RED HILL VALLEY PARKWAY INQUIRY

TRANSCRIPT OF PROCEEDINGS
HEARD BEFORE THE HONOURABLE J. WILTON SIEGEL
held via Arbitration Place Virtual
on Thursday, April 28, 2022 at 9:30 a.m.

VOLUME 4

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Arbitration Place Virtual

--- Upon resuming on Thursday, April 28, 2002 at 9:30 a.m.

JUSTICE WILTON-SIEGEL: Good morning, Counsel.

MR. LEWIS: Good morning, Commissioner.

JUSTICE WILTON-SIEGEL: I'll turn the podium over to Mr. Lewis.

MR. LEWIS: Thank you, Commissioner. The witness today is Dr. Ludomir Uzarowski. I ask the court reporter to affirm or swear in Dr. Uzarowski.

LUDOMIR UZAROWSKI; AFFIRMED

EXAMINATION BY MR. LEWIS:

Q. Good morning, Dr. Uzarowski.

A. Good morning.

Q. Thank you for joining us. Registrar, could we go to Golder 396, image 9.

And Dr. Uzarowski, I just want to look at your CV from 2006, and this is a CV that was attached to a July 28, 2006 Golder proposal respecting services to be rendered during the Red Hill paving, and just locate the date

there. I'm just going to go through a few things in your CV before we get going.

You're a professional engineer of course?

A. Yes, I am.

Q. And you're licensed to practice in Ontario?

A. At that time only Ontario, yes.

Q. Okay. Now elsewhere as well?

A. Yes, in Alberta and Saskatchewan.

Q. Okay. And you obtained your masters of science from Gdansk Technical University in Poland in 1974 and then the University of Nottingham in 1994; is that right?

A. Yes, yes.

Q. And that was in highway engineering; is that right?

A. Highway and airports in Poland and highway engineering in England -- in the United Kingdom.

Q. Okay. And at the time of the CV in 2006 you were completing a doctorate in

civil engineering specializing in pavement engineering; is that right?

A. Yes. Yes, I did.

Q. And you completed it in 2006?

A. Yes. I did in 2006, yes.

Q. And could you just briefly describe what pavement engineering entailed for your doctorate?

A. Pavement engineering, that -- the subject of my dissertation was related to pavement materials, particularly (garbled audio) deformation of asphalt, and I also did (garbled audio) analysis to analyze the performance of asphalt pavement under heavy loading. But generally the subject also covered other aspects of pavement engineering.

Q. All right. And from 2003 to the present you've been at Golder?

A. Yes, yes. Correct.

Q. And in 2006 your title was senior pavement and materials engineer, and I understand at some point along the way since then that has changed to principal pavement and materials engineering; is that right?

A. Principal, I became the principal, but I was and I still am senior pavement and materials engineer at Golder.

Q. Okay. And before Golder you were at John Emery Geotechnical Engineering Limited known as JEGEL from 1994 to 2003 I believe?

A. Yes, that's correct.

Q. Okay. Can you briefly describe your experience with SMA pavements at JEGEL and Golder prior to your involvement in the Red Hill Valley Parkway?

A. So starting with Golder, there was some limited SMA experience when I was with Golder. I used SMA in my PhD research, and I think I evaluated SMA on one of the projects when I was with Golder. But when I was with John Emery Geotechnical I was involved at a few projects where SMA technology was used, SMA asphalt mix was used. So there were a few projects with SMA.

Q. Right. And so by the time you were into the early, mid-2000s SMA wasn't a new technology to Canada at that time? It had been around for some period of time?

A. I think in Canada it was

introduced in 1992, and there were numerous projects where SMA was incorporated.

Q. Okay. And what about experience with friction testing, methods of testing, interpretation of results? Is that something that you had experience with at the time of your CV here in -- mid-2006?

A. Well, that was when I was with John Emery Geotechnical.

Q. Yes.

A. We did a number of -- the company did a number of friction testing on some projects. At that time JEGEL had British pendulum tester, BPT, so we used BPT for friction testing. There were mainly some municipal projects where we tested friction.

Q. All right. So is British -- your experience was in relation to British pendulum testing, not other sorts that we have heard about and will hear about, like the locked wheel tester are grip tester, SCRIM, that sort of thing?

A. No, that time we used -- JEGEL had only British pendulum tester, so we used only British pendulum tester.

Q. Okay. And were you familiar with other types of friction testers at the time even though you had not been involved in actual testing?

A. I had some -- you know, I'm a pavement and materials engineer, so I had some general knowledge but not practical experience.

Q. Okay. And did you -- do you have an understanding again at that time that different testing devices, testing at different speeds, at different temperatures, perhaps other variables, can affect the test results and return different coefficients of friction? Is that something you had an appreciation with, again at that time up to say 2006, 2007?

A. At the time I was not particularly involved in this. You know, I was involved at number of airport projects. At airports they use different friction testing methods but not -- I didn't go into details at that time.

Q. Okay. So fair to say that you had perhaps some awareness of that or no awareness of what I just described?

A. I probably had some, some.

Q. A limited amount?

A. A limited, yes.

Q. Okay. Okay. If we could go to overview document 3, image 14. And, Registrar, I'll be on overview document 3 until I say otherwise. I'll try to say 3 each time, but I'm not going to be moving to another overview document until -- in all likelihood much later in the examination. So if I refer the overview document, it's overview document 3 right now.

In paragraph 21, it's a reference to a paper that you co-authored for the CTAA, the Canadian Technical Asphalt Association, with Mr. Vince Aurilio of the Ontario Hot Mix Producers Association for the CTAA conference in Montreal in November 2004. And it's titled "Perpetual Asphalt Pavements," and there's a introductory paragraph which is cited there in the overview document which -- and as I understand the paper explained the concept of perpetual pavements, including examples of practical applications in Ontario and included references to using SMA or other asphalt mixes as the surface

course of a perpetual pavement.

Do you recall this paper?

A. Oh, yeah, I remember that paper well.

Q. And am I correct that the topic and the purpose of the paper is about describing perpetual pavements, its advantages and essentially about extending the life of asphalt pavements through the perpetual pavement structure; is that fair?

A. Yes, yes. Generally it was the bottom-up design, yes, to extend the life of asphalt pavement, yes.

Q. And if you could just -- actually first. Permanent pavement and perpetual pavement, those are just interchangeable terms as I understand; is that right? We sometimes see different people referring to --

A. Yeah, it's sometimes called like long-lasting pavement, but it's generally -- the most common name is perpetual pavement.

Q. Okay. But if I happen to say permanent rather than perpetual, you'll understand what I mean?

A. Yes, of course I will.

Q. Great. Thank you. And so if you could just briefly describe what is permanent or perpetual pavement about. We heard a bit about it yesterday, but if you could just describe it, bottom up.

A. Okay. So maybe if I can compare the difference. So conventional asphalt pavement is designed, typically designed to last 20 years. So in about year 20 or somewhere around that time major rehabilitation is required. Why? Because in regular pavement it's assumed that cracking will start at the bottom of asphalt and will propagate upwards. Okay. And also relatively high stress will be transferred to subgrade and the pavement will erupt.

Now, perpetual pavement idea is just to address it. So it's called a bottom-up pavement design. So the idea is, first, the pavement has to be thick enough so the strain -- because in asphalt pavement we assume the strains control the performance of the pavement. So the strain transfer to subgrade would be low enough so there won't be permanent deformation or rutting, and at the same time the strain at the bottom of

asphalt will be low enough that the pavement will not -- the cracking will not start at the bottom. It may. There will always be some cracking starting at the top, and we call it top-down cracking, but we can eliminate the starting cracking at the bottom and this bottom-up cracking.

Also, in order to make this pavement design more effective, at the bottom -- at very first layer we design so-called RBM, or rich bottom mix. It's a special mix that has very high fatigue cracking endurance. So that's the general idea. So the only thing -- of course nothing is perfect, so over time only periodical resurfacing at the top will be required, but the rest should stay in good structural condition, so --

Q. And if I could jump in for one second. When you talk about a major reconstruction, you're talking about the reconstruction of the entire pavement structure as opposed to the milling and replacement of the surface layer?

A. Yes, something -- we call it major rehabilitation.

Q. Yeah.

A. We try to avoid reconstruction at any cost because it will be very expensive, so we call it major rehabilitation, so like, you know, all asphalt layers, they will require very significant work, as opposite to what you mentioned in perpetual pavement. We only periodically can resurface the very top, and it can be done very quickly. So get in, get out quickly and stay out. So it can be done even like overnight, just resurfacing.

Q. Of the top layer?

A. Top layer, yes.

Q. Okay. And so as I understand, again, what your -- you still may have cracking along the top, but the purpose is to eliminate or reduce the contracting which originates at the bottom and works it way up to the upper layers?

A. So the entire asphalt structure should be okay. Only -- you have to anticipate that you will have some top-down cracking at the very top. The rest should remain in good structure and condition, or intact.

Q. Okay. And of course all

asphalt pavement structures have a surface course, and as set out in paragraph 21 of the overview document here SMA is one of the options for the surface course. It doesn't have to be SMA; it could be Superpave mix or other surface mix, but that's one of the options. Correct?

A. Yes. It has to be a good quality asphalt mix that offers good resistance to rutting and good resistance to cracking. So it has to be -- or good quality Superpave mix or SMA mix. SMA mix is probably considered most frequent because of its excellent resistance to rutting and excellent fatigue endurance.

Q. And whichever the surface course is -- that you describe, is it intended with a perpetual pavement that the surface course will be able to go somewhat longer without the resurfacing, without the surface layer being replaced, than in a conventional pavement structure? Is that part of the benefit or at least the --

A. It can be a part of benefit, but everything depends on the traffic loading and -- so traffic loading in terms of number of vehicles, like number of trucks.

Because personal vehicles basically have no impact on structure condition of the pavement, but the tracks impact the structure condition, and in particular if there is any overloading in terms of the individual loads exceed the limit.

Q. Right. So the amount of traffic will impact the length of time that the surface layer lasts. But what I'm asking is, assuming the same traffic loads is part of the purpose of a perpetual pavement, part of it, to increase the length of time that the surface layer will last before it needs to be replaced, or no?

A. Yes. Generally you can anticipate, you know, somewhat better performance, yes.

Q. Okay. Now, I want to move to your first meeting with Mr. Gary Moore of the City of Hamilton respecting the Red Hill Valley Parkway, and if we could use image 14 and also add image 15 from the OD.

And we know that you met with Mr. Moore on January 11th, 2005, and could you describe how that meeting arose and who initiated it.

A. I think, you know, it was

2005, so it was seven, eight years ago, so I would have to rely on my notes, but I'm positive that it was initiated by Mr. Moore by the City of Hamilton because, as we discussed, he was interested in -- he was very interested in our presentation. That paper we presented with Mr. Aurilio, and he was interested in using the perpetual pavement structure on the Red Hill Valley Parkway. And I don't know if you want to know more details why --

Q. Yeah, if you recall. We'll look at your notes, but if you recall right now what he was interested in, please do.

A. Because mainly, you know, the Red Hill Valley Parkway cut across the heart of the city, just in the middle of the city. So his concern was that -- so, you know, one thing, if he had to do major rehabilitation, what could he do with the traffic because he anticipated pretty heavy traffic on the Red Hill Valley Parkway. And suddenly if you -- if the City had to close the highway for a longer period of time, then they couldn't, you know, send the traffic to residential roads because, you know, that would be a disaster, so they would have to probably do a detour, that would be expensive. So he wanted,

one, avoid this.

At the same time he is saying, okay, if he can reduce the number of cycles, of rehabilitation cycles, yes, so -- and if they can limit it to resurfacing, so come at night, resurface and go, so you don't have to divert this traffic into the very busy or into residential. It would be impossible to send this high number of vehicles to residential roads. So that would be a disaster. So the probably only option would be to build a detour, but it would be very expensive.

Q. To build a detour. So (garbled audio) reduce the number of -- or extend the life of the pavement overall so that you can avoid closing the whole road down for a long period of time?

A. Yes.

Q. Okay. All right. And did you know Mr. Moore prior to him contacting you about this and having the meeting on January 11, 2005?

A. I knew him aware -- from the time when I was with Geotechnical. I knew him -- I don't recall any particular projects, maybe there was some. Yeah. So he was well known

in the industry, but I didn't -- I don't recall any particular project with him before that -- before that meeting.

Q. Okay. And if we could pull up the note -- I'm going to ask -- just ask you about this in a second. But if we could pull up the notes transcription of Dr. Uzarowski's overall notes produced. This is RHV933.

And what I understand, Dr. Uzarowski, is of course Golder produced large numbers of your handwritten notes over a period of years considered to be relevant to the matters the inquiry is looking into. And these are your handwritten notes, and that over a period of time you transcribed those notes into a typewritten form from handwritten making your best efforts to be as accurate as possible; is that correct?

A. Yes, it is.

Q. Okay. And, Commissioner, what we have is -- this document is a compilation of Dr. Uzarowski's handwritten notes. In the overview documents the references are to the various handwritten notes, but for at least today I'm going -- and I expect for a lot of the inquiry we'll be referring to either the overview

documents where they are completely reproduced or the transcription by Dr. Uzarowski.

And just generally speaking with respect to your handwritten notes, was your practice to take notes at the time of meetings and telephone calls generally speaking? When you documented a meeting, were those notes taken at the meeting or afterwards?

A. You know, so the first thing, yeah, I tried to keep my notes because -- you know, I'm a consultant. I work on large number of projects, so sometimes it is -- there are so many commitments and time and delivery, et cetera, so, you know, that they were of great help, my notes. And, you know, sometimes, you know, -- let's say if I had a meeting and I anticipated what would be discussed, then I would prepare my notes before the meeting, typically like, you know, item 1, 2, 3, 4, 5, et cetera, what I would like to discuss.

Q. Right.

A. And then during the meeting I would add my handwritten written quick, quick comments. But sometimes if it was, you know, a meeting and I didn't anticipate it, I

would take notes during the meeting, so without any preparation.

Q. Right. I think we have a very similar approach to note taking in that respect. So what you're saying is that sometimes in advance you would do a list of the items that you want to hit, and then you would supplement that by additional notes taken during the meeting potentially, and at other times you would just be taking the notes during the meeting if it wasn't your agenda that was being set, for example. Those are just two potential examples?

A. Yes, exactly.

Q. Okay. Great. So -- and, you know, on any individual instance if it's material, we can talk about when you took the notes, but -- so if we can look at -- sorry, could we make this Exhibit 17, I believe it is, Commissioner. This is RHV933, Dr. Uzarowski's transcript of his notebooks.

THE REGISTRAR: Noted, Counsel.

MR. LEWIS: Thank you.

EXHIBIT NO. 17: Transcripts of Dr. Uzarowski's notebooks, RHV933.

BY MR. LEWIS:

Q. And could we go to images 2 and 3 of this document.

And you've indicated, Dr. Uzarowski, that Mr. Moore wanted to talk to you about using a perpetual pavement structure.

Sorry, I guess it's images -- it's a little -- that's image 1, so we want 2 and 3. I guess that's image 2, isn't it? It says image 1 at the top. Okay. So actual images 3 and 4, then, I guess. Okay. I think we'll have to note that although it says image 2 and image 3 at the top, that's different than the images that are in -- actually in the database.

So here we have your transcription of notes from January 11, 2005 from your meeting with Mr. Moore. And on the page on the right -- sorry, on the page on the left -- on the right-hand side, it says towards the bottom, "SMA Gary wants to use 3 dB noise attenuation." Is this indicating that Mr. Moore wanted to use an SMA surface course on the perpetual pavement?

A. Yes. The City wanted to use SMA because of -- it is believed that SMA reduces the noise. It's typically between 2 and

3 decibels so, you know, he believed it was 3 decibels. So, yeah, that was one of the reasons, was the noise attenuation.

Q. Okay. Did he describe any other reasons for wanting to use SMA as the surface course?

A. Because SMA, you know, he -- he had good experience with using SMA because the City used it a few years prior, so they had good experience. And, you know, he attended number of conferences and he knew that SMA offered, you know, exceptional, very good rutting resistance, fatigue endurance, good friction characteristics and overall performance, and then what was important for him, this noise reduction.

Q. Okay. And did you -- the prior project, was that an SMA placement on Burlington Street?

A. I believe, yes. That was -- that was his experience with SMA, and that was not only his because there were a team that was involved with -- yeah.

Q. Mr. Moore didn't place it himself, but that's what --

A. No, no, no.

Q. He was referring to that project, is your understanding?

A. Yes.

Q. Okay. Thank you. On the left-hand side of the first image there, I think it's the fifth line, well it says "4 lane expressway" and then "90 kilometre per hour posted speed des," which I take to be design speed, "100 to 110 kilometres per hour."

Does that reflect what Mr. Moore told you about the posted and design speeds at that meeting?

A. Yes. Everything that is in that note this is what -- the majority is what he told me. I was not familiar, so this is what he told me.

Q. He asked you to the meeting, and then he described what the situation was, described what the highway was going to be and what he wanted --

A. Yes.

Q. -- is that fair?

A. Yes, it is.

Q. Okay. And I understand

that -- did -- Mr. Moore then asked you to do something following from that, to do a feasibility study?

A. Yes. After that meeting he asked me to first prepare -- work on feasibility study and then the design if the feasibility study was -- showed that it makes sense to -- if the structure was -- if perpetual pavement was feasible.

Q. Okay. And just to be clear, you said "after the meeting." Do you mean at the meeting he asked you as a follow-up to the meeting to do the feasibility study; is that correct?

A. I would have to look at -- you know, I think we discussed -- I think we -- he presented what he wanted and then the next step would be to prepare to work on the feasibility study.

Q. Okay. Because we know -- and this is in overview document -- which we won't go to this for a second because I want to stay on the notes -- but in paragraph 22 of overview document 3 it also indicates the next day -- sorry, two days later you sent Mr. Moore the

proposal to carry out the feasibility study. So is it -- but you discussed it at the meeting; is that what you think?

A. Well, I think it must have been discussed, this thing at the meeting. That was the next logical step. We must've agreed during the meeting.

Q. Okay. And then on the page on the right in your notes, the third line up from the bottom, actually right above that a few lines up, it says, "SMA is already there." Is that a reference to Hamilton already having SMA that you just described?

A. Yes. So I said, it's already there because, you know, they were familiar with SMA and the City was comfortable with SMA.

Q. Okay. And then detour costs, you've already described; that's an issue. And do you recall what the "if a 7 million in backup required" is?

A. I believe that it -- I would have to do some calculation, roughly detour route cost about 7 million. It was maybe, like, you know -- oh, assume that it would be roughly

about $7 million to build a backup because it's a very tight environment. So I understand that that would be for a detour.

Q. Okay. And then "what the ballpark numbers are and then proceed." Is that a reference to the feasibility study? Figure out what the relative costs are of going with a conventional pavement and the perpetual pavement?

A. Yes. That would be just, you know, a roughly estimate, you know, what -- because that was the first time, so, you know, roughly what my feeling was.

Q. What your fee was?

A. No, no, what my feeling. What --

Q. Feeling.

A. Ballpark, ballpark. Because you can assume something quickly but then you would have to do some detail analysis getting the cost, et cetera, to do the feasibility study. So that was ballpark, like the feeling what it would cost.

Q. All right. And then the CTAA paper it refers to, that is referring to doing a paper for the CTAA about perpetual

pavement in the Red Hill Valley Parkway; is that correct?

A. Yes, yes, that was the idea of writing a CTAA paper about perpetual pavement in the City of Hamilton on perpetual pavement, yes.

Q. On Red Hill Valley Parkway?

A. On Red Hill Valley Parkway, yes.

Q. And whose idea was the CTAA paper?

A. I haven't discussed for so many years, but I think it's -- I think, you know, the City wanted to be the leader in sustainable infrastruct- -- pavement infrastructure, so they will -- they wanted to -- and then he knew that I was very active at CTAA so it was I think probably, you know, mutual agreement or mutual interest to write the paper on this thing.

Q. Okay. And when you say -- I appreciate the City and Mr. Moore is the City's representative, but Mr. Moore is the person you are talking to at this point at the City,

correct?

A. Yes, at that -- that point of time that was Mr. Gary Moore, yes.

Q. Okay. And then if we could go back to the overview document, page 22 and 23. As I said the next day, January 12th -- I said it was the 13th; I think it was the 12th -- sorry, it's page 14. I apologize. It's image 14 and 15. Thank you.

So on January 13th you sent Mr. Moore the proposal to carry out a feasibility study on using perpetual pavement on the Red Hill Valley Parkway in Hamilton in 2005, and then you'll see at the top of the image on the right the next day, January 14th, 2005 Mr. Moore gave Dr. Uzarowski permission to proceed with the study. So that's the feasibility study that we were just discussing, correct?

A. Yes.

Q. And the purpose of the feasibility study is set out in proposal, and we can absolutely go to it, but if we don't need to, we won't. But it was to carry out a study on the use of the perpetual pavement design and determine whether that was feasible for the Red Hill -- in

Red Hill Valley Parkway in doing a cost comparison between that and a conventional pavement structure; is that right?

A. Yes. Yes, it is.

Q. All right. And it was -- you mentioned this at the meeting. This was Phase 1 is the feasibility study, and then it contemplated a Phase 2 involving the pavement design and doing the specifications for the highway; is that correct?

A. Yes, it is.

Q. Okay. At page 15, paragraph 25, halfway down the page on the right, is reference to a "Paper Offer Abstract" dated February 28th, 2005 for the CTAA's 50th annual conference titled "Sustainable Pavements, Making the Case For Longer Design Lives For Flexible Pavements." And this is just an abstract that you provided to Mr. Moore, and it's listing you, Mr. Moore, Michael Maher, who is a Golder person, and Vince Aurilio as authors. Do you recall this? Did you draft the abstract?

A. I think it was -- yeah, likely it was me.

Q. All right. And the paper

arising for this was eventually published in November 2006 as part of the annual CTAA conference; is that right?

A. Yes, it -- yes, it was.

Q. Okay. And just for reference, Commissioner, that is referred to at overview document 3, image 18, paragraph 34.

And is it fair to say, Dr. Uzarowski, that the feasibility study that you were then commissioned by Mr. Moore to do for the City and the CTAA paper are essentially on the same topic; although there's differences in lengths and focus and so forth. But they are on the same topic, which is the feasibility of the perpetual pavement structure for the Red Hill comparing the lifecycle costs of the perpetual pavement option to the lifecycle costs of the conventional deep strength pavement option. Is that a fair summary?

A. Yes, it is.

Q. Am I correct that the assumption for both the feasibility study and the CTAA paper was that SMA would be the surface course for both options being compared, the perpetual pavement and conventional deep strength;

is that right?

A. Yes. Yes, it was.

Q. Okay. And of course both the paper and the feasibility study were based on their unit costs and quantities and all the inputs that go into that. Who provided those inputs?

A. The City.

Q. And by "the City" do you mean Mr. Moore?

A. Like, you know, I -- Mr. Moore was the one who directly send it to me, but he could get the cost from somebody.

Q. No, I appreciate that, but he was your contact for this, right?

A. He was my contact. Yeah, he was my contact person, yes.

Q. So wherever he got them internally, again he's not the -- might not be his role to dig those out, but he was the one that sent them to you?

A. Yes, he was the person who sent this thing to me, yes.

Q. Okay. And so you were relying on the same information for both the CTAA paper and the feasibility study, correct?

A. Yes, for the, you know -- for the abstract, no, because that was only the abstract state, but yes, it was, yeah.

Q. I appreciate it, but right at the start you do a proposal for the feasibility study in January. You send the abstract in February; that's before you have all the information. But going forward that was the case, correct?

A. Yes. Yes, it was.

Q. Thank you.

And, Commissioner, we won't need to go through it, but in the overview document there are a significant number of paragraphs that deal with this going from paragraphs 26 to 28, 30 to 34, and 36 to 37 cover that timeframe as the year progresses with respect to the feasibility study and the CTAA paper.

Now, if we could go to RHV935.

And just for background, Dr. Uzarowski, up until last week I think we did not have a signed copy of the final feasibility study. We just had an electronic unsigned copy. But Golder's counsel last week delivered to commission counsel this document, which is a

signed final feasibility study that we were just talking about. And so is that correct, this was located quite recently, the signed copy?

A. Yes, that's correct.

Q. And I understand it was located -- it was found in Golder's library, and it's with the office, and it's just been missed prior to that, in Golder's document searches?

A. Yeah. It was only the report, not other records or analysis. Only the report itself was found in the library in -- with the office.

Q. Right, so just the final report. And you also -- we don't need to go to it now. There's -- we have a photograph that shows the actual cover of the report, and it's the signed document as opposed to all of the underlying work that went behind it. Is that what you're saying?

A. Yes, yes. Only the report itself, yes.

Q. Okay. And did you deliver -- it's dated August 2005, as you can see there. Did you deliver a signed copy of this to Mr. Moore?

A. Yes, I believe I did.

Q. Okay. And if we could go to image 6 of this document. And at the top of the summary 5.0, it states:

"A flexible pavement satisfying the requirements for perpetual pavement design is recommended for Red Hill Creek Expressway."

And that's the final conclusion of the feasibility study; is that right?

A. Yes, it is.

Q. Okay. And there's an August 5, 2005 draft. Maybe we can go to the overview document at images 17 and 18.

And paragraph 33 at the bottom of image 17 indicates that on August 5th, 2005 that you e-mailed the draft of the CTAA paper that we were discussing to Mr. Aurilio and Dr. Maher at Golder asking them to review, and this paper is called "Sustainable Pavements, Making the Case For Longer Design Lives For Flexible Payments." And as we discussed, and this is a draft of the paper that we were just looking at the final version of, the pavement options compared in the paper, being

the perpetual pavement versus conventional deep strength, both used SMA for the surface course, and then it sets out at image 18 a couple of passages from the draft paper.

And I want to focus on the last sentence of the first paragraph there where it says:

"The City of Hamilton has decided to use the perpetual pavement concept on their major infrastructure project."

And that's -- the "major infrastructure project," that's referring to the Red Hill Valley Parkway; is that right?

A. Yes, it is.

Q. And the -- at that point then, August 5th, 2005 was it your understanding that it had been decided that there would be -- that it would be a perpetual pavement structure and an SMA surface course on the Red Hill Valley Parkway?

A. Yes, it had.

Q. And we can go to it, but do you recall what the cost saving was estimated to be? I appreciate it's a prospective estimate --

A. On --

Q. -- perpetual pavement.

A. I would have to look at the -- I don't -- I know that there was some -- there was benefit from using perpetual pavement in terms of -- here in terms of cost.

Q. Well, I won't test your memory on it. We'll come to it.

If we could go to Golder 3367, which is the draft paper at that time. And if we could go to image -- so this is the August 2005 draft at image 8. I don't think that's image 8. Should be page 6, image 8, I think, Registrar. There we are.

So this table, it states, "Its present worth of MNR work for deep strength pavement."

So this is the cost estimate for the deep strength option, correct?

A. Yes.

Q. Okay. And I'm just looking at, on the left-hand side there under the left-hand column, "Scheduled Maintenance Rehabilitation Year." If you go down it gives the number of years down to number 48, 48 years out

from construction. And then the fourth line down is 19, so 19 years out, "80 millimetres asphalt pavement resurface SMA 40 millimetres."

So is -- do I understand this correctly is anticipating that the -- with the conventional deep strength pavement design that the surface course you were discussing earlier, SMA in this case, would be milled and replaced 19 years in; is that right?

A. Yes.

Q. Okay. Along with the layer below -- another additional layer below that, if I understand that correctly?

A. Yes.

Q. Okay. And then the next image, 9, this is table 4. This is the present worth of MNR work for perpetual pavement, again main line only. And so this is the comparison, the correlative costs and forward-looking estimates for the perpetual pavement option.

And looking in the same column, it's on the left-hand side, the fifth number down is 21. And to the second column, if I understand it, it is saying that the estimate is that it will be 21 years out that the surface SMA,

40 millimetre layer, would be milled and replaced but 21 years out; is that right?

A. Yes.

Q. Okay. And before that in both options there's estimates about other maintenance work that will be done routing and ceiling crack, et cetera, but that's the first surface estimate -- first surface layer estimate for replacements, right?

A. Yes. Yeah, yeah, yeah. Yes.

Q. Okay. If we could take that down and go to OD3, image 19.

And paragraph 36 indicates that on September 28th, and this is taken from some of your -- from your notes -- that you and Mr. Moore discussed finishing Phase 1 and a possible Phase 2 of the perpetual pavement project. So the Phase 1 that we talked about, that was the feasibility study, right?

A. Yes.

Q. And then Phase 2 is the next step we discussed which was develop potentially -- or as you discussed back in January of 2005, developing the specifications,

the pavement specifications for the actual construction and paving of the highway; is that right?

A. Yes, it was, you know, finalizing the design and developing the specifications, yes.

Q. Right. Okay. And then it says there, "including mix requirement and specification development for Superpave, SMA and RBL," which is the rich bottom layer that you described earlier when you were talking about the perpetual pavement structure, correct?

A. Yes. Yes, it is.

Q. Like, and rich bottom layer -- and you use the rich bottom mix for the rich bottom layer; is that right?

A. Yeah, this is like, you know, this layer or mix, different names, but it's basically the same whether -- it's basically rich bottom layer where rich bottom mix is used.

Q. That's what I understood. I just wanted to clarify I understood that.

A. Yeah.

Q. Okay. And do you know at that point having delivered the signed report of

the feasibility study, what was to be finished for Phase 1? Do you know?

A. No -- you know, it's like after that report was final that was it for the Phase 1, I understand.

Q. That is for the what, sorry?

A. For Phase 1.

Q. Yes, that's what the report was that we looked at from August 2005, okay. So you don't know what the "finishing Phase 1" is a reference to?

A. Finishing -- sorry, what do you mean?

Q. Well, we can go to the note, but it refers to "finishing Phase 1." Do you recall what had to be finished, or was there nothing to be finished?

A. It was, you know, so many years ago because basically I think finishing Phase 1 -- it's like feasibility study, it's like general study. But then for detail design I would have to do a final structural analysis to finalize the design. So that would be, you know, additional -- so first, for the design itself.

And I know I use a special program for this, and then, you know -- and then you know, Phase 2, like, you know, the mixes and other aspects of Phase 2.

Q. Right. No, I appreciate that. It's just the reference in your notes to finishing Phase 1, but if you don't recall we'll move on.

So if we could go to image 20 of the next page. So paragraph 38 indicates that on November 19th, 2005 your notebook contains a note that states, one:

"Hamilton, paving on Lincoln Alexander Parkway, SMA 12/5 and ground rubber modified mix three hours."

Can you tell us what this is about?

A. Yeah, I can. Lafarge was placing a short test strip of SMA mix with modifier -- with crumb rubber modifier and the purpose of this was to determine how much noise reduction you can use by using this special type of SMA with crumb rubber modifier. Because there was a belief that if you add rubber you even more reduce the noise in -- on SMA pavement. So that

was the test strip to -- so for me I went there to look at this thing, but as far as I recall probably University of Waterloo measured the noise. I don't have records, but I think it was -- me just, I was asked to look at the placement, but then they evaluated how much noise reduction they would get.

Q. Okay. And who invited you to go? Was that Mr. Moore?

A. Mr. Moore and Paul Lamb who was the -- Paul Lamb was the -- at the time he was like maybe director of reduction or construction for Lafarge and Mr. Moore because Mr. Moore was very interested in the subject.

Q. Okay.

JUSTICE WILTON-SIEGEL: Mr. Lewis, I need about five minutes to deal with something that's come up.

MR. LEWIS: Absolutely. So what time would you like us to come back, Commissioner?

JUSTICE WILTON-SIEGEL: Just five minutes right now, if you don't mind.

MR. LEWIS: Sure. 10:32, everybody.

JUSTICE WILTON-SIEGEL: That's perfect.

--- Recess taken at 10:27 a.m.

--- Upon resuming at 10:33 a.m.

MR. LEWIS: May we proceed, Commissioner?

JUSTICE WILTON-SIEGEL: Please do.

MR. LEWIS: Thank you.

BY MR. LEWIS:

Q. Registrar, if we could go to overview document 3, image 20. Paragraph 39 indicates, Dr. Uzarowski, that on November 22nd, 2005 you submitted a cost estimate for Golder to Mr. Moore titled "Perpetual Pavement Phase 2," which included:

"Pavement and asphalt consultations, including detailed corrections and the project documentation, updates to the current HMA --" that's hot mix asphalt "-- paving specifications and development of new required paving specification, any mix design reviews and assisting in preparation of tender documents for the pavement works."

And a few days later,

November 25th, Mr. Moore e-mailed back accepting it and asking what you needed to get started.

So does that accurately describe what you did for this Phase 2 of the project as you described it?

A. Yes. Yes, it does.

Q. Okay. And to be clear, we'll get to it, that the paving specifications were for the perpetual pavement structure that you described with the rich bottom layer, interim layers and the SMA surface course; is that right?

A. Yes, yes.

Q. Okay. And part of that was the OPSS specifications and special provisions, which are the Ontario Provincial Standards Specifications; is that right?

A. Yes, OPSS is Ontario Provincial Standard Specification, so I have no right to change OPSS, but, you know, on behalf I can recommend changes in a special provision. I can develop special provision for the municipality that I can recommend some changes to the OPSS because I have no right to change OPSS itself.

Q. Okay. So the OPSS, just generally speaking can you describe what they are

so we have the background?

A. Ontario Provincial Standards Specification, that covered detailed requirements for a particular part of -- you know, I'm talking about, in this case about pavement materials and pavement construction because they cover everything. They cover all aspect, but, you know, my area was the pavement. So they cover particular -- what the requirements are for ingredients, for mix design, what should be included in the mix design, what characteristics should be met and also what characteristics should be met during construction.

Q. Right.

A. So in general, you know, just in general terms.

Q. Right. And as you described, you can then recommend -- and obviously the client will decide if they are going to accept your recommendations, we accept that with any consulting work -- but you can recommend special provisions which modify the OPSS specifications; is that right?

A. So I can -- in special provision I can describe what should be added or

should be changed in the OPSS because OPSS is developed by OPSS committee. Actually I'm a member of OPSS municipal committee, so only the committee can suggest -- can change the OPSS specification itself, but me as the consultant hired by the municipality, I can develop special provision where I can advise or recommend what can be added or changed or removed, whatever.

Q. Right. Okay. I understand you.

And if we go to image 26 of the overview document. Actually 26 and 27, please. This is just describing ultimately the paving specifications for the pavement materials in the tender for the Red Hill Valley Parkway paving, and it lists in paragraph 54 the number of those specifications.

Am I correct this is what you ultimately developed in relation to the tender; is that right?

A. I develop special provision and I -- they were incorporated into the tender document.

Q. Right. I appreciate you did not put the tender document as a whole

together, but you were the one and were retained to and did consult on and recommended the components relating to the paving specifications --

A. Yes.

Q. -- that went into the tender?

A. Yes. Yes, I did.

Q. And on page 27 or image 27 there, paragraph 55, there's an addendum to the tender contract documents issued on May 10th, 2006 with the original tender being issued April 25th, 2006. But on May 10th, 2006 an addendum was issued by the City of Hamilton which required trial sections be placed for both the rich bottom mix or the RBM layer and the SMA pavement layers. And were you involved in or did you recommend this addendum?

A. You know, I recommend the trial section because this were -- as you probably know RBM was a new idea, was a new mix and, you know, anticipated some difficulties and challenges with the material in construction. And also SMA, obviously they -- I anticipated some changes with this. So, you know, it was my recommendation to

do a trial section or test strip, whatever you call it, to verify that the contractor can produce what is in the mix design and can place it to meet the specification requirements.

Q. Right. And going on to -- if we can keep the image 27 and add image 28, please. And at the top of 28 in the -- still on the addendum with respect to the trial sections, in the last paragraph if we could expand that, please, Registrar. It starts "provided the trial sections" just above paragraph 56.

So this paragraph is indicating that:

"If the trial section --" whether it's the RBM layer or the SMA layer "-- meets the requirements of the specification, it will be considered acceptable and paid, but otherwise the contractor shall be required to repeat additional trial sections until the material meets the requirements of this specification, and the contractor shall be responsible for all costs associated with that." (As read).

And again, was that part of your recommendation to do the trial sections?

A. I believe, yes, it was. It was based on my airport experience, so I think it -- this is what I -- yeah, I believe that was.

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

And going back to your first meeting with Mr. Moore respecting the Red Hill on January 11th, 2005, was there any doubt in your mind from that point forward that Mr. Moore wanted to use a perpetual pavement structure with an SMA surface course on the Red Hill?

A. No, no. He -- that was clear to me that he wanted to use perpetual pavement with the SMA surface course.

Q. Okay. And we know, as we've discussed, that the CTAA paper wasn't actually published until I think it was late 2006, but that you wrote the abstract for back in February 2005 and prior to completing the feasibility study. I mean, was there ever any doubt that that was going to be the result, that the perpetual pavement structure with the -- both options having the SMA surface course, that that was going to be the preferred method of paving the Red Hill?

A. No. After -- you know, the feasibility study showed us, no, it was -- and I was convinced, right, that that would be the implemented solution, so perpetual pavement with SMA surface course, no doubt.

Q. Okay. Thank you. And if we could go to image 30. Maybe 31 as well. I'm not sure if that continues onto the next page. So just image 30, please.

And so on July 28th, 2006 Golder submitted a proposal to Philips which was the contract administrator for the paving construction on the Red Hill outlining Golder's scope of work pertaining to:

"...the request and laboratory and field testing inspection services for the main line paving of the Red Hill Valley Parkway."

This was a revised proposal. There was an earlier one but....and I believe this is also where your CV is -- that I was asking you about at the start was from this document, was attached to it.

Does this excerpt describe what Golder's responsibilities ultimately were for the quality assurance role that it assumed for the

Red Hill Valley Parkway paving construction?

A. Yes, it does.

Q. And to boil it down it's quality assurance testing and inspection of the asphalt materials; is that right --

A. Yes, it --

Q. -- generally?

A. Sorry.

Q. No, go ahead.

A. Yes, it is quality assurance. Quality assurance is done on behalf of the owner, yes. That was quality assurance.

Q. As opposed to the quality control which is done on the paving contractor side?

A. Yes. Quality control is done by the contractor to check the quality of the product, and quality assurance is to confirm the quality, and it's typically a base for acceptance.

Q. Okay. And so as I understand it, Golder as part of that, you know doing the quality assurance testing, the laboratory and field testing and inspection services as we talked about, and also for approving or not approving asphalt mix designs.

Is that one part of the role?

A. Yes, it is.

Q. And as part of that includes approving or not approving the characteristics of the aggregates used in the various asphalt layers; is that right?

A. Yes, it is.

Q. And as well results of the test strips that are laid that we just discussed, the rich bottom layer and the SMA surface layer, for conformance with the project specifications; is that correct?

A. Yes, it is.

Q. And communicating those results to the contract administrator, being Philips, and as well often Dufferin, the paving contractor; is that right?

A. Yes. You know, mainly CA because we're hired by CA, but, you know, cc'd the contractor and often the owner.

Q. Right. The CA being the contract administrator?

A. Yes, CA was the contract administrator. Sorry.

Q. Okay. And -- right.

This is for all the pavement layers. It's not just the SMA surface layer; it's all of the pavement layers that are being laid in series?

A. Yes, all pavement layers. You're right.

Q. Okay. And so if something conformed to the contract specifications, then you on behalf of Golder would approve, and if they did not, then you would not approve, is that correct, subject to the client's final decision?

A. Yes, generally yes, it is.

Q. Okay. Now, I understand that SMA, the surface layer in this case, has some peculiarities and challenges in mix design and placement procedures. Could you describe some of those.

A. Yes. You know, SMA, it is, you know -- it is a premium mix, but it's not easy to design, not easy to place and compact. SMA, there are some differences between conventional mix like, you know, Marshall mixes or Superpave mixes and SMA. SMA is an upgraded mix or -- so where, you know, the main part is the

stone-on-stone contact, so it includes mainly coarse aggregate and very fine aggregate with a very little amount, a very small amount of the medium fraction. So it's called upgraded mix as opposed to continuously graded mix like Superpave or Marshall mixes. And at the same time it has I would say very high asphalt cement content or ACS. And in order to allow this high AC content and avoid drain down we had to add fibre; it's typically cellulose fiber. And --

Q. So that's cellulose fibre?

A. Cellulose fibre. But yes, it's not to provide the strength, but to allow addition of this high amount of asphalt cement and to prevent drain down.

Q. Do you mean drain down of the asphalt cement?

A. Yes.

Q. So to hold it together? It's a binder to hold it together; is that right?

A. Yeah. If you -- let's say in SMA you have about 6 percent asphalt cement. If you added 6 percent to regular Superpave mix, then the asphalt cement would drain

down. You would have dripping asphalt from the mix, so that was the idea. And particularly that we didn't have this medium, medium fraction in the mix, So we had to use additional ingredient to the mix to make sure that it will be -- it will hold together.

So this is, you know -- so there are some challenges from the, you know, mix design. But, you know, actually, you know, over time it was, you know, established and, you know, a good experience. But I realize that it's -- you know, it's not easy. So one thing is the mix design.

Now, another thing is placement and compaction because, you know, this -- typically SMA incorporates higher quality asphalt cement. So it's, you know -- you probably noticed here that with specified performance graded asphalt cement, 70 to minus 28, and that asphalt cement incorporated a pretty high amount of polymer. Polymer makes it sticky. So, you know, there is, you know, one aspect -- I don't if you want me to --

Q. Yes, 70. When you referred to the performance-graded asphalt cement,

70-28, that's the temperature range?

A. Yeah, so 70 is the high end temperature; minus 28 is the lower end temperature. So in order to have this big range, because, you know, the rule of thumb is that if you add both numbers if you are above 92, you have to add a pretty high amount of polymer. So they had to add, you know, a significant amount of polymer. I don't want to go into details because it's confidential how the suppliers produce it. But we know that it -- so it's very sticky.

So you are -- on one hand you are limited when it comes to compaction equipment because you don't want to use rubber tired roller because it can make it -- we call it fat spots. But, you know, at the same time it's so stoney that it's not easy to compact. Actually compactiveness of SMA is only about 30 percent of what conventional mix has. So it's very difficult to compact, and we call it not forgiving mix. So if you don't compact it while it is very hot, this is it, you will not be able -- you can use heavy rollers and you can pack it -- you will crush the aggregate, but you will not compact it.

So at the same time, like, we

have to be careful with using heavy vibrator rollers because if you, you know, pack it too much, then you can crush the aggregate. So we want to have compaction, but there are some issues that have to be taken into account during -- so that's why I say it's not --

Q. So if I could just unpack a couple of things. You don't want to -- you are not supposed to use the rubber rollers because it creates what you call fat spots, and because of the stickiness essentially of the mix?

A. Yes, yes. The, you know, rubber tires can cause fat spots or, you know, flash --

Q. The rubber tires.

A. -- and we call it -- yeah, rubber tires, yes, With pneumatic tires.

Q. Right. And then with the extra effort or the difficulty with compaction, you have to be careful not to crush or crack the aggregate. I think that was the second thing that you said there; is that right?

A. Yeah. We have -- you know, you have to be very careful with compaction because, you know, if you static rolling, that's

okay. But if the contractor applies vibration late in the compaction process when the mix gets cool, they may not get compaction, but they may crack the aggregate. So it's not easy to compact. There are some challenges.

Q. Okay. And with respect to vibratory rollers, you have the asphalt rolling machines which have the ability to use a vibration function to assist in compaction; is that correct?

A. Oh, yes. You can have, you know, even pretty heavy vibratory rollers, but you can turn off the vibration and use it in static mode.

Q. Right. That's what -- and you've referred to static mode, which means without vibration; is that right?

A. Without, yes.

Q. And am I correct typically in your understanding that it's not recommended for SMA to use the vibration function; is that right?

A. You can use it, but, you know, you have to be very careful. Actually vibration can be used only when the mix is very hot because if it -- if the temperature -- I

believe it is about 140 degrees, the temperature drops below 140 and you have the stone-on-stone aggregate, this heavy vibration or heavy vibrator rollers, they cause some aggregate -- you know, they crush the aggregate. So compaction procedure has to be addressed very carefully.

Q. Okay. And if we could go to image 49, please, in the OD. Maybe also the next page, image 50.

This is jumping ahead, but in paragraph 100 are the site meeting minutes from July 10th, 2007, which is about three weeks before the actual SMA paving started on August 1st, 2007. And this was the meeting that the minutes indicate you were in attendance at, and it's discussing the status of a number things at the time, including the progress of the paving to that date. And if we go to the top of image 50 there under "Material Testing," it indicates:

"Golder requested that Dufferin produce a trial batch of SMA for the field labs to work out testing correlation differences --" which we'll get to, but then "-- Golder indicated the vibratory roller currently being used by Dufferin is likely too heavy for the

SP19 and SMA pavement layers." (As read).

So is that the issue that you were just talking about?

A. Yeah --

Q. The vibratory roller.

A. So, you know, that vibratory roller, if it's used in static mode it's okay, but applying vibration, they would have to be very careful with applying vibration because, you know, on the stone-on-stone mix it can cause some aggregate breakage.

Q. And if aggregates are crushed or cracked, however you describe it, during the compaction process, what affect does that have on pavement performance?

A. Obviously we don't want to use it because it -- you know, it will have -- it can have impact on durability.

Q. So how long it lasts?

A. How long it lasts. Yeah, but, you know, at -- at the end, like, you know, we -- I don't know if this is the time for this comment. We work with Dufferin. We establish compaction procedure, and when we -- when City took number of samples in 2018 and we tested, the

results were very good, show that almost there was no degradation of the asphalt cement.

Q. And we will get to that in Phase 2.

A. Okay.

Q. I understand. I'm just asking directionally --

A. Yes.

Q. -- with -- if you do have crushing of aggregates, and we'll see that was an issue with the test strip when we get to it, but if you do have crushing, you indicate there can be an effect on the durability of the pavement?

A. Yes.

Q. Is that right?

A. Yes.

Q. Okay. And does that have any effect if there's crushing or cracking of aggregates on the frictional quality of the pavement in your view?

A. No, no, I don't -- I don't think so, no.

Q. Okay. Now, at the time you were developing the Red Hill paving specifications, so as we said you presented the

proposal in late 2005 for the tender which was issued in late April 2006, you were familiar I take it with the Ministry of Transportation of Ontario's "Designated Sources of Material List," called the DSM for short?

A. Yeah, of course I was.

Q. Right, and the DSM of course deals with lots of different materials, not just pertaining to what we're going to talk about, but you would agree that the DSM lists the products and their sources that the MTO will accept as suitable for MTO contracts; is that correct?

A. Yes. Yes, it is.

Q. Okay. And part of the DSM includes the listing of sources of aggregates that are pre-approved for use by the MTO on MTO projects, correct?

A. Yes, it is.

Q. And at the time when you were developing the specifications in 2006, were you aware that one of the purposes of pre-qualifying aggregates for use in asphalt mixes by listing them on the DSM for use in surface courses is to ensure that those aggregates have

adequate skid resistance?

A. Yes, yes.

Q. Okay. All right. And were you aware at that time, again in 2006 when you were developing the specifications, that it was a requirement of being placed on the DSM, that skid testing and polished stone value testing be conducted on a road or a test strip using those aggregates, the aggregates in question?

A. Yes, I was.

Q. Okay. And to come back to the earlier question, we talked about your experience with -- at JEGEL in particular with doing British pendulum testing, but were you familiar that the MTO's approach for measuring friction was to do skid testing using a locked wheel tester? Was that something you were specifically familiar with?

A. Well, I know that they used a locked wheel tester. I know that the tester was developed by -- years ago by Dynatest, so I knew what kind of equipment they use.

Q. At the time as opposed -- I know you do today, but at the time were you aware, yes?

A. Yeah. At the time I think I did, yes.

Q. Okay. And the polished stone value test, that's a test to determine resistance of an aggregate to polishing. Is that something you were familiar with at the time?

A. Yes. Yes, I was.

Q. Okay. And you're aware that essentially it's predictive of the microtexture and how microtexture will reduce over time as the aggregate polishes, and therefore affect predictively skid resistance over time. Is that something you were aware of?

A. Yes. Yes, I was. It evaluates the resistance to polishing of the aggregate, yes.

Q. Okay. Now, we know that Dufferin, the paving contractor, proposed in March 2007 to use aggregates from -- to mix aggregates for the SMA and SP19 FC2 surface courses.

And if we could go to images 33 and 34 of the overview document.

Specifically it's paragraphs (b) and (c) that I'm looking at for the moment,

and then your -- it will be your response which is dealt with below there. And so at the bottom of image 33 in paragraph 66(b), it indicates Vincent Gangaram, laboratory supervisor of Dufferin, wrote to Mr. Meranzin who is the Philips contract administrator representative, regarding the approval of Demix-Varennes trap rock aggregate, and he writes to him at the top of the page that:

"Dufferin Construction is seeking approval to use an externally sourced crushed trap rock in the Superpave 12.5 FC2 and SMA mixes. The source Demix-Varennes Quarry located in Quebec and not currently listed on the Ministry of Transportation Ontario's designated source list DSM."

He refers to it being --

"The aggregate is used as a reference aggregate by the Ministry of Transportation Quebec for the CPP test, skid resistance and on several asphalt paving projects, including Picardie Street in Varennes. Please find attached physical test data submitted by the demix. Your prompt response would be highly appreciated to ensure a timely completion of aforementioned mix designs."

Mr. Meranzin in subparagraph (c) indicates he faxes you -- we were dealing with faxes occasionally back then -- the letter to you, and it references that they are "...seeking approval to use Demix-Varennes trap rock aggregate for the Superpave and SMA mixes."

And attached to that letter, if we could go to -- attached to the letter, if we could go to Golder 4873. And it's a little bit unclear, bit unclear, but in the very bottom left, this is a quality control technical data for Demix-Varennes Quarry, and it has a date; at the top it says that March 2007. But in the bottom left of the chart it says "polishing by projection coefficient, CPP." Can you see that?

If you could expand that, please. Maybe just the bottom four lines of that. Yeah, that's good. And right across. We can start -- we'll start there. "Polishing by projection coefficient, CPP," second line from the bottom. Do you see that?

A. Yes, I -- yeah, I can see, yeah.

Q. Okay. And what's -- were you familiar with that test, polishing by

projection coefficient, CPP?

A. I wasn't before, but when I receive this thing then I read about CPP, and then CPP is the method of evaluating of aggregate resistance to polishing used by MTQ or the Ministry of Transportation in Quebec. It was developed in cooperation, I think, with French laboratory and it was described by -- obviously I look at this, what it was. It was described in CTAA paper by people from MTQ. You know, I knew people from MTQ, and, you know, their contribution to CTAA.

So there was a CTAA paper by Pierre Langlois and Guy Tremblay about how they evaluate aggregates, and they described CPP methodology. And also there was a technical paper by U.S. Army Corps of Engineers, and I think it -- roughly about, you know, somewhere about 2000, and it's called synthesis -- I think something -- no, maybe Synthesis 99 maybe, dash 20 or something, and when they describe this method of polishing resistance evaluation. And so obviously I read about this values -- about -- read about this methodology just to familiarize myself with this -- with the methodology. So after I received this

I read it, I read what it was, what methodology it was.

Q. Okay. Does it have a similar -- you take that down, please, Registrar.

Does it have a similar purpose to the polished stone value test about measuring the polishing qualities of an aggregate?

A. Yes. It measures the polishing resistance of the aggregate, but, you know, with some differences. They also use -- like in PSV they use British pendulum testers to evaluate before and after polishing, but the method of polishing is somewhat different between PSV, British method, and this French method.

Q. Right. The British and the French do it a bit differently, and the -- and you're talking about the actual polishing method is different, not the -- then the using the British pendulum method to actually measure the frictional qualities after the polishing; is that right?

A. Yeah. So they both use BPN, British pendulum number, British pendulum tester, but the method of polish (indiscernible) actually, as far as I know, you know, the people

in Quebec consider this thing more reliable than PSD, so, you know, it's more recognized in Quebec --

Q. Okay.

A. -- this methodology.

Q. But this isn't -- this isn't part of the contract requirements that were in the tender for the Red Hill Valley Parkway. That wasn't a contemplated test, correct?

A. No. No, it was not.

Q. Okay. Can we take that down, please, Registrar.

And so on -- in the overview document, images 34 to 35, which is I think where we were, you wrote back along with Michael Navarra at Golder and then here in training to Philips Engineering and to Hamilton, Mr. Oddi, specifically regarding your review of the aggregate physical properties and the test results that had been sent to you. And I won't read through the entire document that has been reproduced in total here.

And you note that it's not on the MTO's -- this is in the second paragraph -- on the MTO's DSM list, and so to be approved for use

in the RHVP they must meet the aggregate requirement specified in the OPSS standards, including method of testing and specifications.

So what -- having received this request, and we can read the letter, and you go on for various reasons it's not currently acceptable and we'll -- for use in the Red Hill, and we'll talk about that. But when you got this request about using the Demix-Varennes aggregates and it not being on the DSM, what was your reaction and did you have any concerns at the time?

A. So, you know, first of all, because I would prefer if it was on the DSM list, but it was not. So, you know, I express my concerns here in this, so if you look at the -- actually, you know, what you showed just a moment ago, the results the demix aggregate, there is one -- the results were, for the aggregate itself, they were excellent. Rarely, you know -- results that you rarely see in terms of very low Los Angeles abrasion, very low micro Micro-Deval, and, you know, other characteristics. So, you know, there's good CPP, but this aggregate was not on the DSM list, one thing. Another thing, that

testing that they sent was not done by a CCIL-certified laboratory by the manufacturer.

Q. Sorry, that CCIL lab, right?

A. Yes. It was not CCIL certified. It was done by the manufacturer. So the OPSS 1003 clearly requested or required that testing should be done by a CCIL certified laboratory. So that was one thing. So it was the result done by laboratory that wasn't certified. Then those characteristics, I wanted in-depth testing to include all tests that were required in OPSS. And another item was some of those results were outdated. I wanted to have the most recent results. So that's why at that point of time, you know, I had to state that this -- I realized it was a good quality aggregate, but for me it was not acceptable. For us, it was not acceptable.

Q. Right. And you list the items that they have to meet in order to be approved in those bullets. You give your comments and state that they are currently -- for Demix-Varennes Quarry are currently not considered acceptable for use on the project is how you conclude your memo.

But you said you would have preferred it be on the DSM. Why is that?

A. Because, you know, if it's on the DSM list, then, you know, MTO takes care of these thing. So, you know, in terms of all of these characteristic, these are done by -- the characteristics are tested, and also in terms of the PSV and frictional performance is verified, all characteristics testing is done on time, and testing is done by CCIL certified laboratory. So I would not have to think about this because I knew it was on the DSM list because they would still have to submit with the results, not PSV but other results they would still have to submit, but I knew -- I would know that that was within the limits.

Q. Because that had been pre-qualified by the MTO.

A. It pre-qualified, yes.

Q. Okay. And in developing the specifications, if you know you would have preferred that it be on the DSM, why did you not make it a requirement that the surface course asphalt contained an aggregate that is -- an aggregate source listed on the DSM?

A. You know, at this point of time, like, you know, I just stated it would -- the aggregate would have to be -- meet the requirements of OPSS 1003 which is the OPSS specification for aggregate, so I stated this, and it was -- it wasn't a common, you know, practice by munici- -- because it wasn't a provincial project. It was municipal project. So it wasn't a common practice for a municipality to put additional requirements, and OPSS standards are, you know, very highly appreciated across Canada, and, you know, honestly speaking even in the US. Like, you know, sometimes I'm asked to --

Q. Right.

A. -- even to send. So I have extremely high opinion about OPSS. So I thought if I specify that it was -- it would have to meet OPSS 1003 requirements that would be -- that was the most common approach of (skipped audio) qualities.

Q. Okay. If we can go to -- and you refer to OPSS 1003 --

A. Yes.

Q. -- November 2004 specification in your memo. Okay. If we could go

to Golder 3905, which is OPSS 1003.

This is the one that you are referencing in your memo?

A. Yes. This is the November 2004 OPSS standard, yes.

Q. Right. Okay. And if we could go to image 19. And maybe just have the previous page too just so we have -- make sure we have the heading and so forth. We have both? Yeah. Thank you.

Right. And you see that there's a note at the top of image 18 which says:

"This appendix does not form part of the standard specification. It's intended to provide information to the designer on the use of this specification in the contract."

And it goes on to refer to a number of things with respect to hot mix asphalt.

And then, for example, at the bottom of image 18, if you could expand that, the last paragraph. The last paragraph, please. Thank you.

So, for example, the specification requires coarse and fine aggregates for SMA, DFC and Superpave 12.5 FC2 to be from the

same aggregate source. And so that's one thing, and that is a requirement that you included; is that correct?

A. Oh, yes. Yeah, that was -- initially they wanted to use different sources, but, you know, there is a requirement, but it's also in the -- it's in the appendix, but it's also in the -- because OPSS standards -- you know, OPSS specifically has two pieces. One is the first one, mandatory part, and then the appendices which are just information.

So in the mandatory it's also stated that it -- the coarse -- the aggregate has to be from the same source. So the blending of aggregate for this FC2 and SMA mixes and DFC that what it uses, so blending is not allowed.

Q. Right. Okay. And if you could reduce that. And then on the next page there, the third paragraph up from the bottom starting "the designer should provide," if you could expand that.

"The designer should provide a list of approved aggregate sources for SMA, DFC Superpave 12.5 FC2 coarse and fine aggregates and HL1 and Superpave 12.1 FC1 course aggregates."

That is indicating that the designer should provide a list of approved aggregate sources. That's referring presumably to the DSM; is that right?

A. Yes. Yeah.

Q. Okay. So it's -- and if I take your prior answer, is that the appendix is not a mandatory requirement, it's not in the main body of the OPSS 1003, but nonetheless it is stating that that is something that should be done, correct?

A. Yes, it is, you know, provided for information. Yes, it is the information. I'm in the OPSS committee, so I know how this thing is. So it's not mandatory, but it's considered, you know --

Q. It's good practice.

A. A good practice, yeah.

Q. Right. And you're aware of the DSM, so it's not -- it would not -- I appreciate what you said that it is perhaps not a common practice for municipalities, but you're aware that it is what the MTO did was require DSM-approved aggregate sources to be used for high volume roads and they're -- for surface courses,

and you have this recommendation here that the designer should provide the list of approved aggregates in this appendix to the OPSS 1003. So you're aware of both of those things, right?

A. Yes, I know. The MTO would include, yes.

Q. I'm sorry?

A. MTO would include.

Q. Right. If it was an MTO road, absolutely it would be included; that it would have been a requirement, right?

A. Yes.

Q. Nonetheless did it occur to you to specify that it would have to be a -- when you were developing the specifications, that it would have to be a DSM-listed aggregate source or no?

A. So, you know, when I -- at the design stage I just reference OPSS 1003, and then it would be only the aggregate -- like, you know, to meet those requirements that are listed there, that would have to be from the DSM list. Because, you know, if you look at the requirements of the aggregate, that would -- they are very, very, very, very, very tight. There

would have to be, you know, material. But, you know, DSM, actually DSM is not mentioned in the standard, OPSS 1003. It is in the current version but that was the 2004 version.

Q. I understand.

A. DSM is not even mentioned.

Q. No, but as you indicated -- and I appreciate it, but as you indicated, you knew that's what this referred to, the list of approved aggregate sources, if I understood you correctly?

A. Yes.

Q. Okay. Thank you. So if we can move away from that document, Registrar, and go back to the overview document paragraphs that we were at, pages rather. 34 and 35, images 34 and 35 of the OD. Thank you.

So at the end in this memo you indicated that it's not acceptable for use on this project, at that time, currently. And -- so they have to go back, Dufferin needs to go back at that point to satisfy the list of items that you set out; is that correct?

A. Yes.

Q. Okay.

A. Yes, it is.

MR. LEWIS: And it's 26 minutes after, Commissioner. Normal break time is 11:30. I was going to move on to another set of documents, so perhaps this would be a good time to take our morning break.

JUSTICE WILTON-SIEGEL: Okay. That'll be fine. So we'll stand adjourned for 15 minutes until 11:42.

--- Recess taken at 11:27 a.m.

--- Upon resuming at 11:43 a.m.

MR. LEWIS: Thank you, Commissioner. Can we proceed?

JUSTICE WILTON-SIEGEL: Please do.

BY MR. LEWIS:

Q. My very able associate Chloe Hendrie reminds me that I did not make an exhibit of RHV935, which is the signed feasibility study dated August 2005. And so, Commissioner, if we could mark that as Exhibit 18. Thank you.

EXHIBIT NO. 18: Perpetual Pavements feasibility Study dated August 2005, RHV935.

BY MR. LEWIS:

Q. Registrar, if we could go to overview document 3, image 39.

And paragraph 74, Dr. Uzarowski, on April 23rd, 2007 Mr. Arnicas, that's Paul Janicas of Dufferin, e-mailed you following up on an earlier meeting on April 13th and attaching a letter dated April 23rd, 2007 with SMA and other asphalt aggregate test results by Trow for Dufferin, and he answers some of the questions in your earlier memo that the proposed surface coarse aggregates from Quebec demix have tested for physical properties in a CCIL certified laboratory, and he attaches to results which he says conforms to all the requirements of the contract. DCC requests that these aggregates be approved for use in the SMA and 12.5 FC2 mixes, and then he asks that Dufferin request the fine aggregate used in both the SMA and 12.5 FC2 be obtained from different sources from the coarse aggregates.

So first of all, do you recall -- did the results meet the contract requirements for the SMA?

A. The results that Paul

Janicas send me, yeah, they were excellent --

Q. Okay.

A. -- results. Actually rarely, you rarely see the aggregate results that are so good.

Q. Okay. But what about the second part. This is what you referred to earlier, that they were requesting that the aggregate in the SMA and 12.5 FC2 be obtained from different sources from the coarse aggregate. So we know they reversed on this after, but that's the point you were talking about, that we were talking about, that you have to be from the same source, all the fines and course aggregates?

A. Yeah. They want -- at that point of time they wanted to use the coarse aggregate from the mixed quarry and the fine aggregate from Marmora Quarry in Ontario that was actually on the DSM list, but that was against OPSS, that OPSS states that the aggregate should be from the same source. So I was -- it was against the OPSS.

Q. Right. And that's -- I mean, that's also the MTO requirement, right, for their projects?

A. Yes, yes. It was a requirement that it should be from the same source.

Q. Okay. And the physical properties, that's referring to what, which test results?

A. So, you know, I don't have them in front of me, but I can tell you the two main for me were the LA -- Los Angeles abrasion and Micro-Deval. You know, so I can tell you I was, you know, impressed how good the results were because they were -- as far as I remember, that the LA was less than 20 and Micro-Deval was about 1.5, so exceptional results.

Q. Well, rather than do a memory test, why don't we pull them up.

A. Yeah, if you can --

Q. Why don't we pull up Golder 1769, and beside it Golder 1770.

A. So I think this one shows the first Micro -- and I'm talking about this aggregate testing results. So this is Micro-Deval and 1.7, and I'm looking from what is the type of aggregate because there were a number of results. So 1.7, 1.7 Micro-Deval, you know, it is

exceptional. I would say it is exceptional, 1.7. I don't know if you have more result because --

Q. We can go to the next page.

A. Yeah.

Q. I think there's additional pages. On 1770, Registrar.

A. Because this is, you know, fine -- this is fine aggregate. I'm looking what fraction. Oh, this is from the screening. That one was for coarse aggregate, the biggest one, 1.7. Here you have for the screenings. The screenings are the -- you know, there's fine aggregate, so we say .5 is good, but the coarse aggregate was excellent. And then if we can go further.

Q. The next page, please.

A. Yes. So now we have absorption 0.7, so it's -- I know maybe I can use the --

Q. Are you looking at the Micro-Deval --

A. Yeah, so it is --

Q. -- at the bottom?

A. So it is -- let me look

at this screen. Sorry. You know, it's -- so yeah, yeah, this is like Micro-Deval, and this is for 12.5-millimetre stone. So it was three, and I, you know -- but if you look at the requirement for this aggregate is 10. So this is excellent; this is excellent plus, you know. All aggregate, because it's quarry aggregate with hundred percent crush. Then let me check here because, you know, other characteristics, okay. The petrographic number, it's fantastic. It's 101. You see the requirement for this aggregate would be 120, so it's really excellent. It's not elongated, but it's flat (indiscernible). It's how you crush, very good.

So all these characteristics are -- in my opinion, they are excellent. So actually you rarely, you know, the aggregate that are -- that have so good characteristics.

Q. Okay. Next page.

A. And here is you have the, you know, the chip, so this is the second. Previous one was 12.5. (Indiscernible) chips are coarse aggregate. So you see in this case Micro-Deval is even better, so it's 1.4. You have some, like, you know, major, major -- of course

it's hundred percent -- it's quarry so its hundred percent crushed. Okay.

Now, petrographic number is even better; it's 100. Flat and elongs are I think of very low -- so again, you know, these results are even better than what you showed in the previous -- in the previous page, so these are excellent results.

Q. Next page. I believe there's one more.

THE REGISTRAR: Sorry, Counsel, that seems to be the end.

MR. LEWIS: Okay. Thank you.

BY MR. LEWIS:

Q. And Micro-Deval is -- what does that show you? What does the Micro-Deval test show you?

A. Micro-Deval, it's a resistance to abrasion. So in Micro-Deval you place a certain amount of particular fracture (ph) aggregate, you put in a small drum, and it's a wet test. You add the number of small steel balls, and you run it for a number of hours and you determine how the aggregate will break. So it's abrasion resistance, resistance of the aggregate.

So it is sort of an indication of -- typically Los Angeles abrasion and Micro-Deval abrasion, they indicate -- they are indicator of skid resistance, resistance of the aggregate. So this is abrasion or wear of the aggregate. So it shows this aggregate -- like, you know, I can -- so, like, you rarely see something like 1.4, so this aggregate almost doesn't abrade, doesn't wear.

Q. So you refer to the LA abrasion. That's a different test that Micro-Deval?

A. Yes. I was also talking about LA because later on we did those LA. But this is -- LA is more drastic than this, but this simulates the wear or the abrasion that occurs in highway pavement or road pavement.

Q. Right. If we could then go back from these documents to the overview document, image 39, please.

And as I indicated he -- Mr. Janicas in paragraph 74, he's requesting the aggregates be approved for use, and he -- there certainly is not an immediate approval at that point from you. Is there a reason for that at

that time?

A. You know, it was, like, you know, so many years ago, so, you know -- I know that there was some -- I don't remember exactly the dates when identified. There were some aggregate breakdown.

Q. Right. Which is in -- you're talking about in the ignition testing --

A. In the ignition oven, so --

Q. Which we'll get to, and that's in July, so we'll get to that in a minute. I'm wondering why here we're in late April. He's provided you these test results, which you indicate are very good. There's no approval forthcoming at that time. Do you recall why?

A. No, I -- you know, it was such a long time ago. I don't -- I don't know whether we issued any -- I don't have records of this. I know that in my opinion the aggregate was of very good quality, so I had no base to reject the aggregate, and I think I would anticipate very good performance of this aggregate, but I don't have -- I don't have any -- I couldn't find any written record of approval of that.

Q. Well, we'll see that there are subsequently Dufferin requesting approval. So we know that it wasn't given at around this time because Dufferin is proceeding under the understanding that they have not been approved. So we can move forward, and we'll get to that point.

A. Yeah, I was -- I think I did (indiscernible), and you would probably show later on that I also wanted to, like -- I needed some sort of performance confirmation of that aggregate. So I still was not fully comfortable with this. I was thinking about field performance, a confirmation of that aggregate.

Q. Okay. Perhaps -- and we'll see there was a -- the test strip was placed on July 25th, but we'll get to that point.

A. It was before, yes. Sorry, I interrupted you, sorry.

Q. It's okay. Just to close off the point at the -- if we go to the next image, 40. 40 and 41.

Paragraph 78, which is at the bottom of page 40, Mr. Paul Janicas of Dufferin wrote to you on May 2nd, 2007, and he indicates

that Dufferin would like to retract their request to the blend of premium sources for the SMA and 12.5 FC2, and that they intend to use the coarse and fine aggregates from the same source. So that was the issue we were just talking about before. And then at the top of 41 he goes on to say:

"Please advise if this aggregate is acceptable for both mixes as soon as possible as we need to begin our mix designs. Also please advise of the status on all of the other mix designs."

So we know at that point that there has not been -- you have not issued an approval of the aggregates at that point since Dufferin is still asking for it. Just to close off that point.

Now, if we jump ahead a bit, we know that the paving started in late May of 2007 involving the rich bottom layer and progressed through June and into July. And just to place it, we know that the SMA main line paving began on August 1st.

And if we can go to image 48 and 49.

In paragraph 97 -- oh, and

before we -- I apologize. Another exhibit. I will get the hang of this, I promise, Commissioner. But relying on the overview document and already-made exhibits I -- probably take me a bit to train myself, but we need to make the OPSS 1003 document that I discussed with Dr. Uzarowski an exhibit, and that is Golder 3905.

THE REGISTRAR: And that's Exhibit 19.

JUSTICE WILTON-SIEGEL: Exhibit 19.

MR. LEWIS: Yes.

EXHIBIT NO. 19: OPSS 1003 - Material Specification for Aggregates Hot Mix Asphalt, GOL3905.

BY MR. LEWIS:

Q. Okay. So paragraph 97. Mr. Janicas for Dufferin e-mailed to you the SMA mix design for the surface course, and within that e-mail attaching the mix design, which is quite a long document, he's asking for approval of the mix. In the second last paragraph:

"Let us know if there are any issues as any delays in the approval of the mix will impact the project schedule."

And this appears to be in keeping with the general approach in your quality assurance role, which is that Dufferin would seek approval from you as we discussed with the aggregates, mixed designs and so forth; is that correct?

A. Yes. Yes, it is.

Q. Okay. And at this point we know that the paving started on August 1st. We're at June 22nd. If Dufferin was required to use a different aggregate source at this point in time because it wasn't approved for use, would that have occasioned some measure of delay for the project?

A. Oh, yeah. Very likely it would result in significant delay in all the project and the impact on the time of completion of the project definitely.

Q. Right. Hence, Mr. Janicas indicating that it would impact the project schedule if the mix design wasn't approved, right?

A. Yes.

Q. And the mix design includes the aggregates of course, right? That's

just one of the components of the mixed design; is that correct?

A. Yes, yes. It's a part of the mixed design, yes.

Q. Right. All right. And as I indicated it was actually May 29th that Dufferin commenced the rich bottom layer paving. How frequently were you on-site during the paving? And I appreciate, yes, it was a long time ago, but I mean in general. I'm not asking you specific days but in general. Were you there daily? Once a week? Twice a week?

A. Definitely not daily because I had Mr. Andros Delos Reyes. He was my site supervisor --

Q. Yes.

A. -- so I was in, you know, daily contact with him, so he was the person to be daily, to be on-site. But I would go on-site probably at least weekly or maybe twice a week. It depends on, you know, if there were any issues or -- like, of course if there was a site meeting in Dufferin's trailer, then I would attend it. But if there was any issue then they would -- that I considered I would have to go and visit and

evaluate the condition, then I would go. So probably depending on what type of -- what stage of paving, I would go. But -- you know, when they did RBM, when they did SP25, when they did SP19, then I would go and look at it or test -- and I would go probably at least weekly, roughly probably twice a week.

Q. Okay. All right. And just for the reporter's benefit, that's Andros Delos Reyes that Dr. Uzarowski referred to earlier, and he was the lab supervisor; is that right?

A. He was the site supervisor.

Q. Or site supervisor.

A. Supervised the -- he supervised the field lab, but also he was doing the inspection and overseeing field testing. Yes, he was the site supervisor.

Q. Right. And Golder had a lab set up in proximity to the construction?

A. Yes, we had a field laboratory near construction site.

Q. Right. And who was your main contact at the City of Hamilton during

construction? Was that Mr. Oddi?

A. During construction Mr. Marco Oddi.

Q. All right. And how often did you communicate with him typically? We've seen the e-mails and so forth, but what about in person?

A. In person probably each time I would go, so maybe, you know, depending on the importance of the visit, probably each time I went on-site I would say Marco in person, but, you know, we communicated over internet or sending e-mails or, you know, phone calls, but in person that would be when I went on-site if there was some significant issue that we had to discuss.

Q. Okay. And what about Mr. Gary Moore? Did you see him much during construction?

A. Not really. Not too often. Probably a few times when we, you know -- but no, the main point of contact was Marco and Philips.

Q. Okay. And Philips, is that Walter Meranzin principally at Philips?

A. Mainly -- I think Gary

Tinsley maybe, you know, a few times but mainly was.

Q. Walter Meranzin. Okay. And who was your main Dufferin contact. Is that David Hainer?

A. David Hainer. From the quality point view, Paul Janicas, and typically I think David Hainer was on-site a few times, but my main contact was Paul Janicas. And I think Peter Gamble maybe like two or three times. I don't remember how. But, you know, a few times Peter Gamble but mainly Paul Janicas.

Q. Paul Janicas. Okay. And sometimes Mr. Hainer, but principally --

A. Mr. Hainer. There was also some other people from Dufferin, but mainly -- if I recall on-site, I mainly -- because, you know, there were some technical issues to be discussed, some finetuning of the mixture during construction, so that would be mainly Paul Janicas.

Q. Okay. And as we've seen that Mr. Janicas is -- frequently it's him who is e-mailing you and vice versa, or sending memos to one another about mix approvals, aggregate

approvals, so testing and so forth. And I guess your discussions on-site follow that?

A. Yes. He was a technical person who, you know, understood the issues, and, you know, he was, you know, very knowledgeable technically, so he was the guy that, you know, I would typically discuss. Other people were probably more from the management point of view, but Paul was the technical guy.

Q. Okay. If we go to image 50 please, maybe 50 and 51 in case it follows.

So at the top of page 50 is the reference to the site meeting that we already discussed on July 10th about the vibratory roller that we discussed earlier just to place this in time.

In paragraph 101 on July 17th, 2007 Mr. Janicas e-mailed you and Mr. Oddi about ignition oven test results and physical property testing on the aggregates delivered and Micro-Deval test results. And could you first describe what the ignition oven testing is and what its purpose is. I understand generally speaking that it's intended to burn off the asphalt cement leaving the aggregate for gradation

testing. Is that in its simplest terms what it is?

A. Yes, it is. So, you know, very briefly there are two methods of testing, aggregate. It's aggregate gradation and also asphalt cement content. So one is by solvent or Rotarex method. A solvent is used to dissolve the asphalt cement, and then you determine the asphalt cement content and gradation of the aggregate. Another one is the ignition oven. The ignition oven, the difference is that in the ignition oven method you just burn the asphalt cement. You burn the asphalt cement and then you are left -- so first, by the difference of, you know -- by comparing the weight of the mix before and after burning, you know how much asphalt cement you had, and then after you burn the asphalt cement you can test the gradation of the aggregate. Yeah, so these two methods.

Q. The solvent method, it also removes the asphalt cement --

A. Yeah.

Q. -- just a different method of doing so?

A. Yes.

Q. Okay. And in this e-mail, Mr. Janicas refers to:

"A concern was expressed over the percent breakdown discovered during the ignition oven testing at 30 percent. Dufferin Construction Company understands that this is not what is typically seen. However, it is not a requirement of the contract that these aggregates meet a specific maximum loss during the ignition oven testing."

And he goes on to explain the testing that they are doing and that the aggregates are currently being tested at Golders from Micro-Deval, and again asks that the aggregates -- that if the aggregates continue to meet the physical requirements that the SMA mix design will be approved for production. So could you just describe what happened with the ignition oven testing that he refers to and the concern expressed?

A. So whenever you use ignition oven you have to do the correlation. So the correlation between solvent, because the solvent is considered to be more realistic than the ignition oven, and determine the correlation,

how much aggregate will disintegrate during burning of asphalt cement. Because the ignition oven you have to hit the mix at a very high temperature. It's well above 400; it may be 460 or 480, so it's a very high temperature. So some aggregate can disintegrate or can -- you know, some breakdown can occur. So, you know, if it's small then, you know, use a correlation factor, and we can see ignition oven.

However, in this case when our -- I think it was our laboratory did it -- when they compared the Rotarex or solvent method with ignition oven, they noted that the difference was so significant that we could not base the results on the ignition oven testing. But we have to keep in mind that in the Hamilton field laboratory we only had the ignition oven because it's a -- it's such an environmentally friendly or sensitive area that we would never get permission to do the solvent. So we're only allowed to use ignition oven. But it didn't make sense because the impact of this high temperature was so significant. At the same time the contractor Trow, who was doing the testing of the mix for Dufferin, they used the solvent. So the decision,

the final decision was that we would shift the samples from -- samples obtained from the project. We would send them to Whitby for solvent testing.

Q. Right. Because you couldn't correlate the results with the testing being done by Dufferin's consultants?

A. Yes, so you can -- this time we would -- we would have the -- we would use the same method.

Q. Right.

A. But actually in some cases you can use different method if the breakdown is very small, but this breakdown was so significant that, you know, we couldn't do it. We had to send the aggregate samples to Whitby for solvent testing.

Q. Right. So he indicates in his e-mail that we looked at that a concern was expressed over the percent breakdown. Who expressed the concern and what was it? Was that you or Mr. Delos Reyes?

A. I think probably it was initially Andros, and he let me know, so we had concern. And this is also we -- you know, we got these results for aggregate testing from Dufferin,

but we decided that we wanted ourselves to do some testing, so we -- you know, we tried the CCI labs, but we wanted us, ourselves, to do the testing, and we decided to do Micro-Deval abrasion ourselves, and also we did LA abrasion, Los Angeles abrasion.

Q. All right. And we'll look at those in a moment. Did the -- the breakdown in the ignition oven, aside from the part that it creates the problem with correlation, as you indicated that it just means the test is a problem, so you need to do a different method of extracting the aggregates. Did it cause you any concern or not about the aggregates themselves that they broke down in the ignition oven?

A. Like, you know, that was concern from the testing point of view because in the pavement you never heat the aggregate. You don't -- you cannot burn the asphalt cement when you produce the mix.

So in the ignition oven the temperature can be, like, well above 400; it can be 460, et cetera. At the plant when you produce asphalt you heat the aggregate to the -- you heat the mixture, the temperature for about 180 degrees

not only to -- not to burn asphalt cement, but not to even oxidize. Because if you increase the temperature too much then you will not only burn, you will oxidize. So the temperature has to be significantly -- very, very significantly lower. Probably about, you know, at the plant -- depending on asphalt cement, it can be about 180 degrees so that, you know, there is no concern for, you know, it will -- anything will occur during production.

Q. So it didn't create -- it didn't create a concern for you with respect to the aggregates themselves; it was just that it meant that the test was not something that you could rely on; you had to do a different method. Is that a fair summary?

A. Yeah.

Q. Because you're not reaching that temperature at any point in the normal production process?

A. Yes, that's correct. That's correct.

Q. Okay. Thank you. If we could go to two tests that are not in the overview document from July 17th and 18th. So the first

one is Golder 244, and the second one is Golder 245. Can these be rotated? Maybe we'll just -- because it takes up more of the screen, why don't we look at this first. This is 244.

This is an LA -- marked LA abrasion. Is this a -- and you mentioned doing an LA abrasion test and a Micro-Deval test. Is this a Golder-done LA abrasion test result?

A. Yes, these are the results from our testing. This is a Los Angeles abrasion, a 19.2. As I say, it's incredible, a very excellent number.

Q. And excellent number. Okay. That's the percentage of lost particles?

A. Yes.

(Speaker overlap)

A. So the difference between Micro-Deval and this, that here you use a much larger drum and fewer but big steel balls, and also you rotate this thing for a number of hours, and you determine the lost particles, like, you know, change in gradation and basically the abrasion, but it's more of impact than compared to Micro-Deval. But this is excellent number, 19.2.

Q. Okay. And then if we

could go to Golder 245.

And I guess if we could, Registrar, mark Golder 244 as an exhibit. As I said, it's not in the overview document. I believe that's Exhibit 20.

THE REGISTRAR: Noted, Counsel.

EXHIBIT NO. 20: LA abrasion test result done by Golder, GOL244.

MR. LEWIS: I told you I would train myself, and I have, see how long it sticks.

BY MR. LEWIS:

Q. This document is marked "Micro-Deval" dated, of the test, July 18th, 2007. Is this a Golder-done Micro-Deval test result?

A. Yes, it is. So we did this thing, and basically it confirms the result that we got from Dufferin, the test result done by Trow. You know, it's also, you know, important that both Los Angeles and Micro-Deval were so low.

Basically the rule of thumb is that if you had both, if you had LA abrasion and Micro-Deval abrasion and if you got the value before -- below 40, it's a good aggregate. So in our case we had, like, 20-something, like, very

low 20s, so it showed that it was very good aggregate.

Q. And which result are you looking at there, the loss again?

A. Yes, so --

Q. 37.9?

A. No, no, no, no, no. Maybe I -- you know, the final result is 2.5.

Q. Is the which?

A. Is 2.5 percent, yes, percent loss.

Q. The percent loss?

A. The percent loss.

Q. Yes.

A. And in the previous that you showed, that was LA abrasion we had, like, you know, 19 point something, so let's say 20. So the rule of thumb is if you add both, if you have value below 40, then it's a very good aggregate. So in our case, you know, we had like -- we would have 20, what, 22. So it showed that it was a very good aggregate.

MR. LEWIS: If we could mark that as Exhibit 21, Commissioner.

JUSTICE WILTON-SIEGEL: Yes.

EXHIBIT NO. 21: Micro-Deval test result done by Golder, GOL245.

BY MR. LEWIS:

Q. And are these the results obtained following using the solvent extraction method?

A. No, no, no. That was the virgin aggregate.

Q. That was the which?

A. No, no. This aggregate -- that was a virgin. Like, you know, the aggregate itself, not extracted from --

Q. Not extracted.

A. -- the solvent because solvent can impact the -- no, it was the aggregate from the stockpile.

Q. Okay. So this is not done, not part of the -- what we just discussed about using the solvent extraction following the ignition oven test problem?

A. No, no, no. That -- we call it virgin aggregate, so the aggregate at the stockpile was not included in the production.

Q. Okay. Provided by Dufferin?

A. Dufferin, yes.

Q. Yeah. Okay. And if we go to -- back to the overview document. We're at page 51, image 51 rather, same thing. Okay. And so on July 18th, which is the same day as the second of those tests that we just looked at, Mr. Janicas wrote to you to provide physical test results, and the physical property test results from construction testing asphalt lab from demix aggregates, and he indicates:

"It is our understanding that the Micro-Deval was the attribute in question due to the breakdown discovered in the ignition oven testing, and the results indicate the materials delivered from the demix quarry meet the requirements of the Micro-Deval abrasion loss."

And then in the fourth paragraph he asks:

"With the above-mentioned results meeting the contract requirements are the SMA and 12.5 FC2 mixes approved for production on City of Hamilton contract?"

And then:

"If after reviewing these results there is still a question of the

suitability of the aggregates, please advise Dufferin immediately and a meeting with all stakeholders will be convened at the earliest possible opportunity."

So was there still at this point a question about the suitability of the aggregates?

A. No, not really. You would probably see on the next page because I talk -- when I talked to MTQ to verify field performance to --

Q. Well, let's look at that and then -- we'll pull that up and then you can describe -- so you're not doing it from memory. 52, it should be 51 and 52. Thank you.

So you said not really, and then you referred to discussing with the MTQ, and in paragraph 104, which runs on to the two pages, there's a note that you took on July 18th, 2007, and there's a reference near the top of image 52 to Daniel Fleury of the Quebec department of transportation. Is that what you're referring to?

A. Yes.

Q. Okay. Sorry. So you go on; you said, not really, and then you spoke to

the MTQ. There we go. So you see I had -- like, based on the results that, you know, I got from the testing, so it was original that they sent and tested by Trow and then tested by Golder, I knew characteristics of the aggregate. It was very good. Then I got CPP in terms of that characterized polishing, and I know it was used as a reference by MTQ, and the results was good.

But I wanted to have a confirmation about field performance of that aggregate. So I called MTQ because, you know, I -- you know, I knew MTQ. I called MTQ to discuss -- to get more information to discuss the field performance of the aggregate. These are my short notes from that conversation, I called Daniel Fleury from MTQ, and I was informed that that was a -- this very good aggregates, one of the best in Quebec. They are used in hot mix asphalt and high volume roads, and actually it was indicated that and what we confirmed that LA was below 35 and Micro-Deval was below 15 percent. So it was just that -- that element that I was missing about field performance of that aggregate. So that was the last element that I needed for -- to have, you know, my opinion about the mix

aggregate.

Q. All right. And so those references to the Micro-Deval and LA abrasion, those are the numbers that Daniel Fleury gave you; is that right?

A. Yes. So she -- you know, it indicated that it is below. So it is, and actually our testing confirmed that it was well, well below, yeah.

Q. Okay. And was your call to the MTQ, was that related to concerns arising from the breakdown of the aggregates in the ignition oven, or was it something else, or a combination of things? What was -- or was it just this final confirmation you were referring to?

A. I think this final confirmation because, like, I knew about -- I had enough information about the quality of the aggregate in terms of, you know, mechanistic characteristics and this estimation, Micro-Deval, LA abrasion, petrographic number, other characteristic. I knew CPP. So I knew these values were good, but I wanted some information about, like, field performance.

Q. Okay.

A. How it performed in the field, and then I got this confirmation that it was one of the best and performed very well. So that was this missing element in my picture, in my opinion about the aggregate.

Q. Okay. And if we could look, then, at the next entry in paragraph 105. So five days later, after your -- the call with the MTQ. In paragraph 105(a), Mr. Hainer, Dave Hainer of Dufferin, e-mailed Philips and Mr. Oddi of the City about concerns expressed about the demix aggregates in the SMA and FC2 surface courses and about laying down the SMA test strip. And so he'd -- he writes:

"Walter, please see the attached correspondence regarding the concerns of the aggregate which are to be used in the FC2 and SMA surface course mixes. As you're aware, we still have to have the test strip for the SMA scheduled for this upcoming Wednesday and trust the documents below will satisfy the concerns verbally identified. Should there still be concerns on this matter after reviewing this information, please call me at your earliest convenience so we can arrange a meeting to resolve

this matter."

And if we could go to the document itself, this is Dufferin 1965.01. -- or maybe just .1. Thank you.

And the way this is structured is -- and you're not copied on it, which we'll discuss in a minute.

At the top is the e-mail from Mr. Hainer that we were just reading from, and he is forwarding an e-mail internally at Dufferin from Paul Janicas on July 20th to Mr. Hainer and Mr. Gamble. And in that he says:

"Dave, attached is the package discussing the demix aggregates issue. Please review."

And, Commissioner, I can advise that -- and this is indicated in the footnote 143 to that paragraph in the overview document -- that although the e-mail states, the e-mail from Mr. Janicas forwarded by Mr. Hainer, indicates that there are attachments, and you can see the image there at the bottom shows four PDFs, that there are no attachments to the document as produced. We don't have the actual documents. Dufferin has advised us that they have searched

and are unable to locate them, and we do not have any production of that --

JUSTICE WILTON-SIEGEL: Okay. Thank you.

MR. LEWIS: -- from the City. And then there's the four items are listed. "Skid Resistance Report" are just the titles of the images of the documents. "Skid Resistance Report," "Mixed Design Examples," "Red Hill Valley Aggregate Physicals Comments," "Trow 20th July, 2007," and "Demix Aggregates July 20th, Dufferin Cover Letter."

And we do not have those documents.

BY MR. LEWIS:

Q. So, Dr. Uzarowski, you're not copied on either of those e-mails. Did you receive the e-mail or made aware of the e-mail from Mr. Hainer at the time?

A. You know, I'm not on the list, so probably under this inquiry I would see the copy that you have.

Q. Yeah, I mean at the time. Until this inquiry --

A. No.

Q. -- had you seen this e-mail?

A. No, I was not included in this e-mail.

Q. Okay. I get that. And were you aware back then of this -- of the e-mail and/or its contents even though you weren't sent the e-mail?

A. I think it -- it may -- probably covered the aspect that, you know, you showed before, the correspondence in all this --

Q. The question I asked, were you aware at the time that this e-mail had been sent or of its contents?

A. No. No.

Q. Could you go back, Registrar, to the overview document, the same page, 52.

Okay. And in the e-mail from Mr. Hainer on the 23rd, he three times refers to -- I think it's three times -- concerns raised or the concern of -- the concerns of the aggregate that the documents will satisfy the concerns verbally identified should there still be concerns on this matter. Three times he mentions that.

Appreciating you didn't receive it, as of that date do you know what concerns he is talking about?

A. No. No. He didn't talk to me.

Q. Okay. Had you expressed concerns to Mr. Hainer or Philips or Mr. Oddi or anyone else at that point beyond the issues that we've already discussed?

A. No. No, I didn't. Only what was discussed.

Q. What about Mr. Delos Reyes?

A. No, I didn't.

Q. Okay. And the same day, if we look at paragraph 105(b), and maybe you could put up the next image, Registrar, image 53 as well.

On the same day Mr. Delos Reyes of Golder is e-mailing you internally about SMA and SP19 mix design, and he reminds you of the test strip for this coming Wednesday, which we know is the 25th of July, and indicates:

"If you are going to issue

written approval with reservation for the SMA mix design, please include the SP19 mix design. We've already given verbal approval during the regular monthly meetings just to confirm it in writing."

So that same day as Mr. Hainer is e-mailing Philips and Mr. Oddi about concerns raised about the aggregate, Mr. Delos Reyes is writing to you about if you are going to issue written approval with reservation for the SMA mix. And do you know what the reservation is that he's talking about?

A. I understand that his reservation was this aggregate breakdown.

Q. In the ignition oven?

A. In the ignition oven, yes.

Q. Okay. So that's what you understood at the time?

A. Yes, this is what I understood and this is I think what we discussed.

Q. Okay. And we hear about concerns from Mr. Hainer in his e-mail, and you weren't included on that. Do you think you ought to have been included as a recipient of that e-mail, and then the one that follows it in -- on

image 53, paragraph (c) at the top. There's a subsequent e-mail the same day by Mr. Janicas about the aggregates that you also did not receive. Should you have been?

A. I think of course I should. I was the QA person. I should be included in my opinion.

Q. Right. And do you know why you were not included?

A. No, I -- no, I don't. I don't know -- I don't know why. I think I should be, but I wasn't -- no, I don't know.

Q. And you weren't aware at the time again that -- again, looking at the second e-mail the there from Mr. Janicas in 105(c) at the top when he's e-mailing Philips and Mr. Oddi about prior use of demix aggregates by the Quebec Ministry of Transportation, giving some -- three examples of prior usage. You didn't receive that either?

A. No, I only saw it during this inquiry. Not that time no, I didn't.

Q. Okay. And you weren't told about it being sent; is that right?

A. No, I wasn't.

Q. Thank you. Now, we know that Dufferin placed the SMA test strips on one of the Mud Street interchange ramps on July 25th, 2007.

And that's if we -- at the bottom of image 53, so if we could move image 53 and put up image 54 as well, please. And you were there for the placement of the test strip; is that rate?

A. No, I was not. Andros was there.

Q. Oh, sorry, your later meeting. I apologize. You were not there. But -- okay. Okay. And so your notes from that day do not reflect that you were attending at the test strip placement; it's just that test trip was occurring?

A. That the test strip was occurring, yes.

Q. Okay. Mr. Delos Reyes was there. Okay. And you did attend a meeting, which we'll discuss in a minute, on 27th. Do you know -- do you recall where it was located?

A. On a ramp -- Mud Street ramp.

Q. Right. And I'm going to put up a map that you had previously annotated for us. This is RHV930. And the -- is that part outlined in red there on the Mud Street interchange -- well, first of all, that's the Mud Street interchange, correct?

A. Yes, it is.

Q. Okay. And it's where the Red Hill curves up north as it moves from the lane if you're going in an eastbound and then northbound direction; is that right?

A. Yes, it is.

Q. Okay. And then the red indication there is the approximate location of the SMA test strip?

A. Yes, it is.

Q. Okay. And how do you know that that is the case? Is that -- you can just -- you can recall that? You know where the result -- where it was laid?

A. I think Andros told me, and I think I also saw when I came to -- for a site visit, I think I had a look at this. So I knew I was pretty -- I'm pretty positive that this is the location I saw.

Q. Okay. Well, there was a meeting on the 27th.

A. Yes.

Q. And so we'll get to that in a second.

So what was the objective of this test strip?

You can take that down, please.

A. As I indicated before the test strip is to check, you know. Because they did a trial batch, so in that trial batch they determined that they -- you know, what finetuning was required to produce it.

Q. So 'they' is Dufferin and their consultants in this case?

A. Dufferin, yes, and their consultants. So now, the objective of the test strip was to make sure that they can produce a significant amount of material, of that particular mix, and then they can place it, and they can compact it in such a way that they will meet the specified requirements. But before they do the mainline paving, the test strip was to verify that they can produce, place and compact in accordance

with the specification.

Q. Okay. And should we talk about, then, the results of the test strip. In paragraph 108 on image 54 and 109 Mr. Reyes is e-mailing you on the 26th and 27th of July, and -- 2007 about the test strip, and he indicates that:

"The thickness is thinner than required. There seems to be some sort of aggregate breakdown."

He sends you some photographs.

And on the 27th he attaches to test strip results stating:

"Air voids is low, DCC got --" that's Dufferin "-- got 6.22 on their AC but seems to be higher on AV(3.1) which does not jive with their test result on trial plant mix."

And then you met with Dufferin and the City of Hamilton to inspect the test strip on the 27th. So what was the problem?

A. Well, the problem was with the quality of the test trip. So there were a few items. First, the mix itself. You know, you can see in my notes that the air void -- this is just that air was -- I got from the lab, that there were only 1.7 percent. So also I think

we -- gradation phase on 475, later on were identified there was an error; it was 0.75. So the mix itself, then the compaction was low, and one thing why the compaction was low, why it was so difficult to compact, because the thickness of the mat was significantly reduced. Actually I got information from Andros Delos Reyes that the thickness of the mat was only 32 millimetres.

Q. Right. 32 millimetres, and it's supposed to be 40?

A. It's supposed to be 40. And it's a stoney mix. It's stone-on-stone contact, and the thinner the lift the more difficult it is to compact. So --

Q. Because you're trying to push the stones --

A. Yeah. So you can --

Q. -- the aggregate into a smaller space?

A. You have stone-on-stone contact, you cannot -- you have no room for relocation of the aggregate. So I also understand that, you know -- I think from Andros, he told me that they even tried to use vibration, and this is why they probably got this aggregate breakdown.

So they had thin lift, they try to pack it, they couldn't get compaction, and they broke the aggregate. Some -- broke some aggregate. So overall, in my opinion they failed test strip.

Q. And that's what you indicated according to your notes, that the test strip has failed --

A. Yes.

Q. -- in your notes, and the test strip is rejectable?

A. Yes.

Q. And you described the reasons. Okay. And when you say low air voids, does that mean there are not -- just to make sure we have the right nomenclature -- that the air voids within the placed asphalt mix are too small?

A. No, these are laboratory air voids. So --

Q. These are lab air voids.

A. These are laboratory air voids. So this is a characteristic of the mix. Because field air voids are hundred minus compaction. Hundred percent minus compaction, these are field air voids. But this 1.7, this is laboratory air voids. This is the parameter of

the mix itself.

Q. Okay. So they are -- they're not talking about the results taken from what was placed in the test strip?

A. Yes, so they took a sample --

Q. Right.

A. -- bring it to the lab. They took it through a giant rotary compactor, compacted it, and then they realized that their air voids were too low.

Q. But when it says low lab voids, you're talking about air voids?

A. Yes, low laboratory air voids, yes.

Q. Okay. Thank you. That's where my confusion was. And you refer to the gradation failed on 4.7 millimetres. That's talking about the sieve, the 4.75 millimetre sieve?

A. Yes. I stated it was 475, but I think I understand that it was an error, and it was actually 0.075.

Q. I think we'll come -- just your --

A. Okay. Yeah, yeah.
Q. You do make an error, but it's -- you correct it after. I think this is the correct one, but we'll confirm that in a minute?
A. That's a sieve, yes, sieve size.
Q. Okay. And that means that, what, is it too few aggregates are ongoing through the sieve or too many?
A. I would have to look at the gradation and see on what side we are.
Q. Okay. That's fine. We'll come to that. And so this is what you advised -- you indicate in your notes, there's a meeting with Marco Oddi, James DCC, Andros and LU. So you're LU, Andros is Andros Delos Reyes, and is that James DCC, is that James Wharrie --
A. Yeah.
Q. -- of Dufferin?
A. Yeah.
Q. Okay. And do you recall that those people were all there at the meeting or is this -- that -- do you have a specific recollection of that, or is that just recollection based on your notes?

A. I think, you know, I would have to rely on my notes because it was such a long time ago. So -- but, you know, I think that, you know, that's the advantage of taking the notes because after so many years I would have no chance to remember, but, you know, when I look at the list -- so definitely these guys where on-site when we met, or the four of us met.

Q. Okay. Thank you. And you do a test strip. Is it uncommon that test strips fail?

A. No.

Q. It's not a regular occurrence?

A. I would say, you know, it's -- it's a regular occurrence. This is why we do test strip, so we want to make sure that before we do the mainline paving, we can verify that the contractor can produce. So this is the idea of this. This is, you know, the main road, main line, so just to -- not only to verify but also the contractor can learn because they will see, okay, you know, where they fail. What should they do? What -- should they finetune the mix, or should they correct the paving operation,

compaction operation, monitor the temperature. So this is I think very important for them, not only me to -- you know, for me to penalize the contractor, but for the contractor to learn how they have to modify the paving corporation to make sure that they do it in accordance with the specification.

Q. Right. And your reference to -- just want to be clear, the aggregate breakdown, Mr. Delos Reyes in his July 26th e-mail says, "There seems to be some sort of aggregate breakdown."

And you indicated that your understanding was that Dufferin had used vibratory roller on the test strip. Is that -- did I get you right on that?

A. I think it was probably in Andros' comment that they -- you know, they had (indiscernible). They noticed that compaction was low so they wanted to apply more effort to improve compaction. But as I mentioned this is like you're not forgiving mix. If you don't compact it immediately, there is no chance. And on top of this there was this thin layer.

Q. That it was thin.

A. So that was -- so when they packed it and apply vibration, they crushed some aggregate.

Q. Okay. We can keep 54 up then move to -- and put up 55 as well, please.

In paragraph 110 at the bottom of page 54 on July 31st Mr. Delos Reyes e-mailed you attaching SMA nuclear density compaction test results for the SMA test strip, and said:

"They are proceeding ahead tomorrow on SMA, SP12.5 looks okay compaction-wise and (indiscernible)."

And you wrote in paragraph 111 on July 31st. You e-mailed Mr. Janicas, Mr. Oddi and Philips attaching SMA test results, including those that Mr. Delos Reyes had e-mailed to you on that day. And then you wrote what was in that paragraph:

"Please find attached the results of the laboratory testing of the SMA plant sample obtained during the test strip on July 25th, 2007 and test strip compaction results. As discussed at a meeting with representatives of the City of Hamilton and Dufferin Construction on Friday July 25th, 2007, the mix did not meet the

specified requirements. Laboratory air voids at end design and the percentage of the material passing the 0.075 millimetre sieve are in the rejectable zones. The Superpave Gyratory cylinders prepared with this mix were presented at the meeting. They look much richer and finer than the cylinders prepared with the SMA trial batch mix that met the specified requirements. Also, the SMA compaction results were in the rejectable zone at a number of locations. The test strip is not acceptable. We recommend a new test strip be completed. We understand that Dufferin Construction intends on place the SMA mix on the main line tomorrow. Dufferin Construction should be aware that the test strip has not been approved, and the paving will be at their entire risk."

So one thing, there's a reference to material passing the 0.075 millimetre sieve, and I -- which is what you were referring to before when you were looking at your meeting notes. I can tell you that later that day Mr. Delos Reyes corrects you to it being the 4.75 millimetre sieve, and you correct it the next day. So just to deal with that issue.

And as we discussed earlier the addendum to the tender, addendum 1 that we discussed, if there's a failure of the test strip Dufferin is supposed to do another one, are they not?

A. Yes.

Q. Okay. And so why is Dufferin moving ahead without one, to your knowledge?

A. You know, I can't tell you, like, I -- we as -- I, as a consultant, or Golder as a consultant, we can evaluate the test strip, and we can say that the test strip passed or failed, and we can advise that the contractor and the owner or the contract administration -- administrator, it failed, and this is it. We cannot force the contractor to do it. I can advise and say, hey, you know, you do this thing at your own risk; you failed. But this is maximum I can do. I cannot -- I have no other power to enforce the contractor to do it.

So at the same time they learn what was wrong. So this is one of the thing that they learn, but they should repeat the test strip in my opinion.

Q. Right. The City could certainly require it of Dufferin, could they not?

A. Oh, yes, they could.

Q. Okay. And do you recall -- you sent this e-mail. You were advised by Mr. Delos Reyes of Dufferin's intention to proceed. And do you recall if you spoke directly to anyone at Dufferin or the City or Philips who told you that this was happening or advised you of what was going on?

A. You can see the thing in my notes on July the 27th that we met on-site, and then we -- I told them that the test strip is rejectable, so that was the City, Dufferin and Andros and myself. So, you know, that was meeting on-site, directly on-site when we met, plus the e-mail.

Q. And that's the -- is that the only discussion that you recall about it, the meeting on-site on July 27th?

A. Yeah, I -- you know, again, like, you know, it was so many years ago, so I probably -- unless there is something more in my hand notes or in my journals, but if there is -- there is nothing, so it would be probably --

Q. So Probably not.

A. It would be probably the, you know, the site meeting that is in my notes and then followed by an e-mail.

Q. All right. And I mean, if -- there's nothing else in your notes; there's no other communication. It does strike me as something that there would be -- you know, you had the site meeting. Dufferin says they are going ahead. It does strike me as that's something you would have at least a discussion with at that time with the City, Philips or Dufferin, but you don't have any recollection; is that fair?

A. No. No, I don't.

MR. LEWIS: I believe I may have, after tooting my own horn, forgotten to make an exhibit of the last document. It's the map which is RHV930, should be marked as Exhibit 22, Commissioner.

JUSTICE WILTON-SIEGEL: Thank you.

MR. LEWIS: It's the test strip map.

EXHIBIT NO. 22: SMA Test Strip Placement map dated July 25, 2007, RHV930.

MR. LEWIS: I think this would be a good time for the lunch break, it's 12:55, and I was going to go next to Dr. Uzarowski's discussion with Chris Raymond at the Ministry of Transportation of July 31st. But it will likely take more than five minutes.

JUSTICE WILTON-SIEGEL: Okay. Let's take our break then, and we'll turn at 10 past 2:00.

MR. LEWIS: Thank you.

--- Recess taken at 12:56 p.m.

--- Upon resuming at 2:10 p.m.

MR. LEWIS: Good afternoon, Commissioner, may I proceed?

JUSTICE WILTON-SIEGEL: Please do.

MR. LEWIS: Thank you.

BY MR. LEWIS:

Q. Dr. Uzarowski, when we left off we were talking about July 31st, 2007, and your e-mail to Dufferin, Philips and the City about the failure of the test strip and Dufferin proceeding with the placement of SMA the next day. If we go to overview document 3, pages 56 to 57, please.

It's paragraph 114, which goes on both pages, refers to a July 31st, 2007 call by you to Chris Raymond at the MTO, and at the bottom of that page going onto the next page is his entire text of his e-mail internally the next day at the MTO reporting on his discussion with you the prior day.

He's a writing to Becca Lane, Kei Tam (ph) and Chris Rogers within the MTO, but of course you're not copied on it. It's internal. He says:

"I received a call yesterday, Tuesday, August 31st --" we know he means July 31st. He's writing it on August 1st.

"-- from Ludomir U. of Golder Associates. He had heard a rumour that the ministry no longer allows Ontario Trap Rock in SMA. I informed Ludomir that the ministry has had concerns with early life friction in some SMA pavements. In response to these concerns, the ministry is, continues to investigate early life friction and has formed MTO industry task groups to discuss the issue the last two winters. As an interim measure, the ministry has developed a short list of acceptable SMA aggregates which are

communicated through special provisions, 313SR5 and now 110F12. The special provisions do not currently list Ontario Trap Rock. Also, in SWR we look at the cost implications of the limited SMA aggregate sources in the area to determine if SP12.5 FC2 should be the surface course on potential SMA projects. Action has also been taken on carryover contracts to ensure acceptable early life friction. Ludomir expressed concern regarding the proposed use of SMA on a City of Hamilton project, Red Hill Creek Expressway, where the contractor has submitted a mixed design using a Quebec source, Demix-Varennes, the aggregate is not on the ministry's DSM. Ludomir indicated he was going to follow up with Chris Rogers regarding the background of this source. A possible outcome is that the City of Hamilton could make a request for friction testing." (As read)

So I'll ask a number of questions about this e-mail, but starting off, does Mr. Raymond's e-mail reporting on this the next day, on your call the previous day, accurately reflect your conversation with him?

A. I think it does, yes.

Q. And why did you call Mr.

Raymond in particular rather than someone else at the MTO? Apart from the substance of your call, why did you call Mr. Raymond in particular?

A. You know, first of all, I knew Mr. Raymond quite well. He did his PhD at the University of Waterloo and I did my PhD at the same university, and his wife, Professor Susan Tighe, was my supervisor, so I knew him quite well. But at the same time, you know, from my note, hand note, you can see that I also tried to reach other people. I think since I wrote their names I probably tried to reach other people at MTO, but Chris was -- Dr. Chris Raymond was the best guy because I knew him and he was very knowledgeable.

Q. You're referring to in the prior paragraph, 113, if you could go back one page, Registrar. Dr. Uzarowski's notes on July 31st at the bottom of that page in 113, they indicate a number of names, Judy Pretty; Neil Virani who was an MTO person; Chris Raymond; John Blair, another MTO person; Chris Rogers at the MTO, his phone, and there's a reference to SMA trap rock and other items. So that's -- you think you may have also tried those people, or Chris was

the first one you got?

A. I think maybe I tried to -- you know, I only don't recall, honestly speaking, Judy Pretty. The name sounds familiar, but I cannot put a person, you know, in front of my face. But I knew -- I knew Neil Virani very well. Of course Chris Raymond. I knew John Blair. I know Chris Rogers.

So this -- the people that I could talk about this. But, you know, obviously Chris Raymond would be probably the best choice because I knew him and I knew how knowledgeable he was on this subject.

Q. He was the senior bituminous engineer in the bituminous section at the time at the MTO.

Okay, if we could bring back 56 and 57, please, just so we have the e-mail in front of us.

To deal with one specific issue, in the second sentence Mr. Raymond indicates that you had heard a rumour that the MTO no longer allows Ontario Trap Rock in SMA. Do you recall when and from whom you heard that rumour?

A. I don't recall, but

actually his note corresponds well with my note that I also wrote about Ontario Trap Rock.

You know, I would like to clarify one thing, that Ontario Trap Rock is not the trap rock in the entire province, it's just one particular quarry.

Q. It's capital O, capital T, capital R, is the name of the company and quarry which is a source of trap rock which is a type of aggregate?

A. Yes. Yes, thank you. Sorry about it. I just wanted to clarify this.

Q. I'm glad you did because I was going to get there, so thank you.

A. I'm sorry. So yeah, so that was -- I must have heard about this, so it basically, you know, raised some concern because I want -- or Dufferin wanted to place SMA on that highway. So whatever was related to SMA was of my interest so I heard about this thing. So I wanted to talk to knowledgeable -- because, you know, the people from bituminous section, they know everything about our asphalt mixes in Ontario, so to get their input, to get their information.

Also if I can -- I also had --

had some question about asset modifications. This is in my notes so I must have been heard, you know, something about a problem with SMA if asset modified -- polyphosphoric acid is used as a modifier for asphalt cement used in SMA. So I wanted to clarify this, but also, you know, to clarify this Ontario Trap Rock and, you know, those restrictions that I heard about the use of Ontario Trap Rock in SMA.

Q. Do you recall when you had heard that, how far in advance of this call?

A. No, I -- you know, I can only -- you know, it was such a long time ago, I have to rely on my notes, and I couldn't find anything more on my --

Q. Do you think it was a matter of days or weeks or months?

A. I think it was probably days, or maybe on the same day, or days.

Q. Yeah, okay.

A. I would rather say probably days, because this is why I decided to call. You see my notes that I tried to reach somebody at MTO, so I must've heard this and I wanted to get their input, MTO input on --

information from MTO on this subject.

Q. Right. So you don't recall where you heard that rumour from or when it was -- likely it was in the order of days prior to the call; fair?

A. Yeah, it is. Yeah, it is fair. No, I don't recall exactly it was such a long time ago, no.

Q. Okay. So he indicates that you expressed a concern regarding the proposed use of SMA on a City of Hamilton project where the contractor has submitted a mixed design using a Quebec source that isn't on the DSM.

Was your concern with the use of SMA or with the aggregates being used in the SMA or both?

A. Not with -- not concerned with the use of SMA because I was convinced that SMA was the right application, but I was -- as mentioned before, I would prefer if that was on DSM list, so I wanted to share my concern with the fact that this aggregate was not on the DSM list.

Q. Okay. And so that was the concern, was it not being -- was that the mix was not on the DSM. And so the concern with it

not being on the DSM then, do you recall his reaction to that, what he told you about it? He has his note, but do you recall if he had any reaction to the concern that you raised?

A. No, I think it's -- you know, my reaction was I -- you know, even from this note, I think I was critical of this at the end of this conversation that we would have to do friction testing.

Q. Right. And that's the last sentence, is:

"A possible outcome is that City of Hamilton can make a request for friction testing."

And who -- do you recall whose idea that was? Was it yours or his idea?

A. I think it was a result of, you know, conversation; if you use, then test the friction.

Q. Is the reason for that because the mix aggregates was not on the DSM and that because one of the requirements of being listed on the DSM is the friction testing and polished stone value testing and so forth to pre-approve the aggregates, that friction testing

would be a good idea to conduct in light of the aggregate not being on the DSM?

A. So that was -- yeah, that was one. The aggregate was not on the DSM. At the same time, Chris, you know, told me about this Ontario Trap Rock and high every strength so that would be, you know, if I -- if we test it, friction, then we would know what we have. And, you know, actually what -- based on the results we get, what action we can -- would be required. So that was -- you know, that would address both things.

Q. Right. So it's two parts, if I understood you correctly, and correct me if I'm wrong. One was the aggregate is not on the DSM; therefore, had not been pre-qualified as having good frictional qualities. And the second is the issue that he identified with you, being the low early age friction issue that the MTO was dealing with for SMA; is that correct?

A. So, you know, I had no base to reject this aggregate, but obviously I would -- yes, you know, I would prefer if it was, so I had some -- I wanted to have a better comfort. So if -- I think in my opinion if -- and

that was the result of the conversation. If we tested then I would know right away what is -- and I have to also point one thing, that since I'm involved at a lot of airport work, I was a member of AAPTP when actually one of the subjects was using SMA on airports, and that included also the subject of early friction.

So, you know, I remember at the conclusion there that there was some issue, but they were still within a reasonable value. But, you know, that -- you know, if we did this thing -- so I would know -- if I did the friction, I would know, you know, the early friction results on that pavement, and also was it an impact of that -- the fact that this aggregate was not on the DSM list on the results. So I think -- I believe that, you know, at the end of this conversation I was convinced to do friction testing.

Q. Okay. There's also a reference in there right before that that you indicated you were going to follow up with Chris Rogers regarding the background of the source, and Chris Rogers at the time was the head of the soils and aggregates section at the MTO which

administered the DSM; correct?

A. Yes.

Q. You were aware of that. Do you recall if you called -- if you contacted, called Mr. Rogers?

A. I think I probably tried but I wasn't successful. This is -- you know, I don't have -- I think if I contacted him I would have something in my notes, but I don't have him -- I probably -- if I said I would try, I would, but I probably wasn't successful. Because it's -- it's not easy to contact those guys.

Q. Was this conversation then the genesis of the MTO friction testing that took place on October 16th, 2007?

A. I think so, yeah. I think -- you know, I can probably say that at the end of this conversation I was convinced to do the friction testing on the Red Hill Valley Parkway.

Q. Understood. To come back, though, to what we were talking about before lunch, you still did have concerns. I think you had indicated, well, the test strip failed; I wasn't concerned about the aggregate. You did have concerns still and that's why you called --

as you described them, and that's why you called Mr. Raymond?

A. Yeah. So one DSM. Another thing was, you know, this information about Ontario Trap Rock. So, you know, as I mentioned before, obviously I would prefer if it was, so that the subject would not exist. But, you know, I had no base to reject, you know. Dufferin, you know, was to place the SMA, but, you know, it was still in my mind that I would -- I wanted to gather, you know, as much information and as much input on this as possible.

Q. Do you recall if around that time of this call that you spoke to anyone at the City about friction testing occurring? Mr. Oddi? Mr. Moore? Anyone else? I know later in September there's a call. I mean at this point in August -- September -- sorry, July 31st.

A. I think, you know -- I don't know if it's in my notes, but I probably -- I think I definitely talked to the City, to -- with -- I talked to them with information that I would recommend doing friction testing after the SMA was completed on the Red Hill Valley Parkway.

Q. We know that Dufferin

started the SMA paving on August 1st. And if we could go to -- well, actually we're on page 57. On page 57, paragraph 117.

We know that Golder completed -- conducted compaction testing on August 1st and August 3rd. I would like to look at the August 1st results first, and that is Golder 1718, and we need to pull this up as a native, Mr. Registrar, as I believe it's in Excel format.

THE REGISTRAR: Okay. One second.

BY MR. LEWIS:

Q. While he's doing that, Dr. Uzarowski, you'll see it's a nuclear density compaction report. So this is what you were talking about earlier when you referred to compaction, and that's the testing that you do to determine whether the compaction is acceptable?

A. Yes, yes, we use nuclear Densometer, so we would use nuclear Densometer, but it was also correlated against course.

Q. If you could go up to the top, Mr. Registrar, and we're going to have to maneuver this around a bit. So asphalt nuclear density test results summary. I think -- I see

the date paving. Could you expand that cell, if you are able to do it, the date paving. The far left one. It's -- there we go. Thank you. Perfect. Thank you.

It's August 1st. If we go to the bottom. Could you take us down there. There's a number of things that we'll talk about, but at the very bottom left it talks about stretch vibrated, 1300 metres. And it says, "23 plus 800 start vibration. Stretch not vibrated, 1950 metres. Total paved 3250 metres." Presumably.

So it appears from this -- and this is a Golder test result; right?

A. Yes.

Q. -- that Dufferin used the vibratory function on the roller for a portion of the SMA placement on the first day, August 1st; is that right?

A. Yes. Sorry. Yes, yes, I understand. Yeah, this is how I understand this, yes.

Q. Okay. Were you there that day?

A. No.

Q. You were not?

A. No, I -- no, only Andros Delos Reyes and probably one of our technicians.

Q. I don't think we need to go to it right now because I'd like to leave this up, but your journal entry for August 1st, for that same day, and it's quite a short entry -- this is in paragraph 116 just for the commissioner and everyone else's reference -- says one "RHVP test trip SMA 4." So what were you doing that day?

A. Oh, you know, if it's -- you know, if it's 4, so it's probably number of hours. So I probably went there. So, sorry, you know, I -- if it was in my journal, you said?

Q. Yeah, we can go to it if you want.

A. Yeah, because, you know, I think 4 would be the number of hours, so I probably drove to Hamilton. But typically I would -- that would be Andros and one of his technicians to do the testing. I maybe -- I could go and have a look but -- I don't recall. Maybe --

MR. LEWIS: Sorry, I apologize, Dr. Uzarowski, you have a notice up

here. Mr. Lederman says that they have lost connection. If we could just hold on for a moment.

(DISCUSSION OFF THE RECORD)

BY MR. LEWIS:

Q. So if I understand you correctly, you weren't there for the placement per se, but you were likely on-site that day; is that right? Do I understand you correctly?

A. Yeah, because typically it would be Andros and his technician, but if my journal notes indicate I was there, I would be probably there to discuss how -- what they can do to improve compaction.

Q. So why don't we just look at -- finish looking at this nuclear density report, and then we'll come back to the note in a moment.

So it says, as I said, that part of it vibrated, part of it not. And you said earlier that, number one, that you've got to be really careful with vibration with SMA for the reasons you described. Second, that you think that the test strip laid on July 25th, that there was some aggregate breakdown and that may have

been the result of the vibration being used on the roller, and then here we have vibration being used again. Do you know what was going on there and why vibration was being used for part but not the rest?

A. Because, you know, you could see that, you know, some of the results are marked as -- like there are some acceptable, some borderline, some rejectable. So probably when they were doing the testing they noticed that some low, so they wanted to improve compaction. And as I mentioned before, you know, I realize the specification doesn't restrict the use of vibration, but the contractor has to be careful. So probably they were -- they had some lower areas of compaction, and so they turn off vibration to improve it. That's probably why this was reported.

Q. Above where we were looking about the vibration, just underneath the chart, there's the range that set outs acceptable, borderline and rejectable percentages, and the rejectable percentages is under 93 percent or over 98.5 percent. And then there's an average, if you go across the bottom of the chart, it says

averages, and it shows 91.7 percent. And that's the overall average, is that right, overall average compaction?

A. Overall average, yes, but you have to keep in mind that what you say -- what you just said, acceptable, borderline and rejectable, is for the centre. And then you have below, longitudinal joint, acceptable, borderline, rejectable. So in column F where you have centre line, this would apply to row 111, 12 and 13, and where you have outside edge or centre edge, that would reply to 117, 118 and 119.

So this edge versus centre line, yes. We include it in the specification. We also included edge compaction, joint compaction. This -- let's say --

Q. It's a lower percentage at the longitudinal joints?

A. Yes, yes, but we wanted to include it in this specification because it's often ignored. You can get compaction -- good compaction in the middle but poor at the joint, so we included this thing on purpose.

Q. And I understand that the range there, the rejectable range is a tighter --

as I think you described it, a tighter specification is actually required in the OPSS standard; is that right?

A. Yes. Yeah, we -- you know this is some kind of -- so we tighten the specification, we raise the specification requirement assuming that, you know, if the contractor is still a little bit below, it will be still better than in the original OPSS. So this is used to force the contractor to put more effort and more attention into compaction.

Q. Right. And is the OPSS lower rejectable range, is that 92 percent rather than 93 --

A. It is 92, and there are no joints, no edges in OPSS.

Q. So here in the top three, the rejectable range being under 93, that would normally be under 92; is that right?

A. Yes.

Q. All right. And I went through the numbers and counted that of -- there's 99 samples here. 53 are rejectable of that total amount, but it's significantly improved when you're in the vibratory roller area. If the

registrar could scroll up a bit, it actually shows where -- continue. There it is. Vibration started at this location at 23, 800. Is that what you would expect to see, better compaction with the use of the vibratory roller?

A. Oh, yeah, you will get better compaction, but, you know, at the same time you don't want to -- so it's like this OPSS does not restrict using vibration, but it's the that -- be careful -- yes.

Q. I know.

A. Be careful with it. Yeah.

Q. Okay. I understand. So if we could then go back to OD image 57. I should ask you, overall, I've just described to you what the -- you know, slightly over half were rejectable. What do you make of that when you get those kind of results?

A. Oh, I definitely report it -- you know, I definitely report it to the client, you know, to CA and the client.

Q. What's the effect of low compaction on pavement performance?

A. Okay. It's again, you

know, the impact can be the durability and -- and then, you know, I recall that we worked with Dufferin how to improve compaction in the most effective way. So you probably -- and we stated this thing later on in a CTA paper. So they increase -- they did what -- you know, so that time they were responsive because they increased the number of rollers.

Q. Right. We'll get to that. I just wanted to know what the effect -- so durability is the --

A. Yeah, durability, yes.

Q. Okay. So here's the note that we were referring to at paragraph 116 that your journal entry stated, "RHVP test strip SMA 4." So you think that the 4 is the number of hours that you spent. I think I caught --

A. Yeah, if it's number 116 in my journal, so the 4 would be, you know, the number of hours, so me driving there and back. And so, yeah, so that was -- yeah. This is how I understand this, yes.

Q. It refers to the test trip. Who are you discussing the test trip with and what test strip?

A. I don't know whether I wrote whether I was on-site. I think the test strip maybe discuss the results of the test strip, in particular how to improve compaction. So yeah, I don't know like -- you know, I -- definitely this August 1st was the main line, so it wasn't the test strip.

Q. Well, that's what I'm wondering because, you know, the test strip was on the 25th that we already talked about, and on the 1st, of course, they are paving the main line and they are, you know, using vibratory roller for part of it and part of it not. So what I'm wondering is whether this was being -- on the 1st being treated as test strip?

A. No, I don't think so. You know, on the main line, you don't do test strip on the main line.

Q. I wouldn't have thought so, but that's what your note says from that day, refers to test strip, which is why I'm asking the question. Related to that is in the nuclear density report, we talked about the vibratory roller being mentioned, right, it actually refers to that. Is that typically what Golder -- does

Golder typically include that information in its compaction test result reports?

A. No, typically not. Because that was written by Andros, so probably, you know, he noticed that change in what Dufferin was doing in terms of compaction so he wanted to know this. No, typically would not write this.

Q. I think that's -- we'll look at some subsequent ones. It doesn't mention whether vibration is being used or not in the subsequent nuclear density test report which would -- and that would be the normal practice for Golder, is that right, to not be mentioning that?

A. Yeah, the normal practice would be not to mention.

Q. Okay. Then again on -- in 117, it also indicates that you had compaction test results on August 3rd. And if we can go to that. It's Golder 1717. And again, Registrar, if we could pull that up as a native. If you go up to the top just so we can identify the document. Thank you. It shows as the date paving, the 3rd of August, 2007, so two days later. Do you recall if you were on-site that day or not?

A. I'm not sure. I would

have to check in my journals, but no, I don't recall.

Q. I don't think we have a note from that day. Oh, we do, sorry. 118. I apologize, we do. Sorry, we should go back. Apologize. Registrar, if we can go back to images 57 and 58. Your note from August 3rd refers to Red Hill Valley Parkway, SMA, four results, and says two trips to Hamilton. Does that help you out?

A. Yeah, so it would show that yes, I -- sorry about that. I didn't remember. So I would have to --

Q. That was my fault.

A. -- on my notes or on my journals, yes.

Q. Okay. So you were on-site that day; is that right?

A. It shows that yes, I was.

Q. Sorry, if we can go back then to Golder 1717. These results are -- as I read them and I think you reviewed them -- as fewer rejectable samples. I think it's 26 of 73 are indicated as being rejectable.

If we go down to the bottom

there, Registrar. It doesn't give an overall percentage in this instance, though. So those are improved results?

A. Oh, yeah, this are improved result, because I think, you know, we discussed this with them how they can improve compaction.

Q. Do you know one way or the other whether Dufferin was using the vibratory function on the rollers that day?

A. No. If there is no note, I would not know.

Q. If we can go back to overview document 3, image 58. This is paragraph 119. You e-mailed Mr. Oddi along with Philips and Mr. Delos Reyes regarding your concerns about low compaction. If we could take that off for a minute, or scroll up so only paragraph 120 shows. Thank you. I'm going to come back to that. That showed some information that I think was supposed to have been redacted, but it does not appear to have been. So -- or it won't show it then. But you indicate:

"Could you please call me? There are quite --"

This isn't the portion that's up. This is from paragraph 119.

"Could you please call me? There are quite a few locations where the SMA compaction is low, some are even below 91 percent. We are concerned about these locations. Low compaction is almost a constant issue with the SMA paving. I suggest that we carry out additional new compaction testing at these locations in the presence of contractor's representative and then decide what to do. The feasible alternative would be to reduce the payment based on the percent compaction."

So you're still at that point, on August 8th, having concerns with compaction; is that right?

A. Yes.

Q. And this is continuing from the August 1st and 3rd results. Here you are talking about results on August 7th, and you recall almost a constant issue. So what were your concerns at this point? It doesn't appear that there's been any -- or perhaps not a lot of improvement. Do you know why that was?

A. You know, I think there

was some improvement, but still there was -- you know, my -- one of -- you know, I wanted to put as much pressure as the -- on the contractor as possible to make sure that they would improve compaction and make the specified requirements. As much as possible. There is nothing more I can do. So put more pressure on them so that they can modify the compaction operation and get better results. And it is possible, but that requires a lot of attention from the contractor, particularly on the SMA mix.

Q. If we go to then -- if you highlight paragraph 122 on that page. I guess it's that page, yeah. Thank you. On August 15th Mr. Delos Reyes e-mailed SMA compaction test results from August 11th and 13th showing compaction as acceptable, and I wonder if we could go to Golder 1684, and pull it up as a native. What was it that Dufferin did to improve the compaction?

A. So first of all I would like to clarify that, you know, our people are not allowed to instruct the contractor how to do it, but I would go and discuss this thing with them and we'll discuss together what can be done, and I

think here the results are much better because they did what we discuss and what we suggest. First, increase the number of rollers. Two --

JUSTICE WILTON-SIEGEL:

Increase the number of what?

THE WITNESS: Of rollers. So I understand that this is, you know, one of the papers. They increase the number of rollers to six. Okay. Then, and this is critical, keep the distance between the rollers and the paver as short as possible. So it means that they can compact the SMA, this SMA that is so difficult, immediately after they pave because the mix is very hot. So that's easy.

Three, monitor the temperature because if the temperature of SMA drops before 140 then there is physically no way.

And four, reduce the amount of water that they're using because sometimes, you know, some rollers use a lot of water and you put water on the surface, you cool the mix. This were the streams that we discuss, how you -- what you can do to improve compaction and actually -- and this is a good example, that at the end it work. Of course I would prefer if it was right

established during the test strip, but, you know, at the end they were responded -- they corrected and they improved compaction, and compaction here also means the quality of the mat, but without this heavy vibration and, you know, taking the risk of crushing the (indiscernible).

Q. If we go down, so this is from the 13th of August, this particular one. And again, it doesn't tell us here where vibratory rollers were used or not, but if we look at the acceptable borderline and rejectable one, the first three lines beneath the chart there, I see that the rejectable percentage is now -- it says under 92 or greater than 97.5 percent. So that's the OPSS standard, right, 92 rather than 93?

A. So it's a typo. No, it should be still 93.

Q. So the reason I think it's not, if you go up, just start at row 62, the third one from the bottom of the chart. Or you can take any other ones. Between 92 and 93 it shows as being acceptable, not in the rejectable range, so it appears that what's being applied is the OPSS standard here; is that correct?

A. Yeah, it looks like,

yeah, but, you know, still the -- in terms of long term, you know, obviously it was better than OPSS, so I told you before that, you know, I tightened the single purpose, okay, because this is what I anticipated.

Q. No, no, and you were clear about that. You indicated that you had hoped that they would get that high, but if not, then they are still within the OPSS standard. I get that. However -- and I understand that. But these results, again if I count them up, if 93 was the rejectable range there would still be a number of them that are rejectable. I count 12 if my math is right. 12 of the results would be over 92 but under 93. So there has been a change in here as to what is considered rejectable or acceptable. So that --

A. 93 should be for what is in column F under centre line. That should be 93.

Q. Sorry, where is that?

A. In column F.

Q. Column F, yes.

A. Centre line, that should be -- still should be 93.

Q. Should be 93.

A. To follow the special provision, yes.

Q. Right. The improved -- right, to follow the - your more stringent requirement.

A. Yeah.

Q. Yes. Okay. Now, if we could go back to image 58 and paragraph 120. If you could highlight 120, please. Thank you. As we had it before, on August 9th Mr. Oddi e-mailed Mr. Hainer, Mr. Gamble of Dufferin, and James Wharrie at Dufferin, all three of them at Dufferin, and he wrote:

"This correspondence confirms that the Varennes demix aggregates have been approved for use in the SMA and Superpave 12.5 FC2 surface course asphalt mixes on the Red Hill Valley Parkway main line paving project. The trial batches for both mix designs met the specified requirements."

If we -- did you receive a copy of this e-mail? You weren't copied on it.

A. No, I didn't.

Q. And were you aware that this e-mail was sent by Mr. Oddi? Did he tell you

he was sending it?

A. No, I didn't.

Q. Sorry. No, he did not?

A. No, he did not. I was not aware.

Q. Did you just become aware of this e-mail in the course of this inquiry?

A. Yes. Yes, I was.

Q. And given your role as you've described it as quality assurance and acceptance, mixed design review and approval, including approval of aggregates, is this something that you would have expected to be involved in?

A. Yes, I would.

Q. Do you know why Mr. Oddi did not involve you in this?

A. No, no, I don't -- I don't know. I don't want to speculate, but I don't know.

Q. I'll offer a speculation and you can tell me if you know this or not. Was -- were you being bypassed because you had been difficult with approval of the aggregates?

A. I think overall I had the

opinion of being difficult and very demanding, not only for aggregates, but for the entire work. I think that was my opinion. I was strict and difficult, or demanding.

Q. You don't ultimately know the reason why you weren't copied on this?

A. No, I don't.

Q. Now, if we could jump to image 60, and these are the site meeting minutes from August 21st, 2007. This is after the SMA paving was completed. It appears to have been completed on the 13th of August. And you were at this meeting, and it indicates on the -- under section 1, the fifth bullet says:

"Golder has completed their analysis and provided written confirmation indicating --" thank you. Fifth bullet:

"-- confirmation indicating the SMA mixed design is satisfactory."

So it's referring to mixed design. It doesn't refer specifically to approval of the aggregates. But other than that August 9th e-mail that we just showed you from Mr. Oddi to Dufferin, are you aware of any specific approval by Golder in writing of the

demix aggregates?

A. No. No, I -- no, I'm not. Of the aggregates, no.

Q. No. Or of the mixed design more generally, appreciating that the aggregates are part of the mixed design?

A. No, I don't have any records, but actually the mixed design itself as the mix was okay. The mix, you know, was done in accordance with OPSS and met the requirements for the mix.

Q. Okay, but then the aggregates has been -- we talked about that before. They are part of the mix design, although I appreciate a discrete part in a way.

A. Yes.

Q. So just to confirm, you're not aware of an actual approval given by you or anyone else at Golder of the aggregates?

A. No.

Q. Thank you. We can pull that down. Thank you.

I should also indicate, Commissioner, I understand that Golder has made efforts to locate a document of that nature and

has not been able to, but efforts have been made.

MS. JENNIFER ROBERTS:

Counsel, I can confirm that.

MR. LEWIS: Thank you.

BY MR. LEWIS:

Q. Now, if we could go to image 61 and 62. Paragraph 127 sets out a -- Commissioner, sets out e-mails between Dr. Uzarowski and Mr. Delos Reyes on August 21st, 2007 following the site meeting we were just talking about pertaining to 32 asphalt test results conducted by Golder and the results on a number of those tests being rejectable and then there being some confusion around potential mislabelling of some of those results. I can advise there's no communications following this in the inquiry database about the results or any follow-up on them, but given the number of test results involved -- as you can see, they are cited there at the bottom of image 61 -- and just sort of the complexity of the explanation given, I thought it was more efficient to have Dr. Uzarowski and Mr. Delos Reyes address the matter by way of affidavit rather than oral evidence in-chief.

So I would like -- we can pull up Dr. Uzarowski's affidavit. I'm not going to ask any questions on them today. It's RHV928.

This is the affidavit of Dr. Uzarowski affirmed on April 8th, 2022, and this provides an explanation of the issues in that paragraph of the overview document.

If I could make this an exhibit. I believe it is 23. I got a thumbs up from Ms. Hendrie, which means my numbering remains correct.

EXHIBIT NO. 23: Affidavit of Ludomir Uzarowski affirmed on April 8, 2022, RHV928.

MR. LEWIS: And then if we could pull up RHV927, which is Mr. Delos Reyes's affidavit. He'll be testifying on Monday but -- so we have these together, it makes sense to do that. It's the affidavit of Andros Delos Reyes, affirmed on April 9th, 2022. Deals with the same issue. If we could mark that as Exhibit 24.

EXHIBIT NO. 24: Affidavit of Andros Delos Reyes, affirmed on April 9th, 2022, RHV927.

MR. LEWIS: I'll proceed then.

If you could take that down, Registrar.

I was going to now move on to the topic of the MTO skid testing, the arranging of it and the skid testing itself. We're planning on the break at 3:15, but perhaps since it's a new topic, would this be a good time for a break?

JUSTICE WILTON-SIEGEL: It would probably be a good time. Should we take the full 15 minutes or should we shorten it?

MR. LEWIS: I think I would leave it to Dr. Uzarowski, and I'm fine with 10 minutes, take a quick break, if that's okay with Dr. Uzarowski.

I would also ask -- I think I will be finished by the end of today, so I would ask counsel for the participants to start thinking about -- so we can have a discussion at the end of the day -- about allocation of time tomorrow. If I do continue on to tomorrow, it will be quite short, but I'm hopeful to be done by the end of today.

JUSTICE WILTON-SIEGEL: Thank you, Mr. Lewis. Let's take a 10-minute break, and I would encourage counsel to have a conversation with Mr. -- think about the conversation with

Mr. Lewis which I guess you'll have at the end of the session today. Thank you.

--- Recess taken at 3:11 p.m.

--- Upon resuming at 3:22 p.m.

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

JUSTICE WILTON-SIEGEL: Yes, please do.

By MR. LEWIS:

Q. Registrar, I'm going to switch to overview document 4, and in particular images 49 and 50 to start. Registrar, did you catch my instruction, overview document 4, images 49 and 50? Thank you.

I want to talk about, as I indicated, the lead up to and the skid testing itself on the Red Hill on October 16th, 2007.

In paragraph 109 at the bottom of image 49 and going on to 50, you have some notebook entries from September 10th of 2007 and they -- I understand that these reflect discussions about the MTO conducting the skid testing on the Red Hill Valley Parkway which you had discussed with Mr. Raymond, of course, back on July 31st of 2007 as we discussed.

So do you recall who you had discussions with? I see references there in the first note, it says:

"Request for the City of Hamilton. SN, give the location. Frank, tomorrow."

Frank I think is Frank Marciello of the MTO. Does that sound right?

A. Yes.

Q. And then on the next page at the top it says:

"Estimate, 40 miles an hour, posted speed, a wet test Monday 10 a.m., Gary."

And then there's another in 110, it says:

"Red Hill Valley Parkway. Gary Moore, IRD instrumentation, SN testing. Chris Raymond, SN, RVM spec, and Andros, deficiencies."

So the SN testing, that means skid number testing; is that right?

A. Yes, it is.

Q. And so these are notes in part referring to arrangements for the testing. And do you recall when it says "request for the

City of Hamilton," what's that talking about? Is that about the MTO wanting a request made by the City of Hamilton?

A. You know, I think a request for the City of Hamilton -- I don't recall. You know, I know it was about the friction testing, obviously for the City of Hamilton on the Red Hill Valley Parkway, but -- you know, I can only say that yes, I wanted this testing to be done and it was supposed to be done.

Q. In the next paragraph, 111 it's an e-mail from Mr. Raymond to Mr. Marciello and Ms. Lane internally to the MTO referring to a telephone call with you and you say:

"Ludomir called me this afternoon regarding the City of Hamilton friction testing that we discussed this morning."

And -- right? And so do you recall who you spoke to at the City about this in light of your note?

A. Maybe when I said request, this is maybe when I talked to Chris and asked about this. From the City it would be Gary Moore or Marco Oddi or both of them. But

definitely Gary Moore would know about this and --

Q. So definitely Gary Moore, maybe Marco Oddi?

A. Maybe Marco Oddi. Yes, Marco Oddi was in charge of construction, so I would have to let him know because that was his responsibility because the project has not been completed and open to traffic, and Gary Moore was the person -- you know, he was the director of engineering, so he would have to know this. Likely both of them.

Q. In the last sentence of the paragraph of the e-mail at 111, it says:

"I informed him that we would conduct the testing once the request is received."

And we can get to it, but, you know, there's subsequent correspondence about the testing and about a request being required by the MTO. Do you recall that as being an issue? Why don't we go to it.

At image 52 and 53, if we could pull those up, please, there's a series of e-mails internal to the MTO that follow an e-mail from you in 116, in paragraph 116 at the top of the image 52, where you e-mail Mr. Raymond and --

in the last sentence:

"Also, as discussed with you before and with the City of Hamilton, could you please carry out the skid number testing on the RHVP pavement?"

That leads to a series of communications internal to the MTO. In 117, Mr. Raymond indicates internally in the second paragraph:

"Ludomir is requesting friction testing and the City does not have objections to the testing, but the City is not making a request to the ministry."

And there are some further discussions. In 119, Mr. Kazmirowski, that's Tom Kazmirowski of the MTO at the time, indicates:

"We should have Ludomir instruct the City to either request the testing or at least approve Ludomir's request for testing and give permission for us to test their facility."

And there's again further discussion about it, and in paragraph 121 -- sorry, 120, Ms. Lane indicates:

"We don't need a letter of request, but we do need their approval."

Referring to the City of Hamilton. In 121, Mr. Raymond says:

"Yes, the City is in agreement but it is strange that the City are not willing to write a request. I asked Ludomir to specifically send me a request from the City a few weeks ago."

And then Ms. Lane responds, says:

"Maybe they are concerned about the results from a liability perspective."

And then she says:

"Anyway, we had agreed earlier this year to provide testing rather than money for instrumentation, which was their original request. Please coordinate with Frank."

So do you know why the City of Hamilton did not want to make a request directly to the MTO?

A. No, this is -- I don't know, and, you know, I would have to speculate. But no, I know that I wanted, and the City agreed with me, that -- you know, the City gave me okay for friction testing, but I don't know why they didn't want to issue a request for testing again. That would -- I would have to speculate.

Q. Did Mr. Moore or Mr. Oddi -- did you have any discussions with them about that? I mean, you must have had some discussion because they -- if you knew that they weren't going to make a request, you must have had a discussion with them.

A. You know, like I -- they are the owners of the road, so I had to get their permission. So I had to talk to them and get their permission. They knew about this that I wanted to do the testing and MTO was ready to do the testing for free because that was a contribution, but I don't know why they didn't want to issue a request. You know, probably, okay, I want to do it, so they agree with this thing that I -- that it can be done on the road, but I --

Q. Is there a concern about a Freedom of Information request might result in something in the disclosure of the request for the testing? Was there any discussion of that?

A. No, this is like -- you know, I didn't hear anything. I don't know whether there are any -- there were any politics. I don't know. I only know that I got okay from

them to -- from the City to do the testing, but they didn't want to give the request.

Q. You referred to a contribution in those e-mails, and we will be asking MTO people about it. They talk about, in relation to an earlier suggestion, that they agreed earlier in the year to provide testing rather than money for instrumentation, which was their original request. Do you have any knowledge about that earlier -- those earlier discussions prior to your July 31st discussion with Mr. Raymond?

A. I know that there was a discussion because the City wanted to install the monitoring station that would include those -- one, the traffic monitor (indiscernible) pavement response. So the City was trying to get some contribution from the Ministry, and I think I -- as far as I recall, even, you know, like University of Waterloo offered that, you know, if they get some money, that they can double the funding through NSERC. So there was some discussion because there were number of parties involved --

Q. Did you know that at the

time or is this what you've learned after the fact?

A. Oh, no, about this -- I know not of the -- I knew about this -- I knew first off about NSERC because I think Professor Tighe told me that, you know, if we get some funding then if it's through the university, that they can double the funding. So I knew at that time well before this inquiry and the testing. But not about the details like -- that was rather between the City and the ministry who would contribute to what.

Q. I want to come back again to 2007, at that time, because you had your discussion on July 31st with Mr. Raymond. Prior to that, were you aware of discussions between the City and Hamilton about friction testing?

A. No, friction testing, no. The friction testing I think was, you know, after my discussion with Chris Raymond, but -- not about friction testing, but I know there was discussion about the monitoring station.

Q. About the monitoring stations. Yes, I understand that. I get that. And there will be evidence about whether friction

testing was discussed, but I just want to be clear, when you had your discussion with Mr. Raymond on July 31st, if I understand you correctly, you were not at that time aware of any prior discussions about friction testing on the Red Hill; is that correct?

A. No, I don't recall any before.

Q. Thank you. We know that you had Mr. Delos Reyes get involved in making the logistical arrangements, is that right, for the testing to take place?

A. Yes. Yes, I ask Andros to do it.

Q. And we know that Mr. Delos Reyes gave some instructions -- or rather, let Dufferin and Philips know that this was going to take place, that the testing was going to take place. And this is at -- if you go to images 55, 56. This is at paragraph 127 at the top of 56 where Mr. Delos Reyes forwards an e-mail from Mr. Marciello to Philips and to Dufferin, James Wharrie, stating "Gentlemen, for your information and permission," and he's forwarding an e-mail from Mr. Marciello about making arrangements for

the testing. Did you have any recollection of you yourself discussing with Dufferin or Philips that skid testing was going to take place?

A. No, I don't recall any. I think I left it to Andros because he had to arrange this thing with the contractor. That was construction site. It was not open, so the construction that was there, their responsibility, so he had to get their permission.

Q. Right, because they're going to drive along a still not open construction site, you want to get the okay.

A. Yeah, they were in charge of health and safety on that, so he had to get their permission and arrange this thing with them.

Q. Okay. You weren't present for actual skid testing when it occurred on October 16th, 2007, were you?

A. No, I wasn't.

Q. And then if we go to OD4, image 62. We'll come back to that image at the top. But on October 18th, this is paragraph 139, at the bottom of the image, Mr. Raymond e-mailed you and Mr. Delos Reyes the MTO's friction testing results that was conducted by Mr. Marciello on

October 16th, 2007. And he wrote:

"Attached please find the friction testing results for the Red Hill Valley Parkway. Please pass the results on to those involved with the project. You may wish to note that some of the friction numbers less than 30 correlate with being located under a structure. Should you have any questions regarding the results, please do not hesitate to contact us."

And before we go to the results themselves, what did you understand Mr. Raymond's comment to mean where he said "you may wish to note that some of the friction numbers less than 30 correlate with being located under a structure"?

A. So, you know, I look at the number. It was obvious that wherever there were structures, the numbers were -- overall, they were significantly higher than 30, but under structures, you know, a few numbers were slightly below. So I understood that this was because of the presence of the structure, the exact location where the structures were.

Q. Overhead structures. You mean overpasses for the roads?

A. Yes, overhead structures, yes.

Q. Okay. If you could pull up 61 and 62, please, Registrar, just so when we have both charts up we can expand them when we need to.

What did -- you refer to the number 30, the friction numbers less than 30. What did you understand to be the significance of the friction number for skid number of 30 for the MTO?

A. You know, here I was thinking about this usual friction number would be before the pavement structure was open to traffic. So the number 30 was the expected value that the ministry expected on the pavement. So I think that was -- I would call like -- I think they call it in one of the papers expected value for early friction, to consider this thing as acceptable.

Q. I just want to back up. Putting aside the Red Hill for a second.

A. Yes.

Q. Are you saying that you -- did you have an understanding at the time about the MTO's use of the friction number of 30

for some purpose?

A. Like, you know, there was general opinion within the pavement community or industry that the value of 30 was the -- how can I say - like, you know, expected value or reasonable acceptable value for asphalt pavement.

Q. As the friction number? If it was 30 or above it was okay?

A. Sorry?

Q. If it was 30 or above it was okay?

A. Yeah, so basically if it was 30 or above, that was okay, yeah.

Q. Okay. And that's something that you knew through your experience at the industry, you were aware that the ministry used it in that fashion?

A. Yeah, it was like -- you know, it was generally well known. That number 30 was known by the industry and in the pavement community.

Q. So did you understand what the MTO's approach was when an FN of under 30 was obtained from its skid testing? Did you have any appreciation or understanding of that?

A. So, you know, this was only for -- you know, for me it was just the initial friction number, so I knew that this number would go up almost right away. So in this particular case, you know, I don't know if this is your question, like my opinion. When I look at this, I knew, okay, 30 was expected, some number slightly below. I know it was not open to traffic, so when they open to traffic it will go almost immediately -- not immediately, because when the asphalt cement film wears off it will go quickly up. So I anticipated very soon it would be above 30.

Q. So just to unpack that a little bit. Are you referring to specifically SMA pavement and the early low friction issue that we talked about earlier or any pavement?

A. Any pavement.

Q. That's new. Okay. Initially you'll have a lower FN, but it will increase once there's some traffic on it?

A. Yeah, usually, you know, you always have because you have the surface of the aggregate is covered with relatively thin film of asphalt cement. The estimate (ph) will a

little bit thicker, but when it wears off it exposes the surface of the aggregate, so the FN or FN numbers go up immediately.

Q. Okay.

A. Immediately, I mean within like whatever. Typically I think we consider this like, you know, 60 days or five weeks or something.

Q. That it will take to increase?

A. Yes.

Q. At this point, were you aware, in light of your conversation with Mr. Raymond back in July 31st, about the specific issue with SMA early age low friction? Was that something you also had in your mind when you were looking at these results?

A. So, you know, I was interested -- you know, of course I was, because that was the purpose for me, so I was interested. But, you know, when I look at the results, I consider this results maybe -- of course I would prefer not to have a single one below 30, but when I look at this with a few just very slightly below and the average 34, I saw that that were, you know

good, acceptable numbers.

Q. I think there were five of the total numbers are slightly below 30, in between 29 and 30 with the decimals.

A. Yes.

Q. One is 28.7 but slightly below 30. So five of them are below there. And what did you take from Mr. Raymond's mention of it being -- of the lower results being underneath structures?

A. So, you know, it was like the overall between the structures, those values were okay, and then, you know, there were some under the structure. So I knew it will go up, but likely it will be because of some schedule, maybe lower pave (ph) of weathering. So there was obviously some impact of the structure where they're -- probably mainly because of the shadow and, you know, oxidation of -- slower rate of oxidation of asphalt cement. But I think was some slight impact of the structures -- of the presence of the structures.

Q. To be fair, you probably didn't really know what the reason was. You just took a note -- the way you're describing it, it's

sort of like, maybe it was this, maybe it was that, but there's a correlation, it appears, to being located underneath a structure. Do you really actually know or did you know what the reason was?

A. No.

Q. Prior to this, just to confirm, you had had been involved in the British pendulum testing when you were at JEGEL but not with the type of skid tester -- skid testing that the MTO did; is that right?

A. Yes, that's right.

Q. All right. Did you have any further discussions with Mr. Raymond about these specific results? There are some subsequent discussions that we'll get to in a second about potentially doing British pendulum testing and so forth. Do you recall if you had any further discussions with Mr. Raymond about these results?

A. No. I think I thank him, but I don't recall any particular conversation about his results.

Q. You sent him an e-mail back saying thanks very much, I will -- and indicating that you would discuss it with the

City.

If we could go to image -- keep 262, move to 63. At the top of 63, as you indicated, you thanked Mr. Raymond for the results, and you were going to discuss with the City, and then you forwarded Mr. Raymond's e-mail with the friction test results to Mr. Moore and Mr. Oddi indicating:

"Please find attached the results of the friction testing on the Red Hill Valley Parkway completed for us by MTO. I will call you to discuss the results."

Do you recall discussing the results with them, and if so, which of them?

A. You know, I definitely would given them a call and -- you know, I think it was probably, okay, these are the results and the results are, in my opinion, acceptable -- not perfect but acceptable -- and I would have to check if there is anything in my notes, but I definitely would call them, yes, call them and discuss it, but I don't have any particular --

Q. We do in your notes - we have a couple of notes of yours from -- if we go to the typewritten transcription, at RHV933,

images 181 and 182. You see on October 18th it indicates RHVP, FN number, also instrumentation, PM24, and October 19th, RHVP instr project. So there's not anything -- it does say SN (ph) numbers on October 18th. Does this assist you at all?

A. Yeah, so I probably -- you know, I probably -- I probably called them and told them this is like -- this SN numbers that we got from Chris, but I see I also talk about the instrumentation because that was a big involvement at that time.

So I understand, yes, I sent them an e-mail and I follow with a telephone call, but there was nothing particular. It's probably, okay, these are the numbers and the numbers are acceptable.

Q. Am I correct that, from the way you've described it, you don't have a specific recollection of the discussion, but you believe that you did call Mr. Moore and Mr. Oddi to discuss the results and that you would have said that they are acceptable results, is that correct, or do you have a specific recollection of speaking to them?

A. No, I -- sorry, I interrupt you. No, I don't have particular recollection, but this is something like I sent an e-mail and then I said I will call you. Probably get a quick call and say, okay, these are the numbers and the numbers are good, are acceptable.

Q. Do you think you would have discussed the significance of FN30 and the there being results below FN30? Is that something you would have discussed as well?

A. You know, I don't anticipate I would discuss this because they were slight -- very slightly, and I anticipated as soon as it was open to traffic they will go higher because it was pretty good. So no, I wasn't -- I didn't have any particular concerns with this thing.

Q. I get that. I'm just wondering if you would have discussed that with them? Would you have discussed the likelihood that the numbers would increase?

A. Yeah, it's possible that I would tell -- I don't have, you know, detailed recall because for me it was like, you know, so close, but obviously I think they were aware and I

was aware that it would go up immediately. But, you know, I don't have detailed recall whether I would just tell them this particular thing.

Q. Why would they be aware that the numbers would go up? Did you have an appreciation that Mr. Moore or Mr. Oddi had an understanding of friction numbers and so forth?

A. I think why -- probably because, you know, it's like -- you know, it's common sense, it will resolve quickly and then the numbers go up. But, you know -- like I know, but for me -- because I'm a materials guy, so for me it's obvious and common sense, so I realize that --

Q. You may or may not have discussed that with them?

A. Yes, you're right.

Q. All right. Now, if we go to image 65. Sorry, image 65 in the overview document 4. Thank you. At paragraph 146. On October 19th, so again the day after the testing, you wrote to e-mail Mr. Raymond with Mr. Delos Reyes about British pendulum testing on the Red Hill Valley Parkway. You indicated:

"Chris, I talked to the City

of Hamilton today. You can go ahead with the British pendulum testing on the SMA on the Red Hill Valley Parkway before it is open to traffic. Please let Andros Delos Reyes from Golder know when you will be doing the testing."

We know from subsequent e-mails that the British pendulum testing didn't take place, but it says that you talked to the City of Hamilton today, which was the 19th of October, and do you recall again who that would have been about British pendulum testing?

A. So that would be definitely Chris Raymond.

Q. No, sorry, you wrote to Chris Raymond, but who at the City of Hamilton did you talk to on that day?

A. It would have to be either Gary Moore or Marco Oddi, one of them. But I think it was just for -- I believe for correlation, so it would be -- from the City, it would be just a courtesy, just to allow the ministry to do the correlation.

Q. So when you say that, do you mean -- are you saying that you think that it was the MTO that wanted to do the British pendulum

testing for the purpose of correlation between British pendulum testing and the MTO skid tester?

A. Yes, I think MTO wanted this.

Q. So you're saying that that was a request not from you or from the City to the MTO, but it was a request from the MTO to you and the City; is that right?

A. Yes, this is my understanding. This would be a great opportunity for MTO to correlate the locked wheel tester against British pendulum tester, on, you know, similar weather, the same pavement. So these are rare opportunities to do this, yeah. I think it would come from MTO.

Q. You said it was "my understanding," but you were the one that was involved in it. So is that your recollection?

A. Again, like, I would -- I'm pretty positive that it will come from MTO, but I don't remember the detailed conversation, but to me it would be -- make sense and I'm pretty positive that it would come from the ministry.

Q. Thank you. That's what I wanted to know.

We'll see it didn't take place. There's an e-mail later from Mr. Raymond that says I think the pendulum testing of the SMA will not happen. Do you have any recollection of why that was?

A. No, I don't know. Because I think also, if I recall, also OHMPA was talking about some correlation. No, no, I don't know why it didn't happen. No, I don't know. We gave them opportunity they could do it, but at the end they decided not to do.

Q. And then if we could go to -- actually, it's still at 65, right below there, paragraph 147. On October 22nd you sent an e-mail to Mr. Raymond with the subject line "pavement shot blasting." And you're giving him information about a company named Blastrac, and you understand shot blasting is a method of friction remediation; is that correct?

A. Not -- it's a method of retexturing of pavement. By doing shot blasting you improve macro and microtexture.

Q. Which has a salutary effect on the frictional qualities?

A. Oh, yeah, definitely.

Definitely. That's the main purpose. So yeah, I don't know if you want more information about --

Q. Not at the moment. My question is actually does this have -- does this request -- sorry. You're giving him this information. Did this have anything to do with the Red Hill Valley Parkway?

A. No, not with the Red Hill Valley Parkway.

Q. Because there's e-mails and there's a number of things of e-mails back and forth about shot blasting and so forth, and I want to take you to images 69 and 70. Beginning at the bottom of 69, paragraph 155, you e-mail Mr. Raymond with the subject line "friction on SMA on Hamilton's Red Hill Valley Parkway," which appears to be responding to your earlier e-mail about Blastrac.

And again you're giving him at the top of page 70, contact information for Blastrac, and then you talk about -- you ask him if he would like to tour the Red Hill Valley Parkway pavement and instrumentation and then talking about arrangements for that.

And then 157, you'll see that

Mr. Raymond responds to your e-mail, he thanks you for the Blastrac information, and then he says he's been really busy here with SMA issues and construction of the MTO's first pervious payment, I assume he means permanent but pervious payment. And says:

"I will follow up with you regarding the tour of the site once I hear from Becca. I think that the pendulum testing of the SMA will not happen."

So that's what I was just referring to about the British pendulum testing not happened, the subject line says "friction on SMA and Hamilton's Red Hill Valley Parkway," and then you talk about the other issues, including Blastrac. So you've indicated that the Blastrac information was not about the Red Hill. Can you explain this?

A. I think that the subject is because, you know, you just -- when you respond to somebody, you click 'reply' and the subject comes automatically. But I -- you know, we -- sometime before we talk about this low early friction, so in my mind it would be one possibility of addressing low friction. But by

using Blastrac -- at that time I was thinking about Blastrac also, skidabrading. But Blastrac, because it's very quick, it's low cost and very efficient. I send it to Chris because I attended a conference in the States on airports and they had a practical demonstration. I was very impressed how quickly, how effectively, how good it looked after just one pass. So I was so impressed that I got their contact information, and I wanted to share it with Chris because I think if they have problem with early friction, that can be one of the solutions.

Q. Right. We anticipate that Mr. Raymond will indicate that this was not -- the Blastrac information was not about the Red Hill Valley Parkway, it was just in light of that e-mail. It's the same subject line as was used in Mr. Raymond's e-mail on October 18th when he sent you the results, "friction on SMA on Hamilton's Red Hill Valley Parkway."

Do I understand what you are saying is you picked another e-mail and -- with Mr. Raymond and you responded to it in that way with the subject line, is that what you were getting at?

A. I think you just click 'reply' or whatever, then the subject comes automatically. No, I didn't have any other friction -- no, not about Blastrac and SMA. No, that was not related.

Q. Now, we know that the MTO conducted skid testing on the Red Hill Valley Parkway in 2008, each year in 2008 through 2012 and in 2014. For the most part we're not going beyond 2007 and '08, but I just want to cover this area in this portion of your evidence.

That subsequent skid testing that was conducted by the MTO. Were you aware of that testing at the time it occurred in each of those years?

A. No, I was not.

Q. When did you become aware of it?

A. About this investigation -- about this -- you know, during this inquiry, but also there was -- it was before inquiry or during inquiry, an article in Hamilton Spectator.

Q. There was -- before the inquiry was called, there were publications in the

newspaper, but that was in 2019. So you're talking about much after the fact when the issues in this inquiry became public. Are you saying that's when you first learned about the subsequent MTO skid testing?

A. Yeah, so that was -- because there was also I think some interview with the minister, and then they -- so that was the first time -- and obviously during this inquiry.

Q. Did you also become aware at some point that the Demix-Varennes Quarry had been added to the MTO'S DSM list?

A. I noticed this -- you know, it must have been after 2009, but I knew this, that -- I knew Demix Quarry was placed on the DSM list.

Q. Right.

A. In 2009 -- it was placed in 2009 but when I noticed, probably somewhere -- I don't know -- '09 or '10 or something.

Q. At some point after when it was on the list in 2009?

A. Yes.

Q. As we said, you were aware that in order to be listed on the DSM that

skid testing had to be conducted on a road containing the aggregates in question. Were you aware that that skid testing had been performed on the Red Hill Valley Parkway?

A. No, I was not.

Q. If we could go to image 90, in OD4. There's two paragraphs, 2012 and 2013. In the first one on November 15th, 2010 -- so we're now in 2010, Mr. Marciello, Frank Marciello of the MTO who did the skid testing at the MTO, and Becca Lane of the MTO -- had an e-mail discussion where Mr. Marciello is writing about the arrangements made for the skid testing in October 2007 and explaining what had happened there, and then he indicates in the second paragraph:

"Northbound lanes have shown declining friction properties from the start, while southbound lanes improved in the first year and then started declining after."

You weren't copied on this e-mail, I appreciate, but then you'll see in paragraph 213 Ms. Lane writes back to Mr. Marciello:

"Good stuff, Frank. Thank

you. Perhaps I will call Ludomir for a City of Hamilton contact."

Then she goes on and asks Mr. Marciello for the most recent friction testing results from the spring of 2010, which he provided to her.

Do you recall -- appreciating you weren't copied on these e-mails, but do you recall whether Becca Lane of the MTO called you to ask for contact information at the City at around or about that time?

A. I'm not sure at that time. I know that probably a few years later she contacted me and I gave her Gary Moore's contact information, but I don't think it was in 2010. No, I don't think it was in -- it was probably a few days -- a few years after.

Q. Just on your level of certainty of this, you are certain that at some point Becca Lane contacted you and you gave her Gary Moore's contact information. You're certain about that; is that correct?

A. I think so, but it was, you know -- I don't know, maybe like 2015, '16, something around that time. At one point of time

I think she contacted me, she asked me, and I thought I would -- yeah, I think I gave her Gary's contact information.

Q. The timing of it, how certain are you about that? I think you said at first two or three years, and then you said maybe 2015, 2016, and I'm just wondering do you have any more certainty other than that you don't think it was in 2010?

A. Oh, definitely it was not -- I don't think it was in 2010. It was -- I think it was -- maybe I was wrong that I say two or three years. I think it was -- you know, I can check again my -- not at that time. I don't think at that time. It was much later.

Q. By all means let us know. We're not aware of a note that indicates about that. Is it fair to say that you don't have, and correct me if I'm wrong, that you don't have any certainty about the timing of the call, other than that it wasn't in that 2010, it was at some point a number of years after? Is that -- that you don't have any certainty? Could it be 2014 or 2015 or 2016? Are those equal possibilities, or are you more certain of one than the other?

A. I think, you know, there are probably some e-mails around that time when she send me something, I responded. So I think there are probably records of this. But I don't recall -- I don't recall anything in 2010.

Q. Well, we don't have any other information that indicates when the call was. Otherwise, I would be using that to refresh your memory.

A. Definitely not in -- I don't recall anything in 2010. I know it was -- it may be '15 or '16 because '15 I was involved in asphalt cement investigation, so that was probably roughly about that time. But not at -- in 2010 I don't recall.

Q. Do you recall if she was -- what she was calling you about? Was it about the Red Hill Valley Parkway? In these e-mails she seems to be talking about friction results. Do you recall what she called you about and you gave her Gary Moore's number for at that later date?

A. You mean in '15 or '16 or -- yeah, that was something about Red Hill -- I think it was Red Hill Valley Parkway. I can check. I would have to check the e-mails, but she

-- I think she -- yes. I can check my e-mails and my records, but not at this time, no.

Q. We're not aware of any further communications about it. I'm sure Golder's counsel will let us know if there is something that we haven't seen.

MS. JENNIFER ROBERTS: There's not in this time period, Counsel.

BY MR. LEWIS:

Q. Thank you. If we could move on to the paper that you referred to a couple of times about the construction of the Red Hill.

JUSTICE WILTON-SIEGEL: Just before you do that, Mr. Lewis, we're almost at 4:15. How much longer do you anticipate being?

MR. LEWIS: I wonder if -- I think I'll be about 15 more minutes, but I wonder if perhaps we could call it a day. I think that it would be more efficient if I finished off in the morning. And I'll be quite short. I'm just really going to cover one more topic, and it's going to be the -- just so Mr. Uzarowski knows, it will be about the paper he referred to, the 2008 TAC paper that he had referred to. I think that's 15, possibly 20 minutes, but it won't be longer

than that.

JUSTICE WILTON-SIEGEL: That makes sense. There's a breakout room for counsel.

MR. LEWIS: I believe -- Registrar, has that been set up? I would like to have a discussion with all counsel about timing of their questioning tomorrow, and we had asked this afternoon that an all counsel room be set up. Has that been done? If it hasn't been done, we can meet somewhere else.

THE REGISTRAR: No worries, Counsel, I can set it up for you.

MR. LEWIS: Great.

MS. JENNIFER ROBERTS: Can we excuse Dr. Uzarowski?

JUSTICE WILTON-SIEGEL: Yes that is what I was going to suggest. It's been a long day for Dr. Uzarowski. We appreciate your testimony, so you're certainly excused, and I think if there's nothing else, Mr. Lewis, that involves the commissioner, I will excuse myself by adjourning until tomorrow morning at 9:30, and I'll leave counsel to their discussion in the breakout room.

MR. LEWIS: Thank you very

much.

--- Whereupon at 4:14 p.m. the proceedings were adjourned until Friday, April 29, 2022 at 9:30 a.m.