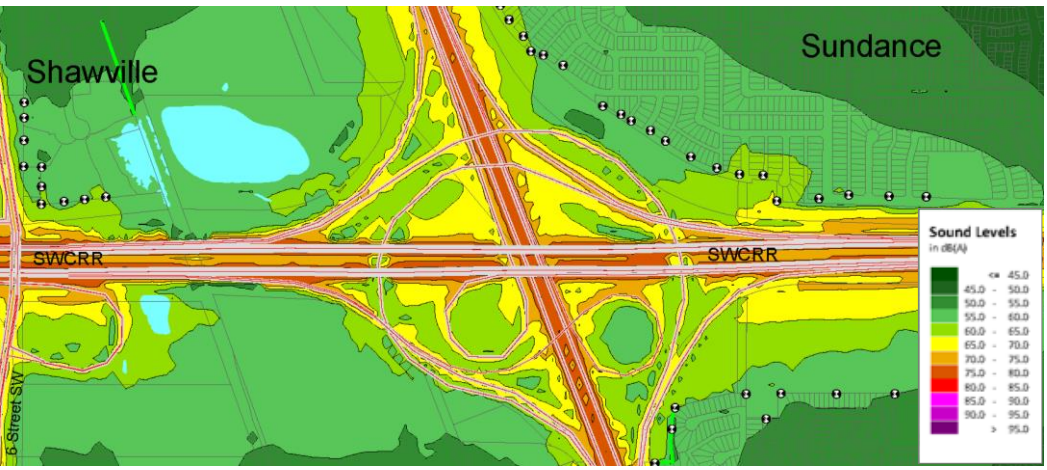
> CASESTUDY

TRANSPORTATION

CALGARY RING ROAD FUNCTIONAL NOISE STUDY



SECTOR
Transportation

FOCUS AREA
Transportation Wireframe

SERVICE
Noise Impact Assessment

CHALLENGE

In August 2014, Patching Associates was retained to provide a Noise Impact Assessment (NIA) of the functional design of the West and Southwest Calgary Ring Road (WCRR and SWCRR) for Alberta Transportation and the City of Calgary. The study included 40 km of road, 70 bridges and 20 interchanges. Patching Associates submitted the final report in April 2015.

The primary objective of this work was to ensure that the noise emissions from the roadways met both the Alberta Transportation Highway and the City of Calgary Surface Transportation noise policies in all the adjacent residential areas.

Creating a detailed model using sophisticated software allowed Patching Associates to predict levels not just at “representative” receivers, but to extend the analysis to all adjacent residential areas, allowing confirmation of predicted levels throughout and adjustments to the proposed barriers accordingly.

Patching Associates utilized state-of-the-art traffic noise 3D modelling software to minimize the uncertainties and conservatism associated with theoretically predicted sound levels.

Solution

Patching Associates executed this project using SoundPLAN® noise modeling software, which incorporates the internationally recognized Transportation Noise Modeling (TNM) algorithms first proposed by the Federal Highway Administration. This software afforded Patching Associates a high degree of accuracy and flexibility in the noise model to accommodate design changes.

A key feature of SoundPLAN is its ability to model immense projects including entire city infrastructures. The software has been verified through numerous tests to be representative of expected real world results, and is capable of incorporating the many factors that can affect noise predictions, including detailed terrain mapping, road modeling, traffic volumes, barriers, buildings, and receiver locations.

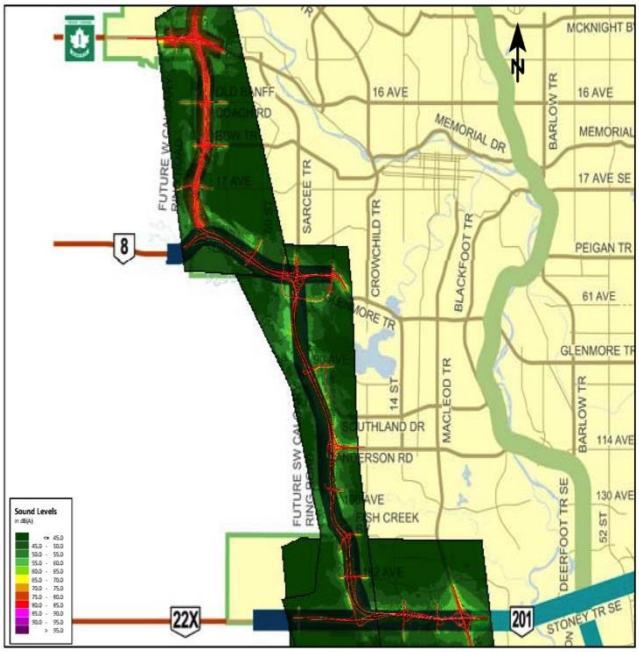
Experienced project staff developed a detailed noise model that predicts where and when barriers are anticipated along the new roadways.

Result

Patching Associates provided recommendations for improving existing barriers and berms, and the addition of new ones, to achieve target sound levels at all adjacent properties.

The recommended measures will reduce noise experienced by residents, and reduce the risk of noise concerns at key locations where target levels would have been exceeded.

By creating a detailed and flexible model, Patching Associates was able to focus on delivering cost-efficient noise control designs and ensuring adjacent residential areas were protected from noise emissions emissions from the proposed West/Southwest Calgary Ring Road design.



Key Tasks

- Correlating design change iterations from several companies over a 10 year period.
- Accurately incorporating detailed attenuation features.
- Adapting multiple sources of terrain information to match wireframe design and existing ground contours.
- Designing efficient barrier or berm locations for the additional required attenuation while minimizing taxpayer costs.

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