

GRAVEL PIT MINING AND ASPHALT PLANT



FOCUS AREA

Industrial and Mining
Gravel Pit

SECTOR

Industrial and Mining

SERVICE

Noise Impact Assessment

➤ CHALLENGE

In 2014, an international industrial company specializing in the production of cement, construction, and concrete materials retained Patching Associates to conduct a Noise Impact Assessment (NIA). The NIA was based on the proposed operations of a Gravel Mine and Asphalt Plant to be located within the County of Rocky View, Alberta. The project was awarded in July 2014, and the results were submitted in October 2014.

The objectives of the study were:

- To assess the potential for noise disturbance at maximum project operations.
- To provide reliable technical support from Patching Associates during open house sessions within the affected community.
- To focus on practical and cost-effective noise control measures to limit noise impacts.

As the County of Rocky View has no explicit regulations limiting noise levels, there was no specific regulatory requirement with which to comply. Therefore, the City of Calgary Noise Bylaw was utilized for regulatory guidance. The project location is strongly influenced by the presence and noise of Highway 567. As such, there was a need to accurately quantify the existing background sound levels at the receivers in the area prior to commencing project operations.

Patching Associates has developed standardized methodologies and processes that integrate with noise-modeling software to provide timely turnaround and response to client projects.

► SOLUTION

Achieving the project goals required completing a detailed assessment of the proposed operations, conducting field reconnaissance activities, and referencing background sound level measurements at selected receiver monitoring locations.

One unique project hurdle was to ensure that accurate and realistic sound power levels were utilized for assessing the proposed equipment and asphalt plant.

As the project was not yet constructed, Patching Associates completed detailed field diagnostic sound measurements of a similar asphalt plant at another location. These measurements, coupled with noise emission data obtained from other mining facilities extracted from Patching Associates' database, considerably reduced uncertainties and limited conservative modeling assumptions. This resulted in improved model accuracy and subsequent noise control recommendations.

The influence of Highway 567 was another hurdle to accurately quantifying existing sound levels at the residences of interest. The solution was to complete continuous sound level measurements over the course of three days at representative residences near the highway.

► RESULT

Based on the model results, it was determined that the predicted sound level (project noise plus background sound level) met the City of Calgary's noise limits. These results were performed under downwind conditions at the residences of concern, and during maximum disturbance operations at the project site, when provided with suitable earth berms.

Due to utilization of reliable and accurate noise emission data and sound modeling software, a considerable amount of noise control costs was saved as the client was able to utilize the earth berms as a noise control measure.



PROJECT HIGHLIGHTS

- High-precision Class 1 sound meters were used to obtain field measurements.
- Advanced noise modeling software and past noise emission data was used to model key activities.
- Noise control costs were reduced through the practical application of earth berms as noise control measures.
- NIA study results were presented to an open house session that was attended by affected residents in the area.

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