Macdonald & MacKay Bridges (Canada)

Project description

The Angus L. Macdonald and A. Murray MacKay bridges are critically important structures for the city of Halifax, capital of the Canadian province of Nova Scotia. They were opened to traffic in 1955 and 1970 respectively, and several decades later, it was determined that both structures were in need of significant reconstruction / maintenance work in order to meet the demands of modern traffic for decades to come. The Angus L. Macdonald Bridge, in fact, is receiving an entire new deck, and computer modelling of the deck, verified by measured data, is playing a key role in the design process. The A. Murray MacKay Bridge, on the other hand, is retaining its existing deck, but is being subjected to significant renovation work.

mageba's scope

Early in the project, it was determined that a fully automated ROBO®CONTROL structural health monitoring (SHM) system should be used to measure and record the movements and rotations of the bridge decks. The installed system has provided the data needed by the computer modelling of the new deck of one bridge, and assisted in the planning of remedial works of the existing deck of the other, enabling the bridge's engineers to optimize their designs and minimize the life-cycle costs of the bridges.

In 2015, it was decided to install new TENSA®MODULAR expansion joints with up to seven gaps each (type LR7) at four axes of the Angus L. Macdonald Bridge, replacing the existing joints. These joints were designed for steel connection, and feature noise-reducing "sinus plates" surfacing.

Highlights & Facts

mageba products:

Type:	TENSA®MODULAR expansion joints, ROBO®CONTROL automated SHM system
Features:	Joints designed for steel connection and feature noise-reducing surfacing
Installation:	2012 (SHM), 2015 (joints)

Structure:

City:	Halifax
Country:	Canada
Type:	Suspension bridges

Angus L. Macdonald Bridge

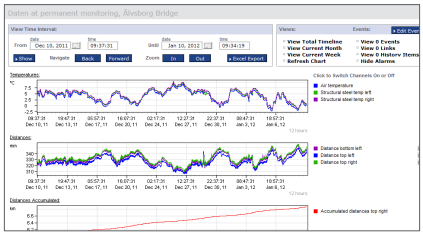
Built:	1955
Length:	4,265 ft (1,300 m) Main span 1,447 ft (441 m)

A. Murray MacKay Bridge

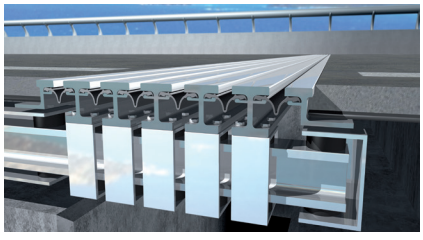
Built:	1970
Length:	3,937 ft (1,200 m) Main span 1,398 ft (426 m)

Location of the bridges in Halifax, Nova Scotia, Canada

Presentation of measured data (in graphic form) from the applied SHM system



3D representation of a 6-gap TENSA®MODULAR expansion joint (cross section at a support bar)



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