

Test Report No. S08MEC04781/B/EMK
dated 18 Aug 2008



PSB Singapore

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SUBJECT:

Laboratory measurement of impact sound insulation of "Besta" board panel system submitted by Best Rock Building Systems Pte Ltd on 4 Aug 2008.

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TESTED FOR:

Best Rock Building Systems Pte Ltd
14 Zion Road
Singapore 247732

Attn : Mr Daniel Wong

DATE OF TEST:

12 Aug 2008

DESCRIPTION OF SAMPLES:

The "Besta" board panel system was installed on the horizontal opening of the receiving room for impact sound transmission test by Best Rock Building Systems Pte Ltd.

The "Besta" board panel system was consisted of 6 pieces of board panel. Each board panel comprised of 1 piece of 12mm thick "Besta" board and 1 piece 18mm thick "Besta" board bonded together with contact adhesive (dunlop glue).

The joining of panel-to-panel and the perimeter seal of the composite mineral board system was used by silicone sealant.

The technical drawing of the board panel system was shown in Figure 4.



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METHOD OF TEST:

The test was conducted in accordance with ISO 140 – 6 : 1998 "Laboratory measurements of Impact Sound Insulation of floors".

Area of test specimen: 10.24m²

Air temperature in receiving room: 26°C

Relative air humidity in receiving room: 68%

Receiving room volume: 84m³

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 preamplifiers (B&K Type 4190)
- 4) A sound pressure level calibrator (Norsonic Type 1251)
- 5) A set of rotating microphone booms (B&K Type 3923)

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TEST PROCEDURES:

- 1) Instrumentation was set up according to ISO 140 – 6 : 1998.
- 2) Measurement system was calibrated using a sound level calibrator Norsonic Type 1251.
- 3) Background noise level for receiving 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 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) Impact sound pressure level in the receiving 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. The 2 others position is taken from the centre location.
- 8) Reverberation time (RT) of the receiving 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. The shifted reference curve, L_n , is shown figure 1.

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RESULTS:

Values of normalised impact sound pressure level (L_n) of the tested sample were tabulated in Table 1.

Table 1 : Measured values of R and values of the shifted reference curve for $L_{n,w} - 86\text{dB}$

1/3 Octave Frequency Band (Hz)	Normalised Impact Sound Pressure Level, L_n (dB)	Weighted Normalised Impact Sound Pressure Level, $L_{n,w} = 86$ (dB)	Deficiency
100	78	88	0
125	77	88	0
160	78	88	0
200	79	88	0
250	80	88	0
315	81	88	0
400	83	87	0
500	82	86	0
630	81	85	0
800	81	84	0
1000	79	83	0
1250	79	80	0
1600	80	77	3
2000	81	74	7
2500	81	71	10
3150	79	68	11
4000	75	65	10
5000	70	62	8
Total deficiency (100Hz – 3150Hz) :			31

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

Remarks:

The tested "Besta" board panel system achieved a Weighted Normalised Impact Sound Pressure Level, $L_{n,w} = 86$ ($C_1 = -9$)



Francis Ee Min Kuen
Testing Officer

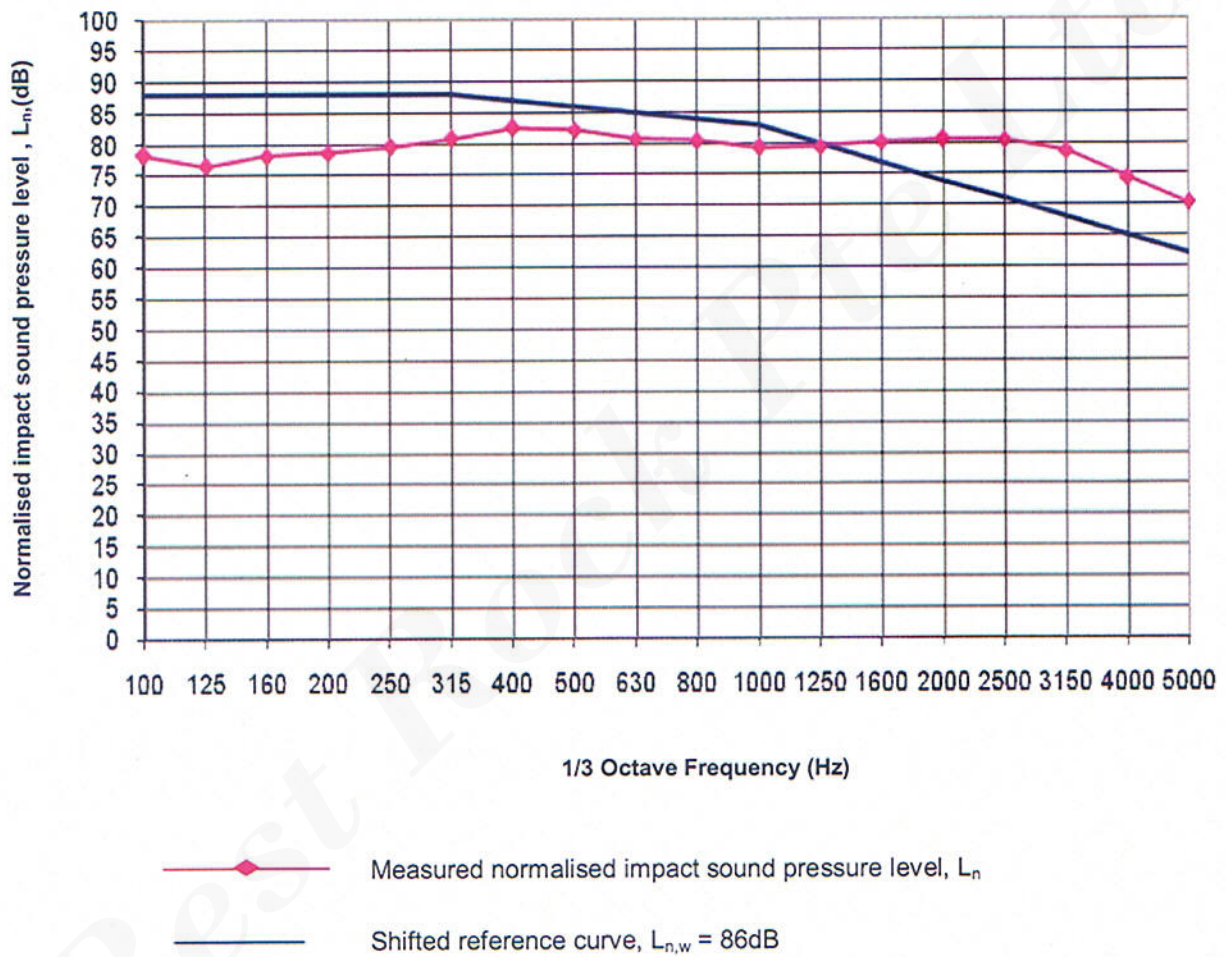


Dr Sun Qiqing
Assistant Vice President
Acoustics & Vibration
Testing Services



RESULTS: (cont'd)

Figure 1 : Impact Sound Insulation Performance of "Besta" board panel system



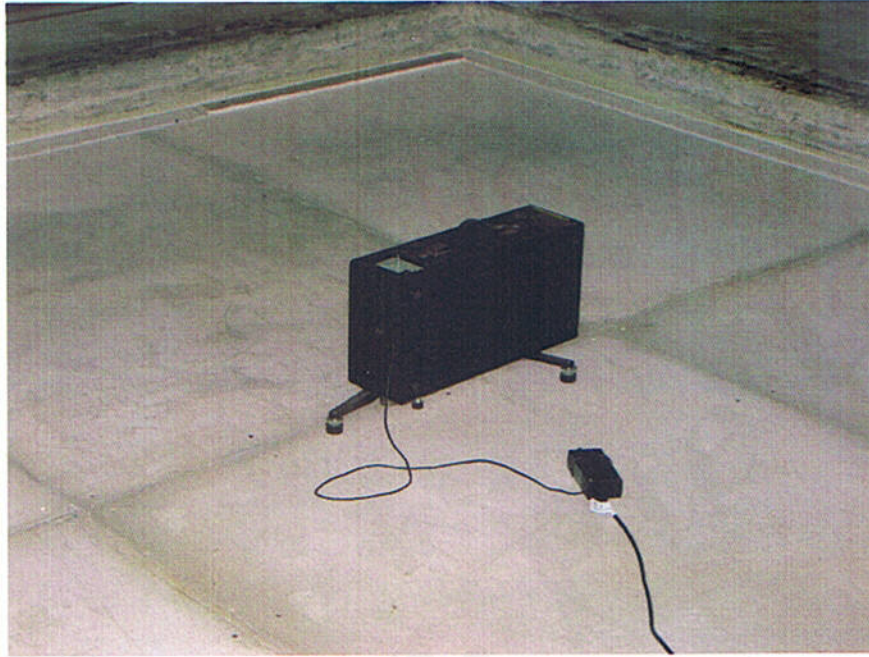
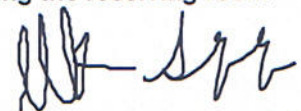


Figure 2 : Tapping machine on the "Besta" board panel system



Figure 3 : Test setup of the "Besta" board panel system (underside) facing the receiving room



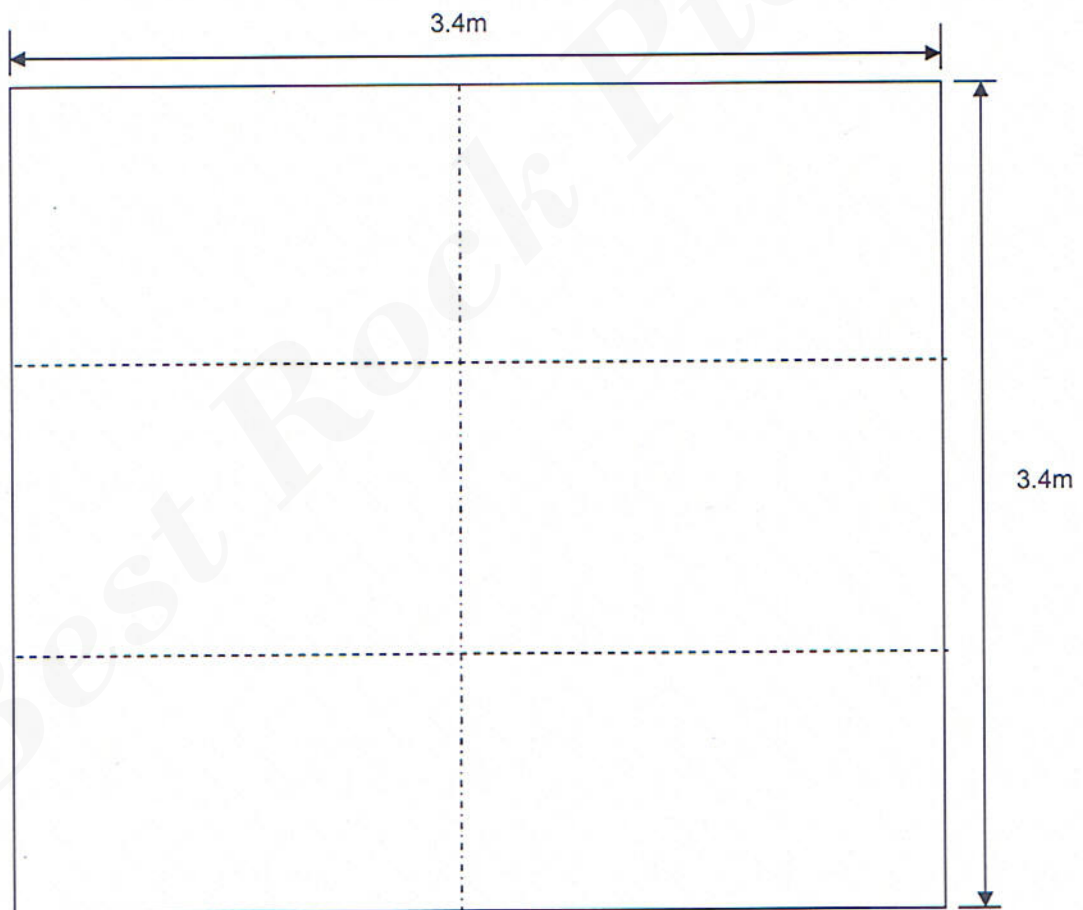
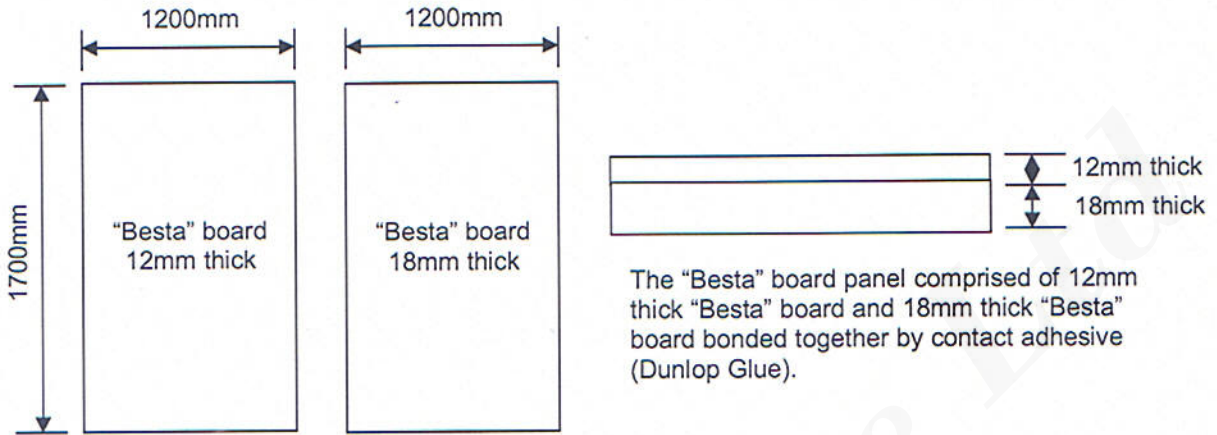


Figure 4 : Technical Drawing



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January 2008