Assessment Report :

Assessment of the fire performance of access panel systems

Assessment report number
CC 209947

BRE

Prepared for :

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Date :

22nd October 2002

Review date :

22nd October 2007

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Contents

1 Introduction

Two single-leaf, steel, access panels faced with plasterboard and ceramic tiles have been tested within a blockwork wall in accordance with BS476: Part22: 1987. Both panels opened towards the furnace and the plasterboard and ceramic tiles were on the fire side. At the end of the 90-minute test, both panels satisfied the integrity criterion of the standard. This report considers the effects of the panel systems being exposed to fire from the other side. The effects of changing the plasterboard for plaster are also considered.

2 Scope

This assessment covers the fire resistance of two access panels mounted in a blockwork wall, in terms of the integrity criterion of BS476: Part22: 1987, for fire exposure of up to 90 minutes from either face.

3 Supporting test data

3.1 BRE Test report FG7586

Two access panel systems were installed in a 150mm-thick aerated concrete blockwall. For ease of reference in this report, the access panel within the 610mm x 610mm structural opening is referred to as panel A and the access panel within the 610mm x 1810mm opening is referred to as panel B.

3.1.2 Access panel A

Access panel A consisted of a 1.5mm-thick Zintec steel recessed door tray, which was polyester powder-coated to Ral 9010 20% gloss. Pre-formed 1.5mm-thick top-hat section stiffeners were welded vertically at the sides of the access panel leaf and horizontally at the top, bottom and across the centre of the access panel leaf between the vertical stiffeners. The vertical top-hat section on the hinge side of the door was 90mm wide; all other sections were 40mm wide. All top-hat sections were 40mm deep. A 12.5mm-thick sheet of Gyproc Moisture Resistant Board was screwed into the recessed door tray using self-tapping screws. The door was hinged at the top and bottom, each hinge consisting of a 6mm-diameter steel pin inserted into a steel pin block with a locating fixing screw to the rear of the door to allow for the door leaf to be removed when necessary. The pin blocks at the top and bottom of the panel leaf were located within the vertical top hat stiffener at the left-hand side top of the door leaf.

A steel roller ball castor was positioned at the base of the hinged side of the leaf in order to allow a smooth opening action of the door.

The panel leaf locking mechanism consisted of two Dzus Touch Latches, one located 150mm from the top and one located 150mm from the bottom of the leaf.

3.1.2 Access panel B

Access panel B consisted of a 1.5mm-thick Zintec steel recessed door tray, which was polyester powder-coated to Ral 9010 20% gloss. Pre-formed 1.5mm-thick top-hat section stiffeners were welded vertically at the sides and horizontally at the top and bottom of the door tray. Two additional horizontal stiffeners were located 580mm apart, centrally between the top and bottom of the door. The vertical top-hat section on the hinge side of the door was 90mm wide; all other sections were 40mm wide. All top-hat sections were 40mm deep. A 12.5mm-thick sheet of Gyproc Moisture Resistant Board was screwed into the recessed door tray using self-tapping screws. The door was hinged at the top and bottom, each hinge consisting of a 6mm-diameter steel pin inserted into a steel pin block with a locating fixing screw to the rear of the door to allow for the door leaf to be removed when necessary. The pin blocks were located at the top and bottom of the leaf within the vertical top hat stiffener at the left-hand side of the door leaf.

A steel roller ball castor was positioned at the base of the hinged side of the leaf in order to allow a smooth opening action of the door.

The panel leaf locking mechanism consisted of three standard budget locks located near the top, centre and bottom of the access panel tray. These locks locate over the 20mm flange of the frame to hold the panel closed. The three budget lock holes in access panel leaf B were fitted with plastic dome plug inserts.

3.1.3 Panel frames

Both access panel frames were formed from 1.5mm-thick Zintec steel, polyester powder-coated to Ral 9010 20% gloss. The frames were a 95mm deep Z-section, consisting of a 25mm-wide front flange and a 20mm-wide rear flange, which locates against the exposed face of the wall.

Access panel frame A was held to the block wall using three 38mm-long, 6mm-wide RAWL plug toggle bolts each side and three across the bottom of the frame. The frame was secured to the lintel at the top of the aperture using two 55mm-long, 6mm-diameter medium weight RAWL bolts.

Access panel frame B was held to the block wall using five 38mm-long, 6mm-wide RAWL plug toggle bolts (at 400mm centres) each side and one at the bottom of the frame. Two 55mm long, 6mm-diameter medium weight RAWL bolts were additionally used at the bottom of the frame, and two at the top.

3.1.4 General

After fitting, the plasterboard on each panel was tiled with 147mm-square white ceramic tiles using Sealocrete ceramic wall tile fix & grout. The joints between the tiles on the access panels were also grouted with Sealocrete.

Following installation of both access panels, the joint between the access panel leaves and frame was filled with Evo-Stik Intucaulk intumescent sealant.

Further details of the specimen construction are given in BRE report FG7586.

3.1.5 Test results

The specimens when tested with the leaves opening towards the furnace, the tiled side being exposed to the furnace, were found to have the following fire resistance:

Access panel A – insulation 20 minutes, integrity 90 minutes (test terminated)

Access panel B – insulation 22 minutes, integrity 90 minutes (test terminated)

Access panels A and B deflected a maximum of 1.1mm and 8.4mm respectively towards the furnace. At the end of the test, panels A and B had deflected 1.0mm and 3.7mm respectively towards the furnace.

4 Description of proposed access panel systems

4.1 Access panels incorporating plasterboard

These panels will be identical to those tested as described in section 2 of this report.

4.2 Access panels incorporating plaster

It is proposed that all details of the two access panel systems will be the same as those tested except that the Gyproc Moisture Resistant plasterboard, 12.5mm thick, will be replaced with a suitable gypsum plaster applied using expanded steel lathing. The lathing will be secured to the steel tray of each access panel with suitable steel fixings, including steel washers, at maximum 300mm centres around the perimeter of each panel. There should also be a fixing in the middle of panel A, (610 x 610mm), and three fixings down the middle of panel B, (1810 x 610mm).

5 Assessment

Both access panels were tested opening towards the furnace with the plasterboard and ceramic tiles exposed to the fire. It can be assumed that plaster held with expanded metal lathing would perform in a similar manner to the plasterboard, as the lathing will retain the plaster in place. It is felt that the importance of the plasterboard or plaster is relatively small anyway, as the remaining construction is all steel, with no combustible components. Both specimens have Z-section frames, and use suitable steel hinges and latches or locks, thus ensuring that the integrity of the specimens will be maintained. Neither specimen deflected to any great extent and were held in position by two steel touch latches, (610mm x 610mm panel A), or three steel budget locks, (1810mm x 610mm panel B).

If the panels had been exposed to fire on the other side, the plaster on the unexposed face would retain the heat within the steel tray of each panel. This would ensure that the

temperature through the steel components would be distributed better and therefore create less bowing. On the other hand, as the steel components would reach a higher temperature than in the tested specimen, they would expand more and cause more bowing. As the panels are relatively small however, and they are well held by the locks and hinges, it can be assumed that the integrity of both panels systems would be maintained. Both the touch latches used in panel A, (610mm x 610mm), and the budget locks used in panel B, (1810mm x 610mm), are of steel construction and or of such a design that they would not become loose when exposed to fire.

With regard the insulation criterion of the standard, one can expect that the fire insulation period would be similar to that achieved by the plasterboard when the fire is on the plaster / plasterboard side. If the fire was on the other side, one can expect a longer insulation period to be achieved as the ceramic tiles and plaster / plasterboard would be shielded from direct exposure to the fire. However, without further test evidence it is not possible to assess how long this would be.

6 Conclusions

The two access panel systems tested in accordance with BS476: Part22: 1987, which comprised a steel tray faced on the fire side with plasterboard and ceramic tiles, and opening towards the furnace, achieved 90 minutes fire resistance in accordance with the integrity criterion of the standard. It has been concluded that the access panel systems would also achieve at least 90 minutes when exposed to fire from either side. In addition, if the plasterboard was replaced with plaster held in position using expanded steel lathing, that a similar fire performance would be achieved.

7 Validity of Assessment

7.1 Declaration by applicant

- We the undersigned confirm that we have read and complied with the obligations placed on us by the UK Fire Test Study Group Resolution No. 82 : 2001.
- We confirm that the component or element of structure, which is the subject of this assessment, has not to our knowledge been subjected to a fire test to the Standard against which this assessment is being made.
- We agree to withdraw this assessment from circulation should the component or element of structure be the subject of a fire test to the Standard against which this assessment is being made.
- We are not aware of any information that could adversely affect the conclusions of this assessment.
- If we subsequently become aware of any such information we agree to cease using the assessment and ask BRE to withdraw the assessment.

Signed: .....

For and on behalf of: .....

7.2 BRE declaration

This assessment is based on test data, experience and the information supplied. If contradictory evidence becomes available to the BRE the assessment will be unconditionally withdrawn and the applicant will be notified in writing. Similarly the assessment is invalidated if the assessed construction is subsequently tested since actual test data is deemed to take precedence over an expressed opinion. The assessment is valid for a period of five years after which it should be returned for review to consider any additional data which has become available or any changes in the fire test procedures. Any changes in the specification of the product will invalidate this assessment.

This assessment has been carried out in accordance with Fire Test Study Group Resolution No. 82. It relates to the fire performance of the product and does not cover aspects of quality, durability, maintenance nor service requirements. This assessment relates only to the specimen(s) assessed and does not by itself infer that the product is approved under any Loss Prevention Certification Board approval or certification scheme or any other endorsements, approval or certification scheme.

Next review date: 22nd October 2007

This assessment report is not valid unless it incorporates the declaration duly signed by the applicant.

==========REPORT ENDS==========