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Zero Stormwater Runoff Project Receives 2015 ACEC National - Engineering Excellence Grand Award



For 4 days in the summer of 2014, nearly 10” of rain fell in the Twin Cities metro area. Flooding was extensive and damage reached several hundred million. This was not the case in the landlocked Northwest (NW) area of Inver Grove Heights, MN. There, property flooding not only did not occur, but no stormwater runoff left the area. How is this possible in a developed environment and, even more so, in a landlocked setting? The answer lies in an innovative, breakthrough approach to stormwater management within the City.

Despite the intense development activity of the early 2000’s, development in the entire NW Area (3,000 acres) of Inver Grove Heights was challenging, due in large part, to the cost of managing stormwater in a hydrologically landlocked area. Traditional stormwater management required 13 pump stations, a new 4-mile outlet to the Mississippi River, and 24 miles of stormwater piping for a total capital cost of \$26 million. Emmons & Olivier Resources, Inc. (EOR) zero-discharge, Enhanced Low Impact Development (LID) approach involved no pumps, no river outlet, and only 3 miles of piping for a capital cost of \$8 million resulting in an \$18 million reduction in the project’s initial capital cost, plus better staging build-out to correspond when development is in place.

How does the zero-runoff, enhanced LID work? EOR’s Enhanced LID approach is a paradigm shift from the traditional “pipe-and-pump” stormwater management. Starting in 2005, EOR took advantage of the site’s natural topography and maintained its regional depressions, mimicked natural hydrology and maximized infiltration opportunities. All of this was done by strategically using an extensive stormwater “Treatment Train System” approach. The precedent-setting Argenta Hills commercial center stormwater system, designed under EOR, serves as evidence of the benefits of the new approach. This system included numerous innovative practices: raingardens, ribbon curbs, porous pavement parking, pervious paver intersections, vegetated swales, and infiltration basins. So far, the 35 raingardens, 274 permeable asphalt parking stalls, 2 permeable paver intersections, a biofiltration swale and 2 large infiltration basins have been constructed and are functioning very well. Not only does the Enhanced LID approach reduce cost, it also helped in retaining the site’s unique natural characteristics, replenishes threatened aquifers, while also adding amenities such as “green streets” and urban open space.

Many engineers around the country have repeatedly argued that LID approaches are not effective or feasible on a large scale for flood control, but this project, with the high bar of meeting zero runoff, solidly proves otherwise. Examples like this of stormwater management ingenuity and creative engineering should serve to expand this approach to other Cities across the United States.

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