

No. RW/33059/29/87(NH-Sids)

*Dated the 7th May, 1987*

To,

1. All State Secretaries PWDs/UTs
2. Director General Border Roads
3. Director General (Works)

Subject : Tentative guidelines on the choice of type and thickness of bituminous wearing courses over different types of base courses.

At present the system of selecting wearing courses over various types of granular or bituminous base courses does not prescribe a proper approach keeping in view the service life of the pavement, the futuristic requirement of its strengthening as well as carriageway capacity and above all the pavement layer drainage, malfunctioning of which can render even any bituminous course with rich specification ineffective in discharging its structural function. Besides, its suitability to the base immediately underneath from overall considerations of future strengthening requirements, including stage construction if to be adopted, level of

riding quality of the surface, traffic needs, climatic and other environmental conditions, future renewal cycles and type of renewal course to be provided, etc. is not being given adequate consideration prior to adopting a particular type of wearing surface. Usually efforts are to provide higher type of wearing courses irrespective of the said considerations leading to subsequent complexities in road pavement performance and also at times low type of wearing courses (or renewal courses) are provided from purely economical considerations ignoring technical requirements.

2. All these aspects have been engaging attention of the Ministry for quite some time. The matter has been carefully considered and it is suggested that the recommendations on the type of wearing course over a particular type of base course considering traffic and rainfall conditions contained in the guidelines appended to this letter (Annexure A) may be followed. Deviations, if any, should be duly justified in the project reports.

3. The use of appropriate grade of penetration bitumen has not been indicated at present in view of the fact that manufacturing of all grades of penetration bitumen has not been started by the refineries and also the choice of the correct grade to be adopted for various bituminous works under various regions is under consideration in the Ministry. The same, when finalised, shall be communicated in due course.

4. It is requested that your valuable comments for modification/improvements, if any, and feedback after implementation of the recommendations contained in the guidelines may be forwarded to the Ministry for consideration and further action called for, if any.

5. Illustrative examples will follow separately.

#### ANNEXURE-A

No. RW/33059/29/87(NH-Std.)

Dated the 5th May, 1987

#### TENTATIVE GUIDE ON THE CHOICE OF TYPE AND THICKNESS OF BITUMINOUS WEARING COURSES OVER DIFFERENT TYPES OF BASE COURSES

S. No.	Type of base course (with adequate pavement thickness for CSA shown in Column-5)	Type of bituminous wearing course	Annual Rainfall — Low less than 150 cm (L) Medium 150-300 cm (M) High more than 300 cm (H)	Intensity of traffic for life of the pavements (CSA in million <sup>2</sup> )
1.	2.	3.	4.	5.
1.	Granular including Water Bound Macadam/Wet Mix Macadam.	(i) 2 coats for Surface dressing	L & M	≤ 0.5
		(ii) 20mm Premix Carpet (PC) + Seal Coat Type 'A'	L, M & H	≤ 10.0
		(iii) 20mm PC + Seal Coat Type 'B'	L & M	≤ 10.0
		(iv) 20mm Mix Seal Surfacing Types 'A' or 'B'	L, M & H	≤ 10.00
2.	Built up Spray Grout (BUSG)	(i) 20mm PC + Seal Coat Type 'A'	M & H	≤ 10.0
		(ii) 20mm PC + Seal Coat type 'B'	L & M	≤ 10.0
		(iii) Mix Seal Surfacing (20mm) Type 'A' or 'B'	L, M & H	≤ 10.0
3.	Bitumen Penetration Macadam.	Same as at Sl. No. 2 above.		
4.	Crushed Cement Concrete base	Same as at Sl. No. 2 above.		
5.	Bituminous Macadam	(a) Semi-Dense Bituminous Concrete (Semi-Dense Carpet)		
		(i) 25mm		
		(ii) 40 mm	L, M & H	≤ 15
		or (b) 20mm Premix carpet with liquid seal coat		
6.	Dense Bituminous Macadam (DBM)	Bituminous Concrete (Asphaltic Concrete)		
		(i) 25mm		
		(ii) 40 mm	L, M & H	≤ 15

- Notes :
1. Over granular bases Semi-Dense Bituminous Concrete and Bituminous Concrete (Asphaltic Concrete) shall not be provided. So also shall be the Case for BUSG, Penetration Macadam and crushed cement concrete bases.
  2. Also, no Bituminous Concrete (Asphaltic Concrete) shall be provided over B.M. base course. Semi-dense bituminous concrete or premix carpet shall be provided, the former being preferred.
  3. Bituminous Concrete (Asphaltic Concrete) shall be provided over Dense Bituminous Macadam Base course only.
  4. The pavement shall be designed for a service life of minimum 10 years in all cases.
  5. Cumulative Standard Axle (CSA) shall be calculated as per IRC 37 : 1984.
  6. Built up spray grout shall not be laid in more than 1 layer of 75mm.
  7. The renewal of wearing course shall be related to CSA, the upper limits given under Column 5 and in case of DBM upto 20 million CSA.
  8. Renewal of wearing course shall be done by the same type as the existing one.
-