NTSB Interviews of Mn/DOT Inspectors

Vance A. Desens
Kurt G. Fuhrman
Rae A. Tressler
Harvey Unruh

(Number of pages including this cover sheet - 63)

I N T E R V I E W

(1:20 p.m.)

MR. HUGHES: This interview is being conducted in support of the National Transportation Safety Board's investigation of the collapse of the Interstate 35W Bridge, Number 9340, over the Mississippi River, at Minneapolis, Minnesota, August 2007. The NTSB accident number is HWY-07-MH-024. Conducting the interview are Henry F. Hughes, H-U-G-H-E-S, Senior Accident Investigator for the National Transportation Safety Board, and Professor Kenneth R. White, W-H-I-T-E, a member of the NTSB Highway Factors Group. The interview is being conducted at the Minnesota Department of Transportation Command Post adjacent to the accident site. The accident number is (tape malfunction) by Henry F. Hughes, Paul Kivisto, Professional Engineer, MNDOT.

INTERVIEW OF VANCE ALLEN DESENS

BY MR. HUGHES:

Q. Sir, would you please state your full name and (tape malfunction).

A. D, as in Dog, E-S-E-N-S (tape malfunction) Minnesota Department of --

(Off the record.)

MR. HUGHES: Okay. August 17th, 2007, 1:20 p.m. This interview is being conducted in support of the National Transportation Safety Board's investigation of the collapse Interstate 35W Bridge, Number 9340, over the Mississippi River, at

Minneapolis, Minnesota, August 2007. The NTSB accident number is HWY-07-MH-024. The interview is being conducted by Henry F. Hughes, Senior Accident Investigator for the National Transportation Safety Board, Professor Kenneth R. White, a member of the NTSB Highway Factors Group, and Mr. Paul Kivisto, Professional Engineer, MNDOT.

INTERVIEW OF VANCE ALLEN DESENS

BY MR. HUGHES:

Q. Sir, would you please state your full name and spell your last name?

A. My full name is Vance Allen Desens, and I spell it D, as in Dog, E-S-E-N-S.

Q. Thank you. May I call you Vance?

A. Sure. You (indiscernible).

Q. Vance, could you provide us with your employer's name and address and phone number?

A. I work for Minnesota Department of Transportation in Maintenance Operations at Water's Edge, at 1500 West County Road B-2 in Roseville. My office phone number -- well, no, I don't know that one, but my cellular phone number is ([redacted]

Q. Thank you very much. Could you please summarize your education and training as a bridge inspector?

A. I started working in bridge inspection in 1981 with a senior engineer by the name of Loren Howe (ph.). And, well, we started there. He was taking bridge workers. I was in bridge

maintenance at that time as a bridge worker, and we -- every one of us went through one year of training with him at that time. And then after that we were in classification. I think it was level one, or something like that, where we had to go to another inspector, and that's how I got my inspections started.

Q. Subsequent to that, have you had any in-service training on inspections?

A. Well, yeah. I've been to several classes with the Baker Group, who have this two-week class on -- for formal training of bridge inspections.

Q. And how long have you been employed as a bridge inspector professionally?

A. Well, let's see. I was a bridge inspector from '81 to 2007 -- be about 26 years.

Q. Okay. Then I'd like to turn it over to Mr. White.

BY MR. WHITE:

Q. Okay. Thank you. How you doing?

A. All right.

Q. I do the bridge inspection training in bridge inspection, so I'm pretty familiar with the process and understand the process that you go through. Have you had additional training such as fracture critical?

A. Yes, I have, yeah.

Q. Okay.

A. I forgot to mention that before, but, yeah.

Q. Any -- do you perform any of the non-destructive type things like ultrasonics or --

A. Not ultrasonic. We do mag particle.

Q. Mag particle?

A. Yeah.

Q. Okay. And you've been through the training on --

A. Yeah.

Q. In mag particle?

A. Um-hum.

Q. Any other training that would be revelant to --

A. Well, training on operation of the snoopers if that's, you know --

Q. Okay.

A. -- revelant to this job.

Q. Speaking of the snooper, you know, I know in doing bridge inspections, gaining access is always one of the critical parts --

A. Um-hum.

Q. -- of doing bridge inspections. Could you give us kind of a summary of how you use -- how you gained access to the I-35 West Bridge?

A. Well, we used -- most of the time when we set this up, we use two snoopers. One is the A-75 Reach-All (ph.), and that's a 75-foot snooper. And then we have a 50-foot snooper. Well, the state's got two of them. We usually get one of them up here to

help also, because it's -- in the past, these last couple of years, we've taken, well, sometimes two weeks we'll spend inspecting that bridge. There are a lot of things we had to go through and look at.

Q. Do you get -- are you able to get arms-length access to all the joints?

A. Honestly, I have to say no. We couldn't get right to the very median, center, median part of her. Even with the 75-footer we couldn't. And a lot of that was because of that catwalk that was down the middle, and they're (indiscernible) obstructed -- that obstructed the movement of the booms, and stuff, on the snooper, that we couldn't get in there as far as we wanted to.

Q. Okay. Did you use the catwalk also?

A. No, we didn't.

Q. You just used the snooper?

A. Um-hum.

Q. Okay. I noticed that in the process, the most recent inspections, that you make, you usually make recommendation to upgrades or repairs or rehabs that you feel that should be done on the bridge? Have you made those types of recommendations?

A. Well, every year I report, you know, is -- you have to realize how these reports are generated. These reports are written, and from one day to the next, you just go in and update as they go on.

Q. Right.
A. And --
Q. I've actually -- yeah --
A. I personally --
Q. I'm not just asking this for --
A. Yeah.
Q. -- your recorded information.
A. I personally probably didn't put all those recommendations in there. Maybe some of them, you know, maybe they're my couple of last ones or maybe even one of them. I don't remember. I'd have to look.
Q. Okay. In your reports, do you make note of any repairs or rehabs that have been completed --
A. Generally, yeah. If something new has been done, yes, that definitely is in the report. It's put in the report when it's done, yeah.
Q. I noticed that there has been some other reports on this bridge from the University of Minnesota and URS. Are you familiar with any of recommendations?
A. No. In 2001, I got on this fracture critical inspection team in the metro. And as of that, that university with those test wires, and stuff, that they put up, I was not involved with that. But with the URS thing in 2003, yeah, I ran a snooper for those guys to get down there and look at that stuff.
Q. Okay. Now --

A. That'd be with the 75, what snooper they -- because you had to. The 75 is only one that'd get down and get to those bearings, those (indiscernible) bearings that are out on those piers.

Q. Right. Okay. You don't -- they made some recommendations in terms of upgrades, and you don't know whether those have been made or not?

A. No. I wasn't aware of what -- actually, up until now, when this is all coming out, this is when I'm first seeing that this was -- they had this report. I assume they went over to central office.

Q. Okay. I've reviewed the inspection reports from back in '72 all the way up to the present time, and I noticed that looking in the older reports, you had condition ratings of all of the different elements of the superstructure. In other words, you had the truss, the approach spans, the bearing devices, all of those separate items. Then you get an overall rating of the superstructure. The truss from '72 to '93 is always rated in a seven or an eight, good condition. And then -- but I'm also aware that in '88, I believe it was, you had a new set of condition rating definitions. And then you guys also implemented PONUS (ph.). I assume that's what --

A. Um-hum.

Q. What (indiscernible) so you don't -- you no longer rate the separate items and don't -- other than what you put down in

PONUS?

A. Um-hum.

Q. Do you know -- do you have a feel for what the condition rating of the truss might be separate from that overall superstructure condition rating? Is that -- was that four rating there accurately -- you're not talking about the truss or not talking about some other --

A. I'm thinking about your question and --

BY MR. HUGHES:

Q. Do you have the document or do you have to take a quick look at it?

A. Well, I --

Q. That's --

A. Yeah, I got it right here.

Q. Okay. That's not -- you probably can't tell from looking at it.

A. No, no. You got to look at that whole sector on there to answer his question and to put a rating on just the truss instead of the whole superstructure, that superstructure, that truss pretty much, in my opinion, is just about the whole superstructure if you get what I mean here. Because when you look at a report, you notice that in the reports, and it's actually (indiscernible), that south span, those approach spans, they had an awful lot of pressure and they were really pushing on that truss, and I don't know if that had anything to do with this or

not, but as a whole, I don't -- the truss itself had a lot of flaking rust and then had pack rust and it had cracked welds and all sorts of things going on, and so, no, I don't think I'd rate that truss much higher than -- if it was -- if it wouldn't be a four, it definitely would be a five.

Q. Okay.

BY MR. WHITE:

Q. Well, you're mentioning the approach span pushing on the truss. Do you notice any duress of the truss like flaking paint or indicators of compression on the top part of that truss as a result of some pressure from the approach spans?

A. Well, the bearings didn't work these last few years on that bridge, and on that bridge (indiscernible) station area. So there was no actual movement on that truss as far as that goes. No, I can't say for sure -- although the bigger joints on top were pushed very tight together. You notice that when you just look at it.

Q. Okay. (indiscernible) --

A. (indiscernible) right up.

Q. Were they buckling, or anything?

A. Well, they weren't buckling, but --

Q. They were just --

A. They were right up in there a lot tighter than they should have been.

Q. Somewhere around 2000, 2001, it was first mentioned and

I noticed there are a lot of poor well details on the truss itself. When did that, to your knowledge, the first time that was --

A. That's --

Q. Began to be part of --

A. -- kind of my doing putting that in there. That's when I got started. I was actually -- 2001 was the first time I did a snooper inspection on this bridge, and I was appalled at what I saw down there when I went down, you know, as far as the tack wells and, you know, it was just -- but -- I don't know how far to go with this, but as far as these tack -- I mean you can't -- see, they built that bridge in the '60s, and back then they built what they thought was good at that time, and what -- and looking at -- and I just -- my period of time of being an inspection or looking at bridges that were built back in the '60s and looking at bridges that are built in the 2000s, well, those bridges that are built today are going to last four times longer than what those bridges ever would. I mean, there's -- the engineering and the improvements on the bridges nowadays is tremendous over what we had in the '60s. I think the design and everything is so much better.

Q. Okay. So you started taking off those pigeon plates so you could get inside?

A. Yeah. We pulled them off and went inside those box fitters and -- you know, because we knew we had that detail inside

there, and we would start looking for those cracked tack wells, and stuff. Well, I mentioned that to my supervisor, Mark Relbrine (ph.), and he's the one that really went after this, and he got going on this --

Q. Do you have one of those fiber optic scopes, or anything?

A. No. It was all visual.

Q. Oh.

A. We'd stick our head up in there and hope to got there wasn't a pigeon in there, or something, you know?

Q. Yeah, I know about --

A. Yeah. And you had to get a special -- we had a battery-powered drill with a special socket in it to back haul them little screws out, take those down, and then take that cover off when we're up there, and look. Had a light, and stuff, we'd take with us, a little flashlight, and stuff, and check them all out. And --

Q. You need something pretty small to get up in there?

A. Yeah.

Q. I noticed in the report some of the photos in there. If we had a color copy of this, it would show it a whole lot better than your black and white. We do notice, though, in the photos there a lot of that was recorded where the cracks were, and stuff, on those tack welds (indiscernible) inside. When you're in your -- when you're reporting information to the engineers

(indiscernible) say low capacity (indiscernible) and you have a concern about a detail member, how do you record that information?

A. Well, it's put in the report, and the report is sent to CO, and they take it from there. That's how we're -- how -- to the best of my knowledge, that's how it's been handled here at MNDOT.

Q. Do you supplement those with photographs or sketches --

A. Um-hum.

Q. -- of those (indiscernible)?

A. Okay. This is the very same report. What you got there is what they got in 2006 on the (indiscernible) inspection.

Q. Okay.

A. You know? That's what they get.

Q. Do you do soundings of some percentage of the rivets, or anything, to determine if they're --

A. No. It's all visual. You know, we didn't tap on any, or nothing.

Q. Okay.

A. You know, and we have -- well, you must know that, too, as far as that goes. You're -- if you got something loose, you're going to see this little red rusting dust coming out of there, and we call it a working joint. And then we look at it a little closer, you know, and look that over real close (indiscernible).

Q. I noticed you referenced two -- some working joints in the report, and I (indiscernible) just visually --

A. You got certain connections and stuff that, you know, aren't, you know (indiscernible) more traffic on that bridge, and I believe that -- it had to be -- it had to have been. It just had to.

Q. Yeah.

A. If you'd have went a long time ago, it wouldn't have, you know?

Q. Okay, Vance, that's the questions I have.

A. Okay.

MR. HUGHES: Paul?

BY MR. KIVISTO:

Q. I just had one follow-up to what Ken was saying. On the fracture critical training -- now, you never really explained what fracture critical training you guys have had over the years, and I'm not even really that familiar with --

A. Well, it was a one-week class. And, again, that was with the Baker Group. They gave us that, so, yeah, and we got, you know, every year we also have a week of -- well, not a week. It's a full day of -- what do I want -- how do -- what do we call that thing? It's that day seminar thing --

Q. The annual inspection --

A. The annual inspection.

Q. -- re-certification.

A. Yeah -- class. And a lot of things are touched on during that day believe it or not. It's a good class they put

together.

Q. That's put on by MNDOT?

A. Yeah, you guys in the central office put it on and it comes out pretty good.

MR. WHITE: And everybody brings in details that they have on how to reprocess it or (indiscernible) discuss it?

MR. KIVISTO: Yeah, it's more a pre-defined agenda, and there's various people who are --

MR. DESENS: Yeah.

MR. KIVISTO: -- you know, speaking for a half-hour, an hour, whatever, on various topics.

MR. DESENS: Yeah.

MR. KIVISTO: I think that's all the follow-up questions I've got.

BY MR. HUGHES:

Q. Okay. And -- okay. Vance, we'd like to give you the last word on it. And, basically, if you have any thoughts about safety improvements, whether they be bridge construction, inspection, federal oversight, state oversight, anything that you think might be appropriate, we'd be very interested in hearing your opinion on it.

A. I'll give it some thought, and if I come up with something, I'll get back to you --

Q. Okay. We appreciate it. I guess --

A. Got your card.

Q. Before we end the interview, I want to thank you for taking the time. We appreciate your help, and you have my card if there's anything I can do or the safety board can do to help.

MR. HUGHES: And (indiscernible) we'll end the interview about 1:40.

(Whereupon, at 1:40 p.m., the interview in the above-entitled matter was concluded.)

CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF:	Major Highway Investigation Collapse of I-35 West Bridge Minneapolis, Minnesota Interview of Vance Allen Desens
DOCKET NUMBER:	HWY-07-MH-024
PLACE:	Minneapolis, Minnesota
DATE:	August 17, 2007

was held according to the record, and that this is the original, complete, true and accurate transcript which has been compared to the recording accomplished at the hearing.

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Danielle VanRiper
Transcriber

I N T E R V I E W

(2:08 p.m.)

MR. HUGHES: Okay. The date is August 17th, 2007. The time is 2:08 p.m. This interview is being conducted in support of the NTSB's investigation of the Interstate 35 West Bridge, Number 9340, over the Missouri River, at Minneapolis, Minnesota, in August, 2007. The NTSB accident number is HWY-07-MH-024. The interview is going to be conducted by Henry F. Hughes, Senior Accident Investigator for NTSB, Professor Kenneth R. White, a member of the NTSB Highway Factors Group, and Mr. Paul Kivisto, Professional Engineer, MNDOT.

INTERVIEW OF KURT GREGORY FUHRMAN

BY MR. HUGHES:

Q. Sir, would you please state your full name and then spell your last name for me?

A. Kurt Gregory Fuhrman, F-U-H-R-M-A-N.

Q. Okay. And who are you currently employed by?

A. Department of Transportation, Minnesota.

Q. And your official job title?

A. I'm a engineering specialist and I do metro bridge inspections.

Q. Okay. Is it okay if I call you Kurt?

A. Sure.

Q. Okay. Kurt, what's your business address?

A. 1500 County Road B2 in Roseville, Minnesota.

Q. Okay. And can you give me a business telephone number?

A. My cell is ([redacted].

Q. Okay. How long have you been employed by MNDOT?

A. About 24 years.

Q. And how long have you been assigned as a professional bridge inspector?

A. About 13.

Q. Thirteen years?

A. Yeah, about 1994 --

Q. Okay. During that period of time as a bridge inspector, have you had an opportunity to attend any formal training or educational opportunities as a bridge inspector?

A. Yeah. They -- there's a -- I guess for bridge safety school, there's at least a one-week course and a two-week course, and then -- that you have to take at the beginning, and then you have to go out and practice bridge inspection during the year. And then I guess every couple of years or so there's classes, and stuff, that we go to. I guess it's, like, two to four-year sequence, so you sort of get into -- since we got so many districts --

Q. Right.

A. Whenever they come to the metro, I go to those classes.

Q. And would they be like a recurrent training class?

A. Yeah, they're like, fracture critical, but if you got any new technologies introduced or as the current -- I guess -- I

do construction or have taken classes for construction, so as new ways to do things come aboard, I go back.

Q. All right. Were you one of the inspectors who conducted the inspection of the I-35 Bridge back in about June of 2006, about a year ago?

A. Yes.

Q. Okay. We'd like to ask you a few questions about it in a little more detail, and I'll ask Ken and Paul to do that.

MR. HUGHES: Ken, would you like to go first?

BY MR. WHITE:

Q. Okay. When you said you had the two-week training course, is that the National Highway Institute?

A. Yeah, it's the --

Q. Baker Group?

A. Yeah, it's a program --

Q. Yeah.

A. One is, I think, two weeks and one is one week. That's how I remember, but that, yeah, I've done that, like, once, but that's what it was.

Q. And do you have fracture critical training separate from that?

A. Well, they do in the, like, non-destructive testing and stuff like that after -- or with these bridge seminar things that we do -- some are MNDOT. Yeah. If they got anything on the federal level, too, that you'd require, that's the kind of stuff

that we --

Q. Well, the federal level has the fracture critical training, but I think it's optional for the state to (indiscernible).

A. Well, okay. I guess we're -- I take the classes -- the state wants us to keep certification, you know, carry the card that -- I guess I'm not sure what the title is now. It used to be, like, level two. It's something else now, but that's what I have.

Q. Okay. You mentioned non-destructive what?

A. Well, using -- we got, like, mag particle, so the magnet with the metal pilings are color-coated. That's what we usually use looking at cracks and stuff like that.

Q. Any ultrasonic?

A. Well, we do have people that do that, but not myself.

Q. Okay.

A. What about any other training that's associated with bridge inspection?

A. Well, I guess I've worked in bridge construction since 1997 at Aiden Perry (ph.) construction office until I started doing bridge construction. So I guess I worked with the contractors building --

Q. Quality, quality construction-type things?

A. Yeah, you know, watching the plans, making sure they got insurance stuff they require, you know, making sure everything was

up to snuff.

Q. Okay. Now, as a bridge inspector, I know that particularly on a large bridges access is a very key element. Can you describe when you do the -- when you were doing the I-35 bridge, what -- how you were gaining access to (indiscernible) bridge?

A. We have a Aspen Aerials in Duluth makes these bridge snoopers that go off the deck and go underneath. That's what we use for all, pretty much all our inspection of, you know, river crossing because they are so big. And we're right up, you know, right up close with the -- we got a 75-footer. With most cases, you can get -- as long as you got -- we have a problem when you get into, like, ten lanes and you don't have a opening in the middle. You can't always get all the way across with that 75-footer. So the one -- like, in the median, you got a opening, you get the basket through, can do both directions.

Q. Okay.

A. And we have one in here that I'm aware of that -- 94 that crosses the Mississippi down, down here about five bridges itself is one of those. We can get, like, three out of five -- well, it's three lanes, but then shoulders. We can't get to the median shoulder, you know, the left shoulder median and the -- so --

Q. On this -- on the I-35 Bridge, can you get to arms-length inspections on --

A. Yeah, we can everything horizontal. I guess the depth of this one when you get into the two piers that were (indiscernible) but, he had a little trouble getting -- just barely make it.

Q. Okay.

A. But, yeah, we can get into all the steel elements most of the time. Believe me, we get what we can reach with the truck.

Q. I understand.

A. So --

Q. I was concerned that safety would prevent you from crawling out, getting out of that box.

A. I guess we -- I'm not like the iron workers that climb out, and stuff.

Q. Well, I know that some of our bridges we used to get out of --

A. Oh, we don't do that here yet.

Q. Yeah.

A. That may change maybe.

Q. Well, yeah, they won't let you do that.

A. Yeah.

Q. Most of them won't let you do that anymore.

A. Okay.

Q. So if I understand what you're saying here, you can get --

A. Well --

Q. At least the important parts of this bridge, you can get to all of these outside joints and --

A. The 75-footer can get you to the -- we were looking at the bearings, I guess, top of them, you know, maybe not below that too much, but --

Q. You can get down to the 60-foot tier?

A. Yeah. You probably can reach them with the big truck. And we have a 50, though, that, you know, you wouldn't be able to reach that far. So we get what we can with that, and in most cases -- on this one out here, the steel pretty much was reachable. Now, I may not -- there's a walkway, and stuff, in the middle. You won't always be able to get down with the members way down at the bottom because you would run out of stick, you know --

Q. But --

A. But out here, yeah, on the --

Q. But the -- but that would be the secondary member?

A. Yeah, the secondary member.

Q. The primary --

A. The primary stuff you usually can get close up.

Q. I noticed in all of this information here that we have that, you know, there's been some recommendations made. And one group from the University of Minnesota did put some string gauges on and they did a little report on fracture critical members, making some upgrades to those members, and I guess URS gave an inspection to it also?

A. Yeah.

Q. And made some recommendations to upgrade those members that have a lot of stress variations? Do you know if they ever made any of those kind of upgrades to the bridge?

A. Not offhand. I guess the view of them when they put string gauges on, I think there's -- seeing if they can get more truck weight on the bridge.

Q. Okay.

A. And I -- most of that I think might have been to increase the weight to, like, 100,000 pounds, where it's, like, 80,000 now, at least in Minnesota. I'm not -- and URS, you know, they were talking about doing some improvements, but as far as I know, they, like, on the bearings for movement, and stuff, they put marks on there. I guess I've never seen the, in my personal possession, seen the reports on them, just what's going on. I guess they recommended some stuff. I don't know if it's any different than what we've said, but, yeah. We -- I guess URS, we took their people and maybe to you, too, worked with them to put their equipment out there that they needed, but that's about as far as it went.

Q. (indiscernible.) Okay.

A. So --

Q. I reviewed the inspection reports from '70 to '93.

A. Okay.

Q. And I noticed in those, in those reports that the

superstructure was divided into various component parts like the truss, the approach spans, the bearing devices, et cetera, and condition ratings given to all the separate parts, and then the superstructure was rated, it looks like by whichever one is the lowest. And I noticed in all of those reports from ’72 to ’93, the truss was rated in good condition, seven or eight. I don’t know if you are familiar with that or not.

A. Well, I guess the elements you’re talking about is what -- in the PONUS (ph.) you know, what we’re -- the main components for a bridge to, you know, rate the condition, and stuff.

Q. Yeah. I guess according to what you’re telling me, you only been there since they implemented PONUS, then, right?

A. Well, it was called BRINFOL (ph.). Then we had -- I don’t know what it was before that, but I’ve been doing fracture critical bridge inspections since, like, 2000, or 1994 is when I started taking the classes. So some -- my name will start showing up on those reports. But, yeah, as far as, you know, each element like the truss, and stuff, yeah. That would be one of the PONUS main components, and the floor beam would be a main component. Stringers would be a component. And we, I guess, because that’s the way that, you know, we’ll talk about in the -- in depth we’re probably a little bit different than PONUS, but, yeah, I guess, you know, corrosion would be the only thing that’s, you know, something that’s real obvious in these.

Q. Okay. Somewhere in that range the -- I guess around 2000 or 2001 I noticed the first mention of a lot of weld details that were what -- it indicated this poor weld details.

A. I guess with this bridge, I guess is, what, late 1970s, or something, when it was built?

Q. ’68.

A. Or -- okay.

Q. ‘67.

A. ’67? Well, in this -- that era of bridges, they looked like they -- I don’t know if they used machine welders yet, but they welded by hand, and they -- the problem with this is they got tack logs and tension zones, and there’s a lot of in the design where they -- with the connections, and stuff, there’s a lot of welds that are fracture-prone details, and these tack logs are all over the place. So you can -- as long as the crack isn’t going in the parent metal, but that’s what we’re looking for all the time.

Q. Okay.

A. These tack logs are -- any time they had a plate that they were trying to rivet -- these were mostly riveted together when it was built. The stuff that’s got repaired has got bolts in it now, but if they -- to first stick it up there to put it together, they tacked it --

Q. Tacked it?

A. And I guess if it’s on a secondary member, that might be okay, but if it’s contacting the primary member underneath, which,

yeah, some of these did. But that's I think a design tendency of anything that was built in this era. That's different than today. But it's definitely a problem with this one.

Q. Did you ever -- you noticed all those bad details, but you never noticed a crack that's actually into the parent material, or the primary material?

A. Well, not necessarily in the truss. They --

Q. On the -- I mean, yeah --

A. We had problems on the approach spans.

Q. Yeah.

A. But they did have stuff like that. And we actually had a fracture on the north approach.

Q. Somewhere in there, I noticed they had also had plug-welded?

A. Yes. There's plug welds in the truss, like, at the top. We -- there's a floor beam truss, and they connect -- if a big gust took place, or whatever (indiscernible) you know, make up those connections, yeah, there are plug welds in there.

Q. Are those in tension zones?

A. They could be.

Q. Okay.

A. I -- we got, you know, a diagram of a floor beam details, and we'd be looking at -- yes, when I would do this, we'd be looking at all the connections anyway to see if something was, you know, something visual, and if it was, we'd put the mag on it.

Q. Okay. But, again, you had not found a crack in a primary member as a result of these really poor details?

A. No.

Q. Okay. You've been -- I noticed your recommendation to remove the pigeon plate and to buy a scope perhaps? You been removing the plates or have you gotten a scope to?

A. Well, the plates came into play maybe four or five years ago. That's to keep the pigeons out because they build nests, and stuff, in there, and if they are there, you can't see -- well, you clean it out the best you can and look for stuff, but that's why they were put on. So I guess the only thing bad about these is they got a special nut that they'll want you to remove them from, but then you can't hardly get them off. But we take them off every time we need to look at the -- I guess it has every couple of years or so, or depending on the federal, usually, guidelines that we have to follow when they want us to do an in-depth, we pull the plates and look in there. And, well, (indiscernible) stick her head in, but as far as a camera, and stuff like that, we don't have one of those in our immediate -- I don't know. It may -- one of the other groups might.

Q. Sure.

A. But I guess that might help in some of this possibly.

Q. A fiber optic scope?

A. Oh, I heard that on the media after this, but I guess I have never used one of those.

Q. Okay. It's pretty -- it's not a real common piece.
A. Yeah.
Q. Okay. When you're making recommendations to the engineers that do the capacity ratings --
A. Okay.
Q. -- how do you back up your material in order so they really understand how much deterioration or damage may have occurred to the bridge?
A. Well, I guess with steel there's always corrosion if you have to access the water, and so (indiscernible) flaking rust or just surface rust or it starts really getting bad, and it gets into pitting and stuff like that, that's I guess on the -- we'd say it right on the report, on the PONUS thing, and then you lower your ratings in the fair -- well, poor category. The deck, like, concrete, and stuff, we get -- all the salt we use it, you know, it leaks and cracks through the deck and it hits the steel and rusts that up. So when we start seeing leaks and cracks, then it goes to delamination and spalling and water saturate, and stuff like that, then I start knocking down the deck elements, but it all depends on flaking rust, pack rust. Like, something like this that's riveted together, just a lot of water damage, we get pack rust, and it starts spreading the members, and stuff like that. So on the PONUS, we'd just spell it out in this report on -- or make a general statement, and then in the PONUS, you'd -- there's element quotes for that stuff. So --

Q. Does this bridge have any significant amount of pack rust?

A. It has some. I guess the plates are being -- I guess -- this -- I don't know if it's traffic, or what, but sometimes up on the superstructure or the stringer level you have stringers, you got some blocks in there that tie it to the deck, to the floor beam, that's popped some of the bolts. I don't know if that's from vibration, though, you know, the cycle --

Q. Stringers --

A. Yeah.

Q. Stringers -- beam connection?

A. That kind of stuff. And so when we see them, we rate them down. Then they -- out bridge crews usually try to (indiscernible) contract or something, would try to put those up, but sometimes they work. Sometimes you come back a year later and they pop loose again. But that, yeah, usually that's where it is, the cracking, the tack welds. If it got into pack (indiscernible) member, then we, you know, they'd know about it or we'd tell people about it, and they may drill holes, whatever you got to do to slow it down.

Q. I noticed a reference of some working joints in the report. How do you guys make a determination on a working joint?

A. Well, when I say working joint, you usually get, like, a red dust in the stringer and the floor beam. You usually get a dust in there, turns red maybe from oxidation, or something, but

you could see the line, or something, up there. And as long as it's not in a tension zone where, you know, it's supposed to be welded, it's not causing a problem. Usually, you like to see that, because at least it means the bridge is moving. When they put string gauges on this, I think they had said on approaches. It's not the truss, though. They had said that it was -- wasn't flexible enough. So some of that if it wasn't working enough, it might -- it did cause some cracks where the welded stiffeners went into the -- one of the girders and cracked across the top.

Q. Yeah. That's on the approaches, though?

A. Yeah, it's on the approaches.

Q. Okay.

A. On this other -- on the deck itself, or I mean on the truss, yeah, the stringers, you know --

Q. What about any --

A. They're not supposed to be welded in tension zones, so that's -- if you saw it, that's a good thing.

Q. What --

A. That wasn't always the case.

Q. What about any riveted joints? Do you have any of those that apparently are moving (indiscernible)?

A. Well, the -- I'm going to -- probably not at the -- you know, I wouldn't think at the joints, no. There might a little bit where the, like, the joint of a weld, and I'm going to say most of that's, like, where the stringers go on the floor beams or

the stiffeners in the weld of the, like, the truss itself most of the time.

Q. Okay. Have you noticed any paint cracking or warping of paint that might indicate a duress on a member? You know, that's one of the things we look for. Sometimes paint cracking is caused by stress or any of that sort of stuff?

A. Well, I guess when you look up and close, you know, it looks like paint cracks. (indiscernible) think that it -- well, the only way you could do it is put a mag up there and check. We do that where we have to I guess. I'm going to say on the truss, no.

Q. Okay. That's my questions.

MR. HUGHES: Paul, do you have any?

MR. KIVISTO: No, I guess I don't have any follow-up questions.

BY MR. HUGHES:

Q. Is there anything we haven't talked about you think's important, you'd like to add, or any ideas as far as safety improvement? We'd be more than glad to have any recommendations you might want to make.

A. Well, I don't know. I think we pretty well spelled everything out. I got -- these had, I think, frozen bearings. I'm not sure when you got a big, long bridge like this and pavement thrust, and stuff, if things are froze up and what -- you know, we did -- they did repairs over the years in a certain spot

where we had cracks, and that's usually at the approach spans where a multiple-beam -- and they added, like, H, like tile, but the H-shaped material to stiffen them, and going from multiple-beam to the deck truss at the ends especially. And, you know, if everything is not -- well, like I said, if things are frozen up and something lets loose, I don't know what that does to that truss, or whatever.

I guess most of the problems on this bridge that we saw, or what I saw, it's mostly on the approaches. It didn't really show up too much on the truss itself except for a transition from one to the other. They did reinforce with H-frame material at the -- where the bearings are for the truss. If it was, you know, cracking in the welds, and stuff, I don't know. But I guess we usually when we see paint cracking, you drill a hole, or a least that's what we did out here on the approaches. And most of the time, it did it -- you know, it stopped it from going any further, but every once in a while you'd find it on the approach span where it kept on going, but -- and -- but I don't -- the -- on the truss, I guess, they had, like, floor beam per bolt. They have truss maybe, end of the truss, and one on the approach, and there were a lot of cracks on the truss, the end of that, like, floor beam, floor beam where -- yeah, on the -- where the (indiscernible) well, where all the intersection for the welds were for the stiffeners and the horizontal stiffeners and vertical stiffeners I guess.

BY MR. WHITE:

Q. That's right at the approach --

A. Yeah, it's right at the end of the approach on the north or south where it goes into the truss. You know, like I say, you're going from multiple-beam with a floor beam support, and, like, for -- I think there's 14 stringers on this thing, or 14 beams, going to two deck trusses, and, you know, going to where the bearings, and stuff, are. So they did -- I had a couple of times where we had -- but, other than that, I don't know.

BY MR. HUGHES:

Q. Okay. There's a picture of bridge on the wall right there. Can you kind of walk us through the order in which you did the inspection on the bridge? I mean, what side did you do first? Which end did you start on?

A. Well, we usually did this one with two -- these inspection trucks, and we usually started at, like, the south and north (indiscernible) and we just worked together. So, you know, it's usually -- because this is -- trying to get this done in a relatively -- because of the traffic, but, yeah, we'd start at each end and then worked towards the middle.

Q. Um-hum. Is that what you did this time -- last time?

A. Yeah.

BY MR. WHITE:

Q. So you'd close off the right lane?

A. Yeah, we'd, well, we had our bridge crew put up, like,

the shoulder or a right-lane closure so we got at least an extra lane beside the truck. So depending on how it's striped out there, we'd have, like, two lanes, and we'd start at both ends and work towards the middle.

BY MR. KIVISTO:

Q. I did have one follow-up question I just thought of now. Kurt, this spring you guys -- did you go out with the inspectors to look at the (indiscernible) --

A. Well, this spring --

Q. For the URS study?

A. Yeah, I guess we -- this spring we were using our UT guys and the -- at his office or in a hotel. They were with us. We took the covers off, and then they were checking these tack logs or the connections inside these trusses in I assume that was the tension areas. And they were, you know, I don't -- we were looking for physical evidence of getting into the pack material I guess.

Q. With ultrasonics or --

A. Yes, I'd guess you'd have to ask the guys that do that what -- you know, but it's the -- I guess whatever else it uses. As far as I know, they didn't find anything, though.

Q. Do you remember how far it got --

A. Well, we saw -- we --

Q. (indiscernible) to so far out, do you remember?

A. This was on the truss, and we had -- I guess a bridge

office must have gave us -- we, you know, we got to start from zero, one, two, because we have a numbering sequence --

Q. Yes.

A. Up to 14 and then prime system. We -- they must have been the high tension areas that URS was -- wanted us to check.

BY MR. WHITE:

Q. Identify the presence?

A. So we -- yeah. They told, you know, top -- it'd be top of the truss, bottom of the truss, or, yeah, whatever. But they told us where, so we took off the covers and then the UT guys came behind us. And we did -- everything that I think that we had to do on the -- well, it'd be the southbound truss, so the direction -- it'd be, like, the west truss on this one. And we did some of the east truss starting from the south of (indiscernible). But we didn't -- you know, we had a week to do it, and we did some of those like the -- from I guess Pier 5 is the beginning of the truss, so Pier 5 to Pier 6 area on the north, on the, yeah, northbound side, but the east truss. But everything on the south is what they wanted us to do.

BY MR. KIVISTO:

Q. You got the entire -- the southbound lane, so the west truss?

A. Yeah, whatever they told us to, you know, get at, that's what we did. That's not -- you know, I haven't done this report on any of that yet, because were planning to come back out here

right about now, or something, do the rest of it, but --

MR. HUGHES: Paul, do you have anything else or --

MR. KIVISTO: No, I think that's it.

MR. HUGHES: Okay. How about you, Ken?

MR. WHITE: I think that's it.

MR. HUGHES: Okay. We're going to end the interview at 2:40.

(Whereupon, at 2:40 p.m., the interview in the above-entitled matter was concluded.)

CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF:	Major Highway Investigation Collapse of I-35W Bridge Interview of Kurt Gregory Fuhrman
DOCKET NUMBER:	HWY-07-MH-024
PLACE:	Minneapolis, Minnesota
DATE:	August 17, 2007

was held according to the record, and that this is the original, complete, true and accurate transcript which has been compared to the recording accomplished at the hearing.

_____

Danielle VanRiper
Transcriber

I N T E R V I E W

MR. HUGHES: This interview is being conducted in support of the National Transportation Safety Board's investigation of the Interstate 35W Bridge, Number 9340, over the Mississippi River, at Minneapolis, Minnesota, August 2007. The National Transportation Safety Board Accident Number is HWY-07-MH-024.

INTERVIEW OF RAE ANN TRESSLER

BY MR. HUGHES:

Q. Ma'am, would you please state your full name and spell your last name?

A. Rae Ann Tressler, T-R-E-S-S-L-E-R.

Q. And, currently, where are you employed?

A. The MNDOT. The --

Q. Minnesota Department of Transportation?

A. Yes, sir.

Q. Can you please give me your business address and business telephone number?

A. It's 2229 Pilot Knob Road, Mendola Heights, Minnesota, 55120. It's -- the phone number is [redacted]

Q. Okay. May we call you Rae?

A. Yes.

Q. Okay.

A. Please.

Q. How long have you been employed as a bridge inspector?

A. I think four years now.

Q. Okay. Have during the course of that time you received any specialized training in bridge inspection?

A. Yes, sir.

Q. Could you please explain what that might be?

A. A three-week bridge, bridge two. Is that what it's called?

Q. What was the content of that training? What kind of subjects did they talk about?

A. Just bridge inspection from the ground up.

Q. Okay. Since that three-week training, have you had any recurrent training one or two-day sessions or any kind of audio/visual training, that sort of thing?

A. Specifically to bridges, no, but we've had other classes.

Q. Okay.

A. Highway stuff.

Q. During the course of your four years, have -- did you receive any kind of apprenticeship training where you worked under the supervision of the -- a more experienced inspector?

A. I still currently do.

Q. Okay.

A. It's an ongoing --

Q. Okay. And that -- then normally you would work with a more experienced inspector that --

A. The chief, yeah --

Q. Yeah, okay, the team leader?

A. Yes.

MR. HUGHES: All right. I think at this point we're going to turn the questions over to Engineer Benjamin, and do you have any questions you'd like to ask her about the bridge inspection?

BY MS. BENJAMIN:

Q. This is Liz Benjamin, B-E-N-J-A-M-I-N. As far as bridge inspection, Rae, out of your time that you've been in inspection, how many of those years have you been on bridge inspections?

A. Three.

Q. Okay. How many bridge projects have you been on and what did they consist of?

A. The Dakota Bridge, the two bridges, three bridges that went with it, so four bridges there, maybe about five or six bridges there. And the 494 River Bridge, that was a year and a half, and then this bridge.

Q. Okay. And out of those projects, were there any projects that were similar to the type of work that you were doing on (indiscernible)?

A. Yes, the 494 River Bridge was a rehab job.

Q. And that project took about a year and a half to do?

A. Yes, roughly one full summer and a half of this summer.

MS. BENJAMIN: Okay. Those are all the questions I

have.

MR. KIVISTO: I'm Paul Matthew Kivisto. It's spelled K-I-V-I-S-T-O, Metro Region Bridge Engineer in the Minnesota DOT office. And I've worked with Rae over the years in various bridge projects.

BY MR. KIVISTO:

Q. And, Rae, just to talk a little bit about this particular construction project, the efforts involved milling out the overlay and replacing the joints, and maybe if you could talk personally about the milling and overlay operation? How thick was the overlay that was taken off? Was it per the plan dimensions, as far as you recall, and did we put back any more concrete than was listed on the plan?

A. I believe the overlay ended up being .21 tenths of -- for the depth. I think it's about the average.

Q. As in .21 feet worth of depth?

A. Yeah, inches? Feet, yes.

Q. .21 feet?

A. Feet, yes.

Q. So it would be, like, getting --

A. Yeah.

Q. About two and a half feet?

A. Yes, just over two and two.

Q. Yes.

A. Yeah.

Q. And do you recall, was the milling set pretty close to two inches on most of it, or did that depth vary?

A. It was set pretty close to two inches.

Q. And has the department taken -- did we have any detailed measurements of the thickness of overlay that was placed at various points along the bridge? Like, did we have something that showed it was .17 here and a 100 feet down it was .2 and another 100 feet it was some other distance? Do you know, do we have any of those for the various concrete placements?

A. For the overlays?

Q. For the overlays.

A. The only difference would be -- it wouldn't be, like, difference in thickness throughout one placement. It would just be between -- averaged up between one placement and the next, you know, figuring out how much was placed.

Q. Okay. So you do it up by volume and then compare that to the area, and --

A. Um-hum.

Q. Calculate it into average thickness?

A. Yeah.

Q. Okay. Okay. So I think that's some valuable information that NTSB -- I'm not sure if you have that, but I think that'd be good information to know.

A. Yeah, I could turn all that in.

Q. Okay. Another question would be the full-depth repairs.

We did some full-depth deck repairs, and I know as I was on the site, I saw many of them. Do you recall at all how many -- what percentage was full-depth repairs and then maybe even also what percentage was what we call the Type 1 repairs, which go down to the top (indiscernible) the rebar?

A. No, not accurately. I know it was very small (indiscernible) compared to total square footage of it.

Q. And maybe the last question that comes to my mind right now is during any of those full-depth repairs, did you notice any problems with the bridge additional movements or anything that you perceived to be potentially at least different from the way the bridge felt before?

A. No, not at all.

BY MR. HUGHES:

Q. I had a couple. This is Hank Hughes, NTSB. Rae, when did you start working on this bridge inspection, on the project for the resurfacing of the bridge? Do you remember what month it was?

A. June.

Q. June? During that period of time, how much -- how many days would you say you spent on the bridge itself?

A. Six days a week since June 18th.

Q. Okay. In terms of weather conditions, was it pretty consistent, hot --

A. Yes.

Q. Typical summer weather?

A. Very hot and very dry.

Q. Okay. Did you ever have occasion to feel or notice anything at all unusual about the movement of the bridge?

A. No, not at all.

Q. Any unusual sounds, smells?

A. No, nothing.

Q. Okay. Based on what you've seen so far, as far as the deck of the bridge, and, obviously, yeah, the bridge collapsed, and, you know, you've been through a lot and we appreciate you taking the time to talk to us, do you have any thoughts on safety improvement, any consideration there?

A. I think it would have been nice to know that there was inspections with consultants before this and to have something written in the special provisions to even know that there was a concern.

Q. Additional detail information on the pre-existing condition of the bridge?

A. Yeah, for sure.

Q. What information were you privy to when you started the project?

A. Regarding the bridge?

Q. Yes.

A. None really. Just general dimensions and what was to be done.

Q. I don't want to ask a leading question, but was the information primarily concerning itself with the replacement of the roadway on the bridge rather than the structure?

A. Yes.

Q. Okay. Would that information have been available to your team had it been requested or do you know that?

A. I don't know that.

Q. Okay. Anything else?

A. No.

MR. HUGHES: Liz, did you have any other?

MS. BENJAMIN: Yeah, just a couple more questions.

MR. HUGHES: Okay.

BY MS. BENJAMIN:

Q. This is Liz Benjamin with MNDOT. Rae, since this was basically a roadway repair, did you ever look at the structural steel below?

A. As a professional inspector, no, but sitting under the bridge in the field office, you know, you just sit there eating your lunch looking out at it, and you just naturally look at the piers and see if everything is where it should be, and there's nothing unusual, and the rivets all appeared to be where they were supposed to be, and other than just, you know, general, normal observation, no.

Q. When they were replacing the joints, did you ever notice anything unusual or different when they were doing that with the

snooper underneath?

A. No.

Q. Okay. That's all I have.

MR. HUGHES: All right. Paul?

MR. KIVISTO: No additional questions.

MR. HUGHES: Okay. We'll end the interview at about 9:16.

(Whereupon, at 9:16 a.m., the interview in the above-entitled matter was concluded.)

CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF:	Major Highway Investigation Collapse of I-35 West Bridge Minneapolis, Minnesota Interview of Rae Ann Tressler
DOCKET NUMBER:	HWY-07-MH-024
PLACE:	Minneapolis, Minnesota
DATE:	August 20, 2007

was held according to the record, and that this is the original, complete, true and accurate transcript which has been compared to the recording accomplished at the hearing.

_____

Danielle VanRiper
Transcriber

I N T E R V I E W

MR. HUGHES: This interview is being conducted in support of the National Transportation Safety Board's investigation of the collapse of the I-35W Bridge, Number 9340, over the Mississippi River, Minneapolis, Minnesota, August 2007. The National Transportation Safety Board Accident Number is HWY-07-MH-024. Present at the interview are Henry F. Hughes, Senior Accident Investigator, National Transportation Safety Board, Liz Benjamin, Professional Engineer, MNDOT, and Paul Kivisto, Professional Engineer, MNDOT.

INTERVIEW OF HARVEY UNRUH

BY MR. HUGHES:

Q. Sir, would you please state your full name and spell your last name?

A. Harvey Unruh, U-n-r-u-h.

Q. Okay. Would you provide me with a business telephone number, address and telephone number?

A. [redacted] and the business address is 2229 Pilot Knob Road, Mendola Heights, Minnesota.

Q. And the zip code, sir?

A. 55120.

Q. Thank you very much.

MR. KIVISTO: What area code on that phone number?

MR. UNRUH: 651 is the area code.

BY MR. HUGHES:

Q. Okay. Thank you. How long have you been employed by MNDOT?

A. Twenty-four years, I believe.

Q. Okay. And during that period of time, how long have you been signed as an inspector, bridge inspector?

A. I worked on bridges for probably 20 of that.

Q. Okay. Is your job specifically to work on -- in bridge inspections, or do you do other types of inspection?

A. I've worked on bituminous jobs. I've worked on grading, curb and gutter, walls, paving. That's what I've worked on.

Q. Okay. During the course of the past 20 years as an inspector at MNDOT, have you had occasion to receive any specialized training?

A. I have received training for MNDOT.

Q. And can you give us a summary of basically what that was?

A. Bridge construction, concrete one and two, bituminous one and two, erosion control.

Q. Do you have any annual recurrent training or other periodic training on bridge inspection, any updates, that sort of thing?

A. Yes. I believe there was a course, an update course that I took.

Q. Do you recall when that might have been?

A. I don't.

Q. Okay. When were you assigned to the project on the I-35W Bridge?

A. I would think it was May or June.

Q. Okay. Some time in the early summer or late spring --

A. Right.

Q. And how many days a week did you work in that project?

A. On this particular project?

Q. Yes.

A. Six days a week, some seven days a week.

Q. Okay. What specifically were you tasked to do in terms of inspection?

A. I might need a little (indiscernible) I guess we're tasked with the testing of the concrete placements, checking the reinforcement, a lot of sounding for DLAM (ph.) on the river span, the river bridge, a lot of sounding out and marking out for repairs types one, type threes.

Q. Okay.

A. There was -- we had five other bridges on, yeah, five other bridges that we were working on at the same time, some pier protection work. Actually, six other bridges, and two more bridges where we were doing overlays, type one, type three patch repair, and expansion joint replacements.

Q. What would you -- how would you characterize your general observation of the bridge where the collapse -- did you note any anomalies or any problems?

A. No, I didn't. I think my observation was that I thought it was in pretty good condition, as far as I didn't see a lot of rust or scale or anything like that. Any of the areas we opened up for joint replacement, didn't see section loss, rusting really, or anything like that.

Q. Okay. Did you ever note any movement of the bridge, any strange noises or smells?

A. No, I didn't.

Q. At the time of the collapse, where were you?

A. I was probably three miles north at -- in the McDonald's parking lot.

MR. HUGHES: Liz?

BY MS. BENJAMIN:

Q. This is Liz Benjamin. I'm the resident construction engineer for MNDOT. My last name is B-E-N-J-A-M-I-N. Harvey, if you could, please, tell us over your experience, what -- how many of these rehabs have you done?

A. When I was -- some of the years that I worked for MNDOT, I was a laborer on a survey crew, so for the first five years, I was a surveyor. I worked on a survey crew. After that, I was just put as a concrete tester on whatever projects there were. One of those projects, I'm thinking 15 years ago, was a rehab project that we did on Lafayette, and we did -- I worked as a Tech 1 on that project. We probably did I would say ten bridges, or something like that.

Q. Where you did rehab work?

A. Where we did the replace joints. We did scarification and overlays on those. So before that, or since then, I did two on Crosstown probably six years ago, short bridges, same thing, sounding the deck, joint replacements, and overlays. And since then, it would have been 494 that we started on by the airport, River Bridge by the airport. We did that starting last fall, and then we finished up this spring. And then this project here.

Q. Did you -- during the course of the work, did you ever see anything different as far as the way contractor (indiscernible) the work, where he placed his materials, where he placed his equipment, how he approached the overlay? Anything different than what you've seen in the past?

A. No.

Q. Had you ever worked with PCI before on any other bridge overlay and rehab projects?

A. The river project we did last fall and this spring on 494 was the last time I've worked with them. I'm trying to remember 15 years ago, and it's hard to remember because the guys switched companies, so I remember faces, but I don't remember if they were working for Lunda (ph.) or PCI at the time.

Q. Okay.

A. I'm thinking that was PCI 15 years ago when we did that, that work through --

Q. Okay.

A. -- Highway 3 I guess it is.

Q. When they were working underneath the deck replacing joints or any other work that was close to the members, steel members, did you see anything unusual, anything different than what you would have expected for this type of work?

A. As far as the in-place members and --

Q. Right. When they were replacing the expansion joints, did they follow the normal procedure of that replacement using the typical equipment, typical process of removing those and replacing them?

A. Yes.

Q. Okay. Those are all the questions I have.

MR. HUGHES: Paul?

MR. KIVISTO: This is Paul Kivisto, K-i-v-i-s-t-o, Minnesota DOT Bridge Office. I'm a Metro Region bridge engineer, and I've worked with Harvey over the years on various projects. I was out on this deck, even, with Harvey discussing some of the items during construction.

BY MR. KIVISTO:

Q. But a couple of my questions, Harvey, as far as the overlay, I know the planned overlay to be milled out was two inches, and if you could, talk about how much was actually milled off compared to that two inches and then how much was put back on per your recollection?

A. The initial milling they brought -- they had a different

mill come in on -- I'm not sure if it came in on the northbound or (indiscernible). On the southbound right lanes, they brought in a new mill. It was some kind of a laser setup. And we shot all the elevations on the in-place expansion joints and came back with a straight-edge and laid it on the deck for when we replaced the expansion joints when we were putting them in, and it was at two inches.

Q. So for both of the mills you had --

A. The second mill, he was at about two inches, but he had areas where he got a little deep and he hit some reinforcement in the process.

Q. And was that over a big area do you think or was that just kind of localized?

A. The main area was on the northbound end right in the ramp area that goes to University Avenue. So it would be beyond Pier 11, north of Pier 11.

Q. So in the truss span area, was that probably pretty close to the two inches do you think?

A. Yes.

Q. Okay.

A. We did have some -- he did come up light a little bit on it after we replaced the expansion, put the new expansion devices in, and there were some areas where they had to do some additional removal they did with jackhammers to take, like, a half an inch off of I would say, like, a ten-foot square area.

Q. But pretty isolated?

A. Right.

Q. Okay. And then this -- another question would be the depth of overlay that we put back on. So do you have a sense or any numbers that you calculated or measured that would show what the average depth of the overlay was?

A. We do have some calculations that we put together, as far as our square footage numbers. We take our square footage numbers on our low slump reports and we just calculate out the best we can what an average depth would be. And all of them were over two inches from our calculations. I would say we were running probably two and a quarter, two and a half, two and three-eighths.

Q. Okay. How about --

A. (indiscernible) called for a minimum of two inches.

Q. Right.

A. Right.

Q. Right. Yeah, that's our typical spec, to be a minimum two inches. Okay. How about as far as the Type 3 repairs, which are full-depth repairs? How many of those actually went through the deck and how many were what we -- we'll pay them as a Type 3 or a full-depth, but there are still some solid concrete remaining. Do you have a sense for, like, of the numbers that you calculated for Type 3 repairs how much might actually be all the way through?

A. I have -- I mean, we have our documentation that shows exactly what that number would be. We separated -- we called one a Type 3 partial, and then we called another one a Type 3 full-depth.

Q. Okay. So --

A. I'm thinking those numbers -- I don't even want to say right now because I don't --

Q. But, again, the documentation shows that?

A. Right.

Q. And I know that's stuff that we've share with NTSB?

A. Right.

Q. I guess that's all the questions I have.

MR. HUGHES: Liz, did you have any other questions?

MS. BENJAMIN: I don't have any other questions.

BY MR. HUGHES:

Q. Okay. Based on your experience working on this bridge and your professional experience of over 20 years, do you have any thoughts on safety improvement, ideas about improving the inspection process, or anything else you'd like add would be really good.

A. I guess for me personally on a project, I would have liked -- I think everybody would like more people looking over their shoulder while they're doing their job.

Q. Sure.

A. I guess. I, you know, maybe more supervision, whatever

that would be. I don't know what that would be, spot checks or --

Q. Do you feel you had sufficient information with regard to the condition of the bridge before you started?

A. No, I didn't.

Q. Okay. What information do you think might have been helpful to you and your colleagues?

A. You know, there's -- that's another thing where I really don't know. I'm not a structural engineer. I have a high school education. You know, I'm not sure how much the information -- you know, what would have made a difference. I don't know.

Q. Anything else you'd like to add?

A. No.

MR. HUGHES: Okay. We'll end the interview at 10:07.

(Off the record.)

(On the record.)

MR. UNRUH: Okay. It was our Pier 11. They were replacing a joint on the southbound. That would be, like, Joint Number 7, I believe, and somebody in their process, there's a diaphragm there, and the top flange comes out and faces south, and somebody had shaved off the edge of that top flange, I don't know, an inch. It could have been a half an inch, might have been an inch and a half, or something like that. Just to know, when I asked the carpenter, "What happened here," I confronted him on it, and he said, "Well, we had to get our forms in there," for his south form work. And I lit into him pretty good and told him

never ever cut anything. So --

BY MR. KIVISTO:

Q. And can you explain a little bit more what member? Was that a stringer up there or --

A. I looked in my plan this morning because --

Q. I might not have all the structure (indiscernible).

MS. BENJAMIN: Have enough information --

BY MR. KIVISTO:

Q. I guess maybe let's just clarify it as far as interview purposes. Was it a transverse member?

A. You'd have to identify it for me. I don't --

Q. It would be this one right here.

A. Right here.

Q. Okay.

A. And where this one ends, there's sets of them off there, and where this one ends, you know, if you're looking at the top of it like that. I don't know if they're -- if they offset a little bit or something, but there was some cutting along the top edge. And I looked at the whole thing. I could see that that's -- that's all I saw there at that time.

Q. Okay.

A. And I probably should have taken a picture. You know, it's --

BY MR. HUGHES:

Q. Do you recall what that carpenter's name is or can you

describe what he looked like?

A. It would have been Mark. That's all I know is his first name.

Q. Okay. How old was he?

A. Forty-five.

Q. Anything distinguishing about him, as far as tall, skinny, short, fat?

A. Short guy, thin guy. He's one of the lead carpenters for PCI.

Q. Okay. Thanks.

BY MR. KIVISTO:

Q. And I think, again, just to clarify, so you said this was Pier 11? So it's not any of the truss spans?

A. No.

Q. It's on the approach span girder. So it will be -- it's one of the pier diaphragm members. And, again, this is Paul Kivisto, in the bridge office. Just trying to determine what member it was, so, again, at Pier 11. It would be a diaphragm member, as near as I can determine?

A. Right.

BY MS. BENJAMIN:

Q. Was that early on in the project, later on in the project? When was that?

A. I'm thinking that was, like, within the first day or two, first couple of days, in our first removal --

BY MR. HUGHES:

Q. Back in May or June?

A. When we first started removals up there.

Q. Would that have been back in May or June?

A. It would have been in June.

BY MS. BENJAMIN:

Q. So it would have been the first on southbound side probably on --

A. Right.

Q. Okay. So you caught it fairly early? Do you know if he tried something like that again?

A. Not that I could see. I mean, we looked at everything as it was going in, and I really don't remember if I told the other inspectors or not.

BY MR. HUGHES:

Q. I think you used the word shaved about a half-inch or cut? About how big an area are we talking about?

A. The flange here is probably four inches across the top, so be at the end of that top flange probably -- I don't -- in square inches, it would be, like, four inches by let's say an inch and a half, or something like that, on the end of it.

MS. BENJAMIN: I don't have any other questions.

MR. HUGHES: Okay. It's 10:13.

(Whereupon, at 10:13 a.m., the interview in the above-entitled matter was concluded.)

CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF:	Major Highway Investigation Collapse of I-35 West Bridge Minneapolis, Minnesota Interview of Harvey Unruh
DOCKET NUMBER:	HWY-07-MH-024
PLACE:	Minneapolis, Minnesota
DATE:	August 20, 2007

was held according to the record, and that this is the original, complete, true and accurate transcript which has been compared to the recording accomplished at the hearing.

_____

Danielle VanRiper
Transcriber