

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

COMMUNICATION AND WORKS DEPARTMENT (C & WD.)
GOVERNMENT OF NORTH WEST FRONTIER PROVINCE
ISLAMIC REPUBLIC OF PAKISTAN

**BASIC DESIGN STUDY REPORT
ON
PROVISION OF ROAD CONSTRUCTION EQUIPMENT
IN
NORTH WEST FRONTIER PROVINCE
OF
ISLAMIC REPUBLIC OF PAKISTAN**

JANUARY 1993

PACIFIC CONSULTANTS INTERNATIONAL

GRS

CR 3

93-026

JICA

BASIC DESIGN STUDY REPORT ON PROVISION OF ROAD CONSTRUCTION EQUIPMENT
IN NORTH WEST FRONTIER PROVINCE OF ISLAMIC REPUBLIC OF PAKISTAN

JAN. 1993

117
51.4
GRS
BRARY
51.4
51.4

27367

JICA LIBRARY



1118433[0]

国際協力事業団

7304

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

**COMMUNICATION AND WORKS DEPARTMENT (C & WD.)
GOVERNMENT OF NORTH WEST FRONTIER PROVINCE
ISLAMIC REPUBLIC OF PAKISTAN**

**BASIC DESIGN STUDY REPORT
ON
PROVISION OF ROAD CONSTRUCTION EQUIPMENT
IN
NORTH WEST FRONTIER PROVINCE
OF
ISLAMIC REPUBLIC OF PAKISTAN**

JANUARY 1993

PACIFIC CONSULTANTS INTERNATIONAL

PREFACE

In response to a request from the Government of the Islamic Republic of Pakistan, the Government of Japan decided to conduct a basic design study on the Provision of Road Construction Equipment in the North West Frontier Province of the Islamic Republic of Pakistan and entrusted the study to the Japan International Cooperation Agency (JICA).

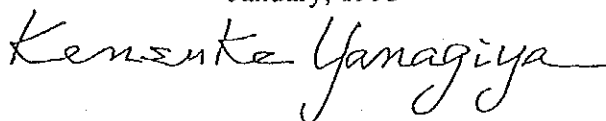
JICA sent to Pakistan a study team headed by Mr. Shinobu Matsumoto, Advisor to the Manager, Facility Section, First Construction Department, Nagoya Construction Bureau, Japan Highway Public Corporation. The team consisted of an official of the Minister of Foreign Affairs and members of Pacific Consultants International. The team stayed in Pakistan from August 24 to September 13, 1992.

The team held discussions with officials of the Government of North West Frontier Province, Pakistan, and conducted a field survey in the study area. After the team returned to Japan, further studies were made. A mission was sent to Pakistan in order to discuss the draft report and this final report was prepared from their observations.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Islamic Republic of Pakistan and the Government of the North West Frontier Province for the close cooperation extended to the JICA team.

January, 1993

A handwritten signature in black ink, reading "Kensuke Yanagiya". The signature is fluid and cursive, with the first name "Kensuke" and the last name "Yanagiya" clearly distinguishable.

Kensuke Yanagiya

President

Japan International Cooperation Agency

January, 1993

Mr. Kensuke Yanagiya
President
Japan International Cooperation Agency
Tokyo, Japan

Letter of Transmittal

We are pleased to submit the basic design report on the Provision of Road Construction Equipment in the North West Frontier Province of the Islamic Republic of Pakistan.

This study, made between August 24, 1992 and January 29, 1993, has been prepared by Pacific Consultants International through a contract with JICA. Throughout the study, we have taken into full consideration the present economic situation in the North West Frontier Province of the Islamic Republic of Pakistan, and have planned the most appropriate process for Japanese Grant Aid.

We wish to take this opportunity to express our sincere gratitude to the officials concerned of JICA, the Ministry of Foreign Affairs, the Ministry of Construction, Japan Highway Public Corporation and the Embassy of Pakistan in Japan. We also wish to express our deep gratitude to the officials concerned in the Communication and Works Department and the Planning and Development Department of the North West Frontier Province, the Economic Affairs Division of the Government of Pakistan, JICA's Pakistan Office and the Embassy of Japan in Pakistan for their close co-operation and assistance during our study.

We hope that this report will be effective for the further promotion of the project.

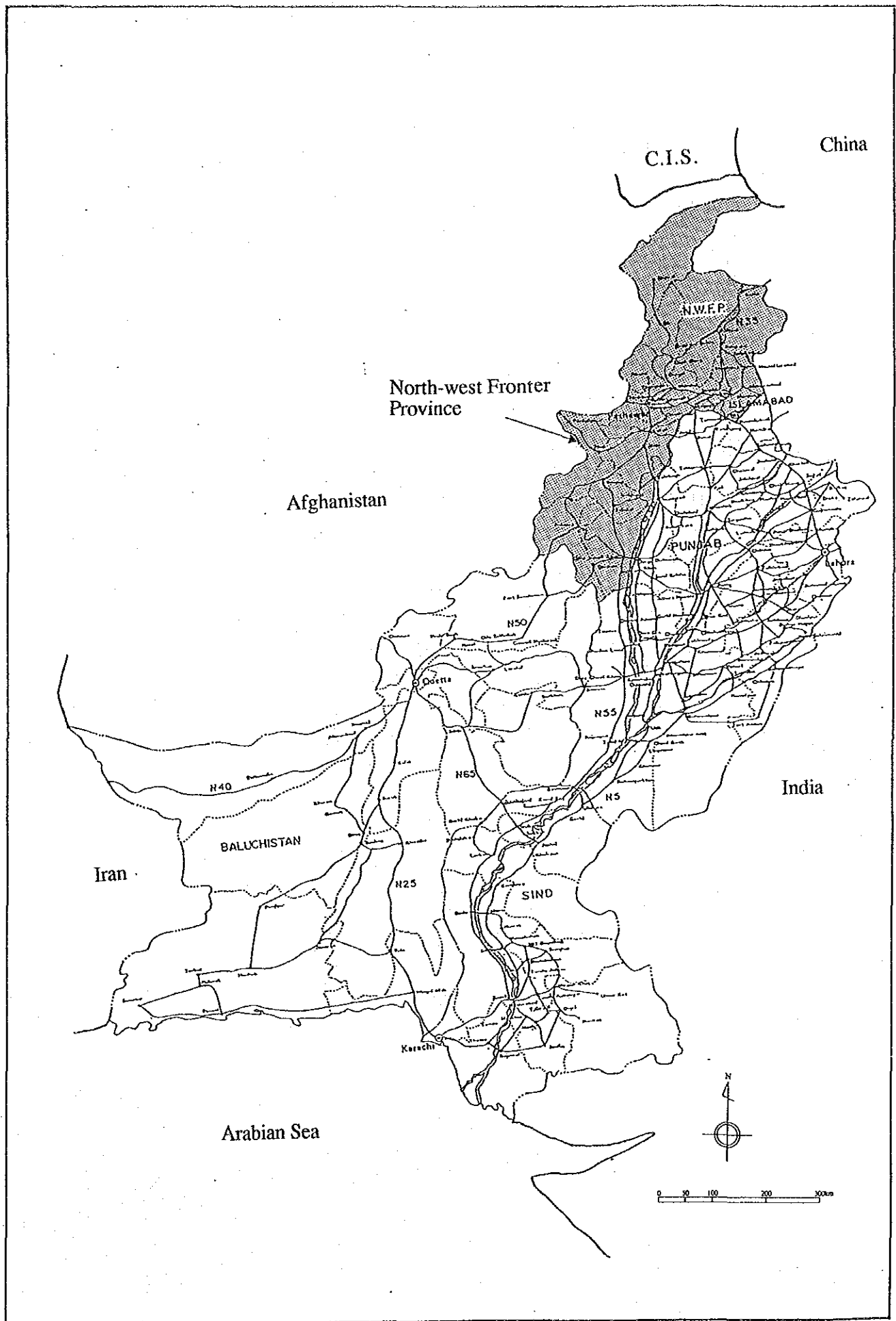
Very truly yours,



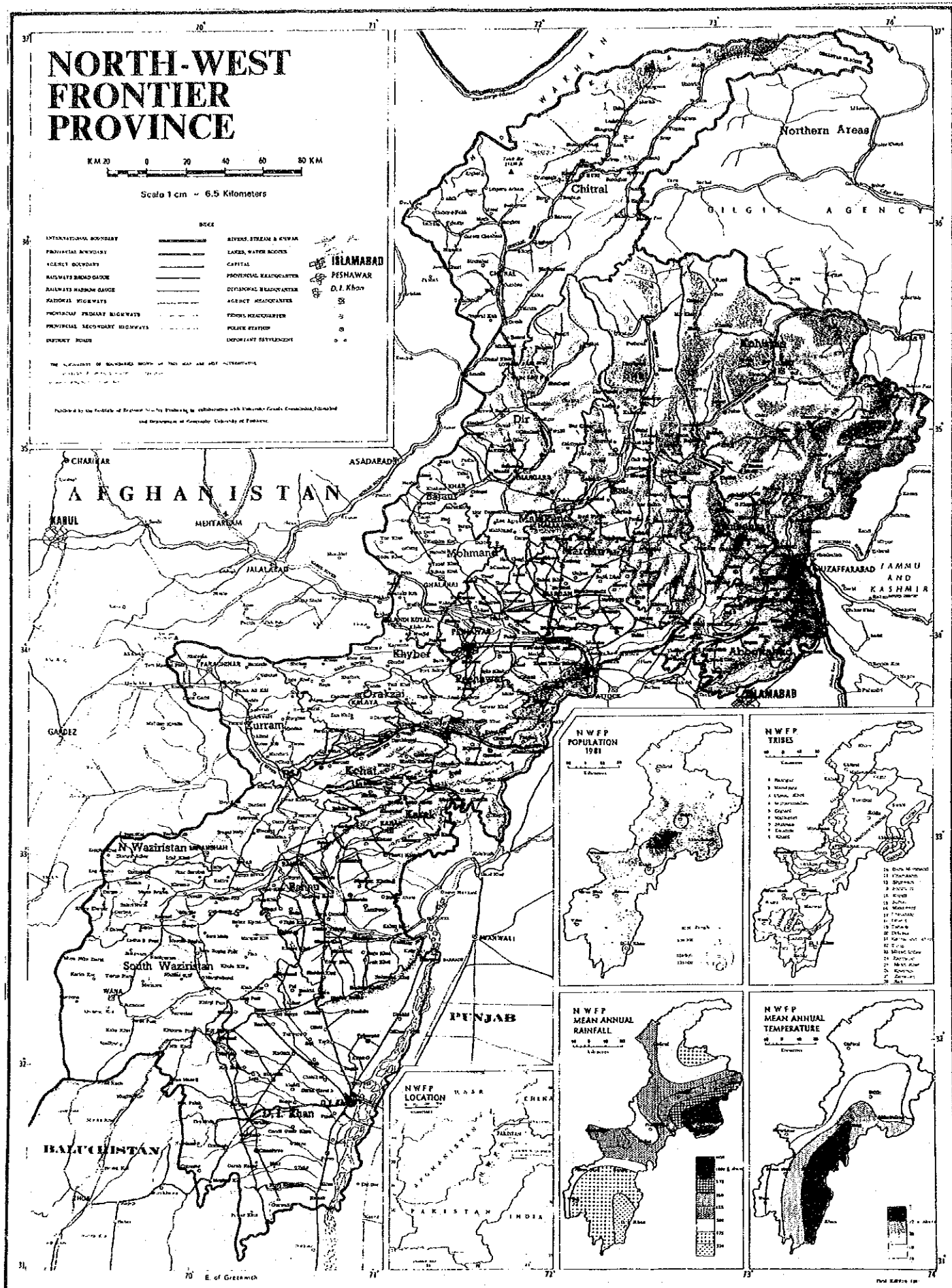
Koki Kaneda

Project Manager

Basic Design Study Team
on Provision of Road Construction Equipment
in North West Frontier Province, Pakistan



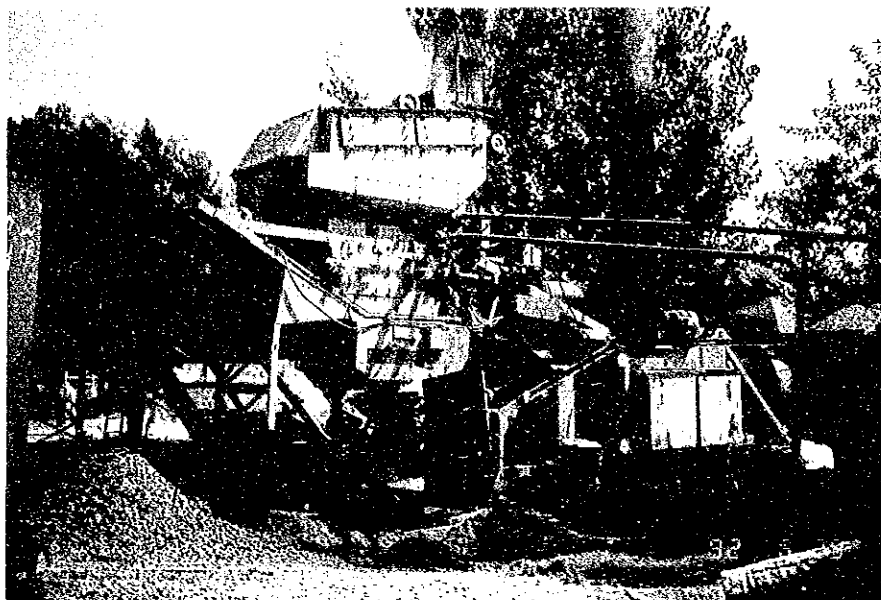
Location Map (1)



Location Map (2)

Photograph-1

Asphalt Plant
in Peshawar, Chamani
40t/h



Photograph-2,3

Maintenance Workshop
in Peshawar

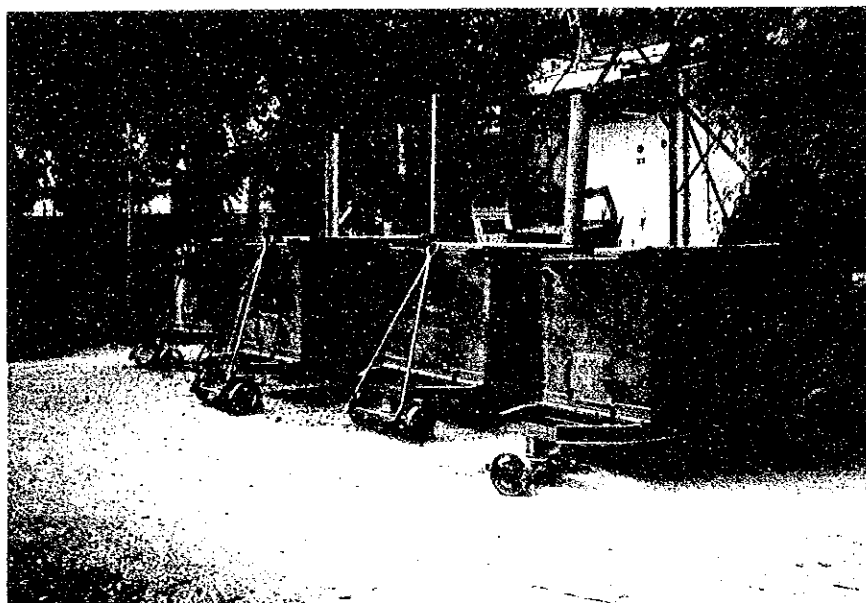
Poor facilities make
the maintenance of
the heavy equipment
difficult .



Photograph-4

Bannu Workshop

Has a function for the production of Tar Heating Kettles.(Production capacity is about 50 units per year)



Photograph-5

One of the Maintenance Workshop of a Private Company

in Peshawar, which are more than 100. They undertake repair works of fuel pump unit parts, etc. from C&W D.



Photograph-6

One of the Maintenance Workshops of Private Companies



Photograph-7

Private Aggregate
Production Plant

10tons/Hours

There are more than
50 plants in Peshawar.



Photograph-8

Scheduled Site for
Asphalt Plant
in SWAT area



Photograph-9

Site of Base Course
Maintenance on the road
from Peshawar to Malakand



Summary

Summary

The Islamic Republic of Pakistan has a population of about 110 million and an area of about 800 thousand square kilometers, comprising four provinces, namely Punjab, Sindh, Baluchistan and North-west Frontier Province.

The North West Frontier Province (NWFP) is located at the border with Afghanistan, and in the North is mountainous separated by many valleys and rivers, and runs to the flat and sandy area of the South. The population is about 16 millions and the area is about 75 thousand square kilometres. The development is delayed compared with Punjab or Sindh provinces.

Road transportation in NWFP is estimated to be more than 85 % for both passengers and cargo of the total transportation volume in the Province, and is now increasing rapidly.

Communication and Works Department (C&W D.), NWFP decided to carry out road construction and improvement during the Seventh Five Year Plan (1988 - 93);

Construciton	999 km
Improvement	2,017 km

But completion in 1993 is estimated to be 57 % for construction and 44 % for improvement due to the following reasons;

- lack of construction equipment
- many old and inefficient construction equipment
- lack of budget due to disasters repairs following every rainy season

To cope with this situation, the Government of Pakistan has requested the Government of Japan to make a grant for the procurement of road construction equipment for the North West Frontier Province under the Japanese Grant Aid programme.

The Government of Japan decided to conduct a feasibility study for the Grant Aid Project.

To conduct the basic design study, Japan International Cooperation Agency (JICA) sent a study team to Pakistan between August 24 and September 13, 1992, and exchanged the Minutes of Discussions with the relevant authorities of the Government of Pakistan and the Government of the North West Frontier Province after the study.

Based on the discussions, the study team has carried out the basic design and determined that the following numbers of plant and equipment are suitable for a grant aid project. In respect to the requirement of **NWFP**, the study team recommends that the primary earthmoving equipment with a short delivery time is shipped fast. The more sophisticated finishing equipment, which has a longer delivery is shipped later.

The procurement of the 63 equipment has been scheduled based on this policy.

	First Shipping	Second Shipping	
Bulldozer	6		
Wheel Loader with Blade	12		
Vibration Roller	24		
Motor Grader	6		
Asphalt Plant		2	
Wheel Loader		2	
Asphalt Finisher		2	
Dump Truck		8	
Mobile Work Shop		1	
Total	48	15	Grand Total 63

The period for the detailed design including site survey, study in Japan and confirmation with the authorities for prepared tendering and contract document is estimated to take a minimum of 4.5 months. The period for procurement and training for the equipment operators is estimated to take a minimum of 10 months. The cost to be prepared by the receiving country is about Rs. 1.2 millions for the acquisition and preparation of the land for the installation of the two asphalt plants.

The maintenance system proposed in this report can be carried out by **C&W D.** without any problems.

The remaining 1,138 kms of road improvement in the Seventh Five Year Plan (1988 - 93) is supposed to be transferred to the Eighth Five Year Plan. The procurement of the equipment by this project will create the opportunity for recovering such delays, and would achieve good economic investment effects.

The following advantages are also expected from this project;

1. Improved standards of life for the people, resulting from the project will ensure the stability of their livelihood.

2. Reduced costs for **C&W D.** road maintenance.
3. Transition of construction from manual to mechanical methods will improve the quality of the work.
4. Increased opportunity for employment will provide increased demand.
5. Upgrading of operator skills.

This project will contribute to a stable life for the people with many benefits arising to them. This project is considered to be suitable as a Grant Aid Project and to be a significant project to be realized at the earliest opportunity.

Table of Contents

Location Map

Photographs

Summary

Chapter 1	Introduction -----	1 - 1
Chapter 2	The Project -----	2 - 1
2.1	Background to the Project -----	2 - 1
2.2	Outline of the Request -----	2 - 6
Chapter 3	Outline of the Project -----	3 - 1
3.1	Objective -----	3 - 1
3.2	Study and Examination of the Request -----	3 - 1
3.2.1	Priority and Necessity -----	3 - 1
3.2.2	Executing Agency and Operational Structure -----	3 - 1
3.2.3	Similar Projects and Assistance from International Agencies ---	3 - 7
3.2.4	Equipment Requested -----	3 - 7
3.2.5	Technical Co-operation -----	3 - 8
3.3	Project Description -----	3 - 8
3.3.1	Executing Agency and Operational Structure -----	3 - 8
3.3.2	Plan of Operation -----	3 - 8
3.3.3	Outline of Equipment -----	3-13
3.3.4	Maintenance and Management Plan -----	3-13
3.4	Technical Co-operation -----	3 -16

Chapter 4	Basic Design -----	4 - 1
4.1	Design Policy -----	4 - 1
4.1.1	Natural Conditions of the Area -----	4 - 1
4.1.2	Equipment Requirements -----	4 - 1
4.1.3	Distributors of Construction Equipment -----	4 - 2
4.1.4	Procurement from Third Countries -----	4 - 2
4.1.5	Procurement Schedule -----	4 - 2
4.2	Basic Plan -----	4 - 2
4.2.1	Selection of Equipment -----	4 - 2
4.2.2	Main Specification for Each Equipment -----	4 - 4
4.2.3	Specification List for Each Equipment -----	4 - 6
4.2.4	Output of Each Equipment Combination -----	4 - 8
4.2.5	Necessary Numbers of Each Combination -----	4 - 8
4.3	Procurement Plan -----	4-10
4.3.1	Policy -----	4-10
4.3.2	Management for the Procurement -----	4-11
4.3.3	Implementation Schedule -----	4-12
4.3.4	Necessary Measures to be taken by Both Countries -----	4-13
Chapter 5	Effect of Project and Conclusion -----	5 - 1
5.1	Effect of this Project -----	5 - 1
5.2	Conclusion -----	5 - 1

Appendixes

Abbreviation List

Pakistan	:	Islamic Republic of Pakistan
NWFP	:	North West Frontier Province
C&W D.	:	Communication and Works Department, NWFP
JICA	:	Japan International Cooperation Agency
CMTC	:	Construction Machinery Training Center
FATA	:	Federally Administered Tribal Areas
ADB	:	Asian Development Bank
WAPDA	:	Water and Power Development Authority
OECD	:	Overseas Economic Cooperation Fund
SAPROF	:	Special Assistance for Project Formation
L.	:	Litre (volume)
KM	:	Kilometre (length)
M	:	Metre (length)
Hp	:	Horse Power (output of engine)
Rs.	:	Rupee
H	:	Hour
/y	:	per Year

List of Tables

Table	Description	Page
Table 1	Road Length in NWFP -----	2 - 2
Table 2	Road Length in NWFP for Years 81 - 91-----	2 - 3
Table 3	Vehicle Numbers in NWFP -----	2 - 3
Table 4	Traffic Accidents in NWFP -----	2 - 3
Table 5	Road Programme in Seventh Five Year Plan (1988 - 93)-----	2 - 4
Table 6	Road Programme in Eighth Five Year Plan (1993 - 98)-----	2 - 5
Table 7	Road Equipment possessed by A class Contractors in NWFP -----	3 - 5
Table 8	Expenditures and Budget of NWFP -----	3 - 6
Table 9	Uncompleted Road Length of C&W D. by Each Circle-----	3 - 8
Table 10	Road Pavement in Northern Area in Seventh Five Year Plan-----	3-10
Table 11	Volumes of Work for Road Improvements-----	3-11
Table 12	Remaining Road Improvement Works in Seventh Five Year Plan-----	3-12
Table 13	Remaining Work Volume in Road Improvements (Subbase Course)-----	3-12
Table 14	Remaining Work Volume in Road Improvements (Base Course)-----	3-12
Table 15	Remaining Work Volume in Road Improvements (Surface Course)-----	3-13
Table 16	Expected New Staffs for Maintenance and Management of the Equipment-----	3-15
Table 17	Wages of the Staffs (1992)-----	3-15
Table 18	Fuel Cost-----	3-16
Table 19	Output of Equipment Combinations-----	4 - 8
Table 20	Procurement Plan-----	4-12
Table 21	Implementation Schedule-----	4-13

List of Figures

Figure	Description	Page
Figure 1	Construction Equipment Numbers Procured in Past by C&W D. -----	2 - 5
Figure 2	Location Map (Circle)-----	3 - 3
Figure 3	Cross Section of Provincial Roads (by C&W D.) -----	3-11

Chapter 1

Introduction

CHAPTER 1 INTRODUCTION

The purpose of this Project is to procure equipment for Road Construction. Improved road conditions will provide a modification to the social and economical conditions of the Islamic Republic of Pakistan (Pakistan) and level up the people's life in the North West Frontier Province (NWFP).

The Government of Pakistan made a request to the Japanese Government in 1989 for a Japanese Grant Aid to promote this Project in NWFP.

The purpose of this study is to conduct the basic design to confirm the feasibility of this project and to establish a suitable scheme for co-operation by the request of Grant Aid Project from the Government of Pakistan.

The Japanese Government has decided to conduct a feasibility study on the Grant Aid Project. To conduct the basic design study, Japan International Cooperation Agency (JICA) sent a study team headed by Mr. S. Matsumoto, Japan Highway Public Corporation, to Pakistan from August 24 to September 13, 1992 and exchanged the Minutes of Discussions with the Government of Pakistan after the study and discussions in Pakistan.

JICA sent the team again from November 24 to December 4 to confirm of the draft report.

The list of members and the schedule of the study team is attached at the end of this report with a copy of the Minutes of Discussions and the list of the related agencies of the Government of NWFP and the Government of Pakistan. (Appendix 1 to 4)

A basic design study team has conducted hearings with officers of the Government of Pakistan and the Government of NWFP about the current status of road construction, road improvements, working conditions of the road construction equipment and the status of their maintenance.

The team also discussed and collected documents and data to confirm the contents of the request. The items conducted by the basic design study team are summarized as follows:

- The 5 Year Plan as the back ground of the Request.
- The current status of road construction and the future plan of road construction.
- The selection of necessary equipment based on the Request.
- The division of the equipment between the various districts.
- The procurement schedule.
- Future procurement methods for short listed equipment.

- The maintenance and management conditions of the current status of the existing equipment.
- The budget and systems for maintenance and management of the equipment.
- The relationship with the construction machinery training centre (CMTC) conducted by JICA.
- The Study of the Minutes of Discussions.
- The technical study of the co-operation by the Grand Aid.

Chapter 2

The Project

CHAPTER 2 THE PROJECT

2.1 Background to the Project

Main industries in the North West Frontier Province (NWFP) are agriculture and mining.

The production ratio for both to the total was more than 35% in 1990 and about 60% of the population are estimated to be engaged in these two industries.

Light manufacturing industries, food industries and textile industries are located near the capital of Peshawar and along Route 5.

As yet heavy industries are not well developed.

The government of NWFP aims to step up the province's economic base, from first industry (agriculture and mining) to second industry, mainly in the private sector.

It becomes more important to expand the transportation network, by such as new road construction and by road improvements.

Road transportation is estimated to be more than 85% for both passengers and cargo of the total transportation volume in the Province, and it is estimated that this ratio will increase rapidly.

Passenger transport is conducted by both the public sector and the private sector. Public agencies for road transportation in NWFP provide services both within the city and for inter-city connections. Public bus transportation ratio is only 15% and almost all other passenger transportation is conducted by the private sector. Passenger services by the private sector includes buses, taxis, motor rikshaw, and coach. There are big buses for 70 passengers and small buses for 15-30 passengers.

Cargo transportation is carried by the public sector (5%) and the remaining by private sector using trucks, pickups and wagons.

Roads in NWFP are divided into 4 categories, National Roads, Provincial Roads, District Roads and Municipal Roads as shown in Table 1.

Table 1 Road Length in NWFP

				(kms)
Definition	Controlled by	Paved	Unpaved	Total
National Road	NHB	842	0	842
Provincial	C & W D.	5,788	3,239	9,027
Provincial	FATA	1,914	1,655	3,569
District	DC	668	7,622	8,290
Municipal	MC	668	199	867
Total		9,880	12,715	22,595

Source : Transport Statistics 1991

National Roads (842 km) in NWFP are controlled by the National Highway Board (NHB) of the Federal Government of Pakistan.

N-5 (Attock - Torkham) has 127 km in the province.

N-35 (Karakoram Highway) is 176 km.

N-50 (Quetta - D.I.Khan) is 143 km.

N-55 (Indus Highway) is 396 km.

Provincial Roads (9,027 km) are managed by the Communication and Works Department (C&W D.) which is in charge of the construction and maintenance of provincial roads in NWFP. Other 3,569 km of provincial roads in the Federally Administered Tribal Areas (FATA) are also under the control of C&W D., but the actual management is performed by each independent tribe.

Road density of 0.12 km per 1 square kilometres is less than the Pakistan average of 0.18 km/km², and the paved road density is 0.077 km/km².

District Roads (8,290 km) are managed by District Councils (DC) and most of them are not paved as is shown in Table 1.

Municipal Roads (867 km) are controlled by the Municipal Councils (MC), such as Peshawar, Norshera and Abbotabad. They have their own equipment and asphalt plants.

According to the Data in 1991, Table 2, by National Transport Research Centre, road widths less than 12 ft (3.6 m) represent 55% of total paved roads in the province, and most of them have surface treatment (black carpet). Damage to these roads in the rainy seasons is frequent as are long term interruptions to the road.

Table 2 Road Length in NWFP for Years 81 - 91

												(kms)
Year	Low Type			High Type								Grand Total
	ERTH	GRVL	Total	-12'	12-18'	18-24'	24-36'	36-48'	D.V.	48'- U.D.	Total	
81-82	2,947	4,764	7,711	1,809	504	951	67	57	3	4	3,395	11,106
82-83	3,046	5,077	8,123	1,874	494	994	67	56	4	4	3,493	11,616
83-84	3,799	6,382	10,181	2,485	607	1,276	275	41	22	4	4,710	14,891
84-85	3,828	6,809	10,637	2,746	718	1,358	275	42	24	4	5,167	15,804
85-86	3,862	6,913	10,775	3,126	746	1,488	285	85	33	4	5,767	16,542
86-87	3,884	6,894	10,778	3,404	779	1,592	291	84	34	4	6,188	16,966
87-88	4,057	7,205	11,262	3,383	829	1,707	311	99	46	4	6,379	17,641
88-89	4,168	7,011	11,179	4,196	984	1,934	319	114	29	4	7,580	18,759
89-90	4,310	7,295	11,605	4,339	994	1,979	323	114	29	4	7,782	19,387
90-91	4,927	7,724	12,651	4,477	1,204	2,033	330	117	29	4	8,194	20,945
				55%	15%	25%	4%	1.4%			100%	

Source : Computer output by Transport Statistics, 1991

Registered numbers of vehicles in the Province was about 220 thousand in 1991 and is increasing at a remarkably fast pace.

The recent rapid increasing of the numbers of vehicles is shown in Table 3 suggesting the important role of road transportation in the development plans for the industrialization of the Province.

Table 3 Vehicle Numbers in NWFP

(million)						
1985	1986	1987	1988	1989	1990	1991
111	133	145	163	181	197	217

Source : Transport Statistics, 1991

The delay of road construction and maintenance programme against this rapid increase in traffic volumes is becoming one of the main causes of the increase in traffic accidents. Table 4 shows the numbers of traffic accidents in the past five years.

Table 4 Traffic Accidents in NWFP

	1985	1986	1987	1988	1989	1990
accident	4824	2832	2658	2432	4642	4452
dead	807	689	650	686	826	732

Source : Transport Statistics, 1991

The following road construction and improvement plans were decided to be carried out during the Seventh Five Year Plan (1988-93);

New Road Construction	999 km
Road Improvement	2,017 km

But the completion of the plan in 1993 is estimated to be 57% for new construction and 44% for improvement as shown in Table 5 due to the following reasons:

- lack of equipment.
- many old and inefficient equipment.
- lack of budget due to restoration, work after natural disasters.

Table 5 Road Programme in Seventh Five Year Plan (1988-93)

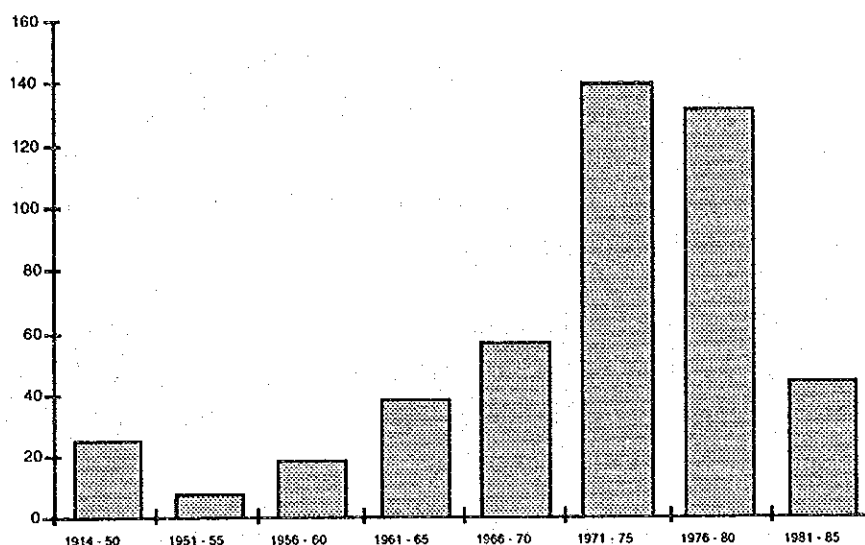
	Expected	Completed	Remaining	Completion ratio (kms)
Improvement				
Primary Road	601	249	352	41%.
Secondary	1,056	502	554	48%.
Feeder Road	360	127	232	35%.
Subtotal	2,017	878	1,138	44%.
New Construction				
Primary Road	150	32	118	21%.
Secondary	328	187	141	57%.
Feeder Road	521	347	174	67%.
Subtotal	999	566	433	57%.
Total	3,016	1,444	1,571	

Source: C&W D.

C&W D. had 629 items of road construction equipment in 1991, and 58% of them are considered to be in a workable condition as shown in appendix 6. The main reasons of low operation are:

- a) most of these equipment were procured in the 70's as shown in Fig. 1, and have already exceeded their working life.
- b) lack of maintenance facilities for the equipment.
- c) lack of maintenance technology due to delays in mechanization.

Fig. 1 Construction Equipment Numbers Procured in Past by C&W D.



Source : Equipment list of C&W D.

The Eighth Five Year Plan (1993-98), still in the draft stage, plans for 3,261 km or road works as shown in Table 6, although it is not yet clear whether this volume of works includes the balance from the 7th 5 year plan. The total volume of the works to be performed by C&W D. up to 1998 are estimated at about three times that of the Seventh Five Year Plan. This is a very severe target for the C&W D..

Table 6 Road Programme in Eighth Five Year Plan (1993-98)

	(kms)		
	Remaining	Eighth Five Year Plan	Total
Improvement	1,138	1,758	2,896
New Construction	433	1,503	1,936
Total	1,571	3,261	4,832

Source: C&W D.

The mechanization of road construction is an important matter to achieve efficient road construction and to recover the delays in the road programme.

Therefore, the procurement of new equipment will give a higher standard of efficiency for the works of C&W D..

2.2 Outline of the Request

Pakistan established the Seventh Five Year plan (1988-93) to achieve the strengthening of the infrastructure for industry and social fairness after experiencing various kinds of changes in the social systems. These systems included socialist economic control, stagnation of private economic dynamism, and included the effects of the oil shock and the independence of Bangladesh in 1971.

The Government of NWFP has established a plan to carry out 999 km of new road construction and 2,017 km of road improvements between 1988 and 1993 based on the Seventh Five Year Plan. This target was to improve the people's life and area development of the province.

C&W D. are planning 1,503 km of new roads and 1,758 km of improvements during the Eighth Five Year Plan (1993-1998). This is difficult considering the present condition of available equipment.

For these circumstances, the Government of Pakistan has requested the Japanese Government to provide a Grant Aid for the procurement of road construction equipment for NWFP in 1989.

The contents of request are:

Item		Qty
Asphalt Plant	40-50 t/h	3
Generator	250 KVA	3
Generator	25K VA	3
Asphalt Finisher	14-16'	3
Front End Loader	150 HP	6
Dump Truck	10 T	18
Crawler Tractor	180/200 HP	23
Pay Dozer		23
Motor Grader	110/130 HP	6
Vibratory Roller		30
Bitumen Distributor	4000 Lit.	4
Mechanical Broom		4
Chip Spreader		4
Road Marking Machine	6	
Mobile Workshop		2
Lubricating Pickup		4
Truck with Crane	5 T	4
Total		146
Add 10% for Spare Parts		

Chapter 3

Outline of the Project

CHAPTER 3 OUTLINE OF THE PROJECT

3.1 Objective

The government of NWFP plans provincial road improvements based on the Seventh Five Year Plan.

But C&W D., which controls provincial roads, cannot enough improve and repair the roads because of the lack of equipment and poor availability of old and inefficient equipment.

It is the objective and purpose of this project to recover and improve the capability of C&W D. for road improvements and repairs, to supply new equipment to bring up to strength and to renew the existing equipment of C&W D..

3.2 Study and Examination on the Request

3.2.1 Propriety and Necessity

The request of Pakistan mentioned that it is proper and necessary to accomplish the Seventh Five Year Plan to give a good effect on achieving the Eighth Five Year Plan.

But it is needed to change the contents of the Request because the Request was made in the first stages of the Seventh Five Year Plan and this year, 1993, is now the last year of the plan.

The study team has changed the necessary equipment in consideration of the current condition of the Seventh Five Year Plan and the condition of the equipment of C&W D..

The study team submitted the draft of changing the equipment and discussed it with the Pakistan Government. The team reached agreeemnt. (refer Appendix 4).

3.2.2 Executing Agency and Operational Structure

(1) Organization of Communication and Works Department

The Study Team confirmed, through the meetings held with the officers of the Government of Pakistan, that the executing agency is to be the Communication and Works Department (C&W D.), NWFP.

C&W D. is in charge of planning, construction, maintenance and management of provincial roads, bridges and public buildings in the province. The head of **C&W D.** is the Minister and actual administrative work is controlled by the Secretary. Under the Secretary, there are three sections headed by the Chief Engineer as shown in Attachment 5. Now 265 Officers and Engineers assist them in the **C&W D.**.

Development Section

Managing of roads, bridges, buildings in **FATA**, Kohat and Bannu.

Superintending Engineer	=	3
Executive Engineer	=	14
Sub-Divisional Officer	=	54

Communication and Works Section

Managing of roads, bridges, buildings and special projects in Peshawar, Mardan, Abbotabad and Malakand.

Superintending Engineer	=	7
Executive Engineer	=	4
Sub-Divisional Officer	=	130

Central Design Office

Designing of roads, bridges, buildings at headquarters.

Project Manager	=	1
Superintending Engineer	=	2
Senior Engineer	=	5
Assistant Engineer	=	16

C&W D. has divided the whole province into six circles as shown in Fig. 2 by considering the topographical conditions and road densities. (Just recently Peshawar was divided into two circles, as Peshawar circle and Mardan circle.)

Each circle's Highway Divisional Office manages the roads, bridges and buildings in the circle under a Executive Engineer (**XEN**).

The provincial roads are managed by **C&W D.**, and new road construction is performed by the private sector through public tender. Almost all the private contractors do not own any road construction equipment, except the "A class" contractors as shown in Table 7.

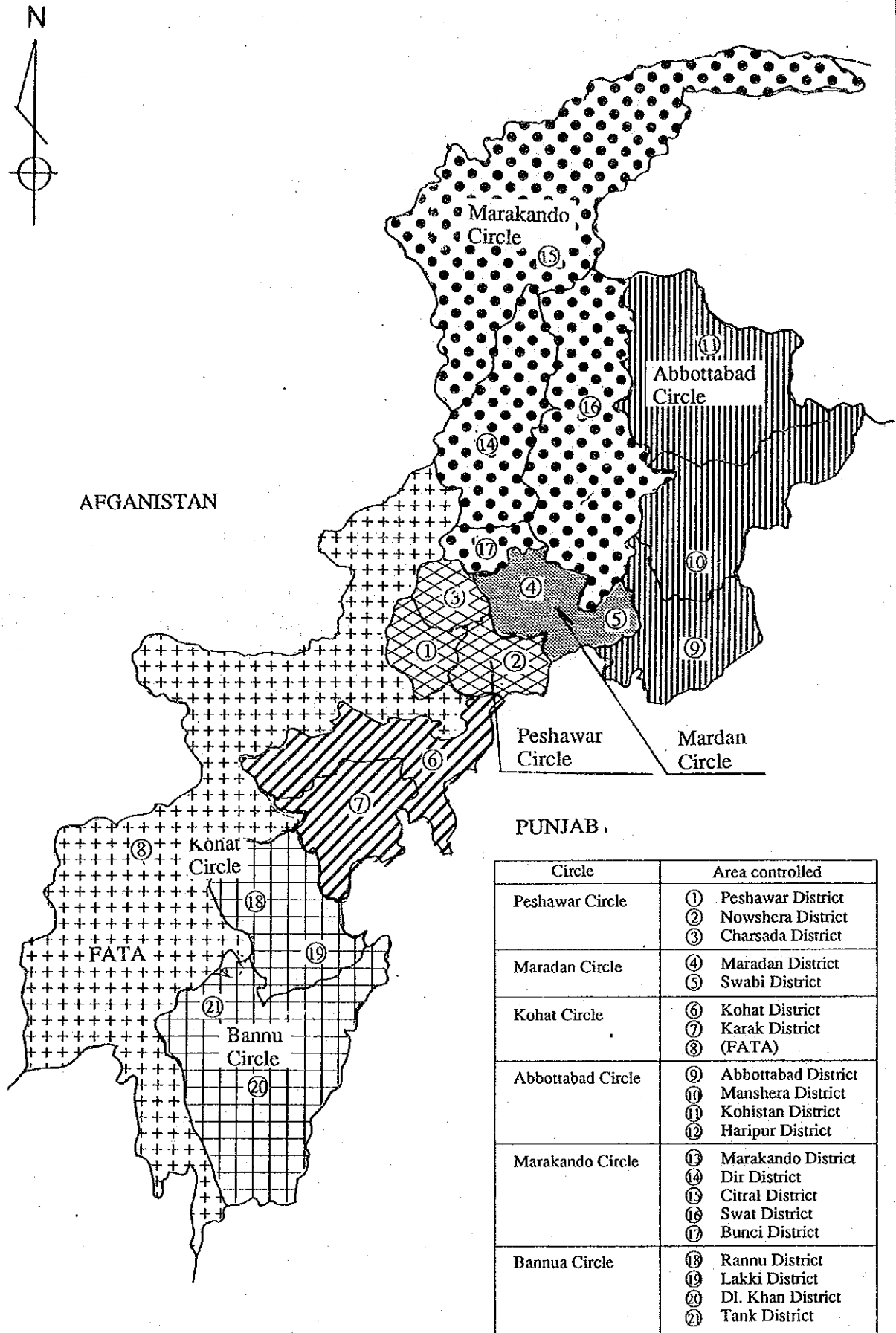
Table 7 Road Equipment possessed by A class Contractors in NWFP

Equipment	Total number
Bull Dozer	6
Road Roller	40
Concrete Mixer	60
Asphalt Plant (10 t/h)	1
Tyre Roller	2
Motor Grader	4
Excavator	2
Asphalt Finisher	1
Total	116

Source : Hearing from **C&W D.**

Necessary equipment will be rented to the successful tenderer with operators. The maintenance and repairs of the equipment will be conducted by **C&W D.** directly in case of short rental period.

Fig. 2 Location Map (Circle)



(2) Organization of maintenance and management of the project

The equipment procured by this project is scheduled to be used for the maintenance of provincial roads, except for FATA areas, under the control of Communication and Works Section and Development Section. The maintenance and management of the equipment will be performed by the three workshops under the Communication and Works Section.

Peshawar Workshop

Maintenance and management of the equipment in Peshawar and Mardan Circle has the function of main maintenance Workshop and Depot yard for NWFP.

Workshop Staff	=	108
Operators	=	82

Abbotabad Workshop

Maintenance and management in Abbotabad Circle.

Workshop Staff	=	30
Operators	=	50

Bannu Workshop

Maintenance and management in Bannu Circle has the function of Production Workshop for Asphalt Kettles and Sprayers for NWFP.

Workshop Staff	=	36
----------------	---	----

(3) Budget of C&W D.

Total expenditures and budget of NWFP and C&W D. since 1987 to 1992 are as shown in Table 8.

Table 8 Expenditures and Budget of NWFP

(Rs 1,000)

Items	Expenditures			Budget			Ratio (1992-93)
	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	
Agriculture	165,288	168,800	172,109	139,000	155,969	175,000	3.88
Forestry	-	-	33,490	43,500	44,700	80,000	4.78
Area Development	337,616	122,380	44,773	148,980	201,705	220,000	4.88
Electric	190,900	169,644	297,859	186,100	206,271	376,000	8.34
Industries	59,688	78,374	81,526	46,105	60,000	66,000	1.46
Mine	41,904	52,328	50,108	22,600	39,000	43,000	0.95
C & W D.	309,160	281,896	412,839	400,686	382,000	442,000	9.81
House City Plan	462,588	644,788	221,623	502,894	549,100	916,000	20.33
Education	483,000	462,512	280,391	609,714	693,700	1,454,000	32.27
Medical	387,000	335,912	550,127	376,467	448,100	666,000	14.78
Culture	15,564	14,348	30,474	16,709	13,100	13,000	0.29
Employment	7,450	11,090	247	11,500	11,700	14,400	0.32
Plan/Development	12,092	22,162	20,303	18,216	33,655	36,600	0.61
Tourism	-	-	-	-	-	4,000	0.09
Environment	-	-	-	-	-	20,000	0.04
Others	-	-	-	203,000	161,000	32,000	0.71
Total	2,472,250	2,164,230	2,195,869	2,725,471	3,000,000	4,540,000	100.00

Source : Planning and Development Dept.,
Annual Development Programme (1991/92)

The budget of C&W D. is about 10 % in 1992 of the total provincial budget and this shows the priority for road maintenance in the Province.

After discussions C&W D. undertook to provide a budget for their share of this project. The share is about Rs. 21 million per year as mentioned later in 3.3.4, and about 4 ~ 5 percent of the budget of C&W D., will be appropriated for this project.

Now is a good time to employ new staff for the project, as there are many good operators of construction equipment who have returned from the Middle East area.

Considering this the C&W D. is able to accomplish the project by providing the necessary budget and employing the necessary staff.

3.2.3 Similar Projects and Assistance from International Agencies

Basic Design Study for 300 bulldozers by **JICA** in the Punjab is on-going for the promotion of agriculture.

Financing from the **ADB** for the procurement of drag-lines for canal construction by **WAPDA** is in-planning.

ADB has provided finance for the project of National Road Phase 1 (1,500 km, completion in 1992). Phase 2 (900 km) is under negotiation.

OECD of Japan is conducting **SAPROF** for 3,000 km of local roads study.(not including **NWFP** - this project). The main subject of the maintenance of roads will be achieved by the procurement of equipment.

Thus there are no similar projects to this procurement project in **NWFP** and Pakistan.

3.2.4 Equipment Requested

The study team agreed with Pakistan about that the contents of the equipment on the request in 1989 which had been changed as mentioned in 3.3.3.

New road construction is conducted mainly by the Private sector through tendering as mentioned in 3.2.2 with road equipment rented from the government .

The equipment procured by this project be used for improvements and repairs to the provincials road conducted directly by **C & W D.**

The completed road length for improvements and repairs under the Seventh Five Year Plan (1988 - 93) is 878 km (44 %), and the final year of the plan will start with 1,138 km remaining, as shown in Table 3.

C & W D. has about 300 units of equipment and half of them are compaction equipment as shown in Appendix 6. Compaction equipment is often used after spreading the aggregate by human power. This construction method is inefficient for speed and quality, but it seems still applicable to the Secondary or Feeder roads considering the current living conditions of the province.

In respect to the requirement of NWFP the study team recommends that the primary earth moving equipment with a short delivery time is shipped first and the more sophisticated finishing equipment, which has a longer delivery time, is shipped later.

The procurement of the equipment has been scheduled based on this policy.

3.2.5 Technical Co-operation

The maintenance and management of the equipment for the project are done under responsibility of each circle.

It is easy to prepare the operators and ground crews of construction equipment.

The study team recommends technical co-operation for maintenance and management of asphalt plant.

3.3 Project Description

3.3.1 Executing Agency and Operational Structure

Executing agency is mentioned in 3.2.2. The Highway Division of each circle will execute the project under the direction and support of the Development Section and the Communication and Works Section of C&W D..

3.3.2 Plan of Operation

The remainder of the works of road maintenance from the Seventh Five Year Plan (1988 - 93), about 1,138 km, is shown in Table 9.

(Detailed circles name and road list are shown in Appendix 8)

Table 9 Uncompleted Road Length of C&W D. by Each Circle

	(kms)
Circle	Uncompleted Road Length
Peshawar, Mardan	76
Kohat	269
Abbotabad	307
Malakand	332
Bannu	154
Total	1,138

These roads have the following problems;

- Collapse of slopes due to insufficient protection
- Flooding in the rainy season due to lack of height of embankment
- Deterioration of base course due to insufficient compaction and quality control
- Damage of the surface due to the volume and weight of traffic
- Damage to road shoulders due to lack of road width

The Government of Pakistan has been endeavouring to procure equipment for the construction and maintenance of roads to solve these problems. But the restrictions due to the lack of road construction equipment and an inadequate budget made it very difficult to achieve the target.

(1) Improvement of Subbase and Base Courses

Amongst the existing 300 pieces of equipment, are there only superannuated 11 Paydozers and 4 Bulldozers for aggregate spreading. C&W D. has been carrying out annually about 200 km improvements to base course by using these old equipment and human power.

The target for this project is, by introducing new equipment, to recover the delay in the early period of the Eighth Five Year Plan.

The necessary aggregate will be procured as follows:

Fine aggregate can be obtained from river beds in good quantities and quality by the private sector.

Course aggregate can also be easily ensured from widely spread stock piled rock or igneous rock in the province. Many private companies are available for this work.

(2) Application of asphalt pavement

Asphalt paving is expected to be performed especially in the northern areas of NWFP. Surface treatment in these cold areas in the winter season is difficult because of low asphalt penetration due to quick cooling. C&W D. has 47 tar heaters with sprayers manufactured in their shops at Bannu, and the surface treatment application on the base course is performed manually.

Completion Ratio of improvements to roads up to 1992 in such northern areas as Abbotabad and Malakand Circle during the Seventh Five Year Plan (1988 - 93) was only 32 % against the total planned length of 339 km.

Two asphalt plants of 40 t/h are set in Abbotabad, and one asphalt plant is in Peshawar. There are no asphalt plants in Malakand Circle. One of two old plants in Abbotabad is planned to be relocated to Peshawar to be put in an efficient working condition under the control of Peshawar Workshop, which has a comparatively high maintenance ability. A new portable asphalt plant of 40 t/h is scheduled to be set up in Abbotabad and Malakand to ensure an overall higher efficiency.

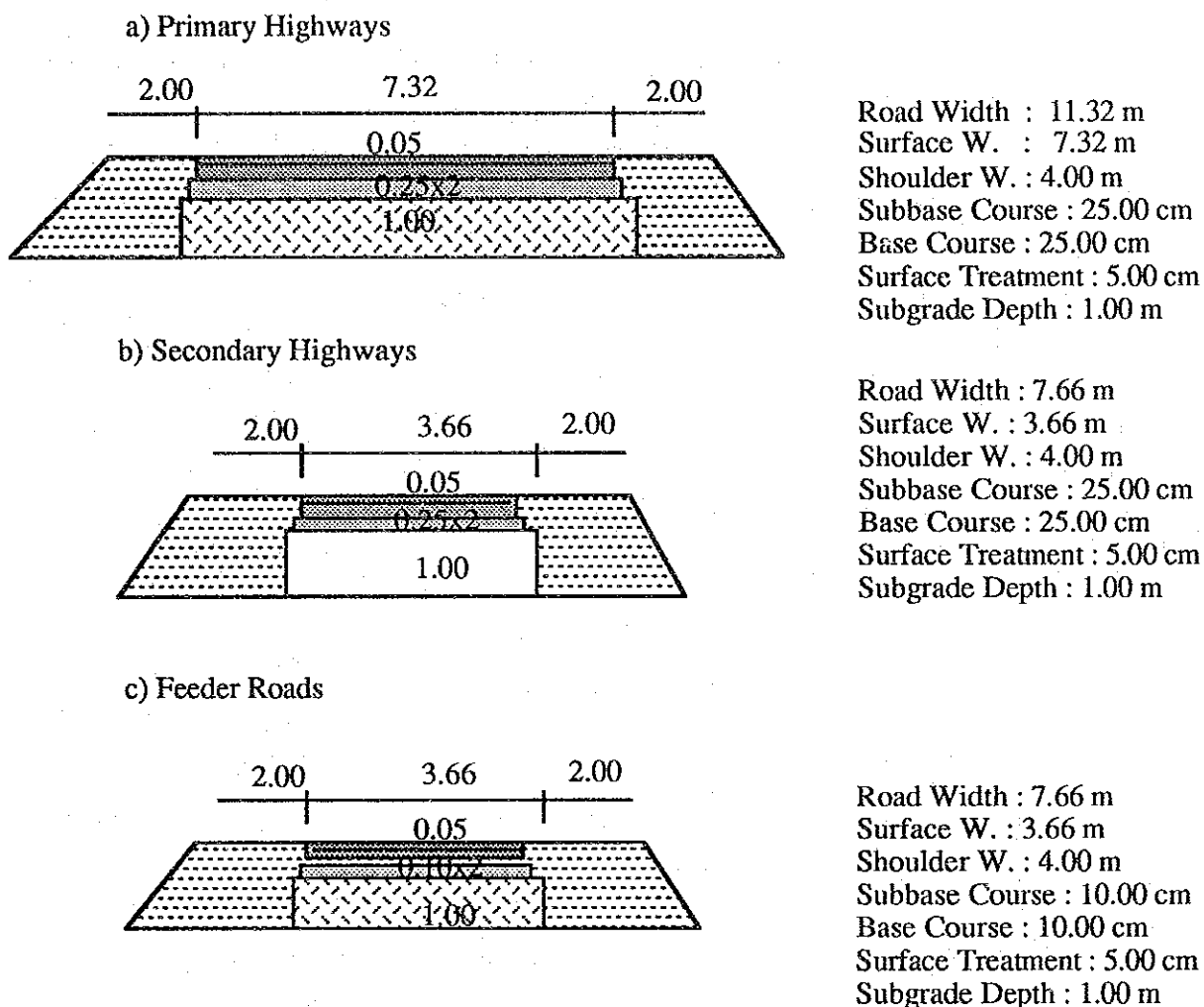
Table 10 Road Pavement in Northern Area in Seventh Five Year Plan
(kms)

	Plan	Completed	Remaining
Abbotabad	111.9	54.0	57.9
Malakand	227.0	54.0	173.0
Total	338.9	108.0	230.9

(3) Total volume of the Works Expected to be Performed

The cross sections of object roads of this project are shown as follows:

Fig. 3 Cross Section of Provincial Roads (by C&W D.)



Based on the above standard, the volumes of work per kilometre are calculated as below:

Table 11 Volumes of Work for Road Improvements
 (m³/km)

	Primary	Secondary	Feeder
subbase course	1,845	950	380
base course	1,830	915	366
surface	366	-	-

The current target of this project is the improvement of 1,138 kms of roads which were not completed in the Seventh Five Year Plan. The breakdown is as follows:

Table 12 Remaining Road Improvement Works in Seventh Five Year Plan
(kms)

	Primary	Secondary	Feeder	Total
Peshawar, Mardan	27	23.5	25.5	76
Kohat	94	152	23.0	269
Abbotabad	58	220	29.0	307
Malakand	173	118.5	40.7	332
Bannu	-	40	114	154
Total	352	554	232.2	1,138

Total volume of the works is as follows:

Table 13 Remaining Work Volume in Road Improvements
(Subbase Course)

	Primary	Secondary	Feeder	Total
Peshawar, Mardan	51	22	10	83
Kohat	176	144	9	329
Abbotabad	108	209	11	328
Malakand	324	112	15	452
Bannu	-	38	43	81
Total	660	526	88	1,274

Table 14 Remaining Work Volume in Road Improvements
(Base Course)

	Primary	Secondary	Feeder	Total
Peshawar, Mardan	49	22	9	80
Kohat	172	139	8	320
Abbotabad	106	221	11	318
Malakand	317	108	15	440
Bannu	-	37	42	78
Total	644	507	85	1,236

Table 15 Remaining Work Volume in Road Improvements
(Surface Course)

		(1,000 m ³)
	Road Length	Total Work Volume
Abbotabad	58	21
Malakand	173	63
Total	231 km	84

3.3.3 Outline of Equipment

The necessary equipment for the project as follows: (details in Chapter 4)

Equipment for subbase and base	1 set for each circle	Total 6 set	= 48 units
	Content of 1 set:		
	Bulldozer	(20 ton)	1
	Wheel loader with blade	(10 ton)	2
	Vibration roller	(10 ton)	4
	Motor grader	(3.7 m)	1
Equipment for pavement	Abbotabad, Malakand each 1 set	Total 2 sets	= 14 units
	Content of 1 set:		
	Asphalt plant	(40 ton/h)	1
	Wheel loader	(1.2 m ³)	1
	Asphalt finisher	(2.5 - 4.5 m)	1
	Pump truck	(8 ton)	4
Equipment for maintenance	1 unit for all circles	Moble workshop	(180 ps) = 1 unit

3.3.4 Maintenance and Management Plan

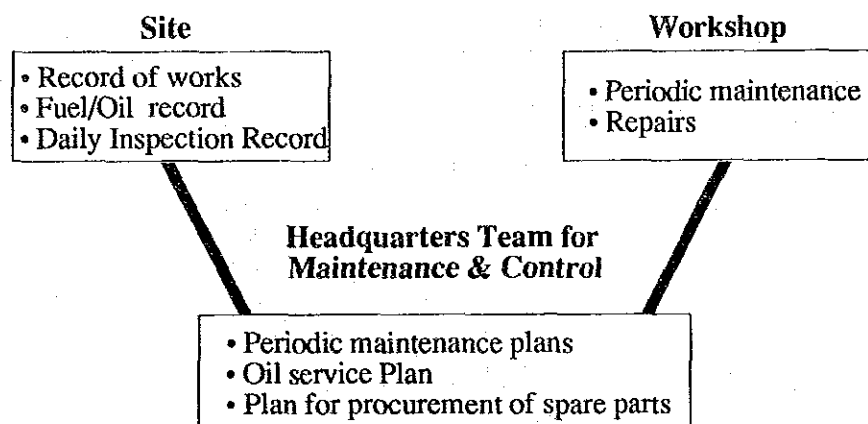
(1) Maintenance and Management System

Maintenance and management of the equipment will be principally the task of the chief mechanic of each circle under the direction of an Executive Engineer. But the actual works in each circle will be only visual inspection plus greasing services. Periodic inspection and maintenance by disassembly will be done at the main Workshop in Peshawar.

Subletting to private workshops will be continued in respect to high technology, such as fuel pumps etc.

C&W D. has a plan to relocate this main Peshawar Workshop to a new site (along Peshawar - Nowshera Additional Carriageway beside the existing asphalt plant) to strengthen and improve the shop's capability and capacity. **C&W D.** also considers to perform the field maintenance services by a mobile workshop to be procured under this project. Maintenance & management will be performed based on the current log book method. From the point of preventive maintenance, review of management systems for historic records, record of lubrication service, trouble-shooting, and maintenance services will be required.

Organizations for Maintenance & Management are shown below :



Maintenance for rented equipment to the private sectors or other public offices are carried out by **C&W D.** and the cost is charged in the rental fee in the case of short rental periods. Heavy maintenance over the long term may be handed over to the Renter by a special Contract while light maintenance will be performed by operators from **C&W D.**.

(2) Estimation of Additional Cost for the Procured Equipment

Necessary engineers and workers for the procured equipment are summarized as follows:

Table 16 Expected New Staffs for Maintenance and Management of the Equipment

Staff	Peshawar	Mardan	Kohat	Abbotabad	Malakand	Bannu	Total
Engineer	1	1	1	1	1	1	6
Plant Operator	-	-	-	3	3	-	6
Assistant	-	-	-	6	6	-	12
Operator	8	8	8	10	10	8	52
Assistant	8	8	8	10	10	8	52
Dump Driver	-	-	-	4	4	-	8
Ground Mechanics	4	2	2	2	2	2	14
Assistant	2	1	1	1	1	1	7
Total	23	20	20	37	37	20	157

Recruiting these new staffs will not be difficult as operators and crews which have returned from the Middle and Near East. While it is difficult to ensure plant operators and the training is expected from this project.

Wages for the above engineers, mechanics and labourers are listed below:

Table 17 Wages of the Staffs (1992)

Staff	Number	per man month (Rs)	Total per month (Rs)	Total per year (Rs)
1 Engineer	6	4,000	24,000	288,000
2 Asst. Plant Operator	6	2,104	12,624	151,488
3 Asst. Plant Operator, Assistant	12	1,843	22,116	265,392
4 Machine Operator	52	1,765	91,780	1,101,360
5 Machine Operator, Assistant	52	1,656	86,112	1,033,344
6 Dump Truck Driver	8	1,743	13,944	167,328
7 Ground Crew	14	1,743	24,402	292,824
8 Ground Crew, Assistant	7	1,656	11,592	139,104
Total	157		286,570	3,438,840

Fuel and oil costs for the equipment to be procured are calculated as follows :
(Diesel Oil = Rs.5.7-/L Heavy Oil = Rs.3.7-/L)

Table 18 Fuel Cost

Name	Number	Spec. (Hp)	Fuel/h•unit	Rs/h•unit	Rs/day•unit	Total Rs/day
Bull Dozer	6	180	22	125	750	4,500
Wheel Loader	12	110	11	65	390	4,680
Vibration Roller	24	130	14	81	486	11,664
Motor Grader	6	135	10	55	330	1,980
Asphalt Finisher	2	133	7	42	252	504
Shovel Loader	2	80	8	47	282	564
Dump Truck	8	230	9	51	306	2,448
Mobile Workshop	1	180	7	40	240	240
Generator Plant	2	120	14	80	480	960
Dryer Plant	2	10l/t	332	1,129	6,774	13,548
Kettle Plant	2	70l/t	224	762	4,572	9,144
total						50,224

200 days are assumed to be possible for works in a year, and the annual cost will be Rs.50,224 x 200 day = Rs.10,045,000/Year.

25 % of fuel cost is assumed as the cost for oil, lubricants and grease.

The total cost for fuel will be Rs.12,560,000- per year.

Maintenance and repair costs are assumed to be a few percents of total of equipment cost in the first Years after initial procurement period.

Maintenance and repair costs Rs.4,744,000-

Total of annual maintenance cost:

Wages	Rs.3,440,000-
Fuel/lubricant	Rs.12,560,000-
Maintenance/repair cost	Rs.4,740,000-
Total	Rs.20,740,000-

3.4 Technical Co-operation

As the equipment for subbase and base improvement is ordinary construction equipment, the highway division of each circle can maintain and manage the equipment employing the operators and ground crews who have returned from construction sites in the Middle East. But there are difficulties to employ the engineers and operators of the plant. Technical training by the supplier's engineers will be provided after setting up the plant under the supervision of the Japanese consultant contracted with C&W D..

Chapter 4

Basic Design

CHAPTER 4 BASIC DESIGN

4.1 Design Policy

4.1.1 Natural Conditions of the Area

The North-West Frontier Province (NWFP) is geographically oblong, spreading from north to south giving quite different natural conditions to Malakand and Abbotabad in the north and Bannu in the south.

Annual precipitation in the North-East mountain areas exceeds 500 mm, and that of over 1,000 mm in the monsoon season from July to September.

Although no exact records for earthquakes in this area were obtained, it seems that frequent perceivable earthquakes have hit the area in the past.

Full consideration, therefore, has been concentrated to the design of foundation for the asphalt plants which requires the installation of asphalt plants.

4.1.2 Equipment Requirement

Road maintenance in NWFP still depends on manual power, and mechanization of road construction is far behind that of Punjab Province and Sindh Province.

Therefore, the policy in selecting the proposed equipment has been made to be acceptable by the local capability for maintenance.

Following conditions are assumed for the equipment procurement. Most provincial roads are provided with two-lanes or less and not more than 7 meters in paved width, hence, suspension of traffic and obtaining of detour is quite difficult. Therefore it is required to secure half of traffic lane of paved width. Consideration in the selection of equipment is required so that the total width of road maintenance equipment shall not exceed 3 m.

Road maintenance equipment shall be preferably parked in the C&W D. depot yard, however it is anticipated that equipment will be sometimes parked at roadsides, where these equipment should have lockable steel cabin for security purpose.

4.1.3 Distributors of Construction Equipment

The availability of distributors and the stocks of spare parts is important in selection of manufactures. The distributor's maintenance and heavy repair facilities is also important.

Presently, Japanese equipment has been most popular, and it is recommended to procure Japanese equipment for the project, considering availability of future maintenance and services.

4.1.4 Procurement from Third Countries

The equipment from third countries have no merit compared to those of Japan, considering the performance, price, delivery time and future maintenance and services. So the equipment from third countries does not apply to this project.

4.1.5 Procurement Schedule

Procurement will entail delivery in two shipments to meet the early delivery requirements of **NWFP**. The first delivery will be earth moving equipment. The second shipment will be the finishing equipment that has a longer delivery time from the manufacturer.

4.2 Basic Plan

4.2.1 Selection of Equipment

The equipment procured for this project are not for new road construction projects, but for strengthening the construction capabilities for road maintenance schemes .

Therefore, the current construction methods familiar to **C&W D.** will be applied in order that traditional equipment on hand will be fully utilized.

As for aggregate spreading, the traditional manual spreading method will be incorporated into the scheme, where the provided equipment are used for compaction of aggregates which are difficult to be done by manual labour.

Due to the shortage of paving equipment and very limited budget for road maintenance, construction methods with higher unit cost for pavement will be limited to the northern territory .

Taking the geographical conditions into account, combination of equipment for base course work will be adopted.

Moreover special consideration has been given to the selection of spreading equipment that will be used not only for improvement works but for new construction works and even for urgent rehabilitation works .

Necessary equipment will be the machines for the maintenance and improvement of the provincial road's subbase, base course and surface course. For the selection of equipment, it should be taken into consideration that 70 % of the area of NWFP is in mountainous terrain, hard crushed rock from granite is widely used as aggregate and the experience of the operators for the equipment will be required.

In case of improvement of the subbase course, the following combinations are recommended. These combinations will be applicable to almost all kinds of site conditions and also to the widening of subgrade or strengthening of slopes of such roads.

Bulldozer + Vibration Roller

This combination will be suitable for the compaction of sandy materials which is difficult by normal compactor.

Wheel Loader with blade + Vibration Roller

Mobility to be suitable for the narrow roads in the mountainous areas.

Motor Grader + Vibration Roller

Suitable for repairing and leveling.

Combination with a wheel loader, however, is requested strongly by C&W D. for the frequent of emergency works for removing snow or collapse of slopes onto the roads.

The materials for base course will be treated by manually as the popular construction method in Pakistan, and two kinds of combination are recommended.

Motor Grader + Vibration Roller

Spreading by hand + Existing Roller

For the works of asphalt pavement, the following two combinations will be necessary :

Asphalt plant + Tyre Loader + Dump Truck

Asphalt Finisher + Existing Road Roller

Facilities to be prepared by C&W D. for the Asphalt plant is considered as follows :

Office	5 m ² x 5 men =	25 m ²
Laboratory	10 m ² x 2 men =	10 m ²
Work yard		12 m ²
Stock yard for aggregate		2,934 m ²
Asphalt drum yard		300 m ²
Empty drum yard		300 m ²
Fence		400 m
Entrance Gate		1 place

A mobile work shop will provide the services for maintenance of the above equipment on site.

4.2.2 Main Specifications for Each Equipment

Bulldozer

Considering the road width and transportation by trailer trucks, a 20 ton weight class standard crawler type bulldozer is recommended.

Wheel Loader with Blade

Mobility compensates for the inferior traction force and is suitable for dozing, leveling and loading on narrow roads in the mountainous areas. It should be taken into consideration that the usage of wheel loaders for heavy pushing work of earth or rock will reduce its life.

A 10 ton weight class wheel loader with blade is recommended. A steel operator's cabin and anti-dust construction is necessary because of the environmental conditions.

Motor Grader

The width of the provincial roads is from 7.6 to 11.3 m plus 2 m width of shoulders on both sides. Motor Graders with 3.7 m width blade is suitable for these roads. A scarifier attachment is essential for breaking-up of surfaces.

A steel operator's cabin and anti-dust construction is recommended.

Vibration Roller

It is the popular practice to mound up the subgrade in hard rock which is widely available in almost all areas. Vibration roller is more suitable than a macadam roller or tire roller in these conditions. Combined type of roller should be selected to obtain the deep compaction and fine finishing of the surface.

To apply for 7.6 ~ 11.3 m road width, and 2 m road shoulder, a 10 ton weight class vibration roller with 2 m roller width is recommended.

A steel operator's cabin and anti-dust construction is recommended.

Asphalt Plant

C&W D. has only 3 asphalt plants. The mobile plant is expected to relocate from site to site with the work load of each district. The capacity of the plant is decided as 40 tons/h, to get a maximum efficiency from the work. This capacity is the same as existing asphalt plants.

A generator is an essential attachment for the plant because of lack of availability at the site or unreliability of the public electricity supply.

Asphalt Finisher

Considering the road width of the provincial road from 7.6 to 11.3 m, the width of the finisher is selected as 2.5 m to be expandable up to 4.5 m.

A crawler type is selected because of the poor site conditions.

Wheel Loader

This is used at the asphalt plant site to supply aggregate to the cold hopper or for cleaning the site. The width of the bucket is decided considering the width of the cold hopper (about 2.5 m). A steel operator's cabin and anti-dust construction is necessary.

Dump Truck

A capacity of 8 tons was selected considering road conditions in the province and the loading time of the hot mixture at the plant. 16 minute turn-around time for one truck is the basis of estimation. In case of long distance carriage, trucks from the private sector will be available.

Mobile Workshop

Important factor of this project is the preventive maintenance for the equipment. The mobile workshop will contribute greatly for this purpose utilising the tools and maintenance facilities installed on the vehicle.

4 x 4 drive vehicle will be useful to provide the facility services at the construction site.

4.2.3 Specification List for Each Equipment

Bulldozer

Operation Weight	:	20 Ton
Engine	:	180 HP
Crawler width	:	550 mm
Attachment	:	Straight Tilt Dozer Steel Operator's Cabin

Wheel Loader with Blade

Operation Weight	:	10 Ton
Engine	:	110 HP
Bucket	:	1.5 M3
Blade width	:	3.5 m
Attachment	:	Angle Blade Steel Operator's Cabin

Motor Grader

Operation Weight	:	10 Ton
Engine	:	135 HP
Blade width	:	3.7 m
Attachment	:	3.7 m Blade & Scarifier Steel Operator's Cabin

Vibration Roller

Operation Weight	:	10 Ton
Engine	:	130 HP
Compaction width	:	2.0 m
Vibration Power	:	20 ton
Wheel	:	Front Steel and Rear Rubber Tyre
Attachment	:	Steel Operator's Cabin

Asphalt Plant

Type	:	Portable, Automatic, Batch type
Capacity	:	40 T/H
One Batch	:	500 KG
Dryer	:	Cylinder Type
Cold Hopper	:	4M3 x 4 units
Asphalt Tank	:	2 x 7000 litter
Generator	:	100 KWH

Wheel Loader

Operation Weight	:	8 ton
Engine	:	80 HP
Bucket	:	1.2M3
Attachment	:	Steel Operator's Cabin

Asphalt Finisher

Kind	:	Self Propelled, Crawler Type
Paving Width	:	2.5 - 4.5 m
Paving Thickness	:	10 - 500 mm
Hopper	:	10 ton
Engine	:	50 HP
Drive	:	Hydraulic
Screed Heater Burner	:	by Light Oil

Dump Truck

Gross Vehicle Weight	:	16 Ton
Load Capacity	:	8 ton
Engine	:	230 HP
Drive	:	4 x 2

Mobile Workshop

Gross Vehicle Weight	:	15 Ton
Engine	:	180 HP
Drive	:	4 x 4
Crane	:	3 ton
Factory Van Room Length	:	4 m
Attachment	:	Generator, 10 - 20 KW Welding Unit, Bench Drill Press, One set of tools.

4.2.4 Output of Each Equipment Combination

The output for each combination is based on considering the site conditions and Data of Ministry of Construction, Japan as follows;

Table 19 Output of Equipment Combinations

	per hour	per day	per year
Subbase course			
Bulldozer + Vibration Roller	19 m ³	114 m ³ /d	22,800 m ³ /y
Tyre Loader + Vibration Roller	19 m ³	114 m ³ /d	22,800 m ³ /y
Base course			
Motor Grader + Vibration Roller	21 m ³	126 m ³ /d	25,200 m ³ /y
Spreading by hand + existing Roller	1.3m ³	25/20 men	500,000 m ³ /y
(Annually 500 km (=500,000 m ³) have been performed in the past by hand)			
Asphalt Pavement			
Asphalt Plant + Wheel Loader + Dump Truck	10 m ³	60 m ³ /d	12,000 m ³ /y
Asphalt Finisher + existing Roller			

4.2.5 Necessary Numbers of Each Combination

The study team assumed the following conditions for calculating the necessary numbers of equipment.

1. Total volume of works as the target are the remaining works of the 7th 5 Year plan as shown in Table 13 to Table 15.

2. Above works should be recovered within a few years to recover the delay in the national plan.
3. Procured equipment will be delivered equally to 6 circles at first except for paving and service equipment. Although the remaining works of the Seventh Five Year Plan are not same in each district, NWFP government is desirous to dispatch to all circles to encourage progress, and the equipment will be re-arranged later according to the actual progress of each district.

Subbase:

Annual target for one circle is ; $1,274,000 \text{ m}^3/6\text{c}/3\text{y} = 70,000 \text{ m}^3/\text{years}$

One set of three kinds of equipment as mentioned in 4.3.1 is adequate for the above request. The wheel loader is requested to be dispatched as soon as possible by C&W D. due to its wide availability for removing snow or collapsed slopes in emergencies. One set of bulldozer plus two sets of wheel loaders are to be delivered to each circle.

Base Course:

Total volume of works to be recovered within a few years is $1,235,000 \text{ m}^3$ as mentioned in Table 14.

Among them $592,000 \text{ m}^3 (= 506,700 + 85,000)$ is for secondary and feeder roads. These works should be done by utilizing more than 200 existing rollers. Output will be about $500,000 \text{ m}^3$ per year as mentioned in 4.2.4, and it will be completed in about one year.

Primary roads, which will need to be more better smooth, is expected to be carried out by the combination of motor grader and vibration roller. Annual target volume for one circle is $644,000/6 \text{ c}/3 \text{ y} = 35,000 \text{ m}^3/\text{year}$, while the capacity of one fleet will be $25,200 \text{ m}^3/\text{year}$. It seems that one combination is not adequate for one circle, but the surplus equipment from secondary and feeder roads will compensate for these gaps, and the overall delay will be recovered by the middle of the Eighth Five Year Plan.

Asphalt Pavement:

The total volume of the works in the two northern circles are 85,000m³. The annual target will be 85,000/2 circles/3 years = 14,000m³.

Capacity of one fleet of paving equipment will be 12,000m³ and the balance will be compensated by the existing equipment in both circles.

Mobile Workshop:

One vehicle will be supplied and will contribute to the total maintenance service of C&W D. based on the detailed schedule.

Recommended total numbers of the equipment by this project is summarised as:

Bulldozer + Vibration Roller	one set for one circle	total 6 set
Wheel Loader + Vibration Roller	two sets for one circle	total 12 set
Motor Grader + Vib. Roller	one set for one circle	total 6 set
Asphalt Plant		total 2
Finisher		total 2
Wheel Loader		total 2
Dump Truck	4 for one plant	total 8
Mobile workshop	for site maintenance of the equipment	total 1

4.3 Procurement Plan

4.3.1 Policy

The necessary equipment for this project are not manufactured in Pakistan. 61 items of equipment and 2 sets of asphalt plants are expected to be delivered to each circle after arrival. The delay in the procurement of some equipment is feared to affect the total delay. It is recommended to procure the entire set of equipment from one country. The majority of them are available from Japan and the procurement for this project is recommended to be imported from Japan considering the availability of future maintenance and services.

The study team assumed that all equipment should be imported from Japan, and landed at Karachi Port. After custom clearance at Karachi, the equipment should be transported to Peshawar by road.

Arrived equipment will be handed over to **C&W D.** at Peshawar after confirmation of delivery of spare parts. The installment of attachments will be performed by the **C&W D.**. Training will be given by the supplier in Peshawar.

Asphalt plant should be transported directly to Abbotabad and Swat to be set up by the supplier. Training is expected to be given at site together with the engineers of the existing plants.

The availability of spare parts is not so good in the present status and it takes about three months after ordering through the private companies.

It is recommended to attach the necessary spare parts to the equipment procured by this project.

4.3.2 Management for the Procurement

The Japanese consultant contracted with **C&W D.** manages from the procurement to the supervision of inspection of the equipment delivered.

The training is done by the engineers of the suppliers under the supervision of the consultant.

The depot area of the delivered equipment will be three existing workshops and existing depots of the each circle. Three workshops also have functions for repairing the equipment.

Delivered equipment to each Circle will be managed by each circle in the first stage, and the future re-arrangement is expected by the difference of the volume of works of each circle.

Asphalt plant should be assembled first at the public area of **C&W D.** in Abbotabad and Swat. This mobile plant will be relocated in future according to the work requirements of each circle.

The detailed design by the Japanese consultant contracted with **C&W D.** will be conducted after signing of Exchange Notes by both Governments.

Table 20 Procurement Plan

First Shipping --- 48 items of Equipment for Subbase and Base Course improvement

Bulldozer	6
Wheel Loader with Blade	12
Vibration roller	24
Motor Grader	6
Total	48

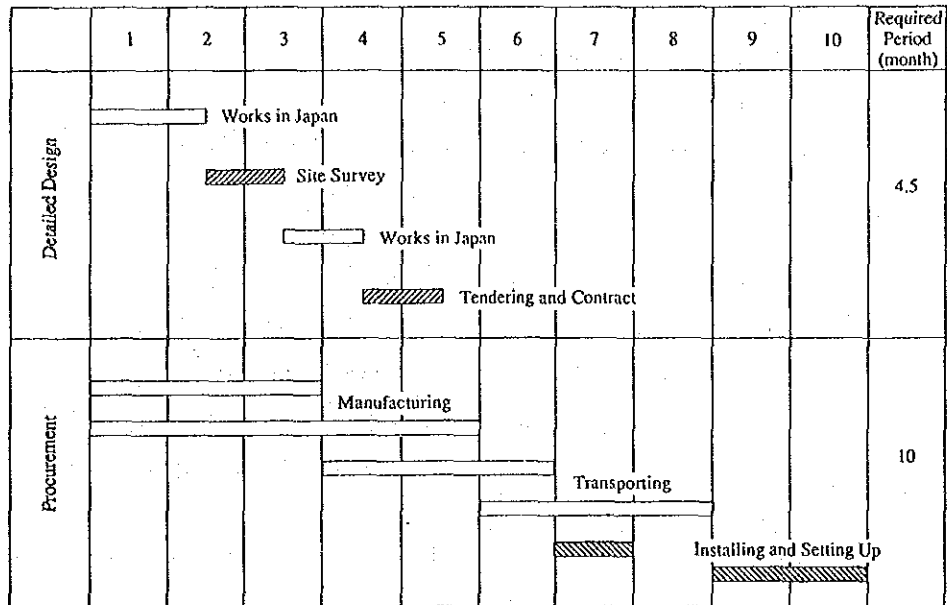
Second Shipping --- 15 items of Equipment for Pavement and Maintenance

Asphalt Plant	2
Wheel Loader	2
Asphalt Finisher	2
Dump Truck	8
Mobile work shop	1
Total	15

4.3.3 Implementation Schedule

The period for the detailed design including site survey, study in Japan and confirmation with the authorities for preparation of tendering and contract document is estimated to require minimum 4.5 months. Actual implementation will be done after verification of the contract with the successful Tenderer. The procurement of 63 units of equipment and plant will be carried out in two stages. The period is estimated to take a minimum of 10 months.

Table 21 Implementation Schedule



4.3.4 Necessary Measures to be taken by Both Countries

Japanese Side

Procurement of Equipment

Bulldozer	6
Wheel Loader with Blade	12
Vibration roller	24
Motor Grader	6
Asphalt Plant	2
Wheel Loader	2
Asphalt Finisher	2
Dump Truck	8
Mobile work shop	1

Total 63

- Shipping from Japan to Karachi, handling at Japanese port and Karachi Port
- Inland transportation from Karachi to Peshawar
- Installation of Asphalt Plant
- Initial Training for Equipment

Pakistan side

- Secure Depot for equipment
- Secure Land for Asphalt plant
- Clearing and Leveling of the land
- Provision of necessary facilities of the Asphalt Plant
- Construction of Access Road to the land
- Expenses necessary for banking arrangements
- Expenses necessary for permission of plan installation
- Necessary import taxes and assistance in customs clearance.
- Assistance for the application to the relevant authorities for banking facilities, customs clearance, inland transportation, installation of plant.
- Approval of Japanese Nationals for the procurement, services and training specified in the contract
- Bear the cost of obtaining the staff necessary for the maintenance and management of the equipment
- Bear all other expenses except the Grant Aid

Chapter 5

Effect of Project and Conclusion

CHAPTER 5 EFFECT OF PROJECT AND CONCLUSION

5.1 Effect of this Project

NWFP is a mountainous and hilly province divided by many valleys and rivers. The development of the province is sagging behind other provinces. Rapid progress of road transportation since the 60's requires the rehabilitation and new construction of roads. But the road standard is not sufficient in width, surface and bridges. Missing links in road networks and the poor access to remoter parts are still a problem. Transportation of cargo and passengers by road will be more than 85 % and this ratio is estimated to increase by the rise in demand in volume and trip length. The Seventh Five Year Plan (1988 - 93) was scheduled to improve 2,017 kms of road, but only 44 % (878 km) was achieved. Remaining 1,138 km road improvements is supposed to be transferred to the Eighth Five Year Plan. The delay of such schedule is feared to affect to the development of the Province and Pakistan. The procurement of the equipment and asphalt plant by this project will give the possibility for recovering such delay, and could obtain high investment effects.

Following effects are also expected from this project;

1. Modification of life of the people by the improvement of the roads will ensure the stability of their livelihood.
2. Cost reduction for the road maintenance by **C&W D.** is expected.
3. Transition of construction from manual to mechanical methods will be carried out urgently and the quality is expected to be improved.
4. Opportunity of employment will increase and demand will be generated.
5. Up-grading up of operators is expected.

5.2 Conclusion

This project will contribute to a stable life of the people with many big positive effects. This project is considered to be suitable as a Grant Aid Project. The maintenance system proposed in this report will be conducted by **C&W D.** without any problems.

It is expected that this significant project will be implemented at the earliest possible opportunity.

Appendixes

List of Appendixes

Appendix	Description	Page
Appendix 1-1	Time Schedule of the Site Survey-----	A1
Appendix 1-2	Time Schedule of Explanation of Draft Report -----	A2
Appendix 2	Name List of Study Team-----	A3
Appendix 3	List of the Persons Concerned in Pakistan -----	A4
Appendix 4-1	Minutes of Discussions --Site Survey -----	A5
Appendix 4-2	Minutes of Discussions -Draft Report Explanation -----	A9
Appendix 5.	Organization Chart of C &W D., NWFP -----	A11
Appendix 6.	Existing Equipment List of C &W D. -----	A12
Appendix 7.	Country Data of NWFP-----	A13
Appendix 8.	Road Inventories of Seventh Five Year Plan -----	A15
Appendix 9.	Road Inventories of Eighth Five Year Plan -----	A25
Appendix 10	Related Articles of Newspapers in Pakistan -----	A39

Appendix 1-1 Time Schedule of the Site Survey

92.8.24 Mon	10:00 Departure Narita 19:00 Arrival Islamabad
92.8.25 Tue	10:00 Visiting JICA Office (Mr.Ishibashi&Mr.Yoshimura) 11:30 Visiting EOJ(Mr.Murase). 12:30 Courtesy call Economical planning division
92.8.26 Wed	Move from Islamabad to Peshawar Courtesy call Secretary of P &D Dep.
92.8.27 Thu.	Explanation of Inception Report and System of Grant at the office of Superintending Engineer of C&W Div.
92.8.28 Fri	Inspection of road condition and plant area of Malakand and Swat
92.8.29 Sat.	Peshawar Workshop, Asphalt Plant, Road construction Site and Dry port inspection
92.8.30 Sun	Answer for the questionnaire . from Superintending Engineer of C&W Div.
92.8.31 Mon	Discussion about the requested equipment at the office of Superintending Engineer of C&W Div.
92.9.01 Tue.	Courtesy call Chief Engineer of C&W Div.. Mr.Matsumoto&Nakano to Islamabad
92.9.02 Wed	Discussion with Executive Engineer of Peshawar Circle
92.9.03 Thu.	Mr.Iwata arrived Peshawar Discussion at Peshawar Workshop
92.9.04 Fri.	Inspection of Khyber District
92.9.05 Sat.	Visiting Superintending Engineer of C&W Div.. Mr.Kaneda to Islamabad.
92.9.06 Sun.	Study of the collected data.
92.9.07 Mon	Inspection of Bannu Workshop
92.9.08 Tue.	Inspection and discussion at Private Workshops
92.9.09 Wed	Visiting Executive Engineer of Peshawar Circle
92.9.10 Thu.	Visiting Superintending Engineer of C&W Div.
92.9.11 Fri.	from Peshawar to Islamabad
92.9.12 Sat.	Report to JICA office Visiting National research center
92.9.13 Sun.	Back to Japan through Beijin.

Appendix 1-2 Time Schedule of Explanation of Draft Report

92.11.23 Mon 12:00 Departure Narita 20:45 Arrival Islamabad

92.11.24 Tue 10:00 Meeting at JICA Pakistan
with Mr.Ishibashi, Mr.Iwasaki
11:30 Courtesy call to the Embassy of Japan Mr. Murase
12:30 Courtesy call to Economic Affairs Division
Mr.Faizur Rahman, Section Officer

92.11.25 Wed Departure to Abbotabad & Meeting at Highway Circle
Mr.Munir Hussain, Sub.Divisional Officer
Mr.Jahnzeb, Highway Machinery Sub.Divisional Officer
Departure to Peshawar & arrival to Peshawar

92.11.26 Thu Courtesy call -Planning & Development Department, NWFP
Mr. Khalid Aziz, Add. Chief Secretary, Civil Secretariat
Mr.Inamullah Khan, Additional Secretary
Mr.Mohammad Bashir Khan, Research Officer (F.Aid)
Courtesy call -Communication& Works Department,NWFP
Mr. Adam Khan, Secretary, C&W Department
Mr. Afzal Khan, Chief Engineer, C&W Department

92.11.27 Fri. Inspection of Dir District

92.11.28 Sat. Join of Mr. Jilani from JICA Pakistan
Meeting with C&W Department
Mr. Afzal Khan, Chief Engineer, C&W Department
Mr. Sardar,
Mr. Mozawfur,

92.11.29 Sun ditto
Report to P&D Department
Mr. Mohammad Saleem Khan, Secretary, P&D Dep.

92.11.30 Mon Signing of the Minutes of Meeting at C&W Department
Departure to Islamabad

92.12.01 Tue Report to JICA Pakistan Office,
Mr.Ishibashi, Mr.Iwasaki
Report to Economic Affairs Division
Mr. Akhtar Iqbal, Deputy Secretary

92.12.02 Wed 12:35 Departure to Karachi 14:30 Arrival

92.12.03 Thu. 11:30 Departure to Bangkok 18:15 Arrival

92.12.04 Fri. 11:15 Departure to Narita 18:40 Arrival

Appendix 2 Name List of Study Team

Shinobu Matsumoto	Japan Highway Public Corporation Basic Design Study Team Leader
Katsuichi Nakano	Department Foreign Affairs Grand Aid Plan Basic Design Work
Koki Kaneda	Pacific Consultants International Chief of Work
Kozo Ishizaka	Pacific Consultants International Machine Arrangement Plan
Fumio Iwata	Pacific Consultants International Machine Maintenance, Management Plan and Cost Estimation

Appendix 3 List of the Persons Concerned in Pakistan

Japan side

Mr. Murase	First Secretary The Japanese Embassy of Islamic Republic of Pakistan
Mr. Ishibashi	Deputy Resident Representative JICA Office in Islamic Republic of Pakistan
Mr. Yoshimura	Assistant for Resident Representative JICA Office in Islamic Republic of Pakistan
Mr. Iwasaki	Assistant for Resident Representative JICA Office in Islamic Republic of Pakistan
Mr. Nakajima	Assistant for Resident Representative JICA Office in Islamic Republic of Pakistan
Mr. Takahashi	Assistant for Resident Representative JICA Office in Islamic Republic of Pakistan

Islamic Republic of Pakistan side

Mr. A. S.Huda	Joint Secretary Economic Affairs Division. Government of Pakistan
Mr.Faizur Rahman	Section Officer Economic Affairs Division.
Mr. Khalid Aziz	Additional Chief Secretary Planning & Development Department.Government of NWFP
Mr. Abdul Qayyum	Deputy Secretary Communication and Work Department Government of NWFP
Mr. Adam Khan	Secretary Communication and Work Department Government of NWFP
Mr. Afzal Khan	Chief Engineer Communication and Work Department Government of NWFP
Mr. Hazard Sultan	Superintendent Engineer Highway Circle Peshawar
Mr. Amir Kamal	Executive Engineer Highway Division Swat

Appendix 4-1 Minutes of Discussions --Site Survey

MINUTES OF DISCUSSIONS BASIC DESIGN STUDY ON THE PROJECT FOR PURCHASE OF MACHINERY AND EQUIPMENT FOR ROAD CONSTRUCTION IN NORTH WEST FRONTIER PROVINCE IN THE ISLAMIC REPUBLIC OF PAKISTAN


In response to a request from the Government of the Islamic Republic of Pakistan, the Government of Japan decided to conduct a Basic Design Study on the Project for PURCHASE OF MACHINERY AND EQUIPMENT FOR ROAD CONSTRUCTION IN NORTH WEST FRONTIER PROVINCE (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (JICA).


JICA sent to Pakistan a study team, which is headed by Mr. Shinobu Matsumoto, Adviser to Manager, Facilities Section, Construction Department 1, Nagoya Construction Bureau, Japan Highway Public Corporation, and is scheduled to stay in the country from August 25 to September 12, 1992.

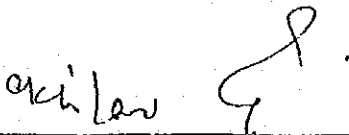
The team held discussions with the officials concerned of the Government of Pakistan and conducted a field survey at the study area.

In the course of discussions and field survey, both parties have confirmed the main items described on the attached sheets. The team will proceed to further works and consider about preparing the Basic Design Study report.

Peshawar, September 1, 1992


Mr. Shinobu Matsumoto
Leader
Basic Design Study Team
JICA


Mr. Adam Khan
Secretary to the Government of
North West Frontier Province
Communication and Works Department


Mr. Akhtar Iqbal
Deputy Secretary, Economic Affairs Division,
Government of Pakistan, Islamabad

(AKHTAR IQBAL)
Deputy Secretary
Economic Affairs Division
Islamabad

ATTACHMENT

1. Objective

The objective of the Project is to purchase machinery and equipment for road construction in North West Frontier Province for the improvement of socio-economic condition and living standard of people in the area.

2. Project sites

The Project sites, as shown in Annex I, are the following circles and districts:

Peshawar, Charsada, Nowshera
Mardan, Swabi
Kohat, Karak
Marakando, Dir, Chitral, Swat, Buner
Abbotabad, Mansehra, Kohistan, Haripur
Bannu, Lakki, D.I. Khan, Tank

3. Executing Agency

Communication and Works Department (C&W Department), Government of North West Frontier Province, is responsible for the administration and execution of the Project.

4. Items requested by the Government of Pakistan

After discussions with the Basic Design Study Team, the items shown in Annex I were finally requested by the Pakistan side.
However, the final components of the Project will be decided after further studies.

5. Place to be provided for equipment

Equipment will be provided at the Dry Port in Peshawar.

6. Japan's Grant Aid system

- (1) The Government of Pakistan has understood the system of Japanese Grant Aid explained by the team.
- (2) The Government of Pakistan will take necessary measures, described in Annex II for smooth implementation of the Project, on condition that the Grant Aid Assistance by the Government of Japan is extended to the Project.

7. Schedule of the Study

- (1) The consultants will proceed to further studies in Pakistan until September 13.
- (2) Based on the Minutes of Discussions and technical examination of the study results, JICA will submit the draft final report by November, 1992, and complete the final report and send it to the Government of Pakistan by February 1993.

ANNEX I

Requested Equipment Names and Numbers

Equipment name	capacity	CircleName	Peshawar	Mardan	Kohat	Abbottabad	Marskand	Bannu	Total
		Supervising	Peshawar	Mardan	Kohat	Abbottabad	Marskand	Bannu	
		District	Nowshera	Swabi	Karsk	Manshera	Dir	Lakki	
			Charsala		(FATA)	Kohistan	Citral	DIKhan	
						Haripur	Swat	Tank	
							Bunai		
Asphalt Plant	Mobi 40t/h					1	1		2
As.Finisher	8-16feet					1	1		2
Tire Loader	1.2M3					1	1		2
Dump Truck	8T					4	4		8
Bulldozer	180/200hp	1	1	1	1	1	1	1	6
Tire Dozer	9-10r 110HP	2	2	2	2	2	2	2	12
Mortar grador	3.7m 110/130HP	1	1	1	1	1	1	1	6
Vibration Roller	10ton	4	4	4	4	4	4	4	24
Road Marking Machin	Handcart Type								0
Mobile Work Shop	180HP 4x4wheel	1							1
Lubrication Car	180HP 4x4wheel								0
Total		9	8	8	15	15	8		63

Remarks: Bulldozer , Tire Dozer and Half number of Vibration Roller will be procured in the first stage.

S.A.

9

ANNEX II

The Governments of Islamic Republic of Pakistan and NWFP will take necessary measures:

- 1) to secure a lot of land necessary for the installation of asphalt plants and to clear the site.
- 2) to provide facilities for distribution of electricity, water supply and drainage and other incidental facilities outside the site.
- 3) to ensure prompt unloading and customs clearance at Dry Port at disembarkation in Peshawar and internal transportation therein of the machinery and equipment purchased under the Grant
- 4) to accord Japanese nationals whose services may be required in connection with the procurement of machinery and equipment and services under the Verified Contracts such facilities as may be necessary for their entry into Pakistan and stay therein for the performance of their work
- 5) to ensure that the machinery and equipment purchased under the Grant be maintained and used properly and effectively for the Project
- 6) to bear all the expenses other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and the installation of the equipment
- 7) to ensure prompt processing of required internal formalities to secure the implementation time schedule of the Project
- 8) to ensure the safety of study members when and as it is required in the course of the study

S.M.

Appendix 4-2 Minutes of Discussions -Draft Report Explanation

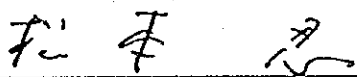
MINUTES OF DISCUSSIONS BASIC DESIGN STUDY ON PROVISION OF ROAD CONSTRUCTION EQUIPMENT IN NORTH WEST FRONTIER PROVINCE (CONSULTATION ON DRAFT REPORT)


In August 1992, the Japan International Cooperation Agency (JICA) dispatched a Basic Design Study team on the Project for Provision of Road Construction Equipment in North West Frontier Province (hereinafter referred to as "the Project") to Islamic Republic of Pakistan, and through discussions, field survey, and technical examination of the results in Japan, has prepared the draft report of the study.

In order to explain and to consult the Pakistan side on the components of the draft report, JICA sent to Pakistan a study team, which is headed by Mr. Sinobu Matsumoto, Japan Highway Public Corporation, and is scheduled to stay in the country from November 23 to December 3, 1992.

As a result of discussion, both parties confirmed the main items described on the attached sheets.

Peshawar, November 30, 1992


Mr. Shinobu Matsumoto
Leader
Draft Report Explanation Team
JICA


Mr. Adam Khan
Secretary to the Government of
North West Frontier Province
Communication and Works Department

ATTACHMENT

1. Components of Draft Report

The Government of North West Frontier Province has agreed and accepted in principle the components of the Draft Report proposed by the team.

2. Japan's Grant Aid System

- (1) The Government of North West Frontier Province has understood the system of Japanese Grant Aid explained by the team.
- (2) The Government of North West Frontier Province will take the necessary measures, described in Annex II of the Minutes of Discussions on September 1, 1992, for smooth implementation of the Project on condition that the Grant Aid assistance by the Government of Japan is extended to the Project.

3. Further Schedule

The team will make the Final Report in accordance with the confirmed items, and send it to the Government of North West Frontier Province by the end of February 1993.

Appendix 5. Organization Chart of C &W D., NWFP



Appendix 6. Existing Equipment List of C & W D.

Existing Equipment List of C & W D.

ITEM	EQUIPMENT NAME	Peshawar & Mardan			Kohat			Abbottabad			Malakand			Bannu			Total					
		W/C	R/P	U/S	Total	W/C	R/P	U/S	Total	W/C	R/P	U/S	Total	W/C	R/P	U/S	Total	W/C	R/P	U/S	Total	
1	Asphalt Plant	1	0	0	1	0	0	0	0	2	0	0	2	0	0	0	0	3	0	0	3	
2	Paver Machine	2	0	0	2	0	0	0	0	1	0	0	1	0	0	0	0	3	0	0	3	
3	Front End Loader	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	
4	Dump Truck	12	6	5	23	0	0	0	0	2	1	0	3	0	0	0	0	14	7	5	26	
5	Crawler Tractor (Bulldozer)	0	0	7	7	0	0	0	0	2	0	11	13	2	2	3	7	4	2	24	30	
6	Pay Dozer	0	0	2	2	1	0	0	1	6	1	2	9	4	2	6	12	11	3	10	24	
7	Motor Grader	0	1	0	1	0	0	1	1	0	0	2	2	0	0	0	0	0	1	7	8	
8	Road Roller (Diesel Vibration)	13	0	5	18	4	1	3	8	0	3	0	3	8	0	0	8	25	4	8	37	
9	Road Roller (Diesel Static)	60	2	3	65	36	2	2	40	28	15	16	59	33	14	13	60	41	17	5	287	
10	Pneumatic Roller (Diesel)	2	0	0	2	0	0	1	1	1	0	0	1	0	0	0	0	3	0	3	6	
11	Vibration Smooth Drum Roller (Tow)	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	
12	Vibration Sheep Foot Roller	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	
13	Hand Roller	1	0	1	2	2	0	0	2	0	0	0	0	0	0	0	0	3	0	1	4	
14	Crane 30 ton to 40 ton Cap	1	0	1	2	0	0	0	0	1	0	1	2	0	0	0	0	2	0	2	4	
15	Trailer with Prime Mover	2	1	0	3	0	0	0	0	0	0	0	0	1	0	0	1	3	1	0	4	
16	Tow Trailer	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
17	Bitumen Distributer	1	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	2	0	0	2	
18	Chip Spreader	1	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	2	0	0	2	
19	Rotary Broom	1	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	2	0	0	2	
20	Wheel Tractor	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2	2	1	0	3	4	
21	Air Compressor	0	0	0	0	0	0	1	0	3	0	11	14	14	1	19	34	0	0	30	49	
22	Hand Drill Machine	0	0	0	0	0	0	0	0	2	0	0	0	4	1	3	8	1	5	3	11	
23	Tar Boiler	13	0	5	18	11	0	1	12	0	0	0	0	7	0	2	9	16	0	19	74	
24	Concrete Mixer	0	0	1	1	0	0	0	0	0	0	2	2	3	3	0	6	0	3	3	9	
25	Steam Road Roller	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	7	
26	Pre-Coat Loader	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	
27	Compactor	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	3	0	3	
28	Snow Blower	0	0	0	0	0	0	0	0	1	0	1	2	0	0	0	0	1	1	1	3	
29	Water Carrier	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
30	Truck	2	0	5	7	0	0	0	0	1	1	1	3	2	0	3	5	0	5	1	15	
Total :		122	10	38	170	54	6	8	68	51	24	47	122	78	23	51	152	59	19	39	629	
		W/C			Workable Condition			R/C			Repairable Condition			U/S			Unserviceable Condition					

Appendix 7. Country Data of NWFP



N.W.F.P. IN FIGURES 1991

BUREAU OF STATISTICS,
N.W.F.P., PESHAWAR

1

ADMINISTRATIVE SETUP (1990-91)

Divisions	6
Districts	17
Sub-Divisions	11
Tehsils	24
Villages/Mouzas (1981)	7809
Municipal Corporation	1
Municipal Committees	17
Town Committees	24
Union Councils	656
Police Stations (89-90)	169

HOUSING (1980) (Thousand)

Housing Units by Tenure	Rural	%	Urban	%
Total	1382	100	234	100
Owned	1083	78	131	56
Rented	86	6	76	32
Rent Free	213	16	28	12

Housing Units by source of facilities:

Electricity	353	26	188	81
Pipe Water	141	11	135	58

POPULATION

IN THOUSAND	1972	1981	%	1991(E)
Total	8389	11061	(13.1)	15508
Urban	1196	1665	(7.0)	2498
Rural	7193	9396	(15.6)	13010
Male	4363	5761	(13.0)	8078
Female	4026	5300	(13.2)	7430
% Annual Growth Rate	3.3	3.3	.	3.3
Literacy Ratio	14.5	16.7	.	.
Density (Persons per Sq. Km)	113	148	.	208
Geographical Area (Sq. Km.)	75	75	.	.

2

EDUCATION 1990-91

Institutions	IN THOUSAND		
	Number	Enrolment (by level)	Teaching Staff
Primary Schools	10.6	1419.2	31.9
Middle Schools	0.9	316.6	7.8
High Schools	1.0	112.2	19.1
Colleges	0.064	55.9	2.2
Universities	0.001	57	0.7

Technical Institutions: (Numbers)

College of Technology	1	1014	99
Polytechnics	7	2590	189
Commercial	1	298	15
Vocational	18	1056	180
Commerce Colleges	7	4831	161
Technical Training Centres	5	983	202

Repeated 1989-90

Participation Rate (%) by Age Group	Both Sexes	Male	Female
Primary (5-9)	62.8	94.3	28.8
Middle (10-12)	17.6	28.1	5.1
High (13-14)	21.7	33.0	8.1

HEALTH (1.1.1991)

Institutions	Number	Beds	Population per Bed
Hospitals	124	9269	.
Dispensaries	415	204	1610
Rural Health Centres	68	380	.
Basic Health Units	613	.	.

Medical Personnels 1.1.90	Government	Private	Total
Doctors	1559	847	2406
Population per Doctor	.	.	6137
Nurses	545	N.A.	545
Lady Health Visitors	438	N.A.	438

3

AGRICULTURE

Crop Acreage 1990-91

Major Crops	Area (000 Hectares)	Production (000 tonnes)	Yield (kilogram)
Wheat	738.6	1018.5	1379.0
Maize	469.8	694.8	1479.0
Rice	521.1	103.5	1987.0
Sugarcane	101.6	4441.0	43691.0
Tobacco	24.7	49.6	2008.0
Gram	119.7	43.3	362.0

Total Reported Area	Forest Area	Cultivated Area	Cropped Area	Irrigated Area
5622.8	1257.9 (22.4)	1731.7 (30.5)	1830.3 (32.6)	753.1 (13.5)

Consumption of Fertilizer by type	(000 Nutrient Tonnes)		
	1988-89	1989-90	1990-91
Total	94.6	98.4	100.7
Nitrogenous	73.3	79.8	79.3
Phosphatic	20.2	16.6	18.2
Potash	1.1	2.0	3.2
Tube-wells (000 Numbers)			
Total	6.8	6.6	6.6(P)
Electric	6.2	6.3	6.3(P)
Diesel	0.6	0.3	0.3(P)

IMPORTANT MINERALS PRODUCTION

Type of Mineral	Production 1989-90	(In thousands Tonnes 1990-91)
Antimony	0.04	0.03
Barytes	3	0.6
China Clay	24	34
Coal	48	42
Gypsum	157	147
Lime Stone	1370	1948
Marble	259	263
Magnesite	4	3
Phosphate	36	24
Rock Salt	55	65
Soap Stone	34	35
Chromite	10	2

4

MANUFACTURING AS ON 30-06-1991

Type of Industry	No. of Reporting Units	Employment level Nos.	Reported Production	
			1989-90	1990-91
Sugar (000 M.Ton)	5	4417	127	101
Cement (000 M.Ton)	3	2043	1259	1340
Vegetable Products (000 M.Ton)	6	1123	118	98
Cigarettes (Million Numbers)	4	2512	11353	9602
Safety Matches (Million Boxes)	4	507	830	692
Paper (000 M.Ton)	.	.	6	4
Board (000 M.Ton)	1	1426	7	7

ROAD KILOMETREAGE

Type of Road	1987-88	1988-89	1989-90
Total	8505	8609	9027
Blacktopped	4994	5328	5788
Shingled	3511	3281	3239
Road Kilometre per Sq.K.M. of area.	0.11	0.12	0.12

TRANSPORT

Type of Vehicles	(In 000 Numbers)		
	1988	1989	1990
Total on Road	151	168	173
Buscs	7	8	7
Taxis	9	10	10
Motor Rickshawa	6	6	7
Trucks	17	18	16
Others	6	7	8

5

COMMUNICATION

Type of Communication facilities	Year	Number
Telegraph Offices	June, 1990	61
Telephone Exchanges	June, 1990	261
Telephone Sets	June, 1990	59520
Post Office	June, 1990	1680
Radio Licences	June, 1990	48200

FUEL AND POWER (Millions)

Items	1987-88	1988-89	1989-90
Gas consumption (Mega Cubic Feet)	7.1	7.6	8.1 (E)
Electricity Connections	0.89	0.96	1.01
Electricity Units Sold (KWH)	2375	2554	2480

Village Electrification (Number)	1987-88	1988-89	1989-90
Number of electrified villages.	4702	5057	5210
% Coverage	60.2	64.8	66.7

NATIONAL ACCOUNTS

At Constant Factor Cost of 1980-81	1987-88 (R)	1988-89 (R)	1989-90 (P)
Gross National Product (Million Rs.) F.C.	402516	418594	437614
Per capital income (Rs.) F.C.	3877	3911	3883
At Current Factor Cost:			
Gross National Product (Million Rs.) F.C.	630120	713676	808262
Per Capita Income (Rs.) F.C.	6069	6668	7325

F.C. = Factor Cost. E = Estimated

6

PUBLIC FINANCE

(In Million Rupees)	1990-91 (R.E.)	1991-92 (R.E.)	% of Total
(A) Total Revenue Receipts	9426.4	14040.1	100.00
i. Total Current Revenue Receipts.	5623.9	14014.7	99.8
ii. Net Capital Receipts	72.8	25.4	0.18
iii. Grant in Aid to meet budgetary deficit.	3729.7	.	.
(B) Total Current Expenditure.	10281.8	12732.3	100.00
i. Total Current Capital Expenditure.	.	.	.
ii. Total Current Revenue Expenditure.	10281.8	12732.3	100.00
Tax Collecting Deptt:	60.74	75.85	0.60
Civil Administration Department.	1202.54	1353.61	10.63
Social Service Deptt:	4019.23	5001.41	39.28
Economic Service Deptt:	1356.28	1591.23	12.50
Miscellaneous, Relief and Wheat Subsidy.	723.36	1106.28	8.69
Debit Services	2919.65	3603.86	28.30

PRICES

Index	Base year 1980-81 = (July - March)		
	1988-89	1989-90	1990-91
Whole Sale price Index (General)	173.50	186.16	205.24
Consumer Price Index (Combined)	167.23	177.33	197.16

Note: (P) = Provisional

7

DEVELOPMENT PROGRAMME

Allocation (Million Rs.)	1990-91 (R.E.)	1991-92 (R.E.)	% with Total
Total ADP	2725.471	3000.000	100.00
Agriculture	139.000	155.969	5.2
Forestry	43.500	44.700	1.5
Rural Development	148.980	201.705	6.1
Water and Power	186.100	206.271	6.9
Industries	46.105	60.000	2.0
Minerals	22.600	39.000	1.3
Transport & Communication.	400.686	382.000	12.7
Physical Planning & Housing.	502.894	549.100	18.3
Education and Training	609.714	693.700	23.1
Health	376.467	448.100	14.9
Social Welfare	16.709	13.100	0.4
Manpower and Training	11.500	11.700	0.4
Planning & Development	18.216	33.655	1.1
Miscellaneous	203.000	161.000	5.4
ADP Scheme (1991-92)	Number	Allocation	% Share
Ongoing	1029	1970.081	65.7
New	285	1029.919	34.3
Total	1314	3000.000	

R.E. = Revised Estimates
B.E. = Budget Estimates

PUBLIC HEALTH ENGINEERING

Drinking Water Supply	Population Coverage	
	Rural	Urban
Upto upto June, 1991	57.23%	81.79%

Appendix 8. Road Inventories of Seventh Five Year Plan

7th 5 Years Plan (Jul1.988-June1993)

Sr. No	Name of Scheme	7th 5 years Plan (1988-1993)						Completed (%)	Transferred to 8th 5 years plan (1993-1998)					
		Improvement			Construction				Improvement			Construction		
		Primary	Seconda	Feeder	Primary	Seconda	Feeder		Primary	Seconda	Feeder	Primary	Seconda	Feeder
I	PROVINCIAL	6.50												
II	DISTRICT													
	PROGRAMME													
1	Peshawar	28.00	23.00	34.46	49.00	16.00	28.00		0.00	2.50	0.00	39.00	0.00	0.00
2	Charsadda	27.00	13.00	0.00	19.00	0.00	0.00		27.00	13.00	0.00	19.00	0.00	0.00
									27.00	15.50	0.00			
3	Mardan	40.40	0.00	25.50	16.63	32.00	0.00		0.00	8.00	25.50	0.00	8.00	0.00
4	Sawabi	32.00	0.00	4.00	20.00	9.20	0.00		0.00	0.00	0.00	20.00	9.20	0.00
									0.00	8.00	25.50			
5	Kohat	128.00	119.00	23.00	45.00	0.00	0.00		94.00	112.00	23.00	40.00	0.00	0.00
6	Karak	0.00	144.33	0.00	0.00	32.00	0.00		0.00	40.00	0.00	0.00	0.00	0.00
									94.00	152.00	23.00			
7	Abbottabad	19.92	50.05	26.50	0.00	25.00	281.20		19.92	40.00	5.00	0.00	25.00	12.51
8	Manshera	92.00	265.05	24.00	0.00	84.00	12.00		38.00	168.30	24.00	0.00	84.00	12.00
9	Kohistan	0.00	34.50	0.00	0.00	15.00	43.00		0.00	11.50	0.00	0.00	15.00	43.00
									57.92	219.80	29.00			
10	Bannu	0.00	121.75	115.00	0.00	24.45	11.20		0.00	40.00	96.00	0.00	0.00	0.00
11	D.I Khan	0.00	32.00	26.50	0.00	90.19	30.68		0.00	0.00	18.00	0.00	0.00	0.00
									0.00	40.00	114.00			
12	Chitral	32.00	0.00	7.00	0.00	0.00	7.00		32.00	0.00	7.00	0.00	0.00	62.00
13	Dir	74.00	47.00	28.00	0.00	0.00	56.65		34.00	0.00	0.00	0.00	0.00	15.00
14	Swat	107.00	172.50	38.70	0.00	0.00	34.50		107.00	118.50	26.70	0.00	0.00	29.50
15	Malakand	14.00	34.00	7.00	0.00	0.00	17.00		0.00	0.00	7.00	0.00	0.00	0.00
									173.00	118.50	40.70			
TOTAL		600.82	1056.18	359.66	149.63	327.84	521.23	0.00	351.92	553.80	232.20	118.00	141.20	174.01

I. DISTRICT PESHAWAR														
1	Black topping of Risalpur-Behram-Kili Road	2.50						0.00		2.50				
2	Widening of Peshawar-Dalazak road (KM7 to 14.5)	7.50						100.00						
3	Feasibility study and a construction of Motor-way from Peshawar-Maradan				20.00			0.00				20.00		
4	Construction of additional carriageway Peshawar-Charsadda-Nagman Section				7.00			0.00				7.00		
5	Blacktopping of Shahalam-Shakarpura-Nuab Gujar with a link to Daman Afghani	13.00						100.00						
6	Improvement and Widening of Pirbala-Shagai Road	10.46						100.00						
7	Improvement and Blacktopping of Dagai Banda, Aza Khel, Pirpai Road including causeway and approach road N5	9.00						100.00						
8	Improvement and reconditioning of Taru-Amarkot Road Via Kurwi, Banda Sheikh Muhim and Ismail including Akhterabad Akbarpura link road	10.00						100.00						
9	Black Toppin	13.00						100.00						

7th 5 Years Plan (Jul1.988-June1993)

Sr. No		Name of Scheme	7th 5 years Plan (1988-1993)						Transferred to 8th 5 years plan (1993-1998)							
			Improvement			Construction			Completed (%)	Improvement			Construction			
			Primary	Seconda	Feeder	Primary	Seconda	Feeder		Primary	Seconda	Feeder	Primary	Seconda	Feeder	
		of Attock-Nizampur Road (Portaion from Nizampur to Kohat District Boundary)														
10		Construction and Black Topping of Risaplur-Pirsabak with bridge over Kalpani Nullakh					16.00		100.00							
11		Construction of road at Surezai Village Road (Shaheed Inayatullah road)						2.00	100.00							
12		Black-topping of road taking off N-5 in KM 1683 to Pishungri							100.00							
13		Construction of link road connecting Ashab Baba Road with PMA Road						2.00	100.00							
14		Construction of Black Topped road connecting N-5 Nowshera-Mardan (near Rasalpur) including bridges over River Kabul and Kaplani Nullah					10.00		100.00							
15		Construction of shingled road linking Mandi-Attock-Mizampur Road						24.00	100.00							
16		Widening and reconditioning of Nowshera-Charsadda Road	15.00						100.00							
17		Feasibility study and construction of motor-way Peshawar-Mardan					12.00		0.00					12.00		
Total			28.00	23.00	34.46	49.00	16.00	28.00		0.00	2.50	0.00	39.00	0.00	0.00	

II DISTRICT CHARSADDA														
1	Construction of additional carriage way along Pshawar Charsadda road Peshawar-Naguman Section				9.00			0.00				9.00		
2	Improvement and Re-conditioning of Charsada-Tarnab-Cheema Road		13.00					100.00		13.00				
3	Widening and Reconditioning of Nowshera-Charsada road	15.00						0.00	15.00					
4	Improvement & Widening of CharSadda-Mardan Road	12.00						100.00	12.00					
5	Feasibility study and construction of Motor way form Peshawar to Mardan				10.00			0.00				10.00		
Total		27.00	13.00	0.00	19.00	0.00	0.00		27.00	13.00	0.00	19.00	0.00	0.00

III DISTRICT MARDAN														
1	Construction of dual carriage way between Maradan and Nowshera including Mardan bye-pass to Gujar Garhi				16.63			100.00						
2	Improvement and widening of NCC Road(Mardan-Shergarh Section)	30.40						100.00						

7th 5 Years Plan (Jul1.988-June1993)

Sr. No	Name of Scheme	7th 5 years Plan (1988-1993)							Transferred to 8th 5 years plan (1993-1998)						
		Improvement			Construction			Comple (%)	Improvement			Construction			
		Primary	Seconda	Feeder	Primary	Seconda	Feeder		Primary	Seconda	Feeder	Primary	Seconda	Feeder	
3	Improvement and widening of Charsadda Mardan Road	10.00						100.00							
4	Construction of Black Topped Road from Sangoo to Bavargai via Kingergali					24.00		100.00							
5	Extension of existing Mardan Bye-pass to connect NCC road with Mardan-Swabi road		0.00			8.00		0.00					8.00		
6	Improvement & Widening of Garhi Kapoora -Dhobian-Yar Hussain road			25.50				0.00			25.50				
Total		40.40	0.00	25.50	16.63	32.00	0.00		0.00	0.00	25.50	0.00	8.00	0.00	

IV DISTRICT SWABI														
1	Construction of Topi Bye-pass constructing Bada Bridge					9.20		0.00					9.20	
2	Black-topping of road from Mardan-Sabi to Nazar Via Ismailia			4.00				100.00						
3	Improvement of Jehangira-Swabi road	32.00						100.00						
4	Construction of Black-topped road from Jehangira to Topi along right Bank river Indus				20.00			0.00				20.00		
Total		32.00	0.00	4.00	20.00	9.20	0.00		0.00	0.00	0.00	20.00	9.20	0.00

V DISTRICT KOHAT														
1	Improvement and widening of Kohat-Bannu road Phase-IV Jatta Section	34.00						100.00						
2	Black-topping of Lachi-Walai Road Phase-I Lachi-Darmalax			12.00				0.00			12.00			
3	Black-topping of Bilitang-siab road		8.00					0.00		8.00				
4	Improvement and Black-topping of Mamoon Killi-Dalan Road			4.00				0.00			4.00			
5	Improvement and black topping of Naryab road			7.00				0.00			7.00			
6	Black topping of Raisan-Shahukhel road including construction of Bridge at Raisan on K-T road		7.00					100.00						
7	Construction of Jangel Khel Bye-pass Road				5.00			100.00						
8	Improvement and Widening of Jata Shakardara Road	37.00						0.00	37.00					
9	Improvement and Widening of Kohat-Khushalgarh Road	37.00						0.00	37.00					

7th 5 Years Plan (Jul.1988-June1993)

Sr. No	Name of Scheme	7th 5 years Plan (1988-1993)							Transferred to 8th 5 years plan (1993-1998)						
		Improvement			Construction			Comple	Improvement			Construction			
		Primary	Seconda	Feeder	Primary	Seconda	Feeder		Primary	Seconda	Feeder	Primary	Seconda	Feeder	
10	Improvement and Widening of Kohat-Thall road		104.0					0.00		104.00					
11	Costruction of Black-topping road connecting Shakaradara with Kohat Khushalgarh road				40.00			0.00				40.00			
12	Improvement and Black-topping of Khairabad Nizampur-Seni Gumbat road Peshawar District Boundary-Chorlaki Section	20.00							20.00						
Total		128.00	119.00	23.00	45.00	0.00	0.00		94.00	112.00	23.00	40.00	0.00	0.00	

VI DISTRICT KARAK														
1	Blacktopping of B.D Shah-Thall road, Ahmadi Banda-Gurguri Section		40.00					0.00		40.00				
2	Improvement and Black topping of Shingled road from Tatta Nasratti to Shiniwa Gudukhel and Daratang		41.33					100.00						
3	Blacktopping of road from Niyazi well in mile 4 of Mathakhel-Sabirabad road to Isak Chauntra to Ghundi Mira Khan		12.00					100.00						
4	Construction of Blacktopped road from Khurram to Nari Panos					12.00		100.00						
5	Construction of Blacktopped road from Ghuni Killi-Khojaki to Alam Sheri via Land Kamar					20.00		100.00						
6	Improvement and Blacktopping of KarakSabirabad-Shakaradara road		30.00					100.00						
7	Improvement and Widening of Surdag-Karak road		21.00					100.00						
Total		0.00	144.33	0.00	0.00	32.00	0.00		0.00	40.00	0.00	0.00	0.00	0.00

VII DISTRICT ABBOTTABAD														
1	Improvement & Widening of Abbottabad-Murre road, Ph-II		9.58					0.00		40.00				
2	Construction of Shingled road from Lora to Sawar gali via Nagri Totial & Deer					28.91		100.00						
3	Improvement & Blacktopping of Havelian- Kalabagh road		17.48					100.00						
4	Construction of Haripur-Srai Niamat Khan road with a link road to Mankarai					17.00		100.00						
5	Blacktopping of Havelian-Kanyal road			21.50				100.00						

7th 5 Years Plan (Jul1.988-June1993)

Sr. No	Name of Scheme	7th 5 years Plan (1988-1993)							Transferred to 8th 5 years plan (1993-1998)					
		Improvement			Construction			Completer (%)	Improvement			Construction		
		Primary	Seconda	Feeder	Primary	Seconda	Feeder		Primary	Seconda	Feeder	Primary	Seconda	Feeder
6	Construction of Pindgali-Beer Shingled road						13.00	100.00						
7	Construction of Shingled road from Chehr to Sajangali						25.00	100.00						
8	Improvement & Widening of Hripur-Sirikot-road, Sirikot Section		23.00					100.00						
9	Construction of Shingled road from Thandiani to Pattan Khurd						21.00	100.00						
10	Construction of Nathiagali-Kohala Shingled road					25.00		0.00					25.00	
11	Construction of Shingled road from Maira Rehmat Khan to Kanthiali						19.98	100.00						
12	Improvement & Widening of Abbottabad-Murree road, Phase - III	19.92						0.00	19.92					
13	Construction of Jajjikot-Storajabri shingled road						11.80	100.00						
14	Construction of Sawargali-Bakot-Boi shingled road						70.00	100.00						
15	Construction of Kahi-Mirpur-Chapra blacktopped road						12.00	100.00						
16	Improvement & Blacktopping of Barian-Leeran-Gorini road			5.00				0.00			5.00			
17	Construction of shingled road from Sajikot to Nagri Totial						12.00	100.00						
18	Construction of Banda Ali Khan-Banda Buri-Banda Nabi shingled road						4.51	0.00						4.51
19	Construction of Narian-Beeran-gali shingled road						18.00	100.00						
20	Construction of Kothiala-Richbenmangal bridge shingled road						20.00	100.00						
21	Construction of Nathiagali-Namli Maira shingled road						8.00	0.00						8.00
Total		19.92	50.05	26.50	0.00	25.00	281.20		19.92	40.00	5.00	0.00	25.00	12.51

VIII DISTRICT MANSEHRA														
1	Improvement and blacktopping of Kund- Banna road		29.25					100.00						
2	Improvement & Blacktopping of Khuza Banda-Chattar Plain road	25.00						100.00						
3	Improvement & Widening of Mansehra-Oghi road	29.00						100.00						

7th 5 Years Plan (Jul1.988-June1993)

Sr. No	Name of Scheme	7th 5 years Plan (1988-1993)							Transferred to 8th 5 years plan (1993-1998)					
		Improvement			Construction			Completer (%)	Improvement			Construction		
		Primary	Seconda	Feeder	Primary	Seconda	Feeder		Primary	Seconda	Feeder	Primary	Seconda	Feeder
4	Improvement & Widening of road from Perhina to Lassan including blacktopping from Perhina to Phulra		23.30					0.00		23.30				
6	Improvement & Blacktopping of Battagram Shamlai road		16.25					100.00						
7	Improvement & Blacktopping of Battal- Sachan-Sathangali road		21.25					100.00						
8	Improvement & Blacktopping of Baffa-Khawajagan road		11.00					0.00		11.00				
9	Construction of shingled road from Thakot to Darband					84.00		0.00					84.00	
10	Blacktopping of Thakot-Banna road		30.00					100.00						
11	Improvement & Blacktopping of Kaghan Valley road		83.00					0.00		83.00				
12	Feasibility studies, improvement & widening of Mansehra-Garhi Habibullah-Balakot road	38.00						0.00	38.00					
13	Improvement & Blacktopping of Gojra-Bedra-Phulra road			24.00				0.00			24.00			
14	Realignment & blacktopping of Oghi-Ahl road		22.00					0.00		22.00				
15	Construction of Bajna-Shugli Bandi Shingled road						12.00	0.00						12.00
16	Improvement & Widen Kas Bridge Road		29.00					0.00		29.00				
Total		92.00	265.05	24.00	0.00	84.00	12.00		38.00	168.30	24.00	0.00	84.00	12.00

IX DISTRICT KOHISTAN														
1	Improvement and construction of Pattan-Ziarat road (23km)		23.00					100.00						
2	Improvement and completion of Jalkot Velly road (11.5km)		11.50					0.00		11.50				
3	Construction of shingled road form Pattan to Chowdara (15km)					15.00		0.00					15.00	
4	Construction of shingled road from Ranolia to Barkilli (8km)						8.00	0.00						8.00
5	Construction of shingled road from Zambeel to Gabrial including suspension bridges (10km)						10.00	0.00						10.00
6	Construction of Zambeel-Kacha Seri shingled road (15km)						15.00	0.00						15.00
7	Construction of Kund-Batera shingled road						10.00	0.00						10.00

7th 5 Years Plan (Jul1.988-June1993)

Sr. No	Name of Scheme (10km)	7th 5 years Plan (1988-1993)							Transferred to 8th 5 years plan (1993-1998)					
		Improvement			Construction			Comple (%)	Improvement			Construction		
		Primary	Seconda	Feeder	Primary	Seconda	Feeder		Primary	Seconda	Feeder	Primary	Seconda	Feeder
	Total	0.00	34.50	0.00	0.00	15.00	43.00		0.00	11.50	0.00	0.00	15.00	43.00

X DISTRICT BANNU														
1	Blacktopping of Adamzai-Kheru Khel road (9.6km)		9.60											
2	Construction of shingled road from Daratang to chashma (24.45km)					24.45								
3	Improvement & balcktopping of Amandi road (1.5km)			1.50				100.00						
4	Improvement & Widening of Bannu-Nurar road (11.2km)		11.20					100.00						
5	Improvement & Widening of Ghaznikhel-Bain road (17.6km)			17.60				100.00						
6	Construction of blacktopped road taking off from mile-6 Tajazai-Lakki-Daratang road to mile-34 of Bannu-D.I. Khan road (11.2km)						11.20	100.00						
7	Blacktopping of Marwat canal road (96km)			96.00				0.00			96.00			
8	Improvement & Blacktopping of Daratang-Chashma road (33.45km)		33.45					100.00						
9	Blacktopping of Janikhel-Khairukhel road (40km)		40.00					0.00		40.00				
10	Widening of Lakki-Daratang Road (27.5km)		27.50					100.00						
	Total	0.00	121.75	115.10	0.00	24.45	11.20		0.00	40.00	96.00	0.00	0.00	0.00

XI DISTRICT D.I. KHAN														
1	Construction of balcktopped road from Giloti to Hathala via Takware (24.68km)						24.68	100.00						
2	Improvement & Blacktopping of Dabara Rori road to Sheikh Uttar via Sheikh Sultan (8.5km)			8.50				100.00						
3	Construction of Blacktopped road taking off from Tank-Pezu road to Arnkhel via Daraki and Pai (8km)					8.00		100.00						
4	Construction of Blacktopped road from Paniala to Pajarpur (24km)					24.00		100.00						
5	Construction of Blacktopped road from Octroi post to Darban road to Gandi Umar Khan via Ara-Begwani (37km)					37.00		100.00						

7th 5 Years Plan (Jul1.988-June1993)

Sr. No	Name of Scheme	7th 5 years Plan (1988-1993)						Transferred to 8th 5 years plan (1993-1998)					
		Improvement			Construction			Improvement			Construction		
		Primary	Seconda	Feeder	Primary	Seconda	Feeder	Primary	Seconda	Feeder	Primary	Seconda	Feeder
6	Construction of shingled road taking off from Abdul Khel Katta Khel to Keri Khaisora via Ali Wanda (6km)						6.00	100.00					
7	Construction of blacktopped road from Towa nullah taking off DIK-Dargan road Bara Isa Khan (21.19km)					21.19		100.00					
8	Improvement & Widening of Gul Imam-Bain road (32km)		32.00					100.00					
9	Improvement & Widening of Hathala-Kulachi road (18km)			18.00				0.00		18.00			
Total		0.00	32.00	26.50	0.00	90.19	30.68		0.00	0.00	18.00	0.00	0.00

XII DISTRICT CHITRAL													
1	Construction & Blacktopping of Chitral-Garam Chashma road Phase-II (8km)						8.00	100.00					
2	Improvement & Widening of Booni-Shahgram road (7km)			7.00				0.00		7.00			
3	Construction of link road to Rashun taking off from Chitral - Booni road (4km)						4.00	0.00					4.00
4	Construction of shingled road from Charan to Zindagram (58km)						58.00	0.00					58.00
5	Improvement & Blacktopping of Chitral-Garam Chashma road Phase-III (32km)	32.00						0.00	32.00				
Total		32.00	0.00	7.00	0.00	0.00	70.00		32.00	0.00	7.00	0.00	62.00

XIII DISTRICT DIR													
1	Improvement & Widening of NCC road, Chakdara-Timargara Section (40km)	40.00						100.00					
2	Blacktopping of shingled road from Dir to Sheringal (25km)		25.00					100.00					
3	Construction of shingled road from Barawal Bandi to Shahi (25.15km)						25.15	100.00					
4	Construction of Blacktopped road from Lal Qilla to Gal and Manyal (16.5km)						16.50	100.00					
5	Construction of shingled road from Daramadala to Baderkanai (15km)						15.00	0.00					15.00
6	Blacktopping of Ouch-Kotigram road (8km)			8.00				100.00					
7	Improvement & Blacktopping of Warai-Niagdara road (22km)		22.00					100.00					
8	Improvement &			15.00				100.00					

7th 5 Years Plan (Jul1.988-June1993)

Sr. No	Name of Scheme	7th 5 years Plan (1988-1993)						Transferred to 8th 5 years plan (1993-1998)						
		Improvement			Construction			Completed (%)	Improvement			Construction		
		Primary	Seconda	Feeder	Primary	Seconda	Feeder		Primary	Seconda	Feeder	Primary	Seconda	Feeder
	Blacktopping of Asband-Swat road (15km)													
9	Blacktopping of Khanpur-Seya road (5km)			5.00				100.00						
10	Improvement & Widening of NCC road, Dir-Lowari Top-Ziarat Section (34km)	34.00						0.00	34.00					
Total		74.00	47.00	28.00	0.00	0.00	56.65		34.00	0.00	0.00	0.00	0.00	15.00

XIV DISTRICT SWAT														
1	Improvement & Blacktopping of Matta-Belha road (23km)		23.00											
2	Improvement & Widening of Daggar-Shlabandai Road (15.5km)		15.50					0.00		15.50				
3	Improvement & blacktopping of existing singled road from Banghdheri to Sakhra (12km)		12.00											
4	Improvement & Blacktopping of Daggar-Gokand road (19km)		19.00											
5	Improvement & blacktopping of Kokkai-Yakhtangi-Dheri Aloch road (25km)		25.00					0.00			25.00			
6	Improvement & blacktopping of Kalam-Matiltan road (12km)		12.00					100.00						
7	Construction of shingled road from village Kankoi to Nawagai via Agarai and Sura (4km)					4.00		0.00						4.00
8	Construction of road from Swari to Rega (1.5km)					1.50		0.00						1.50
9	Construction of Pir Baba-Qadir Nagar Road (5km)					5.00		100.00						
10	Improvement & blacktopping of road from Diwana Baba to Kulyari (1.7km)		1.70					0.00			1.70			
11	Reconditioning of Khawazakhela-Besham road (67km)	67.00						0.00	67.00					
12	Improvement & Widening of Landakai-Saidu Road (40km)	40.00						0.00	40.00					
13	Improvement & Widening of Saidu-Kalam Road (103km)		103.00					0.00		103.00				
14	Construction of Shingled road from Batara to Shang via Pandher (8km)					8.00		0.00						8.00
15	Construction of shingled road from Dandar to Dargalai via Dakara, Charkot & Ghazikot (16km)					16.00		0.00						16.00
Total		107.00	172.50	38.70	0.00	0.00	34.50		107.00	118.50	26.70	0.00	0.00	29.50

7th 5 Years Plan (Jul1.988-June1993)

Sr. No	Name of Scheme	7th 5 years Plan (1988-1993)							Transferred to 8th 5 years plan (1993-1998)						
		Improvement			Construction			Complete (%)	Improvement			Construction			
		Primary	Seconda	Feeder	Primary	Seconda	Feeder		Primary	Seconda	Feeder	Primary	Seconda	Feeder	
XV MALAKAND AGENCY															
1	Improvement & blacktopping of NCC road, Shergarh-Dargai section (14 km)	14.00						100.00							
2	Widening and blacktopping of Thana-Cherat-Palai road (first 10 km)		10.00					100.00							
3	Improvement, widening and blacktopping of Kot-loe Agra road (24 km)		24.00					100.00							
4	Improvement & blacktopping of road from Haryan Kot to Abazai Branch & Palonow (7 km)			7.00				0.00			7.00				
5	Construction of shingled road from Palai to Shahkot, Zalamkot and Allah Dhand Dheri (17 km)						17.00	100.00							
Total		14.00	34.00	7.00	0.00	0.00	17.00		0.00	0.00	7.00	0.00	0.00	0.00	0.00

Appendix 9. Road Inventories of Eighth Five Year Plan

8TH FIVE YEARS PLAN (1993, July - 1998, Jun)

Sr. No	Name of Scheme	Status	Estimate (Rs '000)	Improvement (km)	Construction (km)	Expenditure	Expenditure During 8th 5 Years Plan (Rs '000)					Expenditure
						in 7th Plan (Rs '000)	93 - 94	94 - 95	95 - 96	96 - 97	97 - 98	in 8th Plan (Rs '000)
I	PROVINCIAL PROGRAMME	o	93,000	0	395	58,000	14,000	9,000	4,000	4,000	4,000	35,000
II	DISTRICT PROGRAMME											
1	Peshawar	o	64565	36	0	15,155	19,200	14,510	7,700	4,000	4,000	49,410
2	Charsadda	o	123646	75	12	38,015	27,432	20,820	19,200	10,979	7,200	85,631
	Nowshera	o	71400	31	30	0	20,000	13,000	13,000	13,000	12,400	71,400
3	Mardan	o	308204	149	46	48,763	35,042	42,281	48,364	42,441	90,313	258,441
4	Sawabi	o	445515	62	132	44,674	23,805	34,200	35,159	29,480	70,273	192,917
7	Abbottabad	o	1049202	309	467	154,356	28,729	54,327	157,985	291,548	241,013	773,602
8	Manshera	o	518670	303	27	219,855	16,060	13,648	83,704	114,325	86,558	314,295
9	Kohistan	o	222900	58	129	0	54,700	46,800	44,800	39,800	36,800	222,900
12	Chitral	o	140000	138	36	0	27,000	34,000	33,000	26,000	20,000	140,000
13	Dir	o	572129	280	59	0	31,705	65,000	96,710	94,000	101,214	388,629
14	Swat	o	312786	117	67	0	44,586	58,200	37,000	16,000	11,000	166,786
10	Bannu	o	179197	100	87	0	37,128	46,300	38,550	27,000	34,819	183,797
15	Malakand	o	151050	100	16	0	12,025	31,800	18,000	9,000	81,225	152,050
TOTAL			4252264	1,758	1,503	578,818	195,706	241,943	318,586	721,573	800,815	3034858

8TH FIVE YEARS PLAN (1993, July - 1998, Jun)

Sr. No	Name of Scheme	Status	Estimate (Rs '000)	Improve (km)	Constuct (km)	Expendi in 7 th Plan (Rs '000)	Expenditure During 8th 5 Years Pla (Rs '000)					Expenditur in 8 th Plan (Rs '000)
							93 - 94	94 - 95	95 - 96	96 - 97	97 - 98	
I. PROVINCIAL PROGRAMME												
1	Feasibility study & design of Major Roads & bridge	unapproved	15,000	0.00	0.00	-	10,000	5,000	0	0	0	15,000
2	136 Farm to Market road	unapproved	78,000	0.00	395.00	58,000	4,000	4,000	4,000	4,000	4,000	20,000
Total			93,000	0	395	58,000	14,000	9,000	4,000	4,000	4,000	35,000

II. DISTRICT PESHAWAR												
1	Construction of Bridge at Jala Bela	approved	23,935	0.00	0.00	15,155	4,000	4,780	0	0	0	8,780
2 *	Widening & Reconditioning of chamkani surizai road i/c 2 Nos Bridges	unapproved	19,230	12.82	0.00		6,000	3,230	3,000	3,000	4,000	19,230
3	B/Topping of road at nedeh Bala Danish Abad Peshawar	unapproved	5,200	4.95	0.00		3,200	2,000	0	0	0	5,200
4	Road from worsak to panam Dheri, Yari Koroona Guli Bagh Mughal Bagh Gujar Banda Hakim Khan Killi Hindu Kassi Akka Khel & Kochian	unapproved	7,200	12.00	0.00		3,000	2,000	2,200	0	0	7,200
5 *	Road from Warsak left Irrigation Canal at Archand Shamshato gari chandan i/c 2 Nos. bridges	unapproved	9,000	6.00	0.00		3,000	2,500	2,500	1,000	0	9,000
Total			64,565	36	0	15,155	19,200	14,510	7,700	4,000	4,000	49,410

DISTRICT : CHARSADDA												
6	Impt: Widening of Charsadda Mardan road	approved	47,197	27.00	0.00	38,015	3,182	3,000	3,000	0	0	9,182
7	Constn: of B.T. road from Harichand to surkamar via chait to kinan pur	unapproved	7,000	0.00	9.96		3,000	2,000	2,000	0	0	7,000
8	Reh: of Nagum an Shabqadar Munda Rfages camp road	unapproved	22,779	26.00	0.00		6,000	6,000	5,000	5,779	0	22,779
9	Impt: & Widening of Gul Abad Shahqadar road upto Batagram	unapproved	7,620	12.70	0.00		3,000	2,620	2,000	0	0	7,620
10	Constn: of B.T. road from Nisatha Doserato Mani Khela via Khulei	unapproved	1,400	0.00	2.00		1,400	0	0	0	0	1,400
11	B/Topping of road from shakor to Qilla via Madund road	unapproved	6,650	9.50	0.00		2,650	2,000	2,000	0	0	6,650
12	Constn: of Adozai bridge over Kabul River on Naguman shah qadar road	unapproved	13,000	0.00	0.21		3,000	2,000	2,000	2,000	4,000	13,000
13	Constn: of Bridge	unapproved	9,000	0.00	0.15		2,600	1,600	1,600	1,600	1,600	9,000

8TH FIVE YEARS PLAN (1993, July - 1998, Jun)

Sr. No	Name of Scheme	Status	Estimate (Rs '000)	Improvement (km)	Construction (km)	Expenditure in 7th Plan (Rs '000)	Expenditure During 8th 5 Years Plan (Rs '000)					Expenditure in 8th Plan (Rs '000)
							93 - 94	94 - 95	95 - 96	96 - 97	97 - 98	
14	over River Swat at Dildar Gari Constn: Bridge over River Swat at Kathezai village	unapproved	9,000	0.00	0.15		2,600	1,600	1,600	1,600	1,600	9,000
Total			123,646	75	12	38,015	27,432	20,820	19,200	10,979	7,200	85,631

NOWSHERA												
15	Impt: & Widening of Akbar Pura road taking of No. 5	unapproved	7,500	5.79	0.00		2,300	1,300	1,300	1,300	1,300	7,500
16 *	Impt: of Pir sabak to Jehangira road	unapproved	10,000	6.67	0.00		2,800	1,800	1,800	1,800	1,800	10,000
17	Constn: of B.T. road from Akora Khatak to Gul Deri to Mani Khel Masam Khel	unapproved	6,400	0.00	8.00		2,000	1,000	1,000	1,000	1,400	6,400
18 *	Const: of road from Akbar Pura to Banda Ismil i/c bridge over Bara River at Zaki Charbagh	unapproved	8,500	0.00	5.67		2,500	1,500	1,500	1,500	1,500	8,500
19	Impt: & B.T. of road from Ziarat Kaka Sahib road to Mehraji via Bahader Khel	unapproved	11,000	11.00	0.00		3,000	2,000	2,000	2,000	2,000	11,000
20	Impt: & B.T. of road from Ziarat Kaka sahib road to Manki sharif via Tangi Khattak	unapproved	8,000	8.00	0.00		2,400	1,400	1,400	1,400	1,400	8,000
21	Constn: of Manki sharif to Nizam Pur road	unapproved	20,000	0.00	16.00		5,000	4,000	4,000	4,000	3,000	20,000
Total			71,400	31	30	0	20,000	13,000	13,000	13,000	12,400	71,400

DISTRICT : MARDAN												
22	Constn: of Gujar Garhi Bagh Killi Black Topped road i/c Bridge over Kalpani Nullah	approved	9,007	0.00	5.58	2,643	2,000	2,000	2,364	0	0	6,364
23	Constn: of Bridge over Kalpani Nullah at Chowki	approved	25,722	0.00	0.00	7,117	4,000	4,000	4,000	4,000	2,605	18,605
24	Constn: of Takhtbai Jamalgarhi black topped road i/c 2 bridges over Bagiani and Kaplani Nullah	approved	18,780	0.00	4.70	7,709	5,000	5,071	0	0	0	10,071
25	Improvement and widening of NCC road Mardan Shergarh Section	approved	32,836	30.39	0.00	31,294	1,542	0	0	0	0	1,542
26	Rehabilitation of Toru Marhatti road	unapproved	9,710	15.76	0.00		2,000	3,710	4,000	0	0	9,710
27	Rehabilitation of Shergarh Lund Khawar road	unapproved	10,441	21.82	0.00		2,000	3,000	3,000	2,441	0	10,441
28 *	Constn: of Sargao Kingargali road (shingled)	unapproved	32,760	0.00	21.84		5,000	6,000	7,000	7,000	7,760	32,760
29	Reh: of Rustam	unapproved	26,948	19.32	0.00		5,000	5,000	5,000	5,000	6,948	26,948

8TH FIVE YEARS PLAN (1993, July - 1998, Jun)

Sr. No	Name of Scheme	Status	Estimate (Rs '000)	Improve (km)	Construct (km)	Expenditure in 7th Plan (Rs '000)	Expenditure During 8th 5 Years Plan (Rs '000)					Expenditure in 8th Plan (Rs '000)
							93 - 94	94 - 95	95 - 96	96 - 97	97 - 98	
30	Ambela road Constn: of bridge over Muqam Nullah between Rustam and Bazar	unapproved	8,000	0.00	0.00		4,000	4,000	0	0	0	8,000
31	Constn: of RCC bridge over Muqam Nullah at Rustam Bazar	unapproved	6,500	0.00	0.00		3,000	3,500	0	0	0	6,500
32	Constn: of RCC bridge on Badri Nullah on Ambar Hund road	unapproved	7,500	0.00	0.00		1,500	6,000	0	0	0	7,500
33	Constn: of RCC bridge on Badri Nullah at Panjpir	unapproved	5,000	0.00	0.00		0	0	5,000	0	0	5,000
34	Constn: of Black topped road from Rustam to Malandri	unapproved	18,000	0.00	14.00		0	0	5,000	8,000	5,000	18,000
35	Impt: of Toru road	unapproved	5,000	8.70	0.00		0	0	5,000	0	0	5,000
36	Constn: of bridge over Kalpani nullah at Toru Godar Ghara	unapproved	6,000	0.00	0.00		0	0	0	0	6,000	6,000
37	Constn: of Foot Bridge over Dhob Mayar	unapproved	5,000	0.00	0.00		0	0	0	0	5,000	5,000
38	Impt: and Widg: of Mardan Bakhshali Oharguli road	unapproved	40,000	26.00	0.00		0	0	4,000	8,000	28,000	40,000
39	Impt: and Widg: of Shergarh Bakhshali road	unapproved	41,000	27.00	0.00		0	0	4,000	8,000	29,000	41,000
Total			308,204	149	46	48,763	35,042	42,281	48,364	42,441	90,313	258,441

SWABI DIST:												
40 *	Impt: of Jehangira Swabi road	approved	57,694	38.46	0.00	19,521	7,500	7,500	7,500	7,500	8,173	38,173
41	Constn: of 2 Bridges on Nawan Killi Shewa road	approved	26,584	0.00	0.00	16,982	9,602	0	0	0	0	9,602
42	Constn: of Black topped road from Nazar to Jalbai via Dhobian	unapproved	17,480	0.00	25.64	1,000	4,000	4,000	4,000	4,480	0	16,480
43	Constn: of Marghuz Kut kani Mainai Black topped road	approved	6,674	0.00	8.44	7,171	2,503	0	0	0	0	2,503
44	Constn: of B/topped road from Jhanda Maini Kotha road	unapproved	9,200	0.00	9.00		0	2,000	1,200	2,000	4,000	9,200
45	Constn: of B/topped road from Shah Mansoor to Dagai vill : Yar Hussain via Sikandari	unapproved	19,800	0.00	21.00		0	3,000	4,000	4,000	8,800	19,800
46	Constn: of B/topped road from Besak Malikabad Babaini Qadra Panjmand road	unapproved	20,600	0.00	22.00		0	3,000	3,000	4,000	10,600	20,600
47	Constn: of B.T. road from Sadri to Maneri (Sher Shah road)	unapproved	6,259	0.00	8.50		0	1,000	1,259	0	4,000	6,259