

The Ramona Apartments Ecoroof 1550 NW 14th Avenue, Portland, Oregon



Project Summary

A 32,000 square foot ecoroof was installed in 2011 atop The Ramona Apartments, making it the largest single-level ecoroof in Portland.

The Ramona is a new mixed-use, mid-rise apartment building consisting of six stories of wood-framed construction over a concrete podium. It includes 138 affordable apartments and ground floor facilities leased by Portland Public Schools and the Zimmerman Community Center. The Ramona is LEED-Gold certified and is located close to shopping, parks, the Portland Streetcar, coffee shops, and bike trails in the Pearl District near downtown Portland, Oregon.

Materials, Construction and Details

Two different extensive soil mixes were installed, each 3.5” deep, one of which is a trial of a more expensive product. Both contain roughly 70% pumice and 30% organic materials. 26 species of potted succulents and grasses were planted. The City of Portland provided flumes at two of the roof drains and will monitor the amount of stormwater released to the storm system.

Below the plants and soils of the Ramona's ecoroof, there is a multi-layered structure that completes the building's continuous air barrier, and provides moisture protection and thermal resistance. The roof includes a leak protection system, a multi-ply SBS-modified bitumen membrane, protection board and root barrier. A layer of drainage mat with filter fabric helps to hold more water on the roof to be used by plants or evaporate, while moving overflow to the outlet.



Pea gravel was installed for walking paths, along with red cinder to reduce overall weight of the green roof components to less than 20 pounds per square foot. The depth of ballasted areas was designed to provide coverage over 100% of the waterproofing layer in an effort to extend the life of the membrane while also being as lightweight as possible. The walking paths were located along parapets and on the ridges between drainage basins to be at the highest points of the roof where soil and plants would have the most difficulty surviving. Paving stones were added in some areas to provide ease of access to mechanical equipment due to changes in photovoltaic panel layout during construction. The Ramona's roof holds both a 30 kWh photovoltaic array, expected to generate enough energy to run the Ramona's elevators and hallway lights, and 64 solar hot water panels over the ecoroof, which will supply approximately half of the building's hot water.



In the summer, the soil and plants are expected to keep the surface of the roof cooler and reduce the build-up of heat in the attic space, and improve PV panel efficiency. Portland State University researchers believe that combining an ecoroof with PV panels increases the efficiency of the PV panels by reducing the ambient temperature on the roof. They are currently testing this. Additionally, low irrigation rates will be tested on different zones by the City because it's anticipated that the solar arrays will provide enough shade for the plants to sustain themselves.

Originally detention vaults were designed in the basement to manage stormwater from the site but these were eliminated when the City's Ecoroof Incentive grant was received. The incentive funded \$5.00 per square foot of the total cost for the ecoroof, which was under \$9.00 per square foot, including structural modifications to accommodate it.

In addition to the ecoroof, the building's courtyard contains permeable surfaces, plants, gravel and sand that are designed to filter and retain stormwater. Together with the roof, these elements treat 100% of the property's stormwater. Additional benefits of the ecoroof are the mitigation of the urban heat island effect and providing habitat.

Websites

<http://www.theramon.com>

www.portlandonline.com/ecroof

Designers/Manufacturers of Record

Viridian Environmental Design, LLC

Ankrom Moisan

Harper Houf Peterson Righellis Inc.

AECOM

Walsh Construction Co.



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Created on December 12, 2011