

CHAPTER 4

DETERMINATION OF REQUIREMENTS FOR BASE DEVELOPMENT

4-1. Key Considerations in Determining Requirements

The key considerations in determining base development requirements are—

- a.* Mission and operational objectives to be accomplished.
- b.* Total force structure required to accomplish the mission.
- c.* Target dates and expected duration of projected operations.
- d.* Expected troop and equipment density by geographic location.
- e.* Standards of construction.
- f.* Phasing troops and equipment over stated time periods.
- g.* Assessment of the impact of environmental conditions in the area of operations.

4-2. Base Development Parameters

a. Broad parameters of the base development program are established during initial planning to visualize the total spectrum of requirements.

b. These parameters include gross facility requirements by service, by indigenous and allied forces (when applicable), and by major area locations for the following principal types of facilities:

(1) Operational facilities, such as airfields; communications systems; naval aids; petroleum, oil, and lubricants (POL) pipelines and dispensing systems; and ports and beaches (including number and capacity of berths and beach ingress and egress routes).

(2) Maintenance facilities, including aircraft, vehicles, marine, railroads, weapons, and electronics and communications.

(3) Storage facilities.

(4) Hospitals, dispensaries, and dental clinics.

(5) Administration facilities.

(6) Troop housing and community facilities.

(7) Electrical power and water.

(8) Lines of communications.

4-3. Determination of Gross Facility Requirements

a. These sequential steps normally are undertaken to determine gross facility requirements—

(1) The contemplated contingency operation is oriented to a projected geographical area.

(2) The basic maneuver elements necessary to undertake the desired operations are determined.

(3) The total of the basic maneuver elements then is used as the base point for determining the total of combat support and combat service support units required to constitute the entire force structure.

(4) A required buildup plan and schedule to execute the operation plan (OPLAN) are next established.

(5) The phased consumption needs of the force can then be translated into related facility requirements. This translation takes place through the use of planning factors based on anticipated consumption rates for all types of supplies, theater stockage objectives, theater equipment, and patient evacuation policies.

b. The translation of consumption and service needs to facility and installation requirements can be accomplished by relating the force structure to the required supporting facilities.

c. Force structure facilities include airfield parking aprons; truck parks; troop housing and messing; maintenance facilities; community support facilities such as exchanges, chapels, service clubs; dispensaries; and utilities. Construction planning factors utilized for these determinations include (but are not limited to) square yards of parking apron, square feet of maintenance shop per number of vehicles serviced, square feet per man for housing or administration space, and gallons of water required per man per day. Planning factors in a theater of operations are provided by the theater commander with input provided by subordinate commanders.

d. Facilities making up the logistic base in-

elude bulk POL storage and handling; helicopter facilities, airfield runways, taxiways, revetments, and parking aprons; hospitals; personnel replacement facilities; ports, beach sites, and deep draft piers; covered, open, and cold storage; hardstand; ammunition storage; communication networks; and lines of communications. Logistic factors applicable to these facilities include theater stockage objectives for all classes of supply; consumption rates per man, vehicle, aircraft, or weapon; theater patient evacuation policy and personnel replacement policy; tonnage of supplies and materiel to be imported per day, per week, per month; and the rate of buildup to stockage objectives. Construction planning factors are then applied to determine the quantity of facilities required.

e. The construction planning factors at this stage in base development planning reflect the total broad requirements within prescribed functional facilities groupings. They do not substitute for the detailed compilation of planning data that must be accomplished for complete development of installations and bases.

f. To assist the planner in development of gross planning factors, the Directorate of Military Engineering, Office Chief of Engineers (OCE), Washington, D.C., has developed gross planning factors keyed to appropriate DOD category code numbers. They are developed from various published criteria and theater experience. These factors have not been published and may be obtained from OCE.

4—4. Assessment of Available Facilities

In-Country

a. When possible, planners will utilize local facilities are available resources from in-country and neighboring countries that host countries are willing or able to provide. Planners can obtain information as to type, quantity, and quality of existing assets from National Intelligence Surveys, U.S. Military Assistance Programs (MAP), U.S. Agency for International Development (AID), and U.S. private corporations operating in the contingency area. Defense Intelligence Agency (DIA) area studies are good sources of information for determining local assets. The availability of existing local resources must be assessed conservatively until known otherwise. A safe assumption would be that only public facilities will be available.

b. The resources of U.S. corporations and industrial firms throughout the world may be avail-

able on a reimbursable basis. Construction firms, in particular, are valuable sources of technical assistance, construction equipment, and supplies. They may be able to provide contract construction support during early phases of the operation before major military construction resources arrive.

c. Planners utilize assets of the MAP and AID to support base development when possible. Nations receiving MAP assistance have complete control over the equipment and facilities released by the United States and, therefore, cannot be considered available to U.S. forces unless the host country is agreeable. The U.S. military has even less control over approved AID projects; however, the planner may contact the chief of the appropriate U.S. Military Mission or Military Assistance Advisory Group (MAAG) to ascertain what agreements are in effect or can be implemented for use of MAP facilities. The Department of State or appropriate U.S. embassy must be consulted concerning possible use of AID resources.

d. Host country troop construction support will rarely be available in underdeveloped countries. Generally, these forces have insufficient engineering capability to satisfy their own needs; more likely, they will depend on U.S. forces for facilities construction.

e. Planning must provide for acquisition, allocation, controlling, utilization, rehabilitation, and disposal of indigenous facilities including real estate for siting new facilities. When possible, real estate and facility usage agreements with host country are initiated before operations begin. Agreements cover length of occupancy, method and amount of reimbursement, modifications to be performed by U.S. forces, credit to the United States for facilities turned over to the local government, and use of the facilities (whether U.S. or combined). JCS Pub 3, section HI, provides detailed guidance on real estate policies and responsibilities in oversea commands.

f. The availability of indigenous manpower is evaluated in all base development plans (BDP). Although unskilled labor is available in most countries, skilled labor is generally in short supply. Therefore, to employ a balanced work force, skilled personnel may have to be provided from other sources.

g. Indigenous construction materials may be utilized when it is most feasible. The type, location, quantity, and accessibility of construction materials may be determined from intelligence

reports, and, where feasible, from onsite reconnaissance. Local procurement of construction materials provides savings in cost and reduction of leadtime for delivery.

4—5. Determination of Net Facility Requirements

a. By subtracting the available facilities from the total of gross facility requirements, the base development planner determines the net facility requirements to be satisfied through new construction, rehabilitation, or substitution by other facilities. The net requirements provide the basis for determining—

- (1) Acquisition of real estate.
- (2) New and/or rehabilitated facility construction.
- (3) Materiel requirements.
- (4) Combat service support forces to be added to the force structure given in the OPLAN.
- (5) Contractual services.
- (6) Time phasing.

Analysis of these factors may influence the OPLAN and the logistic plan (LOGPLAN) and require adjustments in force structure, standards of construction, readiness dates, and phasing of operational objectives.

b. After the planner has determined net requirements for facilities, real estate, and the associated phase scheduling, he then evaluates the construction force requirements. Army engineer construction force requirements may be determined from factors given in the Army Facilities Components System (AFCS) and FM 101-10-1. This does not, however, identify requirements for special construction units, such as well-digging crews and equipment, civil contract construction firms, equipment support organizations, and special augmentation equipment. The planner also identifies those tasks that have to be accomplished by specialized units e.g., marine facilities by port construction companies, well drilling by engineer well-drilling detachments. Further, facility requirements are analyzed to identify important tasks for which special units or additional equipment may be required. For example, aggregate production required for roads, airfields, hardstand, and concrete building foundations should be compared with the gross production capabilities of the number of construction battalions approximated previously. This comparison ordinarily identifies need for additional rock-crushing plants, which may be provided for in the construction force in the form of engineer light equipment or construc-

tion support companies, 500-series TOE team and detachment, or by augmenting units in the force with additional military or commercial plant capability. Net requirements for facilities should also be evaluated to identify those that can or should be accomplished by contract construction forces. Factors to be considered are—

- (1) Physical security and defense of construction site.
- (2) Construction of a highly sophisticated or complex nature demanding skills and equipment normally not found in a troop construction unit.
- (3) The ability of the contractor to mobilize a construction force in keeping with the phasing and priorities of the BDP. Similarly, an evaluation of facility requirements should be made to determine those that can be accomplished by occupying units under a self-help program. Such programs are particularly applicable to troop cantonment areas. With technical assistance, most military units can construct their own (temporary) billets.

c. The BDP of the theater commander may indicate that other construction forces are available such as Navy construction units (SEABEES).

d. In most situations involving base development, the total requirements likely will exceed execution capabilities for some time. Therefore, a system of priorities is established to insure that the most critical needs of the theater are met first. These priorities are established at the joint command or theater command level. The system established initially emphasizes operational and logistic requirements at the expense of personnel support and community support elements. The priority system is based on these broad categories of requirements:

- (1) Operational and logistic facilities.
- (2) Personnel support facilities including cantonments (shelter, mess, sanitation).
- (3) Other personnel support facilities (those that provide improved living conditions).
- (4) Welfare and recreational facilities.

e. Initial construction is limited to minimum essential facilities to reduce the scale of construction resources required as much as possible when shipping demands and other logistic requirements are at their peak. Careful phasing in of construction resources is necessary to preclude disproportionate demands on the logistic system. Command attention is required to balance the buildup and demand of construction resources with those necessary to launch and sus-

tain combat operations. Continued application of the priority system is necessary to avoid an imbalance in program execution and to preclude exceeding established priorities and construction standards. In this respect, the entire needs of the contingency area, including the needs of the separate services, should be treated within a single area priority system.

f. Closely associated with priorities is the requirement for a detailed coordinated time-phasing plan. Planners start with the desired occupancy date and work backwards to determine construction force deployment schedules and appropriate shipping dates for materials and equipment. Shipping and port schedules can then be worked out to meet construction requirements. Since sufficient resources are seldom available to meet all base development requirements for a military operation, planners try to balance requirements and capabilities. Various means to overcome shortages in engineer construction units have been discussed. The use of prefabricated buildings and other pre-engineered facilities provides savings in manpower and time for erection. Additionally, construction requirements may be reduced by lowering standards of construction to the lowest standard capable of fulfilling immediate essential requirements. Several options are available for reducing the amount of construction materials and equipment to be shipped during deployment. These include prepositioning theater reserve stocks, maintaining forward floating depots, prehostilities construction, and offshore procurement. The trade-offs inherent in employing each of these approaches must be evaluated in the light of specific conditions for each proposed operation.

4—6. Troop/Contractor Mix

a. General. Experience indicates that rarely has there been an adequate troop construction capability in being to satisfy the construction requirements of a major contingency operation in an underdeveloped area or country. Therefore, U.S. forces have been forced to resort to a troop/contractor mix in base development planning.

b. Considerations.

(1) The troop/contractor mix is a major consideration for base development planners in the base development planning process. The mix considerations are complex and closely interface with other considerations in the total planning process. For example, the base development planner must consider the force structure, operational objectives, sensitivity of facility, avail-

ability of troop construction forces, contractor capability, availability of local skilled labor, magnitude, time phasing of construction requirements, and the estimated duration of the contingency. When the troop and indigenous contract construction capability is insufficient to execute large and/or complex construction programs in contingency situations, plans will be oriented toward use of a civilian contract. The number and size of the contracts will depend on the size of the program, geographical considerations, and required construction completion dates. Services of the designated DOD construction agent will be utilized in the establishment of construction contracts.

(2) Detailed analysis of the trade-offs involved in the decisionmaking process regarding troop/contractor mix in any given contingency must consider—

(a) The availability of personnel resources.

(b) Materiel resources. In industrialized nations, a sufficient base of materiel assets may exist; for example, mass importation of materiel through a long logistic pipeline may not be necessary as in long-distance underdeveloped areas.

(c) Funds. Adequate funding on a phased basis must be available.

(d) Effort required. The size and rate of the combat force buildup greatly influence construction execution.

(e) Complexity. The technical requirements of the task must be viewed in terms of available skills of the construction troops/contractor(s) to determine what, if any, augmentation of skills is required. For example, construction requirements may be concentrated in a narrow range of skills (road building), or they may include the full spectrum of technical skills (waterfront, pier development, dredging, electronics, electrical power production and distribution, heating, air conditioning, POL systems, structural design, and development). Many of these projects require skills and equipment beyond those found in normal construction units.

(f) Mobilization/demobilization. Establishment of the phaseout of contractor and troop units in-country requires time and funds. Planners must phase carefully to avoid excessive costs in movement of construction units in and out of country.

(g) Security. Enemy action at the construction site may help to determine whether civilian contractors will be allowed in the area. The degree of insurgency within the host country

will influence labor force security requirements and utilization of indigenous labor. Security conditions help to determine whether dependents, military or contractor, will be allowed in-country which, in turn, influences compensation for the U.S. and third-country national civilian workers.

(h) *Political aspects.* Agreements with host countries in a theater of operations normally address utilization of military units or U.S. or third-country national workers in-country. Coordination with local embassy and host country ministries is important to establishing a plan for utilization of troops or contractors, or both. Other factors influencing the mix are gold flow considerations, a requirement to maximize use of local labor, and programs directed to development of in-country economic assistance.

(3) As a basic concept on construction troop/contractor mix for a contingency operation, planners should consider the use of construction troops in the initial lodgment and buildup phases of base development, followed by the introduction of contract forces to perform construction in enclave/secure areas. Later, troop construction forces can move forward with the tactical forces and devote their major efforts to supporting tactical requirements.

(4) Base development planners must insure that construction forces are not utilized to perform facility maintenance once the base has been developed. This represents a misapplication of resources and a dilution of already limited construction capabilities. Base development planners must, therefore, provide for essential facility *maintenance* forces to insure the availability of construction forces to perform their primary mission. Maintenance forces must be phased in to assume responsibility for facility maintenance on completion of construction. If U.S. force maintenance units are not available, the base development planner considers alternatives such as the use of civilian contractors or indigenous forces, or both.

c. Steps To Determine Troop/Contractor Mix.

(1) *Planning.*

(a) Develop construction requirements.

(b) Evaluate available assets and conditions in-country.

(c) Analyze potential workload against construction troop capabilities to determine whether contract augmentation is required for overall capability and/or sophisticated construction.

(d) Determine whether additional con-

struction capability beyond assigned units is available.

(e) Recommend a troop/contractor work split so that a troop/contract scope can be defined.

(f) Adjust construction plans and troop/contractor work split in consonance with assets made available by higher authority.

(2) *Execution utilization.*

(a) Construction troops are utilized for forward area tactical support and other projects as required.

(b) Contractors are utilized in more secure areas and for more sophisticated projects in enclaves.

(c) Local contract capability is used if available.

(3) *Phase-down.* Once the construction program has stabilized, prepare for phase-down of contract operations to convert main effort to construction troops. Order of phase-down normal] y proceeds as follows (some may be phased down concurrently):

(a) Reserve units (if used).

(b) Major contractors.

(c) Newly activated troop units.

(d) Troop units.

(e) Local contractors.

4—7. Other Planning Requirements

BDP generates some information requirements in addition to those defined above and in JCS Pub 3.

a. The bases that the base development planner has provided for must be operated and maintained after they are constructed. The base development planner should insure that the necessary utility, operating, and maintenance teams required to operate those bases are included in the troop list.

b. The base development planner should identify and summarize those conditions that will adversely influence the base development program. The solution of these problems may be outside the responsibility of the base development planner, but he will be the first to identify the condition and it is his responsibility to define the problem area. These are the most probable conditions that will act as constraints on the base development program:

(1) The dispersal requirements in view of probability of a chemical, biological, or nuclear threat may generate serious problems on acquisition of real estate, dollar costs, and line of communications distances.

(2) The dollar cost may be excessive because of high standards of construction or unrealistic requirements of the OPLAN.

(3) Construction delays may be excessive because of the priorities, standards of construction, the concept of operations, or the small size of the construction force.

(4) Movement of construction supplies and materiel may be a constraint because of the exist-

ing line of communications network or the standards of construction that generate large transportation demands.

(5) The OPLAN may generate excessive construction requirements for a base at one specific location. The relocation of the base may significantly reduce the construction effort with little effect on the OPLAN.