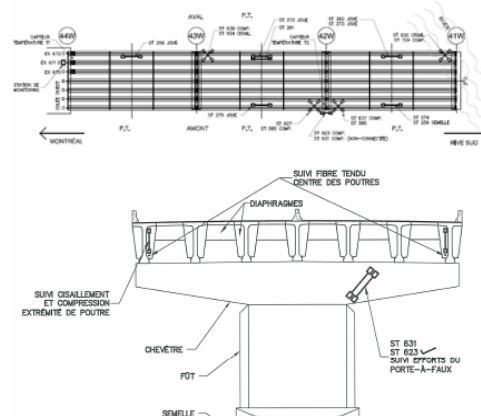


Champlain Bridge, Montreal, Canada

osmos

Integrated safety for structures



Instrumentation sketch with joist detail



Orthogonal Optical Strands to measure shear stress



Optical extensometer as a WIMS sensor

Damage evolution Monitoring on an essential bridge

Client

Société Les Ponts Jacques Cartier et Champlain, Inc.

Structure

Cantilever Motorway Bridge, built in 1962.
 Length of bridge structure: 3.4 km
 Concrete approach structures:
 - 50 reinforced concrete spans 2 500 m.
 - 7 beams transversally tensioned, 3.3 m height x 52 m length
 - 24 cables per girder (Fressynet), 12 wires

Context

The bridge must bear very aggressive conditions: Traffic (120 000 vehicles/day, including heavy trucks), exposing to de-icing salts and river ice and wide temperature variance (70°C in a yearly cycle)

This has lead to severe damages on this bridge since the mid-80's, in particular penetration of salt, corroding cables.

Client's Needs

The client wishes to monitor prestressed concrete beam condition awaiting major rehabilitation works by establishing a database for normal strains on damaged and exterior girders.

Instrumentation Installed

- 18 Optical Strands
- 3 optical extensometers as WIMS sensors
- 1 temperature sensor
- 1 monitoring station

First results

Initial results show the bridge to be functioning in a safe mode.

Client Benefits

The client can monitor the bridge efficiently and detect precociously any further damage on this bridge. The users' safety is ensured during the monitoring period.



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