

FIELDERS FACT FILE

FILE REFERENCE NUMBER: F.3.6A /// APR 2018

FIRE DESIGN OF FIELDERS SLIMFLOR® CONSTRUCTION (BEAMS)

This fact file assists designers with designing their Asymmetric Steel Beams for fire conditions. When undertaking a fire design for a SlimFlor® design both the slab and beam sections need to be considered. This fact file discusses the fire rating of the Asymmetric Steel Beams, for details on fire rating the SlimDek 210™ slab refer to Fielders Fact File F.3.6b.

FIELDERS SLIMFLOR®

SlimFlor® utilises Fielders SlimDek 210™ flooring profile in conjunction with Asymmetric Steel Beam Sections (ASB) to provide a floor system with a reduced construction zone. It does this by combining the floor slab and supporting structure in the same plane, providing a lightweight, versatile, long spanning floor system.

ASYMMETRIC BEAMS

Due to the nature of the SlimDek 210™ resting on the bottom flange of the ASB and encasing the beam in concrete (leaving only the underside of the bottom flange exposed) the beam is provided with a degree of fire protection. This level is detailed in the *Fielders Fact File F.3.5 – Asymmetric Beams for SlimFlor® Construction*. To achieve higher levels of fire protection the bottom flange can be painted with an intumescent paint or covered with fire rated boards or vermiculite sprays. Specifications for the paint are detailed below.

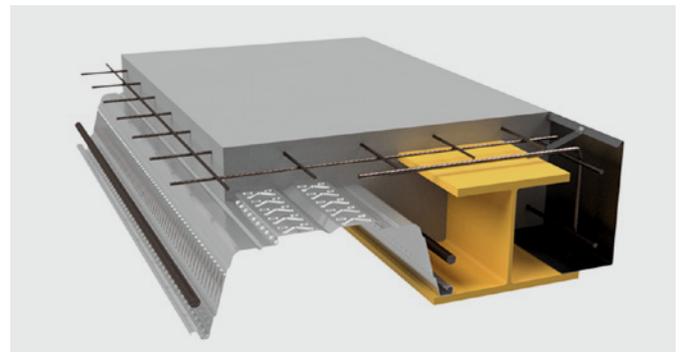


Figure F.3.5.1 Fielders SlimFlor®

SPECIFICATION, CERTIFICATION AND WARRANTY REQUIREMENTS FOR AKZONOBEL INTUMESCENT PAINT

- All materials, primer, intumescent, topcoat shall be obtained from one manufacturer AkzoNobel – International Paints
- The intumescent coating shall have been tested and assessed to the requirements of AS 1530.4 and AS 4100.
- The intumescent coating shall have 3rd Party Certification (i.e. Certifire, LPCB).
- All materials used shall be documented in the independent NATA laboratory assessment (i.e. BRANZ, Exova etc).
- A 10 year warranty is offered in consideration of the durability guidelines in AS2312.

APPLICATOR AND APPLICATION REQUIREMENTS

- There must be a documented audit trail to record the installation of the intumescent coating. This must be registered with the building owner and paint supplier.
- Applicators must be able to demonstrate competence and experience in the application of intumescent paints.
- Application of all materials should be as per the manufacturers technical data sheet and application guidance notes.

SURFACE PREPARATION

- Abrasive blast clean to Sa2.5 (ISO 8501-1:2007) or SSPC-SP10. If oxidation has occurred between blasting and application, the surface should be re-blasted to the specified visual standard. Surface defects revealed by the blast cleaning process, should be ground, filled, or treated in the appropriate manner.
- A sharp, angular surface profile of 50-75 microns (2-3 mils).
- All corners, edges should have a 2mm radius.
- Stripe coats should be applied to all welds, lap joints, plate edges, corners, sharp edges, and any other areas.
- All surfaces should be clean dry and free from any contamination prior to painting.

COATING SYSTEMS

Internal dry atmosphere steelwork (C1 or C2) – up to 120 minutes

Intercore 200 – 75 microns dft (shop application)

Interchar 1260 – dft as per section size (site application)

Interthane 870 – 75 microns dft per coat (site application)

Internal C3 environments should have 2 coats of Interthane 870 applied

PRODUCT DESCRIPTIONS

Intercore 200 - Epoxy Zinc Phosphate primer

Interchar 1260 – Water based Acrylic Intumescent

Interthane 870 – Semi gloss polyurethane topcoat

TABLE F.3.6.1

Steel thickness Single sided plate protection	HpA	CCT Deg C	Interchar 1260 mm dft 60/-/-	Interchar 1260 mm dft 90/-/-	Interchar 1260 mm dft 120/-/-
10 mm	100	620	0.28	0.59	0.90
12 mm	84	620	0.23	0.52	0.80
14 mm	71	620	0.20	0.49	0.77
10 mm	100	650	0.24	0.53	0.83
12 mm	84	650	0.20	0.47	0.74
14 mm	71	650	0.20	0.42	0.71
10 mm	100	700	0.20	0.46	0.73
12 mm	84	700	0.20	0.40	0.65
14 mm	71	700	0.20	0.36	0.62
10 mm	100	750	0.20	0.39	0.64
12 mm	84	750	0.20	0.34	0.57
14mm	71	750	0.20	0.30	0.55

Any plate greater than 14mm in thickness will use the same data as 14mm.

SERVICE PENETRATIONS

Integration of services can be achieved by providing an opening through the beam midway between the ribs of the SlimDek 210™ decking. The size and location of the web openings must meet the following requirements;

- Elongated openings up to 160 mm deep by 320 mm long centrally between the ribs over the middle half of the beam span, but not within 1500 mm from the supports.
- Alternatively, provide circular openings up to 160 mm diameter, but not within 1000 mm from the supports.

To offer fire protection through the void a fire collar can be placed around the pipe as shown in Figure F3.6.2.

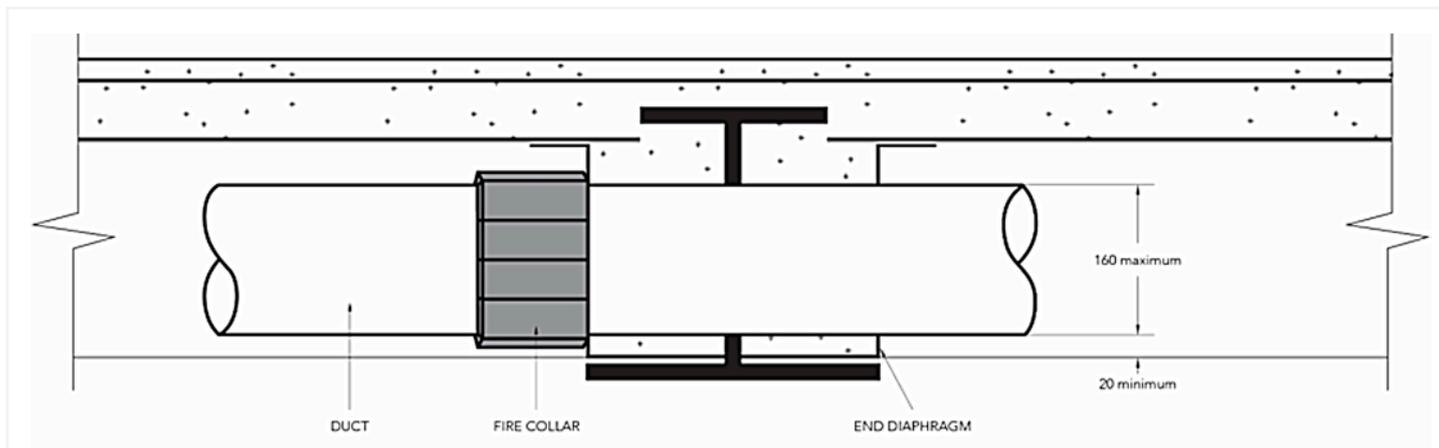


Figure F.3.6.2 Fire collar on service penetration through beam

PLEASE CHECK WITH FIELDERS THAT YOU HAVE THE CURRENT FIELDERS FACT FILE FOR THIS TOPIC.

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REFERENCES;

- Fellinger, J.H.H & Twilt, L, Fire behavior of long span composite floor, Fire Safety Science – Proceedings of the 5th International Symposium, pp1093-1104, 1997.
- Booth, C., Fellinger, J.H.H & Twilt, L, Shallow floor construction with deep composite deck: from fire tests to simple calculation rules, HERON, Vol. 42, No. 3, 1997.

The product information presented in this brochure is intended as a guide only. It is recommended that you obtain qualified expert advice when seeking confirmation of product application. More comprehensive information can be sourced from your local Fielders' Technical Representative.

