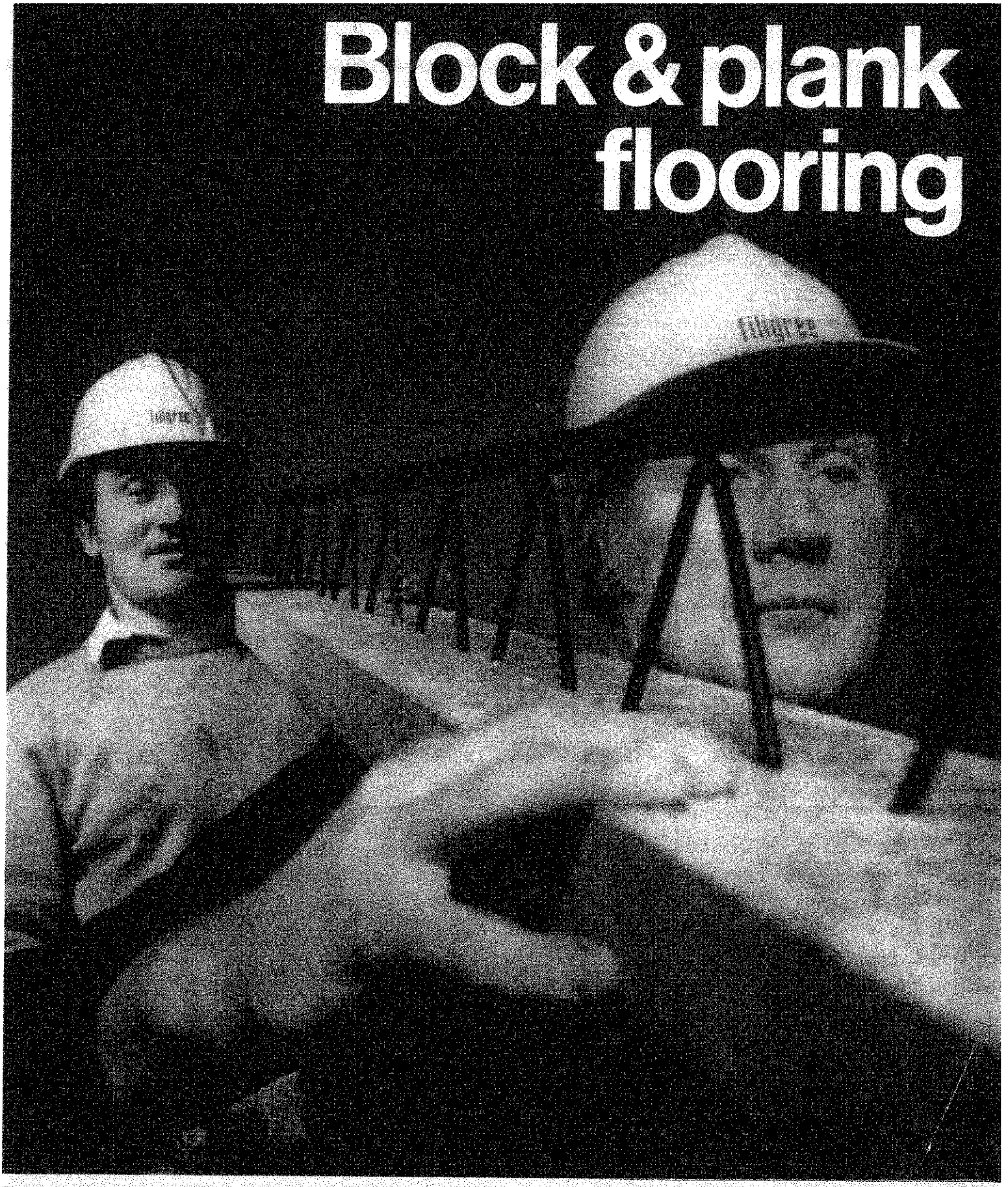
Block & plank flooring



filigree

flooring systems

STRESSLINE

Stressline Limited,
Stoney Stanton, Leicester LE9 6LX.
Tel: 045-527 2457

Filigree Block and Plank flooring has been proved in use over many years. It's continuing success has led to widespread and increasing use throughout Europe. Millions of square metres of Filigree Block and Plank flooring have been successfully constructed in Germany, France, Austria, Italy, Spain and the United Kingdom.

The composite floor construction combines a precast plank reinforced with the patented Filigree girder with in-situ compression concrete. The advantages of precast and in-situ construction are thus brought together with speed and simplicity.

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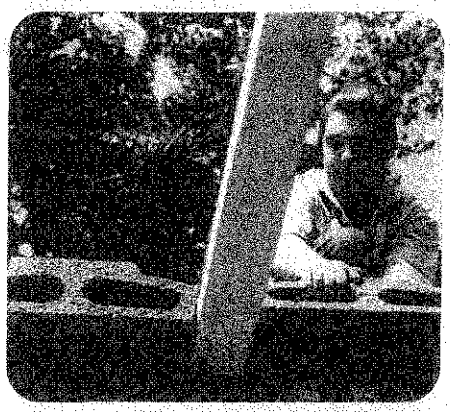
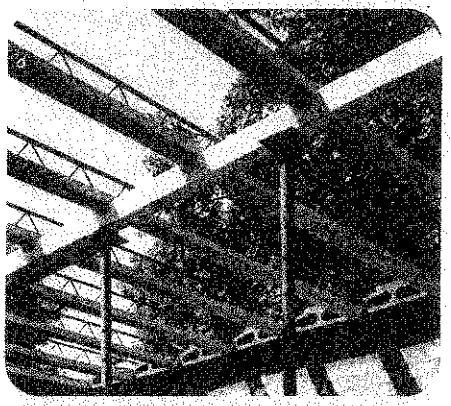


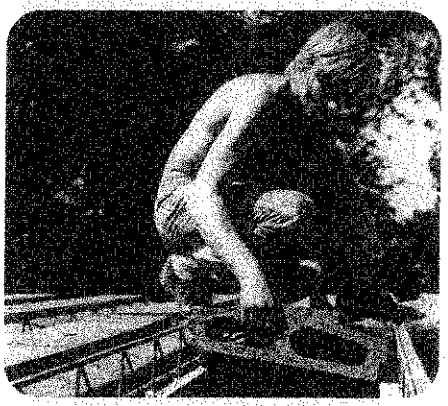
Setting Out

The Filigree planks are placed in position between the supports at approximately 600mm (2'0") centres. Accurate spacing is then carried out by placing a hollow block between each end of adjacent planks.



Temporary Propping

Spans of up to 2m (6'6") normally require no propping. Using the deepest girder type, greater unpropped spans are possible. Before laying the hollow blocks to larger spans, temporary props and bearers with adequate base support are required.



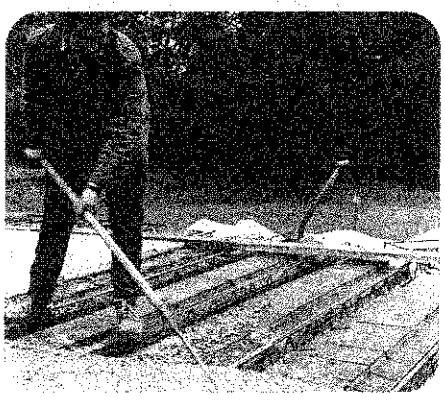
Laying

The infilling of hollow blocks is now completed as shown on the engineers details. Solid tray tiles and stop ends are available for special cases. At this stage any additional reinforcement required by the engineer in make up strips etc. can be fixed.

Concreting

The pouring should be carried out either by crane and concrete skip or by hoist and barrow run. It is important to avoid excessive or impact loading on the planks or infill blocks: The concrete skip should never be lowered onto the FILIGREE deck. If using barrows, boards should be laid as a barrow run.

The concrete used should utilise coarse aggregate not exceeding 10mm in size and have a guaranteed 28 day cube strength of 25N/mm^2.



Compacting & Finishing

After vibrating the concrete is brought to a rough level. A simple tamped finish is then normally adequate to receive the specified floor or roof finish. On floors with a minimum of 75mm of structural topping it is possible to power float the surface to take carpet or any other suitable finish direct.

Alternatively, the concrete, trowelled to level, can be finished by power grinding after it has cured sufficiently, to provide a similar result.

Floor Design

Filigree floors are designed in accordance with C.P. 114: Part 2: 1969 and C.P. 116: Part 2: 1969 or C.P. 110: Part 1: 1972. An extensive list of computer calculated load tables are available on request from Filigree Limited or your local concessionaire.

The Filigree system is extremely versatile and is readily adaptable to suit individual design considerations of loading, span, openings etc. The spacing between the planks allows maximum design latitude for service holes etc. The finished structural floor comprises a series of parallel reinforced tee ribs. On all floors without topping or on heavily loaded floors with topping it is recommended that a transverse rib is formed at approximately 3.0m (10'0") centres to utilise fully the monolithic character of the floor. This can conveniently be done using a row of tray tiles. The composite nature of the Filigree system makes integration with special features such as cantilever balconies, a relatively simple matter. In cases where a cantilever has a common soffit with the Filigree floor and spans parallel with the girders there is sometimes sufficient reinforcement in the top chord of the girder to support the cantilever moment, otherwise additional steel must be provided to resist these moments.

In buildings over four storeys the Filigree system can greatly simplify the work required to comply with Regulation D19 of "The Building Regulations 1972".

Your local concessionaire or Filigree Limited will be only too pleased to advise you on any specific design problem you face, or if required will provide you with a comprehensive design service through the medium of their fully qualified Design Engineers.

Fire Rating

Strict factory control ensures accurate positioning of the girders in a plank of at least grade C concrete in accordance with Table 1 CP 116: Part 2: 1969.
The minimum cover used in all production floors is 20mm and on all floors where a non-combustible finish is applied on either the top surface or soffit of the structural floor the fire ratings shown will be improved. Yet considering the structural floor alone, Block and plank floors provide the following fire ratings:

Structural Topping	Fire Resistance
None	At least 1 hr.
30mm	At least 2 hrs.
50mm	At least 4 hrs.*

*For 4 hr. rating the concrete cover to the main girder reinforcement must be increased to 25mm (1").

Sound Insulation

Block and plank floors provide good sound reduction between dwellings and generally only require the provision of any one of the finishes set out in Specification 2 of Part II of Schedule 12 of "The Building Regulations 1972" to comply with regulation G3 of the same.

Thermal Insulation

Roofs:

Block and plank construction provides good thermal insulation. Compliance with regulation F3 of "The Building (Second Amendment) Regulations 1974" can be effected by the application as specified in Table 5 of any one of the applied finishes set out in columns 2f or 2g of Table 6 of Schedule 11 of the same regulations.

Floors:

Where the underside of a floor is permanently exposed to the air, compliance with regulation F3 of "The Building (Second Amendment) Regulations 1974" can be effected by the application as specified in Table 3 of any one of the applied finishes set out in columns 2a or 2b of Table 4 of Schedule 11 of the same regulations.

Supply and Delivery

Filigree planks are supplied in bespoke lengths, stacked and labelled for immediate placing on the job. Except on small jobs the necessary light weight blocks are supplied separately. In most cases these can be supplied banded on self unloading vehicles.

Delivery requirements can be promptly met through a network of manufacturing licensees. Factory control ensures accurate positioning of the girder reinforcement in the planks and allows the use of high quality concrete.

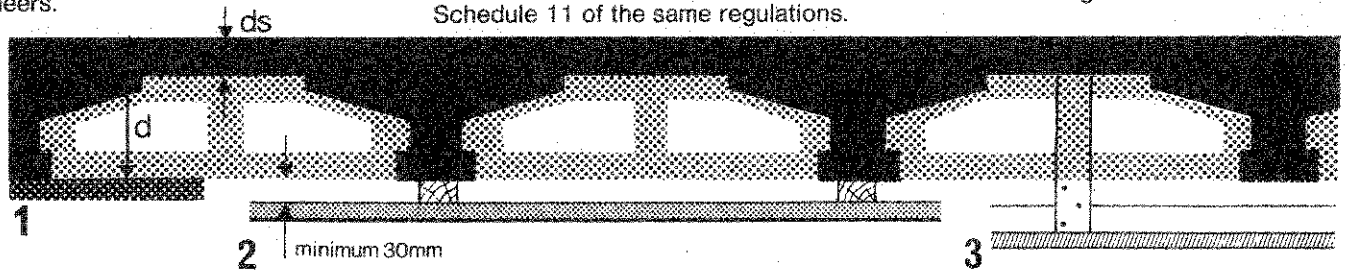
Erection

Every component of the Filigree system is capable of being handled by one or two men. Shuttering is eliminated since the Filigree plank provides a positive positioning for the infill blocks. Once laid and propped these provide a firm working deck to support the insitu concrete. This concrete bonds the Filigree girders into the completed floor, thus allowing it to act in a monolithic manner normally only associated with insitu construction. For detailed erection procedure reference should be made to the 'Filigree Block and Plank Users Guide' which is available on request from Filigree Limited or from your local concessionaire.

Floor Type

Specific types of Filigree floors are denoted by a seven or eight digit sequence of numbers which show the overall depth 'd' of the floor, the minimum thickness of insitu concrete 'ds', and the overall spacing of the Filigree planks 'b', thus: d/ds/b.

Example:
A 250mm deep Filigree floor comprising 200mm hollow blocks supported on Filigree ribs at 600mm centres and supporting a 50mm structural topping would be designed as a 250/50/600 floor.



Ceiling finish

A variety of ceiling finishes can be applied to the soffit of a Filigree floor.

1. The Filigree hollow blocks and planks provide a flat soffit which forms an ideal key for the direct application of plaster.
2. Notched timbers can be placed between blocks onto which plasterboard can be fixed directly prior to skimming. Alternatively a 25mm x 15mm batten can be cast into the soffit of the Filigree plank.
3. At the time of erection various types of ceiling hangers can be inserted at regular centres between the Filigree blocks to allow the fixing of any type of suspended ceiling.

Since Filigree floors are not a prestressed form of flooring they do not suffer from the problem of differential cambers between adjacent ribs.

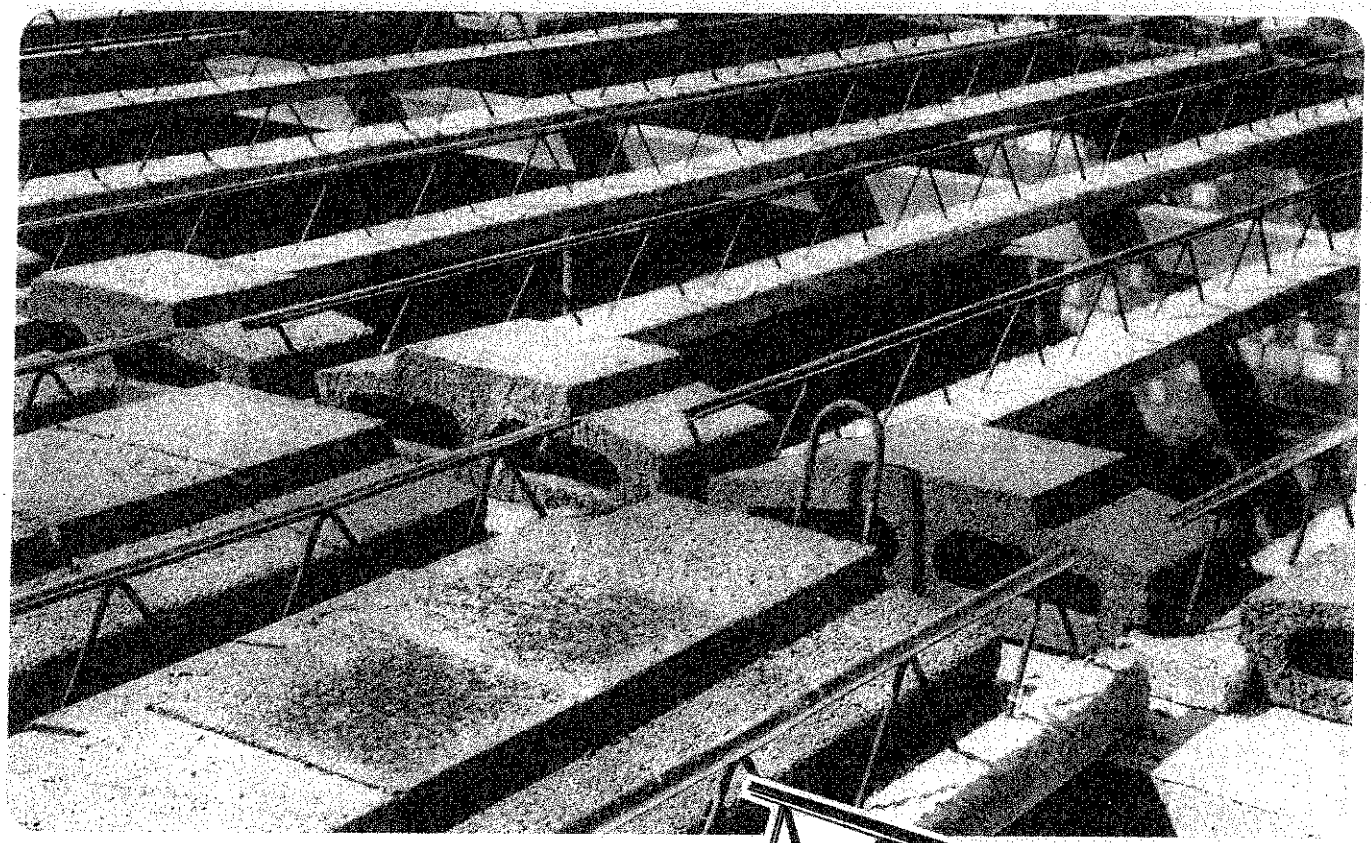
Floor Load/Span Guide

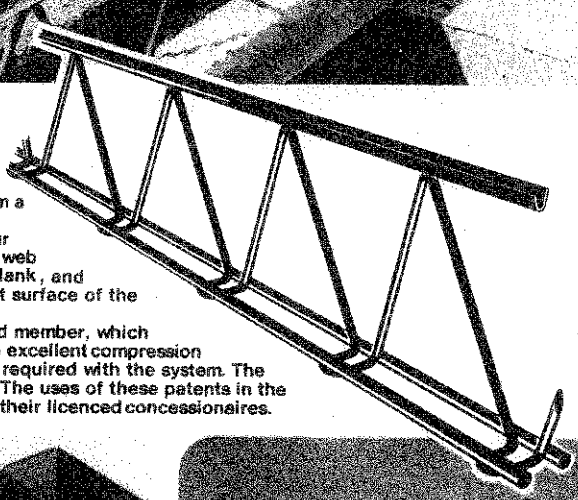
Structural Floor Depth in mm.	Suggested Economical max. span and floor type dependent on floor use.		
	Domestic (1.50kN/m²)	Commercial (2.50kN/m²)	Industrial (5.00kN/m²)
150	150/0/600 4.05	150/0/600 4.00	150/0/600 3.80
200	200/0/600 5.30	200/0/600 5.20	200/50/600 5.20
250	250/0/650 6.60	250/0/650 6.40	250/50/600 6.70
300	300/0/650 7.70	300/0/650 7.30	300/50/650 7.40

Note: (1) In addition to superimposed loading specified an allowance of 1.50kN/m² for finishes has been made in each instance. A further allowance of 1.00kN/m² has been made for possible light weight partitions in the domestic and commercial cases.

(2) The spans shown have been calculated on the basis of simply supported conditions. Spans and loads in excess of those shown can be achieved by using multiple girders and/or in certain cases by introducing continuity reinforcement at the supports.

Designed and Produced by
Carter Matanle, Rubel and Barton Ltd.





THE GIRDER

The strength of these floors lies in the patented all welded Filigree girder, which is produced automatically by a continuous process, from a feed of coiled rod and strip. The main bottom chord reinforcement members are manufactured in a range of sizes from 6–16mm. The four point resistance welded connection between these members and the web diagonals provides unrivalled bond between reinforcement and the plank, and ensures adequate shear resistance to the forces acting at the contact surface of the plank and the insitu concrete.

The web diagonals in turn are simultaneously welded to the top chord member, which consists of steel strip formed into a trough section. This provides the excellent compression flange to the girder, thus reducing the amount of temporary propping required with the system. The girder and production process are protected by international patents. The uses of these patents in the U.K., Isle of Man and Eire is granted exclusively by Filigree Limited to their licenced concessionaires.