

Case Study – Maria Fidelis Rooftop Screen



Project Overview:

Bespoke Acoustic Solutions Ltd (BAS) was appointed to design, supply, and install a free-standing screening louvre system with partial acoustic panel features on the roof of a modular prefabricated building as part of the HS2 rail project. The site, located adjacent to Euston station in London, required localized screening and acoustic treatment for AHUs and air conditioning plant at roof level, while also withstanding local wind loads and adhering to specific structural requirements.



Bespoke Acoustic Solutions Limited

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Registered in England No. 10866964.



Client Collaboration and Requirements:

BAS collaborated closely with the client and a third-party structural engineer to ensure the design met all requirements. The project called for a freestanding support framework integrated into the building's structural design, capable of withstanding local wind loads and ensuring foot pressures did not exceed 25kN/m². Additionally, the acoustic panel was required to provide a mass of 12kg per m² and Class 1 absorption properties.



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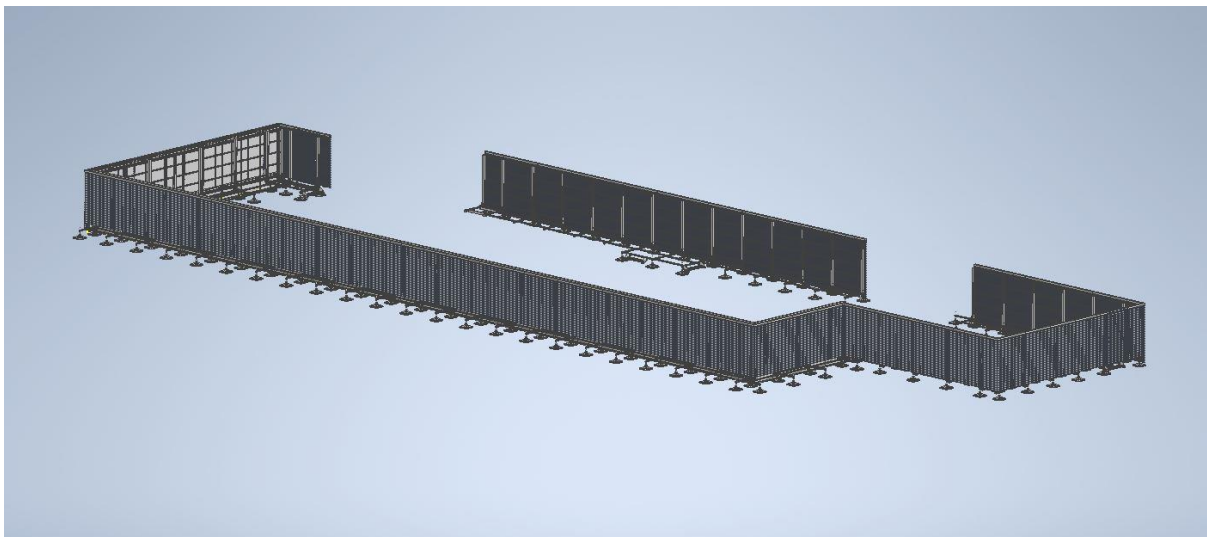
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Design and Engineering Solutions:

In collaboration with Bigfoot Support Systems, BAS developed a non-penetrative freestanding system to support the screening louvre. This innovative approach eliminated the need for traditional structural steelwork, which could potentially compromise the roof's integrity. The system was meticulously designed to ensure compatibility with the architect's vision while effectively concealing the VRF systems.

1. **Engagement and Collaboration:** BAS engaged with the client and structural engineer to ensure design loads were catered for, while also maintaining access and fire exit strategies.
2. **3D CAD Models:** BAS produced detailed 3D CAD models of the plant screen for inclusion in the project's Building Information Modelling (BIM) model, ensuring seamless integration with the overall design.
3. **DWG Files:** Detailed DWG files were provided for client and design team review, facilitating collaboration and feedback.
4. **Framework Design Calculations:** BAS conducted rigorous calculations to ensure the framework design could withstand wind loading, providing structural integrity and stability.
5. **Foot Pressure Calculations:** Foot pressure calculations were performed to ensure the roof structure could handle the loads imparted by the framework, including self-weight and variable loads.



Manufacturing and Installation:

Once the design iterations were finalized and approved, BAS proceeded with the manufacturing and installation of the screening louvre system. The framework was constructed to exact specifications, with acoustic panels integrated to provide the necessary screening and absorption properties. Installation was completed efficiently and safely, ensuring minimal disruption to the project timeline.



Operational Success and Client Satisfaction:

The completed screening louvre system provided effective localized screening and acoustic treatment for the AHUs and air conditioning plant at roof level. BAS's meticulous design and engineering ensured structural integrity, compliance with wind loading requirements, and adherence to acoustic performance standards. The client expressed satisfaction with the final result, appreciating BAS's responsiveness to changing requirements and commitment to delivering a high-quality solution.

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**Conclusion:**

The HS2 rail project at Euston station exemplifies Bespoke Acoustic Solutions Ltd's expertise in providing tailored acoustic solutions for complex environments. Through collaboration, innovative design, and rigorous engineering, BAS successfully delivered a free-standing screening louvre system that met the project's specific requirements while ensuring structural integrity and acoustic performance. As a trusted partner in noise control solutions, BAS remains dedicated to exceeding client expectations and delivering solutions that enhance the built environment.

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