

Structural performance of systemised walls - Introduction

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 provides an introduction to the structural design of systemised walls. It describes the different structural configurations, the loads to be carried and the calculation of design forces and moments.

Introduction

Curtain walling, rainscreen and other forms of systemised building envelope are normally designed to carry only the actions applied to them: wind load, self-weight, barrier loads, snow loads and loads caused by attachments.

They are not normally structural elements contributing to the load carrying capacity and stiffness of the primary structural frame of the building.

Systemised building envelopes are normally designed to accommodate the movement of the primary structural frame so that forces are not transferred to them from the primary structure. CWCT TN55 and CWCT TN56 give guidance on design for movement accommodation.

Structural systems

Most framing systems for curtain walling comprise vertical framing members (mullions) spanning between the edges of the floor slabs and often horizontal framing members (transoms) inserted between the mullions to support the glazing or infill panels.

A similar grillage of framing members may be used to construct slope glazing.

The rectangular grillage described above may be skewed on some facades with mullions and or transoms inclined in the plane of the wall.

In some constructions the horizontal framing members span across the glazed opening with vertical framing members inserted between them.

In the case that both the vertical and horizontal framing members are structurally continuous across more than one opening a more detailed calculation may be carried out than is described in this series of Technical Notes.

Rainscreen systems may employ vertical rails spanning between floor slabs but commonly use lighter rails supported by the back wall. The rainscreen panels are often supported directly by the vertical rails. Horizontal rails may be used either on their own in place of vertical rails or in conjunction with vertical rails.

This Technical Note focuses on vertical rectangular grillages but most of the guidance is directly applicable to other structural geometries.

Construction

Stick system curtain walling

This is assembled at site from factory machined mullion and transom profiles. The transoms