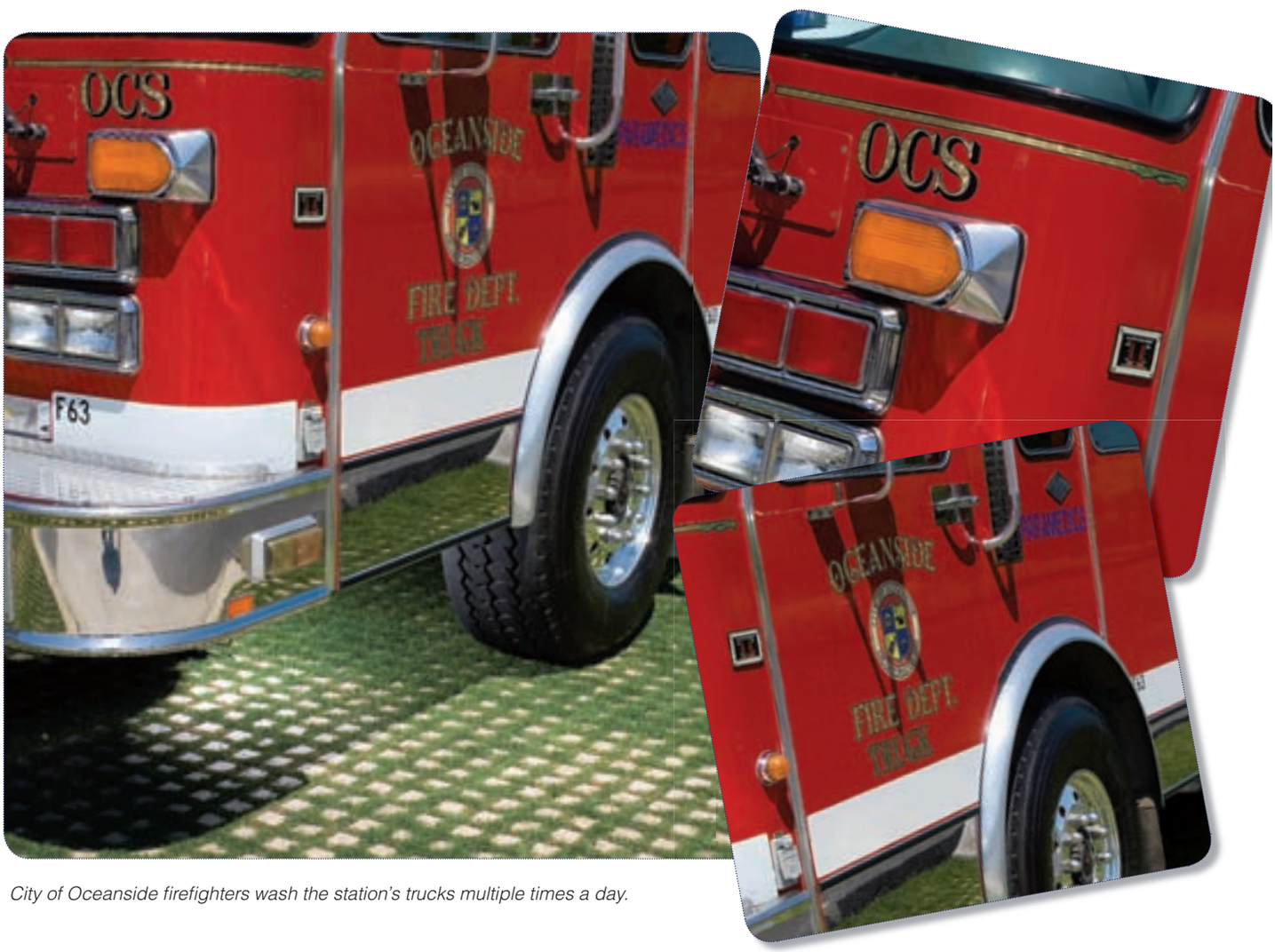
runoff 911

Pervious pavement helps a California fire department keep dirt off its trucks and out of the San Luis Rey River

By Niklas Jansson, P.E.

This study focuses on the use of a pervious, plantable and flexible concrete pavement solution at an Oceanside, Calif., fire station located adjacent to the San Luis Rey River. The river, which outlets into the Pacific Ocean, is one of the most polluted beach outlets in southern California. Its mouth is frequently closed to swimming and recreation and has become a major threat to the quality of life and tourism in the area.

Firemen used to wash their trucks on the asphalt outside the garage of the station up to a few times a day. As a result, up to several hundred gallons of polluted



City of Oceanside firefighters wash the station's trucks multiple times a day.

The station's original truck wash area.

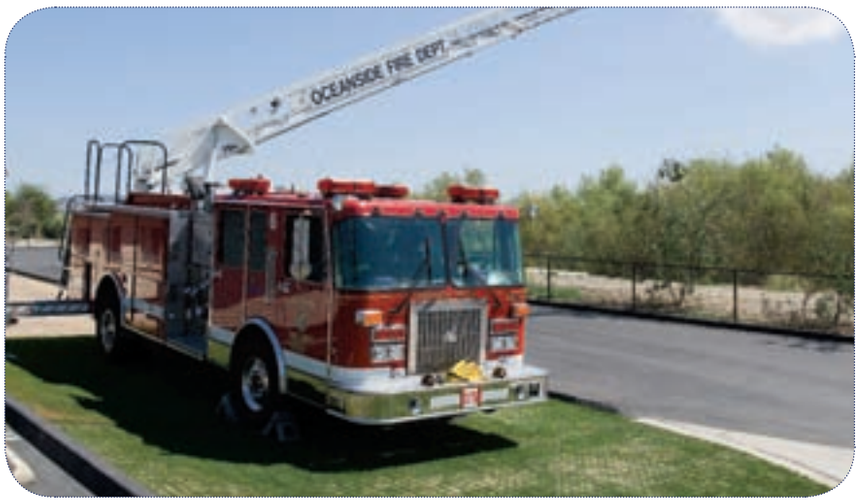
water per day ran directly into the river. The San Diego Regional Water Quality Control Board mandated the city of Oceanside to make a change. With a limited budget, the area was underlain with Visqueen and topped with gravel. The solution proved to be unstable to drive on, was dirty, involved high maintenance (gravel sank into the subgrade and had to be replaced frequently) and was ineffective in controlling polluted runoff.

Research & Results

Soil Retention, innovator and manufacturer of the new area, got wind of the problem and proposed using the station as a test site for its new product. The company hired GMU Geotechnical, Rancho Santa Margarita, Calif., to design, test and monitor the installation and performance of the the new areaw area. The city engineering department checked the design and made additional recommendations. The purpose of the study was to prove that the product could handle heavy fire truck loading on a daily basis and resolve polluted fire truck wash runoff issues.

Single rear-axle trucks with axle weights of 28,000 lb have driven over the new area up to three times a day since October 2005. Deflection monometers were surveyed during set intervals, and the product was inspected for wear and durability. Other studies, including truck boom loading and 75-ft ladder extensions, were performed successfully.

The original installation comprised a 2-ft by 4-ft version of the product. Due to consumer feedback, Soil Retention modified the size to 2 ft by 2 ft for ease of handling. The company again hired GMU Geotechnical, this time to test a small area which had experienced some deflection at the transition between the original



The finished test area was done with three infills: cement-stabilized gravel, sod and a seeded portion.

concrete/asphalt and the truck wash area. The minor deflection resulted from a slight grade break at the transition, extreme use and subgrade yielding. A 2-ft by 20-ft trench was dug to study the section and confirm that only the subgrade had yielded.

The newly sized product is performing equally well as the former. It has conformed to the underlying soils without any cracking or unraveling at the surface that would have occurred with asphalt. Most importantly, the truck wash area has no more runoff, as all water is stored and infiltrated through the product. The storage capacity at the surface is up to .4 in. of water. The infiltration rate of the section was calculated to be more than 3 in. per hour due to the granular infill and base materials used. SWS

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