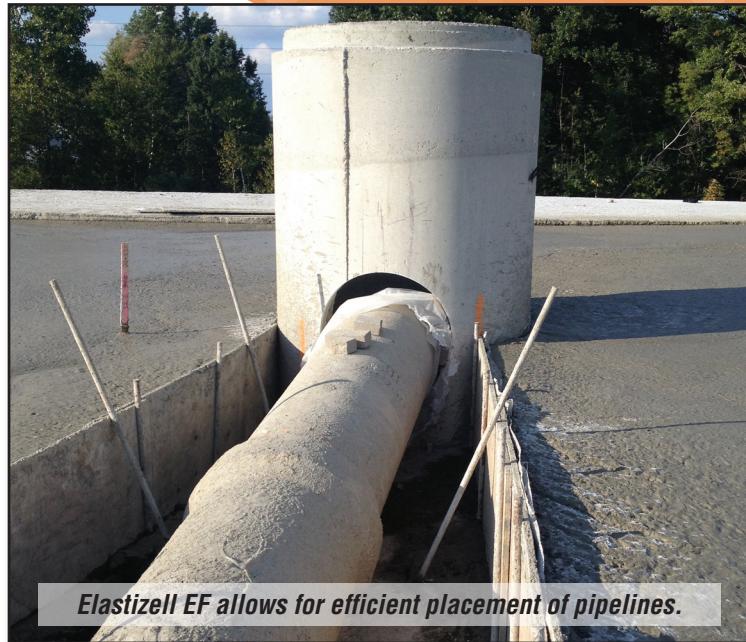


Lightweight Elastizell EF Completely and Safely Fills Voids



Problem

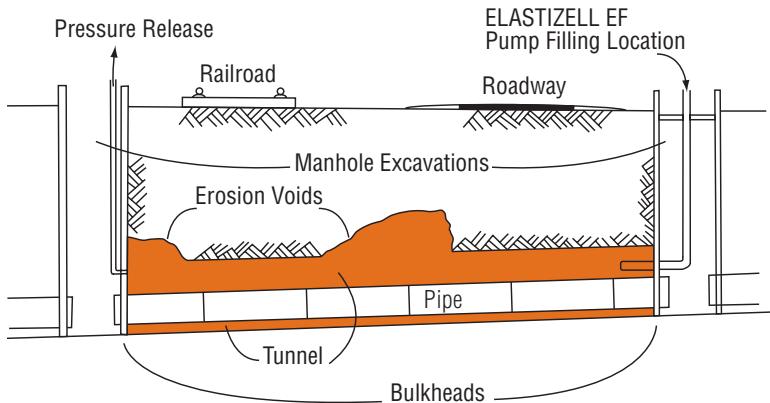
Various types of pipeline construction creates voids that require filling. What is an economical method for filling tunnel voids, abandoned pipelines and sliplined pipe annular spaces?

Discussion

Sliplining an existing pipe is a cost effective way of prolonging the life of the existing utility carrier. However, any remaining voids need to be filled to avoid future settlement and problems.

Pipeline or tank abandonments also need to be completely filled to avoid future liabilities due to cave-ins and collapses. Loading of the abandoned structure needs to be considered, as original design capacity should not be exceeded.

Open excavations require design, inspection and worker protection adding time and expense to projects.

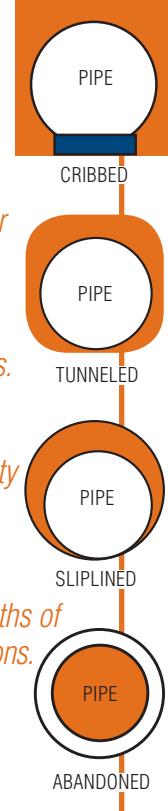


Solution

Elastizell EF is a highly flowable, cementitious material that can be pumped thousands of feet to fill irregular voids. The density and resulting strengths can be designed to meet the required project specifications. Elastizell EF is an excellent fill material for undefined voids created by various methods of underground pipeline construction.

Advantages

- *Elastizell EF is pumped into place to fill the entire void.*
- *Since no workers are in the excavation, it is a safer method for filling voids.*
- *The speed of installation results in this being an economical and competitive method of filling voids.*
- *The high fluidity of Elastizell EF completely fills the void. Elastizell EF has demonstrated flowability of up to 600 feet and the ability to be pumped thousands of feet.*
- *The ability to vary the density and resulting strengths of Elastizell EF enhances its use in numerous applications.*
- *Elastizell EF will not overload poor soils and is stronger than other backfill materials.*

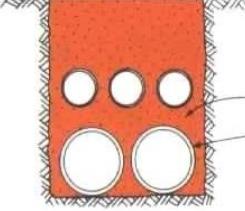
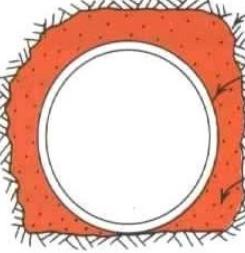
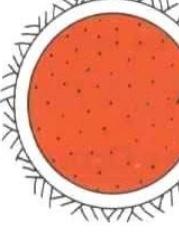


ELASTIZELL PS (Pipeline Solutions)

RESEARCH
REPORT

www.Elastizell.com

Cost Efficient Pipeline Applications

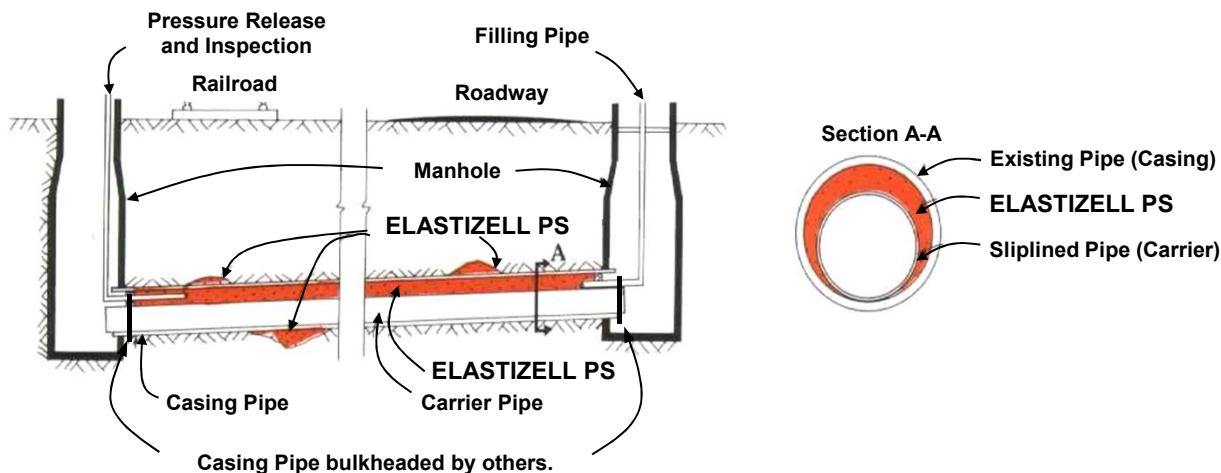
TRENCHED  <p>ELASTIZELL PS New Pipe</p> <p>Increases life performance and stability. Easily excavated. Reduces settlement.</p>	SLIPLINED  <p>Existing Pipe (Casing) ELASTIZELL PS Sliplined Pipe (Carrier)</p> <p>SLIPLINED Completely fills annular space stabilizing the carrier pipe. Low grouting pressures and low buoyant forces.</p>
TUNNELLED  <p>Tunnel Cut New Pipe ELASTIZELL PS</p> <p>Reduces lateral pressure and completely fills void. Fast installation. Flowable.</p>	ABANDONED  <p>Abandoned Pipe ELASTIZELL PS</p> <p>Eliminates surface trenching disruption. Reduces dead load and settlement.</p>

SLIPLINED – CASING & CARRIER

Elastizell PS is an ideal material for grouting the annular space in sliplined or casing & carrier sewer pipeline applications because of its stability, low density, and flowability.

- The stability of Elastizell PS assures a consistent material meeting the design criteria.
- Low density Elastizell PS permits the installation in one lift. This reduces the chances of floating the carrier pipe. Precautions preventing carrier pipe buoyancy should be considered. See procedures below.
- The flowability of Elastizell PS permits pumping at low pressures, reducing the risk of damage to the carrier pipe which may occur with heavier and less flowable grouts.

ELASTIZELL PS – SLIPLINED PIPE



PROCEDURE:

1. The casing pipe is bulkheaded at both ends by others. The carrier pipe is filled with potable water or from the sewer flow, or it may be blocked or anchored in the casing pipe to prevent flotation.
2. Typically, fill and relief lines are installed at the bulkheads by others.
3. Elastizell PS is pumped into the annular space at low pressure completely filling voids.

Problems with Other Grout Materials

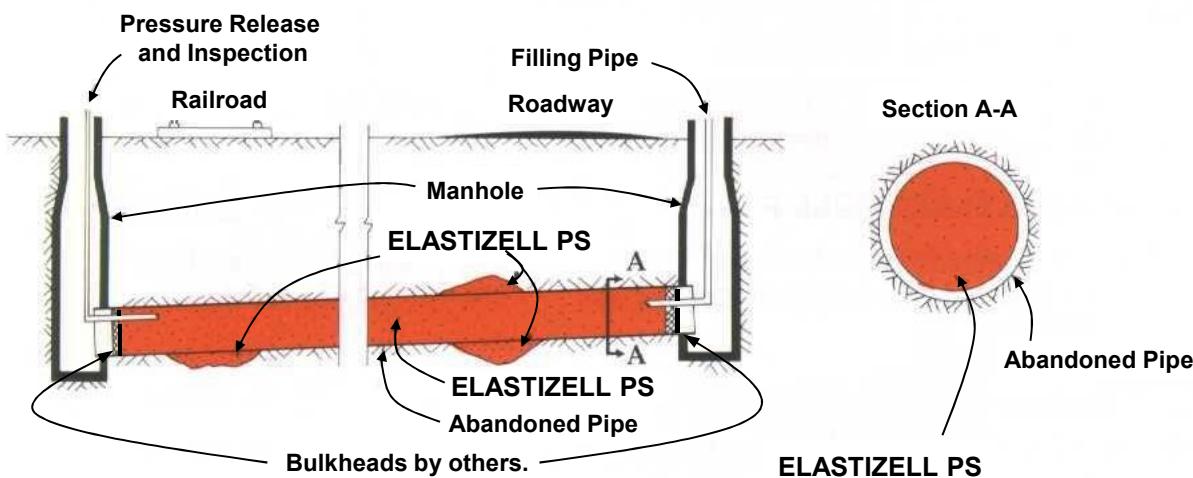
- Flotation of the Carrier Pipe with higher grout densities
- Incomplete filling or plugging of the annular space due to lack of flowability.
- Carrier pipe collapse due to high pumping pressures and the hydrostatic pressure differential of a heavier grout.

ABANDONED

It is often more economical to fill an abandoned pipeline with Elastizell PS than to excavate and remove it.

- Elastizell PS fills erosion voids at pipe joints or at broken pipe sections.
- Without workers in the excavation, it is a safe void filling method. Compaction is not required.
- The speed of installation provides an economical method for filling voids.
- Flowability of over 1200 feet is possible, depending on density and mix design.

ELASTIZELL PS – ABANDONED PIPE



Specialized batching, mixing and placing equipment is required for proper installation of low density Elastizell PS pipeline applications. Transit mixers are typically not acceptable for low density applications with cast densities less than 42pcf.

ELASTIZELL PS - BASIC PHYSICAL PROPERTIES

ELASTIZELL	Bearing Capacity	Cast Density
PS 030	2.2 Tons/sf	28pcf
PS 060	4.3 Tons/sf	34pcf
PS 120	8.6 Tons/sf	38pcf
PS 200	14.4 Tons/sf	42pcf
PS 300	21.6 Tons/sf	48pcf
PS 500	36.0 Tons/sf	52pcf
PS 500 SG	36.0 Tons/sf	70pcf

COMMON QUESTIONS ABOUT PIPELINE APPLICATIONS

Q: What density is recommended for pipeline fills?

A: Although Elastizell PS 120 is preferred for most standard pipeline fills, specific densities and strengths may be customized for a particular application.

Q: Is the low density of Elastizell PS significant?

A: Elastizell PS at one-fourth the weight of lean fill has acceptable load bearing qualities. Mix designs may be customized for special strength requirements. The listed strengths are acceptable for most applications.

Q: How far will Elastizell PS flow before another inlet is needed?

A: Pumped Elastizell PS has flowed up to 1200 feet between manholes, depending on mix design and annular space conditions. Actual conditions and requirements must be evaluated for specific mix designs.

Q: How effective is Elastizell PS at filling voids in and around pipelines?

A: Elastizell PS is highly flowable, and fills cracks and voids around the casing pipe.

Q: What if there is standing water in the void?

A: Elastizell PS 120 and heavier will displace small amounts of standing water. This is mainly due to the cohesive nature of this material, which displaces the water.

Q: Will the carrier pipe float in the annular space of a slipline application?

A: If floating is a concern, the carrier pipe can be filled with water, blocked, or anchored to prevent floating. Existing flow is diverted to carrier pipe to fill the pipe. Simple buoyancy calculations determine the % of the carrier pipe that must be filled to prevent flotation for a specific density of Elastizell PS.

Q: Are hydration temperatures a problem?

A: Pipe manufacturers indicate that PVC pipe is formed at 400°F with reheating to 300°F for forming the bell. A PVC carrier pipe should contain circulating water up to 72 hours after casting. This may vary due to specific job conditions. Elastizell PS hydration temperatures may reach 130°F to 180°F for a period of a few hours about 24 hours after the material is placed.

***Please contact the Elastizell Corporation of America
Or your local applicator for recommendations***

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