RED HILL VALLEY PARKWAY INQUIRY

TRANSCRIPT OF PROCEEDINGS
HEARD BEFORE THE HONOURABLE J. WILTON-SIEGEL
held via Arbitration Place Virtual
on Wednesday, June 15, 2022, at 9:29 a.m.

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Arbitration Place Virtual

--- Upon resuming on Wednesday, June 15, 2022, at 9:29 a.m.

MR. LEWIS: Good morning, Commissioner.

JUSTICE WILTON-SIEGEL: Good morning.

MR. LEWIS: Dr. Uzarowski.

THE WITNESS: Good morning.

MR. LEWIS: Good morning. Dr. Uzarowski testified previously at the end of April, so we don't need to affirm his evidence again, but could the court reporter please remind him that he remains under affirmation.

LUDOMIR UZAROWSKI; PREVIOUSLY AFFIRMED

MR. LEWIS: And there is a lot to cover with Dr. Uzarowski, and so our plan, as discussed with counsel, is likely to finish each day at approximately 3:30 so as to not wear the witness out. Unless advised otherwise by counsel for Golder, that would be our plan, Commissioner.

JUSTICE WILTON-SIEGEL: Thank you.

MR. LEWIS: And, as well, I'm not going to go through Dr. Uzarowski's

background, as we did so when he testified in April and when he was talking about pre-construction and construction issues.

EXAMINATION BY MR. LEWIS:

Q. Now, Dr. Uzarowski, last time we did discuss your note taking practices and, in particular, we did so in the context of notes during the pre-construction and construction phase.

Did your note taking practices remain the same in later periods, say, between 2012 and forward, as they did prior to that period?

A. Yes, it remained constant. Maybe not perfect, but that was my practice.

Q. Right. And your typical practice, then, was on occasion to take notes both in preparation for meetings and calls and as well during meetings and calls, not perfectly, not always the same, but you did both of those activities?

A. Yes. For preparation, I would go item by item what I would like to cover. And during the meeting, I would try to cover all

items that were on the list and I could sometimes make additional notes. Or, if it was a phone call, something unexpected, then I would simply grab a pen and write my notes, not in the same order or not as tidy as in the preparation of.

Q. Okay. So, mostly when I refer to your notes, I'll either be -- if it's in the overview document, I'll refer to it there, or in the typewritten version, where available, that you prepared for the inquiry rather than the original handwritten notes, for the most part.

So, I would just like to first talk about your experience working with Mr. Gary Moore in the period after completion of the Red Hill construction and Mr. Moore's retirement.

And am I correct that Mr. Moore was your primary contact at the City regarding Red Hill and pavement related matters until his retirement in 2018?

A. Yes. Mr. Moore was my primary contact. Also, I contacted sometimes a large number of people because he got involved a larger number of people. But then Mr. Mike Becke, he became the project manager on process of hot in-place recycling investigation, so he was --

then he became the main contact. And more frequent contact for, you know, that time of -- that period of time.

Q. Right, and then we're getting into the much later period at that point?

A. Right.

Q. And we'll get there, but up until that point Mr. Moore was your primary contact?

A. Yes. The main contact was Mr. Moore. So, I contacted other people, but the main was Mr. Moore.

Q. Okay. And what was your impression of Mr. Moore in terms of interest in innovative ideas and new technologies?

A. Well, he was very interested in innovations and actually he introduced a large number of innovation. I can only talk about pavement and materials aspect. So, he was always very keen and he was recognized for this. And yes, you know, extremely keen on innovations, very devoted to improvement of asphalt technology and implementing innovations and also what was used, maybe not on a regular basis but wider use on hot mix asphalt and other

technologies.

Q. And could you describe where your meetings with Mr. Moore, if they were in person, where and when did those typically take place?

A. If they were in person, like face to face only with Mr. Moore, then they would typically be in his office. And, typically, I would come to his office at 8:00. He started working early, so I would come at 8:00. I would call him on my iPhone, he would come to the door, open the door, and the meeting would typically be one hour. So, from -- yeah, one hour, so the first half an hour was okay. He was available. But then after, you know, about 8:30, then the phone started ringing and, you know, he was less available than in the first half an hour.

Q. Okay. Because he was pretty busy and people would start to contact him as they arrived. Is that your impression?

A. Oh, yes. He was very busy. This is why he used to come to the office early, so he told me that he could do more at early hours than later, because there were, you know, always phone calls. This is what I

observed.

Q. Okay. And how did that affect your preparation for meetings with him?

A. You know, before that meeting, I prepared my notes, so I prepared a list of subjects that I wanted to discuss with him and I anticipated that, you know, it will be a relatively short time, so I knew I had to go through item by item just to make sure that I covered the subject. That was my routine that I developed working for John Emery, so I would just follow the list, make sure that I cover it.

Q. Okay. And what was your perception of how well Mr. Moore understood the role of pavement in roadway design and performance and friction issues specifically? Did you develop an impression of that?

A. Mr. Moore, he was a very good engineer and a very intelligent person. Obviously he was not a pavement and materials engineer, so, you know, his area was much wider than this, but he had, you know, a good understanding. And, you know, when it comes to friction, he wasn't a friction expert, but I think he had some understanding of the subject of

friction. Not an expert, but some understanding.

Q. Okay. And on that topic, so did he appear to understand, from your impression, what microtexture and macrotexture were, for example?

A. I think he did, very likely. I can say yes, he did, but it was such a common subject covered everywhere, in every book and CTAA conference. Everybody was talking about it, so it was a very well-known subject.

Q. And what about, like, the coefficient of friction, what that was, how it was arrived at, is that something you felt that he understood?

A. I think he probably had some general understanding, but I don't think he understood details of this. So, general, probably some general understanding, what it should be.

Q. What about the relationship of testing speed to test results, friction test results?

A. You know, I think probably some very general understanding that, you know, friction is related to speed. I know in the past he was a co-author of a paper on this, so

some general understanding but probably not too detailed. Common sense understanding, I would say.

Q. And when you talk about being co-author of the paper, are you talking about the 2002 CTAA paper regarding the Burlington Street SMA project? Is that the one you're talking about?

A. Yes, I'm talking about.

Q. And did he appear to you to understand that there were different friction testing devices and what those devices were?

A. I think he must have had some understanding because in that paper I know that JEGEL did use British pendulum test there and also, I think, the locked-wheel tester was used, so he must have had some understanding that there were different pieces of equipment, but I don't anticipate he would knew details.

Q. Well, apart from that paper, what was your impression?

A. I don't think that he understood, you know, different pieces of equipment, just there were different methods. But that was my impression.

Q. He knew that there were different methods but not necessarily the specifics of them?

A. Yes.

Q. Okay.

A. Exactly.

Q. And we'll get to some specifics later when we start looking at the various test results and reports, but did you have a sense of whether Mr. Moore understood if results from different testing devices could be compared to one another and correlated?

A. I think they are two different things, compared and correlate. Correlate is probably more precise. Compare, you can always compare. But I don't know to what level his knowledge was. I think, you know, you can compare. You can compare. What is low in one method is also low in another method, what's good in another method is good in -- in one method is good in another method, but probably not. Correlation is the next step. Correlation is more precise.

Q. Correlation meaning, I'm not saying this is what it is, but, you know, FN30

equals GN40 or something like that. When we speak of correlation specifically, that's the kind of thing you're talking about? When you can actually take one number from one type of testing and say it equals the number from another type of testing, that's correlation?

A. Yes, that's what I mean by correlation.

Q. Okay. And did you ever doubt that Mr. Moore understood what you told him or what you reported in your reports?

A. No. I think it was clear what was in the report. It was the evaluation report that covered two aspects. I think it was clear.

Q. No, I mean just generally. Your impression of Mr. Moore, did he ever give you any sense that when you were speaking to him of technical concepts or when you were delivering report results or delivered a report itself, did you ever get a sense from him that he didn't understand what you were telling him?

A. No. In my opinion, he had a good understanding of what I was talking

about, what the recommendations -- what the findings and recommendations were.

Q. Okay. I would like to go back to one matter from your testimony on April 28, because a further document has been produced since then, so I'll just put this in context for you.

I asked you about e-mails between two individuals at the Ministry of Transportation on November 15, 2010. It was between Becca Lane and Frank Marciello on that date.

And, Registrar, if we could go to overview document 4, image 90, 9-0, and it's paragraphs 212 and 213. If you could call those out.

This is respecting the e-mail communications between Mr. Marciello and Ms. Lane on November 15, 2010 respecting the friction test results that the MTO had taken and then Ms. Lane saying:

"Good stuff, Frank. Thank you. Perhaps I will call Ludomir for a City of Hamilton contact."

And then she asks Mr. Marciello for the most recent friction test results on the Red Hill from the spring of 2010.

And then you testified in April that you did not recall Ms. Lane contacting you in and around that time and that you didn't think that she did so, although you did refer to her doing so a number of years later about a different topic about the Red Hill in January 2016.

And so, now, if you can take that down, Registrar, and go to Golder 7502, which is Exhibit 44, and it's image 2.

And this is a note of yours dated Monday, November 15, 2010 that counsel for Golder sent to us after Ms. Lane's first day of testimony last month. Could you explain what caused you to look for this note and have it sent to us at that time?

A. Yeah, because, you know, when I found out that Ms. Becca Lane wanted to contact me to get the contact for Hamilton, then I -- at that initial, I didn't remember, but then where I checked my notes. I took in my notes of everything and then I noticed that on that

particular day, I had that note, and I informed our counsel that I found that note.

Q. Do you mean after hearing her testimony?

A. Yes.

Q. And it does refer to both friction and it says, "Becca Lane, 2007 friction on the RHVP." Do you know how you missed that in your other reviews of your notes?

A. No. I have, you know, probably a thousand or maybe a few thousand of pages of my notes, so in preparation for this inquiry I went through my notes and I was basically looking Red Hill Valley Parkway, Hamilton and Gary Moore, so, you know, under those names. So, whatever I found, then I would scan and pass to the inquiry.

But I didn't check under Becca Lane, but I look at, you know -- then when I look at that particular date, I noticed the name, Becca Lane. And so, initially I missed it, but then when I was looking at the date, I found I had a note.

Q. Now, Ms. Lane, as you know, testified that she didn't have a specific

recollection but she thought that she would have contacted you and then her note confirmed her evidence on that point.

With the benefit of this note now, is your memory refreshed as to Ms. Lane contacting you on November 15, 2010? Do you recall anything about it at this point?

A. I don't recall this thing exactly, but if it's in my note, then I'm positive she called me.

Q. Okay. So, you don't actually recall it, but you have no doubt that she did?

A. Yeah, exactly.

Q. Okay. And it says, "Becca Lane, 2007, friction on RHVP." Does that tell you anything about your conversation?

A. You know, when I look at this now, I think, you know, in 2010, there was still the moratorium on this stone mastic asphalt because of the issues with early life friction of SMA. And, as you know, the tests of SMA on the Red Hill Valley Parkway indicated that the values were significantly better, what was IRS or what was typically observed by MTO and was shown in the

2009 paper, I think it was 2009 CTAA paper. So, I thought, when I look at this, that was the subject that she discussed with me.

Q. Sorry, the topic being that -- you mean about the early age friction issue, early age low friction issue, SMA?

A. Yes. When I look at my notes, you know, 2007 friction on the Red Hill Valley Parkway, that would be, you know, when I wrote that note, that would be the justification of this. She talk about 2007 friction on the Red Hill Valley Parkway.

Q. Okay. So, we know that what prompted Ms. Lane to contact you was her e-mail exchange with Mr. Marciello about the discussion about 2010 results. You don't have any recollection of that being discussed?

A. No. No. I didn't know and, actually, it would be very likely of interest to me, but I learned about this later in 2018 that MTO did further testing on the Red Hill Valley Parkway, not at the time.

Q. Right. And is that something you would have noted if she had mentioned it to you, that the MTO had done further

testing?

A. Oh, definitely, and I would write a note about this.

Q. Okay. And the internal MTO e-mail communications indicated that Ms. Lane was going to perhaps contact you for a City of Hamilton contact. Do you have any recollection of whether you did or did not give her that contact?

A. No, I don't recall. If I gave her any contact, that would very likely be Mr. Gary Moore, but I don't recall what information I gave her.

Q. Okay. If she in fact did ask you for a contact, you would have given it her, I take it?

A. Yeah, of course. I would give her the contact. Later on, in 2016, this is what I -- yeah, definitely I would.

Q. Actually, I think it was 2016, but you're referring to the later instance where she contacted you and you in fact contacted Mr. Moore yourself. Right?

A. Yes.

Q. Okay. And so, is it possible that in this instance you also contacted

Mr. Moore in addition to giving her his contact information?

A. No, I don't think so, because I have no note about it, so I think I didn't.

Q. Okay. You can take that down, Registrar. Thank you.

Now, we know that you were involved in three phases of what were called the pavement and materials technology review project for the City of Hamilton or sometimes called the PMTR for short, which I believe ran in a few phases from 2009 to 2013. Do you recall that?

A. Yes, I do.

Q. Okay. And we're not going to go to all of these references, but the phases are covered in overview document 5, paragraphs 51 to 69, overview document 6, 28 and 30, and there may be others, but overview document 6, paragraph 213.

So, before we get into specifics and the three phases, could you tell us how Golder came to be retained on these projects and then what, generally speaking, they were?

A. Mr. Gary Moore talked to

Golder, to me, and he was concerned that the pavement in the City of Hamilton were underperforming. And you'll show later on, I believe, that they had extensive network of pavements of certain value and that would require certain budgets. Their budget was much smaller, so he wanted to improve the performance of the pavement to make sure that he would get what he anticipated. So, it was a long-term objective to improve pavement performance.

Q. Okay. And am I correct that the project overall and the use of the three phases, they weren't specifically related to the Red Hill Valley Parkway? Am I correct?

A. No, no, they were not related to Red Hill Valley Parkway.

Q. And so, if we could go to overview document 5, images 24 and 25, please, Registrar.

And in paragraphs 51 to 53 describe Golder's report to Mr. Moore, phase 1 of pavement and materials technology review, and in paragraph 52 it indicates that Golder's tasks for phase 1 included inspection of visual pavement conditions, review of the City's pavement

maintenance, rehabilitation and construction specifications from a QC/QA point of view, site visits to select construction sites, review of materials, test results from contractors, review of QA test results, development of recommendations for improvement for construction quality, staff training and assisting staff with implementing recommended changes and preparing a report.

Is that a fair description of phase 1 and what it was about?

A. Yes, it is.

Q. And then phase 2, if we could go to overview document -- actually, just the next two images, 26 and 27, and paragraphs 57 and 58 talk about phase 2 in the Golder proposal that you submitted on that setting out the scope for it. Does that describe, generally speaking, the work that Golder did on phase 2?

A. Yes. Yes, it does.

Q. And I don't think we need to go to it, but there was a report that Golder did for phase 2 dated April 2012. Does that sound about right in terms of the timing?

A. Yes, it is.

Q. Okay. And, for

reference, this is at -- maybe we can go to it -- overview document 5 still at the next page, 28, at paragraph 61 and 62. It doesn't actually state the date in 61, but it was from April of 2012.

So, again, the report addressing various items related to pavement maintenance, rehabilitation and preservation and discussing asphalt mix designs, including SMA mixes, based on OPSS.MUNI1511 and mix design methodology.

So, that part of it is involved in -- again, fair description of the report?

A. Yes, it is.

Q. And then this is just in terms of the timing about what Golder was doing with the City during this period.

If we could go to overview document 6, Registrar, images 15 and 16, and paragraph 28 first of all, which straddles the pages.

On March 1, 2013, you e-mailed Mr. Moore and stated that, as discussed this morning, you were attaching an authorization to proceed and consulting services agreement and

three proposals for work, with this first being activating the instrumentation on the Red Hill Valley Parkway, the second being phase 3 of the pavement and materials technology review. That's phase 3 of what we were just talking about, the PMTR. Is that right?

A. Yes, PMTR, phase 3. Yes.

Q. Right. And then the third at the top of image 16, "Pavement Condition Evaluation on Red Hill Valley Parkway Five Years After Construction."

And then if we could go -- and we'll come back to the third one in a bit, but if we could go now to call out paragraph 30, and this is about phase 3 of the PMTR.

And is this a fair summary of what phase 3 was about?

A. Yes, I think it is. Yes.

Q. So, implementing, to start with, phase 1 and two recommendations. And one of the things I see there is analysis of the feasibility of using high recycled asphalt pavement mixes. That's one of the things that you covered in phase 3?

A. Yeah. I think the main

purpose was to review the implementation of phase 1 and phase 2, because it's easy to recommend and if it's not implemented, that would be waste. So, first, that was the main purpose and then some other items. One of them was using high percentage of recycled mixes and recommendation for analysis and also, you know, using composite pavements or, you know, in this case, we called it concrete basis and pavement structure, so it's a composite pavement.

Q. Okay. And then I think if we go to image 82, overview document 6.

Just to date this, paragraph 213 indicates that at least the initial draft of the PMTR phase 3 report, you sent to Mr. Moore on December 31, 2013. That's something that you were working on throughout 2013?

A. Yes. Yes. Yes, I did.

Q. All right. And were those, the PMTR, different phases, were those the primary Golder engagements with the City up until at least 2013? From 2009 to 2013, were those the primary Golder engagements or at least the ones that you were involved in?

A. Of my part on pavement

and materials, because there were also other members of Golder involved, but for me, yes, that was the main engagement of Golder, my group, yes.

Q. Okay. If you could take that down, Registrar, and go to image 7 of overview document 6.

And in paragraph 9, it refers to an entry in your notebook on November 21, 2012 refers to Hamilton and then RHVP monitoring stations start and five years later. Do you recall what this is about?

A. Yes. The monitoring station, actually, that monitoring station was installed in 2007, but, you know, there were some issues after flooding, some technical issues after flooding. And also, the City of Hamilton wanted automatic connections through internet, so they didn't have to drive to the station to download but they could do it over internet, so that was this piece.

And then five years later, that was the condition of the pavement on the Red Hill Valley Parkway five years after construction.

Q. Okay. So, just on the first part you referred to, at the time of

construction of the Red Hill, there was the instrumentation we've seen previous reference to where monitoring for the permanent pavement was put in place at the time and this is a followup on that. Is that right?

A. Yes, it is.

Q. Okay. And then the five years later, the condition of the pavement five years after construction you mentioned, so does this reflect a discussion that you were having or a meeting or what?

A. Yes. It probably -- you know, if it's ten years ago I don't remember details, but I think it was probably the initial discussion about the idea of evaluating of pavement condition five years after construction.

Q. And, sorry, initial discussion with who?

A. That would be very likely with Gary Moore.

Q. Okay.

A. With Gary Moore.

Q. And if we could pull up images 11 and 12, at paragraph 18, which straddles the two pages.

On February 1, 2013, you e-mailed Mr. Moore that you were attaching an abstract for a proposed paper for TAC 2013, and that's the Transportation Association of Canada. Is that right?

A. Yes, it is.

Q. And their annual conference?

A. Yes, for the annual conference in --

Q. Okay. And it attached an abstract, you attached an abstract, of a paper titled "Evaluating Performance of the Perpetual Pavement on the Red Hill Valley Parkway Five Years After Construction." And then the abstract itself is set out in full there.

Maybe if you could just call up the indented text there. Thank you.

So, you sent this to Mr. Moore and it lists you, Mr. Moore and Vimy Henderson of Golder as the authors. Was this paper your idea or someone else's idea? Do you recall?

A. I think it was my idea, yes.

Q. All right. And had you,

prior to your sending this abstract to him, had you discussed with him doing a five-year performance review?

A. From that note, I think I likely talked to him, but here in the abstract, there are more details about this, but this is only an abstract, an idea what would be in the paper.

Q. Right. But presumably there's a distinction between the paper and the actual five-year performance review study?

A. Yes.

Q. Right?

A. Yes.

Q. Is that fair?

A. Yes.

Q. And at this point, had you actually conducted any investigations respecting the Red Hill Valley Parkway condition or performance after five years?

A. No. I didn't do any investigation, just, you know, visual, overall visual impression. Not evaluation, but visual impression, just driving to the -- you know, mainly driving to the station, because the station

was just next to the Red Hill Valley Parkway, so I could see the pavement.

Q. Sorry, the station, do you mean the monitoring station?

A. The monitoring station, yes.

Q. Okay. And had you spoken to Mr. Moore about doing a paper prior to sending this to him?

A. I'm not sure about the paper because then, you know, Mr. Moore was not interested in writing a paper, so he was yes to evaluation but no to paper, I would say.

Q. Okay. We'll get to that. He responds subsequently about a lack of interest in the paper. What was your impetus for doing the paper? You said you think to spoke to him previously about doing the actual review. What was your impetus for wanting to do this paper?

A. First, there was a lot of interest. You know, that was the first municipal perpetual pavement in the country and with some innovative technology, so there was interest. It would be very interesting to see how this thing is performing. And, you know, at the same time, you

know, I knew about the two flooding events on the Red Hill Valley Parkway and, you know, driving there, you know, I knew there was some, at that time, low severity cracking, so I was interested in the condition of the pavement.

Q. And, in the last two paragraphs, we've got it already called up but in the second last paragraph beginning, "Five years after construction of the pavement," I want to focus on that. In the last paragraph it contemplates certain investigations and analysis and presumably that includes various tests -- thank you, Registrar -- to be carried out to evaluate the Red Hill performance. Is that correct?

A. So, those tests, the paper discusses advanced material characterization test were used during construction, so that was, you know, I would say, unique, like, you know, testing those characteristics. And then also the information from the instrumentation that was installed in the pavement and then was monitored in the monitoring station. So, that was unique, so that would be very -- I think a very interesting for the industry.

Q. But then in the last sentence it talks about field investigations carried out on the RHVP in its fifth year of service and the detailed analysis carried out to evaluate its performance to date and evaluate the impact of measured performance on its life cycle. Is that anticipating testing to come?

A. Yes. Yeah. This would -- so, it was, like, initially what was installed, how this thing was constructed, how it was monitored. And then the third stage will be the evaluation, how -- of the performance, how it looks like now. Now, I mean, you know, five years after construction.

Q. Okay. And what was the intention in terms of how this was going to be funded, these future testing and investigations and analysis that are referred to in the paper?

A. So, you know, the evaluation, I anticipate evaluation would be funded by the City. But the paper, we wrote the paper in our own time.

Q. So, you're talking then there's the actual report, investigation, the five-year investigation that you say you think you

already talked about with Mr. Moore, and then the paper on the side. Is that fair?

A. Yes. So, it would be the evaluation, you know, some testing and report. That would be one part. Another part would be the paper.

Q. All right. And is it similar in that way to the feasibility study back in 2005 and the CTAA paper that we talked about in your previous evidence? So, the one hand you've got the feasibility study and the other hand you've got the paper going at the same time. Is that the idea?

A. Yes. It may be similar, but here we would have, you know, realistic data, realistic data of the performance.

Q. Yeah. Sorry. I just mean I'm just talking about the timing of when the report for the City and, on the other hand -- or the study for the city and then on the other hand the paper. Similar approach. Is that fair?

A. Yeah, that would be -- and, you know, if we have the information from the evaluation, just write a report, a paper, a technical paper on this, what we observed.

Q. Okay. And then in the second last paragraph that starts off, "Five years after construction, the pavement is in excellent condition," what is that based on?

A. Oh, it is based on the visual impression. I think the pavement was in excellent condition. I have to clarify that excellent condition doesn't mean perfect, but, you know, if -- like, technically, I don't know if you want me to elaborate a little bit of this.

We used, for instance, pavement condition index to evaluate pavement condition. The perfect condition is 100, but PCI of 100 to 85, if a pavement has PCI of 85 to 100, it's considered to be excellent condition and then the ranking goes down to very good, good, et cetera, to fair.

And, for instance, Stantec, I think when they prepared the report, I think, in 2019, they used OCI, which is overall condition index. For excellent pavement, their ranking was 81 to 100. So, excellent doesn't mean perfect, but it's still, you know, better than very good. So, there are some -- you can anticipate some distresses, but not some, you know, very severe

fractures. Some stresses could be anticipated and the pavement could be still classified as excellent.

Q. But that ranking that you refer to, is that a ranking that's based after testing or is that a ranking that is based on a visual inspection?

A. No. At that point of time, it was based on my -- before visual condition, that was my visual impression.

Q. Right. Okay. I understand it was at this time. You're quite clear about that. But normally when you are giving a ranking of that sort about the condition, is that typically a ranking that you would give in a report after having done various tests in addition to a visual, or is that always something that's restricted to a visual inspection, that ranking to which you refer?

A. Well, you know, it depends what index you use, but, you know, if you talk about PCI or pavement condition index, it's based on visual.

Q. Okay. And here, though, this is abstract is actually speaking in the past.

Right? In that very last sentence that we looked at in the last paragraph, right, it's talking about the paper will discuss the various field investigations carried out on the RHVP in its fifth year of service and the detailed analysis, so it's speaking in the past tense about things that haven't occurred yet. Correct?

A. Yes.

Q. Okay. Because the anticipation is that this paper is going to be reflecting tests to be done in the future. Right?

A. Yes. Yes.

Q. Okay.

A. It is.

Q. And by characterizing it as excellent at this point, perhaps does that suggest a predisposition to find it to be ultimately in good or excellent condition, given that tests haven't actually been done on it?

A. Yes. You know, I've been doing this thing now for 48 years, so I know likely what to anticipate. So, I think I would anticipate it would be as I identified, yes.

Q. If we could take that down and paragraph 19 on image 12, if you could

call that out.

I think this is what you were referring to before. On February 5, 2013, Mr. Moore responded to you by e-mail and said:

"I don't see anything that is using the data gathered over the last five years or the evaluation of performance. Everything is just a rehash of the original design and previous work. I can't really support this going forward as is."

Were you surprised by this response?

A. Well, you know, maybe not surprised. I can say disappointed, but, you know, the client is the client. You know, it's his road, his decision. If he's not interested, this is it.

Q. All right. Did you agree or disagree with his statement that everything is just a rehash of the original design and previous work?

A. No. It's really not

original then because, you know, we would show, you know, the current performance and this is what was -- the interest of some agencies. Like, you know, you have the cracking. Is it only top-down cracking? So, it wouldn't be a rehash. But, you know, Gary's decision is Gary's decision. He's not interested, so, for me, that was it.

Q. Okay. And then if we could go to image 14 and paragraphs 26 and 27.

We'll go to the notes themselves in a second, but it indicates you attended a meeting at Mr. Moore's office on March 1, 2013 at 9:00 a.m. and there's an appointment that was sent which said the subject of the meeting was the "Red Hill Valley five years later/instrumentation/phase 3 technology review."

And if we could go to the notes themselves, Registrar, it's RHV933 at image 595. The overview document has the handwritten note, so this is easier to review.

Do you recall this meeting?

A. I don't recall details, but, you know, if I had notes, then definitely the meeting occurs and this is what was discussed.

Q. All right. Do these look

like the kind of notes that you would have made prior to the meeting or during the meeting?

A. No. They are too tidy. That would likely be before. But then I would also add some comments, yes, later on.

Q. Okay. Now, if these are typewritten after the fact, they were handwritten notes at the time. Tidy just in the sense of setting out bullet points that you're covering. Is that what you mean?

A. Yes. I typically put dash. And I would have to look at my handwritten notes, you know, to see how tidy they are, but they look to me like likely prepared before the meeting, but also some items later on added.

Q. All right. And so, if it's talking about those three items and it says:

"Meeting with Gary

1/RHVP

- instrum

- five years"

Is that the five-year review that we were just discussing?

A. Yes. Yes, it was.

Q. And instrum is

instrumentation?

A. Instrumentation.

Q. And then PMTR phase 3, that's the third phase of the pavement materials -- sorry, I'm better with the acronym than I am with the full name. The PMTR, phase 3?

A. Yeah.

Q. Okay. And then, if we could pull that down and images 15 and 16 in overview document 5. Actually, maybe go back to 14 just for one second. Sorry, you're in overview document 5. I meant 6. I apologize. There we go, there's 15.

So, those are your original handwritten notes, just because you mentioned wanting to see them. Do those look like notes that you would have taken beforehand?

A. Yeah. You know, they are -- I would say they are too tidy. They would probably be before, but the last ones may be after. But also, I -- sorry I bring. There was a typo in that typed notes because the last note was GPR, not GIR, GPR, because I don't know what GIR would be. It's GPR, longitudinal and transversely.

Q. Okay. The very last one?
A. The very last one, GPR. The P is, like, you know, my handwriting is not very --
Q. You're saying in the transcribed typewritten note, it says GIR, which you're correct, but that's wrong?
A. I overlooked this thing. It should be GPR.
Q. Okay. Thank you. All right. So, if we could go to 15 and 16. We have 15 up already.
And you sent Mr. Moore an e-mail on March 1. I can tell you it was in the evening. And you say:
"As discussed this morning --"
I take it you're talking about the meeting that we were just looking at. And then you sent him three proposals, and we looked at this paragraph briefly before, one being activating the instrumentation for the Red Hill, second, phase 3 of the pavement and materials technology review, and the third being the pavement condition evaluation on the Red Hill Valley Parkway five years after construction.

And so, is it that meeting when Mr. Moore asked you for the proposal on the five years after construction project?

A. I think yes. All three times, yes.

Q. Okay. Yeah, as well as the other two?

A. Yeah, yeah.

Q. All right. And if we could keep 16 up and add 17, please.

Paragraph 31, this is with respect to the five-year review project, this is paragraph 31, indicates that the total budget for the work was $23,500 and then the scope of work was described at the top of image 17.

If you could call that up, please.

And this is referred to -- the project that results from this is the five-year project, often called the Golder project. If I refer to that, you'll know what I mean? We're talking about the five-year review and it became the six-year review later on as time passed. Is that right?

A. Yes, it is.

Q. Okay. And the proposal includes field investigations and indicates a number of four items, analysis and reporting. Did this differ from what you were contemplating in the paper abstract that we looked at or is it the same stuff that you were contemplating in there?

A. Yeah, it's the same stuff that I was considering. Yes.

Q. Okay. And, at this point, is the paper, after Mr. Moore's rejection, is that off the table at this point?

A. At this point of time, it's off the table.

Q. And did you talk to anyone else at the City about this proposal or this project prior to sending it to Mr. Moore, or was this just entirely on your discussions with Mr. Moore?

A. I know I have, you know, some discussions with Mr. Marco Oddi. He was, you know, helping me, you know, arranging about pavement condition. It is possible, but I'm not sure whether I have any notes, any details. During the investigation, definitely, but at this point of time, I'm not sure.

Q. Okay. Yeah, I'm talking about up to this point. You don't actually recall --

A. No, I don't.

Q. No? Okay.

A. I know that later we added coring, so it was -- but not at this stage.

Q. Sorry, was that coring, you said?

A. Yes, coring.

Q. All right. So, take that down, Registrar.

And, in paragraph 32, Mr. Moore on March 8 e-mails you and accepted the three proposals, but deferred two items from the phase 3 PMTR proposal and asked you to submit your proposed work schedule.

And then if we could keep 17 up and bring up 18 as well, please, Registrar.

On March 11, you e-mailed Mr. Moore the proposed schedule -- this is paragraph 33 -- for work on all three projects, which Mr. Moore, at the top of the next page, on 34, he replies that the timelines are acceptable.

And then in 33 at the bottom,

you indicate that:

"We will start organizing and carrying out the field work shortly."

Maybe if you could call that up there, Registrar, bottom of 17:

"The falling weight deflectometer testing will be the determining factor in terms of completing the field work as it can only be carried out once the ground is fully thawed. Assuming that the falling weight deflectometer can be completed in May, the report will be provided by June 14, 2013."

And could you just describe what falling weight deflectometer testing is?

A. Falling weight deflectometer is a piece of equipment used for non-destructive evaluation of pavement structure condition. In FWD, apply a load pile to the pavement surface and there's a beam with number of sensors, it can be six to nine, and you measure

the deflection at each sensor. And by analyzing the deflection or the shape of the deflection, that we call the deflection basin, you can evaluate the structure condition of each layer.

So, you would have to know the thickness of the layer to know the deflection and you can evaluate the structure condition that is stressing resilient modules of each particular layer. And also from the centre of the load, you can evaluate the structure condition of the pavement. I don't know if it's enough. I can --

Q. No. Is that also what you're looking for there are -- is that part of looking at rutting and whether there's bumps and so forth in the pavement? Is that part of that or no?

A. No.

Q. It's not?

A. No. Rutting would be evaluated visually or bumps, for dips and bumps, we would have to use and we use inertial profiler.

Q. And that's one of the other tests that, of course, were in the proposal, the inertial profiler testing. Right?

A. Yes. The FWD testing can

identify how prone the pavement can be to deformation and rutting and other, but it doesn't determine -- it only determines the structure condition. And the other stress would have to be evaluated more from visual pavement condition evaluation or from the scan by the inertial profiler.

Q. Okay. Thank you. We can take that call out down, please.

Now, you'll see on paragraph 35 at image 18, if you can call that out, please, that around the same time the City was working on arrangements with CIMA to conduct a review of the Red Hill Valley Parkway and discussion of this in the overview document continues on for a number of paragraphs at that point.

Were you aware at that time, now in March 2013, when you were being engaged on the Golder project, the five-year review, that the City was also engaging CIMA to conduct a safety review of the Red Hill from Dartnall to Greenhill?

A. No, I was not.

Q. And we know that that engagement of CIMA by the City, that particular

engagement, culminated in a 2013 CIMA report that we've heard quite a bit about for the last couple of weeks.

When did you first learn that CIMA has been engaged to conduct any Red Hill Valley Parkway reviews or investigations?

A. On December 18, 2018, I met with Mr. Gord McGuire and, at the end of our meeting, he told me that CIMA was the consultant hired by the City for safety review on the Red Hill Valley Parkway, safety -- I know in my notes I said safety geometry and traffic volume. So, this is the first time that I found about CIMA's involvement on the Red Hill Valley Parkway.

Q. Okay. And we will much later come to that but we're going to take it chronologically, but it's not until December 18, 2018 that you were aware. Is that right?

A. Yes, that's right.

Q. Okay. You can take that down, Registrar. Thank you.

Now, with respect to the -- and you take down the overview document as well.

With respect to the Golder project itself, the five-year review, could you

describe the structure and responsibilities of the principal staff that were involved at Golder, yourself and others?

A. So, I was the project director and Dr. Vimy Henderson, I think she was a doctor at that time, I don't remember exactly the date, so Dr. Vimy Henderson was the PM, project manager, and pavement and materials engineer and project engineer. Also, Rabiah Rizvi was another project engineer on this assignment. And, plus, we had a few other, you know, like other people involved, like technicians, et cetera, (indiscernible), but that was the main staff involved.

Q. Okay. And so, as project director, what was your responsibility? Was that overall supervision of the project?

A. Yes, overall supervision of the project.

Q. And so, you describe there Ms. Rizvi's and Dr. Henderson's, sort of, titles, I guess, but what were they responsible for?

A. So, Dr. Henderson, she was the project manager and also the project

engineer, and so she was -- now, you know, who -- I think she was doing pavement visual condition evaluation and overall arranging of the project. I think it's likely that she arranged falling weight deflectometer and the inertial profiler, but I know that Rabiah Rizvi did the analysis, at least she did falling weight deflectometer analysis. I'm not sure who finalized the inertial profiler analysis. I think it was likely that maybe Joe Lin did the initial analysis and then Rabiah finalized the analysis. I think here I would have to check, but I know she did FWD.

Q. And we can ask them. Is it "Jolene" you referred to there?

A. Joe Lin, yes.

Q. "Jolene"?

A. Yeah, she was the -- I think she was the inertial profiler operator. I'm not sure whether she was the operator for the falling weight deflectometer. I would have to check. Probably Rabiah will know better.

Q. Okay. And, actually, for the record, I thought you said "Jolene," but it's Joe Lin. Is that right, L-I-N? Is that who you're talking about?

A. Joe Lin, yes.
Q. Okay. Thank you.
A. It could be Joe Lin or also and Steve Jagdat, the FWD test. I would have to check with Dr. Henderson or with Rabiah Rizvi, who was the operator of the falling weight deflectometer.
Q. And so, you just described those two kinds of tests. Was any friction testing involved at this point of the project?
A. No, it wasn't.
Q. And if we could go to overview document 6, images 21 to 22.
And just in terms of timing in paragraph 45, it indicates that Golder staff travelled to the Red Hill on April 18 and 23, 2013 to inspect visually the pavement condition and the staff observed some microcracking, some longitudinal cracking and some construction joints with third lane or ramp generally starting to open up, and then Golder also made arrangements to conduct profiler and falling weight deflectometer testing in early May 2013.
And so, were you involved in

the visual inspections or was that other staff?

A. I think it was probably mainly Dr. Henderson. I know I was there. At least I walked some section, particularly that section between Barton Road and Queenston. I knew I walked on the shoulder, so I remember, but definitely not the entire 7.5 kilometres, no. But at least I walked on a piece of that road, on the shoulder.

Q. There's cars on there right now?

A. Oh, yeah.

Q. Okay.

A. We had a health and safety program, very strict. I would not be allowed to do it.

Q. Fair enough. And then at image 27, just for timing, at paragraph 56, indicates that Golder conducted the falling weight deflectometer testing on May 9, 2013. And then on May 17, Rabiah Rizvi of Golder sent the results of the falling weight deflectometer analysis to you and then she indicates her, sort of, summary in her covering e-mail.

And I think before you had

mentioned that you thought that Ms. Rizvi had analyzed the data or analyzed the results from the falling weight deflectometer testing. Is that --

A. I think she did. She was a well trained engineer in analyzing the falling weight deflectometer. I think she did the analysis, yes.

Q. Okay. And then she said in the second paragraph in the second sentences:

"I really think there is a material problem with the cracking being limited to the surface. Do you think that they should either perhaps consider milling the surface and resurfacing, as it is five years old now? If they don't want to resurface, do you think they should at least apply microsurfacing so the water doesn't penetrate into the structure? Are the cracks too wide for it to be a good candidate for microsurfacing?"

Do you recall your reaction at

that time to that statement?

A. No. I think it made -- to me, it made a lot of sense and, you know, I was the right person for her to ask about this. There were -- I think the most important thing was that it was not what we call fatigue cracking or bottom-up cracking. That was initial impression. And obviously there was microcracking and some of those microcracks would be okay for microsurfacing, but the bigger cracks would have to be routed and sealed before microsurfacing because microsurfacing would not address them.

And also, there were some more severe cracks that would have to -- she asked about milling and overlaying and I think, based on this, we approached the City asking for permission to take a few cores.

Q. To take a few cores?

A. A few cores, yes. To drill a few cores.

Q. The core samples?

A. From the pavement, yes.

Q. All right. And then, if we could go to image 30, and paragraph 63 indicates that by June 13, 2013, Golder had

started drafting its report on the five-year review of the RHVP, which contained a description and results obtained from field investigations conducted to date, which included visual condition inspection, asphalt coring, surface longitudinal profile and falling weight deflectometer testing, but did not contain any analysis or recommendations yet.

So, if we could go to the document itself, to the draft, it's GOL1428, Registrar.

And so, it's titled "Red Hill Valley Parkway Five-Year Review" and this is a draft and it's 15 pages of the PDF but it's pretty bare bones and there's a number of pages that don't have any content, including appendices and so forth, but it does have, as indicated in the overview document, description and results of the tasks done to date.

It says here "submitted to Gary Moore, City of Hamilton." Do you recall if a copy of this was shared with Mr. Moore or otherwise outside of Golder by this point in time or at that time?

A. I think because that was

the purpose, so it was a very, very, you know, bare bone version, just to show what problems we observe. And I noticed that, you know, the cores were included -- I don't know if you want me to elaborate a bit -- because there was a concern how deep the cracks were.

Q. I'm not sure if there's photos in here. If you could scroll ahead, Registrar. Asphalt, there we go.

3.2, asphalt coring, that's what you're referring to?

A. Yes. So, that was our observation because there was a concern, is this a perpetual pavement that has no cracking coming from the bottom up or, you know, actually I was confirming that this is what we call top-down cracking, so that was something important to bring to the City's attention. Our initial -- our observation, our initial considerations for this. So, yeah, it's confirmed. It was what we anticipated, yeah. It was top down.

Q. Actually, I'm noticing here, although the document itself has the date on the first page of June 2013, and that's what the overview document, as I mentioned, referred to by

June 14, the drafting had begun, this references August 6 when the cores took place.

So, presumably this is a draft has been developed over time. Is that fair?

A. Yes. Yes, it is.

Q. Okay. And the distinction between the top-down cracking and the bottom-up cracking, I think that's something you talked about before in the permanent pavement or perpetual pavement structure, that a big concern would have been if it was bottom-up cracking, which the rich bottom mix and the entire structure was intended to avoid. Is that right?

A. Yes, it is. That's the main purpose of perpetual pavement.

Q. Okay. You can take that down, Registrar, and if we could go to image 35.

This is a reference at -- paragraph 75 talks about July 4, 2013 and then paragraph 76, later the same day, July 4, 2013, if you could call that up, Registrar.

So, July 4, 2013, Mr. Kirchknopf of the City sent an e-mail to Brian Applebee of CIMA about mainline pavement treatment on the Red Hill Valley Parkway. And you weren't

copied on this e-mail but it states:

"Regarding the Red Hill Valley Parkway mainline payment treatment, please be advised that the City's asset management section has retained Golder Associates, care of Ludomir Uzarowski, to oversee all testing and monitoring of the specialized surface material. Please contact Ludomir directly should you require any additional information regarding 'weight in motion' or 'friction testing' on the RHVP mainline."

And he gives your phone number. Do you recall Mr. Applebee or anyone else at CIMA contacting you about weight in motion or friction testing around that time or at any later time?

A. No. No, I don't. I don't recall. Weight in motion, no. There was no weight in motion at all, unless maybe they meant

monitoring station. No, I don't.

Q. Okay. Well, let me turn it around. Did anyone at CIMA contact you about anything --

A. No.

Q. -- in that time period?

A. Not about Red Hill Valley Parkway, no.

Q. Okay. Do you have any insight as to why Mr. Kirchknopf was referring to you here? Had you had any discussions with him about this issue?

A. I knew of Mr. Kirchknopf because he was, I think, the traffic division manager, so I knew him from there, and he -- from that monitoring station, maybe not himself but his division, they were getting the traffic monitoring data, so I knew him from -- only from this. And he must have -- I understand that he knew about us being engaged in this. But no, I didn't have any contact with him about this.

Q. Okay. He references friction testing on the Red Hill Valley Parkway mainline. At that point in time, by the time, July 4, 2013, was friction testing on the Red Hill

something that you had contemplated or discussed with Mr. Moore?

A. No. No, it was not.

Q. I guess that was a double-barreled question. Had you contemplated it by that point?

A. No, I didn't.

Q. So, following from that, had you had any discussions about that with anyone by that point in time?

A. No. No, I didn't.

Q. We can take that down, Registrar, and if we could go to image 52 in overview document 6.

And paragraph 130 refers to a second draft of what's defined as the Golder report, which is the ultimate draft report that resulted from the Golder project, the five and then six-year review. And this is dated September 20, 2013, which contained a new text in the Analysis and Recommendations section.

And we'll go to it itself, but why don't we do that. It's GOL1430.

And you see the date of the September 2013. It indicates, again, submitted to

Gary Moore, City of Hamilton.

I'll back up. This one is 11 pages. The prior draft we looked at was 15 PDF pages, but this one lacks the appendices, the sort of unpopulated appendices that the prior draft had. And image 10 contains the analysis and Recommendations Section.

If you can go there, Registrar. Thank you. So, if you can call up section 5, it says:

"The results of the testing and investigation carried out on the RHVP indicate that the pavement structure is in good condition and performing well. The observed cracking is anticipated to be a function of the material and not due to fatigue damage or the environment."

So, is that your language or is that someone else's? Do you know? Do you recall who wrote that?

A. I don't recall. I think I agree that, you know, that was right. Whether

it was my language or Vimy's language, it's hard to say, but this is a very initial evaluation of the structure condition of the pavement and there are no recommendations. So, no, you know, I don't -- I don't recall who did this.

Q. Okay. In any case, even if it was Dr. Henderson, you agreed with it?

A. Yes. Yes.

Q. Okay. And was this draft shared with Mr. Moore or anyone else outside of Golder? Do you know?

A. I think -- I don't recall. I think the idea of updating this was to show the City what the condition was. So, I anticipate if it was updated, I would have to check my notes, but if it was updated, the purpose would be to share the more recent observation with the City.

Q. And when you say the City in this context, I take it you mean Mr. Moore at this point. Right?

A. That would be mainly Mr. Moore, yes. I'm not sure about Mr. Oddi. I think it was Mr. Moore, yes.

Q. Okay. And, yeah, we

don't have a specific e-mail indicating that you shared with him, but as you indicated that it was updated for that purpose, what was it that you wanted to share with him?

A. Well, mainly that, you know, the condition -- because, you know, besides these cracks that we mentioned, it was still in good condition and the main thing, that it was not due to fatigue damage. So, it was almost like a confirmation, yes, that's a perpetual pavement, there is no fatigue cracking, the cracking is the top-down type of cracking. So, it is perpetual pavement and I don't know at what time we did some analysis for the remaining life of the pavement, whether it would be able to support what it was designed for for a period of 50 years, but, you know, just to show that, yes, it's definitely not fatigue, so it is a perpetual pavement.

Q. And it says in the second sentence:

"The observed cracking is anticipated to be a function of the material and not due to fatigue damage or the environment."

I appreciate you describing now that it's not due to fatigue damage, but what does a function of the material mean?

A. So, it's a function of the material that, you know -- just, you know, how the top-down cracking occurs, like -- I don't know if you want me to elaborate a little bit.

Typically, the cracking in asphalt occurs at the bottom where the tensile strength is the highest. So, this is in conventional pavement, it starts at the bottom and it propagates upward. Now, in perpetual pavement, you know, the tensile strength at the bottom of asphalt is low, plus we have this RBM, rich bottom mix, that is has excellent resistance to cracking.

So, where the cracking occurs, at the top, at the top you have compression, so it is as, you know -- you know, you shouldn't have cracking where you have compression, but there is a certain stress distribution that causes cracking at the top. This is why we called it's a function of the material and not -- so, it was just to emphasize it's not fatigue. It's just this phenomenon that is unusual stress at the top of the pavement where you should have compression but

actually at some locations you may also have some tension and this cracking can occur. So, that was to emphasize function. There was nothing wrong with the material there, so it was just to distinguish between the two phenomena.

Q. Okay. That's really what I'm getting at. When it says function of the material, that suggests that it has something to do with the material itself, with the pavement itself, but you're saying that that is not the case, that is not what you were suggesting?

A. No. The pavement was very -- the material was very good, so it's not issue with the quality of the material. It was the phenomenon of top-down cracking.

Q. Okay. And no mention in this draft of friction testing. Do you know if, at this point in time, you had discussed friction testing with Mr. Moore?

A. I know I didn't, at the time, no.

Q. Okay.

A. It was September the 20th. Yes? No, I didn't.

Q. Yeah, okay. And we'll

get to some subsequent communications shortly.

Now, we know that the October 2013 CIMA report has some findings about wet weather collisions and we know that you did not see -- you've said that you didn't see any CIMA reports or weren't aware of them until late 2018 or after. You weren't even aware until December 2018, you indicated.

But have you reviewed the October 2013 CIMA report subsequently?

A. What do you mean subsequently? Not --

Q. Afterwards. Not at this time, in 2013. After you became aware of it, much later in time, did you have an opportunity to review it, even in the course of these proceedings?

A. Yes. During this inquiry, yes, I look at this.

Q. Okay. And we can go to it if you want, but there are findings in there about -- there are friction testing recommendations and an analysis of wet weather collisions.

Is that something that you

would have found helpful or informative to know about at the time you were putting together the Golder report?

A. It would be like, you know -- it depends when, because then after the City ask us to measure friction, that would be -- obviously that would be useful to know what CIMA's observations were.

Q. Right. And at the moment we had just been speaking about, at September 20, that you hadn't been asked to do friction testing, you described. But once you had been, if I understand you correctly, you're saying that yes, that would have been something that would have been useful to you to know?

A. Well, you know, I'm not a safety consultant, so I do what the City asks me to do. You know, so, you mean before Gary Moore asked me to do friction. Yes?

Q. Sorry, you're going to be -- very shortly after this in time you're going to be asked to do some friction testing and there's going to be some discussions.

Once you're asked to do that, once you're engaged to have friction testing done,

would it have been useful for you to know about the 2013 CIMA report and its contents?

A. Of course. I think it would be useful for me to know.

Q. Okay. And why is that? How would it inform you?

A. Because then I would, you know, look at CIMA's recommendations and CIMA's concern and then we would think what -- you know, to go into details like, you know, what recommendations, what testing, you know, when I -- you asked me whether I reviewed the report later on and there was a lot of concern about wet accidents. I would include macrotexture testing.

Also, like, you know, like one thing, SMA, stone mastic asphalt, is the type of mix that offers good macrotexture, and if you see in our reports, a report later on, there are a lot of photos, it's showing the macrotexture, but it would be, I think, maybe not only from formal point of view but just to measure, like, this is what we did in 2017, yes, show, to show that, because it's a defactor. It's microtexture and macrotexture. Show the macrotexture, yes. It is good.

And, you know, also -- so, you know, so the testing, the macrotexture and then analysis and recommendations, so I think it would be definitely, I think, beneficial to know about this.

Q. Is that because of the concern about -- I think you mentioned because of the concern about wet weather collisions specifically?

A. Wet weather, you know, the main concern with wet weather is macrotexture, yes, because of hydroplaning, so they have to make sure that this thing would be addressed, would be answered. And also, you know, some maybe focus -- I know that, you know, CIMA was concerned with, you know, polishing and they would call it flushing and contamination. So, you know, it would at least, I would say, there was no flushing on the road, but it would be, you know, included in the report or in the analysis.

As of today, I can say no, there was not observed any flushing or any -- for SMA, we called it fat spots, so there was -- but, you know, just to formalize this thing and show, you know, what our opinion, what our observations

were, what our opinion was.

Q. Sorry, and you're referring to flushing and fat spots? That's what you --

A. Yeah. So, you know, typically for other pavements it's called fat spots or bleeding, and for SMA we call it fat spots. So, like flushing on other pavements is typically called fat spots on SMA, if it's observed, but we didn't observe any --

Q. That's not something you observed, okay. So, in overview document 6, there's the long section, just to place this, about the heavy rainfall Hamilton experienced on September 21, 2013 and then communications arising out of that event internal to the City respecting slipperiness and skid resistance on the Red Hill Valley Parkway, including references to reports by police about slipperiness and collisions.

And, for reference, that's overview document 6, paragraphs 131 to 154. And then if we could go, Registrar, to images 59 to 60 and specifically it's paragraph 150, which is at the bottom of image 59 and the top of 60. If you could call that up, please. Thank you.

And so, September 30, 2013, between 12:56 p.m. and 3:27 p.m., Mr. Moore and Dr. Uzarowski exchanged e-mails about skid resistance testing. And this isn't referred to here, but the document itself that this is taken from, the subject is "Skid resistance numbers for the LINC and the Red Hill."

And do you recall this exchange between you and Mr. Moore?

A. Yeah. That's the best proof that we have. Like, you know, I don't recall details, but, you know, I found this e-mail with this sort of exchange, so I know it occurred, yes.

Q. All right. And Mr. Moore says:

"During the last couple of heavy rain events, the police have been attributing accidents to the 'slipperiness of the pavement.' Did we do any 'skid resistance' testing in our last outing? Can we do it on both?"

And you respond:

"We did very limited (a few locations only) skid testing on the Red Hill Valley right after construction, i.e., in 2007, and got good numbers, better than MTO typically has. We haven't done any skid testing on the LINC. We will organize the skid testing on both roads and let you know the details, (price and schedule) soon."

And Mr. Moore says:

"Okay, thanks."

So, Mr. Moore initiates this e-mail exchange. Do you recall if you had any discussion with him about friction or skid resistance testing preceding this exchange on September 30, 2013?

A. No, nothing before September 30, 2013. No.

Q. And I ask -- there's no note or anything that indicates this, but it seems like, sort of, a sparse enquiry to mention this in a couple of sentences and then you respond and say

that you'll organize skid testing on both roads. And it makes me wonder if there was some prior discussion. It seems like it's a sparse enquiry about it to then spark your comment that, yeah, we'll do skid testing on both the LINC and the RHVP?

A. I think -- so, you asked my comment. Yes?

Q. Yeah.

A. My opinion? So, I think this, you know, is definitely the first time, the first day, that, you know, I learned about this slipperiness of the pavement on the Red Hill Valley Parkway. It is likely that we talk about it, can we do it on both? So, on both, what is both meaning? It would have to be Red Hill Valley Parkway and the LINC --

Q. Sorry. That's why I said before the subject line does say skid resistance numbers for the LINC and the Red Hill.

A. Okay. Yeah, yeah. No, so I don't recall any discussion before, so this is the first time, the first day, that I learned about this and no, I didn't.

Q. Okay. And what did you

understand his question, did we do any skid resistance testing in our last outing, to refer to? What outing did you take that as meaning?

A. In our last outing, I think outing, I think he probably means the pavement evaluation that we did, so what we did under this -- what initially was called the five-year review.

Q. In this particular project that we've just been discussing?

A. Yes. Yes.

Q. And then your reference to the skid testing in 2011 right after construction and that you got good numbers, better than the MTO typically has, that's referring to the 2007 MTO results?

A. Yes, it is.

Q. Okay. And, at that point, what was your basis for that statement?

A. Because, you know, I just, you know, stated what I knew about friction. At that point of time, I only knew that the friction testing was done before opening in 2007. And, you know, my opinion was the numbers were good and better than MTO typically has when

compared to what they reported, MTO reported, in that 2009 paper on SMA initial -- early life friction. So, that's what I meant.

Q. Okay. So, you're saying that you had an understanding from that 2009 paper, which I can take you to?

A. Yes.

Q. So, if we could go to GOL2660, and this is a papered titled "Addressing the Early Age Low Friction Problem of Stone Mastic Asphalt Pavement in Ontario." If you go to the next image, it's the date. Next image, please. I don't see the date, but I understand that this is a 2009 paper in any event. I believe the date is in there somewhere.

But if we could go to -- we're on image 3.

And this is authored by a number of people at the MTO. And to confirm, is this the paper you're talking about?

A. Yes, it is.

Q. And in the second paragraph under Issues -- if you could call that up, thank you -- there's a reference to placement of SMA containing Ontario Trap Rock on the

westbound lane of Highway 401 and the friction number being as low as 20 after three days of exposure to traffic.

Is that what you were and the other contents of this article what you based your comment on that you described to us?

A. I don't think this particular paragraph, but there is later on there is a plot and I don't remember what figure it is but where they show how it look like --

Q. I think it's at the next page, image 4. Registrar, can you go to image 4.

Is this what you're talking about, figure 1, "401 Westbound Surface Friction and Stone Mastic Asphalt Mix Versus Age"? Is that what you're talking about?

A. Yes, it is.

Q. And so, is the number of days on the X axis and the friction number on the Y axis, with it beginning at 20 after three days and increasing thereafter?

A. Yes, this is what I meant.

Q. All right. So, in your reference to Mr. Moore when you say --

JUSTICE WILTON-SIEGEL: Sorry, Mr. Lewis. I'm wondering whether it would be possible to take our break at this point?

MR. LEWIS: Absolutely.

JUSTICE WILTON-SIEGEL: There's a matter that I have got to attend to.

MR. LEWIS: Absolutely. When should we resume?

JUSTICE WILTON-SIEGEL: Let's resume at 20 to 12:00. Thank you.

--- Recess taken at 11:26 a.m.

--- Upon resuming at 11:40 a.m.

MR. LEWIS: We are back. May I proceed, Commissioner?

JUSTICE WILTON-SIEGEL: Please proceed.

BY MR. LEWIS:

Q. Registrar, if you could pull back up GOL2660 that we were looking at before the break and image 4 thank you.

So, it's the figure 1 that we were talking about and just to cover it off, this is the figure that you were referring to before the break?

A. Yes, correct.

Q. All right. And so, when in your e-mail exchange with Mr. Moore that led us to talk about this document you wrote that you did the skid testing on the Red Hill Valley right after construction, i.e. in 2007, and got good numbers, better than the MTO typically has, am I correct what you were referring to was better than the MTO typically has in the context of a newly opened or, in that case, unopened, but with new SMA asphalt. Is that correct?

A. Yes, it is. In terms of high early friction -- you know, early life friction of SMA, yes.

Q. Right. But I notice you don't mention that there to Mr. Moore in your e-mail to him on the 30th. Is that correct?

A. That's correct.

Q. Okay. All right. We can take that down, Registrar. And then if we could go to -- it's at paragraph 154 but I think we should go to the document itself, GOL2641.

This is a long e-mail chain that's mostly internal to the City, but at the top, if we could expand that, yeah, Mr. Moore, the next day, October 1, 2013, e-mails you and he

forwards this e-mail chain and he indicates that:

"Our traffic section is installing new crosswalk markings and they are concerned the expansive amount of paint has an effect on the skid resistance through the intersection."

And he asks:

"Can this be included in your scope of work or is it different in town? A more comparative study of with and without new paint, but it would need to be on the same pavement. Call me if you have any questions. Thanks."

And he forwards this long e-mail chain, which included a number of e-mails with John McLennan, Bryan Shynal, Martin White, John Mater and Geoff Lupton. And did you review that e-mail? If you take this top one down. Do you recall if you reviewed the e-mail chain?

A. Yeah, I remember this, this e-mail, and yes, I read it.

Q. Okay. And, you know, we looked at your e-mail exchange with Mr. Moore on the 30th of September, which I had indicated didn't provide a lot of detail as to the reason. Did this e-mail exchange that he forwarded to you give you any insight into the reasons for the friction testing on the Red Hill and the LINC?

A. Yes, he did.

Q. And what was that?

A. I read this thing and then I noticed that, you know, there were, I think, police reported that they considered this to be slippery. Some people from the City also have concerns that it was slippery. Also, there was, I think, the one -- one of them that appeared was that there are no significant claims and something similar to what is observed on other mountain cuts.

So, that was, like, you know, general opinion of some people from the City of what happened there also, and my opinion was pretty unusual because that was the first time, probably the last time, that I got this type of e-mail from...

Q. Sorry, it was unusual

because -- it sticks in your mind because it was the first time you got, what, this long e-mail chain forwarded to you? Is that what you mean?

A. Yeah. I never got this type of chain of e-mails from Mr. Moore or from other City employees.

Q. Okay. And so, if we could go to the last image, image 4, you referenced the police and the originating e-mail here at the bottom, September 22, if you could call that out, Registrar.

This is September 22, 2013. It's from a Sam Capostagno to a number of people at the City about the Red Hill and talking about Saturday, due to heavy rain, they had some issues and talking about the police calling saying the ramps and the road is very slippery. It refers to accidents and so forth.

Is this the e-mail you were talking about? I just want to make sure we're --

A. It is one of them because, you know, Gary also mentioned that police was complaining. And then, you know, I also remember that they mentioned speed because, you know, I talk with the City about speed. I think

started in 2008, my concern about speed on the Red Hill Valley Parkway. So, that's in the chain, so Gary, Mr. Moore, send me that on September 30 that police had concerns and this is the confirmation of the concern that the police had.

Q. Right. And Mr. Moore, on the previous day, he indicated that during the last couple of heavy rain events, the police have been attributing accidents to the slipperiness of the pavement. That's what you're referring to?

A. Yes.

Q. Okay. And then, if we could go to image 2, you referred to the reference about mountain cuts. And, if you call up the bottom e-mail here on September 26, the whole thing, please, including the -- thank you. From John McLennan, again, internal to the City on September 26.

And I see in the first sentence he says:

"Off the top of my head, I would say there is not a significant claims history for slippery conditions on the RHVP, certainly no more than

any other mountain cut, if I can call it that."

Is this the e-mail that you're talking about specifically?

A. Yeah. So, this is, like, you know, a part of that chain of e-mails that I was reading, yes. So, this is the one. So...

Q. Okay. So, what did you understand was the purpose of the testing that had been requested of you at this point?

A. You know, the purpose of the testing was to test friction, it's to provide friction numbers, using a method to determine the friction numbers. And, you know, as I think I said before, you know, I'm not a safety consultant, I'm not a friction expert, because I know that slippery is related to large number of factors and friction numbers are just this one item, but this is what they wanted me to test.

And obviously another concern was, yes, you know, you test, you have this number, but still police consider this thing to be slippery. So, it have some -- you know, it stay, I think, in my memory and in my mind what police were saying about this.

Q. And did you have any discussion with Mr. Moore or anyone else at the City around this time about wet weather collisions and whether that was a concern or the number of wet weather collisions being a concern?

A. No. Because he mentioned, Mr. Moore mentioned, that, you know, after a period of heavy rains, but I don't recall any, you know, particular conversation about wet weather accidents.

Q. And you can take that down, Registrar. Thank you.

Now, do you recall, following from this, how it came about that Golder sought to get an outside provider to perform the friction testing?

A. Sorry, what do you mean?

Q. Were you involved in the efforts to retain another -- an outside provider to perform the friction testing?

A. Yes. Golder didn't do it, so we were looking for an outside, you know, provider who could do it for us.

Q. All right. And were you involved in who to contact to obtain the testing?

A. I think Dr. Henderson contacted MTO, but my first thought was, you know, to ask MTO if they could do the friction testing on the Red Hill Valley Parkway.

Q. And was that your suggestion to Dr. Henderson?

A. You know, I don't particularly recall, but, you know, that would be my obvious -- my first thought, my first thought. Okay, they did this thing in the past; can we ask them to do the same testing now? No, not the same testing because, you know, because it was a different -- that one was before opening, but can they do friction testing on the entire Red Hill Valley Parkway now?

Q. Okay. And were you aware at the time that the MTO used the locked-wheel skid trailer?

A. Yes, I was.

Q. All right. And that that's what they had used in 2007 and that's what they would use this time, if they agreed to do it?

A. Yeah. I knew that they had this all trailer assembled by them by Dynatest years ago for friction testing. Yeah, I knew

that. I knew that, what they used.

Q. Okay. And do you recall if you told Dr. Henderson why to contact the MTO specifically, that they had done the prior testing?

A. No, I don't, because I don't even have this type of notes in my note. But I think it would be, you know, logical for me to ask Vimy to contact MTO to do it and use this -- so I think it would be logical for me to ask her to do it.

Q. No, no. I understand it would be logical and if I'm inferring correctly it would be logical because it would make sense to have the same type of device, the same device, conducting the testing as had conducted it in 2007. Fair?

A. Yes, the same device and the same company -- not the same company, because MTO is not a company, but the same provider, yes.

Q. I appreciate the logic behind that, but I want to know whether or not you told Dr. Henderson that the MTO had conducted the testing in 2007?

A. I think so. I don't

remember details, but, you know, it is very likely that I told her.

Q. Okay. And were you then aware at that time that Dr. Henderson contacted Stephen Lee of the MTO to enquire about the MTO conducting the testing?

A. I think I was, yes.

Q. Okay. And do you recall why you didn't have her contact Becca Lane or Chris Raymond, who had been involved back in 2007, in directing the testing?

A. Do I know why? No. I probably left it with Dr. Henderson.

Q. And if we could go to images 61 and 62, sorry, in overview document 6. And so, it's paragraph 156, just to place it in time, at the bottom of 61, that it was October 4, 2013 that Dr. Henderson wrote to Stephen Lee at the MTO and then the next day Mr. Lee responded and asked for some details about the scope and timing.

And then if we could go to images 70 and 71, please.

In paragraph 179 at the bottom, on October 29, 2013, Dr. Henderson and

Mr. Lee exchanged further messages about the testing and Mr. Lee explained that the MTO would not be able to accommodate the request.

And then if you could expand their e-mail exchange.

He, Mr. Lee, indicated they're behind in their friction network level work and performance-based specification testing and recommend you get a quotation from ARA that has the same equipment or others that have different friction equipment:

"Sorry we will not be able to accommodate for the season."

Did you take any part in these communications with Mr. Lee?

A. No, not with Mr. Lee, but I think Dr. Henderson would keep me informed. She would CC me and keep me informed about this.

Q. So, I don't think you were copied on, I'm just looking at the documents, you weren't copied on those documents, but you're saying that she would have kept you informed?

A. Yeah. As far as I know, Dr. Henderson, she would keep me informed.

Q. Okay. And did anyone

contact ARA, as suggested by Mr. Lee?

A. No, I don't think so.

No, I don't think so.

Q. Do you know why not?

A. I knew from Dynatest that there was only one piece of equipment in Ontario they assembled, so it would be likely that ARA would have to bring it from the States, so that would be my explanation.

Q. Sorry, you surmise that that's what ARA would have to do?

A. Yes.

Q. Okay. And how did you know that from Dynatest? You had had direct communications with Dynatest at some point?

A. Oh, I think I knew Dynatest for years when I worked for John Emery Geotechnical, so we had a very good relationship with Dynatest, we knew people, we talked to them. Now, who told me, I knew they told me that they assembled one whole trailer for the Ministry, and that was one available in Ontario.

Q. Okay. But, I mean, you worked at JEGEL a long time before that. Did you have any current knowledge about ARA's --

A. No.

Q. No? Okay. And we know that ultimately Tradewind was contacted by Golder and engaged to perform the testing. And how did that come about? Whose initiative was it to contact Tradewind?

A. It was mine.

Q. And how were you familiar with Tradewind?

A. As you know, I do a lot of airport pavement work and I attend every year Swift conference on airports and I met Mr. Leonard Taylor almost every year there. They had a booth and they showed their equipment. He was considered to be the top expert not only in Canada, also one of the top experts in the U.S. in pavement friction, particular airports, so he had very good reputation. He delivered, I think -- you know, I don't remember if it's one or a few presentations on this. And, you know, just whenever I went there, I talked to him, so I know him, I knew what they did and they knew their reputation.

Q. Okay. And were you aware from that that they used the grip tester and other

continuous friction measuring equipment for their airport work?

A. I think I did because at the booth they showed -- I don't know what exact pieces of -- but I think they showed the grip tester. Some of this was just, you know, shown during, in the booth, what they used. I think so or at least there were, you know, a lot of photos of the equipment they were using, so I knew that.

Q. Okay. And did you have any awareness about whether they used the ASTM locked-wheel tester or not?

A. ASTM, sorry, walk or lock?

Q. The locked-wheel trailer, like, of the same type that the MTO used?

A. You know, like, at that point in time, it's hard to say what I thought, but I think in my opinion that was the only piece in Canada, so logical would be that they didn't.

Q. Okay. And did you think about or take into account in contacting or deciding to contract Tradewind that they would not be using the same testing device as the MTO had used in 2007?

A. No, I didn't have any particular serious concerns about using different pieces of equipment. This equipment was recognized and well-established and described in the TAC guide as the equipment used for friction testing.

Q. Okay. And you were aware, as you described, of Tradewind's experience in particular with airport testing. Did you give consideration as to their experience with roads? Were you aware of their experience with roadway testing?

A. You know, it's difficult for me to remember what I discussed, but I had -- I think I was comfortable with them doing this testing, so yeah, that would be my opinion, yes. That's my opinion.

Q. Well, I understand that you were comfortable with it, but do I understand you correctly you don't recall whether you gave any thought in particular as to their experience with roads as distinct from airports?

A. I don't remember what they were showing at the booth, you know, whether that was only airports or also roads or highways,

because they typically include a lot of photos. So, no, I don't remember this detail.

Q. And I understand that it was Dr. Henderson who contacted Tradewind initially. Did you have any involvement with the discussions about retaining Tradewind once you came up with the idea?

A. I think I probably, you know, I told her who to contact, like, you know, the company and the person.

Q. All right. If we go to image 71, I think we've already got it up, yes, and paragraph 180, Dr. Henderson contacted Tradewind through its website and she asked to speak to someone about Hamilton's request for friction testing to be conducted this year on its urban highways, and then their office manager forwarded Dr. Henderson's request to Leonard Taylor, the president and CEO of Tradewind?

And so, from that point forward -- well, first of all, since Dr. Henderson just went through their website and didn't contact Mr. Taylor directly, do you think perhaps you didn't direct her to anyone in particular?

A. I think she contacted

Tradewind based on my recommendations and I don't think I had Leonard Taylor's contact information. I knew him but it is likely I probably had somewhere his business card, but, you know, I probably -- the easiest way for her was to, you know, go on the website and find a contact.

Q. All right. And then, if we could go to image 75, paragraph 191, at the top, on November 19, you e-mailed Mr. Moore to advise him that the price of the friction testing and to, quotes, "prepare a short memo report," would be $8,000 plus HST. Mr. Moore approved the expense, directed City staff to issue the purchase order and assist with the logistical arrangements for the testing.

Do you recall if you advised Mr. Moore in advance that the testing would be conducted using a grip tester?

A. I don't have any particular recollection at this point of time, no.

Q. Okay. And if we could go back to images 73 and 74 and paragraph 187, which straddles the two images, is an e-mail two days earlier, November 17, 2013, Mr. Taylor to Dr. Henderson copying Tradewind's technician,

Michael Hogarth, and he indicates that he can perform the testing and so forth.

And he sets out some of the parameters, aside from the dollars and so forth, at the top of 74. Thank you. And he indicates that the grip tester would be used at 50 kilometres an hour and reference or a comparison be made with established UK highway reference levels, and refers to it being 50 kilometres an hour.

Is that something Dr. Henderson made you aware of? You weren't copied on this particular e-mail.

A. If I wasn't copied, I think it likely, but I don't recall.

Q. And, at any point in this timeframe, at the time of retaining and engaging Tradewind, is the issue of correlation of results that would be obtained by Tradewind from using the grip tester with the MTO results from 2007, is that something that crossed your mind or was any issue for you?

A. No, it wasn't.

Q. Page 77, please, image 77. In paragraph 196, we know that the

friction testing by Tradewind took place on November 20, 2013.

Am I correct that you were not present for the testing? Is that right?

A. No, I wasn't.

Q. And do you recall what information was provided to Tradewind in advance with respect to the testing?

A. Definitely, you know, the location from length of the section, location from two. I think we wanted also a few ramps to be tested, so, you know, this kind of information. And just I think, I believe, Vimy would arrange exact time and whatever, where to meet, when to meet and this sort of details.

Q. The logistics?

A. Logistics, yes.

Q. All right. And then if we go to image 82, actually, this refers to some entries in your notebooks at paragraph 211 about one on December 10, 2013 and another on December 13, 2013.

And if we could maybe go to RHV933 so we can see the actual notes or typewritten notes, rather, image 631 and 632,

please.

So, the December 10 note on the left simply says "Hamilton - 7:30 a.m. - meeting with Gary," and then December 13, 2013 "call, Gary Moore."

Do you recall the meeting and call and what they were about?

A. I know it happened and very early. I think it would probably be rather PMTR 3.

Q. Possibly about the PMTR, the third phase?

A. Yes.

Q. Is that because that was still pending at the time. Is that right?

A. I think it was pending and then it took a long time to verify and they added more and more to this, including specifications and quality controls, building quality control systems, so that became a huge subject. So, I would say that was likely this.

Q. Okay. All right. If we could go back to image 82. The second sentence in paragraph 211 indicates you have a note to call -- and, actually, 212 as well. Call them both up,

please.

On December 20, you had a note to call Mr. Moore, Lisa Castronovo, the admin assistant in asset management, engineering services in Hamilton, and Trevor Moore, who is a corporate technical director of Miller Paving.

And then on December 20, Mr. Moore from Miller Paving e-mailed you attaching, he indicates "as discussed," and then attaching some brochures and guidelines about microsurfacing and slurry seal, which then you forwarded to Dr. Henderson at Golder on December 20.

And so, do you recall what this is about, why he was sending you the materials on microsurfacing and slurry seal materials that you sent to Dr. Henderson?

A. I was considering using microsurfacing in the City of Hamilton. So, you know, the history go back to PMTR 2 where that was one of the preventive treatment, optional pavement rehabilitation treatment that we would consider, and if so that would be a double purpose for microsurfacing. One would be for Red Hill Valley Parkway because this is what we considered, like,

you know, you showed that e-mail from Rabiah, this microsurfacing, so that was one microsurfacing.

But at the same time, and we was under PMTR 3, I was looking at finding an effective way of -- how can I say? -- pavement treatment for pavements in the City in Hamilton that involved incorporated old poor quality steel slag that resulted in cracking. So, it was like regular microsurfacing would be for Red Hill Valley, but I was thinking about microsurfacing and even slurry seal. But slurry seal, I probably gave up on this. Microsurfacing was fibre for those cracked steel slag, old steel slag pavements. And I talked to Trevor and he send me the brochures, the price, for this treatment.

Q. So, if I could unpack that, both for -- let me put it this way -- City streets in relation to PMTR work that you had been doing and also on the Golder project for the Red Hill Valley Parkway, and you referred back to the e-mail from Ms. Rizvi about microsurfacing, so for both purposes. Is that right?

A. Like, you know, for both, but I would say for the Red Hill Valley Parkway it would be conventional, but for the City it was

particularly steel slag. I wanted to use the one with fibre because it provides additional reinforcement.

Q. Sorry, provides additional?

A. Reinforcement. This fibre is not the same as SMA. It's not a cellulose fibre. This is like, you know, a kind of reinforcement, so it would provide better for performance for the steel slag cracked pavement.

Q. Okay. Now, if we could go to images 83 and 84, Registrar.

In January of 2014, Dr. Henderson exchanged a number of e-mails with Leonard Taylor at Tradewind and with you relating to seeking the results from the Tradewind testing.

And in paragraphs 216 and 217, if we could call those both up, please, Registrar, so they're -- maybe just start with 16. That's fine. It's large. We'll stay with 16.

On January 7, Dr. Henderson e-mailed Mr. Taylor and asked him for his anticipated timeline for providing the test results, and Mr. Taylor responded the same day and he said he expected to have your data analyzed and

report ready within about one week. And Dr. Henderson responded that she understood but that, quotes, "the client was starting to bug me," closed quotes.

And then you can take that down and call up 217, please. And then Dr. Henderson, the same day, e-mails you to tell you that Tradewind will provide the friction data by the end of next week so they can finish the report, and you responded:

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

So, first of all, she referred to Mr. Taylor about the client starting to bug me. Who is she referring to there?

A. So, you know, I think that would have to be Mr. Gary Moore.

Q. Okay. And was she having direct communications with Mr. Moore or was that just you that would have passed that on to her?

A. You know, I think it would be mainly me. Maybe she said it's because I

was under pressure, so she wanted to convey, you know, to put some pressure on Tradewind.

Q. So, perhaps you had conveyed to her that there was urgency -- not urgency. That the client was wanting it, was pushing it, and she conveyed that on your behalf?

A. It is likely, but, you know, it appears also -- I cannot say that, you know, she didn't contact Mr. Moore. I don't know. I don't have any notes on this. But, you know, I think it would be likely from me, but it's -- I cannot, you know, say that she didn't contact Gary. I didn't know about it --

Q. You're not aware of her having any direct communications with Mr. Moore, though. Is that right?

A. No. No, I'm not.

Q. Okay. And when you indicate in your e-mail to her, I have to call Gary, I'm afraid he will ask me for it, what was your concern? Was he pushing you for the results at that time?

A. Yes. He wanted the results and then the testing was done, you know, some time ago. He wanted the results. So, you

know, obviously then he would put the pressure on me.

Q. All right. And then we know that Mr. Taylor was further delayed in delivering the results.

And so, at -- go to image 87. If we could call up paragraphs 230 and 231. In between, there's some communications about the delay and then you write to Mr. Taylor twice. And so, the first one here, without going to the document, I can tell you, is actually at 9:15 a.m. and then the second one there in 231 is at 10:50 a.m.

So, the first one you write:

"Good morning, Leonard. I received a message from my client this morning. He needs the friction testing results this morning. He has a meeting with the management to discuss the pavement issue. I would appreciate it if I could receive the report this morning. It cannot be delayed any more."

And then in your second one, you write:

"My client needs a comparison of friction numbers on the Red Hill Valley Parkway in Hamilton from 2007 and 2013. I have summarized 2007 and need the numbers for 2013. He needs my summary before noon. Could you send the 2013 numbers to me?"

So, who is the client referred to in these e-mails? Is that Mr. Moore?

A. The City of Hamilton, yes. Mr. Moore, yes.

Q. Right. I appreciate that the City of Hamilton is --

A. Yes, Mr. Moore. Yes.

Q. -- your client, but an individual is calling you and that was Mr. Moore?

A. That was Mr. Moore.

Q. All right. And do you recall did you have a phone call with him or was it a voicemail message? Do you have any recollection?

A. "I received a message from my client this morning," so if there is no e-mail, it was likely a phone call.

Q. Okay. And did you receive -- since you sent it in two e-mails, do you know if you received a second message or had had a second call with Mr. Moore?

A. It is likely because first I said only from the client this morning and in the second I say that I need it before noon, so it's likely that I got the second message that he needed the results before noon. So, I don't recall details, but it's likely that I got the second call.

Q. Okay. And did Mr. Moore tell you that it was a meeting with management? That is information that you received from Mr. Moore?

A. You know, this is what I said that, you know, I'm meeting with the management, so now, you know, do I recall what he exactly said? At least my understanding was that it was a meeting with the management, because I knew that just, you know, by the, you know, last minute, I saw that he was meeting with the

management and he needed the results, so at least it was my understanding that that would be a meeting with the management. If he told me, I don't recall. My understanding was it was with the management.

Q. Okay. So, I want to back that up. Presumably you wouldn't have said it was a meeting with management unless you were told that it was a meeting with management. Is that fair?

A. Yeah, you know, it sounds fair. Yeah, you know, it sounds -- I don't recall the details. But, you know, at that point of time, you know, I knew that until the very last moment, until I sent him the results, my understanding is it was with the management. Maybe I think it's likely that, you know, he didn't have to explain me the details. Maybe it was with the management. So, my understanding until the very last moment, it was the management.

Q. Okay. And, sorry, you say until the very last moment. Did that understanding change?

A. No, no, no. You know, like, you mean as of today?

Q. No, I'm not talking about that. You said until the very last moment, so I want to know what that moment is that you're referring to.

A. Until the very last moment that I sent him the results, I thought it was for the meeting with the management.

Q. Okay. And did you ever learn otherwise until this inquiry?

A. No. Only from this inquiry.

Q. Okay. What about the second part in your second e-mail about:

"My client needs a comparison of friction numbers on the Red Hill Valley Parkway in Hamilton from 2007 and 2013."

Was that also information that originated from Mr. Moore? That was a request from Mr. Moore?

A. This is in the e-mail, so I think yes, that was requested by Mr. Moore.

Q. Okay. You can take that down, please, Registrar, and if we could also pull up 88.

In the next paragraph, 232, the same day and it's actually in between those two e-mails that you sent to Mr. Taylor, at 10:28 a.m., you sent Dr. Henderson an e-mail which contained the friction test results from the MTO in 2007 and forwarding the e-mail from Mr. Raymond back then.

Maybe we should go to the document itself, which is GOL1096.

So, you see at the bottom -- can we expand the -- thank you.

So, this is the October 18, 2007 e-mail from Mr. Raymond to you and Mr. Delos Reyes, attaching the October 16 MTO friction test results on the Red Hill. Right?

A. Yes.

Q. And that's what you're forwarding to Dr. Henderson? If you take that down, please. And you just indicated at the top, "FN numbers for RHVP from Chris," is what you send to Dr. Henderson. Do you recall why you were sending that to her at that point in time?

A. No. I think we must have talked about this. This is why I send it to her. But I don't recall details why.

Q. You don't recall why it came to your mind at the time? I mean, we've seen the indication in your second e-mail to Mr. Taylor that your client wanted a comparison of the 2007 and 2013 results. Did it have anything to do with that?

A. I think definitely, but now I don't know who prepared it, whether I prepared this and send or Vimy prepared and send it to me or I send it to Mr. Moore. That may be for the preparation of that e-mail, 2007 and 2013, but I don't recall that, you know, who -- I think it came from me. I sent it to him, but it's sometimes possible that she could prepare, send it to me, I would add and pass it to --

Q. We don't have any indication of that. Okay. So, you don't have a specific recollection of what prompted you to send it to her at this point. Is that right?

A. No, I don't.

Q. Okay. And then if we could take that down and go to images 88 and 89 in OD 6.

So, before noon, at 11:44 a.m., in paragraph 233, that same day,

January 24, you e-mailed Mr. Moore under the subject line "Friction Numbers on RHVP" and it had had three attachments. We'll look at the e-mail in a second. Three attachments: There was the MTO spreadsheets with the test results from 2007 and the paper titled "Addressing the Early Age Low Friction Problem of Stone Mastic Asphalt Pavement in Ontario."

Now, if we could pull up the e-mail itself. Thank you. There we go.

So, before we look at the specifics of this, am I correct that at this point, on this day, you don't have anything in writing from Tradewind providing you with the results of its testing? Is that right?

A. No, I don't -- no, I didn't get anything. I think the information was provided to me over the phone not by Leonard Taylor but Mr. Rowan Taylor.

Q. Rowan Taylor, that's Leonard Taylor's son?

A. I don't know. Like, you know, the last name is the same, but I've never met that gentleman. I know Leonard, but I don't know the other gentleman.

Q. Okay. And we know there's a later e-mail that does suggest -- where Leonard Taylor refers to an earlier conversation with Rowan Taylor. Do you actually recall the conversation with Rowan Taylor on the 24th?

A. I don't recall the telephone conversation. I recall my frustration, because I had very short time, I had to deliver this thing before noon, I still didn't have the information, so I remember that part. I don't remember the details of the conversation, but I think those four numbers were given to me.

Q. Okay. So, when you say the four numbers -- sorry, Registrar, can you lift the top one up a little bit because it's obscuring the last line. There we go. Thank you.

Okay. So, the four numbers, you're talking about the numbers that begin in the middle there about the grip tester begin with SB right lane 35 and the three lines after that. Is that correct?

A. Yes. I don't think he gave me the LINC numbers because I was only interested in Red Hill Valley Parkway, because this is what I had to deliver.

Q. Okay.

A. So, I think only these four numbers.

Q. Right. And so, at the top of the e-mail, you're describing of course that the surface asphalt is SMA and refer to the MTO performing friction testing in both southbound lanes and you give the average number and the range for both of those two lanes. Right?

A. Yes.

Q. And do you recall, did Mr. Moore ask you to set out a description of what it was? Do you recall?

A. I don't, you know, recall details, but I think he ask me for a comparison, a comparison 2007, 2013, and I think he must have asked about the CTAA paper.

Q. Right. And that's the bottom part and that's the paper we looked at earlier. Right?

A. Yes, it is.

Q. Okay. And so, you think that Mr. Moore requested that, the paper?

A. I think so, because otherwise I would have no justification to send

the paper. So, I don't recall details, but my opinion, he requested this.

Q. And then in the middle, beginning with:

"In 2013, the friction numbers were measured on the RHVP in both directions by Tradewind Scientific using a grip tester. The average FN numbers were as follows: SB, right lane, 35; SB, left lane, 34; NB, right lane, 36; NB left lane, 39."

Am I correct that SB refers to southbound and NB refers to northbound?

A. Yes, you are right.

Q. And do you recall how Rowan Taylor conveyed this information to you? You already said that you think you only discussed the Red Hill numbers, because that's all you were asking for. Do you recall how he conveyed to you the lanes and the numbers?

A. No, I don't have this recollection. I think I have this thing ready. I was waiting for four numbers to insert and send

it.

Q. Okay. Do you recall whether he referred to them as northbound-southbound or whether he referred to them as eastbound-westbound? Do you have any recollection of that one way or another?

A. I don't remember the telephone conversation, but I know that Tradewind called it different. They didn't call this southbound-northbound, but they called it westbound-eastbound.

Q. Right. And we will get to that when we look at the Tradewind report, but what you're referring to is Tradewind starts on the LINC, which of course is moving in an east-west direction, and continues with that on its measurements, even when referring to the Red Hill. Is that correct?

A. Yes. Yes, it is.

Q. Okay. And, at this point, did you appreciate that the average FN for each lane doesn't reveal of course the range of friction values over the length of the surface? I take it that's something you appreciated?

A. Oh, yeah. That's only

the average, yes.

Q. By definition. Right?

A. By definition. That's only the average, yes.

Q. Okay. And so, with that knowledge, why are you just giving Mr. Moore the averages by lane, only the averages?

A. Only the averages, because he didn't give me the range. He gave me just the -- he didn't give me the range from two. He only gave me this four -- you know, if I said, like, you know, I assume that he didn't give me anything for LINC, so he would give me only these four numbers, the average. He didn't give me the range.

Q. Right. And do you recall if Mr. Moore was asking you only for averages or was he just saying give me the results?

A. I don't think he was asking for the range. He was only asking for the results.

Q. Sorry, you said you don't think he was asking for the range, he was only asking for the results. Was he asking for an average or was he just saying give me the results?

A. I think he wasn't asking for the range. He wanted the results for -- only asking for results. No, he didn't ask for range.

Q. Did he ask for the average?

A. I don't have, you know, you know, the specific recollection, you know. You know, at that time, I thought that, you know, he asked -- he would be satisfied with the average if I sent him the average.

Q. Given that he was asking for you that morning by noon?

A. Yeah. Yes. It was, you know, I had to deliver this thing by noon and I was just, you know, only 50 minutes before the deadline, so...

Q. Right. And so, would you have provided the numbers in that fashion absent the request to get it to you on an expedited basis?

A. Sorry, can you repeat the question?

Q. Would you have provided the numbers, just giving the average, without having been asked to do so on an expedited basis?

A. No. At that point of time, I thought that I delivered what he wanted.

Q. No, I understand that. I know. And I'm asking would you have delivered just the averages to him in a situation other than get them to me now?

A. Oh, if I had more time, then I would probably do the same thing as I did for the 2007, so I would say this is the average or ranges from two. But, you know, because of the pressure, time pressure, and the information that I got, I just wanted to send, you know, the information before noon, so that's...

Q. And did you consider at all -- and appreciating it was in the context of a client requesting the information on an expedited basis, but did you consider the appropriateness of doing that without further interpretation of the results to someone who is not an expert in the field of friction and friction results?

A. No. At that point of time, I thought I delivered what he wanted. I didn't have, you know, concerns about this at that point of time.

Q. All right. Now, you

provide, I think as requested, the 2007 MTO numbers and the 2013 Tradewind numbers. What, at that point, was your understanding, at that point in time, of the ability to correlate between grip tester results and locked-wheel skid trailer results?

A. You know, at that point, I knew that later on I tried to find some correlation between the two. But, you know, for me, it was -- I know I downloaded some papers about this, but for me, at that point of time, it was that I wasn't aware of any good or reliable correlation between the two.

Q. Okay. And, sorry, you weren't aware of it. Can I turn it around? Is it fair to say that you understood that there wasn't a precise or any correlation between the grip tester and locked-wheel test results, at least to your understanding at that time?

A. Yeah. At that time, it was, like, you know, I would send him something quickly and then later on I would more think about this.

Q. I understand. I just want to know your knowledge at the time. At the

time, were you aware that there was not a precise or, however you want to characterize it, a good correlation between grip tester and locked-wheel tester numbers?

A. You know, at exactly that time, because I know that I look at some papers, you know, and I downloaded some papers, I know that those numbers could be similar, but I wasn't aware of any reliable correlation. I know that they could be similar with locked-wheel slightly higher, but at that point of time that was the other correlation. I was not aware of any reliable correlation between the two.

Q. Do I understand correctly to say that your understanding was that the locked-wheel tester would have higher friction results than the grip tester or the other way around?

A. It would be slightly higher. Locked-wheel would be slightly higher.

Q. Okay.

A. They would be similar, but locked-wheel will be slightly higher. And actually, you know, later on, you know, I did some analysis and I didn't confirm anything from ARA

and globe, EnGlobe, testing that they were, you know, as I anticipated that the locked-wheel was slightly higher by about three units.

Q. Right. Maybe we're at cross-purposes here. Was it your understanding that -- and forget about later at this time.

A. Yeah.

Q. That, all other things being equal, if they were performed at the same speed, on the same roadway, under the same weather conditions, are you saying that your understanding was that the locked-wheel tester would return a higher friction number than a grip tester would return a grip number?

A. If they were -- so, you say if they were carried out at the same speed, because the speed was different. This one was 90. The other one was 50. At the same -- you know, like, you know, first of all, I understand that, you know, the locked-wheel was never -- would never be done at 90 kilometres per hour. I know from the -- because this is what I downloaded from Dr. Emery's presentation, Get a Grip, that was at 65 kilometres per hour. So...

Q. I think you said that the

locked-wheel tester was never done at 90 kilometres an hour. I'm going to suggest that's an error. The locked-wheel tester, that is --

A. No, I'm sorry. I was thinking about grip tester. I just confused. I made an error. Locked-wheel, for me, locked-wheel is done at the design -- at the posted speed, so it would be 100 kilometres per hour or 90 kilometres per hour on the Red Hill Valley Parkway, but now the typical standards in the U.S. -- in the U.S., they called it 40 miles per hour, which is about 65 kilometres per hour, so that's a fast speed.

And the grip tester is -- I think grip tester is always done at 50 kilometres per hour. I'm not aware of any test where it was done at 65 and definitely not, like, you know, 100. So, grip tester, so grip tester is slower. Grip tester is a slower speed, locked-wheel is higher speed, so generally, okay, locked-wheel would be higher.

Now, if it's at the same speed -- okay. If it's at the same speed, I would have to look at, you know...

Q. Is it fair to say you're

not sure?

A. No, I'm not sure. I would probably have to look at, you know, the presentation by John Emery when he confirmed various friction testers, because he compared at 65 kilometres per hour, so it's --

Q. Well, we've heard a fair amount of evidence that, generally speaking, the grip tester, all other things being equal, will return higher grip numbers than a locked-wheel tester will return friction numbers. Is that --

A. Yes. That's what I said. It would be somewhat higher than -- because I know that I did, sort of, you know, speed correction. So, for me, the locked-wheel would give about, at that point of time, roughly about 2.5 units higher than the -- 2.5 units higher, between two and 2.5 units higher than -- you know, the grip tester would give us 2.5 units higher than the locked-wheel.

Q. Which is the opposite of what you were saying before, which is why --

A. Sorry. You know what? Maybe I was -- so, the grip tester tested at the grip -- no. The grip tester, when the testing was

done at 50 kilometres per hour, whatever they specify, would give slightly higher numbers by about, you know -- I think at that time it was about 2.5. Slightly higher than the locked-wheel ran at 90 kilometres per hour. Yes, that's --

Q. Okay.

A. Sorry if I confused this. For me -- and, actually, I verified this thing later on when I compare EnGlobe with ARA.

MS. JENNIFER ROBERTS: Commissioner, may I suggest that we break for lunch? I think that might be a good moment.

JUSTICE WILTON-SIEGEL: I'm inclined to think that as well, Mr. Lewis.

MR. LEWIS: Yes, that's fine. Thank you. I was about to suggest that.

JUSTICE WILTON-SIEGEL: Okay. Well, we have consensus on that. So, let's break until 2:15.

--- Luncheon recess taken at 12:57 p.m.

--- Upon resuming at 2:15 p.m.

MR. LEWIS: We're back. May I proceed, Commissioner?

JUSTICE WILTON-SIEGEL: Yes.

MR. LEWIS: Thank you.

BY MR. LEWIS:

Q. Dr. Uzarowski, just to return briefly to where we left off before lunch, on January -- and, really, the question that I started with before we got into our last exchange. On January 24, 2014, when you had the conversation with Rowan Taylor and passed on the average results to Mr. Moore, did you understand at that time that the grip tester is likely to return higher grip numbers testing at 50 kilometres an hour than the locked-wheel skid tester would return friction numbers test at 90 kilometres an hour, at that time?

A. At that time, I would say, yeah, slightly.

Q. Okay, at that time. Thank you.

Now, a slightly different topic. This morning, there's just something I wanted to return to. You spoke about, when we were looking at the e-mail chain that Mr. Moore forwarded to you on September 30, 2013, this was the one that was the long City e-mail chain that he sent to you, so I guess it was on October 1, sorry, September 30 is when you had the

discussion, it was on October 1, and you said to the effect of:

> "I also remember that they mentioned speed because, you know, I talked with the City about speed. I think it started in 2008, my concern about speed on the Red Hill Valley Parkway."
>
> And I didn't follow up at that time. What were you referring to about from 2008?

A. In my February 2008 note, there is a statement that I talk with Gary about speed and it was Red Hill Valley Parkway and also about overloading trucks.

Q. So, speed and more trucks than were contemplated?

A. So, about more trucks, I didn't know at the time, but there were trucks that were heavy, that were overloaded.

Q. Sorry, the individual trucks being overloaded?

A. Yes.

Q. Which puts presumably greater strain on the road?

A. On the pavement, yes.

Q. Okay. And, sorry, the speed, this is February 2008?

A. February 2008, my -- in my note from the meeting, yes. I mentioned -- I talk about speed.

Q. Okay. We'll see if we can pull that up and come back to it.

Registrar, can we go to RHV933, image 326. 325 and 326. The March 4 note.

And then I see on the right-hand side, this is at image 326, there's a -- at number 9, I see it says on the right-hand side towards the bottom:

"Pavement overloading on RHVP and LINC and speed."

A. Yes.

Q. Is that what you're referring to?

A. Like pavement loading, yes, overloading and speed, yes.

Q. Okay. And who is this discussion with?

A. With Gary Moore.

Q. Okay. All right. And do you recall what you told him? I can see what your note says, but --

A. I was concerned with overloading because, you know, it was a perpetual pavement. You know, I don't want overload to have negative impact on this. And, also, the speed, in the monitoring station there was traffic monitoring part and speed was monitored and speed was recorded very high. There were number, 120 plus.

Q. And you raised that with Mr. Moore at the time?

A. Yes, I did.

Q. Okay. Thank you. Now, if we could go back, Registrar, to overview document 6, images 89 and 90.

So, we've been talking about the e-mail on January 24, 2014 that you sent to Mr. Moore with, if I can call it, the bottom line Tradewind results. And then in paragraph 235, which, again, covers both images 89 and 90, 15 minutes after receiving that message from you, Mr. Moore e-mailed Thomas Dziedziejko, who is the general manager of AME, of Aecon Engineering

Materials Corp., and who also was listed as one of the authors of the paper that you sent to Mr. Moore just 15 minutes earlier.

And Mr. Moore, you weren't copied on this e-mail, but he sent it to Mr. Dziedziejko and as part of it he summarized the skid resistance results that you had sent to him. That's fine. You can just leave it there.

So, you'll see on the right-hand expanded image it's the same text that you had just sent to Mr. Moore.

So, the first thing, did you know Mr. Dziedziejko professionally or personally at the time?

A. I've known Mr. Dziedziejko very well.

Q. Okay. And had you worked with him previously?

A. I don't recall particular project, but he was very well known in the industry.

Q. And did you know that Mr. Moore intended to send this information to him?

A. No, I didn't.

Q. And when did you become aware of that, that he did that?

A. This is not this e-mail on the 24th because, "hope this helps," this is the e-mail from 2015. I'm sorry that, you know, I...

Q. I'm sorry, this is the e-mail that Mr. Moore just sent to Mr. Dziedziejko. Are you saying this is something different?

A. Okay, because I sent him something different, so "hope this helps." So, he didn't send exactly the same thing that I sent to him.

Q. Sorry, yeah. He didn't just forward your e-mail?

A. Yeah. Sorry.

Q. Don't think ahead. Just try to stick with me here. He starts off, he writes to Tom, as you can see in paragraph 235, sends him some pictures, you weren't copied on the e-mail and so forth, but he describes the Red Hill, the SMA surface course, and then he gives the summary, and this part of it is clearly taken from what you had just sent to Mr. Moore. Okay?

A. Yes. Yes, I did. Thank you.

Q. Okay. So, when did you find out that Mr. Moore sent this to Mr. Dziedziejko?

A. During this inquiry.

Q. Okay. You can take that down -- actually, no. Before you do, sorry.

At the bottom of that, after Mr. Moore's name and title, it says:

"PS, thoroughly enjoyed event last night. Thanks again, Tom."

Did you attend or have any knowledge of an event the prior night, January 23, with Mr. Moore and Mr. Dziedziejko?

A. No, only under this inquiry. Nothing at that time.

Q. Okay. You can take that down. Thank you. And then if we could go to the next image, 91, and paragraph 240, if you can call that up, please.

So, on January 26, you and Dr. Henderson received an e-mail from Leonard Taylor of Tradewind attaching the final Tradewind

report and he then just writes a short three-paragraph e-mail. In the second paragraph, he writes:

> "You will note that while the average grip number friction levels were generally uniform and comparable to or above the relevant reference levels on the Lincoln Alexander Parkway, those from the Red Hill Valley Parkway were considerably below the reference levels and less consistent."

So, did you, first of all, read this e-mail at the time, when you received it?

A. Yes, I did.

Q. And do you recall if you read the Tradewind report itself on that day or was it at some later point that you first read it?

A. I know I've read this, you know. I don't remember that was on that particular day, but roughly in that time, when I was -- when we're waiting on the Golder's report.

Q. Okay. Right. So, you

read it before you finalized or at least finalized the draft Golder report that you appended it to?

A. Yes. Yes, I did.

Q. All right. Now, we know that you didn't send the Tradewind report to Mr. Moore until January 31, and we'll get to that, but we don't have any indication that you forwarded Mr. Taylor's e-mail to Mr. Moore with this.

Do you know why you didn't do that?

A. Why? No, I did it because I wanted to address this thing, to look at this thing, in the report, analyze and look at the report, in our report.

Q. In your report, okay. And do you recall if, before sending the report to Mr. Moore, if you spoke to him about the Tradewind report or Mr. Taylor's e-mail?

A. I don't recall and I don't have any notes.

Q. I think there's -- we can go to RHV933, Registrar, and image 638.

So, there's reference here on January 27 and 28 -- or two things. They don't

mention Mr. Moore on January 27. It says "friction results" and, January 28:

"VH - Hamilton with LU - what described on the report, HIR, instru -- "

Which I take as being instrumentation, and:

" -- friction."

There's nothing that mentions Mr. Moore, so are you saying you don't think you did speak with him beforehand, before sending it to him.

A. You said with Mr. Moore or Mr. Taylor?

Q. No, with Mr. Moore.

A. With Mr. Moore, the 27th, no, I didn't.

Q. Okay. And what about prior to sending Mr. Moore the report on the 31st?

A. I don't recall and I think I would rely on my notes. There are no notes, I believe, before, so I don't think I did.

Q. Okay.

A. I don't recall.

Q. If you could go to

image 640 there, please, Registrar, in the same notes. 641, perhaps.

There's a reference there to call Gary, which is after you sent it to him, so do you think it's fair to say, then, that if you spoke to him, it was then after you sent him to report?

A. Yes. I sent him -- I e-mailed him the report on the 31st and then I called him ahead of a face-to-face meeting.

Q. Okay. And, having then reviewed the Tradewind report -- actually, we can go back to image 19 in OD 6, I think images 91 and 92.

Paragraph 241 summarizes -- and I'm not going to go through and read it. I know you're familiar with it and I think we're not going to go through all the parts of the report. But having reviewed the Tradewind report and then before you sent it to Mr. Moore, what were your impressions and your reaction?

A. My impression is, you know, the numbers were what they were, but my overall impression was that number that he referenced, it was overly conservative.

Q. And which number are you referring to?

A. A GN of 48.

Q. Okay. So, you mean in the right-hand, image 92, in the third paragraph? If you could call up from the second paragraph to the fourth paragraph there, yes. All right.

The second paragraph there is where the Tradewind report refers to the relevant UK investigatory level 2, GN of 48. Is that what you're referring to?

A. Yes, it is.

Q. And you say that you considered that to be too conservative?

A. Yes, overly conservative. Yes.

Q. Okay. And on what basis did you form that view?

A. I mentioned before that I use the TAC 1997 pavement design and management guide and there's a reference for UK level 2 requirement and I know that somewhere around that time I had downloaded UK PMS, technical paper, and it's also for level 2, the number is given, and 41, which is equivalent to certify what is in the

TAC guide.

Q. Okay. So, there's a few things to unpack there. First of all, the TAC guide that you're referring to -- I wonder, Registrar, if you could pull that down but keep image 92 up.

And I'm going to take you to the February 28, 2019 Golder pavement evaluation report, because this is probably the easiest place to pull it up. So, it's much later in time but there's a reference to the TAC 1997 guide.

So, this is GOL6612. If you could call that up as well, Registrar, and go to image 2. And there's a reference to the -- yeah. At the very bottom, yeah, bottom paragraph, last three lines:

"An example of criteria for identifying low friction pavement surfaces given by the Transportation Association of Canada, footnote 4 or reference 4, is shown in table 1 below and the same criteria are also included in 2."

And so, if we could go, then, to table 1, which is at the next page, is this what you're talking about?

A. No. It was on the next page.

Q. On the next page?

A. On the next page in the TAC book.

Q. I see, so not this one?

A. No. This book is referenced here, I believe, on the next page.

Q. Well, this is -- okay. Sorry. Go on.

A. On the next page under References, if we go to the next -- oh, Transportation Association of Canada Pavement Design and Management Guide, 1997, so this is the book.

Q. Yes.

A. And in that book, next to that table that you show, there is a table from UK with CFME values for level 2 and it's identified at 0.35.

Q. That's zero point?

A. 35, which is equivalent

of GN of 41.

Q. Okay. Right. You're talking about the SCRIM value? The SCRIM value is 35?

A. SCRIM value is 35, which UK PMS shows that this is equivalent of GN of 41. And, actually, I think Mr. Rowan Taylor later on corrected that they made an error and it should be 41.

Q. Okay. So, you're talking about the later -- go back to the previous image there, please, Registrar.

Okay. So, you referred to two tables, though. You referred to the UK PMS table, which you just referred to, but you also referred to the TAC guide, and that's what table 1 is. Right?

A. Yeah, but table 1 is not for this. Table 1 was for FN40. But next to that table on the following page was that table that I was talking about.

Q. Okay. And you said that that indicated a what?

A. That indicated that -- because you showed that table a few pages from

that guide and it shows that UK SCRIM requirements for level 2.

Q. Okay. So, you're referring to in the TAC guide, the reference to the SCRIM and the --

A. Yes.

Q. That you're talking about?

A. Yes.

Q. Okay. You can take that down, then, Registrar. Thank you.

And then if I've understood you correctly, you're saying at this time, in late January 2014, you were aware that there was a later table that showed that the investigatory level for the grip tester was 41, not 58. Is that what you're saying?

A. No, no. This table under this -- as part of this inquiry, Mr. Rowan Taylor admitted to the Commissioner that there was an error. But I'm talking about the 1997 TAC guide table and also UK PMS document, which was roughly 2006 or something, that showed the value for level 2.

Q. Right. And I think I

understand what you're saying, is that -- well, I'll back up.

Mr. Taylor, in a letter to the Commission, acknowledged, Mr. Rowan Taylor acknowledged, that they used in their report an earlier version of the investigatory levels. Is that what you're talking about when you refer to Mr. Rowan Taylor having acknowledged this?

A. You know, I know that he acknowledged this thing, but I have the value of 41 is from the TAC 1997 TAC book and also from the UK PMS paper that I downloaded roughly about that time when I was looking at the results of Tradewind Scientific.

MS. JENNIFER ROBERTS: Counsel and Commissioner, I wonder if it would be helpful for this moment to actually go to that.

JUSTICE WILTON-SIEGEL: Have you got that document? I think it's absolutely right. We're going around in circles here. Can you give us the reference for the TAC guide?

MS. JENNIFER ROBERTS: I can. It's Golder 3936, image 3, we think, subject to Dr. Uzarowski's confirmation.

JUSTICE WILTON-SIEGEL: Okay.

MR. LEWIS: Registrar, if you could keep this page up while also pulling up the TAC guide, that would be great.

THE REGISTRAR: Sorry, counsel, is it 396?

MS. JENNIFER ROBERTS: 3936.

THE REGISTRAR: It may be a different doc ID. Sorry, I don't have that one.

MR. LEWIS: Okay. He may not have that because it wasn't referred to in the overview document.

MS. JENNIFER ROBERTS: So, we're e-mailing it to the Registrar right now.

MR. LEWIS: Thank you.

JUSTICE WILTON-SIEGEL: This may take a little bit of time.

THE REGISTRAR: Yes.

JUSTICE WILTON-SIEGEL: Would it make sense to go on and come back to this once the registrar has received it?

MR. LEWIS: Yes, I believe it would. I don't want to go too far ahead. Give me one moment and see if I can.

JUSTICE WILTON-SIEGEL: Thank you.

BY MR. LEWIS:

Q. Okay. So, if we could go to the Tradewind report itself.

THE REGISTRAR: Sorry, counsel, I have the document now.

MR. LEWIS: Great.

THE REGISTRAR: Let me just load it in and then I can share it on screen for you.

MR. LEWIS: Thank you. Registrar, if this is going to take a few minutes still --

THE REGISTRAR: It's okay.

MR. LEWIS: There we go. Thank you.

THE REGISTRAR: Sorry. I have to shut down the program and open it up again any time I add something new. Apologies.

MR. LEWIS: Okay. Do we have, Ms. Roberts, an image number?

MS. JENNIFER ROBERTS: I think it's image 3. Do we have that right?

THE WITNESS: Yes.

BY MR. LEWIS:

Q. Can we go to the previous

image just for one second just to see what precedes it. Okay.

So, in the middle paragraph -- sorry, I'm going to the top. It's table 2.6, which gives criteria for identifying low-friction pavement surfaces. And then the middle paragraph refers to the SCRIM surveys and investigatory levels in table 2.7, so that's on the next page. Can you go to there. All right. And if you could expand just the chart itself. Thank you. That's easier to read. There we go.

And that's the SCRIM level. Right?

A. Yes, it is.

Q. So, if you could then explain from that where you derive the number, I think you said 40, that you referred to?

A. Yes. So, here, reference is level 2 and level 2 here is showing the SCRIM is 0.35, so there is carriageway, all purpose, so this is where it is.

And, you know, I found, because I downloaded a number of documents, that in PMS, the SCRIM of 0.35 was equivalent of GN of 41.

Q. And I think that's what we've seen in a later CIMA report and also in Dr. Flintsch's friction primer referred to the SCRIM and grip number correlations?

A. Yes.

Q. Okay. Got it. So, do I understand you correctly in saying that at this time, in late January of 2014, you looked at the TAC guide and you looked at the UK PMS chart that you referred to, and that is how you came to the conclusion that you just referred to?

A. Yes. This TAC guide was, I would say, one of the main documents that I was looking at.

Q. Okay.

A. Because, you know, I think all pavement engineers are likely familiar with it.

Q. Okay. You can take that down, please, and if we could make this an exhibit, which I believe is 77.

THE REGISTRAR: Noted, counsel. Thank you.

EXHIBIT NO. 77: 1997 TAC guide, GOL3936.

MR. LEWIS: Thank you. Sorry, how many pages is that particular document, Registrar?

THE REGISTRAR: It's just three or I just have three.

MR. LEWIS: Just that excerpt of the page. Thank you. You can take that down, Exhibit 77.

BY MR. LEWIS:

Q. Okay. So, you indicated that you thought that the Tradewind report was overly conservative and you described why. Did you have any other views that you formed at that time?

A. Yes.

Q. And what were those?

A. Because when I look at the -- there was a technical paper by MTO on ten years performance of SMA and Highway 401 and they showed the results, so I realize that basically all those results would be under investigatory level. So, you know, my overall opinion based on this, on this TAC guide and also there was an NCHRP paper referenced in that TAC guide, so I look and then that was my conclusion, that it was

overly conservative.

Q. Okay. No, I understand that. But beyond that, what did you conclude?

A. You know, I look at the results. So, is this your question, like, you know, I look at the results of the grip tester --

Q. Yes.

A. -- from Tradewind Scientific and I used some general comparison or how I would anticipate and I concluded that those results, I called them relatively low. I don't know if you want me to elaborate.

Q. So, that's what you referred to later in the report, so --

A. Yes.

Q. -- perhaps we can wait until we get to that because those were the words you were using there, so why don't we park that for a moment.

On January 31, you sent Mr. Moore the draft Golder report, and we can go to image 96 of OD 6.

In paragraph 251, that's when you e-mailed it to Mr. Moore and you indicated:

"As an updated draft report on

the condition of pavement on the RHVP six years after construction, we have included the friction testing results in the updated report."

And you ask him to contact you if he has any questions. And the first issue is -- and if we could go to the report itself, and this is what we call the Golder report. Right?

A. The Golder report, yes.

Q. Right. And if you could go to GOL2980. Sorry, 2981 is the report itself. There we go.

So, this is the Golder report and it's stamped draft, so am I correct this was a draft, not a final report?

A. Yeah, it was a draft report. Yes.

Q. Okay. And if we go to image 101, appendix E, Friction Testing Results, also marked draft. And then next image, please, is the first page of the Tradewind report, also marked draft.

Was the Tradewind report a draft report?

A. No, it was not. It was the final. It was the administrative error. It's automatically insert this, the draft word, where it should know that Tradewind was the final.

Q. Okay. Sorry. If I understand you correctly, you're saying when inserting the draft watermark on the Golder report, because the Tradewind report became part of the same document, it also applied draft to the Tradewind report?

A. Yes, that's correct.

Q. Was the fact that the Tradewind report was not a draft but was rather a final report, is that something you recall ever discussing with Mr. Moore?

A. No, no. There was never a question, no.

Q. And what's Golder's practice, generally speaking, with respect to sending clients draft reports?

A. We would send, you know, a draft report and discuss and if the client -- that was our practice. If the client had comments, then we would incorporate the comments and finalize.

Q. That applies to the City of Hamilton as well as other clients?

A. Yes. Yes, it does.

Q. And if a client has comments on a draft report, how do you deal with those?

A. If the client has comments, I would look at the comments and then, you know, think, you know, whether I agree with the comments. And then if I agree, then I would incorporate or, if I didn't, then I would discuss with the client. But typically the majority of comments that we receive were just grammatical, you know, style comments. Very rarely something technical.

Q. Okay. And if the client did have technical comments or ones that affect the substance of your report and conclusions and recommendations, how do you deal with those?

A. Well, I would discuss and then if we agreed, then, you know, discuss and finalize the comments and would incorporate them if they were justified.

Q. Okay. And with Mr. Moore, did he provide comments to you from

time to time on draft reports?

A. Yeah. Mr. Moore was very quick. He typically provided his comments very promptly. But, you know, mainly, as I said, they were, like, some grammatical or style. I don't recall any significant technical changes or comments.

Q. Okay. Did I understand you correctly to say that if he did, that it would typically be fairly quick?

A. Yes, it was very -- he responded quickly.

Q. And your covering e-mail that we looked at refers to this as an updated draft report. That suggests you're referring back to a prior draft. Would that be the one back in September that we already talked about?

A. Yes. So, updated is -- the update were to the one that we submitted before we incorporated friction into this, so basically, you know, the visual structure evaluation of the pavement. So, that was the update.

Q. Okay. And your January 31 e-mail to Mr. Moore with the draft

Golder report copied Dr. Henderson and Ms. Rizvi. Did you provide the report to anyone else at the City?

A. No, no. I only e-mailed it to Mr. Moore and then I -- yeah, only to Mr. Moore and then I met face to face in delivering a hard copy.

Q. And did you have any discussions with City staff, other than Mr. Moore, about the friction testing? There's an e-mail back on November 19 about organizing friction testing and the logistics, as I think we described. But beyond that, did you have any discussions with anyone at the City about the friction testing?

A. No, not at the time. No. I think it was only -- I don't recall. I don't recall, no.

Q. And if we go to image 10 of the Golder report, and so maybe if we could just expand this page. Can we do 5, section 5, to begin with. Yes. Thank you.

So, you indicate briefly when the testing was carried out in November 2013 by Tradewind using a grip tester and that it was

completed in the northbound and southbound through lanes and you refer to the Tradewind report in appendix E. And then it also covers the results -- the Tradewind report also covers the friction testing on the Lincoln Alexander Parkway. And then you refer to table 6 below, which sets out the average numbers by lane.

And then in the last paragraph, you refer to the:

> "Friction number values are higher than when measured in 2007, immediately after construction. Between 30 and 34, they are considered to be relatively low. Typically, the FN value should be at least equal to or higher than 40 to be considered adequate. In the United Kingdom, for example, the FN value should be at least 48 for a motorway pavement."

So, was this your interpretation of the Tradewind results?

A. Well, it was my -- it was

our, Golder's, interpretation of the results, yes.

Q. Okay. But was this something you did in concert with Dr. Henderson and Ms. Rizvi or was this your work?

A. It was not Ms. Rizvi. I'm not sure whether I discussed this thing with Dr. Henderson, so that would be, I think, mainly me, mainly myself.

Q. And so, when you say typically the FN values should be at least equal to or higher than 40 to be considered adequate, does that refer back to what we were just discussing?

A. Yes.

Q. And that's, again, from the TAC guide and then your further research into the UK PMS chart that had the correlation between the SCRIM and the grip number. Right?

A. Yes. And also in the TAC guide reference NCHRP, I think 83, and these are identical numbers. So, basically, yeah, this is like that's -- it's coming from there.

Q. Okay. Now, then you go on to say:

"In the United Kingdom, for

example, the FN value should be at least 48 for a motorway pavement."

What's that based on?

A. I included this thing because I reference what Mr. Leonard Taylor said in his report. I didn't want to ignore it, so I just reference what he said in his report as a requirement for a motorway in the UK. So, it was just reference, referencing.

Q. Okay. Because what you had concluded, as you just described, was that in the UK, the values were lower than that because, as you referred to, the UK PMS chart and the chart which was from the UK that was referenced in the TAC guide. Right?

A. Yes, so that was one step. I also look at the other table, table 2.6, and I did a brief comparison. So, for me, it was -- it would be close to, you know -- and that was example from Pennsylvania, but from the NCHRP paper, so that was my conclusion, that, you know, for -- it would have to be 40 to be adequate.

Q. Right. I understand that. What I'm tripping on a bit is the reference

to -- because you're drawing from UK sources here and in order to disagree with, as you described Mr. Taylor's conclusion in the Tradewind report to the threshold of 48 as being overly conservative, you were drawing on UK sources as well for that.

So, what I'm wondering is why you're then saying in the UK it should be at least 48 for a motorway pavement?

A. So, I know maybe it's not precise, but, you know, at that point my point of view was that, you know, what I saw in the TAC guide, I saw, okay, this would be applicable for our conditions, but I didn't want to ignore what he said, what Mr. Taylor said, about the UK, so I still included his number. But I also -- I look at the other table. For me, you know, I thought that for our condition, for here, 48 would be adequate. I know it's not maybe fortunate wording, but, you know, that was my intention.

Q. Were you trying to avoid undermining the Tradewind report and its use of 48 as the threshold value?

A. I think so. You know, with his reputation, I didn't want just to ignore it, so at least I referenced it.

Q. But why would you not state the reason behind that? I mean, you just described it to us. Why would you not describe that?

A. Describe what? Sorry.

Q. How you arrived at that conclusion, that the Tradewind threshold of 48 was overly conservative and how you arrived at that conclusion.

A. I wanted to, you know, have this thing like, you know, a simple, pragmatic, practical recommendation, so I just, you know, I made it simple.

Q. Okay. And in making it simple, I think the point is if it needs to be at least 40 or higher to be considered adequate, that the average values that you reflect in table 6 are all below that level. Correct?

A. Yes. They are below that level, yes.

Q. Okay. And when you referred to this before, that those results, the Tradewind results, are considered to be relatively low, relatively low to what?

A. I considered them

relatively low because those values were higher than, you know, this commonly known FN of 30, if you assume that, you know, the grip tester is higher than, somewhat higher than, locked-wheel, so those values were higher than 30. But then I was thinking, so, what is this 30? 30, like at least to me, it wasn't a clear definition. It's not a minimum. You know, I think, you know, somewhere MTO described as expected value, so I thought it wasn't a red flag. This result were not red flag results, but I considered them to be relatively low for when I did the evaluation of the pavement. I knew that, you know, there was a concern that pavement was slippery, so that was my conclusion. I realize that I'm not a safety or friction expert, but my conclusion was that they were not alarming low but relatively low, and I wanted to improve that, recommend improve.

Q. Just when I hear relatively I just think that it's relative to something else and there's a few possible things it could be. Right? Is it relatively low compared to the UK standard of 48 that you refer to in the last sentence? Is it relatively low to the number 40 to be considered adequate? Is it

relatively low compared to the LINC results? What's the benchmark that it is relatively low in comparison to that you're referring to there?

A. I didn't compare them with the LINC. I would say relatively low to what I anticipate is 40. So, relatively low, I wanted -- my meaning was not a red flag value, but not what would be adequate. So, that's why I considered -- I used that word relatively low.

Q. Okay. And when you refer to a red flag, what do you mean by that? Is it red flag to you something where it would be inherently a safety risk? Is that what you see as a red flag, or do you mean something different?

A. Oh, red flag, let's say, if it was well below 30, like something that, you know, MTO would be concerned. If it was 20 or 20 something, that would be a red flag. But this one, for me, it was higher than 30, so not of, you know, like immediate concern from the friction number point of view. So, from the friction number point of view it wasn't bad. But at the same time, you know, how many factors impact the safety, so there was other concerns, but not from this friction number.

So, this is what I meant. Not a red flag, yes, so not something, you know, very low below, you know, some really concerned level.

Q. Okay. But the MTO number of 30, that's a number that involves using the locked-wheel tester, of course, which, as discussed, has different results and typically lower results even if taken as a higher testing speed.

And so, would that not have been something that ought to have been pointed out, or no?

A. You know, I wanted to keep it like, you know, I would say, pragmatic, simple. Yeah, I know that MTO would use the locked-wheel tester and there was some difference, but, you know, I had some estimate of the difference. So, for me, it was still above the value of 30. But I don't know if I answered your question. So, it was above the value of 30, but nothing that would give me the comfort that it was adequate.

Q. Okay. So, not a red flag, but not adequate. Is that a fair bottom line conclusion?

A. Yes, it is.

Q. Now, the numbers from 2007 that you referred to being immediately after construction, there's no reference there to those numbers being ones which were subject to the SMA early age low friction issue. Right?

A. Yeah, you're right.

Q. Okay. And is that not a relevant and, in fact, important point, that if you're comparing 2007 numbers to 2013 numbers, that it would be expected that the 2007 numbers would increase, that they were low because of the time in which they were taken?

A. Yes. You know, obviously, yeah. This is what I definitely anticipated, that those numbers would increase after the traffic wears off the asphalt cement film on the surface. Yes. That was -- I didn't state it here but you are right, this is what I would anticipate, definitely.

Q. Right. And so, if reader was out having all of that background information, if a reader is looking at this, would they not get a misleading impression that, on these raw numbers, grip numbers not friction numbers, but

these raw numbers, that they're higher in 2013 when they're actually being compared to something which was, I use the term, artificially low at the time, in 2007? Does it not give a misleading impression?

A. I think maybe, you know, that the wording maybe was not very fortunate, but my intention was to show that, in my opinion, they were not adequate. Something has to be done.

And, at the same time, the purpose of that was the pavement evaluation report, so there were other aspects that my objective was to address, because the perpetual pavement exhibited some distress that I had to address. So, this was like, in my mind, there were two aspects that I had to address and basically in the next section I believe that I addressed both of them.

Q. Right. And why don't we go to that. So, number 6 is the Analysis and Recommendations. I think it goes on to the next page as well. But, of course, as you said, you did other testing prior to being engaged to conduct the friction testing as well.

And so, you give a description

of those issues, including increased traffic or higher traffic than originally designed for, and, you know, reference in the second paragraph to top-down cracking.

If we could then go on to the next page, the next image, in table 7 you have the Cumulative ESALs.

And then if you could call up the five text paragraphs there, Registrar.

So, if you could describe what your overall recommendation was to address the different issues. Could you describe what you were recommending?

A. So, what I recommended, there were two aspects. One was friction. Another one was structure and visual condition of the pavement.

So, the friction was discussed. Now, from the structural and visual point of view there were a few things. There were longitudinal cracks, microcracking and dips and bumps. And also what my concern was what we call the lamination of the bonding, so these were the stresses that were identified in that pavement and this was a perpetual pavement. So, I wanted to,

in my recommendation, combine both, so recommendation was the worst section -- I don't know if you want me to elaborate a little bit.

Q. No, I would like you to explain it, please, yes.

A. So, the worst section was the section with the flooding, the particular impacted by the flooding event. There were two. So, we identified that subgrade was softer there and this is where the majority of those longitudinal cracks were and particularly the bonding.

The bonding is, you know, in the lamination is, you know, the separation of the lifts, so they suddenly, instead of working as one unit, they were to separate my highest stress and their effect. So, on top was two and a half kilometres, so I think it was probably about 125 on each side. So, I didn't see any other solution than just overlaying this thing. And then we would have cracking left, cracking, like, low severe cracking, some microcracking, so we recommended for those cracks what we call route and seal those cracks and then place a single layer of microsurfacing on the surface because

those cracks, you could see those bigger cracks, but microcracking, that would be impossible to see. But if you put the microsurfacing, this is the coat that would seal everything, okay, address microcracking and all other aspects.

But at the same time, the microsurfacing would increase, significantly increase, friction number on that surface. I don't know if -- I wrote a paper on microsurfacing in 2004 and when we had the friction numbers for microsurfacing and they ranged from 52 to 60 something.

Q. So, after microsurfacing, that's what --

A. After microsurfacing, yes.

Q. Okay. Go on.

A. If it was done, like, if it were necessary, of course we needed to include a good aggregate with PSV, route and seal the crack, put a microsurfacing so you address everything. You address structural distresses and also maybe I didn't mention here, but if you have dips, when you would do microsurfacing, we put typically a scratch coat first and then the

surface coat, so you fill all dips. All these things, you can fill it and make it, you know, a perfect surface. Not perfect, sorry, you know, a good surface.

At the same time, you can improve friction numbers, so the issue of low friction numbers would be final, finished, addressed. Sorry.

Q. Right. Okay. So, if I can then summarize it, as I understand it, because of the surface cracking and deterioration, you recommended a mill and pave, I think you said an overlay, for the worst areas, so that's a mill and pave or a shave and pave for approximately 2.5 kilometres?

A. Yes.

Q. Right?

A. Yes.

Q. Okay. And that's where the top-down cracking and the other items that you indicated are the worst.

And then for the rest of it, routing and sealing and microsurfacing?

A. Yes.

Q. Okay. And the

microsurfacing recommendation is in the second last paragraph there. I guess the first part of about the milling is in the third paragraph, the milling and the shave and pave.

And then in the next paragraph, the second last one:

"On the remaining portion of the Red Hill -- "

Other than those 2.5 kilometres, that:

" -- the existing cracks in the surface course should be routed and sealed to prevent the ingress of water and incompressible material into the pavement structure."

And then:

"Following the routing and sealing, it is recommended that a single layer of microsurfacing be applied."

And then:

"By carrying out the mill and overlay -- "

On the one hand:

" -- where required and microsurfacing -- "

On the other, you state:

" -- the issue of relatively low FN on the RHVP would also be addressed."

So, both methods would address the relatively low friction issue. Right?

A. Yes. Also, that this 2.5 kilometres, also that the bonding, microsurfacing would not address the bonding. They would have to shave and pave or mill, did the bonded, but for the rest it's what you described.

Q. Right. Because that's the bonding between the surface layer and the second layer. Right?

A. Exactly.

Q. And you recall, was that a contiguous or a continuous 2.5 kilometre section?

A. No. It was a bit on one side, a bit on the other, particularly between Queenston Road and Barton Road, because this is where the most severe flooding was.

Q. Right. Towards the

northern end --

A. Northern end of the parkway.

Q. On both sides, both directions?

A. Not the same distance, but roughly the total would be about 2.5 kilometres. And this is why we took cores and the cores, I think two of the cores, two or three, confirmed the bonding, the lamination, we call it, or the bonding.

Q. Now, in the Tradewind report, if we go to image 114, please, this is the very end of the Tradewind report, and in the middle paragraph, you can call that up, Tradewind indicated:

> "However, the overall friction averages as measured by the grip tester on the designated lanes and sections of the Red Hill Valley Parkway were below or well below the same UK investigatory level 2. The overall low levels and the variability of friction values

along the length of the parkway indicate the need for a further examination of the pavement surface, composition and wear performance. It should be noted that in addition to the overall low average grip number levels on this facility, there are some localized sections with quite low friction values reaching 27 to 30 in several areas. We recommend that a more detailed investigation be conducted and possible remedial action be considered to enhance the surface texture and surface characteristics of the Red Hill Valley Parkway based on the friction measurements recorded in the current survey."

And do you feel that your recommendations that we just discussed adequately echo or deal with the recommendations in the

Tradewind report?

A. Yes, I did, because that would be, you know, he says possible remedial action and I considered what I considered as corrective action.

Q. Right.

A. So, remedial or corrective, the same.

Q. Right. Because it would deal with the friction issue?

A. With the friction, yes.

Q. And, Commissioner, it's 3:30. We've gone a bit past the usual afternoon break, but as I indicated at the outset, our intention, unless otherwise suggested, would be to break early with Dr. Uzarowski.

So, unless Ms. Roberts and Dr. Uzarowski want to do something differently, I would suggest that this would be a good time to break for the day.

JUSTICE WILTON-SIEGEL: If this is an appropriate break time, let's do that. We'll let Dr. Uzarowski have a little bit of a break until tomorrow morning at 9:30. We stand adjourned until that time.

--- Whereupon the proceedings adjourned at 3:29 p.m. until Thursday, June 16, 2022 at 9:30 a.m.