

Rail Renaissance Creates Necessity

FCM/RAC Proximity Initiative on track with vibration study

Freight and passenger railways often receive complaints from private citizens living in proximity to rail operations regarding noise and vibration derived from day-to-day railway operations. Railways have collaborated with municipal governments and community associations to establish guidelines and best practices that should be incorporated into new residential developments in proximity to railway operations. The FCM/RAC Proximity Initiative published Guidelines and Best Practices for New Residential Developments in 2004.

Mitigation measures recommended in these Guidelines have included setback of dwellings, constructing physical barriers, acoustic design of building components and engineered ground borne vibration isolation., all implemented at the time of construction, and designed to reduce the level of noise and vibration associated with normal railway operations.

The current renaissance in goods and people movement by rail is likely to exacerbate the volume of complaints related to noise and vibration. Of particular concern are existing residential developments that have been built near rail operations over the years without appropriate mitigation.

While retrofit solutions for mitigating noise, such as barriers, improved windows and air conditioning are fairly well established and available for consideration by the various stakeholders, the tool box of retrofit solutions for ground borne vibration, whether at the track bed, building foundation or somewhere in between, is empty.

Recognizing the need to investigate possible solutions to vibration issues and the cost/benefits of these solutions, the FCM/RAC Proximity Initiative, issued an RFP in October for a Vibration Reduction Study. The objective of the project is to compile a depository of information on research and best



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practices that have been undertaken or implemented to reduce vibration associated with railway operations at various locations from source to receiver, specifically for retrofit situations. The study will include international research of new and existing practices in Europe, Australia and North America on railway vibration mitigation methods including a selection of case histories, successful or otherwise.

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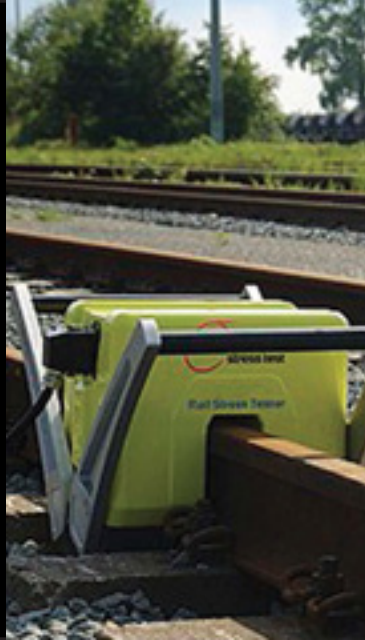
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There will be an analysis of the research findings, breaking down the methodologies suitable for retrofits, by mitigation location (source, receiver, property line) costs of application, constraints of application in Canada (climate, North American infrastructure and equipment) and expected level of vibration attenuation. A working group comprised of both rail operator and municipal members and chaired by Adam Snow, Transportation Planner, Metrolinx, will co-ordinate the study and report to the FCM/RAC Proximity Steering Committee.

“We see this study as an important first step to augment our knowledge of mitigation measures involving rail-oriented vibration as we work towards finding viable and financially feasible solutions,” Snow said.

The contract was awarded to Howe Gastmeier Chapnik Limited (HGC Engineering) in November with the final report to be published this spring.

“HGC Engineering has routinely addressed vibration mitigation for new structures, but retrofit mitigation has only been considered in a few special instances and it has proven more difficult to achieve a meaningful improvement,” said Brian Howe, president of HGC Engineering. “Increased awareness amongst planners and policy makers regarding international efforts and what can feasibly be achieved in the Canadian context is a good step forward.”

A similar project, but with a much larger scope, is being undertaken by the International Union of Railways (IUC). The Railway Induced Vibration Abatement Solutions (RIVAS) is a two year project (January 2011 to December 2013) that “aims to reduce the environmental impact of ground-borne vibration while safeguarding the commercial competitiveness of the railway sector”. The European Rail Research Advisory Council (ERRAC) also has a schedule for research and development for ground borne vibration induced noise that continues through to 2030. ■

NOTE: Cynthia Lulham, project manager of the FCM/RAC Proximity Initiative, is participating via the RIVAS “User-Interest Group.” Information on all the studies can be found on the FCM/RAC Proximity web site at www.proximityissues.ca.