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#### FAST FACTS

Penetron products  
significantly increase the

## Internal Waterproofing for Concrete

Penetron® Industry Newsletter

March 2011

Crystalline Admixtures are now recognized as the best PRA (Permeability Reducing Admixture) for concrete under hydrostatic pressure. In our new TechTalk section, we provide solutions to the challenges involved with using these products on precast concrete tanks.

Joints generally prove to be a primary weak point in most precast concrete water tanks. The Precast Concrete Tank Manual, provided upon request underneath, offers a variety of detailed solutions for different types of joints and precast tank constructions.

These details show how one or more Penetron products can help to achieve tight, leak-free joints. These concepts maximize efficiency and durability by combining the structural and waterproofing elements into one. A well designed structural concrete can be turned into a durable permanent water barrier.

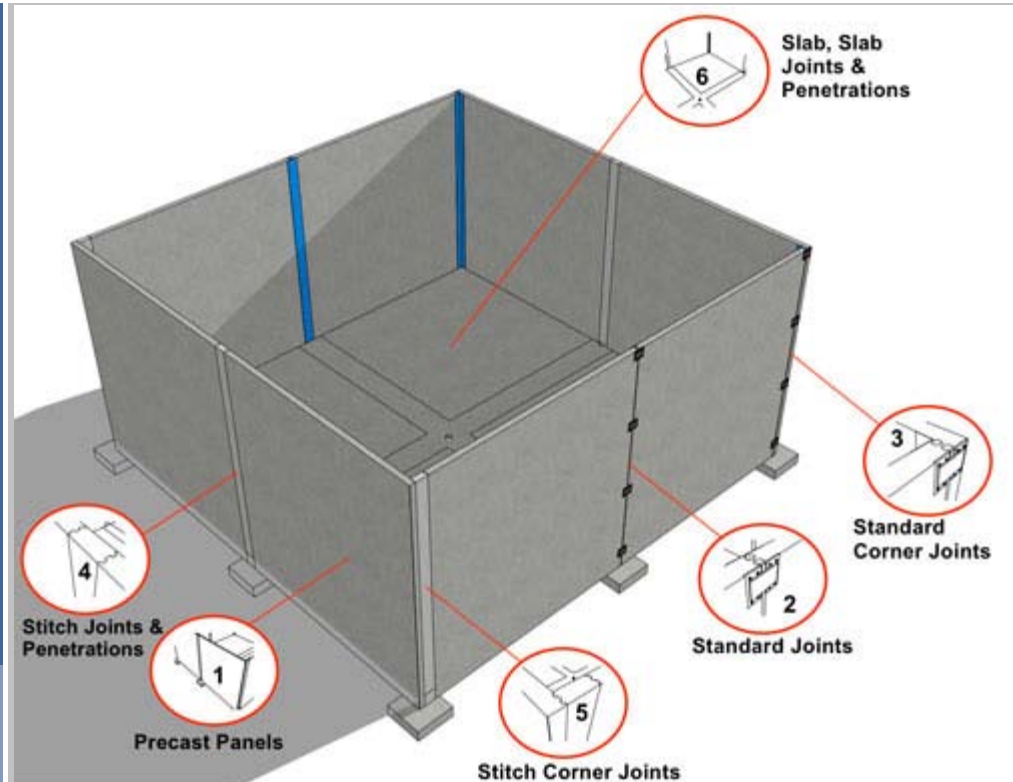
Further, read about Penetron success stories in countries as diverse as Chile, Vietnam and Guatemala under Penetron Worldwide.



TechTalk – waterproofing Precast Concrete Tanks



durability of concrete structures.



Click here for a copy of the [Penetron Precast Concrete Tank Manual](#)

*Please note that this manual is a continuously evolving guideline that will be updated periodically to include new ideas and best practices from around the globe.*

A major advantage of Penetron over other additives, admixtures and pozzolanic cements is that the process of crystal growth is continuous for the life of the concrete and self-healing of new capillary tracts and micro cracks is ongoing.

Above is an image of a completed precast concrete tank using Penetron products from the Penetron Precast Concrete Tank Manual. It shows the following tank elements:

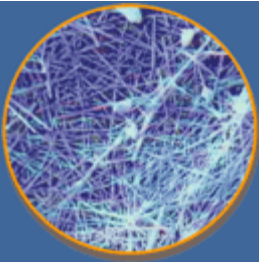
1. Precast Panels
2. Standard Joints
3. Standard Corner Joints
4. Stitch Joints & Penetrations
5. Stitch Corner Joints
6. Slab, Slab Joints and Penetrations

These solutions can produce a concrete that is stronger, more durable and watertight to hydrostatic pressures and help achieve a permanently waterproof tank structure requiring less maintenance.

Please contact your Penetron representative for additional performance advantages of the Penetron System such as self-healing properties that can protect against future concrete micro cracking problems and protection of steel reinforcing from corrosion.

 Penetron® Worldwide:

 USA - Duke Energy - Marshall Steam Station, Terrell/Catawba, North Carolina



An intricate web of insoluble crystals forms in the presence of Penetron® and H<sub>2</sub>O creating a permanent protective seal



Witness Penetron's crack sealing ability



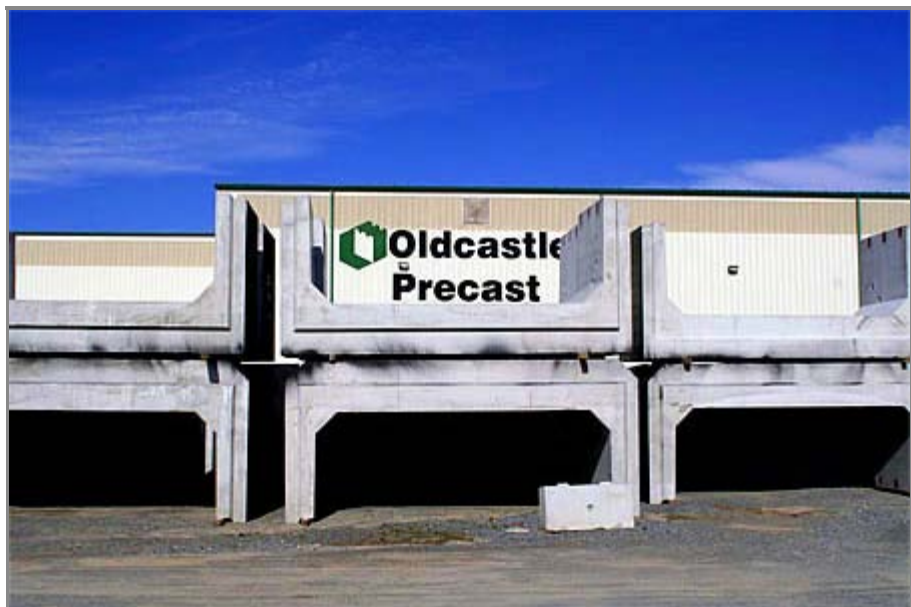
Send to a friend or colleague.



The Marshall Steam Station is a four-unit, coal-fired generating facility named for former Duke Energy president E.C. Marshall. It is Duke Energy's second largest coal facility and generates enough electricity to power approximately 2 million homes. Since it began commercial operation in 1965, Marshall Steam Station has been among the most efficient power plants in the nation.

As part of a solution to reduce the amount of corrosive runoff and groundwater contamination resulting from stockpiled coal, a new coal conveying system was designed to get the coal to the plant. Zapata Engineering designed a cut and cover tunnel consisting of an above grade concrete funnel through which the coal is dumped and fed to an underground precast concrete box culvert tunnel conveying system.

A combination of Penetron products (Penetron Admix, Penetron and Penecrete Mortar) were used to construct the base slabs, funnel and precast tunnel sections. Penetron's ability to lower the concrete's permeability and thereby increase its long term durability in an aggressive groundwater environment was but one of the reasons it was specified for use in the 4600 cubic yards of concrete poured.





## Chile - Lucio Fariña Stadium Quillota



The Lucio Fariña Stadium in Quillota about 120km North-East of the Capital Santiago is home to the San Luis Quillota football-team, which plays in Chile's First Division.

After the demolition of the old stadium from the 1940s, the Chilean construction company DESCO built the new 15 million USD Lucio Fariña Stadium with a capacity of 7500 spectators, which was opened on September 15, 2010.

Another feature is the archaeological exhibition hall, which exhibits remains of a cultural complex called Aconcagua, Bato and Inca, which was discovered and conserved during the reconstruction project.

Penetron Admix was chosen to waterproof and protect the concrete of the visitor stands.



## Vietnam - A&B Tower, Ho Chi Minh City

After the successful completion of the first five-star resort in Mui Ne Phan Thiet on Vietnam's South Coast, the Penetron-Team was called by Mr. Ha Van An, the owner of A&B

Development Corporation, for their latest development in Ho Chi Minh City.

A&B Tower is a 33-storey office tower with a 3-level basement car park and located right in the heart of Ho Chi Minh City's District 1 neighbouring New World Hotel. The project was designed by dcmstudios (Hong Kong), Duffill Watts & Tse (now CPG, New Zealand), Indochine Engineering (Vietnam) and Bureau Veritas (France).

The waterproofing works required treatment of the diaphragm wall and basement slab from the negative side including sealing of all construction joints and leaking cracks with Penetron for a total area of about 6000m<sup>2</sup>. All walkways and plant boxes as well as all wet-areas of the 33 storey tower were sealed using Peneseal Pro.

All waterproofing works were completed to the full satisfaction of the client.



 Guatemala - Verdino Vista Hermosa, Guatemala City



Verdino Project Site

Located in Zone 15 of Guatemala City, this fresh and innovative residential concept unifies comfort and harmony with nature. Created by architect Mendez Francisco Samayoa Verdino and developed by Vexem Construction, it involves the combination of apartments and lofts with beautiful forest views.

This project is the first of its kind in Guatemala and features more than 1500m<sup>2</sup> of garden area. Sustainability, best use and savings of resources were a central focus during the development of the Verdino concept.

The project incorporates technologies to reduce electricity consumption and natural energy sources such as solar panels for the water heaters and heat pumps as well as wind engines. Advanced water treatment technology helps the project save up to 50% of water in the bathroom units and garden maintenance.

Even the concrete used in the Verdino project was produced on site in order to reduce traffic from concrete trucks and the cement used in the concrete was produced with 30% less energy than comparable cement.

In order to enhance the durability of the concrete and to effectively waterproof and protect the structure of Verdino, Penetron Admix was chosen to be added to the concrete of all plant-holding balconies to prevent water seepage. Penetron Admix was conveniently added to the mixing truck using soluble bags that simply disintegrate in the concrete mix resulting in significant time and cost savings.

As Penetron products are non-toxic and completely eliminate the use of petroleum-based waterproofing materials they contributed greatly to the environmental-friendly concept of Verdino.



Addition of Penetron Admix soluble bags

[www.penetron.com](http://www.penetron.com)

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