The Alliance for PE Pipe's Newsletter

Pipeline

September 2014 Issue

Director Welcome

Thanks for opening this Alliance email. Our goal is to provide you with worthwhile information related to HDPE pipe, fittings and equipment. This month we travel to the Denver Front Range to review what happened one year ago following the devastating floods. Give the article a few moments. Perhaps when you need help in your system, what you learn might save you some research effort and service downtime.

If you come across a question about how HDPE should be used or you have a project you are considering, give me a call. See you on the road.

Peter Dyke Executive Director

HDPE Pipe Experts to the Rescue - Weld County Water Service Restored

One year ago, on September 9, 2013, heavy rains struck the front range area of Colorado. The stalled front caused massive flooding just north of Denver and the impact, a full year later remains significant. Lives, jobs, rivers, businesses and homes were destroyed. The federal government made \$340 million available for disaster aid to help fund clean up and restoration. The torrential rains garnered my attention and the focus of millions across the United States. And, for good reason. People were dying and tens of thousands were being affected. I had no idea when I first read news reports that HDPE industry would play an important role in the recovery effort.

How a Cost Effective Solution to Corrosion Became the Largest Domestic Order of HDPE Pipe.

The Regional Carrizo Project, San Antonio Water System

The Problem: finding the optimal material for the 120,000 feet of pipe needed in the Buckhorn Wellfield and Water Supply Pipeline, about 90 minutes outside of San Antonio.

Looking for a Solution.

The design team, consisting of the owner, program manager, and two design firms, evaluated multiple pipe materials. Four technical memoranda were written, which each presented its own scoping and ranking methodologies for the pipe materials in the effort to determine the most efficient, yet cost effective material.

It was an exhaustive process, evaluating available pipe materials against specific criteria. Criteria included strength, corrosion resistance, durability, constructability, effect on water temp, and cost. Pipe materials studied included ductile iron,



PVC, bar-wrapped concrete, fiberglass reinforced pipe, steel, and HDPE. Each demonstrated certain desirable qualities, with the challenge being to objectively identify the best available pipe across all evaluation criteria.

During the selection process, two types of HDPE resin were evaluated: PE3408 and PE4710. The PE3408 resin for HDPE pipe was originally considered but would have required thicker walls due to design temperature, thus increasing the cost. PE4710 was judged to be suitable for the project and remained an option in the decision making process.

In our next edition...Arriving at a solution through in depth research, evaluation, and collaboration.

Who We Are

The mission of the Alliance for PE Pipe, Inc. is to promote smooth-wall polyethylene pipe and fittings as the material of choice for municipal water and sewer piping applications. HDPE is the responsible choice for piping systems: Environmentallyresponsible due to its leak-free properties, Fiscally- responsible due to its lower life-cycle, installation and maintenance costs, Socially-responsible due to trenchless installation resulting in less disruption to traffic flow and Swollen rivers and flood waters left nine people killed and towns in Weld County were left without water or fire service.

Low pressure hung out for 5 days and dumped up to 17" of rain most of which found its way to the South Platte River. The tributaries of the South Platte were so swollen they flowed along routes that did not exist the day before. Nine people were killed.Damage to property exceeded \$1 billion and the Front Range was declared a disaster area. People that had never even considered needing flood insurance were forced from their homes as the water rose around them. The floods damaged or destroyed nearly 2,000 homes, washed out hundreds of miles of roads and damaged dozens of bridges.

One area of the flood impact that did not receive major attention was the water and sewer systems. Many pipelines were damaged, washed out and rendered inoperable by the rerouted rivers and floodwaters. Treatment plants were totally inundated with water. In fact, many communities were dumping raw sewage into the Platte River for weeks following the event. In several cases HDPE pipe was used to temporarily restore service to critical life safety systems. We will briefly explore what occurred in Weld County, an area well north of Denver that was at the heart of disaster.

The Central Weld County Water District is based in Greeley Colorado and provides water to many towns in the county including LaSalle, Firestone and Frederic. One of those tributaries to the South Platte is the St. Vrain River which runs through the heart of the Water District. The velocity and volume of water combined to blow a 500' gap in a 36" ductile iron treated water line functioning as the primary water source for Firestone, Frederic and Dacono.



Weld County Offices - Located in Greeley, Colorado, The Central Weld

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County Water District tapped HD Supply to help them restore service to a critical water service.

Agency officials were concerned about water service for their residents, but they were also critically aware that without water, fire service could be limited. On the front line was HD Supply, a company that specializes in HDPE pipe, service, fittings and equipment. Dave Reese directed efforts from HD's Henderson office over the weekend. Dave said, "We were pretty concerned because if they had had a fire, they would not have had the pressure to put it out." Dave then deployed veteran polyethylene expert, John Keene, to work with the contractor selected by the Water District.

I caught up with Dave this past March shortly before he retired after many great years in the business. Reese is one of those who had seen a lot in his career and he is also one of the most knowledgeable and "cando" guys you could ever meet. He said, "...got the call on a Friday and pipe was delivered to the site within 24 hours." Dave had reached WL Plastics, an HDPE pipe manufacturer who had large diameter pipe in inventory at their Casper WY plant 250 miles away. Reese knew that with WL's 20" HDPE he could get the pipe across the river and that it was large enough to carry sufficient flow. He also knew that finding large diameter pipe, available at a moments notice was a stroke of genius, or luck. Unfortunately, WL had actually already sold the pipe to other customers. After a brief phone call, Reese had convinced WL to ship the pipe to them. The WL sales team reached out to their customers and explained the situation and the pipe was soon loaded onto flatbeds headed to Colorado.

The ride south from Wyoming was not without drama either as the interstate was closed because of the floods. "Truck drivers were coming down from Casper on I-25 but I-25 was closed," said Keane. Reese called the state police and let them know the important loads were being delivered. The highway patrol was there on site waving them in, saving valuable time. Over a mile of WL's HDPE Pipe was delivered by Saturday afternoon, one day after the original call.



The velocity and volume of water combined to blow a 500' gap in a 36" ductile iron treated water line. WL Plastics and High Country Fusion supplied pipe and fittings within 28 hours of "the call."

Reese then had to contend with the fittings. Knowing he needed fabricated fittings to make the large diameter angles, Reese called High Country Fusion, a specialized polyethylene fabricator in the northwest. High Country had what Reese needed so they loaded "everything we thought Reese would need" onto a flatbed and had it down there by Saturday evening," said David Hanks from High Country. The fittings and valves made it to Keane 28 hours after the call.

Given the emergency situation, the Weld County owner was required to make the repair more of a "build project" versus a more typical "design build." Weld County relied heavily on the ingenuity of the contractor and HD Supply's Dave Reese. Now that Reese had all the equipment assembled, he and field expert Keene were faced with another important question: how to string pipe across a raging river well outside its banks. Reese knew all along the only pipe that could withstand that kind of task and do it well was HDPE pipe. "We went to a spot on the river for the crossing where the bank was high and the river was narrow so we did not need to support the pipe with a structure," said Keane.



The HDPE pipe was run along the bank on both sides fused together and then draped over the raging river 300 yards north of the break with only the support of the bank. It was braced, but it was literally hung from the bank and draped over the St. Vrain. Once the 2600 feet of pipe was fused it carried the water at its 250 psi from one side of the river, over the river and then back down the other bank. As you can see from the illustration, the line had to head up river to get to the narrow point for the crossing.

Fabricated 90's and 45's were used to change direction on the bypass line. High Country had also sent fabricated 36 x 20" tees to the site. "The tee was great because it changed the direction of the flow and it reduced the diameter to the pipe size available," said Reese. "We did not need a reducer because we had the tee." So on either end of the ductile iron line, a 36" x 20" DIP Tee was installed. The 36" open end was plugged and a butterfly valve was installed. An HDPE MJ adapter was then connected to the butterfly valve. The pipe was then butt fused to the MJ. All told it took a week to fuse the pipe and get it operational.



A butterfly valve, similar to this one was attached to an MJ adapter at the point where the HDPE connected to the Ductile iron pipe. Image courtesy of Mueller Company

The HDPE stayed in place for two months while crews worked to restore other parts of the system. According to Stan Linker, District Manager, the HDPE performed flawlessly during its time on duty. As municipalities, contractors and consulting engineers develop greater comfort and experience with HDPE pipe, fittings and equipment, HDPE will keep earning its stripes.



An MJ adapter (mechanical joint) is a common HDPE fitting that permits connection between HDPE and ductile iron. Image courtesy GF-CP.

Authors note: I commend Stan Linker and the folks at Central Weld County for their hard work and ingenuity in rapid storm recovery. The experts at HD Supply, WL Plastics, Georg Fischer-Central Plastics and High Country Fusion assisted with articulating the technical aspects of how the fix was made. John Keane's first hand accounts were instrumental in understanding the level of devastation present on site. Thanks one and all.

Notes

1 - FEMA Release Number NR 21 April 30, 2014, "Federal Disaster Aid for Colorado Flooding Tops \$339.5 million.

2 - (3/14/14 Ivan Moreno AP Denver Post)

If you are interested in bringing the Alliance's roadshow to your town, please <u>contact the Alliance</u> for more information.