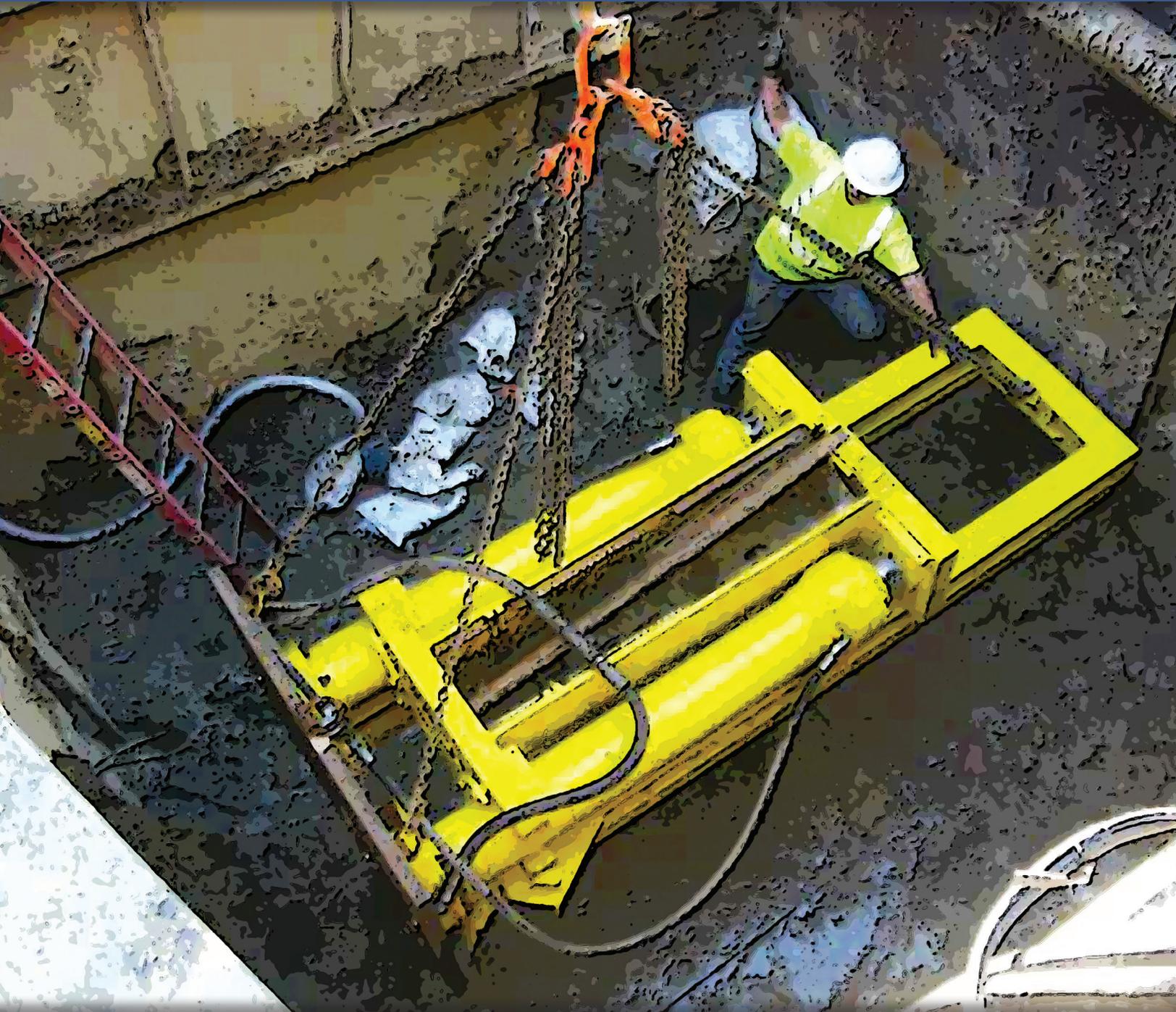




# FLOWTITE® FRP JACKING PIPE USED IN TRENCHLESS APPLICATION



## PROJECT OVERVIEW

In 2018 after a heavy rainfall in south Seattle, the scent of brewed coffee was replaced with the smell of untreated sewage. The combined sewer overflow filled up quickly and discharged into the Duwamish River. To correct the problem the Emerald City proposed a 340,000-gallon storage tank and trenchless pipe repair.



## SOLUTION – TRENCHLESS DESIGN

To convey water to the Hanford combined sewer overflow tank, engineers planned a 72" pipe ram with a 36" carrier pipe.

# CHALLENGES

## *Ground Freezing*

To support foundations of nearby buildings, the installation process included ground freezing. The process is common, but not without risk. Ground freezing may choose its own path and solidify ground outside the intended area. Engineers were concerned the frozen ground might intersect with the pipe ram path and cause damage to structures it was intended to support.

## *Nearby Infrastructure*

A 102" Seattle Public Utility storm drain rested above the proposed tunnel. The 72" pipe ram vibrations could have an impact on it and nearby structures.

## *Value Engineering With Flowtite® FRPM Jacking Pipe*

Experienced with Flowtite® FRP, the contractor, James W. Fowler, Co., made a recommendation; use a microtunnel boring machine followed by 60" Flowtite® FRPM jacking pipe. Benefits included:

- ▶ No ground freezing required
- ▶ Reduced vibrations
- ▶ Smaller outside diameter
- ▶ Faster installation
  - As a single pass solution, grouting the annular space between the carrier and casing pipes was eliminated
  - Less excavation
  - Smaller tunneling equipment
  - No welding required
- ▶ Reduced long-term maintenance costs

## *Flowtite® FRP Fast Facts*

- ▶ Since the 1970s more than 100 million feet of Flowtite® pipe has been installed worldwide.
- ▶ The durable pipe has a minimum 50-year projected life span.
- ▶ Flowtite® is lightweight, long-lasting, and extremely resistant to both inner and outer corrosion.
- ▶ Reliable, and cost-effective, it is used in water, sewer, and industrial piping applications.
- ▶ Flowtite® FRP is available in a variety of standard pressure classes up to 450 psi depending on diameter, four different stiffness classes, and diameters ranging from 4" to 156".