

Going lean, clean and (Army) green: DPW tackles environmental issues



Photos by Sammy Jackson, DPW Engineer

ABOVE, Bldg. 39054-39050 has one of the more than 260 Duro-Last roofs that have been installed on Fort Hood in the last 3.5 years. The prefabricated membrane roofs help the installation save money and energy. LEFT, Contractors roll the insulation onto the roof of Bldg. 29014, which can be accomplished in almost half the time as placing traditional asphalt shingles.



By Christine Luciano
DPW Env. Outreach Coordinator

The Fort Hood Directorate of Public Works' engineering division is working with its environmental division toward a greener future.

Although the perception exists that engineers are tree cutters and environmentalists are tree huggers, on Fort Hood both divisions are working together toward sustainable design and development.

Currently, Fort Hood's engineering and environmental divisions are in the process of designing three, 5,000-square-foot office buildings to meet the U.S. Green Building Council's Leadership in Energy and Environmental Design Silver standards. The Army is transitioning from the Sustainable Project Rating Tool used to rate environmental aspects of buildings to the LEED rating system for military construction projects starting fiscal year 2008.

To comply with Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management, Fort Hood is using LEED as a tool to implement sus-

tainable design and development for high performance construction.

Compressed straw building

One of the LEED Silver buildings will be the future DPW Environmental Office. This building will have solar panels and a rainwater collection system, and it will be completely constructed with structurally insulated panels made out of compressed straw and oriented strand board.

Another building will have the first green roof on Fort Hood, active daylighting and xeriscaping with vegetation acclimated to Texas. From these pilot projects, Fort Hood will learn how to better implement the Army's environmental strategies and goals.

Adding sustainable roofs and light emitting diode lights to ongoing installation projects is another way DPW engineers implement these new environmental initiatives.

DPW engineer Sammy Jackson conducted a search for a product that was better than asphalt shingles, required less maintenance and would save the installa-

tion money. Jackson learned about a product called Duro-Last Cool Zone, an Energy Star sustainable roofing product that has a high solar reflectance rating recognized by the Environmental Protection Agency.

Jackson first used this product when the III Corps Headquarters building needed a new roof.

"DPW had a budget of \$1 million to replace the roof, but with research to find a sustainable product, we were able to install the Duro-Last for \$600,000 and have a cost avoidance of \$400,000," Jackson said.

Instead of the traditional process of applying tar and asphalt shingles onto roofs, Duro-Last is a prefabricated membrane that laborers roll to install.

"There is minimal waste, and extra sections of the Duro-Last are recycled for walk pads," Jackson said. "The end result is a high-quality product that makes the building cooler and in turn saves energy."

The asphalt shingles typically have trace contaminants found in crude oil, coal and other hydrocarbons, Jennifer Rawlings, DPW environmental pollution prevention coordinator, said.

"This is an environmental concern because weathered shingles are toxic to aquatic life, and several are suspected carcinogens," she said. "But this is changing, and with engineering's support, we are making progressive steps towards sustainability to meet Fort Hood's goals of LEED Silver for all new construction projects."

DPW engineer Michelle Lenis is also working on a project to install LED lights and reflectors at Robert Gray Army Airfield and LED traffic lights throughout the installation.

The project started last year when the engineering division replaced lights at Hood Army Airfield with LEDs and installed radio controllers for power. The net result was a savings of more than \$60,000 a year.

New power-saving measures

"Since Hood Army Airfield is now monitored 24 hours a day, seven days a week, the power was on constantly," Lenis said. "But with the LEDs and a radio frequency for pilots to tune into to turn on the power, we were able to drastically reduce our electricity consumption from 67 per-

cent to four percent."

Engineering's initial success led them to undertaking initiatives for future projects, such as the LED traffic light.

Traffic lights replaced

On Fort Hood, there are 1,362 traffic lights that will be completely replaced with LED lights by the end of the calendar year. The program will save the installation an average of \$25,000 a year.

"There are so many advantages to LEDs," Lenis said. "The lifecycle is 10 times longer, lasting about 10 years, and they require much less maintenance and labor."

These projects demonstrate how engineering is making greener decisions and finding long-term, sustainable, innovative solutions to energy savings.

"This is a win-win situation for everybody - for environmentalists and engineers," Lenis said.

"There is no downfall on a project like this. Engineering is continuing on with their good work including implementing environmental aspects into everything we do."

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