LANDFILL GAS – NON-WELDED HDPE SOLUTIONS

Kyle Kukuk, PE, Senior Project Manager - Blackstone Environmental
Richard Alspaugh, Regional Sales Manager - Victaulic
INTRODUCTION

- Project Background
- Solution
- Victaulic couplings
- Installation
- Project benefits
PROJECT BACKGROUND

- 2 sumps in need of repair
- Original manufacturer gusset welds failed
- Localized settling around sumps
- Gas quality dropping from increased oxygen in system
- GCCS is 8 years old
PROJECT BACKGROUND

SOUTH SUMP
PROJECT BACKGROUND

EAST SUMP
SOLUTION

- Excavate sump and remove failed gusset welds
- Replace gusset welds with Victaulic fittings and couplings
• Est. 1919 (approaching centennial anniversary)

• Victaulic pipe joining technology has been incorporated successfully in buried services for over 85 years.

• Installations dating back to the 1930s.

• Standard Victaulic grooved couplings, manufactured from ductile iron meeting the requirements of ASTM A536 Grade 65-45-12
VICTaulic HDPE Solution

- Municipal (Water & Wastewater)
- Power
- Landfill
- Mining
- Oil and Gas
- Irrigation
- Commercial / Geothermal
VICTaulic Coupling

- Directly joins HDPE without heat
- Reusable yet permanent pipe joint providing end restraint at full rated pipe pressure.
  - Retaining rings engage into plain end pipe
  - Coupling “keys” engage in prefabricated pipe grooves.
- Temperature/environment does not affect installation time
- Designed with smooth contours for dragging.

2” – 8” Style 905
8” – 36” Style 908
HOW IT WORKS

Victaulic Style 905
HDPE Coupling
MECHANICAL JOINT BENEFITS

Faster
- Up to 10X faster than fusion
- In service immediately after installation

Simple Tools
- Hand tools/Impact wrench
- No generator or extension cords
- No special training or certification

Versatility
- Vertical installations (in plant)
- New, used or dirty pipe

Weather Independent
- Installs in wet or dry/hot or cold conditions
- No heating or cooling time required

Safety
- Visual confirmation of proper installation
- No hot plate or sharp knives needed
VICTAULIC HDPE PRODUCT OFFERING

Global Coupling Solution
- S/905 2”-8”
- S/908 8”-36”

Fittings 2”-8”
- S/926 Outlets
  - 10”-48”, 4” & 6” outlets

Coatings / Fasteners (Buried)
- S/907 2”-8”

Grooving Tools
- 8”-36”

Transition Coupling

Hydraulic Patent Pending
DESIGNED TO BE BURIED
Corrosion protection for Victaulic’s Refuse-to-Fuse products can be considered for any one or combination of reasons below:

1. Extending service life for <10-point non-aggressive soil for greater than 50 years of service

2. Aggressive soil conditions >10 points

3. Absence of soil survey data

4. “Known corrosive environments” such as coal, cinders, muck, peat, and landfills, per Appendix A of ANSI/AWWA C105/A21.2

5. Corrosion potential of existing installations in same soil conditions

6. As specified by the end-user/application

If corrosion control is deemed necessary, there are a number of options available. For instance, Refuse-to-Fuse couplings with fluoropolymer-coated hardware will have appreciably more than a 50-year life expectancy in a modestly corrosive soil, per AWWA C105 Appendix A.
If corrosion control is deemed necessary, there are a number of industry-accepted corrosion control options available for Styles 905, 907, and 908 couplings and/or hardware. They include, but are not limited to, the following:

- 316 Stainless steel fasteners meeting ASTM F593 Group 2 (for soils not aggressive to 316SS material)
- AWWA C10513 polyethylene sleeve
- AWWA C21015 liquid epoxy coatings and linings
- AWWA C21316 fusion-bonded epoxy coatings and linings
- AWWA C21417 tape coatings • AWWA C21618 heat shrink
- AWWA C21719 petrolatum and petroleum wax tape
- Sacrificial anodes for providing cathodic protection per AWWA M2720
DESIGNED TO BE BURIED
QUALITY CONTROL

Material and Performance Testing:
Internal testing to validate designs and ensuring gaskets will perform as expected for life of the system.

In-House Material Property testing:
- Durometer/Hardness
- Tensile strength
- Elongation
- Accelerated Aging
- Compression Set
- Stress Relaxation
- Volume Swell

In-House performance testing:
- Hydrostatic Pressure Test
- Pneumatic Pressure Test
- Bending of flexible pipe joints
- Vacuum conditions
- Freezing conditions
- Elevated temperature
- Temperature cycle
PERFORMANCE BENEFITS

Pressure
- Meets the rating of the pipe to ASTM F714-13

Allowable Tensile Loads
- Exceeds safe pull load requirements per Plastic Pipe Institute (PPI) Specifications and ASTM F1804-12

Minimum Bend
- Exceeds safe bend test radius requirements per Plastic Pipe Institute (PPI) Specifications

Temperature range:
- Matches the pipe
- Coupling tested successfully to - 40°F/°C
• Excavate around sump
• Cut out existing HDPE tees and welds
INSTALLATION
INSTALLATION
INSTALLATION
INSTALLATION
PROJECT BENEFITS

- Reduced project cost by a third
- No outside contractor was utilized. Installation completed by landfill staff and Victaulic staff
- Installation was completed in freezing conditions
QUESTIONS

Kyle Kukuk, P.E.
Senior Project Manager
Blackstone Environmental, Inc.
16200 Foster, Overland Park, KS 66085
913-956-6223
kkukuk@blackstone-env.com

Richard Alspaugh
Regional Sales Manager
Victaulic
913-217-0375
Richard.Alspaugh@Victaulic.com