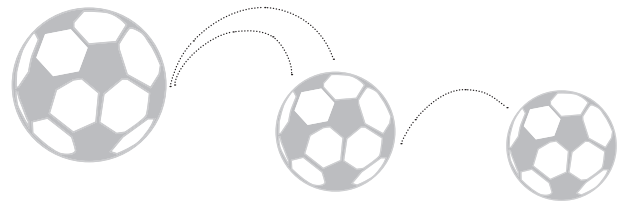


# Play on

Underground storage system defender of choice for a California soccer field

By Stefanie Hansen



*Plastic devices did not suit the soccer field project's soil support and budget needs.*

Halfway between Los Angeles and Long Beach, Calif., the city of Downey occupies 12.6 sq miles and is home to about 110,000 people. Primarily a residential community, Downey is experiencing significant redevelopment as a commercial and residential area and must manage strict runoff regulatory requirements and conflicting land use demands.

The regional trend of building million-dollar homes on lots less than one-quarter of an acre has nearly eliminated the opportunity for the city to procure the land needed for new recreational facilities. In redeveloping the former Boeing space shuttle facility, city officials included nearly 13 acres of athletic fields via the Discovery Sports Complex.

Due to conveyance deficiencies, the county flood control district limited future peak runoff flow rates to less than 20 percent of those currently observed, while the local water quality agency requires all new and redevelopment projects to infiltrate the first 0.75 in. of storm runoff, which should retain 12 of the 14 in. of annual local rainfall.

City leaders were faced with constructing an entire soccer field as a below-grade flood flow detention basin and abandoning the badly needed playing field for months at

a time so that it might be available as a runoff infiltration best management practice (BMP). An alternative design based on an underground detention basin was recommended by the project consultant.

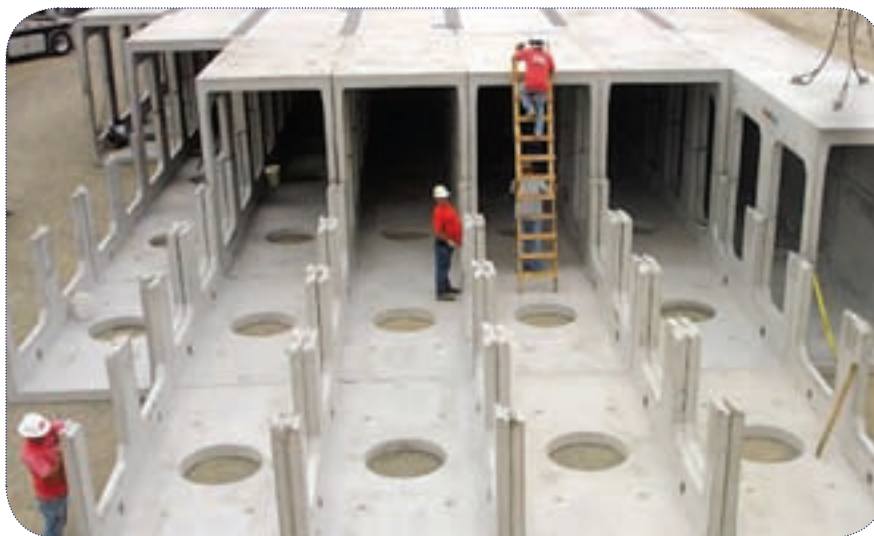
“The proposal recommended the use of a plastic device with very high void volume but no accessibility, and the system would have been unable to support the necessary soil cover depth,” said Gerry Greene, Downey’s principal civil engineer and water resources control specialist. “Two other plastic devices often used in Downey were evaluated by city staff, but they would have required additional excavation and extensive use of rock base aggregate, greatly increasing project costs.”

### Choosing Concrete

To maximize the athletic field area while complying with water quality regulations, a precast concrete underground retention/detention system design by StormTrap was used. The design called for a system that could efficiently handle 8 acre ft (2.6 million gal) of runoff with hydraulic continuity between the 3.2-acre-ft water quality infiltration retention system and 4.8-acre-ft peak-flow detention system.

The design incorporated an upstream BMP pretreatment train to maximize runoff water quality. It included parkway biofilter strips; an inverted roadway cross-section with landscape median; grated drainage inlets; and a 5-mm screen hydrodynamic separator to comply with local trash total maximum daily loads standards. A bidirectional air/vacuum release manifold accommodates the 120-cu-ft-second peak storm flow.

The city of Downey worked with the manufacturer to engineer its precast base units with openings to promote infiltration of retained runoff water. This redevelopment



*A precast concrete underground retention/detention system helped maximize field area and meet water quality requirements.*

project captures runoff from a catchment of more than 60 acres and recharges it through rock-filled wick drains 20 ft below the planned soccer field. The system meets local regulations to protect the San Gabriel River, its estuary and Long Beach and Orange County ocean beaches; reduces flooding; and encourages groundwater recharge, an important drought-condition water resource.

The system is fully installed and will be operational by year’s end. **SWS**

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