



Case Study: IQHQ Alewife Park, Building 3 Cambridge Massachusetts

Project Overview

Alewife Park, developed by IQHQ, is a premier 26.5-acre life science and technology district located in North Cambridge, Massachusetts. Situated east of Alewife Brook Parkway, between Rindge and Whittemore Avenues, the park offers extensive green spaces and direct access to the MBTA Red Line, making it one of the most sought-after destinations in the country.

As part of the redevelopment, Building 3 is one of three new three-story lab and office buildings constructed to modernize and expand the existing facilities. The project aims to create a vibrant, resilient, and inclusive community by integrating sustainable design elements and enhancing the surrounding natural areas.

Purple-Roof Stormwater Detention System

To address stormwater management requirements and promote sustainability, the project team incorporated the Purple-Roof stormwater detention system into Building 3's design. This system includes a detention layer and a honeycomb reservoir, providing the necessary retention and detention capacities to meet the city's stormwater regulations.

The Purple-Roof system was chosen due to the need to maximize all usable square footage, both inside and outside the building. Traditional stormwater solutions, such as tanks or retention ponds, were deemed less desirable as they would occupy valuable space that could otherwise be used for building functionality or green areas.

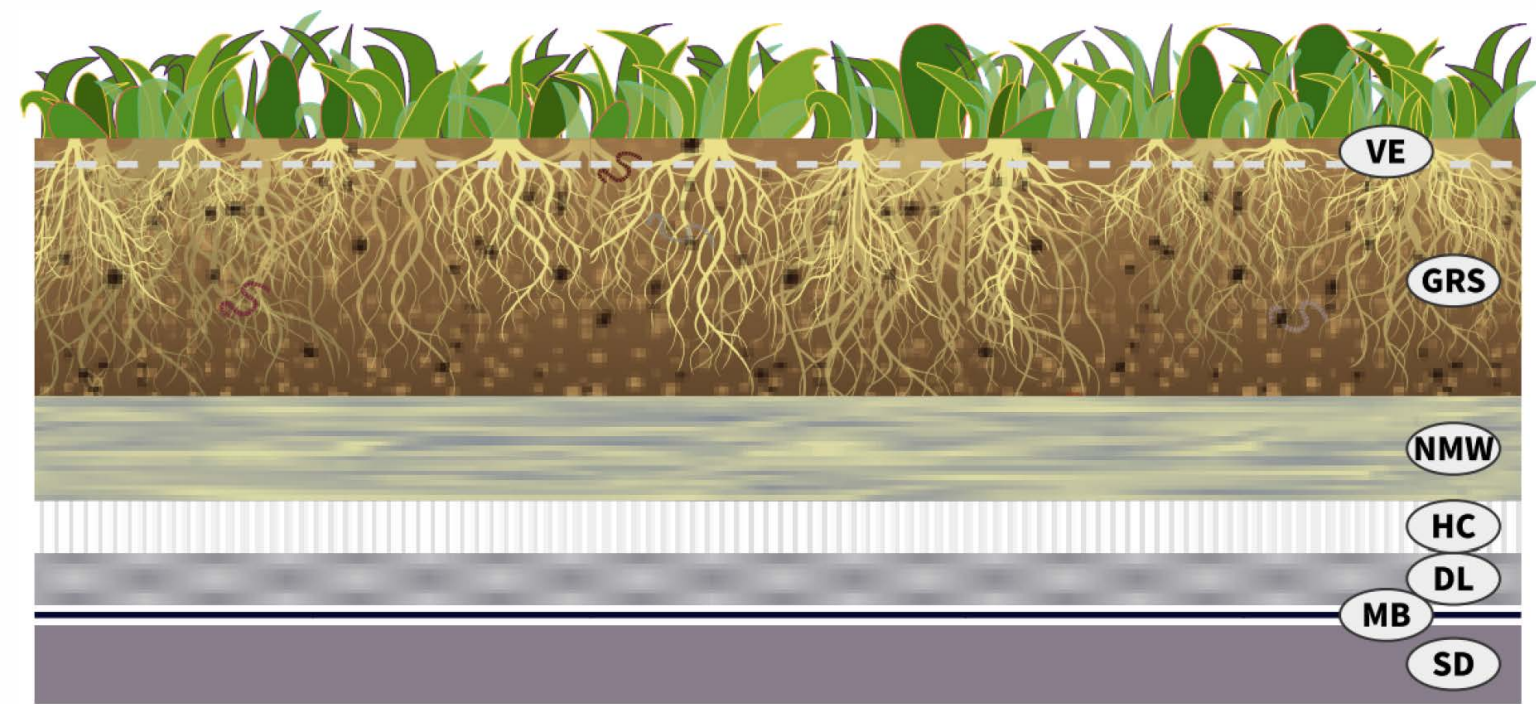
Since a green roof was already included in the project scope, the added cost for upgrading to the Purple-Roof system was limited to the honeycomb reservoir and detention layer, making it an exceptionally cost-effective solution. By integrating the Purple-Roof system with the green roof, the project effectively manages stormwater at the source, reducing runoff and alleviating pressure on the city's drainage infrastructure.

Results

- **Stormwater Compliance:** The Purple-Roof system ensures Building 3 meets Cambridge's stringent stormwater management requirements, contributing to the overall sustainability goals of Alewife Park.
- **Maximized Usable Space:** By utilizing the rooftop for stormwater management, the project preserved interior and exterior areas for other purposes, ensuring optimal land use.
- **Cost-Effectiveness:** With a green roof already part of the project, the incremental cost of the Purple-Roof system was minimal, limited to the honeycomb reservoir and detention layer.
- **Environmental Benefits:** The green roof, combined with the Purple-Roof system, enhances biodiversity, reduces the urban heat island effect, and improves air quality in the surrounding area.
- **Design Integration:** The system seamlessly integrates with the building's architecture, maintaining aesthetic appeal while providing functional stormwater management.

This case illustrates how innovative stormwater management solutions like the Purple-Roof system can effectively support sustainable urban development, maximize space efficiency, and provide cost-effective compliance with regulatory requirements.





	thickness	component
VE	0.5 inches	Sedum Mat
GRS	4.5 inches	Green roof soil
NMW	2 inches	Needled mineral wool
HC	1 inches	Honeycomb
MB	0.25 inches	Waterproofing Membrane
DL	0.2 inches	Detention layer
	0 inches	allowable ponding
	2	% slope
	20	drains this area
	24 inches	drainage length per drain
	*	included in soil/media depth

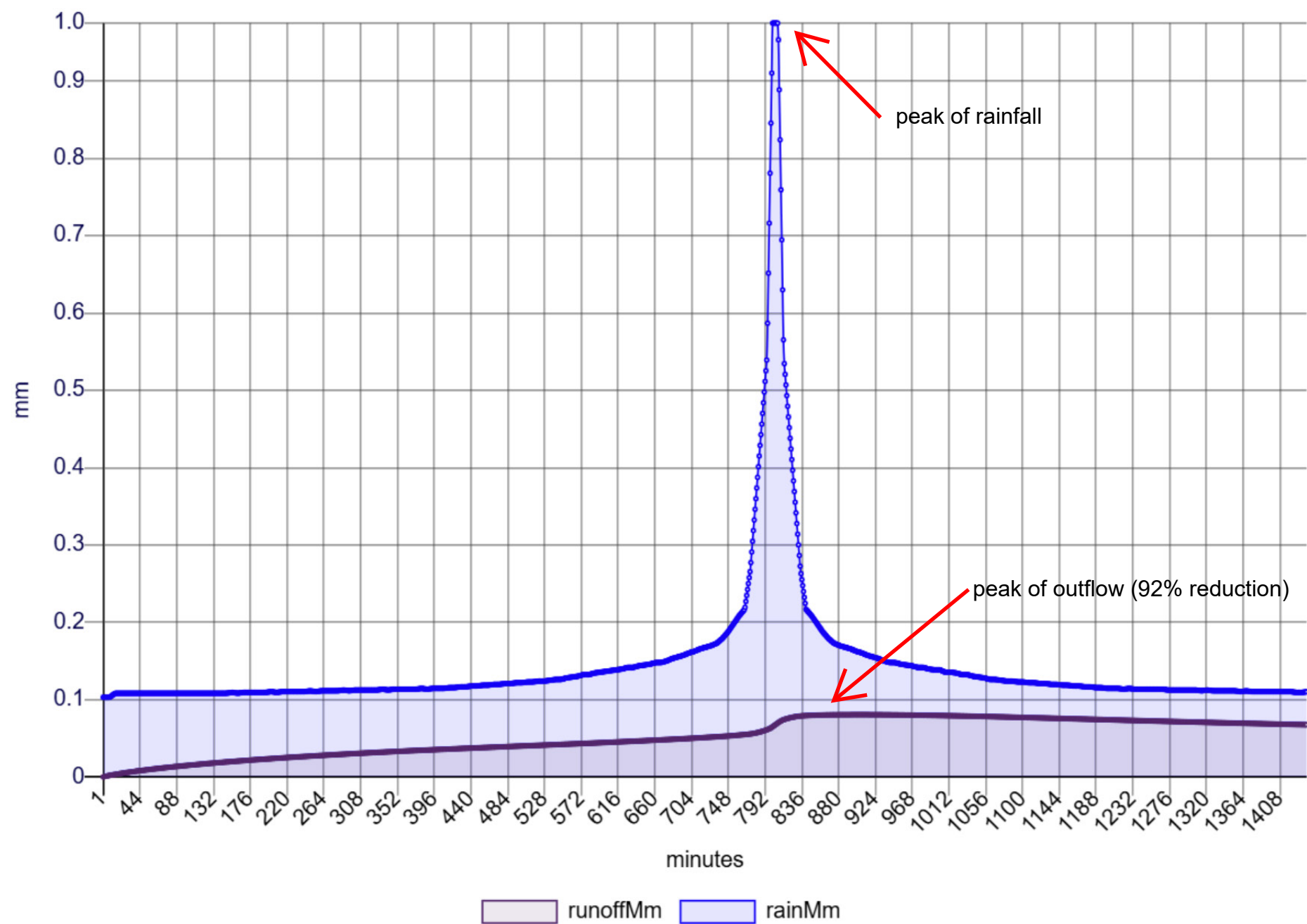


Cost Information

Additional Cost to upgrade existing green roof to purple-roof
addition of honeycomb and detention layer
\$11.00 psf x 31,825 sf = \$350,075.00

Estimated Cost of storage tank (15,741 cf capacity)
\$397,000 (outdoor) to \$505,000 (indoor)

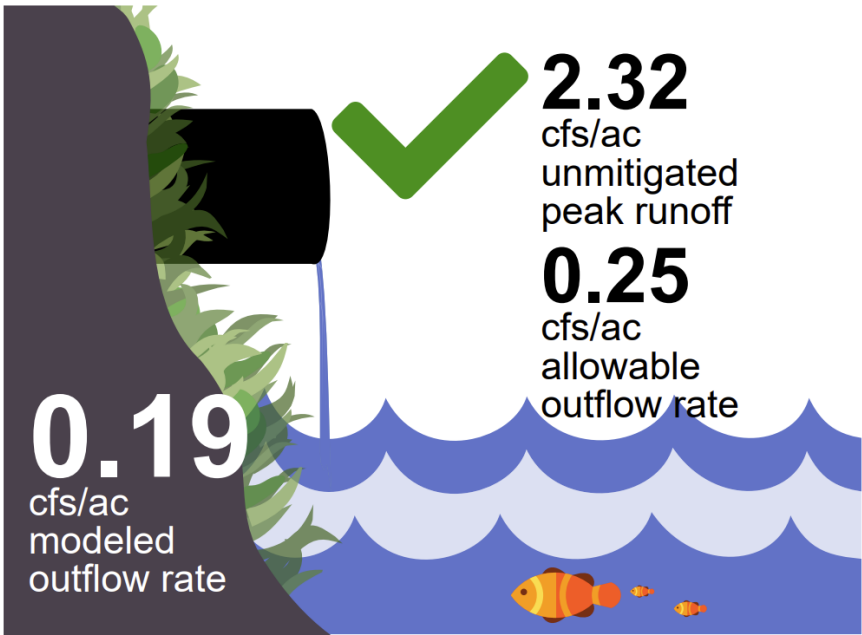
Estimated cost saving - \$46,925.00 to \$154,925.00



Overall Project Detailed Hydrograph
Design Storm: Type III distribution, 8.22 in total volume, 1440 minutes total duration

area	profile	size sf	slope (%)	retention storage cf	detention storage cf
Overall Project	varies	31825	varies	7232	8509
Building 3- Extensive Green roof	Purple-Roof System 5+2+1	31825	2	7232	8509

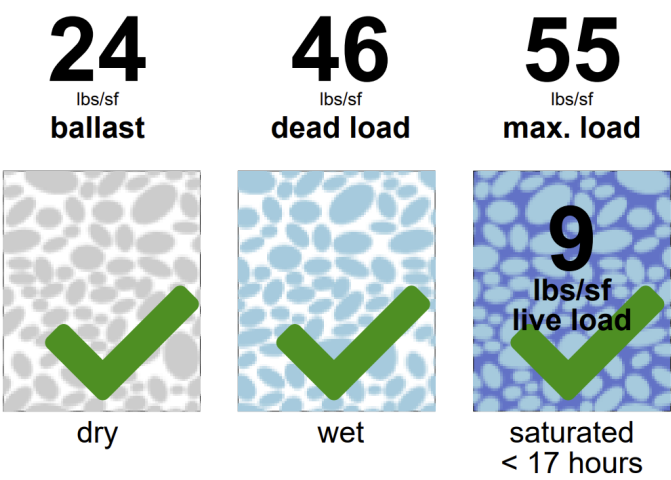
Overall Project Storage Summary Table



Overall Project Diagrammatic Flow Rate Compliance
Design Storm: Type III distribution, 8.22 in total volume, 1440 minutes total duration

	target cfsAc	modeled cfsAc	model / target %	% reduction
unmitigated runoff	N/A	2.32	N/A	0%
peak flow rate	0.25	0.19	77%	92%

Overall Project Flow Rate Summary Table
Design Storm: Type III distribution, 8.22 in total volume, 1440 minutes total duration

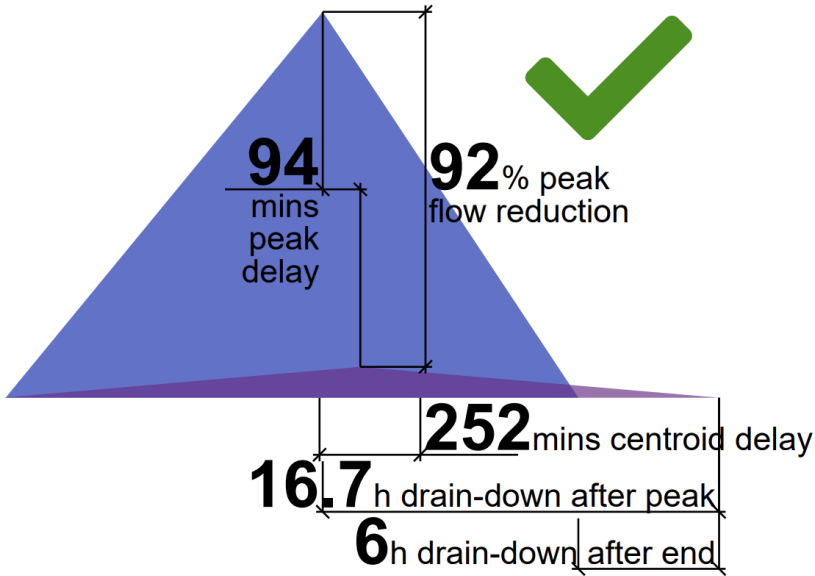
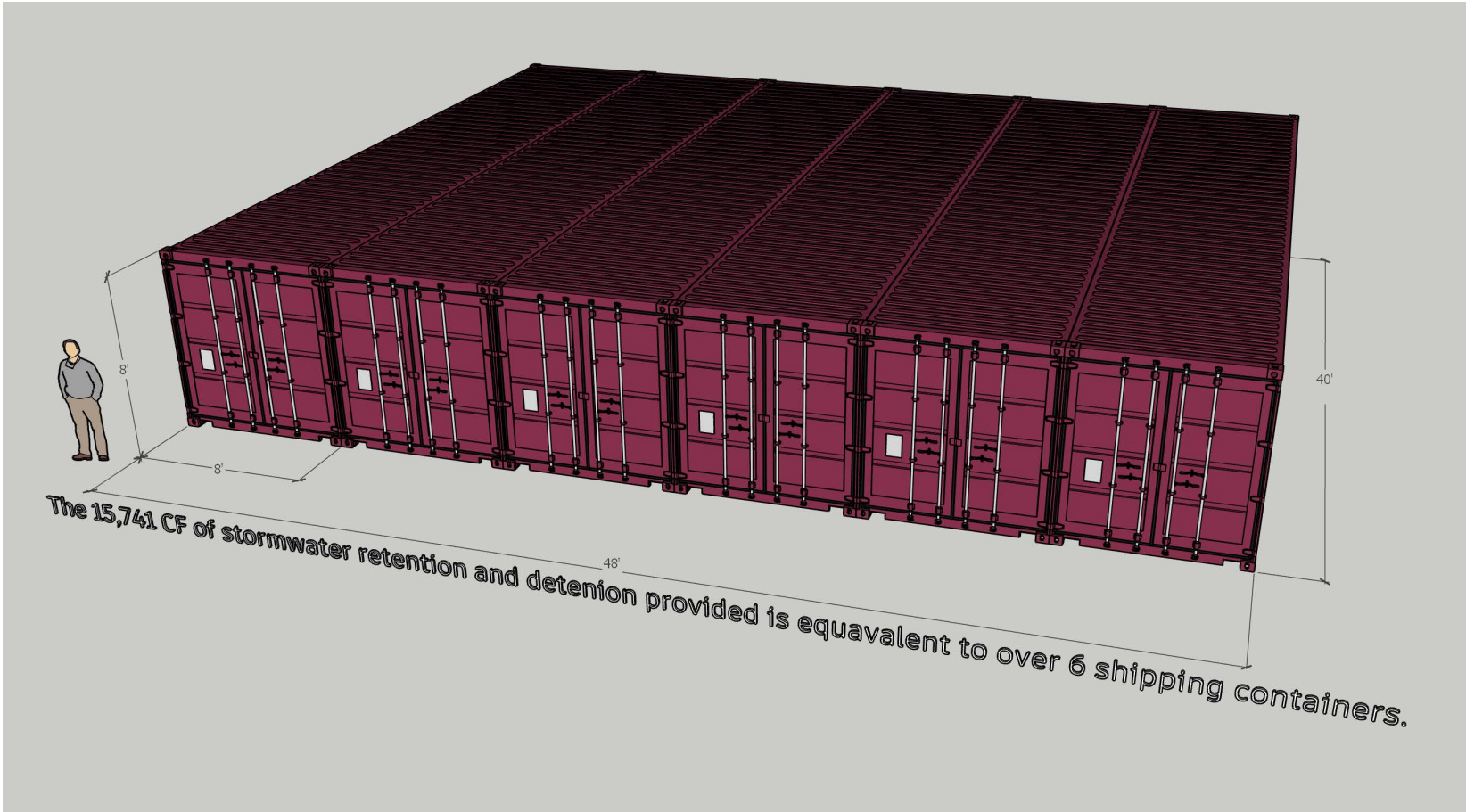


Note: Dead load corresponds with the maximum retention value per ASTM E-2399 / FLL B.2, which is used to estimate worst case scenario for structural conditions.

Building 3- Extensive Green roof Weight Summary

area	profile	size sf	slope (%)	ballast weight psf	dead load psf	live load psf	combined load psf
Overall Project	varies	31825	varies	varies	varies	varies	varies
Building 3- Extensive Green roof	Purple-Roof System 5+2+1	31825	2	24	46	9	55

Overall Project Weight Summary Table



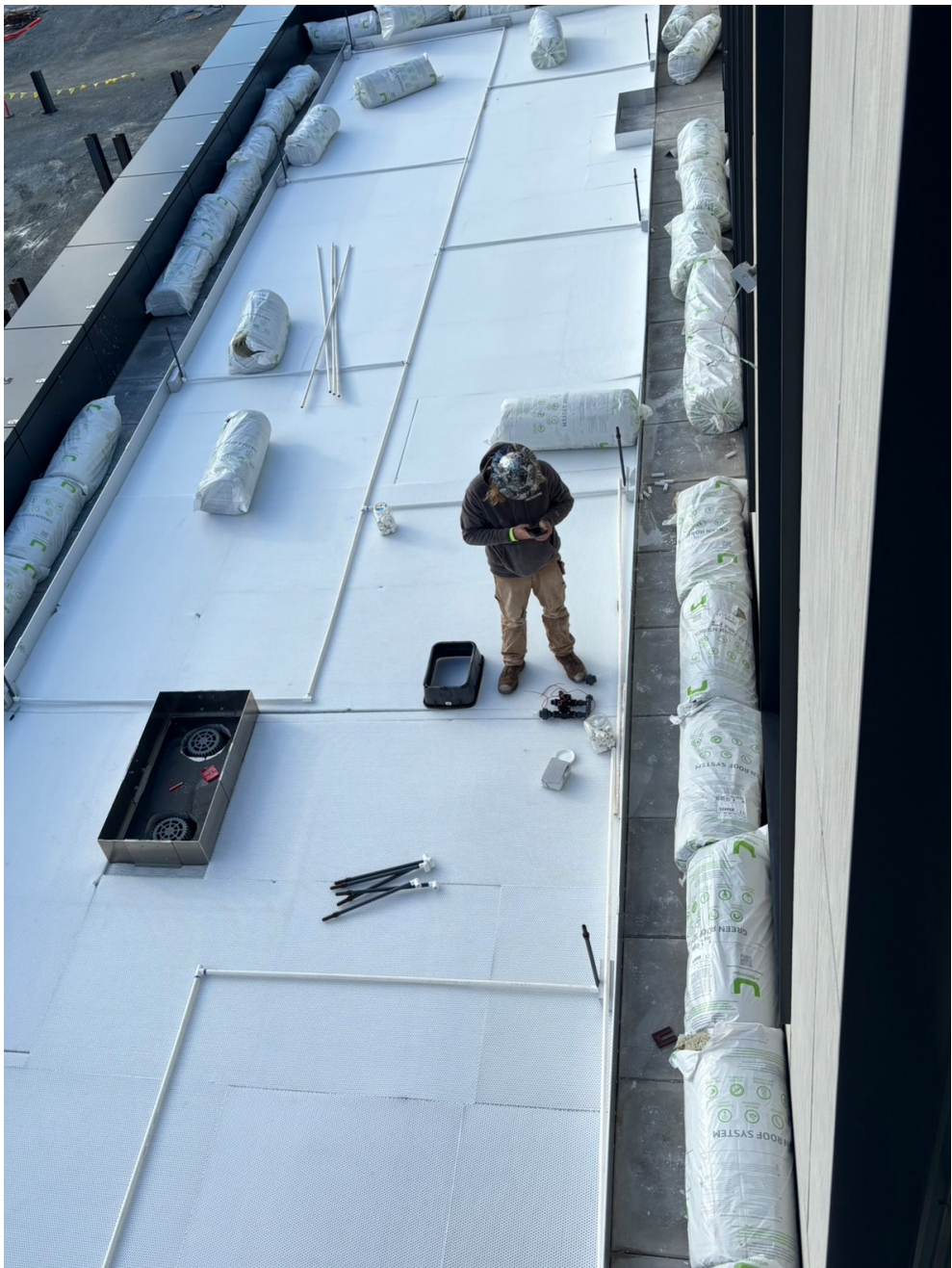
Overall Project Diagrammatic Hydrograph
Design Storm: Type III distribution, 8.22 in total volume, 1440 minutes total duration



Drain Enclosure installad at roof drain



Detention Layer installation



Honeycomb installed and irrigation lines in place



Needed mineral wool being installed



Detention Layer palletized



Honeycomb palletized



Needed Mineral Wool palletized



Project: IQHQ Building 3

Location: 36-64 Whittemore Ave, Cambridge, MA 02140

Owner: IQHQ

Architect: Gensler

General Contractor: AECOM Tishman

Waterproofing: Marshall Roofing

Civil Engineer: Vanasse Hangen Brustlin, Inc., Boston, MA

Green Roof Installer: Recover Green Roofs

