



Hearst Castle Neptune Pool

San Luis Obispo County, California, USA



Owner
STATE OF CALIFORNIA

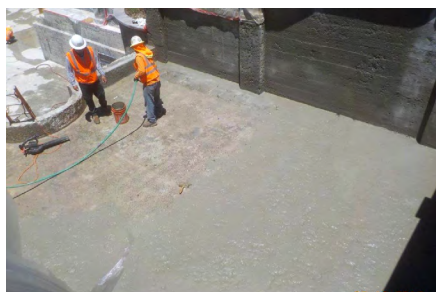
Architect
PAGE & TURNBULL, INC

Engineer
**MARK SAUER
CONSTRUCTION**

Contractor
T.B. PENICK

Applicator
ANGELUS WATERPROOFING

Products
**CONCENTRATE,
PATCH'N PLUG, MEGAMIX II**



California's Central Coast, the estate, owned by the State of California since 1957, is a national historic landmark attracting millions of visitors each year.

Beginning in 1919 and collaborating for the following 28 years, Hearst and Architect Julia Morgan constructed a castle worthy of those Hearst had dreamed of building since his European tour as a boy. By 1947, they had created an estate of 165 rooms and 127 acres of gardens, terraces, pools and walkways—one of the world's greatest showplaces for his art collection which can still be seen today occupying almost every inch of this historic castle.

Although Hearst Castle's architectural style and ornamentation evolved from historic European themes, its underlying structure is primarily steel reinforced concrete.

The Neptune Pool

The outdoor Neptune Pool was built and rebuilt three times from 1924 to 1936, primarily to enlarge the pool and to suit its owner's tastes. The final version of the pool is 104 feet long, 58 feet

wide and 95 feet wide at the alcove. It is 3.5 feet deep at the west end, 10 feet at the drains. A highlight of the estate, the pool features fountains, ornamental pools, sculptures, marble pavilions, alabaster lanterns, dressing rooms, and the façade of an ancient Roman temple Hearst imported to California. Other notable aspects include 9,000 square feet of Vermont marble that lines the basin, gutters, and alcove; and four Italian relief sculptures on the sides of the colonnades.

Xypex and the Neptune Pool Restoration Project

The 345,000-gallon Neptune pool has leaked and evaporated 5,000 gallons per day for most of its 90-year history. The opportunity to remedy this situation began during the drought of 2014 when keeping the pool filled was no longer feasible. The four-year \$10 million project to repair and restore the pool included removing all of the old tile lining; redoing filtration, piping and flow systems; finding and repairing leaks; and waterproofing with **Xypex Crystalline Technology** and a fluid-applied membrane.

Hearst Castle is one of the most ambitious architectural endeavors in American history and a testament to the power and vision of William Randolph Hearst, a Harvard graduate and a media genius whose influence extended to publishing, politics, Hollywood and the art world. Located above the village of San Simeon along



The Xypex Application

First, honeycombing and other defective areas in the 90-year-old concrete had to be removed and patched with Xypex waterproofing materials. Xypex [Patch'n Plug](#) was used on areas smaller than 6 inches and Xypex [Megamix II](#) on larger areas. Then, two coats of Xypex Concen-

trate were then applied to the pool's interior. Xypex Concentrate consists of Portland cement, finely graded sand and active proprietary chemicals. It was applied as a cementitious slurry to the pre-saturated surface of Neptune pool basin. The active chemicals diffuse into the substrate and react with moisture and the constituents of hardened concrete to cause a catalytic reaction. This reaction generates a non-soluble crystalline formation throughout the pores and capillary tracts of the concrete, as well as cracks, permanently sealing the concrete and preventing the penetration of water and other liquids from any direction, even under high hydrostatic pressure.

Because the application was performed in 90 degree weather, an overnight sprinkler system was required to prevent the Xypex treatment from drying prematurely. After 14 days, the pool was filled with water for leak testing. Upon the initial fill, some leaking was evident but over the course of several days, as the crystalline formation developed within the concrete's pores and voids, leaks turned to drips and gradually dried up resulting in a waterproof structure.

Once this process was complete, the surface was allowed to dry and a liquid membrane coating was applied to the interior of the pool. Thousands of new marble tiles, from the same Vermont quarry as the original tiles, were installed on the base and sides of the pool.

Xypex's Winning Performance

The Neptune Pool was refilled in August 2018 and is leak free for the first time in its history. It is rewarding to know that our technology, work and service played a critical role in the successful waterproofing of such an historic landmark. Neptune Pool has now been returned to its original glory and is key stop for the more than 750,000 who visit Hearst Castle each year.