Test Report No: 719191029-MEC10-01-EMK
dated 23 Dec 2010

PSB Singapore

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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 15 Dec 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:

15 Dec 2010

DESCRIPTION OF SAMPLES:

The drywall partition system of dimension 3153mm (width) x 3131mm (height) x 136mm (thick) was installed onto the sample carrier by Besco Building Supplies (SEA) Pte Ltd.

The partition wall system consisted of 2 layers of 12.5mm thick, 855kg/m^3 density "X" gypsum plaster boards, a layer of 5.3mm thick, 1900kg/m^3 density **TECSOUND® SY100** acoustic insulation membrane, a layer of 75mm thick, 40kg/m^3 density rockwool, 2 layers of 12.5mm thick, 855kg/m^3 density "X" gypsum plaster board, a layer of 5.3mm thick, 1900kg/m^3 density **TECSOUND® SY100** acoustic insulation membrane with 76mm x 32mm x 0.55mm thick galvanised runners and vertical studs.

The technical drawing of the drywall partition system were shown in Appendices 1-5.

TÜV SÜD PSB Pte Ltd

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The preliminary data reported herein are given without prejudice.

Vice President
Mechanical
Testing Services

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LA-2007-0380-A
LA-2007-0380-A-1
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.

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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: 3.15m (width) x 3.13m (height) = 9.87m^2
Air temperature in both source room and receiving room : 26°C
Relative air humidity in both source room and receiving room : 53%
Source room volume : 74m^3
Receiving room volume : 84m^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) Two units of loudspeaker (JBL MPro MP415)
3) Two sets of ½" condenser microphones (B&K Type 4943)
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)

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Mechanical
Testing Services

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 = 54

1/3 Octave Band Frequency (Hz)	Measured Sound Transmission Loss, TL (dB)	Shifted Reference Curve STC = 54 (dB)	Deficiency
100	33.5	35.0	1.5
125	39.6	38.0	0.0
160	45.9	41.0	0.0
200	42.9	44.0	1.1
250	41.8	47.0	5.2
315	44.3	50.0	5.7
400	46.1	53.0	6.9
500	50.0	**54.0**	4.0
630	49.4	55.0	5.6
800	53.2	56.0	2.8
1000	57.7	57.0	0.0
1250	61.2	58.0	0.0
1600	65.8	58.0	0.0
2000	67.0	58.0	0.0
2500	66.4	58.0	0.0
3150	64.0	58.0	0.0
4000	64.1	58.0	0.0
5000	67.4	58.0	0.0
		Total deficiency (125Hz – 4000Hz)	**31**

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

Remark:

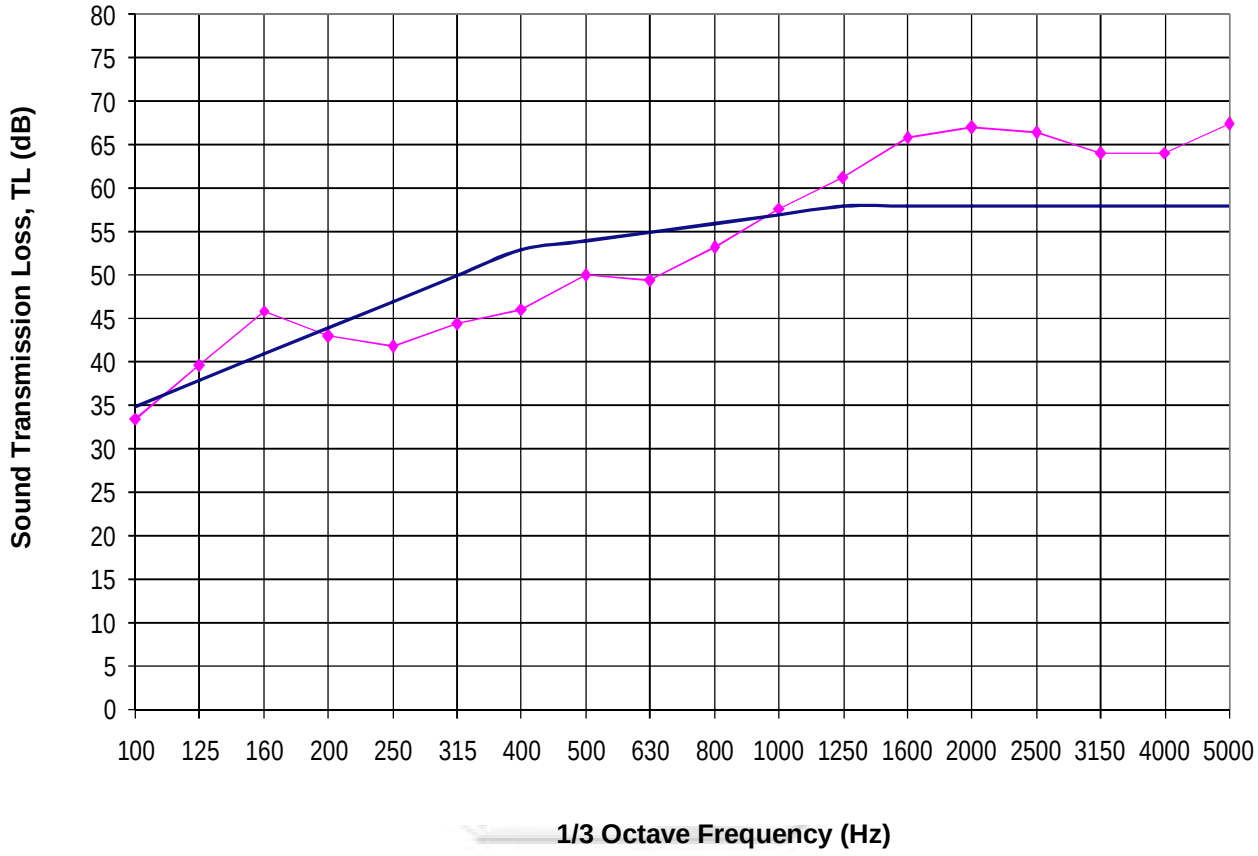
The tested 136mm thick drywall partition system achieved a sound transmission class, STC = 54.

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 136mm thick drywall partition system



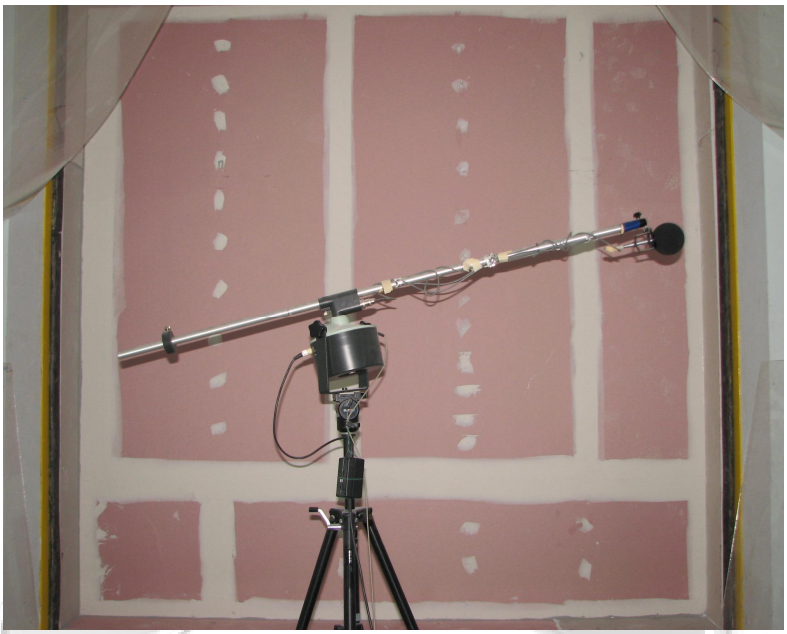


Figure 2 : Drywall partition system facing the source room

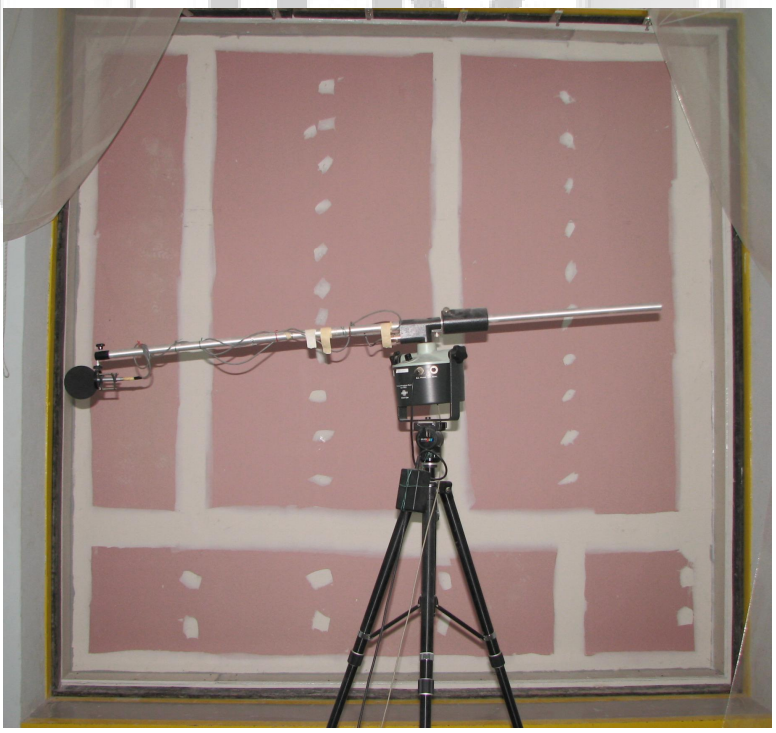
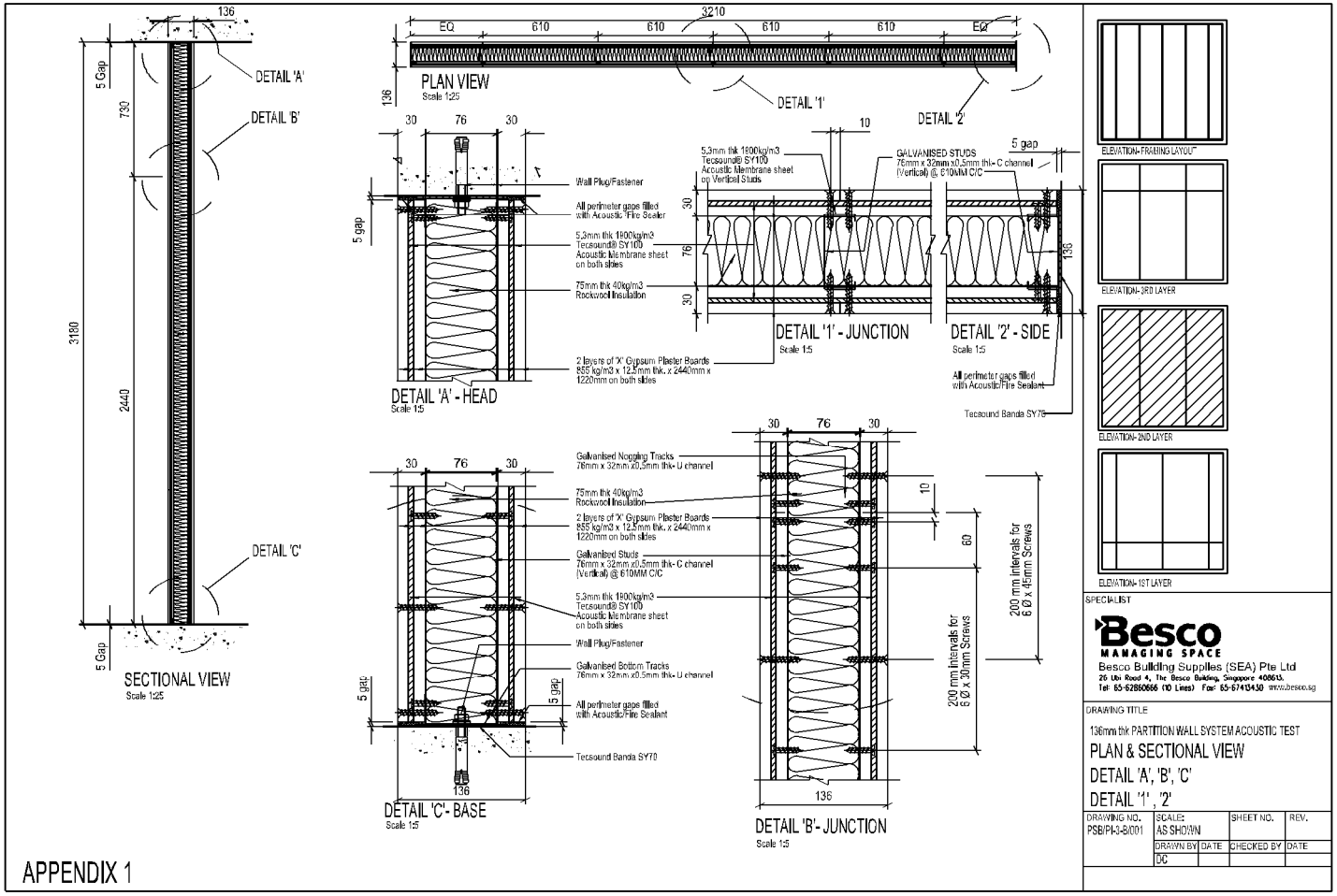
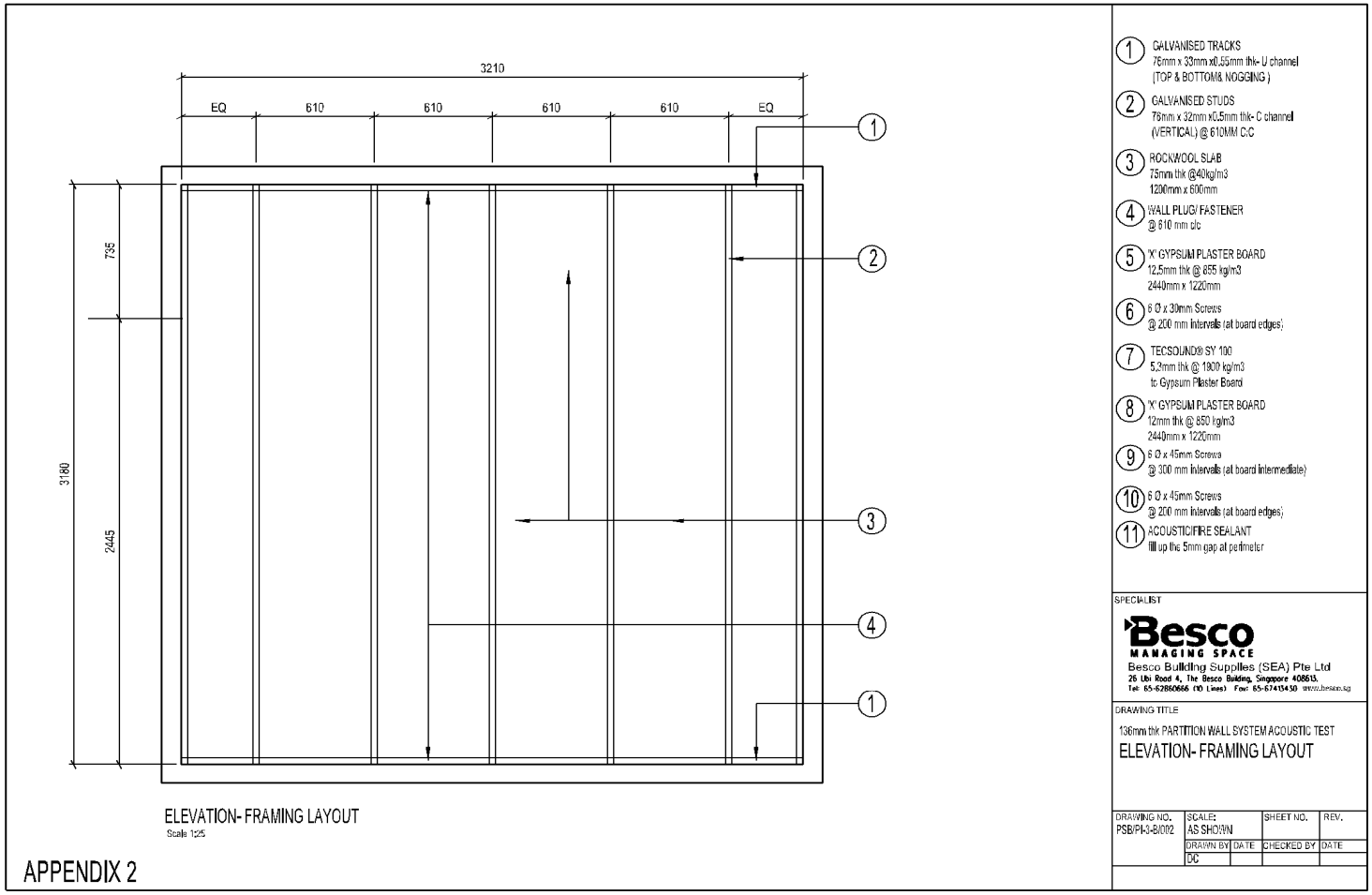


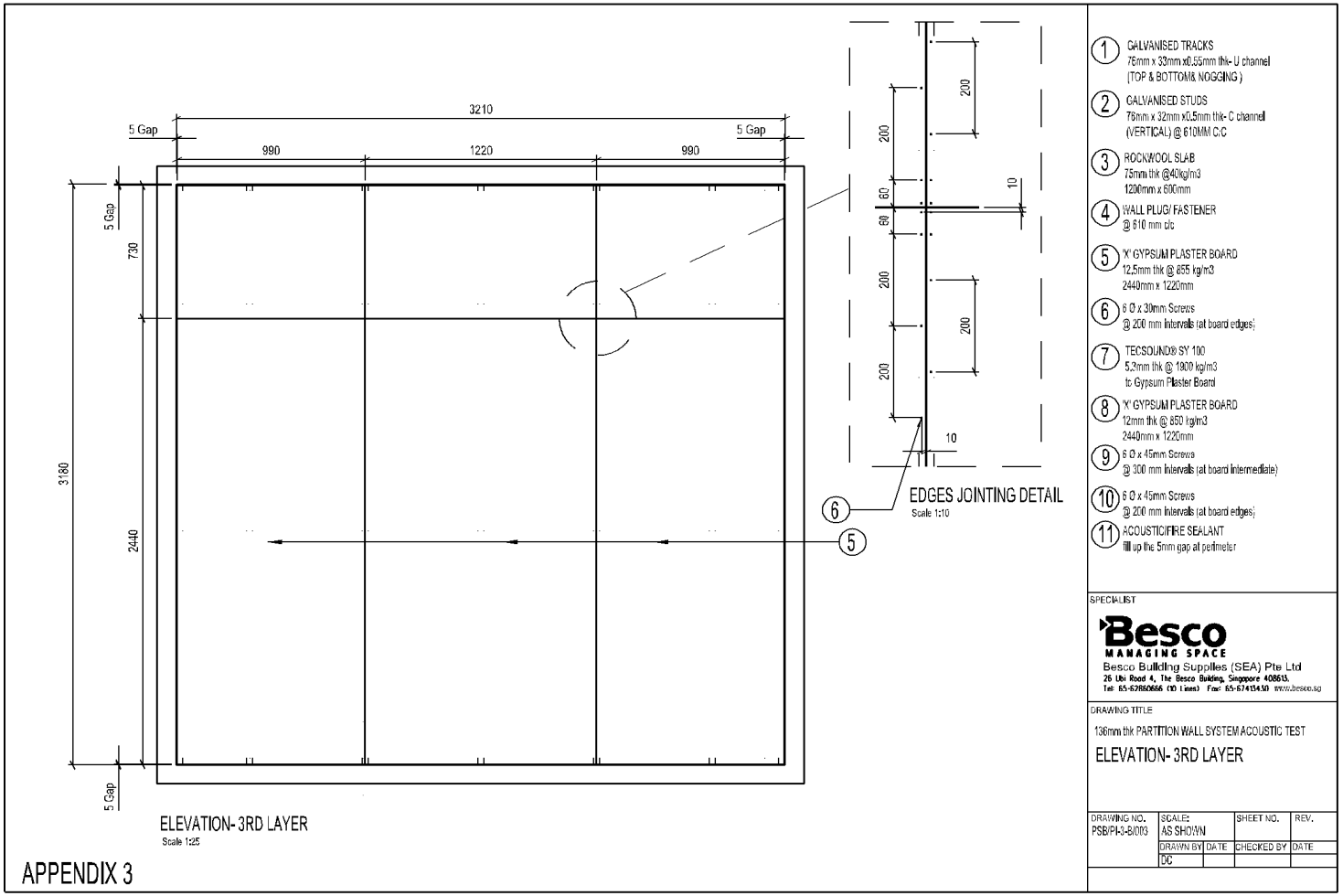
Figure 3 : Drywall partition system facing the receiving room



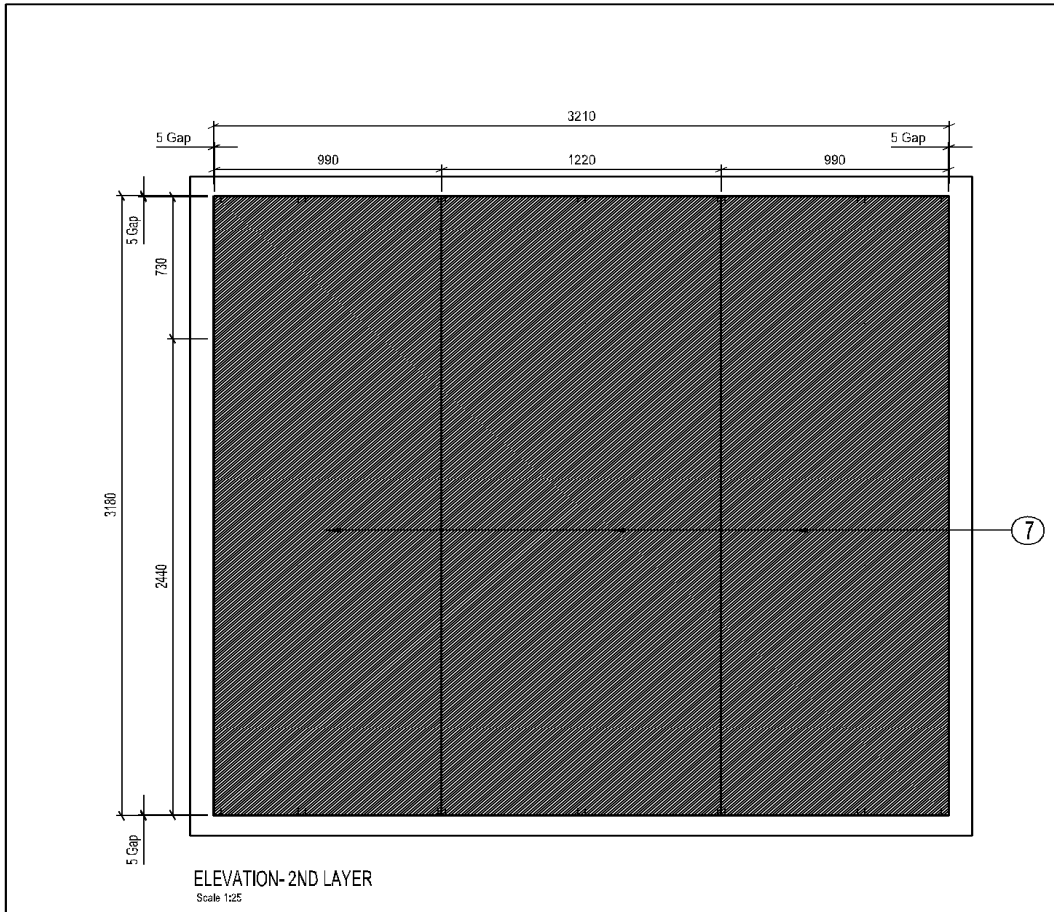
Appendix 1 : Technical Drawing



Appendix 2: Technical Drawing



Appendix 3 : Technical Drawing



1 GALVANISED TRACKS
76mm x 33mm x0.55mm thk- U channel
(TOP & BOTTOM& NOGGING)

2 GALVANISED STUDS
76mm x 32mm x0.5mm thk- C channel
(VERTICAL) @ 610MM C/C

3 ROCKWOOL SLAB
75mm thk @40kg/m3
1200mm x 600mm

4 WALL PLUG/ FASTENER
@ 610 mm c/c

5 'X' GYPSUM PLASTER BOARD
12.5mm thk @ 855 kg/m3
2440mm x 1220mm

6 6 Ø x 30mm Screws
@ 200 mm intervals (at board edges)

7 TECSOUND® SY 100
5.2mm thk @ 1900 kg/m3
to Gypsum Plaster Board

8 'X' GYPSUM PLASTER BOARD
12mm thk @ 850 kg/m3
2440mm x 1220mm

9 6 Ø x 45mm Screws
@ 300 mm intervals (at board intermediate)

10 6 Ø x 45mm Screws
@ 200 mm intervals (at board edges)

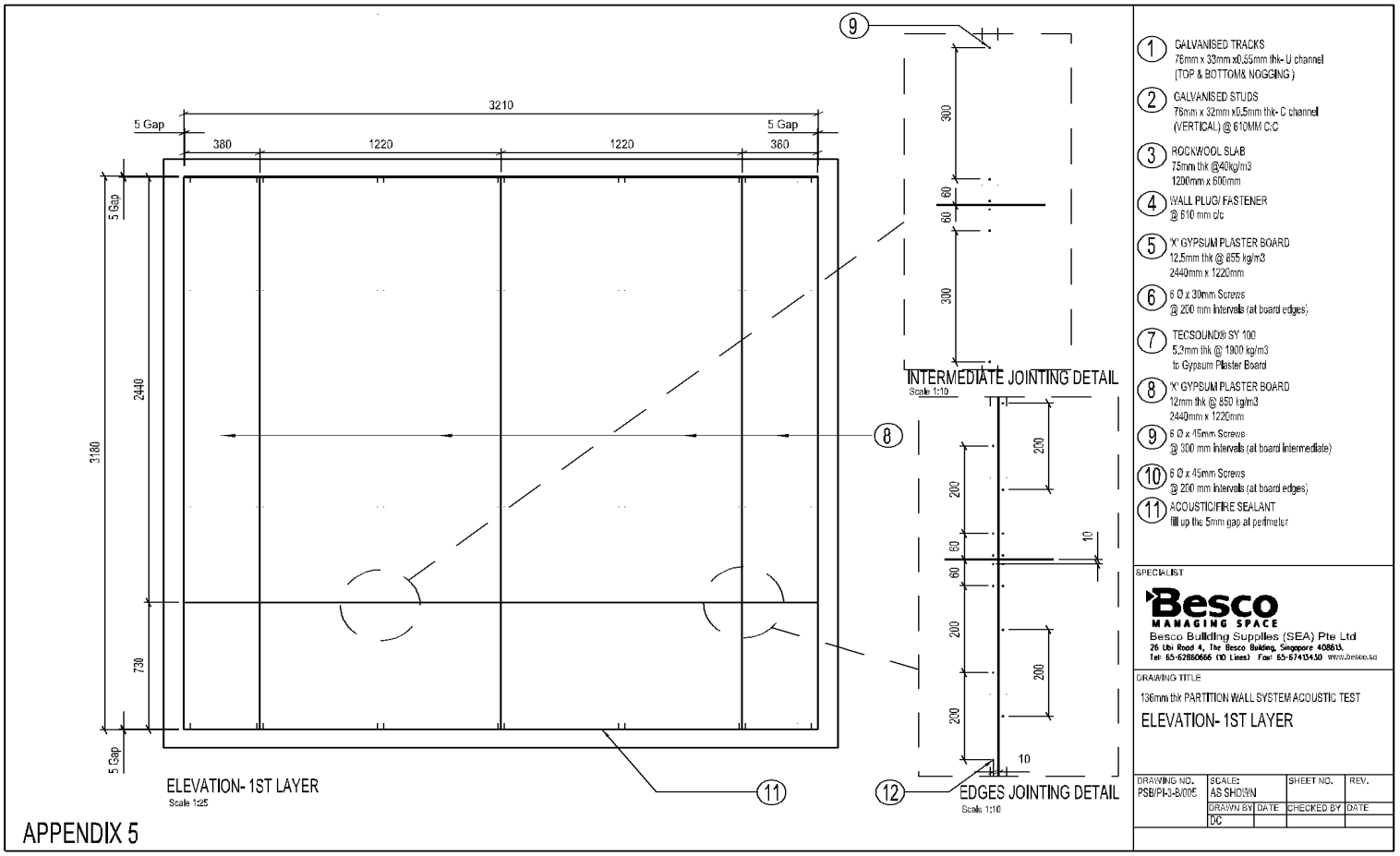
11 ACOUSTIC/FIRE SEALANT
fill up the 5mm gap at perimeter

SPECIALIST
Besco MANAGING SPACE
Besco Building Supplies (SEA) Pte Ltd
26 Ubi Road 4, The Besco Building, Singapore 408618.
Tel: 65-62860666 (10 Lines) Fax: 65-67413430 www.besco.sg

DRAWING TITLE
136mm thk PARTITION WALL SYSTEM ACOUSTIC TEST
ELEVATION- 2ND LAYER

DRAWING NO.	SCALE:		SHEET NO.	REV.
PSB/PI-3-B/004	AS SHOWN			
	DRAWN BY	DATE	CHECKED BY	DATE
	DC			

Appendix 4 : Technical Drawing



Appendix 5 : Technical Drawing

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March 2010