

## TAKING A MATERIAL RISK: PENNY WISE, DOLLAR FOOLISH

A sewer job in a Michigan Township which started construction in 2017, still has not been finalized three years later.

The project for the Township included the installation of over 13,000' of 15"-21" sanitary sewer pipe. The engineer originally specified ASTM C76 Reinforced Concrete Pipe, however, a salesman was able to convince the contractor and the engineer that they could save money by installing (flexible), polypropylene pipe. The engineer allowed the use of an alternative pipe product saving the owner \$30,000.00 – a small portion compared to the project total.

As reported to us by the contractor:

- The contractor installed the pipe in 100% stone bedding and backfill, per the engineer's requirements.
- Towards the end of construction, during post installation inspection, major problems started to appear including excessive deflection, water infiltration, and leaking joints.
- Even in the "jack and bore" portion of the project where the PP pipe was slid through a steel casing with no earth load, leaking joints were found.
- Thus far, there has been 2,973 lineal feet of pipe re-rounded and leaky joints pressure grouted. 15 polypropylene pipe locations had to be dug up and completely replaced. Repair costs are over \$250,000 and still rising, over 8 times the up-front money "saved".
- Prior to construction, the manufacturer of the polypropylene pipe reviewed all of the geotechnical data and burial depths. They also reviewed the installation of the pipe per the Township's standard trench details.
- Monies will be held in an escrow account over the next two years to cover additional testing and repairs.
- The lesson here is as clear as it is costly. The polypropylene pipe that was promoted as having high pipe stiffness, sanitary grade joints, lowest installed cost and a 100-year life, didn't perform as promised.

The failures in this Michigan township project demonstrate that even a municipality or agency that is cautious in allowing alternate pipe materials can still suffer significant problems. Manufacturers of alternate materials often market their product with claims of large *initial* savings based on pipe material prices. But, these "savings" do not include any of the higher direct costs of installing flexible pipe (such as select backfill, additional compaction and inspection, project delays, haulage and disposal offsite of native material, etc.) versus rigid pipe, nor do they reflect any long-term cost difference. Also, these "savings" do not include any indirect costs – such as causing additional negative impact and inconvenience to the public. Was \$30,000.00 in savings worth the headaches and grief?

Always video inspect and mandrel or laser profile test all plastic pipelines to catch these types of problems before the installation is accepted. Ensure a maximum allowable deflection of 5% is measured no sooner than 30 days after backfill.

**There are Hundred\$ of Thousand\$ of reason\$ to specify reinforced concrete pipe!**