# Motel One, Berlin, Germany

The new construction of a hotel complex (Motel One) was planned on the property between Kantstrasse and Hardenbergstrasse in Berlin-Charlottenburg (right by the 'Bahnhof Zoo' railway station). The Berlin trams and underground trains as well as regional and long-distance trains run next to the construction site on the city railway viaduct. The smallest distance between the edge of the property and the viaduct is seven metres. For this reason it was to be expected that the vibrations caused by the railway traffic above the building ground would be transferred to the foundation, load-bearing walls and floor slabs of the building. The engineering company hired by the building owner first performed measurements and forecast calculations for vibration and secondary air-borne sound immission by the tram, intercity railway and underground traffic.

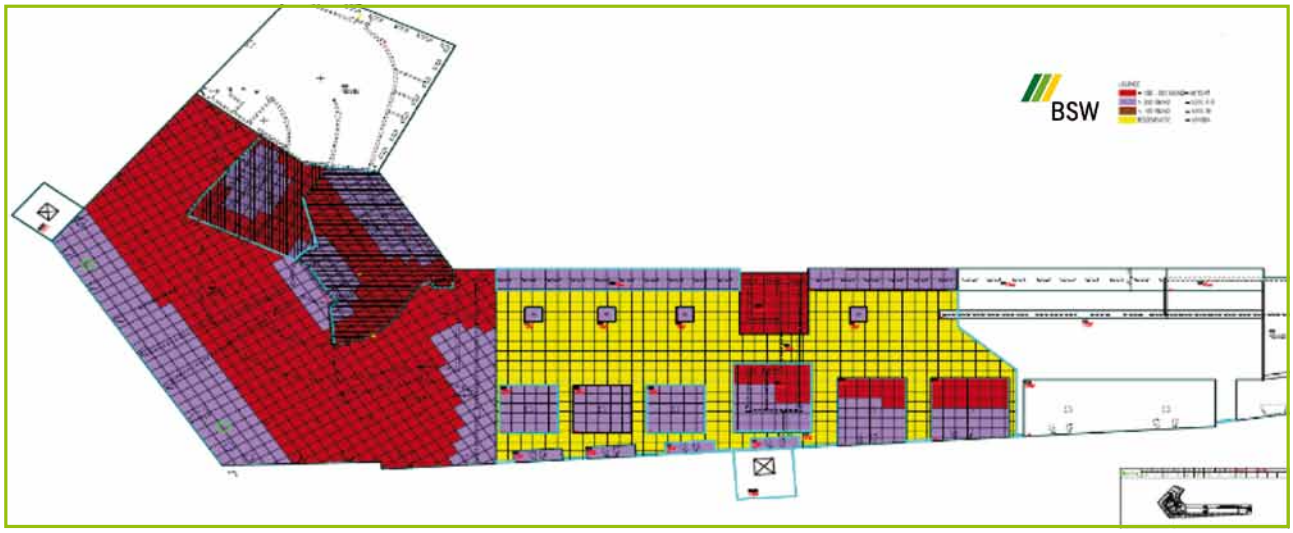
The result of this analysis was that elastic bedding would be necessary in the area of the building foundation. The excitation spectrum revealed that vibration-damping mats were going to be needed with dimensions that would achieve an effective isolation of 10 dB from approx. 40 Hz. In-house calculations indicated that the required minimum value of 10 dB would be achieved with the specific loads and material thicknesses of 34–45 mm, which the structural engineer had stipulated. The load ranges of the built-in elastic supports were between 0.025 and 0.4 N/mm$^2$. A total of 6,500 m$^2$ of the materials **Regupol**® BA, **Regupol**® HT and **Regupol**® XHT were installed with thicknesses of 10, 15 and 17 mm.

An installation plan was established according to specifications provided by BSW. After it was approved, BSW's own installation team went to work. Since there were three different depth levels (level 0, level –2.25 and level –4.10 m) it was absolutely mandatory to waterproof the pertinent insulation materials (**Regupol**® BA, **Regupol**® HT and **Regupol**® XHT) in the two lower levels on account of the high groundwater level. This was done by 'welding' pre-cut insulation slabs into a waterproof sealing sheet. In addition to the installation, which was supervised by an engineering firm that had been hired, material samples were taken from various production batches and it was checked if they met the stipulated material parameters.

Regupol
(Australia) Pty. Ltd.

# Reference

Vibration measurements in the completed building shell were performed by GuD Geotechnik Dynamik Consult GmbH, Berlin. The air-borne sound levels calculated from these measurements were compared to the forecast figures which GuD had provided in its expert opinion before the construction work was begun. It turned out that the resilient bedding of the building with **Regupol®** had resulted in the expected significant vibration reductions. In the non-vibration-isolated building, median maximum levels of 42–51 dB(A) would have occurred. The maximum levels of the isolated building which were calculated on the basis of the vibration measurements were approx. 28 dB(A). This clearly surpassed the isolation effect of 10 dB which was required according to the expert opinion submitted prior to the start of construction.




Additional references are listed on our website.

**www.regupol-vibration-technology.com.au**

Contact: Regupol (Australia) Pty. Ltd., Phone: (02) 9820 1233 • vibration@regupol.com.au • www.regupol-vibration-technology.com.au

Regupol
(Australia) Pty. Ltd.

Online Version December 2011