

No. RM-4(10)/71

Dated the 13th April, 1972

To

The Secretary to the Government of West Bengal Public Works Department dealing with National Highways and other Central works

Subject : Procurement of bituminous pavement construction equipment for execution of **central/centrally sponsored works**

I am directed to say that a tentative assessment of requirement for the following items of bituminous pavement construction equipment was made in the Ministry for the execution of Central/Centrally sponsored road works, being taken up in the States in IV Plan period.

- (1) Mobile Hotmix Asphalt 6-10 per hour capacity
- (2) Tipper trucks 5-7½ tons capacity

On that basis an indent has already been placed on DGS & D for their supply with the specifications detailed in Appendix I. It may be seen that the Indian standards specification have been followed with slight modifications. Your views, if any, on these specification may please be communicated immediately.

After taking into consideration the quantity of similar equipments already supplied to some of the States for the execution of earlier special projects like the IDA, a tentative distribution of the number of above categories of equipments likely to be purchased between various States, has been worked out and the number in respect of some of these types likely to be finally considered for allotment to your State on receipt of detailed reply to this letter furnishing the information called for in the above and in the succeeding paragraphs is indicated below :

- (1) Hotmix plant 6 to 10 Tonnes/hour capacity = 4 Nos.
- (2) Tipper Trucks 5-7½ tonnes capacity = 21 Nos.

It may be confirmed that the entire quantity indicated above, in case finally decided to be allotted on receipt of the reply asked for from you, will be fully utilised for the execution of Central Works in your State, and if so the following information regarding consignee instructions may be furnished immediately for communicating to D.G.S. & D.

- (1) Designation of officers to whom the equipment allotted are to be consigned
- (2) Railway station to which these may be booked
- (3) Postal address to which Railway receipt is to be sent
- (4) Telegraphic address of receiving officer
- (5) Phasing of supply preferred, consignee-wise

2. As already intimated earlier, ending with D.O. letter dated 18.3.72 from DG (RD) & Additional Secretary it would be necessary to ensure that proper and adequate mechanical organisational set up and repair facilities are arranged so as to ensure proper and timely commissioning, better operation and upkeep of the equipment. As West Bengal already have bigger sized Hot mix plants and Pavers they may be aware of the need to have proper set up for handling the same satisfactorily. In this connection an organisational set up etc. that may be required for operating one hot mix plant unit station is enclosed for your guidance, which of course will vary from State to State according to the conditions prevailing in the State.

4. Adequate co-ordination between works (supply of material, etc) and mechanical branches (shifting to sites, assembly, commissioning, etc.) are also required to be arranged for proper utilisation of equipments and for their uninterrupted smooth working so that bituminous pavement work is executed with requisite speed and to target schedule. Hence timely preliminary action may also have to be taken in this connection.

5. Your detailed reply to this communication with full information asked for and bringing out the State PWD's due preparedness for being able to take on and thereafter properly and fully utilise these important categories of machinery and also being able to look after, maintain and operate them properly may please be furnished at your earliest in order to enable this Ministry to **finally** consider the proposed distribution of machinery and thereafter communicate to the State the final quantity of machinery to be allotted and also transmit the consignee instructions to the D.G.S. & D.

## SPECIFICATIONS

**Item I : Mobile Hot Mix Asphalt Plant Light duty 6-10 Tonnes per hour**

The Specifications will generally conform to I.S.S. 5890/1970 subject to such other amplifications, modifications, alterations and additions as are detailed below :

- (i) The plant shall be driven by a diesel engine of adequate H.P. conforming to the latest I.S.S. is acceptable to us.
- (ii) Two numbers cold feed storage hoppers with total capacity of about 3.5 cu. m. with suitable and efficient feeding arrangement sufficient to feed material to get a maximum output of 10 T.P.H. Feeding height should be about 1½ metres suitable for manual loading. Feeding platform will be required to be provided if the feeding height exceeds the same. This arrangement is suggested in preference to loading skip arrangement detailed in para 8.1 of I.S.S.
- (iii) Dryer unit of adequate capacity of about 1.7 cu. m. to ensure 6 T.P.H. output when aggregates fed have 6% moisture content and increasing to 10 TPH output with aggregates having a favourable moisture content of 2%. This is in addition to the details in paras 9.1 and 9.2 of I.S.S.
- (iv) Means may be provided for ascertaining the temperature of the heated aggregate at the discharge and of the dryer or any other suitable location (Para 9.3 I.S.S. refers).
- (v) As per requirements for clause 7.1 (e) of I.S.S. Bitumen boilers or bitumen storage tanks with heating arrangements or bitumen heating kettle may be provided with the capacity not less than 3000 litres so as to ensure continuous flow of bitumen to cater for the maximum capacity of the plant, when supply is made in bitumen drums (Packed drums), complete with burners of adequate capacity to raise the temperature quickly to 175°C and to maintain the continuous supply of Hot Bitumen at the same temperature. Means shall be provided for the filling of storage tanks with packed bitumen so as to ensure the complete emptying of bitumen drums at a rate not less than the maximum demand of the plant. Suitable insulation is necessary to avoid clogging of bitumen pipe lines, bitumen pumps and spray bars etc.
- (vi) The burners must be suitable to work satisfactorily using furnace oil as well as light diesel oil. Preheater for oil supply is necessary. The choice of type is being indicated referring to para 9.4 of I.S.S. Tenderer should indicate oil consumption of burner when aggregates with 6 per cent moisture content is dried.
- (vii) Twin shaft Paddle mixer of about 275 kg capacity to ensure an average output of 10 TPH at 2 per cent Moisture content of aggregate (Amplification of para 10.2. ISS).
- (viii) In addition to details specified under para 9.2 of I.S.S. the Hot Mix Plant will be using a maximum aggregate size of 63 mm. and minimum aggregate size passing through sieve of size of 2.36 mm with a moisture content varying from a maximum of 8% to a minimum of 1%.
- (ix) In addition to details under (iii) above, Thermometers or similar instruments to indicate temperature of heated aggregate, heated bitumen and the final mix are to be provided.
- (x) Out of 50 Nos. Diesel engines to be supplied, cold starting arrangements for 15 engines only are necessary (Amplification of para 5.1 of I.S.S.).
- (xi) Details of site conditions are as follows :
 

(a) The maximum altitude above mean sea level	= about 2400 metres.
(b) (i) The maximum temperature	= 48°C
(ii) Relative humidity corresponding to the maximum temperature	= 10%
(c) (i) Max. R.H. as attained in Kerala State during rainy season	= 100%
(ii) Corresponding to max. R.H. Dry Bulb temperature	= 32°C
(d) Minimum temperature for 15 engines out of 50 vide para (x) above	= -2°C

Tenders must specify the outputs at various moisture contents ranging from 2 to 6%.

Lubrication means suggested in para 6.4 I.S.S. is acceptable to us. The arrangement detailed in para 9.5 of I.S.S. will be suitable to us.

The height and location of the discharge end of mixer shall be such as to allow free use of standard wheel barrow for carrying the mixed material as specified in para 10.2 of I.S.S.

**IV. Tippers**

All Steel cab and all steel way tipping rear body on 118"-127" wheel base chassis, 5 tons capacity driven by a suitable diesel engine of about 100 HP capacity and complete with hydraulic tipping gear. The rear body may be about 7'-0" wide and 10'-0" long with 2' high sides, and hinged tail gate. The cab details are as per DGS & D Drg. No. 18507.

Floor and the sides of the Rear Body are to be built with 10 gauge M.S. sheets and the sides are to be properly reinforced. The body to be generally as per DGS & D Dr. No. 16853.

The tipper trucks are required to work in conjunction with Paver Finishers for the carriage of hot bitumen mixed material. 20 per cent spares for each of the above units.

**Type Estimate for the Installation of Hot-Mix Plant at each Station  
(Provisions of accommodation and service roads)**

1. Cost of tents, tarpaulins and other tentage equipments for one Station Vide Appendix 'A'
2. Fencing with 3 horizontal lines of barbed wire fixed to the 6'-0" long 6" dia. Sallunger pitched @ 8'-0" etc including cost of

materials, labour for pitching etc. all complete.

Residential :

300'-00"

100'-00"

25'-00"

300'-00"

125'-00"

850'-00" @ Rs. 3/- per ft. \_\_\_\_\_

Rs 2550=00

3. Wooden gate for the colony enclosure  
12'-0"×4'-6" of numbers as per the P.W.D. standards  
L.S. \_\_\_\_\_

Rs 250=00

4. Approach road inside the colony made of moorum,  
cindres or coarse sand as stone ballast etc. whichever is readily available

100'-00"

100'-00"

25'-00"

100'-00"

300'-00"

625'-00"×12'-0" 7500 sft. @ Rs. 2.00 per sft.

including 6" thick moorum, flank dressing etc. all complete \_\_\_\_\_

Rs 15,000=00

5. Site development including levelling and dressing and  
provision of Katcha drains etc. \_\_\_\_\_

Rs 1,000=00

6. Provision of temporary service latrines etc. for the  
officers and others within the colony \_\_\_\_\_

Rs 2,500=00

Rs 21,300=00

7. Electric installation in the campus including the cost of wiring (temporary)  
etc. all complete within a max. lead of 1000 ft. from the Electric Mains

L.S. \_\_\_\_\_

Rs 2,500=00

8. Temporary shed for the testing laboratory for the quality control works etc. all completed  
20'×8'=160 sft.  
@ Rs 15/- per sft. \_\_\_\_\_ 2400/-  
(including water connection)

Rs 2,400=00

9. Provision of Tube well or pucca wells for the drinking water supply  
for the workers and the people residing within the colony.  
2 nos. @ Rs 1500/- each \_\_\_\_\_

Rs 3,000=00

Rs 29,200=00

10. Cost for fixing the cash chest in the pucca B.W. including all costs.  
2 nos. @ L.S. 500/-  
Cost vide appendix for item No. 1 \_\_\_\_\_

1,000=00

Rs 30,200=00

17,600=00

Rs 47,800=00

11. Extra for temporary L.S. for 4 acres @ Rs. 500/- per year for 2 years

Rs 2,000=00

Rs 49,800=

Say : Rs 50,000=

### Appendix for Item I

			Rs
1. Swiss cottage	4	@ Rs 500	2000
Kobul pal	8	@ Rs 300	2,400
Petro-max	6	@ Rs 100	600
Lavatarus	80	@ Rs 10	800
Tarpaulins sheds	68	@ Rs 100	6800
Steel folding table	10	@ Rs 60	600
Steel folding chairs	24	@ Rs 50	1200
Steel trunks	12	@ Rs 50	600
Cash chest	2	@ Rs 800	1600
Steel camp cots	2	@ Rs 500	1000

17,600

**ACCOMMODATION FOR OFFICE AND TEMPORARY RESIDENCES FOR OPERATIONAL STAFF AT EACH HOT-MIX PLANT STATION**

Details of staff Grade	Total Nos.	Swiss Cottage	Kabul pal double cover	Pet-max	Lan-terns	Tar-pau-lin Sheds (12'X10')	Steel folding tables	Steel folding chairs	Steel trunks 36'X24" X18"	Cash chest	Steel camp cots	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13
1. Assistant Engineer		2	2	—	2	2	—	2	4	—	—	2 Residential
2. Subdivisional Officer		2	2	—	4	2	—	4	8	6	2	— Office
3. Engineer Asst. Overseer (Civil)		2	—	2	—	2	—	2	4	2	—	2 Resident & Office
4. Engineer Asst. Overseer (M)		2	—	2	—	2	—	—	4	2	—	2 Residential
5. Research Asst.		2	—	2	—	2	—	2	2	2	—	2 Residential
6. Laboratory Asst.		2	—	1	—	1	—	—	—	—	—	2 Residential
7. Orderly Peons		6	—	—	—	3	3	—	—	—	—	— Joint Occupation Residential
8. Foreman		1	—	1	—	1	—	—	2	—	—	1 Residential
9. Grade IV Employees		76	—	—	—	38	38	—	—	—	—	— Residential
10. Labourers Sheds		105	—	—	—	27	27	—	—	—	—	— Residential
<b>Total</b>			4	8	6	80	68	10	24	12	2	11

*N.B. :* Accommodation for Testing Lab. will be provided in Semipermanent Hutments with 10" brick wall and C.A. sheats. Size of hall will be 20'X8" at each station.

**GRADATION OF STAFF AT EACH HOT-MIX PLANT**

Details of Staff	Gr. II	Gr. III	Gr. IV	Labourers
Assistant Engineer	2	—	—	
Engineer Assistant Overseer (Civil)	—	2	—	
Engineer Assistant/Overseer (Mechanical)	—	2	—	
Subdivisional clerk	—	2	—	
Orderly peons	—	—	6	
Research Assistants	—	2	—	
Laboratory Assistants	—	2	—	
Helpers	—	—	6	
H.M. Plant Operator	—	—	6	
Paver Finisher Operator	—	—	1	
Three Wheeled Roller Drivers	—	—	1	
Tandem Roller Drivers	—	—	1	
Tipping Trucks Drivers	—	—	15	
Tipping Trucks Khalasis	—	—	15	
Ordinary Truck Drivers	—	—	1	
Ordinary Truck Khalasi	—	—	1	
Foreman	—	1	—	
Senior Mechanics	—	—	2	
Junior Mechanics	—	—	3	
Mechanical Helpers	—	—	4	
Greasers	—	—	6	
Fitter	—	—	1	
Welder	—	—	1	
Cleaners	—	—	9	

Electrician	—	—	1	
Coolies	—	—	—	2
Labourers	—	—	—	
Mason	—	—	—	1
Road Surface cleaners	—	—	—	20
Roller Wheels cleaners	—	—	—	2
Flank dressing	—	—	—	20
Chowkidars				
Paver site	—	—	1	—
Plant site	—	—	1	—
H.M. Plant feeders	—	—	—	60
<b>Total :</b>	<b>2</b>	<b>11</b>	<b>82</b>	<b>105</b>

**D. STAFF FOR MOBILE QUALITY CONTROL SUB-DIVISION (CIVIL) UNDER ONE ASSISTANT ENGINEER**

1. Research Assistants — 2 nos. (May be increased to 4 nos. as per quantum of work)
2. Laboratory Assistants — 4 nos. (May be increased to 8 nos. as per quantum of work)
3. Helpers — 6 nos. (May be increased to 10 nos. as per quantum of work)
4. Coolies — 2 nos.

**E. LABOURERS FOR ONE HOT-MIX PLANT STATION AND ITS OPERATION (PER DAY)**

1. Labourers for feeding aggregates — 60 to 70 nos.
2. Labourers for Paver Finisher :
  - (a) Mason — 1 No.
  - (b) Labourers — 20 nos. (for clearing the road surface etc.)
  - (c) Labourers — 2 nos. (for cleaning the roller wheels).
3. Labourers for flank dressing — 20 nos.
4. Chowkidars at :
  - (a) Paver site — 2 nos.
  - (b) Plant site — 2 nos.

**F. REGULAR ESTABLISHMENT AT SITE**

1. Mobile Mechanical Subdivision :
  - (a) Assistant Engineer (Mechanical) — 1 no.
  - (b) Engineer Asst. Overseer for Plant — 1 no.
  - (c) Engineer Asst. Overseer for Paver — 1 no.
  - (d) Sub-divisional clerk — 1 no.
  - (e) Orderly peons — 3 nos.
2. Mobile civil sub-division
  - (a) Assistant Engineer (Civil) — 1 no.
  - (b) Engineer Assistant Overseer for Plant — 1 no.
  - (c) Engineer Assistant Overseer for Paver Finisher — 1 no.
  - (d) Sub-divisional clerk — 1 no.
  - (e) Orderly peon — 3 nos.

**APPENDIX III**

**DETAILS OF WORK CHARGED STAFF ESSENTIAL FOR ONE STATION FOR INSTALLATION OF HOT-MIX PLANT FOR THE BITUMINOUS MACADAM WORKS IN NATIONAL HIGHWAY WING**

**A. PLANTS AND MACHINERIES REQUIRED FOR EACH HOT-MIX PLANT STATION**

1. Hot-Mix Plants — 3 Nos. (Two operating, one stand-by)
2. Paver Finisher — 1 No.
3. Three wheeled roller — 1 No.
4. Tandem Roller — 1 No.
5. Tipping Trucks — 15 Nos.
6. Ordinary Trucks — 1 No.
7. Tanker for storage of fuel — 2 Nos.
8. Tar boilers (Coal fired) — 15 Nos.

**B. OPERATIONAL STAFF FOR THE ABOVE MACHINERIES**

1.	Hot mix plants operators	— 6 Nos. (2 Nos. in each plant)
2.	Paver finisher operator	— 1 No.
3.	Three wheeled roller Driver	— 1 No.
4.	Tandem Roller Driver	— 1 No.
5.	Tipping trucks drivers	— 15 Nos.
6.	Tipping trucks Khalasis	— 15 Nos.
7.	Ordinary truck driver	— 1 No.
8.	Ordinary truck Khalasi	— 1 No.

(for the operation for tar boilers casual labour will be needed as per the requirement during the work in progress)

**C. MECHANICAL STAFF REQUIRED FOR THE MAINTENANCE OF THE ABOVE PLANTS AND MACHINERIES AT ONE STATION**

1.	Foreman	— 1 No.
2.	Senior Mechanics	— 2 Nos.
3.	Junior Mechanics	— 3 Nos.
4.	Mechanical helpers	— 7 Nos.
5.	Greasers	— 6 Nos.
6.	Fitter	— 1 No.
7.	Welder	— 1 No.
8.	Cleaners	— 9 Nos.
9.	Electrician	— 1 No.