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Achieving Optimal Acoustic Solutions

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1. Explain the difference between R_w and $D_{nT,w}$ ratings in acoustic testing.

R_w (Weighted Sound Reduction Index) is a laboratory-tested rating that measures a product's ability to reduce airborne sound under ideal conditions. $D_{nT,w}$ (Weighted Standardised Level Difference) is a site-measured rating that reflects how the product performs in real-world installations.

2. Describe three key factors that contribute to the loss of acoustic performance between laboratory-tested ratings and on-site (field) performance of operable wall systems.

Flanking paths: Sound can bypass the operable wall via ceilings, floors, ductwork or adjacent structures.

Installation quality: Poor workmanship, misaligned panels or gaps in seals reduce effectiveness.

Site conditions: Environmental factors such as slab undulation, ceiling penetrations and access flooring can introduce unintended sound paths not present in lab conditions.

3. List and explain three common documentation or specification pitfalls architects should avoid when detailing acoustic operable walls or sliders in project drawings or schedules.

Omitting required acoustic ratings: Failing to specify R_w or $D_{nT,w}$ targets may lead to unsuitable product selection.

Lack of integration with adjacent systems: Not coordinating the acoustic wall with ceilings, floors or services can create flanking issues.

Referencing outdated or incorrect test standards: Using non-compliant or international standards (e.g., STC instead of R_w) can cause confusion or non-compliance with local codes and standards.

4. What role does overhead structural support play in the performance and safety of acoustic operable walls?

Operable walls are top-hung systems, so adequate overhead support is essential to carry the wall's load. Insufficient structural design can lead to misalignment, acoustic failure or safety hazards. Beams or slabs must meet load and deflection requirements.

5. Which Australian standards or codes are relevant when specifying acoustic operable walls and why must they be referenced in documentation?

Relevant standards include AS/NZS 2107 (recommended internal sound levels), AS 1191 (acoustic testing methods), and the NCC for sound insulation. Referencing these ensures compliance, guides performance expectations and supports product certification and approvals.

6. What are the risks of using generic or vague terminology like "high acoustic performance" when specifying operable wall systems?

Vague terms can lead to incorrect product selection or substitution with non-compliant systems. Precise specifications using measurable ratings ensure accountability and acoustic performance is delivered as designed.