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Facilities Engineering
Standards for Forward Operating Sites

For the Commander:

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Summary. This pamphlet provides standards for forward operating site (FOS) and cooperative security location (CSL) facilities in USAREUR contingency areas.

Applicability. This pamphlet applies to personnel involved in planning, constructing, inspecting, and supporting FOS and CSL facilities.

Forms. AE and higher level forms are available through the Army in Europe Publishing System (AEPUBS).

Records Management. Records created as a result of processes prescribed by this pamphlet must be identified, maintained, and disposed of according to AR 25-400-2. Record titles and descriptions are available on the Army Records Information Management System website at <https://www.arims.army.mil>.

Suggested Improvements. The proponent of this pamphlet is the Deputy Chief of Staff, Engineer (DCSENGR), USAREUR (AEAEN-ESO, DSN 370-6488). Users may suggest improvements to this pamphlet by sending DA Form 2028 to the USAREUR DCSENGR (AEAEN-ESO), Unit 29351, APO AE 09014-9351.

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SECTION I INTRODUCTION

1. PURPOSE

a. This pamphlet provides standards that apply to military camps—called forward operating sites (FOSs) and cooperative security locations (CSLs)—for U.S. Forces operating in designated USAREUR contingency areas where USAREUR has United States Code (USC), Title 10, responsibility.

(1) When USAREUR is identified as having Title 10 administrative and support responsibilities, the result is administrative control (ADCON) authority.

(2) Joint Publication (JP) 1-02 defines ADCON as *direction or exercise of authority over subordinate or other organizations in respect to administration and support, including organization of Service forces, control of resources and equipment, personnel management, unit logistics, individual and unit training, readiness, mobilization, demobilization, discipline, and other matters not included in the operational missions of the subordinate or other organizations.*

b. This pamphlet provides guidance for planning and developing FOSs that support associated missions according to JP 4-04. This pamphlet also addresses FOS development planning for the orderly and efficient management and development of land, facilities, and infrastructure to support the mission. Master planning provides an integrated strategy for constructing and maintaining required facilities at the best possible cost. The level of detail of the FOS master plan will depend on the “maturity” of the location, the speed at which the operational need for an FOS develops, and the expected length of stay.

c. The intent of this pamphlet is to provide personnel with safe and adequate living and working conditions in the contingency theater of operations. Authorized levels of support are derived from Army regulations and from lessons learned in the field over the years. The goal of this pamphlet is to take the intent of installation-type Army regulations and apply them to contingency operations (CONOPS). Suggested changes and additions to authorized facilities should be sent to the Deputy Chief of Staff, Engineer (DCSENGR), USAREUR (AEAEN-ESO), Unit 29351, APO AE 09014-9351.

d. This pamphlet is not intended to address all aspects of the FOS planning process.

2. REFERENCES

Appendix A lists references.

3. EXPLANATION OF ABBREVIATIONS

The glossary defines abbreviations.

SECTION II CONSTRUCTION STANDARDS AND FORWARD OPERATING SITES

4. GENERAL

a. Peacetime CONOPS are politically and time sensitive. They use tailored forces, are usually short in duration, and joint or combined in scope. A basic tenet of peacetime CONOPS is to rapidly project military forces consistent with the factors of mission, enemy, terrain, troops, time, and civilians (METT-TC) considerations to bring the contingency to closure under conditions favorable to the United States.

b. The combatant commander (COCOM) specifies the construction standards for facilities in the theater. The standards are established to ensure that projects support the commander's intent and concept of operations. These standards are intended to minimize the engineering effort on any given facility while ensuring the quality of the facilities supports health and safety standards and mission accomplishment.

c. Facilities governed by this pamphlet will be initial, temporary, or semipermanent unless USAREUR specifically approves permanent construction. The following construction standards apply:

(1) Initial. Characterized by austere facilities requiring minimal engineering effort. Intended for immediate operational use by units on arrival for a limited time (up to 6 months). Initial facilities may need to be replaced by more substantial or durable facilities during the course of the operation. The initial standard facility list includes only critical facilities.

(2) Temporary. Characterized by austere facilities requiring more engineering effort than that required for initial facilities ((1) above). Temporary facilities are intended to increase efficiency of operations for use up to 24 months. Provides for sustained operations. Temporary standards replace initial standards in some cases where mission requirements dictate. The temporary standard may be used initially if so directed by the COCOM. Temporary standards provide a wider selection of minimum facilities to increase the durability, efficiency, health standards, morale, and safety of personnel.

(3) Semipermanent. Designed and constructed with finishes, materials, and systems selected for moderate energy efficiency, maintenance, and life-cycle cost and with a life expectancy of more than 2 years, but less than 25 years. For the purposes of this pamphlet, semipermanent constructions standards will be considered when the operations are expected to last more than 2 years. The types of structures to be considered for these types of operations will depend on the duration of the operation. Semipermanent standards may be used initially if so directed by the COCOM.

d. Protective construction must be provided for all facilities according to Unified Facilities Criteria (UFC) 4-010-01 and the supplemental guidance in USEUCOM Operation Order 03-11.

e. Facilities will be categorized as follows:

(1) FOS. A scalable location intended for rotational use by operating forces. Such expandable "warm facilities" may be maintained with a limited U.S. military support presence and possibly prepositioned equipment. FOSs support rotational rather than permanently stationed forces and bilateral and regional training. FOS Bondsteel, Kosovo, is an example.

(2) CSL. Joint Publication 1-02 defines CLS as: *A facility located outside the United States and U.S. territories with little or no permanent U.S. presence, maintained with periodic Service, contractor, or host-nation support. Cooperative security locations provide contingency access, logistic support, and rotational use by operating forces and are a focal point for security cooperation activities.*

5. FORWARD OPERATING SITE DEVELOPMENT PLANNING

a. Master Planning. Master planning provides an integrated long-term strategy for constructing and maintaining facilities. The intent is to provide needed facilities at the best possible cost. The Base Camp Planning Board (BCPB) develops and maintains the master plan and conducts long-range, short-range, and capital-investment planning. Master planning produces the requirements USAREUR validates and funds. Appendix B provides a detailed explanation of master planning responsibilities and requirements.

b. Facilities Standards Development. DOD policy and Army regulations governing military facilities may not apply to CONOPS. This pamphlet takes the intent of those publications and applies it to CONOPS. This pamphlet describes the standards for security, housing, unit facilities, Soldier support facilities, and utilities. Supported unit commanders or activity heads will not deviate from these standards without the written approval of the DCG, USAREUR/7A. Requests to deviate from the standards in this pamphlet or to establish a new standard must be sent to the USAREUR DCSENGR (AEAEN-ESO), Unit 29351, APO AE 09014-9351. The DCSENGR will coordinate the request and submit it to the DCG, USAREUR/7A, for decision. This process will ensure effective use of resources and equitable standards for all personnel in the area of operations.

c. Resource Management. Resource managers will track FOS projects approved in accordance with master plans separately from repair and maintenance projects. Construction projects in the approved master plan must be prioritized and implemented in the order of priority. New construction will be tracked using a system that reports the start of construction, a weekly percent of progress, and the final date for completing construction.

(1) Any change to infrastructure will require USAREUR approval according to Joint Acquisition Review Board (JARB) instructions and USAREUR directives.

(2) Whenever mission or support requirements at a U.S.-NATO co-use FOS or headquarters facility require the construction of a U.S.-NATO shared facility or the upgrade or restoration of existing U.S.-NATO shared facilities (which support NATO units, activities, or personnel contingents), the local U.S. commander is first required by Title 10 to pursue eligibility for NATO funding. The U.S. commander should contact the DCSENGR (AEAEN-EN, DSN 370-6544) for guidance, and the local NATO contingency headquarters engineer to obtain support for a NATO-project submission. The project must then undergo three further NATO approval levels to secure full or partial NATO funding support. If the project receives no NATO support or only partial NATO support (that is, to the level of a NATO “minimum military requirement”), U.S. CONOPS funds may be requested and used, but only to the level prescribed in this pamphlet based on the current U.S. population at that FOS.

(3) Wherever possible, specialized technical requirements for the missions of other Services will be accommodated through the existing JARB process. In these instances, the proponent activity or Service will specify the particular technical requirements to be addressed as part of the JARB presentation of the proposed project. For example, USAFE is the Service proponent for technical specifications dealing with safety-of-flight issues at planned and existing airfields.

(4) Contracting sources are not authorized to negotiate or award contracts that include provisions that allow for exceeding facility standards. Coordination with and approval of the area support team (AST) manager is required before including housing authorizations in any contract.

6. FACILITIES STANDARDS

a. The COCOM will specify the construction standards for facilities in the theater (para 4b).

b. The intended life span of the facilities and infrastructure of an FOS will depend on mission-driven and economic decisions. There are three sets of construction standards that are determined by the expected FOS life span (para 4c). During the life-cycle of an FOS, authorized facilities may progress from initial to semipermanent or may be immediately established at any level depending on operational requirements. Meeting the facility standards may be a progressive effort; however, COCOMs will strive to meet the standards in table 1 as quickly as the operational situation permits.

Table 1 Initial, Temporary, and Semipermanent Facilities			
FACILITY	INITIAL (Less Than 6 Months)	TEMPORARY (6 Months to Less Than 24 Months)	SEMI-PERMANENT (2 Years to Less Than 25 Years)
AFN-Manned Operations	None	Container, SEAhut	Container, SEAhut, metal prefabricated building
AFN-Unmanned Operations	None	Container, SEAhut	Container, SEAhut, metal prefabricated building
Alteration/Pressing Shop	None	Tier III tents, SEAhuts, containers	SEAhuts, containers: 2 to 10 years. Masonry and prefabricated buildings: 10 or more years.
Arms Storage Areas and Rooms	Armed guard	Armed guard	Constructed according to AR 190-11, appendix G-2, and equipped with IDS and a dehumidifier. DA-approved portable armories equipped with IDS may be used in lieu of constructing an arms room. COCOM may request waiver for above or use armed guards.
ASG, AST	None	Tier III tents, SEAhuts, containers	SEAhuts and containers: 2 to 10 years. Masonry and prefabricated buildings: 10 or more years.
ASP	Containers surrounded by securely anchored triple-strand concertina wire	Containers to bunkers surrounded by securely anchored triple-strand concertina wire	Bunkers surrounded by a USACE FE-6 chain-link fence secured with a 5,200-series approved medium-security lock
Athletic Fields	None	Grassed fields	Grassed fields with lights

**Table 1
Initial, Temporary, and Semipermanent Facilities**

FACILITY	INITIAL (Less Than 6 Months)	TEMPORARY (6 Months to Less Than 24 Months)	SEMIPERMANENT (2 Years to Less Than 25 Years)
Aviation Fuel	HEMTT tanker	Bladder	Metal tanks, steel lines
Aviation Maintenance	Organic tentage, FP (note 2)	Aviation clamshell tent with sand-filled plywood, asphalt, or concrete floor	Aviation clamshell tent with sand-filled plywood, asphalt, or concrete floor
Barber Shop, Beauty Shop	None	Tier III tent, SEAhuts, containers	SEAhuts, containers: 2 to 10 years. Masonry and prefabricated buildings: 10 or more years.
BLAHA, CAHA	MILVANS with earth berms surrounded by securely anchored triple-strand concertina wire	Earth-covered, standard, steel-reinforced bunkers on concrete pads with berms surrounded by securely anchored triple-strand concertina wire	Earth-covered, standard, steel-reinforced bunkers on concrete pads with berms surrounded by a USACE FE-6 chain-link fence secured with a 5,200-series approved medium-security lock
Chapel	Organic tentage with wooden floors, tier I tents, “Chapel-in-a-Box”, FP (note 2)	SEAhut, containers	Davidson-like wood-frame building, SEAhuts, containers: 2 to 10 years. Masonry and prefabricated buildings: 10 or more years.
Cold Storage	Portable refrigeration with freezer units for medical, food, and maintenance storage	Refrigeration installed in temporary structures	Refrigeration installed in semipermanent structures: may be pre-engineered buildings.
Communications Compound, NSC	Organic tentage with wooden floors, tier I tents, FP (note 2)	Tier III tents, SEAhuts, containers	SEAhuts and containers: 2 to 10 years. Masonry and prefabricated buildings: 10 or more years.
Community Activity Center	None	SEAhuts	SEAhuts: 2 to 10 years. Masonry and prefabricated buildings: 10 or more years.
Dining Facility	MKT, organic tentage with	Tier III tents SEAhuts, fest tents	SEAhuts: 2 to 10 years. Masonry and prefabricated

**Table 1
Initial, Temporary, and Semipermanent Facilities**

FACILITY	INITIAL (Less Than 6 Months)	TEMPORARY (6 Months to Less Than 24 Months)	SEMIPERMANENT (2 Years to Less Than 25 Years)
	wooden floors, tier I tents, FP (note 2)		building: 10 or more years.
DRMO	None	Metal prefabricated building with concrete or asphalt floor with gravel holding area	Metal prefabricated building with concrete or asphalt floor with gravel holding area
DS Maintenance	Organic tentage or FP (note 2)	Metal two-story prefabricated building on concrete base with concrete aprons	Metal two-story prefabricated building on concrete base with concrete aprons
DX, CIF	None	Tier III tents, SEAhuts, containers, metal prefabricated building	SEAhuts and containers: 2 to 10 years. Masonry and prefabricated buildings: 10 or more years.
Education Center	None	Tier III tent, SEAhuts, containers, metal prefabricated building	SEAhuts, containers: 2 to 10 years. Masonry and prefabricated buildings: 10 or more years.
Electrical	Tactical generators with high- and low-voltage distribution, organic equipment, FP (note 2)	Commercial power with nontactical power with high- or low-voltage distribution backup	Commercial power with nontactical power with high- or low-voltage distribution backup
Field House, Multipurpose Facility	None	Metal prefabricated building	Metal prefabricated building
Finance and Personnel Support Operations	None	Tier III tents, SEAhuts, containers	SEAhuts and containers: 2 to 10 years. Masonry and prefabricated buildings: 10 or more years.
Fire Protection	Organic equipment, portable fire extinguishers	See paragraph 37.	See paragraph 37.
Fitness Center	None	SEAhuts, metal prefabricated building	SEAhuts: 2 to 10 years. Masonry and prefabricated buildings: 10 or more years.

**Table 1
Initial, Temporary, and Semipermanent Facilities**

FACILITY	INITIAL (Less Than 6 Months)	TEMPORARY (6 Months to Less Than 24 Months)	SEMIPERMANENT (2 Years to Less Than 25 Years)
Ground Fuel	Organic equipment, bags, FP with secondary containment	Bladders with secondary containment surrounded by securely anchored triple-strand concertina wire	Metal tanks with steel lines with secondary containment surrounded by a USACE FE-6 chain-link fence secured with a 5,200-series approved medium-security lock
Hazardous-Materials Warehouse	Storage container	SEAhuts or metal prefabricated building with secondary containment	SEAhuts and metal prefabricated buildings with secondary containment: 2 to 10 years. Masonry and metal prefabricated buildings with secondary containment: 10 or more years.
Hazardous Waste	Storage container, removal from theater	Covered, built on elevated pad with secondary containment (civilian contract removal)	Covered, built on elevated pad with secondary containment (civilian contract removal)
Helipad	Tactical surfacing, including matting	Concrete with aprons	Concrete with aprons
Housing	Organic tentage with wooden floors, tier I tents, FP (note 2)	Tier III tents, SEAhuts, containers	SEAhuts and containers: 2 to 10 years. Masonry and prefabricated buildings: 10 or more years.
 kennel	Organic tentage, tier I tents (DA Pam 190-12)	SEAhuts, container adapted to DA Pamphlet 190-12 criteria	SEAhuts and containers adapted to DA Pamphlet 190-12 criteria surrounded by a USACE FE-6 chain-link fence secured with a 5,200-series approved medium-security lock
Latrines and Septic Systems	Organic equipment, evaporative ponds, pit burnout latrines, lagoons for hospitals, FP (note 2)	Waterborne from AB units or SEAhuts to austere treatment facility	Waterborne to wastewater treatment plant from SEAhuts and AB units: 2 to 10 years. Masonry and prefabricated buildings: 10 or more years.

**Table 1
Initial, Temporary, and Semipermanent Facilities**

FACILITY	INITIAL (Less Than 6 Months)	TEMPORARY (6 Months to Less Than 24 Months)	SEMI-PERMANENT (2 Years to Less Than 25 Years)
Laundry Collection and Distribution Point	Organic tentage with wooden floors, tier I tents, FP (note 2)	Tier III tents, SEAhuts, containers	SEAhuts and containers: 2 to 10 years. Masonry and prefabricated buildings: 10 or more years.
Medical (See para 24 for further guidance.)	Organic tentage with wooden floors, medical tents, tier I tents	SEAhuts and medical metal prefabricated buildings, refrigerated container	SEAhuts and medical metal prefabricated buildings: 2 to 10 years. Masonry and medical metal prefabricated buildings: 10 or more years.
Medical Waste	Field incinerator	Incinerator, civilian contract	Incinerator, civilian contract.
Morgue	Refrigerated container	SEAhut, container with Gortex for private fencing, refrigerated container	SEAhuts and containers: 2 to 10 years. Masonry and prefabricated buildings: 10 or more years.
MP Station	Organic tentage with wooden floors, tier I tents, FP (note 2)	Tier III tents, SEAhuts, containers	SEAhuts and containers: 2 to 10 years. Masonry and prefabricated buildings: 10 or more years.
Multipurpose Theater	None	Metal prefabricated building	Metal prefabricated building
MWR Warehouse, Maintenance Facility	None	Metal prefabricated building	Metal prefabricated building
Nonpotable Water	Local source	Local source	Local source
Office	Organic tentage with wooden floors, tier I tents, FP (note 2)	Tier III tents, SEAhuts, containers	SEAhuts and containers: 2 to 10 years. Masonry or prefabricated buildings: 10 or more years.
Parking Lots	Gravel	Gravel with concrete turning pads for tracked vehicles	Gravel with concrete turning pads for tracked vehicles
Perimeter Fence	Triple standard	USACE Standard FE6	USACE Standard FE-6

**Table 1
Initial, Temporary, and Semipermanent Facilities**

FACILITY	INITIAL (Less Than 6 Months)	TEMPORARY (6 Months to Less Than 24 Months)	SEMI-PERMANENT (2 Years to Less Than 25 Years)
Perimeter Lights	Generator sets	Fixed lighting	Fixed lighting
Postal	None	Metal prefabricated building	Metal prefabricated building
Potable Water	Bottle or water points, wells, other potable-water production and pressurized water-distribution systems, ROWPU, FP (note 2)	Wells, treatment plants	Wells, treatment plants
PX	AAFES trailer	Davidson-like wood-frame building, metal prefabricated building	Metal prefabricated building
PX Warehouse	AAFES trailer	Davidson-like wood-frame building, container, metal prefabricated building	Metal prefabricated building
Road	Gravel	Gravel	Primary roads: Asphalt with concrete turning pads. Secondary and Perimeter Patrol roads: Gravel.
Runway and Taxiway	Tactical surfacing, including aggregate and stabilized earth	Paved	Paved
Shower	Organic equipment, FP (note 2)	AB units or SEAhuts	SEAhuts and AB units: 2 to 10 years. Masonry or prefabricated buildings: 10 or more years.
Solid Waste	Field incinerator	Incinerator, civilian contract and recycling when possible	Incinerator, civilian contract, recycling program, composting
Squadron Operations Building	Organic tentage with wooden floors, tier I tents, FP (note 2)	SEAhuts, metal prefabricated building	SEAhuts and metal prefabricated buildings: 2 to 10 years. Masonry and metal prefabricated buildings: 10 or more years.

Table 1 Initial, Temporary, and Semipermanent Facilities			
FACILITY	INITIAL (Less Than 6 Months)	TEMPORARY (6 Months to Less Than 24 Months)	SEMIPERMANENT (2 Years to Less Than 25 Years)
SSA Warehouse	Organic tentage with wooden floors, tier I tents, FP (note 2)	Metal prefabricated building	Metal prefabricated building
Training Facilities	None	See paragraph 38.	See paragraph 38.
Vehicle Maintenance	Organic tentage, FP (note 2)	Metal two-story prefabricated building on concrete base with concrete aprons	Metal two-story prefabricated building on concrete base with concrete aprons
Washrack	Gravel lot	Gravel lot with oil-water separator and gray-water discharge	Elevated, flat, and container rack with oil-water separator and gray-water discharge
<p>NOTES: 1. The glossary explains abbreviations. 2. FP (Force Provider): Each module supports 550 personnel plus 50 operators with climate-controlled billeting (15 Soldiers per tent; food service (1,800 A-rations meals per day); 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. megawatts continuous)); prime power connection kit; water storage and distribution (80,000 gallons for every 3 days); fuel storage and distribution (20,000 gallons for every 3 days); waste-water collection (30,000 gallons per day); system support packages (30 days spare and repair parts).</p>			

SECTION III CONOPS FORWARD OPERATING SITES

7. FORWARD OPERATING SITES

FOSs may be occupied by any size of force. AN FOS is a scalable location intended for rotational use by operating forces. Such expandable “warm facilities” may be maintained with a limited U.S. military support presence and possibly prepositioned equipment. FOSs support rotational rather than permanently stationed forces and are used for bilateral and regional training. A CSL (para 4e(2)) is a facility with little or no permanent U.S. presence, which provides contingency access, logistic support, and rotational use by operating forces and for security-cooperation activities. The determination of facilities present or to be made available will be based on command and logistic determinants. When the decision on the type and level of facilities are made, the standards in this section will apply for those facilities. The standards in this section apply to all FOSs and CSLs. Since the initial construction standards are mainly organic unit equipment or Force Provider (FP) (table 1, note 2), the information in this section primarily concerns temporary and semipermanent construction standards.

8. ROADS

Primary roads identified by commanders on FOS master plans are authorized for paving with asphalt. Primary roads are considered to be the major arteries that support the majority of vehicle traffic through the site. Concrete turning pads are authorized to prevent damage to asphalt roads. Secondary and perimeter patrol roads will be surfaced with gravel.

9. DINING FACILITIES

Dining facilities (DFACs) must provide 640 square feet (SF) of dining-room space and 320 total SF of kitchen, administration, and storage space per 75 authorized users. Adequate space for cleaning, latrines, and clothes-changing for local national kitchen staff must also be provided. Sanitary wall board (SWB) or other water-proof material must be used in the kitchen and latrine areas. Loading docks may be concrete, asphalt, or treated lumber. Portable sanitary handwashing stations must be located at the entrance of the DFAC.

10. HOUSING

a. Standards. Table 2 shows the authorized (maximum allowable) SF for unaccompanied personnel housing (UPH) billeting space for Soldiers, civilian employees, and contractors. Table 3 shows the authorized (maximum allowable) SF for UPH billeting space for civilian employees and contractors who are deployed for more than 6 months. Table 4 shows the authorized (maximum allowable) SF for UPH billeting space for Soldiers who are deployed for more than 6 months. Figure 1 shows how SEAhuts are organized into company groupings (“clusters”), with a collocated latrine and shower container. A standard SEAhut is 512 SF (equivalent to a general purpose (GP) medium tent), with a standard SEAhut cluster (Davidson) having five bays and a latrine, for a total of 2,944 SF. SEAhut structures provide a higher level of safety and comfort and will be provided with linoleum flooring. SEAhuts designed in this manner minimize the distance personnel are required to walk to shower and latrine facilities and increases unit cohesion by maintaining company, platoon, and squad integrity.

(1) Private (containerized or partitioned SEAhut) and semiprivate billeting space for the housing of long-term (exceeding 6 months) Government civilian employees, all contractor employees, and Soldiers will be considered, but not guaranteed, in camp planning. The USAREUR G4 will determine grade equivalencies for contractor employees. The area support group (ASG) or area support team (AST) commander or manager will resolve private room availability for long-term civilian and contractor employees and Soldiers at FOSs.

(2) All 230- and 120-volt electrical outlets in the entire SEAhut will be protected by not more than a 30 mAmp ground fault circuit interrupter (GFCI) or other similar performing device. The highest protection level will be selected to protect against electric shock. Where practical, housing should be configured into company clusters with ablution units collocated within the clusters. Standard walkways at least 5-feet wide will be constructed for each side of the SEAhuts to allow personnel to walk under cover to ablution units. Sufficient space must be maintained between structures to allow firetrucks and other safety vehicles driving space. Carpet is not authorized in living or office areas.

(3) Authorized furniture for deployed Soldiers and civilians includes the following:

(a) One bed, bunk or single.

(b) One mattress of single foam rubber with a nonplastic shell.

Table 2 Housing Standards		
Category	Number Per Standard SEAhut, GP Medium Tent or Equivalent (16 by 32 ft)	Number Per Standard Container (8 by 20 ft) (note)
E1 through E5; GS-5 and below; pay band 1 of YB, YL, YM, and YI; NF-1 and 2; civilian WG-1 through -11 or WL-1 through -5; contracted laborers	6	2
E6 through E7; WO1 and CW2; O1 and O2; GS-6 through -9; pay band 1 of YA, YC, YD, YF, YK, YN, YH, and YJ; pay band 2 of YB, YE, YL, YM and YI; NF-3; civilian WS-1 through -7; educators schedule C1 through C3	4	2
E8, CW3 and CW4, O3 and O4; GS-10 through -12; pay band 2 of YA, YD, YH, and YK; pay band 3 of YB, YE, YI and YL; pay band 4 of YE; NF-4; educators schedule C4 and up, D-F, M-O and teaching principals - schedule L	3	2
E-9; CW5; O5 and O6; GS-13 through -15, pay band 2 of YC, YF, YG, YJ, and YN; pay band 3 of YC, YD, YF, YG, YH, YJ, YK, and YN; pay band 4 of YJ and YL; NF5	2	1
O7; SES; NF-6	1	1
NOTE: Containers are not a standard size. Some may be 8-by-20 ft open living containers, others may be 9-by-20 ft containers with a private bathroom, and others may be 9 by 26 ft with separate rooms and a shared bathroom. The intent is for no person to have a private bathroom. If, however, these containers are in use, personnel in the first three categories above should be provided at least 65 SF, but no more than 85 SF of living space per person (not counting the bathroom or other space). For personnel authorized a single container, no single individual may solely occupy a container larger than 9 by 20 ft.		

- (c) One footlocker.
- (d) One wall locker.
- (e) Nail boards on walls of living areas.
- (f) Locally built shelves made of plywood.
- (g) One table light.

NOTE: Units that presently exceed the standards in (3) above may keep the excess furniture.

**Table 3
Housing Standards for Long-Term Civilian and Contractor Employees (More Than 6 Months)**

Category	SEAhut, GP Medium Tent, or Equivalent (16 by 32 ft)	Number Per Standard Container (8 by 20 ft) (note)
GS-8 and below; pay band 1 of YA, YB, YC, YD, YE, YF, YH, YI, YJ, YK, YL, YM, and YN; pay band 2 of YB, YE, YI, YL, and YM; NF-1 and -2; civilian WG-1 through -11; WL-1 through -5	2 personnel per room (16 by 16 ft) with 2 rooms or SEAhut	1
GS-9 through -12; pay band 2 of YA, YD, YH, and YK; pay band 3 of YB, YE, YI, and YL; NF-3; civilian WS-1 through -7; educators schedule C1 through C3	1 person per room (8 by 16 ft) with 4 rooms per SEAhut	1
GS-13 and above; pay band 2 of YC, YF, YG, YJ, and YN; pay band 3 of YA, YC, YD, YF, YG, YH, YJ, YK, and YN; pay band 4 of YE, YJ, and YL; NF-4; educators schedule C4 and above, D through F, M through O, and teaching principals - schedule L	1 person per room (16 by 16 ft) with 2 rooms per SEAhut	1
SES, NF-6	1 person per room (16 per 32 ft) with 1 room per SEAhut	1

NOTE: For personnel authorized a single container, no single individual may solely occupy a container larger than 9 by 20 ft.

**Table 4
Housing Standards for Long-Term Soldiers (More Than 6 Months)**

Category	SEAhut, GP Medium Tent or Equivalent (16 by 32 ft)	Number Per Standard Container (8 by 20 ft) (note)
E1 through E6	2 people per room (16 by 16 ft) with 2 rooms/SEAhut	1
E7 through E8, WO1 through CW4, O1 through O4	1 person per room (8 by 16 ft) with 4 rooms/SEAhut	1
E-9, CW5, O5, and O6	1 person per room (16 by 16 ft) with 2 rooms per SEAhut	1
O7 and above	1 person per room (16 by 32 ft) with 1 room per SEAhut	1

NOTE: For personnel authorized a single container, no single individual may solely occupy a container larger than 9 by 20 ft.

Company Cluster

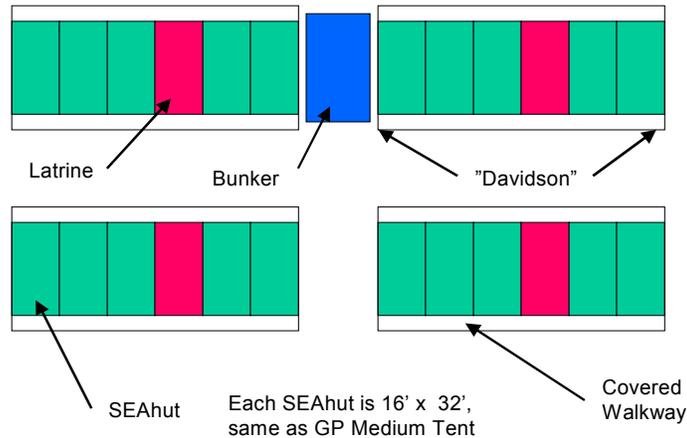


Figure 1. Standard SEAhut Design

b. Surge Housing. All FOSs and CSLs will maintain the ability at all times to house 10 percent of the total population as transients and surges. During surge periods that exceed 10 percent, tier II tents (maximum) will be used for housing. Tier levels for tents are as follows:

(1) Tier I consists of a GP medium field tent or equivalent (Temper) (16 by 32 ft) with plywood floor panels.

(2) 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.

(3) Tier III consists of a GP medium field tent or equivalent (Temper), full wooden frame for the tent, plywood panel sidewalls, raised insulated flooring, four electric light outlets, eight electrical outlets, and environmental control units (ECUs).

c. Guest Quarters. When authorized, one SEAhut or two containers per 150 Soldiers assigned to the FOS may be used for guest quarters. The total space for guest quarters will not exceed two Davidson SEAhuts or 20 containers.

11. TOILET AND SHOWER FACILITIES

a. Toilet and shower facilities will be lighted, heated, and equipped with hot and cold water. SWB is the preferred wall covering for latrines. Sheetrock, if used, must be waterproof, with a waterproof finish for cleaning.

b. A showerhead to population ratio of 1:10 is the goal for all FOSs.

c. A toilet to population ratio of 1:10 is the goal for all FOSs.

12. UNIT FACILITIES

Table 5 provides standards for office sizes.

Table 5 Utilization Guidelines for Office Space	
PERSONNEL	MAXIMUM NSF PER PERSON
Private Offices	
Brigadier general, major general, SES, NF-6	300
Colonel; lieutenant colonel commander; GS-15; TF CSM; pay band 2 of YG; pay band 3 of YA, YC, YD, TF, YK, YN, YG, YH, and YJ; pay band 4 of YJ; NF-5	200
Lieutenant colonel; major commander; GS-13 and -14, brigade and battalion CSM; pay band 2 of YC, YF, YN, YH, and YJ; pay band 4 of YE; and YL	150
Major; captain commander; CW5; GS-12; SGM; 1SG; pay band 2 of YA, YD and YK; pay band 3 of YB, YE, YL and YI; NF-4	100
PERSONNEL	MAXIMUM NSF PER PERSON
Open Offices	
GS-9 through -11; E8; WO1 through CW4; O1 through O3; pay band 1 of YA, YC, YD, YF, YK, YN, YH and YJ; pay band 2 of YB, YE, YL, YM and YI; NF-3	110
GS-7; E7; pay band 1 of YB, YE, YL, YM, and YI; NF-1 and NF-2	90
Stenographic and clerical positions	60
<p>NOTES: 1. The glossary explains abbreviations.</p> <p>2. This table applies only to military units, organizations, and personnel. Administration space for MWR and commercial functions are discussed separately.</p> <p>3. To calculate total building size, add an additional 40 percent for central files, hallways, as well as storage, copier, mail, and conference rooms.</p>	

13. TASK FORCE HEADQUARTERS

The size of headquarters facilities will depend on the situation and be based on the standards in table 5. Final designs may be approved only by HQ USAREUR/7A. The TF headquarters facilities should include at least the following:

- a. USACE Standard FE6 chain-link fence with outrigger.
- b. Gravel parking lots.
- c. Exterior security lighting that can be turned off using a single emergency switch that is available to the security forces.
- d. A secure compartmentalized information facility (SCIF).
- e. A facility to house the tactical operations center (TOC) operation.
- f. Commander's office building.

- g. SEAhut-style buildings or containers for primary staff offices.
- h. Communications platforms and shelters.
- i. Command bunkers.
- j. Guard shacks.
- k. Arms-storage area or approved portable armory.

14. SUPPLY SUPPORT ACTIVITY AND WAREHOUSE FACILITIES

When a supply support activity (SSA) is required, the size will depend on equipment density, troop strength, and classes of supply to be supported. Each brigade-sized element is authorized a 10,000 SF warehouse in addition to the SSA. Warehouses are for long-term storage. Military vans (containers) (MILVANs) are only for transportation. MILVANs will be unloaded promptly (in less than 7 workdays) and returned to the transportation system. Leased MILVANs will never be held for storage or modified (for example, holes cut or parts welded on). Warehouses will not be used for long-term housing of excess Government property.

15. DIRECT EXCHANGE AND CENTRAL ISSUE FACILITIES

When a direct exchange (DX) facility or central issue facility (CIF) is required, the size will be based on a rate of 1 SF per person supported and will have a gravel holding yard with a chain-link fence.

16. FINANCE AND PERSONNEL SUPPORT

When a finance center and personnel-support operations are required, each detachment is authorized 2,944 SF (1 Davidson SEAhut) or 17 containers for each. Authorized space may be divided among various facilities based on the needs of the TF. For the finance detachment, this will include space for a 5- by 8-ft pay cage, an 8- by 9-ft walk-in vault equipped with an intrusion detection system (IDS) that should be prepositioned, and a customer-service area.

17. POSTAL FACILITIES

When a postal facility is required, the building may not exceed the standards in DOD 4525.6-M, chapter 13. Postal facilities must be at least 20 meters from any other structure.

18. LAUNDRY COLLECTION AND DISTRIBUTION POINT

Each FOS may have a laundry collection and distribution point of 512 SF or 3 containers of space per 500 authorized users with a minimum of 256 SF or 1 container.

19. BRIGADE FACILITIES

When an FOS holds a brigade element, a maximum of 5,376 SF or 33 containers is authorized for the brigade headquarters.

20. BATTALION FACILITIES

When an FOS holds a battalion, a maximum of 3,840 SF or 24 containers is authorized for housing the headquarters elements of each battalion-sized unit. This space is intended to house the battalion command group, S2 and S3 sections, TOC, administrative and logistics operations center, battalion communications office, mailroom, chaplain, arms room, and the battalion maintenance officer administration space.

21. COMPANY FACILITIES

When an FOS holds a company, each company-sized unit is authorized a maximum of 1,536 SF or 10 containers of space for the administrative office; orderly rooms; nuclear, biological, and chemical (NBC) rooms; arms rooms; and a supply room. Arms-storage rooms will be constructed according to AR 190-11, appendix G, and equipped to support IDS and control inside temperature and humidity. HQDA-approved portable arms-storage rooms may be used. NBC rooms must have utilities to maintain stored equipment above freezing temperatures and below 76 degrees Fahrenheit.

22. AVIATION FACILITIES

a. Helicopter Pads. Helicopter landing and parking pads will initially be surfaced with M2 matting to prevent foreign object damage (FOD). Helicopter landing and parking pads must be concrete with asphalt aprons. The pads must have adequate grounding rods and tie-downs. All soil in the immediate area of the pads must be planted in grass or gravel large enough not to become FOD. "Hot pads" will have Hesco bastions or similar material to minimize damage from an accidental weapons discharge.

b. Vehicle Parking Area. Aircraft ground-support vehicles must maintain a 10-foot distance from wingtips of supported aircraft (FM 10-67-1).

c. Lighted Landing Pad. One helicopter-landing pad on each FOS will be outfitted with nighttime landing lights. This will facilitate landing helicopters for emergency operations. As a minimum, a Bean Bag Lighting Kit must be available and operational for nighttime flight operations.

d. Forward Area Refuel Point. If pipe is used, it must be double-walled stainless steel with a return line. Aviation-quality fuel filters must be used. Pads must be concrete, as well as any area where fuel spills are likely. Blast protection must be installed around fueling pads. Hazardous-materials spill kits will be kept on site to be used in case of a spill.

e. Control Tower. The control tower must be large enough and tall enough for unobscured vision of the entire airfield. The tower may be either wood or metal, but must be grounded and adequately primed and painted to prevent weather damage and minimize slip hazards in bad weather.

f. Squadron Operations. 10,000 SF of space is authorized per squadron.

g. Aviation maintenance. The total number of aviation clamshell tents will be based on mission requirements. Tow ways must be paved from the helipads to the clamshell tents.

h. Ground Maintenance. Paragraph 25 applies to aviation ground-vehicle maintenance. Aircraft parking and maintenance areas must be surrounded by a perimeter fence and separated from other areas of the FOS.

i. Helicopter and Aviation Washracks. Washracks for helicopters and other aircraft are authorized. The washracks must have a storage tank and concrete pad with a drainage system equipped with an oil-water separator.

23. COMMUNICATIONS COMPOUND AND NETWORK SERVICE CENTER

When a communications compound or network service center (NSC) is authorized, the facility size will depend on the number of occupants. The space authorization is as follows:

- a. Up to 200 occupants: 512 SF or 3 containers.
- b. From 200 to 1,500 occupants: 2,944 SF (1 Davidson SEAhut) or 17 containers.
- c. From 1,501 to 3,000 occupants: 4,736 SF or 30 containers.
- d. From 3,001 to 5,000 occupants : 6,208 SF or 39 containers.
- e. More than 5,000 occupants: 9,152 SF or 57 containers.

24. MEDICAL FACILITIES

All plans for health clinics, dental clinics, and hospitals must be developed in coordination with the Health Facility Planning Agency, Europe Region (HFPE), the United States Army Europe Regional Medical Command (ERMC); or through the United States Army Health Facility Planning Agency, Office of The Surgeon General. These organizations will assist in all aspects of design and construction management and are available to support the medical mission of the warfighter in all categories of operations worldwide. The HFPE may be contacted at DSN 371-2113. The Command Surgeon, USAREUR, is the approval authority for all plans for medical facilities. The guidance in subparagraphs a through f below will be used as a “rule of thumb” when planning FOS medical and dental facility requirements. Actual requirements will be directly related to the medical and dental mission and the care expectations of the operational command, which should be coordinated with HFPE.

a. Battalion Aid Station. The battalion aid station mission is strictly echelon I medical care (no dental) and is oriented to provide basic medical assessments, treatment, and stabilization for evacuation to higher echelons 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 with immediate transfer ability to higher echelons of medical care when required. A rule of thumb for these facilities is to provide the following for one aid station per 750 Soldiers:

- (1) One examination room (100 net square feet (NSF)) per provider or three examination rooms per two providers.
- (2) 100 NSF for storage.
- (3) 130 NSF for entry, administration, waiting area, and toilet facilities.

b. Clinic. Clinics are established in FOSs that require more medical and dental support than a table of organization and equipment (TOE) aid station configuration can provide. To meet this requirement, clinics will be configured and staffed to support each established FOS, based on population, medical staffing, and contingency mission. The FOS clinic should be planned to support both medical and emergency dental care for Soldiers and authorized civilians. Routine dental care may be provided if it does not have a major effect on space needs.

(1) To support a clinic, plans should include basic radiology, radiology development, and laboratory functions within the clinic. The dental and medical offices may be collocated in the same structure to reduce redundancy of radiology and laboratory functions. Table 6 lists basic NSF requirements to meet medical- and dental-care missions.

Table 6 Medical Clinic Authorizations		
SPACE	NSF	NOTES
Medical	1,660	Based on organic medical TOE staffing of a typical armor or infantry battalion. Add 100 NSF per doctor or examination room. The NSF includes the functions in paragraphs 24b and c.
Dental	500	This is the minimal requirement for a single dentist and one hygienist. Add 115 NSF per dentist or DTR. Two DTRs per dentist may be provided depending on the workload.
Holding	340	This is the minimum requirement for a three-cot holding capacity. Add 80 NSF per additional holding bed required.

(2) Additional space will be required to meet holding capacity as dictated by the mission's emergency contingency plan. At least two single toilets are recommended to be included in the clinic; however, additional toilets are authorized based on the location and overall size of the clinic.

(3) A factor of 10 percent should be added to the NFS in table 6 for a gross estimate. In addition, a smooth transition for litters (ramping if necessary) should be added for entry into the main building with a direct access to the trauma room. A 6-ft double-door entry to the facility and the trauma room should also be considered. Table 7 provides grossing factors.

Table 7 Grossing Factors	
Condition	Percent of NSF
A separate mechanical space is used	11.0
Circulation	35.0
Wall and partitions	12.0
Half areas	1.5
Total gross SF	159.5

c. Physicians and Dentists.

(1) For final planning, the exact number of physicians and dentists should be obtained from the command. For planning, table 6 is based on an average of 1,200 Soldiers and authorized civilians per FOS. Add one physician for every additional 750 Soldiers and authorized civilians, and add one dentist for every additional 800 Soldiers and authorized civilians. The basic FOS clinic will contain the following spaces:

- (a) At least two toilet rooms.
- (b) Class VIII (medical) storage.
- (c) Command and control.
- (d) Dental sterilization and storage.

- (e) Dental treatment room (DTR).
- (f) Examination rooms.
- (g) Laboratory.
- (h) Pharmaceutical storage.
- (i) Radiology (for medical and dental).
- (j) Receiving.
- (k) Shared administrative.
- (l) Soiled utility.
- (m) Trauma/treatment room.
- (n) Waiting.
- (o) X-ray developing.

(2) If allowable, a small separate countertop area for the 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 other space as dictated by mission requirements.

(3) Paragraph 44 provides guidance on heating, ventilation, and air conditioning requirements.

d. Special Requirements.

(1) The following spaces must include a sink with hot and cold running water:

- (a) Dental sterilization.
- (b) DTR.
- (c) Examination rooms.
- (d) Laboratory.
- (e) Trauma/treatment rooms.

(2) Radiology rooms will require lead shielding appropriate to the type of radiology equipment used. This includes all four walls and servicing door (lead shielded). The minimum thickness of doors and walls and specifications for FOSs may be determined by consulting the supporting health-facilities planning office or preventive medicine office.

(3) Specific consideration should be given to ensure ventilation from the x-ray development, dental sterilization, and laboratory space is provided.

(4) Finishing materials should support infection-control measures by incorporating smooth washable surfaces with limited seams throughout. All interior partitions must be constructed from the floor to the underside of the ceiling and will not be undercut or left open at the top.

(5) Lighting and electrical requirements for each space must be coordinated with HFPE in consideration of existing and planned medical equipment.

e. Clinic Location. Locate the clinic on the FOS so that it supports the command's mission requirements. Consideration should be given to daily sickcall operations and the relative proximity to the troop population and emergency medical operations (evacuation operations both in and out of the clinic by ground and air). The standard FOS clinic will be sized to meet the medical- and dental-care expectations of the population stipulated in the operations order and supported by the medical staff. The standard or typical level of care expected will exceed the basic battalion aid station (echelon I medical care) model in FM 4-02.4. The peace stabilization base camp model is based on echelon I (plus) to echelon II levels of medical care.

f. Hospitals. All planning for hospitals in theaters of operations (including alteration or modification) must be deferred to the HFPE or United States Army Health Facility Planning Agency, Office of The Surgeon General.

25. MOTOR POOL FACILITIES

a. Maintenance Facilities. TFs should consolidate maintenance activities as much as possible. A facility size of 1,840 SF per battalion supported by the facility is authorized. If a company-sized facility is required, then a 1,200 SF maintenance facility is authorized. These facilities will be equipped with inside and outside lights as well as exhaust fans and compressed air.

b. Maintenance Administration. Each company-sized element is authorized 320 SF or two containers of office space. Each battalion-sized unit is authorized 640 SF or four containers.

c. Maintenance Pads. Each company-sized element is authorized a parking area large enough to accommodate outside maintenance of unit vehicles. Pads should be large enough to accommodate the largest vehicle in the unit plus a recovery vehicle. Battalion maintenance pads for tracked and wheeled vehicles must be constructed from concrete. Maintenance pads must be located near the unit maintenance bay, usually as aprons to a consolidated maintenance facility.

26. FUEL STORAGE

Above-ground fuel tanks are authorized for storing bulk fuels. Fuel storage bladders will be phased out as the above-ground storage tanks become available. Tanks will be constructed according to the environmental requirements in the environmental annex of the applicable concept plan. Where it is necessary to use fuel bladders, they will be placed according to environmental requirements in the environmental annex of the applicable concept plan and must be surrounded by a constructed containment structure that is large enough to hold the maximum amount of fuel in the bladder. Fuel-truck parking areas must have secondary containment pads equipped with a catchment sump and grounding rods. Hazardous-materials spill kits must be kept on site.

27. HAZARDOUS WASTE COLLECTION POINTS

Each company-sized element will have a covered hazardous-waste collection point built on an elevated pad to be out of contact with the ground surface and a secondary containment. A concrete pad is authorized for battalion-sized motor pools but is not required. FOS commanders may authorize additional collection points. Hazardous-materials spill kits must be kept on site.

28. HAZARDOUS-MATERIALS WAREHOUSE

When a hazardous-materials warehouse is necessary, each FOS is authorized a hazardous-materials warehouse or container at a size of 100 SF per 100 occupants. The area must be covered and built on an elevated pad with secondary containment. Hazardous-materials spill kits must be kept on site.

29. PARKING LOTS

Parking lots should be constructed using well graded, compacted rock with an engineered slope and drainage to minimize weather effects and increase safety. Loose rocks larger than 30 to 40 millimeters should be avoided to minimize damage to gravel parking lots and to prevent damage to vehicles from flying rocks. Wooden parking-lot stripes are not authorized. Concrete turning pads are authorized for parking tracked vehicles. Chain-link fences around motor pools are not authorized unless the fence is part of the perimeter fence.

30. DIRECT SUPPORT MAINTENANCE AND ALLIED TRADES WORKSHOPS

When direct support (DS) maintenance is authorized, the design rate will be 2,050 SF per 1,000 FOS personnel supported (including administration space). When an allied trades workshop is authorized, it will be at the same design rate as the DS facility.

31. KENNELS

When kennels are authorized, a lighted, climate-controlled kennel, and an exercise yard are authorized for military working dogs. Kennels will have individual stalls (dog runs) for each dog and a sealed concrete floor for health reasons and easy cleaning. Kennel-floor drains should be connected to a sewer system. The kennel-planning factor is 200 SF per dog, which includes a kitchen, tack room, and interior dog run (80 SF per dog). Exterior dog runs should be 80 SF per dog with a connecting guillotine-type door to the interior dog run.

32. MORGUE

Each morgue is authorized 512 SF or three containers of workspace and a refrigeration van. A privacy screen is authorized around the entire facility.

33. DEFENSE REUTILIZATION AND MARKETING OFFICE

When a recycling facility is authorized, it will be designed at a size of 1 SF per FOS employee (Soldier, U.S. civilian employee, host country national). The facility should have a concrete or asphalt floor capable of handling forklifts. A gravel-holding yard of 2 SF per employee is authorized.

34. AMMUNITION SUPPLY POINT

The ammunition supply point (ASP), if applicable to the FOS, will use bunker storage when available. If bunker storage is not available, ammunition will be stored in containers located in bermed cells. Ammunition must be stored in ammunition-certified containers. DOD-owned containers are the preferred method of storage. Commercial-leased containers may be used for storage until certified DOD containers can be brought in to replace them. The ASP will be constructed with bunkers or bermed cells and the space allocations (safety requirements) to meet the net explosive weight (NEW) of the ammunition planned and projected for storage. AR 385-10 and AE Regulation 385-64 govern the storage of ammunition. ASPs will be surrounded by a perimeter fence to control access.

35. BASIC LOAD AMMUNITION HOLDING AREAS AND CAPTURED AMMUNITION HOLDING AREAS

Ammunition holding areas must be constructed according to AR 385-10 and DA Pamphlet 385-64. Ammunition holding areas must have containment berms, a fenced and lighted perimeter, graveled access roads, and lightning protection for the entire area. Ammunition must be stored in protective structures (MILVANs) that are out of contact with the ground (on wooden sleepers or on concrete foundations). ASPs will be surrounded by a perimeter fence to control access.

36. WASHRACK

When authorized, each FOS that requires a washrack will have at least one 45-ft long elevated vehicle washrack, one 100-ft flat washrack, and one container washrack equipped with oil-water separators. Washracks must be designed to fit the largest and heaviest vehicles in the fleet.

37. FIRE PROTECTION

Fire and emergency-response services will be provided according to DODI 6055.6, AR 420-1, and the following:

a. Fire departments are authorized at FOSs that have any of the following:

(1) A population of 500 or more U.S. personnel (permanent residents).

(2) U.S. Air Force flight operations or U.S. Army rotary-wing flight operations of more than 40 military movements (average) per day (arrivals and departures).

b. FOSs that do not meet the criteria in subparagraph a above will use appropriate portable fire extinguishers. Fire and emergency personnel will be assigned extinguisher duties and properly trained on the use of extinguishers. An area of responsibility (AOR) fire chief will be assigned and, in coordination with the director of public works (DPW), determine the type and number of fire extinguishers required. The fire-prevention program of the AOR will be managed by the assigned fire chief and must include the FOSs and CSLs.

c. For FOSs that have fire departments—

(1) The number and type of fire apparatus for structural and aircraft rescue and firefighting (ARFF) response, as well as the number and type of personnel staffing for fire protection, fire prevention, and the fire control center, will be according to AR 420-1. The Provost Marshal (PM), USAREUR, through IMCOM-Europe fire-protection specialists, will determine required response capabilities, manning requirements, and facility requirements through a risk assessment. The PM will review the risk assessment each year and amend it as needed to adequately adjust the program to changes in mission and associated required response capabilities. Dedicated personnel are authorized for fire dispatch, ARFF, fire prevention, and management and administration. Other missions, such as hazardous-materials incident response, rescue, and wild-land firefighting are usually cross-staffed.

(2) Fire and emergency services must be available 24 hours a day, 7 days a week. FOS commanders have the authority to reduce levels of ARFF capabilities during periods when the flight-control tower is not operational and no aircraft-ground services or maintenance are available. Staffing will not be reduced below the level required to meet regulatory requirements for structural firefighting and hazardous-materials incidents. This includes ensuring enough personnel are available to meet minimum ARFF-vehicle requirements to initiate fire-suppression actions and provide firefighting-agent and water resupply. All operations must comply with the requirements of AR 420-1 and applicable codes and regulations.

(3) Construction of a firestation to house firefighters and firetrucks is authorized. Construction of additional firestations is authorized if response times exceed requirements in AR 420-1. This must be validated through a risk assessment performed by the PM.

(a) Firefighters should live at the firestation to reduce response time unless otherwise appropriate and approved in coordination with the DPW. Space authorizations are identified in UFC 4-730-10. Additional space is authorized if firefighters permanently live in this facility. The construction type will depend on the anticipated lifespan of this facility.

(b) One firecontrol center per FOS is authorized.

(4) Construction of a live-fire training facility is authorized if it would be more economical than sending firefighters to the IMCOM-Europe firefighting training center at Ansbach, Germany, or if travel restrictions on foreign national firefighters would prevent their use of the Ansbach facility.

(5) For firefighting purposes, FOSs are authorized one 5,000-gallon tanker for water storage. The tanker must be capable of tapping into the potable water-storage system. Centrally located standpipes for filling the tankers should be added to the potable water system to fill the tanker.

(6) Fire departments will enter all required data in the National Fire Incident Reporting System. Additionally, FOS fire chiefs will report all fires to the DCSENGR and send a copy of each report to the IMCOM-Europe Fire Protection Specialist according to IMCOM-Europe fire-reporting procedures. This includes immediate notification in case of fatalities, an interim report by the close of business on the next business day, and a final report.

(7) The FOS fire chief will perform fire investigations according to requirements in AR 420-1. The IMCOM-Europe Fire Protection Specialist will perform supplemental technical fire investigations as required by AR 420-1.

(8) The AOR fire chief will establish a comprehensive fire-prevention program that includes public awareness and training, regular fire inspections, fire drills, and design reviews. Deficiencies identified during inspections must be documented in writing, a risk assessments code must be assigned, and corrective action must be initiated. The fire chief will continually follow up on all deficiencies until they are corrected.

(9) All facilities must comply with the criteria of UFC 3-600-01. Construction projects must be submitted to the fire chief for review and approval. If no fire department has been established, projects must be reviewed and approved by the IMCOIM-Europe Fire Protection Specialist. DPWs will ensure maintenance meets or exceeds criteria in UFC 3-600-02.

(10) All living units and other areas determined to be “high hazard” or “mission critical” must be equipped with fire extinguishers and hardwired smoke detectors and evacuation horns that transmit to the firestation. Pull stations should be located strategically near exits to allow for manual notification of the fire department and evacuation of the structure. For additional fire protection, SEAhuts must be constructed using 5/8-inch (or equivalent) sheetrock for the interior walls.

(11) Use of burn barrels to destroy classified material is not recommended. If no other approved destruction method is feasible, every burn procedure will be subject to review and approval by the fire chief.

(12) Storing fuels and other flammables in the life-support area (LSA) is not recommended.

(13) The LSA will be arranged so that fire lanes are left between groups of structures to serve as firebreaks and lanes for firefighting equipment.

(14) The AOR fire chief, in coordination with the DPW, will conduct yearly fire and emergency services operational readiness inspections. IMCOM-Europe will validate these inspections and use them when reviewing and validating risk assessments.

38. TRAINING FACILITIES

The quantity and types of training facilities will depend on the size and mission of the FOS. When training facilities are authorized, the following will apply:

a. Deployed Training Support Center. As a minimum, the facility will be (40 by 100 ft).

b. Deployed Distance Learning Center. The facility will be at least (40 by 50 by 10 ft).

c. Virtual Trainers. Engagement Skill Trainers (ESTs) and Small Arms Virtual Trainers (SAVTs) are authorized when semipermanent construction standards are established. These training systems may be set up and operated in any room that is 25 by 30 by 8 ft or larger. The room should have a way to block out all sunlight. If room lights are necessary, they must be fluorescent. Incandescent light or sunlight in the room will cause the system to register false laser hits. Rooms must also have line of sight for satellite signals and air conditioning for computer equipment.

d. Less Than 6 Months. When the FOS will be used for less than 6 months, a 25-meter range is authorized to sustain Soldier weapon proficiency from 9 to 7.62 mm and to sustain newly assigned personnel on their weapons. The facilities will also be available to reconfirm weapon zeros. A 10-lane range must have a backstop berm 14.4 meters high, with left and right berms 3 meters high.

e. More Than 6 Months. Deployments that last 6 or more months require a live-fire range with the capability of target distances up to 1,800 meters. These ranges must be at least 500 meters wide. This type of range will meet requirements of DA Pamphlet 350-38, chapter 16.

39. MILITARY POLICE STATION

When a military police (MP) station is authorized, it will be designed at a rate of no more than 4,000 SF per MP company. The MP station must have space for a mailroom, conference room, platoon rooms, company headquarters elements, supply room, holding cell with latrine, latrine, arms room, waiting area, evidence holding room, communications room, administration, and desk sergeant.

40. AREA SUPPORT GROUP AND AST FACILITIES

When an area support group (ASG) or AST is deployed to support an FOS, the ASG or AST will be provided 512 SF or three containers per 250 FOS-supported personnel. This space will also be used for director of logistics (DOL) and DPW operations. A consolidated arms- and ammunition-storage area should be available for use by AST staff and units rotating through the base temporarily.

41. FORCE PROTECTION AND SAFETY

a. Antiterrorism, force protection, and physical security in deployed environments present unique challenges to planners, engineers, and security forces. As is the case for fixed facilities, the type and severity of the threat as well as the desired level of protection must be the primary considerations in the selection of the antiterrorism, force-protection, and physical-security measures. These considerations will affect decisions on various issues, such as the types of vulnerability-reduction measures and the physical layout of facilities, facility groups, and infrastructure.

b. Important factors in planning security measures in deployed environments include the availability of existing facilities, the types of structures in which people live and work, existing natural and manmade features, types and quantities of indigenous construction materials, available real estate, and layout of utilities and other base infrastructure. For pre-existing buildings, the standards for existing buildings will be used.

c. The following must be considered when making force-protection and safety decisions:

(1) Facility Access.

(a) Select FOSs away from public roads or other uncontrolled areas.

(b) Maximize use of natural or manmade features to obscure vision from potentially threatening vantage points.

(c) Limit vehicle-approach speeds.

(d) Minimize vehicle-access points.

(e) Provide an entry-control point with a well-defined holding area for unauthorized vehicles and vehicles that need to be searched. The holding area should be outside the prescribed minimum standoff distance (UFC 4-010-02).

(f) Separate functional areas requiring frequent vehicle access (for example, kitchens, industrial areas, retail areas, refuse collection points) from billeting areas.

(2) FOS Characteristics.

(a) Maintain good housekeeping by keeping areas within 30 feet of shelters or structures free from items other than those that are part of the infrastructure.

(b) When possible, position exterior doors to prevent their being easily targeted from the FOS perimeter or uncontrolled vantage points.

(3) Facility Standoff or Separation. UFC 4-010-02, table D-1, provides requirements for facility standoff and separation areas.

(4) Threat-Specific Standards. In addition to the minimum standards in (1) through (3) above, the DOD Security Engineering Manual (UFC 4-020-series) provides guidance for incorporating additional measures to mitigate specific threats. That guidance includes design strategies for mitigating the effects of specific aggressor tactics to defined levels of protection and the effect on building cost of applying those measures.

(5) Power Generation and Distribution. Wood or chain-link fencing will be installed around all generator, transformer, and consolidated generator station locations. Enclosing generators in wooden buildings is not authorized.

(6) Perimeter. Fences, either FE-6 chain-link or concertina, are authorized around the FOS perimeter. Berms and sniper screens are authorized to block vision. Perimeter lights are authorized. A gravel perimeter road is authorized inside the berm. Culverts underneath the perimeter fence must be caged to prevent anyone from crawling through. Drainage ditches, culverts, vents, ducts, and other openings that pass through a perimeter and that have a cross-sectional area greater than 96 square inches and whose smallest dimension is greater than 6 inches will be protected by securely fastened welded bar grills (TM 5-853-3, fig 8-1).

(7) Access Control Points. Covered inspection areas at the main gates are authorized if required by weather conditions. Gates must have lighted and heated guard shacks. Tilt-bar and swing gates are authorized. Clearing barrels must be placed inside the gates.

(8) Clearing Barrels. Clearing barrels must be installed at all access-control points and outside the entrances to arms and ammunition-storage areas, medical facilities, and dining facilities.

(9) Walkways and Decks. Pressure-treated, rot-resistant lumber is the standard. If this lumber is not available or is cost-prohibitive, composite decking material for constructing walkways and decks will be used. Untreated wood may be used if primed and painted. Wooden walkways will be painted with sand paint or other nonslip materials to reduce the chance of slipping, particularly in climates with snow, ice, or extended rainy periods. Lighting must be provided wherever steps cannot be seen at night.

(10) Buried Utilities. The DPW will maintain a database of all buried utilities. No job will be closed out until new underground utilities have been properly documented. No work will begin on a project until a dig permit has been obtained from the DPW. Digging permits should also be coordinated for communication-line clearance. Buried utilities must have caution tape at least 1 foot above the utility lines. Buried electrical lines must have signs posted at every turn in the line and wherever else needed, based on the terrain.

(11) Bunkers. Only bunker designs approved by the United States Army Corps of Engineers Engineer Research and Development Center will be constructed. Sandbag bunkers must protect sandbags from solar radiation and protect the wooden core from rot. The design factor of 110 percent of FOS population will be used for bunkers and fighting positions. The normal planning factor is that 50 percent of the population will be on the perimeter and 50 percent in bunkers.

(12) Guard Towers. Guard towers will be placed so that personnel in each tower can see the towers to their immediate right and left. This prevents “dead space” on the perimeter. Towers must have heat, light, and be hardened against small-arms and mortar fire.

(13) Constructed Fighting Positions. The overhead cover design for fighting positions must be approved by the TF engineer. Fighting positions must be inspected regularly for deterioration. A digging permit from the DPW must be coordinated before any construction begins.

(14) Other Facilities. Theaters and similar multipurpose facilities must be provided protection according to Army force-protection criteria.

(15) Potable Water. Water plants, wells, storage tanks, and bladders must be fenced.

SECTION IV UTILITIES

42. GENERAL

Design and installation of utilities systems must be according to current applicable military handbooks, technical manuals, guidance, and recognized industry standards, codes, and practices. Engineering calculations will be used to determine the size of the systems. All utility designs must be approved by the DCSENGR before installation begins.

43. ELECTRIC POWER

a. Where economically supportable and practicable, FOS power grids will be connected to commercial power. Smaller or remote FOSs that cannot be economically connected to the commercial power grid are authorized to construct central power plants capable of supporting 125 percent of the FOS maximum demand load or to use distributed generators that have enough capacity to support maximum demand loads.

(1) An economic analysis must be completed to determine the most cost-effective power plant or generator solution. In all cases, critical facilities must be identified in the master plan by the ASG or AST commander or manager and have back-up generator power.

(2) Noncritical facilities that have stand-alone distributed generators will not have any back-up generator power. However, a maximum of 10 percent of the total generators (one minimum) serving noncritical facilities are authorized as reserve generators that can be placed in service quickly in case a generator serving a noncritical facility has a major failure.

(3) Determining the appropriate size of generators is not a simple task, because many generators are typically bigger than the loads they support. Determining the size of generators must include an evaluation of actual and expected loads and consider appropriate demand and load-diversity factors along with a review of any historical demand-load data for similar FOSs. Engine-generator sets may need “de-rating” to account for use of JP-8 fuel (rather than diesel), altitude, temperature, and starting requirements for any large load, specialized equipment (for example, hospital X-ray machines).

(4) In many cases, load banks have been used to ensure adequate performance of underloaded engine-generator sets. Underloaded engine-generators may operate unsatisfactorily, fail prematurely, and require more frequent maintenance and overhauls because of excessive formation of carbon deposits in the engine. The use of load banks and premature engine overhauls can be avoided if engine-generators are the right size for the load.

(5) A complete and thorough analysis of the affected electrical system must be conducted to ensure power-plant requirements are properly defined.

(6) Leasing generators for periods greater than 6 months is generally not cost-effective. Where stand-alone distributed generators are the main power source, they will be sized so that no generator set is loaded less than 50 percent.

b. Electrical power systems for FOSs can be composed of subtransmission lines to main substations; distribution lines to distribution substations; utilization lines to distribution transformers; and generators to provide emergency, stand-by, or prime power for mission-critical facilities.

(1) Application of new so-called distributed generation (DG) technology rather than familiar internal combustion (IC) genset (diesel engines) technology may be considered if economically feasible, environmental effects and emissions are of utmost concern, and any alternative fuels that may be required for DG applications are available.

(2) DG and IC gensets allow cogeneration (combined heat and power) “waste” heat from power generation to be recovered and used to offset costs. The capital cost of an IC genset is \$200 to \$350 per kilowatt (kW) for diesel and \$400 to \$1,000 per kW for natural gas. Operations and maintenance (O&M) costs for both types, excluding fuel, are \$0.01 per kW hour per year.

c. Electric power-supply transformers will be in accordance with the voltage and frequency characteristics of the host nation. Frequency converters, 50 Hertz (Hz) to 60 Hz rotating or static (preferred), should be used instead of 60 Hz generators. Applicable electrical industry codes, standards, or publications intended for use with the equipment, materials, and installation of both must be used. The latest edition of National Fire Protection Association (NFPA) 70 (National Electrical Code) and American National Standards Institute C2 (National Electrical Safety Code) provide minimum requirements for safeguarding people and property from hazards arising from the use of electricity. These codes must be met.

d. All facilities that are used for or contain housing, office space, or other areas that require the use of electric devices or equipment must be supplied with fixed electrical outlets. SEAhuts used for housing must have eight fixed duplex electrical outlets. All facilities that require illumination to perform tasks or to provide a safe living, working, or recreational environment must be equipped with electric lights.

e. Generator power will continue to be the primary source of remote FOS power if commercial power is not available.

44. HEATING, VENTILATION, AND AIR CONDITIONING (HVAC)

a. All facilities where personnel live, work, and enjoy recreation must have heating. When possible, ECUs that provide both heating and cooling capabilities will be installed. Large facilities (for example, DFACs, medical clinics) should be provided with central HVAC systems. FOSs will use installed central heating and cooling systems where already existing or as economically feasible. Storage areas will be provided only the heating or cooling services needed for specific storage requirements as specified in the subparagraphs on designated facilities types.

b. When temporary and semipermanent facilities such as SEAhuts use ECUs, the ECUs will be the proper size to ensure heating and cooling are provided as follows:

(1) The standard for maximum indoor temperature in winter is 68 °F and the minimum indoor temperature in summer is 78 °F. The ECU must be able to meet these standards.

(2) Temperature strips must be installed in administrative areas and living spaces wherever ECUs are used.

c. Where central heating or cooling systems have been installed and for all other facilities (for example, hangars, recreation centers, gyms, DFACs, medical facilities), the ASG or AST will monitor installed thermostatic controls to maintain established temperature standards.

45. WATER

The order of preference for potable water for all FOSs is as follows:

a. The Joint Contracting Center (JCC) will contract to tie into local municipalities if it is economically feasible and meets Army health and force-protection standards. The installation of a water-purifying station, such as a UV-60 Transportable Water Purification and Disinfection System, should be considered in the startup cost.

b. Installation of wells for potable water is authorized. FOS planners should consider installing water-storage distribution systems if economically feasible. A minimum of two wells per FOS (one primary and one for backup) is authorized. Because the expense of mobilization for drilling equipment is a major cost in providing a well, local contractors should be hired to drill the wells. Additional wells may be drilled based on the capability of the first two wells to supply the required amount of water. Wells should be within FOS boundaries.

c. The least desirable option is trucking potable water or bottled water to the FOS. The cost of purchasing and maintaining the trucks and paying drivers as well as the recurring cost of bottled water (including purchase, transport, storage, and waste disposal) must be included in the initial cost estimate.

46. WASTEWATER-TREATMENT PLANT

Sewage-collection tanks are authorized. During the initial assessment for an FOS, installation of a wastewater-treatment system should be considered based on the projected population size of the site (including allied forces and local national personnel). Sewage can be trucked to a suitable wastewater-treatment plant. Coordination with the JCC should be completed to determine if connection to a municipal wastewater-treatment plant is economically feasible and environmentally sound. Upgrades to existing sewage-treatment plants may be authorized to allow for effective treatment of waste being generated on a facility. Upgrades will be limited to the expansion of the plant's current capabilities to handle the increased daily flows.

SECTION V SOLDIER AND AUTHORIZED PERSONNEL SUPPORT

47. INTENT

Support facilities for FOSs are intended to improve the quality of life of assigned personnel. On FOSs where commanders have decided to divide Soldier and authorized personnel support, MWR, or Army and Air Force Exchange Service (AAFES) services or concessions according to the geographic location of the LSAs, the sum of the space allocated for each activity will not exceed the total SF for that category of facility as prescribed in this section.

48. CHAPELS

When an FOS is authorized a chapel, it will be designed at a rate of 400 SF of space per 250 authorized users, with a minimum size of 160 SF or one container. The structure will have linoleum flooring installed. The design will be nondenominational. Office space will be provided for chaplain. Chaplain office space will be designed to support privileged communications with parishioners.

49. EDUCATION CENTERS

When authorized, a combination education center, Defense Logistics Agency, and military occupational specialty library of 512 SF or three containers is the design rate for each 300 authorized users assigned to an FOS.

50. AAFES

a. Barber, Beauty, Alteration, and Pressing Facilities. When a barber or beauty shop and alteration or pressing facility are authorized for an FOS, these facilities should be collocated in the same facility. Barber and beauty shops are authorized 320 SF or two containers per 1,500 authorized users, with a minimum size of 256 SF or one container. Alteration and pressing facilities may be collocated in the same facility if contractor requirements can be met. Alteration and pressing services are authorized 320 SF or two containers per 2,000 authorized users.

b. Post Exchange (PX). When a PX is authorized, the design rate of 2,100 SF per 750 authorized users will be used, with a minimum size of 512 SF or three containers. Sufficient electrical connections are authorized to ensure sufficient, safe electrical power is available for displays and other requirements.

(1) Each PX warehouse is authorized 350 SF per 250 authorized users.

(2) Each PX administrative space is authorized 160 SF or one container per 480 authorized users.

(3) Loading docks and gravel parking lots for delivery trucks are authorized.

c. Food and Service Concessions Stands. When a food concession is authorized, it will be designed at a rate of 160 SF or one container per 250 authorized users. Authorized seating space is 125 SF per 250 authorized users. One refrigerated cooler, three freezers, and one dry-storage container are authorized per food court. When requested by the local command, a specialty-food concept may be authorized 512 SF, which includes seating. Amusement areas adjacent to the food concession are authorized 150 SF per concession for equipment setup. The Army is responsible for providing basic facilities for these concessions, to include utility hookups and ventilation. AAFES is responsible for installing and maintaining AAFES-peculiar items (for example, cash registers, display shelves and coolers, stoves, specialty lights).

51. MORALE, WELFARE, AND RECREATION

a. Fitness Facilities. When fitness facilities are authorized, they will be designed at a rate of 3 SF per authorized user. The facility must have rubber floor tiles and separate male and female latrines. The fitness center must have a minimum size of 1,024 SF.

b. Field House or Multipurpose Facility. When an FOS is authorized a field house or multipurpose facility and has 500 or more occupants, it will be used to conduct indoor sports, shows, or large meetings. The facility must have a wooden floor lined for basketball, volleyball, and other sports activities. If possible, the facility should be able to have an enclosed full-size basketball court of 50 by 94 ft with 18 ft floor-to-ceiling clearance and at least a 5-ft safety or walking lane surrounding the playing area. Field houses should have fluorescent lighting, climate control, and separate male and female latrines. The field house should have double entry/exit doors.

c. Athletic Fields. When an FOS is authorized athletic fields and has more than 500 occupants, two sand volleyball courts, two horseshoe pits, one paved outdoor basketball (half-court) court, and one outdoor pavilion must be provided. FOSs with more than 2,000 occupants are authorized twice this amount. FOSs with populations less than 500 are authorized one sand volleyball court, one horseshoe pit, a paved outdoor basketball (half-court) court, and one outdoor pavilion.

(1) Where adequate space exists, a multipurpose athletic field with outdoor lighting suitable for flag football, softball, soccer, and track activities may be constructed.

(2) Where possible, each FOS is authorized a lighted outdoor running trail up to 2 miles long with up to eight uncovered fitness stations.

52. COMMUNITY ACTIVITY CENTER

Each FOS should have a community activity center. Smaller FOSs can be designed at a rate of 1,024 SF per 150 authorized users, with a minimum size of 1,024 SF. Larger FOSs are authorized 4,608 SF per 2,000 authorized users. The facility should have double entry/exit doors, latrines, and running water. The community activity center and theater will be located in opposite areas of the FOS for force protection. The structure will house the communication center with telephone center, common area, library, equipment room, television room, movie room, and video-teleconferencing room.

53. MULTIPURPOSE THEATER

Each FOS with more than 1,000 U.S. personnel should have one multipurpose theater, with a 35-ft wide by 25-ft deep stage that has steps on both sides and a securable storage area under the stage, two dressing rooms on both sides, climate control, and mirrors and shelves on both sides. FOSs with fewer than 1,000 personnel are not authorized a stage. Each facility will be hard-wired with two each 380-volt, 32 amp, and 220-volt, 64 amp, power supply. The theater will be housed in a structure designed to seat 25 percent of the base population but no more than 500 people. The theater should have double entry/exit doors. Seats will be folding-metal or plastic chairs that can be quickly removed.

54. MWR WAREHOUSE OR MAINTENANCE FACILITY

Each FOS with MWR facilities should have an MWR warehouse or maintenance facility that consists of 1 SF per each person supported. The facility will be used for repair of MWR equipment and for short-term storage of remote FOS equipment and seasonal equipment not in use. These facilities will not be authorized for long-term storage of excess MWR equipment.

55. AMERICAN FORCES NETWORK

Each FOS should establish facilities for broadcast transmission of American Forces Network (AFN) services. The standard AFN broadcasting pad will be at least 300 by 150 ft and located on the highest point of the perimeter or in the center of the FOS. It must include a housed power-generation or fuel source. Variations for manned and unmanned operations areas are as follows:

(1) **Manned Operations.** The AFN pad will include a facility to house a manned affiliate operation with studios, offices, and other administrative space up to a maximum of 56 by 75 ft or 4,200 SF.

(2) **Unmanned Operations.** One climate-controlled equipment shelter the size of a standard SEAhut (512 SF) is required.

SECTION VI OPERATIONS AND MAINTENANCE

56. PURPOSE

This section provides guidance for the amount of maintenance required on facilities constructed for CONOPS. The goal is to maximize the life expectancy of temporary facilities with minimum cost to the Government. Contracts given to maintenance contractors should follow the guidelines in this section.

57. PAINTING

Buildings must be painted to prevent weather damage. Painting buildings solely for the sake of appearance is not authorized. Paint must have a durability rating of at least 5 years.

a. All wooden structures should be primed before being painted. Buildings must be painted when there are significant repairs that leave wood exposed, when there is surface damage, and when the cost of painting can be justified as a cost-avoidance measure.

b. Treated lumber is the standard for wooden walkways, decks, and wherever wood comes in contact with the soil. Where treated lumber is not available, all bare wood must be covered with a primer and two coats of paint (including the underside of decks, deck stringers, and pilings). All decks must be sand-painted or coated by some other method to prevent slipping. Planners should consider using composite decking material for constructing walkways and decks. Lighting must be provided wherever steps cannot be seen at night.

- c. Painting warning signs, trip hazards, and other standard safety markings is authorized.
- d. Painting of interior walls is authorized at every third rotation (18 months).

58. SIGNS

Signs must be generic. The intent is to have signs that will function through several rotations. Signs may be either metal or wood.

- a. One-foot square unit-patch signs may be added to generic signs using hooks. This avoids costs. When units change, the generic sign remains, and the only cost involved is the cost of changing unit patches.
- b. The names of the commander and the senior noncommissioned officer may be attached to generic signs.
- c. Standard European traffic signs must be used.
- d. Use of contractors for making battalion crests and other distinctive unit signs is not authorized.
- e. The following applies specifically to warning signs:

(1) Signs should be erected to assist in controlling authorized entry, to deter unauthorized entry, and to preclude accidental entry. Signs should be plainly displayed and legible from any approach to the perimeter from a reasonable distance. The size and coloring of a sign, its letters, and the interval of posting must be appropriate to each situation.

(2) A significant number of warning signs should be erected to ensure that possible intruders are aware of entry into restricted areas. Warning signs augment control signs. They warn intruders that the area is restricted and that trespassing may result in the use of deadly force.

(3) Warning signs should be installed along the limited area's physical barriers and at each entry point where they can be seen readily and understood by anyone approaching the perimeter. In areas where English is one of two or more languages commonly spoken, warning signs must be in the local language and in English. The wording on the signs will denote warning of a restricted area. The signs should be posted at intervals of no more than 100 feet. They must not be mounted on fences equipped with intrusion-detection equipment.

(4) In addition to the rules in (1) through (3) above, the warning signs prescribed in AR 190-13 should be posted at all entrances to limited, controlled, and exclusion areas.

59. ROAD REPAIR AND DUST ABATEMENT

The intent of the guidance in this paragraph is to maintain maximum maneuverability for the commander, minimize damage to Government equipment, and provide a safe transportation system for Soldiers.

- a. The DPW will determine how often roads need to be graded based on the local conditions. Generally, grading is done often enough to minimize potholes and washboarding. Compacting high-use areas may be cost-effective. Loose rocks larger than 40 mm will be removed from roads and parking lots.

b. The DPW will determine the frequency of dust abatement based on local conditions. Generally, dust abatement is done often enough to prevent dust damage to engines and electronic components and to protect the health of Soldiers and civilians.

c. Dust abatement and grading costs should be closely monitored. Paving should be considered on gravel roads if the payback period is 2 years or less.

d. The DPW will determine how often mud needs to be removed from paved roads. Safety should be the prime consideration.

e. Use of lumber for parking-lot stripes on gravel parking lots is not authorized.

60. EROSION CONTROL

Erosion-control measures are authorized to minimize damage to Government facilities and for vector control. Erosion-control measures are authorized and will be implemented around fence perimeters to prevent washouts underneath fence lines. Landscaping solely for the sake of appearance is not authorized.

a. Ditches. Ditches with more than a 3-percent slope and where serious erosion is observed should have geotextile and rip-rap installed. Culverts should have headwalls with a 5-year design life. The use of dry-mix cement and sand in sandbags for various erosion and headwall construction projects is preferred over using sand-filled bags.

b. Grass. Planting grass is authorized for erosion control. Grass should be a local species or other variety known to do well in the local area with minimum maintenance. A mixture of seed that includes at least 30 percent of a species of grass that grows through the winter should be used. Fertilization and other soil amendments to encourage adequate erosion protection are authorized. Grass cutting should be done under the guidance of the environmental officer based on local conditions. Cutting the grass solely for the sake of appearance is not authorized with the exception of the following:

(1) Within 50 feet of buildings, the maximum height of grass is 8 inches. The minimum is 4 inches. Grass will not be mowed more than once every 2 weeks.

(2) Authorized MWR fields may be planted, fertilized, watered, and cut for the needs of the sport they are designed to support. Chalk markings are authorized.

(3) The commander may direct that the grass be cut in certain high-visibility areas where uncut grass may reflect negatively on the command. These areas will be individually specified in a grass-cutting contract.

(4) Clear zones should be kept clear of weeds, rubbish, or other material capable of offering concealment or assistance to an intruder attempting to breach the barrier. A clear zone of 20 feet or more should exist between the perimeter barrier and exterior structures, parking areas, and natural or man-made features. When possible, a clear zone of 50 feet or more should exist between the perimeter barrier and structures within the protected area, except when a building's wall constitutes part of the perimeter barrier. ASPs must have clear zones 12 feet outside of the ASP and 30 feet inside, and the vegetation must not exceed 8 inches (4 inches for high-threat and highly controlled areas). Refer to AR 190-11 and DOD O-2000.12-H, appendix EE, for further information.

c. Leaf Raking. A contractor is authorized to rake and collect leaves three times each year, between October and January, or as directed by the DPW.

d. Vector Control. Filling in or planting grass in minor depressions, wheel ruts, and grounds damaged by construction is authorized to prevent mosquitoes and insect-borne diseases. The environmental officer must assess any area of standing water larger than 1/10 of an acre (4,356 SF) for environmental effects.

e. Storm Damage. Use of contractors to trim and remove storm-damaged trees is authorized. The intent is to minimize the effects of tree damage to utilities and transportation.

61. PAVEMENT REPAIR

All contractor asphalt projects should come with a 2-year guarantee. Repairs to existing paved roads should be as follows:

a. Asphalt. Potholes and utility cuts should be repaired as soon as possible to prevent accidents, vehicle damage, and further road damage. The base course should be prepared to prevent slumping.

b. Concrete. Repairs to concrete roads, bridges, and airfields will be coordinated with and must be approved by the TF engineer on an individual basis.

c. Stone. Repair of existing paving stones for safety and equipment concerns is authorized. Repairs solely for the sake of appearance are not authorized.

d. Guardrails. Guardrails to keep vehicles off areas are authorized. Barriers should be constructed from treated lumber, concrete, or metal. If no guardrail previously existed, it must be treated as new work.

62. NEW WORK

Construction of new roads, sidewalks, buildings, or other facilities where none previously existed is “new work” and cannot be accomplished under O&M. Major modifications to existing structures (such as adding or closing in porches; adding decks, walls, latrines, electrical service; moving doors and windows; installing countertops, shelves, and bulletin boards) are considered new work.

63. PREVENTIVE MAINTENANCE

Use of contractors for preventive-maintenance inspection of facilities is authorized. Inspections should be conducted every 60 days, but the commander may direct that they be conducted more or less frequently, depending on the commander’s needs. The purpose of these inspections is for safety and to save the Government money by identifying deficiencies while they are still small and easy to fix. A contract may be for “inspect” or for “inspect and fix.” Inspections should include but not be limited to the following:

a. Electrical. Check for damage to or tampering with—

- (1) Circuit breakers.
- (2) Control panels.
- (3) Fuses.

- (4) Grounding rods.
- (5) Junction boxes.
- (6) Outlets.
- (7) Overloading.
- (8) Switches.

b. Plumbing. Check for—

- (1) Corrosion in showerheads and shower curtains.
- (2) Hot-water temperature.
- (3) Leaks and drips.
- (4) Signs of water damage to floors and walls.
- (5) Water pressure (40 pounds per square inch (psi)).

c. Exterior. Check—

- (1) Doors for squeaks ease of movement, and working locks.
- (2) Roof for leaks, deterioration, lost shingles, bubbles, and animal damage.
- (3) Walls for holes and chipping paint.
- (4) Windows for broken glass and ease of operation.

d. Interior. Check—

- (1) Ceiling for evidence of leaks.
- (2) Doors for squeaks ease of movement, and working locks.
- (3) Linoleum for cracks and tears.
- (4) Walls for cracks, holes, and chipping paint.

e. Perimeter Fence. Check for—

- (1) Signs of erosion or digging under fenceline.
- (2) Signs of cutting or bulging of fabric and other signs of possible breaches.
- (3) Burned out perimeter lights.
- (4) Fuel levels for portable perimeter light sets. (This should be done daily.)

APPENDIX A REFERENCES

Title 10, United States Code, Armed Forces

Joint Publication 1-02, DOD Dictionary of Military and Associated Terms
(<http://www.dtic.mil/doctrine/jel/doddict/index.html>)

Joint Publication 4-04, Joint Doctrine for Civil Engineering Support
(http://www.dtic.mil/doctrine/jel/new_pubs/jp4_04.pdf)

DOD Instruction 2000.16, DOD Antiterrorism (AT) Standards

DOD Instruction 6055.6, DOD Fire and Emergency Services (F&ES) Program

DOD 4525.6-M, Department of Defense Postal Manual

DOD O-2000.12-H, DOD Antiterrorism Handbook

Unified Facilities Criteria 3-600-01, Fire Protection Engineering for Facilities
(http://www.wbdg.org/ccb/DOD/UFC/ufc_3_600_01.pdf)

Unified Facilities Criteria 3-600-02, Inspection, Testing, and Maintenance of Fire Protection Systems
(http://www.wbdg.org/ccb/DOD/UFC/ufc_3_600_02.pdf)

Unified Facilities Criteria 4-010-01, DoD Minimum Antiterrorism Standards for Buildings
(http://www.wbdg.org/ccb/DOD/UFC/ufc_4_010_01.pdf)

Unified Facilities Criteria 4-010-02, DoD Minimum Antiterrorism Standoff Distances for Buildings
(<https://pd.c.usace.army.mil/library/ufc/4-010-02/#download>)

Unified Facilities Criteria 4-730-10, Fire Stations
(http://www.wbdg.org/ccb/DOD/UFC/ufc_4_730_10.pdf)

National Fire Protection Association Code 70, National Electrical Code
(<http://www.nfpa.org/categoryList.asp?categoryID=124&URL=Codes%20and%20Standards>)

American National Standards Institute National Electrical Safety Code (<http://standards.ieee.org/nesc/>)

Joint Publication 1-02, Department of Defense Dictionary of Military and Associated Terms

USEUCOM Operation Order 03-11, Antiterrorism

United States Army Corps of Engineer Design Guides
(<http://www.usace.army.mil/publications/design-guides/>)

AR 190-11, Physical Security of Arms, Ammunition, and Explosives

AR 190-13, The Army Physical Security Program

AR 190-51, Security of Unclassified Army Property (Sensitive and Nonsensitive)

AR 210-20, Real Property Master Planning for Army Installations

AR 385-10, The Army Safety Program

AR 420-1, Army Facilities Management

DA Pamphlet 190-12, Military Working Dog Program

DA Pamphlet 350-38, Standards in Weapons Training
(<http://www.atsc.army.mil/tpiolive/strac/firspage.asp>)

DA Pamphlet 385-64, Ammunition and Explosives Safety Standards

United States Army Corps of Engineers Standard FE6, Chain-Link Security Fence Details
(<https://pdc.usace.army.mil/library/drawings/fence>)

Field Manual 3-19.30, Physical Security

Field Manual 4-02.4, Medical Platoon Leader's Handbook Tactics, Techniques, and Procedures

Field Manual 10-67-1, Concepts and Equipment of Petroleum Operations

Technical Manual 5-853-3, Security Engineering Final Design

AE Regulation 385-64, Explosives Safety

USAREUR Regulation 405-15, Facilities Utilization Management

APPENDIX B MASTER PLANNING

B-1. MASTER PLANNING

a. Purpose. Master planning is a comprehensive process that brings together a variety of personnel and their requirements. It addresses the need to comprehensively plan future facilities to meet various and competing interests in support of the mission.

b. Background. The administrative control (ADCON) relationships and command and control may vary from one contingency operation (CONOP) to the next. The guidance in this appendix is based on the assumption that a task force (TF) is in place and is responsible to the CG, USAREUR/7A, for executing all Title 10 responsibilities in its area of operation. It also assumes that there is an area support team (AST) established that carries out the TF commander's guidance and intent at each forward operating site (FOS).

(1) For the purposes of this appendix, it is assumed that the AST is managed by a Federal civilian employee. USAREUR's role in master planning is to provide oversight and approve expenditure of funds according to established policy (for example, Joint Acquisition Review Board instructions).

(2) TF commanders will establish base camp planning boards (BCPBs) at each FOS, provide guidance on conducting planning boards, issue commander guidance, and coordinate master planning components.

c. Definition. A master plan is the TF commander's comprehensive plan for the orderly and efficient management and development of land, facilities, and infrastructure to support the mission.

d. Applicability. Where applicable, FOSs will have a BCPB and develop a base camp master plan (BCMP). Remote FOSs may fall under the command of a larger FOS that provides support.

B-2. REFERENCES

- a. DOD Instruction (DODI) 2000.16 2, Antiterrorism Standards (AT).
- b. DODI 6055.6 DOD Fire and Emergency Services (F&ES) Program.
- c. Unified Facilities Code (UFC) 4-010-01, DOD Minimum Antiterrorism Standards for Buildings.
- d. United States Army Corps of Engineers Design Guides (<http://www.usace.army.mil/publications/design-guides>).
- e. United States European Command Operation Order 03-11, Antiterrorism.
- f. AR 210-20 Real Property Master Planning for Army Installations.
- g. AR 190-11, Physical Security of Arms, Ammunition, and Explosives.
- h. DA Pamphlet 190-12 Military Working Dog Program.
- i. USAREUR Regulation 405-15, Facilities Utilization Management.
- j. USAREUR Joint Acquisition Review Board (JARB) Implementing Instructions.

B-3. DISCUSSION

Use of a BCMP will enhance force protection, operational readiness, personnel safety, efficient use of resources, living conditions, and the quality of life. Proper zoning and improvements to the facilities and utilities and the efficient investment of resources will increase the quality of life for all Soldiers while enhancing force protection.

a. An organized site plan is a crucial part of a master plan. A well-designed site layout will address at least the following:

- (1) Biological factors that may affect physical health.
- (2) Financial factors that could reduce operational and renovation costs.
- (3) Psychological factors that affect attitudes.
- (4) Social factors, including coordination and cooperation.
- (5) Security, antiterrorism, and force-protection requirements.

b. The BCPB provides the forum for FOS program managers and experts to make comprehensive, balanced decisions on the future layout of FOS facilities and infrastructure. The board will meet periodically to review and refine plans based on changing mission priorities with the goal of providing high-quality living and working environments while incorporating best business practices.

B-4. RESPONSIBILITIES

a. The TF commander is responsible for all master plans developed within the TF. The TF commander will—

- (1) Review and approve all BCMPs and updates.
- (2) Return disapproved BCMPs and disapproved portions of BCMPs to BCPBs, through the AST, for reconsideration and resubmission.
- (3) Forward JARB requests and other documents to HQ USAREUR/7A for approval when appropriate.

b. AST managers will—

- (1) Convene BCPBs as required in this appendix and as directed by the TF commander.
- (2) Chair BCPBs.
- (3) Be responsible for formulating BCMPs and changes to them; and ensuring plans, changes, and updates are submitted through appropriate brigade commanders to the TF commander for approval.
- (4) Send the commander's guidance and standards to BCPBs for use in preparing BCMPs and coordinating with higher headquarters for technical expertise not available in the AST.
- (5) Approve and sign BCPB minutes and ensure they are sent to the TF commander in a timely manner.

c. Directors of public works (DPWs) will—

- (1) Be the AST manager's designated representative for the overall implementation of BCMPs.
- (2) Serve as executive secretary for BCPBs and submit minutes of BCPB meetings through the AST to the TF commander for approval.
- (3) Help and support FOS commanders.
- (4) Ensure BCPBs are conducted on a routine schedule and all issues are consistently addressed.
- (5) Prepare guidance for, assist, and educate BCPBs on the planning process.
- (6) Maintain a central repository all BCMPs and BCPB-meeting minutes to ensure BCMP consistency through rotations of units, commanders, and AST managers.
- (7) Advise the AST manager by recommending which BCMPs to approve.
- (8) At the direction of the AST manager, return disapproved portions of BCMPs to the BCPB for further action.
- (9) Advise the JARB of projects that are inconsistent with approved BCMPs.
- (10) Ensure all projects submitted to the JARB are consistent with the BCMP.

d. Commanders of major assigned units, tenants, and supported activities at FOSs will—

- (1) Identify and develop facility requirements to support their missions, and ensure these requirements are incorporated into the FOS-approved master plan.
- (2) Provide a voting member to the BCPB.

e. Members of the BCPB will—

- (1) Monitor development of the BCMP and submit recommendations through the AST manager to the TF commander for approval.
- (2) Ensure the BCMP addresses all facility requirements for all activities on the FOS and supported sites.
- (3) Ensure the BCMP incorporates anticipated growth or reductions in units and activities based on current and proposed missions.
- (4) Ensure FOS changes are in accordance with BCMP-approved zoning, aesthetic, and traffic considerations.
- (5) Make recommendations to the TF commander concerning requirements to update BCMPs.
- (6) Advise the TF commander of priorities for large projects with significant effect on the site.
- (7) Consider the environmental effects of all decisions relating to the BCMP.

B-5. TECHNICAL EXPERTS

The Deputy Chief of Staff Engineer, USAREUR, will coordinate the assistance of technical experts (for example, 412th Engineering Command, United States Army Corps of Engineers, IMCOM-Europe).

B-6. MASTER PLAN COMPONENTS

a. Long-Range Component. The long-range component is an assessment of what the FOS should look like in 5 years. It includes infrastructure, transportation flow, zoning, aesthetics, and signage. The following items make up the long-range component (items with an asterisk are owned or updated by the BCPB chair and BCPB executive secretary):

- (1) Long-range analysis.*
- (2) Environmental-baseline analysis (DPW environmental office in coordination with the FOS environmental compliance office).
- (3) Utilities assessment (DPW).
- (4) Transportation assessment.*
- (5) Land-use analysis and zoning plan.*
- (6) Physical security plan (overlay).*
- (7) Antiterrorism and force-protection plan.*
- (8) Fire-protection plan (overlay).*
- (9) FOS-design guide (DPW).*
- (10) Capacity-expansion analysis.*
- (11) Supporting graphics and overlays.*
- (12) Ammunition holding area explosive quantity distance site plan.

b. Capital Investment Strategy. The capital investment strategy analyzes shortfalls and excesses in facilities through a tabulation of existing and required facilities, and identifies preferred action plans to solve imbalances. The recommendations (solutions) must be consistent with the long-range component.

c. Short-Range Component. The short-range component of the master plan is the immediate or temporary solution to facility imbalances to be used until a permanent solution is found. Temporary solutions may include relocations or temporary diversions in uses of facilities and temporary construction until a more permanent solution is reached. The short-range component includes site-specific graphics with locations of projects. The following items make up the short-range component:

- (1) Overview of requirements. An assessment of how to “get well,” analyses of alternatives, evaluation and selection of preferred alternatives, and a narrative justification for the selected course of action (COA).

- (2) Assets/facilities investment plan.
- (3) Environmental documentation (DPW provided).
- (4) Assets-disposal list.
- (5) Supporting graphics.

B-7. BCPB

a. Functions. The BCPB will—

- (1) Act as the TF commander’s “board of directors” to ensure the orderly development and management of the FOS’s facilities (and supported sites).
- (2) Guide the development and maintenance of all components of the BCMP.
- (3) Coordinate FOS planning with the following:
 - (a) Adjacent or nearby sites.
 - (b) Affected host-nation agencies. (DPWs will act as the lead coordinating agency.)
- (4) Ensure the BCMP does the following:
 - (a) Addresses facility requirements for all activities of the FOS and supported areas.
 - (b) Projects for growth or reduction in units and activities assigned to the FOS based on changes in mission.
 - (c) Determines FOS design guidelines and adheres to standards.
 - (d) Reviews funding projections and advises the TF commander of priorities and COAs.
 - (e) Ensures maximum efficient use of existing facilities.
 - (f) Ensures project plans and projects are consistent with good environmental stewardship.
 - (g) Makes recommendations on space utilization.

b. Composition. The BCPB in each of the FOSs will include at least the following:

- (1) **Chair.** The AST manager will be the chair.
- (2) **Voting Members.** Voting members will include at least the following:
 - (a) DPW. The DPW will provide staff support and administrative assistance to the BCPB.

(b) The chief of each principal staff section (proponency) on the FOS. Proponency representatives should include at least the following:

1. Personnel and morale, welfare, and recreation.
2. Operations and intelligence.
3. Logistics.
4. Security and provost marshal operations.
5. Safety.
6. Information management.
7. Signal.
8. Force protection.

(3) Nonvoting Members. Nonvoting members may include the following:

- (a) TF command sergeant major.
- (b) Supported FOS representative.
- (c) Contractor's site manager.
- (d) AAFES manager or representative.
- (e) Other U.S. Forces operating in the area of operation.

c. Meetings.

(1) The BCPB will meet at least once each quarter.

(2) The executive secretary will record the minutes during BCPB sessions. The executive secretary will prepare the meeting agenda, read-ahead packets, and other administrative requirements. The minutes will record those voting members in attendance and those absent, nonvoting member attendance, and topics discussed (including issues, points of discussion, and board recommendations with vote tallies).

d. Approvals. The board is required to recommend formal approval for—

- (1) Components of the BCMP.
- (2) FOS architectural and design themes.
- (3) Other items within the purview of the board's charter as designated by the TF commander.

GLOSSARY

1SG	first sergeant
AAFES	Army and Air Force Exchange Service
AB	ablution
ADCON	administrative control
AFN	American Forces Network
AOR	area of responsibility
ARFF	aircraft rescue and firefighting
ASG	area support group
ASP	ammunition supply point
AST	area support team
BCMP	base camp master plan
BCPB	base camp planning board
BLAHA	basic load ammunition holding area
CAHA	captured ammunition holding area
CIF	central issue facility
COA	course of action
COCOM	combatant commander
CONOPS	contingency operations
CSL	cooperative security location
CSM	command sergeant major
DCG, USAREUR/7A	Deputy Commanding General, United States Army Europe and Seventh Army
DCSENGR	Deputy Chief of Staff Engineer, United States Army Europe
DFAC	dining facility
DG	distributed generation
DLA	Defense Logistics Agency
DOD	Department of Defense
DODI	Department of Defense Instruction
DOL	director of logistics
DPW	director of public works
DRMO	Defense Reutilization and Marketing Office
DS	direct support
DTR	dental treatment room
DX	direct exchange
ECU	environmental control unit
ERMC	United States Army Europe Regional Medical Command
EST	Engagement Skill Trainer
FM	field manual
FOD	foreign object damage
FOS	forward operating site
FP	Force Provider
GFCI	ground fault circuit interrupter
GP	general purpose
HEMTT	heavy expanded mobility tactical truck
HFPE	United States Army Health Facility Planning Agency, Europe Region
HVAC	Heating, Ventilation, and Air Conditioning
Hz	Hertz

IC	internal combustion
IDS	intrusion detection system
IMCOM-Europe	United States Army Installation Management Command, Europe Region
JARB	Joint Acquisition Review Board
JCC	Joint Contracting Center
kW	kilowatt
LSA	life-support area
METT-TC	mission, enemy, terrain, troops, time, and civilians
MILVAN	military van (container)
MKT	mobile kitchen trailer
MOS	military occupational specialty
MP	military police
MWR	morale, welfare, and recreation
NATO	North Atlantic Treaty Organization
NBC	nuclear, biological, and chemical
NEW	net explosive weight
NFPA	National Fire Protection Association
NSC	network service center
NSF	net square feet
O&M	operations and maintenance
PM	Provost Marshall, United States Army Europe
psi	pounds per square inch
PX	post exchange
ROWPU	reverse osmosis water purification unit
SAVT	Small Arms Virtual Trainer
SCIF	secure compartmentalized information facility
SEAhut	Southeast Asia hut
SES	Senior Executive Service
SF	square foot
SGM	sergeant major
SSA	supply support activity
SWB	sanitary wall board
TF	task force
TOC	tactical operations center
TOE	table of organization and equipment
UFC	Unified Facilities Criteria
UPH	unaccompanied personnel housing
U.S.	United States
USACE	United States Army Corps of Engineers
USAFE	United States Air Forces in Europe
USAREUR	United States Army Europe
USEUCOM	United States European Command
VTC	video-teleconference