1. BACKGROUND

Road traffic noise is a growing concern and the public has a growing desire for solutions to reduce traffic noise. Noise barriers are costly and not feasible for all projects [2].

2. EVALUATION

2.1. Diurnal Sound Intensity (DSI) Method

The Sound Intensity method was used to evaluate the diurnal sound intensity (DSI) levels at each test section. This method was chosen due to its ability to detect the diurnal variation in sound intensity levels.

2.2. Pavement Performance - 4 Years

Pavement performance was assessed based on standard crack detection data that was further supported by visual observations. The data was analyzed using the AASHTO TP 76 method.

2.3. Pavement Performance - 4 Years

On average, the 2010 OGFC measured values are 2.3 dBA lower than the 2012 values. This indicates that the pavements section (A) have the least amount of noise reduction when compared to the other sections (B, C, D, E). The SMA section (D) has the least amount of noise reduction, followed by the OGFC & OBC section (B). It is worth noting that the OGFC & OBC section (A) has the highest pavement surface and the lowest sound intensity before sweeping.

3. NOISE REDUCTION PERFORMANCE

On average, the 2010 OGFC measured values are 2.3 dBA lower than the 2012 values. This indicates that the pavements section (A) have the least amount of noise reduction when compared to the other sections (B, C, D, E). The SMA section (D) has the least amount of noise reduction, followed by the OGFC & OBC section (B). It is worth noting that the OGFC & OBC section (A) has the highest pavement surface and the lowest sound intensity before sweeping.

4. FINDINGS

- Open-graded pavements are quieter than conventional dense-graded pavements.
- A two-lane duplicate open-graded section has the most potential for reducing noise levels.
- The noise performance of open-graded pavements can be further enhanced by the use of rubberized asphalt cement.
- The use of SMA does not reduce noise levels as anticipated. However, there was an unexpected loss of asphalt film, and it is believed that the use of a supplemental seal coat over time could improve noise performance.
- The porous pavement provided an indication of the porosity of a pavement and the technology used to evaluate traffic noise on porous pavements. It was determined that an outflow meter and the noise level measured using the DSI method.

5. CONCLUSIONS

- Since completion in 2009, MTO has been evaluating the test sections with the objective of determining the following questions:
  - Are the quiet pavement sections performing well structurally?
  - Can the quiet pavement sections maintain their noise reduction effectiveness over time?
  - Can the noise reduction effectiveness of quiet pavements be restored?

- The Quiet Pavement Test Sections in Ontario have been successful in reducing noise levels and are considered to be a viable solution to traffic noise reduction.