



ANNEX 3-34 ENGINEER OPERATIONS

CONSIDERATIONS ACROSS THE RANGE OF MILITARY OPERATIONS

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This section focuses on aspects of civil engineer planning, execution, and assessment functions that may require unique efforts based on the type of operation being supported. It also describes the skills Air Force civil engineers provide throughout the range of military operations.

Engagement, Cooperation, and Deterrence Operations

Civil engineer planning, execution, and assessment for engagement, cooperation, and deterrence operations are similar to those activities required in support of other military operations. However, engineers should be familiar with different command and control structures and different cultures and languages while working alongside local engineers and with US government agencies and nongovernmental organizations. Engineers support the development of the commander, Air Force forces campaign support plan and country plans designed to shape the steady-state environment in support of the Joint Force Commander's (JFC) campaign plan.

Security Cooperation. Civil engineers facilitate security cooperation through exchange of knowledge, technology, and personnel. Providing engineering and construction expertise to partner nations assists the JFC's ability to maintain access in influence in key regions, and helps build partner nation (PN) capability and capacity in essential services. Civil engineers advise, assist, train, and enable PNs to help themselves as well as support third nation requests.

Building Partnership Capability (BPC):

Plans for possible conflicts in the Pacific region will continue to increase Air Force engineering relevance in BPC missions as part of CCMD theater security cooperation efforts. One of the main ways for engineers to engage in BPC is through working with host nations to develop airfields into viable options for Combatant Commanders in the event of contingencies, since a diverse set of operating locations will likely overwhelm enemy decision calculus and impose greater costs for escalating tensions. Whether the future need for a diverse set of operational airfields is in support of humanitarian efforts, military operations other than war, or as divert for operating locations in a contested environment, having more options for the rapid establishment of air operations is critical to maintaining deterrence in preserving the peace and maintaining Phase 0 for longer periods of time.

Building this type of capacity ensures other nations can contribute to an international civil engineering workload.

Forward Presence and Force Projection. Air Force civil engineers support both forward presence and force projections as deterrence options. Engineers establish and maintain basing platforms including forward operating bases and combat outposts from which airpower can be projected. These bases may be permanent, semi-permanent, or temporary depending on US international agreements and the JFC's intent.

Nuclear Operations. Civil engineers maintain critical infrastructure and facilities in support of the Air Force nuclear enterprise. Civil engineers provide the emergency services capabilities in support of nuclear incident response, hazard identification, decontamination expertise, and consequence management. For additional information see Annex 3-72, [Nuclear Operations](#).

Homeland Operations

Homeland operations incorporate all applications of air, space, and cyberspace capabilities designed to detect, preempt, respond, mitigate, and recover from the full spectrum of attacks, incidents, and man-made or natural disasters. Civil engineer planning for homeland operations is somewhat different from other major operations, since detailed coordination between the installation and the community is critical.

Air Force civil engineers support homeland operations by construction management and operation and maintenance of facilities and infrastructure to support the Air Force's air sovereignty alert mission. Additionally, engineers are regularly placed on Prepare to Deploy Orders (PTDOs) in support of Joint Task Force Civil Support and prepared to respond in the immediate aftermath of natural and man-made disasters. The Readiness and Emergency Management Flight monitors and protects resources subject to [chemical, biological, radiological, and nuclear](#) (CBRN) events, emergency response, and incident command. Air Force firefighters have mutual support agreements for fire and medical response with civilian fire departments. Air Force firefighters are trained for an urban search and rescue capability. Engineers also assist federal, state, local, and tribal law enforcement agencies with [explosive ordnance disposal](#) (EOD) matters when determined to be in the interest of public safety. For additional information see Annex 3-27, [Homeland Operations](#).

Defense Support to Civil Authorities (DCSA)

Civil Engineer support to civil authorities in response to the full spectrum of attacks, incidents and disasters will remain a core capability. One of the ways engineers prepare to support homeland defense and civil authorities is by maintaining mutual support agreements and partnership efforts designed to facilitate response when necessary. In response to Superstorm Sandy, Westover Air Reserve Base and FEMA demonstrated the value of these mutual support agreements. This successful DCSA and mutual aid response was based on three plus years of robust teamwork and a longer relationship. Through this partnership, Westover and FEMA had pre-scripted mission assignments and signed a Memorandum of Agreement (MOA) to formalize the partnership and provide long term continuity.

Crisis Response and Limited Contingency Operations

Civil engineers have the capability to respond anywhere to crises or limited contingencies. Early engineer assessments are critical to identify available support and other resources needed to meet anticipated requirements based on the situation. Plans are then tailored to the actual capability needed for the emergency response. Tasking only those capabilities actually needed reduces the burden on the deployment system and minimizes the engineer footprint. As the operation continues, some efforts may transfer to local civilians or contractors.

Foreign Humanitarian Assistance. During [foreign humanitarian assistance](#) (FHA) operations, engineers coordinate with appropriate NGOs for activities such as the following: train and construct surface transportation systems; drill wells; clear debris; dispose of solid waste; provide sewage treatment and flood control; construct relief centers and camps for dislocated persons; provide environmental management to control hazardous waste and disposal, potable water production and distribution, emergency power and lighting; restore public facilities and transportation routes; provide incident command and emergency response; and construct temporary facilities for governmental services and other operations as required. **In supporting NGOs, it is critical to establish effective communications with an engineer liaison to coordinate and execute engineering support.** Based on the severity of a disaster, the level of support provided can be limited or involve specialized [Prime BEEF](#) or [RED HORSE](#) capabilities.

[Irregular Warfare Operations.](#) Engineers executing operations outside the installation should remain vigilant and aware of local threats, and be familiar with local culture and language while working with local nationals and joint or combined forces. Engineers can assist communities in restoring essential services and becoming self-sufficient, thereby reducing their dependence on insurgents and reinforcing US support for the partner nation. Consideration should be given to employing the local populace to accomplish some tasks. While engineers can probably accomplish the task faster, the long term effect of increased self-sufficiency will further reduce insurgent dependency. [Appendix B](#) provides details on the engineering capabilities available for use in irregular warfare operations.

[Stability Operations.](#) Air Force civil engineers are organized, trained and equipped to support stability operations in addition to their mission to establish, operate, protect, and maintain airbases. Stability operations provide a means to terminate conflicts in a manner consistent with US political objectives. This capability requires a different approach to planning. Stability operations tend to be of long duration, requiring sustained support of forces and significant resources. Engineers may be working within communities in high-threat areas, making force protection a critical aspect of planning. Air Force civil engineers can assist local communities in providing emergency services and restoring essential services such as electrical power; potable water production; sewage treatment; expedient repair of critical infrastructure such as shelters, clinics, schools, and roads. Engineers also focus on permanent infrastructure development (e.g., roads, railways, airports, electrical power sectors, and municipal services). These projects should employ local populations and contribute to stabilization. While executing stability operations, civil engineers focus on training host nation personnel and assist local populations in sustaining themselves.

Traditional Warfare. Air Force civil engineers provide a component of combat support which supports the COMAFFOR during all phases of military operations. **Civil engineers provide sustainable installations as power projection platforms through engineering and installations support across the full mission spectrum.** Availability, suitability, and transportability of equipment and material needed for force beddown and force protection are critical. Funding, life-cycle costs, and quality of life factors should be included in planning. Engineer expertise needed to sustain and protect bases to ensure mission success underpins all of these requirements.
