



Software: Scia Engineer

Description of the project

The building is designed as a reinforced concrete monolithic skeleton structure with bracing walls of the vertical core. It has 3 underground floors and 18 above-ground floors.

The foundation slab is assessed on the 5 m-thick gravel layer. Under the gravel there is a neogene clayey layer more than 30 m thick. The whole building was designed as one unit, without a dilatation joint between the high part and the underground part. The measurements of the underground part are 96 x 52 m. The foundation slab under the high part working together with reinforced concrete piles is 1,200 mm thick, under the columns there is a mushroom head for punching efforts. The foundation slab under the low part is 400 mm thick. The maximum underground water lifting power is higher than the dead load of the low part, so the structure is protected against underground water pressure by piles. All peripheral walls and slabs are designed as watertight reinforced concrete with the maximum crack width 0.25 mm.

The vertical bearing elements are reinforced concrete monolithic columns and walls. C40/50 concrete is used for the columns, C30/37 for the other vertical structure and C25/30 for the typical upper floor slabs. The walls of the vertical communication core ensure the stability of the building against wind and seismic load. The maximum seismic acceleration of 0.6 m/s^2 was used for calculation. The span of $7.8 \times 8.1 \text{ m}$ is used for the columns. The horizontal bearing elements are beamless solid slabs with reinforced concrete mushrooms heads. The thickness of the slabs for floors is 200 mm and the mushrooms heads ensure the allowed deflections and the shearing efforts. The slab over the 1st underground floor is designed for 33 kN/m^2 of dead load because there is a park with trees provided.

The layouts of the 1st and 2nd floors do not have the same shape as the other upper floors, that is why they are hung on the 3rd floor slab. This slab was reinforced by beams for this reason. The length of the peripheral columns on the 1st, 2nd and 3rd floors supporting the whole building is 12 m.

The process of work started in January 2012 and the expected deadline is June 2013. The excavation, piles and whole concrete bearing structure were completed in September 2012.

Use of Scia Engineer

Scia Engineer software was used for the static and dynamic analysis. The EN standards were used for calculation. One complete model of the main structure and some partial models for particular floors were made, and all bearing elements are designed. The Soilin module was used for the settlement calculations and for the contact tensions. Scia Engineer allows for the model of the complicated building to be produced very easily. It allows for a number of alternatives of the structure as well. There were more designs in the process of the work according to the client and architect demands and Scia Engineer permits changing of the structure very easily. The real deflections of the structure were measured on site, and the results are very near to the calculated deflections.

Contact Jozef Baran
 Address Tomášikova 3/A
 821 01 Bratislava, Slovakia
 Phone +421 2 43411703
 Email baran@baranprojekt.sk
 Website www.baranprojekt.sk



Baran Projekt s.r.o. was established in May 2006 as a continuation of already implemented projects of its founder, Jozef Baran. After graduating from the Slovak University of Technology in Bratislava in 1976, he started to work as a structural engineer at the state-owned company SPTU, one of the biggest design engineering companies in Slovakia. After the change of the political system in 1990 he passed the professional qualification examination, obtained the authorised certificate from the Slovak Chamber of Civil Engineers and in accordance with the new laws started to work as a structural engineer - entrepreneur. He has been doing this work - entailing comprehensive project documentation in the field of structural engineering, static and dynamic analysis, as well as preparing expert opinions - since his graduation. A selection of the many projects that he has worked on as a lead structural engineer can be viewed on the website www.baranprojekt.sk.

Project information

Owner	HB Reavis Group
Architect	CEPM s.r.o.
General Contractor	Skanska
Engineering Office	Baran Projekt s.r.o.
Location	Bratislava, Slovakia
Construction Period	01/2012 to 06/2013

Short description | Forum Business Center

The landmark building with 18 above-ground floors is located on the corner of Bajkalská and Prievozská streets in Bratislava. There is a gross leasable area of 18,900 sq m and 350 parking spaces under the building. The developer - HB Reavis - takes the principle of good corporate citizenship extremely seriously and has established a strong corporate culture aimed at sustainable growth and continual innovation. It is the first developer in the region to implement general BREEAM certification for this project. BREEAM is the world's leading design and assessment method for sustainable buildings.

