Technical Note No. 16

JOINTS IN THE BUILDING ENVELOPE

Introduction

A joint may be defined as a discontinuity in the fabric located in a predetermined position between either similar or dissimilar materials. A joint may pass through the full thickness of the building envelope or may only be present in one layer or component of the envelope. However, the performance of a joint in one layer of the envelope may be affected by the properties of the remaining layers and the interaction of the various layers of the construction must be considered in the design of a joint.

This Technical Note gives an introduction to the requirements to be considered in the design of joints and the types of joint that can be employed. More detailed guidance on joints in general is given in BS 6093.

Purpose of joints

Joints may be required for one or more of the following reasons:

- To facilitate construction. The façade of a building is normally composed of a number of components made of different materials and there will be joints where the different materials meet. Even where the same material is used for a large area, the material will have to be supplied in sections, which are small enough to handle, and joints will often be required.

- To allow movement. Two types of movement must be considered. The outer layer of the façade, which is exposed to the weather, will normally be subject to greater variations in environmental conditions than the inner layers and the structural frame. It will therefore be subject to greater movements and joints will normally be required to allow these movements to occur without inducing stresses in the fabric. Where a large building is involved there may also be movement joints in the structural frame. Where these occur it is necessary to ensure that joints are also provided in the cladding.

- To provide separation. There are some situations where it is necessary to provide a break in some property of an element in the façade. The most common situations are the use of thermal breaks in aluminium window frames and curtain walling and the provision of dpcs or cavities in masonry construction.

Properties of joints

Joints may be required to have some or all of the following properties:

- Transmission of forces. A joint may be required to transfer load in one or more directions and in some cases will also be required to transmit moments.

- Accommodation of movement. Joints will often be required to allow movement in one or more directions but may be required to prevent movement or even transmit loads in other directions. For example the joint between a glazing unit and frame will be required to allow movements due to expansion or contraction of the unit but will be required to transmit the wind loads to the frame.

- Allow for induced deviations. Induced deviations are the variations in the actual