Purple-Roof®

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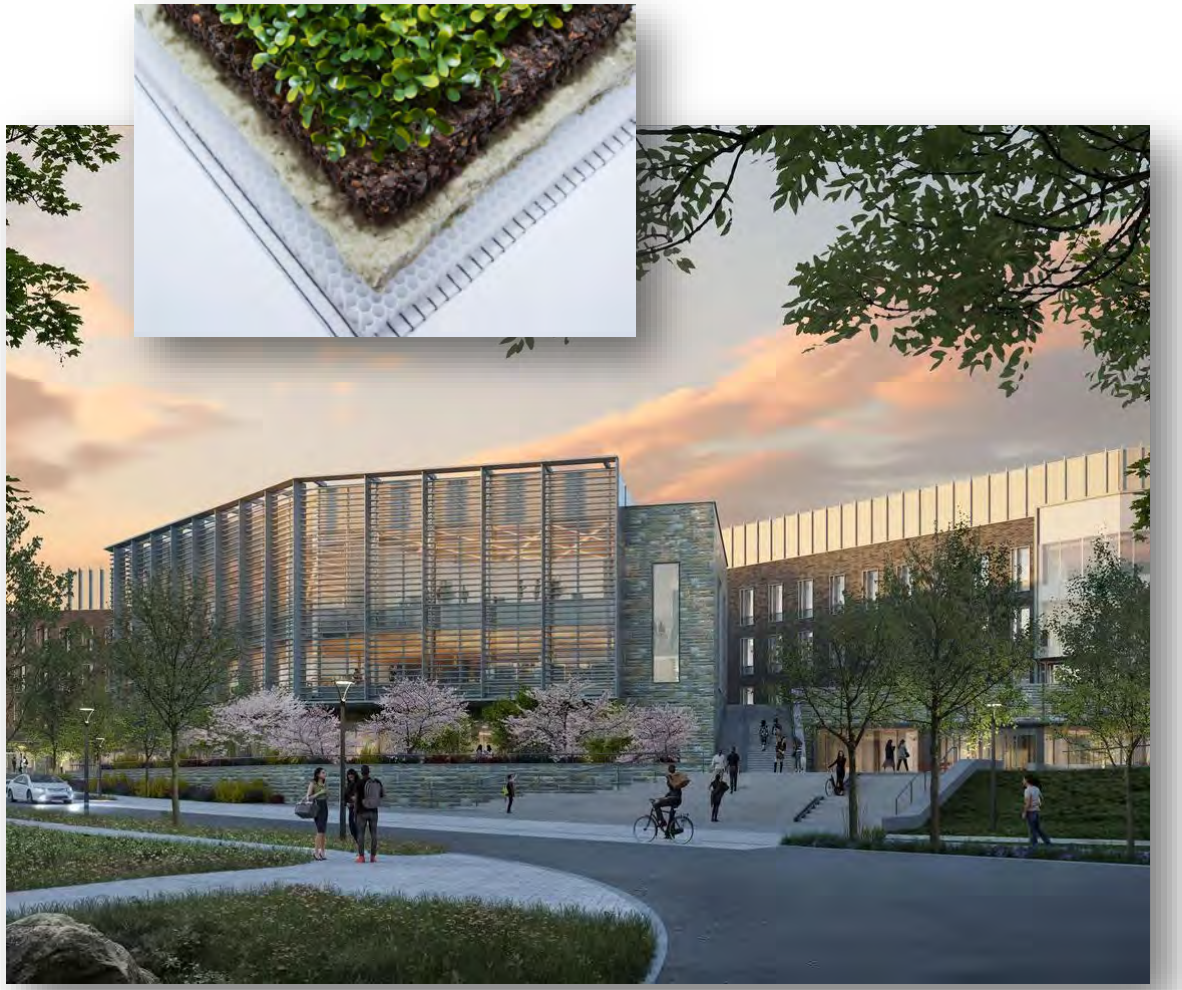
CASE STUDY- Princeton University Environmental Studies & Commons Building, Princeton NJ



A 7,000 square foot Purple Roof system is set to be installed in fall 2024 at the Princeton University Environmental Studies & Commons Building in Princeton, NJ. This state-of-the-art green roof will feature a 6+1+1 profile designed for advanced stormwater management.

The Purple Roof system is engineered to provide 1,405 cubic feet of retention and 1,967 cubic feet of detention, combining for a total stormwater storage capacity of 3,372 cubic feet. This integrated system will significantly mitigate the impact of heavy rainfall and reduce the burden on local stormwater infrastructure. Notably, the system at Princeton University is expected to achieve a remarkable 95% reduction in peak outflow, demonstrating its efficiency in managing stormwater runoff.

Retention in this system refers to the green roof's capacity to hold rainwater and gradually release it, thereby preventing immediate runoff and reducing peak flow rates. This process is essential in minimizing the risk of flooding and alleviating pressure on the drainage systems. Detention involves temporarily storing stormwater and releasing it at a controlled rate, ensuring that the city's drainage systems are not overwhelmed during heavy rain events.

The installation of the Purple Roof system at the Princeton University Environmental Studies & Commons Building exemplifies sustainable urban development. By integrating vegetation into the built environment, the project promotes biodiversity, reduces the urban heat island effect, and enhances air quality. Additionally, the Purple Roof system's efficient stormwater management capabilities contribute to cleaner waterways and reduced pollution levels.

This project demonstrates the effectiveness of advanced green roof systems in urban environments, highlighting the importance of sustainable building practices in modern urban planning. The anticipated successful implementation at Princeton University will serve as a model for future projects, showcasing how innovative green infrastructure can provide significant environmental benefits while enhancing the aesthetic appeal of the building.

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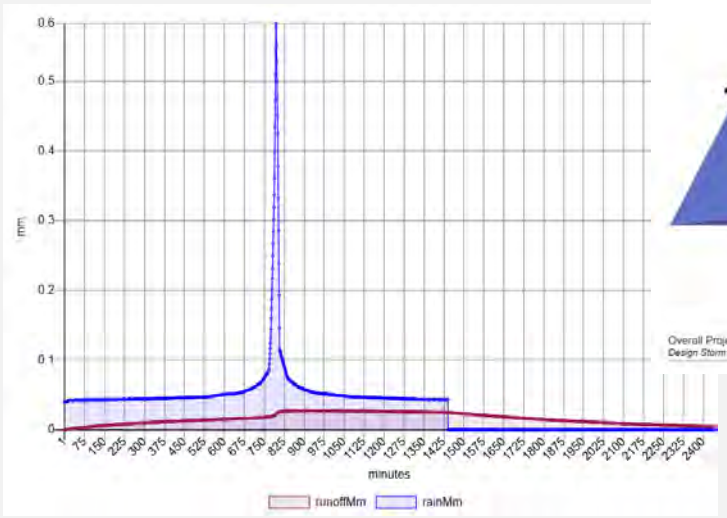
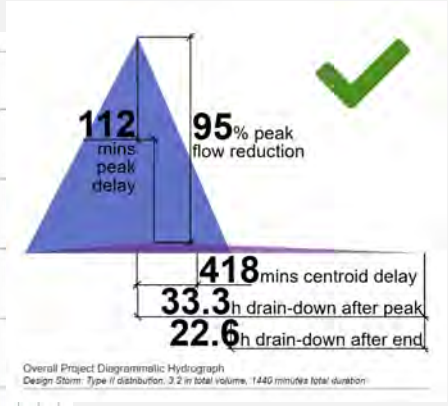
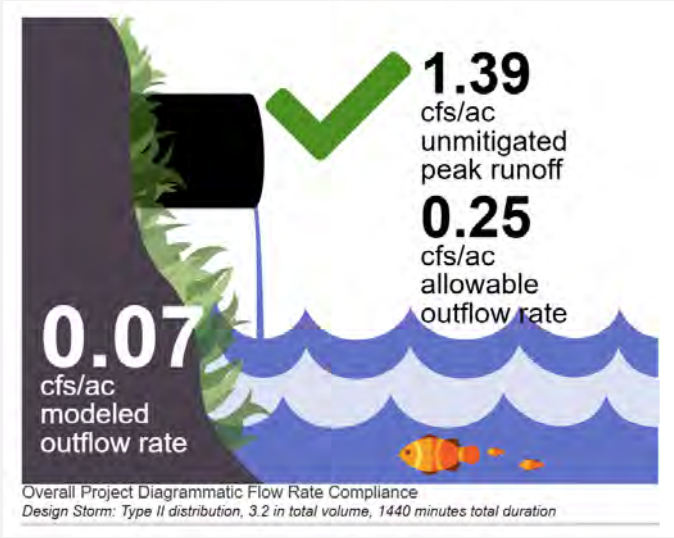
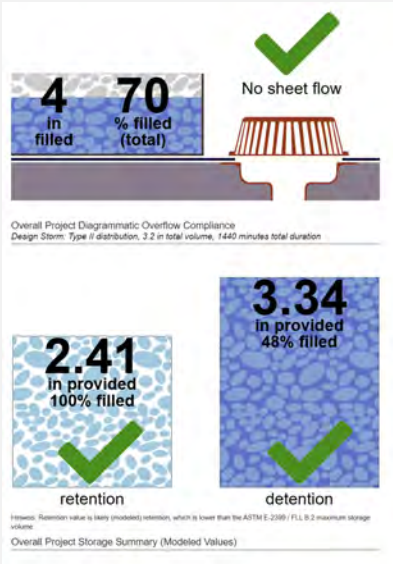
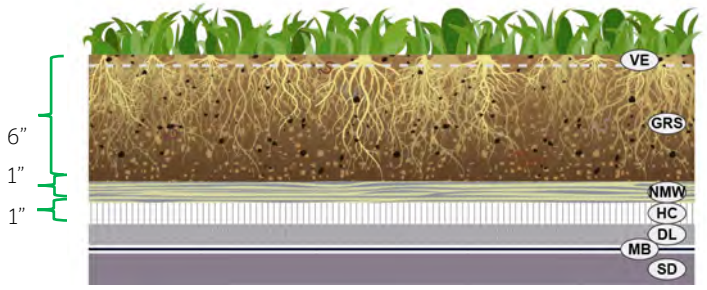




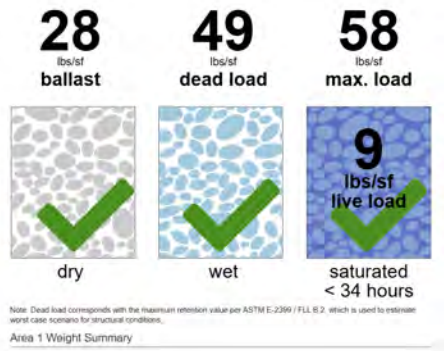




VEGETATED “6+1+1” PROFILE



	thickness (inches)	component	use
VE	0.5	Sedum Mat	Vegetation prevents erosion of the growing medium and is the primary driver for evapotranspiration (retention).
GRS	5.5	Green roof soil	Engineered soil media (or green roof soil) is the primary rooting medium and nutrient source for plants, provides weight (ballast) to prevent wind uplift, and retains water.
NMW	1	Needled mineral wool	Needled mineral wool layer manufactured from 100% rock that serves to efficiently retain stormwater, and serves as a secondary rooting medium.
HC	1	Honeycomb	Water storage reservoir consisting of a series of vertical tubes that detain (hold) water for up to several hours after rainfall.
DL	0.2	Detention layer	Specialized drainage composite that regulates flow rates, particularly during large storms.
MB	0.25	Waterproofing Membrane	Water-impenetrable membrane that prevents water penetration into the building.* Thickness of membrane per specific product selection.



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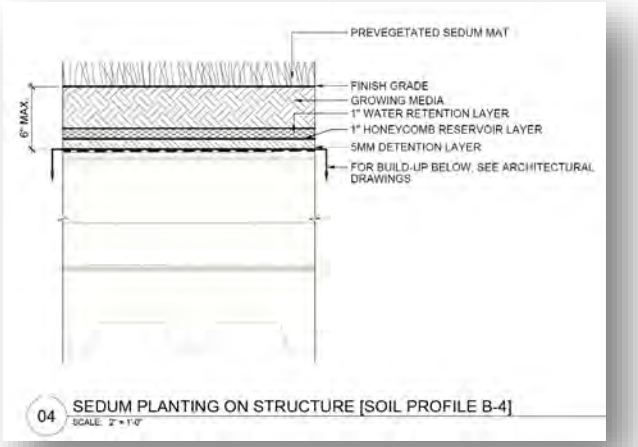
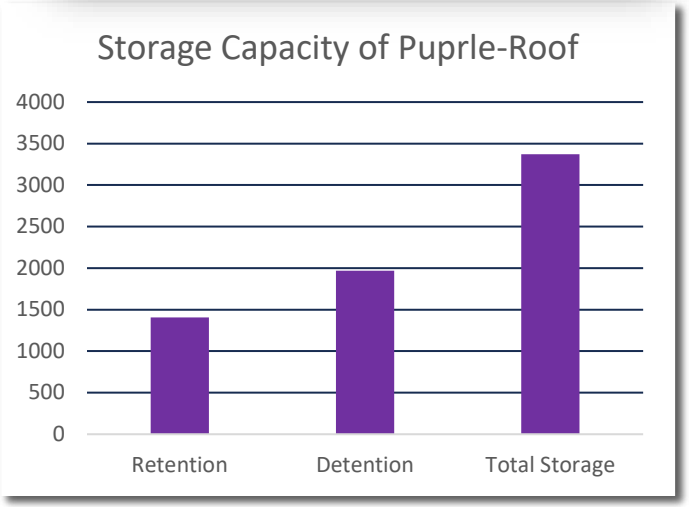


	target cf	target in	modeled cf	modeled in	model / target %	% filled
retention storage	N/A	N/A	1405	2	N/A	100%
detention storage	N/A	N/A	1967	3	N/A	48%
combined storage	N/A	N/A	3372	5	N/A	70%

Overall Project Storage Summary Table



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Storage volume equivalent to 2.9 ocean containers

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Project Information:

Location:	Princeton, New Jersey 08544
Client:	Office of Executive Vice President, Princeton Univ.
Design Architect:	Ennead Architects, LLP
Sustainability Consult.	Atelier Ten
Installer:	Recover Greenroofs
Civil:	Nitsch Engineering
Landscape:	Field Operations
Waterproofing:	TBD