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Stricter stormwater regulations require better project teamwork

October 27, 2009 - Spotlights

Since the early 20th century, percolation testing has been a useful, low-tech way to measure water infiltration. Now, however, a "perc" test alone is no longer an acceptable method under the Mass. Stormwater Regulations.

Last year, the Mass. Department of Environmental Protection (MassDEP) revised its Stormwater Management Standards and Mass. Stormwater Handbook. The revision was designed to:

- *Promote increased stormwater recharge;
- *Ensure treatment of more runoff from adjacent land uses;
- *Encourage the use of low-impact development (LID) techniques;
- *Improve flood control;
- *Remove illicit discharges to stormwater management systems; and
- *Improve operation and maintenance of stormwater best management practices (BMPs).

A major driver of the new, stricter regulations is stress on watersheds. Extensive land development and groundwater withdrawals cause rivers to flood in the spring and dry up in the summertime. It is common to see summertime watering bans in many towns around the state, and some municipalities actually run out of drinking water and have to buy it from the MWRA or other sources. Stormwater runoff is a threat to these watersheds, carrying pollution deposited on land into rivers, lakes, and streams. For this reason, the state has grown more aggressive in its attempts to control stormwater runoff. One logical target of this effort is land development, for the simple fact that it can alter natural drainage features, increase flooding, and reduce groundwater recharge.

Mass. builders can make the best of the situation - and even use these regulations to their advantage - by understanding and accepting the objectives of the wetlands protection initiative, familiarizing themselves with and keeping abreast of advancements in stormwater management techniques, and most importantly, enlisting their civil engineering consultant into the planning process at the earliest stage.

Because the measures used in the newly required techniques tend to be more conservative, they often necessitate stormwater runoff mitigation steps that are more aggressive than they would have been if the soil evaluator had performed a simple perc test.

Instead of - or in addition to - perc tests, Mass. soils professionals must either conduct more comprehensive tests using devices such as a double-ring infiltrometer or use predetermined infiltration rates based on soil type. In instituting the change, DEP determined that perc tests overestimate the saturated hydraulic conductivity rate - i.e., how quickly water passes through soil under saturated conditions.

For example, where a perc test may have allowed for a half-acre detention pond to handle stormwater runoff, the more comprehensive testing procedures may dictate that the detention pond

cover a full acre. Not only would this forfeit an additional half-acre of valuable land to a non-buildable use, the developer would have to contend with designing, siting, and maintaining a component of the property's infrastructure twice as large as it otherwise would have been. Additional requirements on sloping and access would further increase the areas required for stormwater management, increasing environmental impact by expanding the disturbance area.

Considering the added responsibilities that these new regulations place on developers and their project teams, it is now even more critical that a civil engineer be part of early-stage planning in the development process. This allows the civil engineer the opportunity to assess the developer's goals for the project, consider which stormwater management approaches would be most appropriate for the property, and provide input that will help optimize the land use while minimizing the impact of stormwater runoff.

David Giangrande, P.E., is president of Design Consultants, Inc., Somerville, Mass.

New England Real Estate Journal - 17 Accord Park Drive #207, Norwell MA 02061 - (781) 878-4540