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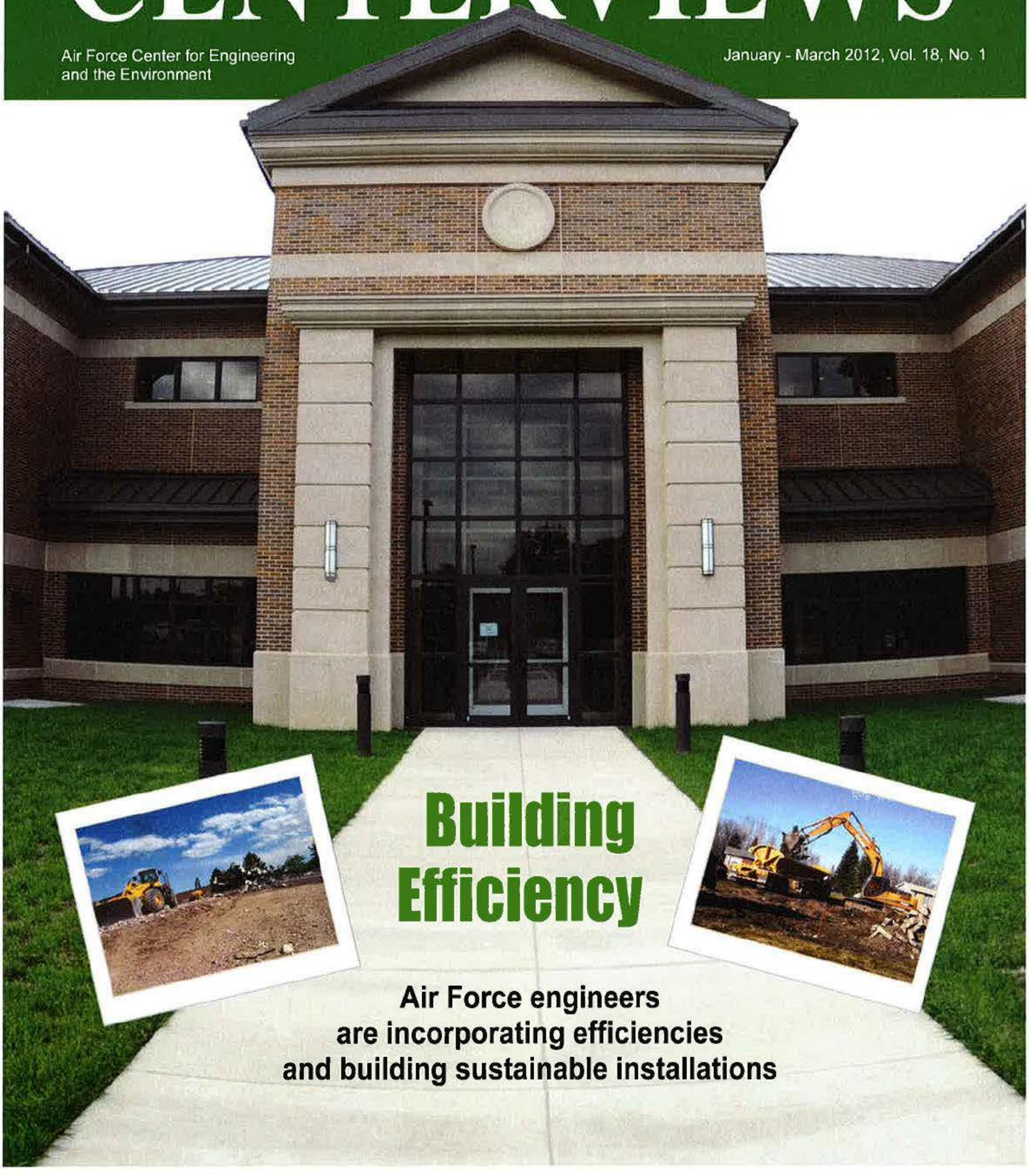

Building Efficiency

**Air Force engineers
are incorporating efficiencies
and building sustainable installations**

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Building Efficiency

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On the cover:

The 48,000 square-foot strategic planning and development facility at Joint Base Andrews, Md., was awarded a gold rating through the U.S. Green Building Council's Leadership in Energy and Environmental Design rating system, the second highest LEED rating, behind platinum. AFCEE has produced six gold-certified projects through 2011.

A new year with new opportunities

view from the center

TERRY EDWARDS
AFCEE Director

Happy New Year! The past year was a very successful one for the men and women of the Air Force Center for Engineering and the Environment. We had a great year across our entire portfolio while adapting to a fiscally constrained budget environment. At the same time, we're making great progress maximizing our ability to exceed customers' needs and expectations.

Late in the year we learned of the CE Transformation – Accelerated process the Civil Engineer community will adopt as it does its share to gain efficiencies needed to meet future Department of Defense and Air Force budget and manpower reduction goals. With hundreds of billions of dollars in the near term and more than a trillion dollars in the long term the Defense Department must trim from its operating budget, we are posturing for the future in accordance with the direction and vision provided by Maj. Gen. Timothy Byers, the Civil Engineer.

In early November, General Byers announced several spirals, or phases, of change the CE community would undertake to get to an end state that meets reduction goals while still accomplishing the critical missions in the CE fold. As part of that transformation, three field operating agencies – AFCEE, Air Force Civil Engineer Support Agency and Air Force Real Property Agency – will consolidate to form one large CE FOA. In addition, several missions previously conducted at Air Staff, major commands and installations will be centralized at the yet-to-be-named FOA, which will give us the opportunity to gain efficiencies through standardization of processes, benchmarking of best ideas and tapping into the intellectual capital of the experts in the consolidated agency to accomplish our missions better, faster and smarter.

The next nine months will be critical as we map out the structure of the new CE FOA and determine roles and responsibilities, manpower, resources and myriad other preparations necessary to stand up this consolidated capability and reach initial operating capability on Oct. 1, 2012. These will be challenging times for the members of the AFCEE team as we must continue to excel at our current missions while posturing for the future and our role in the new FOA.

As General Byers stated in his transformation announcement video, change is not new to the Air Force or its civil engineers, but it will present some challenges over the next several years.

"Change is not easy," he said. "CE Transformation will fundamentally change our community and how we support the mission. Lean times require great leaders to turn challenges into opportunity. I expect all of you to step up to the challenge as we make tough decisions on the capabilities we provide to our installations at home and in deployed locations."

At AFCEE, we have embraced the general's call to step up to the task. We are very cognizant of the fact we are in a no-fail situation. The Airmen and their families we support require our full effort to ensure we provide the installations, infrastructure and support mechanisms they need to train and equip themselves to defend America. The American people expect, and rightfully so, a capable, agile and ready fighting force.

In his testimony before the House Armed Services Committee in October, Secretary of Defense Leon Panetta summed up the focus we all share and will maintain throughout this transformation process when he said, "…we cannot break faith with our men and women in uniform. … They're the ones that have made us strong, and they're the ones that put their lives on the line every day in order to protect this country. We have got to maintain our faith with those that have deployed time and time and time again. And that's something I intend to do."

At AFCEE, we will maintain that focus as we transition into the CE FOA. The Airmen and civilians – active duty, federal employees and contractor support staff – on the AFCEE team will execute, to the best of their ability, our mission of delivering "integrated engineering and environmental management, execution and technical services that optimize Air Force and Joint capabilities through sustainable installations." ■

AFCEE follows LEED for SUSTAINABILITY

By Robert Ginsberg
Capital Investment Execution Division

The Air Force Center for Engineering and the Environment has placed an emphasis on supplying the Air Force with sustainable installations through "green" building alternatives.

"AFCEE is fully engaged in supporting the Air Force Civil Engineer's commitment to sustainable design and development," said AFCEE Director Terry Edwards. "Our focus is to provide our customers with the necessary technical expertise to execute sustainable and environmentally sound construction projects."

In support of the Air Force "20/20 by 2020" initiative, which aims to reduce owned, leased and Air Force-led joint base real property and associated operating costs by 20 percent by the year 2020, AFCEE's construction and demolition projects are regularly executed in strict adherence to the U.S. Green Building Council's Leadership in Energy and Environmental Design requirements.

"AFCEE's LEED-certified buildings are designed to reduce waste, conserve energy and create a healthier and safer environment for occupants," said Ben Kindt, acting AFCEE Capital Investment Execution Division deputy chief. "As a result, these projects are known to lower operating costs and increase asset value directly supporting the Air Force initiative."

LEED promotes sustainable building and development practices through a detailed ratings system, which recognizes green building design, construction, operations and maintenance solutions. The program provides a framework for identifying and incorporating construction practices and "green" building features that better the environment and improve quality of life.

AFCEE has produced six gold-certified projects through 2011, the second highest LEED rating, behind platinum.

"In some cases, our LEED gold projects surpassed original contract requirements of LEED silver," said Scott Nickerson, acting AFCEE construction execution branch chief. "Our project managers and contractors found ways to increase the certification level while staying within the confines of the contract by incorporating green features that are both environmentally and economically rewarding."

Most recently, AFCEE struck gold in managing the construction of a 48,000 square foot strategic planning and development facility, or SPDF, at Joint Base Andrews, Md. Completed in April, the $29 million design build project was recently certified LEED gold.

The new facility accommodates over 1,000 occupants and provides a state-of-the-art, fly-in and fly-out conferencing facility for the Air Force District of Washington.

AFCEE engineers collaborated with the contractor throughout the design build process to ensure the project was executed in accordance with contract requirements that specified a LEED silver rating. Together, cost-effective sustainable features were incorporated into the facility, which elevated the LEED (version 2.2) certification achieved to gold while remaining within the contract's budget.

"Our goal was to construct a state-of-the-art conferencing facility that provided the Air Force with a safe, technologically advanced and environmentally conscious space," said Capt. Katherine Lockhart, acting chief of the AFCEE program management office at Joint Base Andrews. "We achieved this by selecting green features such as low-emitting materials and energy-efficient mechanical systems, and by implementing sustainable building practices early on in the design phases while monitoring impacts on cost, schedule and performance."

Some of the SPDF's environmentally friendly features include bicycle racks, changing rooms and reserved parking spaces for carpools and vans to encourage alternative transportation; reducing the heat island effect through a solar reflective roof; a lighting plan that utilizes automated fixtures to reduce light pollution and optimize energy performance; and low-flow faucets and water efficient landscaping to reduce water consumption.

In support of the Air Force's recycling goals, the project leveraged a waste management plan to recycle 50 percent of non-hazardous building materials such as wood, cardboard, brick, metal, plastic and glass. The facility was also designed to promote green habits with a dedicated area to store and collect recyclables.

The new facility was dedicated in October to Gen. Jacob E. Smart, whose leadership, planning and innovation guided Air Force operations through World War II and the Korean War.

The newly dedicated "Smart" building now has a fitting name to support strategic level Air Force planning through advanced technology capabilities and green buildings features. ■

Top: Charles Mouzannar, AMEC senior vice president; Maj. Gen. Darren W. McDew, Air Force District of Washington commander; and Philip McQuiston, AMEC project executive manager; are presented the Strategic Planning and Development Facility Leadership in Energy and Environmental Design Gold Certificate. The Gen. Jacob E. Smart Strategic Planning and Development Facility at Joint Base Andrews, Md., provides state-of-the-art fly-in and fly-out conferencing capabilities to the Air Force District of Washington.

Bottom: An inside look at one of the state-of-the-art conference rooms at the Gen. Jacob E. Smart Strategic Planning and Development Facility at Joint Base Andrews, Md.

U.S. Air Force photos

AFCEE fills the recycling bin with DEMOLITION DEBRIS

By Robert Ginsberg
Capital Investment Execution Division

The Air Force Center for Engineering and the Environment is fully aware and engaged in supporting the Air Force with its recycling initiatives.

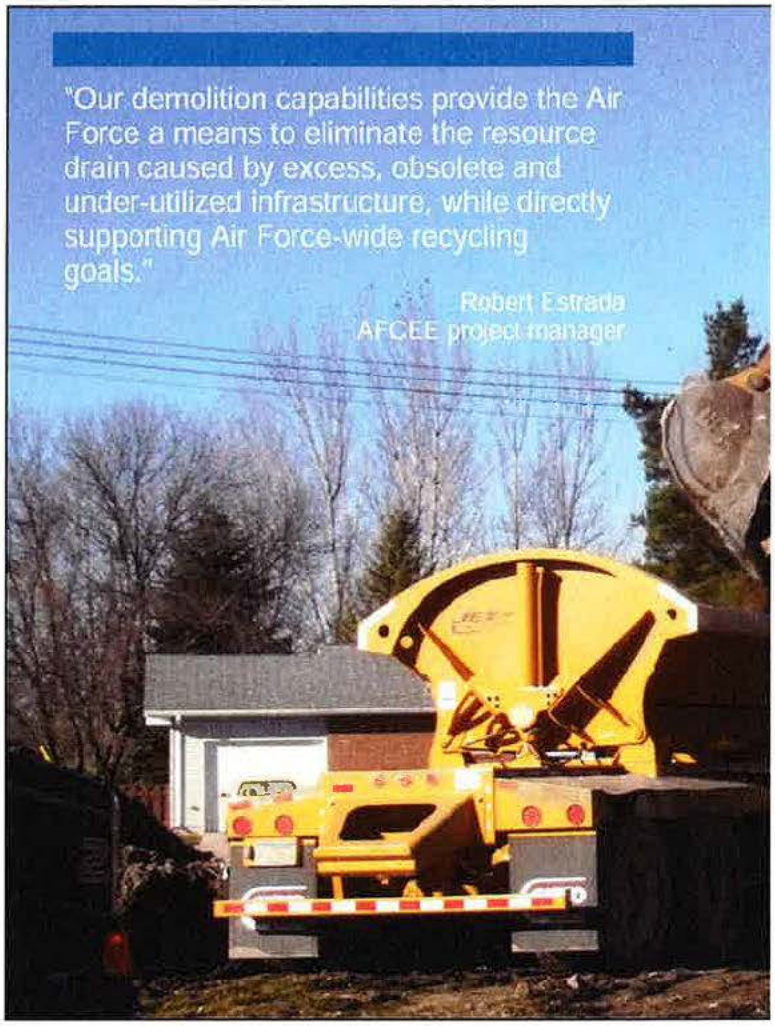
As stated in the Department of Defense Strategic Sustainability Performance Plan, the Air Force has established a goal to divert 60 percent of construction and demolition debris from its waste stream by fiscal 2015 and beyond.

"AFCEE realizes that the demolition of existing structures and the construction of new ones can generate an exorbitant amount of solid waste," said Ben Kindt, acting AFCEE Capital Investment Execution Division deputy chief. "We continually analyze and refine our facility demolition process to address environmental concerns and better support the Air Force's waste management goals."

In support of this notion, AFCEE often leverages a "green" demolition process, commonly referred to as deconstruction.

"In the past, waste material produced from the demolition of structures was landfilled, in part because construction material was destroyed during the process and unable to be repurposed," said Scott Nickerson, acting AFCEE construction execution branch chief. "Deconstruction involves a lot of planning and coordination upfront to properly survey the structure, noting any hazardous or toxic material and identifying material that can be recycled or reused."

AFCEE has managed several demolition and deconstruction projects recently, including the demolition of 492 military family housing units at Shaw AFB, S.C.



Completed in September, the project leveraged both traditional excavator practices and deconstruction practices to repurpose and recycle material. The demolition effort was deemed a huge success by the base project manager as it repurposed playground equipment, gazebos, a bus stop and street lamps. Over 80 percent of the more than 44,000 tons of material removed was recycled, including almost 34,000 tons of concrete, 95 tons of metals and 2,250 tons of asphalt.

"This was the most complex housing demolition project we've had and yet it was the smoothest, with no complaints," said Shaw project manager David Poythress.

Part of the project's complexity was maneuvering around occupied MFH units, which minimized the space available to execute demolition operations.

"AFCEE along with the contractor put a lot of effort into the planning of this demolition effort,"

said AFCEE project manager Robert Estrada. "Our main priority was to reduce the impact on and ensure the safety of the surrounding unit occupants during demolition. We were able to do this while completing the project on schedule and maximizing the material recycled."

At Grand Forks AFB, N.D., AFCEE engineers oversaw the demolition of 629 MFH units and garages. The $12.3-million project was part of a larger site restoration effort to reduce and consolidate underutilized space while repairing utilities, sewer systems and roadways in the remaining housing neighborhoods.

AFCEE and the contractor had to overcome many challenges during the demolition process.

"We experienced a host of unforeseen site conditions consisting primarily of unmarked utilities and some asbestos," said AFCEE project manager Tracy Kissler. "We also endured a much harsher winter and wetter than normal spring; clay soil doesn't work well in these conditions. In spite of all this, we remained focused and delivered top-notch (sustainment, restoration and modernization) solutions."

The project was executed with a focus on diverting as much salvageable material from the landfill as possible. Concrete, siding and asphalt were some of the materials recycled.

AFCEE will also be managing a $2 million demolition project at Beale AFB, Calif., in the near future. Currently in the planning phases, the project will remove 100 MFH units and associated power poles deemed degraded beyond a maintainable standard.

Estrada, AFCEE's project manager for this project as well, plans to execute the project in a similar fashion as the Shaw demolition effort.

"Much like the demo project at Shaw, our challenge at Beale will be operating in tighter spaces as

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AFCEE delivers sustainable solutions

By Robert Ginsberg and Micah Shuler
Capital Investment Execution Division

The construction execution branch of the Air Force Center for Engineering and the Environment, Lackland AFB, Texas, continues to expand its sustainment, restoration and modernization, or S/R&M, capability offering. In support of President Obama's June 2010 memorandum asking for all federal agencies to dispose of unneeded real estate and use installations more efficiently, AFCEE has ramped up its S/R&M offering and its focus on the Air Force's initiative, "20/20 by 2020."

20/20 by 2020 aims to reduce owned, leased and Air Force-led joint base real property and associated operating costs by 20 percent by the year 2020. In support of both this initiative and the president's direction, AFCEE's focus is to support installations executing projects to reuse existing facilities for new mission and realignment via S/R&M, space optimization and asset management orders.

To accomplish this, AFCEE is leveraging worldwide-capable, on-line contract vehicles and in-house project management and technical expertise. These assets allow AFCEE to perform focused planning, design, construction and asset management services that produce direct savings by renovating current space, consolidating underutilized space and demolishing excess space.

In addition to S/R&M projects, AFCEE engineers are currently managing 11 task orders in support of the space optimization initiative for major commands stateside and in overseas locations, and seven task orders involving asset management planning.

"AFCEE's role in the management of this work is critical as it provides information on where there may be opportunities to plan for and operate our installations more efficiently," said Ben Kindt, construction execution branch chief.

Conceptual rendering of renovations proposed for the United States Air Forces Europe Headquarters building at Ramstein Air Base, Germany.

For space optimization support, AFCEE issued a statement of work for surveying facilities, which includes collection of space utilization data and updated floor plans. This information is compiled in a space optimization tool, known as an S-File, which enables installations to track, view and analyze the data.

By integrating space utilization data with facility condition and operational cost data, engineers are able to identify consolidation and demolition opportunities in support of the 20/20 by 2020 goal.

Under AFCEE's asset management task orders, contractors are developing a plan for implementing asset management principles; creating tools for evaluating activity management plans and maximizing their effectiveness; and providing technical expertise to participate in asset management focus groups.

AFCEE continues to look for opportunities to enhance its support of sustainable installations, as demonstrated during AFCEE and the Air Force Civil Engineer Support Agency's Joint Field Operating Agency S/R&M Industry Forum Feb. 24 in San Antonio, Texas. The event brought together about 80 representatives from over 35 prime contracting firms to share best practices and lessons learned in an effort to enhance the quality, speed and effectiveness of forward operating agency delivery of S/R&M design and construction.

Another contribution to the 20/20 by 2020 initiative is the Inter-American Air Force's Academy Training Complex. AFCEE contractors recently completed the project, which consolidates seven separate training facilities, aircraft and equipment at Lackland and Kelly AFBs, Texas, into one massive facility located at Lackland.

"The 20/20 by 2020 initiative is all about efficient use of resources. To accomplish this, we must continue to improve our communication with our customers and stakeholders, staying proactive to ensure Air Force assets are well managed and used wisely, and support the sustainable directive," Kindt said. ■

"The 20/20 by 2020 initiative is all about efficient use of resources. To accomplish this, we must continue to improve our communication with our customers and stakeholders, staying proactive to ensure Air Force assets are well managed and used wisely, and support the sustainable directive."

Ben Kindt
AFCEE Capital Investment Execution Division
Branch Chief

Deconstruction, continued from page 7

the units slated for demolition are spread out across the base's entire housing area," Estrada said. "Safety and reducing the impact on the surrounding unit occupants will again be our top priority."

As with all AFCEE demolition efforts, the contractor will repurpose or recycle the demolished materials to the greatest degree possible.

"It's become a status quo at AFCEE to maximize the material recycled and repurposed during our demolition efforts," Estrada said. "Our demolition capabilities provide the Air Force a means to eliminate the resource drain caused by excess, obsolete and under-utilized infrastructure, while directly supporting Air Force-wide recycling goals." ■

STATE-OF-THE-ART TRAINING FACILITY REACHES COMPLETION

By Robert Ginsberg
Capital Investment Execution Division

Engineers at the Air Force Center for Engineering and the Environment oversaw construction of the recently completed state-of-the-art training complex at Lackland AFB, Texas, for the Inter American Air Forces Academy, or IAAFA, totaling nearly 75,000 square feet of space.

As a result of Base Realignment and Closure recommendations, IAAFA was directed to consolidate operations at Lackland.

In support of the BRAC effort, AFCEE engineers were given the task of combining seven existing training facilities, equipment and aircraft currently in various locations at Lackland and the neighboring former Kelly AFB.

"The delivery of the IAAFA BRAC (military construction) project was a significant benchmark in AFCEE history," said AFCEE project manager Micah Shuler. "The sheer size and complexity of this project took a collaborative team effort from our engineers, construction specialists and project managers and showcases our ability to execute large-scale MILCON efforts."

Following the request of Peru's minister of aeronautics Gen. Fernando Melgar in 1943, IAAFA has been training partner nation aerospace forces since. Today, the IAAFA team teaches 37 technical courses, in Spanish and English, to students from more than 22 countries per year.

To enhance IAAFA's ability to support this mission, AFCEE engineers designed the $18.5 million facility with classroom space, training laboratories, hangars for aircraft and helicopters, a paint shop and a new training taxiway.

The design included "green" features such as underground cisterns to collect rainwater to be reused for irrigation, "low flow" toilets, light sensors for classrooms and a construction waste management plan to recycle approximately 75 percent of all construction debris.

The inclusion of environmentally friendly features and green building techniques made the facility a candidate for a Leadership in Energy and Environmental Design, or LEED, silver rating. To be considered for a LEED certification, a facility must be designed and constructed with sustainable features, use recyclable materials when possible and use energy-efficient lighting and appliances.

The facility also contributes to the 20/20 by 2020 Air Force initiative, by optimizing space with the merging of seven existing installations while reusing the old training sites as Port San Antonio lease space. The 20/20 by 2020 Air Force directive aims to reduce owned, leased and Air Force-led joint base real property and associated operating costs by 20 percent by the year 2020.

"We are proud to have been involved with a project that continues AFCEE's mission of delivering sustainable solutions and contributes to the 20/20 by 2020 Air Force initiative," said Ben Kindt, AFCEE capital investment execution construction branch chief. "AFCEE is staying proactive to ensure Air Force installations are designed and constructed for maximum efficiency and sustainability." ■

RECYCLED SHINGLES

pave way for green parking lot

By Lea Johnson
21st Space Wing Public Affairs

U.S. Air Force photo by Lea Johnson

A new parking lot doesn't seem like a big deal. A new parking lot made from recycled shingles however, gets people talking.

The parking lot behind the 21st Logistics Readiness Squadron building at Peterson AFB, Colo., used to be a landfill, said Fred Brooks, 21st Civil Engineer Squadron civil engineer. The ground is sandy and through the years, the 200-space parking lot has settled creating large cracks and holes that fill with water.

The parking lot is being repaved using almost all recycled materials, including recycled asphalt shingles and concrete.

Rocky Mountain Excavating of Castle Rock, Colo., is the primary contractor for the project. Lafarge Asphalt of Colorado Springs is the subcontractor. Dody Day of RME and Dave Chelgren of Lafarge Asphalt are in charge of quality control.

"We had a bunch of big hail storms in this area and everybody got that knock on their door to replace their roof for free. Everybody jumped on that bandwagon and replaced their roofs and now we've got this huge amount of shingles in our area," Chelgren said.

Rather than sending the shingles to the landfill, Lafarge Asphalt has them ground up to roughly the size of coffee grounds. The shingles, mixed with recycled asphalt concrete, gives them nearly 20 percent of the oil needed for a parking lot.

The virgin oil that's added to the mix, is a premium grade oil, Chelgren said. "During the winter months if we get down to minus 28 degrees, there's still some flexibility in the pavement (so) it's not just snapping or cracking on us right away."

Before the asphalt can be laid down, the existing parking lot has to be torn up.

Day said the existing parking lot is being milled up and 30 percent of the millings are being mixed with other recycled concrete and then being put down as a stable foundation for the pavement.

"The rest of the millings went over to the recycle yard here at Peterson. Nothing's going back to landfills," she said. "It's being recycled through other projects here on the base. (There is) no waste really at all."

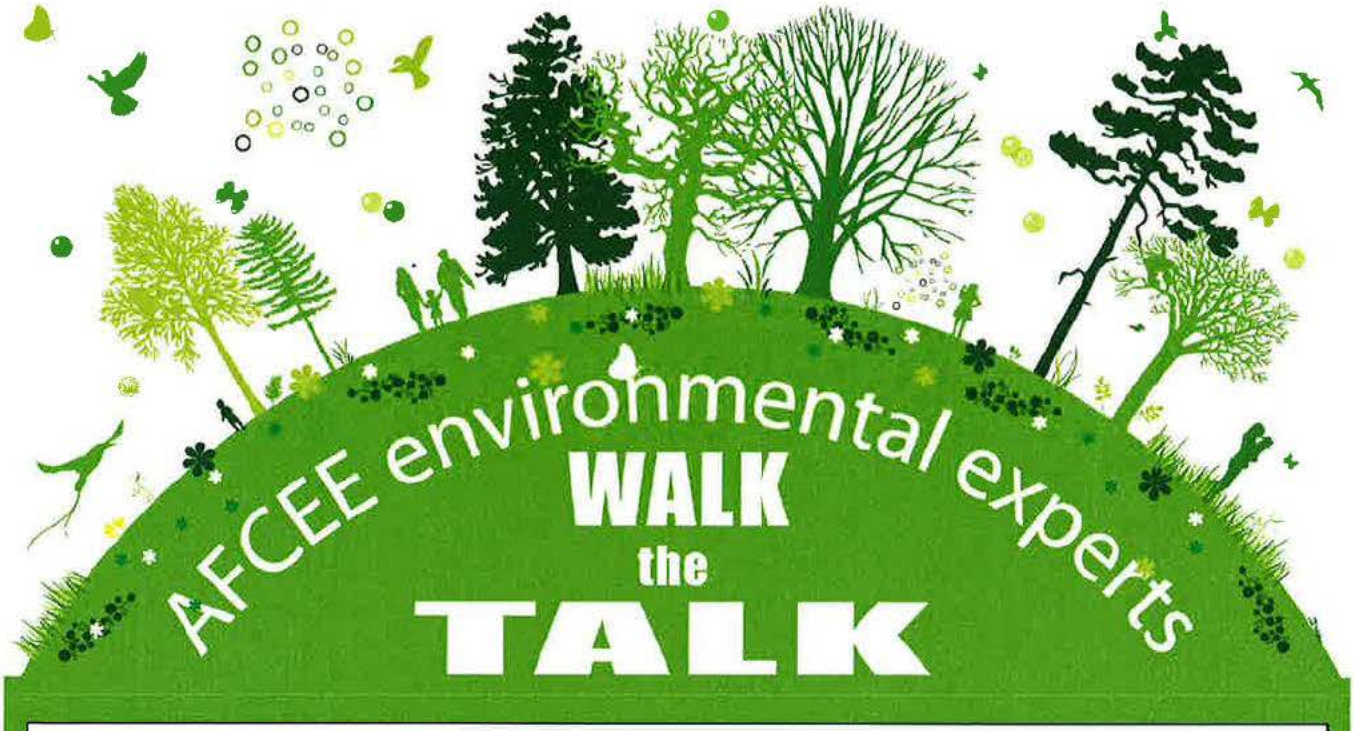
Extra millings have gone to the golf course and to other parking lot projects on base.

The materials come from the local area and the recyclable leftovers stay in the local area, Day said.

The savings really start adding up, Brooks said, when you take into count the fuel it would take trucks to go back and forth to the landfill. "Big picture, it's an exponential savings," he said.

"In the construction industry, there's a big push for innovation — the environmental, sustainable side of it," Chelgren said. ■

"Nothing's going back to landfills. It's being recycled through other projects here on the base."



By Jennifer Schneider
Public Affairs

Some environmental experts at the Air Force Center for Engineering and the Environment have taken their mission to 'green' the Air Force a step further and incorporated several environmentally friendly features when constructing or remodeling their own homes.

The scoring system used to assess sustainability across commercial building designs, the U.S. Green Building Council's Leadership in Energy and Environmental Design system, is familiar to many of those involved in AFCEE's military construction mission.

As of 2008, a LEED rating system was made available for residential homes as well. The rigorous process toward LEED certification analyzes several home components and awards points in such areas as water efficiency, use of environmentally preferable materials, landscaping features, indoor environmental quality and energy and atmosphere.

When designing and constructing an energy-efficient home, the U.S. Department of Energy recommends a "whole-house systems approach" which considers the interaction between the building site, the climate and several other home elements. This approach recognizes that the features of one component in the house can greatly affect other components, thereby affecting the overall energy efficiency of the home.

Erica Becvar, AFCEE's environmental management system program manager, said that while she didn't seek a formal LEED certification when undertaking a remodel of her 1937 cottage in Alamo Heights, she was determined to incorporate many of green principles touted by the USGBC and the DOE.

"While we knew we didn't have the time, nor was our contractor LEED-certified, we did know that we wanted to reduce, reuse and conserve where possible," Becvar said. "I had taken LEED training and was thus aware of LEED principles and what could be done on a residential structure. I also have good friends at AFCEE who are very passionate about their environmental professions and have shared their knowledge and interest in ways to reduce, reuse and conserve in building and remodeling."

Some of the energy-efficient aspects she incorporated in the remodel included the use of a non-volatile organic compound, or VOC, spray foam in the 230-square-foot home addition as well as in

existing walls and under the home to help insulate the structure. She replaced the existing asphalt roof with a metal roof and also installed energy-efficient windows and a new efficient heating, ventilation and air conditioning, or HVAC, system.

Becvar also took into account the home's location on the lot, minimizing windows on the west-facing wall of the home to reduce heat gain and adding large, high windows to the north-facing side to allow light to penetrate farther into the home and reduce the need for artificial lighting. She also installed a solar tube in the bathroom to make further use of natural lighting.

Efforts were made to improve water efficiency in the home by installing new low-flow plumbing fixtures and installing a hybrid water heater system. Hybrid water heaters combine the technology of tank and tankless conventional hot water heaters, by using a multi-pass design to increase efficiency in addition to including a small storage tank to provide higher capacity. She also added five rain barrels to the property along with the infrastructure needed to collect condensation from the air conditioning unit and roof and divert it to the barrels.

The environmentally friendly practice of material reuse was also implemented, as Becvar reused old kitchen cabinets and countertops in the new laundry room and reused and incorporated flagstone, siding and a front door from other remodels in her home.

Becvar said she has been pleased with the results.

"My profession is environmental, and I am the EMS AFCEE program manager, where you consider the impact on the environment in all activities you do," she said. "As an additional benefit, my electricity bills have stayed the same or been reduced, even though we added to the size of the home."

Becvar's coworker, Nancy Carper, AFCEE subject matter expert for integrated solid waste management, shared the same concern for the environment when constructing her new home.

Some of the features Carper included to improve energy efficiency were tankless water heaters, high-efficiency windows, programmable thermostats, a radiant barrier on the exterior of the home and spray-foam insulation throughout the structure.

In line with her occupation, diverting waste from the landfill was an important consideration. To avoid future land-filling of roof shingles, a standing-seam metal roof was installed.

Carper also made use of old cedar fence boards, which resembled weathered barn wood, as an interior finish in the kitchen and dining areas.

Landfill diversion was also a consideration when clearing brush and trees from the home site. A large cedar tree, which had been growing in the proposed home site, was utilized as the home's fireplace mantle. To divert other wood debris from the landfill, the contractor hired a wood grinder to come to the construction site, leaving the ground wood onsite for landscaping purposes. Other trees and shrubs from site clearing were sent to a local composter, with the compost being applied prior to sodding the yards in an effort to increase water retention and root

See Green Home, continued on page 14

Nancy Carper, an AFCEE subject matter specialist for integrated waste management, repurposed a cedar tree cleared from her property as a fireplace mantle in her new home (right). Courtesy photos.

Green Home, continued from page 13

A worker sprays foam into the walls of the addition at AFCEE employee Erica Becvar's home to improve energy efficiency.

stabilization. The yards were landscaped with native plants and trees.

Another feature Carper installed was an aerobic septic system, which pumps gray water from the system to an irrigation system on the property, instead of releasing the water via underground leach fields.

Carper said the energy savings have been significant.

"Electricity consumption is much lower, just about cut in half with this house, yet the square footage is larger than the house we previously owned and lived in," Carper said. "Even though the costs to put most of these items into our construction were more expensive than longstanding, conventional construction materials, we were willing to put in that extra money upfront to reap the long-term savings." ■

Sustainable communities: Building efficiency into Air Force installations and beyond

By Karla Saia
Public Affairs

AFCEE's sustainable communities initiative is streamlining and economizing the Air Force's approach to meet federal requirements, as well as providing a model of sustainable development and continuous improvement for the federal community at large. As a pilot program, and to illustrate the ease of Sustainable Communities' practical application across Department of Defense installations, AFCEE personnel will conduct field demonstrations during early 2012 at three different service branch installations to give Airmen, soldiers and sailors a chance to see how sustainable communities works in real-time.

Field Demonstrations

The first demonstration will take place at Naval Base Ventura County, Calif., in January, followed by two concurrent demonstrations at Army Post Fort Carson and the United States Air Force Academy, both in Colorado. These installations were selected because of their status as recognized leaders of sustainability in their respective services branches, as well as factors such as variety of climate zones and varied command structures to showcase sustainable communities' applicability across the widest possible array of environments in just three demonstrations.

The goal for the demonstrations "is to demonstrate how an installation can show continuous improvement towards sustainability," said Christopher Kruzel of AFCEE's built infrastructure branch. "The key for the installation to implement the system is an environmental management system. For us, the key to demonstrating the methodology will be to show the installation, in a single snapshot, how they're doing. Through this, they'll have an implementation strategy for the DOD Strategic Sustainability Performance Plan that's tailored to their unique needs and gives them feedback as they move forward."

To prepare for the demonstrations, each installation assembles a collection of 10 projects that cover three requirements: facility energy use reduction, waste diversion rate increase (the amount of waste an installation can divert from a landfill) and potable water use reduction. The project delivery team establishes a baseline calculation of the sustainable return on investment and the savings-to-investment ratio. These calculations (the control) will then be used to determine each installation's calculation

accuracy (the variable) during the demonstration. From this, the project delivery team can measure each installation's success against the performance objectives.

Throughout the demonstration, the AFCEE project delivery team will give feedback to the installation to support effective use of the sustainable communities scorecard – the gauge by which an installation's sustainability is measured. The installation, in turn, will give the project delivery team feedback on their perceived value of the scoring system in terms of ease of use, the feedback on each project and its usefulness in determining ideal areas for improvement and investment.

By building structure and efficiencies into the way the Air Force, and ultimately the DOD, assess sustainability, sustainable communities empowers installations to minimize duplication of effort and data collection, while supporting informed decision making leading to reductions in waste, energy consumption and more. The time and money saved can then be diverted to support plans for larger investments in strategic infrastructure.

Simplifying

Sustainable Communities is rooted in a long-standing need to manage DOD accountability in pursuit of a variety of sustainability mandates and goals, Kruzel said.

In 2007, AFCEE led representatives from their counterparts in the Army, the Navy, Department of Energy, Environmental Protection Agency and U.S. Green Building Council to review emerging guidelines and mandates related to sustainability. This collaborative review resulted in consensus that there was a need for a more holistic approach to replace the multiple, overlapping data gathering required to comply with evolving federal mandates.

To address this need, the group developed a series of sustainable communities scorecards that address 10 major categories for evaluation. These categories cut across traditional organizational stovepipes to quantify the level of sustainability of an installation. This sustainable communities rating system uses a combination of requirements and credits to evaluate the sustainability of an entire installation, and results in a single compliance score for the installation to demonstrate compliance with federal sustainability mandates. Additionally, it provides operational- and tactical-level guidance with a streamlined, continuous improvement process based on the official EMS and asset management philosophy, and backed by a business case analysis that demonstrates life cycle return on investment.

Sustainable Communities Evaluation Categories
Community design and development
Energy & greenhouse gas emissions
Water efficiency
Materials and waste management
Built infrastructure
Natural infrastructure
Transportation
Mission readiness
Community engagement
Innovation and regional

Progress

Since the initial group was formed, several workshops and summits were held from October 2008 to November 2010 to evaluate and validate the rating system, identify the main categories for the scorecards, and develop a list of requirements and credits. Additionally, sustainable communities reached a number of milestones to necessary to achieve program status: the sustainable communities pre-proposal which was submitted to the DOD Environmental Security Technology Certification Program in February 2010 to fully fund the development of a sustainable communities rating system; field demonstrations and initial deployment; sustainable communities contract and initial draft credit development in April 2010; and submittal of the sustainable communities ESTCP full proposal in August 2010.

Future Plans

Sustainable communities will report the results of its three initial field demonstrations to ESTCP in May of 2012. The second phase of sustainable communities, focused on full integration and deployment, is scheduled for May 2013. ■

ENVIRONMENTAL MANAGEMENT SYSTEM

By Susan Walker
Technical Division

The Environmental Management System is the framework the Air Force uses to identify, prioritize and manage daily operations that generate waste and pollution while improving mission performance and reducing environmental risks and costs. On Oct. 28, Terry A. Yonkers, assistant secretary of the Air Force for Installations, Environment and Logistics, issued a memorandum requiring EMS standardization by Dec. 31.

"I recognize this is an ambitious endeavor, but as the Air Force centralizes its environmental programs, it is essential to have an Air Force-wide perspective of operational processes and their ensuing wastes in order to identify and invest in solutions for those 'targets of opportunities,'" said Yonkers in the memo.

AFCEE is charged establishing and communicating the methodology and approach for the standardized EMS.

Erica Becvar, EMS program manager at AFCEE, brings the EMS message to Airmen and field practitioners so they can implement the appropriate steps while establishing compliance, reducing risk and continuously improving environmental management systems across the Air Force.

"In very basic terms, EMS is made up of four components: plan, do, check and act," Becvar said. "If you can remember and implement these simple actions, you can achieve a successful EMS."

Management systems can be used not just for environmental systems, but also in everyday life, Becvar said.

"Think about something you do every day – like going to work," she said. "You get in your car, stop for gas, a cup of coffee, drive to work and then start your workday. Your actions may not require a formal plan, but steps must be followed to achieve your objective and get to work. These actions have impact on the environment. Your choice of actions can be considered part of your management plan and your actions may negatively impact the environment. By examining and implementing available options, such as carpooling, teleworking and bringing a non-disposable cup to the coffee shop, you have used a management system approach and changed your actions while reducing your environmental impact. It is this sort of systematic approach that we are attempting to standardize enterprise-wide."

The EMS is based on International Standard 14001 issued in November 2004. ISO 14001 is endorsed by the Environmental Protection Agency and is widely used in the private sector as well. For federal agencies, the original executive order for mandatory adoption of ISO 14001 took effect in October 2005. The current EMS follows Executive Order 13514 which required all federal agencies to be in conformance by October 2009.

For the Air Force, the EMS approach enables

MAXIMIZE THE MISSION, MINIMIZE ENVIRONMENTAL IMPACT

installations to minimize environmental risk, increase mission capability and achieve sustainability goals. The Air Force EMS implementing guidance is outlined in Air Force Instruction 32-7001, *Environmental Management*. The EMS is consistent with Air Force Policy Directive 90-8, *ESOH Management and Risk Management*.

The Air Force Civil Engineer will soon publish a playbook on the Civil Engineer portal for guidance on how AFI 32-7001 can be implemented at an installation. What this means for the Air Force is that impacts from a management system approach are measurable while regulatory requirements are satisfied.

"The EMS can be used as a means to control risk and costs and wisely manage resources," said Karen Winnie, AFCEE Technical Division branch chief. "Asset management and EMS together are methodologies that help standardize and align our programs and levels of service so that we can better focus resources."

The process for developing an installation's EMS begins with identification of the EMS scope, which identifies the boundaries and affected organizations of the installation's EMS. Participants from these organizations serve on the cross functional team. Each member has a role in the development and maintenance of the EMS. All activities and programs which have a potential impact on the environment, regardless of funding source or mission, can be included in the scope of the installation EMS. The installation's senior leadership develops and approves the installation's environmental policy, which stresses a commitment to continual improvement, pollution prevention and regulatory compliance. The CFT members are tasked with developing and annually reviewing the EMS scope and policy.

EMS communication occurs in a variety of settings including CFT meetings, commanders' calls, installation Environmental, Safety and Occupational Health council meetings, base newspaper articles, pamphlets and brochures. The Air Force has developed several EMS tools including an EMS playbook, eDASH and AFCEE's Accessible Knowledge for Sustainable Resources, or ANSR. These tools can be used by Air Force personnel at all levels to ensure that all are aware and understand that their actions contribute directly to the success of the installation's EMS, the resulting environmental conditions and the sustainment of the Air Force mission.

For more information visit: https://cs.eis.af.mil/a7cportal/eDASH. To submit questions about EMS or any other environmental program or issue, submit the inquiry to ANSR on eDASH. ■

"Think about something you do every day – like going to work. You get in your car, stop for gas, a cup of coffee, drive to work and then start your workday. Your actions may not require a formal plan, but steps must be followed to achieve your objective and get to work. These actions have impact on the environment. Your choice of actions can be considered part of your management plan and your actions may negatively impact the environment. By examining and implementing available options, such as carpooling, teleworking and bringing a non-disposable cup to the coffee shop, you have used a management system approach and changed your actions while reducing your environmental impact. It is this sort of systematic approach that we are attempting to standardize enterprise-wide."

Erica Becvar
Environmental Management System
Program Manager

Environmental planners help HURLBURT FIELD with wetland delineation

By Joe Di Misa
Woolpert

Environmental planners are nearing completion of a base-wide wetland delineation for Hurlburt Field, Fla., an effort spanning 6,700 acres. The process includes field flagging and GPS location of more than 8,000 wetland flag points comprising 85 linear miles of forested wetlands, wet meadows, pine flatwoods, lakes and salt marshes.

"Hurlburt Field has unique growth challenges with over 50 percent of the base being protected wetlands," said Philip Pruitt, 1st Special Operations Civil Engineer Squadron Asset Management Flight chief. "Having a front-loaded jurisdictional delineation agreed upon by the regulators helps to ensure the success of the (1st Special Operations Wing) mission and saves the Air Force money and time while protecting our valuable natural resources."

The primary challenge for the team was managing human resources needed to complete the massive project under a tight deadline.

Because of extreme summer temperatures, Woolpert contracting support, with assistance from Wetland Sciences, Inc., chose to complete the delineation during one winter season, which required multiple teams to work in the field simultaneously. Three field teams, each staffed by a veteran wetland scientist and a supporting scientist and GPS operator, were simultaneously deployed.

The wetland scientist determined the wetland boundary while the GPS operator obtained the spatial position of the wetland line immediately. The team leader maintained communication among all teams throughout the field effort to assure field teams didn't inadvertently cross into another team's survey territory.

While original delineating was conducted in the winter, verification in the field with the Army Corps of Engineers and Florida Department of Environmental Protection occurred in the spring and summer.

As with most installations, Hurlburt is comprised of multiple sub-areas, some with more challenging access issues than others. Responsibility for gaining access to these areas, which include the airfield, golf course, explosive ordnance disposal range and three shooting ranges, fell to "access ambassador" Kristal Walsh, the Hurlburt installation natural resources manager.

Timing was also an issue with these areas because the team was often only granted access for a short period to limit impact on area operations.

In addition to access issues, safety was also important. The majority of the wetlands at Hurlburt are comprised of dense wetland shrubs, saw palmetto and greenbriar. All staff members had to be cautious of the potential for heat-related injuries due to the subtropical climate. Avoiding poisonous snakes such as pygmy rattlesnakes, cottonmouth moccasins and diamondback rattlesnakes, in addition to other wildlife such as alligators and Florida black bears, was also a daily challenge. Health and safety briefings were a regular part of the team leader's morning kickoff meetings.

When field work was complete, draft maps were prepared. Quality was assured with GIS specialists conducting a live, web-based on-screen review of the plotted polygons with senior wetland scientists. To double check and assure data quality, Hurlburt's geobase manager also reviewed the mapping.

Upon completion of ACE and FDEP verifications, the base will have a regulator-approved wetland delineation that will be effective for five to 10 years.

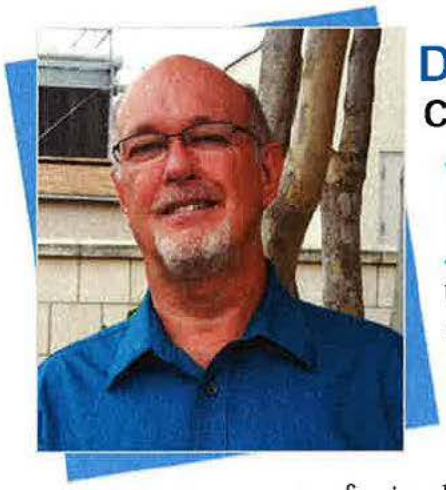
Accurate resource mapping is crucial at a base where construction projects occur frequently due to the operational environment and the extensive areas of wetlands that constrain the projects.

Having a base-wide delineation streamlines the delivery of these new facilities. While wetland delineation projects are carried out on bases throughout the United States, the mobilization of multiple teams at a massive site to complete the project in an expeditious way made this particular project unique.

"The value we brought to Hurlburt for this large and challenging project was our ability to gather and manage the resources needed so that the wetland delineation could be done quickly. We are happy to be a part of providing a new wetland survey that will streamline the base's delivery of new construction projects," said David Rickard, Woolpert senior vice president-design services. ■

BUILT INFRASTRUCTURE EXPERTS

The Air Force Center for Engineering and the Environment's 'think tank' includes several subject matter experts with a broad range of expertise in built infrastructure. This edition of CenterViews focuses on three of AFCEE's experts: David Duncan, Mark Sanchez and Ralph "Rick" Sinkfield.



David Duncan
Construction Criteria

David Duncan, a registered professional architect and Leadership in Energy and Environmental Design accredited professional, serves as the subject matter expert for construction criteria, which encompasses technical development, implementation and problem resolution for programming, design and construction of facilities throughout the Air Force. He holds a Bachelor of Science in environmental design and a Master of Architecture, both from the University of Oklahoma. Prior to joining AFCEE in 1992, he served as chief of the architectural design section of the Tulsa District U.S. Army Corps of Engineers.

Duncan's time serving the Department of Defense spans over 29 years, 20 years of which have been spent at AFCEE.

A charter member of AFCEE's Air Force Design Group, Duncan manages the U.S. Air Force Design Awards Program and the Assistance Team Program at AFCEE. He also serves as the Air Force representative to the Coordinating Panel for Unified Facility Criteria which is comprised of Air Force, Army, Navy, Marine and Office of the Secretary of Defense representatives.

"I work with the other services and fellow subject matter experts, many of whom are at the Air Force Civil Engineering Support Agency, to develop, refine and coordinate the DOD's design and construction criteria," he said. "The coordinating panel has worked hard to consolidate and truly unify DOD design and construction criteria. When I began serving on the panel in 2007, we had over 300 (unified facility criteria) to keep up with. That number is now less than 200."

Dealing with ever-changing criteria is a constant challenge for the program, Duncan said.

"The continuous stream of new criteria in the form of executive orders, congressional acts, DOD policies and industry organization standards is very difficult to embrace and incorporate into our existing criteria," Duncan said. "This is especially true for criteria affecting energy conservation and sustainability. As soon as we figure out how to incorporate a new standard into our criteria, we're faced with yet another."

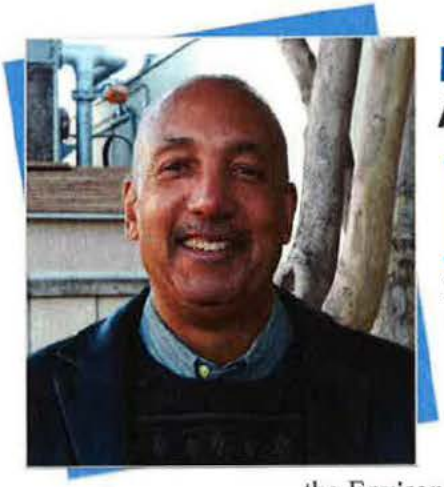
Each year, Duncan takes a break from managing facility design criteria, and relaxes through one of his favorite pastimes: cycling.

"I'm an avid touring cyclist – I'm not a racer, but I

See Subject Matter Experts, continued on page 20

Subject matter experts, continued from page 19

travel very long distances," he said. "Each June, I ride by recumbent bicycle towing a trailer for a self-supported, weeklong trek across Texas from San Antonio to the beginning of Oklahoma Freewheel, an organized recreational bike tour across Oklahoma. This tour follows a different route each year, but generally travels from the Red River to the Kansas border. By the time we cross the Oklahoma-Kansas border a week later, I've pedaled around 1,000 miles. It's a blast!"



Ralph "Rick" Sinkfield
Architecture

Ralph "Rick" Sinkfield, the Air Force architecture subject matter expert, has been with the Air Force Center for Engineering and the Environment since 1992 and has over 30 years of experience as an Air Force architect. After graduating from Howard University, Washington, D.C., with a Bachelor of Architecture, he was an active duty architect for six years before becoming a civilian architect for the Air Force. Sinkfield also holds an M.A. in management and is a registered architect and registered interior designer in Texas.

Sinkfield is the author or editor of many Air Force facility design guides and architectural programming tools and works with American Institute of Architects committees to develop training programs for Air Force architects and commercial architects interested in Air Force work.

The architecture program consists of providing guidance on facility architecture, interior design and landscape architecture. As the SME, he is responsible for program guidance, policies, promotion and implementation.

In addition to developing design criteria for Air Force facilities, he represents the Air Force on DOD and technical panels, such as the Tri-service Architecture Discipline Working Group and the industry-advocate Whole Building Design Guide Board of Direction and Advisory Committee, which develops and coordinates DOD and industry architectural design standards. Sinkfield is also responsible for monitoring and evaluating emerging trends, issues and legislative or regulatory initiatives that may affect Air Force policy or guidance and providing substantial recommendations on proposed Air Force initiatives.

To support Air Force architectural practitioners, Sinkfield works with the career field manager on mentoring, training, education, recruitment, retention and professional registration opportunities; Air Force design and construction awards; accessibility issues; design standards and criteria; and project management process issues.

Two of the recent industry trends being adopted into the program are building information modeling, or BIM, and incorporation of sustainable design practices, said Sinkfield.

BIM is the process of generating and managing building data during its life cycle. Typically, it uses three-dimensional, real-time, dynamic building modeling software to increase productivity in building design and construction, Sinkfield said. The process produces a building information model which encompasses building geometry, spatial relationships, geographic information, and quantities and properties of building components. The architecture, engineering and construction industry is adopting this process for facility design, building and facility management, Sinkfield said.

Sustainable design is the philosophy of designing the built environment with the principles of economic, social and ecological sustainability. The intent is to eliminate negative environmental impact completely through skillful, sensitive design and the architecture design community is adopting this philosophy for facility design, he said.

Mark Sanchez
Installation Planning

Mark Sanchez, the installation planning subject matter expert, holds over 30 years of urban planning experience with local, state and federal agencies, including bases, major commands and field operating agencies within the Air Force.

The installation planning program comprises Air Force policy, guidance and technical assistance for base comprehensive planning. Sanchez manages the program and provides technical assistance to DOD, Air Staff, major command and installation-level planners and developers. He also performs research, designs and develops programs, leads planning processes, conducts technical analyses and effects innovative change to improve Air Force installation planning. He develops, drafts and clarifies Air Force policies, guidance and standards to implement federal regulatory and DOD guidance. In addition, Sanchez coordinates with the career field manager for mentoring, training, education, recruitment, retention and professional certification opportunities for Air Force community planners.

Sanchez holds a Bachelor of Arts in political science from the University of Arizona and a Master of Public Administration in urban and environmental planning from Arizona State University. He is also an Air War College graduate, a member of the American Institute of Certified Planners and a past chair of the Federal Planning Division of the American Planning Association. Sanchez is also a retired Air Force officer with service in both active and reserve components.

Witnessing the population surge in Phoenix, Ariz., led Sanchez to take an interest in urban planning.

"I had witnessed and experienced the tremendous population growth and urban sprawl in the Phoenix area," Sanchez said. "I had a keen interest in the various processes – political, economic, design – impacting livable communities, meaning quality places to live, work and play. Long before 'sustainability' became a sound bite, I was interested in the balance between the built and natural environments."

Sanchez said some of his fondest memories are of his time in the Air Force.

"Next to holding a fly rod and catching a large Platte River trout in Colorado, I enjoyed the anticipative thrill of being in a four-ship F-15 flight, holding at end-of-runway, hands visible on the rails, as the crew preps the jet," he said. "Split the flight for departure, blast off from (Luke AFB), hopefully on the Azar departure for a max performance climb, with the mission being intercepts in the Sells military operational area … but, that was a different time and a different world." ■

AFCEE builds new BRIGADE HEADQUARTERS in Afghanistan

By Summer Allen
Contingency Construction

The Air Force Center for Engineering and the Environment is nearing completion of two new brigade headquarters buildings at Camp Leatherneck in Afghanistan. This $15.6 million construction project will be occupied by two U.S. Marine Corps units and other coalition forces.

Camp Leatherneck is collocated with Camp Bastion, which was established by the United Kingdom in 2006, and Forward Operating Base Tombstone, which is itself collocated with Afghan National Army base Shorabak. These bases make up a strategic and tactical hub for coalition forces in the fight to stabilize the volatile Helmand Province in southwest Afghanistan.

A conference room from the recently completed 2nd MEF Command Headquarters Group. The facility houses the Jordanian headquarters and supports Marine operations throughout Helmand Province, Afghanistan. U.S. Air Force photo.

Camp Bastion is the main joint U.S. and U.K. military base, accommodating 25,000 people and situated northwest of Lashkar Gah, the capital of Helmand Province. This is Britain's largest military camp in the world, serving in what is considered by officials to be one of the most dangerous areas in the region.

"Within Camp Bastion, U.S. Marines needed new facilities to manage day-to-day tactical operations and give the command units stationed there additional and enhanced resources to help the Afghani people fight the Taliban," said Albert Kellner, AFCEE contingency construction project manager in San Antonio, Texas.

"The Second Marine Expeditionary Force has an intelligence unit located on Camp Leatherneck and will use one of the new facilities as a command center to manage Marine movement and operations throughout the regional command southwest battlespace," said Capt. Ray Orr, AFCEE project manager in Afghanistan. "The Second Marine Air Wing logistical unit will move into the other building when complete."

Each building will accommodate 200 personnel and will include command and control centers, sensitive compartmentalized information facilities, administrative areas, bathrooms and supporting facility infrastructure.

The new buildings will give Marines state-of-the-art platforms on which to conduct operations, Orr said.

"An interesting feature about this construction project was the upgrades to the security features that are not normally included in a standard military construction project," Orr said.

The added security features resulted in increased construction time to ensure all requirements were met.

AFCEE contractors are completing the construction in two phases. The first phase involves construction of the southern brigade headquarters facility, while the second phase involves the northern brigade headquarters building on Camp Leatherneck.

"The work here is critical to our global mission," Orr said. "There was an urgent need for a consolidated contingency operation center in this area, allowing us to provide better tools and resources for our military and coalition partners stationed in Afghanistan."

Operations will soon be conducted from these facilities as the final stages of the project come to an end.

Expansion enhances medical capabilities in Afghanistan

By Summer Allen
Contingency Construction

A new 40-bed recovery ward featuring several privacy and sanitary upgrades not found in the previous ward. Courtesy photo.

The contingency construction division at the Air Force Center for Engineering and the Environment is involved in a number of projects aimed at providing the infrastructure necessary for the future success of the government in Afghanistan. One recently completed project at Joint Operating Base Bastion/Leatherneck/Tombstone is an expansion of the joint medical facility on Camp Bastion.

The existing British hospital at Tombstone and Bastion is a joint-operated facility with British, American and other coalition staff and serves both the military and civilian populations in the province. This project expands the capabilities of the hospital to accommodate the increases in population at Camp Bastion and Camp Leatherneck.

As part of the project, a new administrative area and other services were moved into a pre-engineered building. The hospital also had two new climate-controlled storage buildings, including refrigerated storage areas, constructed for consumables storage. A ward addition added 40 beds, a nursing station, a common area for patients, two offices, male and female washrooms, shower rooms sized for assisted use, a laundry storage area, and mechanical and electrical spaces.

"The new ward addition will provide much needed space and include privacy curtains for each bed space," said Capt. Joseph Diciolla, AFCEE contingency construction branch manager. "This is a much needed sanitary and quality-of-care upgrade that the current undersized recovery ward doesn't provide."

The project also included construction of new pathology and microbiology labs, which allow expansion of the surgical suite within the existing hospital.

This particular project was led by in-country project manager Andrew Barboza and stateside project manager Capt. Tracie Konietzko, an arrangement that is typical of projects managed by AFCEE in Afghanistan.

"Each project has a project manager at both Camp Bastion and stateside who work in tandem to accomplish cradle-to-grave construction management of projects at BLT," Diciolla said. "The in-country project manager is responsible for onsite development of requirements, management of contractors and stakeholders, and communication of the needs of the project to the stateside project manager. The stateside manager takes the information and requirements and establishes contracts between the government and contractors to complete the desired work. Any modification to the initial contract will also be started in-country and passed stateside for contract and funding requirements to be executed."

There are further changes scheduled for execution in the next few months that include the relocation of wards currently in tents and other facilities.

Camp Bastion was established in Afghanistan by the United Kingdom in 2006, in a remote desert area outside the city of Lashkar Gah. Camp Bastion is co -located with Camp Leatherneck, Forward Operating Base Tombstone and Camp Shorbak, an Afghan National Army base. Together these bases make up Joint Operating Base Bastion/Leatherneck/ Tombstone, a strategic and tactical hub for coalition forces in the fight to stabilize the volatile southern region of Afghanistan. The United Kingdom has control of the airfield, but the U.S. Marine Corps has the largest presence with the 2nd Marine Air Wing on Camp Bastion and the 2nd Marine Expeditionary Force on Camp Leatherneck. ■

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The Air Force Center for Engineering and the Environment recently completed a state-of-the-art training complex at Lackland AFB, Texas, for the Inter American Air Forces Academy, or IAAFA, totaling nearly 75,000 square feet of space. See related story on page 10.