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Testing. Advising. Assuring.

Title:

The Fire Resistance Performance of Single-Acting, Single-Leaf, Panelled Timber Doorsets

WF Report No:

345423

Prepared for:

Rohden UK Ltd

Unit 2
Hayleys Manor Farm
Upland Road
Epping Upland
Essex
CM16 6PQ

Date:

2nd December 2014

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Executive Summary

Objective

This report presents an appraisal of the fire resistance performance of single-acting, single-leaf, panelled timber doorsets.

The proposed doorsets, which are described in the Proposals section of this report, are required to provide 30 minutes integrity and insulation performance if subjected to a fire resistance test in accordance with Clause 6 of BS 476: Part 22: 1987.

Report Sponsor

Rohden UK Ltd

Address

Unit 2
Hayleys Manor Farm
Upland Road
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CM16 6PQ

Summary of Conclusions

Should the recommendations given in this report be followed, it can be concluded that the proposed timber doorsets should provide at least 30 minutes integrity and insulation performance, if tested in accordance with Clause 6 of BS 476: Part 22: 1987.

Valid until

1st January 2020

Introduction

This report presents an appraisal of the fire resistance performance of single-acting, single-leaf, panelled timber doorsets, which are similar in construction to previously fire tested assemblies.

The proposed doorsets are required to provide a fire resistance performance of 30 minutes integrity and insulation, if subjected to a fire resistance test in accordance with Clause 6 of BS 476: Part 22: 1987.

FTSG

The data referred to in the supporting data section has been considered for the purpose of this appraisal which has been prepared in accordance with the Fire Test Study Group Resolution No. 82: 2001.

Assumptions

General Construction

It is assumed that the doorsets shall be constructed and installed in an identical manner to the previously fire tested doorsets described in this report, unless otherwise specified.

Supporting construction

It is assumed that the doorsets shall be installed within a fire rated supporting construction, which has separately proven to be capable of supporting the doorsets for the required period of 30 minutes

Clearance gaps

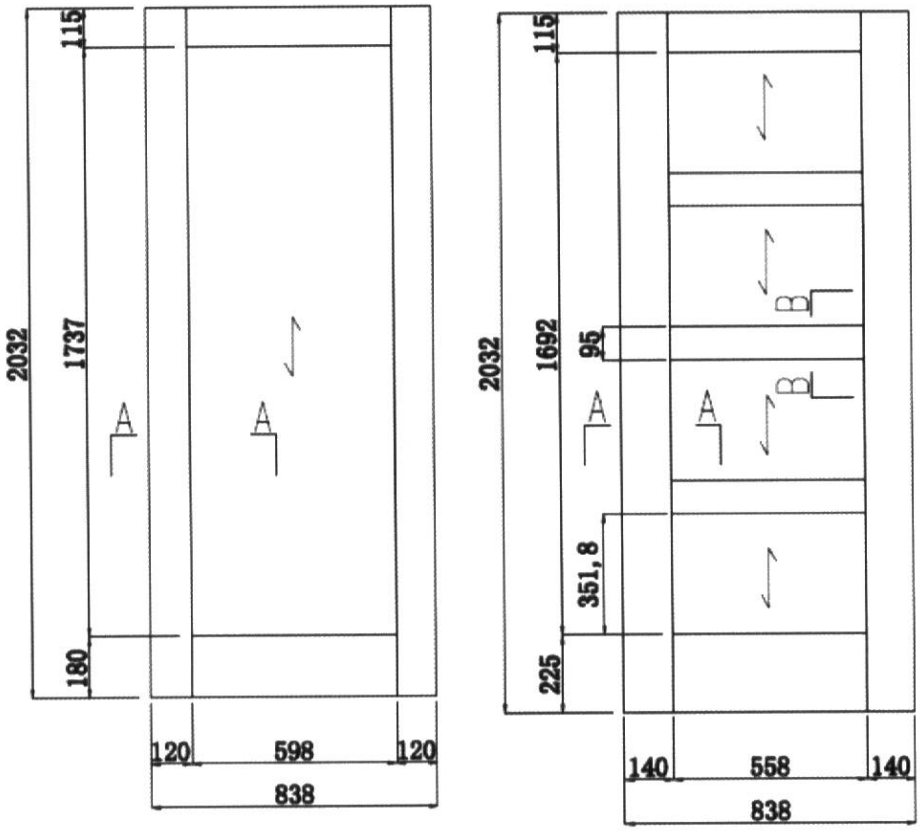
Door leaf to frame clearance gaps can have a significant effect on the overall fire performance of a doorset. It is therefore assumed that the leaf to leaf and leaf to frame clearance gaps will not exceed those of the fire tested assemblies, and in no case shall exceed 3 mm.

Proposals

WF Test Report No. 344527 describes a fire resistance test performed on two specimens of single-acting, single-leaf timber doorsets. The doorsets were of similar construction with the following exceptions:

Doorset A (Referenced Oxford-Test) incorporated a single panel design with 120 mm wide stiles, a 115 deep top rail and a 180 mm deep bottom rail.

Doorset B (Referenced Marlow) incorporated a single panel design with four 95 mm wide muntin bars bonded horizontally across the face of the panel. The stiles were 140 mm wide with a 115 deep top rail and a 225 mm deep bottom rail



Tested (Oxford-Test) Doorset **Tested (Marlow) Doorset**

It is proposed that the doorsets may incorporate the following modifications.

- Doorset to incorporate a single muntin bar bonded vertically to the panel at mid-span, on both sides of the doorset. Model to be referenced ***Hitchin.***

- Doorset to incorporate a two decorative mutin bars bonded vertically to the the panel on both sides of the doorset, the depth of the top rail is be increased to 120 mm and the Panel aperture lining changed to decorative moulded profile. Model to be referenced ***York.***

- Doorset to incorporate a single panel design with 140 mm wide stiles, a 250 mm deep bottom rail and a 115 mm deep top rail. Model to be referenced ***Oxford.***

Its required the above changes will not detract from the previously achieved fire performance of 30 minutes integrity and insulation, with respect to Clause 6 of BS 476: Part 22: 1987.

Basic Test Evidence

WF Test Report No. 344527

A fire resistance test in accordance with BS 476: Part 22: 1987, Clause 6, on two fully insulated single-acting, single-leaf doorsets.

For the purpose of the test the doorsets were referenced Doorset A (Oxford-Test) and Doorset B (Marlow), both were installed such that their leaves opened towards the heating conditions of the test.

Both dorsets had overall dimensions of 2075 mm high by 910 mm wide and incorporated a door leaf of overall dimensions 2032 mm high by 838 mm wide by 44 mm thick. The door leaves were each hung within a softwood door frame on three steel hinges and comprised laminated particle board stiles and rails, and an inner panel comprising a 10 mm thick Magnesium oxide board with 7.5 mm thick particle board facings. Each doorset incorporated a door closer referenced 'Briton 121'.

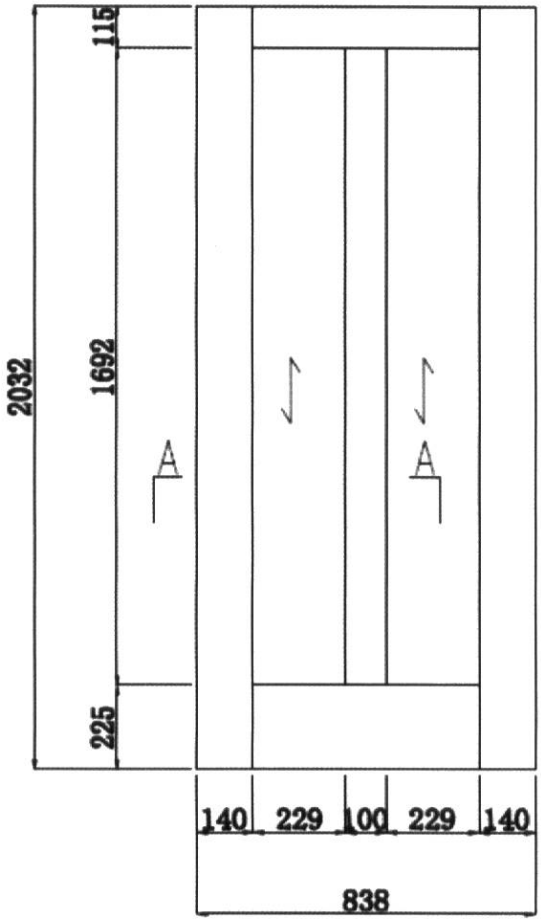
Dimensions of the perimeter framing and addition mutin bar details are detailed previously in this report

Both Doorsets satisfied the integrity and insulation performance criteria for a period of 34 minutes.

Assessed Performance

Hitchin

The proposed design is identical to the previously tested Marlow doorset with the following exceptions: the four horizontal mutin bars are replaced with a single vertically orientated mutin bar.



Proposed Hitchin Design

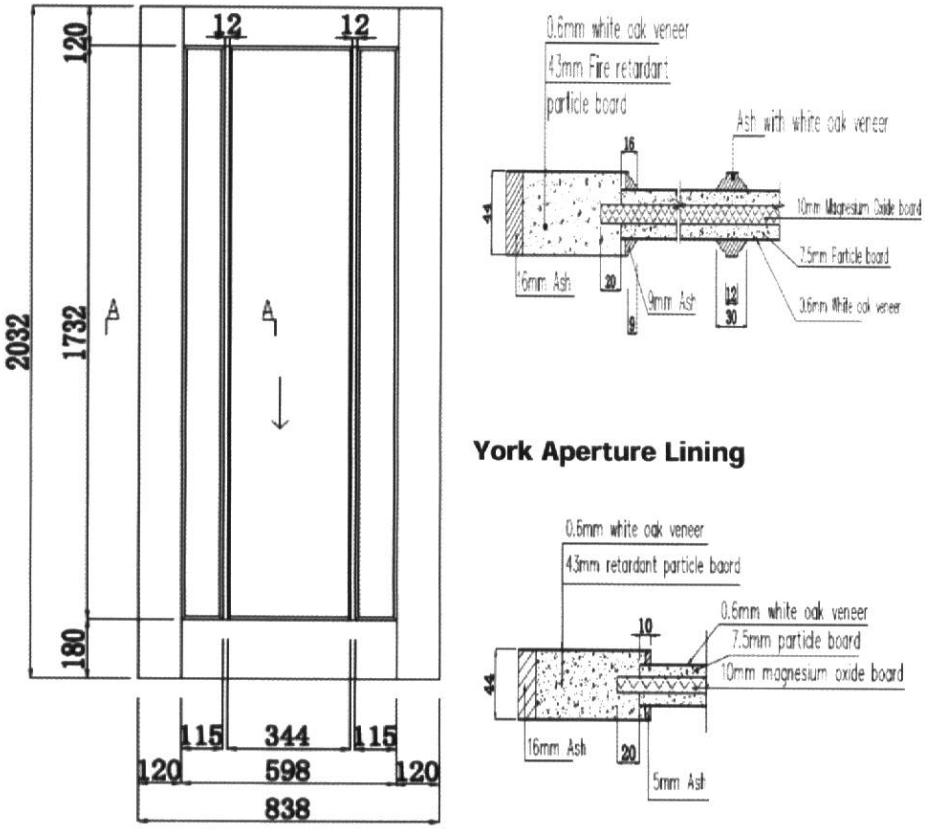
The perimeter framing details of the proposed design are identical to the previously tested Marlow doorset and have therefore proven to be capable of contributing to the required fire performance.

The removal of the four horizontal mutin bars may potentially decrease the restraint across the face of the panel; however the addition of the vertical mutin bar will negate this to a degree. However further confidence in this design is given by the fact that a larger panel with no additional stiffeners was previously successfully tested in the 'Oxford-Test' doorset.

The proposed 'Hitchin' door design may therefore be positively appraised.

York

The proposed design is identical to the tested 'Oxford-Test' doorset with the following exceptions: Two decorative vertically orientated mutin bar are bonded to the panel; the depth of the top rail is increased to 120 mm and the square finish panel aperture lining is replaced with a moulded aperture lining.



York Aperture Lining

Tested Aperture Lining

Proposed York Design

The perimeter framing details of the proposed design are identical to the previously tested 'Oxford-Test' doorset which have already proven to be capable of contributing to the required fire performance. However it's proposed that the width of the top rail is increased to 120 mm from the tested 115 mm. The increase in the depth of the top rail can only be beneficial in terms of the required fire performance since this would be expected to provide increased stability across the head of the door leaf.

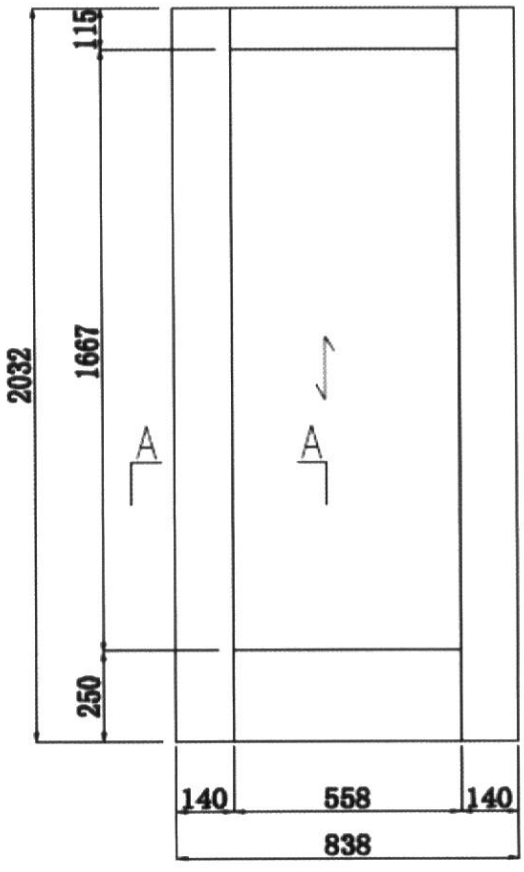
It's anticipated that the proposed decorative mutin bars will not detract from the required fire performance and may even provide some additional restraint to panel, contributing to the required fire performance.

The tested panel aperture linings were formed from 5 mm thick Ash sections bonded to the inside edges of the framework. It's proposed that this lining is replaced with a 9 mm Ash moulding. A review of the observations from WF Test Report No. 344527 reveals that there were no integrity failures associated with panel aperture linings on either doorset for the entire test duration of 34 minutes, providing confidence in this joint detail. Although the proposed linings have a different profile the overall size is increase and could therefore be expected to positively contribute to the required fire performance.

The proposed 'York' door design may therefore be positively appraised.

Oxford

The proposed design is identical to the tested 'Oxford-Test' doorset with the following exceptions: The width of the stiles is increased and the depth of the bottom rail is also increased.



Proposed Oxford Design

The proposed increase in the width of the stiles and in the depth of the bottom rail would be expected to produce a more dimensionally stable leaf which could be expected to experience smaller deflections/distortions during the required 30 minute test period, contributing positively to the required fire performance.

The proposed 'Oxford' door design may therefore be positively appraised.

Conclusions

The doorsets considered within this report would be expected to provide 30 minutes integrity and insulation performance, if subjected to a fire resistance test in accordance with Clause 6 of BS 476: Part 22: 1987.

Validity

This assessment is issued on the basis of test data and information available at the time of issue. If contradictory evidence becomes available to Exova Warringtonfire the assessment will be unconditionally withdrawn and Rohden UK Ltd. will be notified in writing. Similarly the assessment is invalidated if the assessed construction is subsequently tested because actual test data is deemed to take precedence over an expressed opinion. The assessment is valid initially for a period of five years i.e. until 1st January 2020, after which time it is recommended that it be returned for re-appraisal.

The appraisal is only valid provided that no other modifications are made to the tested construction other than those described in this report.

Summary of Supporting Data

WF Test Report No. 344527

A fire resistance test in accordance with BS 476: Part 22: 1987, Clause 6, on two fully insulated single-acting, single-leaf doorsets.

For the purpose of the test the doorsets were referenced Doorset A (Oxford-Test) and Doorset B (Marlow), both were installed such that their leaves opened towards the heating conditions of the test.

Both dorsets had overall dimensions of 2075 mm high by 910 mm wide and incorporated a door leaf of overall dimensions 2032 mm high by 838 mm wide by 44 mm thick. The door leaves were each hung within a softwood door frame on three steel hinges and comprised laminated particle board stiles and rails, and an inner panel comprising a 10 mm thick Magnesium oxide board with 7.5 mm thick particle board facings. Each doorset incorporated a door closer referenced 'Briton 121'.

Test Results:	Doorset A	Doorset B
Integrity	34 minutes	34 minutes
Insulation	34 minutes	34 minutes

The test was discontinued after a period of 34 minutes.

Test Date : 27th September 2014

Test Sponsor : Rohden UK Ltd

Declaration by Rohden UK Ltd.

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 the 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 Exova Warringtonfire to withdraw the assessment.

Signed: B. Lowri

For and on behalf of:

ROHDEN UK LTD.

Signatories

Responsible Officer

S Gilfedder* - Certification Engineer

Approved

A Kearns* - Technical Manager

* For and on behalf of Exova Warringtonfire

Report Issued: 2nd December 2014

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