



FIRE ASSESSMENT REPORT

FC18491-01-1

**AN ASSESSMENT OF THE FIRE RESISTANCE OF HILTI CFS-TT-MD OS,
CFS-TTS MD P & CFS-TTS MD C HEAD OF WALL PROTECTION WHEN
INSTALLED WITH FIRE RESISTANT WALLS BELOW STEEL DECK
COMPOSITE FLOOR SYSTEMS**

CLIENT

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ASSESSMENT OBJECTIVE

To assess the fire resistance of Hilti CFS-TTS-MD OS, CFS-TTS MD P & CFS-TTS MD C head of wall protection when installed with fire resistant walls below steel deck composite floor systems in accordance with AS 1530.4:2014 for certification with AS 4072.1-2005.

CONCLUSION

It is considered that the fire resistance, as established by test, of the Hilti Firestop CFS-TTS-MD OS, CFS-TTS-MD P and CFS-TTS-MD C when installed with fire resistant walls below steel deck composite floor systems will not be prejudiced for up to 60 minutes Integrity and Insulation in accordance with AS 1530.4:2014 for certification with AS 4072.1-2005 subject to the conditions stated:

- FRR/FRL -/60/60 for Hilti Firestop CFS-TTS-MD OS & CFS-TTS-MD P when orientated perpendicular to the direction of the steel decking profile.
- FRR/FRL -/60/45 for Hilti Firestop CFS-TTS-MD OS, CFS-TTS-MD P & CFS-TTS-MD C when orientated parallel to the direction of the steel decking profile.
- Suitable steel decking profiles ComFlor 60, ComFlor 80, ComFlor SR, Tray-dec 60, Tray-dec 80 and Tray-dec 300.
- FRR/FRL of the Hilti Firestop CFS-TTS-MD OS, CFS-TTS-MD P and CFS-TTS-MD C may not exceed the FRR/FRL of the wall and floor assemblies.

LIMITATION

This report is subject to the accuracy and completeness of the information supplied.

BRANZ reserves the right to amend or withdraw this assessment if information becomes available which indicates the stated fire performance may not be achieved.

This assessment report may only be quoted or reproduced in full.

TERMS AND CONDITIONS

This report is issued in accordance with the Terms and Conditions as detailed and agreed in BRANZ Services Agreement for this work.

The results reported here relate only to the item/s described in this report.



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1. INTRODUCTION

This report gives BRANZ's assessment of Hilti CFS-TTS-MD OS, CFS-TTS MD P & CFS-TTS MD C head of wall protection when installed with fire resistant walls below steel deck composite floor systems.

2. BACKGROUND

2.1 Warringtonfire FRT200424

The Warringtonfire Australia Pty Ltd fire resistance test report FRT200424 details a pilot scale, wall head detail fire resistance test, conducted generally in accordance with AS 1530.4:2014 of a nominally 1,425 mm high x 1,600 mm wide x 90 mm thick plasterboard lined, steel stud wall installed below a nominally 870 mm long x 1,760 mm wide x 150 mm thick section of ComFlor 80 composite floor system. The floor was orientated such that the peak and trough profiles ran perpendicular to the direction of the wall.

The wall construction comprised 64 mm x 0.5 BMT Rondo steel studs, deflection head, track and nogging track and was lined on both faces with a single layer of 13 mm thick GIB Fyrelite®.

Prior to the installation of the deflection track member below the composite floor system, a Hilti Firestop Top Track Seal; CFS-TTS-MD OS was fitted to its exterior faces over the whole length. The deflection track including the CFS-TTS-MD OS was then screwed to the underside of floor at each trough position, the remaining construction of the wall followed the relevant GIB specification.

There were a total of four peaks in the steel decking above the deflection track (excluding the two partial peaks at the edges). Hilti Firestop Top Track Plug; CFS-TTS-MD P were inserted into each of the voids on both faces, flush to the faces of the wall. The dove tail on each peak of the decking was filled with Hilti Firestop CP606 acrylic sealant on both faces to depth of nominally 20 mm.

The specimen was exposed to the fire conditions specified in AS 1530.4:2014 for a duration of 86 minutes and during this period there were no observed instances of Integrity failure. Insulation failure occurred after a duration of 75 minutes due to a temperature rise in excess of 180K recorded by a thermocouple attached to a CFS-TTS-MD P (plug).

An elevation and cross section view of the test specimen is shown as Figure 1.

2.2 Warringtonfire FRT200425

The Warringtonfire Australia Pty Ltd fire resistance test report FRT200425 details a pilot scale, wall head detail fire resistance test, conducted generally in accordance with AS 1530.4:2014 of a nominally 1,425 mm high x 1,600 mm wide x 90 mm thick plasterboard lined, steel stud wall installed below a nominally 870 mm long x 1,760 mm wide x 150 mm thick section of ComFlor 80 composite floor system. The floor was orientated such that the peak and trough profiles ran parallel to the direction of the wall with the wall being directly below a peak.

The wall construction comprised 64 mm x 0.5 BMT Rondo steel studs, deflection head, track and nogging track and was lined on both faces with a single layer of 13 mm thick GIB Fyrelite®.



On the underside of the floor at the peak profile where the wall specimen was to be positioned, a Hilti Firestop Top Track Cover; CFS-TTS-MD C was attached into the void which was retained via 100 mm wide x 400 mm long x 1.5 mm thick galvanised steel strips spaced at nominally 600 mm centres which were fixed across the void into the troughs.

A Hilti Firestop Top Track Plug; CFS-TTS-MD P was installed at each end of the Top Track Cover. The dove tail on the peak of the decking was filled with Hilti Firestop CP606 acrylic sealant on both edges to depth of nominally 20 mm.

Prior to the installation of the deflection track member below the composite floor system, a Hilti Firestop Top Track Seal; CFS-TTS-MD OS was fitted to its exterior faces over the whole length. The deflection track including the CFS-TTS-MD OS was then screwed to the underside of floor at each steel strip position (600 mm centres), the remaining construction of the wall followed the relevant GIB specification.

The specimen was exposed to the fire conditions specified in AS 1530.4:2014 for a duration of 76 minutes and during this period there were no observed instances of Integrity failure. Insulation failure occurred after a duration of 59 minutes due to a temperature rise in excess of 180K recorded by a thermocouple attached to the CFS-TTS-MD OS (top track seal).

An elevation and cross section view of the test specimen is shown as Figure 2.

Figure 1: FRT200424 Test Specimen

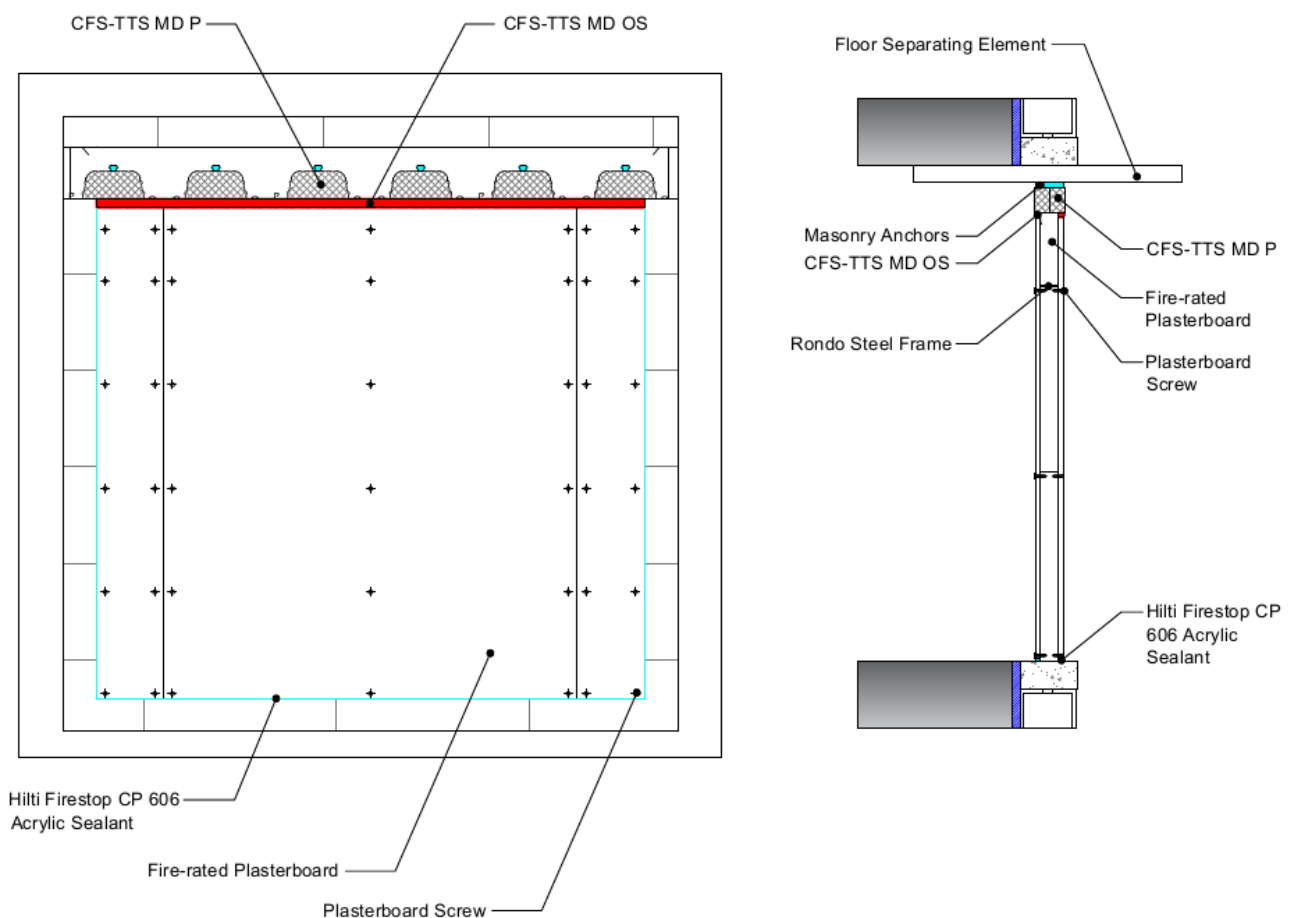
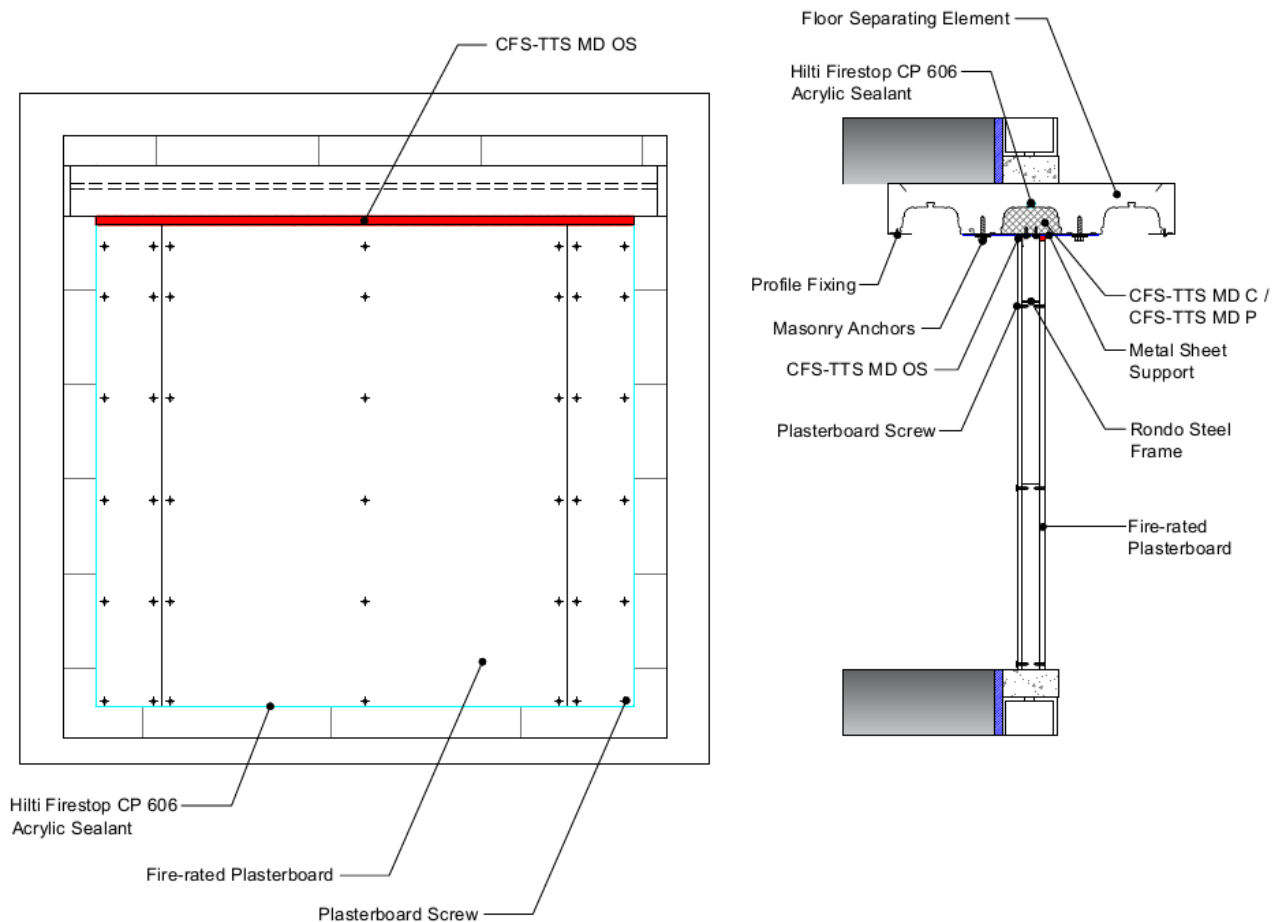


Figure 2: FRT200425 Test Specimen



3. DISCUSSION

3.1 Summary of Test Results

The tests described in Section 2 demonstrate the ability of Hilti Firestop CFS-TTS-MD OS, CFS-TTS-MD P & CFS-TTS-MD C to maintain Integrity, in accordance with AS 1530.4:2014, at the junction between the head of a steel framed plasterboard wall and the underside of a ComFlor 80 composite steel deck floor system for at least 60 minutes. The systems were shown to provide this fire resistance performance irrespective of the direction of the wall in relation to the steel decking profiles (peaks and troughs).

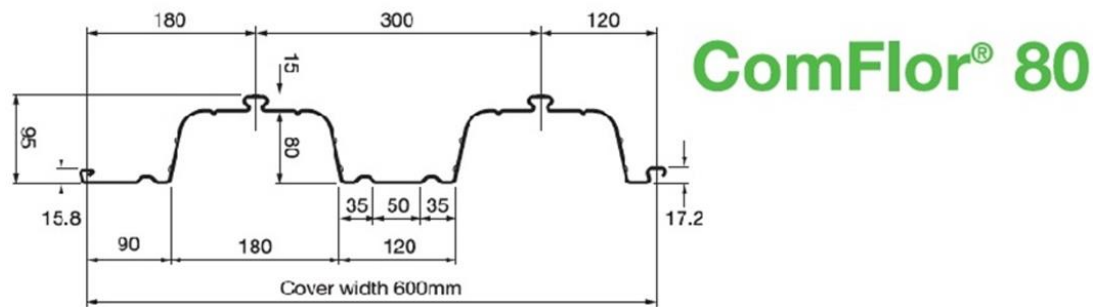
With the direction of the wall perpendicular to the steel decking profiles above it, Insulation failure occurred after a duration of 75 minutes therefore the system achieved a -/60/60 FRR/FRL.

With the direction of the wall parallel to the steel decking profiles above it, Insulation failure occurred after a duration of 59 minutes therefore the system achieved a -/60/45 FRR/FRL.

3.2 Alternative Decking Profile Options

Both test specimens used ComFlor 80 decking profile. A cross sectional diagram of ComFlor 80 is shown as Figure 3.

Figure 3: Cross Section - ComFlor 80



With respect to the use of the Hilti Firestop system with alternative composite steel deck floor systems, the only significant consideration to be made is the size of the voids where the Hilti Firestop materials are installed, the method of their installation would be identical to the test specimens.

It can be reasonably considered that decreasing the area of the voids would not be detrimental to the fire resistance of the Hilti Firestop materials demonstrated in the tests referenced in Section 2.

Based on the discussion above, substitution of the composite decking profile, provided that the area of the voids does not exceed those of ComFlor 80 would not be detrimental the established fire resistance of the Hilti Firestop CFS-TTS-MD OS, CFS-TTS-MD P & CFS-TTS-MD C for -/60/60 when installed perpendicular to the decking profile and -/60/45 when installed parallel to the decking profile.

According to manufacturer information, the following steel decking profiles have void dimensions which are less than or equal to that of ComFlor 80:

- ComFlor 60 and ComFlor SR
- Tray-dec 60, Tray-dec 80 and Tray-dec 300.

4. CONCLUSION

It is considered that the fire resistance, as established by test, of the Hilti Firestop CFS-TTS-MD OS, CFS-TTS-MD P & CFS-TTS-MD C when installed with fire resistant walls below steel deck composite floor systems will not be prejudiced for up to 60 minutes Integrity and Insulation in accordance with AS 1530.4:2014 for certification with AS 4072.1-2005 subject to the conditions stated:

- FRR/FRL -/60/60 for Hilti Firestop CFS-TTS-MD OS & CFS-TTS-MD P when orientated perpendicular to the direction of the steel decking profile.
- FRR/FRL -/60/45 for Hilti Firestop CFS-TTS-MD OS, CFS-TTS-MD P & CFS-TTS-MD C when orientated parallel to the direction of the steel decking profile.
- Suitable steel decking profiles ComFlor 60, ComFlor 80, ComFlor SR, Tray-dec 60, Tray-dec 80 and Tray-dec 300.
- FRR/FRL of the Hilti Firestop CFS-TTS-MD OS, CFS-TTS-MD P and CFS-TTS-MD C may not exceed the FRR/FRL of the wall and floor assemblies.