MCWP 3-17

# Engineering Operations

**U.S. Marine Corps**

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DEPARTMENT OF THE NAVY
Headquarters United States Marine Corps
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# FOREWORD

Marine Corps Warfighting Publication (MCWP) 3-17, *Engineering Operations* provides doctrine and supporting tactics, techniques, and procedures (TTP) for the planning and execution of engineer support to the MAGTF. This publication provides general information on the numerous capabilities engineers bring to the battle, from planning through to the execution of an operation. Engineers provide one of the most versatile resources a commander has in a MAGTF. They can provide the means to creatively apply the art and science of tactics in any situation encountered.

This publication reflects the Marine Corps warfighting philosophy and explains how engineer operations contribute to our ability to wage maneuver warfare. It provides guidance for planning and coordinating engineer support and explains the unique command and support relationships of engineers. MCWP 3-17 is the lead publication in a series of engineer-related doctrinal publications. As such, it ties the specific TTP described in supporting publications with applicable engineer functions. This publication is designed primarily for engineer unit commanders, their staffs, and anyone involved in engineer planning, but is also useful to any commanders and their staffs that work with engineer units.

MCWP 3-17 supersedes FMFM 13, *MAGTF Engineer Operations*, dated 10 February 1992.

Reviewed and approved this date.

BY DIRECTION OF THE COMMANDANT OF THE MARINE CORPS

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## Engineering Operations

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# Chapter 1

# MAGTF Engineering

The role of today's engineers in Marine air-ground task force (MAGTF) operations was founded in the needs and experiences of World War II. Geographic isolation and dispersion of objectives compounded with the limits of then existing technology required the ability to improve remote sites in order to effectively use these locations to prosecute the war.

This new mission requirement for the Marine Corps meant creating organic units with the specialized equipment and training needed to support the existing warfighting mission. This necessity for engineering support also led to the Naval Construction Force (NCF) becoming integral to some Marine engineering operations. By the end of the war, engineering had progressed to the level of providing warfighting skills that allowed commanders to modify the battlespace to their advantage through the applications of mobility, countermobility, survivability, and general engineering.

Today, the combat engineer brings both constructive (e.g., building bunkers, providing utilities) and destructive (e.g., demolition, breaching) support capabilities to the battlefield. This unique combination of diametric capabilities provides knowledge, experience, and skills to commanders at the operational and tactical levels with which they can, for example, reduce friction, facilitate maneuver, and improve the morale of friendly forces or create friction and disorder for the enemy. Examples of these include maintaining roads to reduce maintenance of motor transport assets or providing showers to front-line combatants. Establishing obstacles or destroying existing roads or bridges can inhibit the enemy's ability to quickly maneuver forces in the attack or defense. Modifications to the physical battlespace permits commanders to achieve faster tempo and better focus of military power. Examples of these would be the establishment of forward arming and refueling points (FARPs) to reduce turnaround time of aviation assets or reinforcing an infantry position with obstacles, bunkers, and mines. This allows a commander to shift combat power to another location to support a main effort while minimizing risk by not compromising security of the remaining forces.

Although current doctrine calls for attacking and exploiting the enemy's vulnerabilities, factors outside of the commander's control (e.g., time, terrain, weather, the enemy's actions) can force commanders into actions against enemy strengths. Combat engineers earn their title most notably through assault breaching of enemy fortifications or by their contribution of firepower in the form of provisional infantry support. These capabilities can be decisive in maintaining momentum in the attack or responding quickly to the enemy's actions or reactions. In military operations other than war (MOOTW) engineers play a significant role in diverse situations such as disaster recovery, humanitarian relief, and peacekeeping operations. These are a few examples of when an engineer unit can bring to bear its unique skills and capabilities to support commanders in achieving their mission(s).

MAGTFs normally contain engineer units in each of their major subordinate commands. The engineers found in a MAGTF are engineer staff personnel in the command element (CE), a combat engineer unit supporting the ground combat element (GCE), a support engineering unit supporting the aviation combat element (ACE), and a support engineering unit in the combat service support element (CSSE). Task force mission requirements may require augmentation of the engineering assets with NCF. See figure 1-1, on page 1-2. As part of mission planning, a MAGTF commander may elect to task-organize certain capabilities (e.g., engineers, artillery, and reconnaissance units) to support the concept of operations for specific operations or missions.

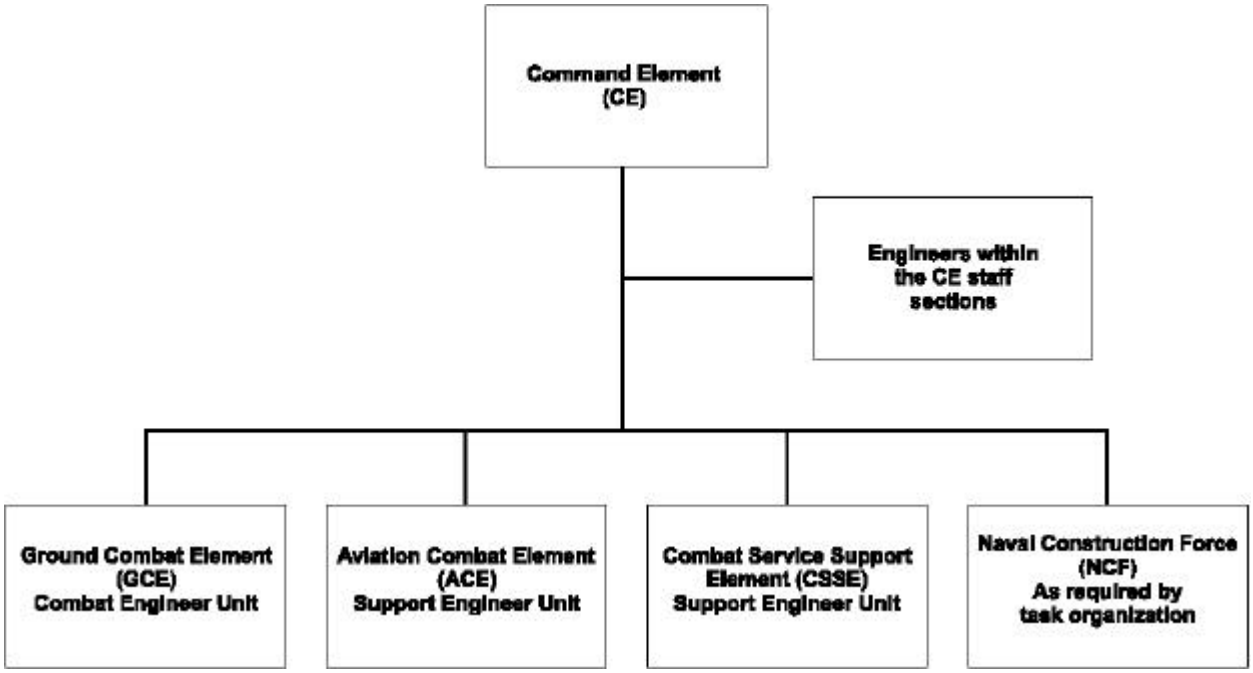


**Figure 1-1. MAGTF Engineer Assets.**

## MAGTF ENGINEER STAFF

The MAGTF commander's staff engineers develop engineer policy, guidance, and standards for the engineer effort throughout the battlespace. The engineers are the focal point for planning, monitoring, and coordinating engineer efforts supporting air, ground, and combat service support operations and providing engineer assistance to the principal staffs. The engineers are responsible for estimating, recommending, and determining requirements and preparing engineer annexes and detailed plans for publication.

### Organization

The number of engineers in the MAGTF command elements will depend upon the mission, structure of the MAGTF, and the magnitude of engineer effort. MAGTF tables of organization (T/Os) provide for engineers and will likely be staffed based on expected missions. When the MAGTF command element is the nucleus of a joint force or combined headquarters, the engineer staff can be augmented with other U.S. or allied service engineers to provide the necessary personnel and experience required to conduct complex joint force and multinational operations. Because engineers are normally located in several sections of the headquarters, they can provide great flexibility in orchestrating diverse engineer operations and allow for the greatest visibility of engineer capabilities, requirements, and responsibilities.

### Functions

The engineers must work closely with other staff sections to integrate engineer considerations and requirements into all phases of planning and execution. These phases include—

- Intelligence. Throughout the intelligence cycle, the engineers assist the G/S-2 in coordinating intelligence requirements. The engineers provide technical assistance in identifying, prioritizing, and validating engineer intelligence needs and in coordinating the collection of engineer information (see chapter 2).
- Operations. The engineers monitor the deployment, employment, and mission status of MAGTF engineer forces. The engineers focus the use of engineer capabilities to support the concept of operations. It is vital that engineers maintain situational awareness of the maneuver forces' current and future courses of action (COAs) so that existing facilities (e.g., main supply route (MSR), tunnels, and bridges) do not constrain their