Test Report No. 54S076035/A/LCM
dated 22 Oct 2007

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SUBJECT:

Laboratory measurement of airborne sound insulation of "GISS" autoclaved lightweight concrete (ALC) wall panel submitted by Godiniland on 19 Sep 2007.

TESTED FOR:

Godiniland
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Perth West Australia 6000

Attn: Mr David Teh

DATE OF TEST:

16 Oct 2007

DESCRIPTION OF SAMPLE:

A "GISS" autoclaved lightweight concrete (ALC) wall panel system of dimension of 3.19m (width) x 3.16m (height) x 100mm (thick) was installed onto the sample carrier by Tarlic Engineering Construction.

Dimension	Quantity
a) 3.19m (length) x 0.6m (width) x 100mm (thick)	5 pieces
b) 3.19m (length) x 0.19m (width) x 100mm (thick)	1 piece

The density of the ALC wall panel is said to be 750kg/m^3.

ALC grout and sealant was used to seal the joint of the external side of the wall. Normal concrete was used to seal the joint of the internal side of the wall.

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LA-2007-0380-A
LA-2007-0380-A-1
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LA-2007-0382-B
LA-2007-0383-G
LA-2007-0384-G
LA-2007-0385-E
LA-2007-0386-C

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METHOD OF TEST:

The test was conducted in accordance with ISO 140 – 3 : 1995 “Laboratory measurements of airborne sound insulation of building elements”.

Area of test specimen : 3.185m x 3.160m = 10.07m^2
Air temperature in both source room and receiving room : 26°C
Relative air humidity in both source room and receiving room : 59%
Source room volume : 73m^3
Receiving room volume : 86m^3
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) An Omni-loudspeaker (B&K Type 4296)

3) Two sets of ½” condenser microphones (B&K Type 4190)

4) Two sets of microphone preamplifers (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)

TEST PROCEDURES:

1) Instrumentation was set up according to ISO 140 - 3.

2) Measurement system was calibrated using a sound level calibrator Norsonic Type 1251.

3) Background noise level for both source room and receiving room were measured.

4) Sound source system was switched on and maintained at constant level. The sound pressure level in the receiving room was ensured to be 15dB higher than the background noise level.

5) Recording time for both rotating microphone booms was set to 64s which equals to the time taken by the booms to complete two revolutions.

6) Sound pressure level difference between the source room and the receiving room was measured with a dual – channel acoustic analyser (B&K 2133), and the measurement was repeated 3 times.

7) Step 6 was repeated after the loudspeaker was moved to new position.

8) Reverberation time (RT) of the receiving room was measured from two different loudspeaker positions. Each loudspeaker position was measured 2 times.

9) The mean values of the six readings for sound pressure level difference and four readings for RT values were calculated.

10) Values of sound reduction index were determined for each 1/3 octave frequency band from 100Hz to 5kHz based on the mean values of step 9.

11) Weighted sound reduction index ($\mathbf{R_w}$) (single number for rating sound insulation of the sample) and its adaptation terms ($\mathbf{C}$, $\mathbf{C_{tr}}$) according to ISO 717-1 was determined at the frequency of 500Hz of the shifted reference curve (see figure 1).

RESULTS:

Values of sound reduction index (R) of the tested sample were tabulated in Table 1. Sound Insulation Rating is computed according to ISO 717 - 1 : 1996 "Acoustics - Rating of sound insulation in buildings and of building elements – Part 1: Airborne sound insulation".

Table 1 : Measured values of the test sample and values of the shifted reference curve for R_w = 38

1/3 Octave Band Frequency (Hz)	Measured Sound Reduction Index, R (dB)	Shifted Reference Curve R_w = 38 (dB)	Deficiency
100	32.1	19.0	0.0
125	34.7	22.0	0.0
160	33.4	25.0	0.0
200	30.8	28.0	0.0
250	29.6	31.0	1.4
315	29.7	34.0	4.3
400	30.0	37.0	7.0
500	30.8	**38.0**	7.2
630	33.6	39.0	5.4
800	37.8	40.0	2.2
1000	40.9	41.0	0.1
1250	43.1	42.0	0.0
1600	45.9	42.0	0.0
2000	47.8	42.0	0.0
2500	49.9	42.0	0.0
3150	51.9	42.0	0.0
4000	53.9	42.0	0.0
5000	56.1	42.0	0.0
		Total deficiency (125Hz – 4000Hz) :	**28**

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

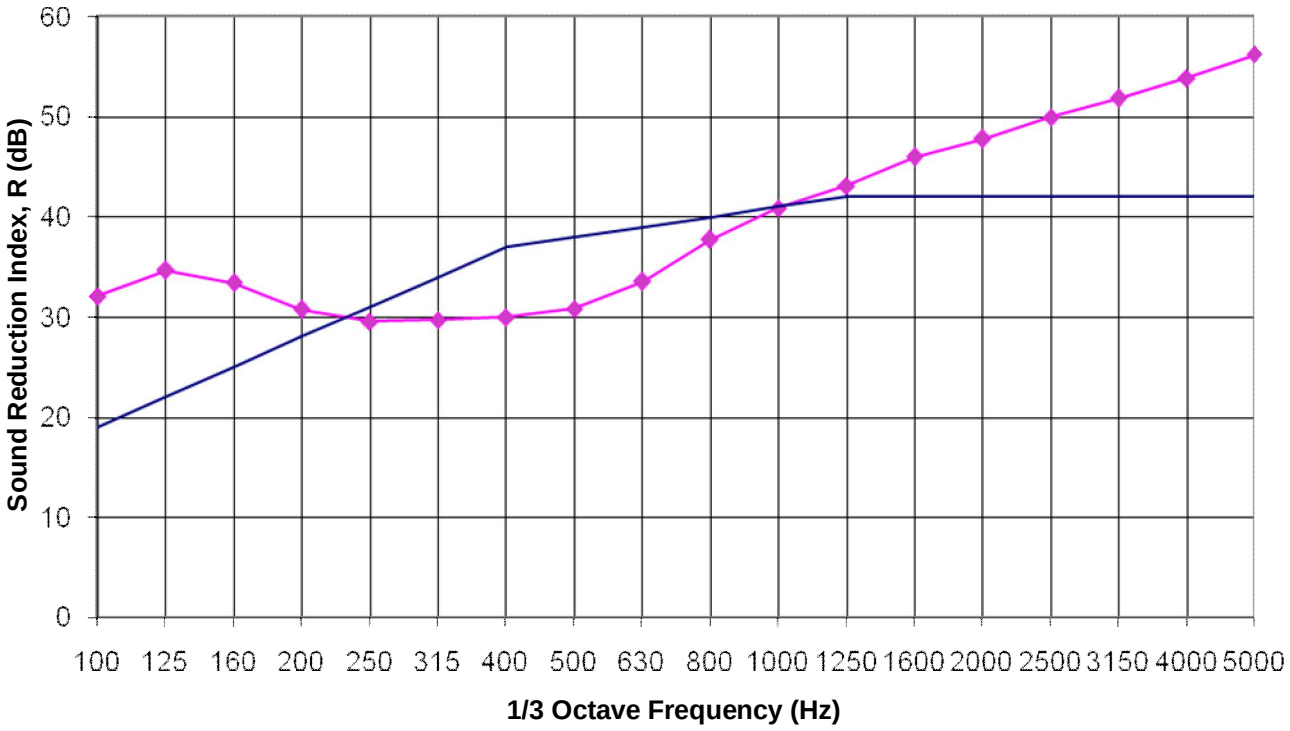
Remark: The tested sample has a weighted sound reduction index, R_w (C, C_{tr}) = 38 (-1, -3).

Lem Chee Meng
Testing Officer

Dr Sun Qiqing
Assistant Vice President
Acoustics & Packaging
Testing Group

RESULTS: (cont'd)

Figure 1 : Sound insulation performance of "GISS" autoclaved lightweight concrete wall panel



Measured sound reduction index, R

Shifted reference curve, R_w = **38**

Figure 2 : Test setup in Source Room

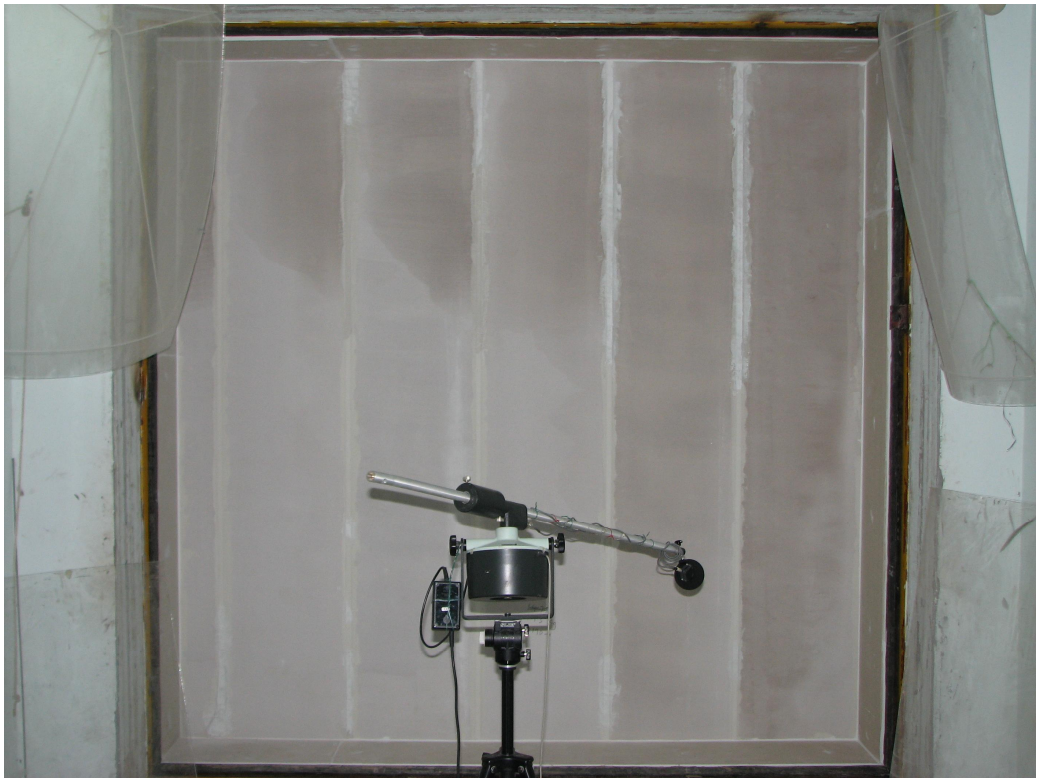
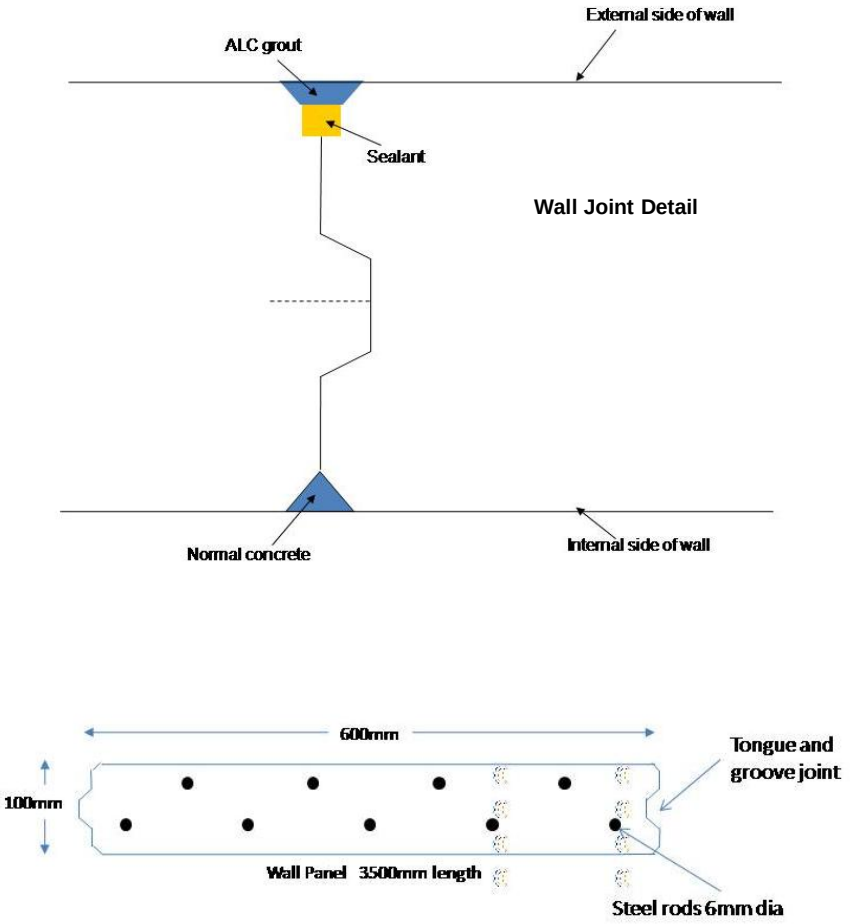


Figure 3 : Test setup in Receiving Room



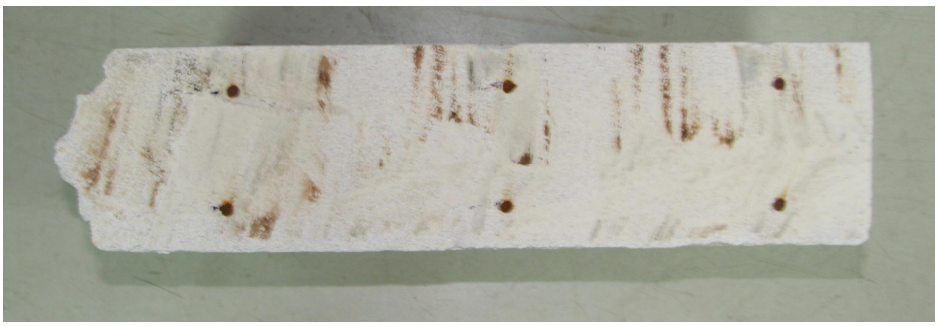


Figure 4 : Joint Detail and Cross Section of ALC wall panel

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May 2007