

UNSCAG 103

**FILE COPY**

UNCLASSIFIED

**FILE COPY**

DEPARTMENT OF STATE  
AGENCY FOR INTERNATIONAL DEVELOPMENT  
WASHINGTON, D. C. 20523

PROJECT PAPER

NEPAL

Trail Suspension Bridges (367-0119)

August 31, 1979

UNCLASSIFIED

## TABLE OF CONTENTS

	<u>Pages</u>
<b>PART I - <u>INTRODUCTION:</u></b>	
A. Face Sheet .....	1
B. Table of Abbreviations.....	2
C. General Data.....	3
D. Summary and Recommendations.....	4
<b>PART II- <u>PROJECT DESCRIPTION:</u></b>	
	5 - 7
<b>PART III-<u>PROJECT ANALYSIS:</u></b>	
A. Technical Analysis .....	8
B. Economic Analysis .....	17
C. Site Selection Procedure and Examples of Application..	39
D. Social Soundness Analysis and Annex.....	59
E. Financial Analysis and Plan .....	65
F. Environmental Analysis (I.E.E. and Approval Cable)....	79
G. Training .....	86
<b>PART IV- <u>IMPLEMENTATION PLAN:</u></b>	
A. Administrative Feasibility .....	89
B. Project Implementation Plan .....	92
C. Project Performance Network.....	97
D. Evaluation Plan.....	98
<b>PART V- <u>ANNEXES:</u></b>	
1. Logical Framework	
2. G11e Certification	
3. Project Authorization and Request for Allotment Part I and II	
4. Checklist of Statutory Criteria	
5. HMG Request for Assistance (Cable Kath. 2976)	
6. Draft Grant Agreement plus Annex 1 and 2	
7. Draft Scope of Work for National Trail Classification and Map.	
8. Plan of Action: Study of Displaced Tradesmen	
9. Swiss/HMG Agreement	
10. Memorandum of Understanding Concerning Suspension Bridge Program (Swiss/HMG)	

AGENCY FOR INTERNATIONAL DEVELOPMENT  <b>PROJECT PAPER FACESHEET</b>	1. TRANSACTION CODE <input type="checkbox"/> A ADD <input type="checkbox"/> C CHANGE <input type="checkbox"/> D DELETE	PP 2. DOCUMENT CODE 3
--	---	-----------------------------

3. COUNTRY ENTITY NEPAL	4. DOCUMENT REVISION NUMBER: <input type="text" value="3"/>
----------------------------	--

5. PROJECT NUMBER (7 digits) <input type="text" value="367-0119"/>	6. BUREAU/OFFICE A. SYMBOL ASIA B. CODE <input type="text" value="04"/>	7. PROJECT TITLE (Maximum 40 characters) <input type="text" value="TRAIL SUSPENSION BRIDGES"/>
---	---	---

8. ESTIMATED FY OF PROJECT COMPLETION FY <input type="text" value="8"/> <input type="text" value="2"/>	9. ESTIMATED DATE OF OBLIGATION A. INITIAL FY <input type="text" value="7"/> <input type="text" value="9"/> B. QUARTER <input type="text" value="4"/> C. FINAL FY <input type="text" value="7"/> <input type="text" value="9"/> (Enter 1, 2, 3, or 4)
---	--

10. ESTIMATED COSTS (\$000 OR EQUIVALENT \$) -						
A. FUNDING SOURCE	FIRST FY			LIFE OF PROJECT		
	B. FX	C. L/C	D. TOTAL	E. FX	F. L/C	G. TOTAL
AID APPROPRIATED TOTAL	564	392	956	1735	1265	3,000
(GRANT)	564	392	956	1735	1265	3,000
(LOAN)						
OTHER U.S. 1. PEACE CORPS	84	6	90	250	20	270
OTHER U.S. 2.						
HOST COUNTRY		397	397		1079	1,079
OTHER DONOR(S)	150		150	450		450
TOTALS	798	795	1593	2435	2364	4,799

11. PROPOSED BUDGET APPROPRIATED FUNDS (\$000)									
A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE		E. 1ST FY <u>79</u>		H. 2ND FY		K. 3RD FY	
		C. GRANT	D. LOAN	F. GRANT	G. LOAN	I. GRANT	J. LOAN	L. GRANT	M. LOAN
(1) FN	133B	829		3,000					
(2)									
(3)									
(4)									
TOTALS				3,000					

A. APPROPRIATION	N. 4TH FY		O. 5TH FY		LIFE OF PROJECT		12. IN-DEPTH EVALUATION SCHEDULED
	D. GRANT	P. LOAN	R. GRANT	S. LOAN	T. GRANT	U. LOAN	
(1) FN					3,000		<input type="text" value="0"/> <input type="text" value="2"/> <input type="text" value="8"/> <input type="text" value="1"/>
(2)							
(3)							
(4)							
TOTALS					3,000		

13. DATA CHANGE INDICATOR. WERE CHANGES MADE IN THE PID FACESHEET DATA, BLOCKS 12, 13, 14, OR 15 OR IN PRP FACESHEET DATA, BLOCK 12? IF YES, ATTACH CHANGED PID FACESHEET.

1 NO  
 2 YES

14. ORIGINATING OFFICE CLEARANCE SIGNATURE  TITLE SAMUEL H. BUTTERFIELD Director USAID/NEPAL		DATE SIGNED <input type="text" value="0"/> <input type="text" value="8"/> <input type="text" value="1"/>	15. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION <input type="text" value="0"/> <input type="text" value="2"/> <input type="text" value="8"/> <input type="text" value="1"/>
---	--	---	--

X2

PART I - B. TABLE OF ABBREVIATIONS

1. AID/W ... Agency for International Development/Washington.
2. EAST. ... EAST Consulting Engineers, Kathmandu
3. FAR. ... Fixed Amount Reimbursement System.
4. FAA. ... Foreign Assistance Act (1961).
5. GON. ... Government of Nepal.
6. International Consulting Engineers (German Consult.).
7. HMG. ... His Majesty's Government of Nepal.
8. IIEF. ... Impact Identification and Evaluation Form.
9. IBRD. ... International Bank for Reconstruction and Development.
10. LDD. ... Local Development Department of Ministry of Home and Panchayats.
11. PC. ... American Peace Corp.
12. PCV. ... Peace Corps Volunteer.
13. RLDC. ... Relatively Least Developed Country.
14. SBD. ... Suspension Bridge Division of Ministry of Works & Transport
15. SATA. ... Swiss Association for Technical Assistance.
16. USAID/Nepal. ... United States Agency for International Development in Nepal.
17. UNDP. ... United Nations Development Programme.
18. UN. ... United Nations.
19. UNCTAD. ... United Nations Conference on Trade and Development.

PART I -

C. GENERAL DATA

1. Project Committee:

- A. Steven J. Freundlich, Project Development Officer, USAID/Nepal.
- B. J. Gabriel Campbell, Social Anthropologist, USAID/Nepal.
- C. L. Rosen, Economist, AID/W (TDY).
- D. R. MacDonald, Office of Engineering, AID/W (TDY)
- E. R. Odell, Loan Officer, AID/W (TDY).

2. Executing Agency:

- A. Ministry of Works and Transport, (HMG).
- B. Ministry of Home and Panchayat, Local Development Department (HMG).

3. International Donor Agencies:

- A. Swiss Association for Technical Assistance.
- B. American Peace Corps.
- C. United States Agency for International Development.

PART I - D. SUMMARY AND RECOMMENDATIONS

1. Grantee: His Majesty's Government of Nepal.
2. Implementing Agency: The Department of Roads, Ministry of Works and Transport.
3. Proposed Amount of Grant: \$3.0 Million.
4. Other Donors: The Swiss Association for Technical Assistance.  
The American Peace Corps.
5. Purpose of the Grant: To provide financial assistance to HMG for the purchase of materials used in the construction of suspension bridges and to upgrade the GON's institutional capacity to rationally improve the national bridge and trail network.
6. Description of the Project: USAID is providing a \$3.0 million grant to His Majesty's Government of Nepal to finance the procurement, fabrication and transportation of material to construct between 24 and 36 bridges throughout Nepal over three years. The selection of bridge sites will be based on a survey using criteria outline in the Project Paper. In addition the grant will finance a contract which will result in a Map and classification of trails in Nepal, a study of tradesmen that are displaced by the construction of bridge and recommendations of alternative employment opportunities, as well as long-term and short-term training. The Swiss Association for Technical Assistance and the American Peace Corps will be providing Technical Assistance throughout the life of the Project.

PART II:

A. Project Description

The Transport and Communication Sector of Nepal's "Basic Principles of the sixth year Plan" (1980-1985) begins with the following:

"The maximum number of suspension and other types of bridges will be constructed over high traffic river crossings to facilitate mobility of people and trade flows in various parts of the country. Construction of suspension bridges of certain specified design standards will be fully incorporated into the Panchayat sector programmes and the local Panchayats will be made responsible for their construction. However, in cases where the bridges to be built are of higher design specification, and outside the reach of the local resources and skills, the concerned Ministry and Department will continue to undertake their construction as before as part of their programmes. With the implementation of five year and annual plans at the village and district levels, it is expected that numerous suspension and other types of bridges will be constructed during the Sixth Plan period through government support (technical and financial), of local resources and active popular participation. This will not only provide the rural areas with improved means of transportation but will also provide employment opportunities and increased use of local construction materials, thereby contributing to appreciable improvement in the income levels of the rural poor."

In conjunction with this HMG development objective, USAID has designed the Trail Suspension Bridge Project. The goal of the project is "To enhance the quality of life of the rural population of Nepal, by increasing the flow of goods and services to and from the rural areas." In that the vast majority of Nepal's population live in communities which are virtually isolated by flooding rivers during one quarter of the year, construction of bridges and improvement of approach trails is viewed as essential if the HMG is to provide "Basic Human Needs" to the rural population of Nepal. The strategy of achieving the project's goal is focused on the purpose of upgrading the HMG's institutional capacity to rationally improve the national bridge and trail network.

The \$ 3 million trail Suspension Bridge project is one element of a larger HMG Multi-donor program. The project build upon the existing, ongoing HMG program by concentrating on the development and utilization of a methodology for bridge site selection. Such a methodology will be

17

employed by the appropriate HMG donor personnel during the standard survey of potential bridge sites. Each site will be surveyed and ranked according to certain developmental criteria. USAID will provide \$2,600,000 of financial assistance to the HMG for the construction of those 24 to 36 bridges which have received the highest evaluation scores during the survey process. Financial assistance will include the costs related to the purchase of imported materials, the fabrication of bridge components from such materials, and the transportation costs involved in delivery of these component to the construction sites. The project will also finance a number of other components essential to the enhancement of the existing HMG program. Approximately \$250,000 of project funds have been allotted for the development of a map of the existing national trail network. Such a map will provide a valuable tool in the bridge site evaluation and selection process, as well as useful mechanism for inventorying existing bridges and scheduling routine maintenance inspections. Another component of the project encompasses training costs of \$65,000 for training Department of Roads Engineers, in the field of Geological Engineering. Such personnel, upon completion of training will return to work with the Department of Roads. In addition to the above components the project will provide approximately \$10,000 to finance a study of Tradesman displaced by the construction of bridges in rural areas. Such a study will gather information regarding the ferrymen and families that are displaced as a result of bridge construction in Nepal. In addition to this investigation the study will also recommend viable strategies for providing possible alternative employment opportunities to these people.

The implementation of this project will be closely coordinated with the ongoing programs of HMG agencies involved in bridge construction and the technical assistance provided by two donor agencies. The central GON bridge construction program is the responsibility of the Department of Road in the Ministry of Public Works and Transport. The SBD, with the assistance of five Swiss engineers from the Swiss Association for Technical Assistance (SATA) coordinates the survey, design, construction and maintenance of central government built bridges and the improvement of their approach trails.

The construction of locally built panchayat and district bridges falls within the responsibilities of the Local Development Department (LDD)

of the Ministry of Home and Panchayats. The LDD, with the assistance of U.S. Peace Corps Volunteers, aids local panchayats and districts to survey, design, construct and maintain "local-type" bridges.

The overall management of the project will be the responsibility of the USAID Project Manager and the Chief of the Department of Roads. In order to insure that the entire HMG donor program will be implemented and completed in a timely manner it is essential that appropriate LDD, SATA and Peace Corps personnel coordinate their activities. Such coordination can be accomplished by the establishment of a joint committee which will meet at regular intervals during the life of the projects.

PART III - PROJECT ANALYSIS:

A. TECHNICAL ANALYSIS

1. History of SBD

The SBD was established in 1964 to coordinate, assign, and implement the trail bridge construction program of the GON. The division is responsible for developing an "in house" construction capability to carry out the construction of those bridges which are designed, approved and designated for completion in each fiscal year. The division has periodically required assistance in the technical and management aspects of the program. This need is presently being addressed by SATA in the form of technicians who have been assigned to the SBD, since 1972 under a Swiss program of foreign assistance.

SATA recognized the need for change within the SBD, assisted in designing and implementing new procedures where such changes were agreed to by the SBD. One example of such improvements is the preparation and publication of a set of standard bridge drawings for the various size spans which are encountered in the SBD programs. An updated revision of these drawings is now being completed which incorporates improvements generated by field use of the original data. These drawings have simplified the design work required to fit a bridge to a specific site. Standard bridge element quantity lists are included with each standard plan, thereby greatly facilitate the cost estimating procedures. These data greatly reduced the time and cost of designing a bridge for a specific site.

SATA by standardizing many of the required elements of bridge hardware and cables has made it possible for SBD to stock many bridge parts, consequently construction can often be implemented soon after a final bridge designs is completed.

2. Sequence of Bridge Construction

Site surveys requires experienced professionals to accurately evaluate soil conditions, river course stability, choice of anchorage best suited to each site, and design span lengths. Also there may be several locations which must be studied to determine which site best meets cost, engineering, and socio-economic criteria.

Another example of SATA's work, aimed at improving the SBD operation, is the development of a manual of "Guidelines for Site Survey Teams."

The initial manual, which will be utilized in training SBD site survey teams for the coming construction season, will include the socio-economic criteria developed in the Project Paper. Thus the initial site surveys will take into account engineering, administrative, and socio-economic criteria. The resulting data will be utilized by SBD to prioritize the list of bridges to be constructed in any given year. The project has scheduled a joint evaluation of the initial application of these criteria, in order to insure that necessary revisions and adaptations can be incorporated into the manual prior to the initiation of a second stage of site surveys.

The socio-economic criteria to be utilized have been derived from the research done by EAST Consulting Engineers, German Consult, SATA, as well as theory and practical experience. A detailed explanation of the criteria can be found in the Project Paper.

Once the necessary site survey data is delivered to the SBD Kathmandu office the design section will do the full bridge design including the construction drawings. They will also prepare the cost estimate for bridge materials to be supplied, the cost estimated for delivery of project materials to site, the labor costs estimates, and local materials cost estimates. In short an itemized estimated cost breakdown and materials list.

Once the materials list is available, the SBD will issue all standard items from their warehouse stocks, and order the materials to be delivered to the bridge site. Special items will be contracted for with a local fabricator and delivered to site when fabricated.

An experienced bridge erection crew of SBD employes is then sent to the site. Such a crew normally consists of an engineer, a work foreman and an accountant. A construction contract is then signed with a firm or individual for the provision of labor, both skilled and unskilled. As a result of the Planning Commission's latest directive the SBD is now required to sign a larger percentage of such construction contracts with local firms or individuals. Thus insuring that a greater share of the expenditure for the bridges are channeled to the local people of the area. Once construction has been completed. There will be an inspection by SBD/SATA/USAID.

### 3. Procurement

SATA, in order to get the construction program moving, in 1977 financed a large order of basic steel stocks for construction. These

stocks of steel and cable were fabricated into bridge parts by local businesses contracted with to manufacture parts for warehouse stock, (standard parts), or special items for a specific bridges. This procedure worked quite well. The quality of the steel was controlled by bulk ordering. As a result of this procedure parts were available in the GON warehouse, or could be quickly fabricated for any particular structure.

The SBD is now purchasing bridge parts for which the fabricator supplies the steel, or at other times SBD orders stock steel through GON procurement procedures. In either case supervision of the quality of the steel is controlled by SATA & DOR technicians. In order to further facilitate the procurement essential to the project a committee representing the donors and DOR is to be formed. The committee's major function will revolve around insure adequate supplies of materials in timely manner. Additional information on project procurement is included in the financial analysis of the project.

4. Project Targets:

One of the objectives of this project is to systematize the method of selecting bridges to be constructed, so as to maximize the socio-economic considerations, and to minimize political pressures in setting construction program priorities. To this end selection criteria are now incorporated into the project so as to assure that engineering and socio-economic conditions are fully addressed prior to establishing which bridges will be funded under the project. Therefore the exact targets, (number of bridges to be constructed, or total meters of completed structure), will be established only after the SBD has proposed bridges which meet the selection criteria, and USAID has given approval to their selection. However, presently estimates indicate the USAID will finance the costs associated with 25-36 bridges throughout the life of the project. (For additional details see the Financial Analysis of the Project.)

5. LDD Bridge Construction:

As part of the overall project \$20,000 is being set aside to procure bridge cable and hardware to support the district level LDD program of local bridge construction. These funds will be channeled through the DOR, who in turn supply technical support to the districts and LDD. Cost estimated and designs would be produced by PCVs working with LDD personnel and agreements will be reached in terms of technical feasibility in consultation with SATA and SBD engineers.

This phase of the project is being designed as a first limited effort to support the district level LDD program. It is expected that after a thorough evaluation of the initial performance, additional support may be considered. Should an evaluation determine that such a procedure of support for LDD is not feasible the earmarked monies would revert to SBD for use in financing additional SBD bridges.

The LDD has been assigned responsibility for constructing the relatively short span local Trail Bridges throughout Nepal. This program draws heavily on locally donated support and participation. Designs are prepared, wherever possible, to incorporate local construction methods in order to more fully utilize such local skills and capabilities.

The LDD has on their staff 12 PCV's who are active in identifying appropriate projects, and mobilizing local support for them. These PCV's are able to provide the essential technical skills for the projects.

The selection of appropriate designs for local bridges are done in collaboration with SBD and SATA. The PCV's supervise construction in conjunction with a district engineer. This program has proved very effective, and has the potential of becoming a major element of any subsequent USAID program of assistance in bridge construction.

A SATA engineer, working in conjunction with an Ex. PCV, has designed a manual including a set of standard local bridge designs. This manual is to be utilized for short span, local crossings. This procedure greatly facilitates the project implementation process, and provides the opportunity to stock standard bridge elements within country so as to expedite the construction process.

#### 6. National Trail Network Survey and Classification System:

The project includes a sub-activity which will provide a base map of the existing trunk trails and satellite trails which make up the current National Trail System of Nepal.

Such a base map will allow for the systematic storing in a filing system, by trail number, all information on trail condition, bridge locations, their condition and any needed trail improvements. It will also provide a base map for trail bridge planning and a means of prioritizing construction project throughout the nation.

Without such a base no rational system can be developed for planning construction, projecting changes dictated by other infrastructure construction, or systematically setting priorities for construction or improvements.

The map will be promulgated from recent satellite and aerial photography of Nepal. Currently used trails will be plotted on an existing topographic map of Nepal. The topographic map, drawn to a scale of one inch to a mile, is considered accurate enough for trail classification and study purposes. The trail system superimposed on the base map, will be interperated to project a trunk system which appears to most rationally serve the hill area of Nepal. When the map is prepared, it will be checked with the SBD, SATA and PC in Kathmandu for local inputs. This period of review will not exceed 3 calender weeks. Based on this review the National Trail System will be corrected, and the trunk satellite trail system will be numbered using a flexible transportation system method allowing for expansion and future adjustment. The map and accompanying information will be utilized in conjunction with maps of the existing and planned rail road, air, and ropeway infrastructure system, in order to provide useful planning data to governmental institutions and personnel involved in Nepal's development efforts.

#### 7. Engineering Geologist

The services of an engineering geologist are required to properly evaluate the geotechnical hazards of any candidate bridge sites. He could evaluate evidence of potential slides, stability of rock masses at anchorage points, possibility of river under cutting of bridge foundations, channel aggregation due to slides above or below the river crossing, and choice of exact location based on the differences in foundation hazards and costs at alternative crossing sites. SATA will be financing the costs of such a specialist working with SBD, in order to develop appropriate NON procedures as well as train the necessary SBD personnel to operate in such a capacity. Should SATA be unable to provide such financial support USAID should be able to assist by utilizing the IQC method.

#### 8. Overview Analysis of Maintenance Budget and Capacity of SBD

##### a. Decentralization & reorganization:

In that the Suspension Bridge Division has been reorganized and decentralized in the last year it is necessary that the

SBD's maintenance budget and capacity be re-examined prior to the final approval by USAID/N of the proposed Trail Suspension Bridge Project.

During the initial USAID/DOR discussions of the decentralization and reorganization of the SBD, questions were raised concerning the Decentralization plan's effect upon the Division's capacity to provide maintenance for bridges. The Department of Roads, recognizing the necessity to provide a workable maintenance program feels that decentralization is the first step in a long-range program to improve the SBD's overall maintenance capacity. The premise behind this belief is that the Decentralization Plan stations, on a permanent basis, SBD technical and administrative personnel in the four Development Regions of Nepal. In conjunction with this physical shift of personnel closer to the target rural areas, the Division will also gradually shift the responsibilities for program planning, budgeting, procurement, design, contracting and maintenance from the Central Kathmandu SBD Office to the four new Regional SBD Offices. Thus the reorganization decentralizes the required manpower, the essential fiscal power and the final decision making power and thereby minimizes the bureaucratic, communicative, and logistical problems involved in providing the SBD program with a regular preventative maintenance capacity. As a result of this improved capacity the DOR feels that a majority of the traditional crises oriented bridge maintenance (reconstruction) will be prevented and the overall output of the SBD will be enhanced.

As a second step in developing a maintenance program for the SBD, Divisional (SBD) Engineers station in the Four Development Regions will, in cooperation with District Engineers, compile a listing of Suspension and Suspended Bridges in their regions. Once such a list is compiled it will become the responsibility of District and Regional technical officers to periodically inspect the bridge sites in their regions for necessary maintenance and repair work. Such an inventory listing will coincide well with the development of a map of the national trail network, which is planned as part of the USAID project. Such an annually updated map will aid in systematizing the regional maintenance program and the regional building program.

Under the decentralized system, the responsibility for the minor maintenance program on "Locally Constructed Bridges" rests in the District Technical Offices. The resident engineers in these offices, located throughout the nation, are fully capable of providing the regular minor maintenance which makes up the majority of the maintenance required by these bridges. In cases where such minor repairs will not suffice, the standard GON procedure calls for officially reporting the maintenance requirements to the District Technical Office. Previously reports would then have been sent to Kathmandu and all subsequent action would have been initiated in the Central SBD Offices, resulting long delayed responses. Under the Decentralization Plan, contact will now be made with the relatively nearby Regional Suspension Bridges Divisional Office. A field inspection is then conducted and necessary repair and/or maintenance is initiated. The Central SBD office is notified only when major maintenance (reconstruction) is needed and technicians and supplies are then sent to the field from Kathmandu.

In addition to these formal lines of communication, a number of informal channels exist to insure ongoing bridge maintenance and repair. Such informal communications are also improved as a result of decentralization. Primary among these informal methods are the reports submitted by SBD engineers and technicians, which result from field surveys of potential bridge sites and other normal field work i.e. bridge construction projects. During these field operations, SBD engineers often cross existing bridges or come in contact with local rural people that have up-to-date knowledge of the condition of bridges in the area. Upon return to their Regional SBD headquarters, reports of maintenance requirements in the region are submitted and then the procedures mentioned previously can take over.

Other informal channels of communication concerning bridge conditions which will be enhanced by the decentralization plan, are the utilization of rural people themselves, Peace Corps Volunteers and other IMI officials based in Kathmandu but on temporary field assignment. These persons will now be able to report bridge conditions to Regional SBD official rather than only to Kathmandu based SBD staff. Then again normal maintenance and repair procedures can take over and a quicker resolution of the problems will result.

b. Capacity:

The Suspension Bridge Division presently has a full time staff of more than 120 persons. Of these, approximately one half are

technically qualified and trained to provide maintenance and repair work to existing bridges. Although no one in SBD is presently exclusively assigned to do such work on a regular basis, the decentralized system insures that such technically capable individuals are available in the regions and can be given this assignment when required. The reorganization also insures that essential maintenance and repair work is performed in a timely manner and that a regular system of inventory and inspection is being established.

c. Budget:

A review of the GON, Ministry of Finance "Classification and Explanation of Expenditure Items in Annual Budgets" reveals that the SBD costs associated with regular and emergency maintenance and repair of bridges are provided for in two separate places.

Line item number 6 "Repair and Maintenance" covers the yearly recurring unforeseen expenditures for repair and up-keep of bridges and associated capital goods and equipment as well as expenditures incurred on wages for repair and up-keep and the cost of tools, spare parts and materials. Transportation of men and material to bridge sites is also covered under this line item. In the GON/FY 1973 budget for the SBD, this line item expenditure was equal to approximately \$84,000 (1,000,000 Rs) or approximately 10% of the total SBD/FY 73 expenditures.

However, the costs of major repairs and improvements, by which the useful life of bridges or equipment is increased is chargeable to expenditure item number 12 "Construction and Improvement". Approximately \$60,000 or 9% of the total SBD/FY 73 expenditures for this line item were for major repair or maintenance work. Therefore approximately 16% or approximately \$144,000 of total budgeted SBD resources in GON/FY 78 were expended for maintenance and repair costs.

d. Conclusion:

USAID/N as a result of the above Overview Analysis has determined that the Reorganization and Decentralization Plan of the SBD provides the basic methodology to insure that a sound systematic approach to maintenance is being developed. The analysis also shows that the technical capabilities presently existing in SBD and in the District Technical Offices are able to provide maintenance and repair of existing and newly constructed bridges.

However, a thorough analysis of the SBD maintenance budget has shown that some questions still exist concerning the basis upon which the Divisional yearly allocations for the maintenance portion of the SED budget are made. Therefore, in order to insure that the maintenance projections of the SED annual budget are based on realistic projections of annual Divisional maintenance requirements, the Project Grant Agreement will contain a condition precedent to the disbursement of fund for the second season of construction of bridges. The C.P. will require that GON show that substantial progress has been made in the establishment of a regional inventory of bridges for which SED has maintenance responsibilities. In addition, disbursement will require that an evaluation be made of the Division's maintenance capability and plan.

PART III -

B. ECONOMIC ANALYSIS

An assessment of the overall economic benefits and costs of a project such as that of the trail suspension bridges which consists of a number of individual sub-projects normally requires an examination of each of the sub-projects which are then aggregated into an overall result. In the present case, since the actual location of each sub-project will not be determined until the project is funded and underway, it could be argued that an overall assessment of the project benefits and costs is so tenuous as to be practically meaningless. In absolute terms this is perfectly correct. However, given the wealth of information and data that has already been generated on suspension bridges in Nepal (notably through the UNDP financed German Consult study and the AID financed EAST Consultants study), it is possible to derive a series of coefficients and average values which can be used to work out the quantifiable economic benefits of a hypothetical, "average" bridge of the type which will be constructed. Comparing this result to average construction cost data then permits the calculation of an indicative internal rate of return for the "average" bridge and for the project as a whole. Before proceeding with this analysis, the conceptual framework needs to be established and several unique characteristics of this project explained.

Conceptual framework. Two quite different types of approach could be used to analyze the economic benefits of suspension bridges: the first is the standard transportation economics approach which focuses on user savings, in this case, essentially the value of reduced travel time since no vehicle traffic is involved. The German Consult study utilized this type of methodology and on the basis of normal traffic projections found that only half of bridge sites examined (42 in total) yielded an economic rate of return of 10% or better. A second and alternative approach, which is better suited for projects in which the volume and value of traffic is low, is to focus not on user savings directly, but rather on the economic consequences of this in terms of increased production and value added. This alternative approach, which may be used for penetration or feeder roads, for example, can show important benefits which would not be counted under the traffic analysis approach.

This distinction is important enough that it warrants an illustration. As an example, a case is assumed of a local trail which involves particularly difficult river crossing such that the area beyond the crossing remains relatively isolated for a substantial portion of the year. As a result, in large degree of its isolation, it is a relatively impoverished, food-deficit area. However, despite the

the acute physical barriers some level of imports of food grains into the area occurs, financed perhaps through wage earnings of migrant labor which treks out of the area on a seasonal basis in search of employment. On construction of the bridge, access to the area is substantially enhanced. Even in the absence of complimentary agricultural investments, it is possible that the improved crossing in conjunction with increased availability of farm inputs and services can lead to an increase in the area's agricultural output several-fold larger than the volume of imported seed, fertilizer, insecticides etc. The increase in production and local employment opportunities may also result in a reduction in imported food and a reduction in outward labor migration, as compared to the without bridge situation. From a traffic point of view this particular bridge would appear to be a failure since traffic in and out of the area will have declined following construction of the bridge. However when examined from the point of view of induced local production, the benefits of the bridge could be substantial enough to justify its construction.

Theoretically, all bridge sites could be analyzed from the point of view of stimulated economic production in which producer surplus or value-added is measured rather than the volume and value of traffic. However relatively few of the bridge sites which are

expected to be proposed for AID financing neatly fit the feeder road case used in the above illustration. The majority of bridge sites will be partially analogous to this situation, but will be on long distance trails, existing or re-aligned in which a large part of the traffic will originate and terminate far away from the area of the bridge site. Since the relative importance of a given crossing improvement declines as the total distance and travel time increases, the induced economic activity attributable to a particular bridge, while remaining positive, will become smaller and smaller the more removed is the ultimate travel destination from the crossing in question. A simple example can serve to illustrate this point. At a particular crossing, construction of a bridge is estimated to result in elimination of a detour amounting to 4 days. For a trip which had previously taken five days, the crossing improvement represents a 10% reduction in travel time. For a more local trip which had previously required only 1 day, the same crossing improvement represents a reduction in travel time of 50%. If in both instances, the volume and value of goods carried are identical, the local impact of the shorter trip will be substantially greater, unless the commodity in question is completely price-inelastic, i.e., demand for the good is fixed and completely insensitive to any change in its cost. This, however, would be a very unusual situation, and one would normally expect that a reduction in transportation cost would result in an increase in quantity demanded for the

commodity. The further the total distance, the less the relative importance of this price change and therefore the smaller (and more diffused) the effect on local demand.

While the relative importance of the crossing declines with the increase in total time and distance, its absolute importance remains the same. Accordingly, for purposes of analyzing the economic benefits of the project, an approach has been adopted which examines separately and then combines both types of situations: local and non-local. The former is arbitrarily defined as that in which travel originates or terminates in the area within 10 kilometers of the crossing site for which the induced economic effect may be relatively important and can be considered in these terms. For the non-local travel, benefits are estimated in terms of the value of the time savings afforded by the crossing improvement. This is calculated on the basis of the average delay eliminated by the bridge multiplied by the number of through traffic users multiplied by the economic value of portage and unladen traveller time. For the local impact, the increase in value added is estimated on the basis of the price effect of the eliminated delay with respect to imported productive inputs and marketed outputs, each of which have benefits of its own, and may also have a combined effect in increasing production.

X 23

For the price effect to be operative, the reduction in transportation costs must be passed through to the producers. For the trail suspension bridges this can reasonably be assumed to be the case since the only barrier to entry to the portering trade is physical stamina. Moreover, full time professional porters constitute a relatively small portion of total traffic, and the bulk of paid portering is performed on a part-time basis by small farmers during slack periods in the agricultural cycle. The ease of entry and competitiveness of paid portering can be seen by the fact that portering rates during the past several years have increased at a much slower rate than general prices as reflected in available price indices. Apart from paid portering, an even greater volume of goods are owner-carried. In the case of owner-carried goods, the reduction in transport costs and corresponding benefits to producer-consumers are of course synonymous. This fact is important not only with regard to the linkage of transport costs to local economic activity, but also with respect to the project's social analysis. Virtually all of the transport savings resulting from each crossing improvement can be expected to accrue to the target population of the hill economy which the project is intended to benefit.

**Best Available Document**

Although somewhat more speculative as a conclusion, the social and distributive aspects of the project are also likely to be re-inforced by the contrasting nature of the commodities which are imported and exported from the hill economy. Many imported goods will tend to have a lower value to weight ratio than exported goods: e.g., imported rice and basic necessities such as salt and kerosene and exported goods such as ghee and handicraft items such as woolen blankets. Transportation costs and the reduction therein afforded by a crossing improvement will be relatively more important on the goods with the lower value to weight ratio, but these same goods are also likely to be much more price inelastic than the exported goods with higher value to weight ratios. The cost of both imports and exports will decline, but the increase in the amount of inputs demanded is likely to be less than proportionate to the decline in import prices while increased demand for exports is likely to be greater than the reduction in export prices. The combined or net effect is therefore likely to be a shift in the income terms of trade in favor of the hill economy as opposed to areas with which the trade is carried on outside: India, the terai and Kathmandu valley.

Another important, and perhaps unique, characteristic of the suspension bridge project is that economic benefits for both through traffic and local impact are virtually independent of the cost of each

crossing improvement. For transportation projects in general, benefits will increase, although not necessarily proportionately, as more elaborate and expensive solutions are undertaken. This could be the case, for example, for road up-grading from dirt to gravel or from gravel to hard surface, for road widening or for extension. In the case of suspension bridges, however, the benefits result from the simple fact of being able to cross the river at ease and this is essentially the same whether a 100 meter, 200, or 300 meter span is required. In more remote areas, benefits may even tend to vary inversely with increasing costs since portage of materials to the site will increase substantially, amounting to as much as 50% of total costs, while benefits may tend to be lower since population, traffic and the economic base in the area of influence will likely be smaller.

In purely economic terms of maximum efficiency, this bias against more remote sites is not only of little consequence, but even desirable. It would be attenuated to the extent that actual financial costs of portage were shadow-priced downward to reflect the opportunity cost of such labor, but this would be done for economic rather than social-equity reasons. If the latter were to be taken fully into account, as is consistent with the strategy being pursued by AID in Nepal, it could be very cogently argued that all portage charges

should be excluded in order that construction costs can be compared without bias against the relative remoteness of potential bridge sites. For social-equity reasons, this approach has been adopted in the site selection criteria. It has not, however, been used in the calculation of the indicative economic rate of return since it is also desirable to show how well the project stands up purely on economic grounds.

Benefit/Cost Analysis:

a. Through Traffic

Using the conceptual framework described above for distinguishing between through traffic and local impact, coefficients and average values for the through traffic can be derived from the data contained in the UNDP German Consult study. In order to avoid distorting the results, all projects surveyed in the German Consult study have been incorporated including those for which traffic flow and delay times were so low that the internal rate of return amounted to 1% or less. The three basic factors: traffic flow, average delay and the monetary value of time saved, although conceptually simple, entail considerable manipulation of the underlying data for each bridge since the data are not presented in the form required

and are further complicated by a breakdown into different classes of travellers: porters unladen non local travellers and local travellers with a further breakdown to distinguish between the wet and dry seasons

The basic data for all bridges surveyed in the German Consult Study yield the following average traffic flows expressed in terms of average daily traffic:

	<u>ADT</u>
Porters wet season	19
Porters dry season	92
Other non local unladen travellers wet season	26
Other non local unladen travellers dry season	122
Local	46

Although the actual wet and dry seasons vary to some degree from region to region, average periods of 110 and 255 days have been taken to expand the data to an annual basis. The crossing delays encountered at each bridge site are discussed briefly in the narrative sections of each site survey contained in the German Consult Study but the actual times are not given. However, treating the delay factor as the unknown and dividing the total value of time savings by annual traffic and by the value of time

used for each class of traveller, the average crossing delay per person for all bridges sites works out to be 0.3 of a day, or 3 hours in a ten hour day.

Placing a value on time saved at each crossing is no doubt the most debatable part of the equation. since if opportunity costs are to be used, an assessment must be made of the next best form of employment, and this inevitably involves a large degree of subjective judgment. The German Consult methodology estimated porterage wages region by region, and then shadow-priced these rates down to prevailing rates for unskilled labour. With only minor variations from area to area, the opportunity wage rates averaged Rs.8.50 and Rs.7.50 per day for porters in the wet and dry seasons respectively. Since 1976 when the German Consult work was carried out, Nepal has experienced rapid inflation, especially for all imported goods. Characteristic underemployment in the wages sector has dampened the increases in salaries and wages, but even so current professional porterage rates now run between Rs. 15 and 18 per day, or roughly (20% higher than in 1976. On this basis, it appears reasonable to adopt the figure of Rs. 10 per day as the current opportunity cost of porterage. Since this is relatively conservative, no distinction need be made for wet versus dry season rates. The same rate should not, however, be applied to unladen travellers whose purposes vary greatly

and for whom the value of time savings cannot be appraised in terms of paid labor. For purposes of calculation, all non-porter traffic is valued at an opportunity cost of Rs.15 per day to reflect, in rough terms, the additional food requirements while trekking.

On basis of the above figures, the value of time savings for through traffic works out to \$7,762 per annum for the average bridge. For purposes of projection, this savings is assumed to occur one year following bridge construction, and then remain constant thereafter over the life of the project.

b. Local Economic Impact.

While the crossing improvement should have a positive effect on all economic activity carried out in the area of influence, the impact on agriculture is likely to be the most significant not only because this will generally be the predominant activity, but also because the crossing improvement can be operative on the input as well as the output side of production. This is less likely to be the case for livestock or cottage industries. Accordingly, only agriculture benefits are considered in the following; and to simplify the estimate all arable land is assumed to be devoted to basic cereal crops. Higher value cash crops would add additional benefits. The agricultural area of influence is defined as that encompassed within a ten kilometer radius on the side of the crossing furthest from the area's principal

- 31 -

market. This amounts to approximately 16,000 hectares. For the hill economy as a whole, arable land amounts to about 6% of the total. On this same basis, the area of influence would contain approximately 1,000 arable hectares. On the basis of average production and yield data for paddy, maize, wheat and millet in the whole hill area production in the 1,000 hectare area of influence should be on the order of 2,500 tons. At Rs.2,000 per ton, derived from weighted average prices of major cereal and standard conversion factors for paddy to rice, etc. the farm-gate value of production in the area of influence would be Rs.5 million. Of this gross value, production costs can be assumed to represent  $\frac{1}{3}$  of the total.

Even in the absence of complimentary agricultural investments in conjunction with the bridge, improvements in the agricultural base outlined above can occur as a result of improved access and reduced transportation costs into and out of the area. For analytical purposes, three separate effects can be estimated: The reduction in average variable costs as a result of cheaper imported inputs; the net value of increased output induced by cheaper inputs; and reduced transport costs for marketed output. Using the three hour delay figure derived for the average bridge and an average porter load of one maund (37.5 kg.), the reduction in transportation costs would amount to approximately Rs.80 per ton. On the input side, taking 50 kg per hectare as the seed requirement, between 10 to 20% of this can be assumed to be the maximum amount imported,

or 5 to 10 tons for the total area. Assuming fertilizer inputs are in the same range, total transport savings on farm inputs could amount to Rs.800 to Rs.1,600. Unless a concerted effort were undertaken with bridge construction to encourage the use of improved seed and fertilizer, the price effect alone would probably not result in more than a 10% increase in use. However, given the current low levels of usage, the fertilizer response per nutrient ton is no doubt quite high, and on this basis alone it would not be unreasonable to project an increase in total output on the order of 5 to 10 tons for which the net value added would be Rs.5,000 to 10,000. On the basis of estimated total production and average population density in the hill region, the area of influence would be a food deficit area. Nevertheless, judging from data contained in various household surveys that have been carried out in Nepal, between 20 and 40 percent of production is marketed, owing in large part to inadequate on-farm storage facilities and the farmers need to repay seasonal credits. If half of the total marketed output, i.e., 250 to 500 tons, is transported over the improved crossing, an additional major benefit will occur, amounting to Rs.20,000 to Rs.40,000. While this transport saving on marketed output might in turn well provide some further stimulation to production, the latter effect is ignored in order to remain on the conservative side is the overall estimate.

Adding the values for the three factors together, total agricultural benefits attributable to the improved crossing amount to Rs.25,800 to Rs.51,600. On the basis of the average of this range, agricultural benefits can be estimated at \$3,252 per annum, or slightly more than 4% of the estimated value of time savings for through traffic. For purposes of projection, agricultural benefits are assumed to commence two years after bridge construction and remain constant thereafter. From the second year onward during the 30 year life assumed for the bridge, total benefits are therefore projected at \$11,000 annually.

c. Bridge Costs.

The UNDP German Consult study provided detailed cost estimates on each of the 42 bridges surveyed. This data can be used to estimate the average cost of bridge construction, and the relative importance of the major cost components. The following summarizes the cost data in thousands of Nepalese rupees (1976 prices) as averages for all 42 bridges

	<u>Rs. (000)</u>	<u>% of Total</u>
materials	247.6	42
fabrication	64.1	11
erection	123.0	22
transportation	140.7	25
of which, portrage	(20.7)	(16)
	568.4	<u>100</u>

Of the various cost components, materials constitute the largest element, notably for imported steel, cables and cement. While the cost of imported materials should normally be shadow priced to reflect the scarcity value of foreign exchange, in this case virtually all imported materials are purchased from India with which Nepal's trade relations are sufficiently open that shadow pricing of imports does not appear warranted. Labour costs should however be shadow-priced to reflect the opportunity costs involved in fabrication, erection and in portage. Since the first two comments consist to a large degree of skilled labor, the opportunity costs are probably much closer to financial costs than is the case for portage. As a simple solution to reflect the difference between financial and economic costs, portage is reduced by one-half. On this basis, the average cost of each bridge amounts to Rs.523.4 thousand rupees, or \$44 thousand in 1976 prices. Since 1976 there have been large cost increases, especially for imported materials. Labor costs have increased as well, although not as sharply. In order to avoid under estimating average current costs, a relatively high overall cost escalation factor of 14% per annum is assumed. Therefore, for purposes of comprising costs with benefits the cost of the average bridge in 1979 prices is taken as \$65,000.

The cost figure of \$65,000 is consistent with the costing coefficients currently being used by the SBD engineers. However, it represents an average cost, and any particular bridge may vary substantially from this average depending primarily on the length of span required. It should also be noted that although all bridges are generally referred to as suspension bridges, actual spans are technically both of the suspension type and the suspended type, with the latter being a simpler and cheaper form of construction suitable for crossings in which greater stress can be placed on foundation rather than aerial support. On a cost per meter basis, the average cost of suspended bridges is on the order of \$550 as opposed to \$750 per meter for genuine suspension bridges. Of the 42 German Consult bridges used to derive the average cost of \$65,000, nearly half are of the suspended type. If a smaller proportion of suspended bridges were selected for AID financing, the average cost figure would be higher. However, since the majority of the surveyed bridge sites are still waiting construction, the mix of suspension/suspended bridges included in the German Consult study is probably representative and can be used at least for indicative purposes.

Maintenance costs for suspension bridges are quite low and consist primarily of periodic retensioning of main cables and lateral stays and redecking of the wooden floor planks. On an annual basis, maintenance generally should not amount to as much as 0.5 percent of base construction costs. Apart from periodic, normal maintenance, bridges are occasionally damaged by natural calamities such as land slides or exceptional flooding. However, improved geological site selection and engineering techniques that are now being introduced should reduce the incidence of natural disaster damage to the point that it can reasonably be ignored during the 30 years of projected bridge life. Since the physical usefulness may well exceed 30 years and since no residual value is assumed, it is also reasonable, in the following rate of return calculations to ignore the small maintenance costs associated with the bridges.

d. Internal Rate of Return:

For purposes of calculation, construction of the bridge is assumed to be completed in the year in which it is begun. Traffic benefits commence the following year with agricultural benefits starting the year after. Total benefits of \$11,000 then remain constant over the 30 year life of the project.

On these assumptions, the internal rate of return, i.e. the discount rate that equalizes the present value of costs and future benefits, amounts to 16%. If benefits were to decline by 25% against the amount projected, the rate of return would still amount to 12% which is equivalent to what might be considered a satisfactory rate of return for capital projects in general throughout Nepal. If, in addition to a 25% decline in benefits, costs were to increase by 25% such that the cost of the bridge amounted to \$81,000 and annual benefits amounted to \$8,250, the rate of return would still exceed 9 percent. While this would be low for capital projects in general, it should not be regarded as unacceptable for rural development projects with a strong social-equity value such as can be expected for the suspension bridges.

Apart from the benefits which have been counted with respect to time savings for through traffic and for local agricultural impact, there are three further economic benefits which have not been included, but could have been quantified to further increase the rate of return. The first concerns potential savings afforded by the bridge with respect to existing ferry and ropeway charges. Of the 42 bridges surveyed by the German Consult study, 15 of them had such alternate crossing facilities averaging roughly \$2,700 per annum in total costs which would be saved if bridges were constructed.

Foregone ferry charges have not been included because of the additional element of uncertainty involved in averaging such costs for the normative bridge and because in the majority of cases where there are existing ferries or ropeway crossings, the local panchayat will probably levy a toll on the new bridge. From the point of view of economic efficiency and as a means of generating local revenue, such tolls can be considered desirable. However, in order to avoid any disincentive effect with respect to local economic activity, it would be preferable that if local traffic were exempted from such tolls as may be considered appropriate to levy on through traffic porters and non-local, unladen travellers.

The second potential benefit which has not been taken into account in the rate of return calculations is the potential savings in trail maintenance costs which can occur as a result of the bridge eliminating the need for a detour in cases in which the detour serves no purpose but to provide a wet season crossing in the absence of a bridge on the normally used trail. Although in certain cases such detours may be of substantial length, actual circumstances vary so greatly that it has not proved possible to develop an indicative figure for foregone maintenance on trail detours.

A third factor which has not been included in this rate of return calculations is the possible growth in economic benefits over the life of the project. For through traffic, in particular, a growth factor might have been incorporated to reflect the normal growth of traffic as a simple function of population growth. A growth factor for benefits has not been included in order to assure that the projection of benefits remains on the conservative side.

For the whole set of bridges to be financed under the AID project, the rate of return should be the same as that for the indicative, average bridge. This results mathematically from the fact that under the set of assumptions utilized each bridge can be regarded as a separate unit for which no costs are incurred until the year of construction. Thus, although actual construction of all bridges under the project may be phased over several years, this should not affect the overall economic rate of return provided that each sub-project is not initiated until such time as it can be completed within a year. However, despite the clear economic advantages of completing each bridge as soon as possible once it is started in order to maximize the present value of benefits, this may not prove possible in all cases owing to problems which may arise from material shortages, seasonal difficulties or non-economic factors. Among the latter, the need to show governmental responsiveness throughout the country could, in fact, justify starting more

bridges each year than can be completed within the year. Spreading limited financial, material and management resources over a greater number of bridges in this fashion would result in lengthening the average completion time for each. Since this would delay the commencement of economic benefits, the rate of return would decline. For example, if the bulk of construction costs were incurred in the first year but completion required two years such that the benefits were delayed an extra year, the rate of return would decline from the 16% calculated on the basis of one year completion to 14% for two year completion. Although there is an obvious loss of economic efficiency, the rate of return resulting from the slower completion would still be at an acceptable level. If, however, completion required three years, the return would decline to approximately 12%. This would be equivalent to losing 25% of the project's total benefits.

PART III- C. Site Selection Procedure and Examples of Application.

General Methodology

Given the large number of discrete sub-projects involved in the trail suspension bridge project and the desire to take social benefits into account, standard quantitative analysis which compares alternative projects in terms of present value, rate of return or other similar measures, is neither financially nor technically feasible. The project selection procedure which has been devised for the suspension bridge program minimizes these problems by focussing on a set of factors which are easier to measure, and can be expected to correlate with the ultimate economic and social benefits being sought. In addition to the advantage of expediency, the procedure which has been developed also affords an advantage of flexibility since it makes it possible to take into account factors of an intangible and qualitative nature which would remain outside the scope of normal quantitative analysis.

The relative importance to be given to each factor must, however, be arbitrarily decided; and the final score or value for each sub-project will depend on the choice of factors and relative weights. It is important to recognize, therefore, that the final value assigned to each sub-project has no significance other than to provide a comparison to other sub-projects which have been valued on exactly the same basis. This limitation might suggest that any such ranking procedure should be kept very simple and used only as a pre-screening

device for selecting those projects which can then be subjected to more intensive quantitative analysis. In the present case, however, given the extensive study and analysis that has already been carried out with respect to suspension bridge in Nepal, the nature and importance of the benefits are much better known. A ranking system for the suspension bridge has therefore been developed which is sufficiently comprehensive to serve as a final site selection procedure rather than simply an initial screening device.

As shown in the attached table, the ranking procedure consists of five components: (1) the criteria or set of factors to be examined for each bridge site; (2) the respective units, e.g., rupees, man-days, tons, etc., by which each factor can be measured; (3) the range of values for each factor's measurement unit; (4) a common rating scale; and (5) the factor weights which determine the relative importance of each factor in the overall score. The criteria, which are discussed in detail below, must be arbitrarily chosen, as must be the respective weight each criterion or factor is given in the total score. The measurement units, range of values and common rating scale are means by which each criterion or factor can be translated into terms of a common denominator and added together for a final score. Mechanically, the value actually observed in each case is compared to the range, converted into percentage terms and then multiplied by the factor weight.\*

\*See next page

RANKING SCHEME FOR TRAIL SUSPENSION (SBD) BRIDGE

- 41 -

CRITERIA	Measurement Unit	Range of Factor Values	Common Rating Scale-Percent	Factor Weight
<b>I. <u>Economic Factors</u></b>				<b>(.65)</b>
1. Cost	Total financial cost less portorage	Rs. 2,000,000 to Rs. 200,000	0-100	.25
2. Time savings for through traffic	Kan-days per annum	0 to <sup>10,000</sup> <del>100,000</del>	0-100	.25
3. Local production of basic food crops.	Tons per annum	0 to 4,000	0-100	.10
4. Major local exports (cash crops/ghee/cottage industry)	Rupees per annum	0 to Rs. <sup>3,000,000</sup> <del>4,000,000</del>	0-100	.05
<b>II. <u>Social Services</u></b>				<b>(.20)</b>
5. Local population served	No. of persons within 10km. of bridge	5,000 to 40,000	0-100	.05
6. Improved access to health facilities	No. of additional persons within 3 hour walk of facility (includes further)	0 to 10,000	0-100	.05
7. Improved access to education facilities	No. of additional school age children within 2 hr. walk of facility	0 to 1,500	0-100	.05
8. Improved access from administrative facilities	No. of additional persons within 4 hours of nearest administrative center	0 to 16,000	0-100	.05

X  
13

CRITERIA	Measurement Unit	Range of Factor Values	Common Rating Scale-percent	Factor Weight
<b>III. <u>Other Factors</u></b>				<b>(0.15)</b>
9. Accident prevention	Reported drawings during past 5 years	0 to 10	0-100	.05
10. Local support of project	Evidence of past self-help and liklihood of local trail and bridge maintenance	high medium low	100) 50) 0)	.05
11. Land ownership	Percent of small farms (1 ha or less) within 1km. of bridge	0 to 100	0 to 100	.03
12. Presence of integrated rural development program	Inclusion of bridge site in rural dev. program area	Yes planned within 2 yrs. No	100) ) 50) 0)	.02

As an example, population within the local area of influence of each bridge site has been chosen as one of the factors and assigned a weight of .05. If, in the case of bridge site A, local population is estimated at 25,000 which is near the lower end of the range, this site's score on the population criterion is 33 percent and its weighted score for the population criterion is  $(57(.05))=2.9$ . If, in the case of bridge site B, local population is estimated at 35,000, site B obtains a score of 86 percent for the population criterion and a weighted score for population of 4.3. When the weighted scores for each of the other factors are similarly calculated, the values can then be totalled to give an overall score for each bridge site.

---

\* The conversion formula is actual value observed less minimum value of the range, divided by the difference between the maximum and minimum value of the range. In the case of the cost factor, however, for which a higher amount constitutes a disadvantage, the conversion formula must be modified. In this case, the cost of particular bridge should be subtracted from the maximum of the range and the difference then expressed as a percentage of the difference between the maximum and minimum of the range.

Ideally, all potential bridge sites should be surveyed at the range of values for each criterion established to fit the minimum and maximum values observed. This would provide the dispersion of weighted scores and maximize the differentiation of the total number of bridges. However, as a practical matter it would be too time consuming. As a realistic compromise, it is therefore proposed that once a dozen or so sites have been surveyed, the tentative range of values be readjusted to fit the actual range of observed values.

Criteria. Altogether twelve criteria or factors have been selected for the evaluation of each bridge site. Some of the criteria, e.g., bridge cost, are readily quantifiable and specifically represent the factors which should be taken into account. Other criteria, such as access to health facilities, serve as proxies for what one would actually like to measure in this case, health improvement. Since the practical difficulties of evaluating health improvement are too great, a simpler proxy measure has been chosen based on the assumption that a reduction in travel time will induce more people to utilize health service posts and that the treatments provided will be of positive benefit. The only real limit to the number and variety of criteria to be taken into account is the practical consideration of finding a useful measure which can be used to differentiate the degree to which the factor is present or operative at each potential bridge site. The twelve criteria with their relative weights are outlined as follows:

(1) Cost (0.25). All other things being equal, the site selection process should obviously favor those crossings which can be spanned at less expense. The importance of this factor is such that it is weighted to constitute 25% of the overall score for each bridge site. Of the total financial cost of each bridge, portorage of materials to the site is the cost component which varies the most, and in the case of more remote sites, portorage can constitute as much as 50% of the total cost of construction. Since the more remote sites will tend to comprise smaller and less advantaged populations, the portorage component has been <sup>eliminated</sup> from the cost comparison on grounds of social-equity. The range of values for the cost factor has been set provisionally at Rs.200,000 to Rs.2 million.

(2) Time saving for through traffic (0.25). Through traffic is defined to include all travellers for whom the origin and the destination of travel lie outside the local area of influence of the bridge site. Since the majority of proposed bridges are expected to be on existing trails, the economic importance of through traffic should, in most cases, be substantially greater than that of local traffic. This criterion is therefore also given a weight of 25% in the overall score. The time saving for through traffic is calculated as the product of total crossings multiplied by the average delay which occurs in the absence <sup>of</sup> / the bridge. Although conceptually simple, actual derivation of the traffic and delay factors constitutes the most difficult part of the whole site selection procedure. The traffic estimate

should be based on a traffic count supplemented by extensive local interviewing to adjust for seasonal variations. The average delay estimate similarly requires extensive local interviewing in conjunction with a high degree of educated judgment to determine the next best alternative means of crossing. In the simplest case, this will be an existing ferry or ropeway for which waiting time may vary from an hour up to several days depending on traffic volume and river conditions. In other cases, delay may amount to as much as a week as a result of lengthy detours during periods in which the crossing is completely unfordable. Conversely, during any period in which the crossing is <sup>fordable by foot,</sup> ~~unfordable~~ delay should be treated as being negligible and total time savings counted as zero, regardless of how high traffic flow may be. Similarly, delay and time savings should be counted as zero irrespective of the crossing delay during any period in which the trail may be impassable, due for example, to heavy rains or snow.\*

---

\* The special case in which a trail realignment may be planned which would eventually divert traffic away from the crossing should be taken into account by adjusting total time savings downward in proportion to the remaining useful life of the bridge as opposed to the normal expected life of 30 years. A similar adjustment should also be made for criterion 9 concerning accident prevention.

to adequately reflect such variations, traffic and delay figures should be estimated on a month to month basis, and even on a weekly basis during periods of peak traffic or peak delay.

(3) Local production of food crops (.10). Existing production of basic food crops in the area of influence of the bridge site is highlighted as a factor since this is the major economic activity in the hill area and warrants priority attention given the present trend of declining yields. As discussed in the overall economic analysis, major increases in production depend on complementary efforts that might be carried out in conjunction with the improved crossing. Even in the absence of such investments, however, the crossing improvement can provide some stimulation in terms of improved access to purchased inputs and marketing of output. Given the very substantial amount of survey work which would be required to project complementary investments and resultant crop increases, existing production is taken as a proxy of the potential for agricultural improvement. For purposes of comparison, the agricultural area of influence is arbitrarily defined as that encompassed within a ten kilometer radius from the bridge site. As a general presumption, only the area on the side of the river farthest from the nearest principal market center should be considered. Thus the maximum area would be defined by  $\frac{1}{2}(\pi r^2)$  or approximately 16,000 hectares. The second step is to estimate within this total area the amount of arable land. For the entire hill area, the ratio of arable land to total land is on the order of 1:16. Each bridge site may of course vary substantially

from this average. Aerial photography would provide the easiest means of assessing arable land and should be used when available from the Canadian photographic mapping mission. Otherwise, the assessment must be based on a combination of local interviewing and data available at panchayat and/or district headquarters. The third step, on the basis of arable land, is to estimate production, also through local and panchayat contacts. Implied yields above 4 tons per hectare indicate that further survey work is required to re-check the data since average yields in the hill area are on the order of 2.0 to 2.5 tons per hectare.

(4) Major local exports (.05). Simulation of local exports can be a significant benefit ensuing from improved crossing facilities. Although the same could be said of imports, the latter can be assumed to be sufficiently limited by income constraints that only exports from the area of influence merit special attention. The export estimate also serves as a rough proxy for possible local employment effects. The first step in estimating exports is to determine the three or four main commodities, if such exist, which are being produced locally and marketed outside the area. For each commodity, a tonnage estimate must then be made on the basis of information gathered during the traffic count in conjunction with local interviews. The third step is to convert the weight estimates into monetary terms. Although actual commodity values may vary significantly both seasonally and geographically, the same set of prices should be used for all bridge sites. These

prices should be derived from national average retail price data, rounded off and expressed as averages: e.g., paddy and potatoes Rs. 1.75/kg; wheat, maize, millet Rs. 2/kg; fruit and vegetables Rs. 3/kg; herbs and spices Rs. 5/kg; ghee Rs. 30/kg; cottage industry products Rs. 40/kg.

(5) Local population served (.05). Local population within the area of influence has been included among the set of criteria as a general measure of the potential local impact of bridge construction on all spheres of activity: economic, political, social and cultural. The area of influence is again arbitrarily defined in terms of a 10 km. radius; but in order to provide a better reflection of the potential ~~xxx~~ social and cultural interchanges between the two sides of the crossing, the whole 10 km. circle should be included. Population within the area may be estimated from local panchayat census data and, if available, from aerial reconnaissance photographs (using a grid/dwelling count technique). The latter would also provide the best means for estimating improved access to health, education and administrative facilities as discussed under the following three criteria.

(6) Improved access to health facilities (.05). Several studies that have been carried out in Nepal indicate that travel time is <sup>a</sup>key factor in the frequency of utilization of rural health facilities. Analysis of data on attendance at hospitals, health posts and ayurvedic centers shows that the majority of patients live <sup>v</sup> within a maximum of <sup>e</sup>

three hours walk from the facility. This time limit is therefore adopted as the parameter for purposes of assessing this criteria. Since distance travelled within three hours will vary from site to site depending on the difficulty of the terrain, the first step is to convert time into distance, e.g., three hours equals 3, 10 or 12 km. according to local conditions. Second, the distance from the local health facility to the crossing is deducted as is the distance value of the average delay which has been estimated for the crossing. The remainder, if positive, establishes a perimeter on the far side of the crossing which comprises the population presently within the three hour limit. Finally, a second perimeter is drawn beyond the first to represent the additional distance value of the time delay to be eliminated by the bridge. The estimated population within the two perimeters is the value which is then used to represent improved access to health facilities as a result of the bridge. If a hospital is used as the focal point, the time factor should be increased to 5 hrs. If aerial photos are not available, the average population density of the area from panchayat census data should be used in the calculations.

(7) Improved access to education facilities (.05). The benefit of an improved crossing in terms of access to education is similar to that for health and the same method should be used to estimate the number of additional potential beneficiaries. However, even though many children walk extraordinary distances to attend daily schools, a two hour distance limit should be imposed in order to deal only with the area for which the influence of the bridge can be expected to be reasonably significant. Only primary (grade 1 through 3) and lower secondary (grade 4 through 7) schools should be considered. This age group comprises approximately 25% of Nepal's population and unless local panchayat census data suggests a higher or lower proportion

25% should be used to estimate the number of school age children out of the total population within the additional area of influence. Given the fact that there are many more schools than health facilities, a further test should also be applied in order to avoid counting as potential beneficiaries those children who are already within a two hour distance of similar school. If, for example, all of those on the far side of the crossing who are brought within two hours of the school taken as the focus are already within a two hour range of a school on their own side of the river, the education factor would be given a zero score for this particular bridge site.

(8) Improved access from administrative facilities (.05). The impact of a bridge with respect to administrative services is more difficult to specify given the variety of services in question and the differences in the real or perceived need for such services. If the question is viewed in terms of travelling to an administrative center, the choice of an appropriate time-distance factor is too uncertain to provide a useful point of comparison. Accordingly, for this ~~xxx~~ criterion, the concept is reversed and attention focussed on travel from the relevant administrative center to the area of influence. What is being gauged in this case then is the increased access to the population on the part of officials located at the administrative center: rural development advisors, agricultural extension agents, police, etc. Measurement of this criterion is exactly the same as

that for health and education. However, the perimeter maximum is defined as four hours travelling distance, the longer time being justified in this case on grounds that the travel is being performed as part of the children's duties rather than on personal initiative. Any overlapping area should be excluded as in the case of education and health facilities.

(9) Accident prevention (.05). Although accidents as a result of crossing unbridged or poorly bridged rivers do not appear to be any more significant than most of the other hazards confronted in rural Nepal life, there are periodic reports of drownings as well as loss of livestock and goods. Given the isolation of hill and mountain areas such occurrences may in fact be much more frequent than is commonly known. Each site survey should ~~investigate~~ <sup>investigate</sup> the occurrence of drownings over the past five years to provide a representative ~~period~~ <sup>period</sup>. An average number should be taken in the event that conflicting reports on accidental drownings appear equally knowledgeable.

(10) Local support of the project (.05). The degree of local support of the project can provide an excellent indication of the importance of the project to the area and an indirect measure of the economic and social benefits it can be expected to generate. Local ~~local~~ financial contribution to construction costs and/or commitment of voluntary labour would be readily quantifiable measures of local support but would introduce an impractical consideration given the

technical and man-power requirements of SBU bridges and the private contracting procedures which have been adopted for construction. Therefore the criterion of local support is based on a judgement on the part of the survey team with respect to the likelihood of local trail and bridge maintenance. In arriving at the assessment, particular attention should be given to evidence of past efforts on the part of the nearest panchayats or villages to improve and maintain other local infrastructure. Measurement of local support is then expressed in terms of three alternatives: strong, medium or poor.

(11) Land ownership (.03). The degree of concentration or distribution of land ownership has been included as a criterion on grounds of social-equity and the fact that the advantages of an improved crossing can lead to increased land values, especially in the immediate vicinity of the crossing. Using one hectare as the <sup>definition</sup> ~~unit~~ of ~~an~~ small holding, it is quite likely that all sites will score the same value for this criterion given the high degree of land fragmentation in the hill area. In this case, the effect of this criterion on the overall score for each site will be neutral. However, in some cases, there may be a higher degree of land concentration and the percentage of small farmers should be graded downward accordingly. As a practical simplification, only the area within one kilometer of the bridge <sup>site</sup> ~~site~~ need be considered since the area <sup>closest</sup> ~~nearest~~ to the bridge is where the impact on land values and economic rent will be the greatest. The

X 55

question to be considered is how much of this area (160 hectares) is owned by individuals <sup>owning</sup> drawing one hectare or less.

(12) Presence of integrated rural development program (.02).

Whether or not the bridge site falls within an area covered by a major, organized rural development program has been included as a criterion on grounds of the potential interrelationships that can exist between the improved crossing and other rural development activities that may help to promote many of the potential benefits inherent in the bridge. Measurement of this criterion is limited to a simple three possibility response (yes/no/planned within two years) in order to avoid the difficulties involved in a ~~subjective~~ comparison subjective ~~comparison~~ of the comprehensiveness and effectiveness of different rural development programs.

EXAMPLE SHOWING RANKING PROCEDURE

The following provides a simplified example of the ranking procedure in which two hypothetical bridges are compared, one which is superior in terms of economic benefits and the other for social benefits, but with the final scores for both bridges being identical. Assumptions: Both of the bridges entail the same cost and provide a similar crossing improvement in terms of estimated delay. Bridge A, however, is on a more important trail such that time saving for through traffic is double that of bridge B. In addition, the local area of influence for Bridge A is already more highly developed such that local production of food crops are twice as important as in the case of Bridge B and its exports are double that of B. Population happens to be the same in both cases, but in conjunction with Bridge A's higher level of economic activity, it is also much better endowed (on both sides of the river) with health, education and administrative facilities - so much so in fact that the bridge itself provides no real advantage from this point of view. Bridge B, on the other hand, has no such facilities on one side of the crossing and the construction of the bridge results in social benefits at the top of the range. All of the remaining factors are assumed to be equal at each site.

	Bridge A		Bridge B	
	Factor Value/Weighted Score		Factor Value/Weighted Score	
1. Cost	RN 1 million	8.9	RN 1 million	8.9
2. Time Saving	<sup>9,000</sup> <del>80,000</del> man days	20.0	<sup>4,000</sup> 40,000 man days	10.0
3. Food Production	3,000 tons	7.5	1,500	3.75
4. Exports	RN 0.5 million	2.5	RN 0.25 mill.	1.25
5. Population	30,000	<del>2.5</del> 3.6	30,000	<del>2.5</del> 3.6
6. Health	0)	0	12,000	5.0
7. Education	0	0	1,500	5.0
8. Administration	0	0	16,000	5.0
9. Accidents	0	0	0	0
10. Local Support	100	5.0	100	5.0
11. Land Ownerships	100	3.0	100	3.0
12. Rural Development	100	2.0	100	2.0
		<u>51.4</u>		<u>51.4</u>
Total Score		52.5		52.5

A small change in one of the factor values would make the affected bridge more attractive. For example, if one mortality were reported at Bridge site B, the final score for this bridge would increase from ~~51.4~~ to <sup>52.5</sup> 53. Since the final scores are the same, these two bridges can be regarded as being of equal priority, the one for its economic benefits and the other for a combination of social and economic benefits. If Bridge B did not have the reddeming social value shown, its final score would amount to only 36.4, a much poorer choice of investment.

Knarlike chat - site selection criteria application

<u>Factors</u>	<u>Value</u>
1. <u>Cost</u> Rs. 600,000 without portorage	19.4
2. <u>Time Savings for Through Traffic</u>	
58 a.u.t. for dry season x $\frac{1}{2}$ hour delay	
x 275 days	
20 a.u.t. for wet season x 1 hour delay	
x 90 days	3.4
3. <u>Local Production of Basic Food Crops</u>	
2000 tons	5.0
4. <u>Major Local Exports</u> Rs. 3,000,000	5.0
5. <u>Local Population Served</u> 26,000	2.6
6. <u>Improved Access to Health Facilities</u>	
$(2 \text{ hrs} \times 3 \text{ km})^2 \times 3.17 / 2 \times 75 \text{ ave. Pop. density}$	2.1
7. <u>Improved Access to Education Facilities</u>	0
8. <u>Improved Access from Admin. Facilities</u>	0
9. <u>Accident Prevention</u>	0
10. <u>Local Support of Project</u>	2.5
11. <u>Land Ownership</u>	3.0
12. <u>Presence of Rural Development</u>	2.0
	<u>    </u>
total =	45.

Bumling Cable Crossing - Site Selection Criteria Application

<u>Factors</u>	<u>Value</u>
1. <u>Cost</u> Rs. 475,000 without portorage	21.2
2. <u>Time Savings for Through Traffic</u>	0
3. <u>Local Production of Basic Food Crops</u> @ 880 tons	2.2
4. <u>Major Local Exports</u> Rs. 1,800,000	3.0
5. <u>Local Population Served</u> 14,00	1.1
6. <u>Improved Access to Health Facilities</u>	0
7. <u>Improved Access to Education Facilities</u> $(\frac{1}{2} \text{ hr.} \times 3 \text{ km})^2 \times 3.17 / 2 \times 44 \text{ ave. Pop. density}$	0.4
8. <u>Improved Access from Admin. Facilities</u>	0
9. <u>Accident Prevention</u> 1 death	0.5
10. <u>Local Support of Project</u>	2.5
11. <u>Land Ownership</u>	3.0
12. <u>Presence of Rural Development</u>	2.0
	<hr/>
	Total = 35.9

PART III -

D. SOCIAL SOUNDNESS ANALYSIS

Generally, an analysis of a project's social soundness is concerned with answering three related questions: a) social feasibility (is it acceptable), b) distribution of benefits (who benefits), and c) spread effect (will any benefits accrue to people outside of the immediate project area?). In the case of the Trails Suspension Bridges project, the question of social feasibility is easily resolved. Bridges of various kinds and varying degrees of technological sophistication have been constructed by local hill people throughout the history of Nepal whenever they have had the resources and requisite technological skills. The Nepalese hill economy has always depended on a high degree of mobility for trade and seasonal employment, and the present intermixture of ethnic groups and network of marriage patterns throughout the country testifies to a history of high social mobility. There is no question that the rural population of the Nepalese hills wants and will accept assistance in building bridges. Concerned government offices are piled high with petitions and requests for assistance in building bridges and almost everywhere, where it is within their means, the local people are constructing small bridges in their own areas—even though many of these must be reconstructed each year following the monsoon torrents.

An important additional indicator of the social feasibility of suspension bridge projects is found in the high degree of local participation which is easily generated. Bridges constructed by the Local Development Department (often with the assistance of Peace Corps Volunteers) usually have all of the non-skilled labor, including the transportation of materials from railheads or airports, donated by the local village panchayats as voluntary labor. As documented by the EAST Consulting Engineer's study of Baglung bridges, the degree of local participation in the construction of local-type bridges that is possible when there is strong local leadership, is phenomenal. In fact, the Baglung example of local participation is so successful that the government is presently seeking ways for extending this kind of activity into other spheres of development, and it is planned that the Suspension Bridge Department also devote some of its budget to constructing local "participatory bridges".

Social Impact

There are three groups of people who will be directly affected by the construction of bridges. First, all of the laborers (both skilled and unskilled) who will be employed for the transportation and construction of bridge components will benefit directly by receiving employment on the project. Since, except for a few highly skilled technicians and engineers, these will consist entirely of local farmers, farm laborers, and low caste

X (01)

artisans, this benefit will be of direct value to the local people, albeit on a one time basis. Given the severe problem of under-employment of the rural population of Nepal, this "Public-Works" aspect of the project should not be under-rated.

Second, the East report demonstrates that bridges benefit women living in their vicinity. It is well known (although exact data awaits the results of the USAID financed status of Women Project) that women are the primary collector's of fuel and fodder resources. By shortening the time required for this laborious year-long chore, women who are able to collect fodder and fuelwood from across a river have more time to devote to other activities such as cottage industries, childcare, food preparation, and socializing. In addition, bridges allow women to marry closer to home across rivers and to attend more market and religious fairs. This in turn means more opportunities to visit their parental home (which serves as a refuge from the hard work and low status associated with their husband's home) and be further integrated into public life.

Finally, there is one group of people that will be negatively affected by the project. These are the families of traditional ferrymen (often members of the special "rivermen" caste known as Majhis) who will be put out of work by the completion of the bridge. The East report shows that while in some cases, these people are able to make the adjustment to new forms of employment, in others, the ferry men were forced to migrate. The East report has suggested that special programs (such as cottage industry training) be devised to assist these people. This is a laudable recommendation, which, while beyond the scope and capacity of the present project, should be seriously addressed during the project period so that a long term approach can be devised.

Since, in contrast to most of the main ethnic groups in Nepal, there is practically nothing known about these people except that they speak a language belonging to the Tibeto-Burman family and that they make their living through fishing and ferrying throughout most of the rivers of Nepal, it is proposed that an extremely modest research study be funded through the project. The primary purpose of this anthropological study would be to identify appropriate forms of alternate income generating strategies for these ferrymen so that appropriate training and credit facilities can be provided to the families displaced by the bridge construction. The recommendations generated from this study would be turned over to the GON for use in their future suspension bridge building operations. It is envisioned that the study could either be conducted under a letter of agreement with an appropriate researcher in Tribhuvan University (such as graduate students or staff at the Research Centre for Nepal and Asian Studies) or by local contract.

### Social Benefits

Social benefits can be conveniently divided between those in which the bridge can be the critical variable and those in which the bridge can be an important infrastructural first step, but is not necessarily the critical variable (economic benefits have been discussed above, see Economic Analysis).

#### Social Benefits in which Bridge can be Critical Variable:

- Increased access to employment possibilities.
- Time and labor saved by women in fuel and fodder collection.
- Stimulus for cottage industry development.
- Increased access to educational facilities.
- Increased access to health facilities.
- Decrease in accidental loss of life.
- Increase in social and religious interaction.

#### Benefits in Which Bridge Can Be An Important, But Not Necessarily Critical Variable:

- Adoption of new agricultural practices.
- Spread of development institutions.
- Improved government services, including more mobility of government officials and extension agents.
- Stimulus for development of additional employment opportunities.
- Increased use of improved livestock breeds.

The construction of needed bridges also tends to produce a crucial, if difficult to measure, attitudinal benefit which is one of the keys to development in Nepal. By serving as concrete evidence of government concern and willingness to assist the people, the construction of high priority bridges helps to bring about a positive attitude to development and modern inputs in a country where many of the people have yet to be convinced of the government's ability to help them. Since there is a

long-standing Nepalese tradition of local persons sponsoring the construction of bridges to gain religious merit, it is anticipated that this project will be particularly effective in this regard. As noted in East's report, "Because there is no material exploitation perceived, modern bridge building is in consonance with the religious values whereby sponsors derive spiritual merit".

The benefits listed above can be said to apply equally to all of the rural population served by a particular bridge. Since the vast majority of these people are small agriculturalists with land holdings of less than an acre per family, the majority of the people benefited according to anyone's definition, are seen with the rural poor.

In summary the suspension bridge project is socially feasible and contains the potential for generating a number of social benefits for women and poor hill farmers. The magnitude of the benefits depends on location and complementary investments.

- 2 -

DISTRIBUTION OF BENEFITS AS DETERMINED BY FIELD APPLICATION

OF

SOCIO-ECONOMIC CRITERIA FOR BRIDGE SITE RANKING

The primary beneficiaries of suspension bridges constructed in the hills of Nepal are the people whose time, labor, and money is saved in crossing rivers. Traffic counts conducted by the German Consult study, East Consultants and by USAID as well as local interviews reveals that the largest percentage of these people are subsistence farmers who must engage in trade and seasonal migration to meet their yearly subsistence needs. The majority of laden porters crossing the river are either carrying their own produce or purchased goods or are carrying those of kinsmen and neighbors on a commission basis. During the agricultural slack season, a minority of porters carry goods for small retail shops on a daily wage basis. In addition, there is considerable local traffic for social reasons (including use of government services and visiting relatives).

The following table, collected by the recent site criteria application team, while not exactly representative either of the whole year or the whole country, is illustrative of the numbers of persons crossing rivers for various purposes during the slack seasons.

Traffic Count for Three Days at Two Potential Bridge Sites on the Arun River According to Purpose of Travel:

<u>Purpose of Travel</u>	<u>Total Number</u>	<u>Percentage</u>
<b>Economic:</b>		
Trade and Marketing	304	43%
Employment	101	14%
Sub-total	405	57%
<b>Social Services:</b>		
Education	36	5%
Mail	6	1%
Hospital	5	1%
Sub-total	35	5%
Social (personal: visit relatives, weddings, and unspecified reasons)	222	31%

X 65

Within this context it is difficult to see how bridge construction produces disproportionate benefits for any one major segment of the population. Significantly disproportionate benefits can only be readily identified at the level of a few individuals: the ferrymen who will have to seek alternate employment and the owners of the land immediately next to the bridge site which can be used for setting up small tea shops and retail stores. The negative impact on the ferrymen has been addressed by the project, while the site selection criteria includes the percentage of small farmer holdings in the immediate vicinity of the bridge site as one of its criteria for ranking bridges.

Arguments for slightly more benefits accruing to larger farmers who would be more readily able to obtain agricultural inputs and more easily market their surplus are matched by arguments which would identify the subsistence farmers (who account for at least 85% of the hill population) as the major beneficiaries since they are the people for whom petty trade and seasonal migration are economic necessities. Thus, while it would be an oversimplification to say that everyone would benefit equally, it does seem reasonable to say that the largest numbers of beneficiaries will be the rural poor.

PART III -

E. FINANCIAL ANALYSIS AND PLAN

Financial Analysis:

The estimated total cost of the project is \$4,799,000 over the three years life of the project. Of this total, \$3,000,000 will be covered by the USAID Grant Agreement. The GON will contribute approximately \$1,079,000; SATA will contribute approximately \$450,000 in technical assistance; and the American Peace Corps will contribute approximately \$270,000 in volunteer technical assistance. A graphic illustration of the financial breakout of this project is provided in the attached table entitled, "Costing of Project Outputs/Inputs" and the "Listing of Project Outputs".

In addition, in an effort to fully analysis the programatic implications of the project, Tables entitled "Program Budget --- Summary Cost Estimate and Financial Plan", "Projection of Program Expenditures by Fiscal Year" and "Costing of Program Outputs/Inputs" have been included in this section of the Project Paper.

Financial Plan

The construction of Suspension and Suspended Bridges in Nepal necessitates the expenditure of funds for a number of discrete project elements. The elements include;

- (A) Procurement of steel cable, cement and other imported items,
- (B) Fabrication of steel parts for each bridge,
- (C) Transportation of construction components to bridge sites, and
- (D) Erection of the bridge.

The Trail Suspension Bridge Project funds will be utilized to pay for costs associated with only elements, A,B, and C. The GON will provide funds under the annual SBD budget to finance the costs associated with item D.

The costs associated with each of these elements will be calculated as a percentage of the Total estimated costs of each individual bridge. These percentages will approximately coincide with the following scale;

- (A) 42% of total estimated bridge cost,
- (B) 11% of total estimated bridge cost,
- (C) 25% of total estimated bridge cost, and
- (D) 22% of total estimated bridge cost.

These calculations are based on an analysis of the estimated cost of bridges study as part of the 1976 German Consult Report and on actual SBD/SATA records of bridges built by the Division between GON/FY 77-79.

An illustration in graphic form, including the contributions of all other donors to the project is provided in the attached Table entitled "Project Budget-Summary Cost Estimate and Financial Plan." In addition, a graphic illustration of the timing of project expenditures is provided in the attached table entitled "Projection of Project Expenditures by Fiscal Year".

While ascertaining what financing procedures would be utilized to pay for the above project elements, it was determined that the Fixed Amount Reimbursement system of financing would not be appropriate to the successful implementation of this project. The F.A.R. system requires that the host country implementing agency has available to it, at the outset, sufficient funds to pay for a majority of the goods and services financed under the project. USAID will then, upon final inspection and approval of completed sub-projects, pay for all previously agreed upon costs. As a result of extensive discussions with GON and SATA personnel working in the bridge construction program, as well as intensive examination and analysis of past and present SBD budget levels and expenditure records, USAID found that the increased expenditure levels which would be required by the expanding overall bridge construction program resulting from envisioned USAID contributions would cause a substantial "cash flow" problem for the host country implementing agency. Therefore, it has been decided that more traditional USAID project financing procedures will be utilized in an appropriate mix so as to insure that goods and services required by the project will be made available in a timely manner. The procurement requirements and the financing procedures to be utilized for each discrete project element are outlined below. An outline of the time frames involved is given in the Implementation Section of the Project Paper.

- (A) Procurement of steel cable, cement, and other imported items to be utilized in the construction of bridges financed by USAID under the Project, will be the responsibility of the Department of Roads. USAID/N, however, will retain the right of approval of all tender and procurement documents in order to insure that USAID competitive bidding requirements have been adhered to throughout the process.

In that, AID Geographic Code 941 is the authorized source for procurement of imported commodities under grants to Nepal, the Project Grant Agreement will contain a covenant requiring that procurement of steel cables, cement and other imported items, to be utilized in the construction of USAID financed bridges, will be only from countries listed on Geographic Code 941. In addition, the procurement of such items for the USAID financed bridges shall be contracted only subsequent to the signing of the Project Grant Agreement.

The Direct Reimbursement Method of financing will be utilized to pay for the costs of at least the initial procurement of items falling under this element. Using this method, the GON with the assistance and approval of USAID will tender and contract internationally in Geographic Code 941 countries only for all imported items to be utilized in USAID financed bridges. Payment for delivery will be made by the GON. Upon submission to USAID of an official Request for Reimbursement and all required attachments, USAID will reimburse the outstanding cost to the GON after conditions precedent to disbursement have been met.

Upon joint evaluation of this initial procurement and an analysis of the availability of SBD funds, a determination will be made as to whether the same financing procedures will be utilized in subsequent procurement of imported items falling under element A. Pending upon the results of this evaluation, USAID will consider an advance of funds to minimize GON working capital shortages. USAID and GON may also jointly consider use of the Direct Payment method of disbursement for imported material in future tranches.

- (B) The local costs associated with the fabrication contracts, for steel parts used in bridges constructed as part of the project, are also eligible for USAID financing. Such contracting will be the responsibility of the Department of Roads. USAID/N will, however, retain the right of approval of all tender and contracting

documents in order to insure that USAID competitive bidding requirements have been adhered to, that the fabricated parts are different in basic characteristics, or purpose or utility from its components which are produced and/or imported from non-eligible source countries, and that components for such bridge parts are only from Geographic Code 935 countries.

The Direct Reimbursement Method of financing will be utilized to pay the local costs of contracting for the fabrication of steel parts for bridges constructed under the project. Once USAID has approved the GON tender and contract documents, fabrication can begin. The GON will then finance these contracts with its own funds. If requested, USAID will provide the GON with an advance payment.

Upon submission of a Request for Reimbursement and the required attachments, USAID will release project funds for direct reimbursement to the GON for the remaining costs of these contracts.

Subsequent to the initial reimbursement for this project element, USAID and GON will jointly evaluate the procedure and determine if future fabrication costs associated with USAID financed bridges should be paid following the same, or revised, procedures.

- (C) The local costs associated with the transport of various bridge components to the construction sites are also eligible for USAID financing under this project. Such contracting will be the responsibility of the DOR. USAID/N will, however, retain the right of approval of all tender and contracting documents in order to insure that USAID competitive bidding requirements have been adhered to.

The financing of this element will be done following the Direct Reimbursement procedure which requires that the DOR utilize its own resources and then subsequently request reimbursement from AID.

- (D) The costs of the actual construction contracts for USAID/GON bridges will not be financed by USAID under this project. The costs of these contracts will be paid for from DOR budget funds. Although the contracts involved in the actual erection of USAID/GON bridges will not be reviewed by USAID in terms of competitive bidding requirements or price, USAID retains the right to review and approve these contracts in terms of the contractor's capacity to carry out the work in a technically, sound and timely manner.

Consisting of Project Outputs Outputs\*\*  
(in \$ 000 for 3 year Life of Project)

Project In Puts	Project Out Puts								Total	
	1	2	3	4	5	6	7	8		
<b>A. USAID Life of Project</b>										3,000
1. Steel Cable, Cement, other imports	1400									
2. Fabricated bridge parts	365									
3. Transport of parts	835									
4. Trail Map, & bridge inventory		250								
5. Displaced Tradesmen Study			10							
6. Trained Geological Engineers					65					
7. Project Evaluation						55				
a. Local costs						(25)				
b. AID/W TDY costs						(30)				
8. Steel Cable & Cement for Local Bridge construction Program								20		
<b>B. SARA Life of Project</b>										450
1. Technical Assistance Pro-rated (5 person x 3 yrs x \$ 30,000)								450		
<b>C. Peace Corps Life of Project</b>										270
1. Technical Assistance to Local Bridge Construction Program (6 persons x 3 yr x \$ 15,000)								270		
<b>D. GON Life of Project</b>										1079
1. Contribution to USAID/GON bridge Project	740									
2. Survey & Inventory Costs				167						
3. SBD Overhead Costs*									172	
a. Maintenance Costs									(110)	
b. Salaries, regionalization etc.									(62)	
<b>E. TOTALS</b>	3340	250	10	167	65	55	290	622		4799

NOTE:

\* All Cost for SARA Technical Assistance, GON Surveys and SBD Overhead are Pro rated for the Project.

X71

Listing of Project Outputs

	<u>First Year</u>	<u>Life of Project</u>
1. SBD Bridges completed*(Target)	24	72
(A) USAID/GON Project (Target)	12	36
(Minimum)	(8)	(25)
(B) SATA/GON Project (Scenario A****)	(0)	(0)
(Scenario B*****)	7	20
(C) GON-Internal Resources:		
(Scenario A****)	(7)	(21)
(Scenario B*****)	5	16
2. National Trail Map & Bridge Inventory	-	1
3. Study of Displaced Tradesmen	-	1
4. Potential Bridge Sites Ranked & Selected	25	75
5. Biological Engineer Trained	-	5
6. Project Evaluations	1	3
7. Local bridges Completed **	5	15
8. Improved SBD Capacity ***	-	-

NOTE:

\* based on an average cost of \$92,000 per bridge.

\*\*based on an average cost of \$5,000 per bridge.

\*\*\* The program outlined above projects an annual increase of Rs. 1347276 per year over the three year Life of Project for the budget of the SBD of the DOR.

\*\*\*\* All costs are projected from the base year of GON FY 1976 expenditure records and calculated on a 14% rate of annual inflation over the life of the Project.

\*\*\*\*\* Survey costs are calculated at the average rate of 5.5% of total bridge construction costs based on SATA/SBD records for GON/FY 77-79.

\*\*\*\*\* Scenario A-GON alone Finances remaining bridges in Program.

\*\*\*\*\* Scenario B-SATA and GON Finance remaining bridges in Program.

Costing of Program Out Puts/In Puts \*\*\*\*  
(in \$000 For 3 year life of Program)

Program In Puts	Program Out Puts								TOTAL COSTS
	1	2	3	4	5	6	7	8	
<b>(A) USAID Life of Program</b>									3,000
1. Steel Cable, Cement, other imports	1400'								
2. Fabricated bridge parts	365'								
3. Transport of parts	835'								
4. Trail Map & bridge Inventory		250'							
5. Study of Displaced Tradesmen			10'						
6. Trained Geologic Engineers					65'				
7. Project Evaluation						55'			
(a) Local costs						(25)'			
(b) AID/W TDY						(30)'			
8. Contribution to Local bridge construction of Steel Cable & Cement							20'		
<b>(B) SATA Life of Program</b>									2,900
1. Steel Cable, Cement, tools etc.	754'								
2. Fabricated Parts	197'								
3. Transport of Parts	449'								
4. Technical Assistance SBD (5 person X 3 yrs X \$100,000)								1500	
<b>(C) Peace Corps Life of Program</b>									270
1. Technical Assistance to LDD program (6 person x 3 yrs. x \$15,000)							270'		
<b>(D) GON Life of Program ***</b>									3,536
1. Contribution to USAID/GON bridges project	740'								
2. Contribution to SATA/GON bridges project	395'								
3. GON built bridges	1500'						52'		
4. Survey & Inventory Costs *****				334'					
5. SBD overhead								515	
(a) Maintenance Costs								(330)	
(b) Salaries, regionalization etc.								(185)	
<b>(E) TOTAL</b>	6,635'	250'	10'	334'	65'	55'	342'	2015	9,706

Projection of Project Expenditures by Fiscal Year  
(U.S. \$ 000)

U.S. Fiscal Year	USAID	GON/SBD	SATA	Peace Corp	Totals
1979	950	397	150	90	1593
1980	1264	334	150	90	1838
1981	780	348	150	90	1368
<b>TOTAL</b>	<b>3000</b>	<b>1079</b>	<b>450</b>	<b>270</b>	<b>4799</b>

Projection of GON/SBD Project Expenditures by Fiscal Year  
(U.S. \$ 000)

Input	GON/SBD	FY 79	FY 80	FY 81	Total
1. Contribution to USAID/GON Bridges	700	290	200	250	740
2. Survey and Inventory Cost	167	50	77	40	167
3. SBD Overhead	172	57	57	58	172
<b>TOTAL</b>	<b>1079</b>	<b>397</b>	<b>334</b>	<b>348</b>	<b>1079</b>

NOTE:

All figures are based on GON/FY 1978 expenditure records including a calculation for 1% annual inflation over the three year life of the project.

Project Budget - Summary Cost Estimate and Financial Plan  
(U.S. \$ 000) \*\*

Project Inputs (Uses)	Sources of Funding								TOTAL
	USAID		GON/SBD		Peace Corps		SATA		
	FX	LC	FX	LC	FX	LC	FX	LC	
1. Bridge Construction	1400	1200	-	740	-	-	-	-	3340***
a. Imported Items	(1400)	-	-	-	-	-	-	-	(1400)
b. Fabricated bridge Parts	-	(365)	-	-	-	-	-	-	(365)
c. Transportation Contracts	-	(835)	-	-	-	-	-	-	(835)
d. Erecton Contracts	-	-	-	(740)	-	-	-	-	(740)
2. Technical Assistance	-	-	-	-	250	20	450	-	720*
3. Trail Map & Bridge Inventory	220	30	-	-	-	-	-	-	250
4. Displaced Tradseman Study & Recommendation	-	10	-	-	-	-	-	-	10
5. Training of Geological Engineers	65	-	-	-	-	-	-	-	65
6. Project Evaluations	30	25	-	-	-	-	-	-	55
7. Imports for Local Bridge Program	20	-	-	-	-	-	-	-	20
8. Survey & Ranking of Potential Sites	-	-	-	167	-	-	-	-	167*
9. SBD overhead Costs	-	-	-	172	-	-	-	-	172*
a. Maintenance Costs	-	-	-	(110)	-	-	-	-	(110)*
b. Salaries, regionalization, etc.	-	-	-	(62)	-	-	-	-	(62)*
10. TOTALS	1735	1265	-1079	250	20	450	-	-	4799

NOTE:

\* All Costs for SATA Portion of Technical Assistance, GON Surveys & SBD Overhead are prorated for Project

\*\* All Costs include a calculation for 1% annual rate of inflation.

\*\*\* The break out of bridge construction cost is based on average % calculation figures from the 1970 German Consult Study and SATA/SBD records for GON/Y 77-79.

- 74 -

PROGRAM BUDGET - Summary Cost Estimate and Financial Plan  
(U.S. \$ 000)\*

Project Inputs (Uses)	Sources of Funding								Total
	USAID		GON/SED		SATA		Peace	Corps	
	FX	LC	FX	LC	FX	LC	FX	LC	
1. Bridge Construction**	1400	1200	630	2005	754	646	-	-	6635
a. Imported Items	(1400)	-	(630)	-	(754)	-	-	-	(2784)
b. Fabricated Parts	-	(365)	-	(165)	-	(197)	-	-	(727)
c. Transport Contracts	-	(835)	-	(375)	-	(119)	-	-	(1659)
d. Erection Contracts	-	-	-	(1405)	-	-	-	-	(1405)
2. Technical Assistance	-	-	-	-	450	-	250	20	720
3. Trail Map & Bridge Inventory	220	30	-	-	-	-	-	-	250
4. Displaced Tradesman Study & Recommendation	-	10	-	-	-	-	-	-	10
5. Geological Engineer Training	65	-	-	-	-	-	-	-	65
6. Project Evaluations	30	25	-	-	-	-	-	-	55
7. Imports for Local Bridge Program	20	-	52	-	-	-	-	-	72
8. Survey & Ranking of Potential Sites	-	-	-	334	-	-	-	-	334
9. SED Overhead	-	-	-	515	-	-	-	-	515
a. Maintenance	-	-	-	(330)	-	-	-	-	(330)
b. Salaries etc.	-	-	-	(185)	-	-	-	-	(185)
<b>TOTALS</b>	<b>1735</b>	<b>1265</b>	<b>682</b>	<b>2854</b>	<b>1204</b>	<b>646</b>	<b>250</b>	<b>20</b>	<b>8656</b>

**NOTE:** \*All cost include a calculation for 1% annual rate of inflation.

\*\* The breakout of the bridge construction cost is based on average % calculations using figures from The 1976 German Consult Study and SATA/S&D Records for GON/FY 77 to FY 79  
 a. 42% b. 11% c. 25% d. 22%

Projection of Program Expenditures by Fiscal Year  
(U.S. \$ 000)\*

US FY	USAID	SATA	GON/SBD	Peace Corp	Total
1979	950	860	1210	90	3110
1980	1200	1114	1170	90	3638
1981	780	926	1150	90	2952
Total	3000	2900	3536	270	9706

INPUT	GON/SBD	FY 79	FY 80	FY 81	Total
Contrib-USAID	710	290	200	250	740
Contrib SATA	395	150	120	125	395
HM; Bridges	1552	500	526	526	1552
Surveys	330	100	150	80	334
SBD Over Head	515	170	170	175	515
Total	3530	1210	1170	1156	3536

INPUT	USAID	FY 79	FY 80	FY 81	TOTAL
Import	1400	550	500	350	1400
Fabrication	305	125	90	150	365
Transport	835	255	300	200	835
Trail Map	250	-	250	-	250
Study	10	-	-	10	10
Training	05	10	22	33	05
Evaluation	55	12	15	28	55
Local Prog	20	-	7	9	20
Total	3000	956	1269	1780	3000

INPUT	SATA	FY 79	FY 80	FY 81	TOTAL
Import	750	190	314	250	754
Fabrication	197	55	100	12	197
Transport	149	115	200	134	149
Tech. Assist	1500	500	500	500	1500
Total	2900	860	1114	926	2900

NOTE: \* All figures are based on the GON/FY 78 expenditures including a calculation for a 14% annual inflation rate over the three year life of the project.

Xm

**Suspension Bridge Division Budget**  
**For GON FY 1978 (34/35)**  
**(US \$) \*\***

	<u>Budget</u>	<u>Expenditure</u>
1. Salary	\$ 42,017	64,595
2. Allowances	3,361	1,713
3. TA & DA	37,813	42,974
4. Services	4,202	5,570
5. Rent	840	297
6. Repair & Maintenance	76,891	84,199
7.1 Expendable goods	2,521	3,760
7.2 Books & Newspapers	252	149
7.3.1 Fuel for Vehicles	2,521	4,584
7.3.2 Fuel for other Purposes	252	51
7.5 Other Expendable Goods	420	27
9. Contingency	840	117
10.11 Furniture	840	1,610
10.3 Tools & Machinery	12,605	6,892
12.1 Building Construction and Maintenance	2,521	1,008
12.2 Other Construction and Maintenance	881,092	848,020
Total	<u>\$ 1,068,988</u>	<u>\$ 1,065,566*</u>

\*includes \$ 163,697.00 equivalent of Swiss Franc.  
\*\*conversion rate of 11.90Rs. = \$ 1.00

Host Country Contribution:

An analysis of the "Costing of Project Outputs/Inputs" reveals that the SBD projected level of expenditures over the life of the project equals \$1,079,000 or approximately 22.4% of the total costs related to the project. This SBD projected level of expenditure includes; (1) the annual costs of a GON contribution to pay the "erection" costs of USAID/GON financed bridges -- approximately \$740,000 over the life of the project; (2) the contribution of the annual costs of the Surveying and Ranking of approximately 25 to 30 potential sites for future USAID/GON financed bridge construction -- or approximately \$167,000 over the life of the project; and (3) the annual prorated share of the SBD budget (overhead) which will be devoted to project related costs -- approximately \$172,000. These SBD overhead costs can be broken down into the costs of maintenance, which equal approximately \$110,000 and the costs of salaries, regionalization etc. which equal approximately \$62,000. All of these estimates have been adjusted for an inflation factor of 14% per year over the life of the project.

In addition to the above cited level of expenditures related to USAID's project, the GON will continue to finance its own ongoing program of bridge construction.

This expenditure of funds will follow either one of two scenarios dependant upon possible contributions of funds by the Swiss Association for Technical Assistance. (SATA).

As shown under the "Listing of Project Outputs", Scenario A would be defined as meaning that the GON would utilize the remainder of the annual SBD construction budget funds to finance the total costs of approximately 21 bridges over the life of the project. This total expenditure would be equivalent to approximately \$1,900,000 over the life of the project. This set of circumstances would therefore result in a total target of approximately 57 newly constructed bridges. (36 USAID/GON + 21 GON = 57).

Scenario B would utilize the same GON, SBD construction budget funding of \$1,900,000 over the three year life of the project, in a manner that would be different from scenario A above. Under this set of circumstances, approximately \$395,000 of SBD construction funds would be added to approximately \$1,400,000 of SATA contributions thus financing approximately 20 SATA/GON bridges. The remaining \$1,505,000 of SBD construction funds would then be utilized to finance approximately 16 GON bridges. Therefore the total projected target number of bridges constructed under Scenario B would equal 72 over the three year life of the project. (36 USAID/GON + 20 SATA/GON + 16 GON = 72 total program bridges.)

X 79

Under both of these scenarios the GON would continue to finance approximately \$510,000 of Divisional overhead costs during the three year life of the project. Such an SBD expenditure is essential if the GON is to maintain an ongoing program of bridge construction at its present level.

Thus after taking all of the above cited projected project expenditures into consideration, USAID has determined that the total GON contribution to the project will not meet the 25% host country contribution requirement of the FAA, Section 110(a) and a waiver is herewith requested.

Provisions for such waivers are cited in section 307 of the International Development and Food Assistance Act of 1975 permitting a waiver of the 25% cost-sharing requirement for either of the following reasons: (a) a waiver can be granted for a project or activity, only on a case-by-case basis (i.e., no blanket country waivers), and (b) a waiver can be granted on the basis that the determination of the country's eligibility must be based on the UNCTAD list of "relatively least developed countries".

Although the host country contribution is less than the required 25%, the GON by contributing the 22% cost of bridge erection plus the \$339,000 related to project overhead, while at the same time maintaining an ongoing GON program outside the parameters of the project, has demonstrated its commitment to the project goals. Thus on a case-by-case basis USAID/Nepal feels justified in requesting such a waiver. In addition Nepal has been classified by UNCTAD as an RLDC and qualifies for the waiver on these grounds. Therefore Nepal and the Trail Suspension Bridge Project qualify for the requested waiver of the host country contribution requirement.

PART III - ENVIRONMENTAL ANALYSIS

INITIAL ENVIRONMENTAL EXAMINATION

PROJECT LOCATION: NEPAL

PROJECT TITLE: Trail Suspension Bridges No. 367-0119

FUNDING: FY 79 \$3,000,000

LIFE OF PROJECT: Three years

I.E.E. PREPARED BY: Mr. S. J. Freundlich  
Capital Inputs Office  
USAID/Nepal

December 1978

ENVIRONMENTAL ACTION RECOMMENDED: Negative Determination

MISSION CONCURRENCE: Julius E. Coles, Assistant Director  
USAID/Nepal

Date: \_\_\_\_\_

ASSISTANT  
ADMINISTRATOR'S  
DECISION:

Approved: \_\_\_\_\_

Disapproved: \_\_\_\_\_

Date: \_\_\_\_\_

X 81

I. Initial Environmental Examination: Trail Suspension Bridge  
Project No. 367-0119

A. Project Description:

The action plan outlined in the Trail Suspension Bridge Project represents a major innovation in the GOI's program to link together the many isolated and underdeveloped regions and peoples of the nation. By utilizing a comprehensive site survey and selection procedure during the location and evaluation of proposed bridge sites, the GOI will of necessity take into consideration the unique cultural, geologic and environmental setting which comprises Nepal.

Constraints which have inhibited the successful development of Nepal's rural areas and populations include the following; an inadequate transportation and communications network, the non-existence of educational and health facilities, a high population growth rate, a low agricultural productivity and a unique socio-economic cultural tradition adapted to Nepal's geographic isolation which insulates the Nepalese rural people from new ideas and concepts. These constraints directly contribute to and increase the rate of soil erosion and deforestation which is rapidly destroying Nepal's environment.

The GOI has identified the proposed program of bridge site selection and construction as a primary means to improve its

**Best Available Document**

capacity to deliver essential developmental inputs and programs to the rural people of Nepal. Suspension Bridges are viewed as vital "Catalysts to Development" which will substantially mitigate the negative environmental impacts of the traditional constraints to Nepal's development.

**B. Identification and Evaluation of Environmental Impacts:**

Although the nature of the environmental impacts of bridges in Nepal has been identified in the attached "Impact Identification and Evaluation Form", the scope and the magnitude of these impacts will of necessity await the more careful and thorough evaluation of the individual bridge sites which will result from the site survey and selection procedure outlined and required as part of the implementation of the Trail Suspension Bridge Project Paper.

An evaluation of the major environmental impact identified during the project design phase has been clearly summarized by EMST Consulting Engineers in their study of the Suspension Bridges previously constructed under the auspices of USAID/H. The study states that:

"The major effect the bridges have had on the local natural environment concerns the depletion of forest resources caused by the increased demand for fuel wood,

Rest Available Document

X 83

fodder and pasture. With the construction of bridges it has become easier for the people to cross rivers and make use of the forest resources on the previously inaccessible side. However, a host of factors are responsible for deforestation, soil erosion and other ecological imbalances which are generally a major problem in the hills of Nepal. It is very difficult to isolate the effects of a bridge from the web of circumstances which surround this environmental deterioration. It could be argued that the installation of a bridge exposes a previously inaccessible area to exploitation, yet the same installation will have a vital balancing effect on the area's ecology in that it will relieve the increasing pressure on already accessible areas. Demand for fodder and fuel will thusly be diverted from the seriously depleted areas, where further deforestation might result in irreversible damage to the ecology of the area."

In addition it must be understood that bridges have in the past provided a vital impetus to initiating a wide variety of development programs. Once a bridge site has been selected and construction has begun, programs of reforestation and conservation can and will be initiated due to the improvement in transportation and communication facilities. Thus the short-term ~~environmentally~~ questionable environmental impact

of a bridge will be mitigated with the incorporation by IB7 of the thorough site selection and survey procedure outlined in the P.P. At the same time such a program of bridge installations will have a definite long-term beneficial impact on the environment of an area due to the GCH increased capacity to provide essential conservation and reforestation inputs and programs.

The bridge selection and construction program will have a very definite impact upon the cultural and socio-economic environment of the people of the areas near the bridges. These impacts have been identified and investigated in the EAST Consulting Engineers study of bridges previously financed by USAID/H and once again in the attached "Impact Identification and Evaluation Form." These impacts include; the enhancement of the process of social interaction among women, a widening of the area beyond the immediate village location in terms of finding a suitable bride or groom for the young people of a particular village, an increase in the spiritual satisfaction of the people due to their increased ability to attend religious festivals and ceremonies, increased safety in travel, improved agricultural production due to the increased ability of farmers to reach and be reached by modern agricultural inputs and knowledge, improved mobility and trade, improved health care

These impacts are perceived as beneficial by both the rural population and the GOE. Therefore while bridge construction will no doubt cause a dilution of traditional cultural and socio-economic patterns their overall environmental impact has been judged as being beneficial to the future development of Nepal.

**II. Recommendation for Environmental Action:**

The proposed action is not a major action which will have a significant detrimental impact on the human and natural environment and is therefore, an action for which an Environmental Assessment or Environmental Impact Statement will not be required.

**Best Available Document**

Proj 367-0119

AID  
AMB  
DCH  
POL/E  
ADMIN  
CHRON

UNCLASSIFIED

UN: 764 22JAN79

R 202152Z JAN 79  
FM SECSTATE WASHDC  
TO AMEMBASSY KATHMANDU 7675  
BT  
UNCLAS STATE 016716

AIDAC

E.O. 12065 N/A

TAUSE:

SUBJECT: TRAIL SUSPENSION BRIDGE PP - PROJECT NO. 367-0119

REF: (A) KATHMANDU 250; (B) STATE 10047

1. REQUEST PARA. 1 OF REF. A, ANSWERED BY REF. B.
2. IEE ACCEPTABLE TO ASIA/PD AND BUREAU ENVIRONMENTAL OFFICER. VANCE

UNCLASSIFIED

ACTION

CI - 2

INFO

D - 1

AD - 1

AM - 1

PRM - 2

FM - 1

ESA - 1

EMB - 1

RF - 2

X 87

PART III -

7. TRAINING

During U.S. FY 1979 USAID/N contracted the services of Dr. Eugene Kojan to investigate landslide and land stabilization problems associated with the Western Hills Road Project of the DOR Department of Roads, and to recommend a program of action which would facilitate the successful completion of that project. After a number of field trips and extensive discussions with DOR officials concerned with both road and bridge construction in Nepal, Dr. Kojan concluded that;

"In the mountainous, unstable terrain of Nepal, landslides present one of the most severe constraints on the development of resources. Where roads, bridges and other capital improvement projects essential to development inadvertently encounter landslides, or other unstable land conditions, the short and long-term cost over-runs commonly exceed two to three orders of magnitude greater than similar structures free of landslides. Projects which on first analysis appear to be economically viable, often turn out instead to be severe economic drains on the rest of the economy. In such terrain, it is not unusual for the maintenance/reconstruction cost over a two to five year period to exceed the entire cost of the initial construction."

Seen in the light of these and similar comments by other experts in the field, USAID/N and the Department of Roads have determined that one of the predominant engineering inputs required in the planning, survey, design and construction of bridges and roads in Nepal are the skills and training which relate to the fields of Geotechnical Engineering and Engineering Geology. The project proposes to provide two separate components of training. The first (outlined below) will cover 1 or 2 participants for long-term graduate training. The second will be composed of short-term on the job training for 5 to 6 participants. The latter will be worked out in detail as the project is implemented.

Both Engineering Geology and Geotechnical Engineering are a blend of geology, engineering science and civil engineering. Both emphasize an understanding of the distribution, properties and behavior of naturally-occurring soil and rock materials. Both fields are involved in the quantitative response prediction and designed modification of natural processes, including for example, landslides, ground water seepage pressures and flow patterns, surface runoff, channel flow, etc.

The principal differences between the two fields are in emphasis. Engineering geologists are trained to deal with the identification, delineation and analysis of geologic hazards, ranging in scale from broad regional problems to a localized hazard. In the case of an individual landslide, for example, the techniques of engineering

- 11 -

geology are particularly useful in deciphering the geometric configuration, boundary conditions and failure surfaces, as well as the critical ground water and strength parameters. Engineering Geologists are concerned with the three-dimensional distribution and engineering properties of naturally-occurring soil and rock materials. Their skills are especially applicable to the exploration and evaluation of soil and rock materials for construction purposes.

Geotechnical Engineering on the other hand, is predominantly concerned with the design and construction of engineering works within and/or on naturally-occurring soil and rock materials. In contrast with the conventional Soils Engineer whose skills and knowledge principally involve artificially prepared or reconstituted soil materials, or soil materials at near-normal consolidation, the Geotechnical Engineer straddles the boundary between soil and rock mechanics. The individual must be prepared to deal with natural materials whose properties are largely determined by defects, design structures in rock and highly overconsolidated soils whose properties are largely determined by geologic factors. The individual must, therefore, be thoroughly acquainted with the principles of geology so that the geologic constraints on design alternatives must be understood and the impact of the completed structure on the environment predicted.

Unfortunately, at present, Nepal has no personnel working within the DOR that are trained in either of these fields. During a return trip to the U.S.A., Dr. Kojan was able to stop in Thailand and hold extensive discussions with the faculty and administrative personnel of the Asian Institute of Technology (A.I.T.). From such discussions Dr. Kojan was able to conclude that A.I.T. was capable of developing a special inter-disciplinary Masters Degree course of study for Nepalese engineers which would provide the skills essential to insuring that necessary geological engineering inputs are available to the Department of Roads and/or the Suspension Bridge Division.

The Asian Institute of Technology (A.I.T.) and Dr. Kojan outlined the proposed training program as follows;

- A. A cost of \$11,000 per student for tuition and room and board for the entire program.
- B. A pre-course two month orientation in English Language and Mathematics.

X 89

- C. A two year course of study at A.I.T. in Bangkok Thailand, encompassing academic studies and appropriate field work in both Geological and Engineering courses.

Both A.I.T. and Dr. Hojan insisted that the Nepalese candidates selected for training have the minimum academic equivalent of a Masters Degree in Geology or Civil Engineering. Candidates should have a minimum of 2 years of field experience in dealing with problems related to project implementation in the unstable terrain of Nepal, as well as a clear understanding of the inter-disciplinary and field oriented nature of the A.I.T. course of study. In addition, such candidates upon completion of training, should be willing to accept an assignment for a three year period to positions within WON Departments which will enable them to utilize, in a field situation, the skills and training they will have acquired. The WON should be willing to guarantee that such assignments will be available upon completion of the course of study. In order to insure the individual candidates are suitability to the course curriculum and objectives, A.I.T. requested that a representative of the Institute take part in the final selection process of candidates.

The project proposes to fund the costs of participant training, plus the costs of bringing an A.I.T. representative to Nepal to take part in the final selection process. A summary estimate budget of costs includes:

1.	2 participants (2 yr. course)	\$ 22,000
2.	1 A.I.T. Representative (Travel & per diem for 2 round trips)	3,000
3.	Short-term training	35,000
4.	Contingency ( % )	<u>5,000</u>
		\$ 65,000

USAI and the WON are certain that the provision of such trained personnel is a vitally needed element of the long-range program to insure that Nepal's development resources are utilized in the most judicious manner.

**PART IV- IMPLEMENTATION PLANNING**

**A. ADMINISTRATIVE FEASIBILITY**

In order to fully assess the administrative feasibility of successfully achieving the institutional building purpose envisioned by this project, it is essential to first clearly understand the planning and operational methodology presently being utilized and that proposed for the future, by the target GON institutions. Only upon completion of such an analysis, will the process of proposing and planning innovations aimed at improving the existing institutions, become a realistic and worthwhile exercise. Then during the implementation stage of the project, the vital functions of adaptation and amalgamation of pragmatic realities and theoretical concepts can ultimately result in the successful achievement of the institutionally oriented purpose of the project.

The present USAID staff should be able to provide essential monitoring and inspection personnel throughout the life of the project. AID/W will be required to provide minimal assistance to the project by contracting with an appropriate individual or firm for the Trail Classification Study. In the Initial and Final Project Evaluation AID/W will be expected to provide necessary TDY personnel. All other technical and administrative requirements will be filled by the SBD/LDD staff and/or the SATA/PC technicians.

At present the various elements of the GON nation-wide program of bridge construction fall under the jurisdiction of two Ministries. The major component of the program is the direct responsibility of the Suspension Bridge Division of the Department of Roads which is in the Ministry of Works and Transport. The GON has decentralized the SBD into the four development regions of the nation. As it now is constituted the SBD has the responsibility to construct Trail Suspension Bridges according to the targets established by the planning documents of the GON and the various district panchayats of the four development regions. SBD must give technical advice and material support to the other governmental units involved in the nation-wide construction program. The SBD presently has a technical and administrative staff of more than 130 persons and an annual budget for FY 1977 of 2 million dollars.

The annual construction targets of between 20 and 30 bridges for the SBD are presently established by the Planning Commission, as a result of the demands generated throughout the nation by local and district panchayats. The present procedures call for only a limited engineering survey of the construction site, once national bridge locations have

been set by the Planning Commission. Once this initial survey is completed by SBD engineers and surveyors, bridge designs and cost estimates are compiled by the design section of the SBD. The division then approves these technical elements and earmarks funds for the necessary raw materials from stocks previously stored as a result of standardized procurement, the fabrication of the needed standardized bridge components, the transportation to the selected site and the actual construction of the bridges.

Due to efforts of SATA technicians working with SBD personnel the division has been able to incorporate a certain amount of standardization of bridge design and bridge components into the program. Such standardization has minimized the bureaucratic delays involved in these crucial steps and has enable SBD to store a working quantity of raw materials and fabricated components in government warehouses. Thus once the site selection, survey and allocation of funds is accomplished the SBD can move ahead relatively quickly in its program of bridge construction. SBD operates a continuous program of procurement through their normal channels so as to insure that the program can continue. At present a portion of the funds utilized for this advanced procurement is provided to SBD by SATA under a 1977, 3 Million Swiss Franc grant in aid.

The transportation of components and the construction of bridges are accomplished by standard GON contracting procedures and SBD supervisory engineers etc. are assigned to each site in order to insure the proper technical and fiscal management of each bridge sub-project. Once completed, each bridge is subjected to a final inspection and a report is submitted to the division verifying completion of the construction.

In addition, the division has in the past cooperated closely with the Local Development Department of the Ministry of Home and Panchayat to technically and materially support the LDD bridge construction program. The LDD, utilizing the assistance of PCVs and LDD overseers provides the essential site selection and survey information for a proposed bridge. Funds for the construction are then channelled from LDD through the District Panchayat to the Local Panchayats. Supervision and coordination by PCVs and district engineers are provided and the construction program utilizing local participation is initiated and completed. Should an initial survey of the site result in the need for a degree of technical inputs or material support beyond the capabilities of LDD and the local panchayat, SBD is contacted. SBD will then determine if the subject bridge

falls within its own program of construction and therefore the above procedures will apply, or if only limited technical and material support from SDD will be required. In this manner the GON has been able to administer and coordinate the multi-departmental, nation-wide government program of bridge construction and has gradually increased overall construction capability.

In the bridge construction by LDD/PC the vast majority of the essential maintenance can be accomplished by local or district people. Should a specific bridge require a degree of maintenance beyond the capacity of local resources, a report is submitted to SDD. A prioritization is then made in terms of the overall national requirements and the availability of resources, and if feasible the necessary funds and personnel are allocated to the specific bridges and maintenance is accomplished.

In order to initiate the continuing process of upgrading the GON's institutional capability, the GON/USAID Trail Suspension Bridge Project is recommending certain innovations in the existing operational procedures of the DOR. These concepts and innovations are based upon extensive discussion with the concerned GON agencies, with the international donors agencies presently involved in the overall program, and on the very thorough analysis and report written for USAID by EAST Consulting Engineers of Kathmandu.

In that the concepts and innovations proposed in the project are as yet untested in a field situation, the program is designed to provide adequate opportunities to test, evaluate, and revise procedures and methodologies throughout the life of the project.

PROJECT IMPLEMENTATION PLAN

**I. Grant Agreement Signed.**

**II. Bridge Site Survey:**

Prior  
Action

1. SATA technical assistance in place in SBD. (SATA/SBD).
2. Design of initial criteria for site selection completed. (SATA/SBD/USAID).
3. Completion of initial training manual of Bridge Survey Guidelines. (SATA).
4. Assignment of SBD personnel to socio-economic survey teams. (SBD).
5. Training of initial survey teams completed. (SBD/SATA).
6. Completion of initial field surveys. (SATA/SBD).
7. Completion of initial site selection. (SBD) (See III A 3).
8. Evaluation of site selection criteria and survey methodology (SBD/SATA/USAID).
9. Revision of initial criteria and site survey methodology (SBD/SATA/USAID).
10. Completion of second training program for survey teams (SBD).
11. Completion of second field survey (SBD).
- \*12. Completion of second set of site selection. (SBD/SATA/USAID) (See III B 6).
- \*13. Evaluation of site selection criteria and survey methodology (SBD/SATA/USAID).
14. Completion of revision of criteria and survey procedures. (SBD/SATA/USAID).
15. Completion of third training program for survey teams (SBD/SATA).

16. Completion of third field survey (SBD).
17. Completion of third set of site Selection (SBD/SATA/USAI). (See III C 1).
18. Evaluation of Site Selection criteria and Survey Methodology completed (SBD/SATA/USAID) (VII).
19. Completion of final revision of criteria and Survey procedure (SBD/SATA/USAID).

**III. A. Bridge Construction: (initial tranche)**

1. Advertise for procurement of initial tranche of imported materials. (SBD/USAID).
2. Advertise for Fabrication of Parts. (SRD/USAID).
3. Site selection, construction design and cost estimates agreed to. (SATA/SBD/USAID) (See II 7).
4. Place orders for imported materials. (SBD/USAID).
5. Place orders for Fabrication of parts. (SATA/SBD/USAID).
6. Advertise for transportation to site, (SBD/USAID).
7. Sign transportation contracts. (SBD/USAID).
8. Delivery of imported materials to SBD. (SBD).
9. Fabricated parts and imported materials delivered to site. (SRD).
10. Construction of bridges completed. (SRD).
11. Inspection of bridges completed. (SBD/SATA/USAID).
12. Completion of initial reimbursement payments. (USAI).
13. Evaluation of initial reimbursement and construction. (USAI/SBD/SATA) (See VII).

**B. Bridge Construction: (second tranche)**

1. Site selection, construction design and cost estimates agreed to. (SATA/SRD/USAID) (See II 12).

2. Advertise for procurement of second tranche of imported materials. (SBD/USAID).
3. Advertise for Fabrication of parts. (SBD/USAID).
4. Place orders for procurement of second tranche of imported materials. (SBD/USAID).
5. Place orders for Fabrication of parts for second tranche construction. (SBD/USAID).
6. Advertise for transportation to sites. (SBD/USAID).
7. Sign transportation contracts. (SBD).
8. Delivery of imported parts complete. (SBD).
9. Fabricated Part and Imported Materials delivered to site. (SBD).
10. Construction of bridges completed (SBD).
11. Inspection of bridges completed. (SBD/SATA/USAID).
- \*12. Completion of second tranche reimbursement. (USAID) (See : 4).
- \*13. Evaluation of second tranche reimbursement and construction. (USAID/SBD/SATA) (VII ).

C. Bridge Construction: (third tranche).

- \*1. Site selection, construction design and cost estimates agreed to. (SBD/USAID/SATA) (II 17).
2. Advertise for procurement of imported materials. (SBD/USAID).
3. Advertise for fabrication of parts (SBD/USAID).
4. Place orders for procurement of imported materials. (SBD/USAID).
5. Place orders for fabrication of parts for bridges. (SBD/USAID).
6. Advertise for transportation to the sites. (SBD/USAID).
7. Sign transportation contracts. (SBD).

- 8. Delivery of imported materials completed. (SBD).
- 9. Fabricated parts and imported materials delivered to sites. (SBD).
- 10. Construction of bridges completed. (SBD).
- 11. Inspection of bridges completed. (USAID/SBD/SATA).
- \*12. Completion of final reimbursement. (USAID).
- \*13. Final evaluation of Project. (USAID/SATA/SBD) (VII).

IV. Trail Network Classification and Study:

Prior  
Action

- 1. Scope of work designed (USAID-TDY).
- 2. PIO/T issued (USAID/N).
- 3. Stereo aerial photos and national base map made available for use in AID/W (USAID/ION).
- 4. Consultant's contract signed (AID/W).
- 5. U.S. photo and map interpretation completed (consultant).
- 6. Nepalese adaptation of interpretation results completed (consultant).
- 7. Graphical representation of trail classification system completed (contractor).
- \*8. Evaluation of study and submission of recommendations for possible follow on program completed (USAID/ION/contractor). (VII).

V. Operational SBD bridge maintenance and trail improvement capacity:

Prior  
Action

- 1. SATA technical assistance in place within SBD (SBD/SATA).
- 2. SBD personnel assigned to Regional Offices (SBD).
- 3. Inventory of bridges in Region begun. (SBD).
- \*4. Completion of initial year inventory of bridges (SBD). (See III B 12).

\*5. Evaluation of maintenance program completed (SBD/SATA/USAID). (VII).

6. Revision of procedures completed (SBD/SATA).

VI. Improved LDD bridge construction capacity:

1. Peace Corps Volunteer in place in LDD (PC/LDD).

2. Maintenance, Training construction manual for local type bridges completed (PC/LDD).

3. Selection of local technicians for training (PC/District).

4. Training of local technicians completed (PC).

5. Inspection of completed bridge (PC/LDD/USAID).

6. Reimbursement for initial bridge construction complete (USAID).

\*7. Evaluation of operation (SBD/USAID/LDD/PC). (VII).

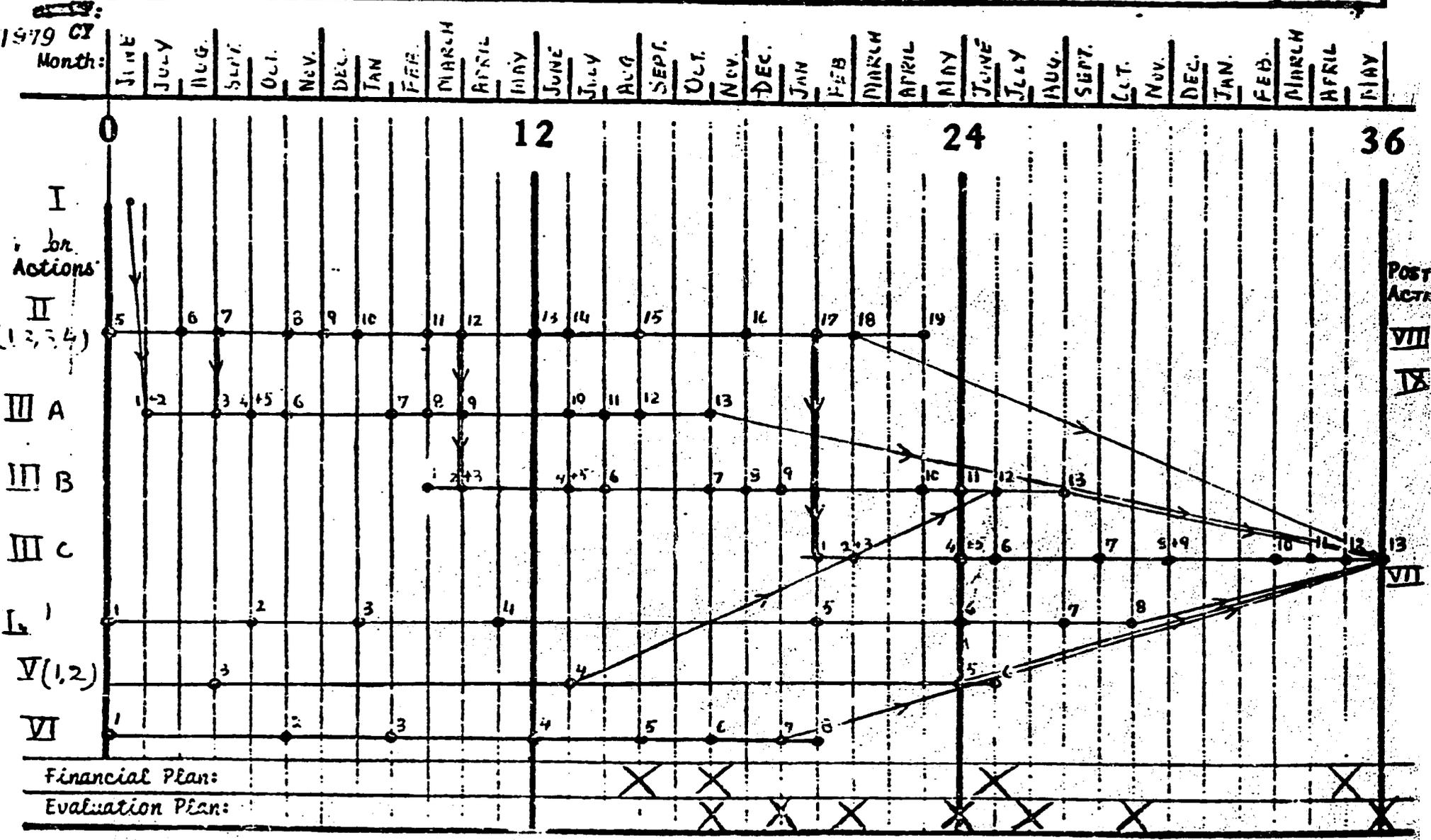
8. Revisions in procedure completed (LDD/SBD/PC/USAID).

\*VII. Project evaluation completed (AID/W/USAID).

VIII. Project recommendation incorporated into rural development strategy and initiation of possible follow on project.

IX. Implementation of P.P. recommendations:

Country: NEPAL	Project No: 367-0119	Project Title: TRAIL SUSPENSION BRIDGE	Date: 11/79	/ / Original /X / Revision: #1	PPT app
-------------------	-------------------------	---	----------------	-----------------------------------	---------



PROJECT PERFORMANCE NETWORK

66. X

#### D. EVALUATION PLAN

In that the purpose of the Project is to upgrade an already existing and functioning GON institution by utilizing a number of innovations and concepts as yet not fully tested in a Nepalese context, the project relies heavily upon a thorough and continuous process of evaluation and refinement, in order to insure the successful adaptation and subsequent adoption of the proposed institutional development.

The Director of the Suspension Bridge Division of the Ministry of Works and Transport and the USAID Project Manager will be jointly responsible for evaluating the progress of the project on an informal continuous basis. In this manner potential problems will be identified and their detrimental effects minimized in advanced. This continuing evaluation process will also make it possible to highlight, during formal evaluation, those elements of the project which are proving themselves as being most effective.

Each of the five individual elements of the project is to be evaluated upon completion of one operational cycle or upon completion of the element in total. Once these initial individual evaluations are performed by the representatives of the concerned agencies (i.e. SBD, LDD, PC, SATA, USAID) necessary revision will be agreed upon. Then operational phases of the individual project elements can continue.

Such evaluations will be required by each of the following project elements:

1. SBD/LDD Bridge Site Surveys.
2. SBD/LDD Bridge Construction.
3. Trail Classification Study.
4. SBD Bridge maintenance and Trail improvement program.
5. LDD Bridge maintenance program.

At the end of the first construction season, after the initial year's reimbursement payments has been made, there will be a project evaluation covering all project elements. The evaluation will concentrate on the appropriateness of the reimbursement system, the utilization of the proposed criteria in site selection, the progress of the Trail Network Classification and study, as well as the SBD/LDD maintenance programs.

It is crucial that the evaluation be undertaken as a joint and collaborative effort of all concerned agencies i.e. SBD/LDD/PC/SATA/USAID. The recommendations of the evaluation for revision will then be pragmatic and can quickly be adopted by the functional agencies for application in the various elements of the project.

The final project evaluation will be held at the completion of the project and timed so as to provide maximum inputs to any subsequent program of bridge construction USAID may wish to consider in the future. The final evaluation committee will include representation from all of the operational agencies concerned with the project as well as representation from AID/W. In addition, the Mission will schedule annual internal evaluation of the Project as required.

PROJECT DESIGN SUMMARY  
LOGICAL FRAMEWORK

(INSTRUCTION: THIS IS AN OPTIONAL FORM WHICH CAN BE USED AS AN AID TO ORGANIZING DATA FOR THE PAR REPORT. IT NEED NOT BE RETAINED OR SUBMITTED.)

Life of Project:  
From FY 79 to FY 82  
Total U.S. Funding 3,000,000  
Date Prepared: April 1, 1979

Project Title & Number: Trail Suspension Bridges 367-0119

PAGE 1

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Program or Sector Goal: The broader objective to which this project contributes:</p> <p>To enhance the quality of life of the rural agricultural sector of the population of Nepal by increasing the flow of goods/services to and from the rural areas.</p> <p><u>Project Purpose:</u></p> <p>To upgrade the GON's institutional capacity to rationally improve the national bridge and trail network.</p>	<p>Measures of Goal Achievement:</p> <ul style="list-style-type: none"> <li>-Increased per capita income of the rural agricultural population during the life of project.</li> <li>-Increased agricultural production in rural areas.</li> <li>-Increased level of food consumption in rural areas.</li> <li>-Increased utilization of GON provide facilities, (ie. Health, Education Agriculture inputs &amp; extension etc.) in rural areas.</li> <li>-Increased transport of goods via bridges and Trails to and from rural areas. E.O.P.S.</li> <li>-Based on the use of the USAID criteria the selection and construction of a minimum of 9 bridges and a maximum of 12 bridges each year, for a total minimum of 25 bridges and a maximum target of 36 bridges for the life of the project.</li> </ul>	<p>GON records and discussions with Local officials of GON.</p> <p>GON/SBD records of construction and field surveys.</p> <p>USAID records of site inspections and reimbursement.</p>	<p>Assumptions for achieving goal targets:</p> <ul style="list-style-type: none"> <li>-Nationally integrated and balanced development will enhance the quality of life of the rural agricultural sector of the population.</li> <li>-Utilization of objective site selection criteria during site surveys will upgrade GON/SBD institutional capacity to construct bridges and will lead to improved approach Trails.</li> <li>-An improved nation-wide trail and bridge network will promote national integration and balance development.</li> <li>-Increasing construction of bridges and maintenance of approach trails will improve the nation-wide transport and communication system.</li> </ul>

PROJECT DESIGN SUMMARY  
LOGICAL FRAMEWORK

Life of Project:  
From FY 79 to FY 82  
Total U.S. Funding \$ 3,000,000  
Date Prepared: APRIL 1, 1979

Project Title & No.: Trail Suspension Bridge 367-0119

PAGE 2

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p><b>Outputs:</b></p> <ol style="list-style-type: none"> <li><u>A Formalized, refined GON site survey system for bridge site selection; based on engineering, social and economic criteria:</u> <ul style="list-style-type: none"> <li>Operational selection criteria.</li> <li>Trained SBD staff for survey teams.</li> </ul> </li> <li><u>National Trail Network Classification Study:</u> <ul style="list-style-type: none"> <li>Base Map of Nepal</li> <li>Classification information</li> </ul> </li> <li><u>Displaced Tradesmen study:</u> <ul style="list-style-type: none"> <li>Study</li> <li>Recommendations.</li> </ul> </li> <li><u>Operational bridge maintenance and trail improvement capacity.</u></li> <li><u>Training:</u> Geological Engineers trained and working in GON/SBD.</li> </ol>	<p><b>Magnitude of Outputs:</b></p> <ol style="list-style-type: none"> <li><u>Construction/Survey Capacity</u> <ul style="list-style-type: none"> <li>Standard Selection Criteria established by 1979</li> <li>6 SBD Survey teams assigned and in the Field by 1980.</li> <li>25 completed site surveys using USAID developed system by 1980</li> <li>75 completed site surveys using USAID developed system by 1982.</li> </ul> </li> <li><u>Trail Classification and Study</u> 50% of trails classified on USAID/GON bridges by FY 81. 1 Map and Study including recommendations submitted for project evaluation.</li> <li><u>Displaced Tradesmen study:</u> 1 Study and recommendations.</li> <li><u>Maintenance:</u> <ul style="list-style-type: none"> <li>Regional inventory of bridges throughout Nepal by EOP.</li> <li>Increased maintenance budget for SBD by EOP.</li> <li>Regularized schedule of regional maintenance inspections and work.</li> </ul> </li> <li><u>Training:</u> 5 Engineers trained.</li> </ol>	<ol style="list-style-type: none"> <li><u>GON/SBD</u> records</li> <li><u>USAID</u> records map and study evaluation and recommendations.</li> <li><u>USAID</u> records study</li> <li><u>GON/SBD-LDD</u> records. budgets</li> <li><u>USAID/GON:</u> records.</li> </ol>	<p><b>Assumptions for achieving outputs:</b></p> <p>SBD will utilize USAID selection criteria and will provide teams for survey</p> <p>The GON will contract for procurement of commodities, transport, fabrication and construction of bridges in a timely manner.</p> <p>Establishing a classification system of trails is possible and such classification will assist in regional and national bridge building and other development programs.</p> <p>GON will utilize the resultant recommendations of a Displaced Tradesmen Study to institute an appropriate program to aid these people.</p> <p>GON/SBD will assign sufficient staff and budget to perform maintenance.</p> <p>GON/DOR will utilize the engineer in the SBD program.</p>

PROJECT DESIGN SUMMARY  
LOGICAL FRAMEWORK

Life of Project:  
From FY 79 to FY 82  
Total U.S. Funding \$ 3,000,000  
Date Prepared: April 1, 1979

Project Title & Number: Trail Suspension Bridges 367-0119

PAGE 3

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Inputs:</p> <p>1. <u>Survey teams:</u> -Administrative support (GOM/SBD)   . Personnel   . Budget -Technical Assistance (SATA)   . Design of Survey procedures</p> <p>2. <u>Financial Payment for expenditures:</u>   . Commodities   . Transportation   . Fabrication   . Construction</p> <p>3. <u>Trail Classification System:</u> (USAID)   . Financing of study of system.</p> <p>4. <u>Displaced Tradesmen Study:</u> (USAID)   . Financing of study</p> <p>5. <u>Operational bridge maintenance Project</u> <u>Trail improvement capacity.</u>   . Personnel, budget and administrative support (GOM/SBD-LDD)   . T.A. (SATA)   . Training (SATA/PC)</p>	<p>Implementation Target (Type and Quantity)</p> <p>1. <u>GOM/SBD</u> 12 SBD staff assigned to survey team \$56,000 in annual SBD budget for survey costs. <u>SATA:</u>   . 1 Site survey manual produced   . 1 Training course completed   . 5 SATA Technicians assigned to SBD</p> <p>2. <u>USAID</u>   . \$1,400,000 of Steel cables, and cement procured, paid by FY 80.   . \$365,000 of fabrication contracts paid by FY 82.   . \$835,000 of transport contracts paid by FY 82.   . GOM \$740,000 of contracts for construction paid by FY 82.</p> <p>3. <u>USAID</u> 1 contract for study</p> <p>4. <u>USAID</u> 1 contract for study</p> <p>5. <u>GOM</u> \$ 110,000 in budget of SBD for maintenance for life of project <u>SATA</u> 1 Training Manual completed 1 Person assigned for training <u>PC</u> 6 PCys assigned to LDD</p>	<p>1. <u>GOM/SBD</u>   . Personnel records   . Departmental Budget</p> <p><u>SATA</u> - completed manuals - personnel records</p> <p>2. <u>USAID</u>   . Records of inspection tours <u>GOM/SBD-LDD</u>   . records of procurement.   . records of fabrication.   . records of transport.   . records of construction.   . mill certification of minimum specification of material.</p> <p>3. <u>USAID</u>   . contracts   . study and recommendation and map</p> <p>4. <u>USAID</u>   . contract   . study and recommendation.</p> <p>5. <u>GOM/SBD-LDD</u>   . records and budget</p> <p><u>SATA</u>   . records and completed manual <u>PC</u>   . 6 of PCVs assigned <u>USAID</u> records of purchase and distribution.</p>	<p>Assumptions for providing inputs:</p> <p>GOM will continue to support the bridge building program of SBD.</p> <p>SATA will maintain it's present level of technical support within GOM.</p> <p>SBD will tender and contract on a timely basis for necessary bridge parts, meeting minimum specifications.</p> <p>Peace Corps will continue to provide PCV's for assignment in LDD.</p>

101



AGENCY FOR INTERNATIONAL DEVELOPMENT  
**PROJECT AUTHORIZATION AND REQUEST  
 FOR ALLOTMENT OF FUNDS - PART I**

1. TRANSACTION CODE  
 A - ADD  
 C - CHANGE  
 D - DELETE

2. DOCUMENT CODE  
 PAF  
 5

3. COUNTRY/ENTITY

4. DOCUMENT REVISION NUMBER

5. PROJECT NUMBER (7 digits)  
 [37-011]

6. BUREAU/OFFICE  
 A. SYMBOL: [MFA] B. CODE: [0]

7. PROJECT TITLE (Maximum 60 characters)  
 [MAIL SUPPLY TO NEPAL]

8. PROJECT APPROVAL DECISION  
 A - APPROVED  
 C - DISAPPROVED  
 DE - DEAUTHORIZED

9. EST. PERIOD OF IMPLEMENTATION  
 YRS. [03] QTR. [ ]

10. APPROVED BUDGET AID APPROPRIATED FUNDS (\$000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE		E. 1ST FY [2]		H. 2ND FY		K. 3RD FY	
		C. GRANT	D. LOAN	F. GRANT	G. LOAN	I. GRANT	J. LOAN	L. GRANT	M. LOAN
(1)	133	29		3000					
(2)									
(3)									
(4)									
TOTALS				3000					

A. APPROPRIATION	N. 4TH FY		O. 5TH FY		LIFE OF PROJECT		11. PROJECT FUNDING AUTHORIZED (ENTER APPROPRIATE CODE(S)) 1 - LIFE OF PROJECT 2 - INCREMENTAL LIFE OF PROJECT	A. GRANT	B. LOAN
	D. GRANT	P. LOAN	R. GRANT	S. LOAN	T. GRANT	U. LOAN			
(1)					3000			1	
(2)									
(3)									
(4)									
TOTALS					3000				

PROJECT FUNDING AUTHORIZED THRU [ ]

12. INITIAL PROJECT FUNDING ALLOTMENT REQUESTED (\$000)

A. APPROPRIATION	B. ALLOTMENT REQUEST NO.	
	C. GRANT	D. LOAN
(1)	3000	
(2)		
(3)		
(4)		
TOTALS		3000

13. FUNDS RESERVED FOR ALLOTMENT

TYPED NAME (NAME, NAME/INITIALS)  
 S.H. Butterfield, Director, USAID/Nepal

SIGNATURE  
 [Signature]

DATE  
 [Date]

14. SOURCE/ORIGIN OF GOODS AND SERVICES  
 000  041  LOCAL  OTHER

15. FOR AMENDMENTS, NATURE OF CHANGE PROPOSED

FOR PPC/PIAS USE ONLY	16. AUTHORIZING OFFICE SYMBOL	17. ACTION DATE				18. ACTION REFERENCE (Optional)	ACTION REFERENCE DATE			
		MM	DD	YY			MM	DD	YY	

PROJECT AUTHORIZATION AND REQUEST FOR ALLOTMENT OF FUNDS

PART II

Name of Country: Nepal

Name of Project: Trail Suspension Bridges

Number of Project: 367-0119

Pursuant to Part 1, Chapter 1, Section 103, of the Foreign Assistance Act of 1961, as amended, I hereby authorize a Grant to Nepal, the "Cooperating Country", of not to exceed three million United States Dollars (\$3,000,000) the ("Authorized Amount") to help in financing certain foreign exchange and local currency costs of goods and services required for the project as described in the following paragraph.

The project consists of financing by AID for the costs associated with the procurement of imported materials for bridge construction, the fabrication of bridge components and the transport of components to agreed upon bridge sites. Other elements of the project include; costs associated with the contracting by AID for a Trail Classification study of Nepal's Trail Network, the costs associated with the contracting for a study of possible alternative employment for the tradesmen that are occupationally displaced by the construction of bridges, and the costs of training.

I hereby authorize the initiation of negotiation and execution of the Project Agreement by the officer to whom such authority has been

delegated in accordance with A.I.D. regulations and Delegations of Authority subject to the following essential terms and covenants and major conditions; together with such other terms and conditions as A.I.D. may deem appropriate:

The following waiver to AID regulations is approved; a waiver of the standard required 25% host country contribution to the costs of the project.

a. Source and Origin of Goods and Services

Goods and services, except for ocean shipping, financed by A.I.D. under the project shall have their source and origin in the Cooperating Country and in countries included in A.I.D. Geographic Code 941 except as A.I.D. may otherwise agree in writing. Ocean shipping financed under the Grant shall be procured in the U.S. or the Cooperating Country, except as A.I.D. may otherwise agree in writing.

Signature: \_\_\_\_\_

S. H. Butterfield  
Director, USAID/N

Date: \_\_\_\_\_

8/31/79

CHECKLIST OF STATUTORY CRITERIAA. GENERAL CRITERIA FOR COUNTRY

- |  |  |
|--|--|
| 1. <u>FAA Sec. 116.</u> Can it be demonstrated that contemplated assistance will directly benefit the needy? If not, has the department of state determined that this government has engaged in consistent patterns of gross violations of internationally recognized human rights?  | 1. The Project Paper clearly discusses the method in which this project will directly benefit the needy in the specific areas where bridge will be built in rural remote areas of Nepal. |
| 2. <u>FAA Sec. 481.</u> Has it been determined that the government of recipient country has failed to take adequate steps to prevent narcotics drugs and other controlled substances (as defined by the Comprehensive Drug Abuse Prevention and Control Act of 1970) produced or processed, in whole or in part, in such country, or transported through such country, from being sold illegally within the jurisdiction of such country to U. S. Government personnel or their dependents, or from entering the U. S. unlawfully? | 2. No.   |
| 3. <u>FAA Sec. 620(a).</u> Does recipient country furnish assistance to Cuba or fail to take appropriate steps to prevent ships or aircraft under its flag from carrying cargoes to or from Cuba?  | 3. No, as far as known.  |
| 4. <u>FAA Sec. 620(b).</u> If assistance is to a government, has the Secretary of State determined that it is not controlled by the international Communist movement?  | 4. Yes.  |

5. FAA Sec. 620(c). If assistance is to government, is the government liable as debtor or unconditional guarantor on any debt to a U.S. citizen for goods or services furnished or ordered where (a) such citizen has exhausted available legal remedies and (b) debt is not denied or contested by such government? No such indebtedness is known to exist.
6. FAA Sec. 620(e) (1) If assistance is to a government, has it (including government agencies or subdivisions) taken any action which has the effect of nationalizing, expropriating, or otherwise seizing ownership or control of property of U. S. citizens or entities beneficially owned by them without taking steps to discharge its obligations toward such citizens or entities? No.
7. FAA Sec. 620(f); App. Sec. 108. Is recipient country a Communist country? Will assistance be provided to the Democratic Republic of Vietnam Cambodia, Laos, Cuba, Uganda, Mozambique or Angola? No.
8. FAA Sec. 620(i). In recipient country in any way involved in (a) subversion of, or military aggression against, the United States or any country receiving U.S. assistance, or (b) the planning of such subversion or aggression? No.

9. FAA Sec. 620(j). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction, by mob action, of U. S. property? No.
10. FAA Sec. 620(l). If the country has failed to institute the investment guaranty program for the specific risks of expropriation, invertibility or confiscation, has the AID Administrator within the past year considered denying assistance to such government for this reason? An investment guaranty program for the specific risks cited has not been instituted. The AID Administrator has not considered denying assistance to Nepal for this reason.
11. FAA Sec. 620(o): Fisherman's Protective Act, Sec. 5. If country has seized, or imposed any penalty or sanction against, any U. S. fishing activities in international waters, Nepal has not seized or imposed penalties or sanctions against any U. S. fishing activities. Nepal has no navy.
- a. has any deduction required by Fishermen's Protective Act been made a. not applicable.
- b. has complete denial of assistance been considered by AID Administrator? b. not applicable.
12. FAA Sec. 620(q): App. Sec. 503  
 (a) Is the government of the recipient country in default on interest or principal of any AID loan to the country? (a) No.  
 (b) Is country in default exceeding one year on interest or principal on U S. loan under program for which App. Act appropriates funds, unless debt was earlier disputed, or appropriate steps taken to cure default? (b) No.

13. FAA Sec. 620(s). What percentage of country budget is for military expenditures? How much of foreign exchange resources spent on military equipment? How much spent for the purchase of sophisticated weapons systems? (Consideration of these points is to be coordinated with the Bureau for Program and Policy Coordination, Regional Coordinators and Military Assistance Staff (PFC/RC).
- Nepal's budget for FY 1977/78 shows 5.6% of the country's total budget devoted to defense. Little foreign exchange is used to acquire military equipment or sophisticated weapons systems.
14. FAA Sec. 620(t). Has the country severed diplomatic relations with the United States? If so, have they been resumed and have new bilateral assistance agreements been negotiated and entered into since such resumption?
- No, the first question. Second question not applicable.
15. FAA Sec. 620(u). What is the payment status of the country's U.N. obligations? If the country is in arrears, were such arrearages taken into account by the AID Administrator in determining the current AID Operational Year Budget?
- Nepal is not in arrears in its obligations to the UN.
16. FAA Sec. 620A. Has the country granted sanctuary from prosecution to any individual or group which has committed an act of international terrorism?
- No.

17. FAA Sec. 666. Does the country object, basis of race, religion, national origin or sex, to the presence of any officer or employee of the U.S. there to carry out economic development program under FAA?

No.

18. FAA Sec. 669. Has the country, after August 3, 1977, delivered or received nuclear reprocessing or enrichment materials or technology, without specified arrangements on safeguards? Has it detonated a nuclear device after August 3, 1977 although not a "nuclear-weapon state" under the non proliferation treaty?

No.

19. FAA Sec. 901. Has the country denied its citizens the right or opportunity to emigrate?

No, as far as known.

#### B. FUNDING CRITERIA FOR COUNTRY

##### 1. Development Assistance Country Criteria

a. FAA Sec. 102(c). (d) have criteria been established, and taken into account, to assess commitment and progress of country in effectively involving the poor in development, on such indexes as: (a) small-farm labor intensive agriculture, (2) reduced infant mortality, (3) population growth, (4) equality of income distribution, and (5) unemployment.

The Government's commitment and progress in each of these areas is reviewed as appropriate in preparation and evaluation of projects. Criteria, when appropriate, are established within the context of each project as objectively verifiable indicators.

b. FAA Sec. 104(d) (1). If appropriate is this development activity designed to build motivation for smaller families in programs such as education in and out of schools, nutrition, disease control, maternal and child health services, agricultural production, rural development, and assistance to urban poor?

By using the Proposed criteria for bridge site selection the GON will construct only those bridges which will facilitate the development of Programs in the rural areas that provide the elements mentioned in this question.

c. FAA Sec. 201(b)(5). (7) & (8): Sec. 208: 211 (a) (4), (7). Describe extent to which country is:

(1) Making appropriate efforts to increase food production and improve means for food storage and distribution.

(2) Creating a favorable climate for foreign and domestic private enterprise and investment.

(3) Increasing the public's role in the developmental process.

(4) (a) Allocating available budgetary resources to development.

(b) Diverting such resources for unnecessary military expenditure and intervention in affairs of other free and independent nations.

(5) Making economic, social, and political reforms such as tax collection improvements and changes in land tenure arrangements, and making progress toward respect for the rule of law, freedom of expression and of the press, and recognizing the importance of individual freedom, initiative, and private enterprise.

The Fifth Development Plan (1975-1980) puts major stress on increased food production and improved marketing of agricultural products.

Nepal provides tax benefits to foreigners investing in needed development projects. The government has taken some actions to create a favorable climate for domestic private enterprise and investment, especially in the case of import substitution or export commodities.

Villagers in parts of Nepal are building schools, water systems and farm-to-market roads. This is on a modest scale so far but is an appreciable start.

69% of Nepal's total FY 1977/1978 budget is devoted to development.

Nepal has one of the lowest per capita military expenditures of any country in the world.

The monarchical system in Nepal is gradually broadening. GON is allowing greater freedom of expression, although the press is still largely government-controlled. There is a Parliament with some, if limited, effective powers. Entrepreneurs operate fairly freely. The government is seeking Western advice in legal matters, taxation, finance, private enterprise, and information services.

(6) Otherwise responding to the vital economic, political, and social concerns of its people, and demonstrating a clear determination to take effective self-help measures.

GON has strengthened its commitment to development in recent years, and has shown a new willingness to take meaningful self-help measures in order to carry out the Fifth Five Year Plan.

c. FAA Sec. 201(b), 211(a).

Is the country among the 20 countries in which development assistance loans may be made in this fiscal year, or among the 40 in which development assistance grants (other than for self-help projects) may be made?

1. FAA Sec. 115. Will country be furnished, in same fiscal year, either security supporting assistance, or Middle East peace funds? If so, has congress specifically authorized such use of funds, or is assistance for population programs, humanitarian aid through international organizations, or regional programs?

No to first question. Second question not applicable.

A. GENERAL CRITERIA FOR PROJECT

APP. Unnumbered; FAA Sec. 653 (b):  
Sec. 671.

1. (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%)?

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 United States 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 loan?

4. FAA Sec. 611(b); APP. Sec. 101. If water or water-related land resource construction, has the 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, and all U.S. assistance for it will to exceed \$1 million, has Mission Director certified the country's capability effectively to maintain and utilize the project?

A. General Criteria for Project:

1. (a) Notification of the proposed project has been sent to the congress as part of the annual AID congressional presentation.

(b) Yes.

2. FAA Sec. 611(a)(1)

(a) All plans and cost estimates necessary to implement the assistance program are complete. Plans and cost estimates for the project are based upon a World Bank financed UNDP Trail Suspension Bridge Study conducted in 1976 and updated by USAID in 1978.

3. No further legislative action is required.

4. Not applicable.

5. Project includes a 2.6 million dollar construction component and the Mission Director has certified that the host country is capable of effectively maintaining & utilizing the project. (See Annex of Project Paper).

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) Information and conclusions whether loan 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 association; (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 the loan will encourage U. S. Private trade and investment abroad and how it will 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); See 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 United States are utilized to meet the cost of contractual and other services.
6. A number of other international donor play a vital role in the project implementation and have been consulted throughout P.P. design.
7. (a) The grant will have only a minimal effect on flows of international trade due to possible importation of raw materials or bridge construction. (b) The project will foster private initiative & competition in those areas the bridge will be in. The effect will be beneficial. (c) The project bridges are envisioned as a vital catalyst to encourage development and use of cooperatives, credit unions etc. (d) The project bridges will discourage monopolistic practices by enabling more businesses to trade and travel throughout Nepal. (e) The project will increase technical efficiency of industry, agriculture and commerce by opening up previously isolated areas to such inputs. (f) No effect on labor unions.
8. The project is not expected to directly foster US investment abroad.
9. The project Grant Agreement contains provisions which assure that the GON will utilize local currencies for support of local costs expenses of the project.

10. FAA Sec. 612(1). Does the United States own excess foreign currency and, if so, what arrangements have been made for its release? 10. No.

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 power plant under an agreement for cooperation between the U.S. and any other country? 11. No.

B. FUNDING CRITERIA FOR PROJECT

B. Funding Criteria for Project

1. Development Assistance Project Criteria

(a) FAA Sec. 102(c); Sec. 111; Sec. 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, 104, 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;

1. Development Assistance Project Criteria

(a) The purpose of the project is to upgrade the GON bridge site selection process so as to insure the involvement of the rural poor in the selection process. Such a process will provide that bridges are chosen for construction giving major emphasis on their beneficial effects on local communities in the rural areas etc.

(b) The bridges constructed under the project are viewed as crucial catalysts of development which in turn will help development of cooperative etc.

(b) FAA Sec. 103.

(1) The project is designed so as to provide the transport and communication facilities which will improve the productivity and income of the small farmers.

(2) Not applicable

- (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;
- (3) Not Applicable.
- (4) (106) for technical assistance, energy, research, reconstruction, and selected development problems; if so, extent activity is:
- (4) Not Applicable.
- (a) technical cooperation and development, especially with U. S. private and voluntary, or regional and international development, organizations;
- (a) Not Applicable.
- (b) to help alleviate energy problem;
- (b) Not Applicable.
- (c) research into, and evaluation of, economic development processes and techniques;
- (c) Not Applicable.
- (d) reconstruction after natural or manmade disaster;
- (d) Not Applicable.
- (e) for special development problem, and to enable proper utilization of earlier U. S. infrastructure, etc., assistance;
- (e) Not Applicable.
- (f) for program 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.
- (f) Not Applicable.
- (5) (107) by grants for coordinated private effort to develop and disseminate intermediate technologies appropriate for developing countries.
- (5) (107) Not Applicable.

(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 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 worker-power 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.

(c) The GON will provide such assurances by signing a grant agreement with provisions contained there in that it will provide at least 22% of the cost of the project, a waiver for a "relatively least developed country" has been signed.

(d) No, grant assistance will not be disbursed for the project over more than three years.

(e)

(1) The project will have a direct beneficial impact on the encouragement of democratic, economic, political and social institutions where ever a bridge is constructed.

(2) By improved transport facilities in remote areas the project bridges will aid in self-help measures aimed at meeting the country's food needs.

(3) By providing limited training in bridge maintenance the project will improve availability of trained worker power in-country.

(4) By improving transport facilities in remote areas the project bridges will assist the GON to meet the country's health needs.

(5) The project bridges will generally assist GON in all of the areas mentioned.

(6) The project bridges will have a very beneficial impact on integrating women into the recipient country's national economy.

(f) FAA Sec. 231(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 political processes essential to self-government.

(g) FAA Sec. 201(b) (2)-(4) and -(5) Sec. 201(e); Sec. 211(a)(1)-(3) and -(3). 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, 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.

Procurement

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

(f) The GON has stated in its Five Year Plans that increasing access of rural people to services of the Government is one of its major goals. This project is viewed as crucial to the GON's ability to do this. The institutional development envisioned in the project will utilize the country's intellectual resources. The bridges will enable the GON to more easily contact the rural population and thereby support civic education and training in skills required for effective participation in government and political processes essential to self-government.

(g)

(1) The project is directly related to the increase of productive capabilities and self-sustaining economic growth, and the development of institutions directed toward social progress.

(2) The project is consistent with GON's development goals and is consistent with AID mandates.

(3) The project paper and annexes contain extensive analysis of the activities economic and social soundness.

(h) No appreciable effects.

Procurement

(1) The goods and services provided under the project will be made available in such a way as to permit U.S. small business to participate equitably at all stages of the project.

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(l). If the cooperating country discriminates against U.S. marine insurance companies, will agreement require that marine insurance be placed in the U.S. on commodities financed?
  4. FAA Sec. 604(c). 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. 608(a). Will U. S. Government excess personal property be utilized wherever practicable in lieu of the procurement of new items?
  6. MMA 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?
2. All commodity will be financed under GON normal procurement regulations and channels and reimbursement where appropriate will be through the FAR system, therefore U.S. sources will not be utilized.
  3. Not applicable due to use of FAR system.
  4. Not applicable due to use of FAR system.
  5. Not applicable.
  6. Not applicable.
  7. Yes technical assistance financed by the project will be provided from private enterprise on a contract basis. No other U. S. governmental agencies will be involved in project.

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?

8. Yes, provided for in the individual contracts & the Grant agreement.

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?

B. Construction

1. Yes, the trail network study will be contracted to a U.S. firm.
2. Yes, all contracts for construction will be let following FMG and US procedures and regulation, thus insuring competition through-out.
3. Not applicable.

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- the countries, contrary to the best interests of the U.S.?

C. Other Restrictions:

1. Not applicable.
2. Not applicable.
3. Yes.

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? 4. Not applicable.
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? 5. (a) Not applicable.
- (b) FAA Sec. 620(g). to compensate owners for expropriated nationalized property? (b) Not applicable.
- (c) FAA Sec. 660. to finance police training or other law enforcement assistance, except for narcotics programs? (c) Not applicable.
- (d) FAA Sec. 662. for CIA activities? (d) Not applicable.
- (e) App. Sec. 103. to pay pensions, etc., for military personnel? (e) Not applicable.
- (f) App. Sec. 105. to pay UN assessments? (f) Not applicable.
- (g) App. Sec. 106. to carry out provisions of FAA Sec 209(1) and 251 (h)? (transfer to multilateral organizations for lending). (g) Not applicable.
- (h) App. Sec. 112: to finance the export of nuclear equipment, fuel, or technology or to train foreign nationals in nuclear fields (h) Not applicable.
- (i) App. Sec. 501. to be used for publicity or propaganda purposes within U. S. not authorized by Congress? (i) Not applicable.

ANNEX 6

A.I.D. Project Number 367-0119

PROJECT GRANT AGREEMENT

BETWEEN

HIS MAJESTY'S GOVERNMENT OF NEPAL

and the

UNITED STATES OF AMERICA

for

Trail Suspension Bridges

Dated:

Table of Contents

Project Grant Agreement

	<u>Page</u>
Article 1: The Agreement .....	1
Article 2: The Project.....	1
SECTION 2.1 Definition of Project.....	1
SECTION 2.2 Annex 1 .....	2
Article 3: Financing .....	2
SECTION 3.1 The Grant.....	2
SECTION 3.2 HMG/N Resources for the Project.....	2
SECTION 3.3 Project Assistance Completion Date.....	3
Article 4: Conditions Precedent to Release .....	4
SECTION 4.1 Release.....	4
SECTION 4.2 Project Implementation.....	5
SECTION 4.3 Releases based on Use of Criteria of Selection	5
SECTION 4.4 Releases of Funds for Training .....	6
SECTION 4.5 Releases of Funds for Reimbursement of Local Currency Cost.....	6
SECTION 4.6 Notification.....	7
SECTION 4.7 Terminal Dates for Conditions Precedent.....	7
Article 5: Project Evaluation and Reports.....	7
SECTION 5.1 Project Evaluation.....	7
Article 6: Procurement Source.....	8
SECTION 6.1 Foreign Exchange Costs.....	8
SECTION 6.2 Local Currency Costs.....	8
Article 7: <u>Release</u> .....	8
SECTION 7.1 Release for Foreign Exchange Costs .....	8
SECTION 7.2 Release for Local Currency Costs.....	9
SECTION 7.3 Other Forms of Release.....	10
SECTION 7.4 Rate of Exchange.....	10
Article 8: Miscellaneous.....	10
SECTION 8.1 Communications.....	10
SECTION 8.2 Representatives.....	12
SECTION 8.3 Standard Provisions Annex 2.....	12
Annex 1 - Amplified Description of Project	
Annex 2 - Project Grant Standard Provisions Annex	

Project Grant Agreement

Dated:

Between

His Majesty's Government of Nepal (hereinafter referred to as "HMG/N")

And

The United States of America, acting through the Agency for International Development (hereinafter referred to as "A.I.D.").

Article 1: The Agreement

The purpose of this Agreement is to set out the understandings of the Parties named above with respect to the undertaking by the Parties of the Project and with respect to the financing of the Project by the Parties.

Article 2: The Project

SECTION 2.1. Definition of Project. The project will provide necessary resources to finance the costs for three distinct elements of the HMG/N bridge construction program. These elements shall include:

- a. Procurement and transport of steel cable, cement and other imported materials,
- b. The fabrication of steel components for specific bridges, and
- c. The transportation costs of delivering steel components and imported materials to specific bridge sites.

In addition the Project will provide resources necessary to finance training, a study of the tradesmen adversely effected by bridge construction and a map and classification system of the nation-wide trail network of Nepal.

SECTION 2.2 Annex 1. Annex 1, attached, amplifies the above definition of the Project. Within the limits of the above definition of the Project, elements of the amplified description stated in Annex 1 may be changed by written agreement of the authorized representatives of the Parties named in Section 8.2, without formal amendment of this Agreement.

Article 3: Financing

SECTION 3.1 The Grant. To assist HMG/N to meet the costs of carrying out the Project, A.I.D. pursuant to the Foreign Assistance Act of 1961, as amended, agrees to grant HMG/N under the terms of this Agreement not to exceed three million United States ("U.S.") Dollars (\$3,000,000) ("Grant"). The Grant may be used to finance foreign exchange costs, as defined in Section 0.1, and local currency costs, as defined in Section 0.2, of goods and services required for the Project.

SECTION 3.2. HMG/N Resources for the Project

(a) HMG/N agrees to provide or cause to be provided for the Project, in addition to the Grant, the other resources required to carry out the Project effectively and in a timely manner.

(b) The resources for the total program, including costs borne on an "in kind" basis, provided by HMG/N shall be the equivalent of approximately U.S. (\$1,079,000).

SECTION 3.3. Project Assistance Completion Date

(a) The "Project Assistance Completion Date" (hereinafter referred to as "PACD"), which is June 30, 1982, or such other date as the Parties may agree to in writing, is the date by which the Parties expect that all services financed under the Grant will have been performed and all goods financed under the Grant will have been furnished for the Project as contemplated in this Agreement.

(b) Except as A.I.D. may otherwise agree in writing, A.I.D. will not issue or approve documentation which would authorize release of the Grant for services performed subsequent to the PACD or for goods furnished for the project, as contemplated in this Agreement, subsequent to the PACD.

(c) Requests for release, accompanied by necessary supporting documentation prescribed in Project Implementation Letters are to be received by A.I.D. or any bank described in Section 7.1 no later than nine (9) months following the PACD, or such other period as A.I.D. agrees to in writing. After such period, A.I.D., after consultation with HMG/N, may at any time or times reduce the amount of the Grant by all or any part thereof for which requests for release, accompanied by necessary supporting documentation prescribed in Project Implementation Letters, were not received before the expiration of said period.

Article 4: Conditions Precedent to Initial Release

SECTION 4.1. Release. Prior to any release under the Grant, or to the issuance by A.I.D. of documentation pursuant to which a release will be made, HMG/N will, except as the Parties may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D.:

(a) A statement from the Ministry of Finance that this Agreement has been duly authorized and executed on behalf of HMG/N and that it constitutes a valid obligation of HMG/N;

(b) A statement of the name of the person holding or acting in the office of HMG/N specified in Section 8.2, and of any additional representative, together with a specimen signature of each person specified in such statement; and

SECTION 4.2. Project Implementation: Prior to release under the Grant, or to issuance by AID of documentation pursuant to which release will be made for costs associated with the Project, HMG/N will, except as the parties may otherwise agree in writing, furnish to AID in form and substance satisfactory to AID, the name and signature of the designated Project Manager. The Project Manager will call a quarterly meeting of all parties involved in the project to review the management and coordination of the project as outlined in the Project Paper.

SECTION 4.3. Releases based on use of Criteria of Selection: Prior to release under the Grant or to the issuance by AID of documentation pursuant to which such release will be made for any costs for bridges to be financed by AID, HMG/N will furnish to AID in form and substance satisfactory to AID, documentation that the socio-economic ranking of HMG/N proposed bridge sites will be taken into consideration in the selection of bridges to be financed by the Grant and that a plan has been developed to incorporate the use of these criteria during all subsequent HMG/N surveying of potential bridge sites to be considered for AID financing under the Grant.

X 131

**SECTION 4.4 Releases of Funds for Training:** Prior to release under the Grant, or to issuance by AID of documentation pursuant to which releases will be made for costs associated with training, HMG/N and AID will mutually agree about the type of training to be provided and HMG/N will provide AID in form and substance satisfactory to AID, documentation that the type of training to be provided is acceptable to HMG/N, that candidates selected by HMG/N fulfill the minimum requirements of qualification for training, and that upon successful completion of training, such participants will be assigned to positions in the DOR which will encompass responsibilities for field work that utilizes the knowledge and skills acquired during their trainings and that sufficient numbers of these participants will be assigned to positions upon completion of training whose responsibilities will encompass work related to the Suspension Bridge Project of the Department of Roads.

**SECTION 4.5, Releases of Funds for Reimbursement of Local Currency Costs:** Prior to the release under the Grant or to issuance by AID of documentation pursuant to which releases will be made for Local Currency Costs associated with the AID financed bridges, HMG/N will provide AID in form and substance satisfactory to AID, evidence that contracting and tendering procedures acceptable to AID have been followed.

SECTION 4.6 Notification: When A.I.D. has determined that the conditions precedent specified in Section 4.1, 4.2, 4.3, 4.4 and 4.5 have been met, it will promptly notify HMG/N.

SECTION 4.7 Terminal Dates for Conditions Precedent

(a) If all of the conditions specified in Section 4.1 have not been met within 60 days from the date of this Agreement, or such later date as A.I.D. may agree to in writing, A.I.D., at its option, may terminate this Agreement by written notice to HMG/N.

(b) If the conditions specified in Section 4.2, 4.3 have not been met within 120 days from the date of this Agreement, or such later date as AID. may agree to in writing, AID, at its option, may cancel the then unreleased balance of the Grant, to the extent not irrevocably committed to third parties, and may terminate this Agreement by written notice to HMG/N.

Article 5: Project Evaluation and Reports

SECTION 5.1 Project Evaluation The two parties, HMG/N and AID; agree to conduct an evaluation of the Project every six months after signing this agreement until the completion of the Project.

Article 6: Procurement Source

SECTION 6.1 Foreign Exchange Costs. Releases pursuant to Section 7.1 will be used exclusively to finance the costs of goods and services required for the Project having their source and origin in the countries included in Code 941 of the A.I.D. Geographic Code Book as in effect at the time orders are placed or contracts entered into for such goods or services ("Foreign Exchange Costs"), except as A.I.D. may otherwise agree in writing, and except as provided in the Project Grant Standard Provisions Annex, Section C.1(b) with respect to marine insurance. Ocean transportation costs will be financed under the Grant only on vessels under flag registry of the United States of America or Nepal except as AID may otherwise agree in writing. For purposes of this Grant Nepal is included as a 941 country.

SECTION 6.2 Local Currency Costs. Releases pursuant to Section 7.2 will be used exclusively to finance the costs of goods and services required for the Project having their source and, except as A.I.D. may otherwise agree in writing, their origin in Nepal ("Local Currency Costs"). To the extent provided for under this Agreement, "Local Currency Costs" may also include the provision of local currency resources required for the Project.

Article 7: Release

SECTION 7.1 Release for Foreign Exchange Costs.

(a) After satisfaction of conditions precedent, HMG/N may obtain releases of funds under the Grant for the Foreign Exchange Costs of goods or services required for the Project in accordance with the terms of this Agreement, by such of the following methods as may be mutually agreed upon:

(1) by submitting to A.I.D., with necessary supporting documentation as prescribed in Project Implementation Letters, (A) requests for reimbursement for such goods or services, (B) requests for cash advances for such goods and services, or, (C) requests for A.I.D. to procure commodities or services in HMG/N's behalf for the Project; or,

(2) by requesting A.I.D. to issue Letters of Commitment for specified amounts (A) to one or more U.S. banks, satisfactory to A.I.D., committing A.I.D. to reimburse such bank or banks for payments made by them to contractors or suppliers, under Letters of Credit or otherwise, for such goods or services, or (B) directly to one or more contractors or suppliers, committing A.I.D. to pay such contractors or suppliers for such goods or services.

(b) Banking charges incurred by HMG/N in connection with Letters of Commitment and Letters of Credit will be financed under the Grant unless HMG/N instructs A.I.D. to the contrary. Such other charges as the Parties may agree to may also be financed under the Grant.

SECTION 7.2 Release for Local Currency Costs

(a) After satisfaction of conditions precedent, HMG/N may obtain releases of funds under the Grant for Local Currency Costs required for the Project in accordance with the terms of this Agreement, by submitting to A.I.D., with necessary supporting documentation as prescribed in Project Implementation Letters, requests to finance such costs.

(b) The local currency needed for such releases may be obtained by acquisition by A.I.D. with U.S. Dollars by purchase.

The U.S. dollar equivalent of the local currency made available hereunder will be, in the case of subsection (b) above, the amount of U.S. dollars required by A.I.D. to obtain the local currency.

(c) Releases for Local Currency Costs of Fabrication contracts can be made only for items produced from steel procured from countries on AID Geographic Code 935.

SECTION 7.3. Other Forms of Release. Releases of the Grant may also be made through such other means as the Parties may agree to in writing.

SECTION 7.4. Rate of Exchange. Except as may be more specifically provided under Section 7.2, if funds provided under the Grant are introduced into Nepal by A.I.D. or on behalf of A.I.D. by any public or private agency for purposes of carrying out obligations of A.I.D. hereunder, HMG/N will make such arrangements as may be necessary so that such funds may be converted into currency of Nepal at the official rate of exchange at the time the conversion is made.

Article 8: Miscellaneous

SECTION 8.1. Communications. Any notice, request, document, or other communication submitted by either Party to the other under this Agreement will be in writing or by telegram or cable, and will be deemed duly given or sent when delivered to such Party at the following addresses:

To HMG/N:

Mail and Cable Address:

For Ministry of Finance

Joint Secretary  
Foreign Aid & Programming  
Division  
Ministry of Finance  
His Majesty's Government  
Babar Mahal  
Kathmandu, Nepal

For DOR

Chief Engineer  
Department of Roads  
Ministry of Works & Transport  
His Majesty's Government  
Babar Mahal  
Kathmandu, Nepal

To A.I.D.:

Mail and Cable Address: Director  
U.S. Agency for International  
Development  
c/o American Embassy  
Kathmandu, Nepal

All such communications will be in English, unless the Parties otherwise agree in writing. Other addresses may be substituted for the above upon the giving of notice.

SECTION 2. Representatives.

For purposes of implementing this Agreement, HMG/N WILL be represented by the Secretary, Ministry of Finance and A.I.D. will be represented by the Director, USAID/Nepal, each of whom, by written notice, may designate additional representatives. The names of the representatives of HMG/N, with specimen signatures, will be provided to A.I.D., which may accept as duly authorized any instrument signed by such representatives in implementation of this Agreement, until receipt of written notice of revocation of their authority.

**SECTION 8.3. Standard Provisions Annex 2. A Project Grant Standard Provisions Annex 2 is attached to and forms part of this Agreement.**

**IN WITNESS WHEREOF, HMG/N and the United States of America, each acting through its duly authorized representative, have caused this Agreement to be signed in their names and delivered as of the day and year first above written.**

**On Behalf of His Majesty's Government  
of Nepal**

**On Behalf of The United States  
of America**

**BY: \_\_\_\_\_**

**BY: \_\_\_\_\_**

**Acting Secretary  
TITLE: Ministry of Finance**

**TITLE: Samuel H. Butterfield  
Director, USAID, Nepal**

Amplified Description of Project

Trail Suspension Bridge Project

I. Description: The Trail Suspension Bridge Project represents a collaborative effort between HMG/N and AID to upgrade the HMG/N's institutional capacity to rationally improve the national bridge and trail network. Achievement of this purpose will be based on a process of surveying and ranking of potential bridge sites prior to final selection, design and construction of bridges by the Department of Roads. The initial designs of this ranking and surveying procedure are outlined in the Project Paper. It is this initial design that will be utilized by the Department of Roads, during the analysis of potential bridges which are to be financed by AID. Such a procedure, it is understood, will be further refined and developed during the life of the project with the aim of incorporating them eventually into the standard operational procedure of the Department of Roads.

As of result of the use of such a process AID will fund, over a three year period, certain elements of the Department of Roads. AID funds totalling upto \$2,600,000 will be applied to costs associated with the following:

a. Procurement of Steel Cable, Cement and other imported material,

- b. Fabrication of steel components used in the construction of AID financed bridges, and
- c. Transportation of materials to construction sites.

The detailed procedure for financing each of these components, will be developed in Project Implementation Letters. HMG/N inputs, which will include but not be limited to, the costs of erection contracts for AID financed bridges, the technical and field personnel, and administrative support, operational and maintenance support. Where appropriate such inputs will be detailed in separate Project Implementation Letters.

The Project Manager will meet quarterly with an AID representative to insure that procurement, contracting, and disbursement of funds for goods and services essential to the implementation of the project is accomplished in a timely and expeditious manner. The Project Manager will take into consideration all relevant HMG/N and AID requirements and procedures that are cited in the Grant Agreement. The Project Manager and an AID representative will meet at least once each quarter.

The Grant will also provide funding for a number of distinct sub-projects. These sub-projects included:

- A. Upto \$10,000 for a study of the tradesmen that are displaced by the construction of Bridges. A Plan of Action for such a Study is provided

in the Project Paper Annex. A detailed Scope of Work and method of financing will be developed in appropriate Project Implementation Letters.

- B. Upto \$250,000 for a Map and Classification System of the nationwide Trail network of Nepal. An outline of such a map and study is provided in the Project Paper Annex. A detailed Scope of Work and method of financing will be developed in appropriate Project Implementation Letters.
- C. Upto \$65,000 for costs associated with training. Such Training and the selection of candidates is outlined in Section 4.4 of the Grant Agreement and
- D. AID will provide upto \$20,000 for costs associated with the procurement of imported cable and cement to be assigned to local bridges which have been designed and surveyed by HMG/N personnel in collaboration with American Peace Corps Volunteers. Such funding will be in kind and will be provided through the Department of Roads as part of a program to support the district level programs of Local Bridge construction. Procedures for requesting such support will be detailed in appropriate Project Implementation Letters.

The budget figures cited above are those provided in the attached Project Paper budget and are to be viewed as illustrative only. Any or all of these figures may be altered as appropriate by Project Implementation Letter.

111

Project Budget

Project Inputs	USAID		HMG/N		Total
	FX	LC	FX	LC	
1. Bridge Construction	1400	1200		740	3340
(a) Imported Items	(1400)				(1400)
(b) Fabricated bridge Parts		(365)			(365)
(c) Transportation Contracts		(835)			(835)
(d) Erection Contracts				(740)	(740)
2. Trail Map	220	30			250
3. Displaced Tradesmen Study		10			10
4. Training	65				65
5. Evaluation	30	25			55
6. Imports for Local Bridge Program	20				20
7. Surveys				167	167
8. SBD Overhead Costs*				172	172
(a) Maintenance				(110)	
(b) Salaries, reorganization etc.				(62)	
9. TOTALS	1735	1265		1079	4079

\*ALL HMG/N costs are prorated for project.

X 142

ANNEX 2

PROJECT GRANT AGREEMENT  
BETWEEN A.I.D. AND  
THE MINISTRY OF FINANCE,  
AN AGENCY OF  
HIS MAJESTY'S GOVERNMENT OF NEPAL

Table of Contents

Project Grant Standard Provisions

	<u>Page</u>
Article A: Project Implementation Letters	1
Article B: General Covenants	1
SECTION B. 1. Consultation	1
SECTION B. 2. Execution of Project	2
SECTION B. 3. Utilization of Goods and Services	2
SECTION B. 4. Taxation	3
SECTION B. 5. Reports, Records, Inspections, Audit	3
SECTION B. 6. Completeness of Information	4
SECTION B. 7. Other Payments	4
SECTION B. 8. Information	4
Article C: Procurement Provisions	5
SECTION C. 1. Special Rules	5
SECTION C. 2. Eligibility Date	5
SECTION C. 3. Plans, Specifications, and Contracts	5
SECTION C. 4. Reasonable Price	7
SECTION C. 5. Notification to Potential Suppliers	7
SECTION C. 6. Shipping	7
SECTION C. 7. Insurance	9
SECTION C. 8. U.S. Government-Owned Excess Property	10
Article D: Termination; Remedies	10
SECTION D. 1. Termination	10
SECTION D. 2. Refunds	11
SECTION D. 3. Nonwriter of Remedies	12
SECTION D. 4. Power of Attorney	12

Project Grant Standard

Provisions Annex

Definitions: As used in this Annex, the "Agreement" refers to the Project Grant Agreement. Terms used in this Annex have the same meaning or reference as in the Agreement.

Article A. Project Implementation Letters

To assist HMG/N in the Implementation of the Project, A.I.D., from time to time, will issue Project Implementation Letters that will furnish additional information about matters stated in this Agreement. The Parties may also use jointly agreed-upon Project Implementation Letters to confirm and record their mutual understanding on aspects of the implementation of this Agreement. Project Implementation Letters will not be used to amend the text of the Agreement, but can be used to record revisions or exceptions which are permitted by the Agreement, including the revision of elements of the amplified description of the Project in Annex 1.

Article B. General Covenants

SECTION B. 1. Consultation. The Parties will cooperate to assure that the purpose of this Agreement will be accomplished. To this end, the Parties, at the request of either, will exchange views on the progress of the Project, the performance of obligations under this Agreement, the performance of any consultants, contractors, or suppliers engaged on the Project, and other matters relating to the Project.

X 144

SECTION B. 2. Execution of Project. HMG/N will:

(a) carry out the Project or cause it to be carried out with due diligence and efficiency, in conformity with sound technical, financial, and management practices, and in conformity with those documents, plans specifications, contracts, schedules or other arrangements, and with any modifications therein, mutually approved by the Parties pursuant to this Agreement; and

(b) provide qualified and experienced management for, and train such staff as may be appropriate for the maintenance and operation of the Project, and, as applicable for continuing activities, cause the Project to be operated and maintained in such manner as to assure the continuing and successful achievement of the purposes of the Project.

SECTION B. 3. Utilization of Goods and Services

(a) Any resources financed under the Grant will, unless otherwise agreed in writing by A.I.D., be devoted to the Project until the completion of the Project, and thereafter will be used so as to further the objectives sought in carrying out the Project.

(b) Goods or services financed under the Grant, except as A.I.D. may otherwise agree in writing, will not be used to promote or assist a foreign aid project or activity associated with or financed by a country not included in Code 935 of the A.I.D. Geographic Code Book as in effect at the time of such use.

SECTION B. 4. Taxation

(a) This Agreement and the Grant will be free from any taxation or fees imposed under laws in effect in the territory of HMG/N.

(b) To the extent that (1) any contractor, including any consulting firm, any personnel of such contractor financed under the Grant, and any property or transaction relating to such contracts and (2) any commodity procurement transaction financed under the Grant, are not exempt from identifiable taxes, tariffs, duties or other levies imposed under laws in effect in the territory of HMG/N, HMG/N will, as and to the extent provided in and pursuant to Project Implementation Letters, pay or reimburse the same with funds other than those provided under the Grant.

SECTION B. 5. Reports, Records, Inspections, Audit. HMG/N will:

(a) furnish A.I.D. such information and reports relating to the Project and to this Agreement as A.I.D. may reasonably request;

(b) maintain or cause to be maintained, in accordance with generally accepted accounting principles and practices consistently applied, books and records relating to the Project and to this Agreement, adequate to show, the receipt and use of goods and services acquired under the Grant. Such books and records will be audited regularly, in accordance with generally accepted auditing standards, and maintained for three years after the date of last release of funds by A.I.D.; such books and records will also be adequate to show the basis of solicitation and award of contracts and orders, and

X 11/16

the overall progress of the Project toward completion; and

(c) afford authorized representatives of a Party the opportunity at all reasonable times to inspect the Project, the utilization of goods and services financed by such Party, and books, records, and other documents relating to the Project and the Grant.

SECTION B. 6. Completeness of Information. HMG/N confirms:

(a) that the facts and circumstances of which it has informed A.I.D., in the course of reaching agreement with A.I.D. on the Grant, are accurate and complete, and include all facts and circumstances that might materially affect the Project and the discharge of responsibilities under this Agreement;

(b) that it will inform A.I.D. in timely fashion of any subsequent facts and circumstances that might materially affect the Project or the discharge of responsibilities under this Agreement.

SECTION B. 7. Other Payments. HMG/N affirms that no payments have been or will be received by any official of HMG/N in connection with the procurement of goods or services financed under the Grant, except fees, taxes, or similar payments legally established in the country of HMG/N.

SECTION B. 8. Information. HMG/N will bring out information concerning the Project and identify the Project site and Project commodities as part of a program jointly financed by HMG/N and A.I.D., as described in Project Implementation Letters.

Article C. Procurement Provisions

SECTION C. 1. Special Rules

(a) The source and origin of ocean and air shipping will be deemed to be the ocean vessel's or aircraft's country of registry at the time of shipment.

(b) Premiums for marine insurance placed in the territory of HMG/N will be deemed an eligible Foreign Exchange Cost, if otherwise eligible under Section C.7(a).

(c) Any motor vehicles financed under the Grant will be of United States manufacture, except as A.I.D. may otherwise agree in writing.

(d) Transportation by air, financed under the Grant, of property or persons, will be on carriers holding United States certification, to the extent service by such carriers is available or on other carriers as mutually agreed. Details on this requirement will be described in a Project Implementation Letter.

SECTION C. 2. Eligibility Date. No goods or services may be financed under the Grant which are procured pursuant to orders or contracts firmly placed or entered into prior to the date of this Agreement, except as the Parties may otherwise agree in writing.

SECTION C. 3. Plans, Specifications, and Contracts. In order for there to be mutual agreement on the following matters, and except

as the Parties may otherwise agree in writing:

(a) HMG/N will furnish to A.I.D. upon request and upon preparation, including material modification,

(1) any plans, specifications, procurement or construction schedules, contracts, or other documentation relating to goods or services to be financed under the Grant, including documentation relating to the prequalification and selection of contractors and to the solicitation of bids and proposals.

(2) such documentation will also be furnished to A.I.D., upon preparation, relating to any goods or services, which, though not financed under the Grant, are deemed by A.I.D. to be of major importance to the Project. Aspects of the Project involving matters under this subsection (a) (2) will be identified in Project Implementation Letters;

(b) Documents related to the prequalification of contractors, and to the solicitation of bids or proposals for goods and services financed under the Grant will be approved by HMG/N with prior agreement of A.I.D., prior to their issuance, and where applicable, their terms will include United States standards and measurements;

(c) Contracts and contractors financed under the Grant for engineering and other professional services, for construction services, and for such other services, equipment or materials as may be specified in Project Implementation Letters, will be approved by HMG/N with

prior agreement of A.I.D., prior to execution of the contract. Material modifications in such contracts will also be approved in writing by A.I.D. prior to execution; and

(d) Consulting firms used by HMG/N for the Project but not financed under the Grant, the scope of their services and such of their personnel assigned to the Project as A.I.D. may specify, and construction contractors used by HMG/N for the Project but not financed under the Grant, shall be acceptable to A.I.D.

SECTION C. 4. Reasonable Price. No more than reasonable prices will be paid for any goods or services financed, in whole or in part, under the Grant. Such items will be procured on a fair and, to the maximum extent practicable, on a competitive basis.

SECTION C. 5. Notification to Potential Suppliers. To permit United States firms to have the opportunity to participate in furnishing goods and services to be financed under the Grant, HMG/N will furnish A.I.D. such information with regard thereto, and at such times, as A.I.D. may request in Project Implementation Letters.

SECTION C. 6. Shipping

(a) Goods which are to be transported to the territory of HMG/N may not be financed under the Grant if transported either: (1) on an ocean vessel or aircraft under the flag of a country which is not included in A.I.D. Geographic Code 935 as in effect at the time of shipment, or (2) on an ocean vessel which A.I.D., by written notice

to HMG/N has designated as ineligible; or (3) under an ocean or air charter which has not received prior A.I.D. approval.

(b) Costs of ocean or air transportation (of goods or persons) and related delivery services may not be financed under the Grant, if such goods or persons are carried: (1) on an ocean vessel under the flag of a country not, at the time of shipment, identified under the paragraph of the agreement entitled "Procurement Source: Foreign Exchange Costs," without prior written A.I.D. approval; or (2) on an ocean vessel which A.I.D., by written notice to HMG/N, has designated as ineligible; or (3) under an ocean vessel or air charter which has not received prior A.I.D. approval.

(c) Unless A.I.D. determines that privately owned United States-flag commercial ocean vessels are not available at fair and reasonable rates for such vessels, (1) at least fifty percent (50%) of the gross tonnage of all goods (computed separately for dry bulk carriers, dry cargo liners and tankers) financed by A.I.D. which may be transported on ocean vessels will be transported on privately owned United States-flag commercial vessels, and (2) at least fifty percent (50%) of the gross freight revenue generated by all shipments financed by A.I.D. and transported to the territory of HMG/N on dry cargo liners shall be paid to or for the benefit of privately owned United States-flag commercial vessels. Compliance with the requirements of (1) and (2) of this subsection must be achieved with respect to both any cargo

transported from U.S. ports and any cargo transported from non-U.S. ports, computed separately.

SECTION C. 7. Insurance

(a) Marine insurance on goods financed by A.I.D. which are to be transported to the territory of HMG/N may be financed as a Foreign Exchange Cost under this Agreement provided (1) such insurance is placed at the lowest available competitive rate, and (2) claims thereunder are payable in the currency in which such goods were financed or in any freely convertible currency. If HMG/N, by statute, decree, rule, regulation, or practice discriminates with respect to A.I.D.-financed procurement against any marine insurance company authorized to do business in any State of the United States, then all goods shipped to the territory of HMG/N financed by A.I.D. hereunder will be insured against marine risks and such insurance will be placed in the United States with a company or companies authorized to do a marine insurance business in a State of the United States.

(b) Except as A.I.D. may otherwise agree in writing, HMG/N will insure, or cause to be insured, goods financed under the Grant imported for the Project against risks incident to their transit to the point of their use in the Project; such insurance will be issued on terms and conditions consistent with sound commercial practice and will insure the full value of the goods. Any indemnification received by HMG/N under such insurance will be used to replace or repair any material damage or any loss of the goods insured or will be used to reimburse

HMG/N for the replacement or repair of such goods. Any such replacements will be of source and origin of countries listed in A.I.D. Geographic Code 935 as in effect at the time of replacement, and, except as the Parties may agree in writing, will be otherwise subject to the provisions of the Agreement.

SECTION C. 8. U.S. Government-Owned Excess Property. Wherever practicable, United States Government-owned excess property, in lieu of new items financed under the Grant, should be utilized. Funds under the Grant may be used to finance the costs of obtaining such property for the Project.

Article D. Termination; Remedies

SECTION D. 1. Termination. Either Party may terminate this Agreement by giving the other Party 30 days written notice. Termination of this Agreement will terminate any obligations of the Parties to provide financial or other resources to the Project pursuant to this Agreement, except for payment which they are committed to make pursuant to noncancellable commitments entered into with third parties prior to the termination of this Agreement. In addition, upon such termination A.I.D. may, at A.I.D.'s expense, direct that title to goods financed under the Grant be transferred to A.I.D. if the goods are from a source outside Nepal, are in a deliverable state and have not been offloaded in ports of entry of Nepal.

SECTION D. 2. Refunds

(a) In the case of any release which is not supported by valid documentation in accordance with this Agreement, or which is not made or used in accordance with this Agreement, or which was for goods or services not used in accordance with this Agreement, A.I.D., notwithstanding the availability or exercise of any other remedies under this Agreement, may require HMG/N to refund the amount of such release in U.S. Dollars to A.I.D. within sixty (60) days after receipt of a request therefor.

(b) If the failure of HMG/N to comply with any of its obligations under this Agreement has the result that goods or services financed under the Grant are not used effectively in accordance with this Agreement, A.I.D. may require HMG/N to refund all or any part of the amount of the releases under this Agreement for such goods or services in U.S. Dollars to A.I.D. within sixty days after receipt of a request therefor.

(c) The right under subsection (a) or (b) to require a refund of a release will continue, notwithstanding any other provision of this Agreement, for three years from the date of the last release under this Agreement.

(d) (1) Any refund under subsection (a) or (b); or

(2) Any refund to A.I.D. from a contractor, supplier, bank or other third party with respect to goods or services financed under

DRAFT  
SCOPE OF WORK FOR  
NATIONAL TRAIL CLASSIFICATION, MAP AND STUDY

1. General Description

Working from recent aerial photography of 1/20,000 the contractor will plot the visible, currently used Nepal trails, on an existing topographic base map of one inch to a mile utilizing the coordinates of identifiable map points to rectify the stereo model. The accuracy of the base map will not be the responsibility of contractor. The contractor will however correct the trail system as shown on the map and show all of the existing trail bridges visible on the photography.

2. Data Supplied to the Contractor

One set each of available aerial photographs of 1/20,000 and of 1/50,000 will be provided at no cost to the contractor. Two copies of an existing topographic map will be provided at no cost to the contractor. In addition one map of Nepal will be provided to the contractor showing existing and planned; airstrips, road networks, ropeways, and major service centers where government centers, health centers, schools or other services are available, and one map showing the 1971 population distribution.

3. Services by the Contractor

Working at their home office or other location at the option of the contractor, the contractor shall plot by photography machine all visible trails of over one mile in length on the topographic base map. All trail bridges shall be shown on the base map, and shall be coded to indicate the type of bridge construction (suspension bridge - wood cantilever - or log bridge). Trails shall be plotted within an allowable horizontal tolerance of two hundred feet. After the trails and bridges have been plotted on the base map the contractor will provide these maps to a qualified transportation planner who will be hired and paid by the contractor. This employee will deliver the maps to the SDD, SATA and the US Peace Corps in Kathmandu. Working in conjunction with the SDD, SATA, PC, the transportation planner will select those trails which appear to serve as the trunk trail system taking into account other existing or planned infrastructure. This review process will not exceed eight calendar weeks.

The transportation planner will then return one copy of the base map print to the photography lab where the trunk trails will be plotted using a separate symbol so they can be clearly distinguished from the satellite trail systems which feed into them.

X 105

After the plotting is completed the transportation planner shall number all of the trails using a transportation numbering code which allows the satellite trails to be identified with their parent trunk trails. The numbering system should be flexible enough so that trails can be added or subtracted from the system without upsetting the numbering scheme.

#### Final Products

After completion of the base map master the contractor will ship to USAID/Kathmandu, at his expense, the following products.

1. The original pencil copies produced by the Photogrammetry Machine.
2. Original scribe sheets.
3. Two reproducible transparencies of base maps.
4. One hundred copies of the final base map.

PLAN OF ACTIONA STUDY OF DISPLACED TRADESMAN AFFECTED BY THE  
CONSTRUCTION OF SUSPENSION BRIDGES IN NEPALPrimary Purposes:

To gather information regarding the ferrymen of Nepal that are displaced by the construction of suspension bridges and investigate what happened to them and their families and to recommend viable strategies for providing them with alternative employment possibilities.

Secondary Purpose:

To strengthen Nepal's capacity to conduct applied social research and to provide the opportunity for a Nepalese graduate student or young researcher to develop his skills in this area.

Rationale:

The suspension bridge study prepared by EAST Consulting Engineers for USAID/Nepal has documented the fact that the construction of suspension bridges often deprives traditional ferrymen of their source of livelihood. In one of the cases studied, the ferrymen were able to adjust to this loss by developing a rope-making cottage industry; in another case they were forced to migrate out of the area and it is not known what happened to them. While it is known that many of the ferrymen belong to an ethnic group known as Majhis, who speak a Tibeto-Burman language, there have been no studies conducted on these people and there is no information available on them. Without basic knowledge regarding these ferrymen, it is impossible to recommend what kind of special programs should be devised to provide them with alternative employment. For example, if they have no agricultural skills, it is not viable to resettle them on land in the Tarai; while if they possess special craft skills associated with boating, fishing, netmaking etc. it would be possible to develop programs which capitalize on these areas of expertise.

Methodology:

A sociological-anthropological methodology should be used which combines the collection of survey data with in-depth case studies and background ethnography. Specific research activities should include:

- 1) Survey of related literature and detailed design of questionnaires and methodology.

- b) Survey of approximately 10 sites where ferrymen existed prior to the construction of a bridge to conduct case study investigations of what happened to displaced ferrymen and their families.
- c) Survey of approximately 10 sites where the construction of bridges is planned and where there are currently ferrymen providing crossing services to gather preliminary information on their economic and social situation.
- d) Analysis of survey data and progress report.
- e) In depth study of two representative ferrymen groups to investigate economic strategies, professional skills, income and expenditure, social organization, patterns of interaction with other groups in society, etc.
- f) Preparation and submission of final report, which will include:
  - i) profile of ferrymen in Nepal,
  - ii) case studies of displaced ferrymen
  - iii) detailed ethnographic description of economic and social aspects of ferrymen's culture
  - iv) recommendations for appropriate strategies for assisting displaced ferrymen.

Schedule and Personnel:

The principle investigator for the study would be a sociology or anthropology graduate student or young researcher working under the direct supervision of a senior Nepalese anthropologist-social scientist. Guidance in research design and analysis would also be provided by USAID/N's Economic and Social Analysis staff.

While an exact schedule cannot be determined in view of the uncertainties of site locations and transportation time involved, the study can be broken into two major phases. Phase I would include activities A through D above and should be completed within 6 months. Phase II would include activities E and F and would be completed within an additional six months. Thus, the total study would be completed within 12 months, with a Phase I progress report due after 6 months, and the Final Report due after 12 months. The Final Report and Recommendations will be submitted to the GON for consideration and the initiation of appropriate action programs.

Method of Execution:

The study would be financed either through a local currency purchase order for the final report or through a local currency research grant. It is anticipated that the contract arrangements would be made with an appropriate institution within Tribhuvan University such as the Research Centre for Nepal and Asian Studies or the Institute of Humanities and Social Sciences -- however it is possible that it may have to be arranged on an individual basis.

AGREEMENT between Switzerland and Nepal concerning  
technical and financial cooperation for the construction  
of suspension and suspended bridges in Nepal

(exchange of letters, dated 6.12.1977)

HIS MAJESTY'S GOVERNMENT

Ministry of Finance  
Kathmandu  
Nepal

December 6, 1977

Excellency,

I have the honour to acknowledge the receipt of Your Excellency's Note of today's date which reads as follows:

"I have the honour to refer to the discussions held between representatives of our two Governments concerning the technical and financial cooperation for the construction of suspension and suspended bridges in Nepal.

As a result of these discussions the following understandings have been reached:

1. The Government of the Swiss Confederation will make available to His Majesty's Government of Nepal a grant of 3 mio Swiss francs with the aim to support the on-going construction programme for suspended and suspension bridges of the Suspension Bridge Division.
2. His Majesty's Government of Nepal will provide all necessary funds to complete at least 20 bridges in each fiscal year 1977/78 and 1978/79 - taking into consideration the Swiss contribution.
3. Out of the Swiss contribution the following goods and services can be paid by His Majesty's Government:
  - cables for Suspension Bridge Division and the Local Development Department (approx. SFR. 0.7 mio);
  - steel construction (steel parts and manufacturing costs) of the workshops constructed by the Suspension Bridge Division and cement (approx. Sfr. 1.8 mio);
  - transportation costs of cables to the Nepalese border, air transport to the very remote areas within Nepal and others as mutually agreed (approx. Sfr. 0.5 mio).

X 160

4. a) For the awarding of contracts in Nepal the rules and regulations of His Majesty's Government of Nepal will be applied. Before such awards take place the Government of the Swiss Confederation shall be informed of the nature and values of the contract.
  - b) Except as the Government of the Swiss Confederation and His Majesty's Government of Nepal may otherwise agree the awarding of contracts financed out of the Swiss grant outside Nepal shall be made on basis of international competition. Quotations shall be asked from at least three different suppliers after consultation with the Director of the Swiss Technical Cooperation in Nepal SATA (hereinafter called Director SATA). The award must be approved by the Government of the Swiss Confederation.
5. No proceeds of the grant shall be used for the payment of any taxes (import duties, levies, fees, duties of any kind) imposed under the law of His Majesty's Government of Nepal on goods or services, or on the importation, manufacture, procurement or supply thereof.
6. a) Immediately after the present understanding has entered into force, the Government of the Swiss Confederation shall open with the Swiss National Bank an account denominated: "Suspension bridge Nepal" in favour of the Nepal Rastra Bank which is designated as the agent of the Ministry of Finance, His Majesty's Government of Nepal. This account shall immediately be credited with three millions Swiss francs.
  - b) The Rastra Bank shall, when making payments from this account to suppliers in countries other than Switzerland or Nepal, request the Swiss National Bank or another Swiss Bank if the Swiss National Bank so prefers to make payments in other appropriate currencies.

All payments due to suppliers and consultants in Switzerland and other countries outside of Nepal shall be made by means of irrevocable letters of credit opened on the request of the Nepal Rastra Bank by the Swiss National Bank in favour of the suppliers, with a correspondent bank of the Swiss National Bank located in the country of residence of the said suppliers. This correspondent Bank is authorized by such a letter of credit to pay the suppliers the amount expressed therein, under the condition that the latter presents to this correspondent bank the documents provided for in the supply contract for such payment. Requests of the Nepal Rastra Bank have to be accompanied by a letter of recommendation of the Director SATA.

- c) For payments to be made in Nepal His Majesty's Government of Nepal can request the Swiss National Bank through the Nepal Rastra Bank to transfer amounts not exceeding 200'000. -- Swiss francs to the Nepal Rastra Bank. Such requests have to be recommended by the Director SATA.

After prior approval given in writing from the Director SATA, the Nepal Rastra Bank can make payments to the workshops and other suppliers in Nepal on request of His Majesty's Government out of this account.

7. The Government of the Swiss Confederation and His Majesty's Government of Nepal shall cooperate fully to ensure that the purpose of the grant will be accomplished. To that end the two Contracting Parties shall from time to time, at the request of either Contracting Party:

- exchange views through their representative with regard to the performance of their respective obligations under this understanding, the administration and operations in respect of the programme of construction financed by the grant;
- furnish to the other Contracting Party all such information as it shall reasonably request with regard to the execution of the programme.

His Majesty's Government of Nepal shall in particular enable the representatives of the Government of the Swiss Confederation to inspect the goods financed out of the proceeds of the grant and any relevant records and any relevant records and documents.

The two Contracting Parties shall promptly inform each other of any condition which interferes with, or threatens to interfere with, the accomplishment of the purpose of the grant or the performance by either of them of its obligation under this understanding.

8. The Director for Development Cooperation and Humanitarian Aid on the Swiss side (cable address: Politique, Berne) and the Ministry of Finance, His Majesty's Government of Nepal, Kathmandu (cable address: ARTHA) on the Nepalese side, will be responsible for the implementation of the present understanding.
9. The present understanding is drawn up within the framework of the Agreement on Technical Cooperation between the Swiss Federal Council and His Majesty's Government of Nepal signed at Kathmandu on August 18th, 1972.

X 162

Upon receipt of a note from Your Excellency indicating that the foregoing provisions are acceptable to His Majesty's Government, the Government of the Swiss Confederation will consider that this note and your reply thereto constitute an Agreement between our two Governments on this subject, the agreement to enter into force on the date of your note in reply and remain valid until December 31, 1982."

I have further the honour to confirm the foregoing arrangements on behalf of His Majesty's Government of Nepal and to agree that Your Note and this Note shall be regarded as constituting an agreement between His Majesty's Government of Nepal and the Government of Swiss Confederation.

Please accept, Excellency, the assurances of my highest consideration.

Sincerely yours,

/s/

Nara Kanta Adhikary  
Secretary

His Excellency Mr. Etienne Suter  
Ambassador Extraordinary and Plenipotentiary  
Embassy of Switzerland for Nepal.

MEMORANDUM OF UNDERSTANDING CONCERNING  
SUSPENSION BRIDGES PROGRAMME

*True copy*

1. Preliminaries

The Department of Roads, HMG has set up four Regional Offices.

The objectives of the suspension bridge programme after the reorganisation consists of :

- To have 30 to 40 bridges under construction per year. About 20 to 25 bridges should be completed every year.
- To maintain or to improve the actual quality of the constructions and their safety.
- To advise and support the technical staff of the district offices in the construction of smaller suspension bridges as far as possible.

2. Reorganisation in three phases

To achieve the above objectives the suspension bridge programme will be organised in three phases.

The first phase will last for about two years. Within this period regional Suspension Bridge Units will be built up, including stores, design offices and soil laboratories.

During this first phase, all designs will be made in the Suspension Bridge Division at the center.

The regional offices will be responsible for survey, maintenance and construction of the bridges.

In a second phase, the responsibility for the design will be transferred to the regional offices, which will be supported by experienced engineer in design. If necessary he will be advised by a Swiss Engineer.

In the third phase, the integration of survey, design and construction of the bridge is envisaged by which the engineers involved in the bridge construction would also be responsible for their survey and design.

3. Organisation

The existing Suspension Bridge Division at the center as a part of the design section of the D.O.R. coordinates the suspension bridge programme. This division will have the following responsibilities:

- Prepare programme and budget for the whole suspension bridge programme, in cooperation with the planning branch of the Department :
  - \* Evaluation of feasibility studies based on the data collected by the regional offices.
  - \* Preparation of the programme and budget for new bridge-constructions.
- Purchase and distribution of materials and equipment which cannot be purchased locally by the regional offices.
- Awarding of manufacturing contracts for steel fabrications and to ensure the necessary quality controls during their fabrication. This responsibility will be shifted to the regional offices once it is equipped with trained personnel.
- Preparation and improvement of standard designs and drawings for the steel construction, development of new bridge types and construction techniques.

- Working out technical standards for survey, site selection, bridge design (Civil Engineering) and bridge construction and compiling the necessary manuals.
- Organisation and implementation of in-service training.
- During the first phase: Preparation of the designs (general arrangements, detail designs) and quantity analysis of the particular bridges for the four regions, based on the survey reports compiled by the regional Suspension Bridge Units.

In the four regions, regional units exclusively for suspension bridges are built up as part of the regional offices. The regional suspension bridge unit is headed by a Divisional Engineer or an Assistant Divisional Engineer.

The regional units under the overall responsibility of the Suptd. Engineer perform the following tasks:

- Detail site selection, survey maintenance and construction of bridges (including transportation) of the suspension bridge programme of the Department of Roads. In the second phase, the responsibility for the design of the bridge will be transferred step by step to the regional Suspension Bridge Units according to their capability.
- Preparation of the programme, budgets, designs and execution of bridge maintenance.
- Preparation of the necessary rate analysis and cost estimates.

X 166

- Maintain separate stores of construction materials, specially used in bridge construction (steel parts, cables, etc.) and of machines instruments, camp equipments (rockdrills, pumps, tyrfors, survey instruments, camp equipment etc.)
- Responsibility for maintenance and repair work of their machines and equipments.
- The power to approve rate analysis and cost estimate.
- In the second phase once the regional units are fully equipped with trained personnel in designing then the units will be authorised to approve the design of the particular bridges.
- While deputing the engineer at the site by the Suspension Bridge Unit at the region, the in-charge of the unit should get approval of the concerned Suptd. Engineer.

4. Other requirements

- The Regional Offices will make available necessary cement, explosives and other materials of general use (e,g, gabion wire etc.)
- Engineers and Overseers in field will be given one month orientation courses and training programmes every year at suitable places.
- In order to carry out survey and design in time it is necessary that the definite list of new bridges is finalised on year before construction begins.

The following system has to be applied :

	1 year Construction period 1	1 year Construction period 2	1 year Construction period 3
Proposed list for new bridges of construction period 3			
Survey and feasibility studies			
Definite list for new bridges of construction period 3			
	steel design bridge design awarding of contracts for steel construc- tions	fabrication of bridges parts	
	- - -	-	
		Distribution of bridge parts and materials	
			Construction

The construction of suspension bridges upto 50 M. span and of suspended bridges will be handed over to the District whenever it is decided by the HMG, but survey, design and site supervision will be carried out by the Department of Roads.

- An engineer will be made responsible for the construction only when he will have construction experience at least for a year.
- Before the beginning of the second phase in the regional offices of the Department of Roads, soil laboratories for the technical analysis of soil samples are built up and staffed with trained personnel.
- During the first phase, five engineers, at least three of them experienced in suspension bridge construction are assigned to the Suspension Bridge Division at the center.

- As counterparts of the SATA-engineers they will be trained in bridge design and supervision and gradually take over the responsibility.
- During the second phase, one engineer experienced in bridge design and construction will be assigned to each regional Suspension Bridge Unit and to the Suspension Bridge Division at the center. This five engineers will be responsible exclusively for bridge design and site supervision.

5. The role of SATA

Referring the agreement concerning financial assistance dated 6 December 1977 between His Majesty's Government and the Government of Switzerland, the equipment and materials imported under this agreement are for the exclusive use for the suspension bridges and the funds made available under the above agreement shall be dispersed by the center.

Under the above arrangements, the four SATA engineers will be assigned in the first phase to the Suspension Bridge Division at the center.

During the construction period they will assist the Regional Offices to equip the regional units, to maintain the communication between the regional units and the bridge sites as well as between the region and the center. Besides they will be involved in site supervision and, during the rainy season, in bridge design, preparing steel standard designs and working out technical standards for site selection, survey, design and construction in close collaboration with their counterparts.

Before the first two years period ends, SATA and the Department of Roads will review the progress and decide the role of SATA for the further development of the suspension bridge programme. At this time it will also be decided whether the four SATA engineers have to be assigned to the regional offices in order to assist their engineers in design and site supervision.

Sd:.....

Chief Engineer  
Department of Roads

Sd: .....

Director  
Swiss Association for  
Technical Assistance