Opinion on Acoustic Performance of

Rockcote Systems Utilising Integra Aerated Concrete

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Project: **Opinion on Integra Systems Performance**

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1.0 INTRODUCTION

Marshall Day Acoustics has been asked to provide an opinion on the Sound Transmission Class (STC) and Weighted Sound Reduction Index (Rw) ratings that would be achieved by three wall systems and one floor system constructed using Integra aerated concrete panels.

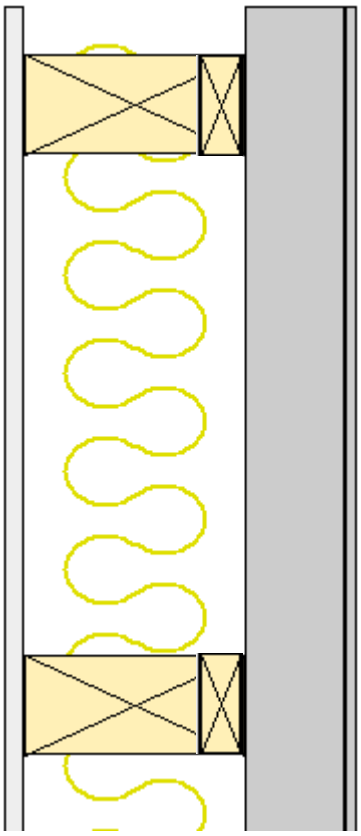
An estimate of the Impact Isolation Class (IIC) and weighted normalised impact sound pressure level ($L_{n,w}$) of the floor system has also been requested

Our opinion is based on theoretical models for the sound transmission properties of double panel walls and of floor/ceiling systems.

2.0 CONSTRUCTION

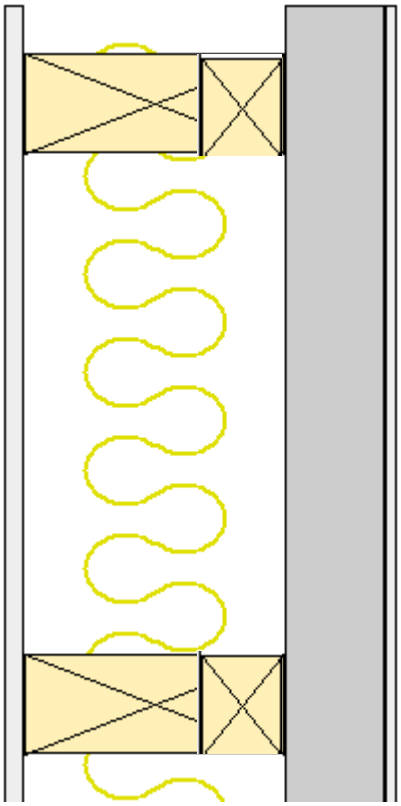
The partitions for which the opinions are provided are constructed as follows:

2.1 Wall System A



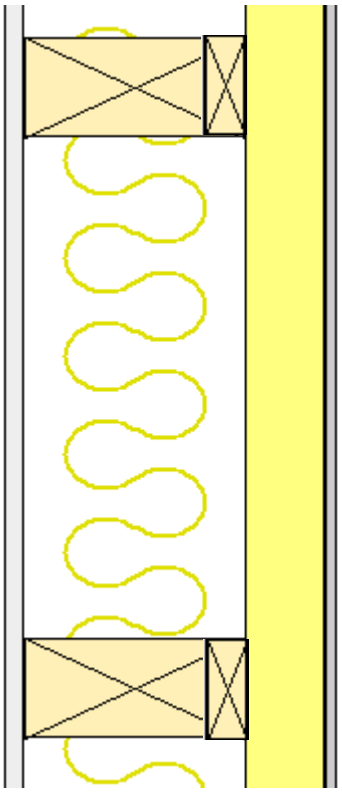
- Standard density Gib plasterboard 10 mm thick on one side of the partition; fixed to
- A row of 90x45mm timber studs at 600mm centres on 90x45mm timber top and bottom plates; with
- Styrene battens 20 mm thick; fixed to
- Integra aerated concrete panel 50 mm thick overlaid with 5 to 7 mm thick Rockcote plaster; with
- A layer of R2.2 fibreglass batts (or approved equivalent) in the wall cavity.

2.2 Wall System B



- Standard density Gib plasterboard 10 mm thick on one side of the partition; fixed to
- A row of 90x45mm timber studs at 600mm centres on 90x45mm timber top and bottom plates; with
- Timber battens 40 mm thick; fixed to
- Integra aerated concrete panel 50 mm thick overlaid with 5 to 7 mm thick Rockcote plaster; with
- A layer of R2.2 fibreglass batts (or approved equivalent) in the wall cavity.

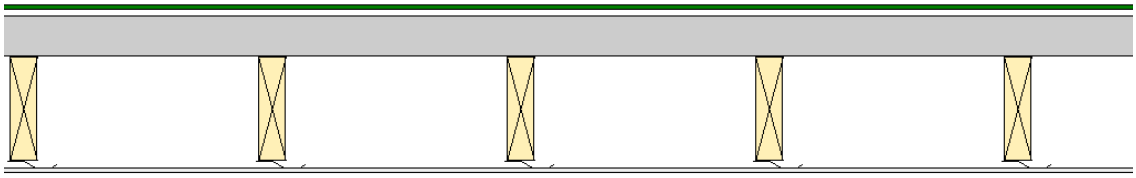
2.3 Wall System C



- Standard density Gib plasterboard 10 mm thick on one side of the partition; fixed to
- A row of 90x45mm timber studs at 600mm centres on 90x45mm timber top and bottom plates; with
- Styrene battens 20 mm thick; fixed to
- Styrene panel 40 mm thick overlaid with 5 to 7 mm thick Rockcote plaster; with
- A layer of R2.2 fibreglass batts (or approved equivalent) in the wall cavity.

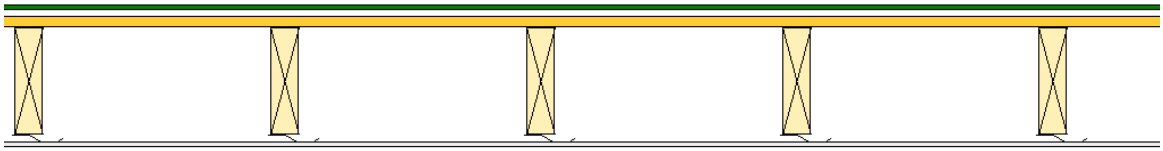
2.4 Floor System A

- Medium weight carpet on rebond pad laid over;
- Integra aerated concrete floor panel 75 mm thick; fixed to
- 200 mm deep floor joists at 450mm centres; with
- Resilient rail and channel; fixed to
- Standard density Gib plasterboard 10 mm thick forming the ceiling.



2.5 Reference Floor System

- Medium weight carpet on rebond pad laid over;
- Flooring grade particle board 20 mm thick; fixed to
- 200 mm deep floor joists at 450mm centres; with
- Resilient rail and channel; fixed to
- Standard density Gib plasterboard 10 mm thick forming the ceiling.



3.0 DISCUSSION

Although Rockcote Resene have not, to our knowledge, commissioned laboratory testing of the specific systems described above Marshall Day Acoustics has considerable expertise in the modeling of the performance of construction systems based on theoretical models. These models have been validated against a wide range of construction types, tested in laboratories over an extended period of time.

The sound transmission loss of a double panel wall is determined by the surface mass of the linings on each side, the stiffness and hence critical frequency of the linings, the air gap between linings, and the type of acoustic absorption within the cavity. In this case theoretical models have been used to predict the effect of the junction details that would be used in wall and floor systems described.

Details of these models are available from Marshall Day Acoustics on request.

4.0 OPINION

The estimated laboratory performance of the wall systems described in Sections 2.1, 2.2 and 2.3 are given in Table 1.

Table 1: Estimated Sound Transmission Loss

Description	STC	$R_{w\,(C,\,Ctr)}$ (dB)
Wall System A	55	$55_{(-3,\,-10)}$
Wall System B	49	$49_{(-2,\,-5)}$
Wall System C	49	$48_{(-3,\,-10)}$

The estimated laboratory performances of the floor system described in Section 2.4 and the reference floor system described in Section 2.5 are given in Table 2. Please note that for IIC values *higher* numbers are better. For $L_{n,w}$ *lower* numbers are better.

Table 2: Estimated Impact Isolation Performance

Description	IIC	$L_{n,\,w}$ (dB)
Floor System A	55	55
Standard Floor System	58	52

5.0 LIMITATIONS

The above opinions are an estimate of the laboratory performance not the field performance. In field installations, flanking may determine the sound reduction between spaces rather than the partition. The estimates are based on the materials as currently manufactured and the construction details set out above. Readers are advised to check that this opinion has not been revised by a later issue. The estimates are expected to be in error by less than ± 2 STC/dB or IIC/dB as applicable.