



Ayrshire SwageBeam™ Building Systems



The Lightweight Building Frame Solution!



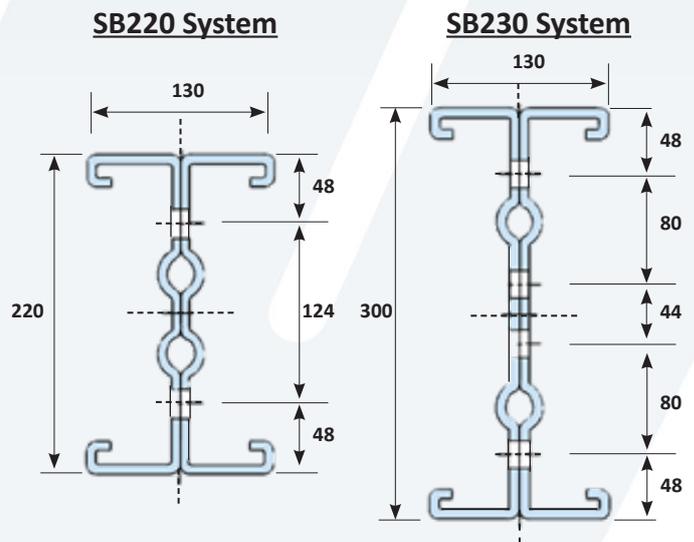
SwageBeam™ Buildings Frames are bolted assemblies of lightweight cold formed steel sections designed in accordance with BS5950-5 and SCI recommendations to resist the loadings defined in the appropriate parts of BS6399. Full size testing has shown that the connections at Eaves and Apex may be considered as rigid joints. The frames are therefore elastically designed portal frames with pinned bases*. The purlin and rail sections are commonly the same depth as the columns and rafters and fit between them, thus ensuring lateral stability of the frame members and minimising the depth of the structural zone in order to maximise the amount of useful space inside the building for a given external footprint.

* Designs using fixed bases are possible but the onus rests on the client to ensure that a suitable foundation can be constructed to resist the applied moments and forces.

SwageBeam™ As A Building System

The SwageBeam™ section is a “C” section with stiffening ‘Swages’ rolled into the web. The beams are used back-to-back as compound ‘I’ sections to form the columns and rafters of the main frames and are connected with special swaged brackets at the eaves and ridge positions that interlock to form strong connections.

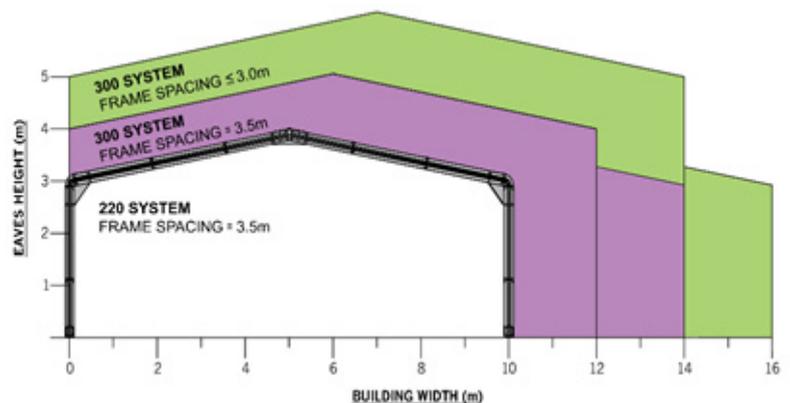
Single sections are used for the purlins and rails, which are fixed within the main frames with standard pressed cleats. Two systems are available using either a 220 or 300mm deep profile. The frames can be very simply secured to the top of a slab using expanding type anchor bolts. Three roof pitches are available as standard (5, 10 & 15 degrees).



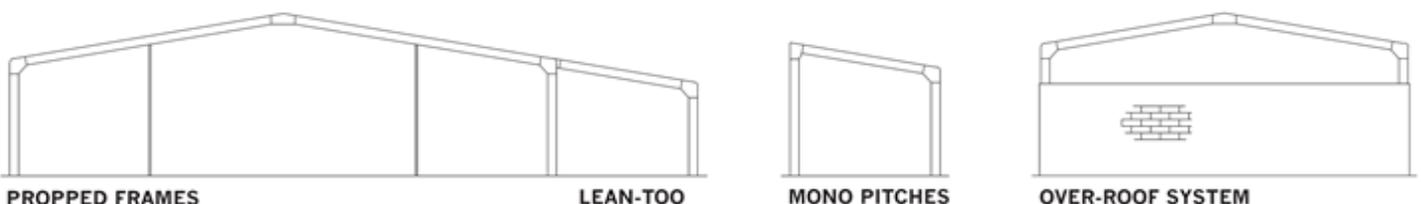
The diagram below illustrates a selection of the range of standard building sizes available for quick delivery at competitive pricing. Bespoke building sizes and shapes can also be designed with SwageBeam™ Building Frames. If you have a specific requirement then feel free to contact us to discuss your requirements. Examples of alternative frame types are shown at the bottom of the page:

Standard Building Sizes

The standard building frames are designed to be suitable for the vast majority of UK mainland locations excluding coastal areas or sites over 200m in altitude. Standard building frames are based upon pinned base frames and fully enclosed buildings with no internal division and incorporate openings for one 3m x 3m roller shutter door and one personal access door.



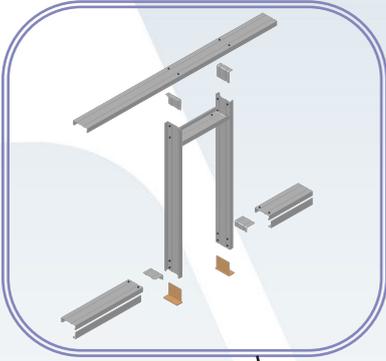
Alternative Frame Types



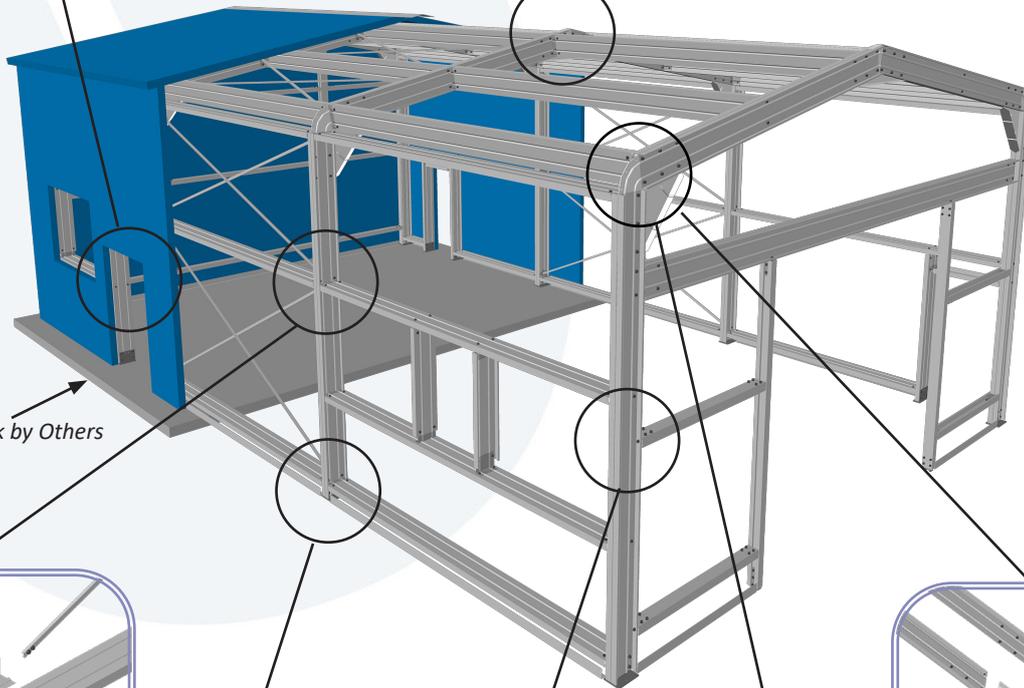
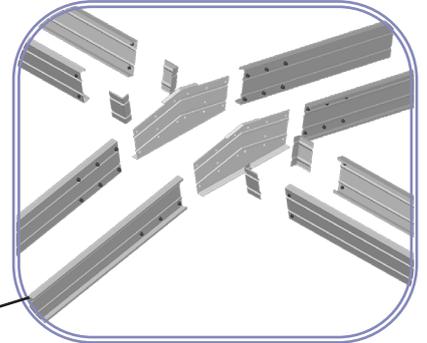
Typical Frame Types



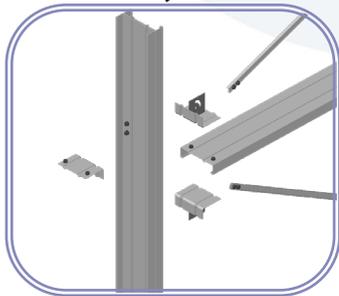
Personnel Door Opening



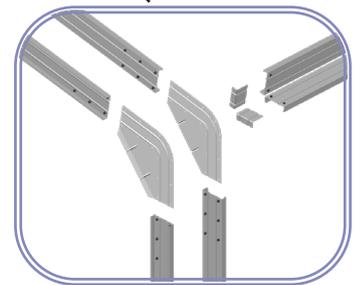
Typical Apex Arrangement
available in: 5°, 10° and 15° Pitch



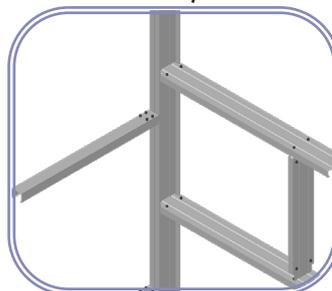
Building Work by Others



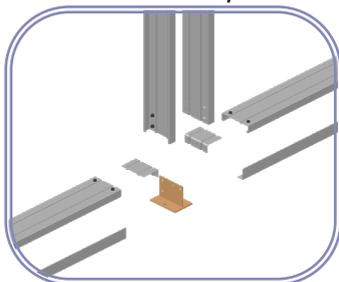
Generic Brace Detail:
Bracing near and Far Side or Plate



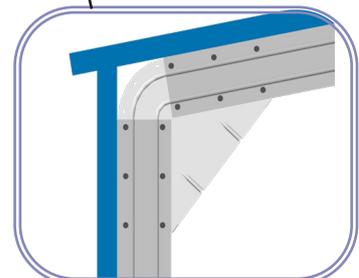
Typical Eaves Arrangement
available in: 5°, 10° and 15° Pitch



Generic Side Rail Detail:
Connection between Rails and Frame



Standard Base



Typical Eaves Detail
(Cladding by Others)



Design Standards

Steelwork: Complies with BS5950: Part 5: 1998
Industrial Imposed Loading: BS6399: Part 3: 1988
Wind Loading: Complies with BS6399: Part 2: 1997

Boundary condition design is in accordance with the recommendations in the Steel Construction Institute's, "Single Storey Steel Framed Buildings in Fire Boundary Conditions SCI P313". Design assumptions were verified by full scale frame load test carried out by the University of Salford, Department of Civil Engineering.

Materials

SwageBeam Section: S450GD+Z275 N-A-C to BS EN 10346
SwageBeam Cleats: S450GD+Z275 N-A-C to BS EN 10346
SwageBeam Eaves & Ridge Brackets: S280GD+Z275
Base Plates: Grade DD11 Steel to BS EN 10111 hot dip galvanised after fabrication to BS EN ISO 1461

Site Storage & Handling

On delivery to site, handling and storage become the responsibility of the purchaser or their agent. Loading and offloading by crane or fork-lift should be carried out with care, using soft slings only.

The materials should be stored on a firm, dry, even base protected from the weather, accidental damage, theft and moisture.

If indoor storage is not available, a temporary tarpaulin covered scaffold should be erected with sufficient space left around the materials to allow air to circulate. The materials should be laid with a slight fall, so that any moisture present can drain away. Inspection of stored materials should be made on a regular basis.

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Design & Estimating Service

Below is a list of services and standard components that make up a SwageBeam™ building frame package:

Quotation

Free design and estimating service tailored to suit each individual building, thereby ensuring that we always offer the most economical solution.

Calculations

Upon receipt of order, full structural calculations including foundation loads are produced ready for Local Authority submission.

Drawings

CAD frame layout drawings, marked up and showing relevant assembly details are provided.

Frame Supply

The manufacture and supply of all cold formed frame components, cut to length and identified with inkjet marking and pre-punched ready for assembly, including appropriate fixings. Frameworks for door and window openings can be supplied to customer's requirements.

Nothing in this manual represents a performance warranty with agreed durability. The building designer is responsible for assessing the suitability of the product for their intended application, taking into account local environmental conditions.

Since our policy is one of continuous product development, Ayrshire Metals Limited, reserve the right to revise the information shown without notification.

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LIGHT STEEL FRAME
ASSOCIATION
MANUFACTURING MEMBER

