

Concrete Pipe **Insights**

A Message from the American **Concrete Pipe** Association

Durability: Too Important to Ignore

One of the most critical but overlooked factors in project design is material durability, or service life. Even such fundamental considerations as a material's ability to perform intended structural and hydraulic functions become irrelevant if a pipe cannot perform satisfactorily for an economically acceptable period.

Laboratory and field data have firmly established that concrete pipe is the recognized leader in service life among buried pipe products. Studies and historical data prove a product life of 100 years or more for concrete pipe.

Despite some manufacturers' claims, the fact is that no known material is completely inert to chemical action or immune to physical deterioration. Therefore, it is necessary to identify that material which offers the greatest likelihood of long service life.

Contrary to the implications in polyethylene pipe (PE) promotions, concrete pipe has an excellent service life record. Sulfuric acid attack from effluents may occur in some sanitary sewers, but not in storm sewers. Exterior acid attack has never represented a problem for concrete pipe. There are design options which can extend the life of concrete pipe in aggressive conditions.

Polyethylene pipe's service life, however, is time dependent, and the product experiences creep and stress relaxation (deflection). Although PE is an inert material when not under stress (load), it is susceptible to attack from some chemicals while under stress. Examples of these chemicals are strong oxidizing acids, oils, alcohols, and polar reagents such as detergents. Because of polyethylene pipe's thin walls, slight scratches or wear from handling and abrasion can be critical. Concrete pipe, on the other hand, has greater wall thickness than polyethylene pipe and is very strong and dense, so scratches, gouges and abrasion are not a factor in the life of concrete pipe.

Polyethylene pipe is flammable, susceptible to ultraviolet degradation, and is temperature sensitive. None of these conditions affect concrete pipe. The inherent strength of concrete pipe increases with an increase in pipe diameter for the same strength classification. Conversely, pipe stiffness often decreases as pipe diameter increases with most polyethylene products.



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