

A Crash Course on Pipeline Weights

Why Pipeline Weights are Used

Buried pipelines have always required a certain level of additional weight to counteract the buoyant force exerted on them from groundwater. Like the haul of a boat in the water, an empty or partially filled pipeline can pop right out of the ground in areas where ground water is present. This fact means that pipeline weights are not an option, they're a necessity. However, the method used to weight a pipeline also plays a key role.

How Pipelines are Protected

Pipeline owning companies and constructors go to great lengths to ensure the integrity of the pipelines they build. Corrosion, commonly known as rust, is enemy number one. Two safeguards put in place to prevent corrosion is pipeline coatings and cathodic protection systems:

Pipeline Coatings

Steel pipelines are typically coated with a fusion bonded epoxy (FBE) that protects the steel pipe from the elements and prevents corrosion from occurring.

Cathodic Protection (CP)

The cathodic protection system acts as additional insurance in the event the coating is ever damaged. Cathodic protection (CP) is an anti-corrosion technique whereby one or more anodes (positive electrodes) discharge electric current to protect the pipeline, which acts as a cathode (negative electrode). If the cathodic protection system is electrically cut-off (shielded) from the pipeline where a hole or gap in the pipeline coating has occurred, then the CP cannot prevent corrosion.

The Risks with Concrete Set-on Weights

Concrete set on weights have been known to compromise the two key protections against corrosion – they can damage the pipeline coating during installation and they can block the electrical current needed for the cathodic protection system to be effective. When these two events happen at the same time, the pipeline can rust and it's only a matter of time before a leak can occur.

Geotextile Pipeline Weights

Geotextile pipeline weights were developed as a replacement to concrete set on weights. They are essentially a large multi-compartment bag made of non-biodegradable fabric that is filled with gravel or sand native to the pipeline. Geotextile pipeline weights are a soft method of pipeline weighting that will not damage the pipeline coating during installation. They also move with the pipeline, meaning there is no risk of coating damage after the pipeline is buried in areas of ground movement or disturbance. They have been proven to not shield cathodic protection systems and provide free movement of ground water around the pipeline. Better for the environment and the pipeline, geotextile fabric pipeline weights are now specified by almost all major pipeline owning companies in Canada, the United States and around the world.

