

renewal programme starting from 1999-2000 in each State as well as in project estimates of Annual Plan. The tentative guidelines for use of modified bitumen in road works have also been circulated alongwith the letter under reference. This has also a reference to discussion at Chief Engineers' meeting held during the IRC Council meeting at Jaipur on 7.8.1999

2. It is hoped that the Ministry's instructions outlined in the circular letter referred to above are being followed for implementation in the field and the stretches have been identified in consultation with the Regional Officers. The steps taken by the State Chief Engineers for use of modified bitumen in road works may please be intimated to the Ministry at the earliest. The feedback on the performance may also be forwarded in due course.

404.21

No. RW/NH-34041/36/90-S&R (Vol.II)

Dated, the 11th/17th January, 2000

To

The Chief Engineers of all State Governments/Union Territories (dealing with National Highways);
Director General Border Roads; Chairman, National Highways Authority of India

Subject : Use of Polymer and Rubber Modified Bitumen in road works on National Highways and other Centrally Sponsored Schemes

The Ministry with its letter of even number dated 21.4.1999 had circulated guidelines for use of rubber and polymer modified bitumen in road construction based on interim report received from Central Road Research Institute, New Delhi, on research study sponsored by the Ministry.

2. The Indian Roads Congress has recently brought out a publication No.IRC:SP:53-1999 "Guidelines on Use of Polymer and Rubber Modified Bitumen in Road Construction" Copy of the guidelines can be obtained from IRC, Jamnagar House, Shahjahan Road, New Delhi.

3. It has now been decided that in supersession of earlier guidelines circulated by the Ministry, the IRC guidelines on modified bitumen should be adopted for all works National Highways and other Centrally Sponsored Schemes. The State Governments are also advised to follow the IRC guidelines for road works in State Sector.

4. It is requested that compliance of these guidelines for road works on National Highways may be ensured with immediate effect. The feedback on use of the guidelines may please be reported from time-to-time to the Ministry

5. The content of this circular may please be brought to the notice of all concerned in your Organisation/ Department.

404.22

No. RW/NH-34041/36/90-S&R(Vol.II)

Dated, the 5th June, 2000

To

The Engineer-in-Chief and Chief Engineers of State PWDs and U.Ts.; (dealing with N.Hs); Chairman, National Highways Authority of India; Director General Border Roads

Subject : Use of rubber and polymer modified bitumen in Road Works

Reference is invited to Ministry's letter of even No. dated 21.4. 99 on the subject with instructions to all States for introduction of the new technology of modified bitumen in at least 10 per cent length of periodical renewal and also in project works on NHs. Subsequently, the Ministry in letter of even no. dated 11.1.2000 have requested all the States to follow the guidelines of IRC:SP:53-1999 on use of modified bitumen in road works with request to report the performance feedback. It is, however, noted that the use of this new technology has not been tried so far in the field as desired.

2. It is reiterated that the adoption of this new technology has to be promoted in road works in view of its various advantages and improved performance over conventional bitumen. Some agencies have expressed concern over the quality of modifiers commercially available for modification and its mixing process in improving the quality of the end product. In this connection the following may be noted :-

- (i) The mixing of rubber/polymer at refinery or at the plants of approved and well equipped blending units would be more appropriate. However, modifiers, like, crumb rubber can be mixed at hot mix site using appropriate mixing devices.
- (ii) The Ministry have taken-up with the Ministry of Petroleum and Natural Gas for production of modified bitumen at refinery, like, conventional bitumen. Recently, M/s Cochin Refineries Limited have started commercial production of natural rubber modified bitumen. It is also learnt that M/s. Madras Refineries Ltd. and Bharat Petroleum Corporation are also likely to take-up commercial production of modified bitumen.
- (iii) The Central Road Research Institute have issued license (with process know-how) for commercial manufacture of polymer modified bitumen (PMB) to some industrial units (List at *Annexure-I*). These Units are capable to supply PMB in compliance with IRC:SP:53-1999 in tankers or packed drums.

3. For success in introduction of the new technology, all care and precautions shall be taken for necessary quality control of work with modified bitumen. Requirements of modifier, design mix and other aspects of modified bitumen shall be governed by provisions of IRC:SP:53-1999. The quality of the work shall be supervised by the field staff in association with the supplier/manufacturers, as required. The base bitumen modified bitumen and mix shall be tested in department laboratories or from reputed Central and State level laboratories including academic institutions having adequate facilities of testing. The names of few such institutions are suggested (*Annexure-II*). In order to ensure these requirements, suitable clause should be inserted in the NIT. It will, however, be the overall responsibility of the field to ensure quality of the work with modified bitumen.

4. The road section laid with modified bitumen should be kept under observation by the Central and State Research Institutions/Quality Control Wings in the States and report on the performance sent to the Ministry and CRRI, New Delhi. It would be advisable to use more than one type of modifiers (Table 2 read with Table 5 of IRC:SP:53-1999) for comparison purposes initially providing additional cost of modifier as per market rate in the work estimate. The feedback related to economics of using different modifiers compared to conventional bitumen and their comparative field performance may be reported to the Ministry.

5. It is requested that necessary instructions to follow the above directives may be issued to the field officers dealing with National Highways under intimation to the Ministry. The State Govt. may also consider to follow above instructions for the State Sector roads subject to such modifications as they may like to make.

404.23

No.RW/NH-33044/3/99-S&R

Dated, the 12th June, 2000

To

The Secretaries of State PWDs/Chief Engineers of States (NH Wing); Chairman, National Highways Authority of India; Director General Border Roads

Subject : Use of Bitumen Emulsion in road works-Clause 503.3.2. of MOST Specification

The Ministry is in the process of revising the Specifications with respect to bituminous works. As regard to Clause 503.3.2 of Ministry's Specifications (3rd Revision), 1995 reservations have been raised by certain quarters with respect to use of emulsion when the ambient temperature is below 20 degree centigrade. The properties of emulsion should conform to the provision of Indian Standards (IS:8887-1995).

2. In view of the above, it is requested that the specific details/experience with respect to the following may kindly be forwarded to the Ministry latest by 5th July, 2000:-

- (i) Whether any heating is required for emulsion before its use for spraying? If so, the temperature range required under different climatic conditions may be indicated.
- (ii) Whether any difficulty is observed for uses of emulsion without heating? If so, kindly give details.
- (iii) Is the emulsion used conforms to the provision of Bureau of Indian Standards.
- (iv) Any suggestions for modifying the provisions of Clause 503.3.2 of MOST Specification with respect to use of emulsion in the works.