



GEOTECHNICAL APPLICATIONS

The unique physical attributes of AquaBlok – both in its dry and in its hydrated form – have proven to make it a highly versatile material for an equally diverse array of geotechnical applications. The base product's composition is simple: powdered sodium bentonite wrapped around a crushed stone core. But the variations – in the balance of clay and stone, particle size, and even treatment additives – allow for use in many settings and for many distinct purposes. The product is highly durable in that it "heals" if disturbed, withstands repeated freeze/thaw cycles, resists erosional forces, and re-hydrates an infinite number of times if exposed to prolonged periods of draught.



Trench Dam Installations ~
(for sewers and other utilities)



With typical formulations ranging in size from $\frac{1}{4}$ " to $\frac{3}{4}$ " (in diameter), AquaBlok looks, feels, and handles – at least before it gets wet – much like any crushed stone that would be used to bed a pipe. The difference lies in AquaBlok's unique veneer of bentonite that wraps each individual stone. Working together, the stone and the clay offer a pourable fill that "self-compacts" when exposed to water. The resulting body of material never sets firm like concrete, but instead remains pliable – conforming to complex shapes like pipes, sheet pile walls, and water control structures.

When placed in a trench perpendicular to a sewer line or other conduit (as pictured at left), product can be wetted to produce a durable, structurally stable barrier that maintains a very low permeability. The coating of individual particles swells against the exterior sidewalls of the pipe and "self-keys" into surrounding soil without the need for benching, installation in lifts, or manual re-compaction. The result: an economical and technically superior barrier.

A consistent, durable, and impermeable bond between the rigid side walls of any water management structure and the surrounding soil is crucial to long-term stability and dependable performance. Bedding an overflow, riser, spillway, etc. in AquaBlok provides an all-in-one preventative solution – the consistent swell and extremely low permeability of high-quality sodium bentonite is united with the structural stability of stone aggregate for a one-step reinforcement.

Once any void spaces are identified and all loose or permeable soils are removed around a failing structure, AquaBlok can be added as a simple backfill. No soil blending or mechanical compaction is necessary (reducing labor and installation costs). Because the product both swells and self-compacts, AquaBlok will naturally "key" into the soil around it – providing a tight seal.

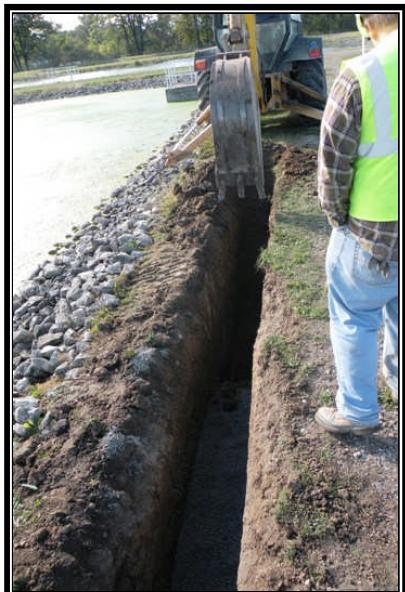


Control Structure
Installations & Repairs ~
(see reverse for related anti-seep applications)



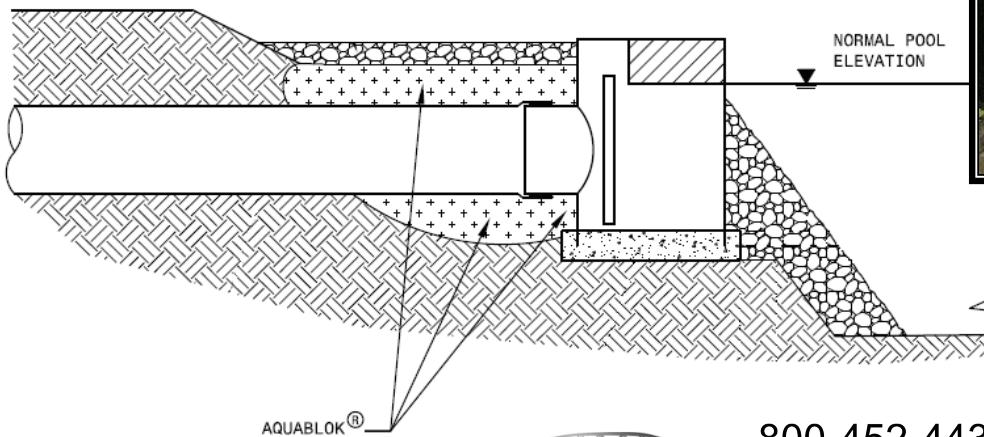
Better Bentonite™

Think of AquaBlok as Nature's Duct Tape!



Cut-Off Walls ~ For dam rehabilitation and contamination containment . . . The traditional liquid slurry trench method is well known for creating hydraulic barriers and has been used for decades to stem the flow of subsurface water and water-borne contamination. In many cases, a backfill material with more structural strength is desired, particularly where subsurface flow rates are high or in earthen dams or dikes where loads must be supported. At 60-80% solids by weight (depending on formulations), AquaBlok behaves much like the crushed stone aggregate that makes up its core composition. As a pre-mix of stone and high-grade, Wyoming-derived bentonite, the product balances extremely low permeability (10^{-8} to 10^{-9} cm/s) with unparalleled structural integrity. An added benefit of this solids-rich blend is ease of installation. Material can be simply gravity dropped into a trench, even if water is actively filling the cavity.

Anti-Seep Collars/Plugs ~ Traditionally, "anti-seep collars" made of a variety of materials (rubber, PVC, plastics, etc.) have been recommended and installed as impermeable diaphragms that encircle the pipe. While these structures are intended and often do prevent wash-out, uniform compaction of the soil around the collar can be difficult or impossible, depending on soil characteristics. An installer often has to choose either to minimize compaction, so as not to destroy the collar or, risk compromising the performance of the collar by insuring proper compaction. The installation of AquaBlok, either in conjunction with an anti-seep collar or as a stand-alone replacement (as a solids-rich backfill), helps both seal and support the exterior of a pipe – dramatically reducing the likelihood of unwanted water migration and instability.



(Above) Water "piping" on the outside of a corrugated pipe following the annular space in the trench (preventable with an anti-seep plug of AquaBlok)

AquaBlok, Ltd.

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