TEST REPORT FOR FIRE PROPOGATION CHARACTERISTICS OF EXTERIOR NON-LOAD BEARING WALL ASSEMBLIES

Test Sponsor:

Siderise Insulation Limited
Forge Industrial Estate,
Maesteg, Bridgend CF34 0AH
Tel: +44 (0) 1656 730833, Fax: +44 (0) 1656 812509
www.siderise.com

Test Assembly:

Non-loadbearing 2mm ALERIS aluminium cladding assembly with SIDERISE RV/RH firestop system.

Test Standard:

NFPA 285; Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Loadbearing Wall Assemblies Containing Combustible Components, 2012 Edition

THOMAS BELL-WRIGHT
INTERNATIONAL CONSULTANTS

Test Date: 23rd Oct '16
Issue Date: 6th Dec '16
Test Report Reference No.: QH116

PO BOX 26385, DUBAI UAE T +971 (0)4 333 2692 admin@bell-wright.com www.bell-wright.com

DUBAI ABU DHABI DOHA

Accreditation

Testing

ISO/IEC 17025: General requirements for the competence of testing and calibration laboratories *with*

International Accreditation Service (IAS) - Testing Laboratory: **TL-626**
www.iasonline.org

Memberships

Members of European Group of Organization for Fire Testing, Inspection and Certification

www.egolf.org.uk

Member of International Trade Council

www.thetradecouncil.com

Member of Association for Specialist Fire Protection

www.asfp.org.uk

Member of Centre for Window and Cladding Technology

www.cwct.co.uk

The work which is the subject of this report falls wholly or partly under the accreditation of **ISO 17025 IAS**

Table of Contents

1. INTRODUCTION

Determination of the fire propagation characteristics of a non-loadbearing 2mm ALERIS aluminium cladding assembly with SIDERISE RV/RH firestop system according to:

NFPA 285; Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Loadbearing Wall Assemblies Containing Combustible Components, 2012 Edition.

2. SPONSOR

Name: Siderise Insulation Limited
Address: Forge Industrial Estate,
Maesteg, Bridgend CF34 0AH
Tel: +44 (0) 1656 730833, Fax: +44 (0) 1656 812509
www.siderise.com

3. TESTING LABORATORY

Name: Thomas Bell-Wright International Consultants (TBWIC)
Address: 25b Street, Ras Al Khor Industrial Area
P.O. Box 26385
Dubai, U.A.E.
T: +971 (0) 4 333 26 92, F: +971 (0) 4 333 26 93
www.bell-wright.com

4. DATE OF TEST

Installation Date: 5-Oct-16 to 10-Oct-16
Fire Test Date: 23-Oct-16
The test has been was witnessed by:

Name	Company	Contact Number
Mr. Sreenivas	SIDERISE	+971 52 668 63 83
Mr. Manoj K. Mathew	BECON	+971 56 404 6864

5. TEST SAMPLES

5.1.Sample and Assembly Description

The 5500 mm x 4550 mm (h x w) wide intermediate scale multistory assembly (ISMA) test wall was composed of 2mm thick Aluminium Panel (55 HX Aluminium – Solid) mounted on 120mm thick base wall composed of Type X 15.9 mm Gypsum board with Mineral Wool Insulation.

5.1.1.Base Frame

The base frame consisted of steel channels of size 150 x 75 x 10mm (w x h x thk.). Initially a 100mm long section of the stub steel channel was fixed onto the angle bars of the test frame using M8 x 100mm through bolts at intermediate locations. A continuous steel channel was then fixed onto the stub steel channels along the width of the test frame using M8 x 100mm through bolts.

5.1.2. Base Wall

The base wall was composed of a layer of 15.9mm thick Type-X gypsum board. The boards were fixed onto 1.2 mm thick galvanized steel studs and tracks. The studs were fixed at the edge of the wall and were spaced to match the spacing of the brackets for the cladding system (See drawings 2 and 3 in Appendix 4). The top and bottom edges of the studs were welded into the 1.2 mm thick steel tracks which were welded directly to the test frame. The studs were also welded directly onto the horizontal angle bars of the test frame at every intersection and there were also horizontal studs welded intermediately between the vertical studs (See drawing 1 in Appendix 4). The meeting edges of all gypsum boards were covered with fiber jointing tape and gypsum jointing compounds.

5.1.3. Aluminium Wall Brackets

The aluminum wall brackets were fixed to the exterior face of the base wall, anchored in the galvanized steel framing system of the base wall using M6 x 30mm self-tapping torx screws (See drawing 2 in Appendix 4). The vertical runner profiles were fixed onto the wall brackets using stainless steel through-bolts of size M8 x 30mm.

5.1.4. Aluminium Runner Profiles

The aluminium runner system consisted of extruded aluminium angles fixed vertically and continuously between the feet to the head of the base wall. They were fixed to the aluminum wall brackets using stainless steel through-bolts, of size M8 x 30mm.

5.1.5. Insulation Supports

Insulation supports were fixed to the base wall and were used to support the mineral wool insulation slabs.

5.1.6. Horizontal Cavity Fire Barrier

Siderise RH 25 S/090/030/098-102 horizontal fire barrier system was fixed onto the base wall at each floor slab level using Siderise B65-110 S/STL insulation anchors.

5.1.7. Horizontal Cavity Fire Barrier

Siderise RVS -090/030/109-121 vertical fire barrier system was fixed onto the base wall at each vertical wall level using Siderise B65-110 S/STL insulation anchors.

5.1.8. Exterior Insulation - Rockwool

A 75mm thick layer of mineral wool insulation of density 80kg/m³ was used over the entire exterior face of the base wall. The insulation slabs were fixed to the base wall using galvanized steel insulation pins, which were fixed onto the base wall.

5.1.9. 2mm thick 55 HX Aluminium Panels

The tray-profile aluminium panels consisted of a 2mm thick sheet of solid aluminium. They were pre-fabricated and bent into tray-profiles.

5.1.10. Window Flashing

Pre-bent sections of galvanized steel were used around the perimeter of the window opening and fixed in place using self-tapping stainless steel screws. The flushing overlapped both the interior face of the base wall and the exterior face of the specimen.

5.2. Supporting Construction

The test assembly was installed on a moveable test frame constructed of 150mm x 150 mm steel I-beams with 3 Nos. of 100 mm x 100 mm steel angles welded horizontally at locations specified by the standard.

The assembly was secured onto the laboratory's intermediate scale multi-story test apparatus (ISMA) and the gaps were filled with ceramic fiber blanket (supplied by Unifrax) with a density of 128 kg/m^3.

6. SPECIMEN VERIFICATION

6.1. Specimen Definition

The laboratory has not been involved in the selection of the specimen.

The choice and the definition of the specimen have been made by Siderise Insulation Limited.

6.2. Specimen Installation

Installation of the specimen: Siderise Insulation Limited

Supporting Construction: TBWIC

7. METHOD OF TEST

7.1. Verification of the Test Specimen

The construction has been verified by TBWIC based on a detailed survey and with the technical information supplied by Siderise Insulation Limited.

TBWIC was not involved in the selection of the materials.

7.2. Conditioning and Moisture

The specimen was delivered on 4-Oct-16 and installed from 5-Oct-16 to 10-Oct-16. The specimen was covered with tarpaulin after installation and stored in ambient conditions at temperatures ranging between 26°C and 38°C and 11% to 84% humidity.

7.3. Instrumentation

The interior thermocouples fixed within the specimen were at a depth of 212mm from the interior face of the base wall, located at mid-depth of the air cavity, as per Figure 6.1(b), Detail H in the NFPA 285 standard.

8. CALIBRATION

The calibration for the test rig was performed on September 07, 2016 and followed the procedure and practices outlined for calibration in NFPA 285:2012, Chapter 7.

Table 1 shows the average heat flux and table 2 shows the average temperature obtained during the calibration test. The values are within the allowable ranges as specified in table 7.1.11 (±10% allowable tolerance).

Time Interval (min)	Average Heat Flux 2FT (W/cm²)	Average Heat Flux 3FT (W/cm²)	Average Heat Flux 4FT (W/cm²)
0:00-5:00	1.09	0.84	0.63
5:00-10:00	2.28	2.16	1.67
10:00-15:00	2.84	2.72	2.35
15:00-20:00	3.47	3.11	2.75
20:00-25:00	4.07	3.72	3.22
25:00-30:00	4.44	4.08	3.65

Table 1: Average heat flux values for the time period indicated.

Time Interval (min)	Avg. Burn Room Temp (°F)	Avg. Int. Wall Temp (°F)	Avg. 1 FT Temp (°F)	Avg. 2 FT Temp (°F)	Avg. 3 FT Temp (°F)	Avg. 4 FT Temp (°F)	Avg. 5 FT Temp (°F)	Avg. 6 FT Temp (°F)
0:00-5:00	1131	1165	675*	700	610	540	524	444
5:00-10:00	1365	1414	981*	1008	901	807	840	683
10:00-15:00	1501	1555	1064*	1074	1003	884	918	754
15:00-20:00	1627	1710	1131*	1132	1099	960	979	809
20:00-25:00	1687	1730	1229*	1250	1187	1035	1026	847
25:00-30:00	1700	1806	1275*	1304	1238	1106	1086	1009

*Some values obtained during the calibration were slightly above the limit. These values represent a more severe test scenario.

Table 2: Average temperature values for the time period indicated.

9. FIRE TEST

9.1. Conditions and Test Situation

The fire test was carried out according to NFPA 285; 2012 Edition

9.2. Measurements (for graphs and data, refer to Appendix 2)

The specimen was fitted with 54 Type-K thermocouples which were distributed as per the diagram in Appendix 1.

A 100 channel Agilent 34970A data logger was used to record the output of the thermocouples on 15 second intervals.

The window burner was centered on the vertical centerline of the window, 9 inches below the top of the opening, and with the longitudinal centerline of the burner at 3 inches from the plane of the exterior wall, consistent with the standard and the calibration of the test apparatus.

The assembly was tested based on the values obtained during the calibration as per the NFPA 285 standard.

The burn room thermocouples were placed at 6 inches below the first story test room ceiling and distributed according to NFPA 285; Fig. 6.1(d)

The ambient temperature at the commencement of the test was recorded as 81.14°F and the relative humidity was recorded as 68%. The airflow, measured with an anemometer placed at a right angle and within 1 meter of the test face, at the beginning at test was recorded at less than 0.2 m/s. Video recording digital photographs, visual observations and data collection were performed prior, during, and after testing was completed.

9.3.Pre-Test Observations

The specimen was found satisfactory to be tested.

9.4.Fire Test Observations

Time (min:sec)	Observations from the front of the specimen (Exterior Face)
0:00	**The test commenced.**
5:00	The window burner was ignited.
9:50	Panels up to the 5ft. mark above the window header was observed to be bulging outward.
10:00	The specimen was stable.
14:33	Panels immediately above the window header began to melt down.
15:00	The specimen was stable.
16:20	Molten aluminium was observed to be dripping down.
18:50	Panels above window header up to 3 ft. had melted down.
20:00	The specimen was stable.
21:17	Window header began to sag down.
25:00	The specimen was stable.
26:35	Panels were still found to be melting down and flame from the window burner was observed to be passing into the cladding system.
28:20	Panels above window header up to 4ft. had melted down.
30:00	**The specimen was stable, the test was stopped and gas shut off, as per the NFPA 285 Standard, and the 10 minute observation period began.**
35:00	The specimen was stable.
40:00	**The observation period was ended as per the NFPA 285 standard and the NFPA 285 test was completed.**

9.5.Second Floor Test Room Observations

Time (min:sec)	Observations From The 2nd Floor Room (Interior Face)
0:00	**The test commenced.**
5:00	The second floor test room was stable, no flames were observed.
10:00	The second floor test room was stable, no flames were observed.
15:00	The second floor test room was stable, no flames were observed.
20:00	The second floor test room was stable, no flames were observed.
25:00	The second floor test room was stable, no flames were observed.
30:00	**The 2nd floor room was stable, no flaming was observed, the test was stopped and gas shut off, as per the NFPA 285 Standard, and the 10 minute observation period began.**
35:00	The second floor test room was stable.
40:00	**The observation period was ended as per the NFPA 285 standard and the NFPA 285 test was completed.**

10. EXTENT OF DAMAGE

10.1.Exterior Face Observations

The panels above the window header had melted down to a height of 4 feet.

10.2.Interior Face Observations

The gypsum boards were burned around in the area exposed to the first floor burn room, and only smoke stains existed on the base wall in the second floor test room.

10.3.Dismantling Observations

Upon removal of the panels, there was slight discoloration from smoke on the exterior insulation up to a height of 6ft above the window header.

11. FIRE PROPOGATION ANALYSIS

Test Performance Evaluation Summary Table		
Test Requirement	**Test Observation**	**Pass/Fail**
Flames emitting from the surface of the exterior face of the test specimen shall not reach a height of 10ft or greater above the top of the window opening.	Flames **did not** reach 10 feet above the window opening.	**Pass**
Flames emitting from the surface of the exterior face of the test specimen shall not reach a horizontal distance of 5ft or greater from the vertical centerline of the window opening.	Flames **did not** reach a lateral distance of 5ft from the vertical centerline.	**Pass**
Flames shall not occur in the second-story test room.	There was **No** visible flaming in the second story test room.	**Pass**
Temperatures shall not exceed 1000°F as measured by thermocouples Tc-11 and Tc-14 through Tc-17.	Tc-11 and Tc-14 through Tc-17 **did not exceed** the 1000°F limit.	**Pass**
Temperatures in the wall cavity air space shall not exceed 1000°F as measured by thermocouples Tc-18 and Tc-19.	Tc-18 and Tc-19 **did not** exceed the 1000°F limit.	**Pass**
Temperatures in the wall cavity air space shall not exceed 1000°F as measured by thermocouples Tc-28 and Tc-31 through 40.	Tc-28 and Tc-31 through Tc-40 **did not exceed** the 1000°C limit.	**Pass**
Temperatures measured 1 in. (25mm) from the interior surface of the test specimen within the second story test room shall not exceed 500 °F above ambient air temperature of test facility at the start of fire test as measured by Tc-49 through Tc-54.	Tc-49 through Tc-54 **did not** exceed the maximum temperature of 587.44°F. (500°F + Initial Ambient Temperature = 500°F + 87.44°F = 87.44°F)	**Pass**

12. SUMMARY OF RESULTS

The 2mm ALERIS aluminium cladding assembly with SIDERISE RV/RH firestop system has been evaluated in accordance with NFPA 285; Standard Fire Test Method for Evaluation of Fire Propagation Characteristic of Exterior Non load-bearing Wall Assemblies Containing Combustible Components, 2012 Edition.

The results of the fire performance evaluation conducted on the wall assembly described herein indicate that the assembly **met** the acceptance criteria stated in the standard.

13. LIMITATION

The results are only applicable to the type and orientation of the installation which relate to what has been tested. No uncertainty factors have been considered or covered in this test report for the test assembly stated herein given a large scale fire.

14. RECOMMENDATION

Thomas Bell-Wright International Consultants recommend that the relevance of test reports should be considered after a period of five years.

This test report is respectfully submitted by: Thomas Bell-Wright International Consultants

Prepared By:

Fawaz Hashim
Fire Testing Engineer

Reviewed By:

Daisan Dippi
Laboratory Operations Manager
& Senior Fire Testing Engineer

Approved By:

David Campbell, GIFireE
Regional Director of Fire Compliance

توماس بيل رايت انترناشيونال للاستشارات (فرع دبي)
P.O.Box: 26385
DUBAI - U.A.E.
Thomas Bell-Wright int'l Consultants (Dubai Br.)

15. APPENDIX 1 – ORIENTATION OF THERMOCOUPLES

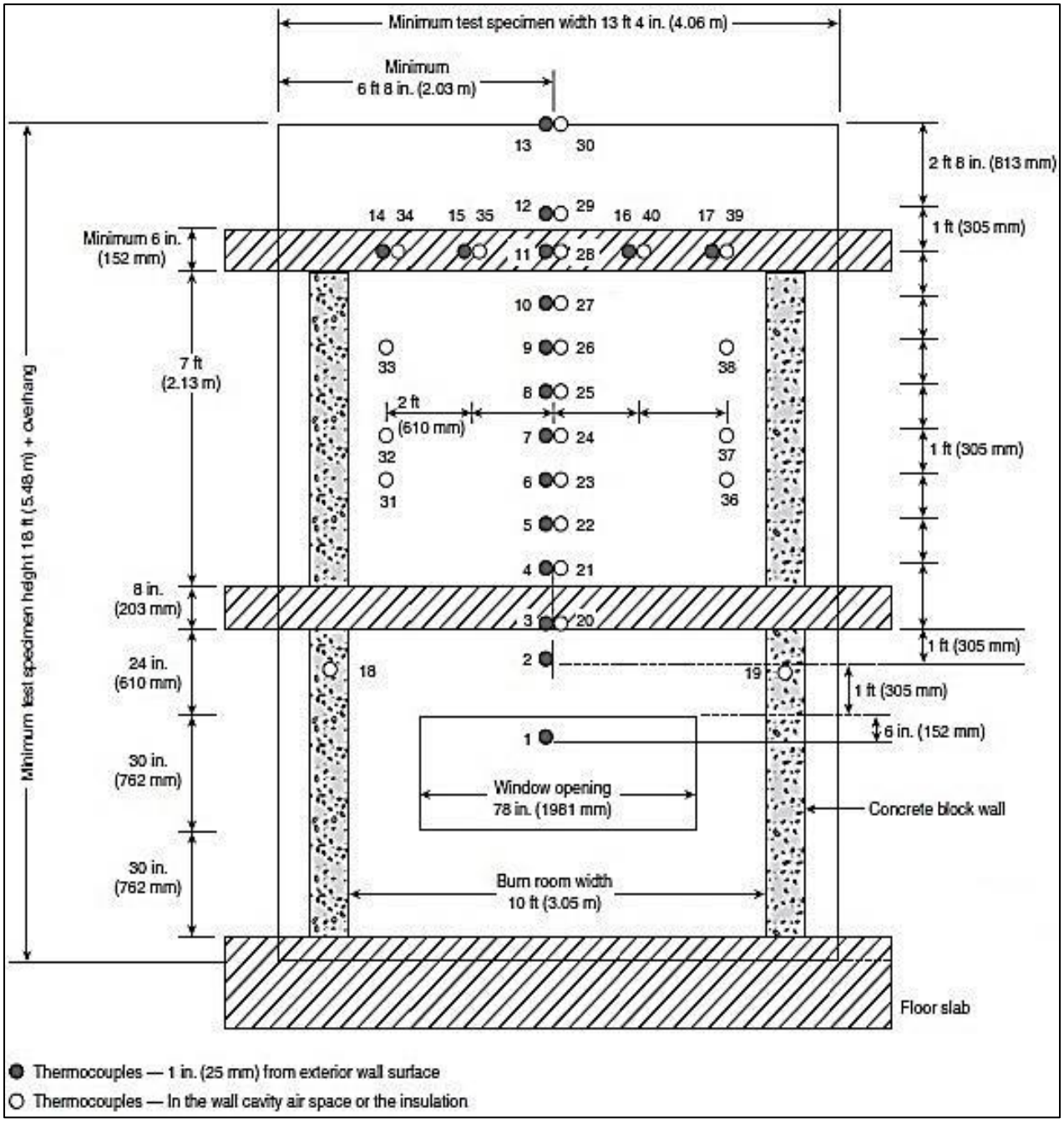


Figure 1: Overall instrumentation on the exterior wall surface and air cavity.

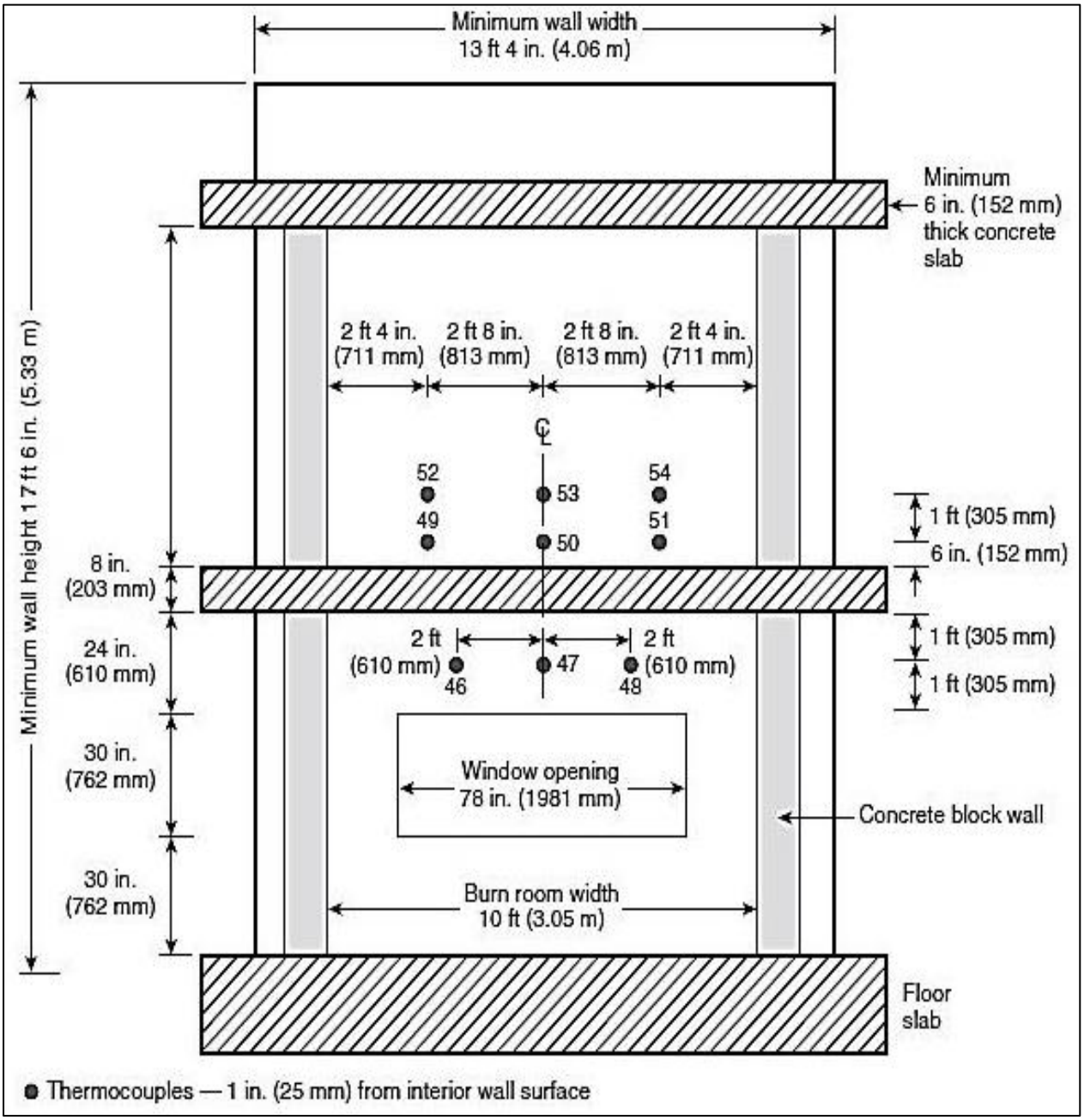


Figure 2: Overall instrumentation on the interior wall surface.

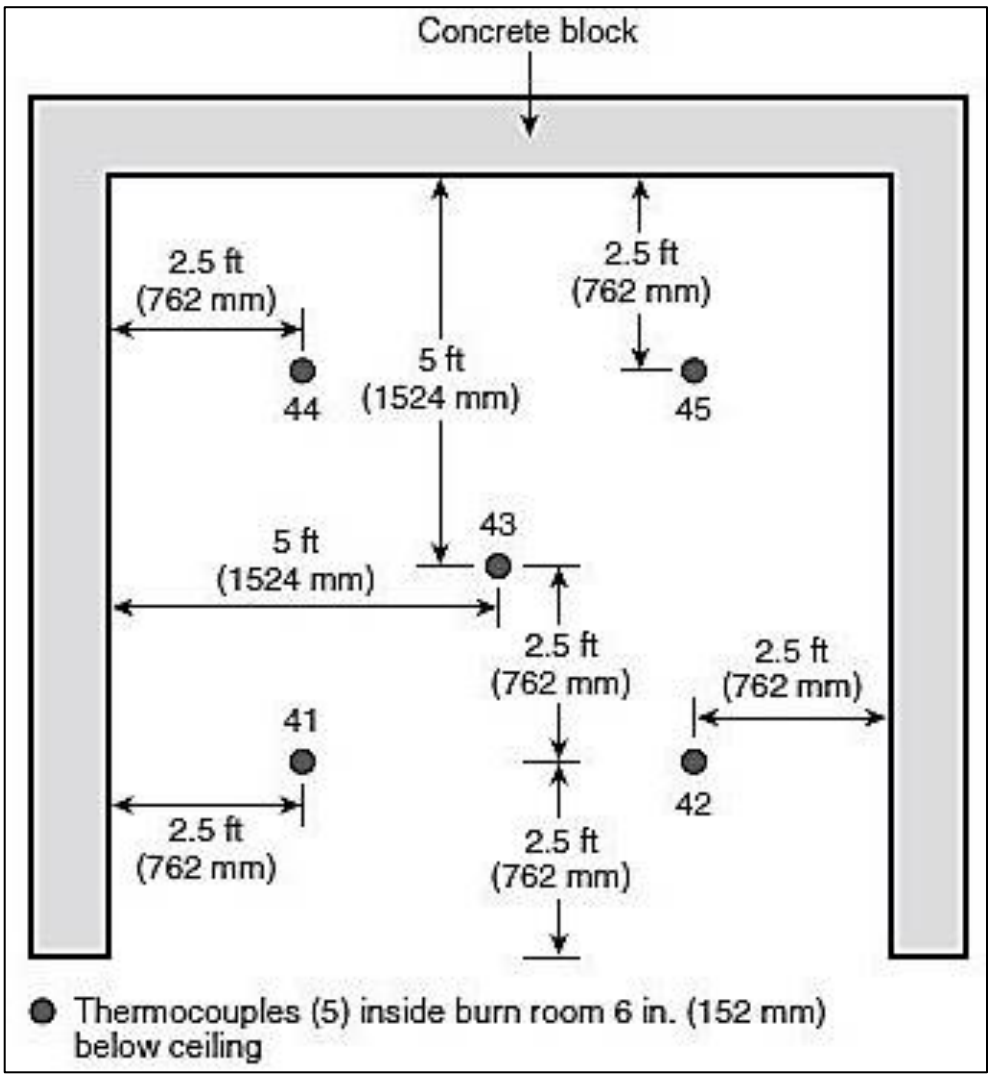


Figure 3: Overall instrumentation inside of the 1st story burn room (Top View)

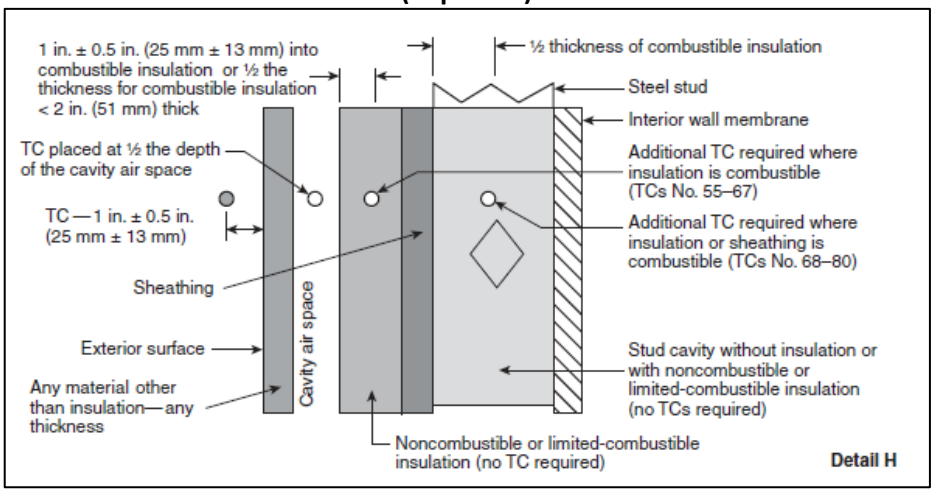


Figure 4: Figure 6.1(b) Detail H of the NFPA 285 standard, showing the thermocouple depth specifications of the specimen.

16. APPENDIX 2 – BURNER GAS FLOW DATA

Time	During Fire Test		During Calibration	
	Room Burner	Window Burner	Room Burner	Window Burner
0 – 5 mins	22 SCFM	0 SCFM	22 SCFM	0 SCFM
5 – 10 mins	24 SCFM	5.6 SCFM	23.9 SCFM	5.6 SCFM
10 – 15 mins	25.6 SCFM	6.3 SCFM	25.5 SCFM	6.3 SCFM
15 – 20 mins	27.1 SCFM	7 SCFM	27.1 SCFM	7 SCFM
20 – 25 mins	28.7 SCFM	7.6 SCFM	28.7 SCFM	7.7 SCFM
25 – 30 mins	28.7 SCFM	8.3 SCFM	28.6 SCFM	8.4 SCFM

**SCFM: Standard Cubic Feet per Minute*

17. APPENDIX 3 – COMPONENTS DESCRIPTION

Base Wall:

Stub Steel channel	
Material	Channel Steel
Manufacturer	Al Jazeera Steel Factory
Dimension	150 x 75 x 10mm (w x h x thk.)
Fixing method	100mm long section of the stub steel channel was fixed onto the angle bars of the test frame using M8 x 100mm through bolts at intermediate locations. (Please refer Appendix – 4, Drawing 1 for more information)
Evidence of survey	Information provided by the sponsor and verified by TBWIC.

Continuous Steel Channel	
Material	Channel Steel
Manufacturer	Al Jazeera Steel Factory
Dimension	150 x 75 x 10mm (w x h x thk.)
Fixing method	Continuous steel channels were fixed on to the stub steel channels using M8 through bolts horizontally. These channels were used to hold the brackets, which were fixed using M6 torx screws.
Evidence of survey	Information provided by the sponsor and verified by TBWIC.

Studs	
Material	Galvanized Steel
Manufacturer	JB Mechanical Services
Dimension	92 x 32 x 9 x 1.2 mm [web x flange (1) x return lip x thickness]
Fixing method	Vertical studs were placed at the left and right vertical edges of the wall span, spaced at the intervals shown in Drawing 1 in appendix 4, as well as horizontally across framing system at intermediate heights, also shown in the drawing. The vertical studs were welded to the tracks at the head and foot of the test frame, as well as to the L-angles of the test frame, and the horizontal studs were welded to the vertical studs.
Evidence of survey	Information provided by TBWIC.

Tracks	
Material	Galvanized Steel
Manufacturer	JB Mechanical Services
Dimension	95 x 25 x 1.2 mm (web x flange x thickness)
Fixing method	The tracks were welded directly onto the test frame along the bottom edge and also onto the studs at the intervals provided by the sponsor for the spacing of the runners. The tracks were placed along the top and bottom of the framing system. Tracks were used along the window opening, too.
Evidence of survey	Information supplied by TBWIC.

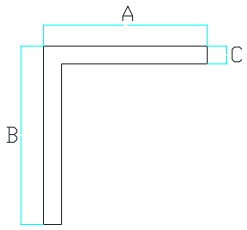
Interior/Exterior Wall Lining	
Material	Gypsum Board
Manufacturer	Knauf LLC
Reference	15.9mm Type X (GW-TX)
Dimension	1200 x 2400 x 15.9 mm (w x h x t)
Fixing method	The boards were fixed with Knauf self-tapping screws TB 3.5 x 35mm self-tapping screws, screwed at nominal distance of 300mm C/C vertically on each stud.
Evidence of survey	Information supplied by TBWIC.

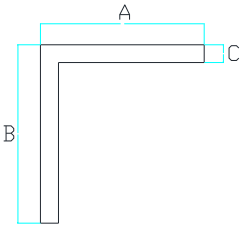
Jointing Tape	
Manufacturer	Knauf
Reference	Knauf Joint Tape
Dimensions	50 mm wide
Fixing method	Applied along the meeting edges between the gypsum boards and was embedded into the jointing compound on both the interior and exterior faces of the base wall.
Evidence of survey	Information supplied by TBWIC.

Jointing Compound	
Manufacturer	Knauf
Reference	Knauf Readygips (Gypsum based filler)
Material	First coat of Knauf Readygips (gypsum based filler) was applied along the joints between the boards. Knauf Joint Tape was embedded into the joint filler and then two more passes of joint filler were applied along the 15.9mm thk. boards after allowing for appropriate drying times. Three separate coats of joint filler were applied over each screw head. The tape and jointing compound were also applied to the inside of the exterior face of specimen at the request of the test sponsor.
Evidence of survey	Information supplied by TBWIC.

Aluminium Composite Panel Cladding Assembly

A. Framing System

Aluminium Wall Bracket	
	
Material	Extruded Aluminium 6063 – T5
Fabricator	Becon Metal Works Factory
Reference	Aluminium Bracket
Dimension	A = 60mm; B = 60mm ; C = 6mm; length = 100mm
Fixing Method	The aluminium brackets were fixed onto continuous steel channels through the gypsum base wall using M6 x 60mm Torx screws. The wall brackets supported the vertical profiles of the Aluminium runner system, which were fixed to the wall brackets using M8x30mm stainless steel through bolts.
Evidence of survey	Information provided by sponsor and verified by TBWIC.

Aluminium Runner System	
	
Material	Extruded Aluminium 6063 – T5
Fabricator	Becon Metal Works Factory
Reference	Aluminium Runner
Dimension	A = 50mm; B = 50mm ; C = 6mm
Fixing Method	The Aluminium runner profiles were oriented vertically on the base wall, fixed to the wall brackets via M8x30mm stainless steel through bolts. They served to support the Aluminium panels, which were fixed to the runners at the lip using Ø3.5 x 20mm self-tapping screws.
Evidence of survey	Information provided by the sponsor and verified by TBWIC

Exterior Insulation	
Manufacturer	Fujairah Rockwool Factory
Reference	S2XX
Material	Mineral wool slabs with aluminum facing on one side.
Density	80kg/m^3 (Measured)
Thickness	75mm (Measured)
Fixing Method	A layer of mineral wool insulation was fixed directly onto the base wall, in between the runners, using Rawl plug MBA08110 8 x 110 mm metal Insulation fixing. All meeting edges of the mineral wool slabs were covered with 45mm wide Aluminium Foil Tape.
Evidence of survey	Information provided by sponsor and verified by TBWIC.

Cavity Fire Barrier - Horizontal	
Manufacturer	Siderise Insulation - UK
Reference	RH25 S/090/030/098-102
Material	Horizontal open state cavity barrier E90 I30
Density	Nominal 80kg/m³
Dimension	75 x 110mm (w x thk.)
Fixing Method	Fixed on to the base wall at each floor slab level using insulation holders which were fixed onto the base wall using Ø3.5 x 20mm self-tapping screws.
Evidence of survey	Information provided by sponsor and verified by TBWIC.

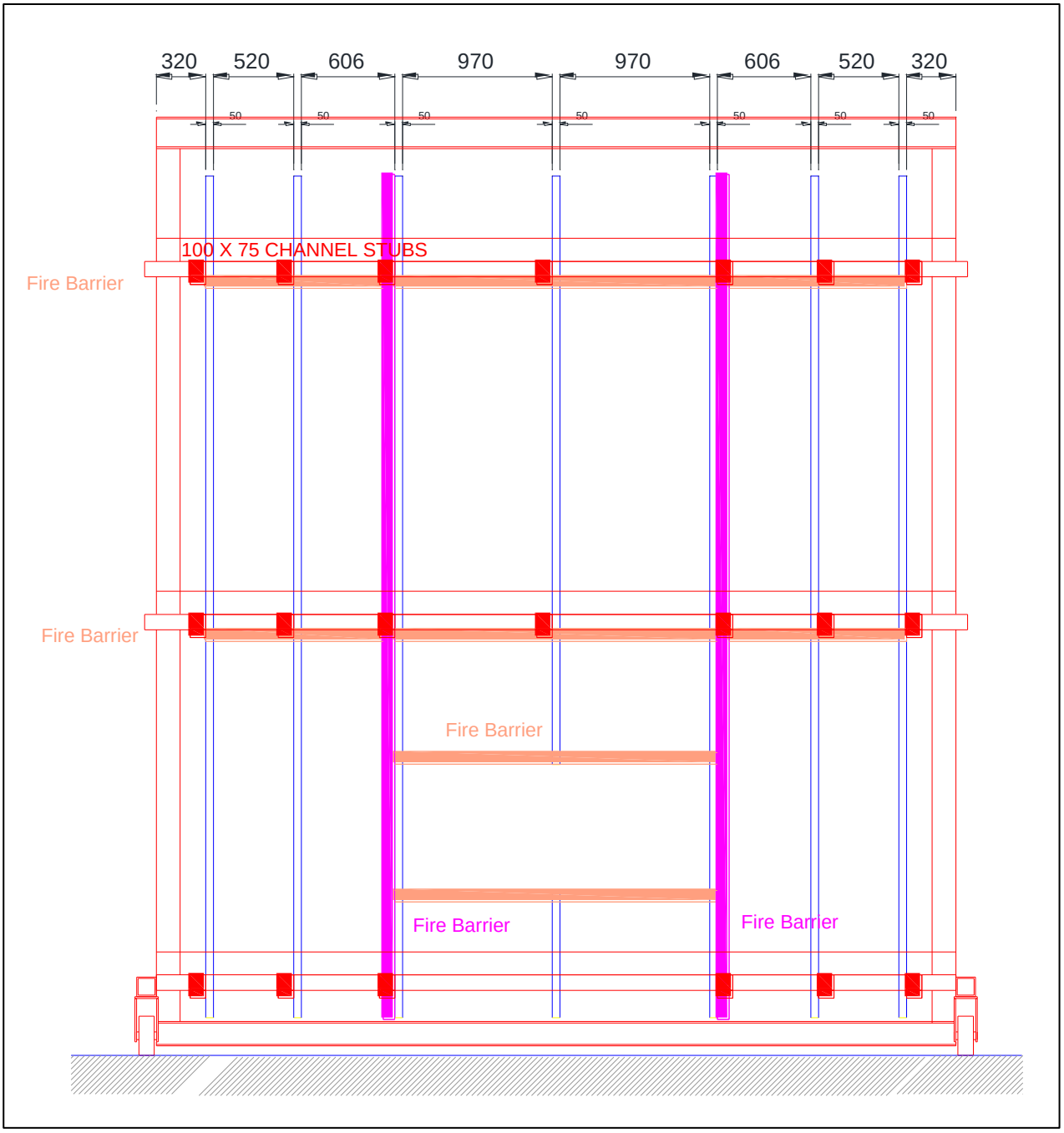
Cavity Fire Break Barrier - Vertical	
Manufacturer	Siderise Insulation - UK
Reference	RVS -090/030/109-121
Material	Vertical Cavity barrier E90 I 30
Density	Nominal 80kg/m³
Dimension	75 x 110mm (w x thk.)
Fixing Method	Fixed on to the base wall at each vertical wall level of the test rig using insulation holders which were fixed onto the base wall using Ø3.5 x 20mm self-tapping screws.
Evidence of survey	Information provided by sponsor and verified by TBWIC.

Exterior Cladding	
Material	ALU SHEETS EN 5005, H14 ANOD NAT 15MU + PE 70MU
Manufacturer	ALERIS
Reference	55 HX Aluminium – Solid Aluminium (2mm thick panels)
Description & Fixing Method	The tray-profile aluminium panels consisted of a 2mm thick sheet of solid aluminium. They were pre-fabricated and bent into tray-profiles. The tray-profile aluminium composite panels consisted of a 2mm thick composite core with a 0.5mm thick sheet of Aluminium on either side. They were pre-fabricated and bent into tray-profiles and was fixed to the vertical

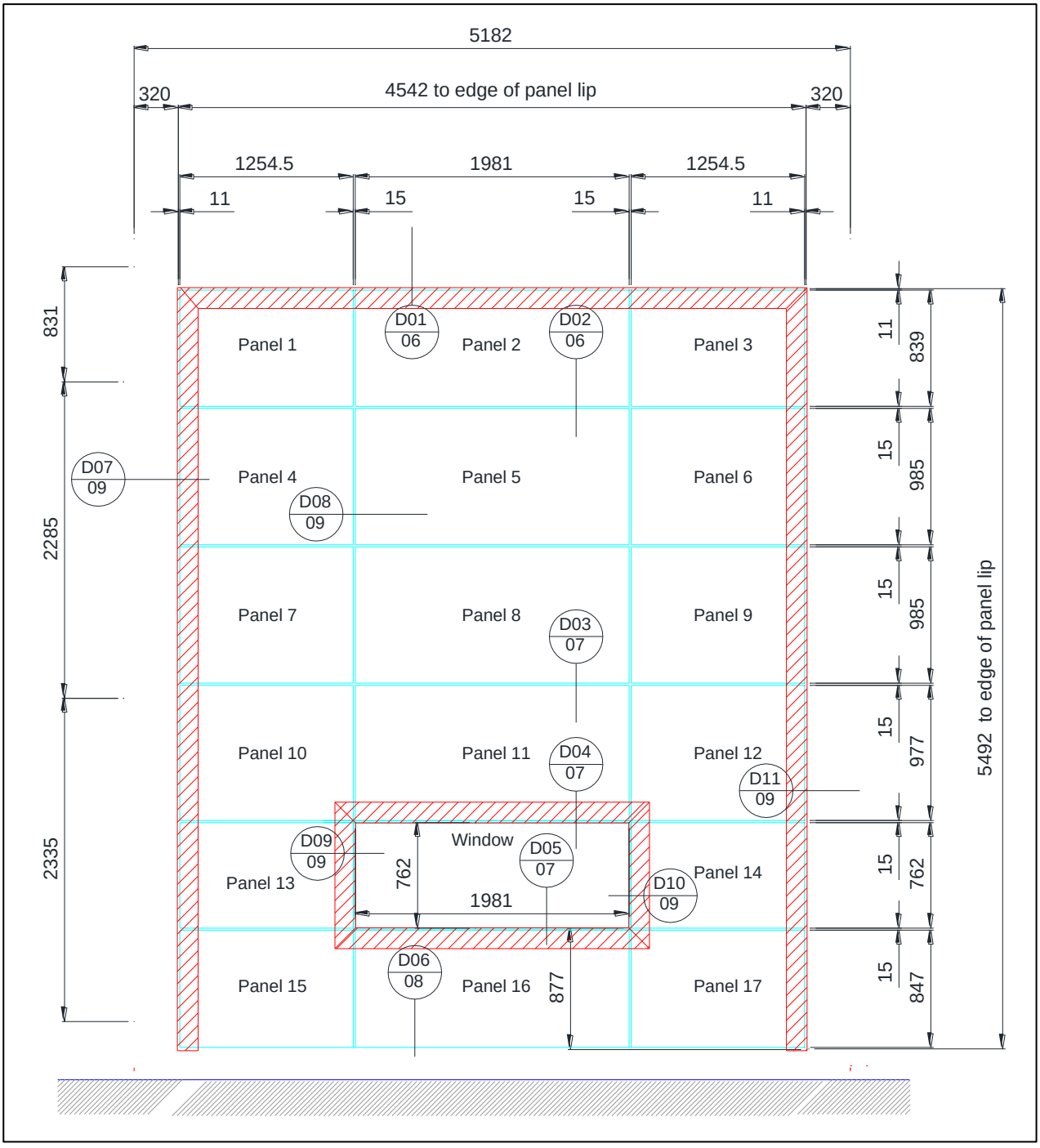
	runner profiles using Ø3.5 x 20mm self-tapping screws. The panels were fixed to the runners along the tip of the panels. Adjacent panels had their lips over one another prior to fixing them onto the vertical runner.
Panel Dimension	Please refer drawing 2, Appendix-4
Thickness	2mm
Evidence of survey	Information provided by Sponsor and verified by TBWIC.

Window Flashing	
Material	Galvanized Steel
Dimensions	1.7 mm thick.
Fixing Method	Pre-bent sheets of 1.7mm thick galvanized steel sheeting were used around the perimeter of the window. The window had a total depth of 232mm and the sheeting overlapped both the interior and exterior faces of the specimen by 150mm. The sheeting was fixed to the specimen using Ø3.5x20 mm self-tapping stainless steel pan head screws spaced evenly around the interior and exterior perimeter of the window opening.
Evidence of survey	Information provided by sponsor and verified by TBWIC.

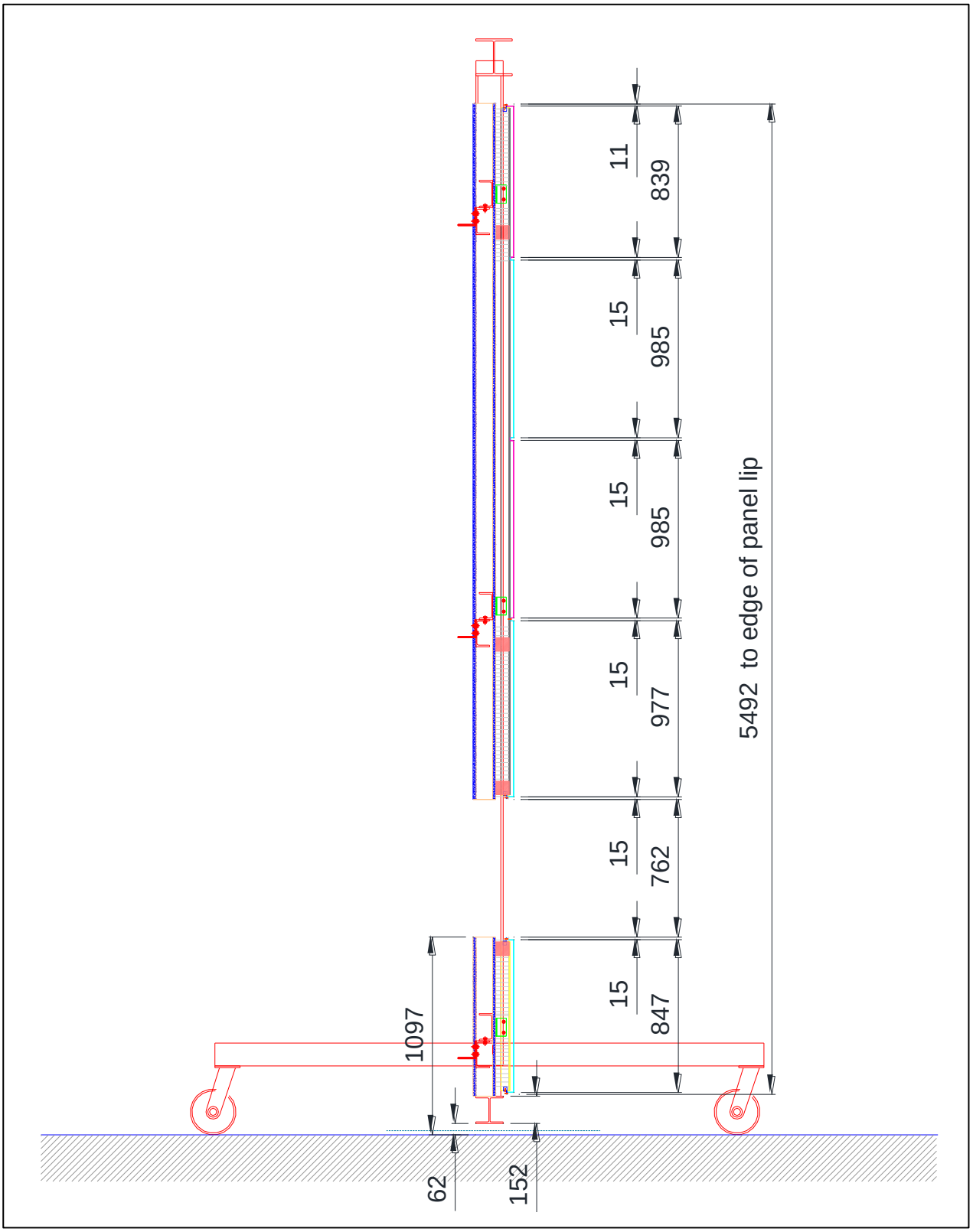
18. APPENDIX 4 – ASSEMBLY DRAWINGS



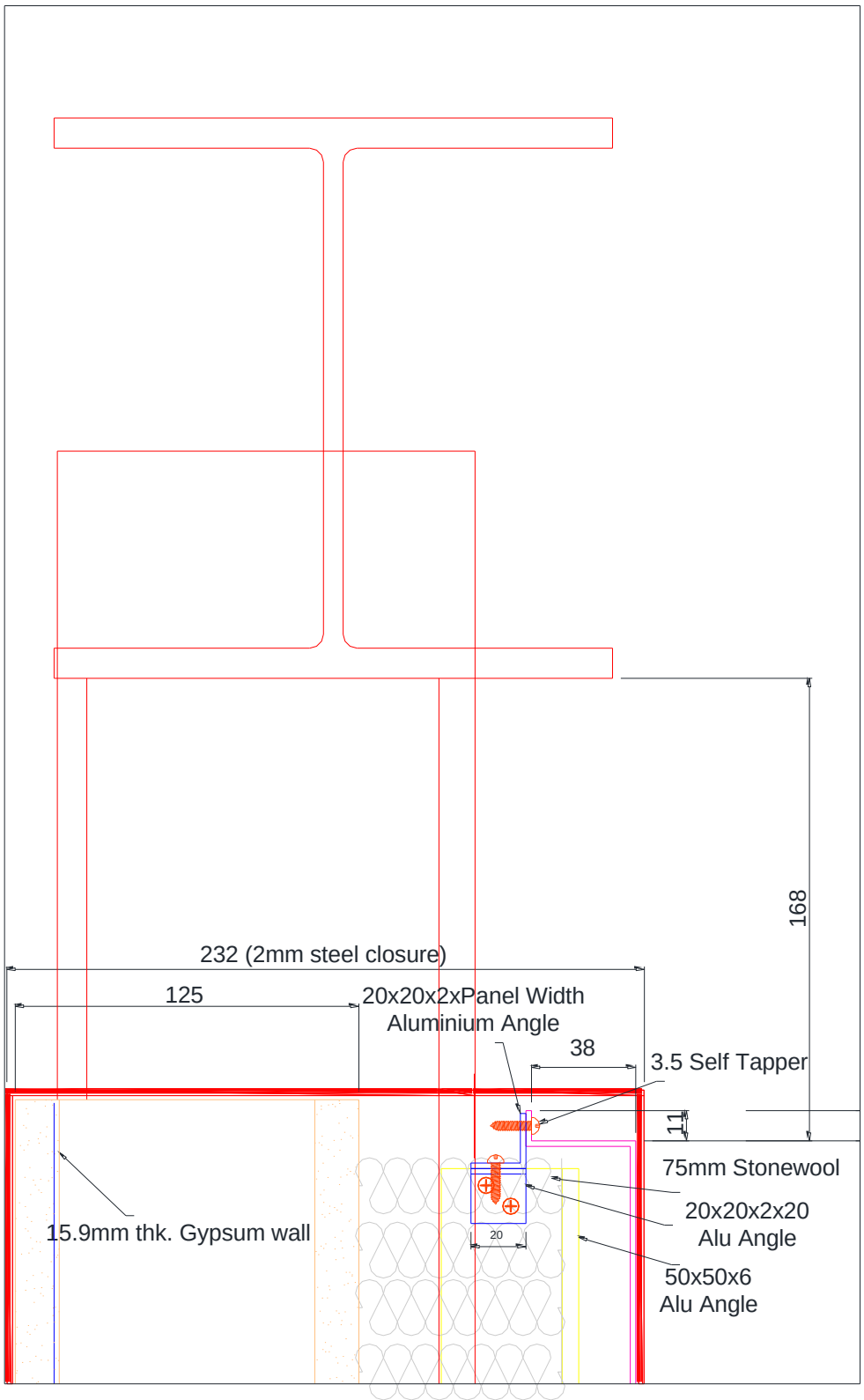
Drawing 1: An elevation view of the framing system and position of the fire barrier of the specimen.
(Drawing provided by the sponsor and verified by TBWIC)



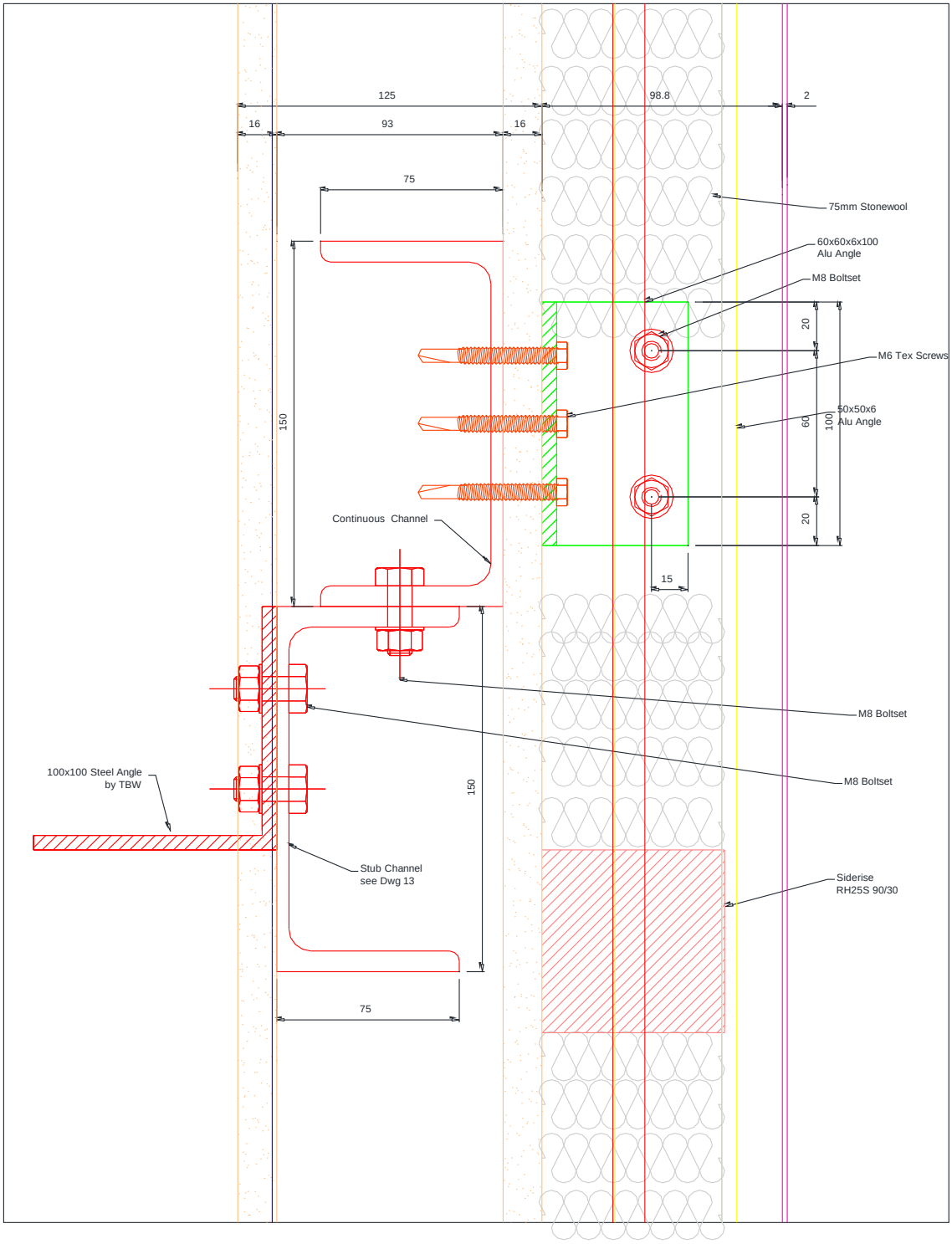
Drawing 2: Elevation view of the specimen.
(Drawing provided by the sponsor and verified by TBWIC)



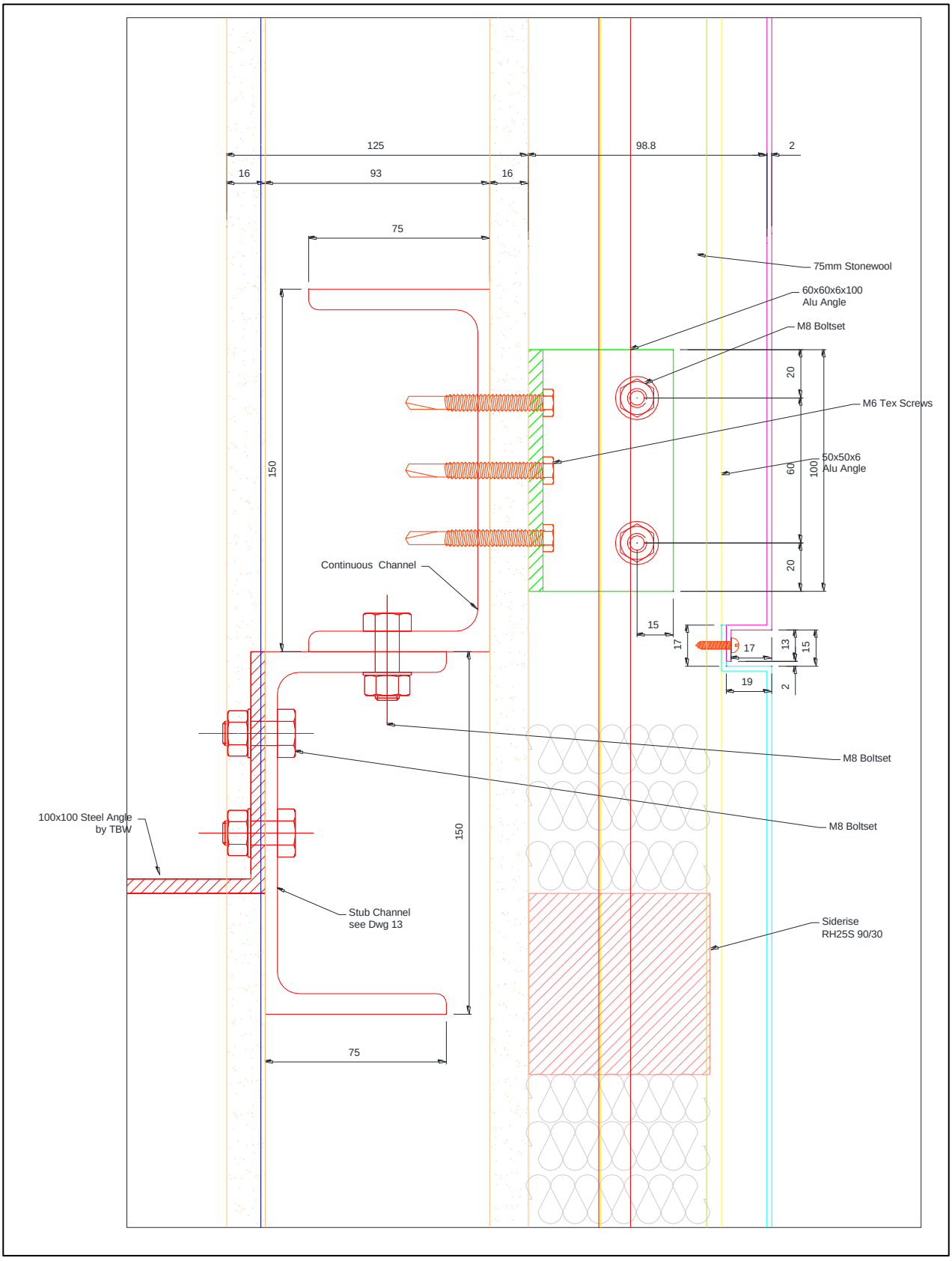
Drawing 3: Vertical sectional view of the specimen.
(Drawing provided by the sponsor and verified by TBWIC)



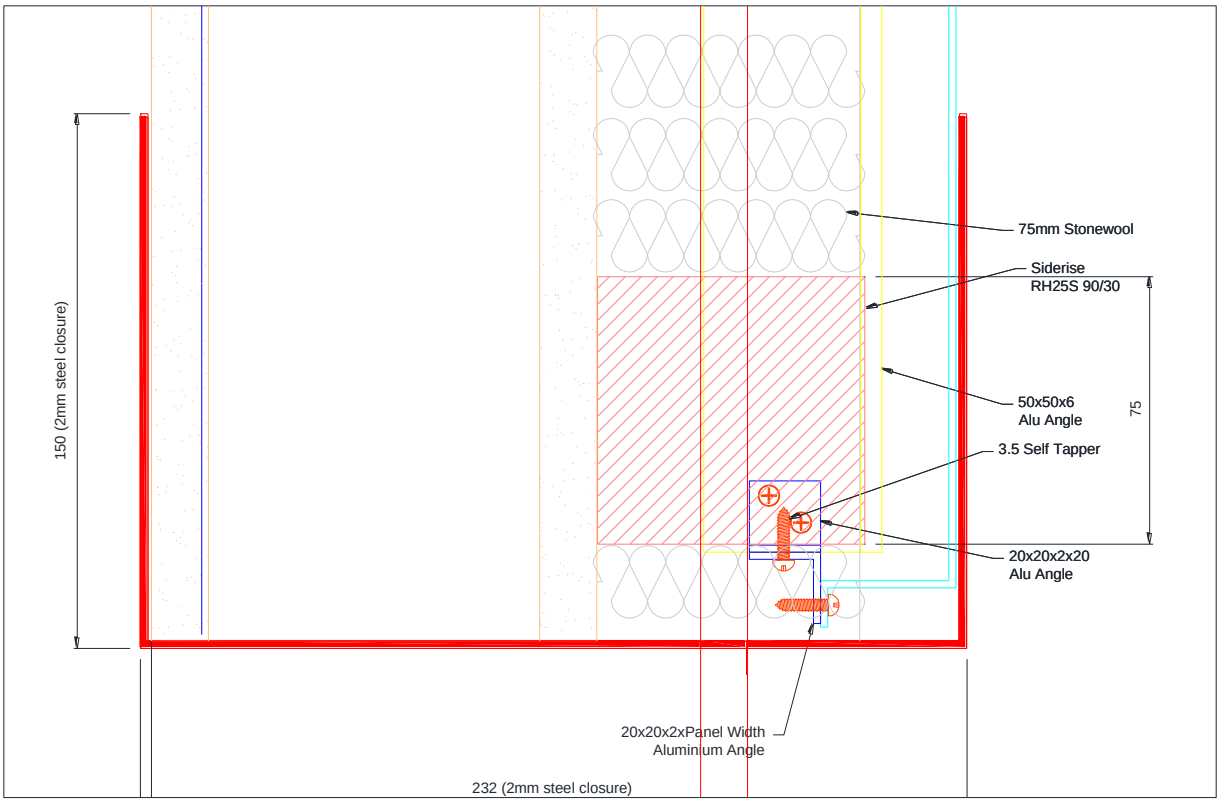
Drawing 3: Detail D01 (Top edge of the wall) of the specimen.
(Drawings provided by the sponsor and verified by TBWIC)



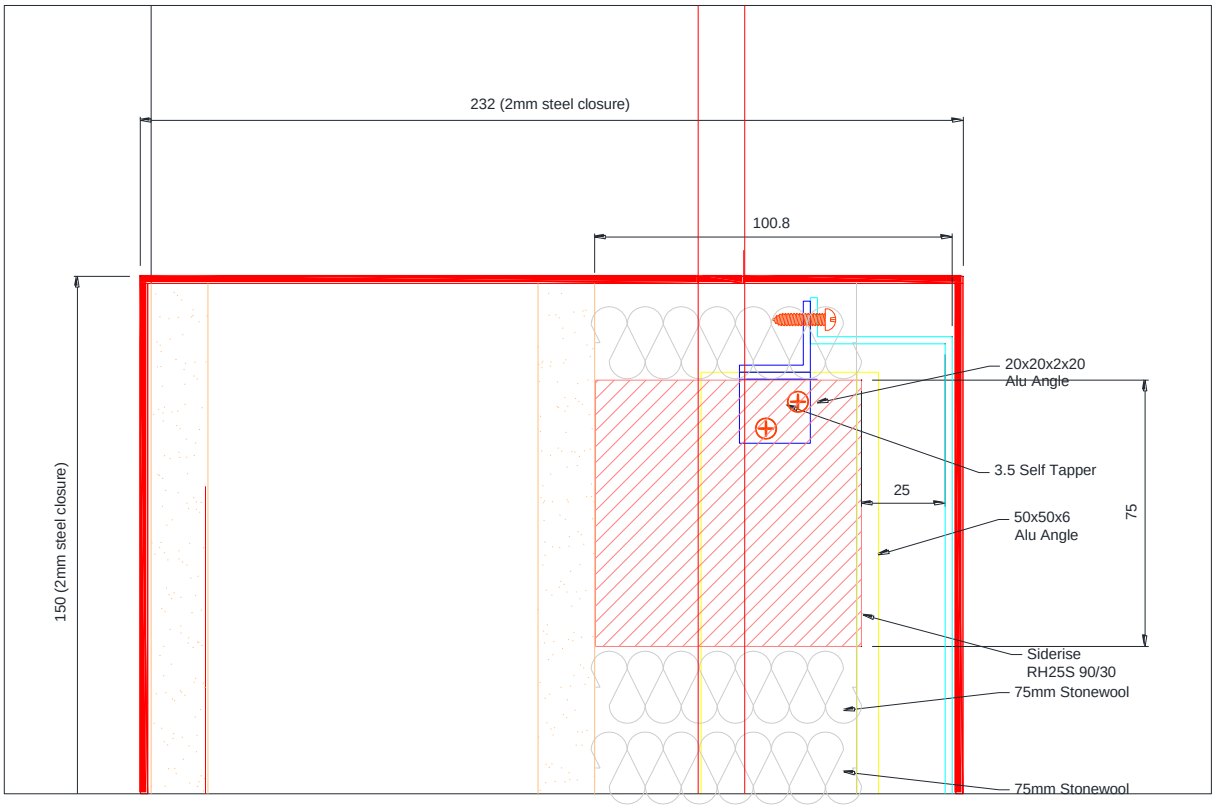
Drawing 4: Detail D02 of the specimen.
(Drawing provided by the sponsor and verified by TBWIC)



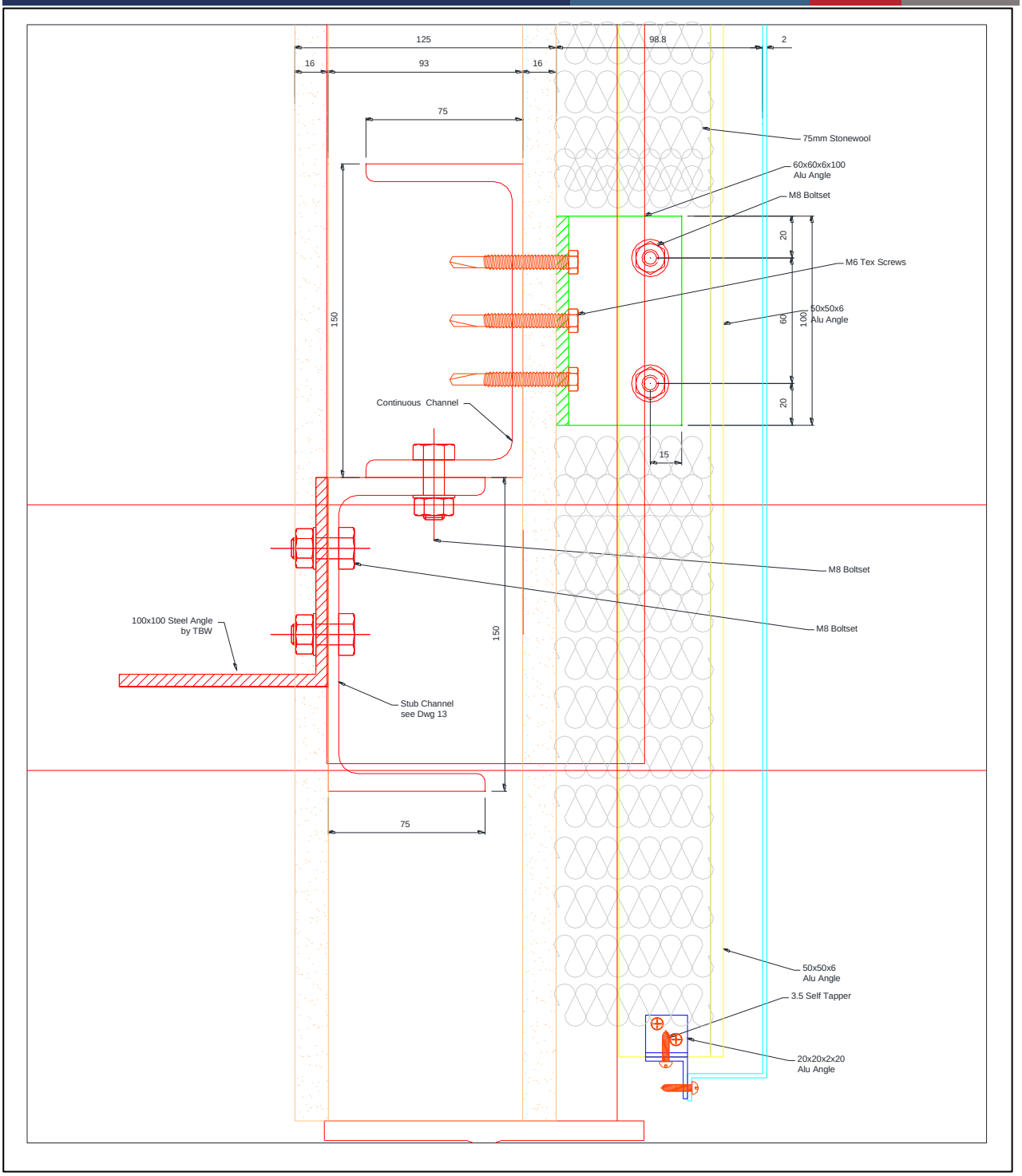
Drawing 5: Detail D03 (Vertical panel to panel joint) of the specimen.
(Drawing provided by the sponsor and verified by TBWIC)



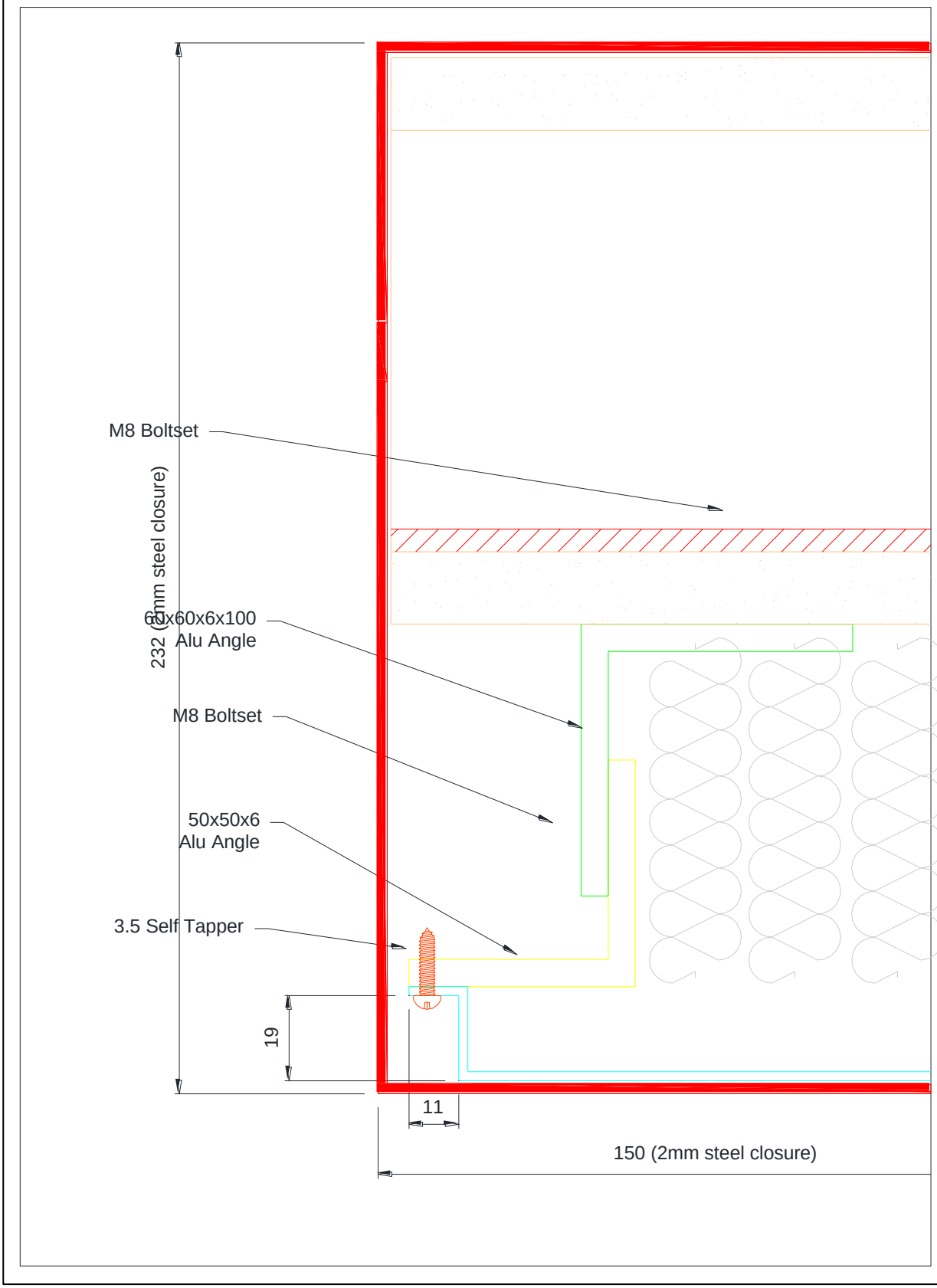
Drawing 6: Detail D04 (Window header) of the specimen.
(Drawing provided by the sponsor and verified by TBWIC)



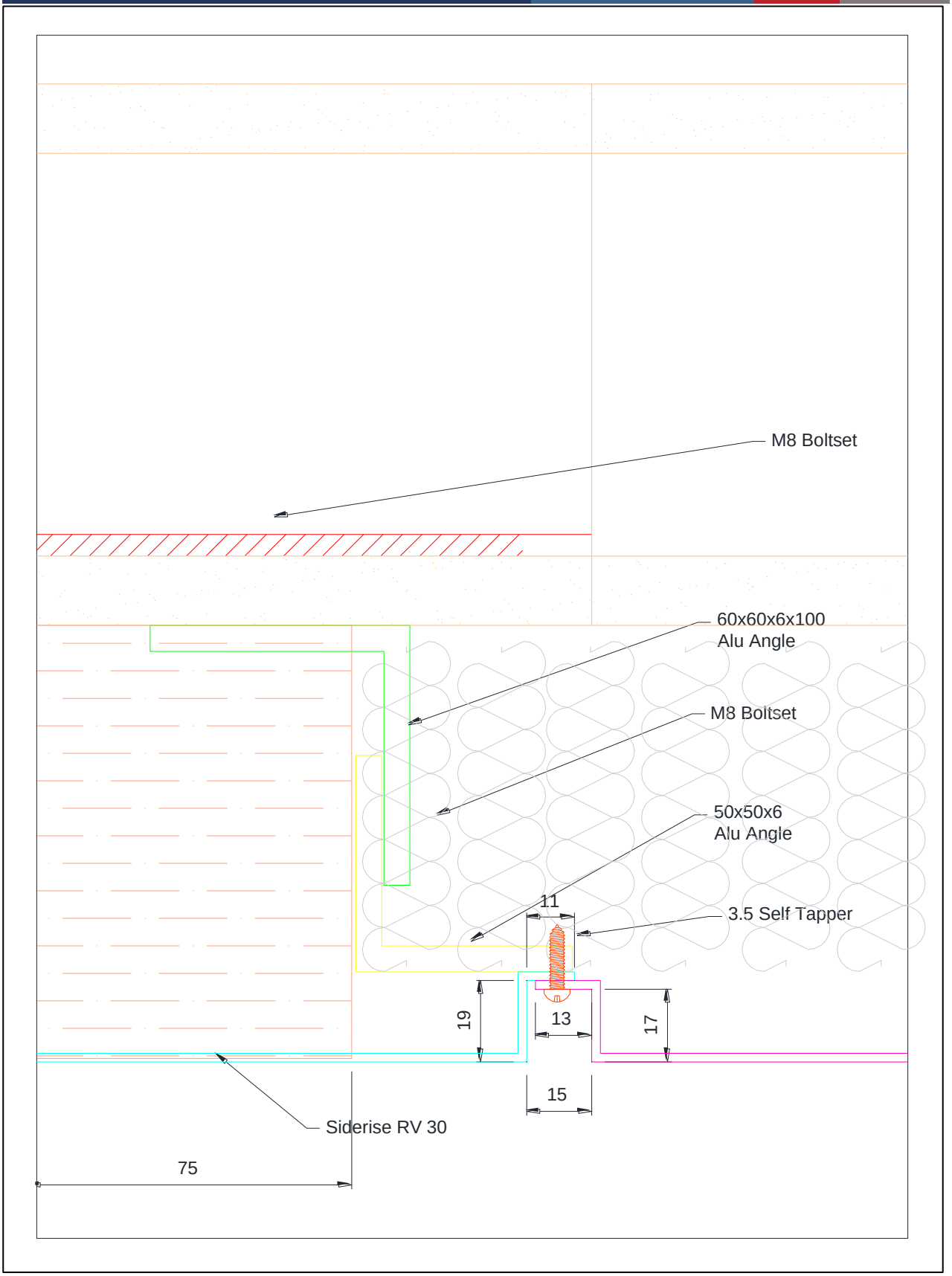
Drawing 7: Detail D05 (Window Sill) of the specimen.
(Drawing provided by the sponsor and verified by TBWIC)



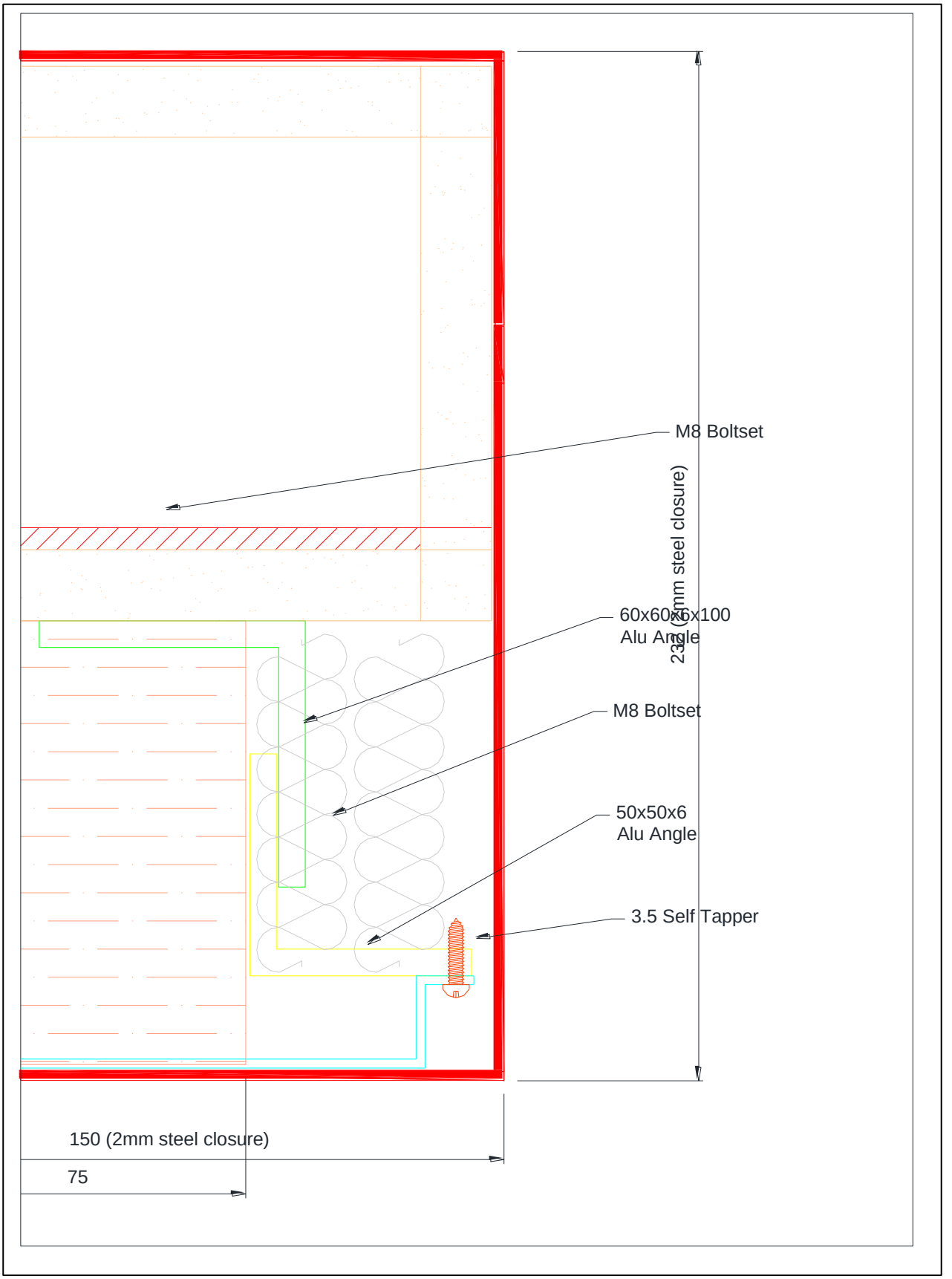
Drawing 7: Detail D06 (Bottom edge of the wall) of the specimen.
(Drawing provided by the sponsor and verified by TBWIC)



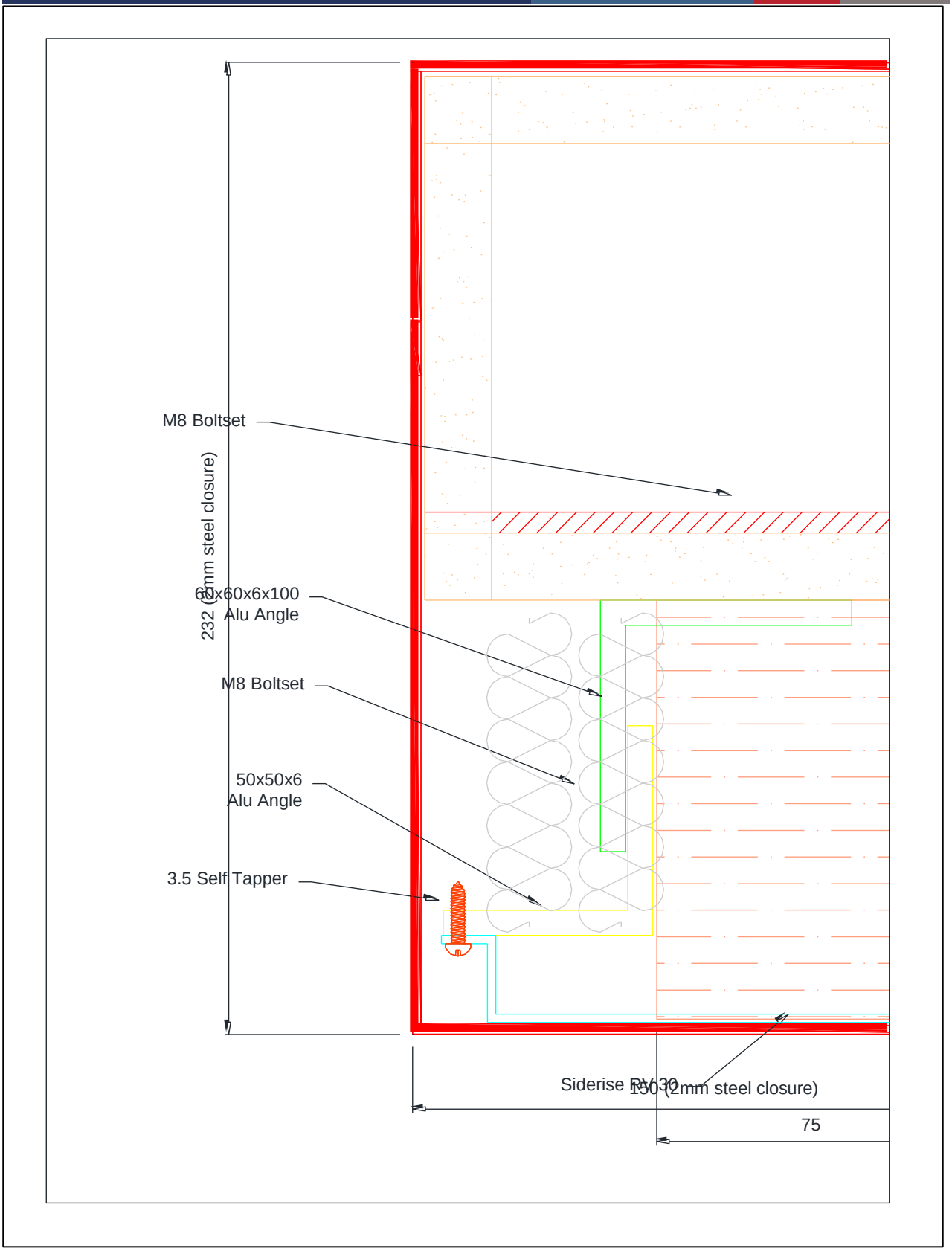
Drawing 8: Detail D07 (Left vertical edge of the wall) of the specimen.
(Drawing provided by the sponsor and verified by TBWIC)



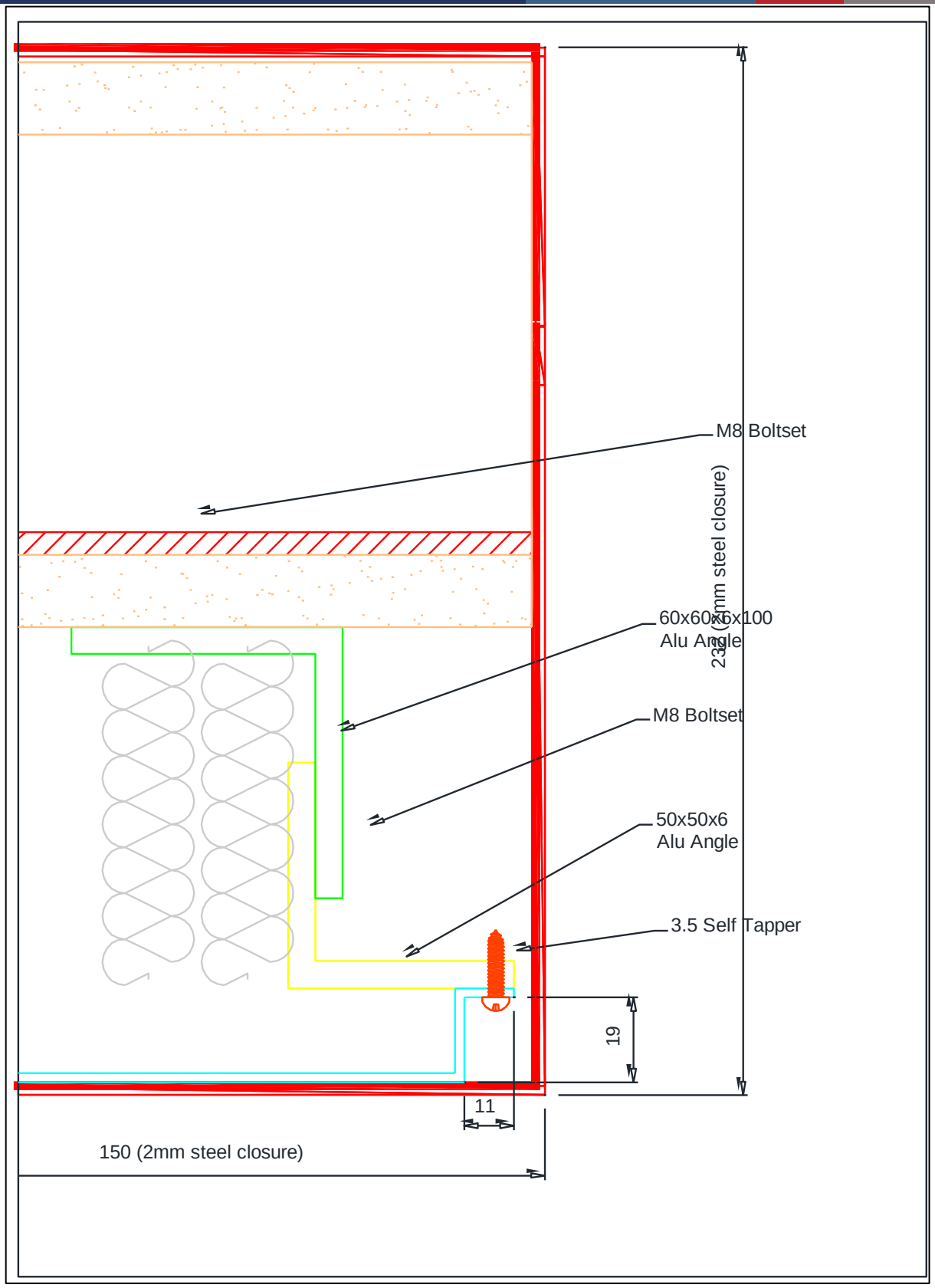
Drawing 9: Detail D08 (Horizontal panel to panel joint) of the specimen.
(Drawing provided by the sponsor and verified by TBWIC)



Drawing 10: Detail D09 (Left vertical edge of window opening) of the specimen.
(Drawing provided by the sponsor and verified by TBWIC)



Drawing 11: Detail D10 (Right vertical edge of window opening) of the specimen.
(Drawing provided by the sponsor and verified by TBWIC)



Drawing 11: Detail D11 (Right vertical edge of the wall) of the specimen.
(Drawing provided by the sponsor and verified by TBWIC)

19. APPENDIX 5 – THERMOCOUPLE DATA

Time (min:sec)	Tc 1 (°F)	Tc 2 (°F)	Tc 3 (°F)	Tc 4 (°F)	Tc 5 (°F)	Tc 6 (°F)	Tc 7 (°F)	Tc 8 (°F)	Tc 9 (°F)
0:00	97	94	82	90	85	82	81	81	81
0:15	320	321	145	357	258	197	149	242	201
0:30	489	478	235	472	327	259	199	287	243
0:45	621	548	319	521	372	301	236	308	271
1:00	706	625	390	576	420	331	276	345	302
1:15	744	683	443	571	433	326	296	346	296
1:30	800	670	500	651	494	352	333	395	346
1:45	819	641	540	671	532	368	370	439	390
2:00	841	663	570	669	539	372	382	411	365
2:15	849	681	593	669	538	374	392	423	376
2:30	830	710	605	634	517	371	396	426	379
2:45	853	722	620	676	542	385	405	421	372
3:00	884	707	635	707	592	409	428	463	411
3:15	893	712	648	718	616	430	445	483	437
3:30	886	689	658	707	616	447	468	485	442
3:45	912	691	665	732	632	451	481	508	446
4:00	913	725	672	731	618	449	477	476	421
4:15	913	724	677	716	615	452	479	479	436
4:30	919	733	684	747	643	473	495	509	463
4:45	933	737	691	753	646	480	503	519	476
5:00	1012	822	736	877	781	539	560	672	603
5:15	1073	934	846	997	866	593	626	741	679
5:30	1109	999	927	1038	887	631	662	727	668
5:45	1128	1018	967	1037	891	648	685	750	690
6:00	1152	1071	1007	1068	872	656	684	694	633
6:15	1156	1065	1030	1070	908	694	710	745	693
6:30	1174	1097	1060	1120	935	729	734	789	724
6:45	1170	1113	1074	1100	926	741	741	755	685
7:00	1170	1116	1078	1106	927	755	750	771	703
7:15	1161	1147	1087	1109	908	741	732	706	657
7:30	1165	1115	1083	1078	931	767	761	803	734
7:45	1167	1135	1089	1111	943	774	776	809	732
8:00	1167	1120	1086	1093	930	776	777	782	720
8:15	1178	1126	1091	1103	946	792	794	841	765
8:30	1179	1149	1095	1102	933	773	766	724	671
8:45	1185	1154	1104	1132	939	775	766	730	660
9:00	1187	1158	1107	1111	922	765	747	701	645
9:15	1185	1147	1101	1102	931	778	768	760	704
9:30	1187	1150	1107	1101	942	790	782	799	734
9:45	1182	1147	1107	1117	961	807	801	825	757

Time (min:sec)	Tc 1 (°F)	Tc 2 (°F)	Tc 3 (°F)	Tc 4 (°F)	Tc 5 (°F)	Tc 6 (°F)	Tc 7 (°F)	Tc 8 (°F)	Tc 9 (°F)
10:00	1187	1151	1112	1112	956	805	801	800	758
10:15	1209	1174	1131	1142	992	835	834	860	799
10:30	1238	1209	1149	1178	1000	838	832	835	774
10:45	1238	1230	1178	1201	997	838	835	830	773
11:00	1235	1209	1184	1176	999	848	853	877	815
11:15	1235	1217	1198	1220	1019	862	858	861	811
11:30	1250	1232	1205	1232	1020	854	854	824	766
11:45	1261	1241	1219	1240	1030	867	855	848	794
12:00	1256	1243	1213	1212	1015	859	846	791	730
12:15	1267	1243	1221	1232	1033	876	868	862	797
12:30	1256	1221	1204	1187	1027	875	885	894	839
12:45	1260	1236	1205	1222	1027	866	864	842	798
13:00	1259	1239	1209	1229	1028	872	879	902	836
13:15	1263	1235	1210	1205	1022	874	883	905	854
13:30	1266	1247	1216	1231	1026	877	885	884	839
13:45	1269	1234	1211	1202	1032	879	894	907	845
14:00	1268	1233	1210	1205	1028	881	902	900	867
14:15	1272	1270	1235	1272	1031	876	892	869	834
14:30	1290	1274	1242	1270	1057	897	907	895	841
14:45	1311	1292	1250	1251	1039	881	889	844	798
15:00	1297	1284	1249	1265	1059	891	900	858	828
15:15	1318	1283	1258	1262	1082	913	927	948	882
15:30	1324	1286	1259	1261	1091	927	952	991	932
15:45	1332	1295	1266	1294	1108	932	960	980	925
16:00	1342	1347	1297	1336	1114	941	963	959	904
16:15	1350	1364	1304	1326	1113	945	960	938	887
16:30	1347	1342	1305	1319	1126	957	978	981	924
16:45	1332	1338	1308	1329	1100	941	958	936	896
17:00	1347	1354	1315	1329	1106	944	960	933	904
17:15	1404	1411	1341	1376	1137	949	952	883	825
17:30	1394	1386	1327	1354	1115	943	957	891	854
17:45	1380	1402	1316	1339	1104	933	947	917	871
18:00	1430	1402	1319	1357	1116	940	953	921	888
18:15	1433	1378	1321	1358	1153	969	979	962	904
18:30	1447	1373	1314	1372	1162	972	979	936	879
18:45	1454	1366	1305	1343	1116	950	958	913	873
19:00	1441	1360	1306	1339	1106	940	955	879	854
19:15	1458	1358	1316	1368	1128	951	962	905	859
19:30	1451	1363	1310	1356	1129	952	948	896	855
19:45	1452	1334	1301	1323	1118	952	961	923	897

Time (min:sec)	Tc 1 (°F)	Tc 2 (°F)	Tc 3 (°F)	Tc 4 (°F)	Tc 5 (°F)	Tc 6 (°F)	Tc 7 (°F)	Tc 8 (°F)	Tc 9 (°F)
20:00	1468	1362	1322	1369	1143	966	974	945	911
20:15	1491	1422	1356	1408	1193	998	993	946	885
20:30	1483	1361	1349	1348	1174	1004	1005	947	879
20:45	1494	1396	1359	1378	1187	1011	1015	985	946
21:00	1491	1381	1367	1389	1181	1008	1010	965	939
21:15	1505	1414	1403	1403	1190	1011	1013	968	918
21:30	1481	1407	1400	1396	1166	1004	1011	939	898
21:45	1503	1428	1412	1384	1140	990	987	914	894
22:00	1475	1400	1392	1365	1146	993	987	945	899
22:15	1516	1439	1427	1434	1212	1040	1034	989	947
22:30	1510	1432	1433	1424	1203	1043	1040	1006	956
22:45	1520	1453	1440	1451	1186	1032	1036	979	958
23:00	1522	1472	1453	1429	1192	1026	1017	920	887
23:15	1551	1454	1463	1447	1217	1046	1019	928	891
23:30	1687	1462	1477	1456	1259	1078	1062	1020	959
23:45	1597	1478	1460	1387	1196	1043	1037	953	925
24:00	1622	1479	1449	1411	1205	1045	1028	997	943
24:15	1715	1500	1495	1485	1280	1083	1067	1027	970
24:30	1707	1470	1477	1457	1220	1062	1055	1019	980
24:45	1712	1494	1478	1465	1226	1060	1056	1008	977
25:00	1697	1498	1496	1495	1258	1082	1074	1009	964
25:15	1692	1484	1511	1492	1229	1067	1066	968	950
25:30	1692	1489	1495	1453	1235	1068	1053	950	927
25:45	1705	1554	1495	1460	1214	1040	1020	891	857
26:00	1673	1536	1519	1501	1234	1047	1010	854	805
26:15	1640	1518	1500	1478	1220	1048	1005	887	856
26:30	1677	1519	1530	1533	1277	1078	1030	925	899
26:45	1681	1546	1552	1582	1325	1122	1074	995	961
27:00	1712	1538	1554	1521	1291	1117	1077	986	961
27:15	1656	1503	1524	1535	1297	1129	1101	1035	993
27:30	1541	1496	1510	1501	1275	1115	1095	1005	982
27:45	1560	1564	1531	1558	1322	1134	1107	1010	982
28:00	1484	1467	1490	1478	1284	1134	1107	1001	962
28:15	1518	1463	1482	1487	1293	1139	1107	1011	990
28:30	1537	1485	1491	1507	1301	1141	1107	1022	994
28:45	1514	1509	1511	1519	1311	1148	1102	993	952
29:00	1532	1573	1548	1587	1328	1151	1115	1017	985
29:15	1522	1581	1565	1536	1303	1137	1099	1000	941
29:30	1535	1553	1549	1486	1283	1116	1060	895	828
29:45	1527	1565	1553	1529	1293	1110	1057	935	900
30:00	1566	1530	1555	1562	1309	1125	1072	959	939

Time (min:sec)	Tc 10 (°F)	Tc 11 (°F)	Tc 12 (°F)	Tc 13 (°F)	Tc 14 (°F)	Tc 15 (°F)	Tc 16 (°F)	Tc 17 (°F)	Tc 18 (°F)
0:00	81	81	82	82	82	81	81	81	81
0:15	85	102	144	131	115	127	173	81	81
0:30	99	120	171	152	135	141	218	85	80
0:45	114	137	188	168	139	154	253	99	79
1:00	131	156	215	203	146	163	264	91	79
1:15	145	166	209	197	148	159	271	87	78
1:30	159	182	230	213	131	153	267	86	78
1:45	177	205	264	248	124	160	250	85	79
2:00	194	215	245	230	144	159	246	85	79
2:15	207	226	257	242	146	157	258	86	79
2:30	218	235	264	246	143	165	273	86	79
2:45	229	242	265	249	154	157	272	87	79
3:00	239	253	291	277	156	186	244	87	80
3:15	251	263	301	287	140	225	228	106	81
3:30	265	279	316	299	127	229	223	115	80
3:45	278	285	311	292	142	186	224	98	80
4:00	288	286	299	284	152	172	261	93	81
4:15	296	293	309	292	154	223	245	100	81
4:30	305	304	335	317	134	227	242	100	81
4:45	314	312	334	315	137	234	235	103	82
5:00	325	333	409	386	144	250	270	106	81
5:15	351	363	451	420	148	298	309	107	81
5:30	380	388	468	432	141	360	316	118	82
5:45	404	405	472	441	139	369	296	128	83
6:00	426	419	461	428	161	306	331	115	83
6:15	443	436	493	460	151	335	325	130	83
6:30	461	450	509	469	157	360	315	131	84
6:45	481	460	493	458	153	364	368	121	84
7:00	494	465	501	469	171	263	377	107	85
7:15	502	462	473	445	189	238	390	101	85
7:30	508	472	517	482	160	312	347	101	85
7:45	522	483	537	501	158	304	345	103	86
8:00	535	491	530	494	175	311	364	102	87
8:15	542	494	538	500	162	248	352	107	87
8:30	551	497	517	479	181	287	408	118	88
8:45	553	496	500	472	196	294	403	111	89
9:00	550	491	489	458	201	281	423	108	90
9:15	551	496	540	512	152	279	368	108	90
9:30	556	502	550	517	139	324	355	104	90
9:45	563	511	559	525	155	314	370	102	90

Time (min:sec)	Tc 10 (°F)	Tc 11 (°F)	Tc 12 (°F)	Tc 13 (°F)	Tc 14 (°F)	Tc 15 (°F)	Tc 16 (°F)	Tc 17 (°F)	Tc 18 (°F)
10:00	572	520	558	523	164	355	368	129	90
10:15	583	537	585	552	168	330	362	127	90
10:30	590	541	558	516	170	336	375	146	90
10:45	597	550	579	542	168	339	416	122	91
11:00	604	557	594	557	175	358	355	147	92
11:15	613	565	606	562	171	376	380	132	93
11:30	622	570	578	541	165	325	410	125	93
11:45	624	570	594	558	177	332	432	135	93
12:00	625	566	574	536	191	341	443	129	95
12:15	625	567	598	558	191	311	412	117	95
12:30	633	580	622	576	161	383	386	127	96
12:45	639	585	605	561	149	380	372	130	96
13:00	641	589	624	581	146	357	397	143	96
13:15	648	595	632	588	156	390	380	134	97
13:30	654	601	638	599	155	362	414	132	97
13:45	660	603	642	603	166	330	383	119	99
14:00	668	609	658	618	149	343	390	123	99
14:15	675	615	640	596	140	359	437	121	99
14:30	679	617	636	594	174	340	397	116	100
14:45	679	610	616	579	176	373	394	141	100
15:00	677	613	644	603	167	345	418	121	101
15:15	681	619	665	622	167	335	416	125	101
15:30	691	631	696	650	146	331	397	117	102
15:45	704	640	689	638	150	348	394	125	103
16:00	715	648	691	644	178	340	446	124	103
16:15	722	651	676	624	157	361	462	126	103
16:30	724	654	692	644	153	365	438	135	103
16:45	728	656	672	623	145	390	408	131	104
17:00	731	663	681	626	160	380	426	150	105
17:15	733	660	647	601	196	358	470	135	104
17:30	732	658	656	615	179	347	462	125	105
17:45	726	655	659	607	174	369	468	135	106
18:00	724	655	672	627	174	385	452	140	106
18:15	728	657	672	627	191	348	462	131	106
18:30	731	651	659	609	209	349	489	126	107
18:45	729	653	677	627	173	376	471	136	108
19:00	729	654	662	617	166	404	503	143	108
19:15	728	655	659	613	190	390	497	135	109
19:30	730	652	651	610	206	341	471	124	109
19:45	729	658	695	641	165	396	449	132	108

Time (min:sec)	Tc 10 (°F)	Tc 11 (°F)	Tc 12 (°F)	Tc 13 (°F)	Tc 14 (°F)	Tc 15 (°F)	Tc 16 (°F)	Tc 17 (°F)	Tc 18 (°F)
20:00	732	664	692	641	150	400	466	149	109
20:15	737	666	676	631	195	349	525	134	109
20:30	741	666	672	630	208	378	495	138	110
20:45	746	673	720	674	187	358	490	131	111
21:00	751	676	712	660	193	374	489	130	111
21:15	756	676	682	640	181	411	499	144	112
21:30	757	681	687	640	180	424	490	147	112
21:45	756	681	694	645	165	411	464	140	113
22:00	751	678	679	634	165	439	453	192	113
22:15	757	687	720	668	197	375	481	160	114
22:30	766	691	721	663	173	376	483	147	115
22:45	775	702	733	678	153	407	449	152	115
23:00	778	698	697	652	159	405	470	162	116
23:15	774	691	679	642	172	376	506	185	116
23:30	776	698	721	673	166	354	501	150	117
23:45	783	700	703	655	163	423	478	167	118
24:00	782	697	703	661	157	352	475	147	117
24:15	788	700	716	672	181	337	492	131	119
24:30	794	707	729	685	183	369	476	138	119
24:45	797	715	735	684	193	415	466	144	119
25:00	803	721	739	692	193	398	494	143	119
25:15	811	725	740	690	172	482	472	198	120
25:30	812	721	712	666	166	505	460	231	120
25:45	804	707	661	621	200	503	457	242	121
26:00	787	686	610	574	212	478	500	257	121
26:15	776	685	653	612	195	506	464	220	121
26:30	771	684	674	631	215	460	520	219	121
26:45	772	691	712	662	193	478	473	225	122
27:00	777	700	727	676	207	395	520	171	122
27:15	788	712	751	699	168	379	474	154	123
27:30	798	719	752	700	175	349	499	144	123
27:45	808	727	754	698	169	361	524	149	124
28:00	814	725	746	699	177	336	513	137	124
28:15	819	731	768	721	177	382	499	160	125
28:30	825	737	781	724	162	416	488	165	125
28:45	829	730	747	693	199	354	540	147	126
29:00	832	736	769	721	195	388	550	149	126
29:15	832	728	717	674	187	348	547	149	127
29:30	820	698	621	594	211	362	554	153	127
29:45	805	694	681	642	221	384	542	156	127
30:00	799	699	718	665	194	430	537	165	128

Time (min:sec)	Tc 19(°F)	Tc 20(°F)	Tc 21(°F)	Tc 22(°F)	Tc 23(°F)	Tc 24(°F)	Tc 25(°F)	Tc 26(°F)	Tc 27(°F)
0:00	83	81	74	75	74	75	75	82	83
0:15	83	85	75	76	75	76	76	83	84
0:30	84	117	78	81	80	82	79	86	87
0:45	84	128	85	87	85	89	84	96	91
1:00	84	127	95	97	92	100	91	108	98
1:15	84	167	105	106	97	109	98	119	105
1:30	85	192	114	117	104	120	106	131	112
1:45	85	192	123	143	115	131	116	145	122
2:00	86	193	128	157	132	145	127	156	131
2:15	86	237	134	154	151	160	137	165	143
2:30	87	260	149	151	161	174	146	173	152
2:45	89	286	154	157	167	187	155	180	158
3:00	91	303	158	163	173	198	170	188	163
3:15	94	319	163	169	173	206	184	194	166
3:30	96	332	173	177	176	211	194	201	174
3:45	99	343	190	180	176	213	202	206	180
4:00	105	356	206	184	180	220	210	213	186
4:15	110	369	218	187	184	226	217	218	191
4:30	114	381	228	191	189	232	225	224	197
4:45	118	393	235	196	194	236	232	229	201
5:00	122	401	241	202	197	243	241	238	211
5:15	128	335	235	204	206	261	269	251	225
5:30	133	296	226	212	220	285	292	261	237
5:45	136	291	230	225	239	306	298	268	246
6:00	139	308	239	242	263	326	306	269	230
6:15	141	342	255	261	283	344	321	277	239
6:30	143	375	275	283	305	367	338	291	241
6:45	154	405	294	304	323	387	355	305	248
7:00	159	411	303	323	338	401	370	321	257
7:15	160	414	307	333	347	414	380	330	267
7:30	140	436	309	345	359	430	391	345	273
7:45	167	461	316	357	373	445	402	356	277
8:00	155	465	322	363	381	454	413	362	288
8:15	144	481	326	378	395	465	422	371	290
8:30	180	472	330	388	401	476	430	375	294
8:45	164	469	334	391	410	485	436	380	298
9:00	196	477	343	392	413	492	438	384	304
9:15	213	486	359	398	418	496	443	394	304
9:30	203	494	360	407	427	503	449	400	307
9:45	206	490	365	414	432	506	456	402	309

Time (min:sec)	Tc 19(°F)	Tc 20(°F)	Tc 21(°F)	Tc 22(°F)	Tc 23(°F)	Tc 24(°F)	Tc 25(°F)	Tc 26(°F)	Tc 27(°F)
10:00	202	501	384	414	439	509	460	403	312
10:15	220	521	383	422	444	521	467	410	317
10:30	144	714	449	465	505	672	537	408	346
10:45	173	804	450	478	519	682	561	410	366
11:00	187	859	450	489	526	659	560	414	377
11:15	142	884	457	501	539	667	570	409	386
11:30	143	942	460	507	547	667	577	392	391
11:45	144	1027	473	511	551	657	582	387	400
12:00	145	1030	485	519	558	671	590	386	410
12:15	147	1000	491	526	564	671	592	390	415
12:30	213	982	492	537	573	681	603	395	420
12:45	161	990	488	537	575	684	607	399	425
13:00	267	984	488	543	579	691	613	404	432
13:15	250	986	493	549	584	689	618	409	440
13:30	266	987	498	553	595	696	620	415	445
13:45	249	993	504	560	602	724	629	422	454
14:00	243	973	510	566	607	721	634	434	461
14:15	260	989	511	569	612	714	637	445	468
14:30	216	1039	576	620	662	788	656	456	477
14:45	208	1075	692	685	706	849	683	461	502
15:00	205	1089	722	688	698	852	685	464	508
15:15	190	1096	751	699	703	851	675	472	507
15:30	180	1107	762	702	709	848	674	483	511
15:45	179	1125	785	723	721	855	681	514	519
16:00	193	1118	826	735	730	867	688	526	532
16:15	200	1123	866	762	751	875	694	533	534
16:30	206	1132	873	764	747	867	689	532	539
16:45	226	1136	889	783	762	869	689	538	549
17:00	232	1150	907	791	765	869	693	537	559
17:15	235	1175	936	820	779	874	698	542	566
17:30	239	1178	935	819	783	874	707	545	574
17:45	243	1191	950	839	796	877	711	544	578
18:00	247	1196	944	834	797	884	724	548	588
18:15	251	1188	967	860	815	890	725	557	596
18:30	253	1203	967	867	821	893	730	568	605
18:45	256	1215	955	861	824	897	737	581	612
19:00	261	1222	962	853	820	894	744	610	625
19:15	264	1222	989	864	819	896	745	632	629
19:30	269	1216	981	864	819	890	749	641	631
19:45	276	1220	972	865	818	890	753	649	630

Time (min:sec)	Tc 19(°F)	Tc 20(°F)	Tc 21(°F)	Tc 22(°F)	Tc 23(°F)	Tc 24(°F)	Tc 25(°F)	Tc 26(°F)	Tc 27(°F)
20:00	282	1232	983	867	827	896	763	657	642
20:15	287	1256	1009	883	838	904	768	676	647
20:30	294	1242	1016	898	852	910	771	671	643
20:45	301	1255	1015	901	856	914	784	679	647
21:00	311	1278	1029	910	868	917	792	686	651
21:15	320	1314	1041	923	877	922	799	695	656
21:30	328	1312	1077	940	886	927	803	703	658
21:45	333	1327	1113	966	903	938	806	713	660
22:00	339	1323	1086	955	902	936	805	703	664
22:15	347	1324	1117	972	915	946	816	713	663
22:30	354	1308	1119	987	928	961	824	718	667
22:45	335	1322	1151	1010	948	974	831	722	672
23:00	307	1367	1177	1018	954	974	839	732	676
23:15	328	1359	1168	1027	962	984	844	737	677
23:30	333	1379	1192	1060	981	995	849	742	667
23:45	331	1378	1168	1049	983	994	857	749	669
24:00	330	1376	1168	1047	983	998	863	748	666
24:15	335	1405	1161	1040	985	1004	871	751	675
24:30	328	1360	1137	1028	980	998	876	758	680
24:45	332	1396	1165	1059	1001	1012	878	763	682
25:00	332	1418	1169	1050	1003	1023	886	766	677
25:15	333	1403	1164	1061	1018	1043	890	768	687
25:30	331	1410	1148	1051	1017	1050	890	771	695
25:45	334	1456	1173	1070	1030	1050	884	770	691
26:00	338	1451	1187	1076	1026	1049	885	763	683
26:15	344	1427	1173	1064	1020	1032	883	757	679
26:30	354	1427	1178	1070	1028	1042	890	759	684
26:45	356	1457	1189	1070	1028	1049	898	764	684
27:00	357	1445	1198	1080	1037	1052	897	766	685
27:15	369	1418	1195	1085	1044	1064	910	773	690
27:30	380	1411	1193	1080	1042	1060	915	781	693
27:45	386	1505	1234	1113	1057	1065	919	787	694
28:00	391	1396	1189	1088	1048	1059	922	787	692
28:15	403	1413	1207	1095	1052	1060	924	794	698
28:30	409	1446	1214	1105	1058	1065	927	797	698
28:45	411	1444	1238	1125	1061	1056	928	797	698
29:00	410	1519	1252	1118	1065	1071	934	800	699
29:15	409	1489	1239	1110	1064	1068	935	801	702
29:30	410	1469	1239	1116	1060	1061	928	795	699
29:45	409	1487	1236	1118	1063	1057	924	792	698
30:00	414	1503	1252	1120	1065	1061	928	795	700

Time (min:sec)	Tc 28(°F)	Tc 29(°F)	Tc 30(°F)	Tc 31(°F)	Tc 32(°F)	Tc 33(°F)	Tc 34(°F)	Tc 35(°F)	Tc 36(°F)
0:00	82	83	81	81	82	82	82	82	84
0:15	82	84	128	81	82	82	82	83	84
0:30	82	88	143	81	82	82	82	84	84
0:45	82	92	146	82	82	82	82	88	84
1:00	82	99	168	82	82	82	82	93	84
1:15	83	105	166	82	82	82	82	98	84
1:30	83	112	170	83	82	82	82	104	84
1:45	84	121	185	83	82	82	82	110	84
2:00	85	128	181	83	82	82	82	115	84
2:15	85	134	187	84	82	82	82	121	84
2:30	86	140	188	84	82	83	82	127	84
2:45	87	146	186	85	82	83	83	133	84
3:00	88	152	202	86	83	83	83	138	84
3:15	90	158	216	86	83	83	83	144	84
3:30	91	164	220	87	83	84	84	149	84
3:45	92	168	215	87	83	84	84	155	84
4:00	93	173	206	88	84	84	84	160	84
4:15	95	177	213	89	84	85	85	164	84
4:30	96	182	230	89	84	85	85	168	85
4:45	97	187	232	90	84	86	86	172	85
5:00	99	194	274	90	85	86	86	177	85
5:15	100	207	303	91	85	86	86	184	85
5:30	102	221	322	91	85	87	87	190	85
5:45	105	233	329	92	86	87	87	199	85
6:00	107	243	304	92	86	87	88	208	85
6:15	110	253	339	93	86	88	88	221	85
6:30	112	261	356	94	86	88	89	237	86
6:45	115	271	341	94	87	89	89	255	86
7:00	119	278	342	95	87	89	90	272	86
7:15	122	281	320	95	87	90	90	285	86
7:30	125	285	362	96	87	90	91	295	86
7:45	129	294	364	97	87	90	91	302	87
8:00	132	305	364	97	88	91	92	309	87
8:15	136	312	363	98	88	91	92	313	87
8:30	141	320	352	99	89	92	93	319	88
8:45	145	323	358	100	89	92	94	324	88
9:00	149	325	339	100	89	93	94	332	88
9:15	153	329	379	101	90	93	95	338	89
9:30	158	332	383	102	90	94	96	342	89
9:45	162	329	386	103	90	94	96	346	89

Time (min:sec)	Tc 28(°F)	Tc 29(°F)	Tc 30(°F)	Tc 31(°F)	Tc 32(°F)	Tc 33(°F)	Tc 34(°F)	Tc 35(°F)	Tc 36(°F)
10:00	165	306	400	103	90	95	97	349	90
10:15	169	299	415	104	91	95	98	355	90
10:30	173	314	390	105	91	96	98	366	90
10:45	176	329	415	106	91	96	99	369	91
11:00	180	342	431	107	92	97	100	375	91
11:15	184	347	432	108	92	98	100	384	91
11:30	188	350	411	108	92	98	101	393	92
11:45	193	338	431	109	93	99	102	399	92
12:00	197	329	414	110	93	99	103	403	93
12:15	201	326	421	111	93	100	103	407	93
12:30	205	330	453	112	94	100	104	412	94
12:45	210	336	442	113	95	101	105	415	94
13:00	215	347	451	114	95	102	106	416	95
13:15	220	359	457	115	96	103	106	420	96
13:30	225	372	459	116	97	104	107	425	96
13:45	229	387	455	117	97	104	108	444	97
14:00	234	406	480	118	98	105	109	453	97
14:15	239	423	469	119	98	106	109	461	98
14:30	244	431	461	120	99	106	110	464	99
14:45	250	428	446	121	100	107	111	481	99
15:00	255	429	464	122	103	108	112	491	100
15:15	260	433	474	123	105	110	112	484	100
15:30	265	444	504	124	107	111	113	487	101
15:45	271	444	494	125	108	112	114	499	102
16:00	276	447	502	126	109	113	115	509	102
16:15	281	428	489	127	110	114	116	512	103
16:30	286	422	501	128	111	115	116	513	104
16:45	290	418	499	129	111	115	117	522	104
17:00	295	418	497	130	111	116	118	533	105
17:15	301	417	477	132	112	117	118	537	106
17:30	305	415	477	133	111	118	119	546	106
17:45	310	414	483	134	111	119	120	549	107
18:00	315	414	506	135	111	120	120	554	108
18:15	319	419	500	136	110	121	121	565	108
18:30	324	423	490	137	110	121	122	572	109
18:45	330	427	510	139	111	122	122	578	110
19:00	335	428	496	140	112	123	123	590	111
19:15	340	429	500	141	114	124	124	593	111
19:30	345	431	489	142	116	125	124	595	112
19:45	349	433	520	143	117	125	125	594	113

Time (min:sec)	Tc 28(°F)	Tc 29(°F)	Tc 30(°F)	Tc 31(°F)	Tc 32(°F)	Tc 33(°F)	Tc 34(°F)	Tc 35(°F)	Tc 36(°F)
20:00	354	436	528	144	118	126	126	601	114
20:15	358	439	503	145	119	127	126	603	114
20:30	362	441	503	147	120	128	127	602	115
20:45	366	444	530	148	121	129	128	604	116
21:00	371	447	525	149	122	130	129	608	117
21:15	375	450	517	150	123	131	129	612	118
21:30	379	451	520	151	124	132	130	614	118
21:45	383	452	531	152	125	132	131	612	119
22:00	388	451	517	154	126	133	132	614	120
22:15	392	454	547	155	127	134	132	613	121
22:30	397	457	544	156	128	135	133	614	122
22:45	401	462	562	157	129	136	134	613	123
23:00	407	464	522	158	130	137	135	613	123
23:15	411	464	523	159	130	138	135	613	124
23:30	416	467	554	160	131	139	136	612	125
23:45	420	469	545	160	132	139	137	612	126
24:00	424	470	543	161	133	140	138	612	127
24:15	428	474	554	162	133	141	138	612	128
24:30	431	477	559	163	134	142	139	612	129
24:45	435	477	567	164	135	143	140	612	130
25:00	439	479	578	165	135	143	141	612	131
25:15	442	494	573	166	136	144	141	613	132
25:30	446	513	546	167	137	145	142	613	133
25:45	450	522	508	168	137	146	143	613	133
26:00	453	527	486	168	138	146	144	616	134
26:15	456	528	529	169	139	147	144	614	135
26:30	458	527	542	170	140	148	145	616	136
26:45	461	526	558	171	140	149	146	619	137
27:00	463	524	573	172	141	149	146	615	139
27:15	466	530	581	173	142	150	147	617	140
27:30	470	534	586	174	142	151	148	618	141
27:45	473	539	589	175	143	152	149	617	142
28:00	476	544	578	175	144	152	150	617	143
28:15	480	549	609	176	145	153	150	617	144
28:30	483	551	602	177	145	154	151	616	145
28:45	487	553	573	178	146	155	152	616	146
29:00	490	556	589	179	147	155	153	617	147
29:15	493	557	533	179	147	156	153	618	148
29:30	496	552	489	180	148	157	154	615	149
29:45	498	547	540	181	149	158	155	614	150
30:00	501	543	566	182	149	158	156	616	150

Time (min:sec)	Tc 37(°F)	Tc 38(°F)	Tc 39(°F)	Tc 40(°F)	Tc 41(°F)	Tc 42(°F)	Tc 43(°F)	Tc 44(°F)	Tc 45(°F)
0:00	84	84	84	84	216	245	465	75	399
0:15	84	84	84	84	717	756	1178	91	1079
0:30	84	84	84	85	895	948	1282	94	1199
0:45	84	84	84	88	960	1005	1315	94	1235
1:00	84	84	84	91	985	1033	1327	95	1266
1:15	84	84	84	95	1004	1049	1330	95	1310
1:30	84	84	84	100	1021	1035	1247	95	1289
1:45	84	84	85	106	1033	1032	1235	96	1349
2:00	84	84	85	112	1063	1047	1272	99	1364
2:15	84	84	85	118	1075	1063	1335	98	1385
2:30	84	84	85	124	1053	1075	1321	99	1345
2:45	84	84	85	131	1057	1080	1281	98	1397
3:00	84	84	85	138	1063	1071	1221	99	1373
3:15	84	85	85	146	1058	1088	1216	98	1335
3:30	84	85	85	153	1050	1093	1212	98	1364
3:45	84	85	86	158	1072	1081	1201	100	1360
4:00	84	85	86	164	1105	1085	1290	100	1375
4:15	84	85	86	169	1112	1094	1275	101	1426
4:30	84	85	86	174	1082	1111	1235	102	1482
4:45	84	85	86	177	1105	1123	1257	103	1431
5:00	85	85	87	182	1115	1130	1276	104	1510
5:15	85	86	87	188	1150	1185	1334	105	1503
5:30	85	86	87	186	1169	1203	1354	105	1539
5:45	85	86	88	173	1179	1232	1362	106	1540
6:00	85	86	88	172	1190	1224	1386	106	1553
6:15	85	86	89	193	1197	1232	1381	106	1625
6:30	85	87	89	216	1211	1251	1433	106	1559
6:45	85	87	90	227	1218	1238	1388	105	1659
7:00	86	87	90	245	1225	1243	1410	105	1581
7:15	86	87	91	257	1259	1240	1504	106	1513
7:30	86	88	91	265	1242	1237	1422	105	1579
7:45	86	88	92	277	1221	1244	1377	103	1599
8:00	86	88	92	287	1251	1241	1464	104	1554
8:15	86	88	92	297	1248	1245	1428	103	1572
8:30	87	89	93	303	1257	1245	1446	103	1594
8:45	87	89	93	315	1271	1256	1493	103	1540
9:00	87	89	94	321	1277	1269	1522	106	1549
9:15	87	89	94	323	1285	1269	1502	108	1550
9:30	88	90	94	333	1282	1261	1446	108	1585
9:45	88	90	95	336	1276	1260	1436	109	1626

Time (min:sec)	Tc 37(°F)	Tc 38(°F)	Tc 39(°F)	Tc 40(°F)	Tc 41(°F)	Tc 42(°F)	Tc 43(°F)	Tc 44(°F)	Tc 45(°F)
10:00	88	90	95	343	1254	1268	1408	97	1625
10:15	88	90	95	351	1280	1302	1483	100	1685
10:30	89	91	96	398	1314	1320	1499	102	1669
10:45	89	91	97	416	1310	1334	1495	102	1750
11:00	89	91	97	424	1317	1346	1505	104	1705
11:15	89	92	98	439	1332	1350	1513	104	1731
11:30	90	92	99	450	1335	1348	1525	104	1739
11:45	90	93	100	451	1347	1343	1558	104	1640
12:00	91	93	100	473	1360	1351	1572	107	1680
12:15	91	94	101	479	1373	1367	1594	109	1690
12:30	91	94	101	490	1348	1370	1512	110	1841
12:45	92	95	102	496	1361	1371	1532	111	1760
13:00	92	95	103	503	1352	1392	1539	110	1797
13:15	93	96	104	508	1355	1377	1525	110	1793
13:30	93	96	105	513	1347	1369	1516	109	1804
13:45	94	97	105	518	1355	1360	1523	110	1746
14:00	95	97	105	517	1347	1366	1521	109	1806
14:15	95	98	106	519	1351	1382	1530	109	1803
14:30	96	98	119	540	1380	1380	1568	111	1751
14:45	96	99	123	566	1374	1379	1552	110	1740
15:00	97	99	123	582	1362	1382	1532	110	1751
15:15	97	100	124	518	1400	1395	1583	110	1854
15:30	98	101	124	518	1396	1400	1586	110	1773
15:45	99	101	125	533	1399	1410	1571	109	1821
16:00	99	102	125	570	1410	1418	1596	110	1818
16:15	100	102	126	583	1411	1414	1600	109	1841
16:30	101	103	126	574	1414	1419	1604	109	1751
16:45	102	104	127	580	1399	1431	1568	107	1956
17:00	102	104	128	584	1397	1412	1565	107	1805
17:15	103	105	129	583	1416	1426	1613	108	1754
17:30	104	106	130	581	1418	1424	1573	107	1805
17:45	104	106	132	579	1422	1434	1596	108	1797
18:00	105	107	133	584	1410	1441	1593	107	1888
18:15	106	108	133	598	1431	1429	1599	109	1778
18:30	106	108	134	602	1438	1434	1651	109	1745
18:45	107	109	135	603	1426	1435	1584	109	1881
19:00	108	110	136	605	1420	1452	1589	109	1856
19:15	108	110	136	606	1410	1438	1579	109	1890
19:30	109	111	137	605	1446	1438	1610	111	1829
19:45	110	112	137	604	1432	1440	1594	110	1847

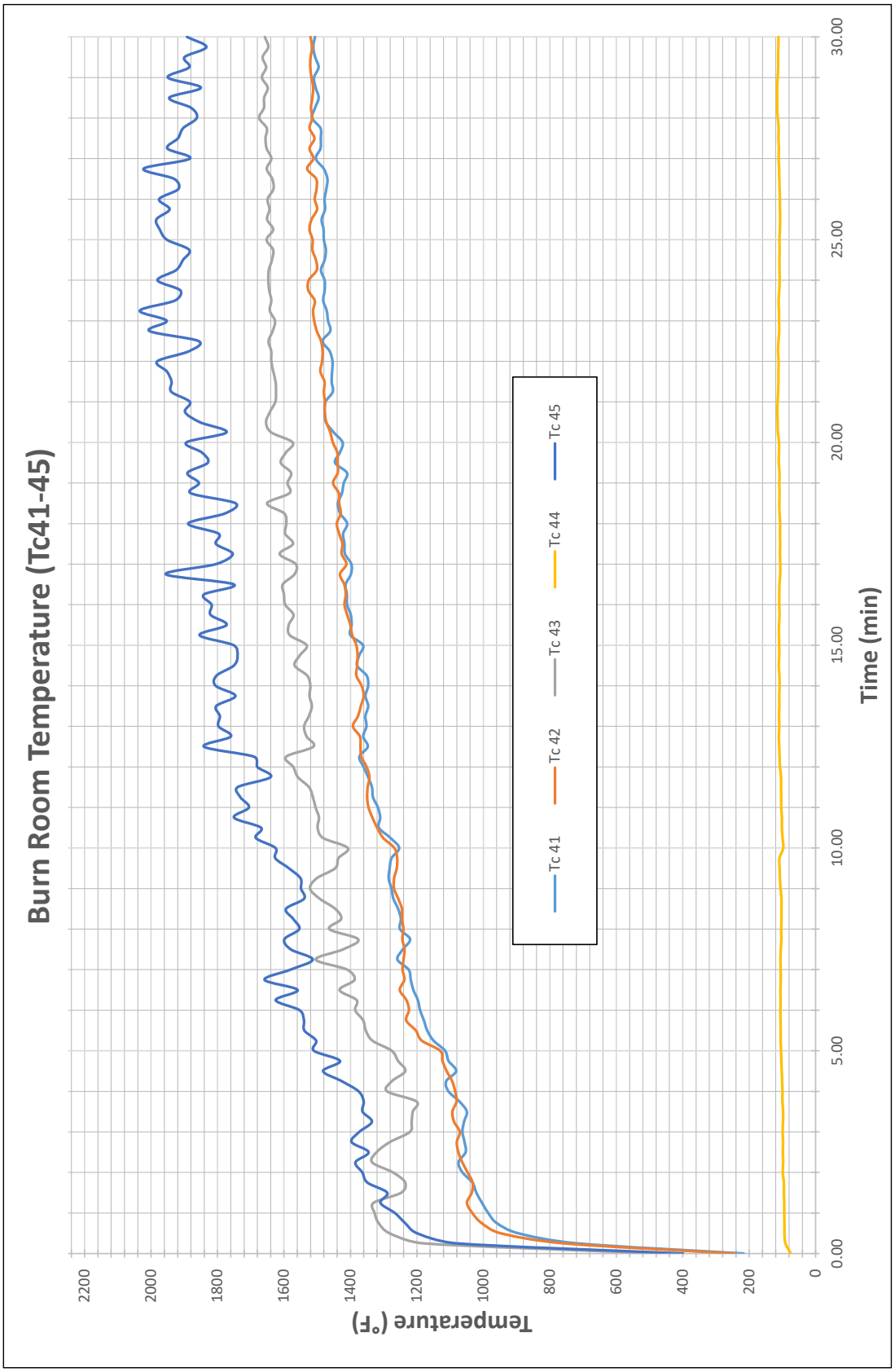
Time (min:sec)	Tc 37(°F)	Tc 38(°F)	Tc 39(°F)	Tc 40(°F)	Tc 41(°F)	Tc 42(°F)	Tc 43(°F)	Tc 44(°F)	Tc 45(°F)
20:00	111	112	138	613	1424	1453	1574	110	1894
20:15	111	113	139	614	1450	1461	1639	114	1773
20:30	112	114	139	606	1474	1473	1654	114	1853
20:45	113	115	139	611	1478	1477	1642	115	1898
21:00	113	115	140	611	1475	1477	1626	115	1883
21:15	114	116	140	617	1453	1480	1624	113	1939
21:30	115	117	141	620	1457	1478	1625	112	1938
21:45	116	118	142	623	1455	1491	1632	112	1952
22:00	117	118	142	628	1454	1485	1638	111	1982
22:15	117	119	142	628	1462	1484	1638	113	1886
22:30	118	120	143	630	1484	1489	1646	112	1857
22:45	119	121	143	633	1461	1501	1634	110	2005
23:00	120	122	144	641	1467	1509	1627	110	1953
23:15	121	123	145	645	1472	1512	1643	110	2034
23:30	121	124	145	635	1482	1508	1638	111	1928
23:45	122	125	146	641	1478	1527	1644	110	1912
24:00	123	125	146	645	1478	1525	1647	109	1980
24:15	124	126	146	643	1489	1502	1646	109	1925
24:30	125	127	147	641	1478	1504	1636	109	1904
24:45	126	128	148	642	1474	1514	1633	108	1885
25:00	126	129	148	644	1480	1514	1652	109	1952
25:15	127	129	148	647	1481	1523	1632	108	1974
25:30	128	130	149	653	1487	1517	1651	107	1984
25:45	129	131	150	657	1476	1500	1644	108	1944
26:00	130	132	151	662	1478	1507	1649	108	1976
26:15	131	133	153	661	1473	1502	1632	109	1918
26:30	132	135	154	669	1469	1503	1635	110	1930
26:45	133	136	155	670	1480	1530	1652	110	2023
27:00	134	137	156	664	1504	1511	1638	112	1883
27:15	135	138	157	661	1490	1523	1652	111	1951
27:30	136	139	158	664	1489	1508	1656	112	1919
27:45	137	140	159	660	1490	1523	1652	111	1903
28:00	138	141	160	657	1515	1515	1674	114	1863
28:15	138	142	160	653	1507	1519	1660	116	1879
28:30	139	143	161	651	1496	1515	1660	116	1945
28:45	140	144	162	652	1505	1512	1649	116	1850
29:00	141	144	162	644	1510	1517	1666	114	1950
29:15	142	145	163	645	1496	1521	1654	113	1885
29:30	143	146	163	639	1506	1520	1664	113	1900
29:45	144	146	164	639	1512	1515	1647	112	1834
30:00	145	147	164	643	1507	1520	1658	112	1892

Time (min:sec)	Tc 46(°F)	Tc 47(°F)	Tc 48(°F)	Tc 49(°F)	Tc 50(°F)	Tc 51(°F)	Tc 52(°F)	Tc 53(°F)	Tc 54(°F)
0:00	329	273	311	83	83	83	83	83	83
0:15	970	905	950	84	83	86	84	84	92
0:30	1103	1054	1032	84	84	88	84	84	94
0:45	1123	1090	1075	84	84	91	83	84	95
1:00	1109	1118	1130	84	84	93	83	84	98
1:15	1137	1144	1136	85	84	93	84	84	98
1:30	1141	1180	1168	85	84	93	84	84	100
1:45	1167	1186	1170	84	85	92	84	84	98
2:00	1192	1190	1208	84	85	92	84	84	100
2:15	1185	1198	1221	84	85	93	84	84	101
2:30	1212	1223	1234	84	84	93	84	84	101
2:45	1203	1221	1246	84	84	94	84	84	101
3:00	1221	1233	1213	84	85	94	84	84	103
3:15	1214	1247	1249	85	85	94	84	84	101
3:30	1206	1229	1243	85	85	95	85	85	101
3:45	1240	1265	1245	85	86	97	85	85	105
4:00	1267	1272	1274	86	85	100	85	85	107
4:15	1269	1279	1283	86	86	100	85	85	107
4:30	1267	1296	1304	86	86	100	86	85	110
4:45	1295	1329	1297	87	85	102	86	85	110
5:00	1333	1343	1323	88	85	104	86	85	109
5:15	1383	1440	1406	88	85	105	86	85	112
5:30	1381	1419	1403	89	86	106	87	86	113
5:45	1399	1445	1391	88	87	106	86	86	110
6:00	1381	1422	1436	90	88	108	87	87	108
6:15	1402	1451	1444	91	87	109	88	86	106
6:30	1392	1443	1452	91	89	109	89	87	112
6:45	1405	1453	1452	93	90	112	89	88	110
7:00	1433	1463	1458	94	90	112	90	88	112
7:15	1436	1467	1472	95	90	112	93	88	111
7:30	1414	1438	1440	96	91	113	93	90	117
7:45	1415	1505	1498	96	91	114	93	89	116
8:00	1412	1455	1489	96	92	115	94	90	117
8:15	1421	1476	1479	95	91	114	93	90	113
8:30	1426	1471	1498	98	92	115	95	90	118
8:45	1433	1494	1517	100	92	115	94	90	120
9:00	1438	1478	1508	104	94	117	101	91	125
9:15	1479	1533	1489	109	97	119	103	92	124
9:30	1453	1505	1485	108	97	122	99	93	122
9:45	1437	1488	1514	108	97	122	102	92	122

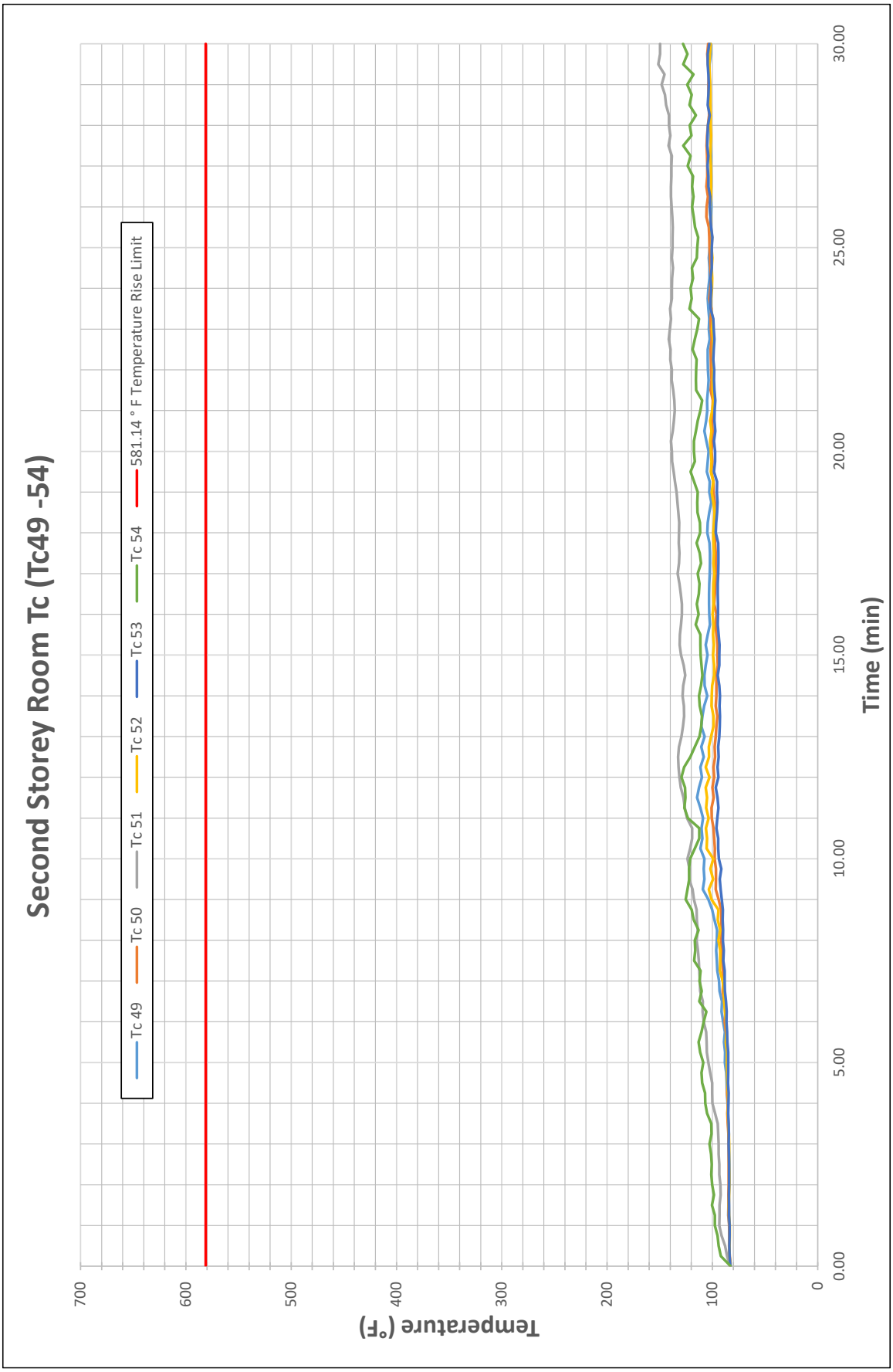
Time (min:sec)	Tc 46(°F)	Tc 47(°F)	Tc 48(°F)	Tc 49(°F)	Tc 50(°F)	Tc 51(°F)	Tc 52(°F)	Tc 53(°F)	Tc 54(°F)
10:00	1446	1507	1517	108	98	124	99	94	121
10:15	1480	1548	1596	111	98	121	105	94	117
10:30	1541	1604	1580	110	98	119	105	94	112
10:45	1536	1608	1604	110	99	119	106	96	112
11:00	1548	1625	1626	109	101	124	104	95	123
11:15	1536	1617	1623	111	101	126	106	94	127
11:30	1555	1607	1639	115	99	127	105	95	126
11:45	1563	1606	1627	113	100	130	106	97	126
12:00	1559	1608	1634	110	98	131	103	94	129
12:15	1582	1639	1649	111	99	132	106	95	127
12:30	1568	1637	1652	108	97	132	103	94	121
12:45	1579	1646	1623	110	98	132	103	94	117
13:00	1572	1656	1679	107	97	129	101	93	112
13:15	1561	1640	1693	111	96	128	99	93	111
13:30	1566	1633	1669	109	95	127	99	93	110
13:45	1593	1658	1659	108	97	127	101	93	112
14:00	1587	1670	1730	105	96	128	101	93	113
14:15	1600	1653	1713	107	96	128	100	93	111
14:30	1605	1656	1681	108	96	126	98	95	109
14:45	1620	1693	1677	106	95	127	98	93	110
15:00	1592	1683	1684	105	95	130	99	93	111
15:15	1664	1720	1752	106	95	131	99	93	111
15:30	1671	1748	1782	104	96	131	99	94	111
15:45	1701	1731	1804	102	97	130	99	95	116
16:00	1677	1743	1756	103	96	129	100	95	113
16:15	1664	1752	1766	103	98	129	99	95	115
16:30	1703	1773	1810	103	98	130	99	95	113
16:45	1634	1712	1810	103	97	131	99	95	112
17:00	1671	1781	1849	102	97	133	98	94	114
17:15	1732	1784	1771	102	97	132	99	94	111
17:30	1659	1736	1809	102	97	131	99	94	112
17:45	1706	1802	1812	103	97	132	99	95	115
18:00	1697	1734	1754	105	98	132	99	97	112
18:15	1699	1799	1819	104	97	131	98	96	112
18:30	1741	1782	1799	103	98	132	98	96	114
18:45	1706	1776	1778	101	98	133	99	95	114
19:00	1693	1740	1813	103	99	134	101	96	114
19:15	1674	1764	1838	103	99	135	99	96	117
19:30	1715	1785	1814	105	101	137	101	99	121
19:45	1700	1769	1854	104	100	138	101	97	117

Time (min:sec)	Tc 46(°F)	Tc 47(°F)	Tc 48(°F)	Tc 49(°F)	Tc 50(°F)	Tc 51(°F)	Tc 52(°F)	Tc 53(°F)	Tc 54(°F)
20:00	1703	1720	1776	104	101	139	101	97	118
20:15	1789	1847	1831	106	100	139	102	99	118
20:30	1799	1879	1875	108	100	137	101	97	116
20:45	1776	1895	1866	106	100	137	102	98	114
21:00	1794	1814	1911	105	100	136	100	98	111
21:15	1772	1794	1910	105	99	136	99	97	110
21:30	1768	1894	1956	104	102	137	100	98	115
21:45	1755	1875	1949	104	101	139	100	98	116
22:00	1755	1889	1927	104	101	138	99	98	115
22:15	1785	1891	1934	104	101	140	99	99	115
22:30	1808	1899	1910	104	102	140	99	99	119
22:45	1829	1845	1893	102	101	141	99	98	117
23:00	1760	1843	1943	103	101	140	100	99	114
23:15	1769	1845	1935	103	102	139	100	99	113
23:30	1808	1847	1923	104	101	140	101	102	122
23:45	1803	1898	1861	104	103	138	101	102	120
24:00	1760	1841	1907	104	102	139	100	101	121
24:15	1801	1899	1925	103	101	138	100	102	118
24:30	1794	1867	1942	103	102	137	101	101	119
24:45	1819	1818	1870	103	102	138	100	101	115
25:00	1814	1875	1991	103	103	138	101	101	114
25:15	1830	1826	1955	102	103	138	100	100	114
25:30	1812	1872	1925	102	103	138	101	101	116
25:45	1808	1937	1994	101	106	138	102	102	118
26:00	1791	1878	2000	101	105	139	103	102	119
26:15	1771	1867	1976	101	104	139	101	102	118
26:30	1821	1914	2025	101	106	139	101	104	119
26:45	1837	1870	1926	101	105	139	101	104	118
27:00	1848	1923	1952	101	105	139	101	105	123
27:15	1846	1888	1933	101	105	138	102	104	121
27:30	1830	1919	2012	102	106	142	102	105	128
27:45	1845	1898	1943	102	105	140	101	105	120
28:00	1895	1964	1918	102	104	141	102	104	122
28:15	1861	1956	1962	102	103	141	102	102	116
28:30	1873	1965	1982	102	103	144	102	104	122
28:45	1889	2000	1918	102	104	145	102	104	120
29:00	1821	1974	1992	102	104	148	102	103	124
29:15	1873	1921	1918	103	103	145	102	104	118
29:30	1845	1945	1962	103	104	151	103	104	128
29:45	1847	1930	1969	101	105	150	102	104	124
30:00	1852	1929	1972	101	104	150	102	103	128

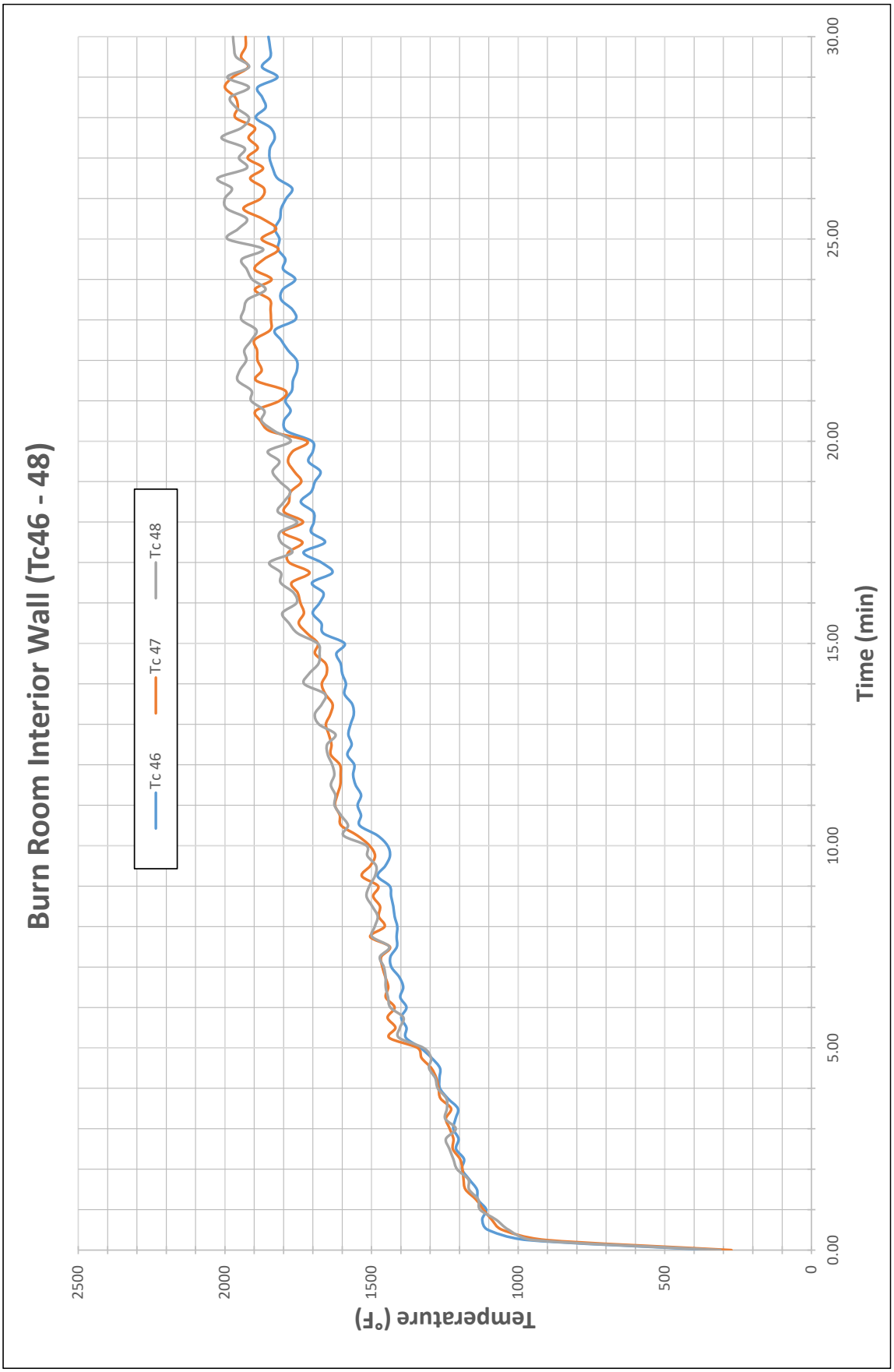
20. APPENDIX 6 – GRAPHS



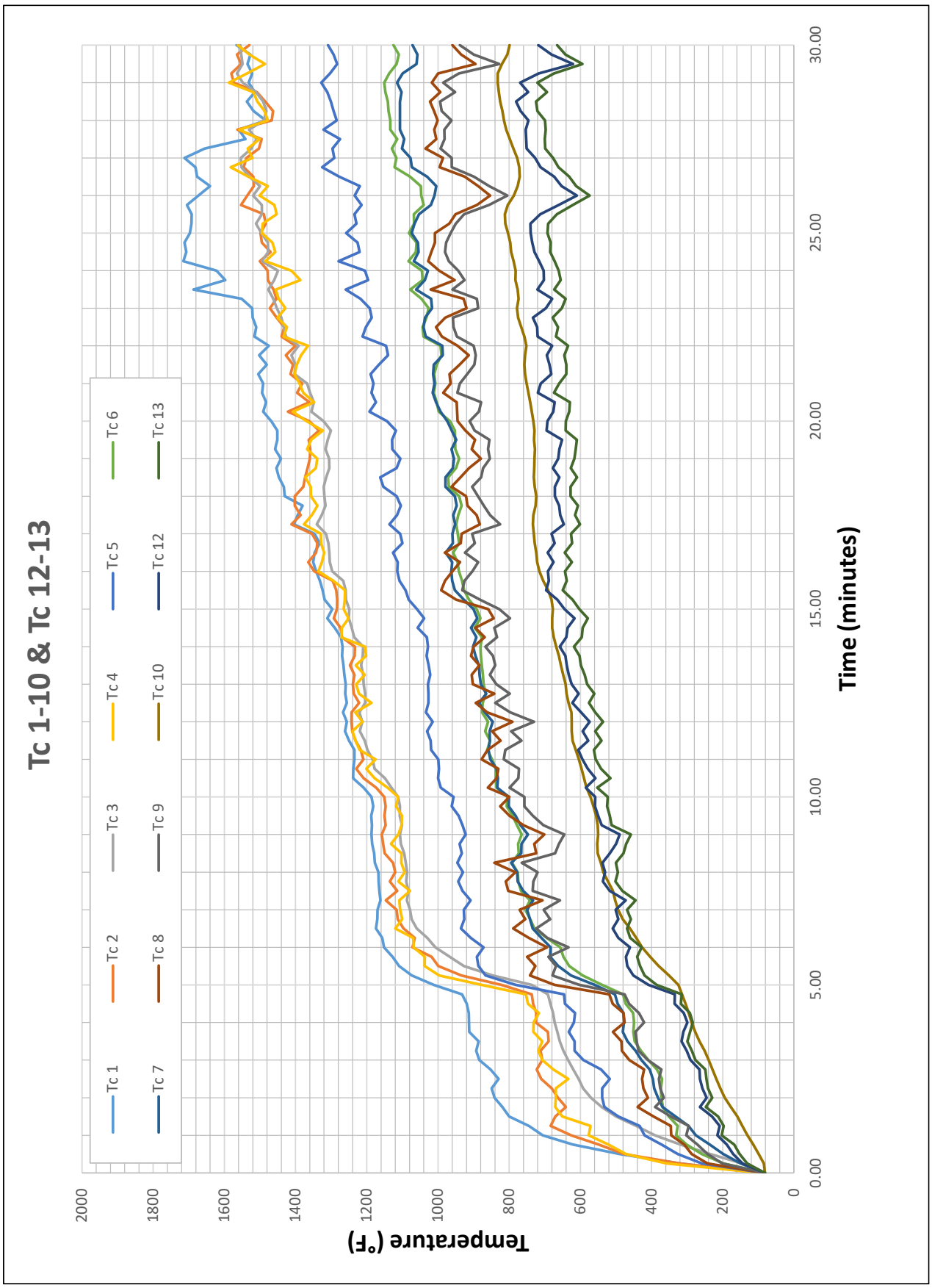
Graph 1: Burn room thermocouple temperature (Tc41 – Tc45)



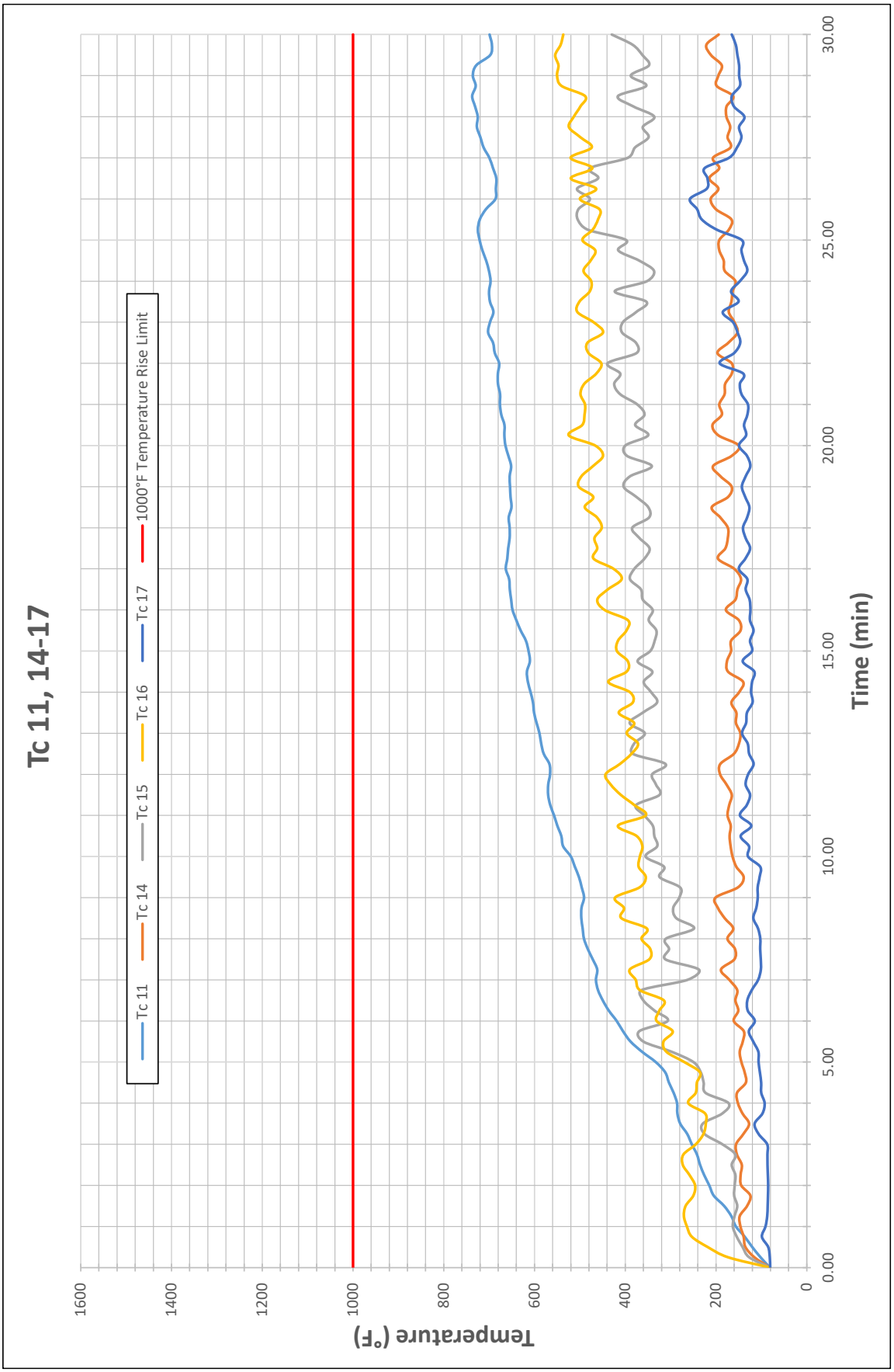
Graph 2: Second story room thermocouple temperatures (Tc49-Tc54)



Graph 3: Burn room interior wall temperature (Tc46 – Tc48)

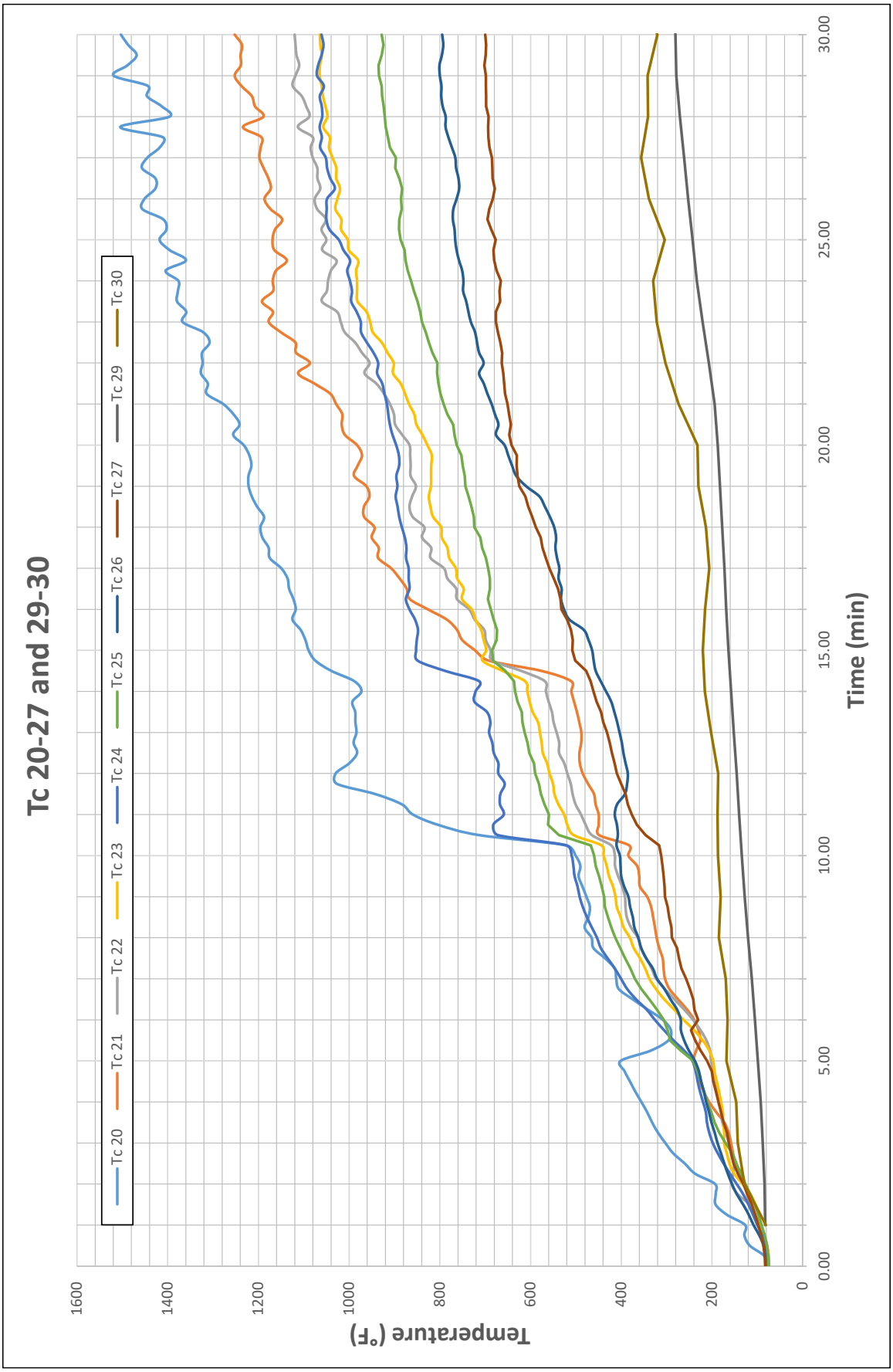


Graph 4: Thermocouple temperatures for Tc1 -Tc10 and Tc12 – Tc23.

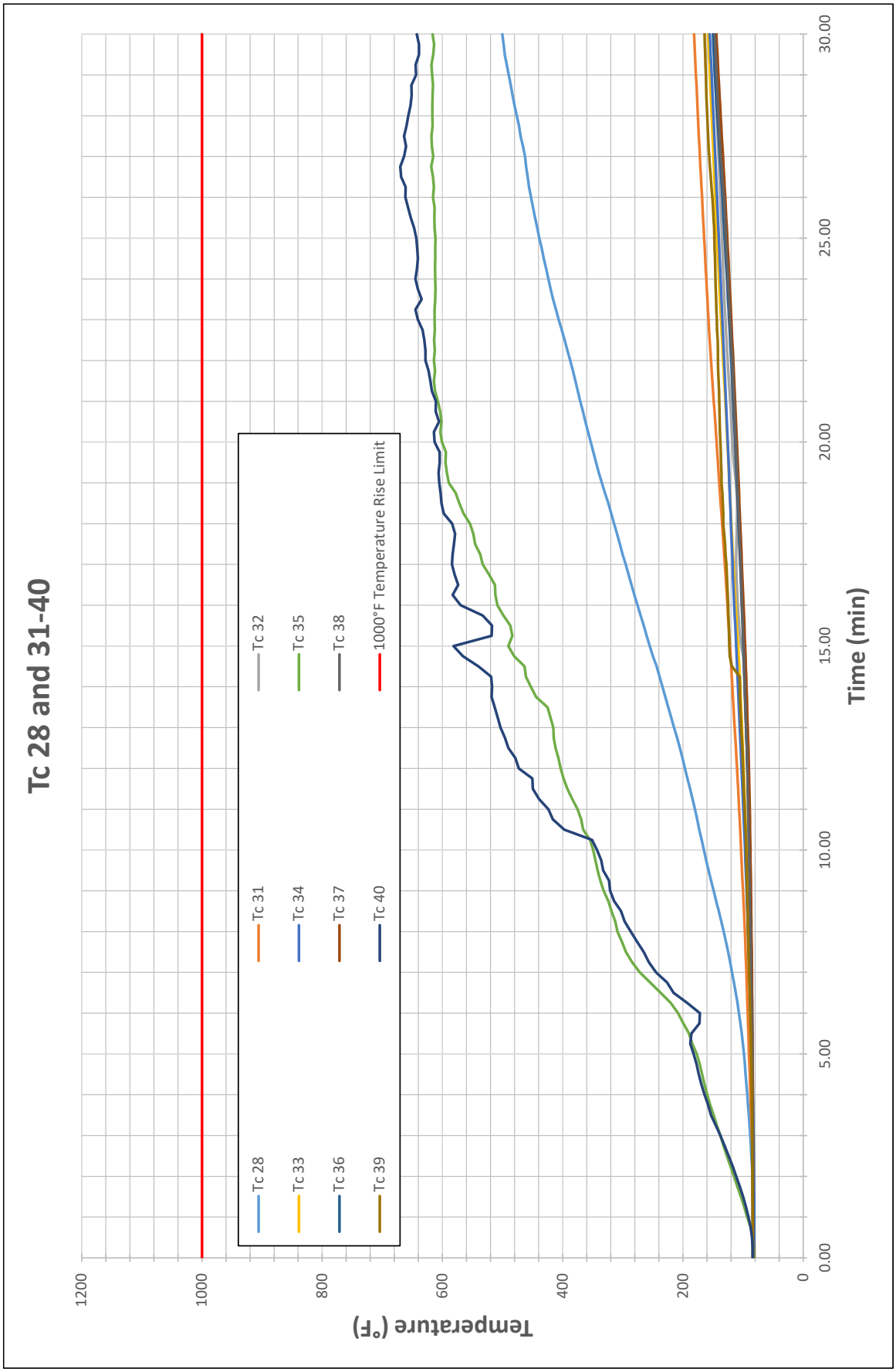


Graph 5: Thermocouple temperatures for Tc11 and Tc14 – Tc17.

Graph 6: Thermocouple temperatures for Tc18 and Tc19.



Graph 7: Thermocouple temperatures for Tc20 – Tc27 and Tc29 – Tc30.

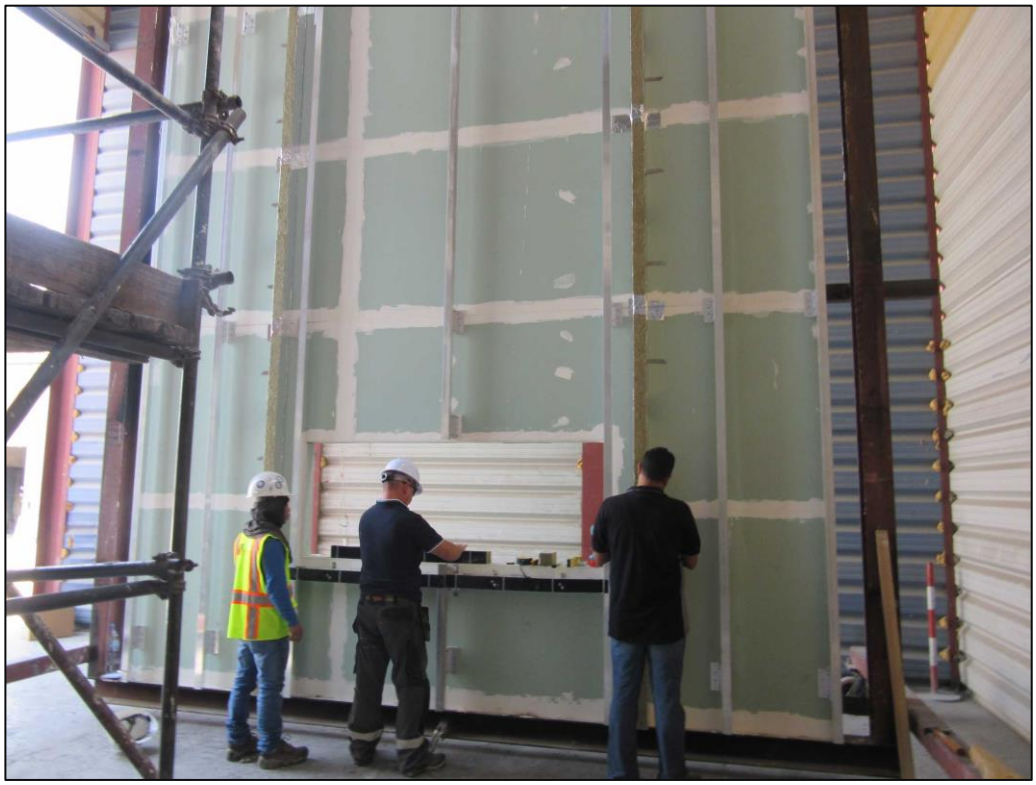


Graph 8: Thermocouple temperatures for Tc28 and Tc31 – Tc40.

21. APPENDIX 7 – CONSTRUCTION PHOTOGRAPHS

Picture 1: Steel channel system to hold the framing system of the assembly.

Picture 2: Aluminium brackets fixed onto the steel channels through the base wall.



Picture 3: SIDERISE RV/RH fire barrier system being fixed onto the base wall.

Picture 4: Elevation showing the SIDERISE RV/RH fire barrier system after installation.

Picture 5: Mineral wool insulation slabs fixed onto the base wall.

Picture 6: The specimen after the insulation and fire barrier systems were installed.

Picture 7: ALERIS aluminium panels being fixed onto the runners.

Picture 8: ALERIS aluminium panels after the installation.

22. APPENDIX 8 – TEST PHOTOGRAPHS

Picture A: Room burner was ignited. Start of the test.

Picture B: At 5 minutes from the start of the test the window burner was ignited.

Picture C: Specimen after 30 minutes. End of test and the observation period began.

Picture D: Second storey test room at the end of test.

Picture E: Specimen at 40 minutes. End of the observation period and NFPA 285 test.

----- End of Test Report -----