

RED HILL VALLEY PARKWAY INQUIRY

TRANSCRIPT OF PROCEEDINGS  
HEARD BEFORE THE HONOURABLE J. WILTON-SIEGEL  
held via Arbitration Place Virtual  
on Wednesday, June 22, 2022, at 9:30 a.m.

VOLUME 35

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1 Arbitration Place Virtual

2 --- Upon resuming on Wednesday, June 22, 2022

3 at 9:30 a.m.

4 CRAIG WHITE; AFFIRMED

5 EXAMINATION BY MR. LEWIS:

6 Q. Good morning,

7 Commissioner, Counsel. Thank you for coming

8 today. We have -- Mr. White is with the 407 ETR

9 and with him is Greg MacKenzie who is counsel for

10 the 407 Concession Company.

11 Mr. White, I understand you

12 are currently employed by the 407 ETR Concession

13 Company limited?

14 A. Correct.

15 Q. You have been since

16 around 2004?

17 A. That's correct.

18 Q. And what does the 407 ETR

19 Concession Company do?

20 A. We are a road authority

21 that runs the 407 ETR toll highway in the greater

22 Toronto/Hamilton area.

23 Q. And I understand that you

24 obtained your bachelor of science in civil

25 engineering from the University of Waterloo; is

1 that right?

2 A. Correct. It's actually a  
3 bachelor of applied science I believe, Andrew.

4 Q. Of course. You're right.  
5 And are you currently a practicing engineer?

6 A. Yes, I am.

7 Q. And a member of the PEO?

8 A. Yes, I am.

9 Q. I understand that you  
10 were -- prior to joining the 407 ETR, that you  
11 were involved in the construction of the  
12 Highway 407; is that right?

13 A. Yes, I was with Canadian  
14 Highways and project manager for the Canadian  
15 Highways constructor doing the project manager of  
16 the tolling portion.

17 Q. I see. And what did you  
18 do after that before you joined the 407 ETR?

19 A. Well, with Canadian  
20 Highways we went on to do the Cross Israel Highway  
21 but I elected not to relocate to Israel and I  
22 landed up -- it was during the dot com days and I  
23 knew some people with a telecom startup who wanted  
24 me to join them. So I was in the telecom business  
25 from '99 till 2002.

1 Q. Okay. And then what,  
2 until you joined 407 ETR in 2004?

3 A. And then I joined Aecon  
4 in their infrastructure group which was the larger  
5 P3 projects, project like Quito airport and that  
6 kind of thing.

7 Q. And I understand that  
8 you've been the 407's vice president of highway  
9 operation since 2009; is that right?

10 A. I was checking the  
11 records. It's actually 2010. I had misspoken  
12 when we spoke previous.

13 Q. That's fine. What was  
14 your position prior to that?

15 A. Prior to that I was the  
16 director of highway operations from 2004 till  
17 2010.

18 Q. And what are your  
19 responsibilities as the VP of highway operations?

20 A. I oversee the team that  
21 takes care of everything to do with the operation,  
22 maintenance, and rehabilitation of our highway.  
23 It includes bridge work, pavement work, drainage,  
24 as well as more maintenance type activities,  
25 ranging from the mundane like cutting grass and

1 painting lines to winter operations, which is  
2 highly critical.

3 Q. So keeping it going?

4 A. Yep. And then also the  
5 tolling system is, you know, the electronic toll  
6 system. I have a group that takes care of all of  
7 that maintenance and operation to keep it going as  
8 well. So basically everything to do with the  
9 field part of the highway.

10 Q. Approximately how many  
11 kilometres long is the 407?

12 A. 108.

13 Q. It has concrete pavement  
14 and asphalt pavement sections; is that right?

15 A. Yes, that's correct. The  
16 original construction which Canadian highways did  
17 from sort of '94 to '98-ish is concrete. That  
18 runs from the 403 interchange in Oakville all the  
19 way to Markham Road. And then after the highway  
20 was privatized, the extensions, both extending  
21 westerly from 403 Oakville to the Freeman  
22 interchange, which is the QEW/407/403 interchange  
23 in Hamilton, approximately 25 kilometres, that is  
24 asphalt. And also what they call the east partial  
25 extension which extended the highway from Markham

1 Road to the terminus of our concession at Brock  
2 Road, and that's approximately 15 kilometres. So  
3 we've got about 68 kilometres of concrete in the  
4 middle portion and 25 on one end, 15 on the other.

5 Q. Right. And how many  
6 lanes is it?

7 A. It varies. The asphalt  
8 sections are currently generally three lanes wide  
9 although there's one limited section that is four  
10 lanes -- and sorry, I'm speaking in each  
11 direction -- whereas the concrete section is  
12 mostly fully expanded, and that has five mainline  
13 lines in each direction but there are sections  
14 where there are axillary lanes and speed change  
15 lanes. So, you know, with the ramp lanes coming  
16 on it's up to seven lanes wide in the concrete  
17 section between 400 and 427.

18 Q. I understand that the  
19 highway operates under a concession agreement  
20 between 407 ETR and the Ministry of  
21 Transportation; is that right?

22 A. Yes, that is correct.

23 Q. And can you tell us about  
24 the concession agreement requirements with respect  
25 to friction testing and monitoring.

1                   A.    Yes.  The concession  
2    agreement, schedule 20, defines the enhanced  
3    standards for operation and included in that is a  
4    requirement that we test and have knowledge of the  
5    friction of the highway, the pavement friction,  
6    and that we use the brake force trailer, the  
7    ASTM E274 specified method of measuring friction,  
8    which is what MTO also uses, and that the  
9    concession agreement establishes what they call an  
10   investigatory level of friction.  So anything with  
11   a skid number less than 30 as measured by the  
12   ASTM 274 trailer at a speed of 100 kilometres per  
13   hour, that requires investigation and appropriate  
14   action as may be necessary.

15                  Q.    So it's the ASTM brake  
16    force trailer, and who -- does the 407 ETR own  
17    that device?

18                  A.    No, we do not own a brake  
19    force trailer.  We obtain access to one through  
20    the pavement engineers that we use to advise us on  
21    different aspects of pavement engineering, which  
22    is Applied Research Associates.

23                  Q.    ARA?

24                  A.    Yes.

25                  Q.    So essentially you're

1 renting it for use or through the consultants?

2 A. Yeah, they bring it up  
3 and they operate it and do the measurements for  
4 us. And even their trailer is not resident in  
5 Toronto; they bring it up from the U.S., and we  
6 have been doing friction measurements every second  
7 year as long as I've been here and I believe the  
8 year prior to my arrival.

9 Q. All right. And is that a  
10 requirement of the concession agreement that the  
11 testing be done every two years?

12 A. I honestly am not  
13 100 percent sure, Andrew. I don't believe it  
14 actually specifies the interval, but I would --  
15 and I don't have a copy of the agreement with me  
16 in this room, but I don't believe it specifies the  
17 interval. But it makes us responsible to know  
18 what the friction measurements are and we chose an  
19 interval of every two years and have been carrying  
20 on with that.

21 Q. And the testing speed,  
22 that is -- you said it was at 100. So that I take  
23 it is the posted speed of the 407?

24 A. Yes, that's correct.

25 Q. And in this biennial

1 testing, what is tested in terms of -- length of  
2 the entire highway, is it portions? How does that  
3 work?

4 A. We've varied it a little  
5 bit over the years. We started off focused on the  
6 outside lane, what we call the truck lane. Given  
7 that that had the heaviest wear and the heaviest  
8 volumes of traffic we felt it was an early  
9 indicator of any deterioration of friction on the  
10 highway.

11 We did that for a number of  
12 years, and I am not sure exactly the dates, but  
13 then we decided we needed to get a better view  
14 of -- you know, to confirm the difference between  
15 lighter used lanes and the heavier used lanes, or  
16 was our assumption valid that that lane should  
17 wear quicker than lane 1 where -- essentially the  
18 passing lane; when the highway was originally  
19 constructed it was mostly three plus three.

20 So we started measuring the  
21 truck lane and lane 1. We didn't generally worry  
22 about lane 2 because it was sort of in between  
23 those two boundaries that we were seeing  
24 difference. And then as we've done widenings of  
25 the highway we've added concrete lanes.

1                   In 2006, 2007 an additional  
2 lane over those two years was constructed, I  
3 believe it was the whole length from 401 to -- or  
4 maybe it was 427 to 404, so major expansion, you  
5 know, adding a complete lane. And actually two  
6 lanes were constructed but only one was open. So  
7 we've also started to measure some of that newer  
8 concrete so that we know how it's performing and  
9 varying across the width. And likewise, we  
10 extended those tests in the asphalt areas as well.

11                   Q. And is there a reporting  
12 requirement to the ministry with respect to the  
13 friction test results?

14                   A. No, there's not an  
15 explicit reporting requirement. When we're asked  
16 or if they are auditing or if there is an  
17 independent safety auditor we do share those  
18 reports with them. But -- and on occasion the  
19 ministry has had questions and we've answered the  
20 questions or provided the information, but there  
21 is not a requirement to share the -- that friction  
22 report unless requested.

23                   Q. Is there a friction  
24 number or skid number referenced in the concession  
25 agreement as to what the -- you referred to it as

1 an investigatory level I think?

2 A. Yes, it is specified as  
3 30.

4 Q. All right. And I may use  
5 the term FN30 or SN, and I mean to use those  
6 interchangeably, use whatever is comfortable for  
7 you.

8 So what is required then,  
9 if -- is the investigation to take place if it's  
10 below 30, do I understand you correctly?

11 A. Yes, and it requires us  
12 to take action as may be appropriate. You know, I  
13 think we do our testing because of the concession  
14 agreement. It's a bit different from how my  
15 understanding of MTO's testing.

16 So we're testing network-wide  
17 every two years, and then we develop the  
18 methodology based on that where we're also doing  
19 analysis of collisions network-wide and we do that  
20 every year. So we've tied those two  
21 considerations together and we're looking at then  
22 do we have an area where we've got low friction  
23 numbers and is it generating a higher rate of  
24 collisions, or we also look at is there areas with  
25 higher rates of collisions and what possibly could

1 be contributing to that; you know, could be  
2 friction, could be construction, could be traffic  
3 volumes, could be winter conditions. But we try  
4 to evaluate that and if there is something that we  
5 can define, you know, a probability that there is  
6 something we can do to intervene or improve the  
7 situation, then we will do that.

8                   The ministry's approach is  
9 more -- and they may do some general testing, but  
10 what I'm familiar with is if they have a problem  
11 on a specific road, section of road, you know, an  
12 area, then one of the things they will do is they  
13 will go out and measure friction, but they already  
14 know they have a problem and they are then looking  
15 to determine sort of I have a problem, do I have  
16 low friction, high friction, what is my feelings  
17 about friction being a contributory factor to the  
18 problem.

19                   Q. And we've heard quite a  
20 bit of evidence from MTO people about that, and  
21 your point though is that yours is -- on the 407,  
22 because you're doing the network testing, it isn't  
23 based on concerns having been raised about the  
24 friction -- potential friction levels or collision  
25 in the first place, it's because it is required

1 and then the testing is done across the network?

2 A. That's correct.

3 Q. Okay. And when -- what  
4 triggers the requirement for an investigation with  
5 friction? Is it based on a particular length of  
6 the highway that's been tested that is falling  
7 below 30, or what's used to trigger the  
8 investigation?

9 A. When we're looking in our  
10 collision investigation we're sectionalizing the  
11 highway in interchange to interchange sections.  
12 So given that we have 40 interchanges in  
13 108 kilometres, you know, they are roughly 2 and  
14 a half kilometre segments of the highway, and then  
15 our friction measurements are done in 500-metre  
16 sections. And if we start to see an area where  
17 we've got consistent 500-metre sections below  
18 30 then we are taking special care and attention  
19 to that area.

20 And I guess, you know, the  
21 concession agreement specifies the level of 30 and  
22 also -- and you hear 30 quite a bit in the  
23 industry with brake force trailers, that being a  
24 level, but the speed is also very important. So  
25 the fact that we measure at 100, 30 at a 100 is

1 not the same as 30 at 60 kilometres an hour, which  
2 is the normal under the ASTM spec. At 100 it --  
3 at 100 you will get measurements below 30 much  
4 more quickly than you will if you were measuring  
5 at the ASTM speed of 60 kilometres per hour.

6 Q. Right. And what you're  
7 saying is that as speed of testing increases the  
8 friction or skid number decreases directionally,  
9 if I can put it that way?

10 A. That's correct. And  
11 that's one of the reasons why I think, you know,  
12 although we do have sections of the highway and  
13 have had over the years where it is below 30, we  
14 are not seeing a correlation with collisions,  
15 increased problem or concern with it.

16 Q. And to come back to then  
17 to the question, is there a specific requirement  
18 over a certain distance where the investigation  
19 has to take place? Is it if it's within a  
20 500-metre stretch or is it over a kilometre or  
21 anything like that? Or is that --

22 A. No, I don't believe that  
23 it is. And previously it was hard for us to --  
24 and even still it's hard -- you have to watch that  
25 the level of precision that you start to interpret

1 your data with does -- you know, your precision  
2 can't exceed the accuracy of the data. And while  
3 the police officers do their best to indicate  
4 location on collision reports, they aren't that  
5 precise or accurate. And if you start to say this  
6 collision is precisely in this area and I have two  
7 of them precisely here, that may or may not be  
8 true. Some officers are marking a collision  
9 location where the vehicle has ended, some are  
10 marking it where the loss of control started or  
11 the impact started, and they can be very different  
12 locations at highway speeds.

13 So we basically are looking  
14 highway segment to segment. And now that the  
15 MTO -- the OPP data comes from MTO to us and is  
16 coming electronically and it is including GPS  
17 coordinates, we are trying to also look at those  
18 GPS coordinates and how accurate are they, are  
19 there any clusters in a more precise location,  
20 because there is a danger, you know, if you take  
21 too long an area like an interchange to  
22 interchange segment, may be masking something  
23 where there is a particular area of 100 metres  
24 that's a problem.

25 So we're now looking at it

1 both ways, but we're finding that the level of  
2 accuracy of the reported location is not that  
3 great.

4 Q. And is that even the case  
5 with the GPS locations?

6 A. Yes, it is.

7 Q. And do I understand that  
8 the collision analysis is something that's also  
9 required by the concession agreement?

10 A. Yes, it is.

11 Q. Okay. And that is an  
12 annual thing compared to the biannual friction  
13 testing.

14 Then you spoke about the other  
15 things that you would look at. So there's the  
16 requirements to the friction and the investigatory  
17 level and the collision analysis, and then you  
18 referred to other factors. So can you just  
19 describe those. And I take it these are part of  
20 the investigation that you entail. If you're  
21 looking at a situation where there is an elevated  
22 number of collisions or if the friction number is  
23 below 30, the investigation takes place, what else  
24 do you look at.

25 A. I get assistance on the

1 analysis of the collision data from our traffic  
2 engineering group and we try --

3 Q. When I say "you" I mean  
4 the 407 ETR, not you personally for each aspect of  
5 it.

6 A. Thank you, Andrew.

7 So we're drawing on different  
8 expertise across the company, but we try to look  
9 at all of the factors that are available on the  
10 police reports or the summary data that we get.  
11 There's many boxes there that tell you time of  
12 day, direction of travel, weather conditions, road  
13 conditions, daylight, you know, all of those  
14 factors try to get analyzed and trying to  
15 determine trends and contributing factors to  
16 collisions, whether they are single vehicle,  
17 multi-vehicle, whether skidding was involved.

18 So we're basically trying to  
19 sift through the data and analyze and see what  
20 does the data tell us. But it's -- you know, I  
21 think on 407 we are fortunate that our collision  
22 rate is quite low. The collision rate is --  
23 historically has always been just slightly below  
24 .3 collisions per million vehicle kilometres  
25 travelled, and that's about half of what the

1 number would be generally on highways across  
2 Ontario and about a third of what it is on the  
3 comparable multilane expressway-type highways in  
4 the GTA. Although those numbers are a bit out of  
5 date, my understanding is they are still in that  
6 same comparable range.

7 Q. In terms of weather, do  
8 you look at statistically the wet weather  
9 collisions compared to the overall number of  
10 collisions in a segment?

11 A. Yes, we do.

12 Q. And what do you take from  
13 that if there are an elevated number of wet  
14 weather collision?

15 A. Well, it would be one of  
16 the factors that helps us determine, you know,  
17 that if we're seeing a lot of wet weather  
18 collisions and they are skidding collisions then  
19 it might become a trigger that we are going to  
20 look at enhancing friction of the surface. And  
21 also our efforts in the friction enhancement have  
22 included grooving of our concrete pavement which  
23 reduces the potential for hydroplaning which, you  
24 know, is a real problem when vehicles are driving  
25 at highway speeds in wet weather. That advice

1 they give you slow down, that's good advice for  
2 all of us.

3 Q. And in terms of the  
4 geometry of the road, is that something that  
5 you're looking at as well, about whether they are  
6 clustered at interchanges, curvature, those sorts  
7 of things, analysis?

8 A. Yes, I mean, we do break  
9 the data separately into mainline and ramps so  
10 we're looking at those separately. And then as we  
11 are looking at especially more recently, the last  
12 two years we've been getting the GPS coordinates  
13 and we would be looking at exactly where in the  
14 segment, you know, and are we seeing a cluster.

15 But our highway is only  
16 designed and built in the 90s and early 2000s.  
17 You know, the design standards -- and there is  
18 even things like an enhanced clear zone, but the  
19 highway was built to sort of the most modern  
20 standards used in Ontario, I would say. And so  
21 things like sight lines, horizontal curves,  
22 vertical curves, they all meet the design speed  
23 for the highway and so I wouldn't anticipate we're  
24 going to see geometric-related problems on the  
25 mainline.

1 Q. If you have FN or SN  
2 results under 30 in a given segment and you  
3 investigate and if there are low collisions  
4 compared to the main lane generally, or no  
5 collisions, what happens then?

6 A. I mean, it's sort of I  
7 guess that old adage of don't fix a problem you  
8 don't have. So if we're not seeing a  
9 friction-related problem then we are not going to  
10 take action as sort of evidenced by collisions,  
11 then we aren't going to go enhance friction just  
12 for the sake of doing so. However, there have  
13 been isolated sections where we did notice.

14 You know, I guess an example I  
15 can give out of both collision analysis and just  
16 knowledge of the highway and collisions was we had  
17 a particular section where we saw over a couple of  
18 years two or three empty tractor trailers lose  
19 control in wet weather or snowy, slightly slippery  
20 conditions in the same -- very same sort of area.  
21 So then we did some targeted friction measurement  
22 in that area confirming across the lanes, and it  
23 indicated lower friction.

24 It's not an absolute, you  
25 know, cause and effect correlation, but we were

1 concerned enough that two or three tractor  
2 trailers over a two-year period in exactly the  
3 same area that were all empty losing control in a  
4 skidding type collision we felt was related to  
5 friction, so we did go out and do isolated diamond  
6 grinding and improving of the pavement and it  
7 seems to have helped.

8 Q. And if I could rephrase  
9 that, and you correct me if I'm wrong about that,  
10 what I'm getting is that it's not that you can say  
11 absolutely that is the -- that low friction was  
12 the cause, but it was something that you or 407  
13 felt that certainly could be the cause of those  
14 collisions that you just described and therefore  
15 thought was prudent to take the friction  
16 remediation method. Is that --

17 A. That's exactly what I was  
18 trying to say, Andrew. It's not an absolute cause  
19 and effect; it's more of a reasonable probability  
20 that this is something we could do to make it  
21 better. And sort of notionally after we've done  
22 that intervention, I haven't seen those same  
23 collisions occur in that area, so I'm believing  
24 that we've done some good to it.

25 Q. You referred to diamond

1 grinding. Is that on the concrete pavement  
2 section?

3 A. Yes.

4 Q. And do you ever have  
5 occasion to investigate friction concerns where  
6 the FN is over 30, so it's not a contractual  
7 requirement but the collisions have caused you  
8 some concern?

9 A. Yes, we would look at  
10 that as well. As I say, we sort of look at the  
11 collision analysis from the point of view of where  
12 are the collisions occurring and what are the  
13 factors or what commonality can we find in these  
14 collisions, and we're always striving to say, you  
15 know, what, if anything, can we do about it that  
16 may help.

17 Q. Are there situations  
18 where there are friction test results that are  
19 substantially different between adjacent portions  
20 of the highway, and if so, how do you deal with  
21 that?

22 A. Yeah, I do notice  
23 different results. I mean, the most significant  
24 is between our asphalt sections and concrete. You  
25 know, concrete, most of it is hovering around the

1 30 kind of level; asphalt is up 50 plus kind of  
2 thing. But the traffic volumes are different in  
3 the different areas. And I guess also I even  
4 notice a difference between the numbers on the  
5 truck lanes on the older concrete and the new  
6 concrete that was constructed in 2006, 2007, you  
7 know, opened to traffic either that time period or  
8 in 2012/13 some of those lanes were also open.

9                   So the concrete does tend  
10 to -- concrete tends to polish over time and  
11 friction numbers will drop. Asphalt often has its  
12 lowest friction right after it's constructed and  
13 it actually gains in friction as the asphalt  
14 cement wears off the aggregate particles and more  
15 of the aggregate sort of sharp edges of the hard  
16 trap rock or they use very aggressive aggregates  
17 in surface courses in Ontario so that you get  
18 better skid resistance. That's exactly why those  
19 high quality mixes are used on highways.

20                   Q. When you're talking about  
21 that are you talking about the Ministry of  
22 Transportation's designated source of materials  
23 list for aggregates for surface courses?

24                   A. Yes.

25                   Q. And does the 407 use DSM

1 aggregates?

2 A. We do but we're even more  
3 restrictive. We only allow -- in the asphalt we  
4 only allow what we believe are the highest quality  
5 products. I think the government allows a  
6 broader --

7 Q. They have a list.

8 A. And I guess it  
9 includes -- it's more inclusive, but there's  
10 aggregate sources from all over the province or  
11 more providers. And they are all good aggregates,  
12 but we've decided we will choose basically trap  
13 rock, and that's our preferred aggregate.

14 Q. What asphalt mix is used  
15 for the surface layer? I understand it's not SMA;  
16 is that right?

17 A. No, we have no SMA. Ours  
18 is an FC2.

19 Q. Why is that the choice,  
20 if you know the answer?

21 A. We don't have as much  
22 heavy truck traffic. So truck traffic does make  
23 your -- make it more susceptible to rutting  
24 issues. And SMA is a premium product and is  
25 better against rutting, but given the

1 characteristics of our traffic, our traffic  
2 volumes, the heaviest sections we might have an  
3 AADT of about 120, maybe 125,000. There's  
4 sections of the 401 where I believe they are over  
5 400, and we run about 6 percent, maybe 7 percent  
6 of traffic is trucks, and they may be in the  
7 20 percent range. I'm not sure of their numbers,  
8 but they are significantly different from ours.

9 Q. Sorry, that was the AADT?

10 A. Yes, the average annual  
11 daily traffic.

12 Q. Thank you. Sorry, just  
13 back to when you were looking at the potential  
14 causes of collisions, just to cut it off.

15 Do you look at the time of day  
16 or evening, night, the sort of the lighting for  
17 the time of the accidents as well? Is that part  
18 of the investigation analysis?

19 A. Yes, we do. And we look  
20 at it, but it's actually sort of kind of funny  
21 because statistics can lie to you a bit as well,  
22 because, you know, it's what are you measuring and  
23 not measuring. So I think nighttime driving is  
24 more difficult and you expect a higher number  
25 collisions, but given the fact that 80 percent of

1 our traffic is during the sort of morning,  
2 afternoon, daytime periods, then your nighttime  
3 collision rates aren't that high just on a direct  
4 basis but it's partly because your traffic volume  
5 is significantly lower.

6 Q. Right. So you have to  
7 look at the percentage of -- sorry, the number of  
8 collisions or accidents against the levels of  
9 traffic at a particular time if you're going to  
10 have anything meaningful?

11 A. Correct. And that  
12 happens -- you mentioned about day, night and it  
13 just made me think of that, but it's same even  
14 with wet weather. And you have more days with dry  
15 pavement in Ontario than you do with wet pavement  
16 or snowy pavement, yet wet pavement or snowy  
17 pavement is much more slippery and contributes to  
18 more accidents. But if there's less traffic  
19 during those periods then -- or less overall  
20 number of days then it reduces -- it reduces the  
21 effect of that as to what you're seeing in your  
22 stats.

23 Q. And I understand quite a  
24 long time ago now the 407 ETR purchased a grip  
25 tester machine; is that correct?

1 A. Yes, that is correct.

2 Q. When was that

3 approximately?

4 A. I think I misstated on  
5 that date also, Andrew. When I talked to you  
6 before I believe I said 2007, 2008, but it was  
7 actually -- I looked it up -- it was 2010, '11.  
8 We ordered it late 2010 and actually received it  
9 in 2011.

10 Q. You were involved  
11 personally in the decision to purchase that?

12 A. Yes, I was.

13 Q. Why -- what was the  
14 purpose?

15 A. Basically as I had  
16 mentioned earlier, the brake force trailer,  
17 there's not one sort of readily available for our  
18 use in Ontario so we have to bring it up from the  
19 U.S.

20 And brake force trailer is a  
21 very expensive piece of equipment. Back when I  
22 was looking at it it was over half a million  
23 dollars. And it requires an operator who is going  
24 to be very familiar and that is basically using  
25 that piece of equipment all the time. And given



1 testing both to determine whether we could run our  
2 test at the same time as the brake force trailer  
3 testing and could we develop a reliable  
4 correlation between the two.

5                   And then also it gave us the  
6 ability to test any time of the year. And we've  
7 taken it out, you know, the prescribed -- both the  
8 brake force trailer and the grip tester, they have  
9 prescribed conditions when you should do the  
10 testing and they control the amount of water  
11 provided, but I was interested, like, vehicles  
12 drive in heavy rainy days. What does the test  
13 trailer tell me on a heavy rainy day. What does  
14 it tell me when there's some snow on the highway.  
15 I was just interested in what could I learn from  
16 the data, and also could I do the correlation and  
17 then eventually maybe convince MTO to not use the  
18 brake force trailer but to use a continuous  
19 measurement device.

20                   Q. So a lot of info in  
21 there. Thank you very much.

22                   On the last point that you  
23 mentioned, am I correct that was sort of the --  
24 apart from the other things that you described,  
25 that the end goal you hoped that you would be able

1 to convince the ministry to allow the 407 to use  
2 the grip tester rather than the brake force  
3 trailer to satisfy its contractual friction  
4 monitoring obligations; is that right?

5 A. Yes.

6 Q. And so you describe sort  
7 of the things you wanted to use it for. Did you  
8 end up using it for those purposes, as you said,  
9 for testing in wet weather conditions as opposed  
10 to under the prescribed testing regimen in  
11 different weather conditions, that sort of thing?

12 A. Yes, we did do that kind  
13 of spot testing in adverse weather, and we did do  
14 testing for a few years in a row in parallel with  
15 the brake force trailer testing so that we had  
16 data as measured by each of those pieces of  
17 equipment basically following one another down the  
18 highway.

19 Q. So you actually conducted  
20 them with the brake force trailer at the same  
21 time, like one following the other; yes?

22 A. Yes.

23 Q. And so from that I would  
24 infer that the grip tester testing was also done a  
25 100 kilometres per hour; is that right?

1 A. Yes, that's correct.

2 Q. And the usual  
3 specification or standard for grip tester is at  
4 50; is that right?

5 A. Yes, that's my  
6 understanding.

7 Q. Right, Okay. And so why  
8 be doing it at the same speed?

9 A. That's a good question.  
10 But I think it eliminates one of the variables.  
11 It's also safer to be doing it at highway speeds.  
12 And as I said before, you're going to get  
13 significantly different skid numbers with any  
14 device at different speeds.

15 And what I did find though,  
16 which was a bit disadvantageous with the grip  
17 tester, and I think it showed in some of the data,  
18 especially with the concrete pavement, concrete  
19 pavement was all constructed at the same time slip  
20 form so it was perfectly flat, but then you cut  
21 the panels into sections so that you got  
22 controlled cracking of your concrete as it cures  
23 and gives you thermal expansion and contraction  
24 capability as temperatures change.

25 But those individual panels of

1 concrete at the joints, over time they start to  
2 warp and those joints become a bit bumpy. And  
3 that roughness or bumpiness of the concrete  
4 pavement with a much lighter trailer like the grip  
5 tester, testing at 100 kilometres per hour, was  
6 not good for it because it would tend to bounce  
7 more than the brake force trailer. But even the  
8 brake force trailer does bounce some if your  
9 pavement is rough.

10 Q. So just more pronounced  
11 with the grip tester as being it's the lighter  
12 machine; is that right?

13 A. Yes.

14 Q. And I think I understood  
15 you to say this was principally a problem on a  
16 concrete pavement for the reason you describe with  
17 the joints, effectively?

18 A. Yes, definitely more on  
19 the concrete than -- I can't say -- our asphalt is  
20 generally quite smooth and we keep it in pretty  
21 good condition so I don't believe there was -- we  
22 get the odd dip or bump same as anybody, but much  
23 more reliable on the asphalt.

24 Q. Okay. And so as we've  
25 heard, and you mentioned, that the grip tester is

1 a continuous friction measuring device or a CFME,  
2 as we've heard it called, as opposed to the  
3 locked-wheel tester which does just that, it  
4 applies a brake fully and then the friction is  
5 measured in a full skid essentially.

6 And so did you form any view  
7 on the differences between the continuous  
8 measurement and the locked wheel testing and just  
9 in terms of the data that it presented to you and  
10 the usefulness of it?

11 A. Well, that was one of the  
12 takeaways I got from talking to the experts and  
13 seeing the testing, participating in that workshop  
14 down at Penn State. I actually felt that the  
15 continuous measurement was -- potentially it was a  
16 better measurement for vehicles that are on the  
17 highway or if we're trying to anticipate friction  
18 relative to vehicle behaviour and safety of  
19 vehicles on the highway, which to me, that's my  
20 underlying concern is making my highway as safe as  
21 possible for the vehicles that use it.

22 And given that vehicle now  
23 have antilock brakes, then you're not locking your  
24 brakes. It rarely, if ever, occurs in today's  
25 vehicles. And so I don't dispute that the brake

1 force trailer is a measurement of friction, but to  
2 try to say that it's a correlation between  
3 measurements of that device where you're having a  
4 locked wheel and extrapolating that to be a  
5 representation of safety of other vehicles that  
6 don't ever lock their wheels, I wasn't totally  
7 convinced.

8                   And I felt that the continuous  
9 measurement also gave a more reliable measurement  
10 in that the brake force trailer -- like, we repeat  
11 these measurement every two years, but because  
12 you're only locking your wheel, you know, and I  
13 forget the exact frequency but it's like every 100  
14 or 200 metres or something, like it's only two or  
15 three measurements I believe per 500-metre segment  
16 of highway, the probability that you're actually  
17 testing that same piece of pavement year over year  
18 is remote to nil.

19                   And so you're introducing many  
20 other variables. You know, are you on the same  
21 path where you're -- in applying the wheel, are  
22 you hitting the same area, are there differences,  
23 the bumpiness of the pavement, all that kind of  
24 stuff. And I felt that it -- and it wasn't just  
25 me, it was also talking to some of the experts,

1 you know, at Penn State there's people who are  
2 real experts in pavement friction, Henry and  
3 Thompson were two of the gentlemen who were like  
4 PhDs in this stuff, I think it stemmed from  
5 landing space shuttles safely and being able to  
6 stop them, friction became a big concern. But  
7 those guys, they just knew so much about it. And  
8 listening to them.

9                   The other thing was they said  
10 if you were using a brake force trailer their  
11 recommendation was use the smooth tire. MTO's  
12 test methodology prescribes using the ribbed tire.

13                   And MTO, you know, credit to  
14 them, they are trying to be able to compare years  
15 of history of data, so they are staying with the  
16 same methodology so that it's absolutely  
17 comparable and they know that data they gathered  
18 in the 80s is compare to data they are gathering  
19 in 2020. So they are staying with the ribbed  
20 tire, they are staying with the brake force  
21 trailer. And I don't blame them. I'm not saying  
22 by any means it's wrong. I just felt sort of  
23 intellectually I like the idea of the continuous  
24 skid measurement and saw benefits to it.

25                   Q. So that -- I understand

1 about what you understood from speaking to people  
2 that caused you to want to try out the grip tester  
3 and -- which is a continuous measurement device,  
4 but were those things borne out that you  
5 described, or no? What was the experience with it  
6 in that regard?

7 A. So the experience was, as  
8 I mentioned earlier on the concrete, taking it at  
9 the speed we were taking it was introducing  
10 another variable and was affecting the readings,  
11 which wasn't good. So, you know, trying to do  
12 this at a high travel speed on concrete messes up  
13 the results.

14 On asphalt I think it was  
15 better and it did give us good measurements, and I  
16 do like the fact that I can take it out, as I said  
17 earlier, on rainy days, snowy days, whatever, and  
18 I can see what is the absolute difference in  
19 friction. And you do see significant differences.  
20 Or being able to measure asphalt right after it  
21 was paved and open to traffic even if it is high  
22 quality aggregate, it's got the AC coating on it,  
23 which is oily, an oil-based product, it's much  
24 slipperier when it's brand new. And if you take  
25 it when it's brand new and in the rain it's much

1 slipperier.

2 Q. And to be clear, am I  
3 correct though that the last part of things that  
4 you just described are based on the availability  
5 of it? You had the device therefore you could  
6 perform those tests which you would have performed  
7 with another device as well. That's an  
8 availability issue as opposed to a device issue?

9 A. Correct.

10 Q. And about the  
11 variabilities that you described, to make -- again  
12 make sure I understand, I do get the point about  
13 the locked-wheel tester only measuring  
14 periodically, and so it's difficult from year to  
15 year to know if you're at exactly the same spot or  
16 not that the measurements taking place, but you  
17 also referred to the wheel path and whether you're  
18 on exactly the same wheel path from two years to  
19 two years. Unless I'm misunderstanding you, that  
20 would apply to other devices as well, right?

21 A. Yeah, that's correct.

22 Q. Okay.

23 A. It's just repeatability  
24 of the results. And then when you're trying to  
25 develop a correlation or even when you're

1 comparing results year to year, and I think there  
2 may even be differences, you know, if we do it  
3 very early in the year and there's still salt  
4 residue on the road versus if there's been huge  
5 rains, or even if it's not the salt residue, you  
6 know, has there been a rain recently that was a  
7 very heavy rain that washes dust, rubber,  
8 whatever, cleans the surface of the road, do you  
9 get better measurements if the surface has been  
10 recently cleaned and dry, and those things  
11 introduce variability in the results as well.

12 Q. Right. Over time,  
13 although if I understood you correctly, not as  
14 between -- if you're using the locked wheel and  
15 grip tester at the same time trailing one another  
16 they are doing it under the same conditions, same  
17 speed, so those variables wouldn't apply in terms  
18 of comparing those results?

19 A. That's correct, and  
20 that's one of the reasons we did it right at the  
21 same time, like, one after the other down the  
22 highway.

23 Q. Right. And so the  
24 repeatability point, is that what you were  
25 describing the locked-wheel tester and the fact

1 that it's measuring periodically over distances?

2 A. Yes.

3 Q. Okay. And so ultimately  
4 how did the correlation exercise go and what  
5 happened with the effort to convince the MTO to  
6 permit use of the grip tester?

7 A. So the correlation -- it  
8 actually wasn't that bad. I think we had an  
9 R-squared of about 68 when we looked at testing on  
10 both concrete and asphalt. The R-squared was not  
11 quite as good if you were just looking at concrete  
12 versus concrete results or asphalt versus asphalt.  
13 When I say asphalt versus asphalt, I mean grip  
14 tester measurements of asphalt versus brake force  
15 trailer measurements of asphalt.

16 But when you took the two  
17 different areas then you actually got an R-squared  
18 of about 68, which means the equation describing  
19 the line through the point cloud is explaining  
20 about 68 percent of the variation between the  
21 results which means that about 32 percent is just  
22 random errors or other factors that are  
23 unexplained by your comparison that says,  
24 whatever, 1.5 grip number equals brake force  
25 trailer number. I'm just pulling those numbers

1 out of the air just to explain what I meant as an  
2 equation.

3 Q. And directionally would  
4 it be correct that the grip tester would return a  
5 higher number than the locked-wheel tester; is  
6 that right?

7 A. Yeah, I believe that's  
8 what it was. And I'm sorry, Andrew, I didn't go  
9 back through those results and haven't looked at  
10 them since I think when we talked last the year.

11 Q. Okay. So higher numbers  
12 returned for the grip tester at the same number,  
13 but if I've understood you correctly, looking at  
14 only one pavement -- type of pavement, so the  
15 asphalt against asphalt results or concrete versus  
16 concrete, the correlation was not the best?

17 A. Yeah, I think the problem  
18 becomes when you take just concrete versus  
19 concrete or asphalt versus asphalt then you've got  
20 less overall spread, less difference. Like I said  
21 before, we might have numbers in concrete that  
22 range from 25 to 35 or 40 -- 25 to 35 say, and  
23 then we've got numbers in asphalt that may be  
24 ranging from 40 to 55.

25 When you take a point cloud

1 that only has concrete then you're still going to  
2 have random distribution but you've got a much  
3 tighter cluster, like, it's from 30 to 35 I said,  
4 and then your grip numbers may be from 40 to 50.  
5 But it's such a short range.

6 And then you've got a lot of  
7 variation in it that it's not explaining -- your  
8 equation is not explaining as much of that  
9 variation.

10 Whereas if I take a point  
11 cloud of concrete numbers down here in that skid  
12 number of 25 to 35 and then I take the asphalt  
13 numbers up here that are in the 45 to 55 range or  
14 something and I put a line through it, and you're  
15 connecting those two clouds and assuming they are  
16 part of the same data, then that line is  
17 explaining a lot more of that variation, or that  
18 equation is. So that's why the R-squared  
19 improves. I don't know if I'm making sense.

20 Q. Well, I'm not great at  
21 math but I understand generally what you're  
22 speaking is you have a wider spread of data with  
23 which to apply to the two sets of data?

24 A. Absolutely.

25 MR. LEWIS: I'm just advised

1 the Commissioner lost his connection. So if we  
2 could hold for one minute. If you could mute me,  
3 please. I think this is the first time the  
4 Commissioner has had an outage so if we could hold  
5 for one moment and we'll get him back on.

6 (DISCUSSION OFF THE RECORD)

7 MR. LEWIS: If we could take a  
8 ten minute break, Registrar, and if we come back  
9 at 10:40 that would be great. And actually if you  
10 could briefly put me into a counsel room as well  
11 that would be -- for all counsel, that would be  
12 good just to talk about timing. Thank you.

13 --- Recess taken at 10:29 a.m.

14 --- Upon resuming at 10:40 a.m.

15 BY MR. LEWIS:

16 Q. We are back after a brief  
17 interruption. Sorry for the delay, everyone.

18 So, Mr. White, you described  
19 the correlation issues, and then the second part  
20 of the question I asked you was were you able to  
21 convince the MTO of using the grip tester rather  
22 than the locked-wheel tester?

23 A. No, and I actually -- I  
24 had informal discussion with MTO as opposed to  
25 submitting a formal application of equivalency,

1 and that's where I got more insights into their  
2 philosophy and desire to maintain standard  
3 methodology and equipment to make the data  
4 strictly comparable or as comparable as possible  
5 over the years. And they have many years of  
6 history.

7 And it was also -- you know,  
8 it specified that this is in the concession  
9 agreement so it would have required an amendment  
10 or modification to the concession agreement.

11 So after making informal  
12 inquiries, finding out their reason and their  
13 motivation that they are likely not going to agree  
14 to the change, then we decided we were not going  
15 to formally apply. It did not seem likely that  
16 they would agree.

17 And I now have my grip tester.  
18 I can do the testing myself if I want. And  
19 although the correlation isn't perfect, it is  
20 another methodology and a valid methodology for  
21 measuring friction and understanding behaviour of  
22 pavements.

23 Q. And so apart from that  
24 and the limitations you described, particularly  
25 with the weight on the concrete pavements, did you

1 find the grip tester to be a useful measuring  
2 device?

3 A. Yes, yes. And as I say,  
4 there are many different devices out there and  
5 they all measure slightly differently, but they  
6 are indications of pavement friction and -- yeah,  
7 basically pavement friction or skid resistance of  
8 a surface. But then how well they represent  
9 what's happening with vehicles, with all of the  
10 current technology and antilock braking and all  
11 that type of thing, I'm not 100 percent sure. But  
12 I do know from engineering and common sense that  
13 if you have less friction then you have more  
14 potential of losing grip and having some type of  
15 slipping incident or loss of control. If a  
16 surface is too slippery you can't even steer a  
17 vehicle on it, much less brake.

18 Q. And does 407 still use  
19 the grip tester?

20 A. We haven't for the last  
21 few years, but that was really just some of the  
22 urgent questions that we had had been answered.  
23 And we also lost a staff member. We've taken  
24 steps -- he was the one who we trained and who had  
25 the expertise and who was able to do the testing,

1 but we are in the process of getting the unit  
2 recalibrated and do plan to use it again this year  
3 or next year, we will be up with brake force  
4 trailer again.

5 Q. One last on the grip  
6 tester. Did you use a smooth tire for the grip  
7 tester? It's a different type of tire than is  
8 used for the locked-wheel tester. It's a  
9 different (garbled audio), right?

10 A. Yeah, the tire is  
11 different. I honestly don't recall. I would  
12 actually have to look back at the records. But I  
13 actually thought that the -- I thought that the  
14 grip tester tire was not a smooth tire, but it is  
15 a much smaller diameter tire than the brake force  
16 trailer tire.

17 Q. I just asked because you  
18 had indicated before about the issue raised about  
19 the MTO using the ribbed tire versus the smooth  
20 tire so I just wondered if you had seen a  
21 difference in that respect?

22 A. Those are both different  
23 options. With the brake force trailer there is a  
24 smooth tire that's just perfectly smooth like a  
25 race car slick kind of thing, and then there is a

1 ribbed tire which is -- it doesn't have tread, it  
2 only has ribs circumferentially around the tire.

3 Q. Did you obtain the grip  
4 tester? Was that from Tradewind?

5 A. Yes, it was.

6 Q. They're an agent for the  
7 manufacturer, correct?

8 A. That's correct.

9 Q. I do not have any further  
10 questions. Thank you very much. Some counsel for  
11 the participants may have some questions.

12 I understand that counsel for  
13 the City may have approximately ten minutes of  
14 questions, Ms. Hale. And so I would ask her to go  
15 first. And then counsel for the MTO and Golder  
16 also asked to reserve sometime and so they may  
17 have a couple questions each after Ms. Hale.

18 EXAMINATION BY MS. HALE:

19 Q. Good morning, Mr. White.

20 A. Good morning.

21 Q. My name is Samantha Hale,  
22 and as commission counsel mentioned I'm counsel to  
23 the City of Hamilton. I have a couple of  
24 questions for you this morning.

25 I would first like to speak

1 about your evidence regarding the ASTM brake force  
2 trailer and the grip tester. Your evidence this  
3 morning was that the 407 purchased a grip tester  
4 in 2010 or 2011 at your direction and you wanted  
5 to try and calibrate the results in hopes of  
6 demonstrating to the MTO that the required  
7 friction testing could be done on the grip tester.  
8 And you mentioned in your evidence that there was  
9 inherent differences in the grip tester and brake  
10 force trailer such as repeatability and  
11 durability, correct?

12 A. Yes.

13 Q. And at the time that you  
14 purchased the grip tester I take it from your  
15 evidence that you were aware of these inherent  
16 differences between grip tester and brake force  
17 trailer?

18 A. Yes.

19 Q. And you spoke with  
20 commission counsel about how the 407 ran this  
21 comparison and correlation. Did you yourself do  
22 the correlation of the results or was that part of  
23 a broader team?

24 A. That was part of a  
25 broader team. The data was gathered. It was our

1 operator running the grip tester; it was ARA's  
2 operator running the brake force trailer. We  
3 provided all data to ARA. They did the analysis  
4 and provided us with the report and the  
5 comparison.

6 Q. And you said that the  
7 correlations between asphalt to asphalt and  
8 concrete to concrete were not the best. Do you  
9 remember approximately what the R-squared values  
10 were?

11 A. I may have it handy. I'm  
12 not sure whether I can just find it quickly. I  
13 know it was significantly less than when we  
14 combined the two. I'm having trouble. I need to  
15 read the report or find the right spot. I found  
16 the same one that I talked before. It was  
17 R-squared of 65 on the combined data, but I don't  
18 see it jumping out at me --

19 MS. HALE: Counsel has come on  
20 screen. Maybe Mr. MacKenzie can assist?

21 MR. MACKENZIE: Thanks. Craig  
22 is trying to find that but it could take a while.  
23 And like you said, if you would like to review  
24 that as well, happy to provide that after he's  
25 wrapped up today, unless it's vital for your

1 continued line of questioning.

2 MS. HALE: That's okay. Thank  
3 you, Mr. MacKenzie.

4 BY MS. HALE:

5 Q. Mr. White, I take it that  
6 if you got a grip tester number of let's say 35,  
7 for example, you would be unable to determine  
8 whether or not that would meet the MTO's  
9 contractual requirement of maintaining a  
10 friction -- FN value of 30; it's not a simple  
11 plus 5 correlation?

12 A. Absolutely. And as a  
13 matter of fact, I mean, even if we were  
14 mathematically correlating and coming to an  
15 R-squared of 80 or 85, if we used a different  
16 device than what the concession agreement required  
17 and a different methodology then that would  
18 require agreement of the parties to do that, you  
19 know. I would not be at liberty to just  
20 substitute the method and tell them this is  
21 equivalent and this is what you're getting.

22 Q. Exactly. And I take it  
23 that if they were able to be so easily correlated,  
24 the 407 would probably have brought that  
25 information to the MTO in a more formal manner?

1                   A.    Yes.  Sorry.  I was just  
2   going to add both if it was more, you know,  
3   demonstrably highly correlated and also if there  
4   was a real strong reason for doing one over the  
5   other.  But I was satisfied with the discussion  
6   with them.  They are satisfied that we're only  
7   doing it every two years and can only do the  
8   testing when the equipment is available to us.

9                   And they really desired the  
10   repeatability and -- or sorry, comparability of  
11   their historical results, so, like, exactly the  
12   same methodology as on any other road for the past  
13   20 or 30 years is what they wanted us to do.

14                  So I took that and said yeah,  
15   I'm wasting my time arguing about it because  
16   there's no harm to us to do the brake force  
17   trailer.

18                  Q.    So moving subjects, I  
19   wanted to ask you some questions about the 407  
20   more generally.  So I take it that the 407 is a  
21   for profit toll road?

22                  A.    Yes.

23                  Q.    And through the  
24   concession agreement with the MTO the 407 ETR, as  
25   you stated before, is contractually responsible

1 for regular friction testing which you have done  
2 biannually?

3 A. Yes.

4 Q. And I take it if the MTO  
5 requested to see the friction testing and it, for  
6 some reason, became clear that the 407 did not do  
7 and did not conduct regular friction testing, that  
8 would be a failure to perform its material  
9 obligation under the concession agreement?

10 A. I'm not a lawyer, but  
11 that sounds reasonable to me. I take it as an  
12 obligation, something I need to do.

13 Q. Basically that the 407  
14 would be in default of one part of the agreement?

15 A. Yes.

16 Q. And upon a default such  
17 as this the MTO would have recourse under the  
18 agreement?

19 A. Yes. I mean, typically  
20 there are things in the agreement where they can  
21 instruct us to do something and we need to follow  
22 that instruction as long as it's reasonable and  
23 comparable or part of our agreement and if we fail  
24 to take action in reasonable time they can step in  
25 and we're responsible for the cost.

1 Q. And despite being  
2 included in the 400 series network, the 407 ETR  
3 section of Highway 407 is not considered part of  
4 the provincial highway network due to it being  
5 privately operated?

6 A. No, I actually -- there  
7 is funny wording in the concession agreement. We  
8 may have -- it is considered to be a King's  
9 highway for certain purposes, including for  
10 Highway Traffic Act and enforcement, but you're  
11 right, it is then set separately that it is a  
12 private highway and not a public accessible King's  
13 highway.

14 Q. The 407, is it the only  
15 road in Ontario that you're aware of that is  
16 required to monitor friction in the manner that  
17 you've discussed?

18 A. No, not any longer. We  
19 were the original, but there have been other P3  
20 projects I believe. Well, I know for certain the  
21 407 East has a requirement for the maintenance  
22 contractor to monitor the friction. It was a  
23 design-build-operate type project. And I believe  
24 that's the same for the parkway in Windsor which  
25 -- the name slips my mind but I believe --

1 Q. The Lincoln Alexander  
2 Parkway. Oh no, sorry, that's Hamilton.

3 A. You could look at that  
4 agreement but I think you would find that will  
5 also have a friction requirement in it.

6 Q. So turning to the  
7 friction monitoring program. You stated that the  
8 407 uses the friction level 30 as an investigatory  
9 threshold, and so that means that areas that have  
10 friction -- FN values over 30 do not require  
11 further investigation based on the friction number  
12 alone?

13 A. I would say that's  
14 correct based on friction number alone, but there  
15 is also a requirement that we do a network-wide  
16 analysis of our collision and highway safety in  
17 general (skipped audio) number.

18 Q. So the 407 could  
19 investigate areas that have, as you said,  
20 consistent FN values under 30 if there were other  
21 indicators that came from the collision data?

22 A. Yes.

23 Q. So an FN value under 30  
24 alone does not mean that remedial action is  
25 required?

1 A. That's correct.

2 Q. And as you said,  
3 generally you're not going to go enhance friction  
4 just for the sake of doing so if the 407 is not  
5 seeing additional indicators of concern from the  
6 data?

7 A. That's correct.

8 Q. Are you familiar with the  
9 Red Hill Valley Parkway?

10 A. I know of the project. I  
11 know -- I know we were interested in that project  
12 when I was at Aecon, spoke to Hamilton about  
13 potentially executing that, but nothing ever came  
14 of it. I've driven the highway since it's been  
15 built.

16 Q. So generally you're aware  
17 of the differences between Red Hill Valley Parkway  
18 and the 407 in terms of number of lanes?

19 A. Yes. And the more -- you  
20 know, what strikes me more is the Red Hill Valley  
21 is going through a valley down the escarpment so  
22 there is a significant grade change from origin to  
23 destination.

24 Q. So you're also aware that  
25 the funding sources for the Red Hill and the 407

1 would be different?

2 A. I did not really pay  
3 attention to how the Red Hill got constructed or  
4 by who, but yes, that this is private finance.

5 Q. I would assume you would  
6 agree that funding is an important factor in  
7 roadway maintenance, the ability to have funds?

8 A. Yes.

9 Q. And you would agree that  
10 there are differences in how the operators of the  
11 road, the municipality on the one hand and then  
12 the 407 ETR Concession Company on the other, are  
13 able to allocate resources to their respective  
14 roads?

15 A. I would think it's  
16 different. I'm not that familiar. I've never  
17 worked in a municipality, but I expect it is  
18 different.

19 Q. So given these  
20 differences, you would agree that the Red Hill  
21 would not be a comparable road to the 407 ETR?

22 A. Yeah, I wouldn't consider  
23 them directly comparable. It's not where I would  
24 go when I'm looking at traffic or collision stats.  
25 I'm looking more at like 401, 403, 400, 427, those

1 kinds of highways. But that's also because we're  
2 part of the King's highway network so I look at  
3 those ones.

4 Q. And would you agree that  
5 the MTO does not publish any standards or  
6 guidelines with respect to friction measurement or  
7 management in Ontario?

8 A. I honestly don't know. I  
9 can't say for sure what they are publishing or  
10 not. I know that they put it our concession  
11 agreement what I was required to do, and then  
12 myself and my team and consultants, we've  
13 investigated those standards. And I believe there  
14 was some information that we also got from MTO on  
15 that but I'm not certain.

16 Q. And are you aware if  
17 there are any published national standard or  
18 guidelines with respect to friction management or  
19 measurement in Canada?

20 A. No, I'm not aware of any.

21 Q. Are you aware of any  
22 published national standards in Canada respecting  
23 highway friction investigatory or intervention  
24 levels?

25 A. I have to admit I've

1 never really gone to look. I've looked at what my  
2 agreement requires me to do.

3 Q. So the friction testing  
4 is not based on any published standard per se but  
5 what is in the concession agreement?

6 A. Correct, which does take  
7 me to the ASTM standards, and then interest and  
8 understanding prompted me to do things like learn  
9 about the workshops on pavement friction and such  
10 that were sort of NASA, Penn State related.

11 MS. HALE: Thank you, Mr.  
12 White. Mr. Commissioner, those are my questions.

13 JUSTICE WILTON-SIEGEL: Okay.

14 THE WITNESS: You're welcome.

15 MR. LEWIS: Mr. Bourrier for  
16 the MTO, if he has any questions.

17 MR. BOURRIER: I don't have  
18 any questions for Mr. White.

19 JUSTICE WILTON-SIEGEL:

20 Ms. Ramaswamy for Golder?

21 EXAMINATION BY MS. RAMASWAMY:

22 Q. Thank you, Mr. Lewis.

23 Good morning, Mr. White. Good morning,

24 Mr. Commissioner.

25 Mr. White, I'm counsel for

1 Golder and I just had questions about one  
2 particular topic.

3 So earlier today you had  
4 talked about if friction numbers suggested that it  
5 required intervention you would use methods to  
6 enhance friction on the 407, and one of the  
7 methods you talked about was diamond grinding.  
8 Were there any other methods of friction  
9 improvement that were used on the 407?

10 A. Yes. In preparation for  
11 the anticipated need to enhance friction,  
12 especially on concrete pavement, then shortly  
13 after I joined 407 we did embark under various  
14 trials of technologies both to evaluate cost,  
15 safety and performance, you know, how much do they  
16 improve the measured friction and how long does  
17 that last and at what cost.

18 So we did trials of things  
19 like -- there were a variety of things. We tried  
20 Skidabrader technology where you're shot blasting  
21 the surface of the pavement. We tried applying  
22 microsurface over top of both concrete and  
23 asphalt. We did trial sections where we put  
24 NovaChip, a very thin, coarse asphalt overlay over  
25 the concrete pavement as an enhancement. We did

1 diamond grinding only. We did trial sections  
2 where we did 500 metres of diamond grinding,  
3 500 metres of diamond grooving, and then  
4 500 metres of grinding and grooving.

5                                 So we tried to have good  
6 knowledge, expecting that at approximately 20-year  
7 life on the concrete what we would need to be  
8 taking intervention both because of friction and  
9 also because of, as I mentioned earlier, the  
10 warping of the concrete slabs and the ride  
11 deteriorating and the need to improve that  
12 before -- you know, if you don't improve the ride  
13 and the trucks really hit on those joints then  
14 that impact loading will really accelerate the  
15 deterioration and the adverse effect on the  
16 pavement.

17                                 So we wanted to be prepared,  
18 so we tested everything we could think of on sort  
19 of smaller scale trials so that we knew what  
20 method we planned to use when the time came.

21                                 Q. Thank you. And what  
22 were -- do you recall what were the outcomes of  
23 those trials and test strips that you conducted,  
24 specifically for skidabrading or microsurfacing?

25                                 A. So it was more -- you

1 know, it was our concrete pavement that was of  
2 concern -- primary concern to us, and with the  
3 concrete pavement the methodology that we selected  
4 was to grind the concrete to improve the ride.  
5 And that also creates a roughness of the surface,  
6 but it's almost like -- the blades are very  
7 closely spaced when you diamond grind and you end  
8 up with little edges that, you know, like in the  
9 corduroy kind of thing, and those edges create a  
10 lot of initial friction but they go away very  
11 quickly. Within two to three years you would be  
12 back down to the same measured skid numbers.

13 So that's where we also  
14 decided we would diamond grind the concrete.  
15 After we had done the grinding we groove it and we  
16 cut grooves into the concrete which enhances the  
17 texture, the friction, and has a long life and  
18 reduces hydroplaning potential.

19 Q. I understand. And so  
20 you're speaking specifically about diamond  
21 grinding, right? How and microsurfacing and  
22 skidabrading?

23 A. Sorry, the question  
24 relative to those again?

25 Q. No, not so much of a

1 comparison, but as much as do you recall what was  
2 the -- you mentioned that there were trials and  
3 test strips that were conducted of these different  
4 methods and so I was just wondering if you recall  
5 specifically with respect to microsurface and  
6 skidabrading what were the results of that trial?

7 A. Microsurface also  
8 improved the friction, had fairly long life. A  
9 major disadvantage was it made the maintenance of  
10 the seals in the joints harder to properly  
11 maintain in the concrete pavement that would be  
12 underlying the microsurface.

13 And that was the same issue  
14 with NovaChip. It lasts very well. It does give  
15 you a good skid resistance surface, but it makes  
16 maintenance of your joints in your concrete  
17 pavement almost impossible. And skidabrading was  
18 short term. It did not have -- it did give you  
19 initial significant improvement in the friction  
20 but it did not last.

21 Q. Thank you, Mr. White.  
22 Those are all my question, Mr. Commissioner.

23 MR. LEWIS: I just have a  
24 couple of clarification questions, Commissioner.

25 JUSTICE WILTON-SIEGEL: Okay.

1 I just wanted to check. Have  
2 we asked counsel for Dufferin whether they have  
3 any questions?

4 MR. LEWIS: They indicated on  
5 the break that they would have no questions.

6 JUSTICE WILTON-SIEGEL: Okay.  
7 Go ahead, Mr. Lewis.

8 EXAMINATION BY MR. LEWIS (cont'd):

9 Q. I was just looking back  
10 at the transcript. I just wanted to be clear  
11 about the investigatory level with respect to the  
12 friction results and the collision analysis as  
13 distinct from an intervention level.

14 So I don't want to -- I  
15 understand that if it's below FN30 there's not a  
16 requirement to intervene, and you described that.  
17 I just want to be clear about whether in terms of  
18 investigation itself, whether that is triggered by  
19 a result that is under 30, or is it also -- for  
20 purely investigation does it also require some  
21 indicators with respect to collision analysis?

22 A. In our agreement it is  
23 really a requirement to investigate, but then it  
24 does then pose that we must take remedial action  
25 as appropriate. So the way we've interpreted that

1 is that if we have a friction number less than 30  
2 we need to be doing the investigation. That's  
3 part of why we established the friction management  
4 program and built that into our collision analysis  
5 so that we are then interpreting it. You know, if  
6 it's less than 30 the next question is does our  
7 investigation say there's a problem. If there's a  
8 no problem then stop. If there is a problem then  
9 determine what is the problem, what can be done  
10 about it, and what is the appropriate action to  
11 take.

12 Q. And then the second  
13 question, just for the transcript, because I don't  
14 think it's a term we've heard before is NovaChip,  
15 N-O-V-A-C-H-I-P.

16 A. Yes, and that's a --  
17 essentially a brand name for a resurfacing  
18 process. It uses a Midland paver, puts down a  
19 very tacky-tac coat to really give a great bond to  
20 the existing surface that you are overlaying, and  
21 then it overlays a very thin course of asphalt,  
22 less than 20 millimetres, so approximately three  
23 quarters of an inch, but it's very, very coarse --  
24 no, I shouldn't say course. It's very rough,  
25 granular in that and very consistently graded.

1 And it is somewhat open graded. It's not like a  
2 drainage layer because it's too thin, but the  
3 aggregate in it reminds me of like what you would  
4 see in an OFC kind asphalt, the open friction  
5 course.

6 Q. So is that a brand name  
7 for something that we call a chip seal? I may  
8 have that wrong.

9 A. No, it's different than a  
10 chip seal. This is put down with -- the paver  
11 that was used is a Midland paver. They had to  
12 bring up the equipment at that time from the  
13 States. Miller, or Colas now, they did the work  
14 for us. And I think there's one other vender  
15 whose got the equipment, and I'm sorry, their name  
16 escapes me, but I think there is a local person.

17 Q. Am I correct that the --  
18 all those methods that you described as doing the  
19 remediation testing on, if I can call it that, was  
20 that all done concrete rather than pavement?

21 A. Yes, that's correct,  
22 because the asphalt we will end up typically  
23 replacing the asphalt wearing surface  
24 approximately every 12 years, give or take, and  
25 that gives us an improved ride, a new surface,

1 helps keep the water out and protect the  
2 underlying layers of the pavement structure.

3 Q. Thank you very much.

4 A. You're welcome.

5 JUSTICE WILTON-SIEGEL:

6 Mr. White, thank you very much for attending this  
7 morning. Your evidence is very interesting.

8 THE WITNESS: You're very  
9 welcome, Your Honour. I'm glad I could help. I  
10 hope I helped.

11 JUSTICE WILTON-SIEGEL: I'm  
12 sure you did, and you're excused. Thank you.

13 THE WITNESS: Thank you.

14 JUSTICE WILTON-SIEGEL: So I  
15 think -- it's 11:12 now, we should take our  
16 morning break. Do we know whether Ms. Henderson,  
17 who I gather the next witness, will be available  
18 at 11:30 or do we wait until 11:45 for her?

19 MS. RAMASWAMY:

20 Mr. Commissioner, perhaps it's better if we could  
21 wait until 11:45. I understand Dr. Henderson is  
22 on her way here. And she should arrive shortly,  
23 but just (garbled audio). Will that be okay,  
24 Mr. Commissioner?

25 JUSTICE WILTON-SIEGEL: All

1 right. There's a bit of echo, Ms. Ramaswamy, but  
2 I think you're saying that we should wait until  
3 11:45; is that correct? Okay. Thank you. Then  
4 let's stand adjourned until 11:45.

5 --- Recess taken at 11:13 a.m.

6 MS. LECLAIR: Commissioner,  
7 the second witness today is Dr. Vimy Henderson.  
8 If the court reporter could please affirm, Dr.  
9 Henderson.

10 DR. VIMY HENDERSON; AFFIRMED

11 EXAMINATION BY MS. LECLAIR:

12 Q. Dr. Henderson, I would  
13 like to start with some questions today about your  
14 background.

15 I understand from January 2009  
16 to September 2018 you worked at Golder Associates  
17 as a pavement and materials engineer; is that  
18 correct.

19 A. Yes, I did. So I would  
20 have started as a pavement and materials analyst,  
21 and then once I received my professional engineer  
22 designation as a engineer.

23 Q. And were those two roles  
24 the titles that you held for the entire duration  
25 at Golder?

1 A. Yes.

2 Q. And could you describe  
3 those two roles and your day-to-day tasks?

4 A. Yes. I was involved in a  
5 variety of work related to pavement and materials  
6 engineering that would include meeting with  
7 clients to see what their needs were, developing  
8 proposals, organizing field work, doing field  
9 work, analyzing results, reporting results and  
10 following up with clients, and that would be work  
11 anywhere from planning or pavement design,  
12 pavement rehabilitation, pavement management  
13 systems, consultation during construction, quality  
14 assurance testing review and forensic  
15 investigations.

16 Q. Thank you very much. And  
17 where did you complete your schooling?

18 A. I went to the University  
19 of Waterloo. I did my undergrad in civil  
20 engineering, and then I did a PhD at the  
21 University of Waterloo.

22 Q. Okay. And that was  
23 completed in 2012; is that correct?

24 A. Yes. I started in summer  
25 of 2008 and finished the PhD in the spring

1 of 2012.

2 Q. And I understand that  
3 you're a licensed professional engineer.

4 A. Yes, I am.

5 Q. When were you first  
6 licensed in Ontario?

7 A. I would have to confirm  
8 that date for you.

9 Q. Okay. No, problem. I  
10 think we do have a copy of your CV if that would  
11 be helpful.

12 If I can ask the Registrar to  
13 pull that up. I don't believe we have a document  
14 ID for that.

15 A. I think if we scroll a  
16 little bit, we will find the exact year.

17 Q. I understand the year to  
18 be December of 2013. I can't find image number.

19 MS. JENNIFER ROBERTS: If I  
20 might assist. I think it's image 8.

21 MS. LECLAIR: Yeah, perfect.

22 BY MS. LECLAIR:

23 Q. Is that correct, to your  
24 understanding?

25 A. Yes, that is correct.

1 Q. Thank you.

2 A. 2013.

3 Q. Great. And are you  
4 licensed in any other jurisdictions?

5 A. I am, yep. I'm licensed  
6 in Alberta as you see there and also in Manitoba  
7 and Saskatchewan, but the Saskatchewan one, I'm  
8 not currently carrying out any projects in  
9 Saskatchewan, so it's not live and active right  
10 now.

11 Q. And, Registrar, if we can  
12 just mark this document as an exhibit, I believe  
13 it's Exhibit 89 if my numbering is correct.

14 THE REGISTRAR: Noted,  
15 Counsel. It's actually Exhibit 90.

16 EXHIBIT NO. 90: Curriculum  
17 vitae of Dr. Vimy Henderson  
18 dated June 18, 2022

19 BY MS. LECLAIR:

20 Q. Okay. And,  
21 Dr. Henderson, what is your current role?

22 A. I'm a principal engineer  
23 at P-Tech Engineering Solutions.

24 Q. And have you held that  
25 role since leaving Golder in September 2018?

1                   A.    No.  When I left Golder,  
2   I was retained by PSI Technologies to be their  
3   director of eastern operations, and I moved on  
4   from that role in October of 2018 and started  
5   P-Tech.

6                   Q.    And how do those roles  
7   compare to the role you held at Golder?

8                   A.    At PSI I was doing  
9   similar work.  My technical work has been  
10  consistent throughout my career.  At PSI I also  
11  had more of a management or leadership role.  I  
12  was focused on developing an Ontario office and  
13  developing business for the company east of  
14  Saskatchewan where the original office was  
15  started.  And now at P-Tech my technical work  
16  remains consistent, as I said, I had been doing at  
17  Golder, and I also have a management and  
18  leadership role.

19                  Q.    Okay.  And did you --  
20  either at PSI or currently at P-Tech do you have  
21  any involvement with the City of Hamilton's public  
22  works department or the City of Hamilton more  
23  generally in your roles after leaving Golder?

24                  A.    Yes.  At PSI we did do  
25  some work for the City of Hamilton, a

1 collaboration with the University of Waterloo and  
2 the City and an additional project as well.

3 Q. And did you work on any  
4 matters relating to the Red Hill Valley Parkway in  
5 that time?

6 A. We did a project that was  
7 looking at non-destructive testing methods on a  
8 variety of roads or on several roads throughout  
9 the City.

10 Q. Okay. But not  
11 particularly looking at the Red Hill exclusively?  
12 Is that -- am I understanding?

13 A. Yes, that is correct.

14 Q. And do you hold any  
15 academic positions?

16 A. I do. I'm adjunct  
17 professor at the University of Waterloo, and I'm a  
18 sessional lecturer and in the process of becoming  
19 an adjunct professor at McMaster University.

20 Q. Okay. And in what  
21 courses?

22 A. At McMaster University I  
23 teach CIVTECH which is pavement and materials and  
24 highway design to undergrad students, and at the  
25 University of Waterloo I teach two different

1 courses. I teach infrastructure management, so  
2 asset management, and pavement and materials  
3 engineering design, and both of those are  
4 typically at the upper undergrad level and also to  
5 graduate students.

6 Q. Registrar, if you can  
7 call up overview document 6, page 5, paragraph 7.

8 I would like to first start in  
9 around October of 2012.

10 That's okay. You don't need  
11 to call out the paragraph for now. Thank you.

12 If you look at paragraph 7, it  
13 starts at the -- sorry, that last document I  
14 believe we need to mark as an exhibit. Though, I  
15 think we may have already marked it.

16 THE REGISTRAR: Sorry,  
17 Counsel, the CV has already been marked  
18 exhibit 90.

19 MS. LECLAIR: Exhibit 90.  
20 Okay. Sorry.

21 BY MS. LECLAIR:

22 Q. So turning to  
23 October 2012, you can see at the bottom of the  
24 page on the left paragraph 7, and then it spills  
25 over onto the next page. To be clear, these are

1 not your notes. This is a transcription of  
2 Dr. Uzarowski's notes for a meeting with Mr. Gary  
3 Moore on October 24th, 2012. And to the extent  
4 that it's helpful, I'm happy to take you to the  
5 original handwritten document.

6 Do you recall if you attended  
7 this meeting?

8 A. I do not recall.

9 Q. Okay. And if we can turn  
10 to image 7. And then if you can call out just  
11 above paragraph -- all of the text just above  
12 paragraph 8. So that's a little -- okay. So the  
13 last line in the call out number 4, I think that  
14 should read, "RHVP proposal, Rabiah."

15 Do you know what RHVP proposal  
16 refers to?

17 A. RH -- to that says  
18 "RVHP." If it was RHVP, I expect it would be Red  
19 Hill Valley Parkway. Which proposal it's in  
20 regards to, I don't know.

21 Q. Okay. And around this  
22 time, so around October 24th, 2012, were you aware  
23 of any proposals related to the RHVP?

24 A. I don't recall.

25 Q. Okay. And do you recall

1 if you were involved in any work or proposed work  
2 related to the RHVP at this time?

3 A. I don't recall.

4 Q. And do you recall if you  
5 had been involved with any projects related to the  
6 RHVP previously at any time since you joined  
7 Golder?

8 A. Since joining Golder  
9 in -- since joining Golder I had done work with  
10 the Red Hill Valley Parkway. I don't recall how  
11 much work we had done prior to 2012.

12 Q. And to confirm that I  
13 understand, so you think prior to 2012 you had  
14 done some work, but you aren't aware to what  
15 extent; is that correct?

16 A. Yes.

17 Q. Do you recall at all the  
18 nature of any work that you might have done on the  
19 Red Hill before 2012?

20 A. I anticipate the data  
21 collection project was ongoing before that date.

22 Q. And the data collection  
23 project, is that related to the Red Hill  
24 monitoring station?

25 Registrar, if we can end this

1 call out and go to overview document -- actually  
2 we still have page 7 up, paragraph 9.

3 Dr. Henderson, is it helpful  
4 if we call out that paragraph, or is that clear on  
5 (indiscernible) on your screen?

6 A. Yeah, I can read that.

7 Q. So this, again, is a  
8 transcription of an entry in Mr. Uzarowski's  
9 notebooks. It's not your note. This is now dated  
10 November 21st, 2012 and the note reads, "Hamilton  
11 RHVP monitoring station-start --" and then  
12 underneath "-- five years later." (As read)

13 So at this time in  
14 November 2012 were you aware of any works relating  
15 to a monitoring station, or five years later?

16 A. I don't recall.

17 Q. And in a few moments  
18 we'll come to a paper abstract and the start of  
19 what we refer to as "the Golder project," but at  
20 this time does the term "five years later" have  
21 any meaning to you in November 2012?

22 A. I don't recall.

23 Q. So I would like to move  
24 forward a bit in time to February 2013.  
25 Registrar, if we can go to OD6, page 11,

1 paragraph 18.

2 I see here that Dr. Uzarowski  
3 e-mailed Mr. Moore attaching a paper abstract  
4 titled "Evaluating Performance of the Perpetual  
5 Pavement on the Red Hill Valley Parkway Five Years  
6 After Construction." You aren't copied on  
7 Dr. Uzarowski's original e-mail, but you are  
8 listed as an author in the abstract along with  
9 Dr. Uzarowski and Mr. Moore in the e-mail  
10 Dr. Uzarowski referred to the abstract as a TAC or  
11 TAC 2013 abstract.

12 Registrar, if we can call up  
13 that document, it is GOL3396. Thank you.

14 To start, to your knowledge,  
15 what is TAC or TAC 2013? What does that refer to?

16 A. Transportation  
17 Association of Canada, so it would have been the  
18 2013 conference.

19 Q. Thank you. And did you  
20 prepare this abstract or have input into its  
21 contents before it was sent to Mr. Moore?

22 A. I don't recall.

23 Q. And had you discussed the  
24 abstract or the idea to write a paper with anyone  
25 at Golder prior to Dr. Uzarowski's e-mail on

1 February 1st, 2013?

2 A. I don't recall.

3 Q. And to your knowledge, at  
4 this time had Golder conducted any investigations  
5 respecting the RHVP condition or performance after  
6 five years?

7 A. I don't recall.

8 Q. And to your knowledge,  
9 what was the purpose of writing this paper or  
10 preparing the abstract?

11 A. We wrote a lot of papers.  
12 Dr. Uzarowski has a academic or technical  
13 background just like myself, and so we wrote many  
14 papers, and we wrote them with our clients. It  
15 was a great opportunity for ourselves,  
16 consultants, and our clients to demonstrate the  
17 work we were doing and share it with the various  
18 industry members across the country or  
19 internationally, whatever the case may be, so they  
20 can -- you know, they can learn from it, and our  
21 clients are able to share with others the work  
22 they have been doing.

23 Q. Thank you. Registrar,  
24 can you turn to OD6, page 12, paragraph 19. You  
25 can take down the GOL.

1                                   You can see here in  
2 paragraph 19, Mr. Moore replied to Dr. Uzarowski  
3 writing that he could not support the abstract  
4 going forward as is. Do you recall if this  
5 response was communicated to you?

6                                   A.    I do not recall.

7                                   Q.    Okay. Now, turning to  
8 paragraph 20, which is on the same image.  
9 Dr. Uzarowski subsequently accepted a calendar  
10 invite for a meeting with Mr. Moore on March 1st,  
11 2013, the subject of which was "Red Hill Valley -  
12 5 Years Later/Instrumentation/Phase 3 Technology  
13 Review." Were you aware of this meeting?

14                                  A.    I do not recall.

15                                  Q.    Do you recall from your  
16 perspective what the next steps were regarding the  
17 paper abstract after it was provided to Mr. Moore?  
18 Was there anything on your desk, so to speak, at  
19 this time?

20                                  A.    I do not recall.

21                                  Q.    Okay. And, Registrar, if  
22 we can turn to image 14, 36 (ph). Actually if we  
23 can call up both 26 and 27 side by side, that  
24 would be helpful. Sorry, my mistake. Before that  
25 if we could call out page 14 and page 15 side by

1 side, and then I may ask you to do a call out.

2 Thank you.

3 So we can see here that  
4 Dr. Uzarowski did attend a meeting with Mr. Moore  
5 on March 4th, 2013. Do you recall if you attended  
6 this meeting?

7 A. I do not recall.

8 Q. Do you recall if  
9 Dr. Uzarowski debriefed you on the meeting after  
10 it occurred?

11 A. I do not recall. Based  
12 on the relationship with Dr. Uzarowski and I, if  
13 there had been tasks forming that came out of the  
14 meeting, he certainly would have shared them with  
15 me following their meeting.

16 Q. Thank you. And,  
17 Registrar, if we can turn to GOL3775.

18 Okay. So this is an e-mail  
19 from Dr. Uzarowski to Mr. Moore which you and  
20 Rabiah Rizvi are copied. This is also on  
21 March 1st, 2013. The e-mail attaches three  
22 project proposal and an authorization to proceed  
23 and consulting services agreement. So I'll be  
24 asking you some questions related to the proposal  
25 for the RHVP five-year condition evaluation. But

1 if it's helpful for background, I can take you to  
2 the first page of the each attachment.

3 Turning first to the RHVP  
4 five-year condition evaluation which I will refer  
5 to as the Golder project for short, if that's  
6 okay, and if it is clear what I'm referring to.

7 And, Registrar, that is  
8 GOL3779. If we can put images 1 and 2 up.

9 So we see on image 2 on the  
10 right there that you are listed as one of two  
11 co-signatories to the proposal. Do you recall if  
12 you drafted this proposal?

13 A. I would have been -- I  
14 don't recall drafting it specifically, but given  
15 that I signed it, I would have been involved in  
16 preparing it. It would have been Dr. Uzarowski's  
17 ideas, and I would have put it into the format  
18 that you see hear.

19 Q. Okay. So you would  
20 have -- if I understand you correctly, you would  
21 have had discussions with Dr. Uzarowski prior to  
22 the drafting of the proposal; is that right?

23 A. Yes.

24 Q. Do you recall having  
25 discussions on the scope of the project with

1 anyone from the City or Mr. Moore in particular?

2 A. I do not recall, but that  
3 is very unlikely that I would have.

4 Q. Okay. And is it unlikely  
5 given your role on a project or your role  
6 generally with --

7 A. Generally. How we  
8 handled the City of Hamilton projects,  
9 Dr. Uzarowski was the main contact with the City,  
10 and he passed along tasks to myself. Any  
11 interaction I had with the City on -- with their  
12 projects, on City of Hamilton projects, would be  
13 related typically to administration or  
14 coordination for field work.

15 Q. Turning back to any  
16 discussions you may have had with Dr. Uzarowski,  
17 do you recall any discussion about the scope of  
18 this proposal?

19 A. I do not recall.

20 Q. Okay. And what was the  
21 purpose of this testing at this time?

22 A. The intention was to gain  
23 information about the condition of the pavement at  
24 its current age.

25 Q. And at this time were

1 there any concerns regarding the condition of the  
2 pavement to your knowledge?

3 A. Not that I recall.

4 Q. Okay. And we see here  
5 that the title of the proposal is similar to the  
6 title of the paper abstract that we just looked  
7 at. To your knowledge was Golder and/or the City  
8 still contemplating drafting a paper relating to  
9 this testing at this time?

10 A. I do not recall.

11 Q. And you do not recall one  
12 way or the other, or do you recall that the paper  
13 was not being contemplated, just so that I'm  
14 clear?

15 A. No, I do not know if  
16 anyone was still intending to prepare a paper or  
17 not for the conference.

18 Q. Okay. Thank you. And so  
19 before we turn a bit more in detail to the  
20 proposal, I would like to ask you about those at  
21 Golder involved in the Golder project at this time  
22 in a more general sense.

23 And you spoke about this a bit  
24 earlier, but what was your role on the Golder  
25 project specifically?

1                   A.    Yep.  My role was -- I  
2    was the project manager, and in that capacity I  
3    certainly would handle items such as proposals and  
4    internal coordination at Golder, and I would have  
5    been involved in coordinating field work as  
6    needed, and I would have helped Dr. Uzarowski in  
7    preparing documents that came out of the work.

8                   Q.    Okay.  And we see here  
9    that both you and Dr. Uzarowski were signatories,  
10   and I think you spoke about this a little bit  
11   earlier as well, but if you could just describe  
12   how your role and Mr. Uzarowski's role differed on  
13   this project in terms of what he was responsible  
14   for versus what you were responsible for.

15                  A.    Sure.  Yes.  
16   Dr. Uzarowski would be the technical lead on the  
17   City of Hamilton projects.  He would work directly  
18   with the City of Hamilton, understand their needs  
19   and what they were looking for in a particular  
20   project, and he would then share that information  
21   with me, and I would help him prepare documents  
22   such as that seen here.

23                  Dr. Uzarowski would review  
24   data that came out of the projects, in addition to  
25   other individuals as well depending on the type of

1 data, and develop recommendations related to the  
2 information gained in a particular project.

3 Q. Okay. And did you have  
4 any substantive input into any of those -- any of  
5 the analysis or the recommendations?

6 A. No.

7 Q. And for the Golder  
8 project who did you consider the client to be?

9 A. The Golder project was  
10 completed for the City of Hamilton.

11 Q. Okay. And did you have  
12 direct contact with Mr. Moore or others at the  
13 City on this project in particular?

14 A. My contact would have  
15 been related to administration as needed, purchase  
16 orders and whatnot. I do not recall exactly the  
17 conversations related to this project, and  
18 anything related to -- I may have been involved in  
19 coordinating field work.

20 Q. Okay. And were others at  
21 Golder involved in the project?

22 A. Yes, there were a few  
23 individuals that worked on the project.

24 Q. Okay. And if you could  
25 just briefly describe their roles, to the extent

1 that you have a recollection of that?

2 A. Yes. Rabiah Rizvi would  
3 have been involved. She, Ludomir and I always  
4 worked together, so we worked on a lot of projects  
5 together. She would have been involved. And in  
6 the inertial profiler testing there would have  
7 been a couple other individuals involved carrying  
8 out that data collection.

9 Q. And, Registrar, if you  
10 could please call out the three bulleted items on  
11 image 1, so field investigation, analysis and  
12 reporting. Thank you.

13 Could you please describe what  
14 each of the four bullets would involve and what  
15 the results of each would represent.

16 A. Sure. The four bullets  
17 in "field investigation"?

18 Q. Yes, please.

19 A. So a windshield condition  
20 inspection. So that's looking at the surface  
21 condition of a road. We want to see if there are  
22 any distresses. If there are, what type of  
23 distresses and the density. So if there's a lot  
24 of them or not very many and the severity; so if  
25 they are big wide cracks or very slight cracks.

1                   Inertial profiler testing to  
2 determine international roughness index, or IRI,  
3 would look at the roughness of the road surface,  
4 and that would be collected by a vehicle at  
5 Golder.

6                   Falling weight deflectometer  
7 testing evaluates the structural integrity or the  
8 structural capacity of a pavement. And that would  
9 have been done with one of Golder's FWDs, and it  
10 drives along, it stops, it drops a weight on the  
11 pavement, and it measures how much the pavement  
12 deflects. If the pavement deflects more, it  
13 indicates it has less structural capacity.

14                  And then rut depth  
15 measurements. The ruts is what we call the wheel  
16 path, so where the vehicles travel on the road.  
17 Some roads have depth ruts; some roads don't have  
18 any ruts. That can be done in one of two ways,  
19 either manually with a straightedge and literally  
20 measuring the depth of the rut, or it can be done  
21 with a vehicle with lasers or LiDAR.

22                  Q.    And were you responsible  
23 for conducting or analyzing any of the testing  
24 shown here?

25                  A.    I was involved in the

1 windshield condition inspection, and that would  
2 have been the one I carried out or I was involved  
3 in. I would have had some involvement in the  
4 coordination of the other tasks.

5 Q. Okay. And, Registrar, if  
6 we can take these down and call out GOL4456.

7 And are these your notes from  
8 April 18th, 2013 and April 23rd of 2013?

9 A. Yes.

10 Q. And are these notes from  
11 field testing conducted on those dates?

12 A. Yes. These are notes  
13 from the visual condition inspection.

14 Q. Okay. And was there a  
15 different purpose for the second visit on the  
16 23rd, or was it a similar purpose but just with  
17 Dr. Uzarowski?

18 A. Yes, it would have been  
19 the same purpose.

20 Q. Okay. And what were your  
21 views regarding the RHVP pavement condition after  
22 the two site visits?

23 A. My view or my opinion  
24 would have been that some surface distresses had  
25 developed, and ideally we don't ever want any

1 surface distresses to develop, but it's going to  
2 happen on all pavements. So as you see here, we  
3 saw, you know, some micro-cracking, construction  
4 joints opening, so there was a bit of surface  
5 distress.

6 Q. In your view was there  
7 anything atypical or concerning about what you  
8 observed?

9 A. No.

10 Q. All right. And did  
11 Dr. Uzarowski express any views on the pavement  
12 condition to you at this time?

13 A. Yes. We were both  
14 on-site on the 23rd, so we would have discussed  
15 the condition as we were looking at the pavement.

16 Q. Do you have any  
17 recollection of your discussion?

18 A. I do not recall.

19 Q. Okay. And do you recall  
20 if Dr. Uzarowski had any concerns or noted  
21 anything atypical because of the site visit?

22 A. I do not recall.

23 Q. Okay. And to your  
24 recollection, did you attend on-site any other  
25 time for this project?

1                   A.    Not for the data  
2    collection that we just discussed in those four  
3    bullets.

4                   Q.    Turning back to the  
5    proposal, which I believe is GOL3779, and under  
6    "Analysis" (indiscernible) proposal," if you can  
7    actually call out analysis. Thank you, Registrar.

8                   You'll see, I believe it's the  
9    second bullet, it's noted:

10                   "Comparison of measured  
11                   performance with performance  
12                   anticipated for 400 series  
13                   highway pavements." (As read)

14                   And the third bullet "setting  
15    a baseline for future comparisons." (As read)

16                   Could you explain what was  
17    intended by the comparison to anticipated  
18    performance of 400 series highway pavements?

19                   A.    Yes. There are three  
20    different -- three -- four different types of  
21    roads we normally talk about. Local roads, which  
22    is your residential subdivision street,  
23    collectors, which would be often a bus route, you  
24    know, an urban bus route, arterials, that's your  
25    bigger urban roads or rural roads, and interstates

1 or highways or freeways. And the Red Hill Valley  
2 Parkway is -- it's a major, major road, and that's  
3 comparable to what we know as the 400 series  
4 highways in Ontario. So that comment there, the  
5 second bullet is to highlight that it will be  
6 compared to the performance we see on roads that  
7 receive similar traffic and similar traffic  
8 volumes.

9 Q. Okay. And what  
10 performance metrics were to be compared, to your  
11 knowledge?

12 A. The measured performance  
13 would be the data we collected during the field  
14 investigation.

15 Q. Registrar, if you can  
16 just take that call out down for a moment.

17 So that would be the four  
18 bullets we just discussed under the "field  
19 investigation"; is that right?

20 A. Yes.

21 Q. Okay. Thank you. And  
22 did you conduct this comparison?

23 A. No, the technical  
24 analysis was not conducted by myself.

25 Q. Okay. And to your

1 knowledge was the comparison to the 400 series  
2 highway pavement conducted?

3 A. I don't recall.

4 Q. And, Registrar, if you  
5 can call out the paragraph below the table at  
6 image 2 just above where it says "sincerely," just  
7 that one paragraph. Okay. And you'll see it  
8 says:

9 "Please sign and return the  
10 consulting services agreement  
11 accompanied by a purchase  
12 order to Vimy Henderson's  
13 attention." (As read)

14 Do you recall if the City ever  
15 signed and returned consulting services agreement?

16 A. I do not recall.

17 Q. Would it be unusual for  
18 it not to be returned?

19 A. It varied with each  
20 project with the City. We always received a  
21 purchase order as noted there.

22 Q. And we know from the  
23 documents -- and I'm happy to take you there if  
24 helpful -- but that a purchase order was provided  
25 Golder. Would that typically be sufficient for

1 Golder to proceed even without a signed agreement?

2 A. Projects for the City of  
3 Hamilton were completed in a variety of ways and I  
4 do not recall if this project was completed within  
5 the roster agreement or not, the roster agreement  
6 had its own set of terms.

7 Q. And if the project was  
8 completed pursuant to the roster, would that be a  
9 circumstance where the -- receiving the purchase  
10 order would be sufficient to proceed?

11 A. The intention would be to  
12 also receive the consulting services agreement.

13 Q. Okay. To confirm that  
14 Golder would proceed with a purchase order if  
15 received? Sorry, let me rephrase. If a signed  
16 consulting services agreement was not received,  
17 would Golder not proceed?

18 A. No, it was project  
19 specific.

20 Q. Okay. Thank you. Okay.  
21 I would like to move forward, again, in time to  
22 June 2013.

23 So, Registrar, if you can  
24 close that down and call up overview document 6,  
25 page 30 at paragraph 63. Okay.

1                   So we can see that Golder  
2     prepared a draft of the Golder report by  
3     June 14th, 2013, and I can take you to that  
4     document. It's GOL1428. Okay.

5                   And do you recall if you were  
6     involved in the preparation of this draft in  
7     June 2013?

8                   A. I do not recall.

9                   Q. Okay. Registrar, if we  
10    can just simply scroll through to the extent that  
11    it's helpful. Okay. And if we could go to  
12    image 4. Okay.

13                  So this draft included a  
14    description and results from the field  
15    investigation conducted to date. As we see here  
16    that this included visual condition inspection,  
17    asphalt coring, surface longitudinal profile and  
18    falling weight deflectometer testing at this time  
19    in June 2013. Was that consistent with your  
20    understanding of the scope of testing for the  
21    Golder project?

22                  A. I do not recall.

23                  Q. Okay. And we know that  
24    later in time, which we will come to, that  
25    friction testing was added to the scope of the

1 Golder project. At this time do you recall any  
2 discussion of friction testing to be included in  
3 the project scope?

4 A. I do not recall.

5 Q. Okay. And do you recall  
6 if you provided this draft or any draft of the  
7 Golder report to anyone at the City?

8 A. I do not recall, but I do  
9 not anticipate I would have. As you highlighted,  
10 it is not a complete document.

11 Q. And you're referring  
12 specifically to the document on screen that you  
13 wouldn't have --

14 A. Yes.

15 Q. -- provided this draft.  
16 Okay. Thank you.

17 Okay. Registrar, if we can  
18 turn back to OD6, page 35, and if you can call out  
19 paragraph 76, please. Actually if you can close  
20 that callout just for one moment just so I can  
21 direct Dr. Henderson.

22 So you'll see just above in  
23 paragraph 75 this is July 4th.

24 And then, Registrar, if you  
25 can call out paragraph 76.

1                   So we see here this is an  
2 e-mail that Gary Kirchknopf from the City e-mailed  
3 to Brian Appleby from CIMA in which he wrote:

4                   "Regarding the Red Hill Valley  
5 Parkway mainline pavement  
6 treatment, please be advised  
7 that the City's asset  
8 management section has  
9 retained Golder Associates  
10 care of Ludomir Uzarowski,  
11 phone number, to oversee all  
12 testing and monitoring of this  
13 specialized surface material.  
14 Please contact Ludomir  
15 directly should you require  
16 any additional information  
17 regarding 'weight in motion'  
18 or 'friction testing' on the  
19 RHVP mainline." (As read)

20                   To your knowledge, did anyone  
21 at CIMA ever contact Dr. Uzarowski, you or anyone  
22 else at Golder regarding weight in motion and/or  
23 friction testing?

24                   A. No, no one contacted  
25 myself. I don't know if anyone else was

1 contacted.

2 Q. But to your knowledge, no  
3 one informed you that they had been contacted?

4 A. Correct. I do not recall  
5 being informed that they had heard from CIMA.

6 Q. Okay. And at this time,  
7 so July 2013, were you aware that CIMA had been  
8 retained to conduct a safety study on a portion of  
9 the RHVP?

10 A. No.

11 Q. Did you ever become aware  
12 of this?

13 A. I became aware of it once  
14 this investigation that we're carrying out now was  
15 underway.

16 Q. While you were at Golder,  
17 did you ever become aware of this?

18 A. No.

19 Q. And Mr. Kirchknopf's  
20 e-mail is from July 4th, 2013, so a few weeks  
21 after the draft Golder report we just looked at.  
22 To your knowledge, was Golder or the City  
23 contemplating conducting friction testing at this  
24 time?

25 A. I do not recall.

1 Q. Okay. And, Registrar,  
2 you can close that. And if we can go to OD6,  
3 page 52 at paragraph 130.

4 So we can see here that Golder  
5 prepared a second draft of the Golder report dated  
6 September 30th, 2013. The draft now included text  
7 in part 5, analysis and recommendations. The text  
8 is excerpted there under paragraph 130, but I'm  
9 happy to take you to the document if it's helpful.

10 Do you recall at this time, so  
11 in September 2013, if you were involved in the  
12 revised draft of the Golder report?

13 A. I do not recall.

14 Q. Okay. And to your  
15 knowledge by this time, so September 20th, 2013,  
16 had the scope of the Golder project changed in any  
17 way?

18 A. I do not recall.

19 Q. Okay. And at this time  
20 did you have any concerns with the pavement  
21 whether from a maintenance or a safety  
22 perspective?

23 A. No.

24 Q. Okay. And did you  
25 provide this draft or discuss the draft with

1 anyone at the City?

2 A. I do not recall, but I  
3 myself would not have provided the draft. If the  
4 draft was provided, it would have gone from  
5 Dr. Uzarowski to the City.

6 Q. Okay. But to confirm,  
7 you would not directly have sent the draft to  
8 anyone at the City; is that correct?

9 A. Correct.

10 Q. And if we can turn to  
11 OD6, page 60 at paragraph 150, Registrar.

12 On September 30th, 2013  
13 Mr. Moore e-mailed Dr. Uzarowski regarding skid  
14 resistance testing on the RHVP. So you weren't  
15 copied on Mr. Moore's original e-mail, but  
16 Dr. Uzarowski copied you on his reply to  
17 Mr. Moore, and I'm happy to take you to the  
18 document itself if that's easier. But do you  
19 recall if Dr. Uzarowski discussed this with you  
20 prior to his response to Mr. Moore?

21 A. I do not recall.

22 Q. And when was the first  
23 time you became aware of the City's request to  
24 have friction testing performed on the RHVP?

25 A. I do not recall.

1 Q. Do you have any  
2 recollection of becoming aware of that prior to  
3 being copied Dr. Uzarowski's e-mail?

4 A. No. No, I do not have a  
5 recollection of that.

6 Q. Okay. And did you speak  
7 to Dr. Uzarowski after he sent the response to  
8 Mr. Moore?

9 A. I do not recall.

10 Q. And, Registrar, if we can  
11 turn to the next image, so image 61. Thank you.

12 So we know from the documents  
13 that Dr. Uzarowski received another e-mail from  
14 Mr. Moore on October 1st, 2013 regarding friction  
15 testing on some cross -- crosswalk markings in the  
16 city. You weren't copied on that e-mail. Do you  
17 recall if Dr. Uzarowski discussed crosswalk  
18 friction testing with you at this time?

19 A. The crosswalk friction  
20 testing was discussed with me when we were  
21 coordinating to get friction testing done.

22 Q. Okay. And Mr. Moore's  
23 e-mail to Dr. Uzarowski, which, to confirm it, you  
24 weren't copied on, but it included a long chain of  
25 internal City staff discussion regarding

1 collisions that occurred during a heavy rainfall  
2 in the City. Do you recall if Dr. Uzarowski  
3 discussed any of those e-mails with you?

4 A. I do not recall.

5 Q. Do you recall at this  
6 time whether you, Dr. Uzarowski or anyone at the  
7 City expressed any concern regarding safety at  
8 this time?

9 A. I do not recall.

10 Q. Okay. And if you can  
11 call up -- put this up on the left side and call  
12 up image 62 on the right, Registrar. Thank you.

13 So at paragraph 56, which  
14 starts at the bottom of page 61 and continues at  
15 the top of 62, on October 4th, 2013 you contacted  
16 Stephen Lee from the MTO writing:

17 "Our client the City of  
18 Hamilton wishes to have some  
19 friction testing carried out.  
20 Are you available to discuss  
21 this the beginning of next  
22 week?" (As read)

23 So presumably at some time  
24 between September 30th, 2013 and October 4th, 2013  
25 you must have spoken to Dr. Uzarowski about the

1 request to conduct friction testing.

2 A. Yes, at some time within  
3 those dates that you noted Dr. Uzarowski would  
4 have spoken to me, explained what was needed and  
5 what he needed me to do.

6 Q. And do you recall what he  
7 told you about the City's request or about what  
8 was needed?

9 A. I do not recall the exact  
10 conversation.

11 Q. Okay. And why did you  
12 contact Mr. Lee?

13 A. I would have been given  
14 guidance from Dr. Dr. Uzarowski to contact him.

15 Q. And would that guidance  
16 have been for you to contact the MTO generally or  
17 Mr. Lee in particular?

18 A. I do not recall.

19 Q. Okay. And were you  
20 familiar with Mr. Lee at this time?

21 A. I knew Stephen Lee. I  
22 had met him in the past in various industry events  
23 or capacities.

24 Q. Okay. Did Dr. Uzarowski  
25 indicate at this time why he wanted you to contact

1 Mr. Lee or the MTO more generally to conduct the  
2 testing?

3 A. No, he -- no. I don't  
4 recall if he did or did not have a reason or  
5 provide a reason to me.

6 Q. Okay. And at this time  
7 were you aware that the MTO had conducted friction  
8 testing in October 2007 prior to the opening of  
9 the RHVP?

10 A. I do not recall if I was  
11 aware of that.

12 Q. Okay. And do you recall  
13 when you did become aware?

14 A. In the documents there is  
15 an e-mail or -- there's an e-mail where I learn  
16 about this.

17 Q. Okay. I'm going to take  
18 you there. I think we will come to that e-mail,  
19 but just so that I can confirm if that is what you  
20 were referring to, would this be an e-mail from  
21 January 24th, 2014, or is there an earlier e-mail  
22 that you're referring to?

23 A. To my knowledge I didn't  
24 know about it before what we're looking at on the  
25 screen right now. I'm not sure if the e-mail is

1 exactly January 24th, but it follows sometime in  
2 that general -- general timing.

3 Q. Okay. And do you recall  
4 if you learned of the MTO testing on your call  
5 with -- through your conversation, rather, with  
6 Mr. Lee?

7 A. No, I did not. Did not  
8 hear about it at that time.

9 Q. Okay. And were you aware  
10 at this time that the MTO had conducted any  
11 additional testing, friction testing on the RHVP?

12 A. No.

13 Q. And at this time were you  
14 aware of the type of machinery the MTO used to  
15 conduct friction testing?

16 A. No, I was not aware.

17 Q. Okay. Did you have any  
18 experience conducting or analyzing friction  
19 testing on freeway or expressway-type roads at  
20 this time?

21 A. No, I did not.

22 Q. And did Golder itself  
23 have any friction testing equipment?

24 A. Not I was aware of.

25 Q. And, Registrar, if we can

1 go to GOL4467. If we can call up the second image  
2 of this document as well. Thank you. Okay.

3 So we can see at the bottom of  
4 the first page and the top of the second page that  
5 Mr. Lee replied to you on October 7th, 2013 asking  
6 for the timing and scope to determine if the MTO  
7 could accommodate the request. And then we see  
8 that you replied on October 29th.

9 Between October 7th and the  
10 October the 29th do you recall if you discussed  
11 the friction testing request with Mr. Lee?

12 A. I do not recall.

13 Q. Did you have a call with  
14 him or discuss the matter as you had asked in your  
15 initial e-mail?

16 A. I do not recall.

17 Q. Okay. And, Registrar, if  
18 we can turn to overview document 6, page 70 and  
19 71. Okay.

20 And we see at paragraph 179,  
21 which starts at the bottom of the page and then  
22 continues at the top of page 71, you responded to  
23 Mr. Lee also on October 29th providing further  
24 details regarding the testing. And I'll just give  
25 you a moment to review that.

1 All right. Please let me  
2 know if you --

3 A. Yeah, we can go ahead.

4 Q. Okay, great. So in the  
5 first sentence you wrote that the City was looking  
6 to have the testing done as soon as possible. How  
7 did you come to understand this?

8 A. I would have gained that  
9 information from Dr. Uzarowski.

10 Q. And do you -- at the time  
11 did you know why the City wanted the testing done  
12 as soon as possible?

13 A. I don't recall. I  
14 anticipate one factor is at this point it's the  
15 end of October, so winter is pending. So we like  
16 to get our field work done before winter, if  
17 possible.

18 Q. And Mr. Lee replied to  
19 your e-mail the same day, writing:

20 "We are behind in our friction  
21 network level work and  
22 performance-based  
23 specification testing,  
24 recommend you get a quotation  
25 from ARA that has the same

1 equipment or others that have  
2 different friction equipment.  
3 Sorry we will not be able to  
4 accommodate the for this  
5 season. Some friction testing  
6 machines are sensitive to  
7 ambient/pavement surface  
8 temperature." (As read)  
9 Did you have knowledge at the  
10 time of any possible comparison or correlation  
11 between different types of friction testing  
12 equipment?

13 A. No, I was not aware of  
14 correlations.

15 Q. Okay. And did you  
16 contact ARA?

17 A. I do not recall.

18 Q. And do you know what  
19 testing Mr. Lee was referring to when he wrote:  
20 "Some friction testing  
21 machines are the sensitive to  
22 ambient/pavement surface  
23 temperature."

24 A. No, I don't know his  
25 specific reference in that sentence.

1 Q. And at the time were you  
2 aware that there were some friction testing  
3 machines that were sensitive as described by  
4 Mr. Lee?

5 A. No, I was not aware of  
6 the specific parameters of different equipment.

7 Q. And did you discuss  
8 Mr. Lee's response with Dr. Uzarowski?

9 A. Yes, I would have  
10 discussed it with Ludomir.

11 Q. And do you have any  
12 recollection of that discussion?

13 A. No, I do not.

14 Q. Do you recall if you  
15 discussed Mr. Lee's comments regarding the  
16 different testing methodologies and the  
17 temperature?

18 A. No, I do not recall.

19 Q. Okay. Registrar, we can  
20 take that down, and then if you can  
21 (indiscernible) right. So we are looking at  
22 paragraph 180.

23 So on November 6th you  
24 contacted Tradewind Scientific through its  
25 website. How did you come to contact Tradewind?

1                   A.    I would have been  
2    directed to contact Tradewind by Dr. Uzarowski.

3                   Q.    Had you previously worked  
4    with Tradewind?

5                   A.    No, I had not worked with  
6    Tradewind.

7                   Q.    To your knowledge had  
8    Dr. Uzarowski worked with them in the past?

9                   A.    I don't know.

10                  Q.    Okay.  And at this time  
11    did you have an awareness of the type of friction  
12    testing equipment Tradewind used?

13                  A.    No.

14                  Q.    And was this a  
15    consideration or something you and Dr. Uzarowski  
16    discussed?

17                  A.    I do not recall our  
18    specific discussions.

19                  Q.    Would the type of  
20    friction testing equipment be something that you  
21    would be responsible for determining or something  
22    that you would have discussed with Dr. Uzarowski?

23                  A.    I would not have been  
24    responsible in deciding what equipment was to be  
25    used.

1 Q. Would you have had any  
2 input into that decision?

3 A. No. That decision would  
4 have been handled by Dr. Uzarowski.

5 Q. Okay. And, Registrar, if  
6 we can turn to image 73. Okay.

7 And at paragraph 186 you see  
8 that you spoke to Mr. Leonard Taylor of Tradewind  
9 on November 8th, 2013. I'll take you to the  
10 document itself as there are some handwritten  
11 notes. So that's GOL4476.

12 And are the handwritten  
13 notations your notes?

14 A. Yes.

15 Q. Okay. And do you recall  
16 if they were taken during the call?

17 A. Yes, they would've been  
18 taken during the phone call.

19 Q. Okay. And it seems that  
20 there's writing in two different pen colours.  
21 Does that reflect the notes being taken at  
22 different times?

23 A. I can't say either way.

24 Q. Okay. And what do you  
25 recall about your discussion with Mr. Taylor?

1                   A.    I do not recall the  
2   discussion outside of the information presented on  
3   this document.

4                   Q.    Thank you.  And,  
5   Registrar, if you can leave this image up and also  
6   bring back OD6, page 73.  Okay.  Thank you.

7                                There's a notation on the  
8   image on the left that says that you expect a  
9   response -- I believe it says "expect a response  
10  from Leonard on Wednesday November 13th."  Is that  
11  correct?

12                   A.    Yes.

13                   Q.    Do you recall what  
14  response you were waiting on?

15                   A.    I don't know exactly what  
16  the response was.  Based on the information that  
17  we have now, I would anticipate that I was waiting  
18  to hear more about the field work, whether it be  
19  availability or timeline or pricing, I'm not sure  
20  which, but....

21                   Q.    Okay.  And you'll see on  
22  the right, paragraph 187, that Mr. Taylor e-mailed  
23  you on November 17th, 2013 advising that Tradewind  
24  was available to conduct the testing between  
25  November 19th and 21st, 2013.  He outlined the

1 cost for the testing, the type of equipment to be  
2 used and the requirements. Do you think this is  
3 the response that you were waiting for referenced  
4 on your note?

5 A. I anticipate it likely  
6 was.

7 Q. Okay. And, Registrar, if  
8 you can take down the Golder 4476 and leave up  
9 page 73 and then also bring up page 74. Thank  
10 you.

11 When you received this e-mail  
12 from Mr. Taylor, what would you have done with it?

13 A. E-mail in item 187?

14 Q. Yeah, it -- the e-mail  
15 itself begins at the bottom of 187, and then it  
16 continues on the top.

17 A. Yes. I would have shared  
18 the information with Dr. Uzarowski, and we would  
19 have discussed next steps or how we want to  
20 proceed.

21 Q. And do you have any  
22 specific recollection of those discussions?

23 A. No, I do not recall.

24 Q. Okay. And would you have  
25 analyzed the proposal to determine if it was

1 suitable to the request from the City, or would  
2 this have been left to Dr. Uzarowski?

3 A. I would have analyzed the  
4 proposal to evaluate if it was in line with the  
5 discussions I had had with Leonard Taylor, and,  
6 you know, if the pricing all added up to the  
7 number he said it did and that sort of thing. I  
8 would have would shared it with Dr. Uzarowski, the  
9 intention of the work, for him to ensure that it  
10 technically met the needs of the City.

11 Q. Okay. And at the time --  
12 This is -- Registrar, if you  
13 can just call out the paragraph at the end of the  
14 e-mail at the top of page 74, just before  
15 paragraph 188. And at the time did you know what  
16 "UK highway Reference Levels" referred to?

17 A. I would not have been  
18 aware of that specific document, no.

19 Q. Okay. And do you recall  
20 if you discussed that in particular with  
21 Dr. Uzarowski?

22 A. No, I do not recall.

23 Q. And did you discuss that  
24 with anyone at the City?

25 A. No, I would not have

1 discussed any aspect of this information from  
2 Leonard Taylor with anyone at the City.

3 Q. And, Registrar, thank  
4 you. You can take down that callout. And if you  
5 could turn to -- move up page 74 and also bring up  
6 page 75.

7 You replied to Mr. Taylor the  
8 next day noting that you would ensure the client  
9 is aware of the costs and let you know by end of  
10 today regarding go ahead.

11 When you wrote this, did you  
12 anticipate that you directly would contact the  
13 City regarding cost, or would you have informed  
14 Dr. Uzarowski who would then discuss it with the  
15 City?

16 A. My intention would have  
17 been that I would share the information with  
18 Dr. Uzarowski, Dr. Uzarowski would speak to the  
19 City, and he would -- and Dr. Uzarowski would  
20 share with me the City's position or answer.

21 Q. And, Registrar, if we can  
22 call up GOL2648. All right.

23 So this is the next day  
24 November 19th, 2013. You e-mailed Dr. Uzarowski  
25 with what appears to be a draft e-mail to

1 Mr. Moore regarding the cost of the testing. Do  
2 you recall if you discussed this with  
3 Dr. Uzarowski before drafting the e-mail?

4 A. I do not specifically  
5 recall discussing it with him, but yes, in our  
6 typical practices I likely would have verbally  
7 discussed it with him and then prepared it.

8 Q. And prepared a draft  
9 e-mail?

10 A. Yes.

11 Q. Thank you.

12 MS. LECLAIR: And, Registrar,  
13 I believe we need to mark this document as the  
14 next exhibit, which I believe is 91.

15 THE REGISTRAR: Noted,  
16 Counsel. Thank you.

17 EXHIBIT NO. 91: E-mail from  
18 Vimy Henderson to Ludomir  
19 Uzarowski dated 11/19/2013;  
20 GOL2648.

21 BY MS. LECLAIR:

22 Q. Okay. And if we can go  
23 back to overview document 6, page 74. Thank you.

24 So you e-mailed Mr. Taylor  
25 again on November 19th, 2013. This time (garbled

1 audio) the additional (garbled audio) testing the  
2 City had requested.

3 In your e-mail, which is  
4 excerpted at paragraph 189, you reference that  
5 Golder had access to a British pendulum. What did  
6 you mean by "access to a British pendulum"?

7 A. The Centre For Pavement  
8 and Transportation Technology at the University of  
9 Waterloo has a British pendulum. Golder often  
10 rented it from CPATT at the university if they had  
11 testing that they wanted to do with the British  
12 pendulum. So that would be the British pendulum I  
13 was referencing.

14 Q. And to confirm as I  
15 understand the portion of the friction testing, so  
16 the friction testing related to the crosswalks was  
17 not related to the RHVP; is that correct?

18 A. That's correct.

19 Q. And did you know why it  
20 was added to this assignment instead of being  
21 requested separately?

22 A. No, I don't know  
23 specifically other than the City was aware that  
24 this testing was being done and identified perhaps  
25 additional work could be relatively easily added

1 on to the day's activities.

2 Q. But you don't have a  
3 specific recollection of any discussion of why it  
4 was added on; is that correct?

5 A. That's correct.

6 Q. Okay. And at  
7 paragraph 190 Mr. Taylor replied advising that the  
8 grip tester would need to be reconfigured for the  
9 testing and that Tradewind's operator Michael  
10 Hogarth would assess whether it could be conducted  
11 that fall or another time in the spring. He also  
12 wrote at the bottom:

13 "As part of our report, we  
14 will be providing comparative  
15 values with other friction  
16 testing measuring equipment,  
17 including the British pendulum  
18 and SCRIM."

19 Did you understand this  
20 reference, so that last sentence, to compare  
21 values only to relate to the crosswalk testing, or  
22 did that also include the testing on the RHVP and  
23 LINC?

24 A. I don't recall my  
25 interpretation at that time.

1 Q. Registrar, if we can call  
2 up the next image, so image 75. Thank you.

3 At paragraph 191 Dr. Uzarowski  
4 contacted Mr. Moore the same day, copying you, to  
5 advise him of the cost to conduct the friction  
6 testing and to prepare a short memo report. The  
7 e-mail seems to be a slightly modified version of  
8 your draft that we just looked at. Mr. Moore  
9 approved the testing, copying various City staff  
10 members in his response including Martin White,  
11 Rich Shebib and Marco Oddi. Had you dealt with  
12 any of those staff members regarding the Golder  
13 project prior to this e-mail?

14 A. I do not recall if I had  
15 or had not.

16 Q. Okay. Registrar, if you  
17 could leave this image up and also call out  
18 GOL4450. And is this a note or a record of a  
19 telephone conversation that you made?

20 A. Yes.

21 Q. Okay. And this reflects  
22 the call with Marco Oddi; is that correct?

23 A. Yes.

24 Q. Do you have any  
25 recollection of this call?

1                   A.    No, I do not.  Do not  
2 recall the phone call.

3                   Q.    Okay.  Other than  
4 scheduling and making logistical arrangements, do  
5 you recall if you had any other discussions with  
6 Mr. Oddi regarding this project or the RHVP more  
7 generally, any substantive discussions?

8                   A.    I did not have any  
9 substantial discussions with him.

10                  Q.    Okay.

11                  MS. LECLAIR:  And, Registrar,  
12 I believe this needs to be marked, and I think we  
13 are at 92, Exhibit 92.

14                  THE REGISTRAR:  Noted.  Thank  
15 you, Counsel.

16                  EXHIBIT NO. 92:  Record of  
17 Telephone Conversation from  
18 Marco Oddi dated May 8, 2013;  
19 GOL4450.

20                  BY MS. LECLAIR:

21                  Q.    And do you recall,  
22 Dr. Henderson, if you had any subsequent  
23 conversations with Mr. Oddi after the call on  
24 May 8th, 2013?

25                  A.    I do not recall.

1 Q. Okay. And we see from  
2 the documents that you did correspond with some  
3 City staff members that were copied on Mr. Moore's  
4 e-mail to coordinate the logistical arrangements.  
5 Do you recall if you discussed anything other than  
6 logistical arrangements with City staff members at  
7 this time? And to be clear, in November of 2013.

8 A. No, I would have been  
9 only speaking with them regarding logistics.

10 Q. Okay.

11 MS. LECLAIR: Commissioner, I  
12 see that we're just slightly past our 1:00 p.m.  
13 stop. I propose this would be a good place to  
14 take the lunch.

15 JUSTICE WILTON-SIEGEL: That  
16 would be fine. We'll stand adjourned until 2:15.

17 MS. LECLAIR: And, Registrar,  
18 if we could have an all counsel breakout room that  
19 would be helpful.

20 --- Recess taken at 1:01 p.m.

21 --- Upon resuming at 2:17 p.m.

22 MS. LECLAIR: Commissioner,  
23 may I proceed?

24 JUSTICE WILTON-SIEGEL: Yes,  
25 please proceed.

1 BY MS. LECLAIR:

2 Q. Okay. Dr. Henderson,  
3 just before the break we were discussing the  
4 correspondence coordinating the logistical  
5 arrangements for the friction testing conducted in  
6 November of 2013. I understand that you were  
7 on-site for the friction testing on November 20th,  
8 2013 during the friction testing; is that correct?

9 A. Yes, I was on-site  
10 throughout the friction testing.

11 Q. Okay. Registrar, can we  
12 please call up GOL4441.

13 And, Dr. Henderson, are these  
14 your notes from the testing on November 20th?

15 A. Yes.

16 Q. Okay. There are a list  
17 of names towards the middle of the page there. Do  
18 you recall other than those noted if anyone from  
19 the City attended the testing?

20 A. No, I don't recall anyone  
21 else attending. To clarify, when we were actually  
22 doing the testing, it was myself and the Tradewind  
23 folks in the testing vehicle. So there wasn't  
24 anyone from the City with us per se doing the  
25 testing.

1 Q. In the vehicle?

2 A. Yeah.

3 Q. Okay. So that would have  
4 been you and Mr. Hogarth?

5 A. I can't recall if that is  
6 the person from Tradewind or not.

7 Q. And do you recall if any  
8 problems arose during the testing of RHVP and/or  
9 the LINC?

10 A. No problems arose that I  
11 was made aware of.

12 Q. And if there had been any  
13 problems, would it have been your practice to make  
14 reference to that in your notes?

15 A. If it was a problem  
16 noteworthy from my perspective. Say, an example  
17 would be if there was an equipment breakdown and,  
18 you know, we had to pause testing for two hours, I  
19 would have made a note of that for our reference.

20 Q. Okay. Thank you.  
21 Registrar, you can close this down and if you can  
22 call up OD6, page 78.

23 At paragraph 198 you'll see an  
24 exchange of messages. Mr. Hogarth e-mailed  
25 Mr. Taylor the day following the testing on

1 November 21st, 2013. And just to be clear, you  
2 aren't copied on this testing, but I would just  
3 like to ask you about one component.

4 If you can just call out,  
5 Registrar, the indented text. Thank you. I  
6 believe it is the fourth line down. Mr. Hogarth  
7 wrote, "Red Hill Valley Parkway is the pavement of  
8 concern."

9 Would you have used that  
10 language or similar language to Tradewind or  
11 Mr. Hogarth?

12 A. I anticipate that what I  
13 would have said is the Red Hill Valley Parkway is  
14 the focus of this project or the focus of this  
15 assignment for a reference for Tradewind. With  
16 the reason being if for some reason we get  
17 delayed, you know, doing our field work, we need  
18 to make sure we get the Red Hill done.

19 Q. Okay. So is it fair to  
20 say that any comments that you made would've been  
21 in terms of prioritizing the testing?

22 A. Yes, that's correct.  
23 That it would be -- it would have been for  
24 prioritizing.

25 Q. And did you consider the

1 RHVP to be concerning?

2 A. No, I did not have any  
3 concerns with the Red Hill.

4 Q. Okay. And did  
5 Mr. Hogarth ever express anything similar to you  
6 or give you an indication of the test results  
7 on-site on November 20th?

8 A. No. When we were  
9 on-site, I do not recall there being any  
10 discussion about the results that were being  
11 generated.

12 Q. Okay. Registrar, if we  
13 can take that call out down and go to page 79.

14 So at paragraph 202, it  
15 reflects that you e-mailed Mr. Taylor on  
16 December 3rd thanking him for fitting the testing  
17 into Tradewind's schedule. You also asked for an  
18 estimate regarding receipt of the results. At  
19 this time did you understand there to be any  
20 deadline or urgency for receipt of the results?

21 A. I do not recall if there  
22 was a specific deadline, but from the  
23 documentation, you know, we've been looking at and  
24 so on, I gather that it was probably understood  
25 that it what was of interest to get results sooner

1 than later.

2 Q. And do you recall if  
3 there was any particular reason for that?

4 A. No, I do not recall a  
5 particular reason being stated.

6 Q. Okay. And, Registrar, if  
7 we can turn to page 83. Okay.

8 At paragraph 16 you e-mail  
9 Mr. Taylor again on January 7th, 2014 asking for  
10 the anticipated timeline for receiving the  
11 friction testing results. Did you have any  
12 discussions with Tradewind between December 3rd,  
13 which we just looked at, and this e-mail on the  
14 7th?

15 A. I do not recall if I had  
16 any conversations with them in between.

17 Q. Okay. And you replied to  
18 Mr. Taylor writing, "the client was starting to  
19 bug me." What did you mean by this?

20 A. The intention of that  
21 statement was we are getting pressure, which would  
22 have been Ludomir was receiving pressure from the  
23 City for the results, so what was the timeline  
24 that Tradewind was going to be able to deliver  
25 them because we were starting to get pressure, and

1 the information was being requested from us.

2 Q. Okay. And had you -- had  
3 anybody from the City contacted you directly?

4 A. No, I did not hear from  
5 anyone at the City regarding this.

6 Q. Okay. And do you recall  
7 what Dr. Uzarowski conveyed to you regarding his  
8 discussions?

9 A. I do not recall our exact  
10 conversation, but I would anticipate that he had  
11 received pressure from the City, when could they  
12 have the results, and he was relaying that to me.

13 Q. And did Dr. Uzarowski  
14 provide any contacts or any explanation for the  
15 pressure that he was receiving?

16 A. I do not recall any  
17 context being provided with it.

18 Q. And did Dr. Uzarowski  
19 indicate who from the City in particular he was in  
20 contact with who was requesting the results?

21 A. Yes. I understood it to  
22 be Gary Moore.

23 Q. Okay. And, Registrar, if  
24 we can go to the next image, please. Okay.

25 So on the same day,

1 January 7th, you advise Dr. Uzarowski that  
2 Tradewind was to provide the friction testing by  
3 the end of the following week. He replied to you  
4 saying:

5 "Vimy, please get it from them  
6 ASAP and give them hell on my  
7 behalf. I have to call Gary,  
8 and I'm afraid he will ask me  
9 about it."

10 Did you understand from  
11 Dr. Uzarowski that the results were need urgently  
12 at that time?

13 A. Yes. Following or  
14 aligning with the item we previously discussed, it  
15 was understood that the City was keen to get the  
16 results or were looking for the results.

17 Q. And what did you  
18 interpret Dr. Uzarowski's direction to "give them  
19 hell" to mean?

20 A. Dr. Uzarowski's comment  
21 was try and do -- was -- was maybe equivalent to  
22 saying try and do whatever you can to get the  
23 results as soon as you can.

24 Q. Okay. And how did this  
25 direction affect what your next steps were, if at

1 all?

2 A. I certainly would have  
3 tried to get the results as soon as I could from  
4 them following Dr. Uzarowski's comment.

5 Q. Okay. And I think you  
6 told me before that in context of your discussions  
7 prior to this e-mail that you did not have a sense  
8 of the context of why the results were being  
9 requested from the City. At this time did you  
10 have an understanding of why Dr. Uzarowski gave  
11 this direction? Had anything changed in your  
12 understanding?

13 A. No. My understanding  
14 remained the same in that I was not privy to any  
15 information from the City as to the need for the  
16 results so urgently.

17 Q. Okay. Did Dr. Uzarowski  
18 provide you with any additional information or  
19 context for why he wrote, "I have to call Gary and  
20 am afraid he will ask me about it."

21 A. No. There was not -- I  
22 do not recall there being any further explanation  
23 than literally what is presented in that sentence.

24 Q. Okay. And did  
25 Dr. Uzarowski ever raise any concerns with you

1 regarding his interactions with Mr. Moore?

2 A. No. I wouldn't (ph) not  
3 say there were any concerns. He did a variety of  
4 projects over the time I worked for him for Gary  
5 Moore.

6 Q. Okay. And did you have  
7 any direct contact with Mr. Moore?

8 A. I had limited interaction  
9 with Mr. Moore. In the documents there might be  
10 an e-mail or two where Gary has directed folks to  
11 speak with me or send me a PO. That was typically  
12 the extent of my interaction with Gary on these  
13 projects, and I would see Mr. Moore at industry  
14 events and so on.

15 Q. Okay. And in terms of  
16 this project you didn't have substantive or --  
17 discussions that were substantive or technical  
18 with Mr. Moore; is that right?

19 A. Yes, that is correct. I  
20 would not have had any technical discussions with  
21 Mr. Moore.

22 Q. Okay. And you'll see at  
23 paragraph 220 you followed up with Mr. Taylor on  
24 January 14th asking for the results. Was there a  
25 particular reason you were following up that day,

1 or were you simply following up on Mr. Taylor's  
2 statement from the week prior that he anticipated  
3 that the results would be complete by the end of  
4 that week?

5 A. I do not recall there  
6 being any particular reason to follow up with  
7 Mr. Taylor aside from the timeline you referenced  
8 that he had noted results would be coming that  
9 week.

10 Q. And, Registrar, if we can  
11 go to image 87 (indiscernible) 86. Thank you.  
12 And in paragraphs 230 and 231 you'll see that  
13 Dr. Uzarowski contacted Mr. Taylor directly on  
14 January 24th sending two e-mails. I'll just give  
15 you a moment to look at the e-mails. Okay.

16 And between your e-mail on  
17 January 14th and Dr. Uzarowski's e-mails on the  
18 24th, had you discussed the timing of the testing  
19 results with Tradewind?

20 A. I do not recall.

21 Q. Do you recall if you  
22 discussed the results with Dr. Uzarowski?

23 A. Sorry, the results or  
24 the --

25 Q. The --

1 A. -- timing of them?

2 Q. The receipt of the  
3 results.

4 A. The receipt of the  
5 results. I do not recall. I anticipate given the  
6 apparent urgency it was of discussion between us.

7 Q. Okay. And the documents  
8 indicate that prior to this you had been Golder's  
9 primary, though not exclusive, contact with  
10 Tradewind; is that fair?

11 A. Yes, that's correct. And  
12 in some of the documents it highlighted that  
13 Rabiah Rizvi had done -- had been helping with the  
14 coordination as well, I believe, when I had been  
15 travelling for another project. So I was the  
16 primary contact, but as you see Dr. Uzarowski  
17 spoke to them, as did Rabiah Rizvi.

18 Q. And to your recollection,  
19 before January 24th, 2014 had Dr. Uzarowski  
20 communicated directly with Tradewind?

21 A. I do not recall if  
22 Dr. Uzarowski had spoken directly with Tradewind  
23 prior to the e-mail here for this project.

24 Q. Okay. And would it be  
25 fair to view these e-mails as an escalation in the

1 request for friction testing?

2 A. Yes, it's -- yes, it is  
3 common or sometimes more effective if the request  
4 comes from a second person or someone else. So  
5 that was likely the intent to try and -- try and  
6 get ahold of these results.

7 Q. Okay. And Dr. Uzarowski  
8 wrote to Mr. Taylor that his client needed the  
9 friction testing results that morning, so the  
10 morning of January 24th, 2014. And in the second  
11 message he wrote that his client needed a  
12 comparison of the friction numbers on the RHVP  
13 from 2007 and 2013. To your knowledge did "my  
14 client" in Dr. Uzarowski's e-mails refer to  
15 Mr. Moore?

16 A. No. I would interpret it  
17 as the City of Hamilton.

18 Q. In the first message  
19 where Dr. Uzarowski wrote:

20 "He needs the friction testing  
21 results. He has a meeting  
22 with the management." (As  
23 read)

24 Would that have referred to  
25 Mr. Moore?

1                   A.    Yes.  Sorry, yes.  When  
2  it's referring to "he" specifically, that would be  
3  Mr. Moore.

4                   Q.    Okay.  And do you know  
5  why Mr. Moore needed the results?  Were you told  
6  by Dr. Uzarowski or anyone else that Mr. Moore had  
7  a management meeting?

8                   A.    No, I don't have any  
9  information about why he needed the results aside  
10 from the meeting mentioned in this e-mail.

11                  Q.    Okay.  And, Registrar,  
12 you can take down that callout.  If you can open  
13 page 88 in addition to 87.  Thank you.

14                  So this starts at the bottom  
15 of page 87 at 232 and continues over to the next  
16 page.  Dr. Uzarowski e-mailed you forwarding a  
17 message he had received October 18th, 2006 from  
18 Chris Raymond at the MTO related to the MTO  
19 friction testing results from 2007.

20                  To the best of your  
21 recollection, is that the first time you saw that  
22 e-mail and the MTO test data from 2007?

23                  A.    Yes.  This e-mail from  
24 Dr. Raymond was the first time I had seen this  
25 information.

1 Q. Okay. And I think we  
2 spoke this morning -- was this the e-mail that you  
3 were referring to of when you became aware that  
4 the MTO had conducted friction testing?

5 MS. JENNIFER ROBERTS: Sorry,  
6 may I just suggest that we go to the actual e-mail  
7 since you're -- we're looking for this witness's  
8 recollection? I think that might be helpful.

9 JUSTICE WILTON-SIEGEL: I  
10 think that would be useful.

11 MS. JENNIFER ROBERTS: Thank  
12 you.

13 MS. LECLAIR: It is GOL1096.

14 BY MS. LECLAIR:

15 Q. So this is the --  
16 actually, Registrar, if you can close page 88.  
17 Perfect. Thank you.

18 So this is the forwarded  
19 e-mail that you received on the 24th of January.  
20 Is this the e-mail when you first became aware of  
21 the MTO friction testing, or were you aware that  
22 the MTO had conducted friction testing before you  
23 received this e-mail?

24 A. This e-mail is the first  
25 time I became aware that MTO had done friction

1 testing.

2 Q. And do you know why  
3 Dr. Uzarowski forwarded you the message at this  
4 time?

5 A. No, not specifically.  
6 Although we had received the results or we were  
7 trying to receive the results of the recent  
8 testing at this time. So to bring it -- sorry?

9 Q. No, no. Go ahead.

10 A. To bring it -- to bring  
11 it forward, because he would use it in his  
12 comparison.

13 Q. "He" being Dr. Uzarowski?

14 A. Dr. Uzarowski, yeah.

15 Q. Okay. Perfect. And,  
16 Registrar, if you can leave this document up and  
17 also call out GOL6463.

18 So this is an e-mail that is  
19 just over 20 minutes after you received the e-mail  
20 from Dr. Uzarowski. You e-mailed Dr. Uzarowski  
21 with two of the same attachments, a description of  
22 the MTO testing and a table with the average  
23 friction numbers for each southbound lane and the  
24 friction number range. There's also an additional  
25 attachment which is a 2009 paper titled "Early Age

1 Low Friction Problem of SMA in Ontario."

2 Why did you send this to

3 Dr. Uzarowski?

4 A. I do not recall why I  
5 sent it to him. Reviewing the e-mail, I  
6 anticipate he had asked me to draft it.

7 Q. Okay. And did you  
8 prepare the summary of testing and the data  
9 included in the table?

10 A. I do not recall.

11 Q. Okay. And why did you  
12 attach and refer to the 2009 paper? I note that I  
13 don't -- it was not attached to Dr. Uzarowski's  
14 earlier e-mail to you on the left.

15 A. I do not recall the  
16 specific discussions at this time. I would  
17 anticipate reading this, that this was a draft  
18 e-mail he had asked me to prepare that he perhaps  
19 was going to share with someone else, so he wanted  
20 the paper included as a reference.

21 Q. Okay. And do you recall  
22 if Dr. Uzarowski provided the paper to you?

23 A. Yes. Dr. Uzarowski would  
24 have provided it or highlighted to me that the  
25 paper existed, and could I go find it, you know,

1 on the internet or something for him.

2 Q. Right. So to confirm,  
3 you would have not independently found and  
4 included the paper yourself; is that correct?

5 A. Yes, you are correct that  
6 identification of the paper would have come from  
7 Dr. Uzarowski.

8 Q. Do you recall if  
9 Dr. Uzarowski asked you to prepare the e-mail  
10 specifically for a draft for him to send to  
11 Mr. Moore?

12 A. I don't recall if that  
13 was the instruction or not, to prepare it for  
14 Mr. Moore.

15 MS. LECLAIR: And just before  
16 we close out this document, I believe we need to  
17 mark it as an exhibit. So that's be GOL6463, and  
18 I believe that's Exhibit 93.

19 THE REGISTRAR: Noted,  
20 Counsel. Thank you.

21 EXHIBIT NO. 93: E-mail from  
22 Vimy Henderson to Ludomir  
23 Uzarowski dated 1/24/2014;  
24 GOL6463

25 BY MS. LECLAIR:

1 Q. And, Registrar, you can  
2 close that down and open up the OD at image 88.

3 And again, I'm happy to take  
4 you to the e-mail itself. But you'll see at  
5 paragraph 233 that approximately an hour later  
6 Dr. Uzarowski sent Mr. Moore an e-mail which  
7 appears to include the content from the e-mail we  
8 just looked at. Does this assist your  
9 recollection at all?

10 A. I don't recall. I gather  
11 you mean my recollection to the instructions to  
12 prepare the draft e-mail.

13 Q. Correct, thank you.

14 A. No problem. I don't  
15 recall getting the instructions, but based on what  
16 we have here, I gather that I was given the  
17 instructions. It's not something I would have  
18 prepared without direction from Dr. Uzarowski.

19 Q. Okay. And  
20 Dr. Uzarowski's e-mail -- Registrar, if we can  
21 call up image 89 so that we have the full  
22 paragraph -- sorry, both together. Thank you.

23 So underneath the table  
24 there's additional content which references  
25 Tradewind data. Are you aware of the source of

1 the numbers included in the e-mail?

2 A. No, I gather that we --  
3 no, I do not know the source.

4 Q. And did you speak to  
5 Mr. Leonard Taylor, Mr. Rowan Taylor or anyone  
6 else at Tradewind regarding the data?

7 A. No, I do not recall  
8 speaking to any of them regarding the data.

9 Q. Okay. And based on your  
10 experience at the time, did you have an  
11 understanding of whether the numbers reported by  
12 the MTO and Tradewind were comparable or not?

13 A. No. At the time I was  
14 not involved in the technical aspects and was not  
15 involved in interpreting them.

16 Q. Okay. Okay. And if we  
17 can go to overview document 6, page 91. Okay.  
18 And at -- actually can we have 91 and 92 up,  
19 please. Okay.

20 And on January 26th, 2014  
21 Mr. Taylor sent you and Dr. Uzarowski a final  
22 Tradewind report which is -- his e-mail is  
23 excerpted underneath paragraph 240. Aside from  
24 the e-mail that I'm showing you, do you recall  
25 receiving the Tradewind report?

1                   A.    I do not specifically  
2    recall receiving that e-mail and the report, but I  
3    know I did based on these e-mails.

4                   Q.    Do you think you likely  
5    read it at the time you received it or shortly  
6    after?

7                   A.    I would have read the  
8    e-mail at the time of receiving it.

9                   Q.    Would you have read the  
10   report at that time as well?

11                  A.    Not likely.

12                  Q.    Okay.  Registrar, if we  
13   can call up GOL1112.

14                                This is the e-mail itself that  
15   was excerpted.  Mr. Taylor wrote in his e-mail,  
16   this is the second full paragraph:

17                                "You will note that while the  
18                                average grip number friction  
19                                levels were generally uniform  
20                                and comparable to or above the  
21                                relevant reference levels on  
22                                the Lincoln Valley Parkway,  
23                                those from the Red Hill Valley  
24                                Parkway were considerably  
25                                below the reference levels and

1 less consistent." (As read)

2 Did this cause you any concern

3 at the time?

4 A. No, I do not recall

5 having a concerned reaction to the e-mail.

6 Q. Okay. And do you recall

7 if Dr. Uzarowski expressed any concern related to

8 the e-mail or to the report at this time?

9 A. No, I do not recall what

10 Dr. Uzarowski's reaction was to the e-mail or the

11 report. My involvement at this time would have

12 been to notify -- my primary involvement at this

13 time, although I would have read the e-mail,

14 would've been to notify Dr. Uzarowski that we have

15 received the results, and they are in his in-box

16 for him.

17 Q. Okay. And in terms of

18 roles on the Golder project would you have been

19 responsible for reviewing and analyzing the

20 information in the Tradewind report or would this

21 have been Dr. Uzarowski's role and responsibility?

22 A. It would have been

23 Dr. Uzarowski's role to review and analyze the

24 data.

25 Q. Do you recall when you

1 first read the report?

2 A. No, I do recall exactly  
3 when I read it. I anticipate it wouldn't have  
4 been long after receiving it, but I don't recall  
5 exactly when I read it.

6 Q. Would it have been before  
7 the draft Golder report was prepared and sent to  
8 the City on January 31st?

9 A. I would anticipate, yes.

10 Q. Registrar, if we could go  
11 to overview document 6, page 93 and 94. Okay.

12 And at paragraph 245  
13 Dr. Uzarowski e-mailed you along with some other  
14 colleagues at Golder, Michael Maher, Andrew  
15 Balasundaram and Ms. Rizvi on January 27th, 2014.  
16 I'll just give you a moment to review the e-mail.  
17 It's at the bottom of page 93 and the top of 94.  
18 Please let me know --

19 A. We can go ahead.

20 Q. Okay. Do you recall any  
21 discussion on the friction test results with any  
22 of those copied on Dr. Uzarowski's e-mail?

23 A. No, I do not recall  
24 myself discussing the results with any of those  
25 folks on the e-mail.

1 Q. Okay. And do you recall  
2 if anyone expressed any concern regarding the  
3 Tradewind friction values?

4 A. I do not recall if there  
5 were responses and what they were.

6 Q. Okay. And in the e-mail  
7 Dr. Uzarowski referred to the difference in values  
8 between RHVP and LINC. This is noted more than  
9 once in this e-mail. Do you recall being involved  
10 in any discussions regarding the difference in  
11 values?

12 A. No, I do not recall  
13 specific discussions about it.

14 Q. Okay. And did you have  
15 any concerns regarding the difference in values  
16 between the Red Hill Valley Parkway and the  
17 Lincoln Alexander Parkway?

18 A. No. I don't recall  
19 having any concerns, but my involvement was  
20 limited at this point. My primary objective was  
21 to receive the results, and I was less involved in  
22 the interpretation.

23 Q. Okay. Thank you,  
24 Registrar. You can close those callouts, and if  
25 you could go to page 96.

1                                   On January 31st, 2014  
2    Dr. Uzarowski sent Mr. Moore, copying you and  
3    Ms. Rizvi, what he described as an updated draft  
4    report on the condition of the pavement on the  
5    RHVP six years after construction. For the  
6    purpose of this inquiry we refer to this report as  
7    the Golder report. I'll just take you to a copy  
8    of the report itself.

9                                   Registrar, if you can call up  
10   GOL2981.

11                                  And, Dr. Henderson, do you  
12   recall if you drafted any parts of this report?

13                                  A. I do not recall which  
14   parts I drafted, but I assume that I did draft  
15   some aspects of it under the direction of  
16   Dr. Uzarowski.

17                                  Q. Okay. Registrar, and if  
18   you can go to the next image.

19                                  Looking at the table of  
20   contents, are there any sections of the report  
21   that stand out you to as sections you drafted?

22                                  A. I don't recall  
23   specifically portions I would have -- I don't  
24   recall specifically portions I drafted.

25                                  Q. Okay. And would you have

1    been responsible for drafting any part of  
2    section 5 friction testing or section 6 analysis  
3    and recommendations?

4                    A.    I may have physically  
5    typed them.  I would not have developed the  
6    content.

7                    Q.    In Dr. Uzarowski's e-mail  
8    he referred to it as "an updated draft report."  
9    Do you recall if there had been any prior draft  
10   reports sent to Mr. Moore?

11                   A.    I do not recall if there  
12   was or was not previous versions.

13                   Q.    Okay.  And why was the  
14   report sent in draft to Mr. Moore?

15                   A.    That is common practice  
16   at Golder and throughout the industry, at least,  
17   you know, in the ground engineering industry, to  
18   send reports or memos or other documents in draft  
19   to the client.  It gives the client an opportunity  
20   review it, discuss the findings with us.  You  
21   know, there may be extra work added, there may be  
22   updates that need to be made, and it just gives an  
23   opportunity for everyone to review the document.

24                   Q.    And does Golder or do you  
25   have a practice of reviewing draft reports with

1 clients?

2 A. Typically yes, we do in  
3 that you would provide the draft report to the  
4 client and then follow up with them and discuss  
5 it, clarify, answer any questions and, you know,  
6 handle anything that arises from it.

7 Q. What type of comments do  
8 you typically expect from a client?

9 A. It varies. It depends  
10 what the document involves. It's -- you know,  
11 often there is not a lot of comments. The  
12 comments -- you know, if it's a design report, a  
13 pavement design report, we might get a comment  
14 back that the owner, the municipality or the City,  
15 has realized instead of the design for 20 years,  
16 they're wondering if we can do an additional  
17 design for 15 years. So comments like that. Not  
18 necessarily changing the whole scope of the  
19 project, but, you know, something has changed a  
20 little bit on their side, and therefore, you know,  
21 can we maybe add this in or change this a little  
22 bit, that sort of thing.

23 Q. Okay. And are there ever  
24 circumstances where you wouldn't implement a  
25 client's comments?

1                   A.    Oh, yes.  I mean, they  
2    are comments, and then we normally discuss them  
3    with them.  Some -- you know, some are easy things  
4    to implement, right.  You know, I found a typo.  
5    Okay, yeah, good, no problem.  Some are ideas.  
6    They heard about a different rehabilitation  
7    treatment, you know, should we consider that.  And  
8    we discuss it with them, and maybe that treatment  
9    is not suitable for that road.  So we don't  
10   include that as an option.

11                   So certainly their comments  
12   for discussion, they don't always get carried  
13   through, but sometimes they do.

14                   Q.    Okay.  And is it common  
15   for draft reports never to be finalized?

16                   A.    Again, it is project  
17   dependent and client dependent.  Typical processes  
18   and methods are that the report gets finalized.  
19   But some clients never need an additional version,  
20   and, you know, you work within what your clients  
21   need of course.  So it is common practice to  
22   finalize reports or memos or whatever they may be,  
23   but on occasion it does not happen.

24                   Q.    On those occasions would  
25   it be typical to document that a report is not

1 being finalized in any way?

2 A. It depends. I would say  
3 it is project specific. It really just depends on  
4 the -- on what happened -- what -- the events of  
5 that particular project, what occurs, you know,  
6 that needs to be documented. So it could go  
7 either way.

8 Q. Okay. And do you recall  
9 discussion finalizing the Golder report with  
10 Dr. Uzarowski?

11 A. No, I do not recall  
12 having any discussions with him about finalizing  
13 it.

14 Q. And did you ever sign a  
15 copy of the report?

16 A. I do not recall signing a  
17 copy of the report.

18 Q. Did this project stay on  
19 your radar, so to speak, after the draft was  
20 provided to Mr. Moore on January 31st, 2014?

21 A. If I interpret the  
22 question correctly, the answer would be no. From  
23 my perspective and what I knew about the scope of  
24 the project, we had fulfilled it in the report  
25 that was provided. And although it said draft on

1 it, it had addressed the entire scope that had  
2 been requested and could be finalized if or when  
3 requested by the City. So no, from my perspective  
4 the work that had been requested had been  
5 completed.

6 Q. Okay. And at any time  
7 did you provide the Golder report to anyone at the  
8 City?

9 A. No. I would have only  
10 provided it to Dr. Uzarowski, and then he would  
11 have shared it from there.

12 Q. Okay. Registrar, you can  
13 close that.

14 So, Dr. Henderson, I  
15 understand from the documents that Dr. Uzarowski  
16 spoke with Mr. Moore regarding the report on  
17 February 4th, 2014 and had an in-person meeting on  
18 February 7th, 2014. Did you participate in either  
19 discussion?

20 A. I did not participate in  
21 either discussion.

22 Q. Okay. And, Registrar, if  
23 you can take us to overview document 6, page 101.  
24 Okay.

25 And at paragraph 264 on

1 February 12th, 2014 Mr. Chris Jacobson from the  
2 City e-mailed you asking for an update on the  
3 crosswalk testing. Did you provide him with the  
4 Tradewind report at this time?

5 A. I did not share the  
6 Tradewind report with anyone.

7 Q. Okay. And do you recall  
8 if you ever discussed the Tradewind report with  
9 Mr. Jacobson or anyone at the City?

10 A. No, I would not have  
11 discussed the Tradewind report with anyone.

12 Q. Okay. And, Registrar,  
13 now turning to overview document 7. If you can  
14 take us to page 82.

15 We are going to jump forward a  
16 bit in time to December 2015. At paragraph 257  
17 you'll see that on December 17th, 2015  
18 Dr. Uzarowski copied you on an e-mail to  
19 Mr. Leonard Taylor writing -- I'll let you review  
20 the e-mail.

21 A. Okay. So that's an  
22 e-mail that Dr. Uzarowski wrote. Is that --

23 Q. Correct.

24 A. -- the one we're looking  
25 at, 257? Sorry.

1 Q. Correct. Yeah. Yes,  
2 that's an e-mail from Dr. Uzarowski to Leonard  
3 Taylor that you were copied on.

4 A. Okay.

5 Q. Prior to receiving this  
6 e-mail had you discussed this with Dr. Uzarowski?

7 A. I do not recall  
8 discussing it with Dr. Uzarowski, but I don't know  
9 if we did or we did not.

10 Q. Do you know why  
11 Dr. Uzarowski was following up on the Tradewind  
12 report at this time?

13 A. No, I don't know why he  
14 was following up.

15 Q. And between approximately  
16 February 2014 and this e-mail on December 2015 had  
17 you had any ongoing work related to the Golder  
18 report or the Tradewind report?

19 A. I don't recall, that  
20 there was any activity during that time.

21 Q. Okay. And are you aware  
22 of any contact you or anyone else at Golder had  
23 with Mr. Leonard Taylor or Tradewind more  
24 generally regarding the Tradewind report?

25 A. No, I don't recall having

1 any communication with Mr. Taylor. I don't know  
2 if anyone else did.

3 Q. Okay. Registrar, can you  
4 also call up image 83, please. Okay.

5 And at paragraph 258, which  
6 starts at the bottom of 82 goes on to 83, you were  
7 copied an e-mail from Dr. Uzarowski on  
8 December 23, 2015. Dr. Uzarowski wrote:

9 "I had a phone call from Gary  
10 Moore from the City of  
11 Hamilton. Please go ahead  
12 with the inertial profiler  
13 scan on the RHVP. It would be  
14 great if we could do it  
15 between Christmas and the new  
16 year. I will then need a  
17 localized roughness analysis.  
18 I will have to tell them where  
19 to do the repairs and what  
20 repairs would be the best. We  
21 would definitely need the GPS  
22 coordinates." (As read)

23 Dr. Uzarowski mentioned a call  
24 with Mr. Moore. Were you involved in that call?

25 A. No, I was not involved.

1 Q. Okay. And to your  
2 knowledge did the call or did the request for  
3 inertial profiling relate in any way to the  
4 discussions with Mr. Taylor or regarding the  
5 Tradewind report?

6 A. I do not know if they  
7 were related or not.

8 Q. Okay. And I understand  
9 that inertial profile testing was conducted in  
10 2013 as part of the Golder project. Do you know  
11 why the City was requesting inertial profile  
12 testing again at this time?

13 A. No, I don't know the  
14 reason for the request.

15 Q. Okay. And at  
16 paragraph 259 you replied the same day, so again  
17 December 23rd, 2015, advising that you would meet  
18 Joe, who I take it to mean Joe Lin from Golder,  
19 who was also copied on Dr. Uzarowski's e-mail; is  
20 that correct?

21 A. I would assume that is  
22 the correct Joe, yes.

23 Q. Okay. And do you recall  
24 if you ultimately attended this testing?

25 A. I do not recall.

1 Q. Okay. Okay. And at  
2 paragraph 261 Dr. Uzarowski copied you on an  
3 e-mail. This is January 25th, 2016 writing:

4 "I will have a meeting with  
5 the City of Hamilton and need  
6 the profile of the Red Hill  
7 Valley ASAP. What is the  
8 soonest time I can get it?"

9 Do you have any knowledge why  
10 the results were needed ASAP?

11 A. No, I -- I don't know  
12 why -- why that timeline was set.

13 Q. Okay. And, Registrar, if  
14 we can go to page 113. Okay.

15 And at paragraph 361  
16 Dr. Uzarowski e-mailed Mr. Taylor on  
17 February 19th, 2016, and to confirm you are not  
18 copied on this e-mail.

19 MS. JENNIFER ROBERTS: Sorry,  
20 may I just note that the witness seems to be  
21 struggling to see this.

22 MS. LECLAIR: We can  
23 absolutely call that out.

24 Could you please call out,  
25 Registrar, paragraph 361.

1 MS. JENNIFER ROBERTS: Just so  
2 you know, Ms. Leclair, Dr. Henderson is in one of  
3 our offices and she does not have the finest  
4 screen that we have in this office that we've  
5 managed to cobble together. So if we could  
6 call --

7 MS. LECLAIR: I will call  
8 things out. I will.

9 MS. JENNIFER ROBERTS: Thank  
10 you.

11

12 MS. LECLAIR: Okay. Thank  
13 you.

14 BY MS. LECLAIR:

15 Q. Okay. So that is the  
16 text of the e-mail. If you could actually call  
17 out the paragraph in addition, that would be  
18 helpful, Registrar. Thank you.

19 And again, you weren't copied  
20 this e-mail, but to your knowledge were there any  
21 discussions between Golder and Tradewind between  
22 Dr. Uzarowski's original e-mail on December 17th,  
23 2015 and this e-mail on February 19th, 2016?

24 A. No, I do not recall any  
25 related discussions.

1 Q. Okay. And you can close  
2 that callout. And if you could open up page 114  
3 in addition to 113 which is already up. Perfect.  
4 And if you can call up paragraph 362. Okay.

5 And you were also not copied  
6 Mr. Taylor's response. Do you recall if  
7 Dr. Uzarowski made you aware of this response or  
8 attachment from Mr. Taylor?

9 A. No, I do not recall being  
10 involved in any discussions related to this  
11 e-mail.

12 Q. Okay. And were you  
13 involved or made aware of any subsequent e-mails  
14 between Dr. Uzarowski and Mr. Taylor on  
15 February 22nd, 2016?

16 A. No.

17 Q. Okay. Registrar, you can  
18 take those down and you can open up page 85.  
19 Okay.

20 And at paragraph 267 there's a  
21 transcription of Dr. Uzarowski's notebook which  
22 included a note that said "Gary Moore, RR-LU-VH."  
23 Am I correct that the initials refer to Rabiah  
24 Rizvi, Ludomir Uzarowski and Vimy Henderson,  
25 respectively?

1 A. Yes, they do.

2 Q. I recognize that this  
3 isn't your note, but do you recall if this  
4 reflects a meeting or discussion with Mr. Moore?

5 A. No, I don't know what  
6 that note is in regards to.

7 Q. Okay. And did you have  
8 any meetings or calls with Mr. Moore regarding  
9 this assignment being the inertial profile  
10 testing?

11 A. No, I did not.

12 Q. And at this time in  
13 February 2016 did you have any concerns regarding  
14 the safety or condition of the RHVP?

15 A. No, I did not have any  
16 concerns about the RHVP.

17 Q. Did Dr. Uzarowski express  
18 any concern to you regarding the safety or  
19 condition of the RHVP?

20 A. No, I do not recall him  
21 expressing any concerns.

22 MS. LECLAIR: Commissioner, I  
23 see that we're few minutes away from the afternoon  
24 break, and I'm about to move to a different topic.  
25 I propose this might be a good time for the

1 afternoon break.

2 JUSTICE WILTON-SIEGEL: Okay.

3 Let's then adjourn until 3:30.

4 --- Recess taken at 3:12 p.m.

5 --- Upon resuming at 3:30 p.m.

6 MS. LECLAIR: Commissioner,

7 may I proceed?

8 JUSTICE WILTON-SIEGEL: Please

9 proceed.

10 BY MS. LECLAIR:

11 Q. So I would like to move

12 forward a bit in time to November 2017.

13 Registrar, if you can call up overview document 8,

14 pages 17 and 18. Thank you.

15 And at paragraph 40 and 41

16 you'll see you received a draft proposal for a

17 project titled "Evaluation of Pavement Surface

18 Skid Resistance Red Hill Valley Parkway" from

19 Ms. Rizvi. For the purpose of the inquiry we

20 refer to the project as "the 2017 Golder pavement

21 evaluation," so if I refer to it that way, I'm

22 referring to work flowing from this proposal.

23 Were you involved in drafting

24 the proposal?

25 A. Is it possible to pull up

1 the proposal?

2 Q. Absolutely.

3 A. Sorry.

4 Q. No, problem. GOL5925.

5 A. Please.

6 Q. This is the draft

7 proposal that Ms. Rizvi sent.

8 A. Yep. And yes, I don't  
9 recall specifically writing it, but I do believe I  
10 am a signee on it on next page, am I?

11 Q. Registrar, can you --

12 A. No. So I certainly would  
13 have -- would have assisted in it.

14 Q. Okay. And do you recall  
15 if you discussed the proposal with Ms. Rizvi or  
16 Dr. Uzarowski before you received it?

17 A. I do not recall the  
18 discussion, but I anticipate that we did discuss  
19 it.

20 Q. And, Registrar, can you  
21 actually put both images for the proposal up.  
22 Thank you.

23 And what was the origin of  
24 this proposal, to your knowledge?

25 A. I'm sorry, I don't

1 necessarily understand. Do you mean where did the  
2 request come from for the proposal, or who  
3 initially drafted it?

4 Q. More the former, so whose  
5 idea was it to do cores, British pendulum testing,  
6 polished stone value testing and to have Golder  
7 prepare a proposal about it? Where did the idea  
8 for this assignment originate?

9 A. Sure. The idea for the  
10 assignment would have come from -- either directly  
11 from Gary Moore or from discussions between  
12 Dr. Uzarowski and Gary Moore.

13 Q. And what was your  
14 understanding of the purpose of the assignment and  
15 of the specific tests contemplated therein?

16 A. At this point we were  
17 gaining further information about the surface  
18 layer of the Red Hill Valley Parkway.

19 Q. For what purpose were you  
20 gaining additional information, to your knowledge?

21 A. I believe at this point  
22 we had started into the discussion of possibly  
23 doing hot in-place recycling on the Red Hill  
24 Valley Parkway.

25 Q. Okay. And to your

1 knowledge was this project intended to determine  
2 the current skid resistance qualities and  
3 relatedly current safety of the RHVP surface, or  
4 was it related to the concept of hot in-place  
5 recycling to resurface the RHVP or both?

6 A. It would not have been  
7 related to safety. Safety engineering is outside  
8 of what we do, or it's not a service -- "we" being  
9 Ludomir and Rabiah and I, provide with our  
10 pavement engineering. So I gather the intention  
11 was to understand more about the current surface  
12 of the highway and how it would behave if we were  
13 to move forward with a hot in-place recycling  
14 treatment.

15 Q. Okay. And, Registrar, if  
16 you can go back to overview document 8, page 18.  
17 And you can take down the -- thank you.

18 At paragraph 43 you see that  
19 Dr. Uzarowski sent a draft of the proposal to  
20 Mr. Moore on November 22nd, 2017, and this draft  
21 is revised from the one that we just looked at. I  
22 know that you are not copied on this e-mail, but  
23 at this time were you aware that Dr. Uzarowski had  
24 revised the proposal?

25 A. I do not recall if I was

1 aware that he had revised it.

2 Q. Okay. And, Registrar,  
3 can you also call up paragraph 40 -- sorry,  
4 page 19. Perfect.

5 And at paragraph 44 we've  
6 outlined some of the revisions between the draft  
7 that Ms. Rizvi sent and the draft provided to  
8 Mr. Moore on the 22nd.

9 Registrar, if you can just  
10 call out 44. Okay.

11 So in addition to the  
12 excerpted text which shows the track changes  
13 effectively between the two proposals, the title  
14 of the proposal also changed. Do you know why  
15 Dr. Uzarowski made these revisions?

16 A. No, I do not know why he  
17 revised it.

18 Q. Okay. And the title of  
19 the project changed From "Evaluation of Pavement  
20 Surface Skid Resistance" to "Evaluation of  
21 Pavement Surface and Aggregates." To your  
22 knowledge was this change intended to reflect a  
23 change purpose of the project?

24 A. No. I do not know the  
25 purpose of changing the title. Dr. Uzarowski

1 would have been in communication with Mr. Moore as  
2 to what he needed from this proposal -- or from  
3 the proposal and then this project. So I  
4 anticipate that revisions were simply to reflect  
5 what Dr. Uzarowski felt the City and Mr. Moore  
6 were looking for.

7 Q. And to confirm, you don't  
8 have a specific recollection of any such  
9 discussions occurring.

10 A. That is correct; I do not  
11 recall discussing this with Dr. Uzarowski.

12 Q. And do you recall whether  
13 Dr. Uzarowski had any discussions with Mr. Moore  
14 about the proposal, or were you just saying in  
15 typical practice that would be the case?

16 A. I do not recall an exact  
17 discussion, Dr. Uzarowski would have had it with  
18 Mr. Moore, but I can confirm that he would have  
19 had a discussion in order to develop a need to  
20 write this proposal. He wouldn't have just taken  
21 it upon himself to write this proposal.

22 Q. Okay. Thank you,  
23 Registrar. If you can close that and take us to  
24 page 20. Okay.

25 And Dr. Uzarowski provided the

1 final signed proposal to Mr. Moore on  
2 November 24th, 2017. You are one of two  
3 signatories with Dr. Uzarowski. I'm happy to take  
4 you to it, but I can tell you that the proposal  
5 reverted to the original language from Ms. Rizvi's  
6 draft from November 22nd that we looked at a  
7 moment ago. Are you aware of why the proposal  
8 reverted to the original draft?

9 A. I do not recall why the  
10 original draft was sent.

11 Q. Do you recall any  
12 discussions about whether to finalize the original  
13 draft or the revised draft?

14 A. I do not recall any  
15 discussions or related discussions to the drafts  
16 and which would be finalized.

17 Q. And did the language  
18 change either way affect what Golder was going to  
19 do and did it?

20 A. I do not believe that it  
21 substantially changed our scope and deliverables  
22 for the project.

23 Q. Okay. And did you have  
24 any technical or substantive role in this  
25 assignment, or was your role the same as you've

1 described today for the other Golder projects  
2 we've discussed?

3 A. My role was as discussed  
4 in a project management and coordination capacity.

5 Q. Okay. So you did not  
6 have a technical or substantive component to your  
7 role?

8 A. You are correct; I did  
9 not have a technical component to this project.

10 Q. Okay. Registrar, if we  
11 can go to page 27 of overview document 8.

12 So I understand that the  
13 testing for the Golder pavement evaluation  
14 occurred overnight on December 6th to 7th, 2017;  
15 is that correct?

16 A. I do not recall.

17 Q. Do you recall if you  
18 attended the testing?

19 A. I do not recall being  
20 on-site for this testing.

21 Q. May --

22 MS. JENNIFER ROBERTS: May I  
23 suggest that we go -- sorry. May I suggest that  
24 we go to the notes because that will clarify, I  
25 think, the evidence on this point.

1 MS. LECLAIR: Sure. I believe  
2 that's GOL1457, or at least that's one page of the  
3 notes. If we could rotate that, please.

4 MS. JENNIFER ROBERTS: Thank  
5 you.

6 MS. LECLAIR: Thank you.

7 BY MS. LECLAIR:

8 Q. Dr. Henderson, does  
9 this -- are these your notes from the testing?

10 A. No, those are not my  
11 notes, and I was not on site during this activity.

12 Q. Thank you. Registrar, if  
13 you can take us to page 30. You can call out  
14 paragraph 73.

15 So I would like to ask you  
16 about this e-mail sent by Ms. Rizvi. At the  
17 outset I want to be clear that you weren't copied  
18 on this e-mail. In the e-mail Ms. Rizvi wrote:

19 "Is there any way it can be  
20 started the week of January 2?

21 I hate to be a pain but the  
22 aggregates then have to be  
23 shipped to Ireland and the  
24 testing there will take  
25 another couple of weeks. The

1 client is facing an urgent  
2 safety issue with their road  
3 and would like an answer  
4 before further issue arise.  
5 Please let me know if that  
6 will be possible. Also how  
7 long do you think the  
8 extraction will take?"

9 Did Ms. Rizvi ever use  
10 language similar to, "the client is facing an  
11 urgent safety issue with their road," with you?

12 A. No, she did not.

13 Q. Did Dr. Uzarowski or  
14 anyone else at Golder ever tell you something  
15 similar to, "the client is facing an urgent safety  
16 issue with their road"?

17 A. No, that comment was  
18 never made at Golder, within Golder.

19 Q. Okay. To your knowledge  
20 that comment was not --

21 A. That I was privileged to,  
22 correct.

23 Q. Did you have any concerns  
24 with the safety or condition of the RHVP at this  
25 time?

1                   A.    No, I did not have any  
2 concerns with the Red Hill.

3                   Q.    Did anyone at Golder  
4 express to you at this time or at any time that  
5 they had such concerns?

6                   A.    No, no one brought  
7 concerns to my attention regarding the Red Hill.

8                   Q.    Okay. And did anyone at  
9 the City ever express to you that they faced an  
10 urgent safety issue with the RHVP?

11                  A.    No, no one at the City  
12 brought up any safety concerns with me regarding  
13 the Red Hill.

14                  Q.    Thank you. Registrar,  
15 you can close that out, and if we can go to  
16 page 66. Okay.

17                  At paragraph 81 you'll see  
18 that the PSV results were received from Test  
19 Consult in Ireland on February 15th, 2018. I take  
20 it from your answer that you did not have a  
21 technical component on this project, that you were  
22 not involved in reviewing or annualizing with PSV  
23 results; is that correct?

24                  A.    Yes, that is correct. I  
25 had very limited involvement in this project

1 acting only as the project manager and not working  
2 on any technical components.

3 Q. And does your answer  
4 remain in same with respect to the British  
5 pendulum testing and the measured texture depth  
6 results?

7 A. Yes, that is correct. My  
8 involvement remains the same; there was no  
9 technical involvement.

10 Q. Thank you. Registrar,  
11 can you take us to page 78, please. And if you  
12 can call out paragraph 214. Thank you.

13 So you receive an e-mail on  
14 March 14th, 2018 from Dr. Uzarowski regarding a  
15 meeting he had with the City on March 9th, 2018.  
16 I'll let you review the content. Please let me  
17 know when I can continue.

18 A. Yes, we can move on head.

19 Q. Did you attend this  
20 meeting on March 9th, 2018?

21 A. No, I did not attend the  
22 meeting.

23 Q. Okay. And prior to  
24 receiving this e-mail on the 14th of March did you  
25 have any discussions with Dr. Uzarowski regarding

1 the meeting on the 9th?

2 A. There was some discussion  
3 of some frustration with none of the proposed  
4 suggestions being carried forward.

5 Q. When you say  
6 "frustration," who was frustrated?

7 A. Dr. Uzarowski expressed  
8 that he had made multiple suggestions of different  
9 treatments, such as -- you know, in this e-mail it  
10 talks about the skid abrader or shot blasting, and  
11 it had been made on more than one occasion, and it  
12 had not been implemented.

13 Q. And did Dr. Uzarowski  
14 provide any information in those discussions or  
15 that discussion on when those recommendation had  
16 been made?

17 A. It was more of a general  
18 discussion that he had brought forward different  
19 solutions that had not been -- not been  
20 implemented.

21 Q. And when you say  
22 "solutions," did Dr. Uzarowski express to you that  
23 he was concerned that the solutions had not been  
24 implemented?

25 A. No, not concerned but



1 at least the worst areas  
2 indicated in Tradewind  
3 Scientific report, to improve  
4 friction of the current  
5 surface if they delay  
6 resurfacing."

7 Did you understand that  
8 comment to be in the same -- of the same nature  
9 relating to maintenance of the roadway.

10 A. Yes, that the road --  
11 there were ways to improve the condition of the  
12 roadway without, you know, having to reconstruct  
13 it or something. There were relatively simple  
14 straightforward efficient treatments that could be  
15 done that would make it even better than it was.

16 Q. And at the time to your  
17 knowledge did Dr. Uzarowski or did anyone at  
18 Golder express any concerns with the safety  
19 resulting from the concerns regarding the  
20 condition of the pavement?

21 A. No. We did not express  
22 concerns about the safety, but safety is outside  
23 of our areas of expertise.

24 Q. Okay. Do you know why  
25 you received this e-mail? Was he looking for your

1 input and opinion regarding the feasibility of hot  
2 in-place on SMA?

3 A. No, I doubt that he was  
4 looking for my input specifically to this e-mail.  
5 Dr. Uzarowski often included myself and Ms. Rizvi  
6 on communication for a few reasons. He is a  
7 wonderful -- okay, not to take it way off track,  
8 but he's a great mentor and, like, you know, is  
9 very good at teaching people and advancing their  
10 career. So he would encourage us to be involved  
11 and want us to see the discussions that were  
12 happening on various projects so we were aware.

13 Secondly, we worked very  
14 closely together, the three of us, so, you know,  
15 by including us then if someone was looking for  
16 the e-mail in two weeks and they couldn't find it,  
17 probably one of the three of us could find it.

18 Q. Thank you. Okay. At  
19 this time, so around March 2018, did you expect  
20 that Golder would prepare and provide a report  
21 related to the 2017 Golder pavement evaluation to  
22 the City?

23 A. I do not recall having a  
24 particular idea about that at this time.

25 Q. Okay.

1 MS. JENNIFER ROBERTS: Sorry,  
2 Commissioner, I note that there was a draft that  
3 was prepared.

4 JUSTICE WILTON-SIEGEL: Yes.

5 MS. LECLAIR: An earlier draft  
6 in December. Is that correct --

7 JUSTICE WILTON-SIEGEL: Well,  
8 why don't we just let the questioning proceed for  
9 a moment. I'm not sure --

10 MS. JENNIFER ROBERTS: Okay.  
11 I'm conscious that if we can help the witness  
12 go -- by going to a document that might be useful  
13 since she's being -- so that it's less of a memory  
14 test. In other words, it might be -- I think that  
15 might be --

16 JUSTICE WILTON-SIEGEL: I  
17 mean, I think that's fair, but I'm not sure that  
18 we are at a question yet where there's a memory  
19 test about any report.

20 MS. JENNIFER ROBERTS: Thank  
21 you.

22 JUSTICE WILTON-SIEGEL:  
23 Ms. Leclair.

24 BY MS. LECLAIR:

25 Q. And I'm happy to take

1 Dr. Henderson to a draft report. My question was  
2 rather in March of 2018 if Dr. Henderson was  
3 involved in any discussions relating to preparing  
4 and providing a draft report to the City at that  
5 time.

6 A. I do not recall being in  
7 any specific -- in any discussions specifically  
8 related to a report for this work.

9 Q. I'm just trying to pull  
10 up the correct document. If you'll give me one  
11 moment.

12 Registrar, if you can take us  
13 to overview document 8, page 88 and 89.

14 This is moving forward just  
15 about a month to April 10th, 2018, and you  
16 e-mailed a series of your colleagues at Golder,  
17 and in your e-mail you wrote that the City  
18 Hamilton wants to try a pavement rehabilitation  
19 method, hot in-place recycling in a new  
20 application and also further this idea has been  
21 driven by the City and not by Golder.

22 At this time was it your  
23 understanding that it was the City who was  
24 interested in using hot in-place recycling to  
25 resurface the RHVP?

1                   A.    Yes, it was Gary Moore  
2    who had highlighted the idea to Ludomir that he  
3    would like to consider hot in-place recycling on  
4    the Red Hill.

5                   Q.    And did you come to have  
6    this understanding through Dr. Uzarowski or  
7    through the City directly?

8                   A.    No, I learned it from  
9    Dr. Uzarowski.

10                  Q.    Okay.  And at this time  
11   is the project you're referring to in your e-mail  
12   separate from what I've been referring to as the  
13   2017 Golder pavement evaluation that we've been  
14   discussing?

15                  A.    Yes, yes, it was for work  
16   that had been brought -- the idea for work that  
17   had been brought forward by the City and Golder,  
18   being Dr. Uzarowski, and the City had started  
19   discussing it as a potential project in the  
20   future.

21                  Q.    Okay.  And in your e-mail  
22   you raise the question of whether the project  
23   needed to go through what you refer to as the risk  
24   committee.  Why did you raise this at this time?

25                  A.    The project was not

1 conventional. It had a research component to it,  
2 and it was looking at a treatment that we were not  
3 routinely doing in Ontario, and it was also  
4 looking at using SMA, stone mastic asphalt, and  
5 the professional within the industry that is the  
6 leader, you know, or the main person you think of  
7 being Pat Wiley had, you know, identified maybe it  
8 will be challenging with SMA or that it hadn't  
9 been done with SMA a great deal.

10 So with all of those  
11 considerations and because we now had this risk  
12 committee at Golder that was, you know, a group  
13 that we heard about more often, I would say, I  
14 brought the question forward. Are we happy moving  
15 forward with this work, or does it need to go  
16 through the risk committee and so on.

17 Q. Okay. Registrar, if you  
18 can take us to overview document 9, page 23. You  
19 can close out -- thank you.

20 Sp at paragraph 51 you'll see  
21 that Dr. Uzarowski e-mailed Mike -- Michael Becke  
22 at the City copying you attaching Golder's  
23 professional titled "Hot in-Place Recycling  
24 Suitability Study." You're also a co-signatory to  
25 this project.

1                   How did this project and this  
2 proposal relate, if at all, to the 2017 Golder  
3 pavement evaluation which as we discussed had a  
4 component that also related to hot in-place  
5 recycling?

6                   A.    Yes.  The findings of the  
7 2017 project or the data gained in the 2017  
8 project would factor into some of the  
9 considerations and discussions that were  
10 anticipated to occur in this project.

11                  Q.    And do you know how the  
12 data was in fact factored in?  Were you involved  
13 in any of that analysis?

14                  A.    No, and -- no, no, I was  
15 not, and I anticipate it may have been factored in  
16 more once I left Golder.

17                  Q.    Okay.  Registrar, if you  
18 can take us to page 39.  And I'm looking at  
19 paragraph 95.  I can indicate out if helpful.

20                         So I understand that samples  
21 were removed from the RHVP for the hot in-place  
22 recycling suitability study on July 22nd, 2018 and  
23 August 19th, 2018 for the southbound and  
24 northbound lanes, respectively.  I note that this  
25 paragraph refers only to the southbound lanes in

1 July.

2 Do you recall if those dates,  
3 July 22nd and August 19th, are correct?

4 A. No, I don't know if those  
5 are the exact dates or not. It was the summer  
6 of 2018, but I don't know.

7 Q. Do you recall if you  
8 attended on-site on either occasion?

9 A. I definitely was on-site  
10 at least one night. I may have been on-site both  
11 nights. I can't recall that, but I was for sure  
12 there one night.

13 Q. Okay. Registrar, can you  
14 call up GOL1509. And please rotate that as well.

15 And are these your notes from  
16 July 22nd?

17 A. Yep.

18 Q. And would that indicate  
19 that you were on-site?

20 A. Yes, yes, this would have  
21 been my notes from on-site, yes.

22 Q. And what was your role  
23 when on-site?

24 A. I was on-site to make  
25 note of the samples we were taking because the

1 samples, you know, were part of our investigation.  
2 So I was there basically to do exactly what we see  
3 in these notes, and that is to make notes and  
4 records of where the slabs were located, you know,  
5 how big they were for our reference at Golder as  
6 we moved ahead with the project.

7 Q. Okay. And do you recall  
8 if anyone else from Golder was present on-site on  
9 July 22nd?

10 A. I do not remember if  
11 there was anyone else from Golder.

12 Q. Do you recall who from  
13 the City was present on-site on July 22nd?

14 A. I gather and I do recall,  
15 that Mike Becke was on-site that night.

16 Q. And do you think -- at  
17 the bottom of this note it says, "Vimy, e-mail  
18 Mike, with PMS data can show performance" -- (As  
19 read)

20 A. "With preventative  
21 maintenance."

22 Q. Thank you. Would Mike in  
23 that sentence refer to Mike Becke?

24 A. Yes.

25 Q. Thank you. When you were

1 on-site, did you discuss the Golder report and/or  
2 the Tradewind report with Mike Becke or anyone  
3 else from the City?

4 A. No, I would not have  
5 discussed that with anyone.

6 Q. And what data does that  
7 note at the bottom of the page that we just  
8 discussed refer to?

9 A. I can't say exactly what  
10 data it is, but that is a general concept within  
11 pavement engineering. Just talking about doing  
12 preventative maintenance, and how you save money,  
13 you know, in the whole lifecycle of a pavement  
14 just like doing these oil changes, and the  
15 performance you get from your pavement over time.

16 So I can't say for sure  
17 exactly what I was thinking I would send him, but  
18 I -- from that I expect it was kind of a generic  
19 plot that we use to explain that concept to  
20 someone that's not as involved in pavement  
21 engineering or asset management.

22 Q. Is it possible that this  
23 note refers to the Golder report?

24 A. No, it would not -- that  
25 would not have anything to do with any of the

1 reports we had written at Golder for Hamilton.

2 Q. Did you discuss anything  
3 with Mr. Becke and/or Dr. Uzarowski after the site  
4 testing or apart from the site testing that would  
5 have prompted Dr. Uzarowski to send the Tradewind  
6 report to Mr. Becke?

7 A. Not that I recall, no, I  
8 wouldn't have discussed anything.

9 Q. And to your knowledge do  
10 you know if Mr. Becke had seen the report prior to  
11 August 27th, 2018?

12 A. No, I don't know who  
13 within the City had seen the report.

14 Q. I'll take you to page 53  
15 and 54. Registrar, if you can call those up.

16 THE REGISTRAR: Sorry,  
17 Counsel, of this document or the OD document?

18 MS. LECLAIR: The OD. Thank  
19 you. OD9, to be clear. Thank you.

20 BY MS. LECLAIR:

21 Q. And we can see at  
22 paragraphs 126 and 127 that Dr. Uzarowski, copying  
23 you, sent Mr. Becke a copy of the Tradewind report  
24 on August 27th, 2018 writing:

25 "As requested, please find

1 attached the 2014 report on  
2 friction on RHVP and the LINC  
3 prepared by Tradewind  
4 Scientific."

5 I anticipate that Mr. Becke  
6 will tell us that the subject came up during  
7 testing in 2018 and that you advised him you would  
8 send him a copy of the report. I want to ensure I  
9 understand your evidence correctly. Is it that  
10 you do not recall either way whether you were --  
11 whether you discussed prior test results on the  
12 RHVP with Mr. Becke in August 2018, or is it that  
13 you remember that you did not have such a  
14 discussion?

15 A. I would not have brought  
16 up the report unless it was brought up by  
17 Mr. Becke at the time. I do not recall if we  
18 discussed it that night.

19 Q. Okay. So it's possible  
20 that you do not recall discussing either on  
21 July 22nd or August 19th?

22 A. That is correct. It's  
23 possible it that was discussed. It is not a  
24 subject I would have brought up as it was work we  
25 had done for Gary Moore.

1 Q. Okay. And just so that  
2 I'm clear, I took you to your notes for July 22nd,  
3 2018. I don't believe we have similar notes from  
4 August 19th, 2018, but I take it that you do not  
5 recall whether you attended -- whether or not you  
6 attended a second time on the 19th of August; is  
7 that correct?

8 A. That is correct. I do  
9 not recall if I was on-site on the August evening  
10 or not. I may or may not have been.

11 Q. Thank you. Okay. And in  
12 context of Dr. Uzarowski's August 27th e-mail to  
13 Mr. Becke, copying you, do you know what  
14 Dr. Uzarowski was referring to in writing "as  
15 requested"?

16 A. No, I don't know what he  
17 was specifically referring to. I gather from that  
18 that he did receive a request to send the report.  
19 He didn't take it upon himself just to distribute  
20 it.

21 Q. But you have no specific  
22 knowledge of such a request being received by  
23 Dr. Uzarowski or anyone at Golder; is that  
24 correct?

25 A. That is correct. I don't

1 know where the request was or what the request  
2 was.

3 Q. Okay. And did you  
4 discuss this with Dr. Uzarowski after receiving  
5 this e-mail?

6 A. I do not recall  
7 discussing it with him.

8 Q. And at any time did he  
9 provide you an explanation for why he sent this?

10 A. I do not recall if we had  
11 any discussions about that e-mail or why it was  
12 sent.

13 Q. Okay. Before your  
14 departure from Golder, which as I understand was  
15 in September 2018, did you at any time have views  
16 or concerns regarding the safety of the RHVP?

17 A. No, I did not have any  
18 concerns with the Red Hill.

19 Q. And other than -- is  
20 there anything other than what we've discussed  
21 today -- do you recall this ever being a topic of  
22 conversation at Golder?

23 A. No, it was -- I do not  
24 recall it being topic of conversation.

25 MS. LECLAIR: Okay.

1 Commissioner, those are my questions.

2 I understand that counsel for  
3 the City has some questions for Dr. Henderson.

4 MS. JENENE ROBERTS: Yes,  
5 thank you, commission counsel. Just take a few  
6 minutes of Dr. Henderson's time this afternoon.  
7 Shouldn't be long at all. May I proceed,  
8 Commissioner?

9 JUSTICE WILTON-SIEGEL: Yes,  
10 please proceed.

11 MS. JENENE ROBERTS: Thank  
12 you.

13 EXAMINATION BY MS. JENENE ROBERTS:

14 Q. Dr. Henderson, I want to  
15 ask you just a little more about your involvement  
16 with the friction testing on the Red Hill. And I  
17 understand from your testimony today that at that  
18 time you had limited experience in friction  
19 testing and analysis and were not familiar with  
20 friction testing equipment generally; is that  
21 correct?

22 A. Yes, that is correct.

23 Q. Okay. And when the City  
24 requested friction testing, if I understand  
25 correctly, you ended up contacting Stephen Lee at

1 the MTO at Dr. Uzarowski's suggestion. Correct?

2 A. Yes, you are correct,  
3 yes.

4 Q. Okay. And the MTO  
5 couldn't accommodate your friction testing request  
6 at that time; is that correct?

7 A. That is correct.

8 Q. And I'm happy to put up  
9 the e-mail exchange again if you would like to see  
10 it, but if you recall Mr. Lee suggested to you  
11 that you could contact ARA which has the same  
12 equipment as the MTO. Do you recall that?

13 A. Yes, I saw that in the  
14 e-mails we've reviewed, yes.

15 Q. Great. And I believe  
16 you've told us that you don't recall whether or  
17 not you did contact ARA after Mr. Lee made that  
18 suggestion?

19 A. That is correct. I don't  
20 recall if we reached out to ARA or not.

21 Q. Okay. But I take it you  
22 were familiar with ARA at the time?

23 A. Yes, yes I know -- I know  
24 of the company Applied Research Associates, yes.

25 Q. Okay. And they are a

1 scientific research and engineering company if I  
2 can describe them that way; is that accurate?

3 A. Yes. They are an  
4 engineering consulting firm throughout North  
5 America. They do all types -- a wide variety of  
6 work, but one area they work in is certainly  
7 pavement and materials, engineering and  
8 non-destructive testing and similar work to what  
9 Ludomir and Rabi and myself were doing.

10 Q. Oh, okay. So if I  
11 understand correctly, then there's some overlap in  
12 the service consulting services that are offered  
13 by ARA and those offered by Golder, and you and  
14 Dr. Uzarowski and Ms. Rizvi in particular?

15 A. Yes, that is correct. We  
16 certainly offered many of the same services.

17 Q. Okay. So ARA was a  
18 competitor of Golder with respect to those  
19 services?

20 A. That is correct, yes.

21 Q. Okay. And then after  
22 receiving Mr. Lee's response I understand that  
23 Dr. Uzarowski then directed you to contact  
24 Tradewind Scientific?

25 A. That's right. I would

1 have shared the response with Dr. Uzarowski, and  
2 we would have discussed next steps and  
3 communicating with Tradewind occurred after that.

4 Q. Okay. And then I believe  
5 you told us that with respect to the -- deciding  
6 what friction testing equipment to be used, that's  
7 not a decision you were responsible for making,  
8 correct?

9 A. That's right. I would  
10 not have been responsible for identifying a  
11 suitable or unsuitable type of equipment.

12 Q. Okay. And would it have  
13 been Dr. Uzarowski that made the decision as to  
14 the type of equipment to be used?

15 A. Yes, it would have been  
16 Dr. Uzarowski that -- well, it was Dr. Uzarowski  
17 that directed me to Tradewind, and so it would  
18 have been him that deemed that to be a suitable  
19 option.

20 Q. Okay. So your  
21 understanding was that Dr. Uzarowski considered  
22 the grip tester that was used by Tradewind  
23 Scientific to be a suitable option?

24 A. My understanding at that  
25 time when we were doing the work was that

1 Dr. Uzarowski considered Tradewind to be a  
2 suitable provider for the testing.

3 Q. Okay. And I know you've  
4 told us you didn't really have expertise in  
5 friction testing equipment at the time, but were  
6 you aware that Tradewind Scientific would be using  
7 a grip tester to perform the testing?

8 A. It was not -- it may have  
9 been shared with me in the e-mails. It was not a  
10 detail that stood out to me.

11 Q. Okay. And I take it that  
12 Dr. Uzarowski didn't tell you at that time that  
13 the MTO had used a different type of equipment  
14 when it had conducted friction testing on the Red  
15 Hill?

16 A. That's correct. I did  
17 not have -- well, two things. As we discussed  
18 today, at that time I was not yet aware that other  
19 testing had been done --

20 Q. Okay.

21 A. -- by MTO in the past.

22 Q. Okay. So given that you  
23 weren't aware of the testing then -- and then that  
24 would mean that, you know, as part of that lack of  
25 awareness you wouldn't have known the type of

1 equipment that had been used for the previous  
2 testing.

3 A. Right, yes.

4 Q. Okay. Registrar, can we  
5 go to OD6, please, images 73 and 74.

6 And, Dr. Henderson, once we  
7 get this up, you'll see this is an e-mail from  
8 Leonard Taylor of Tradewind to you, and commission  
9 counsel asked you some questions about this  
10 earlier, but I just have one additional question.

11 So if we look at the text of  
12 the e-mail that spans two pages in paragraph 187,  
13 I'm looking in particular at the top of page 74.

14 And if we could perhaps just  
15 call out that last little extract. Thank you,  
16 Mr. Registrar.

17 And commission counsel took  
18 you to this earlier and here we see Mr. Taylor  
19 says that:

20 "The standard grip tester test  
21 speed for highway surveys, in  
22 order to allow direct  
23 comparison with established UK  
24 highway reference levels is,  
25 50 kilometres per hour." (As

1 read)

2 And I believe you told  
3 commission counsel earlier with respect to this  
4 reference here to the UK highway reference levels  
5 that you didn't know what document was being  
6 referenced here. Is that right?

7 A. That is correct. I don't  
8 know the document in terms of I couldn't recite it  
9 to you. I have an appreciation for what the  
10 document probably involves.

11 Q. Okay. And as part of  
12 that appreciation I take it you understood that  
13 Tradewind was proposing that the friction testing  
14 be conducted in a way that -- so it could be  
15 compared to -- so friction reference that's from  
16 the UK?

17 A. Yes. That the testing --  
18 okay. I don't recall this conversation, but based  
19 on what we see in this e-mail, I understand that  
20 that is the reference that the results could be  
21 compared to.

22 Q. Okay.

23 A. Which although I didn't  
24 have a great deal of experience with friction  
25 testing at the time, I did know enough about

1 project specifications for pavements to know that  
2 we in Ontario do not have a specification that we  
3 reference day to day on an every project basis as  
4 we do for some other properties about our  
5 pavements.

6 Q. Okay. And you actually  
7 anticipated my next question which was, I take it  
8 you understood from this that Tradewind wasn't  
9 referencing any sort of Ontario standard, and you  
10 told me now that you're aware that there was not  
11 in fact an Ontario standard that could be  
12 referenced. Is that right?

13 A. It certainly not -- it's  
14 not a reference we use regularly. MTO may have  
15 some sort of -- some guidance, but, you know, for  
16 some of our pavement properties and parameters we  
17 have parameters or we have, you know, thresholds  
18 that the -- we're comparing pavements to all the  
19 time.

20 Q. Okay. But I take it at  
21 the time you weren't aware specifically of any  
22 sort of pavement guidelines with respect to a  
23 friction standard from the MTO?

24 A. That is correct.

25 Q. Okay. And if I

1 understand your evidence correctly, you didn't  
2 have any concerns regarding the safety or  
3 condition of the Red Hill Valley Parkway at any  
4 time while you were at Golder?

5 A. That is correct. I did  
6 not have any concerns about the Red Hill while I  
7 was at Golder --

8 Q. Okay.

9 A. -- and as I mentioned,  
10 not to repeat myself, but safety analysis and  
11 safety engineering is not what I do. So to  
12 comment on, you know, a safety analysis, I  
13 can't -- I can't provide that. But I did not have  
14 any concerns while I was at Golder about the Red  
15 Hill.

16 Q. Okay. Thank you. And  
17 you do not recall Dr. Uzarowski expressing any  
18 concerns regarding the safety or the condition of  
19 the Red Hill Valley Parkway at any way either --  
20 sorry, at any time either, correct?

21 A. That is correct.

22 Q. Okay. And I take it that  
23 means that you didn't have any concerns  
24 specifically regarding friction levels and any  
25 impact they might have on safety of the Red Hill

1 Valley Parkway?

2 A. Yes, that is correct. I  
3 didn't have concerns about friction, but also any  
4 other concerns, concerns about cracking or -- you  
5 know, concerns as a whole I did not -- based on  
6 what I was involved in, my involvement I did not  
7 have concerns.

8 Q. Okay. And just to sort  
9 of close the loop on that, you don't recall  
10 Dr. Uzarowski expressing any experience regarding  
11 the friction levels and any safety impact on the  
12 Red Hill Valley Parkway?

13 A. I don't recall  
14 Dr. Uzarowski and I having any discussions about  
15 concerns or safety concerns. He may have had  
16 concerns that were not shared with me.

17 Q. Okay. And in addition to  
18 any, you know, lack of discussions I take it there  
19 were no e-mails or sort of written communications  
20 that expressed any such concerns about friction  
21 and safety on the Red Hill Valley Parkway from  
22 Dr. Uzarowski?

23 A. That's correct.

24 MS. JENENE ROBERTS: Okay.  
25 Thank you, Dr. Henderson. Those are all my

1 questions.

2 MS. LECLAIR: I believe  
3 counsel for the MTO said that they do not have any  
4 questions. If Mr. Bourrier could confirm.

5 MR. BOURRIER: That's correct.  
6 I don't have any questions for Dr. Henderson.

7 MS. LECLAIR: And I believe  
8 counsel for Dufferin may have had a few questions,  
9 but I leave that to Mr. Buck.

10 MR. BUCK: That's correct. I  
11 have very few questions.

12 JUSTICE WILTON-SIEGEL: Okay.  
13 We normally terminate at 4:30. Do your  
14 questions -- are they likely to go beyond that?

15 MR. BUCK: I think we can  
16 probably be done before 4:30, Commissioner.

17 JUSTICE WILTON-SIEGEL: Then  
18 let's proceed.

19 EXAMINATION BY MR. BUCK:

20 Q. Good afternoon,  
21 Dr. Henderson. I'm Chris Buck. I'm counsel for  
22 Dufferin. I just want to ask a couple of  
23 questions about the location of the testing  
24 carried out by Tradewind Scientific.

25 If we can have -- if,

1 Mr. Registrar, can you bring up Golder 4441.

2 These are your notes,

3 Dr. Henderson, that you took on November 20th,

4 2013.

5 If we can go to image 2. And  
6 if you could -- can you call out from where it  
7 says "ramps" down through number 10 where it says  
8 "Stone Church off ramp."

9 And what I would like,  
10 Dr. Henderson, is for you to help us understand  
11 some of the notes here that you've written. I  
12 believe that numbers 8, 9 and 10 are the ramps  
13 that appear to be recorded in the Tradewind  
14 report. But can you help -- I just want to be  
15 very clear with the location of these ramps. So  
16 the first number 8 says "Greenhill off ramp WB."  
17 I'm assuming that stands for westbound. Is that  
18 correct?

19 A. Yes, "WB" would be  
20 westbound, yes.

21 Q. And 400 metres is pretty  
22 self-explanatory. And then the note after that,  
23 can you explain what that note means?

24 A. Yes. So what that says  
25 is "pavement may have changed."

1 Q. Changed?

2 A. Changed, yeah. So

3 meaning that visually as I was driving on the  
4 road, you could see -- you must have been able to  
5 see a transverse joint somewhere. And so the  
6 pavement initially looked one way, you know, let's  
7 call it dark gray, and then after this point it  
8 was light gray. I don't know that's the case, but  
9 there was some visual change.

10 So that's what my note is, and  
11 the note below it, "pavement change at 260 metres"  
12 is indicating that the material we were testing --  
13 we may have tested two different materials based  
14 on what I visually saw that day.

15 Q. Okay. And that would be  
16 for -- if the pavement was a different colour,  
17 that might indicate that it was a different mix,  
18 or it was installed at different time? What --

19 A. You're right. So  
20 there --

21 Q. -- could be a good  
22 explanation for that?

23 A. Yes. I'm sorry to  
24 interrupt you. Yes, so two scenarios. You're  
25 right. It might be all the same mix, but -- well,

1 it might -- three scenarios. Might be all the  
2 same mix, but from different truckloads that  
3 looked -- that, you know, had some sort of  
4 differences between the loads, so there's a visual  
5 difference. It might be that we paved one day,  
6 and we came back, and there's a very apparent  
7 construction joint, or more likely based on my  
8 note, I would expect the material actually did  
9 change.

10 So there was one type of  
11 material that was the same as what was on the main  
12 lines of the Red Hill, and then it changed, and it  
13 was a different mix after that point.

14 Q. And I guess depending on  
15 whether on the off ramp it would be similar  
16 material to the mainline at first and then changed  
17 somewhere along that as you travel off the  
18 mainline, and the reverse on the on ramp?

19 A. Yes, you are correct,  
20 exactly. So if it's not all consistent with the  
21 mainline, then situation you just presented is the  
22 most likely scenario.

23 Q. And finally on number 10  
24 at the bottom where it says "Stone Church off  
25 ramp," the note there says "all RHVP." What would

1 that indicate?

2 A. I would anticipate that I  
3 meant that the pavement was consistent the whole  
4 way, consistent with the main lines of the Red  
5 Hill.

6 Q. So no change, it was  
7 uniform for that entire 400-metre stretch?

8 A. Yeah. So I would  
9 anticipate and I would have to look at the map.  
10 It would either mean that, or it would mean that  
11 the entire ramp was -- it never branched off from  
12 the mainline in those 400 metres.

13 Q. Okay.

14 A. You know, that it's just  
15 still running parallel. So one of those two  
16 scenarios.

17 MR. BUCK: Thank you. Those  
18 are all my questions.

19 JUSTICE WILTON-SIEGEL: Okay.

20 MS. LECLAIR: Commissioner, I  
21 understand counsel for Golder, Ms. Roberts  
22 estimates 10 minutes or less for her examination.  
23 I do note the time, but I propose subject to your  
24 direction that we --

25 JUSTICE WILTON-SIEGEL: We've

1 gone over 10 minutes. Okay. Ms. Roberts, if  
2 that's your estimate.

3 MS. JENNIFER ROBERTS: Yes,  
4 thank you, and, if we might, I would be grateful.  
5 Dr. Henderson does not live within the City, so I  
6 don't want to bring her back if we can possibly  
7 avoid it.

8 MS. JENNIFER ROBERTS: May I  
9 proceed?

10 JUSTICE WILTON-SIEGEL: Yes,  
11 Please go ahead.

12 MS. JENNIFER ROBERTS: Thank  
13 you.

14 EXAMINATION BY MS. JENNIFER ROBERTS:

15 Q. Dr. Henderson, I only  
16 have a few questions. So let me just begin with  
17 one. You were asked whether it was Golder's  
18 practice to review draft reports with clients and  
19 gave evidence on that. Was it -- do you recall  
20 whether it was Dr. Uzarowski's practice  
21 specifically with City of Hamilton to review draft  
22 reports?

23 A. Yes. Dr. Uzarowski  
24 worked very closely with City of Hamilton and  
25 would certainly review any deliverable and

1 typically go and review it in person with the  
2 City?

3 Q. Thank you. Next  
4 question. We talked a little bit -- or you talked  
5 a little bit in your testimony about maintenance.

6 Registrar, could you please  
7 pull up Golder 2981, image 11. Actually let's go  
8 to the first page first, and then we'll go to  
9 image 11. So this is the Golder report, the  
10 six-year review.

11 And I would like please to  
12 turn to image 11. So can we go to the next page.  
13 I've got the wrong page. No, back please. Must  
14 be 10, analysis and recommendations, section 6.  
15 Thank you.

16 So these are the  
17 recommendations made as part of the Golder report,  
18 and they provide for -- for remedial work for the  
19 Red Hill, including -- let me see if I can find  
20 it -- the top down cracking is -- they're  
21 recommending a shave and pave repair of cracking  
22 and then microsurfacing; is that right? Yeah, the  
23 mill and patch. Do you see that? I think we need  
24 to go to the next page.

25 A. It's here kind of at the

1 end I think of -- oh, okay. This is talking about  
2 the lifecycle cost analysis, sorry.

3 Q. Have I got the right  
4 document? Can we go to the next page, please.  
5 And can you please call it out. There we are.  
6 Now I've got it. Thank you.

7 There, in order -- so in order  
8 to remedy the longitudinal top down cracking, it's  
9 recommended that the surface course estimating --  
10 paved and a surface course be placed in certain  
11 locations. At a minimum the milling and  
12 overlaying should be carried out on sections where  
13 the most frequent top down cracking is observed  
14 based on our pavement visual condition inspection.  
15 And then in the total length the mill and overlay  
16 required will be about 2.5 kilometres. And then  
17 it talks about where that would be:

18 "The remaining portion, the  
19 existing cracks in the surface  
20 course should be routed and  
21 sealed to prevent ingress of  
22 water and incompressible  
23 material into the pavement  
24 structure. Following routing  
25 and sealing it is recommended

1                   that a single layer of  
2                   microsurfacing be applied by  
3                   carrying out the mill and  
4                   overlay where required and  
5                   applying microsurfacing issue  
6                   of the relatively low FN on  
7                   the Red Hill Valley Parkway  
8                   would also be addressed." (As  
9                   read)

10                   We talked about the remedial  
11                   work. What's your expectation if the remedial  
12                   work here is not carried out?

13                   A.    So if you don't carry out  
14                   treatment such as those noted here, the pavement  
15                   is going to continue to deteriorate. And at this  
16                   point treatments like -- you know, at the time of  
17                   writing this report, treatments can be done that  
18                   are going to improve the condition of the pavement  
19                   and keep it in very good condition at limited  
20                   cost. If you don't do this type of work, mill and  
21                   overlay and so on, the deterioration rate is going  
22                   to increase, and so meaning that the condition of  
23                   your pavement is going to decrease faster. And  
24                   then repairing it is going to be much more  
25                   expensive, and it's not going to be as good a

1 quality pavement for the users as if we did these  
2 small amounts of maintenance now.

3                                 So, you know, the comparison  
4 is the same to any infrastructure, your house,  
5 your car. You know, it's the regular maintenance  
6 keeps it running in a very good condition. You  
7 know, the oil changes and so on. Yeah, sure, you  
8 can skip them and not do them, and it's going to  
9 keep running for a while, but the problem you  
10 cause is going to be a bigger one.

11                                 So it ties a little bit into  
12 what I talked about at the beginning that, you  
13 know, this is a -- this road has a lot of traffic  
14 on it, and that's even what we talk about right in  
15 this chapter, and before this point is it has had  
16 a lot more traffic on it than predicted, and it  
17 has a lot of users on it. So these are treatments  
18 that could be done, could be done efficiently and  
19 would keep it in a better condition for all those  
20 users.

21                                 Q. Thank you. And do you  
22 have experience with microsurfacing in your  
23 practice?

24                                 A. Yes, yeah, we have done  
25 microsurfacing in the past.

1 Q. And what is your  
2 experience with the application of microsurfacing?

3 A. It can be a very good  
4 treatment. Certainly everything has to be used at  
5 the right place and the right time, but this would  
6 be a suitable application for it.

7 Q. Thank you. And is it  
8 your experience that it does improve surface  
9 friction?

10 A. It certainly -- yes, the  
11 characteristics of it gives it good frictional  
12 properties.

13 Q. Thank you.

14 MS. JENNIFER ROBERTS: Thank  
15 you. Those are my questions. I think I've  
16 achieved in under 10 minutes, Commissioner.

17 JUSTICE WILTON-SIEGEL: Thank  
18 you, Ms. Roberts. Okay. Ms. Leclair, do you have  
19 any follow-up questions?

20 MS. LECLAIR: I do not.

21 JUSTICE WILTON-SIEGEL: Okay.  
22 Then, Dr. Henderson, you're excused. Thank you  
23 very much for attending to the inquiry today.

24 THE WITNESS: Thank you.

25 JUSTICE WILTON-SIEGEL: You're

1 excused. And I guess there's nothing further this  
2 evening, so we'll stand adjourned until 9:30  
3 tomorrow morning. Thank you all. Have a good  
4 evening.

5 --- Whereupon at 4:39 p.m. the proceedings were  
6 adjourned.

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