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**QUALITY CONTROL ON
PESHAWAR- ISLAMABAD MOTORWAY (M-1)**

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C O N T E N T S

<u>S.No</u>	<u>TITLE</u>	<u>PAGE</u>
	Executive Summary	i
1.	Introduction	1
1.1	General	1
1.2	Project Description M-1	2
1.3	Objective	2
1.4	Scope of Work	3
2.	Progress of Section of M-1	3
3.	Reconnaissance Survey	4
3.1	Earthworks	4
3.2	Aggregate Base Course	4
3.3	Asphalt Base Course (Riding Quality)	4
3.4	Culverts	4
3.5	Rotary Interchange # 3	4
3.6	Burhan Bridge 1B at N-5	5
3.7	Dotal Khas Nala Bridge	5
3.8	Flyovers	5
4.	Quality Control Assessment	5
4.1	Field Density	6
4.2	Laboratory Density Values	7
4.3	Field CBR of Sub-Grade	7

4.4	Gradations of Sub-Grade and Base Course	7
4.5	Asphaltic Base Course	8
4.6	Compressive Strength of Cement Concrete	10
4.7	Tensile Strength of Steel	11
5.	Quality Assurance System by Consultants	11
6.	Conclusions	12
7.	Report Limitation	13

Annexure - A

Annexure - B

Annexure - C

Photographs

EXECUTIVE SUMMARY

The quality and durability of our highways, roads and streets has always been a major concern to the users. One such concern was shown on the appearance of news in a local newspaper related to the poor quality of work in the construction of Section-1 of Peshawar - Islamabad Motorway (M-1).

The Peshawar - Islamabad Motorway (M-1) has a total length of 151.78 Km. In 1998 M/s bayindir a Turkish firm was awarded the contract as a contractor. The total cost of the project has been worked out to be Rs. 27588 million. This motorway was initially six lanes divided carriage way, however due to economic constraint it has now been reduced to four lanes with all the structures and formation width for six lanes.

Supervision of work has been awarded to a consortium of Firms called Pakistan Motorway Consultants (PMC). Consisting of a lead consultant M/s Engineering Consultants International (Pvt) Ltd. and association of consultants including M/s Engineering Associates, M/s Snowy Mountains Engineering Corporation (SMEC), M/s A.A. Associates and M/s Louis Berger International Incorporation.

National Transport Research Centre on the request of ministry of Communications carried out necessary investigation based on performing actual field and Laboratory tests on pavement materials.

The scope of investigation covered Section-1 of Islamabad - Peshawar Motorway (M-1) and include the following steps:

- Reconnaissance Survey of Section-1 of M-1.
- Quality Control Assessment.
 - Field observations, testing and materials sampling.
 - Laboratory testing and analysis of samples.
- Report writing

Various field and Laboratory tests were conducted on the sub-grade, aggregate & asphaltic base course and concrete materials obtained from the locations in question. These tests were performed strictly in accordance with the standard specifications set forth in the AASHTO Manuals. The brief summary of the results is as follows:-

- i) Sub-grade materials sampled from two different location were found to be A-4 as per AASHTO classification with the plasticity index of 9. Field density test result at station 20+784 falls 2 percent below the minimum required percent compaction.
- ii) In-site CBR values obtained on the sub-grade materials were far above the minimum required as specified by the NHA specification.
- iii) Results of the field density and gradation tests on base course materials show that these were properly graded and compacted in compliance with the specifications.
- iv) Asphaltic base course materials cored from different locations when tested did meet the minimum specified requirement of the standard specification except sample obtained from station 33+745 to 33+900 has thickness more than the required tolerance.

- v) The workmanship of is cement concrete structures rated as satisfactory. Bulging or honey combing has not been observed in constructed structures. Also the cement concrete samples tested for compressive strength by NTRC were found to be in accordance with the minimum specified requirement.
- vi) The deformed steel bar sampled from contractors stockyard has been tested for yield and ultimate tensile strength and found as per specifications.
- vii) Riding quality of the completed sections of asphaltic base course was independently rated as "Very good" on the average.
- viii) The quality of on-site material testing laboratories and performance of the technicians observed were found to be satisfactory.
- ix) The overall workmanship of different construction activities were found to be satisfactory.

It is apparent from the report findings that quality control test results in most cases do comply with the requirement and work so far done is satisfactory. It is quite evident that improving the quality of high profile road construction through Laboratory control that is not very difficult now a days. The National Transport Research Centre and many other Government agencies as well as private sector maintains a full scale laboratory and can be utilize in a better was to build better quality of road network in the country.

1. INTRODUCTION

1.1: GENERAL: The construction of motorways in Pakistan has been initiated to provide another North-South link in the country joining Karachi with Peshawar. It will also extend to Gawadar thereby connecting Baluchistan with the rest of the country (Pakistan Motorway Alignment at Annexure-A). Conforming to the international standards, the Pakistan Motorway is also a limited access highway. The first phase of Pakistan Motorway project i.e. Lahore-Islamabad Motorway (M-2) was completed in December 1997. It provides a completely uninterrupted flow of traffic allowing access and exit only at the ramps designed for this purpose.

The second phase of this project Islamabad - Peshawar Motorway (M-1) has been started in 1998. The project was first initiated in 1993 but due to certain reasons it was abandoned. In 1998 after completion of the Lahore-Islamabad Motorway (M-2) the project of M-1 was revived and M/s bayindir a Turkish firm was awarded the contract on the rates on which it had been awarded in 1993 with some escalation. The total cost of the project has been worked out to be Rs 27588 million. M/s bayindir also pledged to arrange 50% of the project cost from its own sources. This motorway was initially six lanes divided highway but due to economic constraint now it has been reduced to four lanes with all the structures and formation width for six lanes.

The quality and durability in the construction of motorways has always been a major concern to the users. This requires that the team involved in construction should have a thorough understanding of the properties of pavement materials and should put emphasis on the implementation of standards and specifications. This report deals with

the assessment of quality control of construction of section-1 of the Islamabad - Peshawar Motorway (M-1).

1.2 PROJECT DESCRIPTION M-1: The Peshawar-Islamabad Motorway (M-1) has a total length of 151.78-Km (layout plan at Annexure-A).

The salient features of the project are: -

- i) Four interchanges first at Burhan, the second at Swabi, the third at Raskhai Mardan & the fourth is at Charsadda.
- ii) It has three major bridges one at Haro the second at Indus & the third is at Kabul River.
- iii) It has a number of flyovers and under passes to facilitate the movement of vehicular traffic & local population respectively.

The supervision of construction work has been assigned to a consortium of consultancy firms called Pakistan Motorway Consultants (PMC) consisting of the following (Organisational chart of consultants at Annexure-A):

M/s Engineering Consultants International (Pvt.) Ltd.

M/s Engineering Associates,

M/s Snowy Mountains Engineering Corporation (SMEC),

M/s A.A. Associates,

M/s Louis Berger International Incorporation

1.3 OBJECTIVE: On the appearance of news in a local newspaper related to the lack of quality assurance on the construction of Peshawar - Islamabad Motorway M-1. Secretary ministry of communications asked

NTRC for carrying out necessary investigations and submission of a report related to the issues of construction work on section-1 (Burhan - Islamabad section) of M-1.

1.4 SCOPE OF WORK: On the instructions of senior chief NTRC a team of engineers carried the work with following scope:

- Reconnaissance survey of section-I of M-1.
- Quality Assurance Checking
 - Field observations, testing and materials sampling
 - Laboratory testing and analysis of samples.
- Report writing

2. PROGRESS OF SECTION-I OF M- 1

For the construction management the project has been divided in three sections. The section-I starts from the terminating point of Lahore-Islamabad Motorway (M-2) located near Pind Nasrala in district Rawalpindi, it has length of 64.322 Km. Section II is 43.264 km in length. While, section III is 44.194 km long. The section I is again divided in two parts. Part-I of section I is 35.568 kilometre long. While, part-II of section is 28.752 kilometre in length. Table-1 summaries the progress of section 1 of M-1 as of the October, 12, 2000.

Table-1 UPDATED PROGRESS OF WORKS FROM KM 00+000 - 36+000 of M-1.

S.No	Description	Quantity completed	%age
1.	Aggregate of Sub base + Base Course	52,487 M3	6.58
2.	Bituminous Base Course	13,687M3	10.71
3.	Structures		
	i) Culverts:	57 Nos	57.57
	ii) Underpasses	11 Nos	68.75
	iii) Bridges & Flyovers	*	50.30

3. RECONNAISSANCE SURVEY

A reconnaissance survey of section I (from station 0+00 to 36+00) of the Islamabad - Peshawar Motorway (M1) was carried out by NTRC experts on October 10, 2000. Details of the reconnaissance survey are given in the following paras: -

3.1 EARTHWORKS: At station 31+800 sub-grade being prepared was observed. The practice involved in preparation of the sub-grade was accordance with the standard methods (Photographs 1 - 4).

3.2 AGGREGATE BASE COURSE: Field density test was observed by the NTRC team, being carried out on an already prepared section of the aggregate base course. The test was conducted in compliance with the standard method (Photograph 5).

3.3 ASPHALT BASE COURSE (RIDING QUALITY): Riding quality of the asphalt base course of various sections completed with three layers were assessed in accordance with AASHTO scale of 0 to 5 with zero being the poor. An independent rating of 4.0 (very good) is given to the completed section. It is anticipated that the riding quality of the pavement will further improve after asphaltic wearing surface course will be laid (Photograph 6).

3.4 CULVERTS: Already completed culverts at various locations were visually observed and appear to be in good condition, excepts the wing walls of culvert at station 29+730 that had already been repaired for minor bulging problem. No major defects were observed in culverts at other locations (Photographs 7 - 8).

3.5 ROTARY INTERCHANGE # 3: At this location deformed steel and post tension cables in one of the girder were observed. No evidence of any bad workmanship and/or defect were found. NTRC team also visually

inspected the concreting operation in one of the cast-in-place pier at this location. The procedure adopted for placing and quality control of concrete pour were in accordance with the standard methods. All other already completed concrete structural components did not show any sign of distress and/ or defect (Photographs 9 - 14).

3.6 Burhan Bridge 1B at N-5: At this location, the team visually observed the pre-cast girders for Railway Bridge, no traces of honey combing and or bulging were found. However, some few pre-cast girders have only the conduits without post tension cables (Photographs 15 - 16).

3.7 DOTAL KHAS NALA BRIDGE: This bridge is located at station 34+137. Girders at this location were already stressed and were in good shape except one girder which has already been rejected by project consultants due to some honey combing and bulging in the concrete (Photographs 17 & 18).

3.8 FLYOVERS: Some of the already completed structural components of Flyovers at various locations between station 0+00 and 36+00 were observed and found to be in satisfactory conditions. No traces of honey containing and/or bulging of concrete were found. At km 11.971 stressing of post tension cables in one of the flyover girder was observed. The stressing operation was carried out according to the standard practice

4. QUALITY CONTROL ASSESSMENT

Exercising a proper quality control over for the construction of motorways, highways & roads is the fore most responsibility of agencies involved in the construction through out the world. Lack of such control results in serious deterioration of the pavement conditions in no time

giving rise to poor riding quality, functional and/ or structural failures to the pavement and discomfort to the road users. The quality of work completed by the contractor M/s Bayindir Construction Incorporation which was verified by the project consultants M/s Pakistan Motorway Consultants (PMC) on section-I of Islamabad - Peshawar Motorway (M-1) was assessed by the NTRC team.

Various field and Laboratory tests were carried out on sub-grade, sub-base, base course and asphaltic base course materials. These tests were performed strictly in accordance with the standard specifications set forth in the AASHTO/ ASTM Manual. In addition structures such as culverts and bridges consisting of post-tensioned girders and piers were visually observed. Freshly poured cement concrete was sampled and analysed for its quality by the NTRC team.

4.1 FILED DENSITY: Field Density Tests of various pavement layers were conducted by the NTRC team using standard sand replacement method as per AASHTO, T-191. Result of tests at different locations for various layers of work items are detailed in Table- 2.

Table- 2 Results of Field Density Tests.

S.No	Represent Test Chainage (km)	Station (km)	Layer Tested	Date	Compaction Achieved (%)	Compaction Required (%)	Remarks
1	23+830 to 23+930	23+898	Base Course	10-10-2000	100.5	100	Pass
2	23+930 to 24+050	24+000	Base Course	10-10-2000	100.5	100	Pass
3	20+700 to 20+800	20+784	Sub-grade	16-10-2000	93	95	Fail
4	20+800 to 20+900	20+850	Sub-grade	16-10-2000	95	95	Pass

Except the sub-grade at station 20+780, all other test result compliance with the requirement. The sheets showing the field density test results duly verified by the inspecting team are placed at Annexure-B.

4.2 LABORATORY DENSITY VALUES: In order to compare the values of maximum dry densities and optimum moisture contents of sub-grade and granular base materials conducted in laboratory by the project consultants. The same were also carried out in the NTRC Laboratory for which samples of sub-grade and granular materials were collected from the site and bathing / mixing plant. Both test results fall in the same range. Table-3 below presents the comparison of the two results.

Table- 3 Comparison of Laboratory Density & Optimum Moisture content.

S.No	Represent Test Chainage	Station	Layer Tested	As per Consultants		As per NTRC	
	(km)	(km)		Density (gm/cc)	OMC %	Density (gm/cc)	OMC %
1	23+830 to 23+930	23+898	Base Course	2.351	4.2	2.336	4.5
2	23+930 to 24+050	24+000	Base Course	2.351	4.2	2.336	4.5
3	20+700 to 20+800	20+784	Sub-grade	2.166	8.1	2.157	8.5
4	20+800 to 20+900	20+850	Sub-grade	2.166	8.1	2.161	8.2

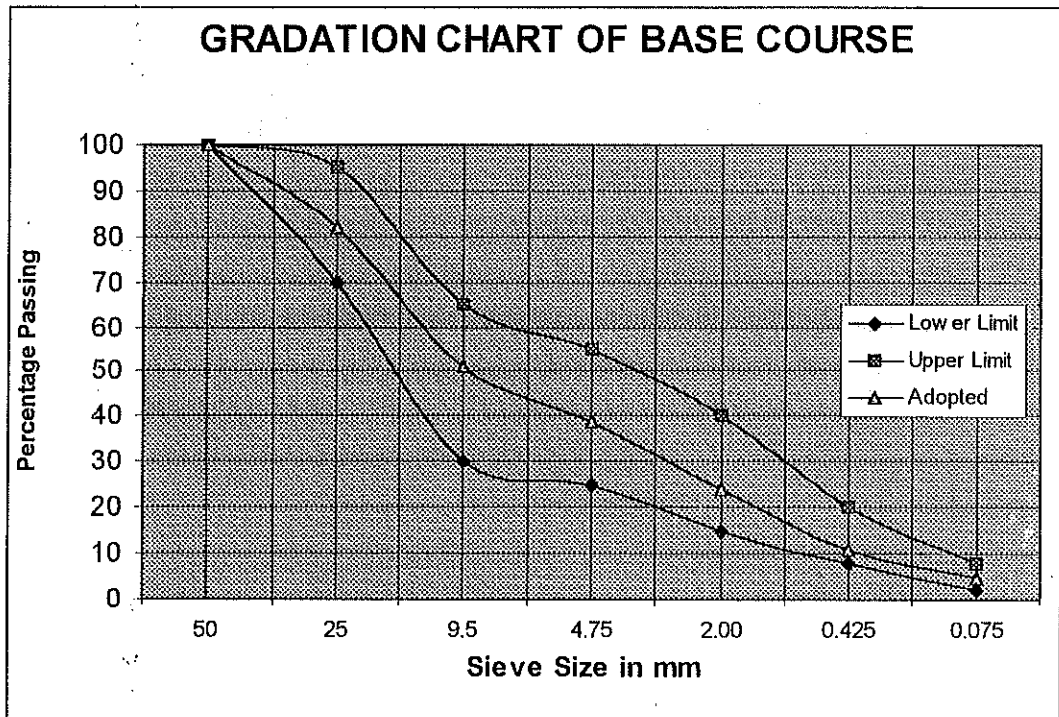
The sheets showing the results of Laboratory compaction of the materials are placed at Annexure - B.

4.3 FIELD CBR OF SUB-GRADE: For determining the In-situ CBR of the embankment and prepared sub-grade Dynamic Cone Penetrometer (DCP) was used. Three tests were carried out at locations 20+784 and 20+850. An average in-situ CBR value of 50% was achieved which exceeds well beyond the minimum required value. Detail results of DCP testing are place at Annexure-B.

4.4 GRADATIONS OF SUB-GRADE AND BASE COURSE: Material used for the sub-grade preparation has been classified as A-4, as per the AASHTO classifications PI value of 9 was obtained which falls with the

acceptable limit of 4-12 and is categorised as fair for the use in sub-grade preparation. The gradation curve of the base course material has been found smooth and fall within the envelope limits for grading "A" as per the NHA specifications requirement for aggregate base course. Figure - 1 show the gradation envelop.

Figure - 1



4.5 ASPHALTIC BASE COURSE: For the conformation of thickness and compaction of the already paved asphaltic base course, cores were drilled in the presence of NTRC engineers. Four cores were drilled randomly from sections where all the three layers of base course have been completed. Table-4 below presents test results of the thickness of asphaltic base course and the bulk specific gravity of the cores conducted in accordance with AASHTO T 166-88.

Table - 4. Core Density and Thickness of Asphaltic Base Course.

S.No	Represent Test Chainage (km)	Station (km)	Average Height (mm)	Average Diameter (mm)	Core Density (gms/cc)	Core Density (gms/cc) T-166
1	34+607 to 34+713	34+659	228	101.4	2.356	2.341
2	34+487 to 34+606	34+549	228	101.3	2.359	2.327
3	33+745 to 33+900	33+808	243	101.4	2.397	2.395
4	33+180 to 33+325	33+271	228	101.3	2.409	2.383

Analysis of cores revealed that out of the total four cores three have thickness of 228 mm against the required thickness of 230 mm. Where as one core has thickness of 243 mm. This shown that three cores are shy of thickness and are deficient in thickness by 2 mm compared to NHA specification, which allow upto 10 mm for deficiency in layer thickness. Whereas, one core which is 13 mm more than the required thickness of asphaltic base course is against the NHA specifications that allow only 5 mm for increase in thickness of asphaltic base course.

Table - 5 below presents the degree of compaction achieved at site in paved asphaltic base course relative to Marshall density acquired in laboratory.

Table - 5 Degree of Compaction of Asphaltic Base Course.

S.No	Represent Test Chainage (km)	Station (km)	Core Density (gms/cc) T-166	Average Marshall Density (gms/cc)	Compaction Achieved (%)	Compaction Required (%)
1	34+607 to 34+713	34+659	2.341	2.394	97.79	97
2	34+487 to 34+606	34+549	2.327	2.389	97.40	97
3	33+745 to 33+900	33+808	2.395	2.397	99.91	97
4	33+180 to 33+325	33+271	2.383	2.405	99.08	97

In all the samples the compaction achieved at the site in asphaltic base course complies with the required specifications.

4.6 COMPRESSIVE STRENGTH OF CEMENT CONCRETE: In order to check the quality of fresh cement concrete that has been used in structures, the concrete pored on 11th October, 2000 at location 37+015 km for the construction of a culvert, was sampled by the NTRC engineers. The class of concrete was "A" and had been departure from the batch plant at 12:40 while it arrived at site on 12:55. Also the slump test and temperature of the concrete was examined. The concrete was placed in accordance with the standard practice.

For the assessment of the strength of the concrete six concrete cylinders mold from the same batch were brought to NTRC laboratory for the curing and further testing. Three of these were tested on 19-10-2000 for eight days strength, while remaining three were tested on 08-11-2000 for 28 days strength as per AASHTO T 22-90. Table-6 below shows the compressive strength of cylinders.

Table - 6 Compressive Strength of Cement Concrete.

Core No.	Date of Testing	Compressive Strength (psi)	Average Compressive Strength (psi)
1	19-10-200	4451	4107 (8 days)
2	19-10-200	3975	
3	19-10-200	3895	
4	08-11-2000	5128	5135 (28 days)
5	08-11-2000	5446	
6	08-11-2000	4833	

For seven days cured samples an average strength of 4107 psi was achieved from three samples. While for other three samples cured for 28 days an average strength of 5135 psi was obtained against the requirement of 3000 psi for the class "A" type of cement concrete (Tests results are placed at Annexure-B). Compressive strength of some of the structural components at various locations checked by the rebound hammer were found to be over 5000 psi.

4.7 TENSILE STRENGTH OF STEEL: Samples of steel were collected from the stockyard of the contractor at Burhan camp. The billet deformed steel bars were tested in accordance with AASHTO M 31-89 & NHA's specifications and compared with the allowable tolerance limits. The Laboratory results on steel bars show that the yield strength was found 83 ksi which is higher than the required 75 ksi for Grade 75 steel. The ultimate tensile strength was 110 ksi that is also higher than the required tensile strength.

5. QUALITY ASSURANCE SYSTEM BY CONSULTANTS

A quality assurance program could be defined as the overall process where the joint efforts of various agencies are combined to develop or establish performance relating quality criteria. This is basically a management tool that represents management concern for quality and the efforts to assure quality.

The project consultants M/s PMC have adopted a well-formed quality assurance system. On-site laboratories are equipped with required duly calibrated apparatus. Proformas for daily materials testing have been used by the consultants and verified by materials engineer. Similarly, a

joint team of qualified and experienced engineers of various agencies has been involved in the execution of the project. For perusal photocopies of field density tests and the documentation for the disposal of discarded materials obtained from consultants are placed at Annexure-C. NTRC experts also visited the on-site materials testing laboratory and checked the daily testing record. Performance was found satisfactory.

6. CONCLUSIONS

The facts as determined by the field and laboratory investigations of section-I of the Islamabad-Peshawar motorway (M-1) enumerated in this report reveals the following:

- i) Sub-grade materials sampled from two different location were found to be A-4 as per AASHTO classification with the plasticity Index of 9. Field density test result at station 20+784 falls 2 percent below the minimum required percent compaction.
- ii) In-site CBR values obtained on the prepared sub-grade were found far above the minimum required as specified by the NHA specification.
- iii) Results of the field density and gradation tests on base course materials show that these were properly graded and compacted in compliance with the specifications.
- iv) Asphaltic base course materials cored from different locations when tested did meet the minimum specified requirement of the standard specification except sample obtained from station 33+745 to 33+900 has thickness more than the required tolerance.

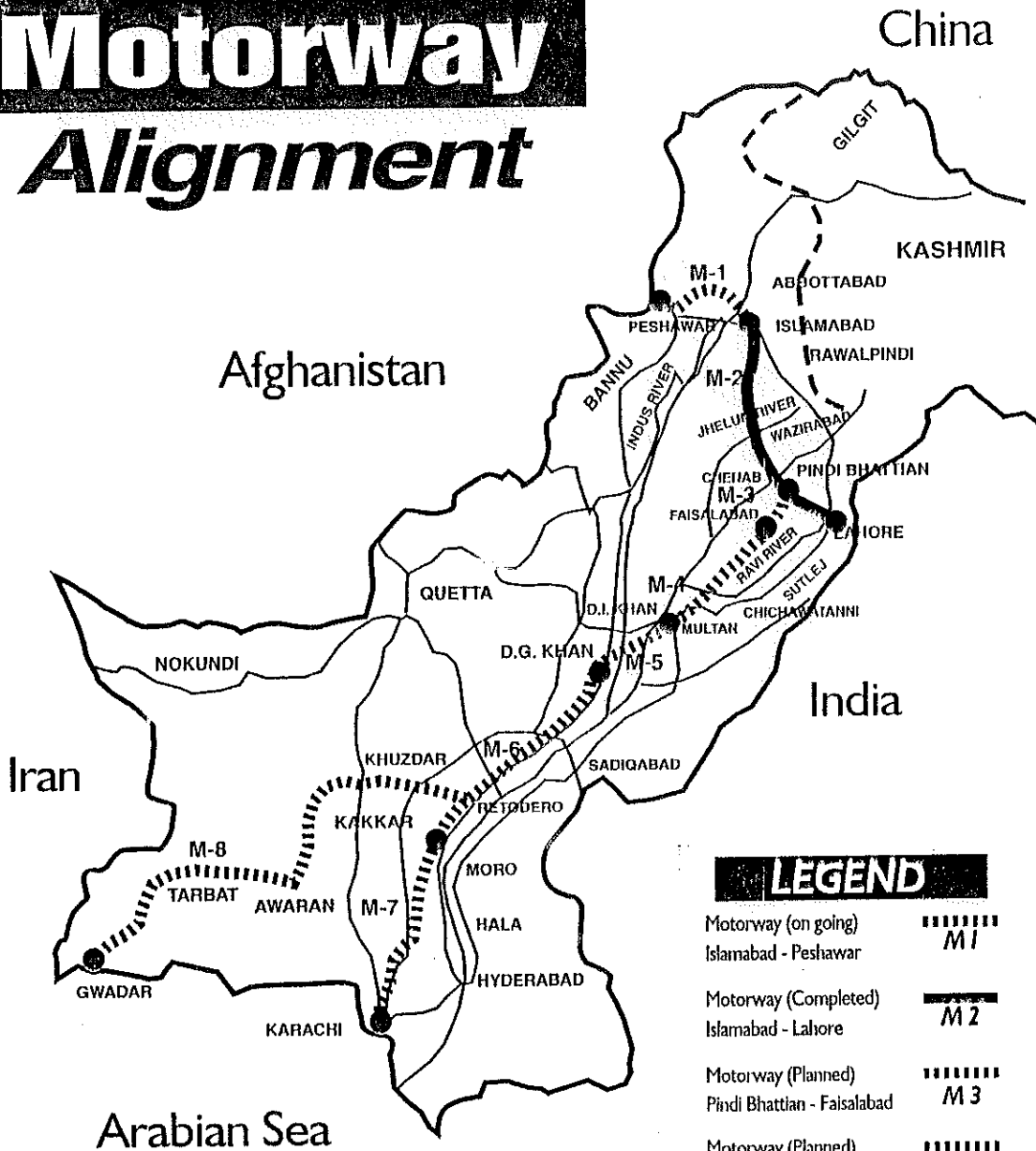
- v) The workmanship of cement concrete structures rated as satisfactory. Bulging or honey combing has not been observed in constructed structures. Also the cement concrete samples tested for compressive strength by NTRC were found to be in accordance with the minimum specified requirement.
- vi) The deformed steel bar sampled from contractors stockyard has been tested for yield and ultimate tensile strength and found as per specifications.
- vii) Riding quality of the completed sections of asphaltic base course was independently rated as "Very good" on the average.
- viii) The quality of on-site material testing laboratories and performance of the technicians observed were found to be satisfactory.
- ix) The overall workmanship of different construction activities were found to be satisfactory.

7. REPORT LIMITATION

This study is not intended as an indictment of any particular agencies. The main objective is to evaluate the quality of construction and its related problems of material inspection, in place performance, sampling and testing and submitted to the concerned authority to enable them to take remedial measures.

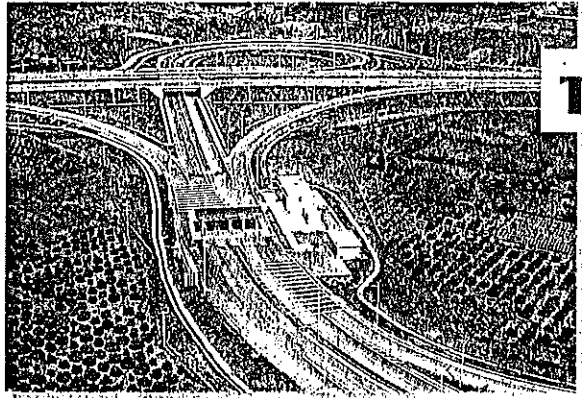
ANNEXURE - A

Pakistan Motorway Alignment



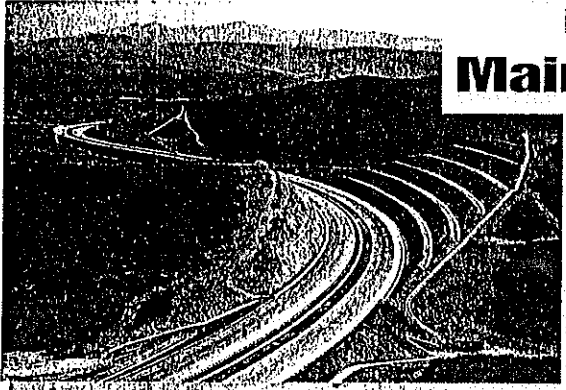
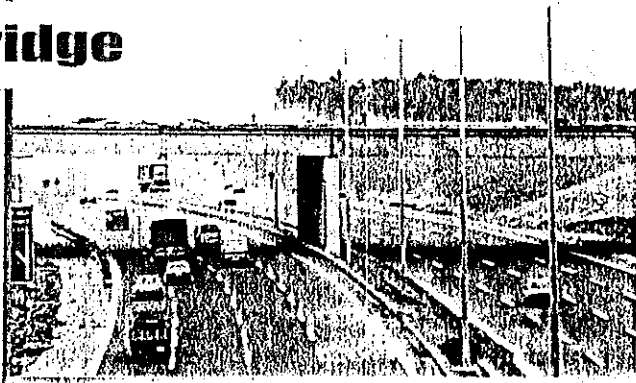
LEGEND

Motorway (on going)	■■■■■
Islamabad - Peshawar	M1
Motorway (Completed)	————
Islamabad - Lahore	M2
Motorway (Planned)
Pindi Bhattian - Faisalabad	M3
Motorway (Planned)
Faisalabad - Multan	M4
Motorway (Planned)
Multan - D.G. Khan	M5
Motorway (Planned)
D.G.Khan - Retodero	M6
Motorway (Planned)
Retodero - Karachi	M7
Gwadar Link
	M8



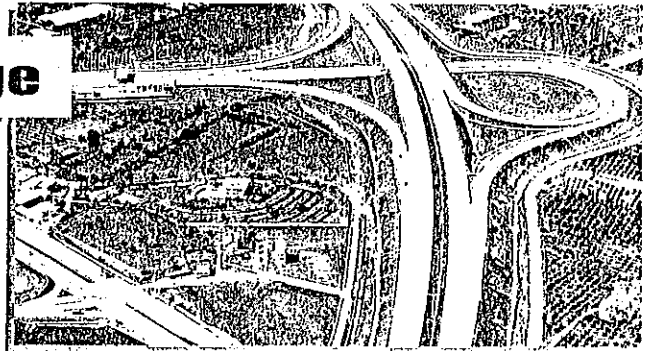
Toll Plaza

Overhead Bridge



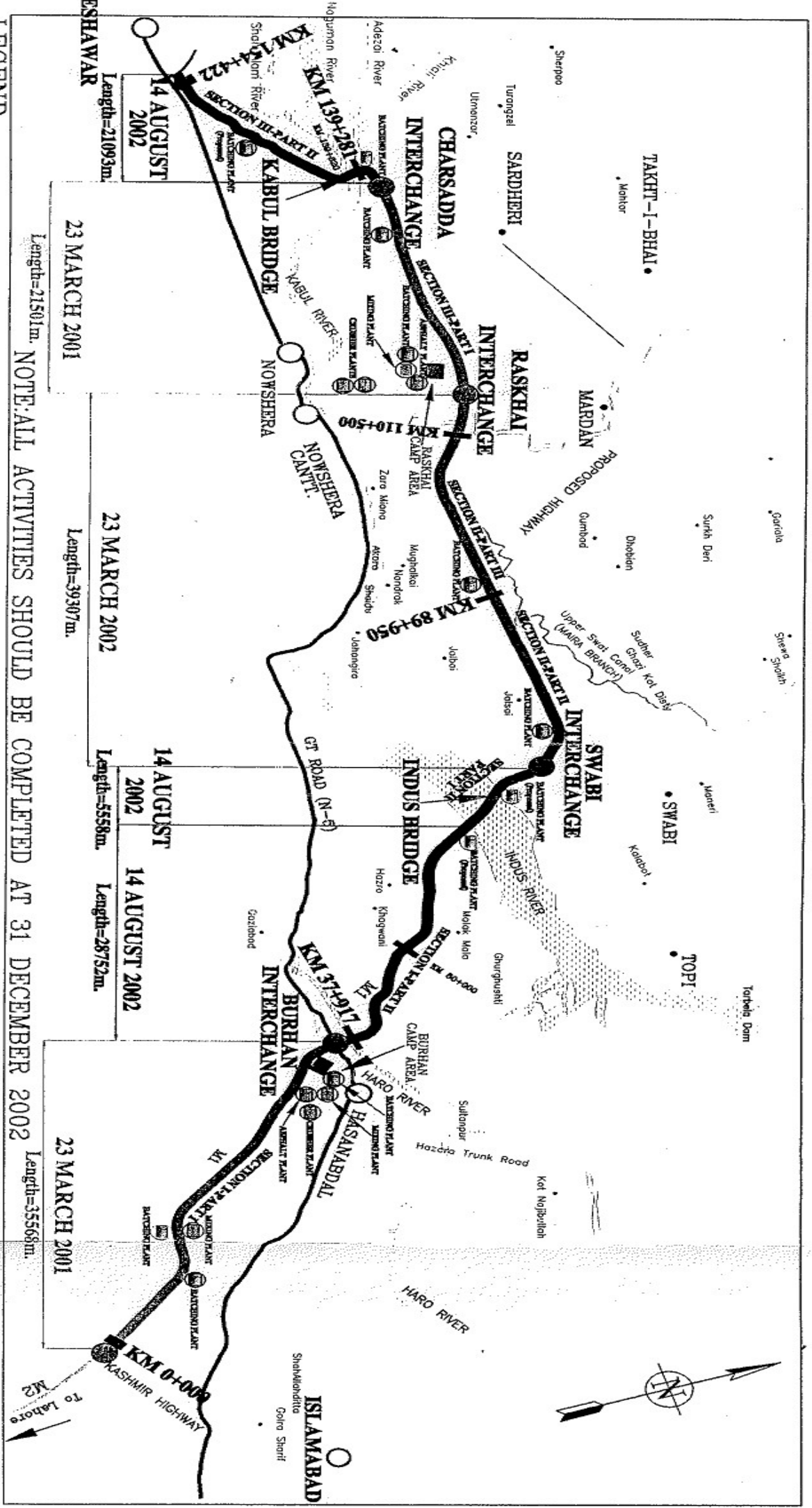
Main Line Motorway

Interchange



ISLAMABAD - PESHAWAR MOTORWAY (M1)

LAYOUT PLAN



NOTE: ALL ACTIVITIES SHOULD BE COMPLETED AT 31 DECEMBER 2002

LEGEND

—	• INTERCHANGE	SECTION I	64.322	Kashmir Highway Interchange	0+000	Rashakai Interchange	112+100
—	• RIVER / NAHA	SECTION II	43.264	Burhan Interchange	36+200	Charsadda Interchange	133+800
—	• RIVER / NAHA	SECTION III	44.194	Swabi Interchange	70+350	Peshawar End Point	154+422
—	• RIVER / NAHA			Indus Bridge	65+280	Kabul Bridge	139+551

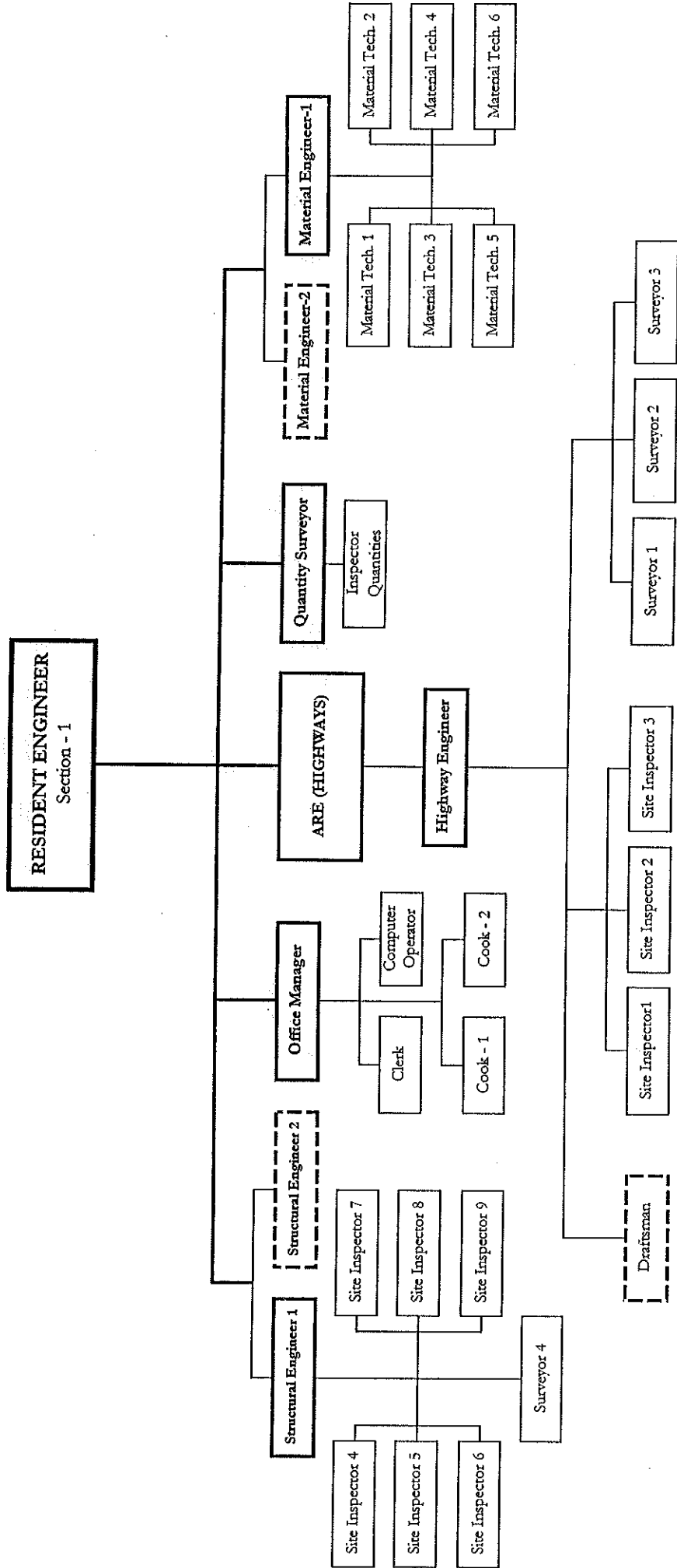
BAYINDIR CONSTRUCTION INC.

PAKISTAN MOTORWAY CONSULTANTS

Islamabad - Peshawar Motorway Project (M-I)

ORGANISATION CHART

Section-1



Positions to be Filled

S. No.	STRUCTURE	TOTAL NUMBERS
1	<p>INTER-CHANGES</p> <p><i>N-5 Burhan Interchange</i></p> <p><i>Jihangira - Sawabi Road interchange</i></p> <p><i>Rashki Interchange</i></p> <p><i>Charsadda Interchange</i></p>	4
2	<p>MAJOR BRIDGES</p> <p><i>Haro River Bridge</i></p> <p><i>Ghazi Brotha Power Channel Bridge</i></p> <p><i>Badri Khaur Bridge</i></p> <p><i>Indus River Bridge</i></p> <p><i>Kalpani Nala Bridge</i></p> <p><i>Kabul River Bridge</i></p>	6
3	MINOR BRIDGES	31
4	FLY-OVERS	16
5	UNDER PASS	73
6	CATTLE CREEP	28
7	CULVERTS	552

Date: October 12, 2000.

Islamabad-Peshawar Motorway Project (M-1), Sec-1
UPDATED PROGRESS OF WORKS

From Km. 00+000 ~ 36+000

1. Aggregate Sub-base + Base course

Total completed	=	52,487 M ³
% completed	=	6.58 %

2. Bituminous Base Course

Total completed	=	13,687 M ³
% completed	=	10.71 %

3. Structures

(i) Culverts

Total completed	=	57 Nos.
% completed	=	57.57 %

(ii) Underpasses

Total completed	=	11 Nos.
% completed	=	68.75 %

(iii) Bridges and Flyovers

Total completed	=	-
% completed	=	50.3 %

ANNEXURE - B



ISLAMABAD PESHAWAR MOTORWAY PROJECT

FILED DENSITY TEST (T.191)

SECTION: ONE

Location	Insepector/Survey/Quality No	14210
	Representing Test chainage (km)	20+740 ~ 800
	Station (km)	20+784
	Test/Retest No	
	Offset from centre Line (m)	15 m R/S
	Layer No. or Level:	55-2
	Depth Of Hole (cm)	14.0
Field Density	Container No.	
	wt. Of wet excav. Soil from hole (g)	5710
	wt. Of container (g)	20
	wt of excavated soil from hole (g)	5690
	Initial wt of sand +empty cone. (g)	8000
	Residual wt of sand +empty cone (g)	2910
	wt of used sand in hole+cone (g)	5090
	wt of sand to fill cone. (g)	1436 1666
	wt of sand to fill hole. (g)	3424
	unit wt of sand (g/cc)	1.336
	volume of Hole (cc)	2562.9
Field wet density of soil (g/cc)	2.220	
Moisture Content	Speedy Moisture Reading %	10.0
	Corrected M. Content %	10.5
	Weight of Cont. + Wet soil (a) (g)	
	Weight of cont. + Dry soil (b) (g)	
	Weight of container @ (g)	
	Oven Dry M. Content (a-b/b-c)*100 %	
Results	Field Dry Density of soil (g/cc)	2.018 2.009
	Lab: No.for Mod: proctor (T 180)	5-1168
	Max Dry Density (Lab) (g/cc)	2.166
	Adj. M.D.D. for O/size Mat.in field (g/cc)	-
	Opt: Mositure Content %	8.1
	Compaction Obtained %	92.8
	Compaction Reported %	93.0
	Compaction Required %	95.0
Time Of Test	15125	
Remarks	Fail/Pass	FAIL

FD Test Carried out in the Presence of Mr. Hamood Akhtar & Mr. Saqib Khan

R.D. NTRC on 16/10/2000. will be re-tested after re-adjusts.

Failed

PMIC Sec I

Tested by MRM

Checked by _____

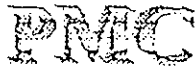
Date 16-10-2000

Date _____

Checked by

16/10/00

M. Saqib Khan



ISLAMABAD PESHAWAR MOTORWAY PROJECT

FILED DENSITY TEST(T.191)

SECTION: ONE

Location	Insepector/Survey/Quality No	14211
	Representing Test chainage (km)	20+800 + 900
	Station (km)	20+850
	Test/Retest No	
	Offset from centre Line (m)	C/L
	Layer No. or Level:	SS-2
	Depth Of Hole (cm)	10.5
Field Density	Container No.	
	wt. Of wet excav. Soil from hole (g)	4490
	wt. Of container (g)	20
	wt of excavated soil from hole (g)	4470
	Initial wt of sand +empty cone. (g)	8000
	Residual wt of sand +empty cone (g)	3640
	wt of used sand in hole+cone (g)	4360
	wt of sand to fill cone. (g)	1666
	wt of sand to fill hole. (g)	2694
	unit wt of sand (g/cc)	1.336
	volume of Hole (cc)	2016.5
	Field wet density of soil (g/cc)	2.217
Moisture Content	Speedy Moisture Reading %	7.4
	Corrected M. Content %	7.6
	Weight of Cont. + Wet soil (a) (g)	
	Weight of cont. + Dry soil (b) (g)	
	Weight of container @ (g)	
	Oven Dry M. Content (a-b/b-c)*100 %	
Results	Field Dry Density of soil (g/cc)	2.060
	Lab: No.for Mod: proctor (T 180)	S-1168
	Max Dry Density (Lab) (g/cc)	2.166
	Adj. M.D.D. for O/size Mat.in field (g/cc)	-
	Opt: Moisture Content %	8.1
	Compaction Obtained %	95.1
	Compaction Reported %	95.0
	Compaction Required %	95.0
Time Of Test	15:50	
Remarks	Fail/Pass	PASS

F.D. Test carried out in the presence of Mr. Hameed Akhtar & Mr. Sajjad Khan

ROs. NTRC on 16/10/2000

Passed

PMIC

Tested by MR/MP *Checked and found passed*

Date 16-10-2000 *16/10/00*

Checked by _____

Date _____

M. Sajjad Khan

PMC

ISLAMABAD – PESHAWAR MOTORWAY PROJECT

FIELD DENSITY TEST (T-191) SUB-BASE/AGG. BASE COURSE

Section : <u>One</u>		Field No:					
Location	Inspection/Survey/Quality No.		P-320				
	Represent Test Chainage		Km	23+630 23+730	23+730 23+830	23+830 23+930	23+930 24+050
	Station		Km	23+670	23+780	23+898	24+000
	Test/Retest No.						
	Offset from Centre Line		m	16 R/S	12 R/S	17 R/S	10 R/S
	Layer No. or Level			(Sub Base + Base) / 1st R/Side			
	Depth of Hole		cm	14.5	15.0	14.5	14.5
Field Density	Wt. of Excavated Wet Material from the hole		gm	11460	12380	11525	11895
	Bulk Specific Gravity of + 4.75 mm from Hole						
	Initial Wt. of Sand + Cone before Test		gm	13000	13000	13000	13000
	Residual Wt. of Sand + Cone after Test		gm	3015	2450	2915	2695
	Wt. of Used Sand (Hole + Cone)		gm	9985	10550	10085	10305
	Wt. of Sand in Cone		gm	3699	3699	3699	3699
	Wt. of Sand in Hole		gm	6286	6851	6386	6606
	Unit Wt. of Sand		gm/cc	1.348	1.348	1.348	1.348
	Volume of Material from Hole		cc	4663.2	5082.3	4737.4	4900.6
	Wet Density of Material from Hole		gm/cc	2.458	2.436	2.433	2.427
	Container No.			2	8	J	0
	Wt. of Wet Material + Container		gm	6565	8615	7765	5775
	Wt. of Dry Material + Container		gm	6385	8388	7591	5656
Wt. of Container		gm	1098	1536	1540	1505	
Moisture Content of Material		%	3.4	3.3	2.9	2.9	
Dry Density of Material from Hole		gm/cc	2.377	2.358	2.364	2.359	
+ % Material from Hole		%	51.8	53.1	57.3	58.1	
+ % Material of Max Dry Density Material		%					
Results	Lab No. for Proctor			S-13	S-13	S-13	S-13
	Max Dry Density (T-130D)		gm/cc	2.351	2.351	2.351	2.351
	Adj. Max Dry Density (T-224)		gm/cc	2.351	2.351	2.351	2.351
	Optimum Moisture Content		%	4.2	4.2	4.2	4.2
	Compaction Obtained		%	101.1	100.3	100.6	100.3
	Compaction Reported		%	101.0	100.5	100.5	100.5
	Compaction Required		%	100	100	100	100
Time of Test		Hrs	15:00	15:35	16:10	16:45	
Remarks:		Pass/Fail	Pass	Pass	Pass	Pass	
Tested By :		Date :	Checked By :		Date :		

Moisture Content 10/10/2000
 T. R. C.
 Sheet was prepared by *[Signature]*
 team also checked & was verified
 Muhammad R.O. (NTRC)
 10/10/2000

=====
 TRRL Dynamic Cone Penetrometer Data file : motor1
 =====

17/10/00
 Site Pakistan Motorway M1 Date 16/10/2000
 Section no. One Start layer Sub-grade
 Test no. 1 Condition Good compacted layer
 Chainage 20+783 Zero error (mm) 0
 Direction/lane Right Side Surf thick (mm) 0
 Position/offset 20 m from C/L Extens @ line 0

Blw	Rdng	Blw	Rdng	Blw	Rdng	Blw	Rdng	Blw	Rdng
1	29	11		21		31		41	
2	10 72	12		22		32		42	
3	20 108	13		23		33		43	
4	25 130	14		24		34		44	
5	30 146	15		25		35		45	
6	35 170	16		26		36		46	
7	40 190	17		27		37		47	
8	45 205	18		28		38		48	
9	50 215	19		29		39		49	
10	55 230	20		30		40		50	

51		61		71		81		91	
52		62		72		82		92	
53		63		73		83		93	
54		64		74		84		94	
55		65		75		85		95	
56		66		76		86		96	
57		67		77		87		97	
58		68		78		88		98	
59		69		79		89		99	
60		70		80		90		100	

E1 : 1.00 E2 : 2.00 E3 : 3.00 E4 : 8.00 EM : 0.80

Layer	Strength mm/blow	CBR	Thick mm	Depth mm
1	3.65	54	201	230

User defined equation - log10(CBR) = 2.4 - 1.18 * log10(STRENGTH)

=====
 TRRL Dynamic Cone Penetrometer Data file : motor2
 =====

17/10/00
 Site Pakistan Motorway M1 Date 16/10/2000
 Section no. One Start layer Sub-grade
 Test no. 2 Condition Good Compacted layer
 Chainage 20+783 Zero error (mm) 0
 Direction/lane Right Side Surf thick (mm) 0
 Position/offset 15 m from C/L Extens @ line 0

Blw	Rdng	Blw	Rdng	Blw	Rdng	Blw	Rdng	Blw	Rdng
1		11	50	21		31		41	
2	5	12	55	22		32		42	
3	10	13		23		33		43	
4	15	14		24		34		44	
5	20	15		25		35		45	
6	25	16		26		36		46	
7	30	17		27		37		47	
8	35	18		28		38		48	
9	40	19		29		39		49	
10	45	20		30		40		50	

51		61		71		81		91	
52		62		72		82		92	
53		63		73		83		93	
54		64		74		84		94	
55		65		75		85		95	
56		66		76		86		96	
57		67		77		87		97	
58		68		78		88		98	
59		69		79		89		99	
60		70		80		90		100	

 E1 : 1.00 E2 : 2.00 E3 : 3.00' E4 : 8.00 EM : 0.80

Layer	Strength mp/blow	CBR	Thick mm	Depth mm
Trans	6.60	27	33	63
1	4.07	48	122	185
Trans	2.25	96	45	230

 User defined equation - log10(CBR) = 2.4 - 1.18 * log10(STRENGTH)

TRRL Dynamic Cone Penetrometer

Data file : motor3

17/10/00

Site Pakistan Motorway M1 Date 16/10/2000
 Section no. One Start layer Sub-grade
 Test no. 3 Condition Good compacted layer
 Chainage 20+850 Zero error (mm) 0
 Direction/lane Centre Surf thick (mm) 0
 Position/offset C/L Extens @ line 0

Blw	Rdng	Blw	Rdng	Blw	Rdng	Blw	Rdng	Blw	Rdng
1		11	50	160	21	100	260	31	
2	5	12	55	165	22			32	
3	10	13	60	175	23			33	
4	15	14	65	185	24			34	
5	20	15	70	195	25			35	
6	25	16	75	205	26			36	
7	30	17	80	220	27			37	
8	35	18	85	230	28			38	
9	40	19	90	240	29			39	
10	45	20	95	250	30			40	
		61			71			81	
51		62			72			82	
52		63			73			83	
53		64			74			84	
54		65			75			85	
55		66			76			86	
56		67			77			87	
57		68			78			88	
58		69			79			89	
59		70			80			90	
60									100

E1 : 1.00 E2 : 2.00 E3 : 3.00 E4 : 8.00 EM : 0.80

Layer	Strength mm/blow	CBR	Thick mm	Depth mm
Trans	4.80	39	24	47
1	2.24	97	213	260

User defined equation - $\log_{10}(\text{CBR}) = 2.4 - 1.18 * \log_{10}(\text{STRENGTH})$

SIEVE ANALYSIS

Sample P/U Date: _____ Sample No. 1

Location: Eschubed - Pash. Motorway (M1) Section I Loc. No: 20 + 78A R/S Heli 15m

Description of Material: Dark brown Sandy Soil.

Processing Time: _____ Study: _____
 Material before washing = 600 gms.
 Material after washing = 184.18 gms.

COARSE SIEVE					FINE SIEVE					
SIEVE NO/mm	RETAINED CUM	RETAINED %	PASSING %	SPEC. From/To	SIEVE NO/mm	RETAINED CUM	RETAINED %	PASSING		SPEC. From/To
								PART	ADJ.	
3					4	17.98	3.00	97	97	
75					4.75					
2 1/2					8					
63					2.36					
2					10	76.64	12.77	87.23	87	
50.0					2.00					
1/2"					16					
37.5					1.18					
1					50	117.36	19.56	80.44	80	
25.0					0.600					
3/4"			100		40	140.36	23.39	76.61	77	
19.00					0.425					
1/2"	6.58	1.10	98.90		50					
12.5					0.300					
3/8"	8.05	1.34	98.66		100					
9.50					0.150					
- 3/8"					200	184.18	30.70	69.30	69	
					0.075					
					PAN					

Technician: Mazhar Hussain

Date Tested: _____

NTRC

US STANDARD SIEVE SIZE

SIZE INCHES

NO. 4 8 10 16 20 30 40 50 60 100 200

3/4 3/8 1/2

3 6 12 24

30 40 50 60 100 200

100 90 80 70 60 50 40 30 20 10 0

PERCENT FINER BY WEIGHT

PERCENT RETAINED

0 10 20 30 40 50 60 70 80 90 100

GRAIN SIZE IN MILLIMETERS

10

1.0

0.1

0.01

0.001

BOLDER	COBBLES		GRAVEL			SAND			SILT OR CLAY
	Coarse	Fine	Coarse	Medium	Fine	Coarse	Medium	Fine	

NATIONAL TRANSPORT RESEARCH CENTRE

ATTERBERG LIMITS TEST

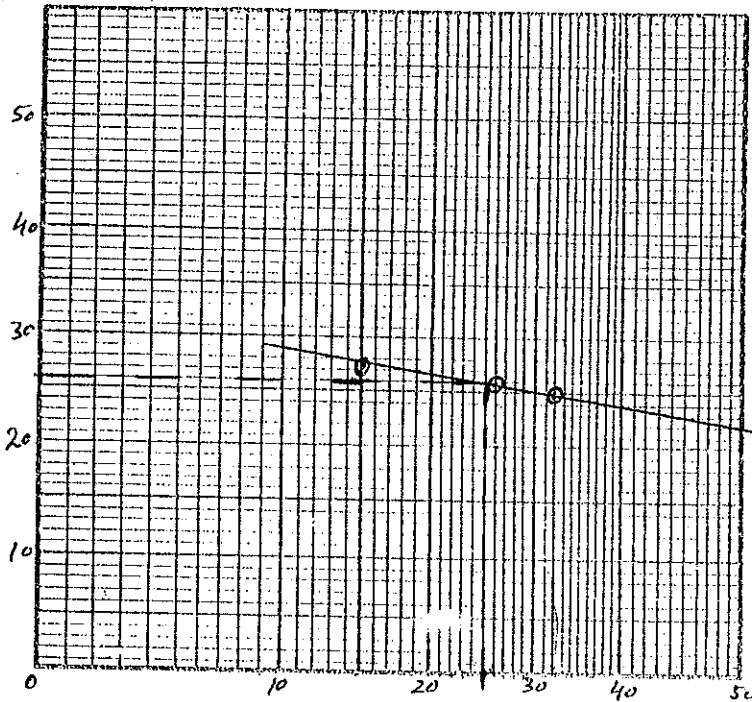
P/U Date: _____ Sample No. 1

Location: Islamabad Pesh. Motorway (M1) Section I Loc. No: 20+784 R/S offset 15 metre
 Description of Material: Dark brown sandy soil.

Processing Time: _____ Study _____

Liquid Limit

Test Number	1	2	3	4
1. Container Number	28	03	09	
2. Weight of Container (gms) m1	16.88	16.30	16.47	
3. Wt. of container + wet soil (gms) m2	32	28.93	29.43	
4. Wt. of container + oven dry soil (gms) m3	28.76	26.33	26.85	
5. Wt. of Water (gms) m2 - m3	3.24	2.60	2.58	
6. Wt. of dry soil (gms) m3 - m1	11.88	10.03	10.38	
7. Moisture Content (%) = $m2-m3/m3-m1 \times 100$	27.27	25.92	24.86	
8. No. of Blows	15	26	32	



Liquid Limit = 26%
 Plastic Limit = 17%
 Plastic Index = 9

Plastic Limit

No. of Blows

Test Number	1	2		
1. Container Number	20	29		
2. Wt. of container (gms) m1	16.62	16.79		
3. Wt. of container + wet soil (gms) m2	18.64	19.75		
4. Wt. of container + oven dry soil (gms) m3	18.35	19.32		
5. Wt. of Water (gms) m2 - m3	0.29	0.43		
6. Wt. of dry soil (gms) m3 - m1	1.73	2.53		
7. Moisture Content (%) $m2-m3/m3-m1 \times 100$	16.76	17		

Average Moisture Content % = 16.88

GOVERNMENT OF PAKISTAN
NATIONAL TRANSPORT RESEARCH CENTRE

MOISTURE DENSITY RELATION

Sample P/U Date: _____

Sample No: 2 (RD 20+784)

Location: Faisalabad-Pesh. Motorway (M1) Section I

Description of Material: Dark brown sandy soil

Date: 25-10-2000

Processing Time (Hrs): _____

Stud: _____

SPECIFICATIONS

BS Standard _____

ASTM Standard _____

Modified

Other _____

No. of Layers 05

Rammer 10 lbs

Blows per Layer 56

Drop 18

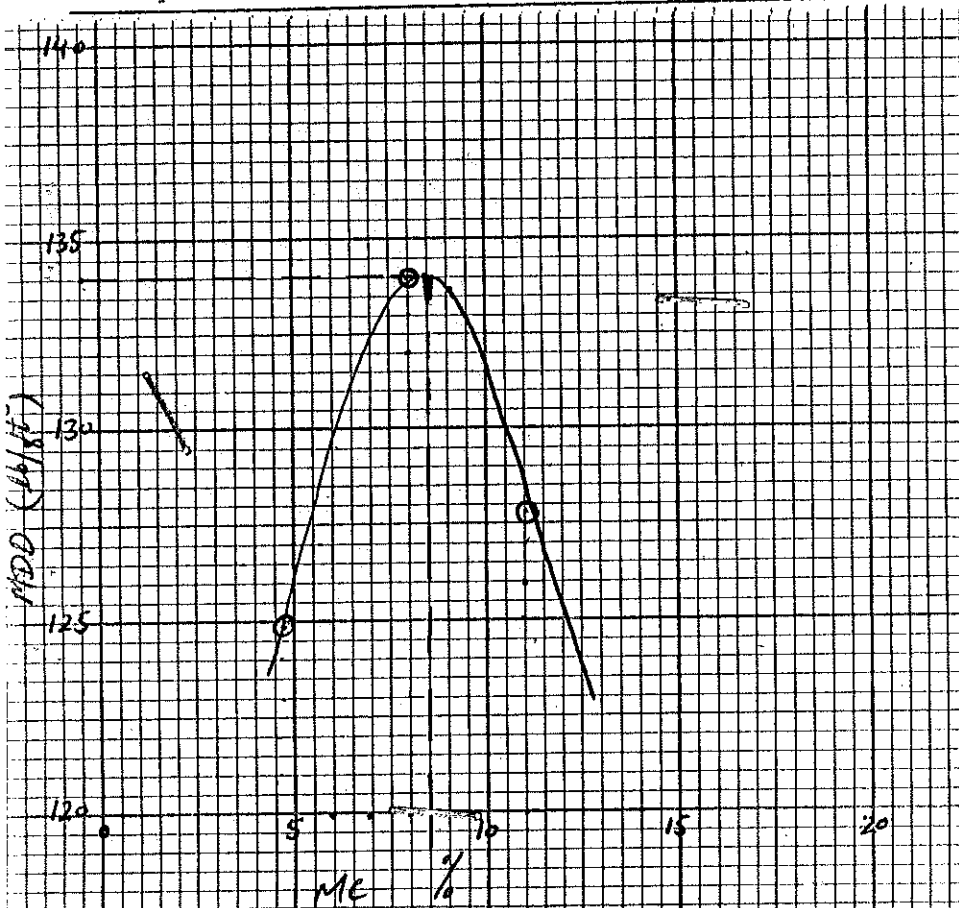
Compacted by hand/Machine _____

Machine

Proctor/CCR/Cylinder No. _____

Proctor

Detail	1	2	3	4
1. Wt. wet Soil + Mold (Lbs)	16.90	17.95	17.72	
2. Wt. of Mold (Lbs)	7.13	7.13	7.13	
3. Net Wt. Soil (1) - (2) (Lbs)	9.77	10.82	10.59	
4. Volume of Mold (cu.ft.)	0.0747	0.0747	0.0747	
5. Net unit Wt. (3)/(4) lb./cu.ft.	130.79	144.85	141.77	
6. Wt. wet Sample + Container (gm)	142.57	148.49	140.89	
7. Wt. dry sample + Container (gm)	136.92	138.68	128.56	
8. Wt. of Moisture (6) - (7) (gm)	5.65	9.81	12.33	
9. Wt. of Container (gm)	16.88	16.67	16.47	
10. Net Wt. dry sample (7) - (9) (gm)	120.04	122.01	112.09	
11. Moisture Content [(8)/(10)] 100 (%)	4.71	8.04	11	
12. Dry unit Wt. (5)/[1+(11*)] lb./cu. ft.	124.91	134.07	127.72	



Maximum Density

134 lb./cu.ft.

Optimum Moisture

8.5 per cent

Technician: Maghar Hussain

Date Tested: 25-10-2000

Computed by: _____

Checked by: _____

Pakistan Motorway Consultants

An Association of Consultants for

PAKISTAN MOTORWAY, ISLAMABAD PESHAWAR SECTION (MI)

Office of the PM and CRE

PMC/CRE/BCI/0.10.02/AS7

October 06, 2000

Mr. Faruk Yildirim
Project Manager
Bayindir Construction Inc.
Project Office, Burhan

Subject: Approval of Job Mix Design of Asphaltic Base Course for Section-I (M-1)

Dear Mr. Yildirim,

This has reference to your letter No. IPM/FY/PMC/1563 dated September 20, 2000 whereby details of Job Mix Formula for Asphaltic Base Course were forwarded in the form of a report (two copies) for approval of the same.

The contents of the report were reviewed and scrutinized. The slight adjustment in the grading, proposed from your side, for the amount of fines passing # 200 sieve to achieve a range of between 4.5% to 6.5% is also accepted, based on the fact that the routine Marshall samples have yielded better results with respect to air voids and voids filled with bitumen while following the adjusted grading envelope.

The Marshall mix parameters for Job Mix Control will be as follows:

Air Voids	4 to 6%
VMA	12 minimum
VFB	55 to 65 %
Flow (0.25mm)	8 to 14
Stability	1200kg minimum

For grading, the control band recommended by the Asphalt Institute Manual MS-2, sixth edition 1997 (25mm nominal maximum size) will be followed. The target grading will be as follows:

Sieve Size Opening (mm)	% Passing
37.5	100
25	93
12.5	71.9
4.75	37.4
2.36	24.2
0.30	8.5
0.075	5.5

Cont...2

Member Companies

Lead Consultants	Engineering Consultants Int'l (Pvt) Ltd.	
Associated Consultants	Engineering Associates	Snowy Mountains Engineering Corp
	A.A.Associates	Louis Berger International Inc.

For tolerances on the different sieve sizes and all other details, the criteria laid down in the NHA general specifications, Section-II A, Item 203 will be applicable.

Finally this is to confirm approval of the job mix formula for asphaltic base course. A copy of the report, duly signed and verified by our Material Engineer for Section-I (M-1) is being returned to you, for compliance and record.

Yours faithfully,



(RAY BRIDGER)
Engineer's Representative

- cc:
1. General Manager (M-1), NHA, Burhan.
 2. Engineer (M-1), Karachi.
 3. Project Director (M-1), NHA, Section-I, Burhan.
 4. Resident Engineer (M-1), PMC, Section-I, Burhan.

PAKISTAN MOTORWAY CONSULTANTS
IPM Project, Sec I, Burhan

No. 4124 Date 9/10 Time 1350

TO	Date	Action	Info
RE	9/10		
ARE			
HE			
SE			
ME			
GM			
PM			
EA			
OM			
REPLY			Date



CONCRETE DELIVERY SLIP

BATCHING PLANT, BAYINDIR/HABIB RAFIQ

No. 21532

DATE 16/10/2020

LOCATION 37+015 km W/T

NAME OF SUB-CONTRACTOR ALBAR

CLASS OF CONCRETE A QUANTITY 7.5 M³

PLATE NO. E.DJ. 7114 MIXER NO. 16

DEPARTURE FROM BATCHING PLANT 12:40

120 M³

ARRIVAL TIME AT SITE 12:55 B. PLANT SUPERVISOR

DEPARTURE TIME FROM SITE 13:25 NAME Ahmet Ali

SIGNATURE

Checked By Monitoring Team.

Slump is 130 mm

Temp is 27°C

Cylinders 12

RECEIVED BY

NAME A. A. 212

SIGNATURE ar

PMC

Concrete 305

ISLAMABAD - PESHAWAR MOTORWAY PROJECT

Sheet-(1)

CONCRETE FIELD LOG

Section : CNE	Structure No : U- Pass n 10A	Contractor's Request No : Alebar	
ISQ No : 3150	Structure Location : 37+015	Pouring Start : 08:45	Completed :
Field No : 3151	Part of Structure : Wall + Top Slab	Batch Plant Location : BAYINDIR CAMP	
Type of Admixture : RP-264	Concrete Quantity 168.0 M ³	Source of Cement : Aslamari	

(A) Mould No.	1	2	3	4	5	6	Water Temp.
Cylinder No. 7 days		805-A		815-B			°C
Cylinder No. 28 days		802-A		802-A			C. Agg. Temp.
Sampled from Mixer No.	030	033	032	031	030	035	°C
Chainage B Time (hr:m)	08:30	08:40	09:00	09:15	09:40	9:55	Sand Temp.
Offset QTY (m)	7.5	7.5	7.5	7.5	7.5	7.5	°C
Concrete Class	'A'						Cement Temp.
Date Moulded	11/6/2000						°C
Time hr	08:40	08:55	09:10	9:30	9:50/9:55	10:05/10:10	M/C Agg:
Slump (mm)	100	135	150	145	175/150	170/145	i) %
Slump Pass/Fail							ii) %
Concrete Temperature (°C)	24.3	24.0	24.2	24.6	23.9/24.2	24.3/24.7	iii) %
Air Temperature (°C)							Absorption %
Compact. Method	Roddling			Roddling			C. Agg: %
	~	~	~	3~4	~	~	Fine Agg: %

Mould No.	7	8	9	10	11	12	13
Cylinder No. 7 days	805-c			807-A			807-B
Cylinder No. 28 days	806-A			808-A			805-B
Sampled from Mixer No.	032	031	030	033	032	031	030
Chainage B Time (hr:m)	10:10	10:25	10:40	11:00	11:20	11:30	11:50
Offset QTY (m)	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Concrete Class	'A'						
Date Moulded	11/6/2000						
Time hr	10:30	10:45	10:55	11:15/11:20	11:35/11:40	11:40	12:05
Slump (mm)	140	150	145	180/150	170/145	140	130
Slump Pass/Fail							
Concrete Temperature (°C)	24.3	25.0	24.2	24.0/24.5	24.9/25.2	24.7	26.5
Air Temperature (°C)							
Compact. Method	5~6	~	~	7~8	~	~	9~10

Prepared By: *[Signature]* Date: 11/6/00 Checked By: _____ Date: _____

PMC

305

ISLAMABAD - PESHAWAR MOTORWAY PROJECT

Sheet - 2

CONCRETE FIELD LOG

Section : ONE	Structure No : U. PASS * 10A		Contractor's Request No : AKBAR					
ISQ No :	Structure Location : 37+015		Pouring Start :		Completed : 16:10			
Field No : C-3182	Part of Structure : Wall + Top Slab		Batch Plant Location : BAYINDIR CAMP					
Type of Admixture : RP-264	Concrete Quantity M ³		Source of Cement : ASKARI					
(A) Mould No.	14	15	16	17	18	19	Water Temp.	
Cylinder No. 7 days		807-C			809-A		°C	
Cylinder No. 28 days		808-C			810-A		C. Agg. Temp.	
Sampled from Mixture No.	033	032	*031	030	033	032	°C	
Chainage (Km)	12:15	12:24	12:40				Sand Temp.	
Offset QTY (m)	7.5	7.5	7.5	7.5	7.5	7.5	°C	
Concrete Class	"A"						Cement Temp.	
Date Moulded	11 / X / 2000						°C	
Time hr	12:20	12:25	12:40	12:55	13:25	13:40	14:00	M/C Agg:
Slump (mm)	170	140	150	130	120	115	145	i) %
Slump Pass/Fail								ii) %
Concrete Temperature (°C)	25.6	26.0	25.5	26.6	27.8	27.2	27.6	iii) %
Air Temperature (°C)								Absorption %
Compact. Method	~		Rodding N.T.R.C		Rodding		~	C. Agg: %
		11~12	1~12		13~14			Fine Agg: %
Mould No.	20	21	22	23				
Cylinder No. 7 days	804-B		809-C					
Cylinder No. 28 days	810-B		810-C					
Sampled from Mixture No.	031	030	033	032				
Chainage (Km)	14:10							
Offset QTY (m)	7.5	7.5	7.5	3.0				
Concrete Class	"A"							
Date Moulded	11 / X / 2000							
Time hr	14:20	14:50	14:40	15:00	16:00			
Slump (mm)	190	150	110	145	145			
Slump Pass/Fail								
Concrete Temperature (°C)	26.2	28.5	28.4	29.0	29.5			
Air Temperature (°C)								
Compact. Method	15~16	~	17~18	~				
Prepared By:	[Signature]			Date:	11 / X / 00		Checked By:	Date:

CIVIL ENGINEERING DEPARTMENT
CONSULTING & TESTING SERVICES

UNIVERSITY OF ENGINEERING & TECHNOLOGY, TAXILA
PHONE: 0596-4381 FAX: 0596-2821
534938

OUR REF: CE/17/2000 *National Transport*

YOUR REF: NTRC-15(48)/2000

DATED: 19/10/2000 *Research Center*

DATED: 19/10/2000

Sector H-8/2 Islamabad

The required results of the concrete cubes provided are as under.

glasses

S. No.	Mark	Weight in Lbs.	Size of Specimen	Date		Age (days)	Mix (ratio)	Crushing Strength PSI	Remarks
				Casting	Testing				
1			6 Q12	11/10	19/10	8		4451. →	
2			~	~	~	~		3975. →	
3			~	~	~	~		3895. →	

LAB INCHARGE

MA

[Signature]
CHAIRMAN
(CHAIRMAN)
Department of Civil Engg.
U.E.T. Taxila.

CIVIL ENGINEERING DEPARTMENT
CONSULTING & TESTING SERVICES

UNIVERSITY OF ENGINEERING & TECHNOLOGY, TAXILA
 PHONE: 0596-4381 FAX: 0596-2821

OUR REF: C.E.D/CT/2000-235

YOUR REF: NTR.C-15(48)¹²⁰⁰⁰

DATED: 08-11-2000

DATED: 08-11-2000

RESEARCH OFFICER NATIONAL TRANSPORT RESEARCH CENTRE
 The required results of the concrete cubes provided are as under.
CYLINDER (Section HS, Ahmed)

S. No.	Mark	Weight in Lbs.	Size of Specimen	Date		Age (days)	Mix (ratio)	Crushing Strength PSI	Remarks
				Casting	Testing				
1			6x12 L	11/10 2000	08/11 2000	28		5127.61	
2			" "	" "	" "	" "		5445.60	
3			" "	" "	" "	" "		4833.47	

[Signature]

LAB INCHARGE

[Signature]

CHAIRMAN
 (CHAIRMAN)
 Department of Civil Engg.
 UET, Taxila.

Pakistan Motorway Consultants

An Association of Consultants for

PAKISTAN MOTORWAY, ISLAMABAD PESHAWAR SECTION (M)

Office of the PM and CRE

PMC/CRE/BCI/0.10.02/157

October 06, 2000

Mr. Faruk Yildirim
Project Manager
Bayindir Construction Inc.
Project Office, Burhan

Subject: Approval of Job Mix Design of Asphaltic Base Course for Section-I (M-1)

Dear Mr. Yildirim,

This has reference to your letter No. IPM/FY/PMC/1563 dated September 20, 2000 whereby details of Job Mix Formula for Asphaltic Base Course were forwarded in the form of a report (two copies) for approval of the same.

The contents of the report were reviewed and scrutinized. The slight adjustment in the grading, proposed from your side, for the amount of fines passing # 200 sieve to achieve a range of between 4.5% to 6.5% is also accepted, based on the fact that the routine Marshall samples have yielded better results with respect to air voids and voids filled with bitumen while following the adjusted grading envelope.

The Marshall mix parameters for Job Mix Control will be as follows:

Air Voids	4 to 6%
VMA	12 minimum
VFB	55 to 65 %
Flow (0.25mm)	8 to 14
Stability	1200kg minimum

For grading, the control band recommended by the Asphalt Institute Manual MS-2, sixth edition 1997 (25mm nominal maximum size) will be followed. The target grading will be as follows:

Sieve Size Opening (mm)	% Passing
37.5	100
25	93
12.5	71.9
4.75	37.4
2.36	24.2
0.30	8.5
0.075	5.5

Cont...2

Member Companies

Lead Consultants: Engineering Consultants Int'l (Pvt) Ltd.
Associated Consultants: Engineering Associates, Snowy Mountains Engineering Corp, A.A.Associates, Louis Berger International Inc.

Postal Address: PMC/CRE office, Burhan Camp, Near GT Road, Jallo Stop, Hassanabdal
OR Through: OCS Pakistan (Pvt.) Ltd. 2-AI Bahood Plaza The Mall Wah Cantt
Tel: (92) 5772 521334-37 Fax: (92) 5772 521342-43 E-mail: pmc@micro.net.pk

: -2:-

For tolerances on the different sieve sizes and all other details, the criteria laid down in the NHA general specifications, Section-II A, Item 203 will be applicable.

Finally this is to confirm approval of the job mix formula for asphaltic base course. A copy of the report, duly signed and verified by our Material Engineer for Section-I (M-1) is being returned to you, for compliance and record.

Yours faithfully,



(RAY BRIDGER)
Engineer's Representative

- cc: 1. General Manager (M-1), NHA, Burhan.
2. Engineer (M-1), Karachi.
3. Project Director (M-1), NHA, Section-I, Burhan.
4. Resident Engineer (M-1), PMC, Section-I, Burhan.

PAKISTAN MOTORWAY CONSULTANTS
IPM Project, Sec. I, Burhan

No. 4124 Date 9/10 Time 1350

TO	Date	Action	Info
RE	9/10		
ARE			
HE			
SE			
ME			
GE			
PE			
EA			
CM			
REPL			

095-(*TS/GE)

CAPITAL DEVELOPMENT AUTHORITY
CIVIL ENGINEERING LABORATORY
 ISLAMABAD

No. CDA/CEL/CN- 207 (MT)/2001-2002/4026 Dated 21/10/2000

Technical Report No. CN/014/(MT)/2000-2001

Agency: Research Officer, NTRC H-8/2, Islamabad.

Description: Deformed Steel bars.

Location: NTRC Project.

Contractor Name: -

Reference: # NTRC-15(48)/2000, dt 18/10/2000.
 (Testing of steel bars)

Cash Receipt No. Sol-15018 Dated 18/10/2000 for Rs. 600/-

Sr. No.	Sample No. (SH)	Description	Nominal		Actual cross-sectional area (Sq. In)	Length (ft)	Weight (lbs)	Weight (lbs/R. ft)	Elongation (%) in 8" guage	Yield Stress (PSI)	Ultimate Tensile Strength (PSI)	Bend Test	
			Dia (inches)	Area (Sq. In)								90 degree	180 degree
1.	129	Deformed Steel.	20	0.48	0.485	1.583	2.610	1.649	18.2	82706	109972	-	-
2.	130	"	"	"	0.485	1.583	2.610	1.649	17.2	81798	109518	-	-

Dy. Director
 18/10/2000

CIVIL ENGINEERING LABORATORY
 CAPITAL DEVELOPMENT AUTHORITY
 ISLAMABAD.

ANNEXURE - C

Pakistan Motorway Consultants
Islamabad-Peshawar Motorway Project (M-1)
SECTION-1

Laboratory Daily Progress Report

Site Activities P.D.T B/Killing

(3)

Date: - 7-11-20

Sr. No.	Location	Layer No.	Station	Remarks	Tested by
1	1+425 W/Wall	7th	1+425	Pass Below M.S.L. Ba	M. Zahid Hassan
2	7+150 "	7th	7+150	Pass " " "	"
3	1+370 Barrel	1st	1+370	Pass Sand fill	K. HOSAIN
4	2+015 W/Wall	3rd	2+015	Pass " "	"
5	2+015 APPROACH	4th	2+015	Pass " "	"
6	21+140 DRAIN	Passable	21+140	Pass " OMER	NASIR Ahmed
7	21+207 "	1st	21+207	Fail " "	"
8	21+360 "	"	21+360	Pass " "	"
9	26+000 T-DUCT	Sand Bed.	26+000	Pass " "	"
10	7+150 Barrel	1st	7+150	Pass " Ba.	"
11	7+150 W/Wall	8th	7+150	Pass Below M.S.L. "	"
12	2+015 "	3rd	2+015	Pass " "	"
13	1+425 "	8th	1+425	Pass " "	"
14	3+090 "	14th	3+090	Pass Concrete "	"
15	1+370 Barrel	End	1+370	Pass Sand fill "	"
				/ (Passing) age - 93 3/4	

Lab. Activities

Sr. No.	Description	Lab No.	Remarks
	Crushing of mortar cubes.	en 935	3 cubes Section 2 D.P.C. #91KALI
	" " " "	en 936	" " " " " "
	" " " "	en 937	" " " " " "
	" " " "	en 938	" " " " " "
	Casting " conc. cyl. A	C-3139	6 Nos. 30.1041 BR. Pile 2 - PR-1 (12:25-13:45)
	" " " 'A'	C-3140	" 07+150 B.C. #12 APPROACH (11:55-12:15)
	" " " 'A'	C-3141	" 09+320 Barrel Bed v.p. 1B (12:30-14:35)
	" " " 'A'	C-3142	" 01+100 opening Slab R/S C.C. #1 (15:05-15:40)
	" " " 'A'	C-3143	" 48+433 P. ch. Bridge G-3, Pile P-7 (15:50-16:30)
	" " " 'A'	C-3144	" 20+055 B.C. #34 W/Wall R/S (16:30-17:30)
	" " " 'A'	C-3145	" 48+433 P. ch. Bridge G-2, Pile L-5 (16:35-18:10)
	" " " 'A'	C-3146	" 14+388 B.C. #21 Barrel Bed 4s R. Pile #1 (21:45-22:00)
	" " " 'A'	C-3147	" 02+399 R. Way B.P. #2, C.C. R-2 (22:45-23:30)

MR. H. Y.

Material Technician

ho dasset
Materials Engineer

Pakistan Motorway Consultants
Islamabad-Peshawar Motorway Project (M-1)
SECTION-I

Laboratory Daily Progress Report

Site Activities

F.D.T B/Filling

(2)

Date: - 9-10-2000

Sr. No.	Location	Layer No.	Station	Remarks	Tested by
1	1+425 APPROACH	2nd	1+425	Fail Sand fill B/S Ba	NASRUZZAN
2	1+425 W.wall	9th	1+425	Pass Below N.S.L.	"
3	2+015 APPROACH	6th	2+015	Fail Sandmat.	"
4	2+015 W.wall	4th	2+015	Fail Below N.S.L.	"
5	3+000	8th	3+000	Fail " " "	"
6	3+090 Barrel	13th	3+090	Pass Sand fill	"
7	7+150	2nd	7+150	Fail " B/S "	"
8	2+207 XDRAM	15th	2+207	Fail Sand fill UNDER	RIZWAN-DR. HAZ - DAYS INGT
9	2+207	15th	2+207	Pass " " "	Javed Saif NIGHT TEST.
10	26+120	main	26+120	Pass " " "	"
11	1+425 APPROACH	2nd	1+425	Fail " " Bei	"
12	1+370 W.wall	9th	1+370	Fail Compuit	"
13	1+370 Barrel	3rd	1+370	Pass Sand fill	"
14	2+015 APPROACH	6th	2+015	Pass " "	"
15	2+015 W.wall	4th	2+015	Pass " "	"
16	3+090	15th	3+090	Pass Compuit	"
17	7+150 Barrel	2nd	7+150	Pass Sand fill	"
18	7+150 W.wall	9th	7+150	Pass " "	"
				Passing 1.09% - 55.6'	

Lab. Activities

Sr. No.	Description	Lab No.	Remarks
	Crushing of Mortar cubes	Cm-925	8 days Section o.p.c. Askari
	"	Cm-926	" " " "
	"	Cm-927	" " " "
	"	Cm-928	" " " "
	"	Cm-929	7 days " " "
	"	Cm-930	" " " "
	" Grouting cubes	Gr-16	" 9+652 Form-D Girders S.G. 7.8 (23m)
	" Mortar cubes	Cm-939	4 days Section-I o.p.c. ASKARI
	"	Cm-940	" " " "
	"	Cm-941	" " " "
	"	Cm-942	" " " "
	"	Cm-943	3 Days " " "
	"	Cm-944	" " " "

Material Technician
Material Technician

Materials Engineer
Materials Engineer

PRC

OMER

ISLAMABAD PESHAWAR MOTORWAY PROJECT

FIELD DENSITY TEST (T.151)

SECTION: GNE

Location	Inspector/Survey/Quality No	BF.D-918		
	Representing Test chainage (km)			<i>x-dim</i>
	Station (km)	214207		<i>Back fill around</i>
	Test/Retest No	2753		<i>Retic pipe and</i>
	Offset from centre Line (m)			<i>cutch Basin</i>
	Layer No. or Level:	1st		
	Depth Of Hole (cm)	15cm		
Field Density	Container No.			
	wt. Of wet excav. Soil from hole (g)	6525		
	wt. Of container (g)	348		
	wt of excavated soil from hole (g)	6177		
	Initial wt of sand +empty cone. (g)	800		
	Residual wt of sand +empty cone (g)	2295		
	wt of used sand in hole+cone (g)	5705		
	wt of sand to fill cone. (g)	1413		
	wt of sand to fill hole. (g)	4192		
	unit wt of sand (g/cc)	1.332		
	volume of Hole (cc)	3112.2		
Field wet density of soil (g/cc)	1.923			
Moisture Content	Speedy Moisture Reading %	11.8		
	Corrected M. Content %	13.4		
	Weight of Cont. + Wet soil (a) (g)	-	1.797	(1.696 - 1.461)
	Weight of cont. + Dry soil (b) (g)	-	-	-
	Weight of container @ (g)	-	1.696	(1.797 - 1.461) <i>KIM</i>
	Over Dry M. Content (a-b/b-c)*100 %			
Results	Field Dry Density of soil (g/cc)	1.696		
	Lab. No. for Mod: proctor (T 150)	-		
	Max Dry Density (Lab) (g/cc)	1.797		
	Adj. M.D.D. for O/size Max in field (g/cc)	1.461		
	Opt. Moisture Content %	-		
	Compaction Obtained %	74.1		
	Compaction Reported %			
	Compaction Required %	78		
Time Of Test	2045			
Remarks	Fail/Pass	fail		

Tested by MI

Date 7.16.2000

Checked by [Signature]

Date 09-10-2000

OMER

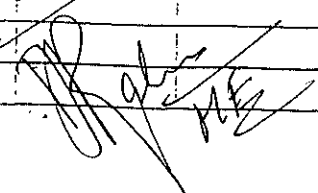
PNIC

ISLAMABAD PESHAWAR MOTORWAY PROJECT

FILED DENSITY TEST (T.151)

SECTION: ONE

Location	Insepector/Survey/Quality No	D-930	
	Representing Test chainage (km)	21+207	
	Station (km)	21+207	X-DRAIN
	Test/Retest No		
	Offset from centra Line (m)	6 m R/S	
	Layer No. or Level:	1st layer	B.F
	Depth Of Hole (cm)	15.0	
Field Density	Container No.		
	wt. Of wet excav. Soil from hole (g)	5760	
	wt. Of container (g)	20	
	wt of excavated soil from hole (g)	5740	
	Initial wt of sand +empty cone. (g)	8000	
	Residual wt of sand +empty cone (g)	2395	
	wt of used sand in hole+cone (g)	5605	
	wt of sand to fill cone. (g)	1436	
	wt of sand to fill hole. (g)	4169	
	unit wt of sand (g/cc)	1.336	
	volume of Hole (cc)	3120.5	
Field wet density of soil (g/cc)	1.839		
Moisture Content	Speedy Moistura Reading %	10.2	
	Corrected M. Content %	10.7	
	Weight of Cont. + Wet soil (a) (g)		
	Weight of cont. + Dry soil (b) (g)		
	Weight of container @ (g)		
	Over Dry M. Content (a-b/c)*100 %		
Results	Field Dry Density of soil (g/cc)	1.662	
	Lab: No. for Mod: proctor (T 130)		
	Max Dry Density (Lab) (g/cc)	MAX = 1.799	
	Adj. M.D.D. for O/size Mat. in field (g/cc)	MIN = 1.461	
	Opt: Moistura Content %		
	Compaction Obtained %	59.8	
	Compaction Reported %	60.0	
	Compaction Required %	78.0	
Time Of Test:	17:20		
Remarks	Fail/Pass: FAIL		

Fail


Tested by MR. N.P.

Checked by _____

Date 09-10-20

Date _____

OMER



ISLAMABAD PESHAWAR MOTORWAY PROJECT

FILED DENSITY TEST (T.191)

SECTION: ONE				
Location	Insepector/Survey/Quality No		D-992	
	Representing Test chainage (km)		21+207	
	Station (km)			
	Test/Retest No			
	Offset from centre Line (m)		2M R/S	X-D ₂₀₁₁₇₇
	Layer No. or Level:		1st	B/F
	Depth Of Hole (cm)		15	Main Hole + Rec Pc/Pc
Field Density	Container No.			
	wt. Of wet excav. Soil from hole (g)		6690	
	wt. Of container (g)		348	
	wt of excavated soil from hole (g)		6342	
	Initial wt of sand +empty cone. (g)		8000	
	Residual wt of sand +empty cone (g)		2010	
	wt of used sand in hole+cone (g)		5990	
	wt of sand to fill cone. (g)		1413	
	wt of sand to fill hole. (g)		4577	
	unit wt of sand (g/cc)		1.336	
	volume of Hole (cc)		3425.9	
	Field wet density of soil (g/cc)		1.251	
Moisture Content	Speedy Moisture Reading %		6.5	
	Corrected M. Content %		7.4	
	Weight of Cont. + Wet soil (a) (g)			
	Weight of cont. + Dry soil (b) (g)			
	Weight of container © (g)			
	Oven Dry M. Content (a-b/b-c)*100 %			
Results	Field Dry Density of soil (g/cc)		1.724	1.797 (1.724-1.461) x 100
	Lab: No.for Mod: proctor (T 180)			
	Max Dry Density (Lab) (g/cc)			1.724 (1.797-1.461)
	Adj. M.D.D. for O/size Mat.in field (g/cc)			
	Opt: Mositure Content %			
	Compaction Obtained %		81.6	
	Compaction Reported %		81.5	
	Compaction Required %		78	
Time Of Test		23:10		
Remarks		Fail/Pass	Pass	

Tested by Javed

Checked by [Signature]

Date 09/10/2022

Date _____



**REQUEST FOR SAMPLING TESTING OF MATERIALS
MIX DESIGNS AND APPROVAL OF SOURCES**

SEC/REQ No: 1/77

1 MATERIAL SOURCE APPROVALS AND QUALITY TESTING

<u>MATERIAL</u>	<u>PURPOSE</u>	<u>MANUFACTURER / TYPE/LOT/QT</u>
1.1 REBAR	A. SOURCE APPROVAL	/
1.2 CEMENT	B. QUALITY TESTING	
1.3 ASPHALT CEMENT	C.	
1.4 CUTBACK ASPHALT		
1.5 WATER		
1.6		

2 SITE INVESTIGATION SOURCE APPROVALS

<u>SITE</u>	<u>PURPOSE</u>	<u>NAME/LOCATION/DESCRIPTION</u>
2.1 BORROW AREA	A. NORMAL FILL	<u>11+850 ~ 12+050</u>
2.2 QUARRY	B. SUB-GRADE	/
2.3 CRUSHER	C. NATURAL SAND	
2.4 GRANULAR DEPOSIT	D. CRUSHED AGGREGATE	
2.5 <u>..CUT AREA.....</u>	E. GRANULAR SUB-BASE	
	F. FILTER	
	G. SAND BLANKET	
	H. STRUCTURAL BACKFILL	
	I. RIPRAP, STONE PITCHING	
	J.	

3 MIX DESIGN APPROVALS

<u>MIX DESIGN</u>	<u>CLASS, TYPE, MATERIAL SOURCES</u>
3.1 STRUCTURAL CONCRETE	<p>* 3 Nos. of samples collected and tested. Found A-6-type material. So Unsuitable to use as Embankment Fill Material.</p>
3.2 GRANULAR SUB-BASE	
3.3 CRUSHED AGGREGATE BASE-COURSE	
3.4 BITUMINOUS BASE-COURSE	
3.5 WEARING COURSE	
3.6	

Sampling, testing and approval for item 2.5 for the purpose of A 9B requested by M. MAZ SELEK, Chief Q/A Engineer, Section I, for and on behalf of Bayindir Construction Inc.

Date: 8.5.99 Time: 9:00 Signature: [Signature]

Received by Man A. Rabi Materials Engineer, Section I, for and on behalf of Pakistan Motorway Consultants

Date: 10.5.99 Time: 10:00 Signature: [Signature]

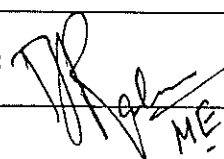
Approval ~~granted~~ not granted by RE/CRE for and on behalf of Pakistan Motorway Consultants

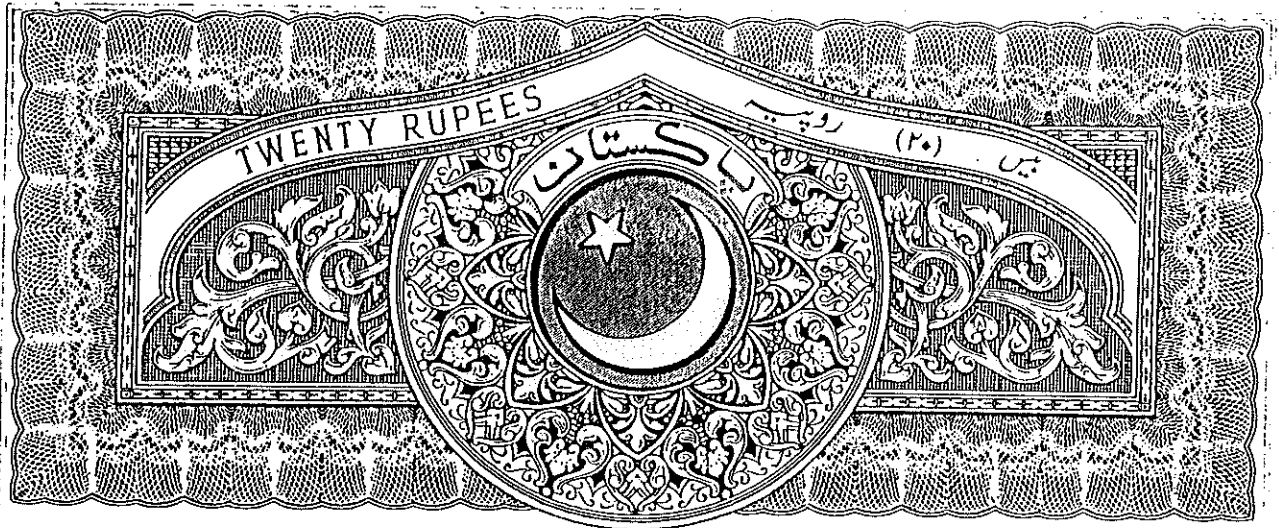
Date: 2.6.99 Time: Signature: [Signature]

PAKISTAN MOTORWAY CONSULTANTS



ISLAMABAD - PESHAWAR MOTORWAY PROJECT

SECTION:		K.M. 11+850 ~ 12+050 @ NO. 1/77				
TEST METHOD	SAMPLE Nos.	TEST REPORT OF SOIL				
	SOURCE	B-092A. B-092B B-092C.				
	LOCATION	CUT AREA				
		12+025	11+975	11+890		
T-27	PASSING #10	96.4	97.9	84.3		Spec.
	PASSING #40	94.6	95.6	75.6		
	PASSING #200	92.2	93.0	71.6		
T-89	LL %	28.29	31	30.31		
T-90	PL %	17.17	18	18.18		
	PI %	11.12	13	12.13		
T-180	M/D RELATION MDD g/cc					
	OMC %					
T-84	SG					
D-4254 (ASTM)	Rel. Density g/cc					
CBR T-193	(i) 93%					
	(ii) 95%					
	(iii) 100%					
	Swell					
	(i) 93%					
	(ii) 95%					
	(iii) 100%					
	AASHTO Classification	A-6	A-6	A-6		
<u>REMARKS</u>	3 Nos. of Samples Collected and Tested. Found A-6 type Material. Unsuitable to Use as Embankment Fill Material.					
NAME:		SIGNATURE: 			DATE: 21/07/99	



بیانِ حلفی

میں مسکن عبدالوہید خان ولد محمد اشرف خان شناختی کارڈ نمبر 143-56-0082 میں
 کے لئے موضع یا سوال تحصیل و ضلع راولپنڈی کا رہائشی ہوں۔ میں حلفیہ بیان کرتا ہوں
 کہ صدرہ نمبر 975 میں واقعہ رقبہ کا مالکیوں۔ جو کہ موضع چوکر تحصیل سیکٹر
 راولپنڈی میں واقع ہے۔ میں اپنی خوشی سے مذکورہ باہر رقبہ میں سٹی ڈالوانا
 چاہتا ہوں۔ بائیندر کنڈر کٹس کمپنی اپنی صوابدیدی علاقہ موٹروے کی فالو
 میں میرے کھیت واقعہ 11+800 میں ڈال سکتی ہے۔ میں بائیندر
 کنڈر کٹس سے سٹی ڈالوانے کا کوئی معاوضہ وغیرہ کا مطالبہ نہ کروں گا۔
 اور نہ ہی کمپنی مجھ سے کسی قسم کا مطالبہ کرے گی۔ کمپنی کو یہ حق حاصل ہے کہ
 وہ اپنی صوابدیدی علاقہ میرے کھیت کو سموار کرے دے۔
 لہذا بخوش خود باہر شہ ویرا اس بغیر کسی عیب و عیبت سے
 موہر و گواہی کے یہ بیان کر رہا ہوں۔

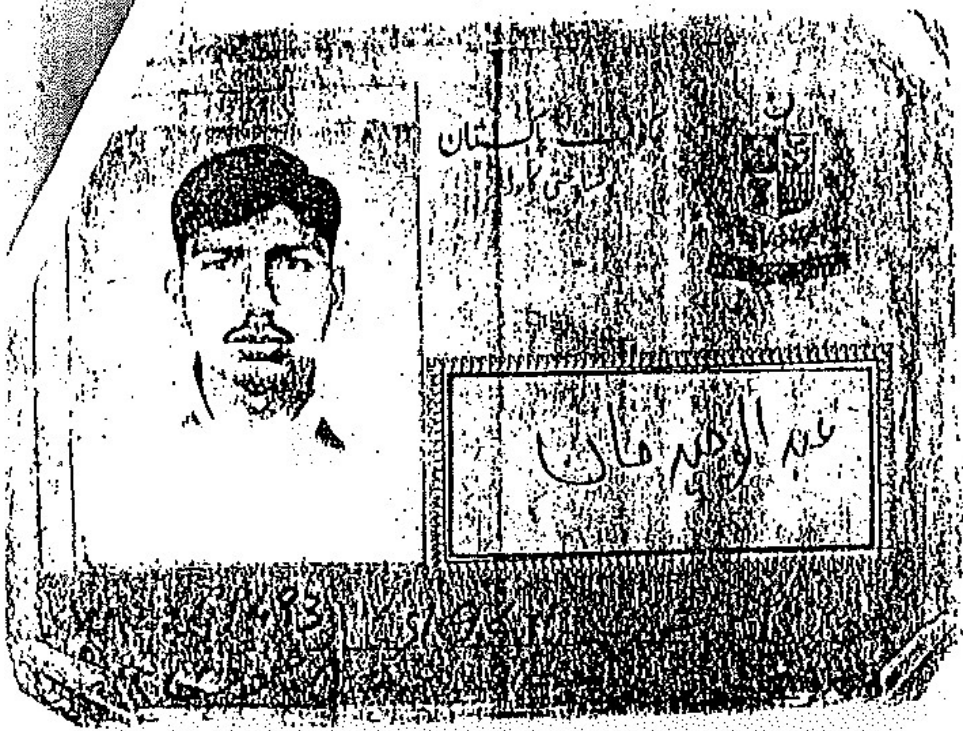
گواہان

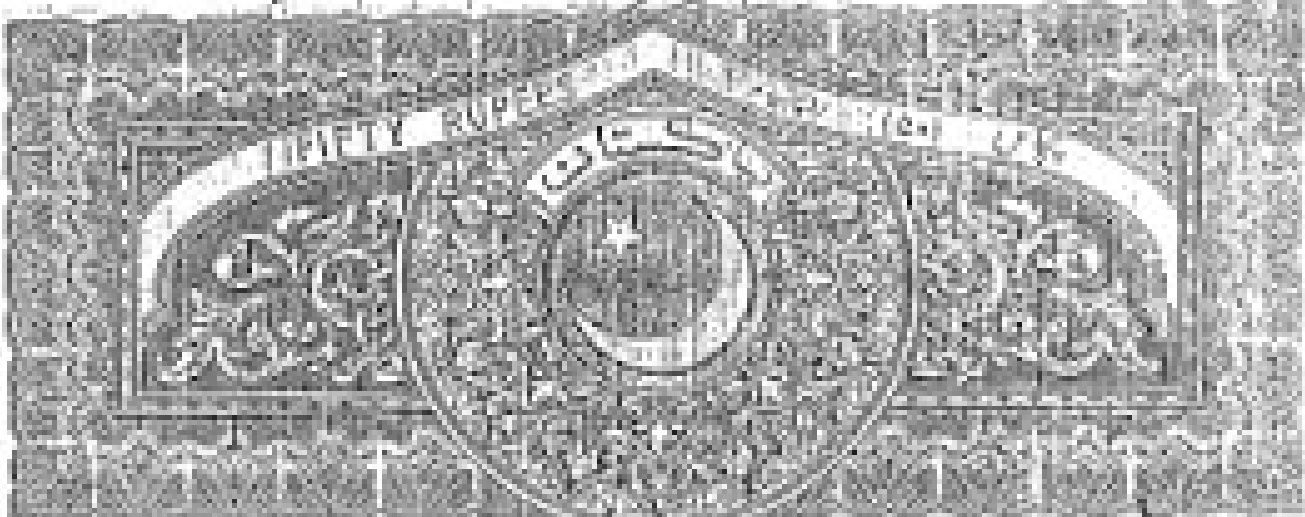
- 1- ملک محمد یعقوب بھٹو
 لیگل آفیسر، بائیندر کنڈر کٹس
- 2- سعید حسین میاں
 [Signature]

المرفوعہ

عبدالوہید خان ولد محمد اشرف خان
 شناختی کارڈ نمبر 143-56-00612

28-02-98 مورخہ





پندرہویں روز سب سے پہلے
دہشت گردانہ کارروائیوں

پندرہویں روز سب سے پہلے دہشت گردانہ کارروائیوں نے آئی ایف این کے خلاف شروع ہونے والی کارروائیوں کو دہشت گردانہ بنانے کی کوشش کی۔ ایف این کے خلاف شروع ہونے والی کارروائیوں کو دہشت گردانہ بنانے کی کوشش کی۔ ایف این کے خلاف شروع ہونے والی کارروائیوں کو دہشت گردانہ بنانے کی کوشش کی۔

پندرہویں روز سب سے پہلے
دہشت گردانہ کارروائیوں

پندرہویں روز سب سے پہلے
دہشت گردانہ کارروائیوں

پندرہویں روز سب سے پہلے
دہشت گردانہ کارروائیوں

منتهی دہائیوں کے دوران میں ملک کے تمام حصوں میں
 کے ساتھ ساتھ ملک کے تمام حصوں میں

بیتا
 محمد علی شاہ



میں سے
 کے ساتھ ساتھ
 کے ساتھ ساتھ

کے ساتھ ساتھ

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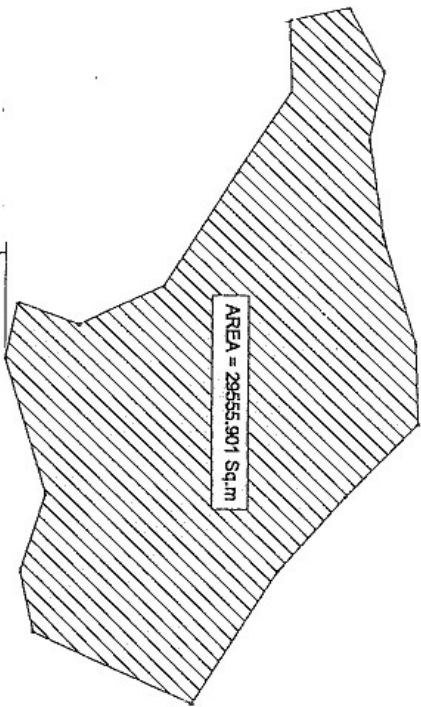
کے ساتھ ساتھ

کے ساتھ ساتھ

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کے ساتھ ساتھ



882.447m
(N.T.S)

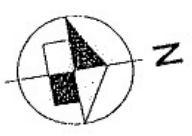
Carriageway to Islamabad

R.O.W

Carriageway to Peshawar


R.O.W

STATION 12+000




EDITION	DESCRIPTION	DRAWN BY	DATE	CHECKED BY

NOTEAHHIT / CONTRACTOR



P
Design
Institute



BEYONDER
INSAAT TURIZM TICARET VE SANAYI A.S.

ISLAMABAD-PESHAWAR MOTORWAY PROJECT SECTION I

TITLE:
DISPOSAL AREA AT 12+000
FOR UNSUITABLE MATERIAL
FROM KM 11+850-12+050

Date : 28/04/1999
Scale : N.T.S
Surveyed by: Aslam Bhatti
Drawn by: Mubashir Ikram
Checked by:
Approved by:
DWG No. S-DISP-006
EDIT:

Surveying & Setting Out Department

PMC

Concrete 305

ISLAMABAD - PESHAWAR MOTORWAY PROJECT

Sheet-(1)

CONCRETE FIELD LOG

Section : CNE	Structure No : U. Pass # 10A		Contractor's Request No : Akbar				
ISQ No :	Structure Location : 37+015		Pouring Start : 08:45		Completed :		
Field No : 3151	Part of Structure : Wall + Top Slab		Batch Plant Location : BAYINDIR CAMP				
Type of Admixture : RP-244	Concrete Quantity 168.0 M ³		Source of Cement : Aslami				
(A) Mould No.	1	2	3	4	5	6	Water Temp.
Cylinder No. 7 days		805-A		815-B			°C
Cylinder No. 28 days		806-A		806-A			C. Agg. Temp.
Sampled from Mixer No.	030	033	032	031	030	033	°C
Chainage B Time (mm)	08:30	08:40	09:00	09:15	09:40	9:55	Sand Temp.
Offset QTY (m)	7.5	7.5	7.5	7.5	7.5	7.5	°C
Concrete Class	'A'						Cement Temp.
Date Moulded	11/6/2000						°C
Time hr	08:40	08:55	09:10	9:30	9:50/9:55	10:05/10:10	M/C Agg:
Slump (mm)	100	135	150	145	175/150	170/145	i) %
Slump Pass/Fail							ii) %
Concrete Temperature (°C)	24.3	24.0	24.2	24.6	23.9/24.2	24.3/24.7	iii) %
Air Temperature (°C)							Absorption %
Compact. Method	Rodding			Rodding			C. Agg: %
	~	~	~	3~4	~	~	Fine Agg: %
Mould No.	7	8	9	10	11	12	13
Cylinder No. 7 days	805-C			807-A			807-B
Cylinder No. 28 days	806-A			808-A			808-B
Sampled from Mixer No.	032	031	030	033	032	031	030
Chainage B Time (mm)	10:10	10:25	10:40	11:00	11:20	11:30	11:50
Offset QTY (m)	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Concrete Class	'A'						
Date Moulded	11/6/2000						
Time hr	10:30	10:45	10:55	11:15/11:20	11:35/11:40	11:40	12:05
Slump (mm)	140	150	145	180/150	170/145	140	130
Slump Pass/Fail							
Concrete Temperature (°C)	24.3	25.0	24.2	24.0/24.5	24.9/25.2	24.7	26.5
Air Temperature (°C)							
Compact. Method	5~6	~	~	7~8	~	~	9~10
Prepared By: <i>Hydar</i>	Date: 11/6/00			Checked By:		Date:	

PMC

305

ISLAMABAD - PESHAWAR MOTORWAY PROJECT

Sheet - 2

CONCRETE FIELD LOG

Section : ONE		Structure No : U. PASS + 10A			Contractor's Request No : AKBAR		
ISQ No : C - 3182		Structure Location : 37+015			Pouring Start :		Completed : 16:10
Field No : RP-264		Part of Structure : Wall + Top Slab			Batch Plant Location : BAYINDIR CAMP		
Type of Admixture :		Concrete Quantity M ³			Source of Cement : ASKARI		
(A) Mould No.	14	15	16	17	18	19	Water Temp.
Cylinder No. 7 days		807-C			809-A		°C
Cylinder No. 28 days		808-C			810-A		C. Agg. Temp.
Sampled from Mixer No.	033	032	*031	030	033	032	°C
Chainage B.TIME (Km)	12:15	12:24	12:40				Sand Temp.
Offset QTY (m)	7.5	7.5	7.5	7.5	7.5	7.5	°C
Concrete Class	"A"						Cement Temp.
Date Moulded	11 / X / 2000						°C
Time hr	12:20 12:25	12:40	12:55	13:25	13:40	14:00	M/C Agg:
Slump (mm)	170 140	150	130	120	115	145	i) %
Slump Pass/Fail							ii) %
Concrete Temperature (°C)	25.6 26.0	25.5	26.6	27.8	27.2	27.6	iii) %
Air Temperature (°C)							Absorption %
Compact. Method	Rodding N.T.R.C			Rodding			C. Agg: %
	~	11 ~ 12	1 ~ 12	~	13 ~ 14	~	Fine Agg: %
Mould No.	20	21	22	23			
Cylinder No. 7 days	809-B		809-C				
Cylinder No. 28 days	810-B		810-C				
Sampled from Mixer No.	031	030	033	032			
Chainage (Km)	14:10						
Offset QTY (m)	7.5	7.5	7.5	3.0			
Concrete Class	"A"						
Date Moulded	11 / X / 2000						
Time hr	14:20 14:30	14:40	15:00	16:00			
Slump (mm)	190 150	110	145	145			
Slump Pass/Fail							
Concrete Temperature (°C)	26.2 28.0	28.4	29.0	29.5			
Air Temperature (°C)							
Compact. Method	15 ~ 16	~	17 ~ 18	~			
Prepared By: <i>[Signature]</i>	Date: 11 / X / 00			Checked By:	Date:		



CONCRETE DELIVERY SLIP

BATCHING PLANT, BAYINDIR/HABIB RAFIQ

No. 21502

DATE 11/10/2000

LOCATION 37+015 km W/T

NAME OF SUB-CONTRACTOR ALBAR

CLASS OF CONCRETE A QUANTITY 7.5 M³

PLATE NO. EDJ-7114 MIXER NO. 16

DEPARTURE FROM BATCHING PLANT 12:40
120 M³

M. Rauf
K. N. R. C.

ARRIVAL TIME AT SITE 12:55 B. PLANT SUPERVISOR

DEPARTURE TIME FROM SITE 1325 hrs NAME Azmat Ali

Checked By Monitoring Team SIGNATURE *[Signature]*

Slump is 130 mm
Temp is 27°C
cylinders is 12

RECEIVED BY

NAME A. A. 212

SIGNATURE ar

Geo file
Concrete logs file
Concrete file
[Signature]

PHOTOGRAPHS



Photo-1 Subgrade preparation underway



Photo-2 Subgrade compaction using sheep foot roller

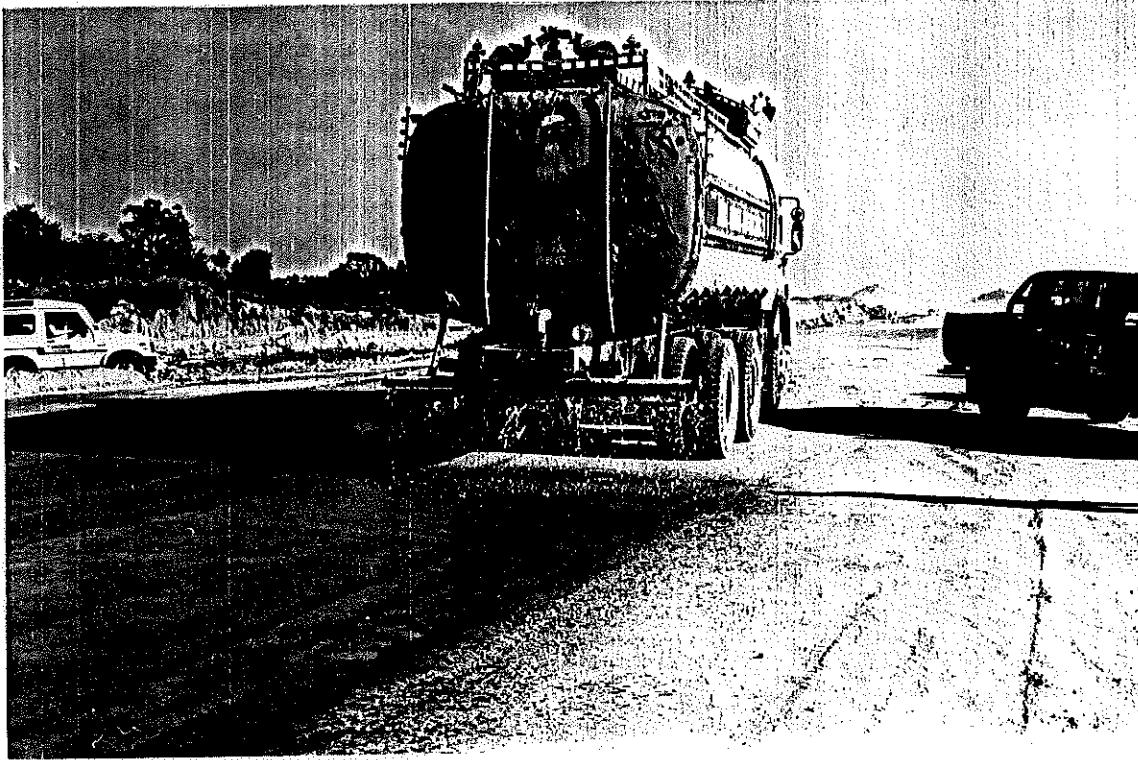


Photo-3 Sprintling of water over subgrade

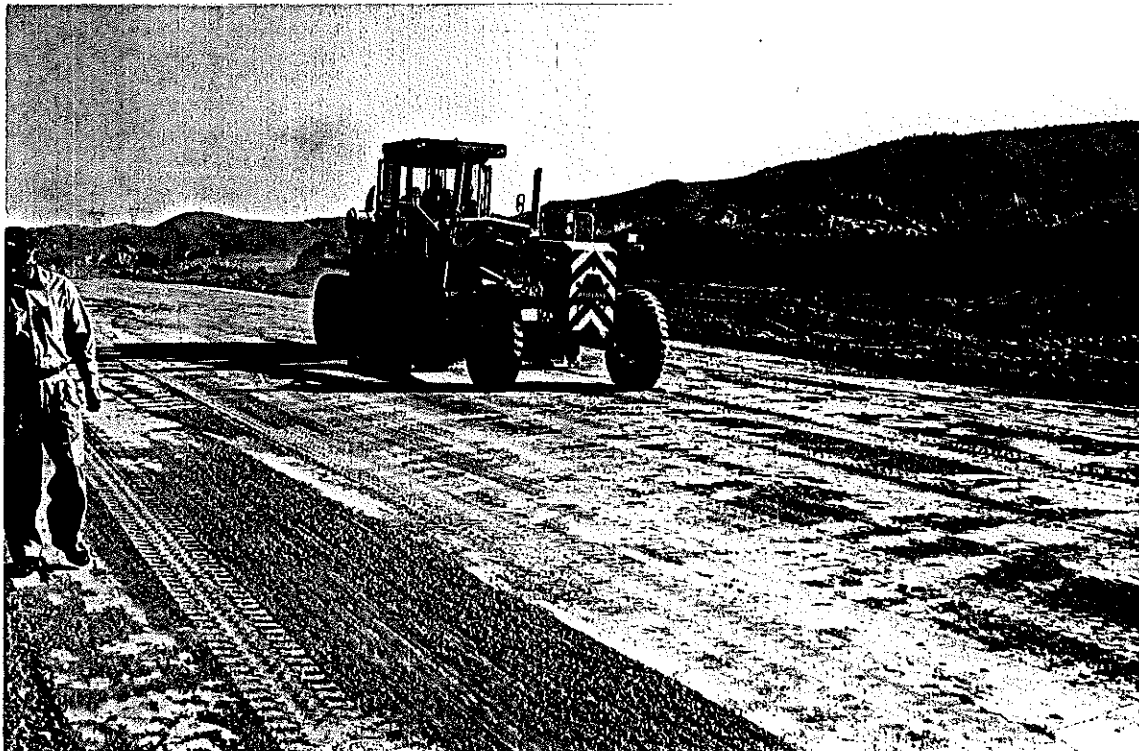


Photo-4 Grader application over subgrade



Photo-5 Field density test over base course

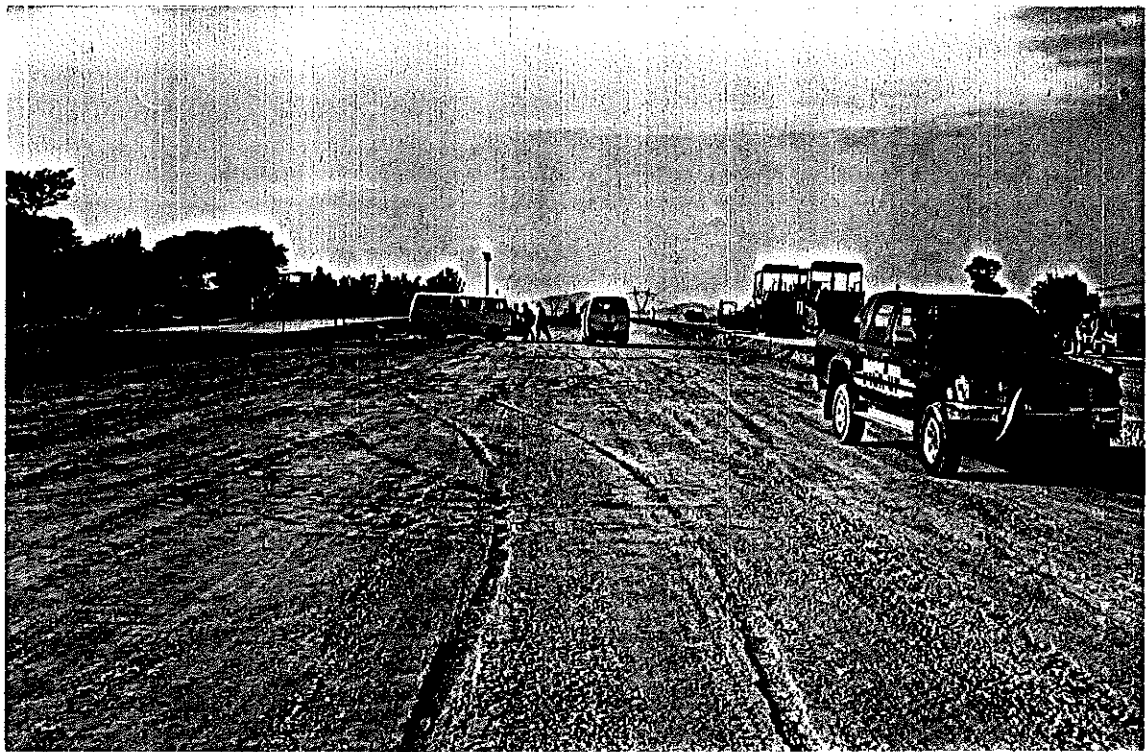


Photo-6 Recently completed asphaltic base course

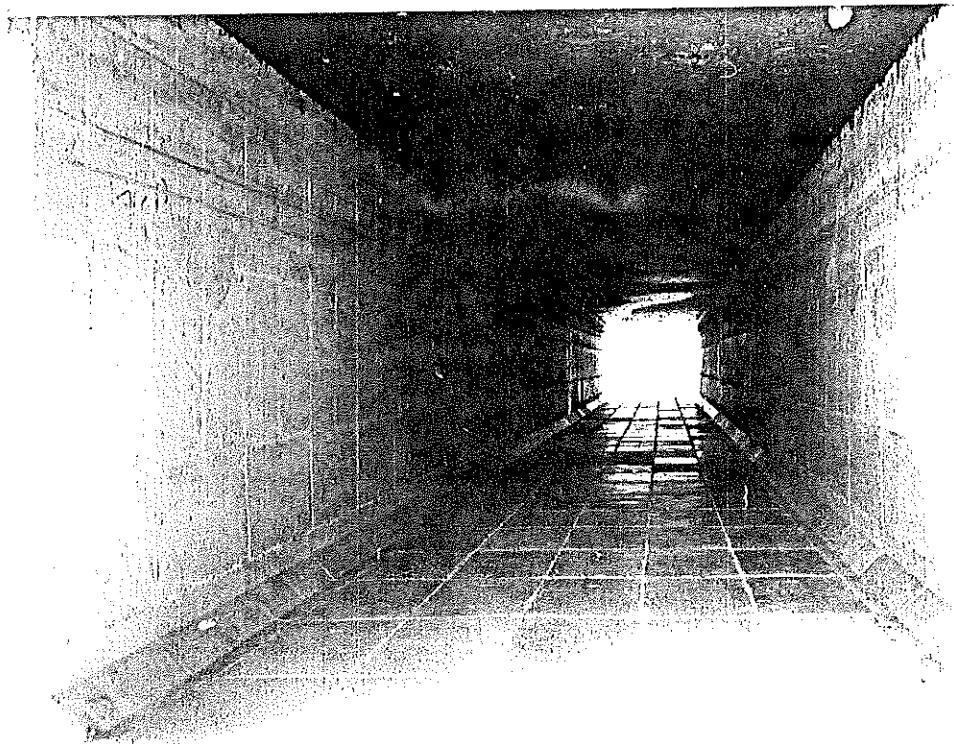


Photo-7 Concrete box-culvert in very good condition



Photo-8 Joint between wing wall not properly packed

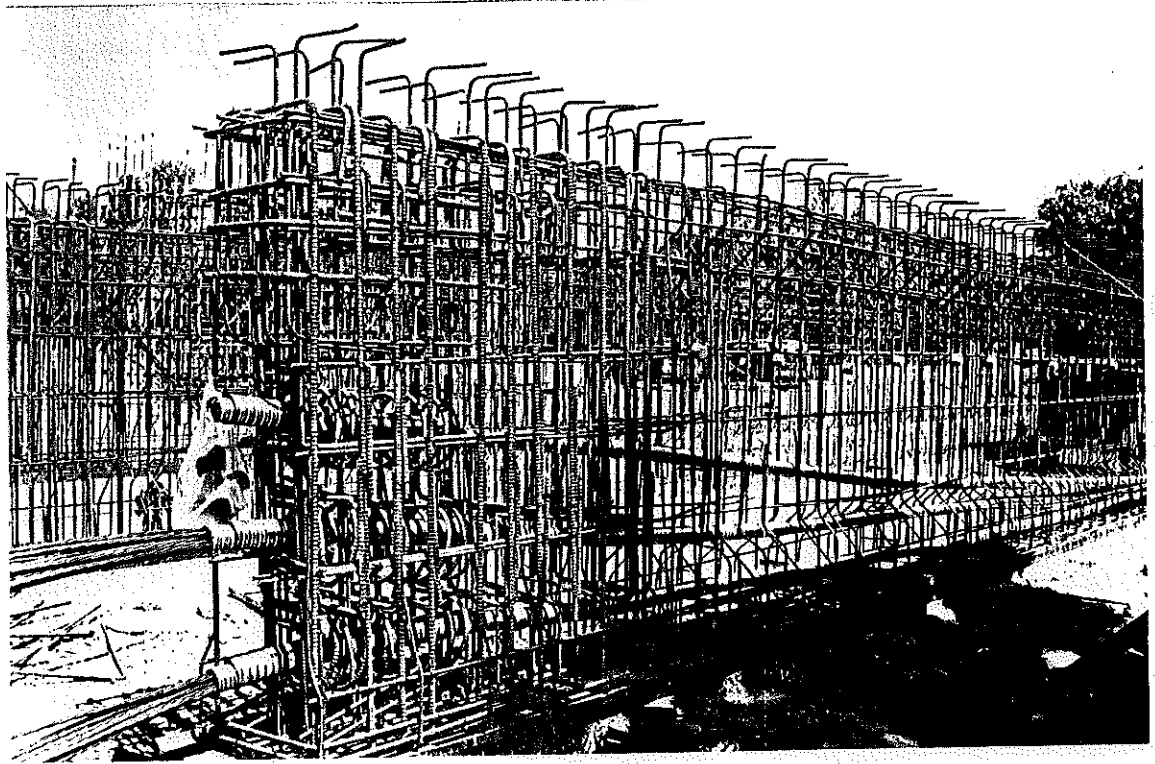


Photo-9 Reinforcement of a girder

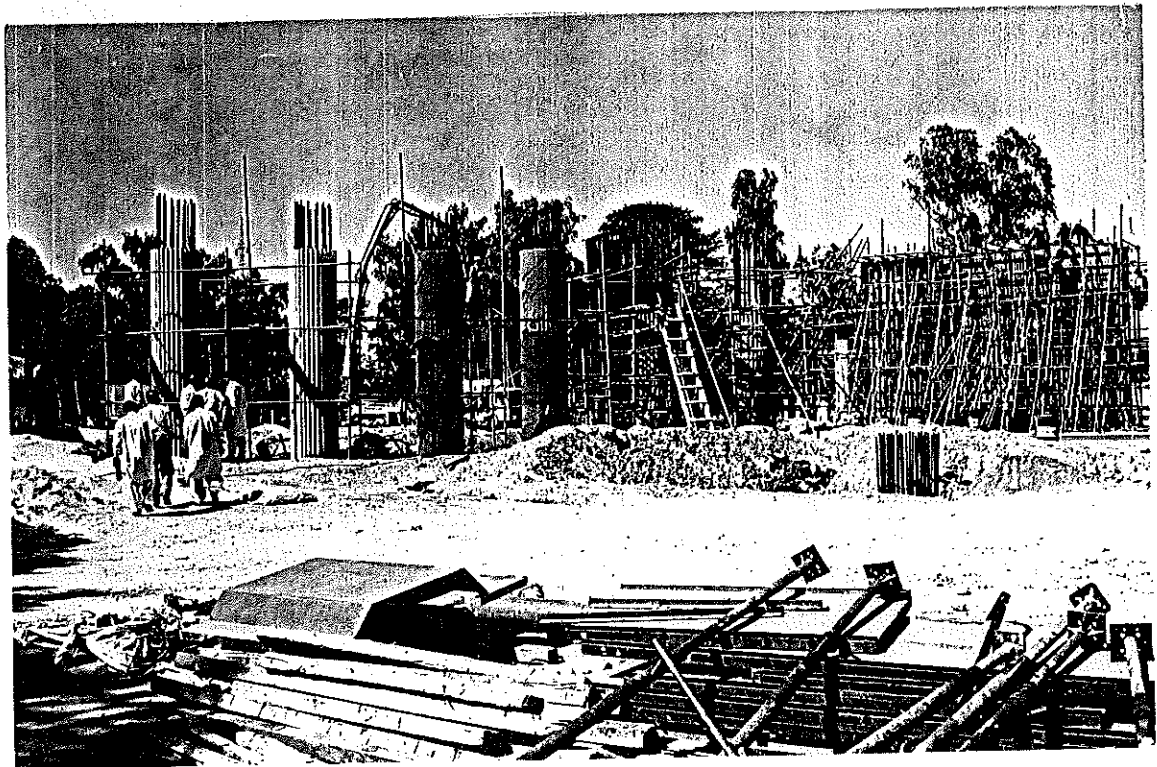


Photo-10 Construction of rotary interchange at Burhan

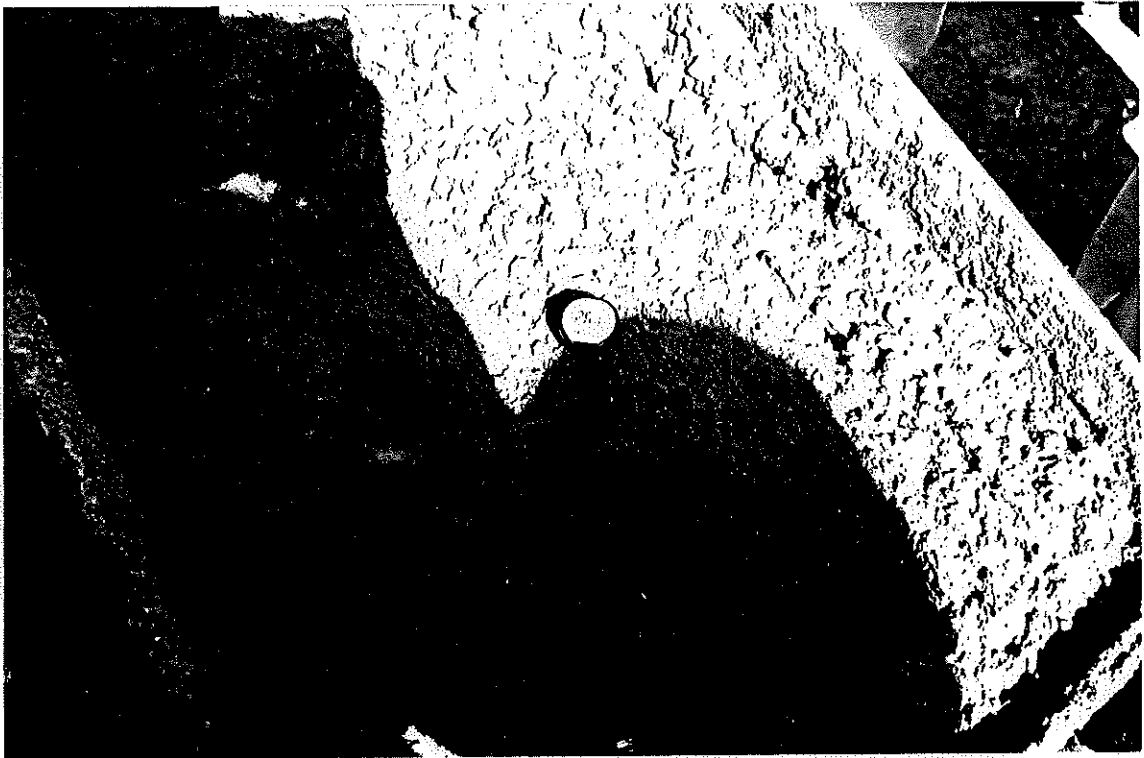


Photo-11 Checking of concrete temperature



Photo-12 Testing of fresh cement concrete is underway



Photo-13 Fresh cement concrete is being poured using pump

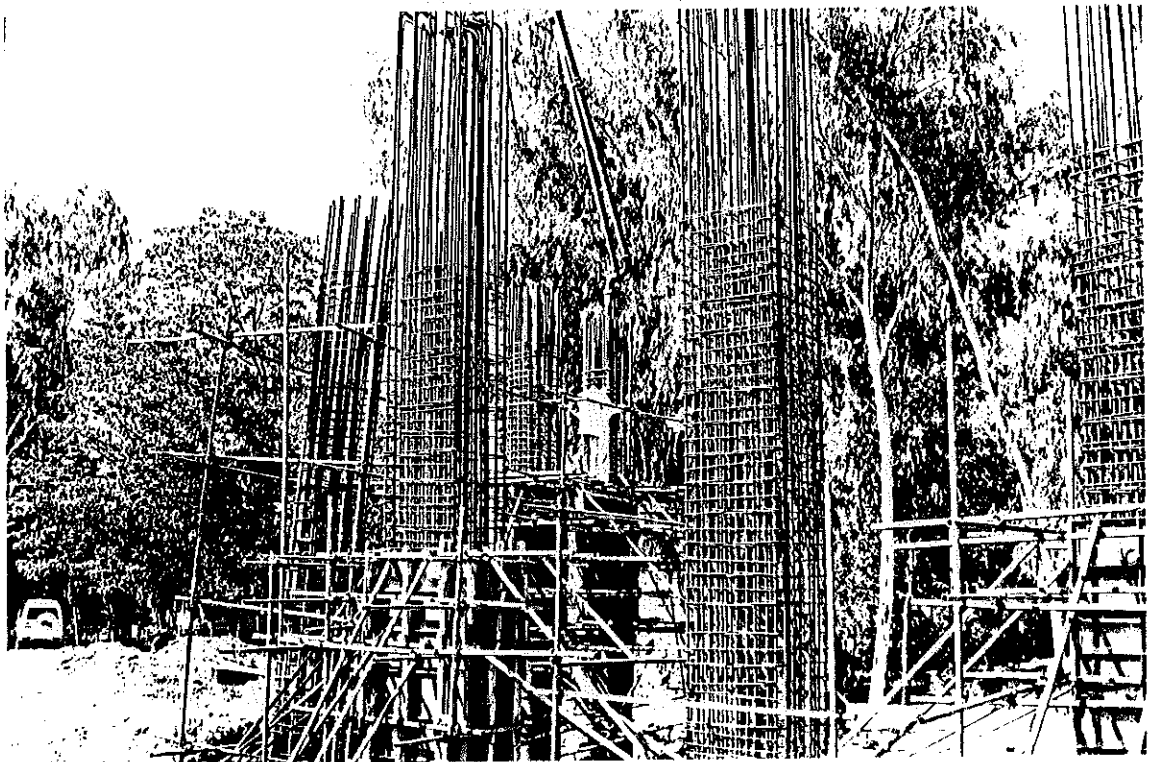


Photo-14 Fresh cement concrete is being poured using pump

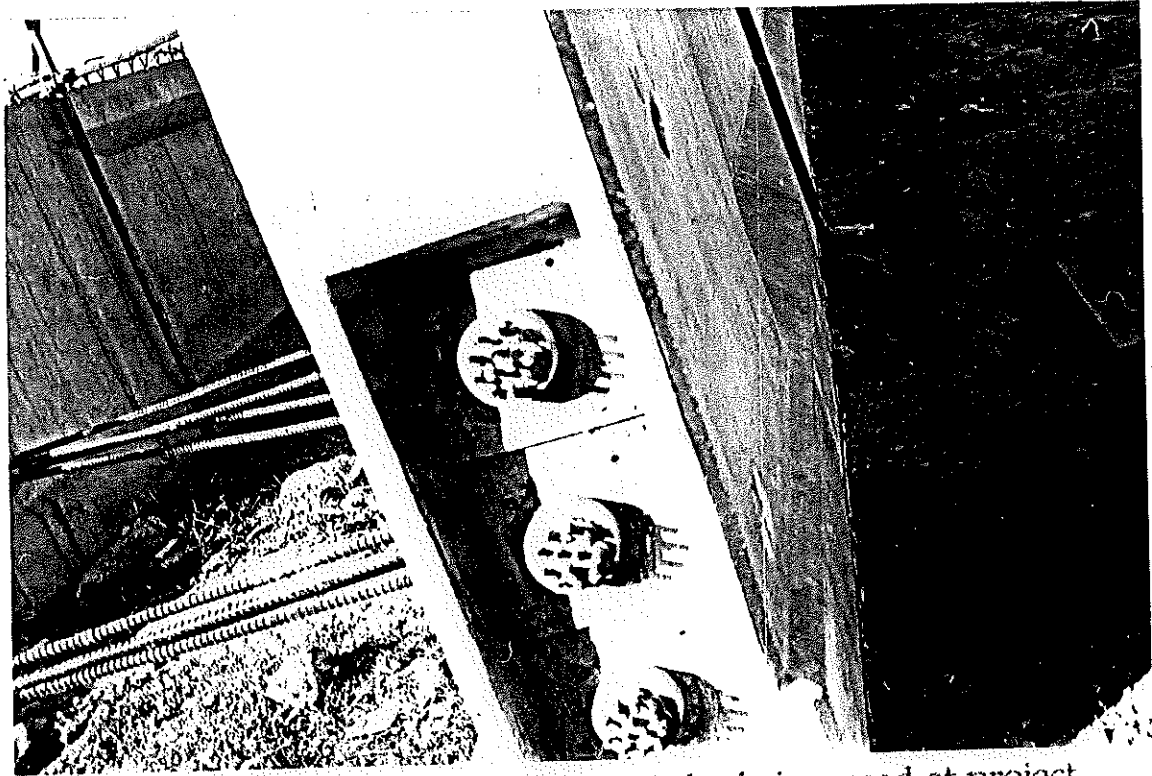


Photo-15 Pre-cast and post tension girder being used at project

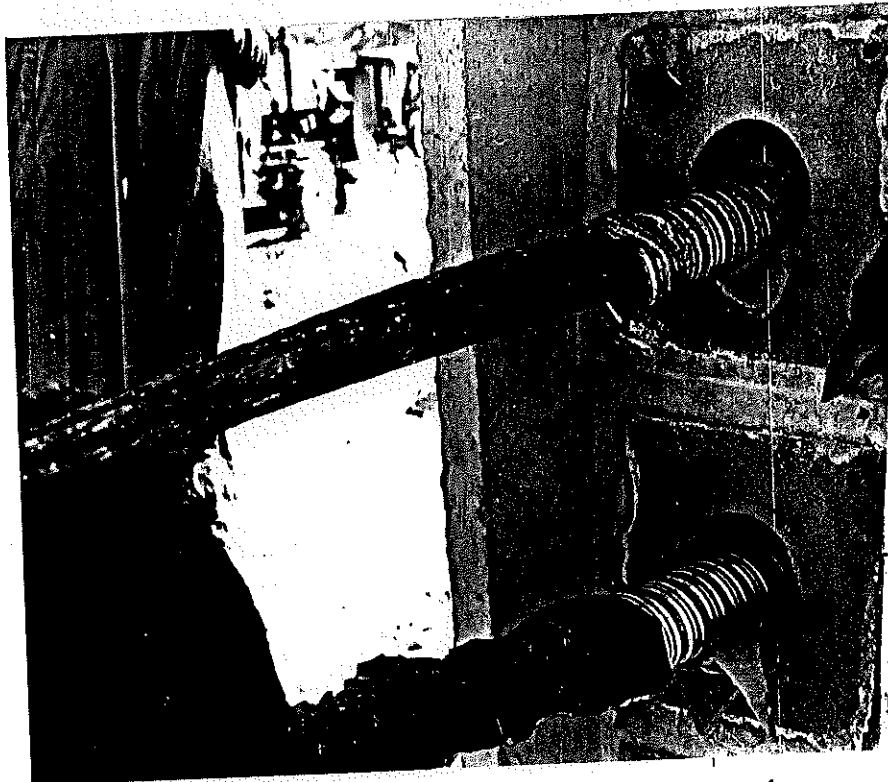


Photo-16 Girder is casted but not tensioned

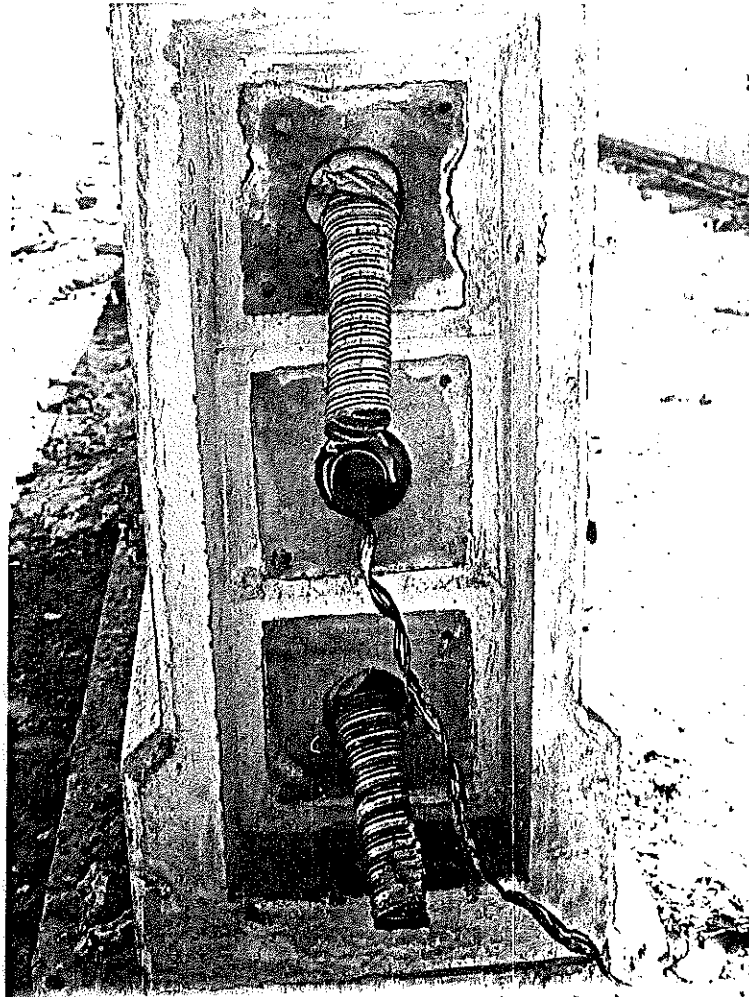
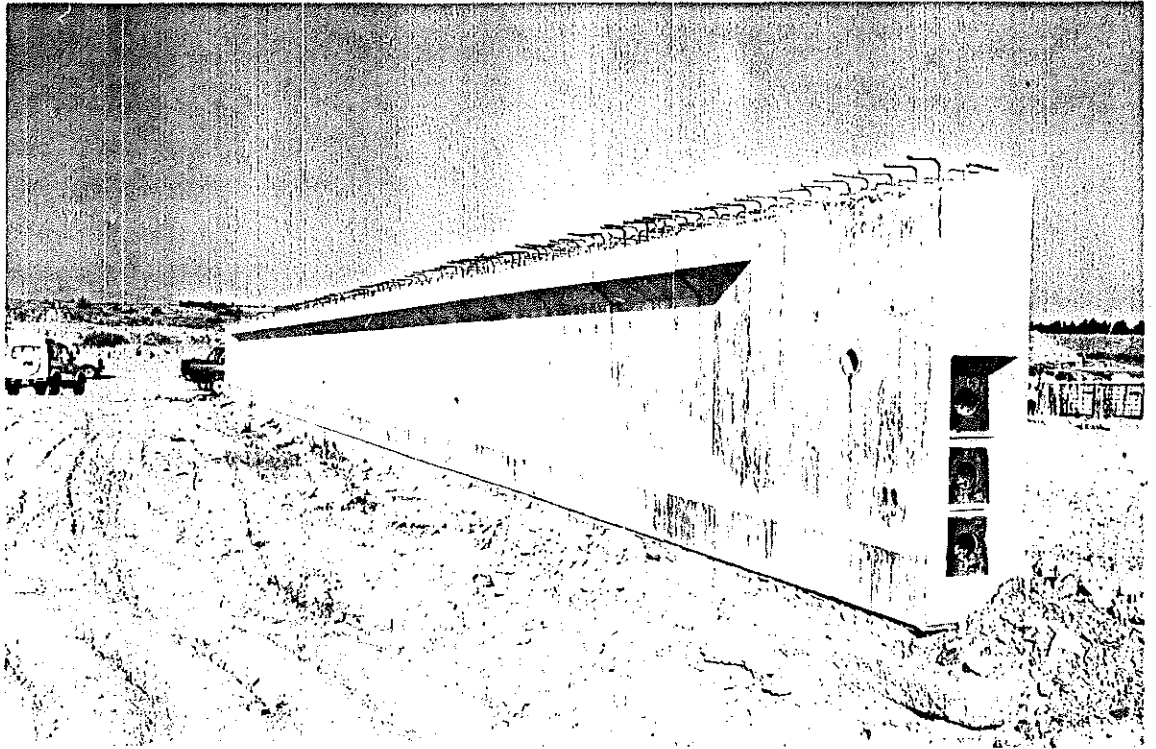


Photo 17 Girder is casted cables not placed also conduit is broken.



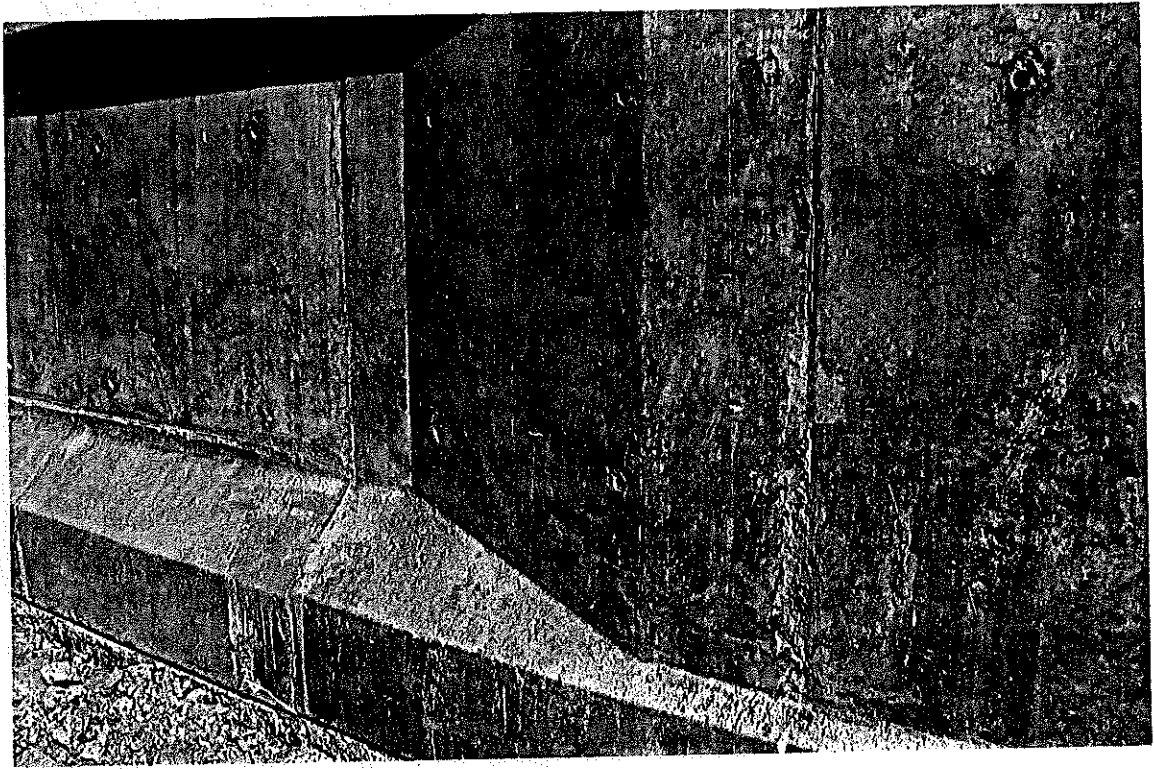


Photo-19 Close view of the discarded girder