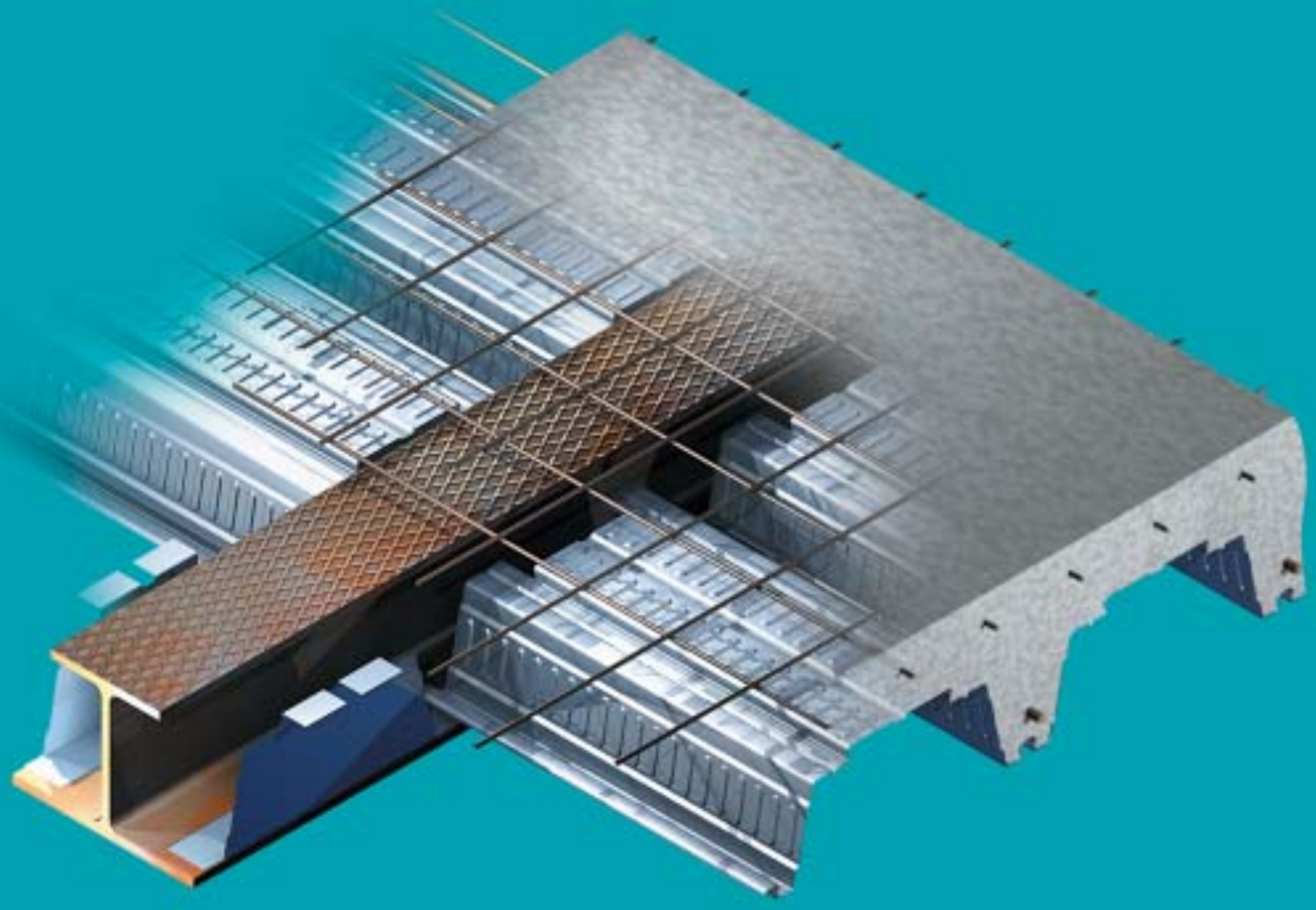
Slimdek®

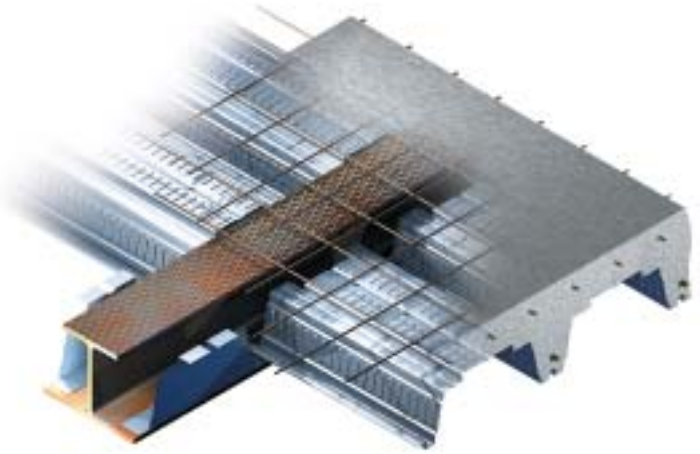
Engineered Flooring Solution



Minimum height with maximum performance. Slimdek® - the engineered floor solution from Corus

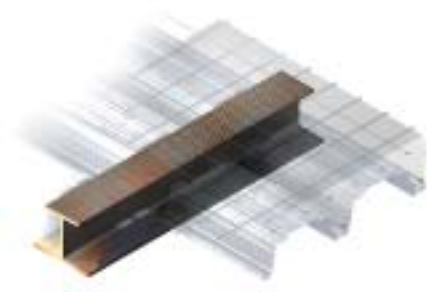
Corus Construction Centre offers a free advice service to clients, project managers, designers and contractors.
Telephone the advice line on +44 (0) 1724 405060.

A Slimdek® design and construction manual, together with a software suite is available free of charge.
Telephone the literature line on +44 (0) 1724 404400.



Slimdek® is an engineered building solution developed to offer a simple cost-effective minimal depth floor for use in multi-storey steel framed buildings with grids up to 9 x 9m.

Slimdek® comprises 3 main components:



ASB and ASB(FE) - Asymmetric Beams
A wide range of hot rolled sections in S355 steel, nominally 280 to 300mm deep with a 190mm wide embossed top flange and 300mm wide bottom flange capable of spans up to 9m. ASB(FE) are engineered sections with a thick web that offer optimised efficiency at both the normal design state and at fire limit state. ASB rolled with a thinner web is economical where up to 30 minutes fire resistance is required or where passive fire protection is needed for more than 60 minutes fire resistance.

SD225 Decking
A 225mm deep x 1.25mm thick galvanised cold rolled steel deck profile capable of spanning up to 6.5m un-propped (dependant on slab weight) and 9.0m propped. SD225 is the standard deck profile for Slimdek®. The profile has a re-entrant shape in the crest that provides both a service and ceiling fixing. Profiled galvanised steel edge trim and end diaphragm pieces are site-fixed using readily available self-drill self-tap screws, or shot fired nails.

RHSFB - Rectangular Hollow Section Fabricated Beam
The RHSFB is a hot rolled rectangular hollow section fabricated with a plate welded to the underside to provide a support shelf. The section has excellent torsional properties making it ideally suitable for its use as an edge beam where the outer face of the RHS can facilitate direct attachment of the cladding. Using an RHSFB around the perimeter of the slab maintains the minimal floor depth.

Slimdek®

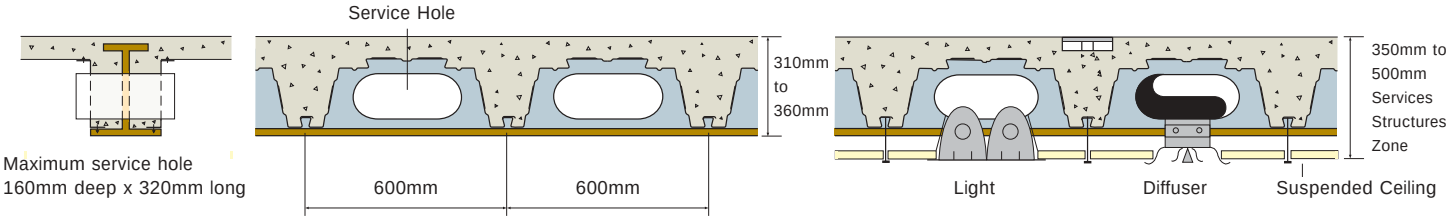
Millennium House - Aylesbury

A proven engineered building solution that has been used in the following applications:

Hospitals
Hotels
Leisure and recreation
Offices
Renovation
Residential
Retail
Retained façade buildings
Schools

Slimdek® offers key benefits for clients, project managers, designers and contractors:

Minimal structural depth
Fast construction with minimum waste
Composite action without shear studs
Elimination or reduction of fire protection
Reduction of cladding and services costs
Flexible services integration and easier fixing
Obstruction-free soffit



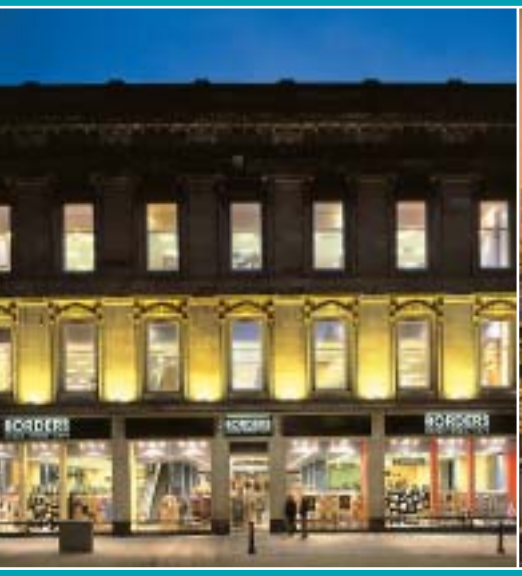
Innovation Centre - Berlin

Steward House - Guildford

Rochdale Infirmary

St. Aloysius School - Glasgow

The Village Hotel - Coventry



Borders Book Store - Glasgow

BMW Dealership - Hailsham

Slimdek®

has several features that offer significant advantages to the specifier.

Service integration

A continuous horizontal service duct 160mm deep x 320mm long can be accommodated within the depth of Slimdek® in the space between the ribs and by penetrating the ASB web with circular or elongated openings. Larger services, if needed, may be run unobstructed underneath the ASB. Integrating and layering services provide conflict-free crossovers, whilst minimising the structure-services zone and building height. Vertical ductwork and pipes can penetrate through openings up to 400mm wide x 1000mm long without the need for special strengthening.

Placing electrical services within the top surface of the slab can eliminate the need for costly raised floors.

Composite action without shear stud connectors

A major advantage has been validated through extensive testing at City University, London. The tests demonstrated that as little as 30mm concrete cover to the top flange provided sufficient shear bond to eliminate the need for welded shear studs.

Savings in fabrication costs

ASBs are rolled asymmetric sections readily available from a regular rolling programme. The cost of welding shelf plates to the underside of beams is eliminated.

Fire resistance

Slimdek® can eliminate the need for passive fire protection giving savings in cost and programme time. ASB(FE) without web openings has 60 minutes inherent fire resistance due to the partial encasement of concrete around the section. For fire resistance periods greater than 60 minutes and also for beams with web openings, the exposed ASB bottom flange requires protection. This can be achieved through the simple application of a board, spray or intumescent coating. The SD225 deck can achieve up to 120 minutes fire resistance due to the reinforcing bar placed in the ribs. For 60 minutes fire resistance, the minimum insulation depth of concrete over the crest of the deck is 60mm for lightweight concrete and 70mm for normal weight concrete. RHSFB can achieve 60 minutes fire resistance without protection to the bottom plate. The bare outer face of the RHS is fire protected by fire stopping for compartment control.

Fire resistance of Slimdek® components can be checked using the Slimdek® software suite (available free of charge).

Thermal capacity

The profile of the deck and thermal capacity of Slimdek® provide simple options for natural ventilation, night time cooling and air circulation within the profiled ribs. Enhanced systems such as Airdek™ and Airflor™ can improve performance significantly, reducing reliance on mechanical services and operational energy requirements.

Other publications

1. Lawson R. M., Mullett D. L. and Rackham, J. W. Design of Asymmetric Slimflor Beams using Deep Composite Decking, The Steel Construction Institute Publication SCI-P-175, 1997.
2. Mullett D. L. Design of RHS Slimflor Edge Beams, The Steel Construction Institute Publication, SCI-P-169, 1997.

Note: Electronic copies are included in the Corus Construction Manual CD-ROM which is available free of charge from the Corus Construction Centre.

Photography: Keith Hunter and Charlotte Wood.

Corus Construction Centre

Corus Construction Centre provides free technical and commercial advice to help specifiers acquire best practice in design and construction using steel and aluminium. Experts with in-depth knowledge and experience in civil, structural and building design staff the centre to help speed the design process, facilitate innovation and encourage an integrated approach. Corus Construction Centre is directly linked to Corus offices around the world to give rapid sales and technical support at a local level.

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