

The Dollars (and Sense) of Sanitary Sewer Pipe Materials



By Jeremy Haskins, P.E.

Take away the hyperbole, misdirection and misleading claims about various pipe materials and the best reason to select one material over another becomes clear: Return on Investment (ROI).

There is a long list of legitimate selection criteria depending upon specific needs of a community: service life, abrasion resistance, chemical resistance and environmental impact to name a few. Unfortunately, current budget demands frequently drive decisions down to a short-term focus on current cost. When a building is being designed for a municipality, the designer takes special care in selecting materials which will provide longevity and thus provide good long term value for the taxpayer's money. Designers rarely suggest using a thermoplastic material such as vinyl siding instead of brick and mortar simply because vinyl siding is cheaper. The driving reason: product longevity. The same holds true for the selection of sanitary sewer pipe materials. Just because the sewer is buried, "out of sight and out of mind," doesn't mean we should choose a cheaper material with a shorter life span.

So what are the appropriate considerations for evaluating the best options for the long-term?

Material Properties

Vitrified clay products are kiln-fired ceramics with everlasting material properties unaffected by age, light or chemicals. On the flip side, limited life products made from plastics "dry out" and become brittle, due to their long chains of molecules, weeping plasticizers as the material ages. The degradation over time results in a substantial reduction in tensile strength.

Sustainability

In this case, sustainability is built from both the service life and from the raw materials and processes used to make the pipe. VCP is made from clay, shales and water. A Health Product Declaration (HPD) for clay pipe is available on the National Clay Pipe Institute's website at ncpi.org/sustainability. VCP was the first pipe material certified as environmen-

tally responsible with a fully transparent life cycle assessment conducted in accordance with ISO-14001 standards. The chlorinated chemistry of PVC "is responsible for a range of environmental and human health hazards: from the beginning of its lifecycle where the vinyl chloride

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monomer is a known human carcinogen, to the release of dioxin, another human carcinogen, when PVC is manufactured," as documented by Perkins+ Will in their 2015 white paper, Healthy Environments: What's New (and What's Not) with PVC.

Operations and Maintenance

VCP has stood up to both chemical and mechanical cleaning methods for more than 100-years. The maintenance departments of municipalities continuing to specify VCP realize the benefits of the unmatched abrasion-resistance and inert nature of clay. Municipal maintenance departments have more options when using high pressure nozzles, mechanical cleaning tools and odor control chemicals with VCP.

Service Life

Only VCP can document more than 200-years of service in the United States, 400 to 500 years in Europe and thousands of years of service throughout the world. VCP will not rust, corrode, shrink, elongate, bend, deflect, erode, oxidize or deteriorate over time. The Vinyl Institute acknowledges that plastic piping lasts "up to 50-years." When evaluating the value of a project, a service life of 50 years is unacceptable.

The superior ROI of clay is clear: unmatched material properties, outstanding environmental responsibility, more options for maintenance and operations and an unrivalled service life.

The greatest Return on Investment (ROI) favors materials that do not change over time, that deliver the greatest service life, the most options for maintenance and operations, and the lowest risk to the owner and the community, in both the present and the future. The advantages of using Vitrified Clay Pipe for sewers or brick and mortar for buildings accrue to the owner. The advantages of using cheaper materials, which are more forgiving at the time of acceptance, accrue to the contractor. As the 19th century British critic, John Ruskin, once observed: It is unwise to pay too much, but it is worse to pay too little. There is hardly anything that some men cannot make a little worse and sell a little cheaper, and the people who consider price only are this man's prey.

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