

December 7, 2022

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**Via Email - Emily.Lawrence@paliareroland.com
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Emily Lawrence / Andrew Lewis
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Toronto, ON M5V 3H1

Dear Ms. Lawrence and Mr. Lewis:

RE: Red Hill Valley Parkway Inquiry

We write in response to the direction regarding the motion for leave to file expert reports provided by the Commissioner on December 5, 2022.

The City of Hamilton (the “City”) seeks leave to present expert evidence during Phase Two of the Inquiry alongside the evidence provided by Dr. Gerardo Flintsch and Mr. Russell Brownlee and as outlined in their respective reports (the “Flintsch Report” and the “Brownlee Report”). As previously advised, Mr. David Hein will respond to the Flintsch Report and Mr. Dewan Karim will respond to the Brownlee Report. Mr. Hein and Mr. Karim’s *curriculum vitae* are enclosed.

The specific issues that Mr. Hein and Mr. Karim will address and their anticipated evidence on those issues if leave is granted is provided at Appendix A and B herein.

During the leave motion scheduled for December 13, 2022, the City will take the position that leave ought to be granted for the following reasons:

1. Mr. Hein and Mr. Karim’s anticipated evidence will address the key issues raised in the Terms of Reference that are unaddressed in the Flintsch and Brownlee Reports, including whether the collisions on the RHVP are higher than other roadways with similar characteristics.
2. In some cases, Mr. Hein and Mr. Karim’s anticipated evidence will provide further context or an alternative perspective to the issues raised in the Flintsch and Brownlee Reports, such as on the interpretation of friction data and the causes of motor vehicle collisions. Roadway friction and roadway safety and design are highly technical and complex issues. A differing viewpoint will assist the Commissioner with a more fulsome understanding of these issues.
3. The Commissioner’s findings may have influence beyond this Inquiry in other legal proceedings. Therefore, it is important that the Commissioner receives a balanced response on the technical issues relating to the safety and design of the RHVP.

The City requests one hour for oral submissions.

We would be pleased to address any questions you may have.

Yours truly,

A handwritten signature in black ink, appearing to read 'Jonathan Chen', with a stylized flourish at the end.

Jonathan Chen

c. Eli Lederman
Delna Contractor

Encl.

APPENDIX A – HEIN REPORT: ISSUES AND ANTICIPATED EVIDENCE

| # | Anticipated Scope | Summary | Anticipated Opinion |
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| 1 | <p>Friction Test Analysis. What do the friction values taken on the RHVP from 2007 to 2019 show? How are those values to be interpreted? What, if any, safety concerns arise based on those figures?</p> | <p>Mr. Hein will give evidence on whether the friction testing results are “relatively low”, the applicability of the UK Investigatory Skidding Resistance Levels, the use of the MTO’s 30FN threshold, the reliability of the friction value conversion undertaken by Dr. Flintsch and the relationship between friction and driver expectations.</p> | <p>(A) Characterization of Friction Levels</p> <p>Dr. Flintsch has characterized the friction testing results on the RHVP as “relatively low”. Mr. Hein’s anticipated opinion will be that this wording is ambiguous and that based on his knowledge and experience, the friction test results and temporal distribution are reasonable for FN(90)R.</p> <p>(B) Friction Value Conversion</p> <p>Dr. Flintsch undertook a conversion of the GripTester Numbers (GN) to FN(90)R and found that the conversions are reasonably appropriate. Mr. Hein’s anticipated opinion will be that there are many factors influencing the accuracy of the conversion such that the conclusion drawn may not be reliable.</p> <p>(C) Driver Expectation</p> <p>Dr. Flintsch asserts that the variance between friction levels on adjacent highway sections at either end of the RHVP and on the RHVP makes the “relatively low” friction on the RHVP “even more problematic”.</p> <p>Mr. Hein’s anticipated opinion will be that there is no expectancy violation in the context of relative friction levels on adjacent highway sections because a typical driver will not normally develop expectations regarding friction levels except in certain limited situations (e.g. presence of snow or contaminants on the roadway). Moreover, the difference in friction levels on the RHVP and the adjacent highway sections are relatively similar to the difference in friction levels resulting from different types of vehicle tires and their wear condition.</p> |

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| | | | <p>(D) Applicability of UK Investigatory Skidding Resistance Levels</p> <p>Dr. Flintsch applies the UK Investigatory Skidding Resistance Levels cited in the Tradewind Report. Mr. Hein’s anticipated opinion will be that based on his decades of experience, the UK Investigatory Skidding Resistance Levels are based on their local road classifications, pavement types and aggregates as well as pavement friction testing equipment that is not commonly used in Canada.</p> <p>(E) Use of MTO’s 30FN</p> <p>Dr. Flintsch does not offer an opinion on the use of FN(90)=30 by the MTO. Mr. Hein’s anticipated opinion will be that based on his experience in the industry, the MTO’s used of FN(90)=30 is a reasonable one for the evaluation of friction for network management purposes.</p> |
| 2 | <p>Friction Management Programs. What, if any, friction management programs were implemented by Ontario municipalities during the years under consideration (i.e. 2007-2019)? If implemented, what did those programs entail?</p> | <p>Mr. Hein will give evidence on Ontario municipal practices regarding roadway friction management.</p> | <p>Mr. Hein will provide evidence on why Ontario municipalities do not have friction management programs and will speak to the challenges of addressing friction-related issues at the municipal level.</p> |
| 3 | <p>Aggregate Quality. What friction-related conclusions can be drawn from the</p> | <p>Mr. Hein will address the polishing testing conducted on the Varennes aggregate and whether any conclusions relating</p> | <p>Dr. Flintsch formed conclusions regarding the frictional characteristics of the RHVP from the polished stone value figures obtained from the asphalt cores taken from the field by Golder in December 2017. Mr. Hein’s anticipated evidence will be that the figures obtained are not indicative of frictional resistance and in any event, the values obtained are not reliable as the aggregates tested were placed back in 2007.</p> |

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| | aggregate used on the RHVP? | to frictional qualities can be drawn. | |
| 4 | Countermeasures. What remedial measures, if any, were appropriate for the City to take in light of the information it had between 2007 and 2019? | Mr. Hein will comment on what, if any, remedial measures should have been taken by the City and the appropriate timing to have taken them. | <p>Dr. Flintsch states generally that a detailed safety analysis could have resulted in a decision to apply a treatment to improve the frictional properties of the pavement surface, such as resurfacing or micro-surfacing.</p> <p>Dr. Flintsch, however, does not discuss whether a particular countermeasure, such as micro-surfacing in 2014, was necessary at that time. Mr. Hein's anticipated opinion will be that there are various factors to consider before deciding on implementing a given countermeasure, including safety of the road, effectiveness, and other planned countermeasures. Mr. Hein's anticipated opinion will also be that, based on those factors, it was not unreasonable, for example, to focus on countermeasures other than micro-surfacing in 2014.</p> |
| 5 | Wet Road Collisions. What factors are relevant to determining the cause of wet road collisions? | Mr. Hein will give evidence on the factors that could contribute to wet road collisions and whether any general conclusions can be drawn regarding the primary causes of wet weather collisions on the RHVP. | <p>Dr. Flintsch stated that he is unable to rank the factors that could contribute to wet road collisions on the RHVP as detailed in David Boghosian's legal opinion as he did not have enough scientific evidence.</p> <p>Mr. Hein's anticipated opinion will be that the alleged contributory factors to wet road collisions cannot be ranked in any generalized manner. Each accident requires its own accident reconstruction to determine the relative contributions of various factors in causing the accident.</p> |

APPENDIX B – KARIM REPORT: ISSUES AND ANTICIPATED EVIDENCE

| # | Anticipated Scope | Summary | Anticipated Opinion |
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| 1 | <p>Geometry and Driver Expectations. Whether the RHVP was designed in accordance with the applicable guidelines, and what conclusions may be drawn as it relates to expectancy violations and safety of the RHVP?</p> | <p>Mr. Karim will give evidence on the design guidelines applicable to the RHVP and the use of design guidelines more generally in Ontario.</p> <p>Mr. Karim will also give evidence on whether the geometry of the RHVP posed any safety concerns and will focus on those aspects that have been asserted as expectancy violations by Mr. Brownlee.</p> | <p>(A) Intended Use of Geometric Guidelines</p> <p>While Mr. Brownlee provides his own analysis of the application of the MTO Design Guide to the RHVP, he does not address the purpose and use of the MTO Design Guide.</p> <p>Mr. Karim will provide evidence on the intended use of the geometric guidelines in roadway design, which provide necessary context to the conclusions drawn by Mr. Brownlee. Mr. Karim will explain that the guidelines are reference points in roadway design, with the understanding that they will not be achieved in all circumstances due to various practical reasons such as geography or pre-existing roadway networks.</p> <p>Mr. Karim will explore the application of industry guidelines and the effect of deviation for practical reasons on the general outcome of roadway user safety. Mr. Karim’s anticipated opinion will be that certain types of deviations from a particular aspect of the guideline does not necessarily imply that the roadway was inappropriately designed or create inherent safety issues.</p> <p>(B) Alleged Expectancy Violations</p> <p>The City anticipates that Mr. Karim will state the following regarding the alleged expectancy violations with the understanding that he cannot provide a definitive conclusion in advance of completing his report:</p> <ul style="list-style-type: none"> • Design Speed: Mr. Karim anticipates that minimal changes in design speed will not result in significant changes to highway geometry and associated safety outcomes. • Interchange Spacing: Mr. Karim anticipates that the interchange spacing is similar to many other highways in Ontario and any alleged expectancy violation will be similar to comparable highways. |

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| | | | Mr. Karim's anticipated evidence will also be that expectancy violations are unlikely to be a result of insignificant changes to the highway geometry on the RHVP. An individual assessment of whether a particular aspect of roadway design contributed to an accident is required to draw a causal connection between design and collisions. |
| 2 | Collision Statistics. What, if any, conclusions or trends can be drawn from the collision data? | Mr. Karim will give evidence on the interpretation of the RHVP collision data and draw comparisons to similar site(s). Mr. Karim will comment on the appropriateness of drawing conclusions based on the data available post-resurfacing. | <p>Mr. Brownlee provides his own analysis of historic collision trends and draws various conclusions respecting the data.</p> <p>Mr. Karim will provide evidence on the standard methodology used to interpret collision data and the limitations of drawing conclusions based on an incomplete data set. Relying on that methodology, Mr. Karim will opine that certain conclusions drawn by Mr. Brownlee, including the effect of resurfacing on the collision rate, cannot be reliably drawn without additional data or physical evidence.</p> <p>Mr. Karim will examine collision statistics between comparator roadway(s) to assess whether there is an overrepresentation of collisions (including wet road collisions) on the RHVP. At this time, the comparison will be limited to the Don Valley Parkway, a roadway with similar design elements. Mr. Karim's anticipated evidence will be that the RHVP total mainline collision rates and wet road collision rates for the entire length are overall relatively lower than the DVP. Mr. Karim has requested additional data for various highways from the MTO but has not yet received the data.</p> |
| 3 | Wet Road Collisions. What factors are relevant to determining the cause of wet road collisions? | Mr. Karim will give evidence on the factors that could contribute to wet road collisions and whether any general conclusions can be drawn regarding the primary causes of wet weather collisions on the RHVP. | <p>Mr. Brownlee was asked to respond to the factors that are alleged to be contributory factors to wet road collisions in the legal opinion provided by David Boghosian. Mr. Brownlee concluded that of the factors set out in the legal opinion, the primary contributory factor would be reduced road surface friction.</p> <p>Mr. Karim's opinion will be that unless an accident reconstruction is undertaken, one cannot determine or rank the cause(s) of a motor vehicle collision.</p> |