



Pont des Piles construction sequence

Shawinigan, Quebec, Canada / 2024

Structural type	Arch bridge
Characteristics	Steel arch bridge with a composite deck featuring double T steel beams and a concrete slab.
Construction sequence	Construction sequence involves the installation of auxiliary towers and cables with a tensioning sequence.**
Owner	MTQ (Ministry of Transports of Quebec)
Client	Structures Universelle Inc
Constructor	Pomerleau
Scope	Design of the construction sequence
Architect	Cima+ / Systra



The new Pont Des Piles bridge is a 180 m span steel arch bridge with a relatively shallow rise. The deck consists of a composite section with double T steel beams and a concrete slab placed over them.

Fhecor is involved as the designer of the complete construction sequence for the "Pont Des Piles" bridge. It is a fairly complex construction sequence, which involves the use of auxiliary steel towers supported on the permanent concrete piers of the bridge. A series of temporary cables are anchored to the top of the towers, responsible for supporting the weight of the arch until its final closure. On the landward side, another series of retaining cables are anchored to the rock. The top of the auxiliary towers is approximately 55 m above the river level.

As an interesting detail, to control the vibrations caused by vortex shedding and wind-induced galloping that may occur around the arch, Fhecor designed a tuned mass damper (TMD). During the construction of the arch, this damper is installed at the tip of the structure's cantilever, moving as the construction sequence progresses. This damper consists of a mass of up to 4 tons, formed by a reinforced concrete slab, supported by four springs anchored on one side to the slab and on the other to the arch segment. Since each construction phase has a different vibration period, the mass used in each phase is modified by adjusting the size of the concrete slab.



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