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U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

MISSION TO PAKISTAN

Islamabad

CONTRACT NO. 391-0479-C-00-5036-00

Baluchistan Area Development Project

BELA — AWARAN ROAD

CONSTRUCTION PROGRESS REPORT

March 1989

JOINT VENTURE

STV/LYON ASSOCIATES, INC., HONOLULU, HAWAII U.S.A.

AND

ASSOCIATED CONSULTING ENGINEERS ACE (PRIVATE) LTD.
KARACHI — PAKISTAN

BELA - AWARAN ROAD PROJECT
USAID CONTRACT NO.391-0479-C-00-5036-00
MONTHLY PROGRESS REPORT

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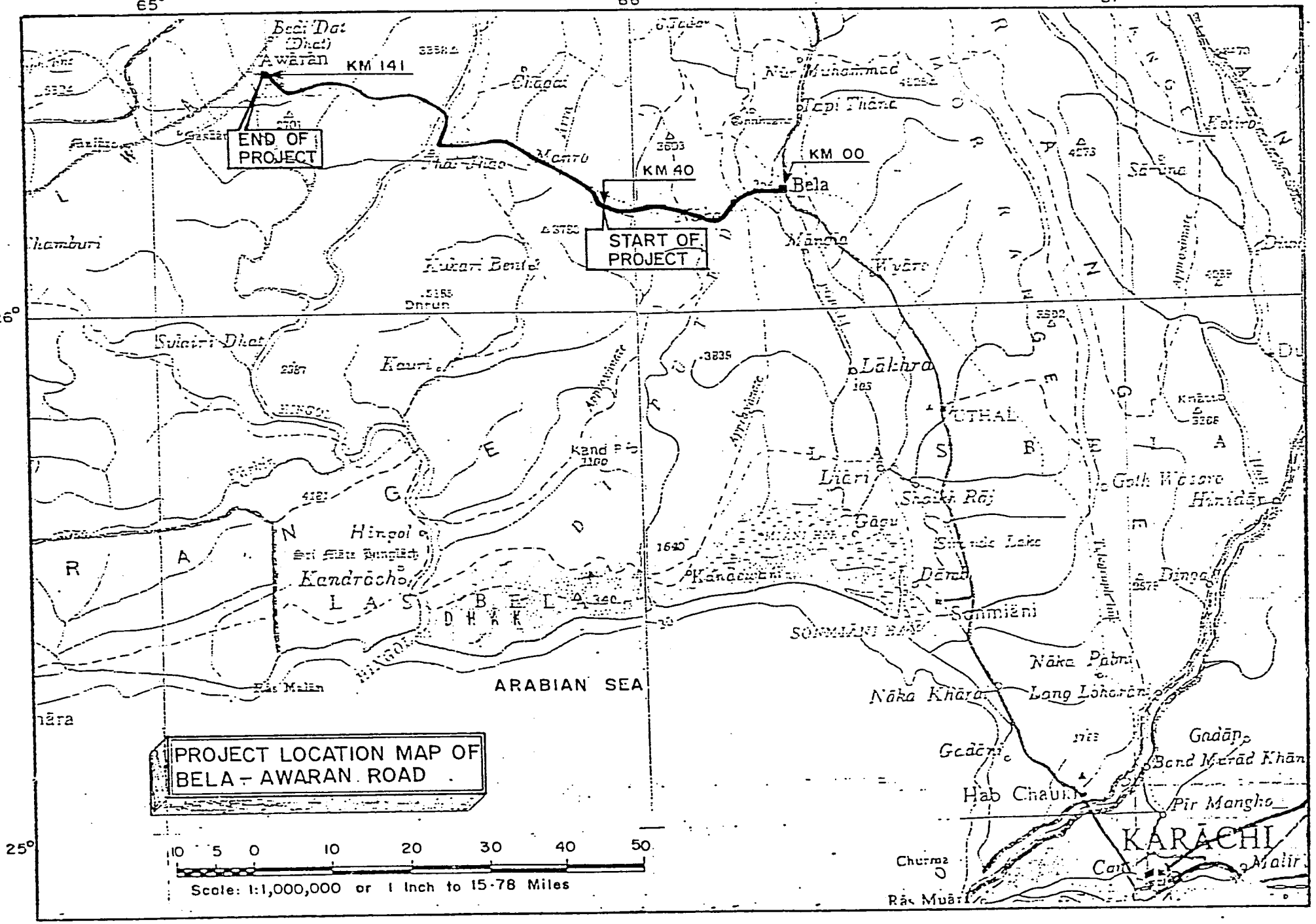
PROJECT LOCATION MAP OF
BELA – AWARAN ROAD
END OF PROJECT
KM 141
KM 40
START OF PROJECT
KM 00
Bela
Awāran
ARABIAN SEA
KARACHI
Hab Chauki
Lākhra
Hingol
Kandrācho
Sonmiāni
Gadāni
Band Murād Khān
Pir Mangho
Churma
Rās Muārī
Malir
Kauri
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Nāka Pabni
Gadāp
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Golh Wasore
Sāmna
Dhrun
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Nur Muhammad
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Sulairi Dhat
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KARACHI
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Rās Muārī
Malir
Hinidār
Golh Wasore
Sāmna
Chamburi

1. INTRODUCTION

1.1 Background

The Baluchistan Area Development (BALAD) Project (391-0479) provides for the Construction of 101 Km of road, bridges and other drainage structures located in the Kalat Division. The road links the towns of Bela and Awaran. USAID will finance the construction costs of the road and structures.

1.2 Purpose

The purpose of this contract is to provide the construction services for the Bela-Awaran Road and bridges and other drainage structures, all to be constructed concurrently.

1.3 Project Description

The Road:

Construction of excavation, embankment, sub-base and base courses, double bituminous surface treatment wearing surface, approximately 101 kilometer long.

The Bridges and other Drainage Structures:

Construction of 14 reinforced concrete bridges, 14 reinforced concrete box culverts, and installation of approximately 251 RC pipe culverts and endwalls.

1.4 Construction Activities (Highlights)

No.	Description	Quantity	Unit
1.4.1	Clearing and Grubbing	189,000	S.M.
1.4.2	Compaction of natural ground	189,000	S.M.
1.4.3	Excavation of unsuitable material	42,560	C.M.
1.4.4	Structural Excavation and Backfilling	10,300	C.M.
1.4.5	Formation of Embankment	2,139,476	C.M.
1.4.6	Subgrade preparation	160,100	S.M.
1.4.7	Granular Subbase	170,200	C.M.
1.4.8	Aggregate Base Course	160,700	C.M.

3

No.	Description	Quantity	Unit
1.4.9	Bituminous Prime Coat	723,550	S.M.
1.4.10	Double Bituminous Surface Treatment	695,550	S.M.
1.4.11	Concrete	17,940	C.M.
1.4.12	Reinforcement Grade 60	1,700	Ton
1.4.13	Joints and bearing devices for concrete	2	Lump sum
1.4.14	Piling: Cast-in-place concrete piles (560 mm)	4,250	M
1.4.15	Concrete Pipe Culverts: 910 to 1830 mm	5,535	M
1.4.16	Concrete Pipe Underdrain	120	M
1.4.17	Riprap	23,800	C.M.
1.4.18	Traffic Road Signs	425	Each
1.4.19	Pavement markings with reflective paint	145,500	M
1.4.20	Precast Concrete Kilometer Post	102	Each
1.4.21	Construction of Engineer's Base Camp	1	Lump sum

1.5 General Information about the Project

1.5.1	Name of the Engineer	STV/Lyon Associates/ ACE (Pvt.) Ltd. - JV
1.5.2	Name of the Contractor	NASA Constructors (Pvt.) Ltd.
1.5.3	Date of Notice to Proceed (NTP)	29-09-87
1.5.4	Date of Commencement of Mobilization Period	29-09-87
1.5.5	Mobilization to be completed	12-05-88
1.5.6	Date of Commencement of Construction	13-05-88
1.5.7	Completion of the Project	29-05-90
1.5.8	Initial Value of Contract	Rs.287,303,642.00

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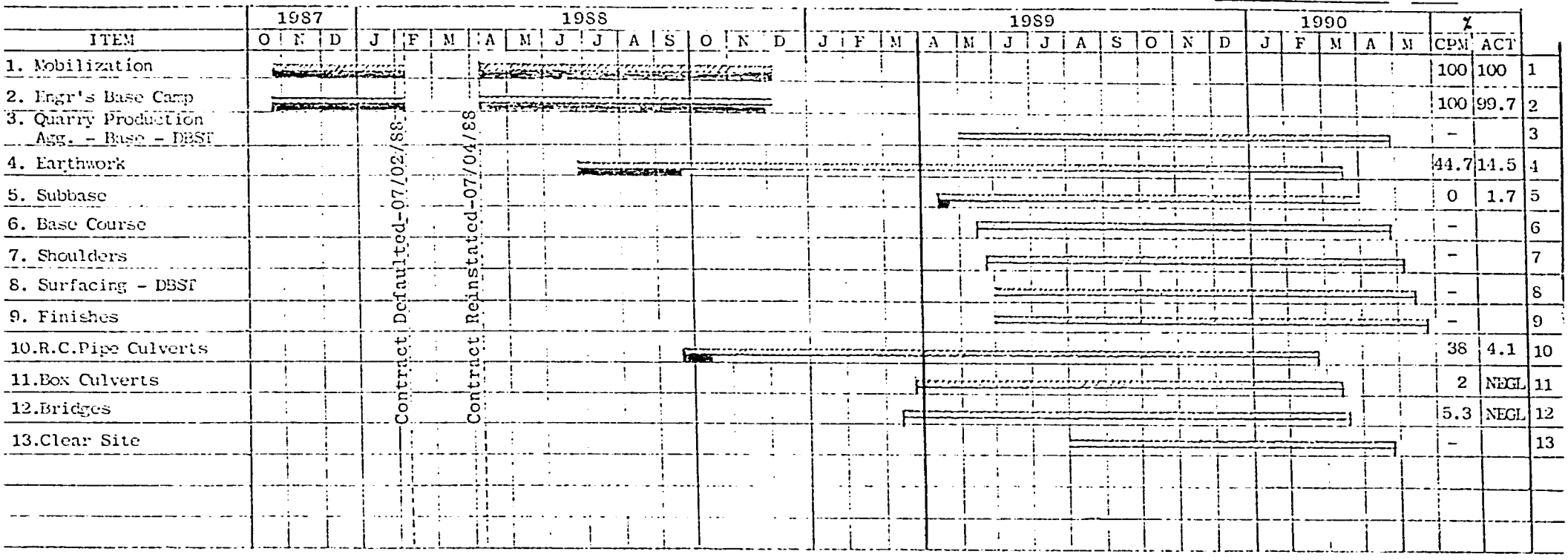
BELA - AWARAN ROAD PROJECT

CONSTRUCTION PROGRESS SCHEDULE

PERIOD ENDING March 31, 1989



ITEM	% CPM	% ACT	
1. Mobilization	100	100	1
2. Engr's Base Camp	100	99.7	2
3. Quarry Production Agg. - Base - DBST	-		3
4. Earthwork	44.7	14.5	4
5. Subbase	0	1.7	5
6. Base Course	-		6
7. Shoulders	-		7
8. Surfacing - DBST	-		8
9. Finishes	-		9
10.R.C.Pipe Culverts	38	4.1	10
11.Box Culverts	2	NEGL	11
12.Bridges	5.3	NEGL	12
13.Clear Site	-		13

LEGEND:

CPM

ACTUAL PROGRESS-%

NOTES: 1. Late start/late finish based on revised CPM dated 05/03/89.

2. Contract completion date 29/05/90.

3. Status of Progress

3.1 Progress this report period

3.1.1 Engineer's Base Camp

1. Continued painting remainder of boundary wall.
2. Completed electrical work in Guard House and Utility Complex.

3.1.2 Earthworks

1. Excavation-unsuit. mat'l.	- 2,991M3	
2. Structural excav. & backfilling-	36M3	
3. Excavation in cut	-21,252M3	approx. 886M3/day*
4. Embankment in place	-29,356M3	approx.1224M3/day*
5. Subbase	- 1,396M3	

*Based on 24 working days in report period

3.1.3 Structures

Box Culverts

1. KM60+737; 1-3.5Mx3.5M - Reinforcement steel completed for base slal
2. KM56+970; 2-4.2Mx4.2M - Reinforcement steel approx. 90% complete
3. KM56+395; 2-4.2Mx4.2M - Reinforcement steel started
4. KM55+740; 2-4.2Mx4.2M - Blinding completed
5. KM55+405; 2-4.2Mx4.2M - Blinding completed
6. KM55+167; 2-4.2Mx4.2M - Excavation completed

Bridges

1. KM73+093(Chagai River)- Piers 1-5-excavated to top rock
2. KM74+380(Aoghani River)- Abutments 1&2, Piers 1&2-Blinding complete

3.2 Progress thru March 31, 1989

3.2.1 Engineer's permanent base camp

No change in the percent completion of the Engineer's permanent base camp which is approx. 99.7%.

3.2.2 Earthworks

1. Clearing & Grubbing	- 28,900M2*
2. Compaction-natural ground	- 6,624M2*
3. Excavation-unsuit. mat'l.	- 6,881M3
4. Structural excav. & backfill	- 3,274M3*
5. Subgrade preparation in earth cut	- 580M3*
6. Embankment-from excavation	-129,886M3
7. Embankment-from borrow	-108,045M3
8. Subbase	- 1,829M3

*To March 24 (Estimate No.4)

3.2.3 Structures

1. R.C.pipe culvert, 0.091M	- 193M
2. Exploratory borings	- 137.75M
3. Box culverts	- Nil
4. Bridges	- Nil

NOTE: The above quantities are solely for progress report use and as such have not been agreed to with the Contractor for estimate payment purposes.

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4. Meetings and Site Visits

4.1 Meetings

4.1.1 On March 7, 1989, a joint meeting with USAID, Joint Venture and the Contractor in attendance. Major item discussed was USAID's concern of the continued lack of progress by the Contractor. The Contractor was also requested to submit a plant build-up for all major construction operations.

4.1.2 On March 15 and 27, 1989, progress meetings were held at the Engineer's site office, Jhal Jhao, with the Contractor. Major items discussed were the Engineer's Base Camp, earthwork operations, subbase, pipe and box culverts, bridges, concrete, surveys and miscellaneous items.

4.2 Site Visits

4.2.1 On March 6-8, 1989, Mr.Pervaiz Gani, Project Engineer - USAID, and Mr.Qamar A. Shaikh, Project Coordinator - JV, visited the site.

4.2.2 On March 6-7, 1989, Mr.A.Majid, Executive Assistant to Chairman - NASA, visited the site.

4.2.3 On March 30, 1989, a group from Communications and Works including the Minister Mr.Humayun Khan Murree, Secretary Mr.Abdul Rahim Zarghun, Executive Engineer Mr.Majid Shah and Sub-divisional Officer Mr.Sanaulla Khan along with Ms.Mary Anne Weaver, correspondant for the New Yorker Magazine, made a brief visit to the JV site office, Jhal Jhao, on their way to Turbat.

5. Materials Status and Test Results

5.1 Status of Stored Materials - Balance on March 31, 1989

Item No.	Item	Balance
1.	M.S.Reinforcement, various dia's	23,070 Kgs
2.	Cement	0
3.	Wooden shuttering	
	a) Pipe culvert - Ø910mm	9 Nos.
	b) Pipe culvert - Ø1370mm	6 Nos.
	c) Box culvert, Panels 2'x8'	38 Nos.
	d) Box culvert, Panels 4'x8'	8 Nos.
4.	Steel plate shuttering	
	a) 2'x3'	100 Nos.
	b) 4.155Mx2.4M	7 Nos.
5.	R.C.pipes	
	a) Ø910mmx2.5M	14 Nos.
	b) Ø910mmx1M	63 Nos.
	c) Ø1370mmx1M	19 Nos.
6.	G.I.pipes - Ø½"	16 Nos.
	- Ø2"	4 Nos.
7.	M.S.bars, steel cage	
	a) For pipe culvert - Ø910mm	60 Nos.
	b) For pipe culvert - Ø1370mm	30 Nos.
8.	G.I.Sheets, Gauge 26 SWG 4'x8'	6 Nos.

5.2 Test Results

5.2.1 Field density tests

See Appendix - A

5.2.2 Concrete compressive strength tests and laboratory test results

See Appendix - B

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6. Equipment Status

Equipment and Machinery available at site as of March 31, 1989:

Item No.	Description	Nos.	Days Worked	Days Idle	Days Deadlined
1.	Dozer, D-9, Cat (H)	1	17	6	8
2.	Dozer, D-8, Cat (O-2, H-4)	6	143	31	12
3.	Graders (O-2, H-2)	4	108	16	-
4.	Grader, Frisch (O)	1	-	-	31
5.	Loader, front end, 966-E, Cat(O)	2	50	12	-
6.	Roller, 15T, vib., tow-type (O)	1	-	-	31
7.	Roller, 10T, vib., Scheid (O)	2	54	8	-
8.	Roller 10T, vib., Dynapac (O)	1	-	-	31
9.	Roller, 10T, vib., SP-56(O)	1	27	4	-
10.	Roller, 3-wheel steel (O)	4*	36	4	72
11.	Trucks, Tippers, 10M3 (H)	13	277	125	1
12.	Tankers, water, 1500-4000gal.(H)	11	252	68	21
13.	Trucks, flat bed	4-1 deadlined			
14.	Trucks, Purga, mobile workshop	1			
15.	Mixer, concrete	5-2 deadlined			
16.	Generator, Cat, 500KW	1-deadlined			
17.	Generator, Omax, 170KW	1			
18.	Compressor, air, Copco Atlas	1			
19.	Compressor, air, ½HP	1			
20.	Welding Machine, 400Amp.	1			
21.	Screen, aggregate	1			
22.	Compactor, plate, Dynapac, 7.5HP	1-deadlined			
23.	Compactor, plate, China, 7.5HP	1-deadlined			
24.	Vibrator, concrete, portable	1			
25.	Water pump: 6"x4" w/12HP engine	1			
	2½"x2" w/7HP engine	1			
	1"x1" w/1HP engine	1			
26.	Pump, submersible:2"w/2HP engine	1-deadlined			
27.	Pickups	7			
28.	Jeep, Pajero	1			
29.	Land Cruiser, Toyota	1			
30.	Tractor, Farm Type (H)	7			
31.	Tractor, Farm Type (O)	2-1 deadlined			
32.	Roller, 2 Ton, Ped type, China(O)	1-deadlined			
33.	Pile boring rig. complete (O)	1			
34.	Trucks, Tippers, 8M3 (O)	2-1 deadlined			

* 3 - 3-wheel steel Rollers arrived on March 03, 1989.

(O) NASA owned
(H) Hired

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7. Manpower Status

7.1 Contractor's Manpower as of March 31, 1989

7.1.1 Deployed at Site

Permanent Staff

Title	Nos.
Project Manager(PLC)	1*
Chief Engineer (PLC)	1
Roadworks Sup't. (PLC)	1
Structure Sup't. (PLC)	1
Plant Manager (PLC)	1
Chief Surveyor	1
Snr. Engineer	1
Snr. Quantity Surveyor	1
Snr.Materials Engineer	1
Chief Timekeeper	1
Timekeeper	4
Storekeeper	2
Clerk	4
Cashier	1
Cook	8
Security Guard	12
Snr.Surveyor	1
Surveyor	5
Chainman	12
Draughtsman	1
Lab.Technician	1
Lab.Assistant	3
Foreman Mechanic	2
Mechanic	8
Snr.Foreman Roadworks	1
Foreman Roadworks	11
Snr.Structures Foreman	1
Structure Foreman	1
Carpenter	11
Mason	13
Steel Fixer	4
Plant Operators	18
Drivers	10
Checker	4
Labourer/Helpers	100
TOTAL	249

*On vacation March 9-31, 1989

Plant Hire Labour

Title	Nos.
Foreman	3
Mechanic	5
Plant Operator	9
Drivers	28
TOTAL	45

Subcontract Labour

Title	Nos.
Superintendent	1
Tractor operator	1
Labour	14
TOTAL	16

7.1.2 Deployed in Karachi

Title	Nos.
Liaison Officer	1

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7.2 Engineer's Manpower as of March 31, 1989

7.2.1 Deployed at Site

Item No.	Title/Name	Nos.
1.	Resident Engineer - Mr.M.W.Marra	1
2.	Deputy Resident Engineer - Mr.A.J.Babar	1
3.	Asst. Resident Engineer (Struc.) - Mr.M.Akram	1
4.	Asst. Resident Engineer (Matl's) - Mr.S.Maqbool	1
5.	Chief Surveyor - Mr.M.Y.Ansari	1
6.	Financial Control Officer - Mr.S.K.Naqvi	1
7.	Office Engineer - Mr.Aslam Parvez	1
8.	Secretary - Mr.N.F.Khawaja	1
9.	Laboratory Technician	1
10.	Asst. Laboratory Technician	1
11.	Earthwork Inspectors	2
12.	Material Inspector	1
13.	Surveyors	2
14.	Draftsman	1
15.	Drivers	5
16.	Security Guards	
	TOTAL	23

7.2.2 Deployed in Karachi

Item No.	Title/Name	Nos.
1.	Project Coordinator - Mr.Qamar A. Shaikh	1

8. Financial Status

8.1 Payment to the Contractor

Estimate No.	Period From - To	Amount in Rs.	Status	Remarks
Mobilization Payment No.1		35,000,000	Received by Contractor	
Mobilization Payment No.2		4,800,000	Received by Contractor	
Mobilization Payment No.3		3,200,000	Received by Contractor	
1.	June 2, 1988 to August 31, 1988	1,366,667	Received by Contractor	Pre-positioned check
2.	Sept. 1, 1988 to Oct. 31, 1988	436,235	Received by Contractor	Includes Rs.37,340 underpayment from Estimate No.1
3.	Nov. 1, 1988 to Jan.31, 1989	2,939,393	Received by USAID	
4.	Feb. 1, 1989 to March 24, 1989	1,973,421	Being processed by JV	

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9. Problems Encountered and Actions Taken

9.1 Problems encountered

9.1.1 Engineer's Base Camp

Completion of most remaining items of work on the Engineer's Base Camp remained uncompleted as in the last report. The only work carried out during the report period was painting the boundary wall and completion of electrical work in the Guard House and Utility Complex. The tubewell submersible pump is still in Karachi, apparently there is a dispute over who is responsible for the repair bill, the contractor or subcontractor.

9.1.2 Construction Equipment

No major heavy equipment was brought to the site during the report period.

9.1.3 Earthwork Operations

Earthwork operations only improved slightly. During the report period four days were lost due to lack of fuel and the tippers were stopped for four days due to driver action against the Contractor.

9.1.4 R.C.Pipe Culverts

Backfilling of the pipe culverts was nil during the report period due to lack of compaction equipment. The Contractor started casting 0.91MØ and 1.37MØ pipe in the site casting yard, however due to shortages of cement, the progress was not continuous. The last date any pipe culvert was installed was September 25, '88.

9.1.5 Box Culverts

Continued lack of steel, cement, aggregate and concrete mixers reduce progress to working on only one box culvert at a time and only one operation at a time, when able to.

9.1.6 Bridges

Same problems connected with box culverts are the cause of delays in construction of the bridges. While one pile boring rig did arrive on site during the report period, the crew to operate the rig has not arrived on site.

9.2 Actions Taken

Progress meetings are held for a general review of all construction items as well as daily meetings with the Contractor's representatives.

10. Conclusions and Recommendations

10.1 Conclusions

10.1.1 Engineer's Base Camp

Completion of the few remaining items has dragged on for several months now and with a little effort on the part of the Contractor, all work outstanding can be completed in three weeks or less.

10.1.2 Construction Equipment

Major heavy equipment such as a backhoe and mobile crane are not part of the Contractor's plant. Using other heavy equipment to do the work of this equipment is impractical and dangerous.

10.1.3 Earthwork Operations

More compaction equipment is required as well as tippers and dozers to spread the embankment material.

10.1.4 R.C.Pipe Culverts

No progress is foreseen until the test results are received on the site manufactured pipe and compaction equipment arrives on the project.

10.1.5 Box Culverts

Additional concrete mixers as well as adequate supplies of steel, cement and aggregate are required immediately if any progress is to be made.

10.1.6 Bridges

The statement above for box culverts is also applicable to bridges as well as more than one pile boring rig will be required.

10.2 Recommendations

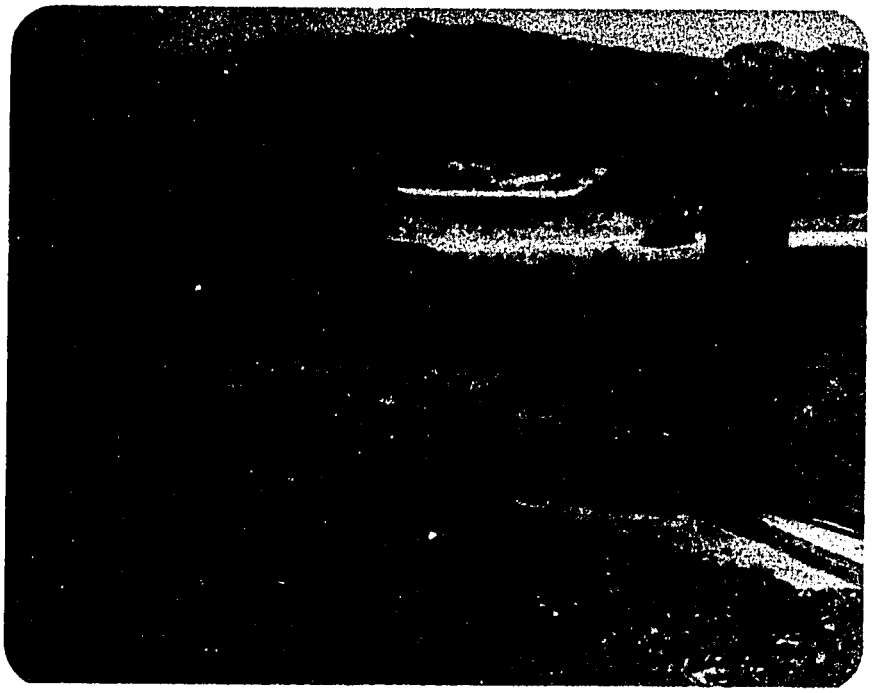
The Contractor was served a "Show Cause" letter at the end of the report period in which the Contractor was told to improve the production rates and meet the schedule as shown on the latest revised CPM dated March 5, 1989. This can only be accomplished by bringing manpower, equipment and supplies onto the site immediately. A joint survey by the Contractor and Joint Venture will start on June 1, 1989 to record the production accomplished from about March 24, 1989 to May 31, 1989.

Also, at this date (end of report period) when only approx. 5.4% of the work is completed and 53.4% of the time has elapsed, it is surely not very realistic to assume the Contractor will complete the project on May 29, 1990.

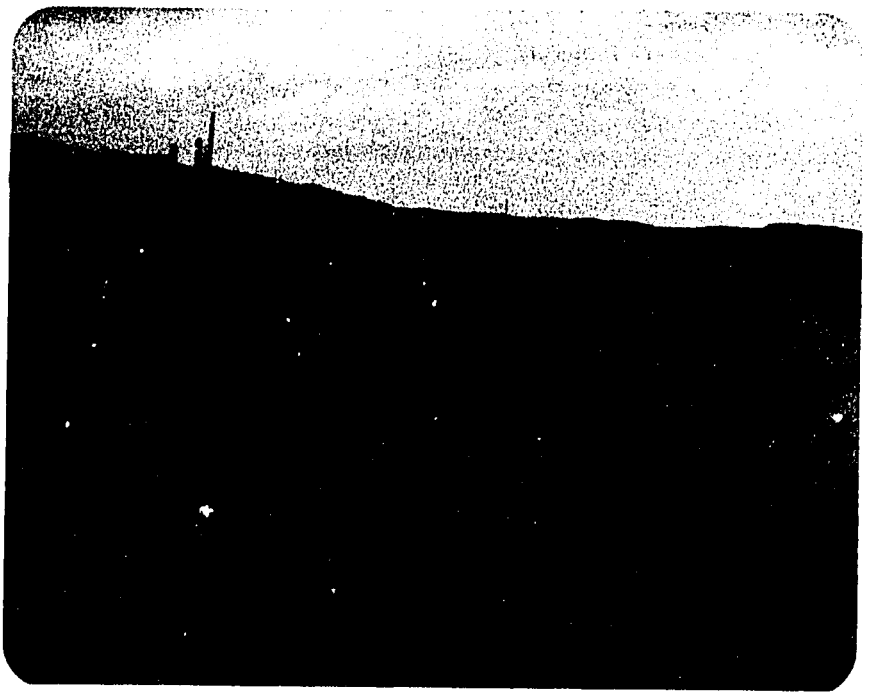
11. PROGRESS PHOTOS

11. Progress Photos

Note: Looking East - towards Bela
Looking West - towards Awaran

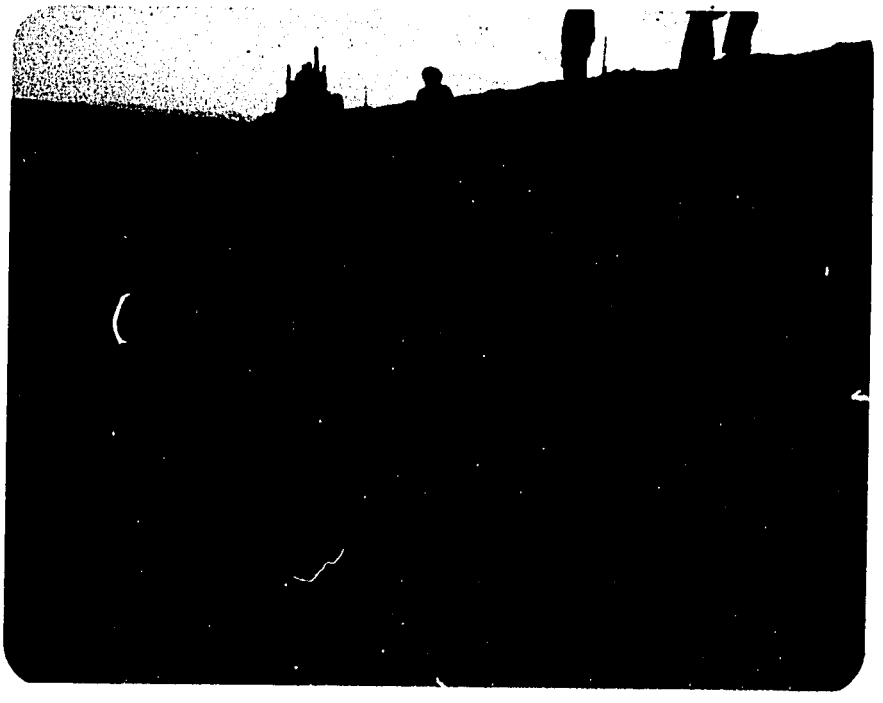


KM56+970 - Box Culvert - base & wall reinforcement steel (not complete)-19/03/89

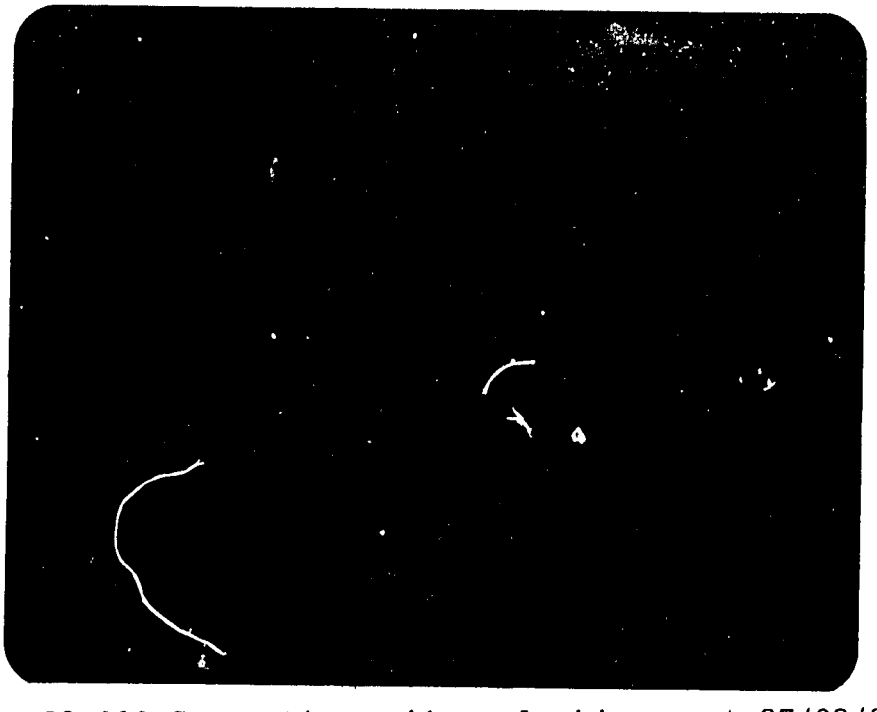


KM62+460 - Placing riprap-looking west-19/03/89

16

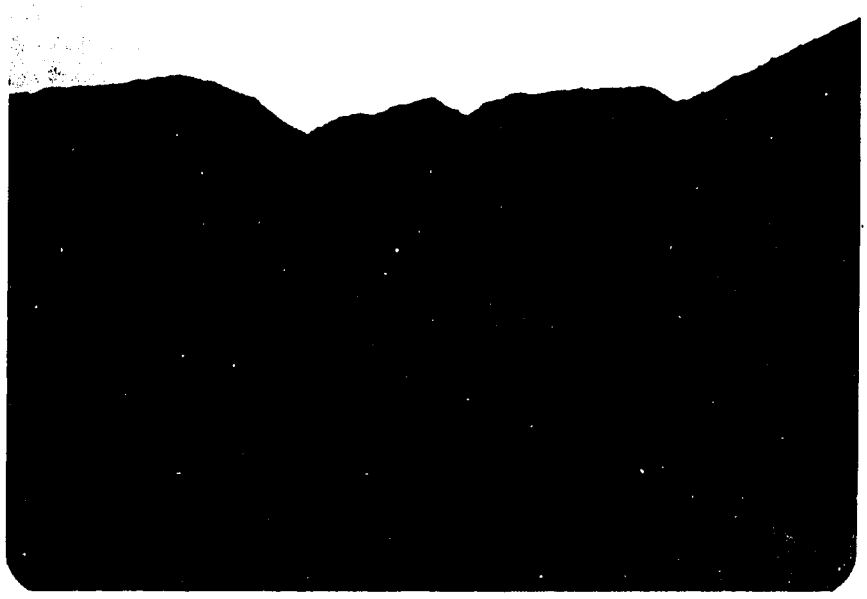


KM68+250-Excavating into slope prior to riprap placement looking east - 23/03/89

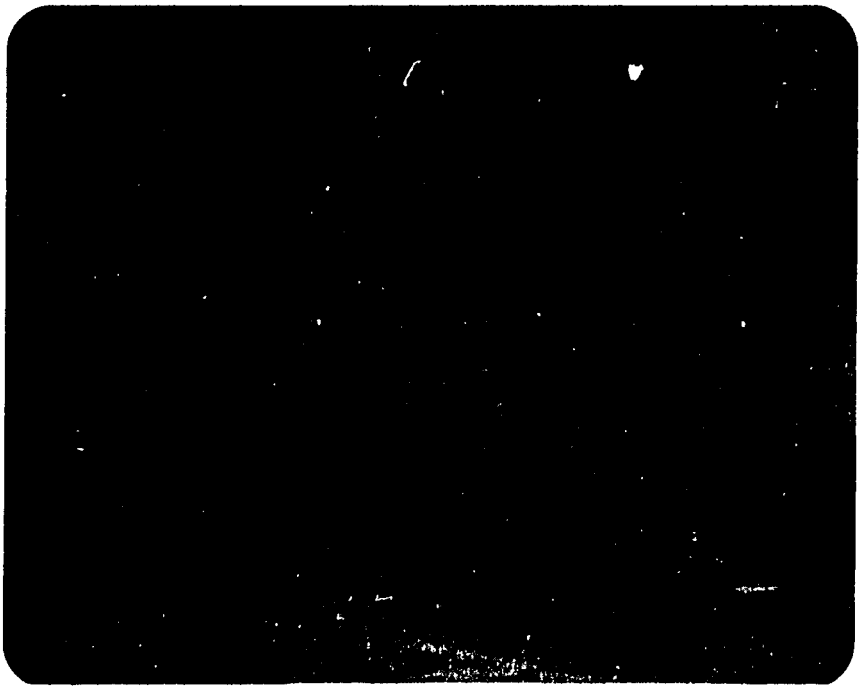


KM69+000-Compacting subbase-looking east-27/03/89

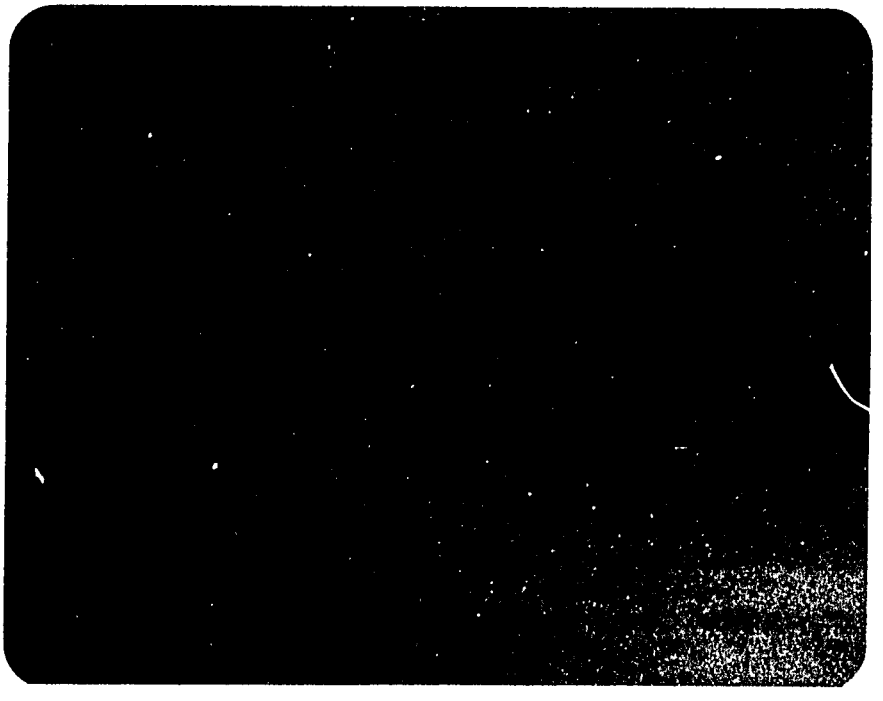
KM74+380-Aoghani Bridge - Pier No.1 -
Blinding concrete pour - 22/03/89



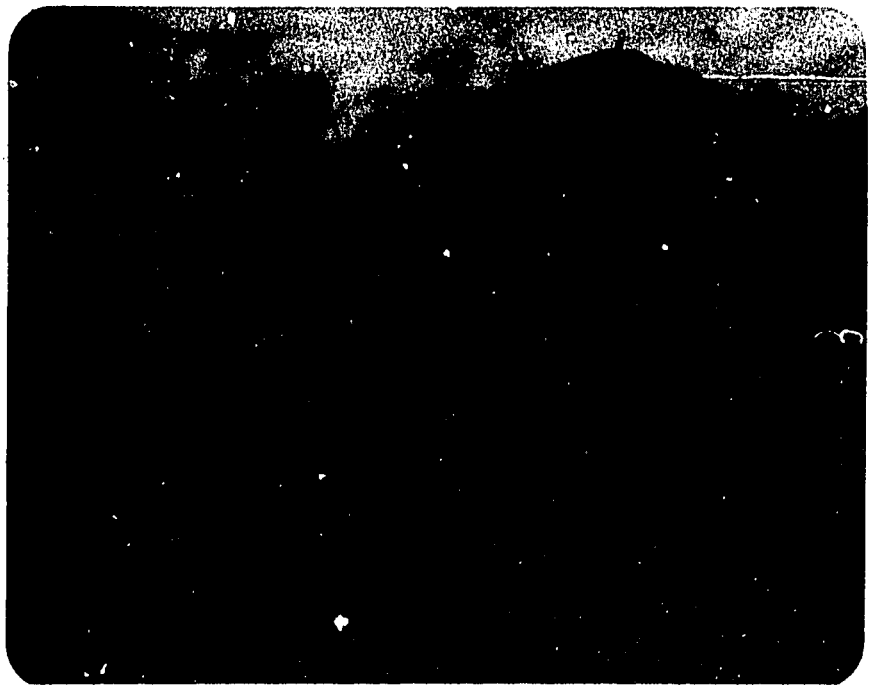
KM80+180 - D8L Dozer cutting slope in side hill
cut - looking east - 23/03/89



KM80+600-D8L Dozer cutting slope in side hill cut - looking east - 22/03/89



KM80+600-Heavy excavation-looking east-27/03/89



KM80+660 - D8L Dozer blading excavation - looking east - 19/03/89

KM88+080 - Blading embankment - shops/hotel in rear to be demolished - looking east-27/03/89

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KM89+500-Compacting embankment-looking east-27/03/89

KM95-R.C.Pipe casting yard - 0.91MØ - 21/03/89

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12. A P P E N D I C E S

APPENDIX A -
TEST RESULTS, DENSITY

BELA - AWARAN ROAD PROJECT

STV/LYON ASSOCIATES - ACE (PVT.) LTD., J.V.

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 1/3/99 to 31/3/99

Sr. No.	STATION	Layer No.	Wet gm/cm^3	MC% by Speedy	Dry gm/cm^3	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
1	Km 78+930 - 78+970	3rd	2.27	4.2	2.18	2.26	96	95	Pass
2	Km 84+730 -84+840	7th	2.16	4.0	2.08	"	92	90	Pass
3	"	"	2.14	3.9	2.06	"	91	"	Pass
4	Km 78+610 - 78+640	3rd	2.14	5.6	2.03	2.32	87	93	Fail
5	"	"	2.26	3.4	2.19	"	94	"	Pass Repeat of No. 4
6	Km 82+660 - 82+740	7th	2.13	3.7	2.05	2.26	91	90	Pass
7	Km 86+040 - 86+240	5th	2.10	2.0	2.06	2.28	90	"	Pass
8	"	"	2.11	2.2	2.06	"	90	"	Pass
9	Km 83+010 - 83+100	6th	2.27	3.7	2.19	2.26	97	95	Pass
10	Km 81+180 - 81+260	2nd	2.12	3.5	2.05	"	91	90	Pass
11	Km 86+400 - 86+490	6th	2.19	3.1	2.12	2.325	91	"	Pass
12	Km 83+180 - 83+220	"	2.27	3.9	2.18	2.26	96	95	Pass
13	Km 83+220 - 83+340	7th	2.24	4.5	2.14	"	95	93	Pass
14	"	"	2.21	4.2	2.12	"	94	"	Pass
15	Km 83+520 - 83+600	"	2.13	3.7	2.05	"	91	90	Pass
16	Km 83+880 - 83+940	"	2.11	3.0	2.05	2.24	91	95	Fail
17	Km 83+880 - 83+940	"	2.30	4.5	2.20	"	98	"	Pass Repeat of No. 16

Prepared by: _____

Checked by: _____

BELA - AWARAN ROAD PROJECT

STV/LYON ASSOCIATES - ACE (PVT.) LTD., J.V.

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 1/3/99 to 31/3/99

Sr. No.	STATION	Layer No.	Wet gm/cm^3	MC% by Speedy	Dry gm/cm^3	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
18	Km 84+080 - 84+180	6th	2.10	3.0	2.04	2.24	91	93	Fail
19	"	"	2.19	4.1	2.10	"	94	"	Pass Repeat of No. 18
20	Km 84+380 - 84+480	3rd	2.18	3.9	2.10	"	94	"	Pass
21	Km 78+970 - 79+040	4th	2.10	2.4	2.05	2.264	90	90	Pass
22	Km 79+040 - 79+060	2nd	2.12	2.7	2.06	"	91	"	Pass
23	Km 85+580 - 85+660	1st	2.13	2.9	2.07	2.28	91	"	Pass
24	Km 85+120 - 85+170	8th	2.16	3.0	2.10	"	92	95	Fail
25	Km 85+170 - 85+300	8th	2.12	3.1	2.07	"	91	90	Pass
26	"	"	2.17	3.6	2.09	"	92	"	Pass
27	Km 85+300 - 85+360	4th	2.29	3.9	2.20	"	96	93	Pass
28	Km 79+430 - 79+690	5th	2.20	3.8	2.12	2.26	94	93	Pass
29	"	"	2.22	5.0	2.11	"	93	"	Pass
30	"	"	2.07	3.1	2.01	"	89	"	Fail
31	"	"	2.17	3.0	2.11	"	93	"	Pass Repeat of No 30
32	Km 81+400 - 81+460	1st	2.25	3.6	2.17	"	96	95	Pass
33	Km 81+280 - 81+400	NGC	2.10	2.7	2.04	2.185	93	"	Fail
34	"	"	2.21	3.4	2.14	"	98	"	Pass

Prepared by: _____ Checked by: _____

BELA - AWARAN ROAD PROJECT

STV/LYON ASSOCIATES - ACE (PVT.) LTD., J.V.

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 1/3/99 to 31/3/99

Sr. No.	STATION	Layer No.	Wet gm/cm^3	MC% by Speedy	Dry gm/cm^3	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
35	Km 81+280 - 81+380	NGC	1.99	2.5	1.94	2.185	89	95	Fail Repeat of No 33
36	"	"	2.04	2.7	1.99	"	91	"	Fail Repeat of No 35
37	"	"	1.96	2.7	1.91	"	87	"	Fail Repeat of No. 36
38	Km 84+180 - 84+250	1st	2.14	3.3	2.07	2.26	91	90	Pass
39	Km 77+210 - 77+280	5th	2.18	3.0	2.12	2.32	91	"	Pass
40	Km 78+830 - 78+890	3rd	2.29	4.3	2.19	2.26	97	95	Pass
41	Km 78+970 - 79+040	4th	2.14	3.2	2.07	"	91	90	Pass
42	Km 79+040 - 79+060	3rd	2.15	2.9	2.10	"	93	"	Pass
43	Km 82+660 - 82+740	8th	2.15	3.4	2.08	"	92	"	Pass
44	Km 82+940 - 82+980	6th	2.21	3.4	2.14	"	95	93	Pass
45	Km 68+660 - 68+860	S. base	2.41	4.3	2.31	2.27	102	100	Pass TRIAL SECTION
46	"	"	2.37	4.1	2.28	"	100	"	Pass - do -
47	Km 62+460 - 62+660	"	2.42	4.4	2.32	2.29	101	"	Pass - do -
48	"	"	2.40	4.1	2.31	"	101	"	Pass - do -
49	Km 73+450 - 73+470	5th	2.15	3.0	2.09	2.315	90	90	Pass
50	Km 77+345 - 77+365	NGC	2.09	2.6	2.04	2.264	90	"	Pass
51	Km 81+660 - 81+720	1st	2.18	3.4	2.11	2.26	93	95	Fail

Prepared by: _____ Checked by: _____

BELA - AWARAN ROAD PROJECT

STV/LYON ASSOCIATES - ACE (PVT.) LTD., J.V.

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 1/3/89 to 31/3/89

Sr. No.	STATION	Layer No.	Wet gm/cm^3	MC% by Speedy	Dry gm/cm^3	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
52	Km 81+660 - 81+720	1st	2.30	4.4	2.20	2.26	97	95	Pass Repeat of No 51
53	Km 81+720 - 81+750	1st	2.18	3.0	2.12	"	94	93	Pass
54	Km 81+750 - 81+900	"	2.22	3.3	2.15	"	95	95	Pass
55	"	"	2.27	4.4	2.17	"	96	"	Pass
56	Km 83+340 - 83+520	6th	2.17	3.0	2.11	"	93	93	Pass
57	"	"	2.22	3.2	2.15	"	95	"	Pass
58	Km 86+400 - 86+490	7th	2.18	2.9	2.12	2.325	91	90	Pass
59	Km 81+180 - 81+260	3rd	2.13	3.0	2.07	2.26	91	"	Pass
60	Km 86+040 - 86+140	6th	2.21	3.0	2.15	2.28	94	93	Pass
61	Km 86+140 - 86+240	"	2.13	2.9	2.07	"	91	90	Pass
62	Km 68+020 - 68+660	S base	2.32	3.6	2.24	2.27	99	100	Fail
63	"	"	2.29	3.4	2.22	"	98	"	Fail
64	"	"	2.35	3.5	2.27	"	100	"	Pass
65	"	"	2.33	3.6	2.25	"	99	"	Fail
66	"	"	2.41	3.7	2.32	"	102	"	Pass
67	Km 71+880 - 72+080	Top	2.28	3.1	2.21	2.35	94	95	Fail
68	"	"	2.35	3.7	2.27	"	96	"	Pass

Prepared by: _____ Checked by: _____

BELA - AWARAN ROAD PROJECT

STV/LYON ASSOCIATES - ACE (PVT.) LTD., J.V.

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 1/3/89 to 31/3/89

Sr. No.	STATION	Layer No.	Wet gm/cm³	MC% by Speedy	Dry gm/cm³	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
69	Km 71+880 - 72+080	T.S.G	2.40	4.2	2.30	2.35	98	95	pass Repeat of No 67
70	Km 68+020 - 68+660	S. base	2.20	3.0	2.14	2.27	94	100	Fail
71	"	"	2.31	3.4	2.23	"	98	"	Fail
72	"	"	2.18	3.3	2.11	"	93	"	Fail
73	Km 79+430 - 79+450	6th	2.16	2.5	2.11	2.26	93	93	pass
74	Km 79+450 - 79+630	"	2.18	3.0	2.12	"	94	95	Fail
75	"	"	2.25	3.9	2.16	"	96	"	pass
76	"	"	2.23	3.4	2.16	"	96	"	pass Repeat of No 74
77	Km 85+580 - 85+660	2nd	2.18	3.9	2.10	2.28	92	90	pass
78	Km 84+080 - 84+180	7th	2.18	2.7	2.12	"	93	93	pass
79	Km 84+180 - 84+250	2nd	2.26	3.7	2.18	"	96	"	pass
80	Km 78+970 - 78+990	6th	2.18	2.7	2.12	2.264	94	"	pass
81	Km 78+990 - 79+040	"	2.11	2.3	2.06	"	91	90	pass
82	Km 79+040 - 79+060	4th	2.10	2.4	2.05	"	90	"	pass
83	Km 78+830 - 78+870	"	2.25	3.9	2.16	2.26	96	95	pass
84	Km 85+180 - 85+300	9th	2.19	2.5	2.14	2.28	94	93	pass
85	"	"	2.20	2.4	2.15	"	94	"	pass

Prepared by: _____ Checked by: _____

BELA - AWARAN ROAD PROJECT

STV/LYON ASSOCIATES - ACE (PVT.) LTD., J.V.

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 1/3/89 to 31/3/89

Sr. No.	STATION	Layer No.	Wet gm/cm³	MC% by Speedy	Dry gm/cm³	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
86	85+120 - 85+170	8th	2.30	4.2	2.21	2.28	97	95	Pass Repeat of No 24
87	83+520 - 83+600	8th	2.14	3.3	2.07	2.28	91	90	Pass
88	84+380 - 83+480	4th	2.21	3.0	2.15	2.28	94	93	Pass
89	84+720 - 84+810	8th	2.12	2.6	2.07	2.28	91	90	Pass
90	84+810 - 84+840	8th	2.23	3.2	2.16	2.28	95	93	Pass
91	77+210 - 77+280	6th	2.20	3.2	2.13	2.32	92	93	Fail
92	" "	"	2.29	3.9	2.20	2.32	95	93	Pass, Repeat of No. 91
93	78+600 - 78+640	4th	2.17	2.8	2.11	2.26	93	93	Pass
94	72+240 - 72+300	TSG	2.33	3.9	2.24	2.35	95	95	Carriageway passed
95	" " " "	"	2.25	2.8	2.19	2.35	93	95	Left shoulder failed
96	" " "	"	2.33	4.2	2.24	"	95	95	Right shoulder passed
97	" "	"	2.24	1.9	2.20	"	94	95	Failed, Repeat of No. 95
98	73+450 - 73+470	6th	2.01	2.2	1.97	2.168	91	90	Pass
99	77+345 - 77+370	1st	2.27	3.8	2.19	2.32	94	93	Pass
100	78+930 - 78+950	4th	2.23	3.5	2.15	2.26	95	95	Pass
101	82+660 - 82+740	9th	2.19	3.3	2.12	2.26	94	93	Pass
102	82+940 - 82+980	7th	2.16	2.8	2.10	"	93	93	Pass

Prepared by: _____ Checked by: _____

BELA - AWARAN ROAD PROJECT

STV/LYON ASSOCIATES - ACE (PVT.) LTD., J.V.

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 1/3/89 to 31/3/89

Sr. No.	STATION	Layer No.	Wet gm/cm^3	MC% by Speedy	Dry gm/cm^3	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
103	72+080 - 72+120	TSG	2.27	3.7	2.19	2.35	93	95	Fail
104	" "		2.19	4.0	2.11	"	90	95	Fail, Repeat of No.103
105	72+120 - 72+240	TSG	2.31	3.1	2.24	"	95	95	Pass
106	" "	"	2.34	3.4	2.26	"	96	95	Pass
107	83+220 - 83+260	8th	2.13	2.9	2.07	2.26	92	95	Fail
108	72+300 - 72+420	TSG	2.31	3.2	2.24	2.35	95	95	Pass
109	" "	"	2.31	3.3	2.24	"	95	95	Pass
110	83+260 - 83+520	7th	2.17	3.0	2.11	2.26	93	93	Pass
111	" "	"	2.24	3.9	2.16	"	96	93	Pass
112	" "	"	2.20	3.3	2.13	"	94	93	Pass
113	83+220 - 83+260	6th	2.31	3.4	2.23	2.26	97	95	Pass
114	81+180 - 81+260	4th	2.13	3.3	2.06	"	91	90	Pass
115	86+040 - 86+140	7th	2.27	3.5	2.19	2.325	94	93	Pass
116	86+140 - 86+240	7th	2.18	3.0	2.12	"	91	90	Pass
117	86+400 - 86+490	8th	2.13	2.6	2.08	2.29	91	90	Pass
118	85+580 - 85+660	3rd	2.21	3.0	2.15	"	94	93	Pass
119	72+480 - 72+510	TSG	2.24	3.8	2.16	2.35	92	95	Fail

Prepared by: _____ Checked by: _____

BELA - AWARAN ROAD PROJECT

STV/LYON ASSOCIATES - ACE (PVT.) LTD., J.V.

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 1/3/89 to 31/3/89

Sr. No.	STATION	Layer No.	Wet gm/cm^3	MC% by Speedy	Dry gm/cm^3	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
120	72+480 – 72+510	TSG	2.36	3.8	2.27	2.35	97	95	Pass, Repeat of No.119
121	72+510 – 72+570	TSG	2.28	3.2	2.21	2.35	94	95	Fail
122	" "	"	2.23	3.6	2.15	"	91	95	Fail, Repeat of No. 121
123	72+570 – 72+680	"	2.28	3.4	2.20	"	94	95	Fail
124	" "	"	2.36	4.3	2.26	"	96	95	Pass
125	" "	"	2.33	6.9	2.18	"	93	95	Fail
126	" "	"	2.37	3.8	2.28	"	97	95	Pass; Repeat of nos 123,125
127	78+780 – 78+830	1st	2.13	3.2	2.06	2.26	91	90	Pass
128	79+140 – 79+230	1st	2.11	3.2	2.04	"	90	90	Pass
129	78+600 – 78+640	5th	2.26	3.5	2.18	"	96	95	Pass
130	78+970 – 78+990	7th	2.19	3.5	2.12	"	94	93	Pass
131	78+990 – 79+040	7th	2.17	3.9	2.09	"	92	90	Pass
132	79+040 – 79+060	5th	2.10	2.9	2.04	"	90	90	Pass
133	81+720 – 81+750	2nd	2.22	3.3	2.15	"	95	95	Pass
134	79+430 – 79+450	6th	2.17	3.0	2.11	"	93	93	Pass
135	79+630 – 79+670	5th	2.17	3.0	2.11	"	93	93	Pass
136	79+670 – 79+690	7th	2.19	3.2	2.12	"	94	93	Pass

Prepared by: _____ Checked by: _____

BELA - AWARAN ROAD PROJECT

STV/LYON ASSOCIATES - ACE (PVT.) LTD., J.V.

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 1/3/87 to 31/3/87

Sr. No.	STATION	Layer No.	Wet gm/cm³	MC% by Speedy	Dry gm/cm³	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
137	73+450 - 73+470	7th	2.18	3.3	2.11	2.315	91	90	Pass
138	77+200 - 77+280	7th	2.19	1.5	2.14	"	92	93	Fail
139	77+200 - 77+280	"	2.23	3.2	2.16	"	93	93	Pass, Repeat of No. 138
140	77+345 - 77+370	2nd	2.21	1.3	2.18	"	94	93	Fail
141	" "	"	2.24	3.2	2.17	"	94	93	Pass
142	85+170 - 85+300	10th	2.21	3.0	2.15	2.28	94	95	Fail
143	" "	"	2.25	3.2	2.18	"	96	95	Pass
144	" "	"	2.22	2.5	2.17	"	95	95	Pass, Repeat of No 142
145	85+300 - 85+350	5th	2.21	3.2	2.14	"	94	93	Pass
146	84+720 - 84+810	9th	2.17	3.9	2.09	"	92	90	Pass
147	84+810 - 84+840	9th	2.22	3.1	2.15	"	94	93	Pass
148	84+380 - 84+480	4th	2.18	3.1	2.11	"	92	93	Fail
149	" "	"	2.22	3.4	2.15	"	94	93	Pass Repeat of No 148
150	83+520 - 83+600	9th	2.13	3.0	2.08	"	91	90	Pass
151	84+060 - 84+160	8th	2.24	3.5	2.16	"	95	93	Pass
152	84+160 - 84+180	8th	2.16	3.3	2.10	"	92	93	Fail
153	" "	"	2.22	2.8	2.16	"	95	93	Pass Repeat of SNO.152

Prepared by: _____ Checked by: _____

BELA - AWARAN ROAD PROJECT

STV/LYON ASSOCIATES - ACE (PVT.) LTD., J.V.

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 1/3/89 to 31/3/89

Sr. No.	STATION	Layer No.	Wet gm/cm³	MC% by Speedy	Dry gm/cm³	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
154	84+180 - 84+250	3rd	2.23	4.1	2.14	2.28	94	93	Pass
155	87+700 - 87+800	1st	2.21	3.1	2.14	2.325	92	90	Pass
156	87+440 - 87+560	1st	2.19	3.3	2.12	"	91	90	Pass
157	" "	"	2.16	3.1	2.10	"	90	90	Pass
158	87+310 - 87+440	"	2.19	3.3	2.12	"	91	90	Pass
159	" "	"	2.19	3.0	2.13	"	92	90	Pass
160	78+950 - 78+970	4th	2.18	2.4	2.13	2.26	94	93	Pass
161	72+740 - 72+820	TSG	2.33	4.1	2.24	2.35	95	95	Pass
162	72+820 - 73+000	"	2.46	7.0	2.30	"	98	95	Pass
163	" "		2.41	6.7	2.26	"	96	95	Pass
164	" "		2.42	7.0	2.26	"	96	95	Pass
165	87+120 - 87+250	1st	2.12	2.4	2.07	2.29	90	90	Pass
166	" "	"	2.12	2.6	2.07	"	90	90	Pass
167	88+020 - 88+260	"	2.15	3.4	2.08	2.25	92	90	Pass
168	" "	"	1.69	3.0	1.64	"	73	90	Fail
169	82+660 - 82+740	11th	2.21	3.7	2.13	2.26	94	93	Pass
170	81+180 - 81+260	5th	2.10	3.1	2.04		90	90	Pass

Prepared by: _____

Checked by: _____

BELA - AWARAN ROAD PROJECT

STV/LYON ASSOCIATES - ACE (PVT.) LTD., J.V.

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 1/3/89 to 31/3/89

Sr. No.	STATION	Layer No.	Wet gm/cm^3	MC% by Speedy	Dry gm/cm^3	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
171	78+990 - 79+040	8th	2.12	2.9	2.06	2.26	91	90	Pass
172	79+040 - 79+060	6th	2.13	2.4	2.08	"	92	90	Pass
173	79+140 - 79+230	2nd	2.10	2.6	2.05	"	91	90	Pass
174	78+780 - 78+830	"	2.18	2.3	2.13	"	94	93	Pass
175	79+430 - 79+450	8th	2.25	3.3	2.18	"	96	95	Pass
176	83+260 - 83+480	9th	2.24	3.4	2.17	"	96	95	Pass
177	" "	"	2.24	3.2	2.17	"	96	95	Pass
178	" "	"	2.22	2.8	2.16	"	96	95	Pass
179	83+480 - 83+520	"	2.21	3.2	2.14	"	95	93	Pass
180	86+030 - 86+060	8th	2.14	2.9	2.08	2.29	91	90	Pass
181	86+060 - 86+140	7th	2.20	3.0	2.14	"	92	95	Fail
182	86+140 - 86+240	8th	2.24	3.4	2.17	"	95	93	Pass
183	86+460 - 86+490	9th	2.14	2.6	2.09	"	91	90	Pass
184	85+580 - 85+660	4th	2.22	3.3	2.15	2.28	94	93	Pass
185	78+830 - 78+850	5th	2.25	3.4	2.18	2.26	96	95	Pass
186	79+660 - 79+680	8th	2.23	3.2	2.16	"	96	95	Pass
187	85+300 - 85+360	6th	2.28	3.5	2.20	2.28	96	95	Pass

Prepared by: _____ Checked by: _____

BELA - AWARAN ROAD PROJECT

STV/LYON ASSOCIATES - ACE (PVT.) LTD., J.V.

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 1/3/89 to 31/3/89

Sr. No.	STATION	Layer No.	Wet gm/cm^3	MC% by Speedy	Dry gm/cm^3	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
188	87+700 – 87+800	2nd	2.12	2.4	2.07	2.29	90	90	Pass
189	73+450 - 73+470	8th	2.17	3.1	2.10	2.315	91	90	Pass
190	81+180 - 81+260	6th	2.11	2.5	2.06	2.26	91	90	Pass
191	82+660 - 82+740	12th	2.12	3.3	2.05	"	91	93	Fail
192	" "	"	2.16	2.5	2.11	"	93	93	Pass
193	84+060 - 84+130	9th	2.17	3.2	2.10	"	93	95	Fail
194	" "	"	2.23	3.0	2.17	"	96	95	Pass : Repeat of SNo 193
195	84+130 - 84+150	"	2.20	2.6	2.14	"	95	93	Pass
196	84+180 - 84+250	4th	2.14	2.7	2.08	"	92	93	Fail
197	" "	"	2.23	3.2	2.16	"	96	93	Pass; Repeat of SNo. 196
198	84+720 - 84+810	10th	2.15	2.9	2.09	2.28	92	93	Fail
199	" "	"	2.23	3.2	2.16	"	95	93	Pass ; Repeat of SNo. 198
200	84+810 - 84+840	"	2.07	2.1	2.03	"	89	93	Fail
201	" "	"	2.22	3.2	2.15	"	94	93	Pass ; Repeat of SNo. 200
202	83+520 - 83+600	"	2.11	2.9	2.05	2.26	91	90	Pass
203	87+440 - 87+560	2nd	2.16	3.9	2.08	2.29	91	90	Pass
204	" "	"	2.15	2.8	2.09	"	91	90	Pass

Prepared by: _____

Checked by: _____

BELA - AWARAN ROAD PROJECT

STV/LYON ASSOCIATES - ACE (PVT.) LTD., J.V.

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 1/3/89 to 31/3/89

Sr. No.	STATION	Layer No.	Wet gm/cm³	MC% by Speedy	Dry gm/cm³	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
205	84+160 - 84+180	8th	2.19	2.9	2.13	2.26	94	93	Pass
206	88+340 - 88+620	1st	2.08	2.5	2.03	2.24	91	90	Pass
207	" "	"	2.11	2.8	2.05	"	92	90	Pass
208	" "	"	2.11	3.5	2.04	"	91	90	Pass
209	88+620 - 88+660	"	2.16	2.8	2.10	"	94	93	Pass
210	88+660 - 88+740	"	2.14	2.5	2.09	"	93	93	Pass
211	88+740 - 89+030	"	2.13	2.1	2.09	"	93	93	Pass
212	" "	"	2.17	3.1	2.10	"	94	93	Pass
213	" "	"	2.17	2.7	2.11	"	94	93	Pass
214	87+120 - 87+250	2nd	2.17	2.9	2.11	2.25	94	90	Pass
215	" "	"	2.15	3.8	2.07	"	92	90	Pass
216	87+310 - 87+380	"	2.13	2.9	2.07	2.29	90	90	Pass
217	87+380 - 87+440	"	2.23	3.0	2.16	"	94	93	Pass
218	84+280 - 84+320	1st	2.17	2.9	2.11	2.24	94	93	Pass
219	84+380 - 84+480	6th	2.19	2.8	2.13	2.28	93	93	Pass
220	83+480 - 83+520	2nd	2.16	3.0	2.10	2.24	93	90	Pass
221	88+150 - 88+220	"	2.10	3.0	2.04	"	91	90	Pass

Prepared by: _____

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BELA - AWARAN ROAD PROJECT

STV/LYON ASSOCIATES - ACE (PVT.) LTD., J.V.

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 1/3/89 to 31/3/89

Sr. No.	STATION	Layer No.	Wet gm/cm³	MC% by Speedy	Dry gm/cm³	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
222	69+660 - 69+920	GSB	2.48	4.5	2.37	2.27	104	100	Pass
223	" "	"	2.56	4.4	2.45	"	108	100	Pass
224	" "	"	2.67	4.6	2.55	"	112	100	Pass
225	69+360 - 69+600	"	2.48	5.5	2.35	"	103	100	Pass
226	" "	"	2.42	5.0	2.30	"	101	100	Pass
227	" "	"	2.48	5.5	2.35	"	103	100	Pass
228	73+180 - 73+420	TSG	2.33	3.6	2.25	2.35	96	95	Pass
229	" "	"	2.34	3.4	2.26	"	96	95	Pass
230	" "	"	2.30	2.6	2.23	"	95	95	Pass
231	89+400 - 89+520	1st	2.24	3.0	2.17	2.24	97	95	Pass
232	" "		2.26	3.5	2.18	"	97	95	Pass
233	69+160 - 69+260	GSB	2.40	4.5	2.30	2.27	101	100	Pass
234	88+220 - 88+260	2nd	2.09	2.6	2.04	2.24	91	90	Pass
235	88+020 - 88+150	"	2.07	2.2	2.03	"	91	90	Pass
236	" "		2.09	2.4	2.04	"	90	90	Pass
237	87+650 - 87+690	NGS	2.24	3.1	2.17	2.28	95	95	Pass
238	87+580 - 87+650	"	2.24	3.3	2.17	"	95	95	Pass

Prepared by: _____

Checked by: _____

BELA - AWARAN ROAD PROJECT

STV/LYON ASSOCIATES - ACE (PVT.) LTD., J.V.

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 1/3/89 to 31/3/89

Sr. No.	STATION	Layer No.	Wet gm/cm³	MC% by Speedy	Dry gm/cm³	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
239	73+440 - 73+470	9th	2.16	3.0	2.10	2.315	91	90	Pass
240	87+690 - 87+800	3rd	2.16	3.0	2.10	2.29	92	90	Pass
241	77+345 - 77+375	"	2.27	3.3	2.20	2.32	95	93	Pass
242	77+200 - 77+280	8th	2.28	3.0	2.21	"	95	95	Pass
243	72+680 - 72+740	TSG	2.32	3.6	2.24	2.35	95	95	Pass
244	88+340 - 88+560	2nd	2.17	4.0	2.09	2.24	93	90	Pass
245	" "	"	2.18	4.5	2.09	"	93	90	Pass
246	" "	"	2.20	5.0	2.10	"	94	90	Pass
247	74+020 - 74+320	TSG	2.29	3.0	2.22	2.32	96	95	Pass
248	" "	"	2.34	5.0	2.23	"	96	95	Pass
249	" "	"	2.31	4.0	222	"	96	95	Pass
250	78+780 - 78+830	3rd	2.26	4.0	2.17	2.28	95	93	Pass
251	78+830 - 78+890	5th	2.27	3.5	2.19	"	96	95	Pass
252	88+690 - 88+740	2nd	1.87	3.0	1.82	2.24	81	93	Fail
253	88+560 - 88+590	"	2.16	42	2.07	"	92	90	Pass
254	87+450 - 87+560	3rd	2.18	4.0	2.10	"	94	90	Pass
255	" "	"	2.20	5.0	2.10	"	94	90	Pass

Prepared by: _____

Checked by: _____

BELA - AWARAN ROAD PROJECT

STV/LYON ASSOCIATES - ACE (PVT.) LTD., J.V.

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 1/3/89 to 31/3/89

Sr. No.	STATION	Layer No.	Wet gm/cm^3	MC% by Speedy	Dry gm/cm^3	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
256	78 +990 - 79+040	9th	2.20	2.0	2.16	2.28	95	93	Pass
257	79+040 - 79+060	7th	2.19	2.0	2.15	"	94	90	Pass
258	79 + 140 - 79 + 230	3rd	2.16	3.0	2.10	"	92	90	Pass
259	81 + 280 - 81 + 380	NGS	2.17	4.6	2.07	2.18	95	93	Pass
260	88 + 740 - 89 + 070	2nd	2.18	2.5	2.13	2.24	95	93	Pass
261	" "	"	2.19	2.5	2.14	"	96	93	Pass
262	" "	"	2.15	3.0	2.09	"	93	93	Pass
263	" "	"	2.15	2.8	2.09	"	93	93	Pass
264	88 + 690 - 88 + 740	2nd	2.08	2.3	2.02	"	90	90	Pass
265	89 + 590 - 89 + 690	"	2.19	3.4	2.12	"	95	93	Pass
266	79 + 700 - 79 + 960	1st	2.12	2.8	2.06	2.28	90	93	Fail
267	" "	"	2.13	3.0	2.07	"	91	90	Pass
268	" "	"	2.14	3.2	2.07	"	91	90	Pass
269	89 + 070 - 89 + 110	2nd	2.15	2.3	2.10	2.24	94	93	Pass
270	89 + 110 - 89 + 160	"	2.25	3.5	2.17	"	97	95	Pass
271	88 + 160 - 88 + 200	"	2.19	2.8	2.13	"	95	95	Pass
272	87 + 310 - 87 + 340	3rd	2.09	2.6	2.04	"	91	90	Pass

Prepared by: _____

Checked by: _____

BELA - AWARAN ROAD PROJECT

STV/LYON ASSOCIATES - ACE (PVT.) LTD., J.V.

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 1/3/89 to 31/3/89

Sr. No.	STATION	Layer No.	Wet gm/cm³	MC% by Speedy	Dry gm/cm³	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
273	87+340 - 87+440	3rd	2.16	3.2	2.09	2.24	93%	93%	Pass.
274	68+520 - 68+660	Sub Base	2.41	4.6	2.30	2.27	101.3	100	Pass
275	" "	"	2.43	4.5	2.32	2.27	102.2	100	Pass
276	68+860 - 69+060	"	2.38	4.4	2.28	2.27	100.4	100	Pass
277	" "	"	2.45	4.7	2.34	2.27	103.1	100	Pass
278	70+390 - 70+440	1st	2.33	3.0	2.26	2.35	96.2	95	Pass
279	70+460 - 70+570	1st	2.23	2.7	2.17	2.35	92.3	95	Fail
280	70+810 - 70+860	1st	2.36	3.4	2.28	2.25	97.0	95	Pass
281	88+200 - 88+300	2nd	2.19	3.5	2.12	2.24	94.6	93	Pass
282	88+300 - 88+400	2nd	2.22	3.2	2.15	2.24	96.0	95	Pass
283	88+020 - 88+260	3rd	2.08	2.2	2.03	2.24	90.6	90	Pass
284	" "	"	2.08	2.3	2.24	2.24	90.6	90	Pass
285	" "	"	2.06	2.0	2.02	2.24	90.2	90	Pass
286	69+960 - 70+060	1st	2.33	3.0	2.26	2.35	96.2	95	Pass
287	70+060 - 70+095	1st	2.32	2.6	2.26	2.35	96.2	95	Pass
288	70+460 - 70+570	1st	2.33	3.0	2.26	2.35	96.2	95	Pass Repeat No. 279
289	70+960 - 71+080	1st	2.25	3.2	2.18	2.27	96.0	95	Pass

Prepared by: _____

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BELA - AWARAN ROAD PROJECT

STV/LYON ASSOCIATES - ACE (PVT.) LTD., J.V.

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 1/3/89 to 31/3/89

Sr. No.	STATION	Layer No.	Wet gm/cm³	MC% by Speedy	Dry gm/cm³	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
290	70+960 - 71+080	1st	2.26	3.0	2.19	2.27	96.5%	95%	Pass
291	71+240 - 71+300	1st	2.25	2.8	2.19	2.29	95.6	95%	Pass
292	88+340 - 88+560	3rd	2.09	3.0	2.03	2.24	90.6	90%	Pass
293	" "	"	2.10	2.9	2.04	2.24	91.1	90%	Pass
294	" "	"	2.09	3.0	2.02	2.24	90.6	90%	Pass
295	70+370 - 70+390	1st	2.32	3.3	2.25	2.29	98.2	95%	Pass
296	88+560 - 88+590	3rd	2.08	2.0	2.04	2.24	91.1	90%	Pass
297	88+590 - 88+640	3rd	2.16	2.4	2.11	2.24	94.2	93%	Pass
298	88+640 - 88+700	3rd	2.16	2.3	2.11	2.24	94.2	93%	Pass
299	87+120 - 87+250	3rd	2.14	4.2	2.06	2.24	91.8	90%	Pass
300	" "	3rd	2.10	2.6	2.03	2.24	90.6	90%	Pass
301	71+390 - 71+460	1st	2.28	3.5	2.20	2.29	96.1	95%	Pass
302	71+540 - 71+580	1st	2.26	3.3	2.19	2.29	95.6	95%	Pass
303	88+700 - 88+820	3rd	2.16	2.9	2.10	2.24	93.7	93%	Pass
304	" "	"	2.16	3.3	2.09	2.24	93.3	93%	Pass
305	88+830 - 89+110	3rd	2.20	3.0	2.14	2.24	95.5	95%	Pass
306	" "	"	2.19	2.8	2.13	2.24	95.3	95%	Pass

Prepared by: _____ Checked by: _____

BELA - AWARAN ROAD PROJECT

STV/LYON ASSOCIATES - ACE (PVT.) LTD., J.V.

SUMMARY OF IN-PLACE DENSITY TEST RESULTS

Progress from 1/3/89 to 31/3/89

Sr. No.	STATION	Layer No.	Wet gm/cm³	MC% by Speedy	Dry gm/cm³	Proctor MDD	Relative Compaction %	Spec Required	REMARKS
307	86+030 - 86+060	9th	2.19	3.0	2.13	2.29	93	93	Pass
308	86+140 - 86+240	9th	2.22	3.6	2.14	2.29	93.4	93	Pass
309	86+390 - 86+480	10th	2.08	2.0	2.04	2.26	90.3	90	Pass.
310									

Prepared by: _____

Checked by: _____

APPENDIX B -

TEST RESULTS - COMPRESSIVE STRENGTH

- LABORATORY

BELA AWARAN ROAD PROJECT
STV/LYON ASSOCIATES-ACE(PVT)LTD,J.V.
SUMMARY OF COMPRESSIVE STRENGTH TEST RESULTS

REPORT NO:.....

CONTRACTOR:- NASA CONSTRUCTORS(PVT) LTD.

DATE:- 1.3.89 To 31.3.89

S NO.	LOCATION IDENTIFICATION NO.	DATE OF CASTING	DATE OF TESTING	AGE IN DAYS	TYPE OF CONCRETE	AXIAL LOAD LBS	COMPRESSIVE STRENGTH PSI	SPECIFICATION REQUIRMENT	REMARKS
1)	Box Culvert km 60+737	11.2.89	11.3.89	28	C	97,000	3432	1500	Pass
2)	Lean Concrete	" "	" "	28	C	100,000	3537	1500	Pass
3)	" "	" "	" "	28	C	123,000	4351	1500	Pass
4)	" "	" "	" "	28	C	105,000	3714	1500	Pass
5)	Box culvert km 56+970	14.2.89	14.3.89	28	C	149,000	5271	1500	Pass
6)	Lean Concrete First	"	"	28	C	135000	4775	1500	Pass
7)	Pour.	"	"	28	C	148,000	5235	1500	Pass
8)	" "	"	"	28	C	136000	4811	1500	Pass
9)	Box culvert km 56+970	15.2.89	22.2.89	28	C	164000	5801	1500	Pass
10)	Lean Concrete 2nd pour.	"	"	28	C	139000	4917	1500	Pass
11)	" "	"	"	28	C	130000	4598	1500	Pass
12)	" "	"	"	28	C	139000	4917	1500	Pass
13)	Box culvert km 56+970	16.2.89	16.3.89	28	C	129000	4563	1500	Pass

TESTED BY: _____

CONSULTANT: _____

CONTRACTOR: _____

BELA AWARAN ROAD PROJECT
STV/LYON ASSOCIATES-ACE(PVT)LTD,J.V.
SUMMARY OF COMPRESSIVE STRENGTH TEST RESULTS

REPORT NO:.....

CONTRACTOR:- NASA CONSTRUCTORS(PVT) LTD.

DATE:- 1.3.89 To 31.3.89

S NO.	LOCATION IDENTIFICATION NO.	DATE OF CASTING	DATE OF TESTING	AGE IN DAYS	TYPE OF CONCRETE	AXIAL LOAD LBS	COMPRESSIVE STRENGTH PSI	SPECIFICATION REQUIRMENT	REMARKS
14	Lean Concrete 3rd Pour	16.2.89	16.3.89	28	C	130000	4598	1500	Pass
15	Box culvert km 56+395	22.2.89	22.3.89	28	C	104000	3679	1500	Pass
16	Lean Concrete 1st Pour	"	"	28	C	75000	2653	1500	Pass
17	" "	"	"	28	C	92000	3254	1500	Pass
18	" "	"	"	28	C	81,000	2865	1500	Pass
19	Box Culvert km 56+395	23.2.89	23.3.89	28	C	58000	2051	1500	Pass
20	Lean Concrete 2nd pour	"	"	28	C	84000	2971	1500	Pass
21	" "	"	"	28	C	82000	2900	1500	Pass
22	Box culvert km 55+740	28.2.89	28.2.89	28	C	73000	2582	1500	Pass
23	Lean Concrete	"	"	28	C	66000	2335	1500	Pass
24	" "	"	"	28	C	62000	2193	1500	Pass
25	Pipe Concrete Pix	4.3.89	11.3.89	7	A+	108500	3838	3000	Pass
26	Cast yard Lot No: 1	"	"	7	A+	122000	4315	3000	Pass

TESTED BY: _____

CONSULTANT: _____

CONTRACTOR: _____

BELA AWARAN ROAD PROJECT
STV/LYON ASSOCIATES-ACE(PVT)LTD,J.V.
SUMMARY OF COMPRESSIVE STRENGTH TEST RESULTS

REPORT NO:.....

CONTRACTOR:- NASA CONSTRUCTORS(PVT) LTD.

DATE:- 1.3.89 To 31.3.89

S NO.	LOCATION IDENTIFICATION NO.	DATE OF CASTING	DATE OF TESTING	AGE IN DAYS	TYPE OF CONCRETE	AXIAL LOAD LBS	COMPRESSIVE STRENGTH PSI	SPECIFICATION REQUIRMENT	REMARKS
27	Pipe Concrete Pre cast	4.3.89	11.3.89	7	A+	126000	4528	3000	Pass
28	Lot No: 1	"	24.3.89	28	A+	155000	5483	4000	Pass
29	" "	"	"	28	A+	150000	5306	4000	Pass
30	" "	"	"	28	A+	130000	4599	4000	Pass
31	Pre Cast yard pipe	6.3.89	13.3.89	7	A+	133000	4705	3000	Pass
32	Concrete Lot No: 2	"	"	7	A+	120000	4245	3000	Pass
33	" "	"	"	7	A+	123000	4351	3000	Pass
34	Pre Cast yard pipe	8.3.89	15.3.89	7	A+	111000	3926	3000	Pass
35	Concrete Lot No: 3	"	"	7	A+	119000	4209	3000	Pass
36	" "	"	"	7	A+	128000	4528	3000	Pass
37	Box culvert km 55+405	12.3.89	19.3.89	7	C	64000	2264	1125	Pass
	Lean Concrete 1st Pour	—	—	—	—	—	—	—	—
38	Pre cast yard pipe	19.3.89	26.3.89	7	A+	120,000	3537	3000	Pass

TESTED BY: _____

CONSULTANT: _____

CONTRACTOR: _____

BELA AWARAN ROAD PROJECT
STV/LYON ASSOCIATES-ACE(PVT)LTD,J·V.
SUMMARY OF COMPRESSIVE STRENGTH TEST RESULTS

REPORT NO:.....

CONTRACTOR:- NASA CONSTRUCTORS(PVT) LTD.

DATE:- 1.3.89 TO 31.3.89

S NO.	LOCATION IDENTIFICATION NO.	DATE OF CASTING	DATE OF TESTING	AGE IN DAYS	TYPE OF CONCRETE	AXIAL LOAD LBS	COMPRESSIVE STRENGTH PSI	SPECIFICATION REQUIRMENT	REMARKS
39	Concrete Lot No: 4	19.3.89	22.3.89	7	A+	120,000	4245	3000	Pass
40	" "	"	"	7	A+	85000	3006	3000	Pass
41	Box culvert km 55+405	20.3.89	27.3.89	7	C	45000	1592	1125	Pass
42	Lean Concrete 2nd Pour	"	"	7	C	35000	1238	1125	Pass
43	" "	"	"	7	C	30000	1061	1125	Pass
44	Pre cast yard pipe	21.3.89	28.3.89	7	A+	125000	4422	3000	Pass
45	Concrete Lot No: 5	"	"	7	A+	120000	4245	3000	Pass
46	" "	"	"	7	A+	128000	4528	3000	Pass
47	Pre cast yard pipe	22.3.89	29.3.89	7	A+	120000	4245	3000	Pass
48	Concrete Lot No: 6	"	"	7	A+	125000	4422	3000	Pass
49	" "	"	"	7	A+	110000	3891	3000	Pass
50	Bridge at km 74	22.3.89	29.3.89	7	C	79000	2794	1125	Pass
51	Lean Concrete	"	"	7	C	75000	2653	1125	Pass

TESTED BY:

CONSULTANT:

CONTRACTOR:

BELA AWARAN ROAD PROJECT
STV/LYON ASSOCIATES-ACE(PVT)LTD,J.V.
SUMMARY OF COMPRESSIVE STRENGTH TEST RESULTS

REPORT NO:.....

CONTRACTOR:- NASA CONSTRUCTORS(PVT) LTD.

DATE:- 1.3.89 To 31.3.89

S NO.	LOCATION IDENTIFICATION NO.	DATE OF CASTING	DATE OF TESTING	AGE IN DAYS	TYPE OF CONCRETE	AXIAL LOAD LBS	COMPRESSIVE STRENGTH PSI	SPECIFICATION REQUIRMENT	REMARKS
52	Bridge 74 km	22.3.89	29.3.89	7	C	70000	2476	1125	Pass

TESTED BY:

CONSULTANT:

CONTRACTOR:

BELA - AWARAN ROAD PROJECT

STV/LYON ASSOCIATES-ACE (PVT.) LTD., J.V.

SUMMARY OF LABORATORY TEST RESULTS

Progress from 1/3/89 to 31/3/89

Lab. No.	LOCATION	Sieve Analysis: Cobble 125mm-75mm	Sieve Analysis: Gravel 75mm-4.75mm	Sieve Analysis: Sand 4.75mm-0.075mm	Sieve Analysis: Silt/Clay 0.75mm	Atterberg Limits: LL	Atterberg Limits: PL	Atterberg Limits: PI	Proctor: OMC	Proctor: MDD	S.P. Gravity	CBR 0.1	CBR 0.2	Compressive Strength PSI	REMARKS
1)	Borrow Pit 86+090	—	59	20	21	—	—	—	5.4	2.325					
2)	81+650-81+900	—	37	30	33	—	—	—	5.3	2.25					
3)	Carriage way 68+680-69+060	—	45	43	12	—	—	—	52	2.276					
4)	73+600 NG	—	—	—	90.4	44.4	24.5	20	6.4	2.16		CBR at 95% = 4.3			
5)	70+000 Cut	—	—	—	62%	29.2	17.25	12	6.3	2.15		CBR at 95% = 7.0			
6)	74+740 Cut	—	—	82.1	17.9	—	N.P	—	7.4	2.13		CBR at 95% = 11.0			
7)	76+600 Borrow Pit	—	62	22.4	15.6	—	—	—	5.1	2.275		CBR at 95% = 20.0			
8)	74+600 Borrow Pit	—	40	49	11.0	—	N.P	—	4.8	2.242		CBR at 100% = 80.0			NOTE: MDD to be repeated
9)	81+200-400 NG	—	38.4	24	37.6	—	—	—	7.5	2.185					
10)	Trial km 71 B.P	—	36	50	14.0	—	N.P	—	4.8	2.331		CBR at 100 = 93.0			MDD report No: 8
	74+600 Subbase														
11)	79+900 cut	—	—	—	87.0	21	6.0	15	7.0	2.17		CBR at 95% = 4.5			

Prepared by: _____ Checked by: _____