



CHALLENGE

A SOUTHEASTERN NEIGHBORHOOD OF PITTSBURGH, PENNSYLVANIA NEEDED A SUSTAINABLE STORMWATER COLLECTION SOLUTION.

SERVICES

- Green Infrastructure Design
- Green Infrastructure Operation & Maintenance
- Interagency Coordination
- Stormwater Management
- Water Resources

DELLROSE STREET GREEN INFRASTRUCTURE

ms consultants, inc. was retained by the City of Pittsburgh Department of Public Works (DPW) through a master services contract to design the reconstruction of Dellrose Street in the Carrick section of the city. Dellrose Street is a 900-foot long bricked paved street with a grade of 4-7% and a crowned cross section. The street width is approximately 21'-6" from curb to curb, providing for two-way traffic and a parking lane on the west side. The area is currently serviced by a dedicated sanitary sewer although no stormwater collection or conveyance is provided. Several properties illegally

discharge roof runoff via leaders extending through the curb reveal into the street gutter. Stormwater runoff collected along the curb gutter is conveyed as gutter flow to the adjacent block.

ms verified the third-party survey and developed the drainage and roadway plans. The ms team prepared a GI permeable paver street design which allowed for the exclusion of traditional storm sewer infrastructure, reducing both capital costs and long-term maintenance

life cycle costs. This permeable paver concept is intended to provide a template for the DPW to apply to the future reconstruction of other city streets.

The design infiltration rate was obtained by ms through onsite double-ring infiltrometer testing. In subsoil areas with limited infiltration, weep holes were provided in the barriers to gradually release the stored runoff downgradient over an extended period. For larger storm events, excess runoff is permitted to weir flow over the series of barriers before being collected at the downgradient project limits.

A dual-purpose perforated overflow drain was proposed above the flow barriers to prevent surcharging during large storm events and to provide a mechanism for legal connection of the roof leaders which currently outlet to the gutter. Water conveyed through the drain has the opportunity to exfiltrate through pipe perforations to be stored behind the subsurface flow

barriers. The overflow drain ultimately discharges the excess volume to the Pittsburgh Water and Sewer Authority (PWSA) dedicated storm sewer system located on the adjacent block.

Conveyance between the permeable paver system drain and the receiving PWSA catch basin is provided through extending a standard pavement base drain along the existing curb line.

As the Dellrose Street GI practice addresses multiple stormwater related issues, the project has become a catalyst for integrated planning between City of Pittsburgh agencies such as the DPW and the PWSA. Consideration is now be given to incorporating similar stormwater management systems within the public right-of-way at other locations to provide a viable method of addressing private roof laterals with illicit connections to the sanitary sewer.