Technical Note No 90

Structural performance of systemised walls – Bracket requirements and principles – *supersedes TN 28*

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

This Technical Note covers the requirements for brackets and associated fixings and bolts, and the principles that affect their design.

Introduction

This Technical Note gives advice on the design of brackets and fixings for the support of curtain walling, rainscreen and other forms of building envelope.

The appropriate design/selection of brackets and fixings will simplify the installation process and allow for more accurate construction.

Brackets and fixings are one of the more complex structural components in a building envelope. It is important that they are analysed or tested to ensure that they are safe in use.

This Technical Note describes the principles relevant to the structural checking of bracket and fixing capacity. Methods of calculation are given in TN 91.

Performance criteria

Brackets for systemised building envelopes are required to meet some, if not all, of the following requirements:

- Transfer loads from the building envelope to the structure
- Limit movement of the building envelope relative to the structure
- Accommodate movement
- Accommodate tolerances
- Resist corrosion
- Resist fire
- Be simple to fix, adjust, inspect and maintain

Load transfer

Two types of bracket are used:

Fixed brackets transfer loads acting in the plane of the wall and normal to it. In the case of a vertical wall:

- The in-plane loads are the self-weight of the wall and any attachments or fixtures,
- The out-of plane loads are windload, barrier load and secondary loads caused by the off-set between the bracket and the line of action of the self-weight.

Note: 'Fixed brackets' are sometimes referred to a 'support brackets'. 'Support' has been used in this series of Technical Notes to refer to any type of bracket and to avoid confusion the term 'fixed bracket' has been adopted.

Fixed brackets are required to prevent in-plane movement. Out-of-plane movement should be limited to 2 mm between extremes of positive and negative windload (CWCT 2006).

Restraint brackets transfer only loads acting normal to the plane of the wall. In the case of a vertical wall the out-of-plane loads are those described above for fixed brackets.

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