

Movement Joints 1

Movement Joints

Materials used in construction are subject to movement of various kinds, and this may induce stresses sufficient to promote loss of adhesion, bulging or cracking of the floor surface. Therefore, to protect against the effects of movement, it is necessary to construct a sufficient number of movement joints to enable the stresses to be taken up without damage. Movement joints can be of three types:

- **Contraction joints:** normally found in newly cast concrete where the only movement to be expected will be due to shrinkage resulting in the opening of the joint.
- **Stress relieving joints:** introduced into the flooring system so that any cracking which may develop due to stresses in the system will be induced to occur at pre-determined positions.
- **Movement joints:** (sometimes called expanding joints) designed to accommodate more frequent or regular movement within a flooring system.

Movement joints should not normally be wider than 10mm. Movement joint cavities should extend through the underlying bedding material and any underlying screed. They should then be completely filled and sealed with a compressible material. Where a separating layer is included the movement joint should extend to this layer but not penetrate it.

Where floors have to withstand hard-rimmed wheeled traffic, movement joints should not be positioned in the traffic area. If this is not possible, consideration should be given to reinforcement of the joint edges with suitable metal sections.

Movement joints must be incorporated into all tiled floor areas that have a dimension greater than 2 metres between restrained edges. The actual shape of the floor, its purpose, the tile and the type of fixing method employed will dictate the exact position and type of movement joint used.

Guidelines on positioning joints is provided as follows:

- **Perimeter joints:** A flexible joint should be included in the restrained perimeter of the floor. A similar joint should also be used around any rigid interruptions in the floor finish, e.g. columns, inspection chambers etc., or where individual hot or vibrating machines need to be isolated from the main floor tiling.
- **Structural joints:** These should be sited immediately over and be continuous with any movement joint in the underlying structure. A number of proprietary joint systems are available.
- **Intermediate joints:** These can be either compressive, stress-relieving or a combination of both and are used to divide up floors into bays. In larger floors, compressive joints are included at distances not exceeding 30 metres. Each of these bays is sub-divided into small bays by stress-relieving joints. In smaller floors, compressible intermediate joints should be included at distances not exceeding 10 metres. If high temperatures are expected, the provision of additional movement joints should be considered.
- **Suspended floors:** For floors subject to bending stresses, stress-relieving joints should be inserted at points where the stresses are likely to be at their greatest,

such as over supporting walls or beams. In addition, intermediate joints should be incorporated at centres not exceeding 4.5 metres.

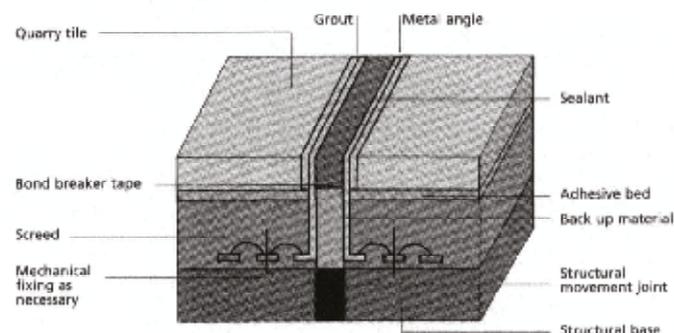
Choice of sealant materials: The choice of sealant for inclusion in a movement joint will depend on many factors including extensibility, resistance to chemical attack, resistance to wear, ease of use etc.

For economic reasons, it is usual to partially fill the joints with a cheaper filler material before finishing with the more expensive sealant. Where such a technique is used, the joint filler material should assist in carrying the traffic loads. Suitable materials include cellular rubber and plastics and some fibre building boards.

The most commonly used sealants in flooring installations are polysulphide rubber, silicone rubber and flexibilised epoxide compounds. Pre-formed strips manufactured from materials such as cork, PVC or synthetic rubber are also available, although they would not normally be recommended for use in floors in wet areas, as any spillage of liquid would seep through at the edges of the strip.

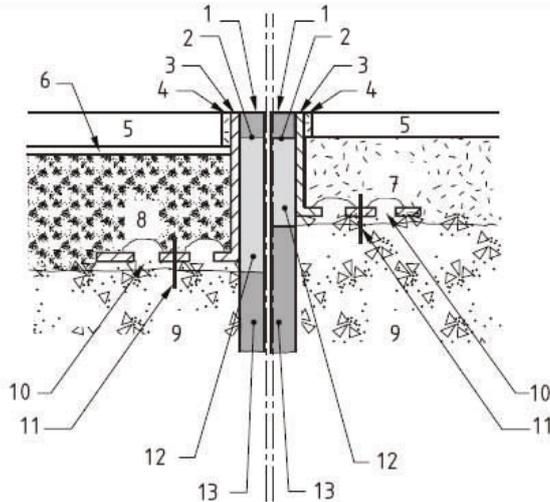
Detailed specifications for movement joints can be found in Section 6.8 of BS5385 Part 3

Fig. 6a. Compressible joint aligned to structural joint



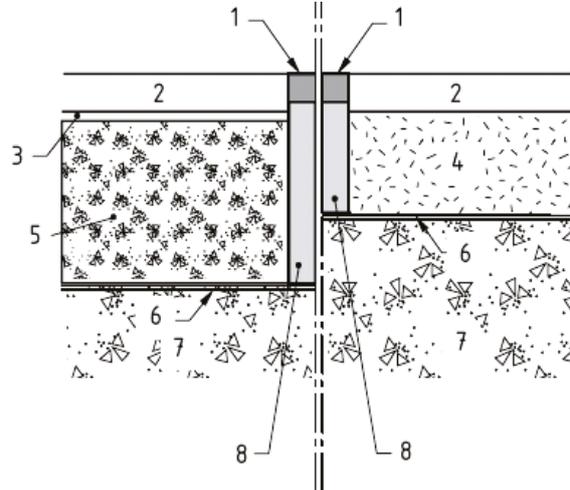
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Examples of some typical movement joints:



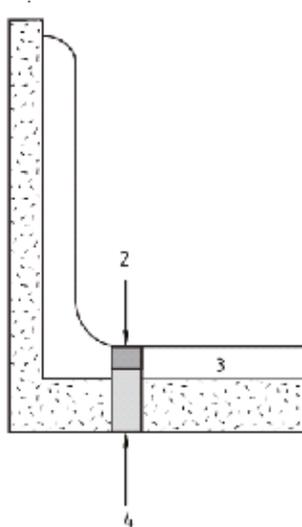
Joint aligned to structural movement joint

- | | | |
|---------------------|----------------------|------------------------------|
| 1 Sealant | 6 Adhesive bed | 11 Mechanical fixing |
| 2 Bond breaker tape | 7 Cement:sand mortar | 12 Back up material |
| 3 Metal angle | 8 Screed | 13 Structural movement joint |
| 4 Grout | 9 Concrete base | |
| 5 Tile | 10 Levelling bed | |



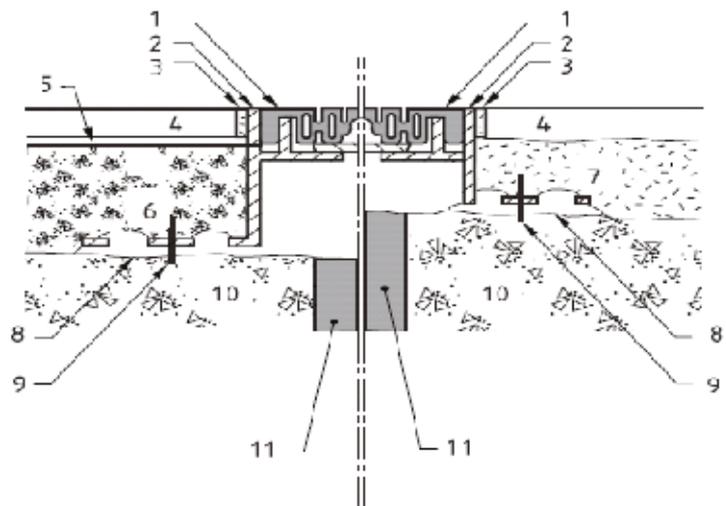
Flexible joint in bed, with or without separating layer

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|----------------|-------------------------------|--------------------|
| 1 Sealant | 4 Cement:sand mortar | 7 Concrete base |
| 2 Tile | 5 Screed | 8 Back up material |
| 3 Adhesive bed | 6 Separating layer (optional) | |



Perimeter joint (with cove based skittings)

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|--------------------|
| 2 Sealant |
| 3 Ruabon CBRT tile |
| 4 Back-up material |



Prefabricated joint with reinforced edges and capping over structural movement joint

- | | | |
|-------------------|----------------------|------------------------------|
| 1 Flexible insert | 6 Screed | 11 Structural movement joint |
| 2 Metal profile | 7 Cement:sand mortar | |
| 3 Grout | 8 Levelling bed | |
| 4 Tile | 9 mechanical fixing | |
| 5 Adhesive bed | 10 Concrete base | |

For further details on movement joints please refer to BS 5385-3