OTIS ELEVATOR ISOLATION SOLUTION
The Metropolitan Boston

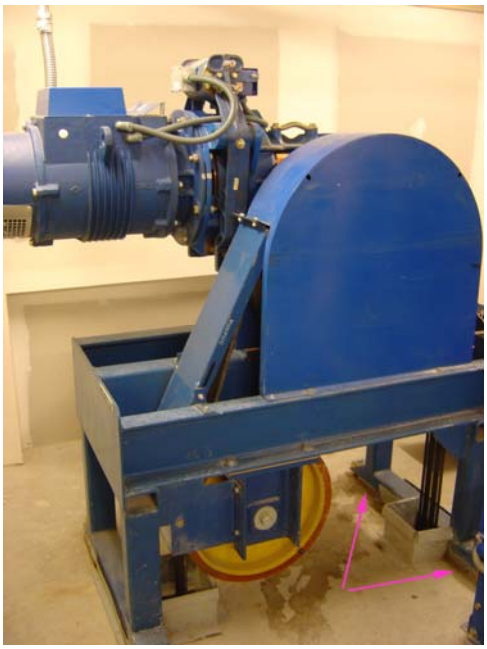
Background:
Two (2) Otis elevators were installed at “The Metropolitan” apartment building in Boston. However, two apartments adjacent to the elevator machine room experienced vibrations (both structure borne and acoustical) as a result of the elevators’ operation.

Due to the vibration problems, The Metropolitan hired a consultant to make vibration and acoustic measurements in the building. The consultant concluded that the disturbances were transmitted structurally, and that the primary concern was an 11 Hz frequency response on the floor in the apartments. Deflection measurements of the floor slab also determined that its natural frequency was approximately 11 Hz. It was therefore concluded that the equipment in the elevator machine room was vibrating the floor, transmitting structural vibrations to the apartments at this frequency.

The existing isolation system included four (4) “neoprene” blocks, one at each support point under the elevator hoist/motor equipment. The neoprene blocks were too stiff and were not providing enough vibration reduction to limit the apartment floor response.

Recommendation:
Due to the floor response at 11 Hz, an isolation material with a natural frequency (stiffness) of 8 Hz or lower was required to provide a reduction in structural vibration/ floor response. Fabreeka replaced the existing, stiff isolators with FAB-EPM isolation material, which has a natural frequency of 7 Hz.

New FAB-EPM isolation material under elevator equipment.



Secondary Isolation:
In addition to isolating the primary vibration transmission path, the use of isolation washers and bushings are recommended. This ensures protection against secondary paths of energy transfer.

Results:
After installing Fabreeka's EPM material, vibration measurements were made to determine actual vibration reduction. There was an 82 to 90% reduction of transmitted vibration with the new isolation material.