DAY DESIGN PTY LTD

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Protecta Group
24 Adderley Street
Lidcombe NSW 2141

Refer: R \ 4686-R1

Attention: Mr Charles Baker
Telephone: (02) 9334 2999

29 November, 2011

Dear Sir,

FIELD SOUND INSULATION MEASUREMENT

OF THE E-WALL HOARDING SYSTEM

We are pleased to advise that we have conducted a field *airborne* sound insulation test of the E-Wall Hoarding System in a commercial office complex at 113 Bonds Road, Riverwood, NSW.

The E-Wall Hoarding System is a temporary wall system made from 10 ply corrugated cardboard with a pre-finished outer surface and is primarily used to partition rooms and areas. The field tested E-Wall system was installed to create two rooms in an open office layout at 113 Bonds Road, Riverwood. The panels spanned from the floor to the underside of the tiled ceiling. Gaps between the panels were sealed with tracking which is part of the E-Wall system. Flanking paths exist through the ceiling tiles, lights and air-conditioning grills which penetrate the mineral fibre tile ceiling.

The E-Wall Hoarding System achieved a weighted standardised level difference with spectrum adaption term at ($D_{nT,w}$ + C_{tr}) of 24 (-1) which included flanking noise through the ceiling system.

1.0 NOISE SURVEY INSTRUMENTATION

Noise level measurements and analysis were made with instrumentation as follows in Table 1.1:

Table 1.1 Noise Instrumentation

Description	Model No.	Serial No.
Modular Precision Sound Analyser	B&K 2260	244 3406
Condenser Microphone 0.5” diameter	B&K 4189	244 0653
Acoustical Calibrator	B&K 4231	243 9033
Microphone Windscreen	Acoustically transparent foam	
Ebony Loud Speaker with inbuilt amplifier	EL 250 P	02 091 007

All instrument systems had been laboratory calibrated using instrumentation traceable to Australian National Standards and certified within the last two years thus conforming to Australian Standards. The measurement system was also field calibrated prior to and after noise surveys. Calibration drift was found to be less than 0.3 dB during attended measurements. No adjustments for instrument drift during the measurement period were warranted.

2.0 SOUND INSULATION DESCRIPTORS

The weighted sound reduction index (R_w) provides an acoustic rating of the sound insulation of walls and partitions due to airborne sound of the human voice. Sound insulation varies with frequency and is dependent on the type of wall construction, however, the R_w provides a convenient method of rating sound insulation using a single number. The higher the R_w rating the better the sound insulation provided by the partition.

The R_w descriptor is used when the measurements are performed in a laboratory while $D_{nT,w}$ descriptor is used when these measurements are carried out in-situ.

A correction factor C_{tr} was introduced in to the Building Code of Australia in May 2004 to better account for the sound insulation performance in the lower frequencies. The C_{tr} factor is added to the R_w rating to get an overall $R_w + C_{tr}$ airborne rating. For masonry walls, the C_{tr} factor is typically between –5 and –3 while for plasterboard walls the factor may often be as low as –12, depending on the construction type.

3.0 ACOUSTICAL SURVEY

The field *airborne* sound insulation test of the E-Wall Hoarding System was conducted at 113 Bonds Road, Riverwood. The E-Wall system was installed to create two rooms in an open office layout with the panels spanning from the floor to the underside of the tiled ceiling. Gaps between the panels were sealed with tracking which is part of the E-Wall system. Flanking paths exist through the ceiling tiles, lights and air-conditioning grills which penetrate the mineral fibre tiled ceiling.

3.1 Measurement of Airborne Sound Insulation

The measurement of airborne sound insulation of the wall was carried out in accordance with the Australian Standard AS2253 “Acoustics – Methods for field measurement of the reduction of airborne sound transmission in buildings” and the International Standard ISO140-4 “Acoustics – Measurement of sound insulation in buildings and of building elements – Part 4: Field measurements of airborne sound insulation between rooms”.

Pink noise was played through an amplifier and speaker in the source room. The sound power was sufficiently high for the sound pressure level in the receiving room to be at least 10 dB higher than the background noise level in any frequency band. The loudspeaker faced the corner of the source room away from the wall or floor being tested so as to give as diffuse a sound field as possible.

The average sound pressure level was obtained in both the source and receiving rooms by using a continuously moving microphone. The averaging time was 20 seconds, which covered a number of traverses. The sound pressure levels were measured using one-third octave band pass filters from 100 Hz to 3150 Hz.

The results from the site survey are shown below in Table 3.1 and on the attached Test Report 4686.

Table 3.1 Airborne Sound Insulation of E-Wall System

Specimen	Measured Airborne Sound Insulation
E-Wall Hoarding System	$D_{nT,w}(C;C_{tr})$ = **24 (-1;-1) dB**

Due to the flanking paths through the ceiling, we are of the opinion that higher airborne sound insulation would be achieved in a laboratory where flanking paths are eliminated.

Phillip Lu, BSc (Physics)

Acoustical Scientist
for and on behalf of Day Design Pty Ltd.

AAAC MEMBERSHIP

Day Design Pty Ltd is a member company of the Association of Australian Acoustical Consultants, and the work herein reported has been performed in accordance with the terms of membership.

The undersigned hereby certifies that this Report has been checked and approved in accordance with our Quality Management System.

Date: 29/11/11

Attachments:

- Test Report 4686

Standardized Level Difference according to ISO 140-4

Field measurements of airborne sound insulation between rooms

Client: Protecta Group

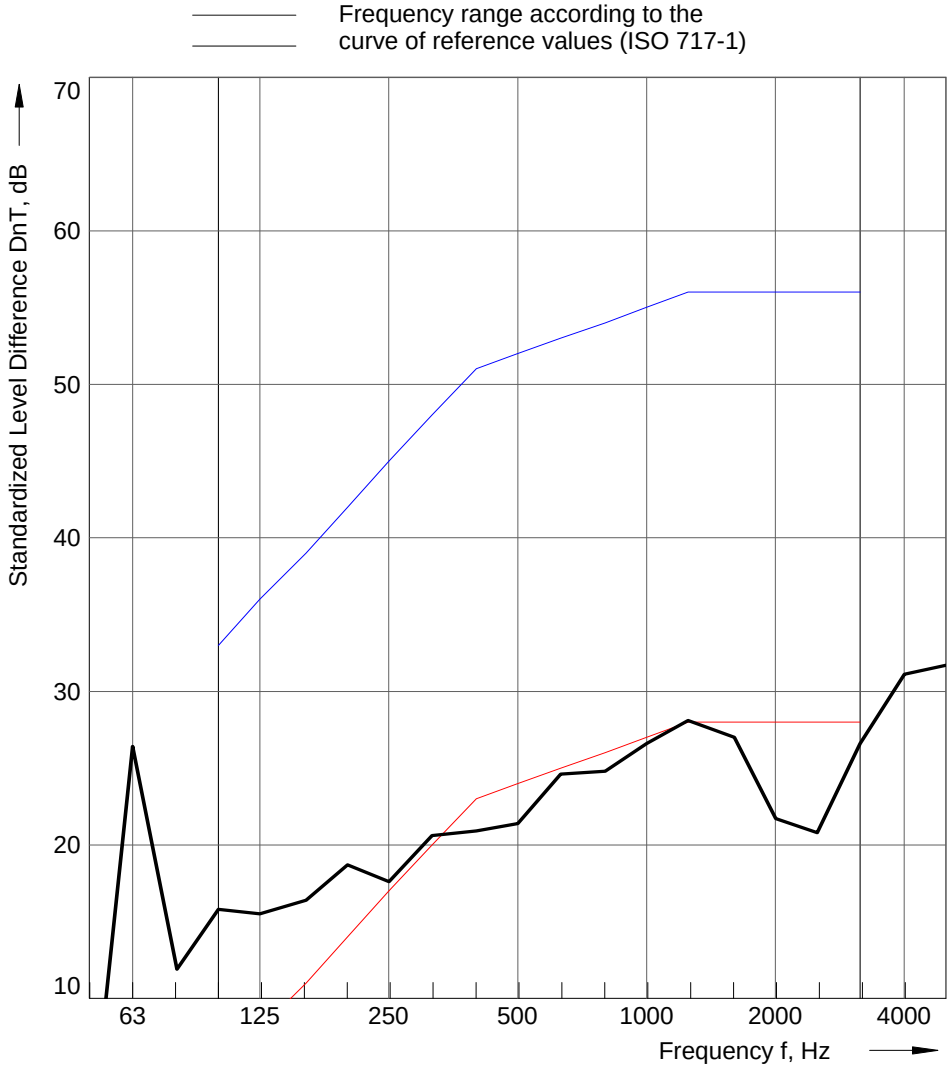
Date of test: 31/08/2011

Description and identification of the building construction and test arrangement, direction of measurement:

E-WALL Hoarding System
10 ply corrugated cardboard with pre finished outer surfaces

Source room volume: 200.00 m^3
Receiving room volume V: 95.00 m^3

Frequency f Hz	DnT 1/3 Octave dB
50	0.0
63	26.4
80	11.9
100	15.8
125	15.5
160	16.4
200	18.7
250	17.6
315	20.6
400	20.9
500	21.4
630	24.6
800	24.8
1000	26.6
1250	28.1
1600	27.0
2000	21.7
2500	20.8
3150	26.6
4000	31.1
5000	31.7



Rating according to ISO 717-1

$D_{nT,w}$ ($C;C_{tr}$) = 24 (-1; -1) dB

$C_{50\text{-}3150}$ = N/A dB; $C_{50\text{-}5000}$ = N/A dB; $C_{100\text{-}5000}$ = 0 dB;

Evaluation based on field measurement results obtained in one-third-octave bands by an engineering method

$C_{tr,50\text{-}3150}$ = N/A dB; $C_{tr,50\text{-}5000}$ = N/A dB; $C_{tr,100\text{-}5000}$ = -1 dB;

No. of test report: 4686

Name of test institute: Day Design Pty Ltd

Date: 01/09/2011

Signature: