



CONTACT INFORMATION

You can contact the following City agencies by calling 311, the City's non-emergency government information and services hotline, or by calling the agency numbers listed below:

NYC Department of Environmental Protection (DEP)
718-595-5223

NYC Department of Buildings (DOB)
718-566-5280

NYC School Construction Authority (SCA)
718-472-8332

WHAT IS ROOFTOP DETENTION?

Rooftop detention, also known as a "Blue Roof" or controlled-flow system, is an easily installed, cost-effective alternative to temporarily store and gradually drain rainwater off a building's rooftop. Detaining rainwater helps to slow its rate of release into the sewer system for a maximum period of 24 hours. It also helps to reduce runoff during peak rainstorms so that more combined sewer flows can be treated at wastewater treatment plants and risks of street and driveway flooding and sewer back-ups in basements are lowered.

Rooftop detention can play a role in ensuring that our sewer systems are not overwhelmed during rainstorms and our waterways are protected from pollutants in urban runoff.



59-17 Junction Boulevard
Flushing, NY 11373

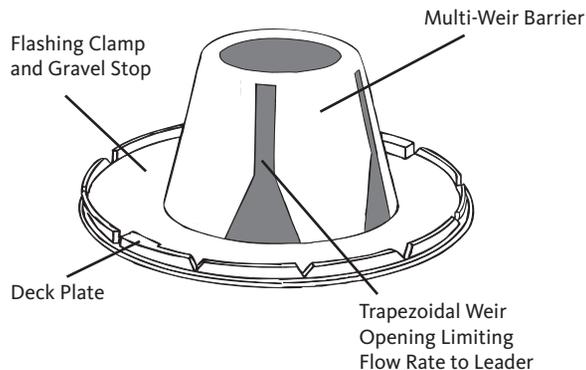
Rooftop Detention

*A Low-Cost Alternative for
Complying with New York
City's Stormwater Detention
Requirements and Reducing
Urban Runoff*



HOW ROOFTOP DETENTION WORKS

Controlled-flow roof drains regulate the flow of rooftop drainage. Small weirs (openings), as shown in the drawing below, are placed inside the inlets of roof drains to capture rainwater and slowly release it. Stormwater builds up to a predetermined depth and drains at a desired maximum rate. Rooftop detention requires that a secondary waterproofing membrane, or other waterproofing roofing system, be applied.



HOW CAN ROOFTOP DETENTION BENEFIT YOU?

In addition to providing benefits for the City's waterways and sewer systems, rooftop detention offers many advantages to the developer, building owner, and tenants. A Blue Roof:

- Requires no additional land area, so it is well-suited to high density urban areas where land is limited.

- Is easy to install and maintain, similar to a standard roof.
- Extends the life of the roof through a secondary membrane, or other waterproofing roofing system.
- Is an approved practice under New York City's construction and sewer connection codes.
- Costs considerably less than other approved detention measures, such as subsurface detention. Costs are estimated at an additional \$5/sq. ft. over a standard roof.
- Provides similar stormwater benefits as green roofs (although green roofs provide additional environmental benefits) at a fraction of the cost – approximately \$5/sq. ft. for blue roofs vs. \$30/sq. ft. for green roofs.

DESIGN CONSIDERATIONS

The following are some design considerations for installing a rooftop detention system. The architect and/or engineer on the project will make site-specific determinations of structural or other design needs for the project.

- *Application on Flat Roofs of New Structures.* Following good design practices and the requirements of the New York City construction codes will ensure optimal performance and low maintenance of a rooftop detention system.
- *Waterproofing:* Rooftop detention requires the installation of a secondary waterproofing membrane, or other waterproofing roofing system.

- *Water Depth:* Water depth on the rooftop should not exceed two-to-four inches and should not be stored for longer than 24 hours. Depths much shallower than three inches are typically required to satisfy detention requirements.
- *Scuppers and Overflow Drains:* Roof should be designed with multiple outlets and unrestricted overflows. Scuppers (wall outlets) should be placed in the parapet.
- *Number of Drains:* A minimum of two drains in roof areas of 10,000 sq. ft. or less; and a minimum of four drains in roof areas larger than 10,000 sq. ft.
- *Load Bearing Capacity:* Although rooftops are generally built to accommodate rainfall build-up and snowpack, rooftop detention may require additional structural supports. This will depend on the depth of water detained, HVAC and other rooftop equipment, as well as further considerations.

CASE STUDIES

The New York City School Construction Authority (SCA) is a pioneer of Blue Roofs citywide. Over the last three years, SCA has installed rooftop detention in 14 new schools. For SCA, the decision was initially an economic one. The costs of rooftop detention were far lower than for subsurface detention. The systems installed have required essentially no maintenance and there have been no problems with leakage. *"We have been extremely pleased with the performance of our rooftop detention systems. The engineer should consider this innovative roof drainage design strategy."* —Harry Cethoute, P.E., SCA.