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Regulatory information report

Assessment of Hilti CFS-TTS Firestop top track seal

Client: Hilti (Australia) Pty Ltd

Product: Hilti CFS-TTS Firestop top track seal

Report number: FAS200132 Revision: RIR 1.2

Issue date: 14 August 2020 Expiry date: 31 May 2025

Amendment schedule

Version	Date	Information relating to report			
RIR1.2*	Issue: 14/08/2020	Reason for issue	Issued in conjunction with FAS200132 R1.2.		
			Prepared by	Reviewed by	Approved by
	Expiry: 31/05/2025	Name	Alim Rasel	Omar Saad	Omar Saad
		Signature			

*RIR 1.0 and RIR1.1 numbering is skipped to maintain consistency with the original assessment report.

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General conditions of use

The data, methodologies, calculations and results documented in this report specifically relate to the tested/assessed specimen/s and must not be used for any other purpose.

All work and services carried out by Warringtonfire Australia are subject to and conducted in accordance with our standard terms and conditions. These are available on request and at https://www.element.com/terms/terms-and-conditions.

Executive summary

This report contains the minimum information required for regulatory compliance and refers to the Assessment report FAS200132 R1.2. Summaries of the test data on which this assessment is based are provided in the appendices which are only available in the full report.

The analysis conducted in the referenced assessment report outlines the findings of the assessment undertaken to determine the likely fire resistance level (FRL) of Hilti CFS-TTS Firestop top track seal if tested in accordance with AS 1530.4:2014 and assessed in compliance with AS 4072.1:2005.

It has been concluded that the proposed variations are likely to achieve the following FRLs as shown in Table 1 to Table 3, if tested in accordance with AS 1530.4:2014 and assessed in compliance with AS 4072.1:2005.

Table 1 Hilti TTS protecting top tracks in flexible wall construction

Hilti TTS top track seal	Track size	Maximum joint height	Fasteners	Joint construction	Separating element (minimum thickness)	FRL
Firestop top track seal CFS-TTS E6	64-65 mm	20 mm	X-C 20 MX, X-C 22 P8 S15-TH, X-C 20 B3, X-C 20 B3 MX, X-P 17 B3 MX, X-P 20 B3 MX, X-P 24 B3 MX, X-P 17 G3, X-P 17 G3 MX, X-P 20 G3 MX, X-GN 20 MX, X-GHP 18 MX, HUS3-P 6 × 40/5, HUS 6 × 35, HUS-H/P 6 × 40, HUS-H 6 × 45, HUS3-PS (Range), HUS-H/P 6 × 60, HUS3-H 10 (Range), HUS3-H 8 (Range), DBZ 6/4.5, HFB 6 × 35.	Horizontal, corners, T-joints, vertical	90 mm (1 × 13 mm) plasterboard wall or 103 mm (1 × 13 mm on one side, 2 × 13 mm on the other) plasterboard wall	-/60/60 (any CFS-TTS type)
Firestop top track seal CFS-TTS E7	71-77 mm				96 mm (1 × 16 mm) plasterboard wall	-/90/90 (any CFS-TTS type)
Firestop top track seal CFS-TTS E9	92-98 mm					
Firestop top track seal CFS-TTS ES	≥ 92 mm single stud walls or double stud walls with total track width ≥ 92mm				116 mm (2 × 13 mm) or 128 mm (2 × 16 mm) plasterboard wall	-/120/120 (any CFS-TTS type)

Table 2 Hilti TTS protecting top tracks in flexible walls with metal decking

Hilti TTS top track seal	Track size	Maximum joint height	Metal deck dimension	Metal deck sealing	Separating element (minimum thickness)	FRL*
Firestop top track seal CFS-TTS E6	64-65 mm	20 mm	Maximum height 65 mm. Overall area restricted to 0.00957 m^2 for each profile	Hilti CP606 ,10 mm deep on both sides. Cavity backfilled with mineral rockwool insulation (density 100 kg/m^3)	90 mm (1 × 13 mm) plasterboard wall or 103 mm (1 × 13 mm on one side, 2 × 13 mm on the other) plasterboard wall	-/60/60 (any CFS-TTS type)
Firestop top track seal CFS-TTS E7	71-77 mm					
Firestop top track seal CFS-TTS E9	92-98 mm					
Firestop top track seal CFS-TTS ES	≥ 92 mm single stud walls or double stud walls with total track width ≥ 92 mm					
Firestop top track seal CFS-TTS E6	64-65 mm	20 mm		Hilti CP606 ,10 mm deep on both sides. Cavity backfilled with mineral rockwool insulation (density 100 kg/m^3)	96 mm (1 × 16 mm) or 116 mm (2 × 13 mm) plasterboard wall	-/60/60
Firestop top track seal CFS-TTS E7	71-77 mm					-/90/90
Firestop top track seal CFS-TTS E9	92-98 mm					-/90/90
Firestop top track seal CFS-TTS ES	≥ 92 mm single stud walls or double stud walls with total track width ≥ 92 mm					-/90/90

*This table is applicable if the wall is perpendicular to the metal decking. If the wall is parallel to the decking, listed FRLs are applicable without the necessity of “Metal deck profile sealing”. The width between the decking (indicated as C in Figure 7) must be higher than the thickness of the wall. The wall must be installed in between the decking profile. The head track and the TTS must not be exposed to the metal decking profile cavity.

Table 3 Hilti TTS protecting uneven overhead horizontal surfaces

Hilti TTS top track seal	Track size	Maximum allowable overhead gap	Sealing system	Separating element (minimum thickens)	FRL
Firestop top track seal CFS-TTS E6	64-65 mm	30 mm	Hilti CP606 25 mm deep. The cavity backfilled with mineral rockwool insulation (density 100 kg/m^3)	90 mm (1 × 13 mm) plasterboard wall or 103 mm (1 × 13 mm on one side, 2 × 13 mm on the other) plasterboard wall	-/60/60 (any CFS-TTS type)
Firestop top track seal CFS-TTS E7	71-77 mm			96 mm (1 × 16 mm) plasterboard wall	-/90/90 (any CFS-TTS type)
Firestop top track seal CFS-TTS E9	92-98 mm				
Firestop top track seal CFS-TTS ES	≥ 92 mm single stud walls or double stud walls with total track width ≥ 92 mm			116 mm (2 × 13 mm) plasterboard wall	-/120/120 (any CFS-TTS type)

The variations and outcome of the referenced assessment report are subject to the limitations and requirements described in Sections 2, 4 and 0 of this report. The results of this report are valid until 31 May 2025.

Contents

1. Introduction

This report contains the minimum information sufficient for regulatory compliance and refers to the Assessment report FAS200132 R1.2.

The analysis conducted in the referenced assessment report documents the findings of the assessment undertaken to determine the likely fire resistance level (FRL) of Hilti CFS-TTS Firestop top track seal if tested in accordance with AS 1530.4:2014[1] and assessed in compliance with AS 4072.1:2005[2]. This assessment was carried out at the request of Hilti Australia Pty Ltd. The sponsor details are included in Table 4.

Table 4 Sponsor details

Sponsor	Address
Hilti (Australia) Pty Ltd	1G Homebush Bay Dr Rhodes NSW 2138 Australia

2. Declaration

The guide to undertaking assessments in lieu of fire tests prepared by the PFPF in the UK requires a declaration from the client. By accepting our fee proposal dated 5 May 2020, Hilti Australia Pty Ltd confirmed that

- To their knowledge the component or element of structure, which is the subject of this assessment, has not been subjected to a fire test to the standard against which this assessment is being made.
- They agree to withdraw this assessment from circulation if the component or element of structure is the subject of a fire test by a test authority in accordance with the standard against which this assessment is being made and the results are not in agreement with this assessment.
- They are not aware of any information that could adversely affect the conclusions of this assessment and – if they subsequently become aware of any such information, they agree to ask the assessing authority to withdraw the assessment.

3. Description of the specimen and variations

3.1 System description

Hilti CFS-TTS FIRESTOP seal protecting top tracks was tested in accordance with AS 1530.4:2014. This report further analyses the test results and explores the applicability of the test outcome in various constructions.

[1] Standards Australia 2014, *Methods for fire tests on building materials, components and structures – Part 4: Fire-resistance tests for elements of construction*, AS 1530.4:2014, Standards Australia, NSW

[2] Standards Australia 2005, *Components for the protection of opening in fire-resistant separating elements– Part 1: Service penetrations and control joints*, AS 4072.1:2005, Standards Australia, NSW

3.2 Referenced test data

The assessment of the variation to the tested system and the determination of the likely performance is based on the results of the fire tests documented in the reports summarised in Table 5. Further details of the tested system are described in Appendix A of the referenced report.

Table 5 Referenced test data

Report number	Test sponsor	Test date	Testing authority
WARRES 71151A	Hilti EntwicklungsgesellschaftmbH	25 April 1997	Warringtonfire UK
EWFA 55905400.1	Hilti (Australia) Pty Ltd	24 July 2018	Warringtonfire Australia
19376E	Hilti AG	30 October 2018	WFRGENT NV
WF415429	Hilti EntwicklungsgesellschaftmbH	07 September 2019	Warringtonfire UK
WF415430	Hilti EntwicklungsgesellschaftmbH	07 September 2019	Warringtonfire UK
FRT 190406	Hilti (Australia) Pty Ltd	21 November 2019	Warringtonfire Australia
FRT 190438	Hilti (Australia) Pty Ltd	03 December 2019	Warringtonfire Australia
FRT 200025	Hilti (Australia) Pty Ltd	11 February 2020	Warringtonfire Australia

3.3 Variations to tested systems

An identical system has not been subjected to a standard fire test. We have therefore assessed the product using baseline test information for similar systems. The variations to the tested systems together with the referenced baseline standard fire tests – are described in Table 6.

Table 6 Variation to tested systems

Item	Reference test	Description	Variations
Hilti CFS-TTS Firestop top track seal	FRT 190406, FRT 190438, FRT 200025	The tested system consisted of Hilti CFS-TTS E6	Firestop top track seal CFS-TTS E7
			Firestop top track seal CFS-TTS E9
			Firestop top track seal CFS-TTS ES
Plasterboard construction	FRT 190406, FRT 190438, FRT 200025	Tested framed wall construction included the following: FRL -/120/120: 2 × 13 mm plasterboard wall construction (both sides) FRL -/60/60: 1 × 13 mm plasterboard wall construction (both sides)	FRL -/120/120: 2 × 16 mm Plasterboard wall construction (both sides) FRL -/90/90: 1 × 16 mm plasterboard wall construction (both sides) FRL -/60/60: 1 × 13 mm of plasterboard one side and 2 × 13 mm on the opposite side. Both single and double stud walls that achieve FRL-/60/60, FRL -/90/90 and FRL -/120/120 are covered under this variation.

Applicable fasteners (Track to concrete)	EWFA 55905400.1	The fasteners included in the tested systems were recorded as Hilti HUS3-P 6 × 40/5 and Hilti X-C 20 b3 MX.	The fasteners can be varied to include, X-C 20 MX, X-C 22 P8 S15-TH, X-C 20 B3, X-C 20 B3 MX, X-P 17 B3 MX, X-P 20 B3 MX, X-P 24 B3 MX, X-P 17 G3, X-P 17 G3 MX, X-P 20 G3 MX, X-GN 20 MX, X-GHP 18 MX, HUS3-P 6 × 40/5, HUS 6 × 35, HUS-H/P 6 × 40, HUS-H 6 × 45, HUS3-PS (Range), HUS-H/P 6 × 60, HUS3-H 10 (Range), HUS3-H 8 (Range), DBZ 6/4.5, HFB 6 × 35.
Joint construction	FRT 190406, FRT 190438, FRT 200025	The Hilti CFS-TTS were applied in horizonal top tracks in the tested system	The fire resistance achieved can be extended to include corners, T-joints and vertical configurations.
Wall frame	FRT 190406, FRT 190438, FRT 200025, 19376E	The tested systems consisted of steel stud frames	The wall framing shall be varied to include timber studs.
Metal Decking	WF415429, WF415430, WARRES 71151A	The tested system included flexible wall perpendicular to metal decking. The decking profile was sealed with CFS-HFF and CFS-F FX.	The wall construction shall be parallel to the metal decking. The decking profile will be sealed with CP606 and cavity insulation.
Sealing of uneven horizontal surfaces	WARRES 71151A	Hilti CP606 in conjunction with mineral wool cavity insulation was used to seal metal decking profile.	Hilti CP606 and cavity insulation must be used to seal overhead gaps caused by uneven horizontal surfaces.

3.4 Purpose of the test

AS 1530.4:2014 sets out method for fire tests on building materials, components and structures and other elements of construction.

AS 1530.4:2014, section 10, further stipulates the testing procedure of service penetrations and control joints

3.5 Schedule of components

Table 7 outlines the schedule of components for the assessed systems subject to a fire test, as referenced in Appendix A of the referenced report.

Table 7 Schedule of component of assessed system

Item	Description	
Separating element		
1	Item name	Fire-rated plasterboard panel
	Construction	FRL -/120/120: The wall must have a minimum thickness of 116 mm and consisted of steel stud/timber framing (minimum 64 mm for steel, 70 mm for timber) lined on both faces with minimum of two layers of 13 mm or 16 mm thick fire grade plasterboard and must be tested to achieve an FRL of -/120/120 or 120/120/120. FRL -/90/90: The wall must have a minimum thickness of 96 mm and consisted of steel stud framing (minimum 64 mm) lined on both faces with minimum of 1 layer of 16 mm thick fire grade plasterboard and must be tested to achieve an FRL of -/90/90 or 90/90/90.

Item	Description	
		FRL -/60/60: The wall must have a minimum thickness of 90 mm and consisted of steel stud framing (minimum 64 mm) lined on both faces with minimum of 1 layer of 13 mm thick fire grade plasterboard and must be tested to achieve an FRL of -/60/60 or 60/60/60. The plasterboard construction can occasionally include 2 layers of 13 mm thick fire grade plasterboard in one of the faces.
	Product name	USG Boral Firestop, CSR Gyprock Fyrchek, Knauf Fireshield, GIB Fyreline, BGC Fireboard / GTEK Fire, Elephant Plasterboard and Midland Fire-Resistant Plasterboard.
	Density	788 kg/m^3(measured)
2	Item name	Head Track
	Size	64-65 mm, 71-77 mm, 92-98 mm, and ≥ 92 mm (single or double stud wall) (as appropriate)
3	Item name	Stud
	Size	Steel studs: 64-65 mm, 71-77 mm, 92-98 mm, and ≥ 92 mm (single or double stud wall) (as appropriate) Timber stud: Minimum thickness 70 mm (2 × 13 mm plasterboard wall construction).
4	Item name	Bottom Track
	Size	64-65 mm, 71-77 mm, 92-98 mm, and ≥ 92 mm (single or double stud wall) (as appropriate)
5	Item name	Fasteners
	Product name	X-C 20 MX, X-C 22 P8 S15-TH, X-C 20 B3, X-C 20 B3 MX, X-P 17 B3 MX, X-P 20 B3 MX, X-P 24 B3 MX, X-P 17 G3, X-P 17 G3 MX, X-P 20 G3 MX, X-GN 20 MX, X-GHP 18 MX, HUS3-P 6 × 40/5, HUS 6 × 35, HUS-H/P 6 × 40, HUS-H 6 × 45, HUS3-PS (Range), HUS-H/P 6 × 60, HUS3-H 10 (Range), HUS3-H 8 (Range), DBZ 6/4.5, HFB 6 × 35
	Size	As applicable
6	Item name	Hilti sealant CP 606
	Product name	Hilti Firestop Acrylic Sealant CP 606
	Density	1868 kg/m^3 (measured)
7	Item name	Plasterboard screw
	Product name	Hilti S-DS01B 3.5 × 25/41
	Size	Ø3.5 mm × 25/41 mm long
8	Item name	Wall cavity insulation
	Product name	Bradford Acoustigard, GreenStuf, Pink Batts, Earthwool or similar insulation with same thickness, density and R value as stipulated below.
	Thickness	50 mm
	Density	11 kg/m^3 (measured)
	R value	R1.2 or higher
9	Item name	Jointing Compound
	Product	USG Boral BaseCote™ 45- and 50-mm paper tape
	Installation	Applied onto the plasterboard joints and screw fixings on the plasterboard.
Fire-stopping protections		
Seal		
10	Product name	Hilti CFS-TTS FIRESTOP Top Track Seal

Item	Description		
	Size		
		Firestop top track seal CFS-TTS E6	64-65 mm
		Firestop top track seal CFS-TTS E7	71-77 mm
		Firestop top track seal CFS-TTS E9	92-98 mm
		Firestop top track seal CFS-TTS ES	≥ 92 mm single stud walls or double stud walls with total track width ≥ 92 mm
	Installation	Installed to protect horizontal gaps as tested in FRT190406, FRT190438 or FRT200025 or corners, T-joints or installed vertically as illustrated in Figure 4, Figure 5 and Figure 6.	
Control joint A			
A	Service	Wall top detail protection	
	Size	Maximum height 20 mm	
	Local fire-stopping protection		
	Protection	Hilti CFS-TTS FIRESTOP Top Track Seal (item 10)	
	Installation	2 pcs of CFS-TTS installed between the head track and the concrete. The CFS-TTS must be visible from both the unexposed and exposed sides, A 15 mm overlap that is compressed between the 2 pcs of CFS-TTS.	

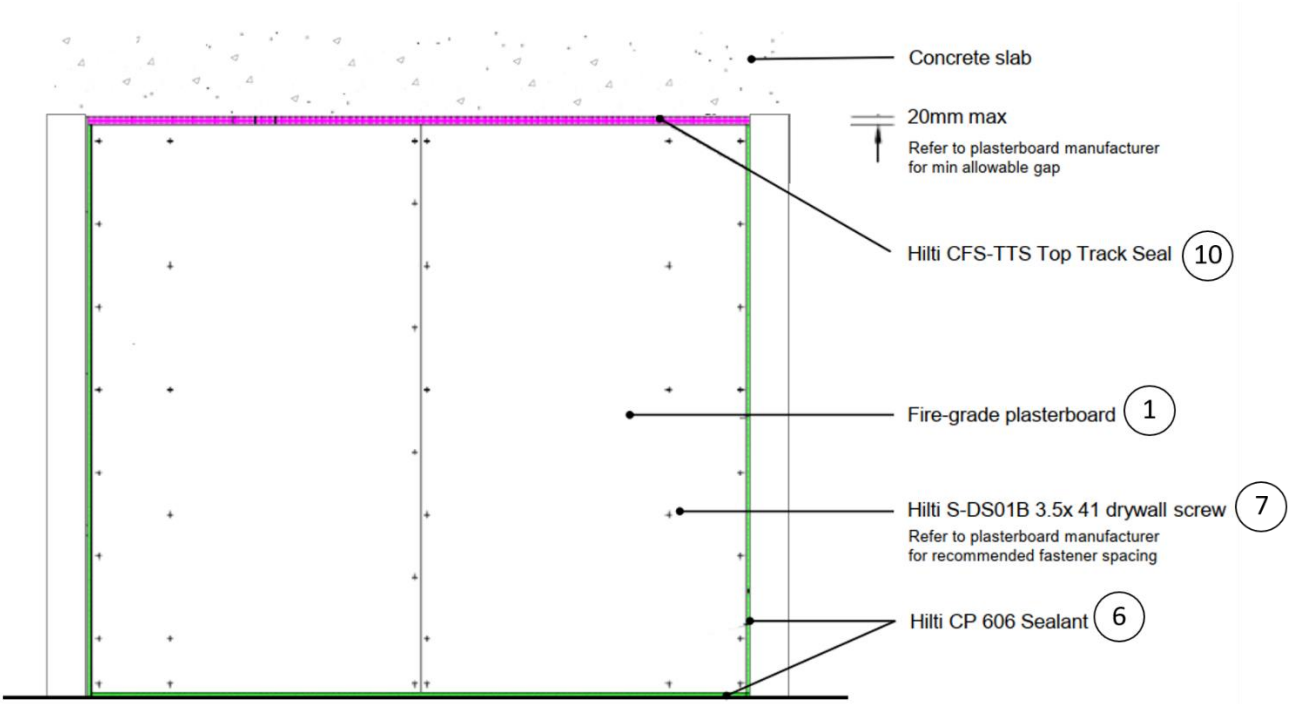


Figure 1 Hilti TTS protecting top track (Elevation view)

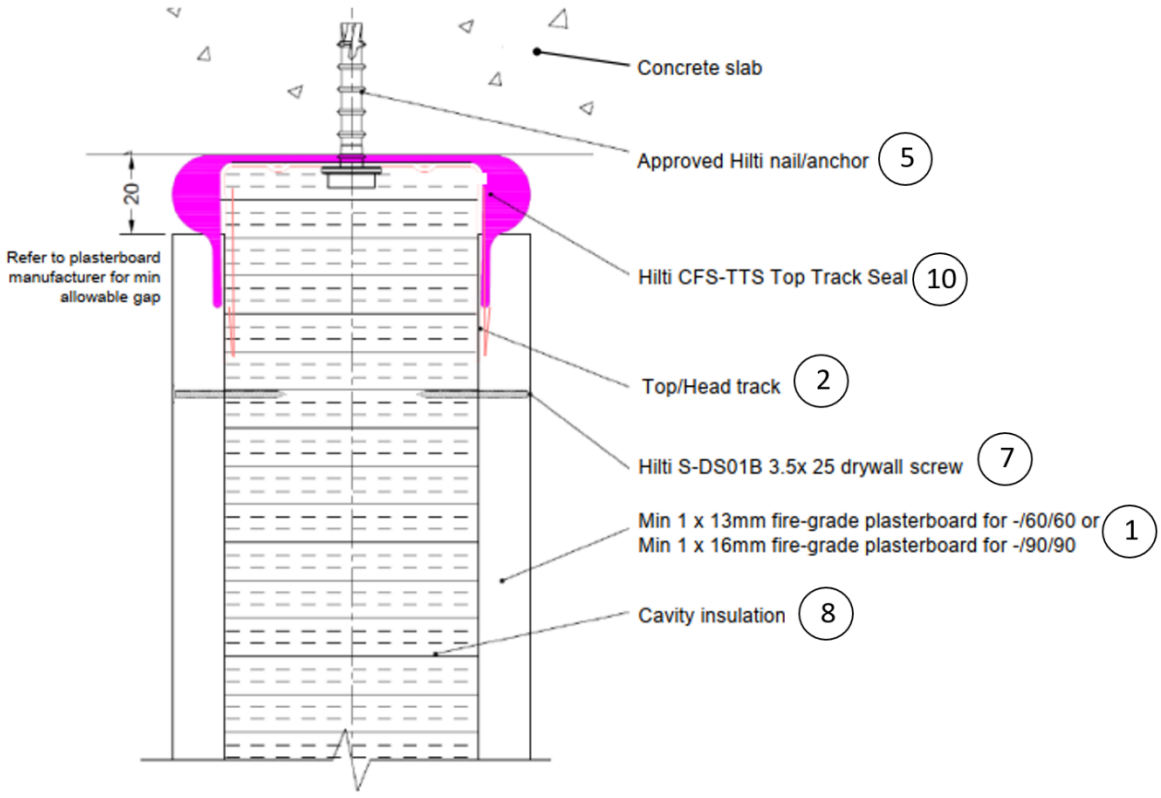


Figure 2 Hilti TTS protecting top tracks- 60- and 90-min system (cross section)

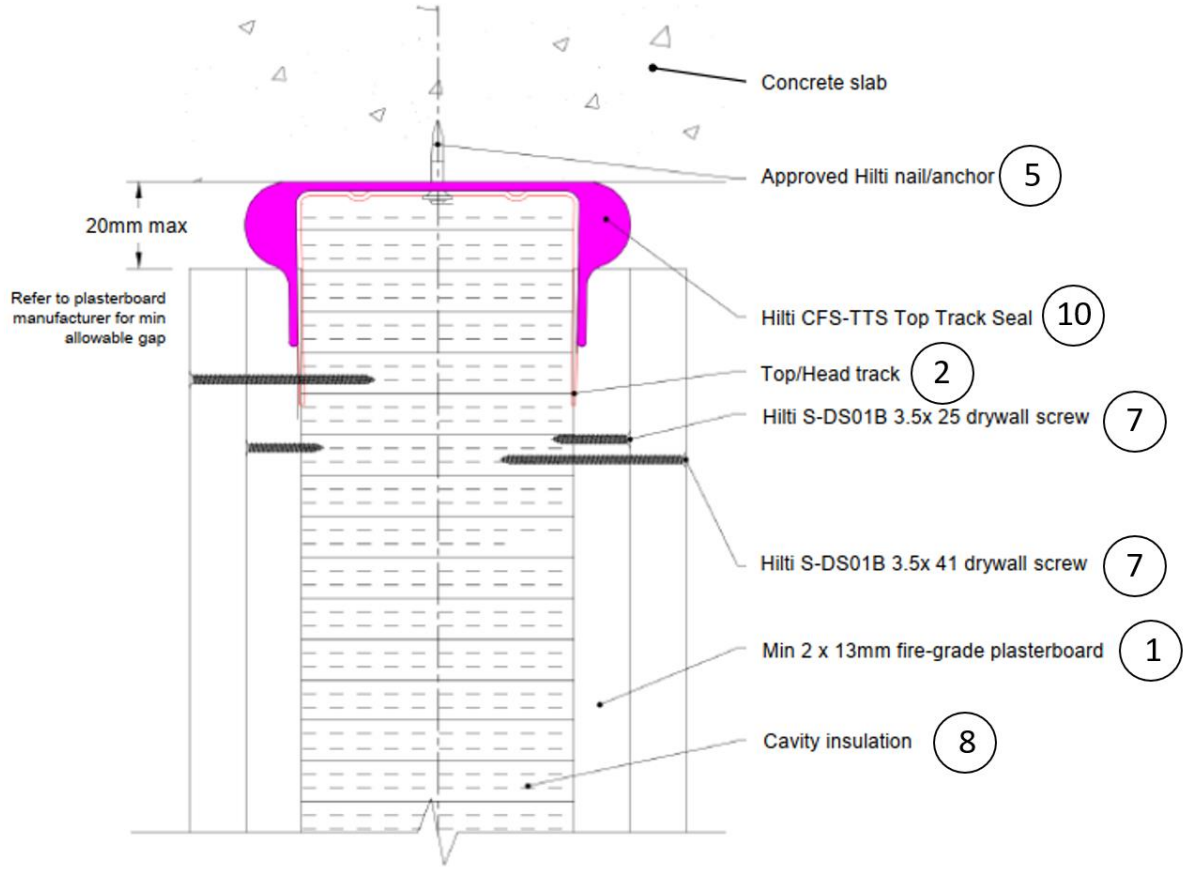


Figure 3 Hilti TTS protecting top tracks- 120-min system (cross section)

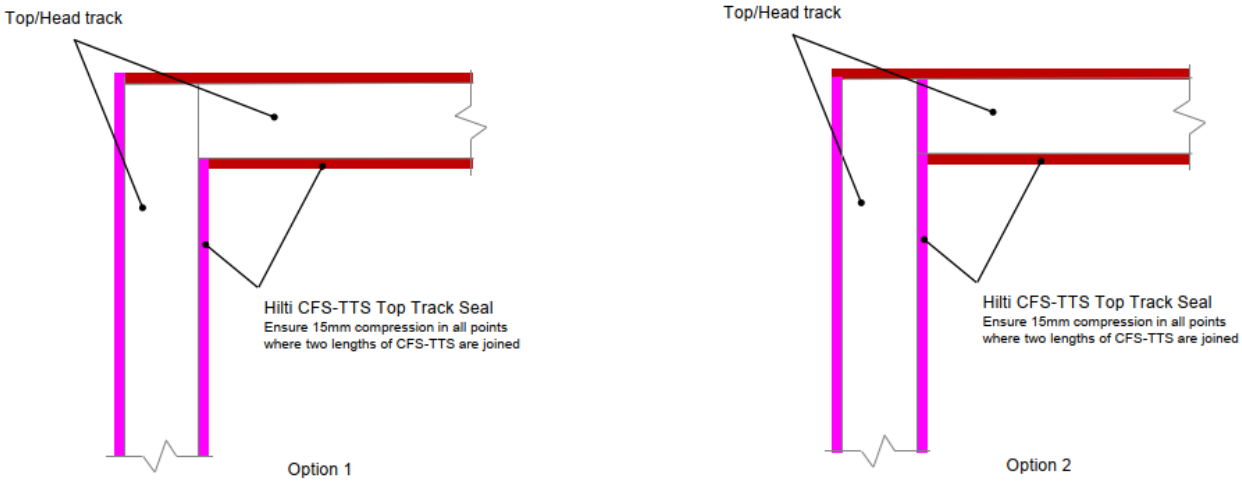


Figure 4 TTS corner details

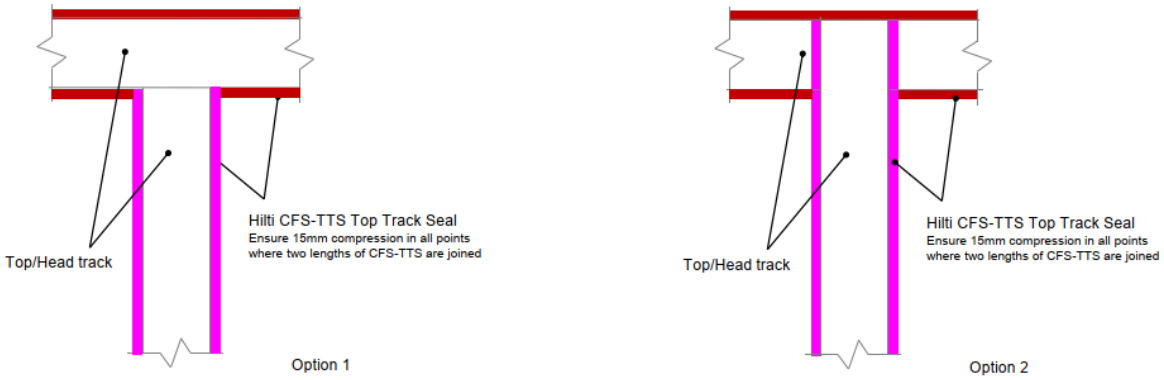


Figure 5 TTS T-joint details

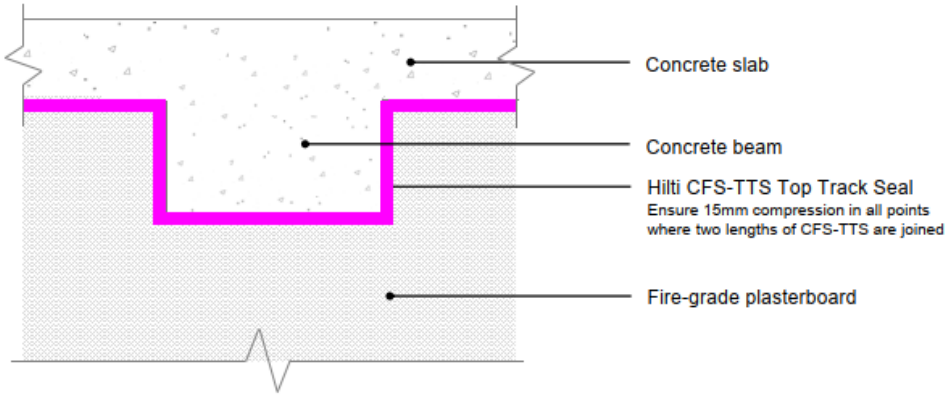
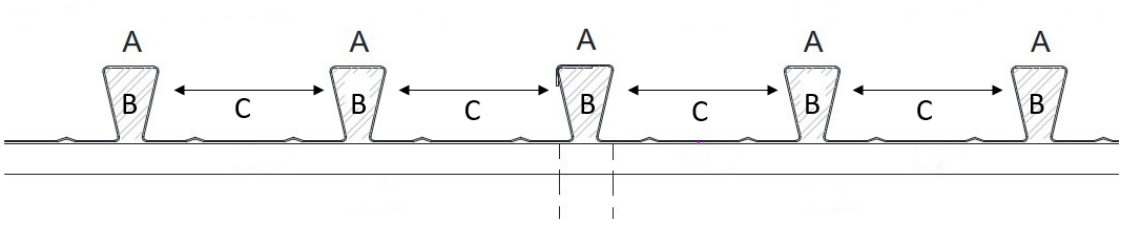


Figure 6 TTS vertical installation



A- Metal decking profile
B- Metal decking filled with 10 mm depth of Hilti CP606. Cavity backfilled with insulation

Figure 7 Metal decking sealing system

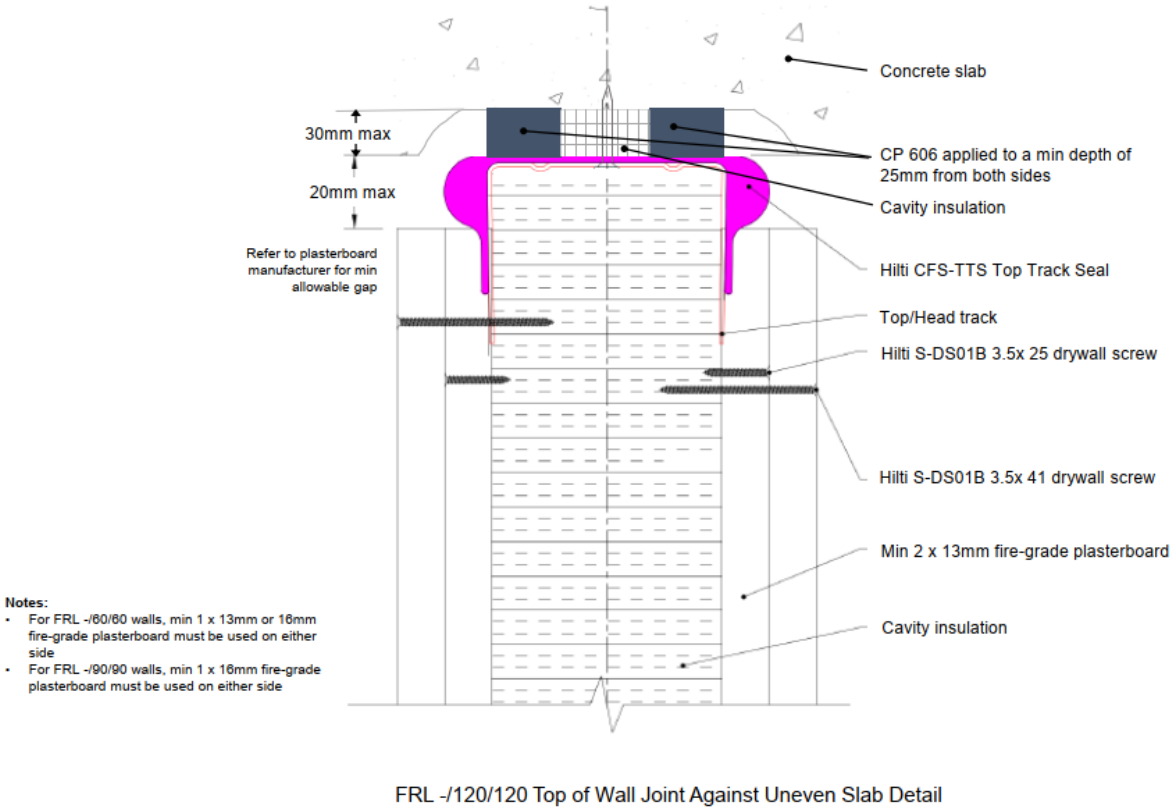


Figure 8 Sealing of uneven slab

4. Scope, objective and assumptions

- The scope of this report is limited to an assessment of the variations to the tested systems described in section 3.3.
- This report details the methods of construction, test conditions and assessed results that would have been expected if the specific elements of construction described here had been tested in accordance with AS 1530.4:2014.
- The results of this assessment are applicable to walls and control joints.
- This report is only valid for the assessed system/s. Any changes with respect to size, construction details, loads, stresses, edge, or end conditions, other than those identified in this report, may invalidate the findings of this assessment. If there are changes to the system, a reassessment will be needed to verify consistency with the assessment in this report.
- The data, methodologies, calculations, and conclusions documented in this report specifically relate to the assessed system/s and must not be used for any other purpose.
- This report has been prepared based on information provided by others. Warringtonfire has not verified the accuracy and/or completeness of that information and will not be responsible for any errors or omissions that may be incorporated into this report as a result.

5. Conclusion

Details of the assessment and discussion are only available in the referenced main assessment report FAS200132 R1.2. It has been concluded that, Hilti TTS top track seal in conjunction with the proposed variations are likely to achieve the FRLs as shown below, if tested in accordance with AS 1530.4:2014 and assessed in compliance with AS 4072.1:2005. A summary of the assessment outcome is outlined in Table 8 to Table 10.

Table 8 Hilti TTS protecting top tracks in flexible wall construction

Hilti TTS top track seal	Track size	Maximum joint height	Fasteners	Joint construction	Separating element (minimum thickness)	FRL
Firestop top track seal CFS-TTS E6	64-65 mm	20 mm	X-C 20 MX, X-C 22 P8 S15-TH, X-C 20 B3, X-C 20 B3 MX, X-P 17 B3 MX, X-P 20 B3 MX, X-P 24 B3 MX, X-P 17 G3, X-P 17 G3 MX, X-P 20 G3 MX, X-GN 20 MX, X-GHP 18 MX, HUS3-P 6 × 40/5, HUS 6 × 35, HUS-H/P 6 × 40, HUS-H 6 × 45, HUS3-PS (Range), HUS-H/P 6 × 60, HUS3-H 10 (Range), HUS3-H 8 (Range), DBZ 6/4.5, HFB 6 × 35.	Horizontal, corners, T-joints, vertical	90 mm (1 × 13 mm) plasterboard wall or 103 mm (1 × 13 mm on one side, 2 × 13 mm on the other) plasterboard wall	-/60/60 (any CFS-TTS type)
Firestop top track seal CFS-TTS E7	71-77 mm				96 mm (1 × 16 mm) plasterboard wall	-/90/90 (any CFS-TTS type)
Firestop top track seal CFS-TTS E9	92-98 mm					
Firestop top track seal CFS-TTS ES	≥ 92 mm single stud walls or double stud walls with total track width ≥ 92mm				116 mm (2 × 13 mm) or 128 mm (2 × 16 mm) plasterboard wall	-/120/120 (any CFS-TTS type)

Table 9 Hilti TTS protecting top tracks in flexible walls with metal decking

Hilti TTS top track seal	Track size	Maximum joint height	Metal deck dimension	Metal deck sealing	Separating element (minimum thickness)	FRL*
Firestop top track seal CFS-TTS E6	64-65 mm	20 mm	Maximum height 65 mm. Overall area restricted to 0.00957 m^2 for each profile	Hilti CP606 ,10 mm deep on both sides. Cavity backfilled with mineral rockwool insulation (density 100 kg/m^3)	90 mm (1 × 13 mm) plasterboard wall or 103 mm (1 × 13 mm on one side, 2 × 13 mm on the other) plasterboard wall	-/60/60 (any CFS-TTS type)
Firestop top track seal CFS-TTS E7	71-77 mm					
Firestop top track seal CFS-TTS E9	92-98 mm					
Firestop top track seal CFS-TTS ES	≥ 92 mm single stud walls or double stud walls with total track width ≥ 92 mm					
Firestop top track seal CFS-TTS E6	64-65 mm	20 mm		Hilti CP606 ,10 mm deep on both sides. Cavity backfilled with mineral rockwool insulation (density 100 kg/m^3)	96 mm (1 × 16 mm) or 116 mm (2 × 13 mm) plasterboard wall	-/60/60
Firestop top track seal CFS-TTS E7	71-77 mm					-/90/90
Firestop top track seal CFS-TTS E9	92-98 mm					-/90/90
Firestop top track seal CFS-TTS ES	≥ 92 mm single stud walls or double stud walls with total track width ≥ 92 mm					-/90/90

*This table is applicable if the wall is perpendicular to the metal decking. If the wall is parallel to the decking, listed FRLs are applicable without the necessity of “Metal deck profile sealing”. The width between the decking (indicated as C in Figure 7) must be higher than the thickness of the wall. The wall must be installed in between the decking profile (within C section) and the head track and the TTS must not be exposed to the metal decking profile cavity.

Table 10 Hilti TTS protecting uneven overhead horizontal surfaces

Hilti TTS top track seal	Track size	Maximum allowable overhead gap	Sealing system	Separating element (minimum thickens)	FRL
Firestop top track seal CFS-TTS E6	64-65 mm	30 mm	Hilti CP606 25 mm deep. The cavity backfilled with mineral rockwool insulation (density 100 kg/m^3)	90 mm (1 × 13 mm) plasterboard wall or 103 mm (1 × 13 mm on one side, 2 × 13 mm on the other) plasterboard wall	-/60/60 (any CFS-TTS type)
Firestop top track seal CFS-TTS E7	71-77 mm			96 mm (1 × 16 mm) plasterboard wall	-/90/90 (any CFS-TTS type)
Firestop top track seal CFS-TTS E9	92-98 mm				
Firestop top track seal CFS-TTS ES	≥ 92 mm single stud walls or double stud walls with total track width ≥ 92 mm			116 mm (2 × 13 mm) plasterboard wall	-/120/120 (any CFS-TTS type)

6. Validity

Warringtonfire Australia does not endorse the tested or assessed product in any way. The conclusions of this assessment may be used to directly assess fire hazard, but it should be recognised that a single test method will not provide a full assessment of fire hazard under all conditions.

Due to the nature of fire 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 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 subject to constant review and improvement. It is therefore recommended that this report be reviewed on or, before, the stated expiry date.

This assessment represents our opinion about the performance likely to be demonstrated on a test in accordance with AS 1530.4:2014, based on the evidence referred to in this report.

This assessment is provided to the Hilti Australia Pty Ltd for its own purposes and we cannot express an opinion on whether it will be accepted by building certifiers or any other third parties for any purpose.