

- PD-ABK-809 -



U.S. AGENCY  
FOR INTERNATIONAL DEVELOPMENT  
**MISSION FOR PAKISTAN AND AFGHANISTAN**  
ISLAMABAD

CONTRACT No. 391 - 0510 - C - 00 - 3542 - 00

BALUCHISTAN ROAD PROJECT

CONSTRUCTION PROGRESS REPORT

**FINAL REPORT**

WILBUR SMITH ASSOCIATES INC.  
IN ASSOCIATION WITH  
REPUBLIC ENGINEERING CORPORATION (Pvt) LTD.



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FOR INTERNATIONAL DEVELOPMENT  
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**30 JUNE, 1994**

**WILBUR SMITH ASSOCIATES INC.  
IN ASSOCIATION WITH  
REPUBLIC ENGINEERING CORPORATION (Pvt) LTD.**

# Wilbur Smith Associates Inc.

In Association with

## Republic Engineering Corporation (Pvt.) Ltd.

42-C, Block 6, P.E.C.H.S., Karachi - Pakistan Telephone : 021 - 434675 Facsimile : 92 - 21 - 4550221



**DATED: JULY 01, 1994.**

**TO PERVAIZ GANI - CONTR, PO.**

**CONTRACTOR : WILBUR SMITH ASSOCIATES/  
REPUBLIC ENGINEERING CORPORATION (PVT.) LTD.**

**PROJECT : BALOCHISTAN ROADS PROJECT**

**PROJECT NO : 391-0510-C-00-3542-00**

**SUBJECT : CONSTRUCTION PROGRESS REPORT JUNE, 1994.  
FINAL PROJECT PROGRESS REPORT**

Dear Sir,

We respectfully submit 5 copies of the CONSTRUCTION PROGRESS REPORT - JUNE, 1994 ( FINAL PROJECT PROGRESS REPORT ) as required under Sect. 11 - Reports (11) Page 12, of our Contract No. 391-0510-C-00-3542-00; other Copies have been distributed as follows.

HASAN MASOOD	1 - Copies
WSA COLUMBIA	2 - Copies
REC LAHORE	2 - Copies
JHAL JHAO SITE	1 - Copies
KARACHI OFFICE	1 - Copies
TOTAL	12 Copies

We would appreciate any comment or suggestion from your office.

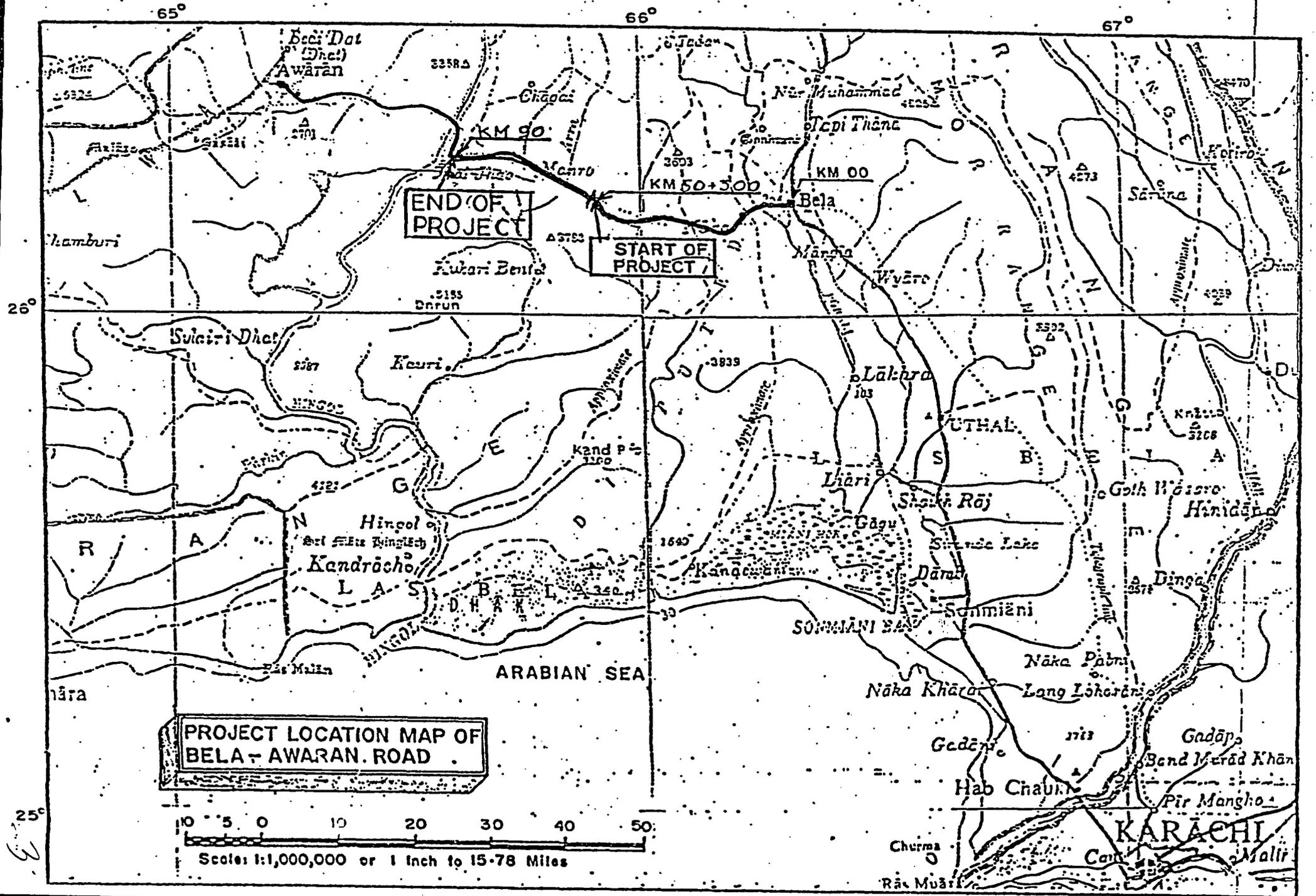
Respectfully submitted

**ROGER W. SHERIDAN  
RE/COR**

1st Floor, PAAF Building, 7-D, Kashmir Egerton Road, Lahore-54000 Pakistan  
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Nations Bank Tower, P.O. Box 92, 1301 Gervais St., Columbia, S.C. 29202, U.S.A.  
Telephone : 803 - 738 0580 Telex : 573439 WILSMITH CLB Facsimile : 803 - 251 2922, 738 3934, 251 2064

-2-



65°

66°

67°

26°

25°

**END OF PROJECT**

**START OF PROJECT**

**PROJECT LOCATION MAP OF BELA - AWARAN. ROAD**

0 5 10 20 30 40 50

Scale: 1:1,000,000 or 1 Inch to 15.78 Miles

Beei' Dat (Dhet) Awaran

3358.5

Chagaci

KM 90

3503

KM 50+300

KM 00

Bela

45753

Kurari Bentu

5155 Darrun

Margha

Wyero

4273

Sa'ira

Sulairi Dhet

3387

Kauri

3839

Lakhra

103

UTHAL

4223

Hingol

Bel Sita Binglech

Kandrocho

Kand P

3300

Liari

Gagu

Sakhi Raj

Sindia Lake

Goth Wazero

Haridan

1645

Kand

Darah

Sonmiāni

SOMMIANI BAN

Dinga

3578

ARABIAN SEA

Naka Khara

Naka Dabru

Lang Lohoran

Gedens

713

Gadaps

Bend Merad Khan

Hab Chaur

Pir Mangho

KARACHI

Churma

Can

Malir

Ra' Muari

BELA - JHAL JHAO ROAD PROJECT  
BALOCHISTAN ROAD PROJECT  
USAID CONTRACT NO. 391-0510-C-00-3542-00  
MONTHLY PROGRESS REPORT  
FINAL PROJECT REPORT

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## INTRODUCTION

1.1 BACKGROUND

The Balochistan Road Project provides for the completion of Construction of bridges and other drainage structures along 43 Km of road located in the Kalat Division. The road links the towns of BELA and JHAL JHAO. USAID will finance the construction costs of the bridges and other drainage structures.

1.2 PURPOSE

The purpose of this contract is to provide the construction service for the BELA - JHAL JHAO Bridges and other drainage structures, all to be constructed concurrently.

1.3 PROJECT DESCRIPTION

The Road:

Construction of excavation, embankment and sub-base for approximately 4.8 Kms which will also have Base and Double Bituminous Surface Treatment (DBST).

The Bridges and other Drainage Structures: Construction of 6 reinforced concrete bridges, 6 reinforced concrete box culverts, installation of approximately 37 New RC pipe culverts and end walls, and completion of existing, partially built, RC pipe culverts.

1.4 CONSTRUCTION ACTIVITIES (HIGHLIGHTS)

<u>NO.</u>	<u>DESCRIPTION</u>	<u>VALUE</u>	<u>RUPEES</u>
B1	PACKAGE 1 : BASIC WORKS 55 + 100 - 93 + 000		62,955,400
B1-1	88 + 195 - 88 + 395 KILKAURI R. BR OPTION 1 - 1		7,075,700
B1-2	59 + 030 TO 60 + 185 WASHOP R. BR. OPTION 1 - 2		8,574,900
B1-3	55 + 100 - 55 + 255 BOX CULVERT (55+175) OPTION 1 - 3		3,100,800

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<u>NO.</u>	<u>DESCRIPTION</u>	<u>VALUE</u>
B1-4	RIP RAP (ADDITIONAL) OPTION 1 - 4	3,040,000
B1-5	RUBBLE (GROUTED AND UNGR) OPTION 1 - 5	11,570,000
B1-6	GABIONS OPTION 1 - 6	6,625,500
		-----
		102,942,300
		=====

<u>NO.</u>	<u>DESCRIPTION</u>	<u>VALUE</u>
B2-	50 + 300 TO 55 + 100 PACKAGE 2: BASIC WORKS	19,923,400
B2-1	50 + 300 TO 55 + 100 SUB-BASE OPTION 2 - 1	11,760,000
B2-2	AGGREGATE BASE COURSE OPTION 2 - 2	11,652,000
B2-3	DBST (50+100) OPTION 2 - 3	5,268,000
		-----
		48,603,400
		=====
	GRAND TOTAL	151,545,700
		=====

**1-5 GENERAL INFORMATION ABOUT THE PROJECT :**

- |  |   |
|--|---|
| 1-5-1 Name of the Engineer   | Wilbur Smith Associates, INC.,<br>in Association with Republic<br>Engineering Corporation (Pvt)<br>Ltd. |
| 1-5-2 Name of the Contractor   | Husnain Construction Company<br>(Pvt.) Ltd.   |
| 1-5-3 Date of Notice to proceed<br>(NTP)   | June 28, 1993   |
| 1-5-4 Date of commencement of<br>Mobilization Period   | June 28, 1993   |
| 1-5-5 Mobilization to be<br>completed within 90 days   | This has been revised to 30<br>Nov. 1993: date has been met.  |
| 1-5-6 Date of commencement of<br>Construction Scheduled  | Oct. 16, 1993<br>(Embankment at ARA bridge)   |
| 1-5-7 Completion of the Project  | Oct. 28, 1994 (See 2-2 for<br>NOTIFICATIONS OF TERMINATION)   |
| 1-5-8 Initial Value of the<br>Contract   | ,<br>Rs. 151,545,700  |
| 1-5-9 NOTICE OF TERMINATION FOR THE CONVENIENCE OF<br>THE GOVERNMENT - TO HUSNAIN CONSTRUCTION COMPANY (PVT.) LTD. |   |

19 MAY, 1994  
TO BE EFFECTIVE AS OF 30 JUNE 94  
(APPENDIX "G")

- 1-5-10 NOTICE OF TERMINATION FOR THE CONVENIENCE OF THE  
GOVERNMENT - TO WILBUR SMITH ASSOCIATES INC.

19 MAY, 1994  
TO BE EFFECTIVE AS OF 31 JULY 94  
( APPENDIX " H " )

## 2.0 PROJECT ACCOMPLISHMENTS

### 2.1 GENERAL OVERVIEW - PROBLEMS

The present Project was premised upon the present Contractor, Husnain Construction Co. (Pvt) Ltd (HCC) completing those works left uncompleted by the previously terminated (terminated 1990) Contractor on the Road Alignment between Kilometers 50+300 to 93 + 000 on the Bela - Awaran Road.

It should be kept in mind that this area of Balochistan Province is an extremely Arid and Desert area. Temperatures have been recorded during June 94 as high as 52 C (125.6 F).

Consistently high temperatures greatly hamper progress, especially placement of Concrete which by contract cannot be placed at Temperature over 32 C. As this is in the Specifications and the PAKISTAN NATIONAL HIGHWAY AUTHORITY Specification, it should not have been a surprise to HCC, and as a prudent Contractor, we expected him to avail himself of methods for chilling the Concrete, water, Aggregate, etc. so as to comply with specification requirements.

Although the concrete placement was a real problem for the Contractor, it actually was a fall-out from other more Basic Problems.

The Contractor was issued a Notice to Proceed on 28 June 1993. One of the Contractual requirements (ITEM 604.1 b ELECTRIC FACILITIES) stated that " within 10 days of the Notice to Proceed provide temporary electricity supply to the Engineer's office and also to accommodation sufficient for two Senior members and two Junior Members of the Engineer's Staff. "

On 17 July 93, the RE upon arrival in Pakistan had his first meeting with HCC and asked if the temporary Electricity was hooked up; the reply was No.

The RE advised HCC, in this their first meeting, that they, HCC were in Default of Contract-the ten days would have been 8 July 93.

HCC was apparently not aware of this requirement and after discussing the Contractual requirements, especially pertaining to MOBILIZATION, HCC was advised by the RE that Contractual requirements were to be complied with as specified.

Proper Equipment mobilization was a Critical item so as to ful-fill the work requirements.

8

Equipment was moved onto the Project in a slow and erratic manner, which then dictated the rate at which work could be performed. Much equipment, which was promised, never arrived: this included additional Dump trucks, Graders and Dozers.

Even in June of 94, just prior to the Termination Date (after 12 months), HCC was still showing an unawareness of Contractual requirements. This lack of awareness has influenced the Progress of the Project from Day One.

On Government Projects in Pakistan there does not seem to be the same requirement for compliance as required on USAID Projects and as this was the first USAID Project for HCC, this must be taken into consideration.

In our first Project Meetings, the RE pointed out to HCC that this Project was basically three Sub - Projects:

1. Completion of all Pipe Culverts left uncompleted by the Previous Contractor and the construction of additional Pipe Culverts.
2. The Completion of existing partially completed Bridges and Box culverts as well as construction of new Bridges and Box Culverts. These would require form work back-fill and Concrete Placement and as noted by the RE, could become problem Areas unless properly equipped.
3. The Construction of Road Embankment to include Sub-Grade, Sub-Base, Base and DBST (Double Bitumen Surface Treatment paving between Kms 50+300 and 55+100, as well as back-filling at Box Culverts and Construction of Pipe Culverts in this Section.

In these first meetings with the Contractor, it was stressed that he must have the proper equipment on the Project and he must have proper Management in place.

It was soon very evident that the Management team could not properly plan, schedule and build the Project in the Contractual Time.

The Weekly Report of 5 August 93 indicates no Contractual work done and the Project 2 % behind the approved submitted schedule.

BY Week ending 06 Jan 94, the Total elapsed time was 39.5%, 12% of the Contractual work was done and the Project was 27% behind schedule.

Week ending 10 February 94 show Total elapsed time was 46.7%, 18% of the Contractual work was done and based upon a new work schedule, the Project was now 4% behind schedule.

By 12 May 94, one week before Termination Notice, the Total elapsed Time was 65.3%, 28% of the Contractual work was done and the Project was 14% behind the submitted schedule.

At this time HCC was operating on a CPM, which was not approved due to glaring faults and erroneous assumptions and on two Bar Charts which indicated that the Project was behind Schedule at the time the Bar Charts were submitted.

All of the above backed up the RE's early insistence that Management must be improved, proper equipment must be on the Site and available for work, and the work must be properly scheduled.

These are the Contractors weak points and the results manifest this.

Some additional Supervision was assigned to the Project, however, no authority was given to these supervisors, so no improvement became evident.

Equipment assigned to the Project was old, and very unreliable. Instead of setting up a Central Concrete Batch Plant, using truck mixers and Concrete pumps as initially indicated, the Contractor used 1 Bag and 2 Bag concrete Mixers, with Buckets and cranes. This meant longer placement times, which required the Contractor to use a retarder so as to complete a pour before the first poured area setup.

The retarder also acted as a plasticizer, thereby aiding in the placement of the concrete, as we were using a specified 4" inch Slump. Fortunately, our cylinder tests have all shown good results; concrete tests being above strength requirements. However, the long pouring times created unnecessary problems which the contractor had difficulties in dealing with.

The Equipment which the Contractor brought to the Project was all in very poor shape.

Most of it has been broken down for long periods of time without replacement. To indicate the poor planning by the Contractor, he only had one Grader on the Project. It was broken down for long periods and when this happened, Roadwork and Back filling did not get done.

In the "Caterpillar Performance Handbook," Edition 18 - October, 1987 in Section "FORMER MODELS", page 537 to 560, all formerly manufactured models of Caterpillar equipment are listed as to characteristics of Production, as well as the earliest and latest manufacturing dates of these Models.

The Contractors Equipment are:

The D5B TRACK-DOZER was manufactured somewhere between 1977 and 1982. This article of equipment sat in the Repair yard at ARA for approximately 6 months, unable to operate, waiting for tracks.

The D6C TRACK-DOZER was manufactured somewhere between 1963 and 1976.

The D8K TRACK-DOZER was manufactured somewhere between 1974 and 1982.

The 12F Grader was manufactured somewhere between 1965 and 1973.

The 950B WHEEL LOADER was manufactured between 1981 and 1987.

The I T-18 was manufactured between 1984 and 1986.

The Contractor brought two tracked Cranes on the Project, an RB-22 and a Smith, both very old and in poor Condition.

On 29 January, 94, while placing Concrete at ARA Bridge, the RB-22 dropped its Boom and Bucket of Concrete. Luckily no damage was done to personnel or the Bridge.

Upon inspection it was apparent that the Boom on the RB-22 had been damaged.

On inspection, it was evident that the Smith Boom was also in bad shape.

The RE directed the Contractor that the Two track cranes were not to be used on the Project as they were unsafe and were to be replaced.

They were replaced by two mobile tired Hydraulic Cranes.

The age of the equipment along with the poor maintenance all contributed to poor performance by the Contractor.

## 2.2 SECURITY

At the time of initiation of the Project, the RE was advised that:

1. He must have a pass from (GOB) in order to travel to and from the Site and work on the Site.

Although, the Contract for the Construction was for a period of 488 days, to be completed on 28 October 1994, obtaining of passes were a continuing problem.

Although the RE was in Karachi and ready to travel to the Site at JHAL JHAO ON 17 July 93, the pass for his travel was not issued until 4 Aug. 93.

This pass included Mr. Jack Leonard, the WSA Project Manager (based in the USA) who had been in Pakistan since 14 July 93 prepared to go to the Site.

Due to Contractual requirements, he returned to the USA in late July, and was unable to visit the site due to the late issuing of the pass.

2. The issuing of the pass for travel to Balochistan and the Site was a continuing problem, in that the initial pass was for 1 month (Later passes were issued for 2 Months), however renewals were always late and there was a Hiatus due to this.

In November 93, USAID applied for a blanket Pass to cover the Project time, but this was turned down by the Government of Balochistan.

3. During the Elections, the RE was directed to Leave the Site and go to Karachi on 28 Sep. 93 returning to the Site on 19 October 93. This was due to security concerns during the Election Period.

RE Pakistan Staff also was required to leave the Site during much of this time.

An Army unit moved into Jhal Jhao and the Major Commanding moved into the Engineer's Base Camp.

All of the above indicates that during the entire Project, Security concerns have been dominant.

4. This became very evident when on Thursday 9 June 94, after arriving in Karachi, the RE was advised that the Local Rumor at Site was that the RE was to be taken Hostage, so as to get the Project finished.

The USAID office in Islamabad was notified and the RE was advised that he was not to return to the Project.

Additionally, during the next two weeks, the RE's office Manager (Pakistan) was advised that he was No. 2 on the list. The DC - AWARAN advised him that he was to travel only when accompanied by Levies.

5. On 26 and 27 June 94, meetings were held in Quetta, (See Meetings Appendix J), attended by USAID officials, GOB Minister and Secretaries, and the WSA/REC RE.

It was apparent at this meeting that, although the GOB officials were stating that Security was no problem, Security was a problem!

The RE and John Martin, Deputy Director of Mission, agreed that since the Contractor was completing his work under the Termination Order on 30 June, that arrangements would be made with the GOB Officials to sign over the Inventory at JHAL JHAO and ARA Camps ( NOT THE VEHICLES ) to GOB on Wed 29 June 94 and all RE staff personnel would leave the Site for Karachi on 30 June 94.

This was done and the move was made with out incidents - The movement was accomplished with Levies in each Vehicle from JHAL JHAO to HUB.

2-3 ACCOMPLISHMENTS

The Project was not completed as originally Contracted.

If the Project had gone to the Original Contract Completion Date of 28 October 94, the Contractor, at the rate of Progress he was doing would have been unable to Complete and would have been under a Penalty of Rs. 65,000 (2500 US) per day.

The contractor did do the following:

- A. Completed the Pipe Culverts which had been started but not finished by the Previous Contractor, as well as completed several new Pipe Culverts from km 55 to km 80.
- B. Completed the Box Culverts left by the Previous Contractor and built one additional Box Culvert (less Wing Walls).
- C. Completed ARA BRIDGE (8 Spans) and MANRO BRIDGE (3 Spans). He did not complete Chiagai Bridge (finished all the PIER CAPS but Beams & Diaphragms for 3 Spans only).

Completed Pier Caps for AOGHONI BRIDGE.

Placed piles for Washop Bridge and 1 Pile (Test Pile) for Kilkoury Bridge.

- D. Graded road bed from Km 50+300 to km 55+800 and placed some sub-grade.

Constructed all pipe Culverts for this stretch, using his manufactured Sections of Pipe.

No Base, Sub - Base or DBST (Double Bitumen Surface Treatment) was placed.

- E. The Engineer's Base Camp at JHAL JHAO was rehabilitated and painted.
- F. The Resident Engineer's additional Quarters/Office at ARA was completed and used.
- G. Completed the Gabion placing and protection work at ARA bridge and at MANRO Bridge.

3-0 PAY QUANTITIES

See attached APPENDIX " J " - BOQ SPREAD SHEET.

4 - MEETING AND SITE VISITS4 - 1 MEETING

4-1-1 Weekly Meetings were held with Contractor. These meetings are primarily to review Contractor's work schedule and prepare for work over the next two weeks.

7 JUNE - SITE MEETING USAID AT ARA CAMP W/RE STAFF.  
MINUTED ( SEE MINUTES FOR DETAILS )

ATTENDEES

USAID PERVAIZ GANI - COTR, PO  
SHAHID PERVAIZ - CONTRACTS OFFICE  
ASIF J - RISHI - CHIEF, COMMODITIES DIV.  
M. SALEEM - PROJECT DEVELOPMENT MONITORING.

WSA/REC ROGER W. SHERIDAN - RE, COR  
SHEIKH ABDUL RAFAY - ARE  
M. IRFAN ULLAH KHAN - PROJ. COORD.

7 JUNE - SITE MEETING USAID/HCC/WSA/REC AT ARA CAMP.  
MINUTED (SEE MINUTES FOR DETAILS).

ATTENDEES

USAID PERVAIZ GANI - COTR, PO  
SHAHID PERVAIZ - CONTRACTS OFFICE  
ASIF J - RISHI - CHIEF, COMMODITIES DIV.  
M. SALEEM - PROJECT DEVELOPMENT MONITORING.

WSA/REC ROGER W. SHERIDAN - RE, COR  
SHEIKH ABDUL RAFAY - ARE  
M. IRFAN ULLAH KHAN - PROJ. COORD.

HCCL : COL. (RET) BHATTI - PROJ. COORD.  
HABIB - UR - REHMAN - PROJECT MANAGER  
M.A. JALIL - PROJ. ENGR.  
RIAZ - UL - HASSAN - MATERIALS ENGR.  
16 JUNE TERMINATION REVIEW CONFERENCE FOR HUSNAIN  
CONSTRUCTION COMPANY (PVT.) LTD. LAHORE  
(USAID, WSA/REC)

17-22 JUNE MIRAN JAN - DC, AWARAN. (VISITED SITE)

23 JUNE TERMINATION REVIEW CONFERENCE FOR WILBUR SMITH  
ASSOCIATES, ISLAMABAD (USAID, WSA/REC).

27 JUNE

MEETING WITH GOB OFFICIALS CONCERNING BRP  
SECURITY CONCERNS - QUETTA (THIS WAS A FOLLOW  
UP MEETING WITH GOB OFFICIALS HELD ON 26 JUNE  
WITH JOHN MARTIN - ACT. DEP. CHIEF OF MISSION  
HARRY PROCTOR - CH. ENGRG.  
PERVAIZ GANI - COTR, PO  
R. W. SHERIDAN - RE, COR

(SEE MINUTES APPENDIX " I " FOR DETAILS)

ATTENDEES

MAJJED BAZENJO - MINISTER (LIVESTOCK) - FROM  
JHAL JHAO AREA.  
SOHAIL HAMAYOON - ADDITIONAL SECATRY (HOME)  
ATTA JAFFAR - ADDIT. CHIEF SECTRY  
( DEVELOPMENT)  
M. A. BALOCH - SECTRY C & W  
MIRAN JAN - DC, AWARAN  
PIR BUX BALOCH - SUPDT. ENGR (SE) MAINT  
(C & W) JAVID RIZWI - SE (P & D)  
USAID - PERVAIZ GANI - COTR, PO  
WSA - R. W. SHERIDAN - RE, COR.

5- MATERIAL STATUS AND TEST RESULTS5-1 Status of stored Materials at Site - Balance on June. 30, 1994

<u>ITEM NO.</u>	<u>Item</u>	<u>Balance</u>
A.	REBAR	= 45 TONS
B.	CEMENT	= ZERO
C.	WIRE (FOR GABIONS WIRE MESH)	= 7 TONS
D.	CRUSHED AGGREGATE ON SITE	= 500 CUBIC METERS
E.	PRE-CAST PIPES AT SITE (LENGTH OF EACH PIPE = 1.12 METERS)	
	Ø 0.91 METERS = 595 SECTIONS	= 666.4 ML
	Ø 1.37 METERS = 128 SECTIONS	= 144.64 ML
	Ø 1.68 METERS = 39 SECTIONS	= 44.46 ML
	( PAID FOR IN BILL NO: 6 - FINAL BILLING )	

5-2 TEST RESULTS - BORROW PIT

See Appendix - D

5-2-1 FIELD DENSITY TESTS

See Appendix - A

5-2-2 AGGREGATE TESTS - IN PROCESS

See Appendix - B

5-2-3 CONCRETE COMPRESSIVE STRENGTH TESTS AND LABORATORY TEST RESULTS

See Appendix - C

7. FINANCIAL STATUS7-1 PAYMENT TO THE CONTRACTOR

<u>ESTIMATE NOS.</u>	<u>AMOUNT IN Rs</u>	<u>STATUS</u>
BILL NO. 1 (REIMB OF COST) (OF GUARANTEE)	Rs. 6,984,000	RECEIVED BY HCC
BILL NO. 2 LINE ITEMS (BOQ) (MOBILIZATION)	Rs. 4,832,685.52 12,123,656.00	RECEIVED BY HCC
<u>NOTE</u> CONTRACTUAL CHANGE:	Rs. 12,123,656.00	PAID FOR MOBILIZATION (08% OF TOTAL) RECEIVED BY HCC
BILL NO. 3 LINE ITEMS (BOQ)	Rs. 4,028,086.62	RECEIVED BY HCC
BILL NO. 4 LINE ITEMS (BOQ)	Rs. 9,159,259.00	RECEIVED BY USAID
BILL NO. 5 LINE ITEMS (BOQ)	Rs. 10,093,712.30	RECEIVED BY USAID
BILL NO. 5 LINE ITEMS (BOQ)	Rs. 14,419,589.00	RECEIVED BY USAID
BILL NO. 6 LINE ITEMS (BOQ) FINAL BILLING	Rs. 15,972,939.00	RECEIVED BY USAID

8. LESSONS LEARNED8.1 - SCHEDULING

It was apparent at the beginning of the Project that HCC did not understand, not only the Contractually required CPM Schedule, but also a simple Bar Chart Schedule.

On 23 Nov. 93, 5 months after Notice to Proceed, HCC finally submitted a BAR GRAPH for the CPM, however they did not have a program delineated for Placing Concrete at ARA Bridge, and were advised that approvals could not be made until a complete Program was submitted.

Several so called "CPM Schedules" were then submitted, the last one on 7 April 94.

The RE advised HCC by letter WSA/REC JJ / 94-196 Dated 28 Apr. 94 as to the incompleteness and flaws that were apparent in this "Schedule."

The following paragraphs concluded the letter:

" A CPM, when properly done and when properly monitored is a tool which can greatly assist the Management of a Project. As part of the Basic CPM Schedule, there should be a Cash Flow Curve, showing Accumulated Cash Flow Vs Time. This is a Management Tool for the Project to use to monitor Progress.

" Also a Manpower Curve and Equipment Curve are a part of a Complete CPM Package.

" The RE's Comments are that the Revised CPM which has been submitted is flawed. The Critical path has late activities and is therefore erroneous, even before the Submittal was made.

" It appears that all of the work has been compressed into a shorter working time, which is just not feasible, in comparing to our experience to date. This is done with no evidence as to what is required to expedite this work and Activities.

" Only a large influx of additional Equipment and Field Management could make any changes in your schedule. Although promised many times and as late as 12 April, in Lahore, it has not happened as yet.

" This Revised CPM is not acceptable as a working Project Schedule.

The Contractor, never, during the course of this Contract submitted a workable, feasible schedule - be it CPM or BAR GRAPH.

Because of this he did not properly make use of the limited equipment which he made available for the Project.

And also, because of not properly Scheduling, the Contractor had no way to forecast what equipment he would need to properly complete the Projects in the Contractual Time frame.

It has been very apparent that the Contractor did not understand either the requirement for CPM Scheduling or how the CPM Scheduling functioned.

The contractor did seem to have some understanding of BAR CHART Scheduling.

Although CPM Scheduling is a customary method of monitoring Projects in the U.S., it seemed to only confuse this contractor.

The RE's recommendation is that a Contractual requirement should be BAR GRAPH Scheduling - if the Contractor is knowledgeable of CPM Scheduling, he will use it, as properly used, it is a very beneficial tool.

## 8.2 - PLANNING

The Contractor, having no workable Schedule to plan from, never properly equipped the Site.

Documented in Minutes of Meetings, Letters to the Contractor, and weekly and Monthly reports, the Contractor promised that he would bring additional Equipment to the Site to expedite the work, however this just did not happen. In any earth moving work, a Grader can be a very profitable tool. He had only one grader on the Project, and it was broken down several times, causing earthwork to be curtailed.

One day, while the Dozers were broken down, HCC used the Grader as a Dozer to move earthwork in a large Cut.

There was no apparent understanding of the economics of equipment use, what equipment was needed to complete certain phases of the work, or proper use of equipment which he did have on the Project.

## 8.3 - PROJECT MANAGEMENT

On 5 Nov. 83, The RE met with the HCC CEO and PM and advised them that in order to complete this Project within the Contractual time frame, they must do at least two things:

1. Properly equip the Project.
2. Remove the PM from Purchasing Activities, give him a Purchasing Assistant, and keep the PM at the Site so as to properly administer the Project.

The CEO stated that within a week, 5 dump Trucks would be at the site and the PM would be on site, with a Purchasing Assistant in Karachi. This did not happen!

During the Course of the Project, the PM was absent for days at a time (duly noted in the Weekly and Monthly reports) without proper delegation of authority, so that much of the time work would be going on with no apparent guidance and no Co-ordination.

Also because of the absence of the Project Manager, established working hours were unknown.

Work might start at 0900 hrs instead of reasonable 0700 or 0730. Requests were made for inspections - when the Inspectors arrived at the requested time, in many instances the work was not ready for inspection and might not be ready for as much as 4 to 6 hours later. This caused problems with assigning RE Inspectors, Laboratory Technicians and Surveyors, as, many times, this caused excessive Overtime.

The Contractor was advised by the RE that if he started work at 0730, this would give him 1 1/2 hours per day more, which in one week (6 days) would be equivalent to an additional one days work per week.

From the above, in the future on Contracts using Specifications such as these, it would be well to ascertain beforehand the extent of familiarity that the Contractor has with them, his ability to understand them, and his capability for compliance.

Although the Government of Pakistan National Highway authority uses the same specifications, it is apparent that the NHA does not require the strict Compliance with them as is required by a USAID Contract.

As this was this Contractor's first experience and exposure to Strict Compliance, it was a rude shock to him, and created problems for him which he could not and did not anticipate.

#### SYNOPSIS

1. On the Termination date of 30 June 94, the Time elapsed was 75.4 % of the Contract time.

Work accomplished based upon the Final Payment was 44.8% of the total Contractual Requirement.

It is our considered opinion that this is a direct result of the ability of the Project Manager, and his presence on the Site, and the proper assignment of equipment and personnel and their proper assignment and use.

2. It is recommended that on future Projects where a U.S. Ex-Patriot is the RE, the understanding of English should be a requirement for all Contractor personnel, at least down through the foreman level.

If this is not required, there will be no understanding of the specifications by the work crews and clarifications in the field become impossible.

3. The Project Manager (PM) for the Local Contractor should be a degreed Engineer.

Although this is not a requirement in the US, it is because of a different set of circumstances.

In the U.S., exposure to Construction Management and planning, etc. is available to all on the Project - Foremen can work their way up to be Project Managers.

In Pakistan, as well as many other Countries, there is a very strong line drawn between Degreed Engineers and Construction personnel.

Because of this, if the Engineer is not degreed, he is not allowed to have the exposure necessary to acquire needed experience, and so is not capable to perform as a P.M.

4. In this contract, 10 % Mobilization payment was allowed after 90 Days.

During this 90 days, certain things were contractually required to be completed.

This required the Contractor to obtain large financing to cover his Mobilization up to the USAID Mobilization payment.

This creates a hardship on the Contractor, as it is not only the 90 days mobilization period that the Contractor must finance, but also the additional time before receiving payment which might be another 30 to 45 days.

Practice in Pakistan, as well as other countries, is to give a Mobilization advance at time of signing the Contract.

It is recommended that this be a consideration on future contracts, as financing (and controlled Interest Rates for financing) are not as available outside the US as they are in the U.S.

5. A Consideration that should be made is that the RE (or A/E as may be ) should be on Site and involved in the Review and Awarding of the Construction Contract; this could alleviate future problems that might arise, if he is not involved in the award process.

6. In this Contract, the Materials Testing Laboratory was on site and under the direction of the RE.

This worked very well and is recommended as a requirement on future Contracts.

7. The Electrical Generators used at the Engineer's Base Camp were owned and furnished during the Contract by the Contractor.

They were not to be left at the Base Camp when the Contractor left and the Camp was turned over to the GOB.

As the local Governments are not wealthy and usually strapped for funds, the usage of the facility, without Generators, will be very limited.

In the future it is recommended that any facility turned over to a local Government should be as complete as possible, including generators if possible.

8. The Engineer's Base Camp at JHAL JHAO was complete and livable, although not much consideration had been given to the Junior staff quarters.

These were small rooms, housing 2 OR 3 People with crowded Toilet/shower facilities.

Projects in very desolate, primitive Areas need better space for personnel - as this is the only place personnel have for relaxation, after long working days of 12-14 hours, 6 days a week.

9. Some latitude should be given to the RE concerning approval at site of Cost Items, within Limits, without prior approval of Co.

This Project was isolated, no telephones, 6 hours by road from Karachi, and limited Radio Communications.

There must be a trust by the Contracting Officer and the RE (A/E) that decisions made by the RE are logical and necessary, within reasonable cost limits.

On this Project, there has been an excellent relationship, however, this could be a serious problem, hindering the progress of a project, due to the required Communications time.

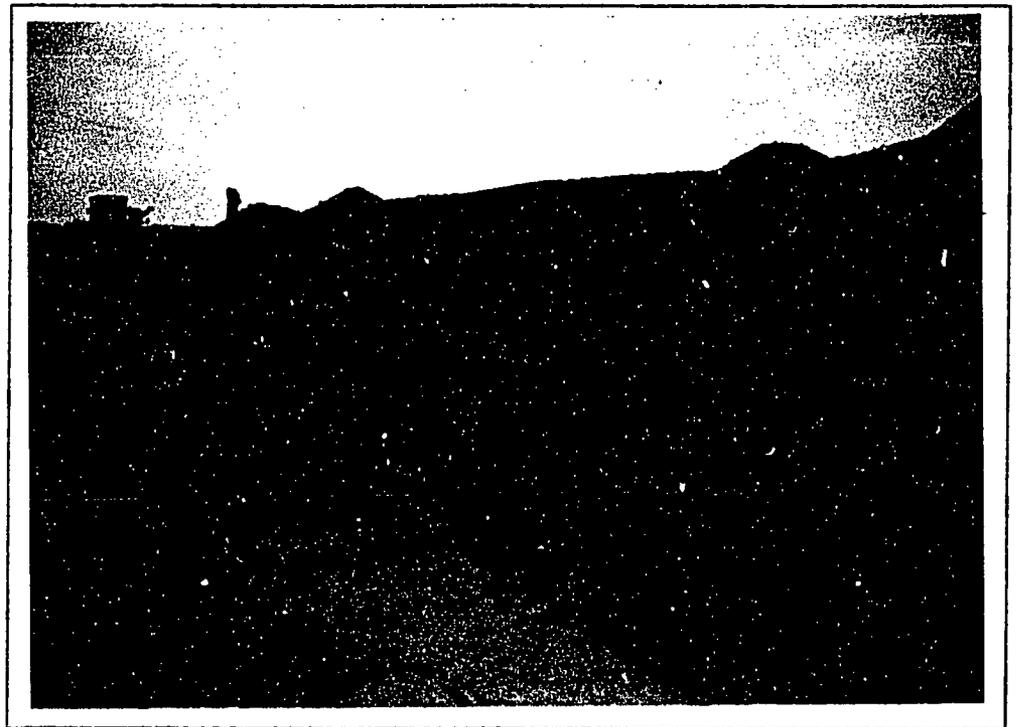
10. It should also be noted that the GABIONS (which were an added Item to the Construction Contract) performed well during the Monsoon Floods of 30 June - 3 July 94.

The GABIONS Constructed at Manro and ARA Bridges, performed their task and prevented erosion from occurring, thereby preventing damage to the bridges.

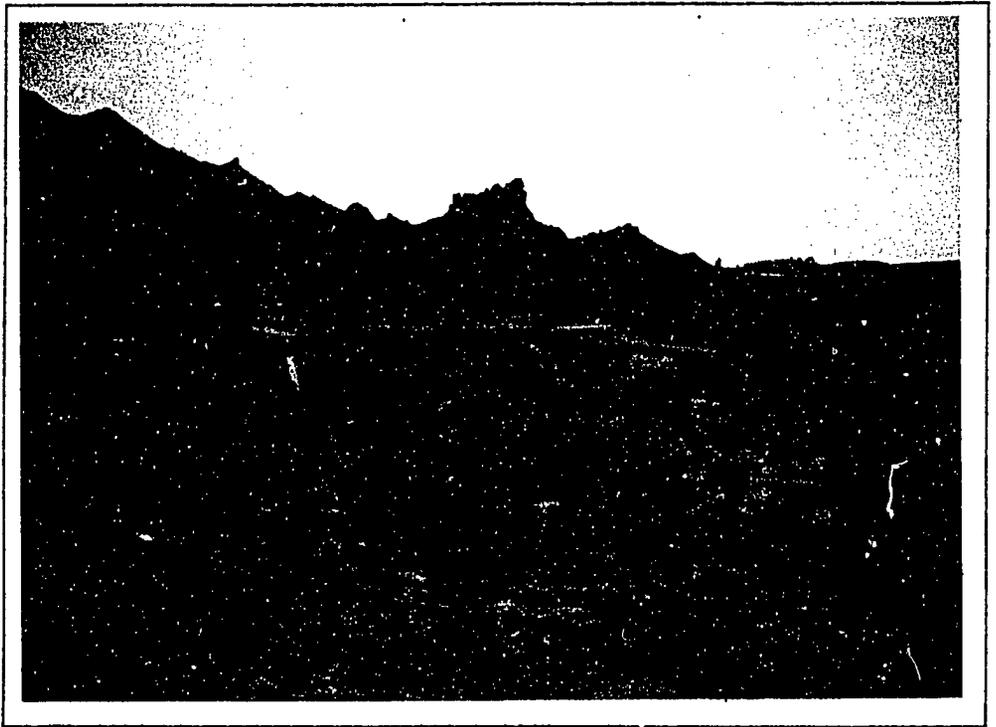
# PHOTOGRAPHS



BOX CULVERT FILL - KM 55 + 165 (1)



BOX CULVERT - KM 55 + 165 (2)



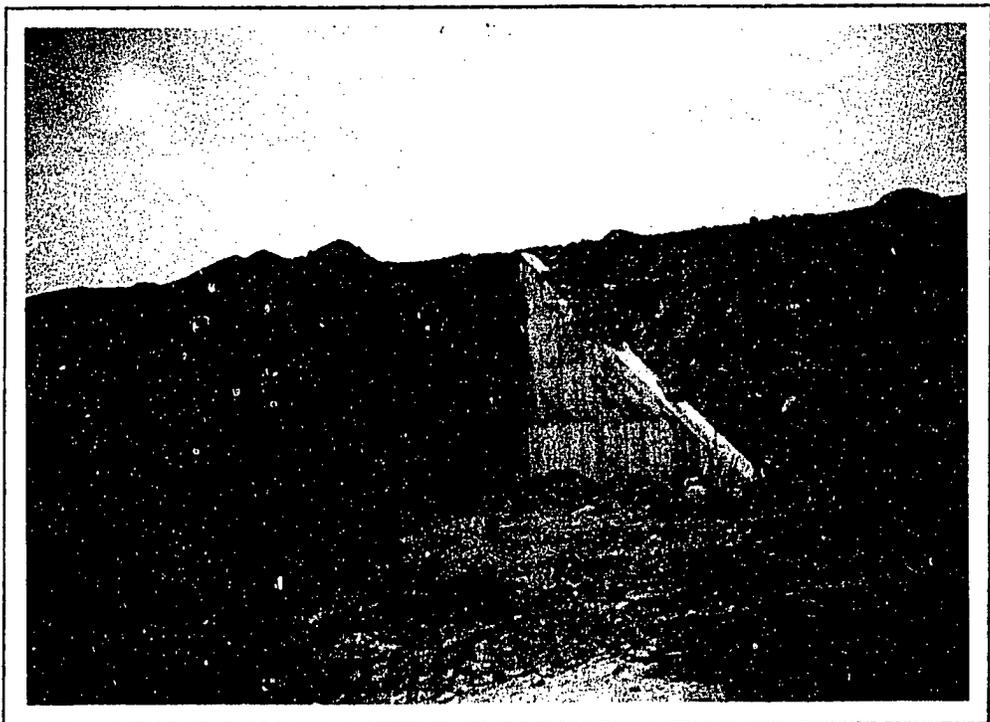
BOX CULVERT - KM 55 + 410 (3)



BOX CULVERT - KM 55 + 740 (4)



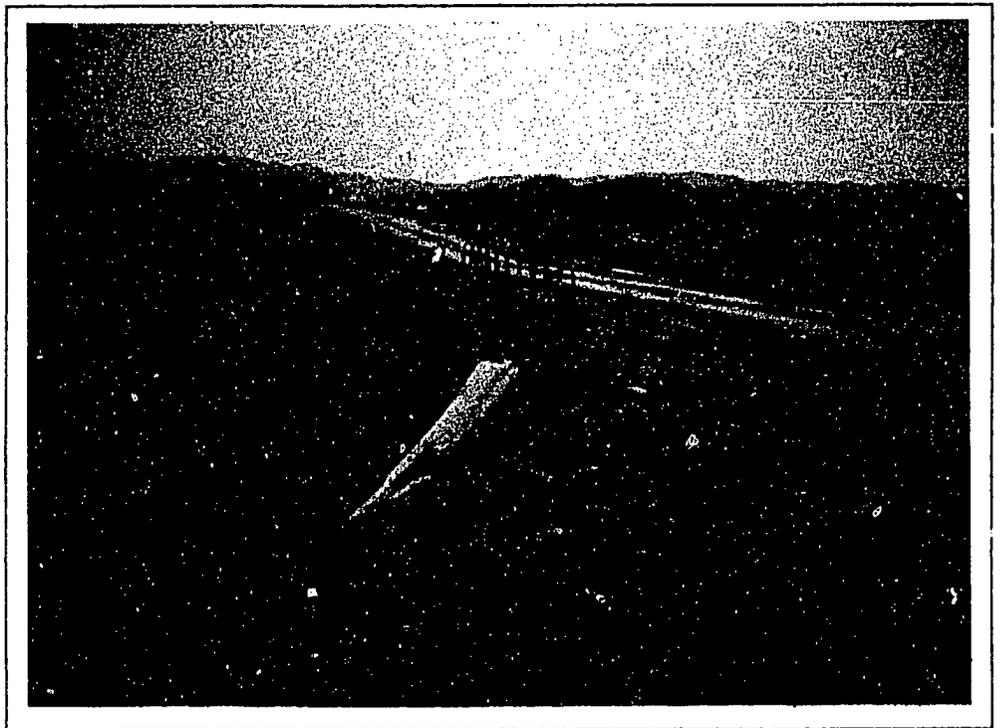
PIPE CULVERT - KM 55 + 952 (5)



BOX CULVERT - KM 56 + 395 (6)



BOX CULVERT - KM 56 + 970 (7)



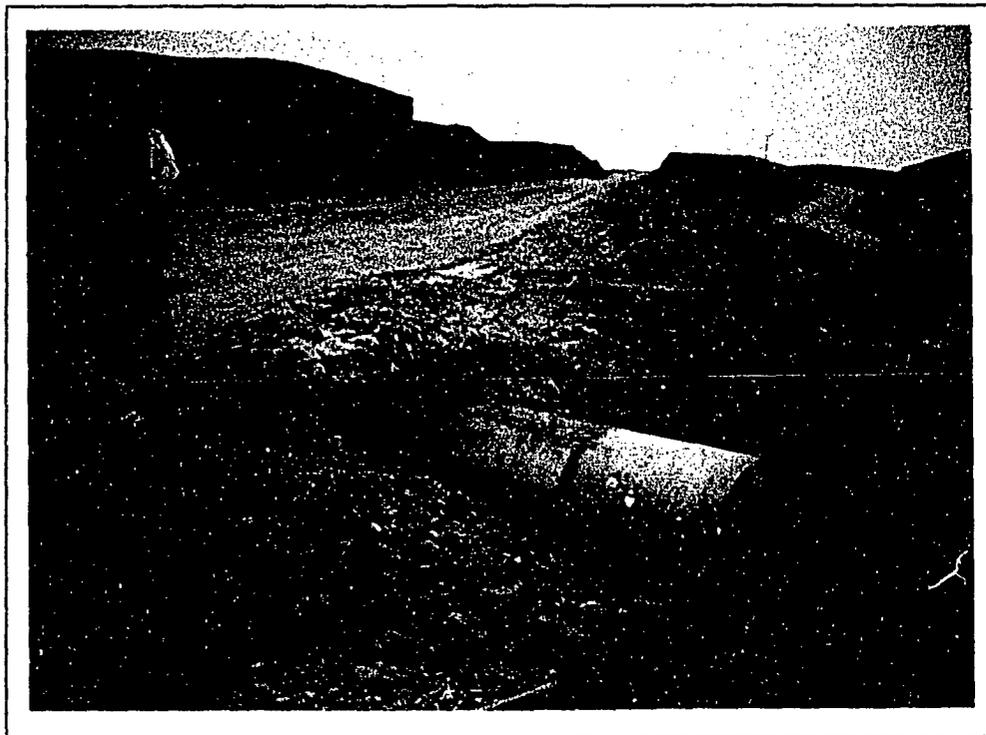
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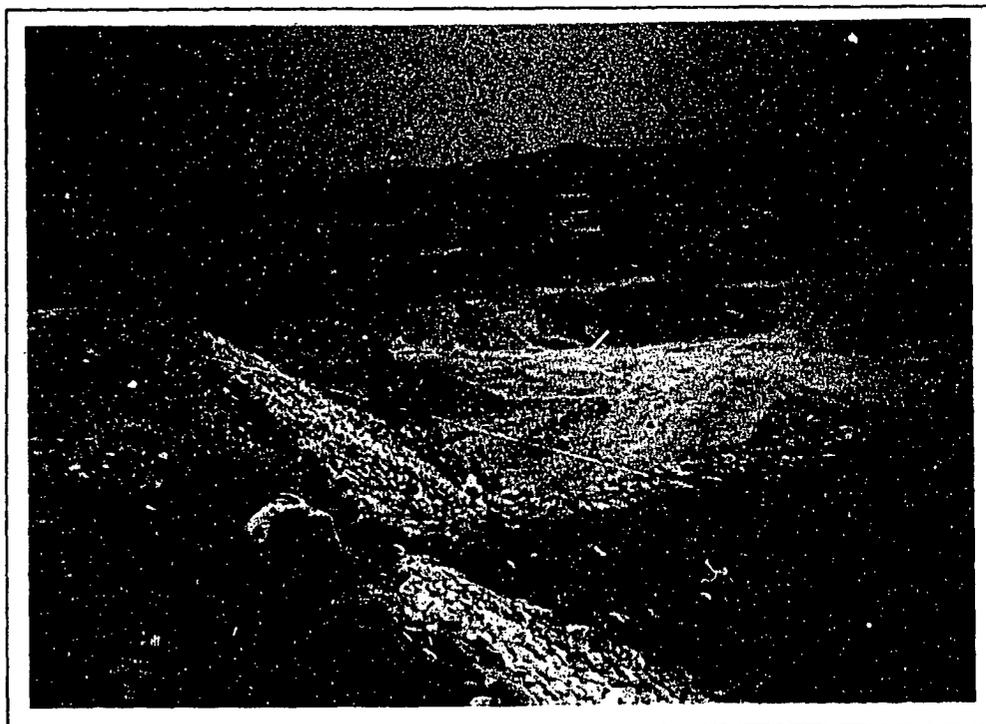
PIPE CULVERT - KM 62 + 033 (9)



ARA BRIDGE - KM 62 + 350 (10)



PIPE CULVERT - KM 64 + 108 (11)



MANRO BRIDGE - KM 67 + 950 (LOOKING NORTH) (12)



MANRO BRIDGE - KM 67 + 950 (13)



MANRO BRIDGE - KM 67 + 950 (LOOKING SOUTH) (14)



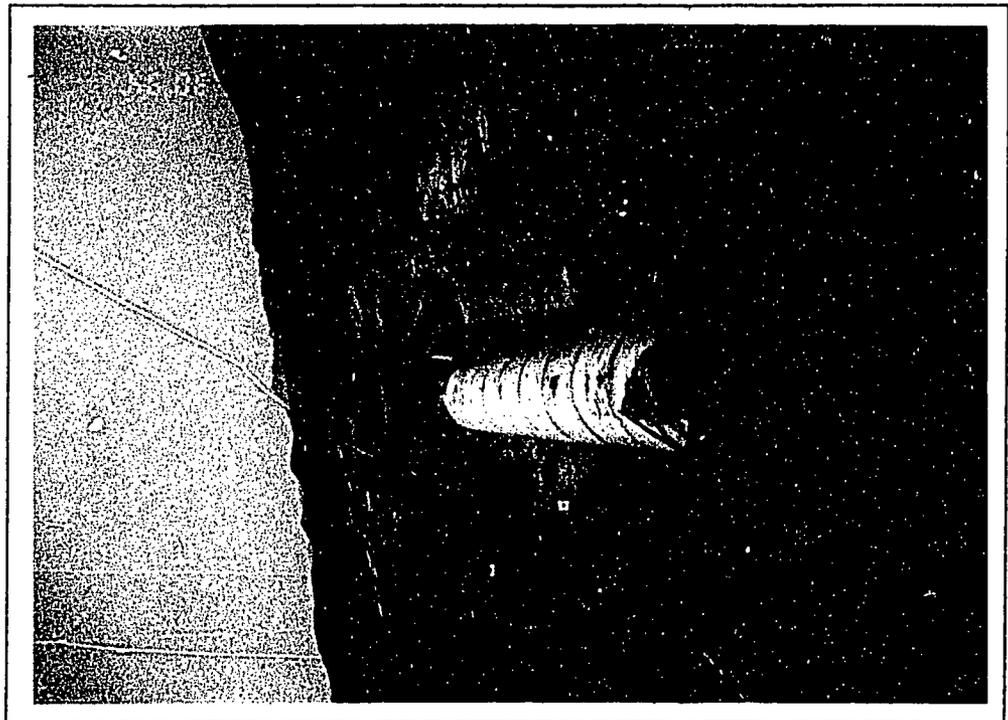
**MANRO BRIDGE — KM 67 + 950 (LOOKING SOUTH) (15)**



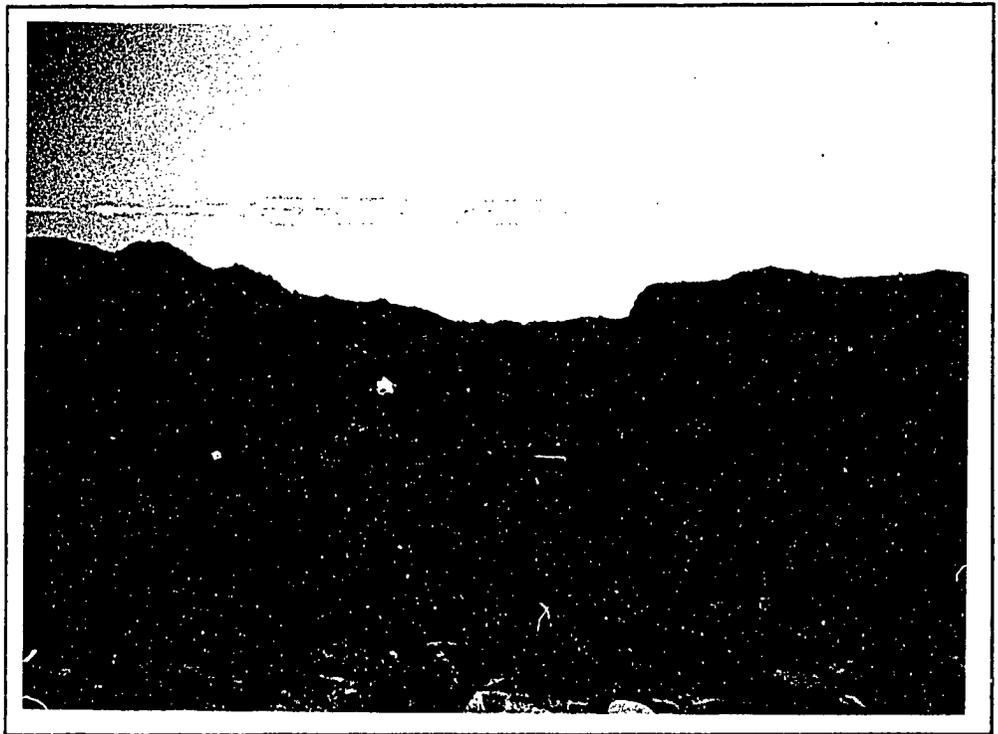
**CHAIGAI BRIDGE — KM 73 + 093 (16)**



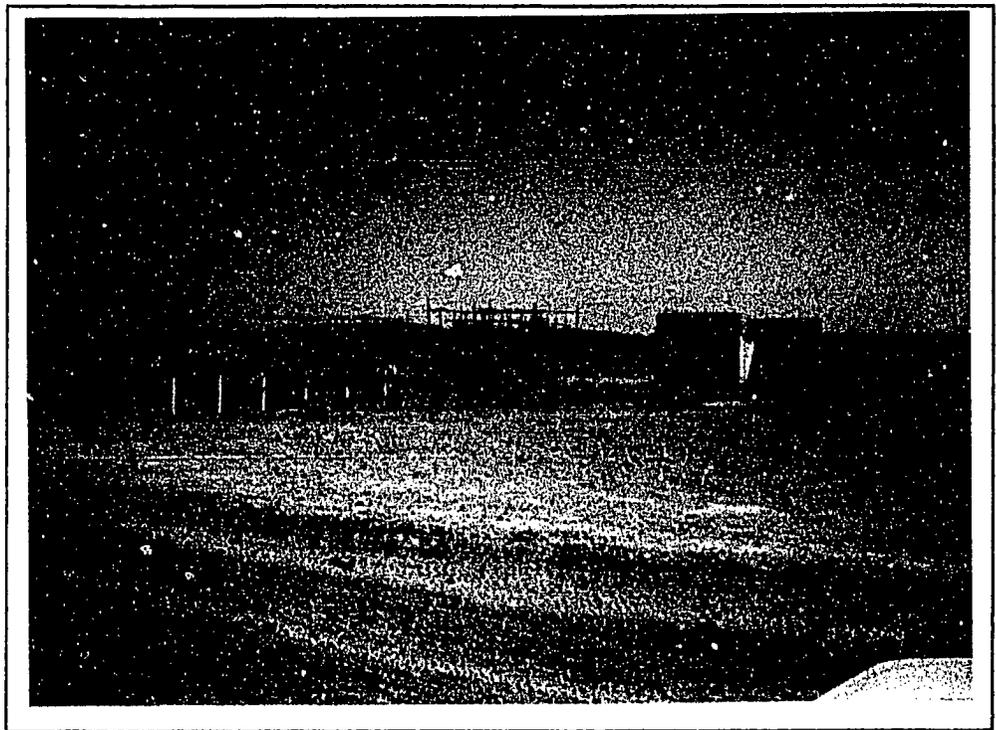
PIPE CULVERT - KM 73 + 388 (17)



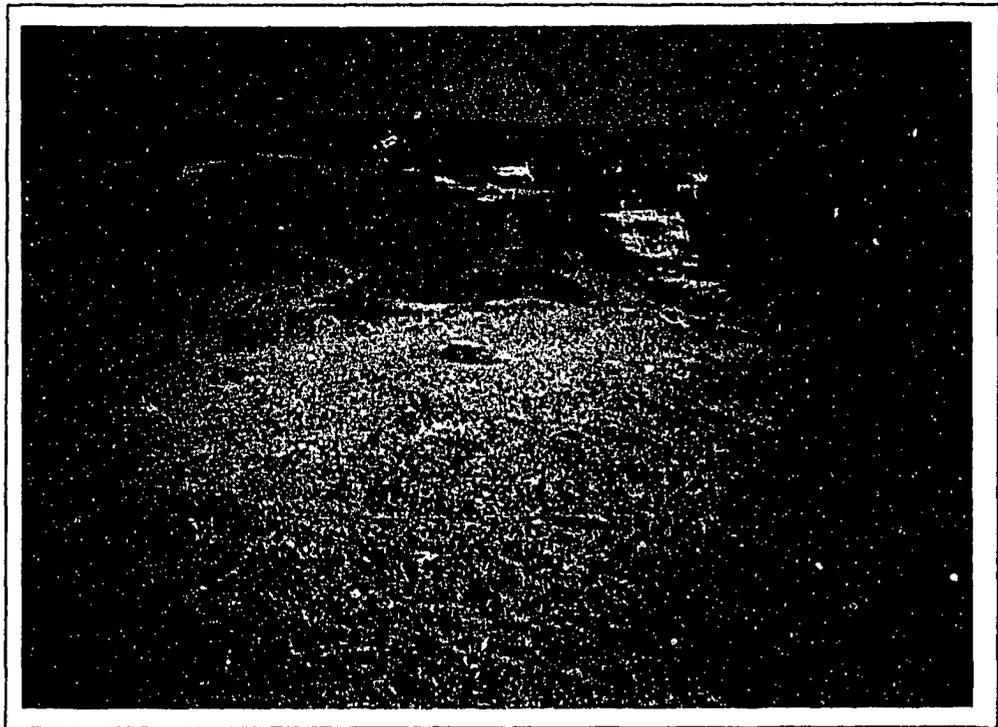
PIPE CULVERT - KM 73 + 660 (18)



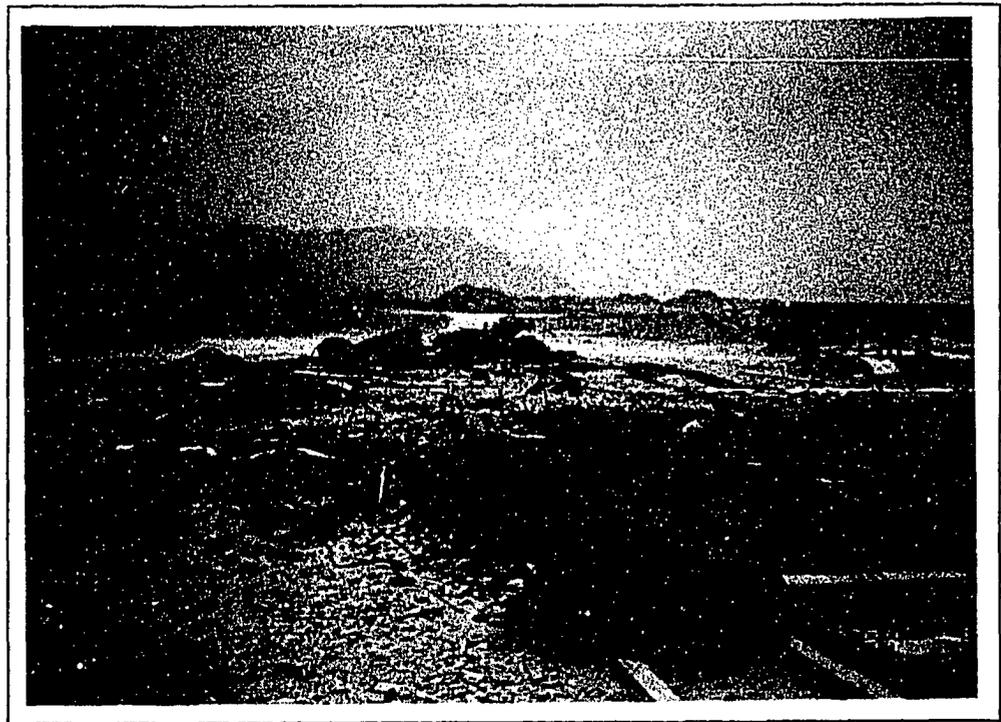
PIPE CULVERT - KM 74 + 196 (19)



AOGHANI BRIDGE - KM 74 + 380 (20)

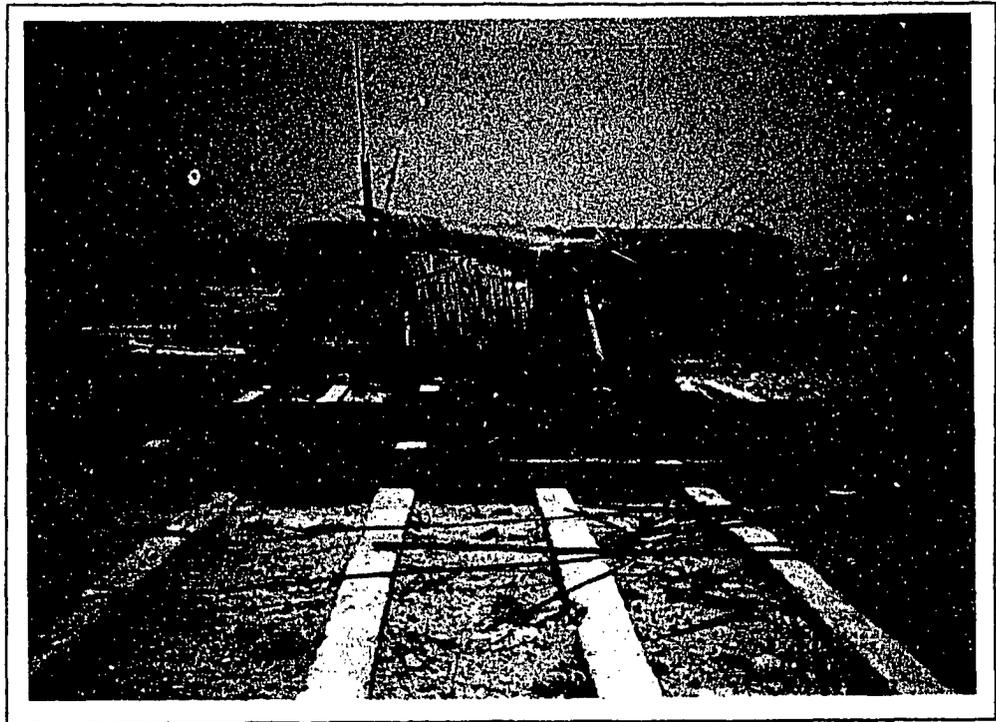


KILKAURI BRIDGE SITE - KM 88 + 195 (21)

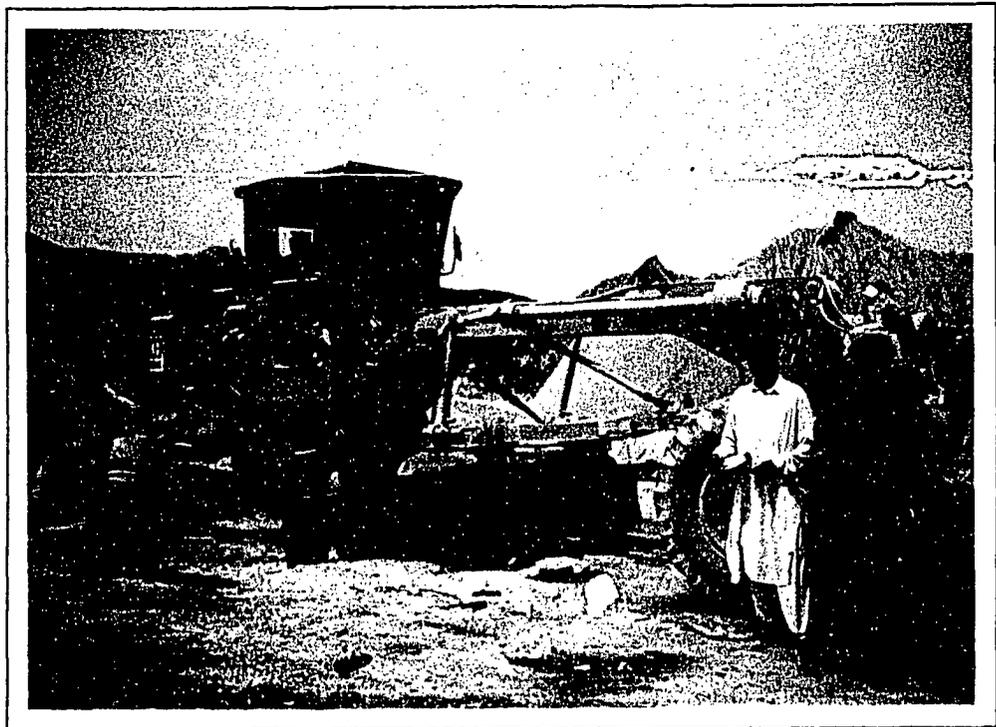


REBAR STOCKPILE - ARA - KM 62 + 300 (22)

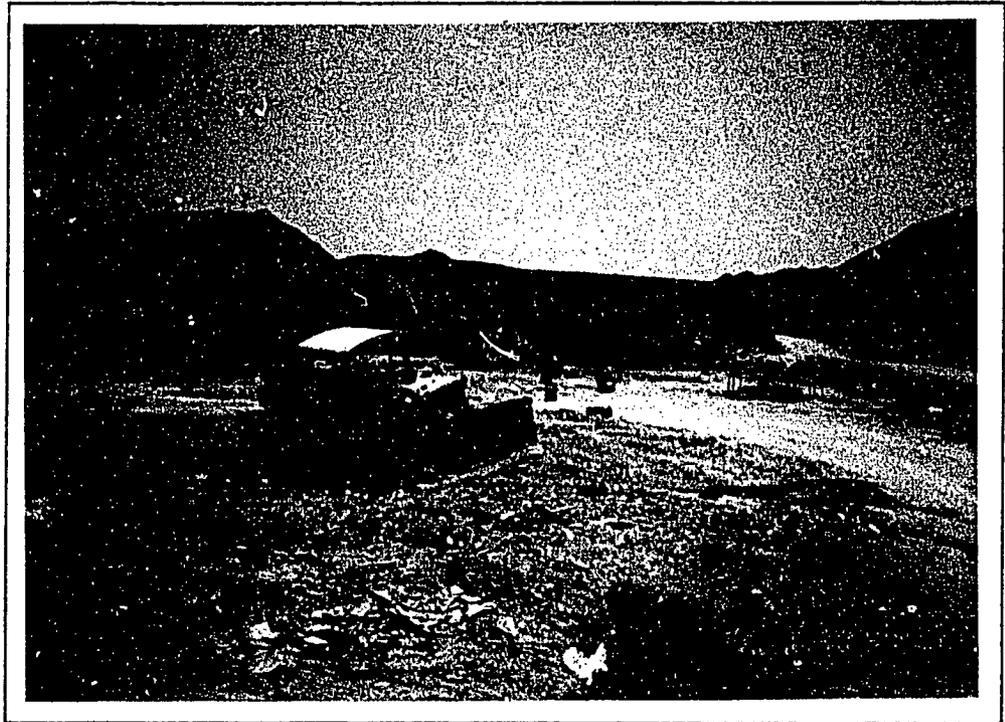
26



REBAR STOCKPILE - ARA - KM 62 + 300 (23)



GRADER BROKEN DOWN - KM 55 + 00 (24)



D - 6 DOZER BROKEN DOWN (25)



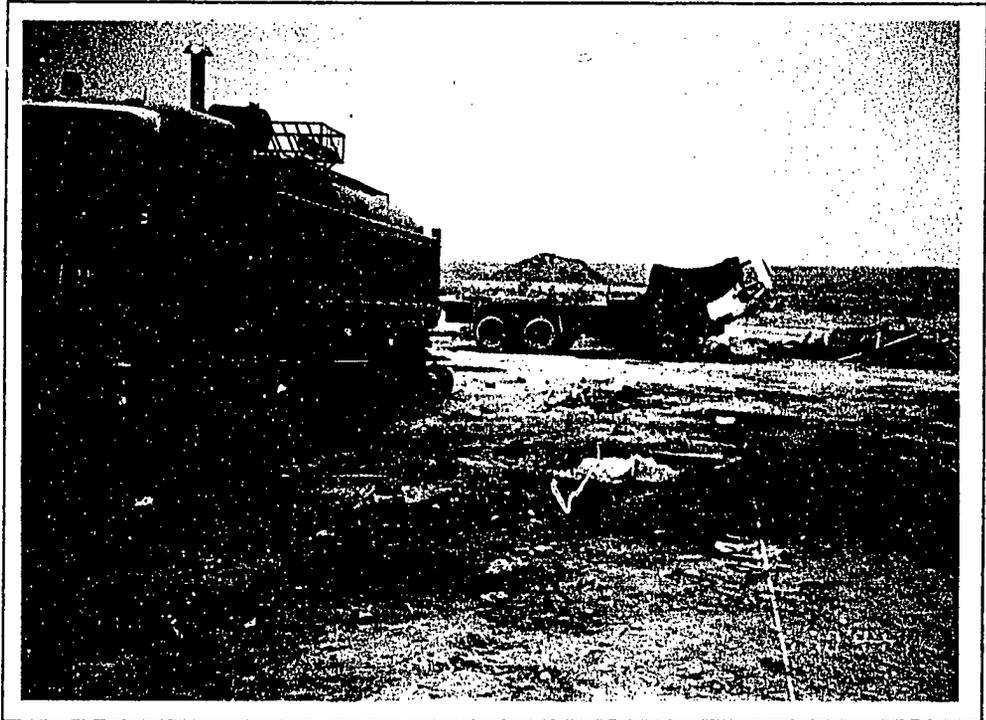
ARA REPAIR CAMP - KM 62 + 300  
(TRUCK IN THIS POSITION FOR 6 NOS.) (26)



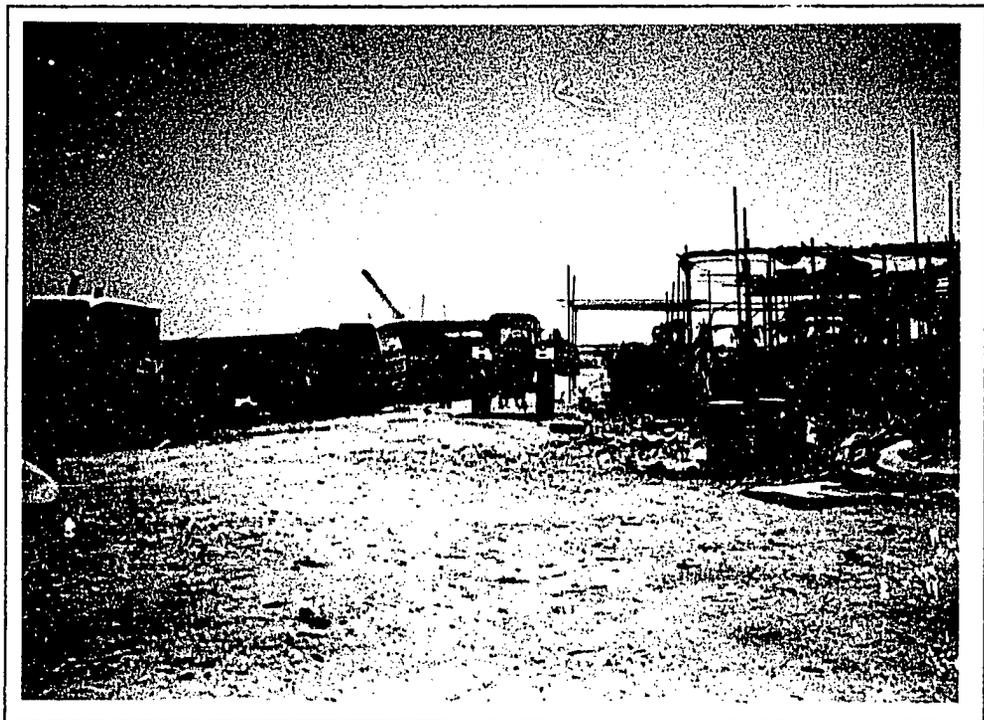
ARA REPAIR YARD - KM 62 + 300 (27)



ARA REPAIR YARD - KM 62 + 300 (28)



ARA REPAIR YARD - KM 62 + 300 (29)



ARA REPAIR YARD - KM 62 + 300 (30)



LAST OF RE STAFF ( WSA/REC )  
LEAVING JHAL JHAO WITH LEVIES  
30 JUNE 94 (31)

**APPENDIX "A"**  
**FIELD DENSITY TESTS**

BELA - AWARAN ROAD PROJECT

**WSA/REC.**

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 1-6 to 7-6-94

No.	STATION	DATE	Layer No.	Wet gm/cm <sup>3</sup>	MC% by Speedy	Dry gm/cm <sup>3</sup>	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
1	50+870 → 50+970	1-6-94	5H	2.285	4.2	2.193	2.254	97.3 %	95	
2	" "	" "	" "	2.280	4.4	2.184	2.254	96.9 %	95	
3	54+792 P/c	2-6-94	12H	2.251	4.3	2.164	2.259	95.8 %	95	
4	55+740 B/c	2-6-94	N/A	2.175	2.5	2.122	2.231	95.1 %	95	
5	55+167 <sup>2nd side</sup> B/c	2-6-94	3rd	2.27	3.2	2.20	2.246	97.9 %	95	
6	51+317 P/c	4-6-94	Bed	2.222	2.4	2.17	2.230	97.3 %	95	
7	55+167 <sup>2nd side</sup> B/c	4-6-94	4H	2.227	3.2	2.158	2.246	96.1 %	95	
8	55+167 <sup>1st side</sup> B/c	6-6-94	1st	2.240	2.8	2.179	2.246	97.0 %	95	
9	55+167 <sup>1st side</sup> B/c	6-6-94	2nd	2.219	3.1	2.152	2.246	95.8 %	95	
10	51+838 P/c	6-6-94	1st	2.248	4.2	2.157	2.254	95.7 %	95	
11	55+167 <sup>2nd side</sup> B/c	6-6-94	5H	2.223	3.3	2.152	2.246	95.8 %	95	
12	55+167 <sup>2nd side</sup> B/c	6-6-94	6H	2.239	3.1	2.172	2.246	96.7 %	95	
13	55+167 <sup>4nd side</sup> B/c	6-6-94	7H	2.233	4.1	2.145	2.246	95.5 %	95	
14	54+792 P/c	6-6-94	13H	2.240	3.6	2.162	2.259	95.7 %	95	
15	50+870 → 50+970	6-6-94	6H	2.259	4.2	2.168	2.254	96.2 %	95	
16	50+870 → 50+970	7-6-94	7H	2.302	4.0	2.213	2.254	98.2 %	95	

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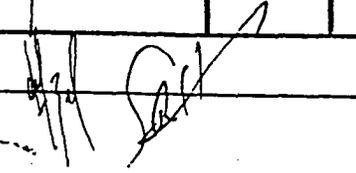
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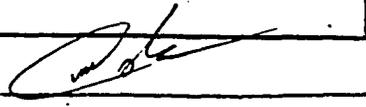
**WSA PREC.**

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 7-6 to 9-6-94

Sr. No.	STATION	DATE	Layer No.	Wet gm/cm <sup>3</sup>	MC% by Speedy	Dry gm/cm <sup>3</sup>	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
17	50+870-750+970	7-6-94	8th	2.255	3.6	2.177	2.254	96.6 %	95	
18	50+87-750+970	7-6-94	9th	2.289	3.3	2.216	2.254	98.3 %	95	
19	55+167 <sup>1st side</sup> B/c	7-6-94	3rd	2.238	3.9	2.154	2.246	95.9 %	95	
20	55+167 <sup>1st side</sup> B/c	7-6-94	4th	2.255	3.8	2.172	2.246	96.7 %	95	
21	55+167 <sup>2nd side</sup> B/c	7-6-94	8th	2.246	3.0	2.181	2.246	97.1 %	95	
22	51+838 P/c	7-6-94	2nd	2.231	3.1	2.164	2.254	96.0 %	95	
23	51+838 P/c	7-6-94	3rd	2.252	3.3	2.180	2.254	96.7 %	95	
24	51+838 P/c	8-6-94	4th	2.257	4.4	2.159	2.254	95.8 %	95	
25	51+838 P/c	8-6-94	5th	2.238	3.1	2.171	2.254	96.3 %	95	
26	50+870-750+970	8-6-94	10th	2.252	2.7	2.193	2.254	97.3 %	95	
27	55+167 <sup>1st side</sup> B/c	8-6-94	5th	2.244	2.9	2.181	2.246	97.1 %	95	
28	55+167 <sup>1st side</sup> B/c	8-6-94	6th	2.214	3.1	2.147	2.246	95.6 %	95	
29	55+167 <sup>1st side</sup> B/c	9-6-94	7th	2.288	3.7	2.206	2.246	98.2 %	95	
30	55+167 <sup>1st side</sup> B/c	9-6-94	8th	2.226	2.9	2.163	2.246	96.3 %	95	
31	55+167 <sup>2nd side</sup> B/c	8-6-94	9th	2.230	3.2	2.161	2.246	96.2 %	95	
32	55+167 <sup>2nd side</sup> B/c	8-6-94	10th	2.207	2.9	2.145	2.246	95.5 %	95	

Prepared by: 

Checked by: 

54

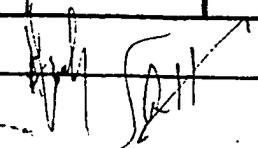
BELA - AWARAN ROAD PROJECT

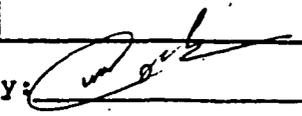
**WSA/REC.**

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 9-6 to 12-6-94

Sr. No.	STATION	DATE	Layer No.	Wet gm/cm <sup>3</sup>	MC% by Speedy	Dry gm/cm <sup>3</sup>	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
33	55+167 <sup>2nd side</sup> B/C	9-6-94	11th	2.296	4.0	2.208	2.246	98.3 %	95	
34	55+167 <sup>1st side</sup> B/C	9-6-94	9th	2.275	4.4	2.150	2.246	95.7 %	95	
35	55+167 <sup>1st side</sup> B/C	9-6-94	10th	2.270	3.1	2.138	2.246	95.2 %	95	
36	55+167 <sup>1st side</sup> B/C	9-6-94	11th	2.239	4.5	2.193	2.246	95.4 %	95	
37	55+167 <sup>consider both side</sup> B/C	9-6-94	12th	2.257	3.9	2.172	2.246	96.7 %	95	
38	55+167 B/C	9-6-94	13th	2.229	3.6	2.152	2.246	95.8 %	95	
39	55+167 B/C	10-6-94	14th	2.223	3.2	2.154	2.246	95.9 %	95	
40	55+167 B/C	10-6-94	15th	2.271	3.1	2.179	2.246	96.8 %	95	
41	55+167 B/C	10-6-94	16th	2.267	3.2	2.194	2.246	97.7 %	95	
42	55+167 B/C	12-6-94	17th	2.252	3.8	2.170	2.246	96.6 %	95	
43	55+167 B/C	12-6-94	18th	2.280	3.5	2.203	2.246	98.1 %	95	
44	55+167 B/C	12-6-94	19th	2.226	4.1	2.138	2.246	95.2 %	95	
45	55+167 B/C	12-6-94	20th	2.270	3.9	2.185	2.246	97.3 %	95	
46	55+405 <sup>both side</sup> Box/culvert	12-6-94	N/A	2.271	3.1	2.203	2.246	98.1 %	95	
47	55+405 B/C	12-6-94	1st	2.232	4.3	2.140	2.246	95.3 %	95	
48	55+405 B/C	12-6-94	2nd	2.255	3.3	2.183	2.246	97.2 %	95	

Prepared by: 

Checked by: 

5

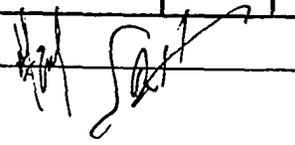
BELA - AWARAN ROAD PROJECT

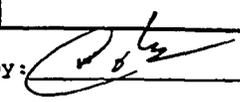
**WSA/REC.**

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 12-6 to 14-6-94

DATE	Sr. No.	STATION	Layer No.	Wet gm/cm <sup>3</sup>	MC% by Speedy	Dry <sup>3</sup> gm/cm <sup>3</sup>	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
12/6-94	49	55+405 <i>cut side Backfill Box/culvert</i>	3rd	2.240	4.1	2.152	2.246	95.8 %	95	
"	50	Mento Bridge 2nd Abutment	N/G	2.246	3.3	2.174	2.244	96.9 %	95	
"	51	" " " "	1st	2.228	3.2	2.159	2.244	96.2 %	95	
"	52	" " " "	2nd	2.279	2.9	2.215	2.244	98.7 %	95	
"	53	" " " "	3rd	2.229	4.2	2.139	2.244	95.3 %	95	
"	54	" " " "	4th	2.236	3.7	2.156	2.244	96.1 %	95	
"	55	" " " "	5th	2.261	2.6	2.204	2.244	98.2 %	95	
"	56	" " " "	6th	2.244	2.8	2.183	2.244	97.3 %	95	
"	57	" " " "	7th	2.235	4.3	2.143	2.244	95.5 %	95	
13/6-94	58	" " " "	8th	2.240	4.1	2.152	2.244	95.9 %	95	
"	59	" " " "	9th	2.246	2.9	2.183	2.244	97.3 %	95	
"	60	" " " "	10th	2.232	3.2	2.163	2.244	96.4 %	95	
"	61	" " " "	11th	2.247	3.7	2.167	2.244	96.7 %	95	
"	62	" " " "	12th	2.229	4.2	2.139	2.244	95.3 %	95	
14/6-94	63	" " " "	13th	2.232	3.7	2.152	2.244	95.9 %	95	
"	64	" " " "	14th	2.235	4.3	2.143	2.244	95.5 %	95	

Prepared by: 

Checked by: 

W/o

**WSA/REC.**

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 13-6 to 14-6-94

DATE	Sr. No.	STATION	DATE	Layer No.	Wet gm/cm <sup>3</sup>	MC% by Speedy	Dry gm/cm <sup>3</sup>	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
13/6	65	51+838 Pipe/ bank	13-6-94	6th	2.251	3.7	2.171	2.254	96.3%	95	
13/6	66	" " " "	13-6-94	7th	2.239	4.0	2.153	2.254	95.5%	95	
	67	Manso Bridge 2nd alluvium	14-6-94	15th	2.233	2.3	2.183	2.244	97.3%	95	
	68	" " " "	"	16th	2.291	2.7	2.231	2.244	97.4%	95	
	69	" " " "	"	17th	2.256	3.1	2.188	2.244	97.5%	95	
	70	" " " "	"	18th	2.268	2.9	2.204	2.244	98.2%	95	
	71	" " " "	"	19th	2.232	3.3	2.161	2.244	96.3%	95	
	72	" " " "	"	20th	2.238	4.1	2.150	2.244	95.8%	95	
	73	" " " "	"	21st	2.236	3.9	2.152	2.244	95.9%	95	
	74	Manso Bridge 2nd alluvium	"	N/A	2.243	3.9	2.159	2.244	96.2%	95	
	75	" " " "	"	1st	2.229	4.1	2.141	2.244	95.4%	95	
	76	" " " "	"	2nd	2.229	4.2	2.139	2.244	95.3%	95	
	77	" " " "	"	3rd	2.236	4.1	2.148	2.244	95.7%	95	
	78	" " " "	"	4th	2.277	3.9	2.192	2.244	97.7%	95	
	79	" " " "	"	5th	2.290	3.8	2.206	2.244	98.3%	95	
	80	" " " "	"	6th	2.250	4.2	2.159	2.244	96.2%	95	

Prepared by:

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*[Handwritten Signature]*

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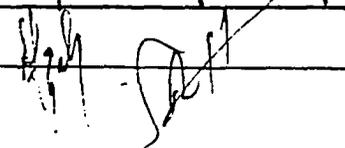
BELA - AWARAN ROAD PROJECT

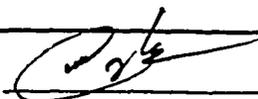
**WSA/REC.**

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 14-6 to 16-6-94

Sr. No.	STATION	DATE	Layer No.	Wet gm/cm <sup>3</sup>	MC% by Speedy	Dry gm/cm <sup>3</sup>	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
81	Mansa Bridge Abutment # 1st	14-6-94	7th	2.233	4.3	2.141	2.244	95.4 %	95	
82	" "	14-6-94	8th	2.230	4.4	2.136	2.244	95.2 %	95	
83	" "	14-6-94	9th	2.281	3.4	2.206	2.244	98.3 %	95	
84	" "	14-6-94	10th	2.262	3.7	2.181	2.244	97.2 %	95	
85	" "	14-6-94	11th	2.269	3.1	2.201	2.244	98.1 %	95	
86	" "	14-6-94	12th	2.233	4.2	2.143	2.244	95.5 %	95	
87	" "	14-6-94	13th	2.232	3.7	2.152	2.244	95.9 %	95	
88	" "	14-6-94	14th	2.235	4.3	2.143	2.244	95.5 %	95	
89	" "	14-6-94	15th	2.233	2.3	2.183	2.244	97.3 %	95	
90	" "	14-6-94	16th	2.291	2.7	2.231	2.244	99.4 %	95	
91	" "	14-6-94	17th	2.256	3.1	2.188	2.244	97.5 %	95	
92	" "	14-6-94	18th	2.268	2.9	2.204	2.244	98.2 %	95	
93	5th 420 Pipe culvert	15-6-94	1st	2.251	3.7	2.171	2.254	96.3 %	95	
94	" "	15-6-94	2nd	2.252	2.9	2.189	2.254	97.1 %	95	
95	" "	15-6-94	3rd	2.252	4.3	2.159	2.254	95.8 %	95	
96	50+920 -> 50+970	16-6-94	14th	2.236	4.1	2.148	2.254	95.3 %	95	

Prepared by: 

Checked by: 

58

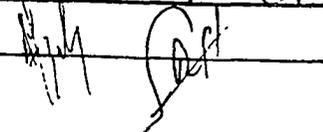
BELA - AWARAN ROAD PROJECT

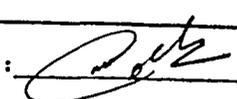
**WSA/REC.**

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 16-6 to 17-6-74

Sr. No.	STATION	DATE	Layer No.	Wet gm/cm <sup>3</sup>	MC% by Speedy	Dry gm/cm <sup>3</sup>	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
97	<sup>P/C</sup> 50+720 → 50+770	16-6-94	15th	2.252	4.3	2.159	2.254	95.8 %	95	
98	<sup>full work</sup> 51+420 Pipe Culvert	16-6-94	4th	2.242	3.5	2.166	2.254	96.1 %	95	
99	" " "	16-6-94	5th	2.245	4.1	2.157	2.254	95.7 %	95	
100	" " "	16-6-94	6th	2.244	3.8	2.162	2.254	95.9 %	95	
1	" " "	16-6-94	7th	2.261	3.2	2.191	2.254	97.2 %	95	
2	<sup>Bolt side</sup> 55+790 <sup>Box culvert</sup>	16-6-94	N/C	2.242	3.3	2.170	2.246	96.6 %	95	
3	" " "	16-6-94	1st	2.274	2.9	2.210	2.246	98.4 %	95	
4	" " "	16-6-94	2nd	2.290	4.0	2.154	2.246	95.9 %	95	
5	" " "	16-6-94	3rd	2.235	4.3	2.143	2.246	95.4 %	95	
6	" " "	16-6-94	4th	2.245	3.8	2.163	2.246	96.3 %	95	
7	" " "	16-6-94	5th	2.209	3.1	2.143	2.246	95.4 %	95	
8	<sup>Bolt side</sup> 55+405 <sup>Box culvert</sup>	16-6-94	4th	2.262	3.1	2.194	2.246	97.7 %	95	
9	" " "	16-6-94	5th	2.271	3.7	2.190	2.246	97.5 %	95	
10	" " "	16-6-94	6th	2.242	4.2	2.152	2.246	95.8 %	95	
11	" " "	16-6-94	7th	2.234	4.4	2.140	2.246	95.3 %	95	
12	" " "	17-6-94	8th	2.259	3.8	2.176	2.246	96.9 %	95	

Prepared by: 

Checked by: 

BELA - AWARAN ROAD PROJECT

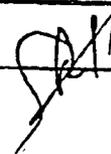
Page 8 of 12

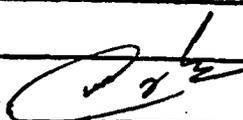
**WSA/REC.**

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 17-6 to 19-6/94

Sr. No.	STATION	DATE	Layer No.	Wet gm/cm <sup>3</sup>	MC% by Speedy	Dry gm/cm <sup>3</sup>	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
13	55+405 Both side Box Culvert	17-6-94	9/K	2.235	4.2	2.145	2.246	95.5%	95	
14	55+740 2nd Side Box Culvert	17-6-94	6/K	2.255	3.3	2.183	2.246	97.2%	95	
15	" " " "	17-6-94	7/K	2.238	3.7	2.158	2.246	96.1%	95	
16	55+405 Both side Box Culvert	18-6-94	10/K	2.248	3.0	2.183	2.246	97.2%	95	
17	" " " "	18-6-94	11/K	2.235	4.2	2.145	2.246	95.5%	95	
18	55+740 2nd Side Box Culvert	18-6-94	8/K	2.255	3.8	2.172	2.246	96.7%	95	
19	" " " "	18-6-94	9/K	2.242	4.1	2.154	2.246	95.9%	95	
20	55+740 1st Side Box Culvert	19-6-94	6/K	2.255	3.2	2.185	2.246	97.3%	95	
21	" " " "	19-6-94	7/K	2.254	3.7	2.174	2.246	96.8%	95	
22	" " " "	19-6-94	8/K	2.246	3.1	2.179	2.246	97.0%	95	
23	" " " "	19-6-94	9/K	2.233	4.0	2.147	2.246	95.6%	95	
24	55+740 Both side Box Culvert	19-6-94	10/K	2.247	4.3	2.154	2.246	95.9%	95	
25	" " " "	19-6-94	11/K	2.243	3.8	2.161	2.246	96.2%	95	
26	" " " "	19-6-94	12/K	2.230	4.2	2.140	2.246	95.3%	95	
27	" " " "	19-6-94	13/K	2.251	2.9	2.188	2.246	97.4%	95	
28	" " " "	19-6-94	14/K	2.245	4.4	2.150	2.246	95.7%	95	

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Checked by: 

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BELA - AWARAN ROAD PROJECT

**WSA / REC-2**

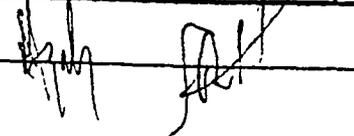
SUMMARY OF IN-PLACE DENSITY TEST RESULTS

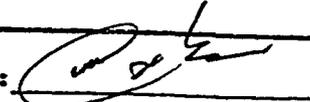
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June 1996

Progress from 19-6 to 22-

Sr. No.	STATION	Layer No.	Wet gm/cm <sup>3</sup>	MC% by Speedy	Dry gm/cm <sup>3</sup>	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
129	55+740 <i>Botk Side</i> Box culvert	15K	2.259	3.9	2.174	2.246	96.8 %	95	
130	" " "	16K	2.231	4.2	2.141	2.246	95.3 %	95	
131	" " "	17K	2.281	4.5	2.183	2.246	97.2 %	95	
132	55+905 <i>Botk Side</i> Box culvert	12K	2.268	2.8	2.206	2.246	98.2 %	95	
133	" " "	13K	2.229	4.1	2.141	2.246	95.3 %	95	
134	" " "	14K	2.271	3.6	2.192	2.246	97.6 %	95	
135	" " "	15K	2.225	3.2	2.156	2.246	96.0 %	95	
136	" " "	16K	2.230	3.0	2.165	2.246	96.4 %	95	
137	" " "	17K	2.245	3.8	2.163	2.246	96.3 %	95	
138	" " "	18K	2.280	4.1	2.190	2.246	97.5 %	95	
139	" " "	19K	2.250	3.5	2.174	2.246	96.8 %	95	
140	56+395 Box culvert	N/G	2.248	3.5	2.172	2.246	96.7 %	95	
141	" " "	1st	2.240	4.1	2.152	2.246	95.8 %	95	
142	" " "	2nd	2.232	3.2	2.163	2.246	96.3 %	95	
143	" " "	3rd	2.235	4.0	2.149	2.246	95.7 %	95	
144	" " "	4K	2.259	3.4	2.185	2.246	97.3 %	95	
145	" " "	5K	2.240	4.1	2.152	2.246	95.8 %	95	

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BELA - AWARAN ROAD PROJECT

**WSA/REC.**

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Page 10 of 12

June 1994

Progress from 22/6 to 27/6

Sr. No.	STATION	DATE	Layer No.	Wet gm/cm <sup>3</sup>	MC% by Speedy	Dry gm/cm <sup>3</sup>	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
146	Box/pavement	23-6-94	N/A	2.256	3.1	2.188	2.240	97.7 %	95	
147	"	"	1st	2.270	2.9	2.206	2.246	98.2 %	95	
148	"	"	2nd	2.232	3.7	2.152	2.246	95.8 %	95	
149	"	"	3rd	2.234	3.5	2.158	2.246	96.1 %	95	
150	"	24-6-94	4th	2.230	3.2	2.161	2.246	96.2 %	95	
151	"	"	5th	2.234	3.7	2.154	2.246	95.9 %	95	
152	"	"	6th	2.227	3.3	2.156	2.246	96.0 %	95	
153	56+970 Box Culvert	25-6-94	N/A	2.230	4.0	2.144	2.240	95.7 %	95	
154	"	"	1st	2.238	3.9	2.154	2.246	95.9 %	95	
155	56+395 Box Culvert	26-6-94	6th	2.224	3.8	2.143	2.246	95.4 %	95	
156	56+970 Box Culvert	"	2nd	2.237	3.1	2.170	2.246	96.6 %	95	
157	"	"	3rd	2.224	3.7	2.145	2.246	95.5 %	95	
158	"	"	4th	2.235	4.0	2.149	2.246	95.7 %	95	
159	"	"	5th	2.252	3.6	2.174	2.246	96.8 %	95	
160	"	"	6th	2.238	3.9	2.154	2.246	95.9 %	95	
161	56+395 Box Culvert	27-6-94	7th	2.249	4.2	2.158	2.246	96.1 %	95	

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BELA - AWARAN ROAD PROJECT

**WSA/REC.**

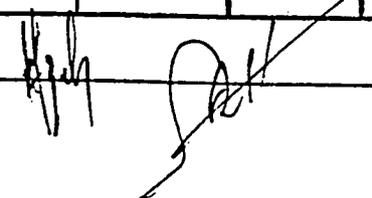
SUMMARY OF IN-PLACE DENSITY TEST RESULTS

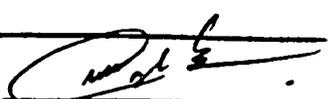
Page 11 of 12

June 1994

Progress from 27/6 to 28/6

Sr. No.	STATION	DATE	Layer No.	Wet gm/cm <sup>3</sup>	MC% by Speedy	Dry gm/cm <sup>3</sup>	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
162	50+780 → 50+900	26-6-94	1st	2.265	3.7	2.184	2.254	96.9 %	95	
163	" "	"	2nd	2.277	2.9	2.213	2.254	98.2 %	95	
164	" "	"	3rd	2.263	3.2	2.193	2.254	93.3 %	95	
165	" "	"	4th	2.238	4.1	2.150	2.254	95.4 %	95	
166	" "	27-6-94	5th	2.232	3.9	2.148	2.254	95.3 %	95	
167	" "	"	6th	2.247	3.1	2.180	2.254	96.7 %	95	
168	" "	"	7th	2.241	3.8	2.159	2.254	95.8 %	95	
169	" "	"	8th	2.260	4.1	2.171	2.254	96.3 %	95	
170	" "	28-6-94	9th	2.253	4.0	2.166	2.254	96.1 %	95	
171	" "	"	10th	2.213	3.1	2.146	2.254	95.2 %	95	
172	56+395 Box Cul	27-6-94	8th	2.229	4.0	2.143	2.246	95.4 %	95	
173	56+970 Box Cul	"	7th	2.266	3.8	2.183	2.246	97.2 %	95	
174	" "	"	8th	2.228	4.2	2.138	2.246	95.2 %	95	
175	" "	"	9th	2.238	3.9	2.154	2.246	95.9 %	95	
176	55+405 Box Cul	"	20th	2.233	4.1	2.145	2.246	95.5 %	95	
177	" "	"	21st	2.236	3.3	2.165	2.246	96.4 %	95	

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BELA - AWARAN ROAD PROJECT

**WSA/REC.**

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

June 1999  
Progress from 28/6 to 29/6

Sr. No.	STATION	DATE	Layer No.	Wet gm/cm <sup>3</sup>	MC% by Speedy	Dry gm/cm <sup>3</sup>	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
178	56+970 Box Culvert	28-6-94	101K	2.224	3.9	2.140	2.246	95.3%	95	
179	" "	"	111K	2.265	2.8	2.203	2.246	98.1%	95	
180	55+790 Box Culvert	"	181K	2.244	4.0	2.158	2.246	96.1%	95	
181	" "	"	191K	2.240	4.1	2.152	2.246	95.8%	95	
182	50+780 → 50+870 <i>connection to</i>	28-6-94	111K	2.309	3.7	2.227	2.254	98.8%	95	
183	" "	"	121K	2.241	4.2	2.151	2.254	95.5%	95	
184	" "	"	131K	2.276	3.9	2.191	2.254	97.2%	95	
185	" "	"	141K	2.253	3.8	2.171	2.254	96.3%	95	
186	56+970 Box/culvert	"	121K	2.238	3.9	2.154	2.246	95.9%	95	
187	" "	"	131K	2.233	4.2	2.193	2.246	95.4%	95	
189	56+395 Box/culvert	29-6-94	91K	2.263	2.8	2.203	2.246	98.1%	95	
190	" "	"	101K	2.245	3.8	2.163	2.246	96.3%	95	
191	" "	"	111K	2.231	4.1	2.143	2.246	95.4%	95	
192	" "	"	121K	2.233	4.0	2.143	2.246	95.6%	95	
193										
194										

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**APPENDIX "B"**  
**AGGREGATE TESTS**

55

# WILBUR SMITH ASSOCIATES

## REPUBLIC ENGINEERING CORPORATION

BEIA AWARAN ROAD PROJECT

CONTRACTOR : M/s Husnain Construction Co. (Pvt) Ltd.

MONTH June 1994

TYPE OF MATERIAL: <sup>3/8" Down</sup> Crush sand  
 LOCATION: \_\_\_\_\_

SR. NO.	DATE OF TEST.	SIEVE SIZES.	PERCENTAGE PASSING (SUMMARY OF GRADATION)															REMARKS		
			3"	2 1/2"	2"	1 1/2"	1"	3/4"	1/2"	3/8"	No. 4	No. 8	No. 10	No. 16	No. 30	No. 40	No. 50		No. 100	No. 200
			75mm	63mm	50mm	37.5mm	25mm	19mm	12.5mm	9.5mm	4.75mm	2.36mm	2.0mm	1.19mm	0.6mm	.425mm	.300mm		.150mm	.075mm
1	2-6-94									100	95.5	-	-	49.1	-	-	27.6	9.2	3.8	
2	3-6-94									100	96.6	-	-	50.2	-	-	27.9	8.7	3.6	
3	5-6-94									100	96.2	-	-	48.5	-	-	26.9	9.1	3.8	
4	5-6-94									100	96.2	-	-	48.5	-	-	27.1	9.2	3.5	
5	6-6-94									100	96.1	-	-	48.3	-	-	27.5	9.4	3.3	
6	8-8-94									100	96.1	-	-	47.5	-	-	26.8	9.1	3.2	
7	9-8-94									100	96.3	-	-	48.4	-	-	27.1	8.8	3.4	
8	11-6-94									100	96.1	-	-	48.2	-	-	26.9	8.9	3.1	
9	14-6-94									100	96.3	-	-	47.6	-	-	27.2	8.8	3.4	
	Avg:									100	96.1	-	-	48.5	-	-	27.2	9.0	3.4	

MATERIAL ENGINEER  
CONTRACTOR

MATERIAL ENGINEER  
CONSULTANT

June 1994

# WILBUR SMITH ASSOCIATES

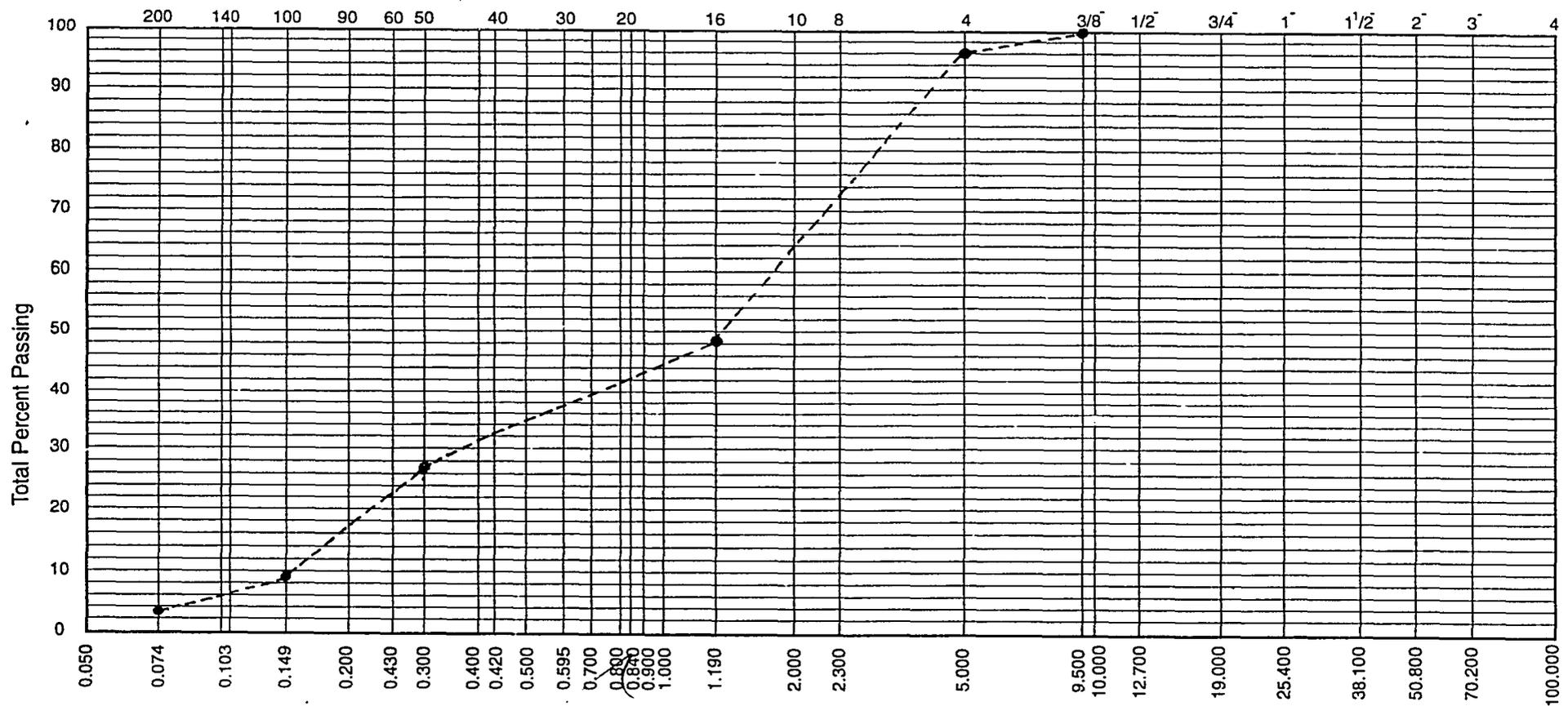
3/8" Down Crush Sand

## REPUBLIC ENGINEERING CORPORATION

BELA AWARAN ROAD PROJECT

CONTRACTOR : M/s Husnain Construction Co. (Pvt) Ltd.

### GRADATION CURVES



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Contractor 

Consultant Engineer 

# WILBUR SMITH ASSOCIATES

## REPUBLIC ENGINEERING CORPORATION

BELA AWARAN ROAD PROJECT

CONTRACTOR : M/s Husnain Construction Co. (Pvt) Ltd.

TYPE OF MATERIAL: 3/4" Down  
Crush Agg  
LOCATION: \_\_\_\_\_

MONTH June 1994

SR. NO.	DATE OF TEST.	SIEVE SIZES.	PERCENTAGE PASSING (SUMMARY OF GRADATION)															REMARKS		
			3"	2 1/2"	2"	1 1/2"	1"	3/4"	1/2"	3/8"	No. 4	No. 8	No. 10	No. 16	No. 30	No. 40	No. 50		No. 100	No. 200
			75mm	63mm	50mm	37.5mm	25mm	19mm	12.5mm	9.5mm	4.75mm	2.36mm	2.0mm	1.19mm	0.6mm	.425mm	.300mm		.150mm	.075mm
1	2-6-94						100	90.4	80.7	27.3	19.9									
2	3-6-94						100	91.2	81.6	29.1	20.2									
3	5-6-94						100	87.1	71.2	28.2	17.0									
4	5-6-94						100	87.3	71.4	29.0	17.3									
5	6-6-94						100	87.7	70.9	28.3	17.6									
6	8-6-94						100	87.1	72.4	29.2	17.8									
7	9-6-94						100	87.3	72.0	28.4	17.5									
8	11-6-94						100	88.2	72.6	28.9	18.2									
9	14-6-94						100	88.7	73.3	27.6	17.9									
	Avg:						100	88.3	74.0	28.4	18.1									

*[Signature]*  
MATERIAL ENGINEER  
CONTRACTOR

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MATERIAL ENGINEER  
CONSULTANT

3/4" Down  
Crush Aggregate

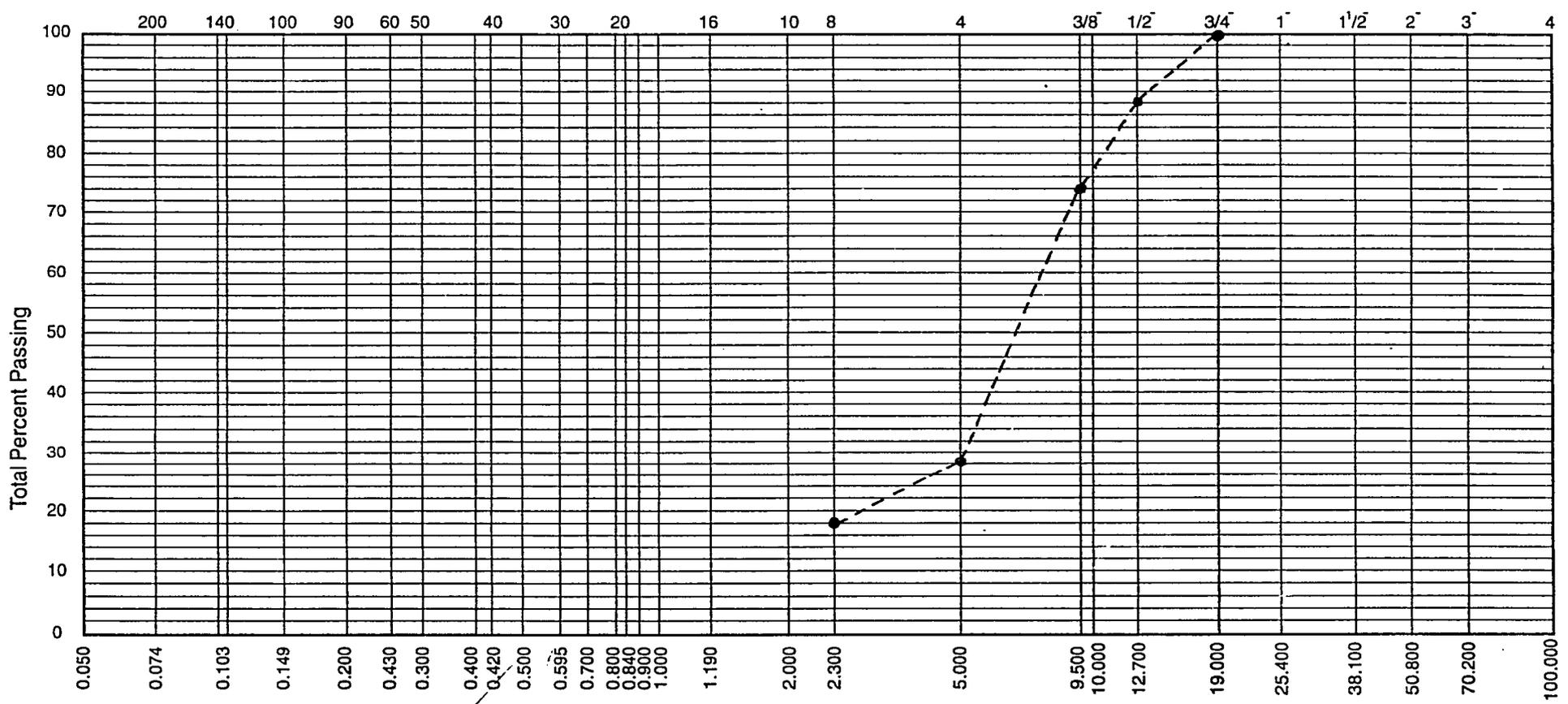
# WILBUR SMITH ASSOCIATES

## REPUBLIC ENGINEERING CORPORATION

June 1994

BELA AWARAN ROAD PROJECT  
CONTRACTOR : M/s Husnain Construction Co. (Pvt) Ltd.

### GRADATION CURVES



Contractor 

Consultant Engineer 

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**APPENDIX "C"**  
**CONCRETE COMPRESSIVE STRENGTH TESTS**

# AVERAGE COMPRESSIVE STRENGTH AFTER 28 DAYS

FOR "A" CLASS AND PIPE CONCRETE

SPECIFICATION REQUIREMENT

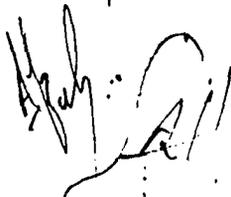
FOR "A" CLASS 3000 PSI  
FOR PIPE CONC 4000 PSI

NOTE: THERE ARE THE AVERAGE COMPRESSIVE STRENGTH OF THREE CYLINDERS

PAGE NO. 1 / 2

SPECIMEN NO.	DESCRIPTION	DATE OF CASTING	DATE OF TESTING	COMPRESSIVE STRENGTH IN	TYPE OF CONCRET	REMARKS
298	PIPE Moulding	04-5/94	01-6/94	5110	Pipe conc	
299	" "	05-5/94	02-6/94	5135	"	
300	WASHOP BRIDGE Pile #9 Pier #3	"	"	4173	class "A"	
301	pipe moulding	6-5/94	03-6/94	4998	pipe conc	
303/A	Footing 51+83.8 L/R	7-5/94	04-6/94	3938	class "A"	
304	pipe moulding	"	"	4961	pipe conc	
302	Mamro Bridge Beam #1	8-5/94	5-6/94	4311	class "A"	
303	" Beam #2	"	"	4310	"	
305	" Beam #3	"	"	5097	"	
306	pipe moulding	"	"	5194	pipe conc	
307	ARA Bridge Parapit wall 3.4	09-5/94	6-6/94	4229	class "A"	
308	pipe moulding	"	"	5135	pipe conc	
309	" "	10-5/94	7-6/94	5134	"	
310	Box culvert st: 55+83.95	"	"	4186	class "A"	Roof slab with Retarder
311	pipe moulding	12-5/94	9-6/94	5167	pipe conc	
312	Mamro Bridge Deck Slab	13-5/94	10-6/94	4968	class "A"	Span # 1
313	Mamro Bridge Deck Slab	"	"	4962	"	Span # 2, 3
314	ARA Bridge Parapit wall, 1.2	15-5/94	12-6/94	4997	"	

CONTRACTOR



CONSULTANT





**APPENDIX "D"**  
**SUMMARY OF TESTS RESULTS**  
**AT SITE LABORATORY**

**SUMMARY OF TEST RESULTS PERFORMED AT SITE LABORATORY JHAL JHAO  
STRUCTURAL BACK FILL AND BORROW MATERIAL**

Month: June 1994

BORROW PIT NO.	LOCATION	DATE	MATERIAL DISCRPTION	% PASSING BY WEIGHT ATTERBERG LIMIT.							AASHTO Classification M-145	COMPACTION		REMARK
				3/4	#4	#10	#40	#200	L.L	P.I		m. d. d	o. m. c	
-	55+790 Box/culvert	2-6-94	used for B/f	-	-	-	-	-	-	-	-	2.231	6.1%	
25	55+600	3-6-96	"	74.2	45.3	36.2	28.7	18.8	-	-	A-1-B	2.246	4.7%	
-	51+317 PIPE/culvert	4-6-94	"	-	-	-	-	-	-	-	-	2.230	6.2%	
8-A	50+920 PIPE/culvert	7-6-94	"	75.9	50.2	32.8	27.7	18.3	-	-	A-2-4	2.254	4.1%	
25	55+167 Box/culvert	8-6-94	used for backfill	74.4	46.2	34.9	28.7	18.5	-	-	A-1-B	2.246	4.4%	
25	55+167 B/c	9-6-94	used for back filling	73.8	47.0	35.3	29.1	17.7	-	-	A-1-B	2.246	4.2%	
25	55+600 L/S	10-6-94	"	73.6	47.3	34.8	29.2	18.5	-	-	A-1-B	2.246	4.4%	
26	Manso River bed	12-6-94	"	-	46.5	36.1	24.8	11.3	-	-	A-1-2	2.244	4.5%	
25	55+405 B/c	12-6-94	"	74.1	46.8	36.4	29.3	18.2	-	-	A-1-6	2.246	4.3%	
26	Manso River bed	13-6-94	"	-	-	-	-	-	-	-	A-1-2	2.244	4.6%	
25	55+405 B/c	16-6-94	"	74.1	46.8	36.2	28.5	17.3	-	-	A-1-6	2.246	4.4%	
25	55+600 L/S	18-6-94	"	75.9	48.6	39.3	31.2	17.4	-	-	A-1-6	2.246	4.3%	
25	55+600 L/S	19-6-94	"	76.3	47.6	38.8	29.4	18.1	-	-	A-1-6	2.246	4.1%	
25	56+395 B/c	22-6-94	"	76.4	47.3	39.0	33.1	18.2	-	-	A-1-6	2.246	4.3%	

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H.C.C.  
Jhal Jhao

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**APPENDIX "E"**  
**HEADWALLS CULVERTS**

# BELA - AWARAN ROAD PROJECT

## CULVERTS HEAD WALLS

SHEET #3A

STA.	CULVERT SINGLE / DBL	EXCAV. CULVERT	PIPE LAYING JOINTING	EXCAV. OF HEADWALLS	LEAN CONC.	CONCRETING BASESLAB	FORMING WALL	REBAR	ADD. PIPE SECTIONS	POURING WALL	FINAL GRADING RIP RAP	FINAL INSP.
62 + 820	DOUBLE PIPE 1 . 37 M. Dia	♥	♣	31 - 10 - 93	06 - 11 - 93	11 - 11 - 93	L/S 30-01-94 R/S 02-02-94	L/S 30-01-94 R/S 02-02-94	R/S 3 NO L/S 1 NO	L/S 31-01-94 R/S 03-02-94		
63 + 425	SINGLE PIPE 1 . 37 M. Dia	♥	♣	01 - 11 - 93	06 - 11 - 93	13 - 11 - 93	04 - 12 - 93	04 - 12 - 93		05 - 12 - 93		
63 + 530	SINGLE PIPE 1 . 37 M. Dia	♥	♣	01 - 11 - 93	07 - 11 - 93	L/S 13-11-93 R/S 15-11-93	18 - 01 - 94	16 - 01 - 94	1 NO R/S 1 NO L/S	13 - 01 - 94		
63 + 930	SINGLE PIPE 0 . 91 M. Dia	♥	♣	08 - 11 - 93	10 - 11 - 93	16 - 11 - 93	R/S 01-12-93 L/S 06-12-93	R/S 01-12-93 L/S 03-12-93	1 NO L/S	R/S 02-12-93 L/S 06-02-94		
64 + 250	SINGLE PIPE 0 . 91 M. Dia	♥	♣	08 - 11 - 93	10 - 11 - 93	17 - 11 - 93	R/S 01-12-93 L/S 11-12-93	R/S 01-12-93 L/S 09-12-93		R/S 02-12-93 L/S 11-12-93		
64 + 892	SINGLE PIPE 1 . 37 M. Dia	♥	♣	15 - 11 - 93	17 - 11 - 93	L/S 18-11-93 R/S 20-11-93	30 - 12 - 93	30 - 12 - 93		30 - 12 - 93		
64 + 970	SINGLE PIPE 0 . 91 M. Dia	♥	♣	16 - 11 - 93	17 - 11 - 93	21 - 11 - 93	L/S 02-12-93 R/S 06-12-93	L/S 02-12-93 R/S 06-12-93		L/S 04-12-93 R/S 06-12-93		
65 + 040	SINGLE PIPE 0 . 91 M. Dia	♥	♣	18 - 11 - 93	18 - 11 - 93	21 - 11 - 93	L/S 01-12-93 R/S 06-12-93	L/S 01-12-93 R/S 06-12-93		L/S 04-12-93 R/S 06-12-93		
67 + 750	SINGLE PIPE 0 . 91 M. Dia	♥	♣	20 - 11 - 93	22 - 11 - 93	23 - 11 - 93	09 - 12 - 93	09 - 12 - 93		09 - 12 - 93		
67 + 486	SINGLE PIPE 1 . 37 M. Dia	♥	♣	26 - 11 - 93	29 - 11 - 93	02 - 12 - 93	08 - 12 - 93	08 - 12 - 93		08 - 12 - 93		
68 + 810	DOUBLE PIPE 0 . 91 M. Dia	♥	♣	28 - 11 - 93	29 - 11 - 93	04 - 12 - 93	06-02-94 R/S 11-12-93 L/S	05-02-94 R/S 11-12-93 L/S	R/S 2 NO	06-02-94 R/S 11-12-93 L/S		
69 + 635	SINGLE PIPE 0 . 91 M. Dia	♥	♣	11 - 12 - 93	04 - 12 - 93	08 - 12 - 93	R/S 12-12-93 L/S 13-12-93	R/S 11-12-93 L/S 12-12-93		R/S 12-12-93 L/S 13-12-93		
70 + 105	SINGLE PIPE 0 . 91 M. Dia	♥	♣	03 - 12 - 93	06 - 12 - 93	08 - 12 - 93	13 - 12 - 93	13 - 12 - 93		13 - 12 - 93		
70 + 200	SINGLE PIPE 0 . 91 M. Dia	♥	♣	05 - 12 - 93	06 - 12 - 93	09 - 12 - 93	09 - 12 - 93	09 - 12 - 93		15 - 12 - 93		

♥ EXCAVATION DONE BY PREVIOUS CONTRACTOR.

♣ LAYING & JOINTING DONE BY PREVIOUS CONTRACTOR.



# BELA - AWARAN ROAD PROJECT

## CULVERTS HEAD WALLS

SHEET #3B

STA.	CULVERT SINGLE / DBL	EXCAV. CULVERT	PIPE LAYING JOINTING	EXCAV. OF HEADWALLS	LEAN CONC.	CONCRETING BASESLAB	FORMING WALL	REBAR	ADD. PIPE SECTIONS	POURING WALL	FINAL GRADING RIP RAP	FINAL INSP.
70 + 605	SINGLE PPE Ø . 91 M. Dia	♥	♣	05 - 12 - 93	06 - 12 - 93	09 - 12 - 93	14 - 12 - 93	13 - 12 - 93		14 - 12 - 93		
71 + 136	SINGLE PPE Ø . 91 M. Dia	♥	♣	09 - 12 - 93	11 - 12 - 93	12 - 12 - 93	16 - 12 - 93	15 - 12 - 93		16 - 12 - 93		
71 + 700	SINGLE PPE Ø . 91 M. Dia	♥	♣	10 - 12 - 93	11 - 12 - 93	13 - 12 - 93	18 - 12 - 93	18 - 12 - 93		18 - 12 - 93		
71 + 855	SINGLE PPE Ø . 91 M. Dia	♥	♣	12 - 12 - 93	14-12-93 R 16-12-93 L	15-12-93 R 18-12-93 L	19 - 12 - 93	19 - 12 - 93		20 - 12 - 93		
72 + 080	SINGLE PPE Ø . 91 M. Dia	♥	♣	13 - 12 - 93	15 - 12 - 93	16 - 12 - 93	19 - 12 - 93	19 - 12 - 93		19 - 12 - 93		
72 + 450	SINGLE PPE Ø . 91 M. Dia	♥	♣	17 - 12 - 93	18 - 12 - 93	18-12-93 L 19-12-93 R	20 - 12 - 93	20 - 12 - 93		21 - 12 - 93		
72 + 895	SINGLE PPE Ø . 91 M. Dia	♥	♣	18 - 12 - 93	19 - 12 - 93	20 - 12 - 93	22 - 12 - 93	22 - 12 - 93		22 - 12 - 93		
73 + 388	SINGLE PPE Ø . 91 M. Dia	♥	♣	01 - 02 - 94	03 - 02 - 94	06 - 02 - 94	10 - 02 - 94	09 - 02 - 94		10 - 02 - 94		
74 + 196	SINGLE PPE 1 . 37 M. Dia	♥	♣	21 - 12 - 93	22 - 12 - 93	23 - 12 - 93	26 - 12 - 93	26 - 12 - 93		26 - 12 - 93		
74 + 548	SINGLE PPE 1 . 37 M. Dia	♥	♣	L/S 27-12-93 R/S 29-12-93	L/S 27-12-93 R/S 08-01-94	L/S 29-12-93 R/S 08-01-94	R/S 10-01-94 L/S 16-01-94	R/S 10-01-94 L/S 16-01-94	1 NO L/S	R/S 18-01-94 L/S 16-01-94		
74 + 950	SINGLE PPE 1 . 37 M. Dia	♥	♣	26 - 12 - 93	26 - 12 - 93	28 - 12 - 93	29 - 12 - 93	01 - 01 - 94		06 - 01 - 94		
75 + 152	SINGLE PPE 1 . 37 M. Dia	♥	♣	27 - 12 - 93	28 - 12 - 93	29 - 12 - 93	01 - 01 - 94	30 - 12 - 93		02 - 01 - 94		
75 + 234	SINGLE PPE Ø . 91 M. Dia	♥	♣	30 - 12 - 93	31 - 12 - 93	01 - 01 - 94	02 - 01 - 94	02 - 01 - 94		02 - 01 - 94		
76 + 410	SINGLE PPE Ø . 91 M. Dia	♥	♣	31 - 12 - 93	02 - 01 - 94	03 - 01 - 94	04 - 01 - 94	04 - 01 - 94		08 - 01 - 94		

♥ EXCAVATION DONE BY PREVIOUS CONTRACTOR.

♣ LAYING & JOINTING DONE BY PREVIOUS CONTRACTOR.

# BELA - AWARAN ROAD PROJECT

## CULVERTS HEAD WALLS

SHEET #3C

STA.	CULVERT SINGLE / DBL	EXCAV. CULVERT	PIPE LAYING JOINTING	EXCAV. OF HEADWALLS	LEAN CONC.	CONCRETING BASESLAB	FORMING WALL	REBAR	ADD. PIPE SECTION'S	POURING WALL	FINAL GRADIN RIP RAP	FINAL INSP.
76 + 680	SINGLE PIPE 0.91 M. Dia	♥	♣	02-01-94	L/S 03-01-94 R/S 05-01-94	06-01-94	08-01-94	06-01-94		08-01-94		
76 + 974	SINGLE PIPE 0.91 M. Dia	♥	♣	03-01-94	L/S 08-01-94 R/S 06-01-94	L/S 10-01-94 R/S 08-01-94	R/S 10-01-94 L/S 12-01-94	R/S 09-01-94 L/S 11-01-94		R/S 10-01-94 L/S 12-01-94		
77 + 215	SINGLE PIPE 0.91 M. Dia	♥	♣	07-01-94	08-01-94	R/L 09-01-94	R/S 11-01-94 L/S 12-01-94	R/L 10-01-94		R/L 12-01-94		
77 + 680	DOUBLE PIPE 1.37 M. Dia	♥	♣	27-01-94	30-01-94	R/S 31-01-94 L/S 01-02-94	R/S 22-02-94 L/S 24-02-94	R/S 21-02-94 L/S 23-02-94		R/S 22-02-94 L/S 24-02-94		
77 + 852	SINGLE PIPE 0.91 M. Dia	♥	♣	08-01-94	L/S 09-01-94 R/S 10-01-94	L/S 10-01-94 R/S 12-01-94	L/S 11-01-94 R/S 13-01-94	L/S 11-01-94 R/S 13-01-94		L/S 12-01-94 R/S 15-01-94		
78 + 540	SINGLE PIPE 0.91 M. Dia	♥	♣	13-01-94	15-01-94	16-01-94	L/S 19-01-94 R/S 20-01-94	L/S 18-01-94 R/S 19-01-94		L/S 19-01-94 R/S 20-01-94		
79 + 020	DOUBLE PIPE 0.91 M. Dia	♥	♣	13-01-94	R/S 15-01-94 L/S 17-01-94	18-01-94	L/S 22-01-94 R/S 23-01-94	L/S 20-01-94 R/S 20-01-94		L/S 22-01-94 R/S 23-01-94		
79 + 443	SINGLE PIPE 0.91 M. Dia	♥	♣	24-01-94	25-01-94	26-01-94	21-02-94	20-02-94		21-02-94		
79 + 721	DOUBLE PIPE 0.91 M. Dia	♥	♣	18-01-94	L/S 19-01-94 R/S 20-01-94	L/S 20-01-94 R/S 22-01-94	R/S 24-01-94 L/S 25-01-94	R/S 23-01-94 L/S 24-01-94		R/S 24-01-94 L/S 25-01-94		
79 + 875	DOUBLE PIPE 0.91 M. Dia	♥	♣	20-01-94	R/S 23-01-94 L/S 27-01-94	R/S 25-01-94 L/S 31-01-94	17-02-94	16-02-94		17-02-94		
80 + 213	SINGLE PIPE 0.91 M. Dia	♥	♣	22-01-94	23-01-94	24-01-94	27-01-94	26-01-94		27-01-94		
ADDITIONAL 73 + 660	SINGLE PIPE 0.91 M. Dia	06-02-94	11-04-94	09-02-94	10-02-94	13-02-94				29-6-94		
53 + 435	SINGLE PIPE 1.37 M. Dia	08-02-94	24-04-94	25-04-94	25-04-94	27-04-94	30-04-94	23-04-94		30-04-94		
53 + 515	DOUBLE PIPE 1.37 M. Dia	06-02-94	30-03-94	02-04-94	04-04-94	05-04-94	R/S 07-04-94 L/S 10-04-94	R/S 06-04-94 L/S 09-04-94		R/S 07-04-94 L/S 10-04-94		

♥ EXCAVATION DONE BY PREVIOUS CONTRACTOR.

♣ LAYING & JOINTING DONE BY PREVIOUS CONTRACTOR.

# BELA - AWARAN ROAD PROJECT

## CULVERTS HEAD WALLS

SHEET #3D

STA.	CULVERT SINGLE / DBL	EXCAV. CULVERT	PIPE LAYING JOINTING	EXCAV. OF HEADWALLS	LEAN CONC.	CONCRETING BASESLAB	FORMING WALL	REBAR	ADD. PIPE SECTIONS	POURING WALL	FINAL GRADIN RIP RAP	FINAL INSP.
54 + 201	SINGLE PIPE 1 . 37 M. Dia	20 - 02 - 94	24 - 02 - 94	26 - 02 - 94	28 - 02 - 94	R/S 22-3-94 L/S 02-3-94	L/S 22-3-94 R/S 24-3-94	L/S 21-3-94 R/S 23-3-94		L/S 22-3-94 R/S 24-3-94		
55 + 952	DOUBLE PIPE 1 . 37 M. Dia	24 - 02 - 94	27 - 02 - 94	20 - 03 - 94	L/S 21-3-94 R/S 24-3-94	L/S 24-3-94 R/S 26-3-94	L/S 27-3-94 R/S 28-3-94	L/S 26-3-94 R/S 27-3-94		L/S 27-3-94 R/S 28-3-94		
62 + 033	SINGLE PIPE 1 . 37 M. Dia	01 - 03 - 94	05 - 03 - 94	24 - 03 - 94	26 - 03 - 94	27 - 03 - 94	29 - 03 - 94	28 - 03 - 94		29 - 3 - 94		
54 + 792	DOUBLE PIPE 1 . 37 M. Dia	27 - 02 - 94	03 - 03 - 94	26 - 03 - 94	28 - 03 - 94	R/S 02/04/94 29 - 03 - 94	L/S 02-4-94 R/S 12-4-94	L/S 31-3-94 R/S 11-4-94		L/S 02-4-94 R/S 12-4-94		
53 + 832	SINGLE PIPE 1 . 37 M. Dia	05 - 03 - 94	R/S 02/04/94 28 - 03 - 94	29 - 03 - 94	30 - 03 - 94	02 - 04 - 94	04 - 04 - 94	03 - 04 - 94		04 - 04 - 94		
52 + 440	SINGLE PIPE 0 . 910 M. Dia	30 - 03 - 94	02 - 04 - 94	04 - 04 - 94	05 - 04 - 94	07 - 04 - 94	11 - 04 - 94	10 - 04 - 94		11 - 04 - 94		
53 + 005	SINGLE PIPE 0 . 910 M. Dia	26 - 03 - 94	04 - 04 - 94	03 - 04 - 94	05 - 04 - 94	06 - 04 - 94	09 - 04 - 94	08 - 04 - 94		09 - 04 - 94		
52 + 170	SINGLE PIPE 0 . 910 M. Dia	03 - 04 - 94	07 - 04 - 94	R/S 10-4-94 L/S 11-4-94	R/S 11-4-94 L/S 12-4-94	R/S 12-4-94 L/S 13-4-94	16 - 04 - 94	15 - 04 - 94		16 - 04 - 94		
52 + 850	SINGLE PIPE 0 . 910 M. Dia	30 - 03 - 94	05 - 04 - 94	05 - 04 - 94	07 - 04 - 94	L/S 09-4-94 R/S 10-4-94	13 - 04 - 94	12 - 04 - 94		13 - 04 - 94		
52 + 288	SINGLE PIPE 0 . 910 M. Dia	13 - 04 - 94	14 - 04 - 94	15 - 04 - 94	16 - 04 - 94	17 - 04 - 94	18 - 04 - 94	19 - 04 - 94		19 - 04 - 94		
53 + 280	SINGLE PIPE 0 . 910 M. Dia	17 - 04 - 94	21 - 04 - 94	22 - 04 - 94	23 - 04 - 94	25 - 04 - 94	28 - 04 - 94	27 - 04 - 94		28 - 04 - 94		
53 + 316	SINGLE PIPE 0 . 910 M. Dia	14 - 04 - 94	18 - 04 - 94	18 - 04 - 94	19 - 04 - 94	20 - 04 - 94	23 - 04 - 94	22 - 04 - 94		23 - 04 - 94		
53 + 743	DOUBLE PIPE 0 . 910 M. Dia	17 - 04 - 94	19 - 04 - 94	19 - 04 - 94	20 - 04 - 94	23 - 04 - 94	L/S 23-04-94	L/S 26-04-94		L/S 27-04-94 R/S 02-05-94		
54 + 695	DOUBLE PIPE 1 . 37 M. Dia	12 - 04 - 94	17 - 04 - 94	17 - 04 - 94	18 - 04 - 94	R/S 19-04-94 L/S 20-04-94	R/S 25-04-94 L/S 23-04-94	R/S 24-04-94 L/S 22-04-94		R/S 25-04-94 L/S 23-04-94		

# BELA - AWARAN ROAD PROJECT

## CULVERTS HEAD WALLS

SHEET #3E

STA.	CULVERT SINGLE / DBL	EXCAV. CULVERT	PIPE LAYING JOINTING	EXCAV. OF HEADWALLS	LEAN CONC.	CONCRETING BASESLAB	FORMING WALL	REBAR	ADD. PIPE SECTIONS	POURING WALL	FINAL GRADING RIP RAP	FINAL INSP.
52 + 025	SINGLE PIPE 0.910 M. Dia	10-04-94	12-04-94	13-04-94	14-04-94	16-04-94	17-04-94	16-04-94		17-04-94		
50 + 920	DOUBLE PIPE 1.68 M. Dia	23-04-94	05-05-94	L/S 29-04-94	L/S 30-04-94	R/S 02-05-94 L/S 02-05-94	02-05-94			L/S 09-6-94 L/S 16-6-94		
51 + 838	SINGLE PIPE 1.37 M. Dia	28-04-94	30-04-94	02-05-94	03-05-94	07-05-94	01-06-94	31-05-94		02-06-94		
51 + 420	SINGLE PIPE 1.37 M. Dia	03-05-94				16-6-94				25-06-94		
51 + 134	SINGLE PIPE 0.910 M. Dia	07-05-94	10-05-94			R/S 02-06-94 L/S 16-6-94				R/S 09-6-94 L/S 22-6-94		
ADDITIONAL 64 + 108	SINGLE PIPE 0.910 M. Dia	12-05-94	15-05-94			22-6-94				25-06-94		
51 + 318	SINGLE 1.37 DIA.	02-6-94	10-6-94	11-6-94	12-6-94	16-6-94				22-6-94		

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**APPENDIX "F"**  
**WEATHER DATA**

# WEATHER DATA

MONTH JUNE 94



DAYS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
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RAINFALL																							X								
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REMARKS  
 RAIN AND HEAVY DIRT-STORM ON 23 JUNE 94 BROUGHT ABOUT FLOODING AT AL-NAL AND ARA RIVERS.  
 MONSOON STARTED ON 30 JUNE CAUSING EXTENSIVE FLOODING

*[Handwritten Signature]*

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**APPENDIX "G"**  
**USAID TERMINATION**  
**LETTER TO HUSNAIN**



UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT  
MISSION FOR PAKISTAN AND AFGHANISTAN

P-9

May 19, 1994

Shiekh Muhammad Yousaf  
Chief Executive  
Husnain Construction Co (Pvt) Ltd.  
242 Ahmed Block  
Garden Town  
Lahore

Subject: Contract Number 391-0510-C-00-3542-00  
Notice of Termination for the Convenience of the  
Government

Dear Mr. Shiekh:

We regret to provide you with this formal notification that the BRP contract, number 391-0510-C-00-3542-00, is hereby terminated for the convenience of the U.S. Government in accordance with Federal Acquisition Regulation (FAR) 52.249-2 and Alternate I: "Termination for Convenience of the Government (Fixed Price) (APR 1984)." This is a termination for convenience and not for default.

This termination for convenience is being exercised in the best interests of the U.S. Government, and is necessitated by an Act of Congress which mandates the rescission of \$56.2 million from the USAID/Pakistan program. Regrettably, a portion of the rescission amount must be met by terminating BRP activities in their entirety.

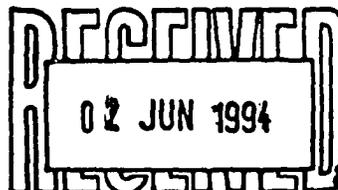
This termination is effective June 30, 1994. Consequently, you must take all steps necessary to avoid incurring any further costs against this contract, except for work specified in paragraph A below. Husnain Construction Company (Pvt) Ltd (HCC) may present a settlement claim in accordance with the termination for convenience provisions of this contract. A copy of the relevant clause is enclosed. Please pay special attention to the obligations outlined in FAR 52.249-2 and Alternate I Paragraph (b) which places several obligations on HCC, as a result of this notice of termination.

A. Cessation of Work and Notification to Immediate Subcontractors

HCC shall take the following steps:

- (1) Stop all work under this contract, except for the following:
  - (a) Complete the construction and backfilling of the pipe culverts at the following locations:

- Km. 50+400
- Km. 50+920



- Km. 51+134
- Km. 51+318
- Km. 51+420
- Km. 51+838
- Km. 62+820
- Km. 63+425
- Km. 63+530
- Km. 63+930
- Km. 74+196

(b) Complete the construction and backfilling of the box culverts at the following locations:

- Km. 55+165
- Km. 55+410
- Km. 55+740
- Km. 56+395
- Km. 56+970

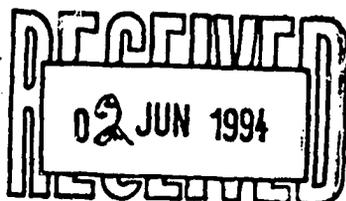
(c) Bridge at Ara River - STA 62+337: Complete construction of aprons at each end with parapet wall as shown in Contract Drawings Vol. 4A of 4, Drawings numbered S-15 thru S-21 and the supplemental Contract Drawings Vol. 4B of 4.

(d) Bridge at Manro River - STA 67+950: Complete embankment construction at each end of the abutment. Complete parapet walls construction on both sides of the deck slab and the apron. Complete the construction of aprons at each end of the abutment. Complete gabions and rip-rap. This work shall be done in accordance with Contract Drawings Vol. 4A of 4, Drawings numbered S-22 thru S-28 and the Supplemental Contract Drawings Vol. 4B of 4.

(2) Place no further subcontracts or orders.

(3) Terminate all subcontracts. The notice of termination to any immediate subcontractor or supplier who is affected by this shall:

- (i) Specify your contract number;
- (ii) State that the contract has been terminated;
- (iii) Provide instructions to stop all work, make no further shipments, place no further orders, and terminate all subcontracts;
- (iv) Provide instructions to submit any settlement proposal promptly, and
- (v) Request that similar notices and instructions be given to any immediate subcontractors



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Letter to HCC  
Page 3 of 4 pages

- (4) Notify the Contracting Officer of all pending legal proceedings that are based on subcontracts or purchase orders under the contract, or in which a lien has been or may be placed against termination inventory to be reported to the Government. Also, promptly notify the Contracting officer of any such proceedings that are filed after receipt of this notice.
- (5) Take any further action required by the Termination clause.

B. Termination Inventory

- (1) As instructed by the Contracting Officer, conduct and deliver to the Government all termination inventory including subcontractor termination that you have the right to take.
- (2) To settle your proposal, it will be necessary to establish that all prime and subcontractor termination inventory has been properly accounted for. For detailed information please refer to Part 45 of the FAR. For your reference, I have enclosed a copy.

C. Settlement with Subcontractors

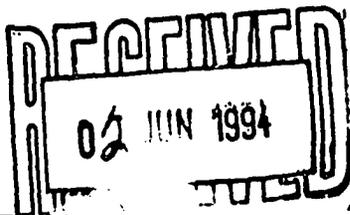
You remain liable to your subcontractors and suppliers for proposals arising because of the termination of their subcontracts or orders. You are requested to resolve these settlement proposals as promptly as possible. For purposes of reimbursement by the Government, settlements will be governed by the provisions of the FAR, Part 49. A copy has been enclosed.

D. Completed End Items

- (1) Notify the Contracting Officer of the number of items completed under the contract and still on hand and arrange for their delivery or disposal.
- (2) Invoice acceptable completed end items under the contract in the usual way, and do not include them in the settlement proposal.

E. Settlement Proposal

HCC has the right to submit a settlement proposal to the Contracting Officer. This proposal should be submitted within 90 days of this notice, but in no event later than one year from the date of this notice. Paragraph (d) of the Termination for Convenience clause describes the items which may be



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P-12 (Last)

Letter to HCC  
Page 4 of 4 pages

considered. The necessary forms for submission of your proposal are enclosed.

F. Administrative/Financial

I am the Contracting Officer in charge of settlement of this termination and will, upon your request, provide any additional information which may be reasonably required. All advance of funds, including advance for drapery/upholstery must be liquidated or accounted for by June 30, 1994.

G. Termination Review Conference

A Termination Review Conference will be held on June 16, 1994 in Republic Engineering Corporation's Office at Lahore. Please depute your representative and confirm your attendance. An agenda for this conference will be sent to you shortly.

Please acknowledge receipt of this notice as provided for below.

Sincerely,

Carlton M. Bennett  
Contracting Officer  
Chief, Contracts and Commodities

ACKNOWLEDGEMENT OF NOTICE

The undersigned acknowledges receipt of a signed copy of this notice on \_\_\_\_\_, 1994. Two signed copies of this notice are returned.

\_\_\_\_\_  
Name of Contractor

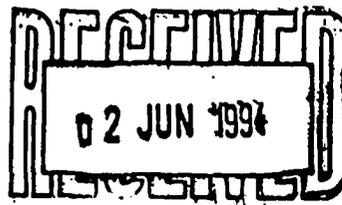
BY: \_\_\_\_\_  
Name

\_\_\_\_\_  
Title

Enc: a/s

Clearance: PO, OFM, RLA, DIR.

cc: copy



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**APPENDIX "H"**  
**USAID TERMINATION**  
**LETTER TO W S A**



UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT  
MISSION FOR PAKISTAN AND AFGHANISTAN

Received 24 May 94  
at Karachi  
office - 1000 hrs.  
RWS

FAX LETTER

May 19, 1994

Mr. James D. Decker  
Vice President  
Wilbur Smith Associates Inc.  
Nation Bank Tower  
P.O. Box 92  
Columbia S.C.

Subject: Contract Number 391-0510-C-00-3541-00  
Notice of Termination for the Convenience of the  
Government

Dear Mr. Decker:

We regret to provide you with this formal notification that the BRP contract, number 391-0510-C-00-3541 is hereby terminated for the convenience of the U.S. Government in accordance with Federal Acquisition Regulation (FAR) 52.249-6: "Termination for Convenience of the Government (Cost Reimbursement)." This is a termination for convenience and not for default.

This termination for convenience is being exercised in the best interests of the U.S. Government, and is necessitated by an Act of Congress which mandates the rescission of \$56.2 million from the USAID/Pakistan program. Regrettably, a portion of the rescission amount must be met by terminating BRP activities in their entirety.

This termination is effective July 31, 1994. Consequently, you must take all steps necessary to avoid incurring any further costs against this contract. All activities in Pakistan, including repatriation of expatriate personnel must be completed no later than July 31, 1994. Wilbur Smith Associates Inc. (WSA) may present a settlement claim in accordance with the termination for convenience provisions of this contract. A copy of the relevant clause is enclosed. Please pay special attention to the obligations outlined in FAR 52.249-6 Paragraph (c) which places several obligations on WSA, as a result of this notice of termination.

A. Cessation of Work and Notification to Immediate Subcontractors

WSA shall take the following steps:

- (1) Stop all work under this contract, except for providing A&E services for the following selected construction activities:
  - (a) Construction and backfilling of the pipe culverts at the following locations:

- Km. 50+400
- Km. 50+920
- Km. 51+134
- Km. 51+318 -
- Km. 51+420 -
- Km. 51+838 -
- Km. 62+820
- Km. 63+425
- Km. 63+530
- Km. 63+930
- Km. 74+196

23+122

(b) Construction and backfilling of the box culverts at the following locations:

- Km. 55+165
- Km. 55+410
- Km. 55+740
- Km. 56+395
- Km. 56+970

(c) Bridge at Ara River - STA 62+337: Construction of aprons at each end with parapet wall as shown in Contract Drawings Vol. 4A of 4, Drawings numbered S-15 thru S-21 and the supplemental Contract Drawings Vol. 4B of 4.

(d) Bridge at Manro River - STA 67+950: Embankment construction at each end of the abutment. Parapet walls construction on both sides of the deck slab and the apron. Construction of aprons at each end of the abutment. Gabions and rip-rap. This work shall be done in accordance with Contract Drawings Vol. 4A of 4, Drawings numbered S-22 thru S-28 and the Supplemental Contract Drawings Vol. 4B of 4.

Road?

(2) Place no further subcontracts or orders.

(3) Terminate all subcontracts. The notice of termination to any immediate subcontractor or supplier who is affected by this shall:

- (i) Specify your contract number;
- (ii) State that the contract has been terminated;
- (iii) Provide instructions to stop all work, make no further shipments, place no further orders, and terminate all subcontracts;
- (iv) Provide instructions to submit any settlement proposal promptly, and
- (v) Request that similar notices and instructions

be given to any immediate subcontractors

- (4) Notify the Contracting Officer of all pending legal proceedings that are based on subcontracts or purchase orders under the contract, or in which a lien has been or may be placed against termination inventory to be reported to the Government. Also, promptly notify the Contracting officer of any such proceedings that are filed after receipt of this notice.
- (5) Take any further action required by the Termination clause.

B. Termination Inventory

- (1) As instructed by the Contracting Officer, conduct and deliver to the Government all termination inventory including subcontractor termination that you have the right to take.
- (2) To settle your proposal, it will be necessary to establish that all prime and subcontractor termination inventory has been properly accounted for. For detailed information please refer to Part 45 of the FAR. For your reference, I have enclosed a copy.

C. Settlement with Subcontractors

You remain liable to your subcontractors and suppliers for proposals arising because of the termination of their subcontracts or orders. You are requested to resolve these settlement proposals as promptly as possible. For purposes of reimbursement by the Government, settlements will be governed by the provisions of the FAR, Part 49. A copy has been enclosed.

D. Completed End Items

- (1) Notify the Contracting Officer of the number of items completed under the contract and still on hand and arrange for their delivery or disposal.
- (2) Invoice acceptable completed end items under the contract in the usual way , and do not include them in the settlement proposal.

E. Settlement Proposal

WSA has the right to submit a settlement proposal to the Contracting Officer. This proposal should be submitted within 90 days of this notice, but in no event later than one year

from the date of this notice. Paragraph (e) of the Termination for Convenience clause describes the items which may be considered. The necessary forms for submission of your proposal are enclosed.

F. Administrative/Financial

I am the Contracting Officer in charge of settlement of this termination and will, upon your request, provide any additional information which may be reasonably required. All advance of funds, including advance for drapery/upholstery must be liquidated or accounted for by July 31, 1994.

G. Termination Review Conference

A Termination Review Conference will be held on June 23, 1994 in the USAID Office at Islamabad. Please depute your representative and confirm your attendance. An agenda for this conference will be sent to you shortly.

Please acknowledge receipt of this notice as provided for below.

Sincerely,



Carlton M. Bennett  
Contracting Officer  
Chief, Contracts and Commodities

ACKNOWLEDGEMENT OF NOTICE

The undersigned acknowledges receipt of a signed copy of this notice on \_\_\_\_\_, 1994. Two signed copies of this notice are returned.

\_\_\_\_\_  
Name of Contractor

BY: \_\_\_\_\_  
Name

\_\_\_\_\_  
Title

Enc: a/s

Clearance: PO, RLA, DIR.

cc: Resident Engineer, WSA

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**APPENDIX "I"**  
**MINUTES OF MEETING**  
**W/GOB - 27 JUNE 94**

*RS*  
*Dani*

FROM: ROGER SHERIDAN/PERVAIZ GANI  
SUBJECT: MEETING WITH GOB OFFICIALS  
BRP SECURITY CONCERNS  
TO: HARRY PROCTOR/JOHN MARTIN  
CC: REC OFFICE(FAX # 021-4550221)

WE MET WITH THE GOB OFFICIALS AT QUETTA ON JUNE 27, 1994 TO SORT OUT OUR SECURITY CONCERNS REGARDING REC STAFF AND HANDING OVER OF EQUIPMENT AT JHAL-JHAO CAMPS. THE FOLLOWING GOB OFFICIALS WERE PRESENT IN THE MEETING:

- (1) MR. MAJEED BAZENJO  
MINISTER LIVESTOCK.
- (2) MR. SOHAIL HAMAYOON  
ADDITIONAL SECRETARY (HOME)
- (3) MR. ATTA JAFFAR  
ADDITIONAL CHIEF SECRETARY (D)
- (4) MR. M. A. BALOCH  
SECRETARY C&W
- (5) MR. MIRAN JAN  
DEPUTY COMMISSIONER AWARAN.
- (6) MR. PIR BUX BALOCH  
SUPERINTENDING ENGINEER (SE)  
(MAINTENANCE) C&W
- (7) MR. JAVED RIZVI  
SE (P&D)

THE FOLLOWING WAS AGREED:

- (1) ON WEDNESDAY JUNE 29, 1994 10:00 HRS MR. PIR BUX BALOCH WILL TAKE OVER FROM MR. WADOOD KHAN (REC) AT JHAL JHAO ALL THE EQUIPMENT OF JHAL JHAO/ARA CAMP AND SIGN OFF ON THE INVENTORY.
- (2) MR. MIRAN JAN, DC AWARAN, HAS GIVEN ASSURANCE FOR THE SECURITY OF ALL THE REC STAFF, WHO WILL DEPART FOR KARACHI FROM THE JHAL JHAO CAMP ON THURSDAY, JUNE 30, 1994. THE DC AWARAN WILL PROVIDE LEVY GUARDS, WHO WILL ESCORT UPTO THE HUB BRIDGE. THE DC AWARAN WILL ALSO COORDINATE WITH THE DC UTHAL, CAPT. AFTAB AHMED, TO ENSURE THE SECURITY OF THE STAFF WHILE PASSING THROUGH UTHAL DIVISION.

IF THE ABOVE COMMITMENTS ARE FULFILLED BY THE GOB OFFICIALS THEN WE ARE SATISFIED ABOUT THE SECURITY OF THE RESIDENT ENGINEER'S STAFF.

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**APPENDIX " J "**  
**BILL NO: 06 FINAL BILLING**

85



WILBUR SMITH ASSOCIATES, INC.

REC

IN ASSOCIATION WITH

REPUBLIC ENGINEERING CORPORATION (PVT.) LTD.

42-C BLOCK 6, P.E. CHS, KARACHI 75400 PAKISTAN PHONE 92 (0) 21 4 6675 FAX 92 (0) 21 4 42 698

WSA/REC/AID-JJ/94.

DATED:- July 12, 1994

TO: **CARLTON BENNETT, CONTRACTING OFFICER**  
**CHIEF CONTRACTING & COMMODITIES**

COPY TO: **PERVAIZ GANI - COTR, PO.**  
**JIM DECKER/JACK LEONARD**  
**WSA - COLUMBIA**

FROM: **ROGER W. SHERIDAN - RESIDENT ENGINEER, COR**  
**WILBUR SMITH ASSOCIATES, INC,**  
**REPUBLIC ENGINEERING CORP. (PVT) LTD.**

SUBJECT: **CONTRACT NO. 391-0510-C-00-3542,**  
**INVOICE NO. 6 - FINAL BILLING.**

The attached Billing No. 6 FINAL BILLING in the Total Amount of Rs. 67,856,214.00 has been reviewed by the resident Engineer.

Payable under this Billing as Final Payment are the Vouchers for Rs. 11,181,057.30 (Requested for payment in Pakistani Rupees) and Rs. 4,791,881.70 (Requested for payment in U.S. Dollars) for a TOTAL FINAL PAYMENT OF Rs. 15,972,939.00.

This Final Payment includes the payment for the Manufactured on Site unconsumed pipe of Rs. 3,298,262.00.

Under Section B-6-b-2, Vol. 1, Page 12 of the Specifications, the Resident Engineer (COR) recommends acceptance in that:

The construction services for which final payment is invoiced meet in all respects the Specification prescribed in the Contract, and the terms of the 19 May 94 "Letter of Termination", and the amount is otherwise properly due and payable under the terms of the Contract.

1ST FLOOR, PAAF BUILDING, 7-D, KASHMIR EGERTON ROAD, LAHORE-54000 PAKISTAN  
PHONE (042) 6360180-3; CABLE "REPENCO"; TELEX 44924 - PICON PK; FAX 92-42-6369655

NATIONSBANK TOWER, P.O. BOX 92, 1301 GERVAIS ST., COLUMBIA, S.C. 29202, USA; (803) 738-0580; TELEX: 573439 WILSMITH CLB; FAX: (803) 251-4264

gb

HUSNAIN CONSTRUCTION  
COMPANY PVT. LTD.

Received on  
12 July 94  
92/5

Dated:-----

The Resident Engineer,  
U.S. AID Project,  
BELA-AWARAN ROAD.

Subject: 6 TH AND FINAL BILL FOR THE CONSTRUCTION OF  
BELA-AWARAN ROAD PROJECT.

Dear Sir,

Please find herewith our 6th and final bill amounting to Rs. 67,856,214.00  
(Rupees Sixty Seven Million Eight Hundred Fifty Six Thousand Two Hundred and ~~forty~~ Only)  
for the above subject in triplicate.

FOURTEEN  
Habit

This is for you approval and early payment please.

Thanking you,

Faithfully yours,  
For HUSNAIN CONST.CO.,PVT. LTD.

Habib ur Rahman  
HABIB UR RAHMAN  
(Project Manager)

92/5

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**PUBLIC VOUCHER FOR PURCHASES AND SERVICES OTHER THAN PERSONAL**

VOUCHER NO.

U.S. DEPARTMENT, BUREAU, OR ESTABLISHMENT AND LOCATION

DATE VOUCHER PREPARED

SCHEDULE NO.

OFFICE OF FINANCIAL  
 MANAGEMENT USAID/  
 ISLAMABAD

CONTRACT NUMBER AND DATE

391-0510-C-00-3542-00

**PAID BY**

REQUISITION NUMBER AND DATE

No.-6

PAYEE'S  
 NAME  
 AND  
 ADDRESS

HUSNAIN CONSTRUCTION COMPANY (PVT)  
 LTD.  
 242 Ahmed Block, New Garden Town  
 Lahore

DATE INVOICE RECEIVED

DISCOUNT TERMS

PAYEE'S ACCOUNT NUMBER

SHIPPED FROM

TO

WEIGHT

GOVERNMENT B/L NUMBER

NUMBER AND DATE OF ORDER	DATE OF DELIVERY OR SERVICE	ARTICLES OR SERVICES (Enter description, item number of contract or Federal supply schedule, and other information deemed necessary)	QUAN- TITY	UNIT PRICE		AMOUNT (1)
				COST	PER	
		6TH & FINAL. Interim construction payment Balochistan Road Project, 391-0510: (70% of total Bill-6 to be paid in Pakistani Rupees.)				11,181,057.30

(Use continuation sheet(s) if necessary)

(Payee must NOT use the space below)

**TOTAL**

11,181,057.30

PAYMENT:  
 PROVISIONAL

APPROVED FOR

EXCHANGE RATE

DIFFERENCES

COMPLETE

= \$

= \$ 1.00

PARTIAL

BY ?

FINAL

PROGRESS

TITLE

Amount verified; correct for

(Signature or Initials)

-Pursuant to authority vested in me, I certify that this voucher is correct and proper for payment.

**ACCOUNTING CLASSIFICATION**

PAID BY	CHECK NUMBER	ON ACCOUNT OF U.S. TREASURY	CHECK NUMBER	ON (Name of bank)
	CASH	DATE	PAYEE'S	

<sup>1</sup> When stated in foreign currency, insert name of currency.

<sup>2</sup> If the ability to certify and authority to approve are combined in one person, one signature only is necessary; otherwise the approving officer will sign in the space provided, over his official title.

<sup>3</sup> When a voucher is receipted in the name of a company or corporation, the name of the person writing the company or corporate name, as well as the capacity in which he signs, must appear. For example: "John Doe Company, per John Smith, Secretary", or "Treasurer", as the case may be.

PER

TITLE

Previous edition usable

NSN 7540-00-604-4206

**PRIVACY ACT STATEMENT**

The information requested on this form is required under the provisions of 31 U.S.C 82b and 82c, for the purpose of disbursing Federal money. The information requested is to identify the particular creditor and the amounts to be paid. Failure to furnish this information will hinder discharge of the payment obligation.

\*U.S. GOP: 1987-181-247/60139

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Stipulated Form 1034  
Revised January 1980  
Department of the Treasury  
118RM 4-7000  
1034-118

## PUBLIC VOUCHER FOR PURCHASES AND SERVICES OTHER THAN PERSONAL

VOUCHER NO.

U.S. DEPARTMENT, BUREAU, OR ESTABLISHMENT AND LOCATION  OFFICE OF THE GENERAL MANAGER (PVT HEAD)/ ISLAMABAD.	DATE VOUCHER PREPARED  CONTRACT NUMBER AND DATE 391-0510-C-00-2542-00  REQUISITION NUMBER AND DATE No. - 6	SCHEDULE NO.  PAID BY  DATE INVOICE RECEIVED  DISCOUNT TERMS  PAYEE'S ACCOUNT NUMBER
--	--	--

PAYEE'S NAME AND ADDRESS  HUSNATH CONSTRUCTION COMPANY (PVT) LTD. 242 AHMED BLOCK, NEW GARDEN TOWN LAHORE.	
--	--

SHIPPED FROM	TO	WEIGHT	GOVERNMENT S/L NUMBER
--------------	----	--------	-----------------------

NUMBER AND DATE OF ORDER	DATE OF DELIVERY OR SERVICE	ARTICLES OR SERVICES <small>(Enter description, item number of contract of Federal supply schedule, and other information deemed necessary)</small>	QUANTITY	UNIT PRICE		AMOUNT
				COST	PER YD	
# 6 AND FINAL.		# 6TH & FINAL. Interim construction payment Balochistan Road Project, 391-0510:  ( 30 % of total Bill-6 to be paid in U.S. dollars.)			RS.	4,791,881.70

(Use continuation sheet(s) if necessary) (Payee must NOT use the space below) **TOTALS** 4,791,881.70

PAYMENT: <input type="checkbox"/> PROVISIONAL <input type="checkbox"/> COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL <input type="checkbox"/> PROGRESS <input type="checkbox"/> ADVANCE	APPROVED FOR BY: _____ TITLE: _____	EXCHANGE RATE = \$ _____ = \$1.00	DIFFERENCES  Amount verified; correct for  (Signature or initials)
--	---	--------------------------------------	--

Pursuant to authority vested in me, I certify that this voucher is correct and proper for payment.

\_\_\_\_\_  
 (Date) (Authorized Certifying Officer)<sup>1</sup> (Title)

ACCOUNTING CLASSIFICATION

PAID BY	CHECK NUMBER	ON ACCOUNT OF U.S. TREASURY	CHECK NUMBER	ON (Name of bank)
	CASH	DATE	PAYEE <sup>2</sup>	

<sup>1</sup>When stated in foreign currency, insert name of currency  
<sup>2</sup>If the ability to certify and authority to approve are combined in one person, one signature only is necessary; otherwise the approving officer will sign in the space provided, over his official title.  
<sup>3</sup>When a voucher is receipted in the name of a company or corporation, the name of the person writing the company or corporate name, as well as the capacity in which he signs, must appear. For example: "John Doe Company, per John Smith, Secretary", or "Treasurer", as the case may be.

**PRIVACY ACT STATEMENT**  
 The information requested on this form is required under the provisions of 31 U.S.C. 82b and 82c, for the purpose of disbursing Federal money. The information requested is to identify the particular creditor and the amounts to be paid. Failure to furnish this information will hinder discharge of the payment obligation.



# HUSNAIN CONSTRUCTION COMPANY PVT. LTD.

G.C. AND FINAL BILL  
BMLA-AWARAN ROAD.

DATED: 9-7-1994.

## SUMMARY OF COST.

<u>S.No.</u>	<u>DESCRIPTION.</u>	<u>AMOUNT.</u>
1.	PACKAGE- 1. BASIC WORKS. B/1.	= Rs. 36,465,629
	OPTION 1.1 KILKAURI BRIDGE	= Rs. 560,365
	" 1.2 WASHOP BRIDGE	= Rs. 1,280,456
	" 1.3 BOX CULVERT 55+167.	= Rs. 2,594,351
	" 1.4 ADDITIONAL RIP-RAP.	= Rs. 400,000
	" 1.5 RUBBLE GROUTED & UNGROUTED.	= Rs. 400,000
	" 1.6 GABIONS.	= Rs. 3,365,602
2.	PACKAGE- 2. BASIC WORKS. B/2.	= Rs. 17,191,549
	OPTION 2.1 SUB-GRADE.	= Rs. 1,500,000
	" 2.2 AGGREGATE BASE COURSE.	= Rs. 400,000
	" 2.3 D.B.S.T.	= Rs. 400,000
	TOTAL	= Rs. 64,557,952

## DEDUCTIONS.

i) Material taken from Client Stores.	
910 mm RCC pipe = 6 Nos @ 2000/-	= 12,000
1370 " " = 33 " @ 3000/-	= 108,000
ii) AMOUNT RECEIVED:	
Vide 1st running bill	= 7,200,000
" 2nd "	= 4,800,000
" 3rd "	= 4,000,000
" 4th "	= 9,100,000
" 5th "	= 4,400,000
	= 39,700,000

*Handwritten signature*



# HUSNAIN CONSTRUCTION COMPANY PVT. LTD.

	B/F	=	Rs.	64,557,952
	(-)	=	Rs.	30,759,619
				<hr/>
		=	Rs.	24,798,333
DEDUCT MOBILIZATION ADVANCE	(-)	=	Rs.	12,123,656
				<hr/>
SUB TOTAL			Rs.	12,674,677

SIZE	LENGTH	PRICE/M	TOTAL
910 MM	666.40MM	3080	2,052,512
1370 MM	144,64MM	6000	867,840
1680 MM	44,46MM	8500	377,910
			<hr/>
			3,298,262

PAYMENT FOR INVENTORIED  
MANUFACTURED ON SITE  
R.C.C. PIPES

Rs. 3,298,262

TOTAL :

Rs. 15,972,939

*Habib ur Rahman*

Project Manager  
HUSNAIN CONSTR. CO.(PVT.) LTD.

*Habib*



# HUSNAIN CONSTRUCTION COMPANY PVT. LTD.

-1-

DATED: 9-7-1994

Gth. AND FINAL BILL  
LA-AWARAN ROAD.

<u>B.O.Q.</u> <u>ITEM No.</u>	<u>DESCRIPTION OF ITEM OF</u> <u>WORK.</u>	<u>UNIT</u>	<u>QUANTITY</u>	<u>RATE</u>	<u>AMOUNT</u>
	1. PACKAGE- 1. <u>BASIC WORK ( B1 ).</u>				
B1/101	CLEARING AND GRUBBING.	M <sup>2</sup>	369.320	10/-	3693
B1/104-a	EXCAVATION IN COMMON MATERIAL.	M <sup>3</sup>	8252.913	100/-	825,291
B1/105-a	STRUCTURAL EXCAVATION BACKFILL & DISPOSAL OF COMMON MATERIAL.	M <sup>3</sup>	3742.110	180/-	673,580
B1/105-c	BACKFILL OF EXISTING PIPE CULVERTS, EMBANK- MENT & BOX CULVERTS B/W WING WALLS.	M <sup>3</sup>	NIL	100/-	NIL
B1/106-a	FORMATION OF EMBANKM- ENT FROM ROADWAY EXCA- VATION IN COMMON MA- TERIAL.	M <sup>3</sup>	NIL	130/-	NIL
B1/106-c	FORMATION OF EMBANKM- ENT FROM BORROW EXCA- VATION IN COMMON MAT- ERIAL.	M <sup>3</sup>	28263.937	160/-	4,522,230
B1/401-a	CONCRETE CLASS- 1.	M <sup>3</sup>	1682.860	5000/-	8,414,300

C/O = 14,439,094

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# HUSNAIN CONSTRUCTION COMPANY PVT. LTD.

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					E/F =	14,439,094
B1/401-c	CONCRETE CLASS- C.	M <sup>3</sup>	37.877	3000/-		113,631
B1/404	COLD WORK REINFOR- cement.	M. TON	179.142	25000/-		4,478,550
B1/405-a	ELASTOMERIC/EXPAN- SION BEARING UNIT.	No.	15	3000/-		45,000
B1/405-b	EXPANSION JOINT ASSEMBLY.	L.M	9.000	1500/-		13,500
B1/405-c	STANDARD STEEL PIP- ES( 100 mm DIA ).	L.M	29.700	800/-		23,760
B1/407-a	R.C.C. PIPES AASHTO M-170 OF 910 mm DIA.	L.M	81.300	4000/-		325,200
B1/407-b	R.C.C. PIPES AASHTO M-170 OF 1370 mm DIA.	L.M	164.960	7500/-		1,237,200
B1/407-c	EXCAVATION & FILL WITH SELECTED MAT- ERIAL.	M <sup>3</sup>	770.500	200/-		154,100
B1/407-g	SELECTED MATERIAL BACKFILL WHERE PIPES HAS BEEN LAID BY PRE- VIOUS CONTRACTOR.	M <sup>3</sup>	2000.000	500/-		1,000,000
B1/407-h	CLEARING & REMOVAL OF DEPOSITS FROM PIPES & CHANNELS CONSTRUCTED BY PREVIOUS CONTRA- CTOR.	M <sup>3</sup>	500.000	100/-		50,000
B1/410-a	RIP-RAP CLASS- A.	M <sup>3</sup>	1446.610	1000/-		<u>1,446,610</u>

C/O. = 23,326,645

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# HUSNAIN CONSTRUCTION COMPANY PVT. LTD.

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B/P = 23,326,645

B1/410-b	RIP-RAP CLASS- A.	M <sup>3</sup>	1639.890	1200/-	1,967,868
B1/410-c	FILTER LAYER/GRAVEL FILL.	M <sup>3</sup>	748.270	800/-	598,616
B1/413	CLEAN EXPOSED REIN- FORCEMENT IN EXIST- ING STRUCTURES.	LUMP- SUM	-	-	150,000
B1/601	CONSTRUCTION, MAINT- ENANCE & DISPOSAL OF TEMPORARY ROAD WORKS.	LUMP- SUM	2,000,000	75 %	1,500,000
B1/604	MAINTENANCE OF ENG- INEER'S BASE CAMP. MONTH	(24-8-93 TO 30-6-94).	100000/-		1,022,500
B1/605-a	REHABILITATING ENG- INEER'S BASE CAMP.	PROV SUM	-	-	1,000,000
B1/605-b	ADDITIONAL ACCOMMO- DATION FOR ENGINEER'S STAFF AT CONTRACTOR'S CAMP.	LUMP- SUM	-	-	2,000,000
B1/SEC-H	BONDS & GURANTEES.	"	-	-	<u>4,000,000</u>
TOTAL =					<u><u>36,435,629</u></u>

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# HUSNAIN CONSTRUCTION COMPANY PVT. LTD.

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## 2. PACKAGE- 1. OPTIONS (1.1 TO 1.6).

### i) OPTION 1.1 ( DELTA BRIDGE ).

B1/1.1/ 406-b	CAST IN PLACE CONC- RETE PILES(560 mm DIA).	L.M.	12.073	5000/-	60,365
B1/1.1/ 406-f	LOAD TEST.	No.	1	100000/-	100,000
B1/1.1/ SEC-II	BONDS & GURANTEES.	LUMP- SUM	-	-	<u>400,000</u>
<b>TOTAL =</b>					<b><u>560,365</u></b>

### ii) OPTION 1.2 ( WASHOP BRIDGE ).

B1/1.2/ .105-a	STRUCTURAL EXCAVATION BACKFILL & DISPOSAL OF COMMON MATERIAL.	M <sup>3</sup>	2.810	180/-	506
B1/1.2/ 401-a	CONCRETE CLASS- A.	M <sup>3</sup>	18.370	5000/-	91,850
B1/1.2/ 401-c	CONCRETE CLASS- C.	M <sup>3</sup>	0.550	3000/-	1,650
B1/1.2/ 404	COLD WORK REINFORCE- MENT.	M.TON	1.366	25000/-	34,150
B1/1.2/ 406-b	CAST IN PLACE CONCR- ETE PILES (560 mm DIA)	L.M.	100.460	5000/-	502,300
B1/1.2/ 406-c	LOAD TEST.	No.	1	100000/-	100,000
B1/1.2/ 413	CLEAN EXPOSED REINFO- NCING STEEL IN EXIST- ING STRUCTURE.	LUMP SUM.	-	-	150,000
B1/1.2/ Sec-H	BONDS AND GURANTEES.	LUMP SUM.	-	-	400,000
<b>TOTAL =</b>					<b>1,280,456</b>



# HUSNAIN CONSTRUCTION COMPANY PVT. LTD.

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## iii) OPTION 1.3 ( ROCK GULVERT 554167 ).

B1/1.3/ 105-a	STRUCTURAL EXCAVATION, BACKFILL & DISPOSAL OF COMMON MATERIAL.	M <sup>3</sup>	51.480	180/-	9,267
B1/1.3/ 106-c	FORMATION OF EMBANKMENT FROM BORROW EXCAVATION IN COMMON MATERIAL.	M <sup>3</sup>	4580.368	160/-	732,859
B1/1.3/ 401-a	CONCRETE CLASS- A.	M <sup>3</sup>	177.770	5000/-	888,850
B1/1.3/ 404	COLD WORK REINFORCE- MENT.	M.TON	22.535	25000/-	563,375
B1/1.3/ SEC-II	BONDS & GURANTEES.	LUMP- SUM	-	-	<u>400,000</u>

## iv) OPTION 1.4 ( ADDITIONAL RIP-RAP ).

TOTAL = 2,594,351

B1/1.4/ SEC-II	BONDS & GURANTEES.	LUMP- SUM	-	TOTAL =	<u>400,000</u>
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## v) OPTION 1.5 ( RUBBLE GROUTED & UNGROUTED ).

B1/1.5/ SEC-II	BONDS & GURANTEES.	LUMP- SUM	-	TOTAL =	<u>400,000</u>
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## vi) OPTION 1.6 ( GABIONS ).

B1/1.6/ 410-c	FILTER LAYER/GRAVEL FILL.	M <sup>3</sup>	189.630	800/-	151,704
B1/1.6/ 416-a	STEEL WIRE MESH FOR GABIONS.	Kgs.	27299.000	30/-	818,970
B1/1.6/ 416-b	ROCK FILL IN GABIONS.	M <sup>3</sup>	2493.660	800/-	1,994,928
B1/1.6/ SEC-H	BONDS & GURANTEES.	LUMP- SUM	-	TOTAL =	<u>400,000</u>

TOTAL = 3,365,602



# HAIN CONSTRUCTION COMPANY PVT. LTD.

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## 3. PACKAGE- 2. BASIC COST ( B2 ).

B2/101	CLEARING & GRUBBING.	M <sup>2</sup>	91.640	10/-	916
B2/104-a	EXCAVATION IN COMMON MATERIAL.	M <sup>3</sup>	27155.103	100/-	2,715,510
B2/105-a	STRUCTURAL EXCAVATION BACKFILL & DISPOSAL OF COMMON MATERIAL.	M <sup>3</sup>	4492.034	130/-	583,965
B2/106-c	FORMATION OF EMBANKMENT FROM BORROW EXCAVATION IN COMMON MATERIAL.	M <sup>3</sup>	47911.000	160/-	7,665,760
B2/401-a	CONCRETE CLASS- A.	M <sup>3</sup>	150.000	5000/-	750,000
B2/401-c	CONCRETE CLASS- C.	M <sup>3</sup>	17.233	3000/-	51,699
B2/404	COLD WORK REINFORCEMENT.	M. TON	5.931	25000/-	148,275
B2/407-a	R.C.C. PIPES AASHTO M-170 OF 910 mm DIA.	L.M	217.250	4000/-	869,000
B2/407-b	R.C.C. PIPES AASHTO M-170 of 1370 mm DIA.	L.M	221.500	7500/-	1,661,250
B2/407-c	R.C.C. PIPES AASHTO M-170 OF 1030 mm DIA.	L.M	62.800	11000/-	690,800
B2/407-e	EXCAVATION & FILL WITH SELECTED MATERIAL.	M <sup>3</sup>	1648.820	200/-	329,764
B2/601	CONSTRUCTION, MAINTENANCE & DISPOSAL OF TEMPORARY ROADS WORKS.	LUMP-SUM	1,400,000	-	1,400,000
B2/SEC-H	BONDS & GUARANTEES.	LUMP-SUM	-	-	400,000
				TOTAL =	<u>17,191,549</u>



# HUSNAIN CONSTRUCTION COMPANY PVT. LTD.

4. PACKAGE- 2.  
OPTIONS ( 2.1 TO 2.3 ).

1) OPTION 2.1 ( SUB-BASE ).

B2/2.1/ 107-c	RESTORATION OF EXIS- TING SUBGRADE BY SC- ARIFICATION & COMPA- CTION.	M <sup>2</sup>	22000.000	50/-	1,100,000
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B2/2.1/ SEC-II	BONDS & GURANTEES.	LUMP-SUM	-	-	<u>400,000</u>
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TOTAL = 1,500,000

ii) OPTION 2.2 ( AGGREGATE BASE COURSE ).

B2/2.2/ SEC-H	BONDS & GURANTEES.	LUMP-SUM	-	TOTAL =	<u>400,000</u>
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iii) OPTION 2.3 ( D.E.S.T. ).

B2/2.3/ SEC-H	BONDS & GURANTEES.	LUMP-SUM	-	TOTAL =	<u>400,000</u>
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