CASE STUDY

# Hillcrest High School

Riverside, United States 2011

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## BACKGROUND

The Hillcrest High School construction project is part of Alvord Unified School District's plan to increase the local school capacity and help absorb some of the congestion from other schools in the area. The $97.5 million project will sit on a 200,000 square meters (50 acre) site off the 91 freeway in Southern California's Riverside County known as the Inland Empire.

The applicator for this project, Superior Gunite in Los Angeles, CA, applied Krystol Internal Membrane (KIM) as a method of waterproofing on the wall using shotcrete. Superior Gunite has worked with Kryton products on several applications in the past with great success. Cemex-Corona provided the ready-mix.

The challenge on this project was to provide a waterproofing solution for a 910 meter (3,000 foot) long, 6 meter (20 foot) high retaining wall to be carved out of the adjacent mountain. The wall is entirely done with shotcrete and will have a surface finish that resembles carved rock.

Sukut Construction was challenged with excavating over 270,000 cubic meters (350,000 cubic yards) of dirt to create a 6,000 square meter (65,000 square foot) soil nail wall. The entire system consisted of 30 meters (100 foot) long soil anchors embedded into the mountainside then covered by layers of shotcrete and sculpted into a boulder-scape facade.

According to veteran school construction managers, Hillcrest will represent the most challenging school project undertaken in decades.

**OWNER:**
Alvord Unified School District

**ENGINEER:**
Mike Gosselin

**ARCHITECT:**
HMC Architects

**SHORING WALL CONTRACTOR:**
ABE Enterprises

**CONTRACTOR:**
Sukut Construction

**APPLICATOR:**
Ken Brinar, Superior Gunite

**DISTRIBUTOR:**
Epicenter Sales, Inc

**PRODUCTS:**
Learn more at **kryton.com**
Krystol Internal Membrane™ (KIM®)

## SOLUTION

The total project consisted of 2000 cubic meters (2600 cubic yards) of KIM concrete. One shotcrete nozzleman sprayed while four followed closely behind to start sculpting the concrete into the façade. The reason KIM was chosen is that due to the very nature of the concrete itself, cracks were

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**Kryton International Inc.**
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intentionally added to enhance the ascetics of the wall.

By simply adding KIM to the concrete mix at the time of batching, waterproofing concrete becomes a quick and easy process that won't hold up the construction timeline. The Krystol system uses advanced integral crystalline waterproofing technology to transform porous concrete into a permanent, water-resistant barrier and provide a guaranteed defence against water damage and steel reinforcement corrosion. If cracks later form, the incoming water will react with KIM and trigger further crystal growth, filling cracks and keeping the structure watertight. This was extremely important as the outside layers of shotcrete contain a high concentration of micro and macro cracking.

Although not directly in the water table, the adjacent mountain will supply substantial amounts of run-off during the Southern California rain season. The school itself will sit just on the other side of the wall.

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