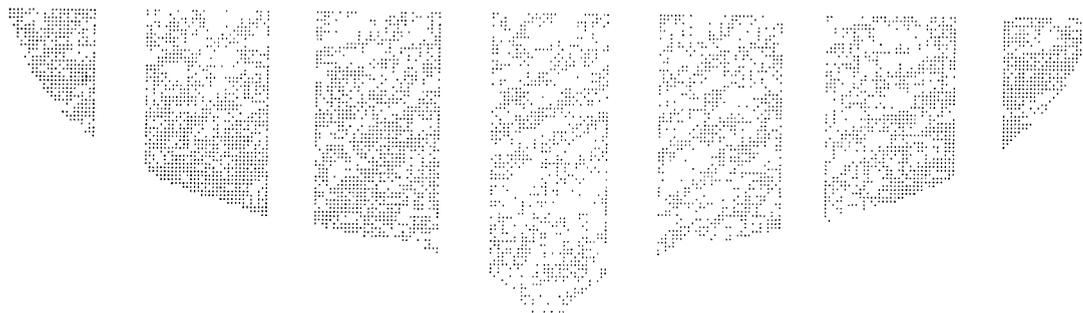


MISSION TO PAKISTAN AND AFGHANISTAN

**PROJECT ASSISTANCE COMPLETION
REPORT**

**Balochistan Road
(391-0510)**



*Submitted by Private Enterprise and Energy Division
October 1994*

TABLE OF CONTENTS

	<u>PAGE</u>
List of Acronyms	
1. Basic Project Data	1
2. Project Goal and Purpose	1
3. Project Background	1
4. Project Components	2
<i>Original Project Components</i>	2
- <i>Road Construction</i>	2
- <i>Road Maintenance</i>	2
<i>Revised Project Components</i>	3
5. Inputs	4
6. Project Accomplishments	5
<i>Drainage Structures</i>	5
<i>Road Work</i>	5
<i>Engineer's Base Camp</i>	5
7. Lessons Learned	5
8. Sustainability	8

LIST OF ACRONYMS

A/E	-	Architect/Engineer
BRP	-	Balochistan Road Project
BALAD	-	Balochistan Area Development Project
C&W	-	Communications & Works
CPM	-	Critical Path Method
ENG	-	Office of Engineering
GOP	-	Government of Pakistan
HCC	-	Husnain Construction Company
km	-	Kilometer
RE	-	Resident Engineer
USAID	-	United States Agency for International Development
USG	-	United States Government
WSA	-	Wilbur Smith Associates

PROJECT ASSISTANCE COMPLETION REPORT
BALUCHISTAN ROAD PROJECT (391-0510)
OCTOBER 1994

1. BASIC PROJECT DATA

Title of the Project	:	Balochistan Road Project (BRP)
Project Number	:	391-0510
Project Officer	:	Pervaiz Gani
Project Agreement	:	August 9, 1990
Original PACD	:	December 31, 1996
Pressler PACD	:	December 31, 1994
Rescission PACD	:	June 30, 1994
Original Amount Authorized	:	\$90,000,000
Revised Amount Authorized/ Obligated (Per Pressler)	:	\$10,000,000
Amount Expended	:	\$5,202,191 (9/30/94)
Implementing Agencies	:	Planning & Development Department Communications & Works Department Government of Balochistan

2. PROJECT GOAL AND PURPOSE

The goal of the project was to accelerate the integration of the Makran Division of Balochistan Province into the socio-economic mainstream of Pakistan.

The original purpose of the project was to link the Makran Division of Balochistan Province to the National Highway network, and to privatize certain road maintenance functions. After the Pressler phasedown, the revised purpose of the Project was to link certain remote areas of the Khuzdar Division, Balochistan Province, to the national highway network.

3. PROJECT BACKGROUND

The scope of BRP activities evolved from the Balochistan Area Development (BALAD) Project, which was completed on 6/30/92. Under the BALAD Project, a 101 Km. road from Bela to Awaran in Balochistan Province was to be constructed. A \$20 million construction contract was awarded to a local construction firm in October of 1987, with a scheduled completion date of May 1990. The contract was terminated in March of 1988, because the contractor was unable to mobilize staff and equipment to the site within the stipulated contract period. In June of

1988, the contract was reinstated on the condition that the contractor mobilize the required expatriate project management team and equipment to the site and complete the road construction within the original 30 month period. The contract was again partially terminated in May of 1989 due to the slow progress of the contractor, and the contract scope was reduced to include only the construction of 56 Km. of road. When contractor also failed to complete even the 56 km by 1990, the contract was finally terminated and the incomplete construction work was included in the Balochistan Road Project (BRP).

The BRP was a \$90 million Project, of which \$86.1 million was obligated on August 9, 1990. The Project was initially designed to construct the entire 376 Km. Bela-Awaran-Turbat road; this originally included the work left incomplete by the previous contractor under the BALAD Project. Eventually, as a result of the Pressler Amendment, it was decided to confine the BRP to include only completion of the 56 Km. portion of the road construction work left unfinished by the previous construction contractor.

A new construction contract was signed on June 8, 1993 with a local construction contractor, Husnain Construction Company, for the amount of Rs. 151,545,700 (approximately \$5.6 million). A Notice to Proceed was issued on June 27, 1993. The scheduled completion date was October 28, 1994. The construction supervision contract was signed on July 20, 1993 with the A/E firm, Wilbur Smith Associates (WSA). The WSA Resident Engineer arrived in Pakistan on July 18, 1993, to take up his position at the project site. He, and the Pakistani technical and professional staff provided by a local A/E firm, supervised the construction work.

As a result of USAID/Washington mandate that the Mission rescind \$56.2 million from the Pakistan program, Mission management terminated the BRP construction contract for the convenience of the Government effective June 30, 1994. The A/E services contract was terminated for the convenience of the Government effective July 31, 1994. \$3.2 million was deobligated from the Project to contribute to the required rescission amount.

4. PROJECT COMPONENTS

A. *Original Project Components:*

1. Road Construction: The project was designed to construct a 376 Km. road from Bela to Turbat. This road would have formed the principle line of communication to Makran Division.
2. Road Maintenance: This project component was designed to upgrade the capacity of the Government of Balochistan Communication and Works (C&W) Department through technical assistance and training of the C&W staff responsible for road maintenance. The same bureaucratic organization within the C&W Department handles construction and rehabilitation of roads in addition to maintenance.

Maintenance, for which there are never sufficient funds, is effectively relegated to the back seat. A systematic approach to identify actual maintenance requirements for the provincial network is not employed; nor is any great effort devoted to correlating physical maintenance needs accurately with the funding requirements. Due to perennial funding shortages, C&W finds itself into a vicious circle as it pays less attention to the existing road network, the rate of deterioration increases and the cost of rehabilitating the system escalates tremendously. Under the BRP, the plan was to redefine the role of the C&W Department to focus on certain aspects of the comprehensive road maintenance program, primarily the development of planning documents and monitoring work to be performed by the private sector firms. In addition, methods of raising additional revenue for maintenance, such as through collection of road tolls, were to be explored.

The project also provided for the procurement of comparatively light pieces of equipment for emergency use by the C&W in its road maintenance program.

The project planned to depart from the traditional approach employed for routine road maintenance programs by introducing the participation of private sector firms.

B. Revised Project Components:

Road and Drainage Structures Construction: The Project scope was reduced to include only completion of all drainage structures in the 44 km stretch partially constructed by the original contractor under the BALAD Project and completion of construction of a 5 km mountainous section of roadway. The drainage structures to be built consisted of 6 bridges, 6 box culverts and 50 reinforced concrete pipe culverts.

5. INPUTS

SUMMARY OF USAID FUNDING
(\$ 000)

OBLIGATIONS

Line Items	Original Project	Revised Project After Pressler	Revised Project After Rescission	Expenditures (As of 9/30/94)
Technical Assistance	5,642	0	0	0
Training	238	0	0	0
Commodities	1,000	0	0	0
A/E Services	0	2,500	1,557	1,244
Construction	73,810	7,500	4,983	3,958
Evaluation/Audit	410	0	0	0
Contingency	5,000	0	0	0
TOTAL	86,100	10,000	6,540	5,202

The Technical Assistance for the project was provided by a U.S. A/E firm, Wilbur Smith Associates. Under this contract, the A/E firm reviewed the design for the 56 km of roadway prepared by a previous A/E firm contracted by USAID to prepare the design and bid documents for the planned 356 km Bela-Awaran-Turbat road. WSA also assisted in reviewing the construction proposals and provided construction supervision services. During the construction supervision phase WSA provided an American Resident Engineer, who stayed in the Engineer's Camp located at Jhal-Jhao. The Pakistani technical and professional construction supervision staff were provided by Republic Engineering Corporation, a WSA sub-contractor.

The construction services were provided by a Pakistani construction firm based at Lahore, Husnain Construction Company (HCC).

6. PROJECT ACCOMPLISHMENTS

Due to early termination, the Project was not completed as contracted. As of the termination date of June 30, 1994, the work accomplished, based upon the last payment, was 44.8%. The contractor completed the following works:

Drainage Structures:

- Completed 12 pipe culverts which had been started but not finished by the previous contractor, NASA, in addition to 25 new pipe culverts from km 55 to km 80.
- Completed 5 box-culverts left by the previous contractor and built one new box culvert.
- Completed Ara bridge (8 Spans) and the Manro bridge (3 spans). The Chagai bridge was not completed; the construction work for all the pier caps was finished but beams and diaphragms were completed for only 3 spans. Pier caps for Aoghani bridge was constructed and piles were placed for the Washop bridge. The pile load test for the Aoghani bridge was carried out and the gabion placing and the flood protection work for the Ara and Manro bridges were also completed.

Road Work:

- Graded the road bed from km 50+300 to km 55+800 (approximately 5 km in total) and placed some subgrade. Constructed all the pipe culverts in this stretch. No sub-base or base was placed in this section.

Engineer's Base Camp:

The Engineer's Base-Camp at Jhal-Jhao was rehabilitated. The Resident Engineer's additional quarters and offices at ARA were completed.

7. LESSONS LEARNED

During the project implementation a number of important lessons were learned. These are described below:

- (i) By terminating a road construction project before it is completed, the portion partially constructed has little or no value and USAID's investment is lost. The incomplete structures stand as a monument to USAID's abandonment of assistance to the area.

With the termination of the construction contract on June 30, 1994, only two bridges out of the total planned construction of six bridges were completed; the third bridge was 50% completed; the fourth bridge was partially completed; only the foundation work was barely done on the fifth and the sixth bridge.

The assigned scope of work included completion of the work left unfinished by the previous contractor, who had left behind incomplete and scattered portions of the work. By terminating the second contract, the situation was not improved. USAID spent more than \$10 million on the BRP, including the cost of work done by the previous construction contractor. There is still no visible benefit from the investment made. Had USAID completed at least four bridges, the people living in the area would have really benefitted from the project.

(ii) A construction contract terminated due to default of the contractor should not be reinstated with the same contractor, under any circumstances whatsoever.

Within three months of signing the construction contract with the previous contractor for the 110 km Bela-Awaran-Road, the Engineering Office recommended its termination, as the contractor was unable to mobilize the staff and equipment on site. The contract was eventually terminated, but it was later reinstated with the same contractor on the condition that he mobilize an expatriate project management team and complete the work within the scheduled time. Although an expatriate management team was mobilized, still the contractor could not complete even half of the project within the contract period. Had USAID contracted with a new contractor rather than one who had previously proven his inability to perform, the 110 km paved Bela-Awaran Road could have been completed and handed over to the Government of Balochistan.

(iii) Evaluation of a local construction contracting firm should be based on that firm's own experience and resources:

The local construction contractor, NASA, qualified for the construction of the 110 km Bela-Awaran-Road on the basis of an association with a well-established Greek construction contractor which agreed to provide project management and construction equipment to the local contractor. The agreement did not work out and within one month after signing the contract the Greek contractor withdrew. This was one of the main reasons for the initial failure of the construction contract.

(iv) Mobilization payments should be advanced to the Local Construction Contractor:

The contract required the contractor to complete certain items within 90 days to be eligible for mobilization payment. To fulfill this condition, the contractor had to incur expenditures from its own resources for the initial 90 day period. This created a hardship for the

contractor, as it was not only the 90 day mobilization period that the contractor had to finance, but also the additional time before receiving payment, which was another 30 to 45 days. The general practice in Pakistan, as well as other countries, is to give a mobilization advance at the time of signing the contract. It is recommended that this payment mechanism should be considered for future contracts, as construction financing at reasonable interest rates is often not available in countries such as Pakistan.

(v) The A/E Resident Engineer (RE) who will be responsible for the construction supervision should participate in the evaluation of construction proposals and provide input on the proposals for USAID's use in the process of selecting the construction contractor.

The representative of the A/E firm who participated in the evaluation of the BRP construction proposals was not the RE designated for the construction supervision; many site problems encountered on the BRP could have been alleviated had the RE been involved in the evaluation phase.

(vi) The Contract Requirement that the Critical Path Method CPM be used for scheduling the Project should be eliminated and the use of Bar-Chart Scheduling should be permitted.

The contract required that the contractor submit a CPM schedule for the project; this was one of the conditions for the mobilization payment to the contractor. The contractor did submit the CPM schedule to fulfill the contractual requirement, but it was apparent from the beginning of the project that the contractor never understood the CPM. Although the CPM is a customary method of monitoring projects in the U.S., it seemed to only confuse the local contractors in Pakistan.

If the contractor is knowledgeable about CPM scheduling, he will use it; and when properly used CPM is a very beneficial tool. Most local contractors are unfamiliar with CPM scheduling. The Contractor did seem to have some understanding of bar-chart scheduling. Had we initially modified the contract documents to replace the requirement for a CPM schedule with the requirement that a bar-chart schedule be submitted, the contractor could have planned his work and focussed his attention on the construction problems more effectively. It is therefore recommended that in future USAID construction contracts the contractual requirement for project scheduling should be a bar chart, if the contractor does not have full knowledge of CPM scheduling.

(vii) If the A/E Resident Engineer supervising the construction is an expatriate then understanding of English should be a requirement for all of the construction contractor's personnel.

We observed that many times the planned construction activities were delayed because of a lack of communication between the A/E RE and the construction contractor's site staff.

It would be quite helpful if an understanding of English were made a contractual requirement for all of the construction contractor's personnel, at least down to the foreman level.

(viii) The materials testing laboratory on site should be under the control of the A/E Resident Engineer.

The general rule on construction contracts is that the materials testing laboratory is managed by the construction contractor and monitored by the A/E RE's staff. On the BRP, USAID authorized the A/E RE to control the materials testing laboratory because our experience has shown that the quality of construction is better assured if the material testing laboratory is managed by the A/E RE. This worked very well on this project and we recommend that on future USAID construction contracts, the laboratory should remain under the A/E's control.

8. SUSTAINABILITY

Sustainability for an engineering project means that the host country has the financial and the technical capability to maintain the constructed infrastructure throughout its designed life. This depends upon both a completed infrastructure project and a sustainable maintenance program. Unfortunately, the BRP ended up with neither. As described above, the roadways which the BRP was intended to build were never completed. It is doubtful whether adequate funding will be found to complete this work in the near future.

The BRP Project design also envisioned upgrading the road maintenance capacity of the C&W Department by providing technical assistance and training to the C&W staff responsible for road maintenance. As the BRP could not be implemented as planned, the C&W financial and technical capabilities for maintaining the constructed infrastructure could not be developed. In the future, when USAID plans to fund road construction projects, top priority should be given to the development of a sustainable road maintenance program for the implementing agency.