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PROJECT COMPLETION REPORT

USN= 37941

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Improved Rural Technology Project
Building Materials Production
698-0407.34

FUNDING:	AID	$ 100,000.00
	S.R.D.A	$ 33,352.00
	TOTAL	$ 133,352.00

SUMMARY:

The Southern Rural Development Association (S.R.D.A) is a non-government, non-profit organization that was established in Kanye in 1979 to encourage the creation of rural employment and the use of locally available resources in the Southern District and Botswana as a whole. After S.R.D.A. operated slate quarrying and mineral pigments collections on a limited scale, a marketing study completed in January 1982 concluded that an expansion of building materials production activities was feasible. Creation of rural employment is a cornerstone of AID's strategy in Botswana and the use of locally available building materials was of interest to the managers of AID's low-cost housing projects. AID reacted positively to a request from S.R.D.A. to assist the pilot project and an Activity Paper for funding from the Improved Rural Technology Project was prepared. The Project, supporting brickmaking, lime production, slate quarrying and mineral pigments industries was authorized April 2, 1982 and the Grant Agreement with S.R.D.A. was signed on May 10, 1982. The brick making, lime production and slate quarrying industries met or exceeded production and employment targets set in the Activity Paper. S.R.D.A. considers the brick making and lime production industries to be economically viable and a project to expand the operations is currently under consideration by Appropriate Technology International (A.T.I.) through their centrally funded AID project. The slate quarrying and mineral pigments industries have been less successful, experiencing marketing problems that require further study and development by S.R.D.A. For a relatively small investment, the project has made a significant contribution to the economy of one village in the Southern District, has virtually eliminated imports of cement block, brick and lime into the area and has demonstrated the potential for replication of brick making and lime production in other areas of Botswana.

DESCRIPTION:

AID Project funds were provided for capital costs (including buildings, tools and equipment), production and management training, materials and production testing, advertising and marketing and a portion of the cost of a utility truck. Each of the four industries was established as a seperate entity. An office in Kanye was established to provide central management, marketing services, and final processing of lime, mineral oxides and slate.

The brickyard was set up in Moshaneng, a village about 20 km. northwest of Kanye. Three elderly Batswana men who had worked in brickyards in the 1950's were recruited to help organize the production. Two types of clay available in the village are mixed with ash, obtained from the Botswana Meat Corporation plant in

Lobatse, and with water to make the bricks. The bricks are air dried before being packed, 30,000 at a time, into a coal fired clamp. The heat characteristics of the clamp produce two types of brick, "red" and "blue", in the ratio of 40% red and 60% blue. Blue bricks result from better heat distribution in the clamp, are stronger than red bricks and sell for a higher price (P60 per 1000 vs. P55 per 1000). The bricks are sold throughout the Southern District where they are used in single story building construction.

The lime production unit was also established in Moshaneng, in an existing quarry that had been part of a mining operation before Botswana's independence. Dolomite stones are collected in the quarry by women from the village, who are paid on a piece rate. The stones are baked in a coal fired kiln and then slaked with water. The slaking process causes the stones to disintegrate into lime. The slaked lime is screened and the larger sizes are pulverized. The lime powder is packaged in 20 kg. bags which sell for P3.00 per bag. The lime is used in cement mortar and road construction work.

Mineral pigments are collected in and around the village of Selokolela, about 25 kms. west of Kanye. In this area, red and yellow oxide stones occur near the surface in thin beds that are easily extracted by the villagers. The oxides are delivered to a depot in the village and periodically transported to the pulverizing machine for processing into a fine powder. The powder is mixed with cement mortar or plaster used in building construction work to provide color. The market for the mineral pigments has not been successfully developed at this time. A stockpile of oxides was processed early in the project but collection has been halted for the moment.

Slate is quarried near Digawana, a village about 30 km. southeast of Kanye. The slate is removed by hand with chisels and hammers and the sheets of stone are split into thin sections of about 10 - 15 mm thickness. The thin sections are either cut into square tiles or sold in irregularly shaped pieces. The tiles and pieces can be used in and around buildings for floors, patios and walkways. The use of slate for these purposes is not common practice in Botswana and, as with the mineral pigments, further market development is required.

S.R.D.A. set up a Mineral Holdings Trust (MHT) in Kanye to manage the project and other building materials industries. MHT was staffed by a Motswana project manager, an expatriate advisor, an expatriate technical manager, a Motswana bookkeeper and a Motswana secretary. Sales and marketing were the responsibility of the advisor and production organization, training of site supervisors and on-the-job training of laborers were the responsibility of the technical manager. MHT contracts with a local trucker in Kanye for transportation of the building materials from the sources to the processing points.

FINANCIAL STATUS:

Table A.

AID CONTRIBUTION

Capital Costs	BUDGET $	BUDGET P	EXPENDITURES P
Brick Making	21,460.00	23,247.00	19,437.00
Lime	48,470.00	52,506.00	47,280.00
Mineral Products	4,640.00	5,026.00	5,944.00
Slate	3,560.00	3,856.00	10,898.00
Sub-Total	78,130.00	84,635.00	83,559.00
Production Training	6,800.00	7,365.00	7,365.00
Management Training	2,160.00	2,339.00	2,339.00
Materials/Production Testing	2,620.00	2,837.00	3,822.00
Advertising/Marketing	5,710.00	6,185.00	7,424.00
1-Ton Utility Truck*	4,580.00	4,961.00	3,813.00
TOTAL	100,000.00	108,322.00	108,322.00

*Additional funding provided by S.R.D.A.

Table B

SRDA CONTRIBUTION

	P
Capital Costs	18,012.00
Material Stocks	1,500.00
Recurrent Costs	6,842.00
TOTAL	26,354.00

COMPLETION STATUS:

The project proposed to set up and bring to full production the four small-scale building materials industries in order to provide employment in rural areas of the Southern District and to substitute locally available materials and processing for imports. Production and employment targets were established to define "full production". The proposed targets are compared to actual achievements in the following table:

TABLE C

		Planned Target	Actual Achievement
Brick	Production	1500 per day	3000/4000 per day
	Employment (Full-Time)	15	25
Lime	Production	6000 kg per day	6000 kg per day
	Employment (Full-Time)	11	17
	(Part-Time)	--	100
Oxides	Production	2200 kg per day	--
	Employment (Full-time)	10	--
	(Part-time)	12 to 15	--
Slate	Production	21 tons per week	36 tons per week
	Employment (Full-Time)	4	8
Processing & Packing	Employment (Full-time)	5	10
Employment Total	Full-time	45	60
	Part-Time	12 to 15	100

While the record shows that brick, lime and slate industries met or exceeded production and employment targets, only the brick and lime industries are considered by MHT to be economically viable operations at this time. Both are located in Moshaneng and have had an observable impact on the village's economy. MHT has plans to expand production and employment on these two industries.

The slate industry has exceeded the production and employment targets established at the start of the project but is not considered to be economically viable and self-sufficient at this time. Capital start-up costs have been almost three times greater than had been envisioned. The market for the product is only beginning to be developed. MHT believes that the production operation can be reorganized to lower costs with further management and technical assistance inputs.

The mineral oxides industry has been unable to compete with the price, colors and established market relationship of the South African imports. Production has been halted while the marketing problems are being sorted out. MHT has recently arranged for an agent in Gaborone to sell their oxides and has received an export permit for Zimbabwe. Production will recommence in the near future to test how effective these marketing initiatives have been.

CONCLUSION:

The project has been successful in creating employment, in substituting local materials for imports and in demonstrating the potential for small-scale building materials industries in Botswana, all for a very modest financial investment by AID. The impact of marketing forces was probably underestimated at the beginning and the important objectives of economic viability and management self-sufficiency were only emphasized late in the project. However, the project managers recognized these deficiencies and made appropriate adjustments during implementation of the project. Further development and expansion of the industries will continue with SRDA and possibly other donor (including AID) support. A.T.I.'s project development work, now underway, will be monitored by USAID/Botswana and should provide the Mission with sufficient follow-on information about the activities.

LESSONS LEARNED:

The project adds to USAID/Botswana's string of positive experiences with projects implemented by indigenous PVOs and NGOs. The project also demonstrates the effectiveness of utilizing centrally funded AID projects such as Improved Rural Technology (IRT), the Accelerated Impact Program (AIP) and now ATI to respond to the needs of small, worthwhile activities not anticipated in the bilateral programming process.