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VOLUME I. EXECUTIVE SUMMARY FOR THE STUDY
OF CONSOLIDATION OF RPMA IN THE
FAYETTEVILLE, N.C. AREA

CONSTRUCTION ENGINEERING RESEARCH LABORATORY
(ARMY), CHAMPAIGN, ILLINOIS

DECEMBER 1976

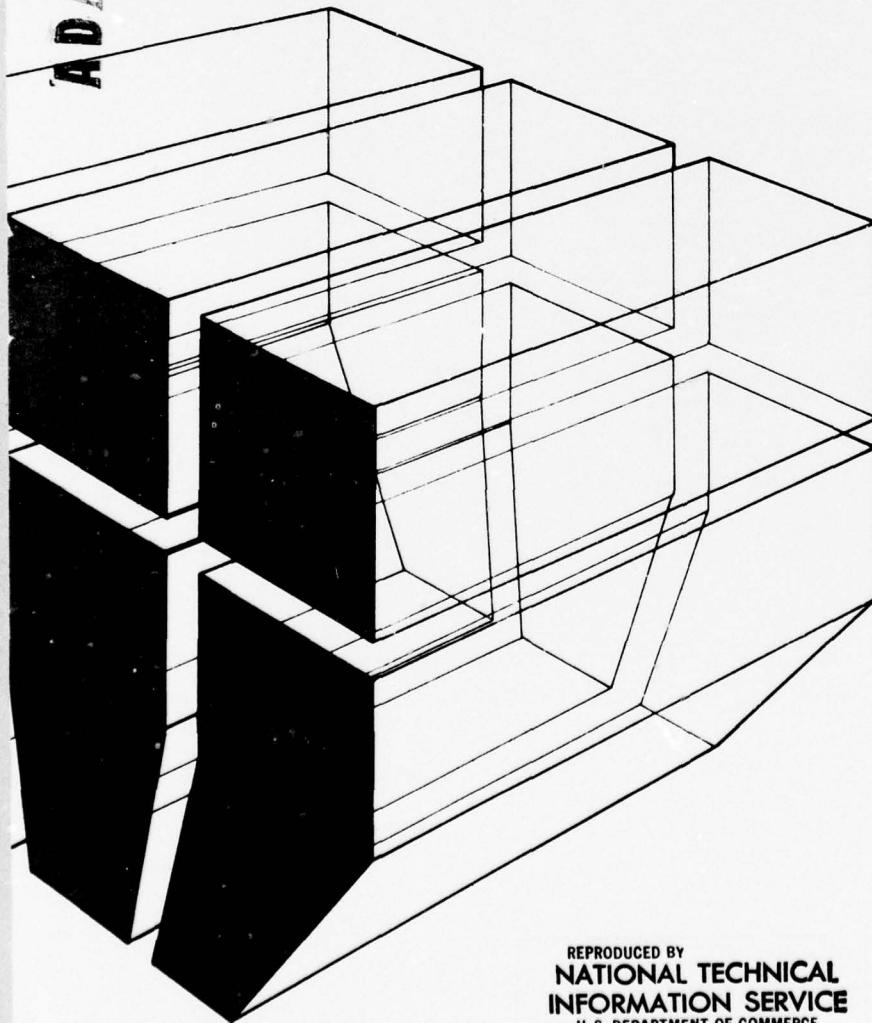
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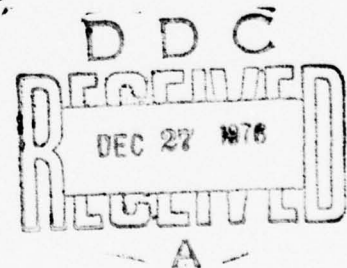
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CONSOLIDATION OF RPMA AT FAYETTEVILLE, NC
VOLUME I: EXECUTIVE SUMMARY FOR THE STUDY
OF CONSOLIDATION OF RPMA
IN THE FAYETTEVILLE, NC AREA



by
David W. Brown
Jeffrey G. Kirby
Joyce L. Nay



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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report provides an executive summary of the economic analysis performed to determine the feasibility of consolidating real property maintenance activities (RPMA) in the Fayetteville, NC area (Fort Bragg/Pope AFB). Results indicate that consolidation of RPMA at Fort Bragg and Pope AFB using an Army Industrial Fund Organization (AIFO) is feasible and that savings are possi- ble based on the assumptions made in this study. Based on the actual fiscal year 1975		

Block 20 continued.

(FY 75) workload, the consolidated organization could generate savings of between \$814,000 (2 percent of combined FY 75 cost) and \$1,184,000 (3 percent of combined FY 75 cost). Manpower reductions of 83 to 100 (6 to 8 percent) are to be expected. No loss of responsiveness or quality of work is expected. Since the savings are based on more than one military service, some of the savings, e.g., for equipment, may be realized by the Department of Defense and not entirely at the local level.

The net implementation costs of \$718,000 should be recoverable within the first year of operation. An environmental impact assessment of the RPMA consolidation in Fayetteville, NC indicates that there will not be a significant impact on the local economy.

An implementation evaluation should be made prior to deciding to consolidate to verify that the CERL consolidation analysis is still appropriate for the current operation and establish the procedures and policies of the AIFO and Residual Engineering Organization.

This volume is the first of five documenting the results of the consolidation study. Volumes II and III provide the cost analysis and backup data, Volume IV provides the general procedures for conducting RPMA consolidation studies, and Volume V analyzes the feasibility of consolidating the fire departments.

FOREWORD

This research was conducted for the Directorate of Facilities Engineering, Office of the Chief of Engineers (OCE), under U.S. Army Project Order ENG-CERL-75-5, dated 25 June 1975. The work was performed by the Facility Systems Branch (FOS), Facility Operations Division (FO), U.S. Army Construction Engineering Research Laboratory (CERL), Champaign, IL.

The OCE Technical Monitor was Mr. T. Kumagai, DAEN-FEP. The study was conducted under the general supervision of Mr. Richard J. Colver, Chief, FOS, and Mr. R. B. Blackmon, Chief, FO.

The study team was composed of CERL staff members and representatives from Fort Bragg Directorate of Facilities Engineering, Pope AFB Base Civil Engineering Organization, U.S. Army Forces Command, Military Airlift Command, and OCE. Appendix A lists team members.

COL J. E. Hays is Commander and Director of CERL and Dr. L. R. Shaffer is Technical Director.

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**CONSOLIDATION OF RPMA
AT FAYETTEVILLE, NC
VOLUME I: EXECUTIVE SUMMARY
FOR THE STUDY OF CONSOLIDATION
OF RPMA IN THE FAYETTEVILLE, NC
AREA**

1 INTRODUCTION

Background

The Assistant Secretary of Defense (Installations and Housing) [DASD (I&H)] has directed that real property maintenance activities (RPMA) be consolidated on a geographical basis when economies are possible.¹ A DASD (I&H) memorandum dated 29 June 1973 requested the Local DOD Real Property Maintenance Consolidation Committee (LDODRPMCC) to study the feasibility of consolidating RPMA in the Fayetteville, NC area.² The committee concluded that the government would not realize a significant cost savings if the RPMA at Pope Air Force Base were transferred to the Facilities Engineer at Fort Bragg; instead, total direct costs would increase.³

Since Fort Bragg did not have manpower resources available to conduct an in-depth study and analysis of total RPMA consolidation, the Deputy Installation Commander recommended to the Office of the Chief of Engineers (OCE) (DAEN-FEP) that an outside agency investigate the ramifications of consolidation on indirect RPMA costs and address the feasibility of establishing an industrial fund type of consolidated RPMA organization.⁴ DAEN-FEP therefore tasked the U.S. Army Construction Engineering Research Laboratory (CERL) to perform an economic analysis of an Army Industrially Funded (AIF) consolidation alternative.⁵

¹Memorandum, Deputy Assistant Secretary of Defense (I&H), 8 June 1972, Subject: Consolidation of Real Property Maintenance Activities at Military Installations.

²Memorandum, Deputy Assistant Secretary of Defense (I&H), 29 June 1973, Subject: Consolidation of Real Property Maintenance Activities at Military Installations in the Fayetteville, NC Area.

³Memorandum, Fort Bragg Deputy Installation Commander (AFZA-FE), 30 October 1974, Subject: Consolidation of RPMA at Military Installations in the Fayetteville, NC Area.

⁴Memorandum, Fort Bragg Deputy Installation Commander (AFZA-FE), Subject: Consolidation of RPMA at Military Installations in the Fayetteville, NC Area (RCS:DD-I&L (AR)-1073). (Transmitted to DAEN-FEP through FORSCOM.)

⁵Memorandum, Assistant Secretary of the Army (I&L), March 1975, Subject: Report for Consolidation of RPMA at Military Installations in the Fayetteville, NC Area (RCS: DD-I&L (AR)-1703).

The first phase of CERL's two-phase study—development of an operational AIF organizational concept (strawman) and study plan for RPMA consolidation at Fort Bragg and Pope AFB in the Fayetteville area—began on 31 March 1975. The second phase—examination of the feasibility of total consolidation of RPMA using the strawman concept developed in Phase I—began on 1 July 1975.

The direction from DASD (I&H) was expanded to require a separate consolidation study to be performed and submitted to DOD for the functional area of structural fire protection.⁶ The structural fire protection study was included as part of Phase II.⁷

Purpose

The objectives of the RPMA consolidation study are to:

1. Determine the feasibility of consolidating RPMA in the Fayetteville, NC area into a separate Army industrially funded organization.
2. Determine the feasibility of consolidating structural fire protection/prevention.
3. Develop general procedures for conducting RPMA consolidation studies.

The purpose of this report is to present an overview of CERL's cost analysis of the feasibility of consolidating RPMA in the Fayetteville area.

Scope

This report is the first of five volumes documenting the consolidation study:

Volume I—*Executive Summary for the Study of Consolidation of RPMA in the Fayetteville, NC Area*—an executive summary of the cost analysis documented in Volumes II, III, IV and V.

Volume II—*Summary Cost Analysis for Consolidation of RPMA in the Fayetteville, NC Area*⁸

⁶Memorandum, Deputy Assistant Secretary of Defense (I&H), 13 May 1975, Subject: Consolidation of Real Property Maintenance Activities (RPMA) at Military Installations.

⁷Letter, Acting Deputy Director, Facilities Engineering, OCE, 17 June 1975, Subject: Consolidation of Real Property Maintenance Activities (RPMA) at Military Installations.

⁸D. W. Brown, J. G. Kirby, and J. L. Nay, *Summary Cost Analysis for Consolidation of RPMA in the Fayetteville, NC Area*, Technical Report C-73, Vol II (U.S. Army Construction Engineering Research Laboratory [CERL], September 1976).

Volume III—*Cost Analysis Support and Backup Data for the Consolidation of RPMA in the Fayetteville, NC Area*⁹

Volume IV—*General Procedures for Conducting RPMA Consolidation Studies*¹⁰—contains procedures used for the cost analysis

Volume V—*Structural Fire Protection/Prevention Consolidation Study for Fayetteville, NC Area*¹¹—discusses the fire study performed according to DOD guidelines.

Approach

An Organizational Concept Document for a consolidated RPMA organization in Fayetteville, NC was developed from AR 420-10¹² and the particular requirements of the Pope AFB Civil Engineering Organization (BCE). The new organization was defined as a stand-alone AIFO with residual engineering functions remaining at each customer installation. During October and November 1975, the concept document was staffed through OCE, U.S. Army Forces Command (FORSCOM), and Military Airlift Command (MAC) Headquarters, as well as the Directorate of Facilities Engineering (DFAE) at Fort Bragg and the BCE at Pope AFB. The revised document is presented in Volume III.

The FY 75 actual work and resource requirements for Fort Bragg and Pope AFB were determined by detailed surveys. Data collected included the type and quantity of work performed, the labor hours and equipment used, the existing Interservice Support Agreements (ISSA), and the external support provided to the engineering organizations by their host bases. Manpower requirements were analyzed at two levels:

1. "As observed"; i.e., the average actual on-board and the currently recognized strengths by shop and office for FY 75.

⁹D. W. Brown, J. G. Kirby, and J. L. Nay, *Cost Analysis Support and Backup Data for the Consolidation of RPMA in the Fayetteville, NC Area*, Technical Report C-73, Vol III (CERL, September 1976).

¹⁰D. W. Brown, J. L. Nay, and J. G. Kirby, *General Procedures for Conducting RPMA Consolidation Studies*, Technical Report C-73, Vol IV (CERL, December 1976).

¹¹David W. Brown, *Structural Fire Protection/Prevention Consolidation Study for Fayetteville, NC Area*, Technical Report P-54/ADA018217 (CERL, November 1975).

¹²*Facilities Engineering: General Provisions, Organization, Functions and Personnel*, AR 420-10 (Department of the Army, 15 June 1975).

2. "As calculated" using DA Pam 570-551.¹³

To compare the current staffing levels with those derived from Change 4 to DA Pam 570-551, the current DFAE and BCE resources were "distributed" to the DFAE, Army operating counterparts. The current method of operation (CMO) could then be compared to the consolidated organization on a cost-center-to-cost-center basis.

The Change 4 staffing criteria were applied to the combined installation workloads for FY 75 to determine consolidated manpower requirements. Concurrent analyses were made to determine the impact of consolidation on installation support and equipment requirements. Several organizational and support options were defined and analyzed. The resulting manpower and dollar requirements were then compared with the "as observed" manpower and dollars for FY 75 to determine the feasibility of consolidation.

The structural fire protection survey was performed independently from the rest of the study in accordance with DOD instructions. Fire protection/prevention is an activity in the facilities engineering organizations in both the Army and Air Force. However, the fire department functions have very little relationship to RPMA functions performed by the DFAE or BCE. For this reason fire protection may be consolidated independently of the rest of the RPMA, consolidated as part of the total consolidation, or left unchanged. The final cost analysis results are presented in Volume II with and without the fire department in the consolidation action.

The study includes the consolidated RPMA requirements for space, charge-out rates, automated reporting, implementation costs, and an environmental impact assessment.

2 CURRENT METHOD OF OPERATION

Fayetteville Area

Fort Bragg and Pope AFB are located side by side approximately 11 mi (17.6 km) northwest of the city of Fayetteville, NC. Fort Bragg occupies 137,319

¹³*Staffing Guide for US Army Garrisons*, Change 4, DA Pam 570-551 (Department of the Army, 24 August 1976). (Note: CERL used a draft revision to the Staffing Guide Change 4 to evaluate manpower in Volumes II and III.)

acres (55 571 hectares); Pope AFB, which is practically encompassed by Fort Bragg, occupies 1,750 acres (708 hectares) (Figure 1). Fort Bragg also has responsibility for Camp MacKall and 33 U.S. Army Reserve Centers throughout North Carolina. Table 1 gives the populations of Fort Bragg and Pope AFB.

The missions of the Fort Bragg DFAE and Pope AFB BCE are similar, in that both support installation operations by maintaining the installations' physical plants and providing engineering services.

Table 1
Population: Fayetteville, NC Area
September 1975

Cumberland County, NC: 247,000		
Grand Total—Post Population Profile: 161,314		
On Post*	Fort Bragg	Pope AFB
Assigned Military [†]	38,031	3,782
Officers	(3,398)	(666)
WO	(777)	—
Enlisted	(33,856)	(3,116)
Attached Military (over 30 days)	77	
NG/USAR on Post IDT	(6,727)	
NG/USAR on Post AT	(1,015)	
ROTC	—	
(Total man-months—Reserve Component)	1,371	
DA/DAF Civilians	4,153	360
On-Post Dependents	15,033	1,613
Other Personnel (NAF, Contract, etc.)	4,162	165
Other Services/Allied Services	16	—
TOTAL ON POST	62,843	5,920
Off Post		
Satellites		
Military	1,094	
DA Civilians	186	
Other Civilians	805	
ARNG/USAF Off Post IDT (man-months)	1,146	
Retirees—Army	5,805	
Other Services	3,329	
Dependents—of Active Duty: Army	57,915	
of Active Duty		
Other Services	4,003	
of Retirees Army	11,610	
of Retirees Other Services	6,658	
TOTAL OFF POST	92,551	

*Figures in parentheses are not included in totals.
†Includes students.

FY 75 Workload

The DFAE had a total expenditure of \$29,130,273 for RPMA in FY 75 and used an average of 749 man-years of effort. The corresponding figures for the BCE were \$6,052,150 and 323 man-years of effort (318 man-years without family housing). The combined FY 75 expenditures were \$35,182,423.

The DFAE and BCE FY 75 workload data were collected and classified in accordance with the Army's RPMA management system, i.e., Individual Job Orders, Service Orders, and Standing Operation Orders. The FY 75 shop labor hours expended in maintaining real property were 764,207 hours at Fort Bragg and 191,925 hours at Pope AFB.

FY 75 Manpower

RPMA were accomplished by the DFAE/BCE using a dedicated civilian work force, military facilities engineering (FE) work force, and troop labor. Table 2 presents the average FY 75 on-board staffing levels for the DFAE/BCE.

Table 2
DFAE/BCE Average Man-Years of On-Board Staffing for FY 75

	Supervisory		Nonsupervisory		Temporary	Total
	Civ	Mil	Civ	Mil	Civ	
DFAE*	86.0	2.0	536.0	76.0	49.0	749.0
BCE [†]	29.0	21.0	110.5	152.3	4.8	317.6
TOTAL						1,066.6

*Average man-years for civilians, military (assigned officers, QMAD and Troop Support to Building and Grounds Division) and temporary appointments during base year period.

†Average man-years for civilians, military (assigned officers and Prime BEEF) and temporary appointments during base-year period.

Military labor is used to accomplish a substantial portion of the RPMA. In FY 75 the DFAE had an average of 78 military in-house consisting of Troop Support to Buildings and Grounds Division (46 man-years) and Quarterly Manpower Authorization Document (QMAD, 32 man-years). The DFAE also obtains out-of-house support from the Self-Help Program (376 man-years) and Engineer Troop Project Support (83 man-years). In contrast, the BCE had an average of 173 military in-house, including the Base Engineering Emergency Forces (Prime BEEF). Only ½ man-year of self-help was identified by the BCE for FY 75.

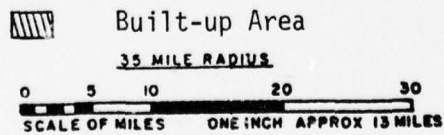
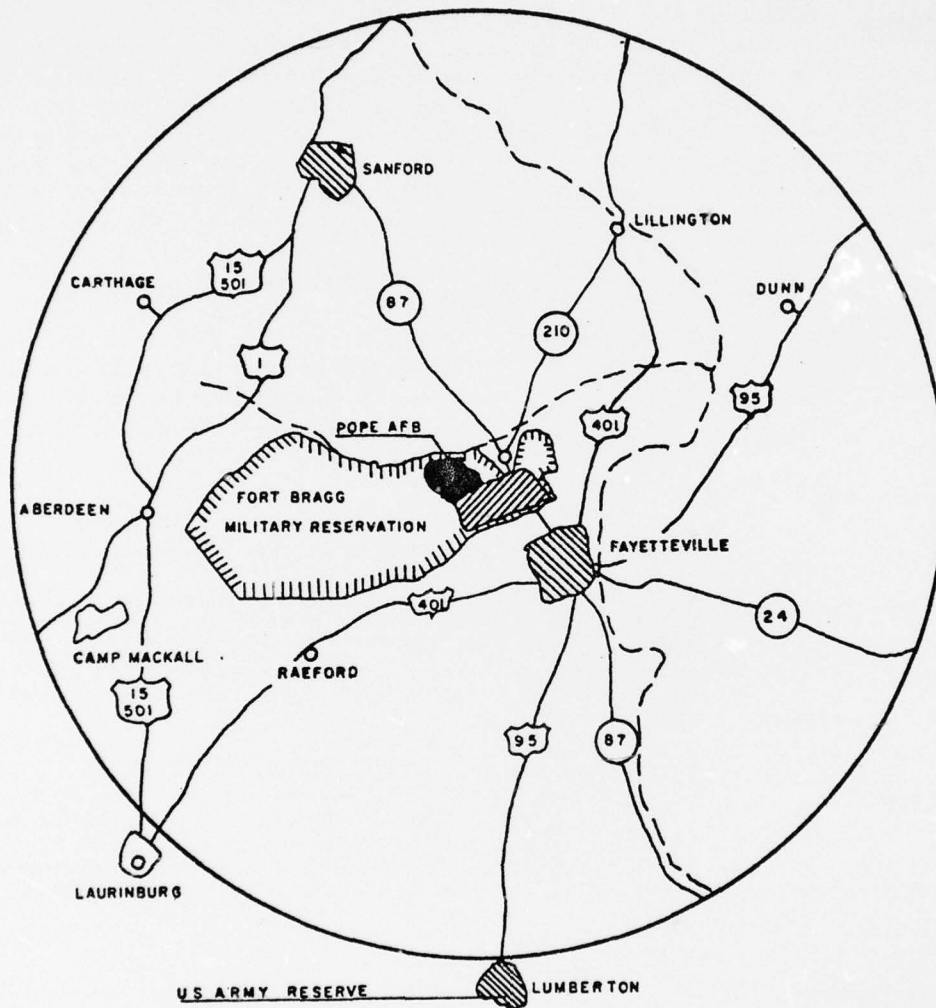


Figure 1. Map of Fayetteville, NC Area.

External Support

A complete study of the economics of the RPMA organizations must include the external support provided by various agencies of the installation. The three types of FE external support were examined: interservice support agreements, out-of-house military support, and support provided by other base operation activities.

Interservice Support Agreements

The existing interservice support agreements (ISSAs) between Fort Bragg and Pope AFB were evaluated. If RPMA is consolidated in the Fayetteville area, the existing ISSAs will not be required, since agreements to share resources, equipment, etc. are automatically handled by the consolidated RPMA organization.

Out-of-House Military Support

The out-of-house military support identified in the previous section was assumed for the study to be available after consolidation. The RPMA performed by the out-of-house military was not evaluated by this study.

Installation Support

Support provided by installation agencies to the DFAE and BCE was evaluated. The types of installation support provided the DFAE and BCE are very similar, but the amounts required vary. Table 3 shows the amount of man-year support provided to the DFAE/BCE.

Table 3
Installation Support to the DFAE/BCE

Agency	DFAE Man-Years	BCE Man-Years
MISO/Data Automation	.18	.33
Comptroller	10.30	3.60
AG/Base Administration	.10	.77
Civilian Personnel Office	6.00	3.50
Supply	.65	13.00
Procurement	9.75	3.00
Transportation	4.49	6.39
Movements	2.15	0
Material Maintenance	1.67	0
Communications	0	0
TOTAL	34.99	30.59

Equipment Analysis

The equipment used by the DFAE and BCE was inventoried and classified as vehicle, shop, or office equipment. This inventory included identification data, acquisition cost, utilization data, and operation and maintenance costs. Table 4 summarizes the equipment for the DFAE/BCE in terms of dollar value and quantity.*

3 CONSOLIDATED RPMA ORGANIZATION

Army Industrial Fund Organization (AIFO)

The consolidation of RPMA in the Fayetteville area was evaluated as an AIFO, which will provide the same services with equal quality and responsiveness as the existing organizations but will charge the actual cost for work performed.

Legal Precedent

There is legal precedent for the authority to consolidate and the AIFO (see Chapter 5 of Volume III). Public law actually requires consolidation of activities whenever it is more efficient and economical. The funds and civilian employees required for RPMA may be transferred from one department or agency to another. The transfer of real property and equipment to the new agency created by the consolidation is merely an administrative matter and presents no legal complications.

Organizational Concept

The organizational concept for the AIFO is the Army facilities engineering organization specified in AR 420-10, with the following exceptions:

1. Engineering Resource Management Division replaces the Work Coordination Office
2. Comptroller function has been added
3. Procurement function has been added to the Supply and Storage Division
4. Fire Department is optional
5. An Activity Civil Engineer (ACE)[†] has been added for each installation to serve as a liaison be-

*Volume III presents the dollar values and quantities in detail.

[†]The Navy term "ACE" is used in this study because there is no Army counterpart. This term may be changed during the implementation evaluation.

Table 4
Equipment Summary for the DFAE/BCE

	General-Purpose Vehicles	Special-Purpose Vehicles	Shop Eq. > \$1,000	Shop Eq. < \$1,000	Office Furniture	Office Machines
DFAE	\$255,997 (79 veh.)	\$2,733,039 (332 veh.)	\$317,247	\$1,080,273	\$42,821	\$179,682
BCE	\$ 76,151 (22 veh.)	\$ 505,283 (67 veh.)	\$276,814	\$ 147,928	\$ 7,872	\$ 30,581

tween the AIFO and all reimbursable customers. The ACE will check on work order schedules, priorities, and any problems encountered by the customers of the AIFO.

A residual staff has also been identified for each installation. The residual engineering organization (REO) is not part of the AIFO but rather an office to coordinate and direct the installation commander's RPMA program.

Figure 2 presents the organizational concept for the Fayetteville area, developed for this study.

AIF Higher Headquarters

The AIF Higher Headquarters (AIF HQ) will be the organization which maintains administrative control over the new AIFO. The AIF HQ will be financially responsible for effective overall management, operation, and control of AIFO programs, including administration of funds and preparation of operating budgets. The AIF HQ will fulfill the responsibility of the "Installation Commander" as cited in AR 37-110.¹⁴

The alternatives for the AIF HQ included Fort Bragg, FORSCOM, Corps of Engineers (CE) Savannah District, CE South Atlantic Division, and OCE. The advantages and disadvantages of each alternative were evaluated. Fort Bragg was eliminated from the alternatives because locating the AIF HQ there would create a conflict with the buyer/seller relationship of the AIF. Of the remaining four alternatives, only FORSCOM currently has an FE review capability. FORSCOM is not expected to require any significant increase in fund management to respond to the AIFO requirements.

A decision on the AIF HQ should be reached during the implementation evaluation prior to consolidation.

¹⁴*Financial Administration: Accounting, Reporting, and Responsibilities for Industrial Funded Installations and Activities*, AR 37-110 (Department of the Army, Change 11, 26 June 1973).

Mission Impairment

A major concern in RPMA consolidation is possible loss of organizational responsiveness to the installation commander's mission and command priorities, or mission impairment. A study group consisting of representatives from the Navy Public Works Center at Great Lakes, Oakland Army Base and Fort Story (which have Navy Public Work Centers performing their RPMA), FORSCOM, MAC, OCE, and CERL was convened in June 1976 to examine the mission impairment problem. The results were:

1. The AIFO would tend to increase responsiveness because a larger work force is created, resulting in more highly skilled and specialized personnel, scheduling flexibility, and justification for more special equipment.
2. Because the AIFO must be conscious of costs for commercial and industrial type services, productivity must be improved.
3. The larger work force will require working leaders to offset the larger span of control. (These are workers below the foreman level who are assigned responsibility for specific tasks.)

AIFO Resource Requirements

Comparing the relative efficiencies of a centralized AIFO and the current DFAE/BCE organizations required an estimate of what an AIFO would need to accomplish the same FY 75 work as the FY 75 DFAE/BCE. This estimate was obtained by combining the separately completed FY 75 DFAE and BCE work, and determining what staff and equipment the AIFO would have required to complete the same workload including installation support. The DFAE and BCE cost centers were redefined in terms of the AR 420-10 facilities engineering structure. Only minor redistributions of resources were necessary. Since the workload requirements were assumed to be the same for the CMO and AIFO for FY 75, the material and supply costs were also assumed to be the same.

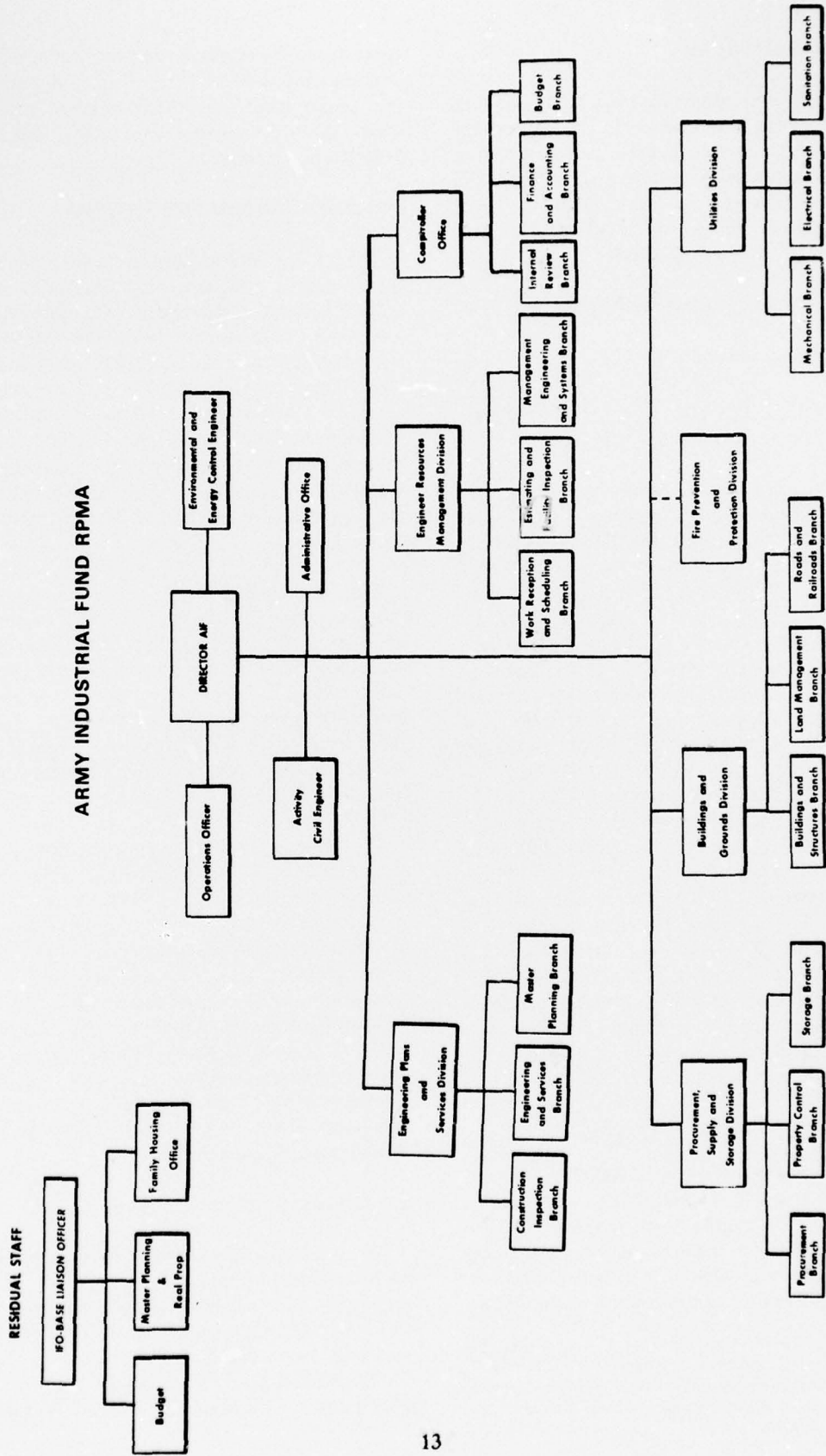


Figure 2. Army industrial fund RPMA organizational concept for Fayetteville, NC.

Consolidated Manpower

One basic premise adopted for this study was that the current staffing criteria (based on facility inventory descriptors) cannot be as accurate as a criterion based on the actual work requirements such as the Staffing Guide (DA Pam 570-551 Change 4¹⁵). Thus, the consolidated manpower requirements were developed using the Staffing Guide.

The central concept of the Staffing Guide is that:

Manpower Requirements =

$$\frac{\text{Accomp Wk} + \text{Unaccomp Wk} - \text{Oper Backlog}}{\text{Productive Manhours/Man-Year}}$$

This staffing formula was applied, where practical, to all operations and maintenance (O&M) shops of the AIFO. When the workload data did not meet the criteria of engineering performance standards estimating procedures, local appraisals (LA) from Manpower Survey Reports were used in lieu of the staffing formula. The LAs provide the recognized manpower requirements. Once the direct labor requirements had been determined, the foreman, supervisor, and administration yardsticks from the Staffing Guide were applied. Thus, the AIFO, as given in Figure 2, was staffed from the bottom to the top—from the direct worker to the Director of the AIFO. The recognized manpower requirement for the consolidated workload is 1,195, with a labor cost of \$13,588,153. The recognized manpower without the fire department is 1,040 at a labor cost of \$11,899,331. The increase in the span of control due to consolidation will require grade increases at the supervisory levels. Since the Army nonsupervisory grade level, which is higher than the Air Force grade levels, was adopted, the cost of nonsupervisory labor for the combined organization will be higher for the Air Force component of the workload.

Installation Support Manpower

The manpower provided by installation support agencies was analyzed by comparing the combined man-years with the requirements of the AIFO. The AIFO can obtain the services of the Fort Bragg support agencies or provide them in-house. The consolidated requirements are presented in the follow-

¹⁵Staffing Guide for US Army Garrisons, Change 4, DA Pam 570-551 (Department of the Army, 24 August 1976). (Note: CERL used a draft revision to the Staffing Guide to evaluate manpower in Volumes II and III. Change 4 was used in its draft state.)

ing section. The minimum and maximum manpower requirements shown are based on the actual man-year requirements and the man-years which could not be given up and are therefore retained by the installation agencies.

Manpower Comparative Analysis

The FY 75 CMO staffing levels were compared to the estimated consolidated organization requirement. The Staffing Guide determines the recognized manpower requirement from the accomplished workload plus the unaccomplished workload (backlog) minus the operational backlog. Since neither the current DFAE or BCE recognized staffing levels were determined this way under the CMO, the recognized manpower requirement was recalculated using the Staffing Guide. The recognized level in the Staffing Guide is normally higher, since it includes the backlog.

The recognized staffing level is not an appropriate measure to evaluate the work actually accomplished under the CMO. Because the CMO workload was accomplished by the on-board manpower, this is the level at which the cost comparison should be made. The Staffing Guide can be used to approach the on-board level for the consolidated workload by excluding the identified staffing required to accomplish the backlog.

The Staffing Guide gives straight time credit for overtime. Thus, if a shop worked X number of man-years of overtime, the guide would allow X number of additional positions. During a comparison, the new organization would appear to require X additional positions; this is clearly incorrect. A valid comparison would require the removal of the overtime staffing credit. Overtime was identified in Table 18 of Volume III by subtracting the accomplished without backlog from the accomplished without overtime. Table 5 presents the labor requirement and related cost for both the CMO and the consolidated organization.

IFS Adjustment to FE In-House

The consolidated workload manpower requirement includes 14 man-years (\$202,677 including fringe) for the Integrated Facilities System (IFS), which has not been included in the combined CMO workload manpower requirement. The Staffing Guide provides for IFS manpower and the DFAE will be staffed with 14 spaces when IFS is established

Table 5
CMO/Consolidated FE In-House Manpower Requirements
 (From Tables in Volume III)

Organization	Accomplished Workload W/O Backlog & Overtime		Table No. From Volume III
	Man-Years	Cost*	
CMO	1,066.4	\$12,451,293.5	12/16
CMO (W/O Fire Dept)	914.5	10,705,039.3	13/17
Consolidated	1,016.0	11,527,900.0	20/22
Consolidated (W/O Fire Dept)	861.0	9,869,081.0	21/23

*Includes fringe (GS = 9.2 percent, WG = 8.7 percent).

at Fort Bragg. The 14 man-years was added to the CMO requirement for the purposes of this study since the IFS manpower will be added whether or not consolidation takes place.

LA Adjustment to FE In-House

Another adjustment is required before an appropriate CMO/consolidation on-board comparison can be made. LAs were used to establish the "recognized" staffing requirements in shops where work order activity was not estimated by Engineered Performance Standards (EPS). Because the Staffing Guide formula cannot be used without an EPS efficiency measure, members of DAEN-FEM, who developed the Staffing Guide, use LAs when EPS estimates are not made. LAs are performed by a manpower survey team which uses an evaluation of the work performed to establish the recognized direct worker requirement. Since the LAs provide a recognized level, they include backlog and overtime considerations. Thus, leaving the LAs at the recognized levels will inflate or overstate staffing levels, which should be based on the work accomplished. The LAs used for staffing the AIFO were compared to the CMO on-board manpower. The actual staffing for shops with LAs was below the recognized level. The analysis showed that the AIFO was staffed with 23.3 man-years more than the CMO for the same workload. The 23.3 man-years were removed from the consolidated workload analysis to obtain an on-board manpower level for comparison with the CMO.

Duplication Adjustment for FE In-House

The in-house manpower analysis includes the comptroller and supply functions which are also included in the installation support analysis. This

duplication must be removed before the CMO and AIFO can be properly evaluated. The CMO in-house manpower must be reduced by 42.2 man-years and the AIFO must be reduced by 35 man-years to eliminate the duplication.

Revised Manpower Requirements

Table 6 shows the impact of the above adjustments.

Table 6
Revised CMO/Consolidated FE In-House
Manpower Requirements

Organization	Accomplished Workload W/O Backlog & Overtime	
	Man-Years	Cost*
CMO	1066.4	\$12,451,293.5
IFS	14.0	202,677.0
Compt/Supply	(42.2)	(457,255.0)
TOTAL	1038.2	\$12,196,715.5
CMO (W/O Fire Dept)	914.5	\$10,705,039.3
IFS	14.0	202,677.0
Compt/Supply	(42.2)	(457,255.0)
TOTAL	886.3	\$10,450,461.3
Consolidated	1016.0	\$11,527,900
Local Appraisal	(23.3)	(274,805)
Compt/Supply	(35.0)	(364,139)
TOTAL	957.7	\$10,888,956
Consolidated (W/O Fire Dept)	861.0	\$ 9,869,081
Local Appraisal	(23.3)	(274,805)
Compt/Supply	(35.0)	(364,139)
TOTAL	802.7	\$ 9,230,137

*The cost does not include fringe benefits.

Installation Support

The CMO installation manpower support was compared to the consolidated support requirement. The analysis identified computer support (MISO), administrative support (AG), personnel support (CPO), transportation support, and material maintenance to be supplied by Fort Bragg, and comptroller, supply, and procurement support to be provided in-house by the AIFO. The minimum and maximum savings derived from the difference between the consolidated requirements and the CMO requirements are presented in Table 7. The manpower cost savings falls between \$49,780 and

Table 7
Consolidated Support Comparison

Current Method of Operation	Bragg and Pope			Consolidated Staffing			Differential (CMO-Consolidated)			
	Man-Years a	Personnel Cost b	Man-Years c	Personnel Cost d	Man-Years e	Personnel Cost f	Man-Years g(a-c)	Personnel Cost h(b-d)	Man-Years i(a-e)	Personnel Cost j(b-f)
Installation Support:										
MISO/Data Automation										
Adm. Staff	.51	\$ 13,492	.22	\$ 12,476	.55	\$ 15,581	.29	\$ 1,016	(.04)	\$(2,089)
Comptroller										
Adm. Staff	24.10	292,544	28.00	322,727*	30.90	356,908*	(3.90)	(30,183)	(6.80)	(64,364)
AG/Base Adm.										
Adm. Staff	.87	16,254	.10	988	.87	16,254	.77	15,266	0.00	0
Civilian Personnel										
Adm. Staff	10.09	139,308	7.38	101,896	9.88	143,255	2.71	37,412	.21	(3,947)
Supply										
Adm. Staff	45.65	431,987	28.00	258,060*	36.65	337,037*	17.65	173,927	9.00	94,950
Procurement										
Adm. Staff†	14.90	165,255	13.55	154,966*	15.30	174,271*	1.35	10,289	(.40)	(9,016)
Transportation										
Direct Labor	10.88	92,384	5.74	52,884	6.13	55,998	5.14	39,500	4.75	36,386
Material Maint. Div.										
Direct Labor	1.67	19,457	1.85	21,597	1.85	21,597	(.18)	(2,140)	(.18)	(2,140)
Total Installation Support:	108.67	\$1,170,681	84.84	\$925,594	102.13	\$1,120,901	23.83	\$245,087	6.54	\$49,780
Adm. Staff	96.12	1,058,840	77.25	851,113	94.15	1,043,306	18.87	207,727	1.97	15,534
Direct Labor	12.55	111,841	7.59	74,481	7.98	77,595	4.96	37,360	4.57	34,246
Total	108.67	\$1,170,681	84.84	\$925,594	102.13	\$1,120,901	23.83	\$245,087	6.54	\$49,780

*Support proposed in-house consolidated organization.

†Includes Movements Branch, DIO.

\$245,087. The Civilian Personnel Office at Fort Bragg should evaluate the manpower requirements during the implementation evaluation. Only after the AIFO has operated for a period of time can a meaningful manpower survey establish the actual savings.

Total Manpower Summary

The consolidated manpower savings are summarized and compared in Table 8. The two ACE positions and the 10 installation REO positions are included in the total manpower requirements for the AIFO. The differential shows the range of the maximum (100 man-years) and minimum (83 man-years) manpower savings to be expected from consolidation. The annual labor savings will be between \$797,279 and \$1,057,413 if the fire department is not included in the consolidation. If the fire department is included in the consolidation, the labor savings will be between \$907,392 and \$1,167,526 annually. The consolidation of the fire department as analyzed in Volume V should provide a 5 man-year savings of \$88,801, including fringe benefits and premium pay, but not leave (24 percent).

The direct labor to administrative staff ratio for the CMO man-years is 2.71. The consolidated man-year ratio falls between 2.85 and 3.07 percent. The number of administrative spaces required to support the direct labor in the AIFO is less than the CMO requirement. This indicates that the productivity of the AIFO will be slightly higher than the combined CMO. Table 8 also shows the direct labor cost to administrative staff cost ratios. The overhead costs decrease as the direct labor/administrative staff ratio increases. The CMO direct labor/administrative staff ratio is 2.33; when compared to the consolidated minimum/maximum ratios of 2.69 and 2.51, the overhead costs are lower for the AIFO. However, these comparisons do not fairly assess all the efficiencies and economies available to the AIFO. The comparison of the CMO and AIFO was based on the combined requirements of the DFAE and BCE, plus the combined installation support. These ratios do not measure the anticipated economies from such items as performance-budgeting, smaller total storage requirements, and larger use of total purchase actions.

Military in the AIFO

The analysis of manpower for the AIFO included the same civilian/military mix as existed in the

CMO. In-house military were not distinguished from civilian personnel when the manpower determinations were calculated using the Staffing Guide procedure.

The analysis of the CMO reveals that there are 78 military in the DFAE and 173 in the BCE. If the military were to be transferred to the AIFO, the Air Force would have approximately twice as many military in the new organization. Inclusion of military in the AIFO and their use must be addressed in the implementation evaluation.

Possible options for treatment of the military are presented below:

Option 1. The military could be assigned to the AIFO in the civilian/military mix determined by manpower analysis in this study. The question of how the military would be assigned work must be addressed in the implementation evaluation.

Option 2. The military assignment to the AIFO could be based on a proportional share of each service's workload. Based on FY 75 operating costs, the Fort Bragg/Pope AFB ratio is 4 to 1. Thus, if Fort Bragg provided four-fifths of the military to the AIFO and Pope provided one-fifth, each service would receive an equitable amount of the workload accomplished by the military.

Option 3. The military spaces in the DFAE/BCE could be converted to civilian spaces, thus eliminating the military from the AIFO. This would require that the 251 military be transferred to other duties or installations. The assumption for this option must be that the savings in man-years due to consolidation will be obtained entirely from the military spaces converted for the combined organization. The number of civilians that would be required to replace the military can be determined by subtracting the consolidation savings from the total number of military. If the fire department is included, the additional civilians required for the AIFO will fall between 151 (251 minus 100) and 168 (251 minus 83).^{*} Without the fire department in the consolidated organization, the military requirement is reduced by the 45 military spaces in the Pope AFB Fire Department. (There are no military in the Fort Bragg Fire Department.) The additional civilians required without the fire department will be between 111 (206 minus 95) and 128 (206 minus 78).^{*}

^{*}These numbers must be reduced by two since a conversion to an all-civilian staff will require two additional man-years of CPO support.

Military/Civilian Conversion Cost

The cost of the military-to-civilian conversion was calculated from the difference between the military and civilian costs. The real cost of the military personnel (\$14,868) including all benefits, training, leave, etc., was compared to the total cost for civilian personnel (\$16,321). The annual cost of converting a military space to a civilian space is estimated to be \$1,453. An all-civilian work force will reduce the previously identified manpower savings presented above as follows:

With fire department—from \$219,403 (151 man-years) to \$244,104 (168 man-years)

Without fire department—from \$161,283 (111 man-years) to \$185,984 (128 man-years).

The estimated manpower and cost associated with a military-to-civilian conversion should be analyzed in detail by the implementation team. Because of the separate funding of military salaries, the military services may feel that the AIFO is not using the military personnel equitably. The training for military in RPMA could be performed at other nonconsolidated organizations. Before consolidation, the implementation study should further evaluate the desirability and costs of converting to an all-civilian staff in accordance with DOD guidelines.

FORSCOM has not stated a position on what would happen to the Army's QMAD and troop support to Building and Grounds Division if the RPMA are consolidated. MAC has stated the desire to remove the Air Force military from the consolidated organization and to retain Prime BEEF at Pope to do preventive maintenance work which is not now being accomplished. It must be emphasized that any military removed from the consolidation but retained at the installation must not duplicate the functions performed by the AIFO if economies are to be realized from the consolidation action.

Contracting Nonrecurring Work

The consolidated staffing requirements for in-house accomplishment of all recurring RPMA and out-of-house accomplishment of nonrecurring work were developed. The 1076 man-years of recurring workload for the Fayetteville area was subtracted from the total consolidated workload of 1195 man-years. The difference, 119 man-years, is the FY 75 nonrecurring workload. The accomplished portion

of the nonrecurring workload (101 man-years) was obtained by multiplying 119 by the ratio of accomplished work to recognized work (1016/1195).

The 101 man-years for the accomplished portion of the nonrecurring workload represents the maximum reduction in AIFO personnel spaces due to contracting this work rather than performing it in-house. The AIFO has the flexibility to contract from 0 to 101 man-years of this workload. The savings resulting from the reduced manpower will be offset by the cost of letting and administering the contracts; however, an evaluation must be made on an individual basis. If manpower restrictions are placed on the AIFO at levels lower than the total workload requirements, the AIFO should adopt the policy of contracting nonrecurring work. Although labor market analysis reveals that some contract labor is available, it is doubtful that the full 101 man-years of effort could be contracted immediately.

Equipment Analysis

It is assumed by this analysis that all the equipment used by the DFAE/BCE will be transferred to the AIFO. The equipment comparison between the CMO and the consolidation organization (after the existing excess was removed) indicated that a total cost avoidance of \$288,178 was attainable. The combined general-purpose vehicles will all be needed, but the number of special-purpose vehicles can be reduced by 16 (a current value of \$104,698). All the BCE shop equipment with an initial cost greater than \$1,000 can be excessed (a cost avoidance of \$138,407). The only other reduction—\$45,073—comes from office equipment.

An economic comparison between the CMO equipment expenses and the consolidated equipment expense can be limited to the current value of the equipment required for each case. O&M expenses are a function of utilization. Thus, as long as the amount of work performed is the same, the O&M expense will be equal. The smaller consolidated equipment inventory will have a lower depreciation expense than the CMO inventory; the value of the difference in the inventory level is recoverable at the time of consolidation and no other downstream benefits occur.

AIFO Charge-Out Rates

Estimates of FY 75 labor and utility rates were developed to construct the charge-out rates for the

Table 8
Total Manpower Summary

	Current Method of Operation				Consolidated Staffing					
	Bragg and Pope				Minimum Requirement				Maximum Requirement	
	Man-Years	Basic Pay	Fringe & Leave*	Total Cost	Man-Years	Basic Pay	Fringe & Leave*	Total Cost	Man-Years	Basic Pay
Installation Support:										
Adm. Staff	96.12	1,058,840	351,535	1,410,375	77.25	851,113	282,570	1,133,683	94.15	1,043,306
Direct Labor	12.55	111,841	36,572	148,413	7.59	74,481	24,355	98,836	7.98	77,595
Total	108.67	1,170,681	388,107	1,558,788	84.84	925,594	306,925	1,232,519	102.13	1,120,901
FE In-House: (W/O Fire Dept)										
DFAE/ BCE										
Adm. Staff**	172.00	2,169,453	720,258	2,889,711	132.00	1,667,251	553,527	2,220,778	132.00	1,667,251
Direct Labor	714.30	7,434,608	2,431,117	9,865,725	670.70 [#]	7,206,858	2,356,643	9,563,501	670.70	7,206,858
Total	886.30	9,604,061	3,151,375	12,755,436	802.70	8,874,109	2,910,170	11,784,279	802.70	8,874,109
Activity Civil Engineer:										
Adm. Staff/Total	0	0	0	0	2.00	30,962	10,279	41,241	2.00	30,962
Installation REO:										
Adm. Staff/Total	0	0	0	0	10.00	149,228	49,544	198,772	10.00	149,228
Total Man-Years & Cost (W/O Fire Dept)										
Adm. Staff	268.12	3,228,293	1,071,793	4,300,086	221.25	2,698,554	895,920	3,594,474	238.15	2,890,747
Direct Labor	726.85	7,546,449	2,467,689	10,014,138	678.29	7,281,339	2,380,998	9,662,337	678.68	7,284,453
Total	994.97	10,774,742	3,539,482	14,314,224	899.54	9,979,893	3,276,918	13,256,811	916.83	10,175,200
Direct Labor/Adm. Staff Ratios										
	2.71			2.33(\$)	3.07			2.69(\$)	2.85	
Fire Dept Additional Savings:[†]										
Grand Total: (Man-Years & Cost Differential with Fire Dept Savings)										

*Adm. Staff = 33.2 percent; Direct Labor = 32.7 percent

**Excludes man-years yardstick 612.2, 621-623; Includes 14 man-years for IFS (612.4, 612.5)

#Excludes local appraisals (23.2 man-years above CMO level)

##Parentheses indicate negative values

[†]See Volume V, Fire Study

^{††}Includes fringe, leave, premium pay

Table 8

Total Manpower Summary

Consolidated Staffing							Differential (CMO Consolidated)			
Minimum Requirement			Maximum Requirement				Maximum Savings		Minimum Savings	
Basic Pay	Fringe & Leave*	Total Cost	Man-Years	Basic Pay	Fringe & Leave*	Total Cost	Man-Years	Personnel Cost	Man-Years	Personnel Cost
851,113	282,570	1,133,683	94.15	1,043,306	346,378	1,389,684	18.87	276,692	1.97	20,691
74,481	24,355	98,836	7.98	77,595	25,374	102,969	4.96	49,577	4.57	45,444
925,594	306,925	1,232,519	102.13	1,120,901	371,752	1,492,653	23.83	326,269	6.54	66,135
1,667,251	553,527	2,220,778	132.00	1,667,251	553,527	2,220,778	40.00	668,933	40.00	668,933
7,206,858	2,356,643	9,563,501	670.70	7,206,858	2,356,643	9,563,501	43.60	302,224	43.60	302,224
8,874,109	2,910,170	11,784,279	802.70	8,874,109	2,910,170	11,784,279	83.60	971,157	83.60	971,157
30,962	10,279	41,241	2.00	30,962	10,279	41,241	(2.00) ^{##}	(41,241)	(2.00)	(41,241)
149,228	49,544	198,772	10.00	149,228	49,544	198,772	(10.00)	(198,772)	(10.00)	(198,772)
2,698,554	895,920	3,594,474	238.15	2,890,747	959,728	3,850,475	46.87	705,612	29.97	449,611
7,281,339	2,380,998	9,662,337	678.68	7,284,453	2,382,017	9,666,470	48.56	351,801	48.17	347,668
9,979,893	3,276,918	13,256,811	916.83	10,175,200	3,341,745	13,516,945	95.43	1,057,413	78.14	797,279
		2.69(\$)	2.85			2.51				
							5.00	110,113 ^{††}	5.00	110,113 ^{††}
							100.43	1,167,526	83.14	907,392

AIFO. These rates are discussed in Chapter 11 of Volume III.

Overhead Rates

The AIFO must be fully reimbursed for the work performed in order to maintain a zero profit and loss position. Consequently, it must charge customers a fair share of its overhead expenses for the manhours expended against work orders completed. The total administrative overhead rate developed was \$2.64 per direct labor hour. The total direct labor overhead rate developed was \$.48 per direct labor hour.

Direct Labor Rates

The charge-out rates for direct labor have been estimated using the overhead costs developed. The hourly rates for direct labor were developed for the appropriate FE functions with and without the overhead.

Utility Service Rates

The existing DFAE utility rates were revised by including the FE overhead applicable to utility operation and maintenance.

AIFO Automated Management Information Requirements

The AIFO will use the Army's IFS to provide automated management and operations information. The external reporting requirements of the AIFO using IFS are compatible (with minor exceptions) with the reporting requirements the Air Force obtains from the Base Engineer Automated Management System (BEAMS). An analysis of the IFS/BEAMS interface is presented in Chapter 12 of Volume III. In many instances, the IFS reports should be acceptable to the Air Force MACOM. The cost for minor modifications to reporting formats and addition of required Air Force reports which do not currently exist in IFS has been estimated to be less than \$30,000.

Residual Engineering Organization (REO)

REOs will be required at Fort Bragg and Pope AFB to provide the installation commanders with their own engineering staffs for installation planning and RPMA coordination.

Responsibilities

The REO Residual Engineer (liaison officer) identified in Figure 2 will be responsible to the respective installation commanders for preparing annual work plans, establishing RPMA priorities, maintaining installation real property and master planning records, and coordinating and monitoring the activities of the AIFO for the installation. The technical part of the work, however, will be provided on a reimbursable basis by the AIFO.

Family housing has tentatively been placed in the Pope AFB REO because it currently resides within the BCE. This activity was not evaluated for Fort Bragg with respect to staffing or costs for the REO, because the Army family housing is managed by the Directorate of Industrial Operations (DIO). Family housing will be a reimbursable customer of the AIFO.

Staffing

The estimated required manpower for each REO is five, excluding family housing at Pope AFB. The six personnel currently in family housing at the BCE may be attached to the Pope REO or assigned to another activity. The REO personnel consist of a liaison officer, secretary, budget officer, master planner, and real property officer. The REO manpower cost is \$149,228 (74,614 for each installation).

Consolidated Space Requirements

The AIFO will require the same types of shops and administrative space that the DFAE and BCE require. Consolidation will require reorganization and relocation of some shops and personnel.

An investigation was made to determine what facilities are presently used by the DFAE at Fort Bragg and the BCE at Pope AFB and how these facilities, or portions thereof, might be used by the AIFO. The assumptions for this analysis were:

1. The DFAE compound should be used as the base facility. It is larger, of permanent construction, and centrally located.
2. Most, if not all, working shops should be retained in a central location to insure adequate supervision by branch chiefs. This is particularly true of

those shops which interface with each other, such as carpentry, plumbing, interior electric, and painting.

3. Parking areas for government and privately owned vehicles will not be considered, since sufficient area exists at the DFAE compound for expansion should it become necessary.

4. Fire protection and family housing will not be considered, since they occupy separate facilities.

5. Facilities must be provided at Pope AFB for the Residual Engineer and his budget, master planning, and real property operations.

6. Administrative and shop space will be the focal points of the comparison.

No one DFAE/BCE building will provide the additional administrative space required for the consolidated organization, but any two buildings will. Thus, six possible combinations of buildings will satisfy the requirement. The favored alternative is to convert the Lumber and Pipe Shed at Fort Bragg to administrative space, relocate the Engineering Plans and Services Division to Building 617, Pope AFB, allocate Building 608, Pope AFB, to the REO, and return Building 621 to Pope AFB for utilization. The vacated facilities at Pope AFB which are not required by the AIFO could be returned to the base for utilization.

This alternative provides 2,356 net sq ft (219 m²) more than the 5,335 net sq ft (506 m²) required. It does, however, provide two offsetting benefits: (1) it is the most efficient use of existing space, and (2) it allows for the future expansion of RPMA staff without additional facilities.

Chapter 13 of Volume III provides a detailed description of the space utilization analysis.

Implementation Requirements

An implementation plan is needed if the cost analysis justifies consolidating the RPMA in Fayetteville, NC. Before a final decision to consolidate, an implementation evaluation is required to verify that the 1975 cost analysis findings are valid for the year of implementation, resolve the problems associated with consolidating the existing RPMA organizations across service lines, and plan the implementation actions. To successfully evaluate the consolidation requirements a freeze must be placed on all person-

nel actions and organizational changes must be suspended from the start of the cost analysis verification until the conversion to the AIFO begins. Figure 3 is a time chart of the implementation period.

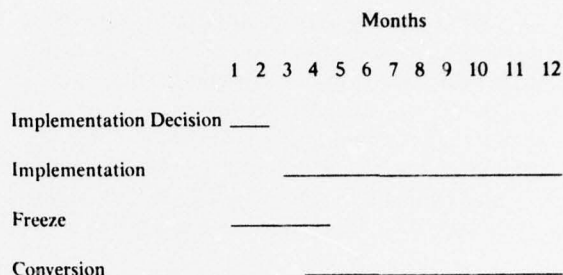


Figure 3. Implementation chart.

The implementation decision should not be made until the cost analysis has been verified for the current operations and the problems following have been resolved: military manpower participation in the AIFO, higher headquarters location, fire prevention/protection disposition, Air Force reporting requirements, Civilian Personnel Office evaluation of manpower requirements for the AIFO and installation support agencies, and transfer of facilities to the AIFO.

Implementation

If the decision is to implement the AIFO, the implementation team must establish the plans and policies for the operation of the AIFO, REO, and higher headquarters. Desk procedures need to be established for job orders, procurement, comptroller, etc. The implementation plan must establish the conversion procedures for hiring personnel and organizing the AIFO to ensure a smooth transition to the new organization.

Implementation Costs

It is very important that funding for the start-up costs be made available to the implementation team at the onset of the implementation. The one-time costs to consolidate RPMA in the Fayetteville area include personnel and activities required to establish/organize the AIFO, equipment requirements, alterations/modifications to buildings, relocation of personnel/equipment, and severance pay for the personnel affected by a reduction-in-force. There is also an additional estimated cost for the initial operating funds (corpus). The AIF corpus is a permanent revolving fund to pay for essential RPMA-incurred

obligations prior to industrial fund accruals. Such obligations include payroll and supply stock expense required to accomplish the work order requests prior to customer reimbursement. This is not truly a cost, since it is only an advance of funds and is recoverable. Start-up costs for the AIFO are shown in Table 9.

Table 9
AIFO Start-Up Costs*

Cost Category	Cost
Implementation Team	\$841,200
Equipment	12,250
Space Alterations	78,000
Relocation	20,800
Severance Pay	24,300
IFS/BEAMS Interface	30,000
Total One-Time Costs	\$1,006,550
AIF Corpus	\$3,200,000

*Detailed cost analysis is presented in Chapter 14 of Volume III.

Environmental Impact Assessment

The environmental impact assessment (EIA) was prepared by using the Economic Impact Forecast System (EIFS) developed at CERL.¹⁶ The EIFS is a computer program designed to determine the impact of changes within a region on the environment. A detailed description of the EIA is presented in Chapter 15 of Volume III. The environmental impact of consolidating RPMA in the Fayetteville area has been determined to be insignificant. The economic impact of RPMA consolidation in the Fayetteville area was evaluated for the following conditions: (1) the current civilian/military mix, (2) an all-civilian staff, (3) without consolidation of the fire department, (4) retaining the military eliminated from the AIFO at Bragg/Pope, and (5) contracting nonrecurring work. The economic changes for the volume of business, population, employment, and personal income resulting from each option were well within the normal fluctuations experienced in the Fayetteville area.

Summary Cost Analysis

Table 10 summarizes the cost analysis for consolidating RPMA, including the maximum and

¹⁶R. D. Webster et al., *The Economic Impact Forecast System: Description and User's Instructions*, Technical Report N-2/ADA027139 (CERL, June 1976).

minimum cost savings with and without the fire department. The total annual savings will be between \$814,000 and \$1,184,000. The one-time cost has been identified as the implementation cost (\$1,006,550); it does not include the AIFO corpus, which is entirely recoverable. The equipment cost avoidance (\$288,178) has been subtracted from the implementation cost. The equipment cost avoidance is the current value of the excessed equipment due to consolidation. The equipment may be sold for the current value or transferred to another government agency. It has been considered in this analysis as a reduction in the start-up costs whether or not the dollars are actually realized by the AIFO. The savings or cost avoidance in some cases will be realized at the DOD level and not on the local level for the AIFO or the installations involved. The payoff period for the one-time cost ranges from .61 years to .88 years.

The FY 75 operating costs could have been reduced between 2.3 and 3.1 percent if the RPMA had been consolidated. The labor cost for FY 75 would have been reduced between 6.4 and 8.5 percent.

4 CONCLUSIONS

Feasibility Analysis

This study has shown that consolidation of RPMA in the Fayetteville, NC area is feasible and that savings are possible. An Army Industrial Fund RPMA Organization will have an economic advantage over the current method of operation and should be able to maintain, and possibly improve upon, the current responsiveness to installation priorities. The consolidation of RPMA will have an insignificant impact on the local Fayetteville economy. An implementation evaluation should be made prior to the decision to consolidate to verify this cost analysis for current operations and resolve inter-service problems. If implementation is to take place then an implementation team must establish the plans and policies for conversion.

Manpower

Consolidation of RPMA at Fayetteville will produce a manpower savings of 83 to 100 positions. The actual savings will depend on the man-years of currently identified DFAE/BCE support "given up" by the installation support agencies. The support agencies identified fewer realizable man-years to be

Table 10
Consolidation Cost Analysis

	Maximum Savings						Minimum Savings					
	W/O Fire Department			With Fire Department			W/O Fire Department			With Fire Department		
	Man-Years	Cost	%	Man-Years	Cost	%	Man-Years	Cost	%	Man-Years	Cost	%
Annual Savings	95.43	\$ 1,057,413		100.43	\$ 1,167,526		78.14	\$ 797,279		83.14	\$ 907,392	
Labor Support "Other Cost"		16,675			16,675			16,675			16,675	
Total Annual Savings		\$ 1,074,088			\$ 1,184,201			\$ 813,954			\$ 624,067	
One Time Cost												
Implementation Cost		\$ (1,006,550)			\$ (1,006,550)			\$ (1,006,550)			\$ (1,006,550)	
Equipment Cost Avoidance		288,178			288,178			288,178			288,178	
Total		\$ (718,372)			\$ (718,372)			\$ (718,372)			\$ (178,372)	
Payoff Period (Cost/Annual Savings)			.67			.61			.88			.78
FY 75 Operating Cost*		\$35,603,180			\$37,685,907			\$35,603,180			\$37,685,907	
Annual Savings/ FY 75 Operations Cost			3.0			3.1			2.3			2.5
FY 75 Labor Cost*		\$12,393,714			\$14,297,131			\$12,393,714			\$14,297,131	
Labor Savings/ FY 75 Labor Cost			8.5			8.2			6.4			6.4

*Includes IFS, Installation Support and 9 percent Compensation. See Appendix D, Volume II.

eliminated than the total man-years of actual support. This occurs since partial man-years are involved and/or agencies are already at or near the minimum manpower staffing requirement. Thus, the lower value of 83 man-years would be obtained if the current installation support activities retain a portion of their DFAE/BCE support. If no DFAE/BCE installation support positions are retained, a 100 man-year savings is possible. If the fire departments are not consolidated, the savings will range from 78 to 95 man-years. Adopting a policy of contracting all nonrecurring RPMA could produce an additional staffing reduction of 101 man-years. Although the dollar savings of this additional 101 man-year reduction would be offset by the cost of contracting the work, contracting would be advantageous when manpower ceilings are low.

The AIFO military spaces have been assigned in the same civilian/military proportion that existed in the CMO. If the military are eliminated from the AIFO, they must be assigned completely different duties. The resulting conversion cost is estimated to be \$161,000 to \$244,000.

Cost Savings

The anticipated annual savings from consolidating RPMA will fall between \$814,000 and \$1,184,000. This range is also a function of the number of current DFAE/BCE support positions given up. The one-time cost to establish the consolidated organization is \$1,006,550, plus an operating corpus of \$3,200,000 (recoverable). A one-time equipment cost avoidance of \$288,178 was identified. Thus, the net theoretical conversion cost is \$718,372, which can be recovered from the first year's operating savings. The maximum savings anticipated is 3 percent of the FY 75 operating costs (8 percent of labor cost); the minimum savings anticipated is 2 percent

of the FY 75 operating costs (6 percent of labor). Since the savings are based on more than one military service, the actual savings, especially for equipment, may actually be realized by DOD rather than at the installation level.

Fire Study

This study has shown that consolidating structural fire protection/prevention in the Fayetteville area will not result in a reduction in the existing fire companies at Fort Bragg and Pope AFB. Consolidation could produce a 4.6 percent savings or approximately \$88,801 per year (\$110,113 including fringe and leave) by reducing the supervisory personnel requirements. The consolidation would result in some resource and operational efficiencies while providing the best site for the proposed relocation of Fort Bragg Fire Station Number 3.

Although the fire departments are currently in the DFAE and BCE organizations, they are not directly involved in RPMA. The fire departments could be consolidated as part of the AIFO or as part of one of the installation commands. If the fire departments are consolidated, desk and operational procedures must be developed. If the fire departments are not consolidated, it is recommended that each installation retain the function in an organization separate from the AIFO. The Residual Engineering Organizations could perform this function for the installations.

General Procedures

The general procedures have been developed as an explanation of the RPMA consolidation study performed in Fayetteville, NC and as a guide for conducting future studies at other locations.

APPENDIX A:

MEMBERS OF RPMA STUDY TEAM

CERL: Mr. R. Colver, CERL-FOS
Mr. D. Brown, CERL-FOS
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Mr. R. Poskus, CERL-FOS
Mr. K. Robinson, Contractor

FORSCOM: Mr. H. Logan, AFEN-EA
Mr. J. Kemp, AFEN-EA

MAC: Mr. W. Loch, HQ MAC/DEM
LTC E. Lednicky, HQ MAC/DEMM

AF Staff: LTC C. Medlock, AF-PREMA

OCE: LTC J. Burt, DAEN-FEP
Mr. T. Kumagai, DAEN-FEP

Fort Bragg/DFAE: MAJ J. MacMullen, AFZA-FE
Mr. C. Beard, AFZA-FE

Pope AFB/BCE: Mr. M. Crovitz, DE

GLOSSARY

Activity Civil Engineer (ACE): An AIFO in-house customer representative for the REO and non-appropriated organizations.

Army Industrial Fund [Organization] (AIF[O]): System where a pool of cash and assets is appropriated when the fund is established. Work is performed using the assets and cash of the fund, and then the fund is reimbursed by the benefiting agency in an amount equal to the total cost of the work.

authorized staffing: Staffing level approved by the installation commander.

backlog: Work not accomplished at the end of a base period.

Base Civil Engineering Organization (BCE): The facilities engineering organization on an Air Force installation.

Base Engineer Automated Management System (BEAMS): An automated data processing system which assists the Base Civil Engineer in the

management of the facilities on an Air Force installation.

base-line year: Year used as a base for comparing costs of consolidation proposals with the current method of operation.

Civilian Personnel Office (CPO): Office which provides support, including recruitment and placement, employee relations, union relations, training, processing of personnel actions, and maintenance of personnel records.

corpus: A permanent revolving fund to pay for essential RPMA-incurred obligations prior to industrial fund accruals.

current method of operations (CMO): A summation reflecting the combined efforts of the Army and the Air Force real property maintenance activities as they are currently operating.

Directorate of Facilities Engineering (DFAE): The facilities engineering organization on an Army installation.

Directorate of Industrial Operations (DIO): Organization responsible for installation operational support which includes supply, procurement, and transportation on an Army installation.

facilities engineer: Commander responsible for the overall planning, organization, control, and accomplishment of all facilities engineering work on an installation.

Integrated Facilities System (IFS): A multi-command Automated Data Processing (ADP)-supported facilities management information system which will be implemented at U.S. Army installations CONUS-wide, in Alaska, Hawaii, Puerto Rico, and Panama.

Interservice Support Agreement (ISSA): An agreement between two agencies to render services to each other.

local appraisal: An analysis of manpower requirements at a locality by manpower survey teams.

Local Department of Defense Real Property Maintenance Consolidation Committee (LDODRPMCC): The committee which studied the feasibility of consolidating the real property maintenance activities in the Fayetteville, NC area.

Management Information Systems Office (MISO): The office which provides computer support to the Directorate of Facilities Engineering.

Naval Public Works Center Organization: The facilities engineering organization on a Navy installation.

nonrecurring work: Work which is not identifiable in advance and does not occur at regular intervals.

on-board staffing: Number of personnel on-board at any given time.

organizational concept: Structure of the organization.

Prime BEEF: Teams of military personnel within the Base Civil Engineering function of the Air Force capable of rapid response to emergencies.

proposed staffing: Staffing level proposed by consolidation technique.

Quarterly Manpower Authorization Document (QMAD): Document which assigns military personnel to the Directorate of Facilities Engineering quarterly. QMAD personnel are assigned to perform tasks on a daily basis.

Real Property Maintenance Activities (RPMA): The maintenance function of the real property on an installation.

recognized staffing: Staffing level suggested by local appraisal or other technique.

recurring work: Work that is identified in advance (in scope) and must be performed at specific repetitive intervals of once a year or more often (except daily), involving facilities, systems, and equipment.

Residual Engineering Organization (REO): Office created to channel work to the AIFO and monitor the progress of the assigned work.

self-help support: Work (other than home owners' responsibilities) performed by military personnel outside of the facilities engineering organization on their assigned real property facilities.

shop rate: Total shop cost per available manhour.

strawman: Preliminary organizational concept for discussion and review, which is easily refuted.

U.S. Army Construction Engineering Research Laboratory (CERL): Army research organization charged with the task of performing an economic analysis of the consolidation of the real property maintenance activities of Fort Bragg and Pope AFB in the Fayetteville, NC area.

yardstick: Standard.

LIST OF ABBREVIATIONS

ACE: Activity Civil Engineer
AG: Adjutant General
AIF(O): Army Industrial Fund (Organization)
AIF HQ: Army Industrial Fund Higher Headquarters
BCE: Base Civil Engineering Organization, Air Force
BEAMS: Base Engineer Automated Management System
CE: Corps of Engineers
CERL: U.S. Army Construction Engineering Research Laboratory
CMO: Current Method of Operation
CPO: Civilian Personnel Office
DA: Department of the Army
DAEN: U.S. Army Office of Engineers
DAEN-FEM: Directorate of Facilities Engineering, Management and Systems Division
DAEN-FEP: Directorate of Facilities Engineering, Office of Plans and Policy
DASD (I&H): Deputy Assistant Secretary of Defense (Installations and Housing)
DFAE: Directorate of Facilities Engineering
DIO: Directorate of Industrial Operations
DOD: Department of Defense
EIA: Environmental Impact Assessment
EIFS: Economic Impact Forecast System
EPS: Engineered Performance Standards
FE: Facilities Engineering
FORSCOM: U.S. Army Forces Command
IFO: Industrial Fund Organization
IFS: Integrated Facilities System
ISSA: Interservice Support Agreement
LA: Local Appraisal
LDODRPMCC: Local Department of Defense Real Property Maintenance Consolidation Committee
MAC: Military Airlift Command
MACOM: Major Command

MISO: Management Information Systems Office
MY: Man-Years
M&S: Maintenance and Service
OCE (DAEN): Office of the Chief of Engineers
(Department of the Army)
O&M: Operations and Maintenance
OMA: Operations and Maintenance Army
Prime BEEF: Base Engineering Emergency Force,
Air Force
PWC: Navy Public Works Center
QMAD: Quarterly Manpower Authorization Document
REO: Residual Engineering Organization
RIF: Reduction-in-Force
RPMA: Real Property Maintenance Activities

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