

HSC-6: Blue Roof

Blue roofs, also known as rooftop detention systems, serve as a rooftop storage designed to reduce runoff peaks and volumes. Captured stormwater, up to the design depth, is held on the rooftop until the water either evaporates or is slowly metered out via flow restriction valves. With sufficient waterproofing blue roofs can be implemented on existing structures, given that the roof and building are of sufficient structural integrity to support the weight for the ponded water. As blue roofs lack vegetation, they require significantly less maintenance than green or brown roofs.

*Note: Blue roofs should not be designed to hold standing water longer than 96 hours in order to mitigate vector hazards.*

<i>Also known as:</i>
➤ <i>Rooftop Detention Systems</i>

<p><b>Blue Roof</b>  <i>Source: New York Department of Environmental Protection</i></p>

**Feasibility Screening Considerations**

- Potential feasibility concerns for blue roofs relate to standing water (vectors) and structural requirements, however these constraints can generally be overcome with careful design.

**Opportunity Criteria**

- Blue roofs can be applied to multi-family residential, commercial, or institutional land uses including rooftops and decks above building structures (e.g., parking structures, outdoor eating area roofs, or storage facilities).
- Building structure must be adequate to support the additional weight of the retained water.
- Roof slope must be flat.

**OC-Specific Design Criteria and Considerations**

- A licensed structural engineer should be consulted regarding the weight bearing capacity of the structure prior to design. Retrofit may be required.
- Blue roof discharges must be treated by an acceptable biotreatment BMP.
- A drain pipe (gutter) is required to convey runoff safely from the roof.
- A waterproof membrane, preventing the retained water from penetrating and damaging the roofing material, should be used. There are many materials available for this purpose; they come in various forms (i.e., rolls, sheets, liquid) and exhibit different characteristics (e.g., flexibility, strength, etc.).
- Unless covered, the maximum detention time should comply with all local, state, and federal regulations. Maximum hold time is typically 72-hours to prevent the breeding of mosquitoes.
- Over time rooftop vegetation may sprout by means of windblown sediment and seeds, especially in a dusty, windy environment. Roof drains should be inspected for clogging, as this may adversely affect downstream BMPs.

### ***Sizing***

- Blue roofs will not generally be able to achieve full retention of the DCV and are most applicable as HSCs as the first part of a treatment train. In this role, the retention depth of the blue roof would be removed from the remaining sizing criteria for downstream BMPs.

### ***Configuration for Use in a Treatment Train***

- A blue roof would serve as the first unit within a treatment train, with captured flows metered to a planter box, rain garden, infiltration gallery, or, if the site is not conducive for infiltration, potentially to a cistern or underground detention area for on-site rainwater use.

### ***Additional References for Design Guidance***

- City of New York – Sustainable Stormwater Management Plan, 2008.  
[http://www.nyc.gov/html/planyc2030/downloads/pdf/sustainable\\_stormwater\\_plan.pdf](http://www.nyc.gov/html/planyc2030/downloads/pdf/sustainable_stormwater_plan.pdf)
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