US Army Corps
of Engineers
Headquarters

Master Planning Instructions

9 July 1993

U.S. Army Corps of Engineers
Engineering Division
Directorate of Military Programs
Washington, DC 20314-1000

FOREWORD

This Master Planning Instruction (MPI) has been developed to provide real property master planning criteria and guidance for all Corps of Engineers Major Subordinate Commands (MSC), District Commands, Field Operating Activities (FOA), and Major Army Commands (MACOM). This MPI should be used as a guide when accomplishing real property master planning at Army installations. The MPI is not intended to be contractual instructions to Architect Engineers (AE); however, this document may be used in conjunction with AE contracts provided it is tailored to the contract requirements.

This MPI is a living document and will be periodically reviewed, updated, republished, and redistributed to MSC, District Commands, FOA, and MACOM. CEMP-EA is responsible for maintaining this MPI. Suggestions, revisions, additions, and deletions to this MPI, with rationale for the changes, should be sent to HQUSACE, ATTN: CEMP-EA, Washington, DC 20314-1000. Comments may also be submitted by automated means using the "suggestion box" feature within DCIS. All comments will be reviewed by the HQDA Master Planning Steering Committee prior to incorporation into the document.

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FOR THE DIRECTOR OF MILITARY PROGRAMS:

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CHAPTER 1

MASTER PLANNING POLICY AND PRACTICE

1. GENERAL.

a. Purpose. These Master Planning Instructions (MPI) prescribe procedures and provide technical criteria for the preparation and updating of installation real property master plans (RPMP), formerly known as installation master plans. This chapter provides an overview of the RPMP and provides guidelines for the practice of Army master planning.

b. Applicability. This document applies to the development of RPMP for CONUS and OCONUS Army installations and is not intended to be contractual instructions to Architect Engineers (AE). However, if this document is tailored to specific contract requirements, it may be used in conjunction with AE contracts.

c. Referenced Documents. The DoD Directives and Instructions, and selected publications, standards, and technical data referenced throughout the chapters in these instructions are a part of these criteria. The Architectural and Engineering Instructions (AEI), "Design Criteria," (reference 1-1) will be used in conjunction with this MPI.

d. Superseded Documents. The following technical policy guidance documents are superseded by these instructions:

Document Title:	Publication Date
TM 5-803-1, Installation Master Planning	13 Jun 86
TM 5-803-8, Land Use Planning	26 Aug 86
TM 5-803-9, Transportation Planning, Inst. Master Plan	1 Apr 89
ETL 1110-3-385, Land Use Planning	19 Feb 88
ETL 1110-3-390, Transportation Plng, Inst. Master Plan	10 Jun 88
ETL 1110-3-404, Utilities Syst. Plng, Inst. Compreh. Plan	18 Aug 89
ETL 1110-3-405, Fire Prot. Plng., Inst. Compreh. Plan	18 Aug 89
ETL 1110-3-406, Long Range Fac. Dev., Inst. Compreh. Plan	20 Sep 89
ETL 1110-3-407, Environmental Quality Planning	3 Dec 89
ETL 1110-3-408, Comprehensive Plng. Data Sources	20 Oct 89
ETL 1110-3-409, Comprehensive Plng. Approach and Process	20 Oct 89
Chapters 1, 2, and 5, Master Planning Instructions	29 Jun 92

2. REAL PROPERTY MASTER PLANNING PHILOSOPHY AND POLICY.

Installation real property master planning is based on assigned installation missions and guidance contained in a variety of plans and other documents. These references establish trends, strategies, goals and objectives upon which Army planners may base long-range and near term plans for economical, environmentally responsible, and effective support of Army goals, objectives, missions and populations. While such planning involves the same factors governing civilian community planning, it is controlled and directed by Army-wide policy and requirements.

a. Real Property Master Planning. The real property master planning process is oriented upon Army real property facilities management and acquisition. The process is described as follows:

(1) Iterative process. Real property master planning for each CONUS and OCONUS installation or community is a process established by AR 210-20, Master Planning for Army Installations (reference 1-2). The process is guided by Headquarters, Department of the Army (HQDA), Headquarters, U.S. Army Corps of Engineers (HQUSACE) and the U.S. Army Engineering and Housing Support Center (EHSC), approved by Major Army Command (MACOM), accomplished by the installation engineer, managed by a Real Property Planning Board (RPPB) at each community or installation, and supported by USACE divisions and districts. Although the process is described in steps, it is really an iterative, never-ending series of actions, which often occur simultaneously and almost never in perfect sequence. The steps are as follows:

(a) Mission and strength. Identify the assigned troop units, tenant activities and community support organizations, their missions, and their needs.

(b) Criteria. Apply real property criteria to the force structure to determine facility and other real property issues.

(c) Assets. Identify real property assets.

(d) Requirements. Determine real property deficiencies, excesses, and nonstructural needs (e.g., utilities and training lands).

(e) Alternatives. Define and evaluate alternatives to satisfy deficiencies, eliminate excesses, and satisfy nonstructural needs.

(f) Constraints. Consider developmental constraints including environmental considerations.

(g) Solutions. Identify preferred solutions to satisfy real property requirements.

(h) Programming. Develop programming actions for prioritization and approval.

(i) The customer. Involve the customer throughout the entire process.

(2) Planning guidance. Among the plans and other documents that govern Army real property master planning are the Army Long-Range Planning Guidance (ALRPG), the Army Long-Range Facilities Plan (ALRFP), The Army Plan (TAP), the Program Objective Memorandum (POM), Program and Budget Guidance (PBG), the Structure and Manpower Allocation System (SAMAS), the Resource Management Plan (RMP)/Annual Work Plan (AWP), the Unconstrained

Requirements Report (URR), and the Army Stationing and Installation Plan (ASIP).

(3) Integration of other plans. RPMP analyze and integrate many operational and developmental plans in order to support the interests of installation engineering, housing and environmental functions, other installation primary staff functions, real property controlled by assigned organizations, and tenant activities, while respecting the guidance and interests of higher headquarters and local communities. These plans become contributing documents to the RPMP.

(4) Record of the planning process. The RPMP is a record of the planning process in graphic, narrative, and numeric form, portraying the present composition of the installation, the present allocation of real property resources, the potential for expansion, and the plan for its orderly management and development to support its missions in the most efficient and economical manner. The RPMP governs execution of real property improvement goals and objectives over the Army's operational planning period (current budget and POM years).

(5) Framework for decision-making. The RPMP is a planning framework within which Army decision-makers establish future directions for utilizing, expanding or downsizing installations; manage limited real property resources; coordinate installation development with local community interests; anticipate controversial actions; guide construction and acquisition programming; manage facilities utilization; develop interim actions that can be used until planned actions can be accomplished; and plan the installation's real property maintenance activities (RPMA).

b. General Policies. The following policies govern the development and maintenance of RPMP:

(1) Army real property planning goals and objectives. The installation RPMP will conform to the following Army-wide planning goals and objectives:

(a) The Army Plan (TAP). The five basic concepts of the Army real property investment strategy are ranked and stated in TAP as follows:

1/ Maximize facilities utilization. RPMP will strive for the best allocation of existing facilities, utilities, transportation networks and information systems, including use or lease agreements with other DoD, Federal, state, or local agencies. The RPMP will stress maximum use of existing adequate facilities and disposal of unneeded facilities. All facilities and allowances will be based on the real property inventory maintained by the installation engineer. The policy directs making maximum use of non-structural alternative solutions that do not require new construction. Examples of these alternatives include conversion of existing facilities, reassignment of activities to improve facilities utilization, use of facilities at nearby DoD installations, and rotational scheduling of

training land.

2/ Maintain. Maintain what we own, and contain or reduce the Backlog of Maintenance and Repair (BMAR) and Deferred Maintenance and Repair (DMAR).

3/ Meet regulatory and environmental concerns. RPMP will demonstrate leadership in, and compliance with, the letter and intent of Federal, Department of Defense (DoD), and Department of the Army (DA) policy guidance documents that govern or influence the practice of planning, to include pollution abatement and energy management policies, and the National Environmental Policy Act (NEPA) of 1969 (Public Law 91-190) (STAT 853) (reference 1-3), as implemented by AR 200-1, Environmental Protection and Enhancement (reference 1-4).

4/ Renew. Renew facilities (rehab, replace, eliminate deficiencies), including the supporting infrastructure.

5/ Provide new facilities. This alternative is the "last resort" for providing facilities. No new construction will be proposed in the RPMP which can be supported by existing under-utilized adequate facilities, provided that the use of such facilities does not degrade the operational efficiency.

(b) The Army Long-Range Facilities Plan (ALRFP). There are seven goals established by the ALRFP as follows:

1/ Recruit and retain. Support the Army's ability to recruit and retain a motivated, well-trained military and civilian force by providing quality living and working environments.

2/ Base operations. Support the force through the efficient and effective operation of installations resulting from quality productive work and living environments, and effective management techniques.

3/ Future roles. Support future Army roles, missions and war-fighting doctrines with facilities that sustain forward deployment, mobilization, force protection, and rapid worldwide troop deployment requirements.

4/ Stationing. Support the Army's evolving force structure and future stationing by properly aligning installation support capabilities with unit stationing requirements.

5/ Systems. Support modernizing war-fighting systems and emerging technologies to maintain U.S. military prowess.

6/ Training. Support future training to assure development of a quality career force that is technically proficient and adaptable.

7/ Environment. Operate installations and conduct Army activities in an environmentally responsible manner.

(2) Authorized planning strength. Requirements for short- and intermediate-range planning, to include requirements for maintenance and repair funding, leasing, other-funded activities and peacetime permanent-type construction, are based on planning strengths reflected in the Army Stationing and Installation Plan (ASIP). The mission statement of the installation is the basis for planning at U.S. Army Materiel Command and other industrial-type installations.

(3) Standardization. Repetitive-type facilities will be planned in accordance with the DA Facilities Standardization Program. Mobilization facilities will be planned in accordance with "M" Series designs whenever possible.

(4) Regional complex plans. One consolidated RPMP should be prepared, whenever practical, for several Army installations in the same geographical area, those under a common command, or those sharing a common mission.

(5) Allowances versus requirements. These two terms are often used interchangeably, which is incorrect. A facility allowance is what current criteria authorizes for a particular function. A facility requirement results from coordinating the allowance "on the ground" by directly coordinating with a prospective facility user and obtaining Real Property Planning Board (RPPB) approval of the user's stated needs. All requirements that exceed the allowances must, of course, be fully justified by the user.

(6) Show all major requirements. The RPMP will reflect all construction and revitalization projects exceeding an estimated cost of $300,000; all major maintenance and repair projects exceeding an estimated cost of $500,000; and all land acquisition projects regardless of the source or amount of funds.

(7) Expansion. Leave room in all planning to accommodate future additions and expansions. Where future expansion capability cannot be estimated, experience has shown that a "rule of thumb" 25 percent expansion factor is not excessive. For example, troop installations with a Reserve Component "round-out" brigade should allocate land to accommodate that organization, because this third brigade might become an active component organization. Planning for light force structure installations should be based on the possibility that heavier units might be assigned.

(8) Compatible and incompatible uses. Good planning requires identification and knowledge of environmental hazards, potential sources of aggravation, and on and off-post land uses which are incompatible. Sensitive activities such as housing, schools, administrative facilities, and morale, welfare and recreational facilities should not be sited in areas subject to environmental hazards, aggravation or incompatible uses.

The environmental analysis and overlay documents these constraints.

(9) Contiguous development. Avoid planning "tailored," isolated complexes of troop housing and support facilities for specific units and organizations. Army stationing and force structure always changes. Units shrink, grow, appear and disappear. Plan housing and support facilities so that they are as contiguous as possible to other like facilities. This arrangement facilitates flexible reassignment of under-utilized facilities, or assignment of additional facilities to expanded organizations.

(10) Peacetime requirements govern. Plans for mobilization or other expansion will not conflict with, or take precedence over, the plan for permanent peacetime development. Allocate prime land areas for permanent peacetime development. Apportion less desirable land for contingency expansion. Do not propose mobilization and other temporary facilities within areas or on sites designated for permanent peacetime development.

(11) Inspect each proposed site. Visit (walk) the project areas or sites before generating or revising any RPMP or programming documentation. Obtain USACE district assistance regarding site inspections for flood plain, wetland involvement, or other possible site restrictions.

(12) Temporary buildings on prime sites. Do not retain temporary buildings located on prime land areas if this causes acceptance of less desirable locations for the permanent development, or causes the inefficient, unattractive scattering of permanent facilities between groups of temporary facilities.

(13) Disposal and retention of temporary buildings. Accomplish removal or relocation of temporary facilities not subject to replacement by permanent construction in accordance with AR 415-15, Military Construction, Army (MCA) Program Development (reference 1-5); AR 405-90, Disposal of Real Estate (reference 1-6); and AR 420-70, Buildings and Structures (reference 1-7). For the sake of economy, plan permanent construction on sites presently occupied by temporary facilities before using totally undeveloped sites. Temporary buildings will not be used as permanent solutions to satisfy the facilities requirements of new missions. Temporary facilities will not be retained unless absolutely warranted by mission necessity.

(14) Installation - U.S. Army Corps of Engineers (USACE) relationship. The installation is the customer of the USACE district. Districts should include installation representatives in all planning support activities to include scoping of planning services, AE selections, field work at the installation and local community, on-board and formal reviews, and planning meetings and presentations. USACE districts support the Mobilization Component (MC) process, exercising the Direct Support (DS) and General Support (GS) District concept. GS districts are offices that have only Civil Works missions during peacetime, but assume military support missions during mobilization. GS districts prepare the MC for the installations they would support during mobilization under the

supervision of the (DS) district that provides military support during peacetime. This means that some installations work with a different district during MC preparation, while others are supported by one district performing the GS and DS missions.

3. THE RPMP. This paragraph presents a short overview of the components of the RPMP. See Chapter 2 of these instructions for a complete discussion.

a. Long-Range Component (LRC). The LRC establishes the basic framework and specific options for developing and managing the installation; documents installation capabilities, constraints and opportunities; and specifies optimum land use, and expansion capabilities based on a thorough environmental baseline analysis. The elements of the LRC are the long-range analysis; environmental quality, natural and cultural resources baseline analysis; land use analysis; utilities assessment; transportation assessment; supporting graphics to include various plans, an environmental overlay, and the installation design guide.

b. Capital Investment Strategy (CIS). The CIS is the installation commander's plan for using and investing in real property to support installation missions and the objectives of the ALRFP; a status summary of of real property support for installation missions and a link between real property deficiencies described in the LRC and the projects listed in the SRC. The elements of the CIS include an executive summary; consideration of alternatives; an action plan; and supporting graphics. The CIS is supported by the tabulation of existing and required facilities (TAB); additional graphics to include the future development site plan; the environmental analysis; and the facilities reduction plan.

c. Short-Range Component (SRC). The SRC integrates real property master planning into the Army's operational planning process over the six-year POM period, implementing the CIS by specifying projects for real property management and development. The SRC reflects the installation commander's plans for facilities construction, revitalization, major repair, major environmental undertakings, and disposal actions. The SRC incorporates the facility investment plans of non-appropriated funded and other separately funded activities. The elements of the SRC include the overview; the real property investment plan (RPIP); and supporting graphics including site-specific project location plans, and site-specific extracts of the environmental overlay.

d. The Mobilization Component (MC). The MC supports the mobilization planning strategy of the installation. It develops the expansion capability analyses of the LRC into specific plans to allocate facilities and acquire needed additional facilities to support mobilization missions, functions and tasks. For industrial installations, the MC will follow MACOM guidance published in a MACOM supplement to AR 210-20 (reference 1-2). The MC consists of a narrative report; land use plan; mobilization tabulation of existing and required facilities; mobilization site plans; and environmental analysis.

4. APPROVAL, REVISION, UPDATE AND REVISION OF RPMP. The MACOM have approval authority for RPMP prepared by installations in their respective commands, as specified by AR 210-20 (reference 1-2). The supporting USACE district can assist with reproduction and mailing of RPMP documents requiring approval.

5. THE ROLE OF AN ARMY MASTER PLANNER. A master planner has a complex job that involves higher headquarters, the installation commander and command group, military units, organizations, residents of the installation and surrounding communities, the USACE district, and the master planning office itself. In addition to RPMP responsibilities, the master planner programs military construction projects, may be the liaison between the installation and the design and construction agent for projects, and may be asked to perform a variety of special projects. This challenging workload must be accomplished with shrinking budgets and manpower allocations. The remainder of this chapter outlines how to practice master planning under today's challenges. Not all suggestions are applicable to any one situation. For example, suggestions given for offices that have several staff members do not apply to a one-person planning operation.

a. Managing Change. It has been overheard from master planners, "I am swamped with unit stationing exercises, 'what if' exercises, changes to the military construction program, orchestrating the Army Communities of Excellence (ACOE), Base Realignment and Closure, Facility Reduction, and Environmental Improvement Programs, etc. When am I going to do any real master planning?" The answer is, "You are doing real master planning right now." Army master planning is not the same as campus planning or community planning in a small town. Constant change is a part of the Army. An anticipatory, accepting attitude toward the turmoil that goes with change is an essential part of the job. Successfully meeting deadlines, solving day-to-day problems, accomplishing special projects and making the inevitable changes, not long-range planning issues, are what justify the planning operation in the minds of most managers and commanders.

b. Advisor. A master planner is not a decision-maker. A master planner is an advisor to the decision-makers in the command group at the installation, at the MACOM, and at HQDA and above. The Army constantly demands decisions from its commanders. If commanders must make these decisions in the absence of good advice, they have been done a serious disservice. The primary job of a master planner is to give decision-makers a realistic set of alternatives and sound courses of action. Master planning advice is important because the legacy of a master planning decision lasts for decades, possibly even centuries.

c. Facilitator. An Army master planner is seldom "the expert" in anything except project development and master planning. Instead, a master planner must be an organizer, ambassador, coordinator, facilitator, interpreter, and a collector and repository of information. Seek expert help when it is needed. Learn to assemble groups of experts, or

groups of information. Do not try to solve a big problem alone.

6. COMMUNICATIONS AND COMMUNICATIONS SKILLS. The effective operation of an installation planning office depends, first and foremost, upon communicating a positive customer care attitude, projecting a professional and competent image, and keeping information flowing between all who are responsible for the installation RPMP and the military construction program. These functions are discussed in detail below.

a. Customer Care. Customer care means supporting the soldier and his/her family as well as, or better than, could be found in the civilian sector. The primary customer is the military or civilian representative of a military organization who contacts the master planning office. Secondary customers are the MACOM or Major Subordinate Command (MSC) headquarters to which the installation is assigned, and HQDA staff personnel who have interest in the RPMP and construction proposals. Like most areas of life, first impressions are lasting. Set professional standards of dress, office conduct and neatness equal to the installation engineer's "front office," and the customer's impression will be favorable.

(1) The installation customer. Each customer is the embodiment of the soldier and his/her family. Make the customer feel like a welcomed guest, whether visiting by appointment or on a "walk-in" basis. The customer should be greeted right away, asked who he/she wants to see or what is needed, offered seating and offered coffee if available. The master planner or staff member should put aside any tasks at hand, including telephone conversations, and should attend to the customer's request.

(a) Minor requests. In most cases, a customer's request involves no more than answering a question, providing information, or copying a set of maps or plans. While this seems unimportant, the requestor views this as an important service and, if taken care of promptly and courteously, will regard the master planning office as a competent "corporate friend" of his/her organization.

(b) Major requests. If the customer's request is more involved, such as developing facility requirements or a construction project, have "take home" information on file that explains what needs to be done and how the overall process works. Talk the customer through the process and make sure there is understanding. Arrange a series of meetings during which the task will be negotiated and completed. If appropriate, provide the customer with worksheets necessary for initial project or requirements development. On construction projects, justification should be prepared by the customer, while budgetary and scoping information should be prepared by the master planner. Always let your management know when major work requests are received.

(c) The Army professional language. Just like many professions, the Army has a unique professional language. The glossary of these instructions provides some of the acronyms used in the Army today.

Try to learn as many terms as possible and try to converse with (and "listen, listen, listen" to) the military customer in his/her professional language. Learn the organizations, units and their capabilities for those

assigned to your installation, including tenants. Study a reasonably recent copy of The Officer's Guide (reference 1-8), available at the installation or USACE district library, to learn Army protocol and etiquette. Learn something about the Army uniform and insignia, because it contains information about each soldier including, rank, branch, special qualifications, and where this person has served. The management style and direction of Army units and organizations always reflect the characteristics of the incumbent military leader and staff. Watch Army promotion lists, and keep up with the changes in military leadership at the installation, the MACOM, the supporting USACE district, and HQDA.

(2) The MACOM and HQDA customers. Customers from higher headquarters usually contact the office by telephone. Telephone courtesy is essential. Answer the telephone with a descriptive title of your office, followed by your name, e.g., "Master Planning Branch, Bill Holmes speaking." Terms like "EP&S" or "ERMD" mean nothing to most callers. Keep use of phones for personal business to an absolute minimum. When MACOM or HQDA action officers call, they usually need information, and need it quickly. If it is not possible to provide an answer while the caller is on the line, state when you will call back with the answer. No matter how harried the caller from higher headquarters may be, show courtesy. The headquarters staffer's impression of the entire installation depends upon your telephone manners. The success of your RPMP revision, project, or other submission may depend on his/her actions. PAXMAIL electronic mail is used for MACOM and HQDA contact with the master planning office and demands the same prompt, courteous response. Also see a later paragraph in this chapter that addresses MACOM staff visits.

b. Coordination. Almost everything produced by the planning office to include policies, agendas, reports, special projects, submittals, and even routine correspondence must be reviewed and concurred in by the appropriate persons, units, organizations or activities before being dispatched. Of all planning skills, the ability to coordinate and achieve consensus may be the most valuable. If coordination and consensus is not achieved, with all concerned, the particular action doesn't really exist (or may invoke anger) and is not "owned" by anyone except the originator. A practical way to coordinate is to send, or give, simultaneous draft copies to all reviewers and ask for comment or concurrence by a certain date. Advise that you will either visit later, bringing the final document, or that telephonic comment or concurrence is acceptable. Make all reasonable changes recommended and negotiate the others. Then make appointments and visit each coordinating office for a formal concurrence on the final document. Don't just "drop in" to offices because it interrupts others' work routine; or people may not even be there. Coordination should be evidenced by the initials of the commander, director, or representative of each concerned activity before the document is signed and dispatched. An Army non-commissioned officer said it best, "If it ain't coordinated, it ain't."

c. Employee care. Much has been published regarding how to look after the best interests of employees while obtaining maximum productivity. "Doing unto others as you want done unto you" is the cardinal

principle to observe when managing the work of others. A few other suggestions are as follows:

(1) Mission versus employee. While the mission must come first and the soldier (or civilian employee) second, it is well to respect employee needs even if they sometimes conflict with the ideal accomplishment of a task. For example, an employee who has scheduled leave or training and has met all important work deadlines should not have it canceled at the last minute, or be called back, unless that delay would have extremely serious impacts (such as affecting a military operation).

(2) Capitalize on differences. Everyone's personality, work strengths, and preferences are different. For example, some persons can "pull good answers out of their back pockets"; others need "think time." Some keep a neat work area and others do not. Some talk often of their personal affairs, while others are more private. Some discuss work-related issues with fellow employees; others take their own counsel. Some perform well in an office; others need regular travel or field work. Some can be told to do a task, be left alone, and get it done; others need close supervision, and may need a "push." The examples could go on indefinitely. Within reasonable limits, allow employees individuality in setting up work areas, hours, and work relationships. The supervisor should strive to understand these personality differences, respect them, and capitalize on them to maximize productivity and employee satisfaction.

(3) Training. In a small office like a master planning operation, avoid compartmentalization of the work. The goal should be that each staff member can answer almost any question or complete any task no matter who is absent, without supervision. Training, cross-training, and breadth of experience is the answer. In addition to on-the-job training, seek formal training in master planning, programming, related automated systems and tools, design and construction management, and facilities engineering management. If possible, a new employee should work for short periods at the MACOM headquarters, the USACE district that supports the installation, the USACE resident or area engineer office, and in other branches of the installation engineer organization. New staff members should accompany more experienced personnel on visits to their HQDA, and HQUSACE and off-post counterparts. Mistakes will be made by new employees, but this is how master planning is learned. On-the-job cross-training can come from routing all incoming and outgoing correspondence through each staff member, having short staff meetings every so often, and making sure that each person has a variety of work assignments.

d. "Supervisor care." There are many books published about leadership and managing employees, but very little is available about the area of "followership". Conformance to the supervisor's management style is one

of the most important jobs of an employee, and is a sure key to success.

(1) Learn the supervisor. There are as many management styles as there are personality types, and none are inherently right or wrong. Some supervisors adhere rigidly to the organizational structure; others place

less emphasis on who is contacted in order to accomplish a task. Some "manage by walking around," while others may use tasking notes. Some get very concerned by deadlines; others want high quality even if the suspense is missed. Some will "back you up" in conflicts, while others expect you to fight your own battles. Some want to review and "ride herd" on everything; others allow employees to complete most actions with little review and control. When first assigned, the best way to begin learning the management style is to directly ask the boss how he/she runs the office.

(2) Conformance. Chances of an employee and a supervisor seeing "eye to eye" on everything are rare. Use the same interpersonal skills needed for success in planning to build a solid working relationship with your supervisor. Advertise and use your strongest skills to achieve the goals of the office. Use what the boss emphasizes to improve your weak areas. For example, training may be emphasized. Since you need training, capitalize on this and attend as much training as is reasonably possible. Use negotiating skills to iron out differences of opinion, recognizing that concessions by the supervisor aren't always going to happen.

(3) Decisions and criticism. It is the boss's job to make decisions. If you are asked to be a "devil's advocate," or critic, then it is acceptable to argue against an impending decision. However, once a decision is made, argument should stop. Do not allow criticisms within the office to be repeated outside the office, especially to customers.

(4) Following instructions. In the final analysis, it is the employee's responsibility to carry out lawful guidance and orders in a professional, responsive manner. At times when there is serious disagreement, and negotiation is impossible, it is wisest to "leave the ego at home" and do exactly as told.

e. Verbal Communication. While many people do not relate to, or fully comprehend writing or graphics, almost everyone relates well to a good speaker (and listener). A master planner must be able to conduct meetings, present briefings, and talk with military customers "in their own language." A good skill to develop is asking for "feedback." Tactfully ask people with whom you meet to "say back" what they have heard, and read back to them after they explain something. Use analogies or metaphors to clarify your concepts, e.g., "Our project list is like the 'do' list at home--we know we won't get everything done." Rehearse all formal presentations. "Hook" presentations to current command interests. For example, you know the commander is vitally interested in the "Power Projection Platform" concept. Show how rehabilitation of the on-post rail system and improvement of the airfield pavement enhances rapid deployment capability. Membership in

organizations such as Toastmasters International can contribute to improved verbal communications. Listening skills can be improved by courses in conflict management and negotiation.

f. Negotiating Skills. Differences of opinion are inherent to the master planning, construction programming, and design and construction

business. Negotiating skills are essential. Negotiation identifies what each party wants, what is mutually acceptable, what is marginally acceptable, and what is unacceptable. "Marginally acceptable" and "unacceptable" issues are then resolved. Each party gains on some issues and yields on others to reach consensus and achieve final agreement. Sometimes, a third party with no vested interest in the outcome can help the process. There is an excellent Proponent Sponsored Engineer Corps Training (PROSPECT) course entitled "Negotiation, Bargaining, and Dispute Resolution."

g. Written Communication.

(1) Good writing. The importance of written communication is illustrated by the DD Form 1391; its text can literally make or break an installation's project. Written communication also includes policy, planning submissions, RPMP documents, routine correspondence, and review comments. Writing skills can be improved by taking business writing courses, or by a couple of unconventional methods that are very successful. Reading one book every two or three weeks during off-duty time, no matter the subject, creates an "ear" for good writing. Another unconventional way is to have employees edit (without trepidation) the writing of their supervisor before it is finalized. One master planner had the clerk typist read each DD Form 1391. If the typist could not comprehend it, more work was needed. Such practices instill a sense of participation, allow employees to compare their own writing with their supervisor's and develop good editing skills.

(2) Know Army correspondence. In an era when clerical positions are disappearing, the planner should learn Army correspondence procedures and format in detail. Prepare and electronically file a sample of each type of correspondence. The samples can be used as a format to avoid mistakes. Also file appropriate "ladders" of coordination for various actions, so no one is inadvertently left out during a review process.

(3) Staff study or coordination paper. There are times when short-suspense planning or military construction issues arise and an RPPB meeting is not possible. In such cases, use a staff study or coordination paper to secure the comments or approval of the RPPB voting membership before forwarding the action to the installation commander for approval. The staff study should thoroughly state the problem or issue, discuss all aspects of the problem and alternatives for solution, and recommend the best solution to the commander to approve. Concurrence of each RPPB member is essential (see the paragraph on coordination above). Avoid going directly to the command group for approval of planning proposals without RPPB

coordination.

(4) Newsletters or bulletins. The master planner should consider circulating a periodical planning newsletter or bulletin to all major units and organizations on the installation, and to the planning organizations of surrounding communities. The newsletter could address long-range planning issues, project development, interaction with surrounding communities,

various initiatives of higher headquarters, or ACOE successes at the installation. The Master Planners Bulletin Board, and the EHSC Master Planners Newsletter, both available on PAX and given worldwide circulation, should be used to publicize successes, good ideas or requests for help.

(5) Writing review comments. A common problem is the low quality of review comments. The normal reaction to such comments is to question or discard them. A solid comment consists of three parts: (a) cite the criteria that are used to make the comment, (b) state how the observed deficiency violates the cited criteria, and (c) recommend a correction.

h. Graphic Communications. Graphics communications skills are used to communicate information about the physical characteristics of the installation and its development. As a rule of thumb, the information that is conveyed is much more important than high quality graphics, or the amount of time spent on them. For example, a hastily prepared land use plan by a good planner is more valuable than an elaborate drawing that looks good but does not reflect the Army's or installation's realities. Most approval actions, briefings, reports, and studies prepared by the master planning office need explanatory graphics. But a word of caution is in order. Many people do not relate well to graphics, especially a presentation that consists mostly of graphics. For example, an installation planner presented a set of "before and after" sketches to explain the IDG. An important member of the audience said, "All looks about the same to me."

i. Meetings. Meetings are the most misused means of interpersonal communications. Most employees remember being sent to meetings with no advance notice, seeing no agenda, sitting for hours or days, knowing nothing about the subject, wondering what got settled, and waiting vainly for a report of the proceedings. Conversely, well-run meetings can disseminate information, obtain decisions, start or review work, investigate issues, and achieve consensus. A few suggestions for a good meeting are as follows:

(1) Worth. The meeting must balance costs of travel and time against the benefits of what gets accomplished.

(2) Scheduling. Meetings should not last longer than 60 to 90 minutes. Also, schedule breaks at training workshops and conferences every 60 to 90 minutes. Start promptly no matter who is absent, and have someone "round up" people who have not arrived. Let people know in advance when they will break. Avoid early Mondays or late Fridays. Schedule for mid-morning or mid-afternoon. Allow travel days during the work week if necessary. Help with lodging arrangements.

(3) Advance notice. Publish the agenda and "read-ahead" information well in advance. Send a packet of directions, phone numbers, maps, and other logistical information to persons arriving from out of town.

(4) Physical arrangements. Have ample room with good seating, lighting, climate control, table space, and visual aids. For large meetings, have separate small rooms for "breakout" work groups. Have

refreshments available, at least coffee and water. Try to have a manned telephone where all participants can be reached. Have a telefax and copier available at larger meetings.

(5) Procedure. Introduce everyone at the start. Make an attendance list, with addresses and telephone numbers, and hand it out before adjournment. Stick to the agenda, using assertive steering to avoid wasting time. Try to cover the agenda, but stop if time runs out. Arrange for meals at, or very near, the meeting location. Give everyone a chance to speak before any meeting adjourns; use a "town hall" session with an open microphone to collect everyone's remarks at large gatherings.

(6) Follow-up. Publish minutes or notes of the meeting, no matter how small the session, within three working days and send copies to all participants. Use the same time frame to supply any additional information or answer outstanding questions.

j. The Installation Real Property Planning Board Meeting (RPPB). Of all the meetings hosted by the master planning office, RPPB sessions are the most important and must be a success. The following checklist helps ensure a successful RPPB meeting:

(1) Pre-meeting activities:

(a) Establishment of the RPPB. The installation RPPB will be established under the provisions of AR 210-20 (reference 1-2). An installation standing operating procedure (SOP) is the best way to establish the Board. Encourage the installation commander and commanders/directors from each major organization and activity to (personally) serve as active members. MACOM and supporting USACE district personnel should be invited to all meetings. The Commanding General, U.S. Army Materiel Command, establishes guidance and instructions for forming a RPPB at a Government-Owned, Contractor-Operated (GOCO) installation.

(b) Frequency. Schedule at least two RPPB meetings per year; one to discuss the long-range component of the RPMP, and one or more to address the CIS, the SRC, the military construction (MILCON) program and the allocation of existing real property. Long-range issues do not involve as many competing interests and usually take only a short executive session. Short-range issues are competitive, and usually require working level "pre-meetings" in advance of the executive session.

(c) Invitations. Invite the appropriate MACOM and USACE district master planning representatives to all installation RPPB meetings.

(d) Sub-planning Boards. Establish working level sub-boards to represent the planning interests of each major staff section, organization, or tenant activity.

(e) Survey. Survey the RPPB membership and the installation engineer management to develop agenda items.

(f) Agenda. Meet with the installation engineer to verify the agenda, which should have a logical flow to the sequence of events. Generally, a review of where the RPMP or construction program has been, where it is now, and proposals for where it is going is a good rule of thumb. After that, specific issues, future stationing actions, specific project updates, presentation of siting actions, and review of documents and studies are in order. Do not forget that MACOM and HQDA policy guidance has a strong influence on the proceedings, and the RPPB must be informed of this guidance. A good guideline is to estimate how the RPPB will decide for every action proposed. Ideally, the RPPB will be steered toward the installation engineer's and master planner's agenda if advance coordination has been accomplished through pre-briefings, coordinations, working level planning board meetings, and informal conversations.

(g) Other preparations. Develop each agenda item into an appropriate format, e.g., is it information or does it require a decision? Prepare audiovisual aids, check and recheck them and associated equipment. Rehearse the RPPB presentation several times, then pre-brief the installation engineer and the RPPB chairperson. Provide forewarning of dissenting views. Finalize and publish the agenda and read-ahead papers. Hand-carry to ensure proper delivery. Finally, double check everything.

(2) Meeting arrangements. Here are a few suggestions that contribute to a success of the RPPB meeting itself.

(a) Timing. Plan for the RPPB meeting to last no longer than 90 minutes. However, realize that the chairperson may extend the time.

(b) Protocol/supplies. Have name cards or place cards, and writing pads and pencils for members. Have another copy of the agenda and read-ahead material at each member's seat. They may forget to bring copies furnished earlier. Locate voting members near the chairperson. Stand when the chairperson enters the meeting room. Personally direct the chairperson to his/her seat.

(c) Answerers. Have all persons required to answer detailed questions present at the meeting; generally, this includes the planning staff, various project proponents, and technical experts.

(d) Graphics. Good graphics and maps are essential. Rehearse in the actual meeting room if possible. Make sure all graphics can be read from appropriate distances. Have spare bulbs for projectors. Run any videos through the VCR to make sure the equipment and the films work.

(e) Recorder. Always have a person designated to record the proceedings, and one back up person or an electronic recorder (announce that the meeting is being recorded during your introductory remarks).

(f) Flexibility. Remain flexible and expect the unexpected! The chairperson's prerogatives govern.

(3) Personal presentation. As in other areas, appearance and delivery are often as important as what is said. Have a friendly, courteous, businesslike attitude. Wear professional attire. Eye contact is essential. Rehearse for modulation of your voice and enunciation of your words. Avoid reading your presentation. Have casual facial gestures; smile genuinely when appropriate. Use relaxed, not stiff, standing and sitting positions. Do not become frustrated if interrupted by the questions or comments of the members; this is a sign of acknowledgment, interest, and a desire to know more. Listen very well. Respond truthfully to questions, admitting real mistakes or oversights without blaming others, and admitting when you don't know an answer. Promise to find all answers that can be obtained and furnish these to questioners after the meeting. Have the recorder write down verbatim all important discussion. When preparing the minutes, compare what you heard with what others heard; everyone "selectively listens."

(4) Influence and follow-up. Once the meeting is concluded, send out the meeting minutes within three working days. Follow-up on unresolved issues and unanswered questions immediately.

7. WORKING WITHIN THE MASTER PLANNING OFFICE.

a. Personnel. In the past, master planning positions were mostly occupied by persons with engineering, architectural, or landscape architectural backgrounds. Today, planning offices are encouraged to enlarge the field of potential master planning job candidates by creating interdisciplinary job descriptions, which make allowance for community and urban planners, and persons with more extensive environmental training than found in the "traditional" professions. Any kind of military experience is invaluable. Membership in professional associations, certifications and licensure increases the credibility of the office. Regardless of professional background, a new staff member needs much additional training and experience to become an effective Army master planner (see the training paragraph of this chapter).

b. Staffing. The Table of Distribution and Allowances (TDA) of the installation engineer organization gives manning levels for the master

planning office. These levels are determined by following the recommendations of the Schedule X Manpower Surveys, and the judgement of the installation engineer. Today's budgetary and manpower trends mean that all activities in the installation engineer organization compete with each other for fewer and fewer personnel spaces. It is increasingly important to sell planning and justify manning levels to the installation engineer management. Most managers are project-oriented people. Therefore, "sell" the project-oriented, immediate response capabilities of the planning operation and stay away from the longer-range RPMP services that the office provides. The administrative office of the installation engineer organization can provide more information on the staffing process.

c. Priorities. The general work priorities of most master planning offices are discussed as follows:

(1) Command priorities. The first priority is any initiative the Chief of Staff, U.S. Army; MACOM commander; installation commander; or installation engineer wants accomplished. You may find yourself designing a gateway marker for the installation; interiors in the front office; landscaping for housing areas; installation brochures; serving on the Memorialization Board to name facilities; or competing for the ACOE Award; All of this has little to do with the RPMP itself. Nevertheless, a good job done in support of the commander's interests means master planning interests will be well served the next time you need command group support.

(2) Military Construction (MILCON). The MILCON program is the next priority. Minor construction and non-appropriated funded construction projects have the installation commander's greatest interest, because they can usually be realized during his/her current tour of duty. Military Construction, Army (MCA) and other funded projects also have priority, because they are driven by MACOM command interest and DA suspenses. AR 415-15 (reference 1-5) addresses this function.

(3) Design and construction liaison. The master planning office may also serve as liaison between the Army customer and the design and construction agent for MILCON projects. Design and construction liaison seldom has high visibility with the installation command group, unless something goes wrong, delays a military unit relocation, or disturbs operations. Performing this job requires continuous contacts with customers, installation engineer maintenance shops, and the design and construction agent; negotiating skills; visits to the USACE district, USACE resident or area engineer office, or the site; and interpreting Army language and functional considerations to USACE district representatives or design consultants.

(4) RPMP maintenance and update. The RPMP usually comes last. It is easy to see why the RPMP falls into a state of low maintenance if these priorities govern all the time. While it is not wise to try to reduce command priority work, strive to reduce the number of programming actions and attempt to get some of the extraneous jobs transferred to another office

(this may take some help from the MACOM). If possible, keep one person at work on some aspect of the RPMP at all times. If not possible, keep the CIS (with tabulation of existing and required facilities (TAB)), Land Use Plan and Future Development Plan up to date, if by no other means than handwritten or local word processing system revisions, and defer the rest of the RPMP. For example, one office mounted the Future Development Plan on one wall of the office, placed a plexiglass sheet over the plan, and kept it up to date with grease pencil. The TAB was kept on local database management software so anyone on the staff could make updates.

d. Pre-planning Activities.

(1) Establish the Real Property Planning Board (RPPB). See the paragraph of this chapter addressing RPPB meetings.

(2) Points of contact. Make a list of master planning points of contact to include personnel at the installation, MACOM, USACE divisions and districts, HQDA, the Engineering and Housing Support Center (EHSC), and HQUSACE. Include names, addresses, office symbols, telephone and FAX numbers, and electronic mail addresses.

(3) Basic planning information. Collect and maintain a technical library. Start by collecting the documents referenced in each chapter of these instructions, instructions for automated planning systems, and course books from various training courses. Also have map atlases, community planning and site planning texts, and planning documents and studies from the surrounding communities. Collect information regarding topography, geology, soils, hydrology, water quality, air quality, climate, energy, noise, vegetation, wildlife, archeology, history, visual resources, land use, facility conditions, transportation, utility systems, information systems, operational constraints, economic profile, population characteristics, socio-political structure, and quality of life programs.

(4) Army missions and organizations. Collect HQDA, MACOM and installation mission statements, goals, objectives, policies, programming guidance, and terminology relevant to the installation.

(5) Planning files. The master planning branch files should be organized, using the Modern Army Records Keeping System (MARKS), into the categories discussed in the following paragraphs.

(a) Office management. The first set of files should consist of general office management files common to any branch level organization within the installation engineer office. These include files for local policies and procedures, budget, travel, trip reports, orientation and briefings, requisitions and hand receipts, personnel management, time and attendance, and policy and precedence.

(b) MILCON. The second type of files are MILCON files. These should be permanent files and should consist of one general file for each

fiscal year (FY) followed by a file for each project. If the master planning branch has been in business for a long time, old files should be consolidated, going back to the earliest years on record, perhaps one folder for every FY with projects tabbed. Permanent files of this type are often needed to answer customer and command group requests, such as, "Why didn't you build a conference room into that section of the building?" Answer: "Your representative at the time said it was not needed (see copy of design meeting minutes)."

(c) RPMP process and documents. The third type of files consists of the master planning documents themselves. Flat files should be used for the supporting graphics of each component. Shelves should be used for the book-type documents. Folder-type files should be used for planning

research and investigative information, such as records of interviews with installation organizations. The building area or general site maps should be mounted on one wall of the office; or, a good set of aerial photos at the same scale as the map may be substituted. Future development site plans should also be placed on the wall. The map and plans should be covered with acetate or plexiglass for easy annotation. Displaying these graphics orients visitors to planning proposals, is useful for impromptu briefings, and keeps the staff focused on the RPMP.

(6) Design and construction. These files should be established only if the office has design and construction liaison responsibility. They should consist of folders for each project under design or construction (moved from the MILCON files described earlier), a plan file for full-size and half-size construction drawings, and shelving to hold the specifications for each project under construction. After construction is complete, the project file is returned to the MILCON files and other material is discarded.

(7) Classified document storage. While classified document containers may not be justified within the master planning office itself, convenient access to a classified document storage container is usually a requirement.

e. Work Quality. Know when to "stay to the left of the decimal" and when more exacting work is called for. Today, there isn't the time or manpower for technically perfect work on every assignment. This is very hard to accept, especially in light of the exactness required during many master planners' professional training. Shortcuts are needed. A few examples follow.

(1) MILCON estimates. When manpower was more plentiful, master planning offices prepared conceptual site plans upon which to base site and utilities cost estimates in MILCON projects. Now, the reduced staff uses a lump sum of 15 to 20 percent of the primary facility cost to arrive at a "close enough" estimate for site items.

(2) Environmental overlay. An installation, unable to fund a

complete environmental overlay, conducted a three-day intensive work session using environmental engineering students and installation experts to map where environmental problems might be encountered.

(3) Siting revisions. An installation master planner used to hand-carry proposed sitings and other RPMP revisions to each member of the RPPB for concurrence before submitting the change to the installation command group for local approval. Now, proposals are telefaxed to each member, and a reasonable time is given for telephonic concurrence or comment. Then the staff study is finalized and sent to the command group. Two or more days of the master planner's time are saved.

(4) Unaccompanied personnel housing renovation. Scheduling military units out of their permanent facilities, housing them in temporary

quarters, then returning them to renovated buildings was originally done by manual means and complicated Critical Path Method (CPM) charts. Now the master planning office uses simple project management software to get the job done and keep up with work progress. This takes less time, keeps scheduling information available to the customers, and allows "what ifs" regarding accelerations or delays to be run on the computer.

(5) "Nitpicking" correspondence. A master planning branch chief, after considerable effort, quit trying to "find something wrong with every draft." Instead, he/she adopted the philosophy that, "A lot of 'better' gets in the way of a lot of 'good'." Now, if a draft says enough to convey the message to the reader, he/she releases it to be sent out. However, he/she still insists that correct correspondence format and "spell check" be used before he/she will review a document.

(6) When precision is needed. There are times when there is no choice but to "go to the right of the decimal." For example, a virtually complete concept design and cost estimate are needed for Minor MCA projects, because there is no second chance to adjust sites or costs. A DoD Explosives Safety Board (DDESB) submission requires a precise concept design and quantity safety distance estimate before the Board will review the case. Land Use Requirements Studies (LURS) (see Chapter 8 of these instructions), and the General Services Administration (GSA) real property and land utilization surveys, which are accomplished periodically at many installations, demand similar precision.

(7) Summary. Accept the fact that most work cannot be of the high quality attained when manpower and dollars were more plentiful. Develop practices that involve less time and cost, less detail, less complication, more automated tools and records, and less effort. Use the least formal means to get work done, but keep management informed. Finally, know when precision work is called for; then invest the effort to do the job right.

f. Strategies to Accomplish Work. Additional ways to get the seemingly impossible master planning workload accomplished are presented as follows:

(1) Overtime. One way to "clean up a deadline" is to go on overtime until the work is finished. However, this eventually reduces productivity and disrupts morale and off-duty life. Normally, extended overtime periods of more than two weeks should be scheduled not more than twice a year. To avoid excessive overtime, obtain management's backing and adopt a "hard line" stance that certain jobs will not be done (until or unless staffing is increased).

(2) District support. Another strategy involves using the supporting USACE district to do work the office cannot accomplish. Funds to reimburse the USACE district for its services must be available. USACE districts can provide excellent augmentation to the installation staff. However, USACE districts require lead time and work at a more deliberate pace than does the installation engineer office.

(3) Help from others in the installation engineer office. Try to obtain help from other offices in the installation engineer organization during critical work periods. There may be employees who need the financial boost of overtime pay. However, don't push the panic button every time there is a deadline. Reciprocally, be willing to lend a hand when other offices have heavy workloads.

(4) Charette. One innovative way to obtain help for the installation planning office is to enlist the talent of MACOM and USACE district planners; design and planning students from colleges and universities; and planners from other installations, for short-term "creative charettes." Such a group is invited to the installation for one-to-three days of intensive work to prepare or revise one well-defined action, e.g., prepare a conceptual environmental overlay or installation design guide, develop a programming document, or design a special project. Make sure to publicize the work of the participants. At a minimum, arrange for memoranda of appreciation signed by your commander to be sent to each team member.

(5) Planning assistance team. Another means of obtaining help is to contact the MACOM and request the services of a planning assistance team comprised of experienced master planners from the headquarters, other installations, and USACE districts. This approach is good for "one time" problems restricted to planning issues, such as resolving a severe traffic problem or responding to a mission change. Planning assistance team visits should not be more than one week in length.

(6) Colleges and universities. Colleges and universities within reasonable commuting distances of the installation offer a wealth of talent that can support the installation planning effort. Often, their departments are searching for "real-world" laboratories in which to train students and academic and research initiatives. Areas in which they could help include environmental analysis, historical and archeological matters, socioeconomic studies, natural resources inventories, transportation planning, architectural standards, engineering studies, and planning and site

selection studies.

(7) RPLANS run. If you do not have the funds, time, or manpower to conduct a complete and detailed update of the TAB, and RPLANS is available at your installation, obtain a "run" from RPLANS and use this as an expedient document. The RPLANS TAB will, at least, provide the facilities allowances for many of the most common facilities. Actual requirements will have to eventually be generated by detailed coordination with the military units, activities, and tenants on the installation, but the "RPLANS TAB" is certainly better than no facilities allowance document at all. When a full-scale update of the TAB is contemplated, the RPLANS run is the best way to start.

(8) USACE laboratories. The Construction Engineering Research Laboratories (CERL) at Champaign, IL, offer a wide range of

installation-related research and development programs, many of which can be of direct benefit even in their developmental stages. For example, one installation used the results of an experimental environmental impact assessment package to prepare a project EIS. Many improvements to the planning system have been, and are being, developed by CERL. Other USACE laboratories provide services such as the center of expertise for aircraft pavements at the Waterways Experiment Station, Vicksburg, MS.

(9) Proponents.

(a) RPMP proponency. Let the RPMP be "owned" by assigned military units, activities, and tenants. Have each major organization and tenant help develop the RPMP for "their" areas, subject to approval by the RPPB. Divide the TAB up to create a subTAB for each major organization and tenant, giving them ownership of their facilities requirements. The same applies to major functional areas, such as the Directorate of Plans, Training and Mobilization, who plans and manages the ranges and training areas. In addition to creating a sense of ownership in their RPMP, the beneficiaries of the plan share in the work of keeping it up to date.

(b) Project proponency. Installation engineers are not the proponents for construction projects, except for those few required to support the facilities engineering and infrastructure function. Find the installation level proponent for each proposal at the time of requirements development. For example, the proponent for aviation facilities is the airfield commander or the aviation office in the Directorate of Plans, Training and Mobilization. The proponent, not the master planner, must "fight for the project" and answer higher command's questions regarding functional aspects and justification throughout the highly competitive approval and appropriation process. The Army obtains and apportions most of its budget by means of the proponency system and the success rate is high. Find and use proponents.

g. Supporting Tools and Systems.

(1) Communication equipment. As stated earlier, planning depends upon excellent communications. Some of the essential items of equipment designed to enhance planning communications are as follows:

(a) Data transmission. The master planning office should have at least one dedicated data transmission line for use with the 1391 Processor System, the remainder of the Programming and Execution Management System (PAX) and for interface with other automated planning tools (see Chapter 10 of these instructions).

(b) Telephones. Telephones are the most essential element of the master planning communications system. At larger installations, two or three extensions, each with full commercial and DSN capability, should be provided. At smaller installations, the master planner should have one dedicated extension. Master planning offices with a limited staff should consider use of an answering machine for periods when no one is available to

answer the phone. While impersonal, a machine ensures each call gets acknowledged and noted.

(c) FAX. The master planning office should also have, or have convenient access to FAX equipment, accompanied by a very informal message release policy to encourage frequent use.

(d) Telegraphic message transmission. Telegraphic message transmission and receiving equipment is needed for most official Army information, especially traffic dealing with classified subjects. Although more means than ever are used for unofficial communications, access to a message center with secure teletype capability is needed for official actions.

(e) Mailing. Access to a complete postal facility is necessary for a planning operation, to include a simple justification procedure to obtain overnight mailing service.

(2) Printing. If there is a printing facility on the installation, utilize it for publication of planning documents and special projects, such as ACOE, newsletters, and other brochures. If there is no printing facility, arrange for contracting this service to commercial printers in the area, or employ the printing capability of the supporting USACE district.

(3) Office automation. Each member of the master planning staff should have a personal computer, with modem, loaded with common word processing, data base management, and chart graphics software. Also learn to use the interactive systems that support real property master planning. Essential systems are the 1391 Processor, the Design Criteria Information System (DCIS), PAXMAIL, the Facilities Planning/Support Facilities Annex System (FPS/SFA), and the Real Property Planning System (RPLANS-if available at your installation). All of these systems are resident in the Programming and Execution (PAX) computer network. Other systems needed for

planning include the Integrated Facilities System-Micro/Mini (IFS-M), or the Desktop Resource Real Property Management System (DR REAL), used to manage the facilities inventory; the Housing Operations Management System (HOMES) used to manage housing assets; and Automated Army Stationing and Installations Plan (ASIP) used to update ASIP data.

(4) Standard designs. HQUSACE has implemented a comprehensive DA Facilities Standardization Program controlled by standards subcommittees comprised of the Army Staff (ARSTAF) facilities proponents and MACOM. HQ, U.S. Army, Europe (HQUSAREUR) has a similar program. There are three types of standards issued. The first are true standard design drawings, which have enough detail to act as a construction drawing once they are site-adapted to a specific location. The second are definitive designs, which are only guides for design and construction drawings. A third type are design guides, which contain written and graphic material describing the design features of a specific facility type, along with several example designs.

(5) USAREUR Space and Planning Criteria Manual (SPCM). The SPCM provides a single source of uniform facility criteria for all the facilities in the USAREUR real property data base (more than 1,600 facility categories). The SPCM is the basis for calculating facility requirements at all USAREUR installations.

(6) NATO criteria. NATO criteria and technical standards have been developed in support of each of the NATO categories, which are designed to meet wartime, rather than peacetime requirements. NATO criteria are approved by all member nations and require their concurrence to be changed.

(7) Facility Allowance and Requirement System (USAREUR). This process of allowance analysis is a series of sequential steps that are performed concurrently with development of the RPMP. The analysis documentation includes standard format population worksheets and consolidated worksheets. This is the basis for facility programming.

8. WORKING WITH THE SURROUNDING COMMUNITIES.

a. The Public Affairs Officer (PAO). Every significant contact made with the local community and media, including the mutual sharing of planning documents and information, should be cleared through the installation PAO. There are few things more disturbing to an installation commander than to be surprised with the news that, "Planning officials from Fort XXX met with the mayor's office and agreed...".

b. The Installation-Community Council. Many installations have established a community relations council. The senior leadership of the installation and surrounding communities use the council to resolve differences or incidents, establish off-duty events for the military and civilians, and discuss issues involving the economy, housing,

transportation, and utilities. This forum may be used to elevate and resolve real property planning conflicts before they become problems.

c. Local Planning Agencies. After coordinating with the PAO, establish a solid working relationship with local planning agencies. Acquaint their planners with your installation's organizations and functions, chain of command, and some of the major programs affecting Army master planning. Formalize this relationship with a memorandum of understanding (MOU) between the installation and the local planning agency. Make sure the MOU specifies which portions of the RPMP and other information will be furnished to the agencies. When dealing with local planning agencies, it is advisable to furnish only such documentation as will help preclude planning conflicts, e.g., the land use plan and the executive summary of the LRC. However, certain local governments, such as those in the National Capital Region (NCR), ask for the entire RPMP and even review most project designs.

d. Informal Visits. After the MOU is in place, develop a friendly professional relationship with the planners in local agencies. Visit with them and invite them to visit the master planning office on a regular basis

to discuss current issues, problems, and share advance knowledge of any planning conflicts between the installation and surrounding communities. Do not make these meetings any more than informal visits, as decisions should be made and conflicts resolved by more formal means.

e. Mutual Attendance at Meetings. Encourage attendance by local planners at select RPPB meetings. However, make sure they understand that most Army proposals are tentative at best. Invite them to make presentations to the RPPB. Conversely, ask the local planners to invite the master planning staff to local planning council meetings, or planning hearings that affect the installation. Many of these meetings and hearings occur during evening hours, but they are a worthwhile investment of time, and can avert major planning conflicts.

f. The Regional Clearinghouse for Planning Actions. States have regional clearinghouses for planning actions as defined by AR 210-70, Intergovernmental Coordination of DoD Federal Development Programs and Activities (reference 1-9). In some cases, the clearinghouse may be the local planning agency. Some MACOM have USACE divisions or districts to perform clearinghouse liaison for their installations. Others have the installations perform the function themselves. In either case, a visit by the master planner to the clearinghouse is a good investment of time. Establish the same relationship that should exist with local planning agencies. This practice also holds true for visits with host-country planning agencies in OCONUS areas.

g. Briefing the RPMP to Civic or Professional Groups. If invited to speak on the installation RPMP in nearby communities, coordinate with the PAO first. Rehearse the presentation with the installation engineer management and possibly the PAO. Be cautious about going into too much depth or detail. Most Army planning initiatives are tentative at best, and

the general public does not understand this fact. Stick to more general topics, such as supporting the soldier and Army family, budgetary and installation strength trends, significant Army programs, the land use plan, the IDG, the construction program now being executed, environmental mitigation projects, and shared concerns of the installation and community.

h. Membership in Community Organizations. Membership in community organizations, within the bounds of Federal and installation regulations, is encouraged. Membership in service organizations like Kwannis, Toastmasters, Civitan and Ruritan provides community involvement, enhances the image of the installation among community leaders, improves public speaking ability, and enhances the ability to organize projects requiring team effort.

9. WORKING WITH THE MAJOR ARMY COMMANDS.

a. Working Relationship. Establishing a collegial, respectful, and responsive connection with the master planning staff at the subordinate major Army command (SUBMACOM - such as is found in the U.S. Army Materiel Command) or MACOM is one of the most beneficial things a master planner can

do for the installation. The installation planner should be able to candidly discuss any work related subject with the MACOM counterpart. For example, a poor siting directed by the local commander, over the planner's objection, can sometimes be "headed off" by the MACOM. The MACOM planner can tell the installation planner "what to really worry about" among the myriad tasks assigned by headquarters. But most of all, the MACOM planner can be an advocate for the installation at MACOM headquarters and HQDA.

b. Visit to MACOM. Even though programming initiatives require trips to the MACOM headquarters, it is recommended that a "planning" visit be scheduled about once a year to brief the RPMP and discuss master planning initiatives and support requirements. MACOM master planners are usually not the same people with whom programming issues are discussed. Informal discussions can also be held on issues such as staffing, automated systems, complaints, planning funds, suggestions, projects, and future workload.

c. MACOM Installation Visits. Make sure to invite the MACOM master planning staff to visit your installation at least once a year. The itinerary for this visit could include a tour of the installation; observation of military operations typical of the primary mission; visits to proposed sites, recently constructed facilities, the community planning agency; and attendance at the RPPB meeting. Courtesy calls (15-minute introductory visits required by Army protocol) should be scheduled with the installation command group and the installation engineer. Assure that lodging, transportation, and other support have been carefully worked out. Involve the entire planning staff in the visit. Treat the MACOM planner like a welcomed, honored guest.

10. WORKING WITH THE CORPS OF ENGINEERS DISTRICT. Today's budgetary and

manpower restrictions seldom permit attainment of an ideal master planning office. In fact, one or two people may constitute the entire staff. The USACE district assigned to support the installation, if employed properly, can help overcome some of the shortages. The USACE district is a resource of specialized talent for in-house and contracted master planning, other engineering, and real estate services. Since USACE districts contract for most master planning services, a detailed discussion of AE contracting procedure is presented in the following paragraphs:

a. AE Contracting Overview. Contracting master planning services follows a well-defined process of coordination, scoping of services, followed by execution and administration of the contract.

(1) Coordination phase. This phase involves discussions between the installation and the USACE district regarding scheduling and funding.

(a) The installation-MACOM relationship. Scheduling and funding for USACE district help varies between MACOM. In some cases, the installation contacts the USACE district directly to request assistance. Some MACOM, however, want more involvement and require coordination before the installation and USACE district talk.

(b) How USACE districts operate. USACE districts operate like a design and construction firm in the private sector; employees' time and expenses are charged against specific project monies. Unlike installations, USACE districts must have funds for salaries and overhead before starting to work on most projects. This is called a reimbursable operation.

(c) Funding.

1/ Reimbursable funding. Funding for all RPMP components, except the MC, is usually made through the installation engineer's Operation and Maintenance, Army (OMA) account for "Other Engineering Services." Installation requirements for salaries and USACE district support are reviewed and consolidated by the MACOM into a Management Decision Package (MDEP), which competes at HQDA against every other Army initiative and program. After appropriation each FY, OMA funds are distributed by HQDA to the MACOM. However, a commander at any level may reprogram OMA funds from one purpose to another; master planning funds may be spent for other purposes. Therefore, track the funds with the MACOM planner and the local budget officer. OMA funds must be spent or obligated to contract by the end of the FY in which appropriated. Because there are long-lead times required to develop contracts, transmit funds to the USACE district as early in the FY as possible.

2/ Nonreimbursable funding. A dwindling amount of OMA money is retained each FY at HQDA for direct distribution to USACE districts for master planning support. While these funds once enabled preparation and update of RPMP components, the limited amount is now used by USACE districts to attend RPPB meetings, visit installations, and prepare scopes of work for

planning contracts.

3/ Mobilization planning funds. Unlike funds for peacetime components, OMA funds for mobilization support have diminished very little. HQUSACE distributes these funds every FY, after coordination with the MACOM, to update a limited number of MC and Installation Support Books (ISB). See Chapter 6 of these instructions. MC funds cannot be used for other purposes. The MC/ISB program was known as the Mobilization Master Planning/Installation Support Book (MMP/ISB) Program and many planners still use this term. The installation master planner should contact the MACOM and the USACE district to request (MMP/ISB) funding for the USACE district, and MC planning assistance.

4/ USACE district funding management. Some USACE districts charge differently for their services. Some charge a cost per contract, while others prorate their yearly costs between the installations they support. Installation planners should learn how the USACE district handles reimbursable funds before discussing planning support contracts.

(d) In-house or AE. During the coordination phase, the USACE district decides whether the work will be done "in-house" using its own

staff, or by contract with an AE firm. In most cases, the work will be done by AE contract. Mobilization components are a special case, because it is preferred that they be done in-house by the GS district.

(2) Developing a master plan Scope of Work (SOW). A SOW is required whenever a project is to be accomplished through a USACE district. Most USACE districts with military installation responsibilities have extensive experience in preparing SOWs for master planning projects. Within the USACE district, responsibility for the SOW is either assigned to the Project Manager (PM), or to a military planning office staff member.

(a) SOW information and data needs list. The first step in SOW development involves the installation and PM identifying the information and data needed to work on the project. The following steps are recommended:

1/ Task. Determine exactly what it is you want to do. Be specific. The installation, USACE district, and AE must know as closely as possible what must be done and how to do it.

2/ Detail. Determine the level of detail required. Factors such as how much research is required, the scale of the drawings, and the intended use of the final product help identify the detail.

3/ Identify and assess related data. Most Army installations and USACE districts already have much additional data which could relate directly or indirectly to the RPMP to include utility studies, traffic studies, environmental studies, archeological surveys, historical

studies, flood plain and wetlands maps, real property inventories, construction folios and as-builts, range maps, and military operations information.

4/ Related data. Related data can also be obtained in the surrounding communities from such sources as city or regional planning commissions, highway departments, or other government agencies such as the U.S. Geological Survey or Soil Conservation Service. Identify information that is not currently available but is important to the planning work. Determining the accuracy of the identified data also helps determine the effort required for the RPMP. Some studies may be synopsized. Others may need update; or, some old studies may be used for general reference.

5/ Format. Determine the format of the final product. Determine how the final product is to be used. Determine whether charts, graphs, graphics, and color presentations are needed.

6/ Examples. Check SOWs for similar work. The USACE district can provide these, but realize that each SOW is unique, having special requirements that must be individually identified and described. Existing facilities and their conditions, topography, primary mission, existing RPMP documents and their accuracy, special studies, tenant organizations, and geography are a few of the items which make each

installation unique. Requirements of individual contracting offices may also impact upon the content of the SOW.

(b) Preparing the SOW. Once the needs list has been developed, the SOW can be prepared as follows:

1/ General paragraph. The first paragraph, general in nature, should identify exactly what is to be produced by the AE. For example, the first paragraph could read:

"The services to be rendered by the AE under this contract shall include all services required to produce new aerial photography at 1:5,000 scale, develop Existing Conditions Maps at a 1" = 400' scale with a 5' contour interval, and utility maps at 1" = 400' as described in paragraph 2 of this document."

2/ Description. Describe the level of detail of each item of work and how the AE is expected to perform each of these items. This information is directly related to the cost of the project. For example, master planning documents are normally general in nature, providing only enough detail for planning decisions. Therefore, instructions for a sanitary sewer map might be as follows:

"The AE is to utilize as-built drawings, record information from the Utilities Division of the DEH at Fort XXX, and perform limited field checking (approximately 10%) of sewer invert elevations to develop the Sanitary Sewer Existing Conditions Map."

This sort of instruction would be far less expensive than requiring the AE to do the following:

"...thoroughly inspect and verify in the field the sanitary sewer system at Fort XXX, including all pipe sizes and invert elevations of all manholes and prepare Sanitary Sewer Existing Conditions Map...".

3/ Coordination. Required coordination should be addressed. This could include obtaining formal concurrences, meetings, or interviews with assigned units and organizations, outside utility companies, tenant activities, and higher headquarters. Explain how the coordination is to be accomplished.

4/ Review. The submissions and approval of work section identifies all submissions and reviews including on-board (in-process) review and formal presentations to the RPPB.

5/ Deliverables. This section should identify all final deliverables to be furnished at the end of the contract. This includes all final master plan documents, and reference data returned by the AE.

6/ Legalities. All legalities having to do with this contract should be identified. Each contracting office has standard

requirements for their contracts. However, such items as security clearance requirements, records to be kept, period of service, and miscellaneous instructions to the AE should also be addressed.

7/ Progress reporting. Phasing and progress reporting may be a part of the SOW.

8/ Publications. List all manuals, regulations, or data needed, whether provided directly to the AE or not.

(c) Selection of AE firms. AE selection follows procedures dictated by Federal Acquisition Regulations (FARS) and supplements, and is not based upon competitive bidding procedures or, primarily, upon cost. Instead, it seeks the best qualified firm to perform the work. The following selection criteria are used to evaluate AE firms:

1/ Professionalism. The firm must have sufficient professional qualifications to satisfactorily perform the required services.

2/ Experience. Specialized experience and proven technical competence of the firm should exist to perform the type of work required.

3/ Capacity. The capacity of the firm must exist to accomplish the work in the required time.

4/ Past performance. The firm should demonstrate good past performance on contracts with Government agencies and private industry in terms of cost control, quality of work, and compliance with performance schedules.

5/ Location. The AE should (ideally) be located in the general geographic area and have knowledge of the project locality, provided that application of this criterion leaves an appropriate number of qualified firms, given the nature and size of the project.

6/ Volume. The volume of work previously awarded to the firm by DoD should be considered. Location of the firm and volume of previous DoD work are less important than the other criteria. They are used only to differentiate among equally qualified firms. For example, all other things being equal, a local firm or a firm with less previous DoD work may have an advantage over other firms.

(d) Project advertising requirements. The Government is required to publicly announce all requirements for AE services over $25,000 in the Commerce Business Daily (CBD). This announcement includes a concise description of the project, approximate scope, project location, type of contract, and the criteria that will be used by the selection boards to analyze AE responses. Specific information might include the disciplines required, experience requirements, availability of funds, and the starting date and estimated duration of the project. The announcement is published

for one day; however, responses can be submitted for up to 30 days.

(e) AE response to CBD advertisement. The AE responds to the CBD announcement on two Standard Forms, SF 254 and SF 255, which state the firm's general and specific qualifications to accomplish a number of different types of projects, personnel, experience, history of past Government and DoD work, as well as ongoing DoD work, and unique qualifications which will enable the firm to perform the work. The forms will address each specific requirement stated in the CBD announcement. The data contained on the two forms will be used by the selection boards to competitively evaluate the firms requesting consideration for the work.

(f) Selection boards. USACE districts use a two-board method for selections: the "preselection" board, and the "selection" board. These boards, are comprised of experienced district staff members, and should include a member of the installation engineer organization. Members may only serve on one board per project; so, two persons from the installation would be needed for each selection. Installation planners should consider selection boards a very high priority task. It is the only chance to influence who performs master planning work for the installation. The boards function as follows:

1/ Preselection board. The AE preselection board must consist of at least three senior staff members (including military personnel) having comprehensive experience in engineering, and must include

representatives of at least the USACE district Engineering and Construction Divisions. An installation representative is invited when contracts are expected to exceed $25,000. The USACE project manager requests that the board establish a slate of qualified AE firms from those responding and also furnishes data on project scope and available funding. The board reviews all SF 254s and SF 255s along with other pertinent data, and prepares a list of the best qualified firms. The preselection list is approved by the district commander, or a designee, and furnished to the selection board.

2/ Selection board.

a/ Constituency. The selection board, like the preselection board, must consist of at least three experienced senior staff members, and must represent both the USACE district Engineering and Construction Divisions. An installation representative is also invited. The selection board is always comprised of different people than those serving during preselection.

b/ Criteria. The selection board establishes criteria in advance for use in differentiating between firms on the preselection list. These criteria must be the same as in the CBD announcement. In addition, AE performance evaluations from previous DoD contracts are obtained from local files or the AE Contract Administrative Support System (ACASS) data base.

c/ Selection board meeting. When all the information is available, the board meets. The USACE project manager briefs and answers any questions on the project. Participation of the installation engineer representative is especially important for master planning projects, because USACE district representatives may not be familiar with the work. The selection board discusses each SF 254 and SF 255, and establishes a list of the best qualified firms (a minimum of three) ranked in order of qualifications.

d/ Documentation. Documentation of the selection procedure follows established guidelines. All criteria and selection factors, and reasons for selection or non-selection become a formal matter of record. The documentation is forwarded to the appropriate USACE approving official. That approval authorizes the USACE district to negotiate with the best qualified AE and, in the event that agreement cannot be reached, the second most qualified firm, and so on, until all ranked firms have been negotiated with, or a contract agreed upon.

REFERENCES

1-1 Architectural and Engineering Instructions (AEI), "Design Criteria," (updated regularly on DCIS).

1-2 AR 210-20, Master Planning for Army Installations.

1-3 Public Law 91-190, 42 U.S.C. 4321-4361, National Environmental Policy Act of 1969 (STAT 853).

1-4 AR 200-1, Environmental Protection and Enhancement.

1-5 AR 415-15, Military Construction, Army (MCA) Program Development.

1-6 AR 405-90, Disposal of Real Estate.

1-7 AR 420-70, Buildings and Structures.

1-8 The Officer's Guide.

1-9 AR 210-70, Intergovernmental Coordination of DoD Federal Development Programs and Activities

CHAPTER 2

PLANNING PROCESS

1. GENERAL.

a. Purpose. The Army real property planning process consists of nine steps to include identifying assigned organizations and their needs, applying criteria to determine facility allowances, identifying real property assets, determining deficiencies, defining and evaluating alternatives, considering developmental constraints, identifying preferred solutions, developing programming actions, and keeping the customer involved. This chapter describes the documents that comprise the long-range component (LRC), the capital investment strategy (CIS), the short-range component (SRC), and the mobilization component (MC) of the real property master plan (RPMP) in relationship to the planning process. Table 2-1 depicts all RPMP components in the same order they are discussed in this chapter:

TABLE 2-1

REAL PROPERTY MASTER PLAN COMPONENTS

1. LONG-RANGE COMPONENT:

a. LONG-RANGE ANALYSIS

b. ENVIRONMENTAL QUALITY ANALYSIS

c. UTILITIES ANALYSIS

d. TRANSPORTATION ANALYSIS

e. CAPABILITY ANALYSIS, EXPANSION BASE

f. INFORMATION SYSTEMS ANALYSIS

g. INSTALLATION DESIGN GUIDE

h. SUPPORTING GRAPHICS:

(1) LAND USE PLAN

(2) ENVIRONMENTAL OVERLAY

2. CAPITAL INVESTMENT STRATEGY:

a. EXECUTIVE SUMMARY

b. REQUIREMENTS ANALYSIS

c. TABULATION OF EXISTING AND REQUIRED FACILITIES (TAB)

d. ENVIRONMENTAL ASSESSMENT

e. SUPPORTING GRAPHICS

(1) FUTURE DEVELOPMENT PLAN

(2) ENVIRONMENTAL OVERLAY (ENHANCED)

(3) TRANSPORTATION PLAN (OPTIONAL).

(4) GENERAL DRAINAGE (OPTIONAL)

TABLE 2-1 (Cont'd)

REAL PROPERTY MASTER PLAN COMPONENTS

(3) REGIONAL PLAN

3. SHORT-RANGE COMPONENT:

a. OVERVIEW

b. PROJECT LISTING

c. PLANNING DATA BASE

d. SUPPORTING GRAPHICS:

(1) PREFERRED ALTERNATIVES PLAN

(2) FUTURE DEVELOPMENT PLAN

(5) AIRFIELD PLAN (OPTIONAL)

2.e. SUPPORTING GRAPHICS cont'd

(6) AIRSPACE UTILIZATION PLAN (OPTIONAL)

(7) FLIGHT HAZARD STRIP PLANS & PROFILES (OPTIONAL)

(8) UTILITY PLANS (OPTIONAL)

(ENHANCED)	(9) AREA DEVELOPMENT PLANS (OPTIONAL)
(3) ENVIRONMENTAL OVERLAY (ENHANCED)	(10) COMMUNITY & FAMILY LIFE FACILITIES PLAN (OPTIONAL)
4. MOBILIZATION COMPONENT:	(11) NATURAL RESOURCES MANAGEMENT PLAN DRAWINGS (OPTIONAL)
a. NARRATIVE	(12) OTHER PLANS (OPTIONAL)
b. ENVIRONMENTAL DOCUMENTATION	
c. MOBILIZATION TAB	
d. SUPPORTING GRAPHICS:	
(1) MOBILIZATION LAND USE PLAN	
(2) MOBILIZATION SITE PLANS	
(3) MOBILIZATION INFORMATION SYSTEMS AND OTHER UTILITIES PLANS	
5. CONTRIBUTING INFORMATION:	
a. EXISTING CONDITION MAPS:	
(1) REGIONAL MAP	
(2) AIRFIELD MAP	

TABLE 2-1 (Cont'd)

REAL PROPERTY MASTER PLAN COMPONENTS
(3) LAND USE MAP
(4) BUILDING AREA MAP
(5) SITE MAP
(6) TRANSPORTATION MAP
(7) UTILITIES MAPS
(8) STORM DRAINAGE MAP
(9) INFORMATION SYSTEMS PLANT-IN-PLACE MAPS
b. REAL PROPERTY INVENTORY

c. RESOURCE MANAGEMENT PLAN
d. HISTORICAL PRESERVATION PLAN
e. TRAINING MANAGEMENT PLAN
f. PHYSICAL SECURITY PLAN
g. OTHER ENVIRONMENTAL, CULTURAL RESOURCES PLANS
h. LOCAL COMMUNITY DEVELOPMENT PLANS

b. Design Criteria Information System (DCIS). The Army's Programming, Administration, and Execution (PAX) computer system contains DCIS. Using DCIS provides a means to display or copy official design criteria such as this MPI and other criteria documents from a computer or computer terminal. Documents in DCIS are official and the most current versions.

(1) DCIS will be activated to PAX users upon request to the PAX system manager, PAX ID: V3MEMORY; or by telephone to AUTOVON 285-0578 or (202) 272-0578 to have the DCIS system added to their PAX menu. There is a nominal charge for access to DCIS.

(2) Authority to access documents in DCIS will be activated to users upon request to the DCIS manager, PAX ID: DCIS1 with a copy furnished to PAX ID CAP013.

(3) Requests for DCIS menu items and for access authority may be made with one message to V3MEMORY with a copy furnished to DCIS1 and CAP013 in the following format:

(a) The name of the requesting individual.

(b) The name of the person who will use the user ID.

(c) The office address and symbol of the requesting individual, as well as the using individual.

(d) Telephone numbers (FTS, AUTOVON, Commercial) of the requesting individual, as well as the using individual.

(4) DCIS has a "Suggestion Box" feature that provides a means of providing feedback, comments and questions relating to criteria contained in this document, which affords users an opportunity to become involved in improving the system and developing new and revised master planning criteria.

c. Responsible Office and Feedback. Users of this document are encouraged to submit suggestions, revisions, additions, and deletions to HQUSACE, ATTN: CEMP-EA, Washington, D.C. 20314-1000, PAXID V3ECEI, CORPSMAIL ID S0MPESF5, FAX (202) 272-8815. Users are requested to be specific in their suggestions, furnish the rationale for their suggestions, and avoid submitting their comments in the form of questions.

2. LONG-RANGE COMPONENT DOCUMENTS.

a. The Long-Range Component (LRC). The LRC is the plan for how the installation will be utilized and developed over a long-range planning horizon and a record of how the plan was developed and revised. LRC documents are listed in the following paragraphs.

b. The Long-Range Analysis. This document makes a record of the process used to develop and maintain the plan, including major decisions reached to develop long-range planning proposals. Additionally, the long-range analysis should contain an executive summary of each section of the long-range component.

c. Environmental Quality, Natural and Cultural Resources Baseline Analysis. This narrative serves as a description of the baseline environmental conditions at the installation and the installation's ability to support assigned missions. The analysis describes gaps in baseline environmental information and recommends necessary surveys and studies required to complete the description of the installation. The analysis looks at overall installation development and identifies the areas of environmental concerns and constraints, and recommending developmental opportunities to mitigate environmental damage. This analysis serves as the framework for all future formal environmental analysis. This document is supported by the environmental overlay described below.

d. Land Use Assessment. This document will establish, in general and in mathematical terms, land use requirements for implementation of the long-range plan, and will record the process used to develop the installation land use plan. See Chapter 3 of these instructions regarding land use planning.

e. Transportation Assessment. This assessment should be performed by the Military Traffic Management Command (MTMC), if at all possible, as part of an installation comprehensive traffic study. If a MTMC study cannot be performed in the short-term future, the planner should request installation provost marshal and transportation officer assistance in conducting a "reconnaissance" transportation survey and assessment. The assessment should contain statements of transportation goals and objectives; condition assessment of existing road, railroad, air and water transportation systems; travel characteristics; land use influences (from land use plan); social and economic influences; transportation problems and opportunities; evaluation of alternative solutions; and long-range transportation recommendations.

f. Information Systems Analysis. This document assesses the capability of the existing information systems plant-in-place to support future development or other changes. This portion of the LRC should be accomplished by the Directorate of Information Management (DOIM) on the installation or should be done in close cooperation with that directorate.

g. Installation Design Guide (IDG). Though an element of the LRC, the IDG is prepared separately. The IDG provides specific guidance on the exterior and interior design parameters for the installation. TM 5-803-5, Installation Design (reference 2-1) provides guidance regarding exterior design. All installation real property maintenance improvements, renovation projects, and new construction must comply with the IDG. This document may be as simple or as comprehensive as desired to achieve aesthetically pleasing living and working environments. Interior design policy should address design and maintenance practices to include wall finish and color recommendations; floor finishes to include carpet colors, pattern selections and product specification guidance; signage and directory systems, graphics and art recommendations; partition and furniture height and color recommendations; methods of reducing visual clutter; personalization and use of plants; housekeeping policy; policy on user building modifications; smoking and eating locations; procurement of matching and compatible furniture components; and maintenance of interior-scape plants.

h. Capacity Analysis, Expansion Base. This portion of the long-range component estimates the installation's expansion potential based on hypothetical increases, made in logical increments, to the present mission. Examples are: adding brigade-size troop elements to a divisional installation, increasing the production rate at an industrial base installation, or redoubling the training output at a training installation. The hypothetical expansion is plotted against the physical capabilities and limitations of the installation, based on land, facilities and utilities to

include information systems, until a point is reached where no further expansion is practical. Use the following steps to perform the analysis:

(1) Factors influencing expansion. The potential expansion capability of each installation depends upon the type of mission and on the availability of usable land area which is free from limitations imposed by topography, geology, soils, hydrology, water quality, air quality, climate, energy, noise, vegetation, wildlife, archaeology, historical considerations, visual resources, land use and airspace considerations, facility conditions, transportation, utility systems, operational constraints, other plans and studies, economic profile, population characteristics, sociological support systems, political structure, and quality of life programs.

(2) Planning guidance. Expansion assessments for forces missions, service schools, hospitals, intelligence facilities, major port and transportation missions, major logistical support missions including information systems support, and manufacturing missions will rely upon data

furnished by the appropriate MACOM, or inter-service relationship controlling these missions.

(3) Capacity assessment, utility systems. Utilities assessment consists of evaluating the practical "upper limit" carrying capacity of each utility system in terms of per capita/per day capacities, peak loads, zone capacities, problem areas, and needed maintenance and repair. This assessment should reference utilities and information systems studies when these have been performed for the installation. In cases where studies do not exist, TB ENG 354, Emergency Expansion Capability Analysis (reference 2-2) may be used to make a general, initial assessment.

(4) Mission support capability. This capability is determined by comparing the organizational structures, population strength, equipment type, density, characteristics, and unit operational requirements with factors governing expansion as stated above. This analysis usually begins with a general quantitative analysis and concludes with a subjective analysis. The capability analysis may take any form which is economical and brief.

(5) Add mission increments. After determining the existing "upper limit" mission support capability, hypothetically add logical increments to the existing mission. For example, add a round-out brigade to the installation strength; increase the training load; or redouble the storage or production capacity until a practical limit is reached, beyond which no more mission increases could be accommodated.

(6) Executive summary. The Long-Range Analysis document should include an executive summary of the expansion assessment. Several key elements should be included as follows:

(a) Bar charts or graphs showing the population or mission support capability of each essential operational system, including

utilities, land, and transportation systems to include "enhanced" capabilities that would result from relatively low cost repairs, modifications or additions to existing systems.

(b) A bar chart, line chart schedule, or critical path diagram showing how the theoretical expansion could occur over a period of time. Peak populations, critical times, and critical improvements should be identified on this chart.

(c) Brief descriptions of other DoD assets in the region which could enhance the capability of the installation to support unforeseen future expansions.

(d) Summary of major or significant environmental impacts associated with development of the installation to maximum capability.

i. Required and Optional Graphics. RPMP graphics will be prepared in

accordance with TB ENG 353, The Overlay Composite Method of Master Plan (reference 2-3), and adapted to computer-aided design and drafting systems if required. The plans are overlays to the existing conditions (formerly called basic information) maps. Plans, together with a cover and index sheet, will be on standard 28 inch [71.1 cm] by 40-inch [101.6 cm] sheets and should be bound, if possible, as a single atlas. Required and optional graphics are listed and described as follows:

(1) Regional plan (required). This plan is prepared to show how regional development will affect on-post development, e.g., major urbanization, other DoD installations, major highways, or major airport development. This plan will show proposed regional improvements covering a radius of roughly 25 miles [40.25 km] to 50 miles [80.5 km] around the installation. Development proposals shown should include airports and airways; all built-up developments; major development of other DoD installations and facilities; cross-country gas and oil pipelines; major communications lines and other features; hazardous and toxic waste cleanup areas; highways; and major recreation areas. The plan should also recommend off-post development and other improvements needed to improve the operational efficiency of the installation or increase its capability to expand. For example, proposed major highways, information systems and communications features, and thoroughfares should be shown.

(2) Future land use plan (required). This plan will show proposed land use within the installation boundaries and adjoining off-post zoning or land uses. This plan may use standard land use planning colors and will show existing land use along with all recommended land use changes relating to the acquisition of additional land, areas for disposal, and proposed reallocations of areas to new purposes.

(3) Environmental overlay plan (required). This plan, which was not required by earlier editions of AR 210-20, Master Planning for Army Installations (reference 2-4), is prepared as an overlay of the future land use plan and is used to identify those environmental conditions that

individually, or in combination, create major or significant environmental impacts or serve to define and limit areas upon which future development could occur. Table 2-2 provides examples of information that should appear on the overlay as follows:

TABLE 2-2

INFORMATION FOR ENVIRONMENTAL OVERLAY PLAN	
NATURAL FEATURES:	
o Prime or unique farmland	o Wetlands
o Watersheds	o Flood plains and floodways
o Coastal zones	o Soils conditions

o Wilderness areas	o Aquifers/recharge areas
o Groundwater/other water supplies	o Wild and scenic rivers
o Forest harvest areas	o Training and maneuver areas where special exercises may be held
o Special analyses required by state laws	
o Fish and wildlife habitats and refuges	o Open space and buffer areas
o Habitats for threatened and endangered plant and animal species	o Areas where seasonal environmental restrictions exist
MANMADE FEATURES:	
o Historic preservation areas	o Production or waste treatment
o Malodorous operations facilities	o Waste disposal sites, active and closed
o Facilities that produce hazardous and toxic waste	o Proposed major research, new weapons research development and testing areas, including areas where weapons, missiles, or lasers are fired over navigable waters
o Major stationary air pollution	
o Range firing and impact areas	
o Hazardous and toxic waste storage	
o Archeological sites	
o Pesticide, fungicide, herbicide,	
o Areas identified by the Army as excess land or real property	o Hazardous or toxic waste cleanup requirements
o Electromagnetic hazard areas	
o Underground storage tank locations	o Real estate agreements
o Sensitive noise receptors	
LIMITERS:	
o Safety distance requirements	o Installation Compatibility Use Zone (ICUZ) noise contours
o Open space	
o Buffer zones around ammunition, chemical, petroleum, oil and lubricant (POL), or other	o Air operations clearance zones, corridors and

TABLE 2-2 (Cont'd)

INFORMATION FOR ENVIRONMENTAL OVERLAY PLAN	
hazardous or malodorous areas	restricted areas
o Critical slope and buildable land areas	o Socioeconomic area and governmental boundaries
o Controlled airspace	

(4) Capacity expansion plan (required). This plan graphically documents the capacity analysis, expansion base described in Chapter 1 and earlier in this chapter. A copy of the land use plan, site plans, and utility plans, to include information systems, should be annotated to show

land areas, facilities and systems required to bring the installation to its maximum capacity. These annotated plans should not be published as a formal part of the RPMP because they are strictly conjectural in nature. The plan should depict the following:

(a) Hypothetical land use changes including adjacent (non-military or recapturable) land areas that would enhance the expansion capabilities of the installation and which may be feasible to acquire.

(b) The outline and type of each aviation facility or expansion thereto, airspace utilization zone, firing range, impact area, safety fan, ammunition and explosive storage area with quantity distance arcs, simulation facility and maneuver area needed for maximum expansion capability.

(c) Traffic circulation as it would have to be modified if significant expansion is feasible.

(d) Recommended "contingency" sites to be held in reserve for important buildings or complexes that are beyond the present facility requirements determined during the TAB analysis and are not part of mobilization mission support.

3. CAPITAL INVESTMENT STRATEGY (CIS). The CIS is a new component of the RPMP that serves as the link to the Army's Planning, Programming, Budgeting and Execution System (PPBES) based on Army goals and MACOM planning and programming guidance. The CIS will be prepared by the installation engineer to portray the real property requirements of all activities and organizations on the installation, including all tenants. The sections of the CIS are the executive summary, requirements analysis, tabulation of existing and required facilities (TAB), environmental assessment, and supporting graphics. The CIS should be prepared as follows:

a. Format. The CIS will be prepared in "hard copy" on letter-size paper and placed in a three-ring binder for easy substitution of pages. Each page should be dated. When revised pages are inserted, the original

preparation date followed by the revision date should be indicated on the page. The document should be filed in some common word processing software for simplicity of update.

b. Executive Summary. While this portion of the CIS should be prepared last, it will be located in the beginning of the document and will summarize all segments of the CIS. The summary must communicate, in brief length, the overall direction of the CIS to senior programming personnel, facilities proponents, and decision-makers at the HQDA and MACOM levels, and will contain the following sections:

(1) Discussion of the overall (major) preferred alternatives to support installation mission accomplishment.

(2) Statement of the installation commander's vision of the installation in the future.

(3) List of major planning goals and objectives that will enable achievement of the commander's vision.

(4) Discussion of the most pressing real property requirements. (For example, a 40 percent shortfall in one FCG may not hamper mission accomplishment nearly as much as a 5 percent shortfall in another.)

(5) Interim actions recommended to meet the most pressing real property requirements until planned actions can be accomplished.

c. Schedule. An implementation schedule will be established and appended to the executive summary after sequencing of actions have been established for each individual FCG, and inter-relationships between actions in all FCGs have been determined. The integrated schedule will be formulated by applying resource guidance from the MACOM for major OMA and MCA across all FCGs and determining what actions can reasonably be expected to be funded each FY until all required actions have been completed. The schedule gives the chain of command a good idea of where the installation is and where it is going; helps to prioritize MCA and major OMA; allows the installation to assure that existing assets are distributed in the best way to meet mission; encourages a realistic approach to solving or working around facility shortfalls; and allows the installation to put facility actions in the proper perspective depending on their anticipated execution (i.e., next year, in five years, in 20 years). The definition of an action will be refined as it moves from long-term to short-term (i.e., siting and cost estimating).

d. Requirements Analysis, General. The requirements analysis will be addressed to an audience of facilities proponents and action officers at HQDA and MACOM levels who validate the program, explaining to them in detail the planning direction that the installation will follow over an unconstrained planning period based on MACOM funding guidance and the development goals and objectives of the installation. Broad groupings of category codes called facility category groups (FCG) will be used to

analyze facilities requirements. FCG are groupings of facility category codes of like functional characteristics and units of measure. The FCG, based on AR 415-28, Department of the Army Facility Classes and Construction Categories (reference 2-5), are listed in table 2-3:

TABLE 2-3

FACILITY CATEGORY GROUP			
FCG	DESCRIPTION	FCG	DESCRIPTION

11110	FIXED-WING RUNWAYS	17932	TANK GUN STATIONARY
11120	ROTARY-WING RUNWAYS	17933	TANK CREW CBT FIRE
11210	STANDARD TAXIWAY	17937	AERIAL GUN RANGE
11310	ACFT PKNG FIXED-WING	17942	FLD ARTY INDOOR RG
11320	ACFT PKNG ROTARY-WING	17943	AIR DEFENSE FIRE RG
11330	ACFT MAINT APRONS	17946	OPTIONAL RANGE
11340	HANGAR ACCESS APRONS	17986	MANEUVER AREA
11350	ACFT RNWY HOLDING APRON	21110	MAINT HANGAR AVUM
		21111	MAINT HANGAR AVIM
11370	ACFT WASH APRON	21407	NG MAINT FACILITY
11380	ACFT LOADING APRON	21409	USAR MAINT FACILITY
11610	COMPASS SWING BASE	21410	VEH MAINT SHOP ORG
13000	COMMUNICATIONS, BUILDINGS	21420	VEH MAINT SHOP DS
		21456	WASH FACILITY CENTRAL
13200	COMMUNICATIONS, OTHER THAN BUILDINGS	21800	SPEC PURP MAINT FAC
		21900	MAINT INSTALLATION OPERATION & REPAIR
14110	AF OPS BLDG		
14112	AV OPS BLDG	22000	PRODUCTION FACILITY
14182	BRIGADE HQ BLDG	30000	R&D TEST EVAL BLDG
14183	BATTALION HQ BLDG	41100	LIQUID FUEL STORAGE
14185	COMPANY HQ BLDG	42100	AMMO STORAGE-DEPOT
17115	BAND TRAIN FAC	42200	AMMO STORAGE-INSTAL
17120	GENERAL INST BLDGS	43200	COLD STORAGE-INSTAL
17121	INDOOR FIRING RG	44100	GEN PURPOSE WHSE-DEPOT
17130	USAR CENTER	44200	GEN PURP WHSE-INSTAL
17142	NATIONAL GUARD CENTER	44230	CONTROL HUMIDITY WHSE
17160	TRAINING AID SUPPORT CENTER	44240	INFLAM MATERIALS WHSE
17901	BASIC 25M FIRE RG	44260	VEHICLE STORAGE SHED
17902	FIELD FIRE RANGE	45200	VEHICLE HARDSTAND
17903	RECORD FIRE RANGE	51010	HOSPITAL
17907	SNIPER TNG FIELD	54010	DENTAL CLINIC
17909	MACH-GUN 10M RANGE	55010	HEALTH CLINIC
17910	MACH-GUN TRAIN RANGE	61050	GEN PURPOSE ADMIN
17912	APC FIRING RANGE	71110	FAMILY HOUSING
17917	GRENADE LAUNCH RANGE	72100	ENLISTED UNACCOMPANIED PERS. HOUSING (BKS)
17923	MOUT CFT RANGE		
17928	COMBAT PISTOL RG	72114	ENL BKS ANNUAL TNG/MOB
17930	TANK GUN 1:30&60	72181	ENL BKS TRAINEE

TABLE 2-3 (Cont'd)

FACILITY CATEGORY GROUP

FCG	DESCRIPTION	FCG	DESCRIPTION
17931	TANK GUN 1:5&1:10	72200	UEPH DINING FAC
72400	OFFICER UPH	81100	ELECTRIC POWER SOURCE
73010	FIRE STATION	81200	ELECT POWER DISTRIB
73015	CONFINEMENT FAC	81300	ELECT POWER SUBSTATION

73020	CHAPEL CTR FAC	82100	HEAT SOURCE
73030	LAUNDRY/DRY CLEAN'G FAC	82200	HEAT DISTRIBUTION LINE
73048	DEPENDENT GRADE SCH	83100	SEWAGE TMT & DISPOSAL
73049	DEPENDENT HIGH SCH	83200	WASTEWATER COLLECT SYS
73073	POST OFFICE	84100	WATER TREATMENT
74006	BANK	84200	WATER DISTRIBUTION
74010	AUDITOR GEN PURP	85100	ROADS
74011	BOWLING CTR	85210	ORG VEHICLE PARKING
74014	CHILD SPT CTR	85215	NONORG VEHICLE PARKING
74021	COMMISSARY	89110	ALARM SYSTEM
74022	SKILL DEVEL CTR	89111	MISC STORAGE WHSE
	(CRAFT SHOP)	89113	MISC VENTILATION EQUIP
74024	SKILL CTR AUTO (CRAFT	89114	MISC DREDG/CUT/FILL AR
	SHOP)	89115	MISC INDIVIDUAL FAC
74025	ARMY CONTINUING EDUC SYS FAC	89116	MISC HOUSING FAC
74028	PHYS FITNESS FAC	89117	PIERS/WHARFS
74033	COMMUNITY CENTER	89118	SPRINKLER SYSTEM
74041	LIBRARY CTR	89119	MISC FUEL STORAGE
74046	OPEN DINING FAC	89120	MISC FUEL DISPENSING
74052	EXCH SVC STATION	89121	REFRIG SYSTEM
74053	EXCH MAIN RETAIL	89122	MISC WATER TREATMENT
74064	RESTAURANT/CAFET	89123	MISC ELECTRIC POWER
74066	YOUTH CENTER	89124	MISC LINEAR FOOT FAC
74069	RECREATION BLDG	89125	MISC HEATING PLANT
75010	TENNIS COURTS	89126	MISC LINES
75011	MULTIPLE COURTS	89127	MISC FUEL LOADING
75020	BASEBALL FIELDS	89128	MISC BUILDINGS
75021	SOFTBALL FIELDS	89129	MISC AREAS
75022	FOOTBALL/SOCCER FLDS	89130	MISC EQUIPMENT
75030	OUTDOOR POOLS	89131	MISC VEHICLE FAC
		93500	LAND

e. Requirements Analysis Format. For FCG that are selected by the MACOM or by HQDA guidance, prepare an analysis in accordance with the following format:

(1) Executive summary. A separate, brief executive summary will be prepared at the beginning of each FCG to communicate the specific

facility strategy to facilities proponents at the MACOM and HQDA levels. The contents of the summary will be as follows:

(a) General. Tell how the installation plans to realize the goals and objectives established by the Army Long-Range Facilities Plan (ALRFP), or other HQDA and MACOM guidance, in this FCG. State the purpose for "getting well and staying well" for this particular FCG. Include any subjective data not apparent in the TAB, e.g., "The 5 percent shortfall in this FCG hampers installation operations more than does the 50 percent shortfall in vehicle maintenance facilities."

(b) Major planning goals and strategies that will be used to "get well and stay well" in this FCG. Use the assumption that new construction represents the "last resort" after other alternatives such as conversions, rehabilitation, lease, have been examined. Make reference to any economic analysis used to examine the alternatives. Include interim measures that are being used to meet the requirement until more permanent solutions can be realized.

(c) Alternatives used to meet goals and objectives. Discuss the approaches and objectives. List the HQDA, MACOM and installation goals and objectives influencing this FCG.

(d) Cost. Establish reasonable amounts of funds for real property maintenance and construction that can be expected for this FCG throughout the Program Objective Memorandum (POM) period and into the out-years. If no data exist upon which to make out-year predictions, use a flat projection beyond the POM period. State if funding for this FCG has been very poor or non-existent in the past.

(e) Schedule. Summarize the detailed schedule that occurs later in this FCG analysis, e.g., "The 1990s will see implementation of the above described alternatives to realize approximately 70 percent of the total requirement, with the remainder, or slippages from the POM period, being addressed during the out-years."

(2) Current situation. Provide the following information:

(a) State the installation mission, how this FCG fits into mission accomplishment and how this FCG will meet the goals of the Army Long-Range Facilities Plan (ALRFP).

(b) Statement regarding how existing facilities in this FCG meet or do not meet mission requirements.

(c) Generally, state the amount of permanent, semipermanent and temporary facilities or space currently used to support the mission.

(d) State interim measures that are being used to meet deficiencies until permanent solutions can be provided.

(e) Make reference to appropriate facilities information in the TAB or the real property inventory (RPI).

(3) Measurement standard and criteria. State the general scope and measure, i.e., persons, square feet, square yards, linear feet. Make reference to the source of criteria used to determine facilities allowances and briefly state these criteria.

(4) Deficiencies. State the allowances based on application of the appropriate measurement standard and criteria, and the ASIP and TAB.

State the actual facilities requirement based on interviews and appropriate staffing with organizations and units assigned to the installation.

(5) Consideration of alternatives. State when, and if, an economic analysis has been performed for this FCG to determine the most logical, economical approach to meeting the requirements. At a minimum, consider the following suggested alternatives, or combinations thereof:

(a) Maximize use of similar existing facilities.

(b) Use available off-post facilities.

(c) Acquire from the civilian sector.

(d) Use facilities at a nearby DoD installation.

(e) Renew existing permanent facilities.

(f) Renew existing temporary facilities.

(g) Provide new facilities.

(h) No action.

(6) Preferred alternative or alternatives, and why the selection was made. Indicate the reason why one alternative was selected in preference to others considered. State the economic, environmental, planning and other considerations that led to the selection, and the date that the Installation Planning Board approved the selection. Indicate the impact, and fallback position, if this alternative is not implemented.

(7) Implementation schedule. Using an extension of the current MACOM program and budget guidance, establish expected levels of funds for each year beyond the POM period. Develop a general schedule regarding how the chosen alternative will be implemented, based on realistic funding expectations. Discuss the relationship between the various projects and other actions in this FCG or program. Then develop a more detailed schedule, starting with the fiscal year following the present fiscal year, extending outward through each fiscal year of the POM period and continuing into the out-years period. The out-years period does not need to be differentiated by fiscal years.

(8) Identify areas, and their capacities, that can accommodate organizations, activities and personnel that are displaced by construction.

(9) State if coordination with facilities proponents at the installation, MACOM, and HQDA levels has been accomplished, e.g., Chaplain--Chief of Chaplains, Medical Activity--Surgeon General, Army and Air Force Exchange Service, Ammunition Branch, Directorate of Logistics--Department of Defense Explosives Safety Board (DDESB), Airfield Commander--U.S. Army

Aeronautical Services Agency (USAASA).

(10) If certain requirements stem from the arrival of a new weapons system, state the time-frames involved.

(11) If certain requirements result from a new, increased or decreased mission, state the scope of the mission(s) and the time-frames involved.

f. The Tabulation of Existing and Required Facilities (TAB). The TAB is a numeric report of facility allowances, requirements, excesses, and shortfalls. The TAB may be produced at the levels of "individual facility category codes" or "facility category groups (FCG)" using AR 415-28 (reference 2-5). If the TAB is initially prepared using "individual category codes," it should be aggregated into FCG for the purpose of the CIS requirements analysis. "Installation RPLANS" is recommended to accomplish this task. The TAB should be developed in standard letter size format if possible and incorporated into the CIS. If using older TAB forms, legal size paper in "landscape" layout is acceptable. If not using "Installation RPLANS," use automated word processing or database management equipment to prepare the TAB using the following guidelines:

(1) Population data. Use the final year of the POM cycle shown in the ASIP as the basis for planning population strength. Use data from the installation Standard Installation/Division Personnel System (SIDPERS), the housing reports, "Format B" reports compiled by the installation medical activity (MEDDAC) and contact with units, activities and organizations to extrapolate total installation population, and various components thereof, from the ASIP strength.

(2) Allowances. Accomplish thorough research of facility space criteria and allowances, using sources such as the Facilities Planning System (FPS), Real Property Planning System (RPLANS), The Army Criteria Tracking System (ACTS), and the Architectural and Engineering Instructions (AEI), "Design Criteria," (reference 2-6).

(3) Determining requirements. After facility allowances have been determined, visit and conduct interviews with each major organization and activity on the installation to determine actual requirements. Keep narrative records of this coordination.

(4) TAB format. Use DA Form 2369-R, DA Form 2369-1-R, and DA Form 2369-2-R which are available from the supporting USACE district; or, create local forms that contain the same information and general layout. Detailed instructions for completing TAB forms are indicated in tables 2-4, 2-5, and 2-6:

TABLE 2-4

LAYOUT, COVER SHEET FOR TAB

TABULATION OF EXISTING AND REQUIRED FACILITIES

(NAME OF INSTALLATION)

(LOCATION)

PREPARED BY:

(ORGANIZATION)

APPROVED BY THE REAL PROPERTY PLANNING BOARD:

(SIGNATURE)

(TITLE)

(DATE)

TABLE 2-5

LAYOUT, WORKSHEET FOR INSTALLATION STRENGTHS

INSTALLATION STRENGTHS	PAGE ___ OF ___

NAME OF INSTALLATION: DATE PREPARED:

REVISION DATE(S):

PRINCIPAL MISSION:

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
(1)							
(2)							(I)
(3)							
(4)							
(5)							(J)
(6)							
(7)							
(8)							
(9)							(K)
(10)							

REMARKS:

SECTION HEADINGS:

(A) Category (of population)
(B) Total (C+D)
(C) Army
(D) Other military services
(E) PCS students
(F) TDY students, including non-U.S.
(G) Other TDY personnel
(H) Long-range and current civilian strength
(I) Long-range and current enlisted strength
(J) Date of the current ASIP

LINE CATEGORIES:

(1) ASIP total
(2) ASIP officer & warrant officer
(3) ASIP civilian, officer equivalent
(4) ASIP enlisted
(5) ASIP civilian, enlisted equivalent
(6) Current strength totals
(7) Current officer and warrant officer
(8) Current civilian, officer equivalent
(9) Current enlisted
(10) Current civilian, enlisted equivalent

(K) Date that current strength was measured

INSTRUCTIONS FOR COMPLETING INSTALLATION STRENGTHS FORM:

Lines 1 through 5 will be completed using the most current ASIP for the

installation. Show only those civilians entitled to on-post housing on line 5.

Lines 6 through 10 will include the total on-board strength of all personnel as of a date as close as possible to the preparation date of this report. Include students, transients, rotationals, patients, personnel absent on temporary duty or leave of absence, etc. Line 10 should show only those civilians entitled to on-post housing.

Column (D) should contain current and projected strength data regarding the personnel of other military services, including non-U.S., who are not shown in column (C).

Columns (E), (F), and (G) represent a partial breakout of the strength figures given in columns (C) and (D). Non-U.S. students will be included with TDY students in column (F).

TABLE 2-6

LAYOUT, WORKSHEET FOR FACILITY CATEGORY CODE ANALYSIS

TABULATION OF EXISTING/REQUIRED FACILITIES PAGE ___ OF ___

INSTALLATION:	ASIP DATED: DATE PREPARED: DATE(S) REVISED:

\1	\2	\3				\8	\9	\10	\11
		\4	\5	\6	\7				
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)

COLUMN HEADINGS:

\1 FCG; or construction category code and facility class.
\2 Unit of measure.
\3 Existing assets.
\4 Permanent assets.
\5 Semi-permanent assets.
\6 Temporary assets
\7 Total existing assets.
\8 Total allowed.
\9 Total required.
\10 Balance required.
\11 Remarks.

INSTRUCTIONS:

Column (a) FCG; or construction category code or facility class - In accordance with AR 415-28 (reference 2-5) the three digit category code (with the short title underlined) and the five-digit category code (with the short title underlined) should be itemized. When preparing the TAB using FCG, itemize those individual category codes that make up the FCG after identifying the main code.

Column (b) unit of measure - In accordance with AR 415-28 (reference 2-5), the unit of measure should be indicated for each category. For category codes

requiring two units of measure for scoping, both units should be listed.

Column (c) existing permanent assets - Record the total

existing or under-construction permanent assets for each category code.

Column (d) existing semi-permanent assets - Record the total existing or under-construction semi-permanent assets for each category code.

Column (e) existing temporary assets - Record the total existing or under-construction temporary assets for each category code.

Column (f) total existing assets - Enter the total of columns "c"+"d"+"e".

Column (g) allowed - Enter the allowances for category codes as established by published space criteria.

Column (h) required - Record the actual requirement, based on field investigation and interview with organizations and units on the installation. Make sure to note major repair and renovation requirements in addition to those for new construction.

Column (i) deficit - Enter the total deficit (normally, column "h" minus column "c").

Column (j) remarks - Use this column to explain deviations between space allowances and actual requirements, any assets that represent multiple facility category code uses, projects that are needed to meet the deficit, why non-standard designs are required, and similar information.

TABLE 2-7

ALTERNATIVE LAYOUT, WORKSHEET FOR FACILITY CATEGORY CODE ANALYSIS

TABULATION OF EXISTING/REQUIRED FACILITIES PAGE ___ OF ___										
INSTALLATION:							ASIP DATED: DATE PREPARED: DATE(S) REVISED:			
\1	\2	\3			\7	\8	\9	\10	\11
		\4	\5	\6					
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)

COLUMN HEADINGS:
\1 FCG; or construction category code and facility class.
\2 Unit of measure.
\3 Existing assets (overall heading).
\4 Permanent assets.
\5 Non-permanent assets.
\6 Total existing assets.
\7 Total allowed.
\8 Total required.
\9 Excess.
\10 Shortfall.
\11 Remarks.

INSTRUCTIONS:

Column (a) FCG; or construction category code or facility class - In accordance with AR 415-28 (reference 2-5) the three digit category code (with the short title underlined) and the five-digit category code (with the short title underlined) should be itemized. When preparing the TAB using FCG, itemize those individual category codes that make up the FCG after identifying the main code.

Column (b) unit of measure - In accordance with AR 415-28 (reference 2-5), the unit of measure should be

indicated for each category. For category codes requiring two units of measure for scoping, both

units should be listed.

Column (c) existing permanent assets - Record the total existing or under-construction permanent assets for each category code.

Column (d) existing non-permanent assets - Record the total existing or under-construction non-permanent assets for each category code.

Column (e) total existing assets - Enter the total of columns "c"+"d"+"e".

Column (f) allowed - Enter the allowances for category codes as established by published space criteria.

Column (g) required - Record the actual requirement, based on field investigation and interview with organizations and units on the installation. Make sure to note major repair and renovation requirements in addition to those for new construction.

Column (h) excess - Enter the total amount of excess space (normally, column "c" minus column g).

Column (i) shortfall - Enter the total shortfall (normally, column "g" minus column "c").

Column (j) remarks - Use this column to explain deviations between space allowances and actual requirements, any assets that represent multiple facility category code uses, projects that are needed to meet the shortfall, why non-standard designs are required, and similar information.

g. Environmental Assessment. Prepare an environmental analysis in accordance with guidance contained AR 200-2, Environmental Effects of Army Actions (reference 2-7).

h. Supporting Graphics. The graphics used to support the CIS are described as follows:

(1) The future development site plan (required). This document, formerly called the general site plan, establishes sites or general development areas for requirements identified in the TAB.

(2) Environmental overlay (required). This document is discussed in the section of this chapter addressing the long-range component.

(3) Transportation plan (optional). This plan shows

recommendations for the general road and railroad systems to serve the installation including proposed layout, type, class, weight of rail, width of roads, and paved parking areas. The previously described transportation analysis serves as a basis for the transportation plan. In many cases, annotated existing conditions maps can substitute for these plans.

(4) Information Systems Plan, Plant-in-Place (required). This plan shows existing and proposed major information management features on the installation.

(5) General drainage plan (optional). This optional plan will show all existing major storm drainage and sub-drainage facilities recommended for retention, modification, or abandonment, and the primary components of all new facilities. In many cases, annotated existing conditions maps eliminate the need for this plan.

(6) Airfield plan (optional). At installations where airfield or heliport facilities are required, a separate one sheet plan at the same scale and with similar information as the corresponding existing conditions map will be included to show the airfield section only. This plan will be developed as part of the site plan for the installation. This large scale plan of the airfield area is required in order to assure that the layout complies with exacting airfield criteria as set forth in TM 5-803-4 Planning of Army Aviation Facilities (reference 2-8). The U.S. Army Aeronautical Services Agency (USAASA) is responsible for approving this plan.

(7) Airspace utilization plan (optional). This plan will be prepared only when enlargement of an existing airfield with a precision instrumented runway is planned, and where possible obstructions to air navigation may require airspace action by the Federal Aviation Administration (FAA). The plan will be prepared using the corresponding existing conditions map. It will be approved by the MACOM prior to inclusion of aviation facilities in a fiscal year construction program. The U.S. Army Aeronautical Services Agency (USAASA) is responsible for approving this plan.

(8) Flight hazard strip plans and profiles (optional). These plans will be prepared only when enlargement of an existing airfield with precision instrumented runways is planned, and where proposed airfield facilities may require airspace action by the FAA. These plans and profiles will be prepared in the same manner as the corresponding basic information maps, showing the same types of information. These plans should be annotated to include dates when obstruction approvals or exemptions have been granted or requested from the FAA in accordance with procedures outlined in AR 95-2, Air Traffic Control, Airspace, Airfields, Flight Activities, and Navigational Aids (reference 2-9). The U.S. Army Aeronautical Services Agency is responsible for approving this plan.

(9) Utility plans (optional). These plans (formerly called Phase III plans) show existing utilities recommended for retention, modification, abandonment, or replacement, and primary components of all proposed utilities, including information systems assessment and plan, and central heating plants. Proposed systems will comply with the intent of AR 11-27, Army Energy Program (reference 2-10). Systems will also be shown in a component size that is adequate to accommodate all future development. At installations where new construction will be in several scattered projects, and only lateral utility connections are needed, annotated existing conditions maps can be substituted for these plans.

(10) Area development plans (optional). These plans are enlarged portions of the site plans that show the proposed detailed development of complexes, community centers, utility services for a section of the installation, a complex firing range, or a single important building with its associated support elements.

(11) Community and family life plan (optional). This optional plan will show all existing and proposed facilities for community and family life support, major outdoor sports and other outdoor recreation areas recommended for retention, modification, or abandonment. There is no need for this plan if proposed welfare, morale and recreational facilities have been shown on the future development site plan.

(12) Natural resources management plan drawings (optional). This plan will augment the Natural Resources Management Plan as required by AR 420-74, Natural Resources Management: Land, Forest, Fish and Wildlife (reference 2-11), and will serve as a key reference and guide for preparation of an installation landscape planting and land management plan. General tree cover plans are no longer required.

(13) Other plans (optional). These plans, which enhance the management of future development, may be prepared on an optional basis. A few examples are: facilities utilization plan, POV parking plan, food service facilities support plan, housing rehabilitation plan, signage plan, and zones of desired architectural character.

4. SHORT-RANGE COMPONENT DOCUMENTS.

a. General. The Army horizon for operational planning is the Program Objective Memorandum (POM) "horizon." During this time frame, the Army establishes planning strategies for stationing, equipment distribution, and training, as well as identifying financial and manpower resources. The SRC integrates the POM horizon with the RPMP process and consists of the documents listed in the following paragraphs. Detailed instructions for preparing the SRC may be found in Chapter 5 of these instructions.

b. Overview. Overview relating to the specific projects and the maintenance and repair project list to the CIS.

c. Planning Data Base. This information, which was not required in earlier editions of AR 210-20 (reference 2-4), is a project listing that integrates all projects identified within the POM horizon and develops justification and planning data in support of projects needed to implement the CIS, to include all major programmed maintenance, repair and new construction actions for the 6-year POM period regardless of fund source. The planning data base ensures that proposed construction and RPMA improvements have been thoroughly evaluated by the MACOM before programming begins. The planning data base will be bound in a loose-leaf binder on standard letter size paper, allowing for simple addition of revised sheets. The planning data base will also include justification and planning information in support of each project as follows:

(1) Project list. Prepare a project list, listing each project by project number, predominant facility category code in accordance with AR 415-28 (reference 2-5), project title, scope and estimated cost. Arrange these projects in estimated fiscal year sequence based on projection of MACOM program and budget guidance.

(2) Project justification and planning data. For each project identified in the short-range component, develop, over a period of time, justification and planning information for only those projects in the POM period so programming documents can be prepared with little additional effort. These data consist of four kinds of information: project description, construction cost, justification, and back-up data. A detailed description of the planning data base is contained in Chapter 5 of these instructions.

d. Environmental Assessment. Prepare an environmental analysis to assess the impact of each project in accordance with Chapter 4 of these instructions.

e. Supporting Graphics. Graphics to support the SRC should include the following required and optional documents:

(1) Preferred alternatives plan (required).

(2) Enhanced future development plan extract (required).

(3) Enhanced environmental overlay (required).

5. MOBILIZATION COMPONENT DOCUMENTS.

a. General. The mobilization component documents should be regarded as overlays to the LRC, CIS and SRC documents, and are described in the following paragraphs.

b. Narrative. The mobilization narrative shall be prepared in accordance with the outlines specified in Chapter 6 of these instructions, and shall be prepared on standard letter-size sheets and bound in a standard, hard cover 3-ring binder.

c. Mobilization Land Use Plan. The mobilization land use plan and site plans shall be prepared on standard-size sheets, 28-inch [71.1 cm] by 40-inch [101.6 cm] between trim, in accordance with the methods and procedures established in TB ENG 353 (reference 2-3).

d. Mobilization Component Tabulation of Existing and Required Facilities (MCTAB). The MCTAB shall be prepared in accordance with the instructions contained in Chapter 6 of these instructions, and shall be prepared on standard letter-size sheets and bound in a standard, hard cover 3-ring binder.

e. Mobilization Development Plans. The mobilization development plans, which are overlays of the peacetime future development plan and shall be prepared on standard-size sheets, 28-inch [71.1 cm] by 40-inch [101.6 cm] between trim, and are prepared according to methods and procedures established in TB ENG 353 (reference 2-3).

f. Optional Plans. Optional mobilization plan sheets shall be prepared on standard-size sheets, 28-inch [71.1 cm] by 40-inch [101.6 cm] between trim, in accordance with methods and procedures established in TB ENG 353 (reference 2-3). These plans may include mobilization utility plans, facility utilization plans, airspace and flight hazard strip plans, and reservation plans annotated with the locations of mobilization ranges and maneuver areas.

6. CONTRIBUTING INFORMATION.

a. General. The RPMP uses many different documents that address a broad spectrum of issues to define factors influencing expansion of the installation and to formulate the LRC, CIP, SRC and MC. Contributory plans that are essential for RPMP preparation and maintenance are listed and described in the following paragraphs. However, this listing should not be regarded as all-inclusive.

b. Existing Condition Maps. These maps graphically portray existing conditions in the region, vicinity and on the installation. Existing conditions maps are standard-size sheets, 28-inch [71.1 cm] by 40-inch [101.6 cm] between trim, and are prepared in accordance with TB ENG 353 (reference 2-3). These maps are the base drawings for the future development plan drawings. Existing conditions maps will include a cover sheet and an index and will be, if possible, bound together as a single atlas. Required and optional existing condition maps are listed as follows:

(1) Regional map (required). This map shows the relationship of the installation to the surrounding region and outstanding physical characteristics of the region. The map should show principal jurisdictions and planning areas in the region. These areas may comprise one or more counties and may be located within a Standard Metropolitan Statistical Area (SMSA) as defined by the U.S. Bureau of Census. A commercially available

map may be adapted for use as a base map.

(2) Installation land use map (required). This map will be prepared at a scale that will depict the entire reservation and adjacent land use areas in the civilian community surrounding the reservation boundary. Principal land uses will be delineated on this map.

(3) Building area land use map (required). This map will be prepared for the built-up areas of an installation to provide a more detailed presentation of land use than is possible on the installation land use map.

(4) Site maps (required). These maps, formerly called general site maps, should cover a sufficient area to show all existing building construction areas and should portray topography, drainage and manmade features such as existing buildings and building numbers, streets, roads and railroads, names or numbers of other prominent features and areas on the installation. When the maps are sectioned because of scale, an additional "composite" building area map should be developed showing the entire building area on one standard-sized sheet.

(5) Transportation map (required). This map will be prepared to show all transportation modes on the installation to include roads, railroads, airfields, and waterways.

(6) Utility and storm drainage maps (required). Water, wastewater, natural gas, electrical, and storm drainage maps will be prepared. Other utility maps are optional as needed.

(7) Environmental overlay map (optional). This map is an overlay of the installation land use map and depicts the existing environmental assets and conditions at the installation. This map will show the same types of information that is depicted on the environmental overlay plan, except that the map depicts present, and not proposed conditions. If an environmental overlay plan has been developed, this map need not be prepared.

(8) Airfield maps (required where air operational facilities exist). These maps are prepared where Army Airfield facilities exist and will depict the entire airfield facility on a single sheet. The U.S. Army Aeronautical Services Agency (USAASA) is responsible for approving these maps.

(9) Information systems maps, plant-in-place (required). These maps are overlays of the site maps that depict major communications features and lines on the installation, and their points of connection to systems outside the installation.

(10) Area development maps (for areas of intensive use) (optional). These maps are of proper scale to delineate site features and topographic contours at a "design level" of detail, sufficient to use for preliminary

design studies for areas where intensive development is proposed or contemplated. Examples of areas where such maps could be prepared include troop housing complexes, shopping complexes, service schools, and command headquarters areas.

(11) Building disposal (optional). These maps portray the cantonment area as it existed at a "snapshot" point in time, usually the late 1950s or early 1960s, and provide a graphic record of temporary buildings that have been disposed of or destroyed, those committed for demolition against specific construction projects, and those designated for retention. These maps should be supported by tabular data that record building information regarding temporary facilities on the installation.

(12) Building numbering (optional). These maps are site maps overprinted with the building numbering grid of the installation, enabling the numbering of new or relocated buildings to be accomplished in accordance with the established grid.

(13) Facility utilization (optional). These are enlargements of the site maps that are sectioned to show areas for which organizations, units and activities on the installation are responsible. The maps may show which specific organization is assigned to each area and building and, in some instances, may be augmented with floor plans to depict multiple occupancy.

(14) Fire protection (optional). These maps are overlays of the site maps that show response areas, fire access routes, fire observation facilities, and fire water connection points throughout the installation.

(15) Firing ranges and training areas (optional). These maps are overlays of the installation land use map that show firing ranges, firing points for indirect fire weapons, range fans and danger areas, impact and demolition areas, maneuver areas, bivouac sites, field latrines, and restricted areas resulting from range operations.

(16) Natural resources maps (optional). These maps are overlays of the installation land use map and site maps that show tree cover and vegetation types, fire lanes, intensively managed areas, scenic areas, rivers, lakes and ponds, and animal and fish populations and types, etc. These maps may be used to augment the Natural Resources Management Plan, which is required by AR 420-74 (reference 2-11).

(17) Physical security (optional). These maps may be overlays of the installation land use map, site maps, and enlarged site maps used to portray the physical security and anti-terrorism features of the installation.

(18) Safety and occupational health (optional). These maps may be overlays of the installation land use map, site maps, or other maps that portray safety and occupational health aspects of the installation such as dangerous traffic features, hazardous waste areas, pest and toxic plant

areas, traffic areas subject to heavy icing and snow drifts, clearance zones around hazardous and malodorous activities, etc.

(19) Community and family life support maps (optional). These maps are overlays to the site maps that show the location and may give descriptions of existing areas and facilities provided for community and family life support, including recreational facilities.

(20) The Army and Air Force Exchange Service (AAFES) maps (optional). These maps are overlays to the site maps that portray the location and give the general description of retail and community facilities operated by the AAFES. These maps may be overprinted with marketing areas, areas serviced by particular facilities, etc.

c. Real Property Inventory (RPI) or Building Information Schedule (BIS) (required). This document is a catalogue of information about each real property facility on the installation which is prepared as follows:

(1) Installations on the Integrated Facilities System (IFS) will keep real property information on this system and format the RPI or BIS from IFS data.

(2) Installations not on the IFS system will prepare RPI or BIS on locally available word processing equipment or personal computers using word processing or spreadsheet software, or use the desktop resource real property management system (DR REAL) software which is available from the Office of the Assistant Chief of Engineers (DAEN-ZCI-P).

(3) Information should include, but need not be limited to, the following for each facility:

(a) Building number.

(b) Category code of the present use.

(c) Size in primary and secondary measurements.

(d) Year of construction.

(e) Permanent, semi-permanent, or temporary.

(f) Proposed or estimated end of economic life.

(4) Building numbers shown on the site map and in the RPI or BIS will be in agreement. Buildings should be numbered in accordance with AR 420-70, Buildings and Structures (reference 2-13). For all facilities identified in the installation's inventory of historic places, the letters "HIST" will be entered along with other information.

d. Resource Management Plan (required by other regulation). The resource management plan is prepared by the Engineering Resource Management

Division of the installation engineer in accordance with Technical Note (TN) 420-10-011, DEH Resources Management System (reference 2-14), and establishes the short-range goals, objectives and strategies of the installation engineer organization.

e. Natural Resources Management Plan (required by other regulation). The installation Natural Resources Management Plan is prepared and maintained by the Land Management Branch, Buildings and Grounds Division of the installation engineer in accordance with AR 420-74 (reference 2-11). This plan inventories all training lands and balances Army mission activities with the land's ability to support long-term use, and implements the Integrated Training Area Management (ITAM) program to manage training lands.

f. Historical Preservation Plan (required by other regulation). All actions at the installation that may affect historic archeological properties must be reviewed with the State Historic Preservation Officer (SHPO) and, in most cases, with the advisory council on historic preservation. AR 420-40, Historic Preservation (reference 2-15) establishes Army historical and archeological preservation policy. A historical preservation plan identifies the historic places on the installation and plans for the preservation of historic and archeological properties to the maximum extent possible.

g. Training Management Plan (required by other regulation). A training management plan is required by AR 210-21, Army Training Ranges (reference 2-16). This plan identifies training facilities requirements and management practices to maintain and conserve training land.

h. Physical Security Plan (required by other regulation). Physical security plans for the installation and critical facilities on the installation have been prepared by the installation provost marshal. The planning, programming and design of facilities must incorporate the physical security provisions established by AR 190-13, The Army Physical Security Program (reference 2-17) and AR 525-13, The Army Terrorism Counteraction Program (reference 2-18).

i. Other Environmental, Natural, Cultural Resources Plans (optional). There may be other preservation and protection plans on the installation that should be considered during the development or revision of the master plan. For example, there may be plans for the protection of threatened or endangered species, for management of grazing or forest lands on the installation, or for archeological investigation of suspected sites.

j. Local Community Development Plans (required). Executive Order 12372, Intergovernmental Review of Federal Programs, as implemented by DoD Directive 4165.61 (reference 2-19), requires intergovernmental coordination of, and public involvement in, DoD planning activities. The development plans of communities near the installation must be coordinated with proposals contained in the RPMP and, conversely, the long-range and selective parts of the short-range components must be made known to

surrounding communities. In this regard, where there is combined local community and Army installation interest in coordinated comprehensive land use planning, a Joint Land Use Study (JLUS) should be undertaken under the JLUS Program sponsored by the Office of Economic Adjustment (OEA). Participation in this program is encouraged. Additional information is available from HQDA (DAEN-ZCI-P) Washington, DC 20314-2600.

REFERENCES

2-1 TM 5-803-5, Installation Design.

2-2 TB ENG 354, Emergency Expansion Capability Analysis.

2-3 TB ENG 353, The Overlay Composite Method of Master Plan Preparation.

2-4 AR 210-20, Master Planning for Army Installations.

2-5 AR 415-28, Department of the Army Facility Classes and Construction Categories.

2-6 Architectural and Engineering Instructions (AEI), "Design Criteria."

2-7 AR 200-2, Environmental Effects of Army Actions.

2-8 TM 5-803-4, Planning of Army Aviation Facilities.

2-9 AR 95-2, Air Traffic Control, Airspace, Airfields, Flight Activities and Navigational Aids.

2-10 AR 11-27, Army Energy Program.

2-11 AR 420-74, Natural Resources Management: Land, Forest, Fish and Wildlife.

2-12 AR 415-17, Cost Estimating for Military Programming.

2-13 AR 420-70, Buildings and Structures.

2-14 Technical Note (TN) 420-10-01, DEH Resources Management System.

2-15 AR 420-40, Historic Preservation.

2-16 AR 210-21, Army Training Ranges.

2-17 AR 190-13, The Army Physical Security Program.

2-18 AR 525-13, The Army Terrorism Counteraction Program.

2-19 Executive Order 12372, Intergovernmental Review of Federal Programs, as implemented by DoD Directive 4165.61.amended.

CHAPTER 3

LAND USE PLANNING

1. GENERAL. Land use planning is a mapping and planned allocation of the use of all installation lands based on established land use categories and criteria. This chapter explains the concept and process for developing, implementing, and updating the land use plan component of installation real property master plans (RPMP) under the provisions of AR 210-20, Master Planning for Army Installations (reference 3-1).

2. THE LAND USE PLANNING PROCESS. Land use planning is performed through a series of well-defined steps that are discussed later in this chapter. The land use planning process is iterative because it needs feedback and ideas from installation residents and organizations. The plan must be prepared and made to work as a matter of "public business" by active solicitation of comments, holding public meetings, and keeping installation residents informed of the plan. Land use planning never stops and is used on a continuing basis along with other RPMP components. These steps include:

a. An identification phase that includes establishing land use planning goals and objectives, and developing a strategy for accomplishing the land use plan.

b. An evaluation phase that includes a functional relationships analysis and actually preparing the land use plan.

c. An implementation phase that involves making the land use plan work.

3. LAND USE PLANNING PHILOSOPHY, POLICY, AND PRINCIPLES.

a. Thought Process. Land use planning involves questioning, analyzing, and placing the results of that process into an implementable plan. While solutions for particular problems will undoubtedly have prototypes elsewhere, the mix of land use solutions at a particular installation will be unique.

b. No "Ideal" Plan. On existing installations, the array of land uses and transportation corridors have evolved over time, as missions, doctrines and technologies changed and needs evolved. Therefore, "the ideal land use arrangement" does not exist on any existing Army installation.

c. No Two Alike. Land use organizational and functional relationships at Army installations vary according to mission, technology, social development, regional cultural values, and the natural and built environments. The land use plan for one installation is unlikely to apply elsewhere.

d. Integration. Land use planning integrates the physical elements of an installation and the human (sociocultural) activities that take place within and around the installation. Sociocultural influences shape the land use plan as much as does the physical environment.

e. Plan Updates. The process of implementing the land use plan must be accompanied by an effort to keep it relevant. An annual review by the Real Property Planning Board (RPPB) is an excellent way to ensure relevance. Installations requesting Major Army Command (MACOM) participation in the planning board reviews find greater value in this process.

f. Feedback. A planning process must include a feedback mechanism so that new information can be incorporated. The acquisition of new data can even require reformulation of some original goals and objectives.

g. Adjacent communities. Joint, pro-active planning with adjacent communities is essential for a good RPMP and successful project development and facilities management. For example, attending city-county planning board meetings, inviting local planners to Real Property Planning Board meetings, meetings to resolve differences between the RPMP and plans of surrounding communities strengthen the validity of the RPMP and adds immeasurably to the planning process.

h. Consistency. There is a difference between amending a plan in light of new information or changed circumstances and altering the plan due to the preferences of individuals. At certain times, it is very difficult to maintain the plan without compromising its vision and coherence. Major Army Commands (MACOM) can help during times of local resistance to RPMP proposals, and have final approval authority.

i. Use. The ultimate test of any plan is the extent to which the installation applies it on a continuing basis as a guiding force for decision-making and development. A land use plan is based upon specific goals and objectives, thus giving a context to decisions and staving off short-term solutions which create or fail to solve long-term problems. Conversely, the plan explains short-range inefficiencies, which actually are evolutionary stages in movement toward long-range goals.

j. Mixed Use. Land use planning is not simply the grouping of all similar uses and facilities together in large masses; it is the mixture of compatible activities that allows them to function efficiently. For example, family housing areas, although shown as a single major land use category, usually contain convenience stores, child care centers, recreational areas, and maintenance and repair facilities for the housing units.

k. Reason For Plan. Land use, siting, building placement and organization are important insofar as they enhance (or detract from) mission accomplishment and the quality of life at the installation.

l. Nodes. The land use structure of the installation can be defined as a system of nodes or centers that are concentrations of compatible, interacting activities. These have functional linkages, both within and among nodes. Figure 3-1 provides a diagram that illustrates the nodes concept.

FIGURE 3-1

NODES CONCEPT DIAGRAM

```
                                   |
EXCHANGE BRANCH<<<<<<<<<<-MAJOR SHOPPING CENTER->>>>>>>>>>EXCHANGE BRANCH
IN HOUSING AREA                    |                     IN TROOP AREA

                                   |
DIRECTORATE ADMIN<<<<<<-CENTRAL POST ADMIN AREA->>>>>>>UNIT HEADQUARTERS
                                   |
```

m. Arrangement of Nodes. Nodes are arranged by related activities. Larger and specialized activities are often the predominant land use in the largest nodes, e.g., the PX in the community center, while smaller activities offering a less complete range of services are "satellited" away from the primary nodes, e.g., shoppettes and service stations located within housing areas.

n. Distance. Surrounding each node is a "density" of interaction that declines with increased distance from the center. Distance influences the distribution of activities and the level of activity at any location. The distance influence in the nodes concept is illustrated the figure 3-2.

FIGURE 3-2

NODES CONCEPT - DISTANCE INFLUENCE DIAGRAM

```
        1 Mi. (1.6 km)                        1 Mi. (1.6 km)
            radius<---------------+---------------->radius
EXCHANGE<<<<<<<|<<<<<<<<<CENTRAL POST EXCHANGE>>>>>>>>>|>>>>>>>>>>>EXCHANGE
BRANCH         |          IN CENTRAL POST AREA         |            BRANCH
IN FAMILY                                                          IN TROOP
HOUSING
```

o. Expansion Capability. The Army changes at a more rapid rate than comparable organizations in the civilian sector, and even more drastic changes can occur during periods of mobilization, one of the Army's primary purposes.

(1) Peacetime expansion. Installations should be planned to accommodate expansion beyond currently foreseen peacetime requirements. For example, a two-brigade divisional installation should leave room for a third brigade, even though current projections do not call for such expansion.

(2) Mobilization expansion. Land use zones should be set aside for the expansion required to accommodate the assigned mobilization mission. Mobilization facilities are less attractive and of a shorter life span than peacetime development. Therefore, mobilization expansion zones should be planned as discrete complexes of "M" Drawing or rapidly erectable facilities, apart from areas proposed for peacetime development. For example, a troop-type installation may set aside space for an Infantry Training Center, which would activate in event of mobilization, while a training installation might plan mobilization facilities to accommodate twice its student load. Utilities planned for peacetime development zones near mobilization areas should be slightly oversized to allow for connection to the mobilization facilities.

(3) Expansion within zones. Individual land use zones should include reasonable space for expansion. A rule of thumb when configuring individual land use zones is to allow 25% expansion above calculated requirements within each zone. The layout of land use zones should be oriented and sized generously enough so that the expansion of one zone does not block or intrude upon development in another zone.

4. GOALS AND OBJECTIVES. (IDENTIFICATION PHASE)

a. Definitions. Develop land use goals and objectives very early in the first phase of the planning process. To assist in this task, a set of definitions is presented, in the order of "most general" to "most focused," as follows:

(1) Goal. A desired end-state, not necessarily quantifiable; a valuable target for planning. An example goal statement is, "Fort Royal will house all unaccompanied enlisted personnel in permanent, adequate unaccompanied personnel housing facilities."

(2) Objective. A more specific component of a goal; usually quantifiable and sometimes linked to a schedule or time-line. Objectives are used to measure progress toward a goal. An example objective statement is, "Fort Royal will house 90% of unaccompanied enlisted personnel in permanent, adequate unaccompanied personnel housing facilities by the year 1995."

(3) Policy. A definite statement about the direction that will be taken to achieve the objective--a guide for routine actions. An example of a policy statement is, "Fort Royal will assign permanent adequate unaccompanied enlisted personnel housing facilities to tactical units first, to be followed by garrison and tenant organizations, and lastly to

Reserve Components organizations assigned to the installation for annual training."

b. Land Use Planning Goals and Objectives. The unique characteristics of each installation require formulation of its own land use goals and objectives. Examples of land use goal and objective statements are as follows:

(1) Goal. Provide real property support for successful accomplishment of the assigned mission.

(a) Objective. Assure sufficient training ranges, facilities and maneuver areas are available on a continuing basis.

(b) Objective. Develop and implement a Range Master Plan in accordance with AR 210-21, Army Training Ranges (reference 3-2) not later than the year 1993.

(c) Objective. Support and assist the assigned Reserve, ROTC, and National Guard components to achieve their training goals on a continuing basis.

(d) Objective. Analyze and program for force structure changes, leaving room for expansion within individual land use allocations during the current update of the land use plan.

(2) Goal. Set aside sufficient land area to support unforeseen peacetime expansion and to support the assigned mobilization mission.

(a) Objective. Develop the current update of the land use plan to provide additional land to house two additional brigade and/or brigade-sized organizations, even though these are not currently a part of the projected strength--update scheduled for completion in mid-1993.

(b) Objective. On the current update of the mobilization component, ensure sufficient area to house an Infantry Training Center, which would be activated in the event of mobilization--update scheduled for completion in mid-1993..

5. PLANNING TO PLAN. (IDENTIFICATION PHASE, CONTINUED)

a. Program Development. A strategy needs to be developed to create the land use plan, ensure its success, maintain community involvement, and keep it current.

b. Long-Range Versus Short-Range. Management of the planning effort involves the conflict between day-to-day problems versus the need for a longer-term strategy and a way of making daily decisions in light of long-term goals. If possible, focus the work efforts of one member of the planning staff on long-range issues including the land use plan. Devote one annual meeting of the RPPB to long-range issues and other meetings to

short-range issues.

c. Schedule. By interrelating the land use plan to other components of the RPMP, develop an implementation schedule that is "cross-leveled" between all facility category groups (FCG). The RPMP component used to develop and record this schedule is called the capital investment strategy (CIS). See Chapter 2 of these instructions.

d. Analysis of Planning Factors. There are three classes of factors that constrain or provide opportunities for development. These classes are defined and discussed as follows (see the environmental overlay section, Chapter 4 of these instructions, for a more thorough discussion of these factors):

(1) Environmental factors. Environmental factors shown on the environmental overlay (see Chapter 2) are constraints influencing the environmental impact of development, each of which varies depending on the land use category. For example, a flood plain area is not suitable for heavily developed uses but may be used as open space, buffers, or locations for outdoor recreation facilities.

(2) Technical factors. Technical factors are characteristics of the environment that affect the feasibility and cost of developing a particular location on an installation, such as areas with geologic sinks or weak soil structure, electronic space corridors, aircraft accident potential zones (APZ), and aircraft flight corridors.

(3) Economic factors. Economic constraints and uncertainties influence the development of a realistic plan. Some constraints are directly measurable. Others, such as the installation's contribution to the regional economy, require a more qualitative analysis. For example, socioeconomic factors may make certain installations infeasible for stationing lower grade enlisted personnel due to the high cost of living in the area.

6. FUNCTIONAL RELATIONSHIPS ANALYSIS. (EVALUATION PHASE)

a. General. The functional relationships analysis determines the physical relationship between related land uses, reveals their dynamic nature and shows how various activities are distributed over an area. The analysis must recognize the ways in which uses interact. Interactions can be positive and beneficial, neutral, or negative and detrimental.

b. Identification. The identification of functional relationships requires information from most installation activities and organizations to identify the activities within each land use and the nature of flows between areas.

c. Map Analyses. Prepare functional relationship map overlay to enable understanding of land use dynamics. Consider the relationships between installation land uses and between the installation and off-post

areas using the following procedures:

(1) Existing conditions map and real property inventory. Obtain a copy of the installation's most recently updated existing conditions map and the real property inventory. Label important facilities and structures located throughout the installation. If a land use map is available, much time can be saved.

(2) Identify land use zones. Establish boundaries for the 12 major functional land use areas discussed later in this chapter, to include adjacent off-post areas. Start by consulting existing planning documents and maps. Look for concentrations of facilities or activities that comprise each land use category.

(3) Depict circulation systems. The transportation system determines the accessibility and efficiency of flows between different land use areas. Show the major and minor circulation routes for vehicles and pedestrians. In some instances, heavily used low altitude aircraft corridors should also be shown.

(4) Overlay. On tracing paper placed on top of the map, indicate concentrations or clusters of facilities that comprise a particular land use category. Identify nodes where one type of facility is so dominant that it determines the land use. Provide for mobilization expansion and expansion of peacetime use zones "above and beyond" currently projected strength increases.

(5) Diagram affinity relationships. Once the major land use areas have been identified and outlined, indicate the strength of functional relationships between land uses using triple, double, and single lines drawn between the zones. Lines are terminated by arrows to show the direction(s) of dependency flows. Then make the following analyses:

(a) Functional dependency. Examine the functional relationships among land uses. A relationship exists when the activities that comprise two or more land uses are dependent.

(b) Flow analysis. Dependencies between land uses are evident by the flows, e.g., raw materials, information, people, energy, support services, administrative services, and finished goods. Maintaining flows between dependent land uses is best achieved by locating them next to each other. Flows may be in one or both directions, described as follows:

1/ One-directional flow. A one-directional flow, e.g., food from a central rations issue facility to dining facilities throughout the installation, implies a one-way dependency in which only one of the functions is the recipient. The best location for the central rations facility is determined by the locations of the dining facilities it supports.

2/ Two-directional flow. A flow in both directions implies that activities in two land uses benefit by the flows between them. For example, unaccompanied personnel benefit by living close to the community center because they depend on these facilities. Reciprocally, the community center is successful because unaccompanied personnel are present.

3/ Organizational relationships analysis. Land uses may be linked by organizational relationships and compatibility of their component activities. For example, the installation engineer may park and maintain its government vehicles in the DOL transportation motor pool which, in this case, should be located nearby. The maintenance and vehicle parking facilities of battalions assigned to one brigade should be, ideally, located near each other and reasonably close to the brigade headquarters.

4/ Land use area evaluation. Each land use should be individually evaluated according to the following criteria:

a/ The land area is of adequate size, including peacetime and mobilization expansion capability, to support the current mission and future development proposals.

b/ Other types of land uses that are essential to the efficient functioning of activities or facilities associated with this land use have been addressed in the planning.

c/ The nature of the interactions (kind, frequency, importance of flow) between the different land uses has been incorporated.

d/ Land uses that would gain operational efficiencies

if they were located closer to each other have been recommended in the plan.

e/ External effects associated with a land use that would adversely affect another adjacent use have been identified and mitigative action recommended.

f/ Land uses that are "footloose" in terms of dependencies on other land use areas have been located in relatively independent areas. Land uses have been identified which have a specific location requirement relative to site suitability (e.g., preserve the land, soil characteristics, minimum area, need for utilities, clearance zones, security considerations, etc.)?

(6) Review overlay. Review the overlay to see if there are any deviations from the relationships described in the land use section, which is found later in this chapter. It is important to know that certain facilities within a single land use category may be incompatible, e.g., ammunition storage is not compatible with petroleum, oil, and lubricant (POL) storage. Be sure that the character of functional relationships is

depicted with lines and arrows, vehicular and pedestrian corridors are shown, land use area combinations that need adjustment or relocation are noted, and adequate expansion zones for peacetime and mobilization have been designated.

(7) Problems and opportunities. Examine the functional relationships overlay to see if related land uses or similar activities are located too far from each other, where compatible activities can be consolidated, and where "stray" individual functions or structures are located away from the functional area most closely related to them.

(8) Major activities and structures. Identify major activities and structures within some of the larger functional land use areas, described later in this chapter, which have a wide variety of activities performed within them. Study activities inside any one of the zones containing complexes of facilities having heavy flows of activities between them, e.g., the industrial area, or heavy flows into and out of the complex, e.g., the community center. This analysis may indicate opportunities for consolidating related, compatible activities within a single structure or complex.

7. PREPARING THE LAND USE PLAN. (EVALUATION PHASE, CONTINUED)

a. General. The key step in the planning process is to prepare a final land use plan that graphically presents the future land use pattern of the installation. The land use plan is the basis for the future development plan and the mobilization site plan.

b. Evolutionary Process. Drafting the future land use plan is an evolutionary process in which alternative plans are drafted, reviewed, and modified based on the previously discussed information and analysis. There is no precise "how to" method, but experience indicates that an intensive working session of perhaps one week duration, by a team of qualified design and planning professionals, can expedite the effort. Descriptions of basic steps are presented in the following paragraphs.

c. Assemble Data. At this point in the process, assemble and integrate the information from the following sources:

(1) The land use planning goals and objectives.

(2) The needs assessment, which identifies key issues and problems that must be addressed through land use planning.

(3) The functional relationships overlay.

(4) The analysis of constraints and opportunities.

(5) Existing land use maps and any other existing RPMP components, particularly the transportation assessment, environmental overlay, utilities assessment, capital investment strategy, future development plan,

and contributing information such as the natural resources plans.

d. Preliminary Plan. Next, a preliminary plan of future land use areas is developed. This should be done as an overlay to the base map and functional relationships overlay. Prepare several alternative schemes.

e. Review Plan. Once the initial alternatives have been drafted, they should be reviewed by a working committee of the RPPB, who must take into consideration the information noted above.

f. Amend Plan. The initial alternatives should be further amended based on adherence to the following checklist:

(1) Land use goals and objectives.

(a) The proposed land use pattern results in the achievement of the land use goals and objectives.

(b) The proposed land use pattern functions efficiently and is effective in supporting the installation mission.

(2) Capital investment strategy (CIS). The land use plan must resolve all land use-related requirements identified in the CIS.

(3) Functional relationships.

(a) Functionally related land uses that would benefit from proximity are proposed for relocation.

(b) Incompatible adjacent land uses are proposed for relocation or buffering.

(c) Improved efficiency of flows between functionally related land uses is proposed when proximity is not feasible.

(d) The plan proposes consolidation of land uses where compatible land uses are currently dispersed from each other.

(4) Planning factors.

(a) Security and anti-terrorism considerations have been included in the plan.

(b) Combination of functionally related or compatible uses into single structures or complexes is proposed.

(c) Demolition of temporary building areas to yield more land that can be developed for new facilities is proposed.

(d) The alternative respects constraints imposed by environmental factors.

(e) The important characteristics of the installation and its resources that should be taken advantage of, or preserved, have been taken into account.

(f) Utility and transportation considerations are incorporated into the land use plan.

g. Reiteration. As the preliminary alternatives are examined in light of the above information sources and checklist, the final land use plan will begin to emerge.

h. Input and Review. Input from other groups is crucial to developing a consensus regarding the plan. Alternative versions of the preliminary land use plan should be circulated for review and comment, with recommendations on the best alternative. Circulation should include the RPPB membership, major activities and organizations on the installation and civilian authorities affected by the plan. Consider conducting working meetings or a public meeting to make all comments a matter of record.

i. Final Plan. After receiving this input, the final alternative is adopted by a meeting of the RPPB and the land use plan is finalized in accordance with AR 210-20 (reference 3-1), and standards set forth for Computer-Aided Drafting and Design (CADD) systems, the Automated Mapping/Facility Management (AM/FM) system, or TB ENG 353 The Overlay Composite Method of Master Plan Preparation (reference 3-3).

8. MAKING THE LAND USE PLAN WORK. (IMPLEMENTATION PHASE)

a. Implementation. The final part of the Army land use planning process is the implementation phase. Three major activities conducted during this phase are listed and discussed in the following paragraphs.

b. Policies, Programs, and Projects. Specific policies and actions to implement the land use plan will be applied regularly. Land use policy, along with policies from other components of the RPMP, will be recorded in the long-range analysis, and in the capital investment strategy (CIS), the source documents for plan implementation. Sources of information and examples of land use policies and actions are as follows:

(1) Sources. Review the land use plan, land use goals and objectives, MILCON program within the current Program Objective Memorandum (POM) cycle, major Operations and Maintenance, Army maintenance and repair project listings, long-range analysis, environmental overlay, transportation analysis, utilities analysis, and off-post plans and policies.

(2) Policy development. The development of land use policies, and accompanying actions, will be a collaborative effort of the entire RPPB membership, probably going through several iterations of drafting and review. Refer to the other RPMP components to ensure that the initial

policies, etc., are consistent throughout the entire RPMP.

(3) Example policies. Land use goals and objectives developed during the identification phase will be the basis for developing more specific measures for implementing them. Each installation will have to develop its own set of policies, programs, and projects. These land use policies and the projects that implement them can be very specific and will influence the development of the CIS. Examples are:

(a) Policy. Reserve an area for construction of additional unaccompanied enlisted housing "above and beyond" current projected military strength levels; Action 1: Dispose of World War II temporary facilities in Area "N" to liberate land for an additional brigade-size complex; and Action 2: Demolish a temporary maintenance complex in Area "L" to liberate land for an additional brigade-sized complex.

(b) Policy. Provide land area for development of an Infantry Training Center in the event of mobilization. Action: Provide a 20% expansion factor in the utility lines planned to serve Area "A" peacetime development to support mobilization development in the northwestern portion of the cantonment area.

c. Incorporate Into the RPMP. After policies, programs and projects have been developed, the land use plan is incorporated into the RPMP. The land use plan has a strong mutual relationship with the future development site plan, the capital investment strategy (CIS), the preferred alternatives plan, future development site plans (enhanced) for each development proposal, and the mobilization component.

d. Monitor Installation Development. The most important role of the land use plan will be to ensure that new development and infrastructure improvements correspond to established land use policies and zones. The plan must be revised in response to feedback, new requirements, philosophies and missions, and technological advances. The true test of a land use plan is that it is "owned" by the organizations on the installation and that it is used as the primary, fully accepted means of guiding future development.

9. LAND USE CATEGORIES. The land use categories presented in this section are functional in nature, have a common purpose, and denote major and significant land use, not minor adjuncts to primary use. For example, an industrial land use area may also contain administration, medical, community facilities, and supply and storage. Anti-terrorism and other security requirements must be considered during the planning of all land use areas. Expansion areas should be allocated "above and beyond" currently forecasted development, as discussed previously.

a. Airfield. (plan color - light blue; letraset pattern - LT 129 or equal) Includes landing and takeoff areas, aircraft maintenance areas, airfield operations and training facilities, and navigational and traffic aids.

(1) Landing and takeoff area subcategory. This subcategory consists of pavements supporting, and directly associated with, aircraft operations, special secured areas around aircraft, open spaces, and imaginary surfaces and operational clearance zones.

(2) Aircraft maintenance subcategory. This subcategory consists of facilities involved in provision of maintenance and fueling for aircraft.

(3) Airfield operational and training facilities subcategory. This group includes ground operational and training facilities required for the support of the aviation mission.

(4) Navigational and traffic aids subcategory. NAVAIDS include all aircraft traffic control systems and structures.

(5) Facility category groups found within this land use are indicated in table 3-1.

TABLE 3-1

AIRFIELD LAND USE FCG FACILITIES
LANDING AND TAKEOFF AREA:
11110 - Fixed Wing Runway.
11120 - Rotary Wing Runway.
11210 - Standard Taxiways.
11350 - Aircraft Holding Apron.
AIRCRAFT MAINTENANCE:
11310 - Fixed Wing Aircraft Parking Apron.
11320 - Rotary Wing Aircraft Parking Apron.
11330 - Aircraft Maintenance Parking Apron.
11340 - Hangar Access Apron.
11370 - Aircraft Washing Apron.
21110 - Unit Maintenance Hangar AVUM.
21111 - Intermediate Maintenance Hangar AVIM.
41110 - Marine Fuel Storage Facility.
AIRFIELD OPERATIONAL AND TRAINING FACILITIES:
14110 - Airfield Operations Building.
14112 - Aviation Unit Operations Building.
44200 - Storage-Covered-Installation, and Organizational.
44230 - Controlled Humidity Warehouse.
44240 - Flammable Material Storehouse.

TABLE 3-1 (Cont'd)

AIRFIELD LAND USE FCG FACILITIES
73010 - Fire Station.
85210 - Parking Area Organizational Vehicles.
85215 - Parking Area Non-organizational Vehicles.
81100 - Electric Power Source.
82100 - Heat Source.
NAVIGATIONAL AND TRAFFIC AIDS:
11610 - Aircraft Compass Swinging Base.

(6) Planning considerations. The size and configuration of an airfield depends on topography, climate, meteorologic factors, land availability, and safety requirements resulting from aircraft and weapons system characteristics.

(7) Affinities. Relationships between the activities on the airfield must be based on a detailed study of operational and work flows. Certain obstruction-free areas of land beyond the paved and built-up area of the airfield must be set aside for clear zones and imaginary airspace surfaces.

(8) Incompatibilities. Airfields are not a good neighbor with most other land uses. Mapped noise contours should be used to influence development away from critical zones near the airfield. Close environmental monitoring is needed for aircraft facilities to preclude the possibility of major environmental problems.

(9) Criteria. Consult TM 5-803-4, Planning of Army Aviation Facilities (reference 3-4) regarding airfield geometry and clearances. Allow an area of not less than 900 acres [363.64 ha] - 1,200 acres [484.46 ha] for the development and buffering of a permanent airfield, 40 acres [16.15 ha] to 50 acres [20.19 ha] for assault and training strips and stage fields, and 10 acres [4.04 ha] to 15 acres [6.06 ha] for helipads.

b. Maintenance. (plan color - dark gray; letraset pattern LT 917 or equal) Facilities and shops for maintenance and repair of all types of Army equipment found at three organizational levels as follows:

(1) Depot maintenance subcategory. This subcategory, normally found only at Army Materiel Command (AMC) depots and some Army ammunition plants, supports the re-manufacturing, major repair, and modification of all types of Army equipment.

(2) Installation maintenance subcategory. This subcategory includes facilities found at the installation level that provide maintenance service on an installation-wide basis. An optional variant of this category, for aircraft maintenance, may be located within the airfield land use zone.

(3) Table of Organization and Equipment (TOE) maintenance subcategory. This subcategory includes shops and associated support facilities, hardstands and parking areas for maintenance of vehicles and equipment assigned to TOE organizations. Special variants for aircraft and ammunition maintenance may be contained in the airfield and supply/storage categories.

(4) Facility category groups found within this land use are indicated in table 3-2.

TABLE 3-2

MAINTENANCE LAND USE FACILITIES
DEPOT MAINTENANCE:
22000 - Production.
44100 - Storage-Covered-Depot and Arsenal.
85210 - Parking Area Organizational Vehicles.
85215 - Parking Area Non-organizational Vehicles.
INSTALLATION MAINTENANCE:
21900 - Maintenance-Installation, Repair and Operation.
21800 - Maintenance-Facilities for Miscellaneous Procured Items and equipment.
TOE UNIT:
21110 - Unit Maintenance Hangar AVUM.
21111 - Intermediate Maintenance Hangar AVIM.
21407 - National Guard Vehicle Maintenance Shop.
21409 - Reserve Army Vehicle Maintenance Shop.
21410 - Vehicle Maintenance Shop, Organizational.
21420 - Vehicle Maintenance Shop, Direct Support.
21456 - Wash Facility, Centralized.
44260 - Transit Shed (in some commands).
45200 - Storage-Open-Installation and Organizational.
83200 - Sewage and Industrial Waste Collection.

(5) Planning considerations. Depot level maintenance activities, also discussed under the industrial category, should be located where ample

open or buffer space can be provided around them. Installation maintenance should be centrally located in the built-up area. Separate traffic corridors should be provided for combat vehicles and civilian vehicles. Maintenance facilities can create severe environmental impacts.

(6) Affinities. Depot level maintenance requires the types of land uses described under the industrial category. Installation maintenance requires access to the command group for control purposes and access to major thoroughfares for transporting equipment to be repaired. TOE maintenance should be collocated with other like facilities and should be near the unit areas they serve. Civilian vehicle parking should be provided for personnel assigned to all shops.

(7) Incompatibilities. Maintenance land uses should not be located in irregular or steep terrain, or in areas that are environmentally sensitive. Maintenance activities are incompatible with land uses requiring freedom from noise and malodorous operations. Military tactical vehicles have different movement characteristics than civilian vehicles and should be assigned separate routes of travel from civilian traffic.

(8) Criteria.

1/ Depot. Provide an area of 15,000 acres [6,055.7 ha] to 20,000 acres [8,074.28 ha] for the installation. Between 90,000 acres [36,344.20 ha] and 120,000 acres [48,445.70 ha] are required for ammunition and chemical maintenance depots, in locations 20 or more miles [32.21 km] away from major population centers.

2/ Installation. Allow 30 acres [12.11 ha] for installation materiel maintenance functions, 20 acres [8.07 ha] to 30 acres [12.11 ha] for the installation engineer, and 12 acres [4.84 ha] to 15 acres [6.06 ha] for the transportation motor pool.

3/ TOE maintenance. Land area requirements for various types of shops are given as follows, some of which are based on Battalion-size units (BN). The dimensions in frontage and depth are given here to allow for maximum efficiency of layout:

BN with more than 6 companies - 1,000 feet [305 m] front X 600 feet [183 m] depth, 13.8 acres [5.57 ha].

BN with 4 - 6 companies - 750 feet [228.75 m] front X 600 feet [183 m] depth, 10.3 acres [4.16 ha].

BN with 3 companies or less - 600 feet [183 m] front X 600 feet [183 m] depth, 8.3 acres [3.35 ha].

Mobilization shops - 600 feet [183 m] front X 600 feet [183 m] depth, 8.3 acres [3.35 m].

Vehicle storage - plan a 35 yd2 [29.26 m2] area for vehicles of 2-1/2-ton truck size and smaller, and 50 yd2 [41.80 m] area for vehicles larger than 2-1/2-ton truck size.

Allow from 0.5 acre [0.20 ha] to 4 acre [1.61 ha] per facility for electronic maintenance and small equipment repair shops.

c. Industrial. (plan color - purple; letraset pattern LT 151 or equal) This category includes activities for manufacturing Army equipment and materiel, utility plants and waste disposal facilities. Industrial uses generally fall into the following subcategories:

(1) Light industrial subcategory.

(a) Description. Activities or functions involving the repair and minor rebuilding of weapons, furnishings, appliances, office equipment, electronic equipment and automated data processing equipment, etc., utility plants and waste disposal facilities.

(b) Subcategories. This land use area is further subcategorized as follows:

1/ Directorate of Logistics. Performs repair and minor rebuild of various types of furnishings, appliances, food service and other equipment, and tactical and non-tactical vehicles, generators and weapons systems.

2/ Installation Engineer (Directorate of Engineering and Housing) performs maintenance, repair, reconditioning and minor rebuilding of utilities and building systems components including mechanical and electrical systems, packing and crating of equipment, and materiel for shipment.

3/ Utilities (infrastructure) for power, water, sewage, waste disposal, cable vaults and antennas. Certain of these facilities, such as sewage treatment facilities, sanitary landfills, incinerators, and information systems facilities that emit electromagnetic radiation require uninhabited isolation distances around them.

4/ Other industrial uses, such as photo labs, test cell, field training detachment, etc.

(2) Heavy industrial subcategory. Heavy industrial land uses include facilities for the assembly, manufacturing, demilitarization, or major rebuilding of vehicles, weapons, ammunition, explosives, equipment and other material.

(3) Facility category groups found within this land use are indicated in table 3-3.

TABLE 3-3

INDUSTRIAL LAND USE FCG FACILITIES
APPLICABLE TO LIGHT AND HEAVY CATEGORIES:
22000 - Production.
30000 - Research, Development, and Test Facilities.
84100 - Water Supply, Treatment, and Storage Potable.
81100 - Electric Power Source.
81200 - Electric Power Transmission and Distribution Lines.
81300 - Electric Power Substations and Switching Stations.
82100 - Heat Source.
82200 - Heat Transmission and Distribution Lines.
83100 - Sewage and Industrial Waste Treatment and Disposal.
83200 - Sewage and Industrial Waste Collection.
85210 - Parking Area Organizational Vehicles.
85215 - Parking Area Non-organizational Vehicles.

(4) Planning considerations. Proximity to end users or to transportation systems is essential. Proximity to the installation engineer and a fire prevention and protection station is desirable. Heavy industrial land use is one of the least compatible with other land uses found in built-up areas.

(5) Affinities. Other land uses having a close functional relationship include airfield and maintenance because all are potentially obnoxious and noisy; open space, which buffers industrial areas; and outdoor recreation for personnel assigned to industrial facilities.

(6) Incompatibilities. Family and unaccompanied personnel housing, and medical and community facilities are the land uses least compatible with industrial land use. Widely separate these land uses from industrial activities.

(7) Criteria. Light industrial land use can be planned at 4.5 acre [1.82 ha] per 100 population. Heavy industrial area requirements are installation-specific. For ammunition manufacturing activities, the country for 5 miles [8.05 km] around the installation should have a population density of not greater than 20 persons per square mile [258 ha]; towns for 5 miles [8.05 km] around the facility should not contain more than 500 persons each, nor have any major manufacturing plant or institutional building; avoid locations under commercial airways, areas of great fire hazard, high incidence of electrical storms or temperature inversions. Allow a 1/4 mile [0.40 km] isolation distance around sewage and waste disposal facilities.

d. Supply/Storage. (plan color - brown; letraset pattern LT 106 or equal) - Depot, terminal, and bulk-type storage for all classes of Army supply.

(1) Installation ammunition storage subcategory. This subcategory includes installation-level storage, handling and holding facilities for ammunition until it is issued to troop units, and all land needed for safety distances from transportation and inhabited facilities.

(2) Depot ammunition storage subcategory. These facilities provide ammunition storage, maintenance and demilitarization at centralized locations, and are operated by the Army Materiel Command.

(3) Cold storage facilities, installation subcategory. These facilities provide cold storage warehousing for the installation to store perishable items and special equipment.

(4) General purpose warehouse, depot subcategory. These facilities provide covered storage for all classes of Army supplies and equipment at the depot level of distribution.

(5) General purpose warehouse, installation subcategory. These facilities provide covered storage for supplies and equipment required at the installation level.

(6) Controlled humidity warehouse subcategory. This subcategory is similar to the general purpose warehouse, except that it contains humidity control equipment and vapor barrier walls.

(7) Flammable materials storehouse subcategory. These facilities provide covered storage for flammable materials, along with land needed for proper safety distance.

(8) Fuel storage subcategory. Coal; petroleum, oil and lubricant (POL) storage areas are established for heating and transportation uses at most installations.

(9) Engineer material storage area. This subcategory is for supplies needed by the installation engineer.

(10) Medical warehouse subcategory. Army medical supplies are administered differently than other classes. Medical warehouses, including mobilization storage facilities, should be in proximity to the central medical activity on the installation.

(11) Unit storage subcategory. Storage facilities are required at the company, battalion and brigade level for individual and unit supplies, equipment, and weapons. Equipment configured for rapid deployment is also stored in these areas.

(12) Salvage and surplus property subcategory. The salvage and surplus property facility supports the entire installation, disposing of unserviceable supplies and equipment.

(13) Facility category groups found within this land use are indicated in table 3-4.

TABLE 3-4

SUPPLY/STORAGE LAND USE FCG
INSTALLATION AMMUNITION STORAGE:
42200 - Ammunition Storage-Installation and Ready Issue.
44240 - Flammable Material Storehouse.
61050 - Administration Building General Purpose.
85215 - Parking Area Non-organizational Vehicles.
82100 - Heat Source.
DEPOT AMMUNITION STORAGE:
42100 - Ammunition Storage-Depot and Arsenal.
44240 - Flammable Material Storehouse.
61050 - Administration Building General Purpose.
85215 - Parking Area Non-organizational Vehicles.
82100 - Heat Source.
COLD STORAGE:
43200 - Cold Storage-Installation and Ready Issue.
74021 - Commissary.
GENERAL PURPOSE WAREHOUSE:
44100 - Storage-Covered-Depot and Arsenal.
44200 - Storage-Covered-Installation, and Organizational.
74021 - Commissary.
82100 - Heat Source.
CONTROLLED HUMIDITY WAREHOUSE:
44230 - Controlled Humidity Warehouse.
FLAMMABLE MATERIALS STOREHOUSE:
44240 - Flammable Material Storehouse.
FUEL STORAGE:

TABLE 3-4 (Cont'd)

SUPPLY/STORAGE LAND USE FCG
41100 - Liquid Fuel Storage-Bulk.
ENGINEER MATERIAL STORAGE:
21900 - Maintenance-Installation, Repair and Operation.
MEDICAL WAREHOUSE:
51010 - Hospital.
UNIT STORAGE:
21410 - Vehicle Maintenance Shop, Organizational.
72100 - Unaccompanied Personnel Housing Enlisted Personnel.
SALVAGE AND SURPLUS PROPERTY STORAGE:
44200 - Storage-Covered-Installation, and Organizational.
45200 - Storage-Open-Installation and Organizational.

(14) Planning considerations. Storage facilities should be located near roads set aside for commercial traffic, ideally separate from those used by civilian traffic. Rail access is desirable. Security and fire prevention, and protection considerations are vital. Planning of ammunition storage facilities requires adherence to criteria established by the Department of Defense Explosives Safety Board (DDESB). Small safety zones are also needed around bulk POL storage areas.

(15) Affinities. Storage and supply functions vary as to how they relate to other land uses. Hazardous storage is typically isolated by a safety zone. Nonhazardous storage and supply areas are usually compatible with airfields, industrial, or maintenance uses. Security requirements frequently require a means of access control.

(16) Incompatibilities. Storage facilities are not visually attractive and are incompatible with land uses that require high visual standards.

(17) Criteria.

(a) Ammunition storage, installation and depot subcategory. Allow 5 acres [2.02 ha] per 1,000 tons [907 mt] of chemical or explosive stored. Allow 300 acres [121.11 ha] for a toxic waste disposal area. Provide a 2 square mile [516.75 ha] ammunition maintenance area and 1 square mile [258.38 ha] for munitions destruction. Allow 80 acres

[32.30 ha] for munitions servicing. Chemical depots should be sized at approximately 20,000 acres [8,074.28 ha] and should be located approximately 20 miles [32.21 km] from any heavily populated area; 1 square mile 258.38 ha] should be set aside as a munitions disposal area. For installation level storage, allow a 1,500 acre [605.57 ha] area for ammunition storage, which includes quantity safety distance arcs and buffer areas.

(b) Cold storage, general purpose warehousing, installation and depot, and controlled humidity warehouse subcategory. Depots should have access to at least two major rail lines, border a main highway, have no transecting rights-of-way, and be within 1 hour's drive of a labor source. Provide 150 acres [60.56 ha] of land area per million square feet [92,888.89 m2] of actual storage area (open or covered). Inert supply storage depots require 15,000 acres [6,055.70 ha] to 20,000 acres [8,074.28 ha] per installation. For most warehousing, use a general space planning factor of 40 times the military plus civilian population of the installation to yield the square footage of covered storage allowed. Provide 150 acres [60.56 ha] of land area per million square feet [92,888.89 m2] of actual storage area. Allow 5 acres [2.02 ha] to 7 acres [2.83 ha] for storage of medical supplies.

(c) Fuel storage subcategory. Plan to provide enough coal storage space to meet 50 percent of the average annual demand. Fuel oil storage should equal a 30-day supply. Vehicular fuel storage should provide for two complete fillings for assigned vehicles. Aircraft fuel storage should be planned in accordance with TM 5-803-4 (reference 3-4). Plan a 100-foot [30.50 m] clearance around all bulk fuel storage facilities.

(d) Open storage subcategory. For engineer storage, allow a 20 acres [8.07 ha] area for storage of engineer supplies in an uncovered area. For vehicle storage, plan a 35 yd2 [29.26 m2] area for vehicles of 2-1/2-ton truck size and smaller, and allow a 50 yd2 [41.80 m2] area for vehicles larger than 2-1/2-ton truck size.

(e) Unit storage subcategory. The majority of unit storage will occur within the land use area allocations for unaccompanied personnel housing or TOE maintenance. Some unit storage is also built into company administration and supply buildings, which are located within unaccompanied personnel housing areas.

(f) Salvage and surplus property subcategory. Allow a 20 acre [8.07 ha] site for installation-level facilities of this type.

(g) Medical storage subcategory. Allow 4 acres [1.61 ha] minimum for this subcategory.

e. Administration. (plan color - dark blue; letraset pattern LT 922 or equal) Headquarters and office buildings to accommodate offices, professional and technical activities, records, files and administrative supplies.

(1) Installation command and control subcategory. This includes the command and staff of the installation, including the Army garrison command and perhaps certain of the subordinate directorates and activities.

(2) Directorates subcategory. Directorate offices for maintenance and light industrial activities are usually located away from the command and control function within the areas or function that they direct. Other directorates and offices may be located within the command and control land use area for ease of access by the command group.

(3) Tenant administration subcategory. Tenant activity administrative areas are usually separated from the installation command and control area, and are the headquarters for organizations that are in a different chain of command than that of the installation.

(4) Organizational administration subcategory. Army organizations and units assigned to the installation each require command, control and administrative space. This space is usually located within, or very near, the unaccompanied troop housing area to which the organization is assigned. Typical levels of command within this subcategory include brigade/group; battalion/squadron, and company/troop/battery.

(5) Special administration subcategory. This subcategory includes activities such as Major Army Command (MACOM) headquarters that are located at one installation, but exercise command over others. Other special administrative functions include conference facilities and "non-industrial" research and testing facilities.

(6) Facility category groups found within this land use are indicated in table 3-5.

TABLE 3-5

ADMINISTRATION LAND USE FCG FACILITIES
INSTALLATION COMMAND AND CONTROL:
61050 - Administration Building General Purpose.
85215 - Parking Area Non-organizational Vehicles.
DIRECTORATES:
61050 - Administration Building General Purpose.
85215 - Parking Area Non-organizational Vehicles.
TENANT:
61050 - Administration Building General Purpose.

TABLE 3-5 (Cont'd)

ADMINISTRATION LAND USE FCG FACILITIES
72100 - Unaccompanied Personnel Housing Enlisted Personnel.
85215 - Parking Area Non-organizational Vehicles.
ORGANIZATIONAL:
61050 - Administration Building General Purpose.
72100 - Unaccompanied Personnel Housing Enlisted Personnel.
85215 - Parking Area Non-organizational Vehicles.
SPECIAL:
61050 - Administration Building General Purpose.
85215 - Parking Area Non-organizational Vehicles.

(7) Planning considerations. Administrative uses for the installation should be planned in a hierarchy. The central node should represent installation-level command and control uses. Satellite nodes should be provided for installation support activities and tenants. Other satellites to the installation center should be planned for organizational uses. Separate nodes should be planned for each level of command so commanders can control their own areas autonomously, without "over-supervision" by an adjacent higher headquarters.

(8) Affinities. Administrative land use is compatible with most other heavily populated uses found within built-up areas. Conference facilities can occupy a central or peripheral area, depending on whether conference activities usually involve the command group. If the conference activity is in a central area, a site near visitor housing is preferable. Customer-oriented administrative functions require locations that are easily identified, near major traffic corridors.

(9) Incompatibilities. Administrative uses are adversely effected by excessive noise, malodorous operations, location near overloaded traffic corridors, location in visually unattractive areas, or in areas where automobile parking space cannot be provided.

(10) Criteria. For troop-type installations, allot 0.09 acres per 100 population. For depot, terminal, and manufacturing installations, allot between 20 acres [8.07 ha] and 30 acres [12.11 ha] for administrative use. For MACOM headquarters, provide a visually impressive, easily identified location of between 20 acres [12.11 ha] and 40 acres [16.15 ha].

f. Training/Ranges. (plan color - medium blue; letraset pattern LT 929 or equal) Much like any large organization, the Army has academic training programs for entry level and continuing education. Unlike most

organizations, the Army requires massive land areas to achieve and maintain soldier and unit proficiency in fire and movement/maneuver. While academic training can be integrated into the land use pattern of the built-up area, fire and maneuver training must occur a significant distance away from other installation and off-post land uses.

(1) Training facilities, buildings, subcategory. This subcategory includes all types of academic facilities, indoor firing ranges, U.S. Army Reserve centers and National Guard armories, range control towers, ammunition breakdown and distribution sheds, target storage and maintenance buildings, field latrines and shower facilities, tent pads and mess shelters, gas chambers, range control buildings, simulator buildings, bunkers, water survival training facilities, etc.

(2) Training grounds and facilities other than buildings subcategory. This subcategory includes an ever-increasing number of training courses and outdoor facilities that develop and maintain individual and unit proficiency in tactical operations.

(3) Firing ranges, training subcategory. This subcategory, which has grown significantly since the advent of the Army Range Program in the 1980's, includes all kinds of ranges for ground and air-delivered weapons systems used by the Army.

(4) Firing ranges, RDT&E subcategory. This subcategory normally involves a highly controlled facility, usually with a limited number of firing points and a very constrained direction of fire.

(5) Facility category groups found within, or related to, this land use are indicated in table 3-6

TABLE 3-6

TRAINING/RANGES LAND USE FCG FACILITIES
TRAINING FACILITIES, BUILDINGS:
17115 - Band Training Building.
17120 - General Instruction Building.
17121 - Indoor Firing Range.
17140 - Army Reserve Center Building.
17142 - National Guard Reserve Center Building.
17160 - Training Aids Center.
72100 - Unaccompanied Personnel Housing Enlisted Personnel.
85210 - Parking Area Organizational Vehicles.
85215 - Parking Area Non-organizational Vehicles.
TRAINING GROUNDS AND FACILITIES OTHER THAN BUILDINGS:

TABLE 3-6 (Cont'd)

TRAINING/RANGES LAND USE FCG FACILITIES
17986 - Maneuver Area Brigade or larger.
91000 - Land.
85210 - Parking Area Organizational Vehicles.
85215 - Parking Area Non-organizational Vehicles.
FIRING RANGES, TRAINING:
17901 - Basic 25-Meter Firing Range (zero).
17902 - Field Fire Range.
17903 - Record Fire Range.
17907 - Sniper Training Field Fire Range.
17909 - Machine Gun, 10-Meter Range.
17910 - Machine Gun, M-60, Transition Range.
17912 - Firing From Moving Armored Personnel Carrier Range.
17917 - Grenade Launcher Range.
17923 - Military Operations in Urbanized Terrain (Combat City).
17930 - Tank Gunnery Range 1:30 & 1:60.
17931 - Tank Gunnery Range 1:5 & 1:10.
17932 - Tank Gunnery Range (Stationary).
17933 - Tank Crew Combat Fire Course.
17937 - Aerial Gunnery Range.
17942 - Field Artillery Indirect Fire Range.
17943 - Air Defense Firing Range.
17946 - Trainfire Ranges (Set of Three).
85210 - Parking Area Organizational Vehicles.
85215 - Parking Area Non-organizational Vehicles.
44110 - General Purpose Warehouse.
FIRING RANGES, RESEARCH, DEVELOPMENT, TESTING AND EVALUATION (RDT&E):
17946 - Trainfire Ranges (Set of Three).
85210 - Parking Area Organizational Vehicles.
85215 - Parking Area Non-organizational Vehicles.
44110 - General Purpose Warehouse.

(6) Planning considerations. Training facilities are located in many different areas of the installation based on the type of training to be conducted and the impacts such training may have upon safety, noise and environmental degradation. Impact areas designated for explosive ordnance are "irreversibly committed" because extremely high cost is involved in making them safe for other uses.

(7) Affinities. Training facilities such as academic classrooms may be located in the administrative, unaccompanied personnel housing, or other quiet zones. Training facilities involving hands-on performance of

tasks aside from weapons firing and tactical maneuvers may be located within maintenance, industrial, airfield, or storage land use zones. Areas for weapons firing and tactical maneuvers relate well to one another and to non-occupied water and wetland areas, open or buffer space. Access to maintenance shops, the road network, tank trails, deployment areas, and Reserve Components access from off-post areas must be addressed. Firing and tactical training areas should be planned based on a geographical hierarchy. Firing and maneuver areas used regularly by large groups of people should be within foot-marching distance of each other and within an hour's march from the cantonment. Noisier activities involving heavy weapons and equipment should be farther away from built-up areas. Maintenance areas directly associated with the training function, such as tank shops used to clean and service tactical vehicles, are appropriate neighboring land uses.

(8) Incompatibilities. The dynamic and potentially hazardous nature of operations at training courses and ranges makes them incompatible with built-up land uses. The potential for negative environmental impact is greater in this category than for any other land use.

(9) Criteria. Use real property planning system (RPLANS) criteria to take an initial look at allowances for training land. Installations with light-type troop units should plan for 44,000 acres [17,733.42 ha] of ranges and 69,000 acres [28,856.28 ha]. Those with heavier troop units should plan for 44,000 [17,773.42 ha] acres of ranges and 110,000 acres [44,408.56 ha] of maneuver area. For training installations, set aside a minimum of 27 percent of available land for firing ranges and impact areas. Approximately 28 percent of land set aside for firing ranges will become impact area. Plan service school campuses at a density of 10.4 acres [4.20 ha] per 100 students.

g. Unaccompanied Personnel Housing (plan color - yellow ocher; letraset pattern LT 113 or equal) - This category consists of unaccompanied enlisted barracks and officer personnel quarters, and includes dining, administration, supply, outdoor recreation, and community retail and service facilities.

(1) Unaccompanied officer personnel housing subcategory. This subcategory includes facilities for housing and support of unaccompanied officers, or their civilian equivalents.

(2) Unaccompanied enlisted personnel barracks or dormitories subcategory. Unaccompanied enlisted personnel housing includes barracks, dormitories and associated administrative and support facilities. This area is usually the headquarters and "unit area" for an Army organization.

(3) Visiting officer's and soldier's quarters. This subcategory includes housing and support facilities for transient officers and enlisted personnel, retirees and civilian equivalents.

(4) Facility category groups found within, or relating to, this land use are indicated in table 3-7.

TABLE 3-7

UNACCOMPANIED PERSONNEL HOUSING LAND USE FCG FACILITIES
OFFICER UNACCOMPANIED PERSONNEL HOUSING:
72400 - Unaccompanied Personnel Housing Officers.
74046 - Open Dining Consolidated.
75030 - Outdoor Swimming Pool.
75010 - Tennis Courts.
75011 - Multiple Court Areas.
75020 - Baseball Field.
75021 - Softball Field.
75022 - Football Field.
75023 - Soccer Field.
82100 - Heat Source.
85215 - Parking Area Non-organizational Vehicles.
ENLISTED UNACCOMPANIED PERSONNEL HOUSING:
61050 - Administration Building General Purpose.
72100 - Unaccompanied Personnel Housing Enlisted Personnel.
72114 - Enlisted Barracks, Annual Training.
72181 - Trainee Barracks, Basic Trainee.
72200 - Unaccompanied Personnel Housing Dining Facilities.
73020 - Chapel Center Facs (w/Religious Educational Facs).
74069 - Recreation Building.
75010 - Tennis Courts.
75011 - Multiple Court Areas.
75020 - Baseball Field.
75021 - Softball Field.
75022 - Football Field.
75023 - Soccer Field.
82100 - Heat Source.
85215 - Parking Area Non-organizational Vehicles.
VISITING OFFICERS AND SOLDIERS QUARTERS:
72100 - Unaccompanied Personnel Housing Enlisted Personnel.
72400 - Unaccompanied Personnel Housing Officers.
72200 - Unaccompanied Personnel Housing Dining Facilities.
74046 - Open Dining Consolidated.
75030 - Outdoor Swimming Pool.
75010 - Tennis Courts.
75011 - Multiple Court Areas.
75020 - Baseball Field.

TABLE 3-7 (Cont'd)

UNACCOMPANIED PERSONNEL HOUSING LAND USE FCG FACILITIES
75021 - Softball Field.
75022 - Football Field.
75023 - Soccer Field.
82100 - Heat Source.
85215 - Parking Area Non-organizational Vehicles.

(5) Planning considerations. Plan unaccompanied personnel housing on the basis of organizational and functional relationships. For example, all the unaccompanied enlisted personnel housing for a particular organization should be collocated with the command and control facility and supporting facilities in one area. Officer housing does not need to be in the organization's area. Visitors' housing should be separated from that of permanent party personnel, in locations easily identified by transient personnel.

(6) Affinities. Housing requires proximity to the commercial community center. Visitor housing should be in reasonable proximity to the command and control area since this is the area most frequented on official visits. Housing is required for the medical detachment near the hospital. Uses that can be combined with troop housing include administration, recreation, dining, medical, and service facilities.

(7) Incompatibilities. Many of the interests and schedules of families and unaccompanied personnel differ greatly. Therefore, unaccompanied personnel and family housing should be widely separated from each other. Troop housing is incompatible with training areas, airfield, maintenance, and industrial land uses. Housing requires absence of environmental hazards or aggravations.

(8) Criteria. Plan brigade-size blocks of sufficient area to accommodate from four to six battalions. Size the area at 3,000 feet [305 m] front X 1,000 feet [305 m] depth for maximum efficient layout. Each battalion block within this area should be 1,000 feet [305 m] front X 1,000 feet [305 m] depth for large battalions of six or more companies; 750 feet [228.75 m] front X 1,000 feet [305 m] depth for medium size battalions of from four to six companies, and 600 feet [183 m] front X 1,000 feet [305 m] depth for small battalions of three or less companies. Plan officer, visiting and transient housing at four acres [1.61 ha] per 100 persons to be housed. Plan mobilization housing blocks at either 500 feet [152.5 m] or 600 feet [183 m] front X 1,000 feet [305 m] depth per battalion-sized unit.

h. Family Housing. (plan color - yellow; letraset pattern LT 167 or equal) Facilities to house military families, along with support and recreational facilities.

(1) Family housing subcategory. This subcategory consists of all types of residential units and developments occupied by enlisted and officer families.

(2) Temporary housing subcategory. Temporary lodging is provided for arriving or departing families who are not assigned to permanent quarters.

(3) Mobile home parks subcategory. This subcategory consists of pre-manufactured dwelling units.

(4) Facility category groups found within, or related to this land use are indicated in table 3-8.

TABLE 3-8

FAMILY HOUSING LAND USE FCG FACILITIES
71110 - Family Housing.
75030 - Outdoor Swimming Pool.
75010 - Tennis Courts.
75011 - Multiple Court Areas.
75020 - Baseball Field.
75021 - Softball Field.
75022 - Football Field.
75023 - Soccer Field.
85215 - Parking Area Non-organizational Vehicles.

(5) Planning considerations. Family housing has its strongest functional relationship with the community facilities land use. Community facilities areas are similar to the retail, community, family support and recreational areas found in suburban civilian communities upon which families depend.

(6) Affinities. Proximity to schools, child care facilities, the community center, open space, outdoor recreation, health care, and the religious center is essential.

(7) Incompatibilities. Requirements for peace and quiet in residential areas are great. Do not site family housing near training, airfield, maintenance, and industrial areas. Family housing and unaccompanied personnel housing should be kept widely separated.

(8) Criteria. For general planning purposes, allow 3.6 acres [1.45 ha] per 100 planned occupants of a family housing area. Plan for residential neighborhoods of approximately 1,000 persons total population. Preliminary school planning assumes that .75 children per family are of

school age; 55% of these are ages 6 - 11 , 23% of these are age 12 - 14, and 22% of these are ages 15 - 17. (A rule of thumb is that 1,000 persons total population will justify one elementary school.) Plan elementary schools using a 25 acre [10.09 ha] site per school - 350 - 400 students per school. Allow a 30 acre [12.11 ha] site for junior high schools - 700 - 1,500 students per school. Allow a 35 acre [14.13 ha] site for high schools - 1,000 to 2,000 student capacity each. Allow approximately 18 acres [7.27 ha] within each 1,000-person community for commercial activities; 1 acre [0.40 ha] of recreational space per 100 persons; 1 acre [0.40 ha] of tot lot space per 100 preschool children (number of families times 0.75 times 0.25); one 10 acre [4.04 ha] - 15 acre [6.06 ha] park per 2,000 persons; and one community park of 15 acres [6.06 ha] - 40 acres [16.15 ha] per 20,000 persons.

i. Community Facilities. (plan color - orange; letraset pattern LT 78 or equal) - Commercial and service facilities, the same as are associated with towns in the civilian community.

(1) Commercial subcategory. The commercial aspects of a community center make it the marketplace of an Army installation. The community center serves most of the functions of a "Main Street, U.S.A."

(2) Services subcategory. The service aspect of the community center includes educational, post office, library, child care center, youth center, chapel and religious education functions.

(3) Facility category groups found within, or related to this land use are indicated in table 3-9.

TABLE 3-9

COMMUNITY LAND USE FCG FACILITIES
COMMERCIAL:
74011 - Bowling Center.
74021 - Commissary.
74033 - Community Center.
74046 - Open Dining Consolidated.
74052 - Exchange Automotive Service Station.
74053 - Exchange Main Retail Store.
74064 - Post (Installation) Restaurant.
85215 - Parking Area Non-organizational Vehicles.
SERVICES:
73010 - Fire Station.
73015 - Confinement Facility (Stockade).
73020 - Chapel Center Facs (w/Religious Educational Facs).

TABLE 3-9 (Cont'd)

COMMUNITY LAND USE FCG FACILITIES
73030 - Fixed Laundry
73031 - Fixed Dry Cleaning Plant.
73048 - Dependent Grade School.
73049 - Dependent High School.
73073 - Post Office Main.
74006 - Bank.
74010 - Auditorium General Purpose.
74014 - Child Support Service Center.
74022 - Skill Development Center.
74025 - Army Continuing Education System Facility.
74041 - Library Main.
74066 - Youth Center.
74069 - Recreation Building.
75030 - Outdoor Swimming Pool.
75010 - Tennis Courts.
75011 - Multiple Court Area.
75020 - Baseball Field.
75021 - Softball Field.
75022 - Football Field.
75023 - Soccer Field.
85215 - Parking Area Non-organizational Vehicles.

(4) Planning considerations. The community center should be located near the geographical center of the built-up area of the installation, served on more than one side by major traffic thoroughfares. The center should be easily accessible to assigned personnel, their families, retirees and dependents. Separate traffic corridors should be provided for commercial delivery vehicles. The site should be visually recognizable, preferably from some distance, and should include ample area for expansion and parking. Facilities mix should be based on day-night occupancy, so parking and support facilities used during the day for commercial activities can be used for service and recreational activities at night. Security and fire prevention and protection considerations must enter into the planning.

(5) Affinities. Service and commercial uses are closely linked, and their physical proximity adds to the efficiency and livability of the installation. The closeness enables customers to get all their errands done at one time. For persons in unaccompanied enlisted and visitor housing, being within walking distance of community services is ideal, but if this is not possible, provide small nodes of commercial and retail functions within housing land use zones. Families require reasonably proximity to the community center. Recreational uses may also be sited in or near the community center.

(6) Incompatibilities. The community center should not be planned in areas already subject to traffic congestion unless traffic solutions will happen before full development. Industrial, maintenance, airfield, training ranges and maneuver areas are incompatible neighboring land uses.

(7) Criteria. In general, community centers will be large, vital activities if the installation population is greater than 4,000 to 5,000 persons. A less intense, neighborhood-type center should be planned if the population is below this level. For smaller installations, allow 0.86 acres [0.35 ha] per 100 persons total population for commercial and service functions. For large installations, lower the planning factor to 0.36 acres [0.15 ha] per 100 persons. Locate the community center so the most remote on-post housing area is not more than four miles distant. For chapels, allow a minimum of 1.5 acres [0.61 ha] for a 50 to 400 member facility, 2 acres [0.81 ha] for 400 to 800 members, 3 acres [1.21 ha] for 800 to 1,200 members and 4 acres (+) [1.61 ha] for facilities greater than 1,200 members. Plan an 8 acre [3.22 ha] area if religious education facilities, including outdoor recreation, are included in the development.

j. Medical. (plan color - pink; letraset pattern LT 122 or equal) Facilities providing for both inpatient and outpatient medical and dental care for active duty and retired personnel. This category may include veterinary and Red Cross facilities.

(1) Facility category groups within, or related to this land use are indicated in table 3-10.

TABLE 3-10

MEDICAL LAND USE FCG FACILITIES
51010 - Hospital.
54010 - Dental Clinic.
55010 - Clinic Without Beds.
81100 - Electric Power Source.
82100 - Heat Source.
83200 - Sewage and Industrial Waste Collection.
85210 - Parking Area Organizational Vehicles.
85215 - Parking Area Non-organizational Vehicles.

(2) Planning considerations. The medical land use should be located near the geographic center of the built-up area of the installation to enable the best possible service radius for emergency vehicles. The area should be within extremely short response distance of a fire station, and should be easily accessible to retired persons arriving from off-post areas. Consider providing a helipad for medical evacuation helicopters. Since medical facilities undergo changes and expansions at a much greater rate than many other facilities, include generous space for expansion.

(3) Affinities. The medical care land use is compatible with unaccompanied personnel and family housing, community facility, administrative, outdoor recreation and open space land uses.

(4) Incompatibilities. Training areas, the airfield, maintenance shops, and the industrial sector of the installation are incompatible land uses.

(5) Criteria. For planning purposes, allow 100 acres [40.37 ha] for development of the central medical activities area. Increase this area if terrain, water areas or vegetation are factors in the planning. For outlying clinics and dispensaries, designate sites of between 1.5 acres [0.61 ha] and 5 acres [2.02 ha].

k. Outdoor Recreation. (color - light green; letraset pattern LT 368 or equal) Outdoor athletic and recreational facilities of all types and intensities of use are included in this category.

(1) Planning guidance. Recreation planning is an entire subdiscipline within the planning profession. Consult TM 5-365, Natural Resources, Outdoor Recreation and Cultural Values (reference 3-5), for an excellent reference on the subject. Recreational preference surveys of the installation population should govern facility requirements in this category.

(2) Facility category groups that are found within this land use are indicated in table 3-11.

TABLE 3-11

OUTDOOR RECREATION LAND USE FCG FACILITIES
74069 - Recreation Building.
75030 - Outdoor Swimming Pool.
75010 - Tennis Courts.
75011 - Multiple Court Areas.
75020 - Baseball Field.
75021 - Softball Field.
75022 - Football Field.
75023 - Soccer Field.

(3) Affinities. Outdoor recreation, regardless of the use intensity, is most closely linked with open space. Land preserved for environmental reasons (e.g., flood plains) can be used for recreational uses such as golf and baseball. Water areas are the focus of many recreational activities. Reasonable proximity to family and troop housing areas is important. Provide liberal multi-purpose courts and baseball or

softball fields within unaccompanied enlisted personnel housing areas.

(4) Incompatibilities. Outdoor recreation is compatible with all installation land uses except for airfield and training ranges.

(5) Criteria. Allow approximately one acre [0.40 ha] of recreational space per 100 persons of the total installation population. Provide tot lots at a rate of one acre [0.40 ha] per 100 pre-school children (number of families times 0.75, times 0.25). Provide one 10 acre [4.04 ha] to 15 acre [6.06 ha] park per 2,000 persons. Provide one community park of 15 acre [6.06 ha] to 40 acre [16.15 ha] per 20,000 persons. Plan recreational facilities based on a detailed recreational preference survey performed approximately once every five years.

l. Open Space. (plan color - dark green; letraset pattern LT 139 or equal) Safety clearances, security areas, utility easements, water areas, wetlands, conservation areas, forest stands, and grazing areas. The primary facility category groups associated with this land use is 91000 - Land.

(1) Unoccupied land subcategory. Unoccupied land can be used to separate and define the various sections of the installation and create a natural setting for facilities. Open space may be undeveloped due to environmental or physical constraints such as flood plains and steep slopes, or may be needed for functional uses such as aquifer recharge, well field, forest production area, conservation area, or protective area for endangered species.

(2) Buffer and easement subcategory. Open space may also be required to provide safety or security clearances. Required buffer/clearance zones include the airfield's ICUZ and other buffers, roadsides, railroad rights-of-way, utility easements, hazardous waste safety limits, security buffers, and safety distances from ranges and weapons and ordnance storage areas, and for separation between family and unaccompanied personnel housing areas.

(3) Greenbelt subcategory. This subcategory consists of linear open spaces through and between land use areas. These can be intensively landscaped or can preserve existing vegetation. They separate conflicting activities and connect outdoor activity areas, such as parks.

(4) Affinities. Open space is necessary for, and often is co-located with, land used for outdoor recreation, family and unaccompanied personnel housing. Open space is compatible with all other installation land uses. Land located within flood plains and wetlands will usually remain open and can be developed for limited outdoor recreational uses. Limitations on development dictate the configuration of open space. Plan small open spaces (i.e., small parks) in the activity centers of the installation (e.g., housing, administrative, industrial, and community center).

(5) Incompatibilities. Because of the attractiveness to birds, water and wetlands should not be included in the open space buffer of an airfield. Expansion zones for other land use areas should not be designated as open space, but should be designated for that particular land use.

(6) Criteria. There are no general criteria for open spaces. The majority of Army installations contain sufficient open space to support a good quality of life for the population, and it is important to retain this space during the preparation or update of the land use plan.

REFERENCES

3-1 AR 210-20, Master Planning for Army Installations.

3-2 AR 210-21, Army Training Ranges.

3-3 TB ENG 353, The Overlay Composite Method of Master Plan Preparation.

3-4 TM 5-803-4, Planning of Army Aviation Facilities.

3-5 TM 5-365, Natural Resources, Outdoor Recreation and Cultural Values.

MASTER PLANNING INSTRUCTIONS

CHAPTER 4

ENVIRONMENTAL COMPLIANCE

28 August 1995

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CHAPTER 4

ENVIRONMENTAL COMPLIANCE

1. GENERAL.

a. ENVIRONMENTAL STEWARDSHIP. Environmental Stewardship is one of the eight goals of the Army. The U.S. Army Environmental Strategy defines the Army leadership commitment and its philosophy for meeting present and future environmental challenges. It provides a framework to ensure that environmental considerations are integral to the Army mission and that an environmental stewardship ethic governs all Army activities including master planning. The environmental goal is supported by four pillars:

(1) COMPLIANCE - Give immediate priority to sustained compliance with all environmental laws.

(2) RESTORATION - Simultaneously continue to restore previously contaminated sites as quickly as funds permit.

(3) PREVENTION - Focus efforts on pollution prevention to reduce or eliminate pollution at the source.

(4) CONSERVATION - Conserve and preserve natural and cultural resources so they will be available for present and future generations to use.

b. PURPOSE. The purpose of this chapter is to provide the master planner with guidance on integrating environmental considerations in the development of the Real Property Master Plan (RPMP). This guidance addresses the environmental process (including NEPA) and its relation to all components of the master plan. It is intended to function as a guide to the master planner to ensure that environmental requirements are included as part of the overall RPMP process. This chapter is supplemented with an environmental checklist and references to assist in facilitating the process.

c. APPLICABILITY. This chapter addresses the integration of environmental considerations into the decision making process, the objective of which is to ensure installation planning is complete, efficient and environmentally sound.

(1) This RPMP/ENVIRONMENTAL integration covers all components of the RPMP including:

(a) Long Range Component (LRC)

(b) Capitol Investment Strategy (CIS)

(c) Short Range Component (SRC)

(d) Mobilization Component (MC)

(e) Periodic Updates to the above RPMP Components

(2) MPI, Chapter 2 contains a listing of these components which make up the RPMP and discussion of these components (see Master Planning Instructions (MPI)). AR 200-2 (under revision) includes a listing of the types of environmental documents.

(3) Master Planning actions at OCONUS installations will conform with the provisions of Status of Forces Agreements (SOFAs), AR 200-2 (Chapter 8) and Final Governing Standards for the Host Nation developed in accordance with DOD Directive 6050.16 and the DOD Overseas Environmental Baseline Guidance Document (OEBGD). The OEBGD will be used for guidance where Final Governing Standards have not been developed for the Host Nation.

d. DESCRIPTION OF ENVIRONMENTAL DOCUMENTATION.

(1) Environmental Policy Act (NEPA). The NEPA of 1969 is our basic national charter for protection of the environment. "The purposes of this Act are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the nation; and to establish a Council on Environmental Quality." The Council on Environmental Quality has issued regulations to show Federal agencies what they must do to comply with the procedures and achieve the goals of the Act.

(2) Record of Environmental Considerations (REC). This is a signed document submitted with project documentation which describes the proposed action and explains why no further environmental documentation is needed. It is used when the proposed action is exempt from NEPA (categorically excluded) or has been adequately assessed in existing documents, and determined not to be environmentally significant. The REC is required for many activities that are

categorically excluded (AR 200-2 under revision).

(3) Environmental Impact Statement (EIS). This is an analysis of the environmental effects of proposed actions and alternatives to the proposed actions. An EIS identifies the affected environment of an area, analyzes the effects of the proposed action, predicts the environmental consequences and proposes how these consequences might be avoided, minimized or mitigated and monitored if appropriate. It is intended to be a decision making tool, and the process promotes public participation. The EIS process contains Draft EIS (DEIS) and Final EIS (FEIS) components (See AR 200-2 under revision) with opportunity for both agency and public input and comment.

(4) Environmental Assessment (EA). This assessment is a public document prepared by a Federal agency which provides sufficient analysis in determining whether the environmental effects of a proposed action are significant enough to prompt preparation of an Environmental Impact Statement (EIS). If the decision is made that an EIS is not required, this determination is documented in a Finding of No Significant Impact (FONSI).

(5) Finding of No Significant Impact (FONSI). The FONSI is a decision document prepared by a Federal agency which concludes that environmental impacts are not significant and therefore an EIS will not be prepared. A FONSI is the conclusion of an EA but is a separate document.

(6) Notice of Intent (NOI). This is a public notice, published in the Federal Register, stating that the possible environmental effects of an action are "significant" enough to prepare an EIS.

(7) Record of Decision (ROD). The ROD is a document which records Federal agencies' decisions by incorporating all environmental analyses and decision making. A public ROD is required after completion of an EIS. It provides a record of all decisions made regarding a proposed action and factors (environmental, economic, etc.) which were considered in reaching this decision.

e. COORDINATION. The nature of planning requires cooperation, communication and coordination among key personnel on-post and off-post. It is important that the installation environmental officer and master planner work concurrently in the RPMP development and solicit input from installation staff elements. This involvement includes the participation of both experts on the Environmental Quality Control Committee and the Installation Real Property Planning Board. The installation master planner is the keeper of all RPMP documents and acts as a facilitator/advisor for the development of the RPMP (see

MPI Chapter 1). However, the environmental officer is responsible for all installation environmental compliance issues to include conservation, pollution prevention and restoration of contaminated sites and knowledge of past and current environmental analysis and requirements. Items such as Historic Preservation Plans, Natural Resource Management Plans, BRAC Environmental Analysis, and EIS's prepared in conjunction with mission changes, etc., could provide much of the data necessary to meet the RPMP environmental analysis requirements (see MPI Chapter 2). Many of these studies take years to complete and often are ongoing. The emphasis should not be to redo all environmental analysis, but to search for information which is already available, use it as appropriate, identify additional data necessary and determine how to pursue obtaining this data. **Include the environmental analysis at earliest stages of the RPMP process to assure the installation's planning requirements are met without delays or unnecessary adverse environmental impacts.** AR 210-20, page 7, table 3-1 contains a list of typical installation proponents for sources of RPMP information.

2. ASSUMPTIONS.

a. The installation master planner is responsible for seeing that the environmental requirements are included in the RPMP. This does not mean that he will do the environmental studies nor have the environmental expertise required, but will act as a coordinator with the environmental officer and other staff elements to see that environmental analysis is properly integrated into the RPMP process.

b. Environmental requirements for the RPMP are addressed in AR 210-20, AR 200-1, AR 200-2 and this MPI.

c. The RPMP should also include considerations of compliance requirements for all environmental laws such as NEPA, as well as other environmental statutes (i.e. Clear Air Act, Clean Water Act, National Historic Preservation Act, Endangered Species Act, etc.).

3. ENVIRONMENTAL REQUIREMENTS OF THE RPMP.

a. SELECTION OF APPROPRIATE ENVIRONMENTAL DOCUMENTATION.

(1) The RPMP and its components are decision documents and must be assessed for their environmental effects as prescribed by AR 200-2 (under revision). The appropriate level of NEPA documentation must accompany individual components if they are submitted as stand-alone decision documents. The actual level of environmental documentation required (REC, EA or EIS) will be determined by the scope of the action in relation to threshold criteria in AR 200-2 (under revision). Environmental documentation may cover more than one component or

the entire RPMP when it is updated and should address that portion of the RPMP that is ready for approval or master plan related projects ready for further development.

(2) The purpose of NEPA is to ensure that the environmental implications of actions are considered in the decision making process. The NEPA documentation is designed to accomplish this. By completing the documentation, the planner effectively integrates environmental considerations into the planning process. (This is why you do documentation.) The level of NEPA documentation required depends on numerous factors such as the magnitude of the proposed action, significance of potential environmental impacts, existing NEPA documentation, potential for controversy, etc. Again, emphasis should be placed on not redoing existing documents, but on using already existing documents where possible. Each case must be considered on its merits. Properly prepared environmental documentation will negate or minimize the needs for project level documentation as the master plan is executed. Table 4-1 presents a decision tree that can be used to aid in selecting the appropriate level of NEPA documentation. NEPA DOCUMENTS. The types of NEPA documents are discussed in the following paragraphs:

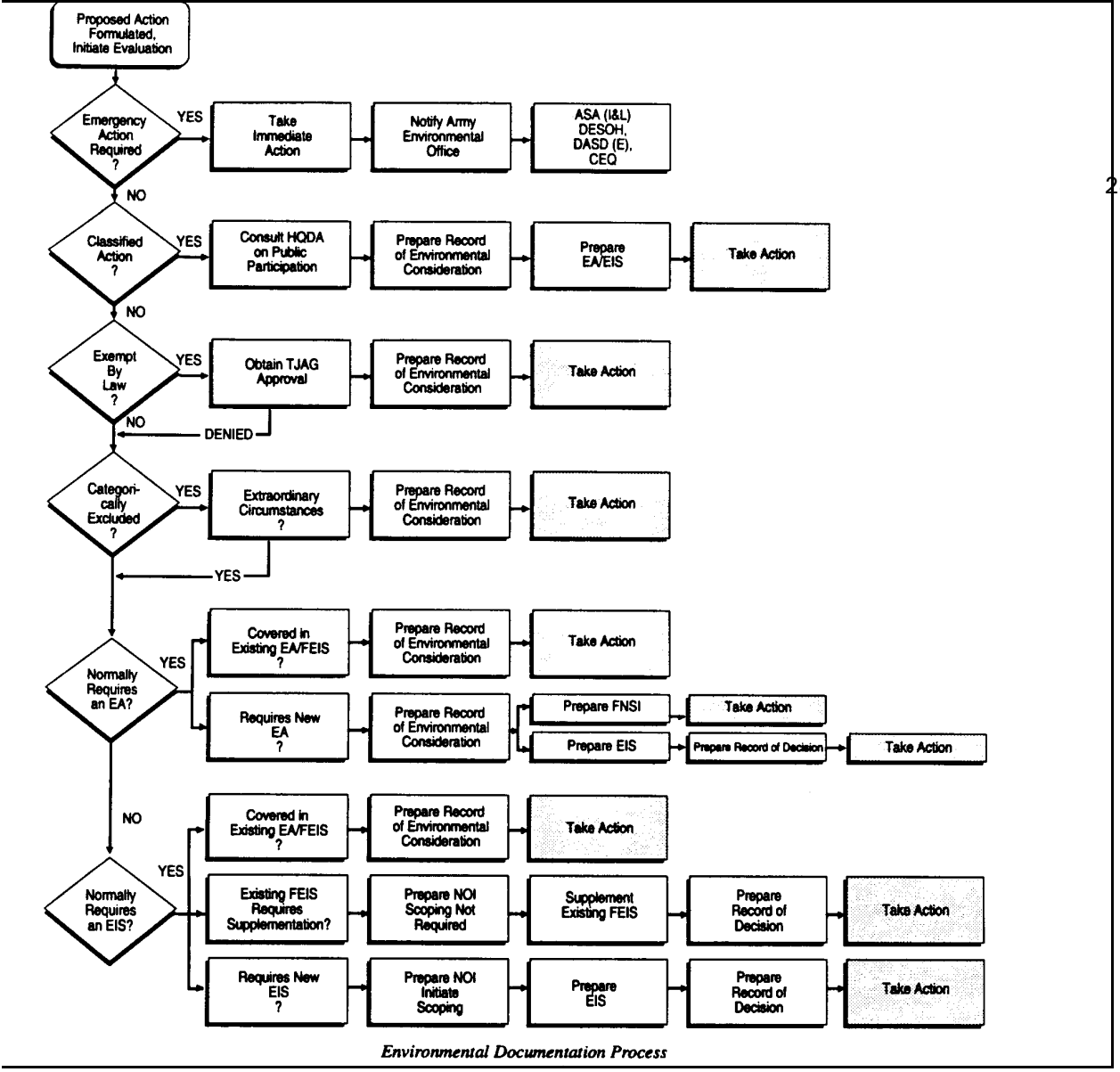

Figure 0. ENVIRONMENTAL DOCUMENTATION PROCESS

(3) Categorical Exclusions (CX) are actions that do not individually or cumulatively have a significant effect on the environment and for which neither an Environmental Assessment nor an Environmental Impact Statement is required. CXs and screening criteria are listed in AR 200-2 (under revision). Typical exclusions related to the RPMP are:

(a) Routine repairs and maintenance of buildings, roads, airfields, and grounds except when requiring application or disposal of hazardous material or waste.

(b) Construction that meets screening criteria and does not significantly alter land use, provided the operation of the action when completed would not itself have significant environmental impact.

(c) Acquisition, installation, and operation of utility and communications systems, data processing, cable and similar electronic equipment that use existing rights-of-way, easements, distribution systems, and facilities.

(4) Actions not qualifying for CX. Proposed actions not qualifying for a CX should be separated into those already adequately covered under an existing EA or EIS, and those requiring the preparation of a new EA or EIS. (see Figure 1 Environmental Documentation Process)

(5) Record of Consideration (REC). Actions adequately covered under an existing EA or EIS require only a REC. Actions not adequately covered by existing documentation are to be reviewed to determine which level of documentation is required, an EA or an EIS.

(6) Environmental Assessment (EA). If the proposed action is not covered by an existing EA or EIS, an EA can be prepared and either a FONSI or NOI issued. Actions normally requiring an EA are:

(a) Changes to the installation land use that generate environmental impacts.

(b) Repair or alteration actions affecting historically significant structures, archeological sites or places on the National Register of Historic Places.

(c) Actions that could potentially cause soil erosion, affect prime or unique farmland, wetlands, flood plains, coastal zones, wilderness areas, aquifers or other water supplies, or wild and scenic rivers.

(d) Actions that may affect endangered or threatened animal or plant species including those on state or territorial lists.

(7) Finding of No Significant Impact (FONSI) and Notice of Intent (NOI). Where the proposed action is within the general scope of an existing EA or EIS, but requires additional evaluation, prepare a new EA evaluating the new requirement and incorporate by referencing existing documents. If the new EA does not show a significant variance from existing documents, a FONSI is published. If significant impacts are found, a NOI to prepare an EIS is issued. The end result of an EA is a FONSI or NOI.

(8) Environmental Impact Statements (EIS). The EIS requirements need to be related to the proposed actions anticipated to have major or significant

impact. A complete list of criteria for EIS is contained in AR200-2 (under Revision). Conditions Requiring an EIS or EIS supplement include:

(a) Actions which significantly degrade environmental quality, public health or safety, adversely effect historic or archeological resources, public parks, recreation areas, wildlife refuge, wilderness areas, aquifers, etc.

(b) Actions which adversely effect properties listed on the National Register of Historic Places or National Registry of Historic Landmarks.

(c) Actions adversely impacting prime and unique farmlands located off-post, wetlands, floodplains, coastal zones, or ecologically important areas, areas of unique or critical environmental sensitivity, result in significant and uncertain environmental effects or unique environmental risk.

(d) Actions adversely affecting endangered or threatened animal or plant species including those on state or territorial list.

(e) Actions involving the production, storage, transportation, use, treatment, and disposal of hazardous or toxic materials.

(f) Actions affecting major changes to the mission of facilities, constructing major ranges or range complexes, and land acquisition greater than 640 acres. If the proposed action is not within the scope of an existing EIS, then the proponent must begin the EIS process. If the proposed action is within the scope of an existing EIS but was not covered adequately, the EIS may be supplemented.

b. LONG RANGE COMPONENT (LRC). The LRC is the examination of broad issues which affect the entire installation and its surrounding community. It provides background information on which decisions can be made and sets the basic framework for the entire RPMP development (CIS, SRC, & MC). Chapter 2 of this MPI discusses the LRC requirements, and Table 2-1, lists the major sections of the RPMP LRC. The required Environmental Quality Analysis and graphic Environmental Overlay represents the environmental baseline of the installation and surrounding community. These are intended to be a summary of all environmental issues affecting the management and development of the installation.

(1) Environmental Baseline. The preparation of the Environmental Baseline requires good environmental documentation from the installation's contributing information plans and studies. Once again, coordination is the key, with a team effort between the installation's Environmental and Master Planning

Offices. This environmental analysis should act as one of the major guides for the development of the installation Land Use Plan - critical to the total installation development. The types of environmental contributing plans which normally are ongoing on a military installation are listed in AR 200-1 (under revision), AR 420-40 and AR 420-74. Also, coordination with Federal, state and local environmental protection agencies can identify additional environmental issues on the installation as well as off-post environmental issues. Information can also be obtained from NEPA documents prepared for other purposes. Studies prepared for BRAC, Mission Changes and Restationing Actions are examples. Table 4-1 provides an environmental checklist to assist in initial data gathering. The checklist identifies areas that may affect the master plan; however, the master planner and environmental officer must determine if they apply to their installation. In some cases data will not be available or will be too outdated. In these cases, the LRC would identify environmental issues in need of further study. These issues would be pursued by the Installation Master Planning/Environmental Office Team. They need to not only identify the studies required, but time frame for development and pursue funding for accomplishment. It must be noted that data on these environmental issues will be needed for the upcoming master planning components (CIS, SRC, & MC).

TABLE 1
ENVIRONMENTAL CHECKLIST

1.	**AIR QUALITY**	
	a.	Does the installation have existing air pollution emissions? Permit/Restrictions/Inventory?
	b.	Will the proposed action involve air pollution discharges?
	c.	Non attainment area?
2.	**WATER RESOURCES**	
	a.	Have U.S. waters/wetlands been identified on the installation? (Check with the Environmental Officer or call U.S. Army Corps of Engineers for jurisdictional determination of U.S. waters/wetlands)
	b.	Does the proposed action involve construction or other work involving:
	•	Excavation or fill in U.S. waters
	•	Operations to modify navigable waters
	•	The discharge of dredged or fill materials?
	c.	Has the 100-year floodplain been delineated?

TABLE 1
ENVIRONMENTAL CHECKLIST

	d.	Does the proposed action involve construction in or otherwise affect the 100-year floodplain?
	e.	Does the proposed action involve:
	•	A pollution discharge?
	•	Storm water runoff?
3.	**ARCHEOLOGICAL AND HISTORIC RESOURCES**	
	a.	Have archeological and historic resources surveys been conducted?
	b.	Identify historic structures and buildings 50 years and older.
	c.	Locate known archeological sites and areas of the installation with high potential.
	d.	Will the proposed action affect archeological or historic resources?
4.	**ENDANGERED SPECIES**	
	a.	Have endangered species surveys been conducted on the installation?
	b.	Have endangered species surveys been conducted in the surrounding community?
	c.	Are endangered or threatened species present?
	d.	Will the proposed action affect endangered or threatened species?
5.	**NATURAL RESOURCES**	
	a.	Has the Natural Resources Management Plan been completed? Is it up to date?
	b.	Identify various natural resource management areas.
	c.	Will the proposed action affect natural resources?
6.	**NOISE**	
	a.	Has an Installation Compatibility Use Zone (ICUZ) study been conducted on the installation?
	b.	Identify areas where noise levels affect land use.
	c.	Will the proposed action affect noise levels?
7.	**ENVIRONMENTAL RESTORATION PROGRAM**	
	a.	Has assessment of the installation been completed?
	b.	Are there any IRP sites on the installation?
	c.	Have the IRP sites been remediated?

TABLE 1 ENVIRONMENTAL CHECKLIST		
	d.	Locate any remaining IRP sites and restrictions to development.
8.	**HAZARDOUS MATERIALS/WASTES**	
	a.	Does the proposed action involve the use of hazardous material?
	b.	Will the proposed action generate hazardous wastes?
	c.	Does the installation have/or has had Resource Conservation and Recovery Act (RCRA) Permit?
9.	**NEPA DOCUMENTATION**	
	a.	Have NEPA documents been prepared for the existing RPMP?
	b.	Have NEPA documents been prepared for other purposes such as the ongoing mission, BRAC or specific projects or actions?

(2) Environmental Overlay is the graphic illustration of the collective environmental information of installation development. Some installations may refer to this as a "Constraints Map", which along with existing Land Use and Topography, is the baseline for the development of the Land Use, Transportation and Future Development Plans. MPI Chapter 2,illustrates the type of information to be illustrated on this overlay.

c. CAPITAL INVESTMENT STRATEGY (CIS). The CIS is the installation commander's overall strategy for providing adequate facilities to support the personnel and mission of the installation. It is a general plan addressing real property requirements, environmental stewardship and infrastructure systems. It requires the installation to look at all options available to meet facility needs. These alternatives include the relocation of existing assets, renovation of substandard facilities, diversion/conversion of facilities, leasing and as a final alternative new construction. Chapter 2 of this MPI discusses the CIS format and requirements.

(1) Environmental Analysis. The environmental analysis associated with the CIS is a continuation of the development of the environmental baseline, and environmental overlay prepared under the LRC. During the CIS, information from previous studies and other identified sources of environmental data is used to analyze alternative solutions, determine the impacts of each action, and help make decisions that avoid negative impacts or mitigate those that are unavoidable. Environmentally sound planning requires the planner to:

(a) Develop plans, actions, projects and operations that

minimize impacts.

(b) Analyze the potential environmental impacts of all proposed alternatives.

(c) Make environmental protection a part of the decision making process.

(2) Policy and Procedures.

(a) The policies and procedures to be followed in preparing the environmental analysis are specified in AR 200-1 (under revision), "Environmental Protection and Enhancement", and AR 200-2 (under revision), "Environmental Effects of Army Actions". ONE IMPORTANT POLICY TO REMEMBER IS TO INCLUDE ENVIRONMENTAL CONSIDERATIONS AT THE BEGINNING OF THE PROCESS OF ANALYZING ALTERNATIVES; DON'T WAIT UNTIL THE END OF THE PROCESS TO CONSIDER ENVIRONMENTAL IMPACTS.

(b) Following the selection of preferred alternatives, CIS actions should be reviewed to determine additional environmental documentation if required. At this point, it should be possible to separate CIS actions that are excluded from additional environmental documentation and those requiring more detail analysis. Once again, this effort should be a cooperative effort between the master planning and environmental office team.

d. SHORT RANGE COMPONENT (SRC). The SRC is where Army planning meets Army programming in terms of dollars for installation facility requirements. With the SRC, the Army enters the Planning Programming & Budget Cycle (PPBES), making its facilities requirements known to the Major Commands (MACOM) and Department of the Army (DA). The PPBES relates to the highly regulated and turbulent 6-year Program Objective Memorandum (POM) cycle. The SRC goal is to integrate the Army's operational planning process with the CIS and is therefore influenced by preceding components of the RPMP. The end result is a prioritized proposal, broken into fiscal years, for funding the installation's MILCON requirements. The size of the SRC is therefore determined by the number of the actions or projects in the CIS and priority established by the installation and MACOM and by funding guidance established by the MACOM. An explanation of the SRC is contained in chapter 5 of this MPI.

(1) SRC Documentation. The SRC consist of the following five closely related but separate parts:

(a) Overview

(b) Real Property Investment Plan

(c) Environmental Documentation

(d) Real Property Disposal List

(e) Supporting Graphics

(2) Emphasis is placed on site specific information and particularly cover the first two years of the SRC project priority list. The extent of environmental documentation required should also be determined for the out years. Army RPMP goals require facilities to be environmentally sound and to promote environmental responsibility in their use and operation.

(3) Environmental Requirements.

(a) All proposed actions must comply with all applicable statutory, regulatory, technical and other controlling provisions. This includes the requirements of the National Environmental Policy Act (NEPA) of 1969 (PL 91-190). Environmental analysis should start at the beginning of the RPMP process, and at the SRC stage should be a continuation and refinement of earlier identified actions. In the SRC, we must ensure that the environmental considerations of each project or action have been addressed. This environmental documentation is prepared in the following two parts:

1/ The impact of each project in the first two years of the 6-year POM period identified, analyzed, and fully documented in accordance with the provisions of AR 200-2 (under revision).

2/ A determination of the type and extent of environmental documentation that will be required for each project in the out years of the POM.

(b) Site specific graphics to support the above environmental considerations for each new construction or revitalization project costing $200,000 or more is required. This graphic overlays the site plan of the project and should be a detailed extract of the environmental overlay to the RPMP enhanced with site specific environmental data. The enhanced environmental overlay should emphasize environmental considerations relevant to the development and use of the site for the specific project.

e. MOBILIZATION COMPONENT (MC). The Mobilization Component (MC) of the RPMP is a facilities support plan for the Crisis Response and Reconstitution phases of mobilization. It identifies all missions assigned to the installation and its tenant units in a proposed General War scenario, and determines the installation's real property requirements. The MC builds on baseline studies and existing RPMP documents. We do not anticipate that NEPA will be waived for mobilization and the various deployments of the Army since the end of the Cold War confirms this view. MC goals include protecting environmental assets and accommodating population peaks as well as sustained mobilization population loads. Chapter 6 of this MPI discusses the Mobilization Component. Just as in peacetime, policies outlined in AR 200-2 (under revision) are applicable to mobilization actions.

(1) Environmental Requirements. Any installation that executes a significant mobilization mission will generate environmental impacts, and NEPA documentation will be required. Impacts may result from a variety of actions, such as siting new facilities, increased sewage outflows, overuse of training areas, increased air pollution due to higher traffic volumes, etc. In the MC, we must ensure that we continue to follow the environmental Documentation process established in other RPMP components.

(a) The preparation of a separate Environmental Assessment (EA) is not required for the MC, but should be a part of the LRC of the RPMP.

(b) The estimated significance of the impact and type of documentation should be identified in the narrative report required for the MC. Table 6-6 of this MPI contains an outline for the MC Narrative (including environmental analysis) and Table 6-8, includes the same for Army Material Command (AMC) Installations. The environmental documentation process as presented in Figure 1 and the check list outlined for the LRC (see Table 4-1) will also be helpful for the preparation of the MC.

(c) A determination of the type and extent of additional environmental documentation that will be required for each MC action should also be addressed in the Mobilization Component.

(2) Responsibilities. The Installation Environmental Officer is responsible for identifying the potential impacts and preparing the required documentation.

4. RESPONSIBILITIES.

a. PROPONENT RESPONSIBILITIES. The installation Directorate of Public Works (DPW), or equivalent staff engineering organization is the proponent for the RPMP. All facility requirements must be coordinated through the DPW by the responsible installation organizations, tenants and other installation activities.

b. SUPPORTING ORGANIZATIONS. The master planner's responsibility is to coordinate all proponents real property planning needs, to identify planning alternatives and to consider the environmental consequence in recommending a plan to the commander. Given all this input, it is the master planner's responsibility to develop or coordinate the development of the environmental documentation. Coordination is the key! The master planning and environmental staff must start, at the earliest stages of the RPMP development, gathering environmental data from elements both on-post and in local communities. Some studies such as ground water monitoring may be ongoing, and some such as Cultural Resources take years to develop. Potential Mission Changes and BRAC may have produced environmental data, and tenant organizations may have data on their operations. Table 4-2 lists the type of data needed and some sources for this data.

TABLE 4-2
DATA TYPE AND SOURCE

No.	topic	Source of Information and DATA
1.	**Safety Zones**	
		Quality Assurance Inspectors, DOL
		Safety Office, DOL
		DPW Master Planning Office
		DPW Environmental Office
		Installation EIS
2.	**Restricted Areas**	
		DPW Environmental Office
		DPTM
		Installation EIS
3.	**Airfield Safety/ Clear Zones**	
		Aviation Officer
		DPW Master Planning Office
		Safety Office, DOL
		Installation EIS

TABLE 4-2
DATA TYPE AND SOURCE

No.	topic	Source of Information and DATA
4.	**Noise**	
		DPW Master Planning Office
		DPW Environmental Office
		Joint Capability Land Use Policy Report
		Installation EIS
5.	**Topography**	
		Automated Mapping/Facilities Management System Topo Sheets
		Installation Master Plan
		Terrain Analysis
		Installation EIS
6.	**Flood Plains**	
		U.S. Department of Agriculture,Soil Conservation Service (USDASCS) maps/soil surveys
		USACE Districts
		Installation EIS
7.	**Wetlands**	
		DPW Environmental Office
		National Wetlands Inventory Maps
		Installation Wetlands Inventory
		USACE Districts
		Installation EIS
8.	**Soils**	
		DPW Environmental Office
		Soil Boring Logs
		USDASCS maps/soil surveys
		State Joint Land Use Studies
		Terrain Analysis
		USACE Districts
		Installation EIS

TABLE 4-2
DATA TYPE AND SOURCE

No.	topic	Source of Information and DATA
9.	**Threatened or Endangered Species**	
		DPW Environmental Office
		Fish and Wildlife Service
		State Natural Resources Office
		National Marine Fisheries Service
		USACE Districts
		Installation EIS
10.	**General Biological Inventory**	
		Fish and Wildlife Service
		State Natural Resources Office
		DPW Environmental Office
		Installation EIS
11.	**Landfills, Contaminated Sites, and Hazardous Sites**	
		Installation Master Plan
		DPW Environmental Office
		AR 420-47, Solid Waste Management
		Installation EIS
12.	**Water and Waste Water Treatment Facilities**	
		DPW Environmental Office
		DPW Engineering and Utilities Office
		Installation EIS
		City, County & State Governments
13.	**Surface Water Groundwater (Aquifer Recharge Areas)**	
		USGS Maps
		USDASCS Maps
		Terrain Analysis
		State Agencies
		Installation EIS

TABLE 4-2
DATA TYPE AND SOURCE

No.	topic	Source of Information and DATA
14.	**Electromagnetic Transmission & Testing**	
		Automated Mapping/Facilities
		Management Data Base
		Installation Range Area Maps
		Limited Contractor Research
		Installation EIS
15.	**Historic Properties (Includes Archeological Sites)**	
		DPW Environmental Office
		Installation Design Guide
		State Historic Preservation Officer
		Cultural Resources Reconnaissance of Installation
		USACE Districts
		Installation EIS
16.	**Air Pollution Sources**	
		DPW Environmental Office
		Installation EIS
		Local Government Point Sources
		Ambient Pollution Level Survey
17.	**Underground Storage Tanks**	
		Automated Mapping/Facilities Management System
		DPW Master Planning Office
		DPW Environmental Office
		Installation EIS
18.	**Outside Boundaries** (Ownership Adjacent to the Installation and Sensitive Noise Receptors)	
		DPW Master Planning Office
		Joint Compatible Land Use Study
		Local (city, county, etc.) Planning Commissions
19.	**Real Estate** (Disposal, Easements, Outgrants, Leases, Mineral Potential)	

TABLE 4-2
DATA TYPE AND SOURCE

No.	topic	Source of Information and DATA
		USACE District Real Estate Office
		DPW Real Property Office
		Environmental Baseline Studies
20.	**Major Research & Testing Areas and Facilities**	
		Directorate of Plans and Training
		Installation EIS
21.	**Open Space/Buffer Areas**	
		Installation Land Use Plan
		Installation Design Guide
		DPW Master Planning Office
		DPW Environmental Office
22.	**Seasonal Restrictions**	
		Directorate of Plans and Training
		DPW Environmental Office
		Installation EIS

c. FUNDING.

(1) RPMP Funds. RPMP funds flow to the installation master planner through the installation's MACOM or through installation, MACOM/Corps of Engineers coordination. The RPMP Component required generalized environmental analysis, as addressed in this chapter, are normally funded as a part of the RPMP Component requirement. Funding for special studies and tenant requirements, could come from the organization having the requirement such as AAFES, MEDDAC, etc, or be a part of the design funds provided for specific actions which have an environmental requirement. The 1383 process is used to program environmental actions or project requirements including the collection of environmental baseline data.

(2) THE 1383 PROCESS: The 1383 is a programming document for environmental action or project requirements. This process can be a source of funding for environmental action if approved. The RCS 1383 report is a database designed to identify and set priorities on all Army Environmental Program

requirements. It is required by E.O. 12088, and is reported via EPA to OMB to prepare the President's Budget. The 1383 guidance is developed and is input annually. The master planner and environmental officer should work together on the 1383 input to ensure that adequate funds are available for necessary environmental data and documentation required for the RPMP. The Master Planner should refer to AR 200-1 (under revision) and contact the installation Environmental Officer for details on the 1383 process.

d. REVIEWS AND APPROVALS. The LRC, CIS & SRC are approved at the installation level, then sent to the MACOM. The MC requires additional review by the CONUSA, U.S. Army Reserve Component, State Adjutant General (when appropriate) prior to MACOM approval. The planning process must comply with AR 200-2 (under revision) for the NEPA requirements. The CIS is the key RPMP document for the NEPA requirement. The contributing documents to the RPMP would follow approval established for each particular document. See AR 210-20, (pages 1 & 2) for RPMP review and approval requirements and AR 200-2 (under revision) for contributing Environmental Plan requirements.

e. COORDINATION AT THE INSTALLATION.

(1) Environmental Officer and Master Planner Responsibilities The Master Planner and Environmental Officer should be working together all along to insure that the necessary environmental information is available when a RPMP update is required. The Master Planner should serve on the Environmental Protection Committee and the Environmental Officer should serve on the Real Property Planning Board. They should use these forums to insure that environmental information on endangered species, natural and cultural resources, wetlands, etc., is available when needed to update or prepare the RPMP. The ongoing requirements for this type information are in AR 200-1 (under revision), AR 420-40 and AR 420-74.

(a) The best approach to environmental issues is to identify and avoid adverse environmental impacts before they become a problem. This is best accomplished by a thorough environmental analysis in the LRC stage, so that good environmental information is available for decision making.

(b) The Master Planner should not try to become, and is not expected to be, an expert in environmental matters. Likewise, the Environmental Officer can not serve the function of the Master Planner. Each has a very important role to play.

(2) Information Sources. Information from plans and programs

required by other regulations will greatly reduce the amount of data collection required to update the RPMP. Additionally, updates to the RCMP documents may provide information necessary for the update of existing related plans. Once again, coordination is the key.

5. GUIDANCE.

a. AR 200-1 (Under Revision). Environmental Protection and Enhancement. This regulation prescribes DA responsibilities, policies, and procedures to preserve, protect, and restore the quality of the environment. It incorporates all applicable statutory and regulatory requirements in the areas of research and development; water resources management; air pollution abatement; hazardous materials management; solid and hazardous waste management; noise abatement; oil and hazardous substance spill contingency planning, control, and emergency response; environmental restoration; asbestos management; radon reduction; and other environmental programs.

b. AR 200-2 (Under Revision). Environmental Effects of Army Actions. This regulation sets forth policy, responsibilities, and procedures for integrating environmental considerations into Army planning and decision making. It establishes criteria for determining what Army actions are categorically excluded from requirements to prepare an EIS and lists applicable categorical exclusions. It further defines when EA's and EIS's are required, and the procedures to be followed in the preparation of these documents.

c. AR 200-3 (Draft) (Old AR 420-74). Natural Resources Management: Land, Forest, Fish and Wildlife. This regulation requires development of preservation and protection plans that should be considered during development or revision of the RPMP. For example, there may be plans for management of grazing or forest lands and fish and wildlife resources. The Natural Resources Management Plan inventories all training lands and balances Army mission activities with the land's ability to support long-term use, and implements the Integrated Training Area Management (ITAM) program to manage training lands.

ATTACHMENTS

ATTACHMENT A

REFERENCES AND FORMS

1. REFERENCES.

   a. AR 5-3. Installation Management and Organization.

   b. AR 200-1 (under revision). Environmental Protection and Enhancement.

   c. AR 200-2 (under revision). Environmental Effects of Army Actions.

   d. AR 200-3 (under development - replaces AR 420-74). Natural Resources

   e. AR 210-20. Master Planning for Army Installations.

   f. AR 420-40. Historic Preservation.

   g. AR 420-74. Natural Resources: Land, Forest and Wildlife Management.

2. FORMS

   a. DD Form 1383

ATTACHMENT - B

ABBREVIATIONS & ACRONYMS

ADCD	Assistant Deputy Commander for Development
AHERA	Asbestos Hazard Emergency Response Act
AMC	U.S. Army Materiel Command
ASA(I&L)	Assistant Secretary of the Army (Installations & Logistics and Environment)
ASIP	Army Stationing and Installation Plan
BRAC	Base Realignment and Closure
CAA	Clean Air Act
CELDS	Computer Aided Environmental Legislative Data System
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CIS	Capital Investment Strategy
CONUSA	The numbered armies in the Continental United States
CWA	Clean Water Act
CX	Categorical Exclusion
EIS	Environmental Impact Statement
EPCRA	Emergency Planning and Community Right-to-Know Act
DASD(E)	Deputy Assistant Secretary of Defense, Environmental
DEIS	Draft Environmental Impact Statement
DESOH	Deputy for Environment, Safety and Occupational Health
DOD	Department of Defense
DOL	Directorate of Logistics
DPTM	Directorate of Planning & Training Management
DPW	Directorate of Public Works
FEIS	Final Environmental Impact Statement
FFCA	Federal Facilities Compliance Act
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FONSI	Finding of No Significant Impact
HQUSACE	Headquarters, U.S. Army Corps of Engineers
IPB	Installation Planning Board
IPR	Installation Restoration Program
ITAM	Integrated Training Area Management Program
LRC	Long Range Component
MACOM	Major Command
MC	Mobilization Component
MILCON	Military Construction
MPI	Master Planning Instructions

MTMC	Military Traffic Management Command
NAAQS	National Ambient Air Quality Standards
NBC	Nuclear, Biological & Chemical
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NPDES	National Pollution Discharge Elimination System
OCONUS	Outside Continental United States
OEBGD	Overseas Environmental Baseline Guidance Document
OMB	Office of Management and Budget
POM	Program Objective Memorandum
PPBES	Planning, Programming, Budgeting and Execution
RCRA	Resource Conservation and Recovery Act
REC	Record of Environmental Considerations
ROD	Record of Decision
RPMP	Real Property Master Plan
SHPO	State Historic Preservation Officer
SOFA	Status of Forces Agreement
SOW	Scope of Work
SRC	Short Range Component
TBO	Total Build Out
TJAG	The Judge Advocate General
TSCA	Toxic Substance Control Act
USACE	U.S. Army Corps of Engineers
USDASCS	U.S. Department of Agriculture, Soil Conservation Service

ATTACHMENT C

ENVIRONMENTAL LAWS

1. LIST OF ENVIRONMENTAL LAWS.

- Abandoned Shipwreck Act
- American Folklife Preservation Act
- American Indian Religious Freedom Act
- Anadromous Fish Conservation Act
- Antiquities Act
- Archeological and Historic Preservation Act
- Archeological Resources Protection Act
- Asbestos Hazard Emergency Response Act (AHERA)
- Bald Eagle Act
- Clean Air Act
- Clean Water Act
- Coastal Barrier Improvement Act
- Coastal Barrier Resources Act
- Coastal Wetlands Planning, Protection and Restoration Act
- Coastal Zone Management Act
- Comprehensive Environmental, Response, Compensation and Liability Act
- Deepwater Port Act
- Emergency Planning and Community Right-To-Know Act
- Endangered Species Act
- Environmental Programs Assistance Act
- Environmental Quality Improvement Act
- Estuary Protection Act
- Farmland Protection Policy Act
- Federal Facilities Compliance Act
- Federal Insecticide, Fungicide, and Rodenticide Act
- Federal Land Policy and Management Act
- Federal Water Project Recreation Act
- Fish and Wildlife Conservation Act
- Fish and Wildlife Coordination Act
- Fish and Wildlife Conservation on Military Reservations
- Flood Control Act
- Food Security Act
- Forest Conservation
- Hazardous Material Transportation Act
- Hazardous Substance Response Revenue Act
- Historic Sites Act

- Land and Water Conservation Fund Act
- Marine Mammal Protection Act
- Marine Protection, Research and Sanctuaries Act
- Migratory Bird Conservation Act
- National Environmental Policy Act
- National Historic Preservation Act
- National Ocean Pollution Planning Act
- National Trails System Act
- Native American Graves Protection and Repatriation Act
- Noise Control Act
- Occupational Safety and Health Act
- Outer Continental Shelf Lands Act
- Pollution Prevention Act
- Port and Tanker Safety Act
- Quiet Communities Act
- Resource Conservation and Recovery Act
- Rivers and Harbors Act
- Safe Drinking Water Act
- Soil and Water Resources Conservation Act
- Solid Waste Disposal Act
- Submerged Land Act
- Superfund Amendments and Reauthorization Act
- Surface Mining Control and Reclamation Act
- The Water Quality Act of 1987
- Toxic Substances Control Act
- Water Resources Development Act
- Water Resources Planning Act
- Water Resources Research Act
- Watershed Protection and Flood Prevention Act
- Wild and Scenic Rivers Act

2. SELECTED ENVIRONMENTAL LAWS. Environmental protection laws and their associated regulations are typically targeted at specific media. The three principal laws directed at controlling pollution of the air, water and land as individual environmental media are the Clean Air Act (CAA), the Clean Water Act (CWA) and the Resource Conservation and Recovery Act (RCRA). A number of environmental issues transcend these media specific pollution abatement statutes. Each statute contains specific sections that pertain to hazardous or toxic substances. Other statutory and regulatory controls, including state and local controls, deserve review as well. To identify the appropriate and applicable statutes or regulations, refer to the Computer Aided Environmental Legislative Data System (CELDS). The following sections briefly discuss the major statutes pertaining to air, water and

land pollution.

a. Clean Air Act (CAA). The Clean Air Act was passed in 1970 and amended in 1977 and 1990. It requires prevention, control and abatement of air pollution from stationary and mobile sources. Its implementing regulations set forth National Ambient Air Quality Standards (NAAQS) and the mechanisms for meeting these standards. Each state is required to develop and implement a State Implementation Plan (SIP) by identifying, preventing and controlling air pollution sources. The SIP is the single document that defines air pollution compliance requirements for Army installations in that state. The SIP must include an implementation program to assure timely attainment of the standards in these areas. Areas outside the region must be protected from significant deterioration of existing air quality. Asbestos removal and disposal are regulated under the CAA.

b. Clean Water Act (CWA). The Clean Water Act was passed in 1977 and amended in 1987. It establishes water quality goals, a discharge permit system, a process for cleaning up the nation's waters, regulation of toxic and hazardous pollutants and potential polluting factors, elimination of the discharge of toxic pollutants, and the elimination of pollution discharges into all U.S. waters. The National Pollution Discharge Elimination System (NPDES) process is a product of the Clean Water Act. Facilities discharging wastes into water bodies must have a NPDES permit. The Water Quality Act of 1987 changed the CWA by substituting state revolving loan funds for former Section 201 grants for the construction of wastewater treatment plants. It also regulates toxic pollutants in sewage sludge and provides new authorities regarding CWA violations. Section 404 of the CWA regulates the discharge of dredge and fill materials into the waters of the U.S. including wetlands. The U.S. Army Corps of Engineers is the permitting agency for Section 404 permits.

c. The Safe Drinking Water Act. This was passed in 1974 and amended in 1986. It establishes standards for drinking water quality and requires operators of public water systems to meet national standards.

d. Resource Conservation and Recovery Act (RCRA). RCRA was passed in 1976 and amended in 1984. It is the primary statutory authority providing for federal regulation of both hazardous and non-hazardous solid wastes. RCRA focuses on land disposal of these wastes. RCRA regulates wastes that are not controlled by other pollution control statutes and promulgates continuous control over hazardous substances.

e. Toxic Substances Control Act (TSCA). The Toxic Substances Control Act was passed in 1976. It regulates polychlorinated biphenyls,

chlorofluorocarbons and asbestos. It regulates release of toxic substances into the environment.

f. Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). CERCLA, also known as Superfund, controls releases of hazardous substances into the environment, establishes strict liability standards, and provides a funding mechanism for clean up of toxic waste disposal sites. A DOD wide program, called the Installation Restoration Program (IRP), has been established with a separate funding mechanism to provide for CERCLA compliance on DoD installations.

g. Emergency Planning and Community Right-to-Know Act (EPCRA). EPCRA was passed in 1986 as part of the Superfund Amendments and Reauthorization Act of 1986. It is primarily targeted at planning and notification of individuals who may be affected by operating, handling or managing hazardous material.

h. Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). FIFRA was passed in 1972 and established requirements for licensing and management of pesticides. It required all pesticide applicators be certified or under the direct supervision of a certified applicator. The Army adopted Integrated Pest Management as the means of control of pests.

i. Endangered Species Act. The Endangered Species Act was passed in 1973 to protect threatened or endangered plants and animals. It requires Federal agencies to avoid jeopardizing any threatened or endangered species or critical habitat.

j. National Historic Preservation Act (NHPA), as amended (PL 89-665). The NHPA was developed to encourage preservation of historic buildings, structures, objects and sites (to include archaeological sites) that might be affected by activities undertaken, funded or permitted by the Federal government. Master planners must determine whether historic architectural and archeological inventory surveys have been undertaken for proposed actions before they are allowed to proceed. If the inventory surveys have been completed and it is determined that National Register eligible properties will be affected by the action, consultation must be undertaken with the appropriate State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation. In order to avoid costly delays to actions, necessary inventories and consultation should occur very early in the planning process.

k. Noise Control Act. The Noise Control Act was passed in 1972 to

establish a national noise policy and regulate noise emissions from commercial operations. Although the act exempts weapons and combat vehicles, the Installation Compatible Use Zone was developed to establish compatible land use areas.

l. Federal Facilities Compliance Act (FFCA). The FFCA allows the Environmental Protection Agency to undertake a thorough inspection annually of federally owned or operated facilities that are subject to the Solid Waste Disposal Act, CERCLA, the Clean Water Act, the Safe Drinking Water Act, and the Toxic Substances Control Act to ensure compliance with these Acts. The Act holds federal agencies responsible for non-compliance and holds government agents or employees criminally responsible for intentional violations of specific environmental laws. In addition, the FFCA authorizes EPA to issue Administrative Orders to federal agencies, and allows states to levy fines in the event of non-compliance.

m. McKinney Act. The McKinney Act provides for reuse of excess facilities to house the homeless.

n. National Environmental Policy Act (NEPA). The NEPA of 1969 is our basic national charter for protection of the environment. "The purposes of this Act are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the nation; and to establish a Council on Environmental Quality." The Council on Environmental Quality has issued regulations to show Federal agencies what they must do to comply with the procedures and achieve the goals of the Act.

ATTACHMENT D
SAMPLE STATEMENT OF WORK

1. FORMAT AND OUTLINE. This Statement of Work (SOW) defines services to be performed for the preparation of the Long Range Component (LRC) of the Real Property Master Plan (RPMP) for Fort "X". The Long-Range Component can consist of the following deliverables:

a. Executive Summary Brochure

b. Executive Summary Poster

c. Two (2) Aerial Perspective Renderings

d. Narrative Reports:

(1) Land Use Environmental Assessment Report

(2) Installation Design Guide (IDG) Report

(3) Long-Range Component Narrative Report

e. Supporting Maps and Plans (30" x 42")

f. Project Management Plan Wall Chart

g. Project Tracking Software System Reports

2. PRE-PLANNING THE LONG-RANGE COMPONENT (LRC). The A-E will perform the following activities following receipt of the official Notice to Proceed (NTP):

a. Assemble the Project Team

b. Review the SOW, Project Schedule/critical path, format for deliverables, procedures for interface with the Technical POC & the Contract Officer, style manual to be followed in preparation of all narrative text & report graphics, etc.

c. Outline the deliverables in "dummy" report form for review purposes.

d. Organize and set up a project filing system.

e. Schedule the initial on-site visit of the Project Manager & all Task Managers.

f. Organize materials for that initial visit.

g. Meet at ??????? (location to be determined by installation and contracting office) with the COE, Assistant Deputy Commander for Development (ADCD), Technical POC and Contract Officer to review the agreed upon SOW.

h. Meet on-site with the Assistant Deputy Commander for Development, the Technical POC, the Installation Planning Board (IPB)/Executive Development Group.

i. Meet on-site with non-IPB members who are data sources and/or who perform functions that need to be covered in the RPMP.

j. Obtain and review all pertinent plans, programs, map tabs & other graphics, DOD & Army regulations/technical bulletins relative to prior and current master planning at Ft "X".

3. INTRODUCTION

a. Purpose: Of the Long-Range Component will explain long-term development to serve the Defense Department and Department of the Army.

b. Scope: Will describe study area, the time horizon and the work tasks to be performed in this contract for the RPMP.

c. Goals: Summary statement of DOD, HQDA, (local planning commissions where appropriate) and installation goals and of mandates of applicable laws and regulations.

d. Development Objectives: The more specific objectives to satisfy the mission and development requirements, address environmental issues, and respect limiting constraints will be listed and referenced to later sections where they will be more fully addressed.

e. Definitions: A glossary is to be prepared summarizing DOD, and Department of the Army acronyms and definitions found throughout the elements of the Long-Range Component.

f. Planning Assumptions: The basic underlying assumptions for the Total Build Out (TBO) scenario and for the Land Use Plan will be stated.

g. History: A brief summary statement of Fort "X"'s history and that of the surrounding area will be prepared.

h. Missions: A summary statement will be prepared of current and expected future missions to be accommodated at Fort "X".

i. Organizations: The host organization, tenants and assigned units will be listed with appropriate descriptive data.

4. OVERVIEW

a. The Overview is to contain the narrative and graphic summary of the physical, geographical, socioeconomic, and environmental setting for the RPMP at Ft. "X". This includes a discussion of the geographic location and context of Ft. "X". It describes the socioeconomic conditions of the region. It describes the natural environment and related concerns as well as steps being taken to protect that environment. It describes the regional transportation network.

(1) The Overview also describes development patterns and master planning in the region surrounding Ft. "X", and the coordination that is required with other public and private agencies. It describes functions at Ft. "X" that provide mission support, including warehousing, fuel storage, waste handling, administrative, logistic, communication, etc. It describes the human environment at the installation. Archeological, historic, current and forecasted demographics, and community services are all described in this Overview.

(2) Mobilization Mission: The A-E will describe in general terms Ft. "X"'s mobilization mission, land areas utilized, activities to be performed, and support structure required.

b. The Overview will include a regional profile describing the regional setting and the relationship between Ft. "X" and the surrounding region.

1. Geographical Location
2. Socioeconomic Conditions
   a. Population
   b. Local Economy
   c. Housing
   d. Community Services

3. Land Use
   a. Land Leases
   b. Easements
   c. Local Coordination as directed and arranged by the Technical POC.
      1) Federal
      2) State
      3) County

4. Transportation: Source documents for this descriptive material include the plan documents of (county, city and state departments of transportation), Military Traffic Management Command (MTMC), (metropolitan or multi-county planning authority),etc.
   a. Air
   b. Rail
   c. Water
   d. Ground
      1) Circulation
      2) Mass Transit Access
      3) Bus Routing

5. Natural Environment
   a. Climate/Air Quality
   b. Topography
   c. Geology
   d. Soils
   e. Tree Cover and Vegetation
   f. Hydrology
      1) Watersheds
      2) Wetlands
      3) Water Bodies
      4) Water Table
   g. Wildlife Significant Habitats
      1) Sanctuaries
      2) Genetic Corridor
   h. Waste Management
   i. Reserved Land/Buffers

6. Mission Support

7. Human Environment
   a. Archaeological
   b. Historic
   c. Buildable Areas
   d. Current and Forecasted Demographics
      1) Military Personnel

a) Live On/Work off
b) Live On/Work On
c) Live Off/Work On

2) Dependents
3) Civilian Personnel
4) Other Supported Populations

e. Community Services

1) Health
a) Medical
b) Dental
c) Mental

2) Recreation
a) Outdoor
b) Indoor

3) Safety
a) Fire Protection
b) Security
c) Ordnance Storage and Transport
d) Hazardous Wastes
e) Air Quality
f) Nuclear Biological & Chemical (NBC) Activities

4) Noise Abatement
a) Aircraft
b) Ranges

5) Water Quality
6) Medical Emergency Assistance
7) Information
a) Education
b) Libraries
c) Museums
d) Visitor
e) Conference Facilities

8) Dining
9) Religious
10) Retail and Personal Services
a) Commissary
b) Post Exchange
c) Specialty Stores and Services
d) Package Store
e) Banking
f) Restrooms

g) Service Station/Repair/Car Wash
h) Post Office
i) Craft Shops
j) Theater

11) Drill and Ceremony
12) Recreation
a) Athletics
b) Fishing
c) Hunting
d) Camping
e) Youth Activities
f) Equestrian
13) Child Care
14) Transient Housing/Services
15) Clubs
16) Kennels
17) Cemetery
18) Community Gatherings

5. EXECUTIVE SUMMARY and POSTER

a. The Executive Summary is to be a freestanding deliverable with its own report packaging. (both as an 8½" x 11" narrative report and as a poster containing a summary of the executive summary). The Executive Summary Brochure will be 8½" x 11", saddle-stitched document approximately X pages long. The cover for the brochure will be printed in 4-color, on an 80# white Patina cover stock. The text will be printed on a 70# white Patina matte stock with 2-color graphics being used throughout the text. A total of 500 copies of the Executive Summary Brochure will be provided.

b. The Executive Summary Poster will be printed 2-sided in 4-color, on an 80# white Moe stock. The overall sheet (24" x 33") will be folded down to 8½" x 11" so that it fits into the pocket of the binder. A total of 1,000 copies of the poster will be provided.

c. All Narrative Reports -

(1) The final narrative reports will be packaged in 3-ring presentation-type binders. The cover and spines will be printed in 4-color on an 80# white Patina cover stock, and inserted into the binders. The text will be printed on a 70# white Patina matte stock with 2-color graphics being used throughout the text. Text pages will be printed on 8½" x 11" sheets, while the majority of the

maps will be on 11" x 17" sheets to provide clarity. A total of 125 copies of the final narrative report will be provided.

(2) Interim submittal of the narrative reports will be photocopied on standard white bond paper, and bound with GBC combs. Twenty five (25} copies of the narrative report will be provided at each interim submittal.

(3) The Executive Summary will provide an overview of the Real Property Master Plan (RPMP). It will outline each component of the RPMP including the Long-Range Component, Short-Range Component, Mobilization Master Plan Component, and Contributory Plans. Each major component of the RPMP will be summarized as they are completed during successive phases of the overall work program so that the reader can understand the overall approach to the future development of the installation. The Executive Summary to be prepared will state in clear narrative and graphics form: current, assumed future missions, constraints and opportunities for future development, buildable areas; and recommendations for development long-term. In addition, anticipated Plan impacts will be summarized. This Executive Summary will be written so that it functions as a document readily useable by commanders, staff, and public and private officials who are interested in or affected by activities at the installation.

(a) Missions: Succinct statement summarizing Army Stationing & Installation Plan (ASIP) for organizations existing and anticipated at Fort "X" and their mission statements.

(b) Limitations/Constraints: Itemized in tabular and graphic form with buildable area highlighted.

(c) Recommendations: Highlighted to summarize proposed future development pattern.

6. LONG-RANGE ANALYSIS (LRA).

a. Long-Range Broad Planning Considerations. The A-E is to analyze the Ft. "X" master planning opportunities within the context of broad based regional plans & policies, including the following:

(1) Metropolitan Area plans & policies
(2) Metropolitan Transit Authority's plans & programs
(3) Regional Planning Commission's plans, policies & procedures
(4) State Department of Transportation's plans & programs
(5) County's plans, programs & policies

(6) Railway system plans and programs
(7) Department of Defense's plans & policies
(8) Department of the Army's plans & policies

b. Long-Range Goals & Objectives.

(1) The A-E will formulate a recommended set of goals & related objectives for this Real Property Master Plan. Data sources will include earlier master plans for Ft. "X", the BRAC master plan document (if appropriate), the Army Long-Range Facilities Plan (ALRFP).

(2) The A-E will take into account the official adopted planning goals & development objectives of the applicable state, regional and local agencies that either have jurisdiction over Ft. "X" or that impact/are impacted by Ft. "X". These include the following:

(a) Metropolitan Government
(b) County Government
(c) Other local agencies as appropriate.

(3) The A-E will review preliminary, recommended goals & objectives with the Installation Planning Board (IPB). DOD/DA or Ft. "X"/external agency or other conflicts between goals/objectives will be identified and will be discussed with the IPB. If these conflicts cannot be resolved at the IPB level, the A-E will take them to the Assistant Deputy Commander for Development (ADCD) for resolution.

(4) Following feedback from the IPB, and based on a decision by the ADCD, the A-E will finalize the recommended set of long-range goals & objectives for Ft. "X".

c. Long-Range Force Structure.

(1) The A-E will utilize the pre-existing ASIP as a point of departure for this work task.

(2) The A-E will interview the DPW Facilities Engineer (FE), the Assistant Deputy Commander for Development (ADCD), and the appropriate DOD, DA & (other appropriate personnel) relative to their long-range (50 year)plans for the stationing of military personnel at Ft. "X".

(3) Where planning documents do not exist that far out in time, assumptions will be made regarding the number of military personnel to be

stationed (and/or housed)at Ft. "X" over the next 50 years. The A-E will write up such assumptions based upon those conversations and will obtain the assistance of the ADCD in securing a sign-off on those particular assumptions which will be a key to the RPMP.

d. Long-Range Planning Issues & Planning Assumptions

(1) The A-E will work certain key issues with the Ft. "X" DPWFE and ADCD and with the appropriate DOD, HQDA & (other personnel as appropriate) to determine what planning assumptions need to be made for the future role of Ft. "X" within the region.. Typical issues will include:

(a) (As Appropriate) What is the relative role of other military facilities in the area, and accommodating army personnel who currently lease space off post within the metropolitan area?

(b) What is the role of Ft. "X" in housing future Ft. "X" assigned personnel? future EPG assigned personnel? other DA personnel working elsewhere within the region?

(c) What is the long-term future of training at Ft. "X"?

(d) Other issues as appropriate.

(2) The A-E will summarize what planning assumptions are being made relative to the future role of Ft. "X" and will obtain the assistance of the ADCD in securing a sign-off on these basic underlying assumptions.

e. Generalized Real Property Analysis. The A-E is to undertake a very generalized analysis of the Ft. "X" real property assets.

(1) First, the A-E will review/evaluate the IFS-M data files. Secondly, the A-E will conduct an exterior, visual survey of the ? (number to be determined by installation) most important buildings on-Post and will make field notes on these facilities.

(2) The A-E will analyze the approximately XXXX buildings (based upon the IFS-M data) and the (?) most important buildings (based upon the exterior, visual survey), and make recommendations for retention or demolition relative to general condition.

(3) The A-E's summary field notes (bullets, not a narrative report) are

to be delivered in typed form in an Appendix.

(4) The A-E is not to undertake a more detailed Space Utilization Study nor is the A-E to perform a Facility Requirements Analysis. Those two work tasks are to be scoped and accomplished separately.

f. Mission Support. The A-E is to assess how Ft. "X" is currently situated relative to accomplishing the above stated long-range goals & objectives. Current & assumed future missions will be described as well as their implied command & organizational structures. The future force structure will be delineated based upon the ASIP, the interviews with DPW/FE, ADP, DOD, & DA personnel and the resulting planning assumptions that are made.

g. Capacity Analysis, Expansion Base. The A-E will estimate the installation's expansion potential in terms of an "order-of-magnitude". This estimate will be based upon hypothetical (assumed) increases to the present mission. Under the Land Use Plan work task, a Total Build Out (TBO) scenario is to be constructed; time increments are not to be considered in this Capacity Analysis nor in that Land Use Plan. In this work task, the A-E is to estimate the maximum supportable working population that can be accommodated within the existing installation's land base, goals, objectives constraints and other limiting factors.

h. Alternatives Analysis/Selection Or the Preferred Alternate. The A-E will briefly describe in narrative form only (for the record), the general evolutionary process and alternative scenarios considered and evaluated by the A-E prior to the adoption of the Total Build Out (TBO) scenario.

(1) The method employed in this prescreening process is to be described. This will include a discussion of the stated long-range goals/objectives, planning assumptions, environmental overlays/man-made constraints/buildable areas analysis, functional relationships analysis, force structure outline, master planning/site planning principles and IDG provisions.

(2) The underlying rationale for the selection of the Preferred Alternate (TBO) is also to be described. The A-E is not to flesh out the-original alternatives considered, but only to write-up the process utilized.

i. Photo Inventory.

(1) XXXX acres XXX buildings. Photo Inventories are to be used as a multipurpose tool for determining the nature of buildings concerning their condition and surroundings. Inventories are generally accomplished to facilitate

quick retrieval of visual information about individual structures.

(2) The Fort "X" Technical POC will make the necessary arrangements to fly over the Post by helicopter for the purpose of photographing certain, selective portions of the installation's land base and major facilities.

(3) The typical photo inventory takes into account similar structures that may not require photography. Approximately XXX significant/typical structures exist that are sufficiently different in appearance as to require individual inventories. The A-E will use a SLR 35mm camera to take this particular ground-level photography. The remaining structures will fall into typical categories. The inventory and deliverables consist of one ground-level elevation photo of each major facade of the buildings selected.

7. ENVIRONMENTAL QUALITY REVIEW. This section will review environmental conditions on-Post, utilizing existing data. This review will derive largely from regulatory requirements and related policies.

a. The assessment will constitute the basis for further constraints development and subsequent analyses related to buildable areas, and limitations to the Total Build Out (TBO) scenario. Thus, this task will support Long-Range Analyses through comprehensive assessment of development implications associated with mission objectives/Total Build Out (TBO).

(1) Air Quality--A review of existing and potential air emissions will be performed based on existing data, and trends. The A-E will interview Post staff and local and state regulatory agencies to obtain information. The sources of major emissions will be mapped and tabulated. A table depicting all major point sources and discussion of emissions and regulatory compliance will be provided. Recommendations will be made for long-term management and assessments provided for mission objectives.

(2) Water Quality--This section Will deal with surface and ground waters and will primarily address point source discharges, as available. This section will also address non-point source pollution, storm water management, NPDES program, and other regulations that affect the Post. This section will briefly cross-reference soil erosion and sedimentation. Interviews will be held with the DPW environmental offices and appropriate agencies. Recommendations for long-term management will be identified.

(3) Land and Soils Quality--A review of existing documents and maps will provide the inventory of constraints due to geology, soils, slopes or

contamination. This information will be provided graphically and in narrative form for future planning and assessment purposes.

(4) Toxic Materials and Hazardous Waste Management--A review of existing documents and programs will be performed. Interviews will be performed with local and state regulatory agencies as well as appropriate post personnel. Known areas of identified concern will be discussed and highlighted on maps, existing and proposed programs described, and any potential conflicts discussed. Recommendations will include discussion of programs that will assist in future environmental compliance.

(5) Recycling and Solid Waste Management--A review of existing programs will be performed. Interviews will be held with the appropriate personnel staff/agencies to determine if deficiencies or opportunities exist in the long term. Recommendations will be based upon successful known programs.

(6) Installation Restoration--The base program will be reviewed and addressed as to its history, existing status, and future activities. Discussions will include locations, schedules, magnitudes and impacts on future programs and siting. The appropriate post personnel and regulatory agencies will be contacted.

(7) Oil and Hazardous Substances Spill Management--Post plans will be reviewed for adequacy and long-term compliance. Control measures will be identified and discussed in narrative form. Data will be obtained from post personnel and contributory maps and narrative produced.

(8) Noise Control--Summary data will be taken from the pre-existing Installation Compatible Use Zones (ICUZ)/Air Installation Compatible Use Zones (AICUZ) Report, if available.

(9) Radiological Control--Existing and proposed major emitters of radiation will be identified and discussed in narrative form. Future changes and conflicts will be identified, where possible, based on existing conditions, proposed additions, and future land use.

(10) Ecological Protection--All natural environmental data will be identified, assessed, augmented, and mapped to the degree necessary to support the LRA. Interviews and field work will be conducted as necessary.

b. The Environmental Quality Assessment will be based primarily on existing data readily available from Post personnel. No new field data will be generated by the A-E, nor will the A-E develop extensive management plans, permit

applications, or other regulatory documents as part of this task. A pre-draft review of data and approach will be conducted with the Fort "X" Natural Resources POC, program managers, and other Post personnel as required.

8. NATURAL/CULTURAL RESOURCES ASSESSMENT.

a. Natural Resources Assessment. This section will address the current natural resources base existing on Ft "X" utilizing existing management plans, data, reports, and other information. The development of current and projected natural resources constraints for the TBO will be based on the environmental quality component as well as existing/new management plans; through interviews with post, regional, state, and federal agency officials knowledgeable in natural resource issues on Ft "X"; and from any other data made available from Fort "X" personnel. Existing management plans will be reviewed and data or program gaps identified. Major natural resource management issues, policies and approaches will be summarized. A pre-draft review of data and approach will be conducted at the A-E's offices with the Ft "X" natural resources point of contact, program manager, and other post personnel as required.

(1) Forest Management. A review of the existing forest management components of the installation natural resources plan will be conducted to identify known constraints imposed on the proposed Total Build Out (TBO). Input from post personnel will be solicited to identify key issues in regard to future forest management plans. Information gaps which preclude fully developing constraints on TBO by forest resources will also be identified. Coordination will be conducted with appropriate state and federal agencies concerned with forest resource management, and recommendations for long-term management will be made based on existing available data.

(2) Fish and Wildlife Management. A review of the existing fish and wildlife management components of the installation natural resources management plan, the most recent Environmental Impact Statement, Comprehensive Base Realignment/Closure and Ft "X" Current Development Plans as well as other pertinent documents made available by Ft "X" personnel will be conducted to identify known constraints imposed by fish and wildlife resources on the proposed TBO. Input from post personnel will be solicited to identify key issues regarding long-range fish and wildlife resources management. Information gaps precluding fully developing constraints on TBO will be identified to the Army. Coordination will be conducted with appropriate state and federal agencies concerned with management and protection of fish and wildlife resources. Constraints maps will identify protected areas as well as important or sensitive resources. Potential conflicts and mitigative measures will be developed.

(3) Pest Management. Existing pest management plans and programs will be reviewed, personnel interviewed, and future problems identified, as possible, based on future land use. Long-range objectives in terms of integrated pest management approaches will be identified, given projections based on available data.

(4) Outdoor Recreation. Existing and new opportunities for nature trails, passive activities, and land and water sports addressed in the existing outdoor recreation component of the installation natural resources plan will be identified and discussed. This discussion will include the post's interface with any planned regional recreation facilities.

b. Cultural Resources Assessment. This section will identify any constraints that cultural resources may have on the long-range planning and development of Fort "X". Potential constraints will take two forms. The first is the distribution of the known cultural resources, their National Register status, and their relation to potential actions proposed to achieve "Total Build Out". Such actions may have adverse effects on historic resources that would need to be mitigated.

(1) The second constraint is the existing gaps in the inventory/evaluation of historic properties at Fort "X". Such gaps make planning difficult because the potential effects on historic properties are then unknown.

(2) To achieve this goal the A-E will identify what cultural resources tasks remain to be completed before a comprehensive inventory and evaluation of National Register status can be achieved. The A-E will also relate the known data on the distribution of historic properties to the recommendations for development. The report for this task will identify constraints from known cultural resources and potential ways to avoid such constraints. It will also identify what must be done to complete the inventory and evaluation of historic properties on the base.

(3) The A-E will identify known constraints from historic properties on the proposed Total Build Out (TBO) scenario including the buildable areas. Gaps in the Post's knowledge of their historic properties will be identified which will prevent a full understanding of cultural resource constraints on the "Total Build Out" (TBO) scenario.

(4) Coordination on cultural resources will be conducted with the appropriate agencies. These include the State Historic Preservation Office, the city and local Planning Commissions, and the Army Historic Preservation Officer.

(5) The A-E will determine if the installation has procedures in place such as a historic preservation plan, which will satisfy their responsibilities under historic preservation law and Army Regulation 420-20 during the "Total Build Out~. Recommendations will be made for achieving coordination between the implementation of the Total Build Out Scenario/Land Use Plan and the long-term continued use of historic properties.

(6) The material will be arranged in such a way that it can be utilized as input in the LRA and the Land Use Plan components of this RPMP, especially the information on the historic properties which might impose constraints on development.

(7) The A-E will prepare a report, a list and a map of recorded historic properties and their National Register status that includes a review of the status of the inventory and evaluation of historic properties and a statement of what remains to be done to complete the inventory and evaluation of historic properties on-Post.

(8) Note that complete identification of constraints will not be possible unless the inventory of Fort "X" historic properties is completed and an evaluation of National Register eligibility has been undertaken of those sites potentially eligible for listing in the National Register. If the Post has a program of complying with its preservation requirements, the A-E will use preexisting reports on prehistoric sites and historic sites, building and personal interviews with DPW personnel as data sources. If available in time for this contract's critical path, the results of any survey of the Post's historic architectural properties currently under contract will be used as input into this cultural resource analysis.

c. Cultural Resources Protection Assessment.

(1) The A-E will assess existing strategies for archaeological and historic preservation and identify long-range strategies for protecting historic properties partially through coordination with the agencies responsible for historic preservation oversight. To achieve these goals, the A-E will:

(a) Recommend the steps needed to complete the cultural resources inventory and how such steps can be integrated into the overall RPMP process and the formulation of the Total Build Out (TBO) Scenario.

(b) Relate the known data on the distribution of historic properties to the recommendations for long-range development.

(c) Identify general protection strategies for two types of historic property, archaeological resources (reviewed by archaeologists) and architectural resources (reviewed by architects).

(d) Prepare a report for this work task which assesses the existing preservation strategies and make recommendations for long-range strategies for the protection of historic resources on Post.

(2) The term historic properties is currently used by the Corps of Engineers to refer to cultural resources that need to be taken into consideration when complying with the National Historic Preservation Act of 1966, as amended. These cultural resources or historic properties include both archaeological sites and objects and historic buildings, sites, structures, and objects.

(a) This proposal and the LRC is not intended to encompass the completion of the post's responsibilities under the National Historic Preservation Act of 1966, as amended, nor Army Regulation 420-20.

(b) The production of a Cultural Resources Plan or Historic Preservation Plan as specified by Army Regulation 420-20 also is not included in this proposal.

9. LAND USE ASSESSMENT

a. Existing Land Use Profile/Analysis. The Land Use Assessment will begin with a review and evaluation of existing plans, studies, and reports. Documents such as the Installation Land Management Plan, Installation Compatible Use Zone (ICUZ) report (if any), Air Installation Compatible Use Zone (AICUZ) report (if any), and Base Realignment and Closure (BRAC) study (if any) will be reviewed. The existing land use patterns at Ft. "X" will be verified and mapped. Existing land use patterns will be evaluated to determine conflicting and incompatible land uses.

b. Functional Relationship Analysis.

(1) As a part of the land use assessment a Functional Relationship Analysis will be conducted. This will consist of a functional relationship survey of all major organizations, tenants and assigned units at Ft. "X", up to a maximum of sixty (60) interviews. Face to face interviews with representatives of each of the major organizations will be conducted. The functional relationships between the various organizations will be described in written and graphic form. The analysis will identify the preferred adjacency and proximity relationships between the various organizations.

(2) The interviews conducted as a part of the Functional Relationship Analysis will also be used to identify the missions of the various organizations at Ft. "X". As a part of the interview process organizations will be required to provide a clear mission statement, and to discuss both planned & potential changes in future missions, their force structure (present & future) and organization charts.

c. Impact of Constraints on Land Use/Development Potential. As a part of the land use assessment, constraints to future development will be identified. Environmental, natural, safety, airfield, mobilization criteria and other constraints to physical development will be evaluated taking input from other sections of this SOW. The impact of each of these constraints will be assessed, and will be used to help determine developable areas for future development. Existing plans and policies as they impact land use and area constraints will be itemized and shown on the Buildable Area Plan.

d. Framework for Land Use Planning. Included in the land use assessment will be an incorporation of the stated planning goals, development objectives, and planning assumptions from the Long-Range Analysis component. These will provide part of the framework for the RPMP.

e. The Total Build Out (TBO) Scenario and the Land Use Plan. The land use assessment will include the formulation of the Total Build Out (TBO) scenario depicting how the expected future Ft. "X" working/living populations are to be accommodated on-Post. Each land use type/allocation will be evaluated and reviewed with the IPB and the Executive Development Group. From the review and evaluation of the LRA material and the specifics of the build-out scenario, a preferred alternative will be formulated. This Land Use Plan will provide the framework for siting facilities in the Capital Investment Strategy (CIS) & Short Range Component (SRC) which will be included in subsequent contracts.

f. Evaluation of Potential On-Post Regulation of Development/Density Levels - The A-E will investigate potential techniques to be employed by Ft. "X" that complement the Installation Design Guide and that help to regulate the development/density pattern on post. This will include a determination of whether the Floor Area Ratio method is worthy of further investigation for its application in RPMP implementation.

g. Site-Specific Land Use Alternatives - The A-E will recommend short lists of alternative land uses on certain, selective portions of the installation's overall land base. These will respond to adaptive reuse of existing buildings that might be vacated due to a DOD Realignment or due to construction of a new, replacement

facilities and/or under-utilization of certain land/buildings. Eight (8) specific areas/functions will be addressed:

(1) Area 1 (Identify specific areas)

(2) Area 2

(3) Area 3

(4) Area 4

(5) Etc.

10. ICUZ/AICUZ NOISE STUDY. Existing data will be reviewed and revalidated. Interviews will be conducted with Post personnel, local, regional and federal agencies, and other personnel to identify noise impacts, mitigation, and the need for future studies based upon projected noise-generating activities at Fort "X".

11. NEPA-STYLE ENVIRONMENTAL ASSESSMENT (EA). Upon completion of the pre-final Land Use Plan, a NEPA-style Environmental Assessment will be prepared. The EA will follow AR 200-2 guidelines for general format including analysis of existing conditions and assessment of potential impacts. The EA will address all proposed LRC actions and discuss the social, economic, and environmental impacts of those actions. The contractor will not prepare a tiered EA or EIS, nor prepare other documentation such as public notices, ROD, FONSI, or other pertinent documents necessary for NEPA compliance. No original field studies are anticipated for this section. Site specific EAs may be necessary based on the results of this document. This document will serve to identify which actions are exempt, minor or major, based upon the Land Use Plan. The NEPA-style environmental assessment will follow the outline of a standard NEPA EA document with the necessary level of technical detail, but no review-and-response cycle with state and federal officials is to be undertaken. A pre-draft review of the environmental assessment will be conducted with Fort "X" personnel as appropriate.

ATTACHMENT E

TYPICAL ENVIRONMENTAL ASSESSMENT OUTLINE FOR RPMP LONG RANGE COMPONENT

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CHAPTER 5

SHORT RANGE PLANNING

1. GENERAL.

a. Purpose. This chapter sets forth the technical policy guidance for preparation of the short-range component (SRC) of the Real Property Master Plan (RPMP).

b. Applicability. This chapter applies to the development of a new planning component that did not exist in earlier versions of AR 210-20, Master Planning for Army installations (reference 5-1). The new AR specifies the SRC for Army CONUS and OCONUS installations. The SRC consists of the data that once accompanied project submittals, the "back up" data used to develop and update master plans, and pre-design information, formerly known as the project development brochure. Before developing the SRC, the long-range and capital investment strategy (CIS) components, described in Chapter 2 of these instructions, should be completed or nearly so. The output of the CIS component is essential for beginning work on the SRC.

2. SHORT-RANGE PLANNING PHILOSOPHY.

a. General. The Army horizon for operational planning is the 6-year Program Objective Memorandum (POM) horizon, during which the Army establishes planning strategies for stationing, equipment distribution and training. Financial and manpower resources are identified to execute these strategies. The SRC corresponds to this planning horizon. The goal of the SRC is to integrate the Army's operational planning process with the capital investment strategy (CIS) component of the RPMP, identify and justify real property projects, integrate projects from all fund sources, and reflect "day-by-day" real property planning and management. The SRC needs the active participation of the Major Army Command (MACOM) for successful development.

(1) Turbulence. The short-range planning environment is highly regulated and turbulent. Changes are routine, deadlines are short, and project documentation is subject to detailed review by HQDA, DoD and Congress. Unlike many items in the Army budget, where programs and initiatives are given "blanket" funding, the construction program is funded on a project-by-project basis. Each project must compete with those of other commands and services. Added to this are facilities utilization issues, which are generally oriented on solving today's problems and meeting short-range requirements for land and real property facilities.

(2) Multiple program years. HQDA, the MACOM, and the installation are constantly addressing actions in as many as seven or eight different fiscal years. These actions consist of projects awaiting programming, being programmed, re-programmed after a delay, under design, under review, under construction, being occupied, and in the post-completion period.

There are projects that are inserted into the program by HQDA or higher authority for which project documents are required. Planners must also assist real property managers and designers of maintenance and repair projects, integrating shorter-term activities with the long-range goals and objectives of the RPMP.

(3) Need for simplification. In the past, MACOM and installations were required to prepare programming documents for most project requirements identified by the master plan and, at a minimum, every project within a 5-year planning period. For some installations, the annual workload consisted of 40 to 50 projects, only a few of which ever reached execution. Current initiatives in the planning and programming areas focus the effort on the nearest years of the POM period, thus reducing the programming workload and allowing more time to address actual planning issues.

b. Philosophy.

(1) New initiatives. Two initiatives are currently underway at HQDA: the new AR 210-20 (reference 5-1) and the revision of AR 415-15, Military Construction, Army (MCA) Program Development (reference 5-2) to reflect what is called the "Military Construction (MILCON) Powerdown", and "Quickstart." These initiatives integrate planning, programming and budgeting using the capital investment strategy as a principal means of integration; change program submission requirements and time-frames to allow more project preparation and review time at installation and MACOM levels; enable reductions in documentation; and accelerate design releases.

(2) Advantages. The advantages of "Powerdown" include an umbrella installation strategy for fulfilling unconstrained requirements for mission accomplishment, MACOM funding guidance that limits the number of projects requiring development, and reduced development effort for projects in years 3, 4, 5, and 6 of the POM period. The process flows logically from the overall plan and program, to budgetary "wedges" that establish project funding requirements in the POM, to DD Forms 1391 supported by a "planning data base," to concept design, through to a completed project.

3. PROCESS AND POLICY.

a. Process.

(1) General. The Army Planning, Programming, Budgetinq and Execution System (PPBES) governs the allocation of all resources in the Army. The first part of this section discusses the generic nature of the PPBES, because a general understanding of PPBES is essential to become effective in the real property management environment. The second part of this section discusses integration of military construction (MILCON) into PPBES, because detailed understanding is essential for effectiveness in the facilities planning and programming environment.

(a) Generic process. The development of the Defense Program (DP) includes cyclical repetitions of planning and issuance of guidance, programming, sponsorship and advocacy of programming proposals by staff proponents at all levels of command, integration of proposals into management development packages (MDEP), numerous adjustments, various validation procedures, evaluation, review at each level of command in the Army, review at Department of Defense (DoD) level, development and continual refinement of resource estimate. More review at each level of command, incorporation of the proposal into the President's Budget, Congressional review and scrutiny, Congressional authorization and appropriation by means of legislation, and execution of the proposal. The Army Program Objective Memorandum (POM) is the means of cyclically updating the DP.

(b) ALRPG and ALRFP. The Army Long-Range Planning Guidance (ALRPG), as interpreted by the Army Long-Range Facilities Plan (ALRFP) (reference 5-3)) looks twenty years to the future. Its strategic and warfighting projections include stationing and installations/facilities planning considerations. The current ALRFP establishes some broad goals and objectives for real property planning in the Army. These are summarized as follows:

1/ Recruit and retain. Support the Army's ability to recruit and retain a motivated, well trained military and civilian force by providing quality living and working environments.

2/ Installation operations. Support the force through the efficient and effective operation of installations resulting from quality productive work and living environments and effective management techniques.

3/ Future doctrines. Support future Army roles, missions and war-fighting doctrines with facilities that sustain forward deployment, mobilization, force protection and rapid worldwide troop deployment requirements.

4/ Stationing. Support the Army's evolving force structure and future stationing by properly aligning installation support capabilities with unit stationing requirements.

5/ Technology. Support modernizing warfighting systems and emerging technologies to maintain U.S. military prowess.

6/ Training. Support future training to assure development of a quality career force that is technically proficient and adaptable.

7/ Environmental. Operate installations and conduct Army activities in an environmentally responsible manner.

(2) The Military Construction (MILCON) program, as a part of PPBES, differs from most other Army programs, such as training, operations and maintenance, or manpower acquisition, because it requires much additional time for planning, design, acquisition or construction, and is reviewed, authorized, and appropriated on a project-by-project basis-not as a single "pot of money." A "rule of thumb" answer to use, when customers ask how long it will take from initial planning to occupancy of a facility, is five years if the project survives stiff budgetary competition. The following is a condensed version of the MILCON process.

(a) Planning. This description of the process assumes that the installation has prepared the LRC and CIS components of the RPMP (see Chapter 2 of these instructions), and that the MACOM has approved these components before the programming process begins. The CIS is the primary source document for entry into the short-range PPBES process.

(b) Guidance. Annual programming guidance precedes the programming cycle. Responsibilities and actions are as follows:

1/ HQDA. HQDA staffs and issues guidance pertaining to various facilities programs to the MACOM. This guidance includes certain budgetary targets and essential elements of project development, proponency, and justification data that is required in the various programs.

2/ HQUSACE. HQUSACE has a significant amount of input to the guidance because of its technical interest in the acquisition and construction of facilities.

3/ MACOM. MACOM interpret the guidance, adding their special requirements and suspense dates to the guidance package.

4/ Installations. Installations receive the guidance from the MACOM and begin project development and programming actions. It is important to note that a significant amount of the programming priorities at the installation level are established by HQDA and MACOM guidance. A limited amount of flexibility is built into the guidance to allow installations to adjust a few priorities.

5/ USACE divisions and districts. USACE divisions and districts are not usually active in the guidance stage of the process.

(c) Project identification and submission - Project development. Programming documentation is developed annually based on the programming guidance and installation goals and objectives as expressed in the CIS.

1/ HQDA. HQDA establishes suspenses for submission of programming documentation in support of the first two years of the POM period. HQDA also may add certain programs and projects to the submission requirements that represent "top-driven" initiatives.

2/ HQUSACE. HQUSACE monitors the project development effort and offers training courses in preparation of project documentation. HQUSACE also operates and maintains the electronic medium used for preparation and submission of documents for most programs and supports the HQDA staff during review of the submission.

3/ MACOM. MACOM headquarters keep close track of installation project development and submission work, establishing suspense dates of their own in order that project documentation, along with supporting RPMP documentation, may be reviewed at the MACOM headquarters prior to submission to HQDA. In certain instances MACOM programmers furnish assistance to installation planning staffs who are developing the program submission.

4/ Installations. Installations perform the majority of the work in project development and submission. The bulk of this chapter is addressed to regulative and policy guidance that must be observed while performing the task. MACOM, and USACE division and district assistance is available, but it is the installation commander who must sign the programming documentation forwarded to the MACOM, and ultimately to HQDA. At many installations, the planning staff's job performance is judged based on the quality and timeliness of the annual program submission.

5/ USACE divisions and districts. In certain instances, USACE divisions and districts assist the installation in preparation of the project documentation. A recent requirement assigned to divisions and districts is to make site visits to verify that each project being programmed will create no major or significant environmental impacts; or, that such impacts have been addressed, and that sufficient data exist that concept design of the project can begin without delay.

(d) Construction Requirements Review Committee. Construction Requirements Review Committee (CRRC) release. The results of Force Integration Analysis (FIA), the Defense Planning and Resources Board (DPRB), and the refinements of Army Guidance are implemented by the MACOMs in their final program submissions. The objective of CRRC review is to release valid projects for initiation of concept design.

1/ HQDA. The CRRC is made up of facilities proponents from the various Army Staff sections. For example, the proponent for tactical equipment shops and storage facilities is the Deputy Chief of Staff for Logistics (DCSLOG). The proponent for housing is the Deputy Chief of Staff for Personnel (DCSPER). These proponents meet to determine the validity of various projects and to "cross-level" the program between themselves. Valid projects are then released for concept design.

2/ HQUSACE. HQUSACE supports the CRRC by means of technical and cost review of each project document in the program before the CRRC meets. HQUSACE also handles design funds and issues design directives on projects released by the CRRC for concept design.

3/ MACOMs. MACOMs conduct CRRC or facility requirements review boards of their own comprised of the MACOM staff proponents for each type of project. The MACOM facilities proponents then interrelate with the HQDA CRRC members through their various "stovepipes" (counterpart offices at each level of command to ensure that MACOM priorities are considered during the CRRC process. MACOMs also keep up with the status of each of their projects.

4/ Installations. Depending on the MACOM involved, installations may be called upon to defend their projects during meetings of the MACOM-level CRRC. Each MACOM has different requirements of their installations in this regard.

5/ USACE divisions and districts. USACE divisions and districts support the CRRC process by certifying that project siting and other aspects will create no major or significant environmental impacts and that enough data exists to begin concept design.

(e) Program review.

1/ HQDA. The annual DA-MACOM Review is scheduled and conducted by the Assistant Chief of Engineers (ACE) in the April - May period usually in the Washington, DC metropolitan area. The purpose of the review meetings is to prepare the ACE for testimony that must be presented to the Congressional Staff and Committees in defense of the program, and to re-validate the requirements stated by the MACOMs. DA also critiques Guidance Year projects (the second year of the program) before design releases are granted.

2/ HQUSACE. HQUSACE supports the program review by sending appropriate technical representatives to each of the MACOM meetings. These representatives are able to comment on the technical feasibility of each project or special problems that must be resolved before the project is implemented.

3/ MACOMs. MACOMs make presentations of the design year and guidance year projects, followed by detailed review and discussion of two FY programs for each installation, project by project, discussing individual projects with DA staff representatives.

4/ Installations. MACOMs sometimes call representatives from their installations to present project briefings at the review meetings, especially if the project is large or has special problems.

5/ USACE divisions and districts. USACE divisions and districts do not usually participate in the program review meetings unless requested by supported installations or HQUSACE.

(f) Line item review. Military Construction Line Item Review (LIR) conferences are held three times a year for the MCA and AFH Programs

at HQUSACE. These review sessions focus on projects that are at some stage of actual execution. LIR representation includes the HQUSACE staff, the Office of the Assistant Chief of Engineers, U.S. Army Information Systems Command (USAISC), and the appropriate MACOM, USACE divisions and districts. Active design programs and projects under construction are reviewed on a line item basis to identify any problems in the project's execution. Discussions result in either on-the-spot resolution of problems or tasking to the responsible organization.

(g) Corporate group. The Corporate Group's function is to reduce design and construction change orders and minimize construction cost growth within the MILCON and Army Family Housing (AFH) programs. The Corporate Group is comprised of HQUSACE, and appropriate USACE divisions, and MACOM members. MACOMs and installations should establish similar corporate groups to establish procedures for review and approval of change requests on projects being executed at the installation. The local corporate group should consist of the installation engineer, the USACE division or district, and the customer.

(h) Reporting.

1/ HQDA. HQDA must report upward to the Army Secretariat and the Congress on the status of each project in the program.

2/ HQUSACE. HQUSACE assembles detailed reports on the design and construction of every project in the program as well as other work being done by USACE divisions and districts for installations. The Construction Appropriation Programming, Control, and Execution System (CAPCES) is the electronic medium used to record project status within Army channels. The Automated Management Construction Progress Reporting System (AMPRS) is the electronic medium used throughout USACE to track project execution status.

3/ MACOM. MACOM receive AMPRS information from the USACE divisions and districts executing the military construction program and disseminate this information to their installations.

4/ Installations. Installations do not generate program execution reports for military construction projects, but receive information through their MACOM headquarters or from their supporting division or district.

5/ USACE divisions and districts. Military support divisions and districts are the primary generators of program execution status reports.

b. Policy. The following policies govern during the development and maintenance of the SRC:

(1) Regulatory compliance. The SRC must comply with all laws, regulations, statutes, technical policy guidance, and memoranda of

understanding governing the programs discussed later in this chapter.

(2) Utilize existing facilities. New construction is no longer a certain method of meeting facilities requirements. Conversion, rehabilitation, repairs and self-help projects are more viable means of meeting facility requirements in preference to new construction. Excellent space utilization management is essential in the present Army environment.

(3) Authorized planning strength. Requirements for short-range planning, to include requirements for Operations and Maintenance, Army (OMA) funding, leasing, other-funded activities and peacetime permanent-type construction, are based on planning strengths reflected in the ASIP for troop-type and training installations. Use the authorized strength shown in the last projected fiscal year, adjusted to reflect approved and scheduled activations, inactivations and redeployments. Industrial installations base their programming requirements on the mission assigned to the installation.

(4) Standardization. Repetitive-type facilities must be planned in accordance with the DA Facilities Standardization Program. Mobilization facilities must be planned in accordance with "M" designs whenever possible for the "sustained" loading of the installation.

(5) Peacetime requirements govern. The long-range and the mobilization components of the RPMP must be coordinated to allocate prime land areas and sites for permanent peacetime development. Apportion less desirable land for mobilization or other expansion. Do not propose mobilization and other temporary facilities within areas or on sites reserved for permanent peacetime development.

(6) Permanent construction. Permanent construction is to be used for permanent mission functions to fulfill requirements of the approved master plan. The Support Facility Annex (SFA) in PAX specifies support facility requirements for selected materiel systems. Permanent construction must conform with Architectural and Engineering Instructions (AEI) "Design Criteria" (reference 5-4).

(7) Semipermanent and temporary missions. Semipermanent or temporary construction is used to meet current facility requirements for which permanent construction is not authorized or is inappropriate. Such construction is not used for family housing.

(8) Mobilization missions. For temporary construction during mobilization or an emergency, see Chapter 6 of these instructions.

(9) Life of facilities. Economic life of facilities is determined by using 25 years for permanent construction, 13 years for semipermanent construction, and 5 years for temporary construction.

(10) Allowable space criteria. Maximum space allowances are given in the Real Property Planning System (RPLANS) available in PAX, the AEI

"Design Criteria" (reference 5-4) available in DCIS in PAX and the Army Criteria Tracking System (ACTS) in PAX. For maintenance facilities use TM 5-841-2, Space Planning Guide for TDA Consolidated Maintenance Facilities. (reference 5-5) and the FPS in PAX. Maximum criteria is used only when actually required and justified. For Army aviation facilities, see TM 5-803-4, Planning for Army Aviation Facilities (reference 5-6). Space planning criteria for medical facilities must be in accordance with "(unnumbered)" DoD Medical Space Planning Criteria (reference 5-7) - available from the Medical Facilities Design Office, Headquarters, U.S. Army Corps of Engineers ATTN: CEMP-M, Washington, DC 20341-1000.

(11) Project formulation control data (PFCD). The installation is responsible for the development of PFCD. PFCD consists of the planning data base described later in this chapter; the capital investment strategy (CIS); the DD Form 1390 and DD Form 1391; an approved site plan with preliminary real estate clearance; a preliminary DoD Explosives Safety Board (DDESB) approval, as required; and equipment lists of materiel to be provided from other funds.

(12) Supplemental programs. Contingencies, such as budget fluctuations, may require the development of supplemental construction programs. Special instructions are provided to MACOM commanders when this occurs.

(13) Design and construction agency. The U.S. Army Corps of Engineers (USACE) designs and/or constructs MCA and AFH projects with the exception of certain minor construction projects and projects assigned by DoD to the Naval Facilities Engineering Command (NAVFAC) or other construction agencies (see DODD 4270.5, Military Construction Responsibilities. - reference 5-8).

(14) Medical facilities design. The programming and design cycle for all medical projects (see TM 5-838-2, Army Health Facility Design, reference 5-9) available through the Design Criteria Information System [DCIS] on PAX) is determined by the Defense Medical Facilities Office (DMFO) and begins one year earlier than MCA projects for the same program year.

(15) Army Reserve and National Guard (USAR/ARNG) component facilities on Army Installations. At installations where facilities are jointly used by the Active Army, USAR/ARNG components, capital improvements to meet training requirements are funded by MCA or other active Army sources. Construction of facilities for the sole use of USAR/ARNG components is funded by these components. If the active military forces must occupy facilities that are used by permanently housed organizations of USAR/ARNG components that are not mobilized, the active component is required to provide equal replacement facilities, as required by DODD 1225.7, Reserve Component Facilities (reference 5-10) and AR 140-478, Facilities, Projects and Programs (reference 5-11). The USAR/ARNG must obtain installation and MACOM site approval prior to initiation of design of USAR/ARNG funded facilities, and design must comply with appropriate

installation design guides (IDG).

(16) Coordination with the adjacent community. Ensure that proposed projects are fully coordinated with impacted communities in accordance with AR 210-70, Intergovernmental Coordination of DoD Federal Development Programs and Activities (reference 5-12).

(17) Construction Appropriation, Programming, Control, and Execution System (CAPCES) report system. CAPCES provides the status of projects during the programming and design process. PAX users at installations, MACOMs, USACE divisions, and HQDA have access to CAPCES. Users may obtain many types of progress reports from the system. Additional information is available from HQUSACE (CEMP-P).

(18) Automated Management and Progress Reporting System (AMPRS). AMPRS is the system used by USACE districts and operating division offices to report monthly progress on design and construction of projects. Districts begin these reports upon receipt of the first design directive and maintain these reports until the project is financially closed out. Assistance can be provided by HQUSACE, ATTN: CEMP-M, Washington, DC 20314-1000.

4. SHORT RANGE PLANNING POLICY GUIDANCE.

a. Contaminants and Unexploded Ordnance. Coordinate with the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA, CETHA-IR) for concurrence after developing a program to evaluate the proposed site for presence of hazardous contaminants, including unexploded ordnance, when the site is suspected or known to be contaminated (Category III site).

b. Information Systems Processing Centers (ISPC) and Information Systems Facilities (ISF).

(1) ISPC programming. Collocation must be considered for projects to house ISPCs and ISFs. Collocating emergency operations centers with ISPCs and ISFs should be evaluated. If collocation is not practical, the DD Form 1391 must include a cost analysis and show why consolidation is impractical.

(2) Approval. Construction of ISPCs is programmed only after HQDA approves the requirement under AR 25-5, Information Management for the Sustaining Base (reference 5-13). Approval must be obtained before a construction request is included in the Guidance Year (GY) submission. A copy of the IPC approval document must accompany the DD Form 1391.

(3) Criteria. ISPC and ISF projects must be housed in highly fire resistant buildings that meet safety, security, temperature and humidity control requirements. Emergency or uninterruptible power supply (UPS) systems funded by MCA must be fully justified. UPS for data processing systems is not funded in MCA programs (see AR 310-34, Equipment Authorization and Utilization Policies and Criteria (reference 5-14).

(4) Shelter space. ISPCs, ISFs, or Command and Control facilities that are used as fallout shelters must be designed to provide the minimum protection required for the installation according to the Army Survival Measures Plan.

c. Explosives, Toxic Chemicals and Ammunition Facilities.

(1) Site layout and design. The DoD Explosives Safety Board (DDESB) must review and approve the layout and design for new facilities or major alterations that involve military explosives, toxic chemicals or ammunition. Other facilities sited so that they are exposed to risks of hazardous materials must also be approved by DDESB. Exemptions to DDESB standards may be authorized in accordance with criteria discussed in AR 385-60, Coordination with the Armed Services Explosive Safety Board (reference 5-15).

(2) Approval. The installation must send site plans, through command channels, to the DoD Explosives Safety Board, 2461 Eisenhower Avenue, Alexandria, VA 22331-0600 (see AR 385-60 (reference 5-15), paragraph 11, and TM 9-1300-206, Care, Handling, Preservation and Destruction of Ammunition (reference 5-16). The data specified in AR 385-60 (reference 5-15) must be included in the submittal. DDESB provides preliminary siting approval based on this preliminary submission. The designing agency prepares all data required and provides it to the installation for submission through command channels to DDESB before the Concept Review (35 percent design) for final approval. Final DDESB approval must be received before final design can begin.

(3) Documentation. For programming purposes, a copy of the DDESB Preliminary Approval becomes a part of the planning data base, and the approved site plan is shown on the MACOM-approved future development site plan, annotated with the DDESB approval date.

(4) Criteria. Construction standards for facilities storing or securing arms, ammunition and explosives are found in DoD 5100.76-M, Physical Security of Sensitive Conventional Arms, Ammunition and Explosives (reference 5-17) and DoD 6055.9-STD, Ammunition and Explosives Safety Standards (reference 5-18).

d. Hazardous Waste Facilities. The construction of hazardous waste facilities on Army installations is discouraged unless no other feasible option exists; see AR 200-1, Environmental Protection and Enhancement (reference 5-19) and AR 420-47, Solid and Hazardous Waste Management (reference 5-20). When it is determined that MCA construction of new hazardous waste facilities is required, the following information must be included in the DD Form 1391 to show that proper analysis has been accomplished:

(1) Sites. A statement must be included in the detailed justification that suitable and adequate sites are not available at other

nearby military installations.

(2) Capacity. A statement must be placed in the justification that the design capacity of the facility has been adjusted to accommodate waste from nearby installations, where appropriate.

(3) Joint use. A statement must also be included certifying that a joint-use facility (hosted by the Defense Reutilization and Marketing Service Office (DRMSO)) cannot satisfy the requirement.

(4) Other costs. Costs of environmental compliance, closure maintenance, and monitoring must be included in the Economic Analysis.

(5) Environmental. Certification that environmental documentation for the project is on file must be included in the justification, as required by AR 200-2, Environmental Effects of Army Actions (reference 5-21) and AR 415-15 (reference 5-2).

e. Food Service Facilities. The establishment of central bakeries, central food preparation facilities, central kitchens, central pastry kitchens, and meat cutting facilities for the appropriated fund food service program on an installation will be subject to the policies contained in DoD Directive 1338.10, Department of Defense Food Service Program (reference 5-22) and DoD Instruction 4100.33, Operation of Commercial and Industrial-Type Activities (reference 5-23). Technical policy guidance for design and construction is contained in Architectural and Engineering Instructions (AEI) "Design Criteria" (reference 5-4) for enlisted personnel dining facilities, confinement dining facilities, cold storage facilities, officers and noncommissioned officers open messes, post exchange restaurants, and ready buildings with dining facilities.

f. Army Family Housing (AFH). AFH projects must be supported by current Army Housing Justification Process (AHJP) documentation. A DD Form 1410, DD Form 1411, DD Form 1523 (for new construction), Segmented Housing Market Analysis (SHMA), and Economic Analysis are back-up data required to support an AFH project. Data in these documents must be consistent and correlate with data in the real property inventory and the DD Form 1657, which gives the Unaccompanied Personnel Housing (UPH) requirement for the same installation. AFH may be programmed up to 90 percent of the long-range effective housing requirements in the Continental United States (CONUS) and U.S overseas. For foreign areas, program up to 80 percent of the long-range effective housing requirements. No AFH funds can be used to increase family housing space beyond statutory limitations (see AR 210-50, Housing Management (reference 5-24).

g. Unaccompanied Personnel Housing (UPH) and Guest Housing.

(1) Program scope. The UPH program provides for new construction and the revitalization of existing substandard UPH (upgradable) facilities to adequate UPH facilities.

(2) Criteria. UPH may be modernized to approach new construction criteria when justified by long-range manpower strengths, adequacy standards, and the physical condition of facilities. However, eligibility is determined by the relative cost of new construction versus modernization. A modernization project cannot be programmed when it exceeds 75 percent of the cost of a new facility. Modernization projects at installations whose UPH utilization rate is below 90 percent are intensively reviewed before being accepted for inclusion in a budget request.

(3) Capacities. Projects to restore facilities to UPH which had been diverted from UPH to other uses must identify the number of enlisted personnel living spaces and the amount of square footage recovered, as well as the other uses to which the recovered space had been put during its diversion. When only part of a diverted UPH facility is being reclaimed to UPH use, the separate parts are to be described on the DD Form 1391 in Detailed Justification Paragraph 1 (D1).

(4) DoD maximum allowance. The Secretary of Defense establishes the maximum allowable net square feet per occupant for new permanent barracks. Instructions are provided in the AEI "Design Criteria" (reference 5-4). Scopes for barracks projects must be supported by grade breakdown, intended (faces) and maximum (spaces) utilization and criteria applicable to the UEPH design.

(5) Documentation. UPH projects must be supported by current AHJP documentation. A DD Form 1657, DD Form 2085, Housing Market Analysis (HMA) and environmental assessment (EA) are kept available to support the project. Data in these documents will be in agreement with data in the DD Form 1523. Reports must contain data from the same time period, the same personnel information, and the private housing available within the same community. The DD Form 1657 is the primary support document for UPH projects.

(6) UPH may be programmed as follows:

(a) Permanent party personnel and permanent change of station (PCS) students may be programmed at 95 percent of the projected authorized unaccompanied permanent party personnel requirement. No permanent party UPH is to be programmed for the following:

1/ Soldiers for whom family housing is programmable.

2/ E-7s and above and officers unless community housing is not available or on-post housing is required due to military necessity. The latter case will apply equally to accompanied soldiers assigned like duties.

3/ A soldier married to a soldier, both of whom are assigned to the same installation or within commuting distance.

4/ Soldiers authorized Basic Allowance for Quarters (BAQ) at the "with dependent" rate; assigned to CONUS, Alaska or Hawaii; and voluntarily separated. (Where family housing is not available on or off post, such soldiers are considered "involuntarily" separated.)

5/ Unit integrity.

(b) Students. Temporary duty students (20 weeks or less, to include personnel attending advanced individual training (AIT) other than one station unit training (OSUT)) and other transient personnel are programmed on the basis of the projected average daily transient load at the installation, including average daily hold-over and hold-on students based on at least one year's experience, modified by known or expected changes. The average daily number of Statements of Nonavailability (SNA) issued is included as a transient requirement. Note the average number of SNAs issued (included in requirement) in the DD Form 1657.

(c) Trainees. Trainee barracks for initial entry training, to include OSUT, are programmed on the basis of the structure load as identified in the ASIP. All other AIT students are considered transient personnel.

(7) UPH complexes. UPH complexes, consisting of separate buildings for barracks, dining facilities, battalion command and control buildings, company operations and supply buildings and recreational facilities, require a separate project justification for each primary facility category code. If these functions are combined into a single building or multiple buildings with the same category code, such as a trainee barracks complex, use a single project justification.

(8) Guest housing. Guest house accommodations and improvements are normally constructed with nonappropriated funds; see AR 210-50 (reference 5-24), AR 415-19, Nonappropriated-Funded Construction Development and Approval (reference 5-25), and AR 215-1, Administration of Army Morale, Welfare and Recreation Activities and Nonappropriated Fund Instrumentalities (reference 5-26).

h. Community Facilities.

(1) Policy. Army policy on morale, welfare and recreational (MWR) facilities is contained in AR 215-1 (reference 5-26). See also AR 415-19 (reference 5-25).

(2) Off-post facilities. In evaluations of off-post facilities, determine the current utilization by Army personnel and perform a detailed comparison of these facilities with Army criteria (size, accessibility, general quality, etc.). Inadequacy of off-post facilities must be supported by data on travel costs and distance from the troop housing areas. In areas grossly lacking in community support, state the population of and distance to the nearest city or cities.

(3) Capacities. The capacity of community facilities must be the minimum required to meet current and projected needs, rather than the maximum allowance.

(4) Schools. Public schools on Army installations in the fifty States, the District of Columbia, Puerto Rico, Guam, American Samoa, Virgin Islands, and Wake Island are provided from other than MCA appropriated funds (see 20 USC 631 through 647, as amended (reference 5-27)). DoD programs dependent schools overseas under the Defense Agencies Title of the Military Construction Acts.

(5) In family housing areas. Community facilities, such as youth centers, pools and community centers, that are integral to a family housing area and serve only these residents and their guests, are programmed within the AFH Appropriation.

(6) Retail and MWR. Commissary, exchange, and certain MWR facility construction are normally funded from revenue generated by these operations. Use of MCA funds requires special justification that is based on activation of a new installation or transfer of an existing facility to another Active Army use. Community facilities, such as Child Development Centers funded from MCA appropriations, require commercial market research and analysis and needs analysis as specified in AR 215-1 (reference 5-26) and AR 415-19 (reference 5-25).

(7) Postal facilities. The U.S. Postal Service provides CONUS postal service facilities in accordance with an agreement with the DoD (see 39 USC 101(g), 401(5), 401(6), and 403(b)(3), Postal Policy, General Powers of the Postal Service, General Duties. (reference 5-28). OCONUS postal service facilities may be funded with MCA funds.

(8) Banks and credit unions. Banks and credit unions are privately funded. Procedure for project development is found in AR 210-135, Banks and Credit Unions on Army Installations (reference 5-29).

(9) Religious facilities. Religious facilities are procured under the proponency of the Chief of Chaplains and are funded from MCA appropriations. The needs analysis for religious facilities is based on the AEI "Design Criteria" (reference 5-4), population served and commander's master religious program.

(10) Commissaries. The programming and design of commissaries is managed by the Defense Commissary Agency (DeCA), located at Fort Lee, VA.

i. Medical Facilities.

(1) Defense medical facilities programming. The Defense Medical Support Agency (DMSA), as represented by the Defense Medical Facilities Office (DMFO), under the Assistant Secretary of Defense (Health Affairs) (ASD(HA)), is responsible for the planning, development, and execution of the Defense Medical Military Construction Six-year Program (SYP).

(2) Category code 500 facilities. All military construction projects classified in the category code 500 series (Hospitals and Medical Facilities) are covered Defense Medical Facilities Programming (DMFP) criteria. A facility is classified in the 500 series if over 50 percent of the space is in the 500 series, over 50 percent of the cost is for 500 series functions, or there is a written agreement between the Army (OTSG) and the DMFO.

(3) Health Facilities Planning Agency. Send questions about health facilities programming to the appropriate Major Medical Subordinate Command (MMSC), or to HFPA (SGFP-ZA), 5109 Leesburg Pike, Suite 679, Falls Church, VA 22041-3258, if further clarification is required.

(4) DMFO control of 1391. DD Forms 1391 for every medical project in the Six-Year Program are to be provided to the DMFO. Control of DD Forms 1391 for the first three years of the Six-Year Program is retained by the DMFO.

j. Aviation, Operational and Training Facilities.

(1) Army aviation facilities and/or airspace management. As required by AR 95-2, Air Traffic Control, Airspace, Airfields, Flight Activities and Navigational Aids (reference 5-30), Army aviation facilities must be planned in coordination with the U.S. Army Aeronautical Services Agency (USAASA, ATTN: MOAS-AI), Cameron Station, Alexandria, VA, 22304-5050. All airfield future development site plans and project sites at or adjacent to an air operational activity require USAASA approval prior to the design of maintenance, repair, or construction, major or minor, of any project related to Army aircraft operational facilities. When planning CONUS airspace, FAA airspace rules govern. Outside Continental United States (OCONUS), airspace requirements and pertinent host nation agreements must be observed. Airspace management and allocation includes acquiring, constructing (or substantially changing) airfields, landing areas, firing ranges and missile sites. AR 95-2 (reference 5-30) requires Air Traffic Control and Navigational Aid facilities to be planned in accordance with AR 210-20 (reference 5-1), TM 5-803-4 (reference 5-6) and TM 5-803-7, Airfield and Heliport Planning Criteria (reference 5-31).

(2) Intelligence facilities. U.S. Army Intelligence and Security Command operational facilities (OCONUS) are collocated with other DoD security facilities when practical.

(3) Training ranges and outdoor maneuver area. These facilities must be planned in accordance with AR 210-21, Installations: Ranges and Training Areas (reference 5-32) and Field Manuals (FM) 25 series. Design guidance can be found in the HNDM 1110-1 series manuals published by the U.S. Army Engineer Division, Huntsville.

k. Research, Development, Testing and Evaluation (RDT&E) Facilities. RDT&E facilities are normally constructed with MCA funds. All category code 300 series projects must include additional data on equipments related to the project that are funded with non-MCA funds. Procedures and requirements for construction funded by the RDTE appropriation are in AR 415-25, Facilities for Research, Development, Test and Evaluation (reference 5-33).

l. Supply and Storage Facilities.

(1) Supply facilities. Programming for facilities to receive, store, preserve and issue materials in the Army supply system are justified in accordance with AR 740-1, Storage and Supply Activity Operations (reference 5-34).

(2) Special weapons storage facilities. Projects for special weapons storage facilities must consider modification of conventional facilities in preference to new construction. These facilities should be located on or next to existing military installations, consistent with operational requirements and economic and engineering considerations, avoiding undue target buildups.

(3) Nuclear weapons storage. Facilities intended mainly to store and maintain nuclear weapons must conform to the criteria in DoD 5210.41-M, Nuclear Weapon Security Manual (U) (reference 5-35), AR 50-5, Nuclear and Chemical Weapons and Material-Nuclear Surety (reference 5-36), AR 190-13, The Army Physical Security Program (reference 5-37), AR 385-60, System Safety Engineering and Management (reference 5-38), and TM 39-series. Facilities in areas not under U.S. control must conform to any understandings or agreements with the host nations.

m. Maintenance and Hardstand Facilities. Maintenance facilities for tracked and wheeled vehicles (category code 214) must be planned according to information contained in the Facilities Planning System (FPS - available in PAX). Facilities for units authorized less than Authorized Level of Organization (ALO-1) may be programmed for Strength Levels (SL). Space allowances for the shop hardstand, which include category codes 123, 214 and 442, are to be planned in accordance with the FPS.

n. Utilities and Site Improvements.

(1) Utilities. The policy of DA is Government ownership of on-post utilities systems. Supporting utilities, as well as roads and parking areas, must be programmed at the same time as construction of primary facilities. All supporting utilities, including those that jointly serve other funded projects, are programmed as part of the MCA program.

(2) Site improvements. The cost of landscape development, planting and screening, erosion control, and seeding must be included in the MILCON funding of the facility.

o. Environmental Pollution Control.

(1) Environmental quality. The National Environmental Policy Act (NEPA) of 1969, PL 91-190 (reference 5-39), established Federal policy on environmental quality. The Council on Environmental Quality (CEQ) oversees Federal compliance with NEPA, in addition to other responsibilities. NEPA is implemented by regulations promulgated by the CEQ and by the Army with AR 200-2 (reference 5-21).

(2) Environmental impact potential. Construction-related actions most likely to involve major environmental considerations include real estate actions; major construction projects; new installations (bases and posts); quarrying or earth moving; constructing fences or other barriers for migration or free movement of wildlife; sanitary landfills, incinerators and sewage treatment plants; dredging and other similar activities; construction on flood plains or projects that cause increased flooding, erosion or sedimentation; activities on wetlands or proposals that could alter the wetlands environmental value; channeling diversion or impoundment of water; roads, transmission lines or pipelines; aviation operations; training facilities; and collection and discharge of storm runoff.

(3) Procedural requirements. Federal facilities must comply with both procedural and substantive pollution abatement regulations for air and water pollution control and for solid and hazardous waste management. Procedures may require construction or operation permits from Federal, state or local regulatory agencies, as applicable, and as required by Army regulations (see AR 200-1 (reference 5-19)).

(4) Documentation. Detailed instructions for compliance with environmental requirements are in AR 200-2 (reference 5-21). Integration of the RPMP and NEPA processes is covered in Chapter 4 of these instructions.

p. Construction in Flood Plains, on Wetlands or in Coastal Zones.

(1) Identification of flood plains and wetlands.

(a) Flood plains. Flood plains are the lowland and relatively flat areas next to inland and coastal waters including flood prone areas of offshore islands. This includes, at a minimum, that area with a one percent or greater chance of flooding in any given year (the "100-year flood"). For critical facilities where evacuation would be difficult, such as hazardous chemical storage or hospitals, the flood plain is that area subject to a 0.2 percent or greater chance of flooding in any given year (the "500-year flood").

(b) Wetlands. Wetlands are those areas flooded or inundated by surface or ground waters often enough to support aquatic life or vegetation. Wetlands generally include swamps, marshes, bogs, and similar areas, such as sloughs, open or wet meadows, river outflows, mud flats,

natural ponds, wet forests, potholes, and riparian areas. They may or may not be located in flood plains.

(2) Restrictions. Executive Order 11988, Flood Plain Management (reference 5-40) and Executive Order 11990, Protection of Wetlands (reference 5-41) restrict Federal activities in flood plains and wetlands in order to reduce the destruction, loss or degradation of wetlands; preserve and enhance the natural and beneficial values of wetlands; and reduce the risk of flood loss and lessen the impact of floods on human safety, health, and welfare.

(3) Requirements. The following steps must be completed if applicable:

(a) Determinations. During the initial project planning stage, the responsible MACOM and installation, assisted by the appropriate USACE division or district, determine whether the project is sited in a flood plain or on wetlands. Consistent with PL 90-448, the National Flood Insurance Act of 1968, as amended (reference 5-42), construction is prohibited in the floodway as illustrated on the National Flood Insurance Rate Maps (FIRM), which are available from the Federal Emergency Management Agency, Field Map Distribution Center, 6930 San Tomas Road, Baltimore, Maryland 21227. Phone: 1-800-333-1363.

(b) Alternatives. If the proposed site is in a flood plain or wetland, the project may be started only if there is no practical alternative based on consideration of at least three alternatives, to include construction of the proposed facility at an alternative site, other means that accomplish the purpose, and no action.

(c) Evaluation. In evaluating these alternatives, consider mission requirements and economic, environmental and other pertinent factors. If the project is started, it must be consistent with the intent of the National Flood Insurance Program. This means that projects must be designed and carried out to meet all requirements of the National Flood Insurance Program and may deviate only to the extent that standards are demonstrably inappropriate.

(4) Coastal zones. The Coastal Zone Management (CZM) Act, PL 92-583 (reference 5-43), requires that Federal agencies with activities or development projects directly affecting the coastal zone conform to approved State CZM programs to the maximum extent practicable (see AR 210-20 (reference 5-1) and AR 420-74, Natural Resources - Land, Forest and Wildlife Management (reference 5-44).

(5) Public involvement. Public notice and clearinghouse notices. Before planning or starting a project in a flood plain or on wetlands, the sponsoring agency takes the actions below.

(a) Federal Register. Circulate an explanation of why the proposed project is to be located in the flood plain early enough in the

site selection process (before project submittal) so that public comment is considered in the decision-making. The Federal Register and local advertising are the proper media for publicizing projects. The public must be given a chance to review the plans and the impacts of the proposed project on the flood plain, even if the project is not important enough to require an Environmental Impact Statement (EIS) under NEPA (reference 5-39). If an EIS is required, it also must be publicized and reviewed by the public.

(b) Clearinghouses. For programs implemented by AR 210-70 (reference 5-12), send a notice of three pages maximum to statewide and area wide clearinghouses. The notice must include reasons for siting the project in a flood plain, whether or not the project conforms to applicable state and local flood plain protection standards, and a list of alternatives.

(c) Reevaluation. After public review of the flood plain proposal and/or EIS and coordination required by AR 210-70 (reference 5-12) have been completed, reevaluate all alternatives. If the decision is made to proceed, send another notice to statewide and area wide clearinghouse agencies and to all requestors. State that the decision to proceed has been made and cite the reasons. Allow 15 to 30 days to receive further comments.

(6) Environmental impact in foreign countries. Construction in foreign countries is governed by Status of Forces Agreements (SOFA). However, Executive Order 12114, Environmental Effects Abroad of Major Federal Actions (reference 5-45) establishes environmental procedures for Federal actions outside the United States.

q. Preservation of Historic Properties and Archeological Sites.

(1) National Historic Preservation Act (NHPA) requirements.

(a) NHPA and NRHP. The National Historic Preservation Act (NHPA) of 1966, PL 89-665 (80 STAT 915, 16 USC 470), as amended (reference 5-46) establishes the national policy for preservation of historic properties (see 16 USC 470-1); a National Register of Historic Places (NRHP) that is maintained by the Secretary of the Interior (See 16 USC 470a); and procedures for consideration and protection of properties included in or eligible for inclusion in the NRHP. These procedures include four citations as follows:

1/ Responsibilities. 16 USC 470h-2(a)(1), Procedures and criteria necessary for complying with the NHPA, as amended, Volume 44, Part IV, Federal Register (published in 36 CFR 800) (reference 5-47) requires that Federal agencies assume responsibility for historic properties owned or controlled by such agencies, and should, to the maximum extent practicable, undertake the preservation of such properties.

2/ Nominations. 16 USC 470h-2(a)(2) (reference 5-47) requires that Federal agencies establish a program to identify and nominate properties that appear qualified for inclusion in the NRHP.

3/ Impact assessment and review. 16 USC 470f, (reference 5-46) requires that, prior to approving any action, the agency decision makers consider the possible impact on property included in, or eligible for inclusion in, the NRHP and afford the Advisory Council on Historic Preservation (ACHP) the opportunity to comment on the proposal.

4/ Foreign areas. 16 USC 470a-2 (reference 5-46) requires that, prior to approving any action outside the United States, the agency decision makers consider the possible impact on property on the World Heritage List or on that country's equivalent of the NRHP to avoid or mitigate any adverse effects.

(b) Procedures. The specific procedures and criteria necessary for complying with the NHPA, as amended, are in Volume 44, Part IV, Federal Register (published in 36 CFR 800) (reference 5-47).

(c) Review. All phases of construction must be reviewed. Apply the procedures in 36 CFR 800 to determine if any property listed is on, or eligible for listing on, the NRHP. When a property is eligible comply with Section 106 of 36 CFR 800 (reference 5-47). Coordinate with the proper State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP) on proposals to remove or reduce the adverse effect. Detailed instructions for compliance with the historic preservation requirements of 36 CFR 800 are in TM 5-801-1, Historic Preservation: Administrative Procedures (reference 5-48), TM 5-801-2, Historic Preservation: Maintenance Procedures (reference 5-49) and AR 420-40, Historic Preservation (reference 5-50).

(2) Archeological sites.

(a) Investigations. Investigations to ensure that a military construction project is not located on an archeological site are funded from other than MCA funds, consistent with the provisions of the Military Construction Codification Act, PL 97-214 (reference 5-51), and Senate Report 97-474, Military Construction Codification Act (reference 5-52).

(b) Preservation, recovery, and mitigation. Protection or preservation of known or suspected archeological objects or findings, gathering data, reporting, etc., must be accomplished prior to award of military construction contracts. Public Law 93-291, Historical and Archeological Data Preservation (reference 5-53) permits the use of up to one percent of the MCA project program amount to be applied to protect, preserve and mitigate damage to previously unknown archeological objects or findings discovered during construction and to compensate the contractor for delays. Temporary protection continues until appropriate investigations and site clearances can be conducted by the installation using other than MCA funds. MILCON projects must not be proposed for sites

which contain known or suspected archeological finds until those sites have been properly cleared of such objects or findings.

r. Real Property Actions. In developing real property acquisition projects and programs, follow the procedures in AR 210-70 (reference 5-12).

s. Energy Conservation. Managers in the project development and acquisition process must ensure that the energy efficiency of buildings, building components, and utilities systems are considered at all phases of project development. The most energy efficient design, based on least life-cycle cost and operational requirements, must be used.

t. Renewable Forms of Energy. 10 USC 2857, as amended, Use of Renewable Energy Forms (reference 5-54), requires that active and passive solar and other renewable forms of energy be considered for each project, based on life-cycle cost analysis. Cost for inclusion of renewable energy provisions in construction contracts are shown on DD Form 1391, Block 9, in the concept design and later cost estimates.

u. Reduction of Seismic Hazards. New facilities or the modernization of permanent existing facilities in seismic zones 2, 3 and 4 must be designed for seismic resistance. All new construction must be based on TM 5-809-10, Seismic Designs for Buildings (reference 5-55). All permanent facilities being renovated must include evaluation of seismic resistance. When there is no assurance that resistance exists, the project must include remedial strengthening work to provide resistance as required by TM 5-809-10 (reference 5-55). For mission-essential buildings in seismic zones 3 and 4 and for essential buildings needed during post-earthquake periods, such as hospitals, TM 5-809-10-1 (new facilities) and TM 5-809-10-2 (existing facilities) are the basis of design.

v. Occupational Safety and Health Act (OSHA). AR 385-10, The Army Safety Program (reference 5-56) requires that OSHA criteria be used during the development of new and upgrading of existing facilities. When work-places in industrial, commercial, maintenance and other facilities must be made safe to comply with OSHA requirements, the cost of these improvements must be included in the cost of the construction project. To ensure the using agency's specific safety, health and fire protection concerns may be adequately addressed, a preliminary hazard list may be prepared. (See AR 385-10 (reference 5-56) for additional information.)

w. Information Systems Support.

(1) Installed equipment. Normally, but with some noted exceptions, MCA, AFH, or other construction funds are programmed for procurement and installation of information systems equipment in and made a part of real property based on USAISC estimates. This work includes equipment inside and outside the building five-foot [1.53 m] line, as defined in AR 735-5, Policies and Procedures for Property Accountability (reference 5-57). Detailed costs are included in the information systems cost estimate (ISCE), which are provided by the

Commander of the USAISC supporting activity or other such agencies and are included in the DD Form 1391. If changes in information systems scope or cost are identified during design, the cognizant USACE district office coordinates these changes with USAISC, the MACOM and the installation prior to revising project documentation.

(2) Movable equipment. MCA funds are programmed for procurement and installation of certain movable equipment based on the ISCE. For additional information see AR 25-1, The Army Information Management Program (reference 5-58). This work includes information systems equipment-in-place as defined by AR 735-5 (reference 5-57), both inside and outside the building five-foot [1.53 m] line.

x. Equipment Installation.

(1) MILCON funded. Equipment affixed to and built into a real property facility as an integral part of the facility is "construction" and is funded as a construction cost.

(2) Not MILCON funded in existing structures. Costs associated with installing equipment that is movable and not affixed to as an integral part of existing real property facilities is "non-construction" and is not funded as a construction cost. Some typical examples, not funded with MILCON when renovating existing facilities, are listed as follows:

(a) Partitions. Prefabricated interior screens, partitions and dividers that are mainly unattached; and movable screens or detachable panels that are temporarily held in place by light braces and screws and are readily removed without impairing or defacing either the panels or the floors, walls or ceilings of the structure.

(b) Platforms. Raised floors and platforms required solely for operating equipment to be installed.

(c) Shielding. Required shielding for electromagnetic radiating devices. Structural changes, including new permanent partitions related to installing shielding, are construction.

(d) Temporary removal. Temporary removal and reinstallation of building components such as portions of walls, roof and utility systems to permit installation of equipment. (Reinstallation may involve rerouting or relocation of some items.)

(e) Unusual foundations or floors. Unusual foundations, pads or slab-on-grade or pits in facilities. Installation of floors other than slab-on-grade is limited to bases needed to spread load and to secure equipment-in-place. Increasing the load-bearing capacity of these floors by additional or larger structural components is construction.

(f) Secondary utility work. Secondary utility work to connect the equipment to utility services within the facility. This work

lies between the primary utility entry or source within the structure and the equipment to be served: for example, utility work from the existing main electrical service panel, or for equipment requiring primary voltage from the building primary bus.

(g) Specialized air conditioning. Air conditioning under the following circumstances:

1/ To meet manufacturers' specifications for equipment temperature, humidity, particulate matter, and air circulation.

2/ In clean rooms installed in non-air-conditioned spaces or when the building's central system cannot meet the temperature and humidity requirements of the clean room operation.

3/ For operator-occupied areas where installed equipment will increase the temperature or humidity beyond safety levels in the immediate area of equipment. Under this policy, air conditioning may be provided only in bona fide equipment spaces directly related to the equipment and not in administrative or other working spaces. All air conditioning must be in accordance with AEI "Design Criteria" (reference 5-4) and AR 420-54, Air Conditioning, Evaporative Cooling, Dehumidification, and Mechanical Ventilation (reference 5-59).

(h) Special ventilation. Mechanical ventilation and separate exhaust systems when needed for personnel safety or for the proper functioning of the equipment as required by the manufacturer.

(i) Special fire suppression. Specialty fire extinguishing systems for rooms that contain substantial amounts of automatic data processing (ADP) equipment.

(3) MILCON funded new construction. When installed in new facilities, items listed in (2)(b)(c)(e)(f)(g)(h) and (i) above are considered construction. Related costs are properly chargeable to MILCON funds.

y. Survival Measures. The Army Survival Measures Program provides the Army with passive defense measures, including protective shelters, that can be provided at moderate costs if installation requirements are considered within the MCA program. Every proposed MCA construction project is evaluated to determine if shelters are practical. Protective shelters must be included in new permanent construction if shelter spaces can be created at no identifiable construction cost, or if additional shelter spaces can be created at minimal cost if required by an installation survival measures plan.

z. Combatting Terrorism (CBT/T) and Physical Security Measures.

(1) Risk probability. CBT/T measures are provided when indicated by existing or potential threat and current vulnerabilities, to deter

terrorists from attacking personnel, facilities, and equipment and minimize loss or damage in the event of such an attack. To ensure that CBT/T and physical security construction requirements are identified, the installation Director of Plans and Training (DPT) and the installation Provost Marshal must be fully involved in the facility planning, programming, and budgeting process. Projects must be coordinated with the installation DPT, or equivalent, and may be reviewed by the installation Force Protection Committee (FPC). Ensure that proposed CBT/T and physical security measures are developed in accordance with existing fire and life safety standards, and that such measures, based on a threat analysis, are responsible, prudent and cost effective.

(2) CBT/T statement. To ensure that CBT/T and physical security requirements have been evaluated and that appropriate measures have been incorporated into proposed construction, all DD Forms 1391 must contain an attesting statement and the planning data base must contain the signatures and telephone numbers of both the DPT, or equivalent, and the Provost Marshal. (See AR 190-13, The Army Physical Security Program (reference 5-60), AR 190-30, Military Police Investigations (reference 5-61), AR 190-52 (reference 5-62), AR 210-50 (reference 5-24) and AR 525-13, Countering Terrorism and Other Major Disruptions on Military Installations (reference 5-63) for additional information.)

aa. Barrier Free Design. All facilities must be barrier-free, with as few obstacles (doors, elevation and grade changes, etc.) as possible. PL 90-480, The Architectural Barriers Act of 1968 (reference 5-64) requires that certain Army facilities be accessible to and usable by handicapped persons. These provisions become part of the project cost. Only facilities operated and used solely by able-bodied military or civilian personnel, or where great hazards exist, may be exempt from this requirement. At least five percent of the total military family housing inventory and guest housing inventory constructed since 7 August 1984 (not less than one unit of each) at an installation must be designed and built to be either accessible, or easily modifiable for access, to the physically disabled. The AEI "Design Criteria" (reference 5-4) provides implementing instructions for the Uniform Federal Accessibility Standards (UFAS).

ab. Permanent Signs. The cost of interior and exterior permanent signs to identify new facilities or areas having constant or fixed use; and traffic signs and markings required due to alterations, extensions, and additions to road networks or paved areas must be included in the project.

ac. Radon Mitigation. Radon mitigation techniques must be incorporated in construction plans to prevent excessive radon migration into new structures (see AR 200-1 (reference 5-19)).

ad. Fire Protection. Fire protection must be provided for facilities in accordance with the provisions of the AEI "Design Criteria (reference 5-4). Unique or special fire protection requirements associated with user-provided equipment to be housed or stored in the facility are provided

by the user.

ae. Construction-related Activities.

(1) Relocation incident to construction. When MILCON projects require operations to be relocated permanently or temporarily, the cost of relocation and of providing austere but adequate accommodations may be funded by MILCON appropriations if the action involves permanent or temporary transfer of an operation from a facility to be altered, renovated or demolished whether or not the organization returns to the completed facility.

(2) MILCON funding limitations for relocation.

(a) Cost limitations. Under the condition described above, only the costs of the initial transfer and relocation of operations are chargeable to the project. Relocation costs must be included in block 9.A of the DD Form 1391 as a separate item.

(b) Relocation costs. Relocation items are described in block 10.F of the DD Form 1391, and a justification and explanation must be included in the planning data base. Provision of temporary facilities, incident to MILCON construction, may be funded by separate contract using MILCON funds. The relocation must be consonant with the LRC and CIS of the RPMP.

(c) Temporary relocation. Only minimum provisions may be made for a displaced operation in a temporary location. The following costs are authorized:

1/ The cost of removing and returning the operation to its permanent location and placing it in an operating condition.

2/ The cost of restoring the interim facility to its original condition.

3/ The recurring costs of operating at a temporary location are not chargeable to the project but to the appropriate O&M accounts.

4/ When an operation is relocated, only the existing equipment (or its equivalent) must be relocated and installed in the interim facility, and returned and reinstalled in its permanent location.

(3) Real estate acquisition.

(a) Policy. AR 405-10, Acquisition of Real Property and Interests Therein (reference 5-65) governs real property acquisition.

(b) Acquisition. Real property access required for construction must be cleared before access is gained. The concerned USACE

district obtains title, right of entry for construction, or right of possession to real estate upon request of the installation and receipt of appropriate funding. Land acquisition OCONUS, however, is processed through the MACOM under the Status of Forces Agreement (SOFA) procedures (see AR 405-10 (reference 5-65)).

(c) Land for projects. Military construction of a permanent nature should be placed only on land areas that meet the requirements outlined in AR 405-10 (reference 5-65).

(d) Unspecified Minor Military Construction, Army (UMMCA). When UMMCA funds are used for land acquisition, 10 USC 2672(a), Acquisition: Interests in Land When Cost Is Not More than $200,000 (reference 5-66) must be cited as the authority.

(4) Disposal of structures.

(a) Disposal guidance. AR 200-1 (reference 5-21), AR 405-90, Disposal of Real Estate (reference 5-67) and AR 415-15 (reference 5-2) provide guidance for disposal of structures. Prior to disposal or demolition of any facilities, installations must comply with the reporting requirements of Section 501, 42 USC 11411 of the Stewart B. McKinney Homeless Assistance Act (reference 5-68). Old facilities may be disposed of as prescribed in AR 415-15 (reference 5-2) where identified and justified in project DD Forms 1391 or as part of the Facilities Reduction Program (FRP). The Army requires that WWII temporary facilities be demolished in exchange for new replacement facilities included in the MCA program. Instructions for demolition of facilities in conjunction with NAF projects are provided in AR 415-19 (reference 5-25).

1/ Methods of disposal. Disposal of structures may be by sale and removal or by demolition done in advance using operating funds or incident to a construction contract. Disposal by sale must occur well in advance of construction contract award.

2/ Commitment to Congress. DA submits the list of MCA-committed buildings to Congress with the documentation requesting new construction. When legislation has been enacted authorizing new construction, DA is obligated to Congress to dispose of those buildings promptly.

3/ Site clearance. The cost to dispose of facilities on a construction site must be included in the cost of the project. Where facilities to be disposed of are located elsewhere on the installation, or on other installations, disposal costs should be programmed as part of the FRP.

4/ Project cancellation or deferral. If buildings have been identified for disposal in a project and Congress does not authorize for construction, DA is not bound by any disposal commitment. The same buildings may be offered for the same or other construction projects.

(b) Procedures. Once a facility is committed for disposal, limit maintenance to only utilities services or provisions for the health and safety of occupants. Delete the facility from the installation BMAR and DMAR reports required per AR 420-16, Facilities Engineering Reports (reference 5-69). Start disposal action per AR 405-90 (reference 5-67) as soon as possible, but no later than 30 days after occupancy of the new facility. Delete the building from the installation IFS-M real property account files when disposal is complete, but retain historical records to chart the progress of building disposals. Environmental requirements must be met, with emphasis on the possible presence of asbestos. When there are valid reasons for the continued use of buildings committed for demolition, others of equal area may be substituted and demolished if approved by The Chief of Engineers.

5. SHORT-RANGE PLANNING GUIDANCE ON VARIOUS PROGRAMS.

a. Unspecified Minor Military Construction, Army Program (UMMCA). UMMCA provides for construction of new and improvement of existing facilities by means of projects with a funded cost of greater than $200,000 and less than $1 million. No UMMCA project may be started without HQDA (DAEN-ZCP) authorization. This authorization is contingent on design completion, cost, COE and DASA(I&H) approval, PBC approval for funding and expiration of the Congressional notification period (21 days).

b. Energy Conservation Investment Program (ECIP). ECIP provides MCA funds to achieve DoD energy conservation goals by means of major retrofit projects (greater than $200,000) for existing Army energy systems and facilities. The program is designed so that installations can initiate and receive funding for energy conservation measures tailored to their needs. ECIP projects that qualify for funding in accordance with annual guidance provided by the U.S. Army Engineering and Housing Support Center may be entered into the programming cycle at any time during any fiscal year.

c. Army Family Housing Construction Program. Family housing construction is funded by the AFH appropriation. AFH is authorized and appropriated under the same MILCON laws as MCA, however, it is a separate appropriation with unique controls and requirements. AFH construction consists of two broad programs--new construction and post-acquisition (or improvement) construction as follows:

(1) New construction. This program addresses new facilities and is directly comparable to the MCA program for new construction.

(2) Post-acquisition (or improvement) construction.

(a) Description. This program is used for all construction projects not categorized as new construction and includes all improvement projects, such as revitalizations, renewals, upgrades, modernizations, rehabilitations, alterations, additions, expansions, extensions, and Energy Conservation Investment Program (ECIP) projects. However, it excludes projects within the cost limitations for incidental improvements ($3,000

per family dwelling unit (DU)/fiscal year (FY), $5,000 per DU/FY where work supports needs of a physically handicapped exceptional family member, and $200,000 per project).

(b) Incidental improvement. Incidental improvements projects are funded from the AFH operations and maintenance (O&M) account, not the AFH construction account (see AR 210-50 (reference 5-24). Incidental improvements projects are comparable to OMA new construction, i.e., very limited scope "L" account projects.

(c) Revitalization. Other post-acquisition construction subprograms include the "whole house" or revitalization program and the Line Item Improvement Program (LIIP) or "nonwhole house" program (see AR 210-50 (reference 5-24)).

(d) Costs above dwelling unit (DU) limit. AFH improvement program projects that exceed the per DU statutory cost limitations require individual line item approval by Congress and are comparable to MCA projects.

(e) Concurrent work. Where a project consists of concurrent maintenance and repair (M&R) and construction improvement work, the total cost of the concurrent work must be considered. A separate DD Form 1391 is submitted to Congress when the total cost exceeds statutory cost.

(f) Below DU limit, incidental improvements. Other AFH improvement program projects that fall below the per DU statutory cost limitations and above the incidental improvement limitation are similar to UMMCA projects, and are submitted by means of DD Form 1391. HQDA then prepares a consolidated DD Form 1391 with a descriptive list of all projects for submittal to the Congress. Congress approves the project list and dollar totals for ECIP projects and for regular improvement program projects. Congress is also notified semiannually of any project substitutions or reprogrammings.

(g) General Officers Quarters. Construction for General/Flag Officers' Quarters (GFOQ) is intensively managed through a series of unique policies and limitations. AR 210-13, General Officers' Quarters and Installation Commanders' Quarters (ICQ) Management (reference 5-70) related to GFOQ.

d. Host Nation-Funded Construction Program (HNFCP). DODD 4270.34, Host Nation-Funded Construction Programs (reference 5-71) provides specific

guidance for the planning, programming, budgeting, development of technical criteria, and execution of HNFCP projects.

e. Mobilization Program. Mobilization construction programming provides facilities the Army needs solely or substantially for mobilization. Missions that Army elements must perform during mobilization are specified in guidance documents from HQDA and MACOM-approved

mobilization component (MC) of the RPMP.

(1) Programming and budgeting responsibility. The installation commander programs and budgets for mobilization construction with the exception of non-installation related tenants. All deficiencies are identified and alternatives to new construction are evaluated during the MC process.

(2) Mobilization project groups. All mobilization projects are classified in one of the following groups:

(a) Group I: Includes those projects that are designed and constructed prior to the order to mobilize, which comply with peacetime construction procedures and fall into both the regular MCA Program (MACOM POM) and the mobilization program.

(b) Group II: Includes those projects that are designed prior to mobilization for construction complying with mobilization sustainment requirements and criteria, are to be constructed after receipt of the order to mobilize (unless earlier construction is permitted by Congressional authority), and are listed in the Mobilization Project Listing (MPL).

(c) Group III: Includes those projects that are to be designed and constructed after receipt of the order to mobilize, are planned prior to the receipt of mobilization orders, and are listed in the MPL.

(3) Mobilization program. All construction supporting mobilization missions, for which MCA funds would apply, are developed by the MC process (see Chapter 6 of these instructions) and included in the mobilization program. Mobilization Group I projects are included in the MACOM Six-Year Plan (SYP) and Mobilization Groups II and III projects in the Mobilization Project Listing (MPL).

(a) Environmental considerations. The MC must be assessed for environmental consequences in accordance with AR 200-2 (reference 5-21).

(b) Peacetime projects with mobilization purpose. That portion of the peacetime MCA Program that also fulfills mobilization requirements must be identified by mobilization codes in the 1391 Processor. MACOMs must clearly justify the classification "mobilization required" on the DD Form 1391.

(c) MCA resource constraints. Excluding projects with a secondary mobilization mission, the number of mobilization Group I projects included in peacetime planning, programming and budgeting is severely restricted, due to MCA resource constraints. Seek alternatives to new construction in order to satisfy Group I requirements. Suggested alternatives include lease of non-industrial (NIF) facilities, conversion

of existing facilities, temporary diversion of space, etc. Essential mobilization Group I projects that cannot be satisfied by any other means must be included in peacetime MCA programs.

(4) Medical mobilization program. Medical mobilization projects are managed and funded by the DMFO, Office of the Assistant Secretary of Defense for Health Affairs (OASD(HA)).

(5) Mobilization program submission.

(1) Project submission. Mobilization projects are submitted in the Multi-Year Plan (MYPLAN) module of the CAPCES system on PAX, usually annually, including medical mobilization projects.

(2) Programming system. In the event of a mobilization, the mobilization programming system (MOBPRO) module of the CAPCES system on PAX will be activated. MACOMs, major subordinate commands (MSC) such as are in the Army Materiel Command, USACE districts and divisions, as well as HQUSACE and HQDA will be provided access to the system. MOBPRO allows for rapid restructuring and confirmation of mobilization facilities requirements to satisfy scenario-specific threats.

f. Defense Access Road Program (DARP). The DARP provides for Army participation in the funding of public highway improvements when such improvements support a sudden or unusual defense-generated highway impact. DARP guidance contained in AR 55-80, Highways for National Defense (reference 5-72) should be researched when major mission changes are expected. Potential public highway impacts must be reported by a defense access roads needs report, through the MACOM to Military Traffic Management Command (MTMC) when projects are first identified. This ensures enough "lead time" for coordinating actions between all Army agencies. Commander, MTMC, determines DARP eligibility and programs MCA funds for DARP requirements.

g. Productivity Investment Funding (PIF). PIF is intended to invest Army dollars into projects that demonstrate a return through enhanced efficiency and productivity. PIF projects are approved through resource management offices, beginning with submission by the installation and continuing up to OSD (see AR 5-4, OSD Productivity Fund (PIF) Program (reference 5-73). PIF dollars remain unassigned to the services until late in the budget cycle. PIF projects compete just as any other MILCON project, and design funds are extremely limited. PIF projects must reach 35 percent complete design by the time they are presented to OSD for consideration, or they cannot be considered as candidates for the next FY MILCON program.

h. International Balance of Payments (IBOP). In IBOP areas (any location not a part of or a possession of the United States), as defined in AR 37-1, Army Accounting and Fund Control (reference 5-74), only essential projects included in the joint listing of U.S. Base Requirements Overseas are submitted for inclusion in the MCA or AFH programs. Reporting and cost

estimation requirements for IBOP (CSCFA-239, International Balance of Payments, Disbursements, and Collections) are contained in AR 37-1 (reference 5-74). Cost estimates for IBOP are required as a mandatory part of project documentation for construction in foreign countries. IBOP projects must include a statement in the DD Form 1391 attesting to the existence of the IBOP cost estimate and stating whether the project is to be constructed using a normal or revised procedure.

i. Commercial Activities (CA) Program. For information regarding the CA program, see AR 5-20, Commercial Activities Program (reference 5-75).

j. Vending Facilities for the Blind on Federal Property. AR 210-25, Vending Facility Program for the Blind on Federal Property (reference 5-76) implements the Randolph Sheppard Act (PL 74-732) (reference 5-77) and gives Army policy for the blind vending facility program. The cost of these provisions are part of the project cost.

k. Backlog of Maintenance and Repair (BMAR) and Deferred Maintenance and Repair (DMAR) as part of MCA and AFH projects.

(1) Backlogged or deferred maintenance and repair work (BMAR/DMAR) may be included in an MCA or AFH project for modernizing, altering or expanding permanent facilities under the following conditions:

(a) Specificity. The MCA or AFH project is being programmed to modernize, alter, or expand a specific facility.

(b) Unavailable OMA. If Operations and Maintenance, Army (OMA) or AFH operations and maintenance (O&M) funds cannot be made available in time to remove maintenance and repair (M&R) deficiencies before completing the MCA or AFH construction phase.

(c) Economic/operational reasons. If economic or operational factors justify combining the M&R work with the construction work.

(d) Required by law. If public law requires consolidating of funding.

(e) Complete upgrade. The modernization, alteration or expansion will upgrade the whole facility, or one or more functional components of it, to equal new construction.

(2) BMAR and DMAR documentation. DD Form 1391, supporting economic analyses, amortization schedules, and alternative analyses, must show costs included in the project for M&R.

(3) UMMCA. UMMCA projects are excluded from this policy.

l. Unprogrammed Urgent Construction Requirements.

(1) Emergency construction. See 10 USC 2803 (reference 5-78). The Secretary of the Army (SA) is authorized to carry out a MILCON project, not otherwise authorized by law, if the SA determines that the project is vital to the national security and the requirement is so urgent that deferring authorization for its construction to the next MILCON Authorization Act would be inconsistent with national security. When a decision is made to use this authority and the cost is greater than the maximum amount for a minor construction project, the SA submits a report to the appropriate committees of Congress on that decision.

(2) Congressional approval of emergency construction. The project may be carried out only after the end of a 21-day period beginning on the date the notification is received by Congressional committees, or after each committee has approved the project, if the committees approve the project before the end of that period.

(3) The maximum amount that the SA may obligate in any fiscal year under this authority is $30,000,000.

(4) A project carried out under this authority must be carried out within the total amount of funds appropriated for MILCON that have not been obligated.

(5) Damaged or destroyed facilities. See 10 USC 2854 (reference 5-79.) The SA may repair, restore, or replace a facility under his jurisdiction, including a family housing facility, that has been damaged or destroyed. O&M appropriations may be used to temporarily repair or restore damaged facilities. If a life-cycle cost analysis shows that the most cost effective alternative is facility replacement, MCA appropriations may be used for the replacement facility. When a decision is made to carry out the construction under this authority and the cost of repair, restoration, or replacement is greater than the maximum amount for a minor construction project, the SA notifies, in writing, the appropriate committees of Congress of that decision.

(6) Congressional approval of damaged or destroyed construction. The project may be carried out only after the end of the 21-day period beginning on the date the notification is received by such committees, or after each such committee has approved the project, if the committees approve the project before the end of that period.

(7) Review of damaged or destroyed facilities. Damaged or destroyed facilities must be surveyed by the installation or responsible USACE district. Work classification (repair or construction) is in accordance with AR 420-10 (reference 5-80). Deciding on whether to dispose of, repair, restore or replace damaged or destroyed facilities must be based on the survey. A facility for which there is a valid requirement comes under one of the following categories:

(a) Repair. O&M funds may be used for temporary repair and demolition of facilities on the construction site of a NAF project.

Repairs must be done in the most cost effective manner using quality materials.

(b) Restoration. O&M funds may be used for restoration.

(c) Complete replacement. Projects can be approved under AR 420-10 (reference 5-80) using O&M funds, or they can be approved under AR 415-15 (reference 5-2) and 10 USC 2854 (reference 5-79). Available MCA funds may be reprogrammed. Family housing projects can be approved in accordance with AR 210-50 (reference 5-24) using AFH O&M or AFH construction funds, as appropriate. It is expected that current design and material criteria would be used for any replacement facility, and such facility may be increased in size to meet current mission and functional requirements.

(8) Reporting procedures for projects to be constructed under 10 USC 2854 (reference 5-80) using O&M type funds are in AR 420-16 (reference 5-69).

(9) Emergency construction costing less than $1 million. UMMCA procedures are normally used to provide for emergency construction requirements costing less than $1 million.

6. PLANNING DATA BASE. Accuracy, coordination and sponsorship at higher levels of command and a complete file of information for each project are the keys to successful project development. Use the guidance presented previously in this chapter to ensure that the project aligns with Army and MACOM programs, goals and objectives; is within budgetary guidance; is accurate; is based on customer involvement; has included help from expert agencies as appropriate; and has a MACOM and a HQDA staff proponent. Project development should begin with TAB-type information when the project first enters the POM period. By the first two years of the POM period, projects should be supported by a complete file of coordination and planning data, resembling what is described in the paragraphs that follow. Collect these data in a local automated file. The planning data base consists of four kinds of information: project description, construction cost, justification, and back-up data. The appropriate block number in the 1391 Processor is shown after each subject in the following paragraphs so information can be entered in the Processor at the appropriate time.

a. General Project Descriptive Information.

(1) Program type. Identify whether the project is Military Construction, Army (MCA), Production Base Support (PBS), Nonappropriated Fund (NAF), Army Family Housing (AFH), Maintenance and Repair (M&R), Commissary (COMM), Army and Air Force Exchange Service (AAFES), Defense Medical Facilities Office (MED), Defense Logistics Agency (DLA), Commercially Financed Facilities (CFF), Base Closure, Army (BCA), or another program such as described earlier in this chapter. (BLOCK 1A)

(2) Component. The word Army is normally used. (BLOCK 1B)

(3) Fiscal year. State the fiscal year in which the project is to be programmed. (BLOCK 1C)

(4) Installation. Enter the official name of the installation. (BLOCK 1E1)

(5) Subpost or remote location. Enter the official name of the subpost or the remote location. (BLOCK IE2)

(6) Location. Enter the state or country in which the installation is located. (BLOCK 1F)

(7) Category code. State the predominant facility category code in accordance with AR 415-28, Department of the Army Facility Classes and Construction Categories (reference 5-81). (BLOCK 1G)

(8) Project title. Limit titles to 26 characters. For ECIP projects, follow the title with this acronym. If land acquisition is involved, append "w/land" to the title. (BLOCK 1H)

(9) Type of work. Choose whether the project involves new, addition, alteration, conversion, modernization, or other type of work. (BLOCK 1I)

(10) Mobilization/Emergency (Y/N). Indicate whether this project is a mobilization or emergency type facility. (BLOCK 1J1)

(11) Late start date. If the project is for mobilization, indicate the latest possible start date in relationship to M-Day (M + XX days). (BLOCK 1J3)

(12) Required occupancy date. If the project is for mobilization, indicate the date in relationship to M-Day when occupancy is required. This allows the 1391 Processor to automatically group-classify the project. (BLOCK 1J4)

(13) Mobilization priority. This is the group classification for the mobilization project (I, II or III). See a description of these groups earlier in this chapter. (BLOCK 1J5)

(14) Type of construction. Indicate whether this project consists of permanent, semipermanent, or temporary construction. (BLOCK 1K)

(15) Program element number. This is a DoD classifier that identifies projects by their mission and purpose. The number is added when the project reaches HQDA. (BLOCK 1L)

(16) Permanent project number. The 1391 Processor generates this number. (BLOCK 1M)

(17) Temporary project number. The installation keeps a list of local project numbers for their own management control. These numbers are usually prefixed by the letter "T" or, in the case of M&R, by the installation's initials. (BLOCK 1N)

(18) Preparation date. This is the date that the project is entered in the 1391 Processor. (BLOCK 1O)

b. Detailed descriptive information. Clearly outline all principal features of work. Begin with a precise description of the primary facility. For facilities other than buildings, describe each major element needed to produce a complete and usable facility. (BLOCKS 3A THROUGH 3I AND BLOCKS 7A, 7B, 8A AND 8B. COMPLETE ALL OF BLOCK 23 FOR COMMISSARY PROJECTS).

(1) Descriptive information. Provide information on the following project requirements:

(a) Site and special items. Discuss required utility services, information systems, fire detection and alarm systems, roads, walks, curbs, gutters, storm drainage, parking areas, and site improvements.

(b) Heating and cooling. State whether a central plant will be used.

(c) Intrusion Detection Systems (IDS). Intrusion detection equipment, to be procured with Other Procurement, Army (OPA) funds, is to be installed with MILCON funds.

(d) Special work. List the special work involved when supporting facilities costs are exceptionally high.

(e) Fuel conversions. Indicate the type of fuel and equipment involved when fuel conversions are required. Indicate that fuel conversions have been supported by life-cycle cost analysis.

(f) Changes in existing facilities. Describe the changes to be made for projects involving additions, alterations, modernization, or conversions.

(g) Unusual design. Identify unusual design requirements, including special space allowances, when such conditions will increase costs.

(h) Disposal. If buildings will be demolished, provide the number of buildings and their total square footage. Support these data with a table that lists installation name, building number, type of construction, quantity and unit of measure, and present use and condition for each building committed.

(i) Handicapped access. If access for the handicapped will be provided, indicate that it is a requirement.

(j) Family housing. For AFH new construction, include a breakout of dwelling units by grade grouping, bedroom count, net area, project factor, cost per net area, number of units, and total cost.

(k) Relocation. Discuss relocation requirements associated with the project. Provide an explanation if relocation of organizations is to be part of this project.

(l) Combatting Terrorism (CBT/T). Discuss measures for CBT/T and physical security, if required and included in this project. (BLOCKS 22A, 22B, 22C)

(m) Related projects. State if this project is related to others in prior year, current year, or future year programs, or if this project represents one phase in a multi-phased effort.

(n) Unit composition. Unit strength and unit identification code (UIC). State the title, UIC and authorized strength of units or activities to be served by the project.

(o) Urgency. If project urgency is driven by external factors, such as a unit activation, clearly state these factors.

(p) Interior design. State comprehensive interior design services requirements.

(2) Criteria. Provide specific identification of regulations, references, automated systems, and other guidance material used to develop and support the scope of the proposed project to include paragraph and table numbers of specific criteria. Provide the following information as applicable: (BLOCK 12A)

(a) Standard designs. Indicate whether standard designs will be used and the source of the designs.

(b) Academic facilities. For academic or similar facilities, furnish the number and size of classrooms and student capacity. List courses and student loads that are the basis for the requirement. Show how the training capability of the proposed facility relates to overall training requirements for the Facility Category Group (FCG) involved.

(c) Non-standard facilities. Include space requirements study data in support of non-standard special design projects. Include quantitative data regarding tasks to be accomplished within the proposed facility.

(d) Pollution control facilities. Provide Federal, state, regional, or local standards upon which the design will be based. Quote

applicable host country standards for projects in foreign areas.

(e) Aviation facilities. Discuss the quantity and type of aircraft, the annual flying hour program, and the type/class of pavement required. State if approvals in accordance with AR 95-2 (reference 5-30) have been obtained.

(f) Organizational vehicle parking. Describe whether the requirement has been developed using the Facility Planning System (FPS). When the requirement was not developed using FPS, provide an explanation as to the variation.

(g) Non-organizational vehicle parking. Describe that the requirement was developed in accordance with the AEI "Design Criteria" (reference 5-4) and list the total authorized permanent occupants from which the parking requirement was derived. Indicate parking provided for visitors, handicapped, service vehicles, staff, and other special requirements.

(h) Chapels. Certify that the project has been coordinated with the Chief of Chaplains.

(i) Information systems processing centers (ISPC). Indicate that collocation of ADP, information processing centers, and other information systems components has been considered or incorporated.

(j) Variance from criteria. Provide an explanation for any variance from standard criteria.

(k) Hazardous facilities. For explosives, toxic chemical agents, ammunition facilities and non-hazardous facilities that might be exposed to such hazards if not properly located, show that site plans have preliminary approval by DDESB.

(l) Laundries. For laundry and dry cleaning facilities, indicate that coordination with the Army facility proponent, the Deputy Chief of Staff for Logistics, has been accomplished.

(m) Weapons systems. If the requirement results from new weapons, state the conditions and timing of the arrival of the system in relationship to the new project.

(n) New missions. If the requirement stems from a new or expanded mission, give the scope of the new mission and its relationship to the project.

(o) Postal projects. State that postal projects have been coordinated by the U.S. Postal Service Postmaster General.

(p) Ranges. State that range projects have been validated by the U.S. Army Engineer Division, Huntsville (CEHND-PM), P.O. Box 1600,

Huntsville, AL 35807-4301.

(q) Technical facilities. For laboratory, research, development and technical maintenance structures, list and clearly explain the missions and functions that require the proposed facility.

(r) Food service facilities. For food service projects, state that the project has been coordinated with the Deputy Chief of Staff for Logistics, the Army proponent for these facilities.

(s) U.S. Base Requirements Overseas (USBRO). If this project is included in the joint compendium of USABRO as validated by the Joint Chiefs of Staff, give the number of the plan or plans of the proposed construction.

(t) Energy requirements. Energy conservation shall be a part of design as specified by the AEI "Design Criteria" (reference 5-4). State that the energy requirements appraisal is included in the project files. (BLOCK 19A)

(u) Provision for the handicapped. Design of every facility must include provisions for the handicapped unless the facility is intended solely for able-bodied military personnel, use of the facility by handicapped persons would be hazardous or, in the case of family housing, there are sufficient dwelling units available or can be easily modified for handicapped access. Provisions for the handicapped must be provided unless one of the above conditions apply. (BLOCKS 20A, 20B, 20C)

(v) Blind vending facilities program. For facility types covered under AR 210-25 (reference 5-76), enter a statement regarding consideration of and provision for blind vending facilities.

(3) Scope. State the magnitude of the project in the primary unit of measure established by AR 415-28 (reference 5-81). (BLOCK 4B)

(4) Size. State project magnitude in secondary units of measure, only in cases where scope measurement differs. For example, hospital scope measurement is in "beds," while size is in square feet. (BLOCK 4C)

(5) Cooling. Estimate the tonnage and approximate cost of any air conditioning requirements. (BLOCK 4D)

(6) Unit of measure. State the primary unit of measure for this project, as established by AR 415-28 (reference 5-81), e.g., square feet, square yards, beds, linear feet. (BLOCK 4E)

(7) Total requirement. State the installation's total requirement for facilities in this category code, expressed in the primary unit of measure. (BLOCK 4F)

(8) Existing adequate. Record the total scope of existing adequate facilities of the category code for which the project is proposed, expressed in the primary unit of measure. (BLOCK 4H)

(9) Funded not in inventory. Record the total scope of projects in this category code which are not in the inventory, i.e., under final design, under construction. (BLOCK 4I)

(10) Utility and information systems support. Provide information related to utility and information systems projects programmed or under construction to support the facility. Provide the distance in linear feet that the facility is located from all utility and information systems trunk lines and connections. State if utilities and information systems support is adequate. If inadequate, reference the projects programmed for correction of deficiencies. (BLOCKS 19B, 19C)

(11) Traffic analysis. Provide information on the anticipated vehicular traffic for the facility and the expected impact on existing roads, bridges, parking areas, etc. For projects significantly impacting traffic, indicate the date of the Military Traffic Management Command traffic survey and analysis. Assure that traffic concerns have been addressed.

c. Cost Information.

(1) Construction start date. Estimate the date construction will begin, assuming funding occurs as planned. (BLOCK 1D1)

(2) Construction end date. Estimate the project completion date. (BLOCK 1D2)

(3) Construction mid-point. Estimate the mid-point between project start and completion. (BLOCK 1D3)

(4) Currency type and exchange rate. (BLOCK 2A0)

(5) The estimated cost of primary facilities. Develop preliminary cost data using order-of-magnitude estimates contained in AR 415-17 (reference 5-82), the 1391 Processor or, for AFH, the DoD Family Housing Cost Model. These cost data are refined when the project is programmed. Include the following types of cost and costing information:

(a) Cost of construction. (BLOCK 2A1)

(b) Total design cost to include the following: (BLOCK 6K)

1/ Contract architect-engineer cost. (BLOCK 6I)

2/ In-house design cost plus architect-engineer supervision and administration cost. (BLOCK 6J)

3/ Production of plans and specifications cost. (BLOCK 6L)

4/ All other design costs. (BLOCK 6M)

(c) Equipment costs, other appropriations. (BLOCK 13A1, 13A2, 13B)

(d) Renovation economic life. (BLOCK 11E)

(e) Design start date (estimated). (BLOCK 6A)

(f) Concept design completion date. (BLOCK 6B)

(g) Design completion date (estimated). (BLOCK 6C)

(h) Percent of design completion as of 15 Sept of Design Year (see AR 415-17 (reference 5-82)). (BLOCK 6D)

(i) Percent of design completion as of 1 Jan of the Budget Year (see AR 415-17 (reference 5-82)). (BLOCK 6E)

(j) Percent of design completion as of 1 October of Program Year (see AR 415-17 (reference 5-82)). (BLOCK 6F)

(k) Standard or definitive design (Y/N)? (BLOCK 6G)

(l) Installation where the design was last used. (BLOCK 6H)

(6) Building information systems. Request that either the local Directorate of Information Management (DOIM), Information Systems Activity, or Deputy Chief of Staff for Information Management develop a cost estimate for information systems support for the proposed project, to include the following information: (BLOCKS 2A2, 17A THROUGH 17G)

(a) Installation name. (BLOCK 17A1)

(b) Permanent project number. (BLOCKS IM, 17A2)

(c) Fiscal year. (BLOCK 1C, 17A2)

(d) Major Army Command (MACOM). (BLOCK 17A4)

(e) USACE district providing support. (BLOCK 17A5)

(f) Project title. (BLOCKS 1H, 17A6)

(g) USAISC Capability Request (CAPR). (BLOCK 17A7)

(h) Information systems design agency, i.e., USACE OR ISC CDR/DIR). (BLOCK 17A8)

(i) Primary facilities, inside the 5-foot [1.53 m] line, installed equipment. (BLOCK 17B1)

(j) Primary facilities, inside the 5-foot [1.53 m] line, equipment in place. (BLOCK 17B2)

(k) Primary facilities notes. (BLOCK 17B3)

(l) Supporting facilities, outside the 5-foot [1.53 m] line, installed equipment. (BLOCK 17C1)

(m) Supporting facilities, outside the 5-foot [1.53 m] line, equipment in place. (BLOCK 17C2)

(n) Supporting facilities notes. (BLOCK 17C3)

(o) Information systems cost estimate. (BLOCK 17D)

(p) Primary proponent fund type, enter OPA, OMA, etc.). (BLOCK 17E)

(q) Remarks. (BLOCK 17F)

(r) USAISC signature block, including title, organization, date signed, date prepared. (BLOCK 17G)

(7) Supporting facilities. Develop preliminary cost data for supporting facilities using either order-of-magnitude estimates contained in AR 415-17 (reference 5-82) or the 1391 Processor. Supporting facilities are those items of construction located outside the 5-foot [1.53 m] line of the facility that are directly related to and required for the support of the primary facility, to include the following items: (BLOCKS 2B1 THROUGH 2B8)

(a) Electrical service.

(b) Water, sewer and gas.

(c) Steam and/or chilled water distribution.

(d) Paving, walks, curbs and gutters.

(e) Storm drainage.

(f) Site improvements and demolition within the site boundaries.

(g) Information systems (see preceding paragraph).

(h) Other supporting items.

(8) Contingency factor. State the percentage of the estimated project value that will be reserved to meet unforeseen occurrences during the contract period. Explain contingency costs that are in excess of five percent of the project amount. (BLOCKS 2C & 3C)

(9) SIOH. Estimate the supervision, inspection and overhead (SIOH) percent and amount. (BLOCK 2D)

(10) Medical equipment. Estimate the Category E equipment for medical projects only. (BLOCK 2E)

(11) Installation costs. Estimate equipment installation costs for M&R projects only. (BLOCK 2E)

(12) Relocatable buildings. Estimate the relocatable building cost for relocatable building projects only. (BLOCK 2E)

(13) Total request. State the total request for project funds. (BLOCK 2E)

(14) Rounded cost. Express the estimated project cost (rounded). (BLOCK 2F)

(15) Other-funded equipment. Estimate the cost of installed equipment from other appropriations. (BLOCK 2G)

(16) Associated costs. State the associated construction costs for M&R and relocatable building projects only. (BLOCK 2G)

(17) Additional personnel. Estimate the number of additional operational personnel required to operate the proposed project. (BLOCK 11F)

(18) Life-cycle, new facility. Estimate the life-cycle cost to operate and maintain the proposed new facility. Provide the estimated life-cycle cost (total cost of ownership) over the projected economic life of the facility, or 25 years, whichever is less. Include cost of construction, operations and maintenance, and residual value at disposal in today's dollars. (BLOCKS 9A THROUGH 9D, BLOCKS 11A THROUGH 11F)

(19) Life-cycle, replacement facility. Estimate the life-cycle cost to operate and maintain the proposed facility if the new facility is a replacement. Provide a comparative analysis of retaining the existing facility versus providing the replacement based on the following information: (BLOCKS 9A THROUGH 9D, BLOCKS 11A THROUGH 11F)

(a) Utilities service different between new and existing facility (yes or no).

(b) Water services, new and existing comparison.

(c) Electrical service, new and existing comparison.

(d) Heating service, new and existing comparison.

(e) Additional capacity or renovation (yes or no).

(f) Design cost, addition or renovation of existing facility.

(g) Project cost, addition or renovation of existing facility.

(h) Related furnishings and equipment. Address requirements for furnishings and equipment to be provided by other-than MCA and other than AFH appropriations. Examples of such equipment include systems pre-wired work stations, chapel furnishings, desks, chairs, beds, and telephone switches and instruments. Provide the following information for this equipment: (BLOCK 2G)

1/ Equipment description.

2/ Procurement appropriation.

3/ Cost in thousands of dollars ($000).

4/ Estimated delivery date.

5/ Estimated installation cost in ($000).

6/ Installing appropriation.

7/ Fiscal year of installing appropriation.

(i) Comparative estimates of the economic life between the proposed facility and renovation of the existing facility. Compare these data with the cost data developed for the proposed project and its life-cycle costs. Select between the alternatives of new construction and retaining the existing facility.

(20) Real property maintenance activity analysis. Enter and calculate the following information: (BLOCKS 9A THROUGH 9D)

(a) The construction category code that applies to the principal use of the project.

(b) The unit of measure.

(c) The units of measure added to the inventory by the project.

(d) An estimate of potential backlog of maintenance and repair (BMAR) and deferred maintenance and repair (DMAR) that will be canceled as a result of this project. Calculate .J, .K, .L, and .M Account funds that will be affected.

(21) International Balance of Payments (IBOP). Indicate that the IBOP cost estimate has been prepared, under either normal or revised procedures, for all projects in foreign countries. (BLOCK 2A0)

d. Justification Information. (BLOCKS 7A AND 7B)

(1) Project. Prepare a one sentence statement of what the project will provide. This statement should reflect only the major facility category code under which the project is programmed. (BLOCK 7A)

(2) Requirement. State why the project is needed now. For M&R projects, state the impact if the project is not provided. Make clear statements on whether the project will reduce excessive maintenance costs, is self-liquidating, providing amortization, is to correct deterioration, etc. Generically list the units to be served to include personnel, vehicles, and aircraft, and new mission or change in present mission. Provide evidence that maximum use is being made of existing facilities. Describe alternates considered during development of this project. For UPH, state both intended (grades and "faces") and maximum (spaces) utilization of the facility in numbers of persons. (BLOCKS 7A AND 7B)

(3) Current situation. State how, and under what conditions, the need currently is being met. Discuss aspects of the present situation such as unfavorable location; environmental problems; adverse health and safety conditions; high maintenance costs; violations of Federal, state, or local laws or regulations; the need to waive existing regulations; and, in the case of replacement projects, state the problems with the present facility that jeopardize mission, lives, or equipment. Analyze deficiencies to include the following: (BLOCKS 7A AND 7B)

(a) Peacetime mission. Describe how facility deficiencies influence mission performance using quantitative data wherever possible. Discuss such problems as numbers of deadlined equipment or vehicles, days of sick leave attributable to poor working conditions, long waiting lists or waiting times, overcrowding, low stockage levels due to lack of storage, distances between currently dispersed facilities accomplishing steps in the same task, etc.

(b) Mobilization missions. Include quantitative data to support mobilization requirements from the Mobilization Troop Basis Stationing Plan (MTBSP), Army Program for Individual Training (ARPRINT), or workload information for government-owned industrial facilities. Do not include classified information.

(4) Impact if not provided. Describe and quantify the manner and extent that mission accomplishment would be affected if the project is not provided, followed by a clear statement of the need that this project will serve. (BLOCK 7A AND 7B)

(5) Addition justification. General information and certain control items will be provided to include the following: (BLOCKS 7A AND 7B)

(a) For mobilization projects, make the statement, "specific mobilization requirement." (ALSO BLOCK 1J1)

(b) To ensure that physical security and CBT/T measures have been evaluated, all projects must be coordinated with the installation Provost Marshal and the Director of Plans and Training. Include one of the following statements: (BLOCKS 22A THROUGH 22C)

1/ "This project has been coordinated with the installation physical security plan, and all physical security and/or CBT/T measures are included."

2/ "This project has been coordinated with the installation physical security plan and no physical security and/or CBT/T measures are required."

(c) Family housing. For AFH construction improvement projects on foreign source dwelling units, identify all improvement and major maintenance work done in the past three years and planned in the following three years.

(d) DDESB approval. When DDESB approval is required, make one of the following statements:

1/ "A preliminary DDESB approval has been obtained."

2/ "DDESB approval has been obtained."

3/ "ASA (IL&E) exemption has been requested/or obtained."

(6) NATO Infrastructure. This block is used only for NATO locations.

(7) Handling classified information. In cases when storage, handling, or use of classified information is included in the project, a TEMPEST risk assessment will be prepared in coordination with the installation security officer. The 1391 Processor provides space for recording the need for and accomplishment of the TEMPEST risk assessment.

e. Back-up Data.

(1) Supplemental data blocks. Supplemental data for each project is developed by the installation and the supporting district as follows:

(a) Estimated annual cost, in today's dollars, to operate the facility to include the following elements: (BLOCKS 9A THROUGH 9D)

1/ Water service, in thousands of gallons [liters] per year.

2/ Electric service, in megawatt hours per year.

3/ Heating service, in millions of British Thermal Units per year.

(2) Economic justification, consideration of alternatives. Present evidence that all alternatives have been examined, evaluated, and adapted or rejected in support of the proposed project. These alternatives should be compared in an economic analysis and should also be used in the environmental assessment of the project. At a minimum, the following alternatives should be addressed: (BLOCKS 9A THROUGH 11F)

(a) Similar on-post facilities. List on-post facilities that could be renovated, expanded, or both, or facilities that could be converted from another use.

(b) Available off-post facilities. List off-post facilities that could be leased.

(c) From civilian sector. State available services/products that could be acquired directly from the civilian sector.

(d) Nearby DoD facilities. List facilities located at nearby military installations where available.

(e) Mobilization Group I. For all projects classified as Group I, additional alternatives will be addressed to include conversion and diversion of existing facilities, leasing and acquiring off-post non-industrial (NIF) facilities, and acquiring temporary structures or facilities.

(3) Environmental consequences. All proposed projects will be evaluated for environmental consequences to include impacts on flood plains, wetlands, and historical and archeological resources. Project documentation will include either a record of environmental consideration or appropriate environmental assessment (EA) documentation. The planning data base should include appropriate statements certifying that the NEPA process has been observed. (BLOCKS 15A, 15B1, 15B2, 16A1, 16A2, AND 18A THROUGH 18F)

(a) Environmental documentation. Environmental documentation must be prepared for all projects. The following paragraphs describe actions to be taken when the documentation has been prepared and conclusions and recommendations have been reached.

1/ No further documentation. When a proposed project requires no further environmental documentation, include the following statement: "The ROD consideration is included in the project files. It has been determined that the action:

a/ ...is adequately covered in the existing (EA or EIS) entitled_____, dated_____.

b/ ...is exempt from National Environmental Policy Act (NEPA) requirements under the provisions of (cite superseding law).

c/ ...qualifies for categorical exclusion number_____, AR 200-2."

2/ EA required. When a proposed project requires an EA, the EA will result in either a finding of no significant impact (FNSI) or the requirement to prepare an environmental impact statement (EIS). Include one of the following statements in the planning data base:

a/ "This project has been assessed. A copy of the draft FNSI, published on ___(date)___, is included in the project file."

b/ "This project will have significant environmental impact and:

1// a copy of the notice of intent to prepare an environmental impact statement and the letter of transmittal to DA is included in the project file."

2// A summary of the (draft or final) EIS, entitled _____, published, _____, and dated _____, is included in the project file."

3/ Survey. All proposed construction sites will be surveyed and evaluated for those environmental attributes and delimiters discussed in the environmental overlay section (see Chapter 4 of these instructions). USACE division review of projects includes inspection for flood plain or wetland involvement. For potential contamination sites, contact the U.S. Army Toxic and Hazardous Materials Agency (CETHA-IR), Aberdeen Proving Ground, MD 21010-5401. Ensure that a clause is included in the construction contract that specifies the category of the construction site, the Government's analysis of current site conditions, and the contractual responsibilities of all parties in the event site problems or contamination are encountered. If the project must be located in a flood plain or on wetlands to function, make one of the following statements:

a/ "This facility is subject to flooding under certain conditions; however, the mission dictates that it be located as proposed. The facility will be designed to minimize:

1// ...adverse affects on flood heights and damages to the structure resulting from floods."

2// ...possible environmental damages caused by encroachment on the flood plain. No practicable alternative exists to the facility as proposed and sited."

b/ "This facility is located on wetlands; however,

the facility will be designed to minimize adverse impacts on the wetlands. No practicable alternative exists to the facility as proposed and sited."

(b) Historic and archeological considerations. Installations having historic properties listed in the NRHP or those properties that appear eligible to be nominated to the NRHP must comply with review procedures discussed in AR 200-2 (reference 5-21). Scheduling of these reviews is critical because lead time required is much greater than for most other project actions. (BLOCKS 18A THROUGH 18F)

7. SHORT-RANGE COMPONENT (SRC) DOCUMENTATION.

a. General. The SRC of the RPMP is dynamic, requiring both MACOM and installation participation in its development. The SRC integrates all projects, regardless of proponent or fund source.

b. The documents of the SRC are as follows:

(1) Overview. This section relates the specific construction and revitalization, maintenance and repair project lists to the CIS. The overview maintains a running record of decisions made regarding the SRC, such as siting, programming sequences and delays, phasing of large programs, and supporting infrastructure needs.

(2) Real property investment plan (RPIP). This document identifies specific programming actions (projects) required to implement the CIS. The RPIP integrates all major maintenance and repair projects and new construction, land acquisition, or revitalization projects for the six-year POM period, regardless of fund source. The RPIP is developed based on the programming and budget guidance (PBG) from the MACOM and consists of the following elements:

(a) MILCON project list. A list will be maintained of each new construction and revitalization project exceeding $200,000 estimated cost. The list should include the project scope and description, number and title, project description, type of funding and estimated cost. The planning data base, described previously in this chapter, supports projects

in the 6-year POM period regardless of fund source. The planning data base ensures that proposed projects have been thoroughly examined by the MACOM before programming begins. Use the project list to accomplish the following tasks:

1/ Projects from year 3 of the POM period that are going to become year 2 projects should be submitted to the MACOM for approval. After the MACOM approves the preliminary submittal, use the planning data base to prepare complete DD Forms 1391 for approved year 2 projects and submit supporting planning documentation, including environmental assessments prepared in accordance with AR 200-2 (reference 5-21). Finalize one project each year as required. The planning data base should be complete enough to facilitate initiation of concept design after project documentation is approved at HQUSACE.

2/ Evolve the planning data base, as described previously, for each renovation or new construction project listed in years 3, 4, 5 and 6 of the POM period. The goal of this effort is to have information of sufficient breadth that DD Forms 1391 can be prepared when these projects approach year 2 of the cycle. Prepare order of magnitude cost estimates based on no more than TAB data and siting as reflected on the future development site plan. These order of magnitude estimates are used to create "budget wedges" for planning "outyears" of the program.

(b) Maintenance and repair project list. A consolidated list of all maintenance and repair projects exceeding $500,000 estimated cost will include no more than the project number and title, a brief project description, and the estimated cost. A planning data base is not needed for maintenance and repair projects. However, the installation should check these projects against the MILCON project list to ensure that new construction or demolition proposals do not conflict with maintenance and repair efforts.

(c) Supporting graphics. Graphics for each revitalization or new construction project exceeding $200,000 should consist of the following elements:

1/ Site plan extract. Prepare a site specific future development plan, with enhanced details relating to the project site. Draw the extract on standard letter-size paper that depicts the site of the project; project name and title; and the site location in relationship to major features on the installation, topography, names of streets and roads nearby, utility lines and connections, and the directional orientation of the plan.

2/ Enhanced environmental overlay. Prepare a letter-size extract of the environmental overlay that depicts the project name and title, environmental factors and delimiters that affect the project site including site-specific factors not visible on the overall environmental overlay. Use of automated equipment and software systems that are compatible between the installation and the supporting USACE division is

recommended to expedite recording and revising the data.

(3) Environmental documentation. Projects in years 1 and 2 of the POM period require environmental documentation prepared in accordance with AR 200-2 (reference 5-21). For projects in years 3 through 6, determine what environmental documentation will be required, e.g., Finding of No Significant Impact (FNSI), Record of Decision (ROD), Environmental Assessment (EA), or Environmental Impact Statement (EIS). Verify that environmental impacts previously identified in environmental documentation of the long-range component are accurate with respect to each individual project.

(4) Mobilization project listing (MPL). The mobilization component (MC) is the installation's plan for facilities, real estate, and utilities, and the additions and adjustments needed to support its changing population and mission in the event of full mobilization. The MACOM-approved MC TAB should serve as the source data for the MPL. Do not prepare planning data bases for mobilization projects. Develop and place the MPL into the DD Form 1391 Processor using the following guidelines:

(a) Non-industrial facilities (NIF). List NIFs that can be secured by lease from the civilian sector. Use code numbers rather than specific titles.

(b) Project grouping. Organize land acquisition and construction projects identified by the MC TAB into the three mobilization category groups discussed earlier in this chapter.

(c) Documentation. Enter the projects on the 1391 Processor as "M" prefix projects, thereby officially posting the MPL at all levels of command.

8. APPROVAL OF THE SHORT-RANGE COMPONENT (SRC). Approval of the SRC, including initial submittal, revisions and updates, will be accomplished in accordance with AR 210-20 (reference 5-1).

a. Programming Certifications. For projects in years 1 and 2 of the POM cycle, HQDA requires certification by the MACOM that all planning and related coordination have been accomplished and that USACE divisions have sufficient information to begin design. Certification requirements are as follows:

(1) MACOM certification. After reviewing the CIS, SRC and DD Forms 1391 with supporting documentation submitted by their installations, MACOMs submit the projects to HQDA along with certification of the following:

(a) Coordination and documentation. MACOM certify that all planning and associated coordination have been accomplished and that project documentation is available. Of extreme importance is verification that the site is free from contaminants, ordnance and explosive waste (OEW)

that would impact the start of construction

(b) USACE review. The project documentation has been reviewed by the appropriate USACE division and found adequate to begin design.

(2) USACE Division certification. USACE divisions review MACOM-approved DD Forms 1391 with supporting justification. This review may include site visits. Any problems are referred back to the installation for resolution. Divisions also review and may revise cost data shown on the documents. Upon completion of the review, the division informs MACOM that, "The project documentation contains sufficient information to begin concept design." The installation and the MACOM are advised when USACE division review is complete.

b. Certification Statements. Certification statements attesting to the above must be included in the transmittal letter forwarding the MACOM submission to HQDA.

c. Design Authorization. After HQDA validates and approves a project, design is authorized. HQUSACE then issues a directive and funds and project design begins.

d. Mobilization Projects. Mobilization projects do not require the above certifications, but must be prepared in accordance with EP 500-1-2, U.S. Army Corps of Engineers Mobilization Operations Planning System (reference 5-83), and AR 415-15 (reference 5-2).

e. USACE Support. Enlist the aid of the supporting USACE division for reproduction and mailing of revised RPMP documents requiring approval.

REFERENCES

5-1 AR 210-20, Master Planning for Army Installations.

5-2 AR 415-15, Military Construction, Army (MCA) Program Development.

5-3 Army Long-Range Facilities Plan (ALRFP).

5-4 Architectural and Engineering Instructions (AEI) "Design Criteria."

5-5 TM 5-841-2, Space Planning Guide for TDA Consolidated Maintenance Facilities.

5-6 TM 5-803-4, Planning for Army Aviation Facilities.

5-7 (unnumbered) DoD Medical Space Planning Criteria.

REFERENCES (Cont'd)

5-8 DODD 4270.5, Military Construction Responsibilities.

5-9 TM 5-838-2, Army Health Facility Design.

5-10 DODD 1225.7, Reserve Component Facilities Program.

5-11 AR 140-478, Facilities, Projects and Programs.

5-12 AR 210-70, Intergovernmental Coordination of DoD Federal Development Programs and Activities.

5-13 AR 25-5, Information Management for the Sustaining Base.

5-14 AR 310-34, Equipment Authorization and Utilization Policies and Criteria.

5-15 AR 385-60, Coordination with Armed Services Explosives Safety Board.

5-16 TM 9-1300-206, Care, Handling, Preservation and Destruction of Ammunition.

5-17 DoD 5100.76-M, Physical Security of Sensitive Conventional Arms, Ammunition and Explosives.

5-18 DoD 6055.9-STD, Ammunition and Explosives Safety Standards.

5-19 AR 200-1, Environmental Protection and Enhancement.

5-20 AR 420-47, Solid and Hazardous Waste Management.

5-21 AR 200-2, Environmental Effects of Army Actions.

5-22 DoD Directive 1338.10, Department of Defense Food Service Program.

5-23 DoD Instruction 4100.33, Operation of Commercial and Industrial-Type Activities.

5-24 AR 210-50, Housing Management.

5-25 AR 415-19, Nonappropriated-Funded Construction Project Development and Approval.

5-26 AR 215-1, Administration of Army Morale, Welfare and Recreation Activities and Nonappropriated Fund Instrumentalities.

5-27 20 USC 631 through 647, as amended.

REFERENCES (Cont'd)

5-28 39 USC 101(g), 401(5), 401(6), and 403(b)(3), Postal Policy, General Powers of the Postal Service, General Duties.

5-29 AR 210-135, Banks and Credit Unions on Army Installations.

5-30 AR 95-2, Air Traffic Control, Airspace, Airfields, Flight Activities and Navigational Aids.

5-31 TM 5-803-7, Airfield and Heliport Planning Criteria.

5-32 AR 210-21, Installations: Ranges and Training Areas.

5-33 AR 415-25, Facilities for Research, Development, Test and Evaluation.

5-34 AR 740-1, Storage and Supply Activity Operations.

5-35 DoD 5210.41-M, Nuclear Weapon Security Manual (U).

5-36 AR 50-5, Nuclear and Chemical Weapons and Material-Nuclear Surety.

5-37 AR 190-13, The Army Physical Security Program.

5-38 AR 385-60, System Safety Engineering and Management.

5-39 National Environmental Policy Act (NEPA) of 1969 PL 91-190.

5-40 Executive Order 11988, Flood Plain Management.

5-41 Executive Order 11990, Protection of Wetlands.

5-42 PL 90-448, the National Flood Insurance Act of 1968 as amended.

5-43 The Coastal Zone Management (CZM) Act, PL 92-583.

5-44 AR 420-74, Natural Resources - Land, Forest and Wildlife Management.

5-45 Executive Order 12114, Environmental Effects Abroad of Major Federal Actions.

5-46 The National Historic Preservation Act (NHPA) of 1966, PL 89-665 (80 Stat 915, 16 USC 470) as amended.

5-47 Procedures and Criteria Necessary For Complying With The NHPA, as amended, Volume 44, Part IV, Federal Register (published in 36 CFR 800).

5-48 TM 5-801-1, Historic Preservation: Administrative Procedures.

REFERENCES (Cont'd)

5-49 TM 5-801-2, Historic Preservation: Maintenance Procedures.

5-50 AR 420-40, Historic Preservation.

5-51 Military Construction Codification Act, PL 97-214.

5-52 Senate Report 97-474, Military Construction Codification Act.

5-53 PL 93-291, Historical and Archeological Data Preservation.

5-54 10 USC 2857, as amended, Use of Renewable Energy Forms.

5-55 TM 5-809-10, Seismic Designs for Buildings.

5-56 AR 385-10, The Army Safety Program.

5-57 AR 735-5, Policies and Procedures for Property Accountability.

5-58 AR 25-1, The Army Information Management Program.

5-59 AR 420-54, Air Conditioning, Evaporative Cooling, Dehumidification, and Mechanical Ventilation.

5-60 AR 190-13, The Army Physical Security Program.

5-61 AR 190-30, Military Police Investigations.

5-62 AR 190-52, Countering Terrorism and Other Major Disruptions on Military Installations.

5-63 AR 525-13, The Army Terrorism Counteraction Program.

5-64 Architectural Barriers Act of 1968.

5-65 AR 405-10, Acquisition of Real Property and Interests Therein.

5-66 10 USC 2672(a), Acquisition: Interests In Land When Cost Is Not More than $200,000.

5-67 AR 405-90, Disposal of Real Estate.

5-68 Section 501, 42 USC 11411 of the Stewart B. McKinney Homeless Assistance Act.

5-69 AR 420-16, Facilities Engineering Reports.

5-70 AR 210-13, General Officers' Quarters and Installation Commanders' Quarters (ICQ) Management.

REFERENCES (Cont'd)

5-71 DODD 4270.34, Host Nation-Funded Construction Programs.

5-72 AR 55-80, Highways for National Defense.

5-73 AR 5-4, OSD Productivity Investment Fund (PIF) Program.

5-74 AR 37-1, Army Accounting and Fund Control.

5-75 AR 5-20, Commercial Activities Program.

5-76 AR 210-25, Vending Facility Program for the Blind on Federal Property.

5-77 Randolph Sheppard Act, PL 74-732.

5-78 10 USC 2803, Emergency Construction.

5-79 10 USC 2854, Restoration or Replacement of Damaged or Destroyed Facilities.

5-80 AR 420-10, Facilities Engineering, General Provisions: Organizations, Functions and Personnel.

5-81 AR 415-28, Department of the Army Facility Classes and Construction Categories.

5-82 AR 415-17, Cost Estimating for Military Programs.

5-83 EP 500-1-2, U.S. Army Corps of Engineers Mobilization Operations Planning System (CEMOPS).

CHAPTER 6

MOBILIZATION PLANNING AND COMPONENT

1. GENERAL. Two engineering documents used to support Army mobilization planning are the Installation Support Book (ISB) and the Mobilization Component (MC) of the real property master plan (RPMP), which was formerly known as the mobilization master plan (MMP). The ISB and MC facilitate the planning, siting, design and construction of facilities needed for mobilization. Space planning criteria, along with recommended M-series building designs, are established in Annex M of the Architectural and Engineering Instructions (AEI), "Design Criteria" (reference 6-1). These criteria apply to Army installations in CONUS which have mobilization missions, including locations in Alaska, Hawaii and Puerto Rico.

a. Obsolete Criteria. This chapter supersedes the Engineering Instructions (EI) for Mobilization Master Planning and Installation Support Books, dated 1982 and 1987, and the 29 June 1992 edition of these instructions.

b. Purpose. This chapter establishes criteria and standards governing the preparation and update of the ISB and the MC of the installation RPMP that are used to support real property aspects of the Army's mobilization mission.

c. Explanation of Terms.

(1) M-Day. The day the Secretary of Defense directs a mobilization based on a decision by the President or Congress, or both.

(2) Phases of mobilization. Generally, the magnitude of the emergency governs the level of mobilization. As authorized by law or Congressional resolution and when directed by the President, the Department of Defense (DoD) will mobilize all or part of the Armed Forces. Concurrently, DoD and other Federal agencies marshal national resources to sustain the Armed Forces. All Major Army Commands (MACOM) should plan and program resources for whatever phase of mobilization is called for, but will assume that there will be incremental increases beyond the specified phase. The phases of mobilization which the planning will address are:

(a) Phase I. The analysis will determine the number of personnel and the increases to the mission that installations will support without the addition of any new facilities. For troop-type installations, capability should show the number of unaccompanied personnel housing (UPH) spaces when measured at 72 net square feet per person [6.7 m2], 54 net square feet per person [5 m2], and 40 net square feet per person [3.7 m2], (as well as the peacetime capability) and the graduated production or throughput rate for U.S. Army Materiel Command (USAMC) and Military Traffic Management Command (MTMC) type installations.

(b) Phase II. This phase involves the mobilization of all the Reserve Component forces and Cadre Divisions, and involves the creation of new units to support a general conflict. This phase is important to deploying units. Plan facilities for these short-term requirements utilizing non-construction alternatives and rapidly erectable light mobilization structures (RELMS).

(c) Phase III. The third phase of mobilization expansion involves population loading, consisting of trainees, which occurs after the deployment phase which results in a peak generally between the 17th and 22nd weeks after M-Day. Plan facilities for these short-term requirements utilizing non-construction alternatives and RELMS.

(d) Phase IV. The fourth time-phased increment involves population loading which constitutes the sustained (steady) load of full mobilization. Planning should meet these longer term requirements by means of major construction (MCA). The "global war" mobilization planning scenario described later in this chapter is based upon this level of mobilization.

(3) Mobilization environment. The Army is currently using four main planning scenarios from among the many that exist. These scenarios, which are presently undergoing change but will remain essentially the same, are as follows:

(a) Eastern conflict. This scenario envisions a regional conflict in the eastern theater to which two Army corps are deployed. A 90-day deployment in the theater of operations is envisioned and is of the "partial mobilization" magnitude. Facility requirements would be met primarily by existing assets and non-industrial facilities (NIF), which are non-Federal facilities occupied on a temporary basis. NIF is governed by AR 500-10, Nonindustrial Facilities for Mobilization (reference 6-2).

(b) Western conflict. This scenario involves a regional conflict in the western theater to which one Army corps is deployed. A 90-day deployment in the theater of operations is envisioned and is of the "partial mobilization" magnitude. Facility requirements would be met primarily by means of existing assets and NIF.

(c) Eastern and western conflict. This scenario involves simultaneous regional conflicts in eastern and western theaters, with two Army corps deployed to the eastern conflict and one corps to the west. Ninety days of operation in each theater are anticipated. This scenario is of the "partial mobilization" magnitude. Facility requirements would be met by existing assets and NIF.

(d) General war. This, the largest of the current planning scenarios, envisions a conflict with eastern European nations and assumes an 18-month conflict with all Army corps being deployed to the theater of operations. This scenario is of the "full mobilization" magnitude and requires military construction in CONUS.

d. Planning Policy. All MACOMs have mobilization plans and planning systems of their own. The U.S. Army Corps of Engineers (USACE) planning system is established by EP 500-1-2, U.S Army Corps of Engineers Mobilization Operations Planning System (CEMOPS) (reference 6-3). The real property aspects of this planning function are largely implemented by the ISB and MC programs. The MC is now a component of the installation real property master plan (RPMP) as specified by AR 210-20, Master Planning for Army Installations (reference 6-4). Medical facilities requirements and assets, although they are the responsibility of the Surgeon General, will be included in the MC. All actions proposed in the MC will be in compliance with Federal law. The following principles will govern the expansion of existing installations or the construction of new installations to meet mobilization needs.

(1) General. A tailored strategy will be developed by each installation to satisfy mobilization construction requirements. The strategy for M-Day to M + 90 days and beyond should take into account the full spectrum of non-construction and construction possibilities, with emphasis on the former, to support the initial surge of Army units and trainees, and the later sustained population. The strategy will be incorporated into each installation's ISB and MC and should consider the following as integral parts:

(a) Non-construction. A few examples of non-construction alternatives are discussed as follows:

1/ Existing unaccompanied enlisted personnel housing (UEPH) capacity compressed to 72 ft2 [6.7 m2] or 54 ft2 [5 m2] and, for short periods, 40 ft2 [3.7m2] per person, as appropriate.

2/ Redesignation or activation of idle facilities.

3/ Evaluation of existing excess capacity to include "cross-leveling" of requirements between Army installations.

4/ Utilities conservation.

5/ Alternate training strategies.

6/ Additional direct and modified direct unit deployments.

7/ Utilization of NIF.

8/ Tents; or RELMS.

9/ Utilization of Federal leased assets.

(b) Construction.

1/ Purchase and construction of commercially available off-the-shelf building systems; or, expedient construction to include RELMS and prefabricated buildings.

2/ M-Series designs and related documents.

(2) New facilities. Mobilization construction of new facilities is based on the sustained mobilization (general war) loading. Use non-construction alternatives and RELMS to accommodate population surges and peaks in those cases where the construction beneficial occupancy date (BOD) does not meet the required occupancy date (ROD), either expedient facilities or non-construction alternatives are programmed to meet the need until the facility becomes available. New construction will be of simple design to save time and critical materials. Total new and existing facilities will not exceed requirements derived from the Mobilization Table of Distribution and Allowances (MOBTDA), Mobilization Army Program for Individual Training (MOB ARPRINT), Health Services Command Mobilization Plan (HSC MOB Plan), each MACOM's MOB PLAN, and the Mobilization Stationing Planning System (MSPS).

(3) Siting. Mobilization facilities will be sited in accordance with the approved installation MC of the real property master plan (RPMP). However, sites for peacetime facilities take precedence over those planned for mobilization, which will not be planned in areas designated for permanent development. The layout and siting of mobilization facilities will be adapted to the existing terrain. Mobilization sites should be arranged to provide economical grading, paving, and utilities. Consideration should also be given to the ease of site restoration when the temporary facilities are removed.

(4) Physically handicapped. In instances where facilities are intended for use by people other than able-bodied military personnel, such as medical facilities and buildings visited by the general public, designs that accommodate the physically handicapped will be in accordance with criteria stated in Annex M of the AEI "Design Criteria" (reference 6-1).

(5) Fallout shelters. Fallout shelters for the protection of personnel against attack by nuclear weapons and chemical and biological agents will not be planned under criteria in this chapter.

(6) Dispersion or camouflage. Protection of installations by means of dispersion or camouflage is not within the scope of these instructions.

(7) Energy conservation. Mobilization facilities will not be designed to meet peacetime energy conservation goals and objectives. However, passive energy design considerations will be included in the site layout to the maximum extent practical.

(8) Fire protection and life safety. Fire protection design and other life safety requirements for mobilization facilities are intended primarily for the protection of building occupants rather than the protection of the facility. Life safety will be established by the provision of adequate exits and a site layout that includes fire equipment access and clear spaces between structures. The requirements of the Uniform Building Code (UBC) for fire area limitations will be used as guidelines.

e. M-series Documents. The M-series documents consist of M-series drawings, standard specifications, mobilization oriented guide specifications, and engineer manuals which replace the obsolete E-series documents. M-series documents are available from USACE district engineer offices.

f. Sizes, Numbers, and Types of Facilities. The sizes and numbers of facilities established by Annex M of the AEI "Design Criteria" (reference 6-1) are those which are required for the housing of soldiers and support activities at operational and training installations. By adjustment, they may be adapted for use at other types of installations, such as arsenals, depots, hospitals, and service schools.

g. Housing for Installation Garrison Personnel.

(1) Garrison personnel. The strength of the garrison will vary depending on the size and type of installation. The installation garrison provides administrative, maintenance, logistics, general housekeeping, and medical and dental support. Use mobilization planning documents, e.g., the MOBTDA, MSPS, or mobilization mission statement to determine garrison strength. The strength of the medical activity will be established by the current mobilization Tables of Distribution and Allowances (TDA) and unit stationing plans.

(2) Civilian personnel. The installation garrison will be augmented by civilian employees. Civilian employees will not be provided with housing, except in isolated communities where adequate off-post accommodations do not exist. Any housing provided to civilian employees will be the same type of temporary facilities as that provided for military personnel of like responsibility and pay scale. Unless authorized by HQDA, family housing will not be provided as part of mobilization construction.

h. Grouping of Facilities. For purposes of planning, site development and space allowances, facilities will be based on battalion-size blocks which are contiguously combined into brigade-size areas. See Chapter 3 of these instructions for a detailed discussion of this concept. Planning for missions that do not involve tactical units should equate to the above unit sizes.

i. Construction Directives. Mobilization construction will be initiated by means of construction directives issued by HQUSACE (AR 415-10, Military Construction - General (reference 6-5)).

2. INSTALLATION SUPPORT BOOK (ISB). The ISB is intended primarily for USACE district or division offices having mobilization construction missions and is mandated by EP 500-1-2 (reference 6-3).

a. General. The primary purpose of the ISB is to provide essential, up-to-date information for use by the Direct Support (DS) and General Support (GS) district offices and on-site field representatives, to design and construct mobilization facilities. By consulting the ISB, the district offices should be able to quickly identify the following:

(1) Key points of contact at the installation.

(2) Restructuring of staff and missions upon mobilization.

(3) Actions regarding current peacetime projects.

(4) Mobilization projects needing immediate initiation.

(5) Sources of standard designs.

(6) Sources of contractors, materials and expertise.

(7) Possible alternatives to design and construction (such as sources of housing, medical facilities, potable water).

b. Approval. If the ISB is prepared by a GS district working under the supervision of a DS district, the DS district will conduct periodic reviews during preparation of the document and will grant technical approval upon satisfactory completion. Regardless of whether the document is prepared by the GS district or in-house by the DS district, the DS district will forward the ISB to the appropriate USACE division for final approval.

c. Preparation Guidance. While in-house preparation of the ISB is emphasized because of the training value to the preparing district, DS district office personnel manage the work. GS district offices accomplish the preparation, which includes field work at the installation. The ISB should be an unclassified working document. An ISB prepared by a GS district office should be submitted to the DS district office before seeking USACE division approval.

d. Outline. Table 6-1 provides an outline for the ISB contents:

TABLE 6-1

OUTLINE FORMAT FOR THE INSTALLATION SUPPORT BOOK

1. Table of contents.

2. Distribution sheet - indicating to which offices the document is sent.

3. Change sheet.

4. Introduction. The introduction of the ISB should contain a description of the relationships of the DS and GS district engineer offices. A plan should be presented regarding changed organizational relationships between USACE supporting district engineer offices, their field offices, and supported Army installations during mobilization. Describe the schedule for review and update of the ISB.

5. Supporting district mission and organization. Describe the following aspects of the district organization during mobilization:

a. Peacetime planning. The on-going mobilization planning activities within the district engineer offices for supported installations should be discussed. Include a priority list of the district's peacetime mobilization tasks and requirements, a list of the installation's Group I projects and alternatives, and an organization chart of the supporting district engineer office, including office symbols, names, locations, room numbers, and commercial telephone numbers should be included.

b. Mobilization. Include a prioritized list of the district's mobilization tasks and projects in a sequence that meets the supported installation's mobilization requirements. Close coordination with the installation is needed because the list of mobilization projects changes with revisions in the mobilization scenario and current situation. A mobilization organization chart with an explanation of the changes from the peacetime chart should be included.

6. USACE field office missions and organization. The missions and organization of the USACE construction field office(s) should be described because they are a critical part of mobilization support. Items such as office space, expansion capability, office equipment, and communication requirements should be addressed.

TABLE 6-1 (Cont'd)

OUTLINE FORMAT FOR THE INSTALLATION SUPPORT BOOK
7. Installation mission and organization. a. Peacetime. Describe the installation peacetime mission, include applicable existing conditions maps and the peacetime installation engineer (Directorate of Engineering and Housing (DEH) or Facilities Engineer (FE) organizational chart. b. Mobilization missions. Describe the installation mission and organizational structure during each of the phases of mobilization (as described earlier in this chapter). Describe the functions of essential elements, referencing the Mobilization Table of Distribution and Allowances (MOBTDA) as needed. c. Work flow diagram. This section should include Mobilization Phase I and Phase II project work flow diagrams, similar to a "Critical Path Method (CPM)," or "Line Chart" along with a brief explanation of each major task. d. Communications. Modes of communication should be described. Telephone networks, telefax, radio, data lines, and other electronic methods should be included. The nearest communication center with the capability to send and receive classified messages should be indicated.
8. Installation environment. A description of the installation's environmental setting does not need to be included if it already exists in the long-range component (LRC) of the RPMP. Reference to the LRC is adequate.
9. Mobilization project information. A mobilization project list of pre-approved MCA projects currently in the 1391 Processor should be provided, with a list of planning criteria, such as M-drawings, and mobilization site and utility plans. A time sensitive list (such as speed of delivery) should be included stating the possible alternatives (construction and non-construction) in providing facilities. Construction industry resources should be described for an area within a 100-mile [160.3-km] radius of the installation, and MOB project bid packages should be listed if they have been prepared.
10. Real estate resources. Discuss the adequacy of the installation real estate to support its mobilization mission. Provide the following lists as applicable: additional real property requirements; installation out-grants (indicating those expiring upon mobilization); excess property (those declared surplus but not yet disposed of); recapturable property; the NIF list (use

TABLE 6-1 (Cont'd)

OUTLINE FORMAT FOR THE INSTALLATION SUPPORT BOOK
numbers only); and any other sources of additional land.
11. Submittal. The completed ISB will be submitted to the appropriate USACE division for review and approval. Courtesy copies of the ISB will be furnished to the supported MACOM and installation, and the appropriate DS district if applicable. Courtesy copies will no longer be furnished to HQUSACE.

3. MOBILIZATION COMPONENT (MC). While the ISB is an internal USACE document, the purpose of the MC is to provide a time-phased evaluation of an installation's capability to meet mobilization requirements by means of facilities, utilities, housing and engineering services. The MC is based on current and planned assets in support of all mobilization phases. The MC compares assets with requirements and discusses ways and means of meeting, alleviating, or reducing the discrepancy between the two on a time-phased basis. The MC is not intended to be a justification document or operational plan. Projects identified must be justified through project justification documents, i.e., the DD Form 1391. In the event of conflicting guidance, these instructions shall govern. A MC should not be prepared before the mobilization mission and other components of the RPMP are available.

a. General Preparation Guidance. Each installation is responsible for its own mobilization planning. USACE provides technical and funding support for preparing and updating the MC. The plans are prepared by the district office tasked to support the installation during mobilization, either DS or GS designation. AE contracts may be used.

(1) Coordination. In all cases, there should be close coordination between the preparing district and each installation. The primary point of contact at each installation should be the master planner or the engineer mobilization planner.

(2) Additional coordination. The U.S. Army Health Services Command (HSC) activity and U.S. Army Information Systems Command (USAISC) will be consulted during all stages of plan development.

b. Approval. There are many actions required by various elements along a chain of offices in order to obtain MC approval.

(1) Security classification. Completed MC will be unclassified to ensure access by personnel at all levels; however, plan preparation requires review of classified documents. District office and consultant personnel performing the planning research usually need a SECRET clearance.

(2) Text and tabular documents. The MC narrative and MCTAB should be in a standard 8-1/2-inch [21.6-cm] by 11-inch [27.9-cm] loose-leaf form and bound in a standard, hard-cover, 3-ring binder. Legal-size paper may be used for the MCTAB. The documents should be filed and updated in commonly used word processing software, preferably the same type and version used by the district and installation.

(3) Plan sheets. Full-size 28-inch [71.1-cm] by 40-inch [101.6-cm] plan sheets, prepared in accordance with TB ENG 353, Installation Master Plan Preparation (reference 6-6), will be retained at GS and DS district offices and installations. The DS district office will make half-size copies for transmittal to CONUSA, MACOM, and the USACE division.

(4) Offices and actions required to execute and obtain approval for a MC are shown in table 6-2 and sample approval statements in table 6-3.

TABLE 6-2

MOBILIZATION COMPONENT DEVELOPMENT AND APPROVAL PROCEDURES

PRIMARY ACTION OFFICE(S)	EVENTS	PARTICIPANTS
Installation	Preparation of draft	MACOM Architect/Engineer other MACOM Support USACE district USACE division SUB-MACOM \1 North Central Div \2
Installation staff	Review	MACOM (staff) Other MACOM SUB-MACOM* CONUSA North Central Div \2
Architect/Engineer	Review meeting	Installation Support district MACOM USACE division Other MACOM North Central Div \1 SUB-MACOM \1 CONUSA North Central Div \2 USAR Support Gp \1

TABLE 6-2 (Cont'd)

MOBILIZATION COMPONENT DEVELOPMENT AND APPROVAL PROCEDURES

PRIMARY ACTION OFFICE(S)	EVENTS	PARTICIPANTS
Support district	Final report	USACE division North Central Div \2 MACOM
Installation (Commander)	Installation approval	USACE division
USACE MSC (division)	Technical review	USACE division North Central Div \2
MACOM (staff)	Functional adequacy approval	MACOM Other MACOM CONUSA SUBMACOM \1 USAR Support Gp \3
MACOM (Commander)	Command approval	Based on staff recommendations

\1 Applies to USAMC installations only.
\2 Applies to USAMC and MTMC installations.
\3 Applies to MACOMs who utilize USAR manpower to assist with review.

TABLE 6-3

SAMPLE APPROVAL STATEMENT	
INSTALLATION ENGINEER (Director of Engineering and Housing (DEH)):	
I certify that this Plan has identified the facilities required of this installation during mobilization. This Plan is not in conflict with the other components of the Installation Real Property Master Plan, and has correctly identified the full and expanded capabilities of the installation.	
_____ Director of Engineering and Housing	_____ Date
_____ Engineer District Technical Approval	_____ Date
_____ MACOM Functional Approval	_____ Date

c. Mobilization Component Tabulation (MCTAB). The MCTAB will contain two separately tabbed sections to include:

(1) Section I - This section will be a summary of deficiencies and mobilization construction projects. List category codes, facility types, scope, mobilization group, project form number or Non-industrial facility number, latest start date, required occupancy date (ROD), and M-Drawing design criteria for each limitation identified in the MC narrative report.

(2) Section II - This section consists of the mobilization tabulation itself.

(3) The format for the MCTAB cover sheet is provided in table 6-4.

TABLE 6-4

COVER SHEET FOR MCTAB

MOBILIZATION TABULATION OF EXISTING AND REQUIRED FACILITIES

_____
(NAME OF INSTALLATION)

_____
(LOCATION)

PREPARED BY: _____
(ORGANIZATION)

APPROVED BY THE REAL PROPERTY PLANNING BOARD: _____
(SIGNATURE)

_____
(TITLE)

_____
(DATE)

TABLE 6-5

TYPICAL LAYOUT FOR MOBILIZATION TABULATION FORM SHEETS \1

MOBILIZATION TABULATION PAGE___OF____

INSTALLATION:_____ DATE:_____

(a)	(b)	EXISTING ASSETS				(g)	(h)	(i)	(j)
		(c)	(d)	(e)	(f)				
PHASE I:\2									
PHASE II:\2									

\1 The Mobilization Tabulation should be bound so that revised sheets may be easily substituted for the originals.

\2 List separate entries for each phase when the requirements are different.

COLUMN HEADINGS:

(a) Construction Category Code and Facility Class
(b) Unit of Measure
Existing Assets:
- (c) Permanent
- (d) Semi-Permanent
- (e) Temporary
- (f) Total Existing

(g) Balance
(h) Excess
(i) Shortfall
(j) Remarks

MOBILIZATION TABULATION INSTRUCTIONS

Column (a) - Group and list by 5-digit category code (AR 415-28, Department of the Army Facility Classes and Construction Categories, reference 6-7) facilities, existing or planned, that best describes the category of facility needed to meet the installation's mobilization requirements.

Column (b) - Use the unit of measure from the construction use column.

Column (c), (d), and (e) - Enter the number of units in the appropriate column of all existing facilities, permanent, non-permanent and total as defined in AR 405-45, Inventory of Army Real Property (reference 6-8).

Column (f) - Total all types of existing facilities (c+d+e).

Column (g) - Enter required total units of facilities based on missions and space criteria for each phase of mobilization (I and II).

Column (h) - Enter, in units of measure, the shortfalls between the quantity required and existing facilities (g minus f) needed to support each phase of the process (I and II).

Column (i) - Enter, in units of measure, the excess (f minus g) of facilities in each category for the sustained load (phase II).

Column (j) - Enter information referencing entries in the other columns. A listing of facility (building) numbers of facilities counted in columns c,d, and e is added to the TAB as an enclosure to eliminate extending the actual pages of the TAB. Remarks referring to column g must indicate the reference, paragraph and page number of the criteria establishing the requirement. If the requirement is based calculations, enter the values used. If a deficiency is shown (column h) column j must include one of the following remarks:

o The construction project number, as identified on the installation mobilization project listings.

o If the requirement is met by NIFs, list the installation's NIF number from block 1 of the submitted DD Form 26-2.

o If other methods are used to meet requirements, including diversion of facilities, explain in column j. Should the deficiency be "scheduled around" or not considered as a requirement by the installation, state this fact here.

o Facility conversions for mobilization should be identified by building number.

d. Summary of Requirements and Mobilization Project List (MPL). Major shortfalls and all mobilization actions and projects derived from the MCTAB are classified in one of the following groups. These are summarized, and pre-approved projects are listed on the MPL, which is resident within the CAPCES System:

(1) Group I. Includes those actions and projects that are designed, constructed or implemented prior to the order to mobilize which comply with peacetime practices and construction procedures, and fall into both the regular peacetime budgetary program as well as the mobilization program. Also included in Group I construction are the projects required for deployment facilities to make the installation an adequate power projection platform (PPF).

(2) Group II. Includes those projects and actions that are completely planned and designed prior to mobilization. Construction projects will comply with mobilization sustainment requirements and criteria, and are to be implemented or constructed after receipt of the order to mobilize, unless earlier action is permitted by Congressional authority.

(3) Group III. Includes those projects and actions that are to be designed and constructed or implemented after receipt of the order to mobilize, but which should be planned prior to the receipt of mobilization orders.

e. Narrative. Two formats for the MC narrative are shown on the following pages. Tab each section of the narrative. Each section will have its own summary and conclusions. The narrative report is a specific, time-phased executable plan to meet installation mobilization requirements, which must present solutions drawn from the recommendations, approved in preliminary analysis, including project numbers, description and scope. Use the first format for all installations that are not under the command of USAMC. Table 6-6 provides an outline for the mobilization component narrative report for all MACOM except USAMC, followed by table 6-7 which provides a sample population chart indicated in the component narrative, and table 6-8 provides the outline for mobilization narrative for USAMC.

TABLE 6-6

OUTLINE FOR MOBILIZATION COMPONENT NARRATIVE
(ALL MACOM EXCEPT USAMC)
o The narrative report is a specific time-phased plan to meet installation mobilization requirements. It must present solutions from the recommendations approved in the preliminary analysis, including project numbers, description, and scope. Assign mobilization construction group numbers to projects based on guidance contained in Annex N, AMOPES (additional reference 6A). The narrative report consists of a table of contents, an executive summary, and six sections as shown in the following paragraphs.
o Executive summary (EXSUM). The executive summary is a concise (5 - 10 pages) generalized overview of the MC to include purpose and scope, mobilization missions, basis for plan, population, restrictions and limitations, requirements, and shortfalls. The EXSUM will contain conclusions and solutions to the installation's mobilization requirements. It will especially comment on the installation's capability during a crisis response to meet contingency operations and as a power projection platform.
o Section I - Mission and operations concept. Analyze all missions

TABLE 6-6 (Cont'd)

OUTLINE FOR MOBILIZATION COMPONENT NARRATIVE
(ALL MACOM EXCEPT USAMC)
assigned to the installation. Population documents, profiles, and loadings that include assigned units (active and reserve components), trainees and students, and all TDAs are part of this section as are assumptions, methodology, and major missions (to include medical). Present the purpose, scope, goal and objectives of the MC. Discuss the installation's organizations, goals, objectives, goals, objectives, constraints and potential. Present the use of facilities, land, and other resources in support of mobilization missions.
o Section 2 - Transportation analysis (on and off-post) - Present a description and analysis of on-post and regional off-post transportation networks and supporting facilities (i.e., terminals) in this section which would present the installation as a power projection platform. Discussions on capabilities of sea and aerial ports of embarkation (SPOE, APOE) off the installation should be included in the power projection analysis, but are not a part of the MC unless the unit deploys from installation facilities. APOE/SPOE support requirements are discussed in the installation mobilization plan (IMP).
o Section 3 - Utility systems analysis. Analyze the capabilities of existing utility systems to support population increases and surges during mobilization. Analyses are not based on averages for past years although these data may be presented for information. Per capita allowances for water and sewage are 100 gallons per capita per day (GPCD) [379 l per day] and 70 GPCD [265 l per day], respectively. A complete listing of water and sewage allowances is presented in the other tables in this chapter. Include charts and summaries for each utility, with major summary charts at the end of the section. Use effective populations developed by the Directorate of Plans, Training (DPTM) in section 1 for the analysis of utility systems.
o Section 4 - Environmental analysis. Analyze the anticipated stress on the environment as a result of mobilization activities. Identify impacts of the proposed action on historical sites, the ecology, the environment, wildlife, visual quality, noise, odors and health and safety if they occur. The preparation of a separate Environmental Assessment (EA) is not required for this document, but is a part of the Long-Range Component (LRC) of the RPMP.
o Section 5 - Land use and facility analysis.

TABLE 6-6 (Cont'd)

OUTLINE FOR MOBILIZATION COMPONENT NARRATIVE
(ALL MACOM EXCEPT USAMC)
- Analyze the capability of existing facilities to meet mobilization requirements. Analyze both the capacity to meet a crisis response (phase I) and the requirements of reconstitution (phase II). Include the utilization of excess facilities to meet shortfalls in categories of facilities. As a minimum, include analyses of training facilities; ranges and maneuver areas; billeting; dining; administrative; maintenance; storage; medical; and community/morale and welfare facilities. Include a time-phased detailed facility analysis that displays assignment of assets to support the requirements for both phases of the MC.
- Phase I should analyze the capability of an installation to mobilize and deploy forces. The analysis should assume each installation is a power projection platform for active units and reserve component units deploying through the installation.
o The facilities associated with deployment are railroads; rail marshalling areas with loading docks and covered storage; stock breakdown; and containerized storage facilities; airfields-to include the runways, taxiways, ramps, ammo loading facilities, loading ramps, and departure control area (DAAG) processing facilities; storage facilities for unit contingency stocks, installations contingency stocks to include CONUS replacement center storage, and deployment ammo requirements; and other administrative, transportation, storage, operational facilities, and lighting for operational areas and facilities.
o Analyze the use of facility diversions, expedient construction, and non-construction alternatives needed to meet peak loading and shortfalls caused by beneficial occupancy dates (BOD) that do not meet required occupancy dates (ROD).
o Refer to lists of construction projects, NIF, real estate acquisition and revocation of outgrants included in the appendices. Utilize mobilization M-Drawings of facilities where they are available. Base billet capabilities upon published criteria of 72 SF [6.7 m2] per trainee for BT, OSUT, and OCS, and 54 SF [5 m2] per person. Hospital bed patients get 72 SF [6.7 m2] per patient. Base all discussions in the analysis on the MC TAB or include a comment why the deficiency is not addressed.
o Land use. Reference to the Mobilization Reservation Plan and Mobilization Site Plan here. Describe the proposed land use

TABLE 6-6 (Cont'd)

OUTLINE FOR MOBILIZATION COMPONENT NARRATIVE

(ALL MACOM EXCEPT USAMC)

area allocations along with the predominant existing and proposed facilities within each land use area. Use graphical displays to define the land use areas.

o Section 6 - appendices. Present appendices that support the MC and provide additional information. The appendices are tabbed will include, but are not limited to the following:

- Construction list. This appendix is a listing of mobilization projects which include project number (this should be the DD Form 1391 form number), description, category code, mobilization group, required occupancy date, late start date, scope, unit of measure, and installation priorities. Cost data is not required in this listing. The preparation of DD Forms 1391 is not a part of this MC effort. Do not include DD Forms 1391 in the MC.

- Non-industrial Facility (NIF) List. List all NIFs requested by the installation including those required by HSC to support the medical activity (MEDDAC). Include the installation number, intended facility, the capacity with unit of measure, date requested, and allocation date and allocation number. All data are taken from the DD Forms 26-2. Also include the date that the facility is required. Do not identify the name of the facility on this list.

- Maneuver Land Requirements. List the amount of land needed for each requirement. Do not list specific lands owned by private interests. The summary will reflect the total land required, as determined in the MC TAB from both phases.

- Real Estate. List land and other facilities required to support the installation mobilization mission. Also list revokations of existing outgrants by lease, licenses, permits, and easements.

- Population Charts. Show how the population changes at and during all phases of mobilization by type (i.e., permanent party, BT, AIT, OSUT, etc.). The development of the population data is the responsibility of the Operations Directorate (DPTM) at the installation level and is the source of accurate population for population data for the MC.

- Units Stationed or Mobilizing at the Installation. This is a

TABLE 6-6 (Cont'd)

OUTLINE FOR MOBILIZATION COMPONENT NARRATIVE
(ALL MACOM EXCEPT USAMC)
listing of all units for which the installation will provide facilities. Provide mobilization station arrival and departure dates for each unit. Indicate which units are not deployers and become part of the installation permanent party or are picked up in the installation MOBTDA.
- Barracks Capacities. List all facilities used for barracks with the capacity displayed on a room-by-room analysis for 72 SF [6.7 m2] per person, 54 SF [5 m2] per person, and 40 SF [3.7 m2] per person. The 40 SF [3.7 m2] per person is used only for short periods of time, with the approval of the senior medical officer and is not to be used as a general planning factor.
- Glossary, Abbreviations and Acronyms. This appendix is a listing of standard terms, abbreviations and acronyms used in the documents and in mobilization planning.
- Other appropriate appendices. Examples of other appropriate appendices include the MOBARPRINT loads, dining facility assignments, expedient facilities requirements, unit bivouac locations, and other impacted facilities displays.

TABLE 6-7

SAMPLE POPULATION CHART FOR MOBILIZATION COMPONENT NARRATIVE

AS OF:15SEP89	CRISIS RESPONSE		RECONSTITUTION (WEEKS)		
CATEGORY	200000	PARTIAL	M+0	M+1	M+30
PERM PARTY/UNIT	PPU				
OFF/WO	200	683	715	1003	1242
ENLISTED	1200	6481	6559	7349	8257
SUBTOTAL	1400	7164	7274	8352	9499
=DEPLOYERS	DPL	DPL	DPL	DPL	DPL
OFF/WO	989	1264	1513	2098	2043
ENLISTED	9874	12072	13750	16845	16289
SUBTOTAL	10863	13336	15263	18943	18332

TABLE 6-7 (Cont'd)

SAMPLE POPULATION CHART FOR MOBILIZATION COMPONENT NARRATIVE

AS OF:15SEP89	CRISIS RESPONSE		RECONSTITUTION (WEEKS)		
CATEGORY	200000	PARTIAL	M+0	M+1	M+30
=TDA	TDA	TDA	TDA	TDA	TDA
OFF/WO	1194	1194	1194	2064	2934
ENLISTED	4626	4626	4626	5727	6827
CIVILIANS	5199	5199	5199	5800	6400
SUBTOTAL	11019	11019	11019	13591	16161
=TRAINEES	TNE	TNE	TNE	TNE	TNE
REC STATION	660	660	660	557	388
BT/OSUT	7100	7100	7100	7602	7942
AIT	0	0	0	0	0
OCS	360	360	360	360	360
OFF	1074	1074	1074	926	1093
CIVILIAN	0	0	0	0	0
OTHERS	1485	1485	1485	1243	1340
SUBTOTAL	10679	10679	10679	10688	11123
=OTHERS	OTH	OTH	OTH	OTH	OTH
CRC					
OFFICERS	0	0	0	0	240
ENLISTED	0	0	0	0	2160
SUBTOTAL	0	0	0	0	2400
=RETIREES	RET	RET	RET	RET	RET
OFFICERS	0	0	0	2016	2145
ENLISTED	0	0	0	5637	5996
SUBTOTAL	0	0	0	7653	8141
=IRR	IRR	IRR	IRR	IRR	IRR
OFFICERS	0	0	0	453	2334
ENLISTED	0	0	0	1168	6001
SUBTOTAL	0	0	0	1621	8335
PATIENTS	287	287	287	287	287
CONFINEMENT	76	76	76	164	592
EPW	0	0	0	0	0
CIVILIANS (OTHER)	2632	2632	2632	2950	3275
CIVILIANS (CTR)	1497	1497	1497	1650	1800
DEPENDENTS O/P	11307	11307	11307	11307	11307
=TOTALS					
OFF/WO	3457	4215	4496	8560	12031
ENLISTED	24183	31662	33418	45696	55099
TOTAL MILITARY	27640	35877	37914	54256	67130
CIVILIANS	9328	9328	9328	10400	11475
OTHERS	1485	1485	1485	1243	1340
DEPENDENTS O/P	11307	11307	11307	11307	11307
=EFFECTIVE POP	43541	51778	53815	70273	83602

TABLE 6-7 (Cont'd)

SAMPLE POPULATION CHART FOR MOBILIZATION COMPONENT NARRATIVE

AS OF:15SEP89	CRISIS RESPONSE		RECONSTITUTION (WEEKS)		
CATEGORY	200000	PARTIAL	M+0	M+1	M+30
HOUSING	HSN	HSN	HSN	HSN	HSN
BOQ/VOQ/TRANSIT	1468	1468	2936	2936	2936
BEQ/EPH/VEQ	24358	24358	30633	33063	38931
FAMILY OFF	771	771	771	771	771
FAMILY ENL	3311	3311	3311	3311	3311

POPULATION DATA FORM INSTRUCTIONS

o Data sources should be from the latest run of the Mobilization Stationing Planning System (MSPS), the "required" line of the FY MOBARPRINT, the approved MOBTDA, and individual ready reservists (IRR) and retirees from the latest Army Personnel Center (ARPERCEN)-provided mobilization personnel (MOBPERCEN) data.

o Permanent Party/Unit: Include all TO&E unites here which are not scheduled to deploy. TDA augmentations TO&E units are counted under the TDA column. Units designated as deployers without deployment dates are still counted as deployers (i.e., quick-fix or other scenarios). Count all other units (i.e., TO&E training divisions, personnel replacement companies for the CONUS replacement centers, and BASOPS units) as permanent party, unless they are incorporated into a MOBTDA as are most training base units. These are counted on the TDA.

o Do not identify units by name. Round dates up two days or down three days to place in weekly columns. Trainees are already identified in weeks from the MOBARPRlNT.

o Trainees: Include all (PCS students, TDY students, Trainees, and receptees) persons attending courses on the installation. Use the required structure load from the ARPRINT.

o Although numbers for the CONUS Replacement Center (CRC) do not break down officers and enlisted, use the planning figure of 10 percent for officers and 90 percent for enlisted. The total numbers for each CRC have been provided separately by TRADOC.

o Numbers for bed patients at the installation should come from

POPULATION DATA FORM INSTRUCTIONS (Cont'd)

the changes to the HSC MOB Plan. Confinement requirements for TRADOC installations are contained in the TRADOC Mobilization Operations Planning System (TMOPS) or can be obtained from the corrections personnel in the FORSCOM or TRADOC Security and Law Enforcement Office. Enemy Prisoner of War (EPW) requirements for those installations affected were provided by FORSCOM J3 Force Stationing Branch. o Retirees and IRRs are taken from periodic data lists provided by ARPERCEN to the installation. o Only civilians identified on the installation TDAs to include TDA augmentations to&Es should be placed in the TDA column. Other civilians hired by the Government who are not on a TDA (i.e., NAF) should be included in the "Other Civilian" category. All contractor personnel working on the installation are to be placed in the "Civilian" (CIV) category.

f. Units stationed and mobilizing at the installation. Provide a listing of all units for which the installation will provide facilities. Provide the mobilization station arrival and departure date for each unit. Indicate which units are not deployers and become a part of the installation permanent party or are acquired on the installation MOBTDA.

g. Barracks capacities. List all facilities used for barracks with the capacities displayed by a room-by-room analysis using the mobilization space criteria given later in this chapter. List the capacity of each space when 72 ft2 [6.69 m2] 54 ft2 [5.02 m2] and 40 ft2 [3.72 m2] per person are used. The 40 ft2 [3.72 m] is used only for short periods of time with the approval of the senior medical officer and is not a general planning factor.

h. Glossary, abbreviations and acronyms. Provide a listing of standard terms, abbreviations and acronyms used in the MC and in mobilization planning.

i. Other appropriate appendices. Examples of additional appendices include MOBARPRINT loads, dining facility assignments, expedient facilities requirements, unit bivouac locations, and other impacted facilities displays.

TABLE 6-8

OUTLINE FOR MOBILIZATION COMPONENT NARRATIVE
(FOR AMC INSTALLATIONS)

1. Table of contents.

2. Executive summary.
   a. Summary of mission.
   b. Summary of limitations.
   c. Summary of major recommendations and conclusions.

3. Introduction.
   a. Purpose and scope.
   b. Authorization for and applicability of the mobilization component (MC) of the real property master plan (RPMP).
   c. Mission and operations.
      (1) Installation history.
      (2) Mobilization mission - brief discussion.
      (3) Tenants - brief discussion.
      (4) Satellite activities.
      (5) Installation support agreements.

MISSION AND OPERATIONS - This section of the report should briefly discuss each major mission, such as: production for AAPs; supply or maintenance for depots, or both; administrative; testing; training; and resources available to meet the mission, for example, number of lines, igloos, and whether it will expand, decrease, or remain unchanged during mobilization. A storage analysis, including incoming and outgoing items, limitations, and/or residual capacities should be included with each "mission" as appropriate.

TENANT ACTIVITIES - This section of the report should identify major tenants and their missions not in support of the installation; whether each tenant will likely remain or not upon mobilization should be discussed; and their mobilization requirements in terms of buildings or land areas, or both, should be identified.

MOBILIZATION LAND USE PLAN. This section of the report should include a presentation of sketches along with the planning rationale and development policy for mobilization land use arrangement. Any collective actions necessary between the master plan components should be identified. A mobilization land use plan and discussion of significant land use changes should be included (the peacetime and mobilization land use plans may be combined if identical or if the changes are minor and can be clearly shown on a single plan).

ON-INSTALLATION CONDITIONS. This section of the report should consist of a concise and comprehensive analysis of significant

TABLE 6-8 (Cont'd)

OUTLINE FOR MOBILIZATION COMPONENT NARRATIVE
(FOR AMC INSTALLATIONS)

on-installation conditions affecting the installation development, including the following:

1. Natural Environment. (Describe and measure the degree of change from baseline conditions established by the long-range component. Recommend the type of environmental analysis required to support the MC. See AR 200-2, Environmental Effects of Army Actions (reference 6-9) for elements that should be analyzed, and address the following:

a. Surface and Subsurface Geology.
b. Topography.
c. Hydrology (include a discussion of any flooding problems and delineation of the flood plain on a map)
d. Land Management.

2. Existing and Planned Population Levels.

3. Existing Land Use Analysis (including peacetime land use plans).

a. Land Use Patterns.
b. Land Use Relationships.
c. Land Use Classification (identify areas not suitable for development, such as, flood plains, wetlands, cemeteries, ranges).

4. Installation, Federal, and Community Interface.

a. Land Leases and Easements (such as, grazing, harvesting, and timber).
b. Cooperative Service Agreements (such as, hospitals and cooperative fire fighting support).

OFF-INSTALLATION CONDITIONS AND SUPPORT ANALYSIS. This section of the report should consist of a concise and comprehensive analysis of off-installation conditions affecting the installation mobilization development. This section may be summarized if there is an existing long-range component and off-installation conditions do not impact on mobilization. If this section is summarized, the MC will reference the date of the installation RPMP and the table of contents will note that Section 3 is summarized.

1. Geographic Location.

TABLE 6-8 (Cont'd)

OUTLINE FOR MOBILIZATION COMPONENT NARRATIVE
(FOR AMC INSTALLATIONS)

2. Climate.

3. Vegetation and Wildlife (habitat and endangered species near the installation).

4. Socioeconomic Conditions.
   a. Population.
   b. Housing.

5. Transportation Systems.
   a. Road Network.
   b. Railroad Service and Terminals.
   c. Airports.
   d. Water Terminals.
   e. Public Transit (regional and to the installation from local communities).

6. Community Land Use.
   a. Existing Land Use Patterns.
   b. Existing Land Use Controls and Restrictions.
   c. Projected Land Use and Development Trends.

7. Regional and Local Planning.
   a. Local and Regional Land Use Plans.
   b. Land Use Control.
   c. Environmental Regulations (required or applicable under mobilization, or both).

TRANSPORTATION ANALYSIS (On-and Off-Installation). This section of the report should address existing transportation networks on the installation and their relationship to off-installation facilities and to land use areas, including parking.

1. Highways.

2. Railroads.

3. Airfields.

4. Limitations.

UTILITY SYSTEMS AND SOLID WASTE ANALYSIS.

1. Utility services at each echelon, such as electrical supply,

TABLE 6-8 (Cont'd)

OUTLINE FOR MOBILIZATION COMPONENT NARRATIVE
(FOR AMC INSTALLATIONS)

sewage disposal, steam, and water supply will be provided on the basis of actual needs at each installation. Utilities will be as simple as practicable but of such permanency as to serve the installation without requiring extraordinary maintenance during the life of the buildings. Under EP 500-1-2 (reference 6-3), utility systems have been evaluated for installations with mobilization missions. Where remote sites are necessary, utilities should be preplanned. This information is contained in the ISB, MC, and other planning documents for each installation. In view of the long long lead time, which may be needed for mechanical equipment, new facilities needed for expansion or remote sites should be contracted as early as possible to prevent unnecessary delay in mobilization efforts, such as:

a. Electric Power (Category Code 810). Standby electrical power equipment will be provided only as authorized in AR 420-43, Electrical Services (reference 6-10).
b. Heat and Refrigeration (Category Code 820). Cooling will be provided only where needed for functional or operational purposes. Heating will be provided in accordance Chapter 13 of the AEI "Design Criteria." (reference 6-1).
c. Sewage and Waste (Category Code 830).
d. Water (Category Code 840).

2. This section of the report should compare current availability and capacities with mobilization requirements for the installation and all tenants. Tenant requirements should be identified if their requirements are significant and can be separated. If not, a statement that tenant requirements are included in the analysis will suffice.

3. Water System.

a. Domestic Requirements (TM 5-813-1, Water Supply Sources and General Considerations (reference 6-11)).
b. Industrial Requirements.
c. Fire Protection (TM 5-813-6 Water Supply for Fire Protection (reference 6-12).
d. Storage and Distribution (TM 5-813-4, Water Supply Water Storage (reference 6-13)).
e. Limitations.

4. Waste Water System.

TABLE 6-8 (Cont'd)

OUTLINE FOR MOBILIZATION COMPONENT NARRATIVE
(FOR AMC INSTALLATIONS)

a. Collection (TM 5-814-1, Sanitary and Industrial Wastewater Collection, Gravity Sewers and Appurtenances, (reference 6-14)).
   (1) Sanitary.
   (2) Industrial.
   (3) Storm.
b. Treatment (TM 5-814-3, Domestic Wastewater Treatment (reference 6-15)).
   (1) Industrial and Hazardous Wastes.
   (2) Domestic.

5. Solid Waste (TM 5-814-4, Incineration (reference 6-16)).
   a. Operation and Location.
   b. Life Expectancy.
   c. Limitations.

6. Electrical System.
   a. Supply Source.
   b. Substations.
   c. Distribution.
   d. Back-up and Emergency Systems.
   e. Electrical Energy Consumption.
   f. Limitations.

7. Process Power.
   a. Fuel.
   b. Steam.
   c. Limitations.

8. Heating Fuel.
   a. Fuel Sources.
   b. Fuel Availability.
   c. Alternatives.
   d. Distribution.
   e. Limitations.

Information Systems.

1. Telephone.

2. Radio and television.

3. Data processing and transmission systems.

4. Cables, vaults and antenna systems.

TABLE 6-8 (Cont'd)

OUTLINE FOR MOBILIZATION COMPONENT NARRATIVE
(FOR AMC INSTALLATIONS)

5. Auxiliary Systems.
   a. Fire Alarm.
   b. Air Raid.
   c. Security.

6. Limitations.

MANMADE ENVIRONMENTAL CONDITIONS (measure change from baseline conditions established in the long-range component).

1. Air Operations.

2. Explosives.

3. Outdoor Firing Ranges.

4. Hazardous Materials.

5. Electromagnetic.

6. Radiation.

SUMMARY OF LIMITATIONS.

MOBILIZATION REQUIREMENTS.

1. Mobilization Project Listing. A listing of mobilization requirements should be presented which includes category code descriptions, group numbers, category codes, a summary of major shortfalls, and estimated design and construction times.

2. Project Siting Rationale. The rationale for locating major facilities should be summarized. Potential availability of off-installation facilities, in lieu of mobilization construction projects, should be briefly discussed.

3. Project Alternatives and Impacts. This section of the report should be based on the assumption that mobilization will occur without an adequate preparation period. Expeditious alternatives to Group I and II projects should be identified and discussed. If variance from a regulation or established guidance is required, the regulation or guidance should be referenced. Examples of alternatives may be open storage or reduced storage, in lieu of required igloos; commercial facilities, in lieu of administrative areas; and

TABLE 6-8 (Cont'd)

OUTLINE FOR MOBILIZATION COMPONENT NARRATIVE (FOR AMC INSTALLATIONS)
reduced speeds and increased maintenance, in lieu of track upgrades. If no alternative exists, for example a new production line, the report should so state and identify the impacts, such as, "no production of ammunition for 30 months."
4. Residual Assets. A discussion of additional capabilities, including under utilized land which could be developed for a more intense usage, should be included. If there are no additional capabilities or under-utilized land, a statement to that effect should be included.

j. Mobilization Site Plans.

(1) For those RPMP sheets that have mobilization construction sited on them, the sheet legend will contain a list of project numbers, description, DD Form 1391 number, and scope.

(2) Use M-Series Drawing footprints in siting all projects for which standard designs are available.

(3) List project numbers and titles on the sheet adjacent to each site.

(4) Ensure that all projects on the mobilization project list are sited on the mobilization site plans.

(5) All sitings will be made in accordance with Chapters 3 and 5 of these instructions.

4. UTILITIES PLANNING FACTORS. Utilities planning factors are much more conservative than those used during peacetime. The following tables represent guidelines for utilities planning under full mobilization conditions.

a. Mechanical Guidelines. Mechanical guidelines are shown in table 6-9.

TABLE 6-9

SUGGESTED
MECHANICAL GUIDELINES

	English Standard	[Metric Standard]
Mechanical Function:		
Nominal Design Temperature (Inside):	F	[C]
Heating - Comfort	68	20.0
Shops	60	15.6
Storage (Except medical facilities)	40	4.4
Heating:	80 Btu per ft2	[861 Btu per m2]
Nominal inside design temperatures:		
Heating - comfort	68 degrees F	[20.0 degrees C]
Shops	60 degrees F	[15.6 degrees C]
Storage, except medical	40 degrees F	[4.4 degrees C]
Air-conditioning:	ft2 per ton	[m2 per ton]
Comfort (such as administration	300	[28]
and offices)	78 degrees F	[25.6 degrees C]
ADP and Communications Facilities	95	[8.8]
UOPH and UEPH	450	41.8
Dining Facilities	200	18.6
Hospitals	250	23.2
ADP, medical, and communications - as required by function.		
Fuel storage requirements for heating fuels - 30 days storage.		

b. Per Capita Water Allowances.

(1) Capacity factors, fire flow requirements, and fire hydrant spacing requirements will be the same as EM 1110-3-160, Water Supply, General Considerations - Mobilization Construction (reference 6-17), EM 1110-3-161, Water Supply, Sources - Mobilization Construction (reference 6-18), EM 1110-3-162, Water Supply - Water Treatment - Mobilization Construction (reference 6-19), EM 1110-3-163, Water Supply, Water Storage - Mobilization Construction (reference 6-20), EM 1110-3-164, Water Supply, Water Distribution, - Mobilization Construction (reference 6-21), and EM 1110-3-166, Water Supply, Fire Protection - Mobilization Construction (reference 6-22), and for mobilization designs.

(2) Materials for construction which are less critical from the standpoint of war production should be utilized; for example, cement products rather than steel products should be used. Clay, concrete, and bituminized fiber pipe, but no iron pipe, should be used.

(3) Overall guidance for mobilization planning will be 100 gallons per capita per day [378 liters per capita per day] for water consumption.

(4) The criteria shown in table 6-10 are to be used to augment local usage and experience factors which may allow for even greater utilities conservation.

TABLE 6-10

SUGGESTED
PER CAPITA WATER ALLOWANCES \1

Type of Military Units	Emergency Type Construction		Field Training Camp		Permanent Construction	
	<----------per capita per day---------->					
	gallons	[liters]	gallons	[liters]	gallons	[liters]
Airfields	150	[568]	75	[284]	150	[568]
Airborne	150	[568]	75	[284]	150	[568]
Divisions:						
Armored Divisions	150	[568]	75	[284]	150	[568]
Infantry Divisions	150	[568]	75	[284]	150	[568]
Hospital Units	600 (per bed)	[2,271]	600	[2,271]	600	[2,271]
Other Types of Units	100	[379]				
Hotels and Similar Facilities Converted for Soldier Housing	70	[265]			70	[265]
Plant, Port and Storage Projects, plus including civilian war workers	30 \2	[114] \2			50 \3	[189] \3
	150	[568]			150	[568]
POW and Internment Camps	50	[189]	50	[189]	50	[189]

\1 The allowances set forth include water used for laundries, washing vehicles, and limited watering of planted and grassed areas. Additional allowance should be made for operation of hydraulically operated fueling systems.
\2 30 gallons [114 liters] per employee per shift and 150 gallons [568

liters] for resident personnel.
\3 50 gallons [189 liters] per employee per 8-hour shift and 150 gallons [568 liters] per resident.

c. Sewage Flow Guidelines. Sewage flow guidelines are shown as in Table 6-11.

TABLE 6-11

SUGGESTED
MOBILIZATION SEWAGE FLOW GUIDELINES \1

Install'n. Mission	Criteria Fm. Plng. Manuals	Permanent Install'n.	Mobilization Install'n.	Temporary Install'n.	Field Trng. Site
	<----per capita per day---->				
	gal. [l]	gal. [l]	gal. [l]	gal. [l]	gal. [l]
Hospitals (including station hospitals)	100 [379]	100 [379]	100 [379]	100 [379]	100 [379]
All other types of posts, camps, depots, and plants.	70 [265]	100 [379]	70 [265]	50 [189]	35 [132]
Other Industrial:	30 gallons per capita per day, 114 liters per capita per day per 8-hour shift, per shift worker.				

\1 Also see EM 1110-3-172, Domestic Waste Treatment - Mobilization Construction (reference 6-23). Overall guidance for mobilization planning will be 100 GPCD [379 LPCD] for sewage flows.

d. Electrical Guidelines. Electrical guidelines are shown in table 6-12.

TABLE 6-12

SUGGESTED
ELECTRICAL GUIDELINES \1

TYPE OF FACILITIES	RECOMMENDED ALLOWANCE
TEMPORARY OCCUPANCY:	
Basic Training Facilities:	
One duplex receptacle for two persons plus two watts per ft2 [0.09 m2] lighting	500 watts per person
Basic training facilities with air conditioning	800 watts per person
Basic training facilities w/electric heat	800 watts per person
Administrative Facilities:	
With air conditioning	8 watts per ft2 [0.74W per m2]
With fans	6 watts per ft2 [0.56W per m2]
ADP and Communication Facilities	Same as peacetime
Dining Facilities	Same as peacetime
Health Clinics	Same as peacetime
Unaccompanied Officers Personnel Housing (UOPH)	One kw per person
PERMANENT CONSTRUCTION AND EXTENDED OCCUPANCY:	
Basic Training Facilities	Same as peacetime
Administrative Facilities	Same as peacetime
Unaccompanied Officers Personnel Housing (UOPH)	Same as peacetime
TENT COMPLEXES:	
Tent city:	Use 500 watts per person

\1 For conditions of occupancy and standards of construction other than given above, interpolate between the recommended allowance given.

5. CHECKLIST FOR REVIEW OF MOBILIZATION COMPONENT. The check list provided by table 6-13 is suggested as a means of reviewing the MC while it is under preparation and when documents are completed.

TABLE 6-13

REVIEW CHECKLIST FOR MOBILIZATION COMPONENT

1. FORMAT:
   - o Does the format follow current guidance?
   - o Are all sections present?
   - o Is a table of contents included?
   - o Is the table of contents accurate?

2. EXECUTIVE SUMMARY:
   - o Is a high level overview of the MC presented?
   - o Are the population basis for the plan clearly stated?
   - o Is the purpose and scope of the MC stated?
   - o Is the mission stated?
   - o Are restrictions and limitations clearly described?
   - o Are conclusions stated?

3. MISSION AND OPERATIONS:
   - o Is purpose and scope discussed?
   - o Are goals and objectives discussed?
   - o Is description and evaluation discussed?
   - o Is use of MMP discussed?
   - o Are major missions discussed?
   - o Are tenant units and activities discussed?
   - o Are satellite installations and activities discussed?
   - o Are installation support agreements discussed?
   - o Are mobilization effective strength figures time phased?
   - o Does an effective population (EP) graph exist?
   - o Do EP figures consider all personnel?
   - o Is MC based upon correct population mix and time?

4. TRANSPORTATION ANALYSIS (ON AND OFF-POST)
   - o Are rail facilities discussed to include:
     - - Are forward deployment and marshalling sites identified?
     - - Are container handling facilities needs addressed?
     - - Main lines?
     - - Spurs?
     - - Passing tracks?
     - - Bridges?
     - - Loading ramps?
     - - Blocking, bracing, packing and crating?
     - - Shortfalls?
     - - Future projects?
     - - Capacities and limitations - Does the analysis include requirements to verify the installation as a power projection platform?

   - o Are highways and roads discussed to include:

TABLE 6-13 (Cont'd)

REVIEW CHECKLIST FOR MOBILIZATION COMPONENT

- Routes?
- Out-loading and on-loading facilities?
- Difficulties and projects?

o Are airfields discussed?

5. UTILITIES:

o Is water supply discussed to include:
- Source?
- Quantity supplied?
- Treatment methods?
- Distribution system?
- Facility limitations?
- Storage capacity?
- Fire fighting requirements?
- Pumps?
- Is the utility study based on correct population figures?

o Is the sewage system discussed to include:
- Collection system?
- Treatment?
- Infiltration?
- Effluents?
- Sludge?
- Correct population?
- Pipe limitations?

o Is the electrical system discussed to include:
- Population basis?
- Limitations and restrictions?

6. ENVIRONMENTAL CONSIDERATIONS. Are these elements discussed to include:

o Are impacts for each area addressed?

o Are adverse effects presented for discussion?

7. FACILITIES ANALYSIS:

o Are separate crisis response and reconstitution requirements discussed to include:
- Operational facilities?
- Training facilities?
- Transportation & deployment facilities?
- Billeting facilities?

o Are training requirements discussed?
- Classrooms and facilities?
- Ranges and maneuver areas?
- Leases and easements?
- Assets compared with requirements?
- Are projects listed on the MOB project list also in the MCTAB and shown on the site plan?

TABLE 6-13 (Cont'd)

REVIEW CHECKLIST FOR MOBILIZATION COMPONENT
o Are communications requirements discussed to include:
- Telephone system, voice?
- Telephone system, data?
- Radio net?
- Limitations and restrictions?
- Assets compared with requirements?
- Are projects listed on the MOB project list also in the MCTAB and shown on the site plan?
o Are supply and storage facilities discussed to include:
- Protection of perishable goods?
- Protection of explosives?
- Limitations and restrictions?
- Assets compared with requirements?
- Are projects listed on the MOB project list also in the MCTAB and shown on the site plan?
o Are medical and related requirements discussed to include:
- Hospitals for mobilization personnel?
- Hospitals for casualty loading?
- Dental clinics?
- Mortuary?
- Cemeteries?
- Limitations and restrictions?
- Assets compared with requirements?
- Are projects listed on the MOB project list also in the MCTAB and shown on the site plan?
o Are administrative facilities discussed to include:
- Limitations and restrictions?
- Assets compared with requirements?
- Are projects listed on the MOB project list also in the MCTAB and shown on the site plan?
o Is billeting discussed to include:
- Space per person is adequate?
- Planning is for sustained load for new construction?
- NIF has been considered?
- Other non-construction alternatives considered?
- Limitations and restrictions?
- Assets compared with requirements?
- Are projects listed on the MOB project list also in the MCTAB and shown on the site plan?
o Are dining facilities discussed to include:
- Field conditions, meals ready to eat (MRE) considered?
- Double and triple shifting considered?
- Sizing criteria is correct and current?
- Planning is for sustained loads?
- NIF is considered?
- Other non-construction alternatives considered?

TABLE 6-13 (Cont'd)

REVIEW CHECKLIST FOR MOBILIZATION COMPONENT

- Limitations and restrictions?
- Assets compared with requirements?
- Are projects listed on the MOB project list also in the MCTAB and shown on the site plan?

o Has other building utilization been considered to include:
- Confinement facilities?
- Radio stations?
- Reception centers?
- Maintenance shops?
- Repair shops?
- Laundry facilities?
- Post office?
- Auditorium/field house?
- Chapels?
- Guest houses?
- NIF considerations?
- Are based on correct population at correct point in time?

o Has other land use been discussed to include:
- Easements?
- Leases?
- Out-grants?
- Discussion of shortfalls and surpluses?

9. APPENDICES:

o Does the construction project list compare exactly with the MCTAB, site plans, and MCA list?

o Check population charts for the following:
- Are all personnel considered?
- Is percent for pro-rated persons in accordance with guidance?
- Is troop list correct as of publication date?
- Is population data time-phased?
- Are dependents counted IAW criteria?

o Have maneuver land requirements been calculated correctly?

o Have all units considered in the plan been listed?

o Have all barracks capacities been listed, and for each set of space criteria?

o Is a glossary of terms and acronyms included?

REFERENCES

6-1 Architectural and Engineering Instructions (AEI) "Design Criteria."

6-2 AR 500-10, Nonindustrial Facilities for Mobilization.

6-3 EP 500-1-2, Corps of Engineers Mobilization Operations Planning System (CEMOPS).

6-4 AR 210-20, Master Planning for Army Installations.

6-5 AR 415-10, Military Construction - General.

6-6 TB ENG 353, Installation Master Plan Preparation.

6-7 AR 415-28, Department of the Army Facility Classes and Construction Categories (Category Codes).

6-8 AR 405-45, Inventory of Army Military Real Property.

6-9 AR 200-2, Environmental Effects of Army Actions.

6-10 AR 420-43, Electrical Services.

6-11 TM 5-813-1, Water Supply Sources and General Considerations

6-12 TM 5-813-6, Water Supply for Fire Protection.

6-13 TM 5-813-4, Water Supply Water Storage.

6-14 TM 5-814-1, Sanitary and Industrial Wastewater Collection, Gravity Sewers and Appurtenances.

6-15 TM 5-814-3, Domestic Wastewater Treatment.

6-16 TM 5-814-4, Incineration.

6-17 EM 1110-3-160, Water Supply, General Considerations - Mobilization Construction.

6-18 EM 1110-3-161, Water Supply, Sources - Mobilization Construction.

6-19 EM 1110-3-162, Water Supply, Water Treatment - Mobilization Construction.

6-20 EM 1110-3-163, Water Supply, Water Storage - Mobilization Construction.

REFERENCES (Cont'd)

6-21 EM 1110-3-164, Water Supply, Water Distribution - Mobilization Construction.

6-22 EM 1110-3-166, Water Supply, Fire Protection - Mobilization Construction.

6-23 EM 1110-3-172, Domestic Waste Treatment - Mobilization Construction.

ADDITIONAL REFERENCES FOR PLANNING GUIDANCE NOT REFERENCED IN THIS MPI:

6-A The Army Mobilization Operations Planning and Execution System (AMOPES), Volume III, Chapter 8 (BASE OPERATIONS SUPPORT) and Annex N (ENGINEER).

6-B FORSCOM Regulation 500-3-A, FORSCOM Mobilization Deployment Planning and Execution System (FORMDEPS), Annex N (ENGINEER).

6-C The TRADOC Mobilization Operations Planning and Execution System (TMOPES), Annex N (ENGINEER).

6-D Health Services Mobilization Plan.

CHAPTER 7

AVIATION FACILITIES PLANNING

1. GENERAL.

a. General and Specific Criteria. The criteria contained in this chapter are applicable to the planning of Army aviation facilities, and are intended for use in conjunction with the earlier chapters in these instructions. These criteria apply to Army installations only and should not be applied to other military services.

b. Aviation Complexes. There are usually four distinct functional components on an aviation complex. However, not all components or parts must be present to render the complex complete and usable. A description of each functional component is provided in this chapter.

c. Functional Proponent. The functional proponency for developing the scope and requirements for Army aviation facilities is usually assigned to the Aviation Division, Directorate of Plans, Training and Mobilization (DPTM) of the installation staff or the Operations Section (G/S-3) of the senior aviation organization. At locations where there is no DPTM or G/S-3 office, facility planners should coordinate with the commander of the aviation unit(s) to be supported. The DPTM, as primary functional proponent, is responsible for determining mission support requirements for aviation complexes, operational and safety considerations, and air traffic density.

d. TM 5-803-4. TM 5-803-7 (reference 7-1), TM 5-803-4 (reference 7-2), and TM 5-834-2 (reference 7-3) will be consulted whenever planning Army aviation facilities. The tri-service criteria contained in TM 5-803-7 should be used when planning Power Projection Platforms for Crisis Response because aircraft of all military services may be using Army facilities. (See Chapter 6 of these instructions regarding the mobilization component.) TM 5-803-4, which sets forth Army planning criteria, is significantly out of date. Therefore, in the event of a conflict between the current version of TM 5-803-4 and this chapter, the criteria in this chapter will govern until the technical manual is updated; afterwards, as is the case with the other two technical manuals, the manuals will govern.

e. Land Area. (Also see Chapter 3 of these instructions.) Aviation complexes need substantial land area for safe and efficient operation and to accommodate future growth. The amount of land apportioned for aviation activities is second only to ranges and training facilities on most troop-type installations.

f. Supporting Documentation.

(1) Facility Planning System (FPS). The Facility Planning System, resident on the Corps' Programming, Administration, and Execution (PAX) computer system can assist facility planners in identifying organizational

structures and equipment space allocation needs. FPS calculates space allowances (not final requirements) for a limited number of aviation facilities based on applicable Tables of Organization and Equipment (TOE) and facility category codes. From the allowances, facility planners can work with the facility proponent to assess existing facility adequacy, and determine existing space surpluses or shortfalls, functional relationships, and mission considerations, resulting in final determination of the actual facility requirement.

(2) Support Facility Annexes (SFA). SFAs on the PAX computer system should be reviewed for each aircraft configuration. The SFA identify impacts associated with the fielding of new aircraft and aircraft support equipment. These impacts usually affect about 70 percent of the facilities identified in this chapter.

2. FUNCTIONAL COMPONENTS OF AN AVIATION COMPLEX.

a. General. The sequence in which facilities are described in this chapter should be followed during the planning of aviation facilities, because safety clearances must be applied to each area prior to addressing the next. For example, a well-designed hangar improperly sited too close to an active runway might be functionally excellent, but would be in violation of basic safety clearance criteria.

b. Functional Components. Facility sizes depend on the organizations to be supported and the equipment or materiel systems that belong to that organization. Each component includes ancillary support requirements which are usually provided along with that component. The four components of aviation complexes are as follows:

(1) Safety clearances, landing surface, and operational buildings.

(2) Aircraft parking.

(3) Aircraft maintenance.

(4) Support facilities.

3. SAFETY CLEARANCES, LANDING SURFACE, AND OPERATIONAL BUILDINGS.

a. General. The clearance, landing surface, and operational component consist of the basic safety and clearance zones necessary to operate the Army airfield (AAF) or Army heliport (AHP), the landing surface (runways, stagefields, helicopter landing lanes, helipads, hoverpoints), taxiways, air traffic control (ATC), airfield operations, navigational aids (NAVAIDS), communications, airfield fire and rescue, weather forecasting and reporting, flight surgeon activities, lighting, utilities, and physical facilities. AAF support fixed-wing and rotary-wing operations while an AHP supports only rotary-wing operations. An AAF is a facility designed for the operation of fixed-wing and rotary-wing Army aircraft, and an AHP is a facility designed for operation of rotary-wing Army aircraft only. AAF and

AHP combinations are found at some locations. Installations providing initial flight training augment their AAF and AHP complexes with remotely located stagefields. Stagefields are dispersed facilities that have landing surfaces, but minimal support facilities, due to high air traffic density and the need for larger safety margins for student aviators. Stagefields consist of essentially establishing multiple lanes, using the geometric criteria for helicopter runways, primarily for training student aviators within the aviation school base. Stagefields are not provided at forces-type installations.

b. Basic Clearances and Safety Zones. Before planning the physical facilities necessary for an Army aviation complex, the site must be examined and surveyed for basic clearances, because without adherence to the safety criteria imposed by these clearances, aircraft operations will not be permitted. Clearances around aviation facilities consist of imaginary three-dimensional surfaces inscribed around the landing surface. Drawings of these surfaces for Army facilities appear in TM 5-803-4 (reference 7-2), which is currently being updated, and in TM 5-834-2 (reference 7-3). Drawings of tri-service criteria for these surfaces appear in TM 5-803-7 (reference 7-1) and should be used whenever Air Force and/or Navy aircraft will operate from the Army facility. The three-dimensional view of an Instrument Flight Rules (IFR) airfield would show a composite of these imaginary surfaces, resembling a series of concentric racetrack shaped horizontal planes extending for great distances around the runway, intersected at each end by inclined trapezoidal approach-departure clearance surfaces, and interconnected by a series of sloped transition surfaces. This section gives brief descriptions of those surfaces and clearances essential to planning the operation of an Army aviation facility.

(1) Approach-departure clearance surfaces. These surfaces occur at the takeoff and landing ends of landing surfaces. Such a surface consists of an inclined plane or combination inclined and horizontal plane, symmetrical about the runway centerline extended. The inclined plane flares outward and upward from the primary surface, having the same width as the primary surface at its point of origin, which begins at the centerline elevation of the runway end. The slope ratio and dimensions of the inclined plane and dimensions of the horizontal plane vary with the type of runway prescribed. In cross sectional view, the approach-departure clearance surface is bounded by transitional surfaces at either side, which slope laterally upward away from the approach-departure clearance surface. There must be no vertical obstructions penetrating this surface. Approach-departure clearance surfaces for the most common facilities are given in the following paragraphs:

(a) Fixed-wing Class A runway, visual flight rules (VFR). A clearance slope ratio, beginning at 200 ft [61 m] from each outer end of the primary landing surface, at the centerline elevation of the overrun, will be a 40:1 slope outward for a distance of 10,000 ft [3.05 km]. The width of the zone is variable, being 1,000 ft [305 m] wide at the inner end next to the primary surface, and 2,500 ft [762.5 m] at the 10,000 ft

[3.05 km] point. Minimum vertical clearance above highway, railroad, or installation property lines is 50 ft [15.25 m].

(b) Fixed-wing Class A runway, instrument flight rules (IFR). A clearance slope ratio, beginning 200 ft [61 m] from each outer end of the primary landing surface, at the centerline elevation of the runway end, will be a 40:1 slope outward until it reaches an elevation of 500 ft [152 m] above the established airfield elevation. It continues horizontally at this elevation to a point 50,000 ft [15.25 km] from the point of beginning. The normal approach departure zone will be 1,000 ft [305 m] wide at the end of the primary landing surface, 7,000 ft [2.14 km] wide at the end of the first 20,000 ft [6.10 km], and 16,000 ft [4.88 km] wide at the 50,000 ft [15.25 km] point.

(c) Limited use runways. This variance from standard criteria may only be applied when site conditions necessitate a reduction due to the physical limitations of the site and when there is low traffic density where flight operations will be conducted under VFR as approved by USAASA. The clearance slope ratio, beginning at each outer end of the primary landing surface, at the centerline elevation of the runway end, will be a 20:1 slope outward for a distance of 10,000 ft [3.05 km] measured outward from each end of the primary surface. Minimum width at the end of the primary surface will be 250 ft [76.25 m] and 1,750 ft [533.75 m] at the outer end.

(d) Limited use helipad, VFR. This is a facility used at sites where only occasional operations are conducted. These may be, but are not limited to, hospitals, headquarters areas, missile sites and at established airfields or heliports where it may be used to provide separate landing facilities in order to facilitate air traffic control operations. The clearance slope ratio, beginning at each outer end of the primary landing surface, on the centerline of the primary surface, will be a 8:1 slope outward for a distance of 1,200 ft [366 m]. The clearance surface will be from 120 ft [36.6 m] to 300 ft [91.5 m] wide at the end of the primary landing surface, and 500 ft [152.5 m] wide at the 1,200 ft [366 m] point.

(e) Helicopter runway and helipad, IFR. A clearance slope ratio, beginning at each outer end of the primary landing surface, on the centerline of the primary surface, will be a 25:1 slope outward for a distance of 24,225 ft [7.39 km]. The clearance surface will be 750 ft [228.75 m] wide at the end of the primary landing surface, and 8,000 ft [2.44 km] wide at the 24,225 ft [7.39 km] point.

(f) Helipad, VFR and helicopter runway, VFR. A clearance slope ratio, beginning at each outer end of the primary landing surface, on the centerline of the primary surface, will be a 20:1 slope outward for a distance of 10,000 ft [3.05 km]. The clearance surface will be 600 ft [183 m] wide at the end of the primary landing surface, and 5,000 ft [1.53 km] wide at the at the 10,000 ft [3.05 km] point.

(g) Hoverpoint. The clearance slope for a hoverpoint is the same as that of a limited use VFR helipad. (See para. 3.b.(1)(d) above.)

(2) Runway clear zone/takeoff safety zone. This is the surface area on the ground or water at the end of each runway or helipad facility and under the control of the local airfield authorities. This area possesses a high potential for aircraft accidents; therefore, its land use is restricted in accordance with DoD Air Installations Compatibility Use Zone (AICUZ) guidance and individual DoD service guidance furnished. These zones are described as follows:

(a) Fixed-wing runway. The length of the clear zone is 3,000 ft [915 m] measured from the end of the runway. The first 1,000 ft [305 m] will be cleared of all natural and manmade objects, grubbed, rough graded and turfed where required. No above-ground structures, objects, or traverse ways are permitted in the first 1,000 ft [305 m], but gentle swales, subsurface drainage, covered culverts and underground structures are permissible. The width will be 1,000 ft [305 m], centered upon the runway centerline extended for a Class A runway and 3,000 ft [915 m] for a Class B runway. An exception to this rule is that NAVAIDS may be installed after the first 1,000 ft [305 m].

(b) Helipad, VFR, limited and normal use. The takeoff safety zone is 400 ft [122 m] in length, beginning at the outer edge of the primary landing surface, and conforms in lateral dimensions to the approach-departure clearance surface.

(c) Helicopter runway, VFR. The takeoff safety zone is 400 ft [122 m] in length, beginning at the outer edge of the primary landing surface, and conforms in lateral dimension to the approach-departure clearance surface.

(d) Helipad and helicopter runway, IFR. The takeoff safety zone is not applicable to the IFR helicopter facilities due to the extensive primary surface area, excepting for facilities where compound or hybrid aircraft are to be operated, such as the V-22.

(e) Hoverpoint. The takeoff safety zone is the same as that of a limited use VFR helipad.

(3) Inner horizontal surface. This imaginary plane surface for IFR operations is located 150 ft [45.75 m] above the airfield, heliport or helipad elevation. For airfields, it is inscribed by a 7,500 ft [2.29 km] radius arc centered at each end of the runway, and by connection of these arcs by lines running parallel to either side of the runway. For IFR helicopter runways and IFR helipads, this surface is inscribed by a 4,600 ft [1.40 km] radius circle, the center of which is located at the center point on the primary landing surface. Horizontal surfaces must not be penetrated by any vertical obstructions.

(4) Conical surface. This imaginary plane surface for IFR operations is an oval shaped transition surface located between the inner and outer horizontal surfaces. The conical surface is inscribed between the outer edge of the inner horizontal surface, thence a 20:1 ratio slope to meet the inner edge of the outer horizontal surface, which is inscribed by a 14,500 ft [4.42 km] radius arc centered at each end of the runway, and by connection of these arcs by lines running parallel to either side of the runway.

(5) Outer horizontal surface. This imaginary plane surface for IFR operations is located 500 ft [152.5 m] above the airfield elevation. The inner edge of this surface is determined by the outer edge of the conical surface. The outer boundary is inscribed by a 44,500 ft [13.57 km] radius arc centered at each end of the runway, and by connection of these arcs by lines running parallel to either side of the runway.

(6) Transitional surface. Transitional surfaces are imaginary surfaces that slope laterally upward from a primary landing surface or from the surface of an approach-departure clearance surface. Vertical obstructions must not penetrate these surfaces. In some cases, transition surfaces slope upward to a point at which they meet horizontal surfaces which are established well above ground level for safety reasons. Transition surfaces for the most common types of Army aviation facilities are as follows:

(a) Fixed-wing runway, visual flight rules (VFR). The transitional surface will extend laterally from a point 500 ft [152.5 m] for a Class A runway either side of the runway centerline at a 7:1 slope ratio to meet the inner horizontal surface, which is an imaginary surface located 150 ft [45.75 m] above the airfield elevation. The transition surface will intersect with the approach-departure zone slope beyond the end of the runway, and will disappear when the approach-departure zone intersects the horizontal surfaces.

(b) Fixed-wing runway, instrument flight rules (IFR). The transitional surface will extend laterally from a point 500 ft [152.5 m] for a Class A runway either side of the runway centerline, and 1,000 ft [305 m] for a Class B runway for fixed-wing aircraft, 1,000 ft [305 m] either side of the centerline for a Class B runway for fixed-wing aircraft, at a 7:1 slope ratio to meet the inner horizontal surface, which is an imaginary surface located 150 ft [45.75 m] above the airfield elevation. The transition surface will intersect with the approach-departure clearance surface slope beyond the end of the runway, and will disappear when the approach-departure zone intersects the horizontal surfaces.

(c) Limited use runways. The transitional surface will extend laterally from a point 125 ft [38.13 m] either side of the runway centerline at a 7:1 slope ratio to meet the inner horizontal surface, which is an imaginary surface located 150 ft [45.75 m] above the airfield elevation. The transition surface will intersect with the approach-departure zone slope beyond the end of the runway, and will disappear when

the approach-departure zone intersects the horizontal surfaces.

(d) Helipad, VFR. The transitional surface will extend laterally, each side, from the lateral edges of the primary landing surface and from the approach-departure clearance surface upwards and away until the transitional surface reaches an elevation of 150 ft [45.75 m] above the primary surface. There are no horizontal surface clearances for VFR helipads.

(e) Limited use helipad, VFR. The transitional surface will extend laterally, each side, from the lateral edges of the primary landing surface and from the approach-departure zone upwards and away at a slope of 2:1 until it reaches a distance of 250 ft [76.25 m] from the centerline. An imaginary vertical surface will then be connected to the transitional surface and rises to 150 ft [45.75 m] above the elevation of the primary surface.

(f) Helicopter runway and helipad, IFR. The transitional surface will extend laterally from a point 375 ft [114.38 m] from the centerline of the pad or runway, upward on a 4:1 ratio slope, until it intersects the horizontal surface established 150 ft [45.75 m] above the runway or helipad elevation; additionally, above the horizontal surface, the transitional surface will extend outward on each side of the approach-departure clearance surface to an elevation of 375 ft [114.38 m] above the approach-departure clearance surface. The inner transitional surface will extend laterally from a point 275 ft [83.88 m] from the centerline of the pad or runway extending along the primary landing surface out to 1,225 ft [373.63 m], upward on a 7:1 slope until it intersects the horizontal surface established 150 ft [45.75 m] above the runway or helipad. The outer transitional surface abuts the inner transitional surface 1,225 ft [373.63 m] from the primary landing surface. It extends laterally from a point 500 ft [152.5 m] from the extended centerline of the runway or pad and is 600 ft [183 m] in width, upward on a slope of 7:1 outward for a distance of 25,000 ft [7.63 km] where its width is 1,500 ft [457.5 m].

(g) Helicopter runway, VFR. The transitional surface for VFR helicopter runways and helipads will extend laterally from a point at the edge of the primary landing surface, upward at a 4:1 ratio slope, until it intersects the horizonal surface established 150 ft [45.75 m] above the runway or helipad elevation; this surface shall extend outward on each side of the clearance surface slope.

(h) Hoverpoint. The transitional surface for a hoverpoint is the same as that of a limited use VFR helipad.

c. Primary Landing Surface. The primary surface of an aviation facility is the paved or stabilized surface upon which takeoffs and landings are made, and may include taxiways. Criteria for the most common types of primary surfaces are stated in the following paragraphs:

(1) Fixed-wing, Class "A" runways.

(a) Length. Ordinarily, the length of these runways will be 5,000 ft [1.53 km] to 8,000 ft [2.44 m]. This 5,000 ft [1.53 km] length at mean sea level is based on accelerate/stop distances for advanced models of the C-12 and smaller aircraft. This length should be increased for altitude and temperature correction factors. Runway width will be 75 ft [22.88 m] unless otherwise approved. Shoulder width will be 25 ft [7.63 m].

(b) Lateral clearance. The lateral clearance will be 500 ft [152.5 m] for standard use. Lateral clearance will be measured perpendicularly, each side, from the runway centerline to fixed and/or mobile objects. Fixed obstacles include trees, buildings, rocks, terrain irregularities, and any other features constituting a possible hazard to moving aircraft. Mobile obstacles include aircraft, parked and moving vehicles, and railroad cars. Taxiing aircraft and emergency vehicles are exempt from this restriction. The prescribed clearances apply with equal force to aprons, parallel taxiways, roads, highways, and railroad tracks. Navigational aids (other than flight control towers and TVORs) and meteorological equipment may be sited within these clearances where essential to their proper functioning to fulfill flight operational requirements.

(c) Longitudinal grades. Longitudinal grades of runways and shoulders shall not exceed one percent maximum slope. Grading requirements are dictated by the operational limitations of aircraft, the need for adequate surface drainage, and the necessity for exercising economy in the development of an airfield site. Consistent with these factors and because runway lengths are computed on the basis of generally level pavements, longitudinal sloping of runways will be held to the minimum possible. The maximum allowable algebraic difference between any two consecutive grades will be such that the minimum sight distance requirements are not violated. The maximum rate of longitudinal grade change per 100 ft [30.5 m] of runway will not exceed 0.167 percent except for edges of runways and shoulders at runway intersections. This rate of change is produced by vertical curves having 600 ft [183 m] length for each percent of algebraic difference between two grades. For more than one change in runway grade, the distance between two successive points of intersection will not be less than 1,000 ft [305 m], and no grade change is to occur less than 1,000 ft [305 m] from the runway end. The maximum rate of longitudinal grade change per 100 ft [30.5 m] for edges of runway and shoulders at runway intersections will not exceed 0.4 percent. The transverse runway grade requirements are not mandatory at runway intersections.

(d) Minimum sight distance. Any two points 5 ft [1.53 m] above the runway pavement must be mutually visible under clear weather daylight conditions for a distance of 5,000 ft [1.53 km] for standard use facilities.

(e) Transverse grade. Minimum transverse grade will be one percent and maximum allowable will be 1.5 percent, from the centerline of the runway, except in cases of runway intersections where the grade must be warped.

(f) Transverse grade, shoulders. Shoulders will slope away from the runway, at 5 percent grade for the first 10 ft [3.05 m], followed by 2 percent minimum to 3 percent maximum.

(g) Cleared area, grade in any direction. Width of cleared areas depends on the runway width. The lateral cleared areas between runway shoulders and clearance lines will not include buildings or other obstacles. See other sections of this chapter for permissible distances between buildings, other obstacles, and the runway centerline. Cleared areas, except where otherwise developed, will be rough graded to the extent necessary to reduce damage to aircraft in event of erratic performance at a 2 percent minimum and 10 percent maximum slope.

(h) Overrun. The overrun area on each end of the runway will be 200 ft [61 m] in length, of the same grades as described for shoulders. The width will be the same as that of the runway plus shoulders. The longitudinal grade will be the same as that described for the last 1,000 ft [305 m] of runway longitudinal grade. The transverse grade will be a 2 percent minimum and 3 percent maximum. Transition from runway and runway shoulder grades to the overrun grades will be made within the first 150 ft [45.75 m] of overrun.

(2) Fixed-wing, Class B runways. Ordinarily, the length of these runways will be 5,000 ft [1.53 km] to 8,000 ft [2.44 m]. This 5,000 ft [1.53 km] length at mean sea level is based on accelerate/stop distances for C-12 and smaller aircraft. This length should be increased for altitude and temperature correction factors.

(a) Width. Runway width will be 150 ft [45.75 m] for accommodation of Air Force fighter aircraft including trainers; 200 ft [61 m] if Air Force aircraft not otherwise specified as Navy and Marine Corps aircraft, and 300 ft [91.5 m] if B-52 aircraft are to use the facility.

(b) Longitudinal grades. The longitudinal grades of runways and shoulders will be a maximum of one percent.

(c) The transverse grade of the runway will be a minimum of one percent and a maximum of 1.5 percent. The transverse grade of the shoulder will be a minimum of 2 percent and a maximum of 3 percent. Unpaved shoulders may be increased to 5 percent for the first 10 ft [3.05 m].

(d) Lateral clearance. Runway lateral clearance for the primary surface will be 1,000 ft [305 m] measured perpendicularly from the centerline of the runway.

(e) Grades within primary surface. Longitudinal grades within the primary surface will be a maximum of 10 percent. Transverse grades within the primary surface (in the direction of the surface drainage) will be a minimum of 2 percent prior to channelization and a maximum of 10 percent.

(f) Distance between parallel runways. The distance between the centerlines of parallel runways will be 1,000 ft [305 m] under VFR conditions without intervening parallel taxiway; 2,075 ft [632.88 m] under VFR with intervening parallel taxiway, and 4,300 ft [1.31 km] under IFR conditions using simultaneous approaches.

(g) Sight distance. Sight distance will be a minimum of 5,000 ft [1.53 km], mutually visible for this distance, between any two points 8 ft [2.44 m] above the pavement.

(h) Class B taxiways. Taxiway width will be 75 ft [22.88 m], which may be modified for particular mission requirements. Width of shoulders will be 50 ft [15.25 m]. Longitudinal grade of taxiways and shoulders will be a maximum of 3 percent. Transverse grade of the taxiway will be a maximum of one percent. Transverse grade of shoulders will be a minimum of 2 percent and a maximum of 4 percent. Sight distance on the taxiways will be a minimum of 2,000 ft [610 m] between eye level points at 7 ft [2.14 m] and an object 10 ft [3.05 m] above the taxiway pavement. Clearance from taxiway centerline to fixed or mobile obstacles will be a minimum of 150 ft [45.75 m]. The grade between the taxiway shoulder and taxiway clearance line will be a minimum of 2 percent prior to channelization and a maximum of 10 percent.

(i) Class B aprons. The size and configuration of Class B aprons will be determined by the methods presented later in this chapter. Grades in the direction of drainage will be a minimum of 0.5 percent and a maximum of 1.5 percent. Shoulder width will normally be 25 ft [7.63 m]. Longitudinal grade of shoulders will be variable, conforming in longitudinal grade to the abutting primary pavement. The transverse grade of apron shoulders will be a minimum of 2 percent and a maximum of 4 percent. Unpaved shoulders may be increased to 5 percent for the first 10 ft [3.05 m].

(j) Class B overruns. Overrun length will normally be 1,000 ft [305 m]. The width of the overrun will be the same as the total width of runway and shoulders. The longitudinal grade for the first 300 ft [91.5 m] will be the same as for the last 3,000 ft [915 m] of the runway; the remainder will be a maximum of 1.5 percent. Transverse grade will be a minimum of 2 percent and a maximum of 3 percent.

(k) Class B clear zones. Clear zones for Class B runways will be 3,000 ft [915 m] in length, measured along the extended runway centerline beginning at the runway end. The width will be 3,000 ft [915 m] centered on and measured at right angles to the extended runway

centerline. Exceptions to these widths are permissible based on individual service analysis of the highest accident potential area for specific runway use and acquisition constraints. Longitudinal grade of the area to be graded will not exceed 10 percent. The transverse grade of the area to be graded, in the direction of the surface drainage prior to channelization, will be a minimum of 2 percent and a maximum of 10 percent.

(l) Class B runway accident potential zones (APZ). APZ are centered upon and measured along the extended runway centerline. APZ I length starts at the end of the clear zone and extends for a distance of 5,000 ft [1.53 km]. APZ I width is 3,000 ft [915 m]. APZ II length starts at the end of APZ I and extends to a distance of 7,000 ft [2.14 km]. The width of APZ II is 3,000 ft [915 m]. Modifications will be considered if the runway is infrequently used; prevailing wind conditions are such that over 80 percent of the aircraft operations are in one direction; local accident history indicates consideration of different accident areas; most aircraft do not overfly an APZ area as defined here during normal flight operations (adjust zones to actual line of flight); or, other unusual conditions exist.

(3) Limited use runways. Runway length for limited use runways will be 3,000 ft [915 m]. Lateral clearance will be 125 ft [38.13 m]. Sight distance will be 3,000 ft [915 m], two points located 5 ft [1.53 m] above the pavement being mutually visible, for minimum use runways. Limited use helipads, hoverpoints, and surface drainage structures are permitted to be constructed 300 ft [91.5 m] or more from the runway centerline of an active facility. Grading will be the same as specified for normal use facilities.

(4) VFR helipad. The primary surface for a helipad, for VFR use, includes a minimum 100 ft [30.5 m] by 100 ft [30.5 m] paved pad with a 25 ft [7.63 m] shoulder, and a 300 ft [91.5 m] by 300 ft [91.5 m] cleared and graded area. Grade of the pad will be one percent minimum and 1.5 percent maximum.

(5) VFR limited use helipad. The primary surface for a VFR limited use helipad will 150 ft [45.75 m] length by 150 ft [45.75 m] width. The paved pad will range from 75 ft [22.88 m] by 75 ft [22.88 m] to 100 ft [30.5 m] by 100 ft [30.5 m]. Grade of the pad will be one percent minimum and 1.5 percent maximum.

(6) IFR helipad. The primary surface for an IFR helipad will be a minimum of 750 ft [228.75 m] in width and 1,550 ft [472.75 m] in length, as measured along the centerline of takeoff and landing. Pavement will be a minimum of 100 ft [30.5 m] in length by 100 ft [30.5 m] in width. Grade in any one direction will be a minimum of one percent and a maximum of 1.5 percent. Shoulders will be 25 ft [7.63 m] in width adjacent to all operational pavements. Longitudinal grade of shoulders will be variable, conforming to the longitudinal grade of the abutting primary pavement. Transverse grade of shoulders will not exceed 5 percent for the first 10 ft [3.05 m], followed by a 2 percent minimum and a 4 percent maximum. Grades

within the primary surface in any direction will be a minimum of 2 percent prior to channelization and a maximum of 5 percent. The takeoff safety zone is not applicable to IFR helicopter facilities due to the extensive IFR primary surface area, excepting in cases where compound or hybrid aircraft are operating, such as the V-22.

(7) IFR precision helipad. The primary surface of a precision IFR use helipad includes a minimum 100 ft [30.5 m] by 100 ft [30.5 m] pad and a 550 ft [167.75 m] by 1,600 ft [488 m] cleared and graded area. Grade of the pad will be one percent minimum and 1.5 percent maximum.

(8) IFR helicopter runway. The primary surface for a helicopter runway for IFR use will be a minimum of 750 ft [228.75 m] in width and 1,550 ft [472.75 m] in length. Runway pavement will be a minimum of 75 ft [22.88 m] in width and 450 ft [137.25 m] in length, corrected for elevation and temperature. Runway overruns of 75 ft [22.88 m] in length and 125 ft [38.13 m] in width will be provided. Pavement will be graded as described for a fixed-wing aircraft runway. Runway lateral clearance will be 375 ft [114.38 m] distance from the edge of the pavement to any fixed and mobile obstacles. Grades within the primary surface will be a maximum of 5 percent in any direction, exclusive of the actual pavement and shoulders.

(9) VFR helicopter runway. The primary surface for a VFR helicopter runway will be a minimum of 300 ft [91.5 m] in width and 600 ft [183 m] in length. Runway pavement will be a minimum of 75 ft [22.88 m] in width and 450 ft [137.25 m] in length, corrected for elevation and temperature. Runway overruns of 75 ft [22.88 m] in length and 125 ft [38.13 m] in width will be provided. Pavement will be graded as described for a fixed-wing aircraft runway. Runway lateral clearance will be 150 ft [45.75 m] distance from the edge of the pavement to any fixed and mobile obstacles for VFR operations. Grades within the primary surface will be a maximum of 5 percent in any direction, exclusive of the actual pavement and shoulders.

(10) Helicopter landing lanes. These lanes provide a number of equally spaced, adequately separated touchdown points along each lane, usually not less than 400 ft [122 m] from center to center. Multiple lanes are to be spaced a minimum of 200 ft [61 m] apart from centerline to centerline. The width of each lane will be 75 ft [22.88 m] and the length will vary from 1,600 ft [488 m] to 2,000 ft [610 m] depending on the number of touchdown points provided.

(11) Helicopter taxiways. These helicopter circulation corridors will be 40 ft [12.2 m] in width with a maximum 2 percent longitudinal grade, and a minimum one percent/maximum 1.5 percent transverse grade. Lateral clearance from the edge of the pavement to fixed and mobile objects will be a minimum of 100 ft [30.5 m]. A maximum 5 percent grade will be maintained in the area between the taxiway shoulder and the lateral clearance line.

(12) Helicopter hoverpoint. A hoverpoint is a prepared and marked surface used as a reference or control point, which is normally used for arriving or departing helicopters. The facility consists of a paved area 30 ft [9.15 m] in diameter, domed to a 6-inch [15.2 cm] height at its center. If the hoverpoint is constructed on an existing pavement, the dome does not need to be constructed.

(13) Shoulders. Shoulders will be provided (paved or unpaved) adjacent to all paved primary landing surfaces. An economic analysis and an assessment of the mobilization mission should be made to determine whether the shoulders will be paved or unpaved. Shoulders will not be used by normal aircraft or vehicular traffic areas and are intended only to minimize the probability of serious damage to aircraft using these areas accidentally or in cases of emergency. Paved shoulders will consist of a 2-inch [5 cm] thick dense graded hot plant-mix asphalt cement concrete. Unpaved shoulders will be surfaced with soils selected for stability in wet weather, and thoroughly compacted. Dust and erosion control will be provided by vegetative cover, course graded aggregate, or liquid palliative. Shoulders will be 25 ft [7.63 m] in width, and will have a transverse grade of 5 percent for the first 10 ft [3.05 m], and 2 percent minimum/4 percent maximum beyond the 10 ft [3.05 m] point.

d. Flight Control Tower. Close coordination with the functional proponent is required for this facility. One control tower will be provided for each airfield or heliport qualified in accordance with AR 95-9 (reference 7-4). Standards for control towers are contained in TB 95-1 (reference 7-5). A good beginning point for the design of a control tower is the Fort Huachuca Control Tower (reference 7-6). The gross area of the tower will be approximately 2,800 ft2 [260.09 m2]. The siting and height of the tower cab is determined by an operational assessment conducted by the functional proponent at the installation level and approved by USAASA. While a control tower should be sited to provide a clear view of the entire landing surface and aircraft parking components, it is not imperative. Control towers may be consolidated with airfield operations buildings or fire and rescue stations, or both, but towers at large or multiple site aviation facilities are not well suited for consolidation. The tower must be connected by means of a direct access, conference call emergency "hotline" alert system to the airfield operations building, fire rescue station(s), dispensary or clinic and medical evacuation (MEDEVAC) operations.

e. Airfield Operations Buildings. An airfield operations building will house the airfield headquarters flight operational and administrative functions to include the airfield commander, flight planning, flight personnel equipment and support rooms, passenger support facilities, and the operations and weather detachments. The airfield operations facility may be provided in a separate building, consolidated with the flight control tower; or, in cases of single, small unit stand alone or remote sites, located in the administrative space of a hangar. Actual space requirements for each facility are based on a local survey of needs accomplished by the functional proponent and facility planner. For general

planning purposes, use the following guidelines:

(1) Planning considerations. The scope of this facility will be based on the number of authorized personnel assigned office space, and the criteria shown below. Special purpose spaces, such as briefing, communications, conference, plotting, and transient waiting rooms will be justified separately by operational requirements. Personnel requiring flying equipment locker space, but not assigned office space, will not be included when computing office space. For planning purposes, table 7-1 below provides the approximate sizes of airfield operations and headquarters buildings (U.S. Air Force (USAF) Air Weather Service (AWS) detachment and flight surgeon spaces are not included).

TABLE 7-1

AIRFIELD OPERATIONS AND HEADQUARTERS BUILDINGS

Number of Assigned Aircraft	Gross Area /1	
	ft2	[m2]
25 aircraft or less	2,200	204.36
26 to 50 aircraft	3,000	278.67
51 to 75 aircraft supporting a division	5,300	492.31
Special /2	11,000 to 20,000	1,021.78 to 1,857.78

/1 Mechanical equipment room space as required will be added to the gross areas shown when determining a total gross area figure for each facility.

/2 At airfields with approximately 60 personnel and which provide interim facilities for USAF air operations during airlifts, serve other USAF and Army aviation missions, and house medical evacuation teams, the actual gross area must be based on a detailed survey of requirements.

(2) Special requirements. Special space requirements are shown as follows:

(a) Weather detachment. If a USAF AWS detachment is assigned, (1,500 net ft2 [139.33 net m2]) will be provided in the operations building.

(b) Flight surgeon. The flight surgeon, when provided as direct support at an airfield where 30 or more aviators are assigned, is

allowed the space shown in table 7-2 within the operations building:

TABLE 7-2

FLIGHT SURGEON SPACE REQUIREMENTS		
Number of Assigned Aircraft	Net Area	
	ft2	[m2]
Less than 25 aircraft	620	57.59
26 to 50 aircraft	800	74.31
51 to 200 aircraft	1,160	107.75
more than 200 aircraft - special design		

f. Airfield Fire and Rescue Stations. Army airfield facilities and flight operations must be supported by fire rescue equipment and trained personnel. Space allowances are influenced by the standards set forth in AR 420-90 (reference 7-7) and whether the installation has additional fire protection missions, or has rescue equipment stationed near the airfield. Use the standard design for this facility as a basis for detailed space requirements. Siting should be at a central location on the hangar line, permitting direct access to aircraft operational areas and the road system. Provide an alert helicopter parking space near the fire and rescue station for MEDEVAC use. Allowances, which are given in more detail in paragraph 5.2. of the Architectural and Engineering Instructions, "Design Criteria" (reference 7-8) are as shown in table 7-3:

TABLE 7-3

AIRFIELD FIRE AND RESCUE STATIONS			
No. of Fire Companies	No. of Stalls	Gross Area	
		ft2	[m2]
1	2	5,550	515.53
2	3	5,950	552.69

g. Airfield Lighting Equipment Vault. A lighting equipment vault is provided for an AAF, AHP or stagefield, and may be required at remote or stand-alone landing sites. A single vault, not to exceed 475 ft2 [44 m2] gross area, will be provided for fixed-wing or separate heliport lighting equipment. A combination vault not to exceed 750 ft2 [70 m2] gross area will be provided where fixed-wing aircraft runway and heliport lighting is provided. These areas may be increased when standby generators are authorized.

h. Navigational Aids Buildings. A navigational aids (NAVAID) building will be provided for aviation facilities so equipped. The term NAVAID encompasses several types of equipment from simple non-directional beacons to microwave landing systems. Each type of equipment is usually housed in a separate facility since actual siting and location on an aviation complex are predicated on proximity to the landing surface, electromagnetic clearances and, in some cases, precise geographical coordinates. Requirements and siting of NAVAID buildings are determined by the functional proponent in accordance with AR 310-49 (reference 7-9), AR 95-9 (reference 7-4), and the attendant technical manuals published by the Army's functional proponent in conjunction with the airspace authority (Federal Aviation Administration for domestic airspace or host nation airspace authority for OCONUS). General space allowances for NAVAID buildings are shown in table 7-4.

TABLE 7-4

NAVIGATIONAL AIDS BUILDINGS

Building Type	Building Description	Gross Area	
		ft2	[m2]
0	Equipment room only	155	14.40
1	Equipment room plus generator	345	32.05
2	Equipment room plus two generators	455	42.26
3	Equipment room plus three generators	560	52.02

i. Radar Buildings. Some aviation complexes are equipped with a radar capability. When the functional proponent determines the need for radar capability (instrument flight rules or IFR capability), space for radar equipment will be provided. Normally, space for radar equipment will be provided in flight control tower buildings. However, when a different

location is required, 225 ft2 [20.90 m2] net area will be provided within another building or 270 ft2 [25.08 m2] gross area will be provided in a freestanding radar building.

j. Aviation Unit Operations Buildings. Aviation units require administrative space for control of aviation activities, normally provided within the hangar shop space allowance. A separate aviation unit operations building will not be provided. Exceptions to this criterion must be based on remote location or excessive distance from the airfield operations building and economic justification. When justified as a separate building, a corresponding amount of space will be deducted from the unit's hangar space allocation.

k. Aircraft Holding Apron. Aircraft holding (engine run-up) aprons, see figure 7-1, are required whenever a fixed-wing runway is required. Normally, a holding apron will be provided at each end of a fixed-wing runway as an extension to the connecting taxiway, clear of any protrusion into the lateral clearance requirements. Size the apron to accommodate the largest assigned or transient aircraft expected to use the airfield on a regular basis. The apron should have a minimum length of approximately 100 ft [30.5 m] and a width of 150 ft [45.75 m]. Where infrequent use by heavy aircraft is anticipated, an aircraft special-purpose apron may be used in lieu of a holding apron, sited immediately adjacent to the parallel taxiway. As an expedient measure, the fixed-wing runway may be used for the holding function; however, this practice is dangerous and requires close control to ensure there are no take-offs and landings. Operational or procedural reasons for not providing a holding apron are at the discretion of the functional proponent.

FIGURE 7-1

```
AIRCRAFT HOLDING APRON

      |-----------------------------------------------------------|
      |                          Runway                           |
      |-----------------------------------------------------------|
      |  |                                                  |  |
    |--  |                                                  |  |-|
    |  X |<Holding Apron                        Holding Apron>| X  |
    |-----------------------------------------------------------------|
    |                        Parallel Taxiway                         |
    |-----------------------------------------------------------------|
```

4. AIRCRAFT PARKING COMPONENT.

a. General. The aircraft parking component is divided into two functional categories, unit and general purpose. The category to be provided is based on the mission support requirement of the installation. Either one, or both, categories may be provided at a single aviation complex. This component must be separated from the nearest fixed or movable object by a minimum of 75 ft [22.88 m].

(1) Unit parking. The unit parking category supports aviation units assigned to an aviation complex and is further sub-divided into two major types of parking aprons, fixed- and rotary-wing. A modular approach should be used to determine the scope of this component, which is made up of parking pads, and hover-and-taxilanes. The parking areas should be sited as a continuous mass parking area of concrete composition with each pad and lane identified by painted markings.

(2) General purpose. When no tenant units are assigned to an aviation complex (e.g., aircraft maintenance depots or major training centers) and transient aircraft parking is anticipated, a personnel loading apron or aircraft special purpose apron should be provided in lieu of a mass parking apron.

b. Aircraft Parking Modules.

(1) Configuration. Parking modules are used to determine the net land area needed to support aircraft parking, or to plan temporary aircraft parking to support aviation units deployed in training areas or tactical situations. There are two basic parking configurations based on either wheeled or skid landing gear configurations, as shown in figure 7-2 as follows:

FIGURE 7-2

```
|                                                                                |
|                      AIRCRAFT PARKING MODULES                                  |
|________________________________________________________________________________|
|                                |                                               |
|             Type I             |             Type II                           |
|________________________________|_______________________________________________|
|                                |                                               |
|                                |                                               |
|     --------------------       |    --------------------------------           |
|     |HOVER |PADS |HOVER |      |    |HOVER  |PADS|PADS| HOVER |PADS |         |
|     |      | X-- |      |      |    |       |X-- | --X|       |X--  |         |
|     | AND  |-----| AND  |      |    | AND   |----------  AND  -------         |
|     |      |     |      |      |    |       |    |    |       |     |         |
|     |TAXI  | X-- |TAXI  |      |    |TAXI   |X-- | --X| TAXI  |X--  |         |
|     |      |-----|      |      |    |       |----------       -------         |
|     |LANE  |     |LANE  |      |    |LANE   |    |    | LANE  |     |         |
|     |      | X-- |      |      |    |       |X-- | --X|       |X--  |         |
|     --------------------       |    --------------------------------           |
|                                |                                               |
|________________________________|_______________________________________________|
```

Type I parking configurations are the most cost effective approach for wheeled-aircraft mass parking aprons, and Type II parking configurations are the most cost effective for skid-aircraft aprons. Type I is a pad in which movement of the aircraft is accomplished in one direction and therefore limited to a single row of parking with two hover-and-taxilanes for circulation. Type II requires that the aircraft turn within each pad and therefore can be utilized in a single row with one hover-and-taxilane or in a double row with two hover-and-taxilanes. Utilization of Type I parking for wheeled-aircraft consumes less total area than Type II parking. This is due to the need to double the individual parking pad size for Type II to accommodate the aircraft turning. (See ETL 1110-3-394, Aircraft Characteristics for Airfield and Heliport Design (reference 7-10).)

(2) Sizing of individual pads.

(a) Fixed-wing aircraft parking module. This module is based on the C-12A-C aircraft. The baseline aircraft dimension is 44 ft [13.42m] long by 55 ft [16.78 m] wide. The module length is derived by rounding off to 45 ft [13.73 m] and adding a 15 ft [4.58 m] safety and circulation path for refueling or support vehicles, work stands, tool boxes, and components removed during the performance of maintenance, and aircraft operating nearby. The parking module length (or depth) is derived by adding 5 ft [1.53 m] to the aircraft width. This will provide a 10 ft [3.05 m] separation from wing tip to wing tip from the next parked aircraft and will allow for an alternate refueling position.

(b) Rotary-wing aircraft parking modules. The size of rotary-wing parking modules is based on the baseline aircraft type, diameter of the main rotor, aircraft length (with all blades turning), landing gear configuration and type, and propeller or rotor wash characteristics.

1/ Landing gear configurations. Skid-configured aircraft must hover for movement. Wheel-configured aircraft taxi like fixed-wing aircraft. The safest and least land intensive method of movement in and around ground objects is accomplished by the positive ground contact of wheeled-aircraft. Wheel-configured helicopters taxi on the ground like fixed-wing aircraft and parking modules are established accordingly, while skid-mounted helicopters must actually fly to their assigned parking spaces and turn about before landing.

2/ Prop wash or wake turbulence. Prop wash and wake turbulence affect operational clearance requirements during power-on operations. The prop wash and wake turbulence dynamics include factors such as engine power, blade diameter, and the number of blades. There are three configurations for rotary-wing aircraft and two for fixed-wing aircraft, each of which influences the size of aircraft parking. Rotary-wing configurations include (1) Two-bladed rotors, single main rotor head (such as UH-1H type aircraft), (2) Multi-bladed rotors, single main rotor main rotor head (such as UH-60 type aircraft), and (3) Multi-bladed rotors, multi-rotor heads (such as CH47 type aircraft). Fixed-wing configurations include (1) Turbo prop single and multi-engine, and (2) Fan jet single and multi-engine, all jet turbine types.

(3) Sizing of hover-and-taxilanes. Hover-and-taxilanes are provided in one width for fixed-wing aircraft and four separate widths for rotary-wing aircraft. All the characteristics of aircraft design (e.g., wheeled versus skid, number of blades, dynamic flight profile for rotary-wing aircraft) and associated safety clearances determine the width of the hover-and-taxilanes. The length and depth of the hover-and-taxilanes is dependent on the configuration of the mass parking apron and its proximity to the airfield landing surface. A peripheral hover-and-taxilane should also be provided around the perimeter of the entire parking apron for unobstructed movement of aircraft.

c. Tie-down Anchors for Mass Parking Areas and Hardstands. Provisions will be made to moor aircraft at Army airfields and heliports through the use of tie-down anchors installed for this purpose in parking areas and hardstands. These anchors are used to secure parked aircraft against wind damage, provide electrical grounding, and provide restraint during power checks. Tie-down anchors for all parking pads will be installed in mass parking apron areas. The tie-down anchors will be spaced in accordance with ETL 1110-3-430 (reference 7-11) throughout the entire parking apron. Specific mooring patterns are provided in the technical manuals that are developed for each aircraft type. The functional proponent must be closely involved when planning tie-down anchors.

5. AIRCRAFT MAINTENANCE COMPONENT.

a. General. The aircraft maintenance component is required when aircraft maintenance is to be performed regularly at the aviation complex. Space requirements and functional relationships for maintenance are based on each type of aircraft's maintenance and supply concept. The appropriate support facility annex (SFA) should be used to determine space allowances for aircraft still under development.

(1) Hangar and maintenance space. The aircraft maintenance component is comprised of hangars, wash apron, hangar access aprons, supply storage, utilities, and physical security facilities. Functional requirements are based on the unit or units to be supported within a hangar. There is a significant difference in the type, orientation, and quantity of space required between aviation unit maintenance (AVUM) and aviation intermediate maintenance (AVIM) functions. Consolidated hangars (more than one unit within a single hangar structure) should be limited to units with similar maintenance functions. Where a single unit has both AVUM and AVIM capability, very close coordination with the unit and functional proponent is required. Ideally, computation of space allowances to support specific aviation units should use the FPS on PAX to ensure that the latest organizational structure, equipment allocation and density is used. However, a manual computation method is provided in this section for those without FPS. Prepare a rough schematic layout of the maintenance and parking components before starting the estimate. Preparation of the estimate requires teamwork with the functional proponent. Each step in the manual computations is shown in tables 7-5 through 15.

TABLE 7-5

STEP 1 - MANUAL COMPUTATION FOR ACTUAL AND PROJECTED AIRCRAFT STATIONING BY AIRCFRAFT TYPE

Aircraft (ACFT) Types	Quantity of Aircraft by Type
1. UH-1, AH-1, OH-58A-C	_____
2. OH-58D, OH/AH-6, RAH-66 (4-blades)	_____
3. AH-64 (4-blades)	_____
4. UH-60 (4-blades)	_____
5. CH-47A-D (3-blades tandem)	_____
6. CH-54 (6-blades)	_____
7. C-12, U-21, U-8 (all)	_____
8. OV-1	_____
9. Other	_____
	_____
	Total _____

(2) Types of aircraft maintenance facilities.

(a) Aviation Unit Maintenance (AVUM) hangars. AVUM is defined as the high frequency "on aircraft," "repair by replacement" maintenance tasks needed to retain or restore aircraft serviceability. Facility planners can identify the AVUM capability of an organization by finding an AVUM section in the TOE, facility planning system (FPS) data, or the support facility annex for a specific aircraft type. Start to estimate AVUM space allowances by assuming 20 percent of all assigned aircraft are undergoing maintenance at any one time, and 80 percent of those undergoing maintenance require hangar space.

(b) Aviation Intermediate Maintenance (AVIM) hangars. AVIM is defined as repairs involving highly skilled "repair by fix" removal of components, and return or repaired components to the customer. AVIM hangars include space for technical shops, storage and issue of parts, technical assistance to customer units, and administration and training functions. There are two types of AVIM activities, TOE and TDA.

1/ TOE AVIM hangars are authorized aircraft maintenance spaces (modules) for 10 percent of each type of aircraft to be supported.

2/ TDA organizations are normally a part of the Directorate of Logistics (DOL), augment the TOE units, and vary in scope from site to site. Initial estimates of TDA space requirements may be made by using the annual intermediate maintenance workload anticipated for each aircraft type, and assuming that 80 percent of this workload will require hangar space. Roughly estimate the shop space for the TDA AVIM hangar using 50 percent of the maximum AVIM shop and supply space allocations stated in the "shop" portion of this section.

(c) Organizations with no organic maintenance capability. If no organic maintenance capability exists, aircraft will normally be maintained by another related organization. Any hangar requirements or allocations for these organizations need detailed justifications.

(d) Other types of hangars:

1/ Security and storage hangars. These hangars are for limited use and do not require the features provided in AVUM and AVIM hangars. Special justification is required for hangars in this category, and all requests for approval will be forwarded to HQUSACE ATTN: CEMP-EA, Washington, D.C. 20314-1000 for coordination. Hangar capacity is determined by the mission documentation that establishes the requirement, which could possibly be 100 percent of the aircraft assigned to the unit.

2/ Regional overhaul and repair hangars. Overhaul and repair activities are regional sites operated by the Aviation Systems Command (AVSCOM), U.S. Army Materiel Command (USAMC), for specific major repairs and overhaul. The modular hangar space methodology described later

in this section should be used to estimate maintenance bay sizes. For estimating shop space, it is recommended that 50 percent of AVIM shop and supply space allowances stated later in this section be used as a beginning point. The number of bays should be based on 80 percent of the annual maintenance workload requiring hangar space. If Government-Owned-Contractor-Operated (GOCO) space is required, the contractor space requirement will influence or govern the space estimate.

TABLE 7-6

STEP 2 - MANUAL COMPUTATION FOR ESTIMATE THE BASIC NUMBER OF HANGAR MAINTENANCE MODULES

- ESTABLISH WHETHER AVUM OR AVIM; THEN CALCULATE THE NUMBER OF MODULES USING THE FOLLOWING TABLE TO COMPUTE THE NUMBER OF MODULES ALLOWED:

Aircraft (ACFT) Types:	Quan./type:	If AVUM (X .20)	If AVIM (X .10)	If Comb. (X .15)
1. UH-1, AH-1, OH-58A-C	_____	_____	_____	_____
2. OH-58D, OH/AH-6, RAH-66 (4-blades)	_____	_____	_____	_____
3. AH-64 (4-blades)	_____	_____	_____	_____
4. UH-60 (4-blades)	_____	_____	_____	_____
5. CH-47A-D (3-blades tandem)	_____	_____	_____	_____
6. CH-54 (6-blades)	_____	_____	_____	_____
7. C-12, U-21, U-8 (all)	_____	_____	_____	_____
8. OV-1	_____	_____	_____	_____
9. Other	_____	_____	_____	_____
Total	_____	_____	_____	_____

Note: When aircraft require 100 percent covered storage, they will not be included in the percentage factor computation above.

b. Aircraft Maintenance Modules Within Hangars. The following dimensions assume that maintenance modules are placed side by side. When single modules are provided (no adjacent module), an additional 10 ft [3.05 m] will be added to the width of the module. Use SFA to estimate the module size of special mission or developmental type aircraft.

(1) Aircraft hangar bay modules. Space allowances for maintenance modules are estimated as follows:

TABLE 7-7

STEP 3 - MANUAL COMPUTATION FOR SIZING OF MAINTENANCE MODULES:

Types of Aircraft	Module Dimensions Length ft	Module Dimensions Length [m]	Module Dimensions Width ft	Module Dimensions Width [m]	Net Module Area ft2	Net Module Area [m2]	No. Required
1. UH-1, AH-1, OH-58A-C (Two-bladed acft)	77	23.5	30	9.1	2,310	214.57	_____
2. OH-58D, RAH-66 *, AH/MH/OH-6 (4+ blades)	77	23.5	45	13.7	3,465	321.86	_____
3. AH-64A - B (4-blades)	77	23.5	60	18.3	4,620	429.15	_____
4. UH-60A - L (4-blades)	84	25.6	64	19.5	5,376	499.37	_____
5. CH-47A - D (3-blades) 2 rotors tandem)	110	33.5	70	21.3	7,700	715.24	_____
6. CH-54A - B (6-blades)	110	33.5	80	24.4	8,800	817.42	_____
7. C-12 Fixed-Wing **	64	19.5	65	19.8	4,160	386.42	_____
8. RV/OV-1 Fixed-Wing	64	19.5	58	17.7	3,712	344.80	_____
9. Other TO BE DETERMINED FOR EACH SPECIFIC AIRCRAFT.							_____

* RAH-66 is based on concept dimensions.
** C-12 equates to aircraft such as U-6, U-8, and U-21; C-7 to C-23; and UH-1 to AH-1S/F.

TABLE 7-8

STEP 3 CONTINUED - DETERMINING HANGAR NET FLOOR AREA

Multiply Step 2 quantities by the module areas to determine net maintenance floor space:

ACFT Type	Module Net Area ft2	Module Net Area [m2]	X	Number Required	=	Net Acft Floor Space
1.	2,310	214.57	X	_____	=	_____ ft2 [m2]
2.	3,465	321.80	X	_____	=	_____ ft2 [m2]
3.	4,620	429.15	X	_____	=	_____ ft2 [m2]
4.	5,376	499.37	X	_____	=	_____ ft2 [m2]
5.	7,700	715.24	X	_____	=	_____ ft2 [m2]
6.	8,800	817.42	X	_____	=	_____ ft2 [m2]
7.	4,160	386.42	X	_____	=	_____ ft2 [m2]
8.	3,712	344.80	X	_____	=	_____ ft2 [m2]
9.	_____	___	X	_____	=	_____ ft2 [m2]

c. Hangar Access and Fire Lanes. The two most common hangar floor plan configurations are shown in figure 7-3 as follows:

FIGURE 7-3

```
_____________________________________________________________________________
|                                                                           |
|                    HANGAR ACCESS AND FIRE LANES  1/ 2/                    |
|___________________________________________________________________________|
|                                                                           |
|                                        Pull-Through Hangar 2/             |
|                                      -----------------------              |
|                                      | <<Safety Corridor>> |              |
|                                      | V --------------- V |              |
|                                      | V | Maintenance | V |              |
|  Individual Access Hangar 1/         | V |    Floor    | V |              |
|  -----------------------   ---------| V |-------------| V |---------     |
|  | <<Safety Corridor>> |   |  Hangar| V |             | V |Hangar  |     |
|  | V --------------- V |   |  Access| V | Access/Fire | V |Access  |     |
|  | V|   |   |   |   |V |   | ^Apron | V |     Lane    | V |Apron ^ |     |
|  | V|  Maintenance  |V |   |   -----| V |-------------| V |-----   |     |
|  | V|   |   |   |   |V |   | ^ |    | V | Maintenance | V |    | ^ |     |
|  | V|   | Floor |   |V |   |   |    | V |    Floor    | V |    |   |     |
|  |   ---------------   |   | ^ |    | V --------------- V |    | ^ |     |
|  |---------------------|   |   |    | <<Safety Corridor>> |    |   |     |
|  | Hangar Access Apron |   | ^ |    -----------------------|    | ^ |     |
|--|  ^   ^   ^   ^   ^  |---|   |--------------------------|----|   |---  |
|<<<<<<<<<<<<<<<<<<<<<<<<<<<<< Mass Aircraft Parking Apron>>>>>>>>>>>>>>>>   |
|                                                                           |
|___________________________________________________________________________|
```

1/ Use the individual access configuration for hangars supporting a single organization with less than 50 aircraft. Most AVUM hangars fall into this category.

2/ Use a pull-through design for those hangars supporting more than 50 aircraft.

TABLE 7-9

STEP 4 - MANUAL COMPUTATION FOR ACCESS, FIRE, AND SAFETY ACCESS LANES

If the hangar is a pull-through design, aircraft maintenance modules will be located on a maintenance floor to either side of a center access/fire lane corridor. Corridor widths for Step 5 calculations are as follows:

Type of Aircraft	Corridor Width		Remarks
	ft	[m]	
UH-1	30	9.15	Only when no plan to support multi-blade aircraft
OH-58D, RAH-66, AH-64A, UH-60A, CH-47C-D, Fixed-Wing	65	19.83	
Safety Corridor Around Perimeter of Maintenance Floor	5	1.53	Free of maintenance activities/equipment

TABLE 7-10

STEP 5 - MANUAL COMPUTATION FOR HANGAR SPACE WITHOUT SHOPS

Dimensions used in this calculation are as follows:

```
                        -------------------         ---
                        | Safety Corridor |          ^
                        | --------------- |          |
                        | | Maintenance | |          |
                        | |    Floor    | |          |
                        | |-------------| |          |
                   ---> | | Access/Fire | | <---     Y
                        | |     Lane    | |          |
                        | |-------------| |          |
                        | | Maintenance | |          |
                        | |    Floor    | |          |
                        | --------------- |          |
                        | Safety Corridor |          V
                        -------------------         ---
                        |<-------X------->|
```

HANGAR SPACES WITHOUT SHOPS, CONTINUED:

Where X dimension = the total width of the aircraft maintenance modules plus the safety corridors estimated from Step 4 above. Y dimension = the total length (depth) of the aircraft maintenance modules (including the access, fire, and safety corridors from Step 4 above).

(X_____ ft [m]) X (Y_____ ft [m]) = _____ ft2 [m2]

d. Hangar Shop Space.

(1) General. Shop space is provided in two categories - basic and special. Basic shop space includes technical repair, maintenance, administration and records, technical library, unit flight operations, and aviation-unique utilities (e.g., flammable storage, compressed air, hydraulics, 270 volts DC) which are common to all Army aircraft. Special shop space meets the particular requirements of specific unit missions or aircraft types (for example, weapons and armament, improved avionics, Chemical and Electronic Warfare Intelligence (CEWI) equipment, medical evacuation, and special navigation systems maintenance, supply and storage functions). Equipment density and workload factors (e.g., number of engines, mission equipment packages, medical, armament, and extended fuel

tanks) determine shop space requirements.

TABLE 7-11

STEP 6 - MANUAL COMPUTATION FOR SHOP SPACE ALLOWANCE
Shop floor space is predicated on the AVUM or AVIM capability of the unit. Whenever two units with separate maintenance capabilities are utilizing the same hangar, the total shop floor space will be the combined total. Begin as follows:
The maximum shop space allowance for AVUM is 7,500 ft2 [696.67 m2] gross area. The maximum special shop space allowance for AVUM is an additional 3,750 ft2 [348.33 m2] gross area. The maximum basic shop space allowance for AVIM is 15,000 ft2 [1,393.33 m2] gross area. The maximum special shop and supply space allowance for AVIM is an additional 7,500 ft2 [696.67 m2] gross area. For units with no organic maintenance capability allow a total of 3,500 ft2 [325.11 m2] basic, but not more than 5,250 ft2 [487.67 m2]. Any additional justification for space will be submitted to HQUSACE, (CEMP-EA). A minimum of 600 ft2 [55.73 m2] gross area of humidity-controlled space must be provided within the basic shop space allowance for both AVUM and AVIM hangars to accommodate maintenance of electronic gear. Estimate and justify space for maintenance storage, secure repair and storage, environmentally controlled maintenance support, if any is required and exceeds the allowances given in earlier paragraphs of this step. Then make the following calculation: Basic + Special + Avionics + Maint. Stor. + Secure Repr/Stor. + Envir. Controlled Maint. Spt. = Total Area _____ + _____ + _____ + _____ + _____ + _____ = _____ft2 [m2]

(2) Maintenance storage. Supply and logistics space is normally provided within the hangar space and is based on whether the occupying organization is AVUM or AVIM. When two or more activities are housed in one hangar, each activity is authorized its own supply and logistic space.

(3) Environmentally controlled maintenance support. Maintenance of chemical, laser and low observable technology in aircraft systems requires environmentally controlled facilities. For example, chemical

agent resistent coating (CARC) painting, and working with composite materials requires air filtration, waste by-product storage and disposal, hazardous material storage and climate control. Space allocations for these special considerations are contained in applicable SFA. Coordinate with functional proponents, and health, safety and logistics activities to determine actual requirements.

(4) Secure repair and storage. Advanced avionics, training device or simulation, and low observable technology increases the requirement for secure repair and storage which may include safes, vaults, electromagnetic interference (EMI) and radio frequency interference (RFI) using National Security Agency (NSA) approved hardware, and conformance with both physical and visual security criteria. Good site planning and design can reduce security risks. Coordination with installation physical security and law enforcement (normally a part of the Provost Marshal's office) is needed to determine the facility scope.

(5) Avionics maintenance shop. Avionics maintenance space should normally be provided within the hangar as described in Step 6 above, but when a separate building for consolidated avionics repair is to be provided, use table 7-12.

TABLE 7-12

AVIONICS MAINTENANCE SHOPS

Number of Aircraft	Gross Area 1/		
	ft2	[m2]	Notes
1 to 30	600	55.73	1
31 to 50	930 to 1,200	86.30-111.47	2
51 to 100	1,225 to 2,450	113.79-227.58	3
101 to 150	2,470 to 3,450	229.44-320.47	4
151 to 450	3,454 to 4,650	320.84-431.93	5
451 and above	****	****	6

1/ Mechanical equipment room space as required will be added to the gross areas shown when determining a single gross area figure for each facility.

NOTES:
1 - Space should be located in a hangar shop.
2 - Space based on 30 ft2 [2.79 m2] for each additional aircraft above 30.
3 - Space based on 25 ft2 [2.32 m2] for each additional aircraft above 50.
4 - Space based on 20 ft2 [1.86 m2] for each additional aircraft above 100.
5 - Space based on 4 ft2 [0.37 m2] for each additional aircraft above 150.

6 - Space will be justified and based on specific requirements.

TABLE 7-13

STEP 7 - MANUAL COMPUTATION FOR NET AREA (MAINTENANCE, CORRIDORS, PLUS SHOP IN THE HANGAR
The total requirement will be determined by combining steps 5 and 6. When step 5 cannot be accomplished, use the total from step 3 as a baseline estimate. Caution: this total does not include the square footage for areas such as break rooms, locker rooms, and toilet facilities, operations administrative functions not related to maintenance (such as classrooms, conference rooms) or support equipment (such as environmental controls, transformers). These spaces must be added during the preparation of a conceptual floor plan of the facility.
Total Step 5 _____ ft2 [m2]
Total Step 6 _____ ft2 [m2]
Total _____ ft2 [m2]

e. Aircraft Wash Aprons. A minimum of one wash apron should be provided for each maintenance hangar, each storage hangar, and each unit with AVUM or AVIM capability based on the size of the largest aircraft supported. However, AVIM units may require two different types of wash aprons when supported aircraft are significantly different in size. Adverse weather and environmental considerations may require more than one apron. Environmental controls on waste water, and utility connections for electricity and compressed air are required. Siting of wash aprons next to hangars is the most economical alternative for providing these utilities, but allow 5 ft [1.53 m] of buffer space between the hangar wall and any aircraft surface. Use TM 5-803-4 (reference 7-2) to obtain aircraft dimensions and add buffer dimensions described below. Three types of aprons are as follows:

(1) Light to medium helicopters (UH-60 baseline). The wash apron width will be estimated by adding 10 ft [3.05 m] to twice the width of the aircraft, and 5 ft [1.53 m] from the nose and tail of the aircraft to the edge of the pavement to provide the buffer space described above.

(2) Heavy helicopters (CH-47 baseline). The wash apron width will be estimated by adding 20 ft [6.1 m] to twice the width of the aircraft. The wash apron length will be determined by adding 10 ft [3.05 m] to the length of the aircraft.

(3) Fixed-wing aircraft (C-12 baseline). Due to the size of fixed-wing aircraft, a single fixed-wing wash apron will be provided per hangar. Add 10-ft [3.05 m] buffers to the length and the width of each

fixed-wing aircraft type to determine pad dimensions.

TABLE 7-14

STEP 8 - MANUAL COMPUTATION FOR WASH APRON ALLOWANCES
A sample space calculation for this step is as follows:
ACFT Types Area
UH-60 Wash Apron 118 ft [35.99 m] X 74 ft [22.57 m] = 970 yd2 [810.92 m2]
CH-47 Wash Apron 140 ft [42.7 m] X 110 ft [33.55 m] = 1,711 yd2 [1,431 m2]

f. Hangar access apron. Hangar access aprons provide a circulation path between the hangar and aircraft parking area. The dimensions of the apron are dependent upon the hangar configuration, the two most common of which are shown in figure 7-4 with dimensions given in feet:

FIGURE 7-4

```
|                                                                                |
|                          HANGAR ACCESS APRONS                                  |
|________________________________________________________________________________|
|                                                                                |
|                                              Pull-Through Hangar               |
|                                              -------------------               |
|                                              |                 |               |
|                                              |                 |               |
|  Individual Access Hangar        <  75   >|                 |<  75   >      |
|  -----------------------      -- ---------|                 |---------      |
|  |                     |    d w  |  Hangar|                 |Hangar  |      |
|  |                     |    o i  |  Access> HANGAR BUILDING <Access  |      |
|  |                     |    o d. | ^Apron |                 |Apron ^ |      |
|  |   HANGAR BUILDING   |    r -- |   -----|                 |-----   |      |
|  |                     |         | ^ |    |                 |    | ^ |      |
|  |                     |         | L |    |                 |    | L |      |
|  |                     |         | A |    |                 |    | A |      |
|  |--^---^---^---^---^--|  ---    | N |    --------------------   | N |      |
|  | Hangar Access Apron |   ^     | E |              ^            | E |      |
|  |                     |  75    >|30 |<            75            |   |      |
|  |<    door width     >|   V     |or |              V            | ^ |      |
|--|                     |---------|65 |---------------------------|   |      |
| <<<<<<<<<<<<<<<<<<<<< Mass Aircraft Parking Apron>>>>>>>>>>>>>>>>>>>>>> |
|                                                                                |
|________________________________________________________________________________|
```

(1) A minimum of 75 ft [22.88 m] distance will be provided between the operational portion of the parking apron (for example, power-on parking modules, hover-taxi lanes) and the nearest fixed or movable object. Dimensions of hangar access aprons will be sufficient to provide a paved area across the entire hanger door width and to provide a paved turning and maneuvering area for a 75 ft [22.88 m] distance away from the hangar building.

(2) Pull-through hangars are normally provided with two aprons 30 ft [9.15 m] wide for two-bladed aircraft or 65 ft [19.83 m] wide for multi-bladed aircraft (across each hangar door area), and 75 ft [22.88 m] distance away from the building. Pull-through hangars require access lanes as well as aprons. The width of these lanes will be 30 ft [9.15 m] for two-bladed craft and 65 ft [19.83 m] wide for multi-bladed craft. The apron will be surfaced with portland cement to prevent damage from fuel spills.

TABLE 7-15

STEP 9 - MANUAL COMPUTATION FOR HANGAR ACCESS APRON ALLOWANCES
Hangar access apron configuration is predicated on the hangar design and area calculations must be made after a conceptual sketch of the design is made. Sample apron estimates are as follows:
Length X width v 9 = square yardage; and, metric length X metric width equals m2; therefore, complete blanks for length and calculate as follows:
For a pull-through hangar:
Two aprons:
___ ft [m] door width X 75 ft [22.88 m] v (9 [omit for m2]) X 2 = ____ SY [m2]
Two access lanes:
___ ft [m](___ ft long X 30 ft [9.15 m] width for two-bladed helicopter); or 65 ft [19.83 m] for multi-bladed helicopter v (9[omit for m2]) X 2 = ____ SY [m2]
Total = _____ ft2 m2]
For an individual access hangar:
___ ft [m] door width X 75 ft [22.88 m] v (9 [omit for m2]) = ____ SY [m2]

6. SUPPORT FACILITY COMPONENT.

a. General. The facility support component is made up of major distribution, transfer, physical security, bulk storage, and transportation facilities necessary for support to one or more of the three functional components previously identified. If flight simulation training devices are required, this is the functional component where they should be located.

b. Bulk Fuel Storage.

(1) An aircraft fuel storage and dispensing facility with direct fuel truck access to the aircraft parking apron will be provided. Fuel storage normally will be installed underground. However, when the quantity of the product to be stored is of such magnitude to create unreasonable demands in construction time or cost, aboveground storage will be considered after determining available space, safety clearances, security

requirements, and underground construction conditions. Supporting justification and request for design assistance for aboveground storage with necessary dispensing equipment will be submitted through the appropriate MACOM to HQUSACE, ATTN: CEMP-EA. Siting of aviation fuel storage will conform with the approved real property master plan and a MACOM-approved detail site plan. Fuel storage allowances are for a 30-day supply and will be reduced to a 15-day supply where deliveries can be made within 7 days of placing an order. Where deliveries are to be made by tank car, the minimum fuel storage capacity for each type fuel will be 12,000 gallons [45,420 L]. Fuel storage capacity of 5,000 gallons [18,925 L] will be allowed for each kind of Army aircraft fuel now provided for permanently assigned aircraft in order to provide storage for fuel withdrawn from or required to refuel aircraft maintained but not assigned at an airfield. Requirements for greater capacities or for fuel storage and dispensing facilities for types of aircraft fuel for other than Army aircraft at an Army airfield will be individually justified. Storage capacities will be calculated as follows:

Number of each type of Army aircraft assigned or planned to be assigned.	X	Basic Annual Flying Hour planning factor for each type of aircraft.	X	Fuel consumption rate for each type of aircraft Use 6.5 lbs per gallon [1.69 kg/L] for AVGAS and JP-4.

(2) Divide the result by 12 to obtain the allowance for a 30-day supply, and halve the 30-day allowance to obtain the allowance for a 15-day supply. Total storage capacities will be rounded to the nearest 5,000 gallons [18,925 L] for quantities over 5,000 gallons [18,925 L] and to the nearest 1,000 gallons [3,785 L] for quantities under 5,000 gallons [18,925 L]. Detailed information on aircraft currently in production or under development is also available from SFA on PAX.

c. Flight Simulator Buildings.

(1) General. A flight simulator facility is comprised of two basic modules and several support modules. The two basic modules are:

(a) a common core module which houses the instructor, classroom, technical library, planning, briefing/debriefing and quality of life areas, and

(b) the simulator room or paved outdoor area which houses the actual training device or simulator. Support modules required as a part of the facility are dependent on whether the device is computer driven and if maintenance is provided by Contractor Logistics Support (CLS). All modern flight simulators use CLS, and space is provided for contractor operations, maintenance and parts storage. The Center of Standardization (COS) for flight simulator buildings, the Mobile Engineer District, can provide DA

Facilities Standardization Program Simulator Standard Design Packages.

(2) Configurations. Flight simulators are provided in several configurations. They may be motion based, non-motion based or mobile devices. Simulators may use individual monitors, visual domes, or no visual system at all, each requiring different facility configurations. Motion based simulators require a high bay area to accommodate movement of hydraulic arms and visual domes, non-motion based systems may usually be housed in lower bays, and mobile devices are temporarily set up on paved areas near buildings, where power sources are available.

(3) Simulator Security. Combat mission simulators, mission rehearsal/planning simulators and flight weapons simulators usually require secure storage. A separate Level 1 physical security room may be required for aircraft survivability equipment (ASE) and mission planning equipment, the training for which is conducted on NSA approved hardware. Level 1 security is designed to limit access and secure storage (e.g., a safe). Additionally, the simulator room or paved area designed to house the simulator device may require secure access and storage during the conduct of training. Site selection and layout procedures for security should be applied here.

(4) Space allowances. The space allowances shown in table 7-16 should be used as a guide when determining the sizes for flight simulator buildings. Use standard designs when developing a site plan for a multiple simulator complex, because the configuration of the standard designs provide space for flight planning, administrative and instructor spaces, and classrooms. The functional proponent and the simulator design COS package should be consulted during all planning, programming, and design to determine the type of simulator, final administrative and classroom space requirements, and siting criteria. Table 7-16 provides space allowances for stand-alone, single building flight simulation facilities.

TABLE 7-16

FLIGHT SIMULATOR BUILDINGS

Types of Simulators 1/	Gross Area 2/	
	ft2	[m2]
UH-1 FS (2B24)	7,200	668.80
CH-47 FS (2B31)	17,300	1,606.98
AH-1 FWS (2B33)	22,900	2,127.16
UH-60 FS (2B38)	22,400	2,080.71
AH-64 CMS (2B40)	23,000	2,136.44
UH-1/UH-60 (2B24/38)	21,000	1,950.67

TABLE 7-16 (Cont'd)

FLIGHT SIMULATOR BUILDINGS		
Types of Simulators 1/	Gross Area 2/	
	ft2	[m2]
CH47/AH-1 (2B31/33)	28,500	2,647.33
CH47/UH-60 (2B31/38)	30,200	2,805.24
AH-1/UH-60 (2B33/38)	37,800	3,511.20
CH-47/AH-1/UH-60 (2B31/33/38)	48,900	4,542.27

1/ FS = flight simulator: FWS = flight weapons simulator, CMS = combat mission simulator.

2/ Mechanical equipment room space as required will be added to the gross area figure when determining a single gross area figure for each facility.

(5) Simulator and device design center. Current simulator and training device designs are maintained by the COS for flight simulator buildings, Mobile Engineer District, P.O. Box 2288, Mobile, AL 36628-0001. The COS will coordinate the planning of all simulation facilities with the Simulation Training and Instrumentation Command (STRICOM), Orlando, FL 32826-3224. Additional information is published in SFA (Various Aircraft Device Systems), available on PAX, and the Trainer Facility Report, available from STRICOM.

d. Personnel Loading Apron. This type of apron will be provided to support transient and Very Important Persons (VIP) aircraft operations and is normally sited immediately adjacent or in proximity to the airfield operations building. The apron may also be used to support medical evacuation (MEDEVAC) operations. In the latter case, proximity to the MEDEVAC unit hangar or the quickest ground vehicular access to the flight line, or both, will be the determining factor for siting.

e. Aircraft Special-purpose Apron. The sizing and siting of this type of apron are dependent on the special clearances and the functional use the apron supports. For example, munitions loading and unloading will be based on safety distances established by DoD Standard 6055.9-STD (reference 7-12) and AR 385-64 (reference 7-13). The size of the largest aircraft to be supported and associated fire suppression requirements will also be considered when siting and sizing this type of apron.

f. Aircraft Compass Swing Base. This type of facility is associated with aviation facilities where maintenance on aircraft are conducted. As a

minimum, this type of facility will be provided at locations where 15 or more aircraft are permanently assigned or where aviation depot activities are to be performed.

REFERENCES

7-1 TM 5-803-7, Airfield and Heliport Planning Criteria.

7-2 TM 5-803-4, Planning of Army Aviation Facilities.

7-3 TM 5-834-2, Geometric Design for Airfields, Heliports and Helipads.

7-4 AR 95-9, Aviation: Terminal Air Navigation and Air Traffic Control Facilities.

7-5 TB 95-1, US Army Air Traffic Control and NavAid Facility Standards.

7-6 Fort Huachuca Control Tower, File Number 223-25-360, SPK Specification 5422, available from the Sacramento Engineer District Office.

7-7 AR 420-90, Fire Prevention and Protection.

7-8 Architectural and Engineering Instructions, "Design Criteria".

7-9 AR 310-49, The Army Authorization Documents (TAADS).

7-10 ETL 1110-3-394, Aircraft Characteristics for Airfield and Heliport Design.

7-11 ETL 1110-3-430, Design of US Army Airfield Aircraft Mooring and Grounding Points for Rotary Wing Aircraft.

7-12 DoD Standard 6055.9-STD, DoD Ammunition and Explosives Safety Standards, authorized by DoD Directive 6055.9.

7-13 AR 385-64, Ammunition and Explosives Safety Standards.

CHAPTER 8

ARMY RANGES AND TRAINING LAND

1. GENERAL.

a. Background. Live-firing and field training exercises are essential to maintaining a trained and ready Army. The modernization of the Army's combat force that began in the early 1980s led to heavier and faster vehicles, longer combat engagement distances, more lethal weapons, and increased use of combined arms exercises. These advancements have made the availability of training land, the environment and natural resources, and the need for realistic training scenarios crucial issues and concerns on most Army installations. Live-fire and maneuver training activities require three categories of facilities: training land; ranges; and training devices, simulators and simulations (TADSS). The provision of all three at a single location is not always possible or necessary. This chapter will focus on the first two categories, training land and ranges. Discussion of TADSS is limited to those items that directly support, or reduce, the need for training land.

b. Criteria. The criteria contained in this chapter are applicable to planning actions associated with the Army Range and Training Land Program (RTLP) and its relationship to the real property master plan (RPMP).

2. PLANNING PHILOSOPHY AND TECHNICAL POLICY GUIDANCE.

a. Hierarchial Approach to Planning. Training is a dynamic, constantly changing, "living" process with many direct and indirect factors which must be incorporated, thus affecting the ability to conduct training. As these direct and indirect factors are always changing, there is an impression that Army training personnel are constantly confused or undecided; however, they must constantly shift and balance between various training approaches to maximize the combat efficiency of Army organizations and equipment. The method used for this planning is to understand the mission, identify resource-intensive functions progressing from the largest units, training requirements, land requirements and equipment demands through to the smallest, establish capability limits, and develop a strategy within those limits to accomplish the training mission. In addition to using the general land use planning concepts set forth in Chapter 3 of these instructions, planning for training land and facilities should follow the process described as follows:

(1) Mission. The first step in accomplishing training land or facility analysis is to understand the mission of the installation and the Major Army Command (MACOM) to which it is assigned, keeping in mind that no two installations have the same mission and unit requirements. The Deputy Chief of Staff for Operations (DCSOPS), the J/G-3, or the Director of Plans, Training and Mobilization (DPTM) is the functional proponent responsible for determining and designating installation and unit missions. Considerations for analysis of the mission are as follows:

(a) MACOM training mission. The MACOM's peacetime and mobilization training mission dictates the type of training to be performed and the training load or density. For example, U.S. Army Training and Doctrine Command (TRADOC) installations focus on individual qualification training, which usually occurs when personnel first enter the Army. "Gaining and sustaining MACOMs" (e.g., U.S. Army Forces Command (FORSCOM), U.S. Army, Pacific (USARPAC), U.S. Army South (USARSO), U.S. Army Special Operations Command (USASOC), Eighth U.S. Army (EUSA) and U.S. Army, Europe (USAREUR)) receive trained individuals, assign them to their units or organizations, and conduct crew and unit training for sustainment of individual skills and unit tasks and missions skills. Most of the Army's training land requirement is found among the sustaining MACOMs, who must counterbalance resources between individual training, which requires less land, versus unit training, which requires larger, contiguous parcels of land. Other MACOMs (e.g., U.S. Army Materiel Command (USAMC) and U.S. Army Health Services Command (USAHSC)) focus primarily on individual sustainment training only, and do not require substantial training land. However, USAMC does require substantial land for its equipment testing and evaluation mission.

(b) Installation training mission. An installation's peacetime and mobilization training mission requirements allow specific facility categories and real property to be addressed in detail. All organizations that will compete for the use of training land and facilities must be factored into the mission analysis. The most dominant training functions determine the predominant training function of the installation. Installations can be generally categorized regarding training functions as follows:

1/ Individual training qualification. These installations, most of which are under TRADOC provide the basic individual skills necessary to qualify soldiers for initial assignment in the Army. Often referred to as the "training base," these installations require training facilities which are based on high volume, relatively short (e.g., one to 3 hours) periods of instruction. Generally, training base installations need more individual qualification ranges than needing large contiguous parcels of maneuver acreage. Exceptions are training installations devoted to combat (e.g., armor, infantry) and combat support (e.g., artillery, combat engineers) training where vehicle maneuvering is necessary. TC 25-8 (reference 8-1) provides additional guidance, descriptions, and basic layouts of ranges to include the weapons they support.

2/ Sustainment or unit training. As stated above, installations assigned to the gaining MACOM's have the greatest need for maneuver acreage. Appendix A, TC 25-1 (reference 8-2), provides maneuver area requirements by organizational type. Army policy dictates that organizations that will engage in combat together also train together. Sufficient training land is critical to meeting the installation's training mission to ensure combat readiness of assigned units. Sustainment training

is sub-divided into two basic unit levels which determine the magnitude of the training land requirement. The two levels are as follows:

a/ Brigade training. The brigade is the lowest level where all battlefield operating systems can be integrated and synchronized. Most Army installations do not have sufficient land area to conduct brigade - level operations.

b/ Battalion training. When an installation does not have sufficient land area to conduct brigade training, maneuver training at the battalion task force level becomes the minimum essential requirement. Units assigned to these installations may either use TADSS to develop expertise in brigade and higher level training operations, or may travel to larger installations to conduct brigade-level training.

(2) Determine the installation training capability. Training capability is defined as the training categories, maneuver areas, ranges or training devices or simulators that can be accommodated on an installation, as governed by the MACOM and installation peacetime and mobilization missions. Capability must also consider constraining factors such as land carrying capacity, erodibility, wetlands, endangered species, cultural resources and other limiting factors. In short, capability determination must answer the question, "What training can be conducted on the installation?"

(3) Determine the installation training capacity. Training capacity is defined as the number of training tasks for each training category and area group that can be supported at an installation, either by specific organizational structure or by weapon system. In simple terms, this analysis determines how many units can be accommodated on an installation.

(4) Identify throughput requirements. Training throughput is defined as the number of personnel, crews, or units that require a particular type of training, or is expressed as the total number of soldiers, crews, or units that a given range or maneuver area is capable of supporting during a specific period of time, during peacetime, and during mobilization periods.

(5) Determine throughput capacity. An evaluation of throughput requirements should be based on annual scheduling data, existing throughput capacity based on annual availability of training areas and facilities, actual usage data maintained by the Range Division of the installation Directorate of Plans, Training and Mobilization (DPTM), and the mobilization mission. In some cases, the DPTM may have computerized data bases (e.g., Range Facility Managers Support System (RFMSS)) which can assist planners in tabulating and documenting data. Requirements for additional capacity are valid when needed throughput is greater than existing throughput capacity.

(6) Weighing alternatives. Peacetime and mobilization missions, capability, capacity and throughput are used in developing and weighing

alternatives, and in determining the actual amount of training land required to satisfy training requirements. Calculations of throughput should include both peacetime and projected mobilization requirements. Calculations for throughput are complex and must be accomplished with the functional proponents at the installation using TC 25-8 (reference 8-1) and TC 25-1 (reference 8-2).

c. Functional Proponent. The RTLP is a centrally managed Army program, under the direction of the Director of Training, Office of the Deputy Chief of Staff for Operations and Plans (ODCSOPS), Headquarters, Department of the Army (HQDA). This program is managed in coordination with Headquarters, U.S. Army Corps of Engineers (HQUSACE); the Training Directorate, Combined Arms Command, and the Directorate of Ranges, Targets and Standards-in-Training Committee (STRAC), Army Training Support Center, both of the HQTRADOC organization. These four offices establish policy and procedure, review and validate requirements, furnish guidance and assistance to MACOM, and prioritize Army budget requirements. The installation-level functional proponent of training facilities, to include Reserve Component (RC) requirements, is the DPTM. At locations where there is no DPTM, master planners should coordinate with the commander of each tenant activity to be supported.

d. Safety. The inherent risk associated with the use of live ordnance on Army installations makes safety considerations paramount. The following guidelines are provided to assist installation planners in assessing and complying with firing and munitions handling and storage safety requirements. Implementation of weapons firing and munitions safety shall be in accordance with AR 385-10, (reference 8-3), AR 385-62 (reference 8-4), AR 385-63 (reference 8-5), and AR 385-64 (reference 8-6). Risk or hazard analyses must balance between total safety versus the risks inherent to simulation of a combat environment. Safety priorities established by Army policy are as follows:

(1) Protection of civilian personnel and property immediately adjacent to, or in proximity to installation boundaries. All ammunition and munitions hazards must be contained within installation boundaries.

(2) Protection of non-participants to training activities. Army personnel not participating in the actual conduct of training must be protected from ammunition and munition hazards.

(3) Protection for personnel conducting training. Army personnel participating in the actual conduct of training must be afforded reasonable protection from ammunition and munition hazards. Proficiency levels are a significant factor to be considered. For example, a facility such as a Military Operations in Urban Terrain (MOUT) area may create high risk to entry level personnel due to their inexperience, while the same facility is of low safety risk to trained personnel, because they are already familiar with their weapons, tactical fire and movement, and safety procedures.

e. Adjacent Land Uses. Adjacent land uses, current and future, must be considered when identifying land for range layout and maneuver training (see Chapter 3 of these Instructions). Buffer zones near installation boundaries must be provided to attenuate the noise, dust, and visual effects of firing and maneuver training. Maneuver areas should be large enough and configured properly to accommodate the TOE unit composition and tactical doctrine that will be supported (see TC 25-1, reference 8-2). Always keep in mind that, while adjacent civilian lands may be isolated and undeveloped today, the possibility of future urban expansion must be a serious consideration in all planning that is accomplished.

f. Airspace. Special use airspace (SUA) represents the "vertical safety envelop" of training land and ranges. SUA matters are processed and coordinated under the provisions of AR 95-2 (reference 8-7). Close coordination with the DPTM (or similar) proponent for aviation on the installation is required regarding the operational and safety aspects of SUA matters.

g. Sources of Assistance in Training Area and Range Planning. The installation DPTM (or similar) proponent should be the first line of assistance in training land and range planning. The Reserve Component Coordinator on the installation can also provide assistance. The following sources of assistance outside the installation may be used to augment the relationship between the DPTM Range Officer, Reserve Components Coordinator, and installation engineer:

(1) Huntsville Division. The Huntsville Division, USACE, is the mandatory center of expertise (MCX) for the RTLP and can provide assistance with the planning and design of training lands and ranges. Huntsville Division also assists HQUSACE in the validation of requirements for Army training land and range projects and participates in the design process of these projects. The address of the Huntsville Division point of contact at is, P.O. Box 1600, Huntsville, AL 35807-4301.

(2) Center of Standardization. The RTLP MCX, USACE, is also the center of standardization (COS) for Army training land and range standard designs. Huntsville Division can provide the latest standard design for many of the facilities required on modern ranges, or those needed to develop realistic maneuver training areas.

(3) Supporting district real estate division, USACE. USACE has the responsibility for all real estate actions involving Army installations. Therefore, the real estate division of the USACE district assigned to support the installation should be contacted in all matters pertaining to use and management of real estate, including acquisition of additional land.

(4) U.S. Army Construction Engineering Research Laboratories (CERL). CERL has developed two programs for the mapping and carrying capacity analysis of training lands and ranges. The Geographic Resources Analysis Support System (GRASS) is an automated geographic information system (GIS) spatial information program used to assist in geographic

mapping, management, and analysis. Data such as soil type and vegetative cover can be graphically modeled. The Land Condition-Trend Analysis (LCTA) Program provides an automated program for estimating the environmental carrying capacity of training land, such as estimating how many vehicle operations can be sustained by a parcel of land over a period of time without major environmental damage. The address for CERL is U.S. Army Construction Engineering Research Laboratories, P.O. Box 9005, Champaign, IL 61825-9005.

(5) National Guard Facility Management Officer (FMO). At State-controlled installations, or when National Guard training requirements must be factored into planning for active component installations, the FMO is the primary source of planning information.

(6) Installation Safety Officer. Range safety expertise is provided by the installation safety office, and each MACOM safety office. The technical advisor for range safety, HQTRADOC Command Safety Office (CSO), Fort Monroe, VA 23651-5000, is available to provide additional assistance.

(7) Health and safety risk assessment. Health and safety risk assessment and design review assistance may be obtained from the installation medical activity and safety office respectively. Additional assistance is available from the U.S. Army Environmental Hygiene Agency, ATTN: HSHB-ML, Aberdeen Proving Ground, MD 21010-54222.

(8) U.S. Army Environmental Center. Assistance with environmental issues may be obtained, through the appropriate MACOM headquarters, from the U.S. Army Environmental Center, Edgewood Area, Aberdeen Proving Ground, MD 21010-5401.

(9) U.S. Army Aeronautical Services Office. Policy guidance and assistance on matters regarding special use airspace (SUA) may be obtained from the U.S. Army Aeronautical Services Office (USAASO), Cameron Station, Alexandria, VA 22314-5050.

(10) Automated systems. The use of validated RTLP automated systems, data bases and analytical models can make the planning of ranges and training areas much easier and less resource intensive. Consideration should be given to interface with or integration with the computer systems and data bases of other staff activities to minimize the workload and ensure the consistency of data elements.

(a) Facility Planning System/Support Facility Annex (FPS/SFA). The FPS/SFA, resident on the USACE Programming, Administration, and Execution (PAX) computer system for worldwide access, can assist facility planners in identifying organizational structures and equipment space allowances. FPS calculates space allowances based on current Tables of Organization and Equipment (TOE) for those facility categories for which a computer algorithm could be developed. FPS output should be coordinated with the functional proponent to refine requirements and determine whether

construction or land acquisition action is warranted. The SFA is an electronic library that identifies impacts associated with the fielding of specific weapon systems and support equipment, noting any conflicts between the requirements of the new system and current criteria. These impacts usually affect about 60 percent of the facility categories identified in this chapter. HQUSACE, Engineering Division, (CEMP-EA), is the proponent for this program and may be reached at COMM (202) 272-0905. R&K Engineering is the FPS/SFA developer and contractor, and provides HOTLINE support at COMM (703) 343-7300, PAXID: RKENG.

(b) Army Modernization and Information Memorandum (AMIM). DA PAM 5-25 (reference 8-8), Army Modernization Information Memorandum (AMIM) provides information on when new weapon systems will be fielded. Additional information on training facilities requirements is also provided. The AMIM can usually be obtained from the installation DPTM.

(c) Integrated training area management (ITAM). ITAM is a comprehensive training areas management program designed to assist installation land managers to mitigate land management problems and maintain effective training land and resources. ITAM facilitates more realistic training, reduced land management and training costs, while anticipating environmental compliance requirements. ITAM includes a standardized long-term land condition-trend analysis (LCTA) program to inventory and monitor Army land; computerized decision support systems for planning and scheduling land maintenance such as the Geographic Resources Analysis Support System (GRASS); training land design support systems; soil erosion and runoff control technologies; and a program designed to increase environmental awareness among personnel using training land and facilities. AR 420-74 (reference 8-9) governs the ITAM program. Land management functions may be shared between the DPTM and the installation engineer ITAM coordinator (located in the Natural Resources Section or in the Environmental Office).

(d) Computer-aided design and drafting (CADD) and geographical information systems (GIS). The use of CADD and GIS can be of significant benefit to training personnel in portraying training scenarios using digitized terrain displays. Training personnel and facility planners can explore different individual and composite training and weapon system overlays and safety or operational conflicts on a computer display of an installation's digitized terrain before siting a range. CADD/GIS system integration between the Army training personnel and engineers is currently under prototype development by the RTLP MCX for adoption as an Army standard. Currently fielded products, capability and status may be obtained from the RTLP MCX. Installation engineer activities currently using or preparing to acquire CADD/GIS systems should contact the USACE CADD Center located at the Waterways Experiment Station (WES), 3909 Halls Ferry Rd., Vicksburg, MS 39180-6199. The Deputy Chief of Staff, Engineer, US Army Pacific, ATTN: APEN-FE, Fort Shafter, HI 96858-5100, may be contacted regarding lessons learned during implementation of this technology.

(e) Range Facility Management and Support System (RFMSS). RFMSS is an automated tool for managing the use of firing ranges and training land. Integration between RFMSS, ITAM and a safety system currently named Surface Danger Zone (SDZ) is underway. The system includes an automated range scheduling system and a computer-based noise monitoring system. USACE Huntsville Division is the RFMSS fielding implementation center for the Army. The point of contact at the Huntsville Division is the Deputy USACE RTLP Program Coordinator, P.O. Box 1600, Huntsville, AL 35807-4301, COMM (205) 955-4383, DSN 645-4383.

(f) Defense Installations, Ranges, and Training Areas (DIRT). An inventory of available training facilities, capacities and capabilities is contained in the DIRT database. The Army component of DIRT resides with Directorate of Ranges, Targets, and STRAC, Army Training Support Center, HQTRADOC. The DIRT database provides alternative sites to meet training land and live-fire range requirements. The point of contact may be reached at COMM (804) 878-4858/4859, DSN 927-4858/4859.

3. TRAINING LAND.

a. General. Training facilities occupy the majority of the land on Army installations that support training of active and reserve component personnel and units. The land must be of sufficient area and configuration to support safe and efficient training and, where possible, allow room for expansion. Refer to Chapter 3 of these instructions for land use planning requirements in addition to those discussed herein.

b. Categories of Training Areas. Training areas consist of three types, each supporting a progressively higher level of training proficiency. The categories are: local training areas (LTA), major training areas (MTA), and combat training centers (CTC).

(1) Local training area (LTA). Typically, home station training for individual weapons proficiency and unit collective training up to the battalion annual training evaluation plan (ARTEP) level is conducted in the LTA. LTA facilities focus on individuals through platoon weapons proficiency, battalion ARTEP maneuver requirements, and applying lessons learned at MTA or CTC. Reduced-scale (scaled) ranges, tactical engagement simulation systems such as the Multiple Integrated Laser Engagement System (MILES), TADSS, and smaller range surface danger areas minimize the land required for LTA. Installations whose mission does not focus on supporting deployable TOE units and/or conduct of individual training exercises need only small LTAs. Installations with missions involving TOE units involved in unit or group training exercises should ideally have sufficient LTA to support all assigned units. Overseas commands, Reserve Centers, National Guard Armories, and weekend training sites (WETS) suffer from a lack of LTA. Training is conducted to the extent available land will support, with the remaining training being conducted at installations with adequate lands.

(2) Major training areas (MTA). Typically, an MTA has enough range and training land resources to support collective live-fire exercises

(CALFEX), and annual battalion ARTEP evaluations. MTAs are usually geographically separate from LTAs. They support a wide number of units (for example, CONUS - Yakima Firing Center, Washington, and Hunter - Liggett Military Installation, California; OCONUS - Grafenwoehr and Wildflecken Training Areas, Germany and Pohakuloa Training Area, Hawaii). Units conducting training at MTAs concentrate on large unit collective fire (platoon through battalion) and maneuver training (battalion and brigade). An MTA allows for training which sustains lessons learned at LTAs; an MTA allows for training which cannot be accommodated at LTAs. At some installations, the physical size of their contiguous boundaries support individual weapons proficiency and both small-and-large unit collective training simultaneously for tenant activities (for example, Fort Hood, Texas).

(3) Combat training centers (CTC). The Army has designated four CTCs as premier training sites for large unit fire and maneuver training: the National Training Center (NTC) at Fort Irwin, CA; the Combat Maneuver Training Center (CMTC) at Grafenwoehr (live fire) and Hohenfels (maneuver) Training Areas, Germany; the Joint Readiness Training Center (JRTC) (provisional) currently relocating to Fort Polk, LA; and the Battle Command Training Program (BCTP) at Fort Leavenworth, KS. Facilities at CTCs include computer-controlled instrumentation systems that provide lessons learned, which are then practiced at LTAs and MTAs.

c. Balance Between Training Facilities. Real property master planners must understand that Army training planners must strike a balance between costs and maintaining trained and ready units, and between the use of LTAs, MTAs and CTCs. For example, if there is not enough land area for maneuver training, and the shortage cannot be mitigated through TADSS, units must travel to larger installations, using funds that would otherwise be available to meet other installation requirements. Similarly, allocation of a large land area for a large training range may temporarily close most other ranges while the larger one is in use, which delays other training.

d. Training Land Design. Tactical training activities by tracked vehicles and troops on maneuvers can extensively damage the soil and vegetative cover. In addition to the environmental impacts, the loss of vegetation reduces training realism, because soldiers must learn to operate in heavily vegetated areas. Plan and site training facilities to maximize use of existing vegetative cover. Consider line-of-sight, movement corridors, and requirements for close proximity to other activities. A solution is to design training areas using tactical concealment islands (TCI) and tactical concealment corridors (TCC). This concept involves the planting of vegetation in presently open tracts where such planting is useful to the training scenarios, in wildlife habitats and to buffer environmentally sensitive areas. TCI and TCC can be constructed to protect vegetation, define and improve vehicle trails and access roads to control water runoff in an effort to return the land to a more natural condition, which enhances conditions for realistic training.

e. Mobilization. The Mobilization Component (MC) of the installation real property master plan is essentially an overlay of the peacetime components depicting development required to support the assigned mobilization mission (see Chapter 6 of these instructions). Training land and range requirements are basic determinants of installation capability, and can govern the expansion that is specified in the MC.

(1) Analysis of training land for mobilization. To determine the adequacy of existing land to support MC requirements, surveys of existing real estate and utilization should be conducted in accordance with AR 405-70 (reference 8-10). Throughput requirements and capacities of existing facilities should be calculated using the methodology described in TC 25-8 (reference 8-1). TC 25-1 (reference 8-2) should be used to estimate training land requirements and the functional proponent should verify the estimates. Use this analysis as an opportunity for further team building, employing the knowledge and experience of the entire planning team (range control, environmental, real property master planning) to accomplish this analysis. Use the environmental analysis, the environmental overlay, and, if necessary, the advice of the U.S. Army Construction Engineering Research Laboratories (CERL) to estimate the environmental carrying capacity of the training land. A land use requirements study (LURS) may be needed to document any additional land needed to support mobilization. After coordinating with the DPTM, contact the real estate division of the supporting USACE district if a LURS is required.

(2) Analysis of training facilities for mobilization. Training facility requirements are a major element of the MC and must be developed in coordination with the functional proponent. The MC identifies requirements for classrooms, training buildings, ranges, impact areas, and close-in training areas. Requirements are based on the type of training to be conducted, the frequency of training, and the projected throughput.

(3) Mobilization alternatives. Determination of requirements for training facilities and land should consider alternative uses of existing ranges and training areas based on mobilization training criteria and needs. In some cases, requirements may be met by upgrading existing or inactive facilities, or by leasing off-post parcels of land for training. The most intensive need for alternatives will occur during the transition period or "surge" when active and reserve component organizations may be present on the installation at the same time. The mobilization component tabulation of existing and required facilities (MCTAB), described in detail in Chapter 6 of these instructions, should be used to document the planned alternatives.

f. Environmental Considerations (see Chapter 4 of these instructions). Management and stewardship of Army-managed land involves measuring the environmental carrying capacity, erosion control, resting and rehabilitating heavily-used areas, protecting the habitats of wildlife and endangered species, historical and archeological sites, flood plains, wetlands and coastal areas, preventing contamination of ground water, respecting and working within the socio-economic system, and mitigating the noise of weapons firing, aircraft and vehicles. Planning must consider alternatives

to all actions being considered, including "no action," along with mitigative measures if the proposal is implemented. Environmental considerations must be an integral part of all Army actions in accordance with the National Environmental Policy Act (NEPA) (reference 8-11), AR 200-1, Environmental Protection and Enhancement (reference 8-12), and AR 200-2, Environmental Effects of Army Actions (reference 8-13).

g. Land Acquisition. New weapons and war-fighting doctrine have intensified the need for training land. In some locations where land has been heavily used, rotational land is needed while primary land is being rehabilitated. Working against these influences is the fact that Congress rarely authorizes and appropriates land acquisition requests. Nevertheless, if a land acquisition action appears warranted, contact the real estate division in the supporting USACE district to start the action. Follow the procedures outlined in AR 210-21 (reference 8-14).

(1) Process. The process for determining if current land holdings at an installation are adequate to support training requirements is divided into four phases which are:

(a) Land use requirements study (LURS). The installation prepares a LURS to determine whether a training land shortfall exists following procedures stated in Chapter 2 of TC 25-1 (reference 8-2). The LURS quantifies training land requirements and documents shortfalls and deficiencies. The MACOM approves the study and forwards it for Army Staff (ARSTAF) review. The ARSTAF forwards the LURS and any recommendations to the Assistant Secretary of the Army (Installations, Logistics & Environment) (ASA(IL&E)) for concept approval. The appropriate MACOM is notified once this approval occurs.

(b) Analysis of alternatives study (AAS). After concept approval of the LURS, HQDA provides general guidance and designates an agency (e.g., MACOM, and/or external agency) to conduct the AAS. The study re-establishes the training land shortfall identified in the LURS, identifies and considers other alternatives, analyzes and compares the alternatives, and presents recommendations. When land acquisition remains the preferred alternative, and is approved by the ASA(IL&E), the results of the AAS will be included in the environmental documentation.

(c) Environmental assessment, environmental impact statement (EA/EIS). The third step in the process is environmental documentation (EIA/EIS) of the proposed action in accordance with AR 200-1 (reference 8-12), and AR 200-2 (reference 8-13). The documentation is prepared as a team effort between the environmental office, range office and the real property master planner. The supporting USACE district can provide assistance and may have useful data for this effort. See Chapter 4 of these instructions for a detailed discussion of environmental compliance issues.

(d) Real Estate Planning Report (REPR) or Lease Planning Report (LEPR). The Office of the Assistant Chief of Engineers (DAEN-ZC) and HQUSACE Directorate of Real Estate (CERE-AM) direct an appropriate USACE district to prepare a REPR or LEPR when the preferred alternative is to acquire additional land and the land area has been identified.

(2) Considerations. The following checklist should be applied to land acquisition actions to determine thoroughness:

(a) Decisions are keyed to a clearly defined study process.

(b) The study process integrates missions and environmental considerations, and takes its baseline from the Program Objective Memorandum (POM), ITAM, GRASS, the installation Range Development Plan (RDP), and RFMSS.

(c) All alternatives are addressed, including improvement of existing land management practices.

(d) Justification is complete, well documented, and analytical. Requirements are not based solely on judgmental factors.

(e) All training maneuver area constraints are reflected in Unit Readiness Reports, providing evidence that the land shortage affects the mission readiness.

(f) Public participation from the earliest stages of planning is well defined, and has been used to the maximum possible extent.

(g) The annual real property utilization surveys of the installation, required by AR 405-70 (reference 8-10), are complete and current.

4. TRAINING RANGES.

a. Range Modernization and Standardization.

(1) General. The modernization of Army ranges addressed under the Army RTLP was initiated to support the previously described improvements in weapons and doctrine. Modern ranges are very costly. Therefore, requirements for improved and additional ranges must be strongly justified. Multi-use ranges reduce the cost of range construction and operation, and permit several levels of training with a variety of weapons to be conducted on the same range. Many of these ranges support collective training for small units and, in some cases, facilitate brigade-sized maneuvers between two opposing forces.

(2) Alternatives consideration. Once a range requirement is established, installation training managers must determine if the need can only be satisfied by a new range, or if other alternatives are available. For example, the range may exist at another installation; an existing

specialized range might be converted to support multiple training requirements; or, the training might be accomplished on a simulator, subcaliber training device, or reduced scale range.

(3) Modernization. Electronic and computer technology have been employed on modern ranges using remote target controls and battle effects simulation devices. These TADSS can simulate stressful and challenging battlefield conditions. Computers record hits and misses, enabling performance analysis, corrective instruction, and after action reviews. Because computer systems and remote controls are used, planning must consider the needs of automated systems and the effects of electro-magnetic emissions and interference. As radio frequency TADSS to simulate enemy jamming are integrated, the latter consideration becomes especially significant.

(4) Standardization. Standardization of ranges has been a goal of the RTLP since its inception, providing designs that meet the training standards established by TRADOC schools and centers and AR 210-21 (reference 8-14), yet are flexible enough to meet local requirements. USACE design manuals (references 8-15 through 8-25) are guidelines for an array of standard designs, including ranges used for entry-level training to sophisticated multipurpose range complexes (MPRC). Standardization establishes a family of ranges, each designed to provide training of one or more well-defined training requirements; this eliminates "one-of-a-kind" facilities; bases range size and configuration on the types and strengths of the units that the range will support; provides standardization of training, tactical and related procedures; and enables accurate mobilization planning based on standard throughput capacities. Built-in to these generic designs is the capability to reduce resources (e.g., ammunition, maintenance), environmental impacts, and safety issues by integrating the use of TADSS, e.g., MILES.

(5) Range siting considerations. Safety and environmental constraints make range location a paramount master planning consideration. The location of the proposed range must be considered in relation to other training land, compatibility with other land uses to include those on and off the installation, and capability for expansion. The location should not isolate maneuver terrain or impact areas, or hamper the clearance of unexploded ordnance. Large contiguous areas are needed for ranges that employ moving vehicles. Widened surface danger zones (SDZ) are required when vehicles are to fire on the move. Range sites must be carefully selected to ensure that the terrain allows for maximum use of weapons systems. Shared support facilities, reasonable maintenance costs, and maintenance while other ranges are in use are required. For example, locating small arms ranges contiguous to close-in training facilities (e.g., obstacle/infiltration or NBC course) enables sharing of common support facilities (e.g., latrines, instruction buildings, parking areas). Complex, larger ranges should accommodate firing and non-firing maneuver exercises whenever possible.

(6) Impact areas. Impact areas are lands designated to receive spent or explosive projectiles fired from weapons. Typically, ranges surround the impact area. Area requirements vary with the installation's training mission and with each weapon system SDZ (the fan-shaped danger zone generated by each weapon type). Impact areas must be large enough to meet the requirements of current and proposed weapon systems. The land area required to contain SDZs and impact areas within an installation boundary may be reduced by placing target areas in front of hill masses. However, many safety considerations must be examined before using this alternative. Range complexes are arranged most efficiently by siting the ranges so the SDZ overlap and extend toward a common impact area. Impact areas must be sited to avoid reducing the availability, capability or capacity of existing training land. The Resource Conservation and Recovery Act (RCRA) (reference 8-26) mandates that new contaminated impact areas not be created, and establishes stringent requirements for exception to this policy.

(7) Range sub-categories and alternatives. TC 25-8 (reference 8-1) provides guidance on range sub-categories or types, graphic layouts and general utilization guidance. The TC also contains recommended ranges and quantities of these ranges by large (e.g., divisional or separate brigade) organization sets. Primary and alternative ranges used for training and qualification with specific weapon systems are listed in Appendix A, TC 25-1 (reference 8-1), and are also shown in tables 8-1 through 8-25, which are located at the end of this chapter.

5. INTEGRATION WITH REAL PROPERTY MASTER PLANNING (RPMP) PROCESS.

a. Provision of Resources. Manpower and funding policies, general procedures, considerations, and sources are discussed in AR 210-21 (reference 8-14) and ER 210-3-2 (reference 8-27), which govern the RTLP. In general, resources which qualify under the definition of the RTLP are budgeted, defended, and allocated through a single Management Decision Package (MDEP). Requirements reviews, program management, and prioritization of resource allocations are accomplished through HQDA level boards as described in paragraph 6 of this chapter.

b. Long-Range Component. The long-range component of the installation RPMP is the plan for how the installation will be utilized and developed over a long-range planning horizon of 10 - 30 years and a record of how the plan was developed and revised (see Chapter 2 of these instructions). Parts of the long-range component used to develop and support the training area and range program include the long-range analysis; the environmental quality analysis; capability analysis, expansion base; environmental overlay: and the land use plan.

c. Capital Investment Strategy (CIS). The CIS component of the installation RPMP is a link to the Army's Planning, Programming, Budgeting and Execution System (PPBES), presenting a strategy for realizing the installation's real property goals and objectives (see Chapter 2 of these instructions). The executive summary and applicable facility category group sections should establish the strategy for training areas and ranges.

d. Short-range Component (SRC). The SRC component of the installation RPMP addresses those actions and projects that must take place within the Program Objective Memorandum (POM) period (see Chapter 2 of these instructions). The parts of the SRC relating to training areas and ranges are:

(1) Planning data base. The planning data base developed for each project is described in detail in Chapter 5 of these instructions. The planning data base is a project file used to prepare a request for a military construction or land acquisition project (DD Forms 1390/1391). If land acquisition is required as a part of a range construction project, a separate DD Form 1390/1391 must be developed. The two requests, one for land acquisition and one for the range construction, may be submitted together.

(2) Site plan extract. The site plan extract presents the proposed project, or land acquisition action, in graphic form on an annotated future development site plan (see Chapter 5 of these instructions). The site plan extract for range projects will be annotated to show existing and proposed surface danger zones (SDZ) and any significant changes to noise contours.

e. Mobilization Component (MC). The mobilization component of the RPMP consists of overlays and supplements to the long-range component, capital investment strategy, and short-range components that depict land and facilities required to support the installation's assigned mobilization mission (see Chapter 6 of these instructions).

f. Project documentation. DD Forms 1390/1391, with cost estimate and project justification are documentation of the formal request for Congressional budgetary authorization and approval for construction and land acquisition projects. Project documentation is described in AR 415-15 (reference 8-28), and are submitted by the installation for MACOM and HQDA review and approval prior to Congressional action. After Congress authorizes the project and appropriates the funding, USACE can begin acquiring the land or constructing the range. The process takes approximately five years. The planning and programming process for RTLP is described in paragraph 6 of this chapter.

6. RTLP PLANNING AND PROGRAMMING PROCESS.

a. General. Management of the RTLP is accomplished through a process that supplements normal Military Construction, Army (MCA) program development and review procedures. This process encompasses all activities leading to the procurement of live-fire ranges or training land. AR 210-21 (reference 8-14) and ER 210-3-2 (reference 8-27) give the details of this process. A synopsis of the process is provided below.

(1) Installation. The process to support RTLP facilities begins at the installation level with the coordinated project development efforts of trainers, real property master planners, environmental and natural and

cultural resource managers, range officers, safety officers, force developers, facility engineers, and resource managers. This process is no different than required for any MCA project (see Chapter 5 of these instructions). The process includes requirements analysis; compliance with availability, scheduled and actual usage objectives; evaluation of alternatives; economic analysis; and incorporation of training facility requirements (ranges and training land) into an installation Range Development Plan (RDP), the RPMP, and the MCA Program for all fiscal years in the POM period.

(2) MACOM. MACOM review and validation of the training requirement, planning effectiveness, and QUICKSTART implementation is the first level at which the RTLP process augments the normal MCA program review process. RTLP focuses on functionality, integration, and compliance with other Army initiatives (e.g., doctrine, force structure and materiel development). A MACOM RDP is prepared, consolidating all installation RDPs, and is forwarded to the appropriate DA Program Coordinator in accordance with AR 210-21 (reference 8-14).

(3) HQDA. MACOM RTLP submissions are reviewed by four separate HQDA boards. They are the Requirements Review Board (RRB), Range Prioritization Board (RPB), and the Training Land Prioritization Board (TLPB), all chaired by DA DCSOPS; and the MACOM Program Review Board (PRB) conducted by the OACE. While the first three boards are unique to the RTLP, the PRB manages all MCA projects (see Chapter 5 of these instructions).

(4) The RRB, RPB and TLPB consist of four members:

(a) The Director of Training, DA DCSOPS (DAMO-TRS), or designated representative, who convenes and chairs the boards.

(b) The USACE Program Coordinator (CEMP-EA), Directorate of Military Programs, HQUSACE.

(c) The DA Range Program Coordinator (ATIC-RTS), Directorate of Ranges, Targets and STRAC, Army Training Support Center.

(d) The DA Training Land Program Coordinator (CAC-T), Training Directorate, Combined Arms Command.

b. Requirements Review Board (RRB).

(1) The RRB is a policy setting, decision-making board which addresses all range and training land issues that are based on changes or new initiatives in doctrine, force structure, and materiel fielding which cannot be resolved by other decision mechanisms at either HQDA or MACOM command levels. The RRB interfaces with other DA decision and policy setting bodies and responds to the Office of the Secretary of Defense (OSD) and Congressional inquiries. RRB functions include:

(a) Implementing DOD and DA guidance.

(b) Evaluating Army initiatives.

(c) Determining policy and regulatory adequacy and applicability.

(d) Identifying resource shortfalls that bear on Army training requirements.

(e) Determining alternative actions that will provide interim solutions to shortfalls, and determining long-range actions and responsibilities to overcome limitations.

(f) Evaluating special purpose and non-standard range designs to determine whether the training requirement can be met with an existing (or modified) standard design.

(g) Reviewing training land requirements, Land Use Requirements Study (LURS), and Analysis of Alternatives Studies (AAS) as required.

(2) MACOM planners identify issues for RRB consideration and forward supporting information and/or documentation to the appropriate DA Program Coordinator (e.g., ranges, training land, or engineering). DA DCSOPS convenes the RRB at least annually. The Program Coordinator records decisions and rationale of the Board and a summary is provided to all members. Unresolved issues are either referred to the appropriate Army agency or activity for resolution or are presented to the Training Mission Area General Officer Executive Committee (TMA GOEC) for decision.

c. Range Prioritization Board (RPB).

(1) Functions. The RPB integrates MACOM Range Development Plans (RDP) into an Army Master Range Plan (AMRP). This board prioritizes range projects within the appropriate fiscal years and is normally held in conjunction with the annual Program Managers Conference. Two basic functions are performed during the RPB session:

(a) Synchronization. Final validation and program synchronization of resources and contracts for the next two years.

(b) POM. Development of the next POM submission based on the MACOM's consolidated and prioritized MILCON and OMA projects.

(2) All issues and MACOM perspectives are reviewed at the RPB and final deliberation by the RPB results in a DA prioritized list resident in the AMRP. The AMRP prioritized list is forwarded to the Director of Army Training, DA DCSOPS, for approval and final coordination with the MACOM G3/J3. After final MACOM review, the prioritized list is presented to the TMA GOEC for approval. The AMRP prioritized list is used by the annual

MACOM PRB as a guide in prioritizing MCA projects Army-wide. Changes in annual construction programs resulting from the PRB are provided to DA DCSOPS by the OACE and the DA Program Coordinator, and the MACOM are informed of any changes. MACOM representatives then rank - order the projects submitted by the installations as prescribed by AR 210-21 (reference 8-14).

d. Headquarters, Department of the Army, Training Land Prioritization Board (TLPB). The TLPB integrates MACOM training land acquisition requirements into a DA priority list, prioritizing land acquisition projects in the same manner used by the RPB. The TLPB is conducted on an as-required basis to develop and validate the training land acquisition plan and priorities. A proposed DA priority list is prepared by the DA Program Coordinator and reviewed by the OACE (DAEN-ZCI-A) in coordination with DA DCSOPS prior to convening the TLPB. All issues and MACOM perspectives are reviewed at the TLPB and a proposed DA priority list is developed. The proposed list is forwarded to the ASA(IL&E) for approval as required. The Board then places all projects submitted by the MACOM in rank - order as prescribed by AR 210-21 (reference 8-14).

e. QUICKSTART Implementation. The QUICKSTART process reduces the amount of time between the review of project documents and the availability of project designs. Certain review and approval authorities are being delegated to the MACOM and USACE district engineer offices (Technical Centers) to expedite the review process. QUICKSTART advantages must be carefully balanced against the vulnerability of the long-lead time construction program versus a constantly changing Army, because projects can become obsolete before they are executed. Because of the need for balance, there is a need to address MACOM and USACE validation of DD Forms 1390 and 1391. The following guidance should preclude potential conflicts between QUICKSTART and the conventional MCA and RTLP processes.

(1) MACOM and USACE coordination with RTLP MCX. MACOM headquarters performing DD Form 1391 reviews and certifications for range projects, including indoor training facilities, for which a standard generic design manual is published (Huntsville Division Design Manual [HNDM] 1110-1-SERIES (references 8-15 through 8-25)), should coordinate with the RTLP MCX prior to final certification of each project. This will assist HQDA/HQUSACE in reducing the need to clarify comments, make corrections, duplicate efforts, and will ensure that the reviews and certifications are consistent with current regulations and directives.

(2) RTLP MCX in technical advisory role. Various headquarters performing project reviews should note that RTLP MCX project review is an adjunct to the QUICKSTART initiative. The RTLP MCX is a programmatic MCX which is authorized direct coordination with other MACOM, installations, TRADOC schools and centers, and USACE and AMC laboratories. However, review by the RTLP MCX is not a substitute for USACE project certification.

(3) MACOM reviewers (presumably MACOM DCSENG) should coordinate with their MACOM J/G-3 training proponent to ensure that DD Form 1391

certifications are consistent with the DA Requirements Review Board (RRB) decisions, and correlate with the Army's consolidated Master Range Program (AMRP ~ 6-year POM period) established by the annual DA Range Prioritization Board (RPB) deliberations (reference Appendix B, AR 210-21 (reference 8-14)). The AMRP's prioritized list is furnished to OACE (DAEN-ZCP) for the MACOM PRB deliberations and day-to-day program execution activities. Projects not included in the ARMP will be returned to the MACOM for DA RPB review.

f. Points of Contact (POC). The POC for this program are as follows:

(1) DA requirements review, Range and Training Land Prioritization Boards - Program Coordinator, Army Training Program, HQUSACE, ATTN: CEMP-EA, Washington, D.C. 20314-1000, COMM (202) 272-0905, FAX (202) 272-8815.

(2) MCX issues - Program Coordinator, RTLP, U.S. Army Engineer Division, Huntsville, P.O. Box 1600, Huntsville, AL 35807-4301 COMM (205) 955-4383, PAXID JORDAN, FAX (205) 955-4664.

(3) Training issues - DA Range Program Coordinator, Fort Eustis, VA 23604-5306 COMM (804) 878-3173, PAXID GUNNER1, FAX (804) 878-4260.

TABLE 8-1

M16A1/A2 RIFLES		
Training Event	Primary	Alternate
Zero	25m range	Automated Field Fire/ Automated Record Fire/ Modified record fire with 25m boots
Sustainment/ practice/ record fire	Automated field fire (AFF)/Automated record fire (ARF)	25m range
Qualification	Automated field fire/ Modified record fire (MRF)	25m range
Night fire	Automated field fire/ Automated record fire/ Modified record fire	25m range
Nuclear, biological and chemical (NBC) conditions	Automated field fire/ Automated record fire/ Modified record fire	25m range

TABLE 8-1 (Cont'd)

M16A1/A2 RIFLES		
Training Event	Primary	Alternate
Squad/platoon annual training evaluation plan (ARTEP)	Infantry squad battle course/(ISBC), Infantry platoon battle course/ (IPBC) Multipurpose training range Multipurpose range complex	Multipurpose training range (MPTR) Multipurpose range complex (MPRC)

TABLE 8-2

CALIBER .45/9mm/caliber .38 PISTOLS		
Training Event	Primary	Alternate
Instructional fire	Combat pistol qualification course (CPQC)	25m alternate pistol/ revolver qualification course
Qualification	Combat pistol qualification course	25m alternate pistol/ revolver qualification course
Nuclear, biological and chemical conditions	Combat pistol qualification course	25m alternate pistol/ revolver qualification course
Military police qualification	Military police firearms qualification course (MPFQC)/Combat pistol qualification course	25m alternate pistol/ revolver qualification course
Military police night firearms sustainment	Military police firearms qualification course	25m alternate pistol/ revolver qualification course

TABLE 8-2 (Cont'd)

CALIBER .45/9mm/caliber .38 PISTOLS		
Training Event	Primary	Alternate
	Combat pistol qualification course	

TABLE 8-3

M21 AND M24 SNIPER RIFLES		
Training Event	Primary	Alternate
Zero	Sniper field fire	25m range
Qualification	Sniper field fire	N/A
Night fire	Sniper field fire	N/A
Squad/platoon annual training evaluation plan Live-fire exercise (LFX)	Sniper field fire	Multipurpose training training range Multipurpose range complex
Combined arms live-firing exercise (CALFEX)	Multipurpose range complex	N/A

TABLE 8-4

M249 SAW MACHINE GUNS		
Training Event	Primary	Alternate
10m Practice	Machine gun 10m	N/A
10m Record	Multipurpose machine gun (MPMG)	N/A

TABLE 8-4 (Cont'd)

M249 SAW MACHINE GUNS		
Training Event	Primary	Alternate
Transition practice	Multipurpose machine gun	N/A
Transition record	Multipurpose machine gun	N/A
Nuclear, biological and chemical conditions	Multipurpose machine gun	N/A
Squad/platoon annual training evaluation plan live-fire exercise/ Staff training exercise (STX)	Infantry squad battle course/Infantry platoon battle course/Multipurpose training range/Multi-purpose range complex	N/A
Combined arms live fire exercise	Multipurpose range complex	N/A

TABLE 8-5

M60/M2HB MACHINE GUNS		
Training Event	Primary	Alternate
10m record	Machine gun 10m	N/A
Transition record	MPMG	N/A
Limited visibility/ Pre-determined fire	MPMG	N/A
Squad/platoon annual training evaluation plan live-fire exercise/	Infantry squad battle course/Infantry platoon battle course/Multipurpose training range/Multi-	N/A

TABLE 8-5 (Cont'd)

M60/M2HB MACHINE GUNS		
Training Event	Primary	Alternate
	purpose range complex	
Combined arms live-fire exercise	Multipurpose range complex	N/A

TABLE 8-6

M203/M79 GRENADE LAUNCHERS		
Training Event	Primary	Alternate
Instructional	Grenade launcher	N/A
Qualification	Grenade launcher	N/A
Nuclear, biological chemical conditions	Grenade launcher	N/A
Squad/platoon annual training evaluation plan live-fire exercise/	Infantry squad battle course/Infantry platoon battle course/Multipurpose training range/Multi-purpose range complex	N/A
Combined arms live-fire exercise	Multipurpose range complex	N/A

TABLE 8-7

HAND GRENADE (HG)		
Training Event	Primary	Alternate
Instructional	Hand grenade qualification course	N/A
Qualification	Hand grenade qualification course	N/A
Live grenade throw	Hand grenade familiarization course	N/A

TABLE 8-8

RECOILLESS RIFLES		
Training Event	Primary	Alternate
Zero	Antiarmor tracking	N/A
Instructional training	Antiarmor tracking	N/A
Qualification	Antiarmor tracking	N/A
Night firing	Antiarmor tracking	N/A
Nuclear, biological, chemical conditions	Antiarmor tracking	N/A
Combined arms live-fire exercise/ Live-fire exercise	Multipurpose range complex	N/A
High explosive (HE) live-fire	Impact area	N/A

TABLE 8-9

(LAW)/AT-4 LIGHT ANTITANK WEAPONS		
Training Event	Primary	Alternate
Instructional	Light anti-tank weapon	N/A
Qualification	Light anti-tank weapon	N/A
Squad/platoon live-fire exercise/ staff training exercise	Infantry squad battle course/Infantry platoon battle course/Multipurpose training range/Multi-purpose range complex	N/A
Combined arms live-fire exercise	Multipurpose range complex	N/A

TABLE 8-10

MK19 GRENADE-LAUNCHING MACHINE GUNS 1/		
Training Event	Primary	Alternate
Practice fire	Note: Range requirements for the MK19 will	
Record fire	be shown here after they are developed.	
Nuclear, biological, chemical conditions		
Night firing		
High explosive		
Machine gun sustainment		
Live-fire exercise		

A |/A |

TABLE 8-10 (Cont'd)

MK19 GRENADE-LAUNCHING MACHINE GUNS 1/		
Training Event	Primary	Alternate
Combined arms live-fire exercise	Multipurpose range complex	N/A

1/ Primary and alternate range designations are notional pending confirmation.

TABLE 8-11

60mm MORTARS		
Training Event	Primary	Alternate
Crew/section/ platoon training	Mortar	N/A
Evaluated annual training evaluation plan	Mortar	N/A
Combined arms live-fire exercise	Multipurpose range complex	N/A

TABLE 8-12

81mm MORTARS		
Training Event	Primary	Alternate
Crew/section/ platoon training	Scaled mortar range (SMR)	Mortar
Crew/section/	Mortar	N/A

TABLE 8-12 (Cont'd)

81mm MORTARS		
Training Event	Primary	Alternate
platoon training		
Evaluated annual training evaluation plan	Mortar	N/A
Combined arms live-fire exercise	Fire control	N/A

TABLE 8-13

107mm MORTARS		
Training Event	Primary	Alternate
Crew/section/ platoon training 1/	Scaled mortar range	Mortar
60mm subcaliber firing	Mortar	N/A
Crew/section/ platoon training	Mortar	N/A
Evaluated ARTEP	Mortar	N/A
Combined arms live-fire exercise	Multipurpose range complex	N/A

1/ USAREUR units only.

TABLE 8-14

M202A1 60mm ROCKET LAUNCHER/FLAME FIELD EXPEDIENT DEVICES		
Training Event	Primary	Alternate
Instructional	Flame operations	N/A

TABLE 8-15

M60A3/M1/M1A1 TANKS		
Training Event	Primary	Alternate
Table I Unit conduct of fire trainer (UCOFT)	Scaled gunnery range (SGR)(1:5/1:10/1:30/1:60)	
Table II Unit conduct of fire trainer		N/A
Table III 1/	Scaled gunnery range	Maneuver Area dayfire/tactical engagement system (TES)
Table IV 1/	Scaled gunnery range	Maneuver area dayfire/TES
Table V	Multipurpose training range	N/A
Calibration	Scaled gunnery range	Multipurpose training range
Table VI	Scaled gunnery range	Multipurpose training range
Table VII	Multipurpose training range	Multipurpose range complex/table VIII (old)

TABLE 8-15 (Cont'd)

M60A3/M1/M1A1 TANKS		
Training Event	Primary	Alternate
Table VIII	Multipurpose training range	Multipurpose range complex/table VIII (old)
Table IX	Multipurpose range complex	Multipurpose training range
Table X	Multipurpose range complex	Multipurpose training range
Table XI	Multipurpose range complex	NONE
Table XII	Multipurpose range complex	NONE

1/ Tank Crew Proficiency Course (TCPC).

TABLE 8-16

M60A3/M1/M1A1 TANKS		
Training Event	Primary	Alternate
Table I Unit conduct of fire trainer (UCOFT)	Scaled gunnery range (SGR)(1:5/1:10/1:30/1:60)	
Table II Unit conduct of fire trainer		N/A
Table III 1/	Scaled gunnery range	Maneuver Area dayfire/tactical engagement system (TES)
Table IV 1/	Scaled gunnery range	Maneuver area dayfire/TES

TABLE 8-16 (Cont'd)

M60A3/M1/M1A1 TANKS		
Training Event	Primary	Alternate
Table V	Multipurpose training range	N/A
Calibration	Scaled gunnery range	Multipurpose training range
Table VI	Scaled gunnery range	Multipurpose training range
Table VII	Multipurpose training range	Multipurpose range complex/table VIII (old)
Table VIII	Multipurpose training range	Multipurpose range complex/table VIII (old)
Table IX	Multipurpose range complex	Multipurpose training range
Table X	Multipurpose range complex	Multipurpose training range
Table XI	Multipurpose range complex	NONE
Table XII	Multipurpose range complex	NONE

1/ Tank Crew Proficiency Course (TCPC).

TABLE 8-17

M2/M3 BRADLEY FIGHTING VEHICLE (FIGHTING ARMORED PERSONNEL CARRIER)		
Training Event	Primary	Alternate
Tables I-IV	Scaled Gunnery Ranges (SGR) (1:5/1:10.1:30/1:60)	N/A
Table V	Multipurpose training range	Scaled gunnery range (1:5)
Zero	Scaled gunnery range	Multipurpose training range
Table VI A/B	Stationary range gunnery range	Multipurpose training range
Table VII A/B	Multipurpose training range	Multipurpose range complex table VIII
Table VIII A/B	Multipurpose range complex	Multipurpose training range table VIII
Infantry squad	Multipurpose range complex/combat exercise	Multipurpose training range table VIII
Infantry squad firing port exercises, stationary and moving	Multipurpose range complex	Multipurpose training range Multipurpose machine gun range
Table IX 1/	Multipurpose range complex	NONE
Table IX A/B 2/	Multipurpose range complex	NONE
Table X A/B 2/	Multipurpose range complex	NONE
Table XI	Multipurpose range complex	NONE
Table XII	Multipurpose range complex	NONE
Combined arms live-firing exercise	Multipurpose range complex	NONE

1/ Vehicle section gunnery.
2/ Scout section gunnery.

TABLE 8-18

COMBAT ENGINEER VEHICLE (CEV)		
Training Event	Primary	Alternate
Table I	Combat engineer vehicle	N/A
Table II	Combat engineer vehicle	N/A
Table III	Combat engineer vehicle	Multipurpose training range Multipurpose range complex
Table IV	Combat engineer vehicle	Multipurpose training range Multipurpose range complex
Table V	Combat engineer vehicle	Multipurpose training range Multipurpose range complex
Live-fire exercise	Multipurpose training range 1/	Multipurpose range complex 1/

1/ Stationary non-automated targetry ONLY.

TABLE 8-19

TOW/M901 ITV (ANTITANK MISSILES)		
Training Event	Primary	Alternate
Tables I - XII	Local training area (LTA)	N/A
Combined arms live-fire exercise	Multipurpose range complex 1/	N/A

1/ All training is conducted using Multiple Integrated LASER Engagement System (MILES) and Antitank Weapons Effect Signature Simulation (ATWESS).

TABLE 8-20

M47 DRAGON AND AT-4 (ANTITANK MISSILES)		
Training Event	Primary	Alternate
Field tracking	Local training area	N/A
Advanced tracking	Local training area	N/A
Tracking qualification	Local training area	N/A
Combined arms live fire exercise	Multipurpose range complex 1/	N/A

1/ All training is conducted using Multiple Integrated LASER Engagement System (MILES) and Antitank Weapons Effect Signature Simulation (ATWESS).

TABLE 8-21

AH-64 ATTACK HELICOPTERS		
Training Event	Primary	Alternate
Commander's gunnery tables	Aerial gunnery range (AGR)	Multipurpose training range Multipurpose range complex 1/
Crew gunnery tables	Aerial gunnery range	Multipurpose range complex
Team gunnery tables	Aerial gunnery range	Multipurpose range complex
Combined arms live-fire exercise/ Joint air attack team	Maneuver/impact area	Multipurpose range complex

1/ When using the MPRC for helicopter gunnery, confirm that target positions are constructed for direct fire aerial gunnery weapon systems. Only non-dud producing ammunition will be used.

TABLE 8-22

AH-1 ATTACK HELICOPTERS		
Training Event	Primary	Alternate
Commander's gunnery tables	Aerial gunnery range (AGR)	Multipurpose training range Multipurpose range complex
Crew gunnery tables	Aerial gunnery range	Multipurpose training range Multipurpose range

TABLE 8-22 (Cont'd)

AH-1 ATTACK HELICOPTERS		
Training Event	Primary	Alternate
		complex
Team gunnery tables	Aerial gunnery range	Multipurpose range complex
Combined arms live-fire exercise/ Joint air attack team (JAAT)	Maneuver/impact area	Multipurpose range complex

TABLE 8-23

UH-1M HELICOPTERS		
Training Event	Primary	Alternate
Commander's gunnery tables	Aerial gunnery range	Multipurpose range complex
Crew gunnery tables	Aerial gunnery range	Multipurpose range complex

TABLE 8-24

HELICOPTER DOOR GUNNER TRAINING (CH-47, UH-60, UH-IH)		
Training Event	Primary	Alternate
Tables I-IV	Multipurpose machine gun	Machine gun 10m
Table V	Aerial	Multipurpose

TABLE 8-24 (Cont'd)

HELICOPTER DOOR GUNNER TRAINING (CH-47, UH-60, UH-IH)		
Training Event	Primary	Alternate
	gunnery range	machine gun Multipurpose training range Multipurpose range complex
Table VI	Aerial gunnery range	Multipurpose machine gun Multipurpose training range Multipurpose range complex
Table VII	Aerial gunnery range	Multipurpose machine gun Multipurpose training range Multipurpose range complex

TABLE 8-25

VULCAN (AIR DEFENSE CANNON)		
Training Event	Primary	Alternate
Tables I-VIII	Air defense firing (ADF)	Multipurpose range complex

TABLE 8-25 (Cont'd)

VULCAN (AIR DEFENSE CANNON)		
Training Event	Primary	Alternate
Tables IX-XII	Multipurpose range complex	N/A

TABLE 8-26

DUSTER (TWIN 40mm AIR DEFENSE GUNS)		
Training Event	Primary	Alternate
Tables I-VIII	Air defense firing	Multipurpose training range Multipurpose range complex
Tables IX-XIII	Multipurpose training range	Multipurpose range complex

TABLE 8-27

REDEYE/STINGER/CHAPARRAL (AIR DEFENSE MISSILES)		
Training Event	Primary	Alternate
Live-fire exercise	Air defense firing	Multipurpose training range

REFERENCES

8-1 TC 25-8, Training Ranges.

8-2 TC 25-1, Training Land.

8-3 AR 385-10, Army Safety Program.

8-4 AR 385-62, Regulations for Firing Guided Missiles and Heavy Artillery for Training, Target Practice, and Combat.

8-5 AR 385-63, Policies and Procedures for Firing Ammunition for Training Target Practice, and Combat.

8-6 AR 385-64, Ammunition and Explosives Safety Standards.

8-7 AR 95-2, Air Traffic Control, Airspace, Airfields, Flight Activities and Navigational Aids.

8-8 DA PAM 5-25, Army Modernization Information Memorandum.

8-9 AR 420-74, Natural Resources Management, Land Forest, Fish and Wildlife.

8-10 AR 405-70, Utilization of Real Estate.

8-11 National Environmental Policy Act (NEPA)

8-12 AR 200-1, Environmental Protection and Enhancement.

8-13 AR 200-2, Environmental Effects of Army Actions.

8-14 AR 210-21, Army Ranges and Training Land Program.

8-15 HNDM 1110-1-5, USACE Design Manual Remoted Target System (RETS) Ranges.

8-16 HNDM 1110-1-6, USACE Design Manual for Multipurpose Range Complex - Heavy (MPRC-H).

8-17 HNDM 1110-1-7, USACE Design Manual for Military Operations on Urban Terrain (MOUT) Training Complex.

8-18 HNDM 1110-1-8, USACE Design Manual for Multipurpose Range Complex - Light Infantry (MPRC-LI).

8-19 HNDM 1110-1-9, Design Information for Range Control Facility.

8-20 HNDM 1110-1-10, Design Information for Battle Simulation Centers.

8-21 HNDM 1110-1-15, USACE Design Manual for RETS-Equipped Ranges (Sniper Training Field Fire Range, Multipurpose Machine Gun and Transition

REFERENCES (Cont'd)

Range, and Combat Pistol Qualification Course).

8-22 HNDM 1110-1-16, USACE Design Manual for RETS-Equipped Ranges (Tank Gunnery Stationary, Tank Crew Combat Firing Course, Tank Platoon Battle Run, and Anti-armor Tracking and Live Fire Range).

8-23 HNDM 1110-1-18, USACE Design Manual for Indoor Ranges.

8-24 HNDM 1110-1-19, USACE Design Manual for Infantry Squad Battle Course (ISBC), (DRAFT).

8-25 HNDM 1110-1-22, USACE Design Manual for Infantry Platoon Battle Course (ISBC), (DRAFT).

8-26 Resource Conservation and Recovery Act (RCRA).

8-27 ER 210-3-2, Army Range Program.

8-28 AR 415-15, Military Construction, Army (MCA) Program Development.