RED HILL VALLEY PARKWAY INQUIRY

TRANSCRIPT OF PROCEEDINGS
HEARD BEFORE THE HONOURABLE J. WILTON-SIEGEL
held via Arbitration Place Virtual
on Tuesday, May 24, 2022 at 9:30 a.m.

VOLUME 17

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Chris Buck	For Dufferin Construction
Jennifer Roberts	For Golder Associates Inc.

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Arbitration Place Virtual

--- Upon resuming on Tuesday, May 24, 2022 at 9:36 a.m.

MR. LEWIS: Good morning Commissioner, Counsel, Mr. Marciello. Before we begin for this week I would like to read off our weekly land acknowledgement.

I would like to open this week of hearing by acknowledging that the City of Hamilton is situated upon the traditional territories of the Erie, Neutral, Huron-Wendat, Haudenosaunee and Mississaugas. This land is covered by the Dish With One Spoon Wampum Belt Covenant, which was an agreement between the Haudenosaunee and Anishinaabeg to share and care for resources around the Great Lakes. We further acknowledge that the land on which Hamilton sits is covered by the Between The Lakes Purchase 1792, between the Crown and the Mississaugas of the Credit First Nation.

Many of the counsel appearing on this hearing today are in Toronto which is on the traditional land of the Huron-Wendat, the Seneca, and most recently, the Mississaugas of the Credit River. Today this meeting place is still

the home to many indigenous people from across Turtle Island and we are grateful to have the opportunity to work on this land.

Could the court reporter please swear in the witness.

FRANK MARCIELLO; affirmed

EXAMINATION BY MR. LEWIS:

MR. LEWIS: I may proceed, Commissioner?

JUSTICE WILTON-SIEGEL: Please proceed.

BY MR. LEWIS:

Q. Good morning, Mr. Marciello. Thank you for coming.

A. You're welcome. Good morning.

Q. And just before we get into any details I just want to go through a bit of your background and work history. I understand that you went to Humber College and graduated with a diploma in civil transportation engineering technology; is that correct?

A. Yes.

Q. And when did you graduate?

A. 1982.

Q. And am I correct that you were employed by the MTO from around March 1986 until 2015?

A. Yes.

Q. And that I understand your last day physically at work for the MTO was March 3rd, 2015, although your employment formally ended in June 2015; is that right?

A. That's right.

Q. And you were the supervisor of the pavement evaluation unit from the early 1990s until you left the MTO; is that correct?

A. Yes, it is.

Q. And could you just describe for us what that job entailed. I know it was a number things, but if you could just briefly describe that for us.

A. It involved supervision of two full-time staff and summer students who operated the automatic road analyzer. And that also was a -- it was evaluation equipment that would determine pavement performance in different indices, pavement rut, crack mapping and so on,

and that would determine the condition of the pavements and a decision would be made based on that.

I also operated within a supervisory role the actual AST and brake force trailer; that, as well evaluated pavements in terms of friction levels, and I did a lot of field work in that unit as well.

Q. All right. I understand that involves quite a bit of travel from time to time in operating the trailer and the other devices?

A. Extensive travel, yes.

Q. You operated the MTO's locked-wheel skid tester for most of your career until you left in the 2015; is that right?

A. I -- for probably at least half of my career, yes.

Q. And is that from back in the early 90s?

A. Probably the mid-90s, yes.

Q. Mid-90s. Okay. And were you the sole operator of it during that time period?

A. During that time I was, yes.

Q. And on the skid trailer you then generated -- after operating it that included generating the results of the testing and compiling them into survey reports?

A. Yes, correct.

Q. And can you estimate -- and I'm not asking for any exact number, sort of an order of magnitude -- but how many skid tests you administered and reported on during the course of your career?

A. I can't put a number to that. It's in the thousands.

Q. That's the only sort of estimate that I was looking for. Somewhere in the thousands?

A. Yes.

Q. And just to place your activities in the context of this public inquiry, we know, and if you can just confirm, you conducted the MTO's initial skid testing on the Red Hill Valley Parkway in Hamilton on October 16th, 2007; is that right?

A. That's correct.

Q. And then subsequently you performed skid testing on the Red Hill Valley Parkway in 2008, 2009, 2010, 2011, 2012 and 2014; is that right?

A. That's correct.

Q. And as is typically done, you compiled the test results and reported on them; is that right?

A. Yes.

Q. And in your role as supervisor of the pavement evaluation unit you formally reported to the head of pavements and foundations; is that correct?

A. Yes, I did.

Q. I understand that variously, sort of starting earlier in time, that was Tom Kazmierowski?

A. Yes, it was.

Q. And then Becca Lane?

A. Yes, it was.

Q. And then Stephen Lee?

A. Yes.

Q. And I think there was -- Betty Bennett may have acted in an acting role in between Ms. Lane and Mr. Lee; is that right?

A. That's correct.
Q. And that's the person who you directly reported to at pavements and foundations?
A. One of those -- one or two of those people, yes.
Q. As time passed it changed?
A. Yes.
Q. So, Registrar, if we could go to overview document 4, image 14, please.
And, Mr. Marciello, we've got a thing called the overview document which is -- part 4 of it, which is what I'm going to be referring you to, which sets out documents and facts and so forth that -- pertinent to the inquiry, but -- and I'll take you to that from time to time but I'll also take you to the underlying documents in some instances as well.
If you -- at any time if I'm looking at the overview document with you and you want to look at the underlying document and I haven't done that, please let me know and we'll just go it to. All right?
A. Hm-hmm.

Q. All right. So in paragraph 22 it talks about a presentation you gave to the MTO's geotechnical committee, and then it was revised later in 2013, and that described the MTO's friction evaluation processes. And do you recall this -- we're going to take you to the slideshow. Do you recall this presentation?

A. I do, I do. Basically I do.

Q. If we could go then to MTO 35791. I'm going to come back to this from time to time, but "Pavement Friction Valuation - MTO Practices." And do you recall the context in which you presented this to the geotechnical committee?

A. I don't recall -- very basically, very basically.

Q. You recall you created it and you know it was (speaker overlap) but that's about it?

A. Yes, that's about it, yeah.

Q. If we could go to image 9? Actually, do we have the native of this document? It's a little bit blurry. Maybe we

don't.

A. I'm familiar with the picture.

Q. I'm just asking the Registrar if we have the native for this document. I suspect we don't. We can just use this if we don't, but if we have the native that would be helpful maybe.

THE REGISTRAR: Counsel, I don't believe we have the native for this one.

MR. LEWIS: That's all right. If we run into a problem we will e-mail it to you.

BY MR. LEWIS:

Q. Okay. So is this a photo of the actual truck and skid trailer?

A. Yes. The two right photos are the most recent machine that we use and the one on the left is an older version.

Q. I see. So at some point did you change the -- did you get a new machine?

A. Yeah, we did. We got an upgrade and then we replaced both the truck and trailer.

Q. Do you recall when that was?

A. No, no, I don't.
Q. I'm wondering if -- because we noticed that there was -- that the GPS data was added at a point in time.
A. Yes.
Q. And was that at that time when the new trailer was purchased and used?
A. No, I believe the GPS was added I think around 2013, 2014.
Q. And was the new machine prior to that or after that?
A. Prior.
Q. I see. You don't recall when that was though?
A. It was probably the last time we had it calibrated in the United States in Michigan and at the same time they installed the GPS technology.
Q. Sorry, you got the new -- sorry, you got the new machine at around the same time that the GPS --
A. I believe the GPS was put onto the machine after the purchase. It could have been a year or two after. Could have been five years after. It was after the purchase of

the machine.

Q. Okay. So in this presentation is the one on the left, is that the original one from your 2005 presentation and on the right it's the later 2013 version?

A. I believe so, yes.

Q. I see. So I think you said that the GPS was added around 2013, 2014. Would that have been in the context of the network testing that did you in 2013, do you know?

A. No, I think the network testing happened after that.

Q. After it was installed?

A. After the installation, yes.

Q. Right. That's what I meant. I was wondering if it was installed for the network testing --

A. No, no.

Q. -- or in anticipation of it?

A. No.

Q. No? Okay. And so would it make sense, and we can take you to it, but from the Red Hill test results, the ones -- the one

from 2014 does have GPS data on it but the ones from 2012 and prior did not. So does that make sense just in terms of timing?

A. Yes, it does, it does.

Q. Okay. And could you just describe how the trailer worked and how you operated it?

A. Okay. The trailer utilizes to ASTM standards that determine what equipment is used and how it is used to come up with numbers that are approved by ASTM.

The skid trailer itself is basically brains behind it. The computer in front will indicate to the trailer the distance that the tire is travelling. The right tire measures the actual distance you are travelling and the left tire is the tire that is used to brake.

So at a given speed at a certain time during whatever pavement test section there is, I will activate the test to be conducted and the actual nozzle in front of the left tire is lowered and water will be sprayed out of the nozzle to stimulate the wet pavement condition. And a split second after that the actual tire brakes, and in a 3 or 4 second span it determines

the actual force required to have an actual tire brake and after -- few seconds after that we have numbers that come up on screen in front of me.

Q. And typically you are doing this at the posted speed, correct?

A. Typically it is, it is.

Q. Not always, but that was the usual -- that was the usual --

A. That was the usual approach, yes.

Q. Typically would you perform it in mixed traffic?

A. Mostly yes, it would.

Q. And what do you do if there's a slow down, a traffic jam something like that, if it's busy?

A. Well, sometimes I'll wait. If it's serious enough I'll pick another day to do it on, but typically I'll wait to see -- well, I would initially start going out to the site knowing that if there is high traffic areas, low traffic areas where I can conduct this safely at posted speed. If there was traffic throughout the day I would -- I would sometimes even test at a lower speed so I can be with the traffic and do

the testing, have results, but mostly at posted speed limit.

Q. And that's one of the ASTM standards that you were referring to, is the ASTM E274; right? That's the --

A. That's right. That pertains to the actual unit and how it operates and the equipment itself.

Q. If we can go to image 12, Registrar.

In this slide you refer to a couple of things. And the second bullet refers to the film of water that's applied and it says 0.5-millimetre of water thickness is simulated, it says. Does that mean it's applied?

A. Yes, it is.

Q. And it says one test cycle lasts up to a maximum of 4 seconds. "4 s," I take that, is that seconds?

A. Yes.

Q. And do you apply the -- each time the brakes are applied is that done manually?

A. It can be done manually. It can be done automatically as well. The

sections are very short. Some may last maybe 1 or 200 metres. The manual method is definitely used if they are short sections of -- if there are concerns on the pavement surface of flushing or bleeding or other areas that we are concerned with I could do it manually as well.

Sections that are longer than 2 or 3 kilometres I can automatically have a test done every known distance. Could be every 200 metres, every 500 metres, especially in the long sections where the pavement surface are consistent.

Q. When you say when the pavement surface is consistent, what do you mean by that?

A. The same pavement design.

Q. I see. Okay. So the same type of mix on top, is that what you mean? The same surface mix, whether it's Superpave, 12.5 or SMA or HL1, is that what you mean?

A. That's correct.

Q. And but typically for longer ones would you use the automatic distance spacing approach or manual? What was your usual practice?

A. I would -- the longer sections I would set the distance and it would test itself automatically.

Q. Okay.

A. It was a matter of utilizing the water I have on board efficiently, especially in the network type of system or where -- a lot of travel where I had very few choices of getting water between sites, especially northern Ontario.

Q. I see. So it's just to regulate the water so you didn't run out?

A. Well, in those cases, yes. In the very long sections where water was not that readily available.

Q. And at image 17, this is talking about protocol for frequency of measurements, and the first part talks about accident inquiry and friction concerns, 30 metres or less?

A. Yes.

Q. And so is that on the shorter sections that you're talking about when it's a very targeted --

A. Usually in the shorter

sections where there may be hazard in spots along the sections.

Q. And quality assurance at 200 metres which -- sorry, 200 or 250. The middle one is aggregate sources selection, 200 metres. So is that the one that typically would apply if you were doing the testing at the request of the soils and aggregate section for DSM purposes?

A. It would typically apply.

Q. With potentially exceptions, but that's the usual?

A. It could be 200 metres or slightly less than that. The main point was to get a representative number of the section, or average -- representative average of the section.

Q. And then project request. So these are ones where it's -- is it where it's a newly paved section?

A. More or less, yes, yes, exactly.

Q. Go if we can go back to image 12. I'm wondering how did the reports get generated out of this? We'll look at a couple examples from the reports from the Red Hill, but we know that there's a chart that sets out the

individual results and so forth and there's also -- can be a graph that shows historically -- how did you generate the results after the report was completed?

A. Okay. They would be put electronically on a disk in the vehicle and be collected and copied on. It would be brought into the office and then I would use various software to print and create a tabular format and graphical format of that data to be viewed and to be looked at with senior management.

Q. And it says in the last bullet "on-board computer computes the dynamic FN." So that's actually the friction number that is generated at each point the locked -- the wheels locked and applied; is that right?

A. That's correct.

Q. So if we could go to overview document 4 at image 60, please. This is the results -- actually I guess and 61, please -- for the Red Hill Valley Parkway, if you could expand for us please, Registrar, on October 16th, 2007. And it's not the particular results I want to look at here but just how you -- how you generated this. Were all of these fields

automatically generated or did some of them get -- you have to manually enter?

A. No, they automatically get read by the Excel software that's there, and I basically enter the distances of the -- every landmark that I collected, mainly let's say for example from .49 kilometres from start -- this part of the street 1.8 kilometres from the start is Queenston. So I would manually input the landmark names.

But the numbers themselves, the three columns you see on the far left, they would automatically be generated by Excel from the disk brought in from the vehicle into the office environment.

Q. Okay. And what about at the -- the averages and the minimum, maximum, standard deviation, are those automatically generated as well?

A. Those automatically generated from the Excel, yes.

Q. And then on the right-hand column there's comments, and I've seen in yours typically you would indicate the type of payment and the conditions and sometimes other

details. Would I be correct that those were also things that you manually entered?

A. Yes, I would enter them manually. Any information pertaining to the site that should be in the comment column, yes.

Q. Okay. And what about in that -- the rest of it at the top, the pavement friction survey 2007 and the information about the location and the limits of the testing and the temperature, would those -- and the date -- were those automatic or ones that you entered?

A. There were automatic as well.

Q. Okay. Even the site limits? I would have thought --

A. The site limits were automatic.

Q. How would it do that if you didn't...

A. A program in Excel, that was created by a student actually. He assisted me in creating this software in Excel that generated those numbers the way I wanted to.

Q. Not the numbers, but I mean did --

A. No --
Q. Where it says "Site: CNR OH structure to Greenhill Avenue (Hamilton)"?
A. They were automatically generated from however it was entered in the field.
Q. Okay. That sounds like if you knew where you were going to be running it from that it would go -- right, so it would be entered in manually what was going to happen and then it would automatically spit it out into this report; is that right?
A. That's right. It would be manually entered in the field.
Q. Okay. And then put on the report. But that information -- it's only then -- if I've understood you correctly, it's only the information in the distance, speed, and average FN and then the averages below that, those are the only things that are entirely automatically generated; is that right?
A. From field to office, yes. And from field to office, even to the top portion of the site and location and direction and lane, that's also automatically generated from the

field media to the office media through Excel.

Q. Right. But on the horizontal green band, the second horizontal green band that has, like, the direction SBL1, lane 1, the date, the site, all of that stuff, that, if I've understood you correctly, is manually entered on the site and then gets generated into this report; is that right?

A. Yes, yes, correct.

Q. Okay. And what about the temperature, same thing?

A. Start.

Q. At the start you entered the temperature at the time and then it gets put onto the report automatically?

A. The temperature, if I recall, the temperature is part of the automatic printout in the field. I don't enter the temperature. The temperature is auto-generated, it's part of the standard, ASTM standard.

Q. Because it requires -- the standard requires the temperature to be recorded?

A. Well, it should be recorded, yes, the temperatures are important.

Q. If we could go to HAM54 -- and I would like the native for this, please -- HAM54586.

This is from data that was sent well after you left the MTO in 2019 from the MTO to the City of Hamilton, but it's got the data from the testing from 2008 through to 2014. And if we can look at the test data tab. And if you could scroll a bit so we can see the 2014 data.

And so there, this is the 2014 results and it's got GPS coordinates there and L and M. Is that -- so by that -- what we were talking about before by 2014, we think 2013 actually, the GPS data was also included?

A. Yes.

Q. Was that something that was obviously automatically generated, the same as the other three columns we looked at?

A. Yes, it was.

Q. Okay. And if we could scroll up to the next results. Keep going.

So this is 2012 data. And then in columns L and M we don't have any results for GPS. So that's what you were talking about. Before that, before 2014 for the Red Hill results

there was no GPS coordinates, correct?

A. There wasn't, but I didn't generate this report.

Q. You did not generate it?

A. No.

Q. That was my next question. Okay. So this is a report presumably then generated out of whatever data there was in the system?

A. I'm not sure. Someone may have gone into it and used the software to get a new format they wanted. But this doesn't look like a format that we used.

Q. Not the format that you used?

A. That I -- yes.

Q. And so then if we could -- take that down then. Thank you. If we could look at 2014 results just to deal with the GPS issue. If we go to the native of MTO 22943.

So this is just one of the lanes. This is northbound lane 1 from the 2014 Red Hill Valley Parkway testing. Take a second to look at it by all means and tell me when you've done so.

A. (Witness reviews document). Yes, I have.

Q. Then I see in here there's -- as compared to the 2007 results we already looked at, it does show the distance on the far left-hand column but then it's got the GPS coordinates in the next two, latitude and longitude; is that right?

A. Correct.

Q. So this is the format of the data that you would have seen it in at the time; is that right?

A. Yes, correct.

Q. And you mentioned when I was asking you about when you got the new trailer and I guess the new truck to go with it, which you thought was at some point prior to the getting the GPS. And -- sorry, was the GPS, was that part of the trailer itself or was that affixed to the truck or how did that work, do you recall?

A. I believe the GPS was attached to the trailer, yes.

Q. Itself?

A. The hardware.

Q. And I think you

mentioned, I don't want to mischaracterize it, that you got the GPS around the time that the trailer was sent to the U.S. for some purpose; is that right?

A. Yes.

Q. Sorry, what was that purpose?

A. I think it was for calibration of the unit itself, the trailer.

Q. So when the unit was new, like when it was first obtained?

A. When we first obtained it the deal was that it would be calibrated there when we first purchased, but I think it was decided to have it calibrated a little more frequently after that.

Q. And when you say calibrated, what do you mean in that context? Calibrated to what?

A. To the ASTM standard itself to make sure the trailer was working properly, giving the right numbers on their pavement sections in Michigan, which they had many, many of. And they were monitored with their machines as well, so to make sure our machine

numbers would match their machine numbers and all the instrumentation would be working properly.

Q. Okay.

A. And it would generate basically a piece of paper that would show that it was calibrated on this date.

Q. And what about with the prior device? You had the prior device and then you got the new one in around 2013, you indicated. What about calibration between results on the prior machine and the new machine?

A. We would annually, sometimes even weekly or monthly, we had a number of sections throughout the province, and because I was -- I would travel extensively there would have to be sections that I would be able to compare historical data with to make sure that the numbers we were getting one year were very close to the numbers we got the previous year, and there would be a correlation with that to make sure it aligned with what the correlation numbers should give us. And that was done prior to getting the new system that we did.

Q. Sorry, prior to getting the?

A. The new truck, the new truck which got calibrated right from the start.

Q. Okay. But what about as between the two devices then, did you -- because I know you would track certain sections, right, as to how the results of one year compared to prior years.

A. Yes.

Q. How did you correlate between -- in testing years between the old device and the new device?

A. The old-to-new device, they actually did it in Michigan. We didn't do that part of the work. They -- the purchase of a new vehicle involved Michigan doing the calibration testing.

Prior to that, with the old vehicle, like I told you we would have pavement sites throughout the province, especially in southern Ontario, on pavement sites that we knew numbers were occurring in previous years and we would compare those numbers. We had never compared numbers prior to the new purchase without the machines.

Q. Sorry, I'm not sure I

understand what you said. Can you repeat that.

A. Okay. The new unit that was purchased, the vehicle you saw in those -- right in that photograph, when it was first purchased in Michigan the company there was responsible to make sure that it gave us the results that ASTM wanted it to spit out. And that's the machine we received. And because it was calibrated it was trusted that the numbers we received throughout the province were the numbers that followed the standard ASTM.

Q. Okay. Just in your experience, did you find that the new machine functioned in a comparable way to the old machine?

A. I did, I did.

Q. Nothing that -- you didn't find that oh, this seems to be measuring higher or lower under certain circumstances, you thought it was reasonably consistent; is that fair?

A. I would say so, yes.

Q. You can take this down Registrar, thank you. And if we could go back to the presentation at MTO 35791.

You mentioned that I think

temperature was important and you mentioned that it was something that was required by the standard to be mentioned?

A. Yes.

Q. And we're going to there. There's a bullet at image 12 that says ambient temperature above 4 degrees. We can wait for it to come up, but if you know what that is referring to?

A. Yes, I do.

Q. It's the first bullet there:

"At posted speed limits and at ambient temperatures above 4 degrees Celsius."

So was that your practice?

A. That was ASTM's practice. Yes, that was our practice as well.

Q. And what was your understanding about the importance of temperature?

A. Well, basically the higher the temperature the more flexible it became and pavement (indiscernible) as they get much warmer and hotter. Anything that hovers around 4 degrees and below might change the dynamics of

the pavement surface, and ASTM standard -- I'm sure they must have set the number at 4 degrees to ensure consistent numbers that can occur above 4 degrees, 20 degrees, 25 degrees, I think it was a number that they chose based on the testing that they did.

Q. Assuming temperature is above 4 degrees when you're performing it, did you experience differences in results based on temperature? Is that something that you noticed?

A. Maybe in extreme temperatures you would see it. The numbers could change because the pavement surfaces become very hot. Asphalts react differently in very, very extreme weathers and I would see some differences at extreme temperatures, yes.

Q. Higher or lower at high temperatures?

A. It just depends the pavement type surface itself.

Q. And we've heard that in some circumstances locked-wheel testers can have difficulties measuring friction on turns and curves because there is risk of skidding when the wheel locks. Is that something that you

experienced?

A. Well, because only one wheel locked, the issue of out of control trailer never happened with me. But it could happen if trailer that was out there had two tires that were skidding at the same time, there would be an issue there. But in my case, in my experience, I never felt that I was going to be losing a trailer on the curve, no.

Q. It wasn't an issue for you?

A. It wasn't.

Q. Go to image 14, Registrar. This slide is titled "Range of Friction Numbers," and in the third bullet, typical FN80 ranges in Ontario, 28 to 50 or does that mean greater than 28 to 50?

A. No, between 28 and 50.

Q. Right. And FN80, that meaning testing at the posted speed of 80 kilometres per hour in that case; is that right?

A. Testing at 80 kilometres per hour. Could be posted; may not be posted at 80.

Q. Right. Because that's the default non-posted speed on a highway; is that right?

A. Yes.

Q. Does that mean though that this dataset that that is coming from are from the -- typically the two-lane highways, not the 400 series; is that right?

A. It could be either/or. It could be two-lane highways; could be multilane highways.

Q. But in any event, at 80 kilometres per hour?

A. Yes.

Q. Do you know what that dataset is from?

A. I believe it's from past reports.

Q. But you don't recall specifically?

A. I don't, no.

Q. And then the next bullet says "measured frictional resistance decreases with increasing tire inflation pressure." And so is that something that you dealt with, checking

for tire pressure regularly?

A. Well, the thing is the there are many consistencies within preparing the trailer to be used in this testing. One of them was having the tire temperatures at a very consistent pressure, 24 PSI, both tires. It was said that if inflation -- if the tire pressure inflation was more than that in a cool temperature where it should be measured then the friction -- would decrease.

Q. Right. And so is that something you would check before -- or deal with before every test was the tire pressure?

A. Many, many times, yes. In a cool environment.

Q. But not --

(Speaker overlap)

Q. I interrupted. Go ahead.

A. Yeah. It would usually be done early morning because I would be travelling throughout the whole day and the tire temperatures itself, it wouldn't make sense to keep (indiscernible) set the tire temperatures at (indiscernible) moments.

And these tires were also part

of another ASTM standard that we used, which was A7501.

Q. Right. And that's the ribbed tire standard, right?

A. The ribbed tire, yeah.

Q. Does that set out as well the tire pressure, yes?

A. Yes.

Q. Okay. So if I understood you correctly about checking it, are you saying that in -- if I've understood you correctly, and you tell me if I didn't get it right, but that in cooler temperatures you would check it often but otherwise you would check it at the start of the day; is that right?

A. At the start of the day, yes. It's more correct at the start of the day, before actually driving.

Q. Right. And if it was off then you would deal with it?

A. I would increase the pressure (speaker overlap) or decrease, yes.

Q. The last bullet:

"Overall measured friction decreases progressively with

increasing speed."

And is this something that you were told or learned or something that you found out through your experience?

A. No, I believe it's documented. I've learned it as well and I have experienced it as well, yes.

Q. Really all three. So again measurements at 100 kilometres an hour generally speaking would be lower than at 90 which would in turn be lower than at 80; is that right?

A. I would say on most pavement types, yes.

Q. Okay.

A. That's a general rule. Yes, it is a general rule.

Q. Maybe there's exceptions, but that's generally speaking what you would expect to see?

A. Yes.

Q. And did you have a particular experience about how much difference 10 kilometres per hour increments would cause? Was there a --

(Speaker overlap)

A. The general rule that I learned since I was trained on the unit and I operated it since then was there usually would be a two SN number difference every 10 kilometres per hour change.

Q. Where did you learn that from?

A. I learned from my previous supervisor, and I believe there are some MTO reports that came out in the early 80s and 90s that had that in their summaries.

Q. And sorry, your previous supervisor, which one are you referring to?

A. Graham Musgrove.

Q. Is that way back?

A. Way back.

Q. When are you talking?

A. About early 80s, mid-80s.

Q. Sorry, that's Graham Musgrove; is that right?

A. Graham Musgrove, yes.

Q. Thank you. And what seasonal effects -- did you find your experience that there could be effects on the measured friction depending on the time of year that it was

taken or (garbled audio) from temperature issues?

A. No, I think between probably 4 degrees and 28 to 29 degrees I think that it was pretty consistent. And if data was collected at any temperature, even higher than that, that is exactly why it was documented on these reports.

Sometimes you would have -- we would basically test from the month of May to in certain parts of the province maybe even up to November at various temperatures. But the thing is the data collected between temperatures that were not extreme were pretty well consistent.

Q. Right. But then what about the time of the year? I know sometimes you did it in April as well, but did the time of year have an effect? We've heard it can have an effect based on the winter maintenance so forth and that sort of thing can cause potentially higher readings early in the season as opposed to in the summer or fall?

A. I have no experience with that, no, I don't.

Q. Not something that you noticed?

A. No.

Q. We've heard quite a bit about the MTO's use of the friction number 30, or skid number 30. What was your understanding of this significance of FN30 within the MTO?

A. I think 30 was more a threshold number, and any numbers below that they would take a look at the data that was received and they would decide on maybe doing other surveys on the site before going to -- or maybe be able to explain why -- and/or maybe they would ask me to do the testing to see what condition they were in.

Anything above 30 I don't think -- there still would be certain, but there wasn't the push to find out if there was a definite problem pertaining to pavement friction.

Q. So if we could go to overview document 4, image 14, please. And just on 14 actually, thank you.

And 22 is the presentation that we've already been looking at, just talking about that. But 23 is an e-mail that you sent on September 4th, 2013, and in the second paragraph there you refer to:

"Currently, Ontario has a

threshold friction requirement that applies to all pavement types at all test speeds."

Is that the FN30 that you were just talking about?

A. Yes, it is.

Q. And if I've understood you correctly, I think you're saying at the threshold about at or below which -- and actually that's first thing -- is it at or below or is it -- if it's 30 did you -- was your understanding that the threshold was below 30, or was it 30 and above?

A. It was the threshold was at 30, so any number below that would be -- decision would be made to further investigate.

Q. Okay. And to investigate do I understand as meaning to look into whether there is a reason for concern about the pavement where it's below FN30 and deciding if anything needs to be done. Is that --

A. Well, even below 30 other things could have been done to determine pavement performance, not only the friction.

Q. Right. So what do you

mean?

A. There are other machines within our unit that would measure other pavement performance indices, and friction using ASTM was not one of them: Could be roughness, could be rutting, could be pavement cracking. If they didn't see a problem there, or maybe if they did, maybe they would determine well, let's get the ASTM machine out there to do friction testing.

Q. Okay. But then once the skid tester is out there and does it, that's when the results are generated that show whether it's above -- at or above or below FN30.

A. That's right.

Q. And then to do an investigation. So I'm wondering at that point, that's what you're talking about, again in your experience, A, the investigation to determine whether this does present any safety issue or not. Is that what you're talking about?

A. Any further investigation, any concern for further investigation. Safety is a strong word, but I would say any further investigation.

Q. But where I'm just having

a little trouble is you say that if it's below FN30 there would be a further investigation and I'm wondering what you mean by that. I can suggest some things but if....

A. I think it's just a number that was determined by MTO years ago that maybe it requires further investigation...

Q. And you I take it typically weren't involved in those further investigations; that was beyond your job?

A. That was beyond my job, yes.

Q. Okay. And then you said that goes back to the 80s. So that was -- you know, the use of that preceded your operation of the skid tester; is that right?

A. I don't know what preceded before I started. I can't answer that. I don't know what preceded when I started, no.

Q. Well, it was being used when you started; is that fair?

A. It was being used when I started operating it full-time.

Q. And the use of FN30 as a threshold as you've described it, is that

something that you typically discussed outside the MTO, or no?

A. I did not.

Q. And was that something -- so that practice of not sharing it outside the MTO, was that something that you were instructed not to do or was that something that was just understood?

A. I think it was just understood that I was -- no, it was understood -- it was understood that way, yes.

Q. So where did you pick that up from, do you recall?

A. Not specifically, no, I can't.

Q. You can take that down, Registrar, thank you.

Just internally to the MTO, requests for skid testing. I understand that those can come from a number of sources; is that right?

A. That's correct.

Q. So how did they come in? Can you describe that for us, and from where?

A. Well, usually during the

winter months, which was a non-testing month, I would send out requests in a certain format and forms of request to different areas of the offices. They could be in (indiscernible) geotechnical offices, quality assurance sections, concrete section. And they would then return -- look at what their area of expertise needed to have evaluated, and they would send me completed forms which included all the information pertaining to pavement test sites.

Q. I see. And then, as I gather, the requests to have to be approved by the head of pavements and foundation; is that right? Or is that --

A. No, they would be shared with him, but eventually they all were shared with management and I would be basically allowed to do whatever it was requested, yes.

Q. So if it was internal to the MTO the testing would be done if they were requested. Is that --

A. Yes.

Q. -- right? And so you would get requests from the various regional offices, right?

A. As well, yeah.
Q. And the soils and aggregate section?
A. Yes.
Q. For DSM purposes?
A. Yes.
Q. And geotechnical staff?
A. Yes.
Q. Sometimes the police, would they make requests as well externally?
A. Not directly to me but we would are sometime -- that usually would happen to the geotechnical offices where the police in the region would go through their channels.
Q. Right, and then be made --
A. That was geotechnical issue.
Q. Actually if we could go, Registrar, back to MTO 35791, image 18, "spot hazards." And then under "special requests" I see research/experimental projects, product evaluations, suspect areas, and municipal concerns. So that's an additional category?
A. Yes, it is.

Q. And for the requests from the regions, was there a standard request form? I see in the -- we don't have it here -- just sort of a standard request form where you would have to fill in here's the location, here is the concern, the reason for the testing. All of that sort of stuff; is that right?

A. Yes. Included types of requests in there, but yes, there was a form.

Q. And you also periodically did -- I think you earlier described it as project testing, but testing done arising out of the SMA early age low friction issue, you did quite a bit of testing in that regard; is that right?

A. That's one such project, yes.

Q. Okay. With newly laid SMA, right?

A. Yes.

Q. And then -- and we'll come to it in a bit, but you did network testing in 2013; is that right?

A. Yes, I did.

Q. So with respect to skid testing requests by municipalities, were those a

common or an uncommon thing?

A. They weren't very common. They were not common.

Q. Not common. So could you -- is that something where you would -- where you would get a few of them in a year or sometimes would you have years where there were no municipal requests at all?

A. Both ways. Sometimes there would be one or two a year; sometimes several years that would go without.

Q. Was there any formal process for dealing with those and how they would get to you?

A. That wouldn't be part of my job. I wouldn't know how the offices would get information, but I would assume in the area or the region that it was in they would probably go through the channels of whatever MTO office was in that region.

Q. Right. Because that was MTO people, typically they would know where the ones in the region, and then that would makes its way back to pavements and foundations and you; is that right?

A. Yes.

Q. And is it fair to say municipal requests would be followed and testing conducted so long as you had the capacity to do it?

A. Yes.

Q. Do you recall them being declined on some occasions?

A. Yes, I do. Yes, I do, because of the network level testing, yes.

Q. Do you recall that for other than the Red Hill, testing being declined?

A. So as I explained before, sometimes between the time between municipal requests would be so long, but prior to that no, I don't recall.

Q. You don't recall one way or the other or you don't think it happened?

A. I don't recall.

Q. To change the subject slightly, did you ever conduct skid testing on the Lincoln Alexander Parkway in Hamilton? Not the Red Hill but --

A. Yes.

Q. That's the east-west

portion of the continued -- what's now -- that runs into the Red Hill but it's the east-west portion. Do you recall that?

A. I can't graphically place it right now. I don't know it's in the Hamilton area. I can't -- I don't use it. I haven't used it since. I can't graphically place it right now.

Q. But you recall testing on the Lincoln Alexander Parkway?

A. Yes.

Q. Do you recall when that was?

A. It was years prior to testing of the Red valley.

Q. So you first tested the Red Hill Valley Parkway in 2007, so you mean at some point years before 2007?

A. Yes.

Q. We know that the Lincoln Alexander Parkway opened in 1997 and then the Red Hill opened in 2007, which is when you first tested it. So can you place it -- obviously it was sometime between those two dates. What's your best recollection as to when that would have occurred?

A. I'm sorry, I can't -- I don't want to guess. I don't know. I don't.

Q. Okay. So your best -- it was some years before 2007 when you did that testing?

A. Yes, yes, it was.

Q. Do you recall any other details around that, around that testing, like how it was requested, anything like that?

A. All I remember is there were concerns about the steel slag in the mix. That's all....

Q. So the steel slag aggregates that were used in the surface course?

A. Yes.

Q. And do you recall that the steel slag was used in all of it or just in part of the surface course that you were testing?

A. I don't recall.

Q. Is that the only detail that you remember? Do you recall anything else?

A. I remember speaking to some outside staff on-site.

Q. You mean outside staff at the City of Hamilton or do you mean consultants?

A. Outside staff of MTO.

Q. Of MTO. I see. Who were on-site at the Lincoln Alexander Parkway?

A. Yeah, I believe so.

Q. Anything else?

A. No.

Q. We know also that the City of Hamilton placed SMA pavement on Burlington Street in the City of Hamilton in October 1999. You were operating the MTO skid tester in 1999, right?

A. Right, yes.

Q. And if we could go to overview document -- and this is overview document 3, Registrar, image 13. 12 and 13, I guess. So according -- it's paragraph 19 at the bottom image on the left. We don't need to expand it. And then the three subparagraphs at the top of the image on the right?

So according to a paper that was published in 2002, the MTO performed skid resistance testing on the Burlington Street SMA placement using its ASTM brake force unit in November '99 and May 2000 and with the average measurements being between FN44 and FN51. Do you

recall conducting that skid testing on Burlington Street at that time?

A. I don't recall. I don't recall doing it but doesn't mean I didn't do it. I just don't recall.

Q. You did a lot of skid testing in your career so this one doesn't stick out for you; is that fair?

A. Yes, it doesn't stick out.

Q. But nevertheless, if the MTO did do the skid testing as referenced in this paper at that time, would that have been you?

A. That's correct.

Q. But you just don't have any recollection of it now?

A. I don't.

Q. Okay. And the paper indicates, as I said, that the results were in a range from FN45 to 51 at a testing speed of 50 kilometres per hour. It's a city street. And it indicated in the paper that these numbers are regarded by the MTO to be consistent with mixes having excellent skid resistance properties. Does that sound like something you would have said?

A. I probably would have said that, yes.

Q. Do you agree with that statement?

A. Yeah. But you are taking a looking at the results -- friction results at 50 kilometres per hour; not 80 or 90 or 100.

Q. Yeah. Right. So you would expect them to be higher than if you were taking them at 100?

A. Yes.

Q. But do you agree -- if it sounds like something you would have said I take it you would agree with that statement? You think it's consistent with excellent skid resistance properties; is that fair?

A. I do.

Q. We know that you did conduct the skid testing on the Red Hill Valley Parkway on October 16, 2007, before it opened to traffic. Do you recall the arrangements around that and the actual testing? Is that one that you do recall?

A. The arrangements, I believe I asked -- because testing prior to

opening wasn't that common I wanted to make sure that it was free of any contamination, any sand, any equipment, any people, anything that could make it -- give us numbers that clearly describe the friction levels of the surface instead of any other material that may have been on there, and to make it a safe environment for myself or anyone that was within the vicinity.

Q. Okay. So this was an unusual one in sense that it hadn't opened yet, it wasn't being done in mixed traffic and so forth, so does it stick out in your head a bit for that reason?

A. It does, yes.

Q. Registrar, if we could go to overview document 4, image 53.

And we know that you were involved in making the logistical arrangements for it with Andro Delos Reyes of Golder Associates after Chris Raymond of MTO instructed you to do it. Does that accord with your recollections? Do you recall that?

A. Yes, it does.

Q. And in paragraph 123 here Chris Raymond -- this is on September 27th,

2007 -- Mr. Raymond is writing to Dr. Ludomir Uzarowski of Golder, copying Becca Lane and you. And he thanks him for providing some information about rich bottom mix, and he says then that he'll arrange for Frank Marciello to conduct the skid testing, and he then he lists information that you are going to need. And is this all typical information that you would require in addition to the issue about it being closed to traffic?

A. Yes, of course. Yes.

Q. And the reference point that's referred to there, does that mean the starting point or?

A. Yes, it does.

Q. So to know where you are going to start and what's that location so the measurements can be taken and the distance can be tracked from that start point?

A. That's right. And it referenced the end point as well. So start point, the end point.

Q. Did anyone accompany you for that testing do you recall, or were you by yourself?

A. That's first day I was by

myself, yes.

Q. Is that the usual? Did you typically conduct the skid testing by yourself?

A. Yes, yes, definitely, yes.

Q. Most of the time?

A. 99.9 percent of the time, yes.

Q. You say that first day I was by myself. Was there a subsequent day when you tested the Red Hill when someone went with you?

A. There was a subsequent day where Bob Gorman joined me as a passenger.

Q. Right, okay. I think we have some -- he'll speak to that and we have some photographs I think that he took at the time. So you actually specifically recall that? Because it was an unusual event.

A. It was, but Bob and I would work closely, especially with section (indiscernible) came out of his office to make sure that testing was done in the proper locations.

Q. And did Bob Gorman, did he ride with you on other occasions when you were conducting testing for soils and aggregate requests?

A. No.

Q. No? That was the only time you recall him riding with you?

A. That's the only time I can recall, yes.

Q. And aside from the road not being open to traffic, was there anything that you encountered about it on this instance of the testing on October 16th, 2007?

A. Nothing that really stands out. I found it to be very easy to navigate and very comfortable in testing. If there was a problem I would have reported it.

Q. That isn't always the case; sometimes you do have difficulties; is that right?

A. Well, associated with traffic, you know, far too much traffic where I can't post the proper speed limit.

Q. Right, no issue (speaker overlap) where it's open though?

A. Yeah.

Q. And then if we could go to image 60 in overview document 4. If you could expand 137, please.

So the next day, October 17th, 2007, you e-mailed the results to Chris Raymond and Becca Lane, and there's your e-mail. You talk about the test limits and the date and so forth. And you only tested the southbound lanes because of the construction materials; is that right? In the northbound lanes?

A. I'm not sure why I tested in only one direction. I can't recall why only one direction was tested.

Q. In the third paragraph you indicated that Dufferin and Philips Engineering and Andro Delos Reyes are eager for the results. Do we know that earlier that day Mr. Delos Reyes e-mailed you and said that Dufferin and Philips are highly interested. Did you have any other discussion with Mr. Delos Reyes about that interest or was it just his e-mail that you were --

A. Just his e-mail that I remember.

Q. And then in the last paragraph you wrote:

"Note: Friction numbers below 30 were collected in areas situated directly under overhead structures (least likely to get weathered)."

Do you recall what you based that statement on? And we'll look at the results themselves, but the conclusion or the hypothesis that it was areas least likely to get weathered?

A. I just made the observation that the numbers were lower under the overhead structures. I don't recall why. I just made observation that that's where they were situated.

Q. But -- so that sort of factual one is one thing, but then there's the least likely to get weathered is sort of -- is a conclusion or speculation, however you want to characterize it. Are you saying you just don't recall where that is from?

A. I don't recall.

Q. We heard from I think Chris Raymond and Chris Rogers that there had been

a previous instance where there had been a correlation of this sort and there was a theory potentially that it was less exposure to sun and the weather and that meant that there was less wearing off of the asphalt film. Do you recall that being discussed?

A. I heard that in the past, yes.

Q. You've heard it in other contexts than the Red Hill, is that what you're saying?

A. In other pavement, other SMAs.

Q. Other SMAs, okay. Is that potentially what you're talking about there based on that?

A. At that time I didn't know what the train of thought was. I can't say yes or no. I can't remember what the train of thought at the time was to write that statement.

Q. Okay. And then if we could go to the next two images, 61 and 62. If you could expand them both. Thank you. Just to make it easier on your eyes and everyone else's.

And so these are the results.

We already looked at the southbound lane 1 results on the left that we looked at a little earlier today, and on the right now we have the southbound lanes 2. And first of all, again, this is the typical way in which you reported the results at the time; is that right?

A. That's right.

Q. What did you make of these results at the time, do you recall?

A. I knew that they were results prior to opening of the highway. I knew that there wasn't enough traffic to affect any of the numbers at all because there was no abrasive action put on the highway yet. I -- there were no conclusions I came up with, no.

Q. When you talk about the that there wasn't enough traffic to affect the numbers, are you referring to observations that you had had from your experience that if something -- if you are testing a pavement right at the outset after it's been placed that the numbers typically go up after a time period, is that what you were talking about?

A. On some payment they do. On some DFCs they do.

Q. Right. Is that on some DFCs? Is that what you said?

A. Yes, yes.

Q. Dense friction course?

A. Yes.

Q. Okay. And what about on SMAs? You had been doing testing on SMAs around that time period as well?

A. Like you stated a few minutes ago, I mean, it was the AC film that probably could affect the performance of the pavement initially. SMA --

Q. I appreciate you're not an engineer and you weren't coming to conclusions on that stuff. Just again, what your thoughts were at the time based on your having been conducting the skid testing on various pavements, including SMA (ph).

A. At that time, initially no thought at that time. It was very early.

Q. Okay. And to come back to then how you would plot things on these charts. You had indicated that you would manually enter the landmarks column and comments column but it's the landmarks I would like to focus on.

And so these start at the distance of 0.0 at the CNR structure, the Canadian National Railway structure, correct?

A. Correct.

Q. And does mean that's where you turn on the skid trailer at that point?

A. Yes.

Q. And I gather you are travelling along, so you switch it on as you pass under it. Is that how that works?

A. I switch it on as the axle, the trailer axle is underneath the structure landmark, because that's where distance is measured at.

Q. Right. It's not in the front of the truck, it's from the trailer that's trailing you?

A. Yes. Yes.

Q. Okay. And then there's the results plotted throughout until the end and showing the distance on the far left. And as you indicated, just to stay with southbound lane 1 on the left-hand side, there's a reading of 28.7 beside the landmark reference to Barton Street, and as well there's one further down at 28.1

beside the Queenston Road landmark.

And I note that the distance beside Barton Street -- just to the left of Barton Street refers to 0.49, whereas on the distance on the left it's .438. And Queenston, it's -- immediately beside Queenston it's 1.82, whereas on the far left it's 1.748.

Do you know why those are -- why those numbers are different? Can you --

A. All I did is I tried to place the actual distance of -- the number on the left to the name of structure as close to where it should fit within the data.

Q. But how do you do that? I'm just wondering how do you know -- because that's a -- under the distance landmarks that's a manually entered figure, correct?

A. Yes, it is.

Q. So where do you get that number from, like, for Queenston of 1.82?

A. As I would be driving along I would actually -- there's the odometer that the pavement -- that the trailer is collecting -- that information is collected by the trailer, is giving me a reading in three

significant digits. I would actually manually write down that number, right, when I was below or above the landmark and I would note it in my notes, my field notes.

Q. I see. While you're driving?

A. While I'm driving. Oh, and also there is many cases where in situations like this I would do a dry run where I would only collect the distances of each one of landmarks without doing testing. I would just have the odometer running, no testing involved, so I can concentrate on just one thing.

Q. I see. Okay. And do you recall doing that here or no?

A. I believe it did that here. It was a totally new section for me. I wasn't familiar with it, I'm sure I did that here.

Q. Okay. So then to clarify, so on the left-hand side the distance is the automatically generated distance by the skid trailer itself, and under the distance landmark section, that's what you -- in this case you believe on a separate run prior to doing the skid testing itself recorded as you passed under each

landmark; is that right?

A. Yes, exactly.

Q. And that again was your typical practice (speaker overlap) either during or before in a separate run or during, one or the other?

A. If I was unfamiliar with the surroundings usually I would do it on a separate run.

Q. If I've understood it correctly then on this particular one, both of them, when you're indicating that they are underneath a structure. It's not exact; right? That's not an exact correlation between automatically -- so we'll just use Queenston first. I will back up. Use Queenston. The automatically generated distance number is 1.748, and that's 1.748 kilometres, right?

A. I'm sorry, where do you see that?

Q. So beside Queenston Road in the far left column, right, that's 1.748 kilometres distance from the starting point, correct?

A. Yes, that point, yes,

that distance, yes.

Q. And that's where it's taking the measurement automatically of 28.1?

A. Yes.

Q. And for -- immediately to the right of that, the 1.82 for Queenston is what you took manually and you believe in this instance at the earlier -- when you did the earlier run before doing the actual skid testing, right?

A. Yes.

Q. So if I understand correctly, it's not an exact correlation between the two; there's a distance of some 70 metres, do I have that right, 70 metres between them; is that right?

A. This is on the far left the 1.748 pertains to the actual numbers that were collected, the actual friction number and the speed. That's all that distance pertains to, is the distances -- or the speed and the friction number. The 1.82 doesn't necessarily match 1.748 because it was in a different location.

Q. Right.

A. Okay.

Q. I get that. So I'm just

coming back to the comment that you made in your e-mail about the numbers under 30 in areas situated directly under overhead structures. I'm just trying -- am I right that they weren't necessarily right under it? Is that fair or not?

A. It's very possible because at a speed of 90 kilometres per hour in 3 or 4 seconds you are travelling quite a distance to collect that information. It could have been within. I'm not sure. It could have been site -- or it could have been within.

Q. Could be either. Or any of the three. And I guess when it says "average FN" in the third, that's the average of the FN number collected over that 4-second time period?

A. Exactly. Exactly.

Q. I don't think we need go through the rest, but is it fair to say the same would apply to the rest of those -- there's five in total between the two lanes that are -- where the number is slightly under 30, in the 28s or 29s. The same analysis applies to each of those as to how you took the number down, the distance number down manually versus the automatically generated number on the left the same in each

instance?

A. They are both collected in exactly the same way, yes. It's all consistently done.

Q. You sent your e-mail that we already looked at to Ms. Lane and Mr. Raymond. Is there anyone else that you communicated the results to that you recall?

A. I can't recall, no.

Q. What was your usual practice?

A. Usual practice is to send the results to the people who initially requested at MTO.

Q. Right. And you don't recall doing anything outside of that normal practice here; is that right?

A. No, no.

Q. In this instance is that because Mr. Raymond and Ms. Lane were involved in the e-mails where you were asked to arrange the testing? And Ms. Lane I guess was your supervisor at that point in time as the head of pavements?

A. Yes, she was.

Q. And that's why you sent

it to them?

A. Yes.

Q. You can take that down, Registrar, thank you.

The testing in the subsequent years on the Red Hill, 2008 through '14, except for 2013, we understand that those were conducted at the request of the soils and aggregates section. Does that accord with your recollection?

A. Yes.

Q. Did you personally ever advise the City of Hamilton or any of its representatives that you were conducting that testing?

A. No, I did not.

Q. And did you ever have any discussion with anyone in the MTO, whether it was your -- in the soils and aggregates section or in pavements and foundations about communicating with the City of Hamilton about that testing?

A. No.

Q. Just wasn't any discussion one way or the other?

A. That was beyond my responsibility, that was their call.

Q. I understand that. I'm just -- for example, did anyone say to you, you know, you don't need to make any arrangements with the City of Hamilton about this?

A. As far as testing and finding out information about the test site itself, which I did and which I -- I'm sorry, can you ask the question again.

Q. Did anyone say to you or suggest to you that you did not need to contact the City of Hamilton to make arrangements or to get permission to do the testing?

A. No, that wasn't discussed at all from anyone.

Q. Okay. So you were just -- you were just told these are the -- to do the testing and you did it?

A. Yes.

Q. Okay. And did you send any of the test results in any of those years to Hamilton or Golder Associates or anyone else outside of the MTO?

A. No, I did not.

Q. Okay. If we could go to overview document 4, images 87 and 88.

And this is in 2009. You conducted testing in 2008, but in 2009 if you look at paragraphs 201 through 204, you conducted the testing on May 7th, 2009. And in 2002 you express in an e-mail with the results to Mr. Senior, that's Stephen Senior in soils and aggregates, Bob Gorman in soils and aggregates and copying Ms. Lane stating:

"Gentlemen, might to early to tell but it appears that friction level/trends may be starting to decline with time." (As read).

And then in 203 Mr. Senior replies on May 11th indicating:

"Frank, both Bob and I agree there is no clear indication of any early trend to the data. Maybe you just have a gut feeling for what's going on out there. Time will tell." (As read).

And then says:

"We will be sending out a notice regarding conditional

approval of the source pending satisfactory performance of the pavement and of the source materials. Thanks for everything." (As read)

And then you reply in paragraph 204 on the top that "conditional is the key word." (As read)

And do you recall what you meant by that?

A. No, I don't. I don't.

Q. Was conditional -- did you have any knowledge of whether DSM approvals were always conditional? Was that something that you had any insight into one way or the other?

A. No, I had no -- no, no, I had nothing to do with that, no.

Q. Okay. And you don't recall why you responded in that way?

A. I don't.

Q. Okay. And am I correct that in all the years after 2007, which we've already discussed, but in all the years on the Red Hill you conducted the testing at or about the posted speed except for one year in 2010? Is that

right?

A. That's right.

Q. Okay. And we'll get to that in a moment, about the 2010 results, but were you aware of anyone else in the -- I asked you before about whether you sent the results to anyone else outside the MTO or talked to anyone outside the MTO. Do you know if anyone else communicated the Red Hill skid testing results to anyone outside the MTO?

A. I'm not aware of that, no.

Q. Okay. And are you aware of anyone other than the MTO being aware of the testing that you conducted?

A. No, I'm not aware of that either.

Q. If we could go to overview document 4, just to the next page, 89. Maybe 90. Okay.

In paragraph 210 you'll see that on April 1st, 2010 you e-mailed the results from your March 31st, 2010 friction tests to, again, Mr. Gorman, Ms. Lane and Mr. Senior, and -- again, this is about the Red Hill results, and you

in second sentence:

"The attached read-only files show a decline in friction in the NB --" meaning northbound lanes "-- averaging 5FN. Some values are at or below FN100 of 30. SB --" meaning southbound lanes "-- performed at similar levels mid 30s as in 2009."

And then you'll see above in 211 (sic) the same day Mr. Gorman replied:

"We will have to watch this one. Maybe do again after the summer?"

And then you agreed.

And so first of all, do you recall the test speed on -- that you performed this at?

A. Well, I don't recall the test speed but I'm just looking -- I'd have to see the report that --

Q. Okay.

A. -- they reported.

Q. Okay. Yeah. And we can

go to that, which is -- go to the first one, MTO 34298. So this is -- this is what's attached to the e-mail that you sent within the MTO, and under "Speed," the second column, it's all at or around a hundred. Do you see that?

A. Hm-hmm.

Q. And the other ones are the same. And I mean, the documents indicate that you didn't know at the -- didn't notice at the time. It was the next year that you recognized that you had performed testing at the higher speed. Do you recall that issue now?

A. I recall -- I recall the issue, yes.

Q. Okay. And we'll get to that next year. I just wanted to place you there. But do you recall why there wasn't further testing done in 2010 given your e-mails with Mr. Gorman?

A. I can't recall why there wasn't any further testing, no.

Q. Okay. So given the drop that you referred to, you indicated that a decline in the northbound lanes averaging 5FN. Was that something that concerned you that you highlighted it?

A. Yes, it was something that concerned me, yes.

Q. Okay. And how so?

A. The numbers hovered above that threshold number, and I think it was a good observation to share. So I think that's probably the only reason why I reported it.

Q. Yeah. I mean, it was something that I take it you thought was unusual for it to be a drop of that number over one year? In your --

A. Yes.

Q. -- experience. Yes?

A. Yes.

Q. Okay. And then if we could go to image 90 of overview document 4. It's paragraphs 212 and 213 that I'm interested in. If you could expand those.

So on the same year a number of months later on November 15, 2010 you e-mailed Ms. Lane, and you can read it there. You provide some history and contact information of Dr. Uzarowski and Andro Delos Reyes and indicate that:

"Northbound lanes have shown

declining friction performance properties from the start, while southbound lanes improved in the first year and then started declining afterwards."

And then she responds in 213: "Good stuff, Frank - thank you. Perhaps I'll call Ludomir for a City of Hamilton contact."

She then asked you for the most recent Red Hill Valley Parkway friction test results from 2010, which we looked at already. One of the lanes, but that's what we were just talking about, and then you provided those to her.

Do you recall what led to this this e-mail exchange, and why you sent this information to her?

A. No. I think it was -- no, I don't recall.

Q. Okay. Just based on this you wouldn't have sent this to her out of the blue, though. You would agree that there must have been some discussion beforehand, right?

A. Yeah, I agree with that. It was just an observation that I thought that they should know.

Q. Okay. No, I get that. But I'm wondering if you would have sent this e-mail to Ms. Lane without having a prior discussion with her, or would you have talked to her and let her know about it and then sent her the e-mail?

A. I don't recall. I don't recall.

Q. Okay. It just seems unlikely that you would just send it to her, and then she says "good stuff, Frank." I mean, if it was out of the blue without any context, she might be saying why are you telling me this, right? Is that fair?

A. What she says I can't control, but I just -- on my end of it I just sent her my observations; that's all.

Q. And, again, I think you -- you said it's an observation that you thought they should know. Is that because you did have a concern with it at that point given the drop in FN?

A. I thought they should know that --

Q. Right, and then do with it what was necessary, but there's something that -- based on your experience that caused you to think that they should know, right? And you had already let Ms. Lane know. You had sent this to her back earlier in April, right? There's -- the 2010 test results?

A. Yes. It looks like it was a concern for me.

Q. Okay. But you don't have any specific recollections around any conversations that occurred that led you to sending it?

A. No, no, I don't.

Q. In Ms. Lane's response she says she --

"Perhaps I will call Ludomir for the City of Hamilton contact."

Do you know if there was any follow-up one way or the other?

A. No, I don't.

Q. And if we could go --

thank you. If you could take that down. And if we could go to image 92 and paragraph 219.

These are the 2011 results. And on May 25th, 2011 you performed the friction testing on the Red Hill, and on May 26th, 2011 you e-mailed the results to Mr. Senior, Mr. Gorman and Ms. Lane. And this letter is talking about before that, although you're sending them the 2011 results, you indicate that the data for 2010 was collected and reported at 100 kilometres an hour is what we had just discussed. That's 10 kilometres an hour over all the other years' collection speed.

"That would definitely explain why this SMA's performance dropped significantly last year. I made and reported an adjustment to 2010 data in the data below." (As read)

So we can look at them, but do I understand this correctly is what you were doing is -- because each year when you were showing the results, you would show the results from prior years too on the graph, right?

A. Hm-mmm.

Q. Is that right?
A. Yes.
Q. And so you made an adjustment to that historical information for 2010, right?
A. Yes.
Q. Okay. And am I correct that what you did was you increased the 2010 results by 2FN? Is that right? We can go and look at it, but if you you recall --
A. Yes.
Q. Is that right?
A. That's right.
Q. Like each of the average numbers you increased by two FN. Oh, sorry, I guess it was the --
A. They should have been increased (speaker overlap) so yeah.
Q. Okay. I think that is what it indicates.
And that's based on what we were discussing earlier was your -- the general understanding that -- of the higher the test speed the lower the FN and of -- two FN being the number that you understood that was appropriate to

consider the difference between -- for every 10 kilometre per hour difference; is that right?

A. That's right.

MR. LEWIS: Commissioner, it is 11:30 which is our typical break time. I think -- I don't have very much to go. I just need to clean up my notes. I think I covered a lot of things early on that I thought I might cover later. I think I will have a few more questions, but if we could -- if it's all right with you to take our break, and I could confer with counsel about their timing.

JUSTICE WILTON-SIEGEL: Fine. So why don't we take a 15-minute break. We'll stand adjourned until quarter to 12:00.

--- Recess taken at 11:30 a.m.

--- Upon resuming at 11:46 a.m.

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

JUSTICE WILTON-SIEGEL: Please proceed.

MR. LEWIS: Thank you.

BY MR. LEWIS:

Q. So, Mr. Marciello, we were just talking about the 2010 and 2011 Red Hill

results, and skid test results, and we know that you also did some testing -- did skid testing on it in 2012 but not in 2013. And do you recall why there was no Red Hill testing in 2013?

A. It could have been two things. Could have been the introduction of the network of level testing, or the test vehicle could have been being upgraded in Michigan.

Q. Okay. So you don't actually -- you don't know one way or the other, but those are the two things that you speculate; is that fair?

A. Yes.

Q. Okay. And when would it go -- the machine go for testing or calibration in Michigan? In the off-season clearly, but would that be in the winter or was it also done during the season sometimes?

A. It's got to be done during the season because they use it under the nascent (ph) conditions to conduct their calibrations.

Q. Oh, I see. Okay. So it wouldn't be like in January. It would be at some point during the actual testing season?

A. Yeah. They would not be able to do any outdoor testing in January.

Q. I see. Because they're calibrating actually in the field or on a test strip of some sort?

A. Yes.

Q. I see. Okay. But you don't recall specifically the reason one way or the other?

A. I do not.

Q. Okay. And am I correct, though, that in 2013 the network testing that you were directed to do was occupying most of your time?

A. Yes.

Q. Okay. And there was 100-and-some-odd pavements that you had to test, skid test, as part of that; is that right?

A. Yes, and there were more being added.

Q. Right. And I think we have the numbers at some part, but they're -- in some place. I don't need to go to them right now. Am I correct also that those were located in various places throughout the province?

A. Correct.

Q. And were you aware in late 2013 of any request being made by Golder Associates to your boss at the time, Stephen Lee to perform friction testing on the Red Hill?

A. I was aware.

Q. Sorry, you were aware?

A. I was aware.

Q. At the time that there was a request?

A. At the time.

Q. Okay. And who made you aware?

A. Stephen Lee.

Q. And -- okay. So -- and do you recall what he said to you?

A. I don't know if he said it to me or to Golder, but we were too busy.

Q. Okay. So I'm going to take you to -- one moment -- Golder 4467. So this is an e-mail chain. If you could bring up the second page of that as well, please.

So this is an e-mail chain from October of 2013 where Vimy Henderson, who is an engineer at Golder Associates on October 4th,

requests to Stephen Lee -- that's on the right-hand page -- that Hamilton wants to have some friction testing carried out and asks if he's available to discuss. She follows up on October 29th on the -- oh, sorry, Stephen Lee writes back October 7th:

> "Let us know the scope and timing to see if we can accommodate it." (As read)

And then on the left-hand page on the October 29th Vimy Henderson follows up, gives some more information about it, about testing the Red Hill Valley Parkway and the LINC, and then Stephen Lee responds and says:

> "We're behind in our friction network level work and performance-based specification testing. Recommend you get a quotation from ARA that has the same equipment or other that have different friction equipment. Sorry, we will not be able to accommodate this for this season." (As read).

And then:

"Some friction testing methods are sensitive to ambient/pavement temperatures."

So this is the written request. You're not copied on any of this. Are you saying that Mr. Lee made you aware of this request?

A. All I remember from him was him telling me that I had no time for that work, that I was busy doing this network level testing.

Q. Okay. So you actually recall him advising you, though, of a request for testing on the Red Hill Valley Parkway, but that you didn't have time for it?

A. Yes, I do.

Q. Okay. And you think that -- do you think this was around that time in October 2013? Is that your recollection?

A. I remember the discussion. I can't place the dates there, but I remember that wording, the discussion, yes.

Q. Okay.

A. It can't place the date.

It's -- no.

Q. Okay. Well, why don't we put it a another way which is that, do you think it was at around the time the request was made?

A. I don't know.

Q. You can't remember?

A. No, no.

Q. Okay. Do you recall if the -- if you were still doing the network testing at that point in October 2013? You talked about other things -- new roads being added and so forth.

A. I may have been. It seems late in the season, but it may have been in southern Ontario.

Q. Okay. The distinction being in northern Ontario you likely wouldn't have been doing it because it's colder up there, and you'd be -- could be covered in snow?

A. That's correct, or just to be colder.

Q. Yeah. Below the temperature at which you would perform it in any event?

A. Hm-hmm.

Q. Give me one second.
A. Sure.
Q. Do you recall if you had any discussion with Mr. Lee at the time of the discussion you just mentioned about you having done prior skid testing on the Red Hill?
A. Can't recall.
Q. Can't recall one way or the other?
A. No, I can't.
Q. Okay. All right. If we could go to overview document 4, image 96.
And this is the 2014 testing on the Red Hill that you did, which you conducted on July 12th and July 23rd, 2014. Do you have any recollection of why you did it on two different days, one northbound lane on the 12th and then the remaining three on the 23rd. Do you recall?
A. I don't remember why.
Q. Okay. Once again, you've tested a lot of roads over the years.
A. It could be one of the possibilities.
Q. Right. And then in paragraph 230 on the 25th of July, 2014 you

e-mailed to Mr. Senior, copying to Mr. Gorman and Mr. Lee, who was at that point your -- the head of pavements and foundations as he was in 2013, attaching the skid test results, and that's your e-mail that's reproduced there. Take a moment to look at that.

A. Sure. (Witness reviews document).

Q. Let me know when you've looked at it.

A. I'm done. Go ahead.

Q. Okay. And do you recall why you sent the comparison average information? I mean, it's a comparison between 2008 in each land the average numbers with the average numbers by lane in 2014.

A. I don't recall why, no.

Q. Okay. You don't recall whether or not you had a discussion with any of those individuals before --

A. No. No, no, I don't recall, no. I mean, I've reported this information many, many times in this way, so it's just -- wasn't anything new.

Q. Okay. So when you had --

you mean when had historical information and there was -- and you were -- so there was a comparison to be made, it was something that you would do is to provide the comparison in the covering e-mail?

A. Sure, many times before.

Q. Okay. And if we could go to the next two images, 97 and 98.

And these are the charted results or graphed results, I guess, and we can go to some -- we can go after to some of the pinpointed results as well, but -- and you let me know if there's anything in particular that you want to look at in the underlying documents, but these are each of the lanes. And if you want to just have a look at them, if you tell me when you're ready to go.

A. (Witness reviews document). I don't see lane direction.

Q. Right. And so -- and I guess based on what you said before, if I'm correct that would have been information that you would have entered in manually on this, right? So if you didn't enter it, then it wouldn't be there; is that right?

A. Yeah. I'm surprised it's

not there.

Q. Okay. Well, we can tell at least, and you tell me if I'm wrong, that it's the southbound lanes on the right because it shows the data from 2007, and that's what you performed in 2007 only in the southbound lanes, right?

A. I don't know for sure because I'm -- I just don't see what should there.

Q. That's okay. Well, we can go to the underlying documents. Do you recall forming a view of the results at the time?

A. Yes. I recall putting things together, of course.

Q. Okay. And what -- sorry, by "putting things together," you mean assembling the data or that you --

A. Yes.

Q. Okay.

A. Yes.

Q. But I'm asking, did you form a view of the -- meaning an opinion or a -- or did you assign a particular meaning to these results?

A. No, no, I didn't.

Q. Did you specifically form

a view about the decline in values over time that are shown here?

A. I don't recall.

Q. You may have, but you don't recall?

A. I just don't recall. I mean, I've done it so many times I just can't recall. I mean, I -- is there an e-mail that went with this information to the describe it --

Q. Yes.

A. -- or I just --

Q. Yeah, that's --

A. -- I just -- I don't recall.

Q. Yeah, that's what we just looked at. If we could go back to the -- we'll go to the actual documents. If you could go back to image (indiscernible), please.

(Speaker overlap)

Q. Yeah, the covering e-mail. That's what we just looked at before.

A. Okay. So some --

Q. Image 96, please, Registrar.

That's in --

A. Okay. I understand. I understand now.

Q. Yeah. That's your e-mail, and, you know, you're going back to the the 2008 results compared to the 2014 results which show a drop in FN of -- by lane, of eight in three instances and seven in the instance of one being the southbound lane 2.

A. Yes.

Q. Right. And so is that something that you formed a view about?

A. Yes.

Q. And what was that?

A. That the friction levels were continuing to drop from between those two years.

Q. And is that something that you saw as significant or insignificant?

A. I just thought it should be reported.

Q. Right. It was enough of a drop that you thought it was worthwhile noting; is that fair?

A. Yes, I would say so.

Q. Okay. And is that

because it was in some respect unusual in your experience?

A. It was not unusual for -- yes, it was unusual; yes, it was.

Q. Sorry, it was unusual?

A. It was unusual.

Q. And compared to what?

A. Other SMAs.

Q. Over that time period, that sort of time period over a number of years?

A. I can't really recall the specifics of the others, but it would come to mind.

Q. Okay. And what about other surface courses?

A. No, no. No, I wouldn't be able to compare with other surface courses.

Q. Okay. And if we could go to the native of -- Registrar, of MTO 22944.

A. I'm sorry, what do you mean by "native"?

Q. Oh, I'm -- this is just for the Registrar. It's just because of the native format. Because we can pull them up as a PDF, but the native format being actually in the

Excel format we can actually see the results better and toggle between tabs.

So MTO 22944, please, Registrar.

So this is the northbound lane 2 results, and we were just looking at this in the overview document as one of the graphs. And if we could then look at the tab "Detailed." And we see there it also says "northbound lane 2."

A. Hm-mmm.

Q. And there are, if I'm reading it correctly, five readings -- sorry, the overall average is over 30; it's 30.7. And there's five readings below that, and four of those are under 28.

And so when you sent your comments to -- in your e-mail, when you were noting the overall -- the average drop, were you also considering the individual readings or is it just the average that you were concerned about?

A. I was looking at the individual readings as well.

Q. As well?

A. Yeah.

Q. Okay. And what did you

take from the individual readings? Do you recall?

A. I found just that, what you said, there were numbers below 30 that made up that average overall.

Q. Okay.

A. Obviously the difference between the min and max were quite a bit there, so --

Q. And what about --

A. -- I was looking at the overall picture.

Q. The overall picture, okay.

And from your perspective was that a -- for those results, a concern or something that you simply felt was significant enough that it needed to be reported to your superiors?

A. It was significant enough it should have been reported.

Q. Okay. And if we could just go to one other of the lanes because this is the one that's not labelled. It's MTO 22946.

And you'll see on this one on the detailed chart it does not indicate that it's

the southbound lane 2, but going to the -- if we go back to the chart, Registrar -- it says, SBL2, southbound lane 2. So did you have to populate each one of those or should it have done it automatically? Do you know?

A. You know what, it should have done it automatically. I can't explain what happened there.

Q. Okay. And if we could go back then to the "detail" tab.

And it's just a little different. I just want to talk about the distance in kilometres on the left-hand side versus the distance in landmarks in the column second from the right. And now we've got the GPS data as well which we've talked about before, right?

And I'm just looking at the landmarks again. And so the landmark distance are the ones that you manually entered as you describe -- as you passed under it --

A. Yes.

Q. -- whether it was done at the time of the skid testing itself on a prior run, correct?

A. Right.

Q. Or would you have just populated these from the prior ones once you had them? If you're testing the same stretch, would you just populate it from the prior stretch?

A. I would say so, yes.

Q. Yeah. Okay. And then -- I'm just noting when you go across to the distance there, the landmarks correlate -- under the autopopulated distances there's a blank space there. Do you know why that is? On the far --

A. Well, I think that -- I think previous years we didn't have the longitudinal -- we didn't have the GPS coordinates.

Q. Right.

A. So that makes -- I needed to populate an extra cell so we can include both GPS coordinates. In the past we didn't have to do that.

Q. Right. So opposite Barton Street there where the GPS coordinates there actually correlate right to the Barton Street bridge in that -- or Barton Street interchange. Yeah, I guess it's the bridge over the --

A. That's right. It correlates with the actual distance of Barton, distance from the start.

Q. Got it. And the same for the other landmarks I've noted?

A. Yes.

Q. Okay.

A. It was just a way of accommodating the GPS information in the new format that we needed to create.

Q. Okay. Got it. Okay.

And do you recall if you had a discussion with or discussions with your superiors about these results beyond the e-mail that you sent?

A. No.

Q. Okay. And so I'm going to give you a couple of pieces of evidence, and you can just tell me if you recall anything about this.

We anticipate that Stephen Lee, who was your boss at the time as the head of pavements, that he may testify that he discussed with you that the friction number was dropping based on the results from these the 2014 and prior

year results, and that it was now near the margin of what was expected of DSM aggregates, and that he told you it was reaching a number where they should be monitoring given that the number is dropping below FN30, and he had a -- he didn't see how the aggregate source could be maintained on the DSM in the long-term. Do you recall that conversation or any part of it?

A. I don't recall it, and I don't think it would -- that information about DSM list would be discussed with me.

Q. Okay. Can you say definitively that that conversation did not occur, or are you just saying you don't --

(Speaker overlap)

A. No --

Q. -- and it doesn't sound like the kind of thing you'd talk about.

A. I don't recall the conversation at all.

Q. Okay. And Becca Lane testified -- she's already testified -- but she testified that you were involved in -- that she recalls you being involved in an internal MTO discussion after -- at some point after these 2014

results with her, Bob Gorman and Steve Senior regarding Demix Aggregates -- which of course was the aggregate that was used in the surface course of the Red Hill -- and that discussion was including around whether Demix Aggregates' performance was satisfactory for the DSM. And she testified her recollection was that you and Bob Gorman came into her office to discuss it and brought the skid test results with you, and then you went over to Stephen Senior's office together to discuss it. That was her recollection. Do you recall that conversation, or that series of conversations?

A. I don't recall a conversation with the DSM technicality, no. I was probably there to share the skid data I had with them, and that was about it. I had no -- that wasn't in my control or title to discuss whether to include some material on DSM list, no.

Q. Okay. Well, that's fine, but do you recall being at a conversation where that occurred?

A. No, I don't.

Q. Okay. And again, is that -- are you saying that it absolutely did not

occur or that you have no -- just have no recollection of it?

A. I have no recollection of it.

MR. LEWIS: Those are all my questions. Thank you, Mr. Marciello. The counsel for the participants may have some questions.

I understand that counsel for the City of Hamilton does have some questions. Can other counsel advise me if they will -- or advise the Commissioner if they are going to have questions so we can order?

MR. BUCK: No questions for Dufferin.

MR. LEWIS: Okay.

Ms. Roberts?

MS. JENNIFER ROBERTS: Yes, very few questions.

MR. LEWIS: And Mr. Bourrier?

MR. BOURRIER: Four or five minutes of questions as well.

MR. LEWIS: Okay. So Mr. Chen, I think, Commissioner, would be appropriate to go first.

JUSTICE WILTON-SIEGEL: Sure.

EXAMINATION BY MR. CHEN:

Q. Thank you. Good afternoon, Commissioner and Mr. Marciello. I am counsel for the City of Hamilton. I just have a couple of questions for you and they relate specifically to the skid testing that you did on the Red Hill Valley Parkway.

So the first is just a clarification question. Earlier this morning you had talked about the truck and the trailer being replaced at some point, and I believe your evidence was that you don't recall when they were replaced; is that right?

A. I don't recall. Yes, I don't.

Q. Can you help us, though, if throughout the testing on the Red Hill Valley Parkway from 2007 - 2014, whether the same truck and trailer were used to do the testing?

A. I believe the same vehicle was used to do the testing, yes.

Q. Okay. And that would be the same for the trailer?

A. Yes.

Q. Okay. Thank you. And

just switching topics. Once you conduct the friction testing and you receive the results, I understand from your evidence that you report it back to whoever requested it as well -- and your superiors?

A. Yes.

Q. I won't go through the specifics because you already did that with Mr. Lewis, but generally between 2007 and 2014 you reported the results to different superiors over the years; is that right?

A. Internally, yes.

Q. And I appreciate you just testified moments ago that you had observed a decline over the years, but I take it that if you had any concerns, safety or otherwise, with the friction testing results and just looking at your e-mails, it would be your practice to report those concerns to your superiors, fair?

A. Normally, yes.

Q. Okay. And the purpose of reporting your concerns to your superiors is so that they can make an assessment as well on what their friction testing numbers showed?

A. Yes.

Q. And in that case your superiors may agree or disagree with your observations?

A. Yes, of course.

Q. Okay. And is it fair to say that you would accept their observation as to what the friction numbers ultimately showed?

A. Yes.

Q. Okay. And is it also fair to say that your superiors would have more expertise than you in interpreting those results?

A. Yes.

Q. Okay. And would it be your expectation that if in fact your superiors saw a concern, safety or otherwise, with the friction testing numbers that they would have communicated the information to the City of Hamilton?

A. I don't know what they would communicate to them. I'm not sure.

Q. Okay. You're not aware of anyone at the MTO contacting the City of Hamilton to report any concerns arising from the friction testing results that you did -- or you took?

A. I am not. I am not.

Q. Okay. And would you expect that if the MTO had safety concerns, they wouldn't sit on that information?

A. I don't believe they would.

MR. CHEN: Thank you. Those are my questions. Thank you.

MR. LEWIS: I believe counsel for Golder, Ms. Roberts, would be next.

MS. JENNIFER ROBERTS: Thank you. Mr. Marciello, I'm Jennifer Roberts. I'm counsel for Golder.

Commissioner, may I ask some questions?

JUSTICE WILTON-SIEGEL: By all means.

MS. JENNIFER ROBERTS: Thank you.

EXAMINATION BY MS. JENNIFER ROBERTS:

Q. Okay. I'll be very brief, Mr. Marciello. I just want to go back to a point you raised earlier in your testimony and that when you put together the testing results, that you reported back to your superiors where you

saw -- well, you reported every year. I take it that's true? You have to answer without a nod, sir. You've got a (indiscernible) that's got to -- I've got to....

A. Can you repeat the question, please.

Q. Sorry?

A. Can you repeat the question? I thought you were commenting. Can you repeat the question?

Q. Sure. I take it it's correct that you reported the results of the friction testing every year to your superiors?

A. Yes, I did, yes.

Q. And you brought to their attention anything you thought was noteworthy?

A. Yes.

Q. Okay. But I take it, sir, that whether the change that you saw was noteworthy, had significance or not, was something that you expected your superiors to determine. That's correct?

A. That's correct.

Q. And so where you noted in 2014, for instance, that the friction continued to

drop, I take it it's correct that whether that was the significant change you left to your superiors to determine?

A. Exactly.

Q. Okay. Thank you. Those are my questions.

MR. LEWIS: Okay.

Mr. Bourrier, last up.

EXAMINATION BY MR. BOURRIER:

Q. Hello, Mr. Marciello. As you know I'm counsel for the Ministry of Transportation. I have a couple questions I would like to ask you regarding the evidence you gave this morning on -- I'm going to ask the Registrar to pull up the document. It's Golder Document 4467.

Do you remember looking that this e-mail exchange this morning with Mr. Lewis?

A. Yes.

Q. And I just want to make sure I have your evidence correct on this issue. And before I ask my question, I just want to note for you, you'll see in the e-mail from Vimy Henderson sent on October 29th, 2013 to -- Mr. Stephen Lee was sent at 4:09 p.m. Do you see

that?

A. Yes, I do.

Q. And then it looks like Mr. Lee's reply e-mail back to Vimy Henderson was sent at 4:30 p.m. on that same day. Do you see that? It's at the top of the document.

A. Yes, yes.

Q. Great. So I'm just noting that that seems to be a 21-minute difference there in when Mr. Lee responded to Vimy Henderson. But my questions for you are, is it your evidence that Mr. Lee made you aware of this municipal request at the time is request came in, so at 4:09 p.m. on October 29th, 2013?

A. No, no, he didn't let me know right away, no.

Q. And do you remember when exactly he advised you of this request, or if he did in fact advise of this request?

A. He did tell me about it, but it was sometime after that point.

Q. Do you have any idea around what timeframe it was?

A. No idea, no idea.

Q. Do you remember if there

was a telephone call or an in-person discussion? Any details about this discussion?

A. It was probably during the working day, but that's all I recall.

Q. And just so I'm clear, so your evidence is that Mr. Lee advised you of this request at some point but prior to you reviewing documents in the context of this inquiry; is that right?

A. I would say so.

MR. CHEN: Thank you. Commissioner, those are my questions.

JUSTICE WILTON-SIEGEL: Thank you. Mr. Lewis, do you have any further questions?

MR. LEWIS: I do. I think just -- just three I think.

EXAMINATION BY MR. LEWIS (resumed):

Q. So this is about the trailer, the new trailer, skid trailer and new truck. I believe, Mr. Marciello, that when I was asking you questions, that you indicated that both the skid trailer and the truck were replaced in or about 2013, but that it was before the 2013 network testing. I think that's what you said to

me. And then the GPS was added after the trailer was purchased. Is that correct?

Because I'll just say the second thing, is, Mr. Chen, when he asked you, he asked you whether you believe the same vehicle and skid trailer were used for the Red Hill testing throughout, which includes 2014. And you said, yeah, you did believe that was the case.

And so there's a discrepancy between those two answers that I see, and I'm wondering can you help us out there.

A. I thought Mr. Chen meant that -- no, no, I can't answer that. No, I can't explain it.

Q. Well, all I want -- you know, all I want to know is whether -- is when the new trailer, skid trailer was bought, and we know that the -- so why don't we just sort of go back to when you got the new -- when the new trailer was bought, and maybe we'll follow up with the MTO for this information. But is it your recollection that the GPS was affixed to the trailer after it was bought, after it was purchased?

A. I believe it was.

Q. Okay. And -- after the

new trailer was purchased?

A. Yes.

Q. Okay. And so if the -- since we've seen the 2014 results have the GPS data on them, would you agree it appears that you were using the new skid trailer at that point?

A. Yes.

Q. Does that make sense?

A. Yes, it does.

Q. Okay. All right. So thank you very much.

MR. LEWIS: It may be, Commissioner, that -- just there's probably an easy answer to this rather than a memory test, Mr. Marciello, and we'll follow up with the MTO on that.

Thank you. No further questions.

JUSTICE WILTON-SIEGEL: Okay. If there are no further questions from anyone, then, Mr. Marciello, thank you for appearing before the inquiry. You're excused.

Now, Mr. Lewis, I gather there is -- Mr. Senior is the next witness?

MR. LEWIS: That's correct,

and I understand it's going to take about 10 minutes, possibly 15, but 10 minutes for him to be set up, and so the question then is whether we take our lunch -- get started with Mr. Senior and then take lunch or if we take an early lunch.

JUSTICE WILTON-SIEGEL: Why don't we take an early lunch and come back at quarter to 2:00. Okay. Stand adjourned.

--- Recess taken at 12:28 p.m.

--- Upon resuming at 1:46 p.m.

MR. LEWIS: Good afternoon, Commissioner, counsel, Mr. Senior. Could we have the court reporter affirm Mr. Senior, please.

STEPHEN SENIOR; affirmed

EXAMINATION BY MR. LEWIS:

Q. Good afternoon, Mr. Senior. Thank you for coming.

A. Good afternoon, all.

Q. So first thing I want to do is just take you briefly through your educational and work history before we get into specific matters.

I understand that you were employed by the MTO from 1986 until your retirement from the MTO in November 2016; is that

right?

A. That's correct.

Q. And that you do some consulting from time to time since your retirement, but for the most part you are retired?

A. Let's just say I did a minor job over the last -- since my retirement, but I really don't work.

Q. Okay. And before joining MTO, I understand that you obtained a bachelor of science in earth science from Waterloo in 1984; is that right?

A. I believe so, yes.

Q. Okay. Close to that date? It was a bachelor of science in earth sciences?

A. Yeah. There was another degree, and I was just trying to remember when that was as well.

Q. Okay. Well -- and the earth science degree, that's a science degree, but not an engineering degree itself; is that right?

A. That's correct. That's in the science faculty.

Q. Right. And then a

masters degree from Waterloo in geological engineering; is that right?

A. Yes, also with the faculty of earth sciences, but at that time they had initiated a geological or -- a geological engineering program, and I was still sort of taking my masters courses in the earth sciences department as well as a number of undergrad courses in the civil engineering department.

Q. Okay. And when did you complete your masters?

A. I'm going to say around 1989.

Q. Okay.

A. I had worked in the interval between my bachelors and masters.

Q. All right. And you were a practicing engineer?

A. I qualified to register as a professional engineer in the province of Ontario after graduating from my masters degree at Waterloo.

Q. Okay. So you are -- are you still registered as a practicing --

A. I'm still registered,

yes, with the PEO.

Q. Okay. And then at the MTO I understand that you started off as an engineer, a contract position back in 1986?

A. Yes.

Q. And then you were a geological engineer?

A. I was on contract in the soils and aggregates section for about six months, and then I was given a permanent position of geological engineer with the soils and aggregates section, yes.

Q. Okay. So your entire career at the MTO was within soils and aggregates?

A. That is correct.

Q. Okay. And then you were the senior soils and aggregates engineer from, I think, 1989 to August 2008?

A. Yeah, there was about 17 or 18 years I was in that position.

Q. Sorry, I think April 2008? I think.

A. It would have been until I won the competition for the head of section.

Q. For the head of soils and

aggregates?

A. Yes, head of soils and aggregates.

Q. Okay. And that was to replace Mr. Chris Rogers, right?

A. Yes, following his retirement.

Q. And were you the acting head of soils and aggregates, though, prior to taking on the permanent position?

A. Yes, I was given an assignment as acting head until they were able to hold the competition to fill it on a permanent basis.

Q. Okay. So ultimately, am I correct, from when Mr. Rogers left, he left I think at the end of April 2008, then you stepped into the acting role and then down the road you won the permanent position; is that right?

A. That is correct, yes.

Q. Okay. And could you describe your duties in that last position as head of soils and aggregates?

A. As head of soils and aggregates? Well, I managed a group of

professionals, engineers, geologists, technicians who supported the ministry's efforts regarding the issues around soil materials and other aggregate construction materials.

Q. All right. And with respect to the designated source of materials list, I know that the soils and aggregates was the custodial office for the DSM for hot mix aggregates; is that correct?

A. DSM 03525, that specific list was our management. We managed that list, yes.

Q. Okay. And then you had under you until not too long before your retirement Bob Gorman; is that right?

A. Bob Gorman worked in our department, worked in our section and reported to me directly, yes.

Q. Okay. And I understand that while Mr. Chris Rogers was there, his evidence was that Mr. Gorman was the primary person responsible for managing the soils and aggregates DSM responsibilities. And did that remain the case after you stepped into Mr. Rogers's role?

A. Yes, that was part of the function of that position, and he maintained that work relationship throughout.

Q. Okay. And he reported to you until -- he retired in 2015. He reported to you until his retirement; is that right?

A. That's correct.

Q. And I understood that his role, Mr. Gorman's role included processing applications for inclusion of new sources on the DSM; is that right?

A. He would take over the functions required to assess the source, either a visit quarries or sample materials, and then managed it from there, and then would probably review with me his findings.

Q. Okay. And he would prepare -- well, he prepared the letters to DSM applicants typically?

A. He would prepare the letters that would go out for my signature.

Q. Right. And typically would you discuss those letters with him and the conclusions before they went out?

A. We would certainly review

them, and if there was anything to be added to the letter from my part, I would certainly add that, and at some point I would sign the letter, and we would send it out.

Q. Okay. And generally speaking were you involved in a day-to-day basis respecting the DSM list, or was it more periodic from your end?

A. It would have been as needed but not in any way on a day-to-day basis.

Q. And I also understand that prior to his retirement from Mr. Rogers that requests for pavement friction testing by soils and aggregates section, at least towards the period when he retired, that they would be sent by Mr. Gorman to the head of pavements and foundations. Did that remain the case during your tenure?

A. Yes. Nothing had changed in that regard.

Q. Okay. You sort of picked up a turnkey organization, is that fair, In respect of the DSM?

A. I'm not so sure what that (indiscernible) means.

Q. It continued running the way it had before, you just picked up the operations as they were already running; is that fair?

A. To me it was a silent operation and I didn't really need to interfere.

Q. Okay. And if we could go to overview document 4, image 86, please.

And just while he's pulling that up, Mr. Gorman (sic), from time to time I'll take you to what's called the overview document, chapter 4, which is the document that sets out the narrative of facts and introduces documents and so forth, and it cites from the source documents that are referenced. Sometimes I may just take you to this overview document, but if you want to look at the underlying document and I haven't taken you to that, please let me know and we'll do that. Okay?

A. Yes.

Q. So just as an example, paragraph 200, so I guess if you could pull up the next image as well, Registrar, 87.

And this just references one example of the requests that were made. It's a March 16, 2009 request sent by Mr. Gorman to Becca

Lane, who at the time was the head of pavements and foundations to conduct skid resistance surveys for the 2009 season, and it sets out a whole list of pavements, including the chart over -- showing over time what was to be surveyed. Is that typical approach on an annual basis from soils and aggregates?

A. As far as I understand it, the typical approach would be there would be a request from the pavements and foundations section when they were preparing the future work, and they would send out notices asking for requests, if there was any need for any skid testing, and Bob would review the candidate sources that we would have on -- ready to be tested or waiting to be tested or other test sections that we had that he wanted more information on.

Q. Okay. And --

A. And so we would compile whatever was needed and then forward it back to the pavements and foundations section per their request.

Q. Right, okay. So sort of a request for request coming from --

A. Basically, yeah. I'm

asking you what do you need so I can (indiscernible) this.

Q. Okay. And then we know that -- we've heard that Frank Marciello of course conducted the friction testing for the MTO up until his departure from the MTO in 2015, and that his normal practice with respect to requests from soils and aggregates is that he would send it to Mr. Gorman and to you and to the head of pavements and foundations, would send the results. Does that accord with your recollection as well?

A. Yes. As far as I know, Frank would send out the results to the requestors and because -- just to -- for information purposes mostly that I would be copied on or through me the information would come into our section.

Q. Okay. If we could go to MTO 186231.

This is a paper from 2004 called "Pavement Surface Friction on Ontario Highways" listing Mr. Rogers, you, Becca Lane and Frank Marciello as authors. Do you recall this?

A. No, I'm not listed as an author on that paper.

Q. Oh, sorry.

A. I'm not an author.

Q. You're not. Sorry, you're right. You're quite right.

Are you familiar with this paper?

A. Oh, yes.

Q. Okay. I apologize, and thank you for your attention. You're absolutely not listed.

And if we could take you to image 7, there's a section on approval of new asphalt aggregate sources that's there, and I just want to take you through it and see during your tenure if this, for the most part, covers the process involved in -- once a new source is sought to be listed on the DSM.

And so the first thing is that there's an -- and you can correct me if I'm wrong any time, and I'm taking it from here but also from my understanding, that the first thing is that the quarry is inspected and there's quality and consistency requirements at that stage; is that right?

A. We sent out a letter to the proponent of these new sources and spelled out

the requirements that we -- what we would be looking for in terms of the physical testing, the production properties testing and then alert them that we would need to have a demonstration of their product in our pavements and that we would be reviewing it over time before they actually received final approval.

Q. Right, so that's the initial letter where you set out the requirements. Once you receive the application, a letter goes back to the applicant saying this is what we're going to need, this is what is required?

A. When the application came in he would send out the letter telling them, spelling out the steps that they needed to take.

Q. Right, okay. And amongst them --

A. Which included -- which included visiting the quarry source --

Q. Right.

A. -- sampling the materials and testing it in laboratories.

Q. Sorry, and testing?

A. In our laboratories at Downsview.

Q. Right. And so there's the initial inspection and then there's the general thing; it's on the third line:

"In general, satisfactory quarry sources contain rocks that are even grade, homogenous and consistent with uniform quality throughout the site and consistent aggregate density."

And then it says:

"A quarrying plan must be devised so as to ensure homogenous, uniform product."

A. There was a requirement to submit a quarrying plan. I'm not so sure what -- when that was or whether it was discussed at the site, but they needed to be -- we needed to be sure that they had a fairly consistent deposit, and there were no deleterious materials in there. If there were, we would alert them in their approval letter to -- we would identify the areas that we -- they would have to omit or go around or quarry around so none of those materials were included in their product.

Q. Okay. And then there were the laboratory requirements that you referred to, and one of them as stated here is:

"A minimum average polished stone value of 50 with no value less than 48."

That was one of them, and that continued to be the case; is that right?

A. Yes, yes. We -- the PSV test actually took four individual coupons, and we took the average of those coupons and reported that. So it would have been an average value of 50 with none of those values being lower that 48.

Q. Right. Of the four? Okay.

A. Of the (indiscernible).

Q. And when you say "a coupon," what does that mean? Others have referred to it. I'm not sure we've actually had anyone at the MTO describe that.

A. Oh, okay. A coupon is made with an epoxy backing, and it takes a fairly skilled operator, experienced operator to place the aggregate particles according to the test method in the coupon in which they would lay out

the coupon -- lay out the aggregate particles. It was a curved coupon so it could fit on the round testing wheel of the PSV equipment. So it -- without a visual, it's kind of hard to describe, but it would be a -- a coupon, something like about 6 inches long maybe 2 inches wide and curved so it fit on the outside circumference of the testing wheel --

Q. I see.

A. -- and it exposed a number of aggregate particles to the abrasive and the rubber tire that was used to simulate the road conditions.

Q. Right. And, yeah, sort of a platform that you are sticking it to, if I can put it that way, sticking the aggregates to so that it could be submitted to the testing; is that right?

A. They were put in a -- the aggregates were put in a mold, and then there was an epoxy -- there was a sand filler for spacing so the -- and then we would pour epoxy on the backing, and when the epoxy had cured we'd take out the mold and there would be the mold, and we removed the loose sand so the aggregates would be

fully exposed to the testing wheel.

Q. I see. And then there was the aggregate abrasion value of six or less is another one?

A. Yes, yes. That was also a prepared coupon in a very similar fashion, but it was flat, and we tested two coupons at a time and took the average value of those two coupons and reported that as a test value.

Q. Okay. And they are not -- the values aren't listed here, but we'll get to them when we look at one of the letters that go -- went back in the case of the Demix aggregates, but refers to:

"...must meet requirements for shape, frost resistance and water absorption." (As read)

At the bottom of the fourth paragraph. So there was the freeze/thaw test, right?

A. In general, but there was a lot more than just that. Right. So there was another -- there were other physical tests, physical properties we would test for and production properties we would test as well and

had to meet the requirements of what we had in our specifications at the time.

Q. All right. And we'll look at the specific ones when we go to the test results in the case of the Red Hill.

A. Yes.

Q. Okay. And then in the second paragraph it says that:

"MTO normally requires a 500-metre pavement test section using the new aggregate."

And that: "It's tested for frictional characteristics with the brake force trailer for two years before the material would be considered for inclusion on the approved list. Inspection and skid testing will take place over the life of the test section."

(As read)

And so this is using the MTO's ASTM brake force trailer with a ribbed tire; is that correct?

A. The brake force trailer was used to measure the friction on the test section, yes.

Q. Right. And there's -- and typically, I know it says "normally" there, but the normal typical approach that has been described is that the test section is done on a new -- at the same time as the new pavement with an already approved aggregate with the test section laid adjacent to the pavement that's being laid pursuant to the contract that's being constructed at that time; is that right?

A. Yes. It would be up to the proponent to identify a contract if they were -- if the quarry was owned or operated by the road-building contractor or whatever association they had. But they would have to find a contract. Sometime we would find a contract or assist them in finding a contract, an ongoing contract in which they were paving the -- a portion of our highways, and then at the same time with the same mix design and the same location with the ongoing contract place that normally 500-metre test section within that ongoing contract.

Q. Am I correct that what

you're looking for is for the new aggregate, the test strip section, to have as good or better friction qualities than the control section. Is that correct? As good or better skid test results?

A. No.

Q. No?

A. That's not correct, no.

Q. Okay. So what --

A. No, we evaluated the test section on its own merits.

Q. Meaning?

A. The fact that we had another aggregate adjacent to it would have been used as a control if -- just because we knew we already had an approved aggregate in that -- in the standard paving. So we -- and we would use that, or you could use that to identify if there was any anomalous conditions that were occurring. So you had expectations of what would be the material already being placed on the contract, and then you would test your test section and -- just to ensure that you had no anomalies in conditions that would affect the friction results.

Q. Sorry, anomalies in what

sense? In terms of weather and --

A. In a lot -- or if there was errors in the testing method or something happened. If there was a contamination or spill on that section of pavement. And it's typical that we would do that with all of our test methods -- at least where we could -- is that we ran a material of known values, at least within range, a known range, to ensure that the testing we were getting from what we would use as a control was within an acceptable range, so we knew that everything was working, the testing was being conducted correctly.

Q. Okay. And then what are the merits that -- individually that you're looking for with skid testing on the test section?

A. Well, we want to make sure that the material stays in place, that there was no premature breakdown of the payment mat, the aggregates weren't raveling from the pavement surface, we weren't losing materials. And then we would also test for the friction to determine what frictional properties or characteristics they had in accordance with the test method.

Q. Right, but what you

disagreed with me about was when I suggested that the reason for having the test strip is so you want to have the test strip to have as good or better skid resistance than the control strip, and you said, no, no, we evaluate --

(Speaker overlap)

A. We're not comparing it to the control material or the material on the standard contract. We're just using that ensure that the testing is done within acceptable ranges.

Q. Okay. But then --

A. It's not a correct comparison.

Q. So then how are you evaluating the skid resistance qualities of the test strip?

A. From the data provided from the skid trailer.

Q. Right, and what is the -- what is the standard or the number against which you are measuring it?

A. We didn't have a standard or number that we tested against. It was -- it was -- the way we described it, we wanted adequate friction.

Q. Okay. And what defines "adequate friction"?

A. It was something that would have been acceptable in terms of, I guess, comparison with our 400 series highways test results.

Q. Okay. Well, we've heard a lot from other witnesses about the use of the friction number 30 --

A. Yes.

Q. -- within the MTO, so I don't want to spend a huge amount of time on the history of it and so forth. But is that what you are talking about? Is it -- that defines an acceptable number in terms of evaluation for DSM purposes?

A. From what I had read in the industry literature, 30 was sort of a number that indicated that you were into something -- a different kind a situation. There is something that you -- it's kind of a -- sort of when it goes from green to yellow in a sense where there's something there that may alert you, and we're talking about average friction numbers of the pavement section. So it's just used as a

guideline more than anything else. And that was for the whole general network. In terms of the DSM materials, we were comfortable knowing that all of our test sections that we had were above 30 for sure.

Q. Okay.

A. But I don't think we -- that was in the back of our minds and something that we could use as a measuring stick.

Q. Right. Okay. So you referred to it as a -- FN30 as a guideline or a measuring stick, something that's in the back of your head when you are evaluating the friction test results for DSM purposes; is that fair?

A. That's fair, yeah. Because I know that number may have been used by pavement management people as to determine what actions they may take, so we kind of applied similar applications of that number to what we would assume to be acceptable friction.

Q. Okay. And when you refer to "pavement management people," you're talking about, am I correct, pavement management people within the MTO?

A. Well, pavement management

people within the industry I would imagine. It's not -- it shouldn't be restricted just to MTO, but whoever was managing the pavement, and whoever owns the pavement. Certainly we would do it for our pavements.

Q. Right. Well, that's what I'm talking about is your --

A. Yes, yes.

Q. -- is MTO pavements. That's what you're talking about?

A. As far as I understand, yes.

Q. Okay. And then you talked about -- I'm not sure of the wording you used but I think you said from -- about FN30 that there was something you had read in the industry literature that was a number that indicated that you went to something -- it sort of goes from green to yellow, and I'm wondering are you talking about internal MTO literature or more broadly industry literature?

A. Well, I do know that within the MTO publications there was reference to that number indicating that above that number there was acceptable, below that number it was a

little bit less acceptable, but there was something different, and then there was other numbers also that they used to sort of pigeon-hole the conditions of the pavement.

Q. Okay. And in terms of the acceptable number for DSM aggregates, what were you looking for? What kind of values, friction values were you wanting to see for your DSM aggregates?

A. We were wanting to see as high as possible.

Q. Understandable. The higher the better, right?

A. That would be desirable, yes.

Q. Yeah. And generally speaking what was your -- I appreciate what you said about a guideline of the -- with the FN30, but was it higher than that that you were looking for and hoping for?

A. Well, most of our DSM sources provide friction numbers from about the low 30s, 32-ish, to 50s, mid 50s, something like that. So that would be the typical range of test values that we would get from friction test

results.

Q. Okay. But I think -- are those friction test results that you're talking about, are those the ones that are from the -- you know, friction management as well as -- as opposed to the ones that have been requested by soils and aggregates?

A. I believe those would be comparable -- those would be numbers that we would determine -- or measured from our test sections.

Q. Okay.

A. And may or may not include actual contracts that included those DSM materials on additional contracts beyond the test section, but they would typically be within that range.

Q. Okay. And if the number dropped below the average number from a test section or -- and monitoring as time passed, if the average dropped below FN30, what was the approach that was taken by soils and aggregates?

A. It never happened, so I can't say specifically what we did.

Q. Well, you didn't. If it didn't happen, then you didn't do anything

presumably?

A. Didn't happen, no.

Q. Okay. What if it did? Did you have a sense of what -- if it did drop below -- on an average below FN30 what you would have done?

A. I guess if there was a concern on the performance of the aggregates in the pavements, we would normally start to begin to take a closer look at the materials. We had -- I know there was a case where we did that, and we would probably go out and do a visual inspection, first of all, because we wanted to know why the friction numbers may be on the low end. You would want to take a visual inspection to determine if there was any clues to the changes in the macro or microtexture of the aggregates in the pavement. And we would probably take cores of the materials and take the materials back for testing to determine if there was anything -- any change, or if they were samples that were outside the specifications. So that would be the first thing.

And normally -- I guess other than that, we would want to contact the proponent to let them know what was happening in a situation

where we thought that the materials were desirable for the DSM, and hopefully work with the proponent to determine -- ask them to sort of work with us to determine what was the source of the problem and how can we eliminate that for sure.

And I know other case we put conditions on the materials and made sure that those conditions were met and negotiate with them for things up to and including removal from the DSM.

Q. Okay. So you're talking about another situation, on the one hand you said that hadn't happened --

A. On a DSM source, yes. This was a DSM source --

Q. Yes.

A. -- that we were investigating on a request from our regional people, which we had then investigated by taking cores, visual inspections, laboratory testing, and we're trying -- we're working with a proponent to determine how best to alleviate the issues that we were dealing with, and we worked over time to determine what conditions were required for them to maintain the use of their product.

Q. Okay. And was this -- were these investigations and the negotiations of these occur -- were these initiated because of the skid resistance, or was it because of other concerns that were raised?

A. Well, of other concerns, amidst other concerns.

Q. Okay. And in the end was it removed from the DSM?

A. No, it wasn't. We put conditions on the use of the materials. We required that the paving contractor who owned the quarry not supply them to other pavers, that they alert our office to any use of their materials in any MTO contracts, that they weren't allowed to sell it to municipalities. One of the reasons we asked for us to be informed is because these things may happen in the regions, we wouldn't necessarily know about it firsthand. So we gave these conditions and I -- which I assume were met because I don't think we removed the material from the DSM eventually.

Q. Okay. And moving specifically to Demix Aggregates and the Red Hill Valley Parkway. We know that the MTO conducted

skid testing on the Red Hill Valley Parkway between 2008 and 2014, with the exception of 2013, at the request of soils and aggregates. And we understand that the purpose of that testing was to evaluate and then maintain the application by Demix Aggregates for DSM inclusion; is that correct?

A. We would -- yeah, we requested testing on it to evaluate the frictional performance of the aggregates themselves.

Q. Right.

A. Specifically for purposes of application and admittance on the DSM.

Q. Okay. If we could go to overview document 4, image 84. And this is in paragraph 193, and just to give you the background. We know that --

A. Yeah.

Q. -- the MTO performed friction testing originally before the Red Hill opened -- we've heard a lot of evidence about that -- on October 16th, 2007, and then before you started as the head of soils and aggregates Demix Aggregates applied for inclusion on the DSM. And then here it is on June 12th, 2008 the MTO

conducted Red Hill Valley Parkway skid testing.

Mr. Marciello e-mailed results to Mr. Gorman, Mr. Raymond and Mr. Ponniah on June 18, 2008. And do you know -- because at that point you think you were the acting head of soils and aggregates, do you know why it didn't get sent to you at that time?

A. I do not know why. I can assume that the distribution was sent to those people who managed the original request. Maybe Frank didn't know I was acting head. I don't know what the reasons would have been, but I wasn't copied on that data.

Q. All right. Did you review the results in any event?

A. I reviewed the results a year later when we were looking at giving them the conditional approval.

Q. Okay. So -- and we will come to that then. But you're saying you didn't review it -- I mean, you weren't copied on it at this time?

A. No, no.

Q. And you think it was only later on in 2009 when you actually reviewed the

results for the purposes of approval.

A. Well, I do know that I did look at them at that time, but I don't know whether -- and I can't recall whether I looked at them prior to that.

Q. Okay. Okay. And if we could go to two documents, MTO 44 and MTO 45, please. And actually maybe, first, if we could look at both pages from 44 before we pull up the samples. Thank you.

This is a letter from you dated December 4, 2008 to Estel Gagnon at Demix Aggregates.

A. Hm-hmm.

Q. And it's "re approval of physical properties of your Varennes quarry (indiscernible) SP12.5 FC1 and SP12.5 FC2 coarse and fine aggregates."

And if you need a chance to review the letter, let me know, or if you are already familiar enough, let me know.

A. I'm somewhat familiar with the contents of the letter, yes.

Q. Okay. And is this one of the letters you describe that Mr. Gorman would

have drafted for your signature?

A. I believe so. His name is on the bottom of the second page left-hand side indicating the authors. I think that's how it works with administrative --

Q. So SAS is you and --

A. Is me, and then RGG would be Bob Gorman and JLP would be Judy Pretty who was our administration assistant at the time.

Q. Okay. And is this the standard kind of -- one of the standard letters that are sent to applicants?

A. I just know I sent it out. In this case it was an interim letter to say that we had visited their quarries, and we had samples and were proceeding with the application.

Q. Okay. And we'll go to the lab tests in a minute, but it refers to a visit, as you said, to the quarry on July 17th. It says that in both the -- I guess in the first and third paragraphs. And, again, is that the standard procedure for the --

A. Sorry, what are you referring --

Q. Sorry, in the first

paragraph it refers to coarse aggregate and screening samples taken from the quarry on July 17th, 2008.

A. I'm looking at a letter from December 4th, 2008 right now, and I --

Q. Yes.

A. -- there's nothing in there in the first paragraph. It just says we completed testing of your coarse aggregate and screening samples taken from the core, yes.

Q. On July 17 --

A. On July 17, yes.

Q. And then in the third paragraph, it says "during our visit on July 17 --"

A. Visit on the July 17th, yes.

Q. Okay. And is that the -- a reference to the standard visits that you referred to before that was part of the qualification requirements?

A. That would have been identifying the quarry visit that was made by our office, yes.

Q. Okay. And is that

Mr. Gorman?

A. It was Mr. Gorman and Ms. MacDonald.

Q. That's Carole Anne MacDonald?

A. Carole Anne MacDonald.

Q. She was a petrographer?

A. She was the petrographer for our section and professionally registered geologist in the province of Ontario.

Q. All right. And in the third paragraph it says:

"Our petrographer has classified your rock as a cyanidic -- "

A. Trachytic.

Q. Trachytic.

A. Trachytic (indiscernible).

Q. And am I correct that's within the general category of a traprock?

A. It's more like a felsite, if you want to be specific. Trap rocks are more mafic, meaning more magnesium and iron minerals. This may have had a lot more sodium, calcium mineralogy or chemistry, a different chemistry,

but in any case it would have been a fine-grained extrusive volcanic rock type, and the identification of the minerals which should be feldspar, albite and netalina (ph).

Q. So the petrographer would have been the one to conduct petrographic analysis and description to identify the minerals within the rock type, okay. And then it says in paragraph 2:

"Laboratory test results are portrayed in table 1. All of the test results are favourable and meet the specification criteria as outlined within special provision 110F12 amendment to OPSS 1003 November 2004." (As read)

And if we could go to the test results then at -- maybe if we leave the first page there of the letter and bring up MTO 45.

So these are the test results that are referred to?

A. Yes. Date spelling was July 17th, 2008.

Q. Right, and -- and then it lists the results from the various categories of requirement on the left-hand side. And all of these, as I said, they all met the requirements of the MTO at that point; is that correct?

A. Yes, they did.

Q. Okay. So there's the polished stone value of 52, so that's above the required amount of 50?

A. Yes.

Q. And the aggregate abrasion value of 2.3, which is below the 6 that's required; is that right?

A. It shows very good resistance to abrasion, yes. Along with the (garbled audio) abrasion test, it shows very good resistance to abrasion.

Q. Right. And the Micro-Deval shows 2.7.

A. And even the Los Angeles abrasion and impact test results also show it's fairly resistant to abrasion and impact.

Q. And that's -- has a 17 as the number beside the Los Angeles abrasion entry.

A. Yes.

Q. Okay. And the freeze/thaw percentage of 1.6, what about that?

A. Extremely well. Extremely good. It's a test that we conducted and developed at the ministry for evaluating resistance for the weathering effects of freezing and thawing.

Q. Going back to the letter in paragraph 4, it indicates that:

"Because the aggregate was used on Hamilton's Red Hill Valley Parkway in a 12.5 SMA mixture, we will allow this city job to act as the trial section needed for your source to be included on the Ministry's designated source of materials list." (As read)

And you explain:

"It requires at least two winters before an approval decision can be made. The mix must obtain the desirable level of friction before the source can be considered for

DSM inclusion. We plan to monitor the performance of your aggregate on the parkway." (As read)

So there's the reference to "the desirable level of friction." What is that in this context?

A. It was indicating to them that we wanted an acceptable friction, that we would allow it to be used for our pavements. It just indicates to them that we were looking for good frictional properties.

Q. Right. And there is of course no -- clearly no reference to the number, the FN30 number that we were talking about --

A. No, there is no reference.

Q. No. And, again, is that -- you wanted to have good frictional resistance, and I think, as you've described it, the FN30 is in the back of your head as a guideline as to -- but your preference is to have it as high as possible. Is that a....

A. Well, I don't know if the number 30, but we were actually wanting to see

what the results were, and if they came down -- if the average FN could have been at 30 or lower, it may have been determined that that wasn't desirable.

Q. Right, okay. Now, talking about the -- you know, if you're using the Red Hill, there is no control section of course of the type that we discussed earlier that was the typical approach?

A. Well, there was no other aggregate on that --

Q. Right.

A. -- pavement that we could compare it to or use as a control if we needed it.

Q. Right, so -- right, so if you're going to use that, then there's no control -- sorry, there's no control section?

A. There's no other established previously accepted aggregate on the pavement that we could compare it to or at least evaluate to determine whether all things are operating normally.

Q. Right. And do you recall if you put any consideration into the issue of not having a control section to go along with the --

with using the Red Hill as a test strip for this purpose? Is that something you thought about at all?

A. Not at all, not at all, no.

Q. Okay.

A. I think that in reviewing test numbers that I had seen from other test sections, that I wasn't aware of what the control values were, so control was something that I was not considering.

Q. Okay. Well, I'm just looking at the timing here, and so Mr. Chris Rogers, he was previously in your position when the application came in in December 2007, and then Mr. Gorman has of course some involvement with this, and he makes the visit to the quarry as we've already talked about, and we did hear some evidence from Mr. Rogers about Mr. Gorman's involvement in drafting the original response letter to Demix. But did you have any discussion with Mr. Gorman about the absence of a control -- of a control strip to go along with the assessment of the aggregate using the Red Hill?

A. I don't think so. I have

no recollection. I don't think it happened.

Q. Okay.

A. But I don't know. I just can't -- I just don't know.

Q. Okay.

A. My suspicion is that there wasn't -- it wasn't a point of discussion. It may have been mentioned, but I don't think it was a point that we discussed.

Q. Okay. So do you -- so to come back to this, the statement in this letter is that you're going to use the Red Hill as the trial section; that means there's no control section. Do I -- have I heard you correctly saying that's just not something that you thought about in this context? Is that --

A. No, I thought the use of the SMA or the Red Hill Valley Parkway 12.5 SMA mixture was established prior to my taking the position. It was indicated in a previous letter that they would be using that as the -- they would accept that as the test section.

Q. So let's go have a look at it, hold on. If we go to images 79 and 80 back on overview document 4, please. So paragraph 182.

This is a moving from the edge on the left to the right, is the complete letter sent by Mr. Rogers signature to -- back to Demix and Dufferin about their original application on --

A. Yes.

Q. -- December 13, 2007. Is this the letter that you're talking about?

A. Yes, this is where I believe that it was established that we would be using the parkway in its entirety as the -- for evaluating the aggregate.

Q. Okay. And I see at the top of page 80 there, there's the -- there's a ref- -- the first full paragraph, it says:

"I note your quarried aggregate was recently used on Hamilton's Red Hill Valley Parkway in a 12.5 SMA mixture. We plan to monitor the performance of your aggregate in the expressway."

Is that the passage you're referring to?

A. Yes, it is.

Q. Okay. And do you recall

whether at the time you were aware of this letter and that intention, or is that through this inquiry process that you've become aware of this process?

A. I believe it's through this process. I wasn't exactly -- I'm not clear whether I knew about this letter or not.

Q. Okay. So if we assume for the moment that you hadn't seen the letter, do you mean that, look, decision had been made, this is how it came to me, and that we just proceeded with that. Is that --

A. Well, I -- okay, so I would say that, yeah, we were just following in the process. We knew we had accepted the expressway as their evaluation section and just indicating that we were going to continue using that -- the expressway the aggregates evaluation.

Q. Okay. But how did that get conveyed to you? Do you recall how that decision was conveyed to you that it was going the expressway that was used?

A. Not exactly, but I'm supposing that was in response to the original request from the proponent, from Dufferin.

Q. Well, sorry, this is the original response from the MTO, this letter?

A. Also in the original request, the original request.

Q. So in the original request, which we can go back to. I think it's at the previous page, yeah, 78. At the bottom is an e-mail with the request letter, and it indicates that it was placed on, the SMA:

"...was placed on the City of Hamilton's Red Hill Creek Expressway in the form of SP12.5 FC2 and SP12.5 2 SMA."

So it's not that it was a specific request, but I'm just -- I'm trying to -- they certainly raised that that's (indiscernible) certainly. I'm just wondering if you recall how you became aware of the decision to use the Red Hill as the test strip for DSM purposes?

A. I'm not aware how that decision was made.

Q. Okay. So do you think that decision was made before your arrival as the head of soils and aggregates?

A. Yes, because I don't

think there was a request for a separate 500-metre test section on a future contract.

Q. That's correct. We're not aware of that. I'm just....

A. And I came into position knowing, I guess in some respects, that the aggregate from Varennes Quarry was placed, and we were using the Red Hill Valley Parkway as the valuation section.

Q. Okay. And then to jump ahead to 2009. If we could go to image 87. And it's paragraphs 201 to 203.

And we can certainly go to the results after this if you want to see it, but Mr. Marciello conducts the skid testing on May 7th, 2009. He e-mails them to you, Mr. Gorman and Ms. Lane attaching the results, and he indicates:

"Might be too early to tell but it appears that friction levels/trends may be starting to decline over (sic) time."

(As read)

And then you replied:

"Frank, both Bob and I agree

there is no clear indication of any clear (sic) trend in the data. Maybe you just have a gut feeling for what's going on out there. Time will tell. We will be sending out a notice regarding conditional approval of the source pending satisfactory performance of the pavement and the source materials. Thanks for everything." (As read)

And the -- if you -- while we can absolutely go and look at the results, I can tell you what the averages had had were 35, 39.4, 37.1, 38.9. And do you want to look at the results before I just ask you some questions about this? Have you had a chance to look at them?

A. No, we should look at them.

Q. Okay.

A. Let's have a look.

Q. Okay. So if we could pull up two at a time, Registrar. If we could pull up MTO 5229 and 5230. Sorry, we should pull

them up in native, sorry, about that, both of them in native format. Just takes them a little bit longer to do that. Just a sec.

THE REGISTRAR: What was the second one?

MR. LEWIS: 230.

THE REGISTRAR: Okay. Thank you.

MR. LEWIS: Is there a problem with the native?

THE REGISTRAR: I have the second one. It's just taking a long time to come up. I have it now.

(DISCUSSION OFF THE RECORD)

BY MR. LEWIS:

Q. There we go. Thank you.

And so you can see on the one on the left is southbound lane 2 and northbound lane 1 on the right. The southbound has results from '07, '08 and '09, whereas the northbound has results from '8 and '9. We see the averages are 36; that's right, 35 and 39 in 2009.

A. Yes.

Q. Okay. And should we look at the other ones?

A. No, but I think what's important here is that, yes, at that time Bob and I did look at this data, and we only had basically two data points to go from because there was only the 2008 and 2009 surveys which would have been considered valid. The 2007 testing would have been prior to traffic.

So we were looking at the results after two winters. So 2008 testing would have been after one winter; 2009 would have been after two winters. So you only have two data points, and it was kind of premature to say there was a specific trend if you didn't have the extended data.

Q. Okay. Hence your comment back to Mr. Marciello?

A. Exactly, yes.

Q. Okay. And so -- and you referred to, and it's in your ultimate letter which we'll look at in a minute, but you referred to conditional approval.

A. Yes.

Q. And is that the usual language that's -- that was used when an aggregate was first approved?

A. All applications and all listings on the DSM are conditional.

Q. And conditional on what?

A. It was standard.

Q. Okay. So it -- number one, it was standard -- it's a standard wording. That's number one?

A. Yes.

Q. Okay. And number two, it's always conditional. Conditional on what?

A. Conditional on a number of things. Conditional on them meeting the specifications for all of our aggregate requirements, including the special testing that we would do within our laboratories for friction, abrasion and polishing the aggregates, and conditional on them -- there was three conditions, and if we -- the acceptance letter would have listed those conditions specifically.

Q. Okay. So let's go to that. Registrar, it's image 88 in overview document 4. So if you could just -- so we don't have the screen in the eyes, if you could pull that up.

This is a May 20th letter,

2009, from you to Ms. Gagnon at Demix. This is the one you're talking about?

A. Yes.

Q. Okay. And in the first paragraph, the first line -- well, the first sentence refers to the conditional approval. That's just what we were talking about?

A. Yeah, it says conditional.

Q. Yeah. Okay. And then -- but before that just to cover off something we discussed earlier. It does refer that your trap rock from your Varennes Quarry is now conditionally approved. And I asked you is -- generally speaking does that come under the category of trap rock and you got into some specifics about it. So I come back to that, not being a geologist.

Does it come under the broad category of trap rock despite the -- what you said --

A. Despite that. Because it was a fine grained volcanic rock we sort of put it together with all of the other similar fine grain volcanic extrusive rocks, which would have

included diabase or a metagabbro, similar to that category.

Q. Yeah. Okay.

A. So it was more of a pigeon-hole category that we placed it under for the purposes of petrographic evaluation because within our specifications, depending on the category, it would have a different requirement for some of the test methods or some of the test results. For example, the dolomitic sandstone would have had a different requirement for certain tests than the trap rock category would have.

Q. Okay. And so the broad categories define the --

A. As a trap, as a trap, yes.

Q. Okay. And so -- and you say in the second paragraph -- sorry, in the second sentence in the first paragraph:

"The condition is that we obtain satisfactory pavement friction from the Hamilton Red Hill Valley Parkway SMA mixture where testing is conducted in future years."

So that --

A. Yes.

Q. As I understand, that's the condition not subsequently laboratory testing; is that correct?

A. Well, one of the conditions, that's one of the conditions. There are conditions listed further down below.

Q. Okay. Right. And so that's in the third last paragraph. Says:

"Please note that continued approval of your aggregate is conditional upon it continuing to meet the requirements of OPSS 128, 1001, 1003 and such special provisions that alter these specifications and maintaining an average polished stone value -- okay -- no less than 50 and (sic) no value less than 48."

(As read)

A. Yes.

Q. Okay. Is that, though -- I mean, was it typical that you would go back and

actually conduct those tests, or was it only if some issue was raised?

A. No. I think if we had the opportunity if that material was ever used on another job somewhere on another contract and we had the opportunity to go and sample and retest it, we would have done that to ensure the product that we were getting today was the same product we got or similar product that we got in the past --

Q. Okay.

A. -- depending on the opportunity, yeah.

Q. All right. And is that -- again, is that a typical paragraph that would go into these kind of letters that --

A. I believe so.

Q. Okay.

A. And there was a third condition.

Q. Yeah. Which is?

A. The last paragraph "as you are aware."

Q. Yes?

A. To be listed they have to register with the road authority.

Q. Right, and pay the fee?
A. Well, there's also another condition where they had to pay the ministry a fee as well as pay whatever it took to get the road authority registration, and there was a fee involved there.
Q. Yeah. And annual fee I believe.
A. That was an annual fee. We had a one-time charge.
Q. Okay.
A. And depending on -- it seems that there was no mention of that one-time charge in this letter. That means they must've already paid it.
Q. Okay. And there's lab tests attached to this letter. We can go to them. They appear to be the same ones that were attached to the prior one. Maybe we should go have a look at it to make sure. It's MTO 47 refers to the sample date July 17, 2008.
A. That is the same -- because it says December 4th, 2008 on the bottom. That is the same, exactly the same information that was given to them previously.

Q. Okay. And did you ever inform Hamilton, the City of Hamilton or any representative of the City Hamilton about the Demix application or that the Red Hill SMA placement was being evaluated for that purpose?

A. No, I did not.

Q. And did you ever consider doing so?

A. No, I did not. I would have not had any reason to.

Q. And why do you say that?

A. It was proprietary to our function, and we were just following through that, so I don't know who would have been interested in it.

Q. Okay. Well, possibly the City of Hamilton since it was there --

A. I would say it was for MTO purposes certainly, so if anybody would have been notified, it would have been our regional offices.

Q. Okay.

A. Because we were just doing this to evaluate the materials, we were just sort of closing this door and moving on. I had no

connection, and I had no requests from the City of Hamilton, and usually I do respond, and we did have requests that would come into our offices for certain aspects, and even consultants would ask if we could do testing of their materials in our laboratories, and so we did respond to requests.

Q. Okay. And if we could just go back to your letter. Maybe we could just open up MTO 46. It was the letter we were looking at in the overview document, on the right there.

So the approval is, or the conditional approval, to be fair, is for use as a source of Superpave 12.5 FC1 coarse and Superpave FC 12.5 FC2 coarse and fine aggregates. And the approval was not also for use in SMA. And do you recall why that was at the time?

A. No, not at the time.

Q. And do you know now?

A. Well, in looking at some of the letters it seems that the original request from Dufferin had requested the FC2 -- FC1, FC2.

Q. Yeah, that -- you're right. It did say that on the letter.

A. And I think that may have -- where that came from. Other than that, I

know that there was a pause on SMA -- aggregates in SMAs, and I don't know -- I guess they were delisted from the DSM at the time so that may have been another reason that we weren't approving anything for SMA at the time. I'm only speculating here.

Q. Okay. It was -- there definitely was the pause that was in place from 2007 through almost the end of 2014 on SMA and their use. The acceptable aggregates were contained in a special provision used in MTO contracts. Is that what you're talking about there?

A. Yes. We wrote the special provision, yes.

Q. Okay. And we know that Demix was removed from the DSM in August 2016. And were you aware of that at the time?

A. No, I was not.

Q. Okay. Oh, I understand that they didn't pay the fees. So is that...

A. I imagine so, but they elected to remove themselves, and this is where (indiscernible) determined through this inquiry.

Q. It wasn't something that

you did? You didn't do this?

A. Absolutely no, no.

Q. Okay. And did you ever inform Dufferin or Demix of the friction test results from the MTO skid testing?

A. No, I did not.

MR. LEWIS: Commissioner, it is 3:05, which is a little before the usual break, but we started a little early. I only have a little bit left to cover about the 2014. So would this be a good time before I move on to that topic?

JUSTICE WILTON-SIEGEL: Sure. Let's take 15 minutes. We'll return at 3:20.

--- Recess taken at 3:05 p.m.

--- Upon resuming at 3:20 p.m.

BY MR. LEWIS:

Q. Mr. Senior, Mr. Marciello tested the Red Hill in 2010, '11, '12 and '14 with the skid tester, but I would like to just go to the 2014 results because it contains the comparison to the prior years if that's okay with you.

And if we could go to overview document 4, image 96, please. Paragraph 230.

Mr. Marciello on July 25th, 2014 e-mailed you, copying Mr. Gorman and Stephen Lee, who at that point had become the head of pavements and foundations, attaching the Red Hill friction test results from July 12th and 23rd. It was split into two days, did one lane and then three lanes. That's the content of Mr. Marciello's e-mail, and he says:

"Four lanes of the parkway were tested a few days ago. Performance shows friction levels continuing to drop. Quick summary of average values in 2008 and in 2014."

And then he gives the results, the average results rounded for each of the four lanes in those two years.

Do you recall if you or Mr. Gorman asked Mr. Marciello to provide that comparison, or is that -- did he just provide them you to? Do you recall?

MS. MCIVOR: Mr. Senior, you are just on mute.

THE WITNESS: I -- no, that would have been Frank's submission to us without

any request from me or anybody else that I would know of.

BY MR. LEWIS:

Q. Okay. And on the averages, each of the four lanes shows a drop of eight or seven -- three of limits. That's a drop of eight FN --

A. Yeah.

Q. -- and in the final lane, southbound 2, it's seven, between 2008 and '14. And we can go and look at the results. Do you recall based on this what your thoughts were at the time?

A. I can't recall.

Q. Okay.

A. If I had any thoughts I would have wanted to ask for the -- I would have ignored that and looked at the complete data --

Q. Okay.

A. -- because there's only two data points there.

Q. And so why don't we go and look at the results, and why don't we start with -- well, actually before I do, what are the other data points that you want? You mean all the

intervening years as well as the specific --

A. Well, I would want those -- yes, because those were the selected end points of the data.

Q. Yeah. Okay. So if we go to MTO 22944 and MTO 22946. I want the native version, please. I always neglect to say that off the top. If you could close the document. Yeah. Thank you.

So this is on the left northbound lane 2 and on the right southbound lane 2. And we can also go to the detailed charts if you want, but if you want to take a moment to look at these.

A. Okay.

Q. Do you want to look at the detailed numbers, yes?

A. Not necessary at this point.

Q. And does this refresh your memory enough, or do you want to look at the other lanes as well?

A. No, that's good. I think the lane 2 is probably where you would be looking to make a decision from because that would be the

most travelled lane.

Q. Okay. All right. So based on this -- first of all, do you recall looking at this information rather than just Mr. Marciello's e-mail?

A. I don't specifically recall looking at it, but I know I did.

Q. Okay. Fair enough. All right. And so what would your reaction, then, have been to these results at the time?

A. It would have been to look at the trend in the data, specifically over the performance of the last year and the most recent years, and to note that, yes, we did have high values in the beginning, but to see them drop is not abnormal specifically for the trap rock category. But I've also noted that the averages were sort of becoming more constant over time and levelling off at a value in the low 30s.

Q. Okay. And were you happy with these results?

A. I don't think I had an emotional response. I was looking at that and saying, well, there's nothing in the average numbers -- there's not -- I mean, it is low, and

if we want to compare it to some of the other DSM traps, it was very similar. So there was nothing alarming about any of this information given that the friction numbers were reasonably similar.

Q. Okay.

A. So it would have been comparable to other pavements that we have already in existence.

Q. Okay.

A. Not all of them but a few, yeah.

Q. Okay. And I want to be clear about that. There were other ones in existence that had a similar pattern and a similar number, but it's a few that you're talking about, not the large number of them. Is that a fair summary?

A. It would have been aggregate-related, and trap rocks themselves would have given us -- have always given us our lower values. Some were in the mid-to-low 30s over the long-term.

Q. Okay. And over this length of time? So here we're talking about --

A. Yes.

Q. -- 2000, 2014, a period of seven --

A. Yes, seven or eight years or so, and we have data, and I think we were looking at some of the data of the historical performance of all of our DSM materials when we were reviewing the performance specifications, and the requirements that we were looking at in looking at that process.

Q. Okay. And by that -- and I don't want to go into a long thing, but you're talking about the issue of actually using an FN minimum or warranty number in contracts as a performance or warranty number? You're saying --

A. Yes.

Q. Yeah. And so you were looking at what the minimum numbers were in relation to that process in determining what would be used as the number in those performance contracts?

A. What could be used, or how it compared, and what were -- possibly what would be the impacts of making a number depending on where that number landed.

Q. Right. Okay. And so

you've looked at the averages here, and as I said we can go into the detailed numbers, but on the northbound lane 2 there's -- why don't we go it to it. Go to the detailed tab in both charts.

And so in northbound lane 2 on the left there's five readings that are below FN30 and four of them are under 28. And in the one on the right, which is southbound lane 2, there's also five under 30, and the lowest of them it says there, the minimum is 26.1. And for DSM purposes would you have been looking at individual readings or solely the average?

A. I would have been looking at the average. Usually if you're comparing pavements and you're reporting the friction number of a pavement, it is the average friction number that you've achieved from the friction testing.

Q. Okay. At some point do individual readings become a concern for you even if they weren't in this instance?

A. No, not individual readings other than a statistical parameter to determine what the minimum and maximum were, but normally it would be the average number that we were reviewing for purposes of reporting a number

for that pavement.

Q. For reporting it. No, I understand that. But you're evaluating this for -- you know, just for continuation on the DSM. And so for that purpose are you saying that the individual readings were not of concern to you as long as the average was --

A. Well, it would have been a concern if the average was the minimum. That would have been of interest certainly. If the average was 27 that would have been of -- that would have maybe have been a cause. But individually that just means to me that at that location there is a possibility of longer stopping distances in wet pavement conditions which may have resulted in an increased number of wet skidding -- wet pavement skidding accidents, and I don't know how to correlate -- without the addition of other data it just is a number used in the average.

Q. Right. Okay. So you're -- what I think I understand you as saying is that maybe if you unpack the data and look at collision rates and geometrics and so forth, there may be or may not be a correlation between the

lower friction values and wet weather collision numbers, but that's just not what you were doing here when you're looking at DSM approval. Is that....

A. Yes. For the pavement management I guess that would have been a different story, but for our purposes we wanted to know what was the overall friction, and the more data you have, I guess, the more accurate the information can be. We're actually looking at what over 7,000 metres of test section which would -- instead of the 500 metres of test section that we would normally do.

Q. Right, right. And in which the five of the -- in the one on the left five of 15 or 16 are under 30, so....

A. Yes.

Q. Okay. But, anyway, I just come back it to again. I just want to make sure I understand your evidence. That's not what you were focused on for the purposes of the DSM application, or rather the DSM continuation; is that right?

A. No, no.

Q. Okay.

A. Those numbers were just numbers, and it shows the variability in the pavement over a large section.

Q. Right. But then I come back to what you consider to be, you know, the wording used -- you spoke about earlier an acceptable level of friction or desirable level; however you want call it. And it does seem, again, that where you're -- what you're really looking at here for that is something around 30 as the lower end on an average?

A. I would say that that may have caused us to think differently.

Q. Right. You don't know --

A. I know what would --

Q. -- what can happen.

A. Okay. The number of the low 30s was -- and I would say that this particular material is on the lower end of all of the our DSM materials.

Q. Okay.

A. But in terms of frictional performance and pavement performance it still is above that sort of a marker highlighted number of 30, and I would have, and I probably

did, have gone to discuss this with other people who may have a better evaluation of overall pavement management, and -- but in terms of was that acceptable friction, and how we would have looked at that in terms of the average.

Q. Okay. And so Becca Lane testified that -- on that issue that you were involved in an internal discussion at some point after these results, 2014 results being produced with her, Bob Gorman and Mr. Marciello about Demix Aggregates, including about whether the Demix Aggregates' performance was satisfactory for continuation on the DSM. And she testified that her recollection is that Mr. Marciello and Mr. Gorman came to her office to talk about it, and then I believe the three of them, it was her recollection, walked over to your office to discuss with you. Do you recall a conversation of that nature?

A. Not specifically --

Q. Okay.

A. -- but I'm sure it happened.

Q. Okay. Do you mean --

A. But not specifically, no.

Q. Okay. So you don't have a specific recollection. When you say you're sure it happened, you mean if Ms. Lane recollects it, you don't doubt that it occurred. Is that what you mean?

A. Absolutely.

Q. Okay. And is that because you -- Ms. Lane has a particularly good memory?

A. Better than mine I would say, yes, for sure.

Q. Okay. Fair enough. Okay. And -- but since you don't have any recollection of it, you just don't -- even with that detail, you don't recall what it was, and you would just -- whatever Ms. Lane said you wouldn't be able to --

A. Well, if that was a discussion, that would have -- and our office is full of a number of different specialists in different areas, and there was a lot of collaboration in discussing issues. I mean, we had many discussions in our little breakout room, so I can't recall any one specific. And I know we sometimes even passing in the hallway would have

conversations to update ourselves and to sort of say, where do we go from here.

But yeah, I have no recollection of specifics, but I'm sure we would have looked at the numbers, would have looked at some comparisons and then made a decision on whether this was to be -- to remain on the DSM or not.

Q. Okay. Since it wasn't removed at that the time presumably the decision was that it wasn't to be removed?

A. The decision was to say there's no -- well, there's nothing there that warrants its removal.

Q. Right.

A. Right.

Q. Do you recall if you considered -- I asked you this question before about -- more generally about the test results in Hamilton, but did you consider providing the 2014 skid testing results to the City of Hamilton or its representatives?

A. No, I did not.

Q. Would you have had the authority to do so had you chosen to?

A. I suppose.
Q. Okay.
A. I could have -- if I had a contact or if I knew someone or if I had a reason to I may have, but I would have had authority.
Q. That's what I mean. I'm not saying that you did.
A. I had the authority for sure.
Q. Okay. And do you know why the Red Hill wasn't further skid tested after 2014?
A. No, I do not.
Q. And we know that Mr. Marciello left the MTO in -- relatively early in 2015. His last day working was in March of 2015. And we've heard that his position wasn't filled until May 2016 after a job competition. But do you recall if anyone was doing any skid testing for soils and aggregates in the meantime?
A. I don't have any memory of that, that's for sure, yeah. I wouldn't know.
Q. Okay.
A. I just wouldn't know,

yeah.

Q. All right. Did it resume at some point before you retired?

A. I don't know.

Q. Okay.

A. I don't know.

Q. You don't know. Can't recall? Okay.

A. Can't recall.

Q. All right.

MR. LEWIS: Okay. I don't have any further questions. Thank you, Mr. Senior. Counsel for the participants may have some questions for you. I know counsel for the City does, but I should ask before we go over.

Ms. Roberts, will you have any questions at this time?

MS. JENNIFER ROBERTS: No, I do not, thank you very much.

MR. LEWIS: Okay. And we know that counsel for Dufferin does not, and the MTO may, but they (indiscernible) any of that.

Commissioner, I believe then Ms. Jenene Roberts would be first up for the City.

MS. JENENE ROBERTS: Thank

you, commission counsel. Thank you, Mr. Commissioner.

EXAMINATION BY MS. JENENE ROBERTS:

Q. Good afternoon, Mr. Senior. My name is Jenene Roberts. As commission counsel mentioned, I'm counsel to the City of Hamilton. I just have a few questions for you really talking about the friction testing on the Red Hill and the listing of the Demix aggregate which following the discussion that you've had with commission counsel already today.

And first of all, I want to start with the 2008 friction testing results. And I think if I understand your evidence, it's that the 2008 results were acceptable for DMS inclusion purposes; is that right?

A. I think the 2008 was only after one winter.

Q. Yes.

A. So that would've not met the conditions that we needed at least two winters of testing before we considered them for inclusion.

Q. Oh, okay. So you have to look at the 2008 and the 2009 results together to

make the assessment for inclusion on the DSM?

A. Yes. Originally -- we wanted two years and at least -- and specifically over two winters.

Q. Okay. So your view after seeing the 2008 results and then seeing the 2009 results was that the Demix aggregate was acceptable for inclusion on the DSM?

A. No, not after the -- there was no decision made in 2008 based on one winter of testing.

Q. Sorry, my apologies. I mean you had 2008 plus 2009. So after the 2009 looking at both years, the decision was being made; is that correct?

A. After the 2009 test results, friction test results were reported and recorded, then we moved forward to making a decision.

Q. Okay. And the decision was that the Demix aggregate was approved for listing on the DSM at the time, correct?

A. Was conditionally approved as stated previously, yes.

Q. Conditionally approved.

And if I understand what that -- the implications of that are -- it's that as of that 2009 decision that meant that your view was that the Demix aggregate was acceptable for use by contractors who were paving MTO projects; is that correct?

A. It was acceptable for FC -- 12.5 FC1 and acceptable for 12.5 FC2, yes. Moving -- yes, at that time it was listed for those products.

Q. Okay.

A. (Indiscernible).

Q. Good. Thank you. And if I understood correctly, that you held that view every year as the friction testing results were reported. So we know 2010, 2011, 2012, 2014, that it continued that the Demix aggregate was listed on the DSM and was acceptable for use in the FC1 and FC2 surface courses; is that right?

A. Yes. We had no reason to remove them from the DSM for those purposes.

Q. Okay. And I take it that means that it's correct that the MTO didn't identify any problems with respect to the Demix aggregate when it's in the testing that was used for the application and the listing of the

aggregate on the DSM?

A. The testing that we did in our laboratories, it met all of our requirements that would have been necessary for it to be an approved aggregate on any job, and then also the friction testing results in 2009 were acceptable as good frictional properties.

Q. Okay. Thank you. And I believe your evidence earlier was that you weren't aware at the time, but you're aware now that the Demix aggregate was removed because the supplier stopped paying fees for the listing; is that right?

A. Yeah, I understand now that they made the decision to not register with the road authority at that time, yeah.

Q. Okay. So the MTO didn't ever remove the Demix aggregate because of any concerns with respect to its friction performance on the Red Hill, correct?

A. We did not remove it from the DSM.

Q. Okay. For any reason at all?

A. For any -- we had no

reason the remove it.

Q. Okay. Thank you. And just going back, and I'm happy to put the -- put it up on the screen if necessary, but I think you've already referenced it. So the approval that was sought and obtained was for FC12.5 FC1 and FC2, correct?

A. It was approved on the DSM for those two uses, yes.

Q. Okay. So am I correct that the testing requirements for listing on the DSM for both FC1 and FC2 would have been the same?

A. The physical properties and the test results --

Q. Yes.

A. -- yes, it would have been very similar, yes.

Q. Okay. So very similar. So were there differences in what would be required for testing for FC1 versus FC2?

A. Well, FC1s, you wouldn't have to test the fine aggregate fraction, but FC2s you would test the coarse and the fine aggregate fraction.

Q. Okay. And would the

testing requirements for DSM listing for use in SMA have been the same as either of FC1 or FC2?

A. It would have been testing of the coarse and the fine aggregate, so it would have been similar to FC2.

Q. Okay. And are you aware of any differences in the testing requirements versus FC2?

A. No.

Q. Okay. And I just want to ask you specifically about the testing that was done on the Red Hill Valley Parkway and then who was actually advised of the testing.

Am I right that in approving the aggregate that Demix would have been advised that friction testing was conducted on the Red Hill Valley Parkway in 2008 and 2009.

A. I believe in my correspondence that's what we identified that we would be doing testing on the Red Hill Valley --

Q. Oh, okay.

A. -- so they were aware through my correspondence that that's what we were doing.

Q. Okay. And with respect

to the testing that was done after 2009, so 2010, '11, '12 and '14, were Demix also advised that testing was being done on the Red Hill in those years?

A. Well, we told them that we would continue to monitor our evaluation section in future years. So I assume that they understood that, and they knew that we were going to do that.

Q. Okay. Do you have any recollection of either you or anyone else at the MTO actually advising them in any of those subsequent years about the friction testing being done on the Red Hill?

A. I'm not aware of any -- anything like that, no.

Q. Okay.

A. I mean, yeah -- I just want to be clear about what your question was there.

Q. Sure. Whether -- so in the approval letter, as you mentioned, your correspondence did indicate that there was friction testing on the Red Hill in 2008, 2009. So I was just asking if you had any specific

recollection of the 2010-and-onwards testing, and whether Demix was told that those years involved testing of the Red Hill as well?

A. Well, we did -- in their approval letter I believe we said -- we told them that we would continue to monitor it in the future.

Q. Okay. So aside from that approval letter, there was no specific correspondence or notification subsequent?

A. No correspondence from me or my office. I don't know if there was conversations outside of that.

Q. Okay. So looking at the friction numbers on the Red Hill in 2014, and you just had a conversation with commission counsel about those. I'm happy to put them -- ask the Registrar to put them up on the screen if you need to see them again. But if you recall the average friction numbers were all above 30 for all the lanes in 2014. Do you recall?

A. I do recall.

Q. Okay. And I believe you had mentioned that for DSM purposes you were looking at those average friction values, and

those were the values that were being evaluated; is that right?

A. That is correct.

Q. Okay. And I take it if the friction testing on the Red Hill Valley Parkway continued to produce the same friction numbers as 2014, so averages above 30, your expectations would have been that the Demix aggregate would have continued to be listed on the DSM?

A. Yes.

Q. Okay. And I believe you told us that your view was that the 2014 friction results for the Red Hill were consistent with the values that were seen on some of the other MTO pavements that included trap rock aggregates?

A. Well, mostly the trap rock aggregates would have been the material we were comparing it to. But it was, you know, similar -- very similar to --

Q. Oh, okay.

A. -- in terms of its -- in terms of its absolute final number, and its -- I guess the values as they decreased over time.

Q. Okay.

A. (Indiscernible), yeah.

Q. Okay. Thank you. But I take if there had been any sort of concern with that 2014 testing in terms of safety issues, then you or someone else from the MTO would have advised someone at the City of Hamilton about any safety concerns?

A. I would imagine so, but I don't know. I can't say for sure. But I would imagine that would've been -- if there was a safety concern -- every -- obviously if there was a safety concern, someone would have said something.

Q. Okay. Great. And then I just wanted to ask you, just following up, I believe your response about -- I believe you told commission counsel you'd never -- you didn't inform anyone from the City or any of the City's representatives about the Demix application or that the Red Hill was being evaluated for friction testing; is that right?

A. Yes. We considered the pavements and foundations section to be the custodian of the data, and we just received it because we requested it.

Q. Oh, okay. So I just wanted to ask you if you're aware of any MTO policy at the time related to advising a municipality or really any third party owner of a facility if friction testing was being done on a facility that's not an MTO facility?

A. Could you say that again, please. I'm not --

Q. Sure. Sorry. So, you know, in the context of the Red Hill, the Red Hill of course not an MTO facility --

A. No, I know.

Q. -- so I understand it's a little bit of a one-off in terms of the test section being not an MTO pavement. I'm wondering if there was any policy, any MTO policy with respect to that sort of circumstance.

So there's testing being done on a municipality's facility, for example. Was there a policy in place as to whether to either advise the municipality or seek permission from the municipality before conducting friction testing?

A. I believe that we only responded to requests from municipalities if they

wanted to do friction testing on their pavements, but I don't think we would have just randomly gone off to a municipality and taken a friction number for no reason. For example, the City of Toronto, if they wanted to test the Don Valley Parkway for friction they may make a question to the Ministry of Transportation and depending on accomodation. The ministry would see how they would respond to that.

Q. Sure. And I understand that. And, I mean, certainly this wasn't a case where the MTO was doing friction testing for no reason. I think we all understand that the friction testing was being done for the purposes of supporting Demix's application for DSM. So my question is really about whether there was a policy in place for those types of circumstances where testing was -- the MTO was doing testing for its own purposes, but that testing was being done on, in this case, the City of Hamilton's property or facility?

A. Yeah, I don't know if there was enough circumstances that occurred that would require a specific policy, written or understood, but it was more or less ad hoc as

needed.

Q. Okay. Thank you, Mr. Senior. Thank you, Mr. Commissioner. Those are all my questions.

JUSTICE WILTON-SIEGEL: Mr. Lewis?

MR. LEWIS: If Ms. Jennifer Roberts does not have any questions, if she confirms that, then we would be on to Ms. McIvor for the MTO.

MS. MCIVOR: I can confirm that we have no further questions.

JUSTICE WILTON-SIEGEL: Okay. Mr. Lewis?

MR. LEWIS: I do not have any further questions.

JUSTICE WILTON-SIEGEL: Okay. Well then, Mr. Senior, thank you for attending the inquiry. You are excused. And I think the same applies, unless is anything further we have to deal with today, to the remaining counsel. Mr. Lewis?

MR. LEWIS: I don't think we need to have a conference. If, perhaps, Ms. McIvor could confirm this evening about

Mr. Klement's availability to start early tomorrow, I would be grateful for that since we know that Mr. Gorman will be shorter than his available slot because of the affidavit that's going to be filed.

MS. MCIVOR: I have confirmed that Mr. Klement will be available to start early tomorrow.

JUSTICE WILTON-SIEGEL: Okay. So we'll stand adjourned then until 9:30 tomorrow morning. Thank you very much. Have a good evening.

--- Whereupon at 3:56 p.m. the proceedings were adjourned until Wednesday, May 25th, 2022 at 9:30 a.m.