PN-ABZ-332

INSTITUTIONAL EVALUATION OF MOP

Prepared For

U.S. Agency for International Development

El Salvador Mission

February 23, 1989

BOOZ•ALLEN & HAMILTON, INC.

PN-ABZ-332

INSTITUTIONAL EVALUATION OF MOP

Under Contract No. OTR-0000-I-00-6176-00

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February 23, 1989

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ACKNOWLEDGEMENTS

The success of any organizational research effort depends largely on the support and cooperation of the individuals who comprise the organization. Overall, we received very good cooperation from the individuals with whom we spoke in MOP. The comments we received were candid and many people went out of their way to ensure that we received the information we requested.

The Booz, Allen team would like to express its gratitude to everyone who participated in interviews with special thanks to Minister Ing. Luis Lopez Ceron for his assistance in helping to arrange initial interviews.

The Booz, Allen team would also like to thank the individuals from AID who helped to point us in the right direction by providing insightful comments on our working report drafts and greatly assisted the team by setting up interviews with key MOP managers. These individuals include Tibor Nagy, Ron Witherell, Leopoldo Reyes, Oscar Lopez, Joe Pastick, Jacobo Harrouch, and Javier Houdelot.

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The work described in this report was performed under a contract between USAID/El Salvador and Booz, Allen & Hamilton Inc. The authors acknowledge the contributions of the many persons and institutions that provided data and that reviewed the draft report. Nevertheless, the opinions, conclusions, and recommendations are the responsibility of the authors and agreement with them by the participating institutions should not necessarily be inferred.

ACRONYMS

AID	Agencia Internacional para el Desarrollo; (U.S. Agency for International Development)
AME	Administracion de Maquinarias y Equipos (MOP); (Machinery and Equipment Administration)
ANDA	Administracion Nacional de Acueductos y Alcantarillados; (National Water and Sewer Authority)
ANDA/MU	Unidad Coordinadora de ANDA; (ANDA Management Unit)
ANTEL	Administracion Nacional de Telecomunicaiones; (National Administration for Telecommunications)
BID	Banco Interamericano de Desarrollo; (Inter-American Devlopment Bank IDB)
CAESS	Compania de Alumbrado Electrico de San Salvador; (San Salvador Electrical Company)
CEL	Comision Ejecutiva Hidroelectrica del Rio Lempa; (Executive Commission for Lempa River Hydroelectricity)
DGC	Direccion General de Caminos; (General Directorate for Roads)
DUA	Direccion de Urbanismo y Arquitectura; (Office of Urban Works and Architecture)
GOES	Gobierno de El Salvador; (Government of El Salvador)
IDB	See BID
IRD	Desarrollo Regional y de Infraestructura; (Infrastructure and Regional Development)
MOH	Ministerio de Salud Publica y Asistencia Social; (Ministry of Public Health and Social Assistance)
MU	See ANDA/MU
PLANSABAR	Plan Nacional Sanitario Basico Rural; (National Rural Basic Sanitary Plan)
PVO	Organizacion de Voluntarios Privados; (Private Voluntary Organization)
SETEFE	Secretaria de Tesoreria Y Finaciamiento Externo; (Secretariat for Treasury and Foreign Finance)
WASH	Water and Sanitation for Health Project

LIST OF EXHIBITS

Executive Summary

This report presents the results of a snapshot institutional analysis of the GOES Ministry of Public Works (MOP) and its principal component, the General Directorate for Roads (Caminos) and the Directorate for Urbanism and Architecture (DUA). The analysis was conducted during January 1989 by Booz, Allen & Hamilton Inc.

Purpose

The purpose of the MOP institutional analysis was to assess MOP's present capacity to effectively carry out a proposed AID-funded "Public Service Reconstruction Project" (Project 320), and to recommend technical assitance and institutional changes necessary for project success. The proposed project will spend approximately $50 million over four years to perform deferred maintenance of roads and bridges, repair direct damages inflicted by the guerrilla war, and provide technical assistance to strenghten the MOP organization.

Overall Assessment

In general, the study team found a sufficient lack of organization, management processes, and internal controls within MOP to cause serious doubt about its present ability to effectively manage AID Project 320. While we did see signs that, given the necessary technical assistance and insistence by AID for organizational and procedural safeguards, MOP has the ability to carry out projects, overall in our view it is not now ready to carry out Project 320. Our main concern about MOP's ability to implement Project 320 under present circumstances is that there would be significant financial exposure for AID.

We concluded that there is such risk from several critical findings:

- There are significant gaps in MOP's internal controls over expenditures, including over labor usage; payroll, vehicle and equipment usage; material usage; and fuel and tool usage.

- There is little or no capability within MOP to audit projects of the nature that will be conducted under Project 320, and there has not been a routine of external audits for such projects.

- There are weaknesses in the overall procurement area, for example, the pre-qualification process for construction contractors does not sufficiently factor in past performance in MOP projects, nor is the contractor selection process as formal and objective as it should be.

- The present AID coordination units in DUA and Caminos are neither organizationally nor procedurally constituted to manage AID project resources, particularly as they are expended in-house.

Because MOP operates in all departments (jurisdictions) of El Salvador, uniform controls are essential to promote accountability. The absence of controls in the functions noted above is cause for concern for project 320, much of which will be focused on rural areas.

In addition to our concern over possible financial exposure, we are concerned about MOP's ability to effectively perform AID-funded projects. This concern stems from MOP's stated philosophy about staffing, which is that employment is one of the agency's primary missions (1). This philosophy is much more than a slogan as evidenced by the fact that there are over 17,000 MOP employees, requiring that over 90 percent of MOP's operating ("ordinary") budget is used to pay salaries. We observed several negative organizational impacts of the staffing and budgetary practices that could affect AID projects:

- There is strong pressure to perform public works projects in-house, to maintain employment, which is less efficient than contracting out.

- The domination of salaries in the budget means maintenance of vehicles is shortchanged and essential supplies are unavailable, which impedes productivity. We observed:

  -- Vehicle and fleet inoperability levels in excess of 50 percent.

  -- Road crews waiting for hours or, at times, days for transportation to their work sites.

  -- Substitution of manual labor for tasks that should have been mechanically-aided but were not because of equipment inoperability, due to lack of spare parts.

  -- Office equipment unused for the lack of simple consumable supplies.

  -- Low salaries and raises make it difficult to retain good engineers and managers.

The essential concern about MOP's staffing philosophy is that it may conflict with AID's intent in Project 320 to maximize the number of roads, bridges and other public works to be maintained and repaired. The general impact of this could be a tendency to emphasize employment over productivity. Indeed, several MOP managers expressed the view that several thousand additional employees would be required to carry out Project 320, rejecting the notion that current staffing is sufficient.

1\ 1987-88 MOP Annual Report, Pg. IV-2.

Recommendations

Although we have serious reservations about MOP's current capacity to carry out Project 320 in a manner consistent with AID stated criteria of financial accountability and implementation effectiveness, there is time in the next eight months, before project inititiation to take steps to reduce AID financial exposure to acceptable levels. Both long- and short-term corrections are needed.

Soon, AID should begin earnest discussions with MOP to accomplish the following before Project 320 initiation:

- Establish Management Units within both DUA and Caminos for AID project management. These must go well beyond the "AID Coordination Units" currently in place, in terms of their:

  -- Support from and access to DUA, Caminos, and MOP top management.

  -- Authority within DUA and Caminos to manage project planning, design, and staffing, and to exercise management control over project implementation.

  -- Procedures for maintaining financial and other records and generally managing projects that will occur across the country.

  -- Authority to determine when projects will be implemented by contract vs. in-house.

- Install essential internal controls over in-house DUA and Caminos expenditures categories that will be significant project components:

  -- Staff time; and
  -- Materials.

- Reach agreement on performing the projects through contractor resources.

- Resolve pending issues and establish a timetable to finalize and implement the MOP-AID plan to merge all fleet and equipment maintenance under one organization, building on the success of the AID-sponsored "AME" project.

After working to improve these areas, AID should reassess its level of exposure to ensure it is acceptable before initiating Project 320.

In the longer-term, AID should assist MOP to strenghten, or in some cases develop its organizational and management capabilities in areas such as:

- Staffing;
- Financial Controls;
- Master Planning;
- Training;
- Procurement; and
- Personnel Management.

Improvements in these areas of organizational functioning will directly and indirectly benefit AID-funded and other projects in MOP.

Area Recommendations

The following paragraphs summarize our findings and recommendations in each of the main study areas.

Organization

The current organizational model used in both DUA and Caminos for AID projects is the same as for non-AID projects. Responsibilities for planning, design, budgeting, implementation, procurement, and reporting are distributed among various line units within the directorates and at the Ministry level. We believe an integral organization would be more effective and recommend the establishment of AID project management units within both DUA and Caminos, that have project life-cycle management responsibilities and authority. We also recommend that AID and MOP follow-through with their concept to merge the maintenance functions of AME and Caminos. Pending resolution of issues, technical assistance for detailed organizational design, planning, and development are recommended to establish the management units and to facilitate the maintenance organization merger.

Staffing and Personnel Management

Overstaffing is a major problem for MOP and creates ripples of organizational dysfunctions throughout the Ministry. With 93 percent of its ordinary ("operating") budget devoted to salaries, MOP limits its productivity: spare parts cannot be purchased, machinery is left idle, and vehicles are in short supply.

With so many employees, salaries are low and must remain so, making it hard to attract and retain skilled engineers and managers. There also is no money for essential training. Personnel management is weak, as engineers and drivers are assigned to accounting jobs, and the like. Because turnover is low except in the small proportion of skilled positions, a reduction in force will be difficult. Nonetheless, it is essential for MOP's long-term health. Personnel management

programs are also necessary, but secondary to attaining reduced staffing. Contracting for project 320 should be emphasized over in-house performance.

Financial Management

Large gaps in MOP's internal controls over various expenditure categories raised strong doubts about MOP's ability to carry out project 320 without causing serious financial exposure for AID. MOP is not auditable for in-house projects, according to US Government Accounting Office standards. Accounting for contracted projects is more complete. MOP needs to conduct more audits and include projects involving AID funds, which currently are not included. MOP needs to automate accounting and control functions; simple stand-alone, personal computer-based applications would improve the situation significantly. Accounting for AME-purchased equipment and in-house expenditures appears to be acceptable.

Technical Management

The project management capability needs strengthening in both DUA and Caminos. AID project 320 should be managed by creating management units responsible for the project life cycle. Technical assitance for engineering projects is needed. Automated (PC-based) project tracking would be helpful. For the long-term, MOP needs to inventory its infrastructure and develop a master plan as the basis for programming and budgeting.

Equipment and Maintenance

The AID-sponsored projects of the recent past to merge DUA's maintenance departments into the quasi-independent (AME) organization using improved methods has proven effective. AID and MOP should resolve several remaining issues and proceed with their general plan to gradually merge Caminos maintenance operations with AME, following the AME model. Technical assistance for organizational development is needed.

The second priority is to maintain a spare parts inventory better suited to actual needs. This is not only a maintenance management issue; lack of budget authority is as much the source of the chronic parts shortage. Beyond these two dominant issues, technical training for mechanics and additional maintenance management information systems (PC-based) are also needed.

Procurement

Considerable procurement reform is needed in MOP, for project 320 and in general. Overall, the procurement process needs to be more formal, open, and competitive. Starting with contractor pre-qualification, past performance should be among the evaluation criteria, and line engineers should be involved in the criteria development, pre-qualification, and selection phases. Suspension of full competition for "urgent" projects should be less frequent. The AID management units should control procurement for AID projects pending reform of MOP procurement. Technical assistance is needed for improving technical specifications of budget requests.

I. INTRODUCTION

A. Historical Perspective

Since 1979 El Salvador has been subjected to periodic planned attacks on public works facilities by insurgent guerrilla groups. These attacks have historically been most heavily concentrated in the northern and eastern rural areas of the country. Recently, however, the incidence of politically motivated violence has been increasing in urban areas.

The guerrillas have traditionally placed a high emphasis on targeting electrical towers, generators, rural roads and bridges. The electric power company (CEL) and the Ministry of Public Works (MOP) have sustained the most direct damage.

The Ministry of Public Works is a cabinet-level government agency responsible for planning, constructing, and maintaining all public roads and streets in El Salvador. Since 1979, MOP has sustained heavy losses from guerrilla sabotage in the following areas:

- damage to bridges, culverts, and equipment from direct attacks;
- deferred preventive maintenance for facilities located in guerrilla occupied territories where it has been difficult to send work crews; and
- increased operating expenses because of a need for security personnel, special insurance, work stoppages, and other miscellaneous costs.

The 1988 Public Services Infrastructure Damage Assessment Report estimated the direct costs to MOP of the guerrilla war to be in excess of $12.8 million in infrastructure and equipment damage during the three year period between 1986 and 1988. Direct damage estimates for MOP's divisions are as follows:

- $6,011,000 for the General Directorate for Roads (Caminos);
- $4,108,000 for the Directorate of Urbanism and Roads (DUA);
- $2,000,000 for the National Geographic Institute; and
- $745,000 for the Geotechnical Research Center.

In addition to the direct costs of the guerrilla war, the Damage Assessment Report estimated the total indirect costs of deferred maintenance to be approximately $167 million.

B. Funding Sources

The most significant component of MOP's grant funding is AID's Public Services Restoration Project (No. 519-0279) which will have provided MOP with a total of $18.7 million in foreign exchange funding over a four year period ending in mid 1989. The emphasis of this project has been on rebuilding public infrastructure that has been damaged by guerilla attacks.

The project currently being proposed to continue AID funding of infrastructure development, Public Services Restoration Project (No. 519-0320), is intended to address these issues by providing the following tentative amounts to MOP over a four year period:

- $2 million for public services restoration (i.e., rebuilding damaged roads and bridges);
- $44.75 million for public services deferred maintenance (i.e., for the initiation of maintenance of rural and secondary roads and bridges); and
- approximatelly $2 million for technical training and program support.

C. Study Purpose and Outline

The successful implementation of Project 320 will depend largely on the ability of MOP to properly manage the funds received. Booz, Allen was asked by the USAID/El Salvador Mission to conduct an institutional evaluation of MOP. The objectives of this evaluation are as follows:

- to assess the current capability of MOP to absorb, manage, and account for the use of donor funds;
- to identify potential organizational weaknesses; and
- to make recommendations for improving the organizational capabilities of MOP that will enable it to more effectively implement 320 funded projects and attract future funding from other sources.

Our study includes the following six components:

- an organizational assessment section that describes MOP's operating environment and identifies areas for improvement;
- a staffing and personnel section that describes MOP's personnel management policies and associated problems involving turnover, staffing levels, training, and salaries;

- a financial management section that examines MOP's ability to account for, plan, budget, and control funds spent for AID-funded projects;

- a technical management section that reviews MOP's ability to design and monitor projects;

- an equipment and maintenance section that describes MOP's procedures for maintaining equipment, managing spare parts, and training maintenance personnel; and

- a procurement section that examines MOP's capability to procure both goods and services.

Each section includes a discussion of areas requiring improvement and concludes with a set of recommended steps to address the problems identified. Because Caminos and DUA will be the primary recipients of Project 320 funds, the study focuses on these organizational units.

D. Methodology

The Booz, Allen team began this study with an initial briefing by AID personnel who helped to clarify the specific study objectives outlined in the statement of work. Next, the team reviewed documents pertinent to the issues to be addressed. These documents included:

- Public Services Infrastructure Damage Assessment Reports (1988, 1986);

- An Assessment of USAID/El Salvador's Pilot Potable Water Environmental Support Project (1988);

- Project 320 PID; and

- other documents provided by AID and MOP.

The team then prepared an interview guide listing questions for each topical area. A copy of this guide is provided as Appendix 1 of this report. Based on an examination of a current MOP organization chart and discussions with AID personnel, specific interviewees were identified. A complete listing of all offices interviewed is provided as Appendix 2. In addition, several MOP facilities including the Central Caminos Garages, AME's garage and La Lechuza Factory in San Salvador were visited.

In total 29 interviews were conducted within MOP involving 46 individuals. In addition, interviews were conducted at SETEFE, the Corte de Cuentas, and AID. Oral comments and supporting documentation, where available, were the primary inputs in making the assessments contained in this report. When permissable, interviews were tape recorded to facilitate data gathering. These tape recordings were subsequently erased to protect the

anonymity of commenters.

Our assessments were based on input from several sources. The same question was generally asked of three or more different individuals within MOP to obtain independent corroboration of comments. The team also relied on written documents, where available, and the judgment of an independent Salvadoran engineer who has many years of experience working with MOP. Finally, AID managers' comments also provided a great deal of insight.

Upon completion of all interviews, AID staff were briefed on the findings and recommendations.

E. Limitations

Because this study relied heavily upon oral interviews and documentation provided by the organizations being examined, the validity of the conclusions is to a large extent linked to the accuracy of the opinions and data they contain. In general, we received a high level of cooperation from the individuals with whom we spoke and feel confident that the opinions expressed were honest and represent the salient views of MOP's managers.

II. ORGANIZATIONAL ASSESSMENT

The Ministry of Public Works is a large and complex organization with a broad public works mission. Of its 17,000 employees, approximately 7,000 are in the General Directorate for Roads and Highways (Caminos), whose mission is to construct and maintain rural roads, highways, and bridges. Approximately 6,600 are in the Directorate for Urban Planning and Architecture (DUA), whose mission is to build and maintain the streets and surface drainage infrastructure in urban areas. Caminos and DUA are the Directorates through which most of MOP's portion of Project 320 will be conducted, and were the primary focus of the MOP institutional analysis. Additionally, we focused on the Administration for Machinery and Equipment (AME), which is an AID-supported unit for maintenance.

Although we did not study MOP as a whole, we had contacts with enough of its components to form an impression that there are MOP-level organizational issues that likely affect DUA and Caminos. For example, there are MOP-level units with reponsibility for planning, financial management, personnel, and auditing. The precise roles these units played, overall and vis-a-vis counterpart functional units in DUA and Caminos, were not clear, but they did not seem to play a strong policy and procedural guidance role, as might be expected and likely needed in such a large agency.

The organization charts for Caminos and DUA are presented in Appendixes 3 and 4. We did not undertake general studies of either organization, rather we focused on the issues of how well-suited they are to implement Project 320 and what changes may be necessary.

A. Caminos

In Caminos, there currently is an office of the Coordinator for Extraordinary Programs, who reports to the Caminos deputy director. This office has responsibility for report preparation and limited coordination for AID-funded projects. It does not have a significant role in project planning, design, or implementation. These functions are performed by other Caminos departments. There is even a separate coordination office for extraordinary budget development. The AID projects conducted under Project 320's predecesor, Project 279, were managed by Caminos' five departments. For example, the Bridges Division in the Caminos Projects Department has been responsible for the (temporary) Bailey bridges projects to replace bridges destroyed by guerrillas.

Although our interviews did not lead us to conclude that the present management for AID projects (using line Caminos functions) is inherently unworkable, we did form the opinion that a different arrangement would provide greater insurance for management effectiveness and financial accountability.

Because of the lack of internal controls within MOP as a whole (discussed in Chapter IV--Financial Management), we believe it would be prudent to provide more focused monitoring of implementation follow-through than is currently provided, both to in-house and contracted-out projects.

We also believe that there is room for greater coordination among the line Caminos departments involved in project planning, budgeting, design, and construction. Although we were not able to assemble project life-cycle data to present conclusive facts, we inferred that more focused responsibility for overall project management could reduce the frequency and duration of delays, logistical and administrative problems, and other process management maladies that currently affect Caminos' projects.

Our recommended strategy for maximizing the likelihood of AID Project 320 success in Caminos is to adopt the life-cycle project management model as has been successfully used for AID-funded projects in the GOES National Administration for Water and Sewer (ANDA). Under this model, one unit is delegated management responsibility for all project phases. This is in distinct contrast to the current role played by the Extraordinary Program in Caminos for AID projects.

Theoretically, project management of this nature could be performed by a more powerful Extraordinary Program Coordinator who would coordinate AID-project activities among existing Caminos line functions. But this would require an exceptionally disciplined organization whose non-AID operations were sufficiently smooth such that they would not be in competition with the AID projects for time, attention, and resources. We think this is unlikely to be the situation in Caminos for the forseeable future.

Therefore, our recommendation is for AID and MOP/Caminos to jointly establish an AID project management unit within Caminos, which has the following essential charter:

- Access to Caminos top management and, if necessary, to MOP top management;

- Engineers and other staff able to plan, design, budget, and manage implementation, including participation in procurement specification and contractor selection;

- Budgetary control over AID funds allocated to projects; and

- Authority to decide whether to contract-out or use in-house resources for construction/implementation.

Many detailed procedural mechanisms would need to be defined, but the above conditions are the essentials for the recommended management unit. We recommend technical assistance be provided to AID and MOP/Caminos to develop the detailed organization of this

unit and eventually integrate it into Caminos. This will require five to eight months to accomplish.

B. DUA

In DUA the coordination of AID-funded projects is handled much the same way as in Caminos, but by the line-organization projects department instead of a separate donor coordination unit. The projects office is but one of several DUA offices involved in the planning, budgeting, design, and implementation of AID projects. While it has a coordination role for reporting, it is not constituted as a general project life-cycle management office--neither for AID nor non-AID projects.

Although there are some organizational differences between Caminos and DUA, we view the situations in the two organizations with regard to AID projects as parallel, we therefore recommend that the same general strategy of establishing an AID project management unit be applied to DUA, following the same general conditions outlined previously for Caminos. Similarly, the provision of technical assistance for detailed organizational design and development is also recommended.

For DUA, as well as for Caminos, the establishment of an AID project management unit will be different because its approach to project organization and management is different than presently practiced. For contracted-out projects, the model should eventually work as smoothly as it does in ANDA. For in-house projects, there will likely always be some degree of difficulty because the management unit will not have complete authority over staff resources in other line units. For this reason, we recommend that the management unit retain the authority to contract-out or use in-house resources.

C. AME

The third organizational element of MOP that our analysis focused on was AME. While not expected to be directly affected by Project 320, it will be inderectly affected to the extend that its machinery and equipment are used on projects funded under 320, in addition to its 320 project association, AME constitutes an organizational issue in and of itself.

AME came into being as a result of an AID local currency project related to Project 279. AME was constituted to be semi-independent of formal MOP and DUA bureaucracy to permit flexibility in its personnel and salary administration, procurement, and overall management. While AME serves DUA's maintenance needs, its director does not formally report to DUA.

In the estimation of the MOP and AID personnel whom we interviewed, AME has proven a successful maintenance organization. Based on our review of AME procedures, records, and management, as described in Chapter VI --Maintenance, we

concur in this assessment. We attribute this performance, as do AID and AME, partly to the quasi-independent status of AME, which affords it the flexibilities mentioned above, as well as to the importance and attention AID has given to the maintenance of its equipment investment. The time that AID has spent in first establishing and then monitoring AME performance has been an important ingredient in securing the organizational conditions necessary for it to succeed.

The future of AME is of great interest to AID and thus, was a facet of this organizational analysis. Current thinking is that AME should become the central equipment and machinery maintenance organization for all of MOP. Already, AME provides maintenance for some of the Caminos inventory supporting AID-funded projects, although Caminos has its own large maintenance department. In principle, both MOP and AID see the advantages of such a merger, however, AID has some well-founded reservations about effecting such a merger without first settling on arrangements that would encourage AME's future success, instead of burdening it with Camino's problems.

We believe that AID and MOP should move forward with the AME expansion to also serve Caminos because it will indirectly benefit Project 320 activities, as well as future AID projects in MOP and strengthen MOP, overall. However, AID and MOP should establish certain conditions for the merger:

- That MOP and AID address the longer-term financing of AME, beyond the current AID funding, so as to provide the necessary resources to continue;

- That staffing levels be based on need, which means that only a portion of Caminos' maintenance personnel would be transferred to AME;

- That the merger of Caminos' maintenance responsibilities be phased-in, perhaps by class of equipment (light, heavy, etc.) and by region, so as not to overwhelm the smaller AME; and

- That the merged Caminos operations will be overhauled to conform to AME's superior standard operating procedures.

To accomplish the merger, we recommend that AID provide technical assistance in detailed organizational design and planning.

A more global issue that MOP and the GOES must address is the future bureaucratic status of an expanded AME. While not presuming to give a legal opinion on the precise status of the current AME, it is clear that it is an entity outside of the MOP legal structure, as it is outside of the MOP budget (since it is now funded by AID). This status is almost certain to change when the Caminos merger has been completed and MOP eventually assumes

financial responsibility for AME. The logical evolution is for AME to become an organization on par with Caminos and DUA, reporting to MOP. Such organizational alignments are found in many public works agencies.

D. Recommendations

Our recommendations for strengthening the MOP organizations which will be most involved with Project 320 are as follows:

1. Reach an agreement with MOP to establish AID project management units in both DUA and Caminos. Pattern them after the successful AID management unit in ANDA.

2. Provide MOP with technical assistance for the detailed design of the Management Units organization, project management procedures, and relationships within DUA and Caminos.

3. Resolve pending issues and establish a timetable to implement the MOP-AID concept to merge all fleet and equipment maintenance under one organization, building on the success of the AID-sponsored "AME" organization. Provide technical assistance for the detailed organizational design, planning, and development of the organization.

III. STAFFING AND PERSONNEL MANAGEMENT

Effective personnel management is vital to the successful operation of any organization. All organizations must rely on the continued productivity of their staff which can be maximized by implementing proper personnel management practices to attract qualified people, develop them within the organization, and encourage quality work through a system of financial rewards and other benefits. The personnel management function includes the following elements:

- recruitment;
- evaluation and promotion;
- remuneration and benefits; and
- training.

Each of these elements was evaluated by the Booz, Allen team and, in general, MOP was found to be lacking in all areas. This chapter describes the problems identified by the team.

A. Personnel Management

Formal personnel policy guidelines do not exist within MOP for any of the functions listed above. Management of personnel appears to be done on an ad hoc basis. MOP's Human Resources Department has responsibility for personnel management and staffing and is divided into the following three components:

- Registration and Control Division, which authorizes and records all personnel actions (e.g., vacations, hirings, terminations, sick leave, salary increases, promotions, etc.);

- Social Welfare Division, which implements recreational programs and provides medical services to employees; and

- Training Division, which attempts to provide training to MOP employees.

Based on our assessment of MOP's personnel management we have identified the following deficiencies:

1. There is no written personnel policy documentation including:

   - no personnel policy manual;
   - no organizational and procedures manual;
   - no position descriptions; and
   - no description of employee benefits.

2. Salaries are established by taking an average for a particular labor category. This is a problem because salary inequity often occurs in which a newly hired employee with relatively little experience can earn more

than an employee with significantly more experience. Furthermore, salaries are constrained by GOES policy.

3. There appears to be no correlation between nominal and functional labor categories. Thus, individuals are hired with qualifications for one type of work and, in fact, often do not do anything approximating their nominal function.

4. MOP is currently over-staffed particularly among daily workers who are hired on a temporary basis to complete assignments, but often are not terminated upon assignment completion. Overemployment leads to decreased productivity and increased salary costs. In 1988, for example, MOP paid C315,542,928 to the daily workers (assuming a maximum salary of C1,574 per month for daily workers) which amounted to almost all of its total budget.

   MOP currently employs 17,785 individuals distributed as follows:

   - 16,706 daily workers;
   - 909 permanent employees; and
   - 170 contract employees.

   Caminos employs 9,575 daily workers, 3,115 of which are in San Salvador, and 6,460 in the rest of El Salvador. In addition, Caminos employs 204 permanent and 40 contract workers.

   DUA employs 6,374 daily workers, 4,310 of which are in San Salvador, and 2,064 in the rest of El Salvador. In addition, DUA employs 243 permanent and 25 contract employees.

5. Turnover is a problem for MOP because a disproportionate number of professionals leave each year, and not enough unskilled and semi-skilled workers leave. MOP's overall turnover rate was approximately 0.4 percent in 1988 and is attributable to 42 resignations, 2 discharges, 18 retirements, and 1 death. Of the total 1988 turnover, 30 percent were professionals.

6. The hiring process is not rigorous enough. It consists of requiring job candidates to complete a biographical form and take blood and lung tests. No formal interviews are conducted.

7. There is no formal evaluation process to assess employee performance. Salary increases are at the subjective discretion of the department chiefs.

8. MOP's Training Department consists of two individuals and no budget. In 1988 training was offered in human relations, administrative procedures, mechanical skills, and organizational skills. Because the Training Department has no budget, training courses are offered by MOP employees with some experience in a particular area. Outside trainers cannot be hired and MOP employees have minimal opportunities for training abroad because of budgetary limitations. For example, only 0.5 percent of MOP's workers received any kind of formal local training, 0.3 percent were trained abroad, and 5 percent received informal in-house training. This presents a problem because there is no effective in-house training program and little formal training despite a very large demand.

9. Personnel records are not automated and there are inadequate controls on employment status reporting, which exposes MOP to the possibility of "phantom employees," and employees who only work a fraction of their actual work schedule.

B. Recommendations

The problems pertaining to MOP's personnel management are considerable. Actions for improving personnel management will require no less than a complete overhaul of the system, this will require long-term high-level support from the Ministry. Such an overhaul should include the following:

- Increasing the Human Resource Department's budget. Without a realistic operating budget, the Human Resources Department will be able to do little to improve personnel management;

- Developing a personnel policy manual that clearly states MOP's policy for every function of personnel management, including more rigorous hiring procedures;

- Developing an evaluation system consisting of annual appraisals based on evaluation criteria, oral feedback on performance, and a personnel development plan for each employee;

- Creating an effective training unit staffed by training professionals who can effectively assess the training needs of the organization and provide regular courses in project management, administrative skills, mechanical skills, safety practices, literacy, and organizational behavior;

- Standardizing salary administration to ensure salary equity;

- Automating personnel records to ensure accurate individual records and prevent non-existent employees

from being on the payroll;

- Ensuring that nominal and functional labor categories are the same;

- Improving benefits (especially medical care); and

- Implementing a hiring freeze for non-professional labor categories to facilitate staff reductions through attrition.

To ensure the proper implementation of Project 320 funds, AID will need to assume responsibility for parts of the personnel management funcion in the short run. This is especially true for training. AID should encourage development of an effective training department by providing independent resources through the AID management units.

IV. FINANCIAL MANAGEMENT

This chapter reviews MOP's financial management function both in terms of ANDA's overall financial management and its management of AID project funds. The Booz, Allen team's purpose was not to conduct an audit, rather it was to assess MOP's institutional capability to properly manage internal and external funds.

The topics addressed in the financial management assessment included the following:

- Controller's Office Staffing
- Financial Management Operations; and
- Recommendations.

Each of these areas is dicussed in detail below.

A. Controller's Office Staffing

The Finance and Accounting Department in MOP functions as the Ministry's Controller's Office. The organization of the Finance and Accounting Department is shown in Exhibit IV-1. The Office has the following responsibilities:

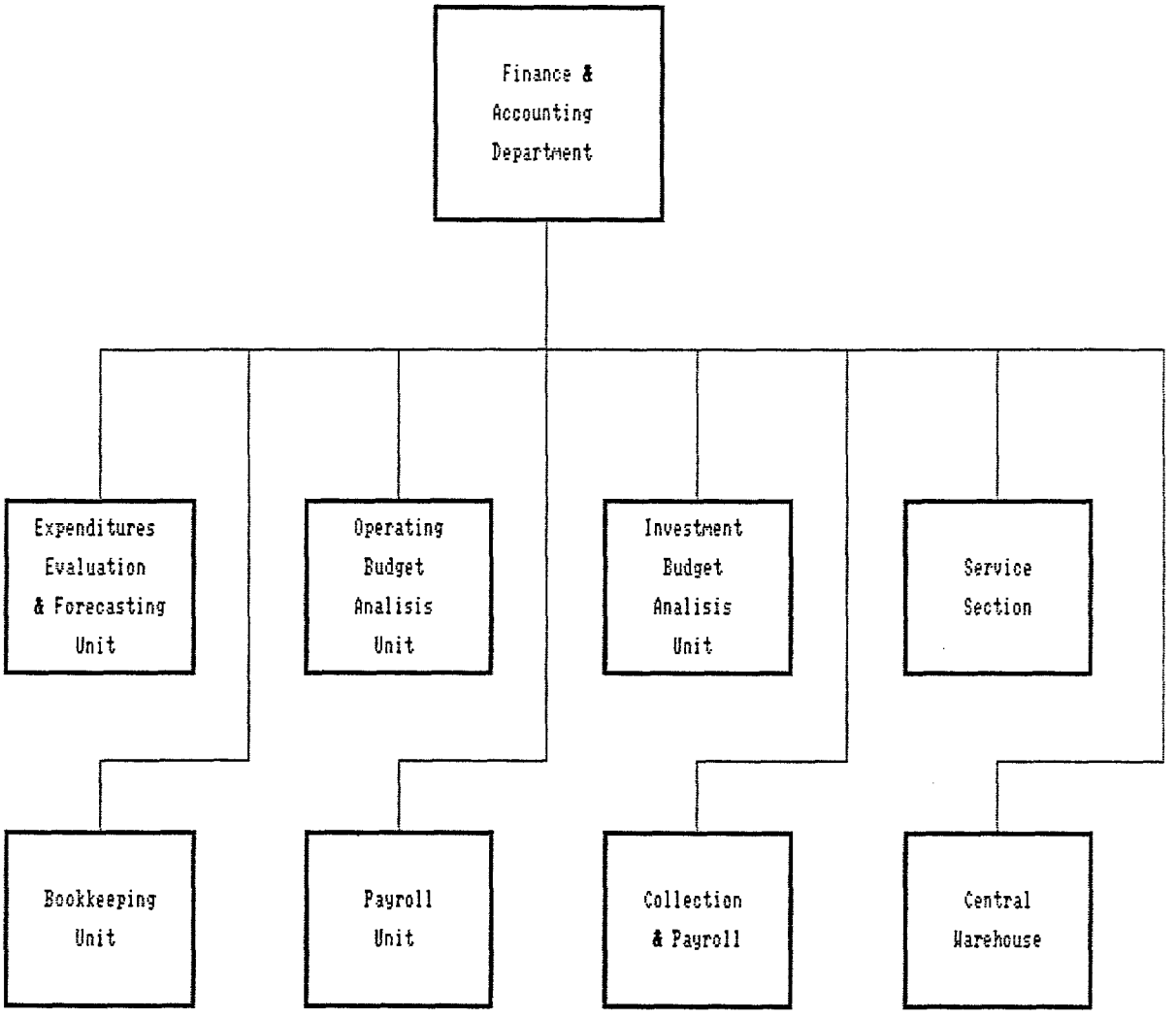
- prepares preliminary ordinary budget annually;
- allocates ordinary budget funds to MOP's units; and
- tracks financial transactions for both extraordinary and ordinary budgets.

In 1987 the Finance and Accounting Department employed 63 individuals divided as follows:

- 5 in the Financial Accounting Office;
- 7 in the Expenditures Evaluation and Forecasting Unit;
- 7 in the Operating Budget Analysis Unit;
- 8 in the Investment Budget Analysis Unit;
- 4 in the Internal Auditing Unit;
- 5 in the Bookkeeping Unit;
- 10 in the Payroll Unit;
- 3 in the Collection and Payroll Unit;
- 3 in the Central Warehouse; and
- 11 in the Service Section.

All personnel in the Finance and Accounting Department have nominal and functional labor classifications which do not match. For example, the four individuals classified as auditors have no background in accounting or auditing procedures and include a driver, an engineering assistant, and two land surveyors. The same is true for all of the other units within the department. This is an obvious problem.

EXHIBIT IV - 1
Finance and Accounting Department Organization.



B. Financial Operating Procedures

The analytical framework we applied to the MOP financial management assessment is a comprehensive cycle consisting of:

- Planning and program development;
- Budget formulation and presentation;
- Budget execution and accounting; and
- Auditing and evaluations.

These functions are generally regarded as standard elements of financial management operations in public as well as many private sector institutions.

Exhibit IV-2 illustrates the iterative nature of the financial management function. Each activity is to some extent driven by the activity preceding it in the cycle. The results of audits and evaluations, for example, affect planning and program development, which in turn drives budget formulation and presentation. Budget execution and accounting is, in turn, affected by budget formulation and presentation. The cycle is completed as audits and evaluations are performed of the effectiveness and results of budget execution and accounting.

1. Planning and Program Development

At the ordinary budget level, the planning and program development of projects is done according to the budget allocated for that year by the National Assembly. Caminos and DUA generally prioritize their projects focusing on urgent projects at the expense of less urgent projects.

Planning and program development is done at the departmental level within DUA and Caminos. The engineers who perform the planning and program development functions are generally not well trained in planning and management skills. These engineers also do planning and program development for the extraordinary budget. Technical assistance is recommended to train engineers in planning and management skills.

2. Budget Formulation and Presentation

The two sources of budgetary funding for MOP are the ordinary budget and the extraordinary budget. The ordinary budget is composed of money from GOES funds and is used to pay for investment and operating costs.

The extraordinary budget is composed of foreign assistance funds and is used to pay for project costs. Extraordinary budget development for both Caminos and DUA is done by a coordination unit (e.g, AFRE in DUA and Extraordinary Budget Coordination Unit in Caminos) in conjunction with individual departments on a project-by-project basis.

Exhibit IV-2

Theoretical Financial Management Process

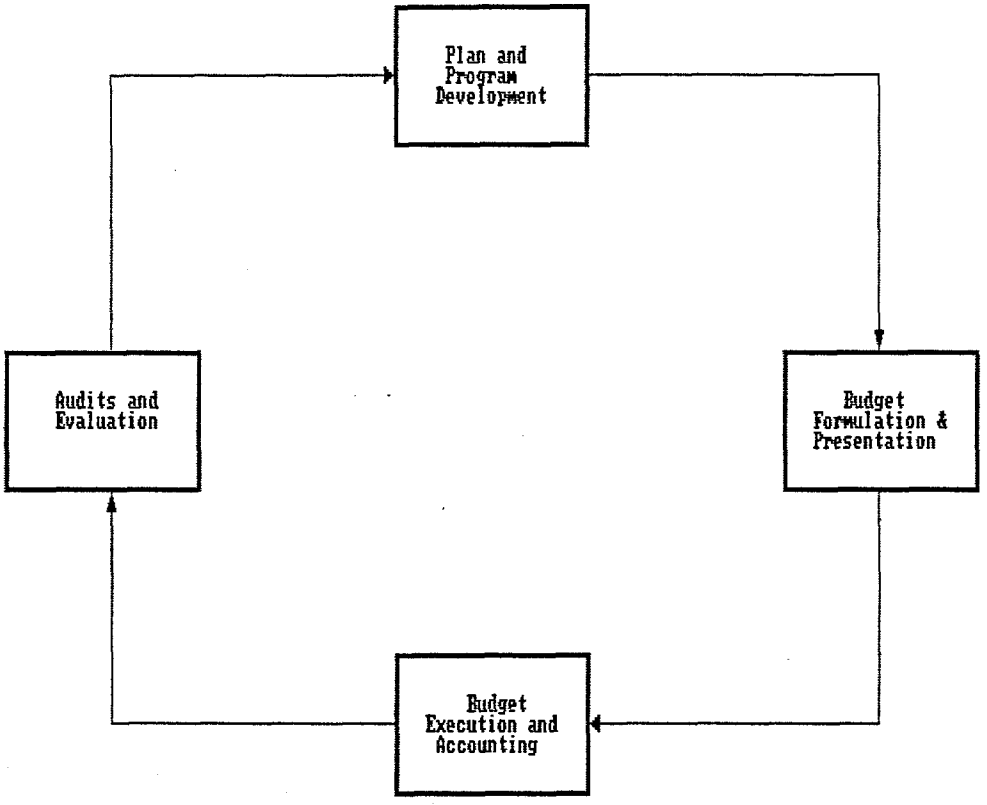


Exhibit IV-3 describes MOP's process for ordinary budget development. In April the General Budget Department within the Ministry of Treasury issues guidelines to the Ministries and to their subordinate units (e.g., DUA, Caminos). The Ministries prepare budgets for the upcoming fiscal year.

Problems arise at this point because the Ministries attempt to draft a preliminary budget based on actual projected needs. However, the guidelines issued by the Treasury do not allow for budgetary flexibility because they generally allocate the same amount of money to each budget category year after year. For example, in FY1988 MOP requested C500 million and received C316 million which was virtually the same as for FY1987. Caminos received 28 percent of MOP's 1988 ordinary budget and DUA received 18.4 percent. In FY 1989, MOP has requested C600 million. This figure is presently awaiting approval.

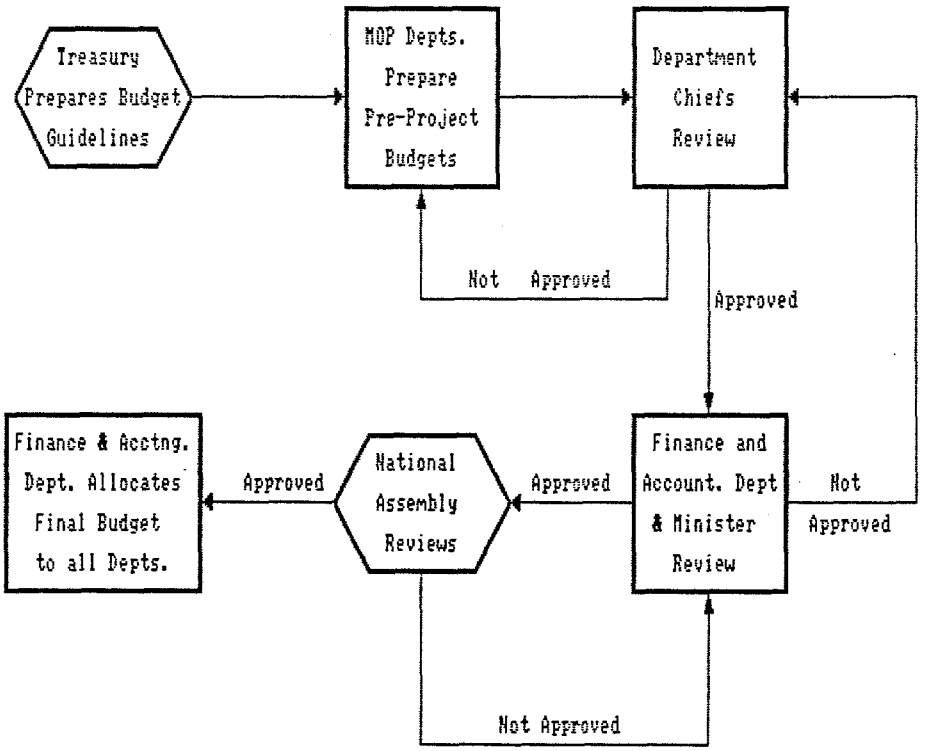
3. Budget Execution and Accounting.

MOP prioritizes its expenditures placing a disproportionate share of the budget into salary expenses. For example Caminos and DUA both expend over 90 percent of their ordinary budget allocations to pay salaries. This leaves little money to pay for maintenance, equipment purchasing, and other necessary expenses.

Budget development within MOP begins when its Offices submit budget requests based on their projections for the upcoming year to the Financial Accounting Office which reviews the budget requests and drafts a preliminary budget incorporating several rounds of revisions. The preliminary budget is sent to the Minister's Office for approval, and then to the National Assembly.

EXHIBIT IV - 3

MOP Ordinary Budget Development



The National Assembly determines how much money is finally allocated to each organizational unit and for each budget category. Exhibit IV-4 shows the funds allocated to each budget category for 1988.

Exhibit IV-4
Total 1988 Operating Budget Allocations By Category
(C000's)

	DUA	Caminos
Permanent salaries	2,466	2,207
Other personal services	8,190	61,514
Non-personal services	186	729
Supplies and materials	571	3,847
Machinery and equipment	22	0
Real estate	0	0
Construction and improvement	0	0
Current transfers	21	157
Capital transfers	0	0
Financial disbursements	0	0
Global assignments	0	0
General funds	0	0
Total	11,456	68,454

Source: MOP Finance and Accounting Office ($1 = 5 colones)

In addition to the operating budget, C165,272,000 was allocated for investment purposes to Caminos and C67,521,000 to DUA. Of the investment budget 59 percent was allocated to salaries in Caminos and 87 percent in DUA. The investment budget is supposed to pay for capital project expenses. In DUA, comparatively little money is allocated to pay for these expenses which include equipment and materials.

Chronic underfunding of MOP's operating and investment expenses leads to annual deficits. For example, DUA's FY 1988 deficits are shown in Exhibit IV-5.

Exhibit IV-5
DUA's FY 1988 Ordinary Budget Deficits By Category

Category	Deficit (C000's)
Permanent Salaries	130
Daily Wages	27,485
Non-Personal Services	465
Materials	37,132
Real Estate	49,000
Current Transfers	243
Total	114,455

Source: DUA

Annual project deficits such as those shown above result in project delays. Projects often must be down scaled or left incomplete because of lack of financing. In 1988, money was reallocated from Caminos to DUA to enable DUA to pay its salaries.

Between June 1, 1987 and May 31, 1988 total investment for Caminos projects was C129.2 million. Approximately 35 percent of these are being implemented in-house and 65 percent are being contracted out. According to MOP's 1987-1988 Annual Report, a major objective of in-house projects is to generate employment rather than to operate efficiently. Projects are usually contracted-out only when the funding organizations require it or because MOP lacks necessary in-house expertise.

The problems arising from the budget development and execution process are largely beyond MOP's ability to control. MOP lacks the flexibility to accurately determine how its funds will be spent. If, for example, MOP reduced its overall workforce by 20 percent, rather than being able to reprogram salary expenses to equipment upgrading, the expectation is that the following year's budget would simply be reduced by a proportional amount.

AID funds are monitored by coordination units in Caminos and DUA who have responsibility for the following:

- managing and authorizing disbursements;
- reconciling expenditures with workplans; and
- formulating action plans.

AID grant funding has thus far been in the form of local currency programs which are allocated through the ordinary budget. Project 320 will provide substantial external dollar funding, which will require considerably more oversight to manage properly.

The technical management is performed by the operations departments of DUA and Caminos. This is a problem because DUA and Caminos are very inefficient in managing projects because they do not have adequate financial, human, or physical resources to properly conduct business. This will be discussed in chapter V below.

With respect to the cost accounting procedures, the coordination units in both DUA and Caminos are responsible for accounting for project expenditures. Problems arise because these units do not have adequate controls to verify expenditures against what has actually been purchased, or to check that equipment is not used for unauthorized purposes. Coordination units receive the purchase invoices, however, because there is little supervision over cost reporting, there is no way of telling if the invoices accurately reflect real costs.

4. Auditing Procedures

MOP's auditing procedures are comprised of the following three types:

- Internal auditing: a section within the Financial Accounting Department that theoretically evaluates administrative procedures for projects in metropolitan San Salvador;

- External auditing: private financial auditors hired by SETEFE that focus on the financial procedures for Camino's and DUA's coordination unit projects; and

- Corte de Cuentas auditing: branch of the Corte de Cuenta de la Republica that monitors MOP's ordinary budget funded projects.

We believe that auditing of MOP projects is, at best, inadequate. For example, the internal auditing department consists of four individuals, none of whom have any formal training in auditing procedures. They include a driver, an engineer's assistant, and two land surveyors.

The internal auditors visually inspect project development for a very limited number of projects at the request of the funding agency. Projects are audited only at the request of AID, the Minister, or the Chief of the Finance and Accounting Department. Audits are not independently initiated. Furthermore, audits are not conducted of all projects and for those projects that are audited, written reports containing findings and recommendations are often not produced. The Booz, Allen team was unable to obtain copies of internal audit reports and was therefore unable to comment directly on their substance.

External audits are conducted by private companies at SETEFE's request and are conducted only for extraordinary budget

projects. External audits are conducted on a relatively infrequent basis. For example, in 1988 only five external audits were conducted.

The Corte de Cuentas auditors review financial transactions of the ordinary budget. Expenditures and funds disbursements are reviewed before they occur which in our view is correct. However, visual site inspections are generally not conducted in conjunction with these audits. Five Corte de Cuentas auditors are permanently assigned to MOP. Based on the current project workload, this unit appears to be understaffed by at least three people.

Finally, lack of agency-wide standard operating procedures for the auditing of accounting and financial transactions often put the auditing department at odds with other departments. In general, there is resistance to auditing within MOP's departments because many managers are not interested in implementing changes to their procedures.

C. Recommendations

Controller's Office Organization and Staffing

1. Ensure that staff performing financial and auditing functions have appropriate educational backgrounds.

   Impact:

   - Improve adequacy of financial functions.

2. Provide training in management, financial and auditing skills to appropriate staff members.

   Impact:

   - Improve staff capability.

3. Automate financial records and analyses.

   Impact:

   - Improve efficiency and effectiveness of financial functions.

Financial Operating Procedures

1. Improve coordination between MOP and the Treasury Department to produce budgets that more closely approxiamte MOP's real needs.

   Impact:

- Each department will recognize its real needs and will have resources available to fund its priorities. The spin-off effects will affect virtually every aspect of MOP's operations.

2. Make a priority of spending less money on salaries and more on non-salary items such as equipment, training, and supplies.

   Impact:

   - Reduce the drain on MOP's budgetary resources resulting from salary expenses.

3. Extend AID coordination units' responsibilities to include technical project supervision as well as financial management. In effect, create AID management units, in Caminos and DUA, with responsibilities similar to those of the ANDA management unit.

   Impact:

   - Ensure that AID funds are effectively spent on projects.

4. Begin to develop and install internal controls in DUA and Caminos, for example over fuel, vehicle use, material use, labor, payroll, etc.

   Impact:

   - Minimize potential for waste and abuse of physical resources.

Auditing

1. Create an effective internal auditing unit by:

   - consolidating all internal auditing functions into a single unit outside of either Caminos' or DUA's organizational structure;

   - providing the internal auditing unit with the authority to conduct audits on its own initiative; and

   - staffing the auditing unit with a sufficient number of well qualified individuals.

   Impact:

   - Improve auditing procedures.

2. Provide a procedures manual to all auditors to assist new staff in becoming familiar with MOP's financial and administrative procedures and ensure consistency in audit methodology and implementation. This will also serve as a guide to the departments in conducting their financial and accounting transactions.

   Impacts:

   - Better coordination between auditors and departments;
   - More efficient use of supervisors and auditors time; and
   - More reliable audits.

3. Provide specialized audit and accounting principles training to all auditing staff.

   Impacts:

   - Better qualified auditors; and
   - More reliable audits.

4. Conduct more frequent audits of AID projects, in particular, and of internal MOP controls, in general.

   Impact:

   - Better quality audits.

5. Encourage better coordination between internal, external, and Corte de Cuentas auditors.

   Impact:

   - Better quality audits.

V. TECHNICAL MANAGEMENT

Technical project management is an essential component of effective project implementation. Project management consists of the following:

- planning and feasibility studies;
- requirements assessment;
- project design;
- project implementation;
- project tracking; and
- evaluation.

This section describes and assesses Caminos' and DUA's procedures for managing AID funded projects.

A. AID-Funded Project Management Processes

AID-funded projects are managed by the Projects Departments of both Caminos and DUA. Of 17 AID-funded projects currently underway in Caminos, 10 are being designed and implemented by private companies and 7 are being implemented in-house. Similarly, of 72 projects currently underway in DUA, 24 are being designed and implemented by private companies and 48 are being done in-house. This contrasts with MOP's overall strategy of encouraging in-house project implementation.

The project planning, design, and implementation cycle for Caminos begins when the Planning Department performs a socio-economic evaluation of a proposed project site. The director of Caminos reviews the evaluation and, if it is approved, it is sent to the Minister's Office. If the Minister's Office approves the evaluation, it is next forwarded to the Projects Department which assigns an engineer to manage the project.

The Projects Department develops a preliminary project design which generally includes two or three options. The Chief of the Projects Department selects the best option and the design is sent to the Planning Department which conducts a feasibility analysis. If the feasibility analysis is favorable, the Projects Department drafts and evaluates a final project design. If no funding is available, the final project design is archived until the necessary funding becomes available. On average only 10 to 15 percent of the final project designs are actually financed. The rest remain in the Archives Section. Projects that are eventually implemented from archived project plans often need to be redesigned because the analyses become outdated. The project design process is not an efficient use of Caminos staff time because most project designs are never implemented and there is no overall master plan coordinating and prioritizing projects.

For those projects which are funded, Caminos goes through the standard MOP procurement procedures described in Chapter VII. Generally, the engineer assigned to manage the project design is

responsible for overseeing implementation. When private contractors are used to implement projects, private supervisors are sometimes hired to monitor project progress. Caminos and DUA personnel are only minimally involved in project supervision in such cases.

The process is essentially the same in DUA with the following exceptions:

- the DUA Director approves project plans rather than the Minister's Office; and

- DUA's Planning Department rather than its Projects Department makes the final determination regarding project feasibility.

Overall we feel that Caminos' and DUA's project management procedures are lacking in several areas including:

- There is no operational project tracking system. DUA and Caminos must rely solely on private contractors' project updates;

- There is no consistent and effective evaluation of projects upon completion;

- Project supervision is inadequate in DUA because of a lack of qualified engineers;

- No updated inventory of roads or a realistic national master plan exists;

- Project management skills are underemphasized in both DUA and Caminos;

- There is a shortage of vehicles to adequately transport Caminos and DUA personnel to project sites for supervision; and

- Personnel resources are inefficiently used to produce project designs that are never implemented.

B. Recommendations

1. Create functioning AID management units in both DUA and Caminos that are responsible for managing AID-funded projects. This can be accomplished by extending the responsibilities of the existing financial coordination units that reside in DUA and Caminos, making them functionally equivalent to ANDA's AID Management Unit. We recommend that this be done before Project 320 funds are used to pay for MOP projects.

Impact:

- Ensure proper management of AID funded projects.

2. Encourage privatization by requiring MOP to contract out a fixed percentage of Project 320-funded projects.

Impacts:

- Better run projects; and
- Decrease the need for in-house staff.

3. Conduct an assessment of all roads and highways under Caminos' jurisdiction to determine maintenance and construction needs for the future and create a national master plan for project implementation.

Impacts:

- More efficient use of project funds.

4. Develop an automated project tracking system to monitor project implementation. Also incorporate automated project design and analysis capabilities.

Impact:

- Improve project management capability; and
- Improve efficiency of the project design process.

5. Provide specialized project management training to Project Department engineers.

Impact:

- Improved project management capability.

6. Institute a policy of producing final project design plans only if funding is reasonably assured so as to minimize staff time spent in designing plans that are never used;

Impact:

- Improve efficiency of personnel use.

7. Create an effective technical unit within the Supervision and Evaluation Department to properly evaluate both project designs and implementation.

Impact:

- Ensure that projects are properly evaluated.

8. Provide more light vehicles for site inspections.

Impact:

- Improve supervision capability.

VI. EQUIPMENT AND MAINTENANCE ANALYSIS

Because public works organizations are by nature capital intensive enterprises, the existence of a well equiped and well maintained vehicle and heavy equipment fleet is essential to the proper implementation of infrastructure building and maintenance projects. The equipment management function includes the following components:

- Maintaining an inventory of equipment and spare parts;
- Performing preventive and corrective maintenance on a regular basis;
- Procuring necessary equipment and spare parts; and
- Providing appropriate training to maintenance personnel.

This chapter examines each of these functions by describing Caminos' and DUA's current equipment inventory and the procedures in place to maintain equipment in good working order. Further, we present a discussion of the stated technical needs of the vehicle maintenance departments in terms of both hardware and training.

A. Organization and Staffing of Maintenance Units

Maintenance operations within MOP are decentralized in that each MOP Division has its own maintenance garage with responsibility for vehicles and equipment under its jurisdiction. Additionally, there are 13 regional facilities nationwide under the auspices of the Caminos General Directorate.

1. Caminos Garage Department:

The Garage Department is responsible for providing preventive and corrective maintenance to Caminos' vehicle fleet. It maintains a central facility in San Salvador. In addition, 13 garage facilities are located nationwide which report directly to the engineer in charge of the local region. These facilities are not under the direct control of the central garage.

Regional facilities perform routine maintenance and minor repairs. Major repairs are performed in the central facility. An organization chart for the Garage Department is shown in Appendix 3.

The Central Garage employs 200 people distributed as follows:

- 3 engineers;
- 3 technicians;

- 2 secretaries;
- 24 clerks;
- 92 mechanics;
- 59 mechanic's assistants;
- 10 lubricators; and
- 7 drivers.

The managers with whom we spoke indicated that staffing levels are currently adequate. They did state, however, that staff expertise is somewhat of a problem because mechanics trainees often leave Caminos after gaining experience because salaries are higher in the private sector.

2. DUA:

The Administration of Machinery and Equipment's (AME) organization chart is shown in Exhibit VI-1. AME is an AID sponsored, semi-autonimous MOP unit responsible for:

- maintenance and temporary assignment of vehicles to DUA and Caminos; and

- supervision of vehicle operation to control usage.

AME employs 351 individuals distributed as follows:

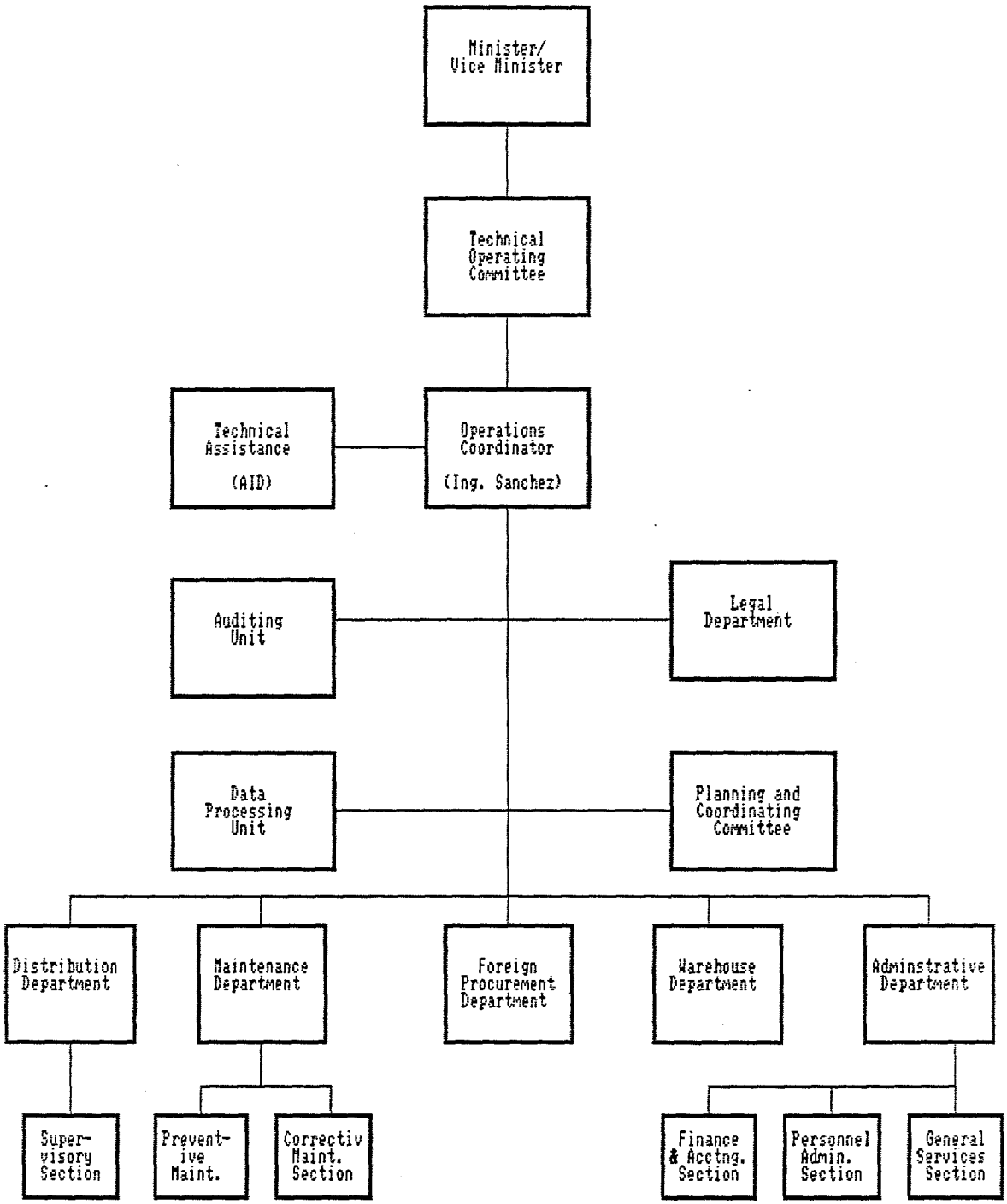
- 1 engineer;
- 35 administrative employees;
- 17 mechanics;
- 17 mechanic's assistants;
- 4 secretaries;
- 119 equipment operators;
- 15 technicians;
- 102 drivers;
- 41 miscellaneous.

AME's staff tends to be well trained and competent. Salaries for AME employees are approximately 30 percent higher than for MOP overall. This is the main reason AME is able to attract and keep highly skilled individuals.

AME's stated personnel needs include an additional 107 equipment operators in response to new vehicles and construction equipment being provided under Project 279.

EXHIBIT VI-1

AME ORGANIZATION CHART



B. Assessment of Caminos Vehicle Fleet and Maintenance Procedures

Caminos's current total fleet (light and heavy) size numbers approximately 1,200 units of which an estimated 600 are inoperable. Of the 600 "operating" units, approximately 20 percent are awaiting repairs at any given time. Thus, only about 40 percent of MOP's total equipment fleet is actually operating at any one time.

Exhibit VI-2 shows Caminos' current operable light vehicle inventory both in and out of service for each department. These figures include only vehicles in working condition. Caminos was unable to provide us with an accurate estimate of their inoperative vehicles because they do not maintain an inventory.

Exhibit VI-2 Caminos' 1988 Operating Light Vehicle Inventory

Department	Operating Vehicles	Vehicles to Be Repaired	Total
General Directorate	2	1	3
Garage Dept.	8	2	10
Transport Sectn.	7	12	19
Maintenance Dept.	7	5	12
Projects Dept.	8	2	10
Construction Dept.	9	5	14
Supervision and Evaluation Dept.	6	2	8
MOP/Caminos Vehicles	1	5	6
Bridges Dept.	6	2	8
Traffic Sign Sectn.	3	1	4
Other Depts.	11	5	16
Total	74	42	116

Source: Project Evaluation and Supervision Dept. (Caminos)

Of the 116 light operating vehicles owned by Caminos, 42 vehicles or 36 percent were awaiting repairs. Repairs can take between one day and several months depending on the complexity of the maintenance required and on the availablity of spare parts.

The status of Caminos' heavy vehicles is even worse. Of 304 operable heavy vehicles (eg., dump trucks, backhoes, tractors, graders), 63 percent are being repaired at any given point in time, leaving only slightly more than one third for actual road work. Lack of spare parts is one major reason so many heavy vehicles remain unrepaired.

Spare parts acquisition is often delayed because of:

- lack of financial resources;
- lengthy procurement process; and
- inadequate in-house spare parts supply.

Caminos vehicle and equipment maintenance procedures are as follows:

- Every vehicle is assigned a control card that provides identifying vehicle statistics including service record for maintenance and repairs;

- The inventory records specialist reviews the card record for each vehicle and identifies vehicles needing service;

- The drivers of vehicles requiring servicing are requested to bring their vehicles to the garage on a specified date; and

- The vehicle is serviced and the vehicle's record is updated.

Because of the high rate of vehicle breakdown, preventive maintenance generally does not occur on a regular basis. The servicing capacity of Caminos' garage is almost totally expended on corrective maintenance. Thus, Caminos has too few operating vehicles to properly rotate them.

Maintenance procedures for heavy equipment are similar to those for light vehicles but instead of bringing the equipment into a servicing facility, the Central Garage dispatches a work crew to the equipment site. Service calls are often grouped by location to save time.

The regional service facilities send service trucks on-site for minor maintenance of vehicles working in rural areas (e.g., oil and filter changes). More complex maintenance (e.g., engine repairs) is done at the regional garage. Vehicles needing more specialized servicing (e.g., major overhauls) are sent to the

central garage in San Salvador.

The lack of a computer data base for vehicle and spare parts inventories hampers Caminos' ability to efficiently track its vehicle servicing and spare parts availablity. This results in servicing lag times and a waste of personnel resources.

In addition, there are presently no standards for equipment or spare parts purchasing. For example, when new equipment is purchased, 15 percent of the shipment is in spare parts. Problems arise because spare parts are selected at random by the vendor resulting in either a shortage or oversupply of certain spare parts. A technical unit is needed to supervise the purchase of new equipment.

Maintaining a limited number of standardized vehicle and spare parts brands would promote greater cost efficiency because mechanics would be expert in the maintenance of these brands, larger inventories of the most needed spare parts could be purchased and stored, and overall reliability would increase because only the most reliable brands would be selected based on maintenance records.

Finally, training is a major requirement for the Garage Department. Presently vehicle maintenance workers receive virtually no regular training in technical skills, equipment operations, or safety regulations and managers require refinement of management skills and specific substantive knowledge of their technical disciplines.

C. Assessment of DUA Vehicle Fleet and Maintenance Procedures

AME is responsible for maintaining, and temporarily assigning vehicles to DUA. AME's maintenance tracking system is totally automated and includes the following:

- warehouse inventory system; and
- vehicle control and tracking system.

AME provides servicing for 599 vehicles of which 120 are light and 479 are heavy. The operating status of these vehicles is shown in Exhibit VI-3 below.

Exhibit VI-3
Status of AME Serviced Equipment (Heavy and Light)

Status:	Vehicle Owner:			
	AME	DUA	Caminos	Total
Working Condition	218	59	11	288
Being Repaired	134	43	2	179
Awaiting Repair	19	1	0	20
Not Assigned	24	71	0	95
Inoperable	14	3	0	17
Total	409	177	13	599

Source: AME (Current as of 1/26/89)

Of AME's total equipment fleet, 64 percent are fully operational at any given time. This figure was calculated by adding the operational vehicles to the "not assigned" vehicles which are new vehicles that are fully operational but have not yet been assigned to an office. Excluding the not assigned vehicles, 57 percent of AME's fleet is fully operational at any given time.

AME's maintenance procedures are similar to Camino's with the exception that AME has an automated tracking and distribution system. This improves AME's overall efficiency because it allows AME to accurately maintain and update its spare parts inventory, and keep track of vehicles needing repairs.

Compared to Caminos, AME is better staffed and better equiped. This enables AME to conduct preventive maintenance on all its equipment. Because AME is AID funded, it has a larger budget compared to Caminos and can thus afford to pay higher salaries and purchase more and better spare parts and equipment. This is reflected in the quality and efficiency of its maintenance procedures.

The major constraint AME currently faces is insufficient space for vehicle storage and repairs. AME currently has two facilities, located in San Salvador and El Coro, with insufficient capacity to store and service the number of vehicles presently under its jurisdiction. Some of AME's workspace has been used as a temporary warehouse because storage space is in such short supply. Managers within AME indicated that they require at least twice the current vehicle storage space. This will become an even more serious problem when AME receives the full 250 Mexican-made trucks some of which are still currently being held in customs.

D. Recommendations

1. Standardize equipment and spare parts purchases by reviewing maintenance records and determining which are the most reliable. Establish a technical unit to review vehicle and spare parts purchasing.

   Impacts:

   - More efficient inventory;
   - More reliable fleet; and
   - Better maintenance expertise.

2. Develop an automated equipment and spare parts inventory tracking system and associated procedures for Caminos and DUA.

   Impacts:

   - Better distribution and control; and
   - Cost savings associated with more efficient procurement.

3. Evaluate current fleet, equipment, and tools status and determine requirements and salvageable equipment. Update fleet and equipment in accordance with standard equipment procurement procedures (recommendation 1).

   Impacts:

   - Decrease operating costs; and
   - Increase project implementation capability.

4. Consider acquiring a ceiling crane for the central garage and evaluate physical facilities (i.e., garage buildings) to determine upgrading requirements.

   Impact:

   - More efficient maintenance services.

5. Provide training in the following areas:

   - Management;
   - Technical training for engineers and professionals;
   - Equipment operation;
   - Vehicle care; and
   - Safety procedures.

   Impact:

   - More efficient and effective personnel.

6. Provide warnings to workers who abuse equipment and initiate disciplinary actions to consistent violators.

   Impact:

   - Less equipment damage.

7 Provide AME with additional vehicle storage space.

   Impact:

   - Enable AME to properly store its current vehicles and absorb additional vehicles in the future.

VII. PROCUREMENT

A. MOP Procurement Practices

Procurement within MOP, for the ordinary and extraordinary budgets, is regulated by the supply laws of El Salvador. These laws establish the guidelines for purchasing and contracting goods and services. All purchases within MOP must flow through MOP's Procurement Office. The Minister, Director of Procurement, and the Corte de Cuentas authorize all MOP procurements.

On average, the procurement cycle takes between two and three months. No automated systems are currently in place to speed-up the process.

Visual inspections of procurements are conducted by the Visual Insection Department of the Corte de Cuentas de la Republica. Problems arise with visual inspections because there is a lack of coordination between the Visual Inspection Department and the Corte de Cuentas' MOP auditors. The MOP auditors are not consistently made aware of when visual inspections are conducted or what the outcomes were.

In addition, there is a general lack of control on procurement procedures. For example, private contractors are chosen only by the procurement director or the Minister. There is no system of checks and balances to prevent irregularities.

The Corte de Cuentas has responsibility to verify that legal procurement practices are followed. However, it does not conduct visual inspections of procurements. The Corte de Cuentas auditors only review workplans to ensure that money is being spent in accoordance with budget forecasts.

Another problem with the procurement process overall is that MOP is very slow in paying its debts to suppliers. Caminos' debt with private contractors, for example, is currently C62 million. Discussions with private companies indicated that payment delays often extend between two months and one year. Consequently, private companies often inflate the price of goods and services in an attempt to compensate for poor cash flow.

B. AME Procurement Practices

AME's procurement is theoretically separate from the rest of MOP because it uses AID funds to purchase imported equipment. AME's Foreign Procuremment Department theoretically is in charge of purchasing imported equipment with the approval of AID, specific AME department chiefs, and AME's coordinator.

In practice, AME's procurement is done through the normal MOP procurement process described above because the Minister, in agreement with the Coordinator of Operations, has chosen to centralize all of MOP's procurements in the Procurement Office.

This presents a problem for AME because it limits AME's position as a semi-autonimous organization and subjects it to the inefficiencies inherent in MOP's procurement process.

C. Recommendations

MOP Procurement

1. Ensure MOP's compliance with procurement law by requiring all auditors to sign off on procurements.

   Impact:

   - Proper conduct of procurement.

2. Ensure auditing coordination between Corte de Cuentas auditors, internal auditors, and the Visual Inspection Department.

   Impact:

   - Improve procurement supervision.

3. Pay suppliers and contractors on a timely basis. This can only be accomplished if a budget is established by the Treasury that accurately reflects MOP's actual expenditures.

   Impact:

   - Decrease in the cost of goods.

AME Procurement

1. Separate AME's procurement process from MOP by having it function as an independent procurement office.

   Impact:

   - Maintain AME's autonomy and improve the efficiency of its procurement.

VIII. Technical Assistance Requirements

As discussed throughout this report, AID will need to provide various types of technical assistance in conjunction with Project 320. The near-term objective of providing this assistance is to provide MOP with the necessary skills to effectively implement AID-funded projects. In the long-term, the objective is to develop MOP's own institutional capabilities for providing training, developing management and accounting systems, and designing and implementing projects. Strengthening these institutional capabilities will enable MOP to become more financially self-sufficient and may encourage other non-AID funding institutions to invest in MOP.

Exhibit VIII-1 summarizes the technical assistance requirements across MOP. These requirements were derived from discussions with MOP and AID managers and are a summary of the technical requirements recommendations discussed in chapters II through VII above. The level of effort estimates assume $2 million of technical assistance will be provided under Project 320.

EXHIBIT VIII-1
Summary of MOP's Technical Assistance Requirements

Requirement	Estimated Level of Effort
Project Management Training	2-3 person years
Personnel Management Training	1-2 person years
Financial Management Training	3-4 person years
Vehicle Control Training/Data Base Design	1 person year
Specialized Engineering and Technical Training	3 person years
Safety Procedures Training	2 person years
Assist in Updating National Road and Highway Inventory	9 person months

From the standpoint of Project 320, technical management expertise is among MOP's most critical needs. As discussed in Chapter V, MOP's lack of formal project management expertise with extraordinary budget funded projects is a major shortcoming. Training should be provided to individuals involved in any future AID management units and to other individuals involved in project management throughout MOP. Specific skill requirements include project tracking, project evaluation, and project accounting.

Another important technical assistance requirement is personnel management training. MOP's current disarray in its personnel management functions will impede the successful implementation of Project 320 and will weaken the organization in the long-run if it is not corrected. MOP needs assistance in:

- developing and implementing consistent and fair personnel policies;

- creating systems to effectively track personnel information; and

- reviewing and adjusting employee benefits.

Financial management training is another needed technical assistance requirement. MOP financial personnel could benefit from training in financial auditing practises, accounting and control functions, and financial analysis. Both internal and external auditors need assistance in the form of standard procedures manuals, auditing principles courses, and interviewing techniques. Assistance in accounting and control techniques is needed to insure that MOP is properly accountable for its expenditures. Lastly, the development of a financial analysis capability would be helpful to MOP by enabling its managers to better understand the financial impacts of their decisions and thereby assist in short and long-term planning.

Finally, an assortment of technical training needs were identified pertaining to vehicle maintenance and control. These include the following:

- Assisting MOP in designing and using a PC-based data base to monitor vehicle and spare parts locations, condition, maintenance needs, and other relevant data;

- Providing specialized training in areas such as equipment operation, preventive maintenance techniques, and specialized mechanical repair procedures to MOP's mechanics, engineers, and other technical support personnel;

- Providing training in safety procedures to all MOP employees engaged in heavy equipment operation or who work in unstable areas; and

- Assisting MOP in preparing an updated bridge, road, and highway inventory including repair requirements.

Providing technical assistance to MOP will not necessarily insure a well-run organization. However, it is a necessary component in improving overall organizational efficiency and cannot be ignored in any program designed to enhance MOP's institutional strengths.

APPENDIX 1

Interview Guide

MOP INTERVIEW GUIDE

Background:

AID is in the process of developing a new project entitled "Public Services Reconstruction Project." This project will assist the Government of El Salvador to:

- restore public services infrastructure destroyed or damaged by guerilla activity (this is a follow-on to the current project #279);
- repair infrastructure such as roads, bridges, and water systems that have suffered deterioration caused by nearly 10 years of defered maintenance; and
- construct new rural water systems.

The objective of this study is to examine the organizations affected (i.e., MOP and ANDA) from a financial, organizational, and technical perspective. The study will recommend appropriate levels and types of technical assistance that will be required to implement effectively the new AID project and other donor funded projects. We would like to stress that this is not an audit and that the level of AID funding is not contingent on our findings.

Our study will examine all of the following:

- Organizational structure
- Staffing/Personnel Management
- Financial Management
- Technical Management
- Equipment and Maintenance Procedures
- Procurement Procedures

We would like to focus on discussing your area of expertise, however, if you have comments pertaining to other parts of the study please feel free to bring them up.

I. Introductory Questions (ask everyone)

1) Please describe your office's responsibilities.

2) With which other offices within MOP do you work most closely?

3) With which other offices outside MOP do you work most closely?

II. Organizational Analysis

1) How many people work in your office by function? (i.e., how many engineers, maintenance workers, secretaries, etc.?).

2) What is the ideal number of people in your opinion to carry out your office's workload?

3) What are the educational backgrounds of the individuals in your office?

   - What is your assessment of the qualifications of your personnel? Do you have a shortage or an oversupply of specific labor categories? If so, why?

4) Is formal management training available?

   - If so, please describe it. Is it adequately utilized? Who primarily takes advantage of it? Is it effective? Provide examples.

   - If not, would management training be helpful to your organization? What types of training would be most useful?

5) How is AME currently staffed?

   - Is this staffing level currently adequate?

   - Obtain a current organization chart for the AME.

   - How could AME best be integrated into MOP?

   - How does the AME conduct maintenance? (Diagram the process)

   - How is maintenance funded?

   - Describe the AME's current organizational strengths and weaknesses.

7) How effective is MOP in implementing maintenance? Provide examples of efficiency and inefficiency.

8) Approximately what percentage of MOP's projects are contracted out? Do you feel that it is a good idea for MOP to contract out its projects? Why/why not?

III. Staffing and Personnel Management

1) Do you have a personnel policy manual? Is it used? If not, how are personnel policies determined?

2) Please describe your recruitment policies and procedures.

   - Do you use formal selection criteria? Describe how job applicants are evaluated.

   - Do you have any suggestion for improving the recruitment process?

3) Please describe how employee performance is evaluated and how promotions are made.

4) What are the salary scales for each labor category?

   - Are they set government-wide or does MOP set its own salary scales?

   - Are there any special salary scales (e.g., for engineers) within MOP?

   - Are salaries generally high enough to attract the kinds of people MOP needs?

5) Please describe what fringe benefits are available to employees (e.g., medical insurance, dental plan, life insurance, performance bonuses etc.).

6) What is MOP's estimated annual turnover rate for each labor category

   - Do you feel that turnover is a problem within MOP? If so, why?

   - Is turnover concentrated in particular functional areas or offices? If so, why?

   - What can be done to minimize turnover?

7) What types of training are available to MOP personnel? (e.g., management, technical, analytical).

   - Do individuals take advantage of training opportunities? Is training effective? If not, how can it be improved?

   - Does your office make use of AID funded training? What types? Is it effective? Why/why not?

8) Do you feel that MOP is adequately staffed in all areas? If not, where is it over or under staffed?

- How are staffing requirements determined?
- Are there any shortcomings in terms of personnel qualifications that you can identify for any parts of MOP?
- Do you have a written position description for every employee. If not, how are job responsibilities communicated to employees? Is this adequate?

IV. Financial Management

We would like to learn about MOP's ability to account for funds spent for projects in terms of how much a given project costs to complete, where the funding for the project came from, and how spending is monitored.

1) Obtain organization chart for controller's office. If one is unavailable, have controller/financial manager describe his office's organization.

2) Does MOP currently have a project based cost accounting system that links sources of funds to expenditures?

   - Please describe the accounting system. (Diagram the accounting procedures from project inception to project completion), e.g., how do you know in the end how much it costs to build a particular water system?

   - Check for the following:

     -- System of records of individual transactions (e.g., books of prime entry such as cash books) Obtain a copy

     -- System of control and total accounts (general ledger) derived from the totals of accounts in the books of prime entry

     -- System for making transfers and adjustments between accounts

   - How are sources of funds accounted for? For example, if a project is being funded with both AID and GOES money, how do you determine how much of each is spent?

   - May we see recent examples of internal cost accounting reports? (Have interviewee describe in detail how internal cost accounting reports are done and where exactly all numbers come from).

3) Please describe the control procedures for authorizing expenditures.

   - Who needs to sign off on procurement requests?

   - What kind of checks are in place on expenditure approvals?

   - How do you determine whether or not a particular expenditure is legitimate?

   - Do cost analysis guidelines exist? What are they? Who uses them?

4) How often is MOP audited?

- What do these audits consist of?
- Who conducts these audits?
- May we see some recent audit reports?

5) Does MOP conduct audits of its major contractors?

- What do these audits consist of?
- How often are they conducted?
- Who conducts them?
- May we see examples of recent external audits?

6) Are budget status reports prepared showing how much has been spent on given projects at a set point in time?

- How often are these reports prepared?
- How are these reports prepared? What systems exist to provide information on project budget status?
- What information is contained in these reports?
- Who receives budgets status reports?
- How reliable are the numbers in these budget status reports?

7) Description of Budget Planning.

- Is there an overall budget planning process?
- What does it cover and what is the time span of these plans?
- How are these plans presented and what are they used for?
- Are the overall plans supported by appropriate subsidiary budgets (revenues and operating expenditures, capital expenditures, debt proposals etc.)
- How are these plans monitored and implemented?
- Who prepares and approves plans and budgets?
- Do plans and budgets identify specific managerial responsibilities for implementation and review?

- What is the timetable for preparation and approval of plans and annual budgets?

- Does the timetable allow sufficient time for generation of all inputs and management reviews of plans and annual budgets?

- Who prepares these timetables?

- Are there sufficient time allowances and arrangements for preparation and incorporation of revisions in plans and annual budgets?

8) Control of plans, budgets and performance.

- What is the system of control and actual performance vis-a-vis plans and annual budgets?

- Who prepares financial reports relating to performance, plans and annual budgets; and what is contained in these reports?

- Does the reporting system allow control and variation of plan or budget execution by functional managers?

- Are adequate corrections made to plans and annual budgets on a timely basis? By whom?

9) Structure and contents of budgets:

- What is the analytical structure and degree of detail of the annual budget? Obtain a copy.

- Is there a physical budget in addition to a financial budget? How are they linked?

- What identification and form of presentation of capital and recurrent expenditures/revenues are in use?

- Are line-item classifications objective (by operational units or output such as the construction of a bridge or the repair of a transmission line) or subjective (by basic inputs such as salaries, fuel, supplies)?

- What period(s) of forecasting (month, quarter, year) is in use?

10) Budget forecasting:

- What bases of forecasting are used (e.g., what a project should cost)?

- To what degree are analytical supporting data used (e.g., statistical analyses, financial ratios)?

- Are corresponding results or data for previous and current years available?

11) Cash flow budget:

- How is the cash flow budget operated?
- Who approves and executes it?
- How frequently is it prepared?
- Who relates forecasts to actual performance, how regularly, and what procedures are followed to respond to budget variances?
- Can the cash flow budget override the main budget(s) (e.g., by stopping payments or by limiting borrowing)?

12) Level of automation:

- Are budgets maintained on computers or manually? Describe.
- What is the currrent capacity of the financial processing system?
- How is financial information transferred from field organizations to operations offices to financial offices?
- What security procedures exist to prevent unauthorized access to financial information?
- Are there any problems associated with budget data storage, retrieval, updating, or reporting? Describe. (e.g., compatibility problems)
- Are there currently any plans underway to automate the budget process?
- How accurate and timely is the financial information you recieve? What improvements are necessary?

V. Technical Management

Technical management refers to the design of engineering projects, internal contract monitoring, review of proposals, and ongoing project maintenance.

1) Obtain organization chart for agency units responsible for technical management.

2) Describe the types of projects your office is responsible for managing.

   - How are projects tracked? (e.g., do you have an automated project tracking system?)

   - Do you have an overall multi-year project plan that delineates project priorities over time? How is it put together?

3) What percentage of your current projects are contracted out?

   - What are the advantages and disadvantages of contracting out?

   - Should MOP contract out more projects? What types? How much do you feel would be optimal?

4) If MOP were given C50 million in additional funding next year how would it absorb the money?

   - Would additional staff be needed?

   - Would additional training be needed?

5) How many people work in your unit by functional area?

   - Is this an appropriate number to perform technical management for current projects? If not, what is an appropriate number?

   - Do you have the right mix of skills? If not, what additional types of skills do you need? Why are they currently unavailable?

6) Is technical management training available?

   - What does it consist of? (e.g., is project management training provided?)

   - Is it effective?

   - How can it be improved?

7) What other areas of technical assistance will you need over the next three years?

VI. Equipment and Maintenance Analysis

1) Obtain organization chart for the maintenance unit.

2) How many people work on equipment maintenance in MOP? Is this number adequate?

3) What is the size of your equipment fleet by type of vehicle?

- What fraction of your fleet is useable at any given time?

- Do you currently have enough operating vehicles to meet project needs? If not, how many additional operating vehicles do you need?

4) Describe vehicle maintenance procedures.

- How often are vehicles serviced?

- Is there a vehicle rotation program for preventive maintenance?

- How are service calls responded to?

- Are all vehicles serviced centrally in San Salvador or are they also serviced in the field? Is this a problem?

- Are outside companies used to do maintenance? If so, how do they compare to internal maintenance operations?

5) What type of inventory system exists to store and track spare parts?

- Do you have adequate warehouse facilities to store spare parts?

- How are spare parts allocated and distributed to service centers?

- Does a planning process exist to procure spare parts? If so, describe?

6) List the types of training available for each major piece of equipment.

- Is it adequate?

- What other types of training would be useful?

VII. Procurement Capability

This section refers to procurement of both goods and services.

1) Describe the process of developing tenders for offshore and local procurement of goods and services.

   - How do you advertise competitive bids?

   - How do you evaluate proposals? Do you have a backlog problem?

2) What is the average dollar volume of procurement for goods and services in a given year?

   - Have average total annual procurements increased, decreased, or stayed the same in recent years? Why?

3) On average what is the range of time between contract issuance and award?

   - What factors lengthen the procurement process?

APPENDIX 2

List of Offices Interviewed

List of Offices Interviewed

MOP:

- Minister's Office
- Planning Department
- Procurment Office
- Finance and Accounting Office
- Human Resources Department
- Internal Audit Office
- The Corte de Cuentas MOP-Office

SETEFE:

- General Management Office
- ANDA-SETEFE Coordinator
- MOP-SETEFE Coordinator

The Corte de Cuentas:

- SETEFE Coordinator

General Directorate of Caminos:

- Director's Office
- Planning Departmen
- Project Department
- Project Supervision & Evaluation Unit
- Operations Division
- Construction Department
- Maintenance Department
- Garages Department
- Transport Unit
- Bridges Reconstruction Office
- AID/ Coordination Unit
- Finance Department
- Internal Auditing Unit

Dua:

- Director Office
- Planning Department
- Project Department
- Personnel Department
- Construction Department
- La Lechuza Factory
- AID/ Coordination Unit
- Financial Department

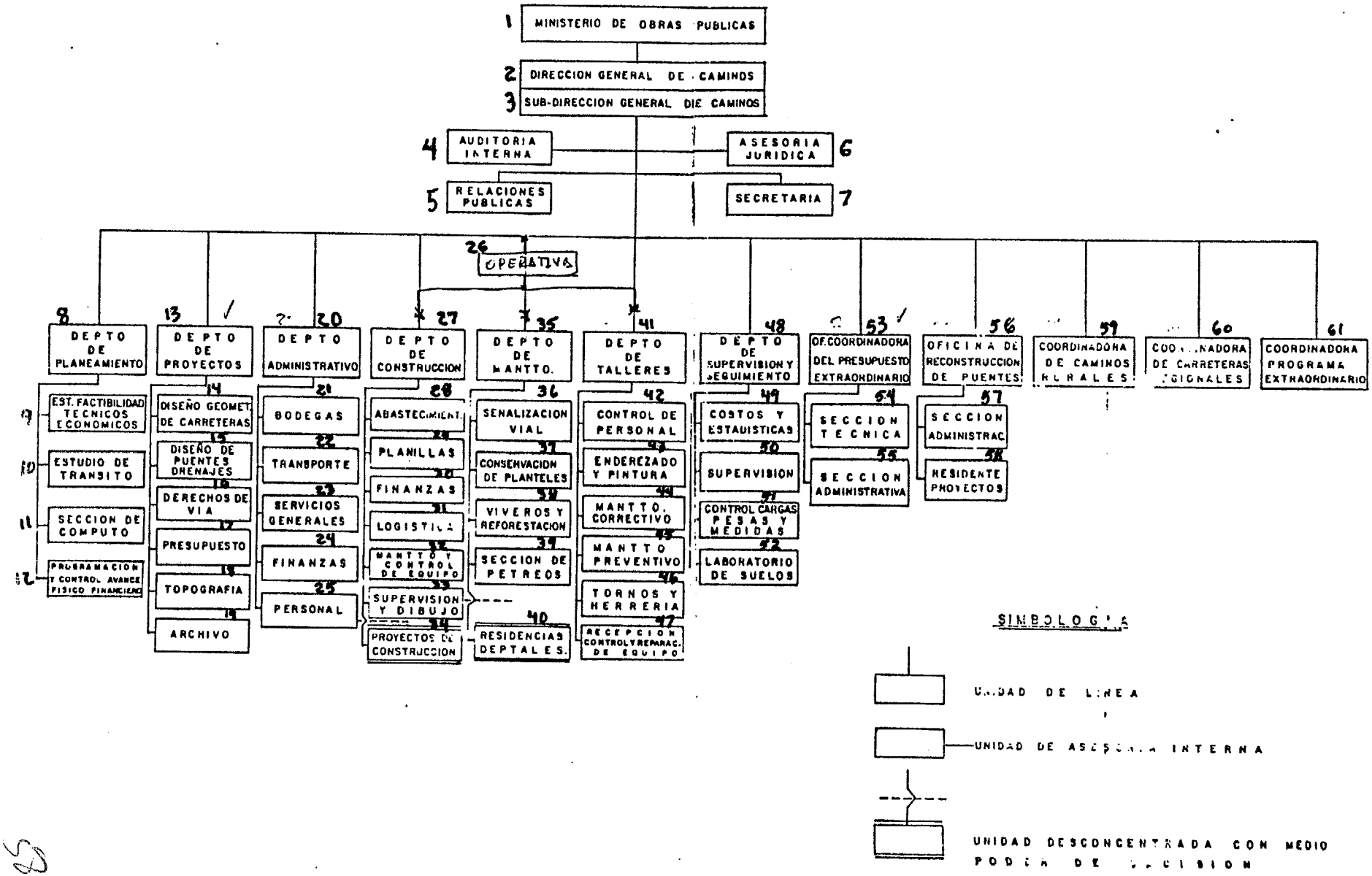
AME:

- Director Office
- Warehouse Office
- Administration Office

APPENDIX 3

Caminos Organization Chart

ORGANIGRAMA DE LA DIRECCION GENERAL DE CAMINOS



FECHA: ENERO DE 1988

General Directorate of Caminos Organization Chart Key

1.- Public works Ministry
2.- General Directorate of Caminos
3.- General Sub-Directorate of Caminos
4.- Internal Audit Office
5.- Public Relations Office
6.- Legal Department
7.- Secretary
8.- Planning Department
9.- Technical & Economic Feasibility Studies
10.- Traffic Studies
11.- Data Processing Section
12.- Program Finance and Control
13.- Projects Department
14.- Highway Design
15.- Bridges and drainage Design
16.- Real Estate Acquisition
17.- Budget Unit
18.- Topography Unit
19.- Archives Section
20.- Adminstration department
21.- Warehouse Unit
22.- Transport Unit
23.- General Services Unit
24.- Finance Unit
25.- Personnel Unit
26.- Operations Department
27.- Construction Department
28.- Supply Unit
29.- Payroll Unit
30.- Finance Unit
31.- Logistics Unit
32.- Equipment Control and Maintenance Unit
33.- Supervision and Drawing Unit
34.- Project Construction Unit
35.- Maintenance Department
36.- Traffic Signals Unit
37.- Building Maintenance UNit
38.- Reforestation and Green Houses Unit
39.- Geological Section
40.- Zoning Offices
41.- Garage Department
42.- Personnel Control Unit
43.- Body Shop
44.- Corrective Maintenance Unit
45.- Preventive Maintenance Unit
46.- Lathes and Blacksmith's Shops
47.- Equipment Control and Repairs
48.- Supervision and Evaluation Department
49.- Cost Accounting and Statistics Unit
50.- Supervisory Unit
51.- Measurement and Weight Control Unit
52.- Soil Laboratory
53.- Extraordinary Budget Coordination Office

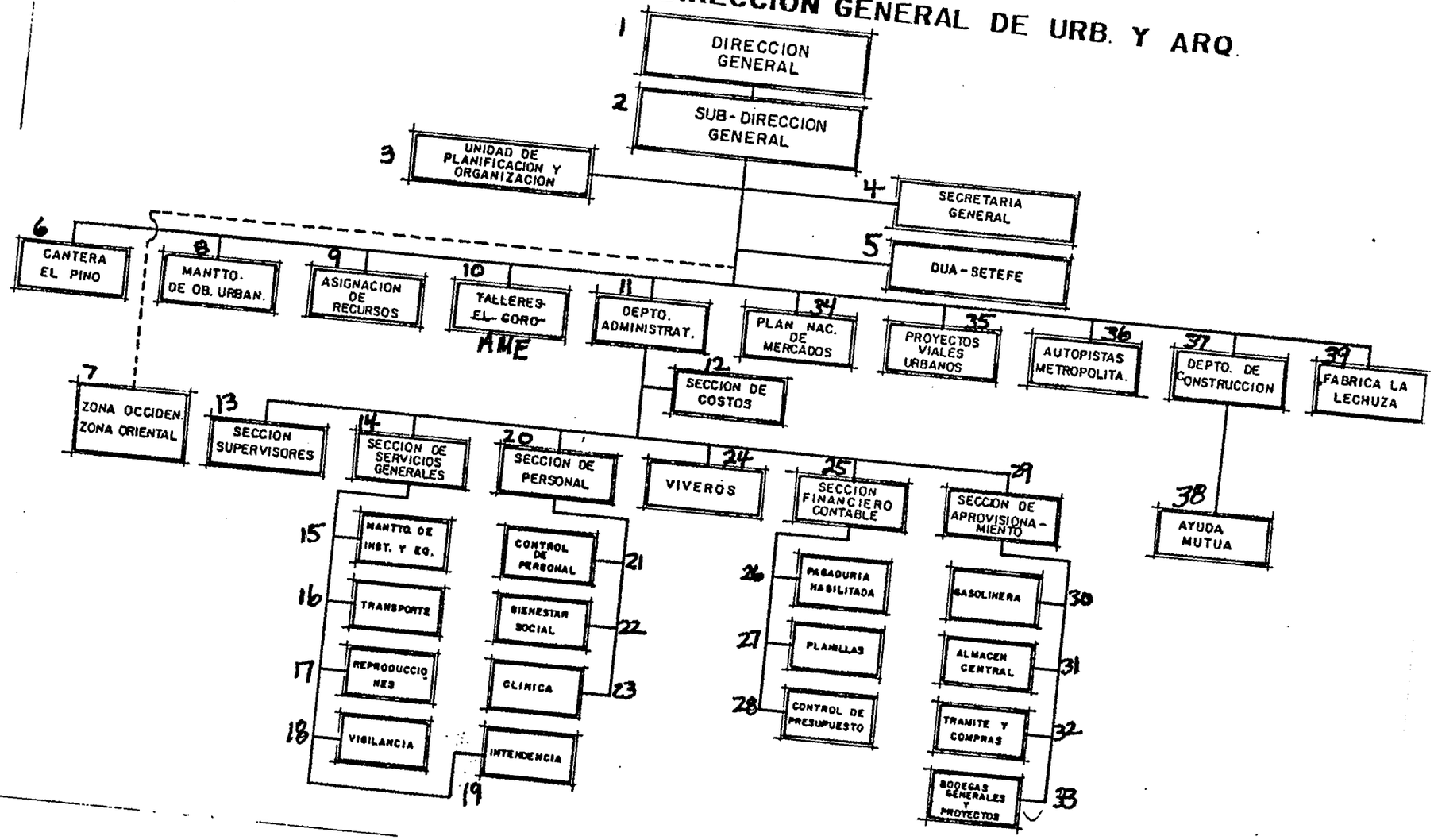
54.- Technical Section
55.- Administration Section
56.- Bridges Reconstruction Office
57.- Administration Section
58.- Residential Projects
59.- Rural Roads Coordination
60.- Regional Roads Coordination
61.- Extraordinary Program Coordination

Appendix 4

DUA Organization Chart

MOP

ORGANIGRAMA DE LA DIRECCION GENERAL DE URB. Y ARQ.



DUA ORGANIZATION CHART KEY

1.- General Directorate
2.- General Sub-Directorate
3.- Planning and Organization Unit
4.- General Secretary
5.- DUA - SETEFE
6.- El Pino Quarry
7.- East and West Zones
8.- Urban works Maintenance Department
9.- Resources Distribution Department
10.- Administarion of Machinery and Equipment (AME)
11.- Administration Department
12.- Cost Accounting Section
13.- Supervisors Section
14.- General Services Section
15.- Building Maintenance Unit
16.- Transport Unit
17.- Reproduction Unit
18.- Security Guard Unit
19.- Administration Unit
20.- Personnel Section
21.- Personnel Control Unit
22.- Social Benefits Unit
23.- Clinic
24.- Green House (nursery) Section
25.- Financial Accounting Section
26.- Paymaster's Unit
27.- Payroll Unit
28.- Budget Control Unit
29.- Supply Section
30.- Fuel Distribution Unit
31.- Central Warehouse Unit
32.- Procurment Unit
33.- General Warehouses and Projects Unit
34.- Food Markets Planning Section
35.- Urban Street Projects Section
36.- Metropolitan Highways Section
37.- Construction Department
38.- Mutual Help Unit
39.- La Lechuza Factory