

Brantford Parkade – Brantford, ON, Canada

Project overview

When access and climate were of concern during the repair of the largest parking structure in Brantford, ON, the city turned to the experts at MAPEI Inc. for help.



Project information

Project category:	Infrastructure – Commercial Facilities
Year of construction:	2018
Year of MAPEI involvement:	2018
MAPEI coordinators:	Lee Cuthbert and Jason Zeppieri
Project owner:	City of Brantford
Contractors:	Macdero Construction (concrete restoration) and Freyssinet Canada (CFRP installation)
Main architect:	Moon-Matz Ltd.
Photographer:	Lee Cuthbert



MAPEI products used

- Carboplate® E 170
- Elastocolor® Paint
- Mapefer™ 1K
- MapeWrap 12
- MapeWrap 21
- MapeWrap C Uni-Ax 1200
- MapeWrap® Primer 1
- Planibond® 3C
- Planigrout® 712
- Planitop® 11 SCC
- Planitop 15
- Planitop 18
- Planitop X

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MAPEI keeps parking garage project from being “parked”

Background

The 950-stall Brantford Parkade provides parking for a large section of downtown Brantford, ON. The businesses that utilize the structure include the public library, the YMCA and the OLG Casino. When the city determined that the structure needed to be repaired, it was faced with a significant problem. A total demolition would take too long and be too much of an inconvenience for the downtown businesses and visitors. Totally closing down the structure for remodeling would also be a severe burden.

No matter which option the city picked, there was the looming problem of the weather: Winter was coming. Brantford needed a repair option that would allow it to keep the parkade open (in sections) during remodeling work, and that would not be affected by extreme cold (or extreme humidity, as the job would encompass both winter and summer months). The city turned to MAPEI Inc. for help.

MAPEI products on the jobsite

“This project itself was essentially very straightforward—the rehabilitation of the existing structure, which had been built in the early 1980s,” explained Lee Cuthbert, the Business Development Leader for Concrete Restoration Systems in Central Canada and one of MAPEI Inc.’s coordinators on this project.

Because the parkade could not be closed, the remodel was conducted in two phases; the section under construction was blocked off from public access. In addition to the challenges of working around the public and from Mother Nature, the deadline could not be extended. This project was paid for with government funds, which meant extremely tight deadlines. It also meant that all operations were a “go” seven days a week, rain or shine.

The concrete substrate was in fragile condition. Consequently, the specification called for all of the weak, friable concrete to be removed from the deck and columns, and to be repaired with MAPEI repair materials. “Due to the condition of the concrete within the parkade, MAPEI’s carbon fiber reinforcement system (CFRP), *MapeWrap*, was utilized as a reinforcement,” Cuthbert explained.

A 10-man crew from Macdero Construction worked on all concrete restoration work prior to the CFRP installation. Freyssinet Canada worked to install all CFRP items with a 6-man crew.

The repair process involved the following: First, the surface was prepared through abrasive blasting, through grinding or with chipping guns, depending on the location and condition of the concrete in question. After the surface preparation, “the crew applied *MapeWrap Primer 1*, a low-viscosity, 100%-solids epoxy resin primer designed for use with MAPEI’s *MapeWrap* composite system, and addressed saturated surface-dry [SSD] conditions with *Planitop 18/Planitop X. Planibond 3C* was used for all form-and-pour applications, as well as form-and-pump repairs,” Cuthbert stated. *Planitop 18* repair mortar hardens rapidly, and *Planitop X* one-component, fast-setting, fiber-reinforced repair mortar is designed for use on vertical and overhead repairs.

The rest of the 40,000-square-foot (3 716 m²) project fell into the following applications:

- 200 columns were repaired with trowel-applied *Planitop X*.
 - These same 200 columns were reinforced with 9,186 feet (2 800 m) of *Carboplate E 170* (0.055" x 3.94", or 1.4 x 100 mm), a carbon fiber plate that is pre-impregnated in an epoxy-based resin, providing high resistance and flexibility to pre-stressed concrete.
 - These 200 columns were wrapped with 5,577 feet (1 700 m) of *MapeWrap Uni-Ax 1200*, a high-strength, uni-directional carbon fiber fabric. The fabric is used with epoxy adhesives to provide part of an engineering solution that allows increased strength of structural elements without increasing the dead load supported by the structure.
 - The same 200 columns were coated with *Elastocolor Paint* high-performance protective coating in Japanese Pearl to provide UV stability and aesthetic value.
- 100 soffit repairs were formed and pumped with *Planitop 15* cementitious, fiber-reinforced repair mortar.

- 50 expansion joints were installed, filled and resloped using *Planitop 18*.
- Over 1,000 linear feet (305 m) of rebar was coated, before installation, with *Mapefer 1K* one-component, anti-corrosion coating.
- 75 columns, end caps and piers were formed/poured or formed/pumped using *Planitop 11 SCC*, a one-component, cementitious, self-consolidating concrete mix with silica fume and a corrosion inhibitor.
- 200 top deck column caps were grouted with *Planigrout 712* high-performance, nonshrink, nonmetallic, one-component, cement-based grout.

MAPEI Inc.’s Concrete Restoration Systems team and its Technical Services Department were involved with this project from the very beginning – working on the specification, on the CADs and on site, and answering all questions during the 10-month installation process. And by all accounts, the project was a huge success. The City of Brantford is pleased with its “new” parkade, and businesses and visitors were not inconvenienced during the repairs. “This was a great project, and it shows the importance of industry relationships and teamwork,” Cuthbert said.

