



B. 690-0234.12-B-T-H ROAD

13. SUMMARY

The project, titled Improvement of Blantyre-Tete-Harare Road, is a part of the Southern Africa Regional Transport Program of AID to contribute, by grant funding, to the improvement of transport linkages among the majority-ruled nations of Southern Africa. This road project of 80kms length between Blantyre, Mwanza and the Mozambique border in Malawi was identified as a critical section of unpaved (dirt) road needing maintenance and spot improvement to facilitate the movement of heavy truck traffic.

This 80km section of road in Malawi is a part of the 700km road running from Blantyre, Malawi to Tete, Mozambique on to Harare, Zimbabwe. At the time of project inception in early 1984, the road was being used by 4 to 6 axel trucks transporting maize from Malawi to the drought stricken areas of Zimbabwe. Therefore, road conditions and ease of movement was keyed to the continued flow of traffic. To facilitate the truck movement which could be delayed for numerous days on this 80km section of road, especially during the November-February rainy season, AID authorized this project in July, 1984 providing funding in the amount of U.S.\$ 500,000 for the maintenance and rehabilitation of selected road sections over the 80kms of roadway. The Government of Malawi contributed, in kind, the Mk equivalent of U.S.\$ 155,000. A Project Grant Agreement, No. 84-690-04, was signed on July 17, 1984 between the Government of Malawi and AID to provide funding for road gravelling, drainage improvement, stone removal, curve easement and road gradient easement on selected sections of roadway. The work was carried out by the Department of Roads using a force account operations with payment being made by AID to the GOM based upon units of work completed. This basis of payment proved to be difficult to measure without extensive records having to be maintained at the job site by the roads department for labor time, material costs and plant hire costs. It was recognised early on by the USAID Regional Engineer that project payments would be simplified along with a vast reduction of record keeping by the Department of Roads if the Fixed Amount Reimbursement procedure (F.A.R.) was used on this project as the basis of payment. This was accepted by the GOM and AID under Amendment No. 1. dated February 13, 1985 to the Grant Agreement.

At the time of project inception a newly located and designed road paralleling 60km of the project road was starting construction (April, 1984). The road was being funded by the EEC under the European Development Fund (EDF) as part of the construction of a high standard, asphalt surface roadway connecting Blantyre with the Mozambique border through the town of Mwanza. It was understood by AID that the project life for the maintenance and rehabilitation of the 80km section of unpaved road would end in July, 1986 with the completion of construction of the EEC road and the road open to traffic. However, problems developed which extended the completion of the

J

EEC road by one year. As a result of this extension AID agreed to continue the project another 18 months, for a total of 42 months LOP, and provide an additional U.S.\$ 200,000, for continued maintenance and the graveling of an additional 16km of roadway. This project extension provided the necessary funds to maintain the road through the 1986/87 rainy season. The additional funding of U.S.\$200,000, for a total project cost of \$700,000, and project time extension of the PACD from June 30, 1986 to December 31, 1987 was the subject of Amendment No. 3 dated July 11, 1986 to the Grant Agreement. The GOM provided, in kind, an additional MK equivalent of U.S.\$ 80,000 to the project.

The Grant Agreement also provided under a Source Origin Waiver U.S.\$ 150,000 for the direct purchase of fuel and lubricants by the Department of Roads for project use. This procurement was never implemented by the Department of Roads as the GOM, Ministry of Finance regulations did not allow the Department of Roads to make direct foreign exchange procurement transactions under force account operations.

The Department of Roads force accounts operations was well managed and supervised. The evaluation team inspection of the 62km section of improved roadway made in early August, 1987 showed a well shaped, drained roadway with graveling completed on the critical hill sections throughout the 62km length. Overall, the project had more than met the finished output requirement and the project objective.

With the opening of the Mwanza section of the EEC funded road in May, 1987 truck traffic has now completely diverted to the EEC paved road and the project road now carries only local traffic.

With the evaluation team's inspection of the project road it was determined that project funding should terminate by August 15, 1987. This would complete the rehabilitation and maintenance of the roadway and provide time for the roads department to correct any residual damage caused by truck traffic prior to opening of the EEC road. The project road has now been designated Malawi Secondary Road Route 137 (S-137) by the Department of Roads with subsequent road maintenance being funded from the annual maintenance budget of the Department of Roads.

The final F.A.R. payment should be completed by October, 1987 and the project officially closed out by November, 1987.

#### 14. Evaluation Methodology

This evaluation represents the one evaluation made of the project and comes at the end of the project as a Project Evaluation Summary (PES). The evaluation is intended to focus on lessons learned in consideration that this same F.A.R. procedure for carrying out force account maintenance and rehabilitation of roads may be used in a subsequent project in Malawi on the Karonga-Songue Road. This evaluation should

provide an insight to the weakness and strength the use of the F.A.R. application for this type of work. The evaluation methodology was based upon (1) an USAID office review of project files; (2) discussions with the Roads Department staff associated with the project; (3) a site inspection of the project roadway; (4) discussions with USAID staff associated with the project; and (5) discussions with the government of Malawi officials of the Ministry of Transport and Communications as well as of the Ministry of Works and Supplies.

#### 15. External Factors

The major external factor impacting on project implementation was the delay in the completion of the construction of the new road facility being financed by the European Economic Commission (EEC) under the European Development Fund (EPF). The new road facility, paralleling the project section of road between Blantyre-Mwanza, constructed to a high standard bituminous surface road, will in effect attract and carry all through truck traffic, especially the 4 to 6 axel trucks, using the Blantyre-Tete-Harare road corridor.

This facility (Route M-6) was scheduled for completion by mid-1986 but due to delays was not completed and opened to traffic until mid-May, 1987. This delay in completion resulted in the GOM requesting additional funds from AID to continue maintenance and rehabilitation of the project road section (62km). Necessary maintenance would be especially critical during the rainy season of November-February. As a result of this request AID agreed to provide additional funding in the amount of US\$ 200,000 and to extend the PACD from June 30, 1986 to December 31, 1987.

The additional money and time extension, although utilized quite effectively by the Roads Department, emphasizes the sensitivity of this project, in funding requirements and time extensions, to the completion of second construction activity outside of AID's control or influence.

A second external factor that influenced project implementation was the action of the GOM, Treasury to delay release of funds to the Roads Department from received project funding. To what extent this practice impacted on the delay of the project road maintenance and rehabilitation activities was not determined during this project evaluation. It is noted that when a force account operation is being carried out by a government agency, present GOM policy does not allow direct Project payments to be made by the donor to that agency, nor does the government assure that donor funds when received, will be made available in a timely manner to the agency for specific project use.

In addition to the above, the project provided through a waiver, US\$ 150,000 to be utilized by the Department of Roads to procure fuel and lubricants from code 935 countries for direct use on the project. This waiver inclusion was a wasted effort on the

4

part of USAID. The Roads Department of the Ministry of Works does not have the authority under force account operations, to open an external account in foreign exchange for project procurement of fuel and lubricants even though the donor may issue a direct L/Comm. to the supplier for payment.

#### 16 & 17 Inputs/Outputs

Project inputs consisted of:

- 1) Road Maintenance Supervision
- 2) Plant, Vehicle hire and Operators
- 3) Fuel and Lubricants
- 4) Road maintenance gangs
- 5) Temporary Labor
- 6) Material and Supplies

AID provided up to US\$ 700,000 to the GOM for delivery of the inputs. The inputs were provided by the GOM, through the Roads Department, Ministry of Works, as a force account road maintenance and rehabilitation operation. Payment was made by AID to the GOM using the Fixed Amount Reimbursement (F.A.R.) payment procedures. At the time of this evaluation (August 1987) 97% of the inputs had been delivered with all delivery expected by mid-August, 1987. Inputs were started in August 1984 by the Roads Department. In March, 1986 it was perceived that the new road paralleling the project and being funded by the EEC under the European Development Fund (EDF), would not be completed until mid-1987. This increased time to complete the construction of the EEC road resulted in the GOM requesting and AID agreeing to provide an additional US\$ 200,000 for a total of US\$ 700,000 project funding and to extend the PACD from 30 June, 1986 to 31 December, 1987. The Roads Department inputs continued as before with the increased funding providing for 16kms of additional road gravelling. No further inputs were required for the project as the EEC funded road was opened to traffic in May, 1987.

Project Outputs consisted of:

- 5kms of roadway cleared
- 21 kms of road surface rebuilt
- 10 kms of road surface reshaped
- 24 kms of reconstruction of road surfacing
- 29 kms of side drains built
- 16 culverts and headwalls extended

At the time of the field site inspection for this evaluation (August, 1987) the project outputs had been met and exceeded. As an example, side drains and drain turnouts had been constructed and maintained throughout the total 62kms of the road section. Final ditch cleaning by hand labor was underway (dry season routine maintenance) along with replacing of the timber planking on the Mputamanga bailey bridge spanning the Shire River. All work to be financed under this project is

5

considered to be complete as of 15 August, 1987. This will provide final repair of the road due to truck traffic damage up to opening of the EEC financed road in May, 1987. A balance of US\$ 123,000 remains in the project for the final F.A.R. payment. Three F.A.R. payments were made and the fourth and final payment will complete the AID project funding input. The Roads Department is expected to submit their request for final payment to USAID by early September, 1987. A letter from USAID to the Roads Department indicating A.I.D.'s final inspection and acceptance of the work will be issued by late August, 1987. The site inspection (6 August, 1987) showed that the project has exceeded planned outputs with the work completed in a satisfactory manner in accordance with the Road Department criteria and specifications and with all work completed three months prior to the PACD of 31 December, 1987.

#### 18. Purpose

The purpose of the project was to reduce the time of vehicle travel and cost of transporting goods over the 90 km Blantyre-Mwanza-Mozambique border road section of the 700 km Blantyre-Tete-Harare road corridor. The focus of the road improvement over the project 90kms length was concentrated in the 62kms between the Chileka Airport junction and the town of Mwanza. The purpose of the project was accomplished with the widening of the road to a 8.0 meter width, improving cross and side drainage, reducing curvature and gradients and a key improvement of gravelling to a 15cm depth steep hilly sections throughout the 62km length. The improvements reduced travel time in the rainy season for 4 to 6 axel trucks from up to 3 days with pull assistance to one-half day, no assistance. The End of Project Status (EOPS) of the completed improvements provides an all weather partially gravel road linking the Chileka Airport junction with the town of Mwanza.

#### 19. Goal

The project goal is based upon AID's Southern African Regional Transportation concepts of improving transportation links between Southern African countries. The corridor served by the project road progressively increased its share of total trade traffic as shown by external trade flows for the years 1983-86.

6

MALAWI IMPORTS AND EXPORTS BY YEAR AND ROUTE  
(Tons)

<u>EXPORTS</u>	1983		1984		1985		1986	
	Project Corridor	Other Corridors	Project Corridor	Other Corridors	Project Corridor	Other Corridors	Project Corridor	Other Corridors
Sugar	4679.9	16359.6	3648.1	35815.8	95882.0	39683.1	37032.3	39325.1
Tobacco	4146.3	10758.1	9768.1	42890.2	33309.4	37782.6	27040.8	31680.3
Tea	1328.0	6826.0	3720.2	18010.9	21338.3	19285.4	28870.9	7665.5
Maize	185.1	47012.8	15615.5	89964.9	7450.2	51627.4	11130.9	20417.6
Groundnuts	177.9	91.0	135.4	245.7	5387.8	1883.5	5170.4	980.6
Produce	962.3	1155.6	612.0	426.0	8373.2	3395.8	12748.1	1128.7
Coffee	-	-	-	-	-	-	576.6	887.0
Cotton	-	-	86.3	1528.7	1986.2	6278.4	6743.2	660.9
Other/Mixed	2617.9	4790.9	2419.3	8427.8	12472.4	6544.7	27057.7	3565.4
	<u>14097.4</u>	<u>86994.0</u>	<u>36004.9</u>	<u>197310.0</u>	<u>186199.5</u>	<u>166480.9</u>	<u>156370.9</u>	<u>106312.1</u>
<u>IMPORTS</u>								
Fertilizer	5881.1	30534.0	12725.6	64436.8	71640.0	63727.4	74913.3	30624.8
Machinery	93.9	177.3	72.0	1516.8	1377.2	2508.9	2529.1	1808.4
Salt	-	29.3	1583.7	3788.0	18293.2	7340.7	7763.0	2756.1
Wheat/Flour	544.4	4033.8	1578.2	9306.4	13663.2	7074.6	10101.7	3191.9
Iron/Steel	2016.9	3120.6	2174.8	7273.9	12486.5	10765.5	7981.6	3292.5
Paper	1065.1	2099.8	1486.9	3827.7	4688.1	6337.3	4491.6	3232.1
Lime/Cement	-	-	-	-	-	-	2156.6	18306.7
Textile Material	-	-	-	-	-	-	466.5	438.1
Petrol	-	1204.9	-	26809.9	-	35683.0	-	37298.6
Gasoline (diesel)	-	4612.4	-	57071.9	17074.4	57062.6	18162.3	52750.4
Paraffin	-	-	-	-	-	449.2	26.0	493.7
Set A-1	-	-	-	4112.4	-	10596.7	36.0	13247.6
Aviation Gas	-	-	-	127.6	-	741.8	102.0	339.0
Coke (coal)	4542.8	6203.7	4956.2	14441.1	21373.5	11620.4	15511.5	2698.3
Others/Mixed	8052.1	15450.0	10266.9	47254.0	66143.9	50907.4	58611.0	21894.9
	<u>22196.3</u>	<u>67665.8</u>	<u>34844.3</u>	<u>239966.5</u>	<u>226740.0</u>	<u>264815.5</u>	<u>202852.2</u>	<u>193373.1</u>
<b>TOTAL</b>	<u>36293.7</u>	<u>154459.8</u>	<u>70849.2</u>	<u>437276.5</u>	<u>412939.5</u>	<u>431296.4</u>	<u>359223.1</u>	<u>299685.2</u>

5

The project paper export/import traffic estimates for 1984, 1985 and 1986 were 405,000 mt, 255,000 mt and 255,000 mt respectively (including grain exports to Zimbabwe and Botswana). As shown by the above figures these were exceeded except for the year 1984.

Hence, the aim of providing a temporary road surface capable of supporting anticipated heavy volume of commercial traffic, pending completion of the EEC/EDF funded road, was achieved during the Life of Project (LOP) and has been fully realized with the end of project status.

## 20. Beneficiaries

The road facilitated supply of critically needed commodities like maize (for Botswana and Zimbabwe), petrol (for Malawi) and fertilizer (for Malawi). Because of qualitative improvement of the road during the project period, considerable savings accrued to commercial truckers in the form of shorter journey times, reduced accidents and savings in operational costs. During road improvements, extra income was generated to the local economy through temporary employment of local unskilled labor. It was also a national policy, to integrate the project into the National Development Program, as it now serves as a secondary road providing the Mwanza District (an area with much agricultural potential) with access to the main Blantyre-Lirangwe-Mwanza road (M6).

## 21. Unplanned Effects

The project had no unplanned effects. The project was authorized to improve and maintain a critical section of 62kms of unpaved roadway to assure movement of truck traffic transporting food and other life sustaining commodities. The Life of Project covered a period of time necessary to complete the construction of a parallel road facility built to a high standard bituminous surface which now carries all through truck traffic.

## 22. Lesson Learned

1. The project was designed around the concept of providing funds for the maintenance and rehabilitation of a key section of unpaved road, some 80kms in length, to accommodate essential truck traffic until the completion of construction and opening of a high standard asphalt surfaced road. Delays in the opening of the new route was a "Fait accompli" for AID to continue project funding of road maintenance until the new facility opened. This resulted in an additional 12 months of project life and an additional U.S.\$ 200,000 funding requirement. Although, in this case the additional cost did not represent a great amount of money and the services performed were essential careful consideration must be given at the time of project conception as to what external factors may control the level of funding and life of project.

8

2. The change in project payment from a unit cost reimbursement basis to the Fixed Amount Reimbursement basis was an excellent project management action while also saving the Department of Roads considerable effort by reducing the need to maintain records on site during the force account work operations.
3. The cost of continuing maintenance on an unpaved roadway carrying 4 to 6 axel heavily laden trucks quickly becomes uneconomical, especially during rainy season operating conditions. One truck, with wet roadway surface moisture conditions, can cause damage equivalent to the cost of the surface gravelling. Where the project may have to continue through additional rainy and dry seasons conditions, improvements to unpaved roads under use of heavy truck traffic becomes uneconomical. High cost improvements result in short term benefits because of road damage due to wheel rutting or surface loss due to road dusting.
4. The inclusion of a FX component for direct project use by the implementing government agency generally does not work under force account operations, due to government agencies not being able to utilize FX for specific project procurements under Ministry of Finance regulations.
5. Another noted aspect of this project is that with experienced supervision carrying out the work under a reasonable good organization, the quality and progress of work was exceptionally good. A well shaped, partially gravelled, well drained road remains in place now carrying local traffic and now part of the secondary road system of Malawi. The final cost of US\$ 12,000 per km of road improvement is considered reasonable and in line with similiar road improvement costs in this area of Africa.

Evaluation Team and Persons Contacted - Appendix 1

Evaluation Team:

- 1) Mr. D. Gephart, REO(A), SARP, USAID/Zimbabwe and
- 2) Mr. B. Mutiti, Transport Economist, SARP, USAID/Zimbabwe.

Persons Contacted:

USAID

- 1) Mr. Denis Light, Regional Engineer, SARP, USAID/Zimbabwe,
- 2) Mr. Stephen Norton, Project Officer, USAID/Malawi,
- 3) Mr. John Chaika, Assistant Program Officer, USAID/Lilongwe

DEPARTMENT OF ROADS

- 1) Mr. Wolfgang Grundner, Senior Engineer (Roads Department), Lilongwe,
- 2) Mr. W. D. Mbvundula, Civil Engineer, Regional Roads (South) Blantyre,
- 3) \*Mr. Salima, Superintendent of Road Maintenance, Controller of Roads (South) Blantyre; and
- 4) Mr. C. Tembo, Transport Economist.

Ministry of Transport and Communication

- 1). Mr. Harold P. Kurzman, Transit Transport Advisor;
- 2) Dr. G.L. Roberts, Senior Transport Advisor;
- 3) Mr. R.G. Magombo, Chief Transport Officer; and
- 4) Mr. T.M. Kaunda, Senior Transport Officer.

\* Mr. Salima was the Supervisory Maintenance person in charge of the road maintenance and rehabilitation, at site, during the work activities. The road site visit was made in company with Mr. Mbvundula, Mr. Salima, Mr B. Mutiti and Mr. John Chaika.