Assessment Review FCO-0670 ‘Floor/ceiling systems incorporating a Vermitex “AF”’

Assessment Review

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Report number: FCO-0670 Review Letter
Date: 18th October 2017
Client: L & A Fazzini Manufacturing Pty Ltd

Commercial-in-confidence
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Report Details:
Report CSIRO Reference number: FCO-0670/CO4695

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<table>
<thead>
<tr>
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<th>ISSUE NUMBER</th>
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<td>18/10/2017</td>
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Report Authorization:

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<tr>
<th>AUTHOR</th>
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<tr>
<td>Keith Nicholls</td>
<td>Janelle Sinclair</td>
<td>Brett Roddy</td>
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18/10/2017  18/10/2017  18/10/2017

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1 Introduction

This review relates to the report FCO-0670 which provides an assessment of floor/ceiling systems incorporating a Vermitex “AF”.

2 Confirmation of Specification

The sponsor of referenced assessment report FCO-0670 is L & A Fazzini Manufacturing Pty Ltd and they have stated in writing that there have been no changes to the design and material specifications of the protection systems in CSIRO reports numbered SI 0020, SI 0081 and SI 1589 that are referred to in FCO-0670.

3 Formal Review

Since the issue of the referenced assessment the test standard AS 1530.4 has been revised and the current version is AS 1530.4-2014. With reference to NCC Volume 1 Specification A1.3 Table 1 Referenced Documents, the note under AS 1530.4 states the following; “Subject to the note to AS 4072.1, reports relating to tests carried out under earlier editions of AS 1530 Parts 1 to 4 remain valid. Reports relating to tests carried out after the date of an amendment to a Standard must relate to the amended Standard”.

As a result of this, our client has requested that we review this report against the requirements of AS 1530.4-1990.

Since the issue of assessment report FCO-0670 there have been no changes to the procedures and methodologies used for the original assessment and are similar to those currently in use.

The design and material specifications of the protection systems of the used for the original assessment has been re-examined and found to be satisfactory.

Therefore it is confirmed that the assessed performance in FCO-0670 is considered valid subject to the requirements in Section 4.

4 Term of Validity

This review remains valid until 31 October 2022. Should you wish us to re-examine this report with a view to the possible extension of its term of validity, would you please apply to us three to four months before the date of expiry. This Division reserves the right at any time to amend or withdraw this assessment in the light of new knowledge.
5 Limitations

The conclusions of this assessment report may be used to directly assess the fire resistance performance under such conditions, but it should be recognised that a single test method will not provide a full assessment of the fire hazard under all fire conditions.

Because of the nature of fire resistance testing, and the consequent difficulty in quantifying the uncertainty of measurement, it is not possible to provide a stated degree of accuracy. The inherent variability in test procedures, materials and methods of construction, and installation may lead to variations in performance between elements of similar construction.

This assessment report does not provide an endorsement by CSIRO of the actual products supplied to industry. The referenced assessment can therefore only relate only to the actual prototype test specimens, testing conditions and methodology described in the supporting data, and does not imply any performance abilities of constructions of subsequent manufacture.

This assessment is based on information and experience available at the time of preparation. The published procedures for the conduct of tests and the assessment of test results are the subject of constant review and improvement and it is recommended that this report be reviewed on or, before, the stated expiry date.

The information contained in this assessment report shall not be used for the assessment of variations other than those stated in the conclusions above. The assessment is valid provided no modifications are made to the systems detailed in this report. All details of construction should be consistent with the requirements stated in the relevant test reports and all referenced documents.
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FOR FURTHER INFORMATION

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LIKELY FIRE-RESISTANCE OF FLOOR/CEILING SYSTEMS
Assessment No. FCO – 0670
Your e-mail of 11 November 2010

INTRODUCTION
As requested in your fax of 8 October 2010 we have re-examined the information referenced by you on the likely effects of using your floor/ceiling systems incorporating a Vermitex “AF” sprayed ceiling membrane on fire-resistance level. The information included:

- our sponsored investigation report numbered 1589 on a sprayed ceiling/roof system tested on 14 July 1982;
- our test report numbered 81 on a floor/ceiling system tested on 18 October 1966;
- our test report numbered 20 on a roof/ceiling system tested on 18 January 1966;
- our previous assessments (opinions) numbered FCO-0285, FCO-0286, FTO-140, FTO-409 and FTO-167; and
- your letter of 20 April 1993 which included the specification for your proposed floor/ceiling systems and drawing numbered 01, dated 20 April 1993 “2HRS.FIRE PROT. SYSTEM UNDER TIMBER FLOOR.”

We have retained these documents and information.

ANALYSIS

National Building Technology Centre sponsored investigation numbered SI 1589

On 14 July this Division conducted a fire-resistance test in accordance with AS 1530.4–1975 on a low-slope metal-deck roof with a ceiling system suspended beneath it. The low-slope metal-deck roof was of conventional construction comprising steel purlins and bracing and steel roof sheeting. The underside of the roof sheeting was insulated with fiberglass insulation supported on a steel wire mesh.

A ceiling system was suspended beneath the roof on steel hanger rods. The ceiling membrane comprised a 60 mm thickness of material supplied and applied by the sponsor and identified as a vermiculite based product “Vermitex 7. The material was spray applied in two
layers each nominally 30 mm thick with layer of galvanised steel reinforcing fabric being fixed beneath the first layer prior to the application of the second layer.

Weights were placed on the roof structure in order to subject the steel purlins to their maximum permissible design stress.

Weights were fixed to the steel rods provided for the attachment of underhung luminaries to simulate a 4.5 kg luminaire.

The tested specimen achieved 4 hours fire-resistance rating in accordance with AS 1530.4-1975.

**Experiment Building Station sponsored investigation numbered SI 81**

On 18 October 1966 this Division conducted a fire-resistance test of a hardwood floor supported by a steel beam encased in precast cementitious sections and protected with a ceiling system of corrugated steel sheeting fixed to the underside of the floor joints and sprayed with 25 mm of “Vermix 4” vermiculite plaster. The structure also incorporated a timber beam. The specimen was tested in accordance with the requirements of Australian Standard No. A30-1958, Section Four.

The tested specimen, excluding timber beam, qualified for 2 hours fire-resistance rating. The timber beam suspended beneath the floor structure and protected with a ceiling system of corrugated steel sheeting fixed to the underside of the floor joints and the surface of the timber beam, sprayed with a minimum thickness of 25 mm “Vermix 4” vermiculite plaster and had the member been directly supporting the hardwood floor and carrying its maximum permissible design stress it would have qualified for 90 minutes fire-resistance rating.

**Experiment Building Station sponsored investigation numbered SI 20**

On 18 January 1966 this Division conducted a fire-resistance test on a traditional softwood - framed terra-cotta tiled roof protected with a ceiling of corrugated steel sheeting fixed to the underside of the ceiling joints and sprayed with a minimum thickness of 25 mm of “Vermix 2” vermiculite plaster.

The tested specimen qualified for a 90 minutes fire-resistance rating in terms of Australian Standard No. A30-1958.

**CONCLUSION/ASSESSMENT**

It is the opinion of this Division that based upon the evidence presented in regards to insulation and stickability properties of your Vermix sprayed insulation, that a floor/ceiling system as detailed in the specification and drawings listed above would be capable of achieving the fire-resistance levels listed in Table 1 below, if they were subjected to the test conditions of AS 1530.4 provided that:

- for timber beams protruding below the ceiling line, the minimum thickness of Vermix “AF” is 25 mm for rating up to 90 minutes and 35 mm for those up to 120 minutes; and
- the ratio of actual stress to allowable stress in the structural members of the proposed systems does not exceed the ratio of the tested specimen.
Table 1

<table>
<thead>
<tr>
<th>Fire-resistance levels</th>
<th>Vermitex “AF” (mm)</th>
<th>Vermitex “AF” (mm)</th>
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<tr>
<td>(Minutes)</td>
<td>Without Incipient Spread</td>
<td>With Incipient Spread</td>
</tr>
<tr>
<td>60/60/60</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>90/90/90</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>120/120/120</td>
<td>30</td>
<td>35</td>
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TERM OF VALIDITY

This assessment report will lapse on 31 January 2016. Should you wish us to re-examine this assessment with a view to the possible extension of its term of validity, would you please apply to us three to four months before the date of expiry. This Division reserves the right at any time to amend or withdraw this report in the light of new knowledge.

Yours faithfully

Russell Collins
For Manager, Fire Testing and Assessment

3 March 2011