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12. Multi-Storey Car Park at Karaký-Istanbul (Turkey)

Owner: Municipality of the City Istanbul
 Design: Yapi Merkezi, Research and Consulting Engineering
 Comp. Camlica-Istanbul
 Contractor: San-is A.S. Istanbul

Dimensions and arrangement:

- Total surface (including ramp): 18'817 m²
- Floor surface: 2'326 m²
- Number of floors: 8
- Total number of parking units: 600; 31 m²/parking unit
- Space built: 74'455 m³; 124 m³/parking unit
- Column spacing: 7,80 x 8,50 m
- Clear ceiling height: 2,10 m
- Floor thickness: 0,15 m
- Ramp's grade: 14 o/o; Ramp's width: 5,0 m
- Parking arrangement: Upright; on both sides
- Lane's width: 7,0 m
- Parking unit's dimensions: 2,5 x 5,0 m
- Live Load (excluding permanent load): 4 kN/m²

Material used:

- Concrete 8,22 m³/parking unit
- Steel for concrete: 1100 kg/parking unit

- Works duration: 30 months
- Service date: 1975

The construction solves the parking problem of the district, and provides also shopping space on the entrance floor. The floors are designed for only taxis and private cars. Half floors with elevation differences of 1.35 meters are connected to each other by four ramps; the two outer ramps are used for entrance and the two inner ones for exit. The middle part has been planned as a stair and service tower. To provide the natural ventilation of the exhaust gases, the floors are surrounded only with a reinforced concrete band. The supports of this concrete band are used as rhythmic architectural elements.

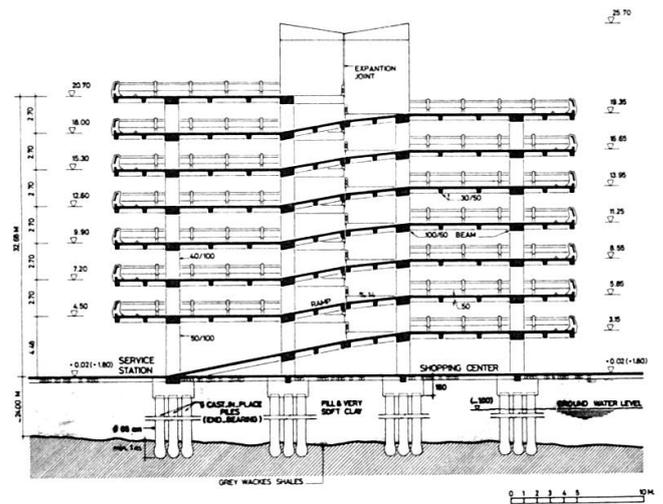


Figure 2. Cross section

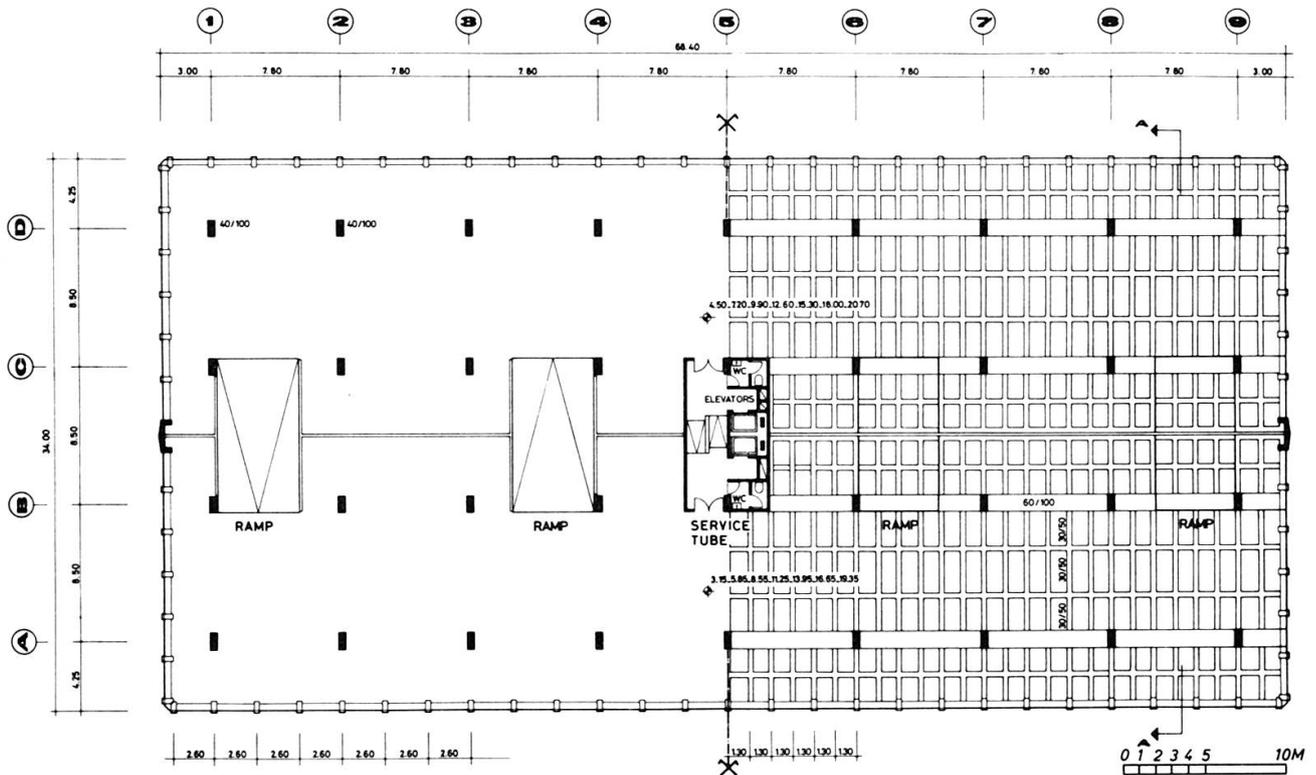


Figure 1. Typical floor plan and structural layout

Soil conditions and foundation system

In the area where the structure is built stable soil stratum is situated at a depth of 24 meters. For this reason, the foundation is based on piles, of 65 cm diameter. In the project, each column is supported by 5 piles, each designed to carry service loads in the order of 110 tons.

Superstructure

The superstructure is composed of two similar blocks. Economics are provided with the balanced distribution of loads in the structural system. Dead and live loads, uniform temperature change, brake effects, seismic and wind forces are considered in the design of the structure.

(E. Arioglu)

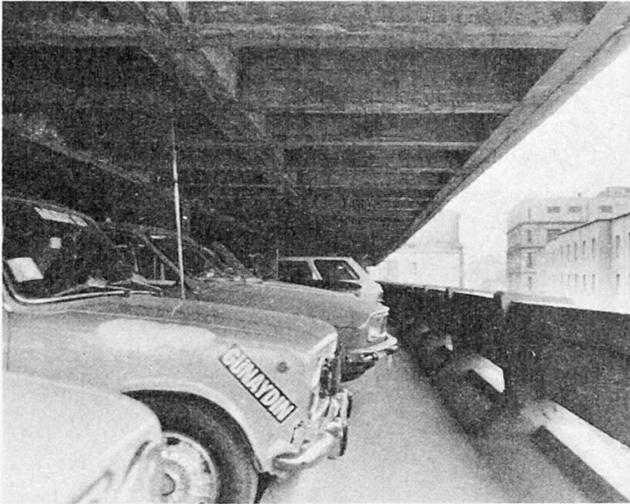


Figure 4. Interior view

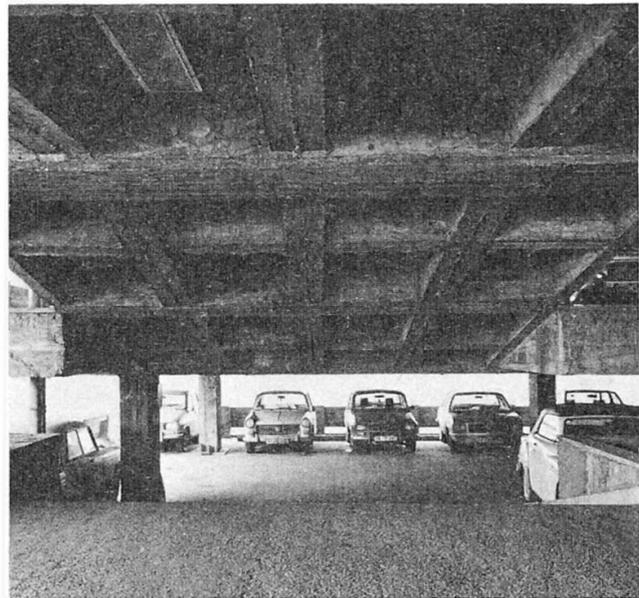


Figure 5. Typical detail from the ramp



Figure 3. General view