

Test Report No. 7191284952-MEC22-EMK
dated 14 Jun 2022
5648314



PSB Singapore

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SUBJECT:

Laboratory measurement of airborne sound insulation loss of UAC acoustic wall performance system submitted by UAC Berhad on 10 May 2022.

TESTED FOR:

UAC Berhad
12 Jalan PJU 7/5
Mutiara Damansara
47800 Petaling Jaya
Selangor Darul Ehsan
Malaysia

Attn : Mr. Hoi Ka Chun

DATE OF TEST:

1 Jun 2022



DESCRIPTION OF SAMPLES:

The UAC Sandwich Lightweight Concrete Panel with Insulation was installed onto a filler wall of the sample carrier for sound insulation test.

Product : UAC Acoustic Wall Performance System
Brand : UAC
Model : UAC SolidPanel
Nominal panel size : 600 mm (width) x 3000mm (length) x 100mm (thickness)
Nominal wall size : 3180 mm (width) x 3150mm (length) x 159mm (thickness)
Material : UAC SolidPanel (Lightweight concrete panel) : 850-922kg/m³
Rockwool Insulation (60kg/m³)
UAC Flexabord 6mm thk (wall lining) :1512kg/m³

The technical drawing of the UAC Acoustic Wall Performance System submitted by the company was shown in Appendix.



 	LA-2007-0380-A LA-2007-0381-F LA-2007-0382-B LA-2007-0383-G LA-2007-0384-G LA-2007-0385-E	LA-2007-0386-C LA-2010-0464-D LA-2018-0702-B LA-2018-0703-G LA-2020-0747-L	The results reported herein have been performed in accordance with the terms of accreditation under the Singapore Accreditation Council. Inspections/Calibrations/Tests marked "Not SAC-SINGLAS Accredited" in this Report are not included in the SAC-SINGLAS Accreditation Schedule for our inspection body/laboratory.
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Laboratory:
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Singapore 609937
TUV®

METHOD OF TEST:

The test was conducted in accordance with the following test standards.

- a) ISO 10140 - 2 : 2021 "Laboratory measurement of sound insulation of building elements"
Part 2 : Measurement of airborne sound insulation.
- b) ISO 717 - 1 : 2020 "Acoustics - Rating of sound insulation in buildings and of building elements"
Part 1 : Airborne sound insulation

Measured area of UAC Acoustic Wall Performance System: 9.78m²
Air temperature in both source room and receiving room : 24°C
Relative air humidity in both source room and receiving room : 63%
Source room volume : 132m³
Receiving room volume : 160m³
Location of the test : Acoustics Lab of TÜV SÜD PSB Pte Ltd

TEST EQUIPMENT:

The following instruments were used for the test.

- 1) A dual-channel real-time frequency analyser (B&K Type 2133)
- 2) One loudspeaker (JBL MPro MP415)
- 3) Two sets of ½" diffuse field condenser microphones (G.R.A.S. Type 40AR)
- 4) Two sets of microphone preamplifiers (B&K Type 2669)
- 5) A sound pressure level calibrator (Norsonic Type 1251)
- 6) A sound source amplifier (Crown model CE 1000)
- 7) Two sets of rotating microphone booms (B&K Type 3923)

WITNESSING PARTY :

The sound transmission test was witnessed by the following persons.

- | | | |
|-----------------------------|---------------------|------------------------|
| 1. Mr. Danel Wong Jern Fung | Acoustic consultant | Arup Singapore Pte Ltd |
| 2. Mr. Hoi Ka Chun | Architect | UAC Berhad |
| 3. Mr Eric Tan | Assistant Manager | UAC Berhad |



TEST PROCEDURES:

- 1) Instrumentation was set up according to ISO 10140 - 2.
- 2) Measurement system was calibrated using a sound level calibrator.
- 3) Background noise level of both source and receiving room were measured.
- 4) One loudspeaker was placed at one corner in the source room.
- 5) Sound source system was switched on to generate "White" noise and maintained at constant level. The measured sound pressure level in the receiving room was ensured to be 15dB higher than the background noise level.
- 6) Recording time for both rotating microphone booms was set to 64s which equals to the time taken by the booms to complete two revolutions.
- 7) Sound pressure level in the source room and the receiving room were measured simultaneously and the measurement was repeated for another 2 more times.
- 8) Step 6 and 7 were then repeated after the loudspeaker was moved to another corner in the source room.
- 9) One loudspeaker was placed at one corner of the receiving room to generate the "Pink" noise for reverberation time measurement.
- 10) The average of 2 measurements of reverberation time in the receiving room was conducted and the measurement was repeated for another 1 more time.
- 11) Step 9 and 10 were then repeated after the loudspeaker was moved to another corner in the receiving room.
- 12) The mean values of 6 readings of sound pressure level difference and 4 readings of RT values were calculated.
- 13) Values of sound reduction index (R) were determined for each 1/3 octave frequency band from 100Hz to 5kHz based on the mean values of step 12.
- 14) Weighted sound reduction index (R_w) and its adaptation terms (C ; C_{tr}) according to ISO 717-1 was determined at 500Hz frequency of the shifted reference curve.



RESULTS:

Values of sound reduction index (R) of the tested UAC Acoustic Wall Performance System were tabulated in Table 1. Sound Insulation Rating is computed according to ISO 717 – 1.

Table 1 : Measured Sound Reduction Index, R, and values of the shifted reference curve for $R_w = 55$

1/3 Octave Band Frequency (Hz)	Sound Reduction Index, R (dB)	Shifted Reference Curve $R_w = 55$ dB	Deficiency
100	33.6	36	2.4
125	31.8	39	7.2
160	35.6	42	6.4
200	39.4	45	5.6
250	45.8	48	2.2
315	50.6	51	0.4
400	52.0	54	2.0
500	53.7	55	1.3
630	55.3	56	0.7
800	57.4	57	0.0
1000	58.5	58	0.0
1250	59.5	59	0.0
1600	61.8	59	0.0
2000	61.9	59	0.0
2500	60.8	59	0.0
3150	61.9	59	0.0
4000	61.6	59	0.0
5000	63.7	59	0.0
Total deficiency (100Hz – 3150Hz)			28

The values in Table 1 were plotted as shown in Figure 1.

Remark:

The tested UAC Acoustic Wall Performance System achieved a weighted sound reduction index, $R_w(C; C_{tr}) = 55 (-3; -8)$.


 Francis Ee Min Kuen
 Testing Officer


 Lem Chee Meng
 Product Manager
 Acoustics
 Real Estate & Infrastructure – Mechanical

RESULTS: (cont'd)

**Figure 1 : Sound Insulation Performance of UAC Acoustic Wall Performance System
 R_w 55**

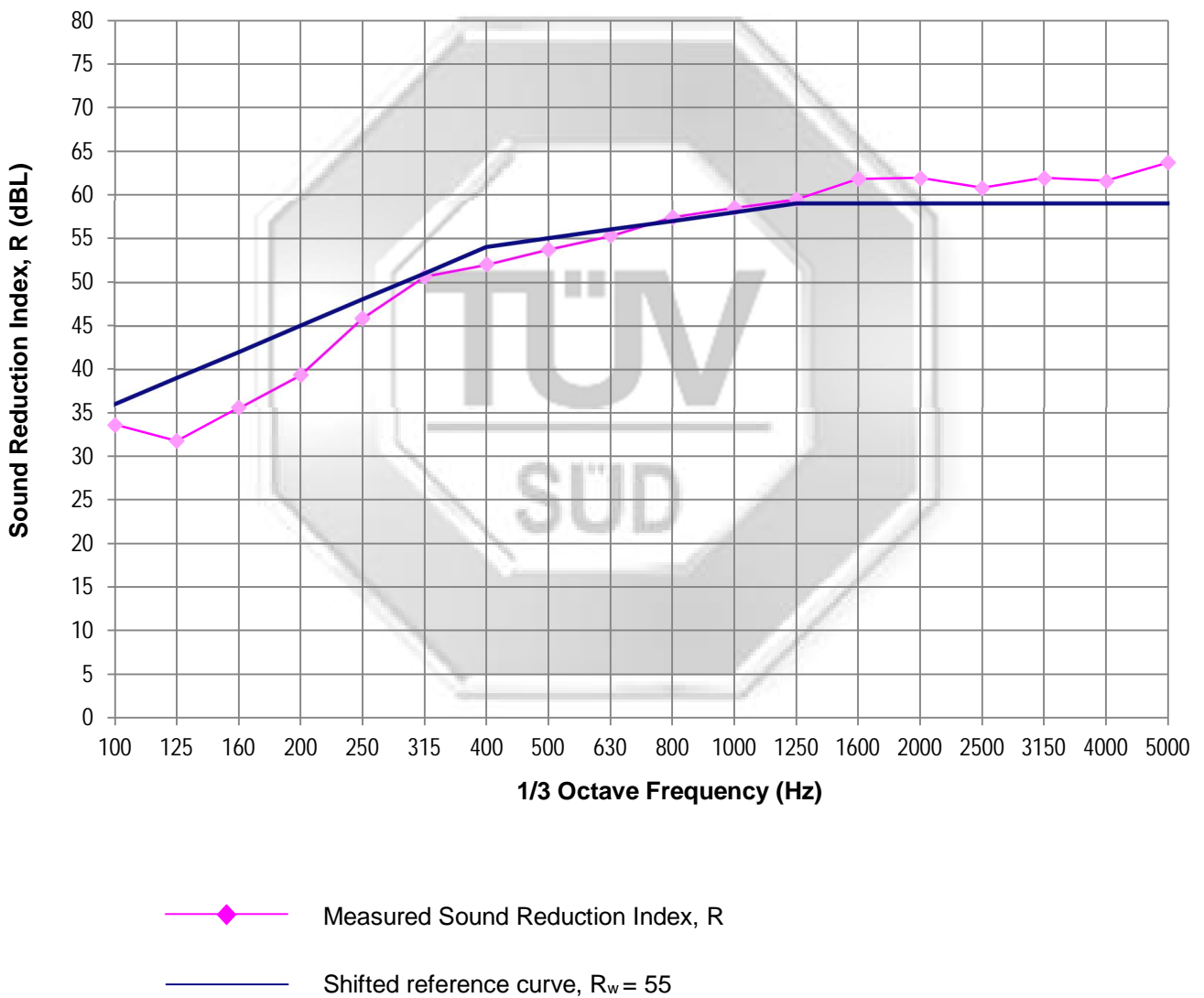
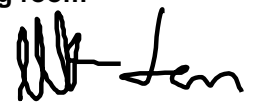




Figure 2 : UAC Acoustic Wall Performance System facing the source room



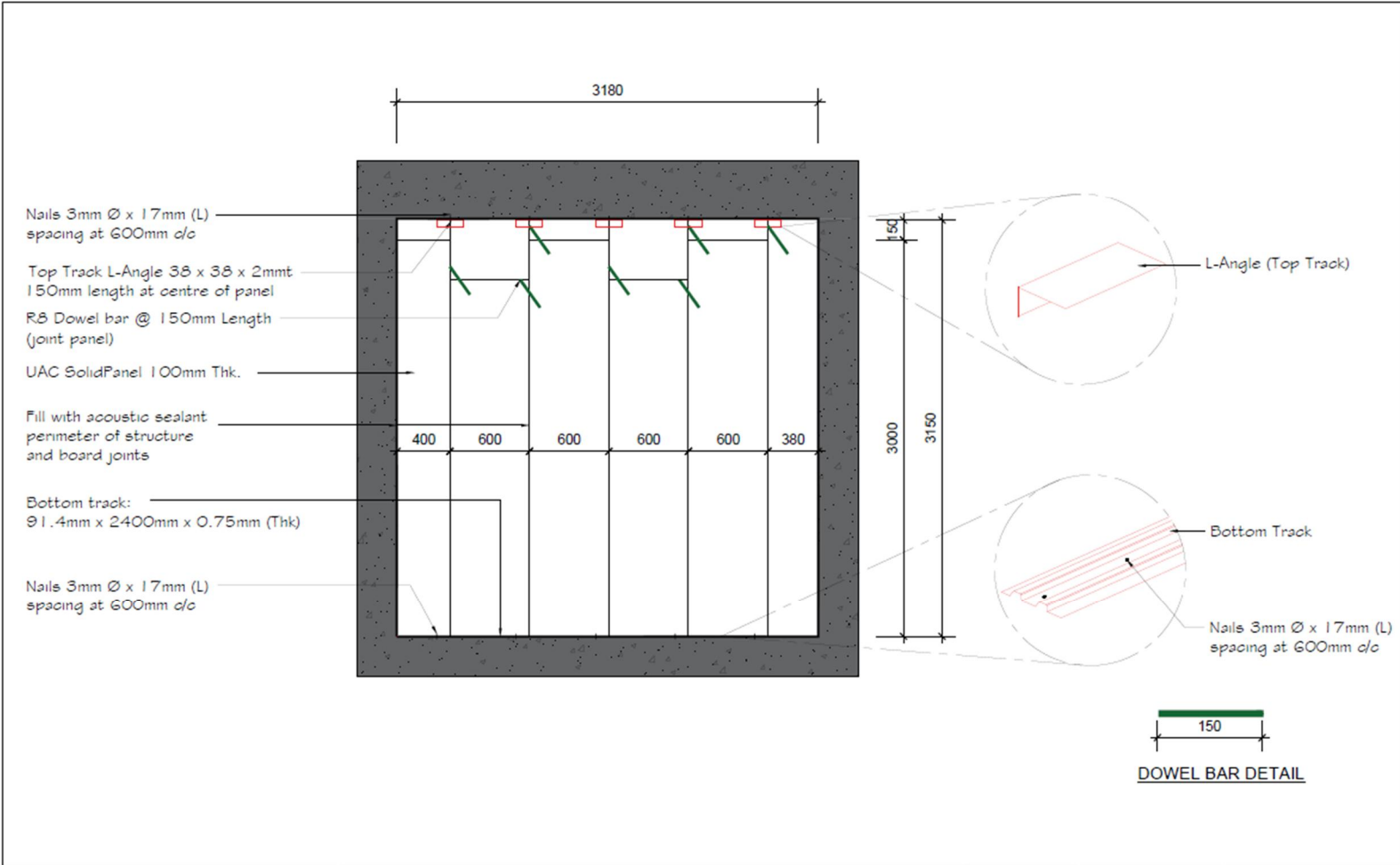
Figure 3 : UAC Acoustic Wall Performance System facing the receiving room



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COMPANY/SUPPLIER :
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TITLE :
**TUV SOUND TEST
 REAR ELEVATION
 UAC ACOUSTIC PERFORMANCE WALL SYSTEM (159mm)**

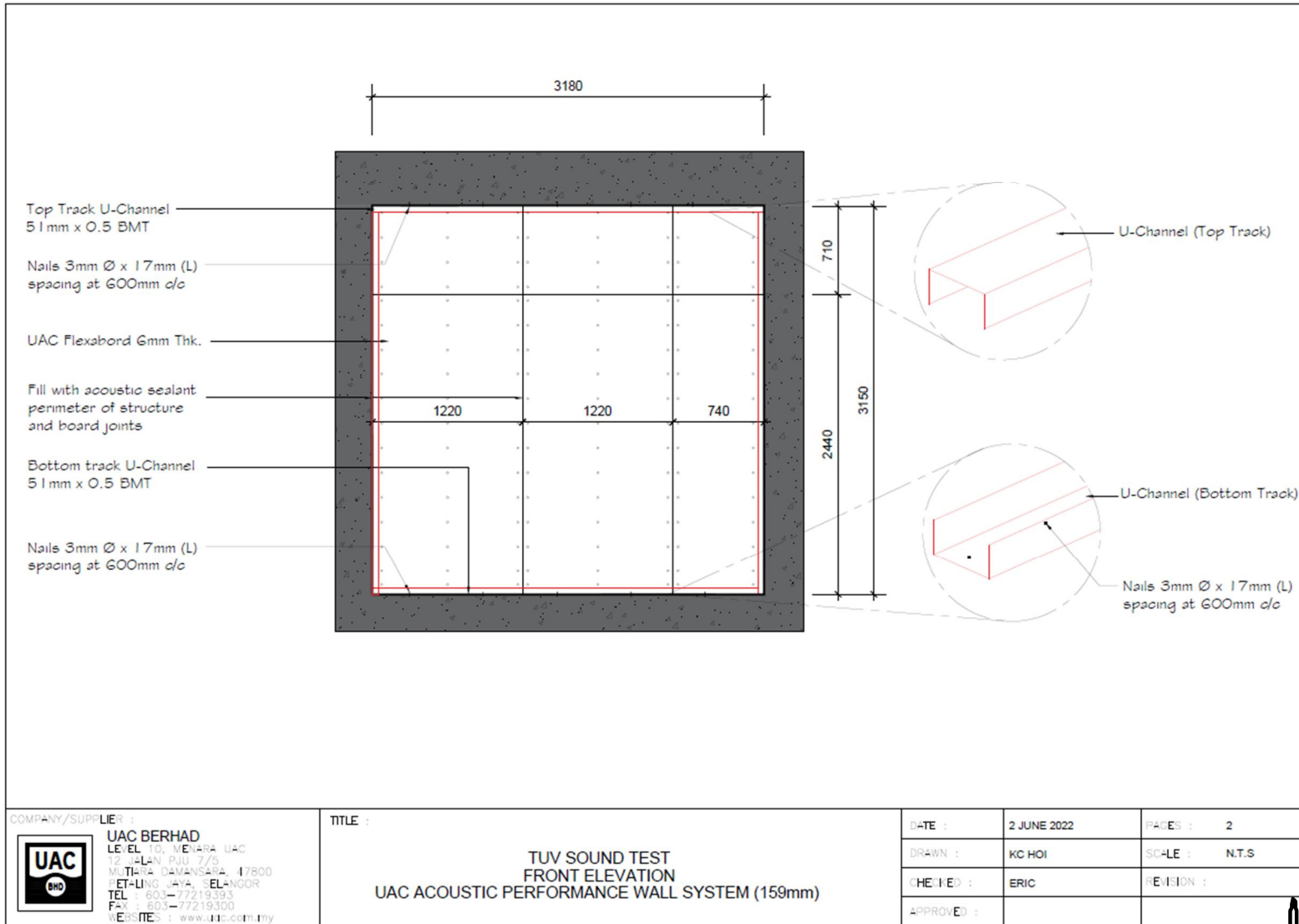
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Appendix 1 : Technical drawing of UAC Acoustic Wall Performance System (Overall View)

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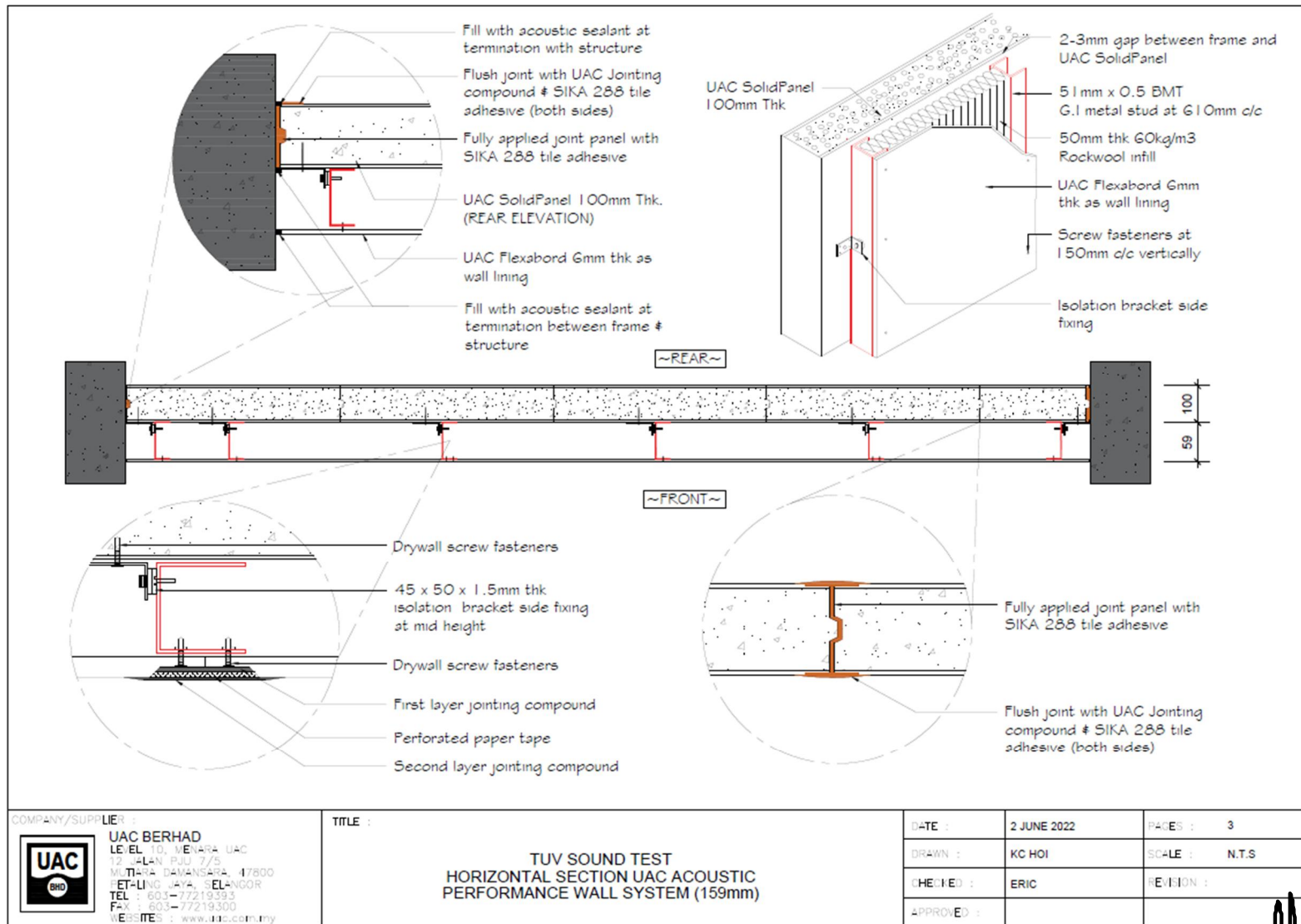
**Appendix 2 : Technical drawing of UAC Acoustic Wall Performance System
 (Overall View)**

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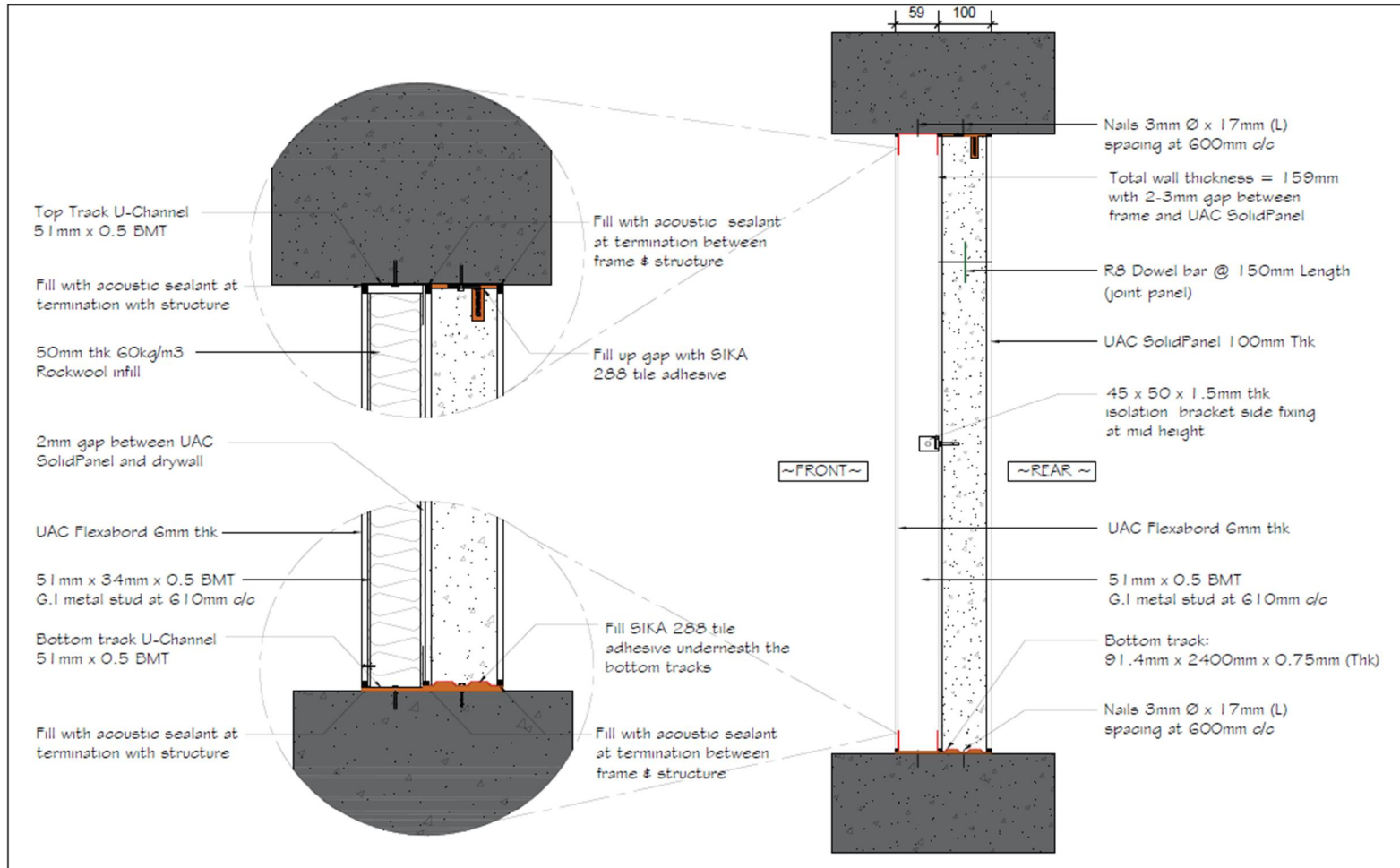
**Appendix 3 : Technical drawing of UAC Acoustic Wall Performance System
 (Section View)**

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		CHECKED :	ERIC	REVISION :	
		APPROVED :			

Appendix 4 : Technical drawing of UAC Acoustic Wall Performance System (Section View)

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Effective 26 January 2021

