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Insider view

A low-impact approach to storm water management

LID seen as a way to improve water quality, but local hurdles exist

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Low-impact development (LID) makes so much sense as a planning and storm water management technique, it's a wonder that it is the exception rather than the rule. Improved water quality, increased water supply, lower storm water infrastructure costs, and more vegetation and open space -- these are just some of the key benefits of LID.

According to some studies, LID has saved more than 20 percent in construction costs for housing developments elsewhere. The practice also helps preserve open space, reduce the size of storm pond structures and eliminate catchments and piped storm conveyances.

But as is often the case with real estate development, the issue isn't as simple as it seems.

State and local regulations can discourage developers from even trying LID. Density is a big issue, for example. The principles of LID often call for a greater concentration of the built environment and less disturbance of the natural landscape. This runs head-on into the zoning regulation trend of acre-plus lot minimums in most suburban communities.

Also, some principles of low-impact development -- for instance, narrower-than-normal streets -- can bring opposition from fire officials concerned that rescue equipment may not have the room or access needed in an emergency situation. And finally, developers may shy away from even proposing LID techniques in a project because it often requires an extensive effort to educate officials and residents about what this atypical method entails.

But attitudes are starting to change, according to the Massachusetts Department of Conservation and Recreation. While most of the principles of LID have been around for some time, only recently have development, planning and engineering professionals begun to group these principles together in a coherent approach to planning and storm water management.

What is low-impact development?

The National Association of Home Builders defines low-impact development as "an ecologically friendly approach to site development and storm water management that aims to mitigate development impacts to land, water and air. The approach emphasizes the integration of site design and planning techniques that conserve natural systems and hydrologic functions on a site."

Basic components of LID include reduced impervious surfaces -- including narrower roads and fewer cement sidewalks -- keeping or planting native vegetation, retaining the natural grade of the site and creating bioretention areas and grassed swales to help filter ground water and allow it to seep into the ground.

Instead of forcing storm water to collect in one or more central locations and then directing it off-site via a system of storm drains and pipes, LID uses the natural topography and vegetation, as well as strategic bioretention areas such as rain barrels and rain gardens, to decentralize the dispersion of storm water. This keeps more of the storm water in the local aquifer, instead of shipping it to a body of water far away from where it falls.

A local example

Like many growing communities in the Boston area, the town of Franklin grapples with the ever-increasing demand for clean drinking water. The town has taken several steps to ensure adequate water supply, including mandatory water bans, curbing water use for maintenance of town property, and searching for new water sources.

Town officials hope to add low-impact development to that list of water conservation efforts. In April, Bill Fitzgerald, Franklin's public works director, submitted a grant application to the Massachusetts Department of Environmental Protection (DEP) that would provide $109,200 in federal money to assess how LID techniques could be implemented on more than 50 existing and proposed streets in Franklin. To ensure that the benefit would be state wide, the study would also provide a road map to help other municipalities implement LID techniques under existing state and local regulations.

According to Sara Cohen of the Mass. Department of Conservation and Recreation, a lot of the resistance to LID comes legitimately from developers who understand that before a LID project has a chance of being accepted, they have to go through a process of educating officials and boards, who in turn face state laws that may work at cross-purposes to LID.

Even if developers acknowledge the upside, they know that it might cost them time and money to help the community understand the benefits.

Despite the hurdles, LID is likely to pick up steam relatively quickly over the next decade. As parts of Massachusetts run into water-supply difficulties, regulations will begin to support this type of development as a requirement for accessing the water supply. And secondly, as a few case studies spring up, developers and town officials will begin to propagate it based purely on its own merits. Lastly, obstacles to LID posed by state laws will start to become better understood, resulting in necessary revisions to these laws.

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