

Headquarters of the AGBU Yerevan

The Armenian General Benevolent Union's officers and project managers are eagerly awaiting the forthcoming opening of AGBU's new office complex, set for spring 2014. With the construction of its own six-storey office building on Melik-Adamian Street in Yerevan, the country's administrative centre, the charity now has fully-equipped office spaces at its disposal as well as up-to-date facilities for conferences and exhibitions. In particular, the new AGBU headquarters in Armenia will serve as a hub for cultural events, and provide urgently needed resources for the nation's existing educational and cultural activities, as well as youth and humanitarian programmes.

Nevertheless planning work presented some ambitious tasks to the team working with architect Aris Atamian (FERNIER & Associés, Paris). The Armenian General Benvolent Union's new plot is located above two heavily used subway lines. Significant vibrations were observed at the construction site, confirmed by the expert vibration report specially prepared by the engineering firm CdB(A)coustique, Paris.

Vibrations spread through the structure of a building as perceptible movement or in the form of disruptive secondary airborne sound heard by occupants, and can have various causes. Above- or below-ground railway tracks are typical sources of structure-borne sounds and vibrations.

High land prices in built-up areas can make cheaper plots near or above railway tracks attractive, provided that the buildings to be constructed are adequately isolated from the building ground. The current price trends for exposed plots in metropolitan areas and centres of industry more than compensate for the cost of additional vibration control measures. Vibration control measures for the protection of building structures, as well as health protection, are therefore becoming increasingly interesting to investors and urban planners.

In general, there are two different options for protecting buildings and people from vibrations. Isolation measures can be taken either at the point of emission (at the source) or at the point of immission (at the recipient). From a technical point of view, both options are equally effective in vibration reduction. However, in the case of isolation at the point of immission, only a few objects can be separately isolated.



For this demanding project, the team working with the architect Aris Atamian and CdB(A)coustique sought out manufacturers offering technically secure, but also simple and cost-effective plans that could be quickly put in place. The six-storey office building was planned with two underground parking levels, covering an area of 1380 m². In this case, the full-surface decoupling of the entire base plate emerged as a low-cost and technically appropriate solution. No design measures for transferring building loads to discrete bearing points or strips were required.

With a full-surface isolation, the entire base plate is separated elastically from the building ground. Elastomers are applied either onto a thick foundation course or onto a specially dimensioned supporting plate. Full-surface application allows isolation measures to be carried out quickly. The risk of acoustic bridges is very low.

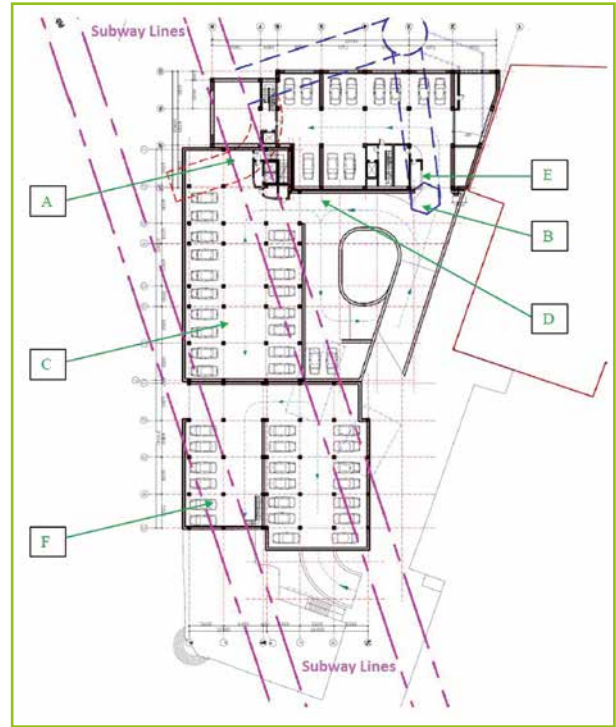
Within a short space of time, the manufacturer BSW GmbH developed two different plans for vibration prevention and, in collaboration with the investor and CdB(A)coustique, these were converted into economically viable and technically adapted measures. The implementation of vibration-reducing measures involved just two different types of damping material made from the material **Regupol®**. This consists of NBR/SBR rubber fibres and granules, and is elasticised with high performance polyurethane.

With the materials **Regupol®** and **Regufoam®** (micro-cell Polyurethane Elastomers), BSW offers 20 different varieties of material in total, which, due to their different load ranges, can be used even for non-uniform loads within building structures. Numerous building foundations have been successfully isolated against vibration using **Regupol®** and **Regufoam®**. Remeasurements in completed projects have shown that better results were achieved than the minimum values determined in the forecast. The vibration protection achieved with **Regupol®** and **Regufoam®** remains at a constantly high level for the long term. It has been possible to document this through control measurements after ten years of use.



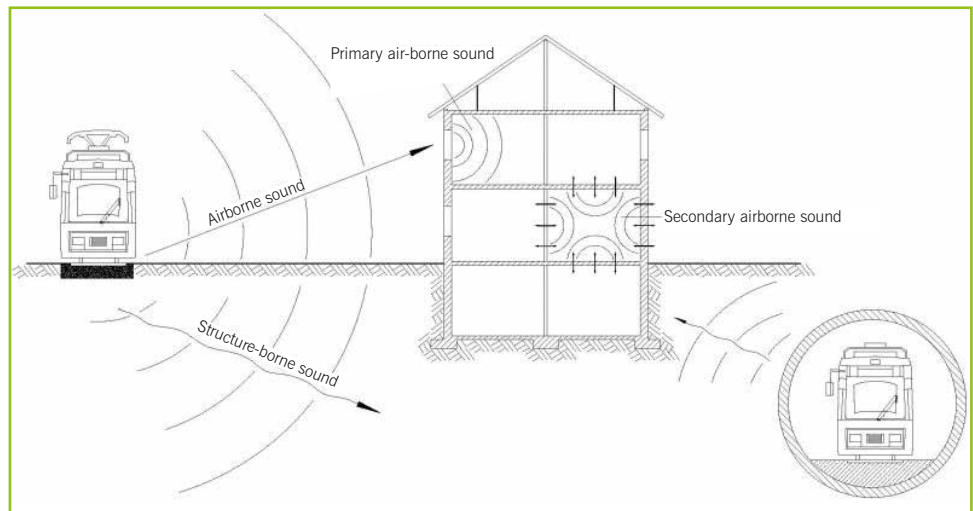
Informationen at a glance

Development commissioned by: Armenian General Benevolent Union (AGBU)
 Property: Headquarters of the Armenian General Benevolent Union
 Architects: Aris Atamian, FERNIER & Associés, Paris
 Vibration isolation: CdB(A)coustique, Paris
 Supplier of materials for elastic isolation: BSW GmbH
 Action: Full-surface resilient bedding of buildings
 Product group: **Regupol®**
 Bearing frequency: 11-14 Hz



Two underground railway lines lie directly beneath the foundations. Without vibration isolation, damage caused by structure-borne sound would have been unavoidable.

Secondary airborne sound may come about due to the transmission of vibrations or structure-borne sound through the soil or building structure.



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