

Aurora Colorado Water Department has seen firsthand the strength and resilience Ductile iron pipe provides.



The Colorado city of Aurora knows that a successful water infrastructure project involves utilizing the “right material for the job.” While the city utilizes several different pipe materials within the system, they have purposefully decided that in situations involving high cyclic loading that Ductile iron is the best material to handle the stresses that result from pumping cycles.

“We just don’t take any chances; we use Ductile iron exclusively on the discharge side of our waste stations.”

— Vern Adam, PE, Engineering Services Manager at Aurora Water

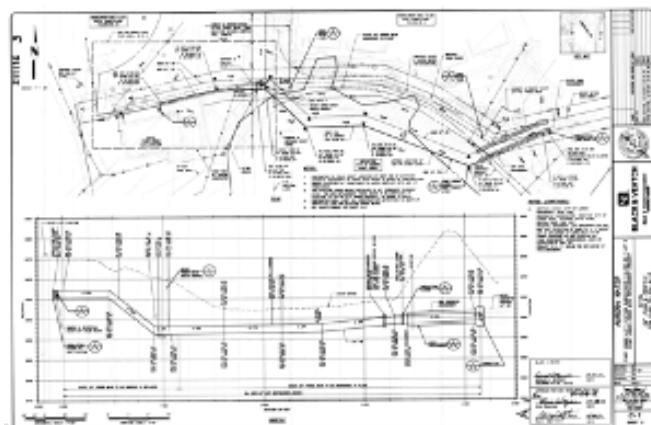
In 2011, the city’s Piney Creek lift station’s force main, made from PVC, completely fractured just outside the foundation of the lift station. This force main was next to a major watershed that leads to the Army Corp of Engineers Cherry Creek Reservoir that is used for flood control and includes a public swim beach. Vern Adam the engineering manager at Aurora Water said that while PVC has its uses, this fracture of the PVC became a “real mess” as the city dealt with a costly repair. Following the fracture of the PVC pipe, likely because of the pressure and cyclic loading coming out of the lift station, the city’s water department decided it was time to replace the PVC with new Ductile iron pipe which has proven to be more resilient, stronger, and ultimately long lasting. It was also a decision driven in part by cost; the initial break of the damaged PVC pipe ended up costing the city close to half a million dollars to repair. A cost they wanted to avoid in the future if at all possible.

Another lift station that is close by, the Shop Creek Facility, on the border of the same Cherry Creek Reservoir, similarly now uses Ductile iron pipe and has had no breaks since it was installed nearly 40 years ago in the 1980’s. As Adam stated, the city

“won’t use PVC again for wastewater discharge systems” after having seen the issues that resulted in the PVC pipe not being able to handle the cyclic loading. After dealing with all the challenges the PVC break at the Piney Creek lift station brought and seeing the success of the Ductile iron pipe installed at the Shop Creek Facility, the water department now only uses Ductile iron pipe for similar projects and applications.



The above image shows the location of the Piney Creek force main.



This image is of the Civil engineers drawing of the 24" force main that they must replace at the Piney Creek lift station.

For more details on this case study or to discuss the benefits of Ductile iron pipe contact one of DIPRA’s Regional Engineers at <https://www.dipra.org/contact-dipra/ask-an-engineer>