

**FM 3-34(FM 5-100)**  
**ENGINEER OPERATIONS**



Headquarters, Department of the Army

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# Engineer Operations

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## Preface

*Field Manual (FM) 3-34* is the Engineer Regiment's capstone manual for operating in today's operational environment within the framework of the Army transformation and, although focused at the operational level, is applicable for all levels of war. Engineers are a combat arm (a branch comprised of combat, combat support [CS] and combat service support [CSS] components) that enables joint and maneuver commanders to achieve their objectives through strategic movement and tactical maneuver by providing unique combat, geospatial, and general engineering capabilities. It has been the engineer creed to support the maneuver commander since June 16, 1775, when the Continental Congress organized an Army with a chief engineer and two assistants. Engineers contributed to the hardest fought battles in the Revolutionary War, including Bunker Hill, Saratoga, and the final victory at Yorktown. At the end of the Revolutionary War, the engineers were mustered out of service. However, their unique skills were realized and they were called back to active duty in 1794 when Congress organized a Corps of Artillerists and Engineers and later in 1802 as a separate Corps of Engineers. Today's *FM 3-34* includes engineer doctrine that has evolved for over 200 years.

*FM 3-34* is the capstone doctrinal manual for engineer operations and is linked to joint and Army doctrine to ensure its usefulness for all joint and Army level commanders and staff. All other engineer FMs (*see Appendix A*) are based on the principles and tenets found in this manual and are synchronized with their respective joint publications. These principles and tenets are founded on the successful employment of engineers, past and present. In today's complex operational environment, the engineers' warfighting focus produces a full-spectrum force that meets the needs of the land component commander (LCC) in war, conflict, and peace.

The primary audience for *FM 3-34* is engineer commanders and staffs down to and including engineer companies, maneuver force commanders, and battalion and task force (TF) organizations. The focus includes Army Service Component Command responsibilities for conducting operations as part of a multinational force. Information contained in this manual will assist multinational forces and other services and branches of the Army to plan and integrate engineer capabilities. This doctrine also will assist Army branch schools in teaching the integration of engineer capabilities into Army operations. Engineer involvement is a given for nearly every military operation. The degree of involvement will include one or more of the roles associated with engineers performing combat, CS, or CSS missions.

While the nature of war remains constant throughout history, the conduct of war is continually changing in response to new concepts, technologies, and requirements. The contemporary threat is continually evolving and adapting to friendly engineer capabilities. No matter how many engineer capabilities are embedded into Army systems, it is the engineer soldier that must recognize shortfalls and develop new concepts and methods to overcome any doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) shortfalls. Failure to adapt to these changes may result in the engineer branch not being ready to confront the challenges of future threats. Therefore, we must recognize that it is the adaptable and professional engineer soldiers of the Regiment that are most important to our future. *FM 3-34* furnishes the authoritative foundation for subordinate engineer doctrine and terminology, force design, materiel acquisition, professional education, and individual and unit training. This manual introduces several new terms, including assured mobility, geospatial engineering, maneuver support (MANSPT) (*see Appendix B*), and field force engineering (FFE) (*see Appendix C*).

*FM 3-34* is built directly on the concepts of *FMs 3-0, 3-90, and 3-07* blending key points of *Joint Publications (JPs) 2-03, 3-0 3-15, 3-34, and 4-04* into its approach to ensure that Army elements of a joint force use all engineer assets to their fullest extent. Given the magnitude of doctrinal changes in recent years, you will need to be familiar with these documents to effectively use *FM 3-34*. This manual addresses engineer roles and functions within a multinational operation, under potentially multinational or interagency leadership and within diverse command relationships. Finally, this manual focuses on the key functional planning considerations for employing engineers at the strategic, operational, and tactical levels of war.

The proponent for this publication is HQ TRADOC. Send comments and recommended changes on Department of the Army (DA) Form 2028 directly to Commandant, United States Army Engineer School (USAES), ATTN: ATSE-DOT-DD, Directorate of Training, 320 MANSCEN Loop, Suite 336, Fort Leonard Wood, Missouri 65473-8929.

**NOTE: The bibliography lists FMs by the new number, followed by the old number in parentheses.**

Unless this publication states otherwise, masculine nouns or pronouns do not refer exclusively to men.

# Chapter 1

## The Army and the Role of Engineers

*Essayons (Let us try!)*

--Motto of the Corps of Engineers

The Army organizes, trains, and equips its forces to fight and win the nation's wars and achieve directed national objectives. The Army also protects the nation's sovereign borders and national interests against aggressors. The engineer's role in the Army's mission of national defense is critical. This chapter outlines the role of the engineer and the mission essential tasks doctrinally performed by engineers, defining the engineer battlespace functions across the spectrum of conflict. This chapter also discusses how engineer leaders interact not only with other Army forces but also with joint, interagency, and multinational organizations to perform the engineer battlespace functions.

### SECTION I - THE ENGINEER REGIMENT

1-1. Army forces are normally the decisive component of land warfare in joint and multinational operations. The engineers are Army enablers for success in these operations. They organize and fight with the Army's maneuver forces to win the nation's wars and achieve its national objectives. They also support the Army's ability to deter war by maintaining their deployability and war-fighting skills, while simultaneously leading the world in advances in technology, such as standoff detection systems, intelligent munitions, and doctrinal concepts such as assured mobility. The engineer force is always ready to respond as a combat-ready force prepared to deal with the full spectrum of potential operations. Engineer forces can be tailored to support operations in austere environments, with little or no infrastructure, and provide mobility and enhance force protection through countermobility and survivability. They also provide geospatial (formerly topographic engineering) and general engineering support across the spectrum of potential operations. Engineers support light, heavy, and special operations forces (SOF) in all types of terrain and operational environments (OEs). This provides the joint forces' land, sea, and air component commander the greatest flexibility to package a force that can rapidly deploy, assist in deterring adversaries, and preclude our enemies from gaining an operational advantage in an area of operations (AO). Engineers are trained to operate with and support other service requirements, integrate with other service engineers and contractors, and assume command and control (C2) of other services or branches.

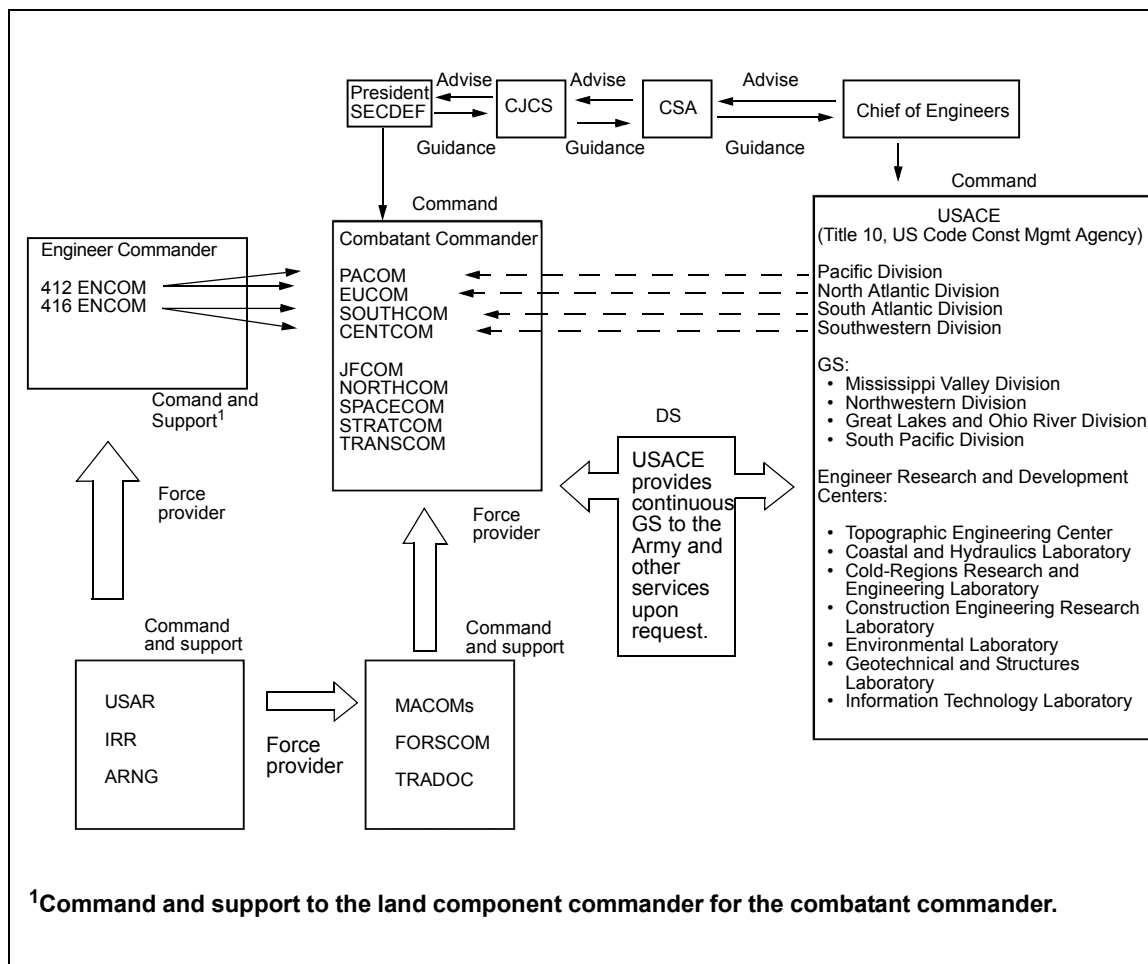
1-2. As Army forces fight and win the nation's wars, they also deter them. The Army's war-fighting focus enables a diverse (full-spectrum) force to meet the

needs of the joint force commander (JFC) in war, conflict, and peace. In war, Army forces form the nucleus of the land component—imposing their will on enemies and causing them to collapse. In conflict, Army forces deploy quickly into an AO to deter adversaries and potential enemies from establishing their forces and to preclude them from gaining an operational advantage. If deterrence fails, Army forces defeat the enemy, terminate conflict to achieve national objectives, and establish self-sustaining postconflict stability. Early movement of Army forces retains initiative and freedom of action by providing the JFC complementary means to conduct decisive offensive operations at a time and place of the commander's choosing. If theater circumstances require it, Army forces provide the means to block the enemy's offensive and deliver the counteroffensive blow necessary to win as rapidly as possible. In peace, Army forces train for war and provide military support to civil authorities when necessary. They also help shape the international security environment through engagement activities and nationally, they provide support to civilian authorities both at home and abroad in response to homeland security (HLS) for natural or man-made disasters. Regardless of the type of commitment of Army forces, the degree of engineer participation is likely to be high.

1-3. The Engineer Regiment contributes to the Army's war-fighting abilities and focus. It consists of all Active Component (AC) and Reserve Component (RC) engineer organizations (as well as the Department of Defense [DOD] civilians and affiliated contractors and agencies within the civilian community) with a diverse range of capabilities. The Chief of Engineers leads the Engineer Regiment and is triple-hatted as the chief of the engineer branch, the staff officer advising the Chief of Staff of the Army (CSA) on engineering matters, and the Commander of the United States Army Corps of Engineers (USACE). The AC of the Engineer Regiment consists of USACE and AC military engineer units within the combatant commands (COCOMs) and major Army commands (MACOMs). The RC consists of the Reserve and National Guard and provides support to the theater engineer commands (ENCOMs). The RC engineer force consists of more than three fourths of all military engineer forces and includes a wide range of specialized capabilities. Additionally, certain types of units are found only in these two components. For example, facility engineer detachments (FEDs) are only found in the RC. The Regiment is joint in its integration capabilities and supports the planning, preparing, and executing of joint operations. The Regiment is experienced at interagency support and leveraging nonmilitary and nongovernmental engineer assets to support mission accomplishment. At the operational/strategic level, the Regiment is represented as shown in *Figure 1-1*. The Regiment is represented by the various engineer organizations and capabilities reflected in *Figure 1-2, page 1-4* at the tactical/operational level. *Appendix D* provides a more in-depth view of the organizations depicted in *Figure 1-2*.

## THE THREEFOLD BRANCH

1-4. The main component of the Engineer Regiment is the Engineer Branch. Engineer officers and engineer enlisted soldiers with combat engineer military occupational specialties (MOSs) are combat arms soldiers. The Engineer Branch reinforces and complements the effects of the other branches



**Figure 1-1. The Engineer Regiment at the Strategic/Operational Level**

in the Army and the other services. While most branches are identified as being either combat, CS, or CSS, engineers are identified in all of these categories and have significant overlap within the branch and the roles, missions, and functions that they perform. The only other branch that shares this distinction and challenge is the Aviation Branch.

## COMBAT ARMS

1-5. Combat arms are those units and soldiers who close with and destroy enemy forces or provide firepower and destructive capabilities on the battlefield. Many engineer units perform combat arms roles. The commander task-organizes combat engineer units with maneuver units and integrates them into a combined arms formation. The engineer units provide demolition and reduction capabilities to the combined arms team. Additionally, engineer units can fire and maneuver to employ direct-fire weapons systems to aid in employing obstacles and breaching obstacles. Regardless of the mission, armored engineer vehicles are combat vehicles and provide a significant contribution to the combat power of the entire formation.