Montreal General Hospital management sought professional design and engineering help to find a way to increase the capacity of their hospital’s parking lot. It was impossible to simply enlarge the lot on the same level, due to the presence of a rock outcropping higher than the original paved surface. Engineers at Genivar Laval discovered the most economical solution to this challenge in the construction of a retaining wall to separate the parking lot’s existing and new levels. In evaluating the various alternatives available for this type of support structure, Permacon’s Keystone Retaining Wall System was found to be the most attractive—and affordable—choice.
Case study
Montreal General Hospital

KEYSTONE® SYSTEM

A LONG-LASTING SOLUTION

An ideal alternative to reinforced concrete, the Keystone system allows for the construction of retaining walls that are durable, aesthetically pleasing, easy to install and economical. Keystone walls are characterized by their attractive exterior and by the strength of their anchoring system. The combination of fibreglass pins and cavities within the block creates a mechanical anchor between the blocks and reinforcement. When a retaining wall must be capable of holding back tons of retained soil and site imposed loads, it is absolutely essential that blocks and reinforcement be well anchored. The Keystone positive connection anchoring system provides this assurance.

CERTIFIED BY THE MTQ

Québec’s Ministère des Transports had previously certified the Keystone system with geogrid for use in walls up to 10 metres high. Recently, the Ministère also certified a second Permacon Group Keystone system. This variation, which uses rigid, galvanized steel reinforcement, can be used to construct retaining walls up to 15 metres in height along highways.

FAST—AND FLEXIBLE

The design for the retaining walls for the Montreal General Hospital project anticipated several different applications. For example, the Keystone system had to allow for the construction of 90-degree interior and exterior corners, as well as the installation of a balustrade (ramp guardrail) on the top of the wall. One of the 90° corners of the retaining wall on the north side of the new parking lot is five metres high.

In total, more than 500 m² of retaining wall was built. Because the construction the Keystone System does not require any specialized equipment, installation was completed quickly and easily. Workers can manually lift individual blocks with ease and, once the first row has been put in place, proceeds the remaining courses at a rapid pace. Furthermore, the Keystone system fibreglass pins allow for the fast alignment of blocks and provide positive connection for the geogrid. In the final analysis it was possible to build this durable as well as aesthetically appealing retaining wall at an efficient rate of up to 85 m² of wall per day.