

Commander, Navy Region Mid-Atlantic Installs its First Green Roof at Naval Station Norfolk

Innovation Filters & Retains Pollutants in Rainwater Runoff

NAVAL STATION (NS) NORFOLK installed the first “green roof” in the Navy’s Mid-Atlantic region as part of its continuing efforts to execute energy conservation and environmental protection initiatives.

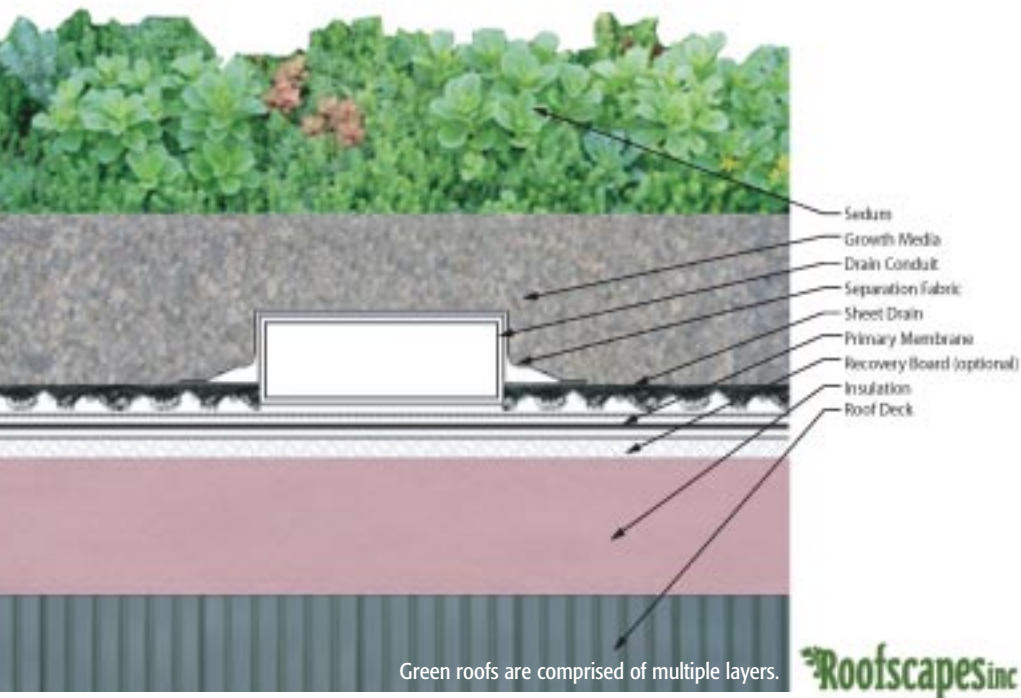
A “green roof” is partially or completely covered with vegetation which is planted over the roof’s waterproofing membrane.

The Naval Legal Services Office at NS Norfolk, Building A-50, was in need of a new roof. As part of the Navy’s goals to conserve energy and reduce pollution, the Naval Facilities Engineering Command Mid-Atlantic chose to install a vegetative green roof in lieu of a traditional roofing system. The \$613,000 project included this Low Impact Development feature that benefits the environment by filtering

and retaining pollutants held in rainwater runoff thus improving the water quality that enters area waterways. Due to its insulating properties, the green roof also helps to reduce energy demand for heating and cooling.

Previously, the building roof was flat and protected with gravel and tar. The roof downspouts drained internally through the building and were tied directly into the storm sewer system. The new design includes a three-inch system, which consists of multiple layers. Typically, a three-inch green roof will retain rain events until the volume exceeds 0.6 inches. On an annual basis, total rainfall runoff quantity is expected to be reduced by 50 percent or more.

In addition to retaining quantities of rainfall runoff, green roofs provide bio-filtration capabilities to improve the quality of that runoff. For facilities with Phase I and Phase II National Pollutant Discharge Elimination System permits, green roofs can satisfy storm water quality requirements. Additionally, using green roofs in urban settings reduces site development costs and increases the commercial space





The newly installed green roof on Building A-50 at NS Norfolk.



The Assistant Secretary of the Navy (Energy, Installations and Environment), The Honorable Jackalyne Pfannenstiel assisted during the ribbon cutting ceremony on 1 November 2010. Pictured (left to right): Jessica Gilden, Jessico, Inc.; The Honorable Jackalyne Pfannenstiel; Kevin White, Architect, NAVFAC Mid-Atlantic; Capt. Mary Jackson, Commanding Officer, NS Norfolk; and CDR Kris Dellapina, Executive Officer, Regional Legal Service Office Mid-Atlantic. Not pictured: Holding the ribbon were Harrison Dudley, NAVFAC Mid-Atlantic construction manager for the project and LCDR Gordon Meek, Assistant Public Works Officer for NAVFAC Mid-Atlantic, Public Works Department Norfolk.

otherwise consumed by traditional storm water management practices such as retention ponds.

Green roofs also assist in reducing reflectance/irradiance of energy back into the atmosphere helping to reduce global warming and the phenomenon of Urban Heat Island

Effect, a condition in which city and suburban developments absorb and trap heat. Anyone who has stood on a scalding parking lot on a hot, summer day has felt one effect of an Urban Heat Island. Urban Heat Islands can affect communities by increasing summertime peak energy demand, air conditioning costs, air

pollution and greenhouse gas emissions, heat-related illness and mortality, and water quality.

Other benefits of green roofs include:

- Reduction in costs associated with heating and cooling. (Green roofs are up to twice as efficient as white reflective roof surfaces in reducing thermal gain.)
- Extended service life of the roof by offering surface protection against Ultraviolet rays and hail.
- Sound reduction inside the building.
- Decrease in air pollutants by filtering what is deposited from the atmosphere and storing the carbon dioxide, which mitigates smog formation.
- Potential reduction in storm water utility fees assessed by local utilities.
- Formation of a living environment that provides habitats for birds and other small animals.
- Offer an attractive alternative to traditional roofs.

The project kick-off ceremony was held on 10 June 2010 and the roof installation was completed in late October 2010. A ribbon cutting ceremony was held on 1 November 2010. The Assistant Secretary of the Navy (Energy, Installations and Environment), The Honorable Jackalyne Pfannenstiel, was onsite to assist Capt. Mary Jackson, Commanding Officer, NS Norfolk, in celebrating this landmark project. ⚓

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