

**Innovative Approach to Storm Water Management  
For Small Parcel Site Development**

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**Abstract**

In response to US EPA's final Phase II Storm Water regulations, there has been a flourish of storm water regulations promulgated at the state, county and local levels. The storm water regulations have significant ramifications for potential site development in particular for small parcel, urban development where space is critical. The incremental cost to acquire additional land to accommodate more traditional storm water management approaches such as above ground detention/retention basins, and the costs associated with the collection and conveyance of storm water can hinder the economic feasibility of these small parcel urban developments. Unlike large parcel developments where the costs may be "spread" across the entire development and passed through to multiple end users to defray financial impact, the smaller parcel developments are unable to do so and face a difficult financial obstacle. In many cases, it will preclude the development.

As an alternative to the more traditional storm water management approach of above ground detention/retention, an innovative approach has been implemented for an approximate 1.23 acre commercial development in Oak Creek, Wisconsin. The innovative approach consists of the use of a pervious concrete pavement for parking and drive areas associated with the development. The pervious pavement is underlain by an oversized stone layer that not only serves as the base course for the pavement placement but also provides detention storage volume for the storm water which infiltrates through the pervious pavement section. This paper will present the planning and analysis that resulted in the selection of the pervious pavement system, as well as design considerations, life-cycle considerations, and water quality impacts and system performance.

Although the pervious concrete pavement has a higher initial cost than conventional asphalt and concrete pavements, use of the pervious pavement eliminates the need to acquire additional land to accommodate traditional storm water management measures, and eliminated the need for on-site storm water catch basins and underground storm water conveyance piping.



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The developer, Zabest Commercial Group, has entered into a partnership with the Milwaukee Metropolitan Sewerage District (MMSD) to monitor the performance of the pervious pavement system starting in Spring 2004. Although performance data for the system has not been collected yet, it is anticipated that the system will result in the following positive outcomes: 1) reduce/eliminate peak discharges to the local storm sewer system; 2) promote infiltration of storm water into subsurface soils; and 3) reduce sediment loading to local storm sewer and ultimately to the receiving surface water. In addition, it is anticipated that this approach will result in much lower life cycle costs than a traditional storm water management approach.