

Test Report No: 719184135-MEC10-EMK
dated 15 Sep 2010

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SUBJECT:

Laboratory measurement of airborne sound transmission loss of drywall partition system submitted by Besco Building Supplies (SEA) Pte Ltd on 7 Sep 2010.

TESTED FOR:

Besco Building Supplies (SEA) Pte Ltd
26 Ubi Road 4
The Besco Building
Singapore 408613

Attn: Mr Daniel Chong

DATE OF TEST:

9 Sep 2010

DESCRIPTION OF SAMPLES:

The drywall partition system was installed onto the sample carrier by Besco Building Supplies (SEA) Pte Ltd.

The dimension of the test sample was 3.15m (width) x 3.17m (height) x 135mm (thick). The partition wall system consisted of 2 layers of 12mm thick, 850kg/m³ density "X" Gypsum Plaster Boards, a layer of 2.6mm thick, 1900kg/m³ density Acoustic Insulation Membrane, **TECSOUND® SY50**, a layer of 50mm thick, 40kg/m³ density Rockwool, 2 layers of 12mm thick, 850kg/m³ density "X" Gypsum Plaster Boards, a layer of 2.6mm thick, 1900kg/m³ density Acoustic Insulation Membrane, **TECSOUND® SY50**, 75mm x 32mm x 0.55mm thick galvanised runners and vertical studs.

The technical drawing of the drywall partition system were shown in Appendices.



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LA-2007-0381-F
LA-2007-0382-B
LA-2007-0383-G
LA-2007-0384-G
LA-2007-0385-E
LA-2007-0386-C

The results reported herein have been performed in accordance with the laboratory's terms of accreditation under the Singapore Accreditation Council - Singapore Laboratory Accreditation Scheme. Tests/Calibrations marked "Not SAC-SINGLAS Accredited" in this Report are not included in the SAC-SINGLAS Accreditation Schedule for our laboratory.

METHOD OF TEST:

The test was conducted in accordance with ASTM E90 - 04 "Standard test method for laboratory measurement of airborne sound transmission loss of building partitions and elements"

Measured area of partition system: 3.17m (width) x 3.14m (height) = 9.95m²

Air temperature in both source room and receiving room : 27°C

Relative air humidity in both source room and receiving room : 61%

Source room volume : 75m³


Receiving room volume : 83m³

Location of the test : Acoustics Lab of TÜV SÜD PSB Pte Ltd

TEST EQUIPMENT:

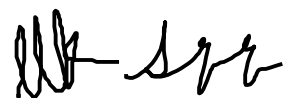
The following instruments were used for the test.

- 1) A dual-channel real-time frequency analyser (B&K Type 2133)
- 2) Two units of loudspeaker (JBL MPro MP415)
- 3) Two sets of ½" condenser microphones (B&K Type 4943)
- 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)



TEST PROCEDURES:

- 1) Instrumentation was set up according to ASTM E90.
- 2) Measurement system was calibrated using a sound level calibrator Norsonic Type 1251.
- 3) Background noise level of the receiving room were measured.
- 4) Two loudspeakers were placed at two corners in the source room.
- 5) Sound source system was switched on to generate "White" noise and maintained at constant level. The 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 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 6 times.
- 8) Two loudspeakers were placed at 2 corners in the receiving room. The loudspeaker was switched on to generate "Pink" noise and maintained at constant level.
- 9) Reverberation time (RT) of the receiving room was measured twice.
- 10) Step 8 to Step 9 was repeated after the two loudspeakers had switched position in the receiving room.
- 11) The mean values of the six readings for sound pressure level difference and four readings for RT values were calculated.
- 12) Values of sound transmission loss were determined for each 1/3 octave frequency band from 100Hz to 5kHz based on the mean values of step 11.
- 13) Sound transmission class was determined at the frequency of 500Hz of the shifted reference curve according to ASTM E413.



RESULTS:

Values of sound transmission loss (TL) of the tested sample were tabulated in Table 1. Sound insulation rating was computed according to ASTM E413 - 04 "Classification for rating sound insulation".

Table 1 : Measured Sound Transmission Loss, TL and values of the shifted reference curve for STC = 50

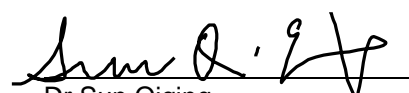
1/3 Octave Band Frequency (Hz)	Measured Sound Transmission Loss, TL (dB)	Shifted Reference Curve STC = 50 (dB)	Deficiency
100	24.3	31.0	6.7
125	26.5	34.0	7.5
160	32.9	37.0	4.1
200	40.7	40.0	0.0
250	41.6	43.0	1.4
315	45.0	46.0	1.0
400	46.7	49.0	2.3
500	49.1	50.0	0.9
630	48.7	51.0	2.3
800	51.1	52.0	0.9
1000	55.0	53.0	0.0
1250	58.1	54.0	0.0
1600	61.0	54.0	0.0
2000	62.4	54.0	0.0
2500	60.8	54.0	0.0
3150	59.3	54.0	0.0
4000	63.4	54.0	0.0
5000	66.1	54.0	0.0
Total deficiency (125Hz – 4000Hz)			20

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

Remark:

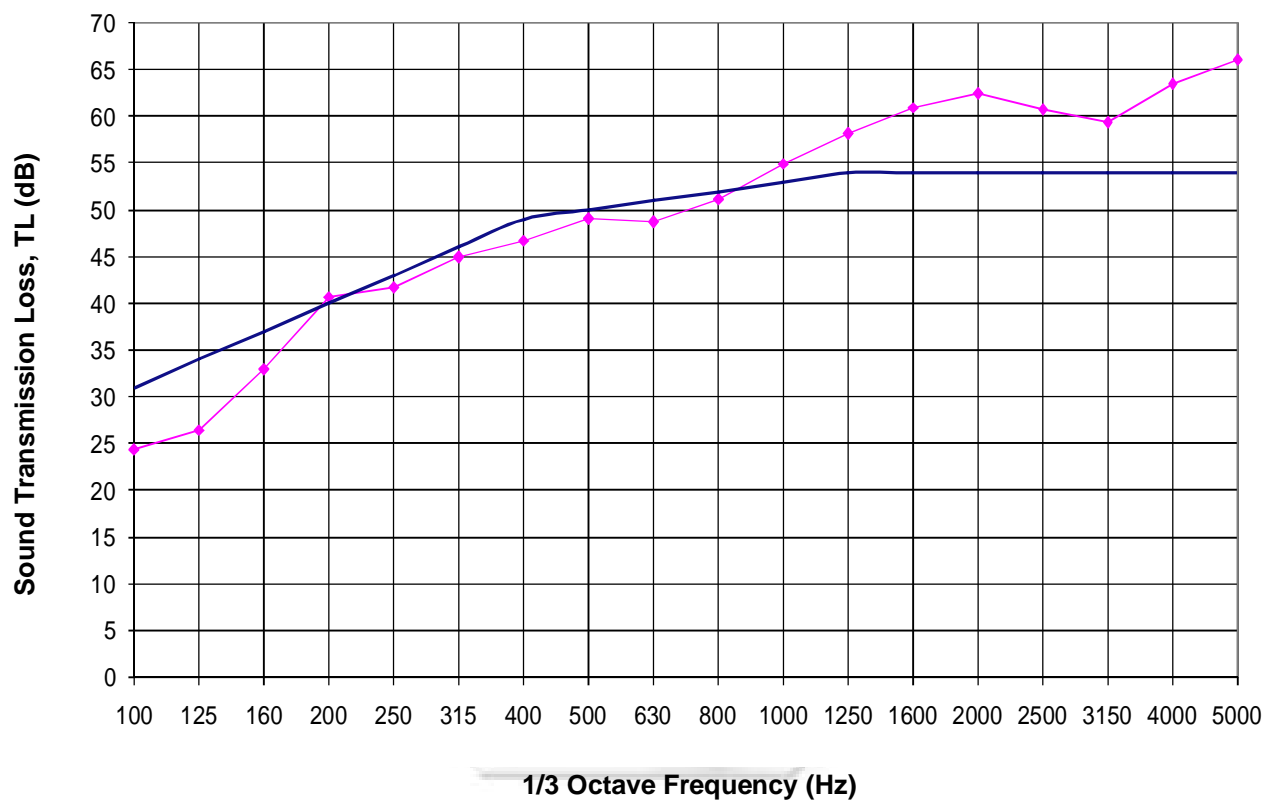
The tested drywall partition system achieved a sound transmission class, STC = 50.


Francis Ee Min Kuen
Testing Officer

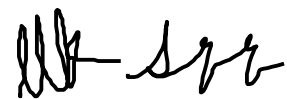

Dr Sun Qiqing
Assistant Vice President
Building and Acoustics
Mechanical Centre

RESULTS: (cont'd)

Figure 1 : Sound transmission performance of drywall partition system



—◆— Measured sound transmission loss, TL
— Shifted reference curve, STC = 50



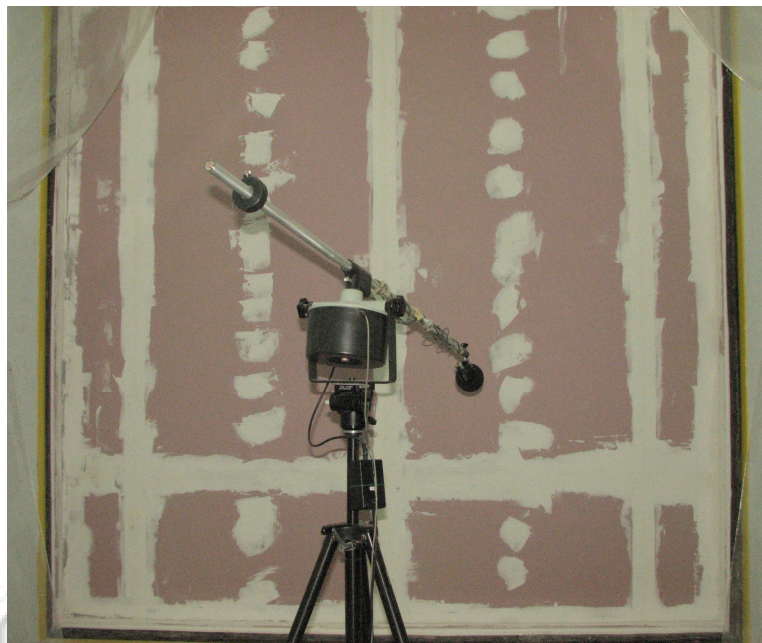


Figure 2 : Drywall partition system facing the source room

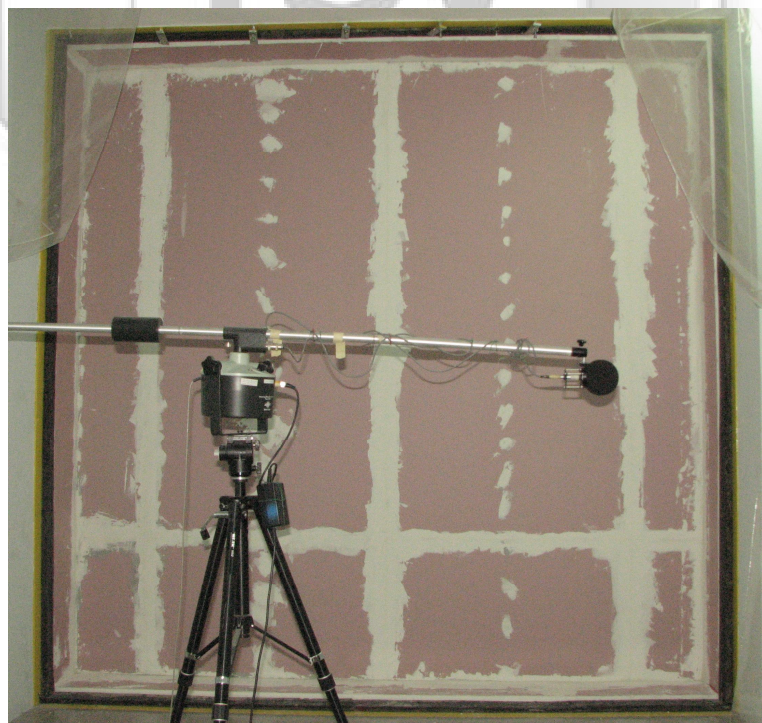


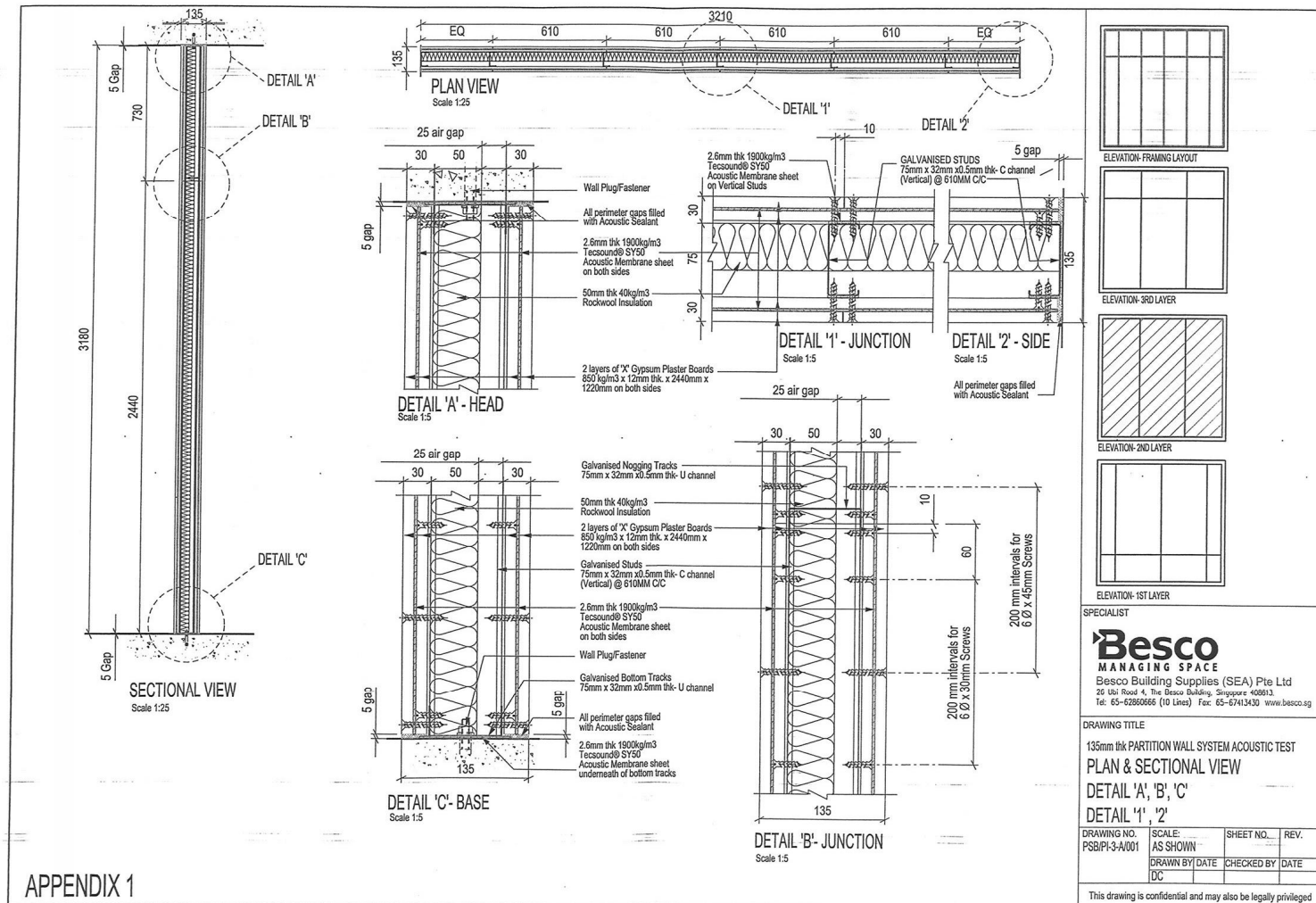
Figure 3 : Drywall partition system facing the receiving room



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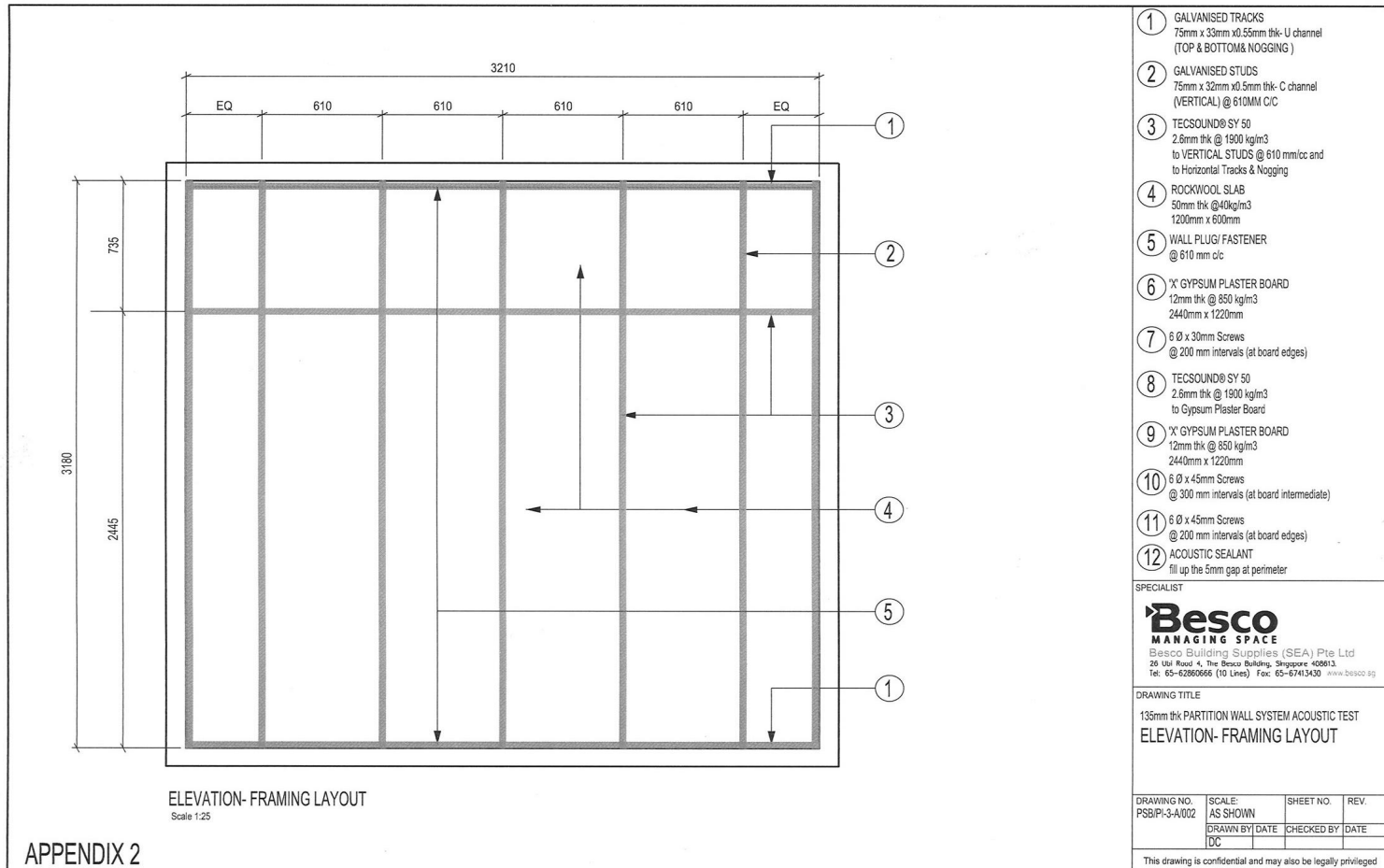
Appendix : Technical Drawing

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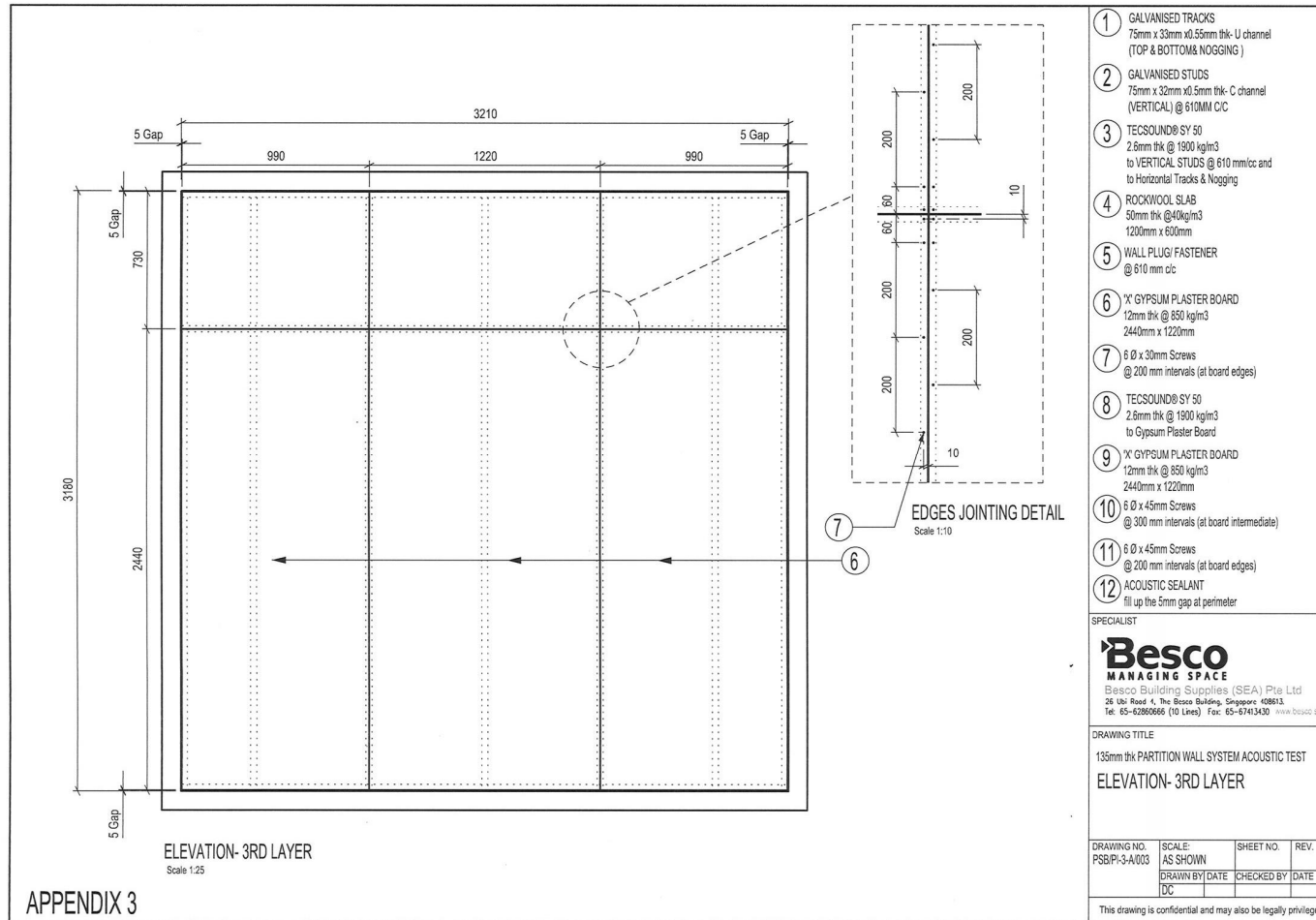


Appendix (cont'd) : Technical Drawing

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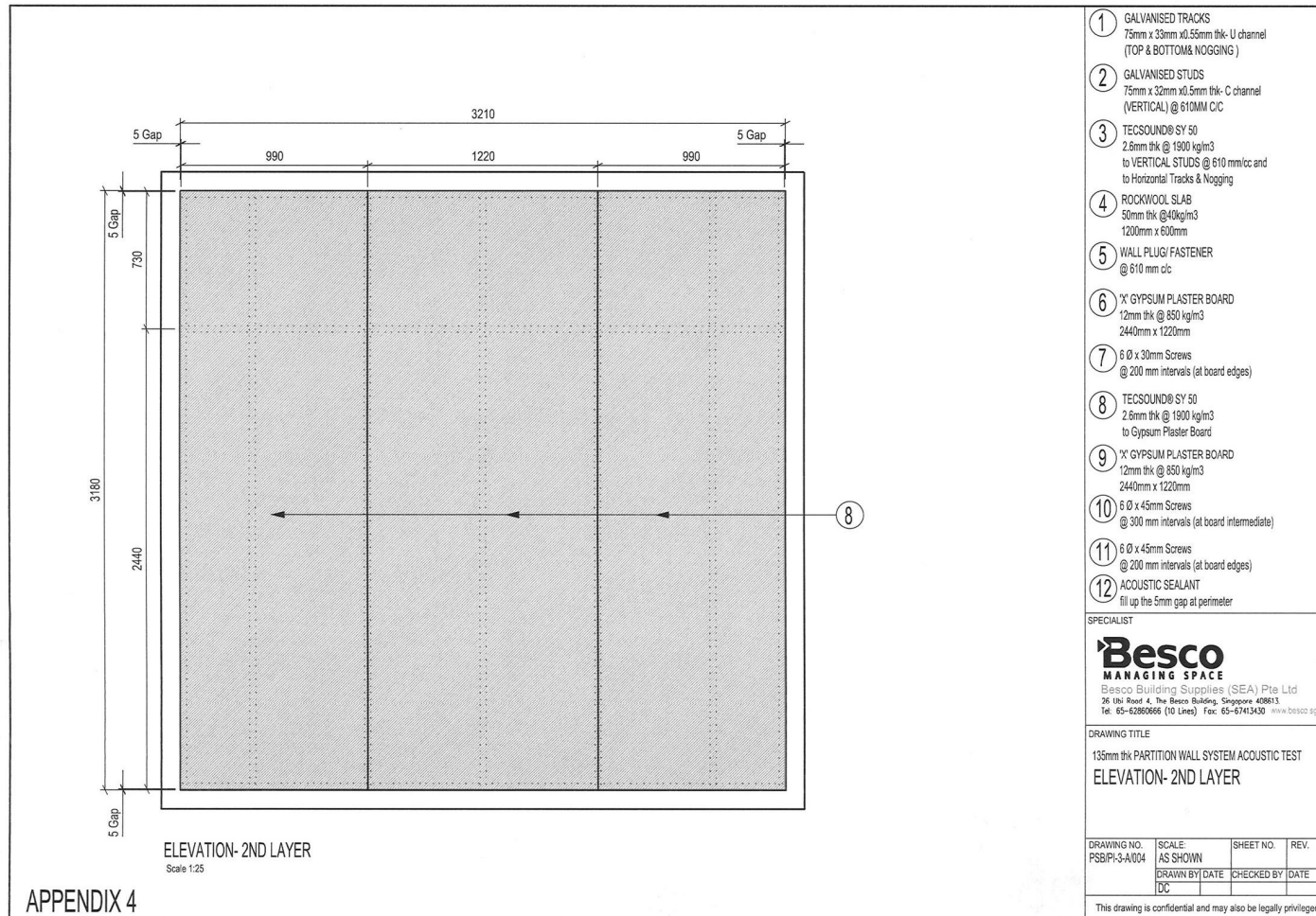
Appendix (cont'd) : Technical Drawing

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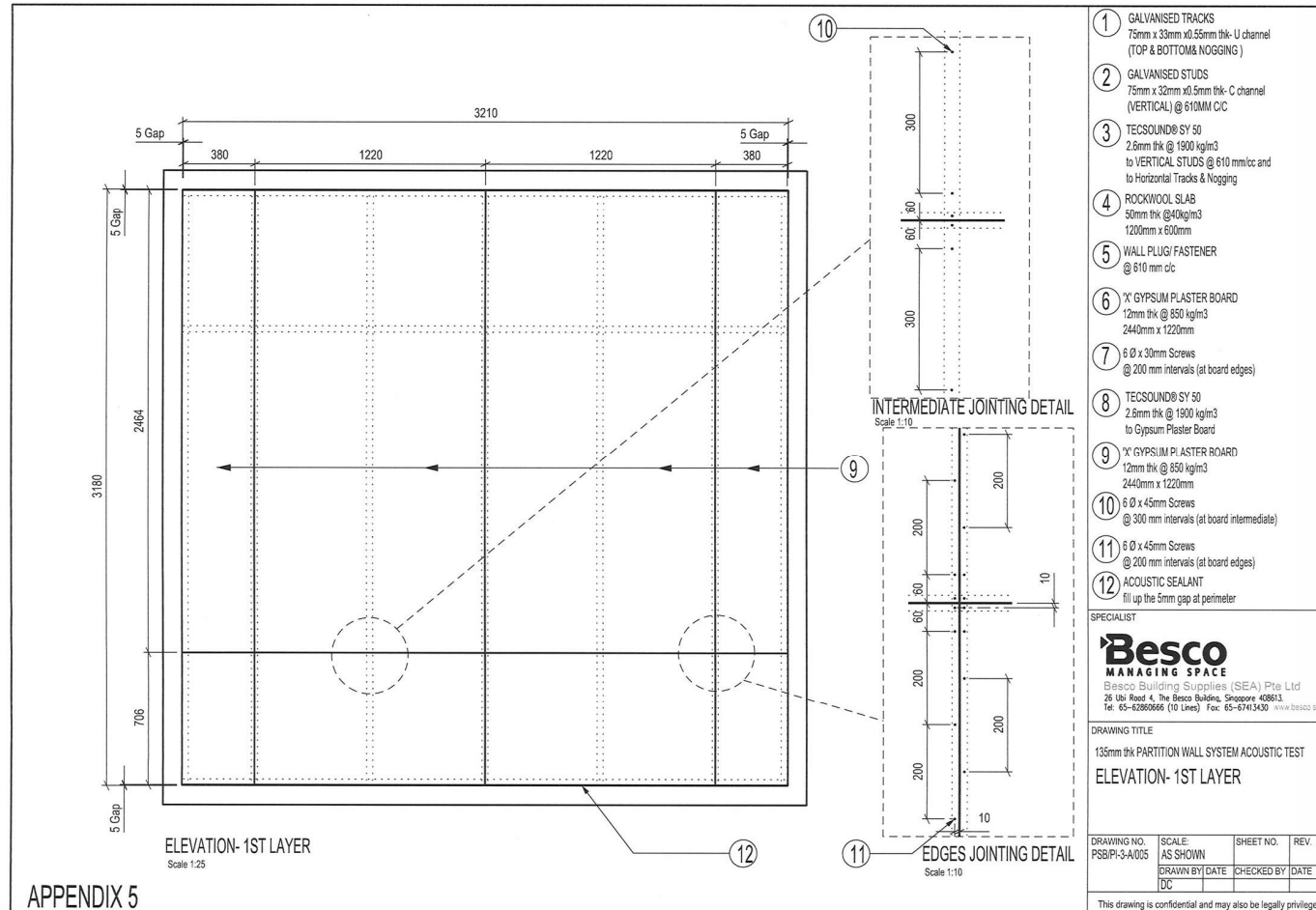
Appendix (cont'd) : Technical Drawing

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Appendix : Technical Drawing 5

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March 2010