



**PHASE I AND PHASE II TRANSMISSION
PIPELINE MODIFICATION**

**RECORD DOCUMENTATION AND
CONSTRUCTION CERTIFICATION REPORT**

**LORAIN COUNTY II LANDFILL
OBERLIN, OHIO**

PREPARED FOR

LORAIN COUNTY II LANDFILL
43502 OBERLIN ELYRIA ROAD
OBERLIN, OHIO 44074

DATED: AUGUST 2018

PREPARED BY

BEL ENVIRONMENTAL ENGINEERING, LLC.
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EXECUTIVE SUMMARY

The Phase I and Phase II Transmission Pipeline Modification construction at Lorain II Landfill was updated to include the following major components:

- 6,406-feet of 30-inch diameter SDR-17 HDPE gas conveyance piping,
- 52-feet of 24-inch Schedule 10 Stainless Steel Piping (Flare skid upgrade),
- 24-feet of 16-inch Schedule 10 Stainless Steel Piping (Flare skid upgrade),
- (3) 24" butterfly control valves,
- Installed one 30" x 24" purge riser, and
- Installed two 36" road crossings with 16 gauge galvanized corrugated steel casing

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LORAIN COUNTY II LANDFILL
Phase I and Phase II Transmission Pipeline Modification**

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1.0 INTRODUCTION

Lorain II Landfill (Lorain), in the fall of 2015 and in the winter of 2017, completed gas transmission line modifications at the solid waste facility located in Oberlin, Lorain County, Ohio. This event was conducted in two Phases. Phase 1 was initiated on October 19, 2015 and was substantially completed December 3, 2015. Phase 2 was initiated on August 16, 2017 and substantially completed December 14, 2017.

Cornerstone Environmental Group of Middletown, New York, prepared the Construction Plans utilizing aerials provided by Cooper Aerial Surveys Co. of Phoenix, Arizona, survey information provided by Wellert Engineering Inc. (Wellert) of New Philadelphia, Ohio and landfill base liner grades also provided by Wellert. BEL was also retained by Lorain to provide full-time third-party quality assurance monitoring and documentation of construction activities associated with the Lorain II Landfill Phase I and Phase II Transmission Pipeline Modification.

American Environmental Group, LTD. (AEG), of Richfield, Ohio, installed the LFG conveyance piping system, and other ancillary components related to the flare skid. JMW Welding and Manufacturing Inc., of Canton, Ohio fabricated and installed the stainless steel portion of the flare skid upgrade.

Wellert Engineering Inc. (Wellert) of Medina, Ohio provided surveying services and BEL prepared the gas collection system as-built drawings.

This report, along with the accompanying appendices and record drawings, provides documentation of the gas collection system construction. Included within this report are the following items:

- Certification of facility construction,
- Gas conveyance piping air pressure testing results,
- Photo Documentation,
- BEL Daily Field Reports,
- Resumes,
- Pertinent Documents,
- Moisture and density testing, and
- Transmission line record drawings and details.

1.1 REFERENCE DOCUMENTS

The following reference documents are applicable to the Lorain II Landfill Phase I and Phase II Transmission Pipeline Modification:

- The Construction Quality Assurance/Quality Control Plan (CQA/QC) Plan, Dated May 2009, Revised January 2015.
- The Gas Collection and Control System (GCCS) Design Plan Lorain County II Landfill, Dated June 1997, Revised June 2015.
- Title V Operating Permit No. P0114469 approved February 27, 2014
- PTI No. 02-6720 – Phase I Gas Collection and Control System, approved June 18, 1993.
- PTI No. 02-4365, approved May 29, 1992.
- PTI No. 02-10937- Vertical Expansion Phase II, approved October 17, 1997

1.2 PROJECT PERSONNEL

The key personnel and companies involved with the construction of the Phase I and Phase II Transmission Pipeline Modification at Lorain II Landfill are listed below:

Lorain II Landfill – Owner

Dawn Wright – Environmental Manager
Rick Kostelnick – Facility Manager

BEL Environmental Engineering, LLC. – Design and Construction Certification

Brian Barninger P.E. – Certifying Engineer/Design Engineer
Janet Todia – Project Manager
Janet Todia – CQA Technician
Nate Schkurko – CQA Technician

American Environmental Group, Ltd. – Contractor

Bob Minor – Project Manager – Pipeline Construction
Dean Back – Superintendent – Pipeline Construction
Kevin Shull – Project Manager – Pipeline Construction

Wellert Engineering, Inc. – Surveying Services

Kyle Danals P.S. – Project Manager

In accordance with OAC 3745-27-08(H) (7) all BEL personnel that worked this project had the appropriate training and experience to complete the necessary construction oversight and testing. Their qualifications are as follows:

Brian Barninger, PE – Mr. Barninger is a Registered Professional Engineer in the State of Ohio and has 14 years of experience with environmental construction, including project management, remedial design, and construction quality assurance. Mr. Barninger has acted as a Landfill Engineer/Project Manager for over 100 solid and hazardous waste landfill construction projects at 40 different landfill facilities in 5 states.

Janet Todia – Ms. Todia has 20 years of experience and knowledge in every aspect of landfill design, landfill gas CQA, GCCSs, construction, compliance, operations, maintenance, closure and post-closure care. She has served as a Quality Control Manager/Project Manager for the past eight years. She is experienced with drilling, pipe fusion welding and pressure testing, transmission line installation, and re-compacted soils and geosynthetic repair procedures and documentation.

Nate Schkurko – Mr. Schkurko has over 6 years of experience in environmental construction design, quality assurance, and project management. He has served as lead design engineer, project manager, and quality control technician for GCCS construction on numerous landfill projects working with multiple GCCS construction contractors.

Personnel resumes are included in Appendix D.

1.3 ALTERATIONS

In accordance with OAC Rule 3745-27-08(H) (2), this report notes the alterations from the approved PTI Application. The following alterations were incorporated into the approved PTI's for the Phase I and Phase II Transmission Pipeline Modification for the Lorain II Landfill.

- The Construction Quality Assurance/Quality Control Plan (CQA/QC) Plan, Dated May 2009, Revised January 2015.
- The Gas Collection and Control System (GCCS) Design Plan Lorain County II Landfill, Dated June 1997, Revised June 2015.
- Title V Operating Permit No. P0114469 approved February 27, 2014
- PTI No. 02-6720 – Phase I Gas Collection and Control System, approved June 18, 1993.
- PTI No. 02-4365, approved May 29, 1992.
- PTI No. 02-10937- Vertical Expansion Phase II, approved October 17, 1997

1.4 OTHER CHANGES

In accordance with OAC Rule 3745-27-08(H) (2) (c), the following is a list of changes during the Phase I and Phase II Transmission Pipeline Modification that enhanced quality and benefited constructability.

- Some of the piping layout was constructed differently from the authorizing documents due to access road layout to the power plant and drainage channels.
- Any minor differences in the construction details compared to the authorizing documents are a result of Lorain implementing standard landfill gas details. Any changes denote an increase in detail or an upgrade in materials.
- During Phase 2 of the project conducted in 2017, pea gravel was utilized for all pipe bedding rather than sand.

1.5 SUMMARY OF WEATHER AND EQUIPMENT IMPACT

In accordance with OAC Rule 3745-27-08(H) (1) (b) it is being noted that no significant difficulties or limitations were encountered during construction due to weather and equipment. Please refer to the Daily Field Reports in Appendix C for details on any minor weather delays.

1.6 SUMMARY OF DESIGN AND CONSTRUCTION SPECIFICATIONS

The Phase I and Phase II Transmission Pipeline Modification consisted of three (3) engineered components: LFG Conveyance Piping System, LFG Flare Skid Modifications, and Transmission Line Road Crossing. Each component was constructed per the design and construction specifications except where noted in section 1.3 of this narrative. A summary of their specifications are as follows:

- LFG Conveyance Piping System – The piping consisted of 30-inch diameter SDR 17 HDPE constructed with conventional butt fusion welding. In addition, flare skid upgrades consisted of 16-inch and 24-inch Schedule 10 Stainless Steel from the outlet of the flares to the 30-inch HDPE transition flange. All piping was subjected to air pressure testing and installed at a minimum of 0.5% percent slope. All work was performed outside the limits of waste. Air lines, dual contained force main, and communication conduit remained intact from the original installation, and was laid in the trench above the 30-inch conveyance line. In addition, the seven inline condensate pump stations (sumps) remained intact as well as all conduit control boxes. See Appendix G for as-built pipe locations.

- LFG Flare Skid Upgrade – Improvements consisted of the installation of 52 linear feet of 16-inch diameter and 24 linear feet of 24-inch diameter Schedule 10 stainless steel piping at the outlet of the flare skids, replacing the previously installed 16-inch SDR 32.5 HDPE. In addition, conveyance line piping was installed above grade at the outlet of the flares to reduce landfill gas temperature prior to entering the conveyance line to EDI below grade. All piping was subjected to air pressure testing. See Appendix G for individual component locations.
- Transmission Line Road Crossing – Improvements consisted of installation of 36-inch CMP road crossing across roadway. Where applicable, the existing roadway was excavated across with adequate depth to accommodate new piping as well as replacement stone. Across concrete roadways, existing concrete was cut with a walk-behind concrete saw. Once existing concrete was removed, typical CMP road crossing installed, and upon completion concrete was re-poured and set.

2.0 CONSTRUCTION PROCEDURES

The Lorain II Phase I and Phase II Transmission Pipeline Modification consisted of removal of the previously installed 24-inch HDPE SDR 32.5 transmission line and replacement with 30-inch HDPE SDR 17 transmission line piping. AEGL installed the new 30-inch HDPE SDR 17 conveyance system between the flare skid and the EDI gas plant located at the southwest corner of the landfill. Approximately 6,406 linear feet of 30-inch HDPE SDR 17 HDPE piping replaced the previously installed 24-inch HDPE SDR 32.5. In addition, the flare skid was upgraded by replacing the originally installed 16-inch SDR 32.5 HDPE with 16-inch and 24-inch Schedule 10 Stainless Steel, approximately 24 linear feet of 16-inch and 52 linear feet of 24-inch. In general, the landfill gas conveyance system upgraded as part of this project consists of the following components:

- Removal of previously installed 24-inch SDR 32.5 conveyance piping and replacement with 30-inch SDR 17 conveyance piping,
- (3) 24-inch isolation (butterfly) valves with flange connections,
- 24" x 30" eccentric reducers to keep current sump stations in place and allow for the conveyance line to be upgraded in size,
- 30" x 24" isolation purge riser to aid in nitrogen purging,
- Two (2) road crossings consisting of 36-inch 16 gauge galvanized corrugated steel casing pipe with concrete replacement, and
- Concrete pad installation at the flare skid

2.1 SURVEY AND LAYOUT

Prior to initiation of the Phase I and Phase II Transmission Pipeline Modification, flare skid surface elevations, road crossings, and original 24-inch HDPE pipeline as built locations were surveyed by Wellert and marked with field lath. Comerstone Environmental compared surveyed elevations with the flare skid design elevations and made modifications as necessary. Comerstone Environmental then provided a final design for conveyance line replacement and flare upgrades for review and approval by Republic Services Inc. and Lorain II. Wellert performed as-built surveying of the gas conveyance line and components, as well as the flare skid modifications as they were constructed, See Appendix G, Sheet 1 for Record Drawings depicting the gas piping layout.

2.2 LFG CONVEYANCE PIPING SYSTEM

The gas transmission line was constructed with 30-inch SDR-17 HDPE, 24-inch SDR-17 HDPE, and 16-inch diameter steel piping. Piping was installed with joints completed by conventional butt fusion welding and flange connections. The gas conveyance pipe trenches were excavated to provide a minimum of 0.5% percent slope for transmission line piping. Metallic locator tape was installed over the pipe at an approximate trench depth of 1-foot above pipe. The trenching was completed by Caterpillar 320E track excavators and was generally performed at a minimum width of 54-inches. Air, condensate force main, and communication lines remained intact from the original installation. The lines were excavated and pulled aside the trench while the 30-inch transmission line was installed, and then returned to the same trench as the header pipe, as shown in Appendix G. Additional clean backfill soil was placed to existing ground surface. BEL monitored all activities to ensure the collection pipe was not damaged during installation. At road crossings, LFG conveyance piping was encased in a protective pipe; see Appendix G.

The general construction/installation methods used for the new 30-inch diameter SDR17 header pipeline were as follows:

- HDPE pipe, fittings, and appurtenances were delivered to the landfill and stored in a clean area.
- The 30-inch diameter HDPE pipe was butt fusion welded onsite by AEGL prior to being placed in the trench.
- HDPE pipe was placed in the trenches following completion of the four-feet (min.) wide by four-feet (min.) deep excavation.
- Pipe bedding consisted of clean sand material or clean pea gravel that extended a minimum of 12-inches above the pipe and 6-inches below the pipe.

- The trenches were backfilled with soil material from the landfill borrow area. Trenches were compacted with vibratory plate tampers in 6-inch lifts. Moisture and density testing results can be found in Appendix F.
- HDPE pipe was installed to achieve the minimum design slope of 0.5% for each run of pipeline from sump to sump and was surveyed by Wellert Corporation.
- The flanged connections were made to the condensate sumps and isolation valves.
- Installed pipeline, fittings, components, and road crossings were field surveyed after installation by Wellert Corporation using total station technology.
- Locations of the pipeline, components, and appurtenances are provided on the Project Record Drawings in Appendix G.
- 5-mil x 3-inch underground detectable tape with the words "CAUTION BURIED GAS LINE BELOW" was placed approximately 1-foot above the HDPE pipe during backfilling activities.
- Waste material/previously installed sand bedding encountered within the excavated soil was stockpiled as the trenches were backfilled. The waste material was placed in articulated dump trucks for transportation and disposal at the active working face of the landfill.

The general construction/installation methods used for the main access road crossings were as follows:

- The 30-inch diameter HDPE pipe was placed inside a 36-inch diameter, 16-gauge, galvanized corrugated steel casing pipe. The steel casing pipe extended a minimum of five feet beyond the outside edge of the road on both sides of the road surface.
- The steel casing pipe was bedded in clean pea stone material compacted in 6-inch lifts that extended a minimum of 12-inches above and 6-inches below the pipe.
- Concrete with a minimum compressive strength of 3500 psi was poured the entire length and width of the trench to the level of the adjacent road surface.
- W6x6 steel mesh was placed a minimum of two inches below the finished concrete surface.
- In order to not interrupt or minimize, as much as possible, normal landfill operations, the main access/haul road crossing was performed in one Saturday.

The conveyance header was tied into the existing LFG system, including the seven (7) preexisting condensate sumps, utilizing fusion welding and existing flange connections. See Appendix G for a typical flange connection.

Three 24-inch control valves were installed and one 24-inch control valve was removed in the conveyance system during construction. Valve locations are shown in Appendix G. See Appendix G for a typical underground valve detail.

2.3 LFG CONDENSATE MANAGEMENT SYSTEM

The Phase I and Phase II Transmission Pipeline Modification construction project utilized previously installed air and force main piping, sumps, and pneumatic pumps. The air piping consisted of 3-inch diameter SDR-9 HDPE. The force main consisted 3-inch SDR 11 HDPE carrier pipe and 6-inch SDR 17 HDPE containment pipe. Air and force main piping was excavated and pulled to the side of the trench after the excavation process, allowing room for removal of the 24-inch SDR 32.5 line and replacement with the 30-inch conveyance line header. Once the 30-inch transmission line was installed, air and condensate force main lines were installed in the same trench above the 30-inch header, as shown in Appendix G.

The previously installed Condensate Pump Stations (CST1-CST7) consist of the following:

- 48-inch diameter solid SDR 32.5 HDPE pipe with 54-inch diameter solid SDR 32.5 HDPE containment
- 48-inch by 24-inch SDR 17 HDPE fabricated reducing tees with flange connections
- 6-inch and 18-inch diameter HDPE stubs with blind flanges and appurtenances
- Short QED AP4+B pumps with fittings and appurtenances

2.4 FLARE SKID UPGRADE

The Phase I and Phase II Transmission Pipeline Modification construction project included upgrade of the flare skid outlet piping from 16-inch SDR 32.5 HDPE to 16-inch and 24-inch Schedule 10 Stainless Steel.

- The existing HDPE connections from the flare skid to the Transmission Line Outlet were disconnected and removed.
- The Schedule 10 Stainless Steel elbows, reducers, control valve, expansion joint, and HDPE to Stainless Steel flange adapter assemblies were fabricated and installed between the blowers and the Transmission Line Outlet.
- Stainless Steel fabrication was completed using Gas Metal Arc Welding (MIG) welding technique.
- The HDPE to Stainless Steel flange adapters were installed to connect the new 30-inch diameter header pipeline.
- Minimum grade for above grade piping at the flare skid outlet is 0.25%.

3.0 CONSTRUCTION QUALITY ASSURANCE

BEL provided construction quality assurance services during the installation of the Phase I and Phase II Transmission Pipeline Modification at Lorain II Landfill. Services included observation of conveyance piping, piping systems construction, air pressure testing, and documentation of construction materials and procedures. Phase 1 of the Project, conducted in 2015, also included compaction and moisture testing of sand bedding for each 6-inch lift at a frequency of every one hundred linear feet of trench. Phase 2 of the Project, conducted in 2017, was constructed exclusively in pea gravel, which did not require compaction or moisture density assurance. Each 6-inch lift of pea gravel was compacted with vibratory plate tampers.

3.1 GAS CONVEYANCE PIPING AIR PRESSURE TESTING

Gas conveyance piping was air-pressure tested following fusion welding to evaluate the system's continuity of the conveyance line header. Air pressure testing was performed by pressurizing the piping system for a minimum of 1 (one) hour. 30-inch, 24-inch, and 16-inch pipe was pressurized to 4 pounds per square inch gauge (psig) through a fabricated blind flange containing a valve stem with an in-line air pressure gauge. Following a brief system stabilization period, initial and final pressures and temperatures were observed and recorded through the elapsed time. After pressure loss was calculated accounting for temperature changes, the system pressure test results were determined to be acceptable if pressure loss was less than 10%. Piping pressure testing was performed after installation and trench backfill. The final test results are provided in Appendix A.

Following air pressure testing, gas conveyance lines were purged with nitrogen gas to prevent the potential for static flash fire. The nitrogen was purged through the newly installed 30" x 24" isolation purge riser. Gas quality was tested with a combustible gas meter to verify the purge was complete prior to pressurizing the newly installed conveyance line with landfill gas, see the purge plan found in Appendix E.

3.2 CONSTRUCTION MONITORING

BEL performed construction observation during the Phase I and Phase II Transmission Pipeline Modification installation to verify the general conformance of materials and construction procedures to the design specifications. The activities and items observed and documented included, but were not limited to, the following:

- Gas conveyance piping material, SDR designation, sizing, and installation,
- Gas conveyance pipe trench, bedding, and backfill,
- Gas conveyance pipe pressure testing,
- Communication line installation,
- Air and force main installation, and
- Compaction and moisture density testing.

3.3 MOISTURE AND DENSITY TESTING

The bedding material placement activities were performed by AEGL. Both sand as well as pea gravel were utilized for pipe bedding during Phase I of the project. During Phase II of the project, pea gravel was exclusively used for bedding.

Materials were hauled to the trench area with Caterpillar 725 off-road rear end dump trucks. Material was manually spread (raked) in 6-inch lifts, while being installed in the trench with a Caterpillar 320E excavator bucket. Materials were obtained directly from the dump truck to keep them clean. After raking out each 6-inch lift of material, both pea gravel and sand lifts were compacted with Honda GX-160 vibratory plate compactors.

BEL completed one-hundred-seventy-two density (ASTM D6938) tests verifying the compaction and moisture of the placed sand bedding material. BEL utilized a Troxler Model 3440 nuclear density gage. The density tests were completed at a depth of 6-inches and all test results exceeded requirements, see Appendix F.1 for lab results. BEL utilized a field form to document the moisture of the bedding sand was uniform and that test locations are representative of the area to be covered by the test, field forms are included in Appendix F.2.

4.0 CERTIFICATION SUMMARY

BEL Environmental Engineering, LLC. provided construction quality assurance (CQA) observation and documentation during the Lorain II Phase I and Phase II Transmission Pipeline Modification construction project. The services provided by BEL included: observation of construction procedures, coordination with surveyors and site personnel, CQA monitoring, and air monitoring. The CQA monitoring services included: monitoring the installation of LFG extraction wells, installation of new header and lateral piping, pipe pressure testing, backfilling, and associated construction as detailed above. A summary of construction activities documented by BEL personnel was reported on the Daily Field Reports included in Appendix E. Selected construction photographs are included as Appendix D.

The observations and tests performed by BEL personnel as described in this report during the construction of the Lorain II Phase I and Phase II Transmission Pipeline Modification Project indicate that the materials tested conform to the project requirements and construction was performed in compliance with the reference documents listed in Section 1.1.

I certify that this document and all attachments were prepared under my direction or supervision in conformance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiries of the persons who were directly responsible for gathering the information, the information submitted is, to the best of my knowledge, true, accurate, and complete.



Brian P. Barninger, P.E.

BEL Environmental Engineering, LLC.

Certifying Engineer

Ohio Professional Engineer

No. E-73061

08/14/2018

Date

APPENDIX A

GAS CONVEYANCE AIR PRESSURE TESTING RESULTS

BEL Pipe Pressure Test Report



Project Name: 2015 Lorain II Transmission Line Date: 11/3/2015
 Project No: 2015.088 BEL Representative: Nate Schkurko
 Contractor: American Environmental Group, LTD

Pipe Dia.	SDR	Material	Overall Segment Length (ft)		Location of Test Segment			
30"	17	HDPE	300'		Trench			
Station/Additional Info:		Flow meter to CS-T1						
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop	Test Data			
0	15	25.0	25.0	0%	Pi: Ti (Celsius) : 15	Time Start:	1800	
60	15	25.0	25.0	0%		Time End:	700	
120	15	25.0	25.0	0%		_____ 25		
180	15	25.0	25.0	0%				
240	15	25.0	25.0	0%				
					Result:	PASS	Retest:	NO
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable:								N/A

Pipe Dia.	SDR	Material	Overall Segment Length (ft)		Location of Test Segment	
30"	17	HDPE	300'		Trench	
Station/Additional Info:		Flow meter 30" flange to CS-T1 north side				
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop	Test Data	
0	10	25.0	25.0	0%	Pi: Time Start: 700 Time End: 1100 25Ti (Celsius): 10	10
60	10	25.0	25.0	0%		
120	10	25.0	25.0	0%		
180	10	25.0	25.0	0%		
240	10	25.0	25.0	0%		
Result: PASSRetest: NO						
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable:						

Pipe Dia.	SDR	Material	Overall Segment Length (ft)		Location of Test Segment	
30"	17	HDPE	300'		Trench	
Station/Additional Info:		CS-T1 to CS-T2				
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop	Test Data	
0	10	25.0	25.0	0%	Pi: Time Start: 700 Time End: 1100 25Ti (Celsius): 10	10
60	10	25.0	25.0	0%		
120	10	25.0	25.0	0%		
180	10	25.0	25.0	0%		
240	10	25.0	25.0	0%		
Result: PASSRetest: NO						
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable:						

BEL Representative: Nate Schkurko

PI = Initial Test Pressure TI = Initial Temperature t = Time in minutes from initiation of test Pc = Initial Pressure in psig corrected for Temperature (Ti) @ Ti °C	<u>*Note Air lines to be tested at 100 psig, condensate lines to be tested at 50 psig, header/laterals @ 25 psig for 8" and 6" and 10 psig for 12" for 4 hours. If outer containment is required for condensate lines, interior condensate lines are pressurized to 60 psig.</u>	Tt = Temperature in Celsius @ Time "t" Pt = Test Pressure in psig @ Time "t" $Pc = (((Pi + 14.7)(Tt + 273)) / (Ti + 273)) - 14.7$ $\% \text{ Drop} = ((Pc - Pi) / Pc) * 100$
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BEL Pipe Pressure Test Report



Project Name: 2015 Lorain II Transmission Line Date: 12/17/2015
 Project No: 2015.088 BEL Representative: Nate Schkurko
 Contractor: American Environmental Group, LTD

Pipe Dia.	SDR	Material	Overall Segment Length (ft)		Location of Test Segment					
30"	17	HDPE	1550'		Trench					
Station/Additional Info:		CS-T2 to CS-T3								
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop	Test Data					
0	4	25.0	25.0	0%	Pi: 25	Time Start:	1200			
60	4	25.0	25.0	0%		Time End:	1600			
120	4	25.0	25.0	0%		Ti (Celsius) :	4			
180	4	25.0	25.0	0%						
240	4	25.0	25.0	0%		Result:	PASS	Retest:	NO	
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable:									N/A	

Pipe Dia.	SDR	Material	Overall Segment Length (ft)		Location of Test Segment			
Station/Additional Info:								
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop	Test Data			
0					Time Start: _____ Time End: _____ Pi: _____ Ti (Celsius) : _____ Result: PASS Retest: NO			
60								
120								
180								
240								
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable:								

Pipe Dia.	SDR	Material	Overall Segment Length (ft)		Location of Test Segment			
Station/Additional Info:								
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop	Test Data			
0					Time Start: _____ Time End: _____ Pi: _____ Ti (Celsius) : _____ Result: PASS Retest: NO			
60								
120								
180								
240								
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable:								

BEL Representative: Janet Todia

PI = Initial Test Pressure TI = Initial Temperature t = Time in minutes from initiation of test Pc = Initial Pressure in psig corrected for Temperature (TI) @ TI °C	<u>*Note Air lines to be tested at 100 psig, condensate lines to be tested at 50 psig, header/laterals @ 25 psig for 8" and 6" and 10 psig for 12" for 4 hours. If outer containment is required for condensate lines, interior condensate lines are pressurized to 60 psig.</u>	Tt = Temperature in Celsius @ Time "t" Pt = Test Pressure in psig @ Time "t" $Pc = (((Pi + 14.7)(Tt + 273)) / (Ti + 273)) - 14.7$ $\% \text{ Drop} = ((Pc - Pi) / Pc) * 100$
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BEL Pipe Pressure Test Report



Project Name: 2017 Lorain II Transmission Line Date: 9/14/2017
 Project No: 2017.129 BEL Representative: Janet Todia
 Contractor: American Environmental Group, LTD

Pipe Dia.	SDR	Material	Overall Segment Length (ft)	Location of Test Segment
30"	17	HDPE	1662'	Trench
Station/Additional Info:		CST3 to CST4		
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop
10	21	4.0	4.0	0%
20	21	4.0	4.0	0%
30	21	4.0	4.0	0%
40	21	4.0	4.0	0%
50	21	4.0	4.0	0%
60	21	4.0	4.0	0%
Test Data Time Start: 1930 Time End: 2030 Pi: 4 Ti (Celsius): 21 Result: Pass Retest: No				
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable: N/A				

Pipe Dia.	SDR	Material	Overall Segment Length (ft)	Location of Test Segment
Station/Additional Info:				
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop
10				
20				
30				
40				
50				
60				
Test Data Time Start: _____ Time End: _____ Pi: _____ Ti (Celsius): _____ Result: _____ Retest: _____				
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable:				

Pipe Dia.	SDR	Material	Overall Segment Length (ft)	Location of Test Segment
Station/Additional Info:				
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop
10				
20				
30				
40				
50				
60				
Test Data Time Start: _____ Time End: _____ Pi: _____ Ti (Celsius): _____ Result: _____ Retest: _____				
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable:				

BEL Representative: Janet Todia

Pi = Initial Test Pressure
 Ti = Initial Temperature
 t = Time in minutes from initiation of test
 Pc = Initial Pressure in psig corrected for Temperature (Ti) @ Ti "t"

***Note Air lines to be tested at 100 psig, condensate lines to be tested at 50 psig, header/laterals @ 25 psig for 8" and 6" and 10 psig for 12" for 4 hours. If outer containment is required for condensate lines, interior condensate lines are pressurized to 60 psig.**

Tt = Temperature in Celsius @ Time "t"
 Pt = Test Pressure in psig @ Time "t"
 $Pc = (((Pi + 14.7)(Tt + 273)) / (Ti + 273)) - 14.7$
 $\% \text{ Drop} = ((Pc - Pi) / Pc) * 100$

BEL Pipe Pressure Test Report



Project Name: 2017 Lorain II Transmission Line Date: 10/4/2017
 Project No: 2017.129 BEL Representative: Janet Todia
 Contractor: American Environmental Group, LTD

Pipe Dia.	SDR	Material	Overall Segment Length (ft)	Location of Test Segment
30"	17	HDPE	966'	Trench
Station/Additional Info:		CST4 to CST5		
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop
10	23	4.0	4.0	0%
20	23	4.0	4.0	0%
30	23	4.0	4.0	0%
40	23	4.0	4.0	0%
50	23	4.0	4.0	0%
60	23	4.0	4.0	0%
Test Data Time Start: 1350 Time End: 1450 Pi: 4 Ti (Celsius): 23 Result: Pass Retest: No				
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable: N/A				

Pipe Dia.	SDR	Material	Overall Segment Length (ft)	Location of Test Segment
Station/Additional Info:				
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop
10				
20				
30				
40				
50				
60				
Test Data Time Start: _____ Time End: _____ Pi: _____ Ti (Celsius): _____ Result: _____ Retest: _____				
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable:				

Pipe Dia.	SDR	Material	Overall Segment Length (ft)	Location of Test Segment
Station/Additional Info:				
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop
10				
20				
30				
40				
50				
60				
Test Data Time Start: _____ Time End: _____ Pi: _____ Ti (Celsius): _____ Result: _____ Retest: _____				
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable:				

BEL Representative: Janet Todia

PI = Initial Test Pressure
TI = Initial Temperature
t = Time in minutes from initiation of test
Pc = Initial Pressure in psig corrected for Temperature (TI) @ TI "t"
Tt = Temperature in Celsius @ Time "t"
Pt = Test Pressure in psig @ Time "t"

$$Pc = (((PI + 14.7)(Tt + 273)) / (TI + 273)) - 14.7$$

$$\% \text{ Drop} = ((Pc - Pt) / Pc) * 100$$

*Note Air lines to be tested at 100 psig, condensate lines to be tested at 50 psig, header/laterals @ 25 psig for 8" and 6" and 10 psig for 12" for 4 hours. If outer containment is required for condensate lines, interior condensate lines are pressurized to 60 psig.

BEL Pipe Pressure Test Report



Project Name: 2017 Lorain II Transmission Line Date: 10/26/2017
 Project No: 2017.129 BEL Representative: Janet Todia
 Contractor: American Environmental Group, LTD

Pipe Dia.	SDR	Material	Overall Segment Length (ft)	Location of Test Segment
30"	17	HDPE	450'	Trench
Station/Additional Info:		CST5 to CST6		
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop
10	13	4.0	4.0	0%
20	13	4.0	4.0	0%
30	13	4.0	4.0	0%
40	13	4.0	4.0	0%
50	13	4.0	4.0	0%
60	13	4.0	4.0	0%
Test Data Time Start: 1430 Time End: 1530 Pi: 4 Ti (Celsius): 13 Result: Pass Retest: No				
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable: N/A				

Pipe Dia.	SDR	Material	Overall Segment Length (ft)	Location of Test Segment
Station/Additional Info:				
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop
10				
20				
30				
40				
50				
60				
Test Data Time Start: _____ Time End: _____ Pi: _____ Ti (Celsius): _____ Result: _____ Retest: _____				
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable:				

Pipe Dia.	SDR	Material	Overall Segment Length (ft)	Location of Test Segment
Station/Additional Info:				
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop
10				
20				
30				
40				
50				
60				
Test Data Time Start: _____ Time End: _____ Pi: _____ Ti (Celsius): _____ Result: _____ Retest: _____				
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable:				

BEL Representative: Janet Todia

PI = Initial Test Pressure TI = Initial Temperature t = Time in minutes from initiation of test Pc = Initial Pressure in psig corrected for Temperature (TI) @ TI "t"	*Note Air lines to be tested at 100 psig, condensate lines to be tested at 50 psig, header/laterals @ 25 psig for 8" and 6" and 10 psig for 12" for 4 hours. If outer containment is required for condensate lines, interior condensate lines are pressurized to 60 psig.	Tt = Temperature in Celsius @ Time "t" Pt = Test Pressure in psig @ Time "t" $Pc = (((Pi+14.7)(Tt+273))/(Ti+273))-14.7$ $\% \text{ Drop} = ((Pc-Pi)/Pc)*100$
---	---	--

BEL Pipe Pressure Test Report



Project Name: 2017 Lorain II Transmission Line Date: 11/3/2017
 Project No: 2017.129 BEL Representative: Janet Todia
 Contractor: American Environmental Group, LTD

Pipe Dia.	SDR	Material	Overall Segment Length (ft)	Location of Test Segment
30"	17	HDPE	450'	Trench
Station/Additional Info:		CST5 to CST6		
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop
10	13	4.0	4.0	0%
20	13	4.0	4.0	0%
30	13	4.0	4.0	0%
40	13	4.0	4.0	0%
50	13	4.0	4.0	0%
60	13	4.0	4.0	0%
Test Data Time Start: 1430 Time End: 1530 Pi: 4 Ti (Celsius): 13 Result: Pass Retest: No				
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable: N/A				

Pipe Dia.	SDR	Material	Overall Segment Length (ft)	Location of Test Segment
Station/Additional Info:				
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop
10				
20				
30				
40				
50				
60				
Test Data Time Start: _____ Time End: _____ Pi: _____ Ti (Celsius): _____ Result: _____ Retest: _____				
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable:				

Pipe Dia.	SDR	Material	Overall Segment Length (ft)	Location of Test Segment
Station/Additional Info:				
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop
10				
20				
30				
40				
50				
60				
Test Data Time Start: _____ Time End: _____ Pi: _____ Ti (Celsius): _____ Result: _____ Retest: _____				
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable:				

BEL Representative: Janet Todia

PI = Initial Test Pressure
TI = Initial Temperature
t = Time in minutes from initiation of test
Pc = Initial Pressure in psig corrected for Temperature (TI) @ TI "t"
Tt = Temperature in Celsius @ Time "t"
Pt = Test Pressure in psig @ Time "t"
 $Pc = (((PI+14.7)(Tt+273)) / (TI+273)) - 14.7$
 $\% \text{ Drop} = ((Pc - Pt) / Pc) * 100$
*Note Air lines to be tested at 100 psig, condensate lines to be tested at 50 psig, header/laterals @ 25 psig for 8" and 6" and 10 psig for 12" for 4 hours. If outer containment is required for condensate lines, interior condensate lines are pressurized to 60 psig.

BEL Pipe Pressure Test Report



Project Name: 2017 Lorain II Transmission Line Date: 11/8/2017
 Project No: 2017.129 BEL Representative: Janet Todia
 Contractor: American Environmental Group, LTD

Pipe Dia.	SDR	Material	Overall Segment Length (ft)	Location of Test Segment
30"	17	HDPE	72'	Trench
Station/Additional Info:		24" valve to CST7		
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop
10	21	4.0	4.0	0%
20	21	4.0	4.0	0%
30	21	4.0	4.0	0%
40	21	4.0	4.0	0%
50	21	4.0	4.0	0%
60	21	4.0	4.0	0%
Test Data Time Start: 1650 Time End: 1750 Pi: 4 Ti (Celsius): 21 Result: Pass Retest: No				
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable: NA				

Pipe Dia.	SDR	Material	Overall Segment Length (ft)	Location of Test Segment
Station/Additional Info:				
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop
10				
20				
30				
40				
50				
60				
Test Data Time Start: _____ Time End: _____ Pi: _____ Ti (Celsius): _____ Result: _____ Retest: _____				
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable:				

Pipe Dia.	SDR	Material	Overall Segment Length (ft)	Location of Test Segment
Station/Additional Info:				
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop
10				
20				
30				
40				
50				
60				
Test Data Time Start: _____ Time End: _____ Pi: _____ Ti (Celsius): _____ Result: _____ Retest: _____				
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable:				

BEL Representative: Janet Todia

PI = Initial Test Pressure
TI = Initial Temperature
t = Time in minutes from initiation of test
Pc = Initial Pressure in psig corrected for Temperature (TI) @ TI "t"
Tt = Temperature in Celsius @ Time "t"
Pt = Test Pressure in psig @ Time "t"
 $Pc = (((PI + 14.7)(Tt + 273)) / (TI + 273)) - 14.7$
 $\% \text{ Drop} = ((Pc - Pt) / Pc) * 100$
*Note Air lines to be tested at 100 psig, condensate lines to be tested at 50 psig, header/laterals @ 25 psig for 8" and 6" and 10 psig for 12" for 4 hours. If outer containment is required for condensate lines, interior condensate lines are pressurized to 60 psig.

BEL Pipe Pressure Test Report



Project Name: 2017 Lorain II Transmission Line Date: 11/30/2017
 Project No: 2017.129 BEL Representative: Janet Todia
 Contractor: American Environmental Group, LTD

Pipe Dia.	SDR	Material	Overall Segment Length (ft)	Location of Test Segment
30"	17	HDPE	680'	Trench
Station/Additional Info:		CST6 to CST7		
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop
10	10	4.0	4.0	0%
20	10	4.0	4.0	0%
30	10	4.0	4.0	0%
40	10	4.0	4.0	0%
50	10	4.0	4.0	0%
60	10	4.0	4.0	0%
Test Data Time Start: 1230 Time End: 1335 Pi: 4 Ti (Celsius): 10 Result: Pass Retest: No				
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable: NA				

Pipe Dia.	SDR	Material	Overall Segment Length (ft)	Location of Test Segment
Station/Additional Info:				
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop
10				
20				
30				
40				
50				
60				
Test Data Time Start: _____ Time End: _____ Pi: _____ Ti (Celsius): _____ Result: _____ Retest: _____				
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable:				

Pipe Dia.	SDR	Material	Overall Segment Length (ft)	Location of Test Segment
Station/Additional Info:				
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop
10				
20				
30				
40				
50				
60				
Test Data Time Start: _____ Time End: _____ Pi: _____ Ti (Celsius): _____ Result: _____ Retest: _____				
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable:				

BEL Representative: Janet Todia

PI = Initial Test Pressure
TI = Initial Temperature
t = Time in minutes from initiation of test
Pc = Initial Pressure in psig corrected for Temperature (TI) @ TI "t"
Tt = Temperature in Celsius @ Time "t"
Pt = Test Pressure in psig @ Time "t"
 $Pc = (((PI+14.7)(Tt+273)) / (TI+273)) - 14.7$
 $\% \text{ Drop} = ((Pc - PI) / Pc) * 100$
*Note Air lines to be tested at 100 psig, condensate lines to be tested at 50 psig, header/laterals @ 25 psig for 8" and 6" and 10 psig for 12" for 4 hours. If outer containment is required for condensate lines, interior condensate lines are pressurized to 60 psig.

BEL Pipe Pressure Test Report



Project Name: 2017 Lorain II Transmission Line Date: 12/14/2017
 Project No: 2017.129 BEL Representative: Janet Todia
 Contractor: American Environmental Group, LTD

Pipe Dia.	SDR	Material	Overall Segment Length (ft)		Location of Test Segment	
30"	17	HDPE	107'		Trench	
Station/Additional Info:		outlet of Flare 2 to 30" pan blank flange in excavation				
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop	Test Data	
10	-12	4.0	4.0	0%	Pi: 4 Ti (Celsius) : -12	Time Start: 0805
20	-12	4.0	4.0	0%		Time End: 0905
30	-12	4.0	4.0	0%		
40	-12	4.0	4.0	0%		
50	-12	4.0	4.0	0%		Result: Pass
60	-12	4.0	4.0	0%		Retest: No
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable:					NA	

Pipe Dia.	Schedule	Material	Overall Segment Length (ft)		Location of Test Segment	
24"/16"	10	Stainless Steel	52'		Trench and Flares	
Station/Additional Info:		outlet of Flare 2 to 30" pan blank flange in excavation				
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop	Test Data	
10	-12	4.0	4.0	0%	Pi: 4 Ti (Celsius) : -12	Time Start: 0805
20	-12	4.0	4.0	0%		Time End: 0905
30	-12	4.0	4.0	0%		
40	-12	4.0	4.0	0%		
50	-12	4.0	4.0	0%		Result: Pass
60	-12	4.0	4.0	0.0%		Retest: No
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable:					N/A	

Pipe Dia.	SDR	Material	Overall Segment Length (ft)	Location of Test Segment	
Station/Additional Info:					
Time (min.)	Tt (Celsius)	Pt (psig)	Pc (psig)	% Drop	Test Data
10					Time Start: _____ Time End: _____ Pi: _____ Ti (Celsius) : _____ Result: _____ Retest: _____
20					
30					
40					
50					
60					
Description/Nature of Leak or Repairs of Tested / Retested Segment, if applicable:					

BEL Representative: Janet Todia

PI = Initial Test Pressure TI = Initial Temperature t = Time in minutes from initiation of test Pc = Initial Pressure in psig corrected for Temperature (TI) @ TI "t" *Note Air lines to be tested at 100 psig, condensate lines to be tested at 50 psig, header/laterals @ 25 psig for 8" and 6" and 10 psig for 12" for 4 hours. If outer containment is required for condensate lines, interior condensate lines are pressurized to 60 psig.	Tt = Temperature in Celsius @ Time "t" Pt = Test Pressure in psig @ Time "t" Pc = $((PI+14.7)(Tt+273))/((TI+273))-14.7$ % Drop = $((Pc-PI)/Pc)*100$
--	--

APPENDIX B
PHOTO DOCUMENTATION

Lorain County Landfill II

2017 Transmission Line CQA Phase I
Oberlin, OH



Photo # 1

Typical sand depth check to ensure a minimum of 6" of sand bedding below piping.



Photo # 2

Standard trench correction calibration for moisture density readings.

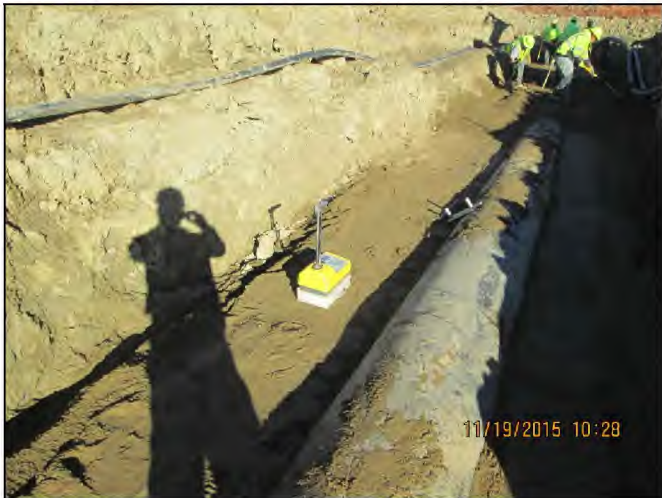


Photo # 3

Troxler moisture density gauge readout.



Lorain County Landfill II

2017 Transmission Line CQA Phase I

Oberlin, OH



Photo # 4

Typical trench excavation with transmission line piping.

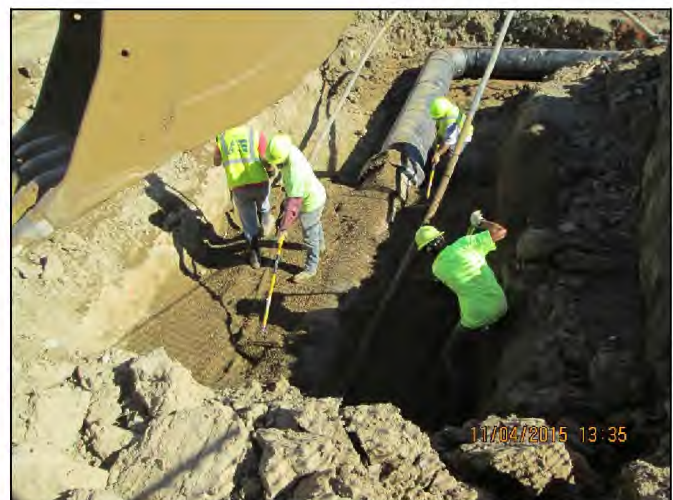


Photo # 5

AEG mechanically tamping sand bedding around the 30" transmission line piping in 6" lifts.

Photo # 6

AEG spreading pea gravel in 6" lifts near tie-in at flare facility.



Lorain County Landfill II

2017 Transmission Line CQA Phase I

Oberlin, OH



Photo # 7

AEG fusing HDPE SDR 17 30" piping using recommended hot plate temperatures and recommended cool down times.



Photo # 8

Typical tie-in with eccentric reducer and 24" flange connections.

Photo # 9

AEG preparing tie-in connection to existing 24" header at flare station.



Lorain County Landfill II

2017 Transmission Line CQA Phase I

Oberlin, OH



Photo # 10

AEG cutting concrete road crossing.



Photo # 11

AEG trenching across the concrete road after roadway was cut open.

Photo # 12

AEG installing large road crossing over roadway.



Lorain County Landfill II

2017 Transmission Line CQA Phase II

Oberlin, OH



Photo # 13

Prefabricated stainless steel blower facility piping section.



Photo # 14

24" Schedule 10 stainless steel blower facility piping layout.



Photo # 15

Actuator valve installed on 24" Schedule 10 configuration.



Lorain County Landfill II

2017 Transmission Line CQA Phase II

Oberlin, OH



Photo # 16

Typical stainless steel to HDPE flanged connection.



Photo # 17

Typical trench with pea gravel bedding and caution tape 12" above piping.

Photo # 18

Completed tie-in, access riser, and valve installed at CS-T3.



APPENDIX C
DAILY FIELD REPORTS

Project No.: 2017.129
 Date: 8/16/17
 Report No.: 1



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A

Weather: AM 83 CL PM 83 CL OC - Overcast MC - Mostly Cloudy
 Temperature (°F): AM 83 CL PM 83 CL CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

called on site @ 1400 to begin
 fusion
 fusion machine arrived @
 1200 but excavator didn't
 arrive until 1400
 completed 3 fuses of 30"
 SDR 17; allowed for proper
 cool down; fusion temp @
 500°F
 last fuse completed @ 1645;
 move pipe off of fusion
 machine & set up for tomorrow
 notified by AEG that pipeline will be bedded w/
 flowable fill (aka gravel) instead of sand; therefore
 no need for compaction testing
 1700 leave site

Contractor Equipment (QTY) / Sketch

(2) 320E

Summary of hours worked:

	*BEL	Contractor
On-site:	<u>1400</u>	<u>1000</u>
Off-site:	<u>1700</u>	<u>1700</u>
Add. Hours:	<u>0</u>	<u>0</u>
Total:	<u>3</u>	<u>7</u>

*If additional hours off-site provide description in field activities.

[Signature]
 BEL Representative:

Project No.:

2017.129

Date:

8/17/17

Report No.:

2



BEL Daily Field Report

Site Name:

Lorain II Landfill

Page:

of

1

Project Name/Location:

Lorain, OH

Contractor/ Personnel:

American Environmental Group

Visitors:

N/A

Weather:

AM

CL

PM

OC

OC - Overcast

MC - Mostly Cloudy

Temperature (°F):

AM

81

PM

82

CL - Clear

PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrive on site. begin
 fusion of 30" SDR17
 - completed fusion of 600' (3
 50" pieces); stringers are
 200"
 proper cool down time permitted
 prior to removal from fusion
 machine
 T storms expected @ 1545;
 told AEG to complete the last
 fuse cool down prior to
 the rain
 T storms @ 1600 - leave site

Contractor Equipment (QTY) / Sketch

(2) 320E

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1600	1600
Add. Hours:	0	0
Total:	9	9

*If additional hours off-site provide description in field activities.

BEL Representative:

Project No.:

2017.129

Date:

8/18/17

Report No.:

3

BEL Daily Field Report

Site Name:

Lorain II LandfillPage: 1of 1

Project Name/Location:

Lorain, OH

Contractor/ Personnel:

American Environmental Group

Visitors:

N/A

Weather:

AM

CL

PM

CL

OC - Overcast

MC - Mostly Cloudy

Temperature (°F):

AM

83

PM

84

CL - Clear

PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 begin fusion of new
stringer 30" SDR17
AEG fused 750' of 30" SDR17
(11 fuses) + allowed for proper
cool down time of each
fuse
Current total of 30" SDR17
pipe fusion: 1,550 linear
feet
1715 left site

Contractor Equipment (QTY) / Sketch

(2) 320 Es

Summary of hours worked:

	*BEL	Contractor
On-site:	<u>0700</u>	<u>0700</u>
Off-site:	<u>1715</u>	<u>1715</u>
Add. Hours:	<u>0</u>	<u>0</u>
Total:	<u>10.25</u>	<u>10.25</u>

*If additional hours off-site provide description in field activities.

 A handwritten signature in dark ink, appearing to read "Miss India", written over a horizontal line.

BEL Representative:

Project No.:

2017.129

Date:

8/19/17

Report No.:

4



BEL Daily Field Report

Site Name:

Lorain II Landfill

Page:

1

of

1

Project Name/Location:

Lorain, OH

Contractor/ Personnel:

American Environmental Group

Visitors:

N/A

Weather:

AM OC

PM OC

OC - Overcast

MC - Mostly Cloudy

Temperature (°F):

AM 71

PM 74

CL - Clear

PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrive on site; calling
for thunderstorms - severe
completed 1 pipe of 30"
SDR17 & allowed for proper
roof down time 100 linear
feet of pipe fused
current total of 30" SDR17
piped: 1,450 linear feet
0845 severe thunderstorms
0900 leave site due to
lightning & severe weather

Contractor Equipment (QTY) / Sketch

(2) 320Rg

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	0900	0900
Add. Hours:	0	0
Total:	2	2

*If additional hours off-site provide description in field activities.

BEL Representative:

Project No.:

2017.129

Date:

8/21/17

Report No.:

5



BEL Daily Field Report

Site Name:

Lorain II Landfill

Page: 1

of 1

Project Name/Location:

Lorain, OH

Contractor/ Personnel:

American Environmental Group

Visitors:

N/A

Weather:

AM

CL

PM

CL

OC - Overcast

MC - Mostly Cloudy

Temperature (°F):

AM

80

PM

83

CL - Clear

PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrive on site; start
first fuse
completed 7 fuses of 30"
SPRIT for a total of 700'
of 30" SPRIT
project total of pipe fused
to date 2,350 linear feet
1730 after allowing for proper
cool down of last fuel,
leave site

Contractor Equipment (QTY) / Sketch

(2) 320 E's

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1730	1730
Add. Hours:	0	0
Total:	10.5	10.5

*If additional hours off-site provide description in field activities.

John Liska
BEL Representative:

Project No.: 2017.129
 Date: 8/22/17
 Report No.: 6



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A
 Weather: AM CL PM CL/T storms OC - Overcast MC - Mostly Cloudy
 Temperature (°F): AM 72 PM 81 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrive on site, begin moving stingers to location for pipeline began receiving loads of compaction sand today, notified AEG to hold up on deliveries until sand trucks are received completed 300 linear feet of fusion before T storms hit @ 1500

told AEG to discontinue fusion because of rain left pit @ 1500

total length of pipe fused is now 2,150 linear feet 1520 out of the gate

Contractor Equipment (QTY) / Sketch

(2) 320Es

Summary of hours worked:

	*BEL	Contractor
On-site:	<u>0700</u>	<u>0700</u>
Off-site:	<u>1500</u>	<u>1500</u>
Add. Hours:	<u>0</u>	<u>0</u>
Total:	<u>8</u>	<u>8</u>

*If additional hours off-site provide description in field activities.

[Signature]
 BEL Representative:

Project No.:

Date:

Report No.:

2017.129
8/23/17
7



BEL Daily Field Report

Site Name:

Lorain II Landfill

Page: 1

of 1

Project Name/Location:

Lorain, OH

Contractor/ Personnel:

American Environmental Group

Visitors:

N/A

Weather:

AM

CL

PM

CL

OC - Overcast

MC - Mostly Cloudy

Temperature (°F):

AM

74

PM

78

CL - Clear

PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrive on site; begin
fusion of 30" SDR17
completed 300 linear feet
of fusion; 3 fuses total
this completes stringers
for the project
total linear feet of 30" SDR
completed: 2,950 feet
received loads of sea gravel
& moved stringers into
place on the pipeline
left site @ 1700

Contractor Equipment (QTY) / Sketch

(2) 320 Bs

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1700	1700
Add. Hours:	0	0
Total:	10	10

*If additional hours off-site provide description in field activities.

BEL Representative:

Arjun Todha

Project No.: 2017.129
Date: 8/24/17
Report No.: 8



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
Project Name/Location: Lorain, OH
Contractor/ Personnel: American Environmental Group
Visitors: N/A
Weather: AM CL PM CL OC - Overcast MC - Mostly Cloudy
Temperature (°F): AM 74 PM 78 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 moved pipe stringers into place for future installation
offloaded pea gravel
begin fusion of eccentric reducers for the sumps
a total of 11 eccentric reducers are needed including one at the flare
9 eccentric reducers completed today; ARB will complete the last reducer tomorrow
1700 left site

Contractor Equipment (QTY) / Sketch

(2) 320Es

Summary of hours worked:

	*BEL	Contractor
On-site:	<u>0700</u>	<u>0700</u>
Off-site:	<u>1700</u>	<u>1700</u>
Add. Hours:	<u>0</u>	<u>0</u>
Total:	<u>10</u>	<u>10</u>

*If additional hours off-site provide description in field activities.

Justin Kraska
BEL Representative:

Project No.:

2017-129

Date:

8/25/17

Report No.:

9



BEL Daily Field Report

Site Name:

Lorain II Landfill

Page:

of

Project Name/Location:

Lorain, OH

Contractor/ Personnel:

American Environmental Group

Visitors:

N/A

Weather:

AM CL

PM OC

OC - Overcast

MC - Mostly Cloudy

Temperature (°F):

AM 74

PM 76

CL - Clear

PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrive on site
 completed fusion of final
 2 eccentric reducers
 (including the reducer for
 the pump)
 notified Rippling ponds need
 to be dewatered prior to
 breaking ground
 obtained sand sample to send
 out for the lab to test for
 % water content + density /
 compaction

left site @ 1000 after organizer contacted reducers +
 speaking to Ops
 RSE claims ponds will be dewatered by Monday to
 begin trenching

Contractor Equipment (QTY) / Sketch

(2) 320 Es

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1000	1000
Add. Hours:	0	0
Total:	3	3

*If additional hours off-site provide description in field activities.

BEL Representative:

Project No.: 2017.129
 Date: 9/11/17
 Report No.: 10



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A
 Weather: AM CL PM CL OC - Overcast MC - Mostly Cloudy
 Temperature (°F): AM 78 PM 76 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrive on site; obtain
 proton readings & calibration
 average
 0905 AEG removed 24" from CST3
 to 24" isolation valve; will
 move 24" valve to outlet of
 CST3
 AEG requests utilizing pea gravel
 for bedding from CST3 to CST4
 due to upcoming rains later in
 the week; approved by Bigli
 1020 utilize sump pump to dewater the area around
 CST3 of runoff water
 1115 Tamp the trench with vibratory plate tamper w/
 16" pea gravel prior to installation of the E-centric
 spool piece
 1345 install 24" valve on the outlet side of sump CST3
 1420 move spool piece w/ E-centric reducer & 90° 30"
 to outlet of CST3
 added more than one truck load of pea gravel to bed
 spool piece due to wet conditions; liquids from runoff
 appear to be following transmission line for drainage
 level 24" valve & continue bedding
 1800 leave site

Contractor Equipment (QTY) / Sketch

(3) 320 Es
 (1) A5
 (2) 725s
 (2) 212 vibratory
 plate tampers

Summary of hours worked:

	*BEL	Contractor
On-site:	<u>0700</u>	<u>0700</u>
Off-site:	<u>1800</u>	<u>1800</u>
Add. Hours:	<u>0</u>	<u>0</u>
Total:	<u>11</u>	<u>11</u>

*If additional hours off-site provide description in field activities.

[Signature]
 BEL Representative:

Project No.: 2017.129
 Date: 9/12/17
 Report No.: 11



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A
 Weather: AM Ch PM CL OC - Overcast MC - Mostly Cloudy
 Temperature (°F): AM 70 PM 73 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrive on site
 continue bedding & tamping
 from CST3 to CST4
 0840 removed old 24" line including
 the 24" through the BDI road
 crossing culvert; communication
 line in the 24" culvert will
 remain through 24" was removed
 1030 continued laying in 12"
 lift of bedding, tamping
 vibratory plate tamper
 1415 lay in the 30" SDR17 from CST3 to the BDI
 road crossing culvert; pulled 30" through the
 new culvert
 1525 called Wetent Engineering for as built survey
 to be conducted Monday & stake plate slab critical
 points as well as well locations for Phase II
 BCC's construction event
 approximate rate of progress for 100' bit of tamping
 completion to top of 30" pipe is 4.0 hours
 1745 install the flange for 24" x 30" "purge T" at
 CST3
 1800 clean up & leave site

Contractor Equipment (QTY) / Sketch

(3) 320Es
 (1) A5
 (2) 725s
 (2) 212 vibratory
 plate tamper

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1800	1800
Add. Hours:	0	0
Total:	11	11

*If additional hours off-site provide description in field activities.

John M. Lucia
 BEL Representative:

Project No.: 2017.129
 Date: 9/13/17
 Report No.: 12



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A
 Weather: AM CL PM CL OC - Overcast MC - Mostly Cloudy
 Temperature (°F): AM 68 PM 72 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrive on site; backfill
 slump CST3 w/ pea gravel &
 continue bedding west for
 100 more linear feet to CST4
 0959 100' run backfilled & set
 w/ survey rebar @ 50' intervals;
 compaction completed in 6"
 lift to top of 30" pipe
 1135 remove old 24" header from
 outlet of BDL road crossing to
 CST4

1205 continue bedding of 6" lift of pea gravel from
 road crossing outlet to just short of CST4 at a target
 grade of 0.61% (0.5% minimum required); the 30"
 SDR17 will be installed in trench tomorrow; trench is
 only bedded for today
 due to extremely shallow depth of liner from slump
 CST3 to highpoint, received permission from Bepko
 to lay communication line w/ four main above the spring
 line of the pipe along side the 30" instead of on top of it
 pressure test & plug (nitrogen) scheduled for
 Friday morning
 rain expected tonight; CST3 & the berm is prepared for
 proper runoff
 1800 clean up & leave site

Contractor Equipment (QTY) / Sketch

(3) 320 Es
 (2) 725s
 (1) A5
 (2) 212 vibratory
 plate tampers

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1800	1800
Add. Hours:	0	0
Total:	11	11

*If additional hours off-site provide description in field activities.

[Signature]
 BEL Representative:

Project No.: 2017.129
 Date: 9/14/17
 Report No.: 13



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group

Visitors: _____

Weather: AM MC PM CL
 Temperature (°F): AM 70 PM 72

OC - Overcast MC - Mostly Cloudy
 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 continue tamping 6"
 lift to CST4 (approximately 200'
 lift from yesterday to get to the
 slump)
 1004 drag pulvinated 30" from
 side trench to outlet of BDI
 road crossing culvert outlet to
 line up 30" in the trench for
 fusion; 1025 begin 30" fusion
 in the trench
 access to BDI road is now
 completely blocked due to 30" pipe installation from
 the road crossing to CST4
 11-1400 made (3) 30" SORIT stringer joints total for the
 day; 2 subsequent joints made outside of the trench
 1530 complete eccentric reducer joint to 30"
 total installation; 1664 linear feet of 30" laid in
 trench on 6" lift; graded 0.6%
 1800 began pressurizing 30" for 4 psi air test over night
 1930 pressurized line complete @ 4 psi
 2000 clean up pipe shavings from road call SCG
 to notify pressure test is on - possible plug tomorrow
 morning
 2005 leave site

Contractor Equipment (QTY) / Sketch

(3) 320Rs
 (1) D5
 (2) 725s
 (2) 212 vibratory
 plate tampers

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1800	1800
Add. Hours:	0	0
Total:	11	11

*If additional hours off-site provide description in field activities.

[Signature]
 BEL Representative:

Project No.: 2017.129
 Date: 9/16/17
 Report No.: 15



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A

Weather: AM CL PM CL
 Temperature (°F): AM 68 PM 74

OC - Overcast MC - Mostly Cloudy
 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrive on site - continue
 backfill to C5TH in 4" lifts
 of pea gravel
 1204 completed approximately
 100 linear feet of compaction
 to the top of 30" pipe
 1300 completed, approximately
 300' of compaction; compacted
 to C6TH
 1414 completed from road
 passing to C5TH
 1800 leave site

Contractor Equipment (QTY) / Sketch

(3) 320 Es
 (2) 725s
 (1) D5
 (2) 212 vibratory plate
 tampers

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1800	1800
Add. Hours:	0	0
Total:	11	11

*If additional hours off-site provide description in field activities.

[Signature]
 BEL Representative:

Project No.: 2017.129
Date: 9/18/17
Report No.: 16



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
Project Name/Location: Lorain, OH
Contractor/ Personnel: American Environmental Group
Visitors: Weller Engineering (survey)
Weather: AM CL PM CL OC - Overcast MC - Mostly Cloudy
Temperature (°F): AM 71 PM 80 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrive on site; begin compaction of pea gravel from inlet of RDT road crossing towards sump CST3 to the top of the 30"
1230 Weller on site to shoot locator points @ the flares & critical slave points & as built on the transmission line from CST3 to CST4
two 6" lifts completed from inlet of RDT road crossing towards sump CST3
completed 300 linear feet of pea gravel compaction (2 lifts)
1830 leave site

Contractor Equipment (QTY) / Sketch

(3) 320 Es
(1) A5
(2) 725s
(2) 212 vibratory plate tampers

Summary of hours worked:

	*BEL	Contractor
On-site:	<u>0700</u>	<u>0700</u>
Off-site:	<u>1830</u>	<u>1830</u>
Add. Hours:	<u>0</u>	<u>0</u>
Total:	<u>16.5</u>	<u>16.5</u>

*If additional hours off-site provide description in field activities.

Paula Tullia
BEL Representative:

Project No.: 2017.129
 Date: 9/19/17
 Report No.: 17



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A Willett Engineering (survey)
 Weather: AM CL PM CL OC - Overcast MC - Mostly Cloudy
 Temperature (°F): AM 67 PM 79 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrive on site; survey w/ survey points obtained by Total Station that AEG achieved a minimum of 0.5% grade; overall achieved 0.7% grade from outlet of ROR road crossing to CST4
 104% survey all points for Phase II GCL/S construction w/ Willett; relocated two wells BW54R4 & BW308R3
 AEG leading pipe from outlet of ROR road crossing to CST4; 6" linear pit of pea gravel compaction in 1" lifts
 pea gravel compaction completed; begin backfill 1830 clean up & leave site

Contractor Equipment (QTY) / Sketch

(3) 320 Rs
 (1) A5
 (2) 725s
 (2) 212 vibratory plate rammers

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1830	1830
Add. Hours:	0	0
Total:	11.5	11.5

*If additional hours off-site provide description in field activities.

[Signature]
 BEL Representative:

Project No.: 2017.129
 Date: 9/20/17
 Report No.: 18



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A

Weather: AM CL PM CL
 Temperature (°F): AM 69 PM 83

OC - Overcast MC - Mostly Cloudy
 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrive on site; begin sea gravel compaction from inlet of RDI road crossing to CST3
 1100 remove safety fencing; install air line, dual contained & communication line above the spring line of the 30" SDR17
 1450 complete one lift (6") of sea gravel from the inlet of RDI road crossing to CST3
 1530 continue tapping of next 6" sea gravel lift from the road crossing to CST3
 1640 installed communication line, air & dual contained in the trench above the spring line of the 30" SDR17
 it is estimated all bedding backfill CST3 to CST4 will be completed this week
 it is estimated the crew will begin excavating CST4 to CST5 Monday
 possible purge next Friday, October 27 - RDI notified by C&S
 1800 clean up & leave site

Contractor Equipment (QTY) / Sketch

(3) 320Es
 (2) 725s
 (1) D5
 (2) 212 vibratory plate compactors

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1800	1800
Add. Hours:	0	0
Total:	11	11

*If additional hours off-site provide description in field activities.

Paula Tullia
 BEL Representative:

Project No.:

2017.129

Date:

9/21/17

Report No.:

19



BEL Daily Field Report

Site Name:

Lorain II Landfill

Page: 1

of

1

Project Name/Location:

Lorain, OH

Contractor/ Personnel:

American Environmental Group

Visitors:

N/A

Weather:

AM

CL

PM

CL

OC - Overcast

MC - Mostly Cloudy

Temperature (°F):

AM

62

PM

81

CL - Clear

PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrive on site
 0720 continue backfill of cover soils from the outlet of RDE road crossing to CST4
 continue bedding of the 30" SDR17 from inlet of RDE road crossing to CST3
 1226 safety fencing for the completed areas has been removed; communication posts have been reinstalled
 1500 completed backfill of cover soils from the outlet of RDE road crossing to CST4
 1800 completed work + clean up; still need one more 6" lift of bedding to complete the inlet of RDE road crossing to CST3
 still on schedule to trench CST4 to CST5 Monday ahead of work schedule

Contractor Equipment (QTY) / Sketch

(2) 320Es
 (2) vibratory plate
 tamper
 (1) A5
 (2) 725s

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1800	1800
Add. Hours:	0	0
Total:	11	11

*If additional hours off-site provide description in field activities.

Julia
 BEL Representative:

Project No.: 2017.129
 Date: 9/22/17
 Report No.: 20



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: Tony Pelletier (RSE)
 Weather: AM Ch PM Ch
 Temperature (°F): AM 60 PM 84
 OC - Overcast MC - Mostly Cloudy
 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

Contractor Equipment (QTY) / Sketch

0700 arrive on site
 continue bedding 30" final 6"
 lift from appropriate high
 point to CST3
 Pelletier & Wright noticed 24" former
 gas convergence line pipe
 intended to be used for drainage
 in the dewatered water way
 near CST3 & asked if be removed;
 AEG immediately removed it;
 Wright approved 5' diameter
 drainage & no culvert pipe w/ assurance from AEG
 This would not cause flooding of the water way
 AEG cut 24" scrap pipe into 30" sections for removal to
 recycle
 afternoon spent backfilling from inlet of RDE road
 crossing to CST3
 still on schedule to trench CST4 to CST5 Monday
 1800 clean up - leave site

(2) 320 E9
 (2) 725s
 (1) P5
 (2) vibratory plate
 tampers

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1800	1800
Add. Hours:	0	0
Total:	11	11

*If additional hours off-site provide description in field activities.

Jack Julia
 BEL Representative:

Project No.: 2017.129
 Date: 10/2/17
 Report No.: 21



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A
 Weather: AM CL PM CL
 Temperature (°F): AM 59 PM 78
 OC - Overcast MC - Mostly Cloudy
 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrive on site
 0730 SCS contacted BDC to
 locate & remove flow so AEG
 could cut into & remove the
 24" 32.5 SDR from CST4 to
 CST5
 The old 24" is staged for removal
 nearby along the road
 one excavator removing soils
 & old bedding sand while
 the other excavator followed,
 filling in 6" lift of pea gravel which was compacted
 with a vibratory plate tamper
 AEG completed bedding over half way between
 CST4 to CST5 (total estimated distance 900')
 continue to be on schedule
 1800 clean up & leave site

Contractor Equipment (QTY) / Sketch

(2) 320 Es
 (2) 725s
 (1) D5
 (2) vibratory plate
 tamper

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1800	1800
Add. Hours:	0	0
Total:	11	11

*If additional hours off-site provide description in field activities.

Joe M. Tullia
 BEL Representative:

Project No.: 2017.129
 Date: 10/3/17
 Report No.: 22



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A
 Weather: AM CL PM CL OC - Overcast MC - Mostly Cloudy
 Temperature (°F): AM 65 PM 83 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrive on site; begin completion of 6" lift of bedding from CST4 to CST5. 6" lift compacted with vibratory plate tamper. Transit set to 0.6% to achieve 0.5% minimum grade.

1305 AEG begin laying 30" SDR17 in the trench from CST5 toward CST4 + tied in the 30" to the centerline reduced @ CST5.

TOTAL: approximately 1600' of 30" laid in the trench today.
 puts us on a purge schedule for late afternoon, Wed or early Thursday; notified SCS presence list of CST4 to CST5 possible tomorrow.
 1800 clean up + leave site.

Contractor Equipment (QTY) / Sketch

(3) 320 LBs
 (1) D5
 (2) vibratory plate tamper
 (2) 725s

Summary of hours worked:

	*BEL	Contractor
On-site:	<u>0700</u>	<u>0700</u>
Off-site:	<u>1800</u>	<u>1800</u>
Add. Hours:	<u>0</u>	<u>0</u>
Total:	<u>11</u>	<u>11</u>

*If additional hours off-site provide description in field activities.

[Signature]
 BEL Representative:

Project No.: 2017.129
Date: 10/4/17
Report No.: 23



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
Project Name/Location: Lorain, OH
Contractor/ Personnel: American Environmental Group
Visitors: N/A
Weather: AM 74 CL PM 82 OC - Overcast MC - Mostly Cloudy
Temperature (°F): AM 74 PM 82 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrive on site; begin 30" fuel to continue installation of 30" in the trench CST4 to CST5 stringers
0830 completed fuel of first stringer w/ proper cool down time
0845 begin fusion of next stringer; 1020 complete fusion of stringer w/ proper cool down

Contractor Equipment (QTY) / Sketch
(3) 725s
(1) A5
(3) 320Es
(2) 212 vibratory plate tampers

completed three 30" SDR17 lines outside of the trench + one 30" SDR17 line inside the trench

1145 much the waterway to the sediment pond in case of rain

1300 weekly progress meeting; notified SCS they can purge this afternoon or first thing tomorrow morning
1345 laid 30" SDR17 line in trench from CST4 to CST5 including pan blanks for pressure test @ the sump flanges

1400 pulled CST4 to CST5 to 4 psi compressed air

1500 PASSED pressure test - maintained 4 psi for one hour
continue mucking; SCS will purge tomorrow

1800 clean up & leave site

Summary of hours worked:

	*BEL	Contractor
On-site:	<u>0700</u>	<u>0700</u>
Off-site:	<u>1800</u>	<u>1800</u>
Add. Hours:	<u>0</u>	<u>0</u>
Total:	<u>11</u>	<u>11</u>

*If additional hours off-site provide description in field activities.

[Signature]
BEL Representative:

Project No.: 2017.129
 Date: 10/5/17
 Report No.: 24



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: Willert Corporation (survey)
 Weather: AM CL PM CL OC - Overcast MC - Mostly Cloudy
 Temperature (°F): AM 67 PM 81 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrive on site; cut 24"
 SDR 32.5 into sections for
 removal to the recycle
 plant; wait for Willert to
 arrive to perform total
 station CST4 to CST5
 1020 Willert on site; validate
 each 50' section is at a minimum
 0.5% grade - PASSED
 1345 begin @ CST5 10' lifts of
 pea gravel tamped w/ vibratory
 plate tamper to top of pipe
 Willert moved wells RW 323R + RW 339R for Phase II
 GCS construction; approximated stake out for electrical
 lines near RW 54R4; Buschko will then come back
 out to obtain elevation on it for drilling safety
 completed bedding to top of 30" SPIRIT to Station
 5+00; will continue tomorrow
 1800 clean up & leave site

Contractor Equipment (QTY) / Sketch

(3) 320Es
 (1) D5
 (2) 725s
 (2) vibratory plate
 tampers

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1800	1800
Add. Hours:	0	0
Total:	11	11

*If additional hours off-site provide description in field activities.

Jim Buschko
 BEL Representative:

Project No.: 2017.129
 Date: 10/6/17
 Report No.: 25



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A
 Weather: AM OC PM OC
 Temperature (°F): AM 66 PM 79

OC - Overcast MC - Mostly Cloudy
 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrive on site
 continue filling 6" lifts of
 pea gravel from station 5+00
 towards east complete to
 top of pipe
 1022 rain; continue filling &
 tamping 6" lifts
 completed 300' of tamping 4"
 lifts of pea gravel towards
 east with vibratory compaction
 1400 left site due to heavy
 rains; will continue tomorrow

Contractor Equipment (QTY) / Sketch

(3) 320Es
 (2) 725s
 (1) A5
 (2) vibratory plate
 tampers

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1400	1400
Add. Hours:	0	0
Total:	147	147

*If additional hours off-site provide description in field activities.

[Signature]
 BEL Representative:

Project No.: 2017.129
 Date: 10/10/17
 Report No.: 210



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A

Weather: AM OC, mddy PM OC
 Temperature (°F): AM 51 PM 58

OC - Overcast MC - Mostly Cloudy
 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrive on site
 0730 begin 6" lifts pea gravel
 lifts @ dump site
 1030 install 3" gas, 3" fiber optic
 + 1x3 dual contained for
 main above the spring line of
 the 30" + continued pea gravel
 bedding
 1420 run caution tape over
 the bedding on top of 30"
 1500 begin hauling lower soils
 for backfill from station 6+00 to 15+4
 1700 complete hauling; will continue backfill from
 station 6+00 to 15+4 tomorrow

Contractor Equipment (QTY) / Sketch

(2) 320 Es
 (2) 725s
 (1) A5
 (2) vibratory plate
 tampers

Summary of hours worked:

	*BEL	Contractor
On-site:	<u>0700</u>	<u>0700</u>
Off-site:	<u>1700</u>	<u>1700</u>
Add. Hours:	<u>0</u>	<u>0</u>
Total:	<u>10</u>	<u>10</u>

*If additional hours off-site provide description in field activities.

[Signature]
 BEL Representative:

Project No.: 2017.129
 Date: 10/12/17
 Report No.: 27



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A
 Weather: AM 06 Rain PM 06
 Temperature (°F): AM 65 PM 72
 OC - Overcast MC - Mostly Cloudy
 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

Contractor Equipment (QTY) / Sketch

0700 arrive on site; due to rains yesterday need to reggrade
 30" SDR17 from CST4 to CST5
 due to wash out of compacted
 pea gravel
 0910 begin manually removing
 pea gravel bedding from
 around the 30" SDR17
 1356 reshot 30" with transit
 to attempt reggrade
 1400-1600 continue to adjust/
 compact pipe to achieve 0.5%
 minimum grade - success
 willit will arrive on site tomorrow morning to
 shoot CST4 to CST5 with total station
 1610 confirm w/ willit
 1800 leave site after clean up

(2) 320Es
 (2) 725s
 (2) vibratory plate
 pumps
 11) D5

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1800	1800
Add. Hours:	0	0
Total:	11	11

*If additional hours off-site provide description in field activities.

[Signature]
 BEL Representative:

Project No.: 2017.129
 Date: 10/13/17
 Report No.: 28



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: Willmet Engineering (survey)
 Weather: AM OC PM OC OC - Overcast MC - Mostly Cloudy
 Temperature (°F): AM 59 PM 66 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

Contractor Equipment (QTY) / Sketch

0700 arrive on site
 0725 verify grade from CST4
 to CST5, is a minimum of 0.5%
 prior to arrival of Willmet
 who will survey with total
 station
 1050 Willmet on site
 1300 grade verified @ minimum
 0.5% @ each 50' station from
 station 6+00 to CST5
 1320 begin moving pea gravel &
 tamping in 1st lifts from station 6+00 to CST5
 rain forecasted for Sunday - will completely bedding
 portion to prevent washing out / damage to grade
 1745 bedding completed from station 6+00 to CST5;
 clean up & leave site

(2) 320Es
 (2) 725s
 (1) A5
 (2) vibratory plate
 tampers

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1745	1800
Add. Hours:	0	0
Total:	10.75	11

*If additional hours off-site provide description in field activities.

Josh Valia
 BEL Representative:

Project No.: 2017-129
 Date: 10/19/17
 Report No.: 29



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A
 Weather: AM OC PM OC
 Temperature (°F): AM 58 PM 60
 OC - Overcast MC - Mostly Cloudy
 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrive on site
 0740 begin soil backfill on top of sea gravel bedding @ 2574
 1003 pin down more holes to prevent sediment @ outfall if near 2574 until vegetation growth can stabilize the area
 1109 begin fusion of SDR 30" for further installation of the pipeline
 completed fusion of six 50' sticks of SDR 30"
 tomorrow will continue fusing sticks into stringers
 1200 clean up & leave site; Area all outfalls are protected by runoff control

Contractor Equipment (QTY) / Sketch

(2) 320Es
 (2) 725s
 (1) D5
 (2) vibratory plate rammers

Summary of hours worked:

	*BEL	Contractor
On-site:	<u>0700</u>	<u>0700</u>
Off-site:	<u>1800</u>	<u>1800</u>
Add. Hours:	<u>0</u>	<u>0</u>
Total:	<u>11</u>	<u>11</u>

*If additional hours off-site provide description in field activities.

[Signature]
 BEL Representative:

Project No.:

Date:

Report No.:

2017.129
10/20/17
30



BEL Daily Field Report

Site Name:

Lorain II Landfill

Page: 1

of

1

Project Name/Location:

Lorain, OH

Contractor/ Personnel:

American Environmental Group

Visitors:

N/A

Weather:

AM Ch

PM Ch

OC - Overcast

MC - Mostly Cloudy

Temperature (°F):

AM 59

PM 73

CL - Clear

PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 begin fusing stringers
for installation CST5 to CST6
30" SDR17
0830 complete fusion of first
stringer w/ proper, got
down time; called to the
office by Wright to discuss
progress
completed four 30" SDR17 fuses
to complete stringers to lay
into trench CST5 to CST6
called BDT to notify the road will be closed
tomorrow to lay pipe in the trench
1500 completed plan up - will have 3 fuses
tomorrow to lay the pipe in trench - 30" will
be laid in two stringer sections

Contractor Equipment (QTY) / Sketch

(3) 320Es
(2) vibratory plate
tamper
(2) 725s
(1) A5

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1500	1500
Add. Hours:	0	0
Total:	8	8

*If additional hours off-site provide description in field activities.

[Signature]
BEL Representative:

Project No.: 2017.129
 Date: 10/21/17
 Report No.: 31



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A

Weather: AM CL PM CL
 Temperature (°F): AM 61 PM 79

OC - Overcast MC - Mostly Cloudy
 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrive on site; SCS contacted
 RPT so AEG could cut into &
 remove the 24" SDR 32.5 from
 CST4 to CST5; The old pipe is
 sagged mostly for removal on
 the side of the road
 0930 begin cleaning out old
 bedding; find grade to
 0.1% to achieve 0.5% minimum
 grade
 1130 continue placing pea gravel
 6" lift for bedding & standing grade compact w/
 vibratory plate tamper
 AEG completed a total of approximately 900' of 6"
 lift compacted pea gravel over half way from
 CST4 to CST5
 continue to be on or ahead of progress schedule
 1800 clean up & leave site

Contractor Equipment (QTY) / Sketch

(3) 320Kg
 (2) vibratory plate
 tampers
 (1) D5
 (2) 725s

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1800	1800
Add. Hours:	0	0
Total:	11	11

*If additional hours off-site provide description in field activities.

[Signature]
 BEL Representative:

Project No.: 2017.129
 Date: 10/25/17
 Report No.: 32



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A
 Weather: AM OC PM OC
 Temperature (°F): AM 51 PM 54
 OC - Overcast MC - Mostly Cloudy
 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 call SCS to locate the
 plant so AEG can remove
 24" SDR 32.5 from 4515 to
 12516
 1019 removed 24" x dia to south
 side of the road; begin removal
 of old sand pipe bedding &
 begin to haul pea gravel
 1204 all sand bedding for 24"
 is removed; begin laying in
 6" lift of pea gravel; one 725
 operating today
 1730 complete 6" lift for pipe bedding; will install
 30" SDR 17 (lay in trench) tomorrow
 1745 clean up water bottles from trench
 1800 back to trailer; leave site

Contractor Equipment (QTY) / Sketch

(3) 320Es
 (2) vibratory plate
 tampers
 (1) A5
 (2) 725s

Summary of hours worked:

	*BEL	Contractor
On-site:	<u>0700</u>	<u>0700</u>
Off-site:	<u>1800</u>	<u>1800</u>
Add. Hours:	<u>0</u>	<u>0</u>
Total:	<u>11</u>	<u>11</u>

*If additional hours off-site provide description in field activities.

[Signature]
 BEL Representative:

Project No.: 2017.129
 Date: 10/26/17
 Report No.: 33



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A
 Weather: AM CL PM CL OC - Overcast MC - Mostly Cloudy
 Temperature (°F): AM 51 PM 57 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 start equipment; still dark outside
 0735 begin moving 30" SDR17 to trench off the side of the road; closed road to left
 0920 make 30" SDR17 fuel stringers to lay in trench; 1045 fuel complete w/ cool down; start stringers to lay pipe in trench
 1245 fuel complete; begin bolting line to flange @ CST5 & CST6 & install pan blanks
 1430 begin PRESSURE TEST one hour @ 4 psi CST5 to CST6 30" SDR17
 1530 PASS PRESSURE TEST; begin removal of pan blanks continue hauling dirt & clean up for the rest of the day; don't want to place reg gravel bedding until confirmation from client
 1800 leave site

Contractor Equipment (QTY) / Sketch

(3) 320 ES
 (2) 725s
 (1) A5
 (2) vibratory plate tampers

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1800	1800
Add. Hours:	0	0
Total:	11	11

*If additional hours off-site provide description in field activities.

[Signature]
 BEL Representative:

Project No.: 2017.129
 Date: 10/27/17
 Report No.: 34



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: Welkit Engineering (Survey)
 Weather: AM OC PM CL OC - Overcast MC - Mostly Cloudy
 Temperature (°F): AM 48 PM 59 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrive on site: verify grade with transit CST5 to CST6 + waited for Wellit to arrive to confirm grade with total station
 1150 Wellit on site: confirmed each 50' section is at a minimum of 0.5% grade w/ total stations
 1242 begin hauling sea gravel to complete bedding CST5 to CST6
 1426 set 3" fiber optic tri, 3" air, + 3x6 force main on top of the spring line of the 30" header + continued 6" lifts of sea gravel bedding to station mark 2+50
 1730 completed bedding of sea gravel + soil backfill to station mark 2+50
 clean up + leave site

Contractor Equipment (QTY) / Sketch

(2) 320 ES
 (2) 725s
 (1) D5
 (2) vibratory plate
 tampers

Summary of hours worked:

	*BEL	Contractor
On-site:	<u>0700</u>	<u>0700</u>
Off-site:	<u>1730</u>	<u>1730</u>
Add. Hours:	<u>0</u>	<u>0</u>
Total:	<u>10.5</u>	<u>10.5</u>

*If additional hours off-site provide description in field activities.

Scott Julia
 BEL Representative:

Project No.: 2017.129
 Date: 10/30/17
 Report No.: 35



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: Willet Engineering (survey)
 Weather: AM OC PM OC OC - Overcast MC - Mostly Cloudy
 Temperature (°F): AM 51 PM 53 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0730 call Willet to obtain second check on survey conducted Friday
 1015 rec'd validation that all runs of 50' are at a maximum of 0.5% by Willet
 Truck is here to pick up first load of discarded 24" SDR32.5 @ 1030

1447 complete bedding & comp of pea gravel CST4 to CST6;

begin backfill; rain is starting & steady, but we will continue to backfill

1730 truck arrives to take second load of 24" SDR32.5 to recycle;

1800 complete loading of truck for 24" pipe removal almost completed backfill CST4 to CST6; tomorrow will finish road repair; road cloth, brick, & stone
 1805 clean up & leave site

Contractor Equipment (QTY) / Sketch

(3) 320Rs
 (2) vibratory plate
 Komatsu
 (1) A5
 (2) 725s

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1800	1800
Add. Hours:	0	0
Total:	11	11

*If additional hours off-site provide description in field activities.

[Signature]
 BEL Representative:

Project No.: 2017.129
 Date: 10/31/17
 Report No.: 36



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A
 Weather: AM OC PM OC OC - Overcast MC - Mostly Cloudy
 Temperature (°F): AM 44 PM 48 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 coordinate w/ sediment pond contractors on their road crossing EBT; call Brad Castle of EBT to notify them of road closure by sediment pond
 0820 continue backfill from CST5 to CST6
 1145 truck comes to pick up load 24" SDR 32.5 for recycle; will only pick up one load today
 1233 begin building road base; grading of substrate for road is complete
 continue backfill from CST5 to CST6; extremely muddy conditions; cut road for EBT contractors; pull out several EBT contractors on road due to mud
 1800 pick trucks, clean up & leave site

Contractor Equipment (QTY) / Sketch

(3) 320Es
 (1) DS
 (2) 725s
 (2) vibratory plate tamper

Summary of hours worked:

	*BEL	Contractor
On-site:	<u>0700</u>	<u>0700</u>
Off-site:	<u>1800</u>	<u>1800</u>
Add. Hours:	<u>0</u>	<u>0</u>
Total:	<u>11</u>	<u>11</u>

*If additional hours off-site provide description in field activities.

[Signature]
 BEL Representative:

Project No.: 2017-129
 Date: 11/8/17
 Report No.: 37



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A

Weather: AM OC PM OC
 Temperature (°F): AM 41 PM 52

OC - Overcast MC - Mostly Cloudy
 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

1700 truck arrives to pick up discarded 24" SDR 32.5+ pipe to recycle center
 0751 SCS starts plant & shuts 24" valve @ BPT near sump CST7; will remove 24" SDR 32.5 from CST7 to 24" valve today
 0922 remove 24" SDR 32.5 CST7 to 24" valve
 1104 remove flange on east side of 24" valve to install pan blank
 1130 begin cleaning out sand / former bedding from trench
 1421 completed cleaning out trench from former bedding; install pea gravel to grade set at 0.6% w/ Transit
 1442 install 60" pipe reducer and 30" SDR 17 stringer
 1458 call Walter to request survey (total station) Friday
 1300+1400 (extended weekly construction meetings)
 PRESSURE TEST 1050 to 1750 @ 4 psi 30" SDR 17 PASS
 1755 leave site

Contractor Equipment (QTY) / Sketch

(3) 320Es
 (1) D5
 (2) 725
 (2) vibratory plate tamper

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1700	1700
Add. Hours:	0	0
Total:	10	10

*If additional hours off-site provide description in field activities.

BEL Representative: [Signature]

Project No.: 2017.129
 Date: 11/9/17
 Report No.: 38



BEL Daily Field Report

Site Name: Lorain II Landfill
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A Wellst Engineering
 Weather: AM CL PM CL
 Temperature (°F): AM 38 PM 46

Page: 1 of 1

OC - Overcast MC - Mostly Cloudy
 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.):

Today's SOW:

0705 move 30" SDR17 to install in trench; 22" elbow fused to meet the 24" flange
 0806 began installation of 24" flange @ 24" valve
 0953 install flange @ CST
 1035 Wellst Engineering arrived early to total station, CST to 24" valve; total grade 3.8%
 1102 station value (24") adjustment
 1330 advise SCS we can purge today instead of tomorrow morning; SCS will purge today
 1335 install 2" purge riser w/ transition fitting for discharge
 1411 start nitrogen purge
 continue bedding 24" valve to CST
 1700 purge is still running; (SCS) purge ran until 2000 per SCS + EDT
 ARG + BEL left site at 1800 - will check the seating of the 24" valve tomorrow; valve may need to be adjusted to seat properly per SCS

Contractor Equipment (QTY) / Sketch

(3) 320Es
 (1) AS
 (2) 725
 (2) vibratory plate tampers

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1800	1800
Add. Hours:	0	0
Total:	11	11

*If additional hours off-site provide description in field activities.

[Signature]
 BEL Representative:

Project No.: 2017.129
Date: 11/10/17
Report No.: 39



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
Project Name/Location: Lorain, OH
Contractor/ Personnel: American Environmental Group
Visitors: N/A
Weather: AM OC PM OC snow OC - Overcast MC - Mostly Cloudy
Temperature (°F): AM 19 PM 22 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrival on site
0725 SCS met w/ us & noticed an issue with the 24" valve not completely seating.
0845 24" valve pulled back & out & discovered valve would only close 3/4; valve seat is damaged
1020 called American Landfill to get new 24" valve there that can be replaced so AEG can install 24" valve today
1333 valve arrived from Akron; child went to pick it up
1521 24" valve installed; seating properly however, valve stem is damaged / cheared; will leave valve functional & order new valve stem
1548 re-hat 24" connection (eccentric reducer) to sump CST7
1740 completed tie in - gave system "back to SCS"; clean up, pick tracks & leave site
Note:
EOI down for the business day, brought back on line in the evening; constantly communicated throughout the day w/ Jason Zess EOI & Brad Castle EOI

Contractor Equipment (QTY) / Sketch

(2) 320Es
(2) 725s
(1) D5
(2) vibratory plate tampers

Summary of hours worked:

	*BEL	Contractor
On-site:	<u>0700</u>	<u>0700</u>
Off-site:	<u>1730</u>	<u>1730</u>
Add. Hours:	<u>0</u>	<u>0</u>
Total:	<u>10.5</u>	<u>10.5</u>

*If additional hours off-site provide description in field activities.

Janell Lucia
BEL Representative:

Project No.: 2017.129
 Date: 11/13/17
 Report No.: 440



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A

Weather: AM 0C PM 0C
 Temperature (°F): AM 17 PM 29

OC - Overcast MC - Mostly Cloudy
 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrive on site
 0735 begin dewatering trench
 area between 24" valve &
 CST7 to start pea gravel
 compaction
 1052 begin installing PVC conduit
 for Blotko electrical to repair
 water line
 1400 completed installation of
 conduit & began pea gravel
 compaction in 6" lifts from
 24" valve in CST7
 clean up work & moving parts to honeyard ongoing
 1600 complete tamping/ pea gravel lifts CST7 to
 24" valve; leave site

Contractor Equipment (QTY) / Sketch

(2) 320 Es
 (2) 725s
 (1) D5
 (2) vibratory plate
 tampers

Summary of hours worked:

	*BEL	Contractor
On-site:	<u>0700</u>	<u>0700</u>
Off-site:	<u>1600</u>	<u>1600</u>
Add. Hours:	<u>0</u>	<u>0</u>
Total:	<u>9</u>	<u>9</u>

*If additional hours off-site provide description in field activities.

[Signature]
 BEL Representative:

Project No.: 2017.129
 Date: 11/27/17
 Report No.: 41



BEL Daily Field Report

Site Name: Lorain II Landfill
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A

Page: 1 of 1

Weather: AM CL PM CL
 Temperature (°F): AM 46 PM 52

OC - Overcast MC - Mostly Cloudy
 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 remove 24" SDR 32.5
 from CST6 to CST7 including
 24" manholes at CST6 & CST7
 1035 cut 24" in to 50' sections
 for removal to recycle
 1040 to 1700 remove old sand
 bedding from French CST6 to
 CST7 & continue to monitor
 grade with Transit - continue
 to monitor grade at minimum
 0.5%.

Contractor Equipment (QTY) / Sketch
 (3) 320 Es
 (2) 725s
 (1) A5
 (2) vibratory plate
 tampers

Kostelnick of RSP called to schedule survey w/
 the total station survey; notified Kostelnick survey
 will be Thursday or Friday depending on progress
 turned away traffic to RITE due to road conditions;
 told them to come back Thursday
 notified Wright of progress
 1700 completed removal of sand bedding & achieved
 grade of 0.5%
 Thompson will initiate first 6" lift of pea gravel
 bedding
 1700 clean up & leave site

Summary of hours worked:

	*BEL	Contractor
On-site:	<u>0700</u>	<u>0700</u>
Off-site:	<u>1700</u>	<u>1700</u>
Add. Hours:	<u>0</u>	<u>0</u>
Total:	<u>10</u>	<u>10</u>

*If additional hours off-site provide description in field activities.

Matthew Hedia
 BEL Representative:

Project No.: 2017.129
 Date: 11/28/17
 Report No.: 42



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A
 Weather: AM CL PM CL
 Temperature (°F): AM 44 PM 55
 OC - Overcast MC - Mostly Cloudy
 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 Begin first lift of 6" sea gravel bedding 1256 to 1257 - 680 linear feet of trench
 while transit to assess grade on top of first 6" lift
 Trench initiated fabrication of stainless steel @ the yard today - no installation, just fabrication
 Welder scheduled for total station today
 Tamping continued throughout the day; completed @ 1700
 1700 Miner put the RDE road to make it more passable for RDE traffic & delivery
 1800 clean up & leave site

Contractor Equipment (QTY) / Sketch

(3) 320 Es
 (2) 725s
 (1) D5
 (2) vibratory plate tampers

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1800	1800
Add. Hours:	0	0
Total:	11	11

*If additional hours off-site provide description in field activities.

Amal Todia
 BEL Representative:

Project No.: 2017.129
 Date: 11/29/17
 Report No.: 43



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A
 Weather: AM CL PM CL
 Temperature (°F): AM 46 PM 46
 OC - Overcast MC - Mostly Cloudy
 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 begin pulling 30" into trench
 @ CST6 to CST7; road is closed
 to EPT traffic to perform tie
 in today
 0920 pipe in place alongside
 trench; begin fusion of center
 reducer to 30" stringer @ slump
 CST6
 1045 fuse 30" stringers out of
 trench
 1300-1400 weekly construction
 meetings; transmission line + Phase II
 1430 fuse both stringers from CST6 + CST7 in
 the trench
 1535 complete fusion + cooling; one fuse left for
 tomorrow (center reducer to 30" line)
 installed pan blank @ CST6 for pressure test; will
 install pan blank @ CST7 tomorrow
 call SES to notify purge is still scheduled for Friday
 1800 clean up & leave site

Contractor Equipment (QTY) / Sketch

(2) 320 Es
 (1) A5
 (2) 725
 (2) vibratory plate
 tampers

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1800	1800
Add. Hours:	0	0
Total:	1800	1800

*If additional hours off-site provide description in field activities.

Jeff Zulia
 BEL Representative:

Project No.: 2017.129
 Date: 11/30/17
 Report No.: 44



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A

Weather: AM CL PM CL
 Temperature (°F): AM 46 PM 51

OC - Overcast MC - Mostly Cloudy
 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 begin final fuse of
 central reducer & flange @
 CST7 to 30" line
 0913 fuse complete & cooled;
 begin installation of flange &
 pan blank @ CST7
 1230 line complete; begin pressure
 test 4 psi @ 1.0 hour
 1335 PRESSURE TEST pass; rain
 delay
 1545 begin removal of pan
 blank @ CST6 flange & reinstall flange
 1610 begin removal of pan blank @ CST7 flange &
 reinstall flange
 1713 notify SCS pan blanks were removed; they
 may purge first thing tomorrow morning; notify
 EPT purge is ready for tomorrow morning
 1800 clean up & leave site

Contractor Equipment (QTY) / Sketch

(3) 320E
 (1) D5
 (2) vibratory plate
 tampers
 (2) 725s

Summary of hours worked:

	*BEL	Contractor
On-site:	<u>0700</u>	<u>0700</u>
Off-site:	<u>1800</u>	<u>1800</u>
Add. Hours:	<u>0</u>	<u>0</u>
Total:	<u>11</u>	<u>11</u>

*If additional hours off-site provide description in field activities.

Joe Phibbs
 BEL Representative:

Project No.: 2017.129
 Date: 12/11/17
 Report No.: 45



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: Weller Engineering (survey)
 Weather: AM CL PM CL OC - Overcast MC - Mostly Cloudy
 Temperature (°F): AM 40 PM 46 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 arrive on site; wait for
 Weller to perform total
 station
 0730 survey grade of 30"
 soil transit
 1000 Weller on site
 1135 Weller verified all 50'
 sections & total grade is at a
 minimum of 0.5%
 1201 begin hauling pea gravel
 and tamping in 6" lifts
 begin tamping & hauling pea gravel of 684' from
 1516 to 1517
 continued tamping pea gravel in 6" lifts from 1201
 to 1715
 1715 cleaned up & left site

Contractor Equipment (QTY) / Sketch

(3) 320 Es
 (1) Q5
 (2) vibratory plates
 tampers
 (2) 725s

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1700	1700
Add. Hours:	0	0
Total:	10	10

*If additional hours off-site provide description in field activities.

[Signature]
 BEL Representative:

Project No.: 2017.129
 Date: 12/4/17
 Report No.: 46



BEL Daily Field Report

Site Name: Lorain II Landfill Phase II GCCS 2017 Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A
 Weather: AM CL PM CL
 Temperature (°F): AM 46 PM 50
 OC - Overcast MC - Mostly Cloudy
 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

0700 begin sea gravel bedding
 + compaction in 6" lifts
 1005 install 2" HOPE conduit
 for Butchko Electric to repair
 broken communication line
 1700 completed approximately
 4+50 bedding to top of pipe,
 installed communication, air,
 + four main lines above the
 spring line of the 30"
 ran out of sea gravel; will
 have more delivered tomorrow; bedded to 4+50;
 backfill will begin tomorrow
 1700 leave site

Contractor Equipment (QTY) / Sketch

(2) 320Es
 (1) DS
 (2) vibratory plate
 rammers
 (2) 725s

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1700	1700
Add. Hours:	0	0
Total:	10	10

*If additional hours off-site provide description in field activities.

[Signature]
 BEL Representative:

Project No.: 2017.129
 Date: 12/6/17
 Report No.: 47



BEL Daily Field Report

Site Name: Lorain II Landfill
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A

Page: 1 of 1

Weather: AM OC PM OC
 Temperature (°F): AM 17 PM 29

OC - Overcast MC - Mostly Cloudy
 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

Contractor Equipment (QTY) / Sketch

0700 arrive on site
 0730 continue bedding with pea gravel; SCS begins their plunge from CST3 to CST7
 ARG laying down pea gravel in 6" lifts & compacting w/ vibratory plate tamper CST6 to CST7
 installed 3" air, 3" communication & 3x16 dual contained & compacted bedding above the spring line of the 30" SPR17
 backfilled the trench w/ cover soils
 rolled caution tape down the trench line
 continued hauling cover soils to fill the trench line
 1700 cleaning grades on equipment; BEL left for the day
 1700 ARG left for the day

(2) 320Bs
 (2) 725s
 (1) A5
 (2) vibratory plate
 tampers

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1700	1730
Add. Hours:	0	0
Total:	10	10.5

*If additional hours off-site provide description in field activities.

Michael Tuba
 BEL Representative:

Project No.: 2017.129
 Date: 12/11/17
 Report No.: 48



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: IMW Manufacturing
 Weather: AM OC Snow PM OC Snow
 Temperature (°F): AM 15 PM 21
 OC - Overcast MC - Mostly Cloudy
 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

Flare 1 IMW:
 installed 24"x16" wye with
 pan blanks @ Flare 1
 52' schedule 10 stainless installed
 on manifold between Flare 1 + 2
 up to and not including the 24"
 flex joint
 John started out @ 17' grade but
 due to transitioning the connection
 from Flare shed 2, ended up at
 0.317' grade; minimum is 0.25'
 per Riley

Flare 2 IMW:

24"x16" wye installed + completed w/ pan blanks
 ABG:

30" flange uncovered + 24" SOR 32.5 removed up to 30" flange
 24" abandoned line will be blind flanged tomorrow w/ 24"
 electrofusion coupler
 propane line + electric conduit exposed without incident
 communication line repaired (was snagged Saturday while
 excavating)

Switch from Flare 2 operation to Flare 1 operation conducted
 w/out incident to EOI - EOI ran entire time

24" abandoned pipe appeared typical egg shape - no further crushing
 extensive dewatering performed today - 1900 left site

Contractor Equipment (QTY) / Sketch

(2) 320 ES
 (1) DS
 (2) vibratory plate
 rammers
 (2) 725s

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1900	1900
Add. Hours:	0	0
Total:	12	12

*If additional hours off-site provide description in field activities.

Joshua India
 BEL Representative:

Project No.: 2017.129
 Date: 12/12/17
 Report No.: 49



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: N/A
 Weather: AM OC Snow PM OC Snow
 Temperature (°F): AM 19 PM 23
 OC - Overcast MC - Mostly Cloudy
 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

Contractor Equipment (QTY) / Sketch

0700 arrive on site; snow & ice falling
 0822 Begin full of 30" SDR17 stringer to a centric 24" x 30" reducer
 1019 install 24" flange joint to 24" stainless steel flange connection flange 2' offset
 1202 install 24" electrofusion coupler on 24" abandon SDR32.5
 1330 install blind flange / electrofusion coupler to abandon 24" line
 1455 full 30" flange onto 30" stringer opposite the end of the 24" x 30" e centric reducer
 1520 move 30" stringer, complete w/ e centric reducer + 30" flange to pipe stands on concrete slab; extremely cold weather is causing issues with pipe memory
 1525 use transit to survey pipe stands to actual grade on 30" since pipe has memory, achieved 1' minimum grade
 1600 fused (1) 45 to a 30" HDPE flange and (1) 45 to an HDPE spring to a 30" flange, fabricating what is needed for inspection tomorrow
 1800 clean up, spoke w/ RSE, leave site

(2) 320Es
 (2) 725s
 (1) D5
 (2) vibratory plate
 pumps

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1800	1800
Add. Hours:	0	0
Total:	11	11

*If additional hours off-site provide description in field activities.

Paul M. Julia
 BEL Representative:

Project No.: 2017.129
 Date: 12/13/17
 Report No.: 50



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: Butchko Robert
 Weather: AM OC snow PM OC
 Temperature (°F): AM 7 PM 21

OC - Overcast MC - Mostly Cloudy
 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

AKG:
 made the last 30" joint &
 installed 107' 30" SOR17 to
 complete installation of the
 30" line
 completed tie in of (3) 30"
 flanges
 installed 16" blind flange/
 at Flare 1 to seal the old
 gas connection
 pressure test will be conducted
 tomorrow; SES doesn't want to conduct pressure
 test until pressure transducer is installed
 Butchko:
 installed conduit for the pressure transducer
 installed conduit for the flow meter
 pressure transducer will be installed tomorrow
 2000 left site; work was slow due to extreme
 cold & snow; updated Augustine - Kostelnick via
 phone at the end of the day

Contractor Equipment (QTY) / Sketch

(2) 320Es
 (1) 05
 (2) 725s
 (2) vibratory plate
 tampers

Summary of hours worked:

	*BEL	Contractor
On-site:	<u>0700</u>	<u>0700</u>
Off-site:	<u>2000</u>	<u>2000</u>
Add. Hours:	<u>0</u>	<u>0</u>
Total:	<u>13</u>	<u>13</u>

*If additional hours off-site provide description in field activities.

Butchko Robert
 BEL Representative:

Project No.: 2017.129
 Date: 12/14/17
 Report No.: 51



BEL Daily Field Report

Site Name: Lorain II Landfill Page: 1 of 1
 Project Name/Location: Lorain, OH
 Contractor/ Personnel: American Environmental Group
 Visitors: THW Manufacturing; Willert Engineering (survey)
 Weather: AM OC snow PM OC snow OC - Overcast MC - Mostly Cloudy
 Temperature (°F): AM 9 PM 19 CL - Clear PC - Partly Cloudy

Description of field activities (include labor, equipment, site conditions, sampling, etc.)

Today's SOW:

Contractor Equipment (QTY) / Sketch

(2) 320Bs
 (2) 725s
 (1) A5
 (2) vibratory plate
 tampers

0700 arrive on site; initiate
 pressure test
 0805 initiate pressure test from
 outlet of Phase 2 pan blank
 to 30" line (range in
 excavation @ 4 psi
 0905 PRESSURE TEST passed @
 4 psi
 0945 Willert on site to perform
 total station; grade on stainless
 steel @ 0.26% (minimum 0.25%)
 grade on HDPE @ 1.7% (minimum 1.0%)
 also shot concrete pad + pipe stands
 THW anchored the pipe stands + installed the final
 pipe stand for the HDPE piping where the 30" H5
 digue elbow dives down below grade
 SCS installed pressure transducers; are successfully
 completed the purge from Phase 2 and Phase 1 to
 CST3
 AEG completed pipe bedding w/ 16" lifts pea gravel in
 excavation
 AEG worked on cutting 24" scrap pipe + general clean up
 BDI back on line + running at full capacity; project
 completed

Summary of hours worked:

	*BEL	Contractor
On-site:	0700	0700
Off-site:	1800	1800
Add. Hours:	0	0
Total:	11	11

*If additional hours off-site provide description in field activities.

Paul Julia
 BEL Representative:

APPENDIX D
RESUMES

Brian P. Barninger, PE

PRINCIPAL
BEL ENVIRONMENTAL ENGINEERING, LLC



TOTAL EXPERIENCE: 17 Years

WORK HISTORY:

- ❖ BEL Environmental Engineering – 6 Years
- ❖ CTI and Associates, Inc. – 7 Years
- ❖ Earth Tech, Inc. – 4 Years

EDUCATION:

- ❖ Bachelor of Science in Environmental Systems Engineering, The Pennsylvania State University

PROFESSIONAL REGISTRATION:

- ❖ KY PE License No. 27582
- ❖ OH PE License No. 73061
- ❖ WV PE License No. 18294
- ❖ GA PE License No. PE039549
- ❖ MI PE License No. 6201061947
- ❖ PA PE License No. PE083438
- ❖ NC PE License No. 44670
- ❖ SC PE License No. 32064
- ❖ TN PE License No. 119727
- ❖ AR PE License No. 17277
- ❖ NCEES Certification of PE License
- ❖ Certified Geosynthetic Materials Inspector (GCI-ICP)
- ❖ Certified Compacted Clay Liner Inspector (GCI-ICP)
- ❖ 40-Hour HAZWOPER Training & 8-Hour Refresher
- ❖ Public Assistance Operation I, FEMA Emergency Management Institute
- ❖ Certified Quality Control Manager by the USACE quality control program
- ❖ Troxler Nuclear Moisture/Density Gauge Operator and Radiation Safety Officer Training
- ❖ Passed AR and TN contractor's exam

QUALIFICATION HIGHLIGHTS:

- ❖ Mr. Barninger has acted as Project Manager/Engineer for over 150 solid and hazardous waste landfill construction projects at over 50 different facilities in 8 states.
- ❖ He has extensive experience in projects including landfill baseliner and closure construction, landfill expansion, landfill gas management systems, leachate recirculation fields and storage tanks, Tensar engineered slope stabilization and retaining walls, and sedimentation and erosion control applications.
- ❖ Since being with BEL, Mr. Barninger has completed over 100 Landfill Gas Control Design Projects and continues to support several active landfills by providing Landfill Gas System evaluations on a regular basis.

RELEVANT PROJECT EXPERIENCE

Green Valley Landfill 2017 – In response to a Slope Failure and Offsite odors BEL is Currently managing the daily O&M team collecting water levels, pump counts, FM pressures, gas data to maximize liquid removal from Unit 2 where there is significant movement within the waste mass. Also, the design engineer preparing LFG Drawings and Certifying construction.

Carbon Limestone Sanitary Landfill, Ohio 2006-Current LFG Currently Negotiating Directors Findings and Orders with the Ohio EPA in response to landfill odors, leachate disposal and elevated well temperatures. Design Engineer and Certifying Engineer during an 11 year period. Mr. Barninger has been part of the LFG Management Team attending the monthly LFG Meetings Since 2007. As part of this team Mr. Barninger has worked with the O&M team on a weekly basis resolving maintenance issues, tuning issues, and managing elevated temperatures.

Imperial Landfill, Imperial PA 2012-current LFG Design Engineer and Certifying Engineer during a 6 year period. The facility was under a consent order for odors when BEL took over in 2012. Mr. Barninger has been part of the LFG Management Team attending the monthly LFG Meetings Since 2012.

Countywide RDF, Ohio 2012-current – This facility was under a consent order for odors resulting from an aluminum dross reaction when BEL took over. LFG Design Engineer and Certifying Engineer during a 6 year period. Mr. Barninger has been part of the LFG Management Team attending the monthly LFG Meetings Since 2012. As part of this team Mr. Barninger has worked with the O&M team on a weekly basis resolving maintenance issues, tuning issues, and managing elevated temperatures.

Greenridge Reclamation, PA 2012 -current – This site was under regulatory pressure due to offsite odors resulting from H₂S being produced with the LFG. LFG Design Engineer and Certifying Engineer during a 6 year period. Mr. Barninger has been part of the LFG Management Team attending the monthly LFG Meetings Since 2012. As part of this team Mr. Barninger has worked with the O&M team on a weekly basis resolving maintenance issues, tuning issues.

Nathan W. Schkurko

PROJECT ENGINEER / PROJECT MANAGER
BEL ENVIRONMENTAL ENGINEERING, LLC



TOTAL YEARS' EXPERIENCE: 7

WORK HISTORY:

- ❖ BEL Environmental Engineering – 6 Years
- ❖ Kurtanich Engineers & Associates, Inc. – 1 Year

EDUCATION:

- ❖ Bachelor of Science in Civil Engineering, Youngstown State University, December 2011

PROFESSIONAL REGISTRATION:

- ❖ 40-hour HAZWOPER & 8-Hour Refresher
- ❖ Certified Nuclear Density Gauge operator and US DOT/HAZMAT training.

QUALIFICATION HIGHLIGHTS:

- ❖ Mr. Schkurko has field construction and engineering design experience with various aspects of solid waste management and landfill gas collection system operations including LFG collectors, geosynthetic installation, LFG and condensate conveyance systems, & LFG blower/flare systems.
- ❖ Mr. Schkurko is proficient in AutoDesk Civil 3D, AutoDesk Vehicle Tracking & KYPipe.
- ❖ Mr. Schkurko has extensive experience in SWPPP & SPCC inspections and report documentation.

RELEVANT PROJECT EXPERIENCE

Landfill Gas Design, Project Management & CAD Drafting

- Completed various LFG Design projects for gas system expansions at several solid waste facilities in Ohio, Pennsylvania, West Virginia, Kentucky, Indiana, and Michigan. This included, but was not limited to, LFG conveyance system layouts and grading, condensate management systems (i.e. sumps, knockout pots, pumps, controls and LFG flow meters), LandGEM model creation & analysis, GCCS Final Development Plans, Well schedule verification and completion, invoicing, proposals, SWPPP & SPCC Plans, KYPipe analysis, Comprehensive wellhead data analysis, EBM analysis, 3D well bore data analysis, recommendations & implementation of temporary gas collectors for fugitive emissions.
- CQA Project Manager for various LFG, Cell & Final Cover construction projects at several solid waste facilities in Ohio, Pennsylvania, West Virginia, Kentucky and Michigan. This included, but was not limited to, ensuring our CQA services are meeting CQA plan & specific project requirements, completing quantities and estimating costs, soils and geosynthetic lab data analysis, manage construction meetings, construction certification reports, communication with various parties involved in construction (i.e. governing agencies, environmental managers, contractors).
- Completed Auto CADD, Civil 3D & KYPipe Drawings for various solid waste facilities in Ohio, Pennsylvania, West Virginia, Kentucky and Michigan. Trained multiple employees to use CAD software effectively. This included, but was not limited to, LFG system layouts & construction drawings, Leachate system layouts & construction drawings, survey data formatting and upload, 3D flare station construction drawings, GCCS Final Development Plan layout and details, 5-yr budget models, KYPipe set up, 3D Well Bore data layouts.

- ❖ Mr. Schkurko has experience with environmental construction, including landfill cell and closure construction and landfill gas system expansion and new construction oversight. He has served as a CQA field technician on landfill projects. He has coordinated with earthwork contractors, geosynthetics contractors, and electrical contractors.
- ❖ Mr. Schkurko has experience with stormwater and sanitary sewer inspections and has conducted property surveys & acquired property deeds from city records.
- ❖ Mr. Schkurko has experience preparing project specification packages including those for landfill LFG, Cell & Final cover construction.
- ❖ Mr. Schkurko has experience in SWPPP & SPCC inspections and report documentation.
- ❖ Mr. Schkurko has experience in wastewater treatment facilities & NPDES Permits.
- ❖ Mr. Schkurko has experience in Engineering Budget Model Analysis

Site Specific Project Relevance

Carbon Limestone Landfill, Ohio - Served as CQA technician during expansions of landfill gas collection system 2011 to 2012. Project engineer 2012 to present, services include design the LFG GCCS Final Development plan using KYPipe, LandGEM, developed construction drawings based on site specific needs, Attending Monthly LFG Meetings & construction project management. Provided knowledgeable recommendations & implementation of temporary gas collectors for fugitive emissions.

Lorain County Landfill, Ohio – Served as CQA technician and project manager during 2015 transmission line replacement. Project engineer 2012 to present, services include design the LFG GCCS Final Development plan using KYPipe, LandGEM, developed construction drawings based on site specific needs, Attend Monthly LFG Meetings, Attend Weekly construction meetings, construction project management, Site specific recommendations. Provided knowledgeable recommendations & implementation of temporary gas collectors for fugitive emissions.

Imperial Landfill, Pennsylvania - Served as CQA technician during expansions of landfill gas collection system 2011 to 2013. Project engineer 2012 to present, services include design the LFG GCCS Final Development plan using KYPipe, LandGEM, developed construction drawings based on site specific needs, Attending Monthly LFG Meetings & construction project management. Provided knowledgeable recommendations & implementation of temporary gas collectors for fugitive emissions.

Ottawa County Farms Landfill, Michigan - Served as CQA project manager during new LFG construction 2014 to present. Served as project engineer 2012 to present, services include, LandGEM, developed construction drawings based on site specific needs, Attending Monthly LFG Meetings & construction project management. Provided knowledgeable recommendations & implementation of temporary gas collectors for fugitive emissions.

Valley View Landfill, Kentucky - Served as CQA project manager during 2016 LFG system updates. Project engineer 2015 to present, services include, LandGEM, developed LFG construction drawings based on site specific needs, Attend Monthly LFG Meetings, Site specific recommendations, blower/flare construction drawings. Provided knowledgeable recommendations & implementation of temporary gas collectors for fugitive emissions.

Janet Todia

SENIOR PROJECT MANAGER
BEL ENVIRONMENTAL ENGINEERING, LLC



TOTAL EXPERIENCE: 20 Years

WORK HISTORY:

- ❖ BEL Environmental Engineering, LLC – 1 Year
- ❖ T&M Associates – 3 Years
- ❖ Brown and Caldwell – 3 Years
- ❖ American Environmental Group – 6 years
- ❖ Environmental Information Logistics – 2 Years
- ❖ Monitoring Control and Compliance – 2 years
- ❖ Tyco Corporation – 1 Year
- ❖ Emcon/OWT – 3 Years

EDUCATION:

- ❖ University of Toledo College of Pharmacy

PROFESSIONAL REGISTRATION:

- ❖ John Zinc Landfill Gas Flare School, 2007-2010 Annually
- ❖ 40 Hour Hazmat Certification and Current 8 Hour OSHA Refresher
- ❖ NSPS/EG & Title V Compliance Training, 2007 – 2011 Annually
- ❖ 8 Hour OSHA Project Supervisor Training
- ❖ Hydraulic Conductivity & Triaxial Shear, 2017

QUALIFICATION HIGHLIGHTS:

- ❖ Ms. Todia has extensive experience and knowledge of every aspect of landfill design, landfill gas CQA, GCCSs, construction, compliance, operations, maintenance, closure and post-closure care.
- ❖ She has extensive experience in managing multidisciplinary project teams and directing professional consultants and contractors during project planning and execution.
- ❖ She has assessed, designed, planned, implemented and/or executed landfill fire, landfill dross reaction, GCCS investigations and remediation projects under state law, CERCLA, RCRA and/or other regulatory programs, as appropriate, in several US States.

RELEVANT PROJECT EXPERIENCE

Middle Point Landfill, Murfreesboro, Tennessee – 2010 – 2017 - Assembled Monthly Operations, Maintenance and Monitoring reports on behalf of Republic Services as required by Tennessee Department of Environmental Quality. Managed Gas Field Technicians and teamed with Republic Management to continuously assess Well Field Operations on this reaction site.

Bridgeton Landfill, Bridgeton, MO, 2010 – 2015 – Ms. Todia teamed with Republic Management to manage Gas Field Technician staff. She also assembled Monthly Operations Reports and worked with site Management to initiate an Operations, Maintenance, and Monitoring Plan as well as assembling Monthly Operations Reports on behalf of Republic Services as required by Missouri Department of Environmental Quality.

Countywide RDF Landfill, 2006-Current – LFG Operations and Maintenance Project Manager for Landfill Gas Management System. Worked with Ohio EPA NEDO through Findings and Orders and Implemented a Gas Technician Monitoring and Maintenance Program due to the ongoing dross reaction on site. Currently assembles monthly reports required by the site Operations, Maintenance and Monitoring Plan and presents data quarterly to NEDO on behalf of Republic Services.

Lorain County I Landfill, Lorain, Ohio 2010 - 2013 – Leachate Compliance Sampling in accordance with Site Direct Discharge Permit. Coordinated Permit renewals and coordinated with Lorain Wastewater Treatment Plant.

Cuyahoga Regional Sanitary Landfill, Nestle USA, Solon, Ohio 1999 – 2003 – LFG CQA Project Manager for Landfill Gas Management System designed to supply a 3.8 megawatt power plant on site and a 72 mmbtu boiler system to Nestle USA. Ms. Todia managed the coordination of field operations with pipeline and compression skid construction activities for the startup of the Nestle Gas-to-Energy Project. In addition, Ms. Todia was responsible for tuning and maintain the well field in addition to installation of air line, force main and pneumatic pumps.

Epperson Waste Disposal, Williamstown, Kentucky 2004 & 2005 – LFG Project Manager/Supervisor for Landfill Gas Technicians. Initiated the installation of pneumatic pumps and air and force main, Managed Environmental Compliance Reporting.

Valley View Landfill, Sulphur, KY – 2004 & 2005 – LFG Project Manager/Supervisor for Landfill Gas Technicians. Managed Environmental Compliance and Reporting.

Hazel Road Landfill, Akron, Ohio 2006-2014 – LFG Project Manager Gas Collection and Control System. Assisted Gas Technicians in trouble shooting potential gas migration issues and pump installation.

Hoffman Road Landfill, Toledo, Ohio 2004 - 2005 – LFG Project Manager for Gas Technician Services. Ms. Todia managed Environmental Compliance and reporting and assisted site technicians in small-scale construction repairs. Managed small-scale construction projects and flare upgrades.

Lake County Landfill, Chesterland, Ohio 2006-2014 – Ms. Todia served as the Project Manager for small-scale construction repairs, and managed Environmental Compliance for the facility.

Oakland Heights Development, Auburn Hills, Michigan 2006-2009 – Ms. Todia served as the LFG Project Manager for Operation and Maintenance

- ❖ Ms. Todia has routinely worked in cooperation with state, including the TDEQ, OEPA, PADEP, federal, and local regulatory agencies on problem resolution as well as project scope, planning, schedule and execution.
- ❖ She has managed landfill operations and maintenance including environmental compliance for 14 active and/or closed landfills
- ❖ She has managed an Operations and Maintenance Team consisting of 12 Technicians spread across 8 States. Responsibilities include managing, mentoring and development of the Operations and Maintenance staff.
- ❖ Ms. Todia also managed a team of 4 Data Compliance Managers prior to the implementation of National Database Systems to manage and monitor well field data.

Services. This gas system Project provided methane to the GM Lake Orion Boiler System. She managed budget and non-routine maintenance activities for the GCCS.

Pine Tree Acres Landfill, Lenox Township, Michigan 2006-2009 – Ms. Todia served as the Project Manager for well field technicians and aided in trouble shooting to increase gas flow to the energy plant on site. Ms. Todia was responsible for Environmental Compliance for the site.

Statewide Landfill, Canton, Ohio 2006-2014 – Ms. Todia managed the Well Field Technicians and aided in routine and non routine tuning, installation of pneumatic pumps, small-scale construction repairs, and troubleshooting potential landfill gas migration issues.

Eastern Sanitary Landfill, White Marsh, MD 2002-2004 – Ms. Todia performed monthly well field tuning as required. In addition, she monitored the site gas probes on a monthly basis and continuously worked to prevent off site migration on a site with challenging geology.

Landfill Air Compliance Reporting (2003 – 2008)

Deercroft Recycling and Disposal Facility, Waste Management, Michigan City, Indiana

Ms. Todia prepared semiannual Title V reports, semiannual New Source Performance Standards (NSPS) reports, and semiannual Startup, Shutdown, and Malfunction (SSM) reports. She submitted variance requests/alternative timeline requests, Title V Annual Compliance Certification, well decommissioning requests and Deviation Occurrence Reports.

Douglas County Recycling and Disposal Facility, Waste Management, Bennington, Nebraska

Ms. Todia prepared semiannual Title V reports, semiannual NSPS reports, semiannual SSM reports, and Title V annual compliance certifications.

ELDA Recycling and Disposal Facility, Waste Management, Cincinnati, Ohio

Ms. Todia prepared quarterly/semiannual Title V reports, semiannual EG reports, and semiannual SSM reports. She submitted variance requests/alternative timeline requests and well decommissioning requests.

Epperson Waste Disposal, Republic Services, Williamstown, Kentucky

Ms. Todia prepared semiannual NSPS reports and semiannual SSM reports. She also submitted alternative variance requests/alternative timeline requests and well decommissioning requests.

Greene Valley Recycling and Disposal Facility, Waste Management, Naperville, Illinois

Ms. Todia prepared semiannual EG Reports, semiannual SSM Reports, semiannual Clean Air Act Permit Program (CAAPP) reports, and annual CAAPP compliance certifications. She submitted CAAPP Form 405s on an as need basis.

Hardy Road Sanitary Landfill, Waste Management, Akron, Ohio

Ms. Todia prepared semiannual NSPS Reports, semiannual SSM Reports, quarterly/semiannual Title V Reports, annual Title V Compliance Certifications, and annual Solid Waste Reports. She also maintained the site Operating Record.

Hoffman Road Landfill, City of Toledo, Toledo, Ohio

Ms. Todia prepared semiannual NSPS Reports, semiannual SSM Reports, and quarterly/semiannual Title V Reports.

Lake County RDF, Waste Management, Chesterland, Ohio

Ms. Todia prepared semiannual EG Reports, semiannual SSM Reports, quarterly/semiannual Title V Reports, annual Title V Compliance Certifications, and annual Solid Waste Reports.

Lake Landfill, Waste Management, Northbrook, Illinois

Ms. Todia prepared semiannual EG Reports, semiannual SSM Reports, semiannual CAAPP Reports, and annual CAAPP Compliance Certifications. She also submitted CAAPP Form 405s on an as need basis.

Metro Park East Landfill, Waste Management, Mitchellville, Iowa

Ms. Todia prepared semiannual NSPS Reports, semiannual SSM Reports, semiannual Title V Reports, and annual Title V Compliance Certifications.

Valley View Landfill, Republic Services, Sulpher, Kentucky

Ms. Todia prepared semiannual NSPS Reports, semiannual SSM Reports, semiannual Title V Reports, and annual Compliance Certifications. She submitted variance requests/alternative timeline requests, and well decommissioning requests.

Wheeler Recycling and Disposal Facility, Waste Management, Wheeler, Indiana

Ms. Todia prepared semiannual EG Reports, semiannual SSM Reports, quarterly/semiannual Part 70 Compliance Certifications, and annual Part 70 Compliance Certifications. She submitted variance requests/alternative timeline requests, well decommissioning requests, and Deviation Occurrence Reports.

Woodland Recycling and Disposal Facility, Waste Management, South Elgin, Illinois

Ms. Todia prepared semiannual EG Reports, semiannual SSM Reports, semiannual Title V Reports, and annual Compliance Certifications. She submitted variance requests/alternative timeline requests, and well decommissioning requests.

APPENDIX E
PERTINENT DOCUMENTS

Pipeline Purge Plan

Lorain County Landfill Lorain County, Ohio

October 2015

Prepared for:
Lorain County Landfill



REPORT CERTIFICATION

Purge Plan
Lorain County Landfill
Landfill Gas Supply Pipeline System
Lorain County, Ohio

The material and data in this report were prepared under the supervision and direction of the undersigned.

Cornerstone Environmental Group, LLC



Steve Wittman, P.E.,
Project Technical Lead



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1 INTRODUCTION

Cornerstone Environmental Group, LLC (Cornerstone) has completed this purge plan for modification of the existing Landfill Gas Supply Pipeline System (Pipeline) at Lorain County Landfill. The Pipeline is utilized to flow low pressure, medium BTU landfill gas from the Landfill to the EDI Landfill Gas to Energy Plant (LFGTE) approximately 7,000 feet away. During normal Pipeline operation, landfill gas (including methane) will be present but not in a flammable mixture within the system. Before system startup, nitrogen will be utilized to remove the oxygen from the Pipeline before introducing landfill gas.

Outlined below are the series of procedures to safely purge the Pipeline of air and then introduce landfill gas into the Pipeline in preparation of starting the LFGTE Plant. Some of the procedures may require notifications of departments outside the solid waste facility. Some of the actions detailed in these procedures may be in response to local state or federal regulations. Staff responsible for implementing the purging will be trained in the safe monitoring and handling of combustible LFG and will have completed the HAZWOPER training. Additional on-site training and a description of purging procedures and required safety protocols will be provided at the pre-purge job site safety meeting.

2 PURPOSE AND SCOPE

The purpose of this plan is to comply with National Fuel Gas Code, NFPA 56. This Standard applies to fire and explosion prevention during cleaning and purging activities for new and existing flammable gas piping found in electrical generating plants and in industrial, institutional, and commercial applications. This item requires pipes to be purged with an inert gas prior to the introduction of a fuel gas (Purging into Service) or removal of the flammable gas (Purging Out of Service). In this case the flammable gas is landfill gas (LFG). LFG is typically found within a landfill gas collection system in a concentration of approximately 50-60% by volume methane content with the remaining volume primarily made up of carbon dioxide. Methane is explosive in a range of 5% to 15% by volume in air.

The purging of the gas line will require the removal of air from the line prior to the introduction of the LFG so that the air-LFG combination does not result in an explosive mixture within the piping. If air is mixed with the combustible LFG in the appropriate ratio, all it would need is an ignition source from mechanical system, unclassified electrical equipment, engine exhaust or a spark from static electricity that can occur as gas moves through high density polyethylene (HDPE) piping, to result in an explosion.

Outlined below are the series of procedures to safely purge the gas supply line of air and then introduce LFG.

3 RESPONSIBILITY

The on-site Supervisor is responsible to see that the procedures covered in this purging plan are properly carried out. The on-site Supervisor may be owner, contractor, or other appropriate owner's representative. All purging personnel are responsible to be familiar with and understand the procedures covered in this plan. Clarification, if necessary, of any procedure is available from the on-site Supervisor.

4 DEFINITIONS

The following terms are defined for their use in this purge plan and as they relate to NFPA 56. Any terms not specifically defined in this section shall assume the definition in Webster's English dictionary.

- Lower Explosive Limit (LEL) is defined as "that concentration of a combustible material in air below which ignition will not occur" NFPA 329.
- Upper Explosive Limit (UEL) is defined as "that concentration of a combustible material in air above which ignition will not occur".
- Landfill Gas (LFG) is composed of methane 50% with an oxygen concentration typically less than 1%. LFG typically has an odor but an individual's ability to detect LFG through smell should never be used to determine gas composition or concentration.
- Inert gas is defined in NFPA as "a nonreactive, nonflammable, noncorrosive gas such as argon, helium, krypton, neon, nitrogen, and Xenon." For the purposes of this purge plan it will be Nitrogen.
- Nitrogen is an inert gas that is not toxic and occurs naturally in the atmosphere. Nitrogen however does pose an asphyxiation risk if it displaces oxygen in the working area.
- Combustible gas detectors measure combustible/flammable gas concentration in the atmosphere, which is indicated on the device as a percentage of the lower explosive limit (LEL).
- Authority Having Jurisdiction (AHJ) is defined by NFPA as an "organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure" such as a local fire marshal or building official.
- Purge into Service is defined as "to replace the air or inert gas in a closed system by flammable gas" NFPA 56.
- Purge out of Service is defined as "to replace the normal flammable content of a closed system by inert gas, air, or water" NFPA 56.

- Stand-Down “if the conditions during the purging or cleaning activity deviate from those indicated in the written procedure, resulting in a safety hazard, the purging or cleaning activity shall be discontinued according to the stand-down instructions.” NFPA 56.

5 COMMUNICATIONS AND TRAINING

5.1 Communications

It is important that before, during, and immediately after the system purge, all questions, observations, or communication be directed to the on-site supervisor. The on-site supervisor can then use this information to modify purge procedures or direct it to the proper personnel.

5.2 Training

All persons whose duties fall within the scope of this plan shall be provided with training that is consistent with the scope of their job activities.

NFPA 56 5.1.1 Such training shall include hazards of flammable gas, hazards of any compressed gas used for cleaning or purging, safe handling practices of flammable gas and compressed gas as applicable, emergency response procedures and equipment, and company policy.

NFPA 56 5.1.2 Personnel training shall be conducted by a competent person knowledgeable in the subject matter and shall be documented.

NFPA 56 5.1.3 Training records shall be maintained for a period not less than 5 years from the date of completion of the activity.

All Personnel involved in the purging procedure should also be properly trained in Lockout-Tag out, Safe Gas Purging Techniques, Hazard Identification, and Use of Gas Monitoring Equipment.

Lockout-Tag-out

Any potential ignition source should be identified and isolated in the proximity of the work area. All flames or potential ignition sources within proximity should be de-energized and locked out. Use the standard lockout-tag out protocols required under OSHA 1910.

Safe Gas Purging Techniques

Gas purging of the Pipeline to remove flammable gas or oxygen should be done using non-flammables that are inert such as carbon dioxide or nitrogen. This reduces the risk of an explosive mixture forming in the pipe, causing fire. These gas purging events have risks associated and guidelines:

- Possible high pressure discharges from venting the Pipeline. This discharge point should be located in an isolated area away from contact with personnel, equipment, and buildings. The point of discharge shall be located at least 10 ft from sources of ignition, at least 10 ft from building openings and at least 25 ft from mechanical air intake openings.
- Inert gasses used to reduce the risk of fire or explosions are not toxic but can make the atmosphere in and around the equipment hazardous for humans to breathe by displacing oxygen. If the oxygen is reduced to below 19.5%, a person could become unconscious.
- High pressure gas can cause catastrophic failure in pipes or equipment. Precautions need to be in place to keep the pressures within design parameters of the system.
- During purge venting discharge, the open point of discharge shall be continuously attended and monitored with a combustible gas indicator.

Hazard Identification

All Personnel taking part in the purging task shall be familiar with the job hazard analysis (JHA). Contractors and subcontractors must provide a JHA prior to purge procedures starting that include:

- Creating a step by step task analysis to complete the job
- Identify all the potential hazards associated with each task step
- List the methods of control for each of the hazards ident

Monitoring

All personnel taking part in the purging task shall have training in operating a reliable combustible gas meter and oxygen meter. These meters should be rated intrinsically safe by Underwriters Laboratory.

- If flammable gas is detected at an excess of 10% of LEL on a personnel gas meter, the purging process shall be immediately stopped following the ***Stand Down Procedure***.
- If oxygen levels on a personnel gas meter are below 19.5%, the purging process shall be immediately stopped following the ***Stand Down Procedure***.
- The combustible gas detector for the Pipeline discharge monitoring should be set to read percent gas in air scale.

6 OVERVIEW OF PURGE PLAN

Nitrogen will be introduced into the modified Pipeline located between the existing Lorain County Landfill blower flare station and the EDI LFGTE Plant in order to displace air that may be present within the Pipeline (see Figures 1 and 2). The nitrogen will be introduced through valve V-1 and purge gas inlet P-1. This will displace air between the existing blower flare station and vent point P-2, located at condensate pump station CS-T2. Gas conditions will be monitored at P-2 to insure that a sufficient "slug" of nitrogen has been developed. The slug of nitrogen will then be pushed through the Pipeline ahead of the LFG. Monitoring point P-3 will be monitored for oxygen and methane concentrations, and when the desired methane concentrations are reached, valve V-3 will be closed resulting in minimal direct venting of landfill gas during the entire purging process.

7 SAFETY AND PROTECTIVE EQUIPMENT

All personnel involved in this purge plan shall be familiar with their company's Health and Safety Plan (HASP), including the JHA, JSA, and PPE requirements. Below is a list of Standard Personal Protective Equipment (PPE) but this list shall not supersede any PPE listed in the site specific HASP

7.1 Standard Personal Protective Equipment

- Gas analyzing meter(s) with the ability to monitor oxygen. May consist of Landtec GEM 2000, GEM 500, or other approved meter.
- Personal safety gas monitors for monitoring staff must include LEL sensor and oxygen sensors.
- High Visibility Vest (or equivalent)
- Hard Hat
- Steel Toe Boots
- Hearing protection
- Protective eye wear
- Walkie-talkies
- Compressed gas air horn

7.2 Stand Down Procedures

The following procedures shall be followed if conditions during the purging activity deviate from those indicated in the written procedure, resulting in a safety hazard. It is important to note that by placing the required purge plug length in the Pipeline, before introducing LFG, at no point will the Pipeline contain an explosive mixture of gas. If Stand Down procedures are initiated during the placement of the purge plug, the introduction of the purge plug may have to be restarted. The on-site Supervisor will advise on this issue based on field observations. If Stand Down procedures are initiated after the purge plug is in place and LFG placement has begun, the on-site Supervisor will advise on this issue based on field observations and reasons for initiating the Stand Down procedure.

Stand Down Procedure

1. Notify on-site Supervisor of safety hazard over walkie-talkie

2. On-site Supervisor will sound alarm signaling purge personnel to begin stand down procedure.
3. Assignments: each step will have a person designated for its completion at the pre-purge meeting
 - a. Close valves
 - i. Close valves on all temporary Pipeline inlets and vents
 - ii. If LFG introduction has started, close valve on discharge side of existing flare blower
4. Evacuate the area. Once a person completes his/her Stand Down task, they shall evacuate the area to a predetermined safe zone decided during the pre-purge meeting.
5. On-site Supervisor will conduct a personnel count and implement reporting and activities outlined in the site specific Health and Safety Plan.

8 PROCEDURE

8.1 Prerequisites

Prior to the actual purging process, a number of items need to be addressed:

1. Purging staff should review NFPA 56 and be familiar with recommended safety protocols and purge venting distances from ignition sources and building openings. All staff involved will participate in a mandatory tailgate safety briefing prior to initiating the purge process.
2. Both attached purge checklists must be completed.
3. The pressure regulator must be checked to ensure it has inlet and outlet pressure measurement capability and the ability to control flows from the nitrogen tank. Typical nitrogen tanks are pressurized to 2,200 PSI. The regulator must reduce this pressure to approximately 50 PSI with ability to adjust as needed for site conditions. Expected nitrogen flows will be around 50 cfm.
4. Installation of temporary piping - This purge plan requires the installation of one nitrogen inlet port in the 16 inch HDPE riser pipe blind flange near the discharge side of the existing flare blower station (P-1). The purge plan will also require the installation of two temporary vent points. The first will be located in the 6 inch blind flange (PVC or better) at condensate sump CS-T2 (P-2) and the second will be in the blind flange at the header access riser at the pipe high point between condensate sump CS-T3 and CS-T4, (P-3). These temporary blind flanges with the required inlet and vent points installed will be available for installation prior to purging. The inlet port P-1 will consist of a 1/2" inch NPT threaded female opening in a 16 inch blind flange. The nitrogen pressure regulator, hosing and ball valve will connect to that 1/2 inch opening. A temporary 1/4" NPT female opening will also be placed into the 16 inch lid to measure pipeline system pressure. Vent point P-2 will consist of a 2 inch threaded pipe stub placed into the cover with a 2 inch ball valve and sufficient tubing or piping to direct exhaust gases to a safe location. This vent

- point will also be fitted with a valved ¼ inch monitoring port. It is critical to insure that the temporary vents are vented at a safe location away from workers, building ventilation openings and ignition sources per NFPA 56 requirement. This may require the installation of a sufficient length of flexible tubing to route vent gases to a safe location.
5. The exclusion zone will be defined on site by the Site Supervisor. That zone must be clear of unnecessary personnel and any ignition sources.

8.2 Purge Procedure

Purging will proceed continuously, but will include two steps. The first step will include the introduction of nitrogen into the Pipeline until the purge plug is documented at vent point P-2. The second step will include the closing of valve V-1 at the nitrogen inlet point P-1, closing valve V-2 at vent point P-2, and the opening of valve V-3 at P-3. At this point, the landfill gas blowers will be started and LFG will be introduced into the pipeline behind the purge plug. Vent point P-3 will be monitored for oxygen levels and methane, and LFG introduction will be halted when sustained, expected methane levels are achieved. Expected methane levels will be determined on site based on the existing landfill gas composition at the time of purging.

Once the purge has started, do not stop or significantly slow the introduction of gas until the purge is complete. This will require the use of walkie-talkies or other clear communication so that the opening and closing of appropriate valves may be coordinated and completed effectively and efficiently, and to complete the removal of air from the pipeline.

8.2.1.1 Purge Pressure

Purge pressure should approach 3 psi to reach critical flow downstream as it pushes the air out of the 2 inch diameter vent points. Adjust inert gas filling rate as necessary to maintain this pressure. Purge pressure may be revised in the field based on field conditions and purge exhaust gas monitoring.

8.2.1.2 Purge Rate

Anticipated purge rate will be at approximately 50 CFM to adequately push the air out of the pipe and vessel. This is based on the critical pressure and critical flow analysis.

8.2.1.3 Purge Volume

In order to purge the approximately 1,000 lineal feet of 24 inch Pipeline between the inlet P-1 and vent P-2, approximately 1,390 cubic feet of nitrogen will be required. To account for potential mixing of gases within the pipe, the plan is to introduce approximately 1,570 cubic feet of nitrogen.

As this line is modified to 30" SDR 17, the purge volume will increase to approximately 2,912 cubic feet of nitrogen.

If sustained low oxygen levels are obtained prior to reaching the planned volume, the purge plug will be considered complete and nitrogen introduction will be halted.

8.2.1.4 Purge Time

Based on the volume of air to be removed from the Pipeline between P-1 and P-2, the purge time of the inert gas filling is anticipated to be approximately ½ to 1 hour. Actual purge time will be dictated by gas sampling to steady state gas purge exhaust conditions meeting oxygen levels noted below:

- To be considered adequately purged for the purposes of achieving the purge plug, oxygen levels at the vent point P-2 shall be below 8 % by volume.
- A flammable methane/oxygen/nitrogen mixture cannot be obtained if the O₂/N₂ fraction percent by volume is below a ratio of 8% oxygen to 92% nitrogen

8.3 Nitrogen Purge Procedure

Note: This sequence will rely on walkie-talkies and communication to adequately implement this protocol as the purge sequence requires various coordinated activities.

1. Close Pipeline valves:
 - a. Confirm Pipeline isolation valves at both ends of the segment to be purged are closed

2. Close temporary purge piping valves:
 - a. Close valve V-1
 - b. Close valve V-3
3. Open Valves
 - a. Open valve V-3 at purge vent P-3
 - b. Connect Nitrogen supply to P-1 and open valve V-1
4. Begin nitrogen purge sequence by introducing nitrogen at P-1. Introduction of nitrogen should be at a steady flow to maintain less than 3 psi in the Pipeline.
5. Begin gas sample readings in the purge vent point in P-2, as oxygen begins to decrease prepare close the valve V-2 at P-2. When oxygen reaches 8% or less steady state conditions (i.e. more than 30 seconds), close the valve V-2. Valve V-1 must be closed so nitrogen introduction is stopped when V-2 is closed. Coordinate the valve closing with walkie talkies. Leave nitrogen connection at P-1 in place until the Pipeline is completely purged.

Note: Venting pressurized gas through small diameter ports can cause significant noise and pressure change. All purge personnel must wear proper hearing protection. Vented gas may also contain combustibles and must be directed away from personnel and any ignition source. If any onsite personal explosive gas meters alarm, follow Stand Down procedures immediately.

At this point, an inert gas purge plug will be present within the Pipeline between P-1 and P-2.

8.4 Product Gas: Introduction of LFG to Pipeline

Note: This sequence will rely on walkie-talkies and communication to adequately implement this protocol and not overpressure the Pipeline.

1. Open valves:
 - a. Open 24" Pipeline Isolation Valve at the existing blower flare station.
 - b. Open valve V-3 at P-3.

2. Start LFG blower and allow LFG to enter the Pipeline and begin pushing the purge plug toward P-3. Monitor pipeline pressure at P-1 and use the Pipeline isolation valve to maintain Pipeline pressure below 3 psi.
3. Begin gas sample readings in purge vent point P-3, as oxygen begins to decrease the purge plug has arrived. Prepare to close valve V-3 at P-3. When methane reaches expected concentrations for 30 seconds, close valve V-3, and the system isolation valve at the blower flare station. This activity must be coordinated so as not to overpressure the system.

Note: Venting at P-3 will contain LFG and must be directed away from personnel and any ignition source. If any onsite personal explosive gas meters alarm, follow Stand Down procedures immediately.

4. At this time the Pipeline is charged with LFG and purging activities are complete. Prior to removing the temporary blind flange covers installed at P-1, P-2, and P-3, open valves V-2 and V-3, and allow the pipeline to vent to atmospheric conditions. Confirm that Valve V-1 on the nitrogen inlet is closed and remove the nitrogen piping. Remove the temporary vent piping at P-2 and P-3. Remove the temporary blind flanges and replace with the system blind flanges.
5. The Pipeline is now ready for system start up and normal operation.

9 REFERENCES

NFPA Publications

NFPA 56 - Standard for Fire and Explosion Prevention During Cleaning and Purging of Flammable Gas Piping Systems, 2012 Edition

NFPA 54 - National Fuel Gas Code, 2012 Edition

10 PROCEDURE CHECKLIST

Attached Tables 1 and 2 include pre-purge requirements that must be addressed and a list of field requirements that must be addressed. These checklists will be completed as a part of the purge process.

11 TRAINING REQUIREMENTS

11.1 Training for Staff Involved with Purging

Employees involved in the purging process shall be trained in and familiar with the safety related work practices, safety procedures and other safety requirements that pertain to their respective job assignment. Completion of OSHA, HAZWOPER training will be sufficient to complete the assigned tasks in this purge plan.

11.2 Training Recordkeeping

OSHA, HAZWOPER training records for Cornerstone staff will be maintained as part of the Corporate Hazard Communication Program.

LIMITATIONS

The work product included in the attached was undertaken in full conformity with generally accepted professional consulting principles and practices and to the fullest extent as allowed by law we expressly disclaim all warranties, express or implied, including warranties of merchantability or fitness for a particular purpose. The work product was completed in full conformity with the contract with our client and this document is solely for the use and reliance of our client (unless previously agreed upon that a third party could rely on the work product) and any reliance on this work product by an unapproved outside party is at such party's risk.

The work product herein (including opinions, conclusions, suggestions, etc.) was prepared based on the situations and circumstances as found at the time, location, scope and goal of our performance and thus should be relied upon and used by our client recognizing these considerations and limitations. Cornerstone shall not be liable for the consequences of any change in environmental standards, practices, or regulations following the completion of our work and there is no warrant to the veracity of information provided by third parties, or the partial utilization of this work product.

TABLES

TABLE - 1 Purge Procedure Check List-Planning

PROJECT TITLE: _____ PROJECT NO: _____
 DESCRIPTION: _____ SHEET: _____
 OF: _____
 PREPARED BY: _____ DATE: _____ CHECKED BY: _____ DATE: _____

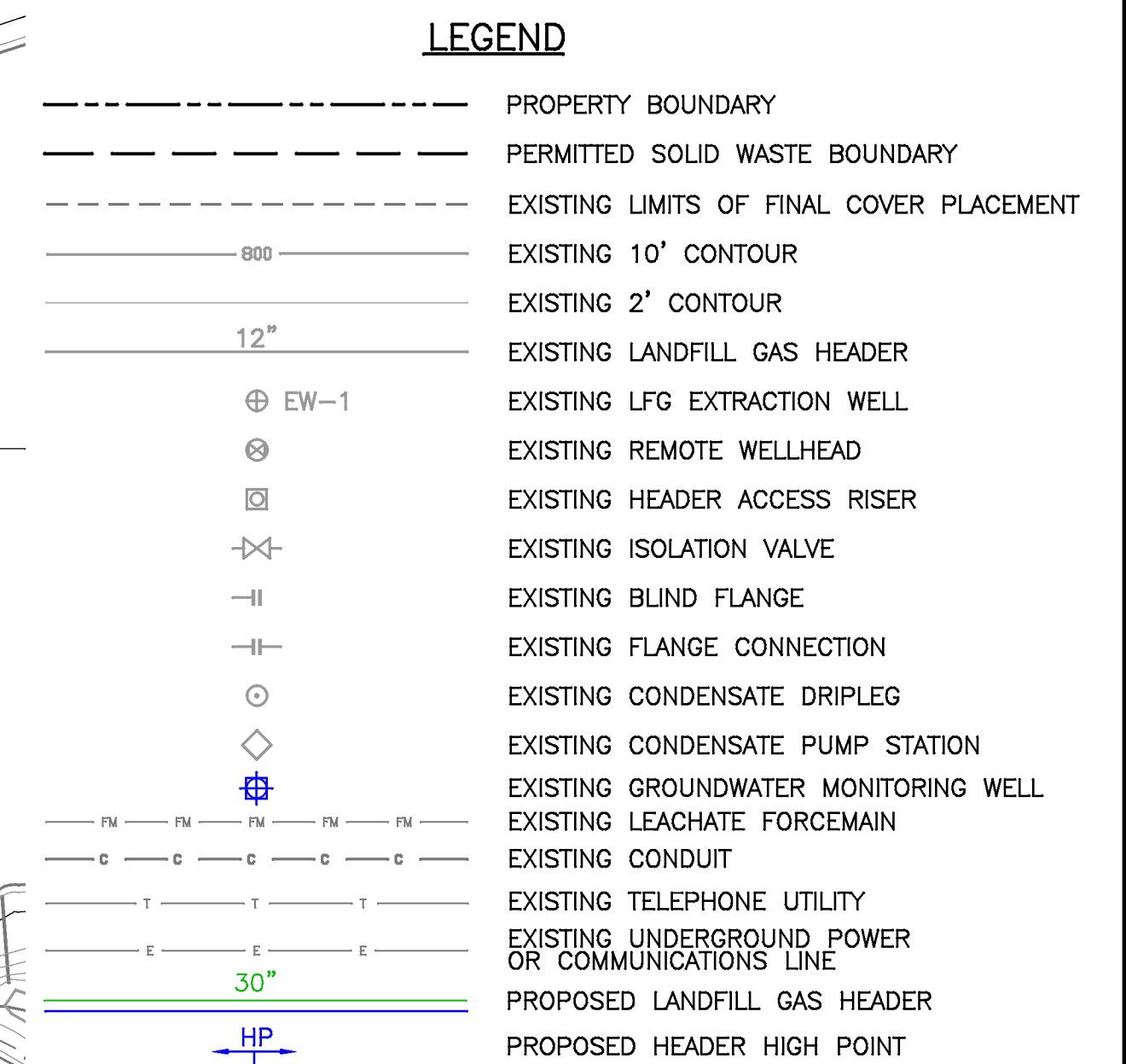
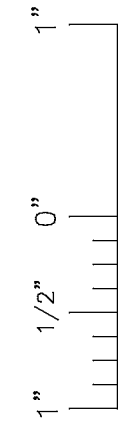
	Yes	No	Notes
Scope of Work and Site Specific Purge Proedure Development			
Cleaning and Purging Method Aproved			
Piping and Istrument Diagram Complete			
Chemical and physical properties of flammable gas, purge media, and discharge gas defined			
Purge end point assessment and control complete			
Purge inlet point pressure control complete			
Temporary piping systems design complete			
Personal Protection equipment (PPE) defined			
Training and Qualifications defined			
Has management reviewed and approved plan			
Restoration of Service			
Target design, Launcher/reciever venting review for pigging operations defined (if applicable)			
Regulatory Permitts Approved			
Engineering Controls Designed			
Written Stand-down instructions completed			
Hazards Identified			
Environmental Conditions and Work Locations			
Exclusion Zones Defined			
Personnel Access Restricted			
Gas Migration Assessment Covered			
Hot Work Restricted in Exclusion Zones			
Lockout/Tagout Procedures Defined			
Impacts of Environmental Conditions on purging analized			
Vehicular and Air Traffic accounted for in Plan			
Site Topography accounted for in Plan			
Noise Control Measures in Place			
Communication Plan			
Pre-Job Briefing Planned			
Work Permits Approved			
Roles and Responsibilities Defined			
Emergency Response Plan in Place			
Facility Alarm, Alert and Warning Systems in place			
General Facility Notification to Start purge in Plan			
General Facility Notification at Purge Conclusion in Plan			
Notification of Regulatory Authorities Complete			
Control of Ignition Sources			
Bonding and Grounding Considered			
Exclusion Zone work and Personnel Limited			
Static Electricity Ignition Sources at Discharge Point Limited			
Pre-purge Piping System Assessment			
Trapped liquids, Pyrophoric Solids and Other Flammable Deposits Within Piping Accounted For			
Piping System Isolation Identified			
Site Condition limitations Identified			
Purge Monitoring and Instrumentation			
Acceptable Instruments Defined			
Training on Instruments Defined			
Calibration of Equipment Defined			
Monitoring Frequency and Reporting Defined			
Approparte Selection of Sample Points Complete			
General Atmosphere Checks Near Purge Gas Release Points Defined			

TABLE - 2 Purge Field Procedure Check List-Planning

PROJECT TITLE: _____ PROJECT NO: _____
 DESCRIPTION: _____ SHEET: _____
 PREPARED BY: _____ DATE: _____ CHECKED BY: _____ OF: _____
 DATE: _____

	Yes	No	Notes
Scope of Work and Site Specific Purge Proedure Development			
Has a Purging - Job Hazard Analysis Been Completed?			
Have all Fuel Line Sources Been Identified?			
Have All Fuel Lines not Required for the Purging Operation Been Secured and Locked Out?			
Are Line Blanks or Blinds Required to Safely Isolate Fuel Lines, Fittings, Gauges?			
Is the purging discharge line located outside away from personnel, equipment & buildings?			
Could high pressure discharge direct gases or foreign objects towards personnel, equipment & buildings?			
Is Inert gas being used as the purging medium?			
Will oxygen levels be monitored to maintain adequate concentration between 19.5% and 23.5%?			
Will the flammable the fammable gas purged settle into low areas where there are uncontrol ignition sources?			
Has the written Gas Purging Plan been communicated to and approved by the local Authority Having Jurisdiction?			
Have all non-essential personnel been evacuated to a safe location from the purging operations?			
Are reliable combustible gas meters being used to sample for gas concentrations?			
Have employees using the combustible gas meters been trained on their use?			
Have the combustible gas meters been properly calibrated and tested per the manufacturer specifications?			
Have all employees been specifically trained in safe procedures for the gas purging operations?			
Is a temporary hose or line required to direct the purged gas to a safe locations outside of the building?			
Has emergency response personnel(Fire Department, EMS, etc.) been notified of the gas purging activities planned?			
Are additional ventilation sources required to maintain gas concentrations within acceptable levels?			
Have all potential ignition sources been isolated, de-energized and locked-out?			

FIGURES



1. TOPOGRAPHIC MAP REPRESENTS THE JANUARY 21, 2010 AERIAL PHOTOGRAPH PREPARED BY KEDDAL AERIAL MAPPING AND PROVIDED BY BROWN AND CALDWELL.
2. LOCAL TOPOGRAPHY PROVIDED BY WELBERT CORPORATION, MEDINA OHIO. DATE OF DRAWING 03-02-2011.
3. GCCS COMPONENT AS-BUILTS PROVIDED BY BROWN AND CALDWELL. SHOWN IN HALF-TONE FOR REFERENCE.
4. MATCH EXISTING GRADES OF REPLACEMENT PIPE AND PROVIDE A MINIMUM 0.5% SLOPE.
5. LOCATION OF PROPOSED GCCS COMPONENTS IS APPROXIMATE AND MAY VARY TO MEET FIELD CONDITIONS AT THE TIME OF CONSTRUCTION. ALL HORIZONTAL AND VERTICAL DATUM TO BE VERIFIED PRIOR TO CONSTRUCTION.
6. NEW 30" HEADER CONSTRUCTION MAY PARALLEL OR REPLACE EXISTING 24" HEADER AS ALLOWED BY FIELD CONDITIONS.
7. MAINTAIN CONNECTION POINTS TO EXISTING CONDENSATE SUMPS.
8. RELATIVE STAGES ARE IDENTIFIED AND COLOR-CODED FOR REFERENCE.
9. EXISTING UTILITIES FROM FROM "LCL1_EX_SITE_15ALT.DWG" PREPARED BY WEAVER CONSULTANTS AND INFORMATION PROVIDED BY LORAIN COUNTY LANDFILL.
10. INSTALL 30" HDPE IN NEW 36" CASING. AIR, FORCEMAIN AND COMMUNICATIONS CONDUIT MAY BE MAINTAINED IN EXISTING CASING.
11. PROTECT EXISTING AIR, FM, CONTROL CONDUIT, PIPE BOLLARDS, AND CONDENSATE SUMPS.
12. EXISTING FLOW METER ASSEMBLY TO BE MAINTAINED.

STAGE	PROPOSED CONSTRUCTION SEQUENCE
1	FLOW METER TO CS-T1
2	CS-T1 TO CS-T2
3	CS-T2 TO EAST SIDE OF ROAD CROSSING
4	EAST SIDE OF ROAD CROSSING TO TRUCK WASH
5	TRUCK WASH TO CS-T3
6	CS-T3 TO HIGH POINT

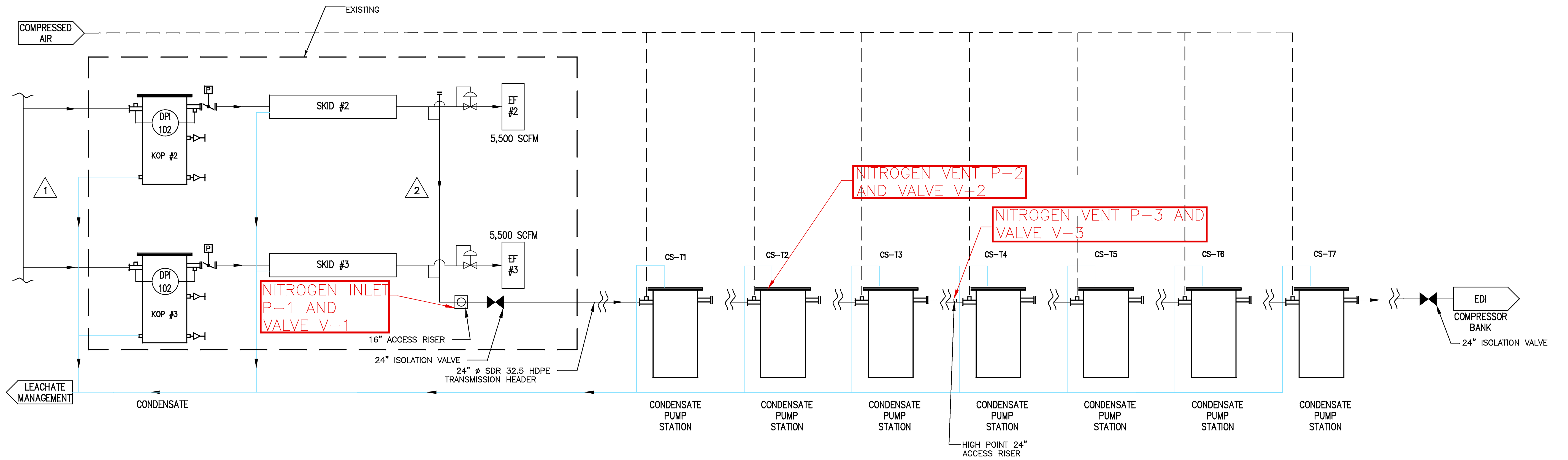
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	DATE OF ISSUE	DRAWN BY	TSS	CHECKED BY	MSM	
	10/28/15	DESIGNED BY	TAB	APPROVED BY	BOS	



REPUBLIC SERVICES, INC.
LORAIN COUNTY LANDFILL
LORAIN COUNTY, OHIO

**PHASE I TRANSMISSION PIPELINE MODIFICATION
LFG PIPELINE PURGE PLAN**

SHEET NO.
1
PROJECT NO.
150693



File: X:\PROJECTS\GRAND\150693 - TRANSMISSION PIPELINE MODIFICATIONS\PROJ DWG\WOL PROCESS FLOW DIAGRAM.dwg Layout: Option 1 User: ted.siddons Date: 30, 2015 - 9:28am

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
1	10/28/15	DATE OF ISSUE				
		DRAWN BY TSS				
		DESIGNED BY TAB				
		CHECKED BY MSM				
		APPROVED BY BOS				



REPUBLIC SERVICES, INC.
LORAIN COUNTY LANDFILL
LORAIN COUNTY, OHIO

**PHASE I TRANSMISSION PIPELINE MODIFICATION
PROCESS FLOW DIAGRAM**

SHEET NO.
2

PROJECT NO.
150693

APPENDIX F
MOISTURE DENSITY TESTS

APPENDIX F.1
LAB RESULTS

PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

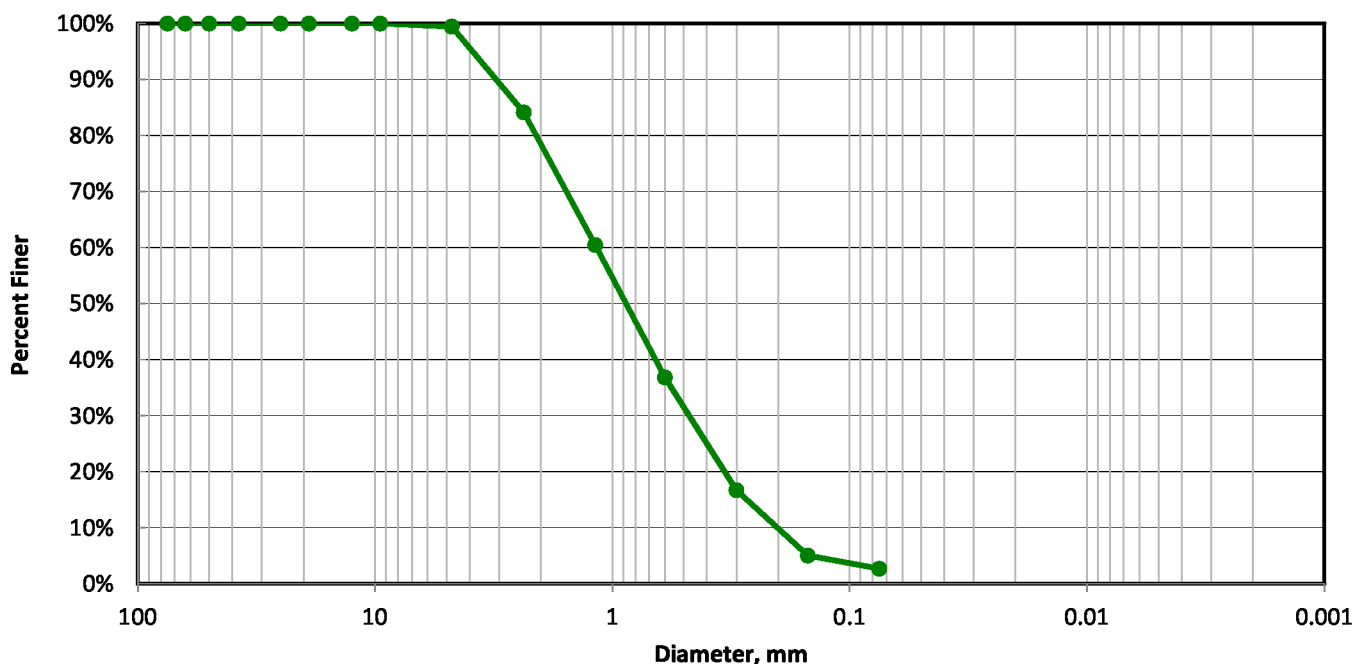
Client BEL Environmental Engineering, LLC Boring Trans Line Mod.
 Client Project Lorain County LF Depth 10-22-15
 Project No. 36556 Sample Sand
 Lab Sample 36556001

Sample Color: **BROWN**
 USCS Group Name: **POORLY GRADED SAND**
 USCS Group Symbol: **sp**

USDA: **NA** AASHTO: **NA**

MECHANICAL SIEVE							
Total Sample		Sieve Size	Nominal Opening, mm	Dry Wt, gm	Split Normalized % Retained	Split Normalized % Finer	Project Specifications
Total Sample Wet Wt, gm (-3")	45991	3"	75	0	0.0%	100.0%	
Sample Split on Sieve	3/4"	2-1/2"	63	0	0.0%	100.0%	
Coarse Washed Dry Sample, gm	0	2"	50	0	0.0%	100.0%	
Wet Wt Passing Split, gm	45991	1-1/2"	37.5	0	0.0%	100.0%	
Dry Wt. Passing Split, gm	44430	1"	25	0	0.0%	100.0%	
Total Sample Dry Wt, gm	44430	3/4"	19	0	0.0%	100.0%	
Split Sample - Passing 3/4"		1/2"	12.5	0	0.0%	100.0%	
Tare No.	709	3/8"	9.5	0	0.0%	100.0%	
Tare + WS., gm	1156.5	No. 4	4.75	5.36	0.5%	99.5%	
Tare + DS., gm	1120.52	No. 8	2.36	156.87	15.3%	84.2%	
Tare, gm	96.7	No. 16	1.18	242.44	23.7%	60.5%	
Water Content of Split Sample	3.5%	No. 30	0.6	241.91	23.6%	36.8%	
Wt. of DS., gm	1023.82	No. 50	0.3	206.14	20.1%	16.7%	
		No. 100	0.15	119.59	11.7%	5.0%	
Wt. of +#200 Sample, gm	996.26	No. 200	0.075	23.95	2.3%	2.7%	

USCS SOIL CLASSIFICATION							
Corrected For 100% Passing a 3" Sieve				USCS Description			
% Gravel (-3" & +#4)	0.5	Silt=NA Clay=NA		POORLY GRADED SAND			
Coarse=0; Fine=0.5		D60, mm	1.16	USCS Group Symbol	Atterberg Limits Group Symbol		
% Sand (-#4 & +#200)	96.8	D30, mm	0.47	sp	np - Non-Plastic (assumed)		
Coarse=21; Medium=51.7; Fine=24.1		D10, mm	0.20	Auxiliary Information	Wt Ret, gm	% Retained	% Finer
% Fines (-#200)	2.7	Cc	0.96	12" Sieve - 300 mm	0	0.0	100.0
% Plus #200 (-3")	97.3	Cu	5.78	6" Sieve - 150 mm	0	0.0	100.0
				3" Sieve - 75 mm	0	0.0	100.0



Input Validation tmp Reviewed By: SVG Date Tested 10/26/2015

LABORATORY COMPACTION CHARACTERISTICS OF SOIL

Client	BEL Environmental Engineering, LLC	Boring	Trans Line Mod.
Client Project	Lorain County LF	Depth	10/22/2015
Project No.	36556	Sample	Sand
		Lab Sample No.	36556001
Visual Description:	BROWN SAND		

WET DENSITY					TEST PARAMETERS	
Mold ID	D	D	D	D	Test Method	ASTM D698
Compaction Point #	1	2	3	4	Compaction Energy	Standard
Wt. Mold & WS, gm.	6087	6182	6239	6200	Test Procedure	B
Wt. Mold, gm.	4213	4213	4213	4213	Mold Diameter, in	4
Wt. WS, gm.	1874	1969	2026	1987	Compacted Layers	3
Mold Volume, cc	946	946	946	946	Blows Per Layer	25
Wet Density, gm./cc	1.98	2.08	2.14	2.10	Rammer Weight / Fall	5.5 lbs / 12 in.
Wet Density, pcf	123.7	129.9	133.7	131.1	Size of Material Used	-3/8" Sieve
					Use: <5% Retained on 3/8"	
WATER CONTENT					OVERSIZE PARTICLE CORRECTION	
Tare Number	825	831	901	920	No Corrections Needed	
Wt. Tare & WS, gm.	1071	1320.5	1309.1	3004.2		
Wt. Tare & DS, gm.	966.8	1172.2	1142.7	2572.2	Percent of Oversize Rock (+3/8" Sieve) = <5% (Based on As-received Screening & Soaking)	
Wt. Tare, gm.	102.3	101.8	98.9	98.8		
Water Content, %	12.1	13.9	15.9	17.5	W.C. of Finer Material, % (-3/8" Sieve) = NA	
DRY DENSITY vs. WATER CONTENT					SAMPLE SUMMARY	
LABORATORY TEST VALUES						
Water Content, %	12.1	13.9	15.9	17.5	Lab Optimum Water Content, %	15.4
Dry Density, pcf	110.4	114.1	115.3	111.6	Lab Maximum Dry Density, pcf	115.6
<i>Note: Maximum Density and Optimum Water Content reported from estimated best fit smooth curve!</i> 95% Lab MDD = 109.8						
<i>Note: Compacted using manual hammer.</i>						

Input Validation: BLS

Reviewed By: AJD

Date Tested: 10/27/15

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SOLAR TESTING LABORATORIES, INC.

1125 Valley Belt Road, Brooklyn Heights, Ohio 44131

Phone: 216-741-7007 • Fax: 216-741-7011



CONCRETE REPORT

Project LORAIN TRANSMISSION LINE MODIFICATION PHASE 1 - OBERLIN, OHIO

Owner REPUBLIC SERVICES

Contractor AEG
Supplier

Class of Concrete 3000 psi

Cement

Fine Aggregate

Coarse Aggregate

Water

Subcontractor

Weight

LBS.

Weight

LBS.

Weight

LBS.

Admixture

Concrete Placement Loc NO LOCATION SPECIFIED (NO INFORMATION WITH CYLINDERS).

Cu. Yds. Placed

Cyls. Made By BEL ENVIRONMENTAL

Curing

Reinf. Grade

Reinforcement: Placing

Securing

Cleaning

Forms: Shape & Line

Cleaning

Construction

Wet

Oiled

Method Placed:

Remarks

NO SLUMP, AIR OR TEMPERATURE TESTS WERE RECORDED BY BEL ENVIRONMENTAL.

Mark	Fresh Concrete			Cylinder		Compressive Strength		Remarks
	Slump (in)	Air (%)	Temp (F)	Dia (in)	Wt (lbs)	Load (lbs)	Strength (psi)	
12/15/2015 (7 day test)								
LTL-001	--		--	6.00	27.13	90,180	3190	
12/22/2015 (14 day test)								
LTL-002	--		--	6.00	27.25	127,220	4500	
1/5/2016 (28 day test)								
LTL-003	--		--	6.00	27.19	169,910	6007	
The above compressive strength tests meet project specifications.								
Spares will be retained for 56 days unless otherwise requested.								
LTL-004	--		--					

ASTM SPECS.: C39, C470, C511, C1231 AND E4.



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CONCRETE REPORT

Project LORAIN TRANSMISSION LINE MODIFICATION PHASE 1 - OBERLIN, OHIO

Owner REPUBLIC SERVICES

Page No. Page 2 of 2

File No. A15701X02

Report No. 001

Date 12/8/2015

Mark	Fresh Concrete			Cylinder		Compressive Strength		Remarks
	Slump (in)	Air (%)	Temp (F)	Dia (in)	Wt (lbs)	Load (lbs)	Strength (psi)	

CC: nschkurko@bel-eng.com


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www.stloho.com

CONCRETE REPORT

Project LORAIN II LANDFILL
Owner REPUBLIC SERVICES
Contractor BEL ENVIRONMENTAL ENGINEERING
Supplier

Page No. Page 1 of 1
File No. S017625
Report No. 001
Date 10/17/2017
Temperature
Weather
PO No. 2017.129

Class of Concrete 4000 psi **Subcontractor**
Cement **Weight** LBS.
Fine Aggregate **Weight** LBS.
Coarse Aggregate **Weight** LBS.
Water **Admixture**

Concrete Placement Loc NO LOCATION SPECIFIED (NO INFORMATION WITH CYLINDERS).

Cu. Yds. Placed **Cyls. Made By** CONTRACTOR

Curing **Reinf. Grade**

Reinforcement: **Placing** **Securing** **Cleaning**
Forms: Shape & Line **Cleaning** **Construction** **Wet** **Oiled**

Method Placed: **Remarks** NO SLUMP, AIR OR TEMPERATURE TESTS
WERE RECORDED BY THE CONTRACTOR.

Mark	Fresh Concrete			Cylinder		Compressive Strength		Remarks
	Slump (in)	Air (%)	Temp (F)	Dia (in)	Wt (lbs)	Load (lbs)	Strength (psi)	
10/24/2017 (7 day test)								
LTL-001	--		--	4.00	8.19	46,290	3685	
11/14/2017 (28 day tests)								
LTL-002	--		--					
LTL-003	--		--					

ASTM SPECS.: C39, C470, C511, C1231 AND E4.

CC: jtodia@bel-eng.com


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CONCRETE REPORT

Project LORAIN II LANDFILL
Owner REPUBLIC SERVICES
Contractor BEL ENVIRONMENTAL ENGINEERING
Supplier

Page No. Page 1 of 1
File No. S017625
Report No. 001
Date 10/17/2017
Temperature
Weather
PO No. 2017.129

Class of Concrete 4000 psi **Subcontractor**
Cement **Weight** LBS.
Fine Aggregate **Weight** LBS.
Coarse Aggregate **Weight** LBS.
Water **Admixture**

Concrete Placement Loc NO LOCATION SPECIFIED (NO INFORMATION WITH CYLINDERS).

Cu. Yds. Placed **Cyls. Made By** CONTRACTOR
Curing **Reinf. Grade**
Reinforcement: Placing **Securing** **Cleaning**
Forms: Shape & Line **Cleaning** **Construction** **Wet** **Oiled**
Method Placed: **Remarks** NO SLUMP, AIR OR TEMPERATURE TESTS
WERE RECORDED BY THE CONTRACTOR.

Mark	Fresh Concrete			Cylinder		Compressive Strength		Remarks
	Slump (in)	Air (%)	Temp (F)	Dia (in)	Wt (lbs)	Load (lbs)	Strength (psi)	
10/24/2017 (7 day test)								
LTL-001	--		--	4.00	8.19	46,290	3685	
11/14/2017 (28 day tests)								
LTL-002	--		--	4.00	8.13	68,340	5441	
LTL-003	--		--	4.00	8.19	67,160	5347	

The above compressive strength tests meet project specifications.

ASTM SPECS.: C39, C470, C511, C1231 AND E4.

CC: jtodia@bel-eng.com

Dennis G. Sanderson
SOLAR TESTING LABORATORIES, INC.

APPENDIX F.2

FIELD TESTS

NUCLEAR MOISTURE DENSITY TEST SUMMARY

LORAIN COUNTYLANDFILL REPUBLIC SERVICES, INC. TRANSMISSION LINE MODIFICATION PHASE 1

FIELD DATA						CONTROL DATA			TEST RESULTS						COMMENTS
Date	Test No.	Lift Number	Northing	Easting	Probe Depth (inches)	Proctor Density (Pcf)	Optimum Moisture (%)	Spec Comp (% Mod)	Wet Density (Pcf)	Dry Density (Pcf)	Moisture Content (%)	Percent Compact.	Pass/ Fail	Retest No.	
11/3/15	1	1	0+25		6	115.6	15.4	90.0	133.5	122.4	9.1	105.9	pass	-	
11/3/15	2	1	1+00		6	115.6	15.4	90.0	136.7	125.3	9.1	108.4	pass	-	
11/3/15	3	1	2+00		6	115.6	15.4	90.0	131.0	122.4	7.0	105.9	pass	-	
11/3/15	4	1	2+75		6	115.6	15.4	90.0	128.8	119.8	7.5	103.7	pass	-	
11/4/15	5	2	0+50		6	115.6	15.4	90.0	117.1	110.7	5.8	95.7	pass	-	14" wide sand
11/4/15	6	2	1+00		6	115.6	15.4	90.0	114.1	108.5	5.1	93.9	pass	-	14" wide sand
11/4/15	7	2	2+10		6	115.6	15.4	90.0	119.6	109.9	8.8	95.1	pass	-	14" wide sand
11/4/15	8	3	1+00		6	115.6	15.4	90.0	126.9	116.9	8.5	101.1	pass	-	14" wide sand
11/5/15	9	3	1+00		6	115.6	15.4	90.0	116.4	109.7	6.1	94.9	pass	-	24"+ trench
11/5/15	10	3	2+00		6	115.6	15.4	90.0	111.5	105.8	5.4	91.5	pass	-	
11/5/15	11	3	0+50		6	115.6	15.4	90.0	126.9	116.5	9.0	100.8	pass	-	
11/5/15	12	4	0+75		6	115.6	15.4	90.0	115.8	108.5	6.8	93.9	pass	-	
11/5/15	13	4	1+50		6	115.6	15.4	90.0	112.2	106.4	5.5	92.0	pass	-	
11/5/15	14	5	0+55		6	115.6	15.4	90.0	114.2	107.7	6.0	93.2	pass	-	
11/5/15	15	5	1+25		6	115.6	15.4	90.0	108.9	115.5	6.1	94.2	pass	-	
11/5/15	16	6	0+60		6	115.6	15.4	90.0	115.8	108.3	7.0	93.7	pass	-	
11/5/15	17	6	1+60		6	115.6	15.4	90.0	115.8	108.7	6.5	94.1	pass	-	
11/5/15	18	7	0+50		6	115.6	15.4	90.0	114.3	107.5	6.3	93.0	pass	-	
11/5/15	19	7	1+75		6	115.6	15.4	90.0	113.0	106.4	6.3	92.0	pass	-	
11/5/15	20	8	0+50		6	115.6	15.4	90.0	113.1	107.0	5.7	92.6	pass	-	
11/5/15	21	8	1+75		6	115.6	15.4	90.0	112.8	106.3	6.1	92.0	pass	-	
11/16/15	22	1	3+60		6	115.6	15.4	90.0	132.2	118.5	11.5	102.5	pass	-	
11/16/15	23	1	4+50		6	115.6	15.4	90.0	125.4	116.2	7.9	100.5	pass	-	
11/16/15	24	1	5+50		6	115.6	15.4	90.0	111.6	105.0	6.3	90.8	pass	-	
11/16/15	25	1	6+50		6	115.6	15.4	90.0	111.4	104.8	6.3	90.7	pass	-	
11/16/15	26	1	7+00		6	115.6	15.4	90.0	112.0	105.8	5.9	91.5	pass	-	
11/18/15	27	2	7+10		6	115.6	15.4	90.0	113.8	105.0	8.4	90.8	pass	-	M=-8 D=53
11/18/15	28	2	6+20		6	115.6	15.4	90.0	119.8	108.0	10.9	93.5	pass	-	M=6 D=36
11/18/15	29	2	5+30		6	115.6	15.4	90.0	126.7	112.3	12.8	97.1	pass	-	M=11 D=68
11/18/15	30	3	7+05		6	115.6	15.4	90.0	121.2	108.3	11.9	93.7	pass	-	M=-3 D=50
11/18/15	31	3	6+25		6	115.6	15.4	90.0	123.3	109.3	12.8	94.5	pass	-	M=-3 D=44
11/18/15	32	3	5+50		6	115.6	15.4	90.0	126.9	111.5	13.7	96.5	pass	-	M=-7 D=49
11/18/15	33	4	7+00		6	115.6	15.4	90.0	122.9	110.5	11.3	95.6	pass	-	M=-1 D=58
11/18/15	34	4	6+30		6	115.6	15.4	90.0	124.1	112.1	10.7	97.0	pass	-	M=6 D=33
11/18/15	35	4	5+20		6	115.6	15.4	90.0	119.8	107.8	11.1	93.2	pass	*	M=-2 D=67
11/18/15	36	5	7+30		6	115.6	15.4	90.0	122.9	111.3	10.4	96.2	pass	*	M=2 D=28
11/18/15	37	5	6+50		6	115.6	15.4	90.0	115.7	106.0	9.1	91.7	pass	*	M=-10 D=13
11/18/15	38	5	5+50		6	115.6	15.4	90.0	118.8	108.2	9.7	93.6	pass	*	M=7 D=21
11/18/15	39	6	7+05		6	115.6	15.4	90.0	118.9	109.9	8.2	95.1	pass	*	
11/18/15	40	6	6+00		6	115.6	15.4	90.0	117.8	109.0	8.1	94.3	pass	*	

NUCLEAR MOISTURE DENSITY TEST SUMMARY

LORAIN COUNTYLANDFILL REPUBLIC SERVICES, INC. TRANSMISSION LINE MODIFICATION PHASE 1

FIELD DATA						CONTROL DATA			TEST RESULTS						COMMENTS
Date	Test No.	Lift Number	Northing	Easting	Probe Depth (inches)	Proctor Density (Pcf)	Optimum Moisture (%)	Spec Comp (% Mod)	Wet Density (Pcf)	Dry Density (Pcf)	Moisture Content (%)	Percent Compact.	Pass/ Fail	Retest No.	
11/18/15	41	6	5+10		6	115.6	15.4	90.0	117.3	108.1	8.6	93.5	pass	*	
11/19/15	42	4	2+40		6	115.6	15.4	90.0	122.5	110.7	10.7	95.7	pass	*	M=5 D=50
11/19/15	43	5	2+60		6	115.6	15.4	90.0	123.9	110.3	12.2	95.5	pass	*	M=-15 D=30
11/19/15	44	6	2+30		6	115.6	15.4	90.0	118.9	108.4	9.7	93.8	pass	*	
11/19/15	45	7	2+50		6	115.6	15.4	90.0	114.4	106.8	7.1	92.4	pass	*	
11/19/15	46	8	2+70		6	115.6	15.4	90.0	119.4	109.1	9.4	94.3	pass	*	
11/19/15	47	2	3+20		6	115.6	15.4	90.0	122.1	111.0	10.0	96.0	pass	*	M=6 D=68
11/19/15	48	2	5+00		6	115.6	15.4	90.0	123.6	112.0	10.3	96.9	pass	*	M=17 D=43
11/19/15	49	3	3+10		6	115.6	15.4	90.0	124.9	112.3	11.2	97.1	pass	*	M=17 D=53
11/19/15	50	3	4+90		6	115.6	15.4	90.0	120.5	107.0	12.6	92.5	pass	*	M=5 D=53
11/19/15	51	4	3+20		6	115.6	15.4	90.0	127.1	111.7	13.8	92.6	pass	*	M=-8 D=37
11/19/15	52	4	4+60		6	115.6	15.4	90.0	125.5	112.0	12.1	96.9	pass	*	M=2 D=21
11/19/15	53	5	3+25		6	115.6	15.4	90.0	122.1	111.6	9.4	96.5	pass	*	M=6 D=21
11/19/15	54	5	4+70		6	115.6	15.4	90.0	119.5	106.8	12.0	92.4	pass	*	M=-2 D=65
11/19/15	55	6	3+30		6	115.6	15.4	90.0	126.2	113.5	11.2	98.2	pass	*	
11/19/15	56	6	4+90		6	115.6	15.4	90.0	124.5	112.3	10.9	97.2	pass	*	
11/19/15	57	7	3+50		6	115.6	15.4	90.0	117.1	106.2	10.2	91.9	pass	*	
11/19/15	58	7	4+70		6	115.6	15.4	90.0	119.8	109.0	9.9	94.3	pass	*	
11/19/15	59	8	3+40		6	115.6	15.4	90.0	117.8	106.5	10.6	92.1	pass	*	
11/19/15	60	8	4+60		6	115.6	15.4	90.0	120.6	109.7	9.9	94.9	pass	*	
11/19/15	61	7	5+50		6	115.6	15.4	90.0	117.9	106.7	10.5	92.3	pass	*	
11/19/15	62	7	7+00		6	115.6	15.4	90.0	122.9	110.9	10.8	96.0	pass	*	
11/20/15	63	7	7+75		6	115.6	15.4	90.0	125.6	110.5	13.8	95.6	pass	*	
11/20/15	64	7	8+25		6	115.6	15.4	90.0	121.7	109.4	11.2	94.7	pass	*	
11/20/15	65	7	8+90		6	115.6	15.4	90.0	121.0	108.5	11.5	93.9	pass	*	
11/20/15	66	8	5+50		6	115.6	15.4	90.0	126.6	113.9	11.1	98.6	pass	*	
11/20/15	67	8	6+30		6	115.6	15.4	90.0	122.0	108.6	12.2	94.0	pass	*	
11/20/15	68	8	7+00		6	115.6	15.4	90.0	126.4	111.9	13.0	96.8	pass	*	
11/20/15	69	8	8+00		6	115.6	15.4	90.0	122.2	109.8	11.4	94.9	pass	*	
11/20/15	70	8	8+70		6	115.6	15.4	90.0	120.2	106.9	12.4	92.5	pass	*	
12/2/15	71	1	9+25		6	115.6	15.4	90.0	132.9	123.3	7.8	106.6	pass	*	
12/2/15	72	1	10+25		6	115.6	15.4	90.0	120.7	111.8	7.9	96.7	pass	*	
12/2/15	73	1	11+10		6	115.6	15.4	90.0	127.0	116.7	8.9	100.9	pass	*	
12/2/15	74	1	12+05		6	115.6	15.4	90.0	122.9	115.2	6.7	99.7	pass	*	
12/3/15	75	2	9+50		6	115.6	15.4	90.0	119.8	113.4	5.6	98.1	pass	*	M=15 D=59
12/3/15	76	2	10+10		6	115.6	15.4	90.0	119.7	111.7	7.2	96.6	pass	*	M=-4 D=54
12/3/15	77	2	11+30		6	115.6	15.4	90.0	112.4	106.5	5.6	92.1	pass	*	M=0 D=76
12/3/15	78	2	12+15		6	115.6	15.4	90.0	119.2	108.3	10.1	93.7	pass	*	M=3 D=38
12/3/15	79	2	13+10		6	115.6	15.4	90.0	120.1	108.5	10.6	93.9	pass	*	M=-13 D=31
12/3/15	80	2	14+20		6	115.6	15.4	90.0	119.5	108.1	10.6	93.5	pass	*	M=-7 D=35

NUCLEAR MOISTURE DENSITY TEST SUMMARY

LORAIN COUNTYLANDFILL REPUBLIC SERVICES, INC. TRANSMISSION LINE MODIFICATION PHASE 1

FIELD DATA						CONTROL DATA			TEST RESULTS						COMMENTS
Date	Test No.	Lift Number	Northing	Easting	Probe Depth (inches)	Proctor Density (Pcf)	Optimum Moisture (%)	Spec Comp (% Mod)	Wet Density (Pcf)	Dry Density (Pcf)	Moisture Content (%)	Percent Compact.	Pass/ Fail	Retest No.	
12/3/15	81	3	9+25		6	115.6	15.4	90.0	120.5	109.6	9.9	94.8	pass	*	M=0 D=31
12/3/15	82	3	10+20		6	115.6	15.4	90.0	121.1	109.3	10.8	94.6	pass	*	M=-3 D=-5
12/3/15	83	3	11+30		6	115.6	15.4	90.0	119.3	108.4	10.0	93.8	pass	*	M=-5 D=34
12/3/15	84	3	12+40		6	115.6	15.4	90.0	120.0	109.5	9.5	94.7	pass	*	M=4 D=15
12/3/15	85	3	13+10		6	115.6	15.4	90.0	120.1	108.9	10.3	94.2	pass	*	M=0 D=63
12/3/15	86	3	14+20		6	115.6	15.4	90.0	117.4	105.2	11.7	91.0	pass	*	M=-4 D=21
12/3/15	87	4	9+75		6	115.6	15.4	90.0	112.8	106.0	6.5	91.7	pass	*	M=18 D=12
12/3/15	88	4	10+50		6	115.6	15.4	90.0	118.5	106.4	11.4	92.0	pass	*	M=-13 D=31
12/3/15	89	4	11+20		6	115.6	15.4	90.0	120.2	108.5	10.8	93.9	pass	*	M=-2 D=44
12/3/15	90	4	12+50		6	115.6	15.4	90.0	119.1	107.5	10.8	93.0	pass	*	M=-7 D=37
12/3/15	91	4	13+50		6	115.6	15.4	90.0	116.6	105.7	10.3	91.4	pass	*	M=-8 D=3
12/3/15	92	4	14+00		6	115.6	15.4	90.0	116.4	104.5	11.4	90.4	pass	*	M=-30 D=70
12/3/15	93	5	9+40		6	115.6	15.4	90.0	116.4	108.7	7.2	94.0	pass	*	M=-1 D=0
12/3/15	94	5	10+10		6	115.6	15.4	90.0	116.6	107.0	9.0	92.5	pass	*	M=-7 D=21
12/3/15	95	5	11+30		6	115.6	15.4	90.0	121.6	109.7	10.8	94.9	pass	*	M=-15 D=17
12/3/15	96	5	12+10		6	115.6	15.4	90.0	121.3	110.1	10.1	95.2	pass	*	M=-3 D=46
12/3/15	97	5	13+30		6	115.6	15.4	90.0	122.9	111.0	10.7	96.0	pass	*	M=-8 D=1
12/3/15	98	5	14+50		6	115.6	15.4	90.0	119.7	107.4	11.5	92.9	pass	*	M=-18 D=26
12/4/15	99	6	9+50		6	115.6	15.4	90.0	118.4	110.2	7.4	95.3	pass	*	
12/4/15	100	6	10+10		6	115.6	15.4	90.0	120.4	110.2	9.2	95.3	pass	*	
12/4/15	101	6	11+30		6	115.6	15.4	90.0	122.2	111.2	9.9	96.2	pass	*	
12/4/15	102	6	12+10		6	115.6	15.4		121.0	110.2	9.8	95.3	pass		
12/4/15	103	6	13+30		6	115.6	15.4		125.1	111.0	12.7	96.0	pass		
12/4/15	104	6	14+40		6	115.6	15.4		123.6	109.7	12.7	94.9	pass		
12/4/15	105	7	9+20		6	115.6	15.4		124.8	111.5	11.9	96.5	pass		
12/4/15	106	7	10+10		6	115.6	15.4		126.7	113.9	11.3	98.5	pass		
12/4/15	107	7	11+00		6	115.6	15.4		125.4	112.2	11.8	97.1	pass		
12/4/15	108	7	12+00		6	115.6	15.4		122.2	109.1	12.0	94.4	pass		
12/4/15	109	7	13+15		6	115.6	15.4		118.7	106.7	11.3	92.3	pass		
12/4/15	110	7	14+10		6	115.6	15.4		121.3	108.2	12.1	93.6	pass		
12/4/15	111	8	9+20		6	115.6	15.4		122.5	110.6	10.8	95.6	pass		
12/4/15	112	8	10+20		6	115.6	15.4		120.6	112.4	7.2	97.3	pass		
12/4/15	113	8	11+40		6	115.6	15.4		115.9	108.3	7.0	93.7	pass		
12/4/15	114	8	12+10		6	115.6	15.4		116.3	106.6	9.1	92.2	pass		
12/4/15	115	8	13+20		6	115.6	15.4		113.5	107.1	6.0	92.6	pass		
12/4/15	116	8	14+30		6	115.6	15.4		112.1	106.2	5.6	91.8	pass		
12/17/15	117	2	17+506		6	115.6	15.4		125.2	117.7	11.1	97.5			
12/17/15	118	2	18+30		6	115.6	15.4		120.3	107.3	12.1	92.8			
12/17/15	119	2	19+70		6	115.6	15.4		124.1	110.0	12.8	95.2			
12/17/15	120	2	20+20		6	115.6	15.4		123.9	109.4	13.3	94.6			

NUCLEAR MOISTURE DENSITY TEST SUMMARY

LORAIN COUNTYLANDFILL REPUBLIC SERVICES, INC. TRANSMISSION LINE MODIFICATION PHASE 1

FIELD DATA						CONTROL DATA			TEST RESULTS						COMMENTS
Date	Test No.	Lift Number	Northing	Easting	Probe Depth (inches)	Proctor Density (Pcf)	Optimum Moisture (%)	Spec Comp (% Mod)	Wet Density (Pcf)	Dry Density (Pcf)	Moisture Content (%)	Percent Compact.	Pass/ Fail	Retest No.	
12/17/15	121	2	21+50		6	115.6	15.4		124.7	112.3	11.1	97.1			
12/17/15	122	2	22+10		6	115.6	15.4		123.1	110.9	11.0	96.0			
12/17/15	123	2	23+05		6	115.6	15.4		126.4	111.1	13.8	96.1			
12/17/15	124	2	23+60		6	115.6	15.4		121.8	109.1	11.7	94.4			
12/17/15	125	3	17+20		6	115.6	15.4		127.4	112.8	12.9	97.6			
12/17/15	126	3	18+10		6	115.6	15.4		120.1	107.1	12.2	92.6			
12/17/15	127	3	19+50		6	115.6	15.4		124.3	111.6	11.3	96.5			
12/17/15	128	3	20+20		6	115.6	15.4		125.4	112.9	11.1	97.6			
12/17/15	129	3	20+90		6	115.6	15.4		129.3	113.5	13.9	98.2			
12/18/15	130	3	21+50		6	115.6	15.4		125.3	113.2	10.7	97.9			
12/18/15	131	3	22+60		6	115.6	15.4		122.0	113.2	7.8	97.9			
12/18/15	132	3	23+50		6	115.6	15.4		122.9	111.6	10.2	96.5			
12/18/15	133	4	17+60		6	115.6	15.4		118.7	108.6	9.3	94.0			
12/18/15	134	4	18+10		6	115.6	15.4		118.7	108.6	9.4	93.9			
12/18/15	135	4	18+90		6	115.6	15.4		119.3	108.8	9.6	94.1			
12/18/15	136	4	19+50		6	115.6	15.4		121.1	109.5	10.6	94.7			
12/18/15	137	4	20+30		6	115.6	15.4		121.1	109.4	10.7	94.7			
12/18/15	138	4	21+40		6	115.6	15.4		124.4	110.1	13.0	95.2			
12/18/15	139	4	22+50		6	115.6	15.4		124.0	110.2	12.5	95.4			
12/18/15	140	5	23+40		6	115.6	15.4		128.8	113.7	12.9	98.4			
12/18/15	141	5	16+50		6	115.6	15.4		126.8	115.4	9.9	99.8			
12/18/15	142	5	17+10		6	115.6	15.4		125.1	111.6	12.1	96.5			
12/18/15	143	5	18+20		6	115.6	15.4		121.5	107.1	13.4	92.7			
12/18/15	144	5	19+30		6	115.6	15.4		119.2	107.4	11.0	92.7			
12/18/15	145	5	20+50		6	115.6	15.4		125.8	111.1	13.3	96.1			
12/18/15	146	5	21+40		6	115.6	15.4		121.2	106.8	13.4	92.4			
12/18/15	147	5	22+10		6	115.6	15.4		125.9	107.9	14.6	95.1			
12/18/15	148	5	23+10		6	115.6	15.4		121.6	108.5	12.1	93.8			
12/18/15	149	6	16+60		6	115.6	15.4		124.8	113.3	10.2	98.0			
12/18/15	150	6	20+30		6	115.6	15.4		125.0	113.0	10.6	97.8			
12/18/15	151	6	17+10		6	115.6	15.4		128.8	116.7	10.3	101.0			
12/18/15	152	6	21+20		6	115.6	15.4		125.9	113.2	11.2	97.9			
12/18/15	153	6	18+50		6	115.6	15.4		126.0	115.5	9.1	99.9			
12/18/15	154	6	22+50		6	115.6	15.4		124.1	113.3	9.4	98.1			
12/18/15	155	6	19+70		6	115.6	15.4		126.6	116.2	8.9	100.5			
12/18/15	156	6	23+10		6	115.6	15.4		120.1	110.4	8.8	95.5			
12/19/15	157	7	16+40		6	115.6	15.4		124.9	112.1	11.4	97.0			
12/19/15	158	7	17+30		6	115.6	15.4		125.7	112.3	12.0	97.1			
12/19/15	159	7	18+20		6	115.6	15.4		122.3	109.1	12.1	94.4			
12/19/15	160	7	19+50		6	115.6	15.4		121.3	108.1	12.2	93.5			

NUCLEAR MOISTURE DENSITY TEST SUMMARY

LORAIN COUNTYLANDFILL

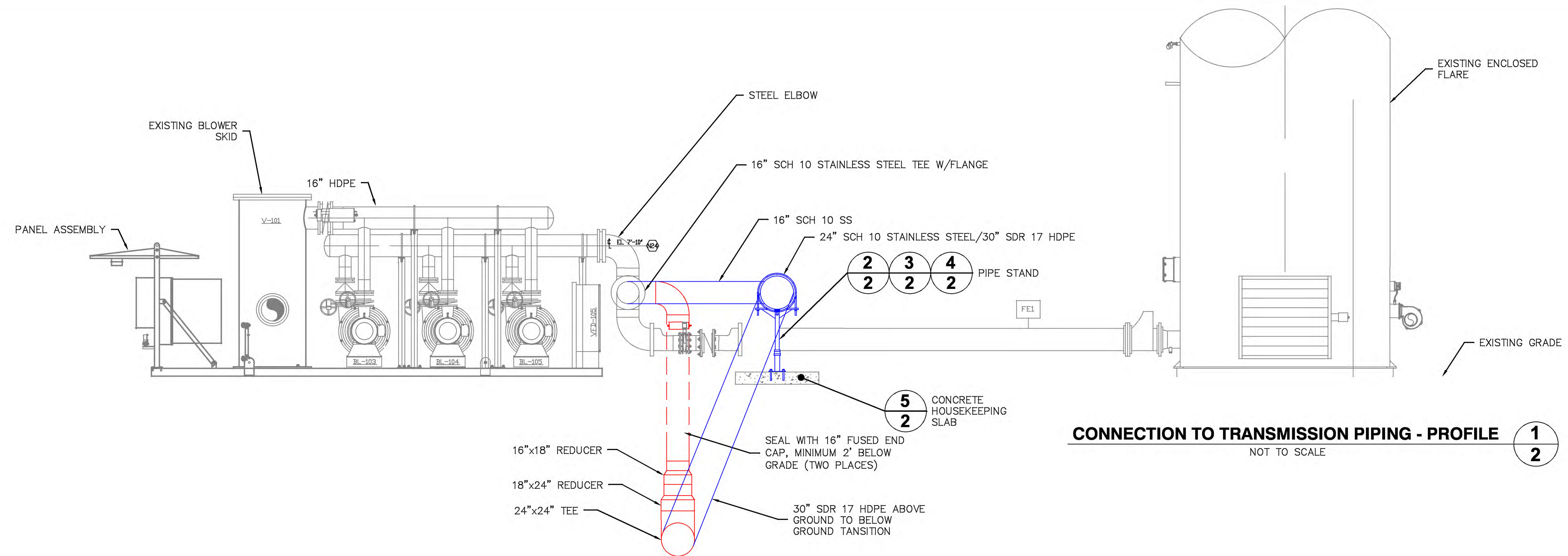
REPUBLIC SERVICES, INC.

TRANSMISSION LINE MODIFICATION PHASE 1

FIELD DATA						CONTROL DATA			TEST RESULTS						COMMENTS
Date	Test No.	Lift Number	Northing	Easting	Probe Depth (inches)	Proctor Density (Pcf)	Optimum Moisture (%)	Spec Comp (% Mod)	Wet Density (Pcf)	Dry Density (Pcf)	Moisture Content (%)	Percent Compact.	Pass/ Fail	Retest No.	
12/19/15	161	7	20+25		6	115.6	15.4		116.4	106.5	9.4	92.1			
12/19/15	162	7	21+45		6	115.6	15.4		115.9	104.6	10.8	90.5			
12/19/15	163	7	22+65		6	115.6	15.4		118.4	106.8	10.8	92.4			
12/19/15	164	7	23+50		6	115.6	15.4		116.6	105.6	10.4	91.4			
12/19/15	165	8	16+40		6	115.6	15.4		123.3	110.5	11.6	95.6			
12/19/15	166	8	17+70		6	115.6	15.4		121.6	108.6	12.0	94.0			
12/19/15	167	8	18+80		6	115.6	15.4		121.8	109.1	11.7	94.4			
12/19/15	168	8	19+55		6	115.6	15.4		121.4	108.8	11.5	94.1			
12/19/15	169	8	20+75		6	115.6	15.4		124.0	111.7	11.0	96.7			
12/19/15	170	8	21+80		6	115.6	15.4		119.1	106.1	12.2	91.8			
12/19/15	171	8	22+50		6	115.6	15.4		124.0	111.6	11.1	96.6			Sand lifts 7/8 16+00-24+00
12/19/15	172	8	23+25		6	115.6	15.4		117.5	107.1	9.7	72.6			

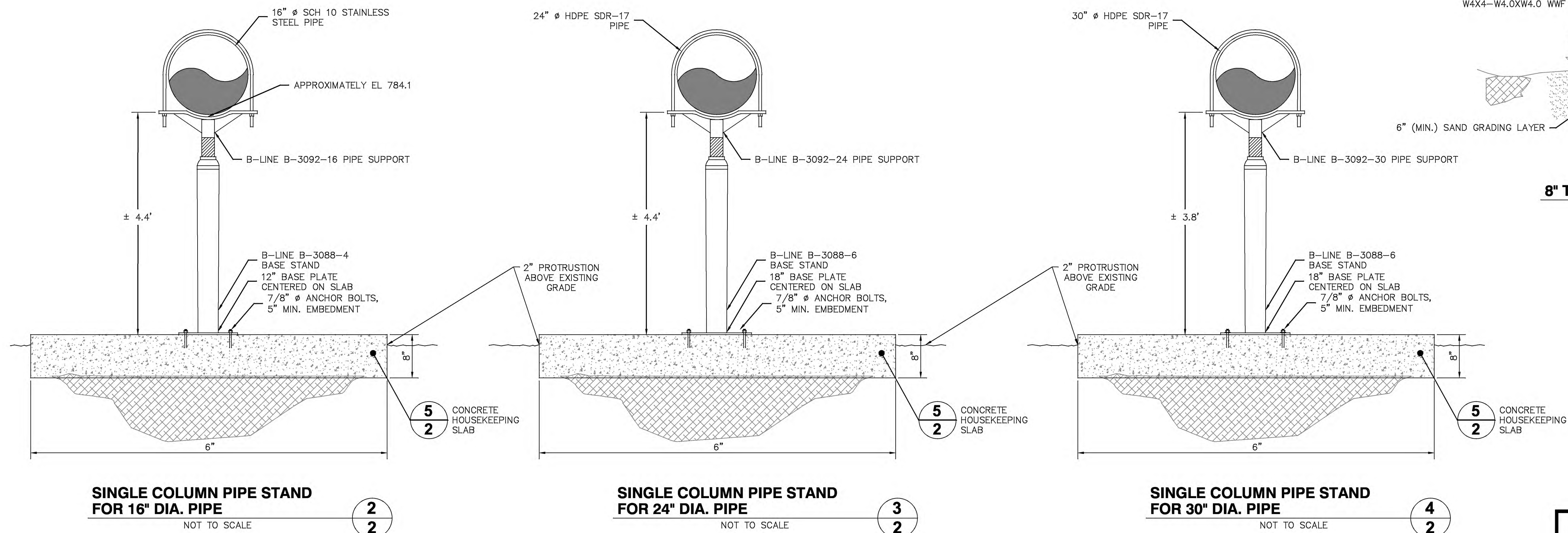
APPENDIX G
RECORD DRAWINGS

<u>Sheet No.</u>	<u>Drawing Title</u>
1	Phase I & II Transmission Pipeline Modification – Plan View
2	Phase I & II Transmission Pipeline Modification – Details
3	Phase I & II Transmission Pipeline Modification – Details
4	Phase I & II Transmission Pipeline Modification – Details
5	Phase I & II Transmission Pipeline Modification – Details
6	Phase I & II Transmission Pipeline Modification – Survey Points



CONNECTION TO TRANSMISSION PIPING - PROFILE
NOT TO SCALE

1
2



SINGLE COLUMN PIPE STAND FOR 16" DIA. PIPE
NOT TO SCALE

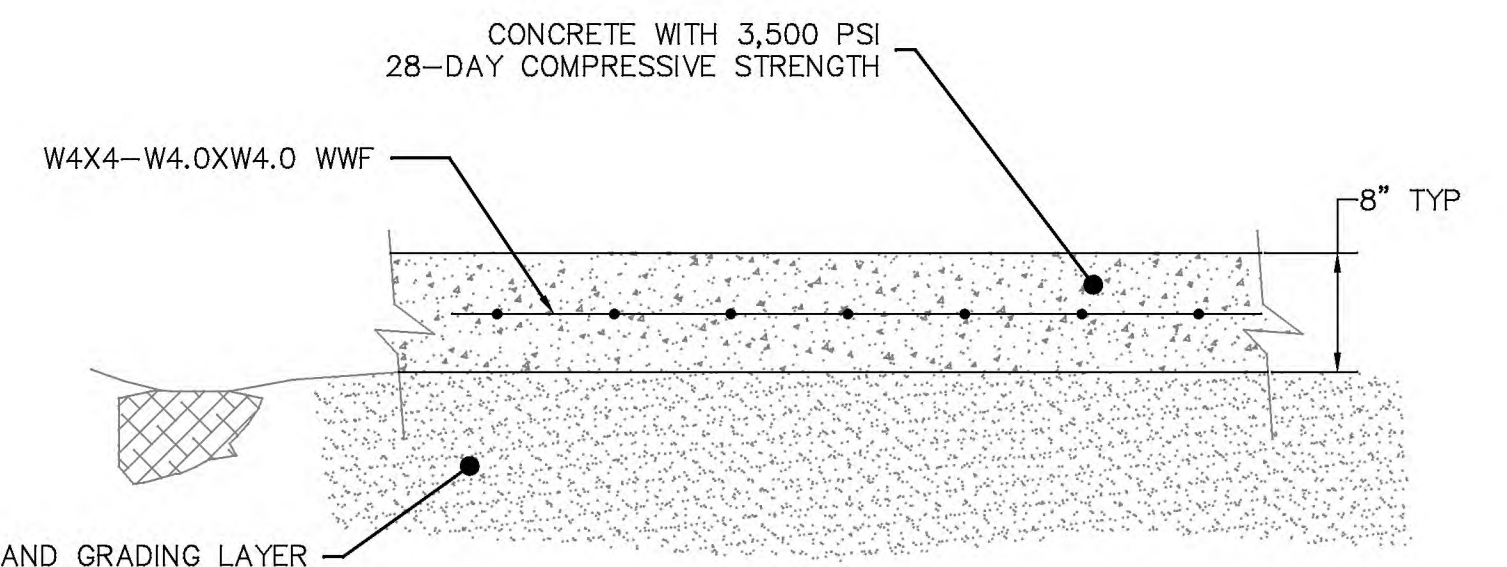
2
2

SINGLE COLUMN PIPE STAND FOR 24" DIA. PIPE
NOT TO SCALE

3
2

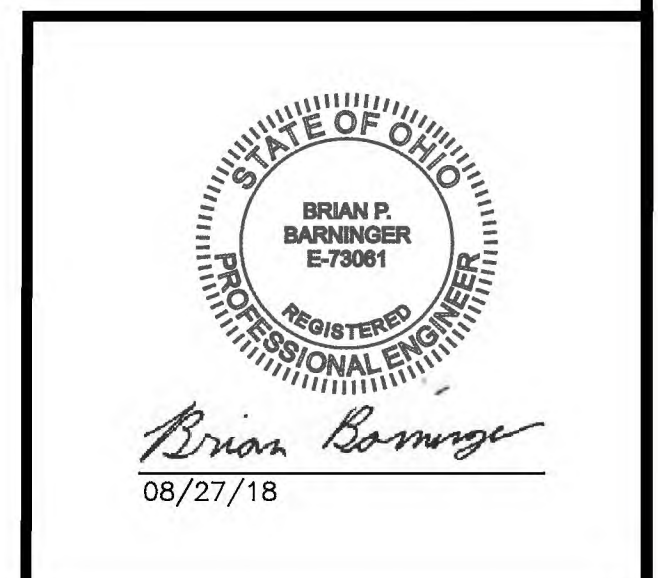
SINGLE COLUMN PIPE STAND FOR 30" DIA. PIPE
NOT TO SCALE

4
2

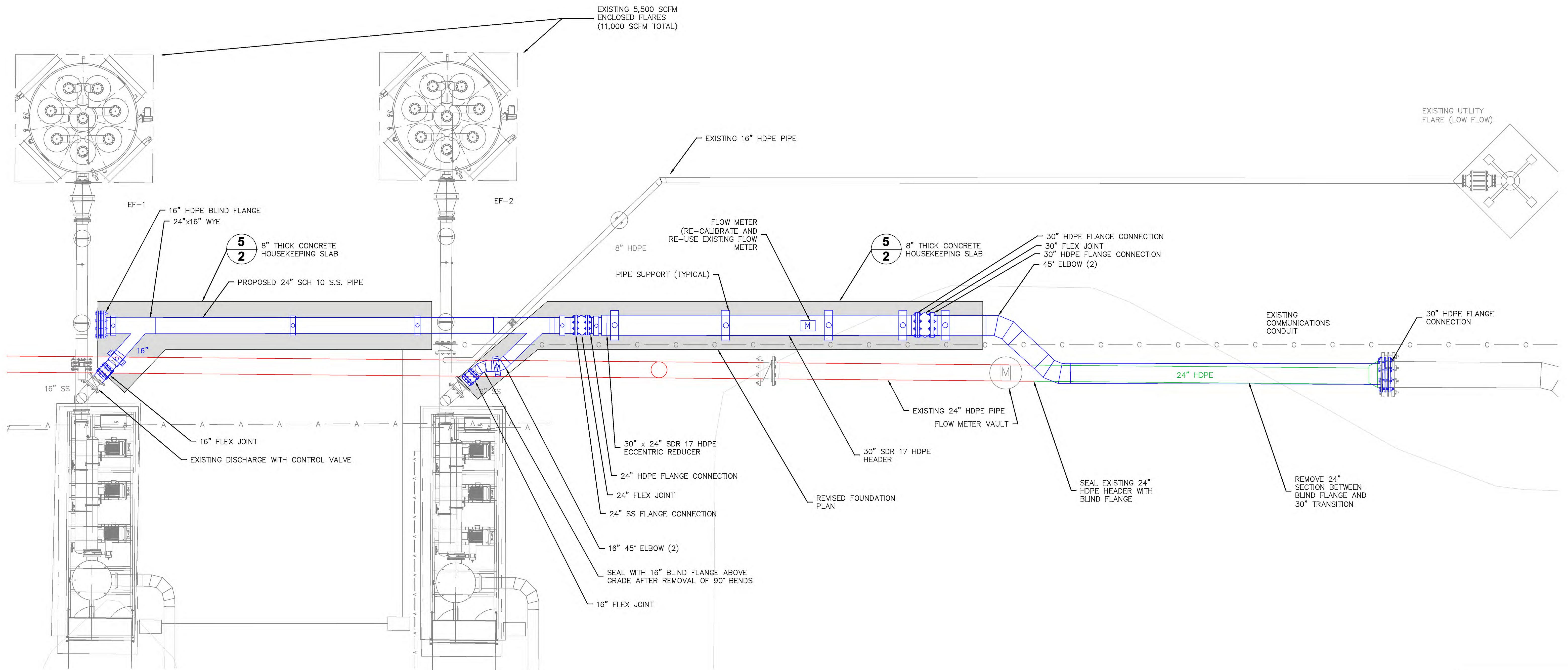


8" THICK CONCRETE "HOUSEKEEPING" SLAB
NOT TO SCALE

5
2



LORAIN COUNTY II LANDFILL			
PHASE 1 & 2 TRANSMISSION PIPELINE MODIFICATION		DATE: 08/27/18	
RECORD DRAWING		DRAWN BY: PTS	
DETAIL		PROJECT NO: 2017.129	
REV.	DATE	DESCRIPTION	CK. BY
DRAWING:		2 OF 6	



LORAIN BLOWER FACILITY AS-BUILT DESIGN FOUNDATION
NOT TO SCALE

1
3



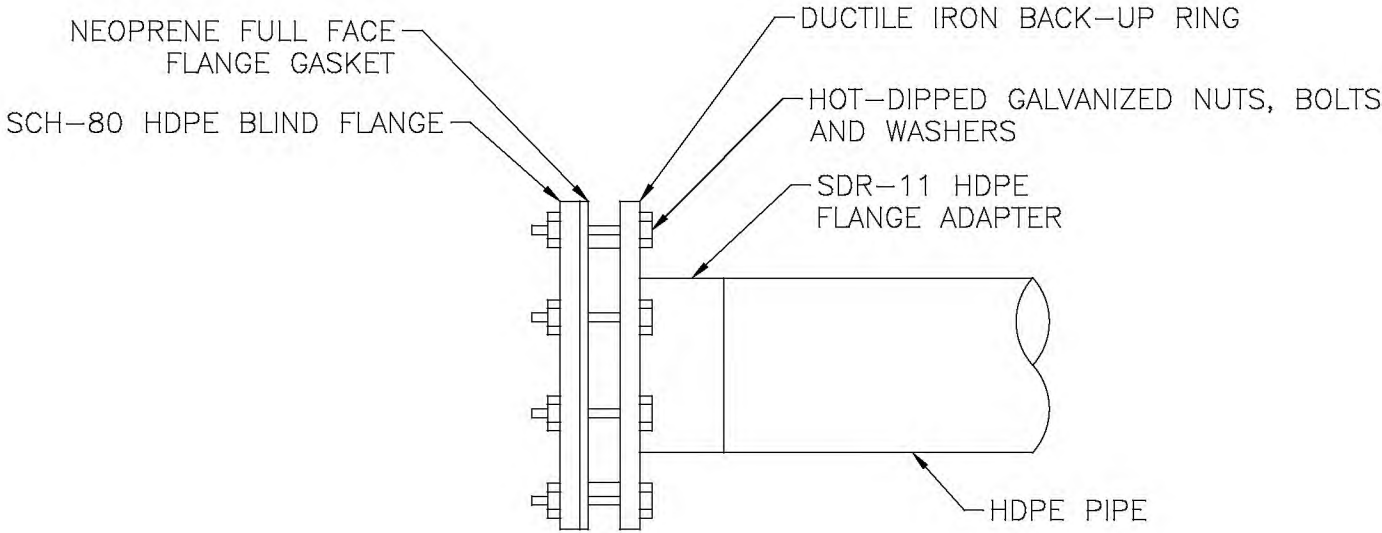
LORAIN COUNTY II LANDFILL

**PHASE 1 & 2 TRANSMISSION
PIPELINE MODIFICATION
RECORD DRAWING
DETAIL**

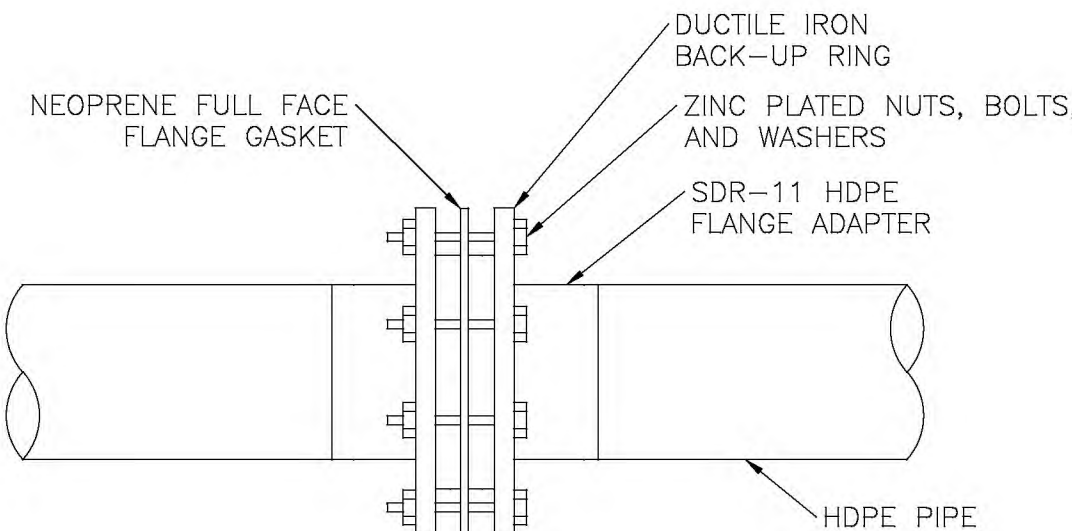
DATE: 08/27/18	PROJECT NO: 2017.129
DRAWN BY: PTS	
REV.	DATE
	DESCRIPTION
	CK. BY



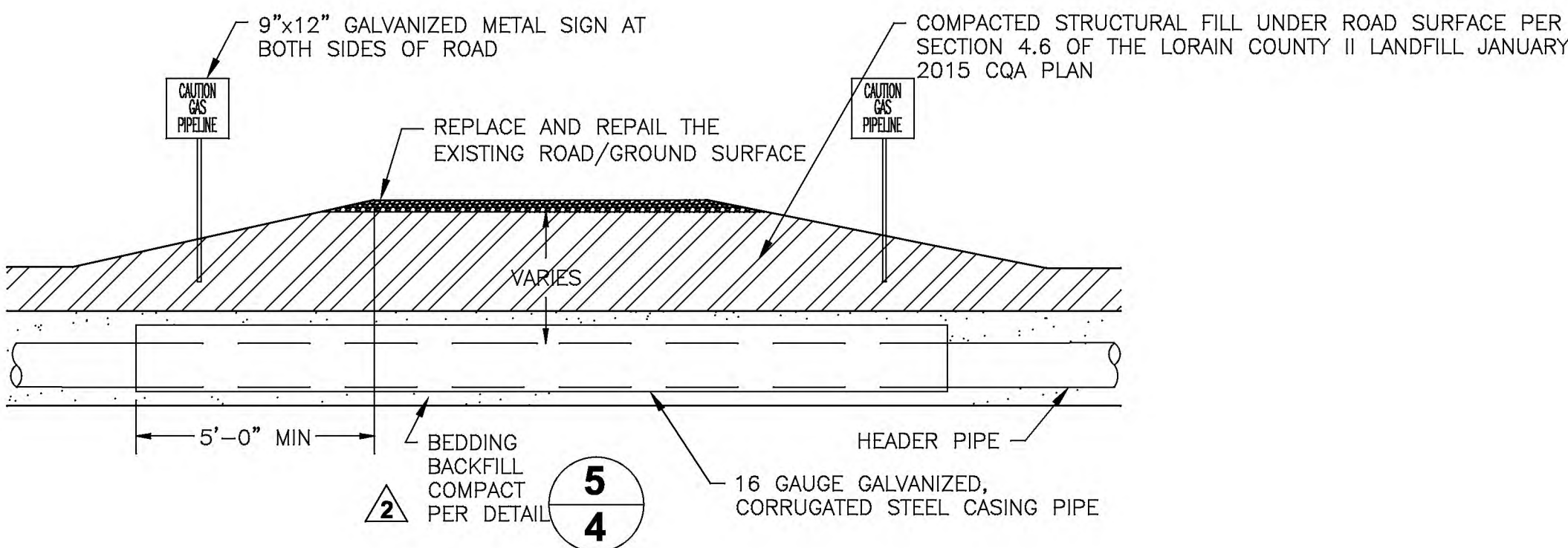
DRAWING:
3
OF 6



TYPICAL BLIND FLANGE ASSEMBLY 1
4
NOT TO SCALE

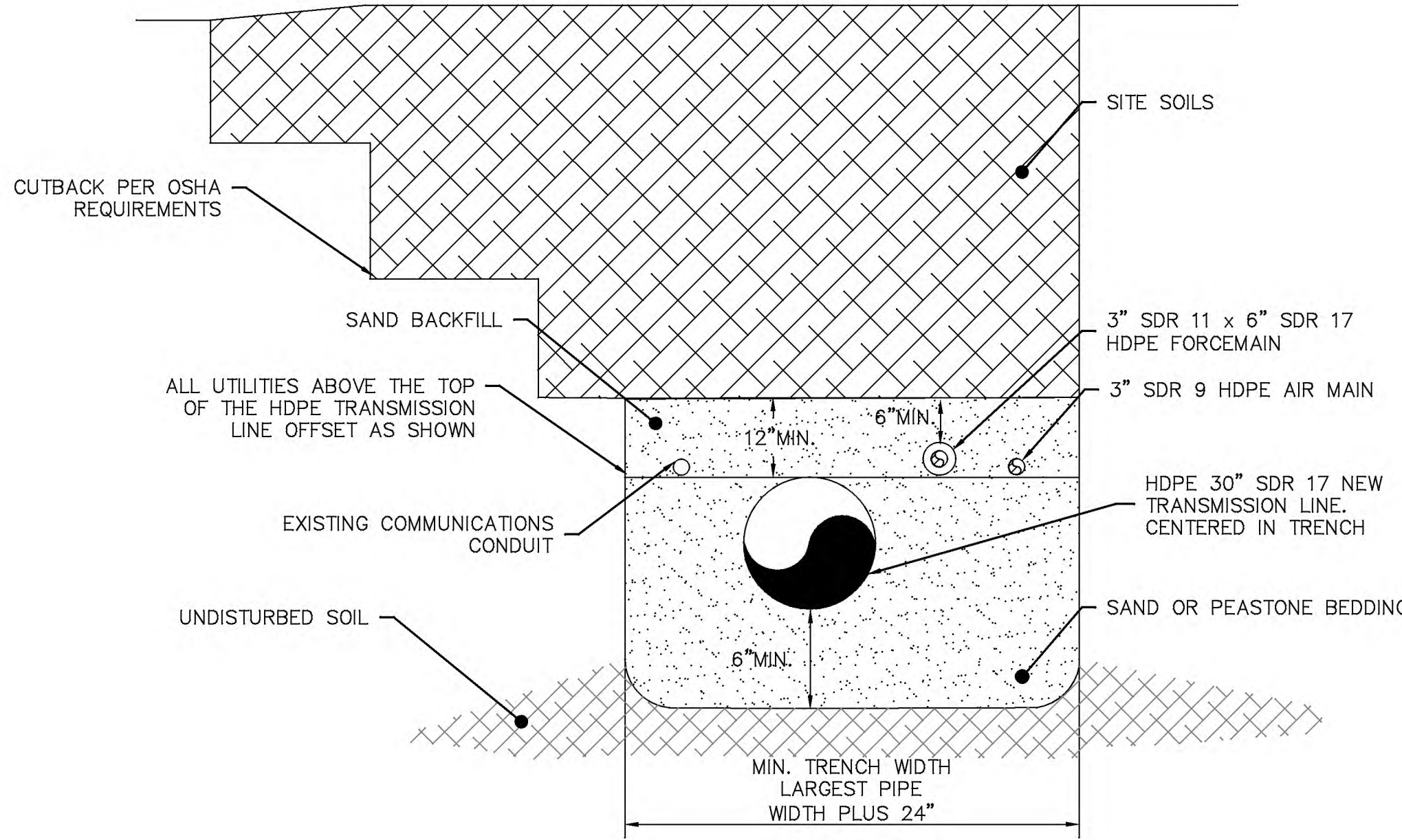


FLANGE CONNECTION DETAIL 2
4
NOT TO SCALE

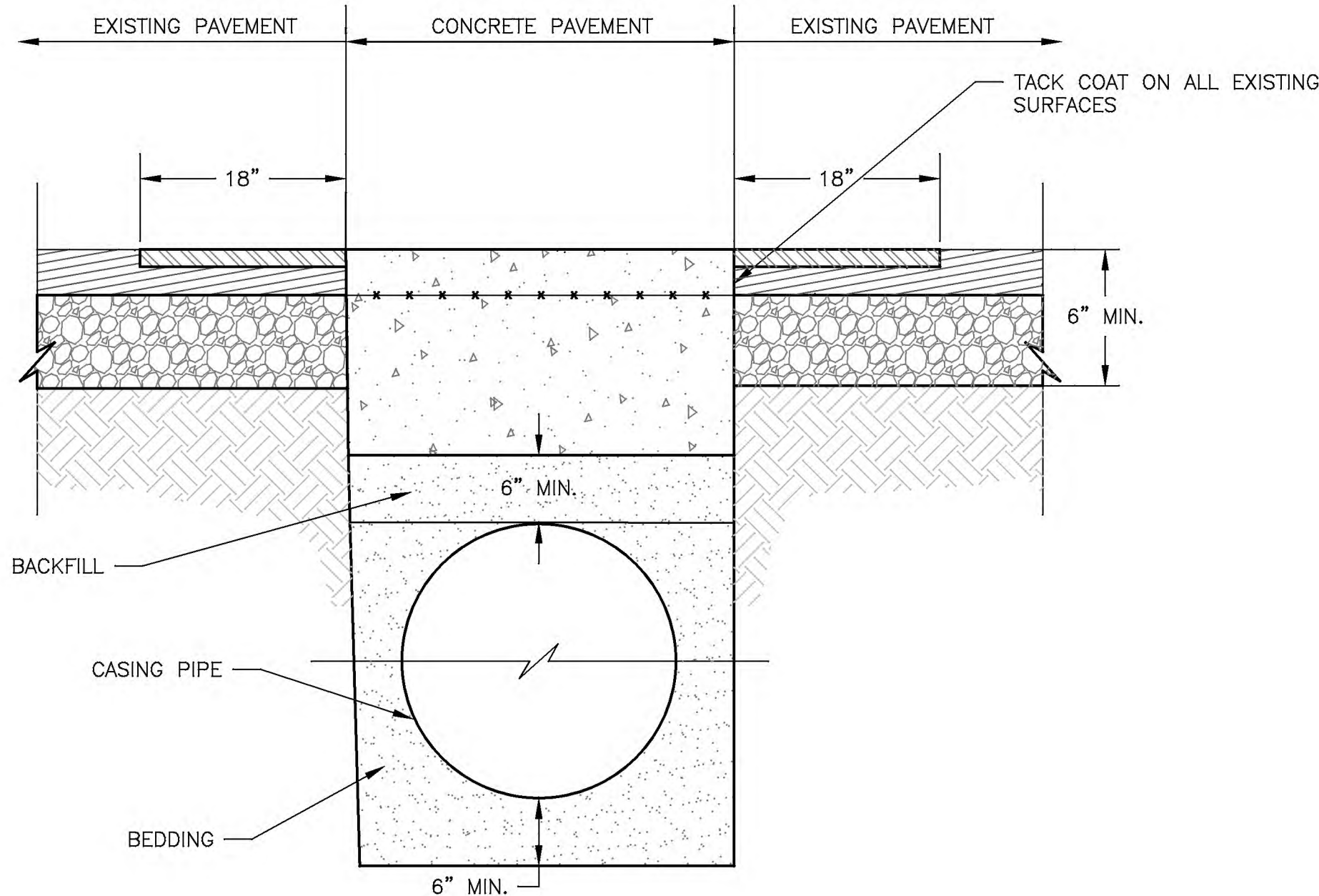


TRENCHED ROAD CROSSING 3
4
NOT TO SCALE

PIPE CASING SCHEDULE	
30" HEADER PIPE	36" CASING PIPE



TRANSMISSION LINE TRENCH 4
4
NOT TO SCALE



TRENCH SURFACE RESTORATION IN BITUMINOUS PAVEMENT 5
4
NOT TO SCALE



LORAIN COUNTY II LANDFILL

PHASE 1 & 2 TRANSMISSION PIPELINE MODIFICATION
RECORD DRAWING
DETAIL

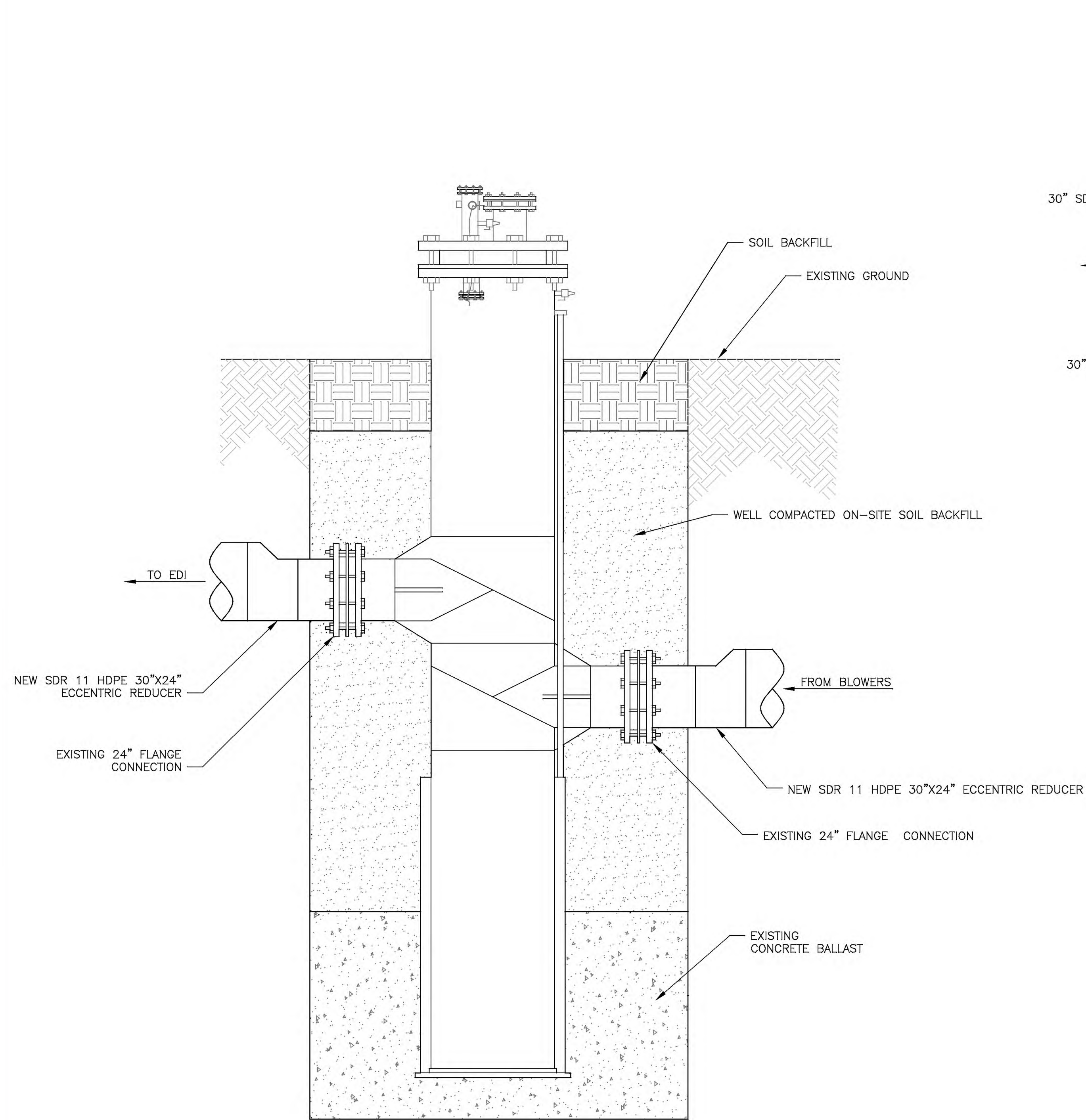
DATE: 08/27/18
DRAWN BY: PTS
PROJECT NO: 2017.129

REV.	DATE	DESCRIPTION	CK. BY

 **REPUBLIC SERVICES**

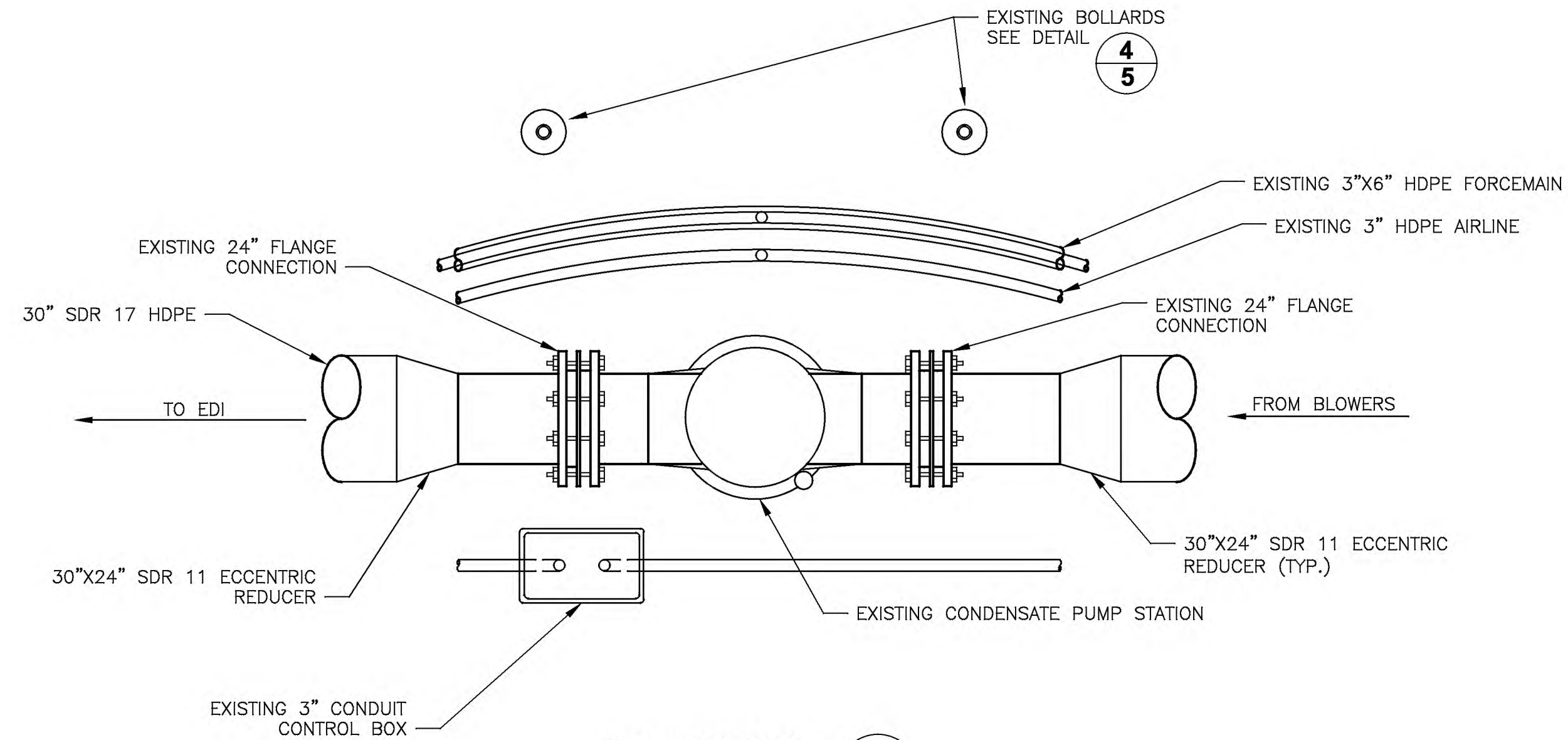
 **BEL ENVIRONMENTAL ENGINEERING**

DRAWING:
4
OF 6



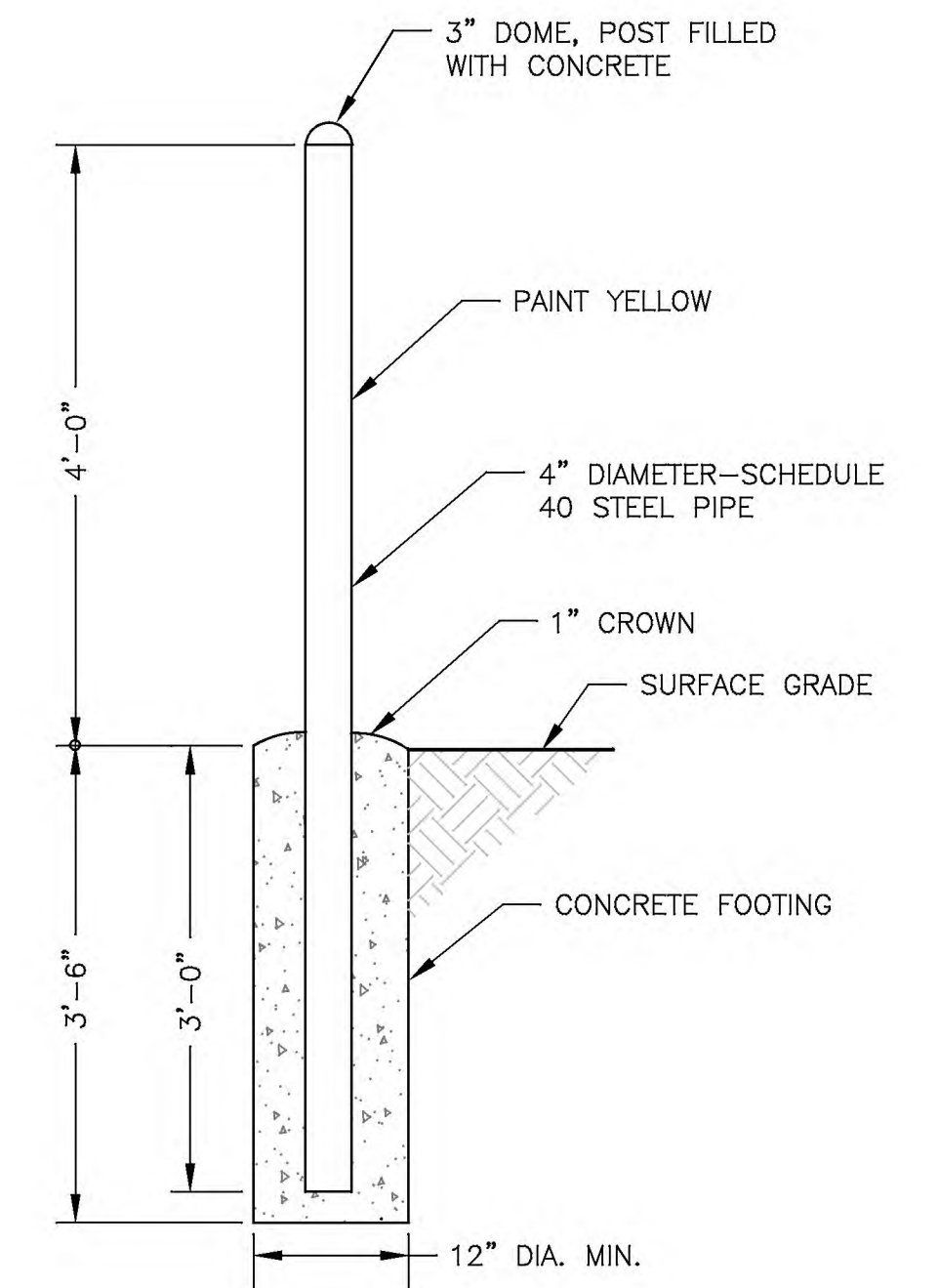
**EXISTING CONDENSATE SUMP STATION
FLANGE ELEVATION DETAIL**
NOT TO SCALE

1
5



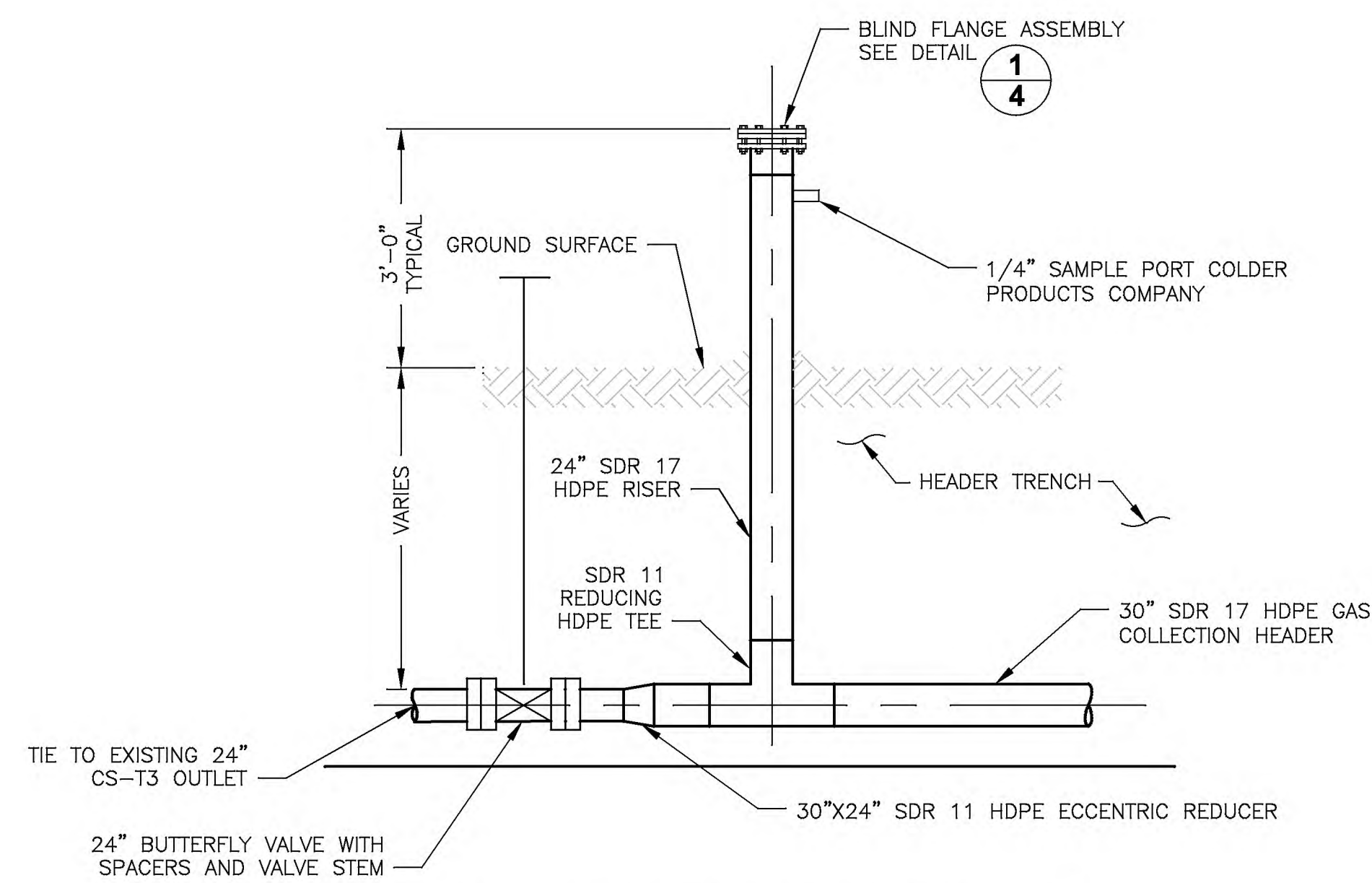
SUMP DETAIL
NOT TO SCALE

2
5



BOLLARD DETAIL
NOT TO SCALE

4
5



HEADER ACCESS RISER DETAIL
NOT TO SCALE

3
5



LORAIN COUNTY II LANDFILL

**PHASE 1 & 2 TRANSMISSION
PIPELINE MODIFICATION
RECORD DRAWING
DETAIL**

DATE: 08/27/18	DRAWN BY: PTS	PROJECT NO: 2017.129
REV.	DATE	DESCRIPTION



DRAWING:
5
OF 6

2017 Lorain Phase II As-Built Transmission Line Survey				
POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
100	595475.85	2058052.21	773.36	30IN HDR T/PIPE
101	595495.43	2058006.63	772.96	30IN HDR T/PIPE
102	595495.67	2058006.32	772.97	30IN HDR T/PIPE
103	595525.55	2057967.25	772.71	30IN HDR T/PIPE
104	595562.18	2057933.63	772.39	30IN HDR T/PIPE
105	595596.13	2057897.26	772.09	30IN HDR T/PIPE
106	595618.29	2057853.01	771.82	30IN HDR T/PIPE
107	595627.18	2057804.06	771.41	30IN HDR T/PIPE
108	595631.23	2057754.35	771.03	30IN HDR T/PIPE
109	595632.33	2057742.13	770.91	30IN TO 24 REDUCER T/PIPE
110	595632.66	2057738.44	770.70	24IN FLANGE T/PIPE
111	595632.52	2057738.33	770.38	24IN FLANGE T/PIPE
112	595634.44	2057727.77	776.69	ECCENTRIC REDUCER 24X30 T/PIPE
113	595633.90	2057730.52	776.24	24IN FLANGE T/PIPE
114	595644.00	2057681.82	776.39	30IN HDR T/PIPE
115	595651.05	2057632.23	776.06	30IN HDR T/PIPE
116	595653.41	2057582.25	775.70	30IN HDR T/PIPE
117	595653.90	2057532.34	775.38	30IN HDR T/PIPE
118	595652.72	2057482.53	775.05	30IN HDR T/PIPE
119	595651.84	2057432.81	774.80	30IN HDR T/PIPE
120	595650.89	2057383.00	774.56	30IN HDR T/PIPE
121	595650.95	2057382.96	774.53	30IN HDR T/PIPE
122	595643.82	2057333.64	774.17	30IN HDR T/PIPE
123	595630.99	2057288.32	773.62	ECCENTRIC REDUCER 24X30 T/PIPE
124	595630.03	2057285.25	773.17	24IN FLANGE T/PIPE
125	595545.93	2056542.60	777.61	24IN VALVE T/PIPE
126	595545.69	2056542.52	777.19	24IN FLANGE T/PIPE
127	595545.62	2056543.30	777.01	ECCENTRIC REDUCER 24X30 T/PIPE
128	595545.62	2056546.56	777.40	ECCENTRIC REDUCER 24X30 T/PIPE
129	595545.75	2056547.73	777.36	22 DEGREE ELBOW T/PIPE
130	595550.49	2056556.75	777.11	30IN HDR T/PIPE
131	595556.56	2056568.26	776.67	30IN HDR T/PIPE
132	595568.97	2056589.00	775.74	30IN HDR T/PIPE
133	595577.57	2056603.00	774.93	ECCENTRIC REDUCER 24X30 T/PIPE
134	595579.10	2056605.44	774.30	ECCENTRIC REDUCER 24X30 T/PIPE
135	595579.80	2056606.01	774.41	24IN FLANGE T/PIPE
136	595584.20	2056608.20	775.58	FIBER OPTIC
137	595549.87	2056540.34	778.63	FIBER OPTIC
138	595627.50	2057277.47	777.31	24IN FLANGE T/PIPE
139	595627.41	2057275.18	776.91	24IN ELBOW T/PIPE
140	595627.37	2057272.29	777.39	ECCENTRIC REDUCER T/PIPE
141	595628.41	2057177.31	776.84	30IN HDR T/PIPE
142	595628.58	2057227.47	777.15	30IN HDR T/PIPE
143	595627.93	2057127.67	776.45	30IN HDR T/PIPE
144	595628.33	2057077.73	775.99	30IN HDR T/PIPE
145	595628.83	2057028.46	775.69	30IN HDR T/PIPE
146	595629.67	2056978.51	775.24	30IN HDR T/PIPE
147	595630.64	2056929.22	774.92	30IN HDR T/PIPE
148	595632.05	2056879.55	774.44	30IN HDR T/PIPE
149	595635.58	2056829.95	774.08	30IN HDR T/PIPE
150	595638.60	2056780.43	773.68	30IN HDR T/PIPE
151	595637.89	2056730.35	773.34	30IN HDR T/PIPE
152	595625.57	2056681.98	773.02	30IN HDR T/PIPE
153	595601.39	2056638.11	771.69	30IN HDR T/PIPE
154	595585.49	2056615.32	770.90	ECCENTRIC REDUCER T/PIPE
155	595583.47	2056613.10	770.36	24IN FLANGE T/PIPE
156	597902.17	2060353.28	780.36	CONC COR
157	597902.21	2060393.36	780.43	CONC COR
158	597902.19	2060376.48	780.41	CONC
159	597889.30	2060350.43	787.79	16IN SS 90 T/PIPE
160	597891.58	2060350.05	783.89	16IN SS 90 T/PIPE
161	597891.70	2060351.75	--	16IN VALVE T/PIPE
162	597896.57	2060357.17	785.60	16IN FLANGE T/PIPE
163	597892.34	2060352.65	785.59	16IN FLANGE SS T/PIPE
164	597898.71	2060359.35	785.25	16X24 WYE SS T/PIPE
165	597899.36	2060356.44	785.88	24IN WYE FLANGE T/PIPE
166	597899.09	2060404.88	785.69	24IN FLANGE SS T/PIPE
167	597899.08	2060409.89	785.69	24IN EXPANSION JOINT T/PIPE
168	597899.03	2060412.15	785.34	24 X 30 REDUCER T/PIPE
169	597898.93	2060414.86	785.81	24 X 30 REDUCER T/PIPE
170	597898.98	2060417.52	785.79	PRESSURE TRANSDUCER T/PIPE
171	597899.23	2060430.60	785.63	30IN T/PIPE
172	597899.26	2060447.18	785.47	30IN T/PIPE
173	597898.97	2060462.94	785.19	30IN T/PIPE
174	597899.07	2060465.42	785.45	30IN EXPANSION JOINT T/PIPE
175	597898.84	2060469.59	784.97	30IN T/PIPE
176	597898.93	2060472.36	784.77	30IN T/PIPE
177	597899.22	2060376.47	785.45	24IN SS T/PIPE
178	597899.43	2060357.46	785.54	24IN SS T/PIPE
179	597892.85	2060353.26	785.27	16IN SS T/PIPE
180	597892.79	2060402.32	785.23	16IN SS 45 T/PIPE
181	597892.38	2060399.27	785.33	16IN SS T/PIPE
182	597896.29	2060405.79	785.44	16IN SS FLANGE T/PIPE
183	597898.25	2060407.73	785.11	16IN X 24 WYE SS T/PIPE
184	597892.05	2060398.58	785.65	16IN SS EXPANSION JOINT T/PIPE
185	597891.40	2060397.91	787.45	16IN VALVE
186	597891.18	2060396.14	781.15	16IN 90 T/PIPE
187	597898.93	2060474.32	784.69	30IN 45 T/PIPE
188	597894.00	2060483.62	776.00	30IN FLANGE T/PIPE
189	597892.98	2060481.50	772.90	24IN BLIND FLANGE T/PIPE
190	597893.41	2060485.35	774.18	30IN 45 T/PIPE
191	597893.34	2060486.34	774.13	30IN T/PIPE
192	597890.78	2060488.27	775.76	PROPANE LINE T/PIPE
193	597891.28	2060490.94	775.98	ELEC LINE T/PIPE
194	597892.11	2060511.31	773.10	30IN T/PIPE
195	597892.48	2060512.30	773.46	30IN FANGE T/PIPE
196	597892.12	2060513.68	773.03	30IN T/PIPE
197	597899.22	2060446.05	785.56	FLOW METER
198	597902.16	2060469.92	779.86	CONC COR
199	597902.36	2060409.20	779.94	CONC COR
200	597896.41	2060407.37	779.96	CONC COR
201	597892.68	2060403.41	779.90	CONC COR
202	597894.68	2060401.43	779.92	CONC COR
203	597896.31	2060469.84	779.81	CONC COR
204	597900.48	2060468.47	779.89	STAND GS

205	597900.62	2060463.09	779.91	STAND GS
206	597900.92	2060447.55	779.86	STAND GS
207	597900.80	2060430.81	779.88	STAND GS
208	597900.54	2060414.64	779.93	STAND GS
209	597900.23	2060412.44	779.93	STAND GS
210	597900.32	2060408.75	779.95	STAND GS
211	597900.49	2060392.42	780.45	STAND GS
212	597900.45	2060376.72	780.42	STAND GS
213	597900.70	2060357.16	780.40	STAND GS
214	597897.65	2060356.61	780.40	STAND GS
215	597895.74	2060406.75	779.93	STAND GS
216	595790.77	2060093.67	777.25	30IN HDR GS
217	595796.60	2060135.55	770.12	CS-T3 OUTLET
218	595795.49	2060134.86	770.62	24IN VALVE T/PIPE
219	595792.45	2060135.22	770.07	E-CENTRIC REDUCER
220	595790.35	2060135.28	770.25	30IN T/PIPE
221	595793.06	2060135.37	769.98	SAMPLE PORT T/PIPE
222	595788.63	2060134.37	770.16	30IN 90 T/PIPE
223	595788.31	2060131.38	770.13	30X24 PURGE RISER T/PIPE
224	595801.06	2060043.92	774.79	30IN HDR T/PIPE
225	595800.15	2060043.86	776.60	30IN HDR GS
226	595806.53	2060025.39	776.46	30IN HDR T/PIPE
227	595824.49	2059990.46	781.49	30IN HDR T/PIPE
228	595791.09	2060093.68	771.79	30IN HDR T/PIPE
229	595806.90	2060025.23	776.53	30IN HDR T/PIPE
230	595824.59	2059990.54	781.54	30IN HDR T/PIPE
231	595843.14	2059955.96	786.85	30IN HDR T/PIPE
232	595858.49	2059919.80	792.01	30IN HDR T/PIPE
233	595864.42	2059900.89	793.91	30IN HDR T/PIPE
234	595867.84	2059881.22	795.52	30IN HDR T/PIPE
235	595867.69	2059861.16	795.80	30IN HDR T/PIPE
236	595867.92	2059868.19	795.96	30IN HDR T/PIPE
237	595865.17	2059841.61	794.86	30IN HDR T/PIPE
238	595861.44	2059822.28	794.18	30IN HDR T/PIPE
239	595856.54	2059802.94	793.58	30IN HDR T/PIPE
240	595852.05	2059783.51	792.86	30IN HDR T/PIPE
241	595848.36	2059764.05	792.39	30IN HDR T/PIPE
242	595844.57	2059744.63	791.99	30IN HDR T/PIPE
243	595840.94	2059725.23	791.64	30IN HDR T/PIPE
244	595837.97	2059705.59	791.34	30IN HDR T/PIPE
245	595834.41	2059686.17	790.91	30IN HDR T/PIPE
246	595831.31	2059666.59	790.55	30IN HDR T/PIPE
247	595827.89	2059646.96	790.22	30IN HDR T/PIPE
248	595824.96	2059627.22	789.95	30IN HDR T/PIPE
249	595821.95	2059607.46	789.72	30IN HDR T/PIPE
250	595819.44	2059587.45	789.46	30IN HDR T/PIPE
251	595817.40	2059567.53	789.28	30IN HDR T/PIPE
252	595815.81	2059547.56	789.14	30IN HDR T/PIPE
253	595814.41	2059527.66	789.01	30IN HDR T/PIPE
254	595813.52	2059507.64	788.83	30IN HDR T/PIPE
255	595812.44	2059487.76	788.49	30IN HDR T/PIPE
256	595811.90	2059468.10	788.33	30IN HDR T/PIPE
257	595810.35	2059418.53	787.01	30IN HDR T/PIPE
258	595806.50	2059368.70	785.40	30IN HDR T/PIPE
259	595802.29	2059318.99	783.81	30IN HDR T/PIPE
260	595796.16	2059269.73	782.25	30IN HDR T/PIPE
261	595780.49	2059223.38	780.80	30IN HDR T/PIPE
262	595753.37	2059198.34	779.22	36IN CMP T/PIPE
263	595753.70	2059198.79	778.96	30IN HDR T/PIPE
264	595702.32	2059168.68	778.14	36IN CMP T/PIPE
265	595699.41	2059167.17	777.83	30IN HDR T/PIPE
266	595657.16	2059139.17	777.33	30IN HDR T/PIPE
267	595618.96	2059108.45	776.97	30IN HDR T/PIPE
268	595583.67	2059073.38	776.65	30IN HDR T/PIPE
269	595548.71	2059037.49	776.41	30IN HDR T/PIPE
270	595513.89	2059001.16	776.07	30IN HDR T/PIPE
271	595483.76	2058962.34	775.82	30IN HDR T/PIPE
272	595465.63	2058916.05	775.47	30IN HDR T/PIPE
273	595458.88	2058667.23	773.39	30IN HDR T/PIPE
274	595458.13	2058655.43	772.73	SAMPLE PORT T/PIPE
275	595458.67	2058653.79	772.85	24IN FLANGE T/PIPE
276	595458.28	2058653.33	772.71	INLET CS-T4 T/PIPE
277	595460.79	2058716.98	774.27	30IN HDR T/PIPE
278	595463.28	2058766.98	774.55	30IN HDR T/PIPE
279	595460.27	2058866.85	775.11	30IN HDR T/PIPE
280	595462.52	2058817.04	774.82	30IN HDR T/PIPE
281	595458.74	2058646.67	776.80	24IN FLANGE T/PIPE
282	595458.43	2058645.54	776.48	ECCENTRIC REDUCER T/PIPE
283	595458.71	2058643.25	776.89	ECCENTRIC REDUCER T/PIPE
284	595463.82	2058498.26	776.07	30IN HDR T/PIPE
285	595460.24	2058597.58	776.60	30IN HDR T/PIPE
286	595463.01	2058547.87	776.33	30IN HDR T/PIPE
287	595463.98	2058448.38	775.69	30IN HDR T/PIPE
288	595464.98	2058398.84	775.40	30IN HDR T/PIPE
289	595464.20	2058349.41	775.10	30IN HDR T/PIPE
290	595464.46	2058249.88	774.51	30IN HDR T/PIPE
291	595464.59	2058150.48	773.95	30IN HDR T/PIPE
292	595463.86	2058299.44	774.80	30IN HDR T/PIPE
293	595464.44	2058200.10	774.23	30IN HDR T/PIPE
294	595467.02	2058100.88	773.64	30IN HDR T/PIPE
295	595475.92	2058052.25	773.33	30IN HDR T/PIPE
296	595526.62	2057967.95	772.75	30IN HDR T/PIPE
297	595496.12	2058006.83	773.00	30IN HDR T/PIPE
298	595562.89	2057933.89	772.41	30IN HDR T/PIPE
299	595596.39	2057897.31	772.14	30IN HDR T/PIPE
300	595626.38	2057803.80	771.60	30IN HDR T/PIPE
301	595618.30	2057853.16	771.89	30IN HDR T/PIPE
302	595630.98	2057754.49	770.80	30IN HDR T/PIPE
303	595632.11	2057742.21	770.75	ECCENTRIC REDUCER T/PIPE
304	595632.45	2057739.84	770.37	ECCENTRIC REDUCER T/PIPE
305	595632.55	2057738.13	770.61	24IN FLANGE T/PIPE
306	595632.70	2057738.71	770.31	TEST PORT T/PIPE