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Design and Installation of Water Pipeline Renewals

ABSTRACT

The market for trenchless renewal of water pipelines is growing at a fast rate. Several methods can be used for trenchless water pipe renewal, such as cured-in-place pipe (CIPP), close-fit pipe (CFT), sliplining (SL), pipe bursting (PB), and spray-in place pipeline (SIPP). There are new methods and technologies developing that should be considered for cost-effective and efficient pipeline renewals. As discussed in this paper, one of these methods recently developed is Pipe-in Liner, a new Fabric Reinforced Flexible Plastic Pipe (FRFPP). Among other factors, pipeline renewal design and construction include considerations for structural, semi-structural and non-structural applications as well as flow capacity. The structural application is used when the new renewed pipe is designed as standalone, without consideration of support from the old pipe. The semi-structural design uses the support from the old pipe and the new liner pipe spans the cracks and holes to eliminate leakage as well as enhancing the structural capacity of the old pipe. The non-structural application is used mainly for corrosion protection and water quality applications. The installation of the renewed pipe requires proper selection of renewal method, old pipe inspection and preparation, and considerations for surface access as well as service disruptions and lateral connections. The objectives of this paper include presenting requirements and decision-making process for design and installation of water pipeline renewal systems using a new close-fit product.