SkyTrain Noise Study: Project Update (Q1 2020)

BACKGROUND

In response to noise concerns from residents along the Expo and Millennium lines, TransLink conducted a multi-step SkyTrain Noise Study in 2018. We want to be good neighbours, so we engaged an internationally recognized acoustic engineer to assess noise levels along the Expo and Millennium lines and to evaluate potential noise mitigation options.

This work is more important now than ever before as Metro Vancouver continues to grow and more people choose to live near rapid transit lines. The results of the study will help us identify noise-reduction measures for our over 30-year-old system and inform future designs and investments.

ABOUT THE PROJECT

Following the 2018 SkyTrain Noise Study, TransLink was advised to undertake further investigations of the feasibility and effectiveness of six mitigation measures:

1. Improvements to switch maintenance practices
2. Investigation of harder rail steel as a measure to improve long-term rail condition
3. Re-introduction of top of rail friction modifiers to improve long-term rail condition
4. Improvements to rail grinding practices to improve long-term rail condition
5. Rail dampers to reduce noise radiated from the rails and hence reduce overall noise
6. Development of guidelines for new developments near SkyTrain

These investigations have been divided into two phases. **Phase 1** involves studying all mitigation measures except for the top of rail friction modifiers and improvements to grinding practices, which require more time to investigate and will be addressed in **Phase 2** (through 2020 and beyond).

Q1 2020 UPDATE

All work for Phase 1 of the noise mitigation study was completed in March 2020 and a draft of the Phase 1 Report is being finalized. The report will outline the expected noise reduction of each measure, as well as the location and method of installation that would be most effective.

Switch Maintenance Improvements Update

Ongoing analysis has continued to show that replacing worn switches has the greatest impact on noise reduction. It also confirmed that grinding maintenance improves noise levels on switches in good condition, but does not help on heavily worn switches. Based on these findings, we finalized our switch maintenance recommendations this quarter, which will be outlined in the Phase 1 Report.

Harder Rail Steel Update

Our investigations continued to show slowed roughness growth and lower train noise levels in areas where higher strength, harder rail steel was used. We are progressing with our change management process to upgrade all running rail replacements to harder rail in 2020 and onwards.

Rail Grinding Update

Since November 2019, we have been analyzing surface roughness and measuring rail roughness growth rates at multiple trial sites that were acoustically ground. Acoustic grinding produces a smoother, more polished surface finish than typically required. The preliminary findings indicate that acoustic grinding in place of standard grinding may be beneficial for noise reduction at some locations.

Rail Friction Modifier Update

The top of rail friction modifier pilot study is in the intermediate planning stages, which includes planning for controlled testing and risk assessment. A trial site for testing the friction modifier has been identified and baseline measurements of rail roughness growth rates are underway.

Rail Damper Update

Custom–tuned rail dampers from two different manufacturers, designed to reduce noise generated from steel rails, were installed for comparison near Commercial-Broadway Station. The results of the rail damper trials will be available in the Phase 1 Report.

New Development Guidelines Update

Interim guidelines for new noise-sensitive developments have been prepared. It is recommended that ownership of the guidelines be transferred to an appropriate office of the BC Government, as administering an environmental noise guideline is outside of TransLink's remit. Further consultation with various stakeholders is likely required prior to finalization.

NEXT STEPS

- Finalize Phase 1 Report
- Preparation of business case to obtain funding for rail damper implementation on 3.2 km of high priority areas on the Expo Line track (to be detailed in Phase 1 Report)
- Continue planning and coordinating top of rail friction modifier pilot study plans
- Continued focus on implementation of rail grinding program
- Continued rail roughness data collection in acoustic grinding test sites
- Improved tracking and communication of noise-reducing maintenance

Learn more at translink.ca/noisestudy.