

Corrigendum

NIT No. 11/2016-17 (Gr-I)

Dated:- 14/12/2016

Following be added under sub para 11 of Technical Specification for all at para 3/5.

11. Process Design, Drawing & Specification of water proofing Treatment.

11.1 PREPARATION OF THE SURFACE

Regrading shall be carried out with a suitable cement mortar incorporating a clean, medium-coarse sand or with a *lime-surkhi* mortar or any other suitable material. Old surfaces intended for waterproofing and damp-proofing treatment shall be renewed suitably.

12. MATERIAL

12.1 Bitumen Primer—Primer shall conform to the requirements laid down in IS: 3384–1965*.

12. Glass Fibre Tissue—The glass fibre tissue shall be thin, flexible, uniformly bonded mat composed of chemically resistant borosilicate staple glass fibres distributed in a random open porous structure, bonded together with a thermosetting resin (phenolic type). The minimum weight of the tissue shall be 40 g/m² and the nominal thickness shall be 0.50 ± 0.1 mm. Other physical properties of the tissue shall conform to Appendix A of IS: 7193–1974†.

12.3 Bonding Material—These shall consist of blown type bitumen conforming to IS: 702–1961‡ or residual bitumen conforming to IS: 73–1961§ or a mixture thereof selected to withstand local conditions of prevailing temperature and surface gradient and shall be prepared by heating to the correct working temperature. The penetration of bitumen shall not be more than 40 when tested in accordance with IS: 1203–1958||.

13. SURFACE FINISH

13.1 Pea-Sized Gravel/Grit—Recommended for concrete and masonry roofs, flat or sloping.

*Specification for bitumen primer for use in waterproofing and damp-proofing.

†Specification for glass fibre base coal tar pitch and bitumen felts.

‡Specification for industrial bitumen (*revised*).

§Specification for paving bitumen (*revised*).

||Specification for determination of penetration (*first revision*).

13.2 Bitumen Based Aluminium Mastics—Recommended for providing a heat reflective surface and for aesthetic appearance.

13.3 Cement Concrete, Flooring Tiles, Mosaic Tiles, Burnt-Clay Tiles, Flat-Terracing Tiles—On roof surfaces subject to foot-traffic.

14. IN-SITU WATERPROOFING TREATMENT FOR ROOFS

14.1 In selecting the combinations of layers of glass fibre tissue membrane, consideration shall be given to the type and construction of buildings, climatic and atmospheric conditions and the degree of permanence required.

14.2 For concrete, masonry and metallic roofs, flat or sloping, the following treatments are recommended.

a. *Normal Duty Treatment*

1. Glean and prime the surface with bitumen primer at the rate of 0.4 kg/m². This should properly embed the surface and should be left till the time it is touch dry.
2. Apply first coat of hot bitumen at the rate of 1.6 kg/m², *Min.*
3. Apply first layer of glass fibre tissue, overlap shall be 100 mm between layers in either direction.
4. Apply second coat of hot bitumen at the rate of 1.6 kg/m², *Min.*
5. Apply finishing by pea gravel or grit at the rate of 0.006 m³/m² or by tiles, patent stone or cement concrete and other finishing materials.

b. *Heavy Duty Treatment*

1. Same as in **6.2(a)**, items (1) to (4).
2. Apply second layer of glass fibre tissue. This layer of glass fibre tissue shall be embedded perpendicular to the earlier layer.
3. Apply third coat of hot bitumen at the rate of 1.6 kg/m², *Min.*
4. Finishing same as in **6.2(a)**, item (5).

c. *Extra Heavy Duty Treatment*

1. Same as in **6.2(b)**, items (1) to (6).
2. Apply third layer of glass fibre tissue. This layer of glass fibre tissue shall be embedded perpendicular to the earlier layer.
3. Apply fourth coat of hot bitumen at the rate of 1.6 kg/m², *Min.*
4. Finishing same as **6.2(a)**, item (5).

Note 1—Five-course treatment is recommended for moderate conditions of rainfall. A typical sketch showing the five course treatment is given in Fig. 1.

Note 2—Seven-course treatment is suggested for severe conditions of rainfall.

Note 3—Nine-course treatment is recommended for very severe conditions of rainfall.

Note 4—Where pea-sized gravel or grit is not available, coarse sand may be used.

Note 5—The conditions specified in Notes 1 to 3 are based on rainfall as follows:

| | | |
|--------------------|---|-------------------|
| <i>Moderate</i> | — | Less than 50 cm; |
| <i>Severe</i> | — | 50 to 150 cm: and |
| <i>Very severe</i> | — | More than 159 cm. |

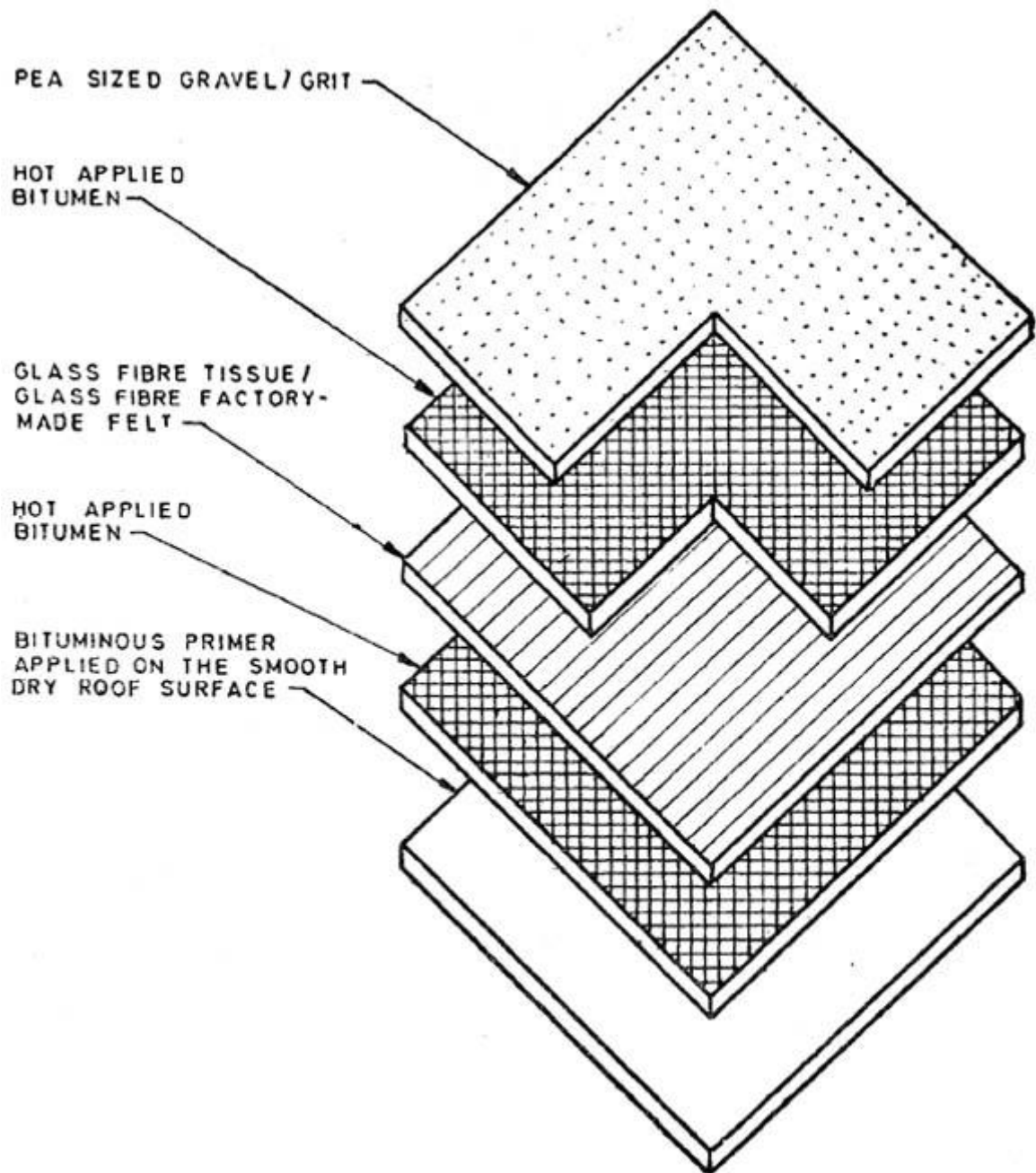


Fig. 1 A Typical Five-Course Waterproofing Treatment with In-Situ Glass Fibre Tissue.

14.3 Junction of Parapet, Wall and Roof—Glass fibre *in-situ* treatment shall be applied as flashings wherever junctions of vertical and horizontal structures occur with minimum overlap of 100 mm. Glass fibre tissue shall be cut to the required size and hot bitumen poured on the surface to the extent required and simultaneously embed the glass fibre tissue into it. The lower edge of the flashing shall overlap the *in-situ* treatment laid on the horizontal surface of the roof and the upper edge of the flashing shall be tucked into the chase (50 mm wide and 50 mm deep) 150 mm above the finished roof level on the vertical face of the wall. In case of multilayer treatments, the joints in the glass fibre tissue between successive layers are staggered with those of the layer beneath it. After the flashings are

properly bonded, the chase shall be filled up with cement mortar (normally 1: 4) or lime mortar (1: 3) or cement concrete (1:3:6) which when set will satisfactorily secure the treatment to the wall. The chase when filled shall be cured by watering for at least 4 days after filling to ensure satisfactory strength and to avoid shrinkage cracks. Figures 2 and 3 give typical details of joint between junction of masonry and RCG parapet and flat roof respectively.

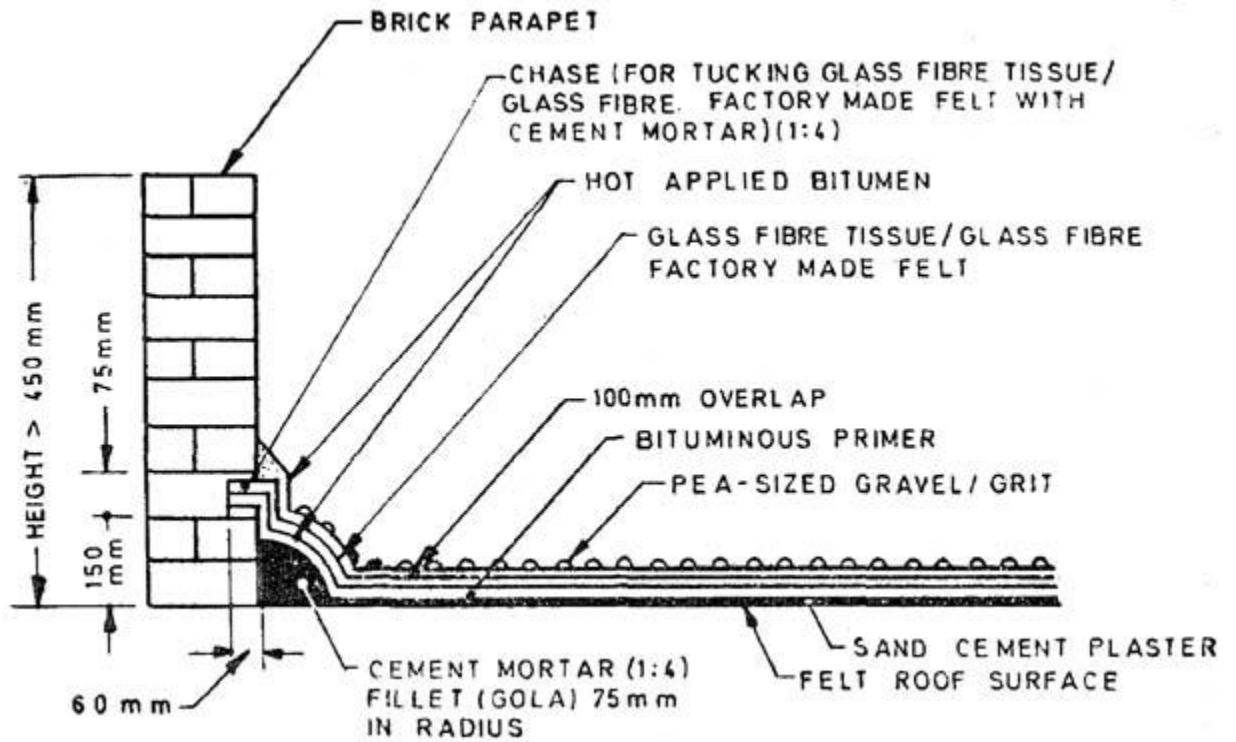


Fig. 2 Waterproofing on a Flat Roof with Brick Parapet Over 450 mm in Height- Typical Details

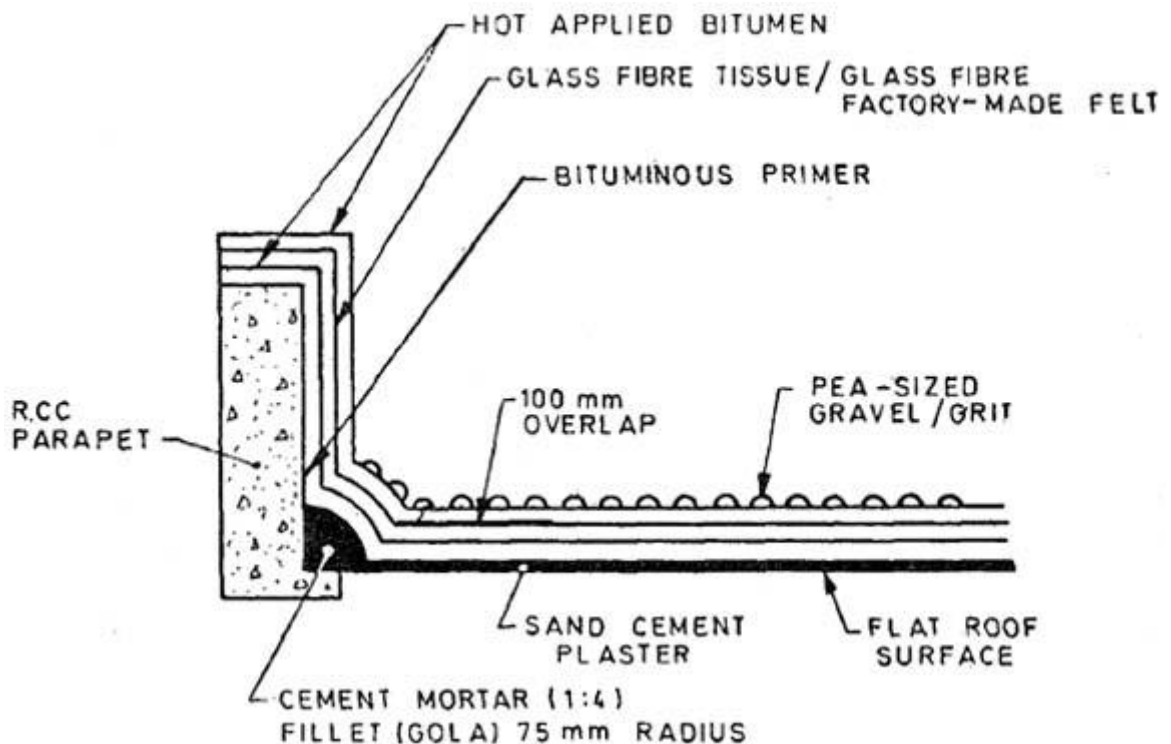


Fig. 3 Waterproofing on a Flat Roof with RCC Parapet 450 mm or Less in Height- Typical Details

14.4 Precast Slab—In case of precast roofs, where the roofs have been graded with lime concrete and surfaces plastered, normal duty treatment with single layer of glass fibre tissue can be adopted as in 6.2(a).

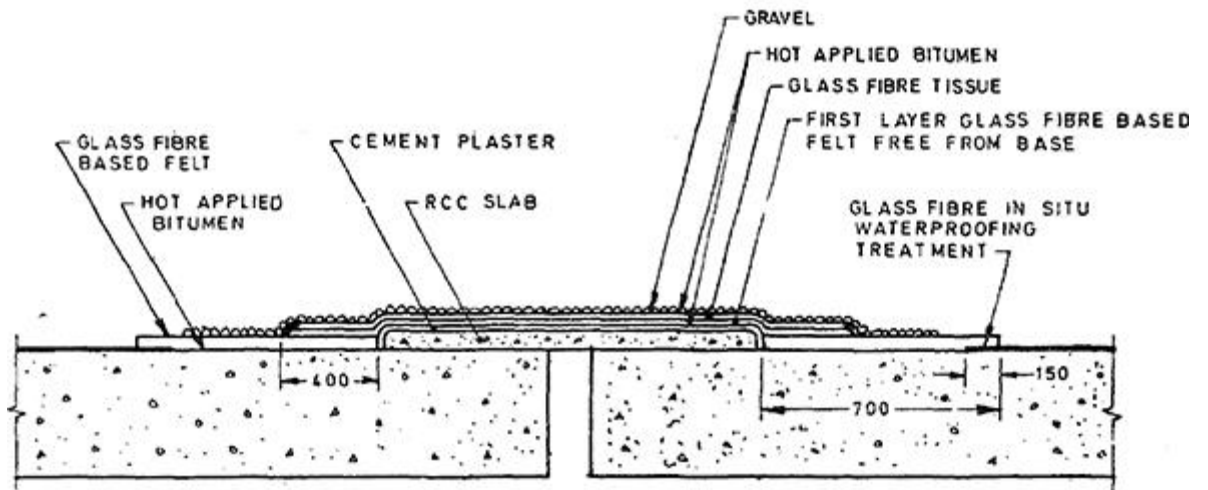
In case of precast sloping roofs, heavy duty treatment with two layers of glass fibre tissue is recommended as in 6.2(b).

In case the precast roof is subjected to too much of structural movements of vibrations, then an additional layer of glass fibre tissue embedded in hot bitumen shall be provided over the joints.

14.5 Expansion Joints—In case of expansion joints two layers of glass fibre based felt Type 2 Grade I as per IS: 7193–1974* shall be laid loose overlapping one another with one end of the felt to be stuck with bitumen alternatively and finally covered with a layer of reinforced glass fibre tissue impregnated with hot bitumen. The entire treatment is to be laid as per IS: 1346–1976† with glass fibre base felt Type 2 Grade I. Typical details of waterproofing of expansion joint with glass fibre *in-situ* treatment on RCG roof slab is given in Fig. 4.

*Specification for glass fibre base coal tar pitch and bitumen felts.

†Code of practice for waterproofing of roofs with bitumen felts (*second revision*).



All dimensions in millimetres.

Fig. 4 Waterproofing of Expansion Joint with Glass Fibre In-Situ Treatment on RCG Roof Slab—Typical Details

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Registrar