

SOUND SOLUTIONS: HOW HOLLOWCORE CONCRETE WALLS ARE REVOLUTIONISING URBAN NOISE CONTROL

In the expanding suburbs, where urban life intersects with tranquil residential areas, the challenge of managing noise pollution has led to an innovative solution: hollowcore precast concrete noise walls. This technology, highlighted by projects like the Metronet Thornlie-Cockburn Link in Western Australia, represents a significant advancement in sustainable and durable infrastructure.

Atlas Precast, a National Precast Master Precaster, is at the forefront, utilising terracotta-coloured hollowcore noise walls that reflect a trend towards environmentally responsible construction.

The hollowcore planks' design minimises the amount of material needed without compromising structural integrity. This reduction in material usage not only lowers the embodied energy of the product but also decreases the environmental impact associated with cement production and steel manufacturing.

Cement production is a significant source of CO2 emissions, so a 20% reduction is substantial. Similarly, the 80% reduction in steel weight contributes to lower emissions, given the energy-intensive process of steel production.

National Precast CEO Sarah Bachmann emphasises, "This substantial decrease in environmental impact demonstrates the potential of advanced construction materials to contribute to a more sustainable future."

Beyond their green credentials, hollowcore precast concrete walls are engineered for durability and longevity. They are designed to withstand harsh elements while providing effective noise mitigation.

In the Metronet project, these attributes are crucial, as the installation spans almost nine kilometres of rail corridor with wall heights varying between 2.4 to 5.5 metres based on proximity to residential areas, existing barriers, topography, and anticipated noise levels. The hollowcore walls ensure these variables are addressed with a tailored, effective solution, maintaining aesthetic appeal through their distinctive terracotta hue.

Community engagement was a cornerstone of the project's planning phase. Residents' concerns about noise and the visual impact of the new infrastructure were met with responsive design and thoughtful implementation.

"The use of terracotta-coloured walls shows a commitment to not only functionality but also aesthetic integration into the local environment," notes Bachmann.

This careful consideration likely played a significant role in minimising project impacts and maximising satisfaction among property owners and tenants affected by the construction.

The installation of these noise walls is performed in phases, which allows for a smooth integration into the community and minimises disruptions to daily activities. This step-by-step method also permits modifications based on continuous feedback and environmental monitoring, ensuring that the project's implementation stays true to its objectives.

Compared to other materials commonly used for noise barriers, such as steel or timber, hollowcore precast concrete provides superior noise reduction due to its high mass and



density, effectively shielding communities from traffic noise. Its resistance to environmental degradation and low maintenance needs further enhance its appeal as a durable, cost-effective noise barrier solution compared to steel and timber.

The Metronet Thornlie-Cockburn Link project showcases how the use of innovative construction materials such as hollowcore precast concrete can turn essential public utilities into sustainable, community-oriented solutions. As urban areas grow and look for methods to reduce environmental impacts, advanced materials like hollowcore precast concrete are poised to play a larger role in city infrastructure, heralding a new phase of sustainable development in public projects.

