



Wind Load Overview



Part 1: Calculation of Loads By:
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Wind loads directly affect the wall and roof finishes of buildings placing both imposed (+ve) and suction (-ve) loads of differing magnitudes on different areas of the building envelope.

These loads need to be considered in the design of both the roofing and cladding and the supporting structure.



For design purposes the wind loads predicted for buildings should currently be calculated according to BS6399: Part 2: 1997 Code of practice for wind loads.

The calculations should be carried out by a competent person such as a structural engineer and will help guide design decisions regarding both structural steelwork and any cladding which is fitted as the building envelope.

The steelwork setout may dictate the cladding profile and gauge chosen or the choice of cladding may influence the steelwork set out.



Reference should also be made to BS EN 1991-1-4:2005 Eurocode 1. Actions on structures. General actions. Wind actions

This recently published European Standard, a part of the BS EN 1991 Eurocode series, provides guidance on the determination of natural wind actions for the structural design of building. It is intended to predict characteristic wind actions on land-based structures, their components and appendages.

The UK National Annex to this standard is expected to be published December 2007.



Loads as calculated will vary according to factors included in the calculation which are project specific. Location factors such as geographical location, whether the building is in open country or a town, proximity to the sea, wind exposure categories and terrain factors form the first stage of a calculation.

Site specific and building geometry factors are then also built into the calculation such as height, single or multi storey, roof pitches and further modifying factors such as presence of dominant openings, proximity of other buildings and funnelling effects.



The calculation will ultimately produce a “zoning map” of the building envelope areas showing the imposed or suction loads applicable in those areas.

On a typical roof the perimeter areas will have higher loadings than the middle of the roof with the most concentrated loads occupying zones at the eaves corners and ridge corners.

The setting out of structural steelwork directly affects the performance of any roofing or cladding fixed to it as the performance under wind load of the roofing/cladding is usually determined by the span between structural supports to which it is attached.



On a typical wall the highest loadings will often appear at corners in the lower half of the elevation. Wall loadings are usually less onerous than the worst case perimeter roof loads.

Wind suction loads are often the limiting factor for envelope products and particularly for roof sheets.

Snow loads as an imposed load may also need to be considered for roofs and some elements such as areas adjacent to parapets may need careful consideration.
