Test Report No. 54S076035/B/EMK
dated 30 Oct 2007

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SUBJECT:

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

TESTED FOR:

Godiniland
Ground Floor, 2 Mill Street,
Perth West Australia 6000

Attn: Mr David Teh

DATE OF TEST:

26 Oct 2007

DESCRIPTION OF SAMPLE:

A "GISS" autoclaved lightweight concrete (ALC) floor panel system was installed on the horizontal opening of the reverberation room for impact sound insulation test by Tarlic Engineering Construction.

Dimension	Quantity
a) 2.00m (length) x 0.60m (width) x 100mm (thick)	5 pieces
b) 2.00m (length) x 0.39m (width) x 100mm (thick)	1 piece
c) 1.39m (length) x 0.60m (width) x 100mm (thick)	5 pieces
d) 1.39m (length) x 0.39m (width) x 100mm (thick)	1 piece

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

The exposed area of the ALC floor panel system for testing was 3400mm (length) x 3400mm (width). Sealant was used to seal all the boundaries of the floor panel system.

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Laboratory:
TÜV SÜD PSB Corporation Pte. Ltd.
Testing Group
No.1 Science Park Drive
Singapore 118221

Phone : +65-6885 1333
Fax : +65-6776 8670
E-mail: testing@psbcorp.com
www.psbcorp.com
Co. Reg : 199002667R

Regional Head Office:
TÜV SÜD Asia Pacific Pte. Ltd.
3 Science Park Drive
#04-01/05 The Franklin
Singapore 118223

METHOD OF TEST:

The test was conducted to ISO 140-6 : 1998 “Acoustics – Measurement of sound insulation in buildings and of building elements – Part 6 : Laboratory measurements of impact sound insulation of floors”

Area of test specimen: 11.56m^2
Air temperature in reverberation room: 26°C
Relative air humidity in reverberation room: 70%
Reverberation 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) A tapping machine (B&K Type 3207)

3) A ½” condenser microphone with preamplifers (B&K Type 4190)

4) A sound pressure level calibrator (Norsonic Type 1251)

5) A set of rotating microphone booms (B&K Type 3923)

TEST PROCEDURES:

1) Instrumentation was set up according to ISO 140-6.

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

3) Background noise level for reverberation room was measured.

4) Tapping machine was switched on and placed on the top surface of the roof system at 45° to the direction of the beams and maintained at constant noise level. The sound pressure level in the reverberation 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) Impact sound pressure level in the reverberation room was measured with a dual – channel acoustic analyser (B&K 2133), and the measurement was repeated twice.

7) Step 4 was repeated thrice at 3 different tapping positions.

8) Reverberation time (RT) of the reverberation room was measured from two different loudspeaker positions.

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

10) Values of normalised impact sound pressure level and sound absorption area were determined for each 1/3 octave frequency band from 100Hz to 5kHz based on the mean values of step 9.

11) Weighted normalised impact sound pressure level was calculated based on the values of step 10.

RESULTS:

Values of normalised impact sound pressure level (L_n) of the roof system were tabulated in Table 1. Impact Sound Insulation Rating is computed according to ISO 717 - 2 : 1996(E) "Acoustics - Rating of sound insulation in buildings and of building elements – Part 1: Airborne sound insulation".

Table 1 : Measured values of R and values of the shifted reference curve for $L_{n,w}$ - 92dB

1/3 Octave Band Frequency (Hz)	Measured Normalised Impact Sound Pressure Level, L_n (dB)	Shifted Reference Curve, $L_{n,w}$ = 92(dB)	Deficiency
100	67	94	0
125	70	94	0
160	71	94	0
200	73	94	0
250	76	94	0
315	78	94	0
400	82	93	0
500	85	**92**	0
630	87	91	0
800	88	90	0
1000	88	89	0
1250	88	86	2
1600	87	83	4
2000	87	80	7
2500	85	77	8
3150	82	74	8
4000	77	71	-
5000	70	68	-
		Total deficiency (100Hz – 3150Hz) :	29

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

Remarks:

The tested ALC floor panel system achieved a weighted normalised impact sound pressure level, $L_{n,w}$ = 92

Ee Min Kuen
Testing Officer

Dr Sun Qiqing
Assistant Vice President
Acoustics & Packaging
Testing Group

RESULTS: (cont'd)

Figure 1 : Impact sound insulation performance of on "GISS" autoclaved lightweight concrete (ALC) floor panel

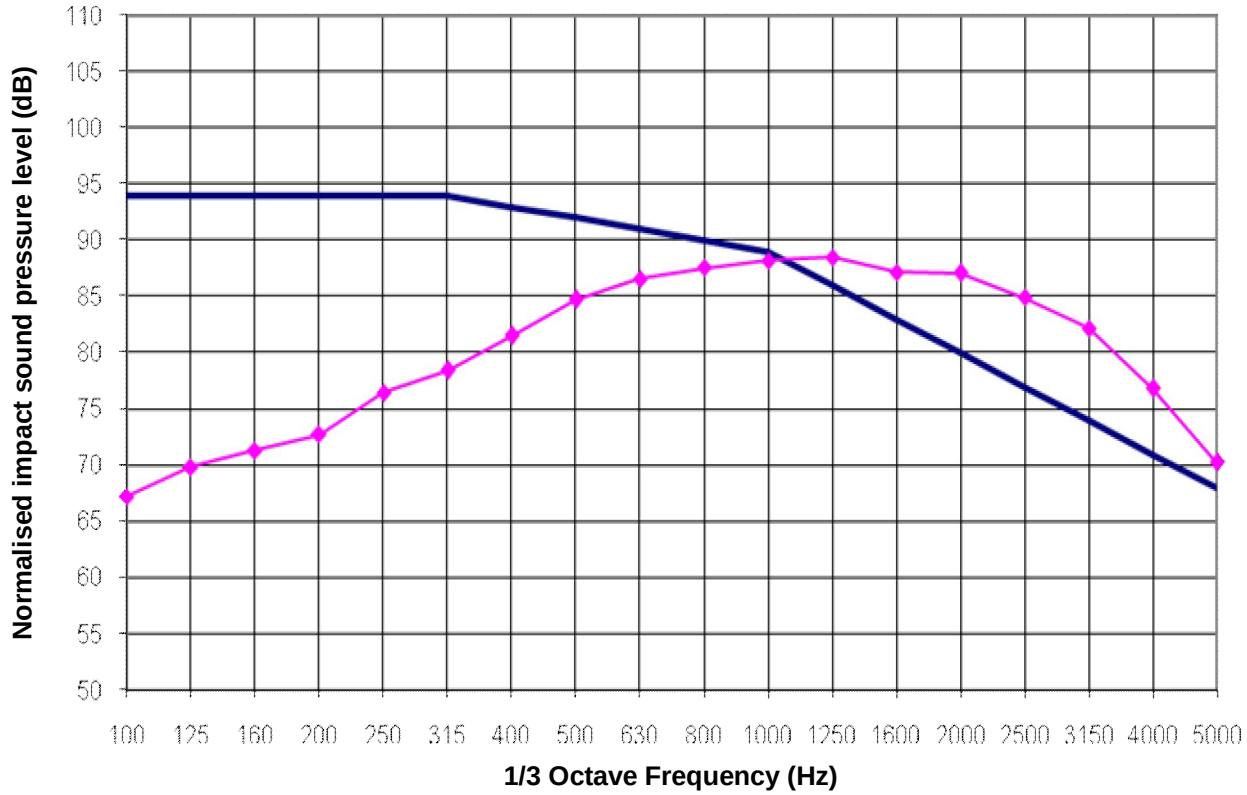
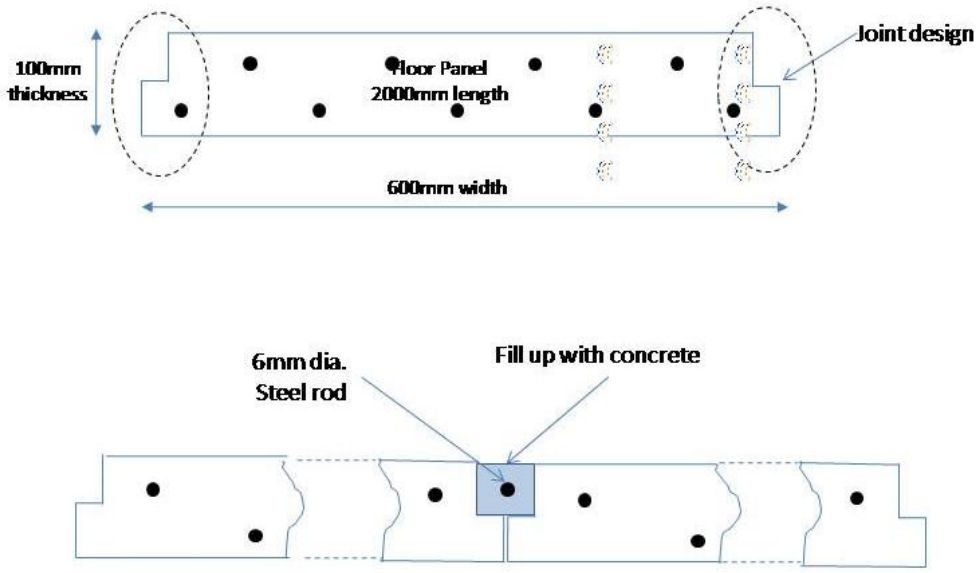


Figure 2 : Test setup of impact machine on floor panel system

Figure 3 : Test setup of floor panel system installed on top of the reverberation room



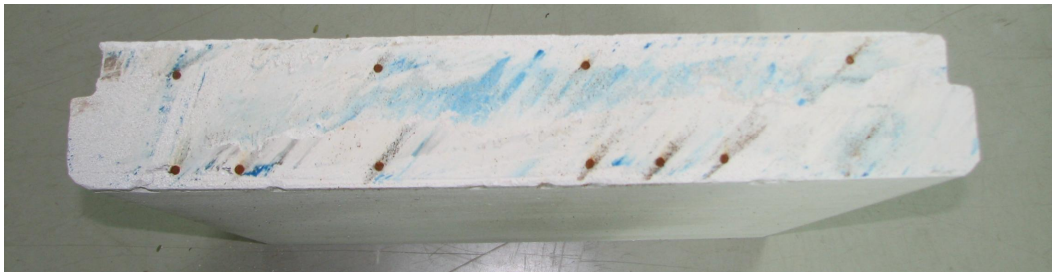


Figure 4 : Joint Detail and Cross Section of ALC floor panel

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May 2007