

CASE STUDY

Acacia Middle School Hemet, California

Storage Provided:	58,383 cu. ft.
Area:	30,874 SF
Models:	Recharger V8HD
Number of Units:	586
Installed:	February 2013
Project Engineer:	Troy R. Walker Engineering, Inc Vista, California
Contractor:	Genesis Construction Hemet, California



Acacia Middle School, located in Hemet, California, has seen a significant growth in its student population and the facility chose to undergo extensive improvements to the west side of its campus, including a new driveway and parking lot, classroom modernization and construction of a new gymnasium.

The repairs and improvements would be carried out in three separate phases and would include a redesign of the school's current stormwater management system. Initially, a drainage system was developed to hold most of the runoff in underground systems; however, it was determined that after a storm, some of the runoff might pump back onto the street. Engineers from Tory R. Walker Engineering, Inc. of Vista, California, who specialize in hydrology and optimization, realized that the runoff would exceed its peak flow to the street if nothing was done. The engineers suggested revising the design to include hydraulic principles and eliminating the pumping system. They instead proposed to use a system that would drain largely by gravity.

The engineers faced a number of stormwater management challenges. The site is very flat, and there is no onsite drainage system. In addition, the flat terrain would make it difficult for some areas to drain by gravity when the water is directed into an underground system because the site lacks an MS4 underground drainage pipe.

"The area just a bit further from the lowest elevation point in the school has enough topographic difference to drain by gravity, but the portion closest to the street did not," said Luis A. Parra, PhD, PE, CPSWQ, D.WRE, ToR, Senior Project Manager at Tory R. Walker Engineering, Inc. "In this case, we designed the system so it would drain by gravity up until a certain point and from that point on it would percolate into the soil."

A three-basin system was designed to drain as much water volume by gravity as possible. Water that cannot be drained by gravity is directed to the parking lot next to the street. The first two basins are hydraulically connected and a third long basin was

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Acacia Middle School

Hemet, California *(continued)*

added in lieu of a drainage pipe for drainage considerations and to enhance infiltration. Using this type of system eliminated the need for a pumping system and any associated maintenance. The use of gravity helps to get rid of runoff quickly after treatment and only a small portion of the water will need to infiltrate into the soil to drain. The hydraulic system maximizes the use of the limited space, while providing the school with a significant cost savings.

CULTEC's Recharger® V8HD plastic subsurface chamber was ultimately selected for the job as it provided a balance of maximizing storage while using a small footprint, and best satisfied the requirements of the school's site. Each chamber measures 32 inches high and 60 inches wide and can hold a minimum of about 100 cubic feet of water, with a bare chamber capacity of 8.68 cubic feet per linear foot.

The system included a total of 586 units of the Recharger V8HD and provided a storage volume of 58,383 cubic feet. The chambers are divided up into three separate beds, one of which is located beneath a grassy area dedicated to a playground and the other two are installed beneath parking lots. A pretreatment system consisting of a vortex pre-filter was installed with the CULTEC chambers to allow for maintenance at a single point. The filter extends the useful life of the underground system by trapping oils, large sediment particles and other debris before they can reach the chambers.

"The new stormwater system had to accommodate a large volume of runoff because we can get a lot of rainfall in this area," said Mike Houghton, contractor with Genesis Construction that put the system in. "CULTEC's chambers provided the storage we needed. Plus, they fit together and install very easily, and you can't beat their integrity."



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