

Technical Note

Project Name: Plot H3 Accor Tribe Hotel - Acoustics Author: Mercedes Astrain
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Sound Insulation between Guestrooms and FOH - acoustic derogation against Brand Standards

1 Introduction

As stated in the Stage 4 Acoustic report the absence of a suspended ceiling in the reception, bar and restaurant areas, will make not possible to achieve the Brand Standards Requirements in relation to the Sound Insulation between these spaces.

It is understood that as per design intent the services will be exposed in the FOH area and therefore a suspended plasterboard ceiling has been discarded.

This option was also reported in Section 4.5.2 of Stage 4 Acoustic report.

The aim of this technical note is to clarify the project requirements and to review the anticipated ability of the current Floor construction proposals to achieve these requirements.

2 Project Acoustic Requirements

Airborne Sound Insulation Performance Requirements for the separating floors between guestrooms and FOH areas, the project contract requirements are as below:

Table 1: Guestroom – Guestroom Floor Acoustic Requirements		
Tribe Brand Standards	BREEAM Credits (+5 uplift)	Building Regulations ADE
Airborne standard $D_{nT,w} + C$ dB	Airborne standard $D_{nT,w} + C_{tr}$ dB	Airborne standard $D_{nT,w} + C_{tr}$ dB
≥ 56 dB $D_{nT,w} + C$	≥ 50 dB $D_{nT,w} + C_{tr}$	≥ 45 dB $D_{nT,w} + C_{tr}$

It should be noted that the acoustic requirements for the project as detailed in Table 1 have been based on three different guidance documents, which each refer to different acoustic parameters/descriptors, thus making the specification somewhat complex.

This complexity arises because the acoustic requirements are derived from a mixture of relevant UK standards and the Client's Brand Standards, which do not utilise the same spectrum adaptation terms when considering airborne sound insulation.

As an example, please note that for the UK standards a road traffic spectrum adaptation term is included in the specification (+ C_{tr}), whereas the Brand Standards include a pink noise spectrum adaptation term (+ C).

3 Separating Floor Design Proposals

We understand that the proposed separating floor construction is based on the following system:

- Floor Finish
- Screed
- 6mm acoustic layer
- 250mm in-situ concrete slab (assuming a concrete density of 2340 kg/m³)

The above construction is predicted to be capable of achieving 50 dB $D_{nT,w} + C_{tr}$ in situ, assuming all potential flanking paths are appropriately detailed and a high level of workmanship is employed during construction.

The construction above (assuming a concrete density of 2340 kg/m³) is expected to achieve a sound reduction of 55 dB $R_w + C_{tr}$. Assuming all potential flanking paths are properly detailed and a high level of workmanship is employed during construction, the above would be expected to achieve a level of airborne sound insulation in the order of 50 dB $D_{nT,w} + C_{tr}$. This would be compliant with ADE and BREEAM requirements, assuming all the above.

In relation to Tribe Standards, the requirement of 56 dB $D_{nT,w} + C$ is not expected to be achieved, in the absence of a suspended ceiling in the FOH area. The above construction is expected to achieve a level of airborne sound insulation in the order of 53 dB $D_{nT,w} + C$ which is not compliant with the Tribe Standards.

In order to achieve the Tribe Standards a suspended ceiling would be required; however, this is understood not to be in line with the Interior Design intent. Therefore, a derogation against the Brand Standards is required.

Please notice that the above is an estimation, and not a performance guarantee, and that changes in the density of the concrete in-situ slab, and not appropriate flanking path detailing may influence in the final in-situ performance.