

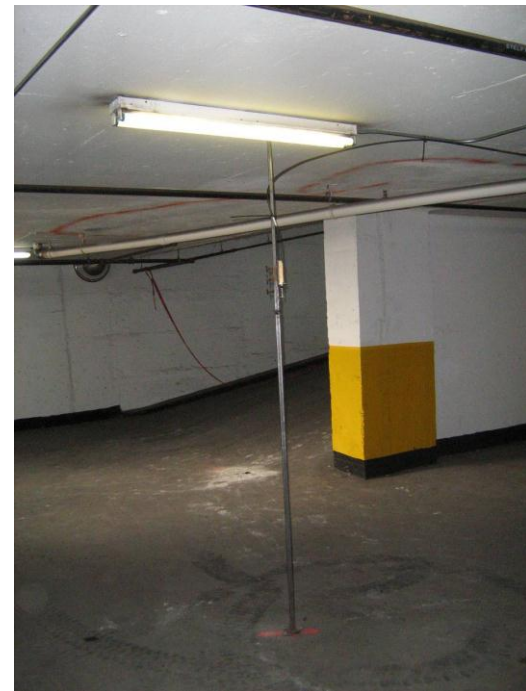
Parking, Avenue des Pins, Montreal, Canada

osmos

Integrated safety for structures



Optical Strand locations to measure longitudinal and transversal deformations of the slab



Optical Extensometer as a deflectometer (Measure of slab deflection)

Structural capacity monitoring

Client

GRGAS Associates, Engineering Company

Structure

Parking levels over 7 floors below the Horizon Apartment, 1212, avenue des Pins Ouest, Montreal

Reinforced concrete structure. Built in 1969.

Context

The client is concerned with the structural capacity of the parking slabs and their overall performance.

These concerns are based on the presence of cracks, rebar corrosion and concrete spalling.

Client's needs

The designed capacity is unknown. The client needs to ascertain with the structural capacity in order to be able to let the parking utilization at its full capacity.

Instrumentation installed

- 2 Optical Strands of 1 meter long, on the surface of slabs
- 4 Optical extensometers, as deflectometers
- 1 temperature sensor
- 1 Monitoring Station

Load tests are realized with the passage of a bobcat vehicle of 3,5 tons. One slab on 5 different floors is tested.

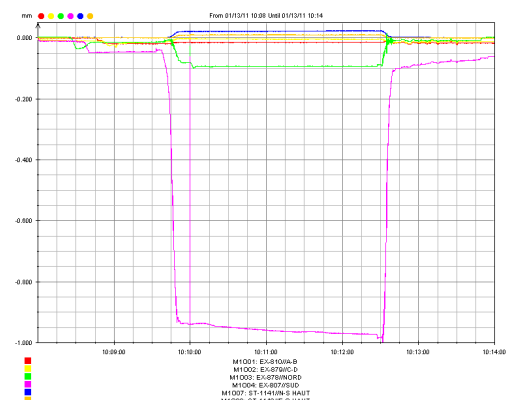
Results

All the static deformations were reversible after unloading. A F.E.M. Analysis with the software SAFE has been realized, and the values correspond very well with the monitoring data.

It is predicted that the slabs would have behaved elastically under a distributed load of 2.4 kPa.

Client benefits

The client can use his parking spaces as predicted. His concerns about Parking slabs performance are dispelled, in spite the visual damages.



Static loading of a slab by the Bobcat Vehicle