	162.35	0.83				
0027	21.70	61.6	0.036	2.22	14.45	0.81	19.88	6.57	130.61	0.67	0.23	87.79	0.46	1.51	1.51	0.75	2.97	164.49	165.85	1.36				
23684	1.89	21.7	0.081	1.76	9.74	0.37	1.89	3.63	6.86	0.20	0.07	36.94	0.08	0.52	0.52	0.26	2.02	166.51	167.59	1.08				
0031	1.89	9.0	0.010	0.09	4.57	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.08	0.04	0.13	166.64	168.04	1.40				
16532	19.88	44.5	0.039	1.74	13.94	0.75	10.12	5.93	60.01	0.55	0.19	5.18	0.04	0.98	0.98	0.49	2.23	166.72	168.69	1.97				
16511	2.42	24.6	0.012	0.30	5.84	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.13	0.07	0.36	167.08	168.46	1.38				
0028	10.12	11.1	0.036	0.40	11.78	0.54	8.61	7.05	60.70	0.77	0.27	97.96	0.56	1.37	1.37	0.69	1.09	167.80	169.50	1.70				
25092	1.53	15.3	0.001	0.02	6.75	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.18	0.09	0.10	167.91	170.01	2.10				
85203A	8.61	11.4	0.011	0.13	8.46	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.28	0.14	0.26	168.07	170.99	2.92				
OUTFALL #6																								
16493	143.89	89.2	0.024	2.14	23.44	2.13	140.17	14.57	2042.28	3.30	1.15	2.02	0.09	3.37	3.37	1.69	3.83	155.88	174.88	19.00				
16441	140.17	166.0	0.039	6.47	23.72	2.18	35.58	14.78	525.16	3.38	1.18	75.47	2.17	5.54	5.54	2.77	9.24	165.17	175.27	10.10				
16430	118.30	19.5	0.004	0.08	15.17	0.89	116.28	7.60	883.58	0.90	0.31	3.05	0.03	1.24	1.24	0.62	0.70	165.87	174.37	8.50				
0021	2.29	31.5	0.020	0.63	7.16	0.20	1.72	3.12	5.37	0.15	0.05	0.10	0.00	0.25	0.25	0.13	0.76	168.93	174.18	5.25				
0020	1.72	44.9	0.030	1.35	6.61	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.17	0.08	1.43	170.65	174.52	3.87				
16387	116.26	57.0	0.019	1.08	16.75	1.09	27.72	8.82	244.49	1.21	0.42	85.48	0.82	2.34	2.34	1.17	2.25	168.12	174.42	6.30				
0022	2.14	34.2	0.015	0.51	6.08	0.14	1.36	2.64	3.59	0.11	0.04	0.40	0.00	0.18	0.18	0.09	0.69	169.49	174.18	4.69				
0019	1.36	45.4	0.020	0.91	5.34	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.11	0.06	0.96	170.63	174.50	3.87				
0023	27.72	179.8	0.047	8.45	17.50	1.19	27.15	8.64	234.58	1.16	0.41	0.10	0.00	1.60	1.60	0.80	9.25	177.37	181.46	4.09				
16251	27.15	165.0	0.057	9.41	17.40	1.18	8.32	6.78	56.41	0.71	0.25	88.63	0.50	1.92	1.92	0.96	10.37	187.74	189.80	2.06				
16325	8.32	51.0	0.017	0.67	6.78	0.18	7.12	5.80	41.30	0.52	0.18	89.53	0.36	0.73	0.73	0.36	1.23	188.97	189.77	0.80				
0029	7.12	155.4	0.040	6.22	11.14	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.51	0.25	0.67	195.44	196.80	1.36				
16415	35.58	92.4	0.050	4.62	211																			



STORMWATER MANAGMENT

TOTAL PROJECT AREA: 7.96 ACRES

EXISTING IMPERVIOUS AREA: 6.64 ACRES

PROPOSED IMPERVIOUS AREA: 6.79 ACRES

THIS PROJECT WAS FUNDED BEFORE 7/1/2012. IT HAS BEEN GRANDFATHERED, THEREFORE NOT SUBJECT TO ARLINGTON'S NEW STORMWATER MANAGEMENT ORDINANCE. IT SHOULD BE GRANTED AN EXEMPTION UNDER THE CHESAPEAKE BAY PRESERVATION ORDINANCE SECTION §61-15(A). THIS EXEMPTION IS APPLICABLE TO PUBLIC LINEAR PROJECTS THAT CONSIST SOLELY OF TRANSPORTATION AND UTILITY-RELATED INFRASTRUCTURE.

THIS PROJECT MEETS THE THREE EXEMPTION CONDITIONS IN THE CODE OF VIRGINIA FOR LINEAR DEVELOPMENT PROJECTS.

1. THERE WILL BE LESS THAN 1 ACRE DISTURBED PER OUTFALL, WITH EACH OUTFALL BEING DEFINED AS A COLLECTION POINT FOR SURFACE RUNOFF.
2. THERE WILL BE INSIGNIFICANT INCREASES IN PEAK FLOW RATES. THE EXISTING HYDRAULIC CHARACTERISTICS AND OUTFALLS REMAIN THE SAME IN THE PROPOSED CONDITIONS, WITH IMPROVEMENTS TO THE ROADWAY DRAINAGE NETWORK. THE IMPERVIOUS AREA INCREASES 2.26% IN THE PROPOSED CONDITIONS, WHICH DOES NOT SIGNIFICANTLY INCREASE THE PEAK FLOW RATE AND IS ADEQUATE FOR THE STORMWATER NETWORK AS DEMONSTRATED IN THE STORMWATER CALCULATIONS.
3. THERE ARE NO EXISTING OR ANTICIPATED FLOODING OR EROSION PROBLEMS DOWNSTREAM OF THE DISCHARGE POINT. THE PROPOSED STORMWATER NETWORK DISCHARGES INTO THE EXISTING SYSTEM. THE STORMWATER PIPE AND HYDRAULIC GRADE LINE CALCULATIONS DEMONSTRATE THAT THE EXISTING SYSTEM IS ADEQUATE DOWNSTREAM OF THE DISCHARGE POINT.

Arlington, Virginia

COMPLETE ARLINGTON STREETS

FY2009 – FY2014 CIP

6 YEAR PROGRAMMED SUMMARY (IN \$1,000s)

Program Description

In November, 2007, the County Board adopted the Master Transportation Plan (MTP) Goals and Policies document and MTP map. One of the three general policies that form the plan's foundation is to "support the design and operation of complete streets." This CIP category formed primarily, but not exclusively, from the former Arterials category, focuses on multimodal projects integrated with adjacent community uses. Projects in this program range from intersection or interchange improvements, to new street links, to major corridor reconstruction. Although the focus is on major streets, in commercial and mixed-use areas, neighborhood street improvements are included in this category.

Master Plan Impact

Master Transportation Plan, Pedestrian Master Plan, Bikeway Master Plan, Transit Master Plan, Underground Utilities Guidelines

Bond Financing Notes

Costs shown are based on current costs. Future costs are subject to market variables that can either increase or decrease the costs shown. Bond maturity is assumed to be 20 years. The costs shown also reflect the costs as if the full approved bond was sold in the first year following approval by the voters, which may or may not be the case for any particular program.

PROGRAM FUNDING SOURCES (IN \$1,000s)

	FY 09	FY 10	FY 11	FY 12	FY 13	FY 14	6 Year Total
Revenue from the Commonwealth	750	750					1,500
Developer Contribution	-	-					-
Other Funding	-	-					-
Transportation Investment Fund	6,900	5,600					13,250
Commonwealth Loan Funds	-	-					-
Master Lease	-	-					-
PAYG	600						600
Bond Issue							
Total Funding Sources	8,250	6,350					15,350

BOND FINANCING IMPACT (IN \$1,000s)

	FY 09	FY 10	FY 11	FY 12	FY 13	FY 14	6 Year Total
Bond Financing Cost (P&I)	0	0	0	0	0	0	0

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

2.0 Authorized Non-Stormwater Discharges

Type of Authorized Non-Stormwater DischargeLikely Present at Your Project Site?

External buildings wash down

☐ Yes

☐ No

Uncontaminated foundation or footing drains

☐ Yes

☐ No

Uncontaminated excavation dewatering

☐ Yes

☐ No

Landscape irrigation

☐ Yes

☐ No

Others

☐ Yes

☐ No

STORMWATER POLLUTION PREVENTION PLAN

COLUMBIA PIKE MULTIMODAL STREET IMPROVEMENTS – SEGMENT F

5.0 Potential Sources of Pollution & Pollution Prevention Practices

Pollutant-Generating Activity	Likely Present at your Project Site?	Pollutants										Pollution Prevention Practice	Responsible Party
		Sediment	Nutrients	Heavy Metals	pH (acids and bases)	Pesticides & Herbicides	Oil & Grease	Bacteria & Viruses	Trash, Debris, Solids	Other Toxic Chemicals			
Clearing, grading, excavating, and un-stabilized areas	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	X							X		(1)	Construction Activity Operator (See Cover Page of this SWPPP)	
Paving operations	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	X				X		X	X		(2)		
Concrete washout and cement waste	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			X	X			X	X		(3)		
Structure construction, stucco, painting, and cleaning	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			X	X			X	X		(4)		
Dewatering operations	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	X	X					X			(5)		
Material delivery and storage	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	X	X	X	X	X		X	X	X	(6)		
Material use during building process	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		X	X	X	X		X	X		(7)		
Solid waste disposal	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							X	X		(8)		
Sanitary waste	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		X		X			X			(9)		
Landscaping operations	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	X	X		X			X	X		(10)		
Others	<input type="checkbox"/> Yes <input type="checkbox"/> No										(11)		

Arlington County – SWPPP 7/2014

7.0 Spill Prevention & Response

Most spills can be cleaned up following manufacturer specifications. Absorbent/oil dry, sealable containers, plastic bags, and shovels/brooms are suggested minimum spill response items that should be available at this location.

1<sup>st</sup> Priority: Protect all people  
2<sup>nd</sup> Priority: Protect equipment and property  
3<sup>rd</sup> Priority: Protect the environment

1. Check for hazards (flammable material, noxious fumes, cause of spill) – if flammable liquid, turn off engines and nearby electrical equipment. If serious hazards are present leave the area and call 911. LARGE SPILLS ARE LIKELY TO PRESENT A HAZARD.

2. Make Sure the spill area is safe to enter and that it does not pose an immediate threat to health or safety of any person.

3. Stop the spill source.

4. Call co-workers and supervisor for assistance and to make them aware of the spill and potential dangers.

5. If possible, stop spill from entering drains (use absorbent or other material as necessary).

6. Stop spill from spreading (use absorbent or other material)

7. If spilled material has entered a storm sewer, contact locality's storm water department.

8. Clean up spilled material according to manufacturer specifications, for liquid spills use absorbent materials and do not flush area with water.

9. Properly dispose of cleaning materials and used absorbent material according to manufacturer specifications.

Emergency Contacts:

Normal Working Hours

DEQ Northern Regional Office703-583-3800

Nights, Holidays & Weekends

VA Dept. of Emergency Management24 Hour Reporting Service804-674-2400

Local Contacts

Arlington County Fire & Police703-558-2222

DES Water, Sewer, Streets 24-Hour Emergency703-228-6555

Washington Gas Emergency703-750-1400

REGISTRATION STATEMENT

Registration Statement

General VPDES Permit for Discharges of Stormwater from Construction Activities (VAR10)

(Please Type or Print All Information)

1. Construction Activity Operator: (General permit coverage will be issued to this operator. The Certification in Item #12 must be signed by the appropriate person associated with this operator.)  
Name: \_\_\_\_\_  
Contact: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ Phone: \_\_\_\_\_  
Email address (if available): \_\_\_\_\_  
Indicate if DEQ may transmit general permit correspondence electronically: Yes ☐ No ☐

2. Existing General Permit Registration Number (for renewals only): \_\_\_\_\_

3. Name and Location of the Construction Activity:  
Name: Columbia Pike Multimodal Street Improvements - Segment F  
Address (if available): Columbia Pike, South Oakland Street to South Wakefield Street  
City: Arlington State: VA Zip: 22204  
County (if not located within a City): \_\_\_\_\_  
Latitude (decimal degrees): -38.854376 Longitude (decimal degrees): -77.116588  
Name and Location of all Off-site Support Activities to be covered under the general permit:  
Name: \_\_\_\_\_  
Address (if available): \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
County (if not located within a City): \_\_\_\_\_  
Latitude (decimal degrees): \_\_\_\_\_ Longitude (decimal degrees): \_\_\_\_\_

4. Status of the Construction Activity (check only one): Federal ☐ State ☐ Public ☒ Private ☐

5. Nature of the Construction Activity (e.g., commercial, industrial, residential, agricultural, oil and gas, etc.): \_\_\_\_\_

6. Name of the Receiving Water(s) and Hydrologic Unit Code (HUC): [Link to HUC6 Map](#)  
Name: Potomac River - Four Mile Run HUC: \_\_\_\_\_  
HUC: 020700100301 PL 25

7. If the discharge is through a Municipal Separate Storm Sewer System (MS4), the name of the MS4 operator: \_\_\_\_\_

8. Estimated Project Start and Completion Date:  
Start Date (mm/dd/yyyy): \_\_\_\_\_ Completion Date (mm/dd/yyyy): \_\_\_\_\_

9. Total Land Area of Development (to the nearest one-hundredth acre): 7.96  
Estimated Area to be Disturbed (to the nearest one-hundredth acre): 7.96

10. Is the area to be disturbed part of a larger common plan of development or sale? Yes ☒ No ☐

11. A stormwater pollution prevention plan (SWPPP) must be prepared in accordance with the requirements of the General VPDES Permit for Discharges of Stormwater from Construction Activities prior to submitting this Registration Statement. By signing this Registration Statement the operator is certifying that the SWPPP has been prepared.

12. Certification: "I certify under penalty of law that I have read and understand this Registration Statement and that this document and all attachments were prepared in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

Printed Name: \_\_\_\_\_ Title: \_\_\_\_\_  
Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
(Please sign in INK. This Certification must be signed by the appropriate person associated with the operator identified in Item #1.)

07/2014Page 1 of 1

ARLINGTON COUNTY WILL COMPLETE AND SUBMIT THE REGISTRATION STATEMENT, AND WILL OBTAIN THE REQUIRED PERMIT(S) FROM DEQ. CONTRACTOR SHALL CONFIRM WITH THE COUNTY THAT THE REQUIRED PERMITS ARE IN PLACE PRIOR TO BEGINNING WORK.

ARLINGTON COUNTY, VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL SERVICES

STORMWATER MANAGEMENT  
COLUMBIA PIKE - ROUTE 244  
COLUMBIA PIKE - MULTIMODAL STREET IMPROVEMENTS  
SEGMENT F

SCALE: HOR. N/A VERT. N/A SHEET: F11.6.2 of F11.6.3

DEPARTMENT OF ENVIRONMENTAL SERVICES

Facilities & Engineering Division  
Engineering Bureau  
2100 Clarendon Boulevard, Suite 813  
Arlington, VA 22201  
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and Associates, Inc.  
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11400 Commerce Park Drive, Suite 400  
Reston, Virginia 20190  
Phone: 703-674-1500  
Fax: 703-674-1500

Seal

Approvals Date

Design Team Engineer Supervisor

Construction Management Supervisor

Water, Sewer, Streets Bureau Chief

Transportation Director

Project Manager

Revisions	Date

Designed: DCD  
Drawn: DCD  
Checked: MRA  
Miss Utility Transmittal #:

Filename: 010073-F-STRM-CALCS.dwg  
Path: K:\NVA\_RDP\Y11010673 Columbia Pike Multimodal Production Task  
12: 12 Final Design of Columbia Pike Segment F (7.5.2 - 100% Design) (P&I.dwg)  
Plotted: September 02, 2021  
Plotted by: patrick.husted

ARLINGTON VIRGINIA

LUIS ARAYA  
BUREAU CHIEF, DES - DEVELOPMENT SERVICES

DEPARTMENT OF ENVIRONMENTAL SERVICES

10/19/2021  
APPROVAL DATE



THIS SHEET HAS BEEN DELETED  
FROM THE PLAN SET



DEPARTMENT OF  
ENVIRONMENTAL SERVICES

Facilities & Engineering Division  
Engineering Bureau  
2100 Clarendon Boulevard, Suite 813  
Arlington, VA 22201  
Phone: 703.228.3629  
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Fax: 703-874-1300

Seal



Approvals Date

Design Team Engineer Supervisor

Construction Management Supervisor

Water, Sewer, Streets Bureau Chief

Transportation Director

Project Manager

Revisions Date

Designed: DCD  
Drawn: DCD  
Checked: MRA  
Miss Utility Transmittal #:

Filename: 010073-F-STRM-CALCS.dwg  
Path: C:\NVA\_RDR\Y11010073 Columbia Pike Multimodal Production Task  
Design\PlanSheet  
Plotted: September 02, 2021  
Plotted by: patrick.husted

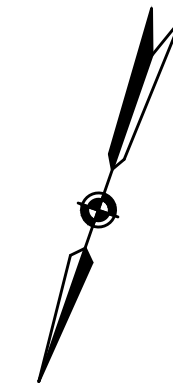
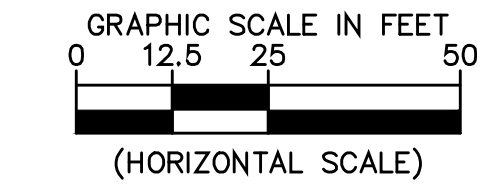
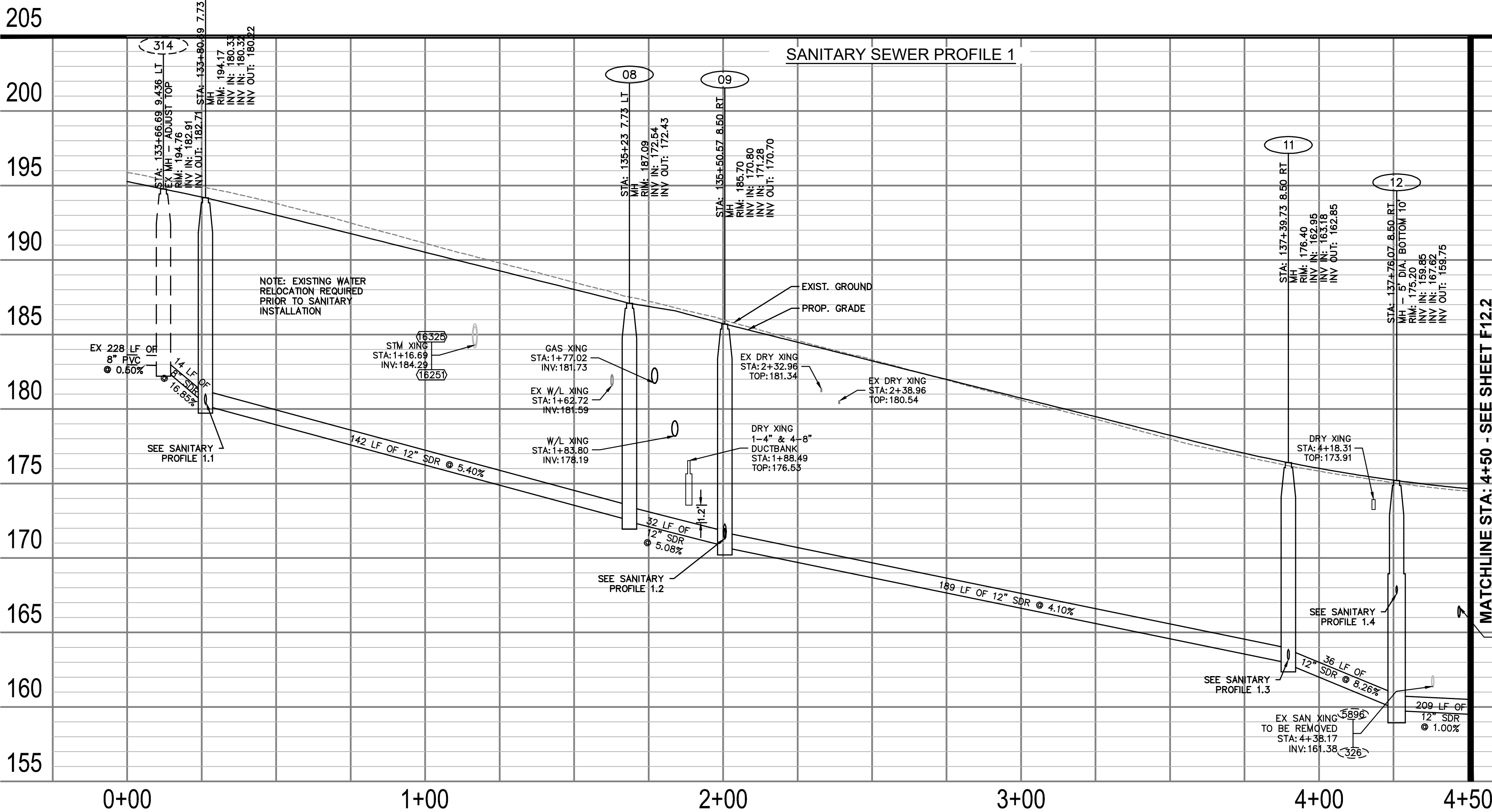
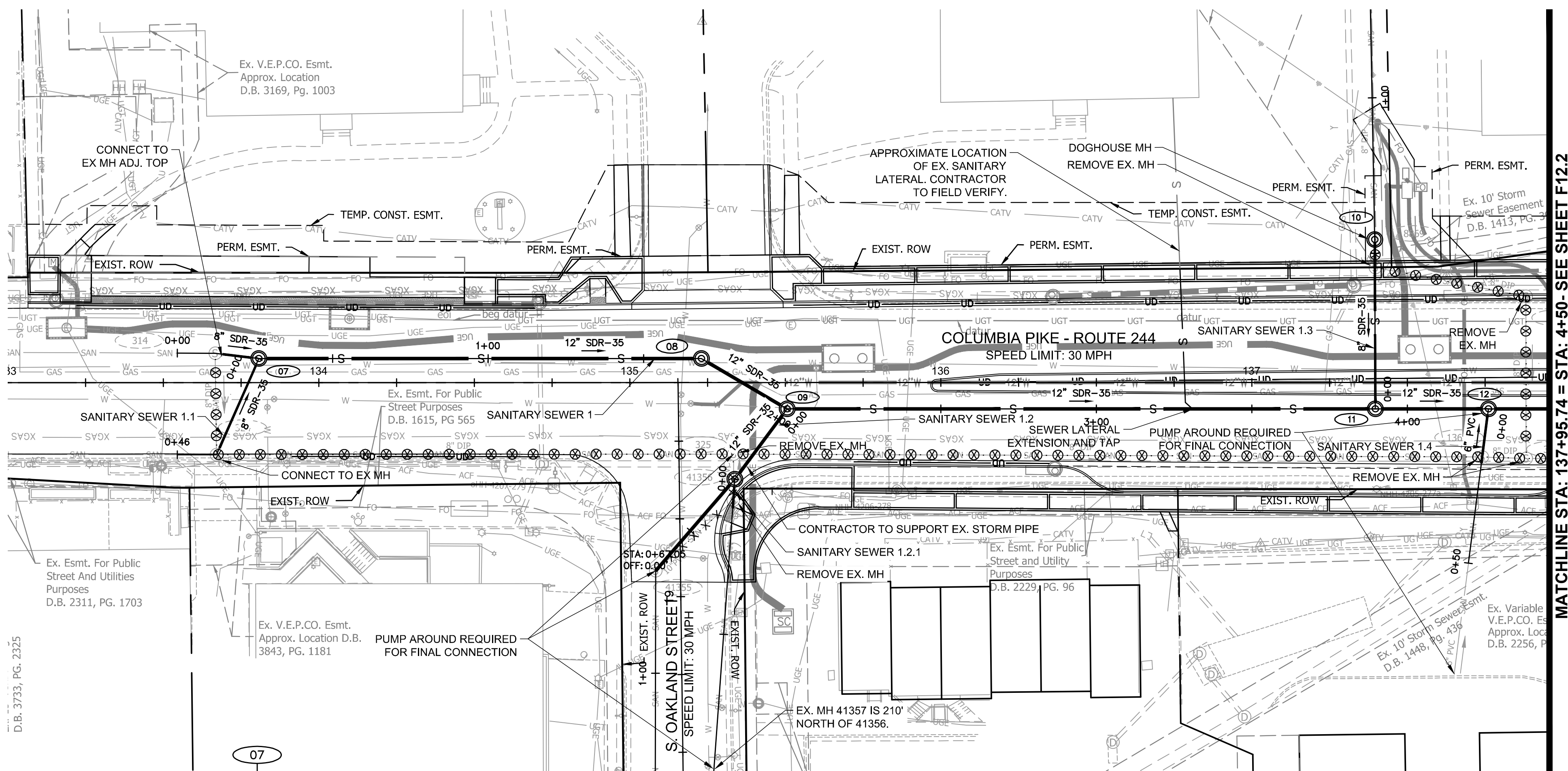
ARLINGTON COUNTY, VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL SERVICES

STORMWATER MANAGEMENT  
COLUMBIA PIKE - ROUTE 244  
COLUMBIA PIKE - MULTIMODAL STREET IMPROVEMENTS  
SEGMENT F

SCALE: HOR. N/A VERT. N/A SHEET: F11.6.3 of F11.6.3

NOT TO BE APPROVED





## FOR SANITARY CONST. ONLY

- NOTES:
- PROFILE STATIONING ALONG CENTERLINE OF PIPE
  - SEE SERIES 10 FOR FULL UTILITY NETWORK PLAN VIEWS.
  - WATERLINE TO BE INSTALLED, TESTED, AND PUT INTO SERVICE PRIOR TO STORM AND SANITARY PIPE INSTALLATION. CONTRACTOR TO CONFIRM EXISTING WATERLINE IS DECOMMISSIONED PRIOR TO REMOVAL. DESIGN ASSUMES THAT THE PROPOSED WATERLINE IS GENERALLY INSTALLED PRIOR TO OTHER UTILITIES TO MITIGATE CONFLICTS.
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- PROFILE VIEW LEGEND
- EXISTING PIPE/STRUCTURE TO REMAIN
  - PROPOSED PIPE/STRUCTURE
- PLAN VIEW LEGEND
- PROP. SDR-35 PVC SANITARY SEWER PIPE
  - PROP. SANITARY SEWER MANHOLE
  - EXISTING SANITARY SEWER MANHOLE
  - PROP. SANITARY STRUCTURE NO.
  - EXISTING SANITARY STRUCTURE NO.
  - FILL & ABANDON UTILITY LINE
  - REMOVE UTILITY LINE

Revisions	Date

Designed: KKF  
Drawn: KKF  
Checked: MRA  
Miss Utility Transmittal #:

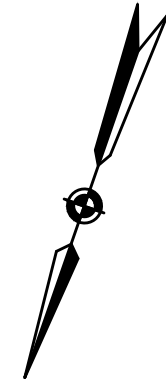
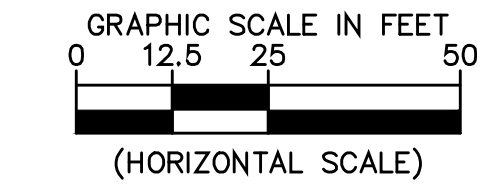
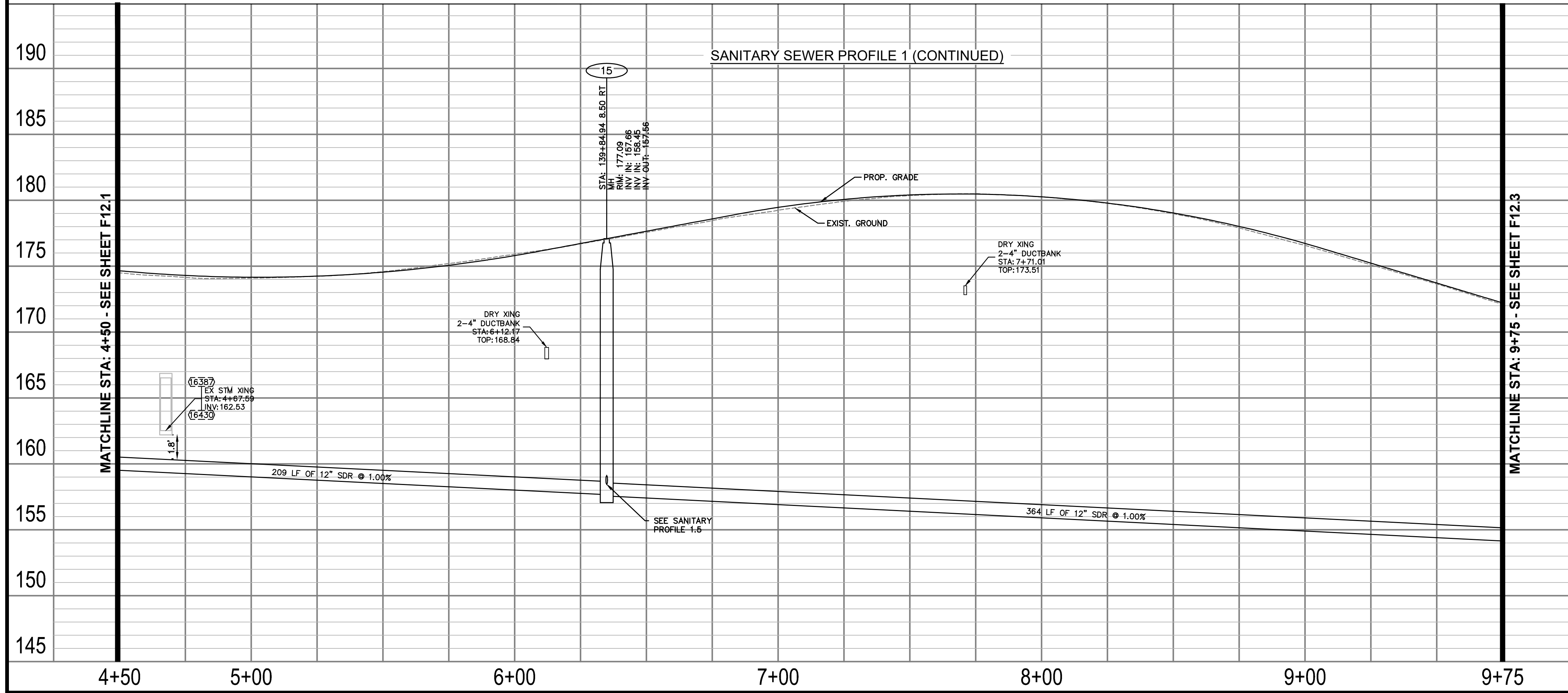
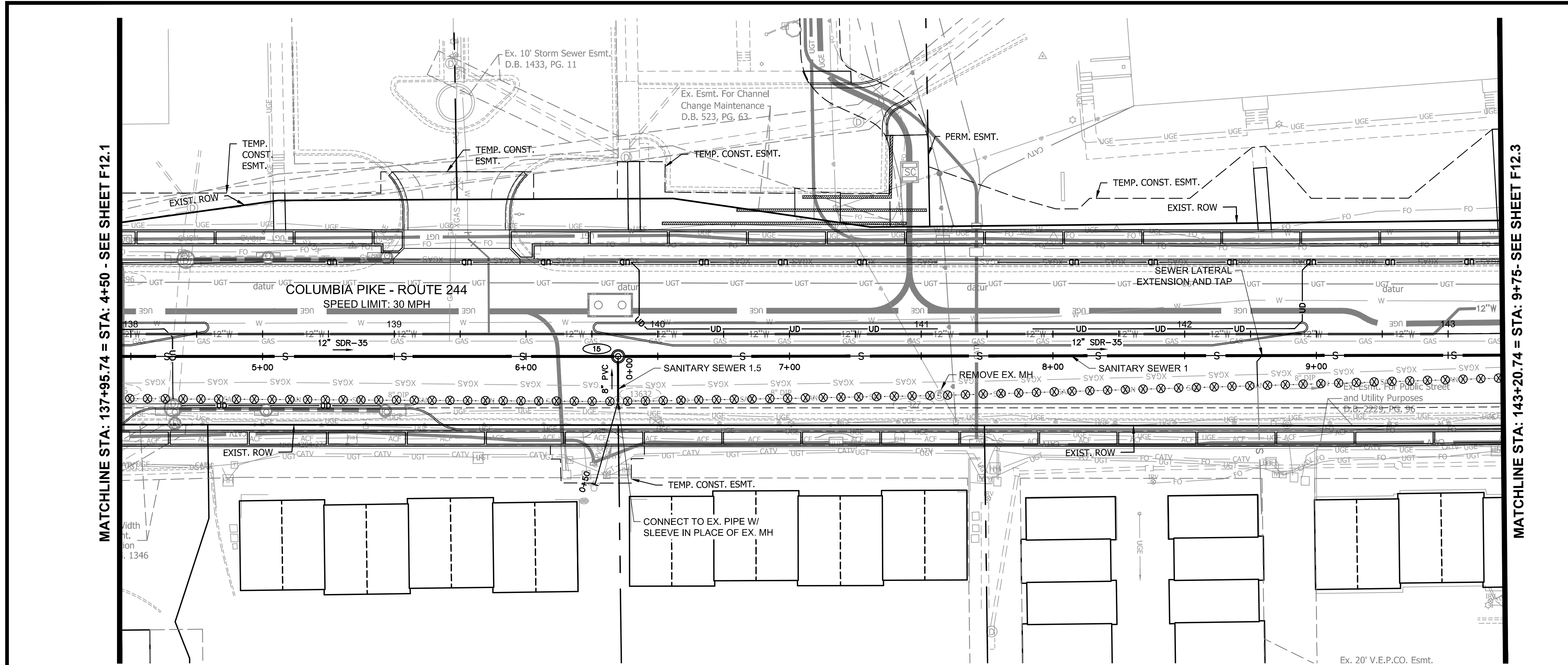
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Plotted: October 13, 2021  
Plotted by: Patrick.Husted

ARLINGTON COUNTY, VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL SERVICES

SANITARY PLAN AND PROFILES  
COLUMBIA PIKE - ROUTE 244  
COLUMBIA PIKE - MULTIMODAL STREET IMPROVEMENTS  
SEGMENT F  
STA. 133+00 TO STA. 137+95.74

SCALE: HOR. 1" = 25' VERT. 1" = 5' SHEET: F12.1 of F12.8





FOR SANITARY CONST. ONLY

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**ARLINGTON VIRGINIA**

DEPARTMENT OF ENVIRONMENTAL SERVICES

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Seal

COMMONWEALTH OF VIRGINIA  
MICHAEL R. ALBRIGHT  
Lic. No. 46643  
10/13/2021  
PROFESSIONAL ENGINEER

Approvals Date

Design Team Engineer Supervisor

Construction Management Supervisor

Water, Sewer, Streets Bureau Chief

Transportation Director

Project Manager

Revisions	Date

Designed: KKF  
Drawn: KKF  
Checked: MRA  
Miss Utility Transmittal #:

Filename: 010073-F-SSWR.dwg  
Path: C:\Users\KIMLEY\OneDrive\Projects\010073-F-SSWR\010073-F-SSWR.dwg  
Plotted: October 13, 2021  
Plotted by: Patrick.Husted

ARLINGTON COUNTY, VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL SERVICES

SANITARY PLAN AND PROFILES  
COLUMBIA PIKE - ROUTE 244  
COLUMBIA PIKE - MULTIMODAL STREET IMPROVEMENTS  
SEGMENT F  
STA. 137+95.74 TO STA. 143+20.74

SCALE: HOR. 1" = 25' VERT. 1" = 5' SHEET: F12.2 of F12.8

**ARLINGTON VIRGINIA**

DEPARTMENT OF ENVIRONMENTAL SERVICES

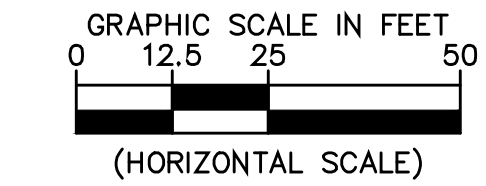
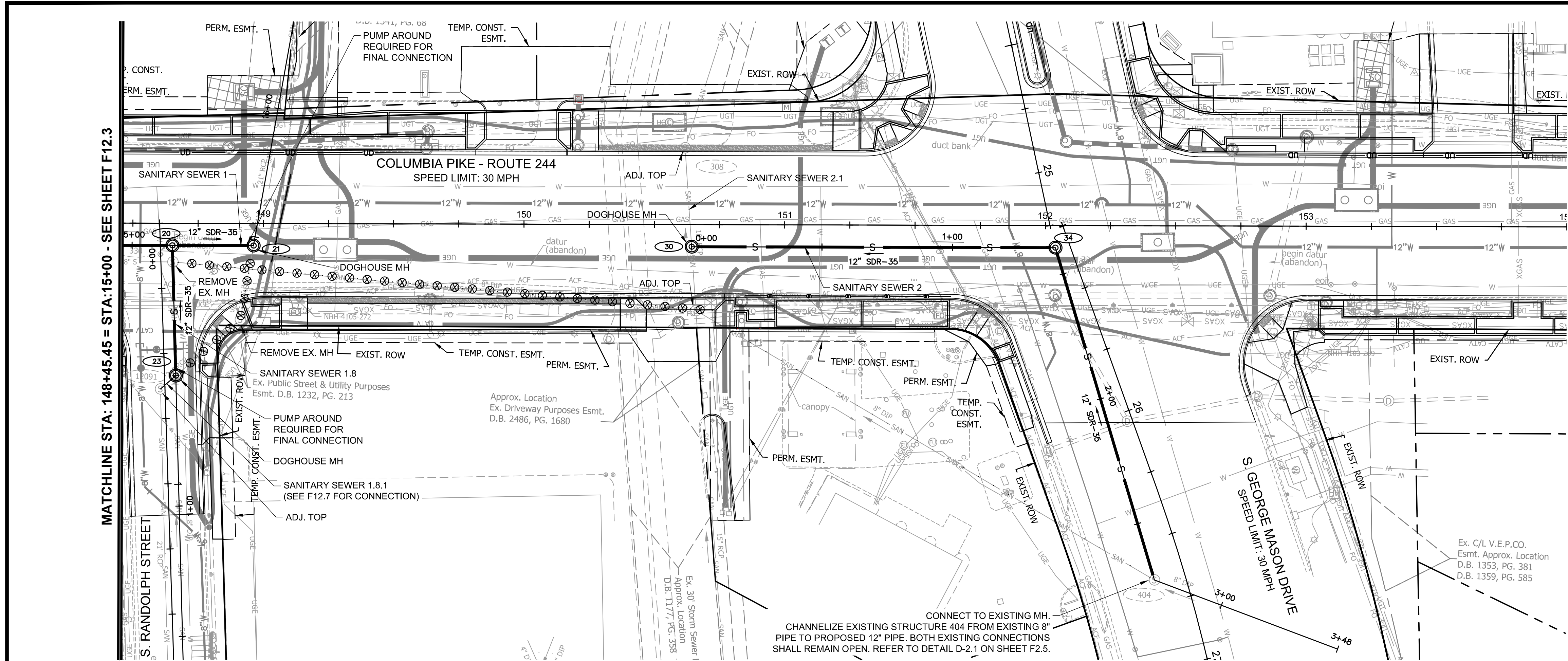
LUIS ARAYA  
BUREAU CHIEF, DES - DEVELOPMENT SERVICES

10/19/2021  
APPROVAL DATE



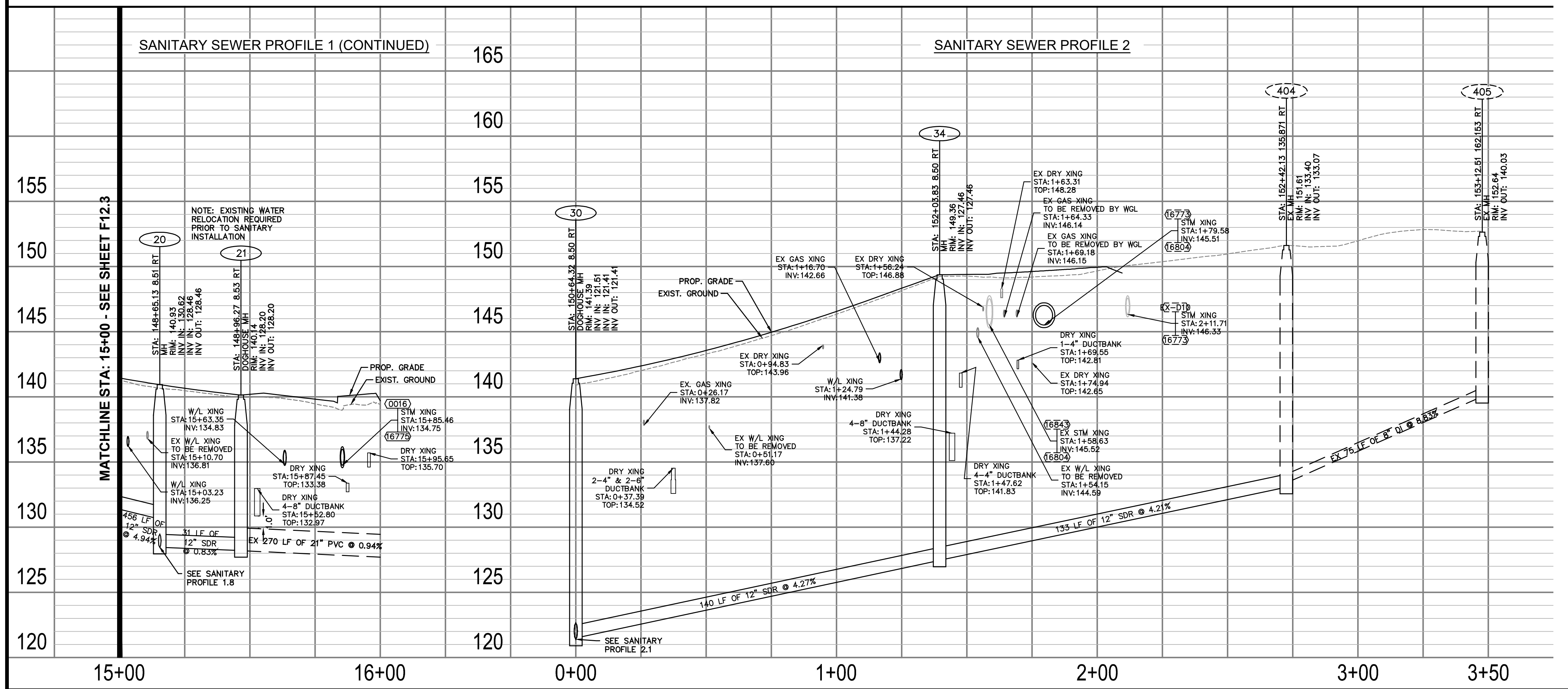
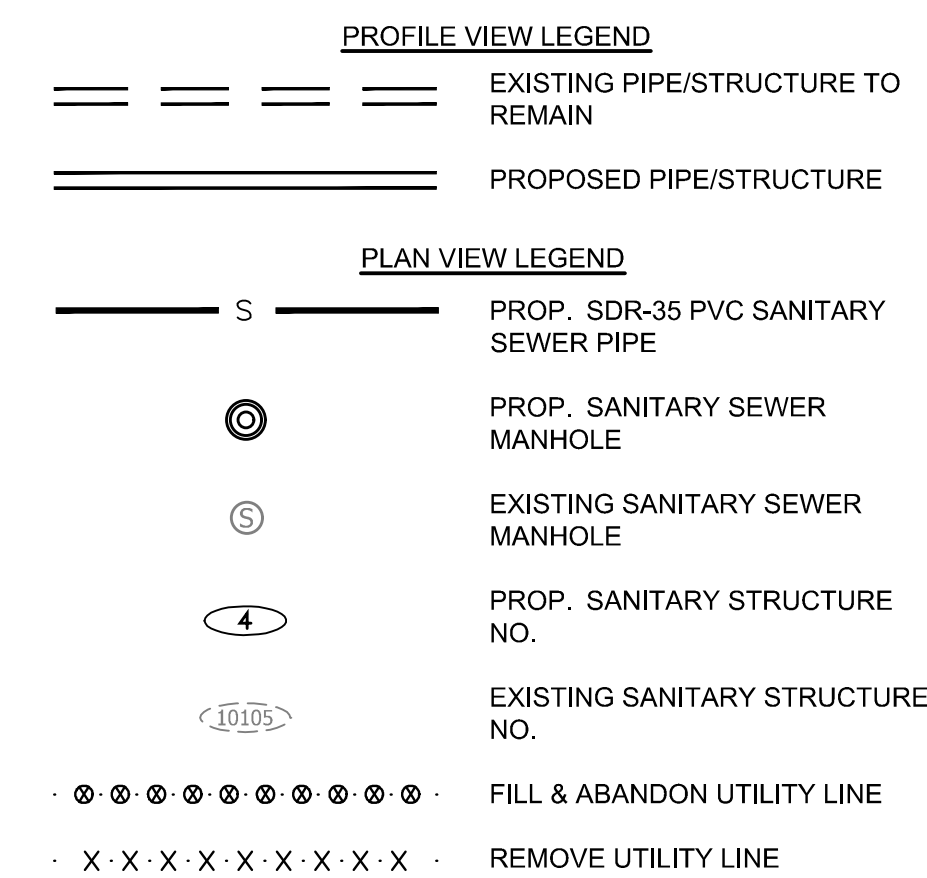






FOR SANITARY CONST. ONLY

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ARLINGTON COUNTY, VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL SERVICES

SANITARY PLAN AND PROFILES  
COLUMBIA PIKE - ROUTE 244  
COLUMBIA PIKE - MULTIMODAL STREET IMPROVEMENTS  
SEGMENT F  
STA. 148+45.45 TO STA. 154+00

SCALE: HOR. 1" = 25' VERT. 1" = 5' SHEET: F12.4 of F12.8

ARLINGTON VIRGINIA

DEPARTMENT OF ENVIRONMENTAL SERVICES

Facilities & Engineering Division  
Engineering Bureau  
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Fax: 703.228.3606

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Seal

COMMONWEALTH OF VIRGINIA  
MICHAEL R. ALBRIGHT  
Lic. No. 46643  
10/13/2021  
PROFESSIONAL ENGINEER

Approvals Date

Design Team Engineer Supervisor

Construction Management Supervisor

Water, Sewer, Streets Bureau Chief

Transportation Director

Project Manager

Revisions	Date

Designed: KKF  
Drawn: KKF  
Checked: MRA  
Miss Utility Transmittal #:

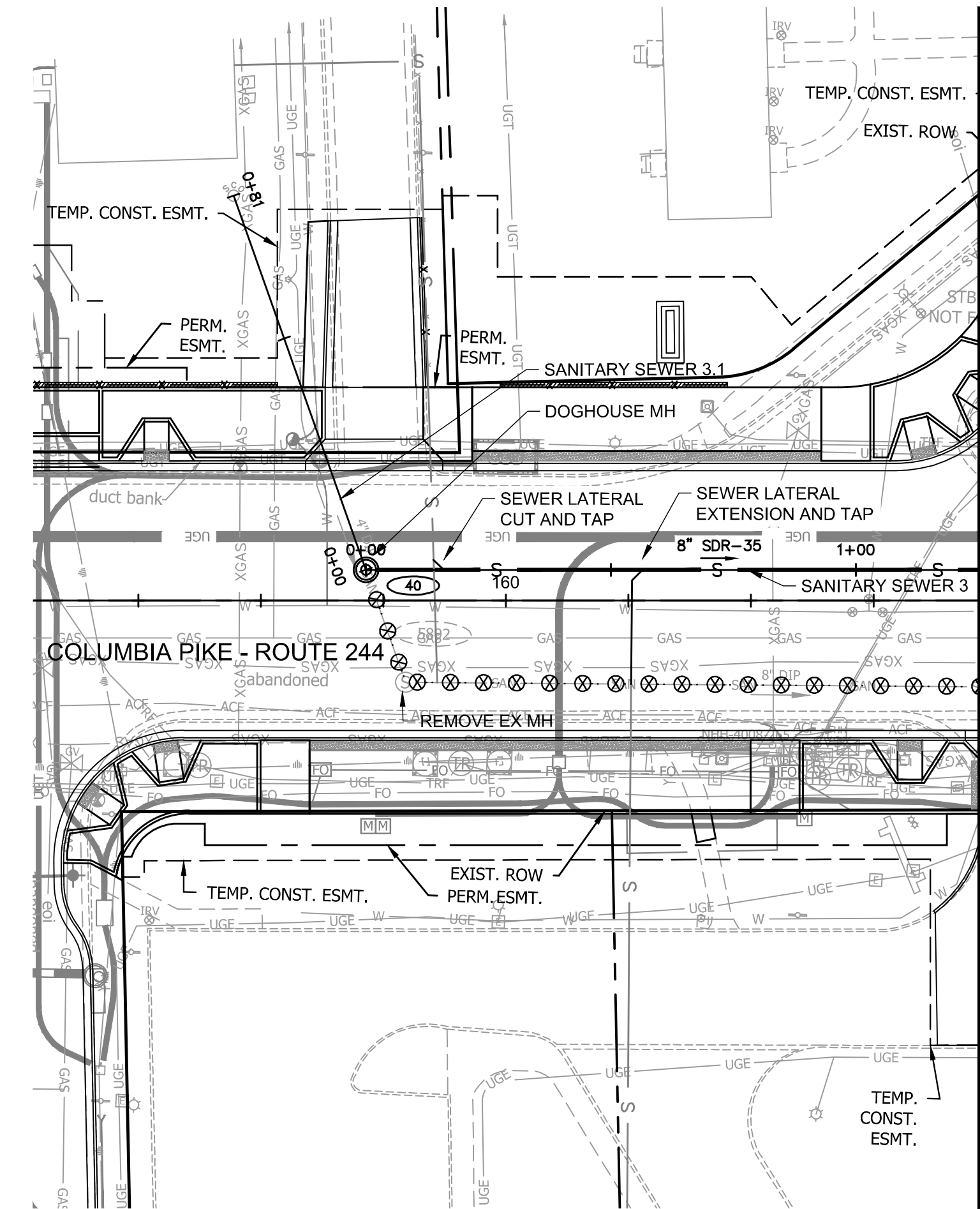
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Plotted: October 13, 2021  
Plotted by: Patrick.Husted

ARLINGTON VIRGINIA

DEPARTMENT OF ENVIRONMENTAL SERVICES

10/19/2021  
APPROVAL DATE

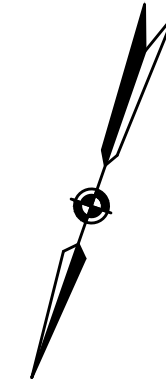
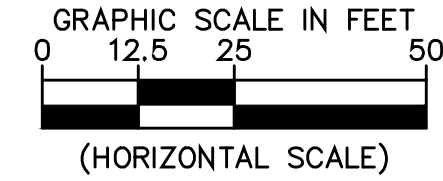




MATCHLINE STA: 160+97.24 = STA: 1+25 - SEE SHEET F12.6



MATCHLINE STA: 1+25 - SEE SHEET F12.6



## FOR SANITARY CONST. ONLY

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### PROFILE VIEW LEGEND

- EXISTING PIPE/STRUCTURE TO REMAIN
- PROPOSED PIPE/STRUCTURE

### PLAN VIEW LEGEND

- PROP. SDR-35 PVC SANITARY SEWER PIPE
- PROP. SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- PROP. SANITARY STRUCTURE NO.
- EXISTING SANITARY STRUCTURE NO.
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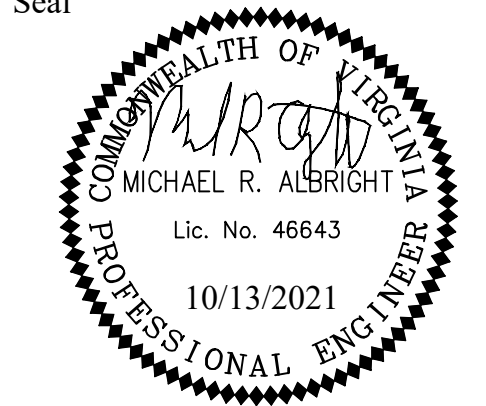


### DEPARTMENT OF ENVIRONMENTAL SERVICES

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Seal



Approvals Date

Design Team Engineer Supervisor

Construction Management Supervisor

Water, Sewer, Streets Bureau Chief

Transportation Director

Project Manager

Revisions	Date

Designed: KKF  
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Checked: MRA  
Miss Utility Transmittal #:

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Plotted: October 13, 2021  
Plotted by: Patrick.Husted

### ARLINGTON COUNTY, VIRGINIA DEPARTMENT OF ENVIRONMENTAL SERVICES

SANITARY PLAN AND PROFILES  
COLUMBIA PIKE - ROUTE 244  
COLUMBIA PIKE - MULTIMODAL STREET IMPROVEMENTS  
SEGMENT F  
STA. 158+75 TO STA. 160+97.24

SCALE: HOR. 1" = 25' VERT. 1" = 5' SHEET: F12.5 of F12.8



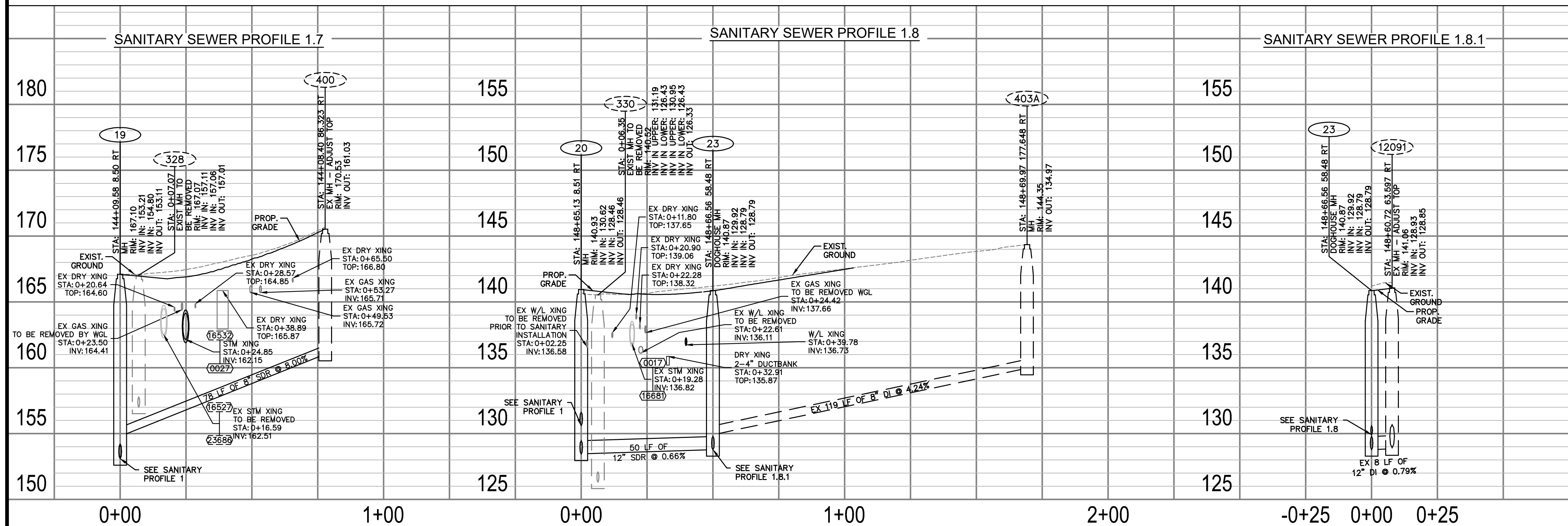
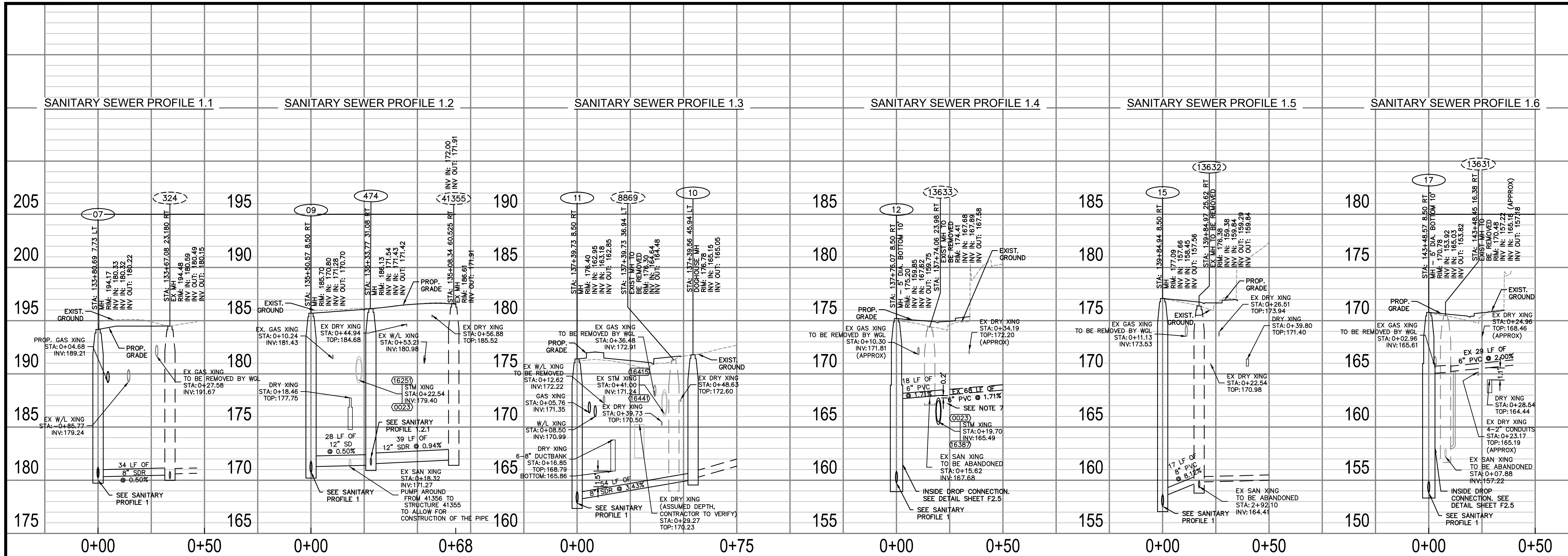
### DEPARTMENT OF ENVIRONMENTAL SERVICES

10/19/2021  
APPROVAL DATE



10/19/2021  
APPROVAL DATE





- NOTES:
1. PROFILE STATIONING ALONG CENTERLINE OF PIPE
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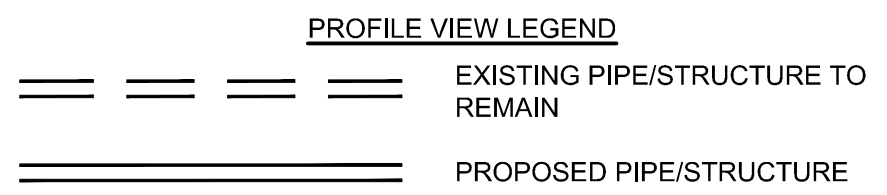
ARLINGTON COUNTY, VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL SERVICES

SANITARY PLAN AND PROFILES  
COLUMBIA PIKE - ROUTE 244  
COLUMBIA PIKE - MULTIMODAL STREET IMPROVEMENTS  
SEGMENT F

SCALE: HOR. 1" = 25' VERT. 1" = 5'

SHEET: F12.7 of F12.8

FOR SANITARY CONST. ONLY



ARLINGTON VIRGINIA

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Seal

COMMONWEALTH OF VIRGINIA  
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10/13/2021  
PROFESSIONAL ENGINEER

Approvals

Date

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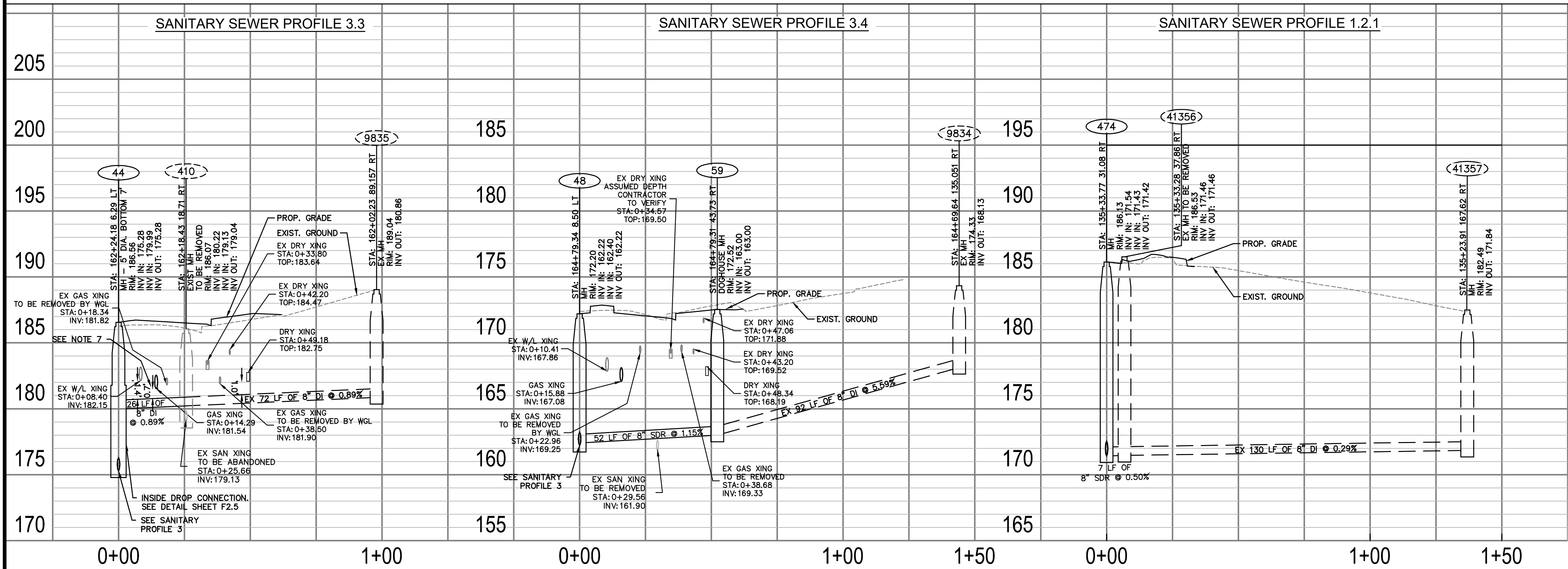
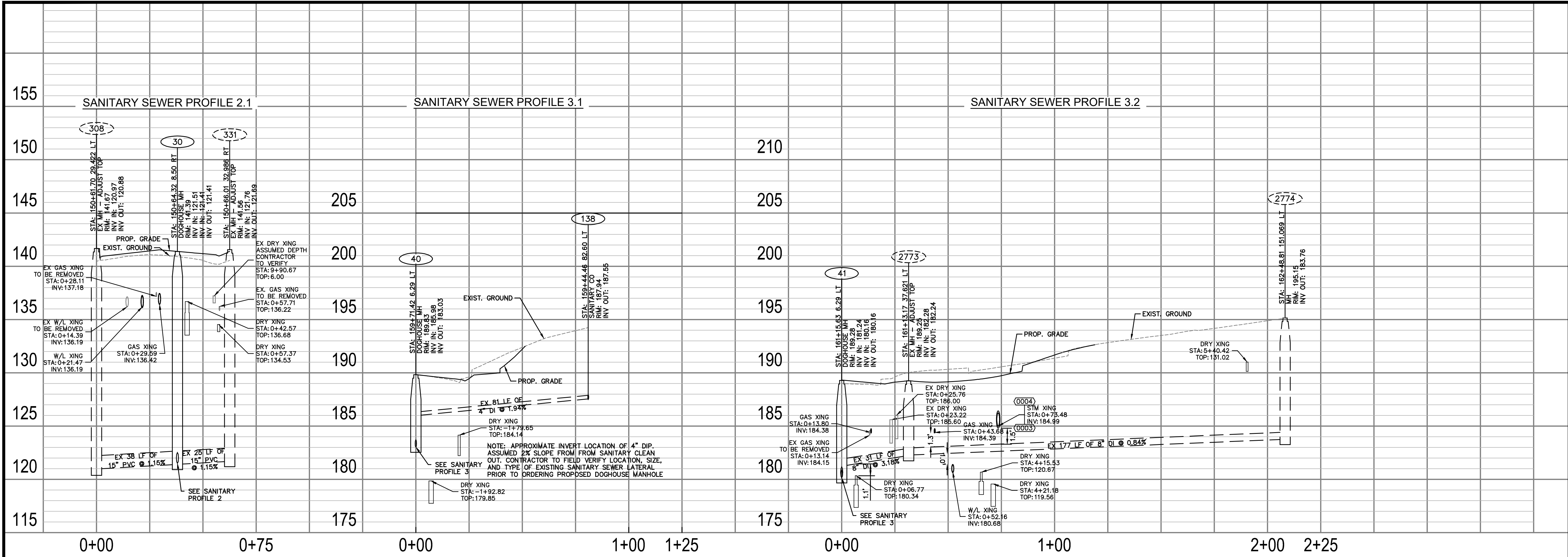
Revisions

Date

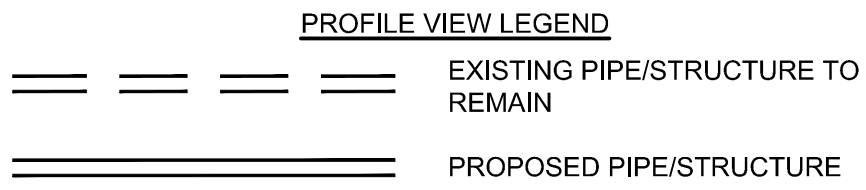
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Path: C:\Users\KIMLEY\OneDrive\Projects\010073-F-SSWR.dwg  
Plotted: October 13, 2021  
Plotted by: Patrick.Husted





FOR SANITARY CONST. ONLY



- NOTES:
1. PROFILE STATIONING ALONG CENTERLINE OF PIPE
  2. SEE SERIES 10 FOR FULL UTILITY NETWORK PLAN VIEWS.
  3. WATERLINE TO BE INSTALLED, TESTED, AND PUT INTO SERVICE PRIOR TO STORM AND SANITARY PIPE INSTALLATION. CONTRACTOR TO CONFIRM EXISTING WATERLINE IS DECOMMISSIONED PRIOR TO REMOVAL. DESIGN ASSUMES THAT THE PROPOSED WATERLINE IS GENERALLY INSTALLED PRIOR TO OTHER UTILITIES TO MITIGATE CONFLICTS.
  4. CONTRACTOR TO MAINTAIN POSITIVE DRAINAGE THROUGHOUT THE PROJECT LIMITS TO THE EXTENT POSSIBLE AT ALL TIMES. STORM SEWER SHALL BE INSTALLED AND SEQUENCED TO MINIMIZE DOWN TIME REQUIRED FOR TIE-IN OR CUT-OVER OPERATIONS. SHOULD PUMP-AROUNDS BE REQUIRED TO COMPLETE STORM SEWER INSTALLATIONS, THEY WILL BE INCIDENTAL TO THE COST OF STORM PIPE AND STRUCTURE INSTALLATION.
  5. CONTRACTOR TO FIELD VERIFY LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES ADJACENT TO OR CROSSING PROPOSED STORM SEWER PIPE AND STRUCTURES PRIOR TO INSTALLATION.
  6. OFFSET OF EXIST. FIBER LINE AND LIGHTING LINE MAY BE REQUIRED FOR PROPOSED IMPROVEMENTS. SEE DETAIL SHEET F2.1.
  7. WHERE MINIMUM VERTICAL CLEARANCES BETWEEN UTILITIES CANNOT BE MET, CONTRACTOR TO INSTALL CONCRETE PIERS AND/OR REINFORCED CONCRETE CRADLE PER ARLINGTON COUNTY STANDARD DRAWING M-7.0.

ARLINGTON COUNTY, VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL SERVICES

SANITARY PLAN AND PROFILES  
COLUMBIA PIKE - ROUTE 244  
COLUMBIA PIKE - MULTIMODAL STREET IMPROVEMENTS  
SEGMENT F

SCALE: HOR. 1" = 25' VERT. 1" = 5' SHEET: F12.8 of F12.8

ARLINGTON VIRGINIA

DEPARTMENT OF ENVIRONMENTAL SERVICES

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Seal  
COMMONWEALTH OF VIRGINIA  
MICHAEL R. ALBRIGHT  
Lic. No. 46643  
10/13/2021  
PROFESSIONAL ENGINEER

Approvals \_\_\_\_\_ Date \_\_\_\_\_

Design Team Engineer Supervisor \_\_\_\_\_

Construction Management Supervisor \_\_\_\_\_

Water, Sewer, Streets Bureau Chief \_\_\_\_\_

Transportation Director \_\_\_\_\_

Project Manager \_\_\_\_\_

Revisions	Date

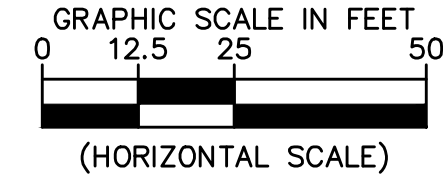
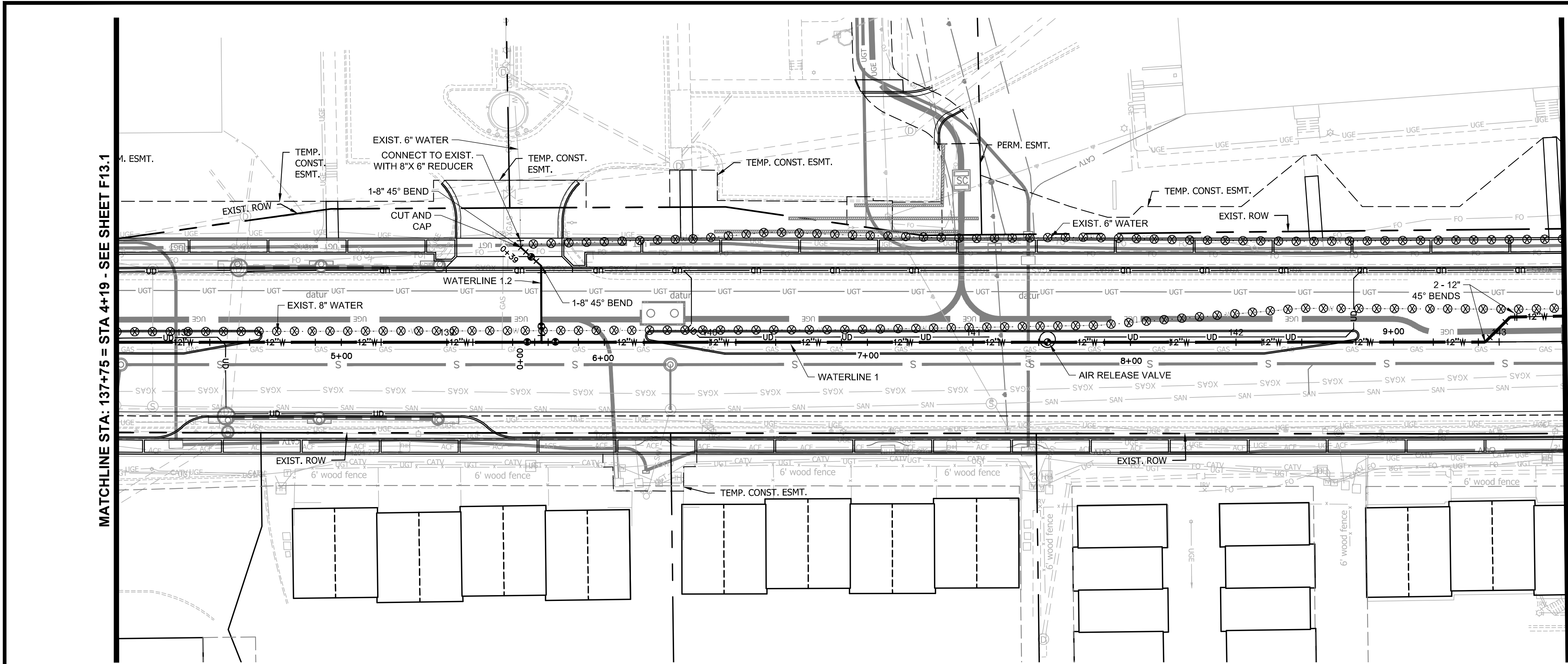
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Miss Utility Transmittal #:

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Plotted: October 13, 2021  
Plotted by: Patrick.Husted









FOR WATERLINE CONST. ONLY

- NOTES:
1. PROFILE STATIONING ALONG CENTERLINE OF PIPE
  2. SEE SERIES 10 FOR FULL UTILITY NETWORK PLAN VIEWS.
  3. SEE SHEET A13.4 FOR RESTRAINT TABLE
  4. WATERLINE TO BE INSTALLED, TESTED, AND PUT IN SERVICE PRIOR TO STORM AND SANITARY PIPE INSTALLATION.
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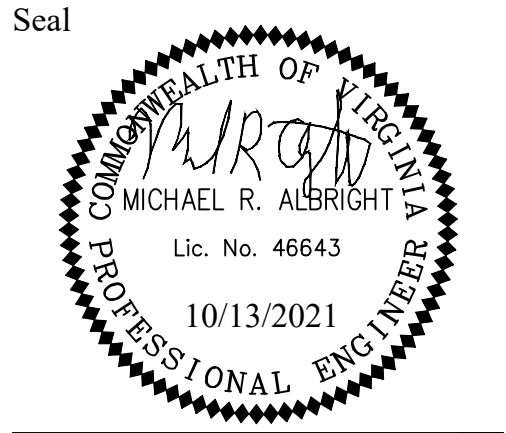
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	PROP. 4" WATER PIPE
	PROP. 6" WATER PIPE
	PROP. 8" WATER PIPE
	PROP. 12" WATER PIPE
	PROP. VALVE
	PROP. FIRE HYDRANT
	PROP. REDUCER
	PROP. TEE
	PROP. CROSS
	PROP. 11.25" BEND
	PROP. 22.5" BEND
	PROP. 45" BEND
	PROP. 90" BEND
	PROP. WATER METER
	PROP. CAP
	FILL & ABANDON UTILITY LINE
	REMOVE UTILITY LINE
	REMOVE VALVE BOX



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Approvals \_\_\_\_\_ Date \_\_\_\_\_

Design Team Engineer Supervisor \_\_\_\_\_

Construction Management Supervisor \_\_\_\_\_

Water, Sewer, Streets Bureau Chief \_\_\_\_\_

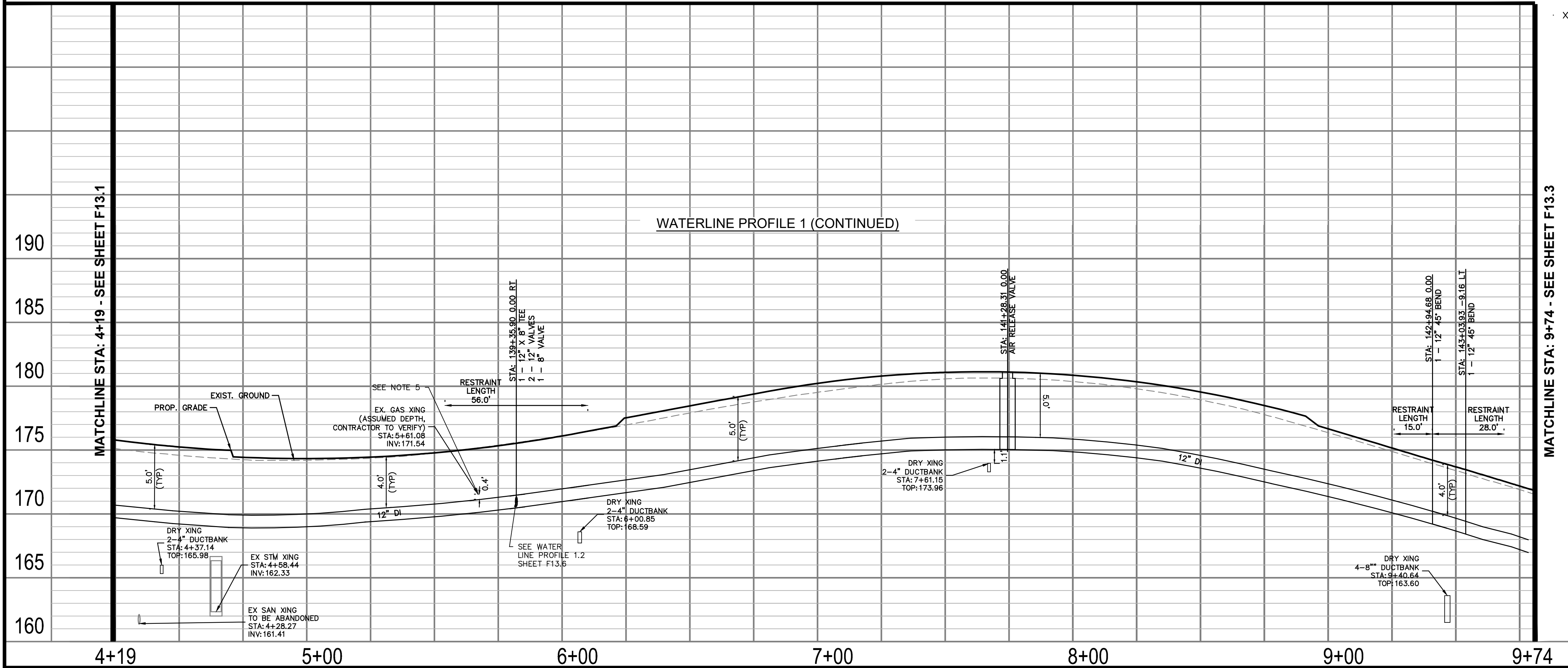
Transportation Director \_\_\_\_\_

Project Manager \_\_\_\_\_

Revisions	Date

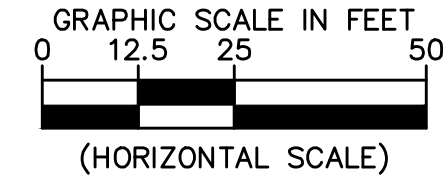
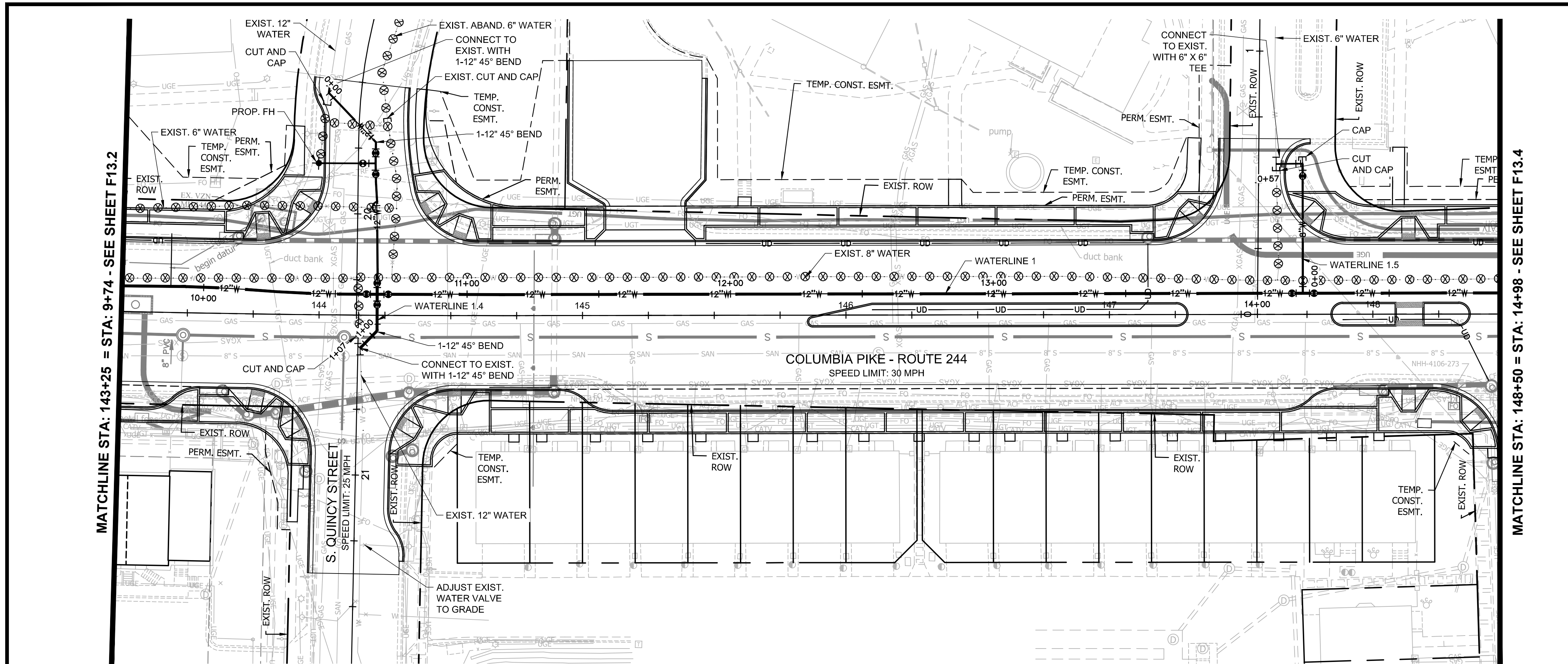
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Drawn: KF  
Checked: MA  
Miss Utility Transmittal #:

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Plotted: October 13, 2021  
Plotted by: Miguel Tyshing



ARLINGTON COUNTY, VIRGINIA DEPARTMENT OF ENVIRONMENTAL SERVICES		
WATERLINE PLAN AND PROFILES COLUMBIA PIKE - ROUTE 244 COLUMBIA PIKE - MULTIMODAL STREET IMPROVEMENTS SEGMENT F STA. 137+75 TO STA. 143+25		
SCALE:	HOR. 1" = 25' VERT. 1" = 5'	SHEET: F13.2 of F13.10

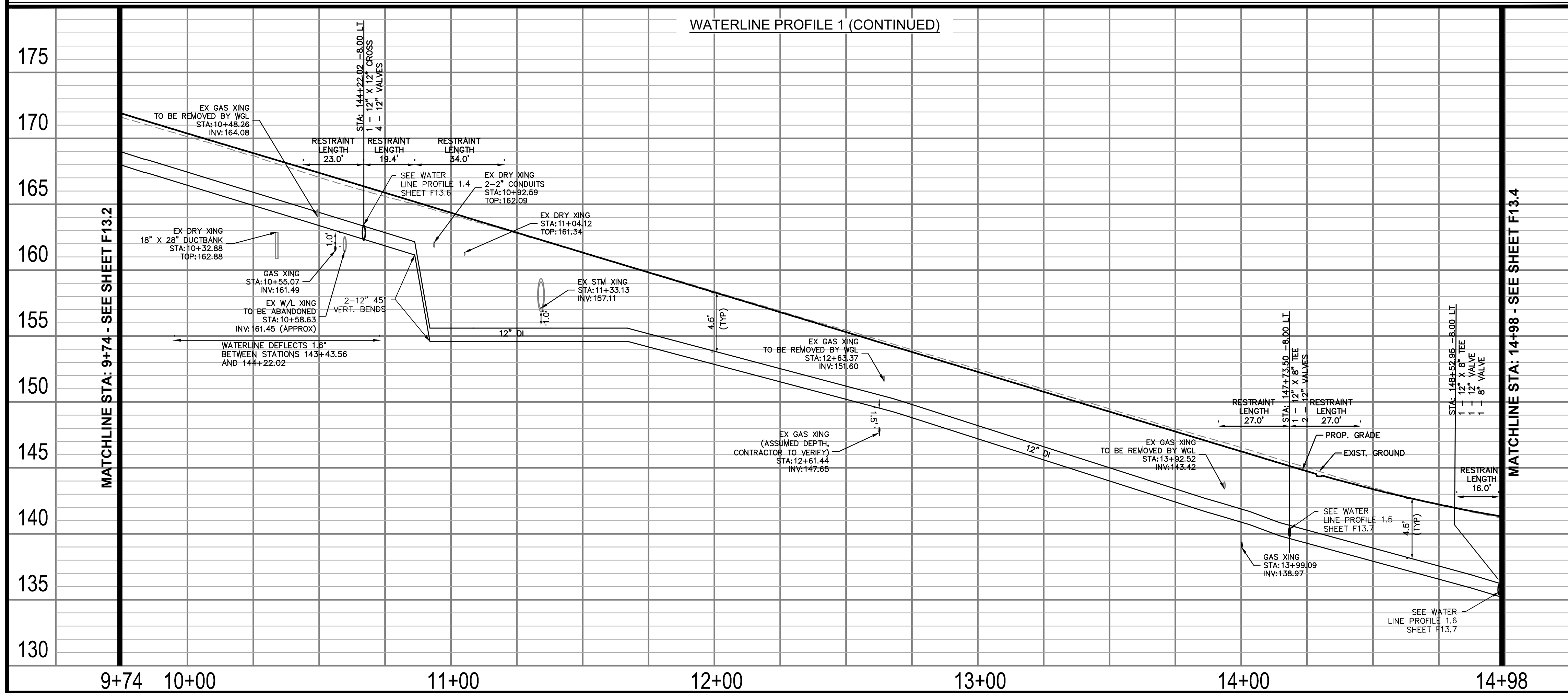




## FOR WATERLINE CONST. ONLY

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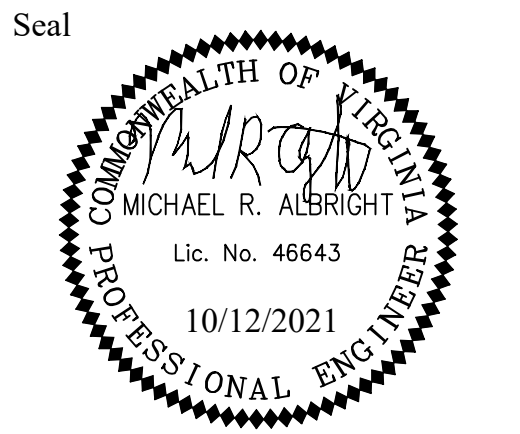
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Approvals Date

Design Team Engineer Supervisor

Construction Management Supervisor

Water, Sewer, Streets Bureau Chief

Transportation Director

Project Manager

Revisions	Date

Designed: KF  
Drawn: KF  
Checked: MA  
Miss Utility Transmittal #:

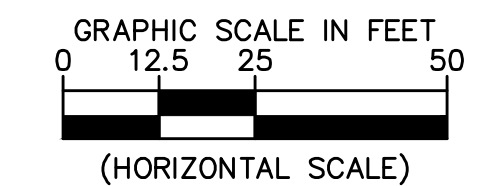
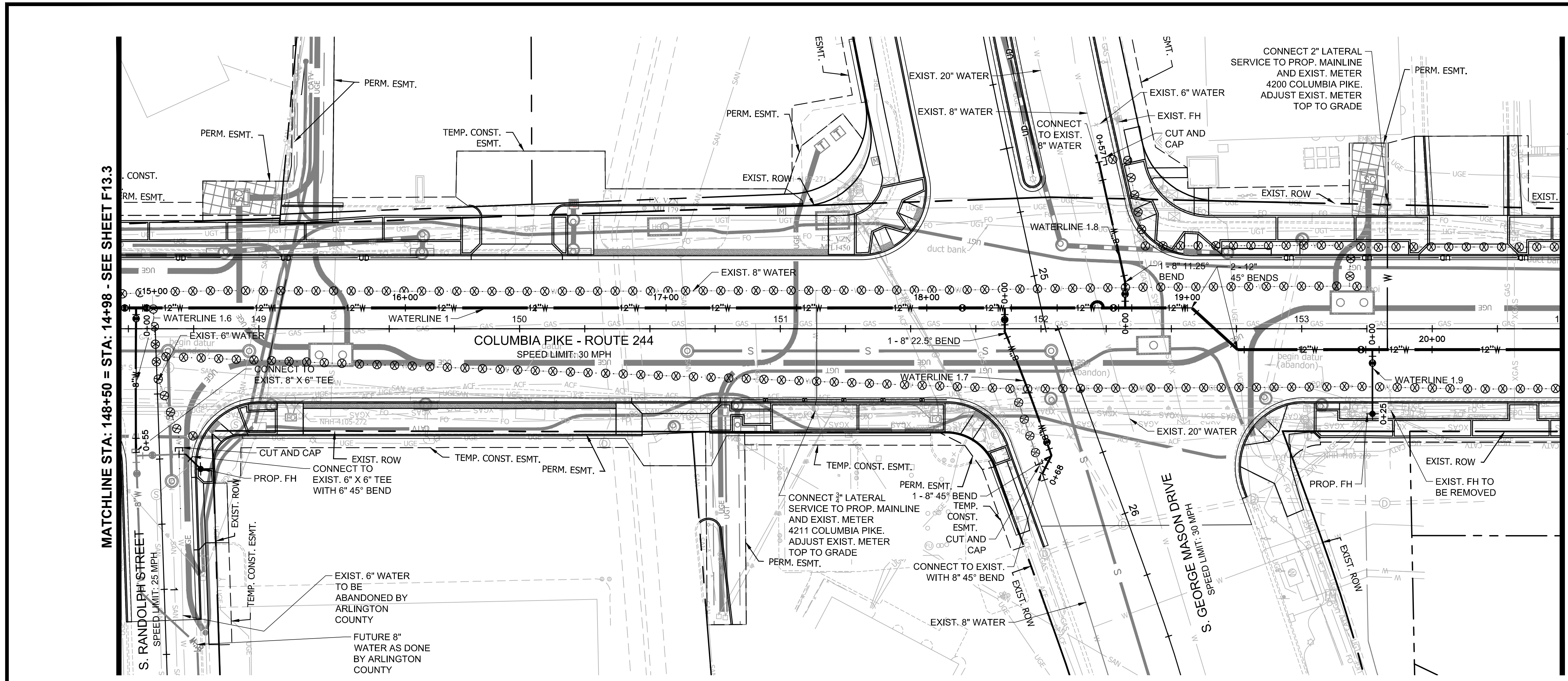
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Plotted: October 12, 2021  
Plotted by: Miguel.Tysing

ARLINGTON COUNTY, VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL SERVICES

WATERLINE PLAN AND PROFILES  
COLUMBIA PIKE - ROUTE 244  
COLUMBIA PIKE - MULTIMODAL STREET IMPROVEMENTS  
SEGMENT F  
STA. 143+25 TO STA. 148+50

SCALE: HOR. 1" = 25' VERT. 1" = 5' SHEET: F13.3 of F13.10

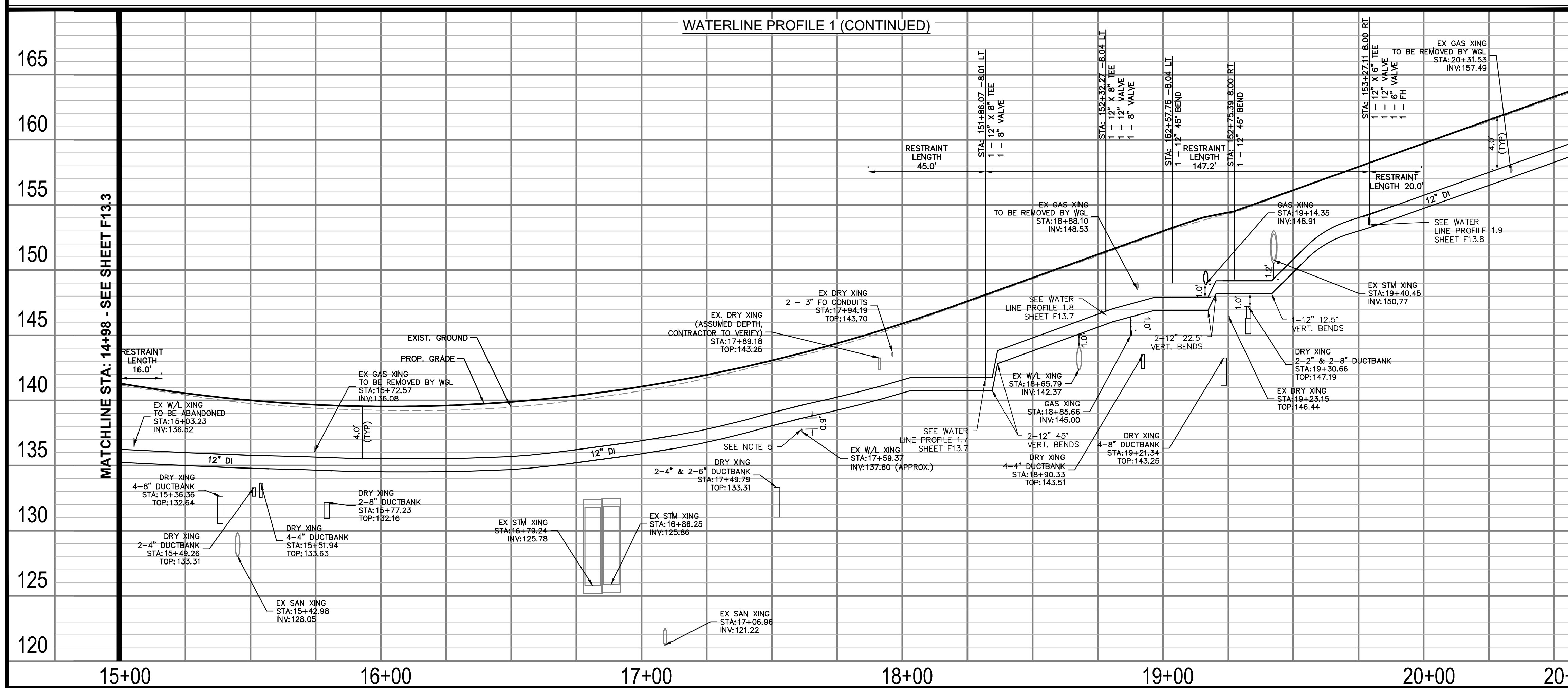




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ARLINGTON COUNTY, VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL SERVICES

WATERLINE PLAN AND PROFILES  
COLUMBIA PIKE - ROUTE 244  
COLUMBIA PIKE - MULTIMODAL STREET IMPROVEMENTS  
SEGMENT F  
STA. 148+50 TO STA. 154+00

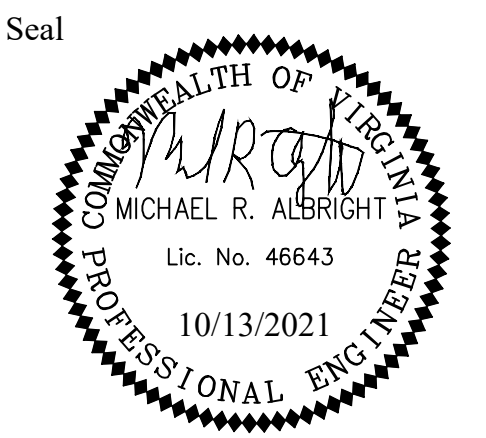
SCALE:	HOR. 1" = 25' VERT. 1" = 5'	SHEET:	F13.4 of F13.10
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Water, Sewer, Streets Bureau Chief \_\_\_\_\_

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Checked: MA  
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