

January 21, 2014

A vehicle was heavily damaged last Monday (Jan. 13, 2014) by a piece of concrete falling from the Hymus Blvd. overpass on Highway 40 in Quebec, Canada. Fortunately, no one was injured. The extreme temperature variation was blamed to be the reason for this incident ([CBC](#)). A recent structural inspection suggests that the overpass is safe ([The Gazette](#)). But, what should be noted is that this inspection and the subsequent conclusion was based on hammering sound - A commonly used method to detect damages and delamination in concrete structures. Although people's lives are at stake, engineers are still using these old-fashioned methods that are very subjective and only detect damages after the fact.



Photographs by: Phil Carpenter, The Gazette



This is not the first time that such incidents occur. The aging infrastructure in Canada and specifically in Quebec are deteriorating at a rate faster than that of the increase in the allocated repair budgets. A [recent estimate](#) shows that about \$20.5B is required annually to address bridge deficiencies in the US. A more critical issue is that the owners do not have an efficient way of prioritizing the repair funds since current inspection methods do not provide accurate information on the state and rate of deterioration.

The main cause of such delamination and spalling in concrete structures is corrosion of steel reinforcement. The governing factors have been well studied by Giatec scientists and engineers. It sometimes takes a couple of years from the initiation of the corrosion until its signs can be detected by hammering. Giatec has developed advanced technologies for accurate detection of the initial signs of corrosion in concrete structures. These novel devices can be utilized to determine the extent of deterioration, and to estimate the remaining service life accurately in reinforced concrete structures such as bridges. Detection of damages at early stages not only makes structures safer for public, but also

results in up to 40% saving in repair costs.

Giatic also offers unique solutions for performance-based quality control of concrete at the time of construction. These technologies have been exported worldwide and were successfully employed in the forensic examination of Elliot Lake mall collapse investigation by [Giatic](#).