*Technical Note No 86*

# Structural performance of systemised walls - Connections

*This Technical Note is one of a series describing the structural design and assessment of wall framing systems and brackets. The series comprises:*

*TN 84 Structural performance of systemised walls – Introduction*
*TN 85 Structural performance of systemised walls – Design charts and profile data*
*TN 86 Structural performance of systemised walls – Connections*
*TN 87 Structural performance of systemised walls – Closed profiles*
*TN 88 Structural performance of systemised walls – Buckling and torsion*
*TN 89 Structural performance of systemised walls – Open profiles*
*TN 90 Structural performance of systemised walls – Bracket requirements and principles*
*TN 91 Structural performance of systemised walls – Bracket calculations*

*These Technical Notes make reference to the Eurocodes for structural design and adopt the terminology of the Eurocodes*

*This Technical Note covers the design of mullion connections for aluminium curtain walls. It describes the types of mullion connection and gives the method for calculating load capacity of a mullion connection.*

**Introduction**

This Technical Note allows the designer to check the load carrying capacity of a mullion connection in an aluminium curtain wall. The connections considered are:

- Pinned connections to brackets
- Moment resisting connections
- Spigot connections

It does not cover the selection of an appropriate mullion profile to carry the applied loads. However it may lead to the selection of a mullion profile with a thicker wall.

It does not cover the design of brackets which are covered in CWCT TN90 and 91.

The calculation of loads on the curtain wall and forces acting through the connections is covered by Technical Note 84.

Methods of calculation of connection capacity are given but a particular design may also be proven by testing.

**Types of connection**

Curtain wall mullions are connected to supporting brackets to transfer the self weight of the wall and loads acting on the wall to the primary structure of the building. Connections may be categorized into three basic configurations as shown in Figure 1.

The type of connection adopted will depend on the overall configuration of the wall and the primary structure.

Type 1 connections comprise a moment resisting bracket connected to the primary structure and a pin or bolt passing through the bracket and the walls of the mullion to create a pinned connection.

Type 2 connections comprise a plate(s) connected rigidly to the wall of the mullion. This creates a moment carrying connection and a pin or bolt is passed through a hole in the plate(s) to make a connection to the primary structure. The pin or bolt normally connects to a moment resisting bracket connected to the primary structure. As an alternative to a pin or bolt, a hook-on configuration may be used.

Type 3 connections connect mullions end to end. A spigot is inserted into the end of one mullion and the second mullion is positioned over the spigot. The spigot transfers shear (load orthogonal to the axis of the mullion). The spigot does not create a moment resisting connection.