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

CAPITAL ASSISTANCE FINDER

Proposal and Recommendations
For the Review of the
Development Loan Committee

AFRICA REGIONAL - TAN ZAM HIGHWAY PHASE IV

East Fort Access Road and
Tunduma-Lyol Improvement

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

AID-DLC/T-707/2

AID-DLC/T-958

April 26, 1971

MEMORANDUM FOR THE DEVELOPMENT LOAN COMMITTEE

SUBJECT: Africa Regional - Tan Zan Highway Phase IV
Har Port Access Road and
Tundana-Iyayi Improvement

Attached for your review are the recommendations for two separate loan authorizations: (1) a \$3.8 million loan to the Government of the United Republic of Tanzania (GOT) to assist in financing the foreign exchange and local currency costs of construction and engineering supervision for a Port Access Road; and (2) a \$3.8 million loan amendment to assist the GOT in completing the Tundana-Iyayi section of the Tan Zan Highway which was, in part, initially financed under AID loan 698-H-005 of \$11.0 million.

We are not planning to have a formal Development Loan Staff Committee meeting on either of these individual loans which are each less than \$5.0 million unless Committee Members specifically request it. However, Africa Bureau representatives will be available to answer questions on these loans at the May 6 DLSC meeting to consider the West Pakistan loan proposal (WARDA) of \$5.2 million.

Please advise us as early as possible but not later than close of business on ~~Friday, May 1~~, 1971, of your recommendations on these loans. *Tuesday, May 4*

Rachel R. Agee
Secretary
Development Loan Committee

Attachments:
Summary and Recommendations
Project Analysis
ANNEXES I-XXII

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AID-REC/1-70772

AID-REC/1-955

April 16, 1971

REGIONAL - TAN-ZAM HIGHWAY PHASE IV
(Dar Port Access Road and
Tunduma-Iyayi Improvement)

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AID-BLG/A-707/L

AID-BLG/A-950

April 20, 1971

**REGIONAL: TAN-ZAM HIGHWAY PHASE IV
(Dar Port Access Road and
Tunduma-Iyayi Improvement)**

I. SUMMARY AND RECOMMENDATIONS

1. Borrower: Government of the United Republic of Tanzania (GOT)

2. Amounts:

For Dar Port Access Road; New Loan - \$ 3,800,000

For Tunduma-Iyayi Improvement; - \$ 3,800,000
Loan 698-H-005A

Total \$ 7,600,000

3. Terms:

A. Maturity: Forty (40) years, including a ten (10) year grace period.

B. Interest: 2% per annum during the grace period, and 3% per annum thereafter

C. Repayment: Interest and principal payable in U.S. dollars.

4. Total Cost of Project:

A. Dar Port Access Road

A.I.D. Loan \$ 3,800,000

G.O.T. Contribution \$ 1,583,000

Sub Total \$ 5,383,000

B. Tunduma-Iyayi Improvement

A.I.D. Loan Amendment
(698-H-005A) \$ 3,800,000

Grand Total \$ 9,183,000

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5. Description of Project: The project consists of (i) the construction and engineering supervision for an improved Port Access Road through the urban area of Dar es Salaam, Tanzania, to Dar es Salaam Harbor and (ii) additional funds to assist the GOT in completing the 150 mile Tunduma-Iyayi section of the Tan-Zam Highway (TZH) financed under A.I.D. Loan 698-H-005.
6. Purpose of Loan: To assist the GOT by financing the foreign exchange costs and a portion of the local costs attributable to the Dar Port Access Road and financing the cost increases on the Tunduma-Iyayi section of the TZH which assistance is necessary to complete the improvement of the TZH.
7. Background: The A.I.D. commitment on the proposed project commenced with the A.I.D. Loan 698-H-003 for engineering design of the Tunduma-Iyayi section of the TZH, and with the feasibility study for the Dar Port Access Road financed pursuant to A.I.D. Loan No. 698-H-007A. Previous A.I.D. assistance to the TZH has included Loan 698-H-003, (\$1,600,000), Loan 698-H-005, (\$13.0 million), and 698-H-007, and 007A (\$10.1 million). The IBRD and IDA are also providing \$15.0 million and, in addition, Sweden is providing almost \$15.0 million for assistance to the GOT for the TZH in Tanzania.
8. Export-Import Bank Clearance: The Bank expressed disinterest in financing this project.
9. Mission Views: The East African Mission and USAID/Tanzania strongly endorse this project.
10. Statutory Criteria: Satisfied; see Part III.
11. Recommendations:
 - A. Authorization of a loan not to exceed \$3,800,000 to finance the cost of the Dar Port Access Road Project in accordance with the draft authorization attached as Annex XXII.
 - B. Authorization of an amendment of Loan 698-H-005 for an amount not to exceed \$3,800,000 to finance the costs of the Tunduma-Iyayi improvements project in accordance with the draft authorization attached as Annex XXIII.

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USAID CAPITAL ASSISTANCE COMMITTEE:

Capital Development Officer: O. Cylke - EARCDO
Engineer : F. Locher - USAID
Counsel : R. Meighan - EARCDO

AID/W CAPITAL ASSISTANCE COMMITTEE:

Capital Development Officer: G. Thompson
Engineer : S. Lubin
Counsel : G. Zarr
Desk Officer : E. Lofthouse

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April 26, 1971

II. THE PROJECTSection I - NATURE OF ~~THE~~ PROJECTA. Project Description1. Definition

The Project consists of the construction of and engineering supervision for an improved Port Access Road through the urban area of Dar es Salaam, Tanzania, to Dar es Salaam Harbor. The new Port Access Road would be approximately 8 miles in length and would be a continuation into the city of the 1300 mile Tan-Zam Highway now under reconstruction between central Zambia and the western outskirts of Dar es Salaam. The proposed loan would also include funds to assist the GOT in financing the construction cost increases on the 150 mile Tunduma-Iyayi section of the Tan-Zam Highway. A complete technical description of the Project is found in ANNEX I-A.

2. Cost Estimates

The financial requirements are as follows:

Table II - 1

	<u>U.S. Costs</u>	<u>Local Costs</u>	<u>Total Costs</u>
Port Access Road	\$ 3,025,000	\$2,341,000	\$ 5,366,000
Improvements			
Tunduma-Iyayi	<u>3,066,000</u>	<u>700,000</u>	<u>3,766,000</u>
Total	\$ 6,091,000	\$3,041,000	\$ 9,132,000

3. Financial Plan*

The financial plans for the proposed loan amendment and new loan are as follows:

Table II - 2

A.I.D. Loans	<u>U.S. Costs</u>	<u>Local Costs</u>	<u>Total Costs</u>
<u>A.I.D. Loans</u>			
Port Access Road	\$ 3,025,000	\$ 758,000	\$ 3,783,000
Tunduma-Iyayi	3,066,000	700,000	3,766,000
<u>GOT Contributions</u>			
Port Access Road		<u>1,583,000</u>	<u>1,583,000</u>
Total	\$6,091,000	\$3,041,000	\$9,132,000

*NOTE: For a more complete financial presentation see Section II E and Tables II-A and II-C.

B. Introduction

1. Project Background

A.I.D. interest in assisting transportation in the Project area developed in mid 1964. At that time, A.I.D. discussed with the GOT a possible study of the economic potential and transportation requirements of the southwestern portion of Tanzania, an area running from Dar es Salaam roughly west to Lake Tanganyika and the Zambian border, and south to Mtwara and Lake Malawi. Prior to completion of arrangements for this study, however, A.I.D. was requested to assist Zambia in finding a suitable route to the sea through East Africa. A.I.D. suggested that the proposed study in southwestern Tanzania be revised to serve the purpose of evaluating both Tanzanian and Zambian requirements for transportation in the area. This crystallized in the Tanzania-Zambia Highway Study which was carried out by the Stanford Research Institute during 1965 and 1966.

The Tan-Zam Highway (TZH) runs from Kapiri M'Poshi, in Zambia, northeast to Iringa in Central Tanzania and from there branches north to Nairobi, Kenya, and east to Dar es Salaam, in Tanzania. The TZH is part of a set of roads seen by some planners as a "Cape to Cairo" highway linking southern Africa and the Mediterranean. While the full implementation of this transport plan appears to be far in the future, the existing TZH in East Africa and Zambia has an immediate usefulness and a demonstrable economic rationale. It is not only a major road for Tanzania linking the Southern Highlands, an area of considerable economic potential, with Dar es Salaam and East Africa generally, but is also the major direct link between Zambia and the Tanzanian port of Dar es Salaam. As such it has been shown over the past four years to have an effective place in a general transport plan for Zambia, a country requiring a number of feasible alternative routes to the sea.

On the basis of the Stanford Research Study and negotiations with the GOT, A.I.D. has previously assisted this Project by loan-financing the U.S. dollar cost portion, and some local costs, of: 1) the final design of the Tunduma-Iringa section; 2) an engineering reconnaissance of and, subsequently, the final design of the sections extending from Iringa to Mahenge and from Moregoro to Dar es Salaam; 3) the construction of the section of highway between Tunduma and Iyayi; 4) the construction of the Moregoro-Dar es Salaam section of highway; and 5) an engineering/economic feasibility study of a Port Access Road in Dar es Salaam. The final design costs for the Dar Port Access Road are being financed from A.I.D. Loan 698-H-007A. This work was financed pursuant to A.I.D. loans 698-H-003 (authorized in March 1967), 698-H-005 (authorized in June 1968), 698-H-007 (authorized in June 1969) and 698-H-007A (authorized in June 1970). The proposed loan originated with these earlier commitments.

The IBRD, the Swedish Government and the United Kingdom have provided substantial assistance in the design and construction of other sections of the TZH, both in Zambia and Tanzania. Specifically, two IBRD loans totalling \$19.2 million, combined with additional U.K. financing, are being used to reconstruct the Zambian section of the road totalling 357 miles. Another IBRD loan (\$7.5 million), an IDA credit (\$7.5 million) and a Swedish credit (amounting to almost \$15 million) were made available in 1969 to finance the construction of the Iyayi-Morogoro section in Tanzania, a stretch of approximately 310 miles.

De Louw, Cather International (DCI) has performed the engineering services for those portions of the TZH assisted by A.I.D. The feasibility analysis for the Port Access Road and requirements estimate for the Tunduma-Iyayi section are based on their various reports.

2. Relation of the Project to A.I.D. Strategy

Several years ago, A.I.D. revised its African strategy to improve the effectiveness of U.S. policies and programs in the long, concerted effort required for African development. The new policy provides for concentration of bilateral aid to selected countries, and regional projects involving cooperation by two or more African states. This interstate emphasis seeks to strengthen African efforts to surmount national problems of limited resources, markets, and economic prospects. Further emphasis has been placed on the coordination of A.I.D. assistance throughout Africa in a multilateral framework, through arrangements under the leadership of the IBRD or the International Monetary Fund (IMF). These international agencies are in an advantageous position to set relatively objective performance standards and priorities, as well as to reduce the present extent of overlap and inconsistencies on the part of diverse donors.

On this basis, A.I.D. took an active interest in the Tan-Zam Highway. Although present country strategy focuses on agriculture, A.I.D. is committed to completion of this important regional and multilateral effort which will also contribute significantly to the development of the fertile southern highlands, an area of vast agricultural potential.

3. The Borrower

The Government of the United Republic of Tanzania: The Borrower will be the Government of Tanzania because the project is located wholly in Tanzania. This is considered appropriate by the Tanzanian and Zambian Governments and A.I.D. despite the regional nature of the Project and the strong interest of the GRZ in its implementation. There has been thorough coordination by the Governments of Tanzania and Zambia on the Project, and close cooperation has been effected among the major donors as well.

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Project Management: The responsibility for the administration of the road system is vested in the Roads and Aerodromes Division (RAD) of the Ministry of Communication, Transport & Labour (Comworks). The Division is directly responsible for the primary and secondary road systems and also provides technical assistance to the District Councils which are in charge of the tertiary roads. The Mechanical and Electrical Division of the Ministry takes care of road construction and maintenance equipment. A recent IBRD financed project has assisted in recruiting local specialists and expatriates for executive and staff training positions. This effort has eased the previous shortage of competent professional staff.

Section II - PROJECT ANALYSIS

A. Requirements - Port Access Road

1. Project Setting

Tanzania, situated a few degrees south of the equator in East Africa, occupies a total area of 361,800 square miles, including the island of Zanzibar. The mainland is bounded by Kenya to the north, the Congo Democratic Republic to the west, Zambia to the southwest, Malawi and Mozambique to the south. The coastline fronts the Indian Ocean.

The main flow of traffic, and, consequently, the orientation of the country's main trunk transport system, runs roughly east-west to and from the seaports. This pattern reflects the economy's dependence on export of primary products and reverse flow of manufactured goods and fuel. The transportation system is also utilized by the neighboring landlocked countries for access to the sea - most notably by Zambia. Extraordinary burdens have been placed on the GOT transport system by requirements arising out of Rhodesia's unilateral declaration of independence in November 1965, and the subsequent large scale diversion of Zambian traffic from Rhodesia to Tanzania routes, particularly towards the sea. Existing road and rail transportation networks, principal ports, and the route of the Tan-Zam Highway are shown in ANNEX I-B.

An important consequence of this focusing of traffic has been increased congestion at the seaports: Dar es Salaam, Tanga and Mtwara. Congestion is most severe at Dar, where port and dockside facilities have become notably overworked and crowded. Three labor shifts are now assigned daily to ease the increasing number of days ships delay, and lighterage activity has simultaneously increased. In 1968, the average delay per ship was 3.2 days. The present reconstruction and enlargement of the harbor at Dar es Salaam (assisted by the World Bank and African Development Bank) reflects the Government's decision to maintain it as the principal national port and will have a special side effect. Rail and lorry services must operate at increased frequency and with improved regularity as port demand for shore transport facilities will no longer be restricted by capacity barriers to port efficiency in handling cargo traffic.

Dar es Salaam Harbor: The harbor at Dar es Salaam serves ocean-going passenger and cargo vessels. It is the second largest port in East Africa, after Mombasa. In terms of urban population it exceeds all East African coastal cities, except Durban. Ships calling at the port in 1970 totalled almost 1,200. Dhows and smaller craft ply coastal trade while fishing boats operate from inlets and lagoons in the vicinity of the harbor. An oil refinery receives 900,000 tons of crude

throughput and re-exports bulk and bunker oil and fuels at the rate of 200,000 tons.

Historical tonnage and growth rates for imports and exports may be found in ANNEX II-A and B. From these tables it can be seen that imports represent 42 percent of total harbor tonnage; copper exports are 26 percent of the total; and exports minus copper are 32 percent. Steel is the largest single item in trade after copper, at 9 percent of the total. Total dry cargo exports at the harbor have risen during the period 1962-1969 at a compound rate of approximately 4 percent, while dry cargo imports have risen at almost 5 percent. Copper shipments, of course, have increased even more rapidly.

Since 1965 port cargoes have increasingly been moved by lorry. Imports delivered by lorry in 1965 were 61 percent of the total; exports moved to the port by lorry were 26 percent. By 1969 and the first seven months of 1970, lorry export cargoes were 70 percent and import cargoes 81 percent of total road and rail movements.

Population, Employment and Investment: Current census estimates for 1970 population indicate that Dar es Salaam is the largest city in Tanzania with a population of 353,000. The population in Dar tripled between 1948 and 1967, while the total population of Tanzania grew by only 63.5 percent during the same period. This rapid population growth rate reflects the confinement of employment opportunities as processing industries and expanded commerce begin to emerge from a largely rural subsistence and plantation economy.

A 1966 survey of industrial production by the Ministry of Economic Affairs is the best index to locations and kinds of economic activity in Tanzania. Among 18 urban areas, Dar es Salaam accounted for 19 percent of total urban-area employment, and was pre-eminent in the major sectors of manufacturing employment with 48.8 percent; commerce 47.7 percent; transport 60.6 percent; and services 46.4 percent. During the period from 1964 to 1967, employment in Dar es Salaam increased at an annual rate of 14.15 percent, with employment in manufacturing rising at an average annual rate of 20.28 percent. A distributional index of processing and manufacturing activities, prepared from survey data on employment numbers by industry, indicates that Dar es Salaam's share of national industrial employment in each standard classification ranks the city as the leading industrial center of Tanzania.

Under the Second Five Year Plan (1969-74) the GOI intends to invest \$1,100 million in the Tanzanian economy. Of this total planned investment, \$300 million is being sought from the private sector, \$300 million from parastatal organizations, and \$80 million from East African corporations. Approximately 62.5 percent of these funds will be used for infrastructural operations and services. The remaining will be invested

in directly productive projects. Among industrial projects, 34 percent are planned for Dar es Salaam, representing almost 20 percent of the national investment in industry. A forecast of the long tons of output of each commodity type which the Five Year Plan projects would generate in each region indicates that the Coast Region, in which Dar es Salaam is the major city, will contribute 73 percent.

Master Plan for Dar es Salaam: A National Capital Master Plan for Dar es Salaam was prepared in 1967. This plan has been adopted by the Government of Tanzania as the official development plan for the city. The Master Plan includes an arterial street system compatible with future land use and the population and employment distribution within the city. The Plan includes a series of circumferential roads which will interconnect the four major existing radial routes serving the City Center. Proposed secondary arterials would serve outlying areas not yet developed. The proposed Kurasini Causeway would connect the districts east of the harbor with the port and existing city developments. The alignment of a new Port Access Road for evaluation incorporated sections of the proposed Master Road Plan. ANNEX III shows this proposed route and its relationship to existing Morogoro Road, Msimbazi Street and Bandari Street, which now provide access to the port.

Two alternative locations were considered for the westerly section of the new port road. The first involved utilization of Morogoro Road to the west of the proposed Ring Road. The second involved utilization of a diagonal arterial road between Ubongo and the Ring Road proposed in the Master Plan. Following field reconnaissance studies and initial traffic investigations, the diagonal route alternative as recommended in the Master Plan was modified to provide a direct movement onto University Road at an intersection with Morogoro Road. The easterly section of the proposed new port access road selected for analysis provides a direct connection into the port and is compatible with the Master Plan Transportation network.

Several parts of the Master Plan are now being implemented. Sections of road are under construction near the City Center and through residential areas under development. These sections have been incorporated into the existing road system for analysis purposes. New residential areas are under construction along Morogoro and Bagamoyo Roads which will immediately affect travel patterns within the city.

2. Economic Forecasts

DCI prepared economic forecasts for national production for the period 1970-1992. These forecasts are contained in ANNEX IV.A, B, C, and D. A summary of the final results of the forecasts is shown in ANNEX V. The four forecasts yield separate expansion multiples over the period 1970-1992, of 2.26 times for national agricultural production, 3.1 times for national industrial production, 3.5 times for domestic exports, and 3.3 times for domestic imports. These forecasts have been correlated with the DCI origin and destination surveys.

Projected Lorry Demand: Tonnages of forecasted production which are projected as moved by lorry in 1970 and in 1992 are expressed as a composite of agricultural and industrial products and tabularized in ANNEX V. Lorry movements of these goods are described as moving either into Dar es Salaam from the Regions, or as reverse movements from Dar es Salaam. In addition, lorry movements to and from the harbor, of export or import cargoes, are separately identified, as are the Zambian copper exports and Zambian cargo imports.

Total Tanzanian goods traffic including exports and imports, which moved by lorry over roads within the city amounted to a total 2,026,726 tons in 1970. By 1992, this movement of goods would total 7,983,576 tons, an increase of 3.94 times, representing a gradual shift toward increasing lorry utilization. In 1970, lorries in the study area were estimated to carry 36.2 percent of the combined total of national production in agricultural-industrial goods plus exports and imports. They are estimated to carry 44.7 percent of the combined national output plus exports and imports in 1992.

Zambian goods movements by lorry, derived from separate forecasts of Zambian exports and imports, would drop precipitously after the one cell opens in 1975. Exports and imports, which were roughly equal in 1970 at about 200,000 tons each, would decline by 1992 to about 90,000 tons each. In 1970 this total would be 31,000 tons each. A more detailed description of the Zambian traffic forecasts may be found in ANNEX VI. Together with Tanzanian goods traffic movement by lorry over the study area roads, including city street traffic as well as harbor traffic, the addition of Zambian traffic would produce a total combined lorry tonnage of 2,530,932 tons in 1970 and 8,162,576 tons in 1992. The overall expansion of lorry tonnage thus accounted would be 3.22 times in 22 years.

3. Transportation Costs Derivation

Vehicle Operating Costs: ANNEX VII shows a summary of total vehicle operating costs for each vehicle type. Costs are separated into distance and time costs, categories which help define the nature of running various fixed costs. These total costs of vehicle operation are stated in

shillings per mile and shillings per minute. The theoretical basis for these costs may be found in ANNEX VIII. It was possible to corroborate this DCI analysis by reference to the "East African Transport Survey" which preceded the DCI Study by one year.

Both vehicle distance and time costs undergo a measurable change as interferences with traffic increase or decrease. This is shown in ANNEX IX. Distance costs per vehicle-mile rise in response to starts, stops and delays which cause slower average speeds. Time costs per vehicle-minute are seen to rise as vehicle-minutes rise with slower speeds.

Passenger Time Costs: Vehicles operating over different kinds of roads, or traveling at varying rates of speed, experience changes in their rate of operating cost. Such variations are described as affecting either distance or time costs and are discussed above. Passenger travel at involuntary low rates of speed also affects society in ways which can be valued monetarily. For example, for the increase in speed (or for the time saving) of the express train or bus, a premium price is paid by the passenger, and "local" fares are invariably lower. The price differential per mile may be computed to identify the incremental cost to the total traveling public of going faster, and/or of saving time. Additionally, time value can be put against the person in transit by assessing what he might alternatively produce for society during these minutes saved or expended while traveling. This can be restated as an average time value of so many shillings per hour and fractions of shillings per minute for every minute of the year.

ANNEX X identifies, for the study area of Dar es Salaam, the employment and earnings of potential wage earning travelers, and the gross regional product (GRP) per capita of non wage earners in Dar and in four contiguous Regions. This Annex shows the basis for (i) passenger time-value per minute calculations; (ii) the relative type of vehicle in which paid or implicit income earners tend to travel; and (iii) the expected frequency in the study area traffic stream of these travelers from Dar es Salaam, Morogoro, Iringa or Mbeya.

Cargo Time Costs: The intrinsic cost to society of time delays in moving its produced goods in transit for processing or consumption must have a measure specific to the value of the goods which are being shipped on a transport network, and specific to the time it takes to move these goods. A relative measure must exist for a trainload of goods delayed by a bridge washout, or even for the simple difference in time of travel between a surfaced road and an unsurfaced one.

Society recognizes various measures of the time value of money tied up in production: the interest rate on borrowed funds, the rate of return needed on an investment, the decline in the value of money caused by the rate of inflation. These time valuations originate in the monetary

sector of the economy. The price of goods themselves tend to rise with the rise in the cost of money, and with the rise in the rate of inflation. Therefore, people value goods more highly in the present rather than in the future. This is called the rate of time preference, and is measured over units of time, since deferred consumption, or postponed production, will come at a higher future cost than at present. A basis, therefore, exists to explain the human preference for things now rather than at some vulnerable future time.

This cumulative rate of cost over time was found to be 9.33 percent by the inflation rate plus 14.05 percent on the recognized money markets, or 23.38 percent overall. This annual rate was economic society's rate of time preference for goods now rather than in the future, i.e., the rate which must be paid a consumer or producer for postponing his needs for one year. The risk element inherent in such a deferral until an indefinite future year was not included in this time cost. Cargo time derivations are summarized in ANNEX XI.

This general time cost was applied to cargo in transit. Expressed as time rate per minute (Shs. 0000444 it was combined with calculations of the average value per ton of cargo in export and import trade to obtain an average time cost per ton-minute of cargo.

4. Traffic Analyses

Traffic studies were conducted by DCI in October and November of 1970 to determine the existing patterns of vehicular, passenger, and cargo movements. Roadside origin-destination studies were taken on the four major approach roads entering Dar. These locations intercepted all combinations of trips possibly assignable to a new Port Access Road or to the existing route if improved.

Existing Travel Patterns: The travel data were expanded to an average 24-hour weekday by first expanding each survey hour by direction and vehicle type to 100 percent and then expanding the survey period to an average weekday. Vehicle classification counts conducted over at least a 48 hour period at all stations and over a full week on Merogore Road, together with previous counts by others, were used to expand the six separate vehicle types to average 24 hour totals. Patterns of automobile and van movements were assumed to be average for the year. Patterns of commodity movements, however, were adjusted as necessary so that they represented total commodity movements by type when annualized. The pattern of truck movements was then adjusted accordingly utilizing average truck load factors derived for each class of truck.

Forecasts of Future Travel Patterns: Forecasts of future automobile travel were based on an estimated metropolitan area population increase from approximately 353,000 in 1970 to 897,000 in 1992, and an

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employment increase from 86,100 in 1970 to 257,000 in 1992. Forecasts of future truck travel were directly derived from economic forecasts of general dry cargo received as exports and imports at the Port of Dar es Salaam, which were forecasted in ANNEX V to increase from 688,905 tons in 1970 to 2,422,653 tons in 1992. It was also estimated that cargo movements to and within the city over the 22-year period would increase approximately 2.5 times, and the average load of 2.6 tons per composite truck for intra-and inter-city movements would remain approximately the same.

It was further estimated that upon completion of the railroad to Zambia, commodity movements by truck between Zambia and the Port of Dar es Salaam would be reduced to approximately 20 percent of present tonnages. Based on comparative rail and road costs, it was calculated that the movements by truck between Zambia and the port by 1992 would return to approximately one-third of what they are today with the demand for general cargo shipments to Zambia controlling two-way movements in the future, just as copper shipments from Zambia are the major part of today's Zambia-Dar truck shipments.

Traffic Time Networks: In order to evaluate the economic impact of improvement of the existing port route or construction of a new traffic to a network which included all possible existing roads over which potential traffic to the improvement might travel from its point of entry into the metropolitan area to its destination. The existing system included in the analysis totalled approximately 50 miles in length. The following networks were used to analyze the 1970/1992 travel patterns:

Network 1 - This network includes the 50 miles of existing streets operating at today's average travel times.

Network 2 - This network is identical to No. 1, except that it assumes the existing port route at an average speed of 20 mph.

Network 3 - This network is similar to No. 1 except for the addition of a new port access road assumed to have an average operating speed of 30 mph.

Network 4 - This network is identical to No. 1 except for increases in travel time over several sections of roads on which future traffic growth will further reduce travel speeds.

Network 5 - This network is identical to No. 4 except that it assumes the existing port access road operated at an average speed of 20 mph, as on No. 2.

Network 6 - This network is identical to No. 4 except for the addition of a new port access road assumed to have an average operating speed of 30 mph as on No. 3.

Network 7 - This network is identical to No. 6 except for the inclusion of the Ring Road proposed in the Master Plan which will eventually connect with the port access road between Morogoro and Pugu Roads.

Cost Network: The weighted operating costs per mile and costs per minute for three composite vehicle types were derived from the Transportation Cost Analysis in Sub-Section A, 3 above. These were assigned to each segment of the existing networks operating at existing speeds and to future networks at the assumed future speeds to determine the combined operating cost for each vehicle. The weighted costs and combined travel costs at representative speeds appear in ANNEX XII.

Summary of Traffic Assignments: Traffic assignments were made on an all or nothing basis where all trips interchanging between two zones use the minimum operating cost path on the arterial street system between that pair of zones. The 1970 auto, bus and lorry trip data were assigned to their respective cost networks for Networks 1, 2, and 3. The 1992 auto and lorry trip data were assigned to their respective cost networks for Networks 4, 5, 6, and 7. The result of the analysis is travel data by vehicle type for each network in 1970 and 1992 and is summarized in ANNEX XIII-A & B. These data were used to determine the total vehicle operating costs, passenger time costs, and cargo time costs for each alternative system.

It must be emphasized that only vehicle movements passing through the four survey stations intercepting traffic assignable to a potential new or improved existing port access road were assigned to the networks. The daily automobile and light truck trips assigned were 42,485 on an average weekday in 1970 and 112,875 in 1992. The Annexes summarize total travel time, travel costs, average speeds, average trip lengths, and average trip costs for each vehicle type on each alternative network in 1970 and 1992. These figures represent the averages over the entire street network and not just for travel over the proposed new or improved existing route.

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B. Economic Analysis - Port Access Road

1. Alternative Solutions

Two alternative road systems are considered in the economic analysis. They are as follows:

- a) The existing road system with the existing port access road improved to provide a higher level of service; and
- b) The existing road system with a new port access road.

A technical analysis was made of both alternative port routes to estimate the initial requirement for each segment to meet the immediate traffic demand as well as any staged improvements which might be required to meet forecasted traffic growth. It assumed that a four-lane divided roadway would be required to handle traffic volumes in excess of 4,000 vehicles per day. A four lane divided facility with provision of right turn lanes and heavy cross traffic could accommodate 20,000 vehicles per day. In sections where the cross traffic would be light, the facility could accommodate up to 24,000 vehicles per day.

Analysis of the existing route indicates that, where volumes now exceed 4,000 vehicles per day, sections should be widened immediately to achieve the average speeds assumed in the economic analysis. The 1970 traffic volumes are sufficient to warrant widening Merogore Road to six lanes between Ubonge and Msimbazi Street. It would be necessary to widen Msimbazi Street to four lanes for through traffic, and local access lanes would be required on both sides between Merogore and Pugu Roads to minimize side road interference and protect through lane capacity. Bandari Street would require four lanes between Pugu Road and the port entrance. On this technical basis, the alternative of leaving the existing route unimproved was eliminated.

Traffic volumes projected for a new Port Access Road would indicate that a four lane divided roadway would be warranted immediately the full length of the alignment. Increasing volumes would require widening sections 2 and 3 to six lanes by 1985. A summary of the stage improvement and lane requirement analysis follows:

Table 11 - 3SUMMARY OF STAGING REQUIREMENTS

<u>Section</u>	<u>Estimated Daily Volumes</u>		<u>Year Improvement Required</u>	
	<u>1970</u>	<u>1992</u>	<u>Four Lanes</u>	<u>Six Lanes</u>
1	1500	14,000	1975	-
2	2200	34,000	1971	1985
3	2000	32,000	1971	1985
4	5000	20,000	1970	-
5	2000	6,000	1973	-

2. Cost Analysis

The summaries of travel data resulting from traffic assignments to each of the alternative networks are shown in ANNEX XIII-A & B. These summaries together with the costs described in the Transportation Cost Analysis above served as the basis for determination of the total annual costs for road users, passenger time and cargo time in 1970 and 1992 for each network. Uniform rates of growth between 1970 and 1992 were assumed for all costs except those relating to Zambian traffic. Zambian costs were calculated separately.

Vehicle Operating Costs: The total Tanzanian vehicle operating costs for each vehicle type were combined. An example of this computation for 1970 traffic on Network 1, the existing highway system, follows:

Network 1

Autos	Shs. 86,950
Trucks	49,400
Buses	<u>26,500</u>
TOTAL	162,850 X 313 week days per year = Shs. 50,972,050

The road user costs were determined in a similar manner for other alternatives in both 1970 and 1992, and a uniform rate of growth was assumed in determining costs in intermediate years. The resulting total vehicle operating costs for all Tanzanian and local Dar es Salaam trips are summarized in ANNEX XIV-A, B, and C, under the column heading "Vehicle Costs - Tanzania and Local".

It is assumed that service will be initiated in 1976 on the Tanzania-Zambia Railroad between the Zambian copper mines and the port of Dar es Salaam. The annual increment of cost change would not be uniform

for lorries from Zambia. It is, therefore, necessary to treat the user costs for Zambian lorries separately. The operating costs per mile for a composite Zambia lorry trip is considerably higher than the average lorry cost per mile developed for local Tanzanian trips. For a sustained average speed of 35 mph, the average operating cost for lorries from Zambia now arriving at Dar is Shs. 3.064 per mile, as compared with an average cost of Shs. 1.191 per mile for all other lorry trips. The total vehicle operating costs for Zambian lorry trips between the port and the boundary of the City at Ubonge over the alternative routes are summarized below:

Existing Route in 1970	Shs. 30.62
Existing Route in 1992	Shs. 36.20
Improved Existing Route	Shs. 25.42
New Port Access Road	Shs. 20.52

Based upon the above costs the estimated annual vehicle operating costs over each alternative network for all lorry trips from Zambia were determined. The resulting annual costs are shown in ANNEX XIV-A, B, and C, under the column heading "Vehicle Costs - Zambia".

Passenger Time Costs: The value to the economy of the time of a delayed passenger, traveling by auto, bus or lorry is determined by the type of passenger, his economic worth to society, and the number which are counted in the traffic system. Analysis of origin-destination trip data found the average vehicle occupancy rate to be 1.4 passengers for autos and vans, 3.0 passengers for lorries, and 30.0 passengers for buses. The average weekday total vehicle hours of travel, the vehicle occupancy rate and the average passenger time value of Shs. 0.0092 per passenger-minute established in ANNEX X were used to compute total annual passenger time values. It was assumed that neither the occupancy rates nor the time values would change over the study period. An illustration of the annual passenger time cost computation for 1970 passengers in vehicles over Network 1, the existing system, is shown below:

Network 1

Autos	11,659 vehicle hours per day x 1.4 passengers per vehicle x F	= Shs. 2,823,810
Lorries	1658 vehicle hours per day x 3.0 passengers per vehicle x F	= Shs. 860,502
Buses	736 vehicle hours per day x 30.0 passengers per vehicle x F	= Shs. 3,819,840
	TOTAL	Shs. 7,504,152 per year in 1970

where F = 60 minutes per hour x 313 weekdays per year x Shs. 0.0092 per passenger-minute = Shs. 173 days per passenger-hour per year.

The passenger time costs were calculated in a similar manner for the other alternatives. For the Zambian port lorry trips, passenger time values were not included. The passenger time costs for each alternative are shown in ANNEX XIV A, B, and C under the column heading "Passenger Time Costs".

Cargo Time Costs: ANNEX XIII-A and B summarizes the total lorry-vehicle-hours of operation on the alternative systems. Using an average load factor of 2.6 tons per lorry and the value Shs. 0.0843 per ten-minute derived in ANNEX XI, the total cargo time values in 1970 and 1992 for each network are determined. An example of the 1970 cargo traffic cost analysis on Network 1, the existing system, is shown below:

Network 1

1658 lorry-hours per day x 60 minutes per hour
 x 2.6 tons per lorry x Shs. 0.0843 per ten-minute
 x 313 weekdays per year = Shs. 6,824,658 per year
 in 1970

As in the case of vehicle operating costs, it was necessary to treat the cargo time values of goods moving between Zambia and Dar es Salaam separately. Using projections of tonnages of copper and general cargo summarized in ANNEX VI, cargo time values were calculated for each alternative. The cost analysis derived cargo time values of Shs. 0.3365 per ten-minute for copper and Shs. 0.0843 per ten-minute for general cargo. Since estimated future copper movements carried by lorry would be controlled by demand for general cargo movements in the opposite direction, the value assumed for copper was reduced to that value assumed for general cargo. The resulting cargo time costs are shown in the Network Cost Tables in ANNEX XIV-A, B, and C under the heading "Cargo Time Cost - Zambia".

Capital and Maintenance Costs: The capital cost requirements for each alternative are outlined in the Technical Analysis Section below. In summary, the cost of improving the existing port route was estimated at \$6,601,300 and the cost of constructing a new port route was estimated at \$5,366,000 with an additional \$475,000 required in 1984 to widen Sections 2 and 3 to six lanes.

The engineering analysis of maintenance costs showed that the annual cost of maintaining the existing street system was approximately Shs. 20,000 per mile. It was estimated that the cost of maintaining the existing route improved or the new port route would be approximately Shs. 40,000 per mile in the initial year. Based on past trends, it was estimated that maintenance costs would increase at about five percent per year resulting in 1992 annual costs of Shs. 40,000 per mile of arterial roadway and Shs. 80,000 per mile of improved or new port route.

3. Benefit Analysis

Present Worth of Total Network Costs: In order to compare various alternatives with different streams of costs, the present worths of these various streams were computed. For this analysis, 1973 was assumed to be the first year of operation and present worth analyses were based upon that year since it would be the first year on which benefits would accrue. The present worth of future costs was determined for each alternative at various discount rates. It was assumed that the construction costs would be expended over a single year, 1972. The construction cost estimate has been increased to 5,566,000 to include final design costs in the economic analysis. The present worth of the project cost in 1971 is, then, the cost plus one year's interest. The present worth in 1992 of all cost streams at various discount rates is summarized in ANNEX XV.

Computation of benefits for Alternative Improvements: The present worth of each major item of cost for each alternative improvement network was compared to costs for the network with the existing port route unimproved. ANNEX XVI summarized these cost comparisons and the cost differences between each alternative improvement and the existing alternative. The difference in user costs and cargo and passenger time costs represents the savings resulting from each alternative improvement. The differences in construction and maintenance costs represent the additional capital expenditures required for each alternative improvement. Dividing the present worth of annual benefits by the present worth of the construction and maintenance costs gives the benefit/cost ratio at the selected discount rate. These ratios are 1.473 and 3.145 at 10 percent. The real meaning, or perhaps the secondary benefits, of this analysis is that goods will flow easier and cheaper to markets thereby stimulating agricultural, commercial and industrial development.

Rate of Return Analysis: The above analysis indicated that the ratio of benefits to costs for a new West Access Road were about 2.3 times those for the existing port route at as high a discount rate as 14 percent. ANNEX XVII illustrates the changing present worths of benefits and costs at various discount rates for both the existing port route improved and the new port route. The intersection of the cost and benefit curves for each alternative establishes the estimated internal rate of return for the project. The estimated rate of return for the existing route improved is 13.5 percent, and for the new port route is 24 percent.

C. Technical Analysis - Port Access Road

1. Detailed Description of Project

The Port Access Road will be a four lane divided highway beginning at the intersection of Morogoro Road and University Road and extending 8.05 miles to the Dar es Salaam Port. There will be a cycle track and walkways along the entire length. A complete description is found in ANNEX I-A.

2. Studies

The engineering and economic feasibility study for the proposed project was carried out by De Leuw, Cather, International, Inc., pursuant to A.I.D. Loan No. 698-N-007A. De Leuw, Cather has previously completed final design for the Tunduma-Iringa, Iringa-Mahenge, and Morogoro-Dar es Salaam sections of the Tan-Zam Highway in Tanzania. The feasibility study was completed in February 1971.

3. Design Standards

The divided roadway will comprise four 12 foot traffic lanes underlain with six inches of crusher waste and six inches of crushed rock topped with 1½ inches of asphaltic concrete. Pavement design provides for 24,000 lb. axle loads, and structures are designed for AASHO H-20S44 loading standards. Traffic lights will be installed at the two major intersections, Ubongo and Pugu Roads. All intersections and railroad crossings will be at grade.

While the proposed new route does not follow an existing street pattern, there will be some restrictions to traffic flow since traffic volumes within the design period do not justify the elimination of these restrictions by means of grade separation and limited access. A design speed of 50 miles per hour was assumed for the proposed new route. A higher design speed would not be desirable through an urban area. The following design criteria have been used as a basis for preparing cost estimates.

Table II - 4

Design Speed	50 mph
Minimum Radius of Curvature	754 feet
Maximum Degree of Curvature	7.6 degrees
Maximum Grade	3.0 percent
Minimum Grade	0.0 percent

4. Construction Materials

Sources of materials which will be required for the work and are produced in Tanzania are located in the vicinity of Dar es Salaam. Materials which must be imported through the port will readily be available to the job site as would any materials which might be imported by rail from neighboring countries. Long haul distances from the point of landing to the job site will not contribute to the cost or problems of construction.

5. Cost Estimate

The cost estimates for this project are based on the high standards of construction and high quality of materials called for in the "Standard Specifications for Construction of Roads and Bridges", FP-61 of the United States Bureau of Public Roads. The unit prices of work items were based on bid prices recently received for similar work in the area. Adjustments were made to reflect significant differences in transportation costs or escalation of basic prices. In those cases where proposed standards, method of payment or basic design differed materially from those used by the Ministry, unit prices were derived from prices of materials, labor and other contributing costs now prevailing in Dar es Salaam.

An estimate of the breakdown between the portion of costs in U.S. dollars and Tanzanian and third country currencies was made on the basis of quantities, prices and sources of labor, materials and equipment which would be used on the Project. The ratio derived compares closely with the ratios now prevailing for recent A.I.D. financed highway contracts in Tanzania. If a U.S. contractor is awarded the contract, the foreign exchange ratio would be about 60 percent in U.S. currency and 40 percent in Tanzanian and third country currencies. For engineering services, the ratio is 90/10.

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6. Construction Schedule

The following schedule is proposed for implementation of the proposed project:

Table II - 5
Dar Port Access Road

Contract for Final Design	June 1971
Final Design Complete	December 1971
Bids Available	February 1972
Bid Opening	April 1972
Engineer's Recommendation	May 1972
Bid Award	May 1972
Contract Signing	June 1972
Contractor Mobilization	July 1972
Construction Complete	December 1973

The construction of the proposed road on a new location will not present major problems of traffic maintenance. Severe climate conditions which have seriously delayed other construction operations in Tanzania are not encountered in Dar es Salaam, and there is no reason to believe that labor or political disturbances will cause delays.

7. Maintenance

The construction of a Port Access Road, in addition to other streets and roads, will necessitate expansion of the present highway maintenance organization if the new investments in streets and roads are to be protected. The format, financing and staffing requirements for a new maintenance organization is under present study by Lyon and Associates, financed under an A.I.D. grant.

It is estimated that an annual expenditure of about Shs. 40,000 per mile, or almost one percent of the initial investment, will be required to maintain the new road in the early years. After that, the annual rate of increase will be about five percent a year.

The Ministry of Communications, Transport and Labour is responsible for maintaining about 10,000 miles of primary and secondary roads. It is expected that this mileage will double when the responsibility for maintenance for an additional 10,000 miles is shifted from local administration to the Ministry of Communications, Transport and Labour. In general, the maintenance funds have averaged about 60 dollars per mile over the entire system, however, the use of maintenance funds is confined to the more heavily travelled roads and maintenance on these sectors is acceptable considering the quality of surfacing. The GOT will be required to warrant that sufficient funds for maintenance will be available for the subject project. The Director's Certification is included as ANNEX XVIII.

8. Technical Soundness

The design standards proposed by De Leuw, Cather have been reviewed by A.I.D. engineers and found to be based on sound engineering principles and consistent with the character of road facility desired by the GOT and considered as necessary by A.I.D. Final designs will be prepared by De Leuw, Cather financed pursuant to A.I.D. Loan 698-H-007A and will be subject to A.I.D. review and approval. The cost estimate was jointly reviewed by the GOT and A.I.D. and found to be reasonable, particularly in light of De Leuw, Cather's recent and extensive experience in engineering design and bid analysis for the TZH. The Consultant's recommendations are summarized in ANNEX XIX. The cost estimate is deemed to meet the requirements of Sec. 611 (a) of the FAA.

D. Additional Financing - Tan Zam Highway (Tunduma-Iyayi)

1. Project Background

Zambia-Tanzania Transport Emergency: Since Zambia gained independence in October 1964, a major long-term policy objective has been to reduce its almost complete dependence on Rhodesia for access to the sea and for many of its vital supplies. Zambian policy has been to develop alternative transport capacity to the sea for its minerals (copper) exports and a wide variety of imported goods. Its objective is to divert traffic from existing facilities in Rhodesia and Mozambique in order to ensure overall long-run transport reliability and to place competitive pressure on existing facilities so as to keep the prices for its external transport services at reasonable levels. Zambia also wishes to develop new and close trade relations with neighboring countries to the northeast and thereby modify its inherited and somewhat arbitrary pattern of international traffic. Pursuant to this policy, Zambia has applied for membership in the East African Community and together with Tanzania is developing new transport links to the sea via Tanzania.

Rhodesia's UDI made long range goals an immediate problem. A series of United Nations Security Council resolutions following UDI

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placed increasingly strict economic sanctions on Rhodesia, beginning with an international embargo on shipment of FOL to or through Rhodesia, and followed by a complete embargo on normal trade. These measures necessitated the emergency transport of liquid fuels and other imports to Zambia and the backhaul of copper exports over the most immediately available alternative route to the sea - the 1300 mile road from Kapiri M'Poshi, Zambia to Bar es Salaan, Tanzania - the Tan Zam Highway.

To handle this emergency a series of transport improvements were undertaken. Already completed is a petroleum products pipeline from Bar es Salaan to the Copper-Belt. A railroad stretching 980 miles from Kapiri M'Poshi to the Kitale railhead of EARR in Tanzania is in construction financed by mainland China. The TZH is the third major response to the emergency and is being jointly financed by the Governments of Great Britain, Sweden and the United States in association with the World Bank. The U.S. government commitment to date totals almost \$25 million. It is important to note, however, that consideration of construction of the TZH predated the emergency, and its economic rationale is independent thereof. Stanford Research Institute made detailed economic resource maps and estimates of the elasticity and demand for transport in the area of influence of the road within Tanzania and found it to be high. Unit savings in vehicle operating costs due to improvement of the highway are, therefore, large. The distances between the major origins and destinations on the highway are also large. Thus, the large absolute fall in cost of most vehicle trips will stimulate significant economic activity in the high potential agricultural areas south and southwest of Iringa. High transport costs covered by poor roads and long distances have been significant barriers to the development of this fertile, temperate highland. The internal rate of return for the portions of the TZH in Tanzania were estimated (in preceding A.I.D. Capital Assistance Papers) to be 13 percent - this estimate based only on road user savings.

Original Loan: In June 1968, A.I.D. authorized a loan totalling \$13,000,000 to assist in financing (i) construction of the section of the TZH between Tunduma and Iyayi in Tanzania, and (ii) the final engineering of the sections between Iringa and Mahenge and Morogoro and Bar es Salaan in Tanzania. The original construction cost estimate was \$17.0 million (\$10.7 million in foreign exchange financed by A.I.D., and \$6.3 million in local costs financed by the COT). The original estimate also included \$976,000 in foreign exchange financed by A.I.D. for contingencies and \$200,000 in local costs financed by the COT for contingencies. See Section II F 1 below for financial requirements.

Table II - 6

	<u>FX Costs</u>	<u>Local Costs</u>	<u>Total Costs</u>
Construction	\$ 10.700	\$ 6.300	\$ 17.000
Supervision	.900	.100	1.000
Contingency	.976	.200	.176
	<u>\$ 12.576</u>	<u>\$ 6.500</u>	<u>\$ 19.176</u>

2. Project Requirements

On July 15, 1966 Nello L. Peier Co., a U.S. contractor, signed a contract approved by A.I.D. with the GOI for \$16,225,271 for the construction of the Kundama-Iyaya section of the TZH. The estimated completion date of this contract was December 1971. Since the date of the original contract there have been a number of small variation orders resulting in an increase in the total contract price to approximately \$15,545,000. The original project is described in Annex XX.

Now the GOI has prepared a major variation order to improve the Kundama-Iyaya section, which is suffering from the deficiencies noted below. The GOI expects to issue this variation order to the contractor. The order adjusts the quantities included in the basic contract and will reflect any increase or decrease in project costs resulting therefrom. Any new items of work for which no unit price was included in the contract will be negotiated by the GOI and set forth in the variation order.

Construction Problems: Approximately 30 miles of road pavement have been completed and 113 miles of base and sub-base laid but not yet paved. Of the 30 paved miles, 20 miles have been open to traffic for varying periods up to 5 months. Frequent inspections of this 20-mile section revealed a continuous and accelerating deterioration of the pavement due to:

- a) Water entering the base and sub-base
- b) Plastic soils used as sub-base
- c) Reduced strength of pavement design due to a reduction of pavement thickness
- d) Excessive wheel loads

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The reason and remedies for each of the above deficiencies are discussed below:

Original Design

The pavement structure was originally designed to withstand a maximum wheel load of 9,000 pounds. The design called for a soil sub-base, a 5" crushed stone base, and a 2" asphalt surface. To effect maximum economy without sacrificing pavement strength the road was designed as a trench section. In this design the base and sub-base are placed in a trench section slightly wider (in this case 3 feet wider) than the pavement surface. Soil shoulders are then built up on each side. This design reduced the quantity of expensive base material and holds up well where adequate soil drainage conditions exist and where suitable sub-base material of low plasticity is available. Under these conditions substantial savings in construction time and cost can be made. Since both of these factors were critical at the time the decision was being made to proceed with the project, a calculated risk was taken in adopting this design.

Causes of Road Failure

Where unfavorable conditions exist, such as in areas where the soil used for the trench shoulders is impermeable, poor drainage results and the sub-base and base suffer from water intrusion. This condition on the Tunduma-Iyayi section of the TZH was further aggravated by high plasticity of the sub-base soil material. A search of the area for low plasticity material was made by the consulting engineer who employed several materials experts for this purpose. When no soils of low plasticity were found adjacent to the highway from Tunduma to Chimala the GOT and DCI decided to use the best available soils, equal to those used by ComFor's to gravel the existing road. When these soils contain optimum moisture they exhibit relatively high strengths. When, however, they become saturated in a confined state, as in the trench section, their load bearing capacity falls to very low levels. While this condition is remedied during construction through protection of the interface between the soil shoulders and the base and sub-base, continued use of the road, especially during the wet season tends to re-expose the interface and disintegrate the prime on the portion of base extending beyond the road surface. The problem of water intrusion then becomes a continuing problem and results in deterioration of the base and failure of the road surface.

Compromise on Surface Thickness

All bids received for the construction of the Tunduma-Iyayi section were in excess of the engineer's estimate. Since a ceiling of \$15 million dollars had been placed on the bids by the GOT with A.I.D.

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approval, all bids were rejected as non-responsive and a decision was made to negotiate with the lowest bidder. Ways were sought to reduce the construction cost to within available funds. One method proposed was to reduce the thickness of the asphalt concrete surface from the designed 2 inches. This question had previously arisen in discussions with the IBRD on common standards for the entire road in both Tanzania and Zambia. The IBRD had made some studies and failure probability calculations which convinced them that the road surface could be reduced to one inch or less without any excessive sacrifice in strength. Their calculations indicated that the added maintenance and need for an additional surface overlay at the end of 4 to 5 years were more than balanced by the IBRD's technical views and costs considerations. DCI and the GOT with A.I.D. concurrence agreed upon a compromise solution reducing the surface thickness to 1¹/₂ inches at a cost saving of about \$300,000. Further savings were obtained through the redesign of the trench section and the compromises reached by DCI and the GOT on soils mentioned in the previous section. The other sections of the TZH financed by other donors were designed to similar standards.

Effects of Final Design

These three comprise elements: trench section, high plasticity of sub-base material and low permeability of soil shoulders, and reduction of surface thickness combined to produce a resulting reduction in road bearing strength. This condition was further aggravated by continued use of the completed road portions by vehicles with loads exceeding the design wheel load of 9,000 pounds. A check of the weighing station at Turluma over a 20-day period showed over 25% of the vehicles to be overloaded. Calculations show that an estimated five repetitions of a 15,000 pound wheel load per day would result in destruction of the pavement in six months. A condition precedent in the amended 698-H-005 loan agreement will provide that proper GOT enforcement procedures to prevent overloads on the highway suitable to A.I.D. be established and that the GOT will undertake to enforce these procedures in a form suitable to A.I.D. prior to any disbursement of funds provided under this loan amendment.

Construction Proposal: It has been agreed among the Government, A.I.D., consulting engineer and contractor to eliminate the trench section. On the sections of road where work on the pavement has not started, the subgrade can be finished in a straight line from the crown point to the shoulder line. Base and, where required, sub-base can be placed across the full width of the road. A more complex problem exists where the trench section has already been constructed. The soil in place will have to be removed and replaced with granular material. After the shoulder material is installed, shaped and compacted, it will receive a covering of prime bitumen, seal bitumen and a sand blotter as necessary. These membranes will substantially preclude the entry of water.

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With regard to the material and strength of the base and sub-base, it has been agreed to increase the base to a five-inch thickness and to require a P.I. limit of 10 to ensure the quality of materials. An asphaltic overlay, and reconstruction where necessary, will be utilized to assure the required strength on that section of the road already completed.

The overloading question has already been substantially remedied. The weighing station at Tunduma has been completed, and automatic weight recorders are being installed. The recorders maintain a permanent record and inhibit the possibility of oversight or collusion. Additionally, officials with power to impound vehicles have been positioned at the station. In late February, the license of one prominent trucking firm (FUDIAP) was taken by the Government because of consistent overloading. The weigh station in Dar es Salaam is under construction, and the Government has recently requested that De Leuw, Cather define steps and establish procedures to assist in the enforcement of axle-load requirements. The Government will further covenant in the Loan Agreement to maintain a rigid pound axle-load limit on the Tunduma-Iyavi section, in addition to the Conditions Precedent mentioned above.

CONSTRUCTION SCHEDULE

The following table shows the expected implementation timetable:

Table II - 7

Tunduma - Iyavi Improvements

Contract Amendment Signed	May 1971
Contractor Mobilization	June 1971
Construction Complete	December 1971

Cost Estimate: The estimated final cost of construction of the project as per present specifications is \$17,824,000. On this basis only \$351,000 of the \$1,176,000 original contingency item remains. The estimated cost of upgrading and repair is \$2,766,000. The revised total construction cost is \$21,951,000. Engineering supervision costs of \$991,000 bring the total project requirements to \$22,942,000. Details of the estimate for upgrading and repair are found in ANNEX XXI.

Technical Soundness: The engineering analysis of the road problems and the recommended redesign prepared by the Consulting Engineer have been reviewed in detail by A.I.D. engineers and were found to be based on sound engineering principles and consistent with the character of the road facility desired by the GOI and considered as necessary by A.I.D.

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The cost estimate was based on measurements of quantities on a section of the road to be reconstructed. The extrapolated cost estimate in Table XXI, which includes an adequate contingency is deemed to be reasonable and to meet the requirements of Section 611 (a) of the FAA.

3. Economic Implications

As noted above, the economic rate of return for the TZM in Tanzania approximates 13 percent where benefits are based on user savings alone. The improvements contemplated herein will ensure that the benefits postulated in the original loan will, in fact, be achieved. In addition, \$1,600,000 in additional maintenance savings will be possible due to the recommended improvements over the life of the Project. Failure to take the steps recommended by the consulting engineer for improvements to the Tunduma-Iyayi section would result in increased maintenance costs and would substantially shorten the life of the section, thereby threatening the viability of the entire TZH.

E. Financial Analysis

1. Financial Requirements

The total financial requirements are as follows:

Table II - 8

	<u>FX Costs</u>	<u>Local Costs</u>	<u>Total Costs</u>
a) <u>Port Access Road</u>			
Construction	\$ 2,207,000	\$ 1,471,000	\$ 3,678,000
Supervision	394,000	44,000	438,000
Contingency	424,000	283,000	707,000
Land & Right of Way		543,000	543,000
Total	\$ 3,025,000	\$ 2,341,000	\$ 5,366,000
b) <u>Tunduma-Iyayi</u>			
<u>Original Loan (005)</u>			
Construction	\$10,700,000	\$ 6,300,000	\$17,000,000
Supervision	900,000	100,000	1,000,000
Contingency	976,000	200,000	1,176,000
Total	\$12,576,000	\$ 6,600,000	\$19,176,000

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Table II - 8 (con't.)

	<u>FX Costs</u>	<u>Local Costs</u>	<u>Total Costs</u>
c) <u>Improvement</u>			
<u>Tunduma-Iyayi</u>			
Construction	\$ 2,760,000	\$ 180,000	\$ 2,940,000
Supervision	- 180,000*	99,000	- 9,000
Contingency	<u>414,000</u>	<u>421,000</u>	<u>835,000</u>
Total	\$ 3,066,000	\$ 700,000	\$ 3,766,000

*Estimated reduction in FX supervision costs.

d) Revised Tunduma-Iyayi

<u>Project Cost</u>			
Construction	\$13,460,000	\$ 6,480,000	\$19,940,000
Supervision	792,000	199,000	991,000
Contingency	<u>1,390,000</u>	<u>621,000</u>	<u>2,011,000</u>
Total	\$15,642,000	\$ 7,300,000	\$22,942,000

e) Total New

<u>Requirements(a & c)</u>			
Construction	\$ 4,967,000	\$ 1,651,000	\$ 6,618,000
Supervision	286,000	143,000	429,000
Contingency	338,000	704,000	1,542,000
Land & Right of Way		<u>543,000</u>	<u>543,000</u>
Total	\$ 6,091,000	\$ 3,041,000	\$ 9,132,000

*For Dar Port Access Project.

2. Financial Plan

The proposed financial plan is as follows:

Table II - 9

	<u>FX Costs</u>	<u>Local Costs</u>	<u>Total Costs</u>
a) <u>Dar Port Access Road</u>			
A.I.D.	\$3,025,000(100%)	\$ 758,000(32.3%)	\$3,783,000(70.5%)
GOT		<u>1,583,000(67.7%)</u>	<u>1,583,000(29.5%)</u>
Total	\$3,025,000(56.6%)	\$2,341,000(43.4%)	\$5,366,000

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Table II - 9 (cont.)

	<u>FX Costs</u>	<u>Local Costs</u>	<u>Total Costs</u>
b) <u>Improvement</u> <u>Tunduma-Iyayi</u>			
A.T.D.	\$3,066,000	\$ 700,000	\$ 3,760,000
GOT			
Total	\$3,066,000	\$ 700,000	\$ 3,760,000
Total of a & B			
A.T.D.	\$6,091,000	\$1,458,000(48.9%)	\$7,549,000(82.7%)
GOT		1,583,000(52.1%)	1,583,000(17.3%)
Total	\$6,091,000(66.7%)	\$3,041,000(33.3%)	\$9,132,000

*Note that the GOT is financing 29.2% of the total costs and 90.4% of the local costs of the total Tunduma-Iyayi project costs (see Table II-8 Sections 6, c and d above) The GOT provided the entire \$6,600,000 of local costs shown in Section 6 of Table II-8.

3. Other Sources of Financing

The Tan-Zam Highway has had substantial foreign source financing. The following list summarizes the financial contributions to the highway's design and construction from all sources. It is possible, but not known at this time, that small amounts of additional foreign loans and credits or local government contributions may be necessary to finish the construction of the highway.

SUMMARY OF TAN-ZAM HIGHWAY COSTS

Tanzania Section

A.T.D. Loans	\$ 32,300,000
IBRD Loan	7,500,000
IDA Credit	7,500,000
Swedish Credit	15,000,000
GOT Contributions	21,000,000
Sub Total	\$ 83,300,000

Zambia Section

Great Britain Loan	\$ 3,500,000
Swedish Loan	5,000,000
IBRD	19,200,000
Zambia Contributions	15,000,000
Sub Total	\$ 42,700,000

SUMMARY OF TAN-ZAMBIA PROJECTS COSTS (cont.)

Total Tan-Zambia

Foreign Contributors	\$ 0,000
Local Govt. Contributions	<u>36,000</u>
	\$126,000

4. A.I.D. Financing and the OT's Contribution to A.I.D. Assisted TZ Projects

The OT is making a considerable financial contribution to the A.I.D. financed portions of the TZ program 23% of the total costs and 3.4% of the local costs.

The total cost of the portions of the TZ program A.I.D. is helping to finance now amounts to approximately \$4,400,000. A.I.D. has and is contributing development loan funds of \$32,300,000 mainly for the foreign exchange costs of the projects, and the OT's financing approximately \$13,115,000 of the estimated \$15,724,000 local costs of these projects.

A.I.D. is proposing to finance 100% of the total cost of the improvements needed on the Tunduma-Irindi section of the TZ. The OT will have financed \$6,600,000 or 24% of the total Tunduma-Irindi costs of \$22,420,000. This last figure includes the estimated \$3,766,000 cost of the improvements. The OT is also financing 0.4% of the \$7,300,000 of local costs of this project.

It was not considered practicable to approach other donors concerning the proposed projects since A.I.D. is already financing the Tunduma-Irindi section and the Morogoro Dar es Salaam section of the TZ. The Central Government previously declined interest in the proposed access road to the IRI's compounds on the TZ. It has reportedly remained with construction financing for the sections between Irindi and Morogoro. The IARD has already launched a new effort in feeder road development in Tanzania and has expressed interest in financing some of the recommended requirements emerging from the A.I.D. financed Nigwa Maintenance Study.

5. Justification of A.I.D. Contribution to Local Cost Financing

The costs of the TZH represent about 25% of the total costs of all public sector projects expected to be financed by the GOT and jointly by the GOT and external bilateral/multi-lateral sources during the Second Five-Year Plan. This project thus represents a mammoth commitment on the part of the GOT, and as pointed out in the Tan-Zam Highway Phase III construction amendment loan paper (A.I.D. DLC/P 846-2) this has already prompted the Tanzanian Minister of Finance to note to the U.S. Ambassador in writing that a disproportionately high contribution by the GOT to TZ construction costs "is bound to compel us to delay still further the construction of a number of feeder roads throughout the country. Already we have accepted a certain distortion in our total road program to the detriment of feeder roads, and this further strain could prove extremely serious."

It is also important to note that even before the increased costs of the Tunduma-Iyayi section, it was correctly observed in the Second Tanzanian Five-Year Plan (1969-1974) that "the construction of the TZ overshadows all other developments in the (transport) sector, particularly during the first three years of the Plan. Spending on other communication projects will be less than would otherwise have been desirable because of the heavy spending necessary on the TZH. During the first Five-Year Plan, a large emphasis was laid on Trunk Routes. It is expected that a better balance will be achieved during this Plan as between Trunk Routes and Feeder Roads." The completion of the TZH is vital, then, both as it will be the main artery for carrying produce from and to the feeder road network in the fertile Southern Highlands, and since it will release needed funds for other important development projects. Since, as indicated, such programs as the feeder road program are of high priority for Tanzania's development, A.I.D. should assume a portion of the local costs of the TZH in the interest of furthering this priority.

The GOT has and is providing an extensive amount of funds for the TZH. Besides the estimated \$13,116,000 it is providing for local costs of A.I.D. financed portions of the highway, it is also providing an estimated \$6.4 million for local costs of the IBRD-JDA financed portions of the TZH in Tanzania, and may be providing substantial funds for the local costs of the TZH being financed by the Swedish Government.

Long term development loans are helping the country minimize this load, because the debt servicing load of commercial loans would be considerably higher.

In addition, the GOT's deficits are partially financed by short term local borrowings. These borrowings have shown a gradual

increasing tendency in the 1960's and in 1969 amounted to about \$19 million of the G.O.'s \$45 million deficit. A.I.D. support of some local cost financing on the TZH relieves the G.O. from a short-term debt burden otherwise incurred. Given Tanzania's expected GNP and export growth, it will be much easier for the G.O. to repay an increased amount of a concessionary foreign exchange loan granted to cover some local costs than to borrow locally at high cost and for a short period, incurring a greater short-term fiscal burden and increasing its already heavy debt-servicing burden.

6. Prospects for Repayment

During the First Five-Year Plan, Tanzania's gross domestic product grew at an average annual rate of about 4.4 percent. The growth rate is attributable principally to adverse weather, but a much lower price for sisal also played a part. The most notable structural change in the economy was the decline in the share of agriculture in GDP, and the very rapid build-up of manufacturing capacity. The service sector which also grew rapidly, benefited in some degree from the growth of Zambian transit trade.

Mid-way through the Plan, the Government adopted an important policy statement known as the Arusha Declaration which extended public control, in varying degrees, to enterprises in the fields of banking, insurance, import and wholesale trade, processing and manufacturing, and later also the sisal industry. Compensation for owners of nationalized enterprises has been agreed in respect of 98 percent of the value of the assets acquired, with the exception of the sisal estates. The Government has also announced that it would welcome the participation of private investors in many fields, particularly manufacturing and tourism either in association with the Government or on their own. Several ventures involving the joint participation of private investor and the Government owned National Development Corporation have been established.

Tanzania's First Plan ended on June 1969 and the Second Five-Year Plan was launched on July 1, 1969. The Second Plan envisages a total investment of Shs 8,055 million. There is a strong emphasis on rural development, reflecting the recognition that the bulk of Tanzania's population will reside and earn a livelihood in the countryside. The major portion of the investment will be financed by internal sources, as was the case with the previous Plan.

If an investment program of just Shs 7,400 million can be implemented, the GDP at constant 1963 prices could grow at an average annual rate of 6.5 percent during the period 1968-1973, which is the same rate projected in the Plan. One aspect of this economic forecast is the anticipated improvement in the outlook for coffee during the next 3-4 years.

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Tanzania's overall balance of payments is expected to be satisfactory. Its merchandise exports will benefit from the unexpected improvement in the outlook for coffee during the next 3-4 years. Invisible earnings are expected to grow steadily owing to the rapidly developing tourist industry and the increasing volume of transit trade to Zambia. With foreign exchange earnings rising, there should be no problem in servicing the country's external public debt. Nevertheless, the temporary nature of the coffee boom, the dominance of agricultural items in exports, and the as yet small resource base make it desirable that the major portion of external assistance for Tanzania's development program be on concessional terms.

Details on the economic development and prospects for Tanzania may be found in IB D report No. AE-7, dated March 17, 1970.

F. Economic Effects of Loan

1. Impact on U.S. Economy

The proposed loan will finance the procurement of construction and engineering services.

2. Impact on U.S. Balance of Payments

Procurement will be in accordance with the new untying rules authorized by the President. It is expected, however, that U.S. engineering and construction firms will continue to be competitive for the Port Access Road in view of their heavy involvement with the Tan-Zam highway.

3. Effect on Private Enterprise

The proposed loan will finance a contract with a private construction and engineering firm. In addition, the proposed loan finances construction of a road which, when completed, will assist private enterprise in both Tanzania and Zambia.

April 26, 1971

CHECKLIST OF STATUTORY CRITERIA
DEVELOPMENT LOAN FUND

Many of the questions require only yes or no answers. Others, however, must be answered more fully. In those cases, a specific reference to explicit discussion of the matter in the loan paper will suffice. But where the loan paper does not deal explicitly with a matter that clearly requires more than a yes or no response, sufficient response must be made to indicate that the matter has been appropriately considered.

The following abbreviations are used in the checklist:

FAA - Foreign Assistance Act of 1961, as amended, incorporating amendments effected by the Foreign Assistance Act of 1969.

App. - Foreign Assistance and Related Agencies Appropriations Act, 1971.

Space for answers is provided in the margin to the right of each question. This form must be made a part of the Capital Assistance Paper.

I. COUNTRY PERFORMANCE

A. Progress Towards Country Goals

1. FAA §§ 201(b)(5), 201(b)(7), 201(b)(8), 208. Discuss the extent to which the country is:

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

Satisfied. Tanzania has given appropriate emphasis to increasing food production, rating the agricultural sector as its first developmental priority.

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

Satisfied. The GOT has signed an Investment Guaranty Agreement. Domestically, investors are encouraged to engage in all but those ventures which are deemed to be too crucial to be left in private hands.

(c) Increasing the people's role in the developmental process.

Satisfied. The Arusha Declaration placed prime emphasis on development as a responsibility of "rural peoples".

- (d) Allocating expenditures to development rather than to unnecessary military purposes or intervention in other free countries' affairs.* Satisfied. Major budget allocations are to development and major non-defense budgets. See Item D-2 below.
- (e) Willing to contribute funds to the project or program.* Tanzania will contribute approximately 30% of the costs of the overall A.I.D.-financed sections of the Tan-Zam Highway.
- (f) Making economic, social, and political reforms such as tax collection improvements and changes in land tenure arrangement; 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.* Satisfied. Within the limits of the segment of the population in the money economy, a tax system has been established. New lands are developed outside of the traditional tribal holdings. Land tenure is not a major problem in Tanzania. Tanzania, although it has a party-controlled newspaper, allows freedom of expression and of the press. It recognizes the importance of individual freedom and initiative to a greater extent than do most other African countries, and encourages private enterprise within the constraints imposed by its Social Development philosophy.
- (g) Responding to the vital economic, political, and social concerns of its people, and demonstrating a clear determination to take effective self-help measures.* Satisfied. The Arusha Declaration and the Doctrine of Self Reliance satisfy this requirement.

B. Relations with the United States

1. FAA #620(c). Is the government indebted to any U.S. citizen for goods or services furnished or ordered where: (a) such citizen has exhausted available legal remedies, including arbitration, or (b) the debt is not denied or contested by the government, or (c) the indebtedness arises under such government's, or a predecessor's unconditional guarantee?

We are not aware of any such case.

2. FAA #620(d). If the loan is intended for construction or operation of any productive enterprise that will compete with U.S. enterprise, has the country agreed that it will establish appropriate procedures to prevent export to the U.S. of more than 20% of its enterprise's annual production during the life of the loan?

The loan is not so intended.

3. FAA §620(e)(1). Has the country's government, or any agency or subdivision thereof, (a) nationalized or expropriated property owned by U.S. citizens or by any business entity not less than 50% beneficially owned by U.S. citizens, (b) taken steps to repudiate or nullify existing contracts or agreements with such citizens or entity, or (c) imposes or enforced discriminatory taxes or other exactions, or restrictive maintenance or operation conditions? If so, and more than six months has elapsed since such occurrence, identify the document indicating that the government, or appropriate agency or subdivision thereof, has taken appropriate steps to discharge its obligations under international law toward such citizen or entity? If less than six months has elapsed, what steps if any has it taken to discharge its obligations?

4. FAA §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, and failed to take appropriate measures to prevent a recurrence and to provide adequate compensation for such damage or destruction?

Satisfied. On only one occasion has the GOT nationalized property owned by U.S. citizens. In 1968 a plantation belonging to Mr. and Mrs. William Kneib was expropriated. Appropriate steps were taken by the GOT to discharge its obligations and settlement of the claim was reached in 1968. Ref: State 187268

Satisfied. There has been no such action against U.S. property in Tanzania.

5. FAA §620(l). Has the government instituted an investment guaranty program under FAA §221(b)(1) for the specific risks of inconvertibility and expropriation or confiscation?

Satisfied. Tanzania has instituted the Investment Guaranty Program.

6. FAA §620(o): Fisherman's Protective Act of 1954, as amended, Section 5. Has the country seized, or imposed any penalty or sanction against, any U.S. fishing vessel on account of its fishing activities in international waters? If, as a result of a seizure, the U.S.G. has made reimbursement under the provisions of the Fisherman's Protective Act and such amount has not been paid in full by the seizing country, identify the documentation which describes how the withholding of assistance under the FAA has been or will be accomplished.

Satisfied. No such incident.

7. FAA §620(q). Has the country been in default, during a period in excess of six months, in payment to the U.S. on any FAA loan?

Satisfied. The GOT is not in default on any loan.

8. FAA §620(t). Have diplomatic relations between the country and the U.S. been severed? If so, have they been renewed?

Satisfied. No break in diplomatic relations.

C. Relations with Other Nations and the U.N.

1. FAA §620(i). Has the country been officially represented at any international conference when that representation included planning activities involving insurrection or subversion directed against the U.S. or countries receiving U.S. assistance?

Satisfied. The GOT has attended no such conference.

2. FAA §§620(a), 620(n); App. §§107(a), 107(b), 116. Has the country sold, furnished, or permitted ships or aircraft under its registry to carry to Cuba or North Viet-Nam items of economic, military, or other assistance?

We are not aware of any such case.

3. FAA §620(u); App. §114. What is the status of the country's U.N. dues, assessments, or other obligations? Does the loan agreement bar any use of funds to pay U.N. assessments, dues, or arrearages?

Satisfied. The GOT is not in default on its international obligations. The Loan Agreement will forbid use of loan funds for any purpose unrelated to the project.

D. Military Situation

1. FAA §620(i). Has the country engaged in or prepared for aggressive military efforts directed against the U.S. or countries receiving U.S. assistance?

Satisfied. It has not engaged in any such activity.

2. FAA §620(a). What is (a) the percentage of the country's budget devoted to military purposes, and (b) the amount of the country's foreign exchange resources used to acquire military equipment? Is the country diverting U.S. development assistance or P.L. 480 sales to military expenditures? Is the country diverting its own resources to unnecessary military expenditures? Has the country spent money for sophisticated weapons systems?

Tanzania has devoted 5.1% of its 1970-71 budget to military purposes and has used less than 1% of its foreign exchange resources to acquire military equipment. Tanzania is not diverting any U.S. assistance to military expenditures, nor is it diverting its own resources to unnecessary military expenditures. The Symington Inter-Agency Committee has placed Tanzania on the "green light" list. We do not believe Tanzania is making purchases of sophisticated weapons systems.

II. ' CONDITION OF THE LOAN

A. General Soundness

-- Interest and Repayment

1. FAA §§201(d), 201(b)(2).

Is the rate of interest excessive or unreasonable for the borrower? Are there reasonable prospects for repayment? What is the grace period interest rate; the following period interest rate? Is the rate of interest higher than the country's applicable legal rate of interest?

Satisfied. The rate of interest is not considered excessive or unreasonable for the borrower. See Part II, Section II, E, 4 for prospects for repayment, and Part II, Section II, E, 2 for interest terms. The rate of interest is not higher than Tanzania's applicable legal rate of interest.

-- Financing

1. FAA §201(b)(1). *To what extent can financing on reasonable terms be obtained from other free-world sources, including private sources within the U.S.?*

Satisfied. See Part II, Section II, E, of the Loan Paper.

-- Economic and Technical Soundness

1. FAA §§201(b)(2), 201(e). *The activity's economic and technical soundness to undertake loan; does the loan application, together with information and assurances, indicate that funds will be used in an economically and technically sound manner?*

Satisfied. See Sections I, II, and III of the CAP for AID Loan 698-H-005 and Part II, Sections II, B, C, and D of the subject paper

2. FAA §611(a)(1). Have engineering, financial, and other plans necessary to carry out assistance, and a reasonably firm estimate of the cost of assistance to the U.S., been completed?

Satisfied. See Part II, Section II, C, D, and E of the subject paper.

3. FAA §611(b); App. §101. If the loan or grant is for a water or related land-resource construction project or program, do plans include a cost-benefit computation? Does the project or program meet the relevant U.S. construction standards and criteria used in determining feasibility?

Not applicable.

4. FAA §611(e). If this is a Capital Assistance Project with U.S. financing in excess of \$1 million, has the principal A.I.D. officer in the country certified as to the country's capability effectively to maintain and utilize the project?

Satisfied. See Annex XVIII.

B. Relation to Achievement of Country and Regional Goals

-- Country Goals

1. FAA §§207, 281(a). Describe this loan's relation to:

a. Institutions needed for a democratic society and to assure maximum participation on the part of the people in the task of economic development.

Satisfied. Although this loan has no direct relation to this stated goal, opening up of Tanzania's interior is certainly a prerequisite to any serious effort at democratizing its society and increasing the involvement of its people in the task of development.

b. Enabling the country to meet its food needs, both from its own resources and through development, with U.S. help, of infrastructure to support increased agricultural productivity.

Satisfied. One benefit to be obtained from this project is the increased facility of transport of agricultural produce, primarily from the interior to the coast.

c. Meeting increasing need for trained manpower.

Satisfied. No direct relevance. Indirectly, maintenance of this facility will involve the training of numerous personnel.

d. Developing programs to meet public health needs.

Satisfied. Not applicable.

e. Assisting other important economic, political, and social development activities, including industrial development; growth of free labor unions; cooperatives and voluntary agencies; improvement of transportation and communication systems; capabilities for planning and public administration; urban development; and modernization of existing laws.

Satisfied. This project will have a direct positive influence on the development of industry along its length, the improvement of transportation and communications systems, and, most directly, with regard to the Port Access Road, the growth of Tanzania's most important urban area.

2. FAA §201(b)(4). Describe the activity's consistency with and relationship to other development activities, and its contribution to realizable long-range objectives.

Satisfied. See Section I, B, 2.

3. FAA §201(b)(9). How will the activity to be financed contribute to the achievement of self-sustaining growth?

Satisfied. See Section II, B and D, 3 of the loan paper.

4. FAA §201(f). If this is a project loan, describe how such project will promote the country's economic development, taking into account the country's human and material resource requirements and the relationship between ultimate objectives of the project and overall economic development.

Satisfied. See Section II, B and D, 3 of the loan paper.

5. FAA §201(b)(3). In what ways does the activity give reasonable promise of contributing to development of economic resources, or to increase of productive capacities?

Satisfied. The project is designed to open vast areas of Tanzanian country and to facilitate commercial activities, both in Dar es Salaam and the other regions of Tanzania.

6. FAA §281(b). How does the program under which assistance is provided recognize the particular needs, desires, and capacities of the country's people; utilize the country's intellectual resources to encourage institutional development; and support civic education and training in skills required for effective participation in political processes.

Satisfied. The AID program in Tanzania has been developed and pursued with all of these criteria in mind.

7. FAA §601(a). How will this loan encourage the country's efforts to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture, and commerce; and (f) strengthen free labor unions?

Satisfied, as to (a), (b), (c), (d) and (e). See Section II B, D and F of the loan paper. There is no information as to (f).

8. FAA §202(a). Indicate the amount of money under the loan which is: going directly to private enterprise; going to intermediate credit institutions or other borrowers for use by private enterprise; being used to finance imports from private sources; or otherwise being used to finance procurements from private sources.

Loan financed construction services and procurement will be on a competitive basis. It is anticipated that the entire loan amount will finance goods and services from private sources.

9. FAA §611(a)(2). What legislative action is required within the recipient country? What is the basis for a reasonable anticipation that such action will be completed in time to permit orderly accomplishment of purposes of loan?

Satisfied. No legislative action is required.

-- *Regional Goals*

1. FAA 8619. *If this loan is assisting a newly independent country, to what extent do the circumstances permit such assistance to be furnished through multilateral organizations or plans?*

Satisfied. The GCT is using five foreign sources, including the IBRD, for finance of the entire road.

2. FAA 8209. *If this loan is directed at a problem or an opportunity that is regional in nature, how does assistance under this loan encourage a regional development program? What multilateral assistance is presently being furnished to the country?*

Satisfied. See Section II, D, 1. The IBRD and African Development Bank are both active in Tanzania. See IBRD Report No. AE-7, 1970. See also Sections I and V.C of the AID DLC/P846 Paper, and Sections I and II and annexes of this paper. Major assistance in building sections of this highway in Tanzania is being furnished by the IBRD and the Swedish Government.

C. Relation to U.S. Economy

-- *Employment, Balance of Payments, Private Enterprise*

1. FAA 88201(b)(6); 102, Fifth. *What are the possible effects of this loan on U.S. economy, with special reference to areas of substantial labor surplus? Describe the extent to which assistance is constituted of U.S. commodities and services, furnished in a manner consistent with improving the U.S. balance of payments position.*

Loan financed procurement will be restricted to lower income countries and the U.S. There are U.S. construction and engineering companies now working on the highway who will be strong contenders. See also Section VI A and C of the AID DLC/P846 Paper. Regarding the second question, \$6,091,000 is for U.S. or Country Code 941 costs only; \$1,453,000 is for local costs.

2. FAA §§612(b), 636(h). *What steps have been taken to assure that, to the maximum extent possible, foreign currencies owned by the U.S. and local currencies contributed by the country are utilized to meet the cost of contractual and other services, and that U.S. foreign-owned currencies are utilized in lieu of dollars?*

Satisfied. The GOT contribution is the maximum permissible given the country's financial situation. The U.S. has no Tanzanian currency that could be used in lieu of dollars for its local cost contribution.

3. FAA §601(d); App. 8115. *If this loan is for a capital project, to what extent has the Agency encouraged utilization of engineering and professional services of U.S. firms and their affiliates? If the loan is to be used to finance direct costs for construction, will any of the contractors be persons other than qualified nationals of the country or qualified citizens of the U.S.? If so, has the required waiver been obtained?*

Satisfied. U.S. engineering and professional services have already been used to study the feasibility and plan for the design of the two sections of the road to be financed under these loans. Agency rules will be followed in relation to employment of Third Country Nationals by construction contractors.

4. FAA §608(a). *Provide information on measures to be taken to utilize U.S. Government excess personal property in lieu of the procurement of new items.*

Satisfied. To the extent practicable, excess property will be utilized.

5. FAA §602. *What efforts have been made to assist U.S. small business to participate equitably in the furnishing of commodities and services financed by this loan?*

Satisfied. USG competitive bid procedures will be followed. Normal AID procedures will be followed.

6. FAA §621. *If the loan provides technical assistance, how is private enterprise on a contract basis utilized? If the facilities of other Federal agencies will be utilized, in what ways are they particularly suitable; are they competitive with private enterprise (if so, explain); and how can they be made available without undue interference with domestic programs?*

Satisfied. The loan will not provide technical assistance.

7. FAA §611(c). *If this loan involves a contract for construction that obligates in excess of \$100,000, will it be on a competitive basis? If not, are there factors which make it impracticable?*

Satisfied. Construction Contracts will be awarded on a competitive basis.

-- Procurement

1. FAA §602(a). *Will commodity procurement be restricted to U.S. except as otherwise determined by the President?*

Yes.

2. FAA §604(b). *Will any part of this loan be used for bulk commodity procurement at adjusted prices higher than the market price prevailing in the U.S. at time of purchase?*

No.

3. FAA §604(e). Will any part of this loan be used for procurement of any agricultural commodity or product thereof outside the U.S. when the domestic price of such commodity is less than parity?

Satisfied. Not applicable.

D. Other Requirements

1. FAA §201(b). Is the country among the 20 countries in which development loan funds may be used to make loans in this fiscal year?

Satisfied. Yes, also, the project is classified as an African Regional Project and therefore does not fall under the restriction.

2. App. §112. Does the loan agreement provide, with respect to capital projects, for U.S. approval of contract terms and firms?

Satisfied. Loan Agreement will provide for U.S. approval of contract terms and firms.

3. FAA §620(k). If the loan is for construction of a productive enterprise, with respect to which the aggregate value of assistance to be furnished will exceed \$100 million, what preparation has been made to obtain the express approval of the Congress?

Satisfied. Not applicable.

4. FAA §§620(b), 620(f); App. §109(b). Has the President determined that the country is not dominated or controlled by the international Communist movement? If the country is a Communist country (including but not limited to, the countries listed in FAA §620(f)) and the loan is intended for economic assistance, have the findings required by FAA §620(f) and App. §109(b) been made and reported to the Congress?

Satisfied. Such determination has been made.

6. FAA §620(h). What steps have been taken to insure that the loan will not be used in a manner which, contrary to the best interest of the United States, promotes or assists the foreign aid projects of the Communist-bloc countries?

Satisfied. Procurement of goods and services for the project will be limited to Code 941. Loan Agreement will restrict use of funds to AID project purposes.

7. App. §118. Will any funds be used to finance procurement of iron and steel products for use in Vietnam other than as contemplated by §118?

Not applicable.

8. FAA §636(i). Will any part of this loan be used in financing non-U.S.-manufactured automobiles? If so, has the required waiver been obtained?

No to first question.

9. FAA §§620(a)(1) and (2), 620(p); App. §117. Will any assistance be furnished or funds made available to the government of Cuba or the United Arab Republic?

Satisfied. No.

10. FAA §620(a). Will any part of this loan be used to compensate owners for expropriated or nationalized property? If any assistance has been used for such purpose in the past, has appropriate reimbursement been made to the U.S. for sums diverted?

Satisfied. No. to first question.

11. FAA §201(f). If this is a project loan, what provisions have been made for appropriate participation by the recipient country's private enterprise?

Satisfied. See Section II, F of the loan paper.

12. App. §104. Does the loan agreement bar any use of funds to pay pensions, etc., for persons who are serving or who have served in the recipient country's armed forces?

Satisfied. The loan agreement will limit the use of loan funds to project costs.

IV. ANNEXES

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TECHNICAL DESCRIPTION

Port Access Road

This project begins at the intersection of Morogoro Road and University Road and generally follows the alignment of Kigogo Road for the first 2.3 miles. From the point where the proposed road leaves Kigogo Road to the point where it meets Uhuru Street, a distance of 1.7 miles, the alignment crosses an undeveloped area. It then follows Uhuru Street for a distance of 2,000 feet where it crosses Pugu Road. From this intersection the alignment turns east and runs parallel with Pugu Road to its intersection with Changombe Road, then in a south-easterly direction to the port. Nowhere along this section from Pugu Road to the port, a distance of 3.7 miles, does the new alignment follow existing streets or roads. The road measures 8.05 miles in length.

Traffic projections indicate that this road should be constructed initially as a four-lane divided roadway over its entire length. Provision will be made to expand it to six lanes on the section starting at a point where it will be joined in the future by a ring road to Pugu Road. The right of way will be 150 feet, except for the section from Station 135 + 00 to Pugu Road where a right of way of 200 feet is required.

Complete details are available in Chapter X of the De Leuw, Cather "Engineering and Economic Feasibility Study of the Dar es Salaam Port Access Road", January 1971.

Tunduma-Iyayi Section

- a) Immediate emergency work: Cut existing soil shoulders on a slope of 11 percent. Waste the excavated soil and prime the exposed area of the base and edge of pavement.
- b) Place crushed stone base in shoulders in lieu of soil.
- c) Repair substandard pavement near Tunduma.
- d) Asphalt overlay completed sections of pavement.
- e) Revise subbase composition with crushed stone or increased thickness.
- f) Eliminate trench section.
- g) Revise PI requirement to 10.

Complete details of project requirements may be found in the January 1971 De Leuw, Cather Study, "Analysis of Subbase, Base and Pavement Problems with Recommended Solutions and Cost Estimates: Tunduma-Iyayi".

IMPORTS AT DAR ES SALAAM HARBOUR
1962-1968

(Long Tons: 2240 lbs.)

	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>Compound Annual Rate</u>
Asphalt	2370	3090	560	100	2030			- 4.1
Cement (Bagged)	71160	60250	95400	120120	82050	20696	59237	-10.7**
Fertilizer	6830	3820	5220	2920	6350		3000	- 2.3**
Hardware	790	780	920	1040	990	(Summed	N.A.	5.8
Maize	55640	10090	520	3770	9480		1562	--
Salt	5100	3580	1480	790	1099	Below)	N.A.	--
Sugar	16960	8830	120	1000	1430		5491	--
Wheat	16710	5350	1760	2540	23330		7411	10.1**
Vehicles	3640	4630	5790	4730	9760		17360	29.0
Railway Materials	10120	12610	1010	1670	4390		19315	11.3
General Cargo (Unspecified)	142970	165190	151330	208450	245520	386521	321294	14.4
Itemized: Total Dry Cargo	332290	279220	264110	347530	386479	407217	434670	4.6
" Bulk Oil, Petrol	221240	269850	260820	253230	535350	790217	899839	26.0
" Total Imports	553530	549070	524930	600760	291829	1197434	1334509	15.8
Reported, Unaccounted For*					1437794	1662695	1827688	12.7
Zambian Imports					18000	54000	80000	
As % Total Dry Cargo.					4.65	13.26	18.40	

* Conflicting Other Totals, Same Sources, Various Reports

* Ave. of Last Two Years And First Two, Where Rate Fluctuates (Basis)

Sources: East Africa Harbours Corporation; Monthly Statistical Bulletins, Central Statistical Bureau;
Economic and Statistical Review, East Africa Authority, Dec. 1969;
and Derivations of Tons Based On Average Values Per Ton

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ANNEX 11A

EXPORTS AT DAR ES SALAAM HARBOUR
1962-1969

(Long Tons: 2240 lbs)

	1962	1963	1964	1965	1966	1967	1968	1969	Percent Compound Annual Rate
Canned Meats	5750	6130	7430	8220	10460	5296	5953	6268	1.02
Canned Fruit	--	670	620	120	90	305	--	153	-30.3***
Maize	--	--	20360	480	6950	--	12892	24434	3.8
Cashew Nuts, Kernels	6830	15190	11040	11620	12900	21396	19224	11224	7.4
Beans, Peas, etc.	30	680	2890	1100	2050	893	1150	848	3.8
Coffee	26040	12020	18650	19980	17280	19876	22014	17740	.6***
Tea	7750	8220	8220	14580	13870	12003	10307	14122	8.8
Cottonseed, Cake	1120	310	5150	2130	10450	10083	756	--	41.0***
Castor Seed	7860	21770	8050	4980	12140	12674	6063	7053	- 1.6
Sunflower Seed	--	5280	7520	6590	*	*	*	*	
Tobacco	50	50	70	2680	690	4042	4319	12236	46.0
Hides, Skins	6420	6840	6620	10450	10380	8522	12547	13127	10.7
Oilseeds, Other	24560	34610	34060	40940	43920	40221	40576	54870	10.5
Wood, Timber	2890	3130	3250	3610	2600	999	963	3154	0
Cotton	69390	97790	90740	106540	179030	129121	71570	134176	9.9
Sisal	110960	107390	100040	91440	77010	82572	88825	66853	- 9.4
Kapok	2800	3210	3090	2760	2340	2515	968	--	-14.2***
Nonferr. Scrap	4080	1680	5660	2210	2580	3175	537	2998	- 6.9***
Cassava	--	--	1730	190	--	1558	124	--	0
Ground Nuts	3560	8670	8790	4290	3090	5075	3200	1016	-10.2
Grains, N.E.C.	10400	7580	1110	240	640	1177	30	688	0
Fuels, Oils (Packed)	1170	1260	500	330	500	631	1004	310	0
Wattle Bark, Extr.	7570	5010	6540	5970	6390	8410	8716	8113	1.0
Beeswax, Gum	--	--	1100	1220	1080	--	--	--	0
Cement	--	--	--	--	--	4032	10391	7789	39.0
Sisal Rope, Twine	--	--	--	--	8740	--	13661	--	25.0
Itemized: Total Dry Cargo	299230	347490	353230	342670	425180	374576	336145	387172	3.8
" Bulk and Bunker Oil, Fuel				--	--	178417	208167	167383	
Sub-Total						552993	544312	554555	
" Copper, Zambia			13670	20330	46450	219485	267774	306445	85.0
" Copper, Congo			--	--	30820				
" Total Exports (Shown above)					102450	772478	812086	861000	
Reported, Unaccounted For**						834785	936923	907460	4.3
Possible Total Dry Cargo						656368	723756	740077	6.1

* Elsewhere classified

** Conflicting other totals, same sources, various reports

*** Ave. of last two years and first two, where rate fluctuates (Basis)

SOURCES: East Africa Harbours Corporation; Economic and Statistical Review, East Africa Authority, Dec. 1969
East African Railways and Harbours, Annual Reports

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ANNEX IIB

DCI NATIONAL INDUSTRIAL PRODUCTION FORECAST (TONNAGE)
1970-1974 and 1975-1992

	(1970-1974)			(1975-1992)	
	Nation (Comp) * %	(Rate) %	Weighted Forecast Rate	Weighted Forecast Rate	Equiv. % of Former Rate
Food	.2765	.10	.02765	.02074	.75
Beverage	.0704	.10	.00704	.00528	.75
Tobacco	.0091	.10	.00091	.00054	.60
Textiles	.0219	.20	.00438	.00263	.60
Apparel	.0097	.22	.00213	.00149	.70
Wood Prod.	.1101	.10	.01101	.01651	1.50
Paper	.0054	.15	.00081	.00089	1.10
Printing	.0064	.08	.00051	.00061	1.20
Leather	.0067	.15	.00101	.00081	.80
Rubber	.0005	.50	.00025	.00015	.60
Chem., Oil	.1809	.22	.04811	.01924	.40
Bldg. Mat'ls	.2187	.20	.04374	.02624	.60
Metal Prod.	.0231	.23	.00531	.00398	.75
Machinery	.0273	.06	.00164	.00229	1.40
Transp. Eq.	--	.06			--
Other	.0324	.16	.00518	.00647	1.25
Total	.9991		.15968	.10787	
			(Composite Annual Rate)	(Composite Annual Rate)	

* Composition as % of total

DCI NATIONAL AGRICULTURAL PRODUCTION FORECAST (TONNAGE)
1970-1974 and 1975-1992

	(1970-1974)			(1975-1992)	
	Nation (Compos.) %	(Rate) %	Weighted Forecast Rate	Weighted Forecast Rate	Equiv. % of Former Rate
Banana	.2284	.020	.00457	.00685	1.50
Cashew	.0336	.100	.00336	.00302	.90
Cassava	.1651	.073	.01205	.00964	.80
Castor	.0017	.070	.00012	.00010	.90
Cattle	.0110	.050	.00055	.00055	1.00
Coffee	.0128	.060	.00077	.00077	1.00
Cotton	.0185	.090	.00166	.00133	.80
Fish, Lake	.0313	.090	.00282	.00282	1.00
Fish, Coast	.0075	.090	.00067	.00090	1.35
Ground Nuts	.0027	.070	.00019	.00019	1.00
Hides, Skins	.0017	.100	.00017	.00015	.90
Maize	.1541	.017	.00262	.00262	1.00
Millet	.0376	.063	.00237	.00213	.90
Potato	.0785	.070	.00549	.00494	.90
Pulses	.0303	.073	.00221	.00177	.80
Pyrethrum	.0012	.040	.00005	.00005	1.00
Rice	.0356	.100	.00356	.00320	.90
Salt	.0102	.038	.00039	.00035	.90
Sesame	.0012	.070	.00008	.00007	.90
Sisal	.0524	.020	.00005	.00005	1.00
Sorghum	.0426	.080	.00341	.00273	.80
Sugar	.0256	.070	.00179	.00143	.80
Sunflower	.0012	.070	.00008	.00006	.80
Tea	.0025	.090	.00023	.00021	.90
Tobacco	.0037	.232	.00086	.00043	.50
Wheat	.0077	.160	.00123	.00074	.60
Total	.9987		.05135 (Composite Annual Rate)	.04710 (Composite Annual Rate)	

DCI NATIONAL EXPORT FORECAST FOR DAR ES SALAAM HARBOUR
(TONNAGE) 1970-1974 and 1975-1992

	Export Tons 1970 Est.	As % National Prod. 1)	Export Composition (%)	Export Growth Rate 4)	Weighted Forecast Rate	
					1970-74	1975-1992
Food Products	12117**	3.20 2)	.0296	.0700	.00207	.00207
Beverage	67*	.06	.0001	.1000	.00001	.00005
Tobacco	5615**	44.81	.0136	.1000	.00136	.00136
Coffee	22014	43.16	.0534	.0500	.00267	.00350
Tea	10307	100.00	.0250	.0880	.00220	.00385
Textiles	1370*	4.55 2)	.0033	.2000	.00066	.00090
Cashew	25285**	18.86	.0613	.1110	.00680	.00680
Ground Nuts	4690**	42.63	.0113	.0300	.00034	.00334
Maize	13324	2.17	.0323	.0250	.00807	.00807
Grains	33	.01	0	0	0	0
Cassava	131	.02	.0003	.0880	.00003	.00003
Pulses	1282	1.06	.0031	.0580	.00018	.00018
Oilseeds	60631	N. A.	.1472	.0100	.00147	.00117
Castor Seed	4715	67.36	.0114	.0050	.00006	.00006
Cotton	74000	96.71	.1796	.0990	.01778	.01778
Cot-Seed Cake	915	13.95	.0022	.2500	.00035	.00035
Sisal	60836	29.10	.1477	.0001	.00001	.00001
Kapok	900	N. A.	.0021	.0001	0	0
Hides, Skins	14439	N. A.	.0350	.1070	.00374	.00270
Wood Prod.	30077**	19.93 2)	.0730	.1000	.00730	.00730
Wattle	9958	65.73	.0241	.0100	.00024	.00034
Nonferr. Scrap	887	N. A.	.0021	.0001	0	0
Cement	13650	6.38 2)	.0331	.2000	.00662	.00660
Sisal Rope	25000	56.25 2)	.0607	.1600	.00971	.00971
Fuels, Packed	1263	.51	.0030	.0020	.00001	.00005
Non Metallic	10393*	3.46 2)	.0252	.2000	.00504	.00500
Basic Metals	7958*	25.06 2)	.0193	.2300	.00444	.00103
Total	411857	7.56	1.00		.08136	.08074
Copper	342299					(Plus Copper)

* As proposed by plan. Not exported in 1968. Regional proximity to Dar Port vs. Tanga Port taken into account.

** Increased by plan investments with specified purpose of a stated gain in exports.

1) % derived from 1968 detail table; no change estimated for 1970, except as above.

2) As % general category of which it is a part in industrial classification

3) Ave. growth (1962-1969) and planned rates (1969-1974); joint effects

4) Or domestic rate if geared to national output and planned growth of exports

DCI NATIONAL IMPORT FORECAST FOR DAR ES SALAAM HARBOUR
(TONNAGE) 1970-1974 and 1975-1992

Dry, General Cargo Excluding Bulk Oil

	Import Tons 1970 Est.	Import Composition %	Growth Rate %	Weighted Forecast Rate		(2)
				(1) 1970-74	(2) 1975-1992	as % (1)
Food Products	13500	.0255	.0200	.00057	.00017	.30
Beverage	3300	.0069	.0001	0	0	--
Tobacco	60	.0001	0	0	0	--
Textiles	48700	.1030	.0020	.00206	.00051	.25
Wood Prod	6850	.0144	.0010	.00001	0	.10
Paper	26750	.0565	.1350	.00763	.00534	.70
Oils, Fats	4300	.0090	.0240	.00022	.00013	.60
Bldg. Matls	18570	.0392	.0100	.00039	.00010	.25
Rubber	5550	.0117	.0900	.00105	.00026	.25
Petrol. Prod	44200	.0934	.0002	.00002	.00001	.30
Chemicals	8600	.0181	.1000	.00181	.00226	1.25
Basic Metals	49000	.1036	.1560	.01616	.01454	.90
Metal Prod	37600	.0795	.1440	.01145	.01030	.90
Machinery	23700	.0501	.1150	.00576	.00662	1.15
Agr. Mach	5600	.0116	.0900	.00106	.00148	1.40
Constr. Mach.	5900	.0124	.0850	.00105	.00094	.90
Electr. Mach.	26500	.0560	.1700	.00952	.01428	1.50
Vehicles	22958	.0485	.1500	.00727	.01018	1.40
Railway Matls	21700	.0459	.1130	.00519	.00207	.40
Plastics	7150	.0151	.1400	.00211	.00274	1.30
Fibres	25600	.0541	.0900	.00487	.00487	1.00
Glass	3750	.0079	.1350	.00107	.00128	1.20
Fertilizer	4500	.0095	.0950	.00090	.00108	1.20
Insecticides, etc	6750	.0142	.0950	.00135	.00135	1.00
Medicinals	8100	.0171	.1275	.00218	.00327	1.50
Dairy Prod	9268	.0196	.0700	.00137	.00041	.30
Fish	2600	.0054	.0300	.00016	.00001	.10
Rice	15450	.0326	.0650	.00212	.00042	.20
Cereals	12500	.0264	.0050	.00013	.00003	.20
Fruit, Veg.	3750	.0079	.0100	.00008	.00001	.10
<u>Total</u>	<u>472756</u>	<u>1.00</u>		<u>.08717</u>	<u>.08466</u>	

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ANNEX IV-D

**FORECAST SUMMARY: TANZANIAN PRODUCTION AND IMPORTS AND EXPORTS
WITH CORRESPONDING TONNAGES MOVED BY ROAD IN THE STUDY AREA (1970-1992)**

(Annual Long Tons)

	<u>Agriculture</u>	<u>Industry</u>	<u>Imports</u> D. S. M. 1)	<u>Exports</u> D. S. M. 1)
1970	4, 075, 000	1, 369, 472	472, 756	411, 857
1980	6, 328, 570	3, 791, 772	966, 376	813, 302
1992	9, 223, 678	6, 980, 844	1, 656, 376	1, 374, 470

Annual Average Rate:

1970-1975	(%)	5.135	15.968	8.717	8.136
1975-1992	(%)	4.710	10.79	8.466	8.072

Compound Equivalent:

1970-1992	(%)	3.8	7.7	5.9	5.6
-----------	-----	-----	-----	-----	-----

Expansion Multiple:

1970-1992	(Times)	2.26x	5.1x	3.5x	3.33x
-----------	---------	-------	------	------	-------

Corresponding Tonnages Moved By Road In The Study Area

	<u>1970</u>	<u>% of</u> <u>Above Total</u>	<u>1992</u>	<u>% of</u> <u>Above Total</u>	<u>Expansion</u> <u>Multiple</u>
Regions to Dar	794, 835	14.6	2, 809, 887	17.3	3.5x
Dar to Regions	539, 986	9.9	2, 751, 035	16.97	5.1x
Road Imports	382, 856	81.0	1, 351, 481	81.5	3.5x
Road Exports	306, 049	74.3	1, 071, 171	77.9	3.3x
	2, 023, 726	34.2	7, 983, 574	44.7	3.94x
Copper to Port	266, 206	--	90, 000	--	--
Cargo to Zambia	242, 000	--	90, 000	--	--
<u>Total Tons:</u>	<u>2, 531, 932</u>		<u>8, 163, 574</u>		<u>3.22x</u>

1) Dry cargo only, at Dar es Salaam Port

ZAMBIAN EXPORT AND IMPORT TRAFFIC AT DAR ES SALAAM

The Tan-Zam Highway in 1970 provided market access by lorry to about 266,206 tons of export copper. This was about 77.7 percent of total Zambian copper exports through Tanzania. This volume of lorry movements permits a two-way transit traffic to emerge in which reverse movements of general cargo imports may be carried at little or no additional transit cost.

Zambian copper exports through Tanzania since 1964 have risen rapidly from a level of 13,670 tons to an estimated 342,299 tons in 1970. This continued rise in the volume of Zambian copper exports is forecasted on ANNEX VI-B. Between 1970 and 1975 copper movements by lorry over the Tan-Zam Highways are expected to rise from 266,206 tons to 408,078 tons. This will represent an increasing rate of flow by lorry, from 77.7 percent of combined existing rail and road movements to 85 percent of combined movements by 1975. The slightly altered lorry percentage will result from the improved road surfaces on the highway; this is in accord also with historic trends toward increasing shares of cargo movements by road relative to the existing East African Rail line.

According to present estimates the new Tan-Zam rail line will open in 1976. Upon opening, a minimum economic utilization of its predicted 5 million ton capacity will demand that virtually the total of Zambian copper output be diverted to this rail. In 1976 this is estimated to be 860,000 tons, with total possible reverse flows of about 2.2 million tons representing total Zambian import demand. This imbalance in flow, and consequent higher transit cost effects, may by itself limit the volume of imports by this rail.

Although road movements may be expected to be sharply reduced, road advantages over rail will exist in certain high-value and fragile commodity imports for which time costs are important. Because of this, copper movements by lorry after 1975 will largely depend upon the volume of the reverse flow of high-value and/or perishable Zambian imports received at Dar es Salaam.

The Zambian import forecast for the period 1970-1992 indicates the annual levels of these special general cargo imports which may be carried by road. Maintenance of present Zambian policy with regard to minimizing transit costs by full-load two-way lorry movements would suggest the continued export of copper by lorry to the extent that vehicles are necessary at the harbour for reverse import traffic.

The basis for the import forecast is an analysis of the Origin-Destination Survey data which indicated that 42,000 tons of Zambian imports at Dar consisted of high-value and perishable or breakable general cargo items which would likely remain on the highway even after construction of the parallel rail line. The rate of growth of these items was based on the complex structure of Zambian imports forecasted by the Stanford Research Institute in its study of Zambian production of copper and the rising level of import demands occasioned by growing income levels. In that study seven consumer groups were analyzed and their demand for imports were forecasted.

ANNEX V-B shows the total volume of Zambian imports at all ports; compared to these annual volumes are the manufacturing and consumer demand import levels forecasted by S.R.I. The volume of Dar es Salaam harbour imports which already move by lorry were compared with the total of manufacturing consumer imports to determine the relative total volumes which were specialized cargoes described as high-value, perishable or fragile. The rate of growth of these potential lorry cargoes therefore is a function of the rate of growth of total manufacturing-consumer imports by Zambia, or 3.5 percent per year (based on a 4.5 percent annual rise in manufacturing sector demand, and a 3.0 percent annual rise in consumer sector demand) from 1970 to 1992. Annual equivalent tonnages are only 42,000 and 75,000 respectively. This annual tonnage of specialized general cargo imports will permit the export movement by lorry of an equal tonnage of copper and/or high-value and perishable type goods to the harbour. Thus in each year tonnage movements from the harbour are forecasted to equal tonnage movements in the other direction. The most efficient use of vehicles, at a greatly reduced level of traffic, will continue to be realized only for special cargoes substantially less in volume than would exist without the new rail.

COPPER EXPORTS AT DAR ES SALAAM HARBOUR AND FORECASTS
1955, 1960, 1964-1977

	<u>Production (L. T. 000)</u>		<u>Exports at Dar Port (L. T.)</u>	<u>% By Road To Dar</u>	<u>Tons By Road To Dar (L. T.)</u>
	Zambia	Congo			
1955	353	230	--	--	--
1960	561	297	--	--	--
1964	622	272	13670	--	--
1965	685	284	20330	--	--
1966	613	312	77270	33.7	26084
1967	* 650	N. A.	219485 1)	50.4	110616
1968	* 700		267774 1)	64.5	172714
1969	* 715		306445 1)	73.1	223800
1970	* 730		342299 2)	77.7	266206
1971	* 745		366260	79.0	289345
1972	* 755		391898	82.0	321356
1973	* 780		419331	83.0	348045
1974	* 800		448684	84.0	376894
1975	* 825		480092	85.0	408078
1976	* 860	Rail open	860475	6.0	51000
1977	* 925	" "	925242	5.7	53000

* Estimated/interpolation from unofficial data sources

1) Compound annual rate 1967-1968-1969 is 11.7%

2) Following years' growth est. at 7% compound rate until 1976 rail opening. Zambian copper movements by road will then equal only the annual tons forecasted for reverse movements of general cargo special goods unsuited to rail shipment.

Sources: Memorandum Report: Minerals Evaluation For The Middle Africa Transport Survey, May 1968, Tarrice (Stanford Research Institute). Also "Minerals Sector," M. A. T. S., Aug. 1968. The Economic Survey and Annual Plan, 1970-71.

ZAMBIAN IMPORTS AT DAR ES SALAAM HARBOUR AND FORECASTS
1968-1992

	<u>Total (L. T. 000)</u> ¹⁾			<u>Dar Harbour Imports (L. T. 000)</u>		
	<u>Imports of which: (Type)</u>			<u>Total By Road</u>	<u>As % Manuf. & Cons.</u> ²⁾	<u>Special By Road</u> ³⁾
	<u>All Ports</u>	<u>Manuf.</u>	<u>Consumer</u>			
1968	1805	113	182	190	64.5	
1969	1858	118	187	223	73.1	
1970	1901	122	193	242	76.9	42
1971	1957	127	199	250	76.9	43
1972	2014	132	205	259	"	45
1973	2074	138	211	268	"	46
1974	2135	143	217	277	"	48
1975	2197	149	223	286	"	49
1976	2262	155	230	0	Rail open	51
1977	2329	161	237		"	53
1978	2398	168	244		"	55
1979	2470	174	252		"	57
1980	2543	181	259		"	59
1981	2619	189	267	"	"	61
1982	2698	197	275		"	63
1983	2779	206	283		"	65
1984	2862	216	291		"	67
1985	2948	225	300		"	70
1986	3036	236	309	"	"	72
1987	3127	246	318		"	75
1988	3221	257	328		"	78
1989	3318	269	338		"	81
1990	3417	281	348		"	84
1991	3520	294	358		"	87
1992	3626	307	369		"	90
% Growth Rates	3.0	4.5	3.0			3.5

- 1) 1968-1980 estimates by Stanford Research Institute: The Tanzania-Zambia Highway.
 2) % of Zambia import demand in manuf. and consumer goods arriving at Dar es Salaam.
 3) Zambia-Tanzania road services company records: Tonnage composed of general cargo items which are fragile, perishable, and/or subject to damage in handling or hauling. This cargo was 13.35% of total Zambia import demand for such goods (as shown in columns 2 and 3). Forecast holds such rate at a constant level, rising only as demand rises.

SUMMARY: VEHICLE OPERATING COSTS
PER MILE
(In U.S. Dollars and Tanzania Shillings*)

	<u>Distance Costs</u>		<u>Time Costs</u>	
	<u>U.S. \$</u>	<u>Shs.</u>	<u>U.S. \$</u>	<u>Shs.</u>
Auto	.04006	.2865	.00319	.0228
Bus	.10951	.7830	.03075	.2199
7-Ton	.08696	.6218	.01772	.1267
10-Ton	.10614	.7589	.02514	.1798
22-Ton	.18376	1.3139	.04070	.2910
w/Trlr	.18839	1.3470	.04776	.3415
32-Ton	.23123	1.6533	.04973	.3556
w/Trlr	.23517	1.6815	.05824	.4164

COMMERCIAL FLEET OPERATING COSTS
(To above basic vehicle costs are added charges
for management, administration and profit.)

Bus	.131692	.9416	.04284	.3063
7-Ton	.10418	.7449	.02493	.1783
10-Ton	.12832	.9175	.03527	.2522
22-Ton	.21938	1.5686	.05291	.3783
w/Trlr	.22498	1.6086	.06661	.4753
32-Ton	.28424	2.0323	.06464	.4622
w/Trlr	.28935	2.0689	.08117	.5814

* @ U.S. \$1.00 = Shs. 7.15 conversion rate.

DISTANCE COSTS

The basis for the ANNEX VII summary is contained in the DCI Report. In these analysis distance costs for each vehicle type are defined on the basis of a 35 mph speed on good asphalt surface roads. Distance costs were calculated as follows:

- a) One-third of depreciated costs after deduction of 10 percent salvage, divided by life of the vehicle, divided by average annual mileage.
- b) Fuel costs per gallon divided by the average miles per gallon.
- c) Oil costs per gallon divided by consumption rates per 1000 miles.
- d) Tire costs per set divided by average annual mileage per set.
- e) Two-thirds of maintenance costs divided by average annual mileage.

TIME COSTS

Costs which do not vary with frequency of operation of the vehicle appear in this category. Time costs as shown on these tables result from estimated speeds of 35 mph on good asphalt surface roads. They were calculated as follows:

- a) Two-thirds of depreciation costs after deduction of 10 percent salvage value, divided by life of the vehicle, to obtain annual cost.
- b) Interest charges on annual capital cost of vehicle expressed as a rate combining the commercial loan (financial) rate plus the rate of inflation (economic) which determine together the total return needed to recover actual costs of purchase.
- c) Insurance costs annually charged this vehicle type in common practice. Vehicle damage covered only.
- d) Licenses and inspection costs required annually by law.
- e) Wages, based on annual rates plus overnight emoluments times their frequency as reported, for both hired driver and helper if any.
- f) One-third of maintenance costs per year.
- g) Sum of above as shillings/year converted to per minute costs on the basis of 187,000 minutes per year average availability time.

VEHICLE OPERATING COST AT VARIOUS SPEEDS

(Asphalt Pavement)

Vehicle	Distance Costs ¹⁾			Time Costs Shs/Min	Time Costs Per Mile ²⁾			Combined Distance and Time Costs as Shs/Mile ⁴⁾		
	Shs/Mile				Shs/Mile ³⁾			12 mph	20 mph	35 mph
	12 mph	20 mph	35 mph		12 mph	20 mph	35 mph	12 mph	20 mph	35 mph
Auto	.5151	.3436	.2865	.0228	.1140	.0684	.0390	.6291	.4120	.3255
Bus	1.6052	1.1075	.9416	.3063	1.5315	.9189	.5253	3.1367	2.0264	1.4669
7-Ton	1.2663	.8752	.7449	.1783	.8915	.5349	.3057	2.1578	1.4101	1.0506
10-Ton	1.5811	1.0834	.9175	.2522	1.2610	.7566	.4325	2.8421	1.8400	1.3500
22-Ton	2.6514	1.8693	1.5086	.4763	2.3815	1.4289	.8168	5.0329	3.2982	2.4254
w/o Trlr	2.6114	1.8293	1.5686	.3783	1.8915	1.1463	.6485	4.5029	2.9756	2.2171
32-Ton	3.3961	2.4007	2.0689	.4622	2.3110	1.4006	.7923	5.7071	3.8013	2.8612
w/o Trlr	3.3595	2.3641	2.0323	.5814	2.9070	1.7618	.9967	6.2665	4.1259	3.0290

1) Speed-Cost relationships were derived using vehicle simulator model later described.

2) Translates time costs/min to time costs/mile: Miles per minute at varying speeds are:
.2000 @ 12; .3333 @ 20; .5833 @ 35 (or mph/60 min. = mpm).

3) 1/mpmin X time cost/minute = time costs/mile (= 5 @ 12, 3 @ 20, 1.7143 @ 35 X Shs/Min).

4) Preceding columns combined.

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ANNEX IX

PASSENGER TIME VALUES: BY SOURCE AND TYPE VEHICLE

I. Auto Driver

Basis: Wage Employment and Earnings:

	<u>No. Employed</u>		<u>Wage Bill</u> (Shs. Mill.)		<u>Annual</u> <u>Earnings</u> <u>Per Capita</u> <u>Employed</u>
	<u>1968</u>	<u>1969</u>	<u>1968</u>	<u>1969</u>	<u>1969</u>
	Dar Es Salaam	70655	71788	432.0	464.0
Coast, Morogoro	44633	46349	135.4	145.6	3141

Expected Frequency In Traffic: DAR 87% x 6463 = 5623
C., M. 13% x 3141 = 408
6031

Derived Time Value: (SHS.)

<u>Per Day</u>	<u>Per Minute</u> (24-Hr Day)
16.523	.011473

II. Auto Passenger, City Bus Passenger, Bicyclist, Pedestrian,
Regional Bus or Train

Basis: Per Capita Gross Regional Product (1967):

	<u>Population</u> (000)	<u>(%)</u>	<u>Gross</u> <u>Product</u> (Shs. Mill)	<u>Prod.</u> <u>Per Cap.</u> (SHS)	<u>Prod.</u> <u>Per Day</u> (SHS)	<u>Prod.</u> <u>Per Min.</u> (SHS)
Dar 'Salaam	229	.076	1149	5020	13.753	.009551
Coast	652	.217	220	330	.904	.000628
Morogoro	636	.212	308	485	1.329	.000923
Iringa	633	.211	243	375	1.027	.000713
Mbeya	853	.284	259	305	.836	.000581

Expected Frequency in Traffic x SHS./Min Value:

	<u>F</u>	<u>SHS/MIN</u>	<u>Type Passenger</u>
Dar	100% x	.009551 = .009551	City Bus, Bicycle, Pedestrian
Dar	87	.009551 = .008364)	.009180 Auto Passenger
Coast	13	.000628 = .000816)	
Dar	27	.009551 .002578)	.003144 Regional Bus, Train
Coast	11	.000628 .000069)	
Morogoro	35	.000923 .000323)	
Iringa	13	.000713 .000093)	
Mbeya	14	.000581 .000081)	

CARGO TIME VALUE DERIVATIONS

I. Price Inflation Rate

Retail Price Index (1963=100)
Among Wage Earners SHS. 1200 to SHS. 4000 Annually

	<u>General</u>	<u>Food</u>	<u>Bev. Tob.</u>	<u>Fuel, Soap</u>	<u>Clothing</u>	<u>Household</u>
1963	100.0	100	100	100	100	100
1964	102.5	100	105	124	107	109
1965	109.5	108	106	120	115	118
1966	114.5	112	107	135	127	120
1967	116.6	112	111	152	134	133
1968	122.0	115	106	170	153	146
1969	122.7	112	114	173	185	179

Ave. Annual % Rates:

3.78 2.00 2.33 12.16 14.16 13.16

Ave. Composition of Export and Import Cargos by Class:

24.04 9.22 3.73 24.83 10.31 27.87

Composite Additive Inflation Rate to Cargo Time Values:

.9087 .1844 .0869 3.0193 1.4598 3.6676

Ave. Total Rate =

9.3267% (Rate of loss in money value)

II. Interest Rates

(June 1969)

	<u>Time Rate</u> (1-Yr)	<u>Commercial</u> (Short) (Long)		<u>Savings Rate</u>
Central Bank	-	5.0	5.5	-
Commercial Bank	4.5	6.5	10.0*	3.5**
Nat'l Dev. Credit	-	8.5	7.5	-

Necessary Return on investable funds (opportunity cost of money):

*Commercial Rate on Capital Equipment = 10.00% (Vehicles)

**Savings Rate Paid on Deposits = 3.50% (Min. Altern)

Assumed Min. Profit Return 1/10 of 5.5 = .55% (Min. Gain)

Sub Total: 14.05

III. Total Annual Time Values: Cargos, Vehicles

Rate of Inflation	9.33		
Investment Return	<u>14.05</u>		
Annual	23.38	=	SHS/Minute: .00004446
			(24-Hr Day Basis)

WEIGHTED VEHICLE OPERATING COST

<u>Vehicle Type</u>	<u>Vehicle Operating Cost</u>	
	<u>Shillings per Mile</u>	<u>Shillings per Minute</u>
Auto-Van	0.305	0.024
Bus	0.942	0.306
Composite Lorry	0.838	0.206

COMBINED TRAVEL COSTS AT REPRESENTATIVE SPEEDS

(Shillings per Mile)

<u>Vehicle Type</u>	<u>Average Speed (Miles per hour)</u>		
	<u>12</u>	<u>20</u>	<u>35</u>
Auto-Van	0.654	0.433	0.346
Bus	3.136	2.026	1.466
Composite Lorry	2.468	1.607	1.191

ALTERNATIVE NETWORK TRIP DATA

1970 AVERAGE WEEKDAY

	<u>Autos and Vans Network</u>			<u>Lorries Network</u>		
Trips Assigned	42,485	42,485	42,485	4,958	4,958	4,958
Vehicle-Miles	187,166	187,317	185,772	29,158	29,131	28,577
Average trip length (miles)	4.40	4.41	4.37	5.88	5.88	5.76
Vehicle-Hours	11,659	11,153	11,429	1,658	1,547	1,428
Average trip length (hours)	0.274	0.262	0.269	0.334	0.312	0.289
Vehicle-Costs	86,950	85,669	85,555	49,348	46,924	44,245
Average trip cost (Shillings)	2.05	2.02	2.01	9.95	9.46	8.92
Average Trip Speed (MPH)	16.05	16.79	16.25	17.58	18.83	20.01
Average Trip Cost (Shs/Mile)	0.464	0.457	0.460	1.692	1.610	1.548

ALTERNATIVE NETWORK TRIP DATA

1992 AVERAGE WEEKDAY

	Autos and Vans Network				Lorries Network			
	4	5	6	7	4	5	6	7
Trips Assigned	112,875	112,875	112,875	112,875	18,584	18,584	18,584	18,584
Vehicle-Miles	747,393	747,552	705,361	679,464	115,823	117,742	112,851	112,813
Ave. Trip Length (Miles)	6.62	6.62	6.25	6.02	6.23	6.34	6.07	6.07
Vehicle-Hours	50,234	45,233	42,689	42,018	8,214	6,951	6,259	6,359
Ave. Trip Length (Hours)	0.445	0.401	0.378	0.372	0.442	0.374	0.337	0.342
Vehicle-Costs	363,254	337,955	320,268	301,242	228,666	206,569	187,676	180,942
Ave. Trip Cost (Shillings)	3.22	2.99	2.84	2.67	12.30	11.11	10.10	9.74
Ave. Trip Speed (MPH)	14.87	16.52	16.52	16.17	14.58	16.93	18.03	17.74
Ave. Trip Cost (Shs/Mile)	0.486	0.452	0.454	0.443	1.974	1.754	1.663	1.603

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ANNEX XIII

ESTIMATED NETWORK COSTS
EXISTING STREET NETWORK UNIMPROVED
(In Thousand Shillings)

Year	Construction Cost	Maintenance Cost	Vehicle Costs		Cargo Time Costs		Passenger Time Costs	Total
			Tanzania & Local	Zambia	Tanzania & Local	Zambia		
1971								
1972								
1973		1,150	73,094	1,149	10,408	1,688	10,544	98,028
1974		1,200	80,469	1,226	11,639	1,813	11,558	107,905
1975		1,250	87,844	1,303	12,870	1,937	12,571	117,775
1976		1,300	95,219	189	14,101	303	13,585	124,697
1977		1,350	102,594	200	15,332	320	14,598	134,394
1978		1,400	109,969	211	16,563	336	15,611	144,090
1979		1,450	117,343	222	17,794	353	16,625	153,787
1980		1,500	124,718	233	19,025	370	17,638	163,484
1981		1,550	132,093	244	20,256	386	18,652	173,181
1982		1,600	139,468	255	21,487	403	19,665	182,878
1983		1,650	146,843	266	22,718	420	20,678	192,575
1984		1,700	154,217	277	23,949	436	21,692	202,271
1985		1,750	161,592	288	25,120	453	22,701	211,963
1986		1,800	168,967	299	26,411	470	23,719	221,664
1987		1,850	176,342	310	27,642	486	24,732	231,362
1988		1,900	183,717	321	28,873	503	25,746	241,060
1989		1,950	191,092	332	30,104	520	26,759	250,757
1990		2,000	198,466	344	31,335	536	27,772	260,45
1991		2,050	205,841	355	32,566	553	28,786	270,15
1992		2,100	213,216	366	33,810	570	29,799	279,86

ESTIMATED NETWORK COSTS
EXISTING STREET NETWORK WITH EXISTING PORT ROUTE IMPROVED
(In Thousand Shillings)

Year	Construction Cost	Maintenance Cost	Vehicle Costs		Cargo Time Costs		Passenger Time Costs	Total
			Tanzania & Local	Zambia	Tanzania & Local	Zambia		
1971								
1972	47,200							47,200
1973		1,400	70,055	926	9,401	1,221	9,884	92,897
1974		1,450	76,820	980	10,412	1,295	10,799	101,756
1975		1,500	83,575	1,035	11,423	1,369	11,715	110,617
1976		1,550	90,330	144	12,435	209	12,630	117,298
1977		1,600	97,085	151	13,446	218	13,546	126,046
1978		1,650	103,840	158	14,457	227	14,461	134,793
1979		1,700	110,595	165	15,468	236	15,377	143,541
1980		1,750	117,350	172	16,479	245	16,292	152,288
1981		1,800	124,106	179	17,490	254	17,208	161,037
1982		1,850	130,861	186	18,501	264	18,123	169,785
1983		1,900	137,616	193	19,512	273	19,039	178,533
1984		1,950	144,371	200	20,523	282	19,954	187,280
1985		2,000	151,126	207	21,534	291	20,870	196,028
1986		2,050	157,881	214	22,545	300	21,785	204,775
1987		2,100	164,636	221	23,557	309	22,701	213,524
1988		2,150	171,391	228	24,568	318	23,616	222,271
1989		2,200	178,146	236	25,579	328	24,532	231,021
1990		2,250	184,901	243	26,590	337	25,447	239,768
1991		2,300	191,656	250	27,601	346	26,363	248,516
1992		2,350	198,411	257	28,612	355	27,279	257,264

ESTIMATED NETWORK COSTS
WITH NEW PORT ACCESS ROAD INCLUDED
(In Thousand Shillings)

Year	Construction Cost	Maintenance Cost	Vehicle Costs		Cargo Time Costs		Passenger Time Costs	Total
			Tanzania & Local	Zambia	Tanzania & Local	Zambia		
1971	5,910							5,910
1972	32,600							32,600
1973		1,450	67,280	747	8,590	844	9,755	88,666
1974		1,500	73,483	791	9,493	897	10,626	96,790
1975		1,550	79,686	835	10,397	949	11,497	104,914
1976		1,600	85,889	116	11,301	144	12,368	111,418
1977		1,650	92,093	122	12,205	150	13,239	119,459
1978		1,700	98,295	128	13,109	156	14,110	127,498
1979		1,750	104,499	133	14,013	163	14,981	135,539
1980		1,800	110,702	139	14,917	169	15,852	143,579
1981		1,850	116,905	145	15,821	175	16,723	151,619
1982		1,900	123,108	150	16,724	181	17,594	159,557
1983		1,950	129,311	156	17,628	188	18,465	167,698
1984	3,400	2,000	135,515	162	18,532	194	19,336	179,139
1985		2,050	141,718	167	19,436	200	20,207	183,778
1986		2,100	147,921	173	20,340	207	21,077	191,818
1987		2,150	154,124	179	21,244	213	21,948	199,858
1988		2,200	160,327	184	22,148	219	22,819	207,897
1989		2,250	166,530	190	23,051	226	23,690	215,937
1990		2,300	172,734	195	23,955	232	24,561	223,977
1991		2,350	178,937	202	24,859	238	25,432	232,018
1992		2,400	185,140	207	25,763	244	26,303	240,057

ESTIMATED PRESENT WORTH OF NETWORK COSTS
EXISTING STREET NETWORK UNIMPROVED

(In Thousand Shillings)

Discount Rate (Percent)	Construction Cost	Maintenance Cost	Vehicle Costs		Cargo Time Costs		Passenger Time Costs	Total
			Tanzania & Local	Zambia	Tanzania & Local	Zambia		
10		12,651	1,035,884	4,660	142,540	7,041	146,787	1,350,573
14		9,598	764,415	4,018	100,327	6,644	108,416	993,418
18		7,608	590,674	3,569	73,993	5,350	83,921	765,115
22		6,257	474,822	3,240	56,803	4,842	67,569	613,533
34		4,075	293,408	2,622	30,540	3,896	41,913	376,454
38		3,666	260,519	2,486	25,903	3,688	37,251	333,513

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ANNEX XV-A

ESTIMATED PRESENT WORTH OF NETWORK COSTS
 EXISTING STREET NETWORK WITH EXISTING PORT ROUTE IMPROVED
 (In Thousand Shillings)

<u>Discount Rate</u> (Percent)	<u>Construction</u> <u>Cost</u>	<u>Maintenance</u> <u>Cost</u>	<u>Vehicle Costs</u>		<u>Cargo Time Costs</u>		<u>Passenger</u> <u>Time</u> <u>Costs</u>	<u>Total</u>
			<u>Tanzania</u> <u>α Local</u>	<u>Zambia</u>	<u>Tanzania</u> <u>α Local</u>	<u>Zambia</u>		
10	51,920	15,288	976,535	3,624	136,823	4,891	135,688	1,324,769
14	53,808	11,665	721,181	3,146	100,620	4,230	100,358	995,008

ESTIMATED PRESENT WORTH OF NETWORK COSTS
WITH NEW PORT ACCESS ROAD INCLUDED

(In Thousand Shillings)

<u>Discount Rate (Percent)</u>	<u>Construction Cost</u>	<u>Maintenance Cost</u>	<u>Vehicle Costs</u>		<u>Cargo Time Costs</u>		<u>Passenger Time Costs</u>	<u>Total</u>
			<u>Tanzania & Local</u>	<u>Zambia</u>	<u>Tanzania & Local</u>	<u>Zambia</u>		
10	42,853	14,767	922,040	2,925	123,907	3,378	132,116	1,241,986
14	43,780	11,240	682,084	2,540	91,199	2,925	97,850	931,618
18	44,845	8,942	528,751	2,269	70,363	2,605	75,939	733,714
22	45,995	7,376	425,472	2,067	56,482	2,368	61,286	601,046
34	49,695	4,835	265,268	1,686	34,785	1,921	38,229	396,419

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ANNEX XV-C

COMPARISON OF PRESENT WORTH OF COSTS
FOR EXISTING NETWORK WITH AND WITHOUT EXISTING PORT ROUTE IMPROVED
WITH COST DIFFERENCES AND BENEFIT RATIOS
AT VARYING DISCOUNT RATES

(All Costs in Thousand Shillings)

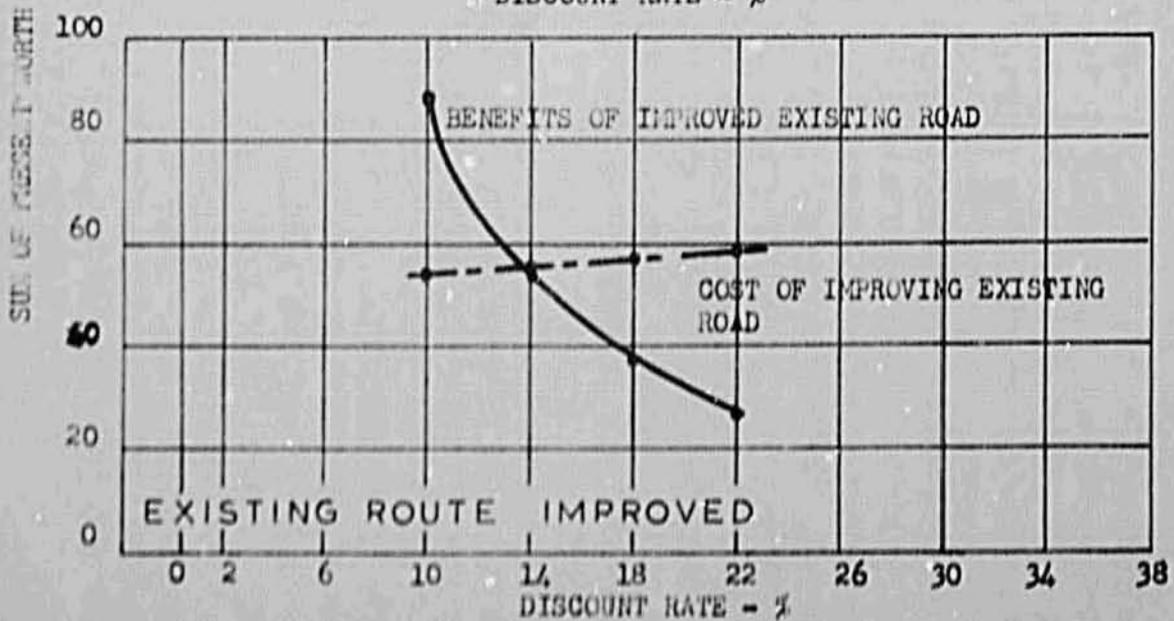
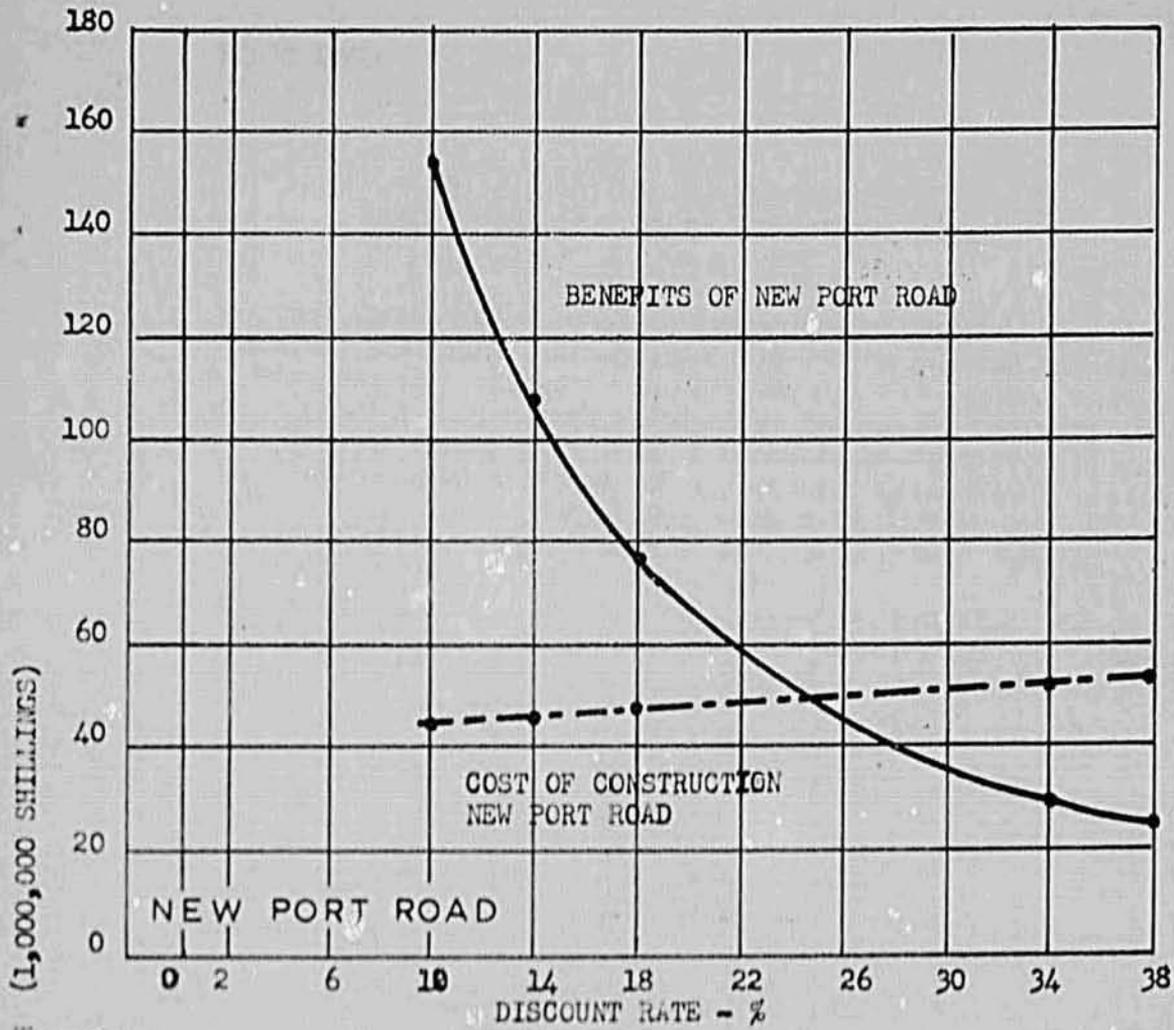
Disc Rate %	Present Worth of Highway Costs				Present Worth of User Costs			Diff in Network Costs (Benefits)	Benefit Cost Ratio
	Cost Descrip	Existing Cond	with Port Route Imp	Diff in Network Costs	Cost Description	Existing Conditions	With Port Route Imp		
10	Const	0	51,920	51,920	Local Vehicle Opr	1,036,884	976,535	60,349	1.473
	Maint	12,661	15,288	2,627	Zambia Vehicle Opr	4,660	3,624	1,036	
					Local Cargo Time	142,540	136,823	5,717	
					Zambia Cargo Time	7,041	4,891	2,150	
					Passenger Time	146,787	135,688	11,099	
				54,547		1,337,912	1,257,561	80,351	
14	Const	0	53,808	53,808	Local Vehicle Opr	764,415	721,181	43,234	.971
	Maint	9,398	11,665	2,067	Zambia Vehicle Opr	4,018	3,146	872	
					Local Cargo Time	100,327	100,620	- 293	
					Zambia Cargo Time	6,644	4,230	2,414	
					Passenger Time	108,416	100,358	8,058	
				55,875		983,820	929,535	54,285	

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ANNEX XVI-A

COMPARISON OF PRESENT WORTH OF COSTS
FOR EXISTING NETWORK WITH AND WITHOUT NEW FORT ACCESS ROAD
WITH COST DIFFERENCES AND BENEFIT RATIOS
AT VARYING DISCOUNT RATES
(All Costs in Thousand Shillings)

Disc Rate %	Present Worth of Highway Costs				Present Worth of User Costs			Diff in Network Costs (Benefits)	Benefit Cost Ratio
	Cost Descrip	Existing Cond	With New Fort Acc Road	Diff in Network Costs	Cost Description	Existing Conditions	With New Fort Acc Road		
10	Constr	0	42,853	42,853	Local Vehicle Opr	1,036,884	922,040	114,844	3.145
	Maint	12,661	14,767	2,106	Zambia Vehicle Opr	4,660	2,925	1,735	
					Local Cargo Time	142,540	123,907	18,633	
					Zambia Cargo Time	7,041	3,378	3,663	
					Passenger Time	146,787	132,116	14,671	
				<u>44,959</u>		<u>1,337,912</u>	<u>1,184,366</u>	<u>153,546</u>	
14	Constr	0	43,780	43,780	Local Vehicle Opr	764,415	682,054	82,361	2.361
	Maint	9,598	11,240	1,642	Zambia Vehicle Opr	4,018	2,540	1,478	
					Local Cargo Time	100,327	91,199	9,128	
					Zambia Cargo Time	6,644	2,925	3,719	
					Passenger Time	108,416	97,850	10,566	
				<u>45,422</u>		<u>983,820</u>	<u>876,568</u>	<u>107,252</u>	
18	Constr	0	44,845	44,845	Local Vehicle Opr	590,674	528,751	61,923	1.679
	Maint	7,608	8,942	1,334	Zambia Vehicle Opr	3,569	2,269	1,300	
					Local Cargo Time	73,993	70,363	3,630	
					Zambia Cargo Time	5,350	2,605	2,745	
					Passenger Time	83,921	75,939	7,982	
				<u>46,179</u>		<u>757,507</u>	<u>679,927</u>	<u>77,580</u>	
34	Constr	0	49,695	49,695	Local Vehicle Opr	293,408	265,268	28,140	-6061
	Maint	4,075	4,835	760	Zambia Vehicle Opr	2,622	1,686	936	
					Local Cargo Time	30,540	34,785	-4,245	
					Zambia Cargo Time	3,896	1,921	1,975	
					Passenger Time	41,913	38,229	3,684	
				<u>50,455</u>		<u>370,279</u>	<u>341,889</u>	<u>30,490</u>	

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ANNEX XVI-B

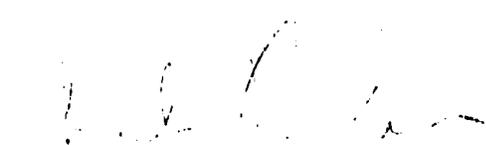


UNCLASSIFIED

ANNEX XVIII

CERTIFICATION PURSUANT TO SECTION 611 (c) OF THE
FOREIGN ASSISTANCE ACT OF 1961, AS AMENDED

I, Charles J. Nelson, the principal officer of the Agency for International Development in Tanzania, having taken into account, among other things, the maintenance and utilization of projects in Tanzania previously financed or assisted by the United States, the presence of expatriate assistance specifically concerned with maintenance in Comoros financed by the Canadian Government, the A.I.D. financed Highway Maintenance Study and the interest on the part of the IPAD in financing the equipment requirements to be identified therein, do hereby certify that in my judgment Tanzania has both the financial capability and the human resources capability to effectively maintain and utilize the capital assistance project, the Tan Zam Highway.



/s/ Charles J. Nelson, Director

February 25, 1971

Date

CONSULTANT'S (DCI) RECOMMENDATIONS:

The following conclusions are based upon our analyses of all economic, traffic and engineering aspects of the study.

- (1) Our economic analyses indicate that a new port access road would result in considerably higher benefits and lower construction costs than for improvement of the existing port route. Therefore a road on a new alignment should be considered.
- (2) Engineering and traffic investigations indicate that the best location for a new road from the standpoint of all considerations would be an alignment beginning at Morogoro Road opposite University Road and continuing southwesterly intersecting in the future with the proposed Ring Road and thence southerly intersecting with Fugu Road. The route should then swing easterly paralleling Fugu Road with a direct entrance into the port area after crossing Kilwa Road.
- (3) Traffic assignments indicate that the new road should be constructed with two lanes for moving traffic in each direction initially with adequate median width to prohibit U turns and protect right turning traffic at major intersections.
- (4) Sufficient median width should be provided over the 1.8 mile section between the proposed Ring Road and Fugu Road intersections to provide for future expansion to three lanes in each direction for moving traffic.
- (5) In order to protect the capacity of the road and to assure an adequate level of service, the facility should be semi-limited access and pedestrian and bicycle traffic should be provided within the proposed right of way.
- (6) Traffic analyses indicate that a relatively high percentage of the total traffic volume will be heavy trucks and the pavement should be designed for axle loads of 25,000 pounds.
- (7) Underground drainage should be provided initially on all sections of the road through developed areas and where development is imminent and open drainage on other sections should be designed so as to be easily converted to an underground system as additional areas are developed.

- (8) The road should be designed to modern high standards and adequate maintenance should continually be provided in order to assure maximum operating benefits and to protect the investment in this facility.

- (9) Traffic analyses indicate that construction of a new port access road will not negate the need for eventually widening and improving existing Morogoro Road. Development in the western and northwestern sections of the city will result in further traffic growth which can only be accommodated on Morogoro Road and Bagamoyo Road to the north. Plans for widening and improving Morogoro Road should be initiated at an early date as a part of an overall program to improve traffic flow in Dar es Salaam.

TECHNICAL ANALYSIS

A. Detailed Description of A.I.D. Financed Construction Portion of Project. A.I.D. financed construction portion of the Project consists of construction and supervisory engineering services associated with the improvements of approximately 150 miles of the GNR in Tanzania. The termini of construction under this project are the towns of Tunduma, on the Zambia border, and Iyayi, at the junction of the GNR and a road extending south to Mjombe and Songea.

The improvement consists of new construction on a location generally paralleling the existing 162-mile route. Mileage savings (12 miles) have been realized through realignments developed during the design phase.

B. Design Details. The road constructed under this Project will conform to the design standards of other sections of the GNR in Zambia. It will consist of:

1. General. A paved surface 22 feet in width with two gravel shoulders each having a width of from three to five feet dependent upon terrain.

The Project design also provides a roadway foundation consisting of four inches of crushed stone based overlaying four inches of select subbase. Workmanship will be carried out in accordance with standard U.S. practice. Roadway design is based on a 9,000-pound wheel load.

The Project also includes the construction of about 15 reinforced concrete bridges designed to American Association State Highway Officials (AASHO) H-20-S-16-44 loading standards.

2. Surface Type. As a consequence of heavy truck traffic and prolonged rains, a gravel or earth road rapidly deteriorates, and increased maintenance is required to keep the route open to traffic. The GURT, in view of the excessive maintenance required to keep the GNR open, has supplemented the maintenance performed by Comworks forces with contractual work performed by East African contractors. These contracts provide for the hauling of borrow material to road sites where it is either spread by hand labor by the GURT or, in cases of heavier maintenance, is spread and compacted by contract equipment and personnel. Roadside maintenance on the GNR such as minor pot hole repair, ditch cleaning, etc., is being performed by GURT labor in an effective manner.

At some point, the gravel road maintenance investment is balanced by an additional investment providing a bituminous or asphaltic concrete surface. Provision of a surface limits the deteriorating effects of rain by sealing and preserving the supporting quality of the base and sub-grade. Periodic maintenance of bituminous surfaces can be performed by unskilled labor using liquid bitumen for patching hand-compacted areas in need of repair. With bituminous tankers and spraying equipment, large sections of roadway can be treated in a short period of time.

During the life of a bituminous-surfaced road, the deterioration of surface due to weather and traffic becomes such as to require a complete resealing of the surface, usually every three to six years depending upon the volume of traffic. The life of any bituminous 'sea' coat is dependent upon traffic, weather, and the stability of the base construction. Under this Project, the base design of the Tunduma-Iyayi section will provide an adequate support structure using crushed rock. A double-bituminous surface would stand up for 10 to 20 years with routine patching of surface breaks and complete resealing every three to five years.

Asphaltic concrete provides a higher class of surface and can sustain heavier and higher volumes of traffic over a greater length of time, with considerably lower maintenance costs than would be necessary for a bituminous surface treatment. In addition to keeping the base dry and thereby maintaining structural support, a two inch (usual thickness) asphaltic concrete surface provides some structural support and a tough wearing layer. Complete resurfacing of asphaltic concrete roadways is seldom required earlier than 10 to 20 years following initial construction. Routine maintenance of surface would only involve spot patching and spraying with liquid bitumen to replace binding agents losses due to evaporation. In Tanzania such an operation might be required every two or three years.

In view of the reduced maintenance costs and the greater longevity and strength of asphaltic concrete, the two inch thickness for this Project is more beneficial in moving the heavy trailer truck traffic now using and expected to use the GRR. However, the economies of a double-bituminous surface treatment in lieu of asphaltic concrete prompted the GRRF and De Leuw, Cather to include it as a provisional tender in the bill of quantities.

3. Drainage. The Project also provides for the construction of about 63,000 lineal feet of culverts of corrugated metal pipe or reinforced concrete. Reinforced concrete structures for the larger drains are also included in this Project. As noted above, the provision

of surfacing will keep the compacted roadway base dry. However, it is not the rain alone that could cause a breakdown of the support designed and constructed in the embankment. By proper cross-section the embankment is so located that the side slopes and drainage ditches keep the ground water accumulated by rain runoff well away from and below the level of the road embankment. Should water accumulate in the ditches the embankment could become saturated and absorb the underlying water. Such a condition would cause immediate failure of the base since the compaction no longer remains static. In terms of the proposed Project, the design and construction will provide for normal drainage as well as that occurring from extraordinary storms. The probability of such storms occurring is a factor included in the design of drainage facility capacities.

C. Present Condition Tunduma-Iyayi Section. The existing route is constructed of compacted earth and gravel except for approximately 27 miles of bituminous surfacing on the route's approaches to Mbeya. The road extends through rolling countryside except for the mountainous area east of Tunduma where travel over the Mbeya Escarpment involves hairpin and similar hazardous curvatures and grades.

The alignment in the rolling area is somewhat erratic in that minor obstacles such as gullies, rock outcrops, and dwellings have been avoided. Generally, the road surface lies two to four feet below the level of existing ground in cuts about 18 to 26 feet wide, including the undefined shoulder areas. Drainage is provided by vertical ditches connecting with the road.

D. Maintenance: GURT Highway Administration and Road Maintenance Activities. The GURT Ministry of Communications and Works appears to have the technical competency to administer and carry out programs of highway planning, construction and maintenance. Their major limitation to undertaking construction is funds and sufficient supervisory personnel. The Ministry assigns their engineers to districts where they oversee the maintenance and road improvements undertaken in that area.

The GURT Ministry of Communications and Works (COMWORKS) is responsible for maintaining about 10,000 miles of primary and secondary roads. Maintenance expenditures for this system of roads are financed from the GURT's current budget. A system of tertiary roads of about 10,700 miles is maintained by various local taxes and some GURT assistance.

Maintenance expenditures on COMWORKS roads in 1965-66 amounted to 2.2 million. Funds for district roads were considerably less, averaging out to about .60 per mile. This appropriation was inadequate as far as providing maintenance of gravel and earth roads is concerned.

Under the conditions precedent, the GURT will be required to provide sufficient funds to adequately maintain the GNR project.

E. Technical Studies. Traffic studies and preparation of design engineering plans, investigations, and IFB for the Tunduma-Iyayi section were carried out by the U.S. firm of De Leuw, Cather International, Inc., under the contract with the GURT, financed by AID Loan 698-H-003. Final engineering for the two additional sections will also be carried out by De Leuw, Cather.

F. Construction Cost Estimate. Actual bids were received on May 24, 1968. All bids were unresponsive, the low bid being \$17.2 million. The Engineer has revised his estimate at \$16.4 million. The new bids will be opened on June 25, 1968.

G. Engineering Cost Estimate; The GURT contract for engineering design services included the provision that supervisory engineering services could be provided by De Leuw, Cather International, Inc., at the following rates with a maximum not to exceed \$25,500 per month.

Resident Engineer	\$ 3,715 per month
Soils Engineer	3,530 per month
Inspector of Works	2,790 per month

The foregoing contract provision relates to the entire Tunduma-Iringa section and only considers two construction supervisory staffs. However, in carrying out the project, the Tunduma-Iyayi section financed under this AID project will require two construction spreads which will involve two supervisory engineering teams. The estimated cost for these services is estimated to be \$1 million. This estimate would provide about 300 man-months technical services using an average man-month cost of \$3,345 calculated from the above rates. Over a 30-month construction period this would provide ten men which can be considered adequate and necessary to supervise the two separate construction activities expected in the proposed construction work schedule.

The project, as far as engineering services are concerned, includes additional design engineering for other sections of the GNR. These sections are the Iringa-Mahenge and that from Morogoro to Dar es Salaam. A GURT/De Leuw, Cather contract for this work was reviewed by AID/W and approved in April 1968, at a cost of \$504,000.

The breakdown to the total engineering services included in the loan is as follows:

Tunduma-Iyayi - Construction Engineering	\$ 900,000
Iringa-Mahenge - Design Engineering	121,000
Morogoro-Dar es Salaam - Design Engineering	<u>303,000</u>

TOTAL.. \$1,324,000

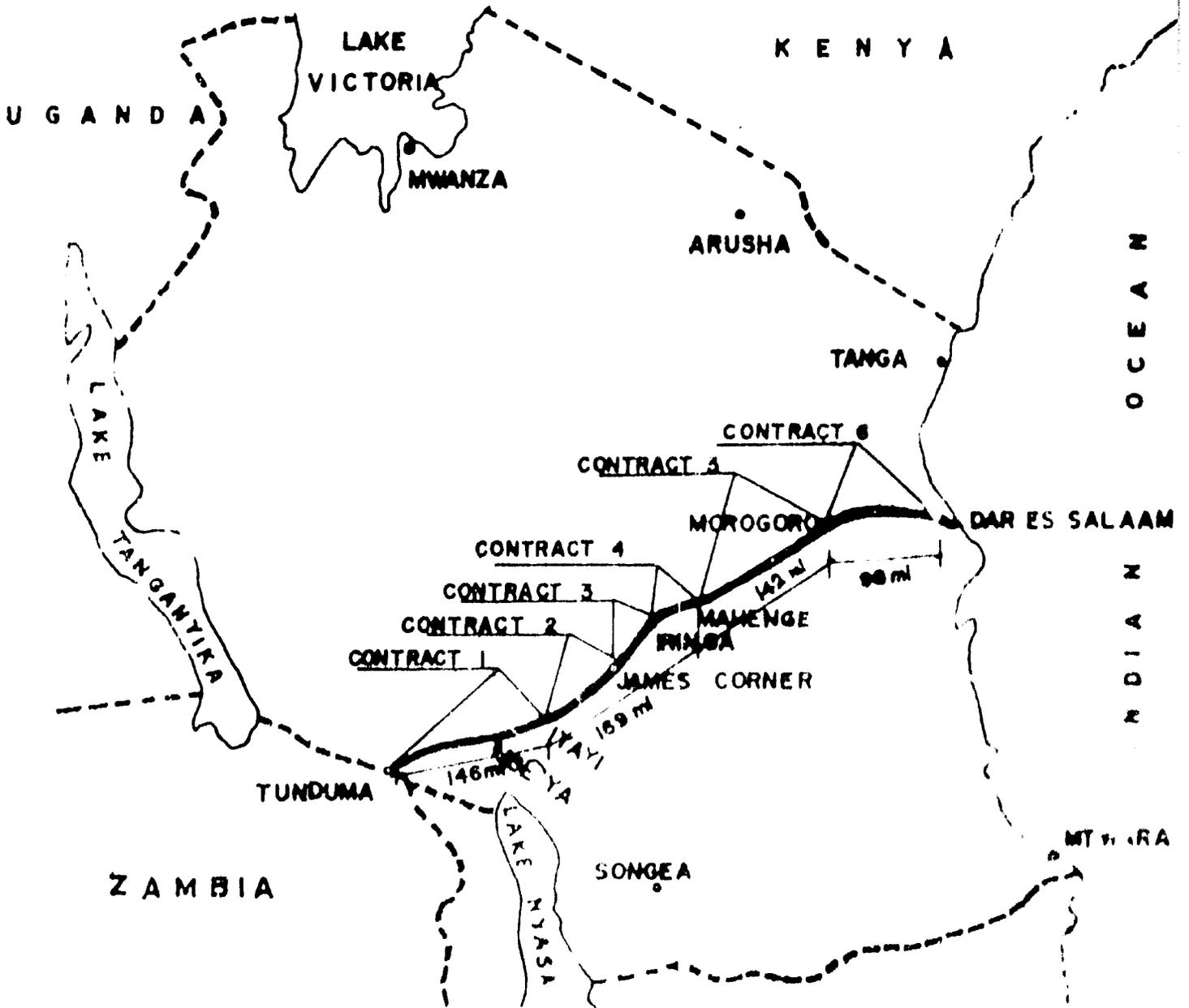
H. Technical Soundness. The designs prepared by De Leuw, Cather have been reviewed in detail by AID engineers and were found to be based upon sound engineering principles and consistent with character of road facility desired by the GURT and considered as necessary by AID. The cost estimates were jointly reviewed by the GURT and AID and found to be sound.

Past experience with U.S. contractors bidding on heavy construction projects in Africa has indicated a reluctance on the part of the contractors to take on additional work. Their submission of tenders has frequently involved bids that exceeded the engineers' estimates. In such cases, engineers' estimates have been verified as to reliability, and AID/W concluded that U.S. contractors sometimes placed too high a cost for their acceptance of contracts in Africa. This has resulted in AID establishing a ceiling defining the highest responsive bid. Such action insures that only seriously interested contractors submit bids. This ceiling is usually set through AID discussions with the project's consulting engineers and host country representatives. In the case of the Great North Road, a ceiling of \$15.0 million has been established by De Leuw, Cather and GURT and subsequently approved by AID/Washington.

I. Implementation Plan. The following schedule has been developed for the construction of the Tunduma-Iyayi section of the Project:

Bids Available:	April 1, 1968
Site Visit:	May 1, 1968
Bidders Conference:	May 20, 1968
Bid Opening:	May 24, 1968
De Leuw Recommendation:	May 27, 1968
Bid Award:	May 27, 1968
Contract Signing:	June 4, 1968
Contractor Mobilization	June, July, August, 1968
Completion Construction	November, 1970

TANZANIA



ROAD PROJECTS IN TANZANIA

SUMMARY OF COST ESTIMATE OF EXTRA WORK

<u>Item</u>	<u>Description of Item</u>	<u>Estimated Cost</u>
1.	Emergency work: Cut back existing soil shoulders, prime exposed aggregate base and install aggregate drains where required (see Diagram land 2).	
	29 miles @ Shs 4,000/mi	= Shs 116,000
2.	Place base aggregate in shoulders in lieu of soil, prime and seal completed aggregate shoulders.	
	29 miles @ Shs 38,300/mi	= 1,110,700
	112.6 miles @ Shs 36,800	= 4,256,280
3.	Repair of Fundana Pavement	
	3.14 miles @ Shs 406,700/mi	= 1,277,038
	0.26 miles @ Shs 406,700/mi	= 105,742
4.	Asphalt overlay of other completed sections of pavement.	
	25 miles @ Shs 119,900/mi	= 2,997,500
	Move crushing and asphalt plant to Mbeya quarry	= 350,000
5.	Use of crushed stone for subbase in lieu of soil where soil subbase is not available.	
	60 miles @ Shs 90,000/mi	= 5,400,000
6.	Additional base to compensate for weak subgrade soils.	
	107 miles @ Shs 33,900/mi	= 3,627,300
	5 miles @ Shs 68,900/mi	= 344,500
7.	Cost of screening stone from subbase materials	
	30 miles @ Shs 15,000/mi	= 450,000
8.	Long haul for subbase (increase of regular contract item).	
	15 miles extra haul for 30 miles of subbase	= 900,000

9. Centerline paint stripe	=	175,000
10. Contingencies	=	6,804,973
	TOTAL	Shs 27,915,033

Shs 26,915,033 + 7.15 = \$ 3,904,200

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20521

AID-ILC/P-958/A Draft

ANNEX XXII
Page 1 of 4

AID LOAN NO.

CAPITAL ASSISTANCE LOAN AUTHORIZATION

Provided from: Development Loan Funds

Tan Zam Highway - Phase IV
Dar Port Access Road

Pursuant to the authority vested in the Administrator of the Agency for International Development (hereinafter called "AID") by the Foreign Assistance Act of 1961, as amended, and the delegations of authority issued thereunder, I hereby authorize the establishment of a loan pursuant to Part I, Chapter 2, Title I, the Development Loan Fund, to the Government of the United Republic of Tanzania (Borrower) of not to exceed Three Million Eight Hundred Thousand Dollars (\$3,800,000) to assist in financing foreign exchange and local currency costs of supervisory and other engineering services and construction of the Dar Port Access Road portion of the Tan Zam Highway project. This loan will be subject to the following terms and conditions:

1. Interest Rates and Terms of Repayment

Borrower shall repay the loan to AID within forty (40) years from the date of the first disbursement under the loan, including a grace period of not to exceed ten (10) years. Borrower shall pay to AID interest on the outstanding balance at the rate of two percent (2%) per annum during the grace period and three percent (3%) per annum thereafter.

2. Currency of Repayment

Provision shall be made for repayment of the loan and payment of the interest in United States dollars.

3. Other Terms and Conditions

- a) Equipment, materials and services financed under the loan shall be procured from Tanzania and from countries included in Code 941 of the A.I.D. Geographic Code Book.
- b) This loan shall be subject to such other terms and conditions as AID may deem advisable.

Assistant Administrator for Africa

Date

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20521

AID-DLC/P-707/2/A Draft

ANNEX XXII
Page 3 of 1

A.I.D. Loan 698-H-005A

CAPITAL ASSISTANCE LOAN AUTHORIZATION AMENDMENT

Provided from: Development Loan Funds
AFRICA REGIONAL: Tan Zam Highway (Formerly Great North Road)
Phase II (Construction)

Pursuant to the authority vested in the Administrator of the Agency for International Development ("A.I.D.") by the Foreign Assistance Act of 1961, as amended, and the delegations of authority issued thereunder, I hereby authorize an amendment to increase the above-captioned loan to the Government of the United Republic of Tanzania ("Borrower") by an amount not to exceed Three Million Eight Hundred Thousand Dollars (\$3,800,000) to assist in financing the foreign exchange and local costs of goods and services for the supervisory engineering and construction of the Tunduma-Iyayi portion of the Tan Zam Highway Project.

1. Interest and Terms of Repayment.

The interest on the increased amount of this loan shall be three percent (3%) per annum on the disbursed balance of such increased amount, except during the grace period when the interest shall be two percent (2%) per annum. The loan, as amended, shall be repaid within forty (40) years from the date of the first disbursement under the loan, as amended, including a grace period of not to exceed ten (10) years.

2. Currency of Repayment.

Payments of principal and interest with respect to the increased amount of the loan shall be in United States dollars.

3. Other Terms and Conditions

- (a) Equipment, materials and services financed under the increased amount of the loan shall be procured from Tanzania and from countries included in Code 941 of the A.I.D. Geographic Code Book.
- (b) The loan, as amended, shall be subject to such other terms and conditions as A.I.D. may deem advisable.

Assistant Administrator for Africa

Date