File: NC29454
Project: 4789241280
Test Date: 19/03/2020

TEST REPORT
On

Fortafire FBI Fire Barrier

In Accordance with

EN 1364-1: 2015*

Test Sponsor:

TBA ECP Ltd
Unit 11 Halfpenny Bridge Industrial Estate
Lincoln Close
Rochdale
OL11 1NR
UK

TEST SPECIMEN DESCRIPTION:

The test specimen covered under this test report is Fortafire FBI Fire Barrier and was tested to evaluate its Fire Resistance performance including hose stream test.
A full description of the tested specimen is given in Annex A.

TEST RECORD 1

Test results relate only to items tested as covered in this test report and Annex(es). The Annex(es) shall be deemed to satisfy the report requirements of the Standard(s) covered herein. The evaluation herein was conducted under Project Reference 4789241280.

TEST SAMPLE(S):

The objective of this investigation was to evaluate a specimen of Fortafire FBI Fire Barrier representing a non-loadbearing wall assembly, in accordance with EN 1364-1: 2015. The specimen had overall nominal dimensions of 5 x 5m and briefly comprised 2 composite fabric layers separated by a air gap resulting in an overall nominal thickness of 67mm. The fabric was supported and re-enforced on both faces by steel channels cast into gypsum compound and fixed together through the barrier. The barrier was fixed to the test frame an all 4 sides via steel angles cast into gypsum compound.

SAMPLING OF TEST SPECIMEN(S):

The tested specimen was selected by UL on 02/03/2020 at TBA ECP Ltd, Unit 11 Halfpenny Bridge Industrial Estate, Lincoln Close, Rochdale, OL11 1NR, UK. Full details are contained in the sampling report referenced 4789375890

TESTING OF TEST SPECIMEN:

The results of this investigation, including construction review and testing were in compliance with the applicable requirements in the standards noted below.

Standard	Title	Edition	Revision Date
EN 1364-1	Fire resistance tests for non-loadbearing elements – Part 1: Walls	2015	July 2015
*UL 263	Fire Tests of Building Construction and Materials	Fourteenth	June 21, 2011

The specimen, as described in Annex A was tested against the following criteria/criterion:

Test Type	Standard/Paragraph
Fire Resistance	EN 1364-1/11
Fire Endurance	UL263/5.3
Hose Stream	UL263/5.4
Conditions of acceptance	UL263/7.3

TEST DATA:

The data generated during the test is contained in Annex B of this test report.

DISCUSSION OF DATA:

The specimen was tested full in accordance with EN 1364-1: 2015 and in addition the instrumentation and conditions of UL 263 Fourteenth Edition were also incorporated.

SUMMARY AND EVALUATION OF TEST RESULTS:

Based on the test(s) reported herein, the Fortafire FBI Fire Barrier was found to satisfy the following criteria:

Performance Criteria – EN 1365-1	Performance (Minutes)
Integrity – Cotton Pad	120
Integrity – Sustained flames	120
Integrity – Gap Gauge	120
Insulation – Maximum	90
Insulation - Mean	107

Conditions of acceptance – UL 263	Performance
Passage of flame, hot gasses and cotton waste	Compliant
Hose Stream	Non-compliant
Transmission of heat	Non-compliant (58 mins.)

TEST REPORT BY:

Chris Johnson	
Responsible Engineer	Signature
Steven Harms	
Reviewed by	Signature

VALIDITY OF TEST RESULTS:

The result(s) described in this report are only applicable to the sample(s) tested herein and this report does not signify certification.

Annex A
Description of Tested Construction

INDEX OF ILLUSTRATIONS:

Illustration A 1

Bracket Unistrut Ref. P1941 ---------- (B)
5-Hole flat plate
Used to fix cast sections together **(end to end)**

Bracket Unistrut Ref. P1325 ---------- (A)
2-Hole / 2-Hole 90° (right angle bracket)
Used to fix Cast Sections together (horizontal to vertical)

Main Profile (Cast-Section Lengths)
1030 x 69 x 60mm (nominal) --------- (C)
Section size may vary slightly piece to piece
Composed of Fire Resistant Gypsum Compound
Over moulded onto Unistrut P1000T

Cross-Brace (Cast-Section Profile Lengths)
770 x 69 x 60mm (nominal) **Short Section** ---- (K)
Section size may vary slightly piece to piece
Composed of Fire Resistant Gypsum Compound
Over moulded onto Unistrut P1000T

Trap / Clamp Profile (Cast-sections)
1025mm x 30 x 50mm (nom) ---------(L)
770mm x 30 x 50mm (nom) **Short Section** --- (S)
Section size may vary slightly piece to piece
Used to Clamp Fire Barrier to support structure. Fixed with Self-drilling Roofing Screws (Techscrews)

Flat Washers
Unistrut Ref. M12FW -------- (I)
Steel washer 24mm x 2.5mm (zinc plated)
Unistrut Ref M10 FW ------ (Q)
Steel washer 20mm x 2.0mm (zinc plated)
Used between brackets & bolt heads, brackets & Hex Nuts

Hex Nuts BZP
Unistrut Ref M10HN -------- (V)
Unistrut Ref M12HN --- (R)
Used when through-bolting cast-sections

Chanel Nuts - Size M12 (Zinc plated steel)
Unistrut Refs.
PNS12A (with short spring) ----- (E)
PNP12A (without spring) ---------- (D)
Used to fix
Bolts to Brackets **P1941 and P1325**
Where fixing is internal to the cast section

Bolts - Size M12 (Zinc plated steel)
M12 x 30HS (length 30mm) ----------(U)
M12 x 40HS (length 40mm) ------(F)
M12 x 80HS (length 80mm) ----------(G)
M12 x 100HS (length 100mm)-- (H)
Used in
P1941 5-hole strap plates
P1325 2-hole / 2-hole 90° brackets
Unistrut P3300 7-Slot lengths

Bolts – Size M10 Unistrut Ref M10HN ---
M10 x 50HS (Length 50mm) -----(W)
M10 x 80HS (Length 80mm) ---------(X)
Used to fix main profile sections together (end to end) using Flat plate brackets and Unistrut P3300 7-slot cut lengths

Multi Fix Screws (concrete Screw)
Pan or Countersunk Head
Size 100mm x 7.5mm --- (M)
Size 120mm x 7.5mm --------- (N)
Peripheral Through-Fix for cast Sections
Frame fix for soffit and Side Walls
Fix at 200mm centres

Self-drilling 8mm Hex-head Roofing screws
Zinc plated (Tech screws)
Size 5.5 x 60mm ----- (O)
Size 5.5 X 75mm ---------- (P)
Screw trap profile through fire barrier and into main and cross brace cast section profiles
Fix at 200mm centres or mixture of 200 and 100mm centres.

Illustration A 2

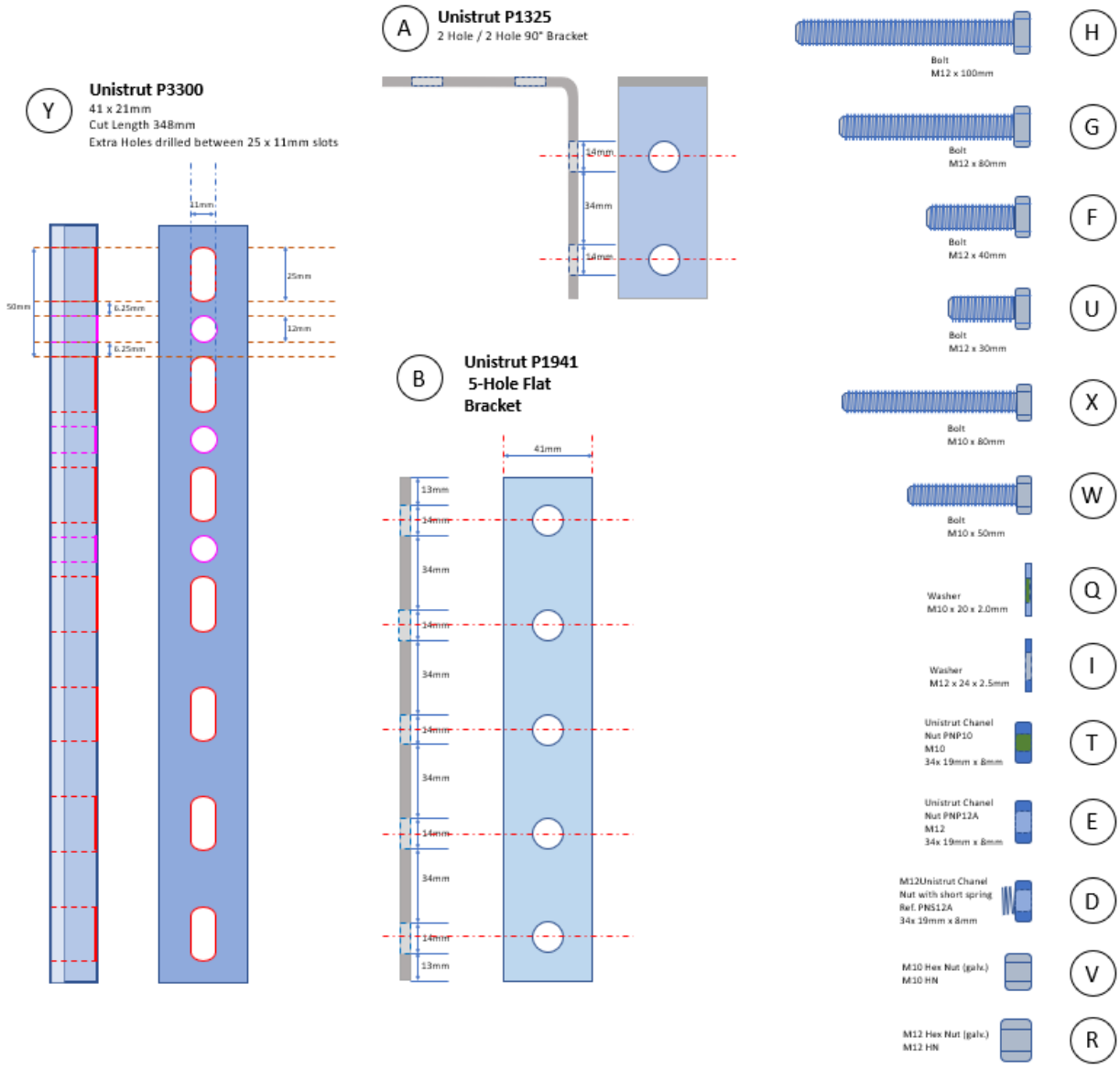


Illustration A 3

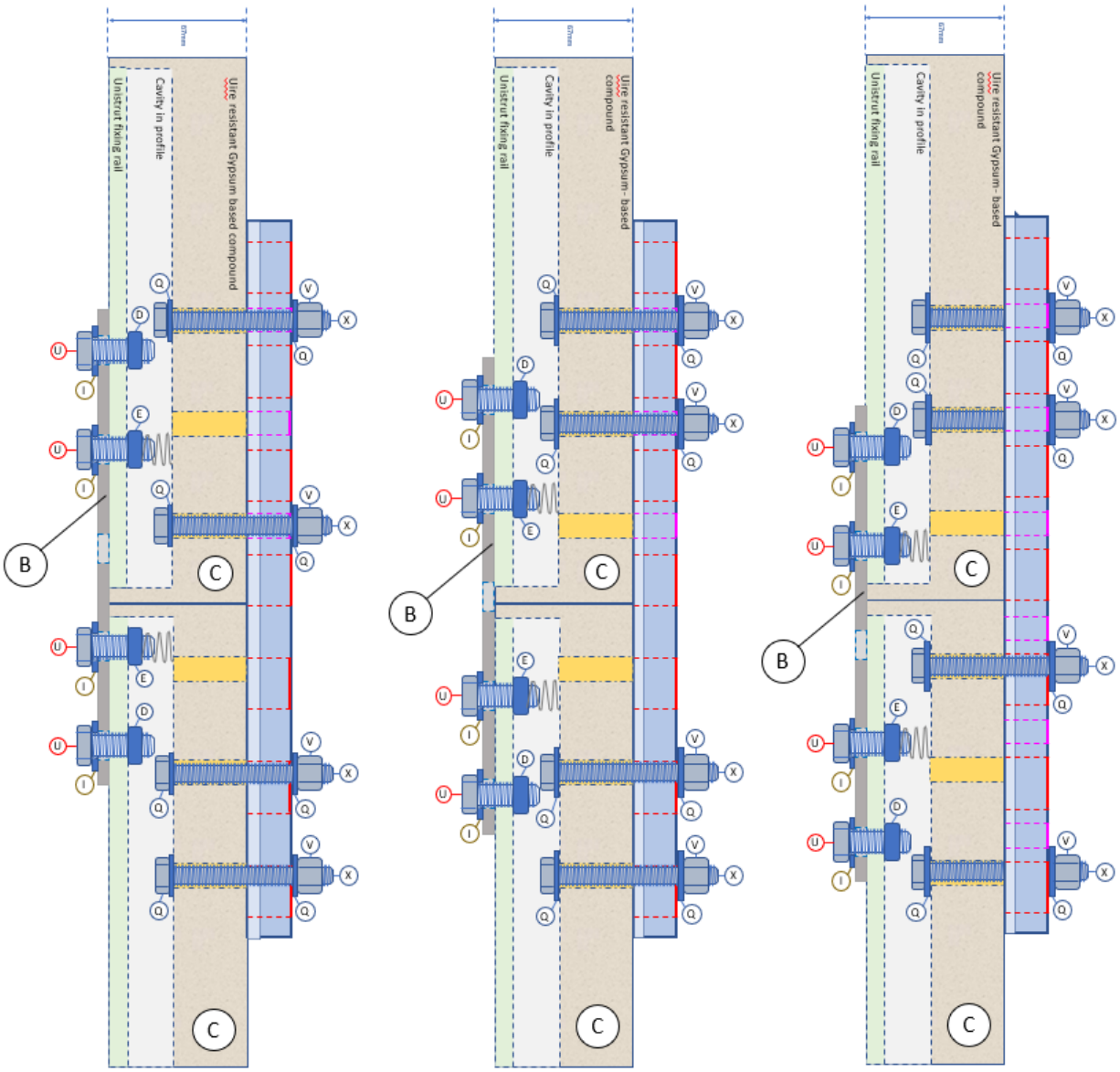


Illustration A 4

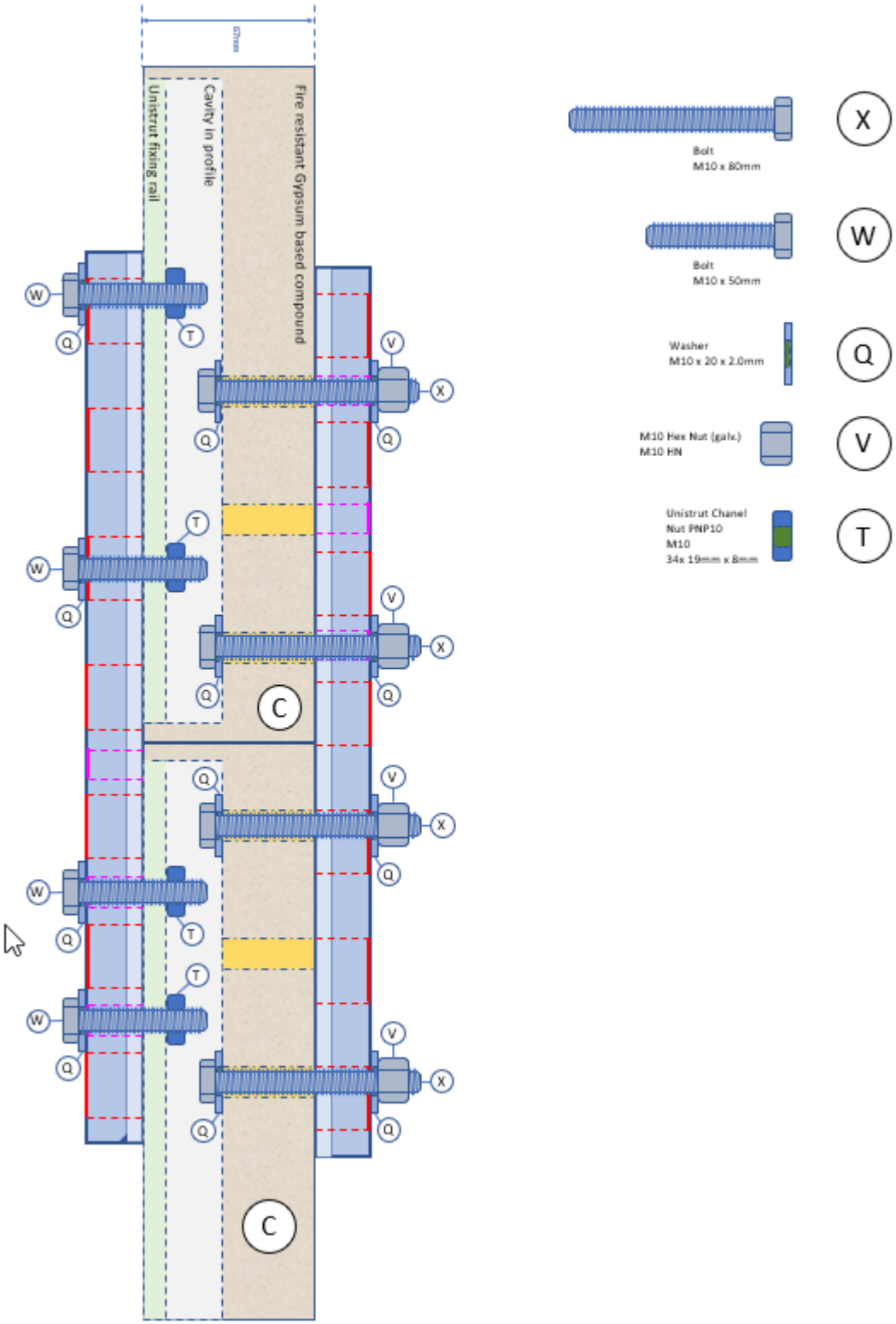


Illustration A 5

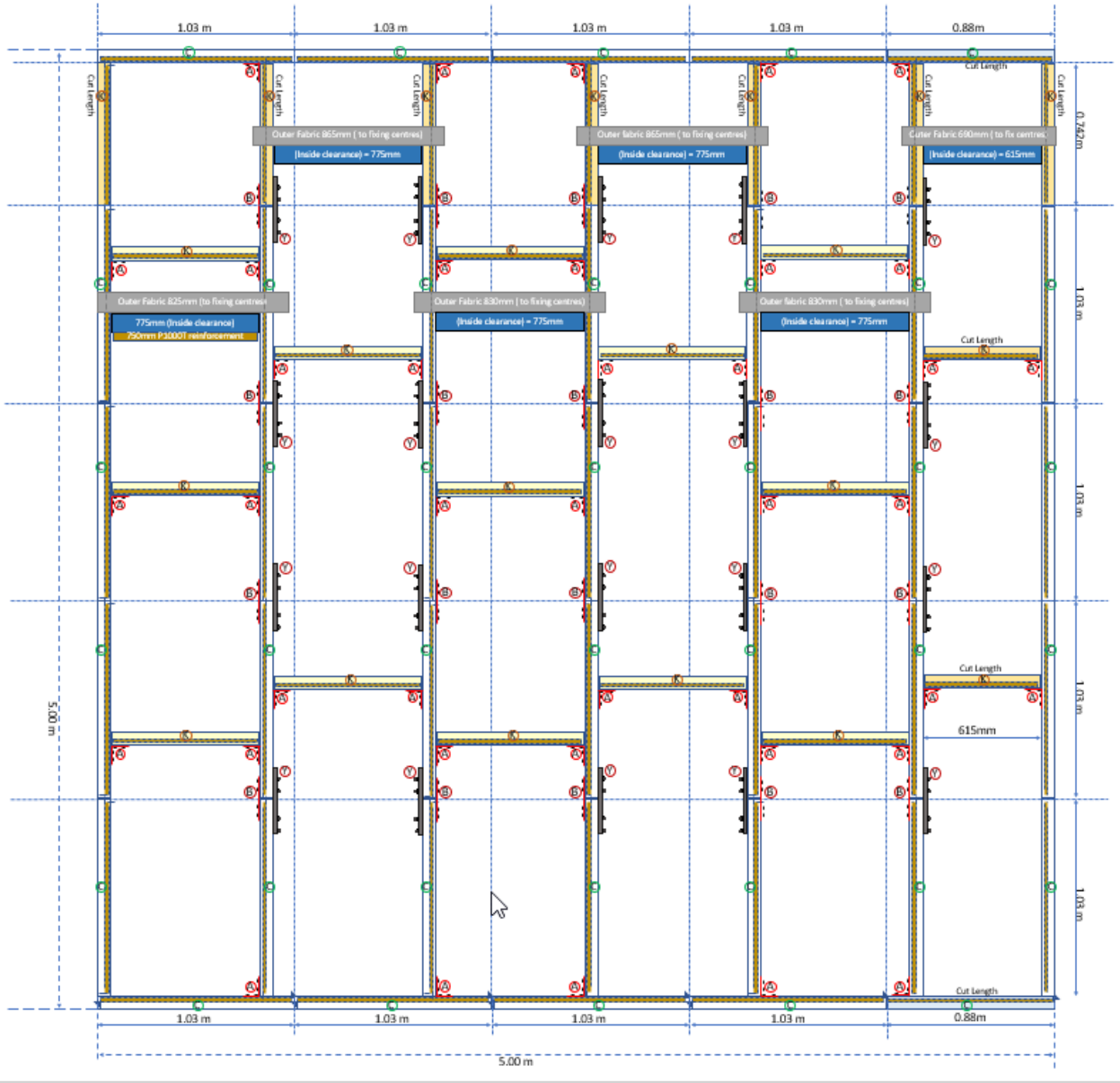


Illustration A 6

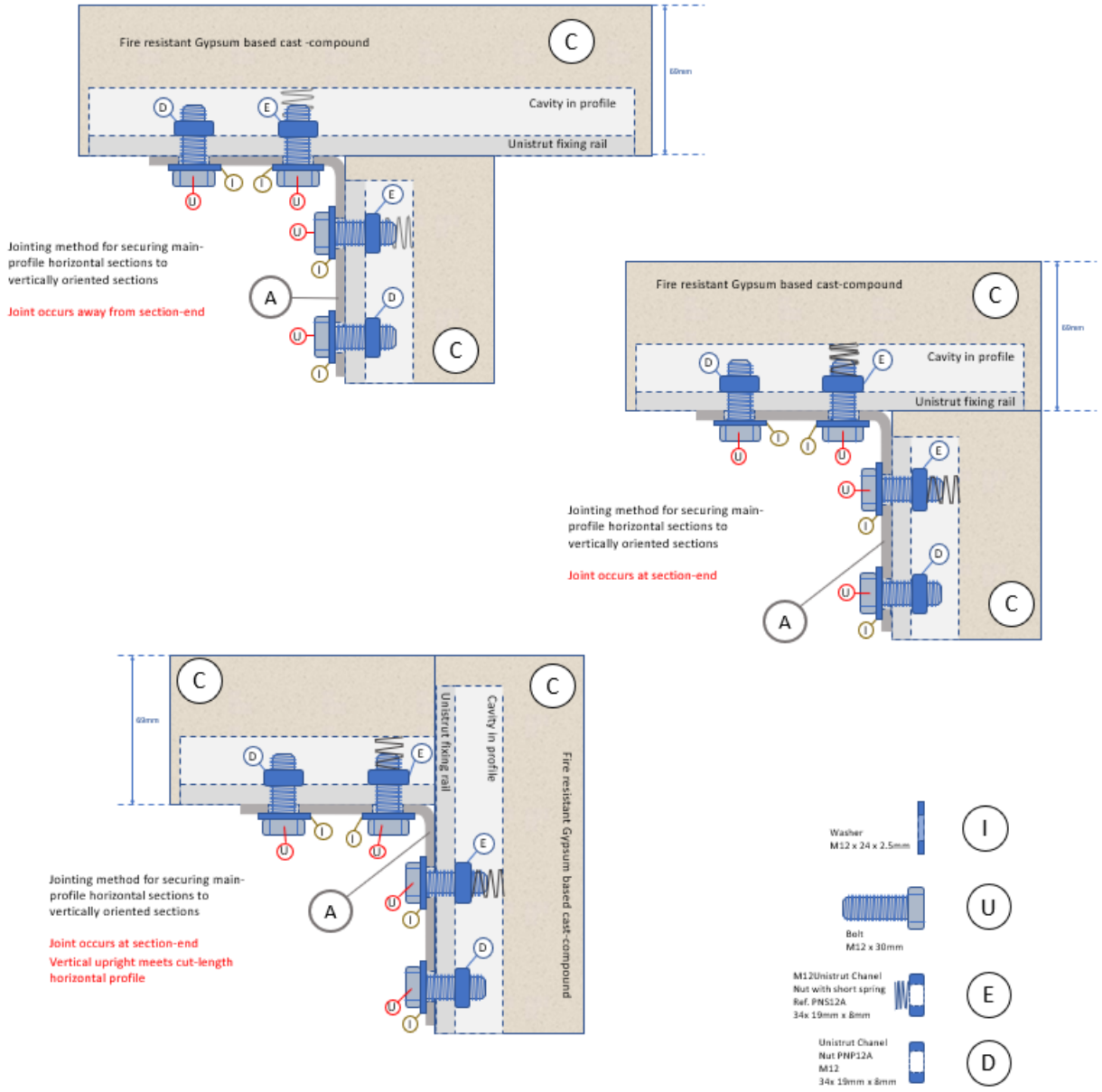


Illustration A 7

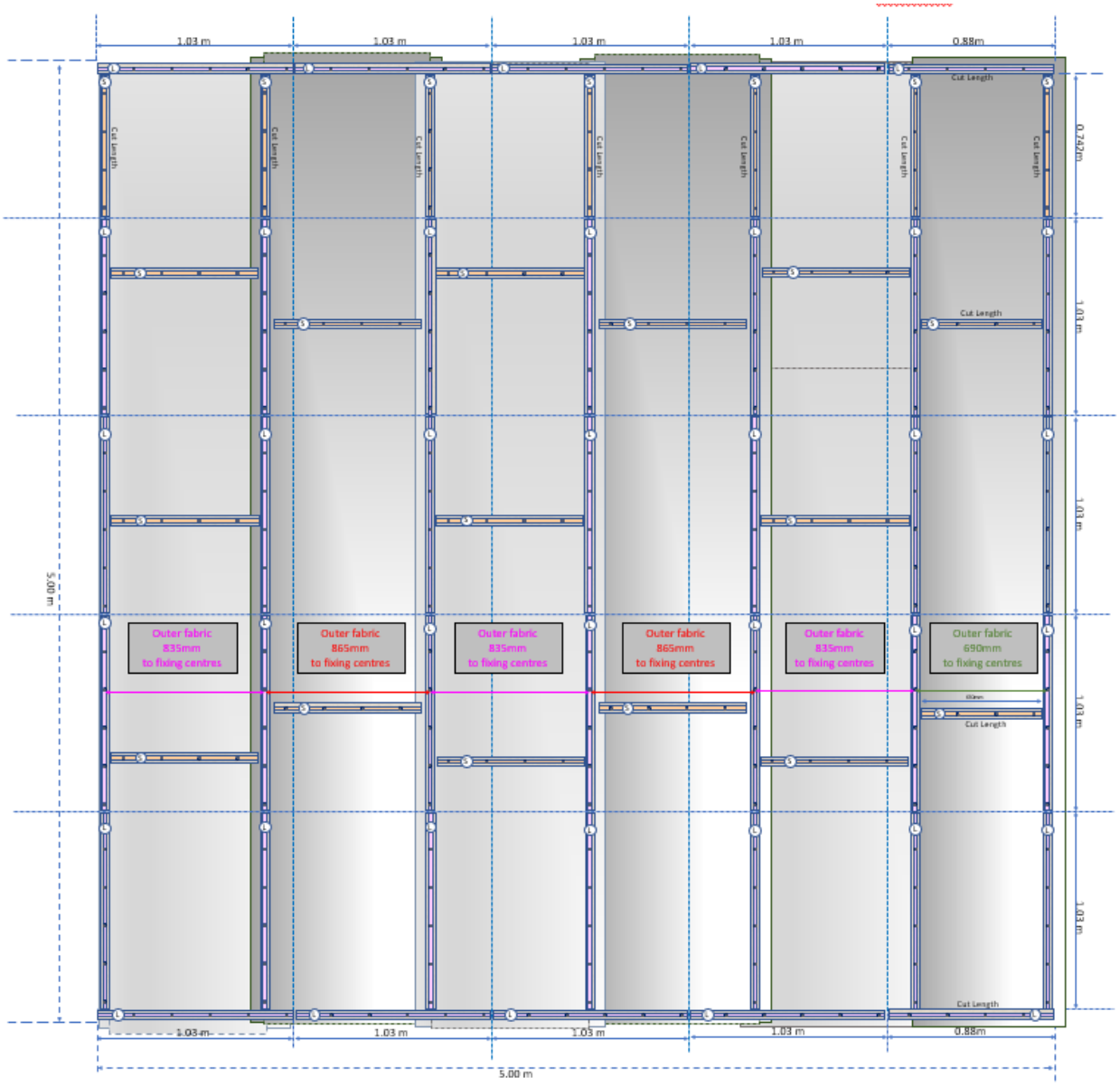
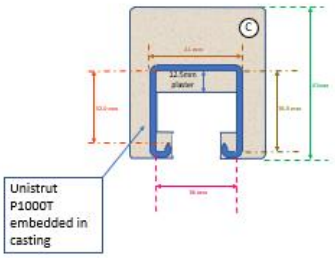
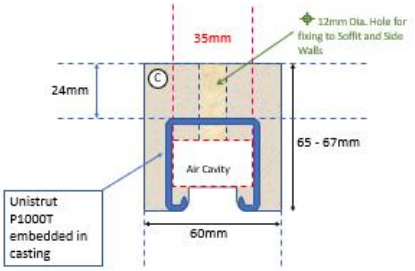


Illustration A 8

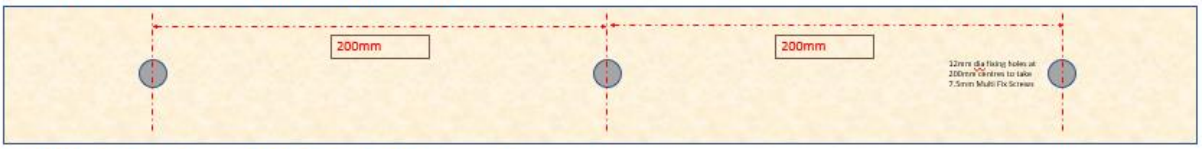
Section Through Main Profile Cast-Section



Section Through Main Profile Cast-Section
showing location of fixing holes and Air cavity



Main Profile (Cast-Section) Top View- partial length



Main Profile (Cast-Section) Side View – Side 1 – partial length

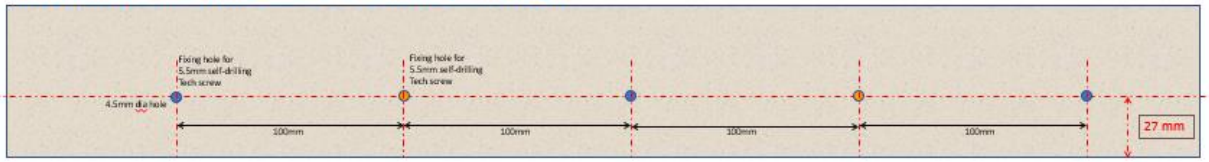


Illustration A 9

Section through Trap / clamp profile

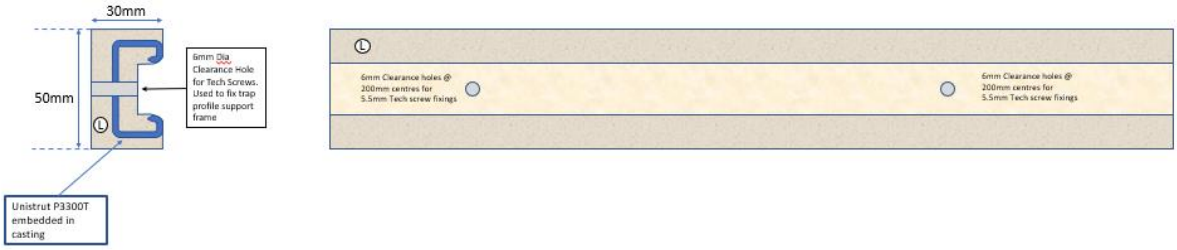
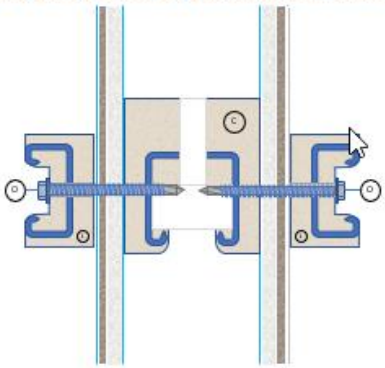
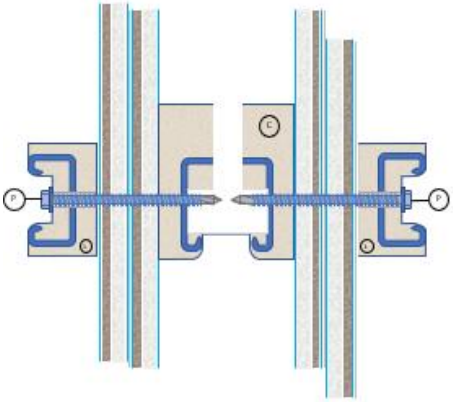


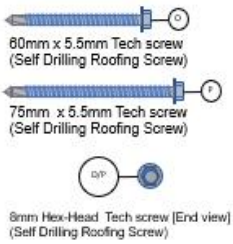
Illustration A 10

Single Layer Clamping of barrier to support frame



Clamping of overlapping barrier sections





Schematic representation of clamping profile (L) and use when fixed adjacent to overlap joint in fire barrier sections.

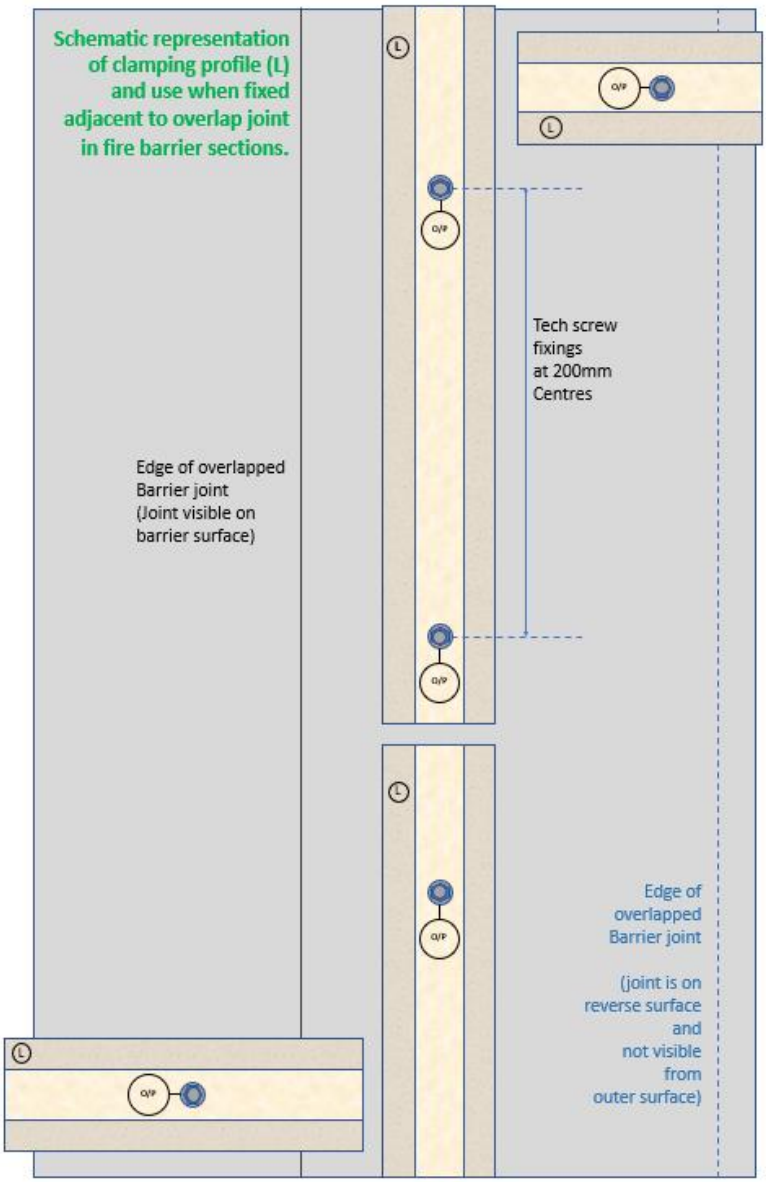
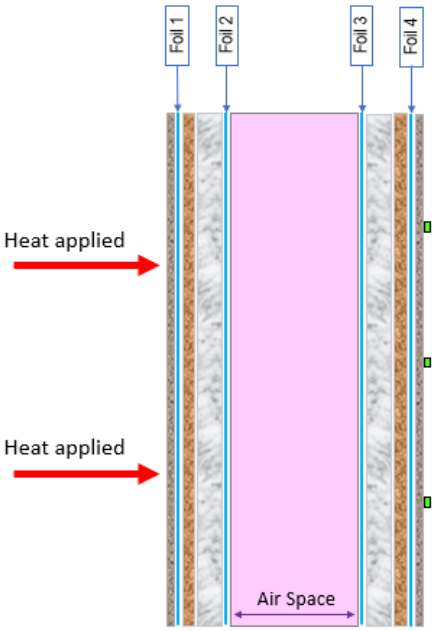


Illustration A 11

Section Through Barrier Showing Orientation of Components

Key

- Thermocouples (numbered L to R)
- Fortafire-X impregnated cover fabric (Machine Impregnated with ECP 8430) Base fabric nominal 600g/m² Impregnation 120g/m² minimum dry weight
- GN-6 E-glass Needle-Matt Nominal 6mm thick
- BN-4 Basalt Fibre Needle- Matt Nominal 4mm thick
- 50µm Al Foil



Annex B
Test Data Generated During The Test

INDEX OF DATA:

Illustration B 1

Illustration B 2

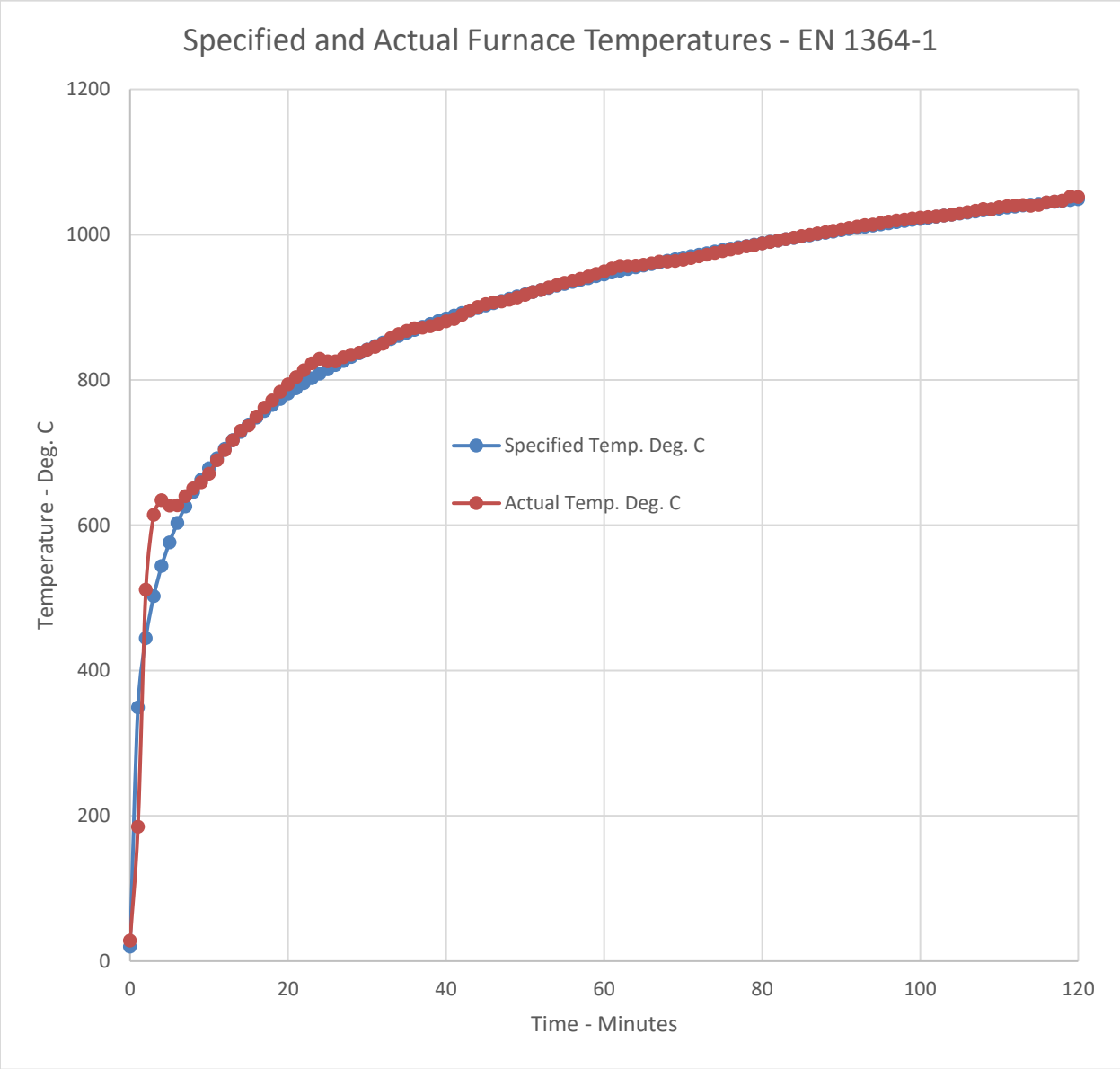
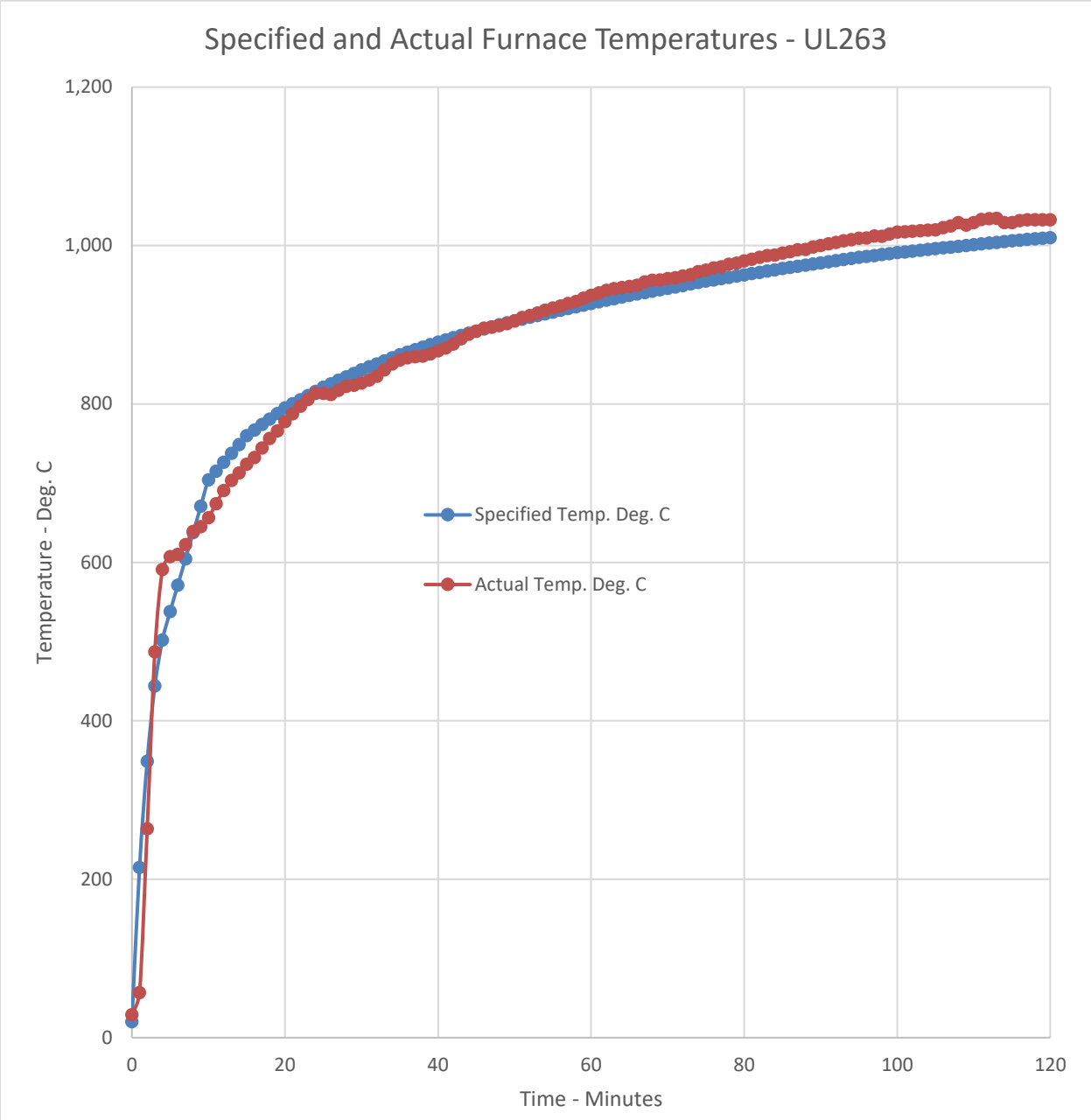


Illustration B 3



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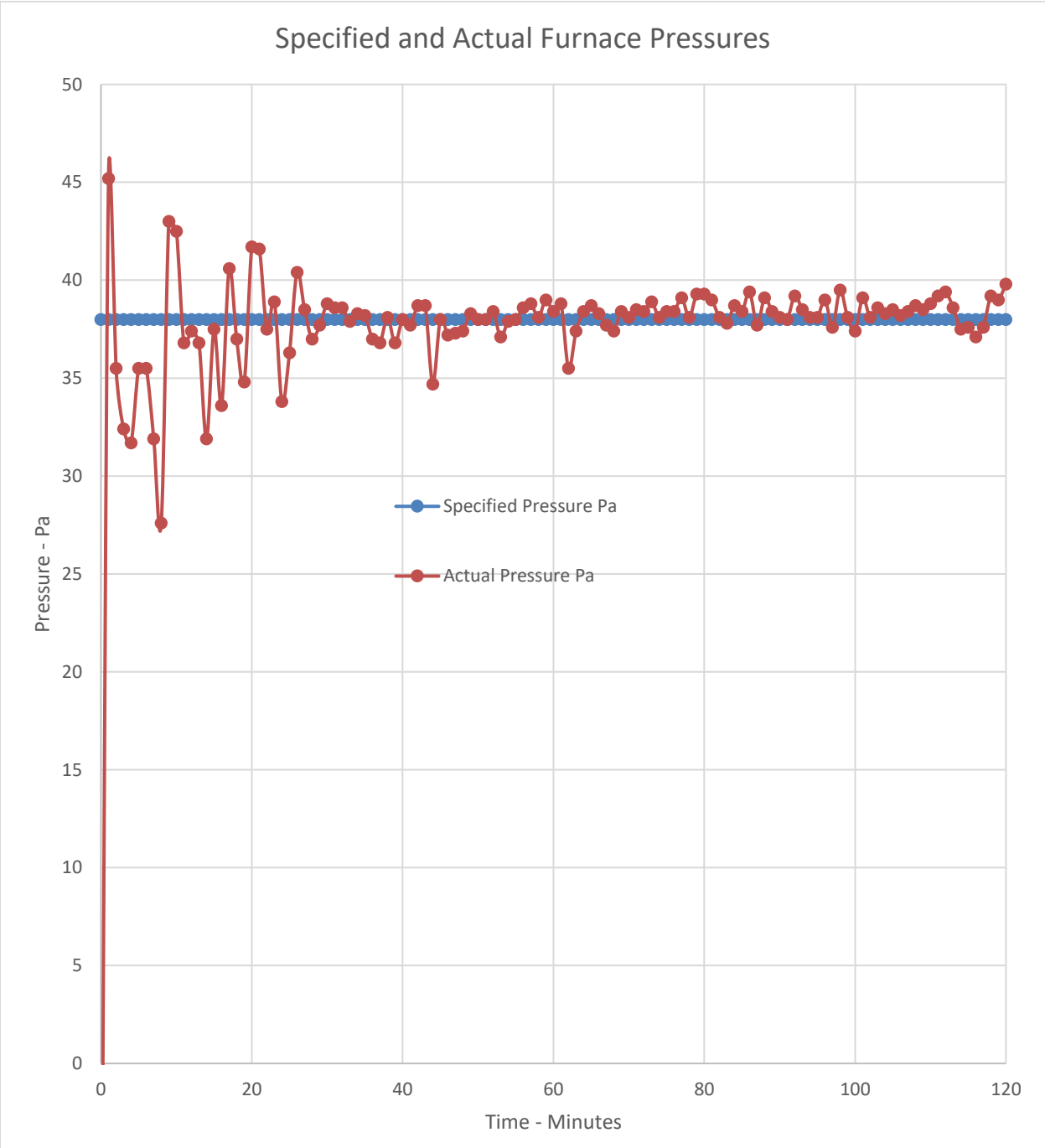

Illustration B 5

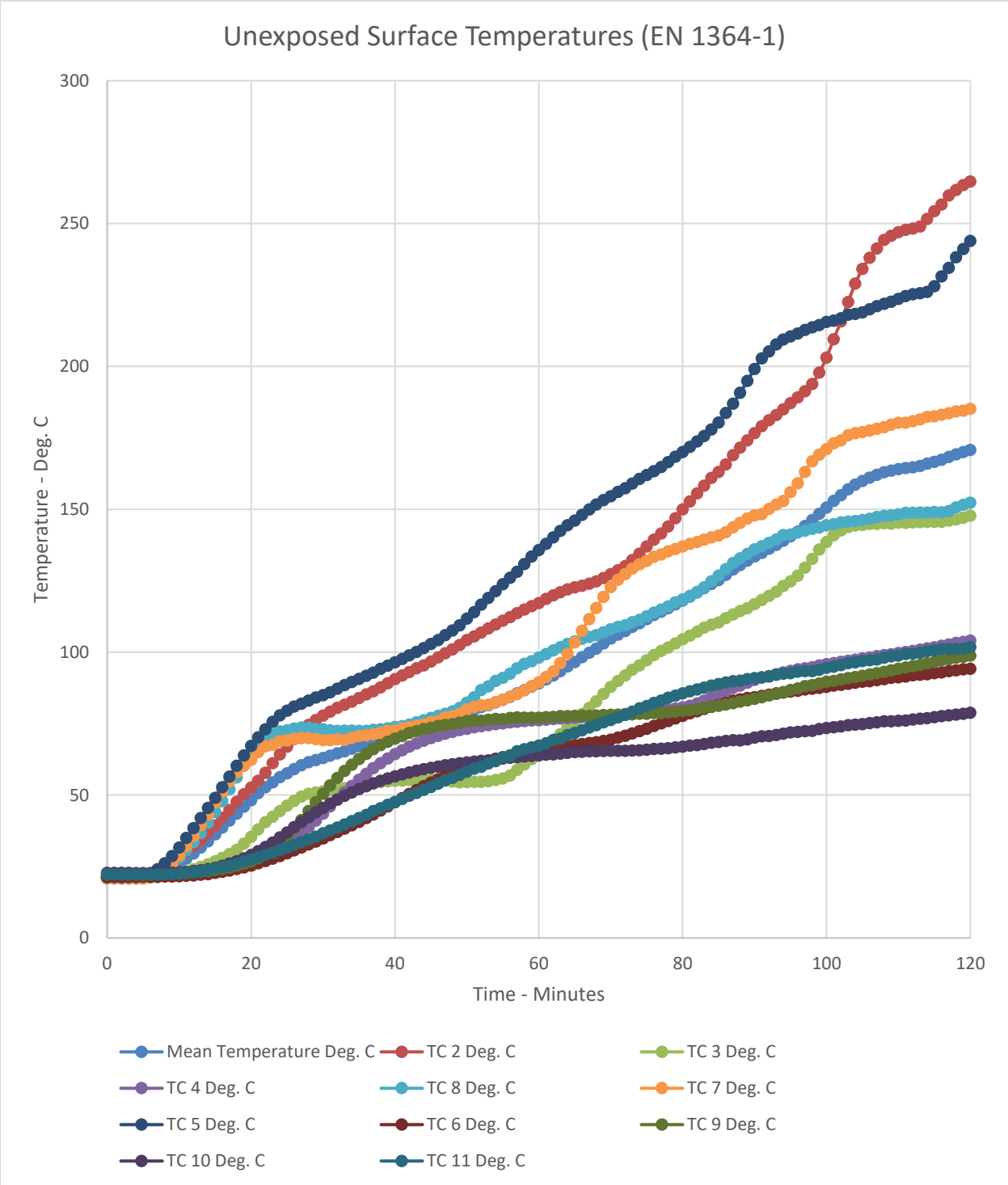

Illustration B 6

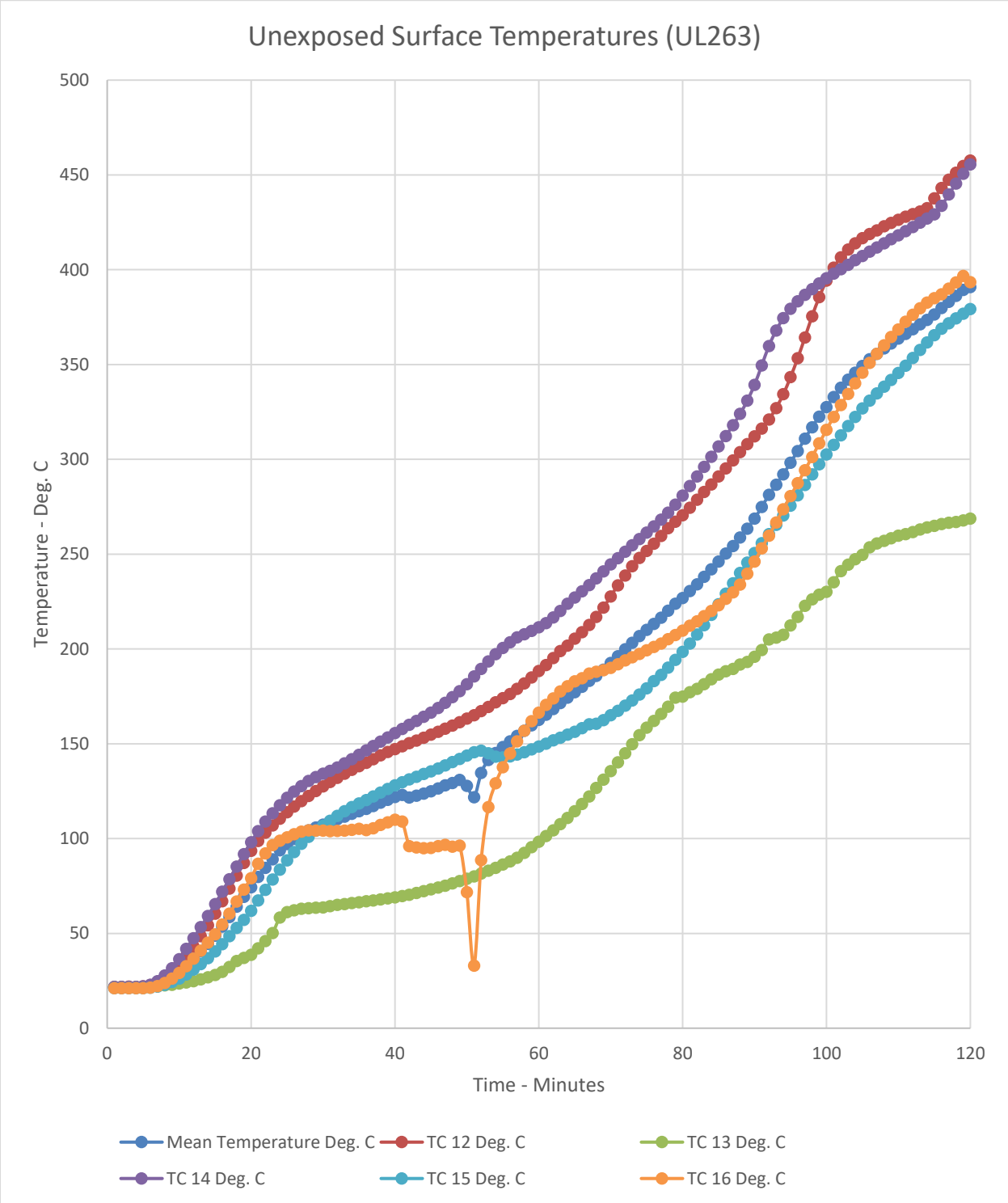

Illustration B 7

Illustration B 8

Illustration B 9

Time, Hr:Min	Fire Test Observations
0:00	Gas on at 11:06 on March 19th 2020
0:11	Wet spots at fabric over most part of the curtain
0:12	Light smoke at top left second seam from the left side.
0:22	Horizontal strut lightly turning brown at second seam from left side, just underneath UL TC1
0:23	Construction bowing outward on top 2/3rd left side, inward on top 2/3rd right side. Lower 1/3rd flat.
0:35	Crystals appearing on the fabric surface, scattered.
0:48	UL TC4 falls off, gets reattached at 0:51.
1:00	No visible change.
1:15	Deflection increases gradually, discoloration increases gradually at wrinkles of fabric.
1:40	Increasing deflection and discoloration.
2:00	Furnace off
2:02	Application of hose stream test.
Post test	Hose Stream conditions of acceptance were not satisfied

Annex D
Photographs of The Test Specimen Before During and After The Test

INDEX OF PHOTOGRAPHS:

Description	Photograph reference
Unexposed face of the specimen before the test	D1
Unexposed face of the specimen during testing	D2
Unexposed face of the specimen during testing	D3
Unexposed face of the specimen during testing	D4
Unexposed face of the specimen during testing	D5
Unexposed face of the specimen during testing	D6
Unexposed face of the specimen during testing	D7
Unexposed face of the specimen during testing	D8
Unexposed face of the specimen during testing	D9
Unexposed face of the specimen during testing	D10
Unexposed face of the specimen after termination of the fire test	D11
Exposed face of the specimen after termination of the fire test	D12
Exposed face of the specimen after termination of the hose stream test	D13
Exposed face of the specimen after termination of the hose stream test	D14
Exposed face of the specimen after termination of the hose stream test	D15

Illustration D 1

Illustration D 2

Illustration D 3

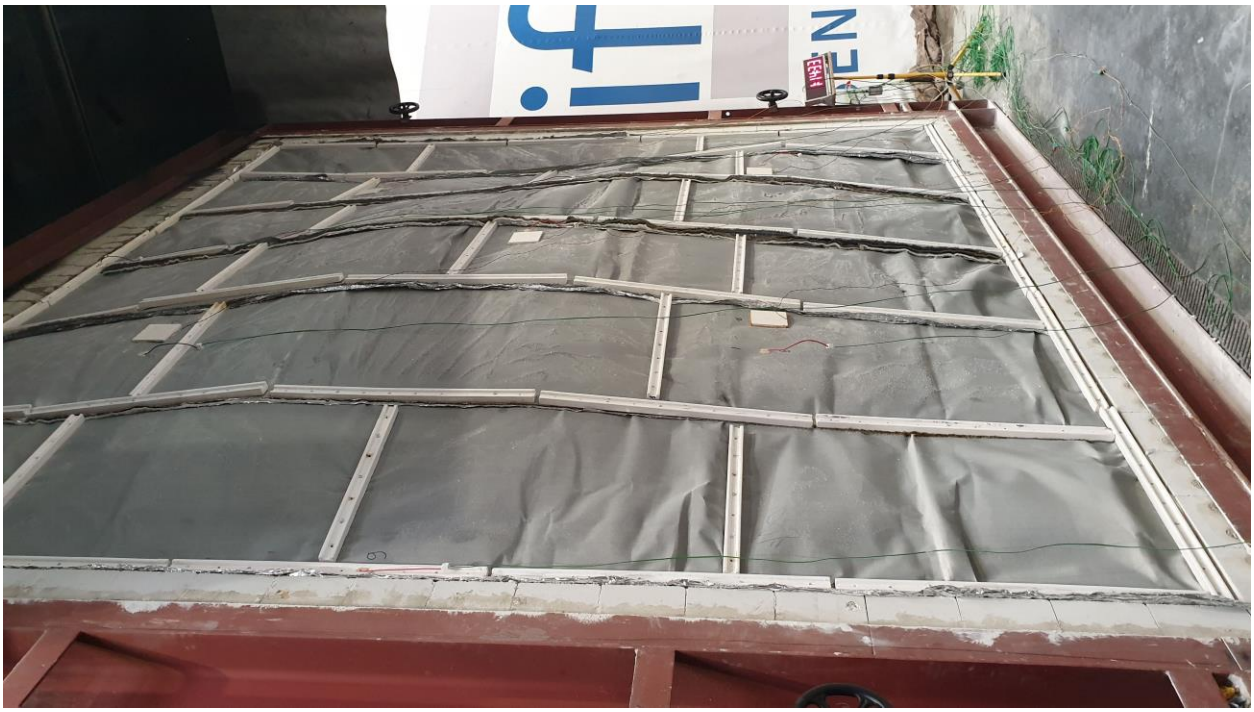

Illustration D 4

Illustration D 5

Illustration D 6

Illustration D 7

Illustration D 8

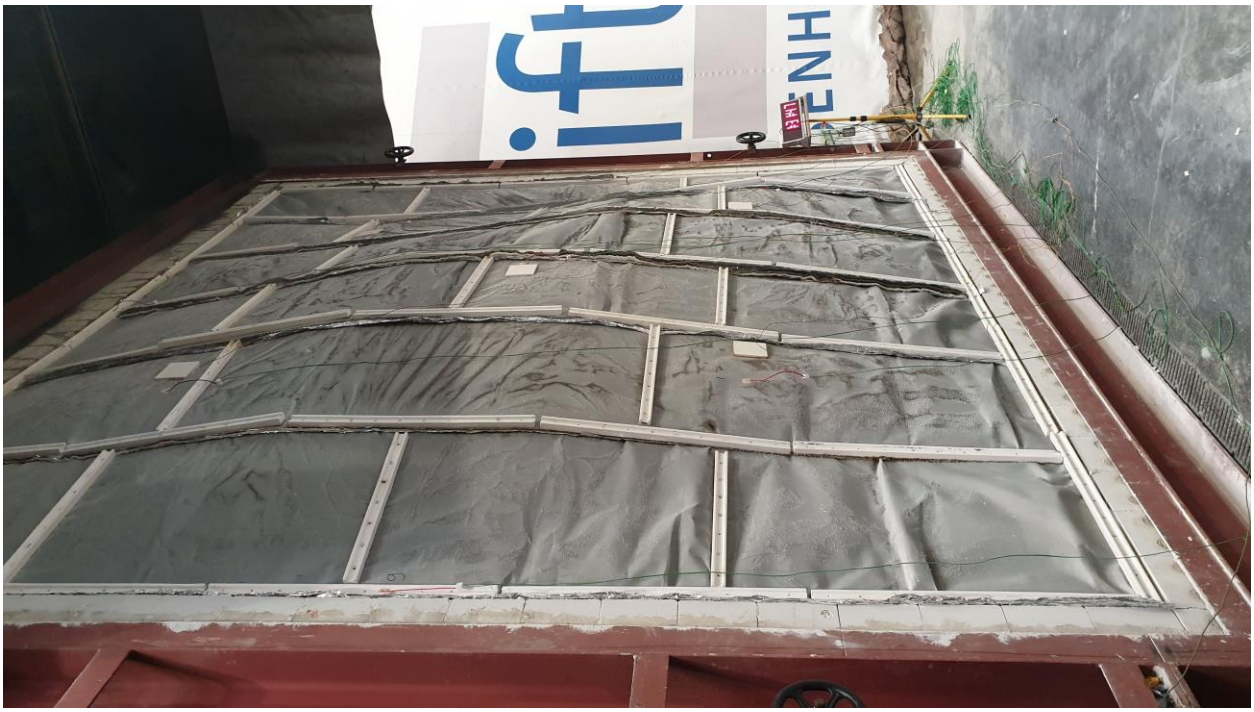

Illustration D 9

Illustration D 10

Illustration D 11

Illustration D 12

Illustration D 13

Illustration D 14

Illustration D 15