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ASSESSMENT REPORT

The Movement Capability of
Hilti CFS-TTS E Firestop Top Track Seal

FOR

Hilti Entwicklungsgesellschaft mbH
Hiltistrasse 6
86916 Kaufering
Germany



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UL International (UK) Ltd.
220, Cygnet Court, Centre Park, Warrington. WA1 1PP

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1. Introduction

This report considers the movement capability of Hilti CFS-TTS E Firestop Top Track Seals, which have been tested in accordance with both EN 1366-4: 2006+A1 (static) and UL 2079 (dynamic).

The data which forms the basis of this assessment was obtained from tests in accordance with BS EN 1366-4: 2006+A1 and UL 2079.

The purpose of this investigation is to provide information for the Authority Having Jurisdiction (AHJ) regarding the movement capabilities of Hilti CFS-TTS E Firestop Top Track Seals in fire resistance test scenarios with respect to the standards EN 1366-4: 2006+A1 and UL 2079.

2. Assumptions

It is assumed that all details of the seals, installation and supporting constructions will be as specified in the test and classification reports detailed in Appendix 1 of this report.

It is assumed that the AHJ will make decisions relating to the suitability of the Hilti CFS-TTS E Firestop Top Track Seals for installation where fire resistance performance and movement capability are required. This document may assist in making an informed decision.

3. Assessment – Movement Capability

The Hilti CFS-TTS E Firestop Top Track Seal has been subjected to a number of fire resistance tests in accordance with EN 1366-4: 2006+A1 (reports detailed in Appendix 1) and has been classified based upon these tests (in accordance with EN 13501-2: 2016) as follows:

Supporting construction	Classification to EN 13501-2
75 mm, 30 minute drywall	EI 30-T-X-F-W25-25 E 60-T-X-F-W25-25
100 mm, 90 minute drywall	EI 60-T-X-F-W25-25 E 90-T-X-F-W25-25
100 mm, 90 minute drywall	EI 45-T-X-F-W25-25 E 90-T-X-F-W25-25*
210 mm, double framed drywall	EI 90-T-X-F-W25-25 E 120-T-X-F-W25-25*
120 mm, 120 minute drywall	EI 90-T-X-F-W25-25*
210 mm, double framed drywall	EI 120-T-X-F-W25-25

* Separate classification also available for bottom track installation

The classifications are subject to configuration and supporting construction and therefore the test reports and classification reports (referenced in Appendix 1) should be consulted for full detail.

Testing for movement capability in the EN 1366-4: 2006+A1 test is optional and was not included within any of the cited tests, as indicated by the 'X' classification e.g. EI 120-T-'X'-F-W25-25.

If the option of movement capability is selected, then the following additional procedure is included within the fire test:

'10.3 Mechanically induced movement of the test specimen

If the test specimen is to be tested with mechanically induced movement, this shall be carried out according to the provisions given in Annex B.

The sponsor shall specify the type of movement (e.g. lateral, shear), if movement is applied prior to or during the test, the movement capability and the anticipated fire resistance time.

B.2.1.1 Movement prior to test

The movement before the test shall be 100 % of the movement capability which will be maintained throughout the test duration (see Figure B.1).

B.2.1.2 Movement during the test

The test apparatus shall be capable of straining the test specimen laterally (see Figure B.1) in a linear manner. The test shall be started at a movement equivalent to 20 % of the movement capability. 100 % of movement capability shall be reached during the first 80 % of the anticipated fire resistance time, subject to maximum 60 min. When 100 % of the movement capability are reached, no further mechanically induced movement is imposed to the test specimen.'

Briefly, the seal is therefore required to be moved to 100% of its maximum claimed capability before the fire test (remaining in this state for the test) or be gradually moved from the installed position to 100% of its maximum claimed capability during the fire test.

EN 1366-4: 2006+A1 should be consulted for full details.

Although the Hilti CFS-TTS E Firestop Top Track Seal has not been tested when including movement capability in accordance with EN 1366-4: 2006+A1, the product is UL Classified for similar applications (see Appendix 2) based on tested in accordance with UL 2079, which also has optional movement capability requirements and in this case the seals were tested including this requirement and provided the following classifications:



Supporting construction	Classification to EN 13501-2	Movement Capability
Single stud drywall	Assembly Ratings — 1 and 2 Hr	Class II or III Movement Capabilities — 50% Compression or Extension or 66% Compression Only
Double stud drywall	Assembly Ratings — 1 and 2 Hr	Class II or III Movement Capabilities — 50% Compression or Extension or 66% Compression Only
Shaft wall	Assembly Ratings — 1 and 2 Hr	Class II Movement Capabilities — 25% Compression or Extension

The classifications are subject to configuration and supporting construction and therefore the test reports and classification reports (referenced in Appendix 2) should be consulted for full detail.

If the option of movement capability is selected, then the following additional procedure is included within the fire test:

‘10.6 Each joint system is to be subjected to movement cycling prior to the fire test. The joint system is to be installed at its nominal width. The movement cycling is to consist of any one of the conditions specified in Table 10.1. A movement cycle is to consist of the joint system width being nominal, maximum, minimum and then nominal.

Table 10.1

Conditions of test specimen cycling

Minimum number of cycles	Minimum cycling rate (cycles per min)
500	1
500	10
100	30

10.7 The cycle range is to be the same as the movement capability, in direction and magnitude, for which the joint system is designed. Only those components of the joint system which are subject to movement need be cycled.

10.8 After movement cycling, the joint system is to be allowed to stabilize, untouched, at the maximum joint width position. After stabilization, the joint system is to be examined and any indication of stress, deformation or fatigue of the joint system is to be noted, photographed and reported.

10.9 The joint system is to be removed from the movement cycling apparatus, installed in the structure at the maximum joint width without allowing any alteration which will enhance its thermal performance, and fire tested within 96 h after completion of the movement cycling.’

Briefly, the seal is therefore required to be cycled up to 500 times and up to 30 times per minute to 100% of its maximum claimed capability before the fire test (remaining in this state for the test). These requirements are also included in EAD 350141-00-1106 for perimeter seals of curtain walls.

These conditions (UL2079) could be seen to be more critical than those of the EN 1366-4 test due to the relatively severe cycling requirement. The EN and UL tests, while broadly similar, do also include numerous differences.

It is therefore apparent that the Hilti CFS-TTS E Firestop Top Track Seal has been successfully tested for fire resistance performance in accordance with EN 1366-4: 2006+A1, without induced movement and in accordance with UL 2079, including induced movement and that the combined information from this data may be useful to AHJs in determining the suitability of the Hilti CFS-TTS E Firestop Top Track Seal for use in buildings as a fire resisting linear joint seal.

4. Limits of Applicability

The conclusions of this report only apply to Hilti CFS-TTS E Firestop Top Track Seal head of wall linear joint seals, as described in this report.

5. Conclusions

It can be concluded that this investigation provides information for the Authority Having Jurisdiction (AHJ) regarding the movement capabilities of Hilti CFS-TTS E Firestop Top Track Seals in fire resistance test scenarios with respect to the standards EN 1366-4: 2006+A1 and UL 2079.

6. 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 UL International (UK) Ltd the assessment will be unconditionally withdrawn and Hilti Entwicklungsgesellschaft mbH 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 June 2023, 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.



7. Declaration by Hilti Entwicklungsgesellschaft mbH

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 UL International (UK) Ltd to withdraw the assessment.

Signed:

For and on behalf of:



8. Signatories

Report by:

Reviewed by:

A handwritten signature in blue ink, appearing to read 'Chris Johnson'.

A handwritten signature in blue ink, appearing to read 'Steven Harms'.

Chris Johnson*
Staff Engineer
Building and Life Safety Technologies

Steven Harms*
Engineering Leader
Building and Life Safety Technologies

*For and on behalf of Underwriters Laboratories International (UK) Ltd

The assessment report is not valid unless it incorporates the declaration duly signed by the applicant. This is included in Section 7 to this report.

REPORT ISSUED: 19th June 2018

Appendix 1: Summary of Primary Supporting Evidence

Warringtonfiregent Report No. 18330B (Notified Body No. 1173) A test in accordance with EN 1366-4, on a specimen top track seal installed in a 75mm thick gypsum drywall. The test demonstrated the ability of the seal to provide 60 minutes integrity and 30 minutes insulation performance.

Warringtonfiregent Report No. 18330D (Notified Body No. 1173) A classification in accordance with EN 13501-2: 2016, based upon the report detailed above. The classification given in the report are as follows:

Classification
EI 30-T-X-F-W25-25
E 60-T-X-F-W25-25

Warringtonfiregent Report No. 18378B (Notified Body No. 1173) A test in accordance with EN 1366-4, on a specimen top and bottom track seal installed in a 100 mm thick gypsum drywall. The test demonstrated the ability of the seals to provide up to 93 minutes integrity and 68 minutes insulation performance.

Warringtonfiregent Report No. 18378C (Notified Body No. 1173) A classification in accordance with EN 13501-2: 2016, based upon the reports detailed above. The classification given in the report are as follows:

Classification
EI 60-T-X-F-W25-25
E 90-T-X-F-W25-25

Warringtonfiregent Report No. 18379B (Notified Body No. 1173) A test in accordance with EN 1366-4, on specimens of top and bottom track seal installed in a 100 mm thick gypsum drywall. The test demonstrated the ability of the seals to provide up to 90 minutes integrity and insulation performance.

Warringtonfiregent
Report No. 18379D
(Notified Body No.
1173)

A classification in accordance with EN 13501-2: 2016, based upon the report detailed above. The classification given in the report are as follows:

Top Track Classification
EI 45-T-X-F-W25-25
E 90-T-X-F-W25-25
Bottom Track Classification
E 90-T-X-F-W25-25

Warringtonfiregent
Report No. 18379B
(Notified Body No.
1173)

A test in accordance with EN 1366-4, on specimens of top and bottom track seal installed in a 210mm thick, double framed gypsum drywall. The test demonstrated the ability of the seals to provide up to 120 minutes integrity and 93 minutes insulation performance.

Warringtonfiregent
Report No. 18379C
(Notified Body No.
1173)

A classification in accordance with EN 13501-2: 2016, based upon the report detailed above. The classification given in the report are as follows:

Top Track Classification
EI 90-T-X-F-W25-25
E 120-T-X-F-W25-25
Bottom Track Classification
EI 120-T-X-F-W25-25

Warringtonfiregent
Report No. 18538B
(Notified Body No.
1173)

A test in accordance with EN 1366-4, on specimens of top and bottom track seal installed in a 120mm thick gypsum drywall. The test demonstrated the ability of the seals to provide up to 120 minutes integrity and 96 minutes insulation performance.

Warringtonfiregent
Report No. 18538D
(Notified Body No.
1173)

A classification in accordance with EN 13501-2: 2016, based upon the report detailed above. The classification given in the report are as follows:



Top Track Classification
EI 90-T-X-F-W25-25
Bottom Track Classification
EI 120-T-X-F-W25-25

Warringtonfiregent
Report No. 18539B
(Notified Body No.
1173)

A test in accordance with EN 1366-4, on specimens of top and bottom track seal installed in a 210mm thick, double framed gypsum drywall. The test demonstrated the ability of the seals to provide up to 124 minutes integrity and insulation performance.

Warringtonfiregent
Report No. 18539D
(Notified Body No.
1173)

A classification in accordance with EN 13501-2: 2016, based upon the report detailed above. The classification given in the report are as follows:

Classification
EI 120-T-X-F-W25-25

Appendix 2: UL Designs

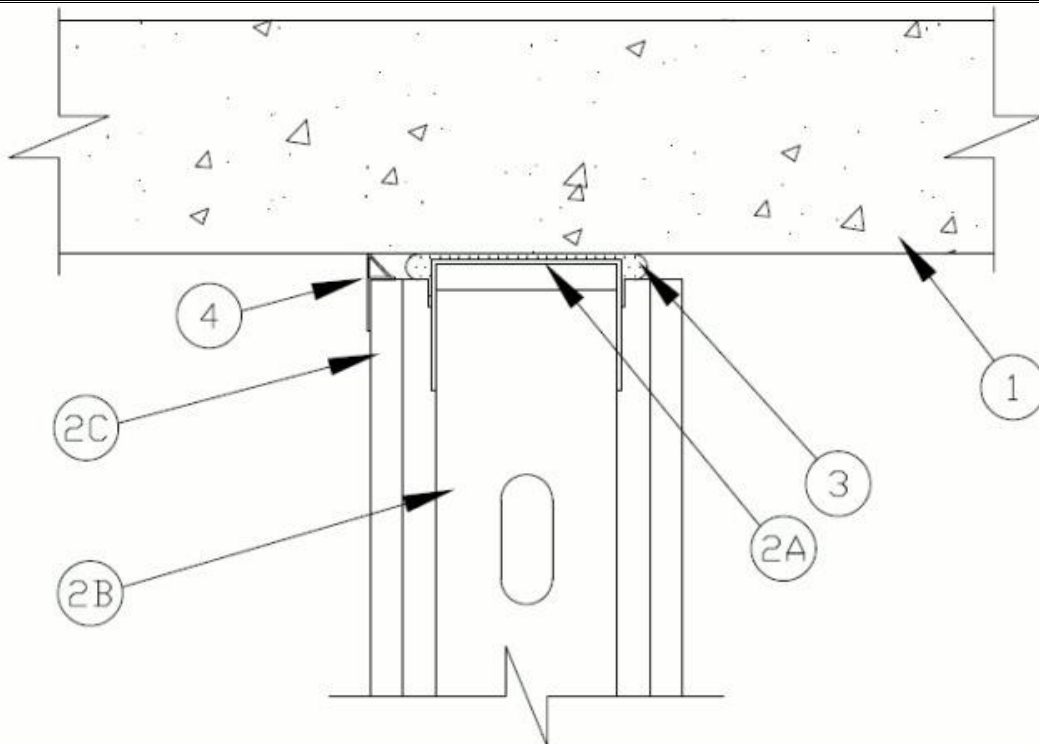
XHBN - Joint Systems

XHBN7 - Joint Systems Certified for Canada

System No. HW-D-0757

October 27, 2017

ANSI/UL2079	CAN/ULC S115
Assembly Ratings — 1 and 2 Hr (See Item 2)	F Rating — 1 and 2 Hr (See Item 2)
Nominal Joint Width — 1/2 or 3/4 In. (See Item 3)	FT Rating — 1 and 2 Hr (See Item 2)
Class II or III Movement Capabilities — 50% Compression or Extension or 66% Compression Only	FH Rating — 1 and 2 Hr (See Item 2)
L Rating at Ambient — Less than 1 CFM/Lin Ft	FTH Rating — 1 and 2 Hr (See Item 2)
L Rating at 400° F — Less than 1 CFM/Lin Ft	Nominal Joint Width - 13 or 19 mm (See Item 3)
	Class II or III Movement Capabilities — 50% Compression or Extension or 66% Compression Only
	L Rating at Ambient — Less than 1.55 L/s/lin m
	L Rating at 400° F — Less than 1.55 L/s/lin m



1. **Floor Assembly** — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) structural concrete. Floor may also be constructed of any 6 in. (152 mm) thick UL Classified hollow-core **Precast Concrete Units***.

See **Precast Concrete Units** category in the Fire Resistance Directory for names of manufactures.

2. **Wall Assembly** — The 1 or 2 h fire-rated gypsum board /steel stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. **Steel Floor and Ceiling Runners** — Floor and ceiling runners of wall assembly shall consist of min No. 25 gauge galv steel channels sized to accommodate steel studs (Item 2B). Flange height of ceiling runner shall be min 1/4 in. (6 mm) greater than max extended joint width. Ceiling runner secured to concrete floor slab with steel masonry anchors, steel fasteners spaced 24 in. (610 mm) OC.

A1. **Light Gauge Framing* — Slotted Ceiling Runner** — As an alternate to the ceiling runner in Item 2A, slotted ceiling runner to consist of galv steel channel with slotted flanges sized to accommodate steel studs (Item 2B). Slotted ceiling runner secured to concrete floor slab with steel masonry anchors or steel fasteners spaced max 24 in. (610 mm) OC.

BRADY CONSTRUCTION INNOVATIONS INC, DBA SLIPTRACK SYSTEMS — SLP-TRK

CALIFORNIA EXPANDED METAL PRODUCTS CO — CST

CLARKDIETRICH BUILDING SYSTEMS — Types SLT, SLT-H

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Type SLT

METAL-LITE INC — The System

SCAFCO STEEL STUD MANUFACTURING CO — Slotted Track

TELLING INDUSTRIES L L C — True-Action Deflection Track

A2. **Light Gauge Framing* — Vertical deflection Ceiling Runner** — As an alternate to the ceiling runners in Items 2A and 2A1, vertical deflection ceiling runner to consist of galv steel channel with slotted vertical deflection clips mechanically fastened within runner. Slotted clips, provided with step bushings, for permanent fastening of steel studs. Flanges sized to accommodate steel studs (Item 2B). Vertical deflection ceiling runner secured to concrete floor slab with steel fasteners or steel masonry anchors spaced max 24 in. (610 mm) OC.

THE STEEL NETWORK INC — VertiTrack VTD250, VTD362, VTD400, VTD600 and VTD800

A3. **Light Gauge Framing* — Notched Ceiling Runner** — As an alternate to the ceiling runners in Items 2A through 2A3, notched ceiling runners to consist of C-shaped galv steel channel with notched return flanges sized to accommodate steel studs (Item 2B). Notched ceiling runner secured to concrete floor slab with steel masonry anchors or steel fasteners spaced max 24 in. (610 mm) OC.

**OLMAR SUPPLY INC — Type SCR**

B. **Studs** — Steel studs to be min 3-1/2 in. (64 mm) wide. Studs cut 3/4 to 1 in. (19 to 25 mm) less in length than assembly height with bottom nesting in and resting on floor runner and with top nesting in ceiling runner without attachment. When slotted ceiling runner (Item 2A1) is used, steel studs secured to slotted ceiling runner with No. 8 by 1/2 in. (13 mm) long wafer head steel screws at mid-height of slot on each side of wall. Stud spacing not to exceed 24 in. (610 mm) OC. When vertical deflection ceiling runner (Item 2A2) is used, steel studs secured to slotted vertical deflection clips, through the bushings, with steel screws at mid-height of each slot. Stud spacing not to exceed 24 in. (610 mm) OC.

C. **Gypsum Board*** — For 1 hr assembly, one layer of 5/8 in. (16 mm) thick gypsum board is required in the individual Wall and Partition Design. For 2 hr assembly, two layers of 5/8 in. (16 mm) thick gypsum board is required in the individual Wall and Partition Design. For both hourly ratings, a max 3/4 in. (19 mm) gap shall be maintained between the top of gypsum board and the bottom of surface of the concrete floor. The screws attaching the gypsum board to studs at the top of the wall shall be located 1 in. (25 mm) to 1-1/2 in. (38 mm) below the bottom edge of the ceiling runner.

The hourly ratings of the joint system are dependent on the hourly rating of the wall.

3. **Fill, Void or Cavity Material* — Top Track Seal —** When max separation between the bottom of floor and top of wall is 1/2 in. (13 mm), the joint system is designed to accommodate a max 50 percent compression or extension from its installed width. When max separation between the bottom of floor and top of wall is 3/4 in. (19 mm), the joint system is designed to accommodate a max 66% compression only from its installed width. Factory supplied foam seal installed over the ceiling runner (Item 2A) prior to attachment to underside of concrete floor in accordance with the installation instructions.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CFS-TTS 358, CFS-TTS 600 or CFS-TTS-OS

4. **Fill, Void or Cavity Material*** — (Optional) — A PVC wall mounted deflection bead can be installed over the surface of the joint at one or both sides of wall. Nom 1-1/8 in. (28.6 mm) leg of the bead rests against the face of the gypsum wall and is secured in accordance with manufacturer installation instructions. Bead includes an integral triangular shaped flexible gasket that fits over the joint and allows for dynamic movement.

TRIM-TEX INC — Wall Mounted Deflection Bead

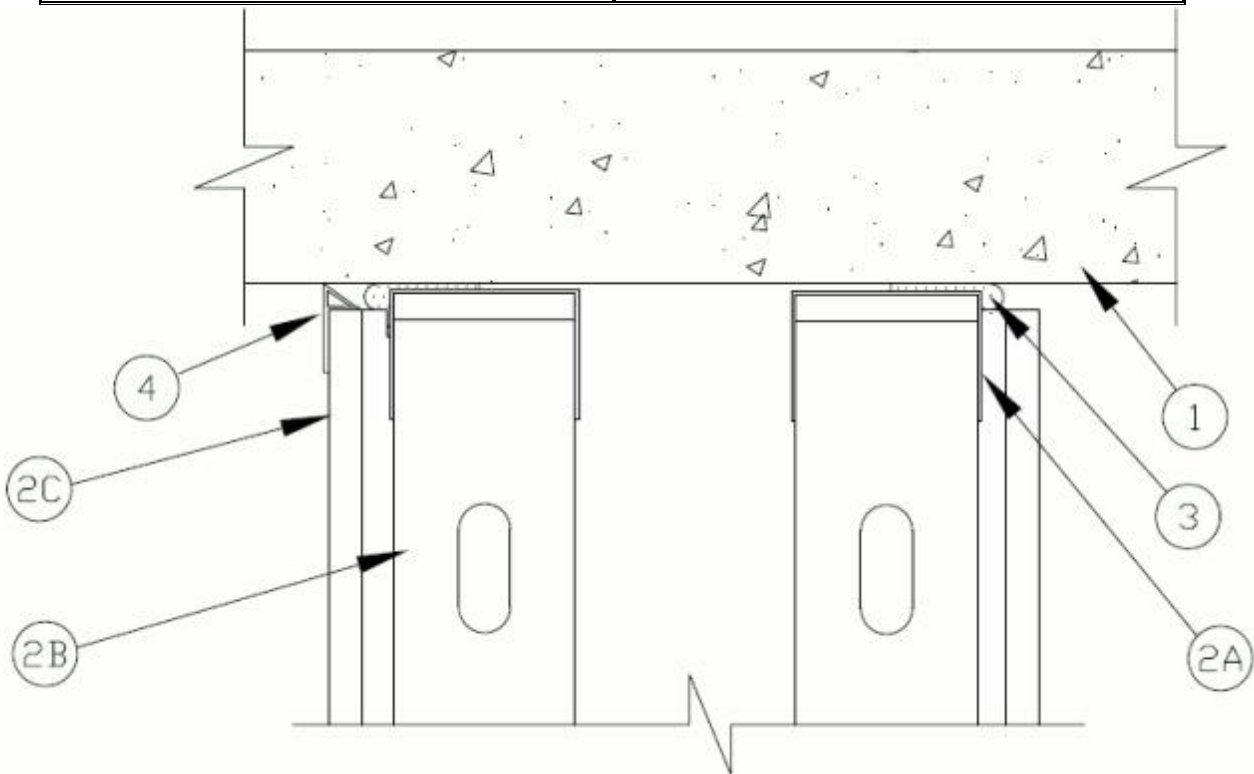
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

XHBN - Joint Systems
XHBN7 - Joint Systems Certified for Canada

System No. HW-D-0758

October 27, 2017

ANSI/UL2079	CAN/ULC S115
Assembly Ratings — 1 and 2 Hr (See Item 2)	F Rating — 1 and 2 Hr (See Item 2)
Nominal Joint Width — 1/2 or 3/4 In. (See Item 3)	FT Rating — 1 and 2 Hr (See Item 2)
Class II or III Movement Capabilities — 50% Compression or Extension or 66% Compression Only	FH Rating — 1 and 2 Hr (See Item 2)
L Rating at Ambient — Less than 1 CFM/Lin Ft	FTH Rating — 1 and 2 Hr (See Item 2)
L Rating at 400° F — Less than 1 CFM/Lin Ft	Nominal Joint Width - 13 or 19 mm (See Item 3)
	Class II or III Movement Capabilities — 50% Compression or Extension or 66% Compression Only
	L Rating at Ambient — Less than 1.55 L/s/lin m
	L Rating at 400° F — Less than 1.55 L/s/lin m



1. **Floor Assembly** — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) structural concrete. Floor may also be constructed of any 6 in. (152 mm) thick UL Classified hollow-core **Precast Concrete Units***.

See **Precast Concrete Units** category in the Fire Resistance Directory for names of manufactures.

2. **Wall Assembly** — The 1 or 2 hr fire rated gypsum board/stud chase (double stud) wall assembly shall be constructed of the materials and in the manner described in the individual U400, V400 or W400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. **Steel Floor and Ceiling Runners** — Floor and ceiling runners of wall assembly shall consist of min No. 25 gauge galv steel channels sized to accommodate steel studs (Item 2B). Flange height of ceiling runner shall be min 1/4 in. (6 mm) greater than max extended joint width. Ceiling runner secured to concrete floor slab with steel masonry anchors, steel fasteners spaced 24 in. (610 mm) OC.

A1. **Light Gauge Framing* — Slotted Ceiling Runner** — As an alternate to the ceiling runner in Item 2A, slotted ceiling runner to consist of galv steel channel with slotted flanges sized to accommodate steel studs (Item 2B). Slotted ceiling runner secured to concrete floor slab with steel masonry anchors or steel fasteners spaced max 24 in. (610 mm) OC.

BRADY CONSTRUCTION INNOVATIONS INC, DBA SLIPTRACK SYSTEMS — SLP-TRK

CALIFORNIA EXPANDED METAL PRODUCTS CO — CST

CLARKDIETRICH BUILDING SYSTEMS — Types SLT, SLT-H

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Type SLT

METAL-LITE INC — The System

SCAFCO STEEL STUD MANUFACTURING CO — Slotted Track

TELLING INDUSTRIES L L C — True-Action Deflection Track

A2. **Light Gauge Framing* — Vertical deflection Ceiling Runner** — As an alternate to the ceiling runners in Items 2A and 2A1, vertical deflection ceiling runner to consist of galv steel channel with slotted vertical deflection clips mechanically fastened within runner. Slotted clips, provided with step bushings, for permanent fastening of steel studs. Flanges sized to accommodate steel studs (Item 2B). Vertical deflection ceiling runner secured to concrete floor slab with steel fasteners or steel masonry anchors spaced max 24 in. (610 mm) OC.

THE STEEL NETWORK INC — VertiTrack VTD250, VTD362, VTD400, VTD600 and VTD800

A3. Light Gauge Framing* — Notched Ceiling Runner — As an alternate to the ceiling runners in Items 2A through 2A3, notched ceiling runners to consist of C-shaped galv steel channel with notched return flanges sized to accommodate steel studs (Item 2B). Notched ceiling runner secured to concrete floor slab with steel masonry anchors or steel fasteners spaced max 24 in. (610 mm) OC.

OLMAR SUPPLY INC — Type SCR

B. Studs — Steel studs to be min 3-1/2 in. (89 mm) wide and formed of min 25 ga galv steel. Studs cut 3/4 to 1 in. (19 to 25 mm) less in length than assembly height with bottom nesting in and secured to floor runner. Steel studs nested in ceiling runner without attachment. Studs spaced max 24 in. (610 mm) OC.

C. Gypsum Board* — Gypsum board 1/2 or 5/8 in. (13 or 16 mm) thick, applied on both sides of wall as specified in the individual Wall and Partition Design except that a max 3/4 in. (19 mm) gap shall be maintained between the top of the gypsum board and the bottom of the floor assembly. The screws attaching the gypsum board to studs at the top of the wall shall be located 1 in. (25 mm) to 1-1/2 in. (38 mm) below the bottom edge of the ceiling runner. No gypsum board attachment screws shall be driven into the ceiling runner.

The hourly ratings of the joint system are equal to the hourly fire rating of the wall.

3. Fill, Void or Cavity Material* — Top Track Seal — When max separation between the bottom of floor and top of wall is 1/2 in. (13 mm), the joint system is designed to accommodate a max 50 percent compression or extension from its installed width. When max separation between the bottom of floor and top of wall is 3/4 in. (19 mm), the joint system is designed to accommodate a max 66% compression only from its installed width. Factory supplied foam seal installed over the ceiling runners (Item 2A) prior to attachment to underside of concrete floor in accordance with the installation instructions.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CFS-TTS 358, CFS-TTS 600 or CFS-TTS-OS

4. Fill, Void or Cavity Material* — (Optional) — A PVC wall mounted deflection bead can be installed over the surface of the joint at one or both sides of wall. Nom 1-1/8 in. (28.6 mm) leg of the bead rests against the face of the gypsum wall and is secured in accordance with manufacturer installation instructions. Bead includes an integral triangular shaped flexible gasket that fits over the joint and allows for dynamic movement.

TRIM-TEX INC — Wall Mounted Deflection Bead

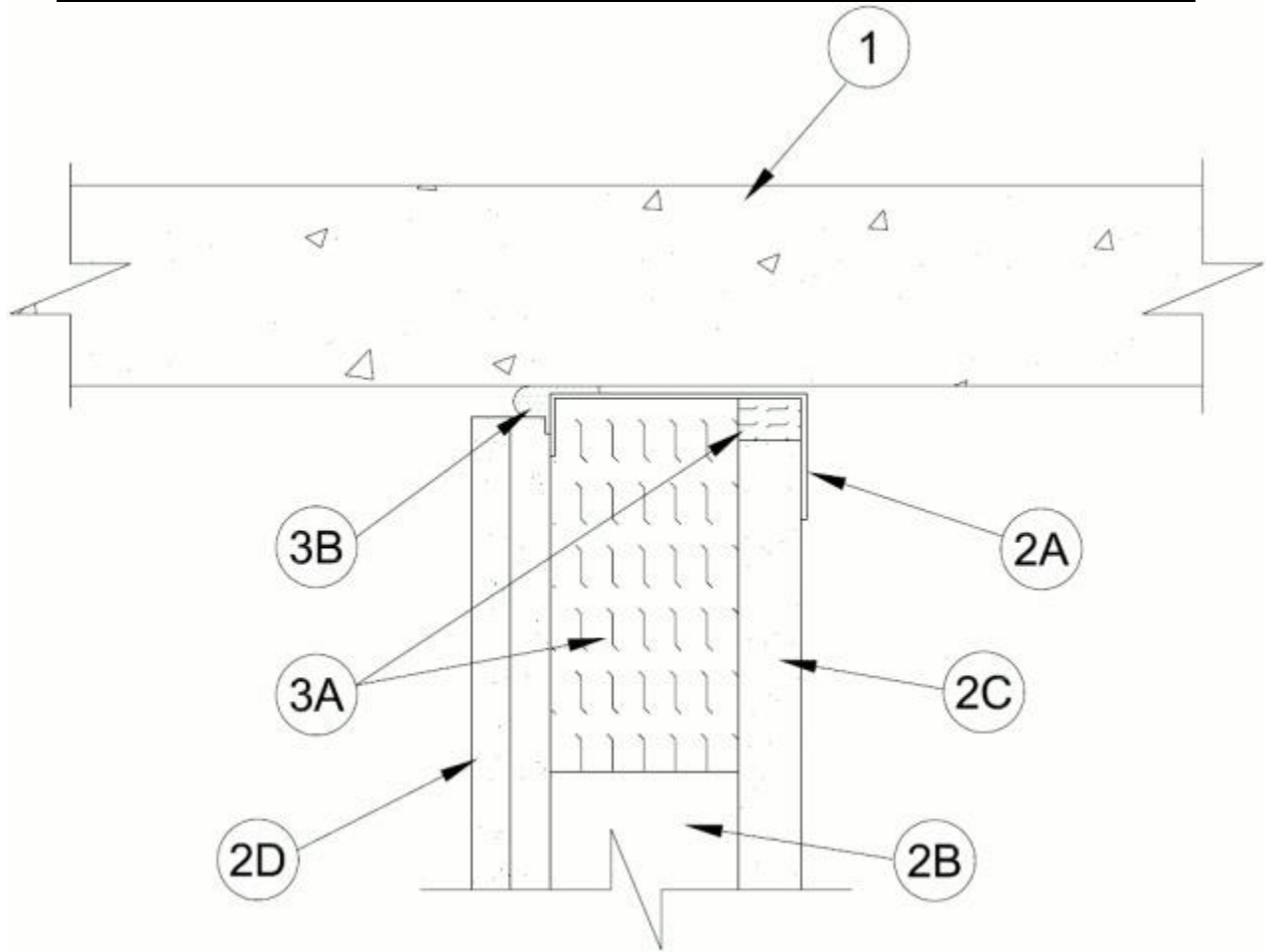
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

XHBN - Joint Systems
XHBN7 - Joint Systems Certified for Canada

System No. HW-D-0824

December 08, 2017

ANSI/UL2079	CAN/ULC S115
Assembly Ratings — 1 and 2 Hr (See Item 2)	F Rating — 1 and 2 Hr (See Item 2)
Nominal Joint Width — 1/2 In.	FT Rating — 1 and 2 Hr (See Item 2)
Class II Movement Capabilities — 25% Compression or Extension	FH Rating — 1 and 2 Hr (See Item 2)
	FTH Rating — 1 and 2 Hr (See Item 2)
	Nominal Joint Width - 13 mm
	Class II Movement Capabilities — 25% Compression or Extension



1. **Floor Assembly** — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) structural concrete. Floor may also be constructed of any 6 in. (152 mm) thick UL Classified hollow-core **Precast Concrete Units***.

See **Precast Concrete Units** category in the Fire Resistance Directory for names of manufactures.

2. **Shaft Wall Assembly** — The 1 or 2 hr fire rated shaft wall assembly shall be constructed of the materials and in the manner described in the individual U400, V400 or W400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. **Steel Floor And Ceiling Runners** — "J"-shaped runner, min 4 in. (102 mm) wide with unequal legs of min 1-1/4 in. (32 mm) and 2-1/4 in. (57 mm), fabricated from min 24 MSG galv steel. Runners positioned with short leg toward finished side of wall. Runners attached to walls and floor with steel fasteners spaced max 24 in. (610 mm) OC. As an alternate to the "J"-shaped floor runner, a min 4 in. (102 mm) wide by 1 or 1-1/4 in. (25 or 32 mm) deep channel formed from min 24 MSG galv steel may be used.

B. **Steel Studs** — "C-H"-shaped steel studs to be min 4 in. (102 mm) wide and formed of min 25 MSG galv steel. Studs cut 1/2 to 3/4 in. (13 to 19 mm) less in length than assembly height with bottom nesting in and resting on floor runner and with top nesting in ceiling runner. Studs spaced 24 in. (610 mm) OC. After installation of gypsum board liner panels (Item 2D), studs secured to flange of floor runner on finished side of wall only with No. 6 by 1/2 in. (13 mm) long self-drilling, self-tapping steel screws.

C. **Gypsum Board*** — 1 in. (25 mm) thick by 24 in. (610 mm) wide gypsum board liner panels. Panels cut 3/4 in. (19 mm) less in length than floor to ceiling height. Vertical edges inserted in "H"-shaped section of "C-H" studs. Free edge of end panels attached to long leg of "J" runner (Item 2A) with 1-5/8 in. (41 mm) long Type S steel screws spaced max 12 in. (305 mm) OC.

D. **Gypsum Board*** — Gypsum board sheets, 5/8 in. (16 mm) thick Type C, applied vertically or horizontally in two layers on finished side of wall as specified in the individual U400, V400 or W400 Series Wall and Partition Design. A max 1/2 in. (13 mm) gap shall be maintained between the top of the gypsum board and the bottom surface of the concrete floor. The screws attaching the gypsum board layers to the C-H studs at finished side of wall shall be located 1 to 1-1/2 in. (25 to 38 mm) below the bottom of the ceiling runner. No gypsum board attachment screws are to penetrate the ceiling track.

The hourly Assembly, F, FT, FT and FTH ratings of the joint system are dependent on the hourly rating of the wall.

3. **Joint System** — Max separation between bottom of floor and top of finished side of wall is 1/2 in. (13 mm) at time of installation. The joint system is designed to accommodate a max 25 percent compression and extension from its installed width. The joint system consists of the following:

A. **Forming Material*** — Min 4 pcf (64 kg/m³) mineral wool insulation. Min 1-1/4 in. (32 mm) wide pieces of forming material to be cut to a thickness 50% greater than the gap above the shaft liner board, compressed and installed within the ceiling runner above the shaft liner board. In addition, min 6 in. (152 mm) wide pieces of forming material shall be cut to a thickness equal to the width of the ceiling runner, compressed in thickness and installed cut edge first into the top of ceiling runner between leg of track and gypsum liner board.

A1. **Forming Material* - Strips** — As an alternate to the mineral wool packed within joint above shaft liner board as described in Item 3A, the strips are stacked to a height twice larger than gap, compressed 50%, and tightly packed within the space within the ceiling runner above the shaft liner board.



HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 767 Speed Strips

B. Fill, Void or Cavity Material* — Top Track Seal — Factory supplied foam seal installed over the ceiling runner (Item 2A) on finished side of wall prior to attachment to underside of concrete floor in accordance with the installation instructions.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CFS-TTS-OS

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.