NATIONAL TRANSPORT RESEARCH CENTRE

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ROAD CONSTRUCTION MACHINERY SURVEY

NTRC-99

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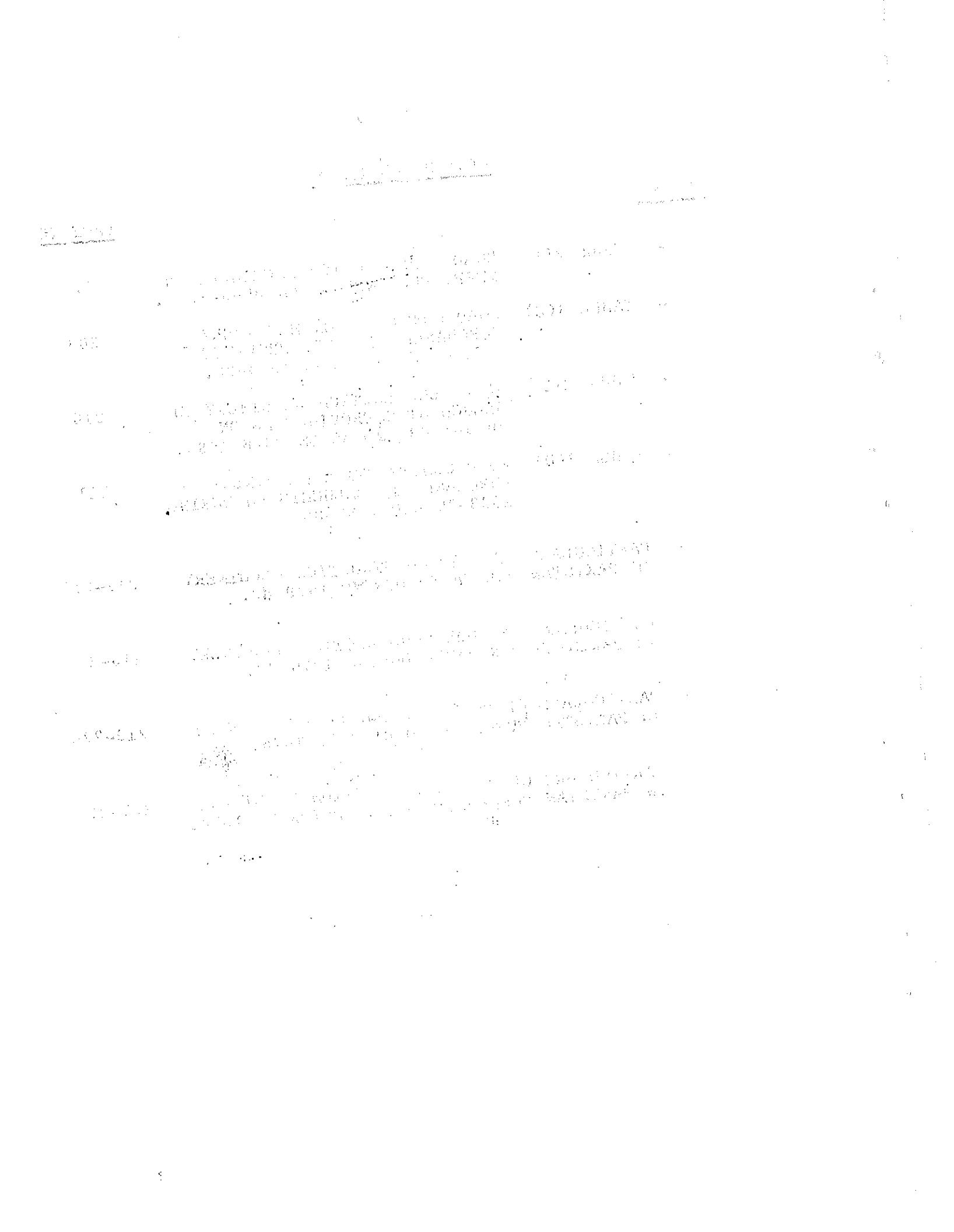

CHAPTER-I

INTRODUCTION

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INTRODUCTION

The number of vehicles using our roads are increasing at a fast rate. Due to general economic uplift, social conditions and industrial activity more and more heavy axles loads are multi-plying. The roads which were previously designed and constructed for a given normal traffic level are deteriorating because roads of much higher standard are needed now-a-days to cater for the destructive forces generated by the present traffic density and axle loading.

At the time of independence in 1947, the road making machinery barely consisted of smooth wheel road rollers, Bitumen heating and spraying trolleys and Water Tankers. Buldozers were occassionally arranged to assist embankment construction. The situation has changed over past years and now one can seen for modern carpeting machines laying the wearing surface on roads. Buldozers, angle-dozers, pneumatic tired rollers, sheep-foot rollers and bitumen mixing plants are owned by various construction organizations in Pakistan. The use of machinery for road construction is on the increase. The road construction tasks wholly executed by labour intensive methods are no longer in practice, because of inherent economic disadvantages and demands of latest road construction technology.

Due to requirement of higher standards in road construction, the conventional methods have become totally

obsolete and wasteful. We can no longer afford to lay thicker layers of earth work and wait for natural forces of wheather and traffic to compact them over several seasons after which a road could be used. No other construction activity has developed as fast as the road construction and more economical and specialized equipment is now available to suit particular site conditions. Because of higher standards of compaction required for earth work and other layers of roads construction, separate machines are required for different types of soils and aggregates. Simple dead weight steel rollers and sheeps foot rollers are not useful for compaction of sands whereas vibratory rollers are poor compactors of clays and silts but very efficient on sandy and sand mixed soils.

Present Government is giving great priority to communication sector especially to maintain and expand the road net work, so as to lay a solid foundation for economic uplift of the masses. During the Fifth Five Year Plan an expenditure of Rs.1600.00 million was incurred and during the Sixth Plan Rs.4,100.00 million, including 2,100.00 million in ADP and 2,000.00 million by Local Bodies, have been provided for the construction of roads. Further during 1986-90 an allocation of Rs.6,200/- million has been provided, under the Prime Minister's Five Point Programme, for Rural Roads.

The road construction machinery available in the country is of multifarious makes and procured from diversified origins. This has resulted in difficulties in maintenance and repair of existing machinery.

A survey of heavy earth moving machinery was carried out by MPO (WAPDA) in 1973 and a survey of requirements of road making machinery was also conducted in 1975 by Punjab Highway Department. Since then, a lot more machinery have been added and some of it scrapped off. The estimates of machinery population are essentially needed to be assessed so that the selection of road construction machinery could be made, appropriately to meet the target of road construction in their true dimensions of time, cost, and other inputs.

In persuance of policy of removing the economic disparity between rural and urban areas, Sixth Five Year Plan, had provided a substantially enlarged development programme, particularly for provision of roads in rural areas. In order to achieve this objective, it was realized that such programme can only be implemented if adequate and appropriate road construction machinery is made available in the country.

The main objective of the survey was to realistically assess the type and output of each type of machinery available with various organizations and

to prepare an inventory of road construction machinery in Pakistan. This would help in indentifying the most suitable machinery in the country. Further on the basis of this inventory a small sample of machinery of each type will be selected for detailed investigations to determine the other aspects of the problem.

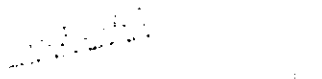
In order to quantify the requirement of road construction machinery, it was deemed necessary to ascertain the present availability of machinery in the country. At the request of Planning and Development Division, Federal Bureau of Statistics in 1982 started organizing a programme for collection of data on road construction machinery available in the private and public sector organizations all over the country. For this purpose, sufficient funds were provided to the Federal Bureau of Statistics. This survey was envisaged to be completed by February, 1983 so that its findings could be in-corporated in the Sixth Plan documents. Keeping in view the importance and urgency of the matter, Federal Bureau of Statistics designed and pretested before finalization the questionnaire. The information asked for in the questionnaire was of such a nature that it would have been only collected after referring to the old records of the organizations like date of purchase, expenditure made on repair/maintenance, fuel consumption, operating cost, remaining life etc).

This report has been divided into Four Chapters. Chapter-I, gives the main Introduction to

the problem. Chapter-II, indicates the Methodology adopted for the study. Chapter-III, provides the Analysis of Data and Chapter-IV, illustrates the Conclusions drawn and Recommendations based on these conclusions.

CHAPTER-II

METHODOLOGY USED FOR THE STUDY



CHAPTER-II

METHODOLOGY USED FOR THE STUDY

SCOPE AND COVERAGE:

A list of nearly 586 organizations in private and public sectors was drawn. It included contractors and construction companies engaged in road construction activity. It covered all Federal, Provincial, Autonomous and Semi-Autonomous Organizations. It also covered local bodies like District Councils, Municipal Corporations/ Committees, Town Committees and Cantonment Boards.

The method of data collection was to get the detailed information from all the Federal, Provincial, Autonomous and Semi-Autonomous Organizations located at Islamabad, Rawalpindi, Peshawar, Lahore, Multan, Quetta, Mardan, Faisalabad, Sargodha, Hyderabad, Abbottabad and Karachi and some other Private Organizations engaged in Road Construction Activities. In addition, 438 local bodies like District Councils, Municipal Corporations/ Committees, Town Committees and Cantonment Boards spread over the country were also covered under the survey. The questionnaire was designed by the Federal Bureau of Statistics. Keeping in view the requirements of NTRC. it was mailed out to all the concerned agencies throughout the country. The questionnaire has covered the following items of information regarding description of Road Construction Machinery like Make/Model, Country of Origin, Rating H.P., Rated capacity, Year of purchase, Average out-put per machine hour, Type of fuel used,

Fuel consumption per machine hour, Average operating cost per machine hour, Annual average repair cost per machine, Cost of purchase, Expected remaining life, Present and replacement value. The information asked for in the questionnaire was in much detail and time consuming and could only be obtained after referring to the old records of these organizations. In view of this, some designated interviewers had to make several visits to the respondents to get the required information. In all 586 Organizations were covered in the survey.

The results of the first phase of the survey, provided by Federal Bureau of Statistics, were discussed in a meeting held in July, 1985 and it was decided to update the results of this survey through another improved questionnaire designed for the purpose. This second phase of survey started immediately after this and the results of this survey were made available in due time, which showed the population of machinery as on 30th June, 1983 and 30th June, 1985 and purchased during 1983-84 and 1984-85. A statement showing imports of Road Construction Machinery from 1970-71 to 1984-85 was also made available by Federal Bureau of Statistics.

QUESTIONNAIRE PREPARATION:

The questionnaire is a funnel through which flows all the information from its source to its ultimate use. In this case, two questionnaires were designed and completed one after the other. The forms were printed in

sufficient number to cover the entire survey. Like others, each questionnaire had also two parts (a) identification items (b) questions related with the survey. These questions were grouped together, each one was leading to the next. The sequence was given for the ease of processing. The persons responsible for processing the data were consulted at an early stage of designing the questionnaire. The quality of the final report and the findings of the survey had not exceeded that of the questionnaire (sample at page 133).

PRE-TESTING OF QUESTIONNAIRE:

Designing an adequate questionnaire is a difficult task. To assure that the questions were properly framed to elicit the desired information. It was planned that the survey teams would visit the offices of the concerned agencies involved in road construction activity to discover whether the requisite information was available with them or not. During the pre-testing of questionnaire at Karachi, it was observed that the information was not easily forth-coming because the questionnaire was quite detailed. Thus the Enumerators had to make a number of visits to the respondents. On the basis of, a careful analysis of the results of the pre-test, the questionnaire was

reviewed, revised and improved. The following steps were considered necessary for pre-testing:

1. It involved the interviewers who carried out the actual survey.
2. Close supervision was ensured.
3. It involved more than one interviewers.
4. It was carried out through regular notes and recordings and not depending on memory.
5. It was done much before the actual data collection efforts.
6. The complete questionnaire was tested.

ADJUSTING/REVISING THE QUESTIONNAIRE:

The problems indentified during the pre-testing were reviewed and necessary adjustments or changes were made in the questionnaire before using it for actual data collection.

PREPARATION OF INTERVIEWER'S MANUAL:

The interviewer's manual is a guide for the interviewers which tells them the appropriate manner in which the interview was to be conducted. It was prepared sufficiently ahead of the initiation of the field operation. It covered broadly the following:

I. A brief description of the study, aims objectives and its importance.

II. Principles of interviewing(its importance, its relation with the project, general attitude of interviewers, rapport building, sequence of questions, respecting interviewers privacy, customs, traditions, draw-backs of probing questions) and be courteous, polite and maintain confidentiality.

III. Question by question objectives, their explanation and other necessary information related to the work of interviewers. In order to achieve good results of the survey a separate manual of instructions was prepared which is given as under:

INSTRUCTIONS FOR THE ENUMERATORS:

1. This survey relates to all available machinery for road construction either in use or in stocks at the time of reporting. The items covered by this survey are listed in the questionnaire. Detailed information for all the items of machinery available with the establishment should be reported.

2. The items of machinery like water pumps, water tankers, trucks, air compressors, Jeeps/ Pickups/Cars etc., if used by the reporting establishment/organization for multiple purposes including construction should also be reported under this questionnaire.

3. Under Col.3 the make of the machinery means the trade name like Ford, Fiat, etc. may be given, whereas under Col.5 the rating horse power of machine may be shown. Under Col.4 is required the rated capacity which means the maximum capacity of the machine e.g. in the case of tar boilers it may be in gallons (210 gallons), road rollers in tons (8-10 tons or 10-12 tons). In case of repair cost it may be annual average repair cost, if possible, other-wise the repair cost of the previous year may be reported. Under Col.12 & 13, the average fuel consumption/machine hour in Rupees should be recorded. In Col. 14 & 15, the average operating cost per machine hour in Rupees should be noted. In Col.16, the cost of purchase of machinery in Rupees should maintained. These all Column should be completed from the relevant record of the organizations.

The interviewer had to authenticate the proforma stating the time, date and full postal address of the 'place of interview' where the interview had actually been conducted.

In case, the place of interview did not change in the subsequent questionnaire, the interviewer had only to record the serial number of the questionnaire having the exact address of the place of interview.

DATA COLLECTION (FIELD OPERATION):

Human beings always observe and as such questions are raised which need to be answered. The observations made by various individuals generate data. Regardless of the source or methodology used for collecting data, the interviewer in each study has to consider what must exist between observer and the observed and how to establish such relationship.

In this case, an attempt was made to get the required information through a mailed questionnaire was sent out to all the concerned agencies through-out the country. Keeping in view, the volume of work, sufficient time was given to these organizations for filling in the questionnaire. A number of agencies supplied the information within the specified date, but some of them failed. When it was realized that, after issuing a number of reminders, these organizations

have not been able to furnish the required information. After this, it was decided to engage field staff to contact organisations in small towns under the supervision of field offices. Moreover four officers from Karachi and Lahore were deputed to supervise the field work and also to contact personally the respondents in towns given under them. These teams were arranged from the field offices of Federal Bureau of Statistics located in different cities/towns of Pakistan. The Enumerators were asked to visit the offices of these organizations and get the required information as per questionnaire and complete the un-filled or incomplete proformas. It was observed that the information was not forth-coming easily. The officers of Federal Bureau of Statistics had to make a number of field contacts and the data was finally collected personally after explaining the urgency and the importance of the information and thus it was also decided to depute one officer each to contact organizations in Baluchistan and N.W.F.P. and two officers each for follow-up action in Punjab and Sind Provinces.

The total number of forms filled in was 586. Out of which 438 were pertaining to the local bodies like District Councils, Municipal Corporations/Committees, Town Committees and Cantonment Boards.

It was ascertained that all information had been obtained from the relevant record Books of these organizations and nothing has been taken from the memory. The Enumerators were provided with an introductory letter issued by the Head of Federal Bureau of Statistics field offices concerned which had to be shown to the competent authority of the organization concerned if so desired.

SPECIAL PROBLEMS ENCOUNTERED IN ENUMERATION:

(a) Listing Error:

Since the accuracy of the list had an important bearing on the technical excellence of the survey all such errors were corrected and called to the attention of the officer incharge.

(b) Call Backs:

When an interview was not obtained on the first call at a specific place, the Enumerator left a card of identification there so that the respondent could communicate with the Enumerator to arrange for a future meeting. For this purpose, the enumerator obtained the full address of the organization and thus it became easy to call back the organisation to get the required information.

(c) Substitution of one agency for another was not permissible because it would introduce an unknown biases into the survey.

(B) ADMINISTRATIVE ASPECTS OF THE FIELD ENUMERATOR:

I. Payment to Enumerators:

The Enumerator were paid full time TA/DA and Taxi Charges as admissible under the rules, depending upon the administrative set-up of the survey.

II. Transportation of Enumerators:

Provision of Taxi Charges was made for Enumerators to move from one place to another with a minimum of time loss.

III. Plans for Measuring Performance:

A careful record was kept of the work assigned and completed by each Enumerator. Standard of performance established so that each Enumerator may clearly understand what was expected and required of him.

IV. Control of Progress of Work:

The Supervisory Staff had the function of seeing that field work started on time, continued on schedule, and was completed by the end of the enumeration period. At the end of each day the amount of completed work was noted.

EDITING OF DATA:

Editing of schedule or filled in proforma consisted of careful inspection to detect any errors, omissions, inconsistencies and/or incompleteness in the data. It also involved check on whether data was reasonable, uniform and ready for tabulation. In this case, each schedule was edited twice, once in the

field after the day work was over and other at the headquarter. Editing was made in a distinctive colour to avoid confusion between the editor's entries and that of the Enumerator. The routine editing was done in the field office every day after the day work was over. This practice facilitated a contact with the respondents without any delay, particularly in case when there was a need for the re-interview. The editing, in general, is carried out to ensure the following:

(a) Completeness.

(b) Legibility.

(c) Comprehensiveness.

(d) Consistency.

(e) Uniformity.

(f) Reasons for non-response.

(g) Coding.

CODING:

Coding is the assignment of numbers, letters or other symbols to the answers on the questionnaire. The purpose of coding is to classify the answers of all questions into meaningful categories and thus to facilitate the summary of the data. In this case, the coding manual was developed by purpose of machinery,

other manual for country codes, make, model, capacity and different type of units etc. were also developed. The schedule after editing and coding were transcribed on a specially designed transcription sheet and passed on to computer for computerization of results.

TABULATION:

After the coding process was completed, there emerged a series of tabulations which constituted the findings of the surveys. For this purpose the data was tabulated accordingly to the already approved tabulation plan on Pakistan and Provincial basis. Each organization was alloted a code and all the schedules were computerized accordingly. The tabulation plan provided a system in which various informations were sorted, grouped, averaged, rounded, summarized and presented in a way which made the findings most usable. Generally speaking, the first tabulations was in more detail than the tables which ultimately appeared in the published report. Non-reporting and zero values cases were distinguished for computation of average machine hour values. The tabulation plan was prepared by Federal Bureau of Statistics and it was discussed in a meeting held in October, 1983. Some amendments were carried out in the tabulation plan. The final shape of tabulations plan would, however, depended upon the availability of data (copy enclosed).

The blank tables were prepared to assess the data requirements, only to serve as a guide. It was desirable to circulated them to the eventual data users for suggestions and improvements. After this, a number of tables were prepared to answer the questions raised at the beginning for which this study was undertaken.

ANALYSIS OF DATA:

The objective of the analysis is to answer the basic questions raised at the problem formulation stage. At the analysis stage, the various relationships in terms of causes and effects were seen. The analysis plan was directed by the objectives of the study. The final report includes the interpretation of the findings of the survey. In writing the analysis, the requirements of all good writings was kept in mind, namely, a logical sequence of topics, clear and easily understood exposition of the ideas.

In this case, the results of the survey give position of data as reported during 1983. As decided in the Inter Ministerial Committee Meeting of NTRC, held on 16th December, 1985, that the results of the above survey as provided on 29th November, 1984, may be updated by collection of data through mailing yet another questionnaire as at Annexure-II and a special tabulation plan be prepared showing the position of data as on 30th June, 1983, 30th June, 1984 and 30th June, 1985.

In the first phase of the survey the data was collected upto 30th June, 1983 but the second phase updated the results upto 30th June, 1985. On the basis of analysis of data, it was desirable to assess the type and output of each type of machinery available with various organizations area-wise. This was to give the operational capability and maintenance requirements of the machinery available in Pakistan which could help us to assess the future needs of road construction machinery and to import the urgently required items of machinery to meet the growing demand of road construction machinery in the country.

LIMITATIONS OF DATA:

(i) It is observed that a large number of small local bodies do not have their own equipment. They normally hire the machinery from PWD, or other departments.

(ii) There are some petty contractors who own one or two road rollers and mixers etc. and give them on hire. The list of such contractors is not available from any source and since their number is also very small. The same have not, therefore, been covered.

(iii) This survey covers only that part of the machinery which is used in road construction only. There are, however, many items of machinery which are also used in building construction, mining etc.

(iv) The equipment of many organizations like NLC, Defence, Mechanized Construction of Pakistan, Highways Departments is held in different parts of the country. It was not possible to obtain

the location of the equipment by areas/ regions etc. The tabulation of such data was, therefore done on the basis of location of their headquarters. The provincial tables, therefore do not provide the exact location of the equipment under this category.

(v) The data of organizations located at Islamabad/ Rawalpindi are shown in the table for Punjab Province.

(vi) The totals of machinery items as on 30th June, 1983 and purchased during 1983-84 and 1984-85 may not be added to the total of equipment shown as on 30th June, 1985 due to deletion of certain machinery items.

(vii) The survey of road construction machinery was assigned to Federal Bureau of Statistics in 1982 and it was highly desirable that the results would be incorporated in the documents of Sixth Five Year Plan period. However the results of the first phase of the survey were provided on 29th November, 1984 which were discussed in two different meetings held in 1985. Ultimately it was decided that the results of the first phase of the survey may be updated from 30th June, 1983 to 30th June, 1985 through mailing another questionnaire and thus the final results on computerized sheets were provided in July, 1986. After this, a meeting was held with representatives of Federal Bureau of Statistics, who were asked to prepare a report on the subject, but they showed their inability to write the report and thus the report was prepared by the NTRC.

CHAPTER-III

ANALYSIS OF THE DATA

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ANALYSIS OF THE DATA

Pakistan inherited small percentage of high level roads at the time of independence, and those too were rather in poor condition due to, apart from strain of heavy Military movements particularly in the North West part of Pakistan during the World War, heavy Floods, Water Logging and Salinity and heavy increase in vehicle Tonnage on Roads. In some parts of Pakistan, volume of traffic was so heavy that the increased laden weight of Lorries/Trucks just tore Off the road crest in early days.

The reasons why road network development suffered in the past was due to the lack of any centralized agency for progressive planning. The other reason was that road development was not given the due priority it deserved. It was every one's necessity but no body's responsibility. It is, however, a chronic human weakness to continue putting off things to the very last and the habit of procrastination is at its worst in the departments run by the Government and certain local authorities. These agencies do not appear to have a proper appreciation of the inevitable growth, which is bound to take place in the next decade and even earlier which would not allow traffic to wait for new construction or heavy repairs to the existing roads.

The failing of our roads is the cumulative result of many deficiencies, like delayed financial allocations, insufficient field staff, and even ineffective implementation capacity of the executing departments besides neglect on maintenance requirements, but on account of per-force adoption of low-cost specifications due to lack of funds. We are now paying more for the maintenance of bad roads.

The road length in relation to area in Pakistan is quite low as compared to other developed and developing countries of the world as shown below:

Table
International Comparison of Road Length in relation to Area

Sl. No.	Country	Km/Sq.Km
1	2	3
1.	Japan	2.74
2.	France	2.70
3.	West Germany	1.68
4.	Italy	1.25
5.	England	1.25
6.	USA	0.64
7.	India	0.50
8.	Sri Lanka	0.38
9.	Brazil	0.15
10.	Pakistan	0.13
11.	Bangla Desh	0.05
12.	Nepal	0.04

The mileage of roads presently existing in our country is too meagre to meet the socio-economic development requirements. At present, there is a deficiency of 346,000 Km. and at the present rate of constructing new roads i.e. roughly 3,000 Kilometers per year it would take years to fulfill the need.

An adequate and efficient highway system is essential for meeting the needs of the present day traffic. It is in fact the corner stone of successful economic and social development. It is, therefore, imperative that ways and means should be focused to meet the requirement in the shortest possible time.

In the survey of Road Construction Machinery, 586 Organizations in private and public sectors were covered throughout the country. Out of which 438 local bodies like District Councils, Municipal Corporations/ Committees, Town Committees and Cantonment Boards and 146 Organizations in public and private sectors engaged in road construction activities were covered for the purpose of collection of data. According to this survey the information in respect of 10,031 items of machinery was collected from these agencies/organizations throughout the country. Out of which 7,106 items were covered for Punjab, 1,483 for Sind, 969 for NWFP and 473 for Baluchistan. The information in respect of those items of machinery which were available as on 30th June, 1983 was collected.

According to the age structure, 49.43% of the items of machinery are more than 10 years old, 8.01% fall within the age group of 9-10 years. 17.92% fall within the age-group of 6-8 years and the remaining 24.64% are less than 5 years old. It is evident that only 1/4 of the total number of items of machinery are such which could be utilized for another period of more than 5 years. 1/2 of the total number of items of machinery is such that they had either retired or are about to retire and can not be depended upon for the time to come because most of these had already surpassed their useful.

In case of Punjab where 70.84% of the total machinery of the country is available. 58.26% of the items of machinery are more than 10 years old. 4.90% of these fall within the age group of 9-10 years, which 13.58% of items are within the age group of 6-8 years and only the remaining 23.26% are less than 5 years old. In case of Sind, where 14.78% of the total number of items of machinery are available, out of which 24.75% of these items are more than 10 years old, 16.32% of these items are within the age group of 9-10 years, 41.47% of these items fall within the age-group of 6-8 years and the remaining 17.46% are less than 5 years.

It is evident that the road construction machinery in Sind is younger in age as compared to that of in Punjab. In case of NWFP,

where 9.66% of the items of total machinery were available, 30.55% of these items of machinery were more than 10 years old, 19.92% of the items fall within the age group of 9-10 years, 17.85% of the items fall within the age group of 6-8 years and the remaining 31.66% were less than 5 years old. In case of Baluchistan where 4.72% of the total machinery was available. Out of which 32.77% of items were more than 10 years old 53.49% of the items were less than 5 years old and the remaining 13.74% fall within the age-group of 6-10 years.

From the above it is clear that in Baluchistan the higher percentage of machinery was less than 5 years old. Which may be due to the fact that road construction activity had started late in Baluchistan and is still continuing.

As regards the country of origin of the machinery purchased/imported during 1947 to 1983 in Pakistan, the maximum number of items of machinery have been imported from Japan, U.K. and USA respectively, which constitute about 51% of the total machinery. Only 19.34% of the items of machinery purchased were made in Pakistan. It is also clear that in the category of road construction/maintenance equipment purchased utilized, highest percentage was of that machinery which was made in Pakistan. Next to this, the larger number of machinery was imported from USSR,

China and Argentina respectively, which constitute 19.89% of the total machinery. The remaining 10.27% of the machinery has been imported from a number of other countries like Poland, Germany, Czechoslavakia, Sweden, Switzerland, Canada, Yogoslavia, Australia, Austria, Denmark, Hungry, North-Korea, Netherland and East Germany.

It is observed that the highest percentage of machinery available in Punjab was made in Japan, whereas the highest percentage of machinery available in Sind was made in USSR, which is about 1/3 of that available in Sind. In NWFP, the highest percentage of machinery available in the province was made in Pakistan. Next to this, the higher percentage of machinery available in NWFP was made in Japan. In case of Baluchistan, the highest percentage of machinery available in the province has been imported from Japan.

As stated above the total number of items of road construction machinery available in Pakistan as on 30th June, 1983 were 10,031 and they were 11,285 as on 30th June, 1985. It means that there was a net addition of 1,254 items of machinery during a period of 2 years, comprising the maximum number of machinery was regarding road construction/maintenance equipment. However, there is a substantial number of items of Earth Moving Equipment and the lowest

number of units is of Transport Equipment nature and others added during the period 1983-85. It is evident that the maximum number of road construction/maintenance equipment was either produced in the country or was imported from abroad during the period 1983-85.

The above items of machinery have been classified into the following five main categories as under:

1. Earth Moving Equipment.
2. Road Construction/Maintenance Equipment.
3. Material Handling and Crushing Equipment.
4. Pre-Mixing and Bitumen Machinery.
5. Transport Equipment and Miscellaneous.

A. EARTH MOVING EQUIPMENT:

In this category three types of items of machinery have been covered i.e. (1) Buldozers (2) Motor Graders (3) Scraper Motorized. In this connection, the information in respect of the 1130 items was collected from different agencies/ organizations engaged in the road construction/ maintenance activities. Information regarding 780 items was collected from Punjab, 121 from Sind, 41 from NWFP, and 188 from Baluchistan.

During 1947-83, in this category, 39% of the total machines was imported from USA and 1983. 29%, 13% and 11% of the items of machinery were imported from Japan, U.K. and USSR respectively. The countries from where a small percentage of machinery was imported included Rumania, Italy and China respectively which constitute about 7%. A negligible percentage of machinery was also imported from a number of other countries.

As regards the age structure, about 50% of the machinery is more than 10 years old, 27% of the machinery is less than 5 years old. 15% of the machinery fall within the age-group of 6-8 years and the remaining 8% of the machinery fall within the age-group of 9-10 years. It can be concluded that, in this category about 50% of the machinery had almost surpassed its useful life and its further use may

be un-economical. About 27% of the machinery is such which can be used for more than 5 years and the remaining 23% of machinery is such that it can be used more one to four years if properly maintained. Thus in order to speed up the road construction work a lot of machinery has to be imported, Firstly to replace the worn out items of machinery and second to make net addition in the present stock which would help to remove the deficiencies.

BULDOZER:

A total number of 606 Buldozers were available in the country as on 30th June, 1983 which have been distributed into the four provinces as 87% of the Buldozer for Punjab, 10% for Sind, 5% for NWFP and 8% for Baluchistan. The total number of Buldozer increased to 776 by 30th June, 1985 thus a net addition of 110 Buldozer for Pakistan i.e. 76 for Punjab, 30 for Sind and 4 for NWFP. There was no increase in number of Buldozers during the 1983-85 in Baluchistan.

During the period 1979-83, the majority of the Buldozers were imported from Japan and a little percentage was imported from other countries like USA, Poland and USSR. During the period 1976-78, higher percentage of Buldozers were again imported from Japan. Next to this, a larger number was imported

from countries like USA, Rumania, USSR, Poland, Italy and China respectively. During the period 1974-75 a larger number of Buldozers was imported from USA, Japan and Italy respectively and a small percentage was imported from USSR. Only two buldozers purchased/utilized were made in Pakistan. During the period prior to 1974, the highest percentage of Buldozer were imported from U.K. and USA respectively and a little percentage was imported from Rumania. It is seen that most of the Buldozers of in U.K. make imported in early Sixties and of USA make had been imported even prior to this period.

As regards the age structure of existing Buldozers, 20.34% of the machines are less than 5 years, 16.93% fall within the age-group of 6-8 years, 8.68% fall within the age-group of 9-10 years and 54.05% are more than 10 years old. Out of those which are less than 5 years old. 49.65% are available in Punjab, 18.88% in Sind, 17.48% in NWFP and 13.99% in Baluchistan. Similarly out of those which fall within the age-group of 6-8 years, 71.43% are in Punjab, 25.21% in Sind, 3.36% in NWFP. Again out of those which fall within the age-group of 9-10 years, 86.88% are in Punjab, 3.28% in Sind, 6.56% in NWFP and 3.28% in Baluchistan. Out of those which are more than 10 years old. 95% were in Punjab, 1.84% in Sind, 2.89% in NWFP and 0.27% in Baluchistan. Out of those available in Punjab,

63.33% of the Buldozers are more than 10 years old, 12.46% are less than 5 years old. 14.91% fall within the age-group of 6-8 years and the remaining 9.30% fall within the age-group of 9-10 years. In Sind, 40.91% were less than five years old, 45.45% fall within the age-group of 6-8 years, 10.61% were more than 10 years and the remaining 3.03% fall within the age-group of 9-10 years. In NWFP, 56.82% of the Buldozers were less than 5 years, 25% were more than 10 years old, 18.18% fell within the age-group of 6-10 years. In Baluchistan, 87% were less than 5 years old and 8.70% fell within the age-group of 9-10 years and the remaining 4.30% were more than 10 years old.

During the period 1979-83 the mostly imported make/model of Buldozers were Komatsu and Caterpellar with varying rating horse power ranging between 90-320 H.P. for Komatsu and from 75-235 H.P. for Caterpellar. Komatsu was imported from Japan whereas caterpellar was imported from USA. For example, Buldozer D-5, Caterpitter, USA, was imported in 1980. It has rating horse power as 90 H.P. with average fuel consumption/machine hour as Rs.14/-(as assessed in).The average operating cost per machine hour was Rs.256/- with annual average repair cost of Rs.25,000/-. The cost of the machine was Rs.460,000/-. Thus the annual average repair cost per machine is 5.43% of the capital cost.

Similarly the Buldozer D-8-K Caterpillar USA was imported in 1980 had horse power as 200 H.P. The average fuel consumption/machine hour was Rs.18/- and its average operating cost per machine hour was Rs.275/-. The cost of purchase of the machine was Rs.2,750/- with an annual average repair cost per machine as Rs.200,000/-. Thus annual average repair cost per machine was 7.27% of the capital cost. The Buldozer D-8-155 AE Komatsu, Japan was imported in 1982. Its rating horse power was 320 H.P. The average fuel consumption/machine hour was Rs.9/- with average operating cost per machine hour as Rs.38/-. The annual average repair cost per machine was Rs.1000/-, with the cost of purchase Rs.732,226/-. The annual average repair cost per machine is 0.14% of the capital cost. During 1976-78 again the most popular make/model of Buldozers were Komatsu and Caterpeller with varying rating horse power. For example, the Buldozers D-8-K Caterpitter USA was imported in 1978, its rating horse power was 300 H.P. The average fuel consumption/per machine hour was Rs.11/- and average operating cost per machine hour were Rs.165/-. The annual average repair cost per machine was Rs.46,750/- with cost of purchase as Rs.2,750,000/-. Thus the annual average repair cost per machine was 1.7% of the capital cost. Similarly the Buldozers D-8-155-A Komatsu Japan was imported in 1978. Its the annual average repair costs per machine is 15.9% of the cost of purchase. It is

evident that the repair cost is more for the Komatsu Buldozers as compared to Caterpeller. During the 1974-75 the majority of the Buldozers was imported from USA and Japan. The buldozers T-D-25 IH-TD-25 USA was imported in 1975. The annual average repair cost per machine was 20,000/- and the cost of purchase was Rs.100,000/-. Thus the annual average repair cost per machine is 20% of the capital cost. Similarly the buldozers D-85-A-12 Komatsu Japan, having 180 H.P. as rating H.P. as rating horse power, was imported in 1975. The annual average repair cost per machine was Rs.100,000/- and the cost of purchase as Rs.562,500/- which is 17.8% of the capital cost. It is evident that, for Buldozers imported in 1975, the annual average repair cost for Komatsu Buldozers is less as compare to American ones. During the period prior to 1974 the majority of the buldozers was imported from USA and U.K. the most popular make/model was caterpeller and I.H. In this case, the annual average repair cost per machine is very high. It ranges from 32% to 80% which is almost un-economical. It may be due to the fact that these Buldozers have surpassed this practical/useful life.

MOTOR GRADER:

There are 275 motor graders as available on 30th June, 1983 in the country, which are been spread into the four provinces as (37% of motor graders in Punjab, 11% were Sind, 5% were NWFP and 47% in Baluchistan). This number increased to 346 by 30th June, 1985, thus making a net addition of 71 motor graders for Pakistan. Out of which 52 for Punjab, 9 for Sind and 10 for NWFP. There was no increase in the number of motor graders in Baluchistan during the period 1983-85.

During the period 1979-83 the majority of the motor graders were imported from Japan. Next to this, a larger number of motor graders were imported from USA and U.K. respectively. During the period 1976-78 the maximum number of motor graders were imported from USSR, USA and U.K. respectively. Next to this, a larger number of motor graders were imported from Japan and Italy respectively. During the period 1974-75 the maximum number of motor graders were imported from USA and USSR respectively. During the period prior to 1974 the maximum number of motor graders were imported from USA and U.K. respectively.

As regards the age structure, out of total number of motor grader 32.49% are less than 5 years,

17.77% fell within the age-group of 6-8 years and 3.55% fell within the age-group of 9-10 years and the remaining 46.19% were more than 10 years old. Out of those which were less than 5 years old, 59.38% of motor graders were available in Punjab, 6.25% in Sind, 1.56% in NWFP and 32.81% in Baluchistan. Similarly out of those which fell within the age-group of 6-8 years, 45.71% were in Sind, and 8.58% in NWFP. There was no motor grader available in Baluchistan which fell within this age-group. Again out of those which fell within the age-group of 9-10 years, 57.14% of the motor graders were in Punjab, 42.86% were in Sind and there was no unit in NWFP and Baluchistan which fell within this age-group. Out of those motor graders which were more than 10 years old, 61.54% were in Punjab, 10.99% in Sind, 7.69% in NWFP and the remaining 19.78% in Baluchistan. Out of those motor graders available in Punjab, 49.12% of motor graders were more than 10 years old, 33.33% were less than 5 years old, 14.04% fell within the age-group of 6-8 years and the remaining 3.51% fell within the age-group of 9-10 years. In Sind, 48.49% of the motor graders fell within the age-group of 6-8 years, 30.30% were more than 10 years old, 12.12% were less than 5 years old and the remaining 9.09% fell within the age-group of 9-10 years. In NWFP, 63.64% of motor graders were more than 10 years old, 27.27% fell within the age-group of

6-8 years and the remaining 9.09% were less than 5 years old. In Baluchistan, 53.85% were less than 5 years old and 46.15% were more than 10 years old. There was no motor grader which fell within the age-group of 6-10 years. It is observed that about 50% of the motor graders are more than 10 years old which have almost surpassed their practical life.

During 1979-83 the most popular make/models were Komatsu of Japan and Clark of USA. Motor Graders Komatsu DJ-500-R having rating horse power as 134 H.P. was imported from Japan in 1981. The average operating cost per machine hour was Rs.1/-. The cost of purchase was Rs.483,076/- and the annual average repair cost per machine was Rs.50,000/- which is 10.35% of the capital cost. (2) Motor Grader Clark, USA having rating capacity as 180 H.P. was imported from USA in 1981. The average fuel consumption per machine hour was Rs.41/- and the average operating cost per machine hour was Rs.[illegible]94/-. The cost of purchase was Rs.14,54,000/- and the annual average repair cost per machine was Rs.73,650/- which is 5.07% of the capital cost.

During the period 1976-78 the most popular make/model of Motor Graders were Ford of U.K. and Gallion of USA. Motor Grader A.B. Ford U.K. having rating horse power as 135 H.P. was imported from U.K. in 1978. The average fuel consumption per machine hour was Rs.13/- and the average operating cost per

machine hour Rs.161/-. The cost of purchase was Rs.928,000/- and the average repair cost per machine was Rs.35,000/- which is 0.38% of the capital cost. Motor Grader Gallion T-500-A was imported from USA in 1977. The cost of purchase was Rs.355,130/- and the annual average repair cost per machine was Rs.60,000/- which is 16.90% of the capital cost. During the period 1974-75 the most popular make/model of Motor Graders were Gallion and Caterpeller of USA. Motor Grader Cat 8T was imported in 1975 from USA. The cost of purchase was Rs.250,000/- and the annual average repair cost was Rs.50,000/- which is 20% of the capital cost.

Motor Graders Caterpiller USA having rating horse power as 95 H.P. was purchased in 1964. The average fuel consumption/machine hour was Rs.9/- and the average operating cost per machine was Rs.104/-. The annual average repair cost per machine was Rs.50,000/- whereas cost of purchase was Rs.70,000/-. Thus the annual average repair cost per machine was 78.57% of the capital cost. Motor Grader hubber USA 10-D was purchased in 1967. Its annual average repair cost per machine was Rs.25,000/- and its cost of purchase as Rs.97,721/-. The annual average repair cost was Rs.25.58% of the capital cost. Motor Grader Komatsu rated capacity 40 Tons and its rating horse

power was 165 was purchased in 1962 and its annual average repair cost per machine was Rs.70,000/- and its cost of purchase was Rs.1,066,201/-. The annual average repair cost was 6.56% of the capital cost. It is evident that the motor graders made in Japan have less annual average repair cost as compare to those of made in USA.

MOTOR SCRAPERS:

There are 189 motor scrapers available in the country as on 30th June, 1983, which have been distributed into the Four Provinces as 81% of the motor scrapers were available in Punjab, 16% in Sind and the remaining 3% in Baluchistan. There was no motor scraper in NWFP. The total number of motor scrapers increases to 190 upto 30th June, 1985, thus there was an addition of one machine to the total number of motor scrapers, only one item which was for (Sind only).

During the period 1979-83, the maximum number of motor scrapers was imported from Japan. Next to this, the larger number was imported from USA, Italy and Sweden respectively. The lowest percentage was imported from U.K. During the period 1976-78, the maximum number of motor scrapers were imported from USA and a little percentage was imported from USSR. During the period 1974-75, the maximum number of motor scrapers was imported from

USA and West Germany respectively and a little percentage of motor scrapers purchased/utilized was made in Pakistan. During the period prior to 1974 almost all motor scrapers were imported from USA.

As regards the age structure, 19.79% of motor scrapers are less than 5 years old, 13.37% fell within the age-group of 6-8 years, 12.83% fell within the age-group of 9-10 years and the remaining 54.01% were more than 10 years old. Out of those which were less than 5 years old. 90% were in Punjab, 10% in Baluchistan. Out of those which fell within the age-group of 6-8 years, 42% were in Punjab and 51% in Sind and 7% in Baluchistan. There was no unit in NWFP falling within this age-group. Similarly out of those which fell within the age-group of 9-10 years, 91.67% were in Punjab and 8.33% were in Sind. There was no unit in NWFP and Baluchistan falling within this age-group. Again out of those which were more than 10 years 96.04% were in Punjab and 3.96% in Sind. There was no unit in NWFP and Baluchistan which was more than 10 years old. Out of those motor scrapers available in Punjab, 58.08% were more than 10 years old, 22.16% were less than 5 years old, 13.17% fell within the age-group 9-10 years and 6.59% fell within the age-group of 6-8 years. In Sind, 70% fell within the age-group of 6-8 years, 10% fell within the age-group of 9-10 years

and the remaining 20% were more than 10 years old. There was no motor scraper available in NWFP. All the motor scrapers all in Baluchistan were less than 5 years old. This may be due to the fact that road construction work has started late in Baluchistan.

During the period 1979-83, the most popular make/model of motor scraper was Komatsu Motor Scraper Komatsu model WS 163-Z was purchased in 1983. The cost of purchase was Rs.3,845,231/- whereas the annual average repair cost per machine was Rs.256,348/- which was 6.67% of the capital cost. During the period 1976-78, the most popular make/model of motor scraper was WABCO of USA which was imported in 1978. The cost of purchase was Rs.1,322,000/- and the annual average repair cost was Rs.44,000/- which was 3.33% of the capital cost. During the period 1974-75, the most popular make/model was West House of Germany. Motor Scraper 15-CUYDS was imported in 1975. The cost of purchase was Rs.1,483,290/- and the annual average repair cost per machine was Rs.276,217/- which was 18.62% of the capital cost. During the period prior to 1974 the most popular make/model was LET with rated capacity 22 Tons. Almost all the Motor Scrapers were imported in 1967 from USA. The annual average repair cost per machine varied from 28.50% of the capital cost.

B. ROAD CONSTRUCTION/MAINTENANCE EQUIPMENT:

In this category, data in respect of 6,166 items was collected throughout the country. Out of which 74% of the items were covered from Punjab, 13% from Sind, 10% from NWFP and 3% from Baluchistan. In this category, 25% of the items of machinery were less than 5 years old, 18% of the items fell within the age-group of 6-8 years, 8% fell within the age-group of 9-10 years and 49% were more than 10 years. It means that about 50% of machinery has surpassed its useful life.

As stated above, 74% of the machinery covered in this category exists in Punjab. Out of which 59% of the machinery is more than 10 years old and 22% is less than 5 years old, 14% fell within the age-group 6-8 years and 5% fell within the age-group 9-10 years. In Sind, 34% of this type of machinery is more than 10 years old, 20% is less than 5 years old, 25% falls within the age-group of 6-8 years and the remaining 21% within the age-group of 9-10 years. In NWFP, 33% of the machinery is more than 10 years old. 29% is less than 5 years old, 14% falls within the age-group of 6-8 years and 24% fell within age-group of 9-10 years. In Baluchistan, 50% of machinery is less than 5 years old, 34% is more than 10 years old, 14% falls within the age-group of 6-8 years and the remaining 2% within

the age-group of 9-10 years. In this category, the highest percentage of machinery utilized was made in Pakistan. Next to this, has been imported from Rumania, Japan, China, U.K. and USA respectively. There are more than 20 countries from where the machinery regarding road construction/maintenance equipment has been imported. The countries from where smaller percentage of machinery has been imported were Canada, India, Austria, Australia and Denmark also.

During 1979-83 maximum of indigenous machinery was purchased under this category. Next to this were the countries from where this machinery has been imported include Japan, China, USA, U.K. and USSR respectively. The smallest percentage of machinery has been imported from other countries like France, Sweden, Germany, Italy, Rumania, Czechoslovakia and Poland. During the period 1976-78 the highest percentage of machinery was imported from Japan. Next to this was that of Pakistan made machinery. However a substantial share of import of machinery from China, U.K. Italy respectively took place. The countries like Sweden USA, Czechoslovakia, USSR, France, Rumania have a nominal share in import of machinery under this category. During the period 1974-75, the maximum number of items of machinery, were imported from Rumania. Next to this were the countries like China and Japan

respectively. There were a number of other countries from where a small percentage of machinery has been imported like Yogoslavia, USA, U.K. and Czechoslovakia. The other origins like USSR, Germany, North Korea and Australia have a very small share in imports of machinery under this category. A substantial quantity of Pakistan made machinery was purchased/ utilized during the period. During the period prior to 1974 the maximum quantity of Pakistan made machinery was purchased/utilized under this category. The highest percentage of the machinery was imported from Rumania. Next to this, a large percentage of machinery was imported from countries like U.K. USA, China, Poland and Czechoslovakia respectively. A smal percentage of machinery was imported from countries like Germany, Japan and USSR respectively. The import of machinery from number of other countries was negligible.

In this category of machinery following items have been covered:

1. Air Compressor.
2. Generator - Electric.
3. Water Pump.
4. Road Roller - all types.
5. Water Tanker.
6. Tractors - All types.

AIR COMPRESSOR:

There were 495 air compressors available in Pakistan as on 30th June, 1983. Out of which, 67% were in Punjab, 17% in Sind, 14% in NWFP and 2% in Baluchistan.

During the period 1979-83, the highest percentage of air compressor was imported from Japan and China respectively. Next to this, a larger number of air compressors were imported from the countries like USA, Sweden, Germany and Poland respectively. Only one Air Compressor made in Pakistan was purchased/utilized during the period. A small percentage of air compressor was imported from many other countries. During the period 1976-78, the maximum number of air compressor was imported from USA, China and U.K. respectively. Next to this, a larger number of air compressor was imported from Japan and Czechoslovakia, Yogoslavia, Germany and Greece respectively. During the period 1974-75, the maximum number of air compressor was imported from Japan and U.K. respectively. Next to this, a large number of air compressor was imported from the other countries like China, USA, Argentina and Poland respectively. During the period prior to 1974, the maximum number of air compressor was imported from USA, China and U.K. respectively. Next to this, a large number of air compressor was imported from

Japan, Czechoslovakia, Yogoslavia, Germany and Greece respectively. It is observed that in the past most of the air compressors were imported from Western countries but now the trend has changed and the air compressors are being imported from Japan and China. This may be due to fact that the air compressors imported from the West are costly as compared to imported from the East. Moreover operating cost for Western items is higher than those of the Eastern. The spare parts for the air compressors imported from the East are easily available whereas for those imported from the West did not get their spare parts in the market.

As regards the age structure, 14.44% of the air compressors were less than 5 years old, 34.05% fell within the age-group of 6-8 years, 14.66% fell within the age-group of 9-10 years and the remaining 36.85% were more than 10 years old. Out of those air compressors which were less than 5 years, 40.30% were available in Punjab, 14.93% were in Sind, 43.28% were in NWFP and the remaining 1.49% were in Baluchistan. Out of those air compressors which fell within the age-group of 6-8 years, 77.21% were available in Punjab, 17.09% were in Sind and 5.70% were in NWFP. There was no air compressor available in Baluchistan which fell within

this age-group. Out of those air compressors which fell within the age-group of 9-10 years, 27.94% were available in Punjab, 64.71% were in Sind and 7.35% were in NWFP. In Baluchistan, there was no air compressor available in this age-group. Out of those air compressors which were more than 10 years old, 92.98% were available in Punjab, 1.76% were in Sind, 2.34% were in NWFP and the remaining 2.92% were in Baluchistan. It is observed that the maximum number of air compressors available in Punjab was more than 10 years old. The largest number of air compressors available in Sind fell within the age-group of 9-10 years. Similarly the highest percentage of air compressors available in NWFP was less than 5 years old. It is seen that the largest number of air compressors available in NWFP were less than 5 years. Out of those air compressors available in Punjab, 48.62% were more than 10 years old, 37.31% fell within the age-group of 6-8 years, 8.26% were less than 5 years and the remaining 5.81% fell within the age-group 9-10 years. In Sind, 52.38% of the air compressors fell within the age-group of 9-10 years, 32.14% fell within the age-group of 6-8 years, 11.91% were less than 5 years old and the remaining 3.57% were more than 10 years old. In NWFP, 61.70% were less than 5 years, 19.15% fell within the age-group of 6-8 years, 10.64% fell within the age-group of 9-10 years and the remaining 8.51% were more than

10 years. In Baluchistan, 16.67% were less than 5 years and 83.33% were more than 10 years old.

During the period 1979-83, the most popular make/model of air compressors were Komatsu, Airman, Paugpu and Denyo/Dynoiair Compressor 210-CFM has the rating horse powers as 120 H.P. was imported in 1981. The average fuel consumption/machine hour was Rs.10/- and the average operating cost per machine hour was Rs.50/-. The cost of purchase was Rs.140,000/- whereas the annual average repair cost per machine was Rs.2,000/-. Thus the annual average repair cost per machine was Rs.1.48% of the operating cost. L-G, Y-11, 10/7 China 120, 105 Q.M-MIN having PAUGPU as model/make was purchased in 1980.The average fuel consumption per machine hour was Rs.8/- whereas the average operating cost per machine hour was Rs.37/-. The cost of purchase was Rs.147,000/- with annual average repair cost per machine was Rs.2,000/-, which was 1.36% of the capital cost. During the period 1976-78 the most popular make/model of air compressors were INGERSOL and AIR MAN. INGERSOL RAND-250 CFM with rated capacity as 250 CFM was imported from USA in 1976. The average operating cost per machine hour was Rs.10/-. The cost of purchase was Rs.100,000/- whereas the annual average repair cost per machine was Rs.20,000/-, which was Rs.20% of the capital cost. (2) Air Man Japan having rated capacity 125-CFM and

having rating horse power as 46 H.P. was imported in 1976. The average operating cost per machine hour was Rs.10/-. The cost of purchase was Rs.49,205/- whereas annual average repair cost per machine was Rs.6,000/- which was 12.19% of the capital cost. During the period 1974-75, the most popular make/model were Tong Yong-Ingersol-Air Man, U.K. 52 K.W.108 CFM was imported from Japan in 1975. The average fuel consumption per machine hour was Rs.1/-. The average operating cost per machine hour was Rs.7/-. The cost of purchase was Rs.83,591/- and the annual average repair cost per machine was Rs.571/-, which was 0.68% of the capital cost. During the period prior to 1974, there was a number of make/model belonging to different countries like USA, U.K., Denmark, China, Japan, Sweden etc. During this period a number of makes/models have been imported from USA like Kellgg Curtia, Joy, Chicago. C.P.T. Ingersol and Bright Brooms. Similarly there was a number of makes/models belonging to U.K. like Air Man Caterpiller, Sipra H.E.C. and consolidated. The other countries have also a number makes/models. The annual average repair cost per machine ranges from 20.50% of the capital cost, which was very high. The average operating cost per machine hour for the air compressors imported prior to 1974 was also very high.

GENERATOR - ELECTRIC:

There were 486 Generators - Electric available in Pakistan as on 30th June, 1983. Out of which 52% of the Generators were available in Punjab, 10% were in Sind, 37% were in NWFP and the remaining 1% were in Baluchistan. Out of those available in Punjab, 67% of the Generators were more than 10 years old, 12% were less than 5 years old, 14% fell within the age-group of 6-8 years and the remaining 7% fell within the age-group of 9-10 years. In Sind, 73% were less than 5 years old, 21% fell within the age-group of 6-8 years old, 5% fell within the age-group of 9-10 years old and the remaining 2% were more than 10 years old. In NWFP and Baluchistan all the Generators were less than 5 years old. To sum up, 23.45% were less than 5 years old, 54.80% were more than 10 years old, 14.97% fell within the age-group of 6-8 years and the remaining 6.78% fell within the age-group of 9-10 years old. It can be concluded that the highest percentage of Generators more than 10 years old were available in Punjab, whereas more than 50% of the Generators available in Sind are less than 5 years old. Similarly no Generators in NWFP and Baluchistan was more than 5 years old. It is evident that the Generators available in Sind, NWFP and Baluchistan can be used atleast for another 5 years, whereas to maintain the present tempo of development we have to provide a number of new Generators to Punjab.

During the period 1979-83, the highest percentage of Generator was imported from Japan and China respectively. Next to this, the larger number was imported from U.K. and Italy respectively. During 1976-78, the highest percentage of Generator was imported from Japan and U.K. respectively. During the period 1974-75, the maximum number of Generator was imported from China and Japan respectively. Next to this, the larger number was imported from USA. However a negligible percentage was imported from Austria. During the period prior to 1974, the highest percentage of Generators was imported from U.K, USA and Czecho-slovakia respectively whereas a little percentage was imported from Japan and China respectively.

During the period 1979-83, the most popular make/model of Generators were HONDA, HINO and KIANARI. The Generators-HINO with rating horse power as 45 KVA was imported from Japan in 1980. The average fuel consumption/machine hour was Rs.18/- and the annual average repair cost per machine was Rs.1,000/- whereas the cost of purchase was Rs.186,490/-. The annual average repair cost per machine was 0.54% of the capital cost. Generators-Honda, Japan 1.5 K.W. rating horse power as 5 H.P. was imported in 1980. The cost of purchase was Rs.7,000/- and the annual average repair cost per machine was Rs.500/- which was 7.14% of the capital cost.

The average fuel consumption was Rs.2/- whereas the average operating cost per machine hour was Rs.15/-. During the period 1976-78, the most popular make/model were DENYO/DYNO and PARKIRSON. Generators-Denyo-DCA, 1051 Japan with rating horse power as 13 H.P. was imported in 1976. The average operating cost per machine was Rs.1/-. The cost of purchase was Rs.20,284/- whereas the annual average repair cost was Rs.2,000/- which was 9.9% of the capital cost. During the period 1974-75, the most popular make/model of Generators CAT D-333 A USA having rating horse power as 75-KW was imported in 1975. The cost of purchase was Rs.50,000/- whereas the annual average repair cost was Rs.10,000/- which was 20% of the capital cost. During the period prior to 1974, there was a number of different makes/models, imported from different countries, available in Pakistan. The average operating cost and the annual repair cost per machine was very high during the period and even un-economical which ranges between 28.50% of the capital cost.

PUMPS - WATER PUMPS:

There were 1343 Pumps - Water Pumps available in the country as on 30th June, 1983, out of which 85% of Water Pumps were available in Punjab, 14% were in Sind and 1% were in NWFP. There was no Water Pump available for road construction activity in Baluchistan. Out of total number of Water Pumps available in the country, 67% of Water Pumps were more than 10 years old, 19% were less than 5 years old, 11% fell within the age-group between 6-8 years. A negligible percentage of Water Pumps fell within the age-group of 9-10 years, In Punjab, 68% of the Water Pumps were more than 10 years old. Whereas 19% were less than 5 years old and 10% fell within the age group of 6-8 years and remaining 3% fell within the age-group of 9-10 years. In Sind, 53% of Water Pumps fell within the age-group 6-8 years, 39% were more than 10 years old, 6% were less than 5 years and the remaining 2% fell within the age-group of 9-10 years. In NWFP, 36% of the Water Pumps were less than 5 years old and 48% of the Water Pumps were more than 10 years old and 16% were within the age-group of 6-10 years old. There are no Water Pumps available in Baluchistan. The over-all position of water pumps in the country was that 67% of the water pumps were more than 10 years old, 19% were less than 5 years old. The remaining 14% fell within the age-group of 6-10 years old.

During the period 1979-83, the maximum number of water pumps purchased/utilized was Pakistan made and

there make was K.S.B. or BECO/PECO. A little percentage was prepared by Ittifaq and MIW. However a small percentage of water pumps was imported from China and Czechoslovakia respectively. During the period 1976-78, the maximum number of Pakistan made water pumps was purchased and utilized. Next to this, a small percentage of water pumps was imported from China, U.K. and USA respectively. During 1974-75, the maximum number of water pumps purchased was again made in Pakistan. Next to this, a large number was imported from the countries like USA, Germany and Japan respectively. During the period prior to 1974, the maximum number of water pumps purchased/utilized was made in Pakistan and there make was BECO/PECO, K.S.B., MIW, MALIK MARCO, SIGMA, SIMPSAR, S.G.M. AND G.M. It is observed that BECO/PECO and K.S.B. were the most popular makes/models of water pumps in Pakistan.

During the period 1979-83, the most popular make/model of water pumps were K.S.B. BECO/PECO, K.S.B. ETA-125/20 with rated capacity as 6" x 5" was purchased and utilized in 1979. The cost of purchase was Rs.35,537/- and the annual average repair cost per machine was Rs.5,900/- which was 16.6% of the capital cost. During the period 1976-78, the most popular make/model among the Pakistan made water pumps were BECO/PECO and K.S.B. FAN-BECO with rated capacity 12" x 10" was purchased in 1976. The cost of purchase was

Rs.1,890/- and the annual average cost per machine was Rs.400/-, which was 21% of the capital cost. K.S.B. ETA-125/20 was purchased in 1976. The cost of purchase was Rs.2,000/- whereas annual average repair cost per machine was Rs.400/- which was 20% of the capital cost. During the period 1974-75, the most popular make/model was PECO/BECO. BECO 3 H.P. rated horse power 3.5 H.P. was purchased in 1974. The cost of purchase was Rs.15,000/- and the annual average repair cost was Rs.1,000/- which was 6.67% of the capital cost. During the period prior to 1974, the most popular make/model among the Pakistan made water pumps were BECO/PECO K.S.B., COSSOR, MALIK, MIW, MARCO and S.G.M. AND AMONG FOREIGN MADE WATER PUMPS PULLSOMETER GRIFN WORTHINGTON CSIHI. BECO rated capacity 6" to 7" was purchased in 1962. The cost of purchase was Rs.30,000/-. The annual average repair cost was Rs.15,000/- which was 50% of the capital cost.

ROLLERS-ROAD ROLLERS-ALL TYPES:

Road Rollers is one of the basic equipment in the construction/maintenance of roads. There were 1,921 Road Rollers-all types in the country as on 30th June, 1983. During the period 1983-85, 270 Road Rollers were added to the present strength. Thus making the total to 2,191. Out of 1,921 of Road Rollers available in the country, 54% of the road rollers-all type were available in the Province of Punjab, 21% were for Sind,

17% were for NWFP and 8% were for Baluchistan. Out of those which were available in Punjab, 58% of the Road Rollers were more than 10 years old, 25% were less than 5 years old, 12% fell within the age group between 6-8 years. The remaining 5% fell within the age-group of 9-10 years old. In Sind, 48% of Road Rollers were more than 10 years, 19% fell within the age-group 9-10 years and 18% fell within the age-group of 6-8 years and the remaining 15% were less than 5 years old. In NWFP, 33% of the Road Rollers were more than 10 years old, 40% fell within the age-group of 9-10 years, 14% fell within the age-group of 6-8 years and the remaining 13% were less than 5 years old. In Baluchistan 58% were less than 5 years old, 37% were more than 10 years old and the remaining 8% fell within the age-group between 6-8 years. The overall position of road roller-all type was that 53% were more than 10 years old, 22% were less than 5 years old, 14% fell within the age-group of 6-8 years and the remaining 11% fell within the age-group of 9-10 years.

It can be easily concluded that about 50% of road rollers available in Sind and Punjab have surpassed their useful life. In NWFP 40% of the Road Rollers were within the age-group of 9-10 years i.e. almost at the verge of retirement. In Baluchistan 55% of the road rollers were less than 5 years old. It means that they can be used for another more than 5 years.

During the period 1979-83, the highest percentage of Road Rollers purchased/utilized was made in Pakistan. Next to this, the larger number was imported from China, Japan and France respectively. However, a small percentage of road rollers was imported from Poland and USA respectively. There are many types of rollers like road rollers Pneumatic Types Road Rollers, Sheep Foot Rollers, Vibratory Road Rollers. The first types was mostly made in Pakistan. The Pneumatic type road rollers were almost imported from Japan and France, Sheep Foot Road Rollers were imported from France and Vibratory Road Rollers were imported from Japan, U.K. Czechoslovakia, West Germany and USSR respectively. During 1976-78, the large number of Road Rollers purchased/utilized was made in Pakistan. Next to this, higher percentage of road rollers was imported from China, France, Czechoslovakia and Sweden respectively. A small percentage was imported from West Germany. For Pneumatic type Road Rollers, the majority was imported from Sweden, USA and Czechoslovakia. Sheep Foot Road Rollers and Pakistan TOE type Road Rollers were made in Pakistan. Vibratory Road Rollers were mostly imported from Italy and Sweden. A small percentage was also imported from Japan and U.K. respectively. During 1974-75, the majority of Road Rollers was imported from Rumania, China, Poland and Czechoslovakia respectively. A substantial number of Road Rollers namely Shahzoor

purchased was made in Pakistan. The Pneumatic type road rollers were mostly made in Pakistan, but a small percentage was imported from USA and Rumania. Sheep Foot road rollers were imported from USA, Rumania. However a large number made in Pakistan was also purchased and utilized. Vibratory road rollers were imported from USA. During the period prior to 1974, the Road Rollers were mostly imported from Czechoslovakia, China, U.K, Rumania, Poland and Germany respectively. A small percentage of Road Rollers was imported from Korea, USA and Yogoslavia. A substantial number of Road Rollers purchased was made in Pakistan. Pneumatic type of Road Rollers was mostly imported from Rumania, U.K. and USSR respectively. A small percentage of road rollers was imported from Japan, West Germany, Czechoslovakia, China and Poland respectively. Sheep Foot Rollers were mostly made in Pakistan and they are also imported from countries like USA, Switzerland and USSR respectively. Vibratory Road Rollers was imported from Czechoslovakia, USA and Germany. A small percentage was also imported from countries like USSR, Poland, China and Switzerland.

During the period 1979-83, the most popular make/model were Ittifaq and Shahzoor of Pakistan. R.R. Shahzoor 40 H.P. has rated capacity 10-12 tons and rating horse power 40 H.P. was purchased in 1982. The average fuel consumption/machine hour was Rs.4/- and the average operating cost per machine hour was Rs.35/-.

The cost of purchase was Rs.262,000/- and the annual average repair cost per machine was Rs.10,000/-, which was 3.82% of the capital cost. During 1976-78, the most popular make/model of Road Rollers were that of made in China Y-21 and Shahzoor of Pakistan. R.R. China Y-21 Diesel with rated capacity 12-15 tons and having rating horse powers as 80 H.P. was purchased in 1978. The average fuel consumption machine hour was Rs.2/-, whereas the average operating cost per machine hour was Rs.59/-. The cost of purchase was Rs.350,000/- and the annual average repair cost per machine was Rs.56,000/-, which was 16% of the capital cost. During 1974-75, the most popular make/model was R.R. Rumania with rated capacity as 8-10 tons was imported from Rumania in 1974. The average fuel consumption per machine hour was Rs.5/- and the average operating cost per machine hour was Rs.49/-. The cost of machine was Rs.150,000/- and the annual average repair cost per machine was Rs.25,000/- which was 16.67% of the capital cost. During the period prior to 1974, the most popular make/model were R.J.M. of China, Rumania and U.K, Polimax, Fedrama of Poland, Shahzoor of Pakistan. Marshall of England, Skoda of Czechoslovakia, R.R. R.J.M. China, 45 H.P. with rated capacity 6-8 tons and the rating horse power 45 H.P. The average fuel consumption per machine hour was Rs.5/- and the average operating cost per machine hour was Rs.25/-. The cost of machine was Rs.150,000/-. The

annual average repair cost per machine was Rs.10,000/- which was 6.67% of the capital cost.

WATER TANKER:

There were 218 Water Tankers available in the country as on 30th June, 1983. Out of which 62% of Water Tankers were available in Punjab, 21% were in Sind, 3% were in NWFP and 14% were in Baluchistan. Out of those Water Tankers available in Punjab, 60% were more than 10 years old, 25% were less than 5 years old, 13% fell within the age-group of 6-8 years and the remaining 2% fell within the age-group of 9-10 years. In Sind, 44% fell within the age-group of 6-8 years and 17% fell within the age-group of 9-10 years, 32% were more than 10 years old and the remaining 7% of water tankers were less than 5 years old. In NWFP, 70% of the water tankers were less than 5 years old and the remaining 30% are more than 10 years old. In Baluchistan, 29% of the water tankers were less than 5 years old, 14% fell within the age-group of 6-8 years, 14% fell within the age-group of 9-10 years and the remaining 43% of water tankers more than 10 years old.

The overall position of water tankers emerges as that 24% were less than 5 years old, 18% fell within the age-group of 6-8 years, 5% fell within the age-group of 9-10 years and the remaining 53% of water

tankers were more than 10 years old.

During the period 1979-83, the maximum number of water tankers was imported from Japan and U.K. respectively. Next to this, a small percentage was imported from USA. However a substantial number of water tankers purchased/utilized was made in Pakistan. During 1976-78, the highest percentage of water tankers was again imported from U.K. and Japan respectively. During this period a small percentage of water tankers purchased/utilized was made in Pakistan. During 1974-75, the maximum number of water tankers was imported from U.K. and Japan respectively and only one unit made in Pakistan was purchased. During the period prior to 1974, the maximum number of water tankers was imported from U.K., USA respectively. Next to this a small percentage was imported from Japan and Italy. During this period a substantial number of water tankers made in Pakistan was also purchased and utilized.

During the period 1979-83, the most popular make/model of water tankers were Ford of U.K. and Hino of Japan. Tanker Ford England having rating horse power as 125 H.P. was imported in 1982. The average fuel consumption/machine hour was Rs.1/- and the average operating cost per machine hour was Rs.25/-. The cost of purchase was Rs.150,000/- where as the

annual average repair cost per machine was Rs.68,000/- which was 45.33% of the capital cost. (2) Tanker Others-Hino having rating horse power 120 H.P. was imported in 1979. The cost of purchase was Rs.75,000/- and annual average repair cost per machine was Rs.6,354/- which was 8.47% of the capital cost. During 1976-78, the most popular make/model were Ford and Isuzu. Tanker Ford U.K. D-1211 with rated capacity 8,000 Gallons and having rating horse power as 190 H.P. was imported from U.K. in 1978. The cost of purchase was Rs.150,000/- and the annual average repair cost per machine was Rs.3,400/- which was 2.27% of the capital cost. (2) Tanker Isuzu Japan with rating horse power as 107 HP. was imported in 1978. The average fuel consumption per machine hour was Rs.43/-. The cost of purchase was Rs.218,225/- whereas annual average repair cost per machine was Rs.11,500/-, which was 5.27% of the capital cost. During 1974-75, the most popular make/model was Bed-Ford. Tanker Bedford England having rated horse power 107 HP. was purchased in 1974. The average fuel consumption per machine hour was Rs.20/- and the average operating cost per machine hour was Rs.121/-. The cost of purchase was Rs.80,000/- and the annual average repair cost per machine hour was Rs.5,000/- which was 6.25% of the capital cost. During the period prior to 1974, the most popular make/model were Eculid of U.K. and White of USA. White 4264 was imported from USA in 1961. The cost of purchase

was Rs.143,998/-, whereas the annual average repair cost per machine was Rs.30,000/- which was 21% of the capital cost. Eculid 91-PD was imported in 1959. The cost was Rs.160,000/- and the annual average repair cost per machine was Rs.30,000/- which was 18.75% of the capital cost.

TRACTORS-ALL TYPES:

Tractors-all type includes Truck Tractors Agriculture and Tractors Others. There are 1703 Tractors-all types available in the country as on 30th June, 1983, which were partly/wholly being used in the Road Construction Activity. Out of which 40% of the tractors were categorized as others and 32% of the tractors specified as agriculture. May be that they were being used for both the activities like agriculture and road construction. Truck-Tractors were about 28%. Out of the total number 96% were available in Punjab, 2% were for Sind, 1% for NWFP and the remaining 1% were for Baluchistan.

As regards the age structure, 40% of the Tractors were less than 5 years old and 34% were more than 10 years old and 14% fell within the age-group of 6-8 years and the remaining 12% fell within the age-group of 9-10 years old. In Punjab, 38% of the Tractors were less than 5 years old and 37% were more than 10 years old and the remaining 25% were

within the age-group of 6-10 years. In Sind, 32% of the tractors were less than 5 years old and 32% fell within the age-group of 6-8 years, again 13% fell within the age-group of 9-10 years and the remaining 23% of the tractors were more than 10 years old. In NWFP, 77% of the Tractors were less than 5 years old, 15% were more than 10 years old. The remaining 8% fell within the age-group of 9-10 years. Similarly in Baluchistan, 80% were less than 5 years old and 20% were more than 10 years old. It is observed that in NWFP and Baluchistan majority the tractors were less than 5 years old. It is also seen that in Punjab high percentage of tractors available were more than 10 years old which have surpassed their useful life.

During the period 1979-83, the majority of the truck-tractors were imported from USSR. Tractors-Agriculture were mostly imported from USA, U.K. and USSR respectively. The Tractors-Others includes Belarus and Ford which were imported from USSR and USA. A small percentage of Land Cruiser tractors was imported from U.K. and Fiat was imported from Italy. During 1976-78, the Truck-Tractors were imported from Japan, Truck Agriculture were mostly imported from USA, U.K. Italy and West Germany. The Tractor-Others were mostly imported from USSR. During 1974-75, Truck-Tractors were mostly imported from Yogoslavia. The Tractor-Agriculture were imported from Yogoslavia

and U.K. respectively. Tractor-Others were also imported from Yogoslavia and U.K. During the period prior to 1974, the Truck-Tractors were mostly imported from USA, Japan, USSR, U.K. and West Germany. Tractor Agriculture were imported from USSR, U.K., West Germany, Czechoslovakia and Yogoslavia. The Tractor-Others includes Cater-Pellar, IMT. Ford Gross-D-MOT and Brilstand were imported from USA, Czechoslovakia, U.K. and Germany respectively.

During the period 1979-83, the most popular make/model of tractors were Belarus/Byelarus of USSR and Ford of USA. Tractor Agriculture Belarus having rating horse power as 60 HP. was imported in 1982. The average fuel consumption per machine hour was Rs.8/-. The average operating cost per machine hour was Rs.45/-. The cost of purchase was Rs.62,000/- whereas the annual average repair cost per machine was Rs.8,000/- which was 12.9% of the capital cost.

(2) Tractor Ford DA-2140 was imported in 1981. The cost of purchase was Rs.110,690/- and the annual average repair cost per machine was Rs.11,500/- which was 10.39% of the capital cost. During 1976-78, the most popular make/model were Ford of U.K, Fiat of Italy and Belarus of USSR. Tractor Agriculture Model 6005 having rating horse power 64 HP. was imported from Italy in 1977. The avenage fuel consumption pen machine hour was

Rs.8/- and the average operating cost per machine was Rs.45/-. The cost of purchase was Rs.60,000/- and the annual average repair cost per machine was Rs.8,000/- which was 13.33% of the capital cost. During 1974-75, the most popular make/model of Tractors were IMT of Yogoslavia and Ford of U.K. Truck-Tractor IMT-LEH-2835 Diesel having rated capacity of 2 tons and rating horse power as 37.75 HP was imported from Yogoslavia in 1974. The average operating cost was per machine hour was Rs.42/-. The cost of purchase was Rs.45,000/- whereas the annual average repair cost per machine was Rs.12,000/- which was 26.67% of the capital cost. During 1974-75, the most popular make/model Tractor Agriculture Ford England having rating horse power as 46 HP was imported in 1975. The average fuel consumption/machine hour was Rs.4/- and the average operating cost per machine hour was Rs.17/-. The cost of purchase was Rs.50,000/- whereas the annual average repair cost per machine was Rs.3,500/- which was 7% of the capital cost. During the period prior to 1974, the most popular make/model of tractors were White and Cater Pellar of USA, Ford of U.K. Truck Tractor White 4464-D having rated capacity as 45 Tons was imported in 1962. The cost of purchase was Rs.146,216/- whereas the annual average repair cost was Rs.97,500/- which was 66.68% of the capital cost. (2) Tractor Wheeled Cat 619/C. 14/18 Cyds having rating horse power as

42 HP was imported from USA in 1954. The cost of purchase was Rs.70,000/- whereas the annual average repair cost per machine was Rs.20,000/- which was Rs.28.6% of the capital cost. (3) Tractor Agriculture Ford England having rating horse power as 46 HP was imported in 1968. The average fuel consumption/machine hour was Rs.8/- and the average operating cost per machine was Rs.33/-. The cost of purchase was Rs.50,000/- whereas the annual average repair cost per machine was Rs.7,000/- which was 14% of the capital cost.

C. MATERIAL HANDLING AND CRUSHING EQUIPMENT:

In this category, 984 number of items of machinery were covered for collection of data. Out of which 63% of the items of machinery were from Punjab, 28% from Sind, 6% from NWFP and the remaining 3% from Baluchistan. 984 was the total number of items as on 30th June, 1983. A net addition of 117 items was made to the total which were purchased during the period 1983-85 and thus making the total to 1101. The maximum addition was made in Concrete Mixers, Crushing Plant and Loaders, which was 70% of the total addition in this category.

As regards the age structure, 22.66% of the total number of items in this category, were less than 5 years old, 39.53% fell within the age-group of 6-8 years, 35.88% were more than 10 years old and the remaining 1.93% fell within the age-group of 9-10 years. Out of those items of machinery available in Punjab, 27.39% were less than 5 years old, 20.26% fell within the age-group of 6-8 years old, 50.57% were more than 10 years old and the remaining 1.78% fell within the age-group of 9-10 years. Out of those items of machinery available in Sind, 7.69% were less than 5 years old, 84.62% fell within the age-group of 6-8 years, 6.02% were more than 10 years old and remaining 1.67% fell within the age-group of 9-10 years. Out of those

items of machinery available in NWFP 48% were less than 5 years old, 36% were more than 10 years old, 10% fell within the age-group of 6-8 years old and the remaining 6% fell within the age-group of 9-10 years old. Out of those items of machinery available in Baluchistan, 38.89% were less than 5 years old, 33.33% fell within the age-group of 6-8 years and 27.78% were more than 10 years old. There was no item which fell within the age-group of 9-10 years old.

It can be concluded that the maximum number of items of machinery were more than 10 years old in Punjab. In Sind, the maximum number of items of machinery fell within the age-group of 6-8 years. In NWFP and Baluchistan the maximum number of items of machinery were less than 5 years old. This may be due to the fact that the development work has started late in these Provinces.

As regards the country of Origin, the maximum number of items of machinery purchased and utilized was made in Pakistan. Next to this the larger number of items were imported from USA, Japan and USSR respectively. However a substantial number of items of machinery were imported from U.K. and China respectively. There were a number of other countries from where a small percentage

of machinery has been imported were like France, Germany, Poland, Italy, Rumania, Denmark, Sweden, Switzerland, Netherland and Czechoslovakia respectively.

During the period 1979-83, the highest percentage of items of machinery were imported from Japan and USA. Next to this, the larger number of items purchased/utilized were made in Pakistan. The imports from U.K. and China were also in larger number. A lower percentage was imported from Sweden and France respectively. During 1976-78, the highest percentage of Pakistan made items of machinery were purchased/utilized. Next to this, the higher percentage of imports were made from USSR, Japan and China respectively. A lower percentage of imports were from U.K, France, Germany, USA and Rumania respectively. There were a number of other countries from where a negligible percentage was imported like Denmark, Switzerland and Italy respectively. During 1974-75, the maximum number of items of machinery were imported from USA. Next to this, a larger number of items of machinery were imported from Germany, Denmark and Poland. A lower percentage of items of machinery were imported from China and Japan respectively. A negligible percentage of items made in Pakistan were purchased and utilized. During the period prior to 1974, the highest percentage of items of machinery was imported

from USA and U.K. However a larger percentage of Pakistan made items was purchased and also utilized. Next to this a higher percentage of items were imported from Japan, Poland, China, Germany and Italy respectively. A lower percentage items were imported from Netherland, France and USSR respectively.

For the purpose of collection of data, the following items of machinery were covered:

1. Batching Plant.
2. Concrete Mixer.
3. Crane.
4. Crushing Plant.
5. Drag-Line.
6. Back-Hoe.
7. Loader.
8. Spreader.

BATCHING PLANT:

There were 19 Batching Plants available as on 30th June, 1983 in the country. Out of which 32% of Batching Plants were in Punjab, 47% were in Sind and 21% were in NWFP. There is no Batching Plant available in Baluchistan. Out of those available in Punjab, 4% of the Batching Plants were less than 5 years, 12% fell within the age-group of 6-8 years and 84% were more than 10 years

old. In Sind, 33% of Batching Plants were less than 5 years old and the remaining 67% were within the age-group of 6-8 years. In NWFP, 50% of the Batching Plants were less than 5 years old and the remaining 50% fell within the age-group of 6-8 years. There is no Batching Plant available in Baluchistan. The overall position of Batching Plants emerges as that 3% of the Batching Plants were less than 5 years old, 29% fell within the age-group of 6-8 years and the remaining 68% of batching plants were more than 10 year old.

During the period 1979-83, only a small percentage was impoted from Japan. During 1976-78, about 29% of the total number of Batching Plants were imported from Rumania, Germany and France respectively. During the period prior to 1974, 68% of the total number of batching plants were imported from Germany and U.K. respectively. However a small percentage purchased/utilized was made in Pakistan. No import of batching plants was made during 1974-75.

During the period 1979-83, only one Batching Plant was imported from Japan in 1981. The cost of purchased was Rs. 9,56,938/- and the annual average repair cost per machine was Rs. 1,91,388/- which was 20% of the capital cost. During 1976-78, the most popular make/model were those of made in Rumania and West Germany. Batching Plant having rating horse power as

235/185 HP was imported from Rumania in 1978. The average fuel consumption per machine hour was Rs.5/- and the average operating cost per machine hour was Rs.20/-. The cost of purchase was Rs.754,698/-. No Batching Plant was imported during the period 1974-75. During the period prior to 1974, the most popular make/model of batching plant were Gross-D-MOT of Germany and BECO/PECO of Pakistan. BECO PAD CM-70 having rating horse power as 7.5 HP was purchased in 1970. The cost of purchase was Rs.5,000/- and the annual average repair cost per machine Rs.1,250/-, which was 25% of the capital cost. (2) Gross-D-MOT, Model LF-75 having rating horse power as 24 K.W. was imported from Germany in 1959. The cost of purchase was Rs.11,500/-, whereas the annual average repair cost per machine was Rs.5,700/-, which was 49.6% of the capital cost.

CONCRETE MIXERS:

There were 299 Concrete Mixers available as on 30th June, 1983 in the country. Out of which 56% were available in Punjab and 35% were in Sind, 8% were in NWFP and the remaining 1% were available in Baluchistan.

According to the age structure, 44% of the concrete mixers were more than 10 years and 6% were less than 5 years. 49% of the concrete mixers fell within the age-group of 6-8 years and 1% fell within the age-group of 9-10 years. Out of those concrete mixers available 68% were more than 10 years old and 28% fell within the age-group of 6-8 years. The remaining 4% were less than 5 years old. In Sind, 90% of the concrete mixers fell within the age-group of 6-8 years, 6% were more than 10 years and the remaining 4% were less than 5 years. In NWFP, 50% of the concrete mixers were less than 5 years old. 25% were more than 10 years old and the remaining 25% fell within the age-group of 6-10 years. In Baluchistan all the concrete mixers fell within the age-group of 6-8 years.

During the period 1979-83, the total number of concrete mixers purchased and utilized were made in Pakistan. During the period 1976-78, the maximum number of concrete mixers purchased was again made in Pakistan. A small percentage of concrete mixers was imported from Japan, China, Germany and USA respectively. During the period 1974-75, a small percentage of concrete mixers purchased and utilized was made in Pakistan. During the period prior to 1974, the highest percentage of concrete mixers purchased/utilized was made in Pakistan. Next to this, a high percentage of concrete mixers was imported from U.K, Japan, Italy and Netherland respectively.

During the period 1979-83, the most popular make/model of Concrete Mixers were BECO/PECO of Pakistan. Concrete Mixers BECO having rating horse power as 3.5 HP was purchased in 1979. The average fuel consumption per machine hour was Rs.1/- and the average operating cost per machine hour was Rs.24/-. The cost of purchase was Rs.57,950/-, whereas the annual average repair cost per machine was Rs.600/-, which was 1.04% of the capital cost. During 1976-78, the most popular make/model of concrete mixers were BECO of Pakistan. Concrete Mixers BECO having rating horse power 7.5 HP and rated capacity as 1 ton was purchased in 1977. The average fuel consumption per machine hour was Rs.4/- and the average operating cost per machine hour was Rs.20/-. The cost of purchase was Rs.40,000/-, whereas the annual average repair cost per machine was Rs.750/- which was 1.88% of the capital cost. During 1974-75, the most popular make/model of concrete mixers was BECO of Pakistan. Concrete Mixers BECO 16 HP 10-14 CFT was purchased in 1975. The average fuel consumption per machine hour was Rs.10/- and the average operating cost per machine hour was Rs.250/- which was seems to be very high. During the period prior to 1974, the most popular make/model of Concrete Mixers were BECO/PECO. Concrete Mixers BECO having rating horse power 7.5 HP was purchased in 1963. The average fuel consumption per machine hour was Rs.2/- and the average operating cost per machine hour was Rs.5/-.

The cost of purchase was Rs.25,811/-, whereas the annual average repair cost per machine was Rs.517/- which was about 2% of the capital cost.

CRANES:

There were 220 Cranes available in the country as on 30th June, 1983. Out of which 40% were available in Punjab, 55% were in Sind, 4% were in NWFP and the remaining 1% were in Baluchistan.

As regards the age structure of Cranes, out of total number of Cranes available in Punjab, 25% were less than 5 years old, 49% were more than 10 years old, 16% fell within the age-group of 6-8 years and the remaining 10% fell within the age-group of 9-10 years. In Sind, 4% were less than 5 years old, 87% fell within the age-group of 6-8 years, 2% fell within the age-group of 9-10 years old and the remaining 7% were more than 10 years old. In NWFP, the total number of Cranes fell within the age-group of 6-8 years old. In Baluchistan, the total number of Cranes was more than 10 years old. It is evident that in Punjab and Baluchistan a higher percentage of Cranes was more than 10 years, whereas in Sind and NWFP a large percentage fell within the age-group of 6-8 years old. The overall position emerges as that 12% were less than 5 years old. 59% fell within the age-group of 6-8 years, 5% fell within the age-group of 9-10 years old and the remaining 24%

were more than 10 years old. It is evident that a higher percentage was in the age-group which can be used for another 4-5 years.

During the period 1979-83, the highest percentage of Cranes was imported from Japan. Next to this a larger number was imported from France and USA respectively. During 1976-78, the highest percentage of Cranes was imported from USSR and France respectively. Next to this, a larger number was imported from U.K, France and Japan respectively. A lower percentage was imported from China and USA. During 1974-75, the highest percentage was imported from USA. Next to this a larger number was imported from Czechoslovakia and West Germany respectively. During the period prior to 1974, the highest percentage of Cranes was imported from USA and U.K. respectively. Next to this a larger number was imported from Poland, China, and Japan respectively.

During the period 1979-83, the most popular make/model of Cranes were those of made in Japan. Crane Shovel having rated capacity 20 tons with rating horse power as 140 HP was imported from Japan in 1980. The average fuel consumption/machine hour was Rs.14/- and average operating cost per machine hour was Rs.250/-. The cost of purchase was Rs.1,513,000/- whereas the annual average repair cost per machine was Rs.50,000/- which was 3.3% of the capital cost. (2) Cranes Pinguly

France with having rated capacity 23.5 tons was purchased in 1980. The average fuel consumption per machine hour was Rs.30/- and the average operating cost per machine hour was Rs.367/-. The cost of purchase was Rs.2,244,900/- whereas the annual average repair cost per machine was Rs.112,245/- which was 5% of the capital cost.

During the period 1976-78, the most popular make/model were those of made in USSR and Japan. Cranes-Recovery Vehicle Wrechers having rated capacity 10 tons was imported from Japan in 1976. The average operating cost per machine hour was Rs.6/-. The cost of purchase was Rs.52,924/- whereas the annual average repair cost per machine was Rs.10,000/- which was 18.9% of the capital cost. (2) Cranes rated capacity 62 tons was imported from USSR in 1977. The average fuel consumption per machine hour was Rs.8/- and the average operating cost per machine hour was Rs.141/-. The cost of purchase was Rs.2,504,387/- and annual average repair cost per machine was Rs.10,000/- which was 0.4% of the capital cost. During 1974-75, the most popular make/model of Cranes were link/link belt of USA. Cranes Link Belt USA having rated capacity 15 tons was imported in 1975 from USA. The average operating cost per machine hour was Rs.4/- and the cost of purchase was Rs.179,000/- whereas the annual average repair cost per machine was Rs.12,000/- which was 6.7% of the capital cost. During the period prior to 1974,

the most popular make/model were those of made in USA and U.K. Crane Shaved P & TT having rated horse power as 95 HP was imported from USA in 1964. The average fuel consumption per machine hour was Rs.18/- and the average operating cost per machine hour was Rs.355/-. The cost of purchase was Rs.200,000/-, whereas annual average repair cost per machine was Rs.1,000/-, which was 0.5% of the capital cost. (2) Crane Leyland Allion the having rated capacity 11 tons was imported from U.K. in 1964. The cost of purchase was Rs.196,000/- and the annual average repair cost was Rs.180,000/- which was 92% of the capital cost.

CRUSHING PLANT:

There were 79 Crushing Plants available in the country as on 30th June, 1983. There was a net addition 35 units during 1983-85 and thus making total to 114. Out of which 33 new Crushing Plants were allocated to Punjab and 2 to Sind. Out of 79 Crushing Plants, 84% were available in Punjab, 3% were in Sind, 10% were in NWFP and 3% were in Baluchistan. Out of the total number of Crushing Plants, 27% were less than 5 years old, 29% were more than 10 years old and 43% fell within the age-group of 6-8 years and only 1% fell within the age-group of 9-10 years. Out of those Crushing Plants which were available in Punjab, 26% were less than 5 years old, 44% fell within the

age-group of 6-8 years, and 30% were greater than 10 years old. In Sind, all the Crushing Plants were less than 5 years old. In NWFP, 50% of the crushing plants were less than 5 years old, 16% fell within the age-group of 9-10 years and 34% were more than 10 years old. In Baluchistan all the crushing plants fell within the age-group of 6-8 years.

During the period 1979-83, the maximum number of Crushing Plants was imported from China and U.K. respectively. During the period 1976-78, the maximum number was imported from China, Japan, Germany and Switzerland respectively. During the period 1974-75, all the crushing plants were imported from China. During the period prior to 1974, the maximum number of crushing plants was imported from U.K. and China respectively and a small percentage purchased/ utilized was made in Pakistan.

During the period 1979-83, the most popular make/model of crushing plants were Dong Fong of China. Crusher Stone Jaw Type with rated capacity 400 CFT was imported from China in 1980. The cost of purchase was Rs.150,000/- whereas the annual average repair cost per machine was Rs.10,000/- which 6.67% of the capital cost. During 1976-78, the most popular make/model of crushing plants were Dong Fong of China and KYC of Japan. The Crushers Mobile Jaw Type Dong Fong N.E.S. was imported from

China in 1976. The average operating cost per machine hour was Rs.1/- and cost of purchase was Rs.48,003/-. (2) Crusher Stone KYC and Sereening Plant having rated capacity as 8 tons and rating horse power as 30 HP was imported from Japan in 1976. The average fuel consumption/machine hour was Rs.3/- and cost of purchase was Rs.158,316/-. During 1974-75, the most popular make/model was of China. Only one crushing plant was imported from China in 1974. The average fuel consumption/machine hour was Rs.9/- and average operating cost was Rs.250/-. During the period prior to 1974, the most popular make/model were Dong Fong of China. Crusher Stone Head Cone Type with rated capacity 900 CFT were imported from China in 1970. The average operating cost per machine hour was Rs.4/-. The cost of purchase was Rs.85,000/-.

DRAG LINES:

There were 174 Drag-Lines available in the country. Out of which 85% were available in Punjab, 15% were in Sind. There was no Drag-Line in NWFP and Baluchistan. Out of total number of Drag Line, 86% of Drag-Lines were more than 10 years old and 14% were less than 5 years old. Out of those which were less than 5 years old, 79% of them were Excavators and remaining 21% were Walker type and for those which were more than 10 years old, 65% of the Drag lines were excavators and 35% were walker type.

During the period 1979-83, the maximum number of Drag-Lines(Excavator and Walker Type) were imported from Japan. During the period prior to 1974, the maximum number of Drag-Lines were imported from USA and U.K. respectively. It is observed that previously the Drag-Lines were imported from the U.K. and USA and now they were imported from Japan.

During the period 1979-83, two types of Drag-Lines namely Excavator and Walker Type were imported. The most popular makes/models of Drag-Lines were Komatsu of Japan. Drag-Lines Excavator Komatsu Standard having rating horse power 20 HP was imported from Japan in 1981. The cost of purchase was Rs.131,024/- and the annual average repair cost per machine was Rs.3,468/- which was 3.3% of the capital cost. No Drag-Lines was imported during the period 1976-78 and 1974-75. During the period prior to 1974, the most popular make/model of Drag-Lines were P & H of USA and Demag of Germany. Drag-lines P & H 1055-LC was imported in 1959. The cost of purchase was Rs.350,000/- and the annual average repair cost per machine was Rs.80,000/- which was 22.86% of the capital cost. (2) Drag-Lines 318 Germany was imported in 1960. The cost of purchase was Rs.185,000/- and the annual average repair cost was Rs.8,250/-, which was 4.46% of the capital cost. It is also pointed out that about 99% of the Dragline have been imported during 1959-64. Out of which the majority was imported during 1959-61. It is evident that

almost 100% of the drag-lines have worked more than 20 years and thus they have surpassed their practical life.

BACK HOE:

There were 8 Back Hoes available in the country as on 30th June, 1983. Out of which 88% were available in Punjab and 12% were in Sind. There were no Back-Hoe available in NWFP and Baluchistan. The 100% of the Back Hoes were less than 5 years old. They all have been imported from Japan.

During the period 1979-83, the most popular make/model was Komatsu of Japan. Back Hoe D-50-A-16 was imported from Japan in 1981. The cost of purchase was Rs.82,604/- and the annual average repair cost per machine was Rs.8,261/- which was 10% of the capital cost. During the period 1976-78, 1974-75 and period prior to 1974, no Back Hoe was imported from any country.

LOADER:

There were 171 Loaders available in the country as on 30th June, 1983. Out of which 74% were available in Punjab, 15% were in Sind, 5% were in NWFP and 6% were in Baluchistan. Out of those Loaders which were available in Punjab, 64% were less than 5 years old, 16% fell within the age-group of 6-8 years, 18% were more than 10 years old and the remaining 2% fell within

the age-group of 9-10 years. In Sind, 43% were less than 5 years old, 43% fell within the age-group of 6-8 years, 9% fell within the age-group of 9-10 years and the remaining 5% were more than 10 years old. In NWFP, 57% were less than 5 years old and the remaining 43% were more than 10 years old. In Baluchistan, 73% were less than 10 years old and the remaining 27% were more than 10 years old. In all, 62% were less than 5 years old, 18% were more than 10 years old, 17% fell within the age-group of 6-8 years old and the remaining 3% fell within the age-group of 9-10 years.

During the period 1979-83, almost all Loaders were imported from Japan and U.K. respectively. During the period 1976-78, the total number of Loaders were imported from U.K, Japan and U.S.A. respectively. Next to this, a smaller number was imported from Denmark, France and Germany respectively. During the period 1974-75, the total number of Loaders was imported from Poland, USA and Japan respectively. During the period prior to 1974, almost all the Loaders were imported from USA, Japan and Italy respectively. There are two types of Loaders (1) Front End Loaders Self Propelled (2) Wheel Loader.

During the period 1979-83, the most popular make/model of Front End Loader Self Propelled was those of made in USA and Japan and among Wheel Loaders were again those of made in Japan. Loaders

White, USA, Furukawa having rating horse power as 140 HP was imported from USA in 1981. The average operating cost per machine hour was Rs.1/-. The cost of purchase was Rs.459,382/- and the annual average repair cost per machine hour was Rs.10,000/- which was 2.18% of the capital cost. Loader Front End Komatsu having rating horse power as 300 HP was imported from Japan in 1982. The average operating cost per machine hour was Rs.2/- and the cost of purchase was Rs.1,217,289/-. (2) Wheel Loaders having rating horse power 105 HP was imported from Japan in 1981. The cost of purchase was Rs.389,122/- and the annual average repair cost per machine was Rs.3,538/- which was 0.9% of the capital cost. During the period 1976-78, the most popular make/model of Loaders were Bray of U.K. and Fiat of Italy. (1) Loaders Front End having rated capacity 3 tons and rating horse power as 107 HP was imported from U.K. in 1976. The average fuel consumption per machine hour was Rs.18/- and the average operating cost per machine hour was Rs.59/-. The cost of purchase was Rs.302,025/- and the annual average repair cost per machine was Rs.5,000/- which was 1.66% of the capital cost. (2) Loader Fiat was imported from Italy in 1978. The cost of machine was Rs.355,408/-. The annual average repair cost per machine was Rs.17,771/- which was 5% of the capital cost. During the period 1974-75, the most popular make/model of Loaders were those of

made in Poland. Loaders Front End having rating horse power as 115 HP was imported from Poland in 1975. The average fuel consumption per machine hour was Rs.193/- and the average operating cost per machine hour was Rs.1,750/-. The cost of purchase was Rs.78,00,000/- and the annual average repair cost per machine was Rs.145,000/- which was 1.86% of the capital cost.

During the period prior to 1974, there are two types of Loaders were imported from USA and Poland respectively. Loaders I.H. USA having rating horse power as 115 HP was imported from USA in 1963. The average fuel consumption per machine hour was Rs.15/- and the average operating cost per machine was Rs.213/-. The cost of purchase was Rs.100,000/- and the annual average repair cost per machine was Rs.13,400/- which was 13.4% of the capital cost. (2) Loaders Front End Fedrona, L-2 was imported from Poland in 1971 having rating horse power as 60 HP. The average fuel consumption per machine hour was Rs.10/- and the average operating cost per machine hour was Rs.50/-. The cost of purchase was Rs.150,000/- and the annual average repair cost per machine was Rs.15,000/- which was 10% of the capital cost.

SPREADER:

There were 14 Spreaders available in the country as on 30th June, 1983. Out of which 79% were available in Punjab and 21% were in Baluchistan. There was no Spreader available in Sind and NWFP. Out of the total number of spreaders 56% were less than 5 years old and 28% were more than 10 years old. The remaining 16% fell within the age-group of 6-8 years. Out of those available in Punjab, 77% were less than 5 years old, and the remaining 23% were more than 10 years old. In Baluchistan, the total number of spreader fell within the age-group of 6-8 years.

During the period 1979-83, the highest percentage of Spreader was imported from Japan. Next to this, a large number of Spreaders was imported from Sweden. During the period 1976-78, the maximum number of Spreader was imported from France. No Spreader was imported during the period 1974-75. During the period prior to 1974, the maximum number of Spreader was imported from Japan and USA respectively.

During the period 1979-83, the most popular make/model of Spreader was those of made in Japan and Sweden. Spreaders-Tar, Sprayers was imported from Sweden in 1982. The cost of machine was Rs.211,000/-. Spreader Aggregate N.S-45 B was imported from Japan

in 1981. The cost of purchase was Rs.491,779/- whereas the annual average repair cost per machine was Rs.49,178/- which was the 10% of the capital cost. During the period 1976-78, the most popular make/model was Sawan of France. Spreader - Tar Sprayers having rated capacity 6 tons and rating horse power as 99 HP was imported in 1978 from Japan. The average fuel consumption per machine hour was Rs.3/- and the average operating cost per machine hour was Rs.13/-. The cost of purchase was Rs.650,000/- and the annual average repair cost per machine was Rs.10,833/- which was 1.67% of the capital cost. No import of Spreaders was made during the period 1974-75. During the period prior to 1974 the most popular make/model of Spreaders were those of made in Japan and USA respectively. No information for the period prior to 1974 has been provided in the Computer Sheets regarding average fuel consumption, average operating cost per machine hour, cost of purchase and the annual average repair cost.

D. PRE-MIXING AND BITUMEN MACHINERY:

In this category, the information in respect of 712 items was collected throughout the country. Out of which 59% of items of machinery have been covered from Punjab, 7% from Sind, 32% from NWFP and the remaining 2% from Baluchistan. Out of those available in Punjab, 41.19% of the items of machinery were less than 5 years old, 52.00% were more than 10 years old, 5.26% fell within the age-group of 6-8 years and the remaining 0.69% fell within the age-group of 9-10 years. In Sind, 46.48% of the items of machinery were more than 10 years old, 28.17% fell within the age-group of 6-8 years, 18.31% were less than 5 years and the remaining 7.04% fell within the age-group of 9-10 years. In NWFP, 32.17% of the items of machinery were less than 5 years old, 32.17% fell within the age-group of 6-8 years, 20.87% were more than 10 years old and the remaining 14.79% fell within the age-group of 9-10 years. In Baluchistan, 41.67% of the items of machinery were less than 5 years old, 41.66% fell within the age-group of 6-8 years and the remaining 16.67% were more than 10 years old. The overall position is that 45.67% of the items of machinery were more than 10 years old, 37.01% were less than 5 years old, 13.39% fell within the age-group of 6-8 years and the remaining 3.93% fell

within the age-group of 9-10 years.

During the period 1979-83, the maximum of Pakistan made items of machinery were purchased and utilized. Next to this, a large number of items of machinery were imported from France and Japan respectively. A smallar percentage of items of machinery were imported from a number of other countries like China, USSR, Italy, U.K, Poland and USA respectively. During 1976-78, the maximum number of Pakistan made items of machinery were purchased and utilized. Next to this a large number of items of machinery were imported from USSR and France respectively. A smaller percentage of items of machinery were imported from a number of other countries like USA, Italy, Japan and China respectively. During the period 1974-75, the maximum of Pakistan made machinery was purchased and utilized. Next to this, a smaller percentage of items of machinery were imported from East Germany, Denmark, Switzerland and France. During the period prior to 1974 the highest percentage of Pakistan made items of machinery were purchased and utilized. Next to this, a large number of items of machinery were imported from USA, Poland, U.K. and Japan respectively. A small percentage of items of machinery were imported from other countries like West Germany, Czechoslovakia, France and China respectively.

In this category, the maximum number of Pakistan made items of machinery were purchased and utilized. Next to this, a larger number of items were imported from France and Japan respectively. However a substantial number of items were also imported from other countries like, USA, U.K, USSR, Poland and China respectively. A lower percentage of items were imported from a number of other countries like West Germany, East Germany, Italy, Switzerland, Denmark and Czechoslovakia. It is observed that in Punjab, maximum number of items of machinery available were made in Pakistan. Whereas in Sind the maximum number of items of machinery have been imported from USSR. In NWFP the maximum number of items of machinery available was also Pakistan made. In Baluchistan maximum number of items of machinery have been imported from Japan. In this category following items of machinery have been covered for the purpose of collection of data:

1. Asphalt Plant.
2. Tar Boiler.
3. Bitumen Distributor.
4. Finisher.
5. Tractor Trollies.

ASPHALT PLANTS:

There were 54 Asphalt Plants available in the country as on 30th June, 1983. Out of which 41% of asphalt plants were available in Punjab, 16% were in Sind, 39% were in NWFP and the remaining 4% were in Baluchistan.

As regards the age structure, out of the total number of asphalt plants, 63% were less than 5 years old and 21% were more than 10 years old, 10% fell within the age-group of 6-8 years old and 6% fell within the age-group of 9-10 years old.

In Punjab 70% of the asphalt plants were less than 5 years old, 21% were more than 10 years old and the remaining 9% fell within the age-group of 6-10 years old. In Sind, 20% were less than 5 years old, 20% were more than 10 years old, 50% fell within the age-group of 9-10 years old and the remaining 10% fell within the age-group. In NWFP, 43% were less than 5 years old, 43% fell within the age-group of 6-8 years old and 14% were more than 10 years old. In Baluchistan, 50% of the asphalt plants fell within the age-group of 6-8 years and the remaining 50% were more than 10 years.

During the period 1979-83, the maximum number of Asphalt Plants were imported from France and China respectively. Next to this, a large number was

imported from Japan, USSR and USA respectively. A substantial number of asphalt plants purchased was made in Pakistan. During 1976-78, the maximum number of asphalt plants was imported from France, Poland and Japan respectively. A small percentage was imported from China. During the period 1974-75 the maximum number of asphalt plants was imported from Poland and Switzerland. Next to this, a large number was imported from France and Denmark respectively. A small number of asphalt plants was imported from U.K. and USA respectively. Next to this, a large number was imported from Poland, Germany, Austria and USSR respectively. However a substantial number of asphalt plant purchased/utilized was made in Pakistan.

During the period 1979-83, the most popular make/model of Asphalt Plant was T.S.M. of France. Asphalt Plant having rated capacity 60-100 tons and rating horse power as 200 K.V.A. was imported from France in 1981. The average operating cost per machine hour was Rs.225/- and the cost of purchase was Rs.2,403,272/-. During 1976-78, the most popular make/model were of different makes like made in Pakistan, imported from Poland, France, Japan and China respectively. Asphalt Plant having rated capacity 60-100 tons was imported from France in 1978. The average fuel consumption per machine hour was Rs.225/- and the average operating cost per machine hour was Rs.2,337/-. The cost of purchase was

Rs.6,600,000/- whereas the annual average repair cost per machine was Rs.330,000/- which was 5% of the capital cost. (2) Asphalt Plant was imported in 1978 from Japan. The cost of purchase of the asphalt plant was Rs.1,800,000/- whereas the annual average repair cost per machine was Rs.100,000/- which was 5.56% of the capital cost. During 1974-75, the most popular make/model of asphalt was Madro-5 of Poland. Asphalt Plant Madro-5 having rated capacity 28-30 tons and rating horse power as 13 HP. The average fuel consumption was machine hour was Rs.1/- and the average operating cost per machine hour was Rs.865/-. The cost of purchase of the Asphalt was Rs.1,460,000/-. The annual average repair cost per machine was Rs.100,000/- which was 6.85% of the capital cost. During the period prior to 1974, the most popular make/model of Asphalt Plants were those of made in U.K. USA and Pakistan. Fug Mill England having rated capacity 3 tons and rating horse power as 67 HP was imported from U.K. in 1969. The average fuel consumption per machine hour was Rs.1/- and the average operating cost per machine hour was Rs.3/-. The cost of purchase was Rs.25,000/-. The annual average repair cost per machine was Rs.444/- which was 1.8% of the capital cost. (2) White L-208, USA having rated capacity 20 tons and rating horse power as 45 HP was imported from USA in 1965. The average fuel consumption per machine hour was Rs.250/- whereas

the average operating cost per machine was Rs.1,000/-. The cost of purchase was Rs.230,000/- and the annual average repair cost per machine was Rs.150,000/- which was 65.22% of the capital cost. (3) Asphalt Plant Parker having rated capacity 30 tons was imported from U.K. in 1960. The average fuel consumption per machine hour was Rs.2/- and the average operating cost was Rs.922/-. The cost of purchase was Rs.450,000/-. It is evident that the asphalt plants which were more than 10 years old having very high average operating cost per machine hour and annual average repair cost per machine, which very un-economical.

TAR BOILER:

There were 407 Tar Boilers available in the country as on 30th June, 1983. Out of which 45% of the tar boilers were available in Punjab, 7% were in Sind, 47% were in NWFP and the remaining 1% were in Baluchistan.

As regards the age structure, out of the total number of tar boilers 20% were less than 5 years old, 59% were more than 10 years old, 15% fell within the age-group of 6-8 years and the remaining 6% fell within the age-group of 9-10 years old. Out of those available in Punjab, 12% were less than 5 years old and 82% were more than 10 years old and the remaining 6% fell within the

age-group of 6-8 years. In Sind, 23% of the tar boilers were less than 5 years old and the remaining 77% of the tar boilers were more than 10 years old. In NWFP, 35% of the tar boilers were less than 5 years old, 36% fell within the age-group of 6-8 years old, 18% fell within the age-group of 9-10 years, and the remaining 11% were more than 10 years old. In Baluchistan 50% of the tar boiler fell within the age-group of 6-8 years old, the remaining 50% were more than 10 years old.

During the period 1979-83, the maximum number of tar boiler purchased/utilized were made in Pakistan and a small percentage was imported from Japan. During 1976-78, the maximum number of tar boilers purchased/utilized was made in Pakistan and a smaller percentage was imported from France. During 1974-75, the total number of tar boilers purchased was also made in Pakistan. There was no import of tar boiler from any where during this period. During the period prior to 1974, the maximum number of tar boilers purchased/utilized was made in Pakistan and a small percentage was imported from Poland, USSR, France and USA respectively.

During 1979-83, the most popular make/model of Tar Boilers was BECO/PECO and Ittifaq of Pakistan. Boilers Tar Boiler having rated capacity 1 ton made in Pakistan was purchased in 1983. The average fuel consumption per machine hour was Rs.1/- and the average operating cost per machine hour was Rs.10/-. The cost of purchase was Rs.25,400/-. (2) Boiler Tar Boilers made in Pakistan was purchased in 1979. The average fuel consumption per machine hour was Rs.7/- whereas the average operating cost per machine hour was Rs.50/-. The cost of purchase was Rs.25,000/- whereas the annual average repair cost was Rs.10,000/- which was 40% of the capital cost. During 1976-78, the most popular make/model were those of made in Pakistan. Boiler-Tar Boiler having capacity 1 ton was purchased in 1978. The average operating cost per machine was Rs.6/- and the cost of purchase was Rs.16,000/- whereas the annual average repair cost per machine was Rs.250/- which was 1.56% of the capital cost. During 1974-75, the most popular make/model were those was made in Pakistan. Boilers-Tar Boilers was purchased in 1975 and having rated capacity 1 ton. The cost of purchase was Rs.20,000/- and the annual average repair cost per machine was Rs.1,500/- which was 7.5% of the capital cost. During the period prior to 1974, the most popular make/model of Tar Boilers were those of made in Pakistan and those imported from Poland in 1964 and 1970 respectively. Boiler-Tar Boiler having rated

capacity 1 ton made in Pakistan was purchased in 1964. The average operating cost per machine hour was Rs.5/- and the cost of purchase was Rs.5,000/- whereas the annual average repair cost per machine was Rs.2,500/- which was 50% of the capital cost. (2) Boilers Tar Boilers having make/model Fedrona and rating capacity 8-10 tons with rating horse power 50 HP was imported in 1970 from Poland. The average fuel consumption/machine hour was Rs.1/- and the average operating cost per machine hour was Rs.4/-. The cost of purchase was Rs.51,000/- whereas the annual average repair cost per machine was Rs.1,667/- which was 3.26% of the capital cost.

BITUMEN DISTRIBUTOR:

There were 27 Bitumen Distributors available in the country as on 30th June, 1983. Out of which 70% of the Bitumen Distributors were in Punjab, 4% were in Sind and 26% were in Baluchistan. There is no Bitumen Distributor available in the Province of NWFP. Out of the total number of Bitumen Distributors 46% were less than 5 years old, 47% were more than 10 years old and 7% fell within the age-group of 6-8 years. Out of those Bitumen Distributors available in Punjab, 50% were less than 5 years old and the remaining 50% were more than 10 years old. In Sind, all the bitumen distributors fell within the age-group of 6-8 years. In Baluchistan, the total number of Bitumen Distributors.

During the period 1979-83, the maximum number of Bitumen Distributors were imported from Japan, Italy and China respectively. Next to this, a large number was imported from U.K. and France respectively. During 1976-78, all the Bitumen Distributors were imported from France. During the period prior to 1974, the maximum number of Bitumen Distributors purchased was made in Pakistan. Next to this, a large number of Bitumen Distributor was imported from China. No Bitumen Distributor was imported from any where during 1974-75.

During the period 1979-83, the most popular make/model of Bitumen Distributors were those of made in Japan, Italy and China. Distributor Hotta Bitumen Fluzers having rating horse power as 60 HP was imported from Japan in 1981. The average operating cost per machine hour was Rs.14/- and the cost of purchase was Rs.482,774/-. (2) Flushers 4 tons having rating horse power as 60 HP was imported from China in 1982. The average operating cost per machine hour was Rs.14/- and the cost of purchase was Rs.140,920/-. During 1976-78, the most popular make/model of Distributors were those of imported from France. Distributor Asphalt having rating horse power 99 HP was imported from France in 1978. The average fuel consumption per machine hour was Rs.18/- and the average operating cost per machine was Rs.70/-. The cost of purchase was Rs.850,000/- and the annual

average repair cost per machine was Rs.21,250/- which was 2.5% of the capital cost. No Bitumen Distributor was imported from any where, during the period 1974-75. During the period prior to 1974, the most popular make/model of Bitumen Distributors were those of made in Pakistan and those imported from China and U.K. respectively. Distributor Bitumen Bed Ford, U.K. having rating capacity 3-6 tons and rating horse power as 65 HP was imported from U.K. in 1962. The average fuel consumption per machine hour was Rs.10/- and the average operating cost per machine hour was Rs.100/-. The cost of purchase was Rs.150,000/- whereas the annual average repair cost per machine was Rs.5,000/- which was 3.3% of the capital cost.

FINISHER:

There were 37 Finishers available in the country as on 30th June, 1983. Out of which 51% of the Finishers were available in Punjab, 32% were in Sind, 14% were in NWFP and the remaining 3% were in Baluchistan.

As regards the age structure, out of total number of Finishers 47% were more than 10 years old, 43% were less than 5 years old and the remaining 10% fell within the age-group of 6-8 years old. In Punjab, 63% of the Finishers were less than 5 years old, 6% fell within the age-group of 6-8 years and the remaining 31% were more than 10 years old. In Sind, 25% of the

Finishers were less than 5 years old and 50% were more than 10 years old and the remaining 25% fell within the age-group of 6-8 years old. In NWFP all the Finishers were more than 10 years old. In Baluchistan 75% of the Finishers were less than 5 years old and 25% fell within the age-group of 6-8 years.

During the period 1979-83, the maximum number of Finisher was imported from Japan, Poland and U.K. respectively. Next to this, a large number of Finisher was imported from USSR. During 1976-78, the maximum number of Finishers purchased/utilized was made in Pakistan. A large number of Finisher was imported made in USSR, USA and Italy respectively. No import of Finisher was made during the period 1974-75. During the period prior to 1974, the maximum number of Finisher was imported from USA, Japan, Germany and USSR respectively.

During the period 1979-83, the most popular make/model of Finishers were Migata of Japan and Blow-Knocks of U.K. Asphalt Paver Model NF-2208 having rated capacity 7 tons and rating horse power as 60 H.P. was imported from Japan in 1980. The average operating cost per machine hour was Rs.6/- and the cost of purchase was Rs.509,511/-. (2) Asphalt Blow-Knocks. U.K. having rated capacity 10 tons and rating horse power as 65 H.P. was imported in 1980 from U.K. The average fuel

consumption per machine hour was Rs.18/- and the average operating cost per machine hour was Rs.450/-. The cost of purchase was Rs.2,335,000/- and the annual average repair cost per machine was Rs.116,750/- which is 5% of the capital cost. During the period 1976-78, the most popular make/model of Finishers were those of made in Italy and USA. Asphalt Simera, Italian having rated capacity 10 tons and having rating horse power as 80 H.P. was imported from Italy in 1977. The average fuel consumption per machine hour was Rs.8/- and the average operating cost per machine hour was Rs.212/-. The cost of purchase was Rs.1,400,000/- and the annual average repair cost per machine was Rs.65,000/- which was 4.64% of the capital cost. (2) Asphalt Paver Finishers Babar-Green having rated capacity 150 tons and rating horse power as 40 HP. The average fuel consumption per machine hour was Rs.7/- and average operating cost per machine hour was Rs.162/-. The cost of machinewas Rs.466,770/- whereas annual average repair cost per machine was Rs.7,500/- which was 1.6% of the capital cost. No Finisher was imported during 1974-75. During the period prior to 1974, the most popular make/model of Finishers were those of made in USA, Japan, Germany and USSR respectively. Asphalt Paver Finishers having rating horse power 25 HP was imported from USSR in 1973. The average fuel consumption per machine hour was Rs.12/- and the average operating cost per machine hour was Rs.50/-. The cost of purchase was Rs.25,000/- and the annual average repair cost per

machine was Rs.5,000/- which was 20% of the capital cost. Asphalt Paver Finishers made in Germany was imported in 1963. The average fuel consumption per machine hour was Rs.1/- and the average operating cost per machine hour was Rs.64/-. The cost of purchase was Rs.127,800/- whereas the annual average repair cost per machine was Rs.750/- which was 0.6% of the capital cost. Asphalt Paver Finishers Mitsubishi having rated capacity 100 tons and rating horse power as 20 HP was imported from Japan in 1971. The average fuel consumption per machine hour was Rs.5/- and the average operating cost per machine was Rs.90/-. The cost of purchase was Rs.97,333/- whereas annual average repair cost per machine was Rs.5,000/- which was 5.14% of the capital cost. Asphalt Paver Finishers having rated horse power as 85 HP was imported from USA. The cost of purchase was Rs.650,000/- and the annual average repair cost per machine was Rs.97,500/- which was 15% of the capital cost.

TRACTOR TROLLIES:

There were 187 Tractor Trollies available in the country as on 30th June, 1983. Out of which 94% of the Tractor Trollies were available in Punjab, 1% were in Sind, 4% were in NWFP and the remaining 1% to Baluchistan.

As regards the age structure, out of total number of tractor trollies, 34% were less than 5 years old, 44% were more than 10 years old, and the remaining 22% fell within the age-group of 6-8 years. Out of those tractor trollies available in Punjab, 56% were more than 10 years old, 42% were less than 5 years and the remaining 2% fell within the age-group of 6-8 years. In Sind, all the tractor trollies fell within the age-group of 6-8 years. In NWFP and Baluchistan all the tractor trollies were less than 5 years.

During the period 1979-83, the maximum number of tractor trollies purchased was made in Pakistan. Next to this, a large number was imported from Japan, USSR and France respectively. During 1976-78, the maximum number of tractor trollies were imported from USSR and a large number tractor trollies purchased/ utilized was made in Pakistan. A small percentage was imported from USA. During the 1974-75, no tractor trolly was imported from any where. During the period prior to 1974, the maximum number of tractor trollies purchased/utilized was made in Pakistan. Next to this, a large number was imported from Japan and USA respectively.

During the period 1979-83, the most popular make/model of tractor trollies were of those made in Pakistan. Next to this, a large number of tractor

trollies were those made in Japan, France and USSR. It is pointed out that no tractor trollies has been imported after 1980 till June, 1983. Trailer Haris Trollies Pak-45 Gallons was purchased in 1981. The average operating cost per machine hour was Rs.10/- and the cost of purchase was Rs.5,500/-. The annual average repair cost per machine was Rs.1,667/- which was 30.31% of the capital cost. (2) Trailer Nissan Japan not specified was imported from Japan in 1980, The cost of purchase was Rs.500,000/- and the annual average repair cost per machine was Rs.6,667/- which was 1.33% of the capital cost. (3) Trailer-Berliat France 208 HP having rated capacity 40 tons with rating horse power 200 HP was imported from France in 1980, The average fuel consumption per machine hour was Rs.2/- and average operating cost per machine hour was Rs.25/-. The cost of purchase was Rs.1,450,000/- and the annual average repair cost per machine was Rs.375,000/- which was 25.86% of the capital cost. During the period 1976-78, the most popular make/model of tractor trollies were those of made in Pakistan. Next to this, a smaller number was imported from USA and USSR. Trailers Haris Trollies were purchased in 1978. The cost of purchase was Rs.2,316/- and the annual average repair cost per machine was Rs.400/- which was 17.27% of the capital cost. Trailer Russian having rated capacity 12 tons and rating horse power as 65 HP was imported in 1977 from USSR. The cost of

purchase was Rs.46,000/- and the annual average repair cost per machine was Rs.7,700/- which was 16.74% of the capital cost. Trailer having rated capacity 25 tons with rating horse power 200 HP was imported from USA in 1978. The cost of purchase was Rs.1,252,000/- and the annual average repair cost per machine was Rs.125,000/- which was 9.98% of the capital cost. During 1974-75, no import of tractor trollies was made from any where. During the period prior to 1974, the most popular make/ model of tractor trollies were those of made in Pakistan. Next to this, a smallar number was imported from Japan and USA. Trailer Haris Trollies Pak-45 Gallons was purchased in 1968. The cost of purchase was Rs.2,000/- and the annual average repair cost per machine was Rs.14?/-, which was 7.15% of the capital cost. (2) Trailer Dodge USA 120 HP 10-15 tons was imported from USA in 1964. The average fuel consumption per machine hour was Rs.2/- and the average operating cost per machine hour was Rs.68/-, The cost of purchase was Rs.130,000/- which was 23.08% of the capital cost.

E. TRANSPORT EQUIPMENT AND MISCELLANEOUS:

In this category, the information in respect of 1039 items of machinery was collected throughout the country. Out of which 71% of items of machinery were covered from Punjab, 20% were from Sind, 5% were from NWFP and 4% were from Baluchistan. There was a net addition of 49 items of machinery purchased/imported during 1983-85. Out of this the maximum increase in items of machinery was for Punjab, 38 items of machinery were added to Punjab 8 items to NWFP, 38 items of machinery have been added. 8 items were added to NWFP and 3 items to Sind.

As regards the age structure, 50.24% items of machinery were more than 10 years old, 24.35% were less than 5 years old, 15.40% fell within the age-group of 6-8 years and the remaining 10.01% fell within the age-group of 9-10 years. Out of those items of machinery which were available in Punjab, 61.51% were more than 10 years old, 25.57% were less than 5 years old, 9.02% fell within the age-group of 6-8 years and the remaining 3.90% fell within the age-group of 9-10 years old. In Sind, 40.78% of items of machinery fell within the age-group of 6-8 years, 28.64% of items fell within the age-group of 9-10 years, 16.99% of items were less than

5 years and the remaining 13.59% of items were more than 10 years old. In NWFP, 40.43% of items were more than 10 years, 31.91% of items were less than 5 years, 14.69% fell within the age-group of 9-10 years and the remaining 12.77% fell within the age-group of 6-8 years old. In Baluchistan, 41.86% of items were more than 10 years old, 30.23% were less than 5 years, 20.93% fell within the age-group of 9-10 years and the remaining 6.98% fell within the age-group of 6-8 years.

During the period 1979-83, the highest percentage of items of machinery was imported from Japan. Next to this, a large number was of those items which were made in Pakistan and of those imported from U.K. Next to this, a small number was imported from China and France and a smaller percentage of items was imported from USA, Canada, Italy and West Germany. During 1976-78, the highest percentage of items of machinery was imported from USSR, U.K. and Japan respectively. Next to this, a large number was of those items of machinery which were made in Pakistan. A small percentage was imported from USA, China, Denmark, Italy and West Germany. During 1974-75, the maximum number of items of machinery was imported from U.K. and Japan

and those of made in Pakistan. A small percentage of items was imported from France, USA, Poland, Italy, West Germany, Sweden and Denmark respectively. During the period prior to 1974, the highest percentage of items of machinery was imported from U.K, Japan and USA. Next to this, a large number was imported from China, West Germany, USSR and of those items which were made in Pakistan. A small percentage was also imported from countries like Italy, Rumania, Yogoslavia, Hungry and Czechoslovakia respectively. The over all position was that the maximum number of items of machinery have been imported from Japan. Next to this a large number of items of machinery have been imported from U.K, USA and USSR respectively. However there is a substantial number of those items of machinery which were made in Pakistan. Next to this, a small percentage of items of machinery have been imported from a number of countries like China, West Germany, France, Italy, Denmark, Poland, Canada, Rumania, Hungry, Yogoslavia, Switzerland and Czechoslovakia respectively.

For the purposes of data collection, the following items of machinery have been covered:

1. Dump Trucks.
2. Water Bowzers.

DUMP TRUCK:

There were 918 Dump Trucks available in the country as on 30th June, 1983. Out of which 72% of the dump trucks were available in Punjab, 22% were in Sind, 3% were in NWFP and 3% were in Baluchistan.

As regards the age structure out of those available in Punjab, 43.58% were less than 5 years old, 44.48% were more than 10 years old, 11.64% fell within the age-group of 6-8 years and a negligible percentage fell within the age-group of 9-10 years. In Sind, 47.52% fell within the age-group of 9-10 years, 42.55% fell within the age-group of 6-8 years, 6.38% were less than 5 years and the remaining 3.55% were more than 10 years old. In NWFP, the total number of dump trucks were more than 10 years old. In Baluchistan, 66.67% of the dump trucks were more than 10 years and 16.67% were less than 5 years old. In 16.67% fell within the age-group of 6-8 years old. The overall position is that 32.30% were less than 5 years, 32.92% were more than 10 years, 20.66% fell within the age-group of 6-8 years and the remaining 14.12% fell within the age-group of 9-10 years.

During the period 1979-83, the highest percentage of dump trucks was imported from Japan

and U.K. Next to this, a large number was imported from France and Canada respectively. During the period 1976-78, the highest percentage of dump trucks was imported from Japan, USSR and U.K. respectively. Next to this, the larger number was imported from China, Denmark and USA respectively. During the period 1974-75, the highest percentage was imported from USSR. Next to this, the larger number was imported from Poland and a smaller percentage was imported from Switzerland. During the period prior to 1974, the highest percentage was imported from Japan, U.K, China and USA respectively. Next to this, a large percentage was imported from USSR and Italy. A small percentage was imported from Hungry, West Germany and Czechoslovakia respectively.

During the period 1979-83, the most popular make/model of dump trucks were Mitsubishi, Komatsu, Perlimi of Japan. Dump Trucks Mitsubishi, F.U-325 H. having rated capacity 15-7 tons was imported from Japan 1983. The cost of purchase was Rs.855,595/- and the annual average repair cost per machine was Rs.80,000/- which was 9.3% of the capital cost. (2) Dump Truck Komatsu Model H.B.180-4 having rated capacity 18 tons and rating horse power as 250 HP. was imported in 1982 from Japan. The cost of purchase was Rs.619,764/- and the annual average repair cost per machine was Rs.60,000/- which was 9.68% of the

capital cost. (3) Dump Truck Perlimi having rated capacity 20 tons. The cost of purchase was Rs.89,500/- and the annual average repair cost per machine was Rs.8,950/- which was 10% of the capital cost. During the period 1976-78, the most popular make/model of Dump Trucks were Komatsu, Hino of Japan and Ford of U.K. Dump Truck Ford England having rated capacity 3-5 tons and rating horse power as 95 HP. was imported from U.K. in 1978. The average operating cost per machine hour was Rs.4/- and the cost of purchase was Rs.220,000/- and the annual average repair cost per machine was Rs.10,000/- which was 4.55% of the capital cost. (2) Dump Truck Hino R.P. 12-DE having rated capacity 9 tons was imported from Japan in 1977. The cost of purchase was Rs.243,000/- and the annual average repair cost per machine was Rs.60,000/- which was 24.69% of the capital cost. (3) Dump Trucks Komatsu-HD-180-4 having rated capacity 18 tons was imported from Japan in 1977. The cost of purchase was Rs.1,003,860/- whereas the annual average repair cost per machine was Rs.125,000/- which was 12.45% of the capital cost. During the period 1974-75, the most popular make/model of Dump Truck was of those of made in USSR. Dump Truck having rated capacity 60-100 tons and having rating horse of power 180 HP. was imported from USSR in 1975. The average operating cost per machine hour Rs.1/- and the cost of

purchase was Rs.107,861/- whereas the annual average repair cost per machine was Rs.175/- which was 0.16% of the capital cost. During the period prior to 1974, the most popular make/model of Dump Trucks were Hino of Japan, Eculid of U.K. and those of made in China. Dump Truck Ecuid 88 F.D. having rated capacity 15 tons was imported from U.K. in 1960. The cost of purchase was Rs.203,000/- and the annual average repair cost per machine was Rs.13,000/- which was 6.40% of the capital cost. (2) Dump Truck China DD-340 having rated capacity 3-5 tons was imported from China in 1973. The cost of purchase was Rs.50,143/-.

WATER BOWZERS:

There were 121 Water Bowzers available in the country as on 30th June, 1983. Out of which 71% were available in Punjab, 2% were in Sind, 12% were in NWFP and the remaining 15% were in Baluchistan.

As regards the age structure, it is seen that no import of Water Bowzers was made in 1974-75 and 1976-78. Out of those available in Punjab, 87% were more than 10 years, 13% were less than 5 years. The total number of water bowzers available in Sind were less than 5 years old. In NWFP, 67% were more than 10 years, 33% were less than 5 years. Similarly in Baluchistan, 67% were less than 5

years and 33% were more than 10 years. In all, 74% of the water bowzers were more than 10 years and the remaining 26% were less than 5 years.

During the period 1979-83, the maximum number of water bowzers was imported from Japan. Next to this, a large number was imported from U.K. During the period 1976-78 and 1974-75, no import of water bowzers was made from any where. During the period prior to 1974, the maximum number of water bowzers was imported from USSR. Next to this, a larger number was imported from U.K. A small percentage of water bowzers purchased/utilized were made in Pakistan.

During the period 1979-83, the most popular make/model of Water Bowzers were Komatsu of Japan and Bedford of U.K. Water Bowzers Komatsu was imported from Japan in 1981. The cost of purchase was Rs.242,888/- and the annual average repair cost per machine was Rs.996/- which was 0.41% of the capital cost. (2) Water Bowzer Bed-Ford was imported from U.K. in 1981. The cost of purchase was Rs.61,930/- and the annual average repair cost per machine was Rs.61,930/- which was 10% of the capital cost. No Water Bowzer was imported during 1974-75 and 1976-78. During the period prior to 1974, the most popular make/model were those of made in USSR,

U.K. and Pakistan. Water Vibrator was imported in 1972 from U.K. The average annual consumption per machine hour was Rs.2/- and the average operating cost per machine hour was Rs.6/- and the cost of purchase was Rs.6,100/-. Water Bowzer was imported from USSR in 1971. The average fuel consumption per machine hour was Rs.1/- and the average operating cost per machine hour was Rs.19/-.

CHAPTER-IV

CONCLUSIONS AND RECOMMENDATIONS

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CONCLUSIONS AND RECOMMENDATIONS

Road is a most general and basic transportation facility which is indispensable for daily life and for production and marketing activities in exploiting minerals and forests, in developing new industry and in export and import trade and which also plays an important role in-forming comfortable living environment and in providing public space for disaster prevention. Among the surface transportation means, motor vehicle transportation plays an important role because of its mobility, door to door servicibility and reliability. Road minimizes the total transport costs taking of other modes and multimodal transportation. It also helps in inter-connection of important centres.

The significance of transport to the normal life of a country and its development lies fundamentally in the fact that mobility and accessibility are essential to the achievement of nearly every other aspects of economic growth. It is also a critical element in achieving social objectives in the successful implementation of health and education programmes and in cultural exchanges.

The Government of Pakistan has persistently made strenuous efforts to provide the people with fundamental socio-economic requirements in-spite of the fact that financial resources for national development is domestically limited. Despite Government has devoted their efforts to the improvement of transport and traffic hither-to with such increase of transport demand, their efforts have not been fruitful and transport capacity is insufficient situation on account of restrictions in various resources. In order to remove economic dispacity between rural and urban areas, programme for the construction of roads particularly for roads in rural areas was being prepared. To achieve this objective, it was felt that such a programme can only be implemented if adequate road construction machinery is made available in the country. The survey of road construction machinery in Pakistan was conducted to ascertain the present availability of road construction machinery in the country.

For this purpose, the detailed information from all the Federal, Provincial, Autonomous and Semi Autonomous Bodies was collected. Keeping in view the requirements of the Study two questionnaires were designed one after the other. In the First Phase the information upto 30th June, 1983 was collected and in the Second Phase the data upto 30th June, 1985 was collected. The survey on road construction was assigned to Federal Bureau of Statistics

in 1982 and they were asked to complete the survey work before March, 1983 in order to incorporate the findings of the survey in the Sixth Five Year Plan but the survey work was completed by them in 1986. The total number of proformas filledin was 586, out of which, 438 local bodies were covered.

In the survey of road construction machinery the detailed information in respect of 10,031 items of machinery was collected from the various organizations throughout the country, out of which, the information in respect of 7,106 items of machinery was collected from Punjab, 1,483 items from Sind, 969 items from NWFP, 473 from Baluchistan. However some additional information regarding 1,254 items of machinery imported/locally purchased during 1983-85 was also collected but no detailed information was made available.

As regards the age structure of items of machinery, about 50% of items of machinery are more than 10 years old and about 25% of the items of machinery are less than 5 years old. It is evident that half of the machinery in the country has surpassed its practical life. In case of those items of machinery available in Punjab, about 58% of the items of machinery are more than 10 years old and about 23% of them are less than 5 years old. In Sind, 25% of the items of machinery are more than 10 years old and 17% are less than 5 years old. In this case maximum number of the items of machinery fell within the age-group of 6-8

years. In NWFP, about 31% of the items of machinery are more than 10 years old and about 32% of the items are less than 5 years old. In Baluchistan, 33% of items of the machinery are more than 10 years old and more than half of the items are less than 5 years old. It is seen that in Punjab, higher percentage of items of machinery are of old age as compared to those available in other provinces. In Baluchistan, the higher percentage of items of machinery are less than 5 years old.

It is observed that maximum number of the items of machinery purchased/utilized are Pakistan made. As regards the import of machinery, the highest percentage of items of machinery were imported from Japan, U.K. and USA respectively. However a large number of items of machinery were imported from countries like West Germany, France, Poland, Czechoslovakia and Italy respectively. A small number of items of machinery were imported from a number of other countries like Sweden, Yogoslavia, Switzerland, Denmark, Canada, India, Korea, Hungry, Netherland, East Germany, Austria and Australia respectively. In Punjab, the maximum number of items of machinery available were imported from Japan, U.K. and USA respectively. However a significant number of items of machinery purchased/utilized were made in Pakistan. In Sind, the maximum number of items of machinery were imported from USSR and Japan respectively. However a large number of items of machinery were made in Pakistan.

In NWFP, the maximum number of Pakistan made items of machinery were purchased and utilized. In Baluchistan, the highest percentage of items of machinery were imported from Japan. However a significant quantity of machinery was imported from U.K.

It is seen that maximum number of items of machinery available in Punjab were imported from Japan. In Sind, the maximum number of items of machinery available were imported from USSR. In NWFP, the maximum number of items are of Pakistan made. In Baluchistan, the maximum number of items were imported from Japan.

The items of machinery have been classified into the following 5 main categories as under:

1. Earth Moving Equipment.
2. Road Construction/Maintenance Equipment.
3. Material Handling and Crushing Equipment.
4. Pre-Mixing and Bitumen Machinery.
5. Transport Equipment and Miscellaneous.

In the category of Earth Moving Equipment 3 types of items of machinery have been covered namely Buldozers, Motor Graders, Scrapers Motorized. The information in respect of 1,130 items of machinery was collected from different organizations throughout the country. Since the inception of Pakistan, 39% of total number of items of machinery were imported from USA and

29% from that of Japan.

As regards the age structure, about 50% of the items of machinery are more than 10 years old and 27% of items are less than 5 years old which means that about half of the machinery has surpassed its useful life and if it is further utilized its fuel consumption, operating cost and repair cost would be very high which would make its operation very un-economical.

It is evident that in order to maintain the present tempo of Road Construction Work a lot of more machinery has to be imported. First to replace the worn out items of machinery and Secondly to make net addition to the present stock to maintain balance between the stock and demand for the expanding Road Construction/Maintenance Work.

In the category of Road Construction/Maintenance Equipment, the data in respect of 6,166 items of machinery was collected throughout the country. Out of which, the information in respect of 74% of the items of machinery was collected from Punjab, 13% of items were from Sind, 10% of items were from NWFP and 3% of items were from Baluchistan. In this category, 25% of the items of machinery are less than 5 years old, 18% of the items of machinery fall within the age-group of 6-8 years, 8% of

the items of machinery fall within the age-group of 9-10 years and the remaining 49% of items are more than 10 years old. It is evident that about half of the machinery has surpassed its useful life and one quarter of the machinery is less than 5 years old.

It is observed that Punjab has high percentage of old items of machinery as compared to the other provinces. This may be due to the fact that road construction/maintenance work might had started earlier in Punjab than those of other provinces. Similarly as highest percentage of machinery is new in Baluchistan it can be concluded that road development work in Baluchistan has recently been initiated. May be during the Fourth Five Year Plan period.

As regards the country of Origin, in this category the maximum number of items of machinery purchased/utilized are made in Pakistan. Next to this, a large number of items were imported from Rumania, Japan, China, U.K. and USA respectively. It is also seen that the items of machinery have been imported from more than 20 countries. There is also a number of countries from where smallest percentage of machinery have been imported from countries like Canada, India, Austria, Australia and Denmark respectively.

In the category of Material Handling and Crushing Equipment, the information in respect of 984 items of machinery was collected throughout the country. Out of which the information in respect of 63% of items of machinery was collected from Punjab, 28% of items from Sind, 6% of items from NWFP and 3% of items from Baluchistan.

As regards the age structure, 22.66% of items of machinery are less than 5 years old, 39.53% of items fall within the age-group of 6-8 years, 35.88% of items of machinery are more than 10 years old and the remaining 1.93% of items fall within the age-group of 9-10 years.

It is seen that in Punjab, the maximum number of items of machinery are more than 10 years old. In Sind the highest percentage of items of machinery fall within the age-group of 6-8 years. In NWFP and Baluchistan the highest number of items of machinery are less than 5 years old.

As regards the country of Origin, maximum number of items of machinery purchased/utilized is made in Pakistan. Next to this, a large number of items of machinery were imported from USA, Japan and USSR respectively. There is a number of other countries from where a small percentage of items of machinery have been imported like France, West Germany, Poland,

Italy, Rumania, Denmark, Sweden, Switzerland, Netherland and Czechoslovakia respectively.

It is concluded that in the past, the maximum number of items of machinery were imported from USA and U.K. respectively but now under the present circumstance, the maximum number of items of machinery are being imported from Japan.

In the category of Premixing and Bitumen Machinery, the information in respect of 712 items of machinery was collected from different organizations throughout the country. Out of which the data in respect of 59% of the items of machinery was collected from Punjab, 7% of items from Sind, 32% of items from NWFP and the remaining 2% of items from Baluchistan.

As regards the age structure, 45.67% of the items of machinery are more than 10 years old, 37.01% are less than 5 years old, 13.39% of items fall within the age-group of 6-8 years and the remaining 3.93% of items fall within the age-group of 9-10 years.

As regards the country of origin, during 1979-83, the maximum number of Pakistan made items of machinery were purchased/utilized. Next to this, a large number of items were imported from countries like France and Japan respectively. During 1976-78, the maximum number of Pakistan made items of machinery were purchased/utilized.

Next to this, a large number of items of machinery were imported from countries like USSR and France respectively. During 1974-75, the maximum number of Pakistan made items of machinery were purchased/ utilized. During the period prior to 1974, the highest percentage of Pakistan made items of machinery were purchased/utilized. Next to this, a large number of items of machinery were imported from countries like USA, Holand, U.K. and Japan respectively.

It is observed that maximum number of Pakistan made items of machinery were purchased/utilized and a large number of items of machinery were imported from France and Japan respectively. In the beginning a very small percent age of items of machinery were imported from Japan, but now the highest percentage of items of machinery are imported from Japan and France respectively. It is also seen that in Punjab and NWFP, the maximum number of Pakistan made items of machinery are available, whereas in Sind, the maximum number of items of machinery, are made in USSR. In Baluchistan, the highest percentage of items of machinery were imported from Japan.

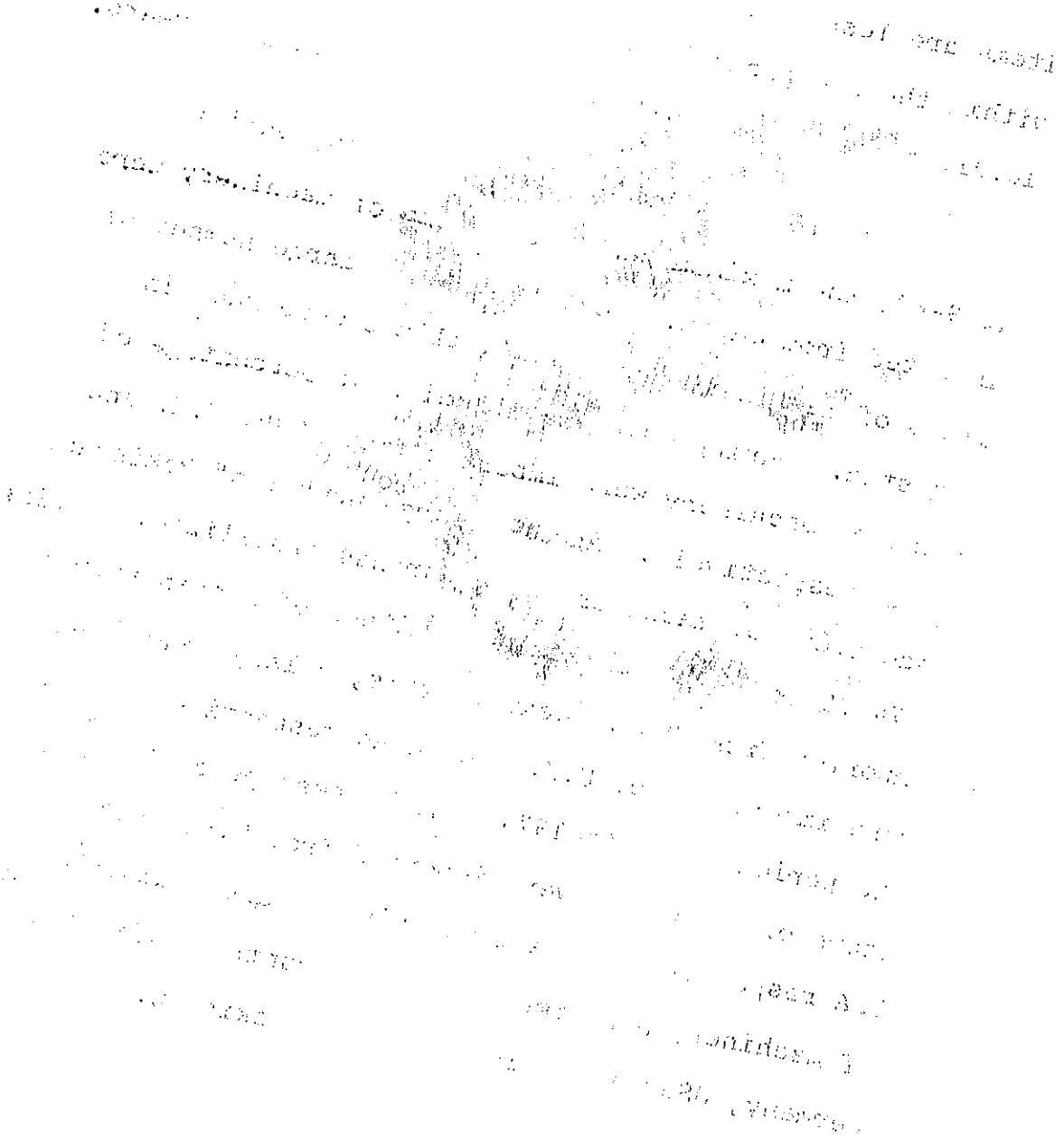
In the category of Transport Equipment and Miscellaneous the information in respect of 1,039 items of machinery was collected from different organizations throughout the country. Out of which, the information in respect of 74% of items of machinery was collected from

Punjab, 20% of items were from Sind, 5% of items were from NWFP and 4% of items were from Baluchistan.

As regards the age structure, 50.24% of items of machinery are more than 10 years old, 24.35% of items are less than 5 years old, 15.40% of items fall within the age-group of 6-8 years and the remaining 10.01% of items fall within the age-group of 9-10 years.

As regards the country of Origin, during 1979-83, the maximum number of items of machinery were imported from Japan. Next to this, a large number of items of machinery purchased/utilized were made in Pakistan. During 1976-78, the highest percentage of items of machinery were imported from USSR, U.K. and Japan respectively. Again a large number of Pakistan made items of machinery were purchased/utilized. During 1974-75, the maximum number of items of machinery were imported from USSR. Next to this, a large number of items were imported from U.K. and Japan respectively. During the period prior to 1974, the highest percentage of items of machinery were imported from U.K, Japan and USA respectively. Next to this, a large number of items of machinery were imported from countries like China, Germany, USSR and that of made in Pakistan.

It is observed that the maximum number of items of machinery were imported from Japan. Next to this, a large number of items of machinery were imported from countries like U.K, USA and USSR respectively. However a significant number of items of machinery made in Pakistan are also purchased/ utilized.



The Buldozers imported during 1979-83 from Japan have less fuel consumption and annual average repair cost per machine as compared to those imported from USA. The buldozers imported prior to 1974, have very high annual average repair cost which ranges between 32% to 80% of capital cost. The Motor Graders imported from USA have less annual average repair cost but their average operating cost is high than those of imported from Japan. The motor graders imported, prior to 1974, have very high fuel consumption and annual average repair cost which indicates that they have surpassed their useful life.

The Air Compressors imported from Japan have higher average fuel consumption than those of China. The Road Rollers imported from China are cheaper in operation cost than those of Rumania. The Road Rollers made in Pakistan have less cost of purchase and average operating cost. Majority of Concrete Mixers are made in Pakistan.

The Cranes imported from Japan are cheaper in cost of purchase and operating cost than those of imported France. The Cranes imported from USA are more durable because are working in Pakistan for still more than 20 years old. They have less annual average repair cost as compared to those of U.K. Almost all the Crushing Plants have been imported from China and Japan respectively. The crushing plants imported from China are cheaper in operating

cost than those of imported from Japan. All the Drag-Lines have worked for more than 20 years and thus they have surpassed their practical life.

The Loaders imported from USA have high cost of purchase but their operating cost is very low as compared to those of imported from Poland. The Asphalt Plants imported from France have high average operating cost, but low annual average repair cost than those imported from Japan. The Finishers imported from U.K. have high cost of purchase and operating cost as compared to those of imported from Japan. Finishers imported from Italy and USSR have higher cost of operation than those of imported from USA and Japan respectively.

It can be concluded that the Buldozers imported from Japan have less fuel consumption and annual average repair cost than those of imported from USA but the Motor Graders are opposite of it. The Road Rollers imported from China and Pakistan made have less cost of operation than those of imported from Rumania. Majority of Concrete Mixers are made in Pakistan. The Crushing Plants imported from China have less cost of operation than those of imported from Japan. Majority of Drag-Lines have worked for more than 20 years in Pakistan. Although

the Loaders imported from USA have high cost of purchase but their fuel consumption is very low as compared to those of imported from Poland. Finisher imported from Italy and USSR have higher cost of operation and annual average repair cost than those of imported from USA. The Cranes imported from France have higher cost of purchase and operating cost than those of imported Japan.

The Road Construction Machinery in Pakistan is worth about Rs.700 Million. Out of which 31% of capital cost is for the Earth Moving Equipment, 24% is for Road Construction/Maintenance Equipment, 17% is for Material Handling and Crushing Equipment, 13% is for Pre-Mixing and Bitumen Machinery and 15% is for Transport Equipment Machinery.

During 1979-83, the machinery worth 42% of the capital cost was imported/purchased locally. During 1974-78, the machinery worth 35% of the capital cost was procured and during the period prior to 1974, the items of machinery worth remaining 23% of capital cost were imported/purchased.

CONCLUDING REMARKS:

An indepth survey/analysis of road construction/ maintenance machinery carried out upto 1983 illustrates undermentioned.

(i) About 50% of the items of road construction/ maintenance machinery were more than 10 years and 25% of the items of machinery are less than 5 years old.

(ii) 71% of items of above machinery were available in Punjab, out of which 58% of items were more than 10 years old and 23% of the items were less than 5 years old. Similarly 15% of the items of machinery were available in Sind, out of which 42% of items fell within the age-group of 6-8 years and 25% of items were less than 5 years old. 9% of items of machinery were available in NWFP. Out of which 31% of items were more than 10 years old and 32% of items were less than 5 years old. 5% of items of this machinery were available in Baluchistan, out of which 33% of items of machinery were of more than 10 years old and 54% of items were less than 5 years old. It is evident that more than half of the items of machinery in Punjab have surpassed their useful life. In Sind, about 45% of items of machinery were more than 5 years old but less than 8 years old. In NWFP and Baluchistan,

majority of the items of machinery were less than 5 years old.

(iii) Maximum of the items of machinery have been imported from Japan, U.K. and USA respectively. Which constitute 51% of the total machinery. 19% of the machinery was locally made. In the category of road construction/maintenance equipment, maximum indigenous machinery had been purchased/utilized. In addition to this, maximum of imports were from USSR, China and Argentina.

In Punjab and Baluchistan, maximum items of machinery available were made in Japan. However, maximum of items of machinery available in Sind were made in USSR whereas maximum number of items of the machinery available in NWFP were locally made.

(iv) The items of road construction machinery imported from Scandinavion countries and USSR have less cost of purchase but their operating cost and annual average repair cost are very high as compared to those of imported from Western countries and Japan. The items of machinery made in Pakistan have also less cost of purchase and operation.

(v) 49.4% of the items of machinery are more than 10 years old but their worth is only 23% of the total

capital cost, 26% of the items of machinery fall within the age-group of 6-10 years but they have worth 35% of the total cost. The remaining 24.6% of the items of machinery are less than 5 years old but their worth is 42% of the total cost.

(vi) The cost of road construction machinery imported/ purchased locally during 1947-74, is worth 23% of the total capital cost whereas machinery imported during 1979-83 has its worth as 42% of the total. This variation is not only due to increase in physical quantities but is mainly due to increase in prices of items of machinery.

RECOMMENDATIONS:

1. From the basis of available inventory, a small sample of machinery of each type be selected for still further detailed examination, on other aspects of the problem if deemed necessary on the basis of preliminary results contained in this report.

2. There is need for adequate initially programmed annual budget allocations for maintenance and repair of machinery which should be allocated to eliminate the wastage of scarce resources for every project.

3. To facilitate accelerated pace of road network development the road construction machinery should be exempted from custom duty and sales tax especially for public sector/un-developed areas.

4. Workshops for repair and maintenance of road construction machinery need to be established at district level and trained manpower should be made available to run these workshop preferably on self sustaining basis.

5. Resource constraints need to be removed at all levels to overcome lack of mechanised resources.

6. The machinery repair/operate of which, becomes un-economical, should be scrapped, and there should be standing procedures to materialise replacements.

7. Such studies should be conducted on regular basis at least at an interval of five years in order to determine the availability of machinery in the country, which will help the planners and policy makers to plan road construction activities in more appropriate manner.

ANNEXURE -I

SD.NA-8

CONFIDENTIAL

GOVERNMENT OF PAKISTAN
MINISTRY OF PLANNING & DEVELOPMENT
STATISTICS DIVISION
FEDERAL BUREAU OF STATISTICS

YEAR (AS ON) _____

SURVEY OF ROAD CONSTRUCTION MACHINERY

GENERAL PARTICULARS OF THE ORGANIZATION

1. Name of Organization _____

2. Address of Organization with telephone number _____

   i) Postal Address _____

   ii) Telegraphic Address _____

   iii) Telephone No. _____

Name of Machinery	No. of Units	Make	Country of origin	Rat H.P.	Barrel Capac-ity	Consumption per hour	Type of fuel used
1	2	3	4	5	6	7	8
Air Compressors							
Asphalt Plants							
Boilers-Tar Boilers							
Buldozers D - 4							
Buldozers D - 6							
Buldozers D - 8							
Concrete Mixers							
Cranes-Shovel/Clain shell Cranes							
Crushing Aggregate Plant							
Crushers Others							
Distributors Bitumen Distributors							
Finishers-Paver Finishers							
Generators Electric							

MACHINERY AS ON ____________________ 1933.

Fuel Consumption per hour	Operating cost per hour	Repair cost per year	Year of purchase	cost of purchased (Rs.)	Extent of use	Expected remaining life(year)	Present Value (Rs.)	Replacement value (Rs.)
9	10	11	12	13	14	15	16	17

Name of Machinery	No. of units	Make	Country of origin	Rating H.P.	Rated capacity	Out-put per hour	Type of fuel used
1.	2.	3.	4.	5.	6.	7.	8.
Greasing-Mobile Greasing Plants							
Jeeps/Pickups/Cars							
Kettles-Tar Kettles							
Loaders - Front and loaders							
Motor Graders							
Premixing Plant Large size							
Premixing Plant Medium size							
Premixing Plant Small size							
Pumps - Water Pumps							
Rollers Road Rollers							
Pneumatic Tired Rollers	c						
Sheeps Foot Rollers							
Vibratory Road Rollers							
Scrappers Motorized							
Snow Clearance Machine							

MACHINERY AS ON ____________ 1983.

Fuel consumption per hour	Operating cost per hour	Repair cost per year	Year of purchase	Cost of purchase (Rs.)	Extent of use	Expected remaining life (years)	Present value (Rs)	Replacement value (Rs.)
9	10	11	12	13	14	15	16	17

Name of Machinery	No. of units	Make	Country of origin	Rating H.P.	Rated Capacity	Out-put per hour	Type of Fuel used
1.	2.	3.	4.	5.	6.	7.	8.
Spreaders-Aggregate Spreaders							
Tank-Bitumen Melting Tank							
Water Tanks							
Tractors-Truck Tractors							
Tractors-Agriculture Tractors							
Trollies-Harness Trollies							
Trucks							
Dump Trucks							

MACHINERY AS ON _____ 1983.

Fuel Consumption per hour	Operating cost per hour	Repair cost per year	Year of purchase	Cost of purchase (Rs.)	Extent of use	Expected remaining life (years)	Present value (RS)	Replacement value (Rs.)
9	10	11	12	13	14	15	16	17

Signature

Name: (In bloc letters)

Designation

INSTRUCTIONS FOR THE SURVEY OF ROAD CONSTRUCTION MACHINERY

1. This survey relates to all available machinery for road construction either is use or in stocks at the time of reporting. The items covered by this survey are listed in the questionnaire. Full information for all the items available with the establishement should be reported.

2. The items of machinery like water pumps, water tankers, trucks, air compressors, Jeeps/pickups/cars etc., if used by the reporting establishment/organization for multiple purposes including construction should also be reported under this questionnaire.

3. Under Col. 3 th make of the machinery means the trade name like Ford, Fiat, etc. may be given, whereas under col. 5 the rating or the horse power of machine may be shown. Under col. 6 is required the rated capacity which means the maximum capacity of the machine e.g. in the case of tar boilers it may be in gallons (210 gallons), road rollers in tons (8-10 tons or 10-12 tons). In case of repair cost it may be annual average cost, if possible, otherwise the repair cost of the previous year may be reported.

ANNEXURE - II

Confidential

GOVERNMENT OF PAKISTAN
Ministry of Finance & Economic Affairs
STATISTICS DIVISION
Federal Bureau of statistics

SURVEY OF ROAD CONTRUCTION MACHINERY

1. Name of Organization

2. Address of organization with telephone No.

i) Postal Address

ii) Telephonic Address

iii) Telephone No.

Code	Description	Symbol	Total NO. as on 30.06.83	Purchased During 1983-84	Purchased During 1984-85	Total No. as on 30.06.85
0111	Bullucters	BD				
0113	Motor Graders	MG				
0114	Scrapers	SC				
0211	Air Compressors	AC				
0213	Generators Electric	GN				
0216	Water Pumps	WP				
0217 to 0220	Road Rollers all types	RR				
0222	Water Tankers	WT				
0223 to 0225	Tractors all types	TR				

P.T.O

Code	Description	Symbol	Total No. as on 30.06.83	Purchased during 1983-84	Purchased during 1984-85	Total No. as on 30.06.85
0311	Batching Plant	BP				
0312	Concrete Mixers	CM				
0313 0314	Cranes	CR				
0315 0316	Crushing Plant	CP				
0318 0319	Dragline	DR				
0320	Back Hoe	BH				
0321 0322	Loaders	LD				
0323	Spreaders	SP				
0411	Asphalt Plant	AP				
0412	Tar Boilers	TB				
0415	Bitumen distributors	BD				
0416	Fi ishers	FS				
0422	Tractor Trollies	TT				
0515	Dump Tr cks	DT				
0516	Water Bowzers	WB				

Signature _____

Name _____
(in Block letter)

Designation _____

A. ROAD CONSTRUCTION MACHINERY IN PAKISTAN
AS ON 30.06.1983

S.NO	NAME OF MACHINERY	PAKISTAN	PUNJAB	SIND	N.W.F.P.	BALUCHISTAN
1.	Earth Moving Equipment	1130	780	121	41	188
2.	Road Construction/Maintenance Equipment.	6166	4536	813	606	211
3.	Material Handling and Crushing Equipment.	984	622	290	54	18
4.	Pre-Mixing and Bitumen Machinery.	712	425	53	221	13
5.	Transport Equipment and Miscellaneous.	1039	743	206	47	43
	TOTAL	10031	7106	1483	969	473

I. EARTH MOVING EQUIPMENT

AS ON 30.06.1983

S.NO.	NAME OF MACHINERY	PAKISTAN	PUNJAB	SIND	NWFP	BALUCHISTAN
1.	Buldozer	666	525	61	28	52
2.	Motor Grander	275	102	30	13	130
3.	Scraper	189	153	30	-	6
	TOTAL	1130	780	121	41	188

2, ROAD CONSTRUCTION/MAINTENANCE EQUIPMENT

AS ON 30.06.1983

S.NO.	NAME OF MACHINERY	PAKISTAN	PUNJAB	SIND	NWFP	BALUCHISTAN
1.	Air Compressor	495	332	83	71	9
2.	Generator - Electric	486	255	47	181	3
3.	Water Pump	1343	1142	190	11	-
4.	Road Roller all types	1921	1044	404	322	151
5.	Water Tanker	218	136	45	7	30
6.	Tractor - all types	1703	1627	44	14	18
	TOTAL	6166	4536	813	606	211

3. MATERIAL HANDLING AND CRUSH EQUIPMENT

AS ON 30.06.1983

S.NO.	NAME OF MACHINERY	PAKISTAN	PUNJAB	SIND	N.W.F.P	BALUCHISTAN
1.	Batching Plant	19	6	9	4	-
2.	Concrete Mixer	299	168	105	25	1
3.	Crane	220	88	121	9	2
4.	Crushing Plant	79	67	2	8	2
5.	Dragline	174	148	26	-	-
6.	Back Hoe	8	7	1	-	-
7.	Loader	171	127	26	8	10
8.	Spreader	14	11	-	-	3
	TOTAL:	984	622	290	54	18

4. PREMIXING AND BITUMEN MACHINERY

AS ON 30.06.1983

S.NO.	NAME OF MACHINERY	PAKISTAN	PUNJAB	SIND	NWFP	BALUCHISTAN
1.	Asphalt Plant	54	22	9	21	2
2.	Tar Boiler	407	189	29	187	2
3.	Bitumen Distributer	27	19	1	-	7
4.	Finisher	37	19	12	5	1
5.	Tractor Trollies	187	176	2	8	1
	TOTAL	712	425	53	221	13

5. TRANSPORT EQUIPMENT AND MISCELLANEOUS

AS ON 30.06.1983

S.NO.	NAME OF MACHINERY	PAKISTAN	PUNJAB	SIND	NWFP	BALUCHISTAN
1.	Dump truck	918	657	204	32	25
2.	Water Bowzer	121	86	2	15	18
	TOTAL	1039	743	206	47	43

B. ROAD CONSTRUCTION MACHINERY IN PAKISTAN AS ON 30-6-1985

S.No.	NAME OF MACHINERY	PAKISTAN	PUNJAB	SIND	N.W.F.P.	BALUCHISTAN
1.	Earth Moving Equipment	1316	912	161	55	188
2.	Road Construction/Maintence Equipment.	7003	5136	967	664	236
3.	Material Handing and Crushing Equipment.	1101	702	315	66	18
4.	Pre-Mixing and Pitumen Machinery.	781	461	69	238	13
5.	Transport Equipment and Miscellaneous.	1088	781	209	55	43
	Total:	11289	7992	1721	1078	498

1. EARTH MOVING EQUIPMENT

(AS ON 30.06.1985)

S.NO.	NAME OF MACHINERY	PAKISTAN	PUNJAB	SIND	WWFP	BALACHISTAN
1.	Buldozer	776	601	91	32	52
2.	Motor grarder.	346	154	39	23	130
3.	Scraper	194	157	31	-	6
	TOTAL	1316	912	161	55	188

2. ROAD CONSTRUCTION/MAINTENANCE EQUIPMENT

(AS ON 30.06.1985)

S.NO.	NAME OF MACHINERY	PAKISTAN	PUNJAB	SIND	NWFP	BALUCHISTAN
1.	Air Compressor	522	354	83	76	9
2.	Generator-Electric	552	291	75	183	3
3.	Water Pump	1451	1165	264	22	-
4.	Road Roller-all type	2161	1233	419	358	151
5.	Water Tanker.	220	137	46	7	30
6.	Tractor - all types	2097	1956	80	18	43
	TOTAL:	7003	5136	967	664	236

3. MATERIAL HANDLING AND CRUSHING EQUIPMENT

(AS ON 30.06.1985)

S.NO.	NAME OF MACHINERY	PAKISTAN	PUNJAB	SIND	NWFP	BALUCHISTAN
1.	Batching Plant.	26	7	9	10	-
2.	Concrete Mixer.	320	175	119	25	1
3.	Crane,	229	91	126	10	2
4.	Crushing Plant.	114	100	4	8	2
5.	Dragline.	181	151	26	4	-
6.	Back Hoc.	10	8	2	-	-
7.	Loader.	197	151	28	8	10
8.	Spreader.	24	19	1	1	3
	TOTAL :	**1101**	702	315	66	18

4. PRE-MIXING AND BITUMEN MACHINERY

(AS ON 30.06.1985)

S.NO.	NAME OF MACHINERY	PAKISTAN	PUNJAB	SIND	NWFP	BALUCHISTAN
1.	Asphalt Plant	55	23	9	21	2
2.	Tar Boiler	420	191	29	198	2
3.	Bitumen Distributor	36	26	2	1	7
4.	Finisher	43	25	12	5	1
5.	Tractor Trollies	227	196	17	13	1
	TOTAL	781	461	69	238	13

5. TRANSPORT EQUIPMENT AND MISCELLANEOUS

AS ON 30.06.1985

S.NO.	NAME OF MACHINERY	PAKISTAN	PUNJAB	SIND	NWFP	BALUCHISTAN
1.	Dump Truck	957	689	207	36	25
2.	Water Bowzer	131	92	2	19	18
	TOTAL	1088	781	209	55	43

C. ROAD CONSTRUCTION MACHINERY IN PAKISTAN PURCHASED DURING 1983-85

S.NO.	NAME OF MACHINERY	PAKISTAN	PUNJAB	SIND	NWFP	BALUCHISTAN
1.	Earth Moving Equipment	186	132	40	14	-
2.	Road Construction/ Maintenance Equipment.	837	600	154	58	25
3.	Material Handling and Crushing Equipment.	117	80	25	12	-
4.	Premixing and Bitumen Machinery.	69	36	16	17	-
5.	Transport Equipment and Miscellaneous.	49	38	3	8	-
	TOTAL	1258	886	238	109	25

ROAD CONSTRUCTION MACHINERY IN PAKISTAN PURCHASED DURING 1983-85

1. EARTH MOVING EQUIPMENT:

S.NO.	NAME OF MACHINERY	PAKISTAN	PUNJAB	SIND	NWFP	BALUCHISTAN
1.	Buldozer.	110	76	30	4	-
2.	Motor Grader.	71	52	9	10	-
3.	Scraper.	5	4	1	-	-
	TOTAL	186	132	40	14	-

ROAD CONSTRUCTION MACHINERY IN PAKISTAN
PURCHASED DURING 1983-85

2. ROAD CONSTRUCTION/MAINTENANCE EQUIPMENT:

S.NO.	NAME OF MACHINERY	PAKISTAN	PUNJAB	SIND	NWFP	BALUCHISTAN
1.	Air Compressor.	27	22	-	5	-
2.	Generator - Electric.	66	36	28	2	-
3.	Water Pump.	108	23	74	11	-
4.	Road Roller - all types.	240	189	15	36	-
5.	Water Tanker.	2	1	1	-	-
6.	Tractor - all types.	394	329	36	4	25
	TOTAL	837	600	154	58	25

ROAD CONSTRUCTION MACHINERY IN PAKISTAN
PURCHASED DURING 1983-85

3. MATERIAL HANDLING AND CRUSHING EQUIPMENT

S.NO.	NAME OF MACHINERY	PAKISTAN	PUNJAB	SIND	NWFP	BALUCHISTAN
1.	Batching Plant	7	1	-	6	-
2.	Concret Mixer	21	7	14	-	-
3.	Crane	9	3	5	1	-
4.	Crushing Plant	35	33	2	-	-
5.	Dragline	7	3	-	4	-
6.	Back Hoe.	2	1	1	-	-
7.	Loader	26	24	2	-	-
8.	Spreader	10	8	1	1	-
	TOTAL	117	80	25	12	-

ROAD CONSTRUCTION MACHINERY IN PAKISTAN
PURCHASED DURING 1983-85

4. PRE-MIXING AND BITUMEN MACHINERY:

S.NO.	NAME OF MACHINERY:	PAKISTAN	PUNJAB	SIND	NWFP	BALUCHISTAN
1.	Asphalt Plant	1	1	-	-	-
2.	Tar Boiler	13	2	-	11	-
3.	Bitumen Distributor	9	7	1	1	-
4.	Finisher	6	6	-	-	-
5.	Tractor Trollies	40	20	15	5	-
	TOTAL	69	36	16	17	-

ROAD CONSTRUCTION MACHINERY IN PAKISTAN
PURCHASED DURING 1983-85

5. TRANSPORT EQUIPMENT AND MISCELLANEOUS:

S.NO.	NAME OF MACHINERY:	PAKISTAN	PUNJAB	SIND	NWFP	BALUCHISTAN
1.	Dump Truck	39	32	3	4	-
2.	Water Bowzer	10	6	-	4	-
	TOTAL:	49	38	3	8	-

ROAD CONSTRUCTION MACHINERY BY PERIOD AND PROVINCE DURING 1947 TO 1983

(Fig. in Percentage)

S.NO.	PROVINCE	1979-83	1976-78	1974-75	PRIOR TO 1974	TOTAL
1.	PAKISTAN	24.64	17.92	8.01	49.43	100.00
2.	PUNJAB	23.16	13.58	4.90	58.26	100.00
3.	SIND	17.46	41.47	16.32	24.75	100.00
4.	NWFP	31.66	17.85	19.92	30.55	100.00
5.	BALUCHISTAN	53.49	10.52	3.22	32.77	100.00

ROAD CONSTRUCTION MACHINERY BY TYPE AND PURCHASED DURING 1947 TO 1983

PAKISTAN (Fig. in Percentage)

S.NO.	NAME OF MACHINERY	1979-83	1976-78	1974-75	PRIOR-TO 1974	Total
1.	Earth Moving Equipment.	27.00	14.92.	8.13	49.95	100.00
2.	Road Construction/Maintenance Equipment.	25.03	17.97	7.50	49.50	100.00
3.	Material Handling and Crushing Equipment.	22.66.	39.53	1.93	35.88	100.00
4.	Premixing and Bitumen Machinery.	37.01	13.39	3.93	45.67	100.00
5.	Transport Equipment and Miscellaneous.	24.35	10.01	15.40	50.24	100.00
	TOTAL PERCENTAGE(%)	24.64	17.92	8.01	49.43	100.00

ROAD CONSTRUCTION MACHINERY BY TYPE AND PURCHASED DURING 1947 TO 1983

PUNJAB (Fig. in Percentage)

S.NO.	NAME OF MACHINERY	1979-83	1976-78	1974-75	PRIOR TO 1974	TOTAL
1.	Earth Moving Equipment	17.16	13.16	9.28	60.40.	100.00
2.	Road Construction/ Maintenance Equipment.	21.69	14.24	5.11	58.95	100.00
3.	Material Handling and Crushing Equipment.	27.39	20.26	1.78	50.57	100.00
4.	Premixing and Bitumen Machinery.	41.19	5.26	0.69	52.86	100.00
5.	Transport Equipment and Miscellaneous.	25.57	9.02	3.90	61.51	100.00
	TOTAL PERCENTAGE(%)	23.26	13.58	4.90	58.26	100.00

ROAD CONSTRUCTION MACHINERY BY TYPE AND PURCHASED DURING 1947 TO 1983

SIND (Fig. in Percentage)

S.NO.	NAME OF MACHINERY	1979-83	1976-78	1974-75	PRIOR TO 1974	TOTAL
1.	Earth Moving Equipment.	26.05	50.42	5.88	17.65	100.00
2.	Road Construction/ Maintenance Equipment.	19.93	24.96	20.96	34.15	100.00
3.	Material Handling and Crushing Equipment.	7.69	84.62	1.67	6.02	100.00
4.	Premixing and Bitumer Machinery.	18.31	28.17	7.04	46.48	100.00
5.	Transport Equipment and Miscellaneous.	16.99	40.78	28.64	13.59	100.00
	TOTAL PERCENTAGE (%)	17.46	41.47	16.32	24.75	100.00

ROAD CONSTRUCTION MACHINERY BY TYPE AND PURCHASED DURING 1947 TO 1983

N.W.F.P. (Fig. in Percentage)

S.NO.	NAME OF MACHINERY	1979-83	1976-78	1974-75	PRIOR TO 1974	Total
1.	Earth Moving Equipment.	47.27	12.73	7.27	32.73	100.00
2.	Road Construction/ Manitenance Equipment.	28.81	13.91	24.28	33.00	100.00
3.	Material Handling and Crushing Equipment.	48.38	9.67	6.00	35.95	100.00
4.	Premixing and Bitumen Machinery.	32.17	32.17	14.79	20.87	100.00
5.	Transport Equipment and Miscellaneous.	31.91	12.97	14.69	40.43	100.00
	TOTAL PERCENTAGE (%)	31.66	17.85	19.92	30.55	100.00

ROAD CONSTRUCTION MACHINERY BY TYPE AND PURCHASED DURING 1947 TO 1983

BALUCHISTAN (Fig. in Percentage)

S.NO.	NAME OF MACHINERY	1979-83	1976-78	1974-75	PRIOUR TO 1974	TOTAL
1.	Earth Moving Equipment.	66.13	-	3.23	30.64	100.00
2.	Road Construction/ Maintenance equipment.	49.68	14.47	1.63	34.22	100.00
3.	Material Handling and Crushing Equipment.	38.89	33.33	-	27.78	100.00
4.	Premixing and Bitumen Machinery	41.66	41.67	-	16.67	100.00
5.	Transport Equipment and Miscellaneous.	30.23	20.93	6.98	41.86	100.00
	TOTAL PERCENTAGE (%)	53.49	10.52	3.22	32.77	100.00

ROAD CONSTRUCTION MACHINERY CLASSIFIED BY COUNTRY OF ORIGIN=PURCHASED FROM 1947 TO 1983

PAKISTAN

(FIG. IN PERCENTAGE)

S. No.	NAME OF PROVINCE	NAME OF COUNTRY														
		USA	U.K	USSR	CHINA	JAPAN	FRANCE	SWIT-ZER-LAND	SWE-DEN	YOGO-SLA-VIA	CAN-ADA	GER-MANY	INDIA	ITALY	PAKI-STAN	RUMA-NIA
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.
1.	PUNJAB.	85.14	80.73	26.63	71.26	76.83	81.51	62.50	100.00	91.30	77.78	80.23	100.0	75.22	73.96	74.81
2.	SIND	9.50	10.69	66.99	18.60	12.70	15.07	-	-	8.70	22.22	12.21	-	18.58	12.37	10.77
3.	N.W.F.P.	4.95	5.38	5.95	9.81	4.99	-	12.50	-	-	-	6.40	-	5.32	11.98	14.42
4.	BALUCHISTAN	0.41	3.20	0.43	0.33	5.48	3.42	25.0	-	-	-	1.16	-	0.88	1.69	-
	TOTAL :	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Contd....P/168.

NAME OF PROVINCE	NAME OF COUNTRY																
	ARG-ENT-INA	AUST-RALIA	BEL-GIUM	BRA-ZIL	BULG-ARIA	AUST-RIA	CZECH-OSOL-VAKIA	DEN-MARK	GRE-ECE	HONG-KONG	HUNG-RY	NORTH KOREA	SOUTH KOREA	NET-HER-LAND	NOR-WAY	POL-LAND	GER-MANY
	13.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28..	29.	30.	31.	32.	33.	34.
PUNJAB	-	100.0	-	-	-	100.00	63.47	78.26	-	-	100.00	-	-	100.0	-	67.39	-
SIND	-	-	-	-	-	-	29.48	21.74	-	-	-	55.56	-	-	-	25.00	100.00
N.W.F.P	-	-	-	-	-	-	5.77	-	-	-	-	44.44	-	-	-	4.35	-
BALUCHISTAN	-	-	-	-	-	-	1.28	-	-	-	-	-	-	-	-	3.26	-
PAKISTAN	100.0	-	-	-	-	100.00	100.0	100.00	-	-	100.0	100.00	-	100.00	-	100.00	100.00

ROAD CONSTRUCTION MACHINERY CLASSIFIED BY COUNTRY OF ORIGIN-PURCHASED FROM 1947 - 1983

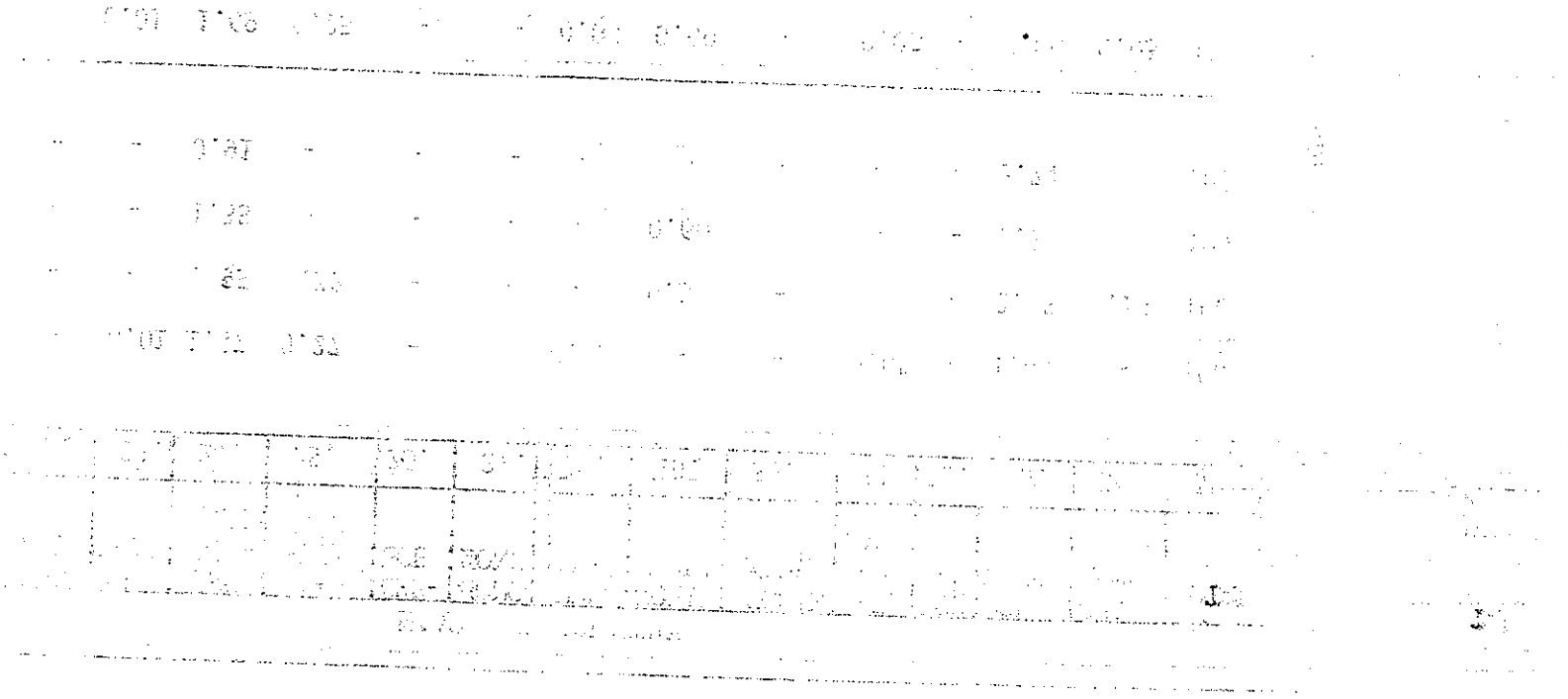
PAKISTAN

(FIG. IN PERCENTAGE)

S. No.	NAME OF PROVINCE	NAME OF COUNTRY														
		USA	U.K.	USSR	CHINA	JAPAN	FRANCE	SWITZERLAND	SWEDEN	YOGOSLAVIA	CANADA	GERMANY	INDIA	ITALY	PAKISTAN	RUMANIA
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.
1.	PUNJAB	15.27	16.44	2.78	6.36	23.47	1.76	0.22	0.67	0.62	0.10	2.04	0.05	1.26	19.48	5.76
2.	SIND	7.37	9.42	30.32	7.18	16.79	1.41	-	-	0.26	0.13	1.35	-	1.35	14.10	3.59
3.	N.W.F.P.	9.00	11.09	6.30	8.85	15.44	-	0.45	-	-	-	1.65	-	0.90	31.93	11.24
4.	BALUCHISTAN	2.29	20.09	1.37	0.91	51.60	2.28	2.74	-	-	-	0.91	-	0.46	13.70	-
	PAKISTAN	13.17	14.90	7.39	6.54	22.43	1.58	0.26	0.48	0.50	0.09	1.87	0.03	1.23	19.34	5.66

Contd....P/170

NAME OF PROVINCE	NAME OF COUNTRY																	
	ARG-ENT-INA	AUS-TRAL-IA	BEL-GIUM	BRA-ZIL	BULG-ARIA	AUS-TRIA	CZEC-HOSO-LVAKIA	DEN-MARK	GRE-ECE	HONG KONG	HUN-GRY	NORTH KOREA	SOUTH KOREA	NET-HER-LAND	NOR-WAY	POL-LAND	GER-MANY	TOTAL
	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.	32.	33.	34.	35.
PUNJAB	-	0.03	-	-	-	0.01	1.47	0.27	-	-	0.05	-	-	0.05	-	1.84	-	100
SIND	-	-	-	-	-	-	2.95	0.32	-	-	-	0.32	-	-	-	2.95	0.19	100
N?W.F.P.	-	-	-	-	-	-	1.35	-	-	-	-	0.60	-	-	-	1.20	-	100
BALUCHISTAN	-	-	-	-	-	-	0.91	-	-	-	-	-	-	-	-	2.74	-	100
PAKISTAN	-	0.02	-	-	-	0.01	1.69	0.25	-	-	0.03	0.09	-	0.03	-	2.00	0.03	100



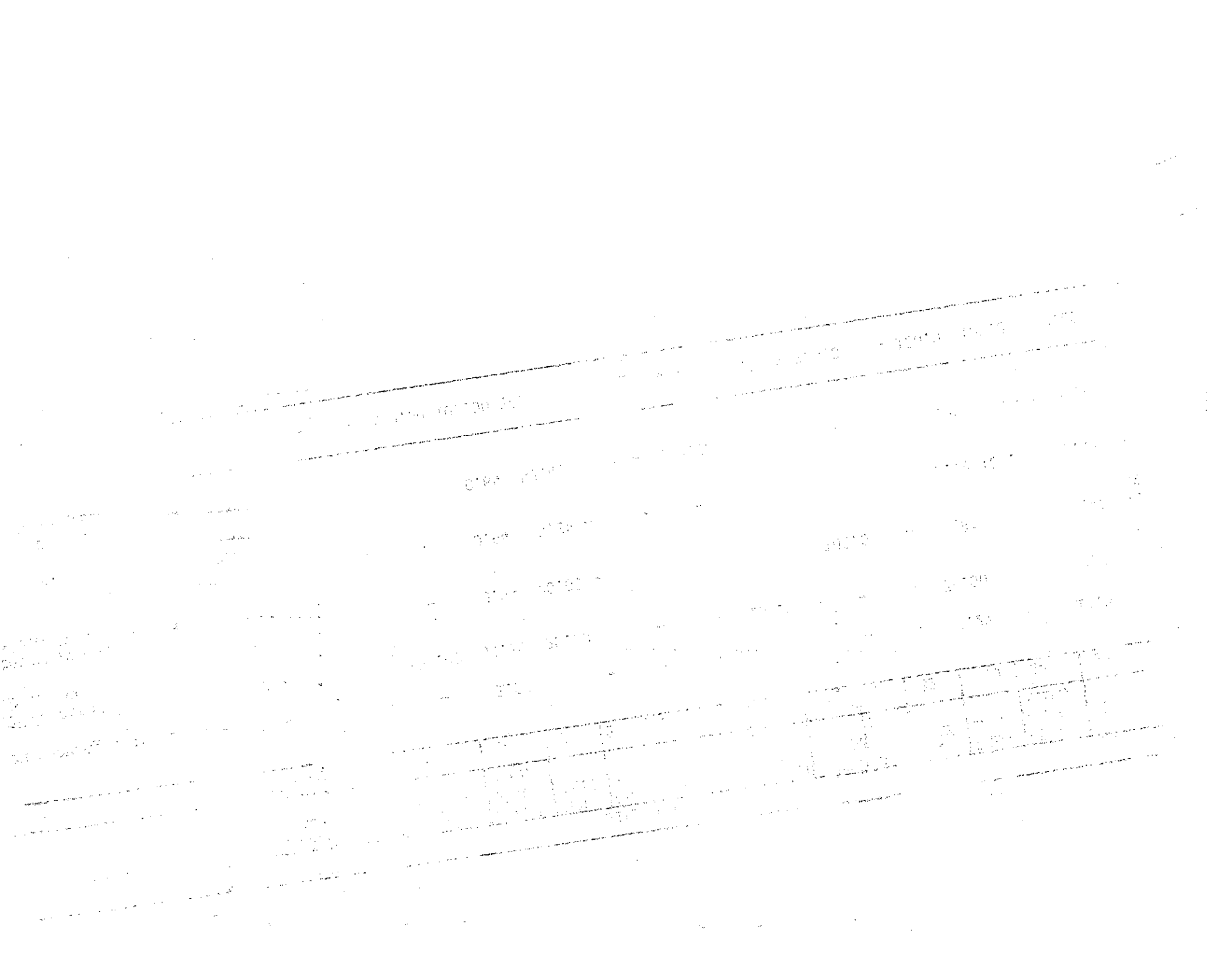
ROAD CONSTRUCTION MACHINERY CLASSIFIED BY COUNTRY OF ORIGIN-PURCHASED FROM 1947 TO 1983.

PAKISTAN (FIG. IN PERCENTAGE)

S.NO:	NAME OF MACHINERY	NAME OF COUNTRY															
		USA	U. K.	USSR	CHINA	JAPAN	FRANCE	SWITZERLAND	SWEDEN	YOGOSLAVIA	CANADA	GERMANY (F.R)	INDIA	ITALY	PAKISTAN	RUMANIA	ARGETINA
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.	Earth Moving Equipment.	33.19	9.89	15.58	1.99	14.54	-	12.50	8.89	-	-	1.16	-	19.46	0.28	7.69	-
2.	Road Construction/ Maintenance Equipment.	24.36	28.80	20.67	72.09	21.97	15.07	58.34	82.22	95.65	22.23	61.04	100.00	47.79	59.62	90.58	-
3.	Material Handling and Crushing Equipment.	12.55	5.89	15.45	9.30	7.24	11.64	12.50	8.89	-	-	11.06	-	7.96	13.49	0.96	-
4.	Premixing and Bitumen Machinery.	2.15	1.81	3.12	2.83	3.05	52.74	8.33	-	-	-	3.48	-	5.31	17.67	-	-
5.	Transport Equipment and Miscellaneous.	27.75	53.61	45.18	13.79	53.20	20.55	8.33	-	4.35	77.77	23.26	-	19.48	8.94	0.77	-
	Total:	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	-

Contd..../page 172

S. NO	NAME OF MACHINERY	NAME OF COUNTRY																
		AUST-RALIA	BEL-GIUM	BRA-ZIL	BULG-ARIA	AUS-TRIA	CZECH-OSOL-VAKIA	DEN-MARK	GRE-ECE	HONG-KONG	HUN-GRY	NORTH KOREA	SOUTH KOREA	NET-HER-LAND	NOR-WAY	POL-LAND	GER-MANY (GDR)	TOTAL
		19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1.	Earth Moving Equipment.	-	-	-	-	-	1.29	-	-	-	-	-	-	-	-	3.27	-	11.35
2.	Road Construction/ Maintenance Equipment.	100.00	-	-	-	100.00	96.79	26.09	-	-	-	100.0	-	-	-	75.00	-	41.79
3.	Material Handling and Crushing Equipment.	-	-	-	-	-	0.64	26.09	-	-	-	-	-	100.0	-	7.61	-	9.45
4.	Premixing and Bitumen Machinery.	-	-	-	-	-	0.64	4.34	-	-	-	-	-	-	-	9.78	100.0	6.42
5.	Transport Equipment and Miscellaneous.	-	-	-	-	-	0.64	43.48	-	-	100.00	-	-	-	-	4.34	-	30.99
	Total:	100.00	-	-	-	100.00	100.00	100.00	-	-	100.00	100.0	-	100.0	-	100.00	100.0	100.00



ROAD CONSTRUCTION MACHINERY CLASSIFIED BY COUNTRY OF ORIGIN-PURCHASED FROM 1947 TO 1983.

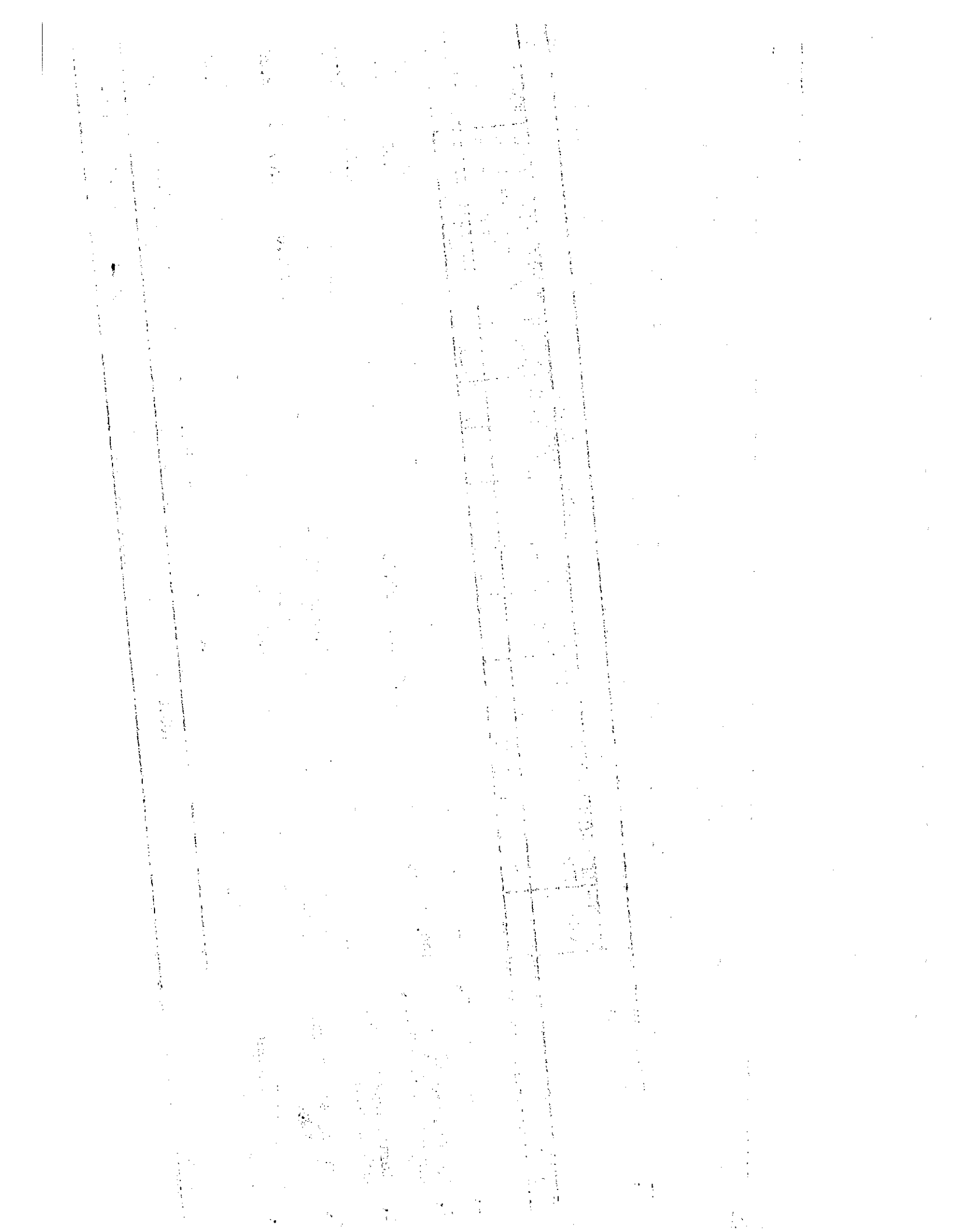
PUNJAB (FIG. IN PERCENTAGE)

S.NO:	NAME OF MACHINERY	NAME OF COUNTRY															
		USA	U. K.	USSR	CHINA	JAPAN	FRANCE	SWITZERLAND	SWEDEN	YOGOSLAVIA	CANADA	GERMANY (F.R)	INDIA	ITALY	PAKISTAN	RUMANIA	ARGETINA
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.	Earth Moving Equipment.	33.56	11.53	38.30	1.87	12.82	-	-	8.89	-	-	-	-	14.12	-	9.25	-
2.	Road Construction/ Maintenance Equipment.	25.99	24.68	51.60	66.44	20.45	17.65	73.34	82.22	100.00	-	63.78	100.00	44.71	67.15	89.72	-
3.	Material Handling and Crushing Equipment.	12.61	5.59	0.54	12.35	7.52	4.20	-	8.89	-	-	11.59	-	10.59	10.57	-	-
4.	Premixing and Bitumen Machinery.	0.49	2.07	4.78	3.26	3.28	57.98	13.33	-	-	-	3.63	-	7.06	15.51	-	-
5.	Transport Equipment and Miscellaneous.	27.35	56.13	4.78	16.08	55.93	20.17	13.33	-	-	100.00	21.00	-	23.53	6.77	1.03	-
	Total:	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	-

Contd..../page 174

PUNJAB

S. NO.	NAME OF MACHINERY	NAME OF COUNTRY																	
		AUSTR-ALIA	BELG-IUM	BRAZ-IL	BULG-ARIA	AUST-RIA	CZECH-OSOL-VAKIA	DEN-MARK	GREE-CE	HONG-KONG	HUN-GRY	NORTH KOREA	SOUTH KOREA	NET-HER-LAND	NOR-WAY	POL-LAND	GER-MANY (GDR)	TOTAL
		19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1.	Earth Moving Equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.03	-	11.31
2.	Road Construction/ Maintenance Equipment.	100.00	-	-	-	100.0	96.97	22.23	-	-	-	-	-	-	-	84.67	-	43.37
3.	Material Handling and Crushing Equipment.	-	-	-	-	-	1.01	33.33	-	-	-	-	-	100.0	-	8.07	-	8.30
4.	Premixing and Bitumen Machinery.	-	-	-	-	-	1.01	-	-	-	-	-	-	-	-	-	-	5.88
5.	Transport Equipment and Miscellaneous.	-	-	-	-	-	1.01	44.44	-	-	100.0	-	-	-	-	3.23	-	30.52
	Total:	100.00	-	-	-	100.0	100.0	100.00	-	-	100.0	-	-	100.0	-	100.00	-	100.00



ROAD CONSTRUCTION MACHINERY CLASSIFIED BY COUNTRY OF ORIGIN-PURCHASED FROM 1947 TO 1983.

S I N D

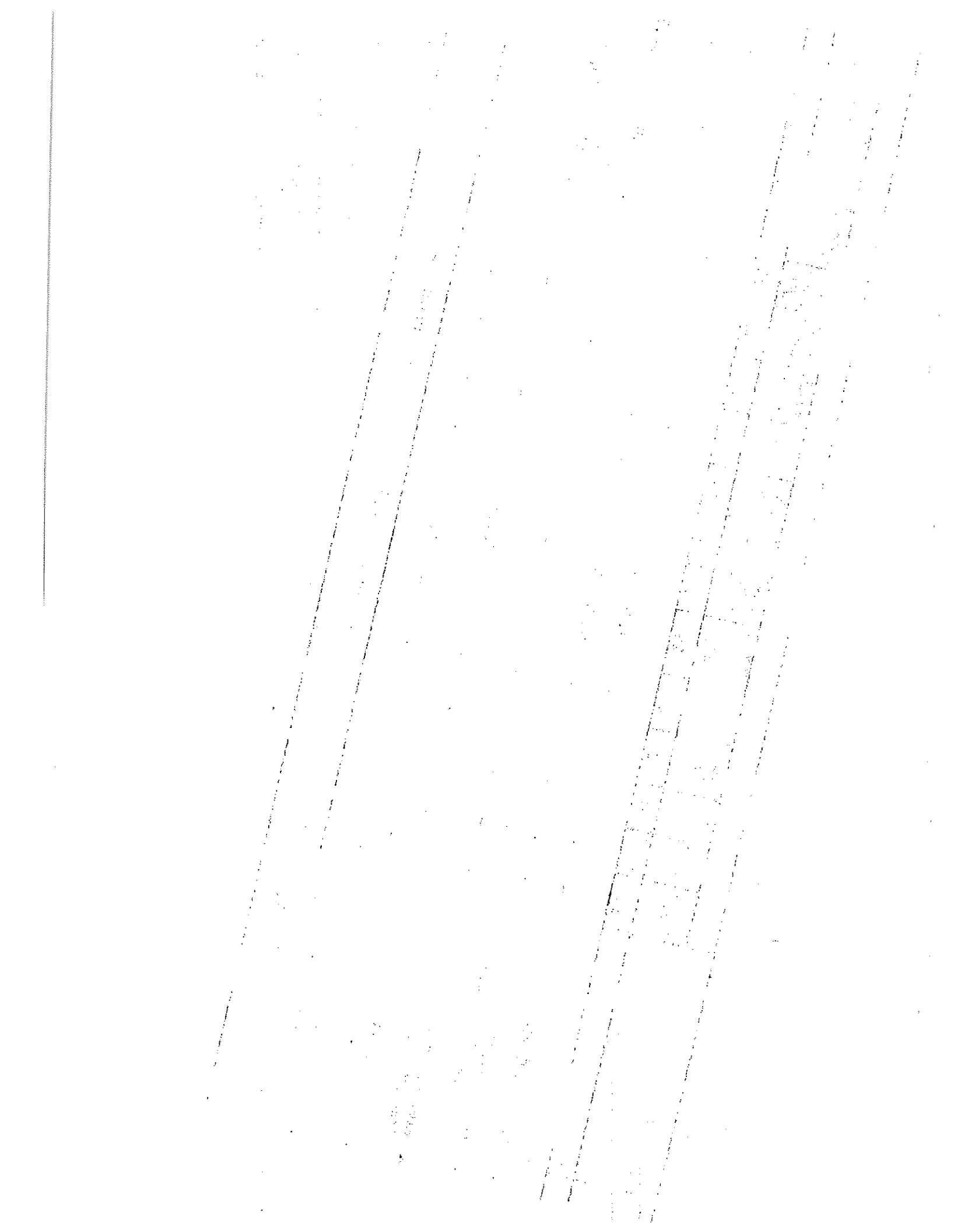
(FIG. IN PERCENTAGE)

S.NO:	NAME OF MACHINERY	NAME OF COUNTRY															
		USA	U. K.	USSR	CHINA	JAPAN	FRANCE	SWITZERLAND	SWEDEN	YOGOSLAVIA	CANADA	GERMANY (F.R)	INDIA	ITALY	PAKISTAN	RUMANIA	ARGETINA
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.	Earth Moving Equipment.	37.40	2.04	7.82	-	6.48	-	-	-	-	-	-	-	28.57	1.36	7.14	-
2.	Road Construction/ Maintenance Equipment.	17.39	50.34	6.13	91.02	25.57	4.55	-	-	950.0	100.0	57.14	-	61.90	46.36	83.93	-
3.	Material Handling and Crushing Equipment.	13.92	6.80	22.83	1.78	7.25	40.90	-	-	-	-	14.29	-	-	39.09	8.93	-
4.	Premisimg and Bitumen Machinery.	6.95	1.36	2.75	-	1.52	27.27	-	-	-	-	4.76	-	-	4.55	-	-
5.	Transport Equipment and Miscellaneous.	24.34	39.46	60.47	7.14	59.2	27.28	-	-	50.00	-	23.81	-	9.53	8.64	-	-
	Total:	100.0	100.0	100.0	100.0	100.0	100.0	--	-	100.0	100.0	100.0	-	100.0	100.0	100.0	-

Contd..../page 176

S I N D

S. NO.	NAME OF MACHINERY	NAME OF COUNTRY																
		AUSTRALIA	BELGIUM	BRAZIL	BULGARIA	AUSTRIA	CZECHOSLOVAKIA	DENMARK	GREECE	HONG KONG	HUNGRY	NORTH KOREA	SOUTH KOREA	NETHERLAND	NORWAY	POLLAND	GERMANY (GDR)	TOTAL
		19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1.	Earth Moving Equipment.	-	-	-	-	-	4.34	-	-	-	-	-	-	-	-	-	-	7.37
2.	Road Construction/ Maintenance Equipment.	-	-	-	-	-	95.66	40.0	-	-	-	100.0	-	-	-	56.52	-	35.13
3.	Material Handling and Crushing Equipment.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.69	-	16.79
4.	Premixing and Bitumen Machinery.	-	-	-	-	-	-	20.22	-	-	-	-	-	-	-	26.08	100.0	3.85
5.	Transport Equipment and Miscellaneous.	-	-	-	-	-	-	40.00	-	-	-	-	-	-	-	8.69	-	36.86
	Total:	-	-	-	-	-	100.00	100.00	-	-	-	100.0	-	-	-	100.00	100.00	100.00



ROAD CONSTRUCTION MACHINERY CLASSIFIED BY COUNTRY OF ORIGIN-PURCHASED FROM 1947 TO 1983.

NWFP

(FIG. IN PERCENTAGE)

S.NO:	NAME OF MACHINERY	NAME OF COUNTRY																
		USA	U. K.	USSR	CHINA	JAPAN	FRANCE	SWITZERLAND	SWEDEN	YOGOSLAVIA	CANADA	GERMANY (F.R)	INDIA	ITALY	PAKISTAN	RUMANIA	ARGETINA
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.	Earth Moving Equipment.	20.00	4.05	2.38	6.79	23.30	-	100.00	-	-	-	18.18	-	50.00	-	-	-
2.	Road Construction/ Maintenance Equipment.	11.67	31.08	40.48	76.27	32.04	-	-	-	-	-	45.45	-	50.00	30.05	100.00	-
3.	Material Handling and Crushing Equipment.	10.00	2.71	-	1.69	3.88	-	-	-	-	-	-	-	-	6.57	-	-
4.	Premixing and Bitumen Machinery.	21.67	-	-	5.08	1.95	-	-	-	-	-	-	-	-	45.54	-	-
5.	Transport Equipment and Miscellaneous.	36.67	62.16	57.14	10.17	38.83	-	-	-	-	-	36.37	-	-	17.84	-	-
	Total:	100.0	100.0	100.0	100.0	100.0	-	-	-	-	-	100.0	-	-	100.0	-	-

Contd..../page 178.

N.W.F.P.

S. No.	NAME OF MACHINERY	NAME OF COUNTRY																
		AUSTRALIA	BELGIUM	BRAZIL	BULGARIA	AUSTRIA	CZECHOSOLVAKIA	DENMARK	GREECE	HONG KONG	HUNGRY	NORTH KOREA	SOUTH KOREA	NETHERLAND	NORWAY	POLLAND	GERMANY (GDR)	TOTAL
		19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1.	Earth Moving Equipment.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.5	-	7.94
2.	Road Construction/ Maintenance Equipment.	-	-	-	-	-	100.00	-	-	-	-	100.00	-	-	-	87.5	-	43.78
3.	Material Handling and Crushing Equipment.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.04
4.	Premixing and Bitumen Machinery.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17.25
5.	Transport Equipment and Miscellaneous.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26.99
	Total:	-	-	-	-	-	100.00	-	-	-	-	100.00	-	-	-	100.00	-	100.00

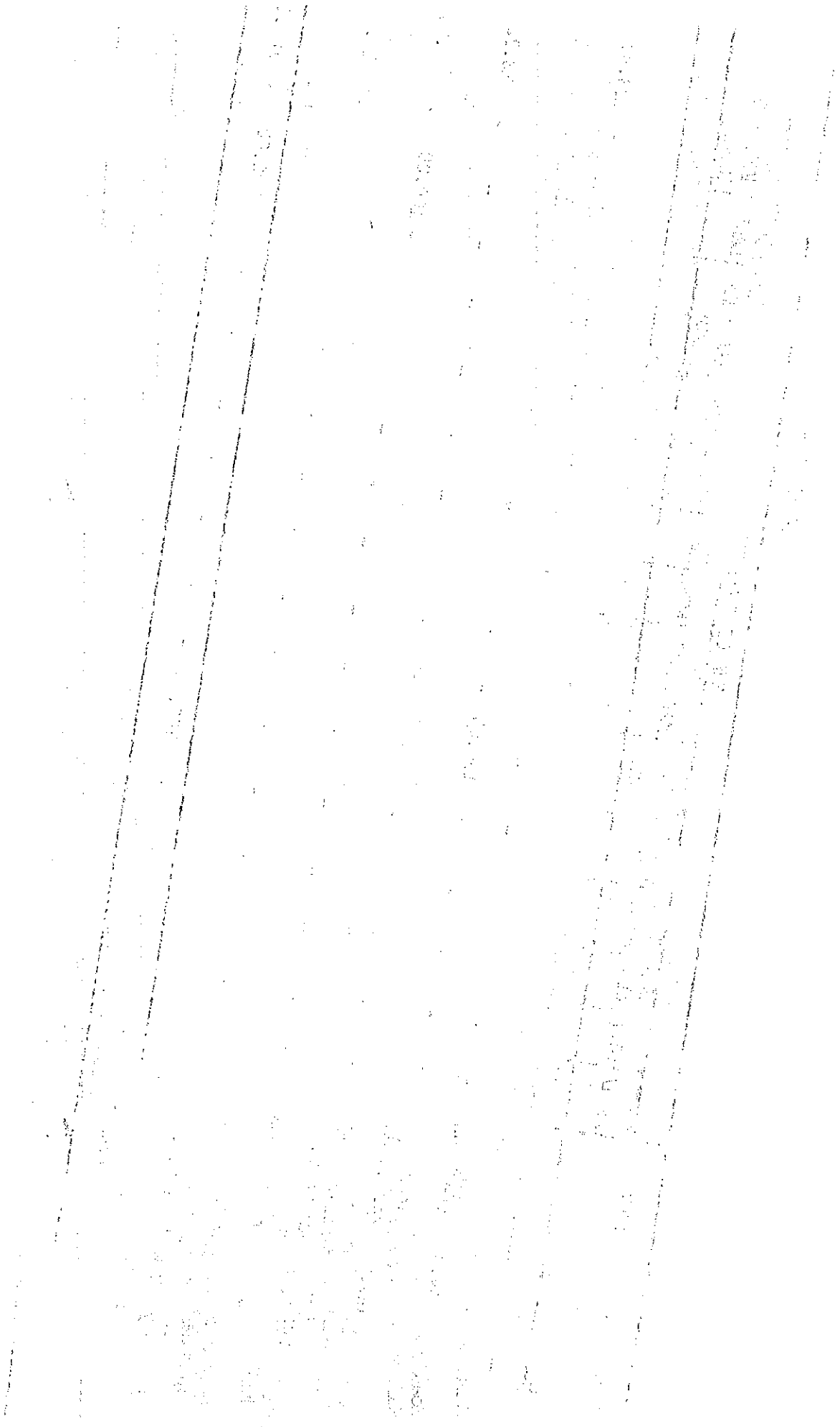
ROAD CONSTRUCTION MACHINERY CLASSIFIED BY COUNTRY OF ORIGIN-PURCHASED FROM 1947 TO 1983.

BALUCHISTAN (FIG. IN PERCENTAGE)

S.NO:	NAME OF MACHINERY	NAME OF COUNTRY															
		USA	U. K.	USSR	CHINA	JAPAN	FRANCE	SWITZERLAND	SWEDEN	YOGOSLAVIA	CANADA	GERMANY (F.R)	INDIA	ITALY	PAKISTAN	RUMANIA	ARGETINA
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.	Earth Moving Equipment.	20.0	4.45	-	-	49.56	-	-	-	-	-	-	-	100.0	6.67	-	-
2.	Road Construction/ Maintenance Equipment.	-	56.83	100.00	100.00	25.66	-	0.50	-	-	-	-	-	-	36.67	-	-
3.	Material Handling and Crushing Equipment.	-	15.90	-	-	6.19	0.60	0.50	-	-	-	-	-	-	3.33	-	-
4.	Premixing and Bitumen Machinery.	-	-	-	-	4.43	0.40	-	-	-	-	-	-	-	10.00	-	-
5.	Transport Equipment and Miscellaneous.	80.00	22.73	-	-	14.16	-	-	-	-	-	100.00	-	-	43.33	-	-
	Total::	100.0	100.0	100.0	100.0	100.0	100.0	100.00	-	-	-	100.00	-	-	100.00	-	-

Contd..../page 180.

S. No.	NAME OF MACHINERY	NAME OF COUNTRY																
		AUSTRALIA	BELGIUM	BRAZIL	BULGARIA	AUSTRIA	CZECHOSLOVAKIA	DENMARK	GREECE	HONG KONG	HUNGARY	NORTH KOREA	SOUTH KOREA	NETHERLAND	NORWAY	POLLAND	GERMANY (GDR)	TOTAL
		19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1.	Earth Moving Equipment.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38.99
2.	Road Construction/ Maintenance Equipment.	-	-	-	-	-	100.00	-	-	-	-	-	-	-	-	-	-	9.43
3.	Material Handling and Crushing Equipment.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13.22
4.	Premixing and Bitumen Machinery.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.00	-	10.66
5.	Transport Equipment and Miscellaneous.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28.30
	Total:	-	-	-	-	-	100.00	-	-	-	-	-	-	-	-	100.00	-	100.00



ROAD CONSTRUCTION MACHINERY CLASSIFIED BY COUNTRY OF ORIGIN-PURCHASED FROM 1947 TO 1983.

PAKISTAN

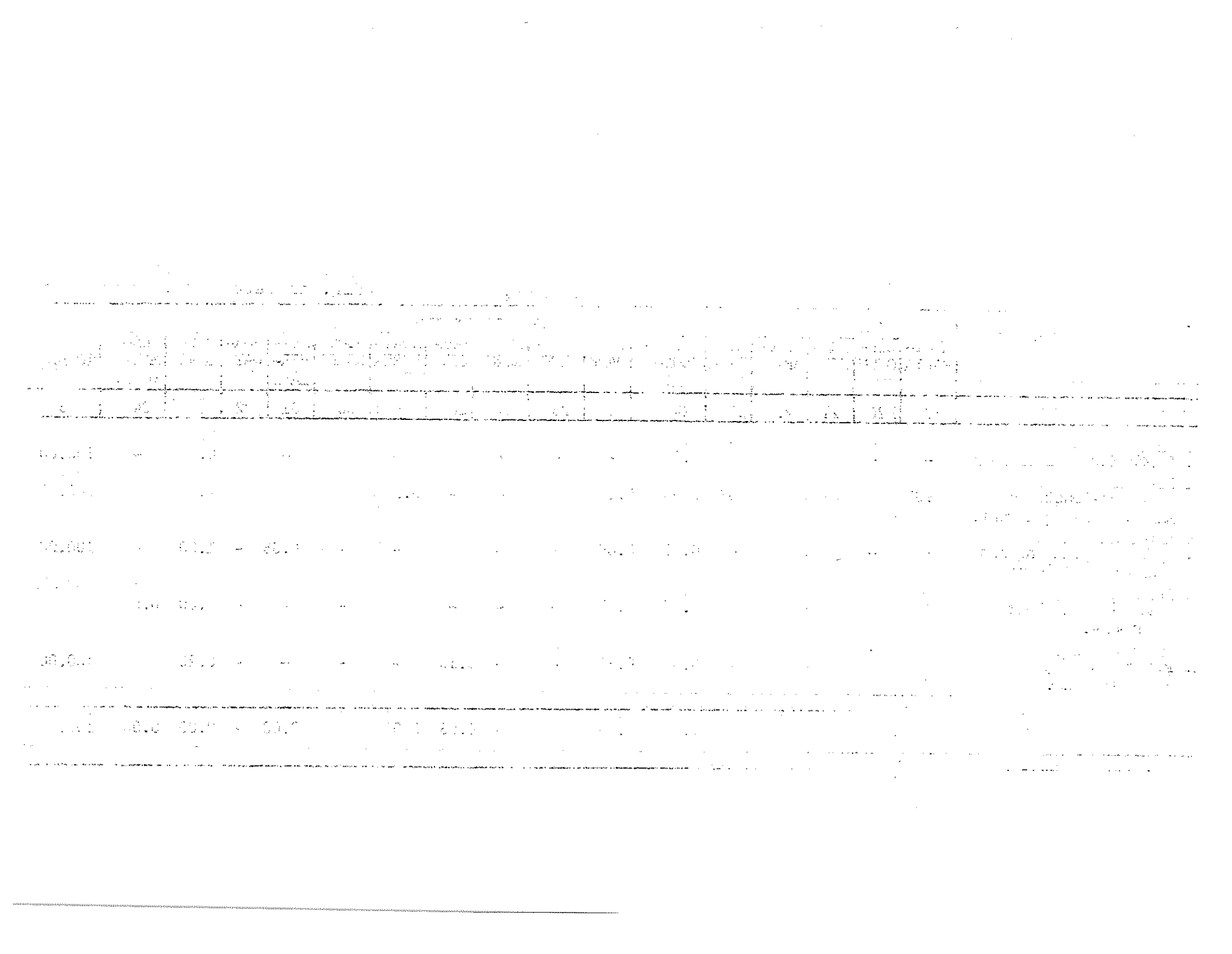
(FIG. IN PERCENTAGE)

S.NO:	NAME OF MACHINERY	NAME OF COUNTRY															
		USA	U. K.	USSR	CHINA	JAPAN	FRANCE	SWITZERLAND	SWEDEN	YOGOSLAVIA	CANADA	GERMANY (F.R)	INDIA	ITALY	PAKISTAN	RUMANIA	ARGETINA
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.	Earth Moving Equipment.	38.51	12.03	10.54	1.15	27.74	-	0.26	0.35	-	-	0.19	-	2.10	0.48	3.80	-
2.	Road Construction/ Maintenance Equipment.	7.68	10.30	3.79	11.29	11.79	0.57	0.36	0.96	1.15	0.05	2.73	0.08	1.42	27.58	12.26	-
3.	Material Handling and Crushing Equipment.	17.51	9.33	12.56	6.45	17.17	1.96	0.35	0.45	-	-	2.19	-	1.04	27.65	0.58	-
4.	Premixing and Bitumen Machinery.	4.48	4.32	3.79	2.93	10.84	13.25	0.34	-	-	-	1.03	-	1.03	54.05	-	-
5.	Transport Equipment and Miscellaneous.	11.75	25.76	11.15	2.90	38.36	1.05	0.07	-	0.07	0.24	1.41	-	0.77	5 .56	0.15	-
	Total;	13.17	14.90	7.69	6.54	22.43	1.58	0.26	0.48	0.50	0.09	1.87	0.03	1.23	19.34	5.66	-

Cont..../page 182.

PAKISTAN (Fig. in Percentage)

NAME OF MACHINERY	NAME OF COUNTRY																	
	AUSTRALIA	BELGIUM	BRAZIL	BULGARIA	AUSTRIA	CZECHOSLOVAKIA	DENMARK	GREECE	HONG KONG	HUNGRY	NORTH KOREA	SOUTH KOREA	NETHERLAND	NORWAY	POLLAND	GERMANY (GDR)	TOTAL
	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1. Earth Moving Equipment	-	-	-	-	-	2.28	-	-	-	-	-	-	-	-	0.53	-	100.00
2. Road Construction/ Maintenance Equipment.	0.05	-	-	-	0.03	3.93	0.16	-	-	-	0.23	-	-	-	3.59	-	100.00
3. Material Handling and Crushing Equipment.	-	-	-	-	-	0.12	0.69	-	-	-	-	-	0.35	-	1.60	-	100.00
4. Premixing and Bitumen Machinery.	-	-	-	-	-	0.17	0.17	-	-	-	-	-	-	-	3.09	0.52	100.00
5. Transport Equipment and Miscellaneous.	-	-	-	-	-	0.03	0.35	-	-	0.10	-	-	-	-	0.28	-	100.00
Total:	0.02	-	-	-	0.01	1.69	0.25	-	-	0.03	0.09	-	0.03	-	2.00	0.03	100.00



ROAD CONSTRUCTION MACHINERY CLASSIFIED BY COUNTRY OF ORIGIN-PURCHASED FROM 1947 TO 1983.

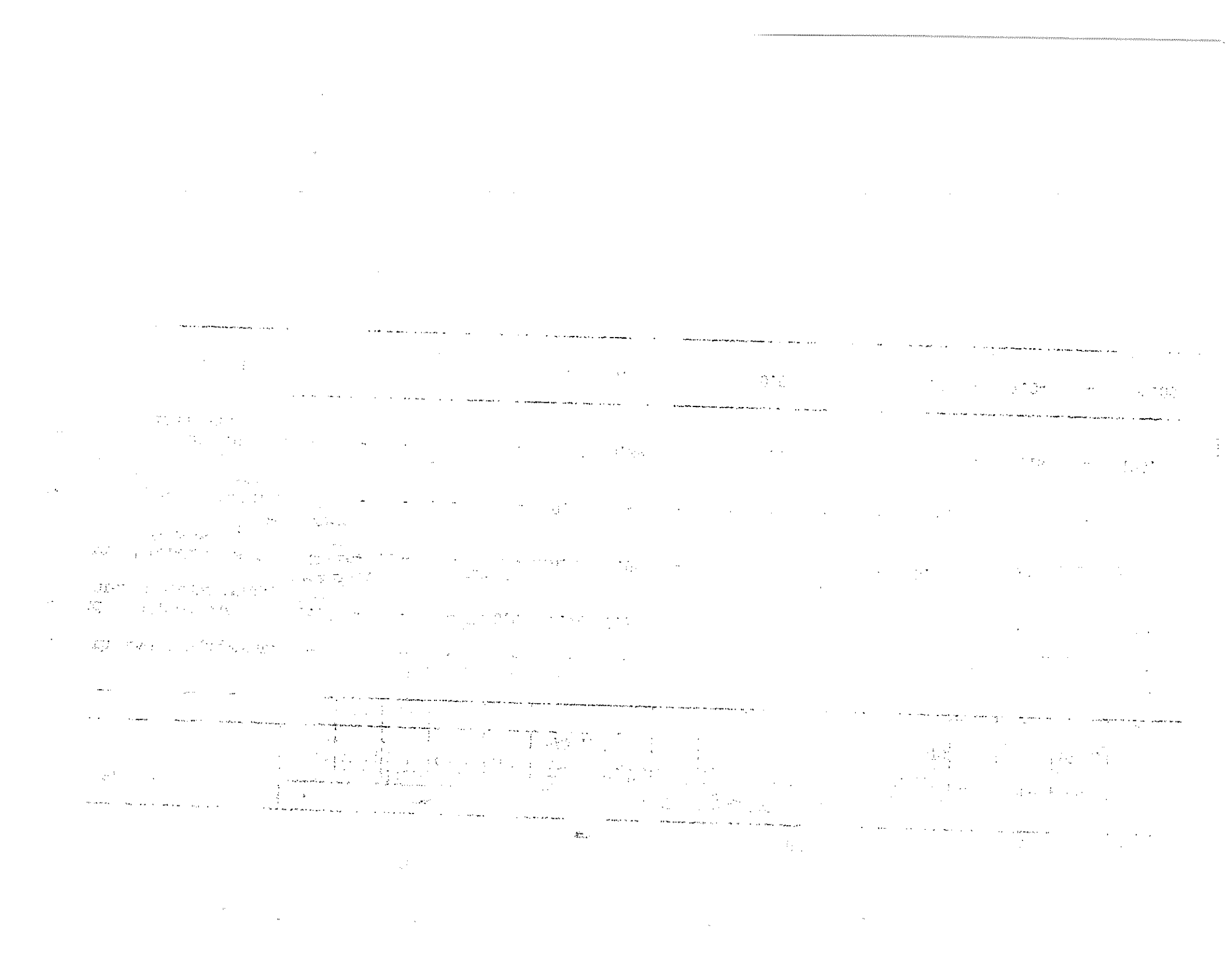
PUNJAB (FIG. IN PERCENTAGE)

S.NO:	NAME OF MACHINERY	NAME OF COUNTRY															
		USA	U. K.	USSR	CHINA	JAPAN	FRANCE	SWITZERLAND	SWEDEN	YOGOSLAVIA	CANADA	GERMANY (F.R)	INDIA	ITALY	PAKISTAN	RUMANIA	ARGETINA
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.	Earth Moving Equipment.	42.03	15.92	8.86	0.89	25.25	-	-	0.50	-	-	-	-	1.49	-	4.44	-
2.	Road Construction/ Maintenance Equipment.	9.15	9.35	3.32	9.73	11.07	0.72	0.37	1.26	1.43	-	3.00	0.10	1.30	30.16	11.93	-
3.	Material Handling and Crushing Equipment.	23.29	11.11	0.18	9.50	21.33	0.89	-	0.72	-	-	2.87	-	1.61	24.91	--	-
4.	Premixing and Bitumen Machinery.	1.28	5.89	2.31	3.58	13.33	17.69	0.52	-	-	-	1.28	-	1.54	52.32	-	-
5.	Transport Equipment and Miscellaneous.	13.69	30.74	0.44	3.35	43.02	1 .17	0.09	-	-	0.37	1.40	-	0.97	4 .32	0.19	-
	Total:	15.27	16.44	2.78	6.36	23.47	1.76	0.22	0.67	0.62	0.10	2.64	0.05	1.26	19.48	5.76	-

Contd..-./page 184

PUNJAB (Fig. in Percentage)

NAME OF MACHINERY	NAME OF COUNTRY																
	AUSTRALIA	BELGIUM	BRAZIL	BULGARIA	CANADA	CZECHOSLOVAKIA	DENMARK	EGYPT	HONGKONG	HUNGARY	NORTH KOREA	SOUTH KOREA	NETHERLAND	NORWAY	POLAND	GERMANY (GDR)	TOTAL
	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1. Earth Moving Equipment.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.62	-	100.00
2. Road Construction/ Maintenance Equipment.	0.07	-	-	-	0.03	3.28	0.14	-	-	-	-	-	-	-	3.59	-	100.00
3. Material Handling and Crushing Equipment.	-	-	-	-	-	0.18	1.08	-	-	-	-	-	0.54	-	1.79	-	100.00
4. Premixing and Bitumen Machinery.	-	-	-	-	-	0.26	-	-	-	-	-	-	-	-	-	-	100.00
5. Transport Equipment and Miscellaneous.	-	-	-	-	-	0.05	0.39	-	-	0.15	-	-	-	-	0.19	-	100.00
Total:	0.03	-	-	-	0.01	1.47	0.27	-	-	0.05	-	-	0.05	-	1.84	-	100.00



ROAD CONSTRUCTION MACHINERY CLASSIFIED BY COUNTRY OF ORIGIN-PURCHASED (FROM 1947 TO 1983.

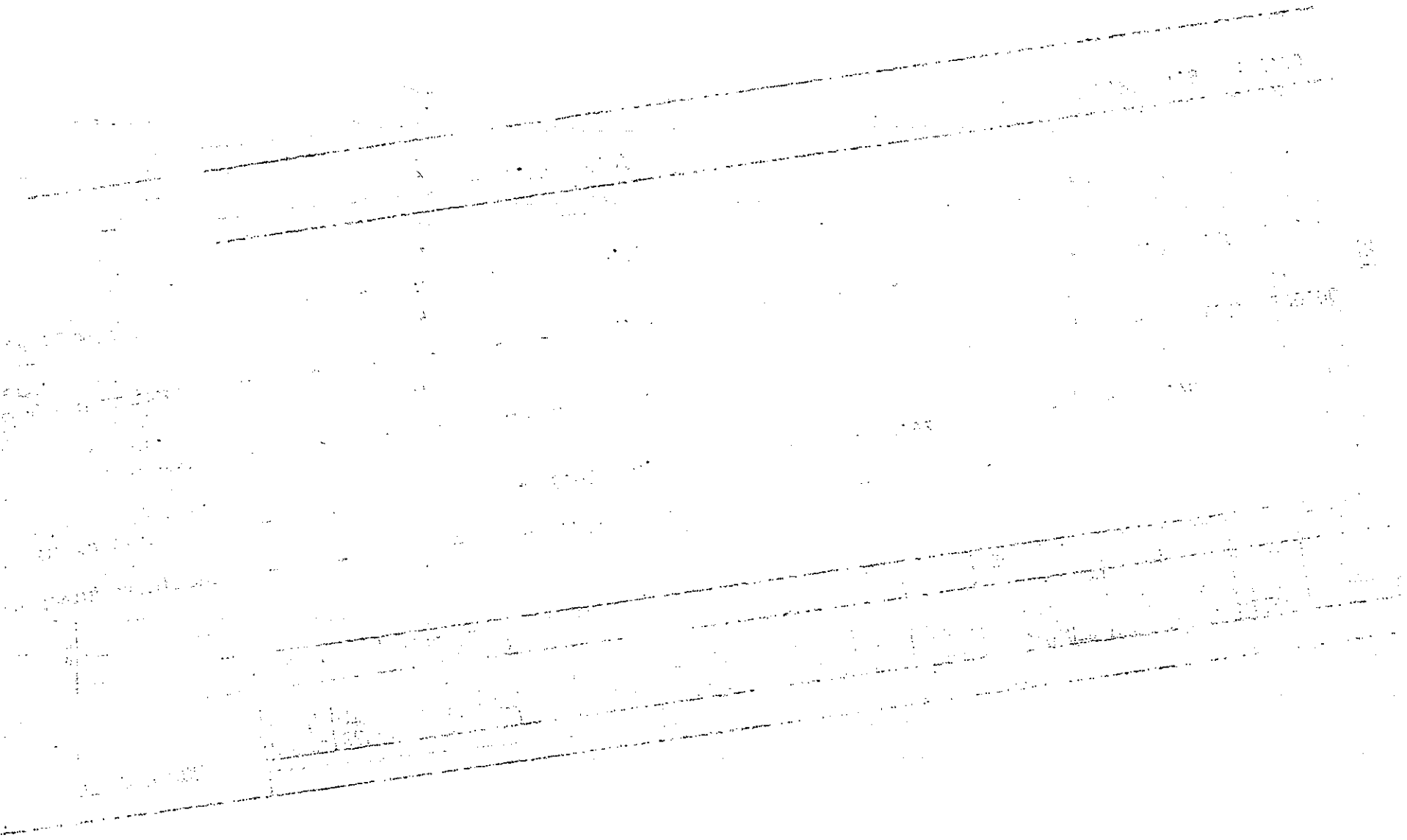
(FIG. IN PERCENTAGE)

SIND

S.NO:	NAME OF MACHINERY	NAME OF COUNTRY																
		USA	U. K.	USSR	CHINA	JAPAN	FRANCE	SWITZERLAND	SWEDEN	YOGOSLAVIA	CANADA	GERMANY (F.R)	INDIA	ITALY	PAKISTAN	RUMANIA	ARGETINA
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.	Earth Moving Equipment.	37.39	2.61	32.17	-	14.78	-	-	-	-	-	-	-	5.22	2.61	3.48	-
2.	Road Construction/ Maintenance Equipment.	3.65	13.50	5.29	18.61	12.23	0.18	-	-	0.36	0.36	2.19	-	2.37	18.62	8.58	-
3.	Material Handling and Crushing Equipment.	6.11	3.82	41.22	0.76	7.25	3.44	-	-	-	-	1.15	-	-	32.82	1.91	-
4.	Premixing and Bitumen Machinery.	13.33	3.33	21.67	-	6.67	10.00	-	-	-	-	1.67	-	-	16.66	-	-
5.	Transport Equipment and Miscellaneous.	4.87	10.08	49.74	1.39	26.96	1.04	-	-	0.34	-	0.88	-	0.34	3.32	-	-
	TOTAL:	7.37	9.42	30.32	7.18	16.79	1.41	-	-	0.26	0.13	1.35	-	1.35	14.10	3.59	-

Contd...../page 186.

S.	NAME OF MACHINERY	NAME OF COUNTRY																
		AUSTRALIA	BELGIUM	BRAZIL	BULGARIA	AUSTRIA	CZECHOSOLVAKIA	DENMARK	GREECE	HONG KONG	HUNGRY	NORTH KOREA	SOUTH KOREA	NETHERLAND	NORWAY	POLLAND	GERMANY (GDR)	TOTAL
		19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1.	Earth Moving Equipment.	-	-	-	-	-	1.74	-	-	-	-	-	-	-	-	-	-	100.00
2.	Road Construction/ Maintenance Equipment.	-	-	-	-	-	8.03	0.36	-	-	-	0.92	-	-	-	4.75	-	100.00
3.	Material Handling and Crushing Equipment.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.52	100.00
4.	Premixing and Bitumen Machinery.	-	-	-	-	-	-	1.67	-	-	-	-	-	-	-	20.00	5.00	100.00
5.	Transport Equipment and Miscellaneous.	-	-	-	-	-	-	0.35	-	-	-	-	-	-	-	0.69	-	100.00
	Total:	-	-	-	-	-	2.95	0.32	-	-	-	0.32	-	-	-	2.95	1.9	100.00



ROAD CONSTRUCTION MACHINERY CLASSIFIED BY COUNTRY OF ORIGIN-PURCHASED FROM 1947 TO 1983.

N.W.F.P. (FIG. IN PERCENTAGE)

S.NO:	NAME OF MACHINERY	NAME OF COUNTRY																
		USA	U. K.	USSR	CHINA	JAPAN	FRANCE	SWITZERLAND	SWEDEN	YOGOSLAVIA	CANADA	GERMANY (F.R)	INDIA	ITALY	PAKISTAN	RUMANIA	ARGETINA
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.	Earth Moving Equipment.	22.64	5.67	1.88	7.54	45.28	-	5.67	-	-	-	3.76	-	5.67	-	-	-
2.	Road Construction/ Maintenance Equipment.	2.40	7.88	5.82	15.41	11.30	-	-	-	-	-	1.71	-	1.03	21.92	25.68	-
3.	Material Handling and Crushing Equipment.	22.22	7.42	-	3.70	14.81	-	-	-	-	-	-	-	-	51.85	-	-
4.	Premixing and Bitumen Machinery.	11.30	-	-	2.62	1.74	-	-	-	-	-	-	-	-	84.35	-	-
5.	Transport Equipment and Miscellaneous.	12.23	25.56	13.33	3.33	22.22	-	-	-	-	-	2.22	-	-	21.11	-	-
	TOTAL:	9.00	11.09	6.30	8.85	15.44	-	0.45	-	-	-	1.65	-	0.90	31.93	11.24	-

Contd..../page 188.

NAME OF MACHINERY	NAME OF COUNTRY																	
	AUSTRALIA	BELGIUM	BRAZIL	BULGARIA	CANADA	CZECHOSLOVAKIA	DENMARK	FINLAND	HONG KONG	HUNGARY	KOREA REPUBLIC	KOREA SOUTH	NETHERLAND	NORWAY	POLAND	GERMANY (GDR)	TOTAL
	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1. Earth Moving Equipment.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.89	-	100.00
2. Road Construction/ Maintenance Equipment.	-	-	-	-	-	3.08	-	-	-	1.37	-	-	-	-	2.40	-	100.00
3. Material Handling and Crushing Equipment.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.00
4. Premixing and Bitumen Machinery.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.00
5. Transport Equipment and Miscellaneous.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.00
Total:	-	-	-	-	-	1.35	-	-	-	0.60	-	-	-	-	1.20	-	100.00

ROAD CONSTRUCTION MACHINERY CLASSIFIED BY COUNTRY OF ORIGIN-PURCHASED FROM 1947 TO 1983.

BALUCHISTAN (FIG. IN PERCENTAGE)

S.NO:	NAME OF MACHINERY	NAME OF COUNTRY																
		USA	U. K.	USSR	CHINA	JAPAN	FRANCE	SWITZERLAND	SWEDEN	YOGOSLAVIA	CANADA	GERMANY (F.R)	INDIA	ITALY	PAKISTAN	RUMANIA	ARGETINA
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.	Earth Moving Equipment.	1.61	3.23	-	-	90.32	-	-	-	-	-	-	-	1.61	3.23	-	-
2.	Road Construction/ Maintenance Equipment.	-	32.33	4.00	2.47	38.27	-	4.00	-	-	-	-	-	-	16.27	-	-
3.	Material Handling and Crashing Equipment.	-	33.33	-	-	33.34	14.28	14.28	-	-	-	-	-	--	4.77	-	-
4.	Premixing and Bitumen Machinery.	-	-	-	-	31.25	12.50	-	-	-	-	-	-	-	18.75	-	-
5.	Transport Equipment and Miscellaneous.	8.89	22.22	-	-	35.56	-	-	-	-	-	-	4.45	-	28.88	-	-
	TOTAL:	2.29	20.9	1.37	0.91	51.60	2.28	2.74	-	-	-	-	0.91	0.46	13.70	-	-

Contd..../page 190.

S. No.	NAME OF MACHINERY	NAME OF COUNTRY																TOTAL
		AUSTRALIA	BELGIUM	BULGARIA	AUSTRIA	CZECHOSLOVAKIA	DENMARK	FRANCE	GERMANY (FR)	GREECE	HUNGARY	ITALY	NETHERLAND	NORWAY	POLAND	GERMANY (GDR)		
		19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1.	Earth Moving Equipment.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.00
2.	Road Construction/ Maintenance Equipment.	-	-	-	-	-	2.67	-	-	-	-	-	-	-	-	-	-	100.00
3.	Material Handling and Crushing Equipment.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.00
4.	Premixing and Bitumen Machinery.	-	-	-	-	-	-	-	-	-	-	-	-	-	37.50	-		100.00
5.	Transport Equipment and Miscellaneous.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		100.00
	Total:	-	-	-	-	-	0.91	-	-	-	-	-	-	-	2.74	-		100.00

Table 2(a) ROAD CONSTRUCTION MACHINERY IN PUNJAB PROVINCE AS ON 30-6-1983

S. No.	Description	Frontier Works Organization R.-pindi	DW & CE Army Hq R.-pindi	DW & CE Navy Hq Rawalpindi.	DW & CE DP. Hq Rawalpindi.	Pakistan Mineral Development Corpn.	Pakistan Railway Lahore	Pakistan Railway Multan	Central E & M Circle P.W.D. Rawalpindi.	Total
		(01)	(02)	(03)	(04)	(06)	(07)	(08)	(09)	
1.	Buldozer	156	23	2	-	-	-	1	-	182
2.	Motor Grader.	31	5	3	-	-	-	-	1	40
3.	Scraper.	2	2	4	-	-	-	-	-	8
4.	Air Compressor.	168	12	1	-	7	-	2	-	190
5.	Generator Electric.	95	28	-	1	4	-	2	-	130
6.	Water Pump.	282	50	-	-	-	-	84	-	416
7.	Road Roller all types.	141	37	3	3	-	1	2	2	189
8.	Water Tanker.	2	-	-	-	1	-	-	3	6
9.	Tractors all types.	74	3	-	1	-	-	-	1	79
10.	Batching Plant.	-	-	-	-	-	-	-	-	-
11.	Concrete Mixer.	85	14	4	5	-	-	-	-	108
12.	Crane.	30	-	-	1	-	-	8	-	39
13.	Crushing Plant.	51	1	-	-	-	-	-	-	52

Contd.....P/192

Table 2(a) ROAD CONSTRUCTION MACHINERY IN PUNJAB PROVINCE AS ON 30-6-1983

Sl. No.	Description	Frontier Works Organization Rawalpindi	DW & CE Army Hq. Rawal-pindi.	DW & CE Navy Hq. Rawal-pindi.	DW & CE DP. Hq. Rawal-pindi.	Pakistan Mineral Develop-ment Corpn.	Pakistan Railway Lahore.	Pakistan Railway Multan.	Central E&M Circle P.W.D. Rawalpindi.	Total
		(01)	(02)	(03)	(04)	(06)	(07)	(08)	(09)	
14.	Drag-line.	2	-	-	-	-	-	-	-	2
15.	Back Hoe.	3	-	-	-	-	-	-	-	3
16.	Loader.	46	-	-	-	-	-	-	-	46
17.	Spreader.	3	-	-	-	-	-	-	-	3
18.	Asphalt Plant.	4	3	-	-	-	-	-	-	7
19.	Tar boiler.	61	6	-	2	1	-	-	-	70
20.	Bitumen Distributor.	7	1	-	-	-	-	-	-	8
21.	Finisher	5	1	-	-	-	-	-	-	6
22.	Tractors/Trollies.	29	-	-	1	-	-	-	-	30
23.	Dump Truck.	282	4	-	-	-	-	-	-	286
24.	Water Bowzer.	61	-	-	1	-	-	-	-	62

Table 2(a) ROAD CONSTRUCTION MACHINERY IN PUNJAB PROVINCE AS ON 30-6-1983

S. No.	Description	Sub Total B/F Page 1 North	North/South Zone Highways Deptts Lahore (10 & 11)	National Logestic Cell Rawalpindi (12)	Mechanized Construction of Pakistan Lahore (13)	Capital Development Authority Islamabad (14)	Faisalabad Development Authority Faisalabad (15)	Lahore Development Authority Lahore (16)	Hakas Ltd Rawalpindi (17)	Indus Valley Construction Co Ltd. Lahore (18)	Interhom Ltd. Lahore (19)	Saadullah Khan & Bros Lahore. (20)	Commulative Total
1.	Bulldozers	182	42	34	225	12	2	3	17	-	2	5	524
2.	Motor Graders	40	10	12	28	5	-	-	3	-	-	4	102
3.	Scrapers	8	9	10	118	2	-	-	2	-	-	-	149
4.	Air Compressors	190	9	6	86	4	1	-	6	9	6	5	324
5.	Generators Electric	130	10	-	99	-	-	1	4	8	1	2	255
6.	Water Pumps	416	15	-	522	-	-	-	5	19	11	4	992
7.	Road Rollers all type	189	487	32	98	22	13	52	7	-	2	26	928
8.	Water Tankers	6	13	20	44	2	1	5	6	5	1	8	111
9.	Tractors all Type	79	42	1278	78	1	1	2	16	7	3	20	1527
10.	Batching Plant	-	-	1	-	-	-	1	-	-	4	-	6
11.	Concret Mixers	108	-	6	28	-	-	-	9	3	8	6	168
12.	Cranes	39	12	9	15	2	-	2	3	-	3	1	86
13.	Crushing Plant	52	-	-	8	-	-	-	2	-	-	4	66
14.	Dragline	2	-	-	146	-	-	-	-	-	-	-	148
15.	Back Hoe	3	-	2	2	-	-	-	-	-	-	-	7
16.	Loaders	46	12	22	11	5	-	6	14	-	1	6	123
17.	Spreaders	3	2	2	-	-	-	-	-	-	-	2	39
18.	Asphalt Plant	7	4	1	2	2	-	3	-	-	-	1	20
19.	Tar Boilers	70	72	-	-	-	-	-	2	-	-	4	148
20.	Bitumen Dist:	8	2	-	-	1	-	2	4	-	-	2	19
21.	Finishers	6	4	2	-	3	-	2	-	-	-	1	18
22.	Tractors Trollies	30	-	12	-	-	1	--	17	7	2	8	77
23.	Dump & Trucks	286	52	50	162	4	3	20	37	-	9	16	639
24.	Water Bowzers	62	-	20	2	-	-	-	-	-	-	2	86

Table 2(a) Road Construction Machinery in Punjab Province
As on 30-6-1983

Sr. No.	Description	Sub Total B/F from Page 2	Town Committee Khawra	District Council Faisalabad	Distt: Council Leiah	Distt: Council Multan	Distt: Council Rajanpur	Distt: Council Sargodha	Distt: Council Sheikhupura	Distt: Council T.T.Singh	Municipal Corpon F'abad	Municipal Committee Haselpur	Cumulative Total
			(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	
1.	Bulldozer	524											52
2.	Motor Grader	102											10
3.	Scraper	149											14
4.	Air Compressor	324									1		32
5.	Generator - Electric	255											25
6.	Water Pump	992				3		7			24	4	103
7.	Road Roller all type	928		10	3	12	1	4	6	2	17		98
8.	Water Tankers	111	1			5					7	1	12
9.	Tractor all types	1527						1			11	1	154
10.	Batching Plant	6											
11.	Concrete Mixer	168											16
12.	Crane	86											8
13.	Crushing Plant	66											6
14.	Drag-Line	148											14
15.	Back Hoe	7											
16.	Loader	123									1		12
17.	Spreader	9											
18.	Asphalt Plant	20									1		2
19.	Tar Boiler	148				12			4		1		16
20.	Bitumen Distribution	19											1
21.	Finisher	18									1		1
22.	Tractor Trollies	77	1					1				3	8
23.	Dump Truck	639									8		64
24.	Water Bowzer	86											8

Table 2(a) Road Construction Machinery in Punjab Province as on 30-6-1983

S. No.	Description	Sub-Total B/F From Page 3.	Municipal Corporation Lahore	Municipal Corporation Multan	Municipal Corporation Rawalpindi	Municipal Corporation Sheikhupura	Municipal Committee Shujabad	Urban Development Authority	Grand Total
			(31)	(32)	(33)	(34)	(35)	(36)	
1.	Buldozer	524	-	-	-	-	-	1	525
2.	Motor Grader	102	-	-	-	-	-	-	102
3.	Scrapers	149	4	-	-	-	-	-	153
4.	Air Compressor	325	6	-	-	1	-	-	332
5.	Generator - Electric	255	-	-	-	-	-	-	255
6.	Water Pump	1030	93	-	-	6	-	13	1142
7.	Road Roller all type	963	35	2	6	1	-	17	1044
8.	Water Tanker	125	6	-	-	1	-	4	136
9.	Tractor all type	1340	80	-	-	4	1	2	1627
10.	Batching Plant	6	-	-	-	-	-	-	6
11.	Concrete Mixer	163	-	-	-	-	-	-	168
12.	Crane	86	2	-	-	-	-	-	88
13.	Crashing Plant	65	1	-	-	-	-	-	67
14.	Drag-line	148	-	-	-	-	-	-	148
15.	Back Hoe	7	-	-	-	-	-	-	7
16.	Loader	124	3	-	-	-	-	-	127
17.	Spreader	9	2	-	-	-	-	-	11
18.	Asphalt Plant	21	1	-	-	-	-	-	22
19.	Tar Boiler	135	-	2	11	3	-	8	189
20.	Bitumen Dist	19	-	-	-	-	-	-	19
21.	Finisher	19	-	-	-	-	-	-	19
22.	Tractor Trollies	82	90	-	-	3	1	-	176
23.	Dump Truck	647	10	-	-	-	-	-	657
24.	Water Bowzer.	86	-	-	-	-	-	-	86

Table 2(a) ROAD CONSTRUCTION MACHINERY IN PUNJAB PROVINCE AS ON 30-6-1985

Sl. No.	Description	Frontier Works Organization Rawalpindi	DW & CE Army Hq Rawalpindi.	DW & CE Navy Hq Rawalpindi.	DW & CE DP. Hq Rawalpindi.	Pakistan Mineral Development Corpn.	Pakistan Railway Lahore	Pakistan Railway Multan	Central E & M Circle P.W.D. Rawalpindi	Total
		(01)	(02)	(03)	(04)	(06)	(07)	(08)	(09)	
1.	Buldozer	180	27	2	-	-	1	1	-	211
2.	Motor Grader	31	7	3	-	-	-	-	1	42
3.	Scraper	2	2	4	-	-	-	-	-	8
4.	Air Compressor	186	12	1	-	7	-	2	-	208
5.	Generator - Electric	124	37	-	2	4	-	2	-	169
6.	Water Pump	282	50	-	1	-	-	84	-	417
7.	Road Roller all type	211	35	3	3	-	1	2	2	257
8.	Water Tanker	2	-	-	-	1	-	-	3	6
9.	Tractors all types	86	3	-	1	-	-	-	1	91
10.	Batching Plant	-	-	-	-	-	-	-	-	-
11.	Concrete Mixer	85	14	4	5	-	-	-	-	108
12.	Crane	30	-	-	1	-	-	8	-	39
13.	Crushing Plant	86	1	-	-	-	-	-	-	87
14.	Drag - line	2	-	-	-	-	-	-	-	2
15.	Back Hoe	3	-	-	-	-	-	-	-	3
16.	Loaders	52	-	-	-	-	-	-	-	52
17.	Spreader	7	-	-	-	-	-	-	-	7
18.	Asphalt Plant	4	2	-	-	1	-	-	-	7
19.	Tar Boiler	61	7	-	2	-	-	-	-	70
20.	Bitumen Distributor	7	1	-	-	-	-	-	-	8
21.	Finisher	8	-	-	-	-	-	-	-	8
22.	Tractors Trollies	41	-	-	1	-	-	-	-	42
23.	Dump Truck	286	4	-	-	-	-	-	-	290
24.	Water Bowzer	61	4	-	1	-	-	-	-	66

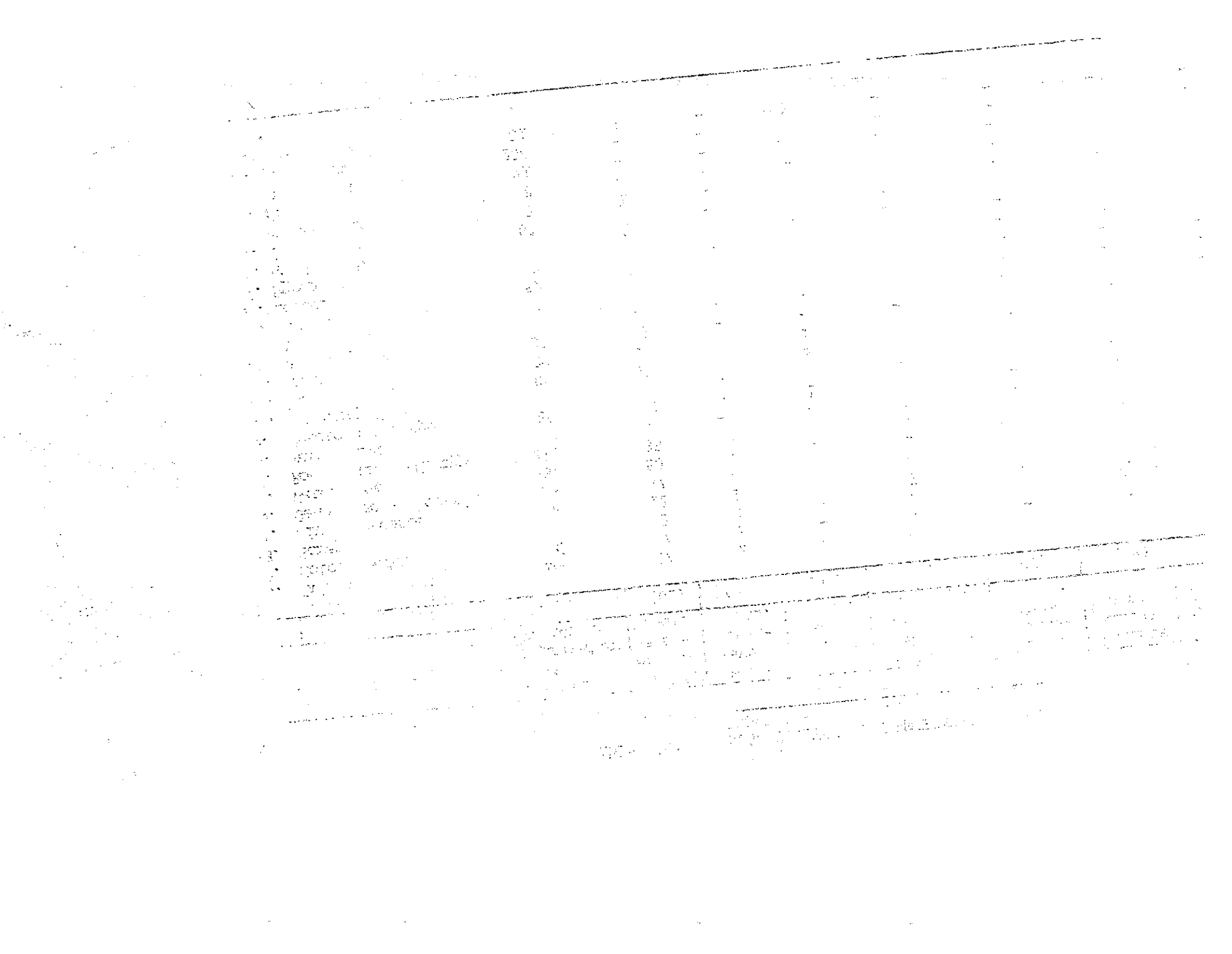


Table 2(a) ROAD CONSTRUCTION MACHINERY IN PUNJAB PROVINCE AS ON 30-6-1985

Sl. No	Description	Sub Total B/F Page 1 North	North/South Zone Highways Depats Lahore (10 & 11)	National Logestic Cell Rawalpindi (12)	Mechanised Construction of Pakistan Lahore (13)	Capital Development Authority Islamabad (14)	Faisalabad Development Authority Faisalabad (15)	Lahore Development Authority Lahore (16)	Hakas Ltd Rawalpindi (17)	Indus Valley Construction Co Ltd. Lahore (18)	Interhom Ltd. Lahore (19)	Saifullah Khan & Bros Lahore. (20	Commulative Total
1.	Bulldozers	210	119	34	173	28	2	3	22	–	2	7	600
2.	Motor Graders.	42	56	12	21	10	–	–	7	–	–	6	154
3.	Scrapers	8	9	10	118	2	–	–	2	–	–	–	149
4.	Air Compressor	208	4	8	75	5	1	–	18	12	9	7	347
5.	Generators Electirc	169	7	–	89	–	4	1	7	8	1	4	290
6.	Water Pumps	417	23	–	515	–	–	–	5	19	23	8	1010
7.	Road Rollers all types	237	614	32	72	26	13	52	11	–	4	36	1117
8.	Water Tankers	6	17	20	30	2	5	5	12	–	2	13	112
9.	Tractors all Types	91	42	1578	64	1	7	2	16	8	6	29	1844
10.	Batching Plant	–	–	1	–	–	–	1	1	–	4	–	7
11.	Concrete Mixers	108	–	6	23	–	–	–	16	3	9	10	175
12.	Cranes	39	9	9	13	2	–	2	9	–	4	2	89
13.	Crushing Plant	87	–	–	3	–	–	–	3	–	–	6	99
14.	Dragline	2	–	–	146	–	–	–	3	–	–	–	151
15.	Back Hoe	3	–	2	1	–	–	–	2	–	–	–	8
16.	Loaders	52	12	22	14	8	–	6	16	–	1	12	143
17.	Spreaders	7	2	2	–	2	–	–	–	–	–	4	17
18.	Asphalt Plant	7	4	1	2	2	–	3	–	–	–	2	21
19.	Tar Boilers	70	72	–	–	–	–	–	2	–	–	6	150
20.	Bitumen Distributors	8	6	–	–	1	–	2	5		–	4	26
21.	Finishers	8	6	2	–	3	–	2	–	–	–	3	24
22.	Tractors Trollies	42	–	12	–	–	4	–	17	8	4	10	97
23.	Dump Trucks	290	52	50	162	4	3	20	42	–	10	30	663
24.	Water Bowzers	66	–	20	2	–	–	–	–	–	–	4	92

Table 2(a) ROAD CONSTRUCTION MACHINERY IN PUNJAB PROVINCE AS ON 30-6-1985

S. No.	Description	Total B/F from Page 2	Town Committee Khawra	District Council F.abad	District Council [illegible]	District Council [illegible]	District Council Rajanpur	District Council Sargodha	District Council Sheikhupura	District Council T.T.Singh	Municipal Corporation F.abad	Municipal Corporation Haselpur	Cumulative Total
			(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	
1.	Buldozer	600	-	-	-	-	-	-	-	-	-	-	600
2.	Motor Grader	154	-	-	-	-	-	-	-	-	-	-	154
3.	Scraper	149	-	-	-	-	-	-	-	-	-	-	149
4.	Air Compressor	347	-	-	-	-	-	-	-	-	-	-	347
5.	Generator - Electric	290	-	-	-	-	-	-	-	-	1	-	291
6.	Water Pump	1010	-	-	-	3	-	7	-	-	24	4	1048
7.	Road Roller all types	1117	-	10	3	12	1	4	6	2	17	-	1172
8.	Water Tanker	112	1	-	-	5	-	-	-	-	7	1	126
9.	Tractors all types	1844	-	-	-	-	-	1	-	-	11	1	1857
10.	Batching Plant	7	-	-	-	-	-	-	-	-	-	-	7
11.	Concrete Mixer	175	-	-	-	-	-	-	-	-	-	-	175
12.	Crane	89	-	-	-	-	-	-	-	-	-	-	89
13.	Crushing Plant	99	-	-	-	-	-	-	-	-	-	-	99
14.	Drag-line	151	-	-	-	-	-	-	-	-	-	-	151
15.	Back Hoe	8	-	-	-	-	-	-	-	-	-	-	8
16.	Loader	143	-	-	-	-	-	-	-	-	1	-	144
17.	Spreader	17	-	-	-	-	-	-	-	-	-	-	17
18.	Asphalt Plant	21	-	-	-	-	-	-	-	-	1	-	22
19.	Tar Boiler	150	-	-	-	12	-	-	4	-	1	-	167
20.	Bitumen Distributor	26	-	-	-	-	-	-	-	-	-	-	26
21.	Finisher	24	-	-	-	-	-	-	-	-	1	-	25
22.	Tractors Trollies	97	1	-	-	-	-	1	-	-	-	3	102
23.	Dump Truck	663	-	-	-	-	-	-	-	-	8	-	671
24.	Water Bowzer	92	-	-	-	-	-	-	-	-	-	-	92

Table 2(a) ROAD CONSTRUCTION MACHINERY IN PUNJAB PROVINCE AS ON 30-6-1983

Description	Sub-Total B/F From Page 3.	Municipal Corporation Lahore	Municipal Corporation Multan	Municipal Corporation Rawalpindi.	Municipal Corporation Sheikhupura	Municipal Committee Shujabad	Multan Development Authority	Grand Total
		(31)	(32)	(33)	(34)	(35)	(36)	
1. Buldozer	600	-	-	-	-	-	1	601
2. Motor Grader	154	-	-	-	-	-	-	154
3. Scraper	143	4	-	-	-	-	-	153
4. Air Compressor	347	6	-	-	1	-	-	354
5. Generator = Electric	291	-	-	-	-	-	-	291
6. Water Pump	1048	98	-	-	6	-	13	1165
7. Road Roller all types	1172	35	2	6	1	-	17	1233
8. Water Tanker	126	6	-	-	1	-	4	137
9. Tractor all types	1857	92	-	-	4	1	2	1956
10. Batching Plant	7	-	-	-	-	-	-	7
11. Concrete Mixer	175	-	-	-	-	-	-	175
12. Crane	89	2	-	-	-	-	-	91
13. Crushing Plant	99	1	-	-	-	-	-	100
14. Drag-line	151	-	-	-	-	-	-	151
15. Back Hoe	8	-	-	-	-	-	-	8
16. Loaders	144	7	-	-	-	-	-	151
17. Spreaders	17	2	-	-	-	-	-	19
18. Asphalt Plant	22	1	-	-	-	-	-	23
19. Tar Boiler	167	-	2	11	3	-	8	191
20. Bitumen Distributor	26	-	-	-	-	-	-	26
21. Finisher	25	-	-	-	-	-	-	25
22. Tractors Trollies	102	90	-	-	3	1	-	196
23. Dump Tractor	671	18	-	-	-	-	-	689
24. Water Bowzer.	92	-	-	-	-	-	-	92

Table 3(a) Road Construction Machinery Purchased in Punjab Province During 1983-84 & 1984-85

S. No.	Description	Frontier Works Organization Rawalpindi(01)		DW & CE Army Hq Rawalpindi(02)		DW & CE Navy Hq Rawalpindi(03)		DW & CE D.P. Hq Rawalpindi (04)		Pakistan Mineral Development Corpn(06)		Pakistan Railway Lahore. (07)		Pakistan Railway Multan. (08)		Central E & M Circle PWD Rawalpindi(09)		Sub Total	
		83-84	84-85	83-84	84-85	83-4	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85
1.	Bulldozers.		24	2	2													2	26
2.	Motor Graders.				2														2
3.	Scrapers.																		
4.	Air Compressors.		18																18
5.	Generators-Electric.	13	16	3	6				1									16	23
6.	Water Pumps.			2	2				1									2	3
7.	Road Rollers all type.	55	15															55	15
8.	Water Tankers.																		
9.	Tractors all type.		12																12
10.	Batching Plant.																		
11.	Concrete Mixers.																		
12.	Cranes.																		
13.	Crushing Plant.	17	18															17	18
14.	Dragline.																		
15.	Back Hoe.																		
16.	Loaders.		6																6
17.	Spreaders.		4																4
18.	Asphalt Plant.																		
19.	Bar Boilers.																		
20.	Bitumen Distributors.																		
21.	Finishers.		3																3
22.	Tractors Trollies.		12																12
23.	Dump Trucks.		4																4
24.	Water Bowzers.			2	2													2	2

Table 3(a) Road Construction Machinery Purchased in Punjab Province During 1983-84 and 1984-85

S. NO	Description	Sub Total 3/F from Page 1		North/South Zone Highways Deptt.Lahore (10 & 11)		National Logestic Cell Rawalpindi (12)		Mechanised Construction of Pakistan Lahore(13)		Capital Development Authority Islamabad (14)		Faisalabad Development Authority Faisalabad (15)		Lahore Development Authority Lahore(16)		Hakas Ltd Rawalpindi (17)		Indus Valley Construction Co.Ltd.Lahore (18)		Interhom Ltd.Lahore(19)		Saadullah Khan and Bros.Lahore (20)		Commulative Total	
		83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85
1.	Buldozers.	2	26	90	-	-	-	-	-	16	-	-	-	-	4	1	-	-	-	-	1	1	97	44
2.	Motor Graders.	-	2	52	-	-	-	-	-	5	-	-	-	-	3	1	-	-	-	-	1	1	56	9
3.	Scrapers.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.	Air Compressors.	-	18	-	-	-	-	-	-	1	-	-	-	-	5	7	-	3	2	1	1	1	8	31
5.	Generator Electric	16	23	-	-	-	-	-	-	-	-	4	-	-	1	2	-	-	-	-	1	1	18	30
6.	Water Pumps.	2	3	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	10	2	2	2	14	15
7.	Road Rollers all type.	55	15	127	-	-	-	-	-	4	-	-	-	-	2	2	-	-	2	-	7	3	193	24
8.	Water Tankers.	-	-	12	-	-	-	-	-	-	2	2	-	-	1	5	-	-	1	-	3	2	19	9
9.	Tractors all type.	-	12	-	-	-	300	-	-	-	2	4	-	-	-	-	-	1	2	1	5	4	9	322
10.	Batching Plant.	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-
11.	Concrete Mixers.	-	-	-	-	-	-	-	-	-	-	-	-	-	3	4	-	-	1	-	2	2	6	6
12.	Cranes.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	1	-	-	1	1	7
13.	Crushing Plant.	17	18	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	1	19	19
14.	Dragline.	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	3	-
15.	Back Hoe.	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	1	1
16.	Loaders.	-	6	-	-	-	-	-	-	3	-	-	-	-	-	2	-	-	-	-	3	3	3	14
17.	Spreaders.	-	4	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	1	1	1	7
18.	Asphalt Plant.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-
19.	Tar Boilers.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1
20.	Bitumen Distributors.	-	-	4	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	1	5	2
21.	Finishers.	-	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	3	4
22.	Tractors Trollies.	-	12	-	-	-	-	-	-	-	1	2	-	-	-	-	-	1	2	-	1	1	4	16
23.	Dump Trucks.	-	4	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	1	-	7	7	8	16
24.	Water Bowzers.	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	3	3

Table 3(a) Road Construction Machinery Purchased in Punjab Province During 1983-84 and 1984-85

S. No.	Description	Sub-Total B/F from Page 2		Town Committee Lahore(21)		District Council Faisalabad (22)		District Council Leiah (23)		District Council Multan(24)		District Council Rajanpur (25)		District Council Sargodha (26)		District Council Sheikhupura (27)		District Council T.T.Singh (28)		Municipal Corporation Faisalabad(29)		Municipal Committee Hasalpur (30)		Commulative Total	
		83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85
1.	Buldozers.	97	44																					97	44
2.	Motor Graders.	56	9																					56	9
3.	Scrapers.	-	-																					-	-
4.	Air Compressors.	8	31																					8	31
5.	Generator Electric	18	30																					18	30
6.	Water Pumps.	14	15																					14	15
7.	Road Rollers all types.	193	24																					193	24
8.	Water Tankers.	19	9																					19	9
9.	Tractors all type	9	322																					9	322
10.	Batching Plant.	1	-																					1	-
11.	Concrete Mixers.	6	6																					6	6
12.	Cranes.	1	7																					1	7
13.	Crushing Plant.	19	19																					19	19
14.	Dragline.	3	-																					3	-
15.	Back Hoe.	1	1																					1	1
16.	Loaders.	3	14																					3	14
17.	Spreaders.	1	7																					1	7
18.	Asphalt Plant.	1	-																					1	-
19.	Tar Boilers.	1	1																					1	1
20.	Bitumen Distributors.	5	2																					5	2
21.	Finishers.	3	4																					3	4
22.	Tractors Trollies.	4	16																					4	16
23.	Dump Trucks.	8	16																					8	16
24.	Water Bowzers.	3	3																					3	3

Table 3(a) Road Construction Machinery Purchased in Punjab Province During 1983-84 and 1984-85

S. No.	Description	Sub-Total B/F from Page 3		Municipal Corporation Lahore(31)		Municipal Corporation Multan(32)		Municipal Corporation Rawalpindi (33)		Municipal Corporation Sheikhupura (34)		Municipal Corporation Shujaabad (35)		Multan Development Authority (36)		Grand Total	
		83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85
1.	Buldozers.	97	44													97	44
2.	Motor Graders.	56	9													56	9
3.	Scrapers.	-	-	4												4	-
4.	Air Compressors.	8	31													8	31
5.	Generators Electric.	18	30													18	30
6.	Water Pumps.	14	15		5											14	20
7.	Road Rollers all type.	193	24	1												194	24
8.	Water Tankers.	19	9													19	9
9.	Tractors all types.	9	322	12												21	322
10.	Batching Plant.	1	-													1	-
11.	Concrete Mixers.	6	6													6	6
12.	Cranes.	1	7													1	7
13.	Crushing Plant.	19	19													19	19
14.	Dragline.	3	-													3	-
15.	Back Hoe.	1	1													1	1
16.	Loaders.	3	14	2	2											5	16
17.	Spreaders.	1	7													1	7
18.	Asphalt Plant.	1	-													1	-
19.	Tar Boilers.	1	1													1	1
20.	Bitumen Distributors.	5	2													5	2
21.	Finishers.	3	4													3	4
22.	Tractors Trollies.	4	16													4	16
23.	Dump Trucks.	8	16	8												16	16
24.	Water Bowzers.	3	3													3	3

Table 2(b) ROAD CONSTRUCTION MACHINERY IN SIND PROVINCE AS ON 30-6-1983.

S.NO	Description	N.C.I Karachi (51)	M.LC & Co. Karachi (52)	Asian Const Egg & International Const Ltd Karachi (53)	Sind Highways Deptt: Hyderabad (54)	Pakistan Railways Karachi (55)	Pakistan Steel Mill (56)	Asphalt Plant K.D.A. (57)	District Council Karachi (58)	Distt Council Tharparka- (59)	Municipal Corporation Hyderabad (60)	Municipal Committee Kandhkot (61)	Municipal Committee Tandoadam (62)	K.M.C Karachi (63)	OGDC Karachi (64)	Total
1.	Bulldozers	9	3	-	16	-	20	2	-	-	-	-	-	3	8	61
2.	Motor Graders	2	2	-	18	-	7	1	-	-	-	-	-	-	-	30
3.	Scrapers	9	-	-	19	-	2	-	-	-	-	-	-	-	-	30
4.	Air Compressors	20	7	3	2	-	42	1	-	-	-	-	-	-	8	83
5.	Generators Electric	6	6	-	13	-	-	2	-	-	-	-	-	-	20	47
6.	Water Pumps	84	80	-	15	-	19	-	-	-	-	-	-	-	2	190
7.	Road Rollers all types	19	2	-	334	3	7	4	-	-	8	1	1	25	-	404
8.	Water Tankers	5	2	2	25	-	11	-	-	-	-	-	-	-	-	45
9.	Tractors all types	2	6	4	14	-	6	-	-	8	-	-	-	-	4	44
10.	Batching Plant	4	5	-	-	-	-	-	-	-	-	-	-	-	-	9
11.	Concrete Mixers	79	22	4	-	-	-	-	-	-	-	-	-	-	-	105
12.	Cranes	7	2	-	4	-	101	-	-	-	-	-	-	2	5	121
13.	Crushing Plant	-	-	-	1	1	-	-	-	-	-	-	-	-	-	2
14.	Dragline	-	-	-	-	-	24	2	-	-	-	-	-	-	-	26
15.	Back Hoe	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
16.	Loaders	5	7	-	6	-	1	4	-	-	-	-	-	3	-	26
17.	Spreaders	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18.	Asphalt Plant	-	-	-	5	-	-	2	-	-	-	-	-	2	-	9
19.	Tar Boilers	-	-	2	27	-	-	-	-	-	-	-	-	-	-	29
20.	Bitumen Dist:	--	-	-	-	-	1	-	-	-	-	-	-	-	-	1
21.	Finishers	-	-	-	5	-	-	4	-	-	-	-	-	3	-	12
22.	Tractors Trollies	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2
23.	Dump Trucks	15	9	-	13	-	145	10	-	-	-	-	-	12	-	204
24.	Water Bowzers	-	2	-	-	-	-	-	-	-	-	-	-	-	-	2

Table 2(b) ROAD CONSTRUCTION MACHINERY IN SIND PROVINCE AS ON 30-6-1985

S.NO	Description	N.L.C. Karachi (51)	M.LIC & Co. Karachi (52)	Asian Const Egg & International Const Ltd Karachi (53)	Sind Highways Deptt: Hyderabad (54)	Pakistan Railways Karachi (55)	Pakistan Steel Mill (56)	Asphalt Plant K.D.A. (57)	District Council Karachi (58)	Distt Council Tharparkar (59)	Municipal Corporation Hyderabad (60)	Municipal Committee Kandhkot (61)	Municipal Committee Tandoadam (62)	K.M.C Karachi (63)	OGDC Karachi (64)	Total
1.	Bulldozers	6	3	-	48	-	20	2	-	-	-	-	-	3	9	91
2.	Motor Graders	2	2	-	26	-	7	1	-	-	-	-	-	1	-	39
3.	Scrapers	9	-	-	19	-	2	-	-	-	-	-	-	-	1	30
4.	Air Compressors	17	7	3	2	-	42	1	-	-	-	-	-	-	11	83
5.	Generators Electric	17	6	-	14	-	-	2	-	-	-	-	-	-	36	75
6.	Water Pumps Diesel/Electric	150	80	-	5	-	19	-	-	-	-	-	-	-	10	264
7.	Road Rollers all types	18	2	-	350	3	7	4	-	-	8	1	1	25	-	419
8.	Water Tankers	5	2	2	26	-	12	-	-	-	-	-	-	-	-	46
9.	Tractors all type	23	6	4	14	-	6	-	-	9	-	-	-	-	19	80
10.	Batching Plant	4	5	-	-	-	-	-	-	-	-	-	-	-	-	9
11.	Concrete Mixers	87	28	4	-	-	101	-	-	-	-	-	-	-	-	119
12.	Cranes	7	2	-	-	-	-	-	-	-	-	-	-	2	10	126
13.	Crushing Plant	22	-	-	4	-	-	-	-	-	-	-	-	-	-	4
14.	Dragline	-	-	-	1	1	24	2	-	-	-	-	-	-	-	26
15.	Back Hoe	1	1	-	-	-	-	-	-	-	-	-	-	-	-	2
16.	Loaders	6	7	-	-	-	1	4	-	-	-	-	-	3	1	28
17.	Spreaders	-	-	-	6	-	-	-	-	-	-	-	-	-	-	1
18.	Asphalt Plant	-	-	-	1	-	1	-	-	-	-	-	-	2	-	9
19.	Tar Boilers	-	-	-	5	-	-	2	-	-	-	-	-	-	-	29
20.	Bitumen Dist:	-	-	2	27	-	-	-	-	-	-	-	-	-	-	2
21.	Finishers	-	-	-	1	-	1	-	-	-	-	-	-	3	-	12
22.	Tractors Trollies	15	-	-	5	-	-	4	-	-	-	-	-	-	-	17
23.	Dump Trucks	13	9	-	2	-	-	-	-	-	-	-	-	2	-	207
24.	Water Bowzers	-	2	-	18	-	145	10	-	-	-	-	-	-	-	2

Table 3(b) Road Construction Machinery Purchased in Sind Province During 1983-84 and 1984-85

S. No.	Description	National Const.Ltd Karachi (51)		Macdonald Laton and Co.Karachi (52)		International Const. Ltd. Karachi (53)		Sind Highway Deptt. Hyderabad (54)		Pakistan Railways Karachi (55)		Steel Mill Karachi (56)		Asphalt Plant (57)		District Council Karachi (58)		District Council Tharparkar (59)		Municipal Committee Kandhkot (61)		Municipal Committee Tandoadam (62)		Karachi Municipal Cor. Karachi (53)		Oil & Gas Devlopment Corpn (54)		Total	
		83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85
1.	Buldozers.	-	-	-	-	-	-	-	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	33	
2.	Motor Graders.	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	8	
3.	Scrapers.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	1	
4.	Air Compressors.	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	2	1
5.	Generator Electric	-	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	8	9	19
6.	Water Pumps Elec.	-	66	-	-	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4	4	70
7.	Road Rollers all type.	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	8
8.	Water Tankers.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	
9.	Tractor all types	-	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	6	9	27
10.	Batching Plant.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
11.	Concret Mixers.	-	8	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	8
12.	Cranes.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	5	-
13.	Crushing Plant.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
14.	Dragline.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
15.	Back Hoe.	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
16.	Loaders.	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
17.	Spreaders.	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	1
18.	Asphalt Plant.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
19.	Tar Boilers.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
20.	Bitumen Distributors.	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
21.	Finishers.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
22.	Tractors trollies.	-	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15
23.	Dump Trucks.	-	-	-	-	-	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	
24.	Water Bowzers.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Table 2(b) Road Construction Machinery in N.W.F.Province as on 30-6-1983

S. No	Description	C&W Deptt. N.W.F.P. Peshawar (71) (Dev.)	C&W Deptt Govt. of N.W.F.P. Peshawar (72) (Mech.)	Kohat Development Authority Kohat (73)	Peshawar Development Authority (74)	Kohistan Development Board Besham Abbotabad (75)	Town Committee Khalabad Town ship Abbotabad (76)	Municipal Corp.Peshawar(77)	Gemstone Corporation of Pak.Ltd. Peshawar (78)	Shahzaman Khattack Ltd., Peshawar (79)	DW & CE Air Force HQ. Peshawar (05)	Mardan Development Authority (80)	Peshawar Cantonment Board (83)	Total
1.	Buldozers.	14	-	-	-	4	-	-	-	-	10	-	-	28
2.	Motor Graders.	3	2	-	3	-	-	-	-	-	5	-	-	13
3.	Scrapers.	-	-	-	-	-	-	-	-	-	-	-	-	-
4.	Air Compressors.	23	16	-	-	12	-	-	5	-	15	-	-	71
5.	Generators Electric.	2	-	-	-	-	-	-	-	-	179	-	-	181
6.	Water Pumps.	-	-	-	-	-	-	1	4	5	-	-	1	11
7.	Road Rollers all type.	95	181	-	14	2	-	2	-	6	21	-	1	322
8.	Water Tankers.	-	-	1	2	-	-	2	-	2	-	-	-	7
9.	Tractors all types.	-	2	1	3	-	-	1	-	1	4	-	2	14
10.	Batching Plant.	-	-	-	-	-	-	-	-	4	-	-	-	4
11.	Concret Mixers.	6	-	-	-	2	-	-	-	-	17	-	-	25
12.	Cranes.	-	-	-	-	-	-	-	-	-	9	-	-	9
13.	Crushing Plant.	2	2	-	-	-	-	-	2	-	2	-	-	8
14.	Dragline.	-	-	-	-	-	-	-	-	-	--	-	-	-
15.	Back Hoe.	-	-	-	-	-	-	-	-	-	-	-	-	-
16.	Loaders.	-	4	-	-	2	-	-	1	-	1	-	-	8
17.	Spreaders.	-	-	-	-	-	-	-	-	-	-	-	-	-
18.	Asphalt Plant.	6	3	-	-	-	-	-	-	-	12	-	-	21
19.	Tar Boilers.	74	97	-	10	2	-	1	-	-	2	-	1	187
20.	Bitumen Distributors.	-	--	-	-	-	-	-	-	-	-	-	-	-
21.	Finishers.	-	3	-	-	-	-	-	-	-	2	-	-	5
22.	Tractors Trollies.	-	3	-	1	-	-	1	-	1	-	-	2	8
23.	Dump Trucks.	1	14	-	-	-	-	-	-	-	17	-	-	32
24.	Water Bowzers.	-	-	-	1	-	-	-	-	-	11	-	3	15

Table 2(b) Road Construction Machinery in N.W.F.Province as on 30-6-1985

S. No	Description	C&W Deptt. N.W.F.P. Peshawar (71) (Dev.)	C&W Deptt Govt. of N.W.F.P. Peshawar (72) (Mech.)	Kohat Development Authority Kohat (73)	Peshawar Development Authority (74)	Kohistan Development Board Besham Abbotabad (75)	Town Committee Khalabad Town ship Abbotabad (76)	Municipal Corp.Peshawar(77)	Gemstone Corporation of Pak.Ltd. Peshawar (78)	Shahzaman Khattack Ltd., Peshawar (79)	DW & CE Air Force HQ. Peshawar (05)	Mardan Development Authority (80)	Peshawar Cantonment Board (83)	Total
1.	Buldozers.	14	-	-	-	4	-	-	-	-	14	-	-	32
2.	Motor Graders.	3	2	-	3	-	-	-	-	-	15	-	-	23
3.	Scrapers.	-	-	-	-	-	-	-	-	-	-	-	-	-
4.	Air Compressors.	23	20	1	-	12	-	-	5	-	15	-	-	76
5.	Generators Electric.	2	-	-	-	-	-	-	-	-	181	-	-	183
6.	Water Pumps.	-	-	3	-	-	-	3	5	10	-	-	1	22
7.	Road Rollers all type.	97	205	6	18	2	-	7	-	8	21	-	1	358
8.	Water Tankers.	-	-	2	2	-	1	-	-	2	-	-	-	7
9.	Tractors all types.	-	2	2	3	-	1	-	-	4	4	-	2	18
10.	Batching Plant.	-	-	-	-	-	-	-	-	10	-	-	-	10
11.	Concret Mixers.	6	-	-	-	2	-	-	-	-	17	-	-	25
12.	Cranes.	-	1	-	-	-	-	-	-	-	9	-	-	10
13.	Crushing Plant.	2	2	-	-	-	-	-	-	-	2	-	2	8
14.	Dragline.	-	-	-	-	-	-	-	-	4	-	-	-	4
15.	Back Hoe.	-	-	-	-	-	-	-	-	-	-	-	-	-
15.	Loaders.	-	4	-	-	2	-	-	1	-	1	-	-	8
17.	Spreaders.	-	1	-	-	-	-	-	-	-	-	-	-	1
18.	Asphalt Plant.	6	3	-	-	-	-	-	-	-	12	-	-	21
19.	Tar Boilers.	82	97	-	10	2	-	1	-	3	2	-	1	198
20.	Bitumen Distributors.	-	1	-	-	-	-	-	-	-	-	-	-	1
21.	Finishers.	-	3	-	-	-	-	-	-	-	2	-	-	5
22.	Tractors Trollies.	-	4	-	1	-	1	1	-	4	-	-	2	13
23.	Dump Trucks.	1	16	-	-	-	-	-	-	-	17	-	-	36
24.	Water Bowzers.	-	-	-	2	-	-	2	-	-	11	-	4	19

Table 3(c) Road Construction Machinery Purchased in NWFP. Province During 1983-84 and 1984-85

S. No	Description	C&W Deptt N.W.F.P. Peshawar (71) (Dev.)		C&W Deptt. Govt. of N.W.F.P. Peshawar (72) (Mech.)		Kohat Development Authority Kohat. (73)		Peshawar Development Authority (74)		Kohistan Development Board Besham Abbotabad (75)		Town Committee Khalabad Township Abbotabad (76)		Municipal Corpn. Peshawar (77)		Gemstone Corpn. of Pak. Ltd Peshawar (78)		Shahzaman Khattak Ltd Peshawar (79)		DW&CE Air Force Hq. Peshawar (05)		Mardan Development Authority (80)		Peshawar Cantonment Board (83)		Total	
		83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85
1.	Buldozers.																			4						4	
2.	Motor Graders.																			10						10	
3.	Scrapers.																										
4.	Air Compressors.			4			1																			4	1
5.	Generators Electric																			2							2
6.	Water Pumps Diesel					1	2							2		1		5								9	2
	Water Pumps Elec.																										
7.	Road Rollers all type.		2		24	3	3	4										2								9	29
8.	Water Tankers.						1					1														1	1
9.	Tractors all types						1					1						3								4	1
10.	Batching Plant.																		6								6
11.	Concret Mixers.																										
12.	Cranes.			1																						1	
13.	Crushing Plant.																		4								4
14.	Dragline.																										
15.	Back Hoe.															1										1	
16.	Loaders.			1																						1	
17.	Spreaders.																										
18.	Asphalt Plant.																										
19.	Tar Boilers.	2	6																							5	6
20.	Bitumen Distributors.			1														3								1	
21.	Finishers.																										
22.	Tractors trollies.			1								1						3								4	1
23.	Dump Trucks.			2												2										4	
24.	Water Bowzers.					1		1						2										1		2	3

Table 2 (d) Road Construction Machinery in Baluchistan Province as on 30-6-1983 and as on 30-6-1985

Description	As on 30-6-1983					As on 30-6-85				
	Quetta Development Authority, Quetta (81)	Local Govt. Rural Dev. Baluchistan Quetta(82)	Pub. Mineral Dev. Comp. Collieries S.R.Quetta (83)	Highway Deptt. Quetta (84)	Total	Quetta Master Regional Authority Quetta (31)	Local Govt. Rural Dev. Baluchistan Quetta(32)	Pub. Mineral Development Collieries S.R.Quetta (83)	Highway Deptt. Quetta (84)	Total
1. Buldozer	1	-	-	51	52	1	-	-	51	52
2. Motor Grader	1	-	-	129	130	1	-	-	129	130
3. Scraper.	-	-	-	6	6	-	-	-	6	6
4. Air Compressors.	-	-	4	5	9	-	-	4	5	9
5. Generators-Electric	-	-	-	3	3	-	-	-	3	3
6. Water Pumps.	-	-	-	-	-	-	-	-	-	-
7. Road Rollers all types.	3	2	-	146	151	3	2	-	146	150
8. Water Tankers.	4	-	1	25	30	4	-	1	25	30
9. Tractors all types.	2	-	-	16	18	2	-	-	41	43
10. Batching Plant.	-	-	-	-	-	-		-	-	-
11. Concrete Mixers.	-	-	-	1	1	-	-	-	1	1
12. Cranes.	-	-	-	2	2	-	-	-	2	2
13. Crushing Plant.	-	-	-	2	2	-	-	-	2	2
14. Drag-line.	-	-	-	-	-	-	-	-	-	-
15. Back Hoe.	-	-	-	-	-	-	-	-	-	-
16. Loader	-	-	-	10	10	-	-	-	10	10
17. Spreader.	-	-	-	3	3	-	-	-	3	3
18. Asphalt Plant.	-	-	-	2	2	-	-	-	2	2
19. Tar Boiler.	2	-	-	-	2	2	-	-	-	2
20. Bitumen Distributors.	-	-	-	7	7	-	-	-	7	7
21. Finishers.	-	1	-	-	1	-	1	-	-	1
22. Tractor Trollies.	1	-	-	-	1	1	-	-	-	1
23. Dump Trucks.	-	-	1	24	25	-	-	1	24	25
24. Water Bowzers.	-	-	-	18	18	-	-	-	18	18

Table 3(d) Road Construction Machinery Purchased in Baluchistan During 1983-84 and 1984-85

Description	Quetta Development Authority Quetta (81)		Local Government Rural Development and Baluchistan Quetta (82)		Pak Mineral Development Corporation Baluchistan Collieries, S.R. Quetta(83)		Highway Department		Total	
	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85	83-84	84-85
1. Buldozer										
2. Motor Grader										
3. Scraper										
4. Air Compressors.										
5. Generator - Elecuric										
6. Water Pumps.										
7. Road Rollers all types.										
8. Water Tankers.										
9. Tractors all types.										
10. Batching Plant.										
11. Concrete Mixers.										
12. Crane.										
13. Crushing Plant.										
14. Drag-line.										
15. Back Hoe.										
16. Loader										
17. Spreaders.										
18. Asphalt Plant.										
19. Tar Boilers.										
20. Bitumen Distributors.										
21. Finisher										
22. Tractor Trollies.										
23. Dump Tractors.										
24. Water Bowzers.										
							-	25	-	25

PARTICULARS OF ROAD CONSTRUCTION MACHINERY IN PAKISTAN PURCHASED DURING 1979-83

S.NO.	DESCRIPTION	MAKE/ MODEL	RATING H.P.	COUNTRY OF ORIGIN	YEAR OF PURCHASE	AVERAGE FUEL CONSUMPTION/ MACHINE HOUR		AVERAGE OPERATING COST PER MACHINE HOUR		COST OF PURCHASE RS.	PRESENT VALUE RS.	ANNUAL AVERAGE REPAIR COST PER MACHINE	REPLACEMENT VALUE RS.
						P.HOUR	P.K.M	P. HOUR	P. K.M.				
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	Bulldozers D-5, Caterpitter,USA, 105H.P.	Caterpellar.	90.0 HP.	U.S.A.	1980	14	-	256	-	460000	36000	25000	-
2.	Bulldozers D-8-K Caterpiller, USA.	Caterpellar.	200.0 HP.	U.S.A.	1980	18	-	275	-	2750000	1500000	200000	4000000
3.	Bulldozers D-8-155A Komatsu, Japan.	Komatsu	320 HP.	Japan	1981	9	-	38	-	732226	622000	1000	-
4.	Bulldozers D-40-A-3,Komatsu, Japan,90 HP.	Komatsu	90.0 HP.	Japan	1982	184	-	125	-	242778	40000	12000	-
5.	Bulldozers D-50-A-16,Komatsu, Angle.	Komatsu	115.0 HP.	Japan	1981	-	-	-	-	499399	399519.	99880	574309
6.	Bulldozers.	Caterpellar.	75.0 HP.	U.S.A.	1980	6	-	25	-	904800	904800	2000	904800
7.	Bulldozers.	Jan Mull-oar.	60.0 H.P.	Japan	1981	9	-	256	-	300000	285000	5000	-
8.	Motor Graders Clark, U.S.A. 180 HP.	Clark.	180.0 HP.	U.S.A.	1981	41	-	494	-	1453000	800000	73650	2000000
9.	Motor Graders Komatsu, JD-500-R.	Komatsu	134.0 HP.	Japan	1981	-	-	1	-	483076	338153	50000	555537
10.	Motor Scrapers Clark, USA.	Clark	150.0 HP.	U.S.A.	1981	19	-	282	-	2279000	1500000	22460	3000000
11.	Motor Scrapers Clark, USA.	Clark	150.0 HP.	U.S.A.	1980	10	-	282	-	2279300	1500000	150000	3000000
12.	Motor Scrapers Fiat,Allis, Italy.	Fiat	250.0 HP.	Italy	1980	27	-	378	-	1480000	1500000	262500	3500000
13.	Motor Scrapers Fiat,Allis, Italy.	Fiat	250.0 HP.	Italy	1980	27	-	378	-	1480000	1500000	262500	350000
14.	" " " "	"	280.0 HP.	"	1980	27		378	-	1480000	1500000	44400	350000

PARTICULARS OF ROAD CONSTRUCTION MACHINERY IN PAKISTAN PURCHASED DURING 1979-83

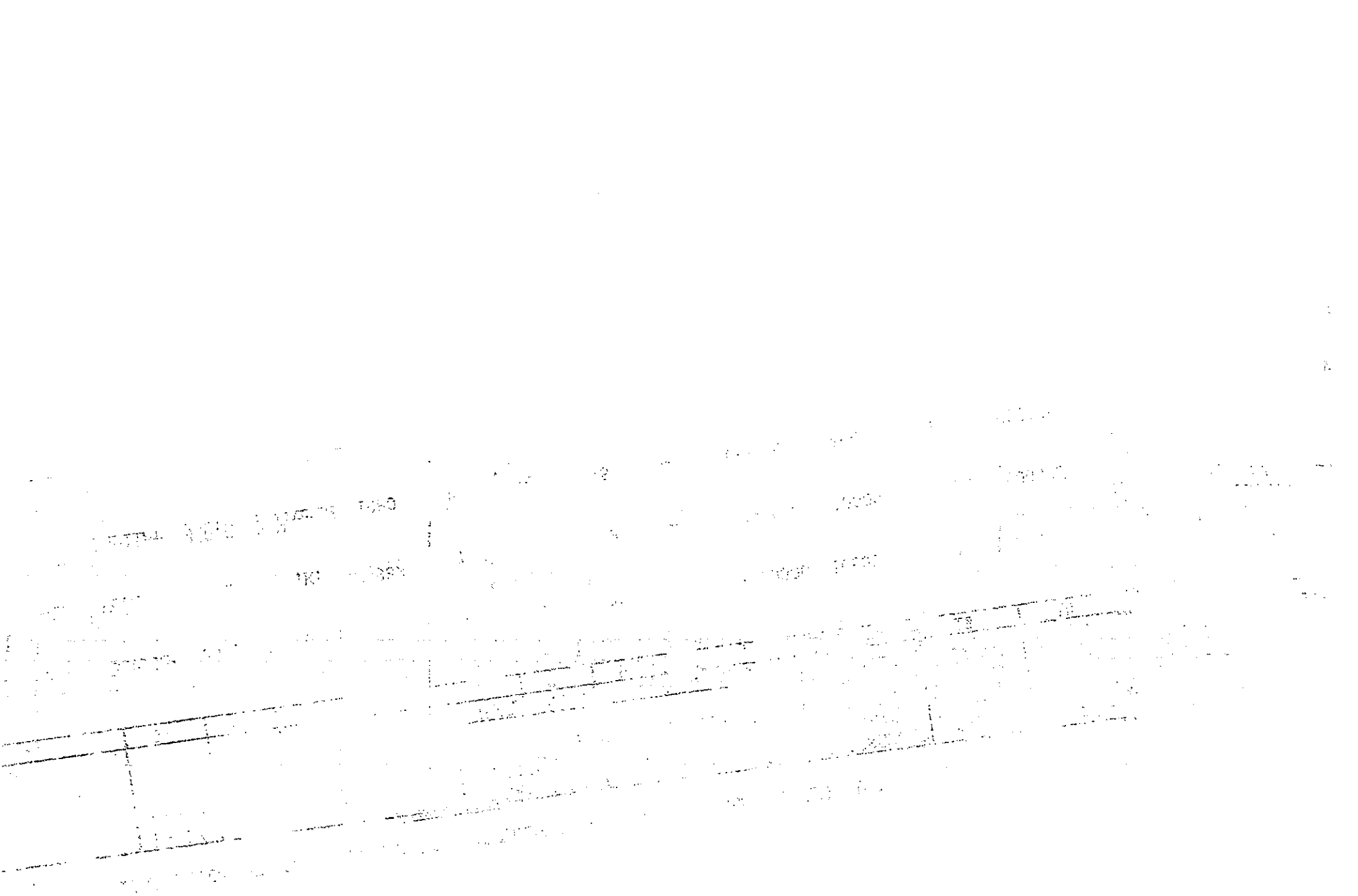
S.NO.	D E S C R I P T I O N	MAKE/ MODEL	RATING H.P.	COUNTRY OF ORIGIN	YEAR OF PURCHASE	AVERAGE FUEL CONSUMPTION/ MACHINE HOUR		AVERAGE OPERATING COST PER MACHINE HOUR		COST OF PURCHASE RS.	PRESENT VALUE RS.	ANNUAL AVERAGE REPAIR COST PER MACHINE	REPLACEMENT VALUE RS.
						P.HOUR	P.K.M	P. HOUR	P. K.M.				
1	2	3	4	5	6	7	8	9	10	11	12	13	14
15.	Motor Scrapers.	Dynapak	7.5 HP.	Sweden.	1983	1	-	10	-	155000	129166	3750	250000
16.	Air Compressors 210 CFM.	Komatsu	12.0 HP.	Japan	1981	10	-	50	-	140000	112000	2000	-
17.	Air Compressors R-210-DA,Atlas, Sweden.	Atlas	134.0 HP.	Sweden.	1983	25	-	90	-	492000	49200	6000	492000
18.	Inger Sol Rand, USA, 140 HP. 600 CFM.	Inger Sol	-	U.S.A.	1980	4	-	23	-	50000	-	50000	-
19.	Joy U.K.140 HP. 600 CFM.	Joy	140.0 HP.	U.K.	1980	22	-	122	-	65000	54400	10000	405000
20.	XA-350 DA Atlas Copeo-Sweden.	Atlas	220.0 HP.	Sweden.	1982	25	-	130	-	513000	513000	6000	812000
21.	R.R.International, USA, 40 HP. 4-5 Tons.	Inter-national	40.0 HP.	U.S.A.	1980	5	-	50	-	20000	20000	2000	400000
22.	R.R. Marshal England, 30 HP.	Marshal	65.0 HP.	U.K.	1983	1	-	5	-	-	-	600	-
23.	R.R. Shahzoor 40 HP. 10-12 Tons.	Shahzoor	40.0 HP.	Pakistan.	1980	1	-	17	-	100000	250000	5000	465000
24.	R.R. Shahzoor 40 HP. 10-12 Tons.	Shahzoor	40.0 HP.	Pakistan.	1982	4	-	35	-	365000	365000	10000	-
25.	R.R. Shahzoor 40 HP. 10-12 Tons.	Shahzoor	40.0 HP.	Pakistan.	1983	4	-	35	-	262000	262000	10000	-
26.	R.R.Pak Ittifaq 45 HP. 10-12 Tons.	Ittifaq	45.0 HP.	Pakistan.	1982	1	-	10	-	300000	210000	3000	465000
27.	Pak Ittifaq 48 HP. 10-12 Tons.	Ittifaq	48.0 HP.	Pakistan.	1983	1	-	4	-	350000	350000	3571	350000
28.	Pak Ittifaq 48 HP. 10-12 Tons.	Ittifaq	48.0 HP.	Pakistan.	1983	-	-	8	-	350000	350000	5000	350000
29.	R.R. Pak Ittifaq 55 HP.10-12 Tons.	Ittifaq	55.0 HP.	Pakistan.	1979	1	-	4	-	306250	105000	8000	375000

PARTICULARS OF ROAD CONSTRUCTION MACHINERY IN PAKISTAN PURCHASED DURING 1979-83

S.NO.	DESCRIPTION	MAKE/ MODEL	RATING H.P.	COUNTRY OF ORIGIN	YEAR OF PURCHASE	AVERAGE FUEL CONSUMPTION/ MACHINE HOUR		AVERAGE OPERATING COST PER MACHINE HOUR		COST OF PURCHASE RS.	PRESENT VALUE RS.	ANNUAL AVERAGE REPAIR COST PER MACHINE	REPLACEMENT VALUE RS.
						P. HOUR	P. K.M.	P. HOUR	P. K.M.				
1	2	3	4	5	6	7	8	9	10	11	12	13	14
30.	R.R. Shahzoor 55 HP.10-12 Tons.	Shahzoor	52.0 HP.	Pakistan	1980	2	-	40	-	365000	365000	19600	400000
31.	R.R. Shahzoor 55 HP.10-12 Tons.	Shahzoor	55.0 HP.	Pakistan	1981	1	-	7	-	300000	300000	7143	350000
32.	R.R. Shahzoor 55 HP.10-12 Tons.	Shahzoor	55.0 HP.	Pakistan	1982	30	-	150	-	365000	300000	20000	-
33.	R.R. Shahzoor 10-12 Tons.	Shahzoor	-	Pakistan	1981	5	-	30	-	237500	230375	9000	950000
34.	R.R. Shahzoor 10-12 Tons.	Shahzoor	-	Pakistan	1981	5	-	30	-	237500	230375	9000	950000
35.	R.R. Pak Ittifaq 55 HP. 12 Tons.	Ittifaq	55.0 HP.	Pakistan	1982	3	-	55	-	365000	300000	32500	400000
36.	R.R. Pak Ittifaq 55 HP. 12 Tons.	Ittifaq	55.0 HP.	Pakistan	1982	5	-	110	-	365000	300000	65000	400000
37.	R.R. Pak Ittifaq 55 HP, 12 Tons.	Ittifaq	55.0 HP.	Pakistan	1982	2	-	37	-	365000	300000	21667	400000
38.	R.R. China, 12-15 Tons.	Dong Fong	250.0 HP.	China.	1983	1	-	10	-	270000	300000	1667	-
39.	Richer France,180 HP.	Richer	180.0 HP.	France.	1981	8	-	100	-	1000000	800000	45000	1200000
40.	Germany, 12 HP.	-	13.0 HP.	Germany(F.R)	1983	2	-	25	-	175000	350000	5000	350000
41.	Skoda Czechoslavakia,55 HP.	Skoda	55.0 HP.	Czechoslo-vakia.	1982	5	-	100	-	300000	100000	60000	400000
42.	HMC VV-8, Pak, 40 HP,10-20 Tons.	HMC.	40.0 HP.	Pakistan.	1983	5	-	100	-	350000	350000	65000	500000
43.	HMC VV-8, Pak, 40 HP,10-20 Tons.	BECO/PECO.	40.0 HP.	Pakistan.	1983	-	-	40	-	350000	350000	10000	350000
44.	Rechier France,100 HP.12 Tons.	Rechier	100.0 HP.	France.	1981	6	-	125	-	450000	250000	75000	1000000
45.	Sakai SV 90 A.	Sakai	85.0 HP.	Japan	1980	-	-	9	-	520000	364000	-	676000
46.	Crane Shovel.	Tandan	140.0 HP.	Japan	1980	14	-	250	-	1513000	756500	50000	2050000
47.	Crane Kato,Japan.	Kato	-	Japan	1982	10	-	100	-	1419000	1419000	5000	1419000
48.	Crane Pinguely France.	Pinguely	-	France	1980	30	-	367	-	2244900	2000000	112245	3000000
49.	Asphalt Blowk No.V.U.K.65 HP.	Blowk No. CKS.	55.0 HP.	U.K.	1980	4	-	168	-	1262625	420875	30000	1350000
50.	A phalt Blowk No.V.U.K.65 HP.	Blowk No. CKS.	65.0 HP.	U.K.	1983	18	-	450	-	2335000	2335000	116750	2335000

PARTICULARS OF ROAD CONSTRUCTION MACHINERY IN PAKISTAN PURCHASED DURING 1979-83

Sr. No.	DESCRIPTION	MAKE/ MODEL	RATING H.P.	COUNTRY OF ORIGIN	YEAR OF PUR-CHASE	AVERAGE FUEL CONSUMPTION/ MACHINE HOUR		AVERAGE OPERA-TING COST PER MACHINE HOUR		COST OF PURCHASE RS.	PRESENT VALUE RS.	ANNUAL AVERAGE REPAIR COST PER MACHINE	REPLACE-MENT VALUE RS.
						P.HOUR	P.KM.	P.HOUR	P.KM.				
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	Trailers Beliat France 208 HP.	Berliat	200.0 HP	France	1980	2	-	25	-	1450000	1050000	375000	2500000
2.	Dump Truck Ford D-12-11 U.K.	Ford	-	U.K.	1982	1	-	9	-	251000	200000	810	800000
3.	Dump Truck Barhiel France, Berliat.	Berliat	250.0 HP	France	1980	4	-	75	-	1350000	400000	26000	1600000



PARTICULARS OF ROAD CONSTRUCTION MACHINERY IN PAKISTAN PURCHASED DURING 1976-79

S.NO.	DESCRIPTION	MAKE/ MODEL	RATING H.P.	COUNTRY OF ORIGIN	YEAR OF PURCHASE	AVERAGE FUEL CONSUMPTION/ MACHINE HOUR		AVERAGE OPERATING COST PER MACHINE HOUR		COST OF PURCHASE RS.	PRESENT VALUE RS.	ANNUAL AVERAGE REPAIR COST PER MACHINE	REPLACEMENT VALUE RS.
						P. HOUR	P. K.M.	P. HOUR	P. K.M.				
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	Buldozers D-7-K Caterpitter, USA.	CATTER-PELLAR	300 HP.	USA	1978	11	-	165	-	2750000	1500000	46750	4500000
2.	Buldozers S-650, Caterpitter, Russian.	ROMANIA	65.0 HP.	ROMANIA (DSR).	1977	2	-	28	-	100000	200000	15500	500000
3.	Motor Graders AB.Ford, U.K. 135 HP.	FORD	135.0 HP.	U.K.	1978	13	-	161	-	928000	400000	35000	1500000
4.	Motor Graders.	AVELLING BEDFORD.	120.0 HP.	U.K.	1978	18	-	122	-	280000	46672	25000	560000
5.	P.F., 8-10 TONS.	ITTIFAQ.	50.0 HP.	PAKISTAN	1977	5	-	25	-	125000	75000	5000	175000
6.	Shahzoor 55 HP.10-12 TONS.	SHAHZOOR	55.0 HP.	PAKISTAN	1977	7	-	21	-	300000	150000	5000	350000
7.	Shahzoor 55 HP. 10-12 TONS.	SHAHZOOR	55.0 HP.	PAKISTAN	1976	1	-	12	-	331500	158555	333	375000
8.	R.R. China 10-12 TONS.	-	40.0 HP.	CHINA.	1978	2	-	59	-	350000	280000	56000	700000
9.	R.R. China 10-12 TONS.	-	40.0 HP.	CHINA.	1978	2	-	59	-	350000	280000	56000	700000
10.	HAMM/GRW 101 CZECH 65 HP.10-12 TONS.	HAMM	65.0 HP.	CZECHOSLO-VAKIA.	1976	7	-	114	-	170000	60000	25000	450000
11.	OTHER.	GALLION	105.0 HP.	U.S.A.	1976	5	-	110	-	291380	75000	10000	700000
12.	TOE Type Pak Vibratory 30 HP.	-	30.0 HP.	PAKISTAN.	1978	1	-	7	-	100000	100000	1429	150000
13.	TOE Type Pak Vibratory 30 HP.	-	30.0 HP.	PAKISTAN.	1978	4	-	50	-	100000	100000	10000	350000
14.	Italy 12 HP.4 TONS.	-	13.0 HP.	ITALY.	1976	4	-	50	-	100000	100000	10000	350000
15.	8 TONS. PERONI ITALY 80 HP.	U.R.SUS PERONI.	80.0 HP.	ITALY.	1978	1	-	13	-	750000	250000	6316	1000000
16.	URSUS 8 TONS. PERONI ITALY 80 HP.	U.R.SUS PERONI.	80.0 HP.	ITALY.	1978	3	-	77	-	750000	250000	40000	1000000

PARTICULARS OF ROAD CONSTRUCTION MACHINERY IN PAKISTAN PURCHASED DURING 1976-79

S.NO.	DESCRIPTION	MAKE/ MODEL	RATING H.P.	COUNTRY OF ORIGIN	YEAR OF PURCHASE	AVERAGE FUEL CONSUMPTION/ MACHINE HOUR		AVERAGE OPERATING COST PER MACHINE HOUR		COST OF PURCHASE RS.	PRESENT VALUE RS.	ANNUAL AVERAGE REPAIR COST PER MACHINE	REPLACEMENT VALUE RS.
						P.HOUR	P.K.M.	P. HOUR	P. K.M.				
1	2	3	4	5	6	7	8	9	10	11	12	13	14
17.	ITALIAN 45 HP. 12 TONS.	-	45.0 HP.	ITALY	1978	10	-	243	-	750000	100000	100000	800000
18.	ITALIAN 45 HP. 12 TONS.	-	45.0 HP.	ITALY	1978	10	-	243	-	750000	100000	100000	800000
19.	ITALIAN 45 HP. 12 TONS.	-	45.0 HP.	ITALY	1978	10	-	243	-	750000	100000	100000	800000
20.	ITALIAN 45 HP. 12 TONS.	-	45.0 HP.	ITALY	1978	10	-	243	-	750000	100000	100000	800000
21.	TANKER FORD ENGLAND.	ISUZU	107.0 HP.	U.K.	1978	5	-	43	-	213225	73742	11500	327350
22.	TANKER ISSZE JAPAN 107 HP.	ISUZU	105.0 HP.	JAPAN	1976	5	-	43	-	213225	-	11500	327000
23.	TRACTOR AGRICUL DEUTZ,MODEL 6005	FIAT	64.0 HP.	ITALY	1977	5	-	99	-	60000	50000	45000	130000
24.	TRACTOR AGRICUL DEUTZ, MODEL 6005.	DEUTZ	33.75 HP.	GERMANY(F.R)	1978	8	-	45	-	60000	58000	8000	90000
25.	TRACTOR AGRICULTURE FIAT ITALY 64 HP.	FIAT	64.0 HP.	ITALY.	1977	5	-	89	-	60000	50000	45000	130000
26.	CRANE SHOVEL .	KATO	-	JAPAN	1977	16	-	307	-	1623490	680000	5000	1760000
27.	CRANE SHOVEL.	HYDRO CONE.	67.0 HP.	DENMARK, DANISH.	1977	10	-	158	-	500000	183333	20000	1000000
28.	TRK CA-10 AUTO CHINA 5 TONS.	-	-	CHINA	1976	1	-	140	-	150000	40000	15000	300000
29.	CRANE HYDRO CONE ENGLAND 8 TONS.	-	-	U.K.	1977	6	-	112	-	1400000	500000	42000	2000000
30.	LOADERS JCB-413 U.K.110 HP. 1.5 CUYDS.	JCB	110.0 HP.	U.K.	1978	5	-	92	-	850000	600000	21833	1400000
31.	LOADERS FRONT END.	DANPOWER	-	DENMARK, DANISH.	1976	5	-	66	-	550000	400000	13750	1300000
32.	LOADERS FRONT END.	BRAY	235/185HP.	U.K.	1978	4	-	42	-	525000	87504	10000	787500
33.	ASPHALT SIMERA ITALIAN 13 HP. 10 TONS.	SIMESA	80.0 HP.	ITALY	1977	8	-	212	-	1400000	300000	65000	2500000
34.	ASPHALT PAVER FINISHER.	BABER-GREEN.	40.0 HP.	U.S.A.	1976	7	-	162	-	166770	200000	7500	1200000

PARTICULARS OF ROAD CONSTRUCTION MACHINERY IN PAKISTAN PURCHASED DURING 1976-78

S. No.	DESCRIPTION	MAKE/ MODEL	H.P.	COUNTRY OF ORIGIN	YEAR OF PURCHASE	AVERAGE FUEL CONSUMPTION/ MACHINE HOUR		AVERAGE OPERATING COST PER MACHINE HOUR		COST OF PURCHASE RS.	PRESENT VALUE RS.	ANNUAL AVERAGE REPAIR COST PER MACHINE	REPLACEMENT VALUE RS.
						P.MAX	P.MIN	P.HOUR	P.MIN.				
1	2	3	4	5	6	7	8	9	10	11	12	13	14
35.	ASPHALT PAVER FINISHER.	-	20.0 HP.	PAKISTAN	1976	5	-	25	-	600000	600000	6000	600000
36.	JEEPS.	TOYOTA	20.0 HP.	JAPAN	1976	2	-	75	-	75000	40000	1500	200000
37.	TRUCKS OTHERS.	ISUZU	105.0 HP.	JAPAN	1976	5	-	43	-	218225	-	15000	436000
38.	TRUCKS.	FORD	110.0 HP.	U.K.	1978	2	-	50	-	173000	135000	30000	250000
39.	DUMP TRUCK GREMO DENMARK 134 BHP.	GROMO	134.0 HP.	DENMARK DANISH	1976	7	-	145	-	900000	200000	61550	1200000

PARTICULARS OF ROAD CONSTRUCTION MACHINERY IN PAKISTAN PURCHASED DURING 1974-75

S.No.	DESCRIPTION	MAKE/ MODEL	RATING H.P.	COUNTRY OF ORIGIN	YEAR OF PURCHASE	AVERAGE FUEL CONSUMPTION/ MACHINE HOUR		AVERAGE OPERATING COST PER MACHINE HOUR		COST OF PURCHASE RS.	PRESENT VALUE RS.	ANNUAL AVERAGE REPAIR COST PER MACHINE	REPLACEMENT VALUE RS.
						P.HOUR	P.K.M.	P. HOUR	P. K.M.				
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	Bulldozers.	-	-	USSR	1975	3	-	10	-	150000	100000	15000	180000
2.	Motor Scrapers, Wapco USA.	Wapco	333.0 HP.	USA.	1975	14	-	240	-	2000000	1000000	58750	4000000
3.	Ingersol Rand 70 HP. 210 CFM.	Inger-Sol.	67.0 HP.	U.K.	1974	12	-	80	-	10000	9500	8000	240000
4.	Worthington USA.	Inter-national	-	USA	1974	9	-	73	-	150000	20000	22500	350000
5.	Worthington USA.	Inter-national	-	USA	1974	9	-	73	-	150000	20000	22500	300000
6.	R.R.Romaina, 8-10 Tons.	-	45.0 HP.	Romaina (DSR).	1974	5	-	49	-	150000	135000	25000	1200000
7.	R.R. Romaina, 8-10 Tons.	-	45.0 HP.	Romaina (DSR).	1974	5	-	43	-	150000	135000	25000	1200000
8.	R.R. China 40 HP.10-12 Tons.	-	40.0 HP.	China.	1974	2	-	27	-	150000	100000	10000	465000
9.	R.R. Shahzoor 55 HP. 10-12 Tons.	Shahzoor	55.0 HP.	Pakistan	1974	5	-	44	-	300000	27000	25000	1200000
10.	R.R. Shahzoor 55 HP. 10-12 Tons.	Shahzoor	55.0 HP.	Pakistan	1974	5	-	48	-	150000	135000	25000	1200000
11.	R.R. China.	-	40.0 HP.	China	1975	2	-	54	-	350000	298000	26000	700000
12.	[illegible]	[illegible]	107.0 HP.	U.K.	1974	20	-	121	-	80000	45000	5000	125000
13.	Others.	Isuzu	45.0 HP.	Pakistan.	1974	2	-	46	-	200000	60000	10000	500000
14.	Truck-Tractors IMT-LEH-2835, Diesel.	IMT	33.75HP.	Yogoslavia	1974	10	-	42	-	45000	24000	12000	120000
15.	Truck-Tractors Debis German 2KM. P.H.	IMT	55.0 HP.	Pakistan	1975	1	-	22	-	52000	10000	5000	150000
16.	Asphalt Plant AMMAN 60/B Swiss 300 H.P.	AMMIN.	300 HP.	Switzerland	1975	193	-	1750	-	7800000	5000000	145000	15000000
17.	Loaders Front END.	-	115.0 HP.	Poland(Polish)	1975	1	-	78	-	550000	250000	32500	800000

PARTICULARS OF ROAD CONSTRUCTION MACHINERY IN PAKISTAN PURCHASED DURING 1974-75

S. No.	DESCRIPTION	TYPE/ MODEL	RATING H.P.	COUNTRY OF ORIGIN	YEAR OF PUR-CHASE	AVERAGE FUEL CONSUMPTION/ MACHINE HOUR P.HOUR	P.KM.	AVERAGE OPERATING COST PER MACHINE HOUR P.HOUR	P.KM.	COST OF PURCHASE RS.	PRESENT VALUE RS.	ANNUAL AVERAGE REPAIR COST PER MACHINE	REPLACE-MENT VALU RS.
1		3			6	7	8	9	10	11	12	13	14
18.	Jeeps.	NISHAN	20.0 HP.	Pakistan	1975	2	-	22	-	50000	20000	2500	100000
19.	Pickup.	CHEVERLET	20.0 HP.	USA.	1975	2	-	15	-	30000	20000	1500	100000
20.	Truck Bedford - 80 HP.	Bedford	80.0 HP.	U.K.	1975	2	-	5	-	75000	69000	22000	300000
21.	Truck Isuzu 90 HP.	Isuzu	90.0 HP.	JAPAN.	1974	2	-	5	-	75000	68250	20000	300000
22.	Trucks	Bedford	45.0 HP.	USA.	1974	2	-	43	-	200000	60000	10000	500000
23.	Dump Truck Saureer Swiss 280.	SAKRER	280.0 HP.	SWITZER-LAND.	1975	11	-	195	-	1300000	300000	80525	2200000

PARTICULARS OF ROAD CONSTRUCTION MACHINERY IN PAKISTAN PURCHASED PRIOR TO 1974

	DESCRIPTION	MAKE/ MODEL	RATING H.P.	COUNTRY OF ORIGIN	YEAR OF PURCHASE	AVERAGE FUEL CONSUMPTION/ MACHINE HOUR		AVERAGE OPERATING COST PER MACHINE HOUR		COST OF PURCHASE RS.	PRESENT VALUE RS.	ANNUAL AVERAGE REPAIR COST PER MACHINE	REPLACEMENT VALUE RS.
						P.HOUR	P.K.M.	P. HOUR	P. K.M.				
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	BULDOZERS TD-20 INTERNATIONAL	INTER-NATIONAL	200.0 HP.	U.S.A.	1961	23	-	204	-	290000	60000	60000	2200000
2.	BULDOZERS TD-20 INTERNATIONAL	INTER-NATIONAL	150.0 HP.	U.S.A.	1961	19	-	178	-	390822	100000	10000	1900000
3.	BULDOZERS TD-25 IH-TD-25 USA.	INTER-NATIONAL	190.0 HP.	U.S.A.	1961	3	-	22	-	226270	-	60000	2300000
4.	CONSOLIDATED PNEUMETIC U.K.	CONSOLI-DATED.	140.0 HP.	U. K.	1966	22	-	122	-	50000	45000	10000	370000
5.	INGERSOLL RAND USA 140 HP.600 CFM.	INGERSOL	140.0 HP.	U.S.A.	1968	22	-	118	-	30000	30000	10000	415000
6.	TANK SH-178.	SKN.	-	SWEDEN.	1965	7	-	50	-	100000	15000	5000	500000
7.	WORTHINGTON USA.	WORTHIN-GTON.	75.0 HP	-	1958	14	-	70	-	16000	-	960	-
8.	GENERATOR LISTER UK. DIESEL 18 HP.	LISTER	18.5 HP.	U. K.	1964	3	-	23	-	23000	15000	2500	199000
9.	GENERATOR CATERPILLER, MODEL 330-A.	CATER-PILLER.	51.0 HP.	U.S.A.	1970	13	-	85	-	60000	55000	11000	385000
10.	GENERATOR MODEL IYI-4374 DELCO A-C.	DELCO-C.	45.0 HP.	U.S.A.	1972	7	-	65	-	52000	46400	11000	360000
11.	CRAEBUS 90X75,19.8 GPM,8 HP.	CRAELIUS	8.0 HP.	SWEDEN.	1964	3	-	40	-	36200	31100	13000	172000
12.	R.R. ZATTLEMAYER GERMANY.	ZATTLEMAYER	16. HP.	GERMANY(F.R)	1952	1	-	18	-	15000	45000	2500	275000
13.	R.R. R.J.M. ENGLAND 6-10 TONS.	R.J.M.	-	U . K.	1973	1	-	5	-	200000	50000	2500	500000
14.	R.R. R.J.M. ENGLAND 6-10 TONS.	R.J.M.	-	U.K.	1972	3	-	10	-	200000	50000	5000	500000
15.	R.R. JONE 45 HP. 8 TONS.	JONE	45.0 HP.	PAKISTAN	1960	3	-	20	-	200000	85000	15000	350000
16.	R.R. SCHEID GERMANY 35 HP., 8-10 TONS.	ZATTLEMAYER	33.75 HP.	GERMANY(F.R.)	1952	2	-	11	-	75000	100000	10000	275000

PARTICULARS OF ROAD CONSTRUCTION MACHINERY IN PAKISTAN PURCHASED PRIOR TO 1974

S.NO.	DESCRIPTION	MAKE/ MODEL	RATING H.P.	COUNTRY OF ORIGIN	YEAR OF PURCHASE	AVERAGE FUEL CONSUMPTION/ MACHINE HOUR		AVERAGE OPERATING COST PER MACHINE HOUR		COST OF PURCHASE RS.	PRESENT VALUE RS.	ANNUAL AVERAGE REPAIR COST PER MACHINE	REPLACEMENT VALUE RS.
						P.HOUR	P.K.M	P. HOUR	P. K.M.				
1	2	3	4	5	6	7	8	9	10	11	12	13	14
17.	R.R.FEDRANA POLAND 37 HP. 8-10 TONS.	FEDRONA	37.0 HP.	POLAND (POLISH)	1971	1	-	13	-	100000	100000	2083	350000
18.	R.R.GERMANY 38 HP. 8-10 TONS.	-	37.0 HP.	GERMANY(F.R)	-	2	-	43	-	38000	20000	15000	430000
19.	R.R.MELCONMOREE USA 40 HP.8-10 TONS.	MELCON-MOREE.	40.0 HP.	U.S.A.	-	5	-	100	-	35000	20000	6000	400000
20.	R.R.MARSHAL USA 45 HP. 8-10 TONS.	MARSHAL	45.0 HP.	U.S.A.	1957	2	-	27	-	20000	60000	6667	400000
21.	R.R. 8-10 TONS.	PARKER	50.0 HP.	U. K.	1952	10	-	50	-	8000	5000	6000	450000
22.	CZECHOSLOVAKIA 45 HP.10 TONS.	-	45.0 HP.	CZECHOSLOVAKIA	1968	5	-	46	-	225000	-	30000	1200000
23.	R.R.GALLIKI CZD 10 TONS.	POLIMEX	30.0 HP.	ROMANIA(DSR.)	1964	5	-	104	-	30000	50000	6000	300000
24.	R.R. POLIMAX POLAND 40 HP.10-12 TONS.	POLIMEX	40.0 HP.	POLAND. (POLISH).	1969	4	-	50	-	100000	100000	15000	445000
25.	R.R. A.B. FORD U.K.45 HP.10-12 TONS.	FORD	45.0 HP.	U.K.	1966	1	-	8	-	150000	75000	8333	400000
26.	R.R. HAMM GERMANY 45 HP.10-12 TONS.	HEMM	60.0 HP.	GERMANY(F.R).	1964	1	-	9	-	50000	160000	7000	400000
27.	R.R. HAMM GERMANY 45 HP.10-12 TONS.	HEMM	45.0 HP.	GERMANY(F.R)	1962	1	-	18	-	30000	110000	11667	400000
28.	R.R. RUTHMAYER 45 HP. 10-12 TONS.	RULHMAYER	45.0 HP.	GERMANY(F.R.)	1952	1	-	22	-	20000	110000	14000	400000
29.	R.R.RUTHMAYER 45 HP. 10-12 TONS.	RULHMAYER	45.0 HP.	GERMANY(F.R.)	1952	1	-	22	-	20000	110000	14000	400000
30.	R.R.SHAHZOOR 55 HP. 10-12 TONS.	SHAHZOOR	55.0 HP.	PAKISTAN	1971	1	-	5	-	375000	250000	7400	900000
31.	R.R.BUFFALO USA 90 HP.10-12 TONS.	BUFFALO	90.0 HP.	USA	1958	6	-	50	-	90000	150000	25000	465000
32.	R.R.CHINA 10-12 TONS.	-	40.0 HP.	CHINA	1972	2	-	54	-	350000	303250	28000	426600
33.	R.R.ROMAINA 10-12 TONS.	-	45.0 HP.	ROMANIA(DSR)	1970	5	-	33	-	90000	79200	12000	360000
34.	R.R. 10-12 TONS.	INTER - NATIONAL	50.0 HP.	U.S.A.	1965	5	-	25	-	42000	5000	5000	600000
35.	R.R. 10-12 TONS.	G.M.	50.0 HP.	U.K.	1952	3	-	13	-	28000	5000	5000	500000

PARTICULARS OF ROAD CONSTRUCTION MACHINERY IN PAKISTAN PURCHASED PRIOR TO 1974

S.NO.	DESCRIPTION	MAKE/ MODEL	RATING H.P.	COUNTRY OF ORIGIN	YEAR OF PURCHASE	AVERAGE FUEL CONSUMPTION/ MACHINE HOUR		AVERAGE OPERATING COST PER MACHINE HOUR		COST OF PURCHASE RS.	PRESENT VALUE RS.	ANNUAL AVERAGE REPAIR COST PER MACHINE	REPLACEMENT VALUE RS.
						P.HOUR	P.K.M.	P. HOUR	P. K.M.				
1	2	3	4	5	6	7	8	9	10	11	12	13	14
36.	R.R. ROMANIA 45 HP. 12 TONS.	ROMANIA	45.0 HP.	ROMANIA(DSR)	1973	1	-	18	-	40000	100000	10833	400000
37.	R.R. ROMANIA 45 HP. 12 TONS.	ROMANIA	45.0 HP.	ROMANIA(DSR)	1973	1	-	12	-	40000	100000	17222	400000
38.	R.R. ROMANIA 45 HP. 12 TONS.	ROMANIA	45.0 HP.	ROMANIA(DSR)	1973	1	-	28	-	40000	100000	16250	400000
39.	R.R. ROMANIA 45 HP. 12 TONS.	ROMANIA	45.0 HP.	ROMANIA(DSR)	1973	1	-	23	-	40000	100000	16250	400000
40.	R.R. SKODA CZECH. 50 HP.12-14 TONS	SKODA	50.0 HP.	CZECHOSLOVAKIA	1968	5	-	30	-	200000	75000	30000	400000
41.	R.R. ROMANIA 70 HP.12-14 TONS.	-	67.0 HP.	ROMANIA(DSR).	1970	3	-	27	-	165000	165000	12500	465000
42.	R.R. SKODA CZECH. 65 HP.14 TONS.	SKODA	65.0 HP.	CZECHOSLOVAKIA	1964	6	-	125	-	50000	35000	7000	500000
43.	R.R. SKODA CZECH. 65 HP. 14 TONS.	SKODA	65.0 HP.	CZECHOSLOVAKIA	1964	3	-	63	-	50000	100000	35000	500000
44.	R.R. SKODA CZECH. 65 HP. 14 TONS.	SKODA	65.0 HP.	CZECHOSLOVAKIA	1964	6	-	125	-	50000	35000	7000	500000
45.	R.R. GALLION USA.60 HP. 12-15 TONS.	GALLION	60.0 HP.	U.S.A.	1964	4	-	63	-	20000	50000	3500	400000
46.	R.R. SKODA CZECH. 65 HP.12-15 TONS.	SKOLA	65.0 HP.	CZECHOSLOVAKIA	1969	4	-	63	-	80000	65300	28000	500000
47.	ROMANIA 45 HP. 10 TONS.	ROMANIA	45.0 HP.	ROMANIA(DSR).	1969	1	-	24	-	56000	20000	12500	450000
48.	ROMANIA 40 HP. 10-12 TONS.	-	40.0 HP.	ROMANIA(DSR).	1971	4	-	54	-	165000	100000	20000	465000
49.	ROMANIA 40 HP. 10-12 TONS.	-	40.0 HP.	ROMANIA(DSR).	1969	4	-	54	-	165000	165000	20000	465000
50.	VIBRATORY GERMANY 45 HP.6-8 TONS.	-	45.0 HP.	GERMANY(F.R).	-	5	-	25	-	190000	160000	15000	-
51.	SNOW CLEARANCE MACHINE MICHIGAN USA.	MICHIGAN	90.0 HP.	U.S.A.	1969	7	-	88	-	100000	40000	12500	1100000
52.	TRUCK TRACTOR BEBIS GERMAN 2 KM PH.	DEUTZ.	55.0 HP.	GERMANY(F.R.)	1969	3	-	16	-	20000	10000	5000	150000
53.	TRACTOR AGRICULTURE DEUTZ.(GER.)42 HP.	DEUTZ	42.0 HP.	GERMANY (F.R.)	1968	2	-	45	-	17000	10000	2250	130000
54.	TRACTOR AGRICULTURE DEUTZ(GER.)42 HP.	DEUTZ	42.0 HP.	GERMANY (F.R.)	1968	1	-	18	-	17000	20000	1250	100000
55.	TRACTOR AGRICULTURE FORD ENGLAND 52 HP.	FORD	52.0 HP.	U.K.	1968	5	-	29	-	17000	30000	4500	125000

PARTICULARS OF ROAD CONSTRUCTION MACHINERY IN PAKISTAN PURCHASED

S.NO.	D E S C R I P T I O N	MAKE/ MODEL	RATING H.P.	COUNTRY OF ORIGIN	YEAR OF PURCHASE	AVERAGE FUEL CONSUMPTION/ MACHINE HOUR		AVERAGE OPERATING COST PER MACHINE HOUR		COST OF PURCHASE RS.	PRESENT VALUE RS.	ANNUAL AVERAGE REPAIR COST PER MACHINE	REPLACEMENT VALUE RS.
						P.HOUR	P.K.M	P. HOUR	P. K.M.				
1	2	3	4	5	6	7	8	9	10	11	12	13	14
56.	TRACTOR AGRICULTURE FORD ENGLAND 52 HP.	FORD	52.0 HP.	U.K.	1968	3	-	45	-	17000	30000	2050	105000
57.	TRACTOR AGRICULTURE INTERNATIONAL USA.	INTER-NATIONAL	55.0 HP.	U.S.A.	1965	1	-	15	-	15000	16000	9000	100000
58.	TRACTOR AGRICULTURE U.K. 55 HP.	I.H.	55.0 HP.	U.K.	1965	4	-	89	-	17000	6000	4500	100000
59.	TRACTOR AGRICULTURE ZETOR CZECH. 60 HP.	ZETOR	60.0 HP.	CZECHOSLO-VAKIA.	1969	3	-	70	-	25000	25000	4500	150000
60.	TRACTOR IMT CZECHO. 42 HP.	IMT	42.0 HP.	CZECHOSLO-VAKIA.	1968	5	-	71	-	17000	20000	5000	100000
61.	TRACTOR IMT CZECHO. 42 HP.	IMT	42.0 HP.	CZECHOSLO-VAKIA.	1968	5	-	72	-	17000	20000	5000	100000
62.	CRANE FEDERAL USA 3.5 TONS.	FEDERAL	-	USA.	1953	18	-	164	-	50000	100000	6400	500000
63.	CRANE BYRESUSA 7.5 TONS.	BYRES	-	USA.	1951	7	-	68	-	200000	100000	15000	2000000
64.	CRANE LORIAN USA 20 TONS.	LORIAN	-	USA.	1952	15	-	209	-	200000	100000	75900	2000000
65.	LOADER I.H. USA 115 HP. 2 CUYDS.	INTER-NATIONAL	115.0 HP.	USA.	1963	15	-	213	-	100000	150000	13400	1500000
66.	LOADER I.H. USA 115 HP. 2 CUYDS.	INTER-NATIONAL	115.0 HP.	USA.	1963	15	-	213	-	100000	150000	13400	1500000
67.	LOADER FRONT END.	-	13.0 HP.	USSR.	1972	5	-	30	-	150000	150000	3600	1150000
68.	FUG MILL ENGLAND 70 HP. 3 TONS.	FUG MILL	67.0 HP.	U.K.	1969	1	-	3	-	25000	20000	444	300000
69.	WHITE L-206, USA, 45 HP. 20 TONS.	WHITE	45.0 HP.	USA.	1965	250	-	1000	-	230000	100000	150000	2500000
70.	WHITE L-208, USA, 45 HP. 20 TONS.	WHITE	45.0 HP.	USA.	1965	250	-	1000	-	230000	100000	150000	2500000
71.	ASPHALT PLANT BABAR GREEN NO.2	BABAR-GREEN.	120.0 HP.	U.K.	1960	300	-	2000	-	700000	150000	200000	8000000
72.	ASPHALT PLANT .	-	90.0 HP.	USSR.	1970	20	-	2000	-	500000	400000	300000	6000000

PARTICULARS OF ROAD CONSTRUCTION MACHINERY IN PAKISTAN PURCHASED PRIOR TO 1974

S.NO.	DESCRIPTION	MAKE/ MODEL	RATING H.P.	COUNTRY OF ORIGIN	YEAR OF PURCHASE	AVERAGE FUEL CONSUMPTION/ MACHINE HOUR		AVERAGE OPERATING COST PER MACHINE HOUR		COST OF PURCHASE RS.	PRESENT VALUE RS.	ANNUAL AVERAGE REPAIR COST PER MACHINE	REPLACEM VALUE RS.
						P. HOUR	P. K.M.	P. HOUR	P. K.M.				
1	2	3	4	5	6	7	8	9	10	11	12	13	14
73.	DISTRIBUTOR BITUMEN BEDFORD U.K.	BEDFORD	65.0 HP.	U.K.	1962	10	-	100	-	150000	20000	5000	500000
74.	DISTRIBUTOR ASPHALT.	COMMER	90.0 HP.	U.K.	1963	2	-	92	-	87860	-	4000	11500000
75.	ASPHALT FINISHER BABAR GREEN UK.	BABAR-GREEN.	65.0 HP.	U.K.	1965	15	-	415	-	300000	40000	4000	1400000
76.	ASPHALT PAVER FINISHER.	MITSUBISHI	20.0 HP.	JAPAN.	1971	5	-	90	-	97833	20000	5000	900000
77.	TRAILER DODGE USA 120 HP.10-15 TONS.	DODGE.	120.0 HP.	USA.	1964	2	-	68	-	130000	50000	30000	700000
78.	TRUCK BEDFORD ENGLAND 85 HP. 6 TONS.	BEDFORD	85.0 HP.	U.K.	1960	2	-	7	-	20000	12000	5200	300000
79.	TRUCK BEDFORD ENGLAND 85 HP. 6 TONS.	BEDFORD	85.0 HP.	U.K.	1960	2	-	7	-	20000	12000	5200	300000
80.	TRUCK AUSTIN N.E.S. 7 TONS.	AUSTIN.	-	-	-	2	-	7	-	30000	40000	3500	300000
81.	TRUCK BMC. U.K. 90 HP. 7 TONS.	BMC.	90.0 HP.	U.K.	1960	1	-	30	-	28000	40000	2000	300000
82.	TRUCK BMC. U.K. 90 HP. 7 TONS.	BMC.	90.0 HP.	U.K.	1960	1	-	4	-	28000	40000	20000	300000
83.	TRUCK BEDFORD U.K.90 HP. 8 TONS.	BMC.	90.0 HP.	U.K.	1968	1	-	30	-	28000	40000	2250	300000
84.	TRUCK MERCEDIES,GERMANY FD-6905.	MERCEDEZ	90.0 HP.	GERMANY(F.R)	1960	2	-	70	-	35000	-	4500	300000
85.	DUMP TRUCKS FORD ENGLAND 95 HP. 3-TONS.	FORD.	95.0 HP.	U.K.	1965	1	-	35	-	45000	8000	2000	350000
86.	DUMP TRUCKS SELF LOADING HUNGERY.	-	65.0 HP.	HUNGERY.	1972	6	-	8	-	100000	15000	4000	450000
87.	DUMP TRUCKS SELF LOADING OVTRA HUNGERY.	OVTRA.	65.0 HP.	HUNGERY.	1972	7	-	120	-	250000	40000	20000	700000
88.	DUMP TRUCKS BEDFORD U.K.82 HP. 5 TONS.	BEDFORD.	80.0 HP.	U.K.	1962	9	-	76	-	60000	15000	2500	480000