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Dated the 20th April, 1985

To

The Chief Engineer (NHs) of all the State and U.Ts/Director General (Works) C.P.W.D.

Subject: Introduction of vibratory rollers for highway construction.

The question of introduction of vibratory rollers for Highway construction was under consideration of this Ministry for some time past. In order to provide guidelines for the use of these rollers to the Highway Engineers, a background paper on 'Introduction of vibratory rollers for Highway construction' was finalised by a Working Group set up by the Highway Research Board of the Indian Roads Congress. This background paper has been published under Information Section of Volume 45 part 3 of the Journal of the Indian Roads Congress of Nov. 1984. A summary of recommendations made in the background paper for introduction of vibratory rollers for Highway construction is given in Annexure I.

2. The advantages of use of vibratory rollers are as follows :

- i) it can replace a number of different types of conventional static rollers theoretically needed for different materials as well as for different compaction operations.
- ii) it can give higher degree of compaction in less number of passes.
- iii) it can compact materials in a wide range of lift thicknesses.
- iv) it can compact efficiently bituminous materials over a wider range of temperatures.

3. In view of the inherent advantages this Ministry is considering to specify/stipulate the use of vibratory rollers on National Highway works while issuing sanctions in future.

4. It is, therefore, necessary that vibratory rollers are extensively used for Highway construction and concurrently ensure that ordinary rollers are phased out in due course.

5. In addition to the two categories of vibratory rollers mentioned in the recommendations of the background paper vibratory rollers 2 to 4 tonnes static weight are also being manufactured in the country for light applications. A list of names and addresses of the firms presently manufacturing the vibratory rollers of different specifications in the country is given in Annexure II for your information and guidance.

## ANNEXURE I

### RECOMMENDATIONS FOR INTRODUCTION OF VIBRATORY ROLLERS FOR HIGHWAY CONSTRUCTION

i) Vibratory rollers have certain advantages vis-a-vis static rollers. These are compaction of pavement materials in greater lift thicknesses, achievement of higher compaction densities, use of smaller number of roller passes and efficient compaction of bituminous materials over a wider range of temperatures. Vibratory rollers need therefore to be introduced in highway construction on a large scale to take advantage of technological improvement.

ii) Dual-drum vibratory rollers of 4 to 6 tonne and 8 to 10 tonne static weight may be manufactured to serve compaction needs of highway construction. The higher rollers may be useful as substitutes for 10 tonne static rollers employed at present for highway construction. They may be also used conveniently for widening of existing pavements, construction of narrow city roads and footpaths and maintenance jobs like trench reinstatement and patch repairs. The heavier roller may be suitable for highway construction jobs, where greater outputs of work and higher compaction densities are to be achieved.

iii) The vibratory rollers may have a frequency range of 1400 to 3000 vibrations/min. and an amplitude range of 0.4 to 1.4 mm with appropriate number of settings for varying frequency and amplitude values suitable for compaction of different pavement layer materials and thicknesses.

iv) If it is not possible to introduce the above mentioned settings to cover the entire ranges of frequency and amplitude, two different types of vibratory rollers may be manufactured with the following characteristics :

a) Frequency range of 14000 to 18000 vibrations/min. and amplitude range of 0.8 to 1.4 mm suitable for compaction of soil and granular layers.

b) Frequency range of 2000 to 3000 vibrations/min. and amplitude range of 0.4 to 0.8 mm suitable for compaction of bituminous macadam and asphaltic concrete layers.

v) In view of the higher cost and the greater degree of technological sophistication of vibratory rollers, it is necessary to achieve fuller utilisation. For this purpose, it is necessary to provide appropriate facilities for training of operation and maintenance personnel and to schedule construction programme so as to minimise idle time.

vi) After introduction of vibratory rollers by several highway construction organisations in the country, feed-back data are required to be collected for more comprehensive evaluation and refining of specifications of vibratory rollers indicated in this paper and for modifying construction specifications with respect to layer thickness and compaction density.

## List and Addresses of firms manufacturing Vibratory Road Rollers

1. **USHA ATLAS**  
Hydraulic Equipment Ltd.,  
14, Princep Street,  
Calcutta-700072
2. **Garlic & Co. Pvt. Ltd.**  
Haines Road, Jacob Circle  
Bombay
3. **International Engineering & Construction Co.,**  
16, Biplabi Rashbehari Basu Road, (Canning Street),  
Calcutta-700001.
4. **Jessop & Co. Ltd.**  
63, Netaji Subhash Road,  
Calcutta-700001.
5. **Escorts Ltd.,**  
Industrial Equipment Department,  
Sector-13, Faridabad-121007. (Haryana)
6. **Garden Reach Shipbuilders and Engineers,**  
Calcutta
7. **Electromag Devices Pvt. Ltd.,**  
1201, Pragati Tower,  
26, Rajindra Place,  
New Delhi-110008.
8. **Larsen and Tubro Ltd.**  
32, Shivaji Marg,  
New Delhi-110015.