

Case Study

The Rushmore Building, NYC (US)

» Mounting of a two tower high-rise complex above a train tunnel

» Decoupling individual floors from vibrations

» Compliance with the required ceiling height with smaller distance between floors



Vibration Isolation of Buildings

Project description

The Rushmore Building in Manhattan

Situated on the Upper West Side of Manhattan in New York City, the Rushmore building is a 41-story luxury condo complex. Developed by Real Estate Developer Extell, The Rushmore is part of New York City's largest construction project in the last 50 years. The overall project consists of 18 high-rise buildings & 7.9 million square meters of floor space. The exact location of the Rushmore presented a challenge as the two-towered high-rise was to be constructed direct-

ly over an AMTRAK railway tunnel. The tunnel consists of two railway lines carrying 25-ton axle loads & a planned future metro line. Due to the close proximity to the rail line there was great concern for rail-generated vibrations. It was these concerns that had limited construction in this area until recently. Together with our North American partner Soundown Corporation, we were able to develop & successfully coordinate the project.

Implementation phase:
July 2007 to spring 2008

Getzner solution

Successful use of polyurethane mats for highly efficient vibration isolation

Getzner Werkstoffe developed a completely new method for the elastic mounting of skyscrapers: the individual floors of the 41-story building are elastically mounted. Two stories are completely decoupled in terms of vibrations, like drawers that can be removed: the ground floor and mezzanine level are mounted on 9 cm polyurethane Sylomer® blocks. Neither of the two floors are connected with the building in fixed manner. Sylomer® mats were also used on the





sides of the load bearing columns to protect against the influence of wind. Together with the architects and structural engineers, Getzner prepared detailed load distribution plans, in which the loads on each of 350 bearing points was precisely determined. The ground floor was constructed using support beams and in the first floor, the isolation is recessed in the ceiling. The new construction method with T-beams helps minimize the build-up height.

Getzner Werkstoffe: developer, manufacturer and installation consultant

Getzner Werkstoffe is more than just a developer and manufacturer of materials for vibration mitigation and isolation. The company is also an experienced consultant in construction engineering issues related to vibration and isolation. Getzner's experts are deeply involved in system development and realization of projects right from the very beginning. Cooperation begins with definition of the overall design conditions and often ends with the development of new, ground-breaking solutions. Thanks to Getzner's technical expertise in the field of vibration isolation, the end result is a smart system using elastic materials, which ensure a high levels of costeffectiveness, noise protection and comfort.



Detail of the pointwise support of the Mezzanine floor. Bearing dimension customized according to given performance criterias as well as specific loading.

Feedback

What did the general contractor have to say about the project?

"Our project team was very impressed with the cooperation with Getzner and Soundown during the course of the planning and coordination. Both firms were extremely flexible and pro-active in getting all participants involved in the project and coordinating the work together.

Thanks to this approach, it was possible to devise an isolation system for the building which is successfully integrated into the structure itself. Installation on-site went very smoothly and quickly, without interruptions. If vibration isolation is what you need, I would not hesitate to recommend Getzner, Soundown and Sylomer® products."

David Ridoutt,
Project Manager
New York, USA



Facts and figures at a glance

The Rushmore Building

One of New York's largest construction project in the last 50 years (18 skyscrapers comprising 7.9 million square metres).

Key data:	130 metres high, 41 storeys, two towers
Location:	Riverside (close to Times Square), Manhattan, New York
Vibration insulation:	Getzner Werkstoffe GmbH
Investor:	Extell Development (since 2005)

Getzner Werkstoffe GmbH

Foundation:	1969 (as a subsidiary of Getzner, Mutter & Cie)
Chief Executive Officer:	Ing. Jürgen Rainalter
Employees:	420
2017 turnover:	EUR 95.2 million
Business areas:	Railway, construction, industry
Headquarter:	Bürs (AT)
Locations:	Berlin (DE), Munich (DE), Stuttgart (DE), Lyon (FR), Amman (JO), Tokyo (JP), Pune (IN), Beijing (CN), Kunshan (CN), Charlotte (US)
Ratio of exports:	94 %

References

- The Touraine - luxury residential complex, New York (US)
- "Four Suns" luxury residential complex, Moscow (RU)
- Beisheim Center Ritz-Carlton, Berlin (DE)
- Drachen-Center, Basel (CH)
- Teatro Nacional de Catalunya, Barcelona (ES)
- BMW World, Munich (DE)
- Welfenhöfe, Munich (DE)
- Lufthansa Head Offices, Frankfurt (DE)
- Clichy Batignolles, Paris (FR)
- Central & Park Panorama Towers, Arnulfpark, Munich (DE)
- Music Centre, Helsinki (FI)
- John Jay College, New York (US)