

# 3E5X1 Engineering



Airmen in the Engineering career field put the “plan” in “planning” for other CEs. They survey and collect data, then use highly technical computer-aided design programs to create the hardcopy and digital maps and blueprints essential to civil engineer’s Air Force mission. They are experts in the two “Gs” – GIS, or geographic information systems, and GPS, global positioning systems.

3E5X1 CEs manage and produce installation maps connected through a GIS interface to the metadata (e.g., facility space, usage, location, condition, etc.) they also collect and maintain. At contingency locations Engineering Airmen perform reconnaissance and evaluate sites for bare base beddown, including staking temporary runway strips from existing runways, taxiways, aprons, highways, and roads; establishing new clear zones and safety zones, and determining location and elevation of runway lights, aircraft arresting systems and navigational aids.

They evaluate potential construction sites and perform field tests on soils, asphalt and concrete. In addition to designs, they prepare cost estimates, performance work statements and specifications for existing and proposed facilities. They coordinate, evaluate, monitor and document contract activities and progress, and serve as the liaison between design and construction and the end-user.

Basically, Engineering CEs are the bottom line, the place where almost everything begins in civil engineering. Most importantly, they always know where everything is, or where it will be!

## A1C Ellen Underwood

### Engineering Apprentice 188 CES, Ft. Smith, Ark.

Although Underwood is a college student studying emergency management, when she joined the Air National Guard in October 2012, she chose Engineering as her career field.

“I left for training in April 2013,” she said. “I could have done what I do in school, but I wanted to challenge myself. I wanted to try Engineering because it was something that was hard for me. I actually like it a lot.”

Participating in a Beyond the Horizons project in Central America gave her more experience and a broader look at what civil engineers do, said Underwood.

“I was part of the first rotation our unit sent to Guatemala for summer training. We went down to build a school, working with the Army. I wasn’t able to work in my field, but I got to do other CE jobs — laying concrete, operating equipment. It was great.”

Underwood said her time as an ANG Airmen has given her much more than practical knowledge.

“As an Air Force civil engineer, I’ve been taught to bring hard work, dedication and pride to my job. And, I love my job. I believe that we’re not only here to protect our country, but to serve and help others.”

## 3-level Apprentice



A1C Ellen Underwood, 3E5X1, 3-level  
(U.S. Air Force photo)

Her goals include both finishing her EM degree as well as continuing in the Air Force, said Underwood.

“I want to stay in Guard or possibly go active duty,” she said. “I want to retire as a chief.”

## SSgt Eric Carpenter

### Engineering Craftsman 99 CES, Nellis AFB, Nev.

Engineering was not Carpenter's first choice for a career field when he joined the Air Force in 2009. He actually wanted to be a loadmaster so he could travel more, said Carpenter.

"But, I'm absolutely satisfied with what I do. I figure I was picked for Engineering because of my applied science associate's degree that includes computer-aided drafting and 3-D. My being detail-oriented to the point of 'OCD' probably also helped," he laughed.

Carpenter said his favorite part of his job is what he's doing right now — building inspection.

"I really enjoy seeing how things are put together and making sure contractors are following the plans, and that it's built to Nellis' as well as Air Force standards."

On his 2012 deployment to Saudi Arabia, Carpenter "did what I do here at Nellis, but was more of a project manager," he said.

"We wrote up packages of what we needed done by our off-base contractors, and we also took care of the paint contract. We usually get to do project management only

## 5-level Journeyman



SSgt Eric Carpenter (right), 3E5X1, 5-Level  
(Courtesy Photo)

later in the career field; the first part is surveying, mapping and drafting. It was great experience."

Carpenter will apply to officer training school after completing his bachelor's in project management, he said. But, if it doesn't work and the goal switches from OTS to retiring as a chief, he stills plans to stay in the Air Force."

"Either way I'll be okay, and will be an asset to the Air Force," he said. "I feel I'm a great mentor as well as a student. I have a knack for breaking it down and teaching others. That's a wonderful feeling."

## MSgt Jason Balolong

### Engineering Craftsman 821 SPTS, Thule AB, Greenland

Balolong, who joined the Air Force in August 1998, arrived at Thule — a remote tour — in July of this year.

"I'm the contract officer representative for plans and program for the civil engineer flight. We provide government oversight for engineering services in support of the maintenance, revitalization and construction of facilities and infrastructure and provide technical support for third-party projects."

Thule is an important location for Air Force Space Command's mission, home to the sensors and satellites that are integral to detection, tracking and warning systems. Thule has a modern airfield with a 10,000-foot runway and more than 3,000 U.S. and international flights per year.

The Engineering career field was his first choice, said Balolong.

"I took drafting in high school and was interested in the job's technical drawing aspect, especially with a computer. I am very blessed and proud to be in the Air Force and especially in my career field. The opportunities have been wonderful."

A deployment to the 577th Expeditionary Prime BEEF Squadron in 2013 was a great experience," said Balolong.

## 7-level Craftsman



MSgt Jason Balolong, 3E5X1, 7-Level  
(Courtesy Photo)

"I definitely become more aware of the vital role CEs have in a deployed environment," he said. For me, I learned that what Engineering CEs do — the maps, managing construction projects, developing plans — can make huge impacts for senior leadership."

Balolong's goals are to get his bachelor's in operations and project management, and achieve as much rank as possible during his Air Force career, he said.

"I want to take in as much experience I can in managing projects, resources and people. The Air Force has already given me so much, but it's also important to give back. I think I'm good at taking care of fellow Airmen at home station or on a deployment. I value being a person someone could come to when they need advice or mentorship."