

**ATP 3-37.10
MCRP 3-17.7N**

BASE CAMPS

APRIL 2013

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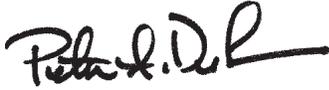
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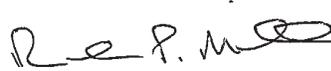
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Foreword

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PETER A. DELUCA
Brigadier General, USA
Commandant
U.S. Army Engineer School



RICHARD MILLS
Lieutenant General, USMC
Deputy Commandant for
Combat Development and Integration

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Preface

Army Techniques Publication (ATP) 3-37.10/Marine Corps Reference Publication (MCRP) 3-17.7N is a compilation of tactics, techniques, and procedures (TTP) found in doctrine, lessons learned, and other reference material that, for the first time, provides an integrated systematic approach to base camps. It codifies the recent efforts of the Base Camp Integrated Capabilities Development Team as part of the Army capabilities-based assessment process and serves commanders and their staffs as a comprehensive “how-to” guide for performing all activities of the base camp life cycle during deployments.

This manual acknowledges that each base camp scenario will be unique, based on mission requirements and the theater-specific facility allowances and construction standards that apply. Therefore, this manual relies on its user’s ability to apply experience and good judgment in incorporating the base camp principles and procedures that are provided here, along with the wisdom to seek out the necessary expertise where needed in generating options and implementing best practices that result in efficient and effective base camps.

The principal audience for ATP 3-37.10/MCRP 3-17.7N is all members of the profession of arms. Commanders and staffs of a joint task force or multinational headquarters should also refer to applicable joint or multinational doctrine concerning the range of military operations and joint or multinational forces. Trainers and educators throughout the Army and Marine Corps will also use this manual.

Commanders, staffs, and subordinates ensure their decisions and actions comply with applicable United States (U.S.), international, and, in some cases, host nation (HN) laws and regulations. Commanders at all levels ensure their Soldiers/Marines operate in accordance with the law of war and the rules of engagement (see Field Manual [FM] 27-10).

ATP 3-37.10/MCRP 3-17.7N uses joint terms where applicable. Selected joint and Army/Marine Corps terms and definitions appear in both the glossary and the text. Terms and definitions for which ATP 3-37.10/MCRP 3-17.7N is the proponent publication (the authority) are indicated in the glossary and are printed in boldface and italicized in the text. These terms and their definitions will be incorporated into the next revision of Army Doctrine Reference Publication (ADRP) 1-02 and MCRP 5-12C. For other definitions in the text, the term is italicized, and the number of the proponent manual follows the definition.

ATP 3-37.10/MCRP 3-17.7N applies to the Marine Corps, Active Army, Army National Guard/Army National Guard of the United States, United States Army Reserve, and Marine Corps Reserve unless otherwise stated.

The Army proponent for ATP 3-37.10/MCRP 3-17.7N is the United States Army Maneuver Support Center of Excellence (MSCoE). The preparing agency is the MSCoE. Send comments and recommendations on Department of the Army (DA) Form 2028 (*Recommended Changes to Publications and Blank Forms*) directly to Commander, MSCoE, ATTN: ATZT-CDC, 14000 MSCoE Loop, Suite 270, Fort Leonard Wood, Missouri 65473-8929. Submit an electronic DA Form 2028 or comments and recommendations in the DA Form 2028 format by e-mail to <usarmy.leonardwood.mscoe.mbx.cdiddcoddengdoc@mail.mil>. The United States Marine Corps proponent for this publication is the United States Marine Corps Engineer School. Submit changes to United States Marine Corps Engineer School, MAGTF Engineer Center, BB-12, RM 245, Camp Lejeune, NC 28542-0069.

A listing of preferred metric units of general use is contained in Federal Standard 376B <<http://www.usaid.gov/policy/ads/300/fstd376b.pdf>>.

Introduction

Meeting America's strategic objectives hinges on the ability to promptly deploy forces at any time, in any environment, and against any adversary. Exploiting this expeditionary capability will often place units in an austere operational environment that is inherently uncertain, with poor or deteriorating infrastructure that cannot accommodate deployed forces. Establishing base camps helps extend and maintain operational reach and is vital in projecting and sustaining combat power. Creating base camps that are both efficient and effective will help conserve resources, protect and sustain forces, limit liabilities, and reduce the overall logistic burden during extended operations—ultimately enabling mission success.

Operating from base camps is a fundamental tactic of ground-based forces. Recent experiences in contingency operations overseas have shown some of the challenges that base camps present to commanders. These experiences have also revealed the consequences when the activities of the base camp life cycle are inadequately considered or addressed during the course of operations. Some of these consequences include—

- Inefficient use of resources such as time, materials, water, energy, and money.
- Hazards associated with improper construction such as fire and electrocution.
- Health-related concerns associated with trash burning and improper waste management.
- Negative impacts on both time and money for base camp transfers and closures due to residual environmental issues.

Although contingency operations are generally thought of as short duration, many situations in the past have resulted in forces remaining in operational areas far longer than anticipated. Often bivouac sites, assembly areas, and existing facilities occupied during the course of operations become de facto base camps with impromptu facilities and infrastructure that evolve without the necessary prerequisite planning and incorporation of appropriate design, construction, and protection considerations. These ad hoc base camps typically exhibit flaws and yield inefficiencies that waste valuable resources, pose hazards to both occupants and the environment, and ultimately detract from the overall mission.

Base camps in support of contingency operations will range from extra small to large base camps with varying levels of capabilities and construction standards that are indicative of anticipated life span. Base camps will routinely support both U.S. and multinational forces, as well as other unified action/interorganizational partners, operating anywhere along the range of military operations.

Base camps may be decisive points within lines of operations for achieving mission objectives in a majority of contingencies. As part of the contingency basing strategy for the operational area, base camps must be viewed through a life cycle construct that includes the development of base camps from preestablishment through transfer or closure, with levels of increasing base camp capabilities. The driving force throughout the base camp life cycle are objectives that emanates from the top level commander who drives policy and ensures strategic synchronization, to the operational commander who owns the area of operations (AO), to the base camp commander and the commanders of tenant units.

This manual does not use the terms “enduring” or “contingency” to classify, categorize, or describe base camps. The terms “enduring” and “contingency” have been commonly associated with base camps, but they do not enhance meaning and often only contribute to confusion. One of the developments in this manual is the base camp classification system. This provides a simple way to classify base camps and mitigate the confusion that has been generated by the inconsistent application of various naming conventions, such as contingency operating base and main operating base. Regardless of how base camps may be referred to by Service components or their commands, all base camps are broadly classified by their size, level of capabilities, and purpose.

This manual uses the term planning process to indicate both the military decisionmaking process (MDMP)/Marine Corps Planning Process (MCP) and troop leading procedures. Battalion-size and larger

units use the MDMP or the MCPP, depending on their Service. Company-size and smaller units follow troop leading procedures.

This manual uses the term mission variables to indicate both the Army and Marine Corps uses of the term. For the Army, mission variables consist of mission, enemy, terrain and weather, troops and support available, time available, and civil considerations (METT-TC). For the Marine Corps (and in joint doctrine) mission variables consist of mission, enemy, terrain and weather, troops and support available—time available (METT-T).

When this manual uses two terms separated by a slash (/), the first term is the Army term; the second term is the Marine Corps term. Key differences in Army and Marine Corps terms include—

- (Army) decisive action/(Marine Corps) simultaneous activities (written in this manual as decisive action/simultaneous activities).
- (Army) decisive operation/(Marine Corps) decisive action (written in this manual as decisive operation/decisive action).
- (Army) geospatial engineer/(Marine Corps) geographic intelligence specialist (written in this manual as geospatial engineer/geographic intelligence specialist).
- (Army) intelligence preparation of the battlefield (IPB)/(Marine Corps) intelligence preparation of the battlespace (written in this manual as IPB).
- (Army) mission command (Marine Corps: command and control).
- (Army) memory aid expressed as observation and fields of fire, avenues of approach, key terrain, obstacles, and cover and concealment (OAKOC)/(Marine Corps) key terrain, observation and fields of fire, cover and concealment, obstacles, and avenues of approach (KOCOA) (written in this manual as OAKOC/KOCOA).
- (Army) movement and maneuver warfighting function/(Marine Corps) maneuver warfighting function (written in this manual as movement and maneuver/maneuver).
- (Army) protection warfighting function/(Marine Corps) force protection warfighting function (written in this manual as protection/force protection).
- (Army) running estimate/(Marine Corps) staff estimate (written in this manual as running estimate/staff estimate).
- (Army) standard operating procedure (SOP)/(Marine Corps) standing operating procedure (written in this manual as SOP).
- (Army) sustainment/(Marine Corps) combat service support.
- (Army) sustainment warfighting function/(Marine Corps) logistics warfighting function (written in this manual as sustainment/logistics).
- (Army) signal/(Marine Corps) communications.
- (Army) unified action partners/(Marine Corps) interorganizational partners (written in this manual as unified action/interorganizational partners).

The development of this manual resulted in the modification of two Army/Marine Corps terms (see introductory table 1).

Introductory Table 1. Modified Army/Marine Corps terms

base camp ¹
quick response force ^{1,2}
¹ ATP 3-37.10/MCRP 3-17.7N is now the proponent manual.
² New Army/Marine Corps definition.

ATP 3-37.10/MCRP 3-17.7N covers the following information:

- Chapter 1 provides an overview of base camps and describes some of the challenges in establishing and maintaining them in future operational environments. It describes the base camp life cycle and the inherent roles and responsibilities, and offers principles that both planners and executors incorporate to optimize efficiency and achieve effectiveness.

- Chapter 2 discusses strategic, operational, and tactical planning with a focus on how commanders and their supporting staffs at the operational and tactical level use the MDMP/MCPP to determine their requirements for base camps and integrate base camps within the concept of operations. It also provides an overview of the base camp development planning process that is performed once the decision is made to establish a base camp.
- Chapter 3 focuses on base camp design and the balancing of tactical, operational, sustainment, and engineering requirements in designing facilities and infrastructure that fulfill the base camp's purpose and its functional requirements based on the needs of the user.
- Chapter 4 focuses on base camp construction and the means, methods, and procedures for fulfilling construction requirements.
- Chapter 5 describes the organizational structuring required for operating and managing base camps, and centers on the operation of base camp management centers and base operations centers (BOCs). It also discusses three critical functional areas for base camps—emergency management, master planning, and contract management.
- Chapter 6 provides information on conducting base camp security and defense as part of the overall protection plan for base camps.
- Chapter 7 provides the specifics for conducting base camp transfers and closures.
- Appendix A provides guidelines for creating the base camp appendix as an attachment to an operation plan (OPLAN) or operation order (OPORD).

For Marine Corps users: Do not use Appendix A. Army annexes, appendices, and tabs do not align with Marine Corps annexes, appendices and tabs. Refer to MCRP 5-1, *Marine Corps Planning Process*, for correct Marine Corps annexes, appendices, and tabs.

- Appendix B provides guidelines for creating a base camp defense attachment to an OPLAN or OPORD.

For Marine Corps users: Do not use Appendix B. Army annexes, appendices, and tabs do not align with Marine Corps annexes, appendices and tabs. Refer to MCRP 5-1, *Marine Corps Planning Process*, for correct Marine Corps annexes, appendices, and tabs.

- Appendix C discusses base camp planning factors that the staff uses to estimate requirements and capabilities and to help develop basing strategies or schemes of base camps.
- Appendix D describes communications support requirements for base camps and the roles and responsibilities for them.

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Chapter 1

Base Camps Overview

This chapter provides an overview of base camps and includes discussion on the classification of base camps that is based on size, level of capabilities, and purpose. It includes some of the challenges that commanders will face in establishing base camps in today's operational environment. It also provides principles that are incorporated throughout the life cycle, and the roles and responsibilities for base camps.

BASIC CONSIDERATIONS

1-1. Base camps provide a protected location from which to project and sustain combat power. Operating from base camps is a fundamental tactic of ground-based forces. Commanders apply operational art to decide when, where, and for what purpose to operate from base camps. Strategic and operational reach may initially depend on existing bases/base camps. Extending that reach and prolonging endurance to achieve success will likely require the forward positioning of base camps along lines of operations. The arrangement and location of base camps (often in austere, rapidly-emplaced configurations) complement the ability of Army and Marine Corps forces to conduct sustained, continuous operations to operational depth by providing locations throughout the operational area from which to sustain and project combat power.

1-2. Army and Marine Corps basing typically fall into two general categories: permanent (bases or installations) and nonpermanent (base camps). Bases or installations consist of permanent facilities and are generally established in HNs where the United States has a long-term lease agreement and a status-of-forces agreement. **A base camp is an evolving military facility that supports the military operations of a deployed unit and provides the necessary support and services for sustained operations.** Base camps are nonpermanent by design and designated as a base only when the intention is to make them permanent. Base camps may have a specific purpose or they may be multifunctional. While base camps are not permanent bases or installations, the longer they exist the more they exhibit many of the same characteristics in terms of the support and services provided and types of facilities that are developed.

1-3. A base or base camp can contain one or more units from one or more Services and will typically support both U.S. and multinational forces, as well as other unified action/interorganizational partners operating anywhere along the range of military operations. A base or base camp has a defined perimeter and established access controls and should take advantage of natural and manmade features. A commander designates an area or facility as a base or base camp, and often designates a single commander as the base or base camp commander responsible for protection, terrain management, and day-to-day operations of the base or base camp. This allows other units to focus on their primary function. Units located within the base or base camp are under the tactical control of the base or base camp commander for base security and defense. Within large echelon support areas, controlling commanders may designate base clusters for mutual protection and accomplishment of mission objectives.

1-4. Base camps may be used for an extended time and are often critical to wide area security (see ADRP 3-0). During protracted operations, they may be expanded and improved to establish a more permanent presence. The scale and complexity of a base camp, however, is generally related to the size and nature of the force that it supports. The decision to expand or improve a base camp must support the basing strategy, the commander's intent, and the concept of operations.

BASE CAMP CLASSIFICATION SYSTEM

1-5. Base camps are broadly classified by size, level of capabilities, and purpose. This classification system provides common terminology and a framework that aids the conduct of all base camp life cycle activities.

Base Camp Size

1-6. There are four sizes of base camps: extra small, small, medium, and large. Table 1-1 shows base camp sizes and the population ranges associated with each. The base camp population includes both tenant and transient units and organizations, which can include U.S., multinational, and HN personnel, units, and organizations to include contractors authorized to accompany the force (CAAF) and non-CAAF. Transient units and organizations are those that come to the base camp for specified services and support, which may not necessarily include remaining overnight. Determining the number of transients that a base camp will serve and understanding service and support relationships with other base camps are critical factors in accurately identifying requirements for base camp facilities and infrastructure, services, and support.

Table 1-1. Base camp sizes and population ranges

<i>Base Camp Size</i>	<i>Population</i>
Extra Small	50 – 299
Small	300 – 1,999
Medium	2,000 – 5,999
Large	6,000 or greater

Levels of Base Camp Capabilities

1-7. As shown in figure 1-1, there are three increasing levels of capabilities for base camps: basic, expanded, and enhanced. Levels of capabilities describe the characteristics of a base camp in terms of support and services (overall quality of life [QOL]) that are provided and the nature of the construction effort applied that are commensurate with the anticipated duration of the mission. Base camps in support of short-duration missions are more austere and require fewer resources to establish and operate, while those for longer-duration missions generally require greater resources. Not all similar sized base camps will have the same level of capability, and the implementation of these capabilities is not directly linked to operational phases.

1-8. Changing a base camp's level of capabilities should be a deliberate decision that is linked to a decision point in the operational plan or triggered by a clearly identifiable change in the situation. Each base camp has a planned life cycle that can be adapted as the operation progresses. Incorporating the base camp principle of scalability facilitates expansion or reduction without major redesign of the base camp. When a decision point or trigger to change a base camp's level of capabilities cannot be clearly established based on the uncertainty of the situation, base camp commanders and planners anticipate and include the necessary requirements to achieve the next level of capability within the base camp master plan that is linked to the basing strategy. This allows for a timely response once a decision is made to change the base camp's level of capability. The information generated from master planning also facilitates future cost-benefit analyses that enable decisionmaking for other aspects of base camp operations.

Basic

1-9. Basic capabilities are established as part of initial entry and are implemented primarily using organic capabilities and prepositioned stocks. Basic capabilities are those functions and services that are considered essential for sustaining operations for a minimum of 60 days. Basic capabilities are characterized by rapid deployment and emplacement. Basic facilities and infrastructure are highly flexible and moveable.

Expanded

1-10. Expanded capabilities are basic capabilities that have been improved to increase efficiencies in the provision of base camp support and services, and expanded to sustain operations for a minimum of 180 days. For example, a prime power system may be installed, a water bottling plant may replace imported bottled water, or an existing facility may be upgraded to replace tents. Engineer units or contracted support may be used to achieve the desired results. See Army Tactics, Techniques, and Procedures (ATTP) 4-10 for more information on contracted support.

Enhanced

1-11. Enhanced capabilities are expanded capabilities that have been improved to operate at optimal efficiency and support operations for an unspecified duration. These capabilities are flexible, durable, and near self-sustaining, and implemented primarily through contracted support. Many of the functions, facilities, and services and support resemble those of a permanent base or installation.

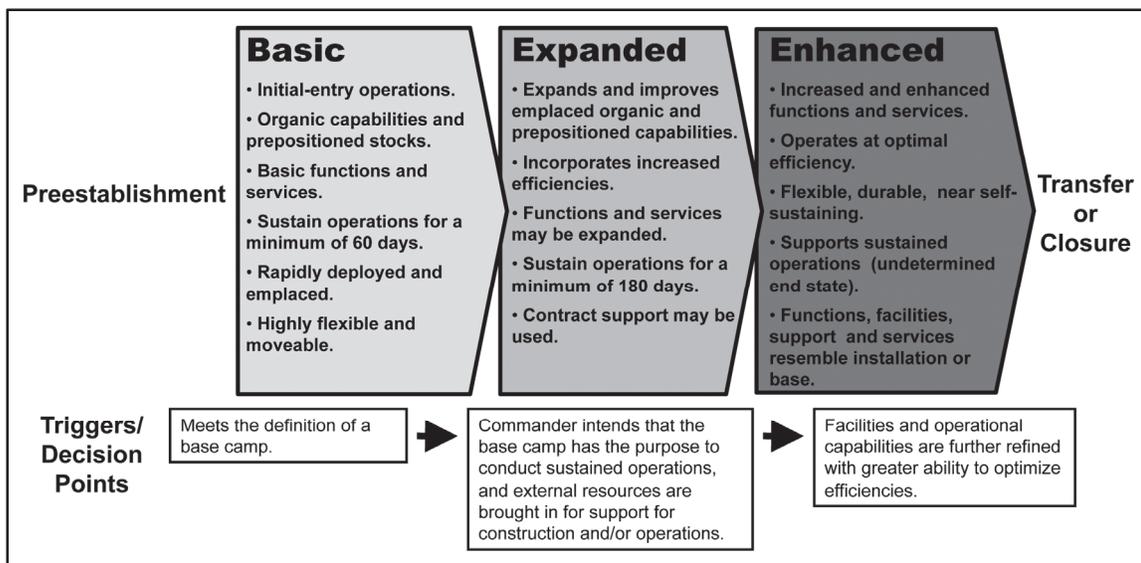


Figure 1-1. Levels of base camp capabilities

Base Camp Purpose

1-12. Base camps are developed to serve a specific purpose such as to serve as an intermediate staging base, a forward operating base, or a logistic base; support reception, staging, onward movement, integration, training, internment and resettlement; or they may be multifunctional. The designated purpose and the operational requirements of tenant units serve as the primary guide in designing the base camp.

BASE CAMP STANDARDS

1-13. Combatant commanders (CCDRs) establish theater base camp standards that are tailored for the joint operations area that provide guidance on facility allowances and standards for construction, QOL, design, environmental, and protection. Base camp standards are developed using operational and mission variables, and considering the unique characteristics of the region and the anticipated duration of a mission. For example, if wooden Southeast Asia huts (SEAhuts) are approved for temporary construction, it may be more cost effective—based on resources, local climate and insects, and the local labor market—to use concrete masonry unit (CMU) construction instead. See Joint Publication (JP) 3-34 for more information on basic guidelines for facility allowances and construction standards.

CONSTRUCTION STANDARDS

1-14. There are three construction standards for base camps: initial, temporary, and semipermanent. The time periods for each standard are derived from the expected design life, not how long a facility may actually be used. Units use their organic construction capabilities to the fullest extent possible to construct base camps to the directed standard. Organic construction capability varies based on the type of unit, training, experience, and equipment available. For example, an infantry unit augmented with engineering capability may be able to construct some facilities to the initial or temporary standard, while a general engineer unit with more organic construction capability may be able to construct some facilities to the semipermanent standard. Commanders ensure subordinate units tasked to perform base camp construction tasks have the necessary capabilities, through augmentation as necessary, to execute base camp construction tasks to standard based on a troop-to-task analysis.

Initial

1-15. Initial construction standards are characterized by austere facilities requiring minimal engineer effort that take full advantage of a unit's organic capabilities. They are intended for immediate operational use by units upon arrival for up to 6 months.

Temporary

1-16. Temporary construction standards are characterized by austere facilities requiring additional engineer effort above that required for initial construction standards. They are intended to increase operational efficiency for use up to 2 years, but may be used to fulfill requirements up to 5 years. Because temporary construction is not intended for long-term use, extending the life of temporary facilities and infrastructure through modifications and increased maintenance and repairs is generally more expensive than building semipermanent facilities and infrastructure from the start. Therefore, commanders strive to identify as early as possible those base camps that will be used long term.

Semipermanent

1-17. Semipermanent construction standards allow for finishes, materials, and systems selected for moderate energy efficiency, maintenance, and life cycle cost. Semipermanent standard construction has a life expectancy of more than 2 years but less than 10 years.

QUALITY OF LIFE STANDARDS

1-18. The base camp classification system has three levels of QOL standards that mirror the levels of base camp capabilities: basic, expanded, and enhanced. These overall QOL levels are based primarily on the standards of support and services determined for each base camp. There is no direct link between construction standards and QOL standards. For example, a base camp may have initial construction standards with expanded QOL standards. The CCDR sets QOL standards for each level depending on local conditions.

Basic

1-19. The basic QOL standard is what units can provide with their organic capabilities or what can be provided by other operational unit capabilities. There is little to no contracted support affiliated with basic QOL standards.

Expanded

1-20. The expanded QOL standard is based on support and services beyond operational unit capabilities and involves contracted support or specialized military units and organizations. The expanded QOL is intended to decrease the stress on personnel deployed for longer periods of time.

Enhanced

1-21. The enhanced QOL standards approach those of an installation. Normally these enhanced QOL standards should not exceed those of a permanent base or installation, but because of the nature of the deployment, some support and services may need to.

BASE CAMP LIFE CYCLE

1-22. The base camp life cycle shown in figure 1-2 embodies the major activities that are involved in base camps. These activities are mutually reinforcing, not mutually exclusive, and include—

- Strategic system and policy integration.
- Planning and design.
- Construction.
- Operations.
- Transfer and closure.

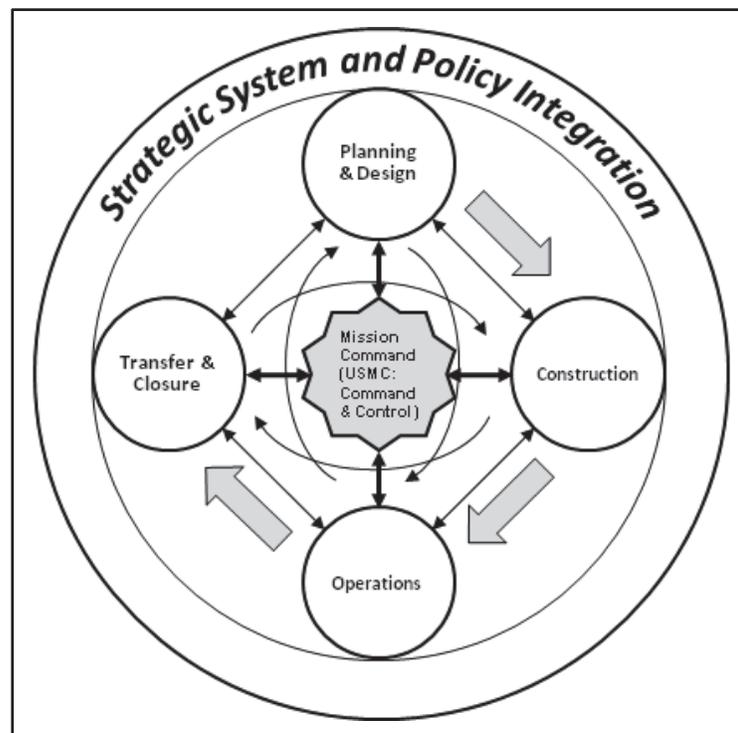


Figure 1-2. Base camp life cycle

1-23. The base camp life cycle includes four activities that relate to the actual life span of a base camp, which are: planning and design, construction, operations, and transfer or closure. These four activities are usually sequential, although they are recurring and often overlap because base camps are dynamic—continuously improved and modified based on threat; mission requirements; and the need for relocation, expansion, or reduction. The base camp life cycle is not directly linked to operational phases as base camps can be planned, constructed, expanded, or transferred or closed during any phase of an operation.

STRATEGIC SYSTEM AND POLICY INTEGRATION

1-24. The life cycle is encompassed by strategic system and policy integration, which emphasizes that base camps are a system of systems governed by policy and procedures established at the national and Service levels. Base camp efforts are integrated as a holistic system to provide consistent policy and doctrine, comprehensive training, integrated command and staff functions, and coordinated resource support which

enables the other life cycle activities. Efficiencies and effectiveness are gained by Department of Defense (DOD) efforts across doctrine, organization, training, materiel, leadership and education, personnel and facilities, and common Service standards. The CCDR confirms and defines base camp policy and ensures strategic synchronization through the creation of the basing strategy that is reflected in plans and orders and passed to the operational commander who owns the AO, to the base camp commander, and to commanders of tenant units.

PLANNING AND DESIGN

1-25. Base camp planning and design are separate activities but are grouped together because they are interdependent. Planning pertains to the specific tasks conducted in gathering, generating, and sharing the necessary information needed for executing the base camp life cycle in support of mission objectives. Base camp design (which is different from the Army and Marine Corps design methodologies described in ADRP 5-0 and Marine Corps Warfighting Publication [MCWP] 5-1) is an extension of planning that matches construction means against base camp requirements to create the necessary engineering and construction details needed for building (and dismantling, as necessary) facilities and infrastructure. Planning and design efforts have the greatest impact on improving base camp efficiencies, implementing cost-effective practices, and reducing costs. Planning and design continue during all phases of the operation and base camp life cycle and are integral parts of master planning.

1-26. The Army Facilities Components System (AFCS) is the primary tool for base camp development planning and design. The Theater Construction Management System (TCMS) is an automated military engineering construction planning and execution support system that delivers AFCS engineering and construction information for use in an operational area. AFCS provides base camp planners with the information needed to plan, design, and manage theater construction projects where austere, temporary facilities are required. See Technical Manual (TM) 5-304 for detailed information on the AFCS.

CONSTRUCTION

1-27. Construction, as part of the life cycle, refers to the means and methods for constructing, modifying, upgrading, and deconstructing base camp facilities and infrastructure that are devised through planning and design. Construction is performed by military units, CAAF, and non-CAAF, or in any combination necessary to achieve the desired results. Facilities and infrastructure are built using various methods that are evaluated and determined during planning and design. Existing facilities and infrastructure are used to the fullest extent to minimize the overall construction effort and reduce the logistic footprint. The use of modular systems and prefabricated or pre-engineered components is maximized to facilitate speedy development and achieve scalability, and to reduce the time needed for closing base camps.

OPERATIONS

1-28. Base camp operations is the operation and maintenance (O&M) of the physical plant (facilities and infrastructure) and the provision of base camp services and support that fulfill the base camp's designated purpose and functional requirements. The BOC is the centralized facility for directing and controlling base camp operations to facilitate effective base camp management.

TRANSFER AND CLOSURES

1-29. All or portions of a base camp may be closed when no longer needed or transferred to another Service, multinational force, governmental or nongovernmental organization, or the HN. As the operation progresses and mission objectives are achieved, base camps are often realigned and closed to consolidate resources and reduce the overall logistic footprint in support of the theater basing strategy. Activities include legal requirements, real estate reconciliation, real and personal property transfer and turn-in, descoping of contractual requirements, environmental cleanup, and records and archives to capture relevant transactions and agreements and document conditions. Proper transfer and closure procedures facilitate the timely withdrawal of U.S. forces, reduce cost, prevent undue liabilities, protect U.S. interests, and promote good relations.

MISSION COMMAND (USMC: COMMAND AND CONTROL)

For Marine Corps users: *Command and control* is a Marine Corps warfighting function. *Mission command* is a type of **command and control. By definition, *mission command* is the conduction of military operations through decentralized execution based upon mission-type orders.**

1-30. As shown in figure 1-2, page 1-5, mission objectives, directed by mission command (USMC: command and control) are the driving force throughout the base camp life cycle. This emphasizes the role of commanders at all levels in directing, leading, synchronizing, operating, managing, and continually assessing all aspects of the base camp life cycle to achieve effectiveness while improving efficiencies and conserving resources. A base camp has one directed commander for unity of command and unity of effort. The more senior commanders of tenant units, the senior airfield authority, other agencies, and contractors providing base camp support and services must all work together—especially during security and defense operations, to ensure unity of effort.

1-31. Commanders foster base camp operational efficiency and effectiveness that yields adaptability and sustainability for meeting future requirements. It relies on the commander's ability to deal with uncertainties in mission duration, troop levels, degree of permanence, political and civil conditions, and funding; and to anticipate and manage transitions during the course of a campaign. Commanders at all levels work together in creating the context for base camps in the operational area, which includes—

- Ensuring early anticipation and identification of base camp requirements for each phase of the operation.
- Conducting in-depth analysis of basing requirements and allocating the necessary resources and capabilities to subordinate units, through force tailoring and task organization, to enable effective planning, design, construction, and management of base camps at the lowest level. This is critical in mitigating the lack of organic base camp capabilities at the brigade combat team (BCT)/regimental combat team (RCT) level and below.
- Providing and enforcing the necessary guidance and policies on facility allowances, construction standards, and QOL that are appropriate for the situation.
- Establishment of base camp management which ensures effectiveness while optimizing efficiency and conserving resources.

1-32. Commanders cannot exercise command of base camps alone. The support they need is enabled through the establishment of one or more of the following organizations that are focused on base camps and that become part of the commander's mission command (USMC: command and control) system:

- **Base camp management centers.** Base camp management centers coordinate, monitor, direct, and synchronize actions needed for establishing, operating, sustaining, and managing base camps within an echelon's AO.
- **Base cluster operations centers.** Base cluster operations centers (BCOCs) are established to control several subordinate base camps that may be grouped together in a cluster for mutual support for either sustainment or protection. BCOCs are most commonly found at brigade/regimental level or higher headquarters and are similar to the base camp management center in both organization and function.
- **Base camp working groups.** Commanders at all levels may form base camp working groups by grouping select staff members who meet to focus on base camp planning or problem-solving. Base camp working groups may be used to conduct the initial base camp development planning until the necessary augmentation needed for adequate base camp development becomes available. When a base camp working group is established, the commander normally designates a group facilitator to focus the group's efforts and prevent duplication of effort. The group facilitator should brief the commander and staff on a recurring basis to maintain visibility and command emphasis on base camps.
- **Base operations centers.** The BOC is the centralized management facility on the base camp that enables the base camp commander to exercise authority and direction, and facilitates the management of base camp functions, services, and support.

OPERATIONAL CHALLENGES

1-33. Developing base camps is a complex task that balances mission, protection, sustainment, and engineering requirements. This task is further complicated by changes in missions, fluctuating troop levels, turbulent civil conditions, and evolving end states that are inherent in contingency operations; and the fact that base camps will routinely support unified action/interorganizational partners operating anywhere along the range of military operations. Added to this are time and resource constraints, funding and contract restrictions, and environmental considerations. Some of the primary challenges that commanders and their staffs will face in establishing base camps are theater entry conditions, mission duration, availability of resources, and competing demands.

1-34. Establishing base camps is resource intensive—not only in terms of the labor, equipment, and materials needed for construction, and O&M of facilities and infrastructure; but also the command and staff efforts that are required throughout the base camp life cycle. This is further exacerbated by limited base camp planning, designing, and management assets within the operational force, which are essentially nonexistent at the lower tactical levels. This demand on commanders and staffs is generated for all base camps, regardless of size and function. Often, the only differences in the effort required for a small and large base camp are the amount and type of resources expended and the degree of technical expertise and engineering required. Commanders, supported by their staffs, primarily overcome these challenges by anticipating and identifying base camp requirements and any shortfalls in capabilities for each phase of the operation as early as possible during planning. This facilitates timely augmentation of the necessary base camp capabilities through force tailoring and task organization.

1-35. Commanders and staffs will be challenged to achieve the level of desired responsiveness in establishing base camps to effectively fulfill mission requirements. Programming and funding procedures for base camp development are cumbersome and often cannot keep pace with rapidly changing mission requirements inherent in contingency operations. Identifying base camp requirements as early as possible in the planning phase provides lead time that will help ensure that base camp requirements are fulfilled in a timely manner. As with all mission tasks, the purpose of each base camp needs to be clearly stated.

ENTRY CONDITIONS

1-36. The deployment of forces may be either opposed or unopposed by an enemy. U.S. forces seek an unopposed entry, either unassisted or assisted by the HN. An assisted entry requires HN cooperation. In an unassisted entry, no secure facilities for deploying forces exist. In an unopposed entry, operations may be conducted from base camps once they are established. The level of support or hostility that U.S. forces encounter will have a significant effect on developing base camps.

1-37. U.S. forces operating with the support of the HN government can reasonably assume some level of support from the local population. This situation eases base camp development by setting conditions which may offer easier and more reliable access to resources and assistance from the local population in obtaining construction materials and contracted labor. It also facilitates early reconnaissance of potential base camp locations which enables planning and design.

1-38. Situations where U.S. forces are assisted by the HN do not mean all factions within the government or within the local population will be supportive. These situations may impede access to resources and contract labor, will require greater security measures, and will limit the ability of U.S. forces to conduct early reconnaissance of potential base camp locations. These locations may also be driven, at least initially, by tactical rather than sustainment considerations. Humanitarian assistance and foreign disaster relief tasks in response to natural or manmade disasters may be similar to this situation, where the damage caused by the disaster will have many of the same effects: limited access to resources, complicated transportation, and limited initial reconnaissance.

1-39. Opposed entry requires U.S. forces to conduct forcible entry operations to gain a foothold or lodgment in a foreign country. These situations are very difficult to plan for as access to potential base camp locations will be limited. Some base camps may be designated in the lodgment area to support entry while others may not be established until commanders decide when, where, and why to conduct other operations from base camps. A hostile government or population will limit access to resources (both

quantity and types available), and base camp location selection must incorporate the tactical situation and other considerations of the operational environment.

ENEMIES

1-40. The concentration of personnel and physical assets within a base camp presents a lucrative target. Enemies will attack base camps using improvised explosive devices (IEDs), mortars, rockets, sabotage, and terrorism. Enemies understand the importance that base camps have in projecting and sustaining U.S. military power and will attempt to disrupt the tasks being performed through various ways, to include—

- Attacking critical communications infrastructure that will disrupt operations and activities.
- Attacking ammunition, explosives, and hazardous materials (HAZMAT) storage areas that can yield catastrophic secondary effects.
- Attacking areas where people congregate to produce mass casualties.
- Disrupting or complicating base camp accessibility through human obstacles (traffic jams and crowds), sporadic attacks, and harassing fires.
- Attacking lines of communications (LOCs) and distribution centers to disrupt means of sustaining base camps.
- Disrupting the employment of contractors through violence and intimidation.
- Persuading the local populace that base camps will impose negative effects on their daily lives and will lead to a permanent foreign occupation.

UNCERTAINTY

1-41. Commanders and their staffs must have tolerance for the uncertainties associated with establishing base camps in support of contingency operations and be prepared to handle the inherent ambiguities and complexities through extensive planning and continuous coordination that effectively mitigates risk. Two of the most demanding challenges are accurately estimating the intended base camp population (personnel, vehicles, and equipment on the base camp at any one time) and determining the expected life span of the base camp based on mission duration. The size and composition of the deployed force may change between planning and construction and will almost certainly change over the life span of a base camp. These uncertainties force planners to plan and design base camps based on valid assumptions, which if proven false can result in inadequate facilities and infrastructure or wasted construction. Planning and designing scalable base camps helps to mitigate the effects of uncertainty.

BASE CAMP PRINCIPLES

1-42. Successful base camps are characterized by four principles that are incorporated throughout the life cycle. These principles are—

- Scalability.
- Sustainability.
- Standardization.
- Survivability.

1-43. Commanders and staffs use the base camp principles as a guide for analytical thinking. These principles are not a set of rigid rules, nor do they apply in every situation. They should be applied with creativity, insight, and boldness.

SCALABILITY

1-44. Contingency operations are inherently uncertain. The size, composition, and positioning of forces are continuously adjusted based on mission requirements. Base camps must be able to accommodate these often unpredictable demands and remain responsive to the commander's needs. Scalability is the ability to tolerate population fluctuations and incorporate changes in the level of capabilities without the need for redesign. Solutions remain efficient and practical whether a base camp becomes larger or smaller.

1-45. Base camp facilities and infrastructure must be scalable to equally handle both increases and decreases in their population with the least amount of resources and effort. This is especially important during transitions in support of base camp closures and realignments, and transfers of authority when base camp populations are essentially doubled.

1-46. Base camp plans, designs, materials, components, systems, construction methods, operational staffs, and communications systems should all be modular and scalable. Comprehensive scalable base camp solutions are integrated and developed at the joint and Service levels.

SUSTAINABILITY

1-47. Base camps must be sustainable. This means that base camps achieve and sustain effectiveness within the means of available resources (materials, labor, energy, and funds) and without placing unnecessary strain on existing sustainment systems. Sustainability is primarily achieved through minimizing demand and cost-effective consumption of resources. Although these two methodologies are similar, the former is generally not appropriate for areas such as survivability, health, safety, and other aspects of Soldier/Marine welfare.

1-48. This principle is broadly aimed at optimizing efficiency in base camps and in no way discounts the overriding requirement for operational effectiveness. This principle acknowledges the importance of ensuring the uninterrupted provision of essential base camp functions through redundancy in systems and protection of critical infrastructure. While the probability of fully incorporating this principle is directly proportional to the expected duration of a base camp (higher probability in longer-duration base camps), it remains important to smaller, shorter-duration base camps since those camps could become long-duration base camps as the operation progresses.

Materials and Labor

1-49. Reducing demand on materials and labor is primarily achieved by maximizing the use of existing facilities and infrastructure, and through proper base camp planning and design. Cost-effective use of materials and labor is achieved primarily by the use of local resources. Local resources are generally less expensive and avoid the challenges associated with international shipments; however, the quality of materials and services rendered must be considered in the overall cost-benefit analysis.

Power and Energy

1-50. Power and energy management is essential to minimize fuel consumption, which reduces logistic support requirements and may provide cost savings within the overall life cycle. Reducing electrical power demand may enable the use of fewer generators, which may produce a more resilient and reliable power system if properly configured into mini- and micro-grids. Cost-effective energy and power management is achieved through a holistic approach that includes implementing—

- Energy efficient technologies in such things as generators, kitchen equipment, insulation for buildings, and environmental control units (ECUs).
- Equipment controls such as timers and occupancy sensors.
- Energy conservation programs that promote behavioral changes in consumers through awareness and leader action.
- Energy conservation plans.
- Smart, mini, and micro power distribution grids.
- Renewable energy resources only after energy and power demands have been minimized.

1-51. Using smart grids helps minimize the need for spot generation and allows for better generator utilization, which improves generator efficiency and reduces base camp O&M costs. Smart grids also allow base camp planners and designers to effectively integrate energy storage and renewable energy systems.

1-52. Leveraging some of these technologies and approaches may require technical and specialized skills or services for installation and O&M. The availability of these capabilities and the initial capital and O&M

costs must be considered in a life cycle cost-benefit analysis of the expected duration of the mission and the life of the base camp.

Water

1-53. Water is a critical commodity. Establishing a self-reliant means for water production, packaging, storage, and distribution on-site or nearby allows base camps to shorten supply lines and greatly reduces the overall demand on the theater supply and distribution system. It also reduces the number of required logistic convoys and the inherent risks associated with them. Recycling gray water, capturing rain water, and implementing and enforcing water conservation plans helps reduce water demands.

Waste Management

1-54. The waste generated on a base camp places a significant demand on a unit's resources. HN municipal waste disposal or treatment facilities will likely be nonexistent, incapacitated, substandard, or beyond reach due to security or political considerations—placing the entire burden for waste management on the deployed force. Reducing this demand is primarily achieved by reducing generated waste. Employing the waste management principle of the three Rs (reduce, reuse, and recycle) is essential in reducing generated waste. Reusable water containers should be used instead of disposable plastic bottles to reduce generated waste and the added strain on the logistic system, especially when local recycling is unavailable or cost ineffective. See engineer doctrine on waste management operations.

STANDARDIZATION

1-55. Standardization of base camp policy, Service standards, guidance, system solutions, standard designs, and construction provides consistent expectations for commanders and drives repetitive use of proven best practices and TTP. It helps achieve a higher degree of sustainability, reliability, and efficiency. Standardization also reduces uncertainty in meeting mandatory requirements and provides for more accurate estimates of materials, scheduling, and cost. Using standardized, scalable, and adaptable designs and construction, such as those in the AFCS, simplifies construction programming activities, improves early planning, and provides consistency in the application of levels of capabilities and the resultant facilities and QOL on base camps. Standardization is achieved by enforcing base camp standards and guidance articulated in the CCDR's basing strategy, planning guidance, and design guides.

1-56. Standardization is also applied to procedures, organizations, training, and operations needed for managing base camps. Standardization helps to improve and sustain proficiency and readiness through the universal application of approved practices and procedures. It reduces the adverse effects of personnel turbulence associated with reassignments, and facilitates interoperability between different organizations.

1-57. Standardizing designs and construction throughout the operational area eases repair and maintenance efforts by allowing for common stocks of parts and supplies which helps reduce inventories. It also reduces skill or training requirements for maintenance and repair workers. The use of custom-made designs can prove to be more costly and difficult to maintain and repair based on the future availability of parts, materials, and skilled labor needed. Therefore, facility and infrastructure designs are based on standard or traditional designs and constructed with standard or stock parts and materials that are readily available locally or through supply channels. This is an important consideration with design and build contracts, since the original contractors who may have the know-how can change out and O&M contracts eventually run out—leaving the burden solely on current and future base camp owners.

1-58. The Army Facilities Standardization Program is a formal process for developing Army standards and standard designs. Standard design includes drawings and specifications developed to ensure the application of sound engineering principles in the design process. Unified Facilities Criteria (UFC) is a DOD-developed consensus on facility planning, design, construction, and O&M criteria for use by all Service components. The Army Facilities Standardization Committee has final approving authority for all UFC that affect Army standards. Army standards are listed in a table of mandatory criteria containing functional requirements necessary to complete present and future military missions. These Army standards are coordinated with Army functional proponents and approved by the Assistant Chief of Staff for Installation Management in coordination with the Army Facilities Standardization Committee.

SURVIVABILITY

1-59. A primary purpose of base camps is providing a protected location from which to project and sustain combat power. Base camps depend on the application of effective protection strategies that is generally achieved by developing a comprehensive protection plan consistent with the principles of protection articulated in ADRP 3-37. Base camps must be equally prepared to protect against the effects of hostile actions, nonhostile activities such as fire, and environmental conditions such as floods and earthquakes.

BASE CAMP FUNCTIONAL AREAS

1-60. Base camp functional areas are related base camp tasks and activities grouped together to facilitate planning and execution. The five base camp functional areas are—

- Operations.
- Logistics.
- Base camp services.
- Protection.
- Facilities and infrastructure.

1-61. During mission planning, the base camp functional areas help commanders and staffs to organize the broad range of base camp requirements and the supporting information and tasks required for execution. The base camp functional areas are used in organizing people and equipment within base camp management centers, BOCs, BCOs, and base camp working groups to facilitate the exercise of authority and direction and the management of base camps. By designating and using base camp functional areas commanders have a means for directing and synchronizing efforts to produce synergistic effects.

OPERATIONS

1-62. This functional area includes those activities necessary for enabling base camp functions, services, and support. It addresses current and future base camp operational requirements and includes the following three primary tasks:

- Conduct the operations process: plan, prepare, execute, and assess.
- Conduct emergency management.
- Conduct master planning.

1-63. Emergency management refers to the activities needed to respond to base camp incidents that are not necessarily the result of hostile actions such as power outages, water main leaks or flooding, fuel or HAZMAT spills, fire, and law and order issues.

1-64. Master planning is an integrated strategy for design, construction, and maintenance of required facilities and infrastructure that integrates base camp improvements for protection, QOL for residents, and efficiencies and effectiveness. Proper master planning enables scalable and sustainable base camps, conserves resources, and prevents wasted construction.

LOGISTICS

1-65. This base camp functional area pertains to the logistic support needed for sustaining base camp functions, services, and support. This logistic support can be provided by any combination of the base camp commander's organic or augmented capabilities, tenant units through support agreements, or contracted support. It includes—

- **Supply.** This includes all classes of supply needed to sustain base camp functions, services, and support.
- **Transportation.** This pertains to transportation needed to perform base camp functions, services, and support such as waste disposal, delivery of supplies, and shuttle services. On large base camps, the distance between unit areas and centralized facilities, such as dining facilities (DFACs) and post/base exchanges, may not be convenient for walking. In those situations, base camp commanders may decide it is more efficient or cost effective over time—based on

competing demands, fuel efficiency, and wear and tear on tactical vehicles—to acquire commercial or General Services Administration nontactical passenger vans or buses for use as a shuttle service.

- **Maintenance.** This pertains to the maintenance of commercial and General Services Administration nontactical vehicles and special equipment such as incinerators, generators, and passenger buses that are procured through local purchases and contracting to specifically perform base camp functions, services, and support. The maintenance requirements for these items often exceed the base camp commander's organizational maintenance capabilities. Shortfalls in maintenance capabilities may be fulfilled through unit augmentation, support agreements with tenant units, and contracted support.

BASE CAMP SERVICES

1-66. Base camp services are a broad categorization of field services, personnel services, and other sustainment-related functions provided as a specified function of a base camp. These services are best provided from fixed facilities to improve operational efficiency and effectiveness and improve the overall QOL for base camp occupants. Base camp services include, but are not limited to,—

- Billeting (including latrine and shower facilities).
- DFACs.
- Medical treatment facilities including medical, dental, and veterinary services.
- Laundry.
- Finance.
- Legal.
- Religious services.
- Postal.
- Morale, welfare, and recreation (MWR) activities.
- Post or base exchanges.

1-67. Authorization and types of base camp services are generally aligned with the designated level of capabilities for the base camp and are detailed in the theater base camp standards and higher headquarters plans and orders. Base camp services may be provided by any combination of the base camp commander's organic or augmented capabilities, a tenant unit, or contracted support. The base camp commander establishes policy on the provision of base camp services (such as authorized customers and hours of operation) that is supportive of higher-level policy and commander's guidance, and ensures the quality of services and level of support being provided through inspections and customer feedback. The base camp commander may designate facility managers to provide added focus on certain areas and facilitate base camp management.

PROTECTION

1-68. A primary purpose of base camps is protecting its occupants and equipment. Base camp protection includes consideration of all of the protection tasks within the protection/force protection warfighting function articulated in ADRP 3-37. Fulfilling this functional requirement is a shared responsibility between operational and base camp commanders.

FACILITIES AND INFRASTRUCTURE

1-69. This functional area includes all of the tasks and activities needed for constructing, maintaining, operating, and repairing the base camp physical plant. The physical plant includes—

- Structures.
- Utilities.
- Roads.
- Areas and grounds.
- Communications and network infrastructure.

1-70. Many of the installation and O&M requirements within this area require technical expertise to ensure safe and effective operations. These requirements, especially on large, complex base camps, typically exceed the base camp commander's organic capabilities and require augmentation or contracted support. On smaller camps, and/or when augmentation is unavailable, base camp commanders must rely on reachback to technical expertise residing in higher headquarters base camp management centers or support agencies and centers such as the United States Army Corps of Engineers (USACE).

ROLES AND RESPONSIBILITIES

1-71. The responsibilities for achieving efficient and effective base camps are not limited to any specific echelon. The required actions are handled at every echelon from policy decisions at the national or Service level, down to the base camp commanders of the smallest base camps. Agencies and their associated roles and responsibilities include—

- **Army Deputy Chief of Staff, Logistics (G-4).** The Army G-4 carries the Army's primary responsibility for base camps. The United States Marine Corps lead is the Deputy Commandant for Installations and Logistics. Together, they provide the consistent Service integration, management, and guidance on base camp solutions, standards for levels of services, and QOL. The Army G-4 integrates base camp operations and management at the strategic level.
- **United States Army Installation Management Command (IMCOM).** They provide installation management expertise and best practices that are transferrable to base camp operations and management. IMCOM supports their civilian employees that volunteer to augment deployable regional support groups (RSGs) in key installation management roles on base camps. They also offer a Garrison Leader's Course and contingency base training for deploying teams at the IMCOM Academy.
- **USACE.** They provide standards for construction, guidance on scalability, standardization and modularity, expertise on contingency standard designs, and management of the AFCS. They also manage the worldwide power contingency contracts that provide power generation and electrical distribution services in conflict and disaster response locations. USACE also provides deployable augmentation teams to support base camps.
- **United States Army Materiel Command.** They catalogue, standardize, and provide many of the base camp systems.
- **Marine Corps Systems Command.** They catalogue, standardize, and provide the organic equipment to allow Marine Corps units to build base camps.
- **United States Training and Doctrine Command (TRADOC).** They develop a standardized comprehensive base camp Army training program. The MSCoE is TRADOC's proponent for base camps and provides standards for survivability. The Sustainment Center of Excellence provides sustainment and logistic support to develop largely self-sustaining base camps.

1-72. Establishing, operating, and managing efficient and effective base camps, regardless of size and purpose, is complex and resource intensive—not only in terms of the labor, equipment, and materials needed; but also the command and staff efforts that are required throughout the base camp life cycle. The requirements for each aspect of the life cycle transcend staff functional areas and demand a combined arms, systematic approach that incorporates the expertise from maneuver commanders, engineers, logisticians, safety specialists, preventive medicine (PVNTMED) personnel, veterinarians, environmental officers, protection specialists, and other members of the staff.

COMBATANT COMMANDER

1-73. The CCDR integrates all aspects of the base camp life cycle at the operational level. The CCDR develops a contingency basing strategy for the joint operations area as part of the CCDR's strategic estimates, strategies, and plans to accomplish the mission. The basing strategy translates national direction and multinational guidance into a concept that supports strategic objectives.

1-74. The CCDR may delegate authority for base camp decisionmaking to Service component commanders or to commanders exercising Title 10 United States Code (10 USC) Service responsibilities.

Decisions are often made in consultation with the HN, subordinate commanders, and U.S. Department of State representatives.

1-75. The CCDR specifies in OPLANs and OPORDs the construction standards for the overall operation for facilities in the theater to minimize the construction effort expended on any given facility, while assuring that the facilities are adequate for health, safety, and mission accomplishment.

1-76. Base camps are often collocated with military ports and airfields. The CCDR or the joint force commander (JFC) delineates responsibilities between the base camp commander, the military port commander, and the senior airfield authority to ensure unity of effort.

SERVICE COMPONENT COMMANDER

1-77. Service component commanders establish a staff engineer section with a facilities and construction department that manages engineering and construction within the AO under the appropriate 10 USC responsibilities. This staff engineer section is responsible for developing the base camp and beddown plan for all Service personnel and equipment arriving in the area of responsibility (AOR). With guidance from the CCDR and the approval of the Service component commander, they provide guidance on engineering and construction missions; establish standards for construction; conduct coordination with the HN; participate in funding, utilization, and resourcing boards; and coordinate with the USACE or the Naval Facilities Engineering Command (NAVFAC) and the theater engineer command. Their responsibilities include integrating the legal, force health protection (FHP), and other aspects of environmental considerations provided from the respective areas of staff expertise. Service component commanders produce a Service-level scheme of base camps that subordinate commanders use as the framework to develop their scheme of base camps.

ENGINEER STAFF

1-78. The engineer staff assists the commander by furnishing engineer advice and recommendations to the commander and other staff officers; preparing the engineering portions of plans, estimates, and orders that pertain to base camps; participating on project approval and acquisition review boards and base camp working groups, as necessary; and coordinating and supervising specific engineer activities for which the engineer staff is responsible. The engineer staff assists the commander by performing a variety of functions to synchronize engineer operations in the operational area (see FM 3-34 and MCWP 3-17 for more information). These functions include—

- Planning and coordinating engineer support that uses both military engineering units and contractors.
- Recommending policies and priorities for construction and real estate acquisition, and for Class IV construction materials.
- Planning and coordinating the procurement and distribution of Class IV construction materials.
- Furnishing advice on the effect of base camp operations on the environment according to applicable U.S., international, and HN laws and agreements.
- Recommending construction standards.
- Standardizing infrastructure systems and design approaches.
- Identifying engineering support requirements that exceed funding authorizations and organized engineer capabilities.
- Furnishing advice on the feasibility, acceptability, and suitability of engineering plans.
- Coordinating with DOD construction agents and other engineer support agencies through appropriate channels.
- Coordinating the development of waste management plans.

LOGISTIC STAFF

1-79. The logistic staff assists the commander by furnishing sustainment/combat service support advice and recommendations to the commander and other staff officers; preparing the logistic portions of plans,

estimates, and orders that pertain to base camps; participating on project approval and acquisition review boards and base camp working groups, as necessary; and coordinating and supervising specific sustainment/combat service support activities for which the logistic staff is responsible. The logistic staff assists the commander by performing a variety of functions to synchronize sustainment/combat service support operations in the operational area (see ADRP 4-0 for more information). These functions include—

- Planning and coordinating sustainment/combat service support that uses both military sustainment/combat service support units and contractors.
- Recommending policies and priorities for procurement and distribution of supplies and materials.
- Identifying logistic support requirements that exceed funding authorizations and organized sustainment/logistic capabilities.
- Furnishing advice on the feasibility, acceptability, and suitability of sustainment/combat service support plans.

BASE CAMP COMMANDER

1-80. The base camp commander is responsible for the protection of base camp occupants, the provision of base camp services and support that are authorized for the base camp, and for managing the day-to-day operations of the base camp.

1-81. For smaller base camps, the senior tactical commander is typically dual-hatted as the base camp commander, or that role may be designated to a subordinate such as a company commander, a deputy commander, or an executive officer. For larger base camps, the base camp commander is either the senior tactical commander or the commander of a supporting unit—who may be junior in rank—tasked to manage the base camp. The RSG is currently the only Army unit with the specific organization and mission to manage large base camps. Other units such as a maneuver enhancement brigade (MEB) or a specialized engineer unit may also perform this mission.

BASE CAMP STAFF INTEGRATOR/BASE CAMP WORKING GROUP FACILITATOR

1-82. The commander may designate a staff member as the primary staff integrator for base camps and/or organize a base camp working group with a designated group facilitator to focus on base camp-related issues. The base camp staff integrator or the base camp working group facilitator serves as the lead on ensuring that base camp requirements and related information are coordinated throughout the staff and integrated into all aspects of mission planning. This individual also serves as the primary point of contact for supporting units or organizations that may be tasked with supporting the development of the base camp.

Chapter 2

Planning

This chapter discusses strategic, operational, and tactical planning with a focus on how commanders and staffs plan for and integrate base camps as part of mission planning at the operational and tactical level that is detailed in ADRP 5-0 and MCWP 5-1. It provides an overview of the base camp development planning process that is detailed in USACE Engineering Pamphlet (EP) 1105-3-1, which supporting or subordinate units use when tasked to develop a base camp. Although base camp planning and design are grouped together in the base camp life cycle, they are separate activities and are discussed in separate chapters. While planning is continuous, this chapter focuses on the initial planning that occurs at the onset of an operation. See appendix C for planning factors that may be used to facilitate base camp planning and design.

PLANNING CONSIDERATIONS

2-1. Base camp planning identifies when, where, and why base camps are needed and the details of life cycle activities. Base camp planning begins as part of crisis action planning, is part of campaign and major operation planning, and continues through OPLAN and OPORD development and execution. Planning identifies the purpose and functional requirements of each base camp and linkages and interdependencies with other base camps, operational forces, and agencies; and generates the necessary information for executing all aspects of the base camp life cycle. It is linked to mission objectives and the commander's intent and results in a basing strategy or scheme of base camps and detailed guidance that directs the design, construction, and operations of individual base camps as part of a larger system of base camps.

2-2. Base camp planning occurs across all levels of war and command echelons. Base camp planning activities cover a continuum that ranges from conceptual to fully detailed. Creating basing strategies or schemes of base camps is mostly conceptual planning at the strategic and operational level. Conceptual planning helps answer questions of what to do and why to do it. Conceptual plans are developed using base camp-specific assumptions to allow planning to continue despite uncertainty in a situation. Developing the scheme of base camps involves detailed planning at the operational and tactical levels. Detailed planning describes how to do it.

2-3. The commander personally leads the conceptual component of planning. While commanders are involved in certain parts of detailed planning, they often leave the specifics to the staff and those individuals and organizations that specialize in base camp development. Base camp planning normally progresses from general to specific. The basing strategy, the conceptual component of base camp planning, provides the basis for all subsequent base camp planning and development. The basing strategy leads to schemes of base camps which, in turn, lead to detailed land use plans (site designs), facility and infrastructure designs, and construction directives. Base camp conceptual planning must respond to detailed constraints, for example, standards of construction, HN agreements, and available resources. These constraints are captured within base camp standards that drive the execution of the base camp life cycle.

2-4. Base camp development planning involves detailed planning. It translates base camp purpose and functional requirements into a complete and practical plan. Base camp development and mission planning have different focuses, but they are interdependent. In combination, they ensure that base camps are positioned where they offer commanders with the best means for projecting and sustaining combat power, and where the terrain is favorable to engineering, design, construction, and environmental considerations. The fast pace of mission requirements during contingency operations rarely allows for these two planning

methodologies to be conducted simultaneously, which complicates coordination and synchronization efforts. In some situations, base camps are planned as part of a sequel. This is often the case for a multiphase campaign involving major combat operations where the construction of base camps is largely contingent on the outcomes. Base camps require a flexible and adaptive approach to planning, just as all other portions of decisive action/simultaneous activities.

STRATEGIC AND OPERATIONAL PLANNING

2-5. The military contributes to national strategic planning for contingency basing through joint strategic planning. Planners recommend and commanders define criteria for the positioning of base camps, thresholds on QOL within the levels of capabilities based on expected mission duration, and link those criteria to the achievement of the end state.

2-6. Base camps are addressed as part of the JFC's contingency planning that is performed in anticipation of specific situations that likely would involve the commitment of military forces. This facilitates the timely development and inclusion of more specific base camp policies and guidance (as part of crisis action planning for a certain situation) that ensures base camps are efficiently used to meet mission requirements throughout the duration of an operation. See JP 5-0 for more information.

2-7. Another agency's use of the military's base camp, including any unique requirements, should be identified and considered before it joins an operation. Effectively integrating the interagency community contributes to the success of base camps, especially during theater shaping and during the stability and enable civil authority phases of an operation when joint forces may operate in support of other U.S. government agencies. While supported CCDRs are the focal points for interagency coordination in support of operations in their AORs, interagency coordination with supporting commanders is just as important. At the operational level, subordinate commanders should consider and integrate interagency capabilities into their estimates, plans, and operations. Depending on the agency's capabilities and the threat, the agency may have a turn-key base camp provided to them by the military, be a tenant on a military base camp, or have a base camp turned over to them when it is no longer needed by the military.

2-8. JFCs should be prepared for base camps to support multinational forces. Multinational force commanders develop basing strategies and standards in multinational channels. JFCs coordinate these actions at the national level through established multinational bodies and at the theater-strategic and operational levels.

2-9. CCDRs develop a basing strategy as part of their strategic estimates, strategies, and plans to accomplish their mission. They plan the arrangement, linkages, and sustainment of base camps. Basing strategies address the means, ways, and ends for base camps, and are linked to the campaign plan, operational plans, and mission planning. Basing strategies—

- Articulate authoritative direction.
- Assign tasks, forces, and resources.
- Designate assumptions and objectives.
- Establish operational limitations (constraints).
- Establish thresholds within levels of capabilities (basic, expanded, and enhanced).
- Define base camp policies, standards, and concepts to be integrated into subordinate or supporting plans to ensure that base camps are optimally efficient and effective.

2-10. The foundation for in-theater base camp planning is the basing strategy developed by the CCDR for the AOR. The basing strategy is mostly conceptual but includes some detailed guidance such as the overarching guidance on base camp standards, facility allowances, and the strategic vision for base camps (links and nodes) within the operational area. Commanders at each echelon provide added focus and detail that allow subordinates to develop base camps in support of mission requirements and create desired effects.

OPERATIONAL ART AND BASE CAMPS

2-11. Operational art helps commanders and staffs to understand, visualize, and describe when, where, and why to use base camps to help achieve a desired end state. This thought process relies on skill, knowledge, experience, creativity, and judgment. Commanders and staffs consider the life cycle and principles of base camps to overcome uncertainties and integrate ends, ways, and means, while accounting for risks, to achieve the desired end state. See JP 5-0 and ADRP 3-0 for more information on operational art.

2-12. Commanders and staffs at all levels use operational art and the design methodology to help understand the operational environment, operational requirements, the problems to be solved, and how these may change over time and affect the base camp life cycle. They use this understanding to determine the most effective and efficient strategies and schemes for establishing sustainable base camps at various locations across multiple echelons.

2-13. Basing is an element of operational art that directly enables operational reach and involves the provision of sustainable facilities and protected locations from which units can conduct operations. Army and Marine Corps forces typically rely on a mix of bases and/or base camps to deploy and employ landpower simultaneously to operational depth—base camps are only one option of basing. Operating from base camps is a fundamental tactic of ground-based forces; deciding when, where, why, and how to do so requires the application of operational art and the design methodology (see ADRP 3-0).

2-14. Base camps are rarely static throughout their life cycle. Operational art assist planners and commanders in visualizing such things as the array of sizes of camps, where they fit on the ground, how they change over time, linkages to the scheme of movement and maneuver/scheme of maneuver and other schemes, base camp functional areas, and the base camp framework for security and defense. Without operational art and an informed vision across the levels of war, base camps devolve into an array of disjointed individual entities that are an inefficient use of resources that ultimately detract from the mission.

2-15. "Dispersed" and "consolidated" describe the two generally opposite approaches for arraying base camps. The dispersed approach, with very few larger base camps and many smaller ones, requires more base clusters or hub and spoke relationships to improve the use of limited resources. It offers closer proximity to objective areas to allow for greater local engagement, but requires a larger aggregate base camp footprint with more LOCs but shorter hauls. The consolidated approach, with fewer but larger base camps, may be better suited for selected situations and for units with good tactical mobility. Having fewer locations reduces the aggregate number of dedicated commanders and staffs needed for operating and managing base camps. It also allows security and defense efforts to be concentrated on fewer sites, but it may allow enemies to focus their attacks and limit greater local involvement and contact. In general this approach may be seen as more efficient, but it may have a tendency to be less effective depending on the operational environment.

2-16. Through operational art, commanders and staffs describe base camp plans with a basing strategy or scheme of base camps that ultimately leads to the specific tasks to subordinates and detailed plans that are needed for execution. Base camps are described by size, purpose, and levels of capabilities.

BASING STRATEGY

2-17. The overall arrangement of base camps throughout the operational area, their sustainment, and their linkages and interdependencies with other base camps, operational forces, and agencies are described in the CCDR's basing strategy for the joint operations area. The basing strategy may change over time, and some base camps will evolve differently than expected. Included as part of the basing strategy are the base camps standards for such things as construction, QOL, design, environmental, and protection that are tailored to a specific joint operations area (or region). In addition to operational and tactical considerations, some of the principal factors that are considered in formulating theater-specific base camp standards include—

- Joint and Service policies.
- International and U.S. laws and regulations.
- HN laws and local customs and practices.
- The availability of indigenous construction materials.

- The availability and capability of the local labor force.
- Access to existing facilities and infrastructure.
- The availability of water from developed and undeveloped sources.
- Power and energy considerations.
- Climate and terrain effects on construction material characteristics and methods of construction.
- The availability of prepositioned stocks and modular base camp sets.
- The ability to move construction resources into and throughout the operational area.

2-18. A basing strategy is developed by the CCDR as a product of operational art and design and is part of the theater strategy or security cooperation strategy (see JP 5-0). The basing strategy has mostly conceptual ends, ways, and means but contains some detailed guidance such as base camps standards. The basing strategy is reflected in guidance on base camps contained in plans and orders such as a theater campaign plan, a country plan, or a specific OPLAN or OPORD. The CCDR may develop an initial theater basing plan and revise it as the campaign progresses. Service-level commanders may need to develop a basing strategy when an individual Service is assigned tasks and missions in support of DOD objectives.

2-19. A basing strategy addresses how bases and/or base camps are used to enable access, extend operational reach, support line(s) of operations, support the generation of combat power, and support the operational, protection, and sustainment requirements of deployed forces.

SCHEME OF BASE CAMPS

2-20. Army and Marine Corps commanders, supported by their staffs, use operational art, the design methodology, and the life cycle and principles of base camps to develop a scheme of base camps. The scheme of base camps is developed as part of both conceptual and detailed planning. Figure 2-1 shows how conceptual and detailed planning combine to develop the scheme of base camps. Conceptual planning asks the question what to do and why and is focused on ends, ways, means, and risk. Detailed planning is focused on who, what, where, and when. The why is a result of conceptual planning and is conveyed by the purpose of each base camp. The scheme of base camps focuses on synchronizing base camps with and supporting major operations, operational approaches, the concept of operations, and lines of operations and lines of effort if used. Schemes of base camps may be nested under and support Service component campaign support plans and OPLANs. See ADRP 5-0 and MCWP 5-1 for more information on conceptual and detailed planning.

2-21. The scheme of base camps primarily links operational, sustainment, and protection requirements of planned tenants across an array of base camps and discusses the means of base camp life cycle activities. The scheme of base camps incorporates the base camp principles and requires integration and synchronization across the warfighting functions.

2-22. Planners develop an initial array of base camps and identify changes to the scheme of base camps during key transition points as the campaign or major operation progresses. During major combat operations, the initial array may be planned at key logistic nodes, along lines of operations, near key objectives or key terrain, or where units stop major maneuvering and plan an extended presence. If the operational theme changes, so may the requirements for base camps. The situation should be fairly stable before major resources are expended to increase beyond the basic level of capabilities.

2-23. The staff develops an initial scheme of base camps for each course of action (COA). Once a COA is approved, the scheme of base camps and its supporting detailed scheme of base camp information is refined and included in the base camp appendix that is attached to plans and orders (see appendix A).

2-24. This scheme is described using any combination of narration and graphics that best communicates linkages to mission objectives, decision points, operational phases (if the operation is phased), and base camp interrelationships (base cluster, hub and spoke, or other relationships) and management requirements.

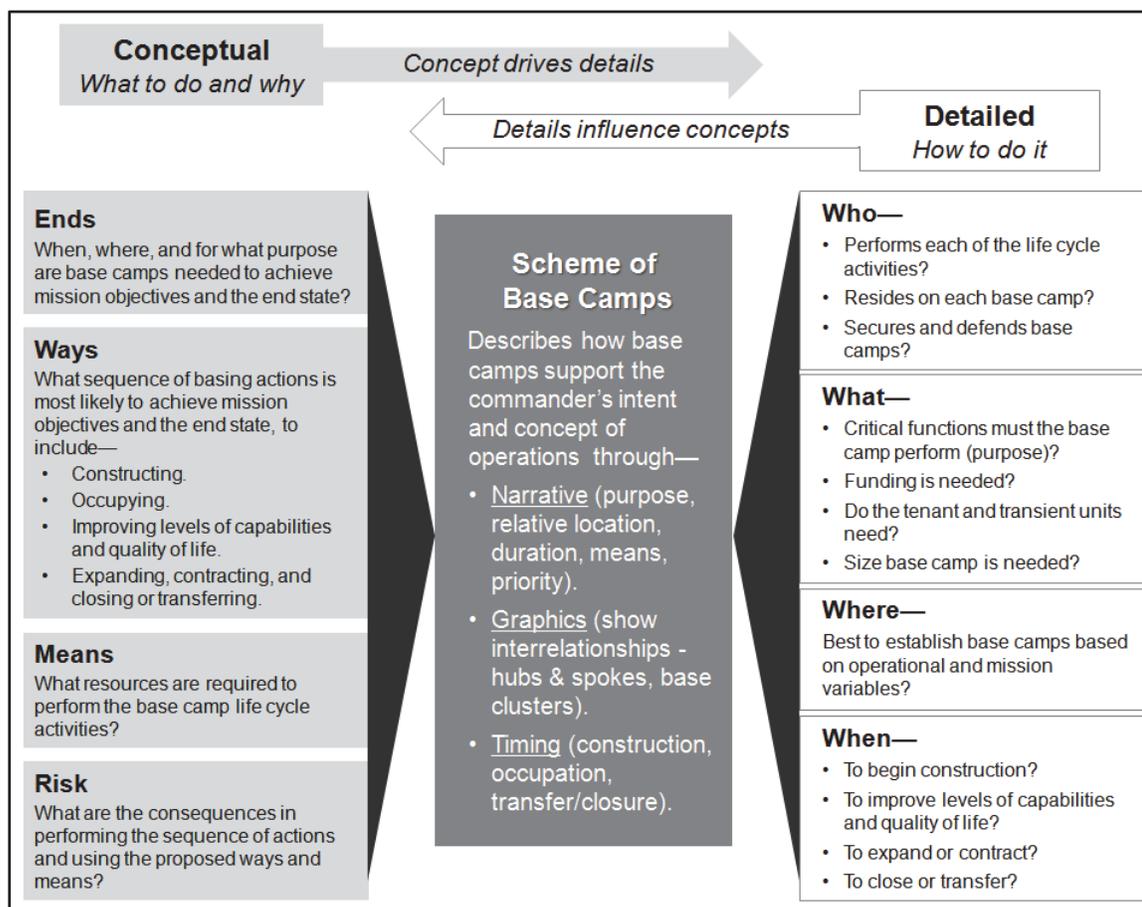


Figure 2-1. Scheme of base camps development

Conceptual Scheme of Base Camps

2-25. The conceptual scheme of base camps is the product of operational art and mission planning. It is directly associated with the basing element of operational art and broadly describes how the commander intends to use base camps to support the operational approach. It describes the purpose, the anticipated duration, the relative location in relation to operational graphics, and the means for base camps that drive detailed planning. The conceptual scheme of base camps answers the types of conceptual ends, ways, means, and risk questions shown in figure 2-1.

2-26. The conceptual scheme of base camps is influenced by detailed planning, such as constraints that are identified as a result of mission analysis/problem framing. For example, land availability constraints resulting from HN agreements and real estate acquisition efforts, land usability constraints resulting from environmental, explosive safety, and engineering assessments. Construction constraints are based on the availability of engineering units, contractors, and other construction resources. The conceptual scheme of base camps may be presented in any combination of narration and graphics. It provides the basis for the more detailed scheme of base camps that is developed for each COA during the planning process and ultimately included in the OPLAN or OPORD.

Detailed Scheme of Base Camps

2-27. The detailed scheme of base camps is a continuation of the conceptual scheme of base camps that is further refined as mission planning progresses and the base camp development planning is completed. It answers the types of detailed who, what, where, and when questions shown in figure 2-1, page 2-5, and

describes in more detail how base camps support the commander's intent, the concept of operations, and other schemes of support. The detailed scheme of base camps states the following for each base camp:

- Size.
- Purpose (including any critical functional requirements such as an airfield).
- Level of capabilities (including scheduled changes).
- Location.
- Duration.
- Tenants (population).
- Priorities of effort and priorities of support.

APPROACH TO PLANNING

2-28. Effective base camps begin with the accurate identification of requirements for each aspect of the life cycle and the generation of supporting estimates and schedules for each phase of the operation. Estimates include the resources (people with the necessary skills, units or organizations with the necessary capabilities, materials, and money) that are needed to fulfill identified requirements. Commanders and staffs use the planning process described in ATTP 5-0.1 and MCWP 5-1 to determine their requirements for base camps and integrate base camps within the concept of operations, and the base camp development planning process described in EP 1105-3-1 for the actual development of base camps. The planning process provides the framework for integrating the actions of the commander, staff, subordinate commanders, and others. A key ingredient for all base camp planning and design activities is the incorporation of the base camp principles.

2-29. Predetermined staff members that have functional area responsibility for base camps, or the base camp working group, will meet at appropriate times throughout the planning process to synchronize efforts and consolidate base camp-related information being generated and gathered from each staff member's respective functional area. As base camp relevant information (RI) is identified, it is disseminated to the appropriate staff sections and any units and organizations supporting base camp development planning for further analysis. They then determine operational impacts from their perspective for inclusion in their running estimates/staff estimates to enable situational understanding (SU). Managing information, focusing on obtaining RI, and preventing information overload are fundamental to effective planning. If a base camp working group is established, the roles and responsibilities of its members should be described in the unit's planning SOP. The planning SOP should also describe who attends certain events during the planning process along with expected inputs and outputs.

2-30. Commanders and staffs incorporate collaborative planning to leverage the information resources and planning support capabilities of higher headquarters, subordinates, and supporting units. Collaborative planning is the real-time interaction among commanders and staffs at two or more echelons developing plans for a particular operation. An example of collaborative planning would be BCT/RCT planners working together with Air Force planners for the design of an airfield on a base camp. Another example might be BCT/RCT staff members planning a base camp with a forward engineer support team (FEST) or base development team before deployment.

2-31. As the operation progresses, base camp planning continues to address all aspects of the life cycle in support of future plans and operations. Base camp requirements and the tasks necessary to fulfill them are synchronized primarily through integrating processes and continuing activities (see ADRP 5-0 or MCWP 5-1). Commanders and staffs monitor the efficiency and effectiveness of base camps and continuously make adjustments to reduce the logistic footprint, conserve resources, and shape conditions for transitions. Adjustments include base camp realignments and closures, increasing or reducing levels of base camp capabilities, and improving efficiencies in base camp operations and management. At the base camp level this is master planning, which is one of the base camp commander's most important responsibilities.

BUILDING THE PLANNING TEAM

2-32. Base camp planning requires a combined arms approach to harness the necessary expertise in logistics, engineering, antiterrorism (AT), protection, civil affairs, environmental, PVNTMED, resource

management, safety, law, ranges and training areas, contracting, real estate, and other fields. It involves the unit staff of the primary organization that will be occupying the base camp, their higher headquarters, and representatives from supporting units and organizations. Working together, they accurately identify the base camp's purpose, its functional requirements, and the necessary supporting information early during the planning process. Based on those requirements, they work together in coordinating and integrating the necessary actions to fulfill those requirements. Instrumental to this effort is the management of data and information through common-access databases and shared networks.

2-33. The commander may designate a staff member as the primary staff integrator for base camps and/or organize a base camp working group to focus on base camp-related issues. Although primarily focused on base camps, base camp working group members participate in every aspect of the planning process to ensure that base camp requirements and the supporting tasks are coordinated and synchronized within the concept of operations as it develops.

2-34. Depending on the scope of base camp requirements, a unit may receive augmentation from a specialized engineer unit, such as a FEST or an engineer facilities detachment (EFD), to assist with base camp development planning. When augmented, the supported commander may pass the lead on base camp planning to the supporting organization while using the base camp staff integrator or base camp working group facilitator to integrate the results of base camp planning into mission planning and ensure the sharing of RI. When the supporting unit or organization such as a base development team is not collocated with the supported unit, collaboration must be achieved through shared networks, voice and video conferencing, liaison officers, and other means of reachback. Commanders of both organizations ensure that the base camp planning being performed by their respective units or organizations remains mutually supportive through continuous coordination and information sharing.

BASE CAMP CONSIDERATIONS WITHIN THE PLANNING PROCESS

2-35. During the MDMP/MCPP, the staff identifies base camp requirements and critical items and services needed to project and sustain combat power, and develops a scheme of base camps that is integrated within the concept of operations as it is being developed. Table 2-1, page 2-8, highlights some of the key base camp considerations in relation to the steps of the planning process.

Table 2-1. Base camp planning considerations during the planning process

Steps of the MDMP	Steps of the MCPP	Base Camp Planning Considerations
Receipt of the Mission	Problem Framing	<ul style="list-style-type: none"> • Identify potential sources of data and information to include existing assessment products such as environmental baseline surveys, occupational and environmental health site assessments, and infrastructure assessments. • Request geospatial information and terrain visualization products to help understand terrain effects. • Request intelligence products on potential threats to base camp. • Gather information on the local population to determine its effect on possible base camp locations. • Update running estimates/staff estimates. • Disseminate base camp relevant information as it is gathered to the appropriate staff sections for inclusion in their running estimates/staff estimates.
Mission Analysis	Problem Framing (continued)	<ul style="list-style-type: none"> • Understand the higher command's basing strategy or scheme of base camps. • Assess assets available to perform base camp life cycle activities (joint and multinational forces, host nation, and contractors); identify obvious shortfalls and prepare requests for augmentation for the commander's approval. • Determine constraints to include— <ul style="list-style-type: none"> ▪ Allowable design and construction standards in theater-specific guidelines. ▪ Higher headquarters policies, procedures, plans, orders, and directives. ▪ Joint and Army/Marine Corps directives and regulations. ▪ International and U.S. laws and regulations as applicable. ▪ Host nation laws, and local customs and practices. • As part of the initial intelligence preparation of the battlefield/battlespace— <ul style="list-style-type: none"> ▪ Evaluate terrain and weather effects on base camp activities. ▪ Evaluate the effects of adversaries and neutrals on base camp activities. ▪ Assess the availability of existing facilities and infrastructure within the operational area, and develop facts and assumptions to support assessments. ▪ Identify potential base camp locations based on threat patterns and terrain. • Identify specified and implied base camp tasks and recommended essential base camp tasks; determine any obvious shortfalls in assets available; and initiate requests for support or augmentation as early during planning as possible. • Integrate information requirements and engineer or other necessary specialized reconnaissance capabilities into the information collection plan. • Conduct a risk assessment as demonstrated in FM 5-19. • Begin generating options and coordinating possible solutions (tasks) for base camp requirements. • Develop preliminary estimates for material and construction requirements including land area, equipment hours, and man-hours. • Recommend priorities of effort and priorities of support for the commander's approval.

Table 2-1. Base camp planning considerations during the planning process (continued)

Steps of the MDMP	Steps of the MCPP	Base Camp Planning Considerations
COA Development	COA Development	<ul style="list-style-type: none"> • Integrate the base camp principles (see table 2-4, page 2-20). • Refine base camp requirements and possible solutions based on the array of forces for each COA. • Recommend base camp locations based on the— <ul style="list-style-type: none"> ▪ Availability of existing facilities and infrastructure. ▪ Terrain, environmental, and civil considerations. ▪ Threats to base camps. ▪ Ability to sustain and secure base camps in a specific area. • Allocate base camp capabilities based on identified requirements (troop-to-task analysis). • Identify nodes and linkages of base camps, including the formation of base clusters.
COA Analysis	COA Wargaming	<ul style="list-style-type: none"> • Identify advantages and disadvantages of each COA from a base camp perspective using evaluation criteria developed before wargaming, such as the— <ul style="list-style-type: none"> ▪ (Protect) Ability to employ reaction forces and first responders in response to attacks and emergencies. ▪ (Sustain) Ability to access base camps for services, resupply, and casualty evacuation; and the proximity to existing facilities and infrastructure. • Wargame (action/reaction) enemy attacks and emergencies on base camps and the employment of reaction forces and first responders.
COA Comparison	COA Comparison and Decision	<ul style="list-style-type: none"> • Analyze and evaluate advantages and disadvantages of each COA from a base camp perspective using the evaluation criteria developed before wargaming.
COA Approval		<ul style="list-style-type: none"> • Gain approval for any changes to the essential tasks for base camps. • Gain approval for recommended priorities of effort and support. • Gain approval for requests for base camp augmentation to be sent to higher headquarters. • Initiate real estate acquisition actions once base camp locations have been approved. • Provide commander updates on base camp issues or concerns within the COA decision brief as appropriate.
Orders Production, Dissemination, and Transition	Orders Development	<ul style="list-style-type: none"> • Integrate base camp tasks within the plan or order and produce the base camp appendix.
	Transition	<ul style="list-style-type: none"> • Ensure the quality and completeness of subordinate unit's instructions for performing base camp life cycle tasks.
<p>Note. The Army uses the MDMP and the Marine Corps uses the MCPP. The processes are similar, although the steps are different. The MDMP is described in Army Techniques, Tactics, and Procedures 5-0.1; the MCPP is described in Marine Corps Warfighting Publication 5-1.</p> <p>Legend:</p> <p>COA – course of action MDMP – military decisionmaking process FM – field manual U.S. – United States MCPP – Marine Corps planning process</p>		

RECEIPT OF MISSION/PROBLEM FRAMING

2-36. During receipt of mission/problem framing, the staff gathers existing information that will facilitate base camp planning. The information needed is obtained from multiple sources, to include: self-discovery

through the planning process, another unit or organization's assessments, studies, or reports of recent operations or activities in the area, higher headquarters basing strategy or scheme of base camps, a supporting unit such as FESTs and EFDs, and nondeployed supporting organizations such as USACE base camp development teams accessed through reachback. The staff focuses on gathering information such as—

- Command policies and directives on facility allowances and construction standards (base camp standards) that apply to the operational area or region.
- Existing geospatial information and terrain visualization products (see ATTP 3-34.80) that help indicate where it may be best to develop base camps based on—
 - **Accessibility**—by ground and air (proximity to established LOCs).
 - **Vulnerability and defensibility**—based on enemy and terrain considerations such as those expressed in the memory aid OAKOC/KOCOA.
 - **Constructability**—based on soil composition, surface and subsurface configuration, slope, access to construction materials and services, and availability of existing facilities and infrastructure.
 - **Suitability**—based on civil and environmental considerations such as proximity to cultural, religious, and historical sites; environmentally sensitive areas; and areas that impact the local population.
- Existing intelligence products on potential threats to base camps.
- Country studies and information on local populations and economies to include—
 - Existing facilities and infrastructure.
 - Local markets for potential sources of labor, services (such as waste disposal and recycling), and materials that could support base camps.
- Existing infrastructure assessment or reports, environmental baseline surveys (EBSs), or occupational and environmental health site assessments (OEHSAs).

MISSION ANALYSIS/PROBLEM FRAMING

2-37. Determining base camp requirements and developing preliminary estimates for material and construction requirements begins during mission analysis/problem framing. These requirements and preliminary estimates are further developed and refined as planning progresses and are updated and completed in more detail during design. TCMS is helpful in providing planners with rough estimates on resources and time needed to build standard facilities. As part of mission analysis, the staff analyzes the higher headquarters plan or order to understand the higher headquarters concept or strategy for base camps within the operational area and timelines. Most of the details pertaining to base camps are found within the protection, sustainment, and engineer annexes.

2-38. As part of IPB, which begins during mission analysis and continues throughout execution, the staff focuses on better understanding the effects of the terrain, adversaries, and environmental and civil considerations on specified base camp locations or for determining potential base camp locations. Coordination is made with the assistant chief of staff, intelligence/intelligence staff officer for geospatial engineering support in analyzing the terrain and generating geospatial information and the corresponding terrain-visualization products to facilitate SU. See ATTP 3-34.80 for information on geospatial engineering.

Determining Possible Base Camp Locations (Site Selection)

2-39. The goal of base camp site selection is finding the best possible location for a base camp that balances mission, sustainment/combat service support, protection/force protection, environmental, and engineering requirements. The staff determines possible locations for base camps based on an analysis of operational and mission variables, with added emphasis on terrain, civil, and environmental considerations. The operational commander may desire to locate a base camp to best support the projection of combat power; but cost, sustainability, real estate acquisition, or protection considerations may support different locations. Base camp site selection considerations in relation to the mission variables in table 2-2.

Table 2-2. Site selection considerations in relation to mission variables (METT-TC/METT-T)

Mission Variables	Site Selection Considerations
Mission	<ul style="list-style-type: none"> • Analyze the unit's mission to determine the purpose of base camps and the major functions they must perform based on tenant and transient unit operational requirements, to include— <ul style="list-style-type: none"> ▪ Requirements for specific types of facilities such as airfields, landing zones, ammunition supply points, and firing ranges. ▪ Types and sizes of tenant units (land area requirements). ▪ Future requirements (sufficient land area for expansion; accessibility; and access to sources of water, power, and energy).
Enemy	<ul style="list-style-type: none"> • Analyze threats to the base camp and the associated protection considerations such as proximity to populations, standoff, and perimeter requirements.
Terrain and Weather (OAKOC/KOCSA)	<ul style="list-style-type: none"> • Vegetation—effects on movement, landing zones, observation, and cover and concealment. • Hydrology—access to water and avoidance of surface drainage. • Soil composition—suitable for construction, trafficability, and waste management options. • Surface and subsurface configuration—trafficability; cut, fill, and clearing requirements; natural slope for drainage; seismic conditions; and clear line-of-sight for communication and collection systems. • Obstacles—natural and manmade impediments (including the presence of people) to base camp construction, operations, and sustainment. • Manmade features—existing structures, and local facilities and infrastructure that affect base camps.
Troops and Support Available	<ul style="list-style-type: none"> • Availability of local workers, equipment, and services to perform base camp construction and operations tasks.
Time Available	<ul style="list-style-type: none"> • Time available for construction (based on when the constructing unit can occupy the site and the delivery of construction materials and equipment).
Civil Considerations (ASCOPE)	<ul style="list-style-type: none"> • Relationship with the local population (acceptance and tolerance). • Local political climate and perceptions and the effects on location, design, and land use decisions (politically unpopular decisions may attract acts of aggression). • Impacts on adjacent landowners including traffic, explosive safety, and inconveniences. • Proximity to historical, cultural, religious, and environmentally sensitive areas. • Areas to include— <ul style="list-style-type: none"> ▪ Sources of natural construction resources (water, gravel, and fill materials). ▪ Political, ethnic, or tribal boundaries and locations of government centers. • Structures—availability of existing structures and local facilities and infrastructure that can help sustain base camps. • Capabilities—ability of local economies and local businesses and laborers to support base camps. • Organizations—within and outside of the AO that can support or affect base camps, including— <ul style="list-style-type: none"> ▪ Local labor unions. ▪ Criminal organizations. ▪ Community watch groups. ▪ Governmental and nongovernmental agencies and organizations. • People—affects of indigenous and transient civilians on base camps (dislocated civilians). • Events—routine, cyclical, planned, or spontaneous activities that can affect base camps (holidays, elections, celebrations, demonstrations).

Table 2-2. Site selection considerations in relation to mission variables (METT-TC/METT-T) (continued)

Legend:

AO – area of operations

ASCOPE – area, structures, capabilities, organizations, people, and events

KOCCOA – key terrain, observation and fields of fire, cover and concealment, obstacles, and avenues of approach

OAKOC – observation and fields of fire, avenues of approach, key terrain, obstacles, and cover and concealment

2-40. Site selection begins during mission analysis/problem framing with the identification of suitable and unsuitable areas that aims to narrow down options and facilitate timely COA development. These areas are primarily determined based on analysis of terrain and civil considerations. An example of a suitable area is an area with adequate existing facilities and infrastructure or readily accessible construction resources such as materials and labor pools. Unsuitable areas, that should generally be avoided, include areas such as those that are prone to flooding, have severe slopes or dense vegetation, or are inaccessible to heavy construction equipment; and areas that are environmentally sensitive or that have historical, cultural, and religious significance. Tailored geospatial products can be developed to show both suitable and unsuitable areas to help visualize the terrain. Site selection refinement continues throughout the planning and preparation phases based on the results of information collection efforts.

2-41. Real estate acquisition is a key task in support of site selection. Right of ways or easements may be required also for transportation and utility distribution lines. CCDRs are responsible for the coordination of real estate requirements within their AORs. USACE contingency real estate support teams (CRESTs), NAVFAC, and Air Force Real Property Agency have experts who can deploy or provide reachback in support of these requirements. The CREST is a deployable team which can support any echelon, but it will typically be tailored to support an Army component headquarters configuration with support missions requiring real estate management. This team operates as augmentation to the supported force engineer staff or supporting engineer headquarters. See EP 500-1-2 for more information.

Terrain Considerations

2-42. Base camps are ideally located in terrain that is defensible, suitable, and sustainable. Terrain considerations are further described as follows:

- **Defensible**—based on terrain effects on specific equipment and weapons and employment methods, and the vulnerability of base camp occupants and critical infrastructure based on enemy observation and fields of fire. In general, planners avoid locations that are adjacent to higher surrounding terrain or buildings that provide easy observation (vantage points) onto the base camp. Base camps are best situated in areas where a 360-degree unobstructed view around the camp exists or can be established by clearing.
- **Suitable**—based on construction considerations pertaining to soil composition, hydrology, and surface/subsurface configuration; elevation analysis for positioning line of sight-based communication and collection systems, environmental considerations; and the religious, cultural, and historical significance of an area.
- **Sustainable**—based on accessibility by air and/or ground LOCs, and proximity and access to existing sources of water, power, energy, and construction sources and materials.

2-43. In situations where existing facilities are used or base camp locations have been specified, planners must still analyze the effects of terrain. They can then determine ways to mitigate any aspects of the terrain that are unfavorable for base camps.

2-44. Planners analyze the natural and manmade features in an area and evaluate their effect on base camps as part of IPB. They address the six characteristics of terrain using the five military aspects of terrain expressed in the memory aid OAKOC/KOCCOA. Terrain considerations in relation to OAKOC/KOCCOA are shown in table 2-3, page 2-14. The six terrain characteristics are further explained as follows:

- **Vegetation.** Vegetation includes trees, scrubs and shrubs, grasses, and crops (cultivated areas). Base camp planners, aided by geospatial engineers/geographic intelligence specialists, analyze

the effects of vegetation on vehicular and foot movements, landing zones, drop zones, observation, and cover and concealment.

- **Hydrology.** Water is an essential commodity and is always an important factor in planning base camps. It is necessary for drinking, sanitation, food preparation, and construction. Certain support activities such as helicopter maintenance and the operation of medical treatment facilities consume large volumes of water. Because of water's importance, planners identify alternate sources of water and backup means for producing, treating, and distributing it. Planners should always consider the impact of base camp water usage on the local population, economy, and agriculture. When untreated or stagnant, water can present health hazards. Through terrain analysis, geospatial engineers/geographic intelligence specialists can help planners determine probable sources of water that may exist on and below the surface. Surface drainage, such as streams, rivers, wet or dry watercourses, and areas prone to flooding or flash flooding, can affect accessibility to base camps and render low-lying land areas unusable. Base camp planners must consider the flow and channeling characteristics of surface water that varies based on geographic location and seasonal weather patterns. Planners must also consider proximity to dams, levees, and other drainage features which could result in catastrophic effects if they fail.
- **Soil composition.** Soil composition includes soil type, drainage characteristics, and moisture content. Soil composition can affect trafficability, road and airfield construction, waste management options, and the ease of digging fighting positions in a specific area. Precipitation is an important factor to consider, since it can change the characteristics of soil. Generating soil data normally requires extensive field sampling and the expertise of soil analysts. Once the data is acquired, geospatial engineers/geographic intelligence specialists use it in combination with standard geospatial products and imagery to create tailored geospatial products that enable further staff analysis. See TM 3-34.64 and ATTP 3-34.80 for more information.
- **Surface and subsurface configuration.** Surface and subsurface configuration is the physical shape of the terrain and includes elevation, slope, surface roughness, and seismic conditions. Slope and the local relief, which is the difference in elevation between points in a given area, affect trafficability, construction requirements (cut and fill requirements), and structural designs such as gravity-fed water utilities. Surface roughness can include uneven surfaces, jagged rocks, and debris which can affect such things as aircraft landings, vehicle movements, and the positioning of prefabricated structures and buildings. Seismic hazards within an area, based on seismic zone, soil conditions, and structure use, may affect base camp locations and the seismic design of structures.
- **Obstacles.** Obstacles (natural or manmade) are any impediments that affect the construction, functioning, or sustainment of base camps. Examples of natural obstacles include rivers, forests, mountains, and steep slopes. Examples of manmade obstacles include buildings, structures, IEDs, remnants of past conflicts such as abandoned minefields and unexploded explosive ordnance (UXO), and the presence of civilians. Some terrain or specific areas may present an obstacle based on religious, political, historical, or environmental significance (see cultural obstacles described in ATTP 3-90.4/MCWP 3-17.8).
- **Manmade features.** These include existing structures, facilities, and infrastructure that can either positively or negatively impact base camp development. Existing structures, facilities, and infrastructure—to include underground utilities—may reduce requirements for new construction, if they do not impose any health or environmental hazards that cannot be mitigated.

Table 2-3. Base camp terrain considerations in relation to OAKOC/KOCSA

<i>Military Aspects of Terrain</i>	<i>Terrain Considerations for Base Camps</i>
Observation and Fields of Fire	<ul style="list-style-type: none"> • Effects of natural and manmade features (such as trees, fences, and buildings) on electronic and line-of-sight surveillance systems, and unaided visual observation. • Defensibility of the area based on terrain effects on the trajectory of munitions (direct and indirect fire) and tube elevation. • Vulnerability of the base camp based on enemy observation and fields of fire (vantage points for direct line-of-sight weapons).
Avenue of Approach	<ul style="list-style-type: none"> • Base camp accessibility based on air and ground avenues of approach. • Avoidance of sites that are close to main thoroughfares with uncontrollable or straight-line vehicular access.
Key Terrain	<ul style="list-style-type: none"> • Nominations for key terrain are based on the mission, concept of operations, threat, environment, and civil considerations. • Examples of key terrain considerations based on the environment include— <ul style="list-style-type: none"> ▪ Urban environment: tall structures, choke points, intersections, bridges, and industrial complexes. ▪ Open environment: terrain features that dominate an area with good observations and fields of fire, choke points, and bridges.
Obstacles	<ul style="list-style-type: none"> • Effects of natural and manmade obstacles (see framework of obstacles in ATTP 3-90.4/MCWP 3-17.8) on construction, sustainment, protection, communications, and other base camp tasks. • Impediments to ground movements include— <ul style="list-style-type: none"> ▪ Slope. ▪ Vegetation. ▪ Road characteristics (curves, slope, width, clearance, and load bearing [bridge classification]). • Impediments to air movements include— <ul style="list-style-type: none"> ▪ Elevations that exceed aircraft service ceilings. ▪ Vertical obstructions such as buildings, power lines, and communication towers. ▪ Bird habitats or attractions (such as waste sites, marshes, and wetlands) that can increase the risk of bird strikes. • Other obstacles to consider include— <ul style="list-style-type: none"> ▪ Structures (such as dams, industrial chemical plants, and other hazardous sites) potentially hazardous if damaged or destroyed by a force of nature or act of man. ▪ Cultural obstacles such as religious tracts of land, historical sites, and environmentally sensitive areas. ▪ Human obstacles such as crowds and vehicle traffic.
Cover and Concealment	<ul style="list-style-type: none"> • Aspects of the terrain that offer protection from bullets, exploding rounds, and explosive hazards (cover). • Aspects of the terrain that offer protection from observation (from aerial and ground detection), such as vegetation and surface configuration (concealment).
<p>Legend: ATTP - Army tactics, techniques, and procedures MCWP - Marine Corps warfighting publication</p>	

Weather Considerations

2-45. Planners consider the effects of weather on the design and performance of base camp facilities and infrastructure. Weather information is normally prepared by staff weather officers and distributed through intelligence channels. The primary weather conditions that planners should consider in respect to base camps are—

- **Temperature and humidity.** Extreme temperatures can affect construction efforts and the efficiency and effectiveness of base camp facilities and infrastructure. Extreme cold can impede digging and freeze water which affects the flow of water and wastewater through piping systems.
- **Precipitation.** Rain and snow can affect road trafficability and impact the ability to transport materials and supplies. Heavy rainfall and snowmelt can render low-lying areas unusable or cause mudslides, and storm water runoff can cause containment systems to overflow and contaminate surrounding areas.
- **Wind.** Knowledge of the prevailing wind direction is important for positioning base camps upwind from local agricultural, industrial, and waste areas and for positioning base camp waste management systems downwind from troop billeting, work areas, and airfields to reduce the effects of odors and toxic smoke and fumes. Wind speed is also an important consideration in determining the feasibility of wind as a source of energy. Wind and its behavior in low-lying areas should also be considered in vulnerability assessments regarding hostile airborne contaminant attacks.

Civil Considerations

2-46. Civil considerations (see table 2-2, page 2-11) help commanders understand the social, political, and cultural variables within the AO and their effect on base camps. The staff analyzes civil considerations in terms of the categories expressed in the following memory aid: **A**reas, **S**tructures, **C**apabilities, **O**rganizations, **P**eople, and **E**vents (ASCOPE). See ADRP 6-0 for more information.

Environmental Considerations

2-47. The operation of base camps and other installations, such as airfields, ports, internment and resettlement facilities, and enemy prisoner of war camps, requires the integration of environmental considerations. The integration of environmental considerations begins early in the planning phase (with special emphasis during site selection) and continues throughout the base camp life cycle. See FM 3-34.5/MCRP 4-11B for more information.

2-48. The existing infrastructure and the surrounding area are surveyed to help planners determine the best location for a base camp from an environmental and health perspective. This survey requires personnel with the necessary expertise to identify potential hazards and may require samplings of the air, soil, and water. Gaining insight on previous site use on and around the area is helpful in determining potential hazards. Factors such as evidence of environmental contamination, landfills or trash burial sites, and surrounding land uses are considered.

2-49. The EBS and the OEHSA are an important part of base camp development and must be conducted for every site that is occupied by U.S. forces. An EBS and OEHSA should be conducted as early as possible in the planning and design phase to allow for any mitigation or adjustments and ensure there is no wasted construction effort. The EBS and the OEHSA are assessment tools to identify potential health hazards and environmental contamination. EBS and OEHSA automated systems should be linked to a common database that archives results and populates reports. See the United States Army Engineer School Environmental Baseline Survey and Occupational and Environmental Health Site Assessment Handbook for more information.

2-50. An OEHSA is conducted to determine whether environmental contaminants from current or prior land use, disease vectors, or other environmental health conditions that could pose health risks to deployed personnel exist at the deployment sites. Additionally, it also identifies industrial facility operations and commodities near the site that could, if damaged or destroyed, release contaminants harmful to personnel. An OEHSA is generally conducted in conjunction with an EBS, since the two documents support each other. While the EBS is generally more visual and engineer-related, the OEHSA is more analytical (including a greater variety and detail of sampling), with a greater focus on health hazards.

2-51. Environmental, safety, and occupational health (ESOH) guidance and standards for the operational area are articulated in the CCDR's plans and orders. The CCDR may develop a theater policy for environmental protection and enhancement similar to Army Regulation (AR) 200-1. Base camp planners

are responsible for ensuring that these standards are appropriately integrated within mission planning and the base camp development planning process. Initial site selection must include ESOH factors. These include items such as electrical systems; water systems; ventilation; air quality; slip, trip, and fall hazards; structural integrity; and the use of existing industrial infrastructure, such as overhead lifts, chain hoists, and cable systems.

2-52. Certain areas of base camp operation require particular attention to avoid environmental impacts and to protect residents' health and QOL. Environmental considerations in the development and operation of these sites include the following:

- Field sanitation.
- HAZMAT storage, transportation, treatment, redistribution or reuse, and safeguarding.
- Spill response and reporting.
- Base camp expansion or contraction potential.
- Petroleum, oils, and lubricants (POL) storage, distribution, and safeguarding.
- Integrated waste management to include the collection, transportation, storage, segregation, recycling, treatment and disposal of solid waste, black water (sewage), gray water, hazardous waste (HW), special waste, medical waste, and explosive waste.
- Maintenance and management of waste management areas and equipment.
- Water conservation, distribution, and reuse.
- Dust abatement.
- Latrine and shower facility locations.
- DFAC locations.
- Establishment of guidance and policy on ESOH standards.
- Integrated pest management for protection against disease vectors including pesticide use, storage, and disposal.
- Motor pool and maintenance locations.
- Washrack locations and operation.
- Drainage and storm water management.

Analyze the Threat to Base Camps

2-53. The staff determines threats to base camps by analyzing threat organizations (manpower, equipment, and available resources), threat patterns, TTP, and support mechanisms. During mission analysis and the initial IPB, the staff attempts to—

- Identify emerging threats and TTP.
- Predict threat capabilities and intentions to attack base camps or impact base camp operations, such as disruption of local contracted support.
- Determine enemy indirect fire capabilities that can range base camps.
- Determine threat abilities to penetrate base camps from underground through tunneling or existing manmade features.
- Determine threat abilities to acquire and use weapons of mass destruction, IEDs, and other weapons that could result in significant casualties or damage on base camps.
- Determine and prioritize information requirements (IRs) that are fulfilled through information collection activities, requests for information (RFIs), and reachback.
- Identify high-value targets associated with threats and recommend high-payoff targets for targeting.
- Assess base camp vulnerabilities that can be exploited by adversaries.

2-54. Any uncertainties associated with base camps become IRs that are fulfilled through information collection efforts, RFIs, and reachback. Those IRs that are of such importance to the commander are nominated as commander's critical information requirements (CCIRs) (see ADRP 5-0 and MCWP 5-1).

Determine Specified, Implied, and Essential Tasks

2-55. The staff analyzes the higher headquarters order and the higher commander's guidance to determine specified and implied base camp tasks. The base camp functional areas are useful in visualizing and organizing the broad range of tasks associated with base camps. From these tasks, combined with the commander's guidance, the staff collectively develops recommended essential tasks for base camps. The results of task analysis lead to the identification of the base camp's functional requirements, and ultimately its purpose, and are dependent on analysis and input from each staff section or functional area within the command post (CP). These functional requirements and base camp purpose drive base design.

2-56. Essential tasks are those tasks that the unit must conduct to meet the commander's intent and accomplish the mission. The staff recommends essential base camp tasks during the mission analysis brief. At the conclusion of the mission analysis brief, the commander approves those essential tasks considered relevant. A fully developed essential base camp task has a task and purpose.

Determine Available Assets and Shortfalls

2-57. The staff determines the availability of forces and specialized equipment within the task organization that can be used to perform base camp tasks. They also assess the amount of construction materials on hand or readily available through the supply system and the ability to perform troop and/or contractor construction based on the availability of manpower, funding, and contracted support. Planners also consider other available support within the operational area or through reachback to include—

- Joint and multinational engineering, logistics, and transportation units.
- Units well suited for operating and managing base camps, such as RSGs that are augmented with the necessary facility engineering skills and other capabilities.
- Contractors, based on their suitability to work in certain areas given the impacts of ethnic, religious, or political boundaries.
- Commercially-available equipment and construction materials that can be acquired through local purchase or contracting.
- USACE, NAVFAC, IMCOM, and the United States Army Public Health Command (USAPHC) support and assistance teams.
- Governmental and nongovernmental organizations.

2-58. Based on the specified and implied base camp tasks identified during mission analysis, planners perform a troop-to-task analysis to determine any obvious shortfalls (based on the current task organization) and initiate requests for augmentation through the proper channels. The staff makes assumptions on expected augmentation to facilitate the continuation of planning. It is important to identify any shortfalls or special equipment requirements as early in the planning phase as possible. Long lead times will often be required in coordinating for specialized engineer teams, USACE and USAPHC support, and assistance teams since they will likely be in high demand especially during the initial onset of operations. When considering the use of contractors, the availability of funds is also a factor. Funding shortfalls must also be identified and submitted through appropriate channels as early in the planning phase as possible. When additional support is not available, base camp planners must be prepared to rely on technical expertise available through reachback.

2-59. The availability and accessibility of resources depends on threat conditions, cooperation of the HN and local government, and support of local populations to include their ability to provide skilled labor that is suitable for established standards. Access to resources, whether the ability to move them into the theater or the availability within theater, impacts the planning and design of base camps. In countries or regions with a well-developed infrastructure, materials and skilled labor may be readily available, either by the relatively easy means of transporting them into the area or through using local resources. If the infrastructure is poor or if the tactical and political situations are unfavorable (as in unassisted and forced-entry situations), resources will be harder to obtain.

2-60. The relative abundance of certain types of construction materials and the local labor market will drive base camp planning and design decisions. The ability to obtain certain construction materials, such as concrete rather than wood products, and the ability of the local labor force to work with those materials,

may dictate how camps are constructed. Other civilian trades, such as the availability of skilled electricians and plumbers, will also impact designs and construction management decisions.

Determine Constraints

- 2-61. The staff determines any constraints on base camps. Constraints for base camps may include—
- Allowable design and construction standards in theater-specific guidelines such as Central Command Regulation 415-1, “*The Sand Book*.”
 - Higher headquarters policies, procedures, OPLANs/OPORDs, and directives.
 - Joint and Service directives and regulations.
 - International and U.S. laws and regulations as applicable.
 - Construction funding limitations.
 - HN laws and local customs and practices.
 - Tactical or operational considerations.

Determine Time Available

2-62. The staff determines the time available for planning and ensures that subordinate units are provided approximately two-thirds of the total time available for planning. As planners begin developing possible solutions, they consider the estimated times of arrival for organic and augmenting troops, equipment, and materials that are needed for performing base camp tasks. They also consider the time required for acquiring the necessary funding and approval for local purchases and for contracting services and support.

Determine Information Requirements

2-63. Base camp IRs are identified collectively, and then selected staff members gather the necessary information within their area of expertise through their respective staff section or through reachback. For example, the engineer staff officer may pursue construction-related information through reachback to USACE support centers, while PVNTMED personnel might coordinate through USAPHC channels. Information is also gathered through information collection to include infrastructure reconnaissance and assessments, and through the submission of RFIs to lower, adjacent, and higher units. See FM 3-34.170/MCWP 3-17.4 for more information. Some examples of base camp-related IRs include—

- The anticipated life span of a base camp.
- The expected base camp population and events that could cause major fluctuations (surges or reductions) such as transfers of authority and right-seat rides.
- Facility allowances and construction standards.
- The availability of contracted support, funding, materials, and so forth.
- Local government and population attitudes on base camps and/or willingness to cooperate and provide assistance.
- Potential constraints, problems, or hazards identified from initial health site assessments and environmental or engineering surveys.

2-64. As with any construction effort, base camp planning is significantly enhanced with on-the-ground reconnaissance and assessments. Whenever possible, predeployment site surveys or on-site reconnaissance is conducted to verify actual conditions and the availability and status of existing facilities. Commanders consider requesting assistance from sources beyond their control, including infrastructure reconnaissance and assessment teams; safety, environmental, and PVNTMED personnel; base camp development teams; and specialized engineer units that are skilled in gathering the information needed for developing base camps.

2-65. Information management is critical to this task. Planners must work together to determine how base camp-related information will be generated, gathered, stored, and disseminated to ensure that the right information is provided to the right people at the right time to facilitate decisionmaking. It is particularly important to avoid sending redundant or irrelevant RFIs to higher headquarters, or through reachback, and

to ensure that RFIs from subordinate units are responded to in a timely manner. See Army and Marine Corps doctrine for more information on information management.

Begin Risk Management

2-66. Risk management (RM) is the primary process for identifying hazards and controlling risks during operations. RM is the process of identifying, assessing, and controlling risks arising from operational factors and making decisions that balance risk costs with mission benefits. For base camps, the staff focuses on health and environmental hazards associated with each aspect of the life cycle. Of particular importance are the hazards associated with occupying existing facilities (or areas) that may have residual contamination or be structurally unsound, and the hazards inherent in waste generation and disposal. Other important planning considerations include explosive safety requirements. See FM 5-19 for a detailed discussion on RM.

COURSE OF ACTION DEVELOPMENT

2-67. After essential tasks for base camps are approved, the staff integrates them into COA development (and refines them as necessary) while considering the base camp principles as shown in table 2-4, page 2-20. The staff develops associated methods to complete the essential tasks by allocating resources and recommending priorities based on commander's guidance. The methods are then synchronized to produce the desired effects.

2-68. As described in ADRP 3-0 and ADRP 5-0, lines of operations and lines of effort bridge the broad concept of operations across to discreet tactical tasks. Planners may use both lines of operations and lines of effort to build their broad concept. If used, planners should consider including base camps within them since base camps are a fundamental tactic for projecting and sustaining combat power.

2-69. As part of COA development, planners develop a scheme of base camps for each COA that is linked to the higher headquarters basing strategy or scheme of base camps. Planners ensure that the necessary assets required for executing essential tasks for base camps are included in the groupings of forces being arrayed including the requirements for base camp management and operations such as base camp management centers, BCOs, and BOCs. This allows the COAs to be feasible, from a base camp perspective, while they are being developed.

2-70. As planners array forces based on mission requirements (force ratios and troop-to-task analysis) and commander's intent, they also consider where best to base forces (personnel and equipment) based on the results of the analysis of terrain, civil, and environmental considerations conducted during mission analysis/problem framing. Planners must understand the unit's capabilities for establishing base camps based on preliminary construction estimates (labor, materials, and time) to ensure that the number of base camps being integrated within the COA is feasible. This ensures that COAs remain feasible, from a base camp perspective, as they are developed. TCMS is helpful in providing planners with rough estimates on resources and time needed to build standard types of base camps based on purpose and size.

2-71. As COA development progresses, planners make note of any additional base camp requirements and other information that may affect base camp development planning and make the necessary adjustments. For example, the positioning of a base camp close to a populated area may require a bypass road to be constructed to avoid interference with local traffic, or potentially require T-walls rather than simply a wire perimeter due to a lack of depth in the outer security area.

Table 2-4. Consideration of the base camp principles during COA development

Base Camp Principles	Planning Considerations
Scalability	<ul style="list-style-type: none"> • Anticipate base camp expansions and reductions (fluctuations in base camp populations and level of capability) based on the array of forces for each phase of the operation. • Analyze potential sites and staffing plans based on fluctuations in population and changes in levels of capability.
Sustainability	<ul style="list-style-type: none"> • Ensure that base camps are accessible based on planned ground and air routes. • Ensure that base camps are positioned where they can be sustained based on the scheme of sustainment/concept of support being developed. • Maximize the use of existing facilities and infrastructure. • Reduce water and energy demands. • Implement integrated waste management. • Ensure that the array of forces includes the necessary base camp capabilities (personnel and equipment) needed for securing; defending; operating, maintaining, and repairing; and managing base camps. • Conduct initial economic analysis of various basing strategies/schemes life cycle costs to optimize efficiency.
Standardization	<ul style="list-style-type: none"> • Ensure that the proposed levels of capabilities for base camps are suitable based on expected duration and viable based on the allocation of base camp resources based on priorities of effort and priorities of support that are articulated in the higher headquarters basing strategy or scheme of base camps. • Review Service standards, standard designs, survivability standards, environmental standards. • Maximize use of standard designs. • Review existing command design guides.
Survivability	<ul style="list-style-type: none"> • Position base camps where the natural terrain is favorable for base camp security and defense (apply mitigation techniques to address shortfalls and achieve acceptable risk). • Ensure that the array of forces addresses base camp security and defense requirements including reaction forces. • Identify requirements for area security tasks that will mitigate threat levels that exceed base camps defense capabilities (based on threats and available combat power). • Review principles of protection in Army Doctrine Reference Publication 3-37.

COURSE OF ACTION ANALYSIS/WARGAMING

2-72. The staff uses wargaming to test, refine, and adapt the scheme of base camps for each COA. This includes—

- Validating the composition of units (personnel and equipment) performing base camp construction; operations, maintenance, and repair; and base camp management tasks.
- Refining base camp-related tasks that will be executed by subordinate units.
- Identifying decision points and triggers for critical base camp-related tasks such as employing a quick response force (QRF) and increasing levels of capabilities.
- Refining CCIRs and IRs and incorporating them into the information collection plan.
- Refining maneuver and fire support plans in support of base camp security and defense missions.
- Refining command and support relationships for base camps.
- Refining the sustainment/logistic plan including water and energy production and distribution, and waste management based on the basing strategy or scheme of base camps.

2-73. The staff should wargame critical base camp-related tasks or events at a minimum, when time for more extensive wargaming is limited. Some examples of critical actions associated with base camps include—

- Timing and sequencing for employing a tactical combat force (TCF) or another available response force to defeat Level III threats.
- Employing first responders in response to a base camp emergency such as—
 - A major fire.
 - An environmental emergency
 - A mass casualty event
 - An emergency in a neighboring town or city.
- Conducting a full or partial base camp evacuation.
- Responding to local demonstrations or riots that threaten base camps or impact accessibility.
- Losing a critical ground or air LOC for a base camp.
- Committing traffic control elements to divert and relocate dislocated civilians that are blocking base camp access.

2-74. Once wargaming and COA refinement are completed and a final task organization has been determined, a communications plan can be developed to support each base camp. Establishing an effective communications plan for base camps ensures that they remain responsive to the commander's needs.

ORDERS PRODUCTION, DISSEMINATION, AND TRANSITION/ORDERS DEVELOPMENT

2-75. The staff prepares the order or plan by turning the selected COA into a clear, concise concept of operations and providing the necessary detailed information required by subordinate units for execution. The detailed information that subordinate units will need that is not within the base order is placed in an attachment (annex, appendix, tabs, and exhibits). Attachments are prepared in a form that best portrays the information, such as text, a matrix, a trace, an overlay, an overprinted map, or a table. See appendix A for guidelines for creating a base camp appendix to an order or plan. See ATTP 5-0.1 and MCWP 5-1 for more information on orders and attachments to orders.

2-76. Certain base camp-related outputs are generated as a result of mission planning. They include—

- A basing strategy or scheme of base camps.
- Planned base camp locations, the supporting real estate acquisition actions, and the necessary inputs into the information collection plan to drive engineer, infrastructure, and environmental reconnaissance and assessments.
- Tenant and transient unit/organization personnel and equipment lists for each base camp.
- The designated purpose, levels of capabilities, and functional requirements for each base camp to drive facility and infrastructure design and land use planning (site design)—and linkages to other base camps as appropriate.
- Base camp standards that are within theater-established guidelines.
- Designated levels of capabilities that are linked to the basing strategy or scheme of base camps.
- Construction means available (labor, equipment, material, and funding) to facilitate design.
- Base camp construction plans or construction directives.
- Initial life cycle cost estimates and economic analysis.
- Initial IRs and collection plan.
- Initial waste management projections.

PREPARATION, EXECUTION, AND ASSESSMENT

2-77. Base camp planning is continuously refined during preparation and execution as SU improves. Much of the detailed on-site information needed to finalize base camp design and start construction may not become available until subordinate units have occupied a certain area and/or on-site reconnaissance has occurred. If the situation deviates from the order (for example, a proposed base camp site is unfeasible

based on current site conditions), commanders direct adjustments based on staff recommendations and coordinate modifications with their higher headquarters. In some situations, commanders may determine that the current order, to include associated branches and sequels, is no longer relevant to the situation. In these instances, commanders reframe the problem and initiate planning activities to develop a new plan. The planning and design of base camps as well as the preparation, execution, and assessment is often a collaborative effort between higher headquarters, constructing units, base camp commanders, and tenants.

2-78. Throughout the operations process, base camp planners begin planning and coordinating for modifications and improvements to base camps that are needed to mitigate predicted changes in the situation, improve efficiencies, and/or increase the desired level of capabilities. Initiating construction projects will often require long lead times to acquire the necessary funds, construction materials, project approvals, and contracted support. Base camp planners must often look further in advance than the typical tactical planning windows that are observed.

Preparation

2-79. After the order is issued, units perform preparation activities to improve their ability to conduct operations. During preparation, base camp planners collectively monitor ongoing preparatory actions within their respective functional areas, continue gathering and generating base camp-related information, and conduct planning refinement as necessary. Key preparation activities for base camps include—

- Gaining project approval and programming (funding) construction.
- Ordering supplies and materials, with a focus on those with long delivery dates.
- Developing and obtaining requirements packet approval.
- Conducting preconstruction meetings with construction units or contractors.
- Identifying and nominating contracting officer's representatives (CORs).
- Refining facility and infrastructure designs based on new requirements or new information resulting from answered IRs.
- Coordinating the linkup of augmenting units/organizations, such as FESTs and EFDs, with the supported unit.
- Planning refinement based upon situation changes and new information. Changes in the situation that could impact base camps include—
 - Revised unit arrival dates, based on deployment and movement timelines, which could affect the availability of base camp capabilities such as specialized engineer teams or assistance teams.
 - Increases in protection measures based on threats, which could impede movements or restrict contractor access to base camps.
 - Changes to the task organization that could increase or reduce base camp populations and affect current design capacities.
 - Changes in the availability or status of base camp resources such as existing facilities, contracted support, and shipments of materials.
 - Changes in the concept of operations and the basing of forces into areas not previously considered.
- Supporting subordinate unit base camp planning through collaboration and/or coordination for reachback, and responding to RFIs.
- Standing up base camp management centers, BCOCs, and BOCs as prescribed in the OPLAN or OPORD.

Execution

2-80. As base camps are constructed and become operational, commanders and staffs monitor the situation, assess progress, and make adjustments as needed. Commanders continuously assess the progress of base camps based on new information, running estimates/staff estimates, and assessments from subordinate commanders. When the situation deviates from the order, commanders direct adjustments to exploit opportunities and mitigate challenges. Commanders and staffs use the rapid decisionmaking and

synchronization process and the rapid response planning process to make those adjustments and rapidly resynchronize forces and warfighting functions. At any time during the operations process, commanders may choose to reframe the problem and develop a completely new plan when changes in the operational environment render the operational design concept, and associated understanding and logic behind it, no longer applicable. See ADRP 5-0 and MCWP 5-1 for more information. During execution, operational commanders and base camp commanders and their supporting staffs monitor such things as—

- Changes in mission duration that affect anticipated base camp life spans and the designated levels of capabilities.
- Changes in task organizations and the repositioning of forces that affect base camp populations.
- Situations that may prompt base camp realignments, transfers, and closures which can affect the populations of other base camps.
- Changes in threat conditions that will impact use of contractors and their access to base camps, access to local resources, and the overall sustainment and functioning of base camps.
- The status of funding, project approvals, and contracting actions that affect the construction of base camps and impact operational timelines.
- The status of critical facilities and infrastructure on the base camp.

Assessment

2-81. Operational and base camp commanders and their supporting staffs monitor the current situation for unexpected success, failure, or adversary actions that can prevent base camps from progressing toward the desired end state. A large number of base camp life cycle activity management tasks must be performed by the base camp commander and staff that require significant monitoring, data collection, and assessment. Staffs continuously assess the impact of new information on base camp operations. They update their running estimates/staff estimates and determine if adjustments are required. See ADRP 5-0 and MCWP 5-1 for more information on running estimates and staff estimates respectively. The focus of assessing base camp activities varies during the operations process as follows:

- During planning, assessment centers on developing SU, establishing measures of effectiveness and performance, and evaluating COAs for the commander’s decision.
- During preparation, assessment is focused on determining the friendly unit readiness to execute base camp activities, and implementing any refinements to orders based on changes in the threat situation or civil considerations.
- During execution, assessment is aimed at identifying any variances between the current situation and forecasted outcomes. The lessons that units learn while conducting base camp activities are conveyed in TTP.

2-82. The BOC, the base camp working group, master planning working group meetings, and project approval and acquisition review boards play an important role in assessing the overall efficiency and effectiveness of base camps. At the lowest level, self-assessment checklists can be created and distributed to units or individuals, such as facility managers, that are assigned specific base camp responsibilities to help assess effectiveness.

BASE CAMP DEVELOPMENT PLANNING PROCESS

2-83. The base camp development planning process is specifically focused on the detailed planning needed for integrating the base camp principles and developing a base camp. It is primarily used by general and specialized engineer units that are tasked to develop a base camp in support of an operation. It is applicable to all base camps, although the degree of required effort may be less for smaller base camps depending on scope, duration, and the overall situation. The base camp development planning process is detailed in EP 1105-3-1.

2-84. The base camp development planning process is applied once a decision is made to establish a base camp and can occur before, in parallel with, or after the MDMP/MCPP. When the base camp development planning process is conducted during the MDMP/MCPP, it is conducted in parallel since base camp planners must often work ahead in developing and coordinating their recommended solutions to ensure that

they are feasible before they are integrated into each maneuver COA being developed. The steps of the base camp development planning process are—

- Initiate preliminary planning.
- Location selection.
- Land use planning.
- Facility requirements development.
- General site planning.
- Design guide, programming, and construction.
- Maintain and update plans.
- Clean-up, transfer or closure, and archive.

2-85. These steps are rarely performed in exact sequence and therefore the steps are not numbered. Some of the preparatory tasks or actions within each of the steps may be performed concurrently or in advance to maximize the time available for planning. Some of the information needed, especially for preliminary planning, will be generated by the supported unit during mission analysis/problem framing. The sharing of this information in a timely manner helps to accelerate the process; however, that information must be reliable and based on facts and valid assumptions. Working ahead, even if based on valid facts and assumptions, has risks since the situation may change and assumptions may prove false which can result in wasted time.

INITIATE PRELIMINARY PLANNING

2-86. This step involves gathering available information and determining IRs. It resembles mission analysis/problem framing in the MDMP/MCPP in many ways. It may occur at any point in the operations process, although preferably during or after mission analysis/problem framing. If mission planning has already concluded, base camp planners should find much of the needed information in existing running estimates/staff estimates and staff products resulting from mission analysis/problem framing and IPB. Supporting units coordinate with the supported unit's base camp staff integrator, base camp working group facilitator, or a designated liaison officer to obtain base camp RI resulting from the MDMP/MCPP.

LOCATION SELECTION

2-87. Selecting the best location for a base camp is a balance between operational, sustainment, and engineering requirements. It also involves consideration of the operational and mission variables (see table 2-2, on page 2-11).

LAND USE PLANNING

2-88. This step integrates the supported unit's requirements and the requirements of all tenant units, such as billeting, motor pool, storage, waste disposal, and protection needs, with land use affinities, operational constraints, and terrain restrictions. It provides a general overlay of land use areas within the proposed base camp. Since land use is directly affected by the selected site, this step is not finalized until the proposed site for the base camp has been approved.

FACILITY REQUIREMENTS DEVELOPMENT

2-89. Facility requirements reflect the integration of facility allowances with supported and/or tenant unit requirements. Allowances are based on unit type and size and the anticipated life span of the base camp. These allowances are usually found in theater-specific guidance documents, such as Central Command Regulation, *"The Sand Book,"* and address such things as square feet of housing space, square feet of command space, and allowances for specific facilities such as chapels and movie theaters. Once allowances have been determined, they are reconciled with specific unit requirements by validating or adjusting those requirements based on specific unit needs.

GENERAL SITE PLANNING

2-90. This step integrates the initial land use plan, facility requirements, and unit requirements into the base camp design. It includes individual building layouts shown within the predesignated land uses. Final decisions regarding facility types, standards, construction, and the final location of specific structures and facilities are made during this step.

DESIGN GUIDE, PROGRAMMING, AND CONSTRUCTION

2-91. This step begins as early as possible in the base camp development planning process. This ensures that funding and resources are available and that the base camp will be completed as scheduled. Beginning the design process early is essential in determining facility types and required resources and making recommendations on labor sources.

2-92. Programming for funds must be completed as early as possible to ensure adequate support. This is especially important if construction will involve the use of contractors, lease payments are required, or restoration and/or damage payments are anticipated. Certain funds may only be used for specific purposes. Base camp planners should consult with the supporting resource management office to determine fund availability, restrictions on use, and information on how to obtain funds and arrange for payments to vendors. If the project is congressionally funded, Department of Defense (DD) Form 1391, FY ____ *Military Construction Project Data*, is required.

2-93. Construction of key facilities such as those that support protection measures should begin as soon as plans are approved. Construction may be performed by military engineer units and contractors. Planners must determine, in coordination with those performing the construction, the proper sequence of events and the critical path required to execute construction in a timely and efficient manner. Planners must anticipate delays in shipments or deliveries of construction materials or services and mitigate the effects. Planners should be attuned to any critical items, especially those with long lead times. Planners must implement an effective quality assurance and surveillance plan (QASP), with qualified government construction inspectors, to ensure contractors adhere to expected construction, safety, and environmental standards.

MAINTAIN AND UPDATE PLANS

2-94. All construction projects require construction plans to be maintained and updated. As these plans are altered according to the master plan, change drawings, diagrams, and environmental conditions reports must be completed. Additionally, any construction waivers that are requested and approved should be included with construction plans. Plans should be maintained at the BOC or base camp management center or as directed by the CCDR. An important part of transfers of authority is ensuring that the necessary base camp records and documents are handed over to the incoming base camp commander or retained in a central repository and readily accessible even as they are archived.

CLEAN-UP, TRANSFER OR CLOSURE, AND ARCHIVE

2-95. Planning for base camp transfers and closures early in the process helps avoid potential problems in the future. Depending on the situation, prerequisite actions needed for performing transfers and closures can be extensive. Prerequisite actions include environmental clean-up and restoration, removal or destruction of facilities, demilitarizing equipment, turnover of facilities to the property owner or the HN, and removal of materials. At the conclusion of a transfer or closure, key records that document the life span of the camp are archived to show what actions occurred, when, where, how, and in some cases why.

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Chapter 3

Base Camp Design

Base camp design is an extension of planning that is described in chapter 2. Like planning, design continues throughout the base camp life cycle as new or modified facilities and infrastructure are needed. During design, construction means, base camp standards, levels of base camp capabilities, on-site conditions, and adaptable, scalable designs are matched against facility and infrastructure requirements. The end result is the production of detailed site designs, drawings, specifications, and special instructions needed for constructing facilities and infrastructure that make up the base camp's physical plant. This chapter is focused on the two major tasks involved in design: land use planning and facilities and infrastructure design. It describes the process and tools, such as the AFCS and geospatial information systems, that base camp designers use to site-adapt standard facility designs.

DESIGN CONSIDERATIONS

3-1. Base camp design integrates functionality, protection aspects, base camp standards, and the prescribed level of base camp capabilities to achieve sustainable and scalable facilities and infrastructure that fulfill the base camp's purpose and functional requirements in the most efficient and cost-effective means possible. The base camp's purpose is a primary driver in the design process. There is no single correct design to a base camp. Each base camp will have unique design characteristics based on site-specific criteria and the operational requirements of tenant and transient units. However, each base camp is also part of a broader system of base camps that is articulated in the CCDR's basing strategy and subordinate commanders' schemes of base camps. Base camp concept designs and approved detailed designs must comply with the basing strategy, standards, the master plan, and resource constraints.

3-2. Like planning, base camp design is an iterative process that is continuously applied throughout the base camp life cycle and synchronized with other life cycle activities. Base camp design consists of the two following major tasks:

- Land use planning.
- Facilities and infrastructure design.

3-3. The overall goal for base camp design is achieving functionality and sustainability while meeting operational and protection requirements and adhering to established base camp standards and program and budget guidance. Planners and designers consider the base camp principles (see table 3-1, page 3-2) within contingency construction designs to ensure efficient and effective base camps.

3-4. Planning and design are interdependent. Effective design hinges on the accuracy of the information generated during planning, particularly information related to facility and infrastructure requirements, available resources, construction means, and site location. Failure to remain continuously linked with mission planning as it progresses, or designing in a vacuum, can result in design solutions that are unsustainable based on the concept of operations or inadequate in meeting the needs of the commander.

3-5. Base camp design is initiated as early as possible and in parallel with planning to ensure that planning and design remain mutually supportive and to provide adequate lead time on acquiring the necessary labor, equipment, and materials needed for construction. Critical information resulting from design that is integrated into planning include construction estimates (bill of materials [BOM], equipment, personnel, cost, and time) that the commander needs to know in establishing priorities of support, priorities of effort, and timelines associated with movement and basing of forces and the flow of the operation.

Table 3-1. Design considerations in relation to the base camp principles

Base Camp Principles	Design Considerations
Scalability	<ul style="list-style-type: none"> • Use modular and multifunctional designs. • Use modular buildings and trailer units that can be relocated, repositioned, and reused (or easily dismantled) and offer flexibility. • Create designs that allow the base camp to easily expand or contract size and levels of service.
Sustainability	<ul style="list-style-type: none"> • Maximize use of existing facilities and infrastructure. • Optimize the existing terrain characteristics. • Maximize the use of energy and water efficient designs often termed “green design.” This includes implementing shading and insulation whenever possible. • Use local resources (materials and labor). • Use energy and water efficient equipment (generators, environmental control units, and low-flow toilets and showers) and materials (thermal insulation). • Maximize the use of renewable energy sources (solar power) and reusable or recyclable materials. • Develop sustainable facilities and infrastructure (simple and inexpensive to operate, maintain, and repair). • Reuse or recycle energy and water (as applicable). • Minimize the use of spot generation since this typically results in generators running under-loaded and inefficiently. • Maximize the use of smart-power distribution systems and employ demand management.
Standardization	<ul style="list-style-type: none"> • Use standardized, scalable, and adaptable designs and construction. • Use standard systems and materials to simplify maintenance and repair.
Survivability	<ul style="list-style-type: none"> • Optimize perimeter zone and entry control point alignment. • Provide appropriate spacing between structures. • Ensure adequate standoff (position key facilities as far away from the perimeter as possible). • Apply hardening where appropriate. • Construct a perimeter zone with supporting outer and inner security areas including engagement area development considerations and other appropriate features and systems.

3-6. Planners and design engineers develop an integrated collection plan for base camp reconnaissance to support planning and design. Some IRs to develop a basing strategy or early concept designs may be obtained remotely. Most detailed designs will require on-site reconnaissance to determine conditions such as soil classification and adequacy of existing facilities.

3-7. Any variables that affect design are resolved through planning. The primary variables include—

- The availability of suitable existing facilities and infrastructure.
- The availability of suitable construction materials and means for performing construction (skilled labor and special equipment provided by troops and/or contractors).
- Base camp standards (facility allowances and construction standards).
- The prescribed base camp level of capabilities and linkages to other base camps as appropriate.
- Terrain and weather effects at the selected base camp location.
- Protection and security requirements (based on threat and vulnerability assessments).
- Civil and environmental considerations.
- Cost and time constraints.
- Governing U.S. regulations, policies, and HN laws and customs.

ARMY FACILITIES COMPONENTS SYSTEM

3-8. The AFCS is the primary tool that planners use for both site design and facilities and infrastructure design. The facilities and components in the AFCS satisfy many of the base camp construction requirements that are identified during planning. The AFCS facilitates base camp designs and can be used even in units at the lower tactical levels that typically lack the necessary design skills and capabilities.

3-9. The AFCS designs aid in solving contingency construction that is constrained by resources and time. Facilities in the AFCS can be rapidly constructed with locally available materials. This allows for the use of preexisting supplies and indigenous craftsmen, both of which dramatically reduce costs and save time.

3-10. The AFCS provides standard designs that are site-adaptable, scalable, and capable of serving multiple functions. AFCS temporary facilities are designed for the most typical and recurring types of facilities with an expected life of at least 24 months. Some of the facilities included in the AFCS are—

- Vehicle washrack.
- Warehouse.
- Medical treatment facility.
- Maintenance facility.
- MWR center.
- Joint operations center to include a segmented compartmentalized information facility.
- Battalion and company headquarters.
- Barracks.
- DFAC.

LAND USE PLANNING

3-11. Land use planning, also commonly referred to as site design or base camp layout, is the process of calculating, mapping, and planning the allocation of land areas. This planning is based on—

- Land use categories.
- Terrain characteristics (lay of the land).
- Operational requirements.
- Functional interdependencies (affinity relationships).
- Protection, civil, and environmental considerations (standoff and separation between facilities).
- Base camp standards and commander's guidance.

3-12. Land use planning is both an art and a science in logically arranging the required facilities and infrastructure within a specific site with the least negative impact to the natural environment and the greatest benefit to users. The land use plan provides the framework for the overall layout of the base camp and is updated through the master planning process. The steps of land use planning are detailed in EP 1105-3-1 and are as follows:

- Collect information.
- Set land use goals and objectives.
- Calculate land area requirements.
- Conduct an environmental analysis.
- Prepare an environmental overlay.
- Conduct a functional analysis.
- Produce a functional relationship overlay.
- Develop alternative land use plans.
- Select the best alternative land use plan.
- Obtain the commander's approval.
- Implement and maintain the land use plan.

3-13. In developing the land use plan, planners consider—

- Tenant and transient unit facility requirements to include adequate space for unit system operations and maintenance, storage, training, and expansion.
- Affinity relationships (functional interrelationships between facilities).
- Antiterrorism/force protection measures (see FM 3-37.2 for more information) including—
 - Layered security approach with adequate dispersion and standoff that is focused on the protection of critical assets.
 - Standoff distances or geographic isolation to minimize accessibility and vulnerability of critical facilities such as ammunition/explosives, POL, and HAZMAT/HW storage areas. See Graphic Training Aid (GTA) 90-01-011, TM 5-304, and TM 38-410 for standoff distances and separation for structures.
- Explosive safety quantity-distance requirements. (Note: certificates of risk acceptance may need to be developed to document risk acceptance of violations of required quantity-distance/safe zones; see DA Pamphlets 385-30 and 385-64 for detailed instructions.)
- Terrain and weather effects (elevation, slope, surface drainage, trafficability, prevalent wind direction).
- Environmental considerations such as standoff from environmentally sensitive areas and separation between food storage or water sources and waste management areas. Depending on the amount of land area available and consideration of the mission variables, some waste management areas, such as sewage lagoons and trash burial sites, may have to be established outside of the perimeter with the necessary protection measures to mitigate any risks.
- Separate working and living areas as required for HN military and government personnel and non-CAAFs which can affect overall utility requirements.
- Accessibility and road requirements including building spacing to facilitate maintenance and repair and the movement of first responders.
- Base camp functions and purpose (allowances for expansion and surges).
- Considerations for expansion and partial transfers or closure.
- Utility corridors to facilitate expansion and repair of utility systems.
- Waste management requirements.

3-14. Although land use planning begins in the early stages of base camp development, it requires planners to conduct a facility requirements analysis before it can be finalized. Additionally, since land use is directly linked to the base camp location selected during planning, planners should confirm the location is approved and remains suitable based on planning refinement and changes in the situation to include the results of real estate acquisitions. Land use planning can be enhanced through geospatially-referenced software applications, such as GeoBEST, that can interface with TCMS. An example of a land use plan is shown in figure 3-1. See appendix E in EP 1105-3-1 for other examples of land use plans.

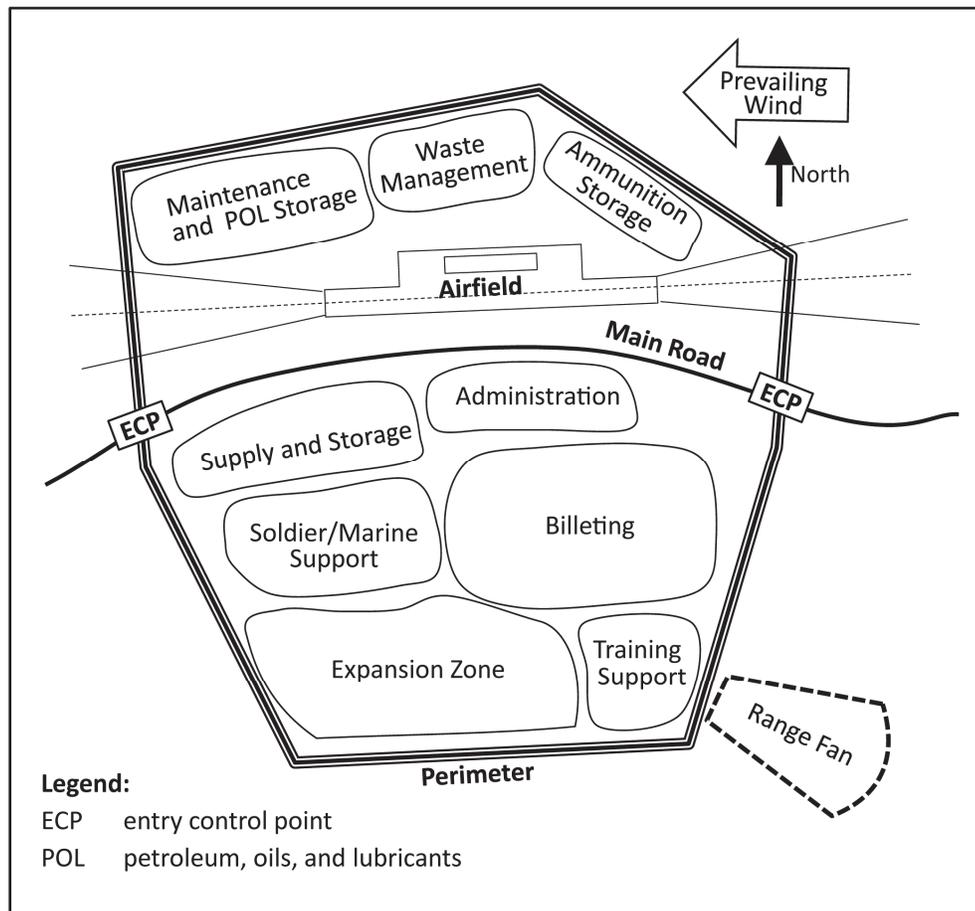


Figure 3-1. Example land use plan

BASIC DESIGNS

3-15. The AFCS provides two standard designs that can be adapted to a particular site—the rectangular box design (see figure 3-2, page 3-6) and the wheel design (see figure 3-3, page 3-7). Although the rectangular box design is more traditional, the wheel design may offer better space utilization, security, and capacity for expansion. Planners must compare the advantages and disadvantages that each design offers based on consideration of the size of the base camp, space limitations, and threat and vulnerability assessments. See TM 5-304 for more information on the AFCS.

3-16. Large and medium size base camps and constructing units should have the software and hardware to access standard design databases to produce site adapted designs that are geospatially referenced, create plans and specifications for construction or contracting, and maintain master plans and as-built drawings. These larger base camps will also typically provide support to small and extra small base camps that they have a hub and spoke relationship with and maintain those records as well.

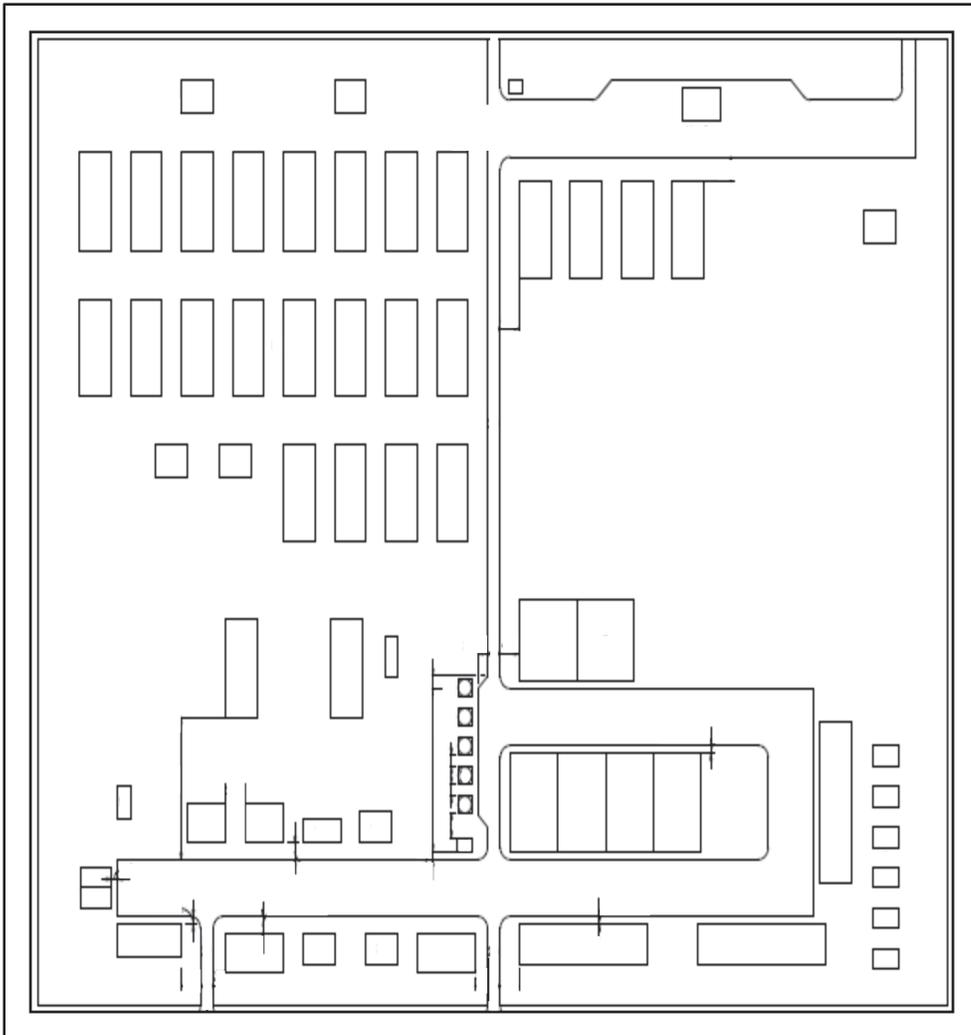


Figure 3-2. Rectangular box design

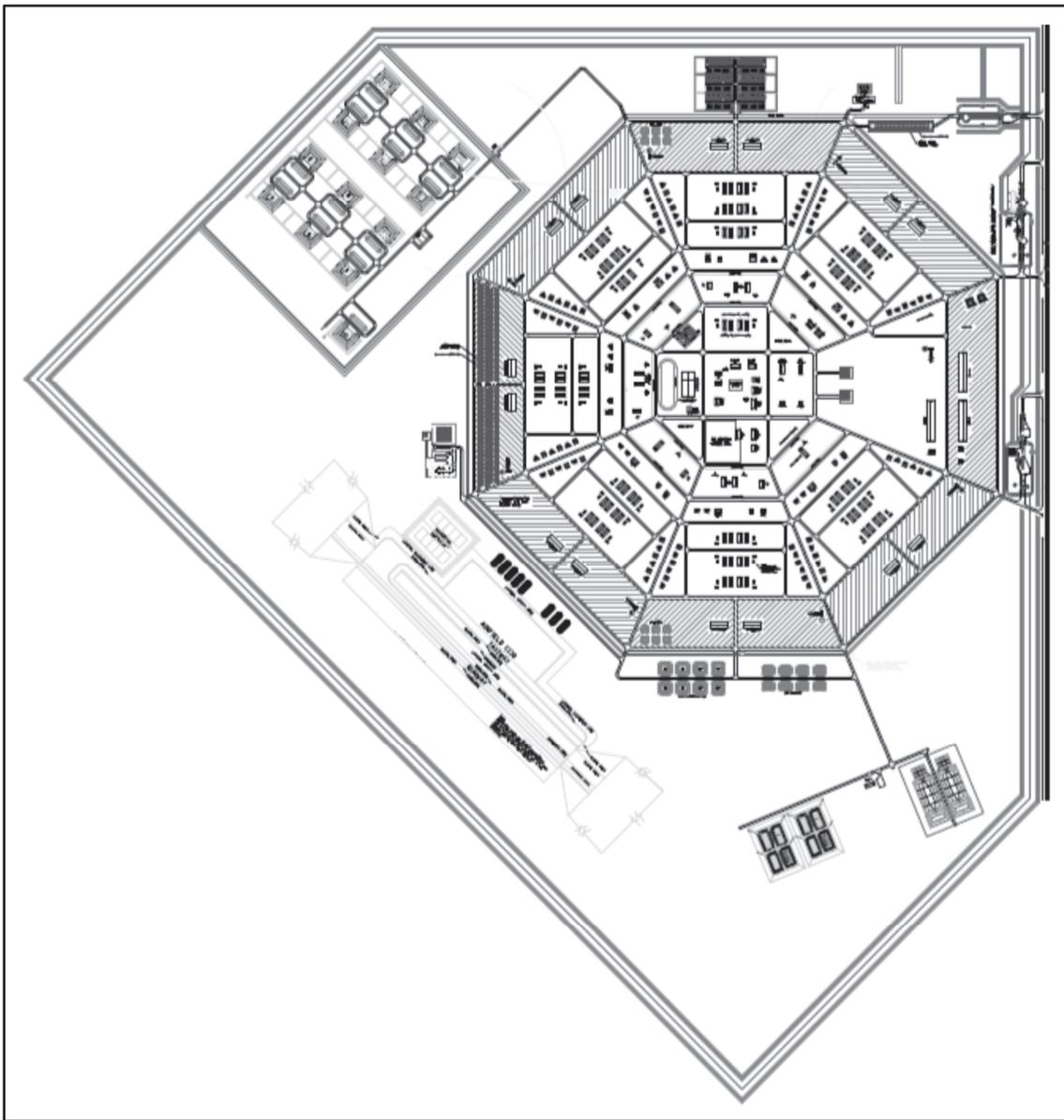


Figure 3-3. Wheel design

LAND USE CATEGORIES

3-17. Establishing zoning within a base camp helps to maintain adequate standoff distances, manage traffic and prevent vehicle accidents (with pedestrians and other vehicles), and maintain the sanctity of troop billeting areas. Typical land use categories used for base camps are shown in table 3-2, page 3-8.

Table 3-2. Typical land use categories for base camps

<i>Land Use Category</i>	<i>Types of Facilities</i>
Operational	<ul style="list-style-type: none"> • Airfields. • Unmanned aircraft system landing strips. • Landing zones.
Training Support	<ul style="list-style-type: none"> • Training areas. • Weapons firing ranges.
Billeting	<ul style="list-style-type: none"> • Tent pads and barracks buildings.
Administration	<ul style="list-style-type: none"> • Unit headquarters. • Administration buildings. • Communication facilities.
Soldier/Marine Support	<ul style="list-style-type: none"> • Medical treatment facilities (includes medical, dental, and veterinary services). • Dining facilities. • Laundries. • Barbershops. • Post exchanges and food courts. • Morale, welfare, and recreation facilities. • Fitness facilities. • Chapels. • Education centers.
Nonhazardous Material Storage	<ul style="list-style-type: none"> • Warehouses. • Space for the placement of military vans or containers.
Hazardous Material and Hazardous Waste	<ul style="list-style-type: none"> • Petroleum, oils, and lubricants storage areas. • Ammunition and explosives storage areas. • Hazardous waste accumulation points.
Motor Pool/Vehicle Parking	<ul style="list-style-type: none"> • Vehicle maintenance facilities. • Specific parking areas for nontactical vehicles.
Utilities	<ul style="list-style-type: none"> • Facilities for power, water, and waste treatment/disposal. • Right of ways or easements.
Security and Defense	<ul style="list-style-type: none"> • Guard towers. • Entry control points. • Staging areas for quick response forces with adequate entry and exit points.

ENVIRONMENTAL CONSIDERATIONS

3-18. Environmental considerations begin during planning as part of site selection (see paragraph 2-39) and continue throughout the base camp life cycle. During the design phase, base camp planners analyze existing EBS (if available) to better understand the initial site conditions and facilitate base camp layout. An on-site investigation is conducted whenever possible to help assess environmental and safety hazards and confirm the overall suitability of the area. Factors such as evidence of environmental contamination, landfills or trash burial sites, and surrounding land uses (industrial complexes) are considered. The existing facilities and infrastructure and the surrounding area are surveyed to help planners determine the best locations for troop billeting, maintenance, HAZMAT and POL storage, waste management areas, and motor pool locations from an environmental and health perspective.

3-19. While all base camp layouts are unique based on variables such as terrain, threat situation, base camp purpose, and number and type of tenant units, certain relationships between base camp layout and

environmental considerations tend to be constant. Environmental considerations with regard to base camp layout include—

- Locating POL and HAZMAT storage areas, HW accumulation points, and motor pools away from billeting areas and drainage features.
- Locating latrines, wastewater treatment sites, trash burial sites, incineration sites and other waste management areas downwind and away from DFACs, food storage areas, populated areas, and sources of water.
- Avoiding naturally and culturally sensitive sites.
- Avoiding low-lying areas that are prone to flooding or areas that have standing water.

FACILITIES AND INFRASTRUCTURE DESIGN

3-20. Suitable existing facilities and infrastructure, existing or established designs such as those found in the AFCS, and prefabricated or pre-engineered buildings are used whenever possible. The AFCS provides designs for most of the facilities that are required on a base camp. These designs, in most cases, can be quickly site-adapted to suit the situation. The AFCS and Service doctrinal design and construction technical publications should provide metric designs and standards that can be used directly in those regions that use the metric system. Selecting designs early is critical to ensure adequate and timely resource availability. Even better is creating designs that are already sustainable based on resources available. When new construction is required, planners use the design process in developing and selecting facility and infrastructure design solutions.

DESIGN PROCESS

3-21. The following is a typical design process that can be used to design base camps. Design should be a collaborative process with planners, engineers, centers of excellence, and actual or potential base camp tenants. The design process consists of the following steps:

- Define life cycle requirements.
- Identify resources and constraints.
- Develop and conceptualize options.
- Evaluate options.
- Decide.
- Implement, assess, and adjust.

3-22. Design usually follows either a top-down or bottoms-up approach. A top-down approach begins with the purpose or function of a facility and works toward identification of subcomponents and their interrelations, while the bottom-up approach starts with a set of given or implied components and works to arrange and link them to achieve desired results.

Define Life Cycle Requirements

3-23. Defining life cycle requirements specifies the capabilities and attributes that the designed facility must have over its planned life cycle to achieve a specific purpose or function, or fulfill a need of the intended users. Defining requirements must often balance commander's guidance for QOL against prescribed level of capabilities, base camp standards, and available funding. Contingency construction designs are characterized by—

- Rapid construction or emplacement.
- Standardized, modular and scalable designs.
- Maximized use of prepositioned stocks and locally procured materials that meet military specifications.

3-24. For complex facilities, planners may prioritize requirements to facilitate evaluation and decisionmaking. Typical important requirements should be identified as early as possible in the planning and design process and may include—

- Size (including life cycle variations).
- Purpose or mission.
- Unique tenant requirements.
- Expected duration.
- Level of capabilities (including life cycle variations).
- Location options.
- Command and staffing plan.

Identify Resources and Constraints

3-25. Resources are the means for constructing a facility or structure and include labor, materials, equipment, and funds. The availability of materials will depend on the local market, access to other markets (which may be determined by the military and political situation), transportation assets, and available funding. The labor for base camp construction may be supplied by military units and contractors. Each labor source has certain strengths and weaknesses based on equipment, training, and experience. If a certain labor source is more prominent than others (such as HN workers), it may be beneficial to select designs that can be executed with the capabilities and skills of that labor source. Conversely, certain designs may not be supportable based on the available labor pool. The results of planning should provide most of the information needed for this step.

3-26. A constraint dictates an action or inaction, thus restricting “how” something can be done. Design is constrained by such things as—

- Base camp standards (facility allowances and construction standards).
- The availability of construction resources (labor, equipment, materials, and money).
- Terrain and weather effects on construction methods and materials.
- The amount of land area that is available and useable.
- Funding limits.
- Antiterrorism/force protection requirements.
- HN agreements.
- Environmental considerations and impacts.
- Operational timelines.
- Civil considerations and impacts on the local economy, resources, and population.
- Characteristics, availability, and reliability of local commercial power.

Develop and Conceptualize Options

3-27. Planners consider established techniques, methods, and local practices to simplify planning, material, and labor requirements. Planners should also consider using reachback. The designs completed at this point are called concept or preliminary designs.

3-28. Base camp designers use two different techniques to design: requirements-based and capabilities-based. Requirements-based design looks primarily at fulfilling all identified requirements and determining what resources are needed in terms of manpower, equipment, materials, funding, and time available. This is often referred to as an unconstrained approach. Capability-based design looks primarily at the capabilities of the force to do construction based on manpower, equipment, materials, funding, and time available.

Evaluate Options

3-29. Planners determine the advantages and disadvantages of each option based on evaluation criteria. Evaluation criteria address factors that affect success and those that can cause failure. The base camp principles may be used as evaluation criteria as well as life cycle cost analysis.

3-30. Preliminary estimates for material and construction requirements developed during planning are updated and completed in more detail during design. A detailed cost estimate is developed to allow a cost comparison of one or more concept designs. An example of a cost estimate is shown in table C-6, page

C-10. A detailed cost estimate is also developed to analyze the engineering tradeoffs made to complete the detailed designs. Assumptions may be required to complete a life cycle economic analysis of design options. The operational commander should consider this life cycle cost estimate when selecting from the design options that form the basing strategy and base camp construction directives. The commander may direct design tradeoffs and resource constrained designs.

Decide

3-31. Planners determine the best option based on their evaluation. After the evaluation is complete, they recommend it for approval by the designated approving authority.

Implement, Assess, and Adjust

3-32. Planners make the necessary coordination and prepare orders or directives needed for implementing the approved option. The detailed designs of specific facilities may be developed at a higher headquarters or by the constructing units. The designated approving authority ensures the detailed designs conform to approved standards and the master plan, and approves the designs before contracting or construction. Site-adapted designs are generally approved by the headquarters that completed the concept designs. The constructing unit and base camp staff have the necessary engineering expertise (or obtain it through reachback), automated design tools, access to standard designs, and network capability to share, archive, and print construction documents. Planners and the constructing unit assess the progress and compare forecasted outcomes with actual events to determine overall effectiveness. Based on assessment, adjustments are made or new options are developed to achieve the desired results. Lessons learned and recommended improvements to standard designs and theater adaptations are captured to facilitate design modifications, and base camp records and as-built designs are updated and maintained to facilitate future construction and transfer or closure.

GENERAL DESIGN CONSIDERATIONS

3-33. The UFC system provides planning, design, construction, operations, maintenance, sustainment, restoration, and modernization criteria for all DOD components. It will be used for all Service projects and work for other customers where appropriate. Although UFC are written with long-duration standards in mind, base camp planners and designers will find them useful for contingency construction as well. In addition to construction standards established by the CCDR for the AOR, such as Central Command Regulation, *"The Sand Book,"* construction outside of the United States may also be governed by DOD guidance, Status of Forces Agreements, HN funded construction agreements, and in some instances, bilateral infrastructure agreements. Planners and designers must ensure compliance with the more stringent standards as applicable. UFC are effective upon issuance and are distributed only in electronic media from the following source: Whole Building Design Guide Web site <<http://dod.wbdg.org>>. See UFC 1-200-01 for information on general building requirements.

3-34. Incorporating the building styles often found on permanent installations and bases, such as stucco exterior walls, multiple interior walls, indoor plumbing, and large windows, increases resource requirements and construction timelines and is generally not used in contingency construction. However, certain structures such as perimeter fencing, entry control points (ECPs), segmented compartmentalized information facilities, and airfield runways are normally constructed to the same standards that are applied in permanent installations and bases regardless of location. These designs are available in various engineering TMs or through reachback.

3-35. Developing "right-sized" facilities and utility infrastructure can quickly become a false economy. Aside from getting the right amount of land in the right location, utility infrastructure—such as electric, water, communication, and sewer lines—can be the tightest physical chokepoint through which base camp operational surges must pass. Installing deliberately oversized utility runs, to include easements, offers the greatest flexibility in evolving and uncertain base camps. Base camp life cycle requirements are assessed to estimate maximum and minimum requirements to enable an effective scalable design.

Antiterrorism/Force Protection

3-36. Facilities should be designed to resist attack through material selection, minimizing the number of doors and windows and orientating openings to minimize exposure. Overhead blast protection designs can be incorporated into all contingency construction facilities and are available as a retrofit for existing structures (such as E-Glass). The most common design is a layered structure with one layer used to detonate incoming munitions and a second layer absorbing the blast concussion and shrapnel. Minimum contingency requirements normally are hardened walls and roof to protect occupants and sized to accommodate primarily the personnel.

3-37. The AFCS incorporates limited antiterrorism/force protection requirements into its designs. Antiterrorism/force protection designs fall into two main categories: isolation and hardening. For isolation, most designs will need to be augmented. One alternative is using soil-filled containers to isolate the facility. For hardening, CMU walls can be hardened with reinforced concrete up to the blast height. This can also be reinforced with blast mitigation products as outlined in the Joint Force Operations Base (JFOB) Handbook. See FM 3-37.2 for more information on determining threats, assessing vulnerabilities, and integrating AT measures within operations.

Fire Protection

3-38. Temporary structures generally use combustible materials. Austere environments often lack adequate water and maintenance resources to support modern fire suppression systems. Fire events can result in the rapid loss of facilities and spread quickly to other structures. An effective fire protection plan is critical to the safety of personnel, facilities, and equipment. Fire protection must be included in the design of base camps. This includes tent and building spacing, means of egress, wiring standards, use of flame-retardant materials, fire-fighting vehicle access, availability of water supply, and fire protection and HAZMAT spill response equipment. See FM 5-415 and UFC 3-600-01 for more information.

Safety

3-39. RM is initiated during planning and continues throughout the base camp life cycle. Designers work together with safety specialists in mitigating the risks associated with any hazards.

3-40. Design influences safety during construction. Some designs and the associated construction methods may be more difficult, especially when unskilled labor is used, and inherently more dangerous. Designers must ensure the complexity of designs is reasonable and justifiable based on the construction means available and/or that the means for enforcing safety and mitigating risks during construction is achievable. HN laborers and contractors may not adhere to expected construction and safety standards.

3-41. Any specifications in component configurations, materials, and construction tasks that are essential for achieving the quality and safety features of the design must be clearly articulated to the constructing unit and become part of the overall QASP. Any incorrect design decisions, changes desired by the facility user, or material substitutions based on availability may require reevaluation of designs.

Structural Integrity

3-42. The safety risks from structural collapse increases greatly with the transition from tents to hardened structures and with the use of existing facilities. Although contingency construction standards are generally conservative to address a wide range of loads in different environments, the structural integrity and conditions of an existing structure can vary greatly based on HN construction standards and quality of construction, and the effects of battle damage. Existing structures may have little resistance to seismic, abnormal weather, or impact loads. The base camp engineer or other qualified engineer representative must oversee the allowable use of existing structures. A structural analysis and materials evaluation must be completed before any protection measures are affixed to an existing structure.

3-43. The base camp engineer oversees any repairs, modifications, or expansion of any existing building to ensure it conforms to established policies and standards. Construction variances with structural components that deviate from the Service standards require a structural assessment and compliance with UFCs. Material

substitutions for structural members with standard designs require a structural assessment and compliance with UFCs. This necessitates completing a structural assessment and repairs before occupying.

Construction Materials

3-44. Although using locally-procured construction materials offers many advantages, there are several factors to consider. These factors include the following:

- Standard sizes may be different. Dimensional lumber is often cut to different standards in foreign countries; for example, European countries measure in meters as opposed to feet.
- Quality may be substandard. Lumber, concrete, and asphalt are three examples of construction materials that are typically not consistent with U.S. standards.
- Military operations may drive up prices in the local market. Sudden spikes (or perceived increases) in demand may result in profiteering from local suppliers.
- Variation in quality of local materials and military specifications.

3-45. Hazardous construction materials such as asbestos and lead-based paint may be discovered in existing structures during rehabilitation construction. This should be a focus of reconnaissance efforts and infrastructure assessments prior to occupying any existing structures.

DRAINAGE SYSTEM

3-46. The planning and design of the base camp drainage systems is conducted by the higher headquarters design engineers and the constructing unit. The drainage system includes the overall drainage plan, area drainage structures, individual facility drainage structures, and temporary construction drainage. Siting of base camps and individual facilities can have major effects on required drainage structures and their associated cost in terms of materials and construction effort. Inadequate drainage is the most common cause of road and airfield failure. Data on local drainage conditions for initial planning may be obtained from maps and aerial reconnaissance, and then confirmed with on-site ground reconnaissance and information from local inhabitants. See FM 5-430-00-1/MCRP 3-17.7A/Air Force Joint Pamphlet (AFJPAM) 32-8013, Volume I for discussion of drainage system design.

3-47. Some drainage considerations include the following:

- Site base camps and individual facilities to minimize required drainage structures and their associated cost in terms of materials and construction effort.
- Evaluate the natural and existing drainage features, expected rainfall or snowmelt, and protection of natural drainage channels.
- Avoid constructing facilities in areas with high water tables.
- Develop the drainage system and temporary drainage in phases to ensure uninterrupted construction.
- Perform continuous maintenance on the drainage system.

MULTIPURPOSE BUILDINGS

3-48. Buildings or areas will be needed to perform base camp services and support, and base camp administration and command functions. Depending on the scope of the base camp, many of these functions can be collocated within unit headquarters and administration buildings to minimize space requirements. MWR activities may require buildings or areas, such as sport fields. Depending on the amount of traffic, landing areas may also serve as sports fields to maximize the use of limited space. Areas designated for expansion may also be used as temporary sports fields.

BILLETING

3-49. When new construction is authorized for billeting, several design options may be available to include tents, prefabricated trailers, wooden SEAhuts, or concrete/masonry construction. A variation of the SEAhut is the Davison SEAhut which combines six SEAhuts to save materials (see FM 3-34.400/MCWP 3-17.7).

All facilities where personnel are billeted or work should have heating by some means. Cooling in some climates is also more than a luxury item.

TOILET AND SHOWER FACILITIES

3-50. Toilet and shower facilities should be lighted, heated, and equipped with hot and cold water. Sanitary wallboard is the preferred wall covering for latrines. Sheetrock, if used, must be waterproof with a waterproof finish for cleaning. The female to male facility ratio will be based on the actual percentage of the sexes on a base camp at the current time or anticipated for the near future. A ratio of 1:20 is generally used for determining the number of shower heads and toilets needed in relation to the number of personnel.

DINING FACILITIES

3-51. Base camps, whether used for military or civilian disaster relief purposes, often have allowances for DFACs. These may be a tent that personnel simply eat in or a structure that resembles a DFAC on an installation. Cooks generally prepare meals using mobile kitchen trailers able to feed up to 350 people or containerized, trailer-mounted systems that can feed up to 600 people. Contractor-operated DFACs, on the other hand, can be quite large and require extensive cooking and food storage facilities (to include refrigeration requirements, food waste containment, and grease traps). Regardless of the size, DFAC operations require large quantities of water for cooking and clean-up. While units in the field may establish gray water soakage pits for DFAC wastewater, larger base camps will require other waste management options. See engineer doctrine for more information on waste management operations. See UFC 4-722-01 for information on DFACs.

HAZARDOUS MATERIAL/HAZARDOUS WASTE STORAGE FACILITIES

3-52. Controlling and managing HAZMAT/HW protects residents of the base camp and the environment. Most units use large quantities of HAZMAT, such as ammunition, fuels, paints, batteries, pesticides, and solvents. Often these compounds contain acids, metals, and other toxins. This is one of the first environmental protection issues that should be addressed at base camps. Design specifications or standard facility designs should be provided for base camps of all sizes. See FM 4-30.13 for information on secondary blast mitigation for ammunition and explosives storage, TM 38-410 for information on HAZMAT management, UFC 4-451-10N for information on designing HW accumulation points, and engineer doctrine for information on spill prevention and clean-up and secondary containment.

MOTOR POOLS AND VEHICLE PARKING AREAS

3-53. Requirements for motor pool facilities and vehicle parking areas must be identified early on during base camp planning and synchronized with the base camp's traffic flow patterns and antiterrorism/force protection requirements as part of land use planning. Requirements can include areas for conducting maintenance (enclosed and exterior maintenance pads), administrative functions, and vehicle washing; and storing POL. Parking areas should be constructed using well-graded, compacted rock and soils with an engineered slope and drainage to minimize weather effects, and improve the safety and longevity of the parking area. Important considerations include scalability to facilitate expansions, drainage, storm water management, and environmental requirements such as oil-water separators.

TRANSPORTATION INFRASTRUCTURE

3-54. Base camp standards, operational requirements, availability of construction equipment and materials, and soil composition (soil type, drainage characteristics, and moisture content) determine the types of roads that can be designed and constructed. Naturally occurring construction materials, such as rock, may be scarce or of poor quality. Portland cement may not be available or may be cost-prohibitive. Matting and sand grid are expedient methods for stabilizing loose soils such as sand for unsurfaced road construction. Geotextiles and other geosynthetics are primarily used to reinforce weak subgrades, maintain the separation of soil layers, and control drainage through the road design. Geosynthetics are the primary means of waterproofing soils when grading, compaction, and drainage efforts are insufficient. See FM 5-436 for

more information on expedient surfacing methods and TM 3-34.64/MCRP 3-17.7G for more information on soil characteristics and predicting soil behavior under varying conditions.

3-55. Planners balance technical engineering design and construction considerations with the desired degree of permanence to generate options that are optimized for effectiveness, while being as efficient as possible. Roads are designed and built with the understanding that future improvements will be necessary to sustain continued use and to accommodate higher volumes of traffic as base camp populations increase. Based on anticipated future needs and the characteristics of the expected traffic, plans are developed to progressively improve roads as time and resources becomes available and the situation allows. Requirements for road maintenance and upgrades are incorporated into the base camp master plan. Planners must ensure roads do not interfere with the routing of underground utility lines.

3-56. The base camp commander is responsible for traffic management to ensure safe and efficient movement throughout the base camp. Military police play an important role in traffic control by helping to identify requirements for traffic control points and implementing the necessary measures to enforce speed limits. See FM 3-39 and MCWP 3-34.1 for more information.

3-57. An airfield or landing zone may be required based on the base camp purpose or functional requirements. Most base camps will likely need a minimum of a landing zone to facilitate resupply operations and casualty evacuation. See UFC 3-260-01 for information on designing airfields and landing zones.

WASTE MANAGEMENT FACILITIES

3-58. Deployed forces can generate significant amounts of waste. Roughly 80 percent of all water used on base camps for purposes other than human consumption ends up as wastewater and will require treatment and disposal. Base camp commanders are responsible for waste management which involves collecting waste at its point of generation and transporting it from collection points to treatment, disposal, or recycling facilities to provide a healthy and sanitary environment for base camp residents. Waste management facilities are designed to handle each category of waste: wastewater (gray and black water), solid waste, hazardous and special waste, and medical waste. The measures used to treat and/or dispose of waste will vary according to base camp population, level of capabilities, availability of existing facilities and contracted support, base camp location, terrain effects, and civilian and environmental considerations. More permanent collection, treatment, and disposal facilities may be possible at expanded or enhanced base camps. Designs for wastewater lagoons and scalable wastewater treatment package plants are available as listed in AFCS. Extensive general engineering support or contractors are required to build and maintain such systems. See engineer doctrine for more information on waste management operations.

WATER PRODUCTION AND DISTRIBUTION SYSTEMS

3-59. Components of a water production and distribution system may include water sources, water purification, well drilling, and water distribution. These are explained further in the paragraphs that follow.

Water Supply

3-60. Planners determine base camp water requirements, based on base camp population and level of capability, and sources of water. Commanders and planners must consider the impact of base camp water sources and usage on local aquifers and water sources used by local populations. Sources of water include local municipal water utilities, water generation through water purification systems (WPSs) and wells, and water distribution through storage tanks and pipes to facilities, water trailers, blivets, and bottled water. Water purification and well drilling present more sustainable alternatives to the use of bottled water. Plastic water bottles significantly add to a base camp's generated solid waste and present disposal challenges when local recycling is unavailable. There are operations that generate effluent water that can be reused after minimal treatment. Recycling water from showers, sinks, laundries, washracks, and other nonpotable water sources is a considerable conservation mechanism and should be practiced whenever feasible. It will bring the base camp into a more sustainable posture. See UFC 3-230-03A for more information on water supply. See engineer doctrine for information on the purple-pipe recycled water distribution system.

Water Purification

3-61. Production of bulk water is often accomplished by water purification—generally through the use of WPSs that can be operated by both troops and contractors. Water purification units require adequate operational space and they must be in close proximity to a water source. The process also generates wastewater that must be managed. See UFC 3-230-08A and engineer doctrine for more information.

Well Drilling

3-62. Well drilling can be performed by specialized engineer units and contractors. Planners must determine the availability of well drilling capabilities and the viability of drilling based on a hydrogeological analysis of the area. This analysis should also incorporate a test well-drilling program. Initial information on the hydrogeology of an area is available through geospatial engineering channels or reachback to USACE. Drilled wells may be integrated into a water distribution system within the base camp, or water may go into storage tanks or bladders for distribution by vehicles. Groundwater normally has a low chemical or biological threat of contamination and does not usually experience a large seasonal variation in quantity. After PVNTMED personnel test approve a groundwater source, treatment is not usually required; however, chlorination is recommended. See FM 5-484/NAVFAC P-1065/Air Force Manual (AFMAN) 32-1072 for more information.

Water Distribution System

3-63. A gravity fed distribution system is the preferred method of maintaining adequate pressure in the system. If a direct-pressure distribution system is required, a properly sized water pump that provides the required flow and pressure is installed at the base of the “design” tower. The configuration of the water distribution system is determined primarily by the size and location of water demands, road patterns, location of treatment and storage facilities, and topography. Two patterns of distribution main systems commonly used are the branching or dead-end pattern and the gridiron pattern with either a looped feeder or central feeder system. In general, mains should be routed to minimize the length of service connections. Mains should not be located under paved or heavily traveled areas and should be separated from other utilities to ensure the safety of potable water supplies, and minimize the interference of utilities maintenance. Water supply storage and distribution systems are susceptible to sabotage. Safeguarding the supply must be considered during the design process. See FM 3-34.471 and UFC 3-230-10A for more information.

ELECTRICAL POWER GENERATION AND DISTRIBUTION SYSTEMS

3-64. All base camps require some electrical power. The source of that power ranges from unit generators which may be augmented by locally purchased or leased generators, to a prime power system, to a sustained power system which may include local commercial power. Identifying the site’s power requirements and integrating a generation and distribution network that is appropriate for a base camp’s size and duration is a significant part of effective base camp master planning. Electrical power system design is motivated by base camp conditions and a deliberate transition plan that may progress along or enter at any point on the base camp power life cycle (initial power, prime power, and sustained power). Figure 3-4 illustrates possible electrical power system progression in relation to base camp size and duration. Although most base camps (especially smaller ones with basic capabilities) initially rely on an initial power system, a base camp may begin with a prime power system or even a sustained power system. All three sources of electrical power may exist concurrently on an individual base camp.

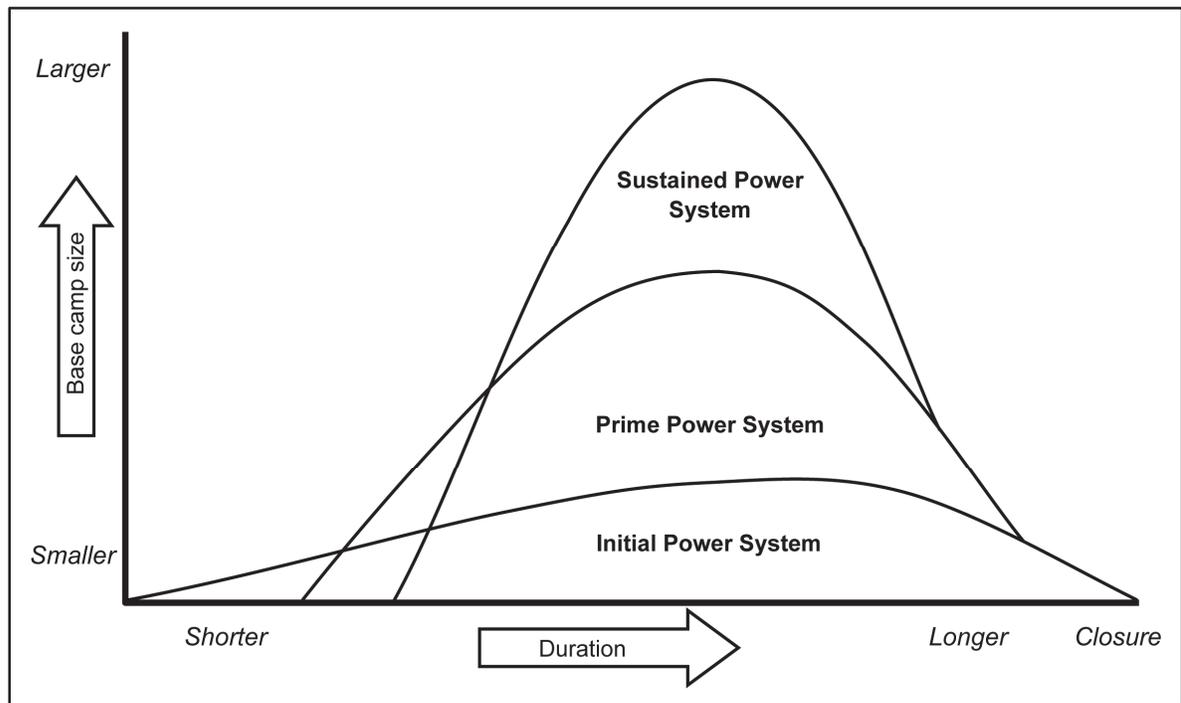


Figure 3-4. Base camp power life cycle

3-65. The base camp power life cycle consists of the following systems:

- **Initial Power System.** This is a highly mobile system comprised of modified table of organization and equipment-authorized generators (typically 200-kilowatt and below). It uses an electrical distribution system such as the Power Distribution and Illumination System Electrical, or the Mobile Electric Power Distribution System Replacement. The initial power system may be augmented with commercial off-the-shelf generators or electrical distribution equipment that are operated and maintained by military personnel.
- **Prime Power System.** This is a deployable system comprised of large, rapidly deployable generators (typically 500-kilowatt and larger) that can be consolidated to operate as a power plant. It uses a medium-voltage electrical distribution system capable of distributing power over an entire base camp's footprint (greater than five miles if necessary). The prime power system is scalable and able to supply reliable utility-grade power needed for base camp support and services and tenant unit operational requirements. The consolidation of electrical loads and reduced number of generators required yields improved fuel economy and overall reduction in O&M costs. The prime power system may employ generators to provide redundant backup power. It may also be augmented with commercial off-the-shelf generators or electrical distribution equipment that are operated and maintained by military personnel.
- **Sustained Power System.** As the situation changes and resources become available, a commander may direct a base camp to transition toward longer-term sustained operations. Responsibility for the operational control, sustainment, and maintenance of the existing initial power system(s) and prime power system(s) is transferred to civilian, contracted, or HN personnel. Life-cycle equipment replacement and further expansion of the power system creates a site-specific sustained power system that is typically comprised of fixed, commercial generators (or utility power, if available) and commercial electrical equipment which continues to be operated and maintained by civilian or contracted personnel.

Power System Efficiency

3-66. An efficient electrical power system will minimize the logistic support (fuel) required to meet the electrical demand. Two primary considerations to optimize power system efficiency are to maximize the efficiency of the power production and distribution system (supply-side management) and to minimize consumption of electrical power (demand-side management). Planners must size generators properly to meet electrical demand and specify fuel-efficient generators with electronic fuel-management systems. The electrical distribution system must be designed as compactly as practical to minimize electrical losses and electrical loads must be consolidated to ensure generators are operated with maximum efficiency. Power demand can be reduced by using energy-efficient equipment (especially generators and ECUs), improving thermal efficiency of structures (with such things as tent linings, building insulation, and solar shades), and incorporating other energy conservation measures (such as lighting timers, occupancy sensors, and programmable or timer-controlled thermostats).

Power System Design Considerations

3-67. Base camp master planning must address and manage current demands, and future power system growth. Base camp power systems contain three elements: a power source (such as generator, power plant, and batteries), a distribution system which delivers the power (power distribution panels, power cables, transformers, and so forth), and the load or consumer (such as air conditioners, lighting, and communication equipment). It is imperative the Ccdr decides whether the primary base camp power system will be constructed to U.S. standards (120/208 volts at 60 hertz) or to local standards (230/400 volts at 50 hertz, or other standard). However, there may be situations where both U.S. and local standard power are required. In these cases, separate power systems or additional equipment to convert frequency and transform voltage to the appropriate standard may be required. Power distribution systems for basic-capability level base camps may have power cables surface-laid (and covered with a protective shield when located in high-traffic areas), while expanded- and enhanced-capability level base camp power distribution systems will likely have buried or overhead power cables (or both). Regardless of which voltage and frequency standard is followed, or method of power distribution, appropriate safety measures must be implemented to prevent damage to cables and to reduce electrocution hazards. See table C-15, page C-16, for electrical power system attributes in relation to the levels of capabilities.

Generator Placement

3-68. Generators should be placed as close as possible to the point of demand without disrupting other activities (such as meetings or sleep), to minimize the materials needed for the distribution system and to avoid voltage drops which may impair equipment function. They must also be positioned to allow for easy service and maintenance (particularly refueling). Generators must be located away from buildings, walls, or other obstructions which may impair cooling. Typically, at least five feet of clear space is required (at least ten feet between generators). Prevailing wind direction may be considered to aid in generator cooling. Sandbags, partitions, and barriers may be placed around generators to reduce noise pollution as long as they do not obstruct cooling air flow.

Generator Protection

3-69. Generators must be protected against attacks, unauthorized access, and the elements. Protection measures may include overhead roofs, protective walls or berms, and secondary containment measures for fuel leaks and spills. The use of protective walls or berms also helps to reduce noise pollution as long as they do not obstruct cooling air flow.

Power System Resources

3-70. Larger camps with expanded and enhanced capabilities typically rely on prime power that uses large generator power plants with distribution systems provided by prime power units or contracted services (USACE worldwide power contract or logistics civil augmentation program [LOGCAP]). This transition away from spot generation to power distribution systems and commercially-produced power typically results in cost savings and improved fuel-use efficiency. Modular base camp life support sets, such as Force

Provider and Harvest Falcon, include organic generation capability that is generally sufficient for its internal components that are designed for a specific number of occupants. Reliable commercial grid power should be used whenever possible, with the appropriate amount of back-up power generation available when needed for critical facilities. See FM 3-34.480 for more information on prime power planning considerations.

3-71. When base camp power requirements exceed a unit's organic capabilities, there are several resources that may provide additional power system capacity. The Army's Force Provider is a modular base camp life support area (LSA) system, which is configured to 150-man scalable up to a 3,000-man configurations, and comes with a complete power system. For larger or longer duration operations, the Force Provider's Prime Power Connection Kit enables transition and connection to the prime power system. The Air Force's Basic Expeditionary Airfield Resources system is a deployable airfield operations package which is complete with low-voltage and medium-voltage power systems. If funding is available, additional power system equipment and support may be obtained from indefinite duration-indefinite quantity contract resources, such as the USACE worldwide power contract or the Army Materiel Command LOGCAP contract. Additional power system equipment is available through the General Services Administration or local contract sources, but would require proper system design to ensure equipment was utilized safely and efficiently.

Alternative/Renewable Energy

3-72. Planners should leverage renewable energy sources such as solar, waste-to-energy, and wind whenever possible to help make base camps more sustainable. Proper employment of renewable energy sources will require foresight during base camp master planning. Plans should account for regional wind patterns and features, such as mountains and buildings, that may block the solar resource when allocating space for renewable energy systems on base camps.

Power System Design Resources

3-73. Most units are not trained to establish power distribution networks. However, power system training is available from the Communications-Electronics Command (CECOM), and power management training is being incorporated into the military occupational specialty 91D (Power-Generation Equipment Repairer) training curriculum. Units may request support from specialized units, such as the 249th Engineer Battalion (Prime Power), USACE FEST, or contract for design support. The risks for electrocution and fire are substantial concerns with electrical systems, and the design must address whether the power system is constructed to U.S. or HN specifications. The codes adopted to follow must be consistent with the voltage and the building materials available and construction methods used. See the UFC 3-500 series at <<http://www.wbdg.org>> for more information.

MEDICAL TREATMENT FACILITIES

3-74. The type of medical treatment facilities (including medical, dental, and veterinary services) on a base camp will vary based on specific requirements that are directly related to the mission, task organization, and allocation of medical units assigned to a particular geographical region or AOR. The United States Army Health Facility Planning Agency (USAHFPA) provides health facility planning expertise in support of deployed units. The USAHFPA serves as the health facility planning link from the strategic to the tactical level and provides reachback technical assistance to the forward deployed health facility planners located in theater. The health facility planner will likely be assigned to the staff of joint force or Service component surgeon serving in a collaborative fashion with the following: theater level engineering sections, base sustainment operations, reachback agency support, contracting agencies, subordinate command-level facility management personnel, funding streams, and HN entities.

3-75. The health facility planner relies heavily on a successful and coordinated working relationship with the echelons-above-brigade engineering staff. The health facility planner provides direct advice and input to the echelons-above-brigade engineering staff with regard to all health facility planning above the brigade/battalion aid station level to ensure appropriate alignment with the theater medical concept of operations. See FM 4-02.1 for additional information on health facility planning and requirements.

3-76. Supporting the USAHFPA in its mission is the U.S. Army Engineering and Support Center, Huntsville Medical Facilities Center of Expertise, which provides technical expertise on medical facility design and supports engineering, planning, design, evaluation, and criteria development for the execution of medical projects for DOD, Army, and designated Air Force and Navy projects. See UFC 4-510-01 for information on medical facilities and engineer doctrine for information on medical waste planning and management.

Chapter 4

Construction

This chapter describes general construction requirements, means, methods, and procedures for constructing base camps as part of the life cycle. Construction standards for base camps are discussed in chapter 1.

GENERAL CONSTRUCTION REQUIREMENTS

4-1. Planners, designers, and leaders within the constructing unit or organization consider operational and mission variables, available construction resources, theater construction standards, base camp levels of capabilities, and the base camp principles in determining the optimal means and methods for constructing base camps. See engineer doctrine for more information on construction planning and estimating.

4-2. Base camps are constructed in phases, based on priorities and sound construction practices, and according to approved designs; and are completed on time within budget and to the specified quality. The constructing organization site adapts the design, when authorized and as required, and finalizes the construction plan based on the actual resources that are available at the time of construction.

ENVIRONMENTAL, SAFETY, AND OCCUPATIONAL HEALTH CONSIDERATIONS

4-3. Commanders ensure ESOH guidance and standards are being executed by the unit and/or contractors performing the construction. During construction, the generation of construction debris is a significant consideration and must be addressed in the overall waste management plan to minimize environmental impacts. See FM 3-34.5/MCRP 4-11B and engineer doctrine for more information on waste management.

PROJECT APPROVAL PROCESS AND ACQUISITION REVIEW BOARD

4-4. Project approval processes and acquisition review boards ensure equitable distribution of resources according to established priorities and prescribed base camp levels of capabilities within the theater basing strategy. They also validate requirements against justifiable needs that are captured in base camp master plans, ensure best value, and prevent unnecessary or wasted construction. A centralized project approval board and/or an acquisition review board is established at a predetermined echelon, and meets regularly to provide oversight on base camp construction projects. The CCDR articulates the processes and procedures, and the appropriate approval authorities based on identified thresholds, for reviewing and approving base camp construction projects in the theater base camp standards. Base camp commanders describe the procedures for project approval and acquisition review boards within base camp policies and SOPs and enforce standards with tenant units.

CONSTRUCTION MEANS

4-5. Sustainable base camps leverage construction resources that are readily available through local means, established supply channels, and operational contract support. See ATTP 4-10 and JP 4-10 for more information on operational contract support. Green or environmentally friendly construction materials should be used whenever possible. Green construction materials are characterized by such things as—

- Low toxicity (nontoxic or void of carcinogenic compounds and ingredients).
- Minimal emissions (emit low or no volatile organic compounds).
- Recycled content (produced with recycled materials).
- Recyclable materials (materials that are recyclable or reusable at the end of their useful life).

4-6. Cost-effective use of materials and labor is achieved primarily by the use of local resources. Local resources are generally less expensive and avoid the challenges associated with international shipments; however, the quality of materials and services rendered must be considered in the overall cost-benefit analysis.

4-7. Given the fluidity of contingency operations, logistics, and labor shortages can arise at short notice. Where possible, anticipate and plan for delays and ensure adequate lead time to accommodate logistic requirements.

4-8. Construction may be performed by joint and multinational engineer units or contractors, or a combination of both that is balanced to meet established objectives that reflect mission requirements and the operational environment. Commanders must ensure subordinate units and base camp commanders are trained and capable of performing and overseeing the tasks needed for the construction methods established for the operational area. This training must also include the necessary COR training needed for ensuring the quality, completeness, and safety of contracted construction.

TROOP CONSTRUCTION

4-9. Troop construction is performed by joint and multinational engineer units that are organic or task-organized to the supported unit. Base camp construction depends on the interoperability of joint and multinational engineering units to gain and maximize efficiencies through interdependencies.

4-10. The Army has modular horizontal and vertical engineering companies, concrete sections, survey design sections and other units that can support base camp construction. Horizontal projects may be completed by a horizontal unit or a unit with both horizontal and vertical capabilities. Horizontal engineering generally involves constructing, repairing, and maintaining roads, airfields, heliports, drainage structures, paving, bridging, petroleum pipeline systems and pile construction projects. Horizontal engineering units with probable support from vertical engineering units prepare the site for the various construction projects.

4-11. The Marine Corps has engineering units organic to its Marine air-ground task force (MAGTF) elements that possess limited horizontal and vertical construction capabilities. These comprise the combat engineer battalions within the ground combat element, the engineer support battalions within the logistic combat element, and the Marine wing support squadrons within the aviation combat element. Although secondary to their primary missions to conduct combat engineering in support of MAGTF operations, each can plan for and construct base camps using organic expeditionary equipment possessed by the Marine Corps for mission essential base camp facilities, and both the engineer support battalion and Marine wing support squadron can construct expeditionary airfields. Additionally, as described in Navy Tactics, Techniques, And Procedures (NTTP) 4-04.1M/MCWP 4-11.5, the naval construction force (also referred to as Seabees) support MAGTF contingency operations as an element and possess a full array of horizontal and vertical construction capabilities to complement Marine Corps organic engineering capabilities and improve expedient, expeditionary facilities that are initially used for base camps. The Seabees augment the MAGTF with specialized capabilities not resident in the MAGTF such as construction contract support, environmental specialists, design engineering, and public works management of base camps.

4-12. Vertical engineering generally involves constructing, repairing, and maintaining protective structures (guard towers and bunkers), concrete structures, buildings, and associated utilities such as electrical, plumbing, water, and sewage. The constructing unit may initially use organic capabilities to support its construction projects. If it is constructing a base camp ahead of planned occupancy, it may occupy completed facilities. It may need to construct support facilities separate from the base camp if another unit is planned to immediately use all completed facilities. These separate constructing unit facilities may be located within the base camp perimeter to efficiently use security and defense resources.

4-13. Performing construction tasks with the proper equipment and tools improves efficiency and effectiveness and promotes safety. Construction units may require augmentation with special tools and equipment through fielding, local purchase, or contracting to be able to perform the desired methods of construction. Construction equipment requirements may vary depending on terrain and weather considerations associated with the region or special environments.

4-14. Base camp construction uses materials that are versatile, durable, energy and water efficient, and readily available to enable timely-constructed, cost-effective, scalable, and sustainable base camps. Versatile materials are able to be used and/or reused for various applications. Using materials that can be reused or recycled will greatly reduce generated waste and waste disposal requirements. Materials must be durable and able to withstand the environmental conditions of the region.

4-15. Construction materials may be obtained using standard military supply procedures or local purchase procedures and contracting. Some materials may be available from prepositioned stocks to facilitate rapid base camp construction. To maximize the benefits, local procurements should occur as close as possible to the base camp site to minimize transportation requirements.

4-16. Certain construction materials, such as soil for fill, sand, gravel, and water, are often needed in large quantities. It is generally more cost-effective to locally produce these materials through military or contractor-operated borrow pits, quarries, and wells. The environmental impact of excavation on the surrounding community or land must be considered, such as erosion, stormwater runoff, natural habitat, and agriculture. Contracted construction and the construction directive for organic units should specify quality standards for use of local materials that are verified through inspections as part of the QASP. See FM 3-34.400/MCWP 3-17.7 for more information on the production of construction materials.

CONTRACTED CONSTRUCTION

4-17. Use of construction contracting and contingency funding is important in developing base camps. The CCDR may use USACE, NAVFAC, and other DOD-approved activities as contingency contract construction agents for design, award, and management of construction contracts in support of base camps; or local labor construction managed directly by a unit. The designated construction agent must be used for military construction (MILCON)-level construction. Contracting officers use construction documents (such as performance work statements [PWSs], plans and specifications, and cost and schedule estimates) that are generated during planning and design to facilitate contracting efforts. FESTs possess contracting capabilities that may assist the CCDR and base camp commanders. Having warranted contracting officers greatly enhances the unit's contracting capabilities. See EP 500-1-2 for information on USACE's field force engineering program and ATTP 3-34.23 for more information on contract construction.

4-18. Executing contracted support in military operations requires significant management efforts from the contracting staff and the requiring activity and/or supported unit. The Service component commander ensures that the requiring activities are properly trained and actively participate in the contract execution process, including the training and certification of CORs. The property book office must establish and maintain accountability for all equipment procured or leased through contracting or local purchases.

4-19. A COR is a person appointed in writing by a contracting officer responsible to monitor contract performance, through inspections and quality assurance checks, and perform other duties as directed. CORs provide the technical knowledge, skills, and abilities needed to ensure contractors are providing the desired products and services. Often times multiple CORs are required for a single project. CORs play an important role during project initiation by helping to ensure the accuracy and completeness of PWSs. Incomplete or poorly written PWSs contribute to wasted efforts in terms of time and resources.

TYPES OF AUTHORIZATIONS AND SOURCES OF FUNDING

4-20. Funding is a constraint that must be analyzed during planning. MILCON may be programmed or accomplished under a number of regulations, and may be authorized and appropriated by separate acts of Congress. Typical funding sources for contingency construction are: O&M, MILCON, and local purchasing. See JP 3-34 for more information on contingency authorities and funding.

4-21. The DD Form 1391 is a programming tool used to request and justify a construction need. It defines the scope and cost estimate for the project. See DA Pamphlet 420-1-2 for instructions on completing and processing this form, and UFC 3-730-01 for more information on programming cost estimates.

4-22. MILCON projects include all MILCON work or any contribution authorized by 10 USC 2801 necessary to produce a complete and usable facility or a complete and usable improvement to an existing facility, or to produce such portion of a complete and usable facility or improvement as is specifically

authorized by law. MILCON may be programmed or accomplished under a number of regulations, and may be authorized and appropriated by separate acts of Congress.

CONSTRUCTION METHODS

4-23. There are multiple options for the construction of facilities and infrastructure that range from modifying preexisting structures; using pre-engineered metal or fabric buildings; using modular base camp kits; and constructing wood, steel, or CMU framed and supported buildings. Construction technologies continue to evolve and offer improved methods of construction that may be incorporated through rapid fielding initiatives and contracted support to enhance the speed, quality, and sustainability of base camp construction. Standardizing the construction used throughout the operational area simplifies costing estimates, safety and quality assurance/quality control implementation, and facility maintenance and repair procedures; allows for reduced inventories in building materials and supplies; and reduces training requirements for construction workers. See FM 3-34.400/MCWP 3-17.7 for more information.

PREEXISTING FACILITIES AND INFRASTRUCTURE

4-24. Preexisting facilities and infrastructure should be used whenever possible to save time, conserve resources, and reduce the overall logistic footprint. Using preexisting structures assumes protection risks, in terms of survivability, safety, and FHP, that must be mitigated through structural assessments and OEHSAs. Documenting the existing environmental conditions helps limit liabilities.

TENTAGE

4-25. The use of organic unit tentage or assembled packaged life support kits, if available, provides a quick means for establishing a basic level of capabilities. However, the impacts of long-term use of tents and effects on protection, QOL, and increasing the level of capabilities must be considered. The longer tentage is used and exposed to the elements, the less likely it is to be easily repacked, stored, and reused. Tentage used outside of the U.S. is typically not retrograded back to the U.S. unless it can meet the rigorous cleanliness requirements mandated by Executive Order 13112. Additionally, the cost of tentage, when combined with shipping costs into remote areas may be more expensive than using local materials and labor to construct base camp facilities.

PRE-ENGINEERED METAL OR FABRIC BUILDINGS

4-26. Pre-engineered metal or fabric buildings, such as K-span® and clamshell structures, are structures that are completely assembled on-site using standard components and materials brought to the site. They range from custom designs to prepackaged and assembled kits ready for constructions. Some advantages they offer include: rapid construction, flexible designs, durability and low maintenance, and minimal foundation preparation requirements. One of the major disadvantages is that the major structural components are often quite large and bulky and difficult to transport to the site.

MODULAR BUILDINGS OR TRAILER UNITS

4-27. Modular buildings or trailer units are types of facilities that are fabricated or assembled off-site, transported to the site, and placed in position. These structures come complete and are available in various sizes. They can be free-standing or placed inside an existing structure. Modular buildings may be used for multiple purpose and provide flexibility, speed of occupancy, and ease of expansion and relocation.

PREFABRICATED OR MANUFACTURED BUILDINGS

4-28. Prefabricated or manufactured buildings are types of structures that consist of several factory built components that are assembled on-site to complete the unit. Prefabrication saves time on the construction site which may be a factor when construction time is limited based on tactical or weather conditions. Quality can be controlled while the components are in production at the factory. Typically, less waste is generated at the construction site which reduces waste disposal requirements in the operational area. There are potential disadvantages to consider such as requirements for careful handling of prefabricated

components, such as concrete panels, and the tendency for leaks where prefabricated components are joined.

TRADITIONAL CONSTRUCTION

4-29. Traditional construction using wood, steel, or CMU offers flexibility in designs, including the incorporation of necessary protection measures, and the ability to perfectly adapt to existing site conditions. Disadvantages include the time and efforts needed for designing and constructing individual facilities, especially on a large scale. The environmental impact of procuring or using local construction material, such as the harvesting of timber, soil degradation, and so forth, must also be considered.

CONSTRUCTION PROCEDURES

4-30. The construction procedures used for base camps are normally executed by engineer construction units or contractors. The detailed construction procedures, techniques, and capabilities are found in Service doctrine for specific techniques or trades.

CONSTRUCTION MANAGEMENT

4-31. A commander may be responsible for base camp planning, design, construction, base camp operations and management; or a commander may only be responsible for constructing the base camp for another unit to operate and manage. Base camp commanders are responsible for establishing the appropriate means for managing initial construction or follow on life cycle construction tasks on their base camps. This normally includes the appointment of project managers who are responsible for the cost, quality, and timely completion of assigned projects.

4-32. Construction or project management involves three primary steps. These steps may be used for a single project or to manage multiple projects for the base camp. See FM 5-412 for more information. Those steps are—

- **Planning.** This step involves dividing the project into manageable subtasks, commonly referred to as construction activities, and determining the best sequence for performing them. Logic diagrams are commonly used to graphically show the established sequence of events.
- **Scheduling.** This step adds the element of time to the planning step by first determining the duration of each construction activity and then calculating the overall duration of the project. Time plans or planning schedules (or Gantt charts) are used to show the results of this step.
- **Monitoring and controlling.** This step consists of measuring project progress (comparing the actual progress against the initial schedule) and taking the necessary corrective actions to accomplish established goals. The implementation of an effective QASP is essential to maintain standards, conserve resources, and maintain safety. The COR is instrumental in assuring quality when contracted construction is used, especially when non-CAAF and/or local labor is used. ESOH surveillance, pollution prevention, material reuse or recycling, spill prevention, fire prevention, and other environmental controls such as erosion control must be integrated during construction.

4-33. Planners use the project management system described in FM 5-412 as a tool for the process of coordinating the skill and labor of personnel using machines and materials to form the materials into a desired structure. The project management process divides the effort into preliminary planning, detailed planning, and project execution.

4-34. Planners rely extensively on TCMS to generate the products needed for planning and execution. These products include the design, activities list, logic network, critical path method or Gantt chart, BOM, and other products. In addition to TCMS, there are various other reachback tools or organizations that can exploit resources, capabilities, and expertise that is not organic to the unit that requires them such as the USACE Reachback Operations Center.

4-35. The project management process normally begins with the development of a construction directive. This provides the who, what, when, where, and why of a particular project and generally follows the five-paragraph format used for mission orders and plans (see ATTP 5-0.1 and MCWP 5-1).

4-36. All construction projects require the maintenance and updating of construction plans. As these plans are altered, change drawings, diagrams, and environmental condition reports (ECRs) must be completed. When contracted construction is used, the contract must specify receipt of as-built plans for each portion of a project before payment for that portion or risk failure to capture the information. These plans are especially important where safety or environmental matters are involved. These include areas such as—

- Electrical systems, especially if buried lines are involved.
- Sanitation systems, such as buried sewer lines, sewage lagoons, and latrine pits.
- Ammunition and explosives storage areas.
- Training areas, especially those that produce UXO.
- Landfills.
- Incineration sites.
- HAZMAT storage areas.
- HW accumulation points.

4-37. An integral part of the construction phase is reporting. Reports from the unit conducting the construction are used to measure and analyze performance, anticipate change and unforeseen requirements, and resolve problems. The headquarters directing the construction ensures that the necessary reporting requirements are contained in orders, plans, or SOPs.

BASE CAMP CONSTRUCTION PLAN

4-38. The base camp construction plan describes who does what, where, and when. The “when” is based on established priorities, the arrival of construction units or contractors and the necessary equipment and materials, and the logical sequence for performing construction tasks. The base camp construction plan may also include other nonconstruction tasks, such as real estate acquisition, funding, and security, that need to be performed before construction begins if those tasks are not covered in other plans and orders.

PROJECT PHASING

4-39. Base camp planners and project managers must determine, in conjunction with the unit or contractors performing the construction, the proper sequence of events and the critical path required to execute construction in a timely and efficient manner. Individual structures or components of the base camp are arranged into groups and/or stages (phased construction) to make the best use of available assets. TCMS products—such as activities list, logic network, critical path method or Gantt chart, and BOM—are useful in project phasing.

CONSTRUCTION PRIORITIES

4-40. Competing demands for often limited construction resources, including equipment, personnel, supplies, and funding, will require careful prioritization. The basis for prioritization is largely a function of the importance that each project contributes to the designated base camp purpose and function(s), and schedules for occupancy. Priorities established in plans and orders may have to be adjusted after construction is started based on new mission requirements and changes in the availability of resources. An example of a project priority list with phasing sequence is shown in table 4-1. Base camp planners establish priority groups to facilitate decisionmaking for resource allocation and master planning. An example of priority groups may include—

- Priority 1—Projects that meet an antiterrorism/force protection, health, safety, or environmental requirement.
- Priority 2—Projects that resolve a critical mission support or functional deficiency.
- Priority 3—Projects that are a necessary precondition for other projects to support base camp development.

- Priority 4—Projects that resolve a current but noncritical functional deficiency.
- Priority 5—Projects that support future expansion capability.
- Priority 6—Other projects.

Table 4-1. Example of a project priority list with phasing sequence

<i>Priority</i>	<i>Project Number</i>	<i>Project Description</i>	<i>Phasing Sequence</i>
1	356	Observation towers	1
2	432	Perimeter lighting system	
3	858	Vehicle maintenance shop	
4	3118	Hazardous material facility	
5	6424	Modified record fire and combat pistol range	
6	13532	Vehicle maintenance shop	
7	16032	Upgrade M16 record fire range 3	
8	16443	Religious activity facility	
9	17154	General instruction building	
10	18166	Vehicle maintenance facility	2
11	18600	Upgrade primary power	
12	18800	Integrated waste management facility	
13	19636	Physical fitness training facility	
14	19699	Vehicle maintenance facility	
15	20807	Tracked vehicle maintenance facility	3
16	21660	Railhead upgrades	
17	22993	Upgrade vehicle maintenance facility	
18	23301	Upgrade night fire range	
19	23484	Hazardous material storage facility	4
20	27775	Vehicle maintenance facility	
21	33967	Tactical equipment shop	
22	14104	Open storage area	
23	14112	Road Improvements and truck pad	
24	14529	Vehicle maintenance facility	5

SITE WORK

4-41. Site work involves the engineering designs for clearing the base camp site (construction site), performing drainage tasks, and stabilizing the surface and subsurface conditions to facilitate the construction of facilities and infrastructure. Site preparation generally involves horizontal engineering units to prepare the site and generally follows this sequence:

- Survey the site.
- Prepare the site.
- Incorporate drainage.
- Stabilize the soil.

Survey the Site

4-42. When a general area has been selected for a base camp as a result of site selection, construction surveys are performed as time and the situation allows. Ideally, construction surveys are performed in conjunction with environmental and infrastructure reconnaissance and related surveys (see FM 3-34.170/MCWP 3-17.4) to obtain or verify the necessary information required to finalize designs and

begin construction. An on-site survey verifies information gathered from geospatial intelligence, including geospatial data and imagery, that may have been used during planning and in making preliminary decisions. After completing a construction survey, the design information is transferred from paper to the field by construction stakes. See FM 5-430-00-1/MCRP 3-17.7A/AFJPAM 32-8013, Volume I for more information. Construction surveys include—

- Reconnaissance survey.
- Preliminary survey.
- Final location survey.
- Construction layout survey.

4-43. The number of surveys conducted and the extent to which they are performed are largely dictated by the time that is available, the standard of construction desired, and the experience level of personnel performing construction tasks. The quality and efficiency of construction are directly proportional to the number and extent of surveys and other preconstruction activities. Key items to verify during on-site surveys include: threat situation, civil considerations, environmental considerations, existing site conditions, site layout, drainage considerations, soils classification, and availability and quality of materials and labor force.

Reconnaissance Survey

4-44. A reconnaissance survey provides a basis for site selection and provides information that supports future surveys. If a site cannot be selected based on this survey, it will be selected in the preliminary survey.

Preliminary Survey

4-45. A preliminary survey is a detailed study of a location tentatively selected on the basis of reconnaissance, survey information, and recommendations. If the best available site for a base camp has not already been determined, it is selected based on this survey.

Final Location Survey

4-46. A final location survey is conducted if time allows. Permanent benchmarks for vertical control and well-marked points for horizontal control are established. This enables construction elements to accurately locate and match specific design locations with those on-site.

Construction Layout Survey

4-47. A construction layout survey is the final preconstruction activity that occurs before construction begins. It provides alignments, grades, and locations (construction stakes) that guide construction operations. This survey continues until construction is complete.

Prepare the Site

4-48. When earthwork estimation, equipment scheduling, and the necessary construction surveys are complete, and worksite security is in place, construction begins by clearing, grubbing, and stripping. Clearing the land involves removing and disposing of all vegetation, rubbish, surface boulders embedded in the ground, and any explosive hazards that may exist within the designated area. Grubbing consists of uprooting and removing roots and stumps. Stripping involves removing and disposing of objectionable topsoil and sod. These three operations are done primarily with heavy engineer equipment, power tools, explosives, and fire. The method of clearing depends on the—

- Amount of area to be cleared.
- Type and density of vegetation.
- Effects of terrain on equipment operation.
- Availability of equipment and personnel.
- Time available for completion.

- Threat situation.

4-49. For best results, a combination of methods is used in a sequence most suitable and effective to the operation. See FM 5-430-00-1/MCRP 3-17.7A/AFJPAM 32-8013, Volume I for more information on land clearing.

4-50. Depending on the size of the base camp, the amount of unsuitable materials can be voluminous and may require disposal. To reduce disposal requirements, efforts should be made whenever possible to reuse those cleared materials for other useful purposes such as fill material in revetments and soil-filled containers.

Clearing and Grubbing

4-51. In most cases, engineer heavy equipment is the fastest and most efficient means of clearing and grubbing. Planners must evaluate the limitations on each type of equipment to be used based on the significance of obstacles in the area, such as the diameter of trees and stumps, and the effects of terrain on equipment operation based on surface configuration and soil conditions.

Stripping

4-52. Stripping consists of removing and disposing of the topsoil and sod which would be objectionable as a subgrade, a foundation under a fill, or as borrow material. Examples include organic soils, humus, peat, and muck. Stripping is done concurrently with clearing and grubbing by using bulldozers, graders, scrapers, and front end loaders. It is often helpful to stockpile suitable topsoil and sod for later use on bare areas for dust or erosion control.

Cut and Fill Operations

4-53. Cut and fill operations are conducted when clearing, grubbing, and stripping are finished. Cut and fill operations are the biggest part of the earthwork in base camp construction. The goal of cut and fill work is to bring the site elevation to design specifications. Throughout the fill operation, the soil is compacted in layers (lifts) to minimize settlement, increase shearing resistance, reduce seepage, and minimize volume change. Compaction is achieved with self-propelled or towed rollers. Cut and fill and compaction efforts are intended to achieve the final grade.

Incorporate Drainage

4-54. A properly planned, designed, constructed, and maintained drainage system is essential to the serviceability of base camps. Delays caused by flooding, subgrade failure, and mud are avoided by employing an effective drainage system. Drainage structures should be developed in stages at the beginning of clearing, grubbing, and stripping operations to ensure uninterrupted construction. In most instances, the impact of surface water can be lessened by following the proper procedures for grading, compaction, and drainage. See FM 5-430-00-1/MCRP 3-17.7A/AFJPAM 32-8013, Volume I for information on drainage design.

4-55. Natural drainage features are used as much as possible to ensure minimum disturbance of natural grades and limit the necessary work involved. Where possible, grading operations should run downhill to improve efficiency and to capitalize on natural drainage. During clearing and grubbing operations, existing or natural watercourses must be kept cleared and holes and depressions filled. Adequate drainage for the site must be provided to ensure that water does not interfere with construction operations.

Stabilize the Soil

4-56. Soil stabilization can be critical, even for short-duration base camps. Soil stabilization improves strength, controls dust, and renders surfaces waterproof. Even when the soil is not stabilized it should be leveled and compacted to support drainage of surface water as required by the drainage plan, prevent soil saturation and to help minimize dust.

4-57. Dust control alleviates or eliminates dust generated by vehicle and aircraft operations. Dust created by operations presents both a health hazard and hazard to equipment. Unfortunately, clearing large areas for motor pools, helicopter landing pads, roads, and billeting areas creates significant dust hazards. Various techniques to help suppress dust include placing larger aggregate paved areas, ensuring that vegetative strips remain in place, and applying various chemical dust palliatives. See GTA 05-08-018 and UFC 3-260-17 for additional supporting information. Soil waterproofing maintains the natural or constructed strength of a soil by preventing water from entering it.

4-58. Subgrades can be stabilized mechanically by adding granular materials, chemically by adding chemical admixtures (lime, Portland cement, fly ash, and such), or with a stabilization expedient (sand-grid, matting, or geosynthetics). A stabilization expedient may provide significant time and cost savings as a substitute to other means of stabilization or low-strength fill. Matting and sand-grid are expedient methods for stabilizing loose soils such as sand for unsurfaced road construction. Geotextiles and other geosynthetics are primarily used to reinforce weak subgrades, maintain the separation of soil layers, and control drainage. Geosynthetics are the primary means of waterproofing soils when grading, compaction, and drainage efforts are insufficient. The availability of these materials must be weighed with the considerable time savings for use of expedients in contingency construction.

CONSTRUCT ACCESS ROADS, HAUL ROADS, AND HORIZONTAL CONSTRUCTION SUPPORT FACILITIES

4-59. The construction of the access roads to a base camp may be a totally separate project performed by a different construction unit or part of the base camp project. Haul roads may be temporary roads used to move construction materials by the shortest economical route to the base camp construction site. The constructing unit almost always requires both horizontal and vertical construction support facilities that will require resources. Ideally these facilities could be part of the final base camp and turned over to the base camp commander when the constructing unit no longer requires their use. The access road, haul roads, and construction support facilities should have been identified during planning and scheduled to be completed before or concurrently with base camp construction.

CONSTRUCT BASE CAMP HORIZONTAL PROJECTS

4-60. The individual base camp horizontal projects are normally phased and completed ahead of the vertical projects to provide access and site conditions to begin the vertical work. Some horizontal projects may be completed after the vertical projects are completed; such as paving. Horizontal projects may include earthen berms (perimeter and ammunition/explosives storage areas), roads, parking, airfields and heliports. The sequencing of horizontal and vertical projects is done as a part of project management.

CONSTRUCT PROTECTION MEASURES

4-61. When occupying the base camp site, the constructing unit conducts reconnaissance, secures the site, and establishes initial job site security while establishing the initial perimeter security. The perimeter security is phased, upgraded, and sequenced with completion of required site work. The perimeter work may include protective positions and fighting positions. The construction of protection measures is sequenced with the other horizontal and vertical construction projects. Some key infrastructure and facilities hardening measures are integrated into the primary project as it is constructed. Potential projects include protection measures associated with—

- BCOC and BOC.
- Support facilities.
- Logistics sites.
- Troop concentration areas.
- ECPs.
- Vehicle checkpoints.

CONSTRUCT BUILDINGS, INFRASTRUCTURE, AND UTILITIES

4-62. Construction of buildings is normally phased to efficiently use the skilled construction work force. Buried-utilities projects are most efficiently integrated with horizontal site work. Infrastructure and utilities may be phased to provide temporary services to facilitate construction or allow immediate occupancy and use of certain facilities. All construction must comply with applicable standards, such as the Uniform Building Code, National Electrical Code, National Electrical Safety Code, and military or HN standards. Construction of buildings, infrastructure, and utilities includes power generation and distribution systems; water purification and distribution systems; sanitation/waste collection/treatment/disposal systems; shower, latrine, and laundry systems; communication infrastructure; bulk fuel, liquid storage, and distribution systems; and structures associated with the base camp transportation infrastructure.

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Chapter 5

Base Camp Operations

This chapter describes base camp management centers and BOCs which provide the organizational structuring needed for operating and managing base camps. It also discusses three critical tasks that are required for base camps—emergency management, master planning, and contract management.

BASE CAMP MANAGEMENT AND OPERATIONS CENTERS

5-1. The organizational structuring needed for operating and managing base camps is fulfilled through base camp management centers and BOCs. These centers are manned and equipped using organic and/or augmenting capabilities. Augmentation for planning, base camp development planning, design, program and project management, and real estate may come from USACE or similar Service capabilities. Augmentation for many areas of O&M and management may come from IMCOM. Each is tailored to meet mission requirements and organized to generally align with the base camp functional areas. The success of these organizations hinges on placing the right people with the right skills at the right place. Individual augmentees and units, such as RSGs and specialized engineer or military police units, are generally needed at the higher echelons and for larger base camps where base camp O&M requirements are more complicated. Units at the lower tactical level establishing smaller base camps with simpler facilities and infrastructure rely primarily on organic capabilities (dual-hatting), with the necessary expertise provided by higher headquarters (base camp management centers) and command-established assistance teams. Expertise can also be obtained through reachback to supporting organizations with a primary mission to generate and sustain operational forces, such as USACE, NAVFAC, and IMCOM. Any shortfalls in skills or capabilities at any echelon or any size of base camp, even those that may remain after augmentation, are fulfilled through reachback.

5-2. The skills needed for operating and managing base camps do not reside in any single branch or functional area. A grouping of capabilities is required to produce synergic effects. The means and requirements for establishing these centers are articulated in the theater basing strategy and further detailed in subordinate plans, orders, and SOPs.

BASE CAMP MANAGEMENT CENTER

5-3. Base camp management centers coordinate, monitor, direct, and synchronize actions needed for establishing, operating, sustaining, and managing base camps within an echelon's AO. Base camp management centers are established at division-level headquarters and above, although they may be formed within brigades and regiments (based on the mission) if adequately resourced. They may be created using organic and/or augmenting individuals and units. Base camp management centers are similar to the functional and integrating cells formed within CPs. Personnel and equipment from select staff sections are organized to facilitate the accomplishment of mission objectives of the base camps.

5-4. The manning and configuration of base camp management centers varies between units and echelon, based on consideration of the mission variables. SOPs are developed to explain individual roles and responsibilities, standardize operations, and ease the training of new personnel. An example organization of a base camp management center is shown in figure 5-1, page 5-2.

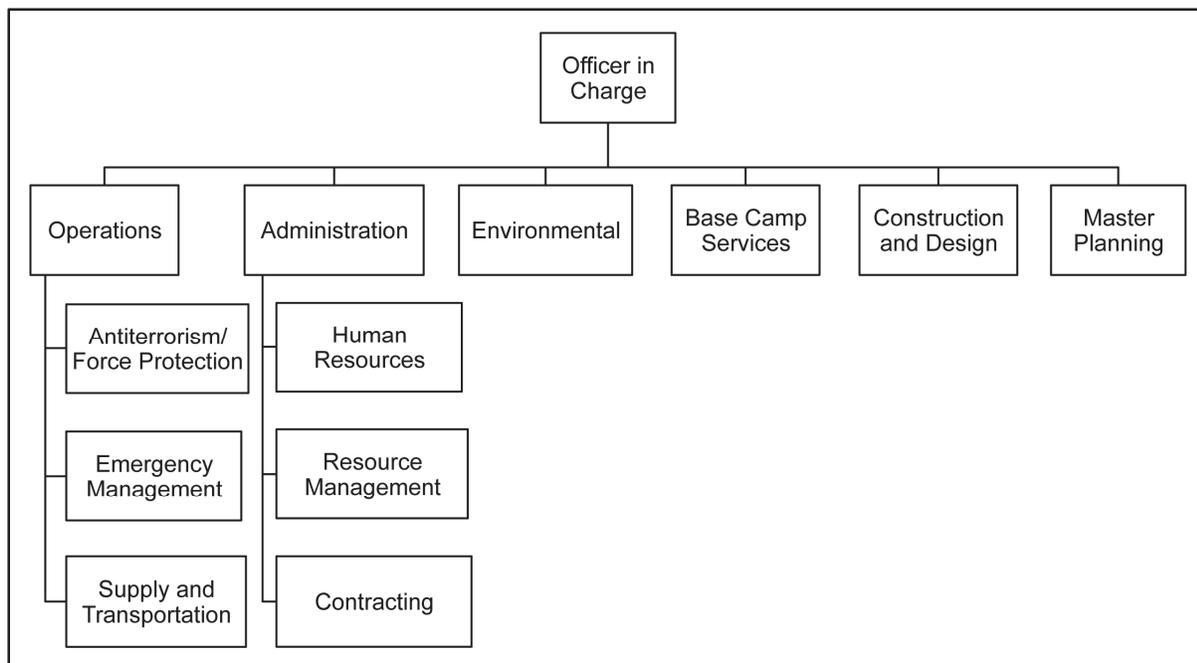


Figure 5-1. Example organization of a base camp management center

BASE OPERATIONS CENTER

5-5. The BOC is the centralized command facility on a given base camp that is needed for operating and managing the base camp. It is the base camp commander's primary means for monitoring the situation and managing the performance of base camp functions and the provision of services and support to ensure efficiency and effectiveness. Some of the key tasks that are performed within the BOC include—

- Conducting the operations process: plan, prepare, execute, and assess (see ADRP 5-0 and MCWP 5-1).
- Monitoring, assessing, and managing base camp functions, services, and support.
- Planning and coordinating for contracted support.
- Coordinating with tenant and transient units/organizations, subordinate base camps (for base clusters), adjacent base camps, and higher headquarters.
- Planning and coordinating for emergency management (incident response and consequence management).
- Conducting master planning (typically collocated at hub base camp BOC/BCOC for smaller base camps) to include land and facility space management.
- Directing and controlling base camp security and defense, if a base defense operations center (BDOC) is not established.
- Performing base camp administrative tasks to include records keeping.

5-6. The BOC is much like a typical CP. Personnel and equipment are arranged to facilitate coordination, the smooth exchange of information, and timely decisionmaking. Well-designed BOCs integrate command and staff efforts by matching personnel, equipment, information systems, and procedures against its internal layout. Personnel are trained to perform tasks required for their specific position or functional area, and are assigned duties that take advantage of their military and civilian experiences, areas of expertise, and managerial skills. See ADRP 6-0 for more information.

5-7. BOCs are organized into sections that generally align with the base camp functional areas to help focus efforts. An example organization of a BOC is shown in figure 5-2. The size, composition, and configuration of the BOC may vary between base camps based on the following considerations:

- Base camp size (population).

- Limited technical expertise augmentation.
- Extent or level of base camp services and support being provided.
- Real property asset management requirements.
- Complexity of facility and infrastructure O&M requirements.
- Reasonable span of control based on the number and echelon of tenant and transient units or subordinate base camps (for base clusters).

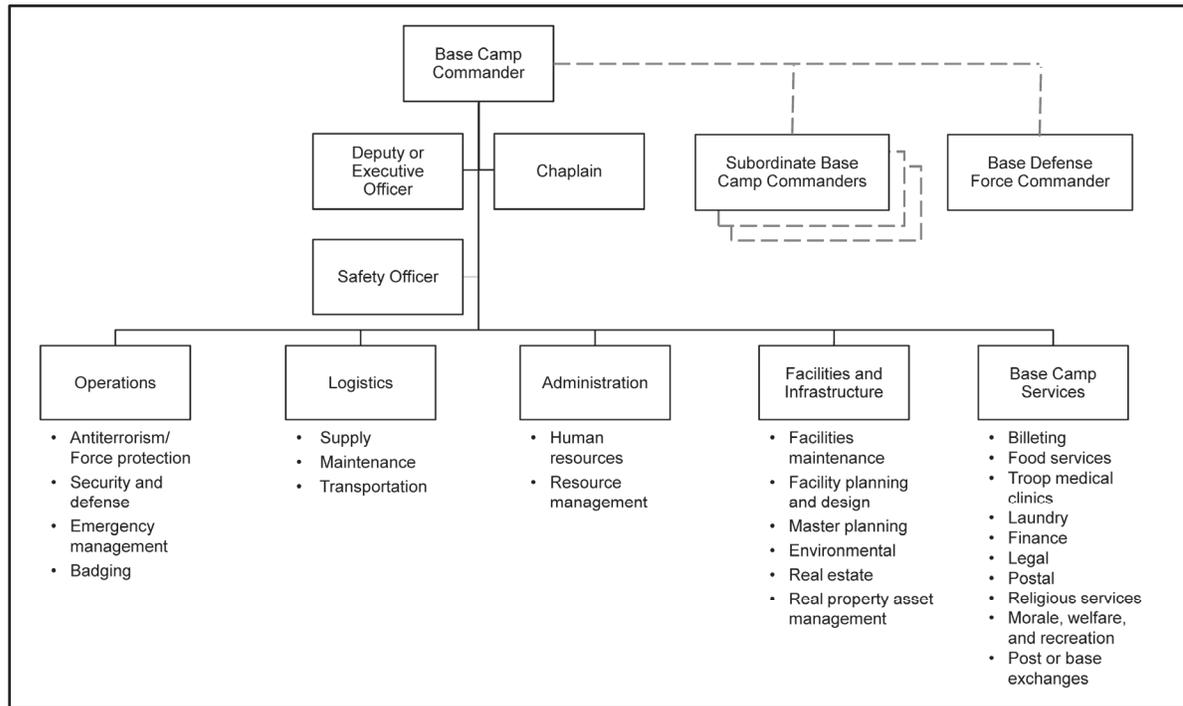


Figure 5-2. Example organization of a BOC

5-8. The BOC is staffed and outfitted using the base camp commander’s organic or augmented capabilities. Individual military or civilian augmentees and/or augmenting units (such as RSGs, construction battalion maintenance units, and FESTs) are generally required for larger base camps where base camp O&M and management requirements are more complicated. For smaller base camps with simpler and less extensive facilities and infrastructure, base camp commanders rely mostly on their organic capabilities and by assigning additional duties (dual-hatting) and areas of responsibilities to individuals or staff sections, with the necessary reachback to the expertise found in higher headquarters (base camp management centers) and supporting organizations (such as USACE, NAVFAC, and IMCOM) whose primary mission is to generate and sustain operational forces. The base camp commander of smaller base camps may decide to establish a stand-alone BOC or subsume the BOC function within the unit CP. The base camp commander develops a BOC SOP to explain individual roles and responsibilities, standardize procedures, ease the training of new personnel, and facilitate continuity during unit rotations. See ATTP 5-0.1 for a more exhaustive discussion of staff duties and responsibilities.

OPERATIONS SECTION

5-9. The operations section has functional responsibility for base camp planning, operations, and training; and the intelligence, fires, and protection functions (or as directed by the commander). For BOCs, the base camp commander’s operations staff officer (S-3) or operations sergeant is typically dual-hatted as the base camp operations officer and leads the operations section. Key tasks performed within the operations section include—

- Planning and coordinating base camp protection, security, and defense (in cooperation with a BDOC if one is established).
- Planning and coordinating emergency management.
- Maintaining and updating the common operational picture (COP).
- Managing security clearances and security compliance.
- Establishing a badging and screening program for controlling access.
- Collecting, analyzing, and disseminating intelligence and combat information.
- Conducting IPB in support of base camp operations.
- Developing and managing the information collection plan.
- Conducting base camp vulnerability assessments.

LOGISTIC SECTION

5-10. The logistic section plans and coordinates supply, maintenance, and transportation tasks (as part of the logistic base camp functional area described in chapter 1) needed for sustaining base camp functions, services, and support. It is linked with the higher headquarters to ensure base camp logistic requirements (demands) are integrated within the overall plan for sustainment. The base camp commander's logistics staff officer (S-4) or the S-4 noncommissioned officer in charge is typically dual-hatted as the base camp logistic officer and leads the base camp logistic section. The logistic section plans and coordinates the following key tasks:

- Requisitioning, storing, and distributing base camp supplies.
- Maintaining base camp commercial vehicles and special equipment used for base camp functions, services, and support.
- Transporting personnel, equipment, supplies, and waste (both within the base camp and between base camps as part of a base cluster) as part of base camp functions, services, and support.

ADMINISTRATION SECTION

5-11. The administration section plans and coordinates base camp administrative tasks that may include human resources support (military and civilian). This section may also have functional responsibility for resource management, identification badges, public affairs, religious services, medical services, and other areas as directed by the commander. For BOCs, the base camp commander's personnel staff officer or human resources sergeant is typically dual-hatted as the base camp administration officer and leads this section.

FACILITIES AND INFRASTRUCTURE SECTION

5-12. The facilities and infrastructure section plans and coordinates the construction, maintenance, operations, and repairs of the base camp physical plant. This also includes establishing and coordinating a base camp self-help program that defines the repairs, modifications, and construction that tenant units are permitted to perform; and tracks the work performed to ensure compliance with safety and construction standards. All construction and modifications to facilities are coordinated with the base camp master planner. Performing construction management is a key task within this section. The facilities and infrastructure section ensures that base camp utility maps are accurate; and establishes and administers a permit process to track, verify, and authorize any excavation or earthwork to prevent damage to underground utilities. The section also coordinates and administers a facilities maintenance and repair work order system to ensure efficient use of resources. This section may also have functional responsibility for environmental protection (see FM 3-34.5/MCRP 4-11B) and master planning as directed by the commander. For BOCs, the engineer staff officer or noncommissioned officer, or an individual with an engineering or facility management background, is typically dual-hatted as the base camp facilities manager, or a director of public works on a large base camp, and leads this section. See TM 5-610 for more information on establishing a preventive maintenance program for buildings and structures, to include processing work orders.

BASE CAMP SERVICES SECTION

5-13. The base camp services section has responsibility for the broad categorization of field services, personnel services, and other sustainment related functions that are provided as a specified function of a base camp. On smaller, short-duration base camps, this section may not be necessary and functional responsibility for the elements of base camp services is retained within the appropriate sustainment/logistics functional area. On larger, long-duration base camps, base camp services can be quite extensive and may require an individual to be designated as the base camp services coordinator or manager. Base camp commanders may designate facility managers for certain facilities, such as a DFAC manager, to facilitate the coordination and management of the activities. The base camp services section is responsible for planning and coordinating the provision of base camp services.

EMERGENCY MANAGEMENT

5-14. Commanders are responsible for establishing, directing, and controlling 24-hour emergency response to base camp incidents that are not necessarily the result of hostile actions; for example, power outages, water main leaks or flooding, fuel or HAZMAT spills, fires, and law and order issues. See Army and Marine Corps doctrine for information on installation emergency management which is applicable to base camps. See ATTP 3-39.10 for additional law and order considerations. Base camp first responders include medical personnel; firefighters; emergency facility and infrastructure repair crews; chemical, biological, radiological, and nuclear specialists; HAZMAT incident response teams, and potentially a Provost Marshal and other military police capabilities. Base camps should be provided state-of-the-art first responder, emergency lifesaving, and tactical and industrial equipment and required training (such as forcible entry tools, fire fighting tools, and leak-sealing systems). Base camp assets may also be required to support foreign consequence management (see JP 3-41 for more information).

5-15. The base camp emergency management function may be conducted through the base camp commander's unit CP or a BOC, which may be collocated or combined with a BDOC if one is established. The base camp commander may also designate an emergency manager to provide added focus on planning, preparing, and responding to emergencies. RM is the foundation of emergency response planning and should be completed prior to the development or update of the emergency plan. A base camp commander should develop contingency plans for hazards such as—

- Power outages effecting key facilities.
- Fires and explosions.
- Water main leaks and flooding.
- Fuel and other HAZMAT spills or leaks.
- Natural disasters (such as earthquakes, floods, hurricanes, and tornadoes).
- Evacuations (complete or partial) and/or sheltering-in-place.
- Other hazards identified during the RM process.
- Law and order considerations.

MASTER PLANNING

5-16. Base camps are continuously improved to increase protection, enhance the overall QOL for residents, improve efficiencies and effectiveness, and ensure sustainability and adaptability for future requirements. Master planning provides an integrated strategy for design, construction, and maintenance of required facilities and infrastructure at the best possible cost that enables scalable and sustainable base camps. Master plans also provide the commander's strategy for meeting the challenges associated with a base camp to include but not limited to: antiterrorism/force protection; reduced manpower, resources, and useable land; base camp realignments and closures; and dependence on contracted support. Improper master planning can result in the inefficient use of resources and land, wasted construction, and inadequate base camps.

5-17. Each base camp with a life span of six months or more has a master plan that is linked to higher headquarters broader master plan. Theater guidance will address archiving requirements. Master planning

is one of the base camp commander's most important responsibilities. The base camp commander, supported by a team of staff members or a base camp master planning working group, develops a master plan that serves as a long-term blueprint for the implementation of improvements. The actual master plan for smaller base camps may be retained at its hub base camp BOC or BCOC.

5-18. The CCDR establishes the policies and procedures for developing, approving, and implementing base camp master planning in the joint operations area. These requirements for master planning are linked to the theater basing strategy and detailed in subordinate unit plans and orders. Master planning for base camps generally follows the process that is used for permanent installations (see AR 210-20), except it has a shortened planning horizon and is often not prepared to the same level of detail.

BASE CAMP MASTER PLAN

5-19. Base camp master plans include land use development (base camp layout) maps or graphics, available land (lease boundaries, UXO areas, and environmental surveyed areas), and supporting construction project lists. Base camp commanders use geospatial data and software applications to plot and show projected modifications to current facilities and infrastructure to enhance their master plans. Master plans should include goals and objectives that subordinates can translate into specific policies and actions. Goal statements should be specific enough to allow for meaningful interpretation by subordinates and practical application.

5-20. A good master plan addresses uncertainties such as resource availability, base camp populations, mission duration, and evolving threats; and consequences of alternative COAs or opportunity costs, which are the costs for not doing something. Base camp commanders identify indicators and triggers to shape master planning and facilitate decisionmaking. Examples of indicators include increased frequency of mechanical breakdowns or failures in utility infrastructure (such as low water pressure or electrical breaker tripping), backlogs at waste collection points or disposal sites, and increased demands on water supply which will directly increase wastewater generation. Examples of triggers include assigned thresholds on the demand for utilities and services based on capability limits (such as the camp laundry facility begins receiving 100 bags of laundry per day), outputs that indicate under- or overutilization (such as load percentages on generators and billeting occupancy rates), and projected timelines for raising levels of base camp capabilities that are linked to operational phases or transitions. Base camp master plans must also address environmental effects and assess the risks of modifications to base camps. Some of the areas that require environmental and risk assessments include HAZMAT storage areas, HW accumulation points, ammunition and explosives storage areas, fuel storage and refueling areas, firing ranges, and waste treatment and disposal facilities.

5-21. The base camp master plan is continuously reviewed, assessed, and adjusted based on new requirements such as changes in prescribed levels of capabilities, expansions and reductions, evolving threats to the base camp, and changes in base camp functions and tenant unit operational requirements. A base camp master plan generally consists of the following:

- **Master planning digest.** This is the foundation planning component of the master plan. It provides the base camp commander's vision, goals, and objectives for the management and development of the base camp. It describes the aim of the master planning effort, challenges and opportunities, and the road map (focus areas and priorities of effort) to achieving long-range goals for the base camp. It is not simply a summary of the base camp master plan. It also includes analyses and can serve as a decision-support document. Base camp commanders consider the base camp principles in formulating their digest.
- **Short-range component.** This component looks out about 2 years and is linked to the established timeline for increasing the levels of base camp capabilities and/or transferring or closing the base camp contained in the theater basing strategy. It focuses on camp improvements needed to provide the desired level of capabilities and QOL. It includes time-phase project lists across the various funding sources that are available. It also addresses any probable clean-up efforts that will be needed to support transfer or closure.
- **Long-range component.** This component looks out more than 2 years and generally less than 10 years, which is the limit for semipermanent construction, and is linked to the established

timeline for increasing the levels of base camp capabilities and/or transferring or closing the base camp as contained in the theater basing strategy. It focuses on improving efficiencies, prolonging endurance, and ensuring sustainability. This component addresses base camp expansion or reduction that is linked to the theater base camp realignment and closure strategy.

- **Base camp design guide.** This is a design tool for standardizing sustainable energy and water efficiency, safety, environmental, and protection measures; and promoting visual order and consistent architectural themes. It is only necessary for base camps that will likely be transferred and become permanent facilities/sites in the HN.
- **Capital investment strategy.** This is the base camp commander's overall strategy for using and investing in real property, as resources and useable land become available, to support the base camp's purpose and functional requirements.

5-22. The level of detail of the master plan depends on the expected life of the base camp and the complexity of its facilities and infrastructure. Master plans for smaller, shorter duration camps may only require simple sketches, such as presentation slides, as long as the necessary detailed information can be conveyed; while those for larger, longer-duration camps may include fully-engineered construction plans based on completed surveys.

MASTER PLANNING WORKING GROUP

5-23. Effective master planning requires expertise in community development, environmental engineering, construction design, and many other areas. Units operating base camps generally lack the necessary capabilities for performing effective master planning and must rely on individual augmentation or technical assistance from higher headquarters or reachback to supporting centers (such as USACE master planning teams).

5-24. Base camp commanders involve tenant units and organizations in the process. Tenant units and organizations (military, governmental, and contractors) provide input into master planning to include the necessary designs and details needed to fulfill their operational requirements. Commanders of base camps that are longer-duration or that have been designated to be transferred and become permanent facilities/sites in the HN should also include the considerations of the HN government and local populations. This ensures that designs and architecture are aesthetically pleasing and suited to the area.

CONTRACT MANAGEMENT

5-25. The base camp commander and staff have responsibility to manage operational contracts. This includes managing contracting and acquiring base camp supplies, services, planning and design, construction materials, and construction support. It may include LOGCAP, regional contracts, construction contracts, support and services contracts, and local procurement. The commander and staff may plan and execute contingency contracts and clauses for essential services under the Federal Acquisition Regulation, Defense Federal Acquisition Regulation, and Army Federal Acquisition Regulation Supplement. They may develop PWSs, technical requirements, plans and specification, and train CORs to obtain contracted quality. See ATTP 4-10 for more information on operational contract support.

5-26. Contract management may be provided on a hub and spoke method, but most CORs need to be located on the base camp where the contractor is providing the service. The base camp commander and staff are responsible for developing and approving requirements, establishing priorities, ensuring performance, and managing funds.

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Chapter 6

Security and Defense

Operational commanders will often be challenged with large AOs, where subordinate units can become widely dispersed and separated by distances that force them to be more self-reliant for protection. These requirements for self-protection can generate competing demands for assets needed for other mission requirements. Establishing base camps, as protected locations from which to project and sustain combat power, and assigning specific units to them offers a way to consolidate protection requirements and maximize the use of available resources. Ensuring that base camps provide the necessary protection requires an application of the protection tasks that are detailed in ADRP 3-37. This chapter focuses on base camp security and defense. Although generally aligned under the protection/force protection warfighting function, base security and defense integrate tasks from both the protection/force protection and movement and maneuver/maneuver warfighting functions as articulated in ADRP 3-37 and ADRP 3-90, respectively. FM 3-37.2, FM 3-90-1, GTA 90-01-011, JP 3-07.2, and JP 3-10 are additional key references for base security and defense operations.

THE PROTECTION WARFIGHTING FUNCTION AND BASE CAMPS

6-1. All commanders are responsible for the protection of forces and base camps within their AOs and consider the protection tasks detailed in ADRP 3-37. The base camp commander integrates the appropriate protection/force protection tasks as part of mission planning and throughout the operations process using integrating processes and continuing activities. Additionally, the base camp commander, whether dual-hatted or as a separate commander with a staff, conducts selected protection tasks and coordinates, enables, supports, monitors, or enforces other tasks for the base camp and tenant units.

6-2. The protection/force protection function facilitates the commander's ability to maintain force integrity and combat power. The protection/force protection function is applied by commanders, staffs, and Soldiers/Marines to reduce the probability of loss of friendly personnel and assets and to mitigate the threat and threat effects when disruptions occur. Protection and defensive measures are applied within and beyond the confines of the base camp to safeguard personnel, physical assets, and information. Protecting and defending base camps includes consideration of all of the protection tasks within the protection/force protection warfighting function as detailed in ADRP 3-37, as well as the associated defensive tasks detailed in FM 3-90-1.

6-3. The requirement to establish a base camp (at least the larger hub sites), which includes designating a base camp commander and determining the necessary means for operating and managing it, should be identified during mission analysis/problem framing. This allows base camp activities to be synchronized and integrated early in the planning process and throughout the occupation of the base camp. In other situations, base camps may evolve from unit locations established during major combat or other military operations. These base camps may start out as a single unit or very small number of units that are capable of providing protection for their assets with organic and attached supporting capabilities. In these cases, the senior commander on site executes all base camp responsibilities in a dual-hatted role. As the base camp grows in size and complexity, specifically the number and variety of units and missions being supported, the assumed additional responsibilities can detract from the senior commander's focus on the primary mission. At this point, a subordinate unit commander, such as a brigade special troops battalion or brigade support battalion for a BCT, or a tenant unit commander may be designated as the base camp commander.

As a base camp grows in size, a specialized base camp commander and staff may be required to minimize the demand on the senior tenant unit and free that commander from the details involved with managing a base camp. Units that will potentially perform this role include RSGs, construction battalion maintenance units, and MEBs. The decision point for this transition is determined based on COA analysis, RM, and other staff assessments during the operations process.

6-4. Bases camps may be grouped in relatively close geographic proximity for mutual protection and ease of accomplishment of mission objectives. When base camps are placed close enough to one another to provide mutual support, the AO commander typically designates a base cluster commander. This may be the senior base camp commander, or the commander of the base camp where the AO commander resides. The base cluster commander is responsible for integrating, coordinating and synchronizing mutual protection/force protection, security, defense measures and defense plans to protect the entire base cluster. A base cluster normally lacks a defined perimeter or established access points to the cluster as a whole, although individual bases within the cluster maintain perimeter security, entry, and access control. Within base clusters, each base commander will implement a base defense plan for their individual base; however, all base defense plans within the cluster must be coordinated and synchronized to ensure mutual support for all bases within the cluster. In a base cluster defense plan, resources (such as TCFs) are typically shared so that they provide support to all bases in the base cluster.

6-5. The application of effective protection strategies for base camps and their tenant and transient units is generally achieved by developing a comprehensive protection plan that is linked to site selection, layout, and facility design. It should also be consistent with the principles of protection detailed in ADRP 3-37, the AT tasks highlighted in FM 3-37.2, and those applicable defensive tasks identified in FM 3-90-1. These include and rely on collective efforts that span the wide range of tasks and areas of specialized technical expertise that are aligned within the protection/force protection and movement and maneuver/maneuver functions. Base camp protection information and requirements are integrated into the operations process. They incorporate traditional information collection resources as well as inform and influence activities of civil affairs, military police, and other elements that are in routine contact with the local population. Information received is used to assess the positive and negative effects of the base camp on the local population. The security of the base camp is an integral part of the security of local population centers. Other information about the security area can also be obtained from tenant and transient units operating in or transiting the security area.

6-6. Protection planning in support of base camp operations begins during the initial planning phase of an operation and coincides with the decision, or identification of the requirement, to establish a base camp. Protection planners determine base camp protection requirements and recommended protection priorities for persons, facilities, infrastructure, and specific areas such as power stations, ammunition/explosive storage sites, and artillery emplacements based on threat, vulnerability, and criticality assessments and protection capabilities. Those requirements that are to be fulfilled through base camp design—including facility designs, building spacing, and site design—are coordinated with base camp planners or through a base camp working group. They are then integrated within the base camp development planning process and the base camp master plan. The ways and means for fulfilling the remaining protection requirements are coordinated throughout the staff and the necessary detailed information needed for execution is then provided in plans and orders to facilitate subordinate unit or base camp commander base camp protection planning. See ADRP 3-37 and FM 3-37.2 for more information on prioritizing protection.

6-7. During COA development and the array of forces, which includes identifying tentative base camp locations, planners consider the forces, equipment, and technical capabilities needed to protect the base camp. Those required capabilities are based on the initial threat and vulnerability assessments that occur during mission analysis/problem framing and consideration of the mission variables. The RM process is applied to protection planning and execution and fully integrated throughout the operations process. See ADRP 3-37 and FM 3-37.2 for more information on integrating protection and FM 5-19 for additional information on the RM process.

6-8. Plans are refined based on new information resulting from reconnaissance (including engineer reconnaissance and infrastructure assessments), health and environmental assessments, and continuous threat and vulnerability assessments. The base camp's actual location, orientation or site design, and

boundary may be adjusted based on current conditions at the proposed location and the results of subordinate unit or base camp commander protection planning.

BASE CAMP SECURITY AND DEFENSE

6-9. Base camps provide a protected location from which to project and sustain combat power. While some base camps, especially smaller base camps built in more dangerous areas, may be required to focus on defense rather than just security, the primary focus for most base camps is not on conducting a defense except in rare instances where Level III threats are imminent. In these cases, normal mission operations on the base camp, including tenant and transient units on the base camp, cease and the focus of all available assets is shifted to defense until the threat is eliminated or repelled. Once the Level III threat is defeated, the base camp and its tenant or transient units return their focus to their primary missions.

6-10. Bases and base camps will typically protect their personnel and assets through application of area security. Area security is a security task conducted to protect friendly forces, installations, routes, and actions within a specific area (see FM 3-90-1).

6-11. Typically, area security tasks are associated with economy-of-force measures that provide an acceptable level of protection to the greater force, thus freeing personnel and assets to focus on other missions supporting the decisive operation/decisive action. This is in contrast to a dedicated defense which is much more resource intensive and is typically employed for shorter durations to enable the force at large to defeat an enemy attack, gain time, economize forces, and develop conditions favorable for resumption or transition to offensive or stability tasks.

6-12. Forces focused on performing area security tasks orient on the friendly force, population, installation, route, area, or asset to be protected. Area security tasks associated with base camp security employ many of the same characteristics and considerations as those documented in the defensive tasks outlined in FM 3-90. Area security missions can also be manifested in offensive action when necessary to counter an identified threat. Area security is normally an economy-of-force mission. Commanders conduct area security tasks to provide early warning and prevent enemy forces from combining and conducting concentrated strikes against base camps and base clusters. These operations allow commanders to provide protection to personnel and critical assets without a significant diversion of combat power. Even though protection of bases is primarily a security task/function, as with any security task, defensive and offensive elements are critical to securing bases, base camps, and base clusters.

6-13. Although primarily aligned with the protection/force protection warfighting function, base camp defense is enabled by all of the warfighting functions. Base camp defense includes the activities needed to defeat Level I and Level II threats to a base camp or base cluster, and shape or delay Level III threats until they can be defeated by a TCF or other available response forces that is part of the higher commander's area security efforts. The three levels of threat categories are—

- Level I—a small enemy force that can be defeated by a unit's organic resources.
- Level II—an enemy activity that requires the commitment of a reaction force to defeat it.
- Level III—a threat that requires the commitment of a TCF to defeat it.

6-14. In most cases, base camps will be placed in locations where the risk of Level III threats have been eliminated or effectively mitigated by the area commander; however, base camps often become focal points for hostile actions. Because of the uncertainty in contingency operations and the acknowledgement of hybrid threats, all base camp commanders must be prepared to conduct defensive tasks to repel a Level III attack when the threat assessment indicates the possibility of a Level III threat in the AO, regardless of which element of decisive action/simultaneous activities is currently dominant. This may involve significant increases in area denial measures; offensive actions; hardening, dispersal, and other protection measures; and immediate reaction to hostile actions. While hardening of facilities and maintaining a QRF is the responsibility of the base camp commander, area denial actions and offensive tasks to reduce the risks of Level III threats are the responsibility of the area commander.

6-15. On initial occupation of the base camp site, friendly forces take offensive actions to identify levels of enemy presence and eliminate enemy threats in the immediate area, if required. Once the area is cleared and the necessary elements of the base camp defense have been established, the base commander continues

area security tasks to provide early warning and mitigate the risks of threat elements operating within the base camp AO. The base camp commander and staff identify gaps in security and requirements for additional support or assets. The base camp commander, supported by the staff, conducts coordination with the area commander to fill identified capability gaps.

6-16. Base camps are designed and constructed to be resistant to attack and recover quickly after an attack so that they can continue to operate. The ability to quickly recover from an attack is enhanced through detailed planning and rehearsals of procedures. Base camps must be prepared to defend in any direction through flexible base defense plans, including the use of dedicated response forces positioned to respond to the widest possible range of contingencies. Base camp commanders apply the principles of protection described in ADRP 3-37 as well as the fundamentals of security and characteristics of defense identified in FM 3-90-1 in preparing base camp defense plans.

6-17. Base camp security and defense capabilities are employed using a layered approach to provide strength and depth. Layering reduces the destructive effect from any single attack or hazard through the dissipation of energy or the culmination of the attacking force. A layered defense slows threat attack elements and provides time for friendly defense forces to assess, decide, and respond. Obstacles, such as barbed wire fences, jersey barriers, T-walls, networked munitions, and scatterable mines if employed, and direct-fire positions and elements are deployed in depth, in a concentric fashion, to provide maximum protection. These obstacles, direct fire positions, and active deterrents can be in the form of—

- Wire, concrete, or other barriers used to reinforce the perimeter.
- Entry and access control points and associated obstacle/countermobility plans used to canalize and control incoming personnel or vehicles.
- Barriers employed to block high-speed avenues of approach (AAs), both externally on approaches to the perimeter and internally to protect high risk targets.
- Perimeter guard towers and observation posts (OPs).
- Ditches, berms, or other earthen obstacles.
- Mobile security patrols.

Note. Due to the risk to noncombatants and the potential for fratricide, scatterable mines are rarely used when conducting area security tasks in support of most base camps. Once designated as base camps these locations are typically characterized by a significant increase of traffic into and out of the camp, and as the theater matures, traffic by other governmental agencies, contractors, local nationals, third country nationals, and other noncombatants will increase. This does not eliminate the selective use of scatterable mines in extremely high threat environments requiring combat operations. See FM 90-7 for more information on controlling obstacles and preventing fratricide.

FRAMEWORK FOR BASE CAMP SECURITY AND DEFENSE

6-18. The framework for base camp security and defense consists of three primary areas (see figure 6-1). This structuring provides a means for organizing protection and defense information and requirements and focusing efforts. These three areas are—

- **Outer security area.** This is the area outside the perimeter that extends out to the limit of the base camp commander's AO. Commanders establish an outer security area to provide early warning and reaction time, and deny enemy reconnaissance efforts and vantage points for conducting standoff attacks. The outer security area is typically patrolled by mobile security elements.
- **Perimeter zone.** This zone includes the base camp perimeter and area immediately in front or behind it that is needed for OPs, fighting positions, and ECPs. Selected base camps may have designated inner and outer perimeters and look more like a Special Forces tactical facility (see FM 3-05.230 for more information). Larger base camps will seldom employ this double layer of perimeters, and will rely more on a single perimeter supplemented with inner barriers and access

control measures around critical facilities. Creation of a double perimeter is extremely resource intensive.

- **Inner security area.** This is the area inside the base camp perimeter. Interior barrier plans can be used around individual unit locations, critical assets, and as traffic control measures to add depth to the base camp security plan and to halt or impede the progress of threat penetrations of the perimeter zone.

6-19. Collectively, these three areas form the base camp AO. Commanders assigned an AO have inherent responsibilities that are described in FM 3-90-1. Not all commanders that may serve as base camp commanders will have the organic capabilities within their units to perform all of these responsibilities. In those situations, the higher commander must clearly articulate in the order which AO responsibilities will not be performed by the base camp commander (and who will perform them), or provide the necessary augmented capabilities to perform them.

6-20. Base camp commanders and their staffs apply the framework for base security and defense to focus their planning activities and ensure all critical elements of base security and defense are addressed. The framework is not intended as an all inclusive solution to base security and defense, but is intended to provide a general template for planning.

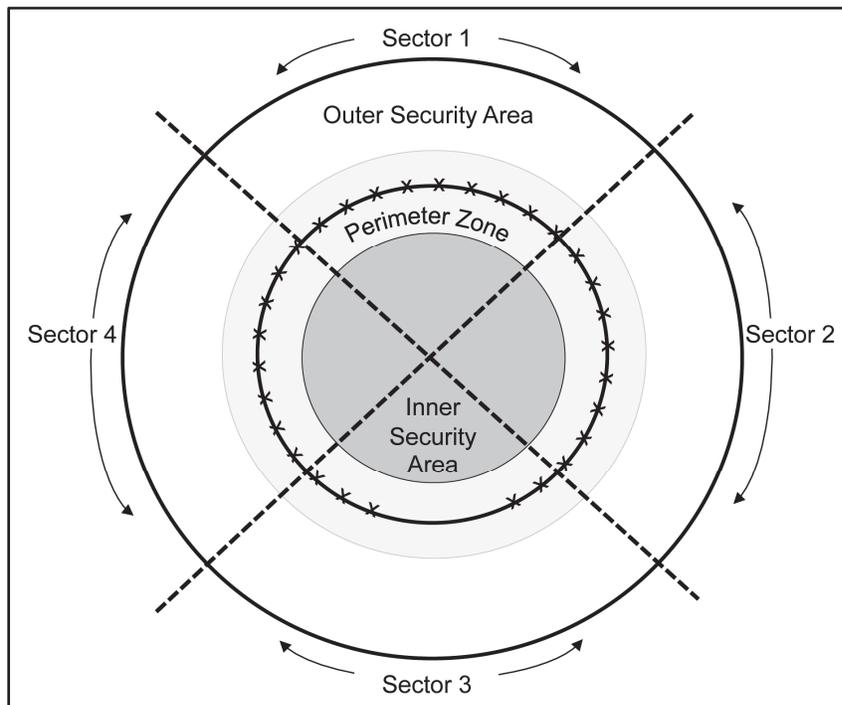


Figure 6-1. Framework for base camp security and defense

OUTER SECURITY AREA

6-21. Each base camp and selected base camp clusters will have an outer security area that extends beyond the perimeter of the base camp(s). The outer edge of the base camp's outer security area is the boundary that defines the limit of the base camp commander's AO. The AO is established by the higher commander and is coordinated with the base camp commander based on consideration of the mission variables. It is a balance between the higher commander's and the base camp commander's area security requirements and the necessary control of specific terrain to accomplish their respective missions.

6-22. The base camp AO boundary typically extends beyond the perimeter to at least direct-fire range (potentially out to the limits of the base camp's indirect fire systems), allowing base camps to execute their fire plans within their ability to control them. When possible, the outer security area should extend beyond

the maximum range of any threat weapon that may be used against the base camp including small arms and crew served weapons fire, mortars and other indirect fire weapons, and explosive devices that may be emplaced or activated by threat elements. The base camp's AO should not be substantially larger than its area of influence. Ideally, the entire AO is encompassed by the area of influence. Base camp AOs can be contiguous or noncontiguous. See FM 3-90-1 and FM 90-7 for more information on the establishment of a security area.

6-23. Base camp outer security areas tend to be limited by urban terrain when base camps are established in populated areas. Mobile security force assets are a critical element in establishing a viable outer security area. Commanders ensure detailed planning and coordination is conducted between base defense forces (BDFs) operating internally and on the perimeter, and mobile security forces operating outside the perimeter to mitigate the risk of fratricide. Mobile security forces must be prepared to conduct battle handover from base and base cluster defense forces or conduct battle handover to a TCF when required.

6-24. The HN may limit the ability to conduct security tasks beyond the limits of the base camp perimeter. HN military and security forces may be capable and willing to assist in those situations. In these cases, close coordination with HN security forces (HN military, police, or other security elements) should be conducted regularly to avoid fratricide and potential friction between U.S. forces and the HN. Inability to adequately defend the base camp as a result of the HN's limitations on the base camp AO must be communicated to the higher headquarters to revise existing agreements or provide acceptable risk mitigation.

6-25. Base camp commanders conduct security tasks to the limit of the base camp AO. They do this to—

- Reduce uncertainties about the terrain and the enemy.
- Gain and maintain contact with the enemy.
- Provide early and accurate warning of enemy attacks.
- Prevent standoff attacks.

6-26. Based on threats outside the base camp AO, and depending on the ability of the higher headquarters to provide a timely response based on competing mission demands, base camp commanders may need to conduct limited operations beyond the base camp boundary that are not directly linked to base camp security and defense. Establishing check points or other LOC security measures are potential examples of such a requirement and may even call for the establishment of a movement corridor (see FM 3-90.31) in selected situations. These actions are coordinated with the higher headquarters to avoid fratricide.

6-27. Commanders, supported by their staff, evaluate mission variables, focusing on the threat to establish a viable plan to control the security area. This planning includes—

- Employing mobile security patrols within the security area, where those patrols focus on—
 - Providing early identification and warning of potential threats.
 - Acting as a mobile response force to eliminate Level II threats
 - Keeping key routes into and out of the base camp clear.
 - Preventing observation of the perimeter and ECPs.
 - Collecting threat and civil information to answer CCIR.
 - Fulfilling other base camp security requirements as directed.
- Developing the information collection plan by working together with the intelligence officer and other staff members in nominating recommended reconnaissance and surveillance assets to cover the security area based on system capabilities and the effects of terrain and weather.

6-28. Commanders of base camps with active airfields and landing zones consider vulnerabilities to approaching and departing aircraft and implement the necessary protection measures to counter threats to include shoulder-launched and surface-to-air weapons and heavy machine guns. See JP 3-10 for more information. Approach and departure corridor security for ground approaches may also be included in a particular base camp's list of missions. This may be extended to include a movement corridor between base camps that are close to one another to facilitate the protection of ground movement along that route. See FM 3-90.31 for more information on movement corridors.

PERIMETER ZONE

6-29. The perimeter is the physical means of separation, or barrier, between terrain that is not occupied by friendly forces and the critical facilities within the base camp. The perimeter security system often forms the first significant line of defense for the base camp. This is accomplished through prevention, detection, and response to threat tactics within the security area to include ground attack, rocket, artillery and mortar attacks, vehicle-borne IEDs, acts of terrorism, sabotage, theft, pilferage, trespass, espionage or other hostile actions. The perimeter should incorporate OPs, fighting positions, and ECPs as applicable. Typical perimeters also include barriers in the form of wire obstacles, concrete or earthen barriers, ditches, other nonexplosive obstacles, and networked munitions emplaced to prevent or delay unauthorized access to the base camp.

6-30. Whether establishing a new base camp or occupying an existing one, base camp commanders initially focus on establishing or reassessing the protective measures at the perimeter and out to the limits of the outer security area. Once those measures are adequate, attention is then directed to the measures used to protect personnel and critical assets on the interior of the base camp (internal security).

6-31. When planning for perimeter security and defense it is critical to remember that a properly designed perimeter security system should be an integrated, layered, defense in depth that takes advantage of the security area. Commanders, supported by their staff, evaluate mission variables—focusing on the threat to establish a viable perimeter defense plan. This plan should—

- Provide adequate standoff as well as proper coverage of engagement areas (EAs) outside of the perimeter in the outer security area (see FM 90-7).
- Limit, or preferably block, all direct-fire, standoff, or ballistic weapon sightlines from potential off-site vantage points.
- Establish movement and fire control measures.
- Establish positive control of all personnel and vehicles entering the base camp.
- Direct the positioning and construction of OPs, guard posts, fighting positions, ECPs, and checkpoints in conjunction with protective positions and facility hardening to enhance survivability.
- Direct the positioning and construction of additional emergency entry/exit points from the base camp to ensure employment of response forces is not constrained by ECP locations.
- Integrate electronic security systems and unattended sensors to enhance the ability to observe and interdict potential threats throughout the base camp security area beyond the perimeter, and provide early warning.
- Employ intrusion detection systems and other technology (such as biometrics, metal detectors, and X-ray devices) whenever possible to improve efficiencies and effectiveness with entry and access control. See GTA 90-01-018 for more information on ECP layout and design.
- Enable the ability to defeat a Level I threat, defeat a Level II threat with the employment of a QRF, and shape or delay Level III threats until commitment of the TCF.

6-32. Perimeter defense planning must also determine adequate standoff distances from buildings and other structures outside the perimeter that offer vantage points for the enemy. Building the base camp with adequate standoff greatly enhances base camp defense. The amount of standoff needed is based on a threat assessment that considers the range, accuracy, and lethality of enemy weapons, and the degree of the base camp's protection measures. The protection cell and/or engineers and EOD teams determine the appropriate standoff distances to protect against blasts from IEDs and other explosive hazards. The amount of standoff that is obtainable may be limited by the proximity of the base camp to local villages and towns and other immovable obstructions. This is especially problematic within dense urban areas. These basic security considerations should have already been integrated into the planning and design and site selection considerations of the base camp – to include all appropriate risk mitigation.

Entry Control

6-33. Controlling access into and out of the base camp is critical. Perpendicular high speed AAs to the base camp are either controlled or mitigated. Moveable and retractable barriers, and other obstacles, are used to

control pedestrian and vehicular traffic in and out of the base camp. Depending on the base camp purpose, the amount of traffic entering and exiting the base camp can be extensive. Since ECPs typically have large manpower requirements, they should be limited to the minimum amount necessary to allow expeditious flow of traffic in and out of the base camp. Base camp commanders can reduce the manpower requirements for ECPs by limiting operating hours for certain ECPs to peak-demand periods.

Perimeter Observation Posts

6-34. The number of required perimeter OPs is directly proportional to the threat and subsequent requirements for continuous observation along the perimeter, based on terrain effects, to prevent threat breaches. Effective perimeter security requires a combination of physical security measures, such as physical barriers, fencing, protective lighting and electronic security systems. All of these measures should be observed and assessed continuously by security personnel.

6-35. OPs are continually improved to increase survivability. Engineer units and contracted labor, equipment, and materials are used to perform survivability operations. See FM 5-103 for more information on survivability operations.

Early Warning

6-36. Early warning of pending threats provides reaction time. Early warning is obtained through ground and aerial based reconnaissance and surveillance assets such as patrols, security cameras, unmanned aircraft system, unattended seismic and acoustic sensors, trip flares, and military working dogs. Civilian informants and actions of local populations are also useful indicators of pending threat actions.

Direct Fire

6-37. The base camp commander establishes mutually supportive alternate and supplementary firing positions around the perimeter. Areas that are outside the perimeter but still within the base camp AO are cleared to provide good fields of fire and enable observation. Surveillance, obstacles, preplanned fires, and response force maneuver are used to mitigate gaps and dead spaces in the defense. EAs are created as appropriate.

6-38. Fighting positions are continuously evaluated and improved to increase survivability. Engineer units and contracted labor, equipment, and materials are used to perform survivability operations. All personnel within the base camp are assigned positions and sectors, or are directed where to go (protective positions, bunkers, or remain indoors) to ensure their safety and that their presence does not detract or impede responses by security and defense personnel. See FM 5-103 for more information on survivability operations.

Joint Fires

6-39. Base camp commanders consider all available sources of fire support based on the positioning of units throughout the operational area, and coordinate with higher headquarters for obtaining that support as required. Base camp commanders and fire support planners consider the benefits and risks of these systems during planning. Clearance of fires, especially in support areas and where noncombatants are present throughout the area, can be difficult to obtain. Observed fires from attack helicopters may be more likely to be approved for use in support of base camp security tasks than fixed-wing aircraft for example.

6-40. In integrating fire support into the base defense plan, the base camp commander (or the BDF commander, if one is designated) considers several factors. These include—

- Positioning howitzers or mortars to create the desired effects.
- Positioning target acquisition, counterfire, and air and missile defense early warning radars.
- Positioning air and missile defense assets, including counter rocket, artillery, and mortar intercept batteries, to deny enemy use of airspace and destroy enemy aerial platforms.
- Establishing alternate or supplemental positions.
- Ensuring that there is sufficient ammunition on hand to support an extended engagement.

- Ensuring that target reference points are easily identifiable.
- Identifying dead space for howitzers (due to the angle of fire) and covering it with mortars.
- Ensuring that all BDF personnel are familiar with call-for-fire procedures.
- Planning fires throughout the depth of likely EAs.
- Ensuring that all obstacles are integrated with fires.
- Registering final protective fires.
- Using specialty munitions, such as smoke and illumination rounds, to enhance the defense.
- Targeting mounted and dismounted AAs, possible OP locations, and potential firing point locations.

6-41. The BDOC fire support officer is the focal point for the planning of indirect fires for base security and defense. The BDOC fire support officer coordinates with the supporting fires cell or fire support coordination center. Planned targets should include areas likely to be used as locations for standoff weapons and likely enemy AAs. These targets should be planned to minimize collateral damage and civilian casualties. Copies of fire support plans and target lists must be provided to the headquarters controlling the fire support assets. Targets may be planned outside the base camp AO after coordination with the headquarters responsible for the area concerned. The BDOC and fire support coordination center will ensure all fire missions are properly coordinated to prevent the possibility of fratricide.

6-42. Fire support coordination measures and airspace coordination measures permit or restrict fires in and around base camps. Careful coordination must occur in planning these measures, especially with the HN. No-fire areas may be required to protect civilians or to prevent disruption of missions by friendly fire.

6-43. Counterfire radars are used to determine the point of origin of indirect fire attacks and can be used for immediate response or for pattern analysis to facilitate targeting. Air and missile defense early warning radars are used to disseminate warnings through the air defense warning system and rocket, artillery, and mortar-warn batteries. Counterfire radars are more likely to be available for positioning inside of base camps to support stability tasks than in support of offensive or defensive tasks.

Obstacles

6-44. Commanders use the natural restrictions of the terrain, reinforced with tactical and protective obstacles that are covered by observation and fire, to fix, disrupt, turn, and block enemy forces and shape engagements. See FM 90-7 for more information on obstacle integration.

6-45. Obstacles are specifically designed, constructed, and emplaced to defeat specific threats. For example, obstacles used at ECPs or along high-speed AAs must be capable of stopping high-speed, large trucks. Barriers and security screens are also used to prevent casual observation onto the base camp and to mitigate observation vantage points and potential sniper locations from adjacent buildings and tall structures. See FM 5-103 and GTA 90-01-011 for more information. Networked munitions provide a rapidly-emplaced intrusion detection and denial system for base and perimeter security. These munitions are remotely controlled from a central station and provide scalable, lethal, and nonlethal effects.

INNER SECURITY AREA

6-46. Internal security is conducted to safeguard critical capabilities and high value assets located on the base camp. It is focused inwardly, but is integrated as an integral part of the overall base defense plan. See FM 3-37.2 for more discussion on internal security.

Planning Considerations for Inner Security Area

6-47. Internal security requires integration of a wide range of protection tasks. The number of tasks and level of execution and required coordination will increase over time as the theater and the base camp matures. Planning considerations for internal security include internal security forces (including response forces), protection of critical assets, and protection of high-risk personnel.

Internal Security Force

6-48. The internal security force is focused on the physical measures to safeguard personnel and prevent unauthorized access to facilities, equipment, and materials within the confines of the base camp perimeter. These protective measures primarily align with the role of physical security that is normally a military police function. In the early stages of base camp operations, internal security patrols and response forces are primarily focused on security along the inside of the perimeter and on designated critical assets. As the base camp matures, especially on larger base camps with diverse units and populations, internal security transitions to a law enforcement activity with many of the same duties and responsibilities that are provided by military police units on permanent installations. On larger base camps, especially as the operational area matures, military police law and order detachments augmented by other military police elements on the base are typically employed to provide internal security including provision of an internal response capability. This force responds as directed to threats to the perimeter of the base camp and participates in finding, fixing, containing, and defeating any attacks that may penetrate the perimeter. Threats exceeding the capability of the internal security force are handled by the QRF.

6-49. Two-person patrols are normally adequate for internal patrolling, although exact patrol configuration is established based on threat, organic or issued equipment available, and mission analysis by the unit tasked to provide internal security patrols. These patrols are typically mounted. Dismounted patrols may be used for specific targeted patrol areas and security missions. Patrols are assigned specific areas of the base camp, and prepared to respond to other areas as required. For example, a roving patrol may be dispatched on an alarm, disturbance, or other incident to conduct a preliminary assessment followed by a full response by the designated response force or other emergency personnel such as medical, fire suppression, and EOD as required.

6-50. The use of roving patrols makes the base camp defensive plan more unpredictable, and offers a means for maintaining some observation over a large area. Mounted roving patrols are more mobile but less stealthy than dismounted patrols. Roving patrols can mitigate this weakness with unpredictable routes and patrol times or by stopping occasionally, turning off the vehicle and observing an area in the darkness for 15 to 20 minutes. The use of night vision devices and blackout lights also increases stealth. Roving patrols are most effective when integrated with fixed OPs on the base camp perimeter. The roving patrols provide immediate investigation of any suspicious activities identified by fixed OPs, provide rapid response to any hostile activities, and can inspect dead zones or other areas which are not visible from the OP.

6-51. Internal response forces must be prepared to respond to threats to the perimeter, providing reinforcement to BDFs in case of an attempted or successful breach. Internal response forces may be required to respond to threats within the boundaries of the perimeter. These threats can be from infiltrated enemy threats, criminal activity, disturbed individuals, or other manmade or natural disruptions. In the early stages of base camp development, internal response force missions can be performed by any unit with a mounted capability. As the base camp matures, a military police response force is typically the preferred solution.

Access Control

6-52. Barriers, such as fencing and walls, are used to reinforce existing natural and manmade obstacles to deny or restrict unauthorized access to specified areas. Certain barriers, such as T-walls, can also enhance survivability. Barriers are available in many forms and some are more easily moveable or reusable to provide flexibility and cost savings.

6-53. In addition to the entry control measures implemented for entering the base camp, a personnel access control system should be established to restrict access to key facilities or areas within the perimeter. Key facilities include headquarters, operations centers, and communication complexes.

6-54. Typically, the unit or element owning the asset is responsible for enforcing access control measures such as badges and identification cards used with access rosters. The area or base commander may identify designated high-value facilities or assets requiring interior security force elements to conduct security and access control. Escorts may be used to control visitors and non-CAAFs. A pass and badge system coupled

with an escort system is the most effective way to control non-CAAFs and vendors. See GTA 90-01-011 for more information.

6-55. Full-time posts for visitor or non-CAAF escorts manned by security force personnel should not be established unless the base camp has the resources to do so. Rather, the unit or facility sponsoring the visitor is typically responsible for escort duties. The person receiving visitors should escort visitors in and out of the base camp as determined by the base camp commander and applicable orders.

Critical Assets, Facilities, and High-Risk Personnel

6-56. Critical assets and facilities on the base camp are identified and the requisite security measures are planned to mitigate threats to each identified asset. Critical assets are determined based on their importance in relation to the mission and may include CPs, secure storage facilities and communication nodes, ammunition or other critical/vulnerable storage areas. Access control to equipment, installations, materiel, and documents identified as critical and requiring additional security measures should be coordinated with the unit responsible for the asset. As base camps expand, some facilities such as DFACs may become more critical or vulnerable based on increases in troop concentrations within them and require enhanced protection measures.

6-57. Internal response plans in case of threat breaches should be planned and rehearsed. Barrier plans within the base camp perimeter should be considered as an additional protection measure. While many survivability measures are conducted by individual tenant units, engineer support may be required to assist in building protective positions and for facility hardening. As the base camp matures, some assets may require installation of intrusion detection devices to provide early warning of a threat breach and as an economy-of-force measure.

6-58. Persons designated as high-risk personnel require increased security protection. Planners and security personnel must also be aware that the presence of high risk individuals on the base camp can increase the threat to the base itself due to the increased visibility and symbolic value of a successful threat attack on the protected person(s).

INTEGRATING BASE CAMP SECURITY AND DEFENSE

6-59. Planning for base camp security and defense, like all protection measures, is integrated throughout the operations process. Base camp defense integrates maneuver, fires, and obstacles, within the context of mission and operational variables and associated constraints, throughout the depth of the base camp AO to meet security and defense objectives. The activities of the operations process are conducted simultaneously throughout the operation (see ADRP 5-0 and MCWP 5-1). Commanders and staff with base camp security and defense responsibilities plan, coordinate, and synchronize actions using integrating processes and continuing activities to ensure full integration of their area security and base defense plans. The two principle types of attacks that a base camp commander and the staff will focus on are categorized as either penetrating attacks or standoff attacks. Infiltrated attacks from inside the base camp are likely to occur as well. Screening and vetting local workers is paramount to disrupting the threat's potential to gain access as a base camp worker.

PENETRATING ATTACKS

6-60. Defending against penetrating attacks relies on a strong perimeter defense that incorporates obstacles and integrated fires from well protected firing positions. When applying defensive elements to a base camp perimeter the type and extent of barrier and fires integration may be restricted based on mission and operational variables. Base camps within built-up areas, especially in support of stability tasks, will likely be restricted in the amount and type of obstacles and corresponding fires allowed in the outer security area—this is especially true for indirect fires.

6-61. Perimeter security forces must be capable of disrupting and delaying penetration of the base camp perimeter until a QRF, or TCF for Level III threats, can be committed to reinforce threatened areas along the perimeter, block enemy penetrations, or counterattack to regain lost security positions or defeat the attacking force. The QRF should have tactical mobility with as much personal protection as possible. The

perimeter security force must be equipped with reliable and multiple means of communications and have the necessary sensors and devices to execute reconnaissance and surveillance out to the limits of the security area during periods of limited visibility to provide adequate detection and early warning. Joint fires may be employed to augment the capabilities of the base camp's organic direct and indirect fire capabilities. Internal security force personnel (augmentation and selectively armed personnel) may be directed to secure key facilities within the base camp including CPs, ammunition storage areas, and aircraft revetments; and support finding, fixing, containing, and defeating any attacks that may penetrate the perimeter. Adequate fire control measures must be employed to prevent fratricide.

STANDOFF ATTACKS

6-62. Standoff attackers are typically an elusive target. Level I and Level II threats may rely on blending in with the legitimate populace and only reveal themselves as combatants when they engage in a hostile act. Standoff attacks are mitigated by conducting area security tasks within and beyond the base camp AO to—

- Deny hiding places to the enemy.
- Disrupt enemy planning, reconnaissance, and organization.
- Detect the enemy as they move into position, and posture forces to quickly neutralize detected forces.

6-63. These preemptive actions rely on robust tactical real-time information collection assets, including human intelligence, within the base camp outer security area and beyond, as necessary and in coordination with the higher commander, to create the desired effects. For imminent threats originating outside the base AO, and when the higher headquarters is unable to assist due to competing priorities, the base camp commander must either use base camp security and defense combat power to counter the threat, with the permission of the higher headquarters, or assume the risk of enemy standoff attacks.

PLANNING

6-64. Base camp defenses are planned by incorporating the principles of protection described in ADRP 3-37 and employing many of the characteristics of offensive, defensive, and security tasks described in FM 3-90-1 within the planning process described in ATTP 5-0.1 and MCWP 5-1. Base camp defense requirements and the tasks necessary to fulfill them are synchronized primarily through integrating processes and continuing activities (see ADRP 5-0). The planning process provides the framework for integrating the actions of the commander of the AO, the base camp commander, their staff, and others.

6-65. The planning activity of the operations process results in a detailed base defense plan. The base camp defensive plan must ensure adequate protection with as small a force as necessary to avoid diminishing the ability of the base camp to function and without hindering tenant units from performing their primary mission tasks. Risks to the security of the base camp are mitigated through a layered defense plan. A layered defense should consider the threat and design security and defense measures to protect against identified potential threats. Preparations for conducting local security for the base camp consider all three areas of the base camp security defense framework (see figure 6-1, page 6-5).

6-66. Information obtained by tenant units conducting missions off the base camp can also be critical to forming a complete threat picture and other portions of the COP. Units operating off the base camp may routinely make contact with personnel from other governmental organizations, nongovernmental organizations, local nationals, and third country nationals. Information relevant to the overall security posture of the base may be obtained through conversation and observation with these various entities.

6-67. Base defense plans use many of the same control measures as those supporting offensive and defensive tasks even when supporting stability tasks. See FM 3-90-1 for information on defensive operations and ADRP 1-02 or MIL-STD-2525C for graphic specifics. As shown in figure 6-1, the base camp may be divided into sectors that extend out to edge of the base camp AO. The sectors, and associated target reference points, can be used as quick reference for the deployment of response forces and the concentration of available combat power.

6-68. Application of adequate control measures is critical to a base commander's base defense plan. Some of the control measures used for base camp security and defense include: phase lines, contact points,

objectives, restricted operations areas (for aviation), restrictive fire areas, restricted fire lines, traffic control points, ECPs, and checkpoints. Fire support coordination measures are established to permit or restrict fires in and around the base. See ATP 3-09.32/MCRP 3-16.6A/NTTP 3-09.2/AFTTP(I) 3-2.6 for more information. No-fire areas and no fire lines may be required to protect civilians; prevent the disruption of sustaining operations; or protect combat outposts, OPs, and patrols from friendly fire. Commanders coordinate all established control graphics with HN organizations to minimize interference, misunderstandings, and collateral damage.

6-69. During COA development and the array of forces (which includes an initial assignment of units to planned base camp locations), planners consider the forces and equipment needed to conduct area security tasks required for base camp defense at each site, to include QRF and TCF requirements to defeat Level II and Level III threats, respectively. The required capabilities are based on initial threat and vulnerability assessments and the capability of available area security assets supporting base camp security requirements to provide early warning and eliminate or mitigate identified threats.

6-70. The detailed information required for preparation and execution is then provided in plans and orders to assist the subordinate unit or base camp commander in base camp defense planning. Guidelines for creating a base camp defense attachment to plans and orders are included in appendix B. Plans are refined based on new information resulting from reconnaissance (including engineer reconnaissance and infrastructure assessments) and continual threat and vulnerability assessments. The base camp’s actual location, orientation or site layout, and boundaries may be adjusted based on current conditions at the proposed location and the results of subordinate unit (base camp commander) base camp defense planning.

6-71. Table 6-1 provides some of the necessary base camp defense planning considerations linked to the steps of the planning process. Table 6-2, page 6-15, provides base camp defense planning considerations in relation to the mission variables.

Table 6-1. Base camp security and defense considerations during the planning process

<i>Steps of the MDMP</i>	<i>Steps of the MCPP</i>	<i>Security and Defense Planning Considerations</i>
Receipt of the Mission	Problem Framing	<ul style="list-style-type: none"> • Gather geospatial information and visualization products needed to understand the terrain. • Gather intelligence products on the threat’s ways and means. • Gather information on the local population to determine its effect on base camp defense. • Update running estimates/staff estimates.
Mission Analysis		<ul style="list-style-type: none"> • Understand the higher headquarters unit mission, the commander’s intent, and the concept of operations. • As part of the initial intelligence preparation of the battlefield/battlespace— <ul style="list-style-type: none"> ▪ Evaluate the effects of terrain and weather to determine where best to position reconnaissance and surveillance assets along the perimeter and throughout the security area. ▪ Assess threat capabilities and intentions, and determine strengths and weaknesses. • Identify specified and implied base camp defense tasks and recommended essential base camp defense tasks, determine any obvious shortfalls in assets available, and initiate requests for augmentation as early during planning as possible. • Identify all available collection assets and resources. • Develop information requirements related to base camp defense—such as rules of engagement, restricted fire areas, threat capabilities, and population considerations—and recommend initial CCIR. • Integrate information requirements into the information collection plan and submit requests for information as necessary.

Table 6-1. Base camp security and defense considerations during the planning process (continued)

Steps of the MDMP	Steps of the MCPP	Security and Defense Planning Considerations
COA Development	COA Development	<ul style="list-style-type: none"> • Determine base camp defense requirements based on— <ul style="list-style-type: none"> ▪ Threat and vulnerability assessments. ▪ Expected outcomes of area security tasks. ▪ Mission variables. • Allocate base camp defense assets based on identified requirements and troop-to-task analysis. • Identify required capabilities that must be requested, if they are not within the current forces/assets available.
COA Analysis	COA Wargaming	<ul style="list-style-type: none"> • Wargame the employment of response forces including the use of time-distance factors. • Consider the unavailability of key systems due to competing demands or attrition resulting from maintenance problems or combat actions. • Wargame changes in the terrain, weather, and civil considerations. • Wargame (action/reaction) enemy use of weapons of mass destruction and synchronized attacks at multiple entry points or points along the perimeter. • Wargame the presence of noncombatants.
COA Comparison	COA Comparison and Decision	<ul style="list-style-type: none"> • Analyze and evaluate advantages and disadvantages for each COA in relation to the ability to execute security and defense tasks to include the— <ul style="list-style-type: none"> ▪ Ability to employ response forces. ▪ Ability to reinforce the base camp perimeter.
COA Approval		<ul style="list-style-type: none"> • Gain approval for recommended priorities of effort and support. • Gain approval for requests for augmentation to be sent to higher headquarters.
Orders Production, Dissemination, and Transition	Orders Development	<ul style="list-style-type: none"> • Ensure that the task organization of security and defense assets is accurate and clear, to include the necessary instructions for effecting linkup for response forces not typically part of the base camp.
	Transition	<ul style="list-style-type: none"> • Ensure the quality and completeness of subunit instructions for performing security and defense operations. • Review subordinate and base cluster plans. • Develop training and rehearsal plans.
<p>Note. The Army uses the MDMP; the Marine Corps uses the MCPP. The processes are similar, although the steps are different. The MDMP is described in Army Techniques, Tactics, and Procedures 5-0.1, and the MCPP is described in MCWP 5-1.</p>		
<p>Legend:</p> <p>CCIR – commander's critical information requirement MCWP – Marine Corps warfighting publication COA – course of action MDMP – military decisionmaking process MCPP – Marine Corps planning process</p>		

Table 6-2. Security and defense considerations in relation to the mission variables

<i>Mission Variables</i>	<i>Security and Defense Considerations</i>
Mission	<ul style="list-style-type: none"> • Specified, implied, and essential tasks. • Commander's intent two levels up. • Missions of adjacent units and their relative contributions to the decisive operation/decisive action.
Enemy	<ul style="list-style-type: none"> • Probable hostile actions against the base camp based on— <ul style="list-style-type: none"> ▪ Enemy capabilities and intentions (most likely and most dangerous courses of action). ▪ Enemy strengths and vulnerabilities. ▪ Friendly strengths and vulnerabilities. • Vulnerability of the base camp based on its purpose and tenant unit functions. • Level and type of threat organizations operating in the area. • Level of communication and synchronization between threat elements.
Terrain and Weather	<ul style="list-style-type: none"> • Terrain and weather effects on friendly and enemy movement and maneuver and weapon capabilities to include— <ul style="list-style-type: none"> ▪ Enemy avenues of approach, hide positions (dead space), and vantage points. ▪ Effects on reconnaissance and surveillance assets and weapon systems.
Troops and Support Available	<ul style="list-style-type: none"> • Reconnaissance and surveillance assets such as troops, working dogs, sensors, radars, electronic security systems, and unmanned aircraft system. • Engineers and contractors (mobility, countermobility, and survivability operations effort). • Fire support (counterfire radars) and air and missile defense. • Aviation support. • Host-nation military and security forces (numbers and types available and their associated training and capabilities). • Maneuver, military police, or combat engineer units available to serve as response forces. • A tactical combat force or other plans present to deal with Level III threats. • Primary occupational specialty/expertise of the troop population. • Relative importance (criticality) of facilities based on the base camp.
Time Available	<ul style="list-style-type: none"> • Time available (considerations on priorities of work and where to take risks). • Expected life span of the base camp.
Civil Considerations	<ul style="list-style-type: none"> • No-fire areas and restricted target lists such as cultural, historic, and religious areas. • Human obstacles (crowds and traffic). • Attitudes and cooperation of the local population. • Placement of base camp in relation to key or sensitive host-nation sites. • Characteristics of the surrounding local population including— <ul style="list-style-type: none"> ▪ Levels of employment. ▪ Relative condition of the general population (starving, destitute, desperate versus generally well supplied and content). ▪ Agrarian versus urban population. ▪ Level of technological development. • Communication networks and available information sources such as television and radio stations, hard copy publications, internet, and social and family networks. • Presence and acceptance of criminal activity to include organized criminal elements.

PREPARATION

6-72. Preparation consists of activities performed by the unit before execution to improve its ability to conduct the operation. Successful base camp security and defense depends as much on preparation as planning. Key preparation activities for base camp defensive tasks include—

- Planning refinement based upon IPB updates and the answering of IR.
- Redirecting information collection assets to focus on the most important unknowns remaining, while emphasizing the CCIR.
- Conducting combined arms rehearsals.
- Performing precombat checks and inspections.

6-73. The rehearsal is one of the most effective synchronization tools available to commanders. Rehearsals help staffs, units, and individuals to better understand their specific role in upcoming operations, practice complicated tasks before execution, and ensure that equipment and weapons function properly. The execution matrix is an excellent tool to drive and focus rehearsal.

6-74. Base camp security and defense may involve multiple units providing elements to support the overall effort. This is especially true when employing response forces. Employing response forces presents unique challenges since two chains of command are operating in one area simultaneously. The possibility of confusion is always increased when multiple unit command structures are involved. The complexity associated with such task areas as clearing of fires, fire support coordination, traffic control, and communications requires close coordination between base camp defense and response forces. Typically, command of all base security and defense forces is passed to the response force or TCF commander once the response force or TCF is employed. The exact point in time must be synchronized between the base camp commander, BDF commander, and response force/TCF to ensure the risk of fratricide is mitigated. Wargaming these actions during mission planning and rehearsals, and implementing the necessary control measures and coordinating instructions, are critical to fratricide avoidance.

EXECUTION

6-75. Execution involves monitoring the situation, assessing the operation, and adjusting the order as needed. Commanders continuously assess operation progress based on personal observations resulting from direct supervision of the base camp defense, information from the COP, running estimates/staff estimates, and assessments from subordinate commanders and leaders. When the situation deviates from the order, commanders direct adjustments to exploit opportunities and counter threats.

ASSESSMENT

6-76. Assessment occurs throughout the operations process, preceding and guiding the other activities, and enabling adjustment or revision of the base defense plan and its preparation and execution. During preparation, assessment is focused on determining the friendly unit readiness to execute the base camp defense plan, and implementing any refinements to orders based on changes in the threat situation or civil considerations. During construction, initial occupation, and transitions, assessment is adjusted based on updates to assumptions and threat assessments. The focus shifts to validating the receipt, posting, and understanding the COP and other SU; conducting rehearsals; and ensuring tenant units are trained and prepared to accomplish all of their security and defense requirements and missions. It may also include ensuring a supporting TCF is prepared to accomplish its missions in support of the base camp. The lessons that units learn while conducting or exercising base camp defensive tasks are incorporated into the base defense plan. The base camp commander reports those lessons learned that potentially have widespread utility up the tactical chain of command.

ROLES AND RESPONSIBILITIES

6-77. The responsibility for base camp defense is shared by the commander of the AO, the base camp commander, and tenant and transient unit commanders. Compliance with the base defense plan by all personnel on the base camp is critical to the overall protective posture of the base.

AREA COMMANDER

6-78. The area commander is the commander of the AO in which the base camp exists. The area commander, supported by the staff, establishes the ways and means for providing base camp security and defense during mission planning. Identifying base camp security and defense requirements early during mission planning is critical in ensuring area security and supporting base camp protection requirements are fully coordinated and synchronized.

BASE CAMP COMMANDER

6-79. The base camp commander is responsible for area security within the base camp AO, to include defeating Level I and Level II threats, and delaying and shaping Level III threats until they can be defeated by a TCF. The base camp commander may be the senior commander on the base or, especially in the case of a larger base camp, a designated commander with the sole responsibility for base camp operations. Depending on the size of the base camp and the complexity of the base camp security and defense mission, the base camp commander may designate a BDF commander to provide added focus on the development of the base camp security and defense plan.

6-80. Upon receipt of mission, the tasked unit commander (base camp commander) conducts base camp defense planning using the planning process (see ATTP 5-0.1 and MCWP 5-1). The base camp commander applies all relevant tasks (see ADRP 3-37, FM 3-37.2, and FM 3-90-1) within the framework for base camp security and defense in organizing requirements and tasks.

6-81. The base camp commander—

- Organizes the BDF based on threat and vulnerability assessments.
- Integrates tenant unit capabilities within the base camp defense plan (to include conducting training, rehearsals, exercises, and drills).
- Requests augmentation to fulfill shortfalls in required capabilities.
- Establishes a BDOC as required.
- Coordinates the base camp boundary and other control measures with higher headquarters, base cluster commander (if a base cluster is established), and adjacent base camp commanders as required.
- Incorporates new construction and modifications to facilities and infrastructure needed for improving security and defense within base camp master planning.
- Exercises tactical control over all tenant and transient units on the base camp when conducting base security and defense requirements and missions, unless the higher headquarters orders otherwise.
- Establishes immediate action drills and provides the necessary training for all base camp residents; and conducts rehearsals and drills to assess readiness.
- Plans and coordinates for casualty and medical evacuation to include responding to mass casualty incidents.
- Coordinates internal barrier placement to protect unit locations, critical assets, and infrastructure.
- Coordinates traffic control to enable base defense operations.
- Coordinates physical security measures.
- Coordinates and directs AT measures.

6-82. Upon establishing a new base camp, the units constituting the base camp immediately start organizing the defense of the base camp. Many tasks occur simultaneously, but some may require priority. The base camp commander establishes the priorities of work for defense which may include—

- Conducting reconnaissance and surveillance operations to provide early warning.
- Establishing local security.
- Positioning key weapon systems and developing range cards and sector sketches.
- Designating final protective lines and final protective fires.
- Clearing fields of fire.

- Preparing hasty/deliberate fighting and survivability positions.
- Emplacing protective obstacles and barriers.
- Emplacing early warning devices.
- Marking (and improving marking) for reference points.
- Ensuring redundant communication means.
- Establishing sleep and rest plans.
- Rehearsing reactions to contact, rules of engagement, casualty evacuation, and the use of response forces.
- Adjusting positions and control measures as required.
- Stockpiling ammunition, food, water, and medical supplies.
- Continuing to improve the defense based on continuous threat and vulnerability assessments.

BASE DEFENSE FORCE

6-83. The BDF consists of all the personnel and equipment needed to perform both security and defense tasks on the base camp. It must be capable of performing the following tasks:

- Conducting reconnaissance patrols for detecting and reporting the location, strength, and capabilities of the enemy.
- Developing positions in its assigned defensive areas to defeat Level I threats, defeat Level II threats with a QRF, and delay and shape Level III threats until they can be defeated by a TCF.

6-84. The BDF may consist of one unit with its organic assets or be a task-organized defense force. The defense force may be augmented with joint, multinational, HN units, and contracted security personnel. Its composition is based on the mission variables and the corresponding troop-to-task analysis of all the security and defense requirements (see FM 3-90-1). Other considerations include—

- Existing and potential threat capabilities.
- Size and configuration of the area to be defended.
- Overall length of the base camp perimeter.
- Type and level of threat.
- Vulnerability and criticality of base camp resources.
- Projected response time (and potential limitations based on weather effects) for the commitment of a TCF or another response force by the area commander.
- Mission constraints.

6-85. The BDF can be further organized into subordinate elements that are focused on providing security and defense of the perimeter zone, inner security area, and outer security area; and serving as a QRF. Based on the threat situation and the level of uncertainty and risk, the base camp commander continually weighs this balance and makes adjustments to the composition and organization of the BDF as needed.

BASE DEFENSE OPERATIONS CENTER/BASE CLUSTER OPERATIONS CENTER

6-86. The BDOC serves as the focal point for base security and defense for planning direction, coordination, integration, and control of all base defense efforts. The BDOC consists of two primary sections—the command section and the plans and operations section—with additional sections as deemed necessary. It is staffed with representatives of the intelligence, movement and maneuver/maneuver, and fires warfighting functions and other functional areas as deemed necessary by the base camp commander. The nature of the BDOC depends on the combination of forces involved and may be joint, interagency, intergovernmental, or multinational.

6-87. The BDOC may be established within the base commander's CP or BOC, or within the BDF commander's CP (if a BDF commander is designated) which may be collocated with the BOC. If the BDF is battalion-size or larger, its unit CP will likely serve as the BDOC while being closely linked to the BOC. For smaller base camps or where the BDF is less than company-size, the BDOC function will likely be subsumed within the BOC to maximize available resources. If the base commander also serves as a base

cluster commander then the BDOC may also function as a BCOC. Key tasks performed by the BDOC include—

- Collecting, analyzing, and distributing information needed for performing security and defense tasks.
- Providing a COP for the commander.
- Preparing and coordinating security and defense plans and orders with tenant and transient units.

6-88. Depending on the number of base camps in the AO and their proximity to one another, the higher headquarters may form a base cluster with one or more response forces positioned to provide the best means of response to most likely threat COAs. The commander of the AO may designate a base cluster commander and establish a BCOC within the headquarters to centrally control area security and base cluster defense activities. Movement corridors may be established to protect the interconnecting routes between base camps. The commander may use an organic subordinate unit, or an augmenting unit such as an MEB, to serve as the base cluster defense headquarters.

PERIMETER SECURITY FORCE

6-89. The perimeter security force occupies OPs and firing positions along the perimeter and conducts area security tasks within the base camp security area. It is prepared to integrate the QRF and other reinforcements and/or response forces that are committed as part of the perimeter defense.

QUICK RESPONSE FORCE

6-90. **A quick response force is a dedicated force on a base with adequate tactical mobility and fire support designated to defeat Level I and Level II threats and shape Level III threats until they can be defeated by a tactical combat force or other available response forces.** The QRF provides the base camp/cluster commander with a depth for security and defense. Once committed the commander will be prepared to reconstitute a QRF. The base camp commander may assign the QRF a wide variety of tasks both within the base camp security area and within the base camp perimeter to—

- Reinforce a threatened area or respond to a penetration of the perimeter.
- Establish contact with potential threats and engage those threats as required within the base camp security area, defeating Level II threats, and delaying Level III threats until they can be defeated by a TCF. A *tactical combat force* is a combat unit, with appropriate combat support and combat service support assets, assigned the mission of defeating Level III threats (JP 3-10).
- Reinforce engaged units outside the perimeter.
- Conduct reconnaissance and surveillance activities.
- Respond to threats on critical assets, infrastructure, or high-risk personnel.
- Conduct security checks and random patrolling within the base camp perimeter.

6-91. The size and composition of the QRF is based on a threat assessment and the levels of uncertainty and risk; and is adjusted based on changes in the situation. The level of responsiveness (readiness condition) of the QRF is also a variable that is adjusted based on threat conditions. The QRF should be mounted to ensure adequate protection and tactical mobility. Typically infantry, armor, military police, and combat engineers are capable of performing response force operations. The commander is responsible for ensuring the QRF is trained and exercised to perform its missions.

TENANT AND TRANSIENT UNITS

6-92. A tenant or transient unit is any unit that resides on the base camp that is not within the direct command of the base camp commander. While tenant and transient units typically have missions other than base security and defense, they may be tasked with specific security requirements while residing on the base. These can range from security responsibilities within and around their unit areas to providing personnel to augment the BDF. These tenant and transient unit requirements will be tasked and coordinated by the base camp commander and staff.

CONTRACTOR SUPPORT

6-93. Use of non-CAAF is a double-edged sword. They can put a local face on the base camp that can help lessen animosity from the local populace. They often provide a cost-effective means for base camp construction and operations. Employing local nationals can potentially reduce their susceptibility to being co-opted by insurgent/terrorist entities by providing a financial incentive. Use of local national labor will always add an increased security threat. Local nationals, even with the financial incentives of steady employment, are highly susceptible to influence (either voluntary or under duress) by threat elements. Their presence on base camps places added demands on security requirements, including contractor escorts while on site. Special access points are designated for non-CAAF to focus additional security capabilities and avoid impacting other base camp traffic entering and exiting the base camp. Even the use of CAAF has security implications since they are likely to employ local labor.

6-94. Base camp commanders consider the risks to protection from using contractors on the base camp. The use of non-CAAF may incur additional risks based on the attitudes of the local population. Base camp commanders conduct a local vulnerability assessment as it relates to using local or third-country national personnel and weigh the benefits against the risks. Important considerations include—

- Determining if non-CAAFs will reside on or off the base camp, and the necessary entry control measures that will be needed.
- Controlling non-CAAF access in certain areas.
- Establishing procedures for vetting and badging requirements.
- Using contractor escorts.
- Providing individual protection for certain contractors.

Chapter 7

Transfer and Closure

Base camps may be transferred, closed, or abandoned. All or portions of a base camp may be closed when no longer needed or transferred to another Service, multinational force, governmental or nongovernmental organization, or the HN. Based on the situation some base camps may be abandoned. Conducting proper base camp transfers and closures facilitates the support of shifting unit operational priorities and the timely retrograde or withdrawal of U.S. forces, reduces costs, prevents undue liabilities, and protects U.S. interests while meeting the expectations of the HN. Commanders will be challenged in closing or transferring base camps and dealing with the disposition of facilities and infrastructure (including the reconfiguration and mothballing of base camp kits), real and personal property, captured enemy materiel, and real estate; and environmental closure actions associated with HAZMAT/HW, waste disposal, wastewater treatment systems, fuel storage areas, and POL spills. There will also be increased risks associated with various protection tasks during these transitions that must be addressed. Transitions always increase the challenges associated with security and defense, whether conducted as a relief in place, or a reduction/increase in the perimeter of the base camp. These challenges are mitigated through detailed planning, the early identification of transfer and closure (or partial closure) requirements, and accurate record keeping. Specific tasks and timelines needed for executing transfers and closures can be found in the theater-specific smartbooks that were developed for both Iraq and Afghanistan, and in the Army in Europe Pamphlet 525-200.

FRAMEWORK FOR TRANSFERS AND CLOSURES

7-1. Eventually base camps are either transferred to another Service, multinational force, governmental or nongovernmental organization, or the HN; or they are closed and dismantled when they are no longer needed. Depending on specific agreements, if they exist, this process can be labor intensive and may require the deconstruction of facilities and mitigation of environmental hazards. Additionally, there are legal and financial considerations which must be integrated to ensure that U.S. obligations are met with the least amount of cost and effort. Effectively transferring or closing base camps protects U.S. interests and promotes good will and understanding with the international community. To do so effectively, personnel must be trained in the proper procedures, doctrine and policy must be consistent, and base camp planning and design must integrate measures that facilitate subsequent transfer or closure. Likewise, Service or DOD systems must be in place to archive records including base camp plans, as-built drawings, and environmental surveys and closure reports. This includes the task to preserve unit historical documentation and property, such as unit and individual memorials, as directed. To improve efficient use of resources and preclude each unit solving the same problems, some actions may be performed by a designated unit or operational area-wide contract.

THEATER BASE CAMP TRANSFER AND CLOSURE GUIDANCE

7-2. The CCDR develops the policies and procedures for base camp transfers and closures as part of the theater basing strategy. This includes guidance on the tasks to abandon, dismantle, and demolish base camps. This theater base camp transfer and closure guidance is based on operational variables; mandated timelines for force reductions, retrograde, and withdrawal as part of the exit strategy; cost-benefit analyses;

existing U.S. and HN laws and regulations; and agreements and negotiations with the HN and private landowners. It is developed in cooperation with multinational forces and governmental and nongovernmental organizations and adjusted as development of the exit strategy progresses. HN agreements are typically used to define the final condition of facilities and infrastructure on base camps being transferred to the HN, and existing buildings and land areas that were used by U.S. forces that are being returned to the HN.

THEATER BASE CAMP REALIGNMENT AND CLOSURE PLAN

7-3. The CCDR develops a theater base camp realignment and closure plan as part of the overall theater basing strategy. This plan describes the concept for closing or transferring nonmission-essential base camps and realigning U.S. forces within remaining U.S. base camps to minimize the logistic footprint, reduce O&M expenditures, and enable the timely withdrawal of U.S. forces. This plan also addresses the potential transfer of U.S. base camps to the legitimate HN government to facilitate its basing strategy for its military and security forces to sustain stable peace. This plan includes the tasks to reconfigure, repurpose, mothball (caretaker status), abandon, dismantle, and demolish base camps. This realignment and closure plan is adjusted as exit strategy development progresses and is executed based on decision points that are linked to transitions or operational phases.

7-4. Execution of base camp transfers and closures is sequenced or phased to avoid competing demands between tactical mission requirements and transfer and closure requirements. A phased approach helps maximize the use of—

- Protection, security, and defense resources.
- Specialized teams needed for environmental mitigation and real estate disposal.
- Transportation and aviation assets needed for moving personnel, base camp property, and reusable supplies and materials; and disposing of waste (including the debris generated from deconstruction).
- Engineering and construction assets (troops and contractors) needed for environmental mitigation and dismantling base camp facilities and infrastructure.

7-5. The basic concept of operations for the base camp realignment and closure plan is essentially a reverse-sequence of that which was used during the initial build up of bases. As troop levels are reduced, the deployed force is consolidated into a fewer number of base camps that are designated to remain open until the operation is concluded. The service and support capabilities on those remaining camps are scaled to accommodate fluctuations in populations and changes in demands. For camps designated for closure, the level of capabilities revert back to basic levels at a pace and to a degree that does not diminish the base camp's critical function(s) and disrupt the provision of essential base camp support and services. For base camps being transferred, commanders must consider the proposed timelines for transfers and the desired condition of those camps at the time of transfer.

7-6. As base camp populations decrease in preparation for transfer or closure, essential base camp service and support contracts are right-sized, while those that are nonessential are closed out. Unit and support areas within the base camp are reduced (right-sized) and activities are consolidated into as few a number of facilities or structures as possible, while the ECPs and barriers that make up the perimeter typically remain in place. In some cases, a reduction in perimeter and reassessment of basic security and defense requirements may need to occur. Reducing the areas, levels of service, and facilities that are used within the base camp frees up nonessential areas and structures that can then be cordoned off, cleaned up, and restored or dismantled in preparation for transfer or closure. As the base camp's electrical utilities are reduced to basic capability levels and support contracts are ended, tactical generators may be required to ensure electrical power remains available until the closure is complete. Some final redeployment support functions may be conducted at HN facilities or at the port of embarkation.

BASE CAMP TRANSFER AND CLOSURE PLAN

7-7. The theater base camp transfer and closure guidance provides the necessary information that operational and base camp/cluster commanders will need to develop the transfer or closure plan for each base camp in their AOR. This plan is developed for each base camp and details the required actions, tasks,

and standards that must be completed within a certain time frame and/or within a certain sequence to ensure the base camp can be transferred or closed according to established timelines. The base camp transfer or closure plan is based on the theater base camp transfer and closure guidance, higher headquarters plans and orders, and unit SOPs. Increased management, control and assessment may be needed during a rapid transfer or closure to ensure compliance with the policies and plans.

7-8. Commanders also establish procedures for abandoning or destroying base camps in response to an emergency or controlled evacuation. In both scenarios, sensitive items are accounted for and either removed or destroyed to prevent their use by hostile forces. Base camp commanders establish local procedures—including evacuation routes, rallying points, and personnel accountability actions—and ensure tenant and transient units understand their requirements.

GENERAL REQUIREMENTS FOR TRANSFERS AND CLOSURES

7-9. Specific tasks are needed for base camp transfers and closures in addition to the routine tasks required for unit redeployments and transfers of authority. These tasks can be grouped into the following four major areas:

- Real estate.
- Environmental.
- Property.
- Contracted support.

REAL ESTATE

7-10. There may be HN government and private owners for various land parcels located inside a base camp's footprint. A critical task is identifying the rightful landowner so that the necessary negotiations and lease payments can be made. Depending on the viability of the HN government and the availability of land records, U.S. forces may need to facilitate deed verification to facilitate the timely disposal of real estate. USACE CRESTs, NAVFAC, and Air Force Real Property Agency have experts who can deploy or provide reachback in support of these requirements. See EP 500-1-2 for more information.

ENVIRONMENTAL

7-11. The base camp commander is responsible for the timely identification and mitigation of negative environmental impacts on the base camp. See FM 3-34.5/MCRP 4-11B for more information on environmental considerations. The major environmental tasks performed in support of base camp transfers and closures include—

- Conducting environmental site closure surveys (ESCSs).
- Transporting HAZMAT and HW to the nearest appropriate accumulation point.
- Removing antiterrorism/force protection measures to include knocking down protective berms, filling in fighting positions, and removing obstacles such as wire and vehicle barriers.
- Conducting environmental mitigation (cleaning up HAZMAT, HW, and POL spills).
- Disposing of medical waste and infectious wastes.
- Closing waste management facilities (solid, hazardous, medical, wastewater, and special wastes).
- Closing vehicle and aircraft washracks.
- Establishing, and later closing, equipment decontamination sites (for hazardous and biological contamination).
- Maintaining environmental documentation.

7-12. Based on the theater guidance for transfers and closures, and in coordination with higher headquarters, base camp commanders develop specific procedures and assign tasks. This ensures the—

- Availability of proper personnel, supplies, and equipment to properly package and ship hazardous and special waste (such as approved containers, labels, placards, and material safety data sheets).
- Availability of proper personnel, supplies, and equipment to clean up any identified or anticipated area that will likely require action.
- Completion of necessary environmental documentation.
- Proper decontamination and packing of unit equipment and proper disposal of decontamination waste (see GTA 05-08-016 for more information).
- Proper transport and turn in of HAZMAT and HW to the designated accumulation point.

Environmental Site Closure Survey

7-13. The ESCS is the mechanism used to document the final condition of the occupied property, ensure units have properly prepared sites for closure or transfer, and protect U.S. forces against undue liability. The ESCS is based on the EBS and ECRs that have been completed during occupation of the base camp, along with any other historical or archived environmental reports, corrective action plans, and information. The ESCS—

- Contains a brief outline containing AO background information.
- Includes a base camp map indicating the locations of spill sites, waste storage or disposal locations, and other environmental concerns or hazards.
- Indicates the locations and status (open or closed) of waste incineration sites, aboveground and underground storage tanks, and washracks within the surrounding area.
- Summarizes past ECRs and lists significant environmental matters and events.
- Comprises findings and determinations that indicate whether or not the camp conditions will impact the environment.

7-14. When alerted to transfer or close a base camp, the base camp commander ensures that qualified environmental personnel conduct an initial ESCS and that a corrective action plan is developed that lists the necessary resources and environmental mitigation actions required. The unit or base camp environmental officer will coordinate through the environmental officer at higher headquarters for any support needed to conduct the ESCS. Support may be provided by an USACE environmental support team or USAPHC team that is providing area support.

7-15. The initial ESCS is normally conducted 90 days (30 days at a minimum) before the base camp transfer or closure date. The base camp commander takes the necessary action, including subsequent ESCSs and corrective action plans as necessary, to ensure all issues and requirements are resolved before the final ESCS. The final ESCS is normally conducted 30 days before transfer or closure to allow for any remaining environmental issues to be resolved. The final ESCS and the associated environmental closure report must be completed before the unit or base camp commander is released of responsibility for the base camp.

Waste Disposal

7-16. Based on theater guidance, base camp commanders develop a plan for disposing of all remaining waste on the base camp and returning each waste collection, accumulation, and treatment site to its preexisting state or the required condition for closure or transfer. Unit or base camp environmental officers should make initial coordination with the appropriate environmental officer or designated representative for removal of hazardous and special waste from HW accumulation points at least 60 days in advance of the transfer or closure date. The plan should address the following critical areas:

- Disposition of reusable and recyclable materials.
- Requirements for packaging, containerizing, inventorying, labeling, and turning in hazardous and special waste for disposal, and clean-up of HW accumulation areas.
- Termination of waste management contracts, removal of contractor furnished equipment, and clean-up of the surrounding area.
- Disposition of empty hazardous and special waste containers, to include standards for turn-in.

- Removal of fuel bladders, blivets, secondary containment liners and associated fuel distribution equipment, and the clean-up standards necessary for any affected areas.
- Disposition of secondary containment and protective berms.
- Disposition of waste material generated from base camp deconstruction.
- Closure and clean-up of all waste management areas such as incinerators, landfills, recycling operations, composting sites, and land farming operations.
- Disposition of medical waste.
- Proper shutdown of WPSs, the disposition of the wastewater and brine lagoon, and the need for a water survey.
- Disposition of wastewater treatment systems.
- Disposition of above and underground storage tanks.

7-17. When closing base camps, all latrines, soakage pits, landfills or trash burial sites, and septic systems must be closed, marked, and their locations recorded and archived for future reference. While simple methods will generally involve only covering with earth, agreements with the HN may require more detailed methods and some form of long-term monitoring to detect potential groundwater contamination. In the absence of formal guidance, best management practices must be used. This may entail enlisting environmental experts to ensure the best possible solutions. See engineer doctrine for information on waste management operations.

7-18. Units will record the grid coordinates and take postclosure digital photographs of each waste management site. This information is incorporated into the environmental site closure report and is archived for future reference.

PROPERTY

7-19. Ensuring the proper disposition (retain, reuse or redistribute, retrograde, or dispose) of property is critical to both transfers and closures. Commanders at all levels share in the responsibility for implementing the necessary controls that ensure accurate and complete official records are maintained for all property transfers. The types of property to be addressed during transfers and closures include—

- **Real property.** This includes land and permanent improvements to that land to include structures, buildings, and the equipment affixed and built into the facility (nonmoveable) as an integral part of the facility such as heating systems, installed carpeting, and overhead hoists. Economic improvement of the HN is considered when recycling or transferring facility infrastructure. See AR 735-5 for more information.
- **Personal property.** This is any property that can be moved and reused without significant refurbishment or degradation from its intended purpose. Personal property includes government property and items owned by individuals. Some personal property items become real property once installed within buildings or facilities, such as lighting, plumbing, and ECUs. See AR 735-5 for more information.
- **Contractor-managed, government-owned property.** This includes both government-furnished equipment and contractor property acquired with government funds.

7-20. In preparation for transfers and closures, base camp commanders and tenant unit commanders begin by conducting property inventories and identifying excess property. Excess property is property that will not be included in the base camp transfer and that is not contractor-owned or part of a unit's modification table of organization and equipment. Serviceable or repairable excess property may be redistributed or cross-leveled to other camps to fill shortages or turned in to a Defense Logistics Agency Disposition Services facility. Unrepairable and nonrecoverable excess property is disposed of through recycling or an approved waste disposal facility as directed. Some items may require demilitarization or destruction prior to transfer or disposal to prevent them from being reused or exploited by adversaries. Planners ensure there is adequate and proper space for property being redistributed to other base camps, and that the necessary transportation requirements are coordinated.

7-21. Land areas may need to be restored to a certain condition based on HN agreements and negotiations with landowners. This may include removing gravel surfaces, concrete pads and footings, survivability

measures (such as protective berms and fighting positions) and antiterrorism/force protection measures (such as concrete barriers and wire obstacles) unless the HN requests that those devices be left in place for continued use. Areas used as ranges and ammunition supply points may require clearance actions to remove or mitigate explosive hazards.

CONTRACTED SUPPORT

7-22. Contracted support is often an integral part of base camp operations. Base camp commanders determine which contracts to retain to sustain essential base camp support and services, while descope and closing out those that are unnecessary to reduce costs and ensure transfers and closures stay on track. They begin by identifying all open contracts to include ongoing material requisitions. They also review construction contracts to determine those that should continue to move forward and those that should be terminated based on cost-benefit analysis and the base camp's planned transfer or closure date.

7-23. Base camp service and support contracts should be commensurately descope or right-sized as the base camp population decreases. Base camp commanders coordinate with requirement owners and determine which contracted services or support are mission essential or needed for life, health, and safety.

7-24. Commanders of remaining base camps ensure their necessary base camp support and services contracts are modified to handle increased demands based on population expansion as a result of realignment and consolidation. Contractors and vendors must be given adequate advance notice of closure notices so that they can plan and execute their recovery and/or redeployment plan. Commanders ensure accountability of contractors as contracts are closed and base camps are transferred and closed so that unauthorized personnel do not remain on base camps.

DOCUMENTATION (RECORD KEEPING)

7-25. Commanders maintain and archive base camp records and documents to provide a historical record that facilitates base camp transfers and closures and the development of lessons learned. This establishes the baseline for that location in the event that follow on operations or legal actions are required. The CCDR confirms standards of master plans and as-built documentation and archives in a central Service or DOD repository. Critical base camp documents that are maintained, transferred to incoming commanders, and archived upon closure include the following:

- Base camp master plans (including as-built drawings).
- Environmental documentation to include—
 - EBSs.
 - ECRs.
 - ESCS and the resultant corrective action plans.
 - Environmental closure reports (see the EBS/OESHA Handbook).
 - Sampling reports to include chain-of-custody forms and analysis results.
 - Spill reports.
 - Results of environmental inspections.
 - Waste turn-in documents and removal manifests for HW.
 - Documentation of solid waste disposal into burn pits, incinerators, and landfills.
 - Environmental site closure reports generated based on the ESCS.
 - Documentation of all clean-up actions taken on site.
- Real estate documents to include—
 - Deed verification map and deeds in English and the predominant language for the AO/HN.
 - Leases and other contractual documents related to real estate acquisition.
- Support contract records.
- Preliminary excess personal property inventory.
- Approved property change notification.
- Property inventories.

- Property disposition documents.
- Final closure or transfer documents.
- Legal reviews.

7-26. Accurate records facilitate the transfer of base camps by providing the new base camp commander with detailed information on building plans, infrastructure locations, and environmental considerations. These records assist in maintaining the base camp and in preventing or mitigating hazards. Base camp records are also essential in base camp closure by providing information on base camp infrastructure that is to be dismantled, assisting in the planning process, helping to mitigate safety and environmental issues, and providing a baseline of information that will help protect the U.S. government against potential liability claims. In addition to facilitating closure or transfer actions, maintaining base camp archives provides information that can assist base camp planners in the future by providing planning and operational information and lessons learned.

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Appendix A

Example Army Base Camp Appendix

This appendix provides guidelines for creating a base camp appendix as an attachment to an OPLAN or OPORD. Refer to ATTP 5-0.1 and MCWP 5-1 for more information on plans and orders. **Marine Corps users: Refer to MCWP 5-1 for correct Marine Corps annexes, appendices, and tabs.**

BASE CAMP APPENDIX

A-1. The base camp appendix contains information, administrative support details, and instructions that expand upon the base order, enabling subordinate unit planning and successful mission execution. The base camp appendix may be part of the engineer or sustainment annex, depending primarily on the echelon and how the functional responsibility for base camps is organized within the staff.

A-2. The example base camp appendix shown in figure A-1, page A-2, follows the five-paragraph format for attachments prescribed in ATTP 5-0.1 and MCWP 5-1 and should be used as a guideline. The base camp appendix can include any combination of text, matrixes, and graphics to best communicate information to subordinates. Although the content may vary based on unit SOPs and unit skill level, the base camp appendix should meet the following general criteria:

- Contains all critical information and tasks pertaining to base camps not covered elsewhere in the order.
- Does not contain items covered in SOPs unless the mission requires a change to the SOP.
- Provides information that is clear and concise.
- Includes only information and instructions that have been fully coordinated in other parts of the plan or order.

A-3. The base camp staff integrator or base camp working group facilitator ensures the optimal amount of information and the necessary tools that subordinate units will need for base camp planning and execution is provided in OPLANs and OPORDs. The information needed is generated by various staff members. The base camp staff integrator or base camp working group facilitator is responsible for collecting and consolidating the necessary information into the base camp appendix and ensuring the information and instructions are consistent with other information contained throughout the plan or order.

[Classification] (Place the required classification at the top and bottom of every page of the appendix.)
Copy ___ of ___ copies Issuing headquarters Place of issue Date-time group of signature Message reference number
<i>Include heading if attachment is distributed separately from the base order or higher-level attachment.</i>
APPENDIX __ (BASE CAMPS) TO ANNEX _____ TO OPERATION PLAN/ORDER NO____.
References: Refer to published theater base camp standards, design guides, and other policies and guidance that apply to base camps.
Time Zone Used Throughout the Order:
1. SITUATION. Include information affecting base camp operations that is not covered elsewhere in the plan or order.
a. Area of Interest. Refer to Annex B (Intelligence) as necessary.
b. Area of Operations. Refer to Appendix 2 (Operations Overlay) to Annex C (Operations) as necessary.
(1) Terrain. Describe how the terrain will impact base camps. Include such things as environmentally sensitive areas; areas with historical, cultural, or religious significance; and existing facilities and infrastructure. Refer to Tab A (Terrain) to Appendix 1 (Intelligence Estimate) to Annex B (Intelligence) as necessary.
(2) Weather. Describe how weather will impact base camps. Refer to Tab B (Weather) to Appendix 1 (Intelligence Estimate) to Annex B (Intelligence) as necessary.
c. Enemy Forces. Describe how the enemy will impact base camps. Refer to Annex B (Intelligence) as necessary.
d. Friendly Forces. Outline the higher headquarters basing strategy or scheme of base camps. List higher, adjacent, and other functional area assets that support or impact the issuing headquarters base camp capabilities or require coordination and additional support. Refer to Annex P (Host Nation Support) as necessary.
e. Interagency, Intergovernmental, and Nongovernmental Organizations. Identify and describe other organizations in the area of operations that may impact base camps. Refer to Annex V (Interagency Coordination) as necessary.
f. Civil Considerations. Describe the impacts of civil considerations on base camps. Refer to Annex K (Civil Affairs Operations) as necessary.
g. Attachments and Detachments. List units attached or detached only as necessary to clarify task organization. Refer to Annex A (Task Organization) as necessary.
h. Assumptions. List any base camp-specific assumptions that support the appendix development.
2. MISSION. State the mission of base camps or base clusters in support of the base plan or order.
[page number] [Classification]

Figure A-1. Example Army base camp appendix

[Classification]

3. EXECUTION.

a. Scheme of Base Camps. Describe how the commander intends to use base camps to support the concept of operations. Describe the overall arrangement of base camps/clusters and clarify the interrelationships (hub and spoke) as necessary. State the priorities for base camps (by unit or area) for each phase of the operation (if the operation is phased) to include base camp transfers and closures. Supplement the concept of sustainment (paragraph 4 of the base order) with any additional information that clarifies base camp tasks and purposes.

b. Tasks to Subordinate Units. List base camp tasks assigned to specific subordinate units not contained elsewhere in the plan or order.

c. Coordinating Instructions. List instructions that apply to two or more subordinate units not covered elsewhere in the plan or order. This may include, but is not limited to—

- Base camp standards.
- Construction programming and funding procedures.
- Project approval and acquisition review procedures (specify thresholds as necessary).
- Transfer and closure procedures.
- Environmental, safety, and occupational health measures for reducing risks associated with constructing and operating base camps.
- Disposition or disposal instructions for construction debris and discarded materials.
- Base camp-related information requirements. Include requests for information that have been submitted to higher and adjacent units that may be relevant to subordinate unit planning.
- Channels for contacting support (reachback) for technical assistance.
- Instructions for disseminating base camp-related information.
- Master planning requirements.

4. SUSTAINMENT. Identify priorities for sustainment for base camps and their key tasks and specify additional instructions as required. Describe stockage levels or basic loads for construction and barrier materials and other base camp-related items to be maintained at each base camp. Describe the appropriate channels for ordering, acquiring (to include local purchases), and contracting base camp supplies, materials, and services that are not covered in Annex F (Sustainment) as necessary. Clarify any support requirements (for transient units or daily base camp visitors) or means for receiving support on an area basis that are not clearly articulated in Annex F (Sustainment).

5. COMMAND AND SIGNAL.

a. Command. Identify base camp/cluster commanders and clarify command and support relationships to ensure unity of effort for base camps. Clearly identify approving authorities (and thresholds as applicable) for base camp construction programming and funding, project approvals, and acquisition reviews. State the location of key personnel involved with base camps.

b. Control. Describe the employment (including location) of base camp management centers, base cluster operations centers, and other centers as known. State any base camp liaison requirements not covered in the base order.

c. Signal. Address communications requirements and reports used for operating and managing base camps. Refer to Annex H (Signal) as appropriate.

ACKNOWLEDGE: Include only if distributed separately from the base order.

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Figure A-1. Example Army base camp appendix (continued)

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<i>Either the commander or the coordinating staff officer responsible for base camps may sign the appendix.</i>
TABS: List any tabs as required. May include— <ul style="list-style-type: none">• Base camp standards.• Base camp transfer and closure procedures.• Base security and defense.• Master planning procedures.• Base camp construction plans and construction directives.
DISTRIBUTION: Show only if distributed separately from the base order or higher-level attachment.
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Figure A-1. Example Army base camp appendix (continued)

Appendix B

Example Army Base Camp Defense Attachment

This appendix provides guidelines for creating a base camp defense attachment to an OPLAN or OPOD. Refer to ATTP 5-0.1 and MCWP 5-1 for more information on planning and orders. **Marine Corps users: Refere to MCWP 5-1 for correct Marine Corps annexes, appendices, and tabs.**

ATTACHMENT GUIDANCE

B-1. The base camp defense attachment is used in OPLANS or OPORDs to describe the concept for defending base camps that are within the issuing headquarters AO. Base defense is most effective with a top-down planning/bottom-up refinement approach. Some of the key components of a base camp's defense (such as the length of perimeter, number of ECPs, and number of guard towers) are already factored into the base camp design as part of base camp planning and design conducted by the higher headquarters, and are simply site adapted by the base camp commander based on the current conditions on the ground. When the defense of all base camps in the AO is adequately planned, coordinated, and synchronized and the necessary defensive components are integrated within base camp planning and design (top-down), the amount of adjusting and synchronization resulting from the base camp commander's site adaption (bottom-up) is minimized.

B-2. The base camp defense attachment may be included as an appendix to Annex E (protection) or as a tab to the base camp appendix to either the Annex F (sustainment) or Annex G (engineer). The example base defense attachment shown in figure B-1, page B-2, follows the five-paragraph format prescribed in ATTP 5-0.1 and MCWP 5-1 and should be used as a guideline. This format is applicable for either an appendix or a tab by simply modifying the heading accordingly. The base defense attachment can include any combination of text, matrixes (execution, BOM, or other items), and graphics to best communicate information to subordinates. An overlay is typically used to show the positioning of weapons systems, guard towers, barriers, and other aspects of the defense that may not be clearly articulated in base camp construction plans or site designs. An example base camp defense overlay for an individual base camp is shown in figure B-2, page B-4.

B-3. Development of the base camp defense appendix (or tab) does not preclude the requirement for the base camp commander or BDF commander (if one is designated) to produce a unit base defense plan. For smaller base camps, a verbal orders briefing in conjunction with a suitable graphic (sketch-map) presentation (similar to what is shown in figure B-2) may initially be adequate and function as a warning or fragmentary order. See ATTP 5-0.1 for more information on overlay orders.

<p>[Classification]</p> <p>(Place the required classification at the top and bottom of every page.)</p> <p style="text-align: right;">Copy ___ of ___ copies Issuing headquarters Place of issue Date-time group of signature Message reference number</p> <p><i>Include heading if attachment is distributed separately from the base order or higher-level attachment.</i></p> <p>TAB ___ (BASE DEFENSE) TO APPENDIX ___ (BASE CAMPS) TO ANNEX ___ OPERATION PLAN/ORDER (number) (code name, if used)</p> <p>References: List maps and other references required.</p> <p>Time zone Used Throughout the Order:</p> <p>1. SITUATION. Include information affecting base defense operations that is not covered elsewhere in the base plan or order.</p> <ul style="list-style-type: none"> a. Area of Interest. Refer to Annex B (Intelligence) as required. b. Area of Operations. Refer to Appendix 2 (Operations Overlay) to Annex C (Operations) as necessary. <ul style="list-style-type: none"> (1) Terrain. Describe the effects of terrain on base security and defense operations. Refer to Tab A (Terrain) to Appendix 1 (Intelligence Estimate) to Annex B (Intelligence) as necessary. (2) Weather. Describe the effects of weather on base security and defense operations. Refer to Tab B (Weather) to Appendix 1 (Intelligence Estimate) to Annex B (Intelligence) as necessary. c. Enemy Forces. Identify enemy forces (including known or potential terrorist threats and adversaries) and appraise their general capabilities. Refer to Annex B (Intelligence) as required. d. Friendly Forces. Outline the higher headquarters plan as it pertains to base security and defense operations. List higher, adjacent, and other functional area assets (including other tactical combat forces and response forces in the area of operations) that support or impact the issuing headquarters base defense capabilities or require coordination and additional support. e. Interagency, Intergovernmental, and Nongovernmental Organizations. Identify and describe other organizations in the area of operations that may impact base defense operations. f. Civil Considerations. Describe the impact of civil considerations on base defense operations. Refer to Annex K (Civil Affairs Operations) as necessary. g. Attachments and Detachments. List base camp security and defense assets attached or detached only as necessary to clarify task organization. h. Assumptions. List any base defense-specific assumptions that support the appendix development. <p>2. MISSION. State the base defense mission in support of the operation.</p>

Figure B-1. Example Army base defense attachment to plans or orders

[Classification]

3. EXECUTION.

a. Scheme of Support. Describe how base security and defense tasks support the commander's intent and concept of operations. Describe the sequence of actions the force will use to achieve the end state. Describe the establishment of base clusters (if used) and the employment of base defense forces, tactical combat forces, and other response forces including priorities of effort and priorities of support for each phase of the operation (if the operation is phased). Supplement the schemes of movement and maneuver/maneuver, fires, and protection/force protection (paragraph 3 of the base order) with any additional information that clarifies base security and defense tasks and purposes, and how those tasks complement one another.

b. Tasks to Subordinate Units. List base security and defense tasks assigned to each base camp or base cluster commander not contained in the base order.

c. Coordinating Instructions. List instructions that apply to two or more subordinate units not covered in the base order. This may include, but is not limited to—

- Timing or sequence of construction.
- Implementation of antiterrorism/force protection measures that are not already incorporated into base camp designs.
- Other necessary guidance.

4. SUSTAINMENT. Identify priorities for sustainment for base security and defense tasks and specify additional instructions as required. Describe ammunition stockage levels and critical security and defense equipment to be maintained at each base camp, distribution of barrier materials, and other resources used for security and defense tasks. Describe procedures for redistributing weapons and ammunition between base camps, conducting emergency resupply, and evacuating casualties that are not covered in Annex F (Sustainment).

5. COMMAND AND SIGNAL.

a. Command. State the location of key leaders and base cluster operations centers (if established). Highlight command and support relationships and triggers for commitment of the tactical combat force and other response forces.

b. Control. Describe the employment of base cluster operations centers and base defense operations centers. State any liaison requirements not covered in the base order.

c. Signal. Address communications requirements (including alarms and notification procedures for employing response forces and for alerting base camp occupants) or reports used for base security and defense. Refer to Annex H (Signal) as required.

ACKNOWLEDGE: Include only if attachment is distributed separately from the base order.

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[Authenticator's position]

ATTACHMENT: List any tabs or exhibits as required.

DISTRIBUTION: Show only if distributed separately from the base order or higher-level attachments.

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Figure B-1. Example Army base defense attachment to plans or orders (continued)

BASE CAMP DEFENSE OVERLAY GUIDANCE

B-4. Overlays are discussed in ATTP 5-0.1 and MCWP 5-1. These products are designed to provide a graphic depiction for the accomplishment of a specified or implied task—in this case, establishment of the defense of a base camp. Overlays may include constraints, such as restrictive fire line or no fire area, or other necessary graphic measures. See ADRP 1-02 for a listing of doctrinal control measures and guidance for drawing control measures on overlays. Overlays allow flexibility in their creation since they are not constrained by the five-paragraph order format.

B-5. Figure B-2 is a simple example of a base camp defense overlay. Its primary purpose is to graphically portray the basic necessary defensive features associated with a specific base camp on a specific piece of terrain. This graphic provides the visual linkage for the accomplishment of all of the construction tasks and defensive applications that are intended for a base camp that may not be clearly articulated in base camp construction plans or site designs. It may be color-coded or marked in some other fashion to reflect sequence of construction, as linked to the commander’s risk assessment, or other noted guidance. Additional related matrixes or tables may reflect bills of material, or other associated information necessary to accomplish the graphic. Sequence numbers may be added to the overlay to link notes to corresponding locations on the overlay to information in supporting tables/matrixes. Although obstacles associated with the defense of the base camp are not shown in this example, their inclusion is also critical to ensure they are properly covered by observation and fire and integrated into EA development and other planning.

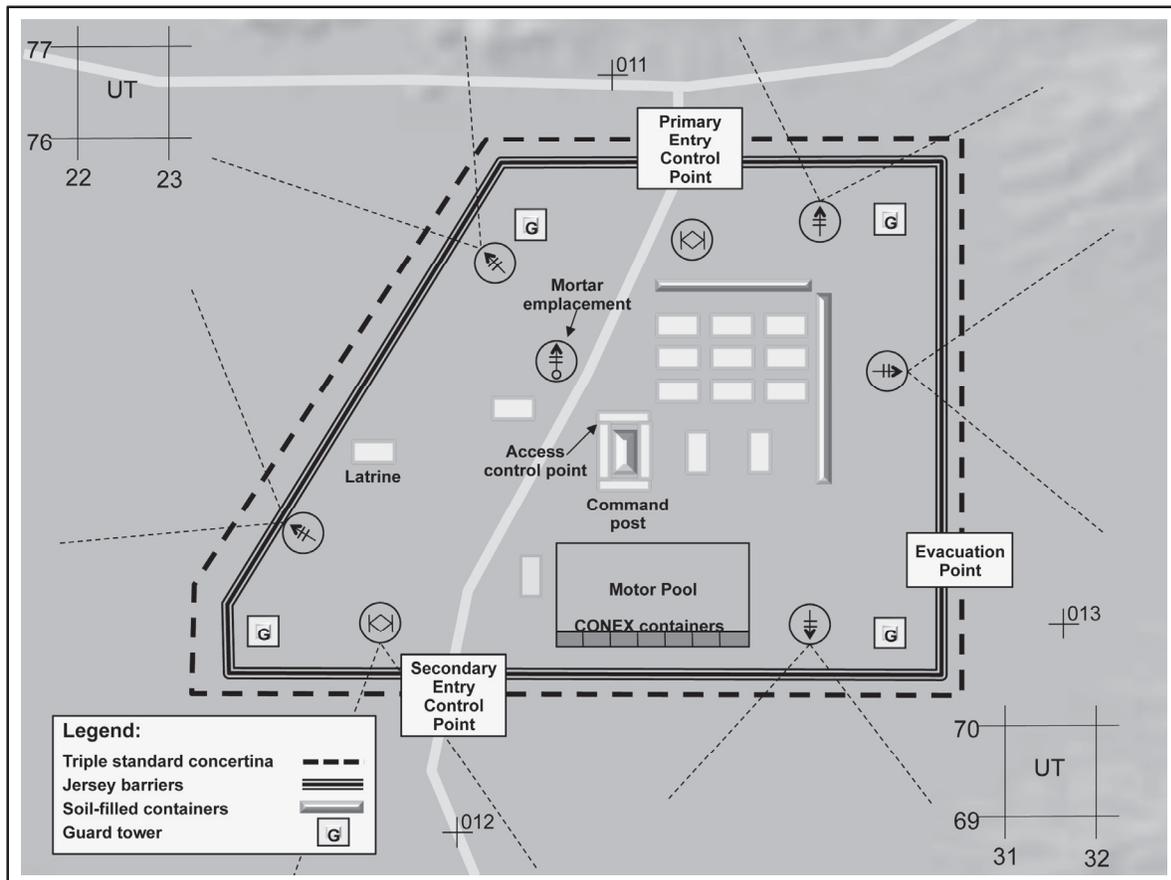


Figure B-2. Example base camp defense overlay

Appendix C

Base Camp Planning Factors

This appendix discusses base camp planning factors, sometimes called rules of thumb. Planners use these to estimate requirements and capabilities as a part of running estimates/staff estimates and to help develop basing strategies or schemes of base camps. Base camp considerations or other factors that should be incorporated in planning are discussed in chapter 2.

USE OF PLANNING FACTORS

C-1. Planning factors provide a start point for preparing running estimates/staff estimates when actual situational data is unclear or unknown, or in the absence of specific policy, planning, or guidance. A rule of thumb is a means of estimation, a general guideline, or a procedure that is easily applied based on experience and common knowledge for approximately calculating—which may not apply to every situation.

C-2. Planning factors and rules of thumb are not intended to be precise or prescriptive. Adjustments must be made based on the uniqueness of each situation. Doing so increases the chances of preparing good basing strategies, schemes of base camps, master plans, and base camp development site plans based on estimates of requirements and capabilities.

C-3. Planning factors may be provided in base camp policy, standards, and planning guidance. For example, “plan to provide one fitness center of 1,024 square feet per 150 authorized users at enhanced small-size base camps” or “plan to provide one fitness facility at 3 square feet per authorized user at expanded small-size base camps.” These two different planning factors applied to the base camp populations associated with each size of base camp (see table C-1, page C-2) would yield estimated facility sizes ranging from 900 square feet to 13,647 square feet (depending on which value of population range is used). The staff uses planning factors to help estimate life cycle requirements, develop COAs, and generate potential solutions to problems. Life cycle requirements are dynamic, based on changes and adjustments to populations, levels of services and support (quantities and types), size, facilities and infrastructure, real property (land and permanent improvement to the land, including all nonrelocatable buildings), construction estimates of materials, labor, time, and equipment, staffing, and cost.

C-4. The CCDR’s base camp standards for the AOR, such as Central Command Regulation 415-1, “*The Sand Book*,” may be used as planning factors to complete initial running estimates/staff estimates unless specific base camp guidance has been provided based on the contingency basing strategy for the operational area.

C-5. Base camp planning factors are used for both conceptual and detailed planning. Because planning is continuous, the planning factors used to develop conceptual and initial detailed plans are assessed, validated, or updated as the operation progresses, data becomes available, and situational understanding improves. Base camp planning documents are continuously revised, updated, and distributed accordingly.

C-6. Planning factors inform and are recorded, and updated as appropriate, in running estimates/staff estimates. See ADRP 5-0, ADRP 6-0, JP 5-0, and MCWP 5-1 for more information.

BASING STRATEGY PLANNING FACTORS

C-7. If authorized, any echelon commander may decide to conduct operations from base camps or direct the development of plans for possible future use of base camps. In the absence of actual numbers, planning factors are used to develop estimates of information needed for the basing strategy or scheme of base camps. Based on the proposed task organization and estimated personnel strengths, normally the engineer

and sustainment planner would work with the operations officer to develop an initial estimate of the required number, size, estimated durations, and possible commanders of base camps across the AO. The engineer and intelligence planners would begin assessment of possible site locations within proposed unit boundaries. The logistic planner would work with the operations officer and engineer to develop an initial array of logistic hubs, base camps with major support and service missions, and each base camp’s initial level of capabilities. Possible base camp hub and spoke options for protection, security and defense, logistics, or communications support could be analyzed.

C-8. Base camp commanders and staff for most base camps will be either dual-hatted or based around a unit assigned a nontraditional mission and assigned/task organized to a base camp for that purpose. It is unlikely—given current force structure—that a joint operations area could plan on a sustained presence of more than two RSGs and one MEB dedicated to base camps.

C-9. For example, using the base camp sizes and population planning factors shown in table C-1, a five-brigade or regimental-size force with an estimated strength of 25,000 might operate from one large base camp, five medium base camps, or some combination of large, medium, small, and extra small base camps. Several COAs should be developed and analyzed. An RSG or MEB could provide the large base camp commander and staff or function as a base cluster commander located at one of the base camps. Each would require staff augmentation based on the specifics of the base camp or network of base camps for which they are responsible. Most other base camp commanders would be dual-hatted, perhaps with one or more being commanded by a unit performing a nontraditional mission. Estimates of joint, interagency, intergovernmental, multinational personnel and daily visitors are arrayed across the matrix of camps to get a more accurate estimate of total camp populations, with an attempt being made to reflect populations over time, or phases if the operation is phased. The final plan would be obtained through an iterative process of analysis and tradeoffs.

Table C-1. Base camp sizes and planning factors

Base Camp Size	Population	Dimension	Surface Area Required (not including standoff)	Length of Perimeter
Extra Small	50 – 299	150 meters by 250 meters	37,500 square meters	800 meters
Small	300 – 1,999	300 meters by 450 meters	135,000 square meters	1,500 meters
Medium	2,000 – 5,999	500 meters by 1,200 meters	600,000 square kilometers	3,400 meters
Large	6,000 or greater	To be determined by base camp planners.	To be determined by base camp planners.	To be determined by base camp planners.

C-10. The initial plan should assume all base camps be continuously operated camps with a commander and staff, and provided with required logistic and protection functions. As the security situation improves some base camps could be mothballed or operated with a skeleton staff and opened and occupied as required – or ultimately prepared for closure.

C-11. Planners use base camp planning factors to estimate the total of logistic requirements, facility requirements, the balance between troop and contracted construction, support, and services; total BOM and shipping cube or local procurement strategy: contract methods, capacities, quality control, and material delivery schedule.

C-12. One base camp should be designated a regional command and/or logistic hub that has a C-130 capable or larger airfield. Linkages from this base camp to major LOCs should be included as part of the master plan.

C-13. Planning factors for specific types of facilities, designs, construction, protection, security and defense, and logistic estimating are found in the related doctrinal manuals. ADRP 4-0 discusses the sustainment estimate and use of the web-based Operations Logistics Planner to assist in developing it.

Although not base camp specific, the tool uses the latest Army-approved planning rates. A similar web-based tool could be developed for base camp engineering estimates. The UFC system provides planning, design, construction, operations, and maintenance criteria and applies to all service commands having MILCON responsibilities. UFC are effective upon issuance and are distributed only in electronic media from the following sources:

- UFC Index < <http://www.wbdg.org>>.
- USACE technical information <<http://www.hnd.usace.army.mil/techinfo>>.
- The Construction Criteria Base System maintained by the National Institute of Building Sciences at <<http://www.nibs.org/index.php/ccb>>.

LAND USE PLANNING FACTORS

C-14. The following paragraph headings align with the base camp development planning process and may be adjusted based on specifics associated with climate, temperatures, and other specifics associated with a given AO.

Calculate Land Area Requirements

C-15. Table C-1, page C-2, provides base camp dimensions, surface area required, and length of perimeter for each base camp size and population range. The dimensions are approximate based on AFCS initial standard designs. The surface area required and length of perimeter are based on the dimensions in the table. The dimensions in this table are minimums used for initial planning and do not include all facility standoff/separation for health, safety, antiterrorism/force protection, or expansion requirements which are discussed below. These dimensions must be adjusted based on other considerations such as the threat, usable terrain, waste management areas, and ammunition/explosive storage.

C-16. An estimate of area requirements is primarily based on base camp population, security area standoff requirements, and an expansion zone. The surface area planning factors shown in table C-1 should be adjusted for each base camp's security standoff requirements. Base camps in a higher threat area may require greater facility dispersion and protective measures. A base camp's surface area must be adequate for accommodating anticipated expansion throughout the life cycle. The area required, based on population, is adjusted after completing estimates of facility and protection requirements (for example depth of the outer security area). Some unique facilities may require extensive land, such as an unmanned aircraft system runway. See engineer doctrine for land planning factors for waste management areas.

Facility Standoff/Separation

C-17. There are several planning factors for standoff and separation of facilities. See UFC 4-010-01 for more information; see FM 4-25.12 and engineer doctrine for standoff planning factors for waste management areas. Planning factors include the following:

- Maintain a minimum standoff distance of 60 feet from inhabited transportable structures to installation perimeter.
- Clearly delineate the installation perimeter. Options include, but are not limited to, fencing, concertina wire, barricades, countermobility barriers, ditches, police tape, and warning signs.
- Maintain a minimum separation of 60 feet between billeting groups.
- Maintain a minimum separation of 11 feet between billets in a row.
- Maintain a minimum separation of 30 feet between rows of billets.
- Limit unprotected glazing to 5 percent or less of the wall area.
- Maintain inhabited building distance from ammunition and explosives storage sites. If this is not possible due to the tactical situation, use the guidance in DA Pamphlet 385-64.
- Locate mail and supply handling areas at least 60 feet from inhabited transportable structures.
- Consider walking distance and the separation between facilities. In general, 0.25 miles (400 meters) is considered a convenient walking distance.

Location Selection

C-18. Location selection is a balance of operational, sustainment, and engineering requirements. Some rules of thumb for site location selection include the following:

- All sites considered as potential base camps sites should be scalable and easily expanded.
- The most desirable site locations are those that are easiest to secure and defend.
- Whenever the establishment of a base camp is being considered, identify at least three suitable, possible locations (COAs or options) before recommending the most advantageous COA.
- The entire staff should be involved in evaluating potential base camp sites.

Facility Requirements

C-19. Facility requirements integrate facility allowances with supported and/or tenant unit requirements. The following are some rules of thumb for facility requirements:

- A prioritized list of projects in the master plan for initial construction, O&M, and follow-on improvements should be developed to mitigate the fact that requirements always exceed resources.
- All requirements that exceed standards should be approved at least at the next higher headquarters.
- Priority for fulfilling facility requirements should be: U.S. owned, occupied, or leased facilities; HN government support; facility leasing; prepositioned facilities in theater; contract construction; and troop construction.

General Site Planning

C-20. General site planning takes the initial land use plan, facility requirements, and unit requirements into account. The following are some rules of thumb for general site planning:

- Be aware that poor site layout can degrade physical health, reduce coordination and cooperation among units, erode morale, and increase operational costs.
- First layout land use categories, facility groups, major interior roads/links to LOCs, primary utility distribution lines, and then individual facilities.

Design Guide and Programming

C-21. Design guides and programming ensures that base camps will be functional at the appointed time. The following are some rules of thumb for design guide and programming:

- Design guides should be provided for all base camps.
- MILCON programming timelines will not normally support initial contingency construction requirements.

Maintenance

C-22. The maintenance planning factors discussed here are part of the base camp O&M, not unit equipment maintenance. Base camp maintenance requirements are integrated into the master plan. Maintenance programs and projects should be developed, planned, prioritized, programmed, and monitored. Service components plan for and program funding for maintenance. Tenant units or organizations are normally responsible for the installation and maintenance of all unit-specific items, such as a signal/communications unit's satellite dish or an Army and Air Force Exchange System cooler or stove. The goal of routine maintenance is to maximize the life expectancy of facilities and infrastructure with minimum cost. Invest in capital maintenance, repair, and minor construction only for minimum essential, high priority, and self-amortizing requirements. Planners should assess HN and contractor maintenance support capabilities. Potential design solutions should be evaluated to reduce maintenance costs.

Painting

C-23. Wood buildings should be primed and painted to prevent weather damage. Paint should have a durability rating of at least five years. Plan to paint interior walls every 18 months.

Roads

C-24. The goal is to maximize maneuverability, minimize damage to equipment, and provide a safe transportation system. Plan for a 30-foot roadway width with 15-foot clear space on either side of the road for utility distribution lines, drainage features, and pedestrian flow. Routine grading is required to maintain drainage and to prevent potholes and wash-boarding. Minimize use of loose rock greater than 40 millimeters in diameter on roads and parking lots. Plan routine dust abatement and mud, snow, and ice removal based on local conditions. Paving should be considered on gravel roads if the payback period is 2 years or less.

Ground Cover

C-25. Planting of ground cover , such as native grasses or low-growing plants, reduces dust and erosion. Ground cover that requires minimum water and mowing should be selected. Mowing should be done under the guidance of the environmental officer based on local conditions for vector control and ground cover survival.

Preventive Maintenance

C-26. Preventative maintenance inspection of facilities should be conducted every 60 days. The goal is to identify safety issues and reduce the cost by identifying deficiencies while they are still small and easy to fix.

Cleanup, Closure, and Archive

C-27. Maintenance for base camps scheduled for closure should be limited to emergency or breakdown repairs. Base camps scheduled for transfer should be maintained to the agreed-upon turn over standards.

C-28. Plans and procedures for cleanup and closure made at the start of an operation and integrated into the planning process will avoid or reduce future challenges. Without other guidance, land should be returned to its original use. Estimate the time to clean-up and close a base camp as 50 percent greater than the time to construct it.

Other References

C-29. For additional potential engineer-specific base camp planning factors, see EP 1105-3-1.

FACILITY AND INFRASTRUCTURE DESIGN FACTORS

C-30. One of the possible options for base camp designs using new facilities should be the standard AFCS designs. As plans are finalized, the standard designs are site adapted. If some or all existing facilities are used, the information from the AFCS can be used as planning factors to help estimate and assess facility requirements.

C-31. Table C-2, page C-6, is an example of some contingency standards that can be used as recommended minimum planning factors to estimate the type and total requirements of facilities within theater. These examples do not include all facilities.

Table C-2. Example contingency standards

Facility	Contingency		
	Initial		Temporary
	Expeditionary <90 Days	Standard <6 months	Temporary <24 Months
Housing	Unit tents ¹	Unit/FP tents	Unit/FP tents to SEAhuts
Latrine	Burn-out	Chemical	AB units/SEAhut
Shower	Shower unit tent	Shower unit tent	AB units/SEAhut
Sewage Disposal	Leach field/lagoon	Leach field/lagoon	Lagoon or treatment plant
Office	Unit tents ¹	Unit/FP tents	SEAhut or container
Helipad	Stabilized earth	Airfield matting	Concrete
Fuel	Bladder ²	Bladder ²	Bladder ²
Vehicle maintenance	Unit tent ¹	Unit/FP tents	Clamshell
Vehicle hard stands	Stabilized earth	Gravel	Concrete
Storage	Unit tents ¹	MILVANs	MILVANs
Roads and streets	Stabilized earth	Gravel ³	Gravel ³
Potable water	Bottle	Bottle/WPS	Well, treatment plants
Nonpotable water	Local source	Local source	Local source
Washrack	None	Gravel	Gravel ³
Electric	Unit generators	Prime power/contract	Local power/generator backup power
DFAC	Unit tent ¹	Unit/FP tents	Unit/FP tents to SEAhut
PX warehouse	Unit tent ¹	Unit/FP tents	Metal prefabricated
<p>Note. Improvements to facilities are dependent on operational situations.</p> <p>¹ Unit tentage to be provided by Service component.</p> <p>² Requires secondary containment.</p> <p>³ Requires oil-water separator (see engineer doctrine for an example field expedient washrack with an oil-water separator).</p> <p>Legend:</p> <p>AB - ablution MILVAN – military van TM – technical manual</p> <p>DFAC – dining facility PX – post exchange WPS – water purification system</p> <p>FP – Force Provider SEAhut – Southeast Asia hut</p>			

C-32. Table C-3 is an example of contingency design requirements that can be used as planning factors to estimate the type, size, and total requirements of the listed facilities. All square footage measurements are annotated in net square feet (NSF). Net square footage is defined as the usable square footage available for use by the individual or activity.

Table C-3. Example contingency design requirements for initial construction

<i>Facility</i>	<i>Initial Construction Standard <6 Months</i>	<i>Recommended Design Size</i>
Housing	Unit/FP tents	80-512 NSF per person
Latrine	Chemical	One fixture per 20 personnel
Shower	Shower unit tent	One shower head per 20 personnel
Sewage Disposal	Leach field/lagoon	Lagoon: 1 acre per 200 personnel
Office	Unit/FP tents	60-300 NSF per person
Medical	Aid station	700 NSF per 1,000 personnel
Helipad	Airfield matting	Not applicable
Fuel	Bladder	Not applicable; include secondary containment
Vehicle maintenance	Unit/FP tents	To accommodate the largest vehicle plus a recovery vehicle
Vehicle hard stands	Gravel	As required
Storage	MILVANs	As required
Roads and streets	Gravel	Not applicable
Potable water	Bottle/WPS	Not applicable
Nonpotable water	Local source	Not applicable
Washrack	Gravel	To accommodate the largest vehicle
Electric	Prime power/contract	Not applicable
DFAC (including kitchen area)	Unit/FP tents	1,290 NSF per 100 personnel
PX warehouse	Unit/FP tents	4,480 NSF per 1,000 personnel
Legend:		
DFAC – dining facility	MILVAN – military van	NSF – net square feet
FP – Force Provider	PX – post exchange	WPS – water purification system

C-33. For beddown facilities, an example planning factor of the recommended minimum square footage for personnel accommodations using a temporary construction standard is shown in table C-4, page C-8. These planning factors could later be established as theater standards. The table also shows how many personnel are housed in a SEAhut or container.

Table C-4. Example planning factors for personnel accommodations for temporary standard

Category			NSF	Number Per SEAhut	Number Per Container (8 by 20)
Army	Marine	Civilian			
private, private first class, specialist, corporal, and sergeant	private, private first class, lance corporal, and corporal sergeant	GS-05 and below	80	6	2
staff sergeant, sergeant first class, warrant officer one, chief warrant officer two, first lieutenant, and second lieutenant,	staff sergeant, gunnery sergeant, warrant officer, chief warrant officer two, first lieutenant, and second lieutenant	GS-06 through GS-09	90	5	2
first sergeant, master sergeant, chief warrant officer three, and captain	first sergeant, master sergeant, chief warrant officer three, and captain	GS-10 and GS-11	90	4	2
chief warrant officer four and major	chief warrant officer four and major	GS-12	100	4	2
chief warrant officer five, command sergeant major, and sergeant major	chief warrant officer five, lieutenant colonel, sergeant major, and master gunnery sergeant	GS-13 and GS-14	125	2	1
colonel	colonel	GS-15	150	2	1
brigadier general	brigadier general	Senior Executive Service	300	1	1
Legend: GS – general schedule NSF – net square feet SEAhut – Southeast Asia hut					

Planning Factors of Force Provider Capabilities

C-34. Each module supports 550 personnel (+50 operators) with climate controlled billeting to include—

- Tent, extendable, modular, personnel (TEMPER) or frame tents (15 Soldiers/Marines per tent).
- Quality food service (1,800 meals per day “A” rations).
- Laundry service (200 pounds per hour).
- Showers and latrines (one 10-minute shower per day).
- MWR facilities and equipment.
- Power: 60 kilowatt tactical quiet generators (1.1 megawatt continuous), prime power connection kit.
- Water storage and distribution (80,000 gallons every 3 days).
- Fuel storage and distribution (20,000 gallons every 3 days).
- Wastewater collection (30,000 gallons per day).
- System support packages (30 days spare and repair parts).

Dog Kennels

C-35. A kennel planning factor is 145 square feet per dog for interior facilities, which includes kitchen, tack room, and interior dog run (36 NSF per dog), and 48 NSF per dog for exterior dog runs. See ATTP 3-39.34 for more information.

Bunkers

C-36. Planning design factor is 110 percent of camp population for bunkers and fighting positions. The normal planning factor is that 50 percent of the population will be on the perimeter during an attack, with 50 percent in bunkers.

Other References

C-37. For further information about airfield standards, see UFC 3-260-01 and contact the International Civil Aviation Organization.

CONSTRUCTION FACTORS

C-38. Construction planning factors include unit, equipment, and personnel capabilities. These factors assist in determining construction support for each COA. LOGCAP program planners can provide planning factors and estimates of contractor capabilities for construction and services. The proximity of a suitable base-course-material source is a critical planning consideration. A key metric for alternative road and airfield plans COA comparison is the total earthwork and number of drainage facilities. Planners assess the availability and capabilities of construction units and contractors to complete the required base camps in accordance with the initial planning schedule and then estimate the operations and maintenance capacities. Professional engineers should approve construction design and preferably manage base camp construction. See FM 3-34.400/MCWP 3-17.7 for engineer unit construction capabilities.

C-39. Table C-5 is an example of a comparison of the use of general purpose (GP) medium tents and SEAhuts for housing. Factors considered are cost, construction time, and force protection. Cost figures in all tables of this appendix are examples to illustrate certain current analysis techniques and should be updated with current estimates during planning.

Table C-5. Example comparison of GP medium tents and SEAhuts

	<i>GP Medium Tent</i>	<i>SEAhut</i>
Cost	\$1,810.49	\$5,215.08
Construction time	40 man-hours	192 man-hours
Force protection	<ul style="list-style-type: none"> • Loose structures can deform quite a bit before failure. • No roof collapse hazard. • Plywood floor may become a debris hazard. 	<ul style="list-style-type: none"> • 4-foot, zero inch stud spacing makes a weaker system. • Roof collapse hazard. • Does not deform before failure. • Plywood floor may become a debris hazard.
<p>Legend: GP – general purpose SEAhut – Southeast Asia hut</p>		

C-40. Table C-6, page C-10, is an example of how staff planners can use unit personnel estimates to determine a maximum number of structures required by unit. It also allows planners the ability to compare the total estimated maximum cost.

Table C-6. Example maximum number of personnel structures

	<i>Personnel Required</i>	<i>Personnel on Hand</i>	<i>Maximum Number of Structures Required</i>	<i>SEAhut Cost</i>	<i>Tentage Cost</i>
BCT 1	3,452	3,395	340	\$1,773,433.20	\$615,566.60
BCT 2	4,207	4,213	421	\$2,195,927.58	\$762,216.29
BCT 3	4,085	4,386	439	\$2,289,815.22	\$794,805.11
BCT 4	1,625	1,577	158	\$824,124.84	\$286,057.42
Sustainment Brigade	920	822	82	\$427,710.36	\$148,460.18
Fires Brigade	970	978	98	\$511,166.04	\$177,428.02
Reconnaissance Squadron	1,308	1,278	128	\$667,645.44	\$231,742.72
Engineer Battalion	2,463	2,301	230	\$1,199,675.40	\$416,412.70
Light Infantry Battalion	2,351	2,351	235	1,225,755.30	\$425,465.15
Other Division Troops	3,304	3,704	370	\$1,929,912.60	\$669,881.30
Totals	24,685	25,005	2,501	\$13,045,165.98	\$4,528,035.49
SEAhut cost:	\$5,215.98 each				
Tentage cost:	\$1,810.49 each				
Legend:					
BCT – brigade combat team SEAhut – Southeast Asia hut					

Surge Housing

C-41. A proven planning factor for surge housing is that all base camps must maintain the ability at all times to house an additional 10 percent of its assigned population for transients and surges. During surge periods that exceed 10 percent, such as those that occur during transfers of authority, Tier II tents (maximum) may be used for housing. Tier level for tents is as follows:

- Tier I consists of a GP medium field tent or equivalent (TEMPER) (16 feet by 32 feet) with plywood floor panels.
- Tier II consists of a GP medium field tent or equivalent (TEMPER) with plywood floor panels, two electric light outlets, two electrical outlets, and space heaters.
- Tier III consists of a GP medium field tent or equivalent (TEMPER), full wooden frame for tent, plywood panel sidewalls, raised insulated flooring, four electric light outlets, eight electrical outlets, and ECUs.

Unit Headquarters

C-42. Table C-7 contains example planning factors for unit headquarters maximum space at a medium- size camp. It can be used to assess existing facilities.

Table C-7. Planning factors for unit headquarters at a medium-size base camp

<i>Unit</i>	<i>Maximum NSF/Unit Headquarters</i>
Brigade	5,376
Battalion	3,840
Company	1,536
Legend: NSF – net square feet	

Unit Facilities

C-43. Table C-8 is an example planning factors for unit private and open office space.

Table C-8. Planning factors for office space

<i>Type of Office</i>	<i>Personnel</i>			<i>Maximum NSF/Person</i>
	<i>Army</i>	<i>Marine</i>	<i>Civilian</i>	
Private	brigadier and major generals	brigadier and major generals		300
	colonel, lieutenant colonel, and task force command sergeant major	colonel, lieutenant colonel, and task force command sergeant major	GS-15	200
	lieutenant colonel, major, and brigade/battalion command sergeant major	lieutenant colonel, major, and brigade/battalion sergeant major	GS-13 and GS-14	150
	major, captain, sergeant major, and first sergeant	major, captain, sergeant major, and first sergeant	GS-12	100
Open	captain, first lieutenant, second lieutenant, warrant officer 1, first sergeant, and master sergeant	captain, first lieutenant, second lieutenant, warrant officer 1, first sergeant, and master sergeant	GS-09 through GS-11	110
	sergeant first class	gunnery sergeant	GS-07	90
	stenographic and clerical positions	stenographic and clerical positions	stenographic and clerical positions	60
Notes. 1. Applies ONLY to military units or organizations and personnel. Administrative space for MWR and commercial functions are discussed separately. 2. To calculate the total building size, add an additional 40 percent for central files; hallways; and storage, copiers, mail, and conference rooms.				
Legend: GS – general schedule MWR – morale, welfare, and recreation NSF – net square feet				

C-44. Table C-9 and table C-10, page C-12, are examples of comparison of the total base camp housing cost with the maximum structures required compared to the total cost for GP medium tents and SEAhuts.

Table C-9. Maximum average estimated cost for GP medium base camp

<i>Item</i>	<i>Unit Cost</i>	<i>Quantity</i>	<i>Total Cost</i>
Housing (tent, general purpose medium)	\$1,810.49	250	\$452,622.50
100-kilowatt generators	\$10,000.00	5	\$50,000.00
5,000-gallon steel holding tanks	\$3,500.00	6	\$21,000.00
One horsepower pump system with pressure tanks, switches, and such	\$3,000.00	6	\$18,000.00
Latrine and/or shower	\$39,700.00	16	\$635,200.00
		Total:	\$1,176,822.50

Table C-10. Maximum average estimated cost for SEAhut base camp

<i>Item</i>	<i>Unit Cost</i>	<i>Quantity</i>	<i>Total Cost</i>
Housing (SEAhuts)	\$5,215.98	250	\$1,303,995.00
100-kilowatt generators	\$10,000.00	5	\$50,000.00
5,000-gallon steel holding tanks	\$3,500.00	6	\$21,000.00
One (1) horsepower pump system with pressure tanks, switches, and such	\$3,000.00	6	\$18,000.00
Latrine and/or shower	\$39,700.00	16	\$635,200.00
		Total:	\$2,028,195.00
Legend:			
SEAhut – Southeast Asia hut			

Medical Treatment Facilities

C-45. Table C-11 is an example “rule of thumb” for basic planning of base camp medical treatment facilities requirements. The actual requirement is directly related to the medical and dental mission and care expectations of the operational command, which should be coordinated with supporting medical headquarters staff.

C-46. The battalion aid station mission is strictly Role 1 medical care (no dental), and is oriented to provide basic medical assessment, treatment, and stabilizing for evacuation to higher roles of medical care. No radiology, laboratory, or holding capabilities are intended. On average, it is meant for a single-sized element (battalion) of roughly 1,000 Soldiers/Marines with immediate transfer to higher echelons of medical care as required. A rule of thumb for these facilities is to provide one examination room (100 NSF) per provider (or three exams per two providers), 100 NSF for storage, 130 NSF for admin/entry/waiting, and toilet facilities as needed. This set of criteria is designated for one aid stations per 750 Soldiers/Marines.

C-47. Clinics may be needed for base camps that require increased medical and dental support over that of a TOE battalion aid station configuration. To meet this end, clinics are configured and staffed to support each base camp established, based on population, medical staffing, and contingency mission. The base camp clinic should be planned to support both medical and emergency dental care to the Soldiers/Marines and authorized civilians. More routine care for dental may also be accommodated without a major impact on additional space needs. To support this expectation, plan for basic radiology, radiology development, and laboratory functions within the clinics. The dental and medical may be collocated in the same structure to reduce redundancy of radiology and laboratory functions. Table C-11 illustrates basic square footage requirements to meet the medical and dental care mission. Additional space is required to meet holding capacity as dictated by the mission’s emergency contingency plan. A minimum of two single toilets is recommended to be included in the clinic; however, additional toilets are authorized based on the clinic location and overall size. The standard base camp clinic will be sized to meet the medical and dental care expectations of the population stipulated in the OPOD and supported by the medical staff. The standard or typical level of care expected exceeds the basic battalion aid station (Role 1 medical care) model of FM

4-02.4. The peace stabilization base camp model is based on Role 1 to Role 2 medical care. See ATTP 4-02 for a full description of the roles of medical care.

Table C-11. Example planning factors for medical treatment facilities

Space	NSF	Notes
Medical	1,660	Based on the organic medical TOE staffing of a typical armor or infantry battalion (add 100 NSF per doctor/exam room); includes the functions listed above in "clinic requirements."
Dental	500	Minimal requirement for one dentist and one hygienist (add 115 NSF per dentist or DTR) two DTR's per dentist may be provided depending on workload.
Holding	340	Minimal requirement for three-cot holding capacity (add 80 NSF per additional holding bed required).
<p>Note. These sizes are NSF only and represent only a few of the common space planning factors for medical facilities. Consultation with a health facility planner or the Health Facility Planning Agency is imperative to ensure that proper space planning is completed in the Space and Equipment Planning System to determine appropriate solutions. A factor of 10 percent should be added for a gross estimate. In addition, a smooth transition for litters (ramping if necessary) should be added for entry into the main building with direct access into the trauma room.</p> <p>Legend: DTR – dental treatment room NSF – net square feet TOE – table of organization and equipment</p>		

C-48. Grossing factors are used to calculate total gross square footage from NSF. See table C-12.

Table C-12. Grossing factors

Condition	Percent of NSF
If a separate mechanical space is used	11 percent of NSF
Circulation	35 percent of NSF
Walls and partitions	12 percent of NSF
Half areas	1.5 percent of NSF
Total gross square footage	159.5 percent of NSF
<p>Legend: NSF – net square feet</p>	

C-49. For final planning, the exact number of physicians and dentists should be obtained from the command. Table C-11 is based on an average of 1,200 total Soldiers/Marines and/or authorized civilians per base camp. For “rule of thumb” planning, add one physician for every additional 750 Soldiers/Marines and/or authorized civilians, and add one dentist for every additional 800 Soldiers/Marines and/or authorized civilians. The basic base camp clinic may contain the following spaces:

- Waiting.
- Administration.
- Receiving.
- Pharmaceutical storage.
- Class VIII (medical) storage.
- Medical waste accumulation area.
- Examination rooms.
- Trauma/treatment room.
- Radiology (for medical and dental).
- X-ray developing.
- Shared administrative.
- Dental treatment room.
- Dental sterilization/storage.

- Two toilet rooms (minimum).
- Soiled utility.
- Laboratory.

C-50. Table C-13 provides a list of planning factors for certain services that a base camp may need. If allowable, a small separate countertop area for a dental laboratory could increase the scope of care from emergent to routine in the future. Additional space to consider is patient holding expectations at the clinic, and others as dictated by mission requirements. UFC 4-510-01 provides details regarding the development of heating, ventilation, and air conditioning requirements.

Table C-13. Some services planning factors

<i>Item</i>	<i>Basic</i>	<i>Expanded</i>	<i>Enhanced</i>
Water	20 gallons per person per day	30 gallons per person per day	50 gallons per person per day
Electricity	1.5 kilowatts per person	2.5 kilowatts per person	3.5 kilowatts per person
Wastewater	16 gallons per person per day	24 gallons per person per day	40 gallons per person per day
Solid Waste	4 pounds per person per day	6 pounds per person per day	10 pounds per person per day
Note. See engineer doctrine for information on developing more detailed waste generation rates that are tailored to a specific base camp.			

Other References

C-51. Central Command Regulation 415-1, “*The Sand Book*,” and U.S. Army, Europe’s *Red Book* (Base Camp Facilities Standards For Contingency Operations) provide very specific recommended minimum planning factors for the construction of base camp facilities.

C-52. Ammunition and explosives storage area planning factors may be found in DA Pamphlet 385-64. For medical facilities information, contact the Health Facility Planning Agency, Office of the Surgeon General; Falls Church, Virginia.

OPERATIONS FACTORS

C-53. The following paragraphs provide example operations planning factors. These factors assist in evaluating options or in developing estimates of some services provided by base camps.

Water Services

C-54. Plan to provide 20-50 gallons of potable water per person per day on camp (see table C-13). If established level of capability requires wells, plan a minimum of 2 wells per camp, one primary and one for back up. The number of wells needed depends on daily water requirements and the production capacity of the well(s) being considered.

Power Generation Options Versus Costs

C-55. Table C-14 shows types of power generation options and planning factors comparison of initial cost and operating cost. The range of costs is shown as from relatively low \$ to high costs \$\$\$.

Electric Power Planning Factors

C-56. Plan to provide 1.5 to 3.5 kilowatts of electric power per person per day (see table C-13). Plan a central power plant to support 125 percent of camp maximum demand load or plan to provide distributed generators of sufficient capacity to support maximum demand loads. Table C-15, page C-16, provides electrical power system attributes, load/situational attributes, and operational considerations for each size of base camp and level of capabilities.

Waste Planning Factors

C-57. Plan to handle wastewater and solid waste volumes as shown in table C-13.

Power Generation Options Versus Costs

C-58. Table C-14 shows types of power generation options and planning factors comparison of initial cost and operating cost. The range of costs is shown as from relatively low \$ to high costs \$\$\$.

C-59. Table C-14 indicates that military and HN commercial power generation would have the lowest comparable costs. Higher initial cost options could be most economical with low operating costs over the long term.

Table C-14. Power generation options versus costs

<i>Type of Power Generation</i>	<i>Initial Cost</i>	<i>Operating Cost</i>
Military	\$	\$
USG lease/military operators	\$\$	\$
USG purchase/military operators	\$\$\$	\$
USG purchase/contractor operators	\$\$\$	\$\$
LOGCAP owner/operators	\$\$	\$\$
Contract owner/operators	\$	\$\$\$
HN commercial	\$	\$
Legend:		
\$ - low cost	\$\$\$ - high cost	LOGCAP - logistics civil augmentation program
\$\$ - medium cost	HN – host-nation	USG – United States government

Table C-15. Electrical power planning factors

<i>Level of Capabilities</i>	<i>Electrical Power System Attributes</i>	<i>Load/Situational Attributes</i>	<i>Operational Considerations</i>
Extra-Small Base Camp			
Basic	<ul style="list-style-type: none"> • Generator/power unit or power plant connected to isolated load(s) at user (low) voltage. (No attempt to consolidate power sources.) 	<ul style="list-style-type: none"> • Primary operational loads include— <ul style="list-style-type: none"> ▪ Critical operations and command facilities ▪ Mission-essential communications. ▪ Weapons/weapon systems. ▪ Field feeding. ▪ Mission-essential maintenance. ▪ Mission-essential HVAC. 	<ul style="list-style-type: none"> • Transportability and rapid setup to support mission-essential operations override other considerations. • Organic equipment operated by individual sections.
Expanded	<ul style="list-style-type: none"> • Power plants (capable of parallel operation) connected to consolidated loads, using PDISE (or similar) low voltage electrical distribution equipment. (Central Power Solution.) (Mini-Grid operational concept.) 	<ul style="list-style-type: none"> • Operational loads (in addition to those for basic capabilities shown above) include— <ul style="list-style-type: none"> ▪ Supply and maintenance operations. ▪ Laundry and shower facilities. ▪ DFACs¹. ▪ Life support areas (troop beddown including HVAC). 	<ul style="list-style-type: none"> • Requires deliberate system planning and/or coordination. • Power plant(s) and PDISE equipment organic to utilities section and operated by utilities section personnel. • Individual unit organic power equipment operationally controlled by utilities section.
Small Base Camp			
Basic	<ul style="list-style-type: none"> • Power plants (capable of parallel operation) connected to consolidated loads, using PDISE (or similar) low voltage electrical distribution equipment. (Central Power Solution.) • (Mini-Grid operational concept.) 	<ul style="list-style-type: none"> • Primary operational loads include— <ul style="list-style-type: none"> ▪ Critical operations and command facilities ▪ . ▪ Mission-essential communications. ▪ Weapons/weapon systems. ▪ Supply and maintenance operations. ▪ Laundry and shower facilities. ▪ DFACs¹. • Life support areas (troop beddown including HVAC). 	<ul style="list-style-type: none"> • Requires deliberate system planning and/or coordination. • Power plant(s) and PDISE equipment organic to utilities section and operated by utilities section personnel. • Individual unit organic power equipment operationally controlled by utilities section.
Expanded	<ul style="list-style-type: none"> • Prime power system; medium voltage power generation and expedient distribution system, secondary distribution centers (transformers) replace power plants. • (Consolidating Mini-Grids into Prime Power Micro-Grid System.) 	<ul style="list-style-type: none"> • Operational loads (in addition to those for basic capabilities shown above) include— <ul style="list-style-type: none"> ▪ Water purification and distribution. ▪ Ice production facilities. ▪ MWR facilities. ▪ Fitness centers. • Post/base exchange facilities (shoppettes and barber shops). 	<ul style="list-style-type: none"> • Requires base camp master planning. • Prime power platoon augments utilities section to install, operate, and maintain prime power system. • Power plants serve as redundant backup or can be re-allocated to other sites.

Table C-15. Electrical power planning factors (continued)

Level of Capabilities	Electrical Power System Attributes	Load/Situational Attributes	Operational Considerations
Small Base Camp (continued)			
Enhanced	<ul style="list-style-type: none"> Expand prime power plant as needed. Expand and/or improve prime power distribution system as needed. (Improved facilities can be designed to use waste heat from generators to preheat water for showers, laundry, and so forth to reduce fuel consumption.)	<ul style="list-style-type: none"> Operational loads (in addition to those for basic and expanded shown above) include— <ul style="list-style-type: none"> Expanded MWR facilities. Post/base exchange vendors. Theater maintenance and supply activities. Improved/consolidated DFACs¹. Improved shower and laundry facilities. 	<ul style="list-style-type: none"> Requires base camp master planning. Prime power platoon continues to augment utilities section for power system operation and maintenance. Transition from tent-based facilities to improved facilities.
Medium Base Camp			
Basic	<ul style="list-style-type: none"> Power plants (capable of parallel operation) connected to consolidated loads, utilizing PDISE (or similar) low voltage electrical distribution equipment. (Power Plants used initially, transitioning very quickly to Prime Power System.) Prime power system; medium voltage power generation and expedient distribution system, secondary distribution centers (transformers) replace power plants. 	<ul style="list-style-type: none"> Operational loads include— <ul style="list-style-type: none"> Critical operations and command facilities . Mission-essential communications. Weapons/weapon systems. Supply and maintenance operations. Laundry and shower facilities. DFACs¹. Life support areas (troop beddown including HVAC). Water purification and distribution. Ice production facilities. MWR facilities. Fitness centers. Post/base exchange services (shoppettes) and barber shops). 	<ul style="list-style-type: none"> Requires base camp master planning. Power plant(s) and PDISE equipment organic to utilities section and operated by utilities detachment personnel. Individual unit organic power equipment operationally controlled by utilities detachment. Prime power platoon augments utilities detachment to install, operate, and maintain prime power system. Power plants serve as redundant backup or can be re-allocated to other sites.
Expanded	<ul style="list-style-type: none"> Expand prime power plant as needed. Expand and/or improve prime power distribution system as needed. (Improved facilities can be designed to utilize waste heat from generators to preheat water for showers, laundry, and so forth to reduce fuel consumption.) 	<ul style="list-style-type: none"> Operational loads (in addition to those for basic shown above) include— <ul style="list-style-type: none"> Expanded MWR facilities. Post/base exchange vendors. Theater maintenance and supply activities. Improved/consolidated DFACs¹. Improved shower and laundry facilities. 	<ul style="list-style-type: none"> Requires base camp master planning. Prime power platoon continues to augment utilities detachment for power system operation and maintenance. Transition from tent-based facilities to improved facilities.

Table C-15. Electrical power planning factors (continued)

Level of Capabilities	Electrical Power System Attributes	Load/Situational Attributes	Operational Considerations
Medium Base Camp (continued)			
Enhanced	<ul style="list-style-type: none"> • Transition to sustained power system. • Prime power equipment may be retrograded to Army prepositioned stocks program. (Consider large-scale renewable energy.) 	<ul style="list-style-type: none"> • Connect all facilities to consolidated power system. • Eliminate expeditionary power systems (isolated generators and/or mini-grids) within the overall system. 	<ul style="list-style-type: none"> • Requires base camp master planning. • Long-term contracted support for operations and maintenance. • Utilities detachment personnel may serve as CORs.
Large Base Camp			
Expanded	<ul style="list-style-type: none"> • Prime power system; medium voltage power generation and expedient distribution system, secondary distribution centers (transformers) replace power plants. • Expand prime power plant as needed. • Expand and/or improve prime power distribution system as needed. • (Improved facilities can be designed to use waste heat from generators to preheat water for showers, laundry, and such to reduce fuel consumption.) 	<ul style="list-style-type: none"> • Operational loads include— <ul style="list-style-type: none"> ▪ Critical operations and command facilities ▪ Mission-essential communications. ▪ Weapons/weapon systems. ▪ Supply and maintenance operations. ▪ Improved/consolidated DFACs¹. ▪ Improved shower and laundry facilities. ▪ Life support areas (troop beddown including HVAC). ▪ Water purification and distribution. ▪ Ice production facilities. ▪ MWR facilities. ▪ Fitness centers. ▪ Post/base exchange services (including satellite shoppettes and barber shops). ▪ Expanded MWR facilities. ▪ Post/base exchange vendors. • Theater maintenance and supply activities. 	<ul style="list-style-type: none"> • Requires base camp master planning. • Power plant(s) and PDISE equipment organic to utilities section and operated by utilities detachment personnel. • Individual unit organic power equipment operationally controlled by utilities detachment. • Prime power platoon augments utilities detachment to install, operate, and maintain prime power system. • Power plants serve as redundant backup or can be re-allocated to other sites.
Enhanced	<ul style="list-style-type: none"> • Transition to sustained power system. • Prime power equipment may be retrograded to Army prepositioned stocks program. (Consider large-scale renewable energy.) 	<ul style="list-style-type: none"> • Connect all facilities to consolidated power system. • Eliminate expeditionary power systems (isolated generators and/or mini-grids) within overall system. 	<ul style="list-style-type: none"> • Requires base camp master planning. • Long-term contracted support for operations and maintenance. • Utilities detachment personnel may serve as CORs.
¹ Includes refrigerated/frozen storage.			

Table C-15. Electrical power planning factors (continued)

Legend:	
COR – contracting officer's representative	
DFAC – dining facility	MWR – morale, welfare, and recreation
HVAC – heating, ventilation, and cooling	PDISE – Power Distribution Illumination System Electrical

Other References

C-60. See GTA 90-01-011 for protective structures planning factors for estimates of necessary materials, equipment, personnel, and total construction time. See UFC 4-010-01 for building estimated standoff distances from various explosive charges.

Appendix D

Communications Support to Base Camps

This appendix discusses communication network requirements for base camps. It addresses the requirements to support the operational needs of tenant and transient units in a small, medium and large base camp. It describes the roles and responsibilities of the base camp commander, assistant chief of staff for communications (G-6)/signal staff officer (S-6), and supporting units providing communications support. Although base camps may be initially established by other Services, this manual focuses on the communications required when base camps are established or expanded to support land component operations. Therefore, this appendix pertains primarily to the Army and the Marine Corps. Although providing long-term base communications support is not a traditional mission requirement for the Marine Corps, it is fully capable of doing so with appropriate augmentation.

Note. For the purpose of this appendix, “communication” refers specifically to electronic communications and technical networks.

COMMUNICATIONS SUPPORT CONSIDERATIONS

D-1. Communications support requirements for base camps are based on the functions, services, and support necessary for base camp operations and the operational needs of tenant and transient units. These requirements are very similar to the services provided by the network enterprise center at permanent installations. On larger base camps the installation of a commercial communications infrastructure will be necessary to replace and free up tactical resources and provide for a more robust, longer duration network. This will include planning for environmental control requirements, power generation, and network redundancy.

D-2. Planning, installing, operating, maintaining, and managing a base camp’s network architecture, as part of the Global Information Grid (GIG), requires the right kind of equipment and personnel with the necessary technical skills. This includes network operations (NETOPS), network management, information dissemination management, and information assurance. Most of these capabilities are organic at the BCT/RCT level and below and may require augmentation.

DETERMINING REQUIREMENTS

D-3. The communications support element determines the capabilities that are required for each base camp during each phase of the operation. Requirements exceeding the organic capabilities of the supporting communications unit are fulfilled through augmentation that is requested through the appropriate channels. Considerations include base camp size, life cycle, tenants and support of transient units as applicable. These capabilities can be grouped within the following areas—

- Local and wide area networks.
- Secure and nonsecure internet services.
- Secure and nonsecure telecommunications services.
- Maintenance.
- Augmentation requirements.

LOCAL AND WIDE AREA NETWORKS

D-4. The local area network (LAN) is a computer-based network covering a small geographic area or group of facilities (such as a base camp). A wide-area network (WAN) covers a broader area or multiple base camps in an AO. LANs and WANs operate at both sensitive but unclassified and classified levels. The LAN and WAN services may include electronic email, data sharing, access to the web, desktop publishing, graphics applications, voice over Internet protocol (VoIP), and video teleconferencing over Nonsecure Internet Protocol Router Network (NIPRNET) and SECRET Internet Protocol Router Network (SIPRNET).

D-5. Each theater may have a multinational network such as the Combined Enterprise Regional Information Exchange System. These multinational networks are the backbone in supporting information-sharing requirements between unified action/interorganizational partners. Extended services may be needed for remote or nonstandard users, such as multinational forces, HN, nonstate actors, nongovernmental organizations, and others that may have unique communications needs.

SECURE AND NONSECURE TELECOMMUNICATION SERVICES

D-6. The Defense Switched Network (DSN) and Defense Red Switched Network (DRSN) are part of the Defense Information System Network. The Defense Information System Network provides nonsecure and secure telecommunications services, including point-to-point switch voice, data, imagery, and video services to all of DOD. It is three separate networks for handling—NIPRNET, SIPRNET, and Joint Worldwide Intelligence Communications System (JWICS). DSN can be extended to joint and multinational subscribers as the technology matures. DRSN provides secure voice and video teleconference. Marine Corps units provide DRSN only to the highest commands (Marine Expeditionary Force commander).

D-7. The JWICS provides continuous classified, compartmented, point-to-point, or multipoint information exchange involving voice, text, graphics, data, and video teleconference up to the top secret sensitive compartmented information level through a system of interconnected computer networks. It is an intelligence counterpart to the SIPRNET for worldwide secure multimedia intelligence communications.

CONTRACTED SERVICES AND SUPPORT

D-8. Contractors are often needed for maintenance and communications support. During planning the G-6/S-6 will identify the need for and duration of contracted support. The G-6/S-6 will coordinate with the G-4/S-4, and other staff members as required, for the protection and oversight of contractors. Base camp commanders are responsible for the protection of contractors living and working on base camps, while the contractor coordination cells within higher headquarters are responsible for accounting for and arranging deployment support for CAAF.

D-9. It is crucial that the units requiring contractor support are identified early in the planning process. Contractor support for sustained base camp operations after turn over to the theater tactical signal brigade (TTSB)/MAGTF G-6 will differ from contractor support provided to the TTSB/MAGTF G-6 and must be considered during planning.

D-10. Program managers may contract support into the life cycle of communication systems. The contract may require the contracted companies to provide system support in the form of maintenance, new equipment training, or system configuration and management. Contractor support for communications-electronics systems is coordinated by the G-6/S-6 or signal/communications unit commanders. Considerations for contracted support should include—

- Life support as required by contractual obligations similar to other tenants.
- Identification of requirements and restrictions for using local civilians, and civilian internees and detainees in logistics support operations.
- Battlefield procurement and contracting.
- Coordination with staff judge advocate on legal aspects of contracting.
- Coordination with financial management staff personnel on the financial aspects of contracting.
- Real property control.

- Fire protection.

COMMUNICATIONS SUPPORT CONFIGURATIONS

D-11. Deployed forces expect base camps to provide many of the same type of network and information services that were provided at home station. When planning a base camp it is important to include what communications support is required during the base camp master planning. Planners should incorporate the base camp principles of scalability, sustainability, standardization, survivability in designing the network architecture. The information systems and networks must be of sufficient scale, capacity, reach, and reliability to support evolving operational requirements or reduction in operations, which is more important during transfers and closures of base camps. During base camp design, units can provide proposed designs for the planned timeframes depending on the assigned units, personnel, equipment, and material. The base camp communications support element should take into consideration the types of services required by users and the tenant units' organic capabilities. These considerations include how many classified and unclassified voice and data terminals and DSN and DRSN capabilities are required for operational use by the users. The primary design of a base camp communications support infrastructure must consider the resources and personnel necessary to meet uncertain requirements in often austere environments. Additional base support activities such as mass notification and warning systems, MWR, post/base exchange services, and QOL will affect the overall plan for communications support.

D-12. The base camp's specific mission and the operational requirements of tenant units are considered in developing the base camp's communications plan. This plan is composed of specific modular components that are primarily focused on duration-related operational needs and the expected life cycle of the base camp. Each base camp will be unique in how it is arranged and the number and type of tenant and transient units and organizations that it supports. Structural and security issues are critical considerations in developing the communications support structure for each base camp. Design will account for more robust facilities and the expected end-life use for the HN, including considerations for what may be left behind for use by the HN. System efficiencies should be implemented as applicable to optimize communications support, especially on longer-duration base camps.

D-13. The designated unit or base camp needs to be prepared to support the signal/communications support elements with rations, billets, POL, and logistics. These life support functions will vary based on the number of communications support personnel needed to sustain communications and communications maintenance efforts. The base camp commander is generally responsible for connectivity and infrastructure support, but not for computers, telephones or other assets. It is imperative that there is communication between tenant units and the BOC to coordinate changes in projected support requirements.

D-14. Base camp communications support may have non-U.S., nongovernmental base camp tenants that may require access to the communication services provided. Network security requirements should be implemented using approved security measures.

D-15. The placement of communications support equipment, antenna interference prevention, and protection of communication lines must be coordinated early during base camp planning to optimize communications and protect all equipment from interference, damage, and exploitation such as protecting cable runs from vehicular traffic.

D-16. The appropriate communications unit will provide connectivity to the GIG for small, medium, or large base camp configurations as required. Units need to provide their own data systems or identify their communications requirements during the initial planning. The category-5 cable, fiber and data connectivity need to be established for each supported unit before it deploys. Expeditionary signal battalions (ESBs) are a pooled Army resource to support units with communication assets.

SMALL BASE CAMP CONFIGURATION

D-17. Four or more battalion-sized headquarters that lack, or have limited, organic communications assets, may reside on a small base camp. Communications requirements vary greatly based on the type of tenant units, the number and type of subscribers, and the required bandwidth. An example of possible support for this size base camp is an Army expeditionary signal battalion, ESB platoon or a Marine Corps

communications platoon/element/detachment which provides voice, VoIP, data, imagery, or video services (figure D-1). Subscriber requirements are mission- and equipment-availability dependent. If a small base camp's communications requirements closely match the capability of an ESB platoon, this will likely be the element in support. If the requirements are significantly less or more, then a different set of communications support assets may be required. See Army and Marine Corps doctrine for information on the organization and capabilities of signal/communications units.

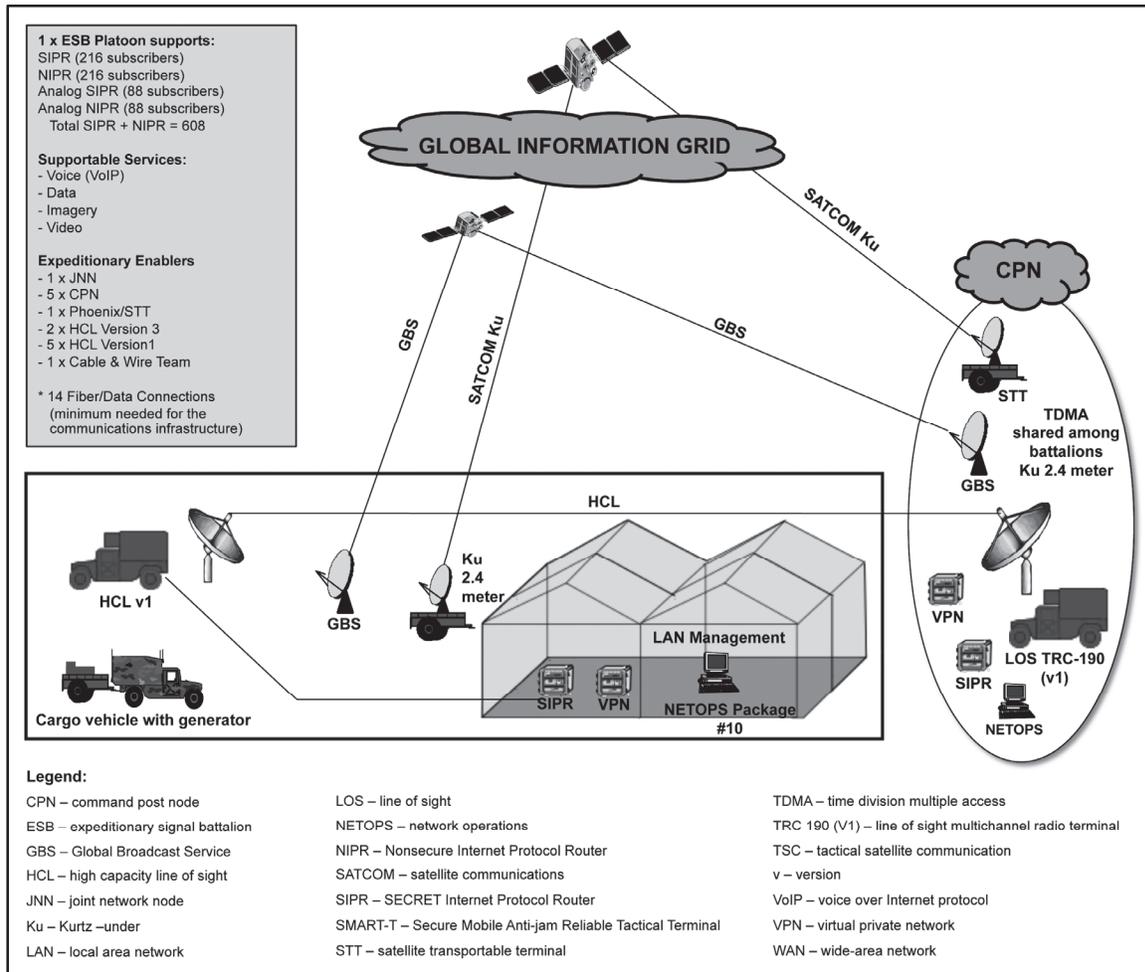


Figure D-1. Example of Army signal support configuration for a small base camp

MEDIUM BASE CAMP CONFIGURATION

D-18. Medium base camps typically contain at least one brigade/regimental-size unit including two or more battalion-size headquarters that have limited organic communications capabilities. Communications requirements vary greatly based on the types of tenant units, number and type of subscribers, and the required bandwidth. An example of possible support for this size base camp is an Army ESB company or a Marine Corps communications detachment/company/squadron to provide voice, VoIP, data, imagery, and video services (see figure D-2). If a medium base camp's communications requirements closely match the capability of an ESB/communications company, this will likely be the element in support. If the requirements are significantly less or more, then a different set of communications support assets may be required.

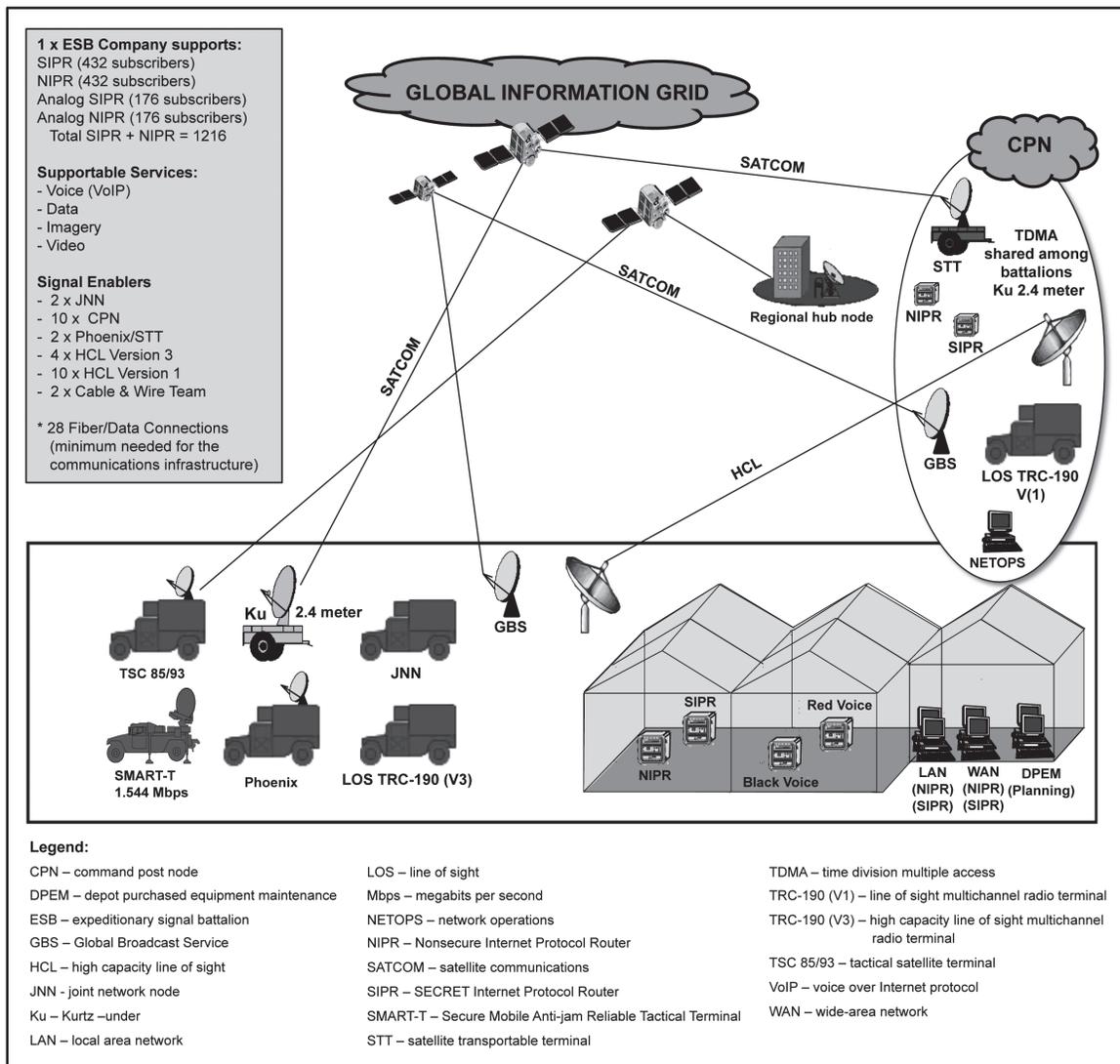


Figure D-2. Example of Army signal support configuration for a medium base camp

LARGE BASE CAMP CONFIGURATION

D-19. An example of a large base camp can typically contain one division or corps headquarters and several brigade/regimental-size units that often have limited organic communications assets. For the Marine Corps, a large base camp supports a Marine Expeditionary Force and all tenant commands assigned. Each supported command will be directed to provide organic communication personnel and equipment, as required, to better support the mission. An example of possible support for a large base camp is an Army ESB or a Marine Corps communications battalion to provide voice, VoIP, data, imagery, and video services (see figure D-3, page D-6). If a large base camp's communications requirements closely match the capability of an Army ESB or a Marine Corps communications battalion, this will likely be the element in support. If the requirements are significantly less or more, then a different set of communications support assets may be required.

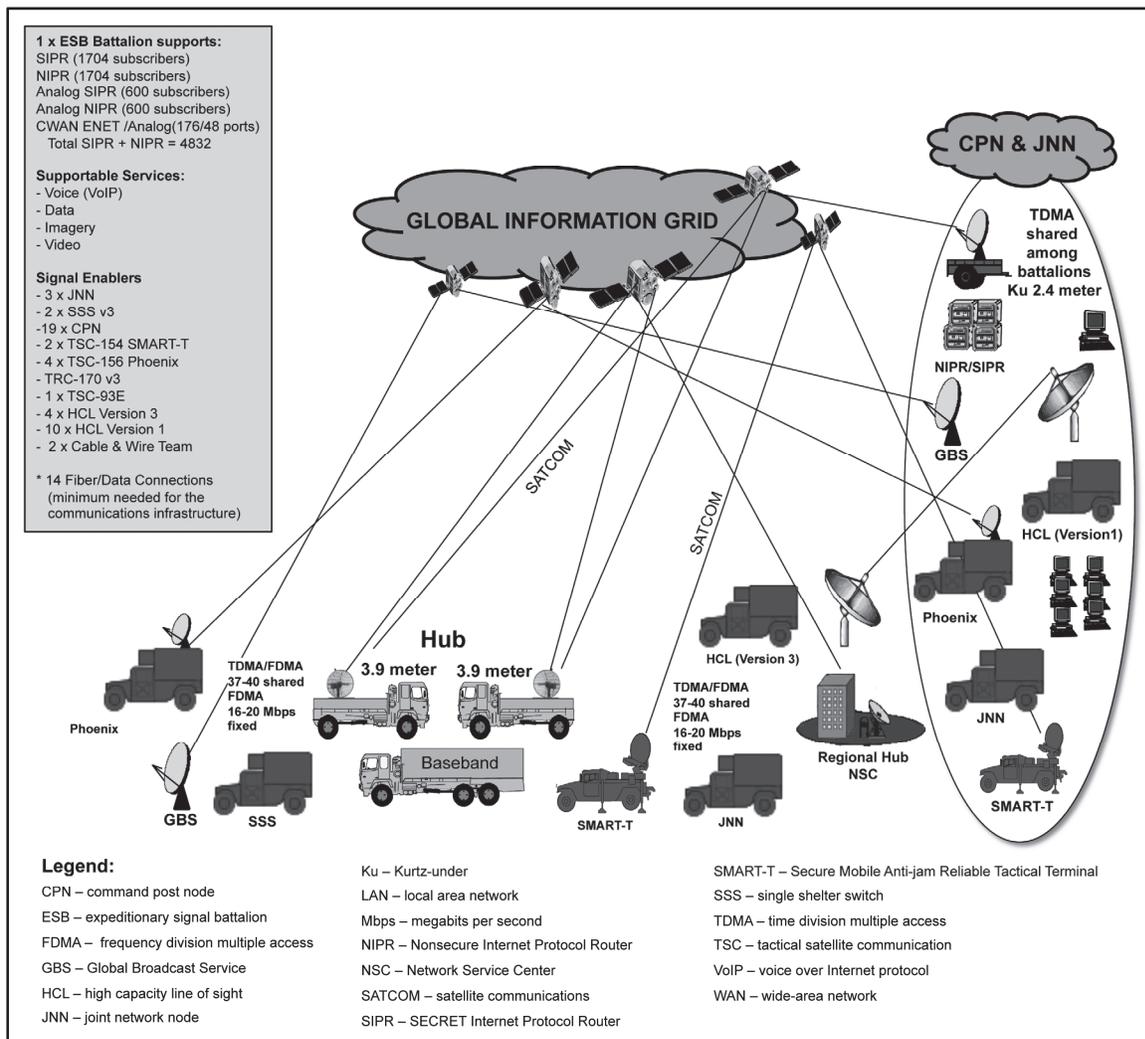


Figure D-3. Example of Army signal support configuration for a large base camp

MARINE AIR-GROUND TASK FORCE COMMUNICATIONS

D-20. The typical equipment used by the Marine Corps to connect MAGTF units is shown in figure D-4. The senior MAGTF element at the base or base camp is responsible for validating and granting all tenant unit communication requests. Depending on the mission and size of the MAGTF, the G-6/S-6 will use only the communication equipment necessary to ensure mission success. The communication plan will be articulated in Annex K of the OPORD. This plan defines the roles and responsibilities for all communication units in the MAGTF.

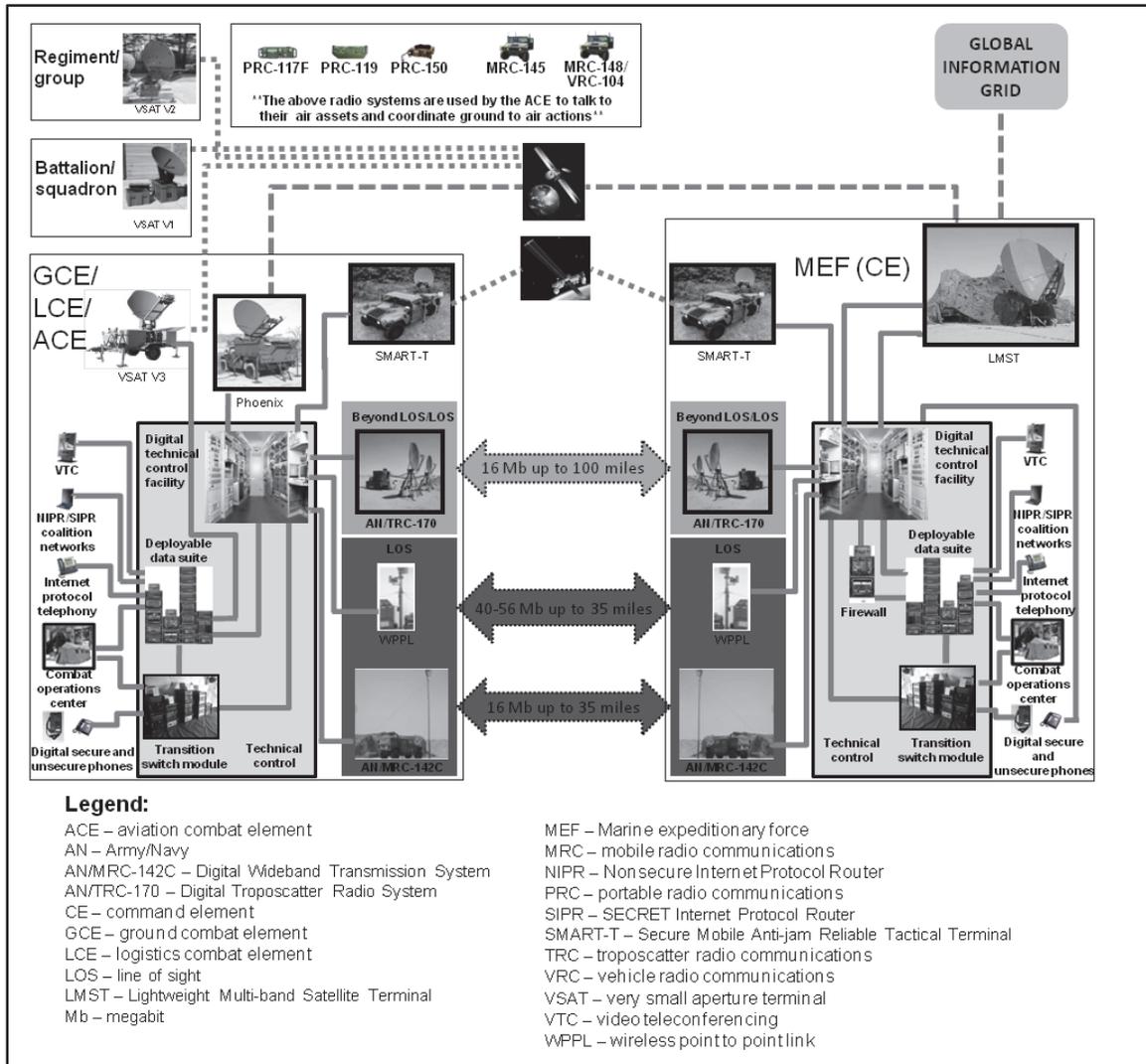


Figure D-4. MAGTF communication architecture overview

LONG-TERM REQUIREMENTS

D-21. Transition from tactical communications support to a long-term commercial network communications infrastructure requires the following actions:

- Installing network redundancies.
- Procuring fixed telecommunications hardware.
- Establishing cyber support facilities.
- Installing fee-for-service commercial television to troop billets (as required).
- Providing possible contractor support for infrastructure sustainment or improvement.
- Establishing long-term telecommunications.

D-22. The G-6/S-6 will evaluate different designs and the flexibilities those designs have in adapting to situational changes in the mission and operation. The communications system directorate of a joint staff (J-6)/G-6 will address potential threats related to the designs and operational needs. The J-6/G-6 will also ensure that base camp communications are interoperable with unified action/interorganizational partners. Communications support planning and design must also include mechanisms to enable global sourcing of equipment, materials, and contract support to enhance the expeditionary capabilities of base camps.

D-23. Army ESBs and Marine Corps communications units assigned to base camp operations are adaptable and tailored to meet the needs of the JFC. The planning and design will be modular and scalable to adapt to the size of any operational element and have the flexibility to adjust based on operations or conditions. Required equipment for all possible scenarios and conditions will be identified. Equipment and repair parts that are not organic to units or that require long lead times to acquire or deploy may be prepositioned and maintained by the appropriate unified action/interorganizational partners or contracting agencies (such as the Army Materiel Command).

D-24. The G-6/S-6 plans and coordinates several tasks with the responsible base camp commander. These include—

- A means for performing reachback for operational issues.
- Site reconnaissance (engineering, infrastructure, environmental, health, and safety).
- Master plan writing and modification.
- Closure planning and coordination required.
- Construction management and oversight for initial construction, expansion, and deconstruction.
- Design modifications.
- Contract management.
- Scaling of facilities to account for surges or downsizing for consolidation.

TRANSFERS AND CLOSURES

D-25. Communications support should be scaled to the required amount of support during base camp transfers and closures. This should be a planned effort between the communications support element, the base camp commander, and the tenant units to ensure the communications support is adequate during downsizing operations.

D-26. The G-6/S-6 is responsible for assuring the communications portion of base camp master plans are being implemented, modified, updated, and maintained to provide continuity for unit rotations. The assistant chief of staff, operations (G-3)/S-3 and supporting Army ESB and Marine Corps communications units will be responsible for developing the closure plans and reports. They are also responsible for anticipating and planning any required site actions (such as deconstruction and environmental clean-up) for their respective base camps.

D-27. In support of transfers and closures, construction and deconstruction actions will most likely be the last actions performed at any given base camp. Deconstruction actions include the removal or decommissioning of structures, systems, and facilities. Deconstruction actions assure that the base camp is returned to a state agreeable to both the JFC and the HN, whether that includes transfer of facilities or reduction to preoccupancy conditions.

D-28. Base camp tenant units should expect to experience a gradual reduction in network capabilities as base camps prepare for transfer or closure. Base camp commanders determine their mission essential communications requirements needed for sustaining protection (security and defense) and seamless flow of communications between command nodes during the execution of transfer and closure actions.

D-29. During the last few days before transfer or closure, the base camp is operated and managed by a skeleton crew who are capable of conducting final closeout or transfer inspections and handling any remaining property transfer actions. In some instances, base camps may be closed but kept in a warm shut down condition in anticipation of some future use. In these cases, the staffs may be a combination of military and civilian personnel.

ROLES AND RESPONSIBILITIES

D-30. Planning the allocation of communications assets is based on each base camp and its specific mission. The roles and responsibilities of the following entities are required to ensure connectivity within each base camp which enables tenant and transient units in effectively conducting and sustaining operations.

THEATER/MARINE AIR-GROUND TASK FORCE ASSISTANT CHIEF OF STAFF FOR COMMUNICATIONS

D-31. The theater/MAGTF G-6 is responsible for developing a theater signal/communications support plan for base camps that is supportive of the theater basing strategy. This plan describes the communications support to base camps for each phase of the operation, if the operation is phased, and addresses the necessary actions needed for expanding and reducing base camps as the operation progresses. The theater/MAGTF G-6 provides the necessary details in plans and orders to facilitate execution, and monitors the situation and recommends adjustments to facilitate efficient and effective use of signal/communications assets.

D-32. The theater/MAGTF G-6 is the senior signal/communications officer who exercises staff oversight of the communications support and information network and has the level of experience to anticipate and implement the necessary adjustments to meet changes in the situation. The G-6 derives this network from the CCDR and is empowered to use all available communications equipment and personnel to accomplish the mission. The G-6 is accountable for all network transport, network services and the viability of information systems throughout the theater. He controls these network assets through NETOPS functions and uses technical service orders, much like a fragmentary order, to implement changes.

D-33. The theater/MAGTF G-6's responsibilities encompass all the management, control and defense capabilities for the theater network. The G-6 is organized and resourced to provide NETOPS support. The G-6 uses NETOPS functions to synchronize disparate networks into one information network, as a part of the LandWarNet (LWN). The NETOPS functions performed in the subordinate support brigades, Marine Expeditionary Brigades/Forces, and BCT/RCTs provides a second echelon of NETOPS management that the G-6 coordinates as part of the greater NETOPS plan.

ASSISTANT CHIEF OF STAFF FOR COMMUNICATIONS/SIGNAL STAFF OFFICER

D-34. The G-6/S-6 is the principal staff officer for all matters concerning communications and networks. The G-6/S-6 has technical oversight responsibility over the command's information networks to include training and readiness oversight of subordinate communications units. He is responsible for providing planning guidance to subordinate communications units to execute the command, control, communications, and computer plan in support of the commander's intent. In executing the commander's intent, the G-6/S-6 directs any technical changes to the network. To make physical moves to communications equipment, the G-6/S-6 recommends fragmentary orders to the G-3/S-3 that will direct such movement. The G-6/S-6 is responsible for advising the commander, staff, and subordinate commanders on command, control, communications, and computer operational matters (staff responsibilities, technical guidance, and training and readiness oversight).

STAFF RESPONSIBILITIES

D-35. G-6/S-6 staff responsibilities include the following tasks:

- Prepare, maintain, and update command, control, communications, and computer operations estimates, plans, and orders. Such orders will often cause for configuration management changes across multiple units.
- Monitor and make recommendations on the technical aspects of command, control, communications, and computer operations.
- Advise the commander, staff, and subordinate commanders on command, control, communications, and computer operations and network priorities (for example, changing bandwidth allocation).
- Direct technical changes to all portions of the base camp network via the technical service order process.
- Develop, produce, change, update, and distribute signal operating instructions.
- Prepare and publish command, control, communications, and computer operation's SOPs.
- Coordinate, plan, and manage the electromagnetic spectrum operational environment within the AO.

- Plan and coordinate with higher and lower headquarters regarding information systems upgrade, replacement, elimination, and integration.
- Work together with the intelligence, operations, and knowledge management staff officers to coordinate, plan, and direct all information assurance activities and command, control, communications, and computer operations vulnerability and risk assessments.
- Coordinate with other staff members and a variety of external agencies to develop the information and communications plans, manage the information network, obtain required services, and support mission requirements.
- Confirm and validate user IRs in direct response to the tactical mission.
- Establish command, control, communications, and computer policies and procedures for the use and management of information tools and resources.
- Coordinate cable routing and physical protection.

TECHNICAL AUTHORITY RESPONSIBILITIES

D-36. G-6/S-6 coordination and technical oversight responsibilities include the following tasks:

- Provide subordinate communications units with direction and guidance during preparation of network plans and diagrams establishing the information network WAN, including business and intelligence WANs.
- Plan and integrate information systems and equipment in response to unit task organization and reorganization.
- Plan and direct all NETOPS activities within the AO in coordination with the Service component command and JTF.
- Use the Network Operations and Security Center as the eye and ears to the “network” and leverage the tools provided by the Network Operations and Security Center to manage and reconfigure the network as warranted.
- Manage and control the use of information network capabilities and network services throughout the AO.
- Manage radio frequency allocations and assignments and provide spectrum management.
- Manage the production of user directories and listings.
- Recommend communications support priorities for force information operations.
- Recommend locations for base camps based on communications support considerations.
- Coordinate with the plans officer on the availability of commercial information systems and services for military use.
- Manage all communications support interfaces with unified action/interorganizational partners, including HN support interfaces.
- Coordinate, update, and disseminate the command frequency lists.
- Manage communications protocols and coordinate user interfaces of defense information systems.
- Advise the commander on support requirements versus support assets available.
- Coordinate external support requirements for supported units.
- Synchronize support requirements to ensure they support current and future operations.
- Plan and monitor support operations and make necessary adjustments to ensure support requirements are met.

TRAINING AND READINESS RESPONSIBILITIES

D-37. G-6/S-6 training and readiness responsibilities include the following tasks—

- Determine the command’s discipline, efficiency, economy, morale, training, and readiness.
- Ensure the development of required skills to all communications personnel within the AO.

- Identify requirements and manages the distribution of communications personnel in coordination with the personnel staff officer.
- Monitor and provide oversight for information dissemination to adjust to changing warfighting function priorities and control measures within the AO in coordination with the G-3/S-3.
- Ensure automation systems and administration procedures for all automation hardware and software being used are compliant with the GIG procedures and standards or Service specifications.
- Ensure assigned communications units are trained to support missions and tasks during home station training events and deployments in coordination with the parent unit commander.

COMMUNICATIONS-ELECTRONICS MAINTENANCE

D-38. The overarching principle of "replace forward/fix rear" remains unchanged. Modular organizations continue to build on the two-level maintenance system, comprised of field maintenance and sustainment maintenance. The two-level maintenance system is one that essentially combines unit and direct support levels of maintenance (called field maintenance) and general support and depot levels (called sustainment maintenance). Field maintenance involves on-system tasks, normally performed by assets internal to a unit, which return systems to a mission-capable status. At field level, all functions are focused on replace and return to the user. The goal is to reduce repair cycle times by providing capabilities as far forward on the battlefield as possible, maximizing reliance on parts distribution, visibility and replacement. Sustainment maintenance involves off-system tasks that are performed primarily in support of the supply system (repair and return to supply). There are no fixed repair time guidelines for performing field or sustainment repair. In the modular organization, maintenance procedures and doctrinal methods are changed to gain greater effectiveness and efficiencies. Regional support centers are maintained by contract for repair of evacuated equipment, as well as a repository for spare parts for affected systems within their respective regions.

Maintenance on Communications-Electronics Systems

D-39. At the battalion level, the S-6 is responsible for field level maintenance on communications-electronics systems. The S-6 works in conjunction with the S-4 and the supporting forward support company to provide a comprehensive maintenance plan that is then incorporated into the unit maintenance SOP. This effort ensures that there are clearly understood procedures in place to ensure a positive maintenance posture. The S-6 must also coordinate with the S-4 for contractor field service representative support as necessary. Consider the necessary maintenance coordination prior to deployment to ensure integration of equipment organic to or allocated for use by G-6/S-6. At the brigade/regimental level the S-6 is responsible for monitoring the status and sustaining the brigade/regiment networks. The brigade/regimental S-6, working closely with the supporting signal/communications company, and the executive officer, ensures the critical network maintenance is performed and parts are available as needed for communications systems to remain operational.

Communications Security Maintenance

D-40. Communications security (COMSEC) equipment is evacuated through normal maintenance channels to the brigade support battalion or the brigade signal company, or through the local electronic key management system for the Marine Corps, if appropriate. Managing COMSEC measures, including the operation of the information system security office of the communications support elements.

D-41. Items procured under the National Security Agency Commercial COMSEC Evaluation Program will be fielded with a limited vendor warranty. All COMSEC equipment having a vendor warranty will be maintained and serviced by the original equipment manufacturer for sustainment support. Once the vendor warranty expires, all sustainment repairs will be transitioned to Tobyhanna Army Depot, for organic support in the Army. The Marine Corps will release a naval message directing the equipment to a supporting establishment for future repairs.

Isolation of Faults and Controlled Exchange

D-42. The communications equipment operator/maintainer will perform field maintenance on the communications equipment. This includes performing preventive maintenance and evaluating the cause of equipment failure through troubleshooting and use of built-in-test equipment. The operator/maintainer is also responsible for the minor repair (check, adjust, tighten) and removal and replacement of unserviceable line replaceable units/ line replaceable modules. The unserviceable line replaceable unit/line replaceable module is then evacuated, using established procedures for repair or replacement. This is accomplished through the supporting maintenance element.

D-43. Controlled exchange is the removal of serviceable parts from an item of nonmission-capable equipment to install on another piece of equipment that can be rendered mission capable more quickly or easily. The TTSB/MAGTF G-6 SOP may give battalion commanders the authority to direct control exchanges as long as controlled substitutions are conducted in accordance with AR 750-1 or Annex K to the Marine Expeditionary Force OPOD. Controlled exchange is done under the direction of the commander based on the recommendation of the S-6 and/or the signal/communications company commander. Controlled exchange may be done at any echelon under these guidelines.

Glossary

SECTION I – ACRONYMS AND ABBREVIATIONS

Acronym	Definition
AA	avenue of approach
ADRP	Army doctrine reference publication
AFCS	Army Facilities Components System
AFJPAM	Air Force joint pamphlet
AFMAN	Air Force manual
AFTTP	Air Force tactics, techniques, and procedures
AO	area of operations
AOR	area of responsibility
AR	Army regulation
ASCOPE	areas, structures, capabilities, organizations, people, and events
AT	antiterrorism
ATP	Army techniques publication
ATTP	Army tactics, techniques, and procedures
BCOC	base cluster operations center
BCT	brigade combat team
BDF	base defense force
BDOC	base defense operations center
BOM	bill of materials
CAAF	contractors authorized to accompany the force
CCDR	combatant commander
CCIR	commander's critical information requirement
CMU	concrete masonry unit
COA	course of action
COP	common operational picture
COR	contracting officer's representative
CP	command post
COMSEC	communications security
CREST	contingency real estate support team
DA	Department of the Army
DD	Department of Defense
DFAC	dining facility
DOD	Department of Defense
DRSN	Defense Red Switched Network
DSN	Defense Switched Network

EA	engagement area
EBS	environmental baseline survey
ECP	entry control point
ECR	environmental condition report
ECU	environmental control unit
EFD	engineer facilities detachment
EOD	explosive ordnance disposal
EP	engineering pamphlet
ESB	expeditionary signal battalion
ESCS	environmental site closure survey
ESOH	environmental, safety, and occupational health
FEST	forward engineer support team
FHP	force health protection
FM	field manual
G-3	assistant chief of staff, operations
G-4	assistant chief of staff, logistics
G-6	assistant chief of staff for communications
GIG	Global Information Grid
GP	general purpose
GTA	graphic training aid
HAZMAT	hazardous materials
HN	host nation
HW	hazardous waste
IED	improvised explosive device
IMCOM	United States Army Installation Management Command
IPB	intelligence preparation of the battlefield (Army)/intelligence preparation of the battlespace (Marine Corps)
IR	information requirement
J-6	communications system directorate of a joint staff
JFC	joint force commander
JFOB	joint forward operations base
JP	joint publication
JWICS	Joint Worldwide Intelligence Communications System
KOCSA	key terrain, observation and fields of fire, cover and concealment, obstacles, and avenues of approach (Marine Corps)
LAN	local area network
LOC	line of communications
LOGCAP	logistics civil augmentation program
LSA	life support area
LWN	LandWarNet
MAGTF	Marine air-ground task force

MCPP	Marine Corps Planning Process
MCRP	Marine Corps reference publication
MCWP	Marine Corps warfighting publication
MDMP	military decisionmaking process
MEB	maneuver enhancement brigade
METT-T	mission, enemy, terrain and weather, troops and support available—time available
METT-TC	mission, enemy, terrain and weather, troops and support available—time available and civil considerations (Army)
MILCON	military construction
MSCoE	Maneuver Support Center of Excellence
MWR	morale, welfare, and recreation
NAVFAC	Naval Facilities Engineering Command
NETOPS	network operations
NIPRNET	Nonsecure Internet Protocol Router Network
NSF	net square footage
NTPP	Navy tactics, techniques, and procedures
NWP	Navy warfare publication
O&M	operation and maintenance
OAKOC	observation and fields of fire, avenues of approach, key terrain, obstacles, and cover and concealment
OEHSA	occupational and environmental health site assessment
OP	observation post
OPLAN	operation plan
OPORD	operation order
POL	petroleum, oils, and lubricants
PVNTMED	preventive medicine
PWS	performance work statement
QASP	quality assurance and surveillance plan
QOL	quality of life
QRF	quick response force
RCT	regimental combat team
RFI	request for information
RI	relevant information
RM	risk management
RSG	regional support group
S-3	operations staff officer
S-4	logistics staff officer
S-6	signal/communications staff officer
SEAhut	Southeast Asia hut
SIPRNET	SECRET Internet Protocol Router Network
SOP	standard/standing operating procedure

Glossary

SU	situational understanding
TCF	tactical combat force
TCMS	Theater Construction Management System
TEMPER	tent, extendable, modular, personnel
TM	technical manual
TRADOC	United States Training and Doctrine Command
TTP	tactics, techniques, and procedures
TTSB	theater tactical signal brigade
U.S.	United States
UFC	Unified Facilities Criteria
USACE	United States Army Corps of Engineers
USAHFPA	United States Army Health Facility Planning Agency
USAPHC	United States Army Public Health Command
USC	United States Code
UXO	unexploded explosive ordnance
VoIP	voice over Internet protocol
WAN	wide area network
WPS	water purification system

SECTION II – TERMS

***base camp**

An evolving military facility that supports the military operations of a deployed unit and provides the necessary support and services for sustained operations.

***quick response force**

A dedicated force on a base with adequate tactical mobility and fire support designated to defeat Level I and Level II threats and shape Level III threats until they can be defeated by a tactical combat force or other available response forces.

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Field manuals and selected joint publications are listed by new number followed by old number.

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These documents must be available to intended users of this publication.

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By order of the Secretary of the Army:

RAYMOND T. ODIERNO
General, United States Army
Chief of Staff

Official:



JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army
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