

# BRISTOL, VIRGINIA INTEGRATED SOLID WASTE MANAGEMENT FACILITY

## SOLID WASTE PERMIT #588

# SIDEWALL ODOR MITIGATION SYSTEM

BRISTOL, VIRGINIA



NO.	REVISION	DATE

SHEET TITLE	COVER SHEET
PROJECT TITLE	SIDEWALL ODOR MITIGATION SYSTEM CAPITAL PROJECT

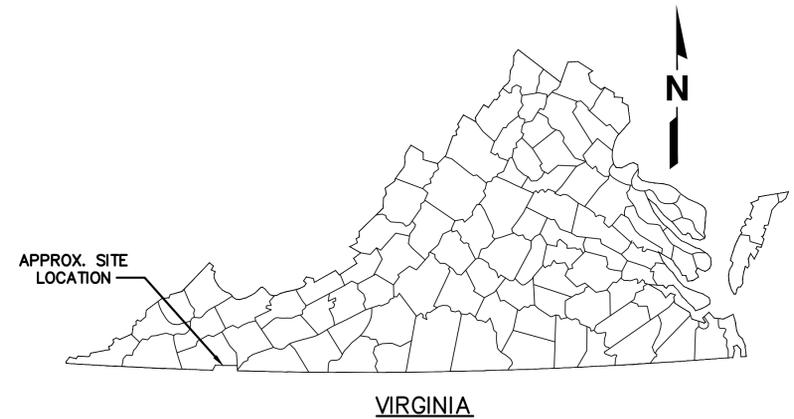
CLIENT	CITY OF BRISTOL INTEGRATED SOLID WASTE MANAGEMENT FACILITY 2655 VALLEY DRIVE BRISTOL, VA 24201
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SCS ENGINEERS STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS, INC. 15521 MIDLOTHIAN TURNPIKE - MIDLOTHIAN, VA 23113 PH. (804) 378-7440 FAX. (804) 378-7433 WWW.SCSENGINEERS.COM	DATE: 11/01/2022
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CADD FILE:	02218208.11
DATE:	11/01/2022
SCALE:	

DRAWING NO.	0 of 7
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INDEX OF DRAWINGS		
SHEET	DRAWING NO.	SHEET TITLE
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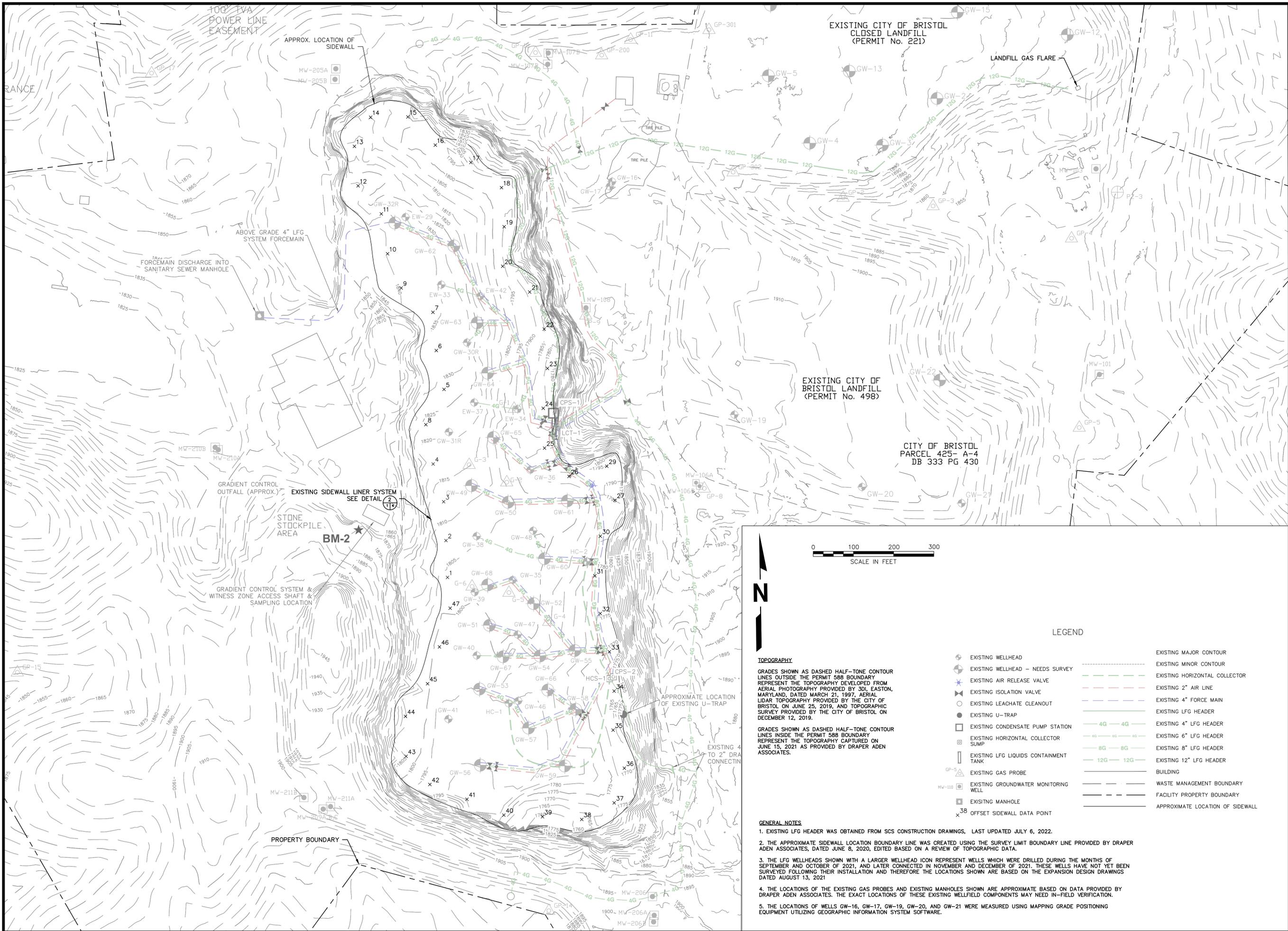


**PREPARED FOR:**  
CITY OF BRISTOL, VIRGINIA  
300 LEE STREET  
BRISTOL, VIRGINIA 24201

INTEGRATED SOLID WASTE MANAGEMENT FACILITY  
2655 VALLEY DRIVE  
BRISTOL, VIRGINIA 24201

**SCS ENGINEERS**  
STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS, INC.  
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PH. (804) 378-7440 FAX. (703) 471-6676  
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SCS PROJECT NO. 02218208.11

NOVEMBER 1, 2022



COMMONWEALTH OF VIRGINIA  
 Charles J. Warren  
 Lic. No. 053809  
 11/01/22  
 PROFESSIONAL ENGINEER

NO.	REVISION	DATE

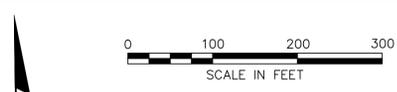
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 PROJECT TITLE: **SIDEWALL ODOR MITIGATION SYSTEM CAPITAL PROJECT**

CLIENT: **CITY OF BRISTOL INTEGRATED SOLID WASTE MANAGEMENT FACILITY**  
 2855 VALLEY DRIVE  
 BRISTOL, VA 24201

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PROJ. NO. 02218208.11  
 DWN. BY: HGW  
 CHK. BY: C.U.W.  
 O/A RW BY: RED  
 APP. BY: C.U.W.

CADD FILE: 02218208.11  
 DATE: 11/01/22  
 SCALE: AS SHOWN  
 DRAWING NO. **1**



**TOPOGRAPHY**

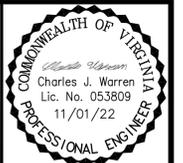
GRADES SHOWN AS DASHED HALF-TONE CONTOUR LINES OUTSIDE THE PERMIT 588 BOUNDARY REPRESENT THE TOPOGRAPHY DEVELOPED FROM AERIAL PHOTOGRAPHY PROVIDED BY 301, EASTON, MARYLAND, DATED MARCH 21, 1997, AERIAL LIDAR TOPOGRAPHY PROVIDED BY THE CITY OF BRISTOL ON JUNE 25, 2019, AND TOPOGRAPHIC SURVEY PROVIDED BY THE CITY OF BRISTOL ON DECEMBER 12, 2019.

GRADES SHOWN AS DASHED HALF-TONE CONTOUR LINES INSIDE THE PERMIT 588 BOUNDARY REPRESENT THE TOPOGRAPHY CAPTURED ON JUNE 15, 2021 AS PROVIDED BY DRAPER ADEN ASSOCIATES.

**GENERAL NOTES**

1. EXISTING LFG HEADER WAS OBTAINED FROM SCS CONSTRUCTION DRAWINGS, LAST UPDATED JULY 6, 2022.
2. THE APPROXIMATE SIDEWALL LOCATION BOUNDARY LINE WAS CREATED USING THE SURVEY LIMIT BOUNDARY LINE PROVIDED BY DRAPER ADEN ASSOCIATES, DATED JUNE 8, 2020, EDITED BASED ON A REVIEW OF TOPOGRAPHIC DATA.
3. THE LFG WELLHEADS SHOWN WITH A LARGER WELLHEAD ICON REPRESENT WELLS WHICH WERE DRILLED DURING THE MONTHS OF SEPTEMBER AND OCTOBER OF 2021, AND LATER CONNECTED IN NOVEMBER AND DECEMBER OF 2021. THESE WELLS HAVE NOT YET BEEN SURVEYED FOLLOWING THEIR INSTALLATION AND THEREFORE THE LOCATIONS SHOWN ARE BASED ON THE EXPANSION DESIGN DRAWINGS DATED AUGUST 13, 2021.
4. THE LOCATIONS OF THE EXISTING GAS PROBES AND EXISTING MANHOLES SHOWN ARE APPROXIMATE BASED ON DATA PROVIDED BY DRAPER ADEN ASSOCIATES. THE EXACT LOCATIONS OF THESE EXISTING WELLFIELD COMPONENTS MAY NEED IN-FIELD VERIFICATION.
5. THE LOCATIONS OF WELLS GW-16, GW-17, GW-19, GW-20, AND GW-21 WERE MEASURED USING MAPPING GRADE POSITIONING EQUIPMENT UTILIZING GEOGRAPHIC INFORMATION SYSTEM SOFTWARE.

LEGEND	LEGEND
EXISTING WELLHEAD	EXISTING MAJOR CONTOUR
EXISTING WELLHEAD - NEEDS SURVEY	EXISTING MINOR CONTOUR
EXISTING AIR RELEASE VALVE	EXISTING HORIZONTAL COLLECTOR
EXISTING ISOLATION VALVE	EXISTING 2" AIR LINE
EXISTING LEACHATE CLEANOUT	EXISTING 4" FORCE MAIN
EXISTING U-TRAP	EXISTING LFG HEADER
EXISTING CONDENSATE PUMP STATION	EXISTING 4" LFG HEADER
EXISTING HORIZONTAL COLLECTOR	EXISTING 6" LFG HEADER
EXISTING LFG LIQUIDS CONTAINMENT TANK	EXISTING 8" LFG HEADER
EXISTING GAS PROBE	EXISTING 12" LFG HEADER
EXISTING GROUNDWATER MONITORING WELL	BUILDING
EXISTING MANHOLE	WASTE MANAGEMENT BOUNDARY
OFFSET SIDEWALL DATA POINT	FACILITY PROPERTY BOUNDARY
	APPROXIMATE LOCATION OF SIDEWALL



NO.	REVISION	DATE

SHEET TITLE: PHASE I  
 SIDEWALL ODOR MITIGATION SYSTEM

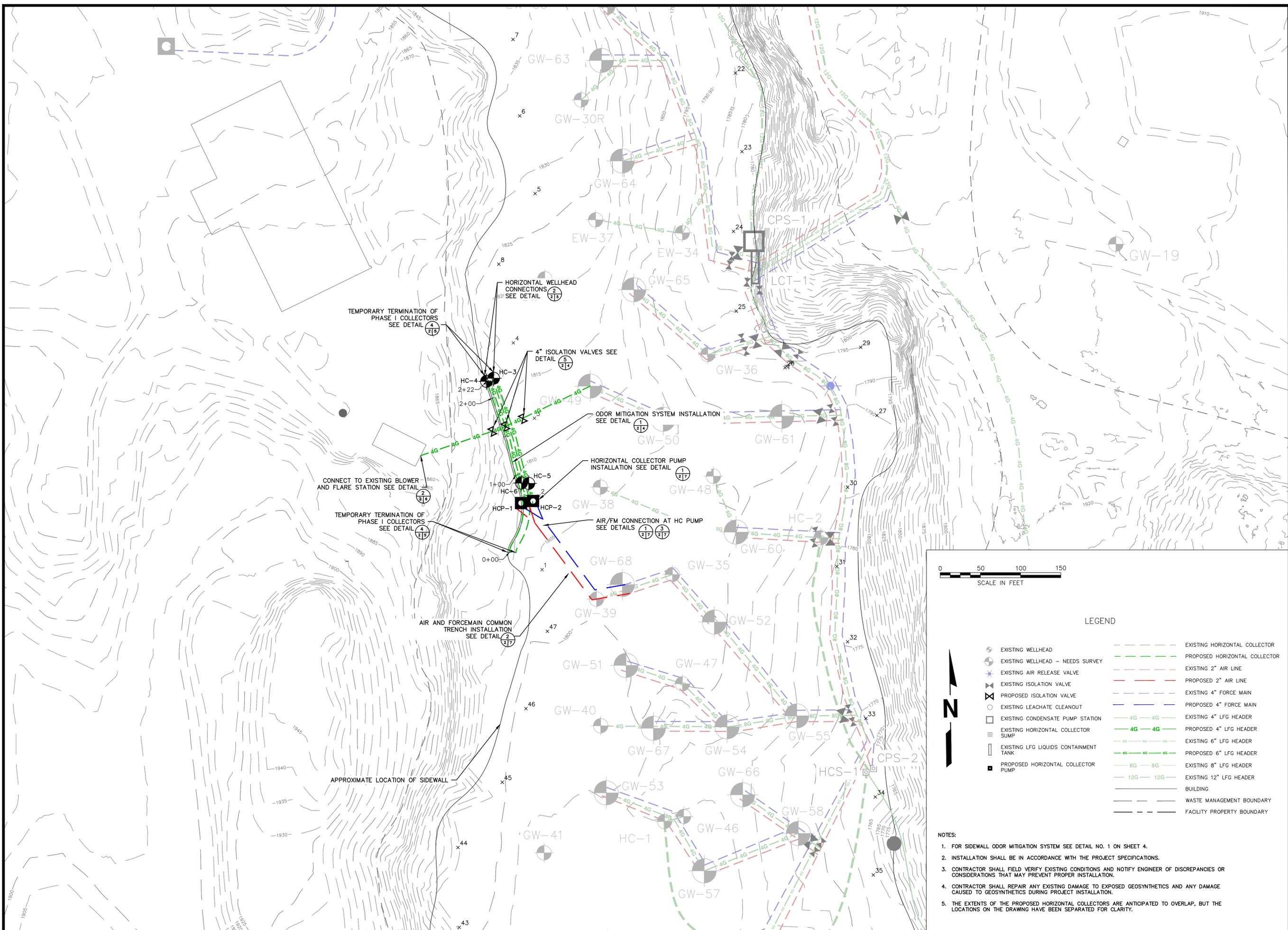
PROJECT TITLE: SIDEWALL ODOR MITIGATION SYSTEM  
 CAPITAL PROJECT

CLIENT: CITY OF BRISTOL INTEGRATED SOLID  
 WASTE MANAGEMENT FACILITY  
 2655 VALLEY DRIVE  
 BRISTOL, VA 24201

**SCS ENGINEERS**  
 STEARNS, CONRAD AND SCHMIDT  
 CONSULTING ENGINEERS, INC.  
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 DWN. BY: HGW  
 CHK. BY: C.U.W.  
 O/A RW BY: RED  
 APP. BY: C.U.W.

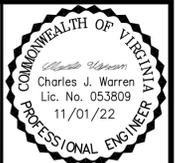
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 SCALE: AS SHOWN  
 DRAWING NO. **2**



LEGEND

	EXISTING WELLHEAD		EXISTING HORIZONTAL COLLECTOR
	EXISTING WELLHEAD - NEEDS SURVEY		PROPOSED HORIZONTAL COLLECTOR
	EXISTING AIR RELEASE VALVE		EXISTING 2" AIR LINE
	EXISTING ISOLATION VALVE		PROPOSED 2" AIR LINE
	PROPOSED ISOLATION VALVE		EXISTING 4" FORCE MAIN
	EXISTING LEACHATE CLEANOUT		PROPOSED 4" FORCE MAIN
	EXISTING CONDENSATE PUMP STATION		EXISTING 4" LFG HEADER
	EXISTING HORIZONTAL COLLECTOR SUMP		PROPOSED 4" LFG HEADER
	EXISTING LFG LIQUIDS CONTAINMENT TANK		EXISTING 6" LFG HEADER
	PROPOSED HORIZONTAL COLLECTOR PUMP		PROPOSED 6" LFG HEADER
			EXISTING 8" LFG HEADER
			EXISTING 12" LFG HEADER
			BUILDING
			WASTE MANAGEMENT BOUNDARY
			FACILITY PROPERTY BOUNDARY

- NOTES:
- FOR SIDEWALL ODOR MITIGATION SYSTEM SEE DETAIL NO. 1 ON SHEET 4.
  - INSTALLATION SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
  - CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND NOTIFY ENGINEER OF DISCREPANCIES OR CONSIDERATIONS THAT MAY PREVENT PROPER INSTALLATION.
  - CONTRACTOR SHALL REPAIR ANY EXISTING DAMAGE TO EXPOSED GEOSYNTHETICS AND ANY DAMAGE CAUSED TO GEOSYNTHETICS DURING PROJECT INSTALLATION.
  - THE EXTENTS OF THE PROPOSED HORIZONTAL COLLECTORS ARE ANTICIPATED TO OVERLAP, BUT THE LOCATIONS ON THE DRAWING HAVE BEEN SEPARATED FOR CLARITY.



NO.	REVISION	DATE

SHEET TITLE	PHASE II SIDEWALL ODOR MITIGATION SYSTEM
PROJECT TITLE	SIDEWALL ODOR MITIGATION SYSTEM CAPITAL PROJECT

CLIENT  
**CITY OF BRISTOL INTEGRATED SOLID WASTE MANAGEMENT FACILITY**  
 2655 VALLEY DRIVE  
 BRISTOL, VA 24201

**SCS ENGINEERS**  
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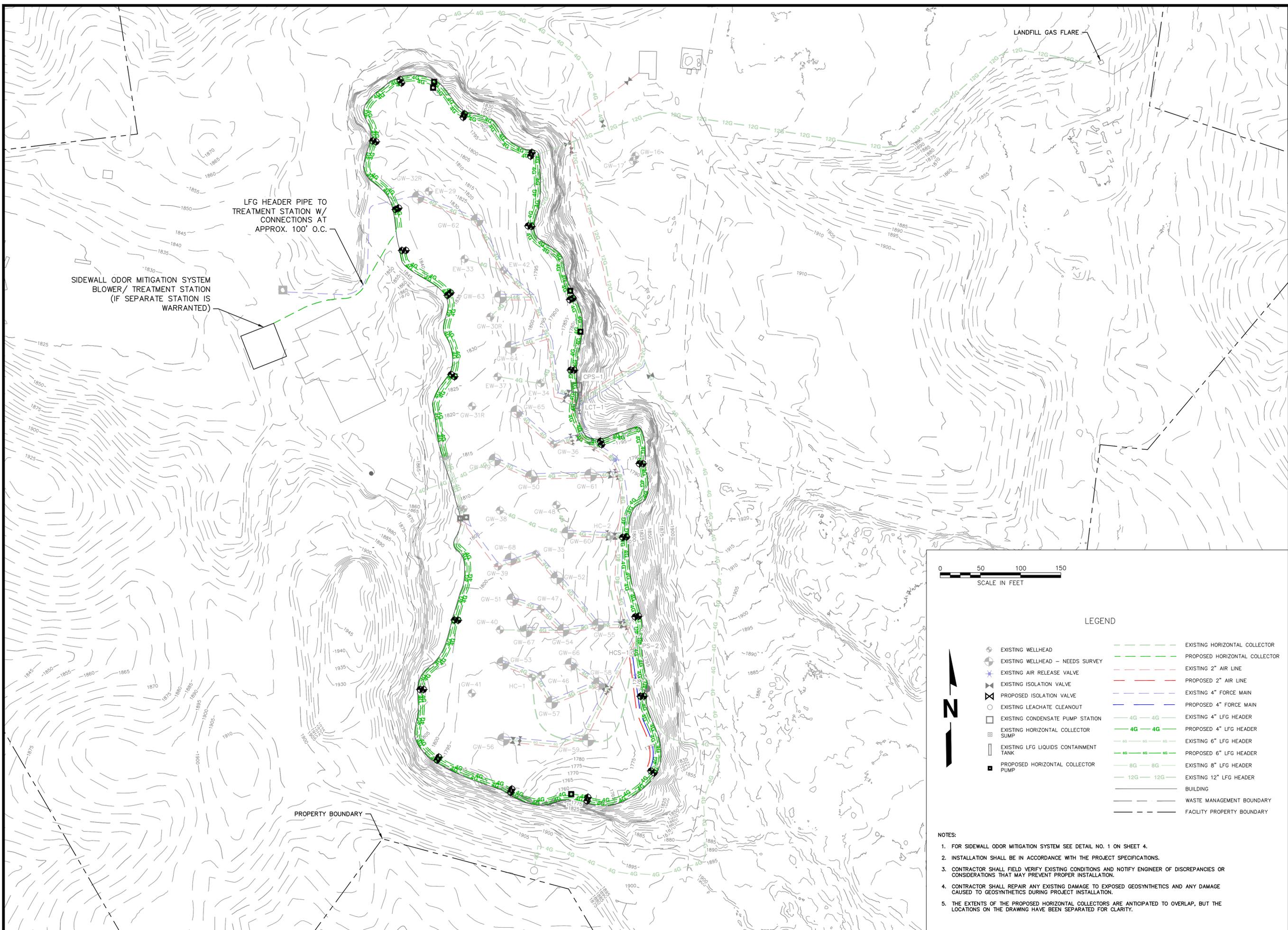
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DATE	11/01/22
DWN. BY	HGW
CHEK. BY	CJW
APP. BY	CJW
CHK. BY	CJW

CADD FILE:  
02218208.11

DATE:  
11/01/22

SCALE:  
AS SHOWN

DRAWING NO.  
**2A**



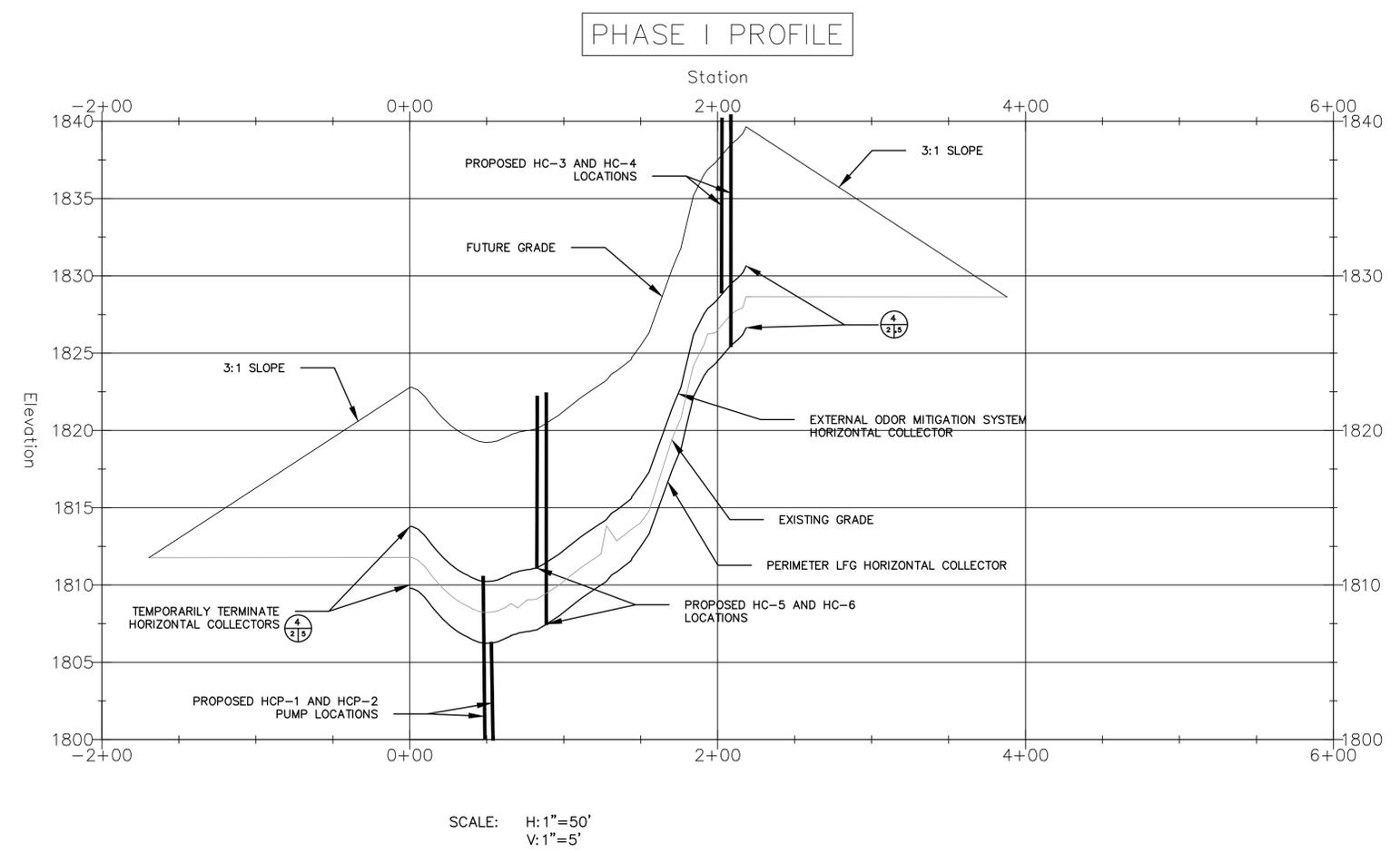
LEGEND

	EXISTING WELLHEAD		EXISTING HORIZONTAL COLLECTOR
	EXISTING WELLHEAD - NEEDS SURVEY		PROPOSED HORIZONTAL COLLECTOR
	EXISTING AIR RELEASE VALVE		EXISTING 2" AIR LINE
	EXISTING ISOLATION VALVE		PROPOSED 2" AIR LINE
	PROPOSED ISOLATION VALVE		EXISTING 4" FORCE MAIN
	EXISTING LEACHATE CLEANOUT		PROPOSED 4" FORCE MAIN
	EXISTING CONDENSATE PUMP STATION		EXISTING 4" LFG HEADER
	EXISTING HORIZONTAL COLLECTOR SUMP		PROPOSED 4" LFG HEADER
	EXISTING LFG LIQUIDS CONTAINMENT TANK		EXISTING 6" LFG HEADER
	PROPOSED HORIZONTAL COLLECTOR PUMP		PROPOSED 6" LFG HEADER
			EXISTING 8" LFG HEADER
			EXISTING 12" LFG HEADER
			WASTE MANAGEMENT BOUNDARY
			FACILITY PROPERTY BOUNDARY

- NOTES:
- FOR SIDEWALL ODOR MITIGATION SYSTEM SEE DETAIL NO. 1 ON SHEET 4.
  - INSTALLATION SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
  - CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND NOTIFY ENGINEER OF DISCREPANCIES OR CONSIDERATIONS THAT MAY PREVENT PROPER INSTALLATION.
  - CONTRACTOR SHALL REPAIR ANY EXISTING DAMAGE TO EXPOSED GEOSYNTHETICS AND ANY DAMAGE CAUSED TO GEOSYNTHETICS DURING PROJECT INSTALLATION.
  - THE EXTENTS OF THE PROPOSED HORIZONTAL COLLECTORS ARE ANTICIPATED TO OVERLAP, BUT THE LOCATIONS ON THE DRAWING HAVE BEEN SEPARATED FOR CLARITY.



NO.	REVISION	DATE
1		
2		
3		
4		
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SHEET TITLE: **SYSTEM PROFILE VIEW**

PROJECT TITLE: **SIDEWALL ODOR MITIGATION SYSTEM CAPITAL PROJECT**

CLIENT: **CITY OF BRISTOL INTEGRATED SOLID WASTE MANAGEMENT FACILITY**  
2655 VALLEY DRIVE  
BRISTOL, VA 24201

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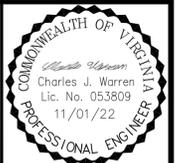
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SCALE: AS SHOWN

DRAWING NO.



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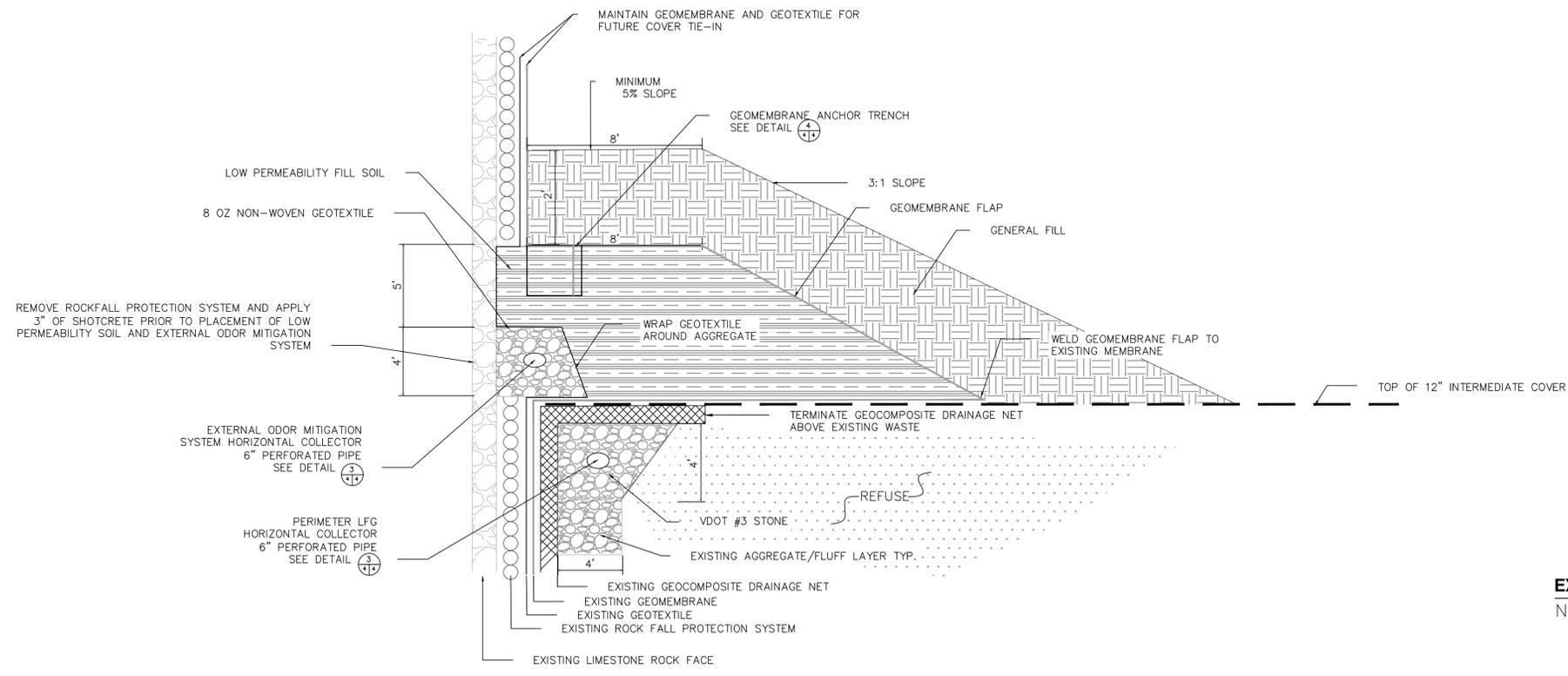
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 PROJECT TITLE: **SIDEWALL ODOR MITIGATION SYSTEM CAPITAL PROJECT**

CLIENT: **CITY OF BRISTOL INTEGRATED SOLID WASTE MANAGEMENT FACILITY**  
 2655 VALLEY DRIVE  
 BRISTOL, VA 24201

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 C/JW

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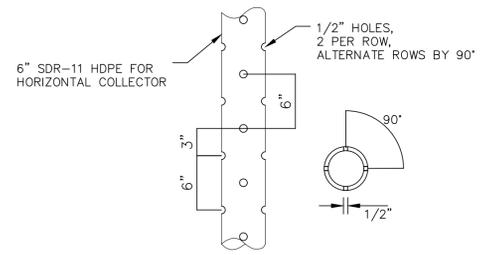
**ODOR MITIGATION SYSTEM DETAIL**

NOT TO SCALE



NOTES:

- CONTRACTOR SHOULD EXCAVATE IN SUCH A MANNER AS TO PREVENT DAMAGE TO THE EXISTING LINER. EXCAVATION BY HAND WILL BE REQUIRED. ANY DAMAGE TO THE LINER SYSTEM MUST BE REPAIRED PRIOR TO BACKFILLING.
- CONTRACTOR TO PROVIDE ADDITIONAL GEOSYNTHETICS AND INSTALL AS NEEDED TO ACHIEVE THE CONFIGURATION SHOWN. ALL MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
- CONTRACTOR SHALL INSPECT EXISTING INTERMEDIATE COVER PRIOR TO GEOMEMBRANE PLACEMENT AND CONFIRM THAT THE MATERIAL MEETS THE PROJECT SPECIFICATIONS.
- CONTRACTOR SHALL INSTALL ADDITIONAL GEOSYNTHETICS AS NEEDED TO ACHIEVE THE DIMENSIONS SHOWN ON THE DETAIL. GEOSYNTHETICS SHALL BE JOINED TO EXISTING GEOSYNTHETICS AS OUTLINED IN THE CORRESPONDING MATERIAL SPECIFICATIONS.

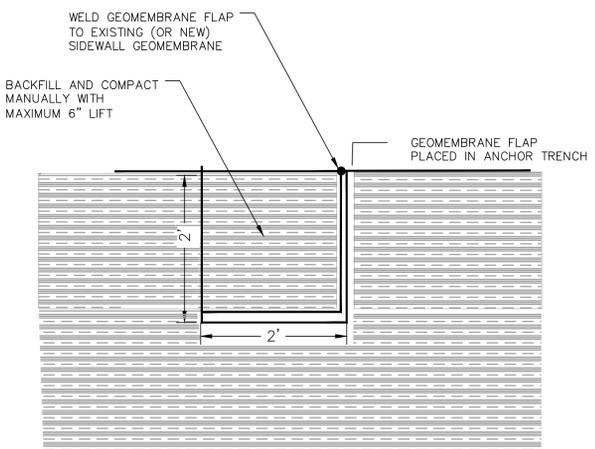


**PERFORATED PIPE DETAIL**

NOT TO SCALE

NOTES:

- PERFORATIONS SPACED 90° APART HORIZONTALLY.
- PERFORATIONS SPACED 6" APART VERTICALLY.
- 90° AND 270° ROWS STAGGERED 3" BELOW 0° AND 180° ROWS.

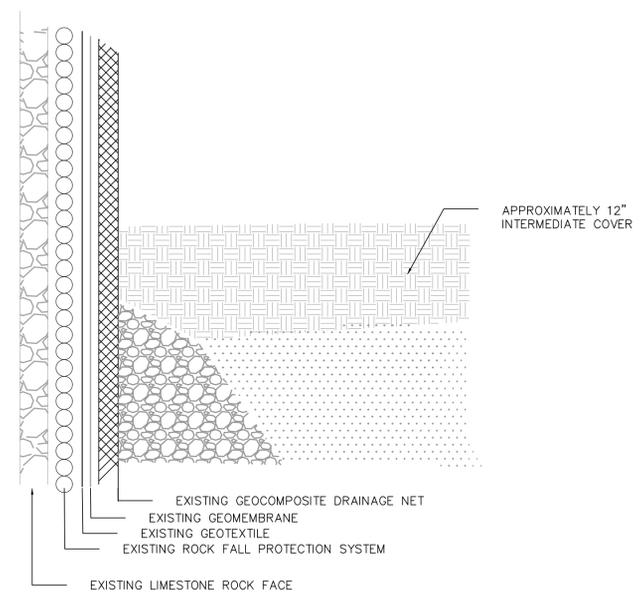


**GEOMEMBRANE ANCHOR TRENCH DETAIL**

NOT TO SCALE

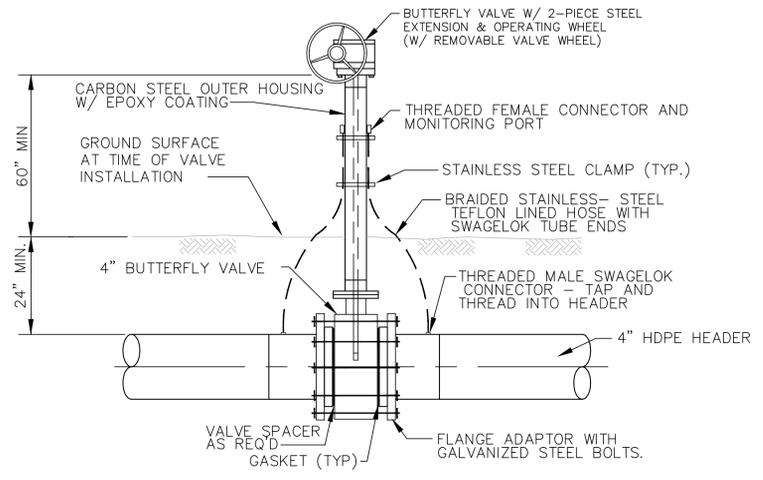
NOTES:

- ANCHOR TRENCH FILL SOIL SHALL BE THE SAME SOIL TYPE AS THE SURROUNDING SOIL.
- ADDITIONAL GEOMEMBRANE FLAP TO BE INSTALLED BETWEEN ANCHOR TRENCH AND QUARRY WALL USING EXTRUSION WELDS.



**EXISTING SIDEWALL LINER SYSTEM DETAIL**

NOT TO SCALE



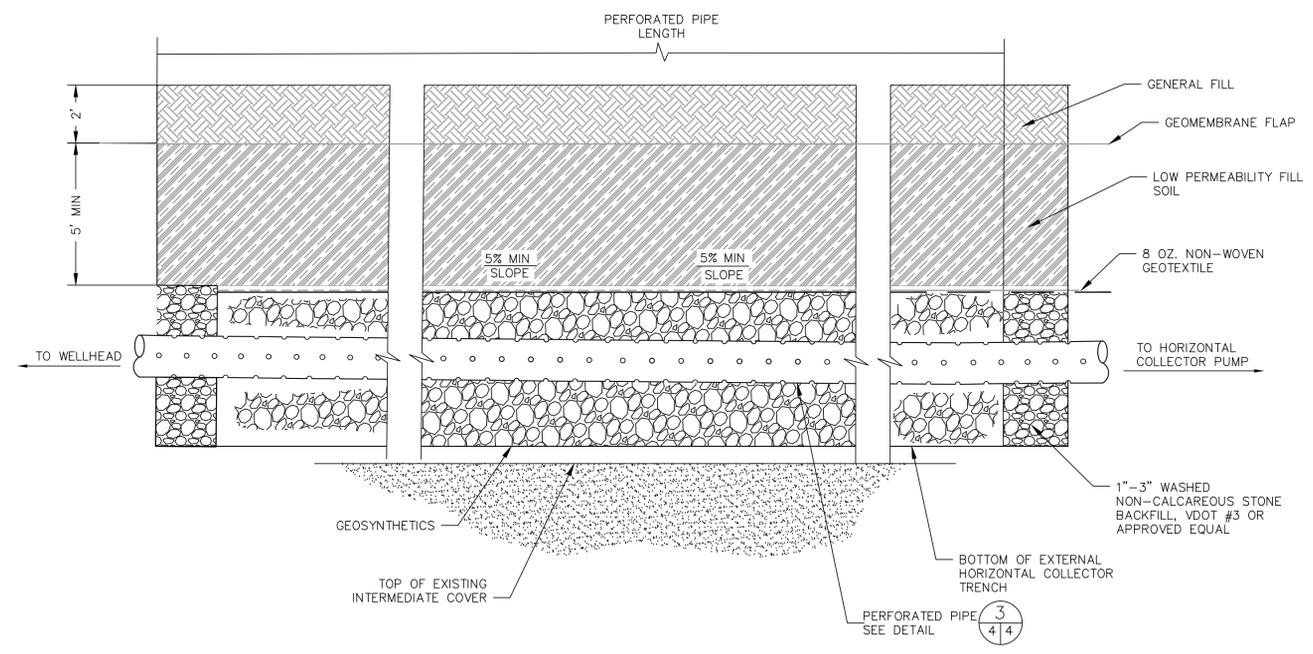
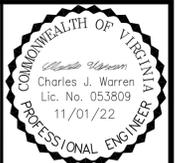
**ISOLATION VALVE DETAIL**

NOT TO SCALE

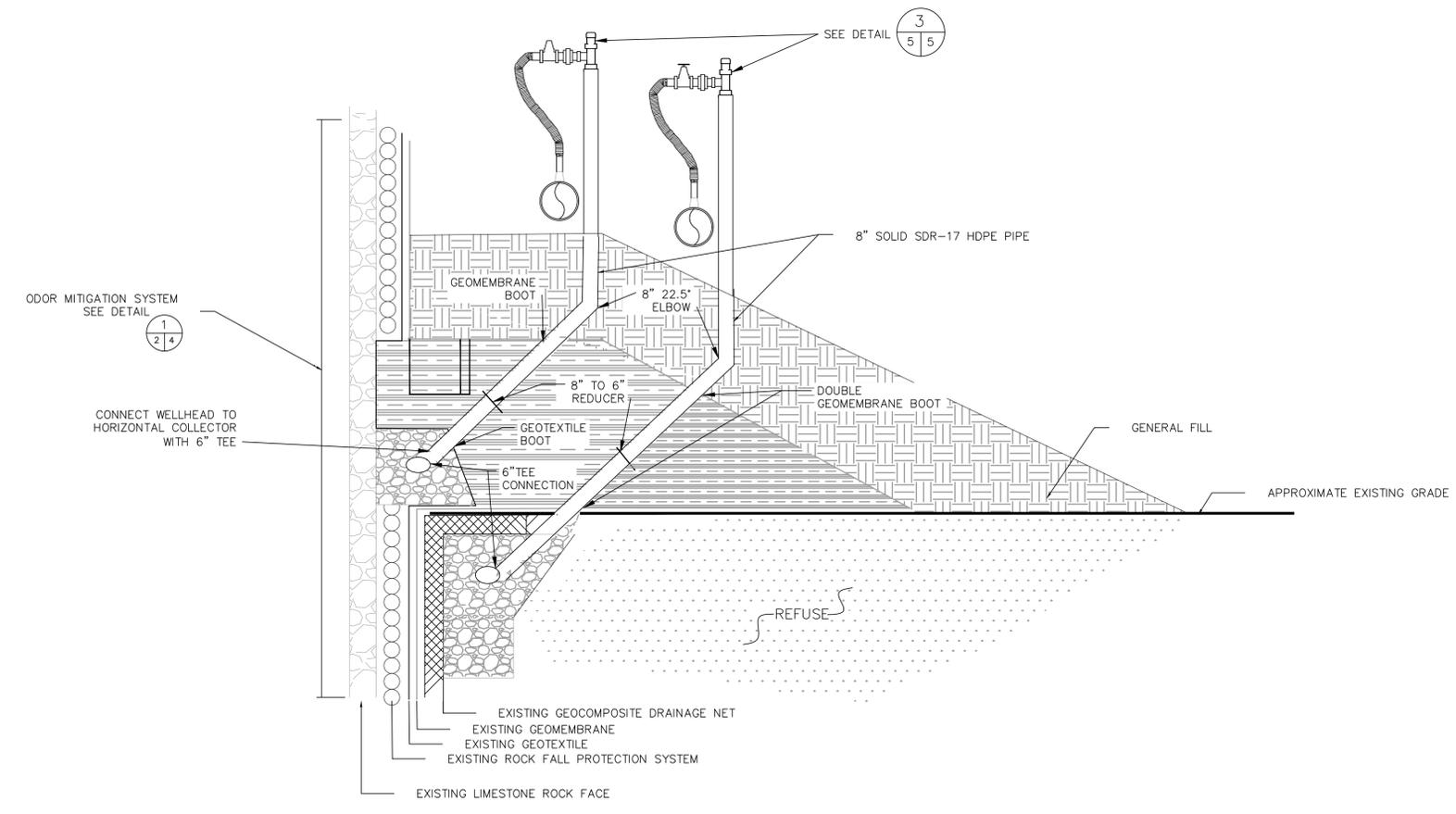


NOTES:

- WRAP AND TAPE THE VALVE, FLANGE, AND BOLTS IN POLYETHYLENE SHEETING PRIOR TO BACKFILLING.

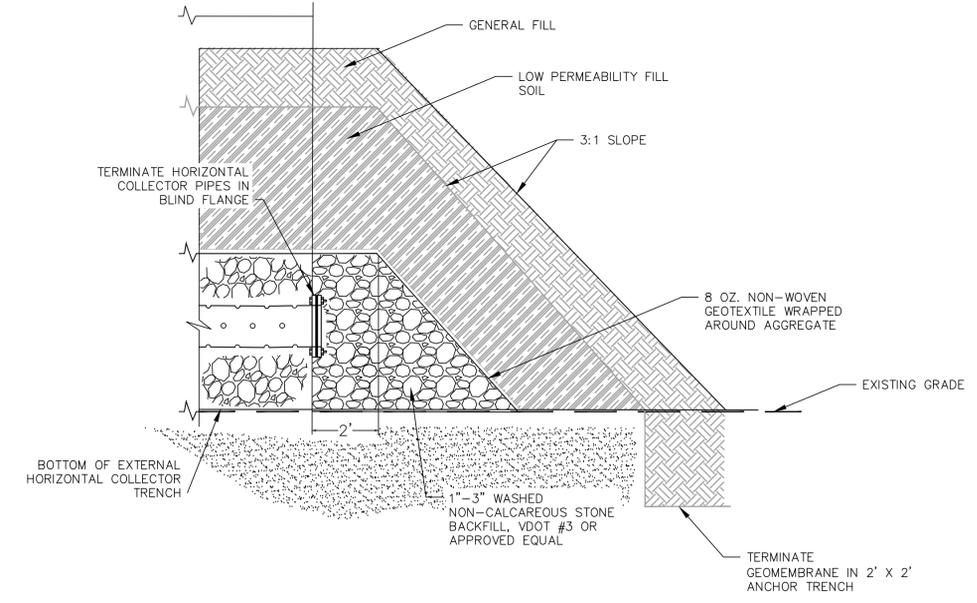


**HORIZONTAL COLLECTOR DETAIL**  
NOT TO SCALE



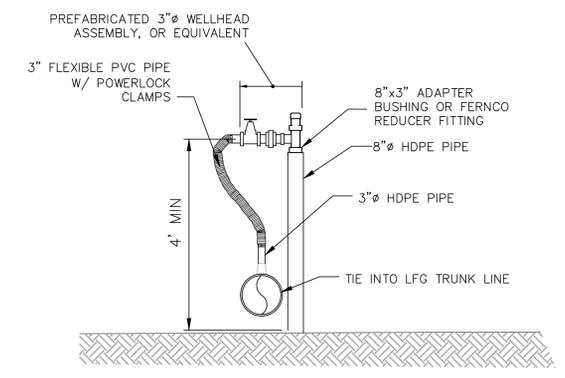
**HORIZONTAL COLLECTOR WELLHEAD TIE-IN DETAIL**  
NOT TO SCALE

NOTE:  
1. CONNECTION OF THE HORIZONTAL COLLECTOR TO SOLID 6" HDPE VERTICAL RISER TO BE MADE WITH A TEE OR BRANCH SADDLE USING HEAT FUSION PROCESSES RECOMMENDED BY THE MANUFACTURER.



**TEMPORARY TERMINATION OF PHASE I HORIZONTAL COLLECTOR DETAIL**  
NOT TO SCALE

NOTE:  
1. ROCKFALL PROTECTION SHALL BE REMOVED FROM QUARRY WALL PRIOR TO PLACING EXTERNAL HORIZONTAL COLLECTOR AND STONE AGAINST QUARRY WALL.  
2. ROCKFALL PROTECTION SHALL BE REMOVED FROM QUARRY WALL AND 3" OF SHOTCRETE APPLIED PRIOR TO PLACING LOW PERMEABILITY FILL SOIL AGAINST QUARRY WALL.



**HORIZONTAL COLLECTOR WELLHEAD DETAIL**  
NOT TO SCALE

NO.	REVISION	DATE

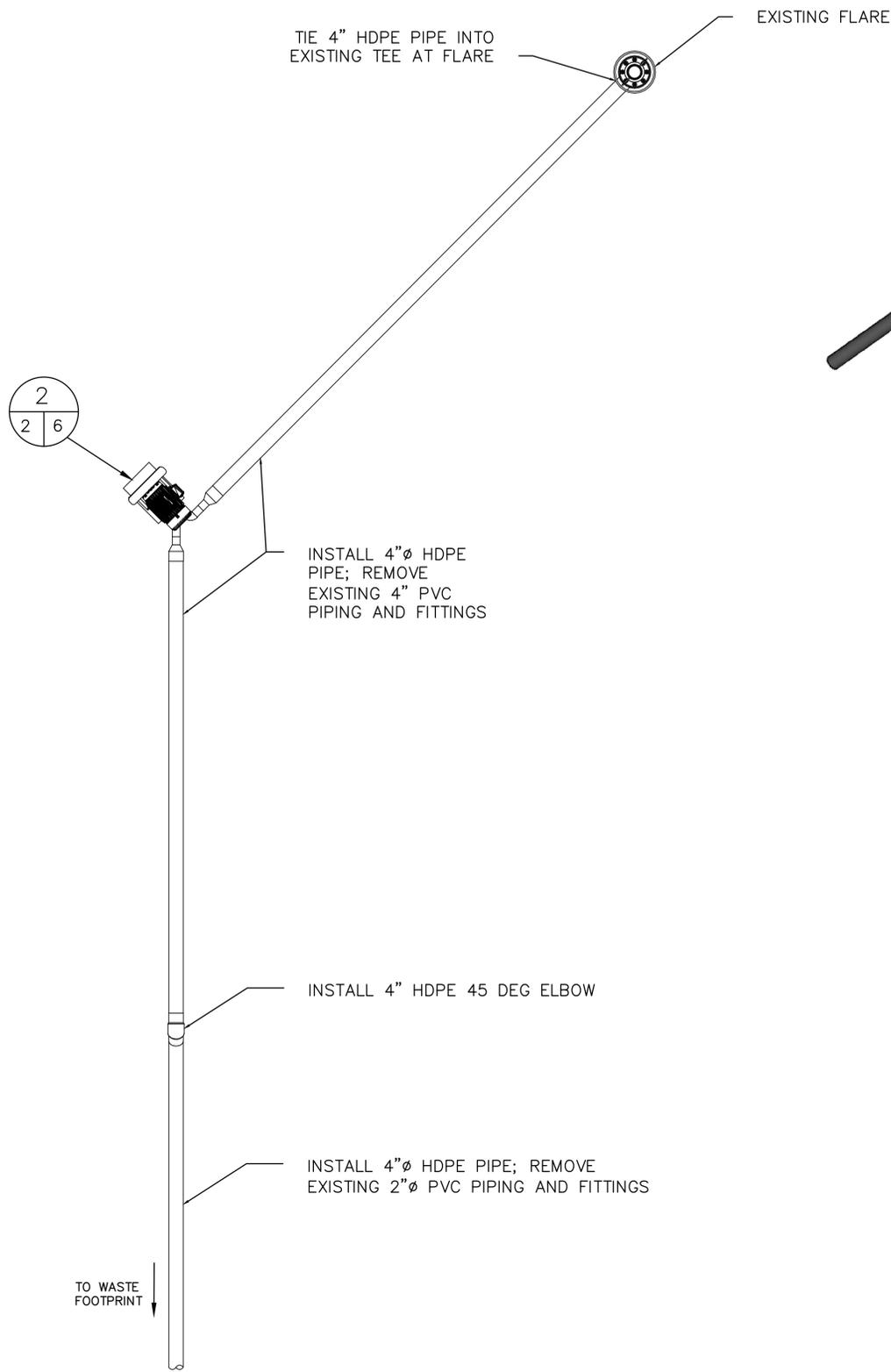
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PROJECT TITLE	<b>SIDEWALL ODOR MITIGATION SYSTEM CAPITAL PROJECT</b>

CLIENT  
**CITY OF BRISTOL INTEGRATED SOLID WASTE MANAGEMENT FACILITY**  
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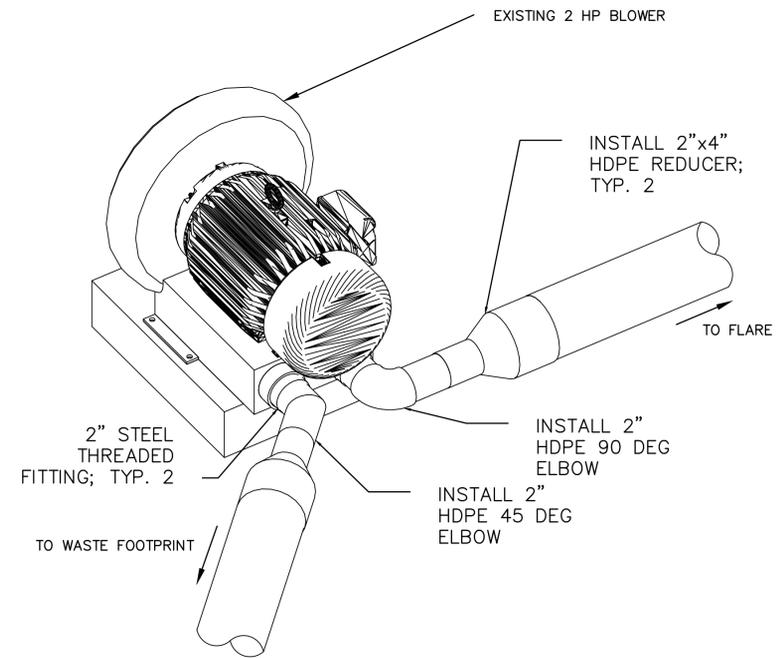
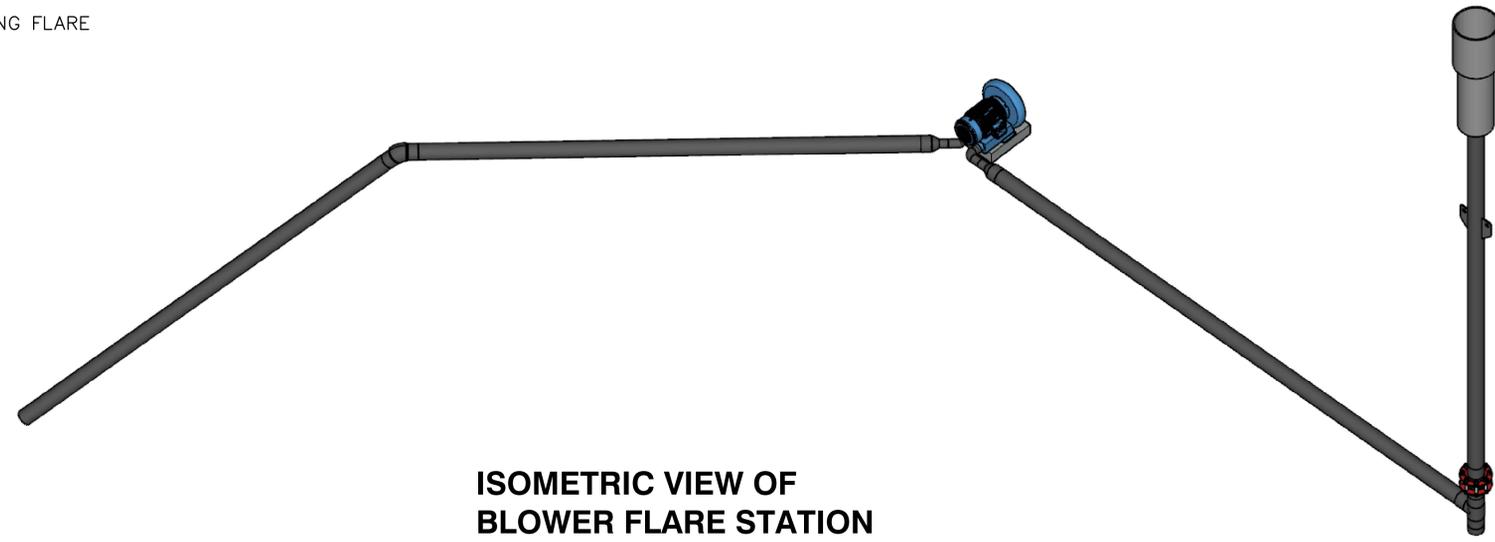
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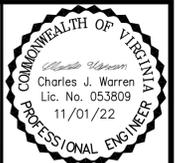
**PHASE I BLOWER FLARE STATION DETAIL**

NOT TO SCALE



**BLOWER CONNECTION POINT DETAIL**

NOT TO SCALE



NO.	REVISION	DATE
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SHEET TITLE: **DETAIL SHEET 3**

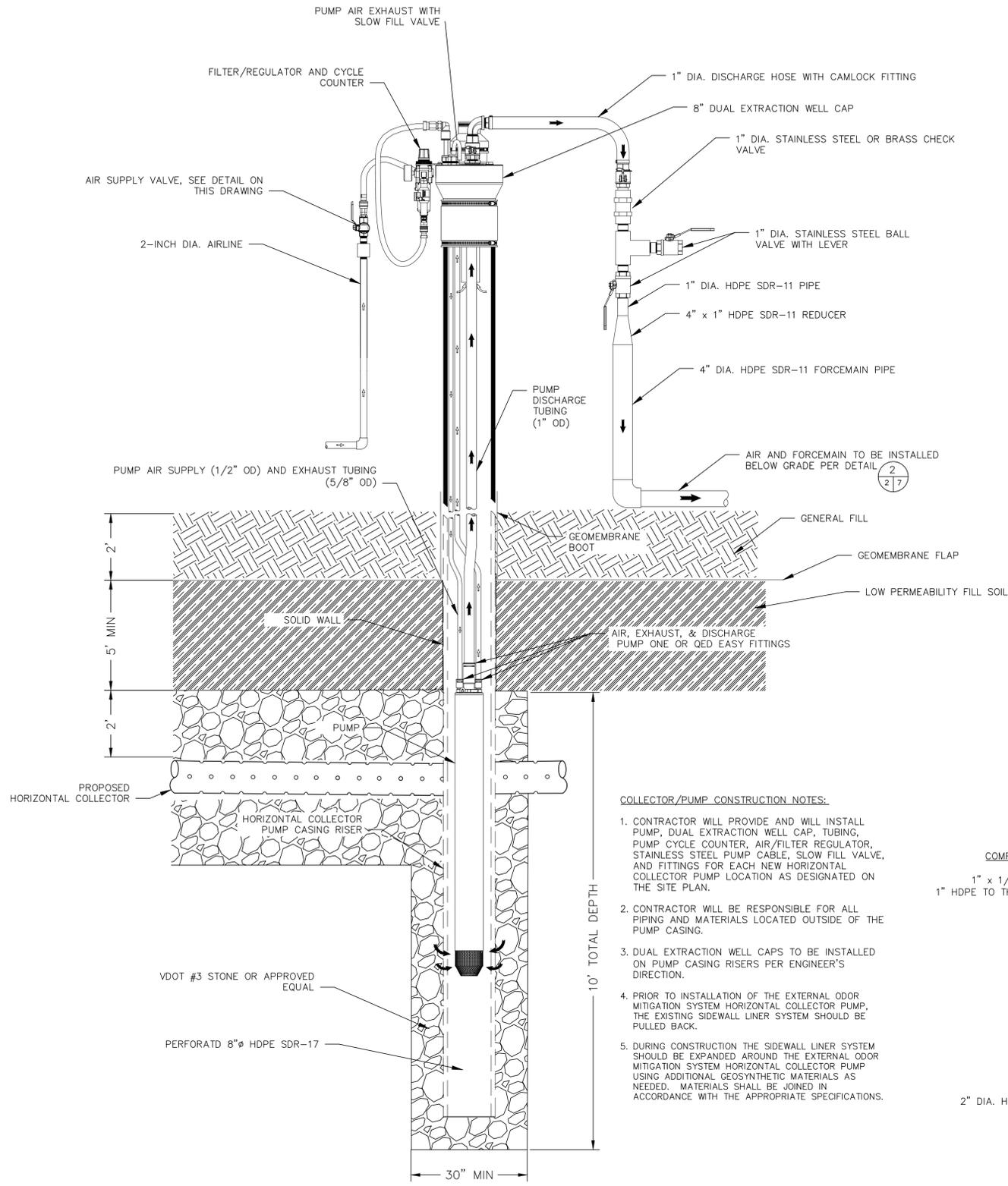
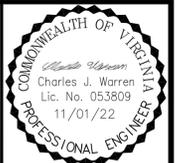
PROJECT TITLE: **SIDEWALL ODOR MITIGATION SYSTEM CAPITAL PROJECT**

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 2655 VALLEY DRIVE  
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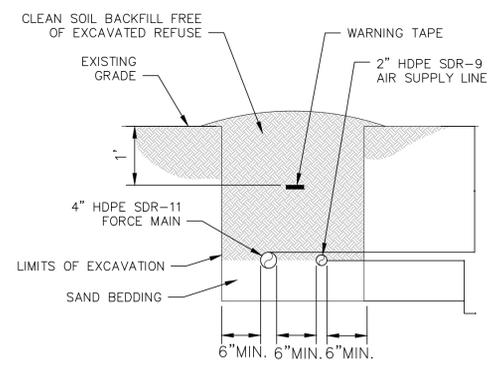
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 CHK. BY: CJIW  
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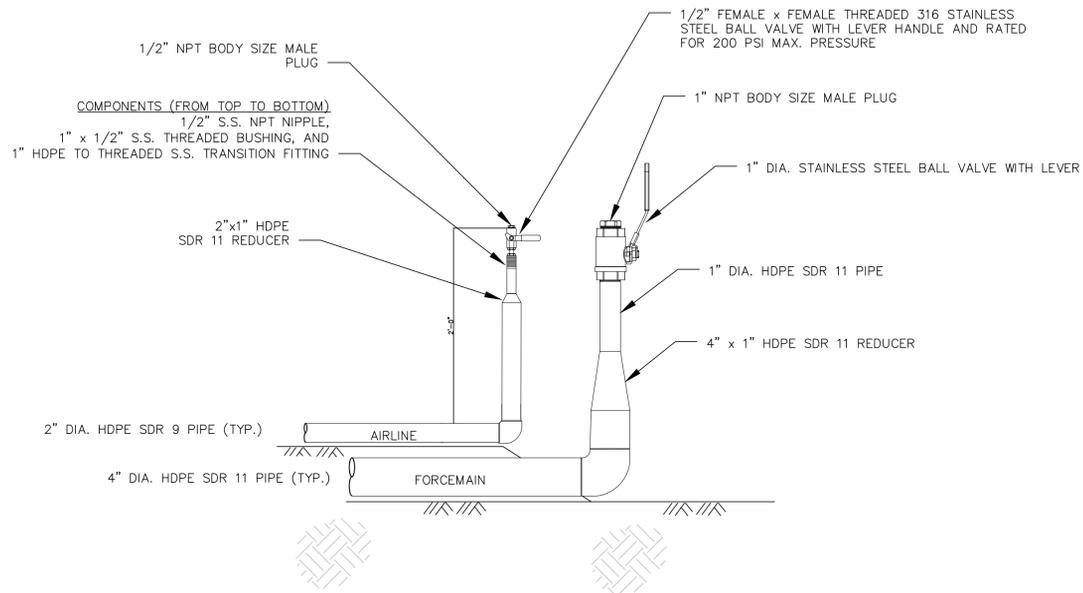
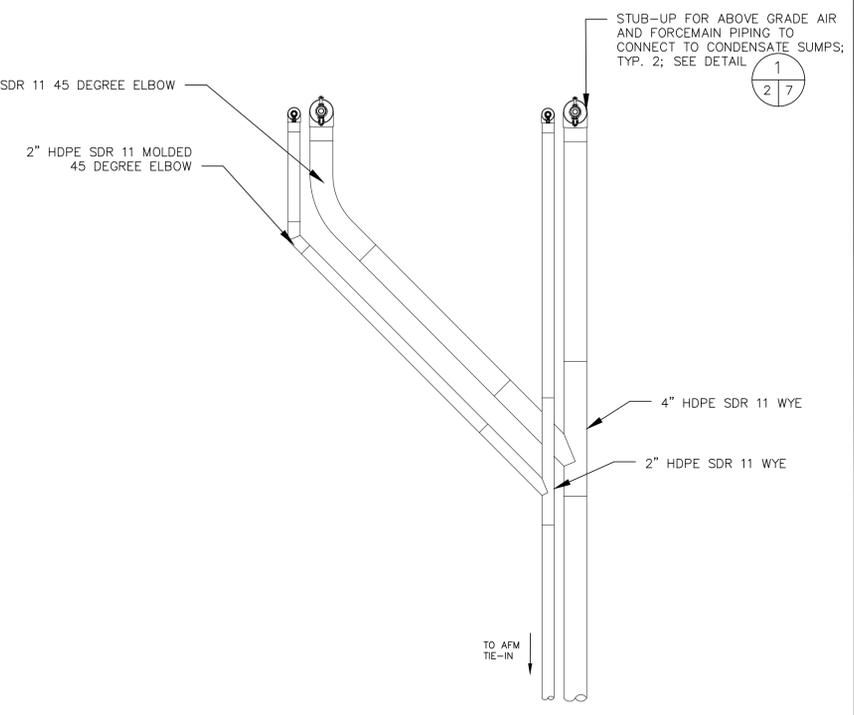
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 DATE: 11/01/22  
 SCALE: AS SHOWN  
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- COLLECTOR/PUMP CONSTRUCTION NOTES:**
- CONTRACTOR WILL PROVIDE AND WILL INSTALL PUMP, DUAL EXTRACTION WELL CAP, TUBING, PUMP CYCLE COUNTER, AIR/FILTER REGULATOR, STAINLESS STEEL PUMP CABLE, SLOW FILL VALVE, AND FITTINGS FOR EACH NEW HORIZONTAL COLLECTOR PUMP LOCATION AS DESIGNATED ON THE SITE PLAN.
  - CONTRACTOR WILL BE RESPONSIBLE FOR ALL PIPING AND MATERIALS LOCATED OUTSIDE OF THE PUMP CASING.
  - DUAL EXTRACTION WELL CAPS TO BE INSTALLED ON PUMP CASING RISERS PER ENGINEER'S DIRECTION.
  - PRIOR TO INSTALLATION OF THE EXTERNAL ODOR MITIGATION SYSTEM HORIZONTAL COLLECTOR PUMP, THE EXISTING SIDEWALL LINER SYSTEM SHOULD BE PULLED BACK.
  - DURING CONSTRUCTION THE SIDEWALL LINER SYSTEM SHOULD BE EXPANDED AROUND THE EXTERNAL ODOR MITIGATION SYSTEM HORIZONTAL COLLECTOR PUMP USING ADDITIONAL GEOSYNTHETIC MATERIALS AS NEEDED. MATERIALS SHALL BE JOINED IN ACCORDANCE WITH THE APPROPRIATE SPECIFICATIONS.



- NOTES:**
- TRENCH DEPTH SHALL BE 18" MIN. WITHIN WASTE LIMITS.
  - AIR SUPPLY AND FORCE MAIN PIPES SHALL BE IN COMMON TRENCH.



- NOTES:**
- STUB-UPS SHALL BE INSTALLED ON NEW AIR AND FORCE MAIN PIPING ADJACENT TO HORIZONTAL COLLECTOR PUMP (HCP) LOCATIONS.
  - AIR AND FORCE MAIN PIPING SHALL BE INSTALLED BELOW GRADE PER DETAIL 2 ON THIS SHEET.

NO.	REVISION	DATE

**DETAIL SHEET 4**

**SIDEWALL ODOR MITIGATION SYSTEM CAPITAL PROJECT**

**CITY OF BRISTOL INTEGRATED SOLID WASTE MANAGEMENT FACILITY**  
2655 VALLEY DRIVE  
BRISTOL, VA 24201

**SCS ENGINEERS**  
STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS, INC.  
1627 MIDLOTHIAN TRPK - MIDLOTHIAN, VA 23113  
PH: (804) 378-7440 FAX: (804) 378-7433

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CHK. BY: C.J.W.  
APP. BY: C.J.W.

CADD FILE: 02218208.11  
DATE: 11/01/22  
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