PROJECT PAPER

TECHNICAL MANPOWER DEVELOPMENT

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TECHNICAL MANPOWER DEVELOPMENT (TMD)

I. SUMMARY

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Grant $7,527,000

Waivers: FAA -110(a) Cost Sharing Requirement

B. Introduction and Summary Description of Project

1. The setting

Afghanistan is a conservative, Muslim, peasant and tribal society whose poverty and disadvantage are reflected in its limited inventory of rural social services and infrastructure. Fully 85% of the population lives in the rural areas. The majority's access to schools, health services, technology and markets is severely constrained by the isolation of villages and the typical concentration of services in and around the larger towns and cities. With the exception of two or three main national arteries, most of the roads which connect Afghanistan's rural villages with each other and with the major industrial and commercial urban centers are seasonal roads, lacking all weather surfaces and bridges and culverts. In addition to poor market access, the bulk of farmers who undertake irrigated agriculture face uncertain water supply owing to their reliance on impermanent river diversion structures which must be repaired several times a year in order to deliver water to their fields.

Currently, the Government of Afghanistan (GOA) has a number of programs directed at extending the network of communications, social services, and infrastructure. For example, the ambitious Seven Year Plan calls for construction of 116 Basic Health Centers and 2700 rural 8th grade primary schools by 1982. The Rural Development Department (RDD) is responsible for upgrading 2,300 kms of rural roads and installing over 200 bridges and 6,700 culverts by 1982. The RDD also has a program to improve 160 of the country's community irrigation systems (CIS) by 1982, mainly by making diversion structures more permanent. USAID is assisting in the construction of health centers, primary schools and rural works.

2. The Problem

One of the major problems faced in these endeavors, however, is the shortage of technical manpower with practical skills in rural construction. Currently the supply of technical manpower is far short of ministerial demand. The Ministry of Planning projects a requirement of 1,617 engineer graduates by 1982 to implement the Seven Year Plan. RDD requirements alone are estimated at 325. Currently RDD has 32 engineers. Assistant engineers are needed to support engineers at a ratio of at least 3:1 and optimally 5:1. While the absolute supply of such manpower is higher, given the greater demand, even high level technicians are in short supply. However, most technicians being produced are not at a level high enough to be considered as an assistant engineer, nor to be given site supervisory responsibilities. Rural Sector shortages are aggravated by the presumed disproportionate allocation of available manpower to the industrial sector in line with the Seven Year Plan industrial growth emphasis. As data on GOA manpower allocations are non-existent, it is impossible to judge the full impact of GOA manpower allocation policies and priorities on rural development. The technical manpower then, which is assigned to rural programs, generally lack the appropriate skills to carry out their responsibilities effectively.

Presently, graduates of the Faculty of Engineering of Kabul University (KU/E) are trained in civil, electrical, or mechanical engineering with a heavy theoretical and industrial slant. There are no engineers now being graduated whose instruction has emphasized practical, on-the-job training in the field of general construction as it would pertain to an assignment in the field. These engineers also lack practical management skills. Some KU/E graduates whose training is in civil, electrical, or mechanical engineering are being assigned to RDD, the Ministry of Public Works, the Ministry of Health, and the Ministry of Education to work on development projects in the rural areas. Without practical training in the field of general construction and management, however, these recent graduates are hard pressed to supply the skills required to supervise construction of rural schools, health centers, bridges, or diversion dams. As such, unrealistic plans and schedules are often drawn, needed materials are ordered belatedly, minor construction problems are ignored, key decisions are improperly made, structures are imperfectly built, and the end product is often sub-standard.

The lack of trained high level technicians or assistant engineers to support the field engineers exacerbates the problem. In time, a graduate in mechanical or civil engineering might be able to gain the practical experience necessary to enable him to supervise effectively a number of rural development projects. But without qualified high level technicians to assist him, his experience cannot be brought effectively to bear on each project. Rather than concerning himself solely with important problems and key decision-making, the engineer is often forced to undertake minor tasks and supervisory roles which could be handled by others if they had the proper training. Also, geographical separation between sites makes daily visits impractical, allowing unsolved problems to deminish job quality. Consequently, there are numerous delays in construction waiting for the field engineer to make a minor decision and insufficient input by the engineer into areas of major importance because he is busy doing lesser tasks. Moreover, what normally transpires in such a situation is that the experienced engineer, for expediency sake, delegates these tasks to contractors, construction site supervisors, and others who are ill-trained for the role.

3. GOA Response

In recognition of the technical manpower shortage facing its development program, the GOA undertook, last year, a four-fold expansion of enrollment at KU/E aimed at producing 350 graduates a year by 1984. Moreover, the GOA Educational Reform, promulgated in 1975, plans the conversion of 50% of all secondary schools to technical school status by 1979. Granting that this is unlikely to occur in the scheduled time-frame, the GOA in the meantime plans to double the number of existing vocational secondary schools. Seven new vocational-technical schools are to be created at Jalalabad, Herat, Kunduz, Parwan, Ghazni, Takhar, and Mazar.

The GOA's priority still remains on the industrial sector. For example, the Ministry of Planning has allocated the expanded enrollments at KU/E among its departments as follows:

6% to Architecture
29% to Electrical
36% to Mechanical
29% to Civil

In terms of likely placement in rural programs, Civil Engineering offers the greatest number of potential candidates but is also likely to receive heavy competing demands from the industrial sector. While some mechanical and electrical graduates do get assigned to rural programs, requirements appear to be less for this more specialized type of engineer.

The Afghan Institute of Technology (AIT), which in the past had received substantial AID assistance (no assistance is currently provided) specializes in training low to intermediate (12th grade level) technicians in automotive, mechanical, electrical and construction technology.

The highly respected institution has been the major source of technicians for the rural sector. For example, RDD has over 60 AIT graduates on its payroll. Since U.S. assistance was terminated, it has been on the decline; the better qualified staff have moved on and the facilities have not been maintained.

In one fashion or another, the GOA is addressing the quantitative aspects of the manpower with one notable exception: training of high level technicians or assistant engineers able to work independently at rural project sites and manage lower level technicians and laborers in support of the engineers. What remains unaddressed are the qualitative aspects of training manpower with technical skills appropriate to rural sector requirements and to existing shortages, so as to optimize the use of each level of skills. In pursuit of an industrial growth model, the GOA has opted for costly training of high level engineers for all sectors. While interested in better qualified graduates, again the GOA's focus is across the board rather than rurally oriented.

4. The Project Response

The project proposed herein attempts to find a common ground between U.S. and Afghan objectives. Espousing the mutual goal of accelerating the impact of rural programs on meeting the basic needs of the rural poor, the project proposes to produce technical manpower better able to plan, design, manage, and implement small-scale rural infrastructure projects. It assumes that the lack of such infrastructure is a major factor inhibiting gains in the rural sector and accepts the GOA's choice to produce engineers, as well as less costly lower level technical manpower, to carry out rural infrastructure development. The key element of the project is to channel a greater proportion of technical manpower with practical construction and management skills into the rural sector. Thus, the project aims:

1) to create a new construction engineering curriculum at KU/F which, by the end of the project, will absorb 24% of KU/E enrollments, in addition to 16% entering civil engineering, and equip graduates with the practical skills and sensitivity needed to work effectively in rural areas;

2) to introduce a 13th and 14th year at AIT leading to a certificate of assistant engineer in seven construction fields which are directly complementary to KU/E graduates.

To achieve its objectives, the project proposes:

1) three full-time advisors for 149 person months to be assigned to KU/E and AIT:

2) 148 person months of consultants;

3) 180 man years of participant training; and

4) selected laboratory and instructional equipment and supplies.

It should be understood at this time that official acceptance of a 13th and 14th year assistant engineer program at AIT has not been received from the GOA by the USAID mission. This means that the inclusion of AIT as part of the project might not be possible. AIT is a highly desirable addition to the program at KU/E, indeed a most practical one for Afghanistan's technical manpower problems. This is not to say that a KU/E only option would be unacceptable, but including AIT will make the project a far sounder one.

This project is designed within the terms of Section 105 of the FAA of 1961, as amended, which authorizes assistance, inter alia, "to increase manpower training in skills related to development." While the primary focus of this section relates to expansion of non-formal education and increasing "the relevance of formal education systems to the needs of the poor, especially at the primary level", it also directs assistance toward strengthening "the management capabilities of institutions which enable the poor to participate in development." This project expects to fulfill this mandate by developing construction management skills of engineers and assistant engineers before they enter GOA institutions related to rural development. In meeting this challenge, this project will work in tandem with a related USAID-assisted project, Development Support Training (306-0157), which is now being designed to strengthen management capabilities in selected ministries through the provision of participant training for in-service staff. This project is directly supportive of on-going USAID projects aimed at rural construction, rural health, and rural primary education. Project implementation is scheduled to start in September 1978 and run through February 1984. Implementation will be the responsibility of the Ministry of Higher Education (MOHE) in cooperation with a U.S. institution under a host country contract. Since AIT expansion will remain under the MOE, a coordinating mechanism will be set up to help implement the AIT portion of the project. The USAID Education Office will be responsible for general project oversight and policy guidance.

C. Summary Findings from Project Analyses

1. This project is believed to be technically feasible in that the production of construction engineers and assistant engineers will help to provide needed technical manpower able to carry out rural infrastructure development. By reorienting the KU/E curriculum and faculty to include a practical engineering program to produce engineers with the practical skills and sensitivity needed to work in the rural areas and by introducing a higher level technician program at AIT complementary to graduate engineers, the project will develop technical manpower whose skills are skewed in favor of small scale rural construction.

A more practical program oriented to Afghanistan's needs will help the graduates become more valuable assets in later life as managers of technical units and on-site projects of the GOA. By controlling enrollment levels and hiring of supplemental faculty at KU/E and AIT, curricular needs can be adquately covered while faculty is upgraded through the proposed participant training program in order to better carry out their work and meet the challenges of development in Afghanistan.

2. The project is not expected to have any adverse effect on the environment. Therefore, an Environmental Impact Assessment is not recommended. (Annex C).

3. The project is socially sound in that it stands to benefit people living in rural areas to the extent that they are affected directly by the infrastructure and social service development projects on which graduates from KU/E and AIT are working. This linkage depends entirely on the degree in which project trained manpower are assigned to rural development programs and the impact their skills have on better planned, designed, and implemented rural infrastructure projects. If this linkage proves strong, the potential spread effects of the project appear significant.

4. Given the low percentage of women who graduate from high school and the social constraints of women in field work, there do not appear to be realistic opportunities open to this project for increasing women's participation in the field of construction engineering. However, this new curriculum would be available to those women taking engineering studies and would be of value also in non-field engineering and planning activities.

5. The project appears to be financially feasible in that the budgetary requirements of the GOA to support the project will not be a major constraint. While deficiencies in the area of procurement are apparent, they will be addressed in the project through technical assistance.

6. The project is deemed reasonably cost effective, given the set parameters under which it has been designed. To the extent that engineering manpower is a binding constraint to development in Afghanistan in general and to rural works construction in particular, the project can have significant impact. Benefits include significant increases in rural infrastructure, a large cadre of trained engineers available for other development activities and a qualitative improvement in engineering/managerial skills which could reduce implementation costs of development activities by as much as the economic costs of the project. The AIT/KU/E option, provides a definite cost advantage to the government; however, the KU/E option alone will still see an increase in construction activity around the country.

7. No other donor is directly involved in training rural construction and assistant engineers at the present time.

8. The project meets all applicable statutory criteria. (See Annex G).

D. Project Issues

1. Project Impact on Rural Sector

Clearly, project success in extending benefits broadly to Afghan villagers depends on the assignment of graduate construction engineers and assistant engineers to programs directed at rural infrastructure development.

In the case of assistant engineers from AIT, assignment patterns of 12th grade graduates suggest reasonable odds in favor of 14th year graduates finding their way into the rural sector.

In the case of engineers from KU/E, two factors mitigate against their assignment to small-scale rural construction programs. First, the Seven Year Plan's industrial growth emphasis places heavy requirements on engineers and other technically trained manpower. While shortages continue, the industrial sector can be expected to receive priority for manpower allocation. Second, engineers by their very education are weaned from traditional values and aspire to modern lifestyles as salaried professional in Kabul. Given a choice, they are likely to prefer employment in large, visible construction projects near the major towns than in small infrastructure programs in remote rural areas. Here is the difficulty then. Can the project overcome these factors by introducing an engineering curriculum especially suited to rural construction and creating a career counseling and placement service at KU/E and AIT? There is no guarantee it can. Ultimately, the government will have to decide where its true priorities lie, if the project is to have the desired impact.

Therefore, there must be agreement between relevant GOA entities (i.e. Ministry of Planning, Ministry of Higher Education, and Central Statistics Office) that most graduates of the KU/E Construction Engineering option will be assigned for their first jobs to rural construction programs. Indeed there is a ray of hope that, prior to the first construction engineering graduates in late 1982, the GOA will have established more effective mechanisms to join talent with need. Recently approved, there is soon to be an operative "Central Office of Personnel and Administrative Reform". (COPAR). It will have broad responsibilities in meeting the personnel needs of the government, through salary and other compensation, classifications, training, registers of qualified personnel and registers of openings, with a special responsibility of "introducing such persons in view of the requirements of departments and public institutions". (Art. II, para. II, Manpower Divisions). Other parts of the reform call for establishment of liaison committee with both GOA employers and training institutions.

The KU/E and the TMD team leader should carefully work with this new reform to the end that construction engineers and assistant engineers will find incentives for work in the rural environment and that they will be assigned. There is a four to five year delay until the first graduates are produced under this project from the time of this writing. It is hoped that this reform can mature and become effective in that time.

2. Inclusion of AIT

If one accepts that the TMD project is responsive to a genuine technical manpower need in rural construction, AID becomes an integral part of the project. This view posits that currently the rate of small rural project construction is a function of the number of available engineers times the period required to complete a given project. Since presently one engineer is assigned usually to one project until completed, the expectation is that the assistant engineer graduate from AIT can be assigned to individual projects, with site supervisory responsibility, thereby enabling an acceleration in the rate of construction. This implies more effective manpower allocation than is currently practiced, but first, one needs to develop the required manpower.

The project has chosen to introduce a 13th and 14th year program rather than just bolster the existing 9 to 12 grade program for the following reasons: 1) Additional technical training is required to prepare AIT students, if they are to effectively complement the construction engineers from KU/FE; 2) AIT faculty and students have long been pressing for the introduction of a 13th and 14th year program as a means of retaining AIT's unique role in the face of the growing number of technical schools around the country; indeed, many senior officials in the Afghan bureaucracy are graduates of AIT;

3) AIT facilities are currently underutilized; 4) A 13th and 14th year program would provide an avenue for channeling technical oriented students who drop out of KU/E and are otherwise lost to non-technical fields; and 5) The prestige factor of being an "assistant engineer" will allow the person considerably more site control.

Inclusion of AIT in this project does raise the question of ministerial coordination for project implementation and the very question of the desirability of AIT expansion within the GOA. AIT is currently under the Ministry of Education while Kabul University is under the Ministry of Higher Education. Within the last year, the MOE has lost both Kabul University and Teacher Training to MOHE. Due to the fact that the MOE believes the introduction of a 13th and 14th year program at AIT may lead to its eventual loss to the MOHE, the MOE is reluctant to give its blessing to the proposed expansion of AIT. However, it is aware of the problems at AIT and strongly desires help from AID to revive it.

The design assumes AIT involvement because the USAID continues to believe that the inclusion of the AIT component within the TMD project is desirable in order to extend the reach of the graduate engineer as the number of rural infrastructure projects increase. Since, at this time, the GOA is not likely to make a decision on this issue, we are prepared to move forward with assistance to KU/E while at the same time pressing the GOA to approve the idea of including the 13th and 14th year program at AIT within the TMD project. Assuming this does occur, a coordinating mechanism will be established between ministries for project implementation and would be a CP in the project agreement. Accordingly, USAID is prepared to hold back the majority of funds earmarked for AIT until such time as the GOA provides us with a clear signal of acceptance. If acceptance is not forthcoming, we intend to terminate assistance and deobligate unutilized funds earmarked for AIT in this project ($1,779,000). Should, for any reason, the intervention at AIT not be possible, the TMD project at KU/E should proceed. AIT is a highly desirable addition to the program at KU/E; indeed while it clearly makes the project more responsive to Afghanistan's manpower needs, it is not a necessary condition for involvement at the Faculty of Engineering. The longer term desire of producing more effective technical manpower for rural construction, though, will require engineers, assistant engineers and lower level technicians.

3. KU/E Expansion vs. Quality Education

The Faculty of Engineering proceeded with a fourfold expansion in freshman enrollment in the spring of 1977. The GOA was banking on AID (through this project),underwriting this expansion to help fill the immediate gaps in required teaching staff and facilities. AID was not prepared to do so. In the absence

of USAID's across-the-board support for the expansion, KU/E has absorbed the influx as best it could relying on its own resources and some faculty provided through the Peace Corps. Its budget was substantially increased, but upper course faculty levels and facilities have remained relagively unchanged. The students have been accommodated by increasing substantially class size. Thus lecture classes, typical of freshman requirements, have increased from 40 to 100 students per session. The increased burden on available teaching staff coupled with less qualified freshman enrolled under lowered entrance standards has resulted in higher first year attrition rates (55% as compared to 40% the year before). This year's repeater class will total 330, which is a greater number than the total KU/E enrollment two years ago. As entering students move through the engineering curriculum, large classes will begin to affect educational quality and possibly cause increased attrition rates in the upper levels also. This impinges directly on this project's prospects for success, since it is designed to train better qualified engineers, especially in management. Ideally, the GOA should proceed more gradually with its engineering expansion. This would mean cutting back enrollments and building incrementally at a pace commensurate with a realistic and orderly growth in KU/E capacities. While the GOA appears reluctant for now to abandon its Seven Year Plan, there is some indication at KU/E of a cutting back of freshman enrollment if only because of the large first year's repeater class. If enrollments are retained at the current level or expanded, then KU/E must ensure that adequate numbers of teachers are available. This can be accomplished through higher teaching loads on existing staff and heavy recruitment of foreign instructors until qualified Afghan instructors are available. The Dean accepts this approach. Accordingly, a critical condition precedent to initial disbursement will be an enrollment and resultant staffing plan ensuring adequate staff growth over the life of the project. In addition, incremental fundings will be conditioned on satisfactory performance against these plans.

4. Inclusion of Mechanical and Electrical Engineering In the Project Scope

The demand for mechanical and electrical engineers in the rural sector is considerably less than for construction engineers. The project, nevertheless, proposes to invest resources in the mechanical and electrical departments of KU/E. This investment is not only appropriate, since these engineers similarly need management skills to perform effectively in a job regardless of the sector, but also necessary in order to reach the construction engineering student. Curriculum from one engineering option to another varies mainly in the mix of courses from all engineering departments a student is required to take. Thus a construction engineering student must take some courses in mechanical and electrical engineering.

Moreover, faculty members from all KU/E departments teach the core curriculum. Quality at KU/E is, therefore, not divisible along departmental lines. It must be addressed across departments.

5. Exclusion of Agricultural Engineering From the Project

In a project such as this which is directed at producing skilled technical manpower to fill rural construction requirements, agricultural engineering looms as a natural field for attention, given the key role water plays in farmer productivity and income. The project designers have reluctantly concluded, however, that it is premature and inappropriate for this project to address this area. Agricultural engineering (AE) presently resides in the Faculty of Agriculture. A couple of years ago, an attempt was made to incorporate AE into KU/E, but it failed. Agricultural engineering proved to be incompatible with the other engineering options, because of the lower teaching qualifications of its staff and the more traditional orientation and lower preparation levels of AE students.

Currently, at the Faculty of Agriculture, AE is not a popular option; there are few students enrolled and a limited teaching staff. Within KU/E's civil engineering department, there is a water resources sub-option. Given Afghan practice of assigning civil engineers to irrigation projects, here appears to be the project's best place for influencing engineers whose work benefits agriculture. For the moment, the project will address only the social and management studies of the curriculum followed by these engineers. In time, other opportunities for qualitative improvement may arise and the project should be open to considering them, if they can result in increased project impact on agricultural programs.

6. Exclusion of Vocation Technical Education (VTE) From the Project

VTE serves as the Teacher Training Institute that supports the country's vocational high schools, currently seven and expanding to fourteen. The consultants from the Academy of Education Development (AED) identified in their report an opportunity for an auspicious marriage of VTE and AIT. They recommend that:

> "VTE be transferred to AIT, that the VTE curriculum be modified to accept with advanced standing students completing the new thirteenth and fourteenth grade technician programs, that enrollment in the present AIT ninth through twelfth grades be reduced so that they can become a laboratory school for practice teaching by the VTE students, and that the entire combination of activities be transferred to the Ministry of Higher Education, becoming a separate faculty of Kabul University."

There is no agreement within the GOA on this issue. Whether the AED report's worthy recommendation is finally accepted by the GOA or not, it has little direct bearing on the project, as designed in this paper, other than in the organization of AIT to accommodate a VTE transfer. The project does not provide any resources to VTE. This is not meant to imply that VTE is not important. Given its role in preparing trainers of mid-level technical manpower, it certainly merits careful consideration of how its impact can be enhanced. But it cannot be examined outside the context of the entire technical vocational system. Support of VTE is, therefore, not provided under this project, as it is felt it would unduly complicate the project design and tax project budget availabilities, and probably not solve the funding needs of vocational teacher training. It is our view that this is an internal matter for MOE and MOHE to resolve and one which is outside the financial scope of this project.

7. Exclusion of Center for Engineering Consulting Services and Applied Research (CECSAR) From the Project

In October 1977, the consultants from AED identified the need to institutionalize CECSAR as a vehicle for faculty to obtain professional experience. After further analysis and discussion, AED has suggested that other informal mechanisms be developed to accomplish the same goal. The project will still seek ways in which the faculty will have opportunities for professional experience both while serving as faculty at KU/E and as an adjunct to overseas training.

Since there is a significant disparity between the various disciplines at KU/E and the expected profile of incoming work, and because there is a difference among the faculty in their ability to execute the work, the perpetuation of a CECSAR would be a mistake and would foster inharmonicus relations among the faculty and probably among the customers. Talk of creating CECSAR into a private organization outside of KU/E is being considered by Kabul University. In any event, the building of a research capability must await faculty with more time available, familiarity with and availability of contemporary journals and some facilities which can be devoted to research.

The project will supply an advisor whose role will be organizing the practical semester for students and in the quest for the above, to broker part-time assignments of individual faculty working on defined jobs for the ministries in their design offices or in their construction offices.

Participantship will encompass discipline training, courses in educational techniques and, if possible, short internships with industry. One year working/teaching internships will be granted to some faculty both at U.S. colleges and industry to provide more practical teaching and working experience to Afghan faculty.

8. Fair Competition In the Contract Award

The contractor who implemented the Higher Education-Kabul University project, as a matter of course became intimately involved in all but the final stages of project design. The contractor possesses detailed knowledge of implementation and financial plans. Also during his four years in Afghanistan, the contractor has established a close rapport with Kabul University and the MOE. Since the project will be implemented through a host country contract, this contractor may be in a privileged position vis-a-vis other potential contractors. Our own guidance on country contracting, Handbook II, specifically states that "a firm should not be employed to perform services when in the judgment of the responsible officer such firm has been, or might be, placed in a position where its judgment may be biased, or where it has achieved an unfair competitive advantage." In view of this history and guidance, and mindful of the Administrator's determination to ensure fair competition, USAID fears fair competition is not likely short of full disclosure of all project details to all contract bidders or exclusion of this contractor from the running. USAID requests AID/W guidance on this issue.

II. THE PROJECT

A. Evolution of the Project Concept

In this project, it is particularly important to understand how the project concept evolved, because developmental considerations have become entangled in the politics of U.S.-Afghan bilateral relations. The long two year process of project development has been characterized by intense dialogue within and between the responsible Afghan and American government entities.

By 1976 the GOA had come to the realization that the production of engineers at the then-current rate fell far below the requirement for engineers projected in the Seven-Year Plan. Given the presence of U.S. advisors at Kabul University under the Higher Education - Kabul University Project (No. 306-0121)-it was not surprising they were asked to participate in drawing up a preliminary plan for the expansion of Kabul University Faculty of Engineering (KU/E) over the coming seven years. This plan was submitted to the High Economic Council in April 1976 and identified plainly the need for substantial foreign assistance, especially teaching staff in the first stage, in order to carry out the desired expansion.

Mr. Mohamad Naim, President Daoud's brother and special representative during his visit to the U.S.A. the following month, raised the question of possible U.S. assistance to the KU/E expansion. He was told that the U.S. would consider assisting in KU/E expansion. The possibility of U.S. assistance was again discussed at the highest levels of the GOA during then-Secretary of State Kissinger's visit to Kabul in August 1976. There followed discussions between U.S. and Afghan senior officials on the shape such assistance might take. In cooperation with the contract advisors already at KU, a fairly detailed implementation plan for a $25 million project was outlined for the Minister of Planning. By September, a U.S. commitment in principle to assist in the expansion of KU/E was firmly established in the minds of the responsible Afghans. Moreover, that commitment was interpreted by these officials to mean $25 million.

In October 1976, USAID brought out Dr. Jack B. Revelle, a manpower consultant, to review the Ministry of Planning's manpower estimates. He reported 1/ that the Ministry of Planning's estimates were on the conservative side and he proposed much higher technical manpower requirements in order to implement the GOA's development plans.

1/ Revelle, Jack B. "Report on the National Technical Manpower Requirements of Afghanistan: 1976-1982". Prepared for: The U.S. Agency for International Development and Government of Afghanistan-The University of Nebraska at Omaha, October 1976.

In November, USAID enlisted another consultant, Dean Hanna of the College of Engineering and Technology at University of Nebraska, to "review curricula, staff numbers, and qualifications, facilities, and the Seven Year Development Plan of the Faculty of Engineering and recommene measures for upgrading the quality of education to the level needed for the Faculty to fulfill its manpower role in the development of Afghanistan." Dean Hanna, in his report[1/] took the view that the Revelle report "confirms the expressed need of the Ministry of Planning as being the minimum requirements of technical manpower to be met---" (p. 2) but that it would be "unrealistic to attempt at this time to meet the manpower needs suggested by the Revelle report." (p. 3) Dean Hanna stressed that "an abrupt and immediate increase in enrollments (at KU/E) is necessary if the manpower needs are to be met in the seven year framework targeted by the Ministry of Planning." (p. 7) He outlined two optional plans for the expansion and proposals for an assistance project. These ideas along with additional implementation details were incorporated into a PID on November 24, 1976 proposing a $25.7 million assistance package for KU/E including CECSAR and VTE over five years comprising:

- Eleven full-time advisors for three years each and five advisors for two years each;

- 390 man years of primarily master's degree training in the U.S.;

- $10.7 million worth of commodities, including textbooks, lab equipment, and equipment for an instructional materials center and a computer center; and

- $5 million in building funds for renovation of existing facilities and construction of a new classroom building in Kabul and for the construction of a provincial faculty of engineering.

AID/W reviewed and approved the PID on December 14, 1976 with reservations concerning the large size and scope of the proposed project and the uncertain benefits it promised for the Congressionally mandated target group. AID/W outlined certain parameters for a project that could be more easily justified within the "new direction" criteria. These included:

a) increasing student capacity of existing KU facilities with modest renovation and more efficient use of space, greater use of existing faculty staff and some expansion of faculty staff. This could entail AID assistance in the form of two advisors and a consultant, master's degree level participant training and limited commodity and equipment support;

1/ Hanna, George P., Jr. "Engineering Education Development to Meet Technical Manpower Requirements of Afghanistan 1976-1982. Prepared for the U.S. Agency for International Development and the Government of Afghanistan - The University of Nebraska at Omaha, Nov. 1976.

b) re-examining the need for expansion of KU facilities and the desirability of expansion of KU/E beyond its own capacities which would require injection of a large foreign advisory team; and

c) dropping any further consideration of a provincial engineering faculty for the time being.

Following exchange of views with AID/W and consultations by AID/W representatives in Kabul, in spring of 1977 a consensus was finally reached on a framework for a substantially scaled down project to help KU/E with qualitative improvements aimed at better preparing engineers for rural sector assignments. The details of the project design were left to be worked out by an independent consultant team.

In September 1977 the Academy for Education Development (AED) fielded a three-man team to design the project. The team recommended in its report of October 10, 1977 an assistance package within the agreed framework that includes: a) introduction of a new construction/management curriculum at KU/E; b) converting CECSAR into KU/E's arm for applied research, and c) introducing a 13th and 14th year program at AIT. This paper largely reflects the general project concept outlined in the AED report. But in translating the AED recommendations into a project paper that details an implementable package of assistance, a number of additional issues required close attention. These issues included:

a) Enrollment in the Construction Option - The AED report suggested that 40% of the students be channeled beginning year-three of the project into the construction option, leaving each of the other three options 20% of the students. This is in stark contrast to the student allocations suggested by the GOA in order to meet the country's engineering manpower requirements, which are: 6% for architecture; 29% for Civil; 36% for Mechanical, and 29% for Electrical. Considering that the Construction option has many common courses with and similar functions to the Civil option, it is unrealistic to expect the Ministry of Planning to accept that 60% of all enrollments be in these two options. In the absence of better manpower projections than those of the Ministry of Planning, it would not be wise to skew KU/E's output so heavily in one direction.

b) Timing and Phasing of KU/E Curriculum Changes - The AED report recommended introduction of the construction option beginning March 1979. This tight schedule would have meant cutting off the last semester of the core curriculum for the initial construction students without their benefit of any revised core courses.

c) Mix of Inputs - Without a clear indication of actual KU/E and AIT student enrollment levels, likely staff and equipment requirements and the phasing of project-initiated changes, a review of the input schedule proposed by AED was not feasible.

d) GOA Contribution - The AED report suggests that the project will demand considerable support from GOA resources. The type and magnitude of these resources, particularly at AIT, remained to be specified.

In resolving these issues, USAID requested one of the AED team members to return in late January 1978. This collaborative effort resulted in a number of significant changes and greater precision in the implementation plan than contained in the AED report. The major changes are:

1. Enrollment In the Construction Option is now targeted at 24% by year four of the project rather than at 40%. Civil Engineering will take 16% of the students while Electrical and Mechanical will each receive 27%.

2. KU/E Curriculum Changes will affect the core program beginning March 1979 as planned through revision of courses but the new Construction option will not be introduced until March 1980.

3. A number of changes have been made in timing and magnitude of project inputs as a result of further analysis and discussions, mainly as relates to consultants and participants.

4. GOA Contributions are now specifically identified.

5. AED's recommendations to include CECSAR in the project as a vehicle for faculty to obtain professional experience was later rejected by them in favor of informal mechanisms to seek the same goals.

B. Project Design

1. Goal

The project has set as its goal "to accelerate the impact of rural programs on meeting the basic needs of the rural poor." Project impact on this goal rests with the ability of the technical manpower produced by the project to work within their respective ministries to bring abut more effective performance in the rural sector. This is no short order. Many variables besides skilled manpower influence performance. The project will be satisfied with its impact if the following targets are met:

a) 75% of the construction engineers and assistant engineers graduated by 1984 are assigned and working in the rural sector;

b) an increased number of small-scale rural development projects is undertaken;

c) average construction time on these rural projects has been reduced;

d) the quality of construction shows improvement.

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In order to verify whether these targets are achieved and attributable to the assignment of project trained manpower, the project will have to rely on a post-project completion evaluation. The evaluation, in turn, will have to rely on the project created alumni records and follow-up system, site inspection of selected rural infrastructure projects, and on the Central Statistics Office's records concerning graduate placement. Further details of the proposed evaluation are contained in the evaluation plan.

2. Purpose

This project is designed to produce technical manpower which will be better able to plan, design, manage and implement small-scale rural infrastructure projects. The project hypothesizes that the GOA's rural sector performance can be improved if qualified technical manpower with a practical, rural-relevant orientation are made available to ministries to enhance their rural construction capacity.

By the end of the project, it is expected that:

a) 24% of KU/E students completing their core requirements will enroll in the construction option and at least 16% will enroll in Civil Engineering;

b) 112 construction engineers and 75 Civil Engineers will have graduated from the revised curricula by 1984;

c) 296 Assistant Engineers will have graduated from AIT by 1984;

d) 40% of engineering students who are now lost to technical fields because of their academic difficulties with math and other sciences at KU/W will be redirected toward AIT and other technical programs.

A number of key assumptions underlie the purpose to goal hypothesis:

a) the lack of rural infrastructure is a major factor inhibiting gains in rural welfare in Afghanistan. The debate concerning the relative merits of rural infrastructure development versus integrated rural development is long standing. Without reopening the debate here, this is a fair assumption to make in Afghanistan.

b) a growing GOA capacity to allocate scarce manpower to priority areas. All current indications are that the GOA has not demonstrated capacity in this area. Available personnel resources are far from optimally utilized. Skilled personnel are concentrated in Kabul, even when under-employed, and outlying offices often go without even minimal professional requirements being filled. More and better qualified manpower alone, then, is not the answer. Improved capacity in manpower allocation and increased incentives by the GOA to the trained personnel could significantly strengthen the project impact. The work of the Central Office of Personnel and Administrative Reform will bear careful monitoring;

c) the GOA's rhetoric of rural development priorities is translated into increased allocation of technical manpower to this sector. USAID's experience in assisting various rural construction programs to date points to a shortage of technical manpower. Whether this is a reflection of the GOA's limited manpower allocation capacity or insufficient priority or both is not clear. Obviously, project impact is heavily dependent on the GOA carrying through on its stated priority. This assumption bears careful monitoring;

d) the GOA will proceed with its plans to build seven new vocational-technical high schools. This less critical assumption recognizes the role of lower level technical manpower in the construction process. These technicians (e.g., masons, carpenters, draftsmen, surveyors) are an integral part of the manpower equation. As the number of upper level technical personnel increases, the lower support levels must increase even faster, given the high ratio of the latter to the former that is needed;

e) the USAID assisted Development Support Training Project is successfully implemented. The construction management skills to be created under the TMD project are only one group of a number of key categories of management skills in short supply. The DST project (with a start in FY 1978) proposes to address these other areas (e.g., project planning and evaluation, personnel administration, budget and accounting, procurement), by training key personnel already in the rural development ministries. DST's impact on these management problems should be felt before the first construction engineers graduate from KU/E, thus perhaps offering a more receptive environment for their contribution to improved rural sector performance;

f) trained technical manpower with adequate site authority will be willing to work in rural areas. Clearly project impact will be nil if graduates are unwilling to accept assignments to rural programs, also Assistant Engineers must be given adequate authority to supervise construction. The project itself can help "turn on" graduates to rural oriented assignments through vocational counseling. The GOA can also help by making rural service more attractive by providing adequate compensation, resources and other incentives.

3. Outputs - In order to achieve the project purpose and to have an impact on the goal, a number of things must happen:

a) Kabul University's Faculty of Engineering (KU/E), curriculum and faculty is reoriented to include a practical engineering program. This output is to be achieved through revision of curricula, strengthening of the practice semester, training of faculty members, both in higher academic levels and in practical engineering experience, establishment of a student counseling and placement service to reduce attrition and to stimulate interest in the new curriculum, and creation of a functioning engineering library at KU/E.

Curriculum revisions will entail the introduction of a new Construction Engineering Program by March 1980. This new curriculum is designed to train an engineer in a broad spectrum of topics from all fields of engineering including eight hours of management and supervision techniques. He becomes a generalist and thus can have immediate impact on the types of problems encountered and decisions to be made in the rural construction environment. The curriculum is considered terminal and does not lend itself to the pursuit of graduate degrees. (See Technical Analysis for details).

In addition, the core program for all curricula (except Architecture) is to be reduced from five semesters to four, and will include seven hours of Afghan history and economics. Beyond the core, each curriculum has eight hours of management related topics added. This program will be revised by March 1979. (See technical analysis for details).

The practice semester - now currently involving on-the-job training in a ministry is to be revised to include a better organized and carefully monitored and assessed field experience for the student. For the construction engineering student his field experience will stress construction of small structures in rural areas. The student will receive seventeen hours of credit for this semester. Logistics, preliminary planning and objective evaluation of the students' experience will be improved. The project will also attempt to make this semester a kind of summer internship program to acquaint the student with the work of a given ministry and give the ministry a chance to observe the student from the standpoint of a prospective employer. Much can be done through a successful practice semester to expose students to practical engineering problems and strengthen the prospects of rural program assignments for the graduates. The practice semester will be tested by August 1980.

Faculty training will be primarily at the Master's degree level (46) in order to develop a more academically competent staff at KU/E. Seven Ph D candidates will also be trained to provide sound professional backing to each of the engineering as well as basic science departments. Participants will bring back better

methods of teaching through their completion of educational methodology courses as part of their overseas training. Short-term internships are planned for administrative staff members and the directors of professional practice. Additionally, the resident advisors and consultants will conduct programs in teaching methods to help on-board faculty members improve course content and their delivery of the subject matter. In this fashion, the project expects to affect 75% of the Afghan teaching staff at KU/E by 1984.

Finally, an advisor will seek ways in which the faculty may have opportunities for professional experience, both while they are serving as faculty at KU/E and possibly as an adjunct to participant training and practice internship. Eight one-year lectureships and working internships will be given to staff members in order that they gain experience teaching undergraduates in the U.S. and possibly practical engineering work with different American organizations.

The advisor will try to develop approval of an exchange program between faculty and ministry engineers, in order to increase the effectiveness of the faculty. This broker program expects to help place 40% of the faculty in some part-time working assignment during the course of the project.

Establishment of a student counseling and placement service by October 1979, is important to ensure that students are encouraged to take the construction engineering option, are aware of the national need and are offered appropriate information regarding employment opportunities in their fields of specialization upon graduation. In addition, counseling should be pointed towards minimizing student failure and attrition by encouraging students to enter disciplines where they will be most successful. This will require activation of the student counseling office and the development of contacts with ministries, Central Statistics Office and students. A follow-up system to keep track of KU/E graduates will also be devised.

A functioning Faculty of Engineering Library by March 1980 is important to provide the resources for students and faculty members to carry out basic research and have available the latest developments in the field of engineering. A library consultant will assist the faculty in establishing an acquisitions policy, cataloging system and other requirements for an active faculty library.

b. The Afghan Institute of Technology (AIT) is elevated to a 14-year technical school offering seven curriculum fields complementary to KU/E graduates.

The aim in introducing this new program at AIT is to take advantage of existing capacity to train assistant engineers for service in rural programs and to provide training to those who can not succeed in the core curriculum at the KU/E so such students are not lost to the technical manpower pool. Such well trained supporting personnel (in the ratio of between three to five

Assistant Engineers to one graduate engineer) are required for the effective use of an engineer, particularly in the rural areas where one engineer could thereby be freed to supervise a number of small projects. The seven proposed curriculum, all new and leading to a certificate of "Assistant Engineer", can be grouped under three general headings:

(1) Engineering Areas

a. Civil
b. Electrical
c. Mechanical

(2) Specialized Areas

a. Inspection
b. Soils
c. Surveying

(3) Business and Record-Keeping

a. Site Business Management

Initially only the five curriculum directly pertaining to rural construction will be introduced, while the Electrical and Mechanical areas will begin in 1982.

Ten AIT faculty members, seven at the BS level and three at the MS level, will be trained in order to provide the necessary academic competence to teach the new 13 and 14 grade program. Finally, lack of maintenance has reduced all existing laboratories and shops to a state of partial usefulness. These excellent, high caliber facilities are ideal for the advanced subject matter, and this project will seek to restore their full capabilities and utilize them in part by 1981, for the practical hands on training of the assistant engineers.

Some key assumptions underlying the output to purpose hypothesis are:

a) Kabul University students will accept channeling into the construction option. This assumption is critical to project success, for without these construction students, eventually Afghanistan will not have enough construction-oriented engineers it needs to better design, manage, and implement rural infrastructure projects. The project can help educate the students by providing vocational counseling early in the student's academic career, thus better matching people with options. The future potential of the Central Office of Administrative and Personnel Reform in Afghanistan merits close study and coordination by the project team, for the office can recommend that more incentives be given to the rural based employee, thus making rural construction work more attractive to both existing and potential employees.

b) Engineer/Technical students will participate in the new 13th and 14th year program at AIT. This assumption recognizes the need for effective vocational counseling and coordination between Kabul University and AIT. Assuming students are more effectively redirected from KU/E to a technical school like AIT, and that they receive both career incentives and prestige by being an "Assistant Engineer", they might be attracted into the program. Increased incentives are sorely needed to "turn on"students early in order that an effective technical manpower base is developed and eventually channeled into the countryside. This assumption recognizes that AIT graduates must be given appropriate fourteenth year civil service and military status. Clearly, without the participation of these technical students, the project's designed impact will not occur in the magnitude desired.

Two important input to output assumptions are:

a) That faculty will support the project; clearly, without this support, the implementation of the project is not possible. There is no reason at this time to doubt the validity of this assumption.

b) Project inputs will be delivered on a timely basis.

C. U.S. Project Inputs

1. Technical Services Contract	pm	($000)
KU/E	208	3,194
AIT	89	
	297	

a. KU/E advisor/team leader 66 pm

The advisor will provide leadership and coordination of a team of resident advisors and consultants working within KU/E and AIT in order to implement programs, curricula and other activities to produce more practical experienced and qualified engineers and assistant engineers to perform in the rural construction programs of Afghanistan. He will be the counterpart of the Dean of the Faculty of Engineering, Kabul University.

b. AIT Advisor 53 pm

This advisor will provide leadership and coordination to a team of consultants working within AIT to design and implement new curricula leading to the production of fourteenth grade "assistant engineer" graduates. These graduates will study specific areas to enable them to perform in a rural environment in labor intensive projects. The advisor will suggest and design other methods to improve the quality of AIT graduates, teaching methods and equipment and faculty. He will be the counterpart of the Director of AIT.

c. Professional Experience Advisor 30 pm

This advisor will provide leadership to faculty committee and consultant to establish methods of placement and evaluation of students during their ninth semester, so they will be employed as junior engineers to gain practical experience in their professional areas. In addition, the advisors will stimulate opportunities for the faculty to obtain assignments as design consultants in the various engineering and management offices of the ministries, both part-time during academic semesters and during school vacation periods. He shall provide oversight and continuity of the student program through two placement cycles. He will be the counterpart of the Assistant Dean of the Faculty of Engineering. In addition, 148 pm of consultant services will be provided in the fields listed below:

KU/E	pm
Practical experience semester	15
Library	6
Mobile power laboratory	9
Engineering courses Consultants (3)	14
Basic science consultants (3)	12
Management Engineering	9
Procurement (shared with AIT)	9
Guidance/counselling	6
Facilities/space utilization	6
Audio/visual techniques (shared with AIT)	10
Other/return visits	10
U.S. Advisory Team	6
AIT	
Technician course development (2)	20
Mechanic	6
Facilities/space utilization	6
Others/return visits	4
	148

2. Participant Training 180 my ($3225)

The following participantships will be necessary to strengthen the abilities of members of the staffs of KU/E and AIT to implement the new curricula and to upgrade the capabilities of various staff to more effectively carry out their work and meet the challenges of the Seven Year Plan:

	KU/E	MY
3	Teachers Basic Science PhD	9
4	Construction Management Engineers MS	10
2	Directors of Practical Experience (no degree)	2
5	Administrative Staff Internship (no degree) Dean, Asst. Dean, Dept. Heads	2½
1	Procurement Specialist (No degree)	½
4	Senior Faculty PhD One each Cons., CD, ME, EE	12
10	Construction Engineers MS	25
8	Civil Engineers MS	20
8	Mechanical Engineers MS	20
8	Electrical Engineers MS	20
4	Architects MS	10
4	Discretionary MS	10
8	Visiting Lectureships or Internships	8
2	Guidance and Adviing Internships (no degree)	2
2	Librarians(no degree) - third country	1
73		152

	AIT	
7	Engineering Technology BS	21
3	Engineering Technology MS	6
1	Administative Intern (no degree)	½
1	Procurement Specialist (no degree)	½
12		28
85	TOTAL KU/E & AIT	180 my

3. Commodities $1108

All commodities except textbooks will be purchased under the contract. Major cost components are for textbooks (to be purchased on a reimbursable basis only, with costs shared by GOA and USAID), for laboratory equipment and supplies to develop new and upgrade the old laboratories at KU/E and AIT, and for engineering equipment to assist in faculty development.

KU/E - New Laboratories

a. Engineering Materials - $10,000 — $10,000

An attempt at giving all engineers a working understanding of commonly used materials and simple structures. Students will build test models and construct simple projects for the campus, i.e., sidewalks, gutters, retaining walls, beams, etc. Used by construction techniques students.

b. Mobile Power Sources Lab - $62,000 — 62,000

If equipment on site is disabled, job delay occurs. This lab helps the engineer to gain knowledge of simple mechanical equipment and exposure to the inner workings of the various critical parts. The student will be able to identify causes and solutions to malfunctions and be able to direct repair or identify spare parts needed.

KU/E - Upgrade Existing Facilities

Surveying	$12,000	
Machine Shop	60,000	
Drafting instruments: 140 x $60	8,400	
Sub-total	80,400	80,400
Other Costs		
4 desk calculators, 5 printers		
50 programmable calculators	81,000	
Non-print items (i.e., microfiche)	25,000	
To be determined	25,000	
	131,000	131,000
50% insurance/freight		141,600
Textbooks:		
New curricula (80% cost for 3rd, 4th & 5th year		
80% x $30 x 2600 = $63,000		
Other curricula (50% of cost)		
50% x $30 x 5000 = $75,000)	138,000	
Graduation "Survival kit"		
130 graduates 1983 - 84		
130 x 2 x $200)	52,000	
	190,000	190,000
Inflation/contingency		132,000
TOTAL		$ 747,000

AIT - New Laboratories

a. Hydraulics - $20,000

Gives the student the opportunity to experiment on free surface flow, pipe flow and hydraulic machinersy. This facility will provide a practical way for the student to gain experience with hydraulic structures in a controlled environment.

b. Metallurgy and Heat Treatment - $30,000

The student gains practical experience with various metals and the outcome of physical properties as they vary alloying and heat treatment. Experimentation with heat transfer and exchange allows the student to gain better, practical understanding of metallurgy and heat treatment.

c. Strength of Materials - $40,000

A hands-on experience with the physical properties of materials, experimentation with stress and strain relationships of materials, understanding deformation and load, and the ability to maximize material strengths in the field.

d. Soils - $27,000

Lab testing to determine basic engineering properties and characteristics of soils

AIT - Upgrade existing facilities

English (repair)	$ 900	
Physics (replacement)	1000	
Chemistry	3500	
General science (new)	1500	
Drafting (new drafting sets)	16500	
Surveying (transits, rods, tapes, etc	10800	
Electrical lab (new equipment)	2000	
Machine shop	20,000	
Welding	8,600	
Foundry	9,300	
Sub-total	190,500	
50% insurance/freight	95,000	285,500

Other costs:

Textbook reimbursement

New curricula only:	
13th class - 80% of cost	
80% x 1200 x $20 = 20,000	
14th class - 80% of cost	
80% x 1000 x $20 = 16,000	36,000
Inflation/contingency	39,500
	$ 361,000

D. GOA Inputs

Counterpart personnel inputs

U.S. Inputs	MOHE
Team leader	Dean, KU Faculty of Engineering
Professional experience advisor	Assistant Dean, KU/E
Practical Experience Consultant	Two staff members
Procurement Consultant	One specialist
Guidance/Counseling Consultant	Two staff members
Audio/Visual Consultant	One staff member
Library Consultant	Two staff members
Course Consultants	Various faculty members to be assigned

U.S. Inputs	MOE
AIT Advisor	Director of AIT
Procurement Consultant	One specialist
Mechanic	One staff mechanic
Audio/Visual Consultant	One staff member
Course Consultants	Various faculty members to be assigned

T.M.D. SUMMARY INPUT

A. AID	Total ($000)	
Technical Service (297 pm)	3,194	
Participant Training (2148 pm)	3,225	
Equipment and Supplies	1,108	
Total AID		7,527

B. GOA	($000 Equivalent*)	
Books and other curricula	114	
Participant costs	110	
Laboratory Supplies/repair	171	
Additional operating expenses	469	
Salary	978	
Dormitory & Allowances	451	
Total GOA		2,293
GRAND TOTAL		$ 9,820

* Exchange rate: Afs 43 = $1.00

III. PROJECT ANALYSES

A. Technical Analysis

1. The problem

The Seven Year Plan has outlined an ambitious program of rural as well as industrial construction. For example, the Plan foresees for the Rural Development Department the following construction program:

a. 225 bridges
b. 6,720 culverts
c. 160 community irrigation systems
d. 140 projects to reinforce canal banks
e. 187 projects to rehabilitate and clear karezea
f. 2,373 kms of feeder roads

The MOE is scheduled to build some 625 new schools as follows:

a. 560 rural elementary schools, mostly 8th grade
b. 60 vocational high schools
c. 5 Teacher Training Institutes

In addition, over 2,000 primary schools are to be upgraded to at least sixth grade schools,usually with new structures.

The Ministry of Health's construction program includes:

a. 10 civil hospitals
b. 116 Basic Health Centers 1/

In Agriculture, a number of large irrigation and power projects are envisaged (e.g., Sardeh, Nangahar). Finally, 1800 kms of motorable roads and a long list of industrial plant facilities are to be constructed.

To implement this construction program, the Plan estimated manpower requirements in construction alone of 613 high level and 497 medium level personnel. 2/ The then-current output of civil engineering and technical construction programs was considered by the GOA insufficient to meet these projected manpower requirements.

2. GOA Manpower Development Efforts

Considering the above requirements, along with other engineering requirements, the GOA decided to expand enrollment at Kabul University

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1/ Source: First Seven Year Economic and Social Development Plan, Vol. I.
2/ Source: Seven Year Plan, p. 56

Faculty of Engineering, excluding VTE students, from 230 in 1976 to over 850 in 1977, with a view to producing 350 graduates by 1984. The following is a breakdown of the estimated graduates:

21 Architects
101 Civil Engineers
127 Mechanical Engineers
101 Electrical Engineers

Accordingly, KU/E expansion was deemed to be an adequate response to the high level construction as well as other engineering manpower shortages identified by the GOA.

An expansion of technical education was proposed to relieve the medium level technical manpower gaps, particularly those identified in the emergent industrial sector.

At present there are only seven Vocational-Technical schools in Afghanistan. They are as follows:

a) Afghan Institute of Technology (AIT): Ex-AID assisted with programs in automotive, mechanical, electrical and construction technology (grades 10-12)

b) Kabul Mechanical School: German Aided. To grade 14, graduates eligible for GOA rank of "Assistant Engineer". Program is metals, automotive, and mechanical technology

c) Kandahar Mechanical School: German Aided. Same as Kabul Mechanical

d) Khost Mechanical:- same as Kandahar Mechanical

e) Kabul Technikum: Russian Aided. Trains to "Assistant Engineer" level in geological fields, and electricity--closely related to Russian Faculty of Engineering at Kabul University (the Polytechnique).

f) Mazar-i-Sharif Technikum: Russian Aided. "Assistant Engineer" programs in drilling, refinery technology, and geological engineering.

f) Art and Ceramic School of Kabul

Experienced Afghan vocational educators have characterized the AIT and German programs as having a 50:50 ratio of practical versus theoretical training while the Russian Technikums were characterized as 75:25 practical versus theoretical.

In addition to these, the Plan calls for the establishment of seven new vocational-technical schools at: Jalalabad, Herat, Kunduz, Parwan, Ghazni, Takhar, and Mazar.

Thus, the GOA visualizes the problem and its solution primarily in quantitative terms and in a fairly general way with no distinction between industrial and rural sector requirements.

3. Weaknesses

The obvious weakness in the GOA's chosen approach from USAID's perspective is its relative unconcern with the quality implications of such rapid expansion and with the matching of manpower training programs to the skills required,particularly in rural areas. This difference in perspectives poses a particular challenge to finding a harmony of interests. Looking at the institutions themselves from this viewpoint, certain deficiencies are apparent.

The Engineer graduate from the Faculty of Engineering, Kabul University, is currently perceived as the best product available to assist the nation in meeting the construction and operational imperatives of the GOA's current Seven-Year Plan. However, field investigations lead to the conclusion that the current graduate is highly skilled in the theoretical aspects of his education but lacks hands-on experience skills, and an understanding of the kind of decision-making process required for a project engineer operating in a remote rural setting, or, indeed, in many situations common to the practice of engineering. Therefore, more engineers alone will not get at the problem.

The current curriculum indicates that KU/E primarily produces a product designed for a graduate school. It produces a person "vertically" schooled into a specialty, as compared to the need for a "horizontally" schooled person to meet the needs of rural development. The nation does need some persons with skills as are currently being produced. These people become the Faculty of the future, and also become the designers of future roads, bridges, buildings, electric power systems, machines, industrial plants, etc. But the country's immediate need is for a different set of skills geared to small-scale construction needs in the country-side.

In addition to this fundamental deficienty in the current response to the problem, there are a number of specific weaknesses affecting KU/E:

a) The present core curriculum extends the student into levels of mathematics and physics not believed necessary for most of the engineering disciplines at KU/E. Further, it has some evident redundancies which could be eliminated with more effective teaching and curriculum structuring; i.e., teach it once thoroughly rather than twice with

insufficient depth. The present core has no social science component. Also, the five semester length places the degree field choice unnecessarily late in the total curriculum; most U.S. students have three professional study years in a four year curriculum. The current KU/E core leaves only two and one-half years (effectively two years due to the practice semester). Therefore, reduction of the core to two years is proposed.

b) The average preparation and experience of the faculty is low by international standards. So is morale, as a result of the low government salaries, modest living conditions available within their income, and the lack of participation in planning by the faculty concerning future goals.

Faculty members are basically young with an average age of thirty-four. Teaching experience averages around five years while professional experience other than teaching averages less than one year per faculty member. About one-half of the eighty faculty members hold or are studying abroad for MS degrees. Fewer than ten hold PhD's and the remainder hold BS degrees, two-thirds of which were obtained from Kabul University. The increased demand for instructors generated by the expansion has forced KU/E to recruit more faculty from the top graduates in this year's class. Without further training, the addition of these faculty members will tend to lower the above averages. Further inbred hiring is the most available way in which to obtain additional faculty to meet the staffing needs of higher enrollment. This will appreciably exacerbate the problems from lack of teaching and professional practice experience as well as to carry forth a perpetuation of the present curriculum inadequacies and oversights.

Faculty salary is on a par with other civil servants, who may have four to six years less education and who function with considerable less responsibility. The drive to obtain better living conditions pushes hard on salaries and leads many faculty to outside efforts which yield supplemental incomes, an action which diverts attention and energy away from their primary responsibility to the University. Of all the benefits available to the faculty, the possibility of obtaining a foreign scholarship ranks as a major portion of the perceived "compensation" of being members of the staff. If uncontrolled support were available, it could lead to a graduate degree proliferation which is not focused towards long-range faculty expertise objectives as they relate to the needs of Afghanistan.

Planning and goal setting are not evident. The Dean has not moved real powers to the discipline level, and the time pressures on the senior official are such as to preclude his efforts towards long-range planning and setting forth challenges and chores for his faculty. The delegation of budget control and other day-to-day matters to departments formed around the major discipline are extremely necessary. Doing so would free the Dean from a thick blanket of trivia, and will be of great assistance in the maturation of the faculty.

c) Laboratory experience in required courses in the three engineering programs varies from a low of some twenty contact hours to a high of thirty-seven contact hours per program. In many courses, emphasis is on instructor demonstration of experiments rather than "hands-on" application by students. This is due largely to the fact that teaching laboratories at the core level are underequipped, requiring that six or more students join to perform one experiment. In other cases, only a single piece of apparatus is available, which is demonstrated to the laboratory section.

d) The current curricula at KU/E releases the student for a four month period of practical experience during his ninth semester (spring). This practice semester is loosely organized at present and student benefit is marginal and spotty. It lacks a coordinated, constructive effort between the faculty and the employers of engineers and a critical evaluation of the work experience. Presently, the faculty does not perceive the practice semester with sufficient importance. Another problem is cultural. For instance, the unwillingness of an engineer to share his work responsibilities with a person who may, in the future, challenge his position.

Finally, for an engineer to work effectively, particularly in rural areas, he must be supported by well-trained, high level technicians whom he can trust to carry out the day-to-day supervision of project implementation. Without such back-up, the use of the scarce engineering manpower pool cannot be optimized. Such personnel are not being presently trained in Afghanistan, particularly those required to support the graduates of the proposed construction engineering program at KU/E.

4. The solution

The recommended solution for these deficiencies centers primarily on the introduction of practical oriented curricula at the Faculty of Engineering (FE) and the Afghan Institute of Technology (AIT).

a) Faculty of Engineering - The curricular needs are to be met by:

1) The establishment of a new curriculum called "Construction Engineering. This new professional curriculum, to be completed in five years, will lead to a B.S. in Engineering as the major topic. It is intended to equip an engineer with a broad background of construction studies to allow the engineer to be a decision-maker in a rural setting wherein he is unsupported by other engineers and lacks the means to rapidly communicate with other engineers. After progress through the modified core curriculum, the construction engineer will take new courses in human relations, water management, construction techniques, sanitation, electrical distribution systems, engineering economics and accounting, mobile power sources, specifications and contracts and computer programming and application. In addition, through the use of courses now offered,

the engineer will be given mechanics, strength of materials, shop processes (including hands-on experience), electrical engineering fundamentals, thermodynamics, hydrology, surveying, structures, geology, reinforced concrete, construction management and economics and transportation. Two technical electives and two non-technical electives are available. In support of the new curriculum, two new laboratories will be developed (Engineering Materials and Mobile Power Sources) while two existing laboratories will be upgraded (Surveying and Machine Shop) in order to provide a more practical training experience for engineering students.

The practice semester will be strengthened by granting the normal seventeen credit hours for one semester of work and be graded pass-fail; faculty are to be assigned on a proportionate credit hour demand basis; student relations with employers are to be structured and evaluated and practice internships to several faculty members are to be created. This new curriculum is as rigorous and demanding as the other engineering programs leading to the B.S. degree. At the same time, because it has a horizontal coverage of many facets of all fields of engineering and companion disciplines, it does not provide for easy continuation into graduate school in one of the traditional fields of engineering. Therefore, construction engineering should be considered to be a curriculum leading to a terminal B.S. degree.

As a resource, a set of basic textbooks, handbooks and a slide rule are to be given to each graduate of the construction engineering curriculum if he or she accepts an assignment to work in the rural areas. This is in recognition of the need to have proper tools available at all times, for alternative reference sources are not readily available. This should be perceived as an added incentive. The new curriculum and course briefs follow.

CONSTRUCTION ENGINEERING CURRICULUM

CORE SEM 1, 2, 3, 4 (65 HRS)

5th SEM	CR HRS.	Teach Dept.
ENGR MECH II	3	CONS
STRENGTH MATLS(4)	3	CE
*MGMT HUMAN RES.	3	CONS
ELECT. ENGR I	3	EE
MFG. PROCESS I	3	ME
	15	

6th SEM		
THERMO I	3	ME
HYDROLOGY I	3	CE
SURVEY II (4)	3	CE
STRUCT. ANAL. I	4	CE
*WATER MGMT	2	CONS
*SHOP/FOUNDRY PROC.	2	ME
	17	

7th SEM		
*CONS. TECHNIQUES I	4	ARCH
GEOLOGY I	3	CE
REINFORCED CONCR I	4	CE
*PRINCS. of SANITATION	3	CONS
*ENGR ECON & ACCT'G	3	CONS
	17	

8th SEM	CR HRS.	Teach Dept.
*CONS. Tech. II	4	ARCH
*CONS. MGMT & ECON	3	CONS
*ELEC. DISTRIB. SYSTEM	2	EE
*MOBILE POWER SOURCES	4	ME
*SPECS&CONTR (CE)	2	CONS
NON-TECH ELECT.	2-3	
	17-18	

9th SEM	
PRACTICE	17
	17

10th SEM		
*COMPUTER LANG. & PROGRAM	3	EE
TRANSPORTATION	4	CE
CE ELECT	3-4	
ME/EE ELECTR	3-4	
NON-TECH ELECT	3	
	17	

Key: * New

HOURS TO GRADUATE - 167
(QUAL PTS BASED ON 150)

CONSTRUCTION ENGINEERING CURRICULUM

Years 3, 4, and 5	HRS	
* Mgmt. of Human Resources	3	Psychology-Sociology based; effective people management, training, work measurement, safety.
o Survey II (4)	3	Reduce Credit. Reduce depth of coverage, field time.
* Principles of Sanitation	3	Modern micro-biological concepts applied to problems of water pollution, effects on human health.
* Shop/Foundry Project	2	Student required to complete one project on machine tools, one project foundry/ forge.
* Mobile Power Sources	4	I.C. engines, power transmission, conveyor system, farm and small construction machinery.
* Water Management	2	Laboratory and field study of surface and deep water use and control, as practiced in Afghanistan. Future improvements and designs, Mirab system.
* Engr. Econ. & Accounting	2	Effective use of manpower, cost considerations, cost control and accounting; estimating building drawing procedures, plans, sections, elevations, details.
*Electrical Distribution System	2	Study of town-size secondary distribution systems, local calculations, transformer sizing, house and building (non-industrial) systems, protection and safety.
*Specifications & Contracts	2	Sample writing different Seq, Cons, CE, ME, EE.
* Computer	3	Programming and use of digital computer systems. Lab with sample problems.

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* New
o Modified

Years 3, 4, and 5	HRS	
* Practice	17	Pass-Fail. Closely coordinated work experience with interpretive report paper from student to stressidentificatic of problems encountered or perceived and solutions accomplished or proposed. Employers to report on standardized format on student performance.
* Construction Mgt. & Economics	3	Job-site requirements for effective scheduling of needed personnel and material; analysis of alternative between labor intensive and capital intensive construction, factoring of effect of the reliability of the supply logistics into job schedule and cost.

Other New Courses

* Engr. Management	3	For EE, ME, MGMT in technical environment responsibilities of an Engineering manager, social/public side of mgt. responsibility; use of budget information computer applications to management.
* Construction Techniques I and II	4	I. For Construction curriculum. Construction drawing methods, working drawings, materials, application, costs. Presently taught to architectural students only. II. Continuation of I - Lab experience in construction of models which apply material use of factors. Uses Engr. Metals Lab. taught by architecture.

* New

2) The modification of the present core curricula for all engineering students. It is proposed to modify and strengthen the core by the addition of seven credit hours of Afghan History and Economics and the addition of a survey type hands-on laboratory course in Engineering Materials. Modification in the credit hours awarded for Mathematics and Introduction to Engineering, the combination of three Physics courses into two, the combination of two English courses into one, and the continuation of some limited commonality in the fifth semester allow room for the new introduction and permit a start on the professional course sequence to begin in the fifth semester, which will give two and one-half years plus practice within the chosen discipline.

The curriculum and course briefs follow.

MODIFIED PRESENT CORE CURRICULUM

	Cr. HRS.	
1st SEM - SPRING		
ENGL I (4)	4	No change
0 MATH I (4)	3	DECREASE CREDIT. Algebra-Trig.
ENGR DWNG I (3)	3	No change
0 INTRO TO ENGR (4)	2	DECREASE CREDIT. Measurements, least squares, graphs, logs, slide rule No. Lab. Reduce redundancy with Physics
* AFGHAN HISTORY	3	1/3 Ancient, 1/3 Modern, 1/3 World relationships
	15	
2nd SEM - FALL		
ENGL II (4)	4	No change
0 MATH II (4)	3	DECREASE CREDIT. Analytic geometry Differential calculus, integral calculus.
ENGR DWNG II (3)	3	No change
0 PHYSICS I (4)	4	Shorten treatment, add heat part of Physics II
* AFGHAN ECON.	2	Development of the Republic Economic systems, 7-Year Plan, goals and needs.
	16	
3rd SEM - SPRING		
ENGL III (2)	2	No change
0 MATH III (4)	3	DECREASE CREDIT. Integration, determinates, plane analytic geometry
PHYSICS II (4)	4	Drop heat, keep electricity, add magnetism and light from Phys, III
CHEM I (4)	4	No change
0 SURVEY I (3)	2	DECREASE CREDIT. Basic survey, errors and analysis, angle measurement, traverse comp. topographic maps. Lec. I lab.

* New
0 Modified

3) Inclusion of relevant management courses in the CE, EE, and ME curricula. Many engineering graduates will assume important roles in the GOA in later years. The inclusion of management skills and a knowlege of national and world economics will pay dividends as these persons graduate and mature. Hopefully, some of the current GOA management deficiencies will be supplanted by more effective mechanisms. Those pursuing the traditional CE, EE, and ME curricula will take the same modified core, ending in four semesters, and begin the professional curricula in the fifth semester. Recommended changes include the addition of computer programming (already a requirement but not in the printed catalog) and a course sequence in management related topics. These graduates should become more valuable as engineers because of the addition and changes, and in later life as managers of technical units of the GOA. The curricula and proposed revisions are shown below:

*WORLD ECON	2	Free trade, currency systems, credits, financial cycles, oil economy, inflation, Afghan position.
	17	
4th SEM - FALL		
* TECHNICAL ENGL	4	Serial combination of Engl. IV and Technical communication
O MATH IV (4)	3	DECREASE CREDIT. Solid geometry, differential equations, vectors, series, some topics from Math V)
* ENGR MAT'LS Cons.	3	Nature and performance of commonly used Engineering materials under loads, composition and processing effects. Lab.
CHEM II (4)	4	No Change
ENGR MECH I (3)	3	No Change
	17	
	65 HRS	TOTAL

Key: * NEW
O MODIFIED

MODIFIED CURRICULUM - CIVIL ENGINEERING

CORE SEM, 1, 2, 3, and 4 - 65 HRS

5th SEM	CR. HRS.	Teach Dept.
ENGR MECH II	3	CE
STR MTLS (4)	3	CE
ELECR. ENGR I	4	EE
*MGMT HUMAN RESOURCE	3	CONS
*COMPUTER	3	EE
	16	-

6th SEM		
HYDROLOGY	3	CE
SURVEY II (4)	3	CE
STRUCT ANAL. I	4	CE
THERMO I	3	ME
FLUID MECH	4	CE
	17	

7th SEM		
HYDRAULICS	5	CE
GEOL I	3	CE
REINF CONC I	4	CE
CONSTRUC. TECH I	4	ARCH
*SPECS & CONTRS (CE)	2	CONS
	18	

8th SEM	CR. HRS.	Teach Dept.
SOIL MECH	4	CE
REIN CONC. II	4	CE
TRANSPORT	4	CE
WATER SUPPLY	4	CE
* CONSTR MGMT&ECON	3	CONS
	19	

9th SEM	
PRACTICE	17

10th SEM		
FOUNDATIONS	4	CE
DESIGN PROJECT	3	CE
WASTE WATER ENGR	4	CE
ØTECH ELECT	3	CE
NON-TECH ELECT.	3	
	17	

COURSES DESIGNATED Ø SELECTED WITH ADVISOR TO ENHANCE SPECIFIC AREA OF INTEREST.

169 HOURS TOTAL

MODIFIED CURRICULUM - ELECTRICAL ENGINEERING

CORE: 1, 2, 3, and 4 -- 65 HRS

SEM 5	CR HRS	Teach Dept.
EL ENGR I	4	EE
STR. MATLS (4)	3	CE
ENGR MECH II	3	CONS
MATH V (4)	3	
*MGMT OF HUM. RES.	3	CONS
	16	

SEM 6		
ELEC ENGR II	4	EE
MATH VI	3	
FLUID MECH	4	CE
THERMO I	3	ME
*COMPUTER	3	EE
	17	

SEM 7		
ELEC. ENGR III	3	EE
ELECTRONICS I	3	EE
ENERGY CONV. I	3	EE
E.E. LABORATORY	2	EE
TECH ELECT	3	EE
NON-TECH. ELECT	3	
	17	

SEM 8	CR HRS	Teach Dept.
ELECTRONICS II	3	EE
POWER SYSTEMS	3	EE
CONTROL SYSTEMS	3	EE
E.E. LABORATORY	2	EE
*ENGR MGMT	3	CONS
Ø TECH ELECTIVE	3-4	EE
	17-18	

SEM 9	
PRACTICE	17

10th SEM		
ENERGY CONV. II	3	EE
TRANSMISS. LINES	3	EE
COMMUNICATIONS	3	EE
E.E. LAB	2	EE
DESIGN PROJ.	3	EE
NON-TECH ELECT	2	
*SPECS & CONTRS(FE)	2	CONS
	18	

Ø COURSES SELECTED WITH ADVISOR TO ENHANCE SPECIFIC AREA OF INTEREST

167 TOTAL HOURS

MODIFIED CURRICULUM - MECHANICAL ENGINEERING

CORE 1, 2, 3, and 4 - 65 HRS

SEM 5	CR HRS	Teach. Dept.
ENGR MECH II	3	CONS
STRENGTH MAILS (4)	3	CE
*MGMT HUMAN RES	3	CONS
ELECT ENGR I	3	EE
MATH V (4)	3	
Ø TECH ELECT	2	ME
	17	

SEM 6		
FLUID MECH	4	CE
THERMO	3	ME
KINEMATICS	2	ME
ELECT MACHINERY	4	EE
NON-TECH ELECT	3	
	16	

SEM 7		
DYNAMICS, OF MACH.	4	ME
THERMO II	4	ME
MGF PROSC I	3	ME
Ø TECH ELECT	3	ME
* COMPUTER	3	EE-
	17	

SEM 8	CR HRS	Teach Dept.
ME LAB. I	2	ME
SEMINAR	2	ME
HEAT TRANSFER	3	ME
*ENGR MGMT	3	CONS
ØTECH ELECTIVE	3	ME
NON TECH ELECT	3	
*SPECS & CONTRS (ME)	2	CONS
	18	

SEM (9)	
PRACTICE	17

SEM 10		
M.E. LABOR II	2	ME
DESIGN PROS	3	ME
Ø TECH ELECT	3	ME
Ø TECH ELECT	3	ME
Ø TECH ELECT	3	ME
NON-TECH ELECT	3	
	17	

167 HOURS TOTAL

4) Faculty quality and invelvement. Participantships and internships are to be provided to faculty and administrative staff. In the engineering curricula, only four faculty members are recommended for PhD training because such academic training does not directly improve a teacher's capability to better prepare students for careers in rural areas. It is important however to build a small nucleus of senior staff at the faculty. There are also one each leading to the PhD degree in Chemistry, Physics and Mathematics, for in these areas such a degree is necessary for achieving professional competency and for developing the strong science and mathamatics programs required for the engineering students. Most of the participantships though, are for the M.S. level of training because the large number of new B.S. hirings must be given the opportunity to obtain M.S. degrees as soon as possible. Care will be taken to insure that participants obtain training in teaching methodology and practical engineering experience in order to reinforce their discipline training once they return to the university.

Internships are to be provided for members of the administrative staff and directors of professional practices in order that they gain first-hand experience in other successful administrations.

Finally, the adoption of a department head system of organization for the KU/E, which appears to be in the making right now, will reduce the inordinate number of students and faculty reporting directly to the Dean. The combined basic sciences, mechanical, civil, electrical and construction/management engineering are each suggested to become formal departments. Only then can the Dean and his office become an expeditor of planning, budgeting and policy development.

b. Afghan Institute of Technology

High level technicians, supportive of engineers in the rural areas are not being trained in Afghanistan at present. In order to be supportive to the graduates of the new construction engineering option in the KU/E and other field engineers currently working at rural project sites across Afghanistan, the project proposes to introduce seven new curricula at the thirteenth and fourteenth grade levels, giving the graduates a certificate of "assistant engineer." The seven areas are civil engineering, electrical engineering, mechanical engineering, inspection, soils, surveying, and site business management. The proposed curricula for these high-level technicians follow:

AIT

1. Civil Engineering Technician

Semester 1	CRS HRS	Semester 2	CRS HRS
English (Expository Writing)	3	Tech. Report Writing	3
		Tech. Math. II	3
Tech. Math I (Incl. Sliderule)	4	Tech. Drawing II	4
Orientation to Engr. Tech.	2	Physics w/application I	3
Tech. Drawing I	4	Physics Lab. I	1
Materials & Processes I	5	Materials & Processes II	3
	18		17

Semester 3		Semester 4	
Construction Mgt.	2	Elem. Surveying	4
Conservation & Natural Res.	3	Design Inspection & Procedures	3
Geotechnics & Soils	4	Str. of Materials & Lab.	5
Engr. Project Planning	3	Construction of Highways	3
Appl. Hydraulics & Drainage	4	Concrete Construction	3
Statics	3		
	19		18

2. Inspection Technician (Equipment—Materials)

Semester 1		Semester 2	
Orientation to Engrg. Tech.	2	Elementary Surveying	4
Intro. to Environmental Engineering	3	Tech Report Writing	3
Tech. Math I (Incl. Sliderule	4	Hydraulics & Pneumatics	3
English (Expos. Writing)	3	Tech Math II	3
Construction Materials	2	Tech Drawing	4
Construction Management	2		17
	16		

Semester 3		Semester 4	
Foundation Engrg.	3	Design Inspection & Procedures	3
Statics	3		
Internal Comb. Engines	4	Computing & Estimating	3
Mechanisms & Mechanics	5	Concrete Construction	3
Personnel Relations	3	Strength of Materials	5
		Road Specs. & Materials	5
	18		19

3. Soils Technician

Semester 1	CRS HRS.	Semester 2	CRS HRS.
Orientation to Engrg. Tech.	2	Elem. Surveying	4
Intro. to Environmental Engineering	3	Tech. Report Writing	3
Tech Math I (Incl. Sliderule)	4	Hydraulics & Pneumatics	3
English (Expos. Writing)	3	Tech Math II	3
Construction Materials	2	Tech Drawing I	4
Construction Management	2		17
	16		
Semester 3		**Semester 4**	
		Soil Physics	4
Soils Chemistry	4	Design Inspec. & Procedures	3
Geotechnics & Soils	4	Computing & Estimating	3
Soils Lab.	4	Concrete Construction	3
Foundation Engrg.	3	Str. of Materials & Lab.	5
Statics	3		
	18		18

4. Site Management Technician

Semester 1		Semester 2	
English (Expos. Writing)	3	Business Letter-Writing	3
Tech Math I	4	Fundamentals of Speech	3
Accounting I	3	Accounting II	3
Introd. to Business Organiz.	3	Statistics	5
Business Machines	3	Purchasing	3
	16		17
Semester 3		**Semester 4**	
Survey of Computer Science	4		
Introduction to Economics	5	Human Side of Computers	4
Psychology	5	Introduction to Finance	3
Cost Accounting	3	Statistical Interpretation	4
	17	Business Law	3
		Intermediate Accounting	3
			17

5. Surveying Technician

Semester 1	CRS HRS.
Orientation to Engrg. Technology	2
Construction Mgt.	2
Construction Materials	2
Introd. to Environ. Engrg.	3
English (Expos. Writing)	3
Tech. Math I (Incl. slidrule)	4
Tech. Draw. I	4
	20

Semester 2	CRS HRS.
Elementary Surveying	4
Tech Report Writing	3
Hydraulics & Pneumatics	3
Tech. Drawing II	4
Tech. Math. II	3
	17

Semester 3	
Conservation of Natural Resources	3
Geotechnics & Soils	4
Advanced Surveying	4
Engineering Proj. Plan	3
Statistical Methods	3
	17

Semester 4	
Design & Inspection Procedures	3
Statistics	3
Computing & Estimating	3
Applied Hydraulics & Drainage	4
Land Surveying	3
	16

6. Electrical Engineering Technician

Semester 1	
Orientation to Engr. Tech.	2
Circuits - Direct Current	4
Circuits - Alternate Current	4
Tech. Math. I (Incl. Sliderule)	4
English Expos. Writing	3
	17

Semester 2	
Vacuum Tube Fundamentals	4
Transistor Fundamentals	4
Network Analysis	3
Tech. Math. II	3
Physics w/applications I	3
Physics Lab. I	1
	18

Semester 3	
Transistor Circuits	4
Pulse & Digital Circuits	4
Appl. Calculus for Tech.	3
Physics w/applications II	3
Physics Lab II	1
Electrical Drafting	3
	18

Semester 4	
Digital Computer Circuit Analysis	4
Tech. Report Writing	3
Motors, Generators & Transformers	4
Electrical Communic. Systems	4
Power Transmission & Distribution	3
	18

7. Mechanical Engineering Technician

Semester 1	CRS HRS.	Semester 2	CRS. HRS
English (Expository Writing)	3	Tech. Report Writing	3
Tech. Math I (Incl. Sliderule)	4	Tech. Math II	3
Orientation to Engr. Tech	2	Tech. Drawing II	4
Tech. Drawing I	4	Physics w/application I	3
Materials & Processes I	5	Physics Lab. I	1
		Materials & Processes II	3
	18		17

Semester 3		Semester 4	
Material Testing	5	Instruments	3
Basic Mechanisms	3	Machine Design II	3
Machine Design I	3	Quality Control	3
Statistical Methods	3	Fluid Power	3
Metallurgy & Heat Treatment	3	Internal Combustion Engines	4
	17		16

5. TECHNICAL FEASIBILITY

a. Supply of Technical Manpower

To meet the projected target of producing 350 engineering graduates annually by 1981, KU/E admitted about 800 new students in March 1977 constituting a fourfold expansion in enrollment. However, last year's experience indicates that about 190 of those students admitted would likely graduate at the end of 1981; i.e. with a 400% increase in first year enrollment, only an eighty to ninety percent increase in the number of graduates can be expected. Due to the disproportionately higher attrition rate associated with the increase in freshman admission, to reach the targeted production, KU/E must further increase its first year enrollment to about 1700. This would imply that twenty one percent of the number admitted would graduate which will be sharply lower than the current rate of over fifty percent. Furthermore, in addition to the consideration of the undesirable inefficiency of this alternative, with the available facilities, faculty, equipment, space, and quality of high school graduates, including the training provided by this project, KU/E will not be in a position to implement a further expansion and can probably only maintain the level of producing about 200 graduates with a slow increase into the late 1980s.

In the projected demand the distribution of the engineering graduates by the four existing options namely civil, mechanical, electrical and architecture, with a rather heavy emphasis on the mechanical option, has been outlined and the addition of the newly proposed construction option would require some modification in the stated distribution. Since the background documents supporting the distributions are not available, it is rather difficult to assess the impact of the shortfall in numbers of graduates in the four existing options resulting from the drop in the total number of graduates and the modified distribution by five options. However, the overall estimated need for engineering graduates seems to be high and it would perhaps be a burden to place all these graudates in positions that strictly require university level training in engineering. On the other hand the plan to produce 200 graduates who are better trained engineers, both in terms of quality of teaching received and the curriculum followed will probably be adequate for the period under consideration. Thus, while the production level of 350 engineers is unfeasible, the project's emphasis is placed on producing less numbers of better qualified engineers. Also, the quality and understanding of local conditions is stressed in the development strategy for Education in the Seven Year Development Plan.[1/]

1/ First Seven Year Economic and Social Development Plan Vol. I, Text, page 218.

To raise the efficiency in training costs, time and in utilization of technical manpower for development projects, the project encourages the training and employment of assistant engineers. The assistant engineers, who will normally be graduates of a vocational-technical school and will have completed an additional two years of applied and practical oriented technical training at AIT, will adequately supervise the implementation of most rural construction acitivities and production operations which in the projected demand has probably been identified as tasks requiring university graduates. In Table 1 the projected demand for technical manpower and the TMD project outputs are summarized. With the inclusion of the assistant engineering program and outputs, the mix of university trained engineers and assistant engineers will even satisfy the projected demand requirements in quantity by 1984. While there will still be shortfall in numbers of graduates in particular categories such as mechanical engineering, with efficient utilization of the mix, no shortfall in quality is anticipated.

6. IMPACT ON KU/E

Student Enrollment at KU/E - It is clear there seems to be a limitation on available qualified students for KU/E. While only one year's general evidence is available, it can be surmised that the larger the entering freshman class the chances of less than top students in that class are great. This will logically lead to greater rates of attrition and early failure as these students struggle with a curriculum which may be too rigorous for many entering freshmen. The opening of the enrollment floodgates has already resulted in a high attrition rate and subsequently, an enormous first year repeater class.

In moving from less than 200 freshman admissions in 1976 to 763 in 1977, the quality of the students dropped significantly. In the past, ten to twenty percent of the entering students were allowed to repeat the freshman year. This year's repeaters comprise approximately fifty percent of those who took the qualifying examination. The rules of Kabul University require that the first two years of studies be completed with an academic average of over fifty-five percent within three years and anyone who stays part of the first semester is given the opportunity to try again. This leads to system inefficiency and high costs.

The new 763 freshmen had an attrition rate of eighteen percent prior to the first examination. Of the 653 who completed any measureable academic work, 323 moved on to the second year of studies and 330 returned to repeat the first year.

Table 1 Prcjected Supply of Technical Manpower

	1978	1979	1980	1981	1982	1983	1984	1985
A. Projected Demand								
Total Graduates (KUFE)	118	114	105	350	350	350	350	350
Civil	43	47	35	101	101	101	101	101
Mechanical	25	23	26	126	126	126	126	126
Electrical	19	30	27	101	101	101	101	101
Architecture	30	14	16	21	21	21	21	21
B. TMD Output								
(I) Total Graduates (KUFE)	120	116	107	195	239	229	237	249
Construction	-	-	-	-	57	55	57	60
Civil	44	48	36	73	38	37	38	40
Mechanical	26	23	27	54	63	62	64	67
Electrical	19	31	28	55	65	62	64	67
Architecture	31	14	16	13	16	14	14	15
(II) Total 14 year AIT	-	-	-	91	91	114	112	135
Grand Total for TMD Output B(I) + B(II)	-	116	107	286	330	343	349	384
Shortfall A - B(I)	0	0	0	155	111	121	113	101
A-[B(I)+B(II)]	0	0	0	64	20	7	1	(-34)

These repeaters are costly in terms of teaching manpower, facilities and supplies and are costly as well to the students. Efforts to reduce attrition through counselling and guidance and to prohibit such a large first year repeater class will pay high dividends in reducing per student cost and increasing overall quality and efficiency. At the same time, orderly faculty growth and participant training can only occur if system overload because of repeaters is aboided.

There appears then to be an insufficient number of capable candidates for admission to KU/E to graduate 350 engineers a year as called for by the GOA. While no magic number is prescribed here, 763 is too many. The numbers picked for student input and attrition from the basic model for planning of the program; i.e. student lab sections, books and size of faculty. Five hundred incoming students were chosen since Kabul University will admit that number in March 1978 and will increase that number in stages to 650 by 1984. The percentage of first year students who go on to the second year from last year's fifty percent has also been increased. The model also factors in a fifteen percent attrition rate for entering students for non-academic reasons, while repeater allowance is reduced from fifty to thirty percent. In future planning, it might be more productive to increase new student input and choke down on repeater population, though this should be studied by the TMD project team leader and the Dean of Engineering. Table 2 shows that once the 500 input and the attrition factors settle, approximately 235 graduates per year will be produced with a faculty of 140. As the 650 input stabilizes, the number of graduates will approach 280 per year with a faculty of 156. We believe this to be realistic.

Table II

1987	1986	1985	1984	1983	1982	1981	1980	1979	1978	Year	
680	680	670	650	600	600	560	500	420	400	Admit	Total Students
885	885	881	866	812	796	720	632	568	520	Year 1	
497	494	494	457	415	412	401	378	316	320	Year 2	
370	363	345	334	305	290	284	297	242	113	Year 3	
303	293	284	262	269	241	262	206	113	120	4	
279	270	249	237	229	230	195	107	116	120	5 Approx. Graduates	
2335	2305	2213	2156	2044	1981	1962	1825	1618	1553	Total	
				6.7	6.66	6.19	5.88		-	ARCH	Basic Science
				12.6	12.44	11.44	10.98			ENGL	
				11.4	11.26	10.44	9.54			PHYS	
				11.3	11.21	9.52	10.07			MATH	
				7.1	7.32	6.95	6.73			CHEM	
				30.1	29.8	26.9	26.3			TOT. BASIC SCIENCE	
				9.2	9.02	8.79	8.02			ARCH	Engineering Depts
				20.4	20.29	21.4	21.65			CIVIL	
				15.2	15.02	12.94	11.27	-	-	CMPS	
				17.3	17.03	16.3	15.32			ELECT	
				31.6	31.26	29.3	26.93			MECH	
				8.7	8.56	6.84	4.57			MFCT	
				102.4	101.2	93.6	85.1			TOTAL ENGR. DEPT.	
153	153	147	142	132.5	131.	122.5	111.4	96.	97	TOTAL FAC. EQUIV.	

Student Apportionment:

Arch	6
Civil	16
Cmps	24
Elect	27
Mech	27

Credit Weighting A Faculty Load per AS/NMD met [illegible] these professions.

ENROLLMENT AND FACULTY

The TMD project will help achieve this goal by concentrating on better teaching, providing counselling and guidance to try and limit attrition and achieve better placement of students while limiting the extra cost of faculty, facilities and operating expenses.

Faculty requirements - Once the enrollment pattern was established, general faculty needs were determined. The model used here establishes a student/faculty ratio of 13/1. Core lectures will include a higher ratio while the ratio for advanced engineering courses will be lower. This ratio is used because of the University's inability to service classes and labs with graduate students as is the case in many other universities. This ratio also takes into consideration other factors - i.e. faculty training, experience, organization, English capability and the inclusion of the basic science courses. Flexibility does exist in the core curriculum. In advanced engineering courses the class size in a given course is set by those who must take it-often two sections may be offered because only one faculty member is capable of teaching that subject. The core is flexible, since the majority of students in any given year are in this area, and a range of plus or minus twenty-five percent in class size, yields close to a twenty percent overall change in the averages. Care should be taken however to increase loads with experienced faculty only.

A change then from a ratio of 13/1 to 16/1 could be acceptable and could reflect a twenty percent decrease in faculty needs. Any change should be assessed during the course of the project in light of evolving experience, especially if third country faculty are not available in the numbers required.

The faculty model was prepared based on the student flow mentioned earlier. The number of faculty expected to be on duty in March 1978 indicates that reasonable instructional loads can be achieved. However, a needed input will be twenty Peace Corps Volunteers, fifteen Bengali temporary faculty and a continued increased in faculty through new hires from within. Peace Corps faculty are already in place. Presently the Dean of KU/E is negotiating with the Bengali contingent to bring it to the university by the beginning of the new school year, although their arrival at that time seems uncertain. Continuation of Peace Corps assistance through 1984, availability of a stable Bengali faculty through 1982 and the continued hiring of new BS graduates will be necessary to allow some number of Afghan faculty to leave KU for training or lecture/ internships. Faculty stability without the need for outside assistance can then be reached by 1984/1985.

Table III

FACULTY OF ENGINEERING STAFFING (500 model)

	Needed	Regular	New Hire	Peace Corps	Bengali	Total	(deficit) excess	Participants going	Participants returning
1978	87	53	10/8	20/16	15/12	89	2	0	0
1979	96	63	12/10	20/18	20/18	109	13	13	0
1980	112	75	12/10	20/18	20	123	11	15	6
1981	122	87	12/10	20/18	20	135	13	15	8
1982	131	99	20/16	20/18	20	153	22	17	11
1983	133	119	24/20	20/18	-	157	24	11	11
1984	142	143	14/12	10	-	165	23	-	11
1985	147	157				157	10	-	13
1986									11

New hire, Bengali and Peace Corps staff members derated twenty per cent first year

With the need for a growing faculty comes the search for available candidates. These will come primarily from within the school's own graduating classes. There does not appear to be a viable alternative to this inbred hiring. To predict their effectiveness, the new faculty, along with the third country nationals are derated by a factor of twenty percent during the first year of teaching. Since this BS graduate hiring will continue through 1984, consideration should be given to examine more than the student's final scores for hiring but also to take into consideration other quality factors like engineering professionalism and English capability.

Participants - In order to prevent a decline in faculty quality by the large infusion of New BS staff (estimated to be near 100 in the next seven years) many of these teachers will be upgraded to the MS level. Additionally, modified participantships will be offered to stimulate better teaching techniques and practical experience for both new and existing faculty.

The training plan offers the opportunity for significant quality improvement of the faculty. Major changes should not be permitted without strong justification. The faculty can meet its mission at KU/E with a preponderance of MS teachers and more opportunities for practical experience. Planning for this project indicates that faculty professional maturity may be some years away. The needs of the GOA are likely to continue to be for increasing numbers of BS level graduates as opposed to high level engineering specialists, thus the idea of expanding KU/E into a graduate degree faculty appears to be at least a decade away. It is on this basis that the participant program places a low priority on the PhD degree.

The process of participant selection will be a difficult one. The aspirations of faculty will not in all cases, match the needs of the project. The team leader and the USAID training officer will have to stand ready to reject selections alien to the goals of the project. The establishment of engineering departments with chairmen at KU will help.

The project calls for the involvement of seventy-three faculty employees with 152 man-years of training. The number of participants proposed adequately provides for the needs of the faculty and it is entirely within its capability to allow the participants to receive training without any appreciable harmful effect upon teaching load and quality, assuming that third country staffing and desired student/faculty ratios are met.

New Curriculum - The total credit hour requirements of the new and revised curricula is virtually the same as that of the present curricula. However, the recommended curricula will result in increased student loads for civil and construction engineering. Training will alleviate the proposed increased teaching loads in these departments. Concurently due to different projected enrollments, there will be decreases in anticipated loads in the mechanical and electrical departments. Lab hours and schedules can be met by the development of three new labs and changes in the use of the existing labs during the teaching week.

The start of the new core curriculum requires the start of the seven hour Afghan History and Economic series. KU/E will get help from other faculties to implement this part of the program.

The first new Mechanical core course will be offered in September 1980, when the course, "Engineering Materials" is offered for the first time. It contains material readily taught by a Civil or a Mechanical engineer and no special training is needed.

The start of the Construction Engineering curriculum in March 1980, requires only the establishment of the new course entitled "Management of Resources." Several current faculty members could teach it, also advisors and consultants in conjunction with the faculty could help arrange to offer the course as a seminar. Later, faculty returning with M.S. training in Engineering Management would be expected to teach this and the related series of other management courses.

Another listed new topic for March 1980 is the computer course for the Civil Engineering curriculum. It is currently being taught in the Electrical Engineering department and is not expected to require any specifically newly trained faculty in order to offer the course at that time.

With the exception of the "Mobile Power Sources" course first offered in September 1981, all other courses listed as new are hybrid courses or special treatment courses of which some can be taught by the existing faculty in the departments. Many of the new courses can be taught by civil engineers, architects etc., however, the increasing number of sections required by the larger student population requires more staff to be trained for respectable instructional loads. By the end of 1982, it is expected that fourteen M.S. graduates will have returned to the faculty to meet the necessary teaching loads in the new areas.

In summary it must be recognized that there are insufficient capable candidates for admission to KU/E to graduate 250 engineers a year as called for by the GOA. The Dean will have to make every effort then to control enrollment and to provide supplemental temporary faculty to provide adequate coverage of curricula needs in order to take advantage of the participant program. The major difficulty with the new curriculum will not be the number of instructors needed but to train the current faculty to organize their efforts towards the practical aspects of their course offerings.

c. AIT

Enrollment size and staffing of AIT presents much less of a management problem than that of KU/E. Presently, AIT is well endowed in terms of classrooms/labs/shops and teaching faculty, with a student/teacher ratio of thirteen to one. This ratio has remained consistent and has been a major factor in the production of high quality AIT graduates over the years. The student/teacher ratio at AIT as part of the TMD project will remain roughly the same as before (13-1).

Students for the proposed 13th and 14th year AIT program will come from two sources: Newly admitted students from AIT and other vocational schools and rechanneling of KU/E students. With a more effective counselling program at KU/E, we would expect at steady state that eighty students would be redirected to AIT while 100 per year would come from AIT or other vocational schools. The total AIT student population as described in Table 3 indicates a relatively stable number of students the second year of the program. Attrition rates at AIT have been low compared to KU/E and it is expected that eighty percent of the 13th year students will move on to the 14th year. Moreover, approximately seventy five percent of the entering 13th year class will graduate.

Staffing - The strengthening of AIT's staff will strengthen the technical aspects of the new program. Other components, i.e. English, Math and Science, can be taught by current faculty including Peace Corps teachers. A concommitant reduction of incoming ninth grade students will also be required.

To carry out the 13th and 14th year program at AIT, replacement faculty hiring must be started during 1979 as shown in Table 4 to allow release in August, 1979 of the first participants. Indications from the Ministry of Education are that this process will begin. The Director of AIT sees no problem in obtaining supplemental authorization for additional staff. Suitable teaching candidates would be midranked graduates of the KU/E/VTE. Table 4 shows that increasing faculty needs will be met as faculty return from training.

Table III

STUDENT FLOW-AIT

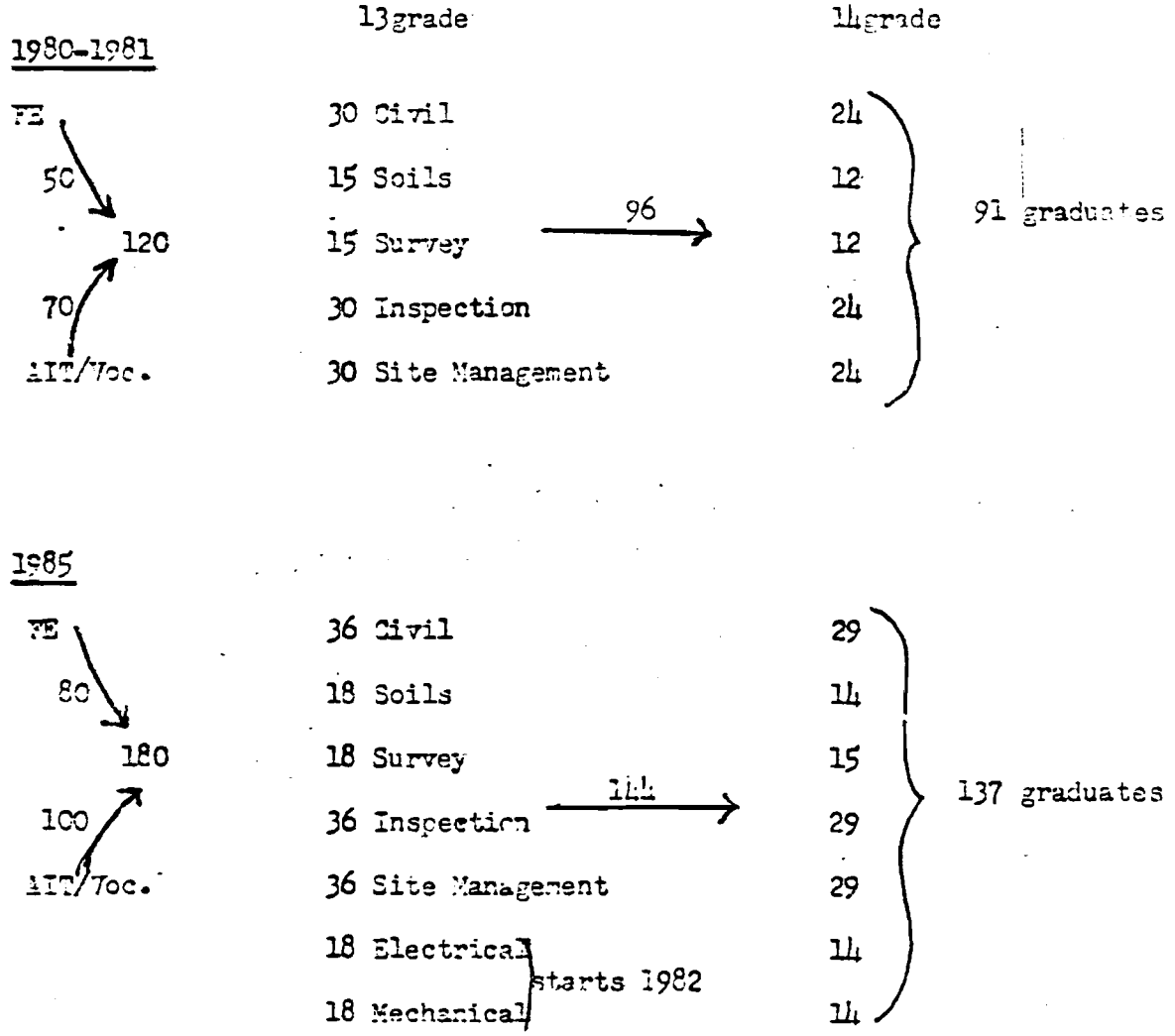

Table IV

AIT FACULTY STAFFING

Assistant Engineers Program

YEAR	Grade	# students	needed new tech. staff	ava.l reg. staff	new hires	excess	partic.	part. return
1979					5/4		6	0
1980	13	120	6	5	6/5	4	2	2
1981	13 14	120 96	12	11	6/5	4	3	1
1982	13 14	150 96	14	17	2	5	1	3
1983	13 14	150 120	15	19	1	5		4
1984	13 14	180 120	17	20	2	5		2
1985	13 14	180 144	18	22	1	5		

New faculty derated 20% first year of teaching

An additional project requirement is increasing budgetary support from the GOA. AIT must be provided with funds for textbooks, laboratory supplies and general operating expenses in order to function effectively. Lacking this support, AIT will not be able to carry out the new program.

Under the TMD project at KU/E, effective student counselling should help to re-direct those unable to complete the rigorous engineering program, yet keep them in the technical manpower pool, by providing assistant engineers to supplement the work of graduate engineers.

AIT's physical plant is generally equipped to serve the proposed 13th and 14th year program however several new labs must be added and some shops must be upgraded to provide the practical training which the new students will need.

AIT pioneered an innovative technical studies program at its inception. It now has the added opportunity to offer a new program and strengthen its role as a high quality vocational education school. If USAID has learned any lessons from its earlier involvement in AIT, however, strong support from the GOA should be a precondition of this new project.

In summary the project's objectives are technically feasible. By reorienting the KU/E curriculum and faculty to include a practical engineering program to produce engineers with the practical skills and sensitivity needed to work in the rural areas and by introducing a higher level technician program at AIT complementary to the graduate construction engineers, the project will develop technical manpower whose skills are skewed in favor of small-scale rural construction.

By controlling enrollment levels and through hiring of supplemental staff at KU/E and AIT, curricular needs can be adequately covered while the faculty is upgraded through the proposed participant training program. With adequate budgetary support from the GOA, both organizations can carry out the program to meet the objectives of the project.

6. Prior U.S. Involvement in Higher Education

There is a long history of U.S. assistance to Afghanistan in the area of higher education. From 1956-1973, this assitance concentrated on development of the Central Administration of Kabul University and its faculties of Engineering, Education and Agriculture. The University received help in training its academic personnel, in creating a central administrative structure and in establishing acceptable university curricula.

A number of contract teams from the University of Wyoming, Indiana, Teachers College, Columbia University and the U.S. Engineering Team provided this technical assistance. In many cases they were pioneers in the development of Kabul University.

In 1973, the Higher Education project at Kabul University was designed to help close any gaps which remained by improving the quality of the instructional program and by developing resources to serve specific development needs through revised course offerings and applied research. This was in response to Kabul University's desire to participate more directly in the development of Afghanistan. In 1974, Nebraska University was selected to help develop curricula in the Department of Education and the Faculties of Agriculture and Engineering to accelerate this process. Support was also given to the Central Administration. The project attempted to focus on curriculum development and administrative systems which would be self sustaining. While some progress was made in the development of relevant curricula and administrative efficiency, little applied research has taken place to date. The project was completed in December 1977.

The bulk of past assistance in higher education was broad based institution building in nature and attempted to provide some qualitative changes in the University system.

The TMD project presents a more focused attempt at extending the reach of the University by creating technical manpower to better manage the increasing number of rural infrastructure projects. This project, along with the Development Support Training Project, will further the effort at strengthening Afghanistan's technical and management people to better plan and implement projects having impact on the rural majority.

B. Social Analysis

1. Socio-cultural Compatibility

Traditionally Afghan villagers have been suspicious of the Government. They would prefer to manage without outside assistance or intervention, but they realize that many tasks are beyond their internal capabilities and that outside expertise is necessary. The engineering component of rural infrastructure projects is one example of this. For many years now, however, the so-called expert who has come to the village to assist in the planning, design, and implementation of a development project has not always had a favorable impact on the quality of the finished product.

First, the expert often is ill-trained in practical engineering and is ill-equipped to solve the numerous problems which arise daily at any construction site. Secondly, he is frequently unfamiliar with the rural social environment in which he is working, especially if he himself is from an urban environment. Finally, the engineer or technician often is not physically present on a regular basis at the construction site, and thus many of the recurring and urgent decisions on design modification and implementation are made without his assistance or advice, by others who often are even less well-trained in engineering. Consequently, many mistakes of judgment and execution are committed, resulting ultimately in a poor, sub-standard product.

This situation has a number of negative effects. Obviously, one of these is a tremendous waste of time, money, labor and personnel, particularly if the finished project is unusable or becomes disfunctional only a few years after its completion. But another consequence, often unrecognized, but extremely insidious to further development efforts, is the people's loss of faith and trust in their government. This is especially true if the people have contributed money and/or labor to the project. Later, when the government calls upon the people for cooperation and participation in other development projects, the outsiders find the villagers uninterested, uncooperative, and frequently antagonistic.

This Technical Manpower Development Project will attempt to relieve this situation by producing technical personnel who are better able to plan, design, manage and implement small-scale, infrastructure projects in the rural areas. Provided with more practical training in a broad spectrum of engineering, the technician will be better equipped to cope with the types of problems encountered and the decisions to be made in the rural construction environment. Ultimately, the quality of rural development projects should improve substantially.

Secondly, provided with some "people-oriented" social science courses in their core curriculum, it is hoped that the engineer graduates will have a better understanding of the nature of the social environment in which they will be working. This should assist them to comprehend the types of problems facing the rural village and to seek the most effective way of solving these problems.

Finally, since this project aims to train assistant engineers who can support field engineers, there should be an increased presence of technical expertise at the construction site on a regular basis. These assistant engineers will handle general supervisory construction duties at one site, such as monitoring the work, checking specifications, making minor decisions, and reporting on progress to the engineer. This will allow the latter to concentrate on issues commensurate with his training and technical skills and to more effectively supervise a larger number of projects.

There are, then, two beneficiaries in this project: the technical personnel and the rural villagers. It is obvious that the engineering students will benefit. First, they are offered another curriculum option, i.e., general construction. For those students with a more practical inclination and for those who would like the satisfaction of supervising small projects more or less single-handedly and receiving more immediate gratification (as opposed to engineering inputs on large capital projects), this could become a popular course offering for the committed students.

Secondly, the engineering student will have an enhanced opportunity to gain practical on-the-job training and experience before entering the work force. This should give the student the necessary confidence to make the numerous decisions which will arise in the planning project. Hopefully, it will also provide him with the skills to make the correct decisions, as well as the ability to recognize minor problems before they become major ones. In addition, the direct responsibility for rural construction projects can serve to accelerate professional growth and lead to more important assignments.

To the extent the engineer has available well-trained assistant engineers who have graduated from the AIT to assist him in his work, a more efficient utilization of scarce technical personnel will result. Relieved of certain tasks and responsibilities which are more suited for technicians than graduate engineers, the position of rural construction engineer will become more desirous and will attract high caliber students. The engineer's pride derived from an increased amount of responsibility will be enhanced.

Finally, engineering students who must leave KU/E for academic reasons mainly because they are unable to handle the advanced math, chemistry or physics requirements, will now have a "second chance" at AIT in that institution's 13th and 14th year program, becoming Assistant Engineers. Similarly, students who are unable to attend KU for some reason will now have the opportunity to continue their education for at least another two years and to gain a valuable technical skill. Previously, technically capable people who failed out of KU/E or who were unable to attend KU have been "lost" to the GOA. These technical resources can now be "salvaged" and channeled into the AIT assistant engineer program. This not only benefits the student but ultimately provides the government with sorely needed technicians to support its engineers.

The other group of beneficiaries are people living in the rural areas who will be directly affected by the development projects on which these KU/E and AIT technical personnel will be working. By producing engineers and assistant engineers who are able to deliver better planned, better designed, and better implemented rural development projects, assuming their placement by the GOA in rural sector jobs, this project will benefit the rural population. There can be no doubt that a physically sound rural primary school or basic health center, a usable CIS river intake, or a standing bridge is more beneficial to rural villagers than these same structures manifesting the opposite characteristics. Additionally, this project will provide the engineers with skills to assist them in selecting and designing appropriate projects to meet the villagers' needs. This, too, can increase the benefits going to the rural populace, making such projects considerably more responsive to the exact local condition.

2. Spread Effects

If each graduate of the construction engineer program and the AIT assistant engineer program were to be assigned to the rural areas to work on development projects, there would be little problem regarding the linkage between this project and the ultimate benefits to the rural population. However, the linkage between an engineer or high-level technician trained to plan, design, manage and implement rural development projects and the ultimate goal of an improved socio-economic life for Afghanistan's rural villagers is only as strong as the GOA chooses to make it. It is obviously necessary for these technically trained personnel from KU/E and AIT to be placed by the GOA in development-related jobs in the rural sector if there is to be any impact on the rural poor. There will be little spread effect, if, for example, a graduate of the construction program is assigned to a non-rural development-related capital project position. The rural areas will have lost the potential benefits that his presence there might have provided. The assignment of the technical personnel trained under this project to the rural areas to work in development-related projects is thus a critical assumption for this project's success. If this assumption proves false, there can be no spread effect.

On the other hand, as discussed in detail in the previous section, there will be a positive spread effect if the assumption regarding the assignment of personnel holds true. Currently the quality of development projects is somewhat less than desirable because of a deficiency of technical personnel trained in practical engineering relevant to rural development needs and available for assignment to rural programs. All failures in Afghanistan's development projects, of course, cannot be attributed solely to the engineering component, but this is a critical input and its improvement would contribute in varying degrees to the overall improvement of the GOA's development program for the rural areas. In addition, training in engineering management techniques for the "main office engineers" will also enhance

the effectiveness of the rural construction environment through improvements in logistics and support. If the execution of development projects is improved, it follows that the intended beneficiaries of these endeavors would receive greater and more permanent benefits.

3. Social Impact

As mentioned above, engineering and technical inputs alone cannot guarantee project success. Similarly, a project which is planned and designed to deliver inequitable benefits cannot be rectified simply by the presence of technical manpower, since problems of inequity are not necessarily related to technical expertise. However, since engineers and technicians are involved in planning and design, they can have an impact on the selection of beneficiaries and the distribution of benefits.

Part of the classroom instruction for engineers at Kabul University will consist of courses in the social sciences (Afghan History, economics, etc.). Hopefully, this will further the engineers' understanding of rural life and make them more aware of the problems faced by the common villager. Cognizant of the social environment and the cycle of poverty in which many villagers are trapped, the engineer involved in planning and designing rural development projects may be less likely to allow projects to evolve which do not channel the bulk of the benefits to the rural poor. Granted, there is a problem in making all of KU/E graduates fully sensitive to this issue with just a few hours of classroom instruction, but this is a beginning, and represents an improvement over the previous curriculum.

Furthermore, the KU/E graduates can be expected to have a heightened sense of confidence due to their more practical training and their on-the-job experience prior to their assignment. This confidence will hopefully induce them to move out of their provincial capitals' offices and into the rural areas on a more regular basis. Although they will be performing job-related tasks on these trips, e.g., inspection, monitoring, etc., continual movement throughout an area and the opportunity to talk with the people and gain first-hand information regarding the problems they face will further the engineer's understanding of the rural area in which he is working. This direct understanding, coupled with the classroom social science instruction, should enable the engineer to recognize more quickly, should he choose to, the nature and distribution of a given project's benefits. He could, thus, influence plans and designs which would help avoid an unequitable distribution of benefits.

4. Impact on Women's Participation in Development

Because of the cultural value Afghans place on secluding their women, the proportion of female graduates of high school is very low (probably less than 10%). Further, only 10% of the students at KU are females, and of the female students at KU only 36, or 4%, are

enrolled in the engineering faculty. In addition, again due to cultural values, most of the female engineering students are enrolled in engineering programs which are not field oriented, i.e., where they do not have to travel far from their homes and, preferably, can spend most of their professional time in the office. It is rather unrealistic, therefore, to expect that more than a few females will enroll in the Construction Curriculum at the KU/E. The prospects of female participation in this project through the expansion of AIT are equally low. There do not appear to be realistic opportunities open to this project for altering this pattern.

C. Financial Analysis

1. KU/E-AIT Recurrent Budget Analysis and Capacities to Sustain Project.

A review of budgets at AIT and KU/E showed that budget allocations have not been a major restraint to operations at either AIT or KU/E. Analysis of expenditures compared to budget allocation showed that AIT and KU/E have not been able to expend the budget allocated. During the past four years, AIT expenditures have ranged from a low of 58% to a high of 70% of budgeted funds. (See Table C-2) The only data readily available at KU/E was for Afghan Year 1356 (March 21, 1977 to March 20, 1978). During this period, KU/E expended a total of 30% of its regular budget and 55% of a special expansion budget (See Table C-1). To say that funds were not expended does not mean that funds budgeted were excessive. It is anticipated that budgeted funds may not be adequate to meet recurrent needs of AIT and KU/E. The feasibility study conducted by the AED showed that both AIT and KU/E lacked adequate textbooks and laboratory supplies. Laboratories required additional hardware, repairs and upgrading. The major area of deficiency was in the area of procurement, especially in the area of offshore purchases of textbooks and laboratory supplies, e.g., the KU/E expansion budget for Afghan Year 1356 contained a line itemf for textbooks in the amount of Afs 12.9 million ($300,000) equivalent) for the purchase of textbooks. However, less than Afs three million or 23% of this budget item was expended. Similarly, AIT has not been able to purchase any textbooks and very limited laboratory supplies during the past several years. Analysis of the budget item for General Supplies and Materials during the past four years showed that AIT expended only about 30% of funds so allocated. Deficiencies in procurement of services and hiring of teacherswere also noted. In order to address the procurement problems, a total of nine person-months of procurement consulting services will be provided under the project. Moreover, not to repeat the mistakes of past projects, the TMD project is designed to strengthen GOA procurement performance by having the GOA purchase all of their inputs into the project including textbooks, a portion of which will be reimbursed to the GOA during the period of project implementation.

In order to arrive at the annual budget requirements for the KU/E and AIT, we began with the known expenditures for Afghan Year 1355 and estimated the additional cost to sustain the project as a result of (a) increased teachers, supplies and services needed to support the increased enrollment and (b) GOA inputs required for the project. These expenditures were projected based on current costs and with a 5% annual inflation rate for ten years. Budget requirements appear to level off at Afs. 36 million for KU/E and Afs. 9 million for AIT at current market prices. This represents a total budgetary increase for KU/E of about 50% by the time steady state is reached in 1988 or an average annual increase of 4% per annum without inflation. This is only a moderate

The project and expenditure plans by fiscal year are contained in Tables C-4 and C-6 respectively. The project is divided into two phases with Phase II being initiated after approval of the revised curriculum at KU/E and AIT and upon meeting a number of conditions precedent to additional disbursement. Therefore, initial fundings is limited to providing funds for advisors, consultants and related support costs. The initial increament of funds for participants and commodity procurement is scheduled for obligation in FY 1979. A more detailed expenditure plan and itemized listing of commodities to be procured from project funds is included as Annex F.

increase in budget requirements given the GOA commitment to increased enrollment and support of KU/E. The increased budget requirement for AIT is almost nil since budget requirments level off at Afs 9,041,000 without inflation by 1985 which is only slightly more than the current AIT budget of Afs 8,878,000. Table C-3 shows the estimated GOA budget requirements for KU/E and AIT in constant monetary terms and with a 5% annual inflation rate.

Based on our analysis we have concluded that the GOA budget requirement to support the project will not be a major constraint. Deficiencies in the area of procurement are apparent. However, they are addressed in the project implementation plan.

2. Financial Plan

The total cost of the project is estimated at $9,820,000, of which $7,527,000 is planned for U.S. assistance (see Table C-4), and $2,293,000 equivalent represents the GOA contribution (see Table C-5). The project will be funded in increments over a five year period (FY 1978 to FY 1982) with implementation and expenditures covering a six year period beginning in FY 1980 through FY 1984. A small contingency of $297,000 of about 4% has also been included. U.S. dollar project inputs follow:

Kabul University/FE	($000)	
Long-term advisors (96 months)	1,068	
Consultants (112 months)	1,206	
Participants (1812 months)	2,727	
Commodities	747	
Sub-Total	5,748	
Afghan Institute of Technology		
Long-term advisors (53 months)	536	
Consultants (36 months)	384	
Participants (336 months)	498	
Commodities	361	
Sub-Total	1,779	
TOTAL		$ 7,527

Table C - 1

KABUL UNIVERSITY
Faculty of Engineering
Budget & Expenditure-Afghan Year 1356
(March 21, 1977-March 20, 1976)
(In Thousands of Afghanis)

Cost Item	Regular Budget		Expansion Budget		Total	
	Budget	Expenditure	Budget	Expenditure	Budget	Expenditure
Section 100						
Salary	7,792	5,141	-	-	7,792	5,141
Section 200						
Service from other GOA offices	3,845	4,074	2,000	2,000	5,845	6,074
Section 300						
General Supplies & Mat.						
310 Materials	285	339	-	-	285	339
313 Uniform & Misc.			1,840	1,840	1,840	1,840
317 Books & Magazines			12,873	2,974	12,873	2,974
320 Transport Material	50	2	-	-	50	2
330 Agriculture Mat.	50	24	-	-	50	24
350 Office Supplies	1,100	750	-	-	1,100	750
360 Technical Supplies	365	52	2,430	1,757	2,795	1,809
360 FX. Purchases	3,111	3,111	-	-	3,111	3,111
	4,961	4,278	17,143	6,571	22,104	10,849
Section 400						
Equipment & Machinery						
410 Transportation equip.	3,000	3,000	-	-	3,000	3,000
440 Education equip.	200	83	2,430	1,123	2,630	1,206
450 Technical & lab. equip.	100	12	5,700	3,178	5,800	3,190
490 Furnishing & others	265	70	4,650	4,650	4,915	4,720
	3,565	3,165	12,780	8,951	16,345	12,116
Section 500						
Fixed Property Maintenance	2,000	-	-	-	2,000	-
Section 600						
Grant & Aid						
Grants to individuals	1,940	2,395	-	-	1,940	2,395
Total	24,103	19,053	31,923	17,522	56,026	36,575
($ 000)						
Dollar Equv. @ 43	$ 561	443	742	407	1,303	850

Table C - 2

A I T Budget & Expenditure
(In Thousand of Afghanis)

Year (Afghan Year) March 21-March 20		100 Salary	200 Service from Other GOA Offices	300 General Supply & Mat.	400 Equipment & Machinary	600 Grant aid	Total (Afs. 000)	Dollar Equivalant ($ 000)
1353	Budget	3,902	690	1,730	-	55	6,377	148
	Expenses	2,611	804	292	-	-	3,707	86
1354	Budget	3,902	454	1,965	-	55	6,376	148
	Expenses	2,931	830	634	-	-	4,395	102
1355	Budget	4,605	936	1,985	50	55	7,631	178
	Expenses	3,990	61	597	50	-	4,698	109
1356	Budget	5,477	936	2,360	50	55	8,878	207
	Expenses	4,488	677	1,061	1	-	6,227	145
TOTAL	Budget	17,886	3,016	8,040	100	220	29,262	681
	Expenses	14,020	2,372	2,584	51	-	19,027	442

Table C - 3

T M D

Recurrent Budget Analysis

(Afs. 000)

CATEGORY	ACTUAL EXP. '56	PROJECTED EXPENDITURE '57	'58	'59	'60	'61	'62	'63	'64	'65	'66	'67
KU/TE												
100 - Salary	5,141	5,141	10,781	11,501	12,221	13,421	10,541	11,381	11,381	11,381	11,381	11,381
200 - Services	4,074	4,074	4,306	4,557	5,027	5,490	5,569	5,831	6,351	6,529	6,619	6,710
300 - Supplies & Materials	4,278	4,278	4,521	7,797	8,351	6,839	6,421	6,695	10,135	10,404	10,540	10,676
400 - Equip.& Mach.	3,165	3,165	3,345	3,541	3,906	4,160	4,327	4,530	5,793	5,073	5,143	5,213
600 - Grant & Aid	2,395	2,395	2,395	2,395	2,395	2,395	2,395	2,395	2,395	2,395	2,395	2,395
Sub-Total	19,053	19,053	25,348	29,791	31,900	32,305	29,253	30,832	36,055	35,782	36,078	36,375
Inflation @ 5%		5%	10.25%	15.76%	21.55%	27.63%	34.01%	40.71%	47.75%	55.14%	62.90%	71.05%
Total for KU/TE	19,053	20,006	27,946	34,486	38,774	41,231	39,202	43,384	53,271	55,512	58,771	62,219
AIT												
100 - Salary	4,483	4,488	4,488	4,776	5,063	5,160	5,208	5,208	4,704	4,704	4,704	4,704
200 - Services	677	677	677	785	872	899	921	948	1,188	1,188	1,188	1,188
300 - Supplies	1,062	1,062	1,062	4,874	2,375	2,416	2,451	2,495	3,149	3,149	3,149	3,149
Sub-Total	6,227	6,227	6,227	10,435	8,309	8,475	8,580	8,651	9,041	9,041	9,041	9,041
Inflation @ 5%		5%	10.25%	15.76%	21.55%	27.63%	34.01%	40.71%	47.75%	55.14%	62.90%	71.05%
Total for AIT	6,227	6,538	6,865	12,080	10,100	10,817	11,498	12,173	13,358	14,026	14,728	15,465
GRAND TOTAL	25,280	26,544	34,811	46,566	48,874	52,048	50,700	55,557	66,629	69,538	73,499	77,684

Table C - 4

T M D Obligation Plan
KU/Faculty of Engineering & A I T
($000)

I T E M	FY - 78	FY - 79	FY - 80	FY - 81	FY - 82	T O T A L
Personnel Service						
Advisors:						
KU/FE	512	-	210	160	186	1,068
AIT	236	-	76	140	84	536
Consultants:						
KU/FE	784	-	262	78	82	1,206
AIT	268	-	116	-	-	384
	1,800	-	664	378	352	3,194
Participants						
KU/FE	-	538	603	620	966	2,727
AIT	-	190	133	68	107	498
	-	728	736	688	1,073	3,225
Commodities						
KU/FE	-	687	-	60	-	747
AIT	-	361	-	-	-	361
	-	1,048	-	60	-	1,108
GRAND TOTAL	1,800	1,776	1,400	1,126	1,425	7,527

Table C - 5

T M D
GOA Contribution
(Afs.000)

	FY - 79	FY - 80	FY - 81	FY - 82	FY - 83	FY - 84	T o t a l
KU/FE							
Books - New Curricula 20%		403	134	134			671
Books - Other Curricula 50%		1,935	645	645			3,225
Participants Travel		559	645	645	731	473	3,053
Participants Salary		360	480	120	120		1,080
Laboratory Supplies/Repair		473	2,193	473	473	473	4,085
New Teachers	5,640	6,360	7,080	8,280	5,400	6,240	39,000
Add Operating Expenses	655	1,367	2,695	3,623	4,227	4,966	17,533
Dormitory & Allowances	555	1,152	2,273	3,057	3,489	4,193	14,719
Library - Books - Periodicals		200	100	100	100	100	600
Total KU/FE	6,850	12,809	16,245	17,077	14,540	16,445	83,966
Dollar Equivalent @ 43	159	298	378	397	338	382	1,952
AIT							
Books - 13th Year 20%		207					207
Books - 14th Year 20%			172				172
Participants Travel		258	86	172			516
Participants Salary		60					60
Laboratory Supplies/Repair		2,514	257	257	257		3,285
Add Operating Expenses		278	500	570	626	696	2,670
Dormitory Expenses		486	875	996	1,093	1,215	4,665
New Teachers		288	576	672	720	816	3,072
Total for AIT		4,091	2,466	2,667	2,696	2,727	14,647
Dollar Equivalent @ 43		95	57	62	63	64	341
GRAND TOTAL	6,850	16,900	13,711	19,744	17,236	19,172	98,613
$	159	393	435	459	401	446	2,293

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Table C - 6

T M D Expenditure Plan
KU/Faculty of Engineering & AIT
($000)

I T E M	P M	FY - 79	FY - 80	FY - 81	FY - 82	FY - 83	FY - 84	T O T A L
Personnel Service								
Advisors:								
KU/FE	96	198	194	236	177	156	107	1,068
AIT	53	117	103	118	109	89	-	536
Consultants:								
KU/FE	112	641	432	85	48	-	-	1,206
AIT	36	244	140	-	-	-	-	384
	297	1,200	869	439	334	245	107	3,194
Participants								
KU/FE		56	415	587	645	624	400	2,727
AIT		28	118	122	112	118	-	498
		84	533	709	757	742	400	3,225
Commodities								
KU/FE		-	589	58	28	37	35	747
AIT		-	337	24	-	-	-	361
		-	926	82	28	37	35	1,108
GRAND TOTAL		1,284	2,328	1,230	1,119	1,024	542	7,527

D. Economic Analysis

The economic analysis is concerned first with a comparison of the potential impact and the costs of the KU/E only option against the KU/E plus AIT option. The impact is measured by the trained manpower available under each option. The costs considered are the training and salary costs of construction and assistant engineers under each option. This is then followed by an assessment of the overall economic costs and benefits of the project.

Manpower. The project anticipates raising the output of engineers from the Faculty of Engineering from about 120 per year to 278 per year by 1987. Of these, 67 will be construction engineers. The output of AIT will, by 1985, reach a level of 135 fourteenth year graduates. The buildup of graduates from 1981 to 1990 is shown in Table 1.

The project goal anticipates that 75 percent of construction engineers and assistant engineers will be assigned to rural areas to work. It is assumed that of those assigned, there will be a 10 percent attrition rate per year beginning the third year of work.1/

An AIT graduate would be assigned to one rural construction project, five such graduates being supervised by one university graduate. University graduates would also be assigned to one project at a time but would not have the additional supervision. These five AIT graduates and one university engineer would form a work unit equivalent to five university engineers. With the AIT option included, by 1990 there will have been 782 work unit years available for rural works. Under the university, only option the work unit years available will be reduced to 276, or 35% of the AIT inclusive option.

Training Costs

The steady state output of KU/E will be reached by the mid-1980's. At that time it is estimated that the cost of producing an engineer will be roughly Afs 200,000[2]/. The cost estimates are shown in Table 2. Salary costs are based on estimated requirements. Other operating expenses were estimated using the mean expenditure per student in the 1356 budget and extrapolating for the expanded enrollment. For books, an estimate of $20 per core course and $30 for advanced course was used. A five year book life was assumed. Equipment was assumed to have a 20 year life. Total equipment estimates were made on the basis of the 1356 expansion budget and project equipment costs per additional student. This was then extrapolated to include the entire enrollment. Dormitory costs and allowances estimates were made assuming 50 percent of the students would reside in dormitories. Depreciation for physical plant was not estimated.

1/ The attrition does not begin until the third year because it is assumed that graduates will want the on-the-job exposure offered and the project will attempt to ensure that graduates are assigned to rural areas for at least the first two years.

2/ Dollar costs in this analysis are converted at Afs 43 = $1

TABLE 1 Output of Rural Construction Work Units

Year	Assistant Engineers	Const. Engineers	Other KU/E Engineers	w/AIT Work Units (3/4)	Cumulative 10% (Attrition)	KU/E only Work Units (3/4)	Cumulative (10%) (Attrition)
1981	90	-	195	-	-	-	-
1982	90	57	182	-	-	-	-
1983	112	54	175	30.2	30.2	8.6	8.6
1984	112	56	181	21.3	51.5	8.1	16.7
1985	135	60	189	21.5	70.0	8.3	24.1
1986	135	65	205	25.2	90.4	9.0	31.5
1987	135	67	211	26.0	110.0	9.8	39.1
1988	135	67	211	26.2	127.9	10.0	46.2
1989	135	67	211	26.2	143.9	10.0	52.5
1990	135	67	211	26.2	158.4	10.0	58.3
TOTAL					782.3		276.5

TABLE 2 Yearly Cost of KU/E and AIT Operations at Steady State (000's afs)

Budget Item	KU/E Cost	AIT Cost
Salaries	11,381	864
Other Operating Expenses	18,072	751
Books & Equipment (depreciation)	9,201	1,013
Lab Supplies	473	257
Computer	1,290	-
Dormitory	11,573	1,312
Student Allowances	3,795	-
	55,785	4,297

Steady state AIT costs for assistant engineers were calculated on a similar basis. The cost per AIT graduate is only Afs 31,000, or 16% of the cost of a university graduate.

The steady state costs of a work unit (five engineers or five assistant engineers and one engineer) using the AIT option is thus 36% of the cost of the KU/E-only option.

The training and salary costs (discounted at 15%) necessary to achieve ten years of field work by the KU/E-only work unit are estimated to be Afs 1.1 million. Using the AIT work unit, the discounted costs would be Afs 623 thousand. Thus, the AIT-inclusive option is a less costly approach to field engineering by a ratio of 1:8:1. This neglects any supervisory costs such as transportation by the engineer supervisor. To the extent these are greater under the AIT-inclusive option, that ratio will decrease

Project Economic Costs

The economic costs of the project are calculated with and without foreign exchange shadow pricing, absolutely and at a 15% discount rate and with and without the AIT option (Table 3).[1/] The life of project is considered to extend until 1990 and education costs are attributable only to graduates completing training by 1989. The KU/E costs are the costs additional to the current operation. AIT costs are only those attributable to the 13th and 14th years of training.

TABLE 3 - SUMMARY OF ECONOMIC COSTS

(Afs millions)

	Undiscounted	15% discount rate
KU/E & AIT	365.9	255.4
KU/E only	283.8	196.9
KU/E & AIT (FX shadow priced)	417.5	299.7
KU/E only (FX shadow priced)	323.9	230.5

The yearly economic cost buildup of the KU/E-only and KU/E-plus AIT options are presented in Tables 4 and 5. The same buildups with foreign exchange shadow priced are presented in Tables 6 and 7.

1/ The shadow rate of exchange used is Afs 54 = $1, following the percentage increase utilized in earlier project papers. However, it is not clear that shadow pricing of foreign exchange is appropriate given Afghanistan's large foreign exchange holdings.

The economic costs of the AIT option represent only 23% of the total project costs. At the same time, including the AIT option almost triples the effective manpower levels available for rural construction work.

Project Benefits

The project is directed to acclerating the impact of rural programs on meeting the needs of the rural poor. While no direct measure of this expected impact is possible, the following types of benefits should occur with both KU/E and AIT options included.

1. Over the life of the project, 782 work unit years of rural engineering skills are anticipated to be available. If each work unit can complete, say, five buildings per year (one per engineer or assistant engineer), there will be 3,900 more rural schools and health centers, etc., over the decade of the 1980's as a result of the project. In terms of primary schools, this would equate to providing space for more than two-thirds of the expected 1990 primary school age population of perhaps three million. Of course, engineering capability is not the only constraint to rural construction, but engineering capacity will not become the binding constraint until at least that many additional buildings are constructed.

If AIT is excluded from the project, there will be only the possibility for 1380 additional rural structures rather than the 3900 with AIT. That equates to approximately 1,500,000 (or half of all primary school age children in 1990) fewer children enrolled in 1990 if all construction were in school buildings.

2. In addition to the engineers working directly on rural infrastructure project, there will be 3,189 man years of other engineering talent available for Afghanistan's development over the decade of the 1980's. These engineers will be working on irrigation and power projects, industrial projects and others. Moreover, there will be 752 construction engineer years and 1,839 assistant engineer years available over that used on rural construction projects.

3. In addition to the quantitative benefits of more rural infrastructure, the project is designed to improve qualitatively the performance of engineers. Better operating efficiency should result. Most engineers will be assigned to one of eight governmental organizations with a 1356 development budget of Afs 6.6 billion. Assuming this level of budget over the decade 1981-90 and assuming a one percent increase in efficiency in the implementation of development budget, at a 15% discount rate, a budgetary savings of Afs 250 million would result from the qualitative improvements in the engineering curriculum at KU/E and AIT. This is almost identical to the discounted economic costs of the AIT-included option. Thus, with this benefit stream alone, an internal economic rate of return of 15% would be indicated.

CONCLUSION

The KU/E and AIT project option appears to be a reasonable one. To the extent that engineering manpower is a binding constraint to development in Afghanistan in general and to rural works construction in particular, this project can have a significant impact. The percent value of economic costs of an expanded KU/E and AIT are Afs 255 million. Benefits include potential for significant increases in rural infrastructure, a large cadre of trained engineers available for other development activities, and a qualitative improvement in engineering/managerial skills which could reduce implementation costs of development activities by as much as the economic costs of project (at a 15% discount rate).

The KU/E-only option is cearly only a second best one. The AIT economic costs are only 23% of total economic costs. AIT-trained, assistant engineer based work units can have as much as 1.8:1 cost advantage over KU/E work units in terms of training costs and salaries. The effective number of rural construction engineering units will be almost three times as great with the AIT-option. Since engineering manpower constraints are likely to be more binding than financial ones, this latter ratio is the more important one. This is not to say that a KU/E-only option would be unacceptable. Including AIT will, however, make the project a far sounder one.

TABLE 4--Economic Costs (undiscounted) of Expanded Operation of KU/E Only
(afs millions)

Year	Advisors	Consultants	Participants	Equipment	Operating Expenses	Dormitory & Allowances	New Teachers Salaries	Total
1979	8.1	26.3	2.0	-	0.7	0.5	-	37.6
1980	7.5	16.9	16.5	32.1	1.9	1.1	6.7	82.7
1981	8.8	3.2	22.6	-	6.2	2.2	7.6	50.6
1982	6.3	1.8	23.8	-	5.4	3.0	8.4	48.7
1983	5.4	-	22.2	1.1	6.0	3.4	5.5	43.6
1984	3.5	-	13.7	1.1	6.8	4.1	6.2	35.4
1985	-	-	-	9.8	6.8	4.8	6.2	27.6
1986	-	-	-	-	4.9	3.7	4.5	13.1
1987	-	-	-	-	2.9	2.2	2.6	7.7
1988	-	-	-	-	1.7	1.4	1.6	4.7
1989	-	-	-52.9	-17.7	1.0	0.8	0.9	-67.9
TOTAL	39.6	48.2	47.9	26.4	44.3	27.2	50.2	283.8

TABLE 6--Economic Costs (undiscounted) of Expanded Operation of KU/E Only with Foreign Exchange Shadow Priced

(afs Millions)

Year	Advisors	Consultants	Participants	Equipment	Operating Expenses	Dormitory & Allowances	New Teachers Salaries	Total
1979	9.6	32.9	2.5	-	0.7	0.5	-	46.2
1980	8.9	21.1	20.5	40.1	2.0	1.1	6.7	100.4
1981	10.6	4.0	28.1		6.6	2.2	7.6	59.1
1982	7.4	2.2	29.6		5.7	3.0	8.4	56.3
1983	6.4	-	27.6	1.4	6.4	3.4	5.5	50.7
1984	4.2	-	17.0	1.4	7.2	4.1	6.2	40.1
1985	-	-	-	12.2	7.2	4.8	6.2	30.4
1986	-	-	-	-	5.2	3.7	4.5	13.4
1987	-	-	-	-	3.1	2.2	2.6	7.9
1988	-	-	-	-	1.8	1.4	1.6	4.8
1989	-	-	-66.1	-22.1	1.1	0.8	0.9	-85.4
TOTAL	47.1	60.2	59.2	33.0	47.0	27.2	50.2	323.9

TABLE 5--Economic Costs (undiscounted) of Expanded Operation with KU/E and AIT
(afs millions)

Year	Advisors	Consultants	Participants	Equipment	Operating Expenses	Dormitory & Allowances	New Teachers Salaries	Total
1979	12.9	36.3	3.1	-	0.7	0.5	-	53.5
1980	11.5	22.4	21.4	45.3	4.7	1.6	7.0	113.0
1981	13.2	3.2	27.3	-	7.0	3.1	8.2	62.0
1982	10.2	1.8	28.0	-	6.3	4.0	9.1	59.4
1983	8.5	-	26.3	1.1	6.9	4.5	6.2	53.5
1984	3.5	-	13.7	1.1	7.8	5.3	7.0	38.4
1985	-	-	-	11.7	7.9	6.1	7.1	32.8
1986	-	-	-	-	6.0	5.0	5.4	16.4
1987	-	-	-	-	4.0	3.5	3.5	11.0
1988	-	-	-	-	2.8	2.7	2.5	8.0
1989	-	-	-62.2	-25.0	1.5	1.4	1.3	-83.0
TOTAL	59.8	63.7	57.6	34.2	55.6	37.7	57.3	365.9

TABLE 7 --Economic Costs (undiscounted) of Expanded Operation of KU/E and AIT with Foreign Exchange Shadow Priced

(afs millions)

Year	Advisors	Consultants	Participants	Equipment	Operating Expenses	Dormitory & Allowances	New Teachers Salaries	Total
1979	15.3	45.4	3.9	-	0.7	0.5	-	65.8
1980	13.6	28.0	26.0	56.6	5.0	1.6	7.0	137.8
1981	15.7	4.0	33.9		7.4	3.1	8.2	72.3
1982	12.0	2.2	34.8		6.7	4.0	9.1	68.8
1983	10.0	-	32.7	1.4	7.3	4.5	6.2	62.1
1984	4.0	-	17.0	1.4	8.3	5.3	7.0	43.0
1985	-	-		14.6	8.4	6.1	7.1	36.2
1986	-	-			6.4	5.0	5.4	16.8
1987	-	-			4.2	3.5	3.5	11.2
1988	-	-			3.0	2.7	2.5	8.2
1989	-	-	-77.8	-31.2	1.6	1.4	1.3	-104.7
TOTAL	70.6	79.6	70.5	42.8	59.0	37.7	57.3	417.5

IV. Implementation Plans

A. Administrative Arrangements

Grantee - Full responsibility for project implementation should rest with the Ministry of Higher Education (MOHE). If AIT is transferred to the MOHE, this responsibility can be met in a straight-forward fashion. If AIT remains under the Ministry of Education (MOE), it will have to establish a coordinating mechanism between the two ministries for implementation of the project. This important link must be in place before funds are obligated and will be a condition of the Project Agreement. The GOA has appointed the Dean of the Faculty of Engineering, Kabul University as the liaison officer for the project. He has reviewed the project design and has worked closely with the project committee.

The need for additional staffing and training of faculty of both KU/E and AIT is a crucial feature of the project and is discussed in detail in other portions of this paper.

The MOHE will enter into a host country contract with an educational institution or some educational umbrella organization for the technical services, training and commodities to be financed by USAID. Preliminary study indicates U.S. services are needed for this project. Since the Ministry has had little experience in host country contracting, USAID will advise, when necessary, on selection requirements and contract award procedures. USAID will review the contract, which must be satisfactory to AID, before any award is made by the GOA. In order to accelerate the contract award process, a prequalification bidding procedure is recommended. It will be important to set out the contractor's terms of reference in the Request for Proposal (RFP). Host country contracting requirements and responsibilities should be clearly specified so the contractor knows from the outset both the potential contract requirements and who the contracting parties will be.

Contractor - Eligibility of faculty members at KU/E and AIT for training will follow standard Ministry procedures based upon seniority, years since last foreign training and other factors to be decided upon by the representatives of the GOA, the USAID training officer and by the team leader. USAID and the contract representative will have to be vigilant to ensure that criteria are not applied arbitrarily to the Faculty of Engineering, for example, but on a departmental basis in order to produce the degree level and area of specialization needed to achieve project objective balance. The selection and qualification criteria for participant training will be a condition in the Project Agreement. It will be the contractor and USAID's responsibility to closely monitor the participant selection process in order that it meets the project's training objectives. Consequently, specific academic areas as well as place of study will require the approval of the contract representative, the USAID training officer and the Dean of KU/E or the Director of AIT, as the case may be.

If necessary, the contractor would be required to sub-contract with an institution to handle the placement and processing of project sponsored trainees and participantships at a broad range of U.S. educational establishments.

The contractor will be administratively self-supporting. The home office will receive and administer funds and be responsible for overall project administration to those AID/Washington offices which are responsible for the project. In order to allow the resident advisors and consultants to focus on specific work tasks as set out in the project design, an administrative assistant in Afghanistan will be hired to take care of logistical and administrative matters. A qualified Afghan will be recruited to fill this position. The MOHE will provide office space, furniture and secretarial assistance for the team at KU/E while the MOE would, if applicable, do the same for the advisors at AIT.

The contractor, along with GOA responsible project officers. will procure project commodities. All offshore procurement will be in accordance with AID procurement regulations and will be covered in the Project Agreement. The MOHE will be responsible for obtaining all necessary authorizations for ordering and be responsible for clearing goods through customs. Procurement of commodities of a recurrent nature such as textbooks will be the responsibility of the consignee institution, but will be financed on a reimbursable basis upon arrival, under the contract. Provisions to finance the texts will be as follows:

New curricula texts --80% of actual cost
Other texts for 3rd, 4th and 5th year KU/E--50% actual cost

A consultant will be provided at the outset of the project to assist KU/E and AIT to improve their procurement capabilities.

USAID - USAID Education Officer will be the designated AID project officer and will have the responsibility for general project oversight and guidance. He will also serve to ensure that the project remains within the guidelines set by the U.S. Congress and AID policy and will periodically review the proceedings to see that the contractor is adhering to the agreed upon scope of work.

A U.S. based advisory committee consisting of two to three independent educators, will be appointed to periodically monitor the progress and help conduct evaluations of the project. Recognizing that the USAID staff does not contain personnel with experience in engineering/technical education, the advisory committee will serve to keep the project on its track and to strengthen the hand of the team leader and of the USAID.

The advisory committee would be independent of both USAID and the contractor. It would meet semi-annually and upon USAID's request, come to Afghanistan to assist in project evaluations. The committee should be jointly chosen by the USAID and AID/W.

The career guidance elements of the projects are aimed at reducing the attrition of entering students to KU/E by steering them towards professional areas in which they would probably be most successful.

Since AIT will remain within the MOE, the effective channeling of students between KU/E and AIT could be hampered without special efforts of coordination initially guided under the resident advisory team to the respective KU/E-AIT placement and guidance officers. This requires administrative arrangements between organizations in order to ensure that Afghanistan does not lose students out of the technical manpower pool.

A project consultant will help to establish a student counseling office. This office will choose faculty counsellors responsible for student career guidance and academic placement. Regular office hours for guidance activities will be instituted. It will be important to choose faculty who are committed to the guidance program; only then will the students be able to gain information which will help them plan their academic studies.

B. Implementation Description

The grant will be used to finance the technical services of long-term contract personnel, the training of GOA faculty members and administrative personnel, short-term consultancy services, ancillary supplies and project-related equipment for shops and laboratories.

Taken in combination, the project design, implementation schedule, and administrative arrangements all indicate how the various project activities are supportive and complementary.

Kabul University Faculty of Engineering (KU/E)

The purpose of the project at KU/E is to produce a number of graduates in Construction Engineering capable of working well in a rural environment and who will supervise the constructional tasks of new schools, bridges, tertiary road systems, small-scale irrigation systems and other projects of direct benefit to the rural sector.

The new core curriculum will be ready by March 1979. The curriculum approval will necessitate new syllabi and materials for the Afghan studies section (history and economics) and presumably this should not be an insurmountable problem. Beyond this, other changes and additions, and the shortening of the core from five semesters into four, to allow the students more time in their professional studies, should be easily implemented.

The project calls for students of fifth semester standing to enter the Construction Engineering curriculum in March 1980. Since these students entered the first semester in March 1978, into the then-existing core curriculum, a special one year transition core curriculum for students in the third semester, March 1979, will be established, in order to allow students to enter the professional curriculum sequence in March 1980. This requires that students be scheduled with some of the new courses such as history and economics. The same system would apply to all students of third semester standing in March 1979 except those in Architecture, which diverge from the core after two semesters.

The Construction Engineering curriculum and the minor changes in the other curricula to include management and computer courses must be developed with the faculty and accepted by them before the semester ends in June 1979. This is an important step to be monitored closely for without the new curriculum approval by June 1979, the project can not move forward. For this reason, it is important that the team leader arrives by October 1978, followed by required consultants to assist in the development of steps necessary for new curricula approval. This would then be followed by additional consultants, who would assist in the translation of the approved program into course syllabi, laboratory configurations and detailed equipment lists as well as procurement procedures. The team leader and the Dean of the Faculty of Engineering will plan for participantships and selection of academic institutions. Final approval for the first participantships, beginning August 1979, should be done by March 1979.

A major effort aimed at the improvement of the practice semester will also begin then. Its goal will be the improvement of this semester for students in the ninth semester in March 1980. The long-term professional experience advisor will work with the practical experience consultant to improve the practical training and to begin to develop informal contacts between private and public sectors as well as various ministries in order to bring faculty members closer to potential employers. The professional experience advisor will serve as a broker in the hope of placing faculty part-time and to help them gain some practical experience. This step is important if classroom instruction is to be useful and practical.

Also, the consultant and advisor will work along with the guidance consultant to build a practical experience for the students and to stimulate interest in the new curriculum among the core students.

Finally, a library consultant will assist the Faculty of Engineering library in establishing an acquisitions policy, cataloguing system and other requirements to bring the library to a functioning state by March 1980. This library is an important resource for both students and faculty members and should be assisted.

Afghan Institute of Technology (AIT)

The AIT program, to consist of a new fourteen grade curriculum, will produce assistant engineers who will assist the construction engineers in the rural areas. It will be necessary to improve and restore the basic capabilities of AIT, to install new laboratories and to extend and upgrade the faculty--particularly in the technology areas.

The AIT program will be supported under the TMD project, and will remain under the general direction of the team leader. In November 1978, the AIT long-term advisor will arrive in country to begin work there. Two additional consultants will assist in curriculum development while a mechanic specialist will begin the assessment and upgrading of inoperable or deficient equipment. This effort will help establish curriculum of the thirteenth and fourteenth years at AIT. Initially, five areas of specialization will be introduced at AIT. These will directly relate to rural based construction. The mechanical and electrical specialists will be introduced in 1982 to allow the faculty time to mature and have sufficient capability to handle all seven areas.

The continuation of the AIT program will depend on the approval of the new AIT function, thirteenth and fourteenth level addition, and the development of an assistant engineering program. Approval of the new program addition at AIT will be negotiated in the Project Agreement; Curriculum approval must come by June 1979 in order to move forward with this part of the project. Under this assumption, the consultants would continue their work. Additional consultants would then arrive to assist in specific, specialized areas in the field of technical education. Procurement of both equipment and supplies would begin to renovate AIT and equip it for the new fourteenth year curriculum.

The entry of new students into the AIT program would begin in March 1980 at the thirteenth level and the thirteenth/fourteenth levels would be operable in March 1981 with the first students graduating in December 1981.

Participant training for AIT faculty will be based on the standard criteria mentioned earlier. The first participants will depart in August 1979 for degree training and it is expected that the first group will return in time to begin teaching in September 1982. The primary faculty need is the addition of B.S. level engineers, some with practical experience to service the technical aspects of the new studies.

It is expected that three years would be required for the attainment of the B.S. degree, considering the number of faculty already available with fourteenth grade training. In order to begin sending some of the present faculty to obtain BS degrees, replacement hiring should begin 1979 to allow the August 1979 release for the first participants. Suitable candidates would be mid-ranked graduates of the Faculty of Engineering/VTE for replacement faculty at AIT.

COUNTRY	PROJECT NO.	PROJECT TITLE	DATE	ORIGINAL / REVISION #	APPROVED
Afghanistan	306-0161	Technical Manpower Development	April 8, 1978	☐ ORIGINAL ☐ REVISION # ___	

PROJECT PURPOSE (FROM PRP FACESHEET)

To produce technical manpower better able to plan, design, manage and implement small-scale rural infrastructure projects.

Experience with host country contracting indicates these duties may slip.

CPI DESCRIPTION	Date	respon-sibility
Year One (CY 1978)		
1. ProAg signed	5/78	GOA/USAID
2. Initial CPs met	9/78	GOA/CONT
3. Contract signed	9/78	GOA
4. Team leader arrives	10/78	CONT.
5. AIT advisor arrives	11/78	CONT.
6. Core curriculum revised and submitted to Fac. of Eng.	11/78	CONT./GOA
7. KU/FE accepts core changes	12/78	GOA
Year Two (CY 79)		
8. Contractor develops detailed operational plan	1/79	CONT.
9. Consultants arrive --pro-curement & curriculum design	2/79	CONT.
10. KU/FE core curriculum operational	3/79	GOA
11. Library consultant arrives	3/79	CONT.
12. Transition core curri-culum in place	5/79	GOA/CONT.
13. First participants selected	3/79	GOA/Cont./USAID
14. Construction Curric. & other changes completed	4/79	GOA/CONT
15. ProAg signed FY 79	6/79	GOA/USAID
16. KU/E curriculum changes approved by faculty *	6/79	GOA
17. New curriculum at AIT approved *	6/79 *	GOA
18. Professional experience advisor arrives	6/79	CONT.
19. Guidance-counselling consultant arrives	6/79	CONT.
20. Five design consultants depart KU/E	6/79	CONT.
21. Procurement commitment begins-Texts for KU/E third year students ordered	6/79	CONT/GOA
22. Procurement commitment begins-- Texts for 13th class at AIT ordered	6/79	CONT/GOA
23. Facilities space consultants arrive AIT/KUE	6/79	CONT.
24. Audio/visual consultant arrives ---- shared KUE/AIT	7/79	CONT. AID
25. First participants depart - KUE/AIT	8/79	GOA/Cont/US
26. Guidance-counselling mechanism established	9/79	CONT/GOA
27. Mobile Power lab consultant arrives AIT	9/79	CONT.
28. Lab utilization and refurbishing plan completed	9/79	CONT/GOA
29. Practical experience industry consultant arrives	9/79	CONT.
30. Audio-visual center operational and first methods seminar completed shared KUE/AIT	10/79	CONT/GOA
Year Three (CY 80)		
31. 14th class texts AIT ordered	1/80	CONT/GOA
32. KUE texts for fourth yr. students ordered	1/80	CONT/GOA
33. KUE labs and AIT labs refurbished	2/80	GOA
34. First texts arrive for KUE third year and AIT 13th class	3/80	GOA/CONT.

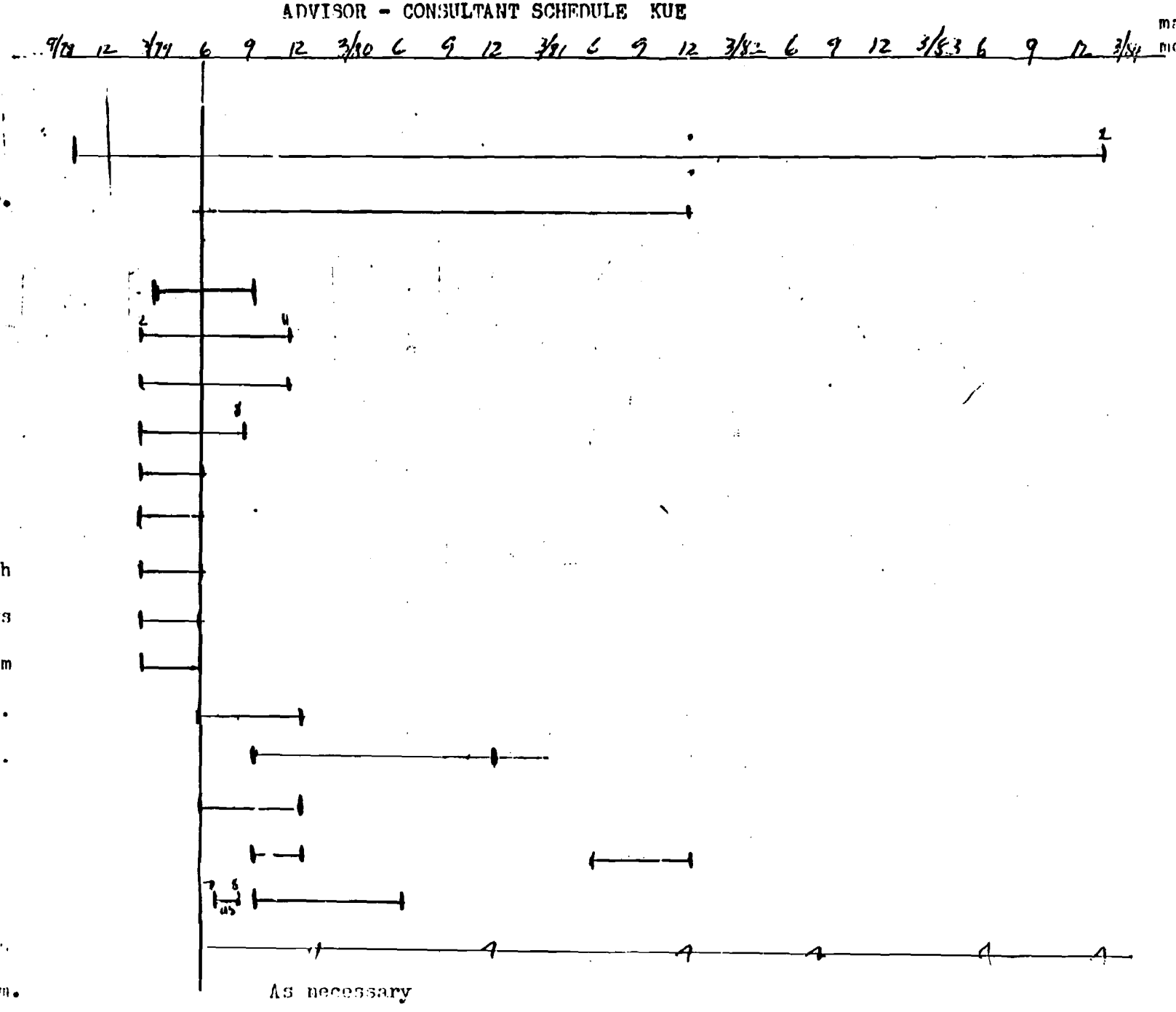
COUNTRY	PROJECT NO.	PROJECT TITLE	DATE	ORIGINAL / REVISION #	APPROVED
Afghanistan	306-0161	Technical Manpower Development	April 8, 1978	☐ ORIGINAL ☐ REVISION # ___	

PROJECT PURPOSE (FROM PRP FACESHEET)

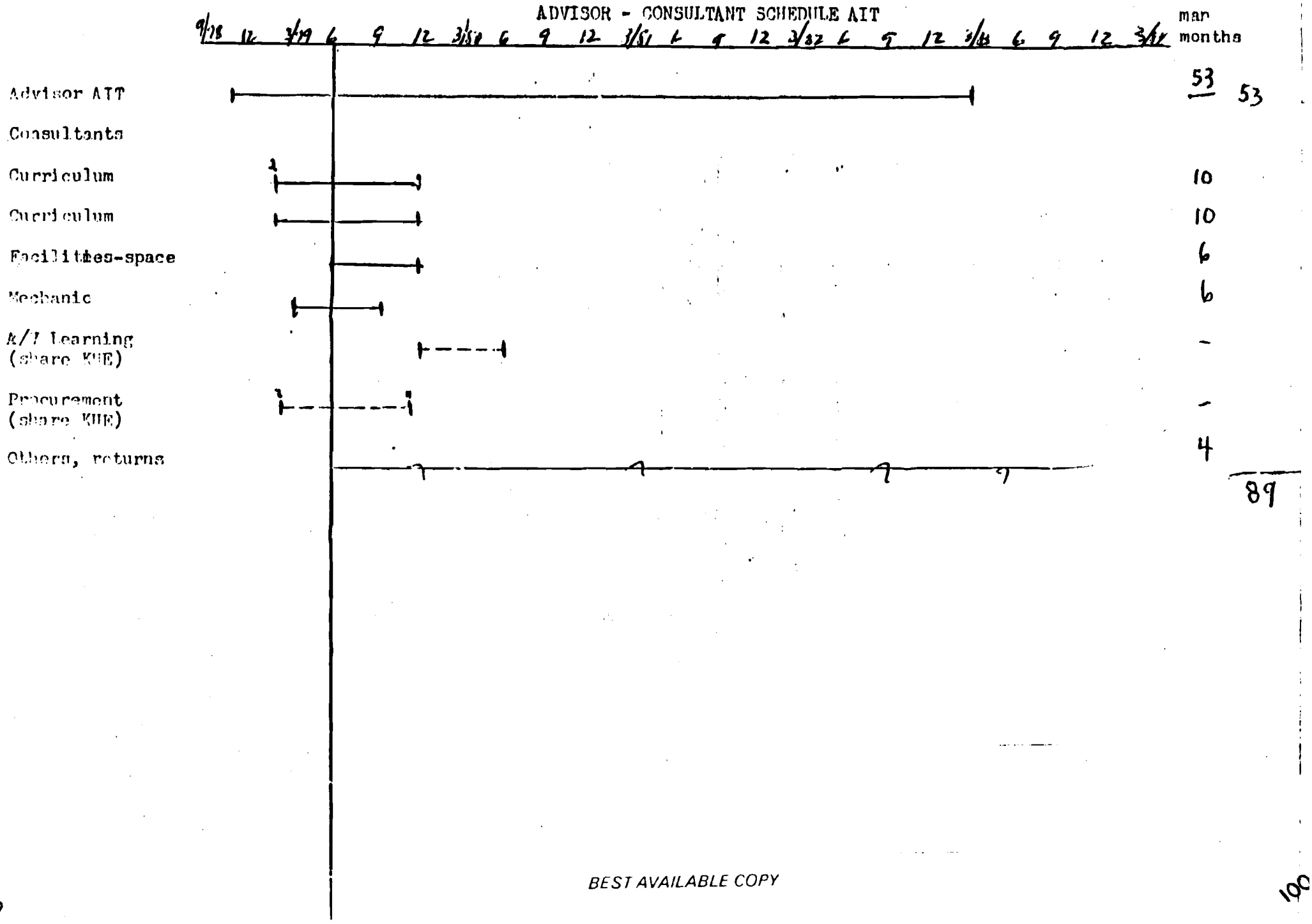
CPI DESCRIPTION

	Date	Responsibility
Year 3(contd)		
35. KUE students enroll in construction engineering option	3/80*	GOA
36. Thirteenth class begins at AIT with new "Assistant engineer curriculum"	3/80*	GOA
37. Second group of participants selected	3/80	GOA/Cont/USAID
38. Practical semester improvements operational	3/or4/80	GOA
39. ProAg signed FY 80	5/80	GOA/USAID
40. Professional experience methanisms established	8/80	GOA/CONT.
41. Practice semester fully tested at KUE	8/80	GOA/CONT.
42. Second participants depart	8/80	GOA/Cont/USAID
43. Texts received for new courses KUE	8/80	GOA/CONT.
44. KUE texts for fifth year students ordered	1/81	GOA/CONT.
Year 4		
45. First major evaluation completed	3/81	GOA/Cont/USAID
46. 14th class at AIT begins	3/81	GOA
47. Third participants selected	3/81	GOA/Cont/USAID
48. KUE fourth year texts arrive	3/81	GOA
49. 14th class texts for AIT arrive	3/81	GOA
50. ProAg signed FY 81	5/81	GOA/USAID
51. Third group of participants depart	8/81	GOA/Cont/USAID
52. First KUE MS participants begin teaching at KUE	9/81	GOA
Year 5(CY 1982)		
53. First 14th level grads at AIT	1/82	GOA
54. Fourth participant group selected	3/82	GOA/Cont/USAID
55. 5th year texts for KUE arrive	3/82	GOA/USAID
56. ProAg signed FY 82	5/82	GOA/USAID
57. Fourth participant group departs	8/82	GOA/Cont/USAID
58. First AIT participant group returns and begins teaching	9/82	GOA
59. Survival kits for construction engineers arrive	12/82	GOA
Year 6 (CY 83)		
60. First FE graduates under construction engineering option	1/83	GOA
61. Second AIT 14th level graduates	1/83	GOA
62. Second major evaluation completed	1/83	GOA/Cont/USAID
63. AIT advisor departs	3/83	CONT.
64. Third 14th year graduates at AIT	1/84	GOA
65. Second FE graduates under construction engineering option	1/84	GOA
66. Team leader departs; final report prepared	2/84	CONT.
67. Post project evaluation completed	7/84	GOA/USAID

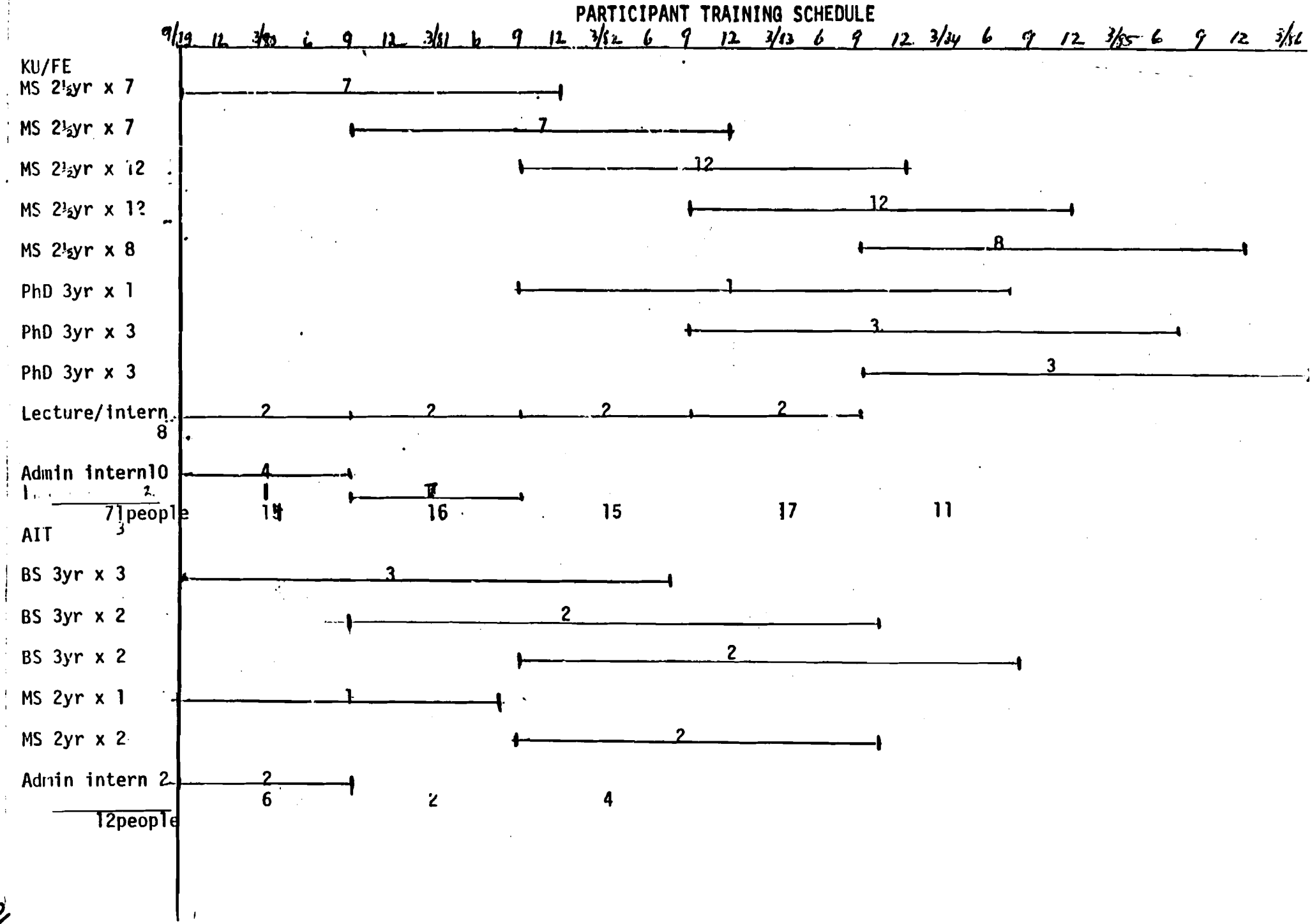
ADVISOR - CONSULTANT SCHEDULE KUE



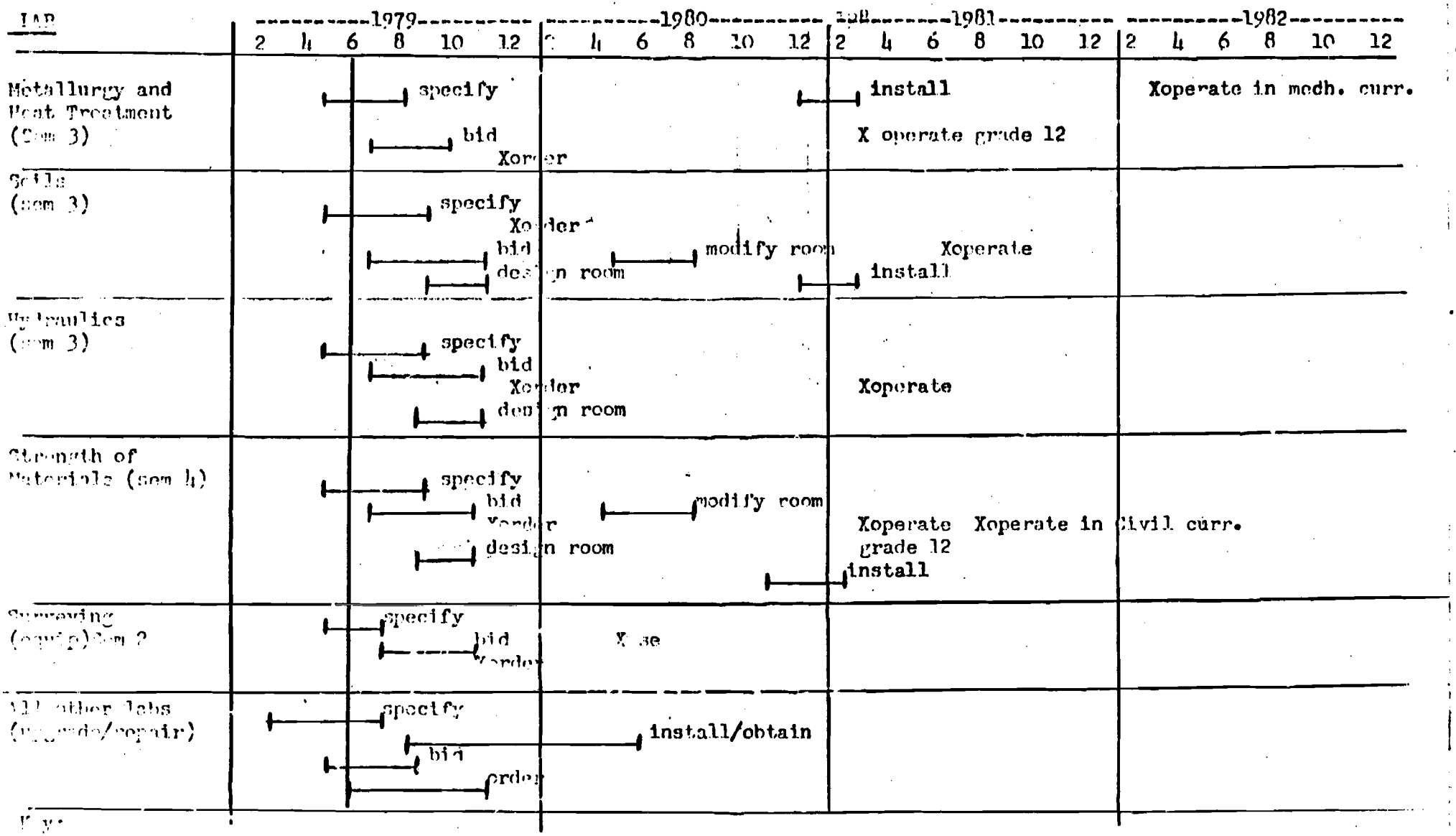
ADVISOR - CONSULTANT SCHEDULE AIT



PARTICIPANT TRAINING SCHEDULE



LABORATORY IMPROVEMENT SCHEDULE AIT



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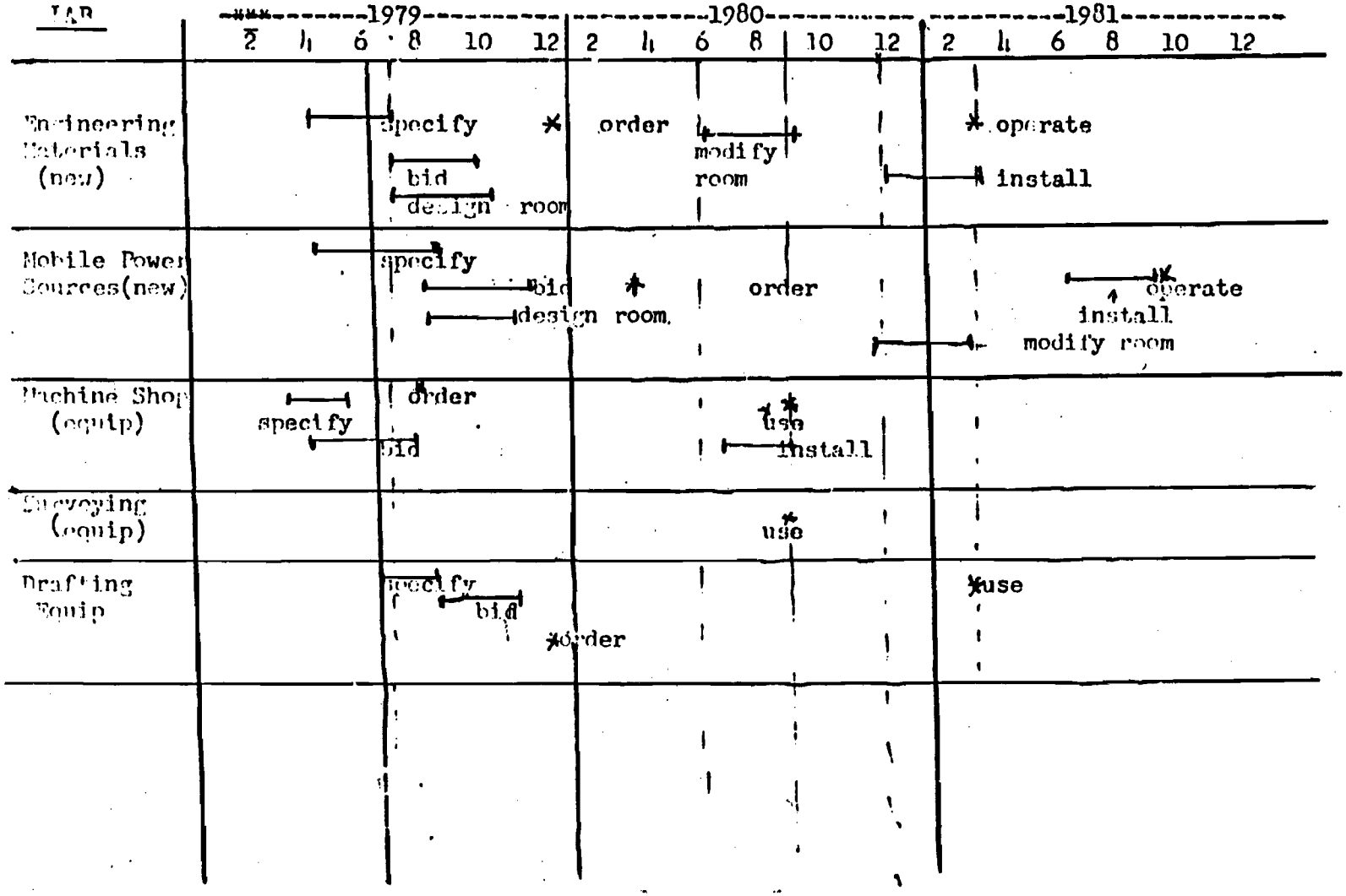
LABORATORY IMPROVEMENT SCHEDULE KUE



Key:

Specify- equipment needs- curriculum consultants

design-room- facilities consultant

modify room- GOA

E. Evaluation Plan

In addition to standard project monitoring, this plan envisages two in-depth evaluations during the project and one ex-post facto evaluation.

The first independent evaluation will be completed no later than twenty-nine months after the team leader arrives and will be designed to assess project progress in producing outputs and to determine the validity of a number of critical assumptions which underlie the project design. The evaluation, to be conducted jointly among representatives of the GOA and the U.S. advisory committee, will identify problems and recommend specific actions to overcome them. Their findings should be reflected in the FY 1981 Project Agreement.

The second evaluation will be completed no later than fifty-one months after the team leader arrives. Its main purpose will be to document implementation experience and performance. This is particularly important in view of the fact that the first group of KU graduates in construction engineering as well as two classes of AIT fourteen year graduates will have completed their studies.

Finally, the follow-up evaluation will be conducted no later than five months after the project completion date and will measure project purpose achievement and project impact at the goal level.

F. Conditions, Covenants and Exceptions

1. Conditions and Covenants:

The following are illustrative of the conditions precedent and covenants that USAID will attempt to negotiate with the Government of Afghanistan. The final text of the CPs and covenants cannot be determined until the Project Agreement is firmly negotiated after authorization of the assistance.

ARTICLE IV

Conditions Precedent to Disbursement

Section 4.1: First Disbursement: Prior to the first disbursement under the Grant, or to the issuance by AID of documentation pursuant to which disbursement will be made, for technical advisory services, the Grantee will, except as the Parties may otherwise agree in writing, furnish to AID in form and substance satisfactory to AID:

(a) A statement of the persons, in addition to the persons specified in Section 8.2, designated as representatives of the Grantee for purposes of the Agreement; together with specimen signature of each person specified in such statement;

(b) An executed contract for technical advisory services between the Ministry of Higher Education (MOHE) and a U.S. educational institution or organization;

(c) A signed protocol between MOHE and the Ministry of Education (MOE) developed to assure proper coordination between the ministries in the implementation of the Project;

(d) A detailed financial plan, including recurrent expenses, for the life of the Project relating both to Kabul University Faculty of Engineering (KU/E) and the Afghan Institute of Technology (AIT);

(e) An enrollment plan and resultant staff plan for both KU/E and AIT ensuring adequate staff growth mutually agreed to by the Grantee and AID; and

(f) Such other documents or evidence as AID may reasonably require.

Section 4.2: Additional Disbursement: Prior to disbursement under the Grant, or to issuance by AID of documentation pursuant to which disbursement will be made, for any purpose other than to finance the services in Section 4.1, and after the conditions specified in Section 4.1 have been fully met, the Grantee will, except as the Parties may otherwise agree in writing, furnish AID in form and substance satisfactory to AID:

(a) Evidence that KU/E curriculum changes have been approved and a Construction Engineering Department of KU/E has been established with authorities equal to other KU/E departments;

(b) A protocol jointly developed by the MOHE and the technical assistance contract, setting forth selection criteria for participant training;

(c) Evidence that the staff plan referred to in Section 4.1 has been implemented so that replacement instructors are available at KU/E and AIT to maintain reasonable teaching loads and so that qualified instructors are kept available for all curriculum specialties before each participant departs for training;

(d) Evidence that AIT curriculum changes have been approved before commodities are ordered for AIT or AIT participants are sent abroad for training.

ARTICLE V

Special Covenants

Section 5.1: Covenants Relating to KU/E:

(a) The Grantee agrees that priority employment for KU/E Construction Engineers will be in the rural areas.

(b) The Grantee will take steps to assure that the KU/E expansion building is completed, heated and operating efficiently.

Section 5.2: Covenants Relating to AID:

(a) The Grantee agrees that AIT fourteenth grade graduates will be granted appropriate civil service and military status for their level of education and career incentives to work in the rural sector.

(b) The Grantee will assure that AIT graduates are required to serve two years in the rural sector before they are eligible to take the concourse examination.

Section 5.3: Selection Criteria: The Grantee agrees to select individuals to be trained on the basis of the selection criteria developed and approved pursuant to Section 4.2(b). In the event that an individual is not selected for training on the basis of the selection criteria, USAID reserves the right to withhold its financing of that individual's training or if Grant funds have already been disbursed for such training, to claim a refund of such disbursement under Section D.2 of the Standard Provisions Annex.

Section 5.4. Returned Trainees: The Grantee shall take steps to assure that participant trainees, after completion of their training period, are assigned to positions of the type and level commensurate with the training received.

2. Exceptions:

Waiver of FAA 110 (a) -- Cost-Sharing Requirement

As discussed in the financial arrangements in Section III-C of this project paper, the overall financial contribution of the GOA to the project is anticipated to be about 23%. The reasons for the GOA not meeting its 25% of the costs of the program are due to the substantial procurement of services for the project from the United States. For this reason, a waiver from the cost-sharing requirements of FAA 110 (a) is recommended. Such a waiver is permissible for RDLCs such as Afghanistan. It is strongly recommended that this waiver request be approved.

AID 1020-28 (1-72)

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

ANNEX B

Life of Project:
From FY 79 to FY 84
Total U.S. Funding 7,500,000
Date Prepared: _____

Project Title & Number: Technical Manpower Development (306-0161)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes: To accelerate the impact of rural programs on meeting the basic needs of the rural poor.	**Measures of Goal Achievement:** 1. 75% of Construction Engineer and Asst. Engr. graduates assigned and working in rural sector by 1984. 2. Increased number of small scale rural development projects undertaken. 3. Construction time on these projects reduced 4. Quality of construction improved.	- project created alumni records and follow-up system - evaluation - on-site inspection of selected project - CSO records	**Assumptions for achieving goal targets:** 1. Lack of rural infrastructure is a major factor inhibiting gains in rural welfare. 2. Growing GOA capacity to allocate scarce manpower to priority areas. 3. Rhetoric of RD priorities is translated into increased allocation of technical manpower to this sector. 4. GOA will proceed with plans to build 7 new vocational-technical high schools 5. USAID assisted DST project implemented successfully. 6. Trained technical manpower with adequate site authority will be willing to work in rural areas.
Project Purpose: To produce technical manpower better able to plan, design, manage and implement small-scale rural infrastructure projects.	**Conditions that will indicate purpose has been achieved. End of project status.** 1. 24% of KU/E students enrolled in the construction and 16% in the civil eng. option. 2. 112 construction and 75 civil engineers graduated by 1984. 3. 296 assistant engineers graduated from AIT by 1984 4. 40% of engineering students now lost to technical fields redirected toward AIT and other tech. programs	- KU/E and AIT records - Evaluation	**Purpose:** 1. KU/E students will accept channeling into construction option 2. Engineering/Technical students will participate in new 13th and 14th year program at AIT.
Outputs: 1. KU/E curriculum and faculty re-oriented to include a practical engineering program. 2. AIT elevated to 14 years technical school with seven fields complementary to KU/E graduates.	**Magnitude of Outputs:** 1. KU/E: a. Core curriculum revised by 3/79 b. Construction curric. in place by 3/80 c. Other curricula revised by 3/80 d. Counselling & placement office in place by 8/80. e. Percent of faculty practicing recommended teaching approaches: 1980: 81 82 83 84 15 25 40 55 75 f. Practical experience semester tested by 8/80. g. No. of participants trained: 1980 81 82 83 84 85 86 6 8 9 9 13 15 11=71 h. 40% of faculty placed in part-time positions with ministries by 1984. i. Functioning faculty library by 3/80 2. AIT: a. 13 year curriculum functioning by 3/80 and 14 yr. functioning by 3/81. b. Faculty trained: 1980 81 82 83 84 2 1 4 3 2 = 12	- project monitoring - financial records - evaluations - contractor reports	**Assumptions for achieving outputs:** Input to Output Assumptions: 1. Faculty will support project 2. Project inputs will be delivered on timely basis.
Inputs: U.S. PM ($000) Tech services 297 3194 Participants 2160 3225 Commodities 1108 7527 GOA Salaries 1011 Commodities 312 Other Proj. Costs 970 2293 $ 9820			**Assumptions for providing inputs:**

ANNEX C

INITIAL ENVIRONMENTAL EXAMINATION

Project Location: Afghanistan
Project Title: Technical Manpower Development
Funding: FYs 1978 - 1982, $7.5 million grant
IEE Prepared By: Allan W. Strom, CDE, USAID/Afghanistan
November 9, 1977
Environmental Action Recommended: Negative Determination

Concurrence Charles R. Grader, Director, USAID/A _____

NE Bureau Approval Selig A. Taubenblatt, NE/CD _____

INITIAL ENVIRONMENTAL EXAMINATION
NARRATIVE DISCUSSION

1. Project Location: Afghanistan

2. Project Title: Technical Manpower Development

3. Funding: FY's 1978 - 1982 $7.5 million grant

4. IEE Prepared By: Allan W. Strom, CDE, USAID/Afghanistan Nov. 9, 1977

5. Action Recommended: Negative Determination

6. Discussion of Major Environmental Relationships of Project Relevant to Attached Impact Identification and Evaluation Form:

The Grant will be used to finance technical services for assisting in the development of technical manpower to carry out small scale rural infrastructure projects. Since no physical activities of any sort will be financed with the Grant funds included in this project the Grant will have no direct effect on any aspect of the environment.

Indirectly, the Grant may have a positive environmental effect. It will finance assistance to the Kabul University Engineering Faculty and the Afghan Institute of Technology. Graduates will have practical skills related to rural development and will be better able to take into consideration the environmental aspects of rural development projects.

As this project will have no adverse effects and may have some positive effects on the environment, it is recommended that an environmental assessment is not required.

IMPACT IDENTIFICATION AND EVELUATION FORM

Impact Areas and Sub-Areas	Impact Identification and Evaluation**
A. LAND USE	
1. Changing the character of the land through:	
a. Increasing the population	N
b. Extracting natural resources	N
c. Land clearing	N
d. Changing soil character	N
2. Altering natural defenses	N
3. Foreclosing important use	N
4. Jeopardizing man or his works	N
5. Other factors	
----------	None
B. WATER QUALITY	
1. Physical state of water	N
2. Chemical and biological states	N
3. Ecological balance	N
4. Other factors	
----------	None

** Use the following symbols: N - No environmental impact
L - Little environmental impact
M - Moderate environmental impact
H - High environmental impact
U - Unknown environmental impact

Impact Identification and Evaluation Form

C. ATMOSPHERIC

1. Air additives	N
2. Air pollution	N
3. Noise Pollution	N
4. Other factors	
---	None

D. NATURAL RESOURCES

1. Diversion, altered use of water	N
2. Irreversible, inefficient commitments	N
3. Other factors	
---	None

E. CULTURAL

1. Altering physical symbols	N
2. Dilution of cultural traditions	N
3. Other factors	
---	None

F. SOCIO-ECONOMIC

1. Changes in economic/employment patterns	L
2. Changes in population	N
3. Changes in cultural patterns	N
4. Other factors	
---	None

Impact Identification and Evaluation Form

G. HEALTH

1. Changing a natural environment	N
2. Eliminating an ecosystem element	N
3. Other factors	
---	None

H. GENERAL

1. International impacts	N
2. Controversial impacts	N
3. Other factors	
---	None

I OTHER POSSIBLE IMPACTS (not listed above)

---	None

Prepared By: Allan W. Strom, CDE USAID/Afghanistan
Date : November 9, 1977

Project Location: Afghanistan

Project Title: Technical Manpower Development

ANNEX D

POSITION DESCRIPTION

Chief of Party; Advisor

Scope of Work

The incumbent will provide leadership and coordination of a team of resident advisors and consultants working within the KU/FE and AIT in order to implement programs, curricula, and other activities to produce more practical, experienced, and qualified engineers and assistant engineers to perform in the rural construction programs of Afghanistan.

Specific duties

1. Serves as team leader, defines in detail the type and team of service of consultants needed to fulfill the TMD mission.

2. Serves as the primary advisor to the FE concerning the formation of and implementation of a "Construction Engineering" curriculum.

3. Assists the FE concerning the acceptance and implementation into other curricula of both social science and management engineering courses. This will necessitate evolutionary changes in the core and ME, FE, and CE curriculas.

4. Work with senior officials of KU and AIT, and officers of MOE, MOHE, and MP to secure necessary monetary support and logistic flow of commodities, in accord with the ProAg.

5. Work with Dean, FE and the Departments, FE in the approval of candidates and subject matter for participantships, while maintaining an adequate at-home faculty and making long-term faculty quality improvements to maintain quality and deversity of the engineering education at the end of the TMD project.

6. Work with AIT Advisor and Head, AIT, to implement the new curricula leading to the 14th year program in 7 fields.

7. Manages scope and level of effort of consultants to be applied to specific problem areas; defines their area of expertise and approves nominations.

Chief of Party

8. Supervises entire Afghanistan staff of 2 advisors, consultants, and other staff to ensure program objectives are met. Provides liaision with USAID and with home office. Provides progress reports and reviews and revises plan of action at least annually.

9. He should establish rapport with formal and informal groups to better assess the detail implementation needs of this project and to secure support and assistance to the end that the goals of the project may be met.

10. He shall maintain continuing contact with the various ministry offices who employ engineers and those offices which assign engineers to make maximum effective use of the graduates, particularly the construction engineers and the assistant engineers in the rural areas of Afghanistan.

Qualifications Required: The advisor should be a civil engineering graduate with senior level experience in the administration of an academic engineering institution and experience in labor intensive or small project construction (home building, rural roads, bridges, etc.). He should have past experience in project management.

Due to the significant length of time the advisor will be in Afghanistan, a just retired dean with earlier construction experience, or a just retired construction administrator with earlier academic experience should be the target for this position; anyone willing to commit to the time should be considered.

Period of Service

U.S. 9/78 - 10/78

Afgh.10/78- 2/84 Total 66 months.

POSITION DESCRIPTION

Advisor, AIT

Scope of Work

This person will provide leadership and coordination to a team of consultants working within AIT in order to design and implement new curricula leading to the production of 14th grade "Assistant Engineer" graduates. These graduates will study specific areas to enable them to perform in a rural environment on labor - intensive projects. The advisor shall also suggest and define other methods to improve the quality of the AIT graduates, teaching methods and equipment, and faculty.

He shall report to the TMD Chief of Party, and coordinate the AIT effort to the end that the goals of the TMD project will be met.

Specific duties

1. Serves as principal advisor to the AIT, and defines duties and assists in selection of consultants to the AIT Assistant Engineer Training program part of the TMD project.

2. Supervises and works with course consultants to design and, upon acceptance by AIT, implement 7 new curricula leading to the offering of two additional years post secondary education leading to the "Assistant Engineer" (technician) certificate. The curriculum shall specifically equip by training the graduates to become responsible on a day-to-day basis for one or more specific rural construction sites.

3. He shall become responsible for supervising the installation and initial operation of the laboratories and equipment needed to implement the new curricula.

4. He shall assist the Director, AIT, in defining the degree, field, and experience level of new faculty to be hired to staff the technical areas of the new curriculum.

5. He shall assist AIT in faculty development and upgrading, including a co-approval responsibility for selection of participants, slips and their topic.

6. He shall assist AIT in restoring and improving quality of their existing program and restoring to usefulness the present inoperable equipment.

7. He shall work with MOE, MOHE, and KU and AIT in developing methods of student articulation to advance the training in technical fields of those students unable to succeed in the heavy analytical demands of the engineering program at KU.

Qualifications Required:

The advisor should have had recent senior level (or leadership) experience in the development and teaching of programs aimed at the production of practical engineering technicians at the post secondary level. Prior service as a department head or area dean at a community college responsible for such a program would be ideal. He may be a graduate engineer, but this is secondary to the above.

He should be aware of the desired continuity of this advisor, necessitating a long stay in Afghanistan.

Period of Service:

11/78 - 3/83 ; 53 months.

POSITION DESCRIPTION

Advisor, Practical Experience, KU/FE

Scope of Work

This person will provide leadership to a Faculty Committee and 1 consultant to establish methods of placement and evaluation for students during their 9th semester, so that they will be employed as junior engineers to gain practical experience in their professional area. In addition, the advisor shall stimulate opportunities for the faculty to obtain assignments as design consultants in the various engineering and management offices of the ministries, both part time during academic semesters and during school vacation periods. He shall provide oversight and continuity of the student program through two student placement cycles.

He shall report to the TMD Chief of Party, and coordinate the practical experience placement effort to the end that the goals of the TMD project will be met.

Specific duties:

1. Plan, supervise, and provide iterative improvements to the practical experience semester for seniors, commending March 1980. This will include organizationcof the principal faculty into an effective committee, and will also require a thorough preliminary study of possible placement opportunities for students.

2. Organize the contact and salesmanship methodology to produce maximum placement and opportunity of students in the various locales of practice employment.

3. With the assitance of one consultant, develop means to enhance the effectiveness and measurement of the student's experience. (Note: student to be graded pass/fail, primarily dependent on his/her effort and gain from the experience. A student could "pass" even though the work experience actually offered was a "failure", but the student understood what was wrong.)

4. Work out ancillary methods for the faculty to gain part time (full time during vacation periods) assignments as consultants in actual working engineering situations, orcother assignments which would enhance the real world exposure of the faculty to engineering practice.

Advisor - Practical experience

Qualifications Required:

The person should have had significant experience as a working engineer, with civil or construction engineering a preferred speciality. The person could be a faculty member provided the practical experience element could be adequately demonstrated. He should have a high ability to work with a broad range of people and personalities so that the program may succeed in a mutitude of finite segments.

Period of Service:

6/79 thru 12/81 ; 30 months.

Practical Experience Semester KU/E

With the assistance of the practical experience advisor, one consultant will help structure the arrangements and evaluate mechanisms so that each engineering student will have a bona fide experience opportunity in their ninth (spring) semester.

It will be necessary to carefully determine employment opportunities for the students and to seek voluntary adherence by the employment offering organization to uniform standards and an effectiveness assessment, both of the student and of his assignment and arrangement.

This effort is a heavy faculty responsibility, so the consultants will work with a special committee of faculty representing the professional curriculum areas to allow them to build the competence and confidence to operate the program after its inception, structuring, and refinement.

Every attempt should be made to place maximum numbers of students outside of the urban areas so their talent can be used to assist upgrading of the rural environment. With Afghan faculty counterparts, all employment arrangements should be verified beforehand, and the need for efforts at adherence to the structure of the practicum should be carefully discussed.

The just newly organized practice semester occurs beginning March 1980. The consultant should begin his efforts September 1979, and continue through the first review and second assignment cycle ending December 1980, at which time the advisor will continue with further evaluation and refinement.

The background of the consultant should be (primarily) in civil engineering and he should currently have a responsibility for student practical experience placement (Co-op Program) at a large school of engineering. He should be thoroughly knowledgeable of the typical mutually beneficial agreement reached between the student, the employer, and the degree institution.

Period of Service: September 1979 through December 1980; 15 months.

Course Development (2) AIT

With the continuing assistance at approximately half time of the AIT advisor, two additional consultants will lead and assist the faculty at AIT in the development of seven new 14th grade sequences focussed particularly in producing assistant engineers to be functional at rural job-sites and to attain a position of responsibility between the site (or region) engineer and the job site contractor and work force. With the advisor assumed to be a generalist in engineering

training, the two specialists should be one from the field of engineering and construction and one from the field of mechanical engineering. The seven fields to be covered are grouped as follows:

Related Group A: Civil Engineering
Surveying
Soils
Site Inspection (Materials and Methods)

Related Group B: Mechanical
Electrical (power)
Site records and Management

Definition of curriculum includes the specifications of laboratory sequences and equipment needed for implementation.

The persons selected should be from a college of engineering which possesses a strong laboratory program or alternatively from a strong technician training program at a community college or technical school. Their degree level should be BS/MS Engineering. They will be required to develop both the curriculum and the methods of implementation, primarily the hands-on laboratory sequence and to define the necessary equipment.

Period of Service: Both, Feb. 1979 - Dec. 1979; ten months each.

Audio-Visual Techniques

Recognizing that during this project the faculty will be learning to teach new courses and the student body will be increasing in size, it would be helpful to the quality of education received by the student (and retained) that modern teaching aids and pre-prepared materials be used where advisable. Such techniques are particularly useful in core-level courses. After he "has the ball rolling" at KU/E, he should attempt to be of some assistance at AIT as it implements the 14th grade program.

With his basic goal, the improvement of teaching techniques through modern methods, he should be in residence one academic year at KU, and should have available the approved new curriculum before he arrives, and should come with a catalog arsenal of available materials and equipments. He should be retained for one month in the U.S. to plan and gather materials.

His background specifically should include recent experience in the development of A-V media approaches to enhancement of engineering education, either through a dean's office in a large engineering college or a central media center with specific responsibilities toward engineering education.

Period of Service: In U.S. July 1979, one month
In Afghanistan September 1979 to June 1980, nine months

Mobile Power Laboratory (KU/E)

Utilizing the syllabus approved for the new laboratory courses in the Construction Engineering Curriculum, this person shall define the equipment and training aids necessary for the full development of a practical, hands-on student experience in the laboratories (particularly the complex-for-Afghanistan mobile power laboratory).

He should expect to generate equipment needs and facilities interface during a first visit, and then to return when the equipment is available to work out its installation and to instruct in its application in the laboratory sequences.

A faculty member in agricultural engineering or mechanical engineering, with laboratory instructional experience of a similar nature is needed for this position. The same person should make a sincere commitment for two visits separated by about eighteen months.

Period of Service: Sept. 1979 to Dec. 1979, three months
June 1981 to December 1981, six months
(tentative dates)

Mechanic (1) (AIT, Primarily)

At this time there are many items of laboratory and shop equipment which are inoperable due to failures of minor parts. These equipemnts preponderately are at AIT, but some exist at KU/E. It is necessary to analyze each failed equipment and define replacements for subsequent procurement, or to ingeniously find ways to improvise to restore the apparatus to operation.

This person should be an accomplished machinist/mechanic with experience in a physics or engineering support shop in a major university. He should have working knowledge of electricity, particularly pertaining to motor power and control wiring, both single phase and three phase, 5-horsepower or less.

Period of Service: February 1979 to August 1979. Six months

Basic Science (3) KU/E

It will be necessary to assist the Faculty in improving and compressing the basic science ingredient in the core curriculum. In particular, compression occurs in both math and physics. Also, the laboratory sequences in chemistry and physics should be reviewed and strengthened with the revision of experiments and the addition of apparatus.

It is suggested that three separate individuals, one each PhD in Math, Physics, and Chemistry be recruited. The persons should have recent experiences in teaching specific basic courses designed to fit the entering engineer's needs.

Alternatively, the two consultants in Math and Chemistry might be replaced with one PhD Chemical Engineer who is demonstratedly aware of the freshman-sophomore preparation needs for engineering students in both math and chemistry. Under this scheme, several man-months might be saved at the expense of a less collegial relationship with the KU Faculty in the two areas. This approach is not preferred.

Period of Service: Feb. 1979 to June 1979, four months each

Alternatively: one physicist Feb. 1979 to June 1979, four months, and

one chemical engineer, Feb. 1979 to August 1979, six months

Management Engineering (KU/E)

He shall assist the Faculty in the definition of the new management-related courses which will appear in each of the professional curricula. The topics to be covered are related to all areas of engineering, from rural, labor intensive construction through the urban area engineering teams which are in ministries and the small industries. (Advanced techniques used in large industrial organizations are not appropriate).

The topics to be covered, in a proposed 7-credit hour sequence, include Human Resources (personnel), engineering economics and cost accounting, construction management and effective scheduling, and specifications and contracts.

He should be prepared to organize seminars on the subject for presentation to the faculty, students, or groups from various ministries. He should be recruited from a faculty of civil or mechanical engineering and should be actively teaching management to engineers. Specific experience in construction management would be desirable. (He should not be recruited from a College of Business unless the sequence taught is specifically evolved for the engineering discipline).

Period of Service: Feb. 1979 to Nov. 1979, nine months

Guidance and Counseling Consultant (KU/E)

He shall assist the faculty and in particular a faculty director and committee (representing each discipline) in establishing continuing methods and approaches to encourage students to enter disciplines where they will be most successful. In addition, he shall develop remedial and tutoring systems to assist in reducing the student attrition.

He shall suggest methods of articulation between KU/E and other institutions, primarily AIT, to allow continuation in technical training for those students unable to meet the rigorous demands of the engineering basic sciences.

He shall work closely with the Professional Experience Advisor, who shall assume the continuing oversight responsibilities at the end of the consultant's term of six months.

He shall also prepare and present seminars on his subject to both students and faculty during the fall semester.

The consultant should be an experienced student advisor, preferably for students at the freshman and sophomore levels, in a dean's office (or equivalent) which serves a large college of engineering.

Period of service: June 1979 to December 1979, six months

Procurement (KU/E and AIT)

He shall organize the procurement effort for commodities and capital equipment needed for the TMD effort at KU/E and AIT. First efforts shall be directed towards the bid cycle, later to the purchase and delivery cycle.

He shall work intensively through counterparts at both institutions and within the GOA to establish their experience and procedure in order that a workable system could evolve for the long-range benefit of the GOA and the two institutions.

He should prepare and present seminars to administrators (Department Head, and higher) and business office managers on procurement methodology.

He should be recruited from the purchasing department of a large U.S. university, and be particularly familiar with sources of supply for laboratory and shop equipment and expendables typically used by the physical sciences and engineering units of his university.

Period of service: Feb. 1979 to Nov. 1979, nine months

Facilities -- Space Utilization Consultants (2); one KU/E and one AIT.

(One consultant shall serve at KU/E, one consultant shall serve at AIT. The requirements at each institution are similar, and a singular description is set forth).

He shall assist the administration and faculty in devising methods of scheduling to make effective use of facilities and student stations. He shall also define the additions and changes, including an indication of utility services and changes needed for the new laboratory sequences in the new curricula. In some cases, he may redefine arrangements and uses of existing facilities to make space available for new laboratories. He shall make sketches and other documentation as necessary to allow the GOA to modify the spaces to accept the new equipment when it arrives.

The consultant should be an architect or engineer with experience in a university office of facilities and space programming.

An ideal combination would be one engineer and one architect, both from facilities offices, who would work as a team in concurrently meeting the space needs of the new programs in both KU/E and AIT.

Period of service (each): June 1979 to December 1979, six months

Engineering Course Consultants (3) KU/E

It will be necessary to assist the faculty in the development of details of the Construction Engineering Curriculum, in concert with the consultant on courses on management engineering. The specific new laboratory sequences include 1) Mobile Power Sources, 2) Engineering Materials, and 3) Construction Techniques.

Among the three consultants it would be helpful if one person had experience in ECPD (Engineers' Council for Professional Development) review of one or more U.S. colleges of engineering, to assist in reviewing and improving the integrity of the new and the other curricula in the FE. This person, with a desired background in civil and/or construction engineering, would remain longer than the other two consultants. The others should specifically be from the fields of mechanical engineering and architectures or architectural engineering.

Period of service: One person (ECPD, Civil Engr) Feb. 1979 to Aug. 2979, six months

Two persons (Mech. Engr., Architecture) Feb. 1979 to June 1979, four months

ANNEX E

TRAINING PLANS FOR TMD

The purpose of the TMD project is to produce technical manpower which will be better able to plan, design, manage and implement small-scale rural infrastructure projects. The Kabul University Faculty of Engineering curricula will need to be reoriented as will the Faculty in order to include a practical engineering program. The Afghan Institute of Technology will have to be elevated to a fourteen-year technical school in order to train assistant engineers to work in the rural sector. The project purpose will be achieved when both graduate and assistant engineers, with practical training experience, can work together to undertake construction in rural areas.

In order to achieve this within a reasonable time, the technical capability of the staffs of both KU/E and AIT must be upgraded. This means an increase in both the number of qualified faculty and their capabilities to implement the project.

The project proposes a training program which will improve the Faculty competence. The result: Better trained engineers and technicians and nopefully more cost effective projects.

Training is presently needed at KU/E to bring BS trained Faculty to the MS level in the following areas: Construction management, construction, civil, mechanical and electrical engineering and architecture. Additional training to the PhD level will be limited to a few faculty members in order to encourage greater proficiency in the basic sciences and to build a small senior academic staff in the major engineering areas.

The project design identifies the professional discipline of most of the participants. At this time, there is not sufficient knowledge of the specific individuals who would have an interest in becoming the management and construction faculty. Therefore, the budget is based on best estimates. The year to year decisions in this area should be a rolling one made by both the team chief and his counterpart and should be based upon the following factors:

Number of students; computed faculty need by discipline; permanent faculty needed to teach; temporary faculty availability and degree level and specific interest of eligible faculty.

Of the seventy three persons predicted to be involved in the program at KU/E, the following participantships are provided for specific enhancement of the knowledge of the individual in order that the person can fill a defined need in the Faculty:

		MY
4	Construction Management MS	10
4	Construction engineering MS	10
8	Engineering specialists MS in other areas (i.e., Mobile power, etc.)	20
2	Guidance-advisory internships (no degree)	2
1	Procurement specialist (no degree)	½
1	Practical experience intern (no degree)	1
5	Staff administrative interns (no degree)	2½
25		46

Eight professors will gain teaching or work experience in the U.S., allowing them to teach from a more enlightened perspective through one year lectureship/internships. Two librarians will be trained to provide technical expertise for the faculty library.

The balance of the participants total thirty MS, and seven candidates for the PhD in order to have high quality instruction and balance among the faculty whose main goal for the period will continue to be training students at the bachelors level. It is important to recognize that the primary source of new faculty will be its own graduates at the BS level. The projected hiring of new persons (BS is about ninety four from 1979-84) would not allow the last fifty eight to go for participantships under this program because of their late start at the Faculty. The KU/E by-laws indicate that eligibility for an MS degree requires three semesters employment; therefore, the expected population by degree would be approximately:

41% BS
47% MS
12% PhD, a reasonable balance for the job at hand.

AIT

A review of the Faculty available at AIT indicates that non-technical faculty appears sufficient and do not need upgrading through participantships. The major emphasis at strengthening the technical faculty at AIT then is to be able to offer the new assistant engineering curricula. Study of the current and past technical faculty rosters shows that there has been a decline in faculty preparation since 1972. The training needs to handle a higher level of subject matter are not enormous and are as follows: seven teachers of engineering technology at the BS level are needed. Some of the faculty with fourteenth grade education will be available for training and hiring of replacement faculty, and will be needed in 1979. Three teachers of engineering technology should be trained at the MS level to allow for some more senior staff at the Institute. A few administrative staff will be sent for specific non-degree training in procurement and administration to help overcome the bottlenecks precluding timely

commodity ordering and efficient administration. A summary of the training items is shown below:

KUE	MY
3 Teachers, basic science PhD, 3 yrs.	9
4 Construction management MS 2½ yrs	10
2 Directors of practical experience, 1 yr.	2
5 Administrative staff interns dean, asst. dean, dept. head, 6 mos.	2½
1 Procurement specialist, 6 mos	½
4 Senior faculty PhD, 3 yrs., one each Const., CE, ME, EE	12
10 Construction engineers, MS 2½ yrs.	25
8 Civil engineers MS, 2½ yrs	20
8 Mechanical engineers MS, 2½ yrs	20
8 Electrical engineers MS, 2½ yrs	20
4 Architects MS, 2½ yrs.	10
4 Discretionary MS	10
8 Visiting lectureships or working interns	8
2 Guidance-advising internships, 1 yr.	2
71	
2 Librarians, third-country	1
73	152

AIT	
7 Teachers of engineering technology BS, 3 yrs., 1 each curriculum	21
3 Teachers engineering technology, MS 2 yrs	6
1 Procurement specialist, 6 mos.	½
1 Administrative intern, 6 mos.	½
12	28

TOTAL: 85 participants 180 MY

T. M. D. Expenditure Plan
KU/Faculty of Engineering & A. I. T.

Item:		PM	FY-79	FY-80	FY-81	FY-82	FY-83	FY-84	T o t a l
Personnel Service									
Advisors:	KU/FE	96	112.3	144.4	162.8	102.5	80.9	47.3	650.2
	AIT	53	77.3	72.5	80.9	72.5	46.8	-	350.0
Consultants:									
	KU/FE	112	517.6	360.8	52.8	25.8	-	-	957.0
	AIT	36	193.9	112.5	-	-	-	-	306.4
		297	901.1	690.2	296.5	200.8	127.7	47.3	2263.6
Participants:									
	KU/FE	1812	47	361	492	519	483	297	2199
	AIT	336	24	103	103	90	91	-	411
		2148	71	464	595	609	574	297	2610
Commodities:									
	KU/FE			497	47	19	26	26	615
	AIT			303.5	18	-	-	-	321.5
				800.5	65	19	26	26	936.5
Sub Total			972.1	1954.7	956.5	828.8	727.7	370.3	5810.1
Local Support Cost			77.9	70.9	70.9	68.4	61.8	32.0	381.9
Vehicles & HHF			123.0						123.0
			200.9	70.9	70.9	68.4	61.8	32.0	504.9
Sub Total			1173.0	2025.6	1027.4	897.2	789.5	402.3	6315.0
Inflation 5% Annually			60	202.4	154.6	179.8	197.5	120.7	915
Contingency			51	100	48	42	37	19	297
Grand Total			1284	2328	1230	1119	1024	542	7527

USAID Cost
KU/FE Commodities

Annex F

New Laboratories	
Engineering Materials	$ 10,000
Mobil Powers Sources Lab.	62,000
	72,000
Upgrade existing facilities	
Surveying	12,000
Machine Shop	60,000
Drafting Instruments (140 X 60)	8,400
	80,400
Other Costs:	
4 desk calculator, 5 printers	
50 Programable Calculators	81,000
Non-Print items (i.e. microfiche)	25,000
To be determined	25,000
	131,000
Total Commodites	283,400
50% Frieght charges	141,600
	425,000
Textbooks:	
New Curricula (80% of cost for 3rd, 4th & 5th year)	
80% X 30 X 2600	63,000
Other Curricula 50% X 30 X 5000	75,000
Total book (includes frieght)	138,000
Graduation "Survival Kit"	
130 graduates 1983-84 (130 X 2 X 200)	52,000
Grand Total	615,000

USAID Cost

Annex F-2

AIT Laboratory Commodities

Metallurgy & Heat Treatment

Controlled atmosphere furnace Heat treatment furnaces (3) Quenching baths Hardness tester, Microscope & electric etcher Extensiometer - tensile test Impact tester, Izod (small)		$ 30,000

Hydraulics

Charnel flow flume, pump, weir - 10,000 Misc. pumps, drivers, impact pump siphon system, misc. 10,000		
Total		$ 20,000

Strength of Materials

Compression - tensile tester, 50,000#	20,000	
Vibration generator, 1000# (Fatigue tester)	5,000	
Impact tester	3,000	
Creep tester	5,000	
Miscellaneous	7,000	
Total		$ 40,000

Soils

Unknown	$ 27,000

General Science

Lecture demonstration equipment to show physical properties of acoustics, light, friction, motion dynamics. 6 apparatus @ 250	$ 1,500

Drafting

200 dwg sets incl. ink instruments @ 40 200 dwg sets - pencil @ 20 200 ea T square, rule, triangles @ 20 total	$ 16,000

Surveying		
Chains, tapes, stadia rods, 20 sets @ 40		$ 10,800
Transits 10 @ 1,000		
Electrical Laboratory		
1 pulse/wave generator @ 1000		
1 Oscilloscope @ 1000		2,000
Michine Shop		
2 Bridgeport Vactical Mills @ 7,000		
1 tool grinder @ 3,000		
Rebuild headstocks in US Factory 50,500		20,000
Foundry		
Furnace, 2000F, 18" chamber @ 2,000		
Pyrometer - 300, core dryer - 1500		
Muller Mixer 4000, Misc. equipment 1500		9,300
Welding Shop		
Pedestal grinder 600		
Flex shaft grinder 1000		
150 amp. Heliarc, bottles,,torch 4,500		
Gas torches, cut torches, bottles 500		
Arc welder, 300 amp. 2,000		8,600
Upgrade Existing Facilites		
English (repair)	800	
Physics (replacement)	1,000	
Chemistry (1st year)	3,500	5,300
Total Commodites		190,500
Estimated Frieght @ 50%		95,000
		285,500
Reimbursement for Book Procurement		
Thirteem Grade - 1200 books x 20 x 80% (includes freight)		20,000
Fourteem Grade - 1000 books x 20 x 80% (includes freight)		16,000
Total Books		36,000
GRAND TOTAL		$ 321,500

ANNEX G

PROJECT CHECKLIST

A. GENERAL CRITERIA FOR PROJECT

1. App. Unnumbered; FAA Sec. 653(b)

(a) Describe how Committees on Appropriations of Senate and House have been or will be notified concerning the project;
(b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than $1 million over that figure plus 10%)?

For responses to the checklist, please see ANNEX G-(B)

2. FAA Sec. 611(a)(1). Prior to obligation in excess of $100,000, will there be (a) engineering, financial, and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?

3. FAA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?

4. FAA Sec. 611(b); App. Sec. 101. If for water or water-related land resource construction, has project met the standards and criteria as per the Principles and Standards for Planning Water and Related Land Resources dated October 25, 1973?

5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed $1 million, has Mission Director certified the country's capability effectively to maintain and utilize the project?

6. FAA Sec. 209, 619. Is project susceptible of execution as part of regional or multilateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs. If assistance is for newly independent country, is it furnished through multilateral organizations or plans to the maximum extent appropriate?

7. FAA Sec. 601(a); (and Sec. 201(f) for development loans). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.

8. FAA Sec. 601(b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).

9. FAA Sec. 612(b); Sec. 636(h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized to meet the cost of contractual and other services.

10. FAA Sec. 612(d). Does the U.S. own excess foreign currency and, if so, what arrangements have been made for its release?

11. ISA 14. Are any FAA funds for FY 78 being used in this Project to construct, operate, maintain, or supply fuel for, any nuclear powerplant under an agreement for cooperation between the U.S. and any other country?

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria

a. FAA Sec. 102(c); Sec. 111; 281a. Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production, spreading investment out from cities to small towns and rural areas; and (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions?

b. FAA Sec. 103, 103A, 105, 106, 107. Is assistance being made available: (include only applicable paragraph -- e.g., a, b, etc. -- which corresponds to source of funds used. If more than one fund source is used for project, include relevant paragraph for each fund source.)

(1) (103) for agriculture, rural development or nutrition; if so, extent to which activity is specifically designed to increase productivity and income of rural poor; (103A) if for agricultural research, is full account taken of needs of small farmers;

(2) (104) for population planning or health; if so, extent to which activity extends low-cost, integrated delivery systems to provide health and family planning services, especially to rural areas and poor;

(3) (105) for education, public administration, or human resources development; if so, extent to which activity strengthens nonformal education, makes formal education more relevant, especially for rural families and urban poor, or strengthens management capability of institutions enabling the poor to participate in development;

(4) (106) for technical assistance, energy, research, reconstruction, and selected development problems; if so, extent activity is:

(a) technical cooperation and development, especially with U.S. private and voluntary, or retional and international development, organizations;

(b) to help alleviate energy problem;

(c) research into, and evaluation of, economic development processes and techniques;

(d) reconstruction after natural or manmade disaster;

(e) for special development problem, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance;

(f) for programs of urban development, especially small labor-intensive enterprises, marketing systems, and financial or other institutions to help urban poor participate in economic and social development.

(5) (107) by grants for coordinated private effort to develop and disseminate intermediate technologies appropriate for developing countries.

c. FAA Sec. 110(a); Sec. 208(e). Is the recipient country willing to contribute funds to the project,

and in what manner has or will it provide assurances that it will provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or has the latter cost-sharing requirement been waived for a "relatively least-developed" country)?

d. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing, or is the recipient country "relatively least developed?"

e. FAA Sec. 207; Sec. 113. Extent to which assistance reflects appropriate emphasis on; (1) encouraging development of democratic, economic, political, and social institutions; (2) self-help in meeting the country's food needs; (3) improving availability of trained workerpower in the country; (4) programs designed to meet the country's health needs; (5) other important areas of economic, political, and social development, including industry; free labor unions, cooperatives, and Voluntary Agencies; transportation and communication; planning and public administration; urban development, and modernization of existing laws; or (6) integrating women into the recipient country's national economy.

f. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civic education and training in skills required for effective participation in governmental and politicipation in governmental and political processes essential to self-government.

g. FAA Sec. 201(b)(2)-(4) and -(8); Sec. 201 (c): Sec. 211(a)(1)-(3) and -(8). Does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities and self - sustaining economic growth; or of educational or other institutions directed toward social progress? Is it related to and consistent with other development activities, and will it contribute to realizable long-range objectives? And does project paper provide information and conclusion on an activity's economic and technical soundness?

h. FAA Sec. 201(b)(6); Sec. 211 (a)(5),(6). Information and conclusion on possible effects of the assistance on U.S. economy, with special reference to areas of substantial labor surplus, and extent to which U.S. commodities and assistance are furnished in a manner consistent with improving or safeguarding the U.S. balance-of-payments position.

A. 1(a) The committees have been notified in accordance with normal agency procedures

(b) Yes

2(a) Yes

(b) Yes

3. Not applicable

4. Not applicable

5. Not applicable

6. The assistance is not directed at a regional problem and the project will not encourage any regional programs. Afghanistan is not a newly independent country.

7. The assistance is a grant and will help to improve the technical efficiency of manpower involved in the construction of Afghanistan's infrastructure. Expanded capability among engineers and high level technicians should result in improved technical efficiency of industry and ministries to sustain a large-scale construction effort. Graduates under this project will assist both the private and public sector of the Afghan economy. This project will not impede development of free labor unions.

8. The GOA will be encouraged to contract with an American educational organization to provide technical services for this assistance. It is expected that equipment and training will be furnished by U.S. organizations.

9. See the financial analysis in the Project Paper. The GOA will pay for a substantial portion of local currency expenses of the project. The assistance will be expended on foreign exchange procurement and technical services.

10. Afghanistan is not an excess currency country.

11. No such activity is financed under this assistance.

B. 1(a) By producing engineers and assistant engineers able to deliver better planned, better designed and better implemented rural construction projects, the project will benefit the rural population. Since the project will produce more cost-effective technical manpower with skills to assist them in selecting and designing appropriate projects to meet village needs, the projects will then be considerably more responsive to exact local conditions.

2. The project, to be funded under Section 105 of the FAA, helps to strengthen the formal technical education of engineers and assistant engineers with the production of more practical skills in their specialties. Through development of construction management skills before the employees enter GOA institutions related to rural development, the project will have immediate impact, along with another AID financed management training activity, on strengthening the management capabilities of these institutions to better provide infrastructural and social service projects to Afghanistan's poor majority.

C. While Afghanistan is a "relatively least-developed country", the GOA has indicated its willingness to contribute approximately twenty-three per cent of total project cost to support local costs of the project. The GOA will give such assurances in the project agreement.

D. This is not a capital assistance project.

E. The assistance will improve the availability of well-trained, practical technical manpower in Afghanistan responsible for infrastructure and social service projects for Afghanistan's poor majority. This impacts upon health, education, agriculture and rural development. The training under this project is equally available to women. See the technical analysis for details of the project.

F. The assistance recognizes the needs of the rural population. It attempts to skew some engineers and high-level technicians to small scale rural construction projects. Through greater access to markets, better health service delivery and through schools better reflecting curricular needs, the project outputs will indirectly assist the poor to achieve greater production and income goals. These projects are part of the essential services to primary productive processes and for social purposes. The project attempts to marshall intellectual resources in higher education to provide a more practical training ground for the country's technical manpower. For further details, see the Project Paper.

G. See response to E. This assistance does relate to other development activities to eventually train practical, skilled manpower to assist Afghanistan in its development program toward greater magnitude, efficiency and relevance of construction.

H. It is expected that the equipment assistance and technical assistance will be financed through a U.S. education institution. No adverse effect on the U.S. balance of payments is anticipated.

ANNEX G

STANDARD ITEM CHECKLIST

A. Procurement

1. FAA Sec. 602. Are there arrangements to permit U.S. small business to participate equitably in the furnishing of goods and services financed?

2. FAA Sec. 604(a). Will all commodity procurement financed be from the U.S. except as otherwise determined by the President or under delegation from him?

3. FAA Sec. 604(d). If the cooperating country discriminates against U.S. marine insurance compaines, will agreement require that marine insurance be placed in the U.S. on commodities financed?

4. FAA Sec. 604(e). If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity?

5. FAA Sec. 603(a). Will U.S. Government excess personal property be utilized wherever practicable in lieu of the procurement of new items?

6. MDA Sec. 901(b). (a) Compliance with requirement that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S. flag commercial vessels to the extent that such vessels are available at fair and reasonable rates.

7. FAA Sec. 621. If technical assistance is financed, will such assistance be furnished to the fullest extent practicable as goods and professional and other services from private enterprise on a contract basis? If the facilities of other Federal agencies will be utilized, are they particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs?

For responses to the checklist, please see attached ANNEX G-(A)

8. International Air Transport. Fair Competitive Practices Act, 1974

   If air transportation of persons or property is financed on grant basis, will provision be made that U.S.-flag carriers will be utilized to the extent such service is available?

B Construction

1. FAA Sec. 601(d). If a capital (e.g., construction) project, are engineering and professional services of U.S. firms and their affiliates to be used to the maximum extent consistent with the national interest?

2. FAA Sec. 611(c). If contracts for construction are to be financed, will they be let on a competitive basis to maximum extent practicable?

3. FAA Sec. 620(k). If for construction of productive enterprise, will aggregate value of assistance to be furnished by the U.S. not exceed $100 million?

C. Other Restrictions

1. FAA Sec. 201(d). If development loan, is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter?

2. FAA Sec. 301(d). If fund is established solely by U.S. contributions and administered by an international organization, does Comptroller General have audit rights?

3. FAA Sec. 620(h). Do arrangements preclude promoting or assisting the foreign aid projects or activities of Communist-Bloc countries, contrary to the best interests of the U.S.?

4. FAA Sec. 636(i). Is financing not permitted to be used, without waiver, for purchase, long-term lease, or exchange of motor vehicle manufactured outside the U.S. or guaranty of such transaction?

5. Will arrangements preclude use of financing:

a. FAA Sec. 114. To pay for performance of abortions or to motivate or coerce persons to practice abortions, to pay for performance of involuntary sterilization, or to coerce or provide financial incentive to any person to practice sterilizations?

b. FAA Sec. 620(g). to compensate owners for expropriated nationalized property?

c. FAA Sec. 660. to finance police training or other law enforcement assistance, except for narcotics programs?

d. FAA Sec. 662. for CIA activities?

e. App. Sec. 103. to pay pensions, etc., for military personnel?

f. App. Sec. 105. to pay U.N. assessments?

g. App. Sec. 106. to carry out provisions of FAA Sections 209(d) and 251(h)? (transfer to multilateral organization for lending).

h. App. Sec. 112. To finance the export of nuclear equipment, fuel, or technology or to train foreign nationals in nuclear fields?

i. App. Sec. 501. to be used for publicity or propaganda purposes within U.S. not authorized by Congress?

STANDARD ITEM CHECKLIST

A. 1. Procurement of goods and services will be pursuant to established AID regulations.

2. Yes

3. Yes. An appropriate provision will be included in the Agreement.

4. Not applicable.

5. Consideration will be given to the use of excess property when practical.

6. Provisions will be included in the Agreement for complying with this section with respect to the commodities financed under this assistance.

7. Technical assistance, to the greatest extent practical, will be from private enterprise on a contract basis.

8. Yes.

B. 1. N/A

2. N/A

3. N/A

C. 1. N/A

2. N/A

3. Yes

4. Financing is not permitted to be used for such purposes.

5. a. Yes
b. Yes
c. Yes
d. Yes
e. Yes
f. Yes
g. Yes
h. Yes
i. Yes

Department of State

13 AMERICAN EMBASSY KABUL

FROM: STATE
NBR: 287433
DATE RECD: 12-3-77

EMB DIST: UNCLASSIFIED

AMB DCM ECON ADM CHRON 9 Dec

chron EDU-TMD

ACTION TO:
INFO TO:
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TO
HRP
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HSAI
PTY
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RF

Action Due: 12/7

Action Taken:

By:

R 020037Z DEC 77
FM SECSTATE WASHDC
TO AMEMBASSY KABUL 2292
BT
UNCLAS STATE 287433

AIDAC

E.O. 11652: N/A

TAGS:

SUBJECT: COMMENTS ON REPORT BY CONSULTANTS ON TECHNICAL MANPOWER DEVELOPMENT PROJECT AT KABUL UNIVERSITY FACULTY OF ENGINEERING (306-0151)

REF: SUBJECT REPORT

1. DURING AID/W TDY OF MRO STANLEY HANDLEMAN, PROJECT COMMITTEE FOR TECHNICAL MANPOWER DEVELOPMENT (TMD) PROJECT, REVIEWED RECENT (OCT. 20, 1977) REPORT OF CONSULTANTS FROM ACADEMY OF EDUCATIONAL DEVELOPMENT (AED). WE UNDERSTAND THAT MISSION IS PREPARING PP TO LARGE EXTENT REFLECTING RECOMMENDATIONS CONTAINED IN REPORT. WE HOPE COMMENTS OUTLINED BELOW, WHICH ARE BASED ON PROJECT COMMITTEE REVIEW (WHICH HANDLEMAN AND CONSULTANTS ATTENDED) WILL BE HELPFUL TO YOU IN FINAL PREPARATION OF PP.

2. OVERALL, WE SHARE MISSION'S HIGHLY FAVORABLE REACTION TO REPORT. PROJECT REVIEW COMMITTEE WAS PARTICULARLY IMPRESSED WITH RECOMMENDATIONS FOR: (A) DEVELOPMENT OF CURRICULUM FOR "NEW" RURAL-ORIENTED PRACTICAL-TYPE CONSTRUCTION ENGINEERING, (B) PROVISION FOR PRACTICAL ENGINEERING TRAINING THROUGH ORGANIZATION LIKE OECSAR, I.E.) POTENTIAL OFFERED BY INCORPORATION OF AFGHANISTAN INSTITUTE OF TECHNOLOGY (AIT) AS TWO-YEAR INSTITUTION WITHIN KU AND UTILIZATION OF AIT FACILITIES BY VTE, (D) REALISTIC APPRAISALS OF NEEDS FOR LONG-TERM CONSULTANT SERVICES IN NO MORE THAN THREE AREAS, COMPLEMENTED BY SERVICES OF SHORT-TERM ADVISORS, AND (E) EQUALLY REALISTIC APPRAISAL OF MANNER IN WHICH ATTITUDE TOWARD PURPOSE OF PARTICIPANT TRAINING MUST BE CHANGED TO ASSURE INCREASED PROFESSIONAL OUTLOOK. AT SAME TIME, WE ARE PARTICULARLY CONSCIOUS OF NEED FOR EXPEDITIOUS PROGRESS IN PROPOSED IMPLEMENTATION SCHEDULE OF THIS PROJECT, IN ORDER TOASSURE ACHIEVEMENT OF PROGRESS IN TIMELY FASHION.

3. AS DISCUSSED DURING THE PROJECT COMMITTEE REVIEW, WE LOOK FORWARD TO RECEIPT SHORTLY OF THE MISSION PP. WE HOPE THE PP CAN ADDRESS ISSUES OUTLINED BELOW WITH SPECIAL CARE. WHERE APPROPRIATE WE HAVE ATTEMPTED TO OUTLINE THE DIMENSIONS OF THESE ISSUES, TO HELP YOU IN DEALING WITH THEM.

ANALYTIC ISSUES URGING SPECIAL ATTENTION:

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Department of State

AMERICAN EMBASSY KABUL

INCOMING TELEGRAM

FROM STATE
NER: 077433

UNCLASSIFIED
Classification

(A) IMPLICATIONS FOR AFGHANISTAN TECHNICAL MANPOWER REQUIREMENT; WE HOPE THAT THE PP WILL EXAMINE THE IMPLICATION OF THE OUTPUTS OF THIS PROJECT ONATHE COUNTRY'S TECHNICAL MANPOWER REQUIREMENTS. HOWEVER, WE RECOGNIZE THAT THIS CANNOT BE DEVELOPED WITH ANYTHING RESEMBLING DETAILED ACCURACY, GIVEN OVERALL LACK OF DATA. ONE APPROACH, HOWEVER, MIGHT BE TO ANALYZE THE NUMBERS, TYPES, ETC. OF SMALL RURAL (CONSTRUCTION) PROJECTS WHICH MAY BE SERVED BY THE ADEQUATELY TRAINED ENGINEERS PRODUCED THROUGH EFFORTS OF THIS PROJECT. THIS MIGHT BE ANALYZED WITH ESTIMATION OF NEEDS (FOR THESE) AND, AS A MINIMUM, PROVIDE SOME INDICATION OF ANTICIPATED RESPONSE VIS-A-VIS AT LEAST IMMEDIATELY DISCERNIBLE NEEDS.

(B) ECONOMIC ANALYSIS - WE ALSO RECOGNIZE THAT DEVELOPMENT OF SIGNIFICANT ECONOMIC ANALYSES FOR THIS PROJECT IS LIKELY TO POSE PROBLEMS, GIVEN THE UNCERTAINTY OF LONG-RANGE PREDICTIONS REGARDING OUTPUTS OF THIS PROJECT. PERHAPS AN APPROACH SIMILAR TO THAT OUTLINED IN THE PREVIOUS SECTION MAY BE APPROPRIATE HERE ALSO. THAT IS TO SAY, AN EXAMINATION, IN ECONOMIC TERMS, OF V OGRAMS (BENEFITTING THE RURAL POOR) WHICH SHOULD BE STRENGTHENED BY THE IMPROVED AND INCREASED SUPPLY OF TECHNICAL MANPOWER PRODUCEDETHROUGH THIS PROJECT MAY HELP LEAD TO THE MOST USEFUL TYPE OF ECONOMIC ANALYSIS.

5. IMPLEMENTATION PLANS AND ANALYSES :

THERE ARE A NUMBER OF QUESTIONS CRITICAL TO IMPLEMENTATION OF THIS PROJECT. LINKED TO THIS IS THE NEED FOR INSTITUTIONAL ANALYSIS, THAT IS, EXAMINATION OF THE CAPACITY OF KABUL UNIVERSITY, BOTH AS THE PARENT BODY OF THE ENGINEERING FACULTY AND AS THE INSTITUTION TO CARRY OUT THIS PROJECT. WE HOPE YOU WILL BE ABLE TO ADDRESS ADEQUATELY QUESTIONS ON (A) IMPLICATIONS FOR ASSURANCE OF FACULTY QUALITY INHERENT IN MOVING FROM 80 TOHQQUW FACULTY MEMBERS, (B) IMPLICATIONS RAISED BY THE NEED FOR SIZEABLE ADDITIONAL OPERATIONAL SUPPORT FOR THE ENGINEERING FACULTY, (C) IMPLICATIONS OF THE ISSUE (TOUCHED UPON IN THE REPORT) OF THE NEED FOR ADEQUACY OF FACULTY SALARIES AND BENEFITS. ANOTHER AREA NOTED AS CRITICAL TO PROJECT IMPLEMENTATION IS THE OPERATION OF CECSAR, OR AN ORGANIZATION LIKE IT. WE HOPE THAT YOU WILL BOTH ANALYZE THE CAPACITY OF CECSAR AND ASSURE THAT ADEQUATE PROVISION FOR OPERATION OF SUCH AN ORGANIZATION IS BUILT INTO THE IMPLEMENTATION PLAN.

6. IMPLEMENTATION ACTIVITIES: THERE ARE SEVERAL OTHER IMPLEMENTATION ACTIVITIES WHICH SHOULD BE CAREFULLY AND THOROUGHLY DELINEATED.

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Department of State

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FROM: STATE

NBR: 247433

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A) ONE OF THESE IS THE AREA OF PARTICIPANT TRAINING. THE REPORT NOTES THAT THE CURRENT ATTITUDES TOWARD PARTICIPANT TRAINING DOES NOT JIBE WITH INTENDED, PRACTICAL. UTILIZATION FOR THE "NEW" CURRICULUM. WE HOPE THE IMPLEMENTATION PLAN WILL PROVIDE FOR MODIFYING THAT ATTITUDE. AS PART OF THIS, THE IMPLEMENTATION PLAN SHOULD DETAIL HOW TRAINING COMPONENTS ARE TO BE CONTROLLED AND EVALUATED.

(B) THERE IS SIMILAR CONCERN FOR COMMODITY PROVISION AND UTILIZATION. THIS REFERS BOTH TO SUCH ITEMS AS BOOKS AND REFERENCE MATERIAL AS WELL AS TO SUCH THINGS AS THE "SMALL-SCALE" COMPUTER NOTED IN THE REPORT. WE HAVE TWO CONCERNS ON BOTH COUNTS. ONE IS ASSURANCE OF ACQUISITION AND DISTRIBUTION CAPACITY AND THE OTHER IS FOR APPROPRIATE UTILIZATION OF THE COMMODITIES, IN ACCORD WITH THE PURPOSE OF THE PROJECT. THE IMPLEMENTATION PLANS SHOULD DETAIL TREATMENT OF BOTH ELEMENTS.

(C) A FINAL BUT CRITICAL PART OF THE IMPLEMENTATION PLAN SHOULD BE THE ASSURANCE OF UTILIZATION OF MAJORITY KC ENGINEERING GRADUATES IN THE RURAL AREA. ANTICIPATED MEANS OR METHODS TO HELP SECURE THIS SHOULD BE OUTLINED. FOR EXAMPLE WE UNDERSTAND THAT PUBLIC SECTOR CIVIL SERVICE JOB APPLICANTS ARE ASSIGNED TO JOBS THROUGH A CSO PLACEMENT SYSTEM. AS A MINIMUM YOU SHOULD ASSURE THAT THESE PLACEMENT PROCEDURES WILL BE MODIFIED, IF NECESSARY, TO ASSURE THAT GRADUATES CAN BE ASSIGNED TO RURAL CONSTRUCTION PROJECTS.

7. PROJECT ARRANGEMENTS: IN ADDITION TO ANTICIPATED IMPLEMENTATION ACTIVITIES, PROJECT ARRANGEMENTS SHOULD BE SPELLED OUT IN CONSIDERABLE DEPTY. AMONG THOSE ARE THE ADVISABILITY (AND POTENTIAL ARRANGEMENTS) FOR HOST COUNTRY CONTRACTING. LINKED TO THIS IS THE POSSIBILITY OF ESTABLISHING SOME MECHANISM LIKE A THIRD-PARTY ADVISORY COMMITTEE IN THE U.S. THIS HAS BEEN MENTIONED AS A BENEFICIAL POSSIBILITY. THESE AND OTHER POTENTIALS OUGHT TO BE THOROUGHLY REVIEWED, TO ASSURE ADEQUATE INDICATIONS OF GOA/MISSION'S INTENTIONS.

8. AS NOTED, THE ABOVE QUESTIONS HAVE BEEN DEVELOPED TO HELP YOU IN PP PREPARATION. WE LOOK FORWARD TO RECEIPT OF THE PP AND WILL BE IN TOUCH WITH YOU SHORTLY THEREAFTER, IF ANY ADDITIONAL CONCERNS SURFACE PRIOR TO NEAC REVIEW.
VANCE
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