

Technical Information Sheet

Upgrading the Fire Resistance Performance of existing concrete using FireKem FP-900

INFORMATION

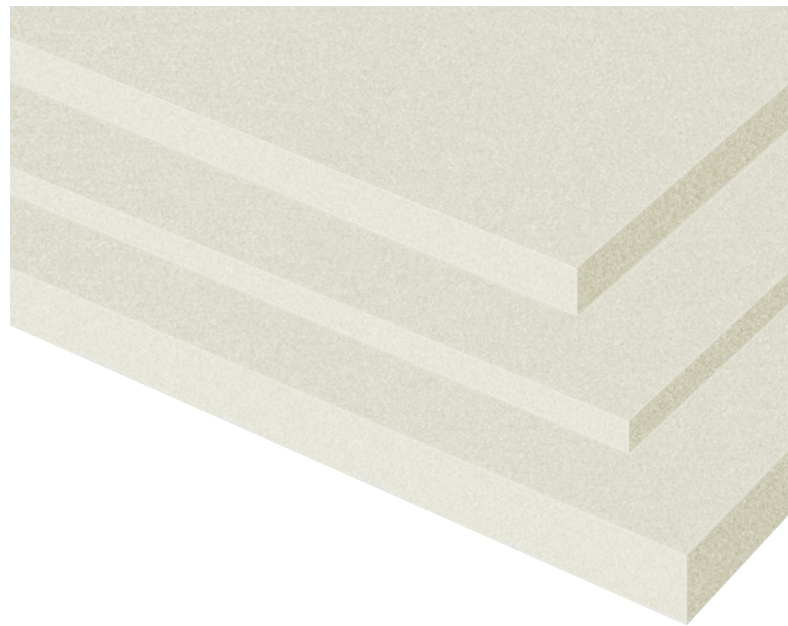
Upgrade the fire resistance performance of existing concrete floors, walls, columns and beams for up to 4 hours, in terms of the loadbearing capacity, integrity and insulation criteria of BS 476: Part 21: 1987, with the application of FireKem FP-900 in various thicknesses to the exposed areas of the concrete, in accordance with Exova Warrington WF Assessment Report No. 348965

It is assumed that the existing concrete beam, column, floor or wall assemblies are designed in accordance with the requirements of BS 8110 and that the construction and loading of these elements comply with that standard.

The additional protection to the exposed areas of concrete to compensate for deficient concrete thickness and/or cover to the main steel reinforcement is provided by FireKem FP-900. The deficiency in concrete thickness and/or cover to the main steel reinforcement is determined by reference to BS 8110: Part 2, Tables 4.2 to 4.6 for the relevant type of construction.

The thickness of the FireKem FP-900 board required to upgrade the beam, column, floor or wall is calculated by a factor that has been determined by assessment from data obtained from a fire test, and set out in Exova Warrington WF Assessment Report No. 348965. The board is applied to the soffit of the floor slab or to the side of exposed beams, columns or walls. The board may be applied in one or multiple layers.

Before the additional protection is applied, any locations where the concrete is missing, should be repaired with a proprietary concrete product designed for this purpose for fire rated concrete assemblies.



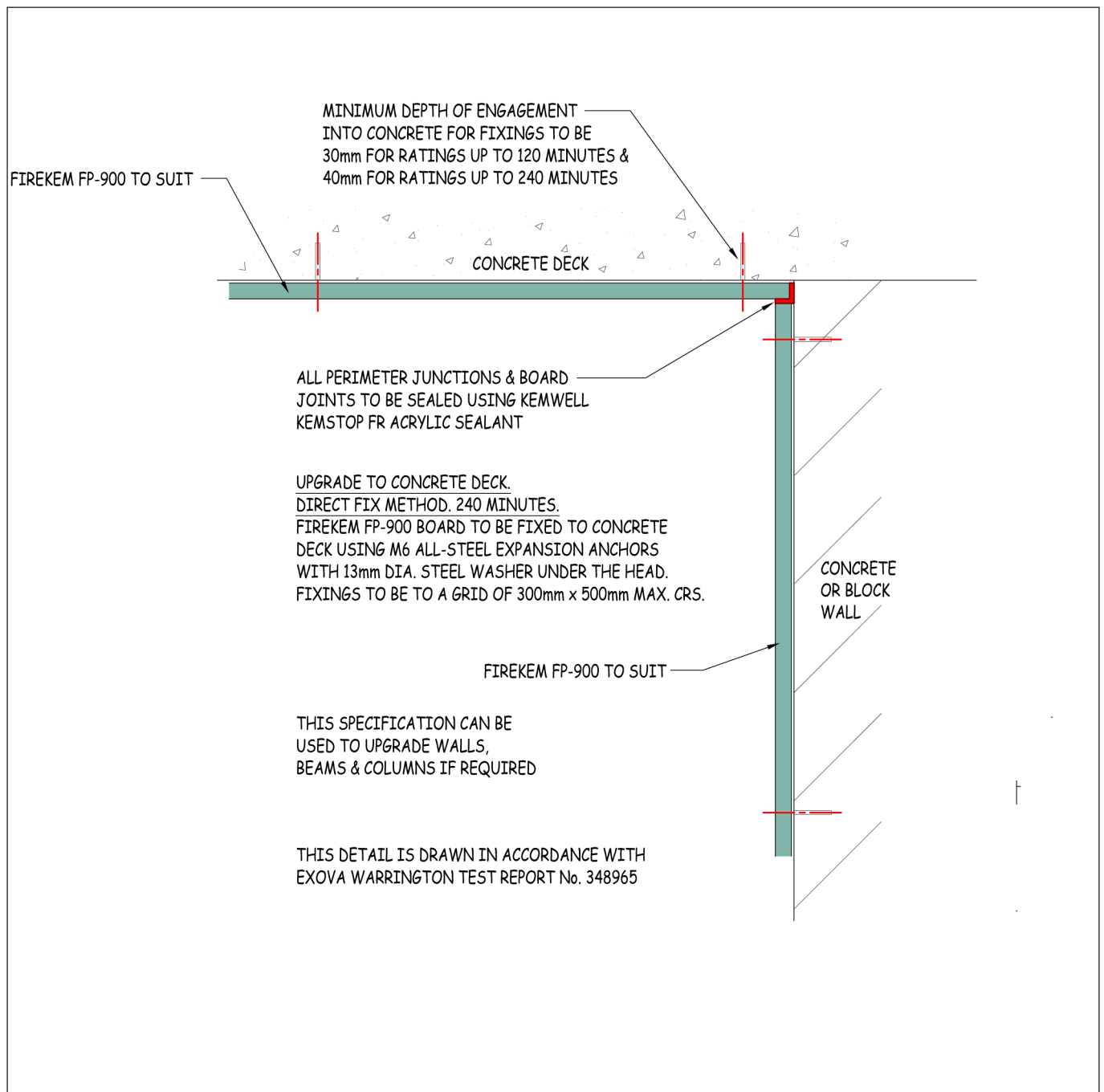
Fixing Method 1 - Direct Fix

The board is fixed directly to the concrete with minimum M6 all-steel masonry/concrete expansion anchors, each fitted with a minimum 13mm diameter steel washer under the head.

The minimum depth of engagement of the anchors into sound concrete is 30mm for fire ratings up to 120 minutes and 40mm for fire ratings up to 240 minutes. Board joints are tight square butt joints.

The anchors are located at a nominal distance of 100mm from the board edge and in a grid with a maximum spacing of 500mm.

Where the board is fitted in more than one layer, the board joints are staggered between layers. All edges and junctions are sealed using **KemStop FR Acrylic sealant**.



Fixing Method 2 - Channel Fix

Steel top-hat sections are fastened to the concrete at 600mm maximum centres. The minimum section dimensions are 50mm web x 30mm flanges x 15mm lips. The minimum thickness of the section is 0.5mm for fire ratings up to 90 mins., 0.6mm for fire ratings up to 120 mins. and 0.8mm for fire ratings up to 240 mins.

The top-hat sections are fastened to the concrete with M6 all-steel masonry/concrete expansion anchors at 400mm maximum centres. The minimum depth of engagement of the anchors into sound concrete is 30mm for fire ratings up to 120 mins. and 40mm for fire ratings up to 240 mins. At the longitudinal corners of beam and column protections, the top-hat sections are connected with longitudinal steel angles, minimum 30 x 30 x 0.5mm thick, which are fastened to the top-hat sections with steel rivets or self-tapping screws.

The FireKem FP-900 board is fastened to the web of the top-hat sections and to the angles, with minimum M3.5 steel self-tapping screws at 200mm nominal centres. All screws are positioned nominal 12mm from board edges and 40mm from board corners.

Board joints parallel with the top-hat sections must coincide with the sections. Board joints are tight square butt joints. Where the board is fitted in more than one layer, the board joints are staggered between layers. All edges and junctions are sealed using KemStop FR Acrylic sealant.

For the appropriate board thickness to provide the required level of fire performance, please provide the following information:

- Required level of fire performance
- Dimensions of structural element
- Depth of cover to main reinforcement

