

# Underground Water Detention

*School features precast underground storm water detention system*

■ *By Aram Kalousdian, editor*

A 150,000-square-foot middle school is under construction in Detroit. Construction of the Heilman Middle School began in November 2001 and it is expected to be completed in July 2003. The estimated value of the project is \$26.5 million.

The facility has an underground storm water detention system. The system consists of 24, 6-foot rise by 24-foot span by 4-foot laying length precast concrete box culverts with a precast bulkhead at each end. The system has a detention capacity of 102,000 gallons. The boxes were placed on a 12-inch base of Michigan Department of Transportation (MDOT) 5G crushed stone. All of the boxes were installed in one day.

The detention system is located in the yard adjacent to the school. Use of a buried precast concrete system saved valuable space on the lot, and saved money over the cost of a poured-in-place system, according to the Concrete Pipe Association of Michigan.

"There are different ways of retaining water before it gets to the city system. This is a way of doing it underground without using an aboveground retention basin. There is a large tank underground that holds the runoff until it can work its way into the system, without overflowing the system," Ryan Molitor, project manager for Clark Construction /DeMaria Building Joint Venture, said. Clark Construction/ DeMaria are the construction managers on the project.

"You don't have retention basins on school property, where students can be allowed to go near open water. So, you have to get the water off of the site. All of the catch basins drain into this tank and a smaller pipe leads into the city system,"



Above: A P&H crane works on the Heilman Middle School project.

Left: The underground storm water detention system is being installed at the new Heilman Middle School site in Detroit.



Molitor said. The facility will have a three-story academic wing.

"One of the unique features is the geothermal heating and cooling system that is being utilized for the project. Geothermal heating and cooling is a relatively new form of heating and cooling, using groundwater and a well system," Molitor said.

The heating and cooling system has involved drilling 100 wells, 400 feet deep. The system includes a heat pump supply and return system. Groundwater is used to heat and cool the building. It is a pipe system.

The building has a glass rotunda area, which is one of the central points of the building. It has a radial staircase with a large curtain wall system that will be encompassing the circular area. The majority of the interior walls are masonry. There is very little drywall being used on the facility.

The school will also have a six-lane track and a football field. There will be tennis courts, basketball courts and another field. The school will sit on a 12-1/2-acre site. □