

Earthquake-resistance inspection of a high-rise in Zurich



EBP originally inspected the earthquake resistance of the Zurich high-rise's (Hochhaus zur Schanzenbrücke) load-bearing structure in 2006. We again carried out a similar inspection in 2020, while also completing a general evaluation of the load-bearing structure (e.g. punching shear, fire protection, watertightness) and the conditions that would have to be met for any major structural changes (including additional stories and replacement).

Our inspection of earthquake resistance in 2006 was carried out based on specifications issued by the SIA, the Swiss Society of Engineers and Architects (Inspection Sheet 2018). The analysis was completed according to a dynamic and quasi-static, non-linear procedure. Owing to updated SIA specifications (SIA 261) relating to the nature of earthquake impacts, it then became necessary to repeat the inspection in 2020.

On-site walk-throughs and recalculations for individual structural elements

Originally built between 1985 and 1989, the high-rise is around 50 meters high. Given the fact that the load-bearing structure's vibration behavior has remained unchanged since 2006, we were able to base our new inspection of earthquake resistance on the pre-existing calculations. Moreover, the new inspection specifications led to no significant changes in the results of our assessment from 2006.

Based on building walk-throughs, an examination of the planning documents and recalculations of individual building

Client

2006: PGMM Schweiz AG (on behalf of UBS Real Estate), 2020: Swiss Life Asset Management AG

Facts

Period	2006 - 2020
Project Country	Switzerland

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sections, we were able to assess the extent to which reinforcements of existing elements are necessary. We also calculated and confirmed the technical feasibility of completing a five-story addition without disproportionate intervention. In fact, our results showed that it would be possible to essentially retain the existing load-bearing structure.

Demanding, but feasible building replacement

Given that the building has six underground levels and extends 17 meters into groundwater, the task of replacing it would be demanding, especially in connection with the construction pit, water control and prevention of hydrostatic uplift. Nonetheless, based on our experience with a comparable project, we were able to outline the feasible steps that would need to be taken to replace building.