



GOVERNMENT OF INDIA
MINISTRY OF ROAD TRANSPORT & HIGHWAYS

404.39

Parivahan Bhavan,
1, Sansad Marg
New Delhi-110001

No.RW/NH-33041/3/2001-S&R(R)

Dated: 19th July 2011

To

1. The Chief Secretaries of all State Governments/U.Ts.
2. The Principal Secretaries /Secretaries of all States/U.Ts. Public Works Department dealing with National Highways, other Centrally Sponsored Schemes and State Schemes.
3. The Engineers-in-Chief and Chief Engineers of Public Works Departments of States/U.Ts dealing with National Highways, other Centrally Sponsored Schemes and State Schemes.
4. The Chairman, National Highways Authority of India (NHAI), G-5&6, Sector-10, Dwarka, New Delhi-110 075.
5. Director General (Border Roads), Seema Sadak Bhawan, Ring Road, New Delhi-110 010.

Sub: Use of modified bitumen in BM/DBM layers for National Highway Works.

Sir,

Ministry has been issuing circulars on the use of modified bitumen in surfacing of the flexible pavement.

2. Flexible pavements with bituminous surfacing are widely used in India. The high traffic intensity in terms of commercial vehicles, overloading of trucks and significant variations in daily and seasonal temperature of the pavement have been responsible for early development of distress symptoms, like, ravelling, undulations, rutting, cracking, bleeding, shoving and potholing of bituminous surfacing. A factor which causes further concern in India is very high and very low pavement temperatures in some parts of the country. Under these conditions, flexible pavements tend to become soft in summer and brittle in winter.
3. Investigations in India and countries abroad have revealed that properties of bitumen and bituminous mixes can be improved to meet requirements of pavement with the incorporation of certain additives or blend of additives. These additives are called "Bitumen Modifiers" and the bitumen premixed with these modifiers is known as "Modified Bitumen".
4. Properties of modified binders depend upon type and quantity of modifier used and process employed adopted for their manufacture. The advantages of modified bitumen can include one or more of the following for road works:
 - Lower susceptibility to daily and seasonal temperature variations

- Higher resistance to deformation at elevated pavement temperature
- Better age resistance properties
- Better adhesion between aggregate and binder
- Higher fatigue life of mixes
- Delay of cracking and reflective cracking
- Overall improved performance in extreme climatic conditions and under heavy traffic conditions.

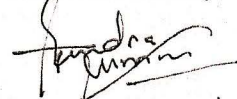
5. Modified bitumen performs better than ordinary bitumen in high rainfall areas and in situations, where the aggregates are prone to stripping. Due to their better creep resistance properties, they can also be used at busy intersections, bridge decks and roundabouts. (Styrene-Butadiene-Styrene) SBS modified bitumen is known to perform better in snow bound areas. Modified bitumen also finds useful applications in porous asphalt.

6. Therefore, at these places modified bitumen may be used in surfacing & base layers (BM/DBM) also. The design of mix may be done as per IRC SP 53-2002. It is advised that use of modified bitumen in base layer of flexible pavement may be adopted as per requirements based on site conditions, availability of material and fund.

7. The contents of this Circular may please be brought to the notice of all the concerned in your organization.

Encl: As above

Yours faithfully,



(Trivendra Kumar)

Executive Engineer SR&T (Roads)
for Director General (RD) & Special Secretary

Copy to:

1. All the Technical officers in the Ministry of Road Transport & Highways
2. All ROs and ELOs
3. The Secretary General, Indian Roads Congress
4. The Director, IAHE
5. Technical Circular File of SR&T (R) Section
6. NIC - for office intranet