



First Green Roof at Fort Bragg

by Jonelle Kimbrough

The Installation Transportation Deployment Support Area at Fort Bragg is growing ... literally. Its roof – the first vegetated roof on Fort Bragg – combines a beautiful garden with versatile and cutting edge technology that requires minimal maintenance but provides substantial benefits.

The LiveRoof® at the \$13 million ITDSA is 10,000 square feet and contains more than 500,000 evergreen and deciduous sedum plants. Sedum is a succulent, or a fleshy plant that efficiently retains water in arid climates or soil conditions. They have a special type of metabolism that allows them to exchange water and gases during the night when temperatures are more moderate. Thus, they are ten times more water efficient than other plants. Although they are not native plants, succulents still thrive in the often hot and dry conditions of the North Carolina sandhills. “This mix was specifically selected for the Carolina climate,” said Seth Leff, the



LiveRoof1: The first vegetated roof at Fort Bragg features over 500,000 evergreen and deciduous sedum plants designed to manage storm water, reduce the urban heat island effect and conserve energy. Photo by Jonelle Kimbrough.

LiveRoof® Area Manager. “The evergreens ensure year-round vegetation and variation while the deciduous plants that lose their leaves nourish the soil.”

According to Leff, the LiveRoof® combines the most advantageous elements of plant-in-place methods with container methods of vegetative roofing. Traditional plant-in-place methods leave soil exposed and plants susceptible to wind scour, water erosion and weed encroachment during the long establishment and maturation process. The LiveRoof® plants are installed when they are mature and dense in pre-vegetated modules. The module system prevents plant loss due to wind and water and discourages weed growth. In addition, it is immediately aesthetically pleasing, offering turn-

key benefits to the owner. The LiveRoof® modules are particularly special, though. Whereas conventional modules are prone to photodegradation and unattractive compartmentalization, the LiveRoof® modules feature a subterranean design that virtually disappears following placement, so the module edges are obscured to prevent photodegradation, to enhance the aesthetics and to allow full soil connectivity. With full soil connectivity, the plants can share water, nutrients and beneficial organisms for optimum health. Furthermore, the LiveRoof® modules are created with recycled content. Even the inorganic soil is ecologically sustainable, durable and suited to the climate. “The entire system is designed to last



LiveRoof Seth Leff: LiveRoof Area Manager Seth Leff surveys the plants on the roof at the Installation Transportation Deployment Support Area at Fort Bragg. Photo by Jonelle Kimbrough.

indefinitely,” Leff said.

The plants and their modules require basic and periodic maintenance. LiveRoof, LLC recommends an annual pruning, an annual soil test and a bi-monthly “weed walk.” Since the materials are engineered to tolerate a dry environment, the plants will require minimal watering.

A vegetated roof has many environmental benefits. The succulents act as sponges and filters to absorb storm water on the site and prevent contaminants from polluting the aquifer. The roof at ➤

Acronyms and Abbreviations	
ITDSA	Installation Transportation Deployment Support Area
LEED	Leadership in Energy and Environmental Design



Reduced BOS Funding Brings out the Best in Area I DPW O&M Division

by Patrick Hannigan and Marshall Downs

USAG Red Cloud and Area I is located in the northern most area of South Korea. It is bordered to the north by the Demilitarized Zone (DMZ), to the south by the Capital City of Seoul, to the east by the East Sea, and to the west by the Yellow Sea. Area I is an area of approximately 700 square miles of mostly mountainous terrain. Located within those 700 square miles are USAG Red Cloud installations and facilities.

USAG Red Cloud and Area I's operational area of responsibility (AOR) consists of approximately 14,000 acres of Status of Forces Agreement (SOFA) granted land, 9 non-enduring camps, 7 enduring remote sites, 33 enduring live fire ranges, and more than 2,000 temporary and semi-permanent buildings and facilities, consisting of over 10 million square feet of covered space. All this adds up to a lot of work for the Area I DPW Operations & Maintenance (O&M) Division.

Prior to 2010, USAG Red Cloud and Area I managed millions of dollars worth of service contracts performing services such as Tank Tightness Testing (TTT), Backflow Preventer Assembly Testing (BFAT), Inspection Test & Maintenance (ITM) of Fire Alarm Detection Suppression Systems (FADSS), Automatic Transfer Switch (ATS) testing, and numerous Ground Maintenance contracts for grass cutting and tree trimming. In mid 2010, the overall Army-wide reduction in funding for Base Operations Support (BOS) had a significantly impact on the affordability of Area I's service contracts. The solution was to obtain



Automatic Transfer Switch (ATS)

training for the in-house labor force, and to begin utilizing trained and qualified Korean National employees from within the division. During FY 11 and FY

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the ITDSA will prevent an estimated 200,000 gallons of storm water from entering waterways every year. The LiveRoof® also reduces the urban heat island effect. Whereas traditional roofs can heat to a temperature of 175 degrees in the height of summer, the LiveRoof® can retain the roof temperature at the ambient air temperature. The plants create a habitat for wildlife such as birds and pollinators. In addition, the succulents provide fire protection and noise reduction by reducing interior sound by as much as 40 decibels.

The LiveRoof® also contributes to Leadership in Energy and Environmental Design (LEED) success. Developed by the United States Green Building Council, LEED is a rating system which recognizes sustainable design and construction that benefits human and environmental health.

The ITDSA is certifiable as a LEED Silver facility and meets Army LEED construction standards.

Vegetated roofs are associated with health advantages, too. Plants are scientifically proven to lower blood pressure, reduce heart rate, enhance mood, create an increased sense of productivity and instill a desire for physical activity and social interaction. Since the roof is visible from the second story of the ITDSA, the occupants of the facility will be able to enjoy the garden and reap its therapeutic benefits.

The LiveRoof® is financially sound as well. The vegetation extends the life of the roof structure by reducing photodegradation and protecting the membrane from mechanical damage or from natural expansion and contraction, resulting in a potential 200 to 300 percent extension of roof membrane life expectancy. The plants cool the entire

structure through an evaporative process and lower interior temperature by 6 to 8 degrees in the summer. Leff estimated that the plants should reduce air conditioning costs in the facility by 25 to 50 percent and should provide nominal insulation during winter months.

“We are very proud of this green roof project,” said Ekaterina Dones of the United States Army Corps of Engineers. “This project is proof that Fort Bragg isn't afraid to do something different in order to achieve additional energy and environmental benefits.” For more information on LiveRoof®, visit www.liveroof.com

POC is Ekaterina Dones, 910-723-652, 1 ekaterina.dones@us.army.mil

Jonelle Kimbrough is a media relations manager in Environmental Management at Fort Bragg, North Carolina. 