WITNESS INTERVIEW TRANSCRIPT

FIGG Bridge Engineers, Inc.

Miami, FL

HWY18MH009

(295 pages)

Table of Contents

UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

* * * * * * * * * * * * * * * * * *
Investigation of: *
*
PEDESTRIAN BRIDGE COLLAPSE *
MIAMI, FLORIDA * Accident No.: HWY18MH009
MARCH 15, 2018 *
*
* * * * * * * * * * * * * * * * * *

Interview of: DWIGHT DEMPSEY
FIGG Bridge Engineers

Sweetwater City Hall
Sweetwater, Florida

Tuesday,
April 10, 2018

APPEARANCES:

KENNETH BRAGG, Accident Investigator
National Transportation Safety Board

ROBERT ACCETTA, Investigator in Charge
National Transportation Safety Board

DAN WALSH, Senior Highway Accident Investigator
National Transportation Safety Board

REGGIE HOLT, Senior Bridge Engineer
Federal Highway Administration

PATRICIA LEID, Attorney
Clyde & Co.

I N D E X

I N T E R V I E W

(8:57 a.m.)

MR. BRAGG: Today is Tuesday, April 10, 2018. It's 8:57 a.m. We are in the Sweetwater City Hall in Sweetwater, Florida. This interview is in reference to the FIU bridge collapse which occurred in Miami, Florida on March 15, 2018.

My name is Kenny Bragg. I'm an investigator in the Office of Highway Safety. I'm going to start off by going around the room. To my left we have --

MR. WALSH: Dan Walsh with the National Transportation Safety Board.

MR. DEMPSY: Dwight Dempsy with FIGG Bridge Engineers.

MS. LEID: Patricia Leid with Clyde & Co.

MR. ACCETTA: Robert Accetta with the NTSB, investigator in charge.

MR. HOLT: Reggie Holt, Federal Highway Administration.

MR. BRAGG: Okay. Okay, Mr. Dempsy, I'm just going to start off by just asking some background stuff.

INTERVIEW OF DWIGHT DEMPSY

BY MR. BRAGG:

Q. What's your current position and who do you work for?

A. Regional director for FIGG Bridge Engineers.

Q. And how long have you served in that role?

A. Since August of 2012.

Q. And is that the same point in time that you began employment

with FIGG Bridge?
A. No. I started employment in December 2002.
Q. And just in layman's terms, describe your -- what you do as regional director.
A. As regional director, basically in charge of operations coming out of our Southeast Region. That includes project management, personnel management, and business development for the Southeast, managing the team.
Q. And what's your professional background?
A. As a licensed professional engineer --
Q. Yes.
A. -- with the structural emphasis in the state of Hawaii. But it's been solely on bridges.
Q. Okay. And when did you become involved in the FIU Bridge project?
A. At the very beginning during the proposal phase. I think this project was initially advertised in 2014, and that's when we became involved in the project.
Q. And during any of the period in which they moved the bridge or they moved the -- were you actually on-site and did you -- were you on-site here at FIU at any point?
A. I was on-site as an observer during the bridge move. And that was -- and we got down here Friday afternoon and were here through the bridge move on Saturday, March 10th, and then we left at noon.

Q. Okay.

I'm going to let Mr. Holt get into some of the technical issues. I might have some follow-up questions after him.

MR. HOLT: Okay. Reggie Holt, Federal Highway.

BY MR. HOLT:

Q. Hi, Dwight. I got some questions. There's going to be like two themes. I guess one will just touch on the analysis that was performed, just some general questions with that.

A. Sure.

Q. And then the construction and maybe construction issues that were incurred. So I'm going to start with analysis. So there was a design team. We understand that Denney Pate was the engineer of record, signed and sealed the drawings. Can you kind of identify the team and the roles?

A. The team as far as within FIGG or within --

Q. Within FIGG.

A. Within FIGG?

Q. Yeah.

A. I was the design manager, so I managed the design efforts. Denney Pate was the engineer of record, and then we had Manuel Feliciano, one of the technical leads, and we had junior bridge engineers and junior CAD members on some of the, you know, smaller tasks, day-to-day operations. Then we had Franklin Hines on-site on three occasions, and that was simply to support the contractor, provide support on-site. And Eddy Leon was also on-site as part

of that.
Q. Okay. So Franklin Hines -- so you didn't have a CE&I contract for duties on this particular -- so what were the occasions that -- I guess what operations were happening that required Franklin Hines to be on-site?
A. Franklin Hines was on-site during the bridge move or prior to the bridge move. MCM had asked for additional support from the FIGG team in advance of the bridge move, just to -- you know, there wasn't a defined scope. It was just to help support the efforts, the coordination efforts leading up to that bridge move.
Q. Okay, so those 2 days or 3 days, whatever --
A. Yeah, I think got here --
Q. -- pre, post and after.
A. -- there Wednesday and they left Saturday.
Q. So trying to understand the project as a whole. We understand that there was a preliminary design done by others that was 30 percent or something? A design criteria and 30 percent construction docs, I guess, is what we've seen. Was there a preliminary concept handed to your team that you started with or was the concept developed wholly within FIGG?
A. As a part of the RFP, they released preliminary design documents. I would not say it was a 30 percent level design. I would, you know, I would say it was more of a 10 or 15 percent level design that would basically show the geometric -- one potential geometric layout for the bridge. You know, a clear span

over US 41 with a secondary span over the canal. Those plans were -- I don't recall if they were attachments or reference documents to the RFP, but that's what was provided as part of the RFP.

Q. Were design criteria also --

A. Yes.

Q. -- included in that?

A. Yes.

Q. So the bridge type selection, was that made by you or is that made by the -- the 30 percent, the truss aspects and the --

A. That was made -- again, these -- the preliminary plans that we just discussed, those were -- they were not governing criteria as far as you have to have a bridge that looks exactly like this. So the criteria as far as the RFP was flexible for different structure types. So during the proposal process when we were teamed with MCM, we explored different structure types that would meet the RFP required criteria.

Q. Okay. So this design criteria and geometric layout was a part of the RFP for that project --

A. That's correct.

Q. -- so we can get all that through the RFP. Okay.

So can you go through the, I guess, project delivery milestones? So you had an RFP to give you geometric layout, some design criteria. So what were the primary deliverables once you were awarded the contract with FIU?

A. Once we awarded -- and I don't have the exact dates off the

top of my head, but I'll give you a general overview as the process. Once we were awarded the project, probably within the first couple months, we had a meeting with FIU and with FDOT representatives, and I believe the city of Sweetwater was there, to go over the 30 percent level design plans. So we had a series of comments that were received, and we addressed those comments.

And then following that, you know, a certain time later, we broke the bridge design -- basically the project design into various packages, because it was a design-build effort, to every stage with when those activities were occurring in the construction. So the first package was really the bridge foundation packages. And those were broken up into a 90 percent level design package, a 100 percent or final design package, and then an RFC package. So for each one of the design packages for the bridge, it was always broken up into 90 percent, 100 percent or final, and then RFC.

So you had a foundations design packages, you had substructure design packages, and you had superstructure design packages.

Q. And you had a 90/100/RFC for all three of those packages?

A. That's correct. That's correct.

Q. So let's get into some of the more details. We noticed that there were, I guess, two analyses done: A 3D LARSA and a LUSAS analysis?

A. Both of those software packages were used for the design.

That's correct.
Q. And one was a mesh and one was a finite element, like a grid and a finite element that was -- can you elaborate on the use of the two different models and their purposes?
A. Right. The first model was the LARSA 4D software program that was used to develop a 3D stage construction, basically beam, grillage beam model. That was, again, used to analyze the three-dimensional aspects of the bridge, in addition to the post-tensioning in the bridge and at the various phases of construction.

So the second software package was the LUSAS software package, and that was basically a 3D solids model. I mean, they're both finite element modeling, but one was a beam element and one was a solids model. That was used to, again, look at various -- the important phases during construction and in the, and in a final state. And it was also, you know, modeling the post-tensioning effects.
Q. So the force effects that were used in the final component design, which model was used to generate those force effects?
A. They were both used hand in hand, and one -- you know, being able to validate, confirm one model to the other. Where we needed more fine-tuned forces maybe at different areas of discontinuity, you know, we would use the LUSAS model. But they were both used for the design.
Q. So you had these 60 percent, 90 percent, 100 percent

submittals.
A. Ninety --
Q. Well, I mean -- yeah, 90 percent, 100 percent, RFC.
A. No 60.
Q. There was no 60.
A. That's right.
Q. So getting back to -- so there were independent reviews being done by others? I mean, there was an independent review consultant, Louis Berger?
A. That's correct.
Q. So how were they involved in the 90 percent, 100 percent and final package?
A. Well, as part of the process in accordance with the FDOT Plans and Preparation Manual, they're very descriptive on the independent peer review process. But a set of plans in advance of the submittals was given to Louis Berger, and they performed their independent peer review analysis calculations. And the deliverable from them is they provide a certification letter stating that this design package meets the FDOT PPM requirements in accordance with RFP.
Q. So that peer review would typically reconcile or validate primary force effects generated, major components -- it wouldn't go into necessarily all the details, but some of the more important --
A. The FDOT is pretty descriptive on the process for the

independent peer reviews.
Q. So what --
A. So they -- it's the various -- you know, not only with the final design but also dealing with the construction phasing. And, I mean, they have a laundry list of items that are to be checked as part of the independent peer review.
Q. So then, in your experience, Louis Berger followed the requirements of the Plan and Preparation Manual for the Florida DOT in their --
A. That's correct.
Q. Okay. Were other entities -- did other entities review or see these documents? Did Florida -- did the FDOT or any other entity, other than Louis Berger, look at these documents and provide you comments?
A. Yes. These design packages were submitted and basically uploaded onto the FDOT ERC system. And ERC is Electronic Review Comment system. It's basically an electronic database to track comments and responses. So in addition to FIU, and sometimes the City of Sweetwater comments, but predominantly that was used for the FDOT review comments for the bridge design packages.
Q. And did they provide comments on, again, the three packages that you produced?
A. Absolutely. Yes.
Q. Were there comments on the package? I guess you wouldn't have known if there -- so you went right from 30 percent, you

know, even though you say it's a little less than 30 percent, to 90 percent. So there was no intermediate submittal between --

A. Can I stop you right there --

Q. Yeah.

A. -- just to make sure we're clarifying? The 30 percent package that we turned in right after our contract award, those were our plans, design plans. So that was a 30 percent level. The plans that were an attachment to the RFP, those were not. Those were just -- they were for a different structure configuration, different set-up. So those were not 30 percent level plans. I just want to differentiate. I heard you say that, well --

Q. Okay, yeah. I'm sorry. So I missed the 30 percent. So there was a 30 percent submittal --

A. Yes.

Q. -- made, conceptual, I guess, aspects of the bridge --

A. Yes.

Q. -- to Florida DOT, Louis Berger and all the --

A. Not to Louis Berger. Just FIU, FDOT. FDOT is very prescriptive as far as when the independent peer review is engaged and when the certification letters are to be required.

Q. Okay. So there were four submittals in the 30 percent, 90, 100, and then the --

A. Right.

Q. -- contract. Okay. Okay, so getting to the -- more of the

details of the design, were -- how did the design address the limited redundancy of the system? Was there any kind of accommodations? Was there a data a factor or --

A. What do you mean, the limited redundancy of the system?

Q. Well, it was a single truss-line bridge. There was one load path carrying the bridge. It wasn't a multiple girder bridge. It wasn't a two truss-line bridge.

A. I don't know if we would qualify this as a non-redundant system. It had the bridge deck, the canopy, multiple truss members, multiple layers of post-tensioning systems as part of the structural system. This would be very similar to a typical beam girder being placed over traffic.

Q. So there was -- so the bridge wasn't considered limited in redundancy in any way and there were no design aspects to incorporate -- to, I guess, appease the limited redundancy?

A. This structure was not quantified as a non redundant structure.

Q. All right. I get that. So there was no way to factor adjustment or anything.

Was there a need for -- was a local zone or (indiscernible) reinforcing needed for any of the PT bars that were in diagonals?

A. I don't -- for the PT bars, I do not recall. Those are -- the PT shop drawings were developed with VSL or by VSL. And typically, they are designing the local zone reinforcement behind the anchorage. But I don't recall off the top of my head whether any anchorage or local zone reinforcement behind the PT bar anchor

plates.
Q. So did you, in these comments, did you receive any comments that recommended changing any of these critical connections? The, you know -- case in point, the diagonal and vertical connections atop to the (indiscernible) and to the deck?
A. The comments -- could you elaborate? What comments are you referring to?
Q. Well, you had Louis Berger, you had Florida DOT, I guess are two primary comment generators.
A. The review comments.
Q. Technical review comments.
A. Okay.
Q. So did you get a -- receive a technical comment on the -- those critical connections on the bridge?
A. One comment that I recall was from DOT where we added some -- at the nodal regions, we added basically some concrete in the longitudinal direction just to add some additional concrete.
Q. So -- on the longitudinal directions.
A. Along the axis of the bridge.
Q. So it should lengthen the engagement of that node's (indiscernible).
A. That's correct. Not transversely. Longitudinally.
Q. Right. And I think that wraps up the analysis part. So just now we'll focus on, you know, the construction and construction issues or, you know, possible construction issues that were

encountered.

Other than the cracking in the vertical 12 and diagonal 11 that we'll talk about later, were there any other PT or any other issues in the construction that required FIGG's engagement for an engineer comment?

A. There was -- I think prior to there might have been a few pictures here where we were asked to comment. Minor hairline cracking that was -- I would classify it as insignificant. You know, we reviewed it and provided a response back to MCM and FIU and CEI. But that -- I would classify those as typical for a concrete structure. There was nothing --

Q. Do you recall at what point this hairline cracking or what location or what time in the structure --

A. I don't recall the exact locations. It was when, obviously when the piece had already been cast in the casting area.

Q. Right.

A. In the staging area.

Q. Were there any post-tensioning issues incurred during construction? Broken strands? Short elongations? Any that you recall?

A. Not to our knowledge. Again, we were not part of the CEI. We did not have boots on the ground for the operations. But we were not notified by MCM or CEI of any issues with the post-tensioning.

Q. In a similar, I guess, vein, so I guess you established

predicted cambers and everything else? Because you had a fairly well-defined post-tensioning sequence and --

A. Right.

Q. -- how the structure interacted with the falsework. And were there any -- were you aware of any issues with that, or was FIGG ever engaged, say, you know, low or high cambers or deflections, unexpected deflections during the casting?

A. We were not aware of any unexpected deflections during casting, no.

Q. All right. I guess I -- now I'd just like to -- first of all, were there any design field changes? Anything that was -- occurred in the field that required FIGG's review?

A. There was a few minor ones. I would classify those as insignificant. I think the one thing that I've seen gotten wrong in the papers is the 11-foot shift to the north. There's been misconceptions out there that the span length was increased 11 feet, but that -- it was not the case. Basically the entire bridge was picked up, including the supports, foundations, the elevator structures and the stairway towers, everything was picked up and just shifted 11 feet to the north and then set back down on the ground. So as far as -- that was not -- we had to update like a GP&E layout sheet.

Q. Right.

A. And had to coordinate with the geotech to make sure that they were okay, and they had to add a bulkhead wall. But from a

pedestrian bridge design standpoint, that was not a major redesign and all that. So I just wanted to --

Q. Right. So it was just a -- you essentially took the same bridge, you picked it up, you moved it 11 feet --

A. Yeah.

Q. -- to accommodate some sort of lane.

A. The main span did not, did not increase --

Q. Increase. Right.

A. -- in length.

Q. So I guess let's just focus in on the cracking that occurred once -- after the bridge was set. And I just -- I'd be interested in hearing how the Tallahassee design office was engaged, and when you first learned of the cracking and how it was described to you. And again, this is, I guess, the vertical 12/diagonal 11 nodal region.

A. Okay. If I -- can I -- I'd like to step back just a little bit --

Q. That's fine.

A. -- back in time just to kind of lay out the events. So we were here on-site for the bridge move Friday. The bridge move took place starting around 4:45 in the morning on Saturday. The FIGG team was there to, again, support the contractor. We had Franklin Hines and Eddy Leon on-site to further assist. The rest of the FIGG team were pretty much an observer, just support role.

So we monitored the movement of the span as well as, you

know, observed the placement of the span. It was a very controlled movement. The bridge span was placed on the supports in a very, very controlled manner. We were very impressed with the -- with Barnhart in making sure that was placed on the supports very even and making sure that even load distribution. Franklin Hines actually was in a manlift looking at the north bearings, the shim stacks, making sure that it was -- you know, basically all four shim stacks were engaged equally to make sure equal load distribution.

Once the bridge had been placed on this temporary supports on the north side and its permanent bearings on the south side, Franklin Hines walked over -- as well as CEI, walked over the bridge and took a look around to see if there was any problems with the span after the movement, just to do a -- you know, making sure everything looked good. Everything looked fine at that point in time. There was no reports of any cracking or deformations from Franklin Hines or CEI or MCM. So around noontime, we left the site on Saturday and, you know, grabbed a bite to eat and then went on our merry way.

We understood that -- well, I guess I'll move on to Monday. Monday at 4:52 p.m. we received or -- we received an email from Rodrigo Isaza that contained a series of pictures. And they had brief little descriptions of what the pictures represented, but there was no story about, you know, when these pictures were taken. You know, was it before or after certain operations?

There was no, there was no context to those pictures.

Q. You said this would be Monday morning?

A. Monday afternoon.

Q. Afternoon.

A. 4:52 p.m. So the email was actually retrieved or opened up Tuesday morning, probably 7:45 a.m. And I called Rodrigo Isaza, the project manager for MCM. Was like, hey, listen, I saw this email. I didn't receive a phone call from you. I'd like to get the context behind it. When were these pictures taken? When did they occur? And that's when Rodrigo Isaza communicated to me that later on on Saturday, MCM and VSL crews -- VSL was a subcontractor to MCM -- they destressed the temporary PT bars in truss member 11 and 2. That was per design plans. Those are always temporary PT bars. Well, before they destressed those PT bars, CEI and MCM had observed some cracking there at that north end region. And they said that after destressing the bars, it was observed that the cracking had gotten slightly worse after detensioning those PT bars.

So again, we were first notified through this email with no phone calls on Monday afternoon, and then Tuesday morning we got additional information. So immediately we mobilized Denney Pate and other members of the design team to take a look at this. And first and foremost, is this a safety issue? And then two, is, okay, what needs, if anything, what needs to be done? It just needs to be evaluated.

So I think, after we spent about an hour and a half looking at it, we determined that we did not -- with the information available at the time, we did not see this as a safety issue, but we made a recommendation to MCM to go ahead and install an additional shim stack underneath that nodal area where the truss member 12 and 11 frame into, just to provide some additional support. I communicated that to Rodrigo directly over the phone and gave him detailed steps, and then I followed that up with an email probably around 9:30 as far as, okay, this is what we discussed. We don't see this as a safety concern with the information that we have at the time, but you know, these are steps for, you know, installing the shim stacks, and we're going to continue to evaluate that.

So Denney Pate and the rest of the design team continued to evaluate this throughout the course of the day. Later on in the day, from Denney's evaluation, again, confirmed that based on the available information at the time, we did not see this as a safety concern. We were not able to duplicate, you know, the -- exactly what was occurring out there in the field that -- from what we saw based on the pictures that we saw, that this was -- it still had reserve strength and the capacity that would be sufficient to meet the design codes. So that's when Denney was preparing the presentation for the Thursday meetings. But as part of the recommendations coming out of the end of the day Tuesday was to -- based on the observations from MCM and CEI that the cracks got a

little bit worse when they detensioned the PT bars, the direction from the design team was, well, let's go back one step backwards, you know, from the design standpoint and go ahead and reinstall those PT bars on the north side only for truss member 11. Not truss member 2; only truss member 11.

And we gave very explicit instructions. Again, this was done verbally over the phone and then followed up with an email. So there was no chance of miscommunication there. But we instructed them -- there's two temporary PT bars in truss member 11. And we instructed them to go ahead and stress the top temporary PT bar to 50 kips and then go and stress the bottom PT bar to 50 kips, and then go back to the top bar to 100 kips, to 100 kips. And just do that 50-kip lockstep.

And we recommended that CEI observe. If they saw anything that was -- you know, if they saw the situation, you know, not improving, then they -- FIGG needs to be notified. So that was the very explicit instructions that we gave them, again, to bring back to a previous statical scheme where we know that the conditions were improved.

Q. Okay. I was just -- I'll go back earlier, but for the stressing operation, so it was 50 kip top, 50 kip bottom, back and forth?

A. Yeah.

Q. Not 50 kips to full stress one tendon and 50 kips increments to full stress on the bottom tendon.

A. No, absolutely not.
Q. There was a top/bottom --
A. Yes.
Q. -- sequence that was provided in an email. Do we have a copy? Can we get a copy of that email --
A. Sure.
Q. -- just describing that operation?
MR. BRAGG: And actually the whole chain of conversations about those cracking.
MR. HOLT: Right.
MR. BRAGG: Not just that one particular one.
MS. LEID: Two emails, I think, we're talking about, then.
MR. DEMPSY: Yes, two emails.
MR. HOLT: Okay.
MS. LEID: And they're both on Tuesday.
MR. DEMPSY: Yeah, one's like 9:30 a.m. and one's at like 5:20 p.m.
MS. LEID: Thirteenth. Okay.
BY MR. HOLT:
Q. So, in summary, so how was the retensioning of the diagonal 11 bars and the shimming under pier 2 intended to address the cracking? What was the logic, I guess?
A. Well, the shim stacks underneath the node 11/12 region was to provide it some additional support.
Q. Vertical support.

A. Vertical support. That's correct. The PT bars is basically, again, based on what was described that the condition worsened when the temporary PT bars were detensioned. That was from the design standpoint, determined that the -- go ahead and restress the PT bars to bring it back to that previous state where the conditions were reported to be slightly improved. That was the intent.

Q. So you mentioned the need for vertical support. Were there signs of distress that indicated that it needed support from the bottom? I mean, was there cracking evident that showed that?

A. There was cracks on the north diaphragm. But it's -- that north support was more of a belt and suspenders. You know, it was just -- it'd probably be good. It's something very easy to do. Not a, not a whole lot to it. It'd be something that we recommended that should be done.

Q. Was there a cracking in -- so there was cracking at the deck diagonal/vertical area, nodal region. Was there cracking in that region in other locations?

A. The pictures provided by MCM had shown some cracks on the north diaphragm.

Q. So the underside, the diaphragm that -- the block.

A. The diaphragm. Right.

Q. That was on -- which faces were showing signs of distress?

A. It was on the north face of that north diaphragm wall.

Q. The north face of the bottom, I guess, five or -- oh, the

north face. The back face?
A. Exactly.
Q. How about the other faces? The bottom face and the south face?
A. We did not have pictures. We only had pictures of the north face.
MR. HOLT: Are those pictures included in the request for emails that we made earlier?
MS. LEID: I don't have the request with me. I'm sorry. You don't have a copy of it?
MR. HOLT: We just -- no, we just asked for emails about -- you said there were two.
MS. LEID: Of course. You're going to get those.
MR. HOLT: I was wondering if those pictures were included in that email chain.
MR. DEMPSY: They were in a --
MS. LEID: Separate.
MR. DEMPSY: I got that email on Monday, 4:52 I think it was. So we can provide that email.
MR. HOLT: Okay, that -- yeah, I'd just like to see that also.
MS. LEID: The photos and the two emails?
MR. HOLT: Yeah.
MS. LEID: Okay.
BY MR. HOLT:

Q. So you stated you weren't able to replicate the distress observed through analytical methods. Were you looking at other remedial measures to be made in the future?
A. Part of the discussion -- again, you know, leading up to the Thursday's meeting, the initial thoughts from the design team was additional measures were not being contemplated at that time. They were discussed as a group during the Thursday meeting, and that was one of the action items for Denney Pate coming out of that meeting, is to look at a temporary restraint mechanism to help provide additional reserve capacity there for that north end.
Q. So was the step forward to go ahead and design and develop a temporary restraint mechanism?
A. The step forward is to look at concepts.
Q. Concepts.
A. Denney had committed to providing concepts to MCM to get their input by Saturday.
Q. So the -- one of the action items from that PowerPoint presentation/meeting was that further remedial measures were going to be made and you were going to look at these restraint mechanism concepts for these future --
A. Yeah, I don't know if there was a commitment that they were absolutely going to be made, but we were going to look into the various options to -- that's what the action item was. To look at those options.
Q. So you mentioned -- I forget the person's name, but after the

setting of the bridge, you made an assessment of the condition of the bridge? You know, I guess, soffit, deck, underside, both --

A. Franklin Hines was there --

Q. Franklin Hines.

A. -- to make observations to indicate that there was no cracking observed or anything like that after the bridge moved.

Q. Okay. So there was no -- the cracking that was -- you know, the picture was sent to you on the back face of the diaphragm, and the deck and the nodal region was not there --

A. It was not there.

Q. -- shortly after --

A. No.

Q. So since you were there, so it was set approximately at noon, I guess?

A. I think -- yeah, I mean the final operations probably finished up around 11, 11:15 and we left the site around noon.

Q. So your assessment happened quickly afterwards, then you signed off and left.

A. Well, there was a --

Q. I'm trying to get a, I'm trying to get a time. Because things happened within hours, it sounds like, so I'm --

A. Right. There was no formal sign-off. I mean, we were -- again, we're not CEI, so we don't have the -- you know, CEI is the one doing the appropriate sign-offs and all that. We just -- because Franklin was there, he got up on the bridge and took a

look around at all the different components, and nothing was observed. No deformations, no cracking.

Q. And at this point the bridge was completely resting on its bearings. The SPMTs were thoroughly disengaged and --

A. Dislodged. Yeah.

Q. Did you know -- did Barnhart do a similar assessment pre- and post-move?

A. I can't comment to that. Barnhart was contracted through MCM so we --

Q. But you didn't see Barnhart on the deck or looking around?

A. I did not observe that, but I was not looking for that either.

MR. HOLT: I think that's it for me. Thank you.

MR. DEMPSY: Okay.

MR. ACCETTA: I have a couple of -- this is Robert. I have a few follow-up questions.

MR. BRAGG: Could you speak up? Could you speak up just as much as you can?

MR. ACCETTA: Yeah, as much as I can. The allergies are doing this to my voice. Excuse me.

BY MR. ACCETTA:

Q. I just want to make sure I understand that 11-foot move. You said it was moved 11 foot north? It was my understanding that -- it wasn't east or west, the 11-foot move? It was just moved north.

A. That's correct.
Q. Okay. All right, so that was a misconception that I had been told on-scene. And then you just, you talked about option memos. Did you ever complete option memos?
A. Option memos for?
Q. I think this was towards the very end of the conversation, when --
MR. HOLT: Reggie Holt, Federal Highway, speaking. You talked about additional measures and the temporary restraint mechanic concepts --
MR. DEMPSY: Right.
MR. HOLT: -- that were being developed, I guess, but you're talking to --
MR. ACCETTA: Yeah, did you ever (indiscernible)?
MR. HOLT: Were they ever developed or --
MR. DEMPSY: Well, Denney left the site at 11 a.m. to board a plane back to Tallahassee where he was going to work on this and provide information back to MCM by Saturday. So obviously this happened when he was still up in the air. So these were not developed.
MR. ACCETTA: All right. That's all I have. Thank you.
MR. BRAGG: Okay. Dan, do you have any questions?
MR. WALSH: Dan Walsh with the National Transportation Safety Board.
BY MR. WALSH:

Q. I'm going to ask you similar questions that -- as presented by Mr. Holt. So if I ask a question that's similar in nature, I apologize.
A. Just explain it again.
Q. But please answer the question --
A. Sure.
Q. -- to the best of your ability.
A. Sure.
Q. You mentioned that the photos were sent -- that you received them on, I believe, Monday, March 12, the cracking, by an email.
A. Right.
Q. Is that, is that correct?
A. That's correct.
Q. Okay. Can you tell us how you analyzed and what tools you used to analyze those cracks and determine that they were not a safety concern?
A. The tools are basically -- all the evaluations and findings from that, from that analysis was presented as part of that presentation that was shown during the Thursday meeting. So it was a combination of independent design checks, independent calculations that were prepared by Denney leading up to that meeting, in addition to pulling, you know, forces and loads from the, from the LARSA models and from the LUSAS design models. So it is, it was basically an independent reverification that was done by Denney Pate, and then basically the details of that

evaluation were presented as part of that Thursday meeting.
Q. Okay. So calculations were performed and stress diagrams were developed as part of the PowerPoint that was presented at that meeting on Thursday morning.
A. Yeah, the calculations were shown as part of that meeting.
Q. Okay. Were there any additional calculations done that were not contained in the PowerPoint?
A. Not to my knowledge. I mean, there might be, you know -- obviously we're not taking snapshot pictures of the calculation pages, the engineering calc book pages and, you know, putting a screen capture on the presentation. We're summarizing in the presentation. So I just want to clarify that. But the point of the presentation was documenting -- here are the steps that were taken by the design team to verify that, you know, we did not see this as a safety issue. And that was all presented as part of that presentation.
Q. Okay. I'm just getting to the -- if there were independent calculations that were performed, we'd like to have a copy of those independent calculations that are --
A. The calculations that provide -- that Denney put together?
Q. Yes. Yes.
A. Okay.
Q. So I'm requesting a copy of all calculations and all stress diagrams that were performed leading up to the PowerPoint presentation.

A. Okay.
Q. And we'd like to get a copy of that.
MS. LEID: Do you have the complete PowerPoint presentation --
MR. WALSH: No. No, we don't.
MS. LEID: -- in your possession? Okay.
MR. WALSH: No, we don't.
MS. LEID: I'm going to add that. Okay.
MR. WALSH: And I was leading up to that as well, is that we've requested that and we have not received a copy of that yet. The original PowerPoint presentation.
MR. DEMPSY: Okay.
MR. WALSH: So we're requesting all calculations that were done as part of that.
MS. LEID: From the moment that we've seen the photos with the cracks?
MR. WALSH: That's correct.
MS. LEID: And the stress diagrams.
MR. WALSH: That's correct.
MS. LEID: Okay.
MR. WALSH: And I would, I would hope that they've been preserved, that they -- okay. All right.
BY MR. WALSH:
Q. So FIGG recommended the number 11 post-tensioning bars be restressed --

A. That's correct.
Q. -- on Thursday. Can you talk us -- can you tell us how you reached that conclusion?
A. It was communicated to us on Tuesday morning from discussions with MCM that the cracks were observed on that north region prior to detensioning the PT bars in truss member 11. And when those PT bars had been destressed, those cracks tend to -- the situation did not improve. So based on that knowledge, the intent was for the design team to go ahead and go back one step to the, to the scheme where those temporary PT bars on the north side were restressed.
Q. Okay. And who at FIGG made the final decision that the restressing number 11 PT bars and the observance of the cracks was not a safety concern? Who made that ultimate decision?
A. That was collectively discussed as a team with Denney Pate and Alan Phipps and myself, as well as, you know, Franklin Hines and Eddy Leon since they were there on-site. Obviously they didn't see any of this. But that was collectively decided on as a team, that that was the right thing to do. And then that was communicated by myself to MCM both over the phone and then followed up with an email.
Q. Okay. Do you believe the restressing of the number 11 PT bars was a change to the design plans?
A. Absolutely not. Absolutely not.
Q. Was it recommended in the design plans for restressing?

A. It was, it was a statical scheme for the bridge. So that statical scheme was represented in the bridge plans.
Q. But I -- the specific recommendation to restress the number 11 PT bar on Thursday, March 15, was that a recommendation that was in the design plans?
A. Well, that -- I mean it was, it was a statical scheme. It's almost like if I'm placing a girder on bearing supports and I place it down the first time and it doesn't fall down exactly as intended, I'm going to pick it up, reposition it and then set it back down. It was -- in my mind, that's a similar occurrence here. So it was a statical scheme. It was basically a stage of construction that was detailed in the plans that we were going back to.
Q. Okay. Was it a similar recommendation as the destressing of the number 2 and number 11 bars that was specifically recommended in the design plans?
A. Could you say that again? I wasn't --
Q. Was the restressing of the number 11 PT bar that was conducted on Thursday, March 15 -- was that a similar recommendation as the recommendation to destress the number 2 and number 11 bars?
A. They were both -- if I understand your question correctly, they were both statical schemes or construction stages as outlined in the, in the bridge plans. Did that answer the question?
Q. No, I understand that the restressing of the number 11 bars

was to address cracking that was observed. Was that part -- was the restressing of the number 11 bars called for in the design plans? Or was it a something that was, that was recommended as part of the cracks that were -- that you had obtained from MCM?
A. Well, if there was, if there was no cracks, I don't think the intent would be to go back in time to go ahead and restress the PT bars that are on the north side.
Q. Okay. So do you believe the restressing of the number 11 PT bars was a manipulation of loads on a member that was not called for in the design plans?
A. No, I do not agree with that.
Q. Was an independent review done of the restressing of the number 11 PT bars?
A. An independent review was done on the statical scheme where those PT bars, temporary PT bars, were stressed. So that -- again, we were -- this is not a new phase. This is not a new statical scheme or a phase that the structure was seeing. This was basically going back to Saturday when that span was in place. So this was not a new structural scheme, structural system. So that's -- I think that's the differentiator there.
Q. Do you, do you recall the Corradino Group who was doing the post-tensioning inspection? Were they present during the restressing?
A. The Corradino Group?
Q. Correct. The Corradino Group was the consultant that did the

post-tensioning inspection for Bolton Perez Associates.
A. I was not aware of that.
Q. Got you. Okay.
A. Again, we're not part of the CEI team. I just -- CEI was Bolton Perez.
Q. Got it.
A. I didn't, I did not -- was not aware of that.
Q. Were you aware that -- were they present during the inspection of the restressing of the number 11 PT bar?
A. We were not on-site, so I don't know.
Q. Okay. So you sent an email giving direction to the restressing of the number 11 PT bar --
A. That's correct.
Q. -- to MCM. Can you describe exactly what was contained in that email?
A. That would be the second email on Tuesday afternoon. So this was sent after I discussed over the phone with Rodrigo about what we were going to be recommending. And the email was -- off the top of my memory is that, you know, this -- again, we don't see this as a safety concern. But we have a recommendation to, you know, provide some additional reserve capacity in the, in the structure to improve the conditions, so to go ahead and restress the temporary PT bars in truss member 11. And the specific procedures was to go ahead and restress the top PT bar to 50 kips. And then go down to the bottom PT bar, stress it to 50 kips. And

then go to the top and stress that to 100 kips, and then move to the bottom -- basically go back and forth between top and bottom PT bar in 50-kip increments until the full -- the original PT bar stressing force was achieved. And we made a recommendation that CEI should observe the structure, and if anything of importance is noted, that, you know, they need to stop. You know, they need to notify FIGG immediately.

Q. As early -- as stated earlier, we'd like to get a copy of that email and then the --

MS. LEID: Yes.

MR. WALSH: -- first email --

MR. DEMPSY: Okay.

MR. WALSH: -- that was mentioned. And then also the PowerPoint.

MS. LEID: You wouldn't have the email on your phone, would you?

MR. DEMPSY: Do I have my email?

MS. LEID: On the phone.

MR. DEMPSY: I could probably, you know, with some time, I can --

MS. LEID: That's okay.

MR. DEMPSY: -- find it, but yeah. I have it somewhere.

MS. LEID: Okay. Are we producing to -- who are we producing to?

MR. ACCETTA: To me.

MS. LEID: To you.

MR. ACCETTA: Yeah.

MS. LEID: Okay. Okay.

BY MR. WALSH:

Q. So when you saw the cracks that were sent to you on Monday, March 12, did you contact the Florida DOT regarding that?

A. We did Tuesday afternoon after we've done some further evaluation, you know, just as a courtesy call. Again we're -- we know Tom Andres, who works in FDOT's central office as part of their bridge design group. He was one of the primary reviewers of all the bridge design plans, and so we know Tom fairly well. But we left a message with Tom -- I don't know. Tuesday afternoon, probably 4:30 or so, if I had to guess. Four o'clock. And you know, it was simply a courtesy call just saying, hey, I want to let you know that we're looking at this. Just want to give you a head's up; you're probably going to see something coming down the pipeline. But it was, it was not to -- hey, there's a serious situation. It was simply just a courtesy call just because of our relationship with Tom Andres.

Q. Did you compare the cracks to Florida DOT's disposition on cracked concrete?

A. That wasn't -- it was simply evaluation of, you know, what could cause the cracks. It was not compared to the FDOT disposition. To my knowledge, FDOT disposition is more along the treatment of the cracks, like, you know, final condition

treatment.
Q. So are you aware of Florida DOT's disposition of cracked concrete that describes the procedures for classification of cracks to determine the appropriate repair, rejection and replacement?
A. I'm vaguely familiar, but again, that's more the final condition state. This was a temporary condition state. That was not the focus of this evaluation at this time. Part of Denney's evaluation and the meeting on Thursday.
Q. Were you present with Mr. Pate during the walkthrough of the main span prior to the meeting on Thursday morning in which you observed cracks on the north side?
A. No, I was not. I was, I was at the meeting via conference call. I was, I was in Tallahassee.
Q. The cracks appeared to be one inch wide, that were observed by Bolton Perez and Associates.
A. That was never communicated to the FIGG team. Again, all we had was the pictures that were provided to us and a conversation I had with MCM, Rodrigo. But never crack width of one inch. That would -- that was never communicated.
Q. Okay. There are photographs that were taken by Bolton Perez that show measurements of one inch wide. Would you believe that cracks that wide would require the bridge to be shut down immediately for repairs?
A. I mean that's -- based on -- again, each picture, each

situation is unique. Without seeing what this picture -- where this crack was at, I can't -- I would not be able to answer that. All we were provided was the information as part of that Monday email, 4:52. We were not -- we did not see this reported picture from Bolton Perez.

Q. Did FIGG enter into a contract with Louis Berger to conduct an independent review?

A. Yes. Yeah.

Q. We'd like to have a copy of that contract. Was that a contract between FIGG directly and Louis Berger?

A. Yes.

Q. It was not a contract that was done -- a joint contract between Louis Berger and the joint venture of FIGG and MCM?

A. Well, FIGG and MCM is not a joint venture. MCM is the lead, and we are subcontracted to MCM.

Q. Okay. So the contract with Louis Berger was between FIGG and Louis Berger.

A. That's correct. That's correct.

Q. Is it customary for the engineer of record to enter into a contract with the independent review consultant, or does the owner customarily enter into the contract with the independent review consultant?

A. I mean, each project, each state is slightly different. I know that the arrangements here -- I know FDOT -- as part of the independent peer review, we had to submit the résumé and the

information on the Louis Berger Group to FDOT for approval. And that was, well, that was ultimately approved. So I can't speak to whether that's any different than any other project.

Q. So FIGG paid Louis Berger the fees. FIGG paid those fees associated with the independent review done by Louis Berger.

A. Right. MCM paid FIGG. FIGG paid --

Q. Louis Berger.

A. -- Louis Berger. That's correct.

Q. Okay. Are you aware that Louis Berger was not on Florida DOT's prequalification list to perform work on complex bridge design concrete projects when they performed the independent review?

A. To my knowledge, I believe that statement to be not correct. During the time that the independent peer review was performed, the Louis Berger Group was in the process of acquiring -- they had already acquired Ammann & Whitney. So at that time, the -- it was kind of confusing. The Louis Berger Group had their prequals split up between Ammann & Whitney and the Louis Berger Group. So all of that information, including the résumés of the individuals performing the work, were provided to the FDOT for approval. And obviously they approved and we moved forward. But they did have all of the prequalifications, including the -- or they did have their prequalification for the complex concrete bridge.

Q. Since you entered into a contract with Louis Berger, did you check that information?

A. Yes. We were --
Q. They were on the Florida DOT's prequalification list.
A. Yes. Yes.
Q. You did.
A. Yes.
Q. You are the engineer of record on the project. Are you also the contractor's engineer of record or the specialty engineer?
A. No, we were not the contractor's engineer of record or the specialty engineer.
Q. Whose responsibility is it to close the bridge if it is determined to be unsafe?
A. I'm not sure who has the authority to close the bridge, whether that's CEI. Obviously if we, FIGG, felt like there was a need to close the bridge, you know, we would make a recommendation to MCM as such. But we were not a part of the -- and again, we're not part of the CEI team with boots on the ground. So I'm not sure who has that, who has that authority.
Q. The contractor, MCM, indicated that he would first need to check with the engineer of record before closing a bridge if it was determined to be unsafe, even if the engineer of record was not on-site or immediately available by telephone. Do you agree with that?
A. No. If there's, if there's a concern of safety, they don't need to contact people. They need to make the decision. So I would not agree with that statement. No.

Q. If nodal area member 11 and 12 was in its most vulnerable condition without the back span connected, was there any consideration for constructing the back span first and then moving the main span into place, shortening the time necessary to make the connection between the main span and the back span?
A. I mean, it was really working with the contractor as far as the sequence on the -- how they wanted to erect the bridge: the first -- the main span first followed by the back span. I guess I'm not following -- there was not a design requirement to dictate you have to put the back span first and then the main span, I guess is what I'm getting at.
Q. My question really is looking at the sequence of construction. And if node number 11 and 12 is in its vulnerable condition without the back span connected, was there any consideration for constructing the back span first?
A. I mean, I kind of see that as a series of concurrent issues happening on top of each other. I mean, it's similar like a traditional bridge. If you had this pure column that supports these two spans, goes out, and then you have this additional pure column go out, you know, what happens to the bridge? I mean, obviously that would not be good for the bridge. So investigating or contemplating the fact that you would have multiple series of members that were a problem, that was not contemplated as part of the design.
Q. Why was it so important to move the main span into place

first before constructing the back span?
A. I don't think it was necessarily -- why it was so important. That was just the steps, the process that, you know, MCM wanted to, wanted to erect the bridge in. I don't think there was, like, it has to be done this way. I mean, it -- I mean, that's just the way the direction sequence was constructed.
Q. You mentioned the governing criteria earlier with Mr. Holt. Was the accelerated bridge construction aspect of the project, was that a governing criteria or not?
A. When you say "criteria," when I was mentioning it with Mr. Holt, what criteria are we talking about? The RFP criteria or --
Q. Yes.
A. As part of the RFP criteria, they had, they had a series of deliverables that were required that were linked to the accelerated bridge construction. You know, they wanted a bridge movement plan and a bridge monitoring plan. Those are the type of things that would be coinciding with the accelerated bridge construction technique.
Q. Was that part of the governing criteria of the project, that it be an accelerated bridge construction project?
A. I don't think there was a criteria where it had to be accelerated bridge construction, off the top of my head. I think that they had it in RFP that, if accelerated bridge construction techniques are used, these are the processes or the deliverables that are going to need to be required. Because I don't, I don't

recall FIU as part of the RFP mandating that you have to have accelerated bridge construction as part of this project.
Q. Okay. Was there a pitch to the structure when it was casted into place, for the main span?
A. A pitch?
Q. Pitch.
A. Could you define -- I'm not following the -- it's probably just the terminology.
Q. On one end, was it more elevated than the other end?
A. Yeah, there was a -- the vertical profile was as such that FIU had a requirement that any runoff or bridge drainage had to go to FIU campus to the south. So there was a 1 percent profile.
Q. And was there a similar pitch when it was placed on the piers on Saturday, March 10?
A. Yes.
Q. There is a similar pitch.
A. Yes.
Q. Okay. Is it the same elevation difference?
A. Well, let me, let me just make sure that we're saying the same things as -- the vertical profile of the bridge at that 1 percent grade, that's -- when it was placed on the supports, it had the 1 percent grade. So does that answer your question?
Q. Yes.
A. Okay.
MR. WALSH: I don't have any further questions.

MR. BRAGG: Okay. Go ahead.

MR. HOLT: Well, I was just --

MR. BRAGG: Reggie.

MR. HOLT: Based on the -- Reggie Holt -- previous questioning, just a couple follow-up.

BY MR. HOLT:

Q. So you did not consider retensioning the bars in diagonal 11 as a field design change or --

A. No, it did not constitute a field design change.

Q. We talked about the calculations that went into the -- I guess verifying the worthiness of the proposed remedial measures. I mean, were the -- the post-tensioning wasn't anticipated being placed during service? So were all the service load conditions look at? You know, live load, when -- creep and shrinkage long-term effects on that element now that has 400 kips in compression --

A. You talking about the PT bar? The temporary PT bars, if they were to remain in place?

Q. Well, you said they were. I mean, when you retensioned them --

A. Right.

Q. -- you talked about calculations that were done to verify that these remedial measures were adequate. But on the other -- in addition to that, the in-service condition for that node and that element is now changed from what was used in the original

design.
A. But the temporary PT bars were never intended to remain fully stressed in service.
Q. But they are now. So the stresses imparted on the node and on the diagonal are seeing 400 kips in service stresses now that they were never captured in the original design.
A. That's incorrect, because that was a statical scheme. You know, as part of the original design, we -- that statical scheme of that bridge span on -- resting on supports with the temporary PT bars stressed, that was investigated as part of the original design.
Q. Okay. Then did that design in that point in time also look at long-term creep and shrinkage even though you were only a couple days in? Look at live load to 90 pounds of square foot on the bridge even though (indiscernible) --
A. The live load, the live load associated with, like, pedestrians?
Q. Yeah.
A. This is a temporary condition during construction.
Q. Right, but they're -- right, but what we're saying is the temporary condition is no longer temporary; it's permanent.
A. But that was not the case. You could -- the intent was to retension the PT bars up till a point in time where, okay, maybe the back span is in place and the -- you know, you have continuity across that pylon. But it was never the intent to keep those PT

bars in place.
Q. So they were going to be -- okay. The first time I've ever heard this. So they were intended to be --
A. Temporary.
Q. -- detensioned --
A. Yes.
Q. -- a second time --
A. Yes.
Q. -- before they were, before --
A. Before the final structure. Absolutely. We all recognized from a design engineer standpoint that's a compression member. So that's, that was not the intent.
Q. Okay. So that -- the reason for my confusion was that I had -- I misunderstood the intent of that. And also it's a -- looking through a few documents, there are a couple other initials on calcs and other documents. EDL, I guess, is Eddy Leon that you mentioned.
A. Yes.
Q. And WDP?
A. That's Denney Pate.
Q. Oh. Denney's his middle name. Okay.
A. Yeah.
Q. And HF or an MF? I can't tell by --
A. MF is Manuel Feliciano.
Q. I see. Manuel Feliciano. Okay.

MR. HOLT: So I think I -- that's it for me. Thank you.

MR. BRAGG: Robert, you have any questions?

MR. ACCETTA: You sure we have -- this is Robert Accetta with the NTSB.

BY MR. ACCETTA:

Q. I'm sure we have this information, but when it was prior to being moved into place, what were they pretensioned to? Do you know?

A. Off the top of my head, I believe those temporary PT bars in truss member 11 that you're referring to were stressed to 280 kips, off the top of my head.

Q. 280. And then in the process of retensioning them 50 kips at a time --

A. Right. Right.

Q. -- what were they supposed to be retensioned to?

A. To their original force, the 280 kips.

Q. 280. Okay.

A. Yeah, so changing nothing from that original -- that previous design step.

Q. Do we have any idea of what stage they were at at the time of the collapse?

MR. BRAGG: This is Kenny Bragg. The employee we interviewed yesterday said they had just finished the final --

MR. ACCETTA: Okay, so --

MR. DEMPSY: 280 kips.

MR. ACCETTA: 280. Okay. All right, those are the only questions I had.

MR. DEMPSY: And that -- I mean, I don't know if I have -- that was the one thing that I -- we noticed and we were kind of taken aback by when we saw the NTSB public announcement or public update. I think it was March 20, or probably less than a week after this date. There was a statement made that the crews had just finished restressing the PT bars on the south side and then had finished stressing one of the PT bars on the north side. And that was -- it was, like, one, like, was the south side. There was never any instructions or any direction to mess with any PT bars on the, on the south side. And on the north side, the intent was always the 50 kips/50 kips. When we saw that one PT bar was stressed, like, wait a minute. Is this -- was that actually what happened, or was that -- was just a miscommunication?

MR. BRAGG: That's why we preface everything with, this is preliminary information.

MR. DEMPSY: Yes.

MR. BRAGG: We don't always get accurate information when we're on-scene.

MR. DEMPSY: We just want to make sure. Again, we weren't on the site, but I was like, well, that's entirely different than what was communicated to the teams on-site.

MR. BRAGG: Correct. That's what we were told when we arrived, when we arrived on scene.

MR. DEMPSY: Yeah.

MR. BRAGG: And that's why they always say this is, this is subject to change.

MR. DEMPSY: Okay. So it's been clarified since then.

MR. BRAGG: Yes.

MR. DEMPSY: Okay. Okay, good. Very good.

MR. BRAGG: Can we review the deliverables, please? Review the requests for information --

MS. LEID: Sure. Sure, sure, sure.

MR. BRAGG: -- or documents that we've --

MS. LEID: I have the -- put a date on this. This would have been March 13. There were two emails on Tuesday. They go from Dwight Dempsy to Rodrigo Isaza. And they're going to be confirming two telephone conversations about photos that were -- while they arrived electronically Monday late in the day, they were not seen and reviewed till Tuesday morning. The photos that we received from Rodrigo, regardless of the quality, through an email, we're going to produce those also. We're going to look at the full PowerPoint presentation of March 15 and we're going to produce that to you, along with independent calculations or stress diagrams that may not have been included in that PowerPoint for whatever reason, for presentation purposes.

I'm out of items.

MR. BRAGG: Let's see. I have -- I did have some additional requests.

MS. LEID: Oh I'm sorry. A contract with --

MR. BRAGG: Yes. Louis Berger --

MS. LEID: -- Louis Berger and FIGG.

MR. BRAGG: Yes.

MS. LEID: Sorry. You have our contract with MCM.

MR. BRAGG: Yes.

MS. LEID: Okay.

MR. BRAGG: Any further questions?

The time is now 10:11 a.m. We will conclude the interview. Thank you.

(Whereupon, the interview was concluded.)

CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF:	PEDESTRIAN BRIDGE COLLAPSE MIAMI, FLORIDA MARCH 15, 2018 Interview of Dwight Dempsy
ACCIDENT NO.:	HWY18MH009
PLACE:	Sweetwater, Florida
DATE:	April 10, 2018

was held according to the record, and that this is the original, complete, true and accurate transcript which has been transcribed to the best of my skill and ability.

[redacted]

Eileen Gonzalez
Transcriber

UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

* * * * * * * * * * * * * * * * * *
Investigation of: *
*
PEDESTRIAN BRIDGE COLLAPSE *
MIAMI, FLORIDA * Accident No.: HWY18MH009
MARCH 15, 2018 *
*
* * * * * * * * * * * * * * * * * *

Interview of: MANUEL FELICIANO
FIGG Bridge Engineers

Law Offices of Clyde & Co.
Miami, Florida

Thursday,
June 28, 2018

APPEARANCES:

KENNETH BRAGG, Senior Human Performance Investigator
National Transportation Safety Board

DANIEL WALSH, Senior Highway Accident Investigator
National Transportation Safety Board

ROBERT ACETTA, Investigator in Charge
National Transportation Safety Board

REGGIE HOLT, Senior Bridge Engineer-Concrete Specialist
Federal Highway Administration (FHA)

PATRICIA A. LEID, Senior Counsel
Clyde & Company
(On behalf of FIGG)

I N D E X

I N T E R V I E W

(11:37 a.m.)

MR. BRAGG: Today is Thursday, June 28. It's 11:37 a.m. We are in the Law Offices of Clyde & Company here in Miami, Florida.

This interview is in reference to the FIU bridge collapse, which occurred on March 15, 2018, in Miami, Florida. My name is Kenny Bragg. I'm a senior investigator in the Office of Highway Safety.

And I'm going to go around the room and ask everyone to identify themselves and their organization.

MR. WALSH: Dan Walsh with the National Transportation Safety Board.

MR. HOLT: Reggie Holt, Federal Highway Administration.

MR. ACETTA: Robert Acetta with the National Transportation Safety Board.

MS. LEID: Patricia Leid, with Clyde & Co.

MR. FELICIANO: Manuel Feliciano with FIGG.

INTERVIEW OF MANUEL FELICIANO

BY MR. BRAGG:

Q. Can you spell your name, please?

A. M-a-n-u-e-l, Manuel. My last name, Feliciano, F-e-l-i-c-i-a-n-o.

Q. All right. Thank you. Who are you currently employed with?

A. With FIGG.

Q. FIGG Bridge Group?

A. FIGG Bridge Engineers.
Q. Okay. And how long have you been employed there?
A. Now it's going to be 15 years.
Q. Fifteen years. And what's your current position with FIGG?
A. Regional bridge engineer.
Q. And how long have you served in that capacity?
A. Probably maybe the last 2 years.
Q. Last 2 years. And what role did you take prior to that?
A. Assistant regional bridge engineer.
Q. Okay. And you had that for the remaining time, or did you serve in other roles as well?
A. Yeah, as a bridge engineer prior to that.
Q. Okay.
A. As a senior bridge engineer.
Q. Okay. And when did you become involved in the FIU bridge project?
A. Actually, I got involved in the proposal phase for that job.
Q. And when did that take place approximately?
A. That was 2015, I believe.
Q. And since then, what has your role been?
A. Well, my role have been like -- as a senior engineer, I was overseeing the design, overseeing the production of the design drawings, coordinating the sub-consultant, you know, the technical engineer, the CADD guys, helping Mr. Denney Pate with the design, also assisting Dwight Dempsey with the project

management.
Q. Okay. And who do you directly report to?
A. To Dwight Dempsey.
Q. Dwight Dempsey. So let's talk a little bit about the -- in the weeks leading up to the bridge collapse, did you have an occasion in which you visited the construction site?
A. No, I didn't.
Q. Have you ever visited the construction site?
A. I was in the construction site when there was no construction activity, you know, during the proposal phase. I went to the pre-construction meeting too.
Q. Okay.
A. That was before any -- you know, trailer were there or anything like that.
Q. Okay. And did you go to the site when the collapse occurred?
A. Never.
Q. Never?
A. Uh-uh.
Q. Okay. And where are you based out of?
A. Tallahassee.
Q. Tallahassee. Okay. Great.
MR. BRAGG: I'm going to let Dan start.
BY MR. WALSH:
Q. Dan Walsh with the NTSB.
Manuel, did you have any communication with -- or

coordination with Structural Technologies/VSL, as part of the project?
A. No.
Q. Okay. Did you have any coordination with the Florida Department of Transportation as part of the bridge design submittals?
A. Yes. I went to the central office a couple of time.
Q. Okay. And who did you coordinate with there?
A. There was Robert Robertson, who is the bridge engineer, the state bridge engineer, and then Tom Andres was there, Terry something -- I don't remember the third person that was there. There was another person there in all of those meetings.
Q. Did you encounter any difficulties working with the Florida DOT?
A. I don't believe it. I think that there were good comments, what they gave us. We are trying to resolve those comments, you know, through meetings or just on secondary questions. That was the normal process.
Q. Did you feel that you addressed all of Florida DOT's comments?
A. Yeah, I believe so, because if we haven't addressed all their comment, they wouldn't accept our RFC plans.
Q. Okay. I have just one -- I have one specific comment that they made.
A. Um-hum.

Q. And it was part of the electronic review comments, and one of their comments was that there appears to be significant shear lag issues in both the canopy and walkway as the stiff web element is being dragged behind the compression zone. They indicated the designer needs to pay particular attention to these areas.

How did you address that comment?

A. Well, I will have to read the response just to be accurate. But, you know, the shear lag we have -- at the deck level, we have six tendon on each side of the deck. You know, usually when you have a shear lag issue is when, for example, in a typical box girder, where your tendon are concentrated in the middle and your top slab is really wide, then you cannot compress all the cross-section. But in this case, you have the deck, and all the tendon were even in space, and it was catching most of the cross-section of the deck. And the canopy level was kind of similar. The canopy was a little bit narrower, and we have about four tendons per side in the canopy.

Again, trying to answer your question, I'm going to have to go and read our response just to see. First of all, the comment was closed; otherwise, we wouldn't proceed with the RFC plans.

Q. Right. You just -- you can't recall how you addressed that specific comment?

A. No, I cannot recall, yeah.

Q. Florida DOT did recommend that chamfered end blocks be considered to address the shear lag. Was that included in the

bridge design plans?
A. What kind of chamfer are you talking? Between the deck and the diagonal members?
Q. Yes.
A. I don't believe that those chamfers were included in the design, yeah.
Q. Okay. And was there a reason for that?
A. I think that was a trip hazard. You know, if you put a chamfer on the deck, it's basically in the walkway. You don't want people hitting with the floor and, you know, (indiscernible) basically.
Q. Okay. I'm going to ask you a series of questions regarding some emails that were sent by Rodrigo Isaza, dated March 12th, 13th, and 14th. And you were carbon-copied on those emails.
A. Okay.
Q. And it had to do with the cracks at the bottom of diagonal number 11 and diaphragm 2. And the email was regarding that the cracks were large and that they asked for a prompt course of action to remedy, if you recall that.
Did you think the cracks, the photographs of those cracks that were attached to those emails, what was your interpretation of those cracks?
A. Well, let me make this very clear. You say March 12th and 13th, right?
Q. Yes.

A. Within that time, I was not in the country. I was on vacation, on a cruise.
Q. Okay.
A. I didn't see any of those pictures during that week. Actually, I came back the following week.
Q. Okay.
A. I cannot tell you anything about --
Q. So you were out of the office?
A. Yeah, I was out of the office. I was not even checking email or communication at all with anybody.
Q. Okay. When you came back to the office and looked at those emails, what was your interpretation of those cracks? What would you consider those cracks? Would you consider those cracks structural cracks?
A. Again, you know, without any measurement -- you know, you see a picture, sure, you can say, okay, there's a concern there. But I cannot tell you if that is a structural crack or is something that is not structural crack. I'm just saying it depend the location of the crack.

For example, if the edge of the girder is -- you have a big spall, you can see a big chunk of concrete gone, but that doesn't mean anything. But if that thing happened in a member that you know that is highly compressed, then you have some concern. It depend the location of where is the crack. That's what I'm trying to say.

Q. Because of that concern, was there any discussion internally with FIGG to document and monitor those cracks?
A. I didn't participate during those -- at that time during the -- what was happening. I cannot answer that question.
Q. Can you tell us your involvement with the independent peer review of FIGG's design plans by Louis Berger?
A. Sure. I was basically the coordinator. I was in touch with Ayman Shama. He was the lead engineer during the independent check.

And basically, my role was I sent him a email with the foundation drawings with the substructure drawings -- those are different packages -- and then the superstructure package drawing. If he have any question about the design, I will try to answer, or any concern, or if he didn't understand something about the drawing, I will explain to him this is what it is or whatever.
Q. Did you work with him on developing the scope of the services?
A. I think at one point I had sent -- I sent an email, but mainly the scope of service, Dwight Dempsey was managing that portion of the project. That is his main role, you know, scope of services, all that kind of stuff.
Q. Do you recall what the scope of services consisted of?
A. It was, in the big picture, it was only about the bridge design. You know, there's towers, elevators, others stuff that they were, you know, supposed to be checking, but you know, in the

big picture, it was just the bridge design.
Q. And would you characterize the independent peer review as looking at the big picture, I mean looking at the entire bridge?
A. Yes.
Q. That's what the independent peer review consisted of?
A. Yeah, look -- you know, and those drawings were, you know, from the erection sequence were there incorporating in those drawings, but they were supposed to be checking the design for the bridge.
Q. Did it get down -- did the independent peer review look at the individual stages of construction?
A. I cannot answer that question because I never saw their calculations, but I know that I sent the whole package to them that include the erection sequence.
Q. So you don't know if the independent peer review looked at the individual stages of construction?
A. I don't know.
Q. Okay.
A. Don't know.
Q. And would you know if it looked at individual nodes, down to the node level of the bridge structure?
A. Well, I remember two comments that we talk on the phone. One of them was the connection between the stay pipe and the blister over the canopy. That was one comment that he was saying you need to put more rebar in that blister. And we add some rebar for

that.

And the other comment was about the vertical member number 1, that he was seeing higher moment there. And we told him that we're going to have a Freyssinet hinge in that member, is the member that have those -- you know, that weird shape on the south side of the bridge. That was --

Q. Okay. I'm going to ask you some questions regarding redundancy, because I'm having trouble understanding the redundancy of the bridge and I just would like you to clarify, or if you could educate me on some of the redundant issues.

For the main span only, sitting on the south pier and the pylon pier to the north, would you consider the main span only a redundant or a non-redundant bridge?

A. You know, redundancy is a very general term. But if you talk about redundancy in the tendon layer, I will say, yes. You know, DOT have structure design guidelines, SDG, that they'll tell you when you have a box girder, then you have to have a minimum of four tendons per web, and they made sure redundancy, because they want redundancy in the tendons.

In this case, we have six tendon per side. If one tendon fail, is the bridge redundant? Yes, it is, because what's going to happen, you maybe increase the tension stresses is the bottom of the deck of main span, and that's it. Nothing happens.

I will say, if you see it from the standpoint of how many tendons you have, sure, it's redundant structure. The same thing

for, you know, a member -- a reinforced concrete member. You have a bunch of rebar inside the member, then I will say you have some type of redundancy there. In the canopy you have more than three tendons. In this case, we're four tendons. Yes, I will say that that's redundancy.

Q. Okay. And these are the longitudinal tendons --

A. That is correct.

Q. -- that you're talking about?

A. Yeah. Yeah, you know that in transverse direction we have -- I don't know how many tendons, but it was a big number of tendons for the deck.

Q. And what criteria did you use for the redundancy? Did you use AASHTO standards or Florida DOT standards?

A. Well, you know, the question of redundancy, that wouldn't be a question. We wouldn't have any comment from FDOT. But yeah, we were looking, at least myself, we were looking the SDG. To my knowledge, there's nothing that address the redundancy for a concrete truss member in that document. AASHTO, I know that there's some section about redundancy, but general, I would say.

Q. Is there a difference between redundancy of a pedestrian bridge versus a vehicular bridge?

A. Well, the thing that I'm aware about pedestrian bridges that is different from vehicular bridges is just the natrual frequency. You don't want people walking on the bridge and they feel like it's bouncing too much. In that way, probably going there and we

increase the stiffness of the bridge just to make it less vibration oriented.

We did that -- if you look this bridge, you know, this bridge is 18 feet tall, expanding 175 feet. The span to that pressure of that bridge is almost 10. You take any bridge around here, and that ratio is probably around 16, 18, 20. You see, it's a big girder that we were putting there.

Q. If one of the diagonal members did fail in the main span, would that result in collapse, collapse of the bridge?

A. I would have to do a collapse analysis of the bridge just to answer that question. Again, if you have the span bridge with one column in the middle and you remove that column in the middle, that bridge is going to go down.

Q. Did you review Denney Pate's PowerPoint presentation that he gave on the morning of the collapse?

A. No, I didn't, not really, because I was on vacation.

Q. Yeah, vacation.

A. I was out of town, yeah.

Q. Okay. I'm just trying to understand one of his last slides in which he said that "the spalled areas are minor, and it's recommended that they be prepared using normal procedures and poured back along with the upcoming pylon diaphragm pour."

A. Um-hum.

Q. What did the upcoming pylon diaphragm pour consist of?

A. There's a section of the pylon, basically, that was

connecting the back span to the main span. You know, member number 12, which was part of the main span, it was supposed to be encapsulate by that pour. And the part that was up-station side of the pylon, it was part of the back span. But that's what he's making reference, that that section is going to be basically a second pour after the bridge had been moved into place.

Q. And would that add more redundancy to the bridge, that pour?

A. I will say it would add more fixity to that pylon base, but as far as redundancy, I think that is still -- you know, you are changing the connection between pin connection to a monolithic connection at that moment in time at that location. That's what I think.

Q. And was it Mr. Pate's belief that the cracks would be addressed as part of that, as part of that pour?

A. Well, they solve -- the cracks would have been covered by that pour, I would say.

Q. I have no further questions.

A. Okay.

BY MR. HOLT:

Q. Reggie Holt, Federal Highway. And I'll put my questions in two categories, one on the design efforts, and then the second category just some -- the field issues that were observed and the actions that were taken. So I'm going to start with the design effort questions.

So I guess my first -- you know, you had a lot of questions

on the -- well, we'll start with the fact that you were part of the proposal development?
A. That is correct.
Q. So in developing the bridge type that was selected, which was a single truss line structure or support line structure, was redundancy of that bridge type discussed?
A. During the proposal phase?
Q. The proposal, yeah, as something that could be viewed as non-desirable?
A. I don't recall any discussion about that.
Q. Do you recall that the solicitation included specific language not to produce a bridge that was non-redundant or fracture critical as a bridge requirement in the proposal phase?
A. I don't recall any language like that during -- you are talking about the RFP document?
Q. The RFP produced by Florida International.
A. Yeah, I don't recall.
Q. So despite that language, this was developed -- how many alternative bridge types were looked into before you decided on this one?
A. On this one? Oh, man, maybe four or five. You know, there were different options that we were looking at one moment in time.
Q. Just, I guess, staying in line with the redundancy discussion, so was there ever a discussion within the -- setting up the design criteria of adjusting the eta factor or -- it's an

adjective for redundancy, ductility, and importance -- of adjusting that in any way for this bridge?

A. I don't recall. I have to go back and see what we did with the -- you are talking about the 1.05 for redundancy, importance factor 1.05? Yeah, I think that it is defined in the RFP document. If they're saying, you know, a factor that we need to apply, we would have done that. But I need to go back and do the calculation, basically, and see which factor we apply.

Q. So you mentioned, in theme, a lot of your -- you put a lot of weight into the internal redundancy of the members?

A. Um-hum.

Q. Again, multiple post-tensioning tendons, multiple reinforcing bars. Were there any specific rules set up to provide redundancy? Minimal number of tendons, minimal number of --

A. Well, when we designed it, they was trying to meet the AASHTO requirement. For example, with post-tensioning, cast-in-place, you need to have less than 3 square-root of f'c for tension, and that's what we were trying to accomplish with the number of tendons. It was not thinking about redundancy per se, but it was more to meet the design requirements.

Q. Again, I want to switch to the design of the nodes, more specifically, node diagonal 11, vertical 12.

A. Um-hum.

Q. So you used a solids model, a LUSAS model, in generating your force effects for your interface shear calculations?

A. Um-hum.
Q. And I was wondering on the reasoning for using a sophisticated model versus a 2D/3D model to get the force effect for that analysis?
A. Well, we were comparing basically -- we have a LARSA 3D model, which was a beam members, and then we have the final element model, which is the one that you're making reference of, the LUSAS model. And basically, we were correlating the force effect and the stress effect, and they were in parallel. You know, they were not exact, but there were numbers that you feel, okay, both of them are giving me something very similar.
Q. Um-hum.
A. For that question about the node design, we rely on the LUSAS model because we thought that will represent -- will have a better representation of that local area versus that the LARSA model was more general, and also the LUSAS model have all the PT bars and all the tendons on -- everything was there.
Q. Did you produce a LUSAS model for the back span, span 2?
A. I don't believe so. I think that was only for the main span.
Q. And so for the analysis of the same regions in the back span, you would switch -- how do you generate your force effects?
A. I think that we used the LARSA result, knowing that the main span was more critical.
Q. More critical because --
A. You know, if -- because the forces were higher. I mean, if

you see the design during, they were very similar in the design, you know, number of bars, pre-bar layout.

Q. We also noticed in your calculations you assumed an intentionally roughened surface for an interface shear calculation?

A. Again, I'd have to go back to the calculation. If that is what is in the calculation, I will say yes.

Q. Do you recall conveying that information on the contract documents to anybody?

A. I remember I email at one point in time -- MCM was doing a closure pour for -- between the column and the landing on the south side. We send in the FDOT specification, how to treat construction joint between two pours. We send the section to them in order to I think -- I believe that that specification said that needs to be roughened.

Q. I'm not that familiar with the FDOT specifications. Is that a standard treatment for closure pours for structural members to roughen the surface?

A. Yeah, for construction joints, yeah.

Q. For construction joints?

A. Yeah.

Q. Can you state the specification?

A. The number?

Q. Or title. Something.

A. Oh, man, it's the general construction specification or

standard construction specification for Florida DOT. That's, I think, 4-point something --
Q. (Indiscernible) FDOT construction spec?
A. Exactly.
Q. And then it would be under a (indiscernible) --
A. Yes, sir.
Q. That specification was referenced in the contract documents?
A. Yes, it was.
Q. The next question pertains to how the voids that were introduced into this nodal region from the drain pipe and the vertical sleeves that accommodated the PT bars and the reinforcing from the pier were accounted for in the design. Do you recall adjustments or recalculations?
A. You are talking about the shape of the deck with the semicircle of the bottom going through the diaphragm?
Q. Yes. So the region that I'm talking about is more at the diaphragm, where you really have -- it was embedded in the mass of concrete, the structure itself. So below, you know, diagonal 11, vertical 12.
A. Twelve.
Q. So you had the drain pipe.
A. Yeah.
Q. And then coming from the pier, there were PT bars that were going to be stressed to lock it, lock it into the pier.
A. Sure, going through and --

Q. Right. So they had vertical PVC pipes --
A. Sure.
Q. -- also penetrating the diaphragm?
A. Um-hum.
Q. So my question is: You had these penetrations through this region, and were or how were they addressed in the calculations?
A. I have to go back to the LUSAS model just to see if there's a opening in the diaphragm showing that, but I don't remember seeing that. Yeah. You know, usually, even in a segmental bridge, you have a bunch of sleeve in the segment for PT bar or future PT bar. And you don't go there and model every single hole. But again, in this specific case, I have to go back and see the model.
Q. So you don't recall any specific recap or direction to account for --
A. Doing that, no.
Q. -- these penetrations through there?
A. Yeah.
Q. So the next theme is I want to, I guess, talk about the mix design development.
A. Sure.
Q. So you had a project-specific mix design? It has to meet certain goals?
A. Um-hum.
Q. Were you a part of that?
A. I believe that Dwight Dempsey sent me at one point in time

the specification to read them. But mainly he was in charge of the mix design with Benton Engineers, that they were the one developing the mix design, but I was not part of the development of the mix design.

Q. Was this mix part of your proposal, this unique mix design?

A. You mean to the owner?

Q. Yeah, the benefits --

A. Yeah, benefits -- I'm going to have to go back and read the proposal. I cannot answer that question. I don't remember that.

Q. Okay. I guess I'm going to switch to field issues. So just before -- but were you ever asked to assess the bridge cracking that was seen and determine its cause or its severity?

A. Yes. Rodrigo sent me an email in the middle of February showing me some small cracks in member number 3 and 10. At that moment in time, they were only stressed the PT bars in member 11 and number 2, and basically, because we don't have any other PT bars going through those members, really, hairline cracks were shown, and he sent me a picture of those cracks. And we told him that if you stress the PT bars in member number 3 and 10, those cracks are going to close. I believe that's what happened later on when they stressed those PT bars. That was the first time that I heard about cracks.

Q. So 3 and 10 are one diagonal off the end nodes?

A. Exactly.

Q. So at time of cracking or this form released, they were not

stressed?
A. Yeah, the formwork was still there. You know, they stress only the member 2 and 11 at that time.
Q. Um-hum.
A. And because we are stressing those member, you're creating a little bit of tension in the member number 3 and 10. But the whole span was supported by the falsework at that moment in time.
Q. Okay. I jumped ahead. I thought you were talking about the cracks -- there was a correspondence (indiscernible) cracking, the cracking that occurred after the release of the falsework. Were you engaged in that?
A. Yeah, there was a second set of email that he sent me those crack after they removed the falsework. All the PT bars were stressed.
Q. Right.
A. And then, yeah, they sent us some pictures. We as a team, FIGG, we evaluate those cracks, and I send an email with our recommendation to him.
Q. So you mentioned an earlier response about cracking and how the location of the crack will affect your assessment of the crack importance --
A. Sure.
Q. -- whether the girder or --
A. Um-hum.
Q. Would you view cracking at a nodal region of connection as a

location of importance on a structure?
A. It depend wherein that nodal region the crack is, you know. But sure, I would look at them and see where they are in that general sum of the nodal region, give my opinion to him. It is in a email.
Q. So the cracking you saw on this nodal region, some cracks would be viewed as more important than others and --
A. Sure.
Q. And the ones that you saw were not deemed as important?
A. Well, the one that I saw, for example, is just that little triangle that has formed between the deck and the diagonal members. When we developed the design -- you know, in your LARSA model, your cross-section goes -- you know, the 1'9" by 2' member goes all the way to the nodal region. And we include that little triangle just for constructability purposes. And that way, they can remove the form in a easier way, you know, you don't have a form pinched between two elements.
Q. Right.
A. And that crack that was part of that little triangle, it was not a big concern to us.
Q. Yeah.
A. We say, yeah, you need to seal it back according to FDOT standard construction specification because you don't want to see a crack like that, you know? It's just a perception issue.
Q. Okay. You stated you were out of the country. I'm not sure

exactly when you returned. So were you involved in the private, I guess, retrofits -- the recommended retrofits to the bridge once it's sort of experiencing --

A. No, I was not involved with that.

Q. Well, what were the dates, the actual dates you were out of the country?

A. I left the day after the move, basically. That was Sunday.

Q. Um-hum.

A. And then came back Friday, the 16th. I was in a cruise. And that's when I received the news.

Q. So Denney Pate developed a presentation that was delivered to the owners to, I guess, provide information that showed or demonstrated the bridge was safe. Do you know who all was involved in developing that presentation and information included on that presentation?

A. I think that was Denney Pate, Eddy Leon. I don't know the exact involvement. David Hall was also involved in the development of that presentation.

Q. Have you seen the presentation?

A. Yes, I did. After the fact, for sure.

Q. Did you recognize the differences in the methodologies of capacity that were used from the design -- final design calculations in the PowerPoint for the nodal zone?

A. For the nodal zone? Well, let me be clear. I just saw the presentation one time. I didn't study it --

Q. Right.
A. -- to be honest with you, because they had told us not to get involved with any calculations or anything like that. And I cannot tell you, you know, the difference between what we did during the, you know, the design and what actually Denney Pate did during his -- to developing that presentation.
Q. Who told you not to get involved in the design of the place conditions?
A. The place condition? What do you mean with the place condition?
Q. You just said in reviewing -- in looking at the PowerPoint, that you were told not to get involved in the design?
A. Well, in the general terms, they told us not to go in there and touch anything, you know, going back and recalculate anything or do anything like that, just -- just to let the process go.
MR. HOLT: Um-hum. All right. That's it -- thank you -- for me.
MR. FELICIANO: Okay.
BY MR. ACETTA:
Q. This is Robert Acetta. I have one question. And it has to do with since the collapse, have you or anyone gone back and checked the original calculations?
A. No. At least myself, I have not gone there and check or look or dig into the numbers or anything like that.
Q. Okay. So you haven't gone back and reviewed a finite element

analysis or anything like that?
A. No.
MR. ACETTA: Okay. That's the only thing I have.
MR. FELICIANO: Um-hum.
BY MR. WALSH:
Q. I just have a few follow-up questions. Would you consider yourself the primary engineer for the main span?
A. I would not say that, you know. I would say that I was part of the design, and these designs are basically it's a team effort. Answering your question, I would not consider myself the principal engineer.
Q. Okay. In reviewing Denney Pate's PowerPoint presentation, if you were here -- or if you were present during that time, would he have asked you --
A. To look at it?
Q. -- to look at it?
A. I believe so, but that is speculation right now.
Q. All right.
A. Yeah.
Q. But typically he would have asked you to look at that?
A. Yes.
Q. Okay. And is there anything that you would have added to that PowerPoint? Is there anything that --
A. Like I say, I just saw the presentation once. But I didn't went and check numbers or think about the presentation or at all

just saying, okay, probably we should add this or subtract this, or whatever, I haven't done that.

Q. All right. In his presentation he mentioned that he could not replicate the conditions. Did you -- did that alarm you in any way?

A. Sure. It's just, if you cannot mimic something, then you say, well, what's going on here? It's just -- sure. It's the nature of the engineer.

Q. Right. Was there any consideration to -- I know you weren't here, but was there any discussion of closing the bridge to --

A. I cannot answer that question. I was not involved in those conversations.

Q. Okay. You mentioned regarding when -- diagonal number 3 and 10. Did those diagonals have PT bars in those particular --

A. Yeah, I believe so.

Q. They had -- they did?

A. Yeah.

Q. Okay. And were there any -- what was the orientation of the PT bars in the --

A. In the member?

Q. Yeah.

A. Were running along the member, you know, but it was different orientation depend which member you were. Could be like, you know, one on top of the other one or could be side-by-side. It depend just to avoid the conflict with the next truss member.

Q. Okay.
A. Or the diagonal member.
Q. And I'm just going to ask a general question, if you had particular experience in this type of design, where you're stressing a member and then you're destressing a member. Is that typically done on -- have you done that on other --
A. Yeah. We have done it in the segmental construction process. It's very common. You know, all the time you put a pier segment or a pier, and you stress temporary PT bar just to fix it, and then you release those bars, basically.
Q. Is that done with -- is there a move -- like, in this particular instance, there was a moving the main span. Was that done in that case that you mentioned?
A. Well, we move segments, right. (Indiscernible) you have several segment in one span, you are moving segment. But it's not the same. I'm just saying that maybe this is very specific case, where you're moving the whole span to a location, stressing and destressing PT bars.
MR. WALSH: Okay. Okay. No further questions.
MR. FELICIANO: Um-hum.
MR. BRAGG: Okay. The time is 12:25 p.m. We'll now conclude the interview. Thank you for your participation.
MR. FELICIANO: Okay. Thank you.
(Whereupon, at 12:25 p.m., the interview was concluded.)

CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF:	PEDESTRIAN BRIDGE COLLAPSE MIAMI, FLORIDA MARCH 15, 2018 Interview of Manuel Feliciano
ACCIDENT NO.:	HWY18MH009
PLACE:	Miami, Florida
DATE:	June 28, 2018

was held according to the record, and that this is the original, complete, true and accurate transcript which has been transcribed to the best of my skill and ability.

[redacted]

Danielle VanRiper
Transcriber

UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

Investigation of:	*	
	*	
PEDESTRIAN BRIDGE COLLAPSE	*	
MIAMI, FLORIDA	*	Accident No.: HWY18MH009
MARCH 15, 2018	*	
	*	

Interview of: LINDA FIGG and ALAN PHIPPS
Figg Bridge Engineers

Miami, Florida

Tuesday,
March 20, 2018

APPEARANCES:

KENNETH BRAGG, Senior Highway Accident Investigator
National Transportation Safety Board

DAN WALSH, Highway Factors Investigator
National Transportation Safety Board

REGGIE HOLT, Senior Bridge Engineer - Concrete Specialist
Federal Highway Administration

JAMES OWEN, Attorney
(On behalf of Figg Bridge Engineers)

I N D E X

I N T E R V I E W

(3:21 p.m.)

MR. BRAGG: Today is Tuesday, March 20th, 2018. It's 3:21 p.m. Eastern Daylight Time. My name is Kenneth Bragg. I'm an investigator from the Office of Highway Safety from the National Transportation Safety Board. This interview is in relation to the FIU bridge collapse in Miami, Florida.

Ma'am, could I ask you to state your name and organization, please?

MS. FIGG: Linda Figg. I'm president and CEO of Figg Bridge Engineers.

MR. BRAGG: Great. And you, sir?

MR. PHIPPS: Alan Phipps, director of operations for Figg Bridge Engineers.

MR. BRAGG: Okay.

MR. HOLT: Reggie Holt, Federal Highway.

MR. WALSH: Dan Walsh, Highway Bridge Engineer with the National Transportation Safety Board.

MR. OWEN: James Owen, counsel to Figg.

MR. BRAGG: Thank you.

INTERVIEW OF LINDA FIGG AND ALAN PHIPPS

BY MR. BRAGG:

Q. Ms. Figg, let's go ahead and start with you and I'm just going to get you to go ahead and explain your role with the company.

A. So, as president and CEO, I am responsible for, you know,

overseeing all of our offices. We have offices in Tallahassee, Florida, that's our southeastern regional office; Denver, Colorado; Dallas, Texas; Philadelphia; Minneapolis; Southern Alabama and Louisiana, and then we have 12 field offices. And so all of those different offices and so forth come under my leadership.

Q. Okay. And the assumption is because Figg Construction, you founded the company; is that correct?

A. My father did.

Q. Your father did? Okay.

A. Yes, in 1978, while I was a sophomore in engineering school.

Q. Okay. And how long have you been with the company?

A. Thirty-six years.

Q. Okay. So temporary employment. Okay.

A. Temporary, yes.

Q. And if you can, go ahead and give us just an overview of the company's business model.

A. So we exclusively specialize in bridges, and Figg Bridge Engineers exclusively does bridge design. We have some other companies, as well, within our organization that are all focused on bridges as well. And we have regional -- each regional design office has a regional director and that regional director, you know, really reports to a -- to Alan and to our management council and oversees the, you know, basic operations of each of the design offices.

Q. And what are some of your noteworthy projects that you have done?
A. The Sunshine Skyway Bridge in Florida, the Natchez Trace Parkway Arches around Grand Father Mountain in North Carolina, the Natchez Trace Parkway Arches just south of Nashville, Tennessee. We did the Emergency replacement of the I-35W bridge in Minnesota, which was designed and built in 11 months. We did an emergency replacement up in Maine called the Penobscot Narrows Bridge and Observatory. It's a big cable stay. We've done a lot of big concrete cable-stay structures. We did the Seven Mile Bridge down here in the Florida Keys, and we've done a couple of -- well, a number of bridges in Virginia, Smart Road Bridge, which is right near Virginia Tech. Really, we've done about 230 bridges around the country, some international work and, you know, had an excellent safety record on those projects.
Q. Okay. When did you assume the role as CEO?
A. In -- actually it would be today 16 years ago. My father passed away on March 20th, 2002 and that put me into the leadership of our company and so I've been president and CEO for 16 years.
Q. Great.
MR. BRAGG: Do you want to go ahead and talk about some of the other --
MR. WALSH: Sure. Dan Walsh, NTSB.
BY MR. WALSH:

Q. Was this a design-build project?
A. Yes.
Q. Can you talk a little bit about your approach to design-build projects versus not design-build projects?
A. So in design-build we are working directly for the contractor. In that role we have a very specific scope of work that outlines what that contractor wants us to do for them. With Figg Bridge Engineers we are focused on the design and supporting making sure that that design carries through in construction for whatever is in our scope of work.

In that role, the contractor remains responsible for means and methods. We didn't incorporate any construction activities for ourselves here. That's what MCM did. But it's a, you know, it's a role we are familiar with because we've done a lot of design-build.
Q. Would you believe that as part of the design-build project that independent reviews are critical to the design-build project?
A. Yes.
Q. Okay. And not only from a design standpoint from the original design, but any changes that occur to the design because of the design-build project would require independent reviews being done to any changes that occur?
A. So we followed the Florida Department of Transportation requirements here, which requires an independent design review by another company that is -- you know, has a very specific identified role under Florida Department of Transportation

criteria. And so that's what we did, and that company was engaged and did the independent design review.

Q. And was that company Louis Berger?

A. Yes.

Q. Okay. And if there were any changes that occurred during construction in which things were evident in terms as such things as cracking on the bridge or that type of thing, in order to address that would you think that an independent review would need to be done in order to look at the remedy that would be necessary for that?

A. So we -- throughout the process, anything that might have evolved, we bring to the Florida Department of Transportation, FIU, the CEI consultant, and share that information with them to determine what the next steps are and the course of action. So we, you know, by contract we have certain roles and responsibilities that we focus on and we focus very strongly on what that contract says we are supposed to do.

Q. Just in this specific example cracking was identified -- I'm not sure if you're familiar with the details of this particular project in terms of the cracking that was noticed and was documented --

A. Uh-huh.

Q. -- and the approach and the remedy that was proposed to correct those cracks. Was your project manager or did that project manager reach out to the Florida Department of Transportation and try to conduct an independent review based on his solution?

A. So I'm not familiar with all the details. But I know that, you know, we received some photographs and Alan and I and Denney met, and that Denney reached out to the Florida Department of Transportation to share information about, you know, his thoughts on, you know, everything. So --
Q. Did he get a response from the Florida Department of Transportation prior to the collapse?
A. I know he met with someone from Florida Department of Transportation beforehand.
Q. Okay. Do you know what that communication was? Was that through telephone? Was that through email?
A. He had a meeting. There was a meeting here in Miami. And, you know, to my knowledge, Florida Department of Transportation, FIU, MCM and the CEI consultant were all at that meeting to talk about it.
Q. Thank you. Would you consider this type of bridge structure a redundant type of bridge structure? Did it have redundant characteristics?
A. So, I mean, I would have to refer to my designer for, you know, technical details. You know, that was sort of outside of where I got involved into it. So --
Q. Sure. I just want your thought process that with this type of structure, since it had no redundant characteristics, that it would require further independent analysis, more safety precautions because of its redundant characteristics, that if one member of the structure were to fail, the entire bridge would collapse. And I want to just get your thought process as to, you

know, that being a very critical issue and that would require a very thoughtful design process and a rigorous review of the design because of that particular design element.

A. Uh-huh. I mean, I'm just not familiar with that kind of level of detail on the design. That's, you know, that's handled by our engineer of record who reviews all that information, and so I wouldn't be able to really answer your question effectively.

Q. Okay. I'm just -- I'm trying to get a sense of the bridge projects that you design, whether a certain percentage of them have redundant characteristics and other percentage of your bridge projects have redundancy and others that do not have redundancy. But you don't have a sense of that?

A. It's not something that, you know, we do calculations on. I'm not sure what --

Q. Okay. No, that's -- okay.

MR. WALSH: That's all my questions.

MR. BRAGG: Reggie.

MR. HOLT: Reggie Holt, Federal Highway.

MR. HOLT: I don't need a whole lot of background.

MS. FIGG: Okay.

MR. HOLT: You've been working with the firm for many years, but I got a few questions, so -- and it deals with basically staffing, because design-builds, they take may shapes and forms so sometimes you need to figure out the players and all the interactions. So Denney was -- Denney Pate was the lead engineer?

MS. FIGG: Yes.

MR. HOLT: And there's not a name for Dwight Dempsey? I

guess he was like the project manager, project engineer, more dedicated -- dedicated a lot more time to this project. Was there any other significant player in the design, I mean, other than those two? I guess senior level, not productions staff, that you're aware of?

MR. PHIPPS: This is Alan Phipps. Denney has a team of engineers underneath him. So, you know, there is -- his next engineer that was helping him with his projects is another engineer in the Tallahassee office named Manuel Feliciano. And I know we had other engineers assigned as well. So, like you say, you end up in a lot of line engineers doing the work.

MR. HOLT: But those two were the most senior engineers that worked --

MR. PHIPPS: Denney was the senior engineer.

MR. HOLT: Senior-most engineer?

MS. FIGG: Yes.

MR. HOLT: Well, we're aware of Dwight because he was --

MR. PHIPPS: Dwight was the project manager, so he took care of the contracts.

MR. HOLT: In the hierarchy he was right below Denney. Okay.

MR. PHIPPS: Kind of separate roles.

MR. HOLT: Separate roles, right. Understood. And then the -- so our understanding for you, you had limited CE&I responsibilities. My understanding it was only for the SPMT move, I guess?

MR. PHIPPS: We had a contract for the SPMT move for that. We had two people on-site for 4 days to provide any technical

assistance needed associated with the structure, answering questions about it, during that 4-day move period. That was our only -- other than periodic site visits for meetings, that was our only contractual scope for that.

MS. FIGG: So, as far as CEI is concerned, we didn't have an official CEI role because Florida Department of Transportation specifically prohibits the designer from being involved in CEI.

MR. HOLT: And you performed your traditional shop drawing for use and everything else on this project?

MR. PHIPPS: Yes. There weren't any shop drawings for the bridge itself because the plan set was construction drawings bus of course there were shop drawings for the post-tensioning and bearings and, you know --

MR. HOLT: Those type things, yes.

MR. PHIPPS: Correct.

MR. HOLT: And they all -- they're all processed through your scope?

MR. PHIPPS: Yes.

MR. HOLT: So your construction oversight, I guess was limited by the contract scope, I guess, pretty much, it sounds like?

MR. PHIPPS: Yes.

MR. HOLT: So, I mean it was a fairly sophisticated construction sequence. Was there any scope attributed, given to your firm to make sure that the stressing sequence, destressing movement, whatever else -- there's only probably 10 or 12 key steps that needed to be made in proper order. Was there any scope

to have you on-site for that?

MR. PHIPPS: Not on site for that, no.

MR. HOLT: No.

MR. PHIPPS: So the scope was to -- as part of the design plans there are -- and you probably already seen the plans. There are sheets that describe how the design assumed the construction steps would go: First do this, then do this, then do this.

And then we also had scope during construction to expand that to some more detailed steps, you know, with when you stress things versus when you move a support and those kind of things, kind of like step by step in the old direction manual. So the means of how you implement that were up to MCM.

MR. HOLT: Right.

MR. PHIPPS: But the steps, the detailed steps was something that we were scoped to provide.

MR. HOLT: So there is another document that's more prescriptive in the construction phasing than the sheets in the back -- two sheets in the back of the plan set, you're saying, you think?

MR. PHIPPS: I have not seen that.

MR. HOLT: Haven't seen that. Okay.

MR. PHIPPS: I just note that the scope of work that calls out an item for making sure -- now, you know, if that was a separate document or if that was just reusing those sheets --

MR. HOLT: Right. Okay.

MR. PHIPPS: -- you know, making sure all the proper notes were on them, I'm not sure.

MR. HOLT: Okay. A refinement, a lot more refinement.

MR. PHIPPS: Right.

MR. HOLT: That's all the questions I have.

BY MR. BRAGG:

Q. Okay. Mr. Phipps, we didn't really discuss your background. How long have you been with Figg Engineers?

A. Thirty-three years.

Q. Another temporary employee.

A. Yeah.

Q. And what's your current role in the company?

A. Current role is senior vice-president and director of operations.

Q. And how long have you been in that role?

A. Twelve years.

Q. And prior the that role?

A. I was a regional director for our western regional office in Denver, Colorado for 16 years.

MR. BRAGG: Okay. I don't have anything else. Anybody else have any questions?

UNIDENTIFIED SPEAKER: Okay. Thank you, guys.

MR. BRAGG: The time is 3:40 p.m. We'll conclude the interview. Thank you very much for your participation.

(Whereupon, at 3:40 p.m., the interview was concluded.)

CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF:	PEDESTRIAN BRIDGE COLLAPSE MIAMI, FLORIDA MARCH 15, 2018 Interview of Linda Figg and Alan Phipps
ACCIDENT NO.:	HWY18MH009
PLACE:	Miami, Florida
DATE:	March 20, 2018

was held according to the record, and that this is the original, complete, true and accurate transcript which has been transcribed to the best of my skill and ability.

[redacted]

Letha J. Wheeler
Transcriber

UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

* * * * * * * * * * * * * * * * * *
Investigation of: *
*
PEDESTRIAN BRIDGE COLLAPSE *
MIAMI, FLORIDA * Accident No.: HWY18MH009
MARCH 15, 2018 *
*
* * * * * * * * * * * * * * * * * *

Interview of: DAVID HALL
FIGG Bridge

Tuesday,
August 14, 2018

APPEARANCES:

KENNETH BRAGG, Human Performance Investigator
National Transportation Safety Board

DANIEL WALSH, Senior Highway Accident Investigator
National Transportation Safety Board

ROBERT ACETTA, Investigator in Charge
National Transportation Safety Board

REGGIE HOLT
Federal Highway Administration (FHA)

PATRICIA LEID, Esq.
Clyde & Co.
(On behalf of FIGG Bridge)

I N D E X

I N T E R V I E W

(10:30 a.m.)

MR. BRAGG: Today is Tuesday, August 14, 2018. It's 10:30 a.m. We are in the law office of Clyde & Co. in Miami, Florida. My name is Kenny Bragg. I'm an investigator with the Office of Highway Safety and this interview is in regards to the FIU bridge collapse which occurred in Miami, Florida.

I'm going to go around the room and ask everyone to state your name and organization, starting to my right.

MR. WALSH: Dan Walsh with the National Transportation Safety Board.

MR. HOLT: Reggie Holt, Federal Highway Administration.

MR. BRAGG: Okay.

MR. ACETTA: Robert Acetta with the NTSB, investigator in charge.

MS. LEID: Patricia Leid with Clyde & Co., representing FIGG Bridge.

MR. HALL: David Hall with FIGG Bridge.

MR. BRAGG: Okay. And Mr. Hall, just to clarify, it is with your knowledge and consent that this interview's being recorded; is that correct?

MR. HALL: Yes, sir.

MR. BRAGG: Okay.

INTERVIEW OF DAVID HALL

BY MR. BRAGG:

Q. How long have you been with FIGG Bridge?
A. It'll be 20 years in August.
Q. Okay.
A. 1998 till --
Q. Still feel like a newcomer?
A. Learning something new every day.
Q. That's a good thing. And so, what's your current role with the company?
A. Title is senior bridge engineer.
Q. Okay. And how long have you served in that role?
A. I think at least 10 years.
Q. Ten years? What other roles or jobs have you held at the company?
A. Well, occasionally we'll get sent out to do some bridge inspection or some of those types of things, but that's a very limited thing.
Q. Okay. And are you an engineer?
A. Yes.
Q. Okay. And where did you receive your training, education.
A. University of Kentucky.
Q. University of Kentucky? And when did you become involved in this FIU bridge project?
A. I'd say the two lead designers, Denney and Manuel, brought me on board to do modeling.
Q. Okay. And that's Denney? The last name?

A. Denney -- oh, I'm sorry. Denney Pate and Manuel Feliciano.
Q. Okay. And you said they brought you in to do modeling?
A. Yes.
Q. And what is -- in layman's terms, what does that involve?
A. It's the program that I used is a 3D solid element model.
Q. Okay.
A. But the name of the title of the software is LUSAS.
Q. LUSAS? And how long have you been using that software?
A. It's -- be 3 years in November.
Q. Okay. Was there a reason why you used that software over another software?
A. It was to give us a different perspective on what the design team was doing.
MR. BRAGG: Okay. I'm going to have Mr. Walsh, go ahead.
MR. WALSH: Thank you, Mr. Bragg.
BY MR. WALSH:
Q. Dan Walsh with the National Transportation Safety Board.
A. Okay.
Q. Can you indicate who you directly reported to?
A. Primarily Denney and/or Manuel. Manuel was primary design leader for the project.
Q. Okay. So you -- most of your interaction was with those two individuals within the company?
A. Yeah. And then there's two additional people, which you may already know of, were Eddy Leon and Erika Hango. But primarily

Manuel.
Q. Okay. You described some of the modeling that you did. What were your primary responsibilities for this project?
A. Modeling.
Q. Okay.
A. Staying out of the design. In fact, I call myself an analyst, not a designer. It's a subtle difference but important.
Q. Okay. Did you have any discussions with Mr. Pate or Mr. Feliciano regarding the redundancy of the pedestrian bridge?
A. Not in -- per se, no.
Q. Did you have any discussion with anyone regarding the redundancy of the bridge?
A. No.
Q. Okay. You indicated you're an engineer. Are you a professional engineer?
A. Yes.
Q. Okay. And are you licensed in the state of Florida?
A. Yes.
Q. Okay. What is your definition of redundancy?
A. Multiple load paths for forces to translate. So in this particular section we had post-tensioning in the top, in the bottom, in the diagonals. We had transverse posting in the bottom deck. That is in its initial state. And then when the other bridge is built adjacent to it, we have continuity in the -- oh, in the canopy, the continuity post-tensioning, which -- yeah.

Q. Okay. I mean, as you know, AASHTO defines a redundant member as a member who's failure does not cause failure of the bridge. The pedestrian bridge was a concrete truss configuration with a single line of diagonal and vertical supports.

Would you consider the diagonal and vertical supports non-redundant members?

A. No.

Q. And why is that?

A. They were interacting with one another. The post-tensioning, internal post-tensioning with the assistance of the top and bottom cords, were all interacting in a truss mechanism.

Q. Okay. Did you have any discussions, see any photographs, or see any emails regarding the cracks on the bridge?

A. Only something that was sent by Franklin, who had been at the site during the initial move for the bridge into final place. I think on that Monday, if I recall, he had sent me a pdf from somebody else and I saw something, whatever was in that pdf.

Q. Can you describe those cracks?

A. There were some cracks around some holes on each side of, I believe we call it member 12. And that's most of what I remember, there being three or four versions of that, but that's what I remember. And then there were, I think, some more pictures. I just don't remember what was in them.

Q. Okay. Since you're a professional engineer, are you familiar with Florida DOT's disposition of cracked concrete located in the

Standard Specifications for Road and Bridge Construction?
A. In this instance, no.
Q. You're not familiar with that specification?
A. Uh-uh.
Q. Okay. Well, FDOT's disposition of cracked concrete does define a structural crack as generally extending deeper than a half an inch.
A. Okay.
Q. I'm going to show you several photographs that were in our investigative update report last week that illustrate cracks extending deeper than a half an inch. And I'm going to ask you would you consider these cracks to be structural cracks?
A. I would -- to comment on this without additional information would be wrong. Certainly there's cracks, and we all know that concrete does crack, indeed, and these are what we might term concerning. But we would need to investigate further to know the context of what is going on to be able to render some sort of recommendation or that kind of thing.
MR. WALSH: Okay.
MR. BRAGG: Could you just hold on one second?
MR. WALSH: Go ahead.
MR. BRAGG: Can you just describe, just for the record, what these photos --
MR. WALSH: Sure.
MR. BRAGG: -- are of?

MR. WALSH: Sure. This first photo is a crack of the diaphragm 2 on the deck west of vertical member 12. The second photograph is a crack at the bottom of diagonal member 11 on the west side looking to the east.

MR. BRAGG: Okay.

BY MR. WALSH:

Q. Are you familiar with the FDOT specification to roughen the surface of the hardened concrete in a manner that will not leave loosened particles, aggregate, or damaged concrete on the surface?

A. From a AASHTO point of view, we're familiar with that specification. I'm not familiar with FDOT's specification.

Q. Okay. Was there a specification to roughen the surface of the hardened concrete at construction joints included in the pedestrian bridge design plans?

A. I do not know. Like I say, I'm an analyst. I really wasn't a designer.

Q. Okay. All right. Did you ever see the Florida Department of Transportation's comments received as part of the bridge design submittals?

A. No.

Q. No. Okay. Did you work on the construction sequence plans for the project?

A. The -- in the, if you will, the casting position, the order of stressing with the software program LUSAS went through several iterations of which tendons to stress, what the sequence should be

to minimize principal tension effects. So there's a definite order of post-tensioning that we -- that was my work product recommendation to the design team. I'll say it that way.
Q. Okay. Under stage 3, the erection of the main span, there is a -- there's a sequence note that indicates stressing of the pylon vertical post-tensioning bars. Do you know if that was done before the collapse?
A. I do not know.
Q. Okay. Okay. Just a general question regarding the construction sequencing. Was there any consideration to casting the back span first before casting the main span?
A. I do not know. I just don't.
Q. Don't know? Okay. Did you work on the instructions given to Structural Technologies for the restressing of diagonal number 11 on March 15th, 2018?
A. I worked on the analysis and with regard to the shims that were in that -- in the field condition, and reported my results to the, you know, the design team, Denney. I think Denney was really the only one in the -- Eddy might've been there, but anyway, this, the design team.
Q. Did you visit the site --
A. No.
Q. -- at any point?
A. I've never been there.
Q. You've never been there. Okay. Who came up with the idea to

restress the post-tensioning bars in 50-kip increments?
A. That was outside of my domain. That was others.
Q. Okay. Were you involved with the independent peer review of FIGG's design plans by Louis Berger?
A. No, I wasn't.
Q. Okay. Does FIGG have a quality control/quality assurance plan set in place for the design plans?
A. Yes, and I was the manager of that. And the work product from the various entities were roadway, I think drainage -- I don't know, several different, you know, sets of plans of various sizes. I was just checking boxes, you know, making sure things were provided in the sequence they were needed.
Q. Okay. Well, did you have anyone work with you regarding that quality control/quality assurance plan?
A. Well, Erika was getting me the submittals so I could at least see them. And she was helping me to make sure that things were QC'd prior to my reviewing them or even seeing them, yes. So I was really more making sure it was -- all the work was done, signatures were provided, that kind of thing.
Q. Did you see any comments from Louis Berger as part of their independent peer review?
A. Not that I'm aware.
MR. WALSH: Those are my questions.
MR. BRAGG: Okay. Okay, let's -- the time is 10:44. Let's take a brief pause.

(Off the record at 10:44 a.m.)

(On the record at 10:47 a.m.)

MR. BRAGG: Okay. The time is now 10:47 a.m. We're going to resume. Before we move on to Mr. Holt, does anyone have any follow-up questions for the topics covered by Mr. Walsh? Robert.

MR. ACETTA: Yes, I do.

BY MR. ACETTA:

Q. I'm not familiar with all the terminology, but I know there are a lot of tendons imbedded into this design.

A. Um-hum.

Q. And you mentioned, were you also involved in the tensioning bars, post-tensioning bars in the design? Does that -- I mean, excuse me, in your analysis.

A. Analysis, yes. Design, no.

Q. Right, right. Okay, in the analysis. So you mentioned earlier that you checked in your analysis the sequence that these were supposed to be tensioned during the construction process.

A. Yes.

Q. Okay. Do you know if that sequence was followed?

A. I do not know.

Q. Okay.

A. That was a field, would be a field thing.

Q. Okay. You also mentioned that you did an analysis of the shims, and this was after it had been moved into place?

A. Yes, sir.

Q. What did that analysis reveal?
A. You know, it was different than the -- I'm going to call it my third model boundary condition. So it revealed a little bit different distribution of stress around those shims. And so, I reported my information to the design team from those results.
Q. Was it their responsibility then to decide if they needed additional shims or move the shims?
A. Yes, sir.
Q. If they made that decision, would they have come back to you to reanalyze that?
A. They could have. They chose not to.
Q. Chose not to. Okay. Again, I understand you weren't involved in the design. But as items are added in the design as it progresses, such as drainage, electrical, conduit, things like that, does that come back to you for reanalysis in your models?
A. Let's see. Mostly no, but there are instances -- like there's a divot in the bottom of the section, and so that was modeled in the original model. So that would've allowed for the drain that was to be located in that location.
MR. ACETTA: Okay. All right. At this time I don't have any additional questions.
MR. BRAGG: I have a couple.
BY MR. BRAGG:
Q. When did you first learn of the cracking?
A. I think it was through that email from Franklin, was my first

knowledge.
Q. And when was that exactly?
A. I think it was Monday, late.
Q. And this was after the move; is that correct?
A. Yes.
Q. Did you learn about any cracking when the falsework was removed?
A. No.
Q. No. Okay. And when you learned about the cracking, what role did you have? Or did you have a role in the analysis?
A. Could you repeat that?
Q. When you learned of the cracking on Monday --
A. On Monday. Okay.
Q. Yeah, did you have a role in analyzing the cracks?
A. No, no. It was the shims is what I was doing.
Q. Shims. And did you ever -- when you learned of the cracking, did you ever look at your, the modeling and determine that those cracks were predictable after looking at the modeling?
A. That's a little bit subjective. But there were different stress distribution, so I couldn't say one way or the other.
Q. Okay. And when you communicated the results of your analysis to Denney Pate, how did you communicate those results?
A. Sometimes he would view things on the screen or would make a pdf, a color 3D pdf.
Q. Um-hum.

A. And turn on certain stress result types and give him the information.

MR. BRAGG: Okay. I don't have anything else.

Mr. Holt?

BY MR. HOLT:

Q. Reggie Holt, Federal Highway. I'm going to have like two different themes of questions, one going to design and one going to construction and the cracking.

A. Okay. Sure.

Q. So I'll start off with the design-themed questions.

A. And remember, I'm a --

Q. When I say design, I mean analysis and everything; I understand that. I guess my first question, were you involved in the type size and location aspects of this project?

A. No. I got the final decided parameters or -- let's see -- dimensions and so forth from the design team.

Q. Okay. So they were already set by the time you started?

A. Yes.

Q. So you mentioned that you performed this LUSAS solid model. We understand that there was also 2D LARSA model performed. Were you also -- were you the modeler on that model?

A. No. That was the designers and that was a 3D model, the LARSA model. But I had no involvement with that.

MS. LEID: Let Mr. Holt get the full question out --

MR. HALL: Oh, I'm sorry.

MS. LEID: -- so we'll get a record.

MR. HALL: Okay. Sorry.

BY MR. HOLT:

Q. So what components were decided that needed the solids model, the LUSAS model?

A. It was the idea of a picture. You get different perspectives from different viewpoints. And so, I was giving the design team a different viewpoint through this modeling effort.

Q. And what part of the bridge was the modeling effort performed on?

A. Oh, we had, if you will, four states of construction or the process. The first state would be classified as the casting. Second state would be the SPMT move. Third state is the temporary state where it's placed in final position. And the fourth state is where continuity is achieved and it's in service.

Q. And were all four states performed?

A. Yes.

Q. On the LUSAS?

A. Um-hum.

Q. Okay. Do you -- we received the final calculations and we noticed that they -- only the third state, when the -- the simple span arrangement state was included in the final calculations.

A. Okay.

Q. Was there a reason that the other models were not included?

A. I do not, I didn't prepare the calculations, as you know. I

only reported my results to the design team.
Q. Okay. So you performed the LUSAS model. How were the force effects generated from this LUSAS model? Were you a part of that or did somebody interpret, need to interpret your model to get these force effects?
A. They -- well, there's kind of a double thing here. LUSAS is a stress model. It doesn't report forces easily. You can get reactions at supports pretty easily, but internal forces out of a volume is a little bit more challenging, to say the least. And so, some of those results were requested by the design team, but that's -- mostly we were looking at stresses in the various states of the model that was developed.
Q. Yeah. Well, I noticed -- I'm familiar with the process, so -- well, I noticed that it did use the LUSAS model to generate the force effects.
A. Yeah.
Q. So the force effects were calculated by someone. Was that someone you or was somebody else --
A. It was me. Yes, sir.
Q. So, so at the nodal regions where the verticals and diagonals attached to top and bottom slab, how were those force effects calculated?
A. By the method of slicing. We were not familiar with that process, but you take a slice, you limit the volumes that are available and you get on that slice the forces -- the program does

an internal integration of the stresses and you get the force effects.

Q. Okay, so those -- so you calculated force effects. They were -- were they calculated for multiple load stages?

A. Yes. Dead load, live load, PT, were reported to Eddy, the designer.

Q. And were multiple load phases, I guess is the word you use also, asked for? Those combinations?

A. To my recollection, it was only the temporary state. I'm going to call it my third model.

Q. Um-hum.

A. From that, we felt, was the controlling state.

Q. So based on the calculations, was that same process used on the back span? Were the solids models results used in the similar node designs on the back span that was not constructed?

A. I did not ever model the back span. So I don't know what was done.

Q. So you said you didn't model the back span. What was phase 4?

A. Oh, 4 was the completed truss. The boundary condition was simulated to where the pylon would be there and you had continuity or it was tied together. But the PT that would have ultimately been post-tension to make continuity was stressed. It just -- we just never put the physical mass of something over there.

Q. So you manipulated the boundary conditions to replicate the

fact that a back span was there, but the back span was never generated?

A. Correct.

Q. So based on that, so the similar nodes on the back span did not use a LUSAS analysis to generate the force effects for their design?

A. Not to my knowledge. Well, there was no model ever built, so no.

Q. You said earlier that three boundary conditions were -- three models or three different boundary conditions --

A. Well, actually four.

Q. Four -- okay, four models?

A. Four models, yes.

Q. And if each model had a different boundary condition --

A. Yes.

Q. -- can you state the different boundary conditions for each?

A. Okay. The first model was casting, and this is an assemble all model; that is, all of the concrete, material properties, you assume to be at 28 days. So that model was supported on the deck level and then all the elements were coming up, the diagonals and so forth, and then the canopy. So it -- you know, we're in a sense ready to start stressing PT once we achieve 28-day strength. PT was modeled in that casting model. Like I say, it's a static model and no time-dependent effects.

The next model, to answer your question, is the -- what I

call the SPMT model, where we, working through the design team, changed boundary conditions until we found the support locations that we felt minimized the stress and was okay or -- I'm trying to think of the contractor who was moving it, they were happy with and we were happy. In that process -- I'm going to give you a little extra -- is we looked at twist. And like the SPMT is rolling over a curb, and so we looked at twist limits on the section. So we did all of that modeling for that movement in that model.

Now, moving on to the third model is when we placed the section in final position and I chose to use the -- because it would be close representative of the final condition, the fixed support at the pylon end and the, if you will, the expansion support at the EJ end, but without the continuity that would be ultimately achieved when the pylon was there.

And then the fourth model is the model where continuity and where the -- I believe it's number 12 is integrated into the pylon.

Q. So I think you stated earlier that you, sounds like you did a fifth model with the -- when the cracking issue was generated.

A. Sure. Taking the, if you will, a third model, modifying it, and putting in the field shims in their rough location and assessing results and reporting those to the design team.

Q. So this new fifth model, I guess reflected the in-place field location of the shims?

A. Um-hum.
Q. What was, what kind of supports were assumed in the third model?
A. The third, it was again fixed and expansion, at the pylon -- let me clarify -- pylon end fixed support, and then at the EJ end just a more or less a vertical support and had some lateral stability or lateral, vertical, horizontal. So it's fixed and released in a sense. Released so that longitudinal displacement could occur.
Q. So the --
A. So the fifth model was a variation. Sorry.
Q. So the north end support was not free to rotate in your third model. It was fixed?
A. Oh, these are translational degrees of freedom. That's a good question. Rotational was turned off. So it was free to rotate.
Q. Okay. So what were -- this is solids model now. So you were able to model the shims in your refined model --
A. Um-hum.
Q. -- after cracking. So what was supporting, what was the support condition of that in your third model? Because it obviously wasn't the shims --
A. Yeah, well, it's the variation.
Q. -- because you had to do the fourth model.
A. The fifth model with the shims, if you will, was we modeled

the shims. Initially, I don't remember the material, but it was too stiff and so Denney made a recommendation to adjust to something more akin to rubber or something elastomeric. And so, we made an assumption on the K value or stiffness value so that that would -- we would see what that would give us. So the bottom of that shim was fixed and then the top of it was connected to the concrete surface of the diaphragm. Yeah.

Q. You were talking about the third or fourth model there?

A. The one, the fifth.

Q. The fifth model.

A. The variation of --

Q. Right.

A. -- the model 3 or the special case, maybe we should say.

Q. Okay. Well, I'll get back to that. So why did you need to adjust the K value for the shims?

A. We were too stiff. You know, your infinite rigidity versus a K that's a softer material. So we were trying to study and see how that boundary condition would affect stresses in the structure.

Q. And do you recall if that K value was something on the lines of what you'd see in elastomeric bearing?

A. We -- I think I tried to look in LUSAS and it might have had a material for that. I'm going from memory, so please pardon me if I don't get it right. But we had tried to get a material set up for some sort of rubber and then a stiffness. I think what we

wound up doing was getting the reaction and dividing it by a 1-inch inch displacement, and came up with a K and I used that per square foot.

Q. Okay. So you didn't have material properties of the hardened plastic that was actually used.

A. Yeah, I didn't know what it was.

Q. So that wasn't replicated. Okay. So I'm back to the third model.

A. Okay.

Q. All right. So I understand that you modeled as best you could the in-place shims on your fifth model.

A. Um-hum.

Q. So the third model was supported at that location some way in your model. So how was it supported?

A. Very good question. It's like the area of the support or the area of the diaphragm was fully translationally fixed; I should say it that way. Rotation was allowed, but the XYZ were all translationally fixed.

Q. So put it my own words, so the full bottom surface of the diaphragm was supported under your third model?

A. Correct.

Q. It wasn't -- it didn't incorporate discrete bearing locations that was occurring in the field.

A. Correct.

Q. And that's the reason you needed to do the fifth model when

this cracking occurred?
A. Yeah.
Q. Was your solids model used in the transverse analysis of the design at all? Of the diaphragm?
A. I'm not, I'm not sure. Honestly, I remember Erika asking me some questions and I do not remember if I gave her some results or if I did not and -- I just don't remember.
Q. So I'm going to focus in on the post-installation analysis effort. So in general, can you describe at a high level your involvement in this in-condition capacity assessment that was happening after, a few days after the move?
A. I was only doing the shims and reporting results to Denney. We might have looked at the stress in some of the other members and, again, reporting to Denney. The designers were on vacation and so I was doing my best to fill in.
Q. So was this assessment primarily be performed between you and Denney?
A. Yeah, at that moment, but I know Denney had other people that he was able to contact. But I -- my role was very limited.
Q. So you mentioned earlier that you had to play with the stiffness of the field shims. Were there any other nuances of the design that you remember you had to go through iterations?
A. No, since the model that we -- you know, we're just adding the shims and then we're looking at results.
Q. And what locations were of interest when you say you're

looking at results? You had the full span, I mean.
A. Right. You can cut these models, solids models, at discrete locations and look at stresses, that kind of thing. Or you can leave them completely open and then rotate them around and look at stresses. So you can look, in a sense, inside and outside if you're, you know, patient enough. So I was, as I recall, mostly looking at external stresses in various members, tensile stresses, since that was the dominant thing to be concerned with was tensile stresses.
Q. And you said these various members. Do you recall which were of interest?
A. Well, whatever was, those members down at the pylon end.
Q. So that would be Diaphragm 2?
A. The diaphragm. Yeah, I remember looking right under the diaphragm and looking at stresses there and rotating things around and -- yeah.
Q. How about the top? How would the node region -- Diagonal 11, Vertical 12 was that also assessed?
A. It would have been there. I may not have focused on it, you know. And, yeah, I'm sure I would have looked at some of that. Not, maybe not as in depth as I maybe needed to, but --
Q. So based on communications, you're aware of cracking, I mean, both at the bottom, the back side, the interface between nodes 11, 12 in the deck, was any attempt made to replicate that cracking in the model; i.e., release certain solid surfaces to show lack of

continuity?
A. No. We're aware that there are things called stress concentrators at reentrant corners or acute corners, so you might say. And some of that modeling is, if you will, quote, "not real." So it's an interpretation thing. So we didn't try to get into what was going on in those locations.
Q. Okay. Do you recall including penetrations through the diaphragm into your model? The drainpipe down the middle and also, there were four vertical sleeves for the hold down PT?
A. That was -- I was never asked to model that. So I never modeled that.
Q. So the model that you have was a, completely modeled a piece of concrete?
A. Correct.
Q. I want to go back to an earlier statement you made. So you said that you received an email from Franklin Hines --
A. Yes.
Q. -- about the cracking?
A. Yes that had pictures.
Q. Pictures?
A. Yes.
Q. Was that sent only to you?
A. No, I think it was sent to Denney and several other people. We'd have to look back at the chain of emails, but I know multiple people got a copy of that email.

MR. HOLT: I guess if we haven't already received that, can we get that email? Or with --

MS. LEID: Yes.

MR. HOLT: -- his assistance identify in the multiple emails we have --

MR. HALL: Yeah, I can understand.

MR. HOLT: -- that this particular email. He said it was sent --

MS. LEID: 12th?

MR. HOLT: -- on Monday.

MR. HALL: 12th.

MR. HALL: It was late Monday.

MS. LEID: Okay.

MR. HOLT: On late Monday, after the move.

MS. LEID: Hines to Hall?

MR. HOLT: Yeah, it was from -- it was sent from Franklin Hines?

MS. LEID: On Monday --

MR. HOLT: I believe so.

MS. LEID: -- March 12th.

MR. BRAGG: Yes.

MR. HOLT: That is the date, yeah.

MR. HALL: The 12th.

MS. LEID: Okay.

UNIDENTIFIED SPEAKER: Sunday was -- Saturday was the 10th.

MS. LEID: We will certainly try.
MR. HOLT: Okay.
MS. LEID: We're in the middle of discovery for litigation, so --
MR. HOLT: Right.
MS. LEID: -- and that's due this week.
MR. HOLT: Yeah, that's added to the list, I guess.
MS. LEID: I feel like the list is growing.
BY MR. HOLT:
Q. Those photos, do you recall, were they taken by Franklin or were they taken by somebody else? Was there any kind of information given on the photos and their source?
A. I think in the email there might have been a source. You know, I was looking at what the information was there, but I wasn't obvious, I didn't know who produced it. Or wasn't familiar.
Q. Do you recall the purpose of the email? Was there intent to initiate any kind of action? Just an FYI? What was the --
A. I think it was more a FYI, you know, to me and the other people. I think the primary person would have been Denney to see that information and -- yeah.
MR. HOLT: I think that's it for me. Thank you.
MR. HALL: Okay.
MR. BRAGG: Are there any follow-up to Reggie's questions?
MR. ACETTA: I have a follow-up.

MR. BRAGG: Okay.

BY MR. ACETTA:

Q. This is Robert. This LUSAS modeling program that you use, I'm not familiar with it at all.

A. Okay.

Q. Especially when you were doing the reevaluation for the shims, does it send up any kind of red flags if something has tensions or forces exceeding what they're supposed to?

A. If you set the limits on what S1 is. In the program it's called the principal tension, and if you are very careful with the way you set your limits, based on the design code, you set that limit and then it can show you a red spot, if you will. That indicates if you're exceeding a value, core value.

You know, it's a contour plot is what it really is. I'm trying to get the right imagery here, but it's a contour plot and you can set the limiting value so you can see where hotspots are if you will.

Q. Okay. And there were no indication of hotspots in your analysis at this time?

A. For tension at that time, no. I don't think -- not too bad, no.

Q. All right. I just want to have a better understanding of the program.

A. Um-hum.

MR. BRAGG: What about you, Mr. Walsh?

MR. WALSH: No further questions. Go ahead.

MR. BRAGG: Do you have any questions?

MR. HOLT: No.

MR. BRAGG: Okay. Okay. So we're going to go ahead and conclude the interview. The time is 11:17 a.m. Thank you for your participation.

MR. HALL: Thank you.

(Whereupon, at 11:17 a.m., the interview was concluded.)

CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF:	PEDESTRIAN BRIDGE COLLAPSE MIAMI, FLORIDA MARCH 15, 2018 Interview of David Hall
ACCIDENT NO.:	HWY18MH009
PLACE:	
DATE:	August 14, 2018

was held according to the record, and that this is the original, complete, true and accurate transcript which has been transcribed to the best of my skill and ability.

[redacted]

Sonya M. Terry
Transcriber

UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

* * * * * * * * * * * * * * * * * *
Investigation of: *
*
PEDESTRIAN BRIDGE COLLAPSE *
MIAMI, FLORIDA * Accident No.: HWY18MH009
MARCH 15, 2018 *
*
* * * * * * * * * * * * * * * * * *

Interview of: ERIKA HANGO
FIGG

Law Offices of Clyde & Co.
Miami, Florida

Thursday,
June 28, 2018

APPEARANCES:

KENNETH BRAGG, Senior Human Performance Investigator
National Transportation Safety Board

DANIEL WALSH, Senior Highway Accident Investigator
National Transportation Safety Board

ROBERT ACETTA, Investigator in Charge
National Transportation Safety Board

REGGIE HOLT, Senior Bridge Engineer-Concrete Specialist
Federal Highway Administration (FHA)

PATRICIA A. LEID, Senior Counsel
Clyde & Company
(On behalf of FIGG)

I N D E X

I N T E R V I E W

(10:14 a.m.)

MR. BRAGG: Today is Thursday, June 28th, 2018. We are in Miami, Florida in the Law Offices of Clyde & Company here in Miami, Florida. This interview is in regards to the FIU bridge collapse in Miami, Florida, which took place on March 15, 2018.

My name is Kenny Bragg. I am a senior human performance investigator for the Office of Highway Safety.

I'm going to start by going around the table, starting with my right, and ask everyone to please state their name and organization.

MR. WALSH: Dan Walsh with the National Transportation Safety Board.

MR. HOLT: Reggie Holt, Federal Highway.

MR. ACETTA: Robert Acetta with NTSB ISE.

MS. LEID: Patricia Leid, with Clyde & Co., representing FIGG Bridge.

MS. HANGO: Erika Hango with FIGG.

INTERVIEW OF ERIKA HANGO

BY MR. BRAGG:

Q. Erika, okay, so, Erika, I'm going to just go ahead and start by just getting some basic information about yourself. How long have you been with FIGG?

A. Four and a half years.

Q. Four and a half years? And what's your current role?

A. I'm an engineer of project development.
Q. Okay. And how long have you served in that capacity?
A. For 2 weeks.
Q. For 2 weeks. And prior to that, what did you -- what was your function with the company?
A. I was a bridge engineer.
Q. A bridge engineer. And where did you receive your education?
A. At Rensselaer Polytechnic Institute.
Q. Okay. And what was your degree in?
A. Civil engineering.
Q. Civil engineering. When did you become involved in the FIU bridge collapse project -- or the bridge project?
A. In January of 2016.
Q. And what was your role with the project at that time?
A. I was part of the design team, and then subsequent to that, I was working on project management tasks and also design office support.
Q. And just explain in layman's terms what your functions were on the design team.
A. Could you please clarify?
Q. Just in layman's terms, what did you do? What does a design team member do?
A. Okay. I was responsible for the design of the foundations and substructure primarily on the south side of the project, and I also worked on the design of some of the superstructure elements.

Q. Okay.
A. And that would have been like the originator of the design, performing calculations and also working with our CADD staff to prepare plans.
Q. Okay. Did there come a time when you visited the bridge?
A. Yes.
Q. Describe that, how that went.
A. Could you please clarify? Do you mean during construction?
Q. Yeah, during construction, yes.
A. I visited on three occasions. There was one trip in the middle of August, August 16th and 17th of 2017, and then August 31st of 2017, and then March 9th and 10th of 2018.
Q. Okay. Now let's talk about the most recent trip, March 9th and 10th. What was your role on March the 10th? What did you do?
A. I was down there -- I traveled down on Friday afternoon on March 9th with Linda and Dwight and Denney and some of our staff who were taking video and pictures. And I was there to observe the operation. Just -- I didn't have an official role. I was just there to kind of experience the ABC move.
MR. BRAGG: Okay. Dan, you want to go ahead and --
MR. WALSH: Yes, yes.
BY MR. WALSH:
Q. Dan Walsh with the NTSB. Erika, you mentioned that you did travel a few times to look at the bridge. What did you find during your inspections?

A. Could you please give me a specific date or a specific time frame that you're interested in?
Q. Sure. The most recent, March 9th through March 10th, what did you find during your inspections?
A. Well, I want to be clear, first, that I was not in a role of inspection at the time. I was just there to kind of observe the process of what was going on, and I didn't notice anything of significance while I was there.
Q. Did you observe any cracks that were on the bridge?
A. No, I did not see any cracks.
Q. Did not see any cracks. Did you ever observe the cracks at the bottom of diagonal number 11 and vertical number 12 during your inspections?
A. To be clear again, I was not part of any inspections of the bridge. I actually did not get up on the bridge deck at any point while I was there. I was always down on the ground. So I did not have any vantage point where I would have seen any cracking.
Q. Okay. I guess that was my question for March 9th and March 10th.
A. Um-hum.
Q. Did you observe any of the cracking with your previous two inspections?
A. The answer is no. I was there in August, and that was actually before any concrete had been poured. The first trip, the middle of August of 2017, there had been no concrete poured at

that time related to the span 1. And the second trip at the end of the August, there -- that was the first bridge deck pour. That was actually abandoned. So I did not see any concrete during those two visits.

Q. Okay. Did you encounter any unusual difficulties working with Structural Technologies, or VSL, as part of the project?

A. Could you please clarify what unusual activities you might --

Q. Anything that was not ordinary in terms of their contractual relationship with FIGG and the -- their responsibilities for post-tensioning the PT bars? Was there any unusual difficulties that you encountered?

A. No.

Q. Overall, do you think Structural Technologies/VSL's performance was satisfactory on the project?

A. I don't think I'm in a position to answer that question. I didn't have the knowledge to make that determination.

Q. Okay. Did you encounter any unusual difficulties with coordination with the Florida Department of Transportation on the bridge design submittals?

A. No.

Q. Okay. Did you address all of FDOT's concerns and comments during the bridge design submittals?

A. Yes, we did.

Q. One of the comments made by FDOT as part of the electronic review comments was "There appears to be significant shear lag

issues in both the canopy and walkway as the stiff web element is being dragged behind the compression zone. The designer needs to pay particular attention to these areas."

Did you think FIGG addressed FDOT's concerns regarding this comment?

A. I guess I don't have enough information at this time to answer that question. I guess what kind of -- how would you consider addressing that comment?

Q. Well, I'm just wondering how FIGG addressed that comment?

A. Um-hum. I know for a fact that we provided a response to that comment, but I don't have it in front of me so I wouldn't be able to recall off the top of my head how that comment was specifically addressed.

Q. Okay. FDOT recommended chamfered end blocks to address the shear lag. Was this included in the bridge design?

A. Again, I would have to probably see the plans to recall if that was part of the design.

Q. Okay. So you don't know if that was included in the bridge design? You don't know if that was included as part of the final bridge design?

A. I don't know.

Q. Okay. I know you were carbon copied on several emails from Rodrigo Isaza, senior project manager with MCM, dated March 12th, 13th, and 14th of 2018 that indicated the cracks at the bottom of diagonal number 11 and diaphragm 2 are rather large and asked for

a prompt course of action to remedy. The emails contained photographs of the cracks at the bottom of diagonal number 11 and diaphragm 2. Did you think the cracks were large enough to be structural cracks?

A. I think I want to preface this with the fact that after I left the site on Saturday, March 10th, I left straight from the Miami Airport to go on vacation. So I was out of the office that week, and so I was not there to review the photographs that were transmitted via email.

Q. So you never saw the photographs that were included as part of those emails?

A. I have seen them because I have -- I got them via email like you noted.

Q. So you did view them?

A. Yes.

Q. Did you view them in the office? Did you --

A. Part of the protocol for when we're on vacation, kind of the prearranged protocol, is that I would check my email daily and just make sure that someone who was in the office was copied on the emails so that they could handle any email communications that came up while I was out of the office. So I did see the email, but there were many other FIGG team members that were copied on that email that were in the office to address anything that came up, so --

Q. Did you or any other personnel from FIGG compare the cracks

to FDOT's disposition of cracked concrete?
A. I don't know. I was not in the office, so I'm not aware of what might have happened.
Q. Okay. Are you aware that FDOT's disposition of cracked concrete defines a structural crack as generally extending deeper than a half an inch?
A. Could you please repeat the question?
Q. Sure. Do you -- are you aware that FDOT's disposition of cracked concrete defines a structural crack as generally extending deeper than a half an inch?
A. I guess at this time I'm not aware of that.
Q. If I could, I'd like to show you several photographs that were contained in the email from Rodrigo Isaza that have been stamped with FIGG's Bates stamp at the lower right-hand corner. In this photograph, stamped FBE-00143, titled "Photo 15, Diaphragm 2, East Side, Top View Cracks," would you consider this crack to be a structural crack?
A. I guess I'm -- there's no depth measurement, I guess, or width measurement on this, so it's kind of hard to tell just from this one picture without actually seeing it in person.
Q. What would you interpret that crack to be?
A. I don't think I have the information to make that determination right now.
Q. Okay. I'm going to show you two other photographs that were contained in that email as well.

A. Okay.
Q. This is stamped FBE-00129, and it's titled, "Photo 1, Diaphragm 2, West Side, Top View Crack." Would you consider this to be a structural crack?
A. Again, it's hard to tell without having any sort of dimensional reference on the picture itself, and I'm not physically there being able to measure it, so --
Q. And I know that that's your response. Was that the response of other FIGG personnel that were reviewing these emails as well?
A. I can't speak to that just because I was not in the office at the time.
Q. Okay. I'm going to show you one last photograph.
A. Um-hum.
Q. And this is stamped FBE-00131, "Photo 3, Truss 11, East Side Cracks." And would you consider this to be a structural crack?
A. Again, kind of the quality of the picture and the lack of dimensions and several different orientations of the crack, it's hard to really make that determination from a photo.
Q. Okay. Thank you.
Please tell us your involvement with the independent peer review of FIGG's design plans by Louis Berger.
A. I guess I was copied on emails to and from Louis Berger, but I had no direct interaction with anyone from Louis Berger.
Q. Who was the person at FIGG who had direct involvement?
A. Dwight and Manuel.

Q. Could you say their full name, please?
A. Yes. Dwight Dempsey and Manuel Feliciano.
Q. Okay. Would you consider the main span only sitting on the pier on the south end and the pylon pier on the north end a redundant or non-redundant bridge?
A. What is your definition of redundancy?
Q. I'm going to leave that up to you in terms of your expertise.
A. Are there specific elements? You said the main span?
Q. Main span only.
A. I don't feel I have enough information to provide any further information on the potential redundancy of the system.
Q. Would you consider, if a diagonal member in the main span, if that failed, would the entire bridge collapse?
A. Again, I don't have enough information or haven't been involved in the analysis to be able to say anything regarding that.
Q. Who at FIGG would be able to answer that question?
A. Maybe Denney Pate.
Q. Okay. Are you aware of Mr. Denney Pate's PowerPoint presentation that was given on the morning of the collapse, March 14th, 2018?
MR. BRAGG: 15th.
BY MR. WALSH:
Q. I'm sorry. March 15th. Excuse me.
A. Yes.

Q. So you had an opportunity to look at that?
A. No.
Q. So you have not looked at Denney Pate's PowerPoint presentation that was given that morning?
A. No, I have not.
Q. Okay. I'm going to ask you this question. In the last slide of the PowerPoint presentation, under "Conclusions and Recommendations," Mr. Pate recommended that the spalled areas are minor, and it is recommended that they be prepared using normal procedures and poured back along with the upcoming pylon diaphragm pour. Do you know what the upcoming pylon diaphragm pour consisted of?
A. To clarify, I'm not familiar with the PowerPoint, but I do know that a future construction step was going to be to cast the intermediate portion of the pylon, basically from the deck to the top of the canopy, at that pylon location. And that was a future scheduled pour.
MR. WALSH: Okay. I have no further questions.
MR. BRAGG: I have some follow-up questions from Dan.
BY MR. BRAGG:
Q. So you said your last visit at the bridge on March 9th and 10th; is that correct?
A. Yes.
Q. And so prior to that time, in other interviews it has been described that there was a large popping sound that was heard when

the falsework was being taken off the bridge. Are you aware of that?
A. No, I'm not.
Q. So when you arrived on March 9th, you were not aware that there were cracks forming on the bridge?
A. No.
Q. So what was the purpose of your visit on March 9th?
A. The purpose of my visit on March 9th was to observe the activities related to the ABC bridge move.
Q. Okay.
A. Just kind of --
Q. And so what activities did you observe?
A. We watched them set up the SPMTs, and then the next morning we watched the SPMTs drive the bridge into its final position.
Q. And so you were there present during the move?
A. Yes.
Q. Okay. And so at this point you weren't aware of any cracks within the bridge; is that correct?
A. That is correct.
Q. Okay. What was your role in responding to the FDOT comments for concerns?
A. I was one of the people that would download the comments from the ERC system and help distribute them to the different team members that would be responsible for answering them. We would have different people draft up responses, and then they would go

through multiple reviews by several people at FIGG and then also by MCM. And then I would help compile the final responses and enter them in and upload them to the ERC.

Q. So did you have a role in determining the response or crafting the response?

A. Yes.

Q. You did? And what did that consist of?

A. Basically any of the comments that were directly related to an element that I was involved in the design or familiar with, I would help draft a response that would go through several review processes.

Q. And what time frame were these responses given? Like, what date?

A. Well, there were multiple reviews on the foundation, substructure and superstructure packages. There was a review at the 30 percent design level, the 90 percent design level, the final, and sometimes we received comments at the RFC level as well. So there were multiple submittals throughout the entire design phase.

MR. BRAGG: Okay. I have no further questions.

BY MR. HOLT:

Q. Reggie Holt, Federal Highway. Erika, I guess I'm going to have two different lines of questioning, one related to the design and one related to just field issues and field visits. I'll start with the design.

Could you describe the design team makeup from the engineer of record down to the production, design engineers, the roles, responsibilities of each party?

A. Specifically at FIGG?

Q. At FIGG for this particular bridge, correct.

A. Okay. The engineer of record was Denney Pate.

Q. Um-hum.

A. And then he worked closely with Manuel Feliciano and Dwight Dempsey. And then there were several engineers that had specific tasks for design elements: myself, Eddy Leon, David Hall, Jason Stauffer. I think that was the entire design team.

Q. Eddy --

A. Leon.

Q. Jason Hall was the other name?

A. Jason Stauffer.

Q. Stauffer.

A. And David Hall.

Q. David Hall and Jason Stauffer. You mentioned that you were primarily tasked with the design of the foundation elements in your answer to a previous question and some tasks on the superstructure design?

A. Um-hum.

Q. Could you identify the engineers that were more focused on the superstructure design?

A. Yeah. For the superstructure design, myself, Eddy Leon,

David Hall, and then with oversight from Manuel Feliciano and Denney Pate.

Q. So these roles, the design effort and the check effort, typically resided with engineers below Dwight and Manuel? They were more oversight or were they actively involved in the design?

A. Yeah. We had -- we were -- myself, Eddy, we were the originators of the design. It was checked by Manuel Feliciano and Denney Pate.

Q. Talk more about some specifics on the design.

A. Um-hum.

Q. So, first, we've discussed the -- addressing redundancy. And I guess was there any discussion of addressing redundancy and whether to at least consider it or not consider it in the implication of -- familiar with the eta factor that's within the AASHTO code to address redundancy for structures?

A. I don't recall that discussion.

Q. There was responses to a redundancy question from others that the structure had internal redundancy?

A. Um-hum.

Q. Was that ever discussed with you or others, or through the design process?

A. I'm aware that there is internal redundancy, yes, but I don't recall specific discussions.

Q. So, I mean, as the designer, one of the designers of the superstructures, were you ever directed from senior designers that

in order to get this internal redundancy, you needed a certain amount of -- certain amount or type of components internal to the structure to provide that capacity or performance?

A. Could you please repeat the question?

Q. Well, if the design was counting on internal redundancy, were you directed from senior engineers that in order to get this redundancy performance, that you would need a certain amount or number of internal components to provide that performance level?

A. We had a predetermined number of, say, post-tensioning tendons or PT bars that -- those were predetermined when we began the design.

Q. The next question is pertaining to the modeling selection. Were you a part of the design of the deck-to-truss diagonal or vertical connections?

A. Could you please repeat the element?

Q. There were design calculations that provided the capacity to connect the verticals and diagonals of the truss to the bottom deck. And I guess my question is, were you a part of that design?

A. No. And just to clarify, I was -- the elements that I designed on the superstructure were the deck end diaphragms and the canopy end diaphragms, as well as some miscellaneous details like the bearings.

Q. Okay. So were you familiar with the fact that they used a solids model in developing the force effects for certain connections?

A. Yes.
Q. Can you provide some information on why they decided to use a solids model for generating the force effects versus a more traditional 2D, 3D analysis?
A. I don't think that I can provide useful information there, but I do know that we used both the solids LUSAS model and also a LARSA 4D model. So there were concurrent models being used for the design of this bridge.
Q. Right. The design indicated that the surface between the diagonal and the deck was supposed to be intentionally roughened, which was a standard detail. Do you recall any place on the plan or specification where that requirement was stipulated to the contractor?
A. I don't have enough information. I would have to look back to the plans to make that determination, but I do know that that is part of the FDOT standard specifications, and that is part of this contract or the contract documents.
Q. Do you recall ever having that specifically added to the plan set anywhere, that note, to call out an intentionally roughened surface?
A. I don't recall.
Q. And are you stating that you would rely on FDOT standard specification to require that performance from a contractor?
A. The FDOT standard specifications are part of the contract documents, yes.

Q. Right. But more particular to being intentionally roughened, that's something that you would defer to FDOT spec to stipulate?
A. I don't think I have enough information right now without looking back at the plans and at the specific section in the specifications as well.
Q. Okay. Now the other question is about design and the accounting for the voids that were introduced by, first of all, the drain pipe that was down the middle, because it did puncture certain surfaces, and the sleeves provided in diaphragm 2 to accommodate large -- or reinforcing steel and PT bars.

Do you recall those voids being addressed in the design calculations and their effects on the design of these elements?
A. Could you please break that question into smaller parts, please?
Q. Okay. For the capacity of diaphragm 2, diaphragm 2 was essentially punctured by two different series of pipes. There was a drain pipe down the middle of the bridge that went through the middle of the diaphragm. There are four vertical PVC pipes that penetrate through the diaphragm vertically at the nodal region.

And my question is: Do you recall any kind of instruction, special instruction, or, specifically, do you recall accounting for performance that would be altered by these penetrations?
A. I would need to look back at the calculations to answer that question fully.
Q. So you don't recall specifically addressing those?

A. I do know that there was coordination performed with the electrical subcontractor, but I don't recall the specifics of it.
Q. The next question I had is -- I imagine happened early on, but were you involved at all in the development of the mix design used for this bridge?
A. No.
Q. Do you recall how the mix design was developed for this bridge, concrete mix design?
A. I do know a little bit just that we had a sub-consultant with us to develop the mix design.
Q. And who was that sub-consultant?
A. Beton.
Q. Can you spell that, please?
A. B-e-t-o-n.
Q. They were hired as a sub-consultant to FIGG or MCM to develop this unique mix, this project-specific mix?
A. I'm not aware of the specifics of the contracts, but they were part of our team, yes.
Q. Okay. I think that is my questions on the design. The next ones are field issues.
I understand you made limited visits to the field, but could you go back, and could you provide us a reason why you visited the site twice in August?
A. Yes. I was there on August 16th for a field meeting with the aesthetics lighting designer just to talk about where we would

locate different light fixtures on the bridge. And the next day, August 17th, 2017, we -- myself and Franklin Hines were there to do a walk-through of the project site and just kind of take observations, and we were there to support MCM and help them try to be successful for their upcoming bridge deck pour.

Q. The 17th visit was right before the first -- the initial deck pour?

A. It was maybe 2 weeks before.

Q. Were there aspects of the deck pour or expected difficulties with the deck pour that required this meeting?

A. Not in particular, no.

Q. So my next question is: I'm not sure when you returned from your vacation, but were you involved in the assessment that was performed to address the bridge's condition and the simple span arrangement after placement?

A. What date would this be?

Q. This would be -- you were notified, I guess -- it was dated on that Tuesday, which was when the email came asking --

MR. HOLT: Huh?

MS. LEID: Thirteenth.

BY MR. HOLT:

Q. Well, do you recall, when did you return from your vacation?

A. I returned to Tallahassee on March 17th, 2018.

Q. Okay. So after the collapse?

A. That's correct.

Q. In any of these daily email checks that you were required to make while you were away from the office, did you respond to any emails that were concerning the assessment of this bridge?
A. No.
MR. HOLT: That's it for me. Thank you.
MR. BRAGG: Go ahead.
BY MR. ACETTA:
Q. Yes, this is Robert Acetta. I have a few follow-up questions based on some of the questions that have been asked.
Just in general, not related to this bridge, as an engineer, what does the term redundancy mean to you?
A. I would define redundancy as providing multiple load paths.
Q. Okay. For what reason? I guess what I'm asking is why would you pull up -- provide multiple load paths?
A. We would provide basically what is required in the codes that are governing the design of the bridge or whatever structure it would be.
Q. Okay. You mentioned something, and I was wondering if you could just expand on it a little bit more. You said something about a future scheduled pour at the north end. Could you tell me a little bit more about that and what that would entail? Describe what that would have been.
A. There were a lot of phases to this project, so one of the phases was setting span 1, and then there was going to be an intermediate pylon pour, the construction of the back span, span

2, and then completion of the pylon. So there were multiple different pours scheduled throughout the course of the project.

Q. Okay. So the intermediate pour, what was that actually comprised of? You have span 1 in place. It's on top of the column?

A. Yeah. There is a, like, a certain cross-section for the pylon that sits on top of the pylon base, and so it would be the remainder of that section of the pylon from the deck to the top of the canopy.

Q. Okay.

A. And --

Q. I'm sorry?

A. Part of the -- to complete the continuity of the structure.

Q. Okay. You mentioned something before in a little bit more detail as to what you were involved in the design. That included the bearings?

A. Yes.

Q. Were you involved in the temporary bearings that were being used at the time of placement?

A. The temporary bearings or shims, we addressed that through an RFI from the contractor.

Q. I'm not sure what an RFI is.

A. A request for information.

Q. Okay.

A. And that's where we gave the material and dimensions for the

shims.
Q. So you provided the guidance for the use of the temporary bearings? Okay.
I'm going to back up to something I forgot to ask.
A. Um-hum.
Q. You mentioned something that one of the times that you're on the site to observe the pours, it was abandoned. I had heard that the concrete was rejected. Is that the pour you're referring to, where they had to remove the concrete? It was in the beginning stages of the project.
A. Yes. This would have been the first concrete pour for the span 1, and it was abandoned -- as far as I know, the reason for abandoning the pour was because there was an electrical issue at the concrete plant, where they were unable to produce concrete for a certain amount of time, and during that time no trucks showed up to the site. So they had -- MCM made the call to stop the pour.
Q. Oh, okay. Yeah, I recall now that because they couldn't get the materials --
A. Correct.
Q. -- they didn't want to continue with the project because it would -- it would have only been a partial pour?
A. Correct. Yes.
Q. Okay. Thank you for clarifying that. I forgot about that.
MR. ACETTA: I know you have some follow-up questions, but some of the questions that we've asked, you said you didn't have

the information available.

Do we want Erika to go back and look at the details and have answers for --

MR. WALSH: Yes.

MR. ACETTA: -- things that she didn't have here to look at?

MR. WALSH: That would be great.

MR. ACETTA: Yeah, to follow up.

MR. BRAGG: I think it'd be more appropriate if we put that in writing, and then we can forward that to Pat.

MR. ACETTA: Yeah.

MR. BRAGG: Would that be okay?

MS. LEID: That would be fine. Are there particular documents, though, that would support these answers that we have not produced yet that you're missing?

MR. BRAGG: Okay.

MR. ACETTA: Not that I'm aware of.

MS. LEID: You think it's in the documents we've already produced?

MR. ACETTA: I think so.

MS. LEID: The design plans, the calculations --

MR. HOLT: We don't -- we weren't given NCRs or RFIs. So the request for information that deals with the placement of the shims that was just asked, the temporary shims --

MR. WALSH: Yeah, if we could specifically request the --

MR. BRAGG: Let's wrap up, and then we can address that --

MR. HOLT: Okay. Yeah. Okay, we can do that. Okay.

MR. BRAGG: I think that would be better.

MR. ACETTA: Yeah, I don't have any other --

MR. BRAGG: Go ahead, Dan.

BY MR. WALSH:

Q. Just to follow up on Robert's questioning, because I'm having trouble understanding some of the redundancy, and if you could explain that for us, because that's -- you said you were aware of internal redundancy to the main span. Can you just explain some of the components of the main span that contributed to the internal redundancy?

A. The elements that I believe contributed to the redundancy would be the post-tensioning tendons and PT bars.

Q. Okay. And just a hypothetical question. When the main span and the back span and the pylon pier are in place, what changes in terms of redundancy when all of those elements are constructed together?

A. I don't know.

MR. WALSH: That's all I have.

Reggie, did you have --

BY MR. BRAGG:

Q. I have one question -- a couple questions just about your vacation. You were present for the move?

A. Yes.

Q. And that took place on what date?

A. The early morning of March 10th, 2018.
Q. And when did your vacation begin?
A. I flew out of the Miami Airport that evening, March 10th.
Q. Okay. And you returned on?
A. March 17th, 2018.
Q. March 17th. And did you respond to any emails during that period?
A. Could you specify?
Q. During the period of your vacation, did you respond to any?
A. In relation to this project or --
Q. Yes.
A. Specifically to the --
Q. To this project specifically.
A. I think might have responded to an email related to a separate item on this project. It was a question on --
Q. Okay. And what -- and just for the record, what is your email address that you use?
A. Ehango@figg, F-I-G-G, bridge.com.
Q. Okay. And you are a professional engineer for FIGG?
A. Yes.
Q. Okay. I have no further questions.
A. I don't think I finished my response, but I was going to say I think I responded to an email related to a question the rebar supplier had.
Q. Okay.

A. Eddy and I were trying to help provide some useful information to them, so he sent me a draft response and I said, yup, looks good.
Q. Okay.
A. But it was not related to the assessment of the condition of the bridge or anything like that.
MR. BRAGG: Any other questions?
MR. HOLT: No, sir.
MR. BRAGG: Okay. The time is 9:58 a.m. We will conclude the interview.
Thank you for your participation.
(Whereupon, at 9:58 a.m., the interview was concluded.)

CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF:	PEDESTRIAN BRIDGE COLLAPSE MIAMI, FLORIDA MARCH 15, 2018 Interview of Erika Hango
ACCIDENT NO.:	HWY18MH009
PLACE:	MIAMI, FLORIDA
DATE:	June 28, 2018

was held according to the record, and that this is the original, complete, true and accurate transcript which has been transcribed to the best of my skill and ability.

[redacted]

Danielle VanRiper
Transcriber

UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

* * * * * * * * * * * * * * * * * *

Investigation of:	*	
	*	
PEDESTRIAN BRIDGE COLLAPSE	*	
MIAMI, FLORIDA	*	Accident No.: HWY18MH009
MARCH 15, 2018	*	
	*	

* * * * * * * * * * * * * * * * * *

Interview of: JAMES HINES
FIGG

Thursday,
May 17, 2018

APPEARANCES:

KENNETH BRAGG, Human Performance Investigator
National Transportation Safety Board

DANIEL WALSH, Senior Highway Accident Investigator
National Transportation Safety Board

ROBERT ACETTA, Investigator in Charge
National Transportation Safety Board

REGGIE HOLT, Senior Bridge Engineer-Concrete Specialist
Federal Highway Administration (FHA)

PATRICIA LEID, Attorney
(On behalf of Mr. Hines)

I N D E X

I N T E R V I E W

(10:44 a.m.)

MR. BRAGG: Today is Thursday, May 17, 2018. It's about 10:44 a.m. My name is Kenneth Bragg, human performance investigator with Office of Highway Safety for the National Transportation Safety Board. This interview is of Franklin Hines and is related to the FIU bridge collapse in Miami, Florida.

I'm going to go around the table and ask everyone to state your name and organization, starting to my left.

MR. ACCETTA: Robert Accetta, A-C-C-E-T-T-A, with the NTSB. I'm the investigator in charge.

MR. HOLT: Reggie Holt, Federal Highway.

MR. WALSH: Dan Walsh, with the National Transportation Safety Board.

MS. LEID: Patricia Leid, L-E-I-D, Counsel for the witness.

MR. HINES: And I am Franklin Hines, James Franklin Hines, III, is my full name; J-A-M-E-S, Franklin, Hines, H-I-N-E-S, with FIGG.

INTERVIEW OF JAMES FRANKLIN HINES

BY MR. BRAGG:

Q. Okay. And how long you have been with FIGG?

A. I actually worked with FIGG, first joined them in 1985 through '89. I left them and went to work for other engineering firms and then came back to FIGG in 2003, and I've been working with them since.

Q. And what's your current role at FIGG?
A. My corporate title is construction engineering manager.
Q. Okay.
A. And I am most generally affiliated with FIGG Bridge Inspection, which is one of the companies of the FIGG organization.
Q. And have you had that role since you came back to the company in 2003?
A. Yes, I've been with FBI since then, in that.
Q. Okay. Tell me about where you went to school.
A. I –- both graduate and undergraduate I went to Mississippi State University. Graduated in '81, worked for a couple of years with McDermott, and then went back to graduate school in '83 -- '85.
Q. And when did you become involved in the FIU bridge collapse?
A. I'm very bad with dates. I can recall it was prior to the first attempt of the concrete pour. I was asked by Dwight to go down there and just, you know, put my eyes on things. So it was prior to the first concrete pour.
Q. And that was in 2018, correct? Or late 2017? Which was that? And I'm not –-
A. It must have been 2017, in the summer; it was warm.
Q. Okay. And so you said the first pour. So what happened with the first pour?
A. The first pour, they -- basically they started the pour and

the batch plant, concrete batch plant broke down, so they aborted the pour, basically opened the forms and removed all the concrete.

Q. Okay. And when did they try a second time?

A. I can't be sure. I wasn't there for that.

Q. Okay.

A. I did -- I was not there for any of the subsequent concrete placements.

Q. All right. So, and just briefly summarize what your involvement in the project has been to this point.

A. Well, it's been very limited. I'll just say off the bat that I have been in -- no involvement in the design of the bridge. I have only gone there as basically to put eyes on the project at Dwight's direction. I've only gone down there with his direction on those three occasions, and just really to –- Dwight wanted me, because I've had construction experience, just to go and look at things and if I saw anything that looked out of sorts to, you know, let him know and to, you know, make comments to the contractor.

MR. BRAGG: Okay. Mr. Holt, do you want to talk a little bit more about that process?

MR. HOLT: Sure.

BY MR. HOLT:

A. Reggie Holt, Federal Highway. So I'll start off with, I guess, I've two lines of questions. One is with the analysis, and you just said you were -- had a limited involvement in that, so I

guess I'm not going to expect a whole a lot of information about that, but then others on the construction operations and observations that were made.

So from your understanding, the FIGG team that designed the bridge and the roles and responsibilities that -- can you, can identify roles and who was involved in the design of the bridge?

A. Well, I -- in general, I know that obviously Dwight Dempsey, Denny Pate, Manuel Feliciano, and Erika Hango. That's the ones I can say definitely that I know were involved in the design. There probably were others, but I don't know.

Q. And what were some of the roles? I mean, we understand it that Denny signed; he was the engineer of record, but that doesn't really necessarily indicate significant involvement. But, you know, from a design manager, lead designer, you know, what kind of roles of the different people that did the design?

A. If -- I can't speak to authority on that.

Q. Right.

A. Honestly, I was peripherally involved. I think, and I'm not a hundred percent sure, I think Manuel was one of the -- maybe the manager of the project as far as engineering went, but -- and, but he worked with Denny. And that's really all I can say generally, I mean.

Q. So Manuel spent a fair -- significant amount of his time designing this bridge? Man-hours relative to the others.

A. Designing it, I don't -- I think more managing.

Q. Okay.
A. Was Manuel's.
Q. You stated that you were asked to observed the first pour by Dwight. Was there any reason for that request?
A. Just because I -- because of my experience with construction, he just wanted me to have -- be another set of eyes. I really wasn't there as an inspector at all. There was CEI firm there that was responsibility for -- responsible for inspections. So, again, I was there to just -- you know, if I saw anything, to say something both to Dwight and to the contractor, in general.
Q. So there wasn't any overriding reason to --
A. No.
Q. -- observe that pour versus any other pour or --
A. No, no. It's just kind of a, you know, it's kind of an added value we give to the project, because when -- you know, if we have experience available to send -- I mean, it was just for a day, so Dwight thought there was value in that to the client.
Q. Other than the plant breaking down were there any observations made as far as, you know -- I guess you looked at the reinforcement placement and post-tensioning placement and procedures for --
A. I glanced -- I just, you know, looked over it. Basically, I'm looking for anything that's glaringly wrong.
Q. Right.
A. And I didn't see anything.

Q. So were you involved in any way in the CE&I for other purposes of the bridge?
A. Absolutely not. No.
Q. So were you aware of any field design changes or NCRs or --
A. No. I was not in the loop of any of that information. Of course, I was aware of stuff was going on, but I -- no one asked me to look at anything.
Q. So how many times did you visit the bridge site?
A. It's three occasions. One was prior, as I said, prior the pour, and I basically walked around, looked for, you know, glaring -- things that were glaringly wrong. I had of course a set of plans with me and, you know, just didn't see anything that was out of sorts with the plans, and that was it. Second time, as I said, was for the concrete pour. Again, nothing seemed wrong other than, you know, the concrete placement had to stop, which was, you know, unfortunate for the contractor. He had to break out all that concrete and start over with the form work. And then the third time, I was there for the actual move.
Q. And what was the purpose of the -- purpose of being there for the actual move?
A. Again, Dwight wanted me there for my experience to offer any comments to the contractor as I saw -- you know, was because of -- basically there was, as you know, there was a procedure that the Barnhart and them everything go with there. So I was there to mainly keep an eye on that things went according to that document,

the move document, if you will. It was submittal and it was approved by FIGG, and so I was basically keeping an eye on the more important things of that move, you know, placement of the supports, but not -- you know, I wasn't directing the work at all, just any, if I -- mainly to look and see if there's anything out of sorts and, you know, glaringly obviously wrong.

Q. So let me get it straight. So you're there -- was this a contractual work requirement by FIGG --

A. No.

Q. -- to participate in the oversite of the move?

A. No. Not to my knowledge it was. Dwight made it clear to me that I was just there to observe and, you know, to counsel the contractor if anything looked wonky.

Q. Okay. So you stated that, so your -- you looked at the SPMT support locations, and -- I mean, I'm trying to think. You were talking about some of the items that you were overseeing.

A. Well --

Q. Officially, unofficially just observed --

A. Right. With my experience, I -- the main thing I was concerned with and that I wanted to make sure that Barnhart did correctly, was put the supports in the right place. I knew that that was important, and so I confirmed that they had it within, way within the tolerance of where it should've been.

Q. Okay.

A. And the other thing that I keyed on, the whole time I was

there once the move started, was to make sure that the instrumentation -- you know, it was instrumented and the rotation, there was a limit in the same procedure, that at no time did the structure be exposed to a rotation more than was allowed in the documentation. And I can say, to my knowledge, that never happened during the move.

Q. How about the placement of the bridge on its supports? Was that observed too? I mean --

A. I was there for that, yes.

Q. And were there components of that move that needed to be observed, that you observed?

A. Well, I was there for the entire move and the final set, so I observed it all. There was, you know, a few moments when I went away and got something to eat or they had a break down on the Wi-Fi, there was about an hour, and so I went and, you know, rested in the car because I had been on my feet for hours, so -- and then, you know, I was informed when they started moving again and I came back and observed it. So there was a few times when I wasn't actually physically looking at the readout of the -- but very few.

Q. To our understanding that there was amount -- that there was a lot of attention paid to the placement of the bridge, the final set, as you say, because it sounds like there were fairly prescriptive procedures. Were you involved in making sure those procedures were --

A. Well, yes. I mean, watching it all, as I said, once the -- we knew the supports were in place, the main thing I keyed on was making sure the rotation was limited to the maximum value. And so therefore, the final set is just as important that its set is not exceeding that rotational value.

So I -- we -- because the south was set first on neoprene bearings, so that, basically that orientation fixed the structure as to how it was going to final lay, so that's why it was set down there first. The other end had shims to adjust for any inherent twist that the structure had that was built. So it was -- the shims stack was there to adjust, if required, to negate any twist in the structure.

Q. Did you observe the placement of the north pier?

A. Yes, I did.

Q. And were shims needed to get the final contact?

A. Well, the shims were --

Q. Get the full contact?

MS. LEAD: Let him get his full question out.

MR. HINES: I'm sorry. Thank you. Thank you.

I'm sorry, please repeat that.

BY MR. HOLT:

Q. So you observed the placement, the final set on the north pier, and you said shims were available. I guess I'm asking were the shims needed to get equal distribution of forces and -- equal contact, I guess?

A. Well, the shims were placed -- they had excess shims for adjustment, but the shim stack was placed according to that same document exactly. We had already -- prior to getting there, we confirmed that that shim stack was as stated in the plans exactly in that procedure. And in the final set there was no adjustment needed. It set -- in my mind, it was as perfect a set as it could possibly get. I was -- I actually expected us to have to shim it, and we didn't. We didn't have to shim. It all came down flat on those shims stacks. There were four shim stacks and it came right down on it. No, no need for shimming. In other words, it came down and hit them all at the same time.

Q. Okay. The construction sequence showed that the vertical PT into the pier was going to occur pretty much after placement, or soon after placement, and we noticed that did not happen. Was that an adjustment that was made or is that something -- I mean, what was the reason for the not following the construction sequence in the contract plans?

A. Well, I really have no knowledge about the post-tensioning. That was not part of that procedure as far as I know, and so, I really, I really don't know -- I mean, while I'm aware that that was part of it, I didn't know what the timing or -- was required on that. I just was vaguely aware of that.

Q. So during observation you weren't made aware that maybe you should go up on the deck an observe the post-tensioning of the --

A. No.

Q. -- vertical rods into the pier?
A. No. No.
Q. So I guess the last theme of questions are basically construction, processing and issues. So as you're aware, I mean, there was cracking that was observed after placement. Did you observe any kind of sign -- distress or cracking during this final set, or crack that you witnessed?
A. I went up onto the top of the structure after the final set when it was fully self-supporting, and I made one walk the full length, down one side and back up the other. And I did observe some, what I -- some minor cracking. There had been some cracking known before and I had seen in photos, and in my estimation it appeared that it was the same cracks that, you know, once it had come -- it was in the state that it was -- that it started with. So it looked like from the photos in my mind that I remembered, they looked the same. It looked like they had just reopened.

Now, one thing to note is that the contractor painted or put some sort of finish on the truss members, I think for, you know, appearances, to make it look pretty. And so, I didn't have any way to really confirm that the cracks were in the same place. But they appeared from the photos to be the same type of cracks that had been exhibited before.
Q. Did the painting occur after the cracking?
A. The -- well, before the move. The painting was before the move.

Q. Yeah, but, I mean, you talked about the cracking that you knew that was there, you saw photos of.
A. Yeah.
Q. And that was the cracking they observed when they dropped the falsework?
A. I honestly don't know exactly when those cracks appeared. I honestly don't know.
Q. But anyway, you had pictures of cracking, but the concrete surfaces were not painted on the --
A. Correct, correct.
Q. They were not painted. So and what you saw was painted. Okay.
A. Yes.
Q. So did you see cracking -- any additional cracking other than what was given to you by the photos?
A. No.
Q. And what were regions of -- was the -- did you see the cracking?
A. It was at the bottom of the vertical members. Some -- I can't remember how many or, you know --
Q. Was there any kind of designation on the cracking to indicate propagation? Any kind of crack, you know, typical cracking markings that you would see?
A. No. I mean, because the white -- because the whatever finish they put on there, there was nothing to really, you know, compare

it to.
Q. So given your construction experience, were you engaged in any way when the -- this initial cracking happened during fabrication?
A. No. Are you talking about engaged -- I'm not clear what you mean on that.
Q. Well, the bridge experienced cracking during this fabrication.
A. Right. Okay.
Q. FIGG was engaged to assess the cracking.
A. Right. No. Okay, I wasn't part of any of the assessment or -- I just happened to see some photos.
Q. So you weren't engaged in any way during that initial assessment?
A. No, sir.
Q. So after your walk-through, other than the cracking that was already indicated to you via photos, did you see any other cracking?
A. No. I will say while I was up there, there was also a CEI member inspector walking, you know, with the same time I was up there. I don't know who he was. But we both kind of had an exchange in passing and saying, well, it looks pretty good, right? And, you know, and he agreed it looks -- you know, wasn't anything out of the ordinary that he expected either, and I assumed he was someone who had been there for the whole time. And so, you know,

kind of -- I kind of, you know, it -- that kind of made me feel good that, okay, well, he's been around here and he's seen that and that's nothing really out of the ordinary here. We've all seen -- you know, the group has seen these cracks.

Q. And other than this other inspector was anybody else with you when you were doing this inspection --

A. No.

Q. -- visual inspection?

A. No.

Q. And how soon after placement did this assessment happen, and did you stay longer or were any additional assessments made?

A. No, and I just -- no one really directed me to do it, it's just kind of something I would normally do in my normal construction jobs. And pretty much as soon as the load was off and it was -- you know, I went up there. So it was immediately after the final set. I don't know what the time interval was, but it was definitely just a few, you know, minute, 10 minutes, maybe less. I basically went up there immediately after the final set and did a quick walk. I just wanted to, you know, make sure there wasn't anything unexpected.

Q. And how soon after that did you leave the site?

A. Wasn't very long, probably within a half hour or so, I think.

Q. That's the last time you were at the site?

A. Well, I briefly the next -- after I left, I went to the hotel and slept for many hours, and on my way to the airport I swung by

and took some photos from the top of the parking garage. Didn't really talk with anybody, just kind of, you know, wanted to take an overall picture from the -- of the site and everything, just, you know, here, it's done, looks great kind of thing.

Q. So it was set at noon on Saturday, right? So those photos --

A. I think it was prior to noon but --

Q. Or it was somewhere around noon. So what -- were you into Sunday now, when you took those pictures?

A. Correct. Yep. A main reason, I wanted to take pictures of Barnhart's stuff as they were breaking it apart, you know, to see it in pieces for basically our future reference, because it was an interesting operation. So mainly why I went there was just to take pictures of their equipment as it was broken down.

Q. Did you speak to anybody while you were up there?

A. Nope. Because I had -- it was just a quick -- because I had to catch a plane.

Q. And this -- the parking garage was the one on the FIU campus? Or what was --

A. Yes, yes.

Q. So behind the --

A. Just south --

Q. -- behind the south abutment? Or --

A. Correct. Correct.

MR. HOLT: I guess we would like see those pictures, if you can --

MS. LEID: They're on the list.

BY MR. HOLT:

Q. And approximately what time was that on Sunday?

A. I think it was noonish. I honestly, I can't remember well -- I think it was around noon.

Q. Okay.

MS. LEID: March 11th.

UNIDENTIFIED SPEAKER: The time changed back on the 9th.

MR. HOLT: That's -- thank you. That was the last question for --

MR. BRAGG: Just a follow-up question for Mr. Holt here.

BY MR. BRAGG:

Q. So you said Dwight asked you go. You mean Dwight Dempsey?

A. Yes.

Q. And so, what's your professional relationship with Dwight Dempsey?

A. Well, he is -- I normally report to Tom DeHaven, who's the head of FBI, but I was in between construction projects -- that's my normal thing that I do -- and so I was reporting directly to Dwight while I was at the Tallahassee office.

Q. Okay. And so, on each of these three occasions when you were observing, how did you communicate with Dwight about your observations?

A. Basically, just conversations.

Q. Conversations?

A. Yeah.
Q. Did you take photographs, send emails?
A. I'm sure I took photographs at various times.
Q. So we would request any photographs that you had, photographs or emails you had, any communication about the observations during these three observations.
And the last thing is, so you said they applied a finish to the --
A. Yes.
Q. When was that finish done?
A. They were doing it on -- I think they were underway on Wednesday and Thursday. It was that week that I actually observed. It was partially complete when I got there, but they -- over Wednesday and Thursday, they were still finishing it.
Q. So this was prior to or after the move?
A. Prior to.
Q. Prior to. How far prior to? Like a week before, a month before?
A. No, no, no, it was that week of the move.
Q. Week of the move, okay.
A. Yes.
Q. Okay.
A. I mean, I don't know when they started it. Like I said, it was underway when I got there and --
Q. And what did that involve, that finish involve?

A. It was just a white -- I don't know if it was a paint or a finishing -- I honestly don't know what it was.
Q. Okay.
A. It could've been a paint. It could've been -- sometimes you have these finishing, like a --
Q. Like a stain?
A. -- paste, stain, something like --
Q. Okay. So how they did apply it? Did they apply it with a spray gun or just apply it with a roller?
A. No, it seems like, seems like it was just kind of troweled on, but I can't -- you know, I honestly can't say exactly. It wasn't a roller. It wasn't done with a roller.
Q. Okay. And who was they? Who was putting it on there?
A. I assumed it was the contractor personnel.
Q. That being MCM?
A. Yes.
Q. Okay.
A. That's who I assumed, or either one of their subcontractors.
MR. BRAGG: Okay.
MR. WALSH: Dan Walsh, with the NTSB.
BY MR. WALSH:
Q. My questions may be similar, somewhat similar, or the line of questions may be similar, so I apologize for -- if that line of questioning is similar.
Franklin, tell us about your knowledge of the cracking at the

bottom of diagonal number 11, and when did you first know about the cracking.

A. Well, honestly, I don't know which diagonal number 11 is. As I said, my knowledge, prior knowledge of the cracks was just glancing at some photos. I don't even know where I saw those from; might have been in email, or that, but really I hadn't -- there was no discussions about them. I -- that -- no one came to me and had a discussion with me about it, if that's what you're asking.

Q. Okay. So you really -- do you -- you don't know where diagonal number 11 is in the design of the main truss --

A. No, sir.

Q. -- whether it's on the south end or the north end?

A. No.

Q. You just -- you don't have knowledge of that?

A. No. I mean, if -- I could figure it out if I had a set of plans, but no, I don't. I don't know.

Q. Okay. And so, if you were out in the field, you would not know, you know, where that particular diagonal is in the main span?

A. No, sir.

Q. Okay. I'm going to ask you about a specific email from John Jackson, an employee with the MCM. Were you made aware from John Jackson of cracks found on February 24th when falsework was being removed from under the main span?

A. I don't recall being part of that email, and I don't know who John Jackson is.
Q. Okay. He had indicated to us in an interview with us, that he sent you an email documenting the cracks on February 24th.
A. To me?
Q. Yes. Do you recall that?
A. I don't recall that. I don't even know who John Jackson is. I don't.
Q. Okay. Okay. He's an employee with MCM.
A. Okay.
Q. The contractor --
A. Well, it would be odd for any of them from MCM to send me an email directly. It would've gone to someone else on that.
Q. Okay. All right. Were you ever aware of a loud popping noise on February 24th that could be heard throughout the casting yard when the falsework was being removed? Could -- were -- my first question is, were you there on February 24th? And then my second question is, did you hear of any loud popping noise within conversations that you had with individuals with FIGG engineering?
A. This is the first I've heard of a loud popping noise.
Q. Okay. All right. Okay. I'm going to ask you another question about another email, if I can. You were carbon copied on an email dated March 12th from Rodrigo Isaza of MCM, that indicated the cracks at the bottom of diagonal number 11 were rather large and asked for a prompt course of action to remedy.

Were you aware of that email?
A. Yes.
Q. Okay. What was FIGG's response to that email?
A. As I recall, Dwight and Denny responded to that, and that -- you know, there was, I believe there was -- I'm not certain when the phone calls were made. I know there were discussions and communications between -- I know definitely there was email from Dwight to him in response to that.
Q. Okay. Did you talk with Dwight about the response, his response --
A. No.
Q. -- as he prepared that email?
A. No.
Q. Was there any discussion with him?
A. No. I had no discussion with Dwight about it.
MR. WALSH: We'd like to get a copy of that response email, if that -- I'm not sure if that was provided or not, but --
MS. LEID: I think we've produced that already.
MR. WALSH: Okay. If that's not already included.
MS. LEID: There's a 3-day cycle of emails.
MR. WALSH: Yeah. Okay. Okay.
MS. LEID: Let me know if you don't --
MR. WALSH: Okay.
MS. LEID: Okay.
BY MR. WALSH:

Q. All right. When you observed these cracks, these photos of the cracks that you had mentioned earlier, how would you consider those cracks? Would you consider those -- yeah, what's your interpretation of those cracks? Would they be minor cracks?
A. Minor hairline cracks.
Q. Okay. Would you consider them structural cracks?
A. No. Would not.
Q. All right. And what, what would -- why -- what would lead you to the conclusion that they're not structural cracks?
A. Because of their size, that they were -- they appeared to be hairline. And the photo again, you know, it was a photo and I just saw it in passing. I don't remember really what the -- how or when I saw them, but -- and it seemed like it was only one or two photos that I saw. But what I saw, it appeared to be, you know, just hairline cracking that you sometimes get when, you know, as concrete cures or whatever.
Q. Yeah.
A. You know.
Q. And do you recall any dimensions --
A. No.
Q. -- of those cracks?
A. No. I definitely know there were -- I didn't see any dimensions in relation to the photos that I saw.
Q. Okay. Some of the cracks at the bottom of diagonal number 11 were measured by Bolton Perez to be approximately 1-inch wide and

4 inches deep. Would you consider those to be structural cracks?
A. Well, I'm sorry, but I'm not going to speculate on someone else's comment and someone else's measurement. Definitely it would be something to look into, you know.
Q. You would consider those to be structural cracks if they were that wide and that deep?
A. It depends on where they are, you know. And so, I don't want -- I really don't feel that I should speculate on something like that without, you know, more investigation than just this as you describe it.
Q. Okay. FDOT defines a structural crack to extend deeper than a half an inch. Are you aware of FDOT's disposition of cracked concrete?
A. I'm -- that -- are you talking about their concrete -- in their specifications?
Q. Yes.
A. I have seen it. It's changed over time. I know that, you know, every year they update it, so -- but I am aware of that specification.
Q. Okay. Were the cracks at the bottom of diagonal number 11 ever evaluated using FDOT's disposition of cracked concrete?
A. I don't know definitively. I know that the subject came up with Dwight. He asked me about that and I showed him the spec. So I know it must have been looked at, but I don't know what the results were or anything. I just -- I basically looked the spec

up for him and gave it to him.
Q. Okay. So you had an interaction with Dwight --
A. Yes.
Q. -- regarding that? Okay.
Bolton Perez requested the cracks at the bottom of diagonal number 11 be monitored and documented for growth to determine if the cracks were active or dormant. Were you aware of that request?
A. No.
Q. Okay. Are you aware of any considerations by FIGG to evaluate the cracking at the bottom of diagonal number 11 by any other means besides visual means?
A. I don't -- I don't know where number 11 is, and I -- so I don't know, honestly.
Q. Okay.
A. I'm sorry.
Q. I'm just asking the question, was there any discussion at all that you're aware of that would've involved the looking at the cracking in more detail rather than visual means?
A. I can't say that I know that. I don't know that.
Q. Okay.
A. I would assume that would've happened, but I don't know.
Q. Okay. So there was no considerations of coring out the concrete, or coring out the concrete in that area where the cracking was evident to determine the extent of how far it

extended?
A. I definitely don't recall any mention of coring with regard to the cracks.
MR. WALSH: Okay. That's all my questions.
MR. ACCETTA: I had a few, but some -- oh, this is Robert Accetta with the NTSB -- but they were already asked, but I do have one.
BY MR. ACCETTA:
Q. That location of the first pour that you were there to observe, where was that in relationship to the structure?
A. They began the pour at what would've been the south end.
Q. Yeah.
A. Okay. That's where they started, and that's -- they didn't get but a few feet past that and had to the abort the pour.
Q. Okay. And as you said, they removed the form work with the concrete --
A. Yeah, yeah. That saved -- would have saved them a lot of money. So they got in there with like 30 guys and were digging out concrete and moving, removing the forms and -- yes.
Q. All right. That was at the south end? That's want I wanted to know.
A. Yes. It was definitely the south end.
Q. Okay. Thank you. I don't have any other question.
MR. HOLT: Reggie Holt, Federal Highway. I just have one more follow-up talking about the cracking that was occurred.

BY MR. HOLT:

Q. So based on your experiences as a CEI expert, what level of cracking do you need to observe before you notify the engineer and what kind -- what level of cracking would you observe during construction where you would say that it is, you know, remedial?

A. Well, any cracking would be reported, and reported to both the owner and the designer. Okay. That would be as a CEI, which I was not on this project.

Q. Right. I understand.

A. But if I were a CEI on a project, it would be reported to both the designer immediately, and the owner. That would be an immediate response to discovering cracks, no matter how big or how small.

Q. So any and all cracking would be --

A. Correct.

Q. -- would be identified?

A. Yes.

Q. And when you identify it, do you ask for follow-up information or you just identify and say here's a crack?

A. Well, we wait for -- this is all speculating --

Q. Right.

A. -- of a hypothetical situation.

Q. Based on your experience.

A. Right. You would give it to, as I said, the designer and then you would wait for their response, and if they wanted

additional information, you would provide it. You know, so normally you'd send, maybe send photos or whatever. So --

Q. So based on your experience, if you saw this particular crack, in your correspondence with the designer/owner you would identify it as a minor hairline crack?

A. The ones I saw on the photos?

Q. The ones you saw on the photos and your walk-through afterwards.

A. Well, the -- as I said, the walk-through it appeared that it was the same type as before, the photos before appeared to be hairline cracks that of course had been reported.

MR. ACCETTA: That's it.

BY MR. WALSH:

Q. Just one follow-up question. You mentioned, you went up on the deck and you saw a CEI employee who said everything looked pretty good. Do you remember who that individual was?

A. No.

Q. The name of that individual?

A. No. I really didn't know it. I was -- I'm really poor with names and I had never been introduce to this individual; I know that.

Q. Okay. Thank you.

MR. BRAGG: Okay. Time is now 11:27 a.m. We will conclude the interview. Thank you for your participation.

(Whereupon, at 11:27 a.m., the interview was concluded.)

CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF: PEDESTRIAN BRIDGE COLLAPSE
MIAMI, FLORIDA
MARCH 15, 2018
Interview of James Hines

ACCIDENT NO.: HWY18MH009

PLACE:

DATE: May 17, 2018

was held according to the record, and that this is the original, complete, true and accurate transcript which has been transcribed to the best of my skill and ability.

[redacted]
Katia Toniolo
Transcriber

UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

* * * * * * * * * * * * * * * * * *
Investigation of: *
*
PEDESTRIAN BRIDGE COLLAPSE *
MIAMI, FLORIDA * Accident No.: HWY18MH009
MARCH 15, 2018 *
*
* * * * * * * * * * * * * * * * * *

Interview of: EDDY LEON
FIGG

Law Offices of Clyde & Co.
Miami, Florida

Thursday,
June 28, 2018

APPEARANCES:

KENNETH BRAGG, Senior Human Performance Investigator
National Transportation Safety Board

DANIEL WALSH, Senior Highway Accident Investigator
National Transportation Safety Board

ROBERT ACETTA, Investigator in Charge
National Transportation Safety Board

REGGIE HOLT, Senior Bridge Engineer-Concrete Specialist
Federal Highway Administration (FHA)

PATRICIA A. LEID, Senior Counsel
Clyde & Company
(On behalf of FIGG)

I N D E X

I N T E R V I E W

(10:14 a.m.)

MR. BRAGG: Today is Thursday, June 28th, 2018. It's 10:14 a.m. This interview is in regards to the FIU bridge collapse, which occurred in Miami, Florida on March 15, 2018. We are at the Clyde & Co. legal office here in Miami.

My name is Kenneth Bragg. I am an investigator with the Office of Highway Safety for the National Transportation Safety Board.

I'm going to start by going around the room this way and ask everyone to state their name and organization.

MR. WALSH: Dan Walsh with the National Transportation Safety Board.

MR. HOLT: Reggie Holt, Federal Highway Administration.

MR. ACETTA: Robert Acetta, National Transportation Safety Board.

MS. LEID: Patricia Leid, Clyde and Co.

INTERVIEW OF EDDY LEON

BY MR. BRAGG:

Q. MR. BRAGG: And please say and spell your name, please?

A. Sure. My name is Eddy Leon. Eddy, that would be E-d-d-y. Leon is L-e-o-n.

Q. Okay.

A. And I'm with FIGG.

Q. That's a good place to start. How long have you been with

FIGG?
A. It's going to be close to 6 years.
Q. Six years? And what's your current role with FIGG?
A. It's bridge engineer.
Q. Bridge engineer?
A. Yes, sir.
Q. You're a PE? You're a professional engineer?
A. I am.
Q. And how long have you served in that capacity?
A. As a PE?
Q. Yeah.
A. As a PE, not too long ago. I got my PE license in December of last year, of 2017.
Q. Okay. And so what did you do prior to obtaining your license?
A. I was a bridge designer, still with FIGG, and I also was -- I actually started with FIGG on the inspection side.
Q. Okay.
A. In the casting yard as well as on the erection side.
Q. And do you have any professional experience outside of FIGG?
A. No, sir.
Q. No, sir. Okay.
A. Actually, let me take that back. I did have a year, but that was within my college career, part-time job with a structural firm in Mobile, Alabama, where I'm currently residing.

Q. And where did you go to school?
A. University of South Alabama.
Q. Okay. So the FIU bridge project, when had you become involved in that?
A. As far as I can remember, maybe early 2017.
Q. Early 2017?
A. Um-hum.
Q. And what was your role in the project?
A. I was involved in the design of the project, superstructure design, as well as the footing and foundations for the pylon, and you know, I also participated in some of the site visits to the project.
Q. Okay. And so describe the site visits, just kind of list them for me.
A. Sure. My first one was prior to the move, the week prior to the move of the span. That was my first visit. And my second was during the day of the accident.
Q. Were you present for the move?
A. I was present for the move, yes, sir.
Q. Okay. So describe a little bit about what you did and what you saw on the week prior to the move?
A. Prior to the move, yeah. I was there with my colleague, Franklin Hines. We both traveled to Miami. I believe that was March the 7th, on Wednesday. And our role -- it's my understanding that our role was as support role to MCM, the

construction company --
Q. Okay.
A. -- just to help them, I guess, get prepared for the move, just to make sure that everything was set up correctly, I guess. But even though that was Barnhart's responsibility, but we were there as a support role for MCM.
Q. Okay. And tell me what, if anything, you did with regards to cracking prior to the move?
A. With regards to cracking, Franklin Hines and myself actually did get on the deck prior to the move. And we just, I guess, confirmed the surface or the minor cracks that were reported, I guess. I think that was back in February when it was reported to FIGG.
Q. And did you document those cracks?
A. No, I did not. No, we didn't. And I don't think Franklin did either.
Q. Okay.
A. That was, you know, I guess the CEI role. I guess they were taking measurements and all that, and probably pictures, too.
Q. Okay. So at that time what was your understanding as to the source and cause of those cracks?
A. My understanding was that those cracks were, I guess, due to the procedure of the stressing and the support conditions of the bridge at that time, but it wasn't really -- at least it was my understanding that they were not really a concern back then, prior

to the move.
Q. Okay. And so then you were there on the move. Describe what happened during the move.
A. During the move, I guess there was a pre-lift test of the bridge, and that would happen on Friday close to midnight. That's basically just -- it was like a 5-minute operation. They just lifted the bridge on the actual supports from Barnhart, and just to make sure -- I guess that they were trying to see if once they put it on the supports if there was going to be a big variation on the numbers that they were recording, I guess that BDI was recording on their computer. And they didn't notice that, so they were --you know, I guess that gave them the good to go.

And then we started -- the actual move started on Saturday morning around 4 a.m., I think is when they started.
Q. Okay. Did you encounter anything unusual during the move itself?
A. The only unusual during the move, it was just a loss, they lost -- I know they lost connection. The BDI lost connection to their -- I think it was a Wifi connection that he was -- had on his computer. So that was the only thing, I guess, an issue that -- you know, there was a big stop, probably an hour stop there, and probably midway between the staging location to its final location. But other than that, I don't think there was --
Q. So nothing occurred unusual with respect to the moving of the bridge?

A. Well, not to my knowledge.
Q. Not to your knowledge?
A. Yes, sir.
Q. Okay. And after the move was completed, when did you leave?
A. After the move was completed, we left the site probably that Saturday afternoon, but me and Franklin went back to our hotel. And then we left Sunday morning, and it's my understanding that Franklin left on Sunday afternoon, a day after the move.
Q. Okay. So after the move, did you go back to the bridge or do any observations?
A. I did not, no, sir.
Q. Okay. So were you aware of -- that there was a crack promulgating after the move?
A. That's what the contractor told us, that I guess they started seeing some cracks a few hours after the bridge was set on its final location. That's what they told me and Denney when we were there on -- I guess when we got there on the 15th.
Q. Okay. And what was your response upon learning this information?
A. About learning about --
Q. About the cracks, yeah.
A. The cracks? Well, I know we received that -- I think it was the Tuesday morning before the accident is when Denney and myself actually got on the phone and, you know, we were -- I guess it was a little hard for us to -- first of all, we were -- and actually,

that's why he called me. We were trying to understand where the cracks were located. That picture didn't have really too much information. So we, you know, we didn't have sizes or lengths. And so we actually took a while just to try to figure out, you know, what was happening, and that's why the decision was made that we needed to go up there as soon as we could, so that he could take a look at those cracks.

Q. Did you ever receive any information about cracks forming when the falsework was removed back in February?

A. Not to my knowledge, sir.

Q. So you had no knowledge of that?

A. No, sir.

Q. Okay.

A. You know, like the only thing I mentioned is, like, I knew there were some cracks developed back in February, I guess, when they were working after the pre-stress, and that was because since I worked on the project, but I wasn't really involved too much in the design support. But every now and then, I talked to Erika Hango, and said, you know, what was an update on the construction, and that's when I -- she mentioned about those initial cracks. But like I said, you know, she didn't mention any concern or anything.

Q. Okay. So you didn't do any in-depth analysis of those cracks?

A. No, sir. I wasn't involved in that.

MR. BRAGG: Okay. Dan, do you have any questions?

BY MR. WALSH:

Q. Dan Walsh with NTSB. Eddy, you mentioned that prior to the move that there was some discussion about the cracks?

A. Um-hum.

Q. Where were those cracks located?

A. As far as I remember, there was one -- I think it was on diagonal 11. And there were other -- the other one that I could remember, it was on the hinge, which was in the south end of the bridge. And I think there might have been other surface cracks, but I wouldn't remember where those were.

Q. And the discussion internally within FIGG at that point --

A. Sure.

Q. -- was that those cracks were developed as part of the pre-stressing that -- or --

A. I'm not sure we -- like I said, if I could say that it was related to the pre-stressing.

Q. Okay.

A. The only thing that I definitely asked Erika was like if they -- you know, if she was -- or if there was a discussion saying that there was a concern, and she told me no. I guess nobody was thinking that that was a concern at that time, that those were like minor or surface cracks and --

Q. Okay.

A. -- didn't show any signs of concern.

Q. No origin of where they -- why --
A. And I'm sure that was discussed, but that wasn't discussed with me.
Q. Okay.
A. That was probably discussed between Erika and the people in Tallahassee, but that wasn't discussed with me.
Q. And you mentioned with Mr. Bragg's questioning that --
A. Sure.
Q. -- you didn't document those cracks, that FIGG didn't document those cracks?
A. No, because it was my understanding that that was not part of our role during that time. It was more the CEI that -- recording those things. At least that was my understanding, and that's why we didn't -- the only thing we did -- you know, of course I took a few pictures. But it was, I guess, the same locations that it was reported back in February. We didn't see anything new at that time.
Q. And there was no discussion about monitoring? Was there any discussion about monitoring the cracks or doing something else besides visual?
A. There was, but that was the meeting on March 15 prior to the collapse. So that was monitoring to monitor those cracks, but not the ones that we saw before.
Q. Okay. And what was the discussion about monitoring?
A. Well, the only discussion was that I guess the BPA team was

requesting either FIGG or MCM to develop a monitoring program, but -- or something, but nothing else was discussed. So no steps to -- what to do were discussed, at least to -- or from what I can remember when I was there.

Q. And what was FIGG's response at that meeting regarding the issue of monitoring those cracks?

A. I don't quite remember that; however, I think the answer would -- I think was that it was going to be discussed between MCM and FIGG, and I guess BPA as well, to come to agreement and see. But I'm not 100 percent sure.

Q. Okay. Did you encounter any unusual difficulties working with Structural Technologies/VSL [sic], as part of the project?A. I wouldn't be involved in that. I wasn't -- but as far as I know, no, but I wasn't there when they were stressing bars or they were stressing tendons, so I couldn't really know that there was any issues related to that.

Q. And was there any internal discussion within FIGG about --

A. Not with me.

Q. -- VSL's performance?

A. Not with me. No, sir, not with me.

Q. Okay. Did you address all of -- what was your relationship with the Florida Department of Transportation in terms of their review comments on the bridge design submittals?

A. I guess I didn't have a direct relationship with them. It was me reporting back to Manuel Feliciano. And then, you know,

from there, you know, I guess they took it between him and Dwight, you know, they took it back to the FDOT. But I wasn't really -- I didn't have a direct relationship with them.

Q. Okay. Did you see their comments as they were submitted?

A. Yes. The comments that were related to the superstructure design, we took a look and respond to them, yeah.

Q. Okay. One of their comments was that there appeared to be significant shear lag issues in the both the canopy and the walkway, and the designer needs to pay particular attention in these areas. Were you aware of that comment?

A. I can remember that comment. I don't remember our response to it.

Q. Okay. You don't remember how you addressed that comment?

A. Right, not right now. I would have to look back at those comments, responses, and see what -- I guess, what were -- what's agreement between myself, Manuel, and Denney Pate. I know Denney Pate was always the last one that took a look at those comments and made sure that, you know, that he was happy with our responses. But I don't remember right now what was our answer on that.

Q. One comment they made is they recommended chamfered end blocks to address the shear lag. Do you remember if that was included in the bridge design?

A. That comment, I don't remember reading it. So I don't know if that was addressed by somebody else, but I don't remember right

now reading that comment.
Q. Okay. I'm trying to understand some of the email exchange --
A. Sure.
Q. -- that occurred March 12th, 13th, and 14th.
A. Okay.
Q. In which Rodrigo Isaza had sent some emails regarding the cracking.
A. Okay.
Q. And I know you were cc'd on -- you were carbon copied on some of those emails.
A. Um-hum.
Q. I'd like to show you just a series of photographs, if I could, that were attached to that email.
A. Okay.
Q. And the emails are stamped with FIGG stamped on it, but I'm just -- I would just like to get your, you know, what -- your opinion of those. And the first one is stamped FBE-00143, "Photo 15, Diaphragm 2, East Side, Top View Cracks."
A. Okay.
Q. And I just -- my first question is regarding whether did you think the cracks that were contained in that email were structural cracks?
A. And I guess --
Q. Sure. I'll show you that.
A. Well, I guess my answer would be since we didn't have a size

or anything -- you see, the photos were sent like this. So, you know, we were asking, okay, is this a right side, left side? So it was -- that was -- we probably spent, like I said, some time just to try and figure out what we're looking at. And so that was the thing. So I couldn't really answer that, if, you know, we were thinking if it was a structural, you know, or minor crack or surface crack.

But you know, so I'm not sure. We didn't -- at that time, we didn't -- and you know, even after, I never, at least myself, I never saw any dimensions or anything related to the cracks.

Q. Okay. Are you aware of Florida DOT's disposition of cracked concrete? Are you aware of that?

A. You mean what's considered a structural crack or not? Is that --

Q. Yeah, just if you're aware of that publication?

A. No, sir.

Q. Okay. Because in it, it does recommend that structural cracks are deeper than a half an inch, generally deeper than a half an inch. And so I was just wondering if any of your assessment of those emails and those photographs, if they were compared to Florida DOT's disposition of cracked concrete?

A. No. And like I said, I guess going back to the -- just because we didn't have a size or, you know, there was not really --

Q. Well --

A. I guess when I was talking to Denney, we didn't discuss about that. However, you know, it had brought his attention, and that's why the decision was made that he needed to be over there as soon as possible. And that's when that decision was made.

Q. Okay. I'll show you two other photographs that were contained in the email, FBE-00129 and FBE-00131. And I'll ask you the same question as to whether you think those are structural cracks or not?

MR. BRAGG: Give this back that's one, two --

MR. LEON: Oh, it's -- oh, okay.

Yeah, I do remember seeing these pictures. However, again, you know, we didn't discuss that with any just -- if we classified these as structural cracks or not.

BY MR. WALSH:

Q. Okay. What would you interpret those cracks to be?

A. I guess I will need a little more information to determine what those cracks -- but I know on this picture, this one right here, I know something that, you know, me and Denney were thinking, that probably the void area or the -- you know, due to that pipe, that this didn't help in this area. And, you know, I know we were discussing this was probably the cause of this crack. I know that's something that me and Denney were discussing, but --

MS. LEID: Could you reference the number on it?

MR. LEON: Sure. It was 129.

MS. LEID: Okay.

BY MR. WALSH:

Q. So you were referencing -- you were looking at that particular area, and your thought that that was probably the cause of that crack?

A. Yeah. That was part of the discussion. I don't know if that was a hundred percent due to that, but that was -- you know, we were trying to brainstorming of causes --

Q. Right.

A. -- for these cracks. But I remember that was part of the discussion, yes, sir.

Q. Okay. Thank you.

A. Um-hum.

Q. Can you tell us your involvement with the independent peer review of FIGG's design plans by Louis Berger?

A. I guess my only involvement with them would be addressing any comments that they had on the superstructure and, you know, any comments, I guess, that had to deal with my design, I guess, that I was involved in, which was pylon and foundations. And I know me and Manuel discussed about their comments and addressed them. I think there were -- they didn't have too much comments, but we addressed all the comments that they send us over, you know, or talk to us about.

Q. Did you have direct involvement with Louis Berger?

A. No, sir. I never had a direct call or anything with him.

Q. And who was the person who -- and who was the person in FIGG

that had direct involvement?
A. I know Manuel Feliciano talked to him, and I'm sure probably Dwight Dempsey probably -- maybe talked to him. But I know because I was -- like I said, because I guess Manuel was addressing a few comments from -- you know, involved with my design, and I know he talked to him.
Q. Okay. And was that individual Dr. Shama from Louis Berger?
A. I think it was Dr. Ayman.
Q. Dr. Ayman?
A. Ayman. I think it was Ayman.
Q. Okay.
A. I don't know his --
Q. Okay. I'd like to ask you some questions about the redundancy of the main span, because I'm just having some difficulty understanding the redundancy and the internal redundancy of the main span versus the entire structure.
So I guess my first question, if you could educate me on the redundancy issue, would you consider the main span only that's sitting on the pier on the south end and the pylon pier on the north end a redundant or a non-redundant bridge?
A. I would consider it a redundant structure in the sense that, you know, we think we have followed the code from AASHTO as well as the FDOT structural guidelines. However, I'm not an expert on that topic yet, so I couldn't really provide too much information on that. I'm guessing I need to have more maturity in order to

answer that question.
Q. Could Manuel Feliciano address that?
A. I guess Manuel will have to answer that question by himself, but --
Q. Okay.
A. I guess at this moment in time, I don't have too much -- I don't feel an expert to answer that question.
Q. Do you know of any of the components that made the main span a redundant bridge? I mean, do you have any --
A. Well, I guess the only thing related to that I could say is like, you know, the factor of safety that we put in our design, you know, that could be adding a redundancy there. But again, I don't feel an expert to really answer all that.
Q. And what was the factor of safety?
A. The factor of safety that we put in our load combinations that we used from AASHTO, so -- you know, and the factor of safety that is involved in the design.
Q. Do you know what those factor of safety, what those numbers were?
A. Not without looking at that table from AASHTO. You know, I know there's a 25 percent factor of safety for dead load, for one of the strength load combinations, but I don't have all those memorized.
Q. Did you use AASHTO's standards for redundancy or did you also consult Florida DOT's design criteria?

A. Right. We did follow FDOT structural guidelines as well as AASHTO RFD for design of this bridge.
Q. Okay. But you can't recall what those specific --
A. Yes.
Q. -- load factors were?
A. No, sir.
Q. Are you familiar with Mr. Denney Pate's PowerPoint presentation that was given on the morning of the collapse? Have you looked at that PowerPoint presentation? Are you aware of it?
A. I'm aware of it, yes. He told me that he was going to -- he had something prepared. He was always very protective of that PowerPoint presentation because, you know, prior to that day he was trying to see what his audience was going to be. And so, you know, he shared with me that he was going to talk to MCM to see what their feeling was to share that presentation or not. But yeah, I was aware that he had something prepared for that day.
Q. Okay.
A. But I wasn't involved in that. He was the one that created that Power Point presentation. I wasn't involved in the creation of that presentation.
Q. Were you able to observe it, to review it --
A. Beforehand?
Q. Yes.
A. No, sir.
Q. Okay. One of the -- I have a question on one of the

slides in the --
A. Okay.
Q. -- the last slide in the PowerPoint under "Conclusions and Recommendations."
A. Okay.
Q. It mentions that the spalled areas are minor, and it is recommended that they be prepared using normal procedures and poured back along with the upcoming pylon diaphragm pour. And I'm just trying to understand what the upcoming pylon diaphragm pour consisted of.
A. Sure.
Q. Would you have knowledge of that?
A. Yes, I do. And there was supposed to be what we call an intermediate diaphragm section of the pylon. It was basically going to be a pour of where that pylon was, it was going to be a pour all the way to the canopy, and that was going to be part of the pylon itself. So that was going to be the next step of where we were. It was going to be the pour of that section only, and then after that, it was going to be the -- span number 2 was going to be poured. So that's what we -- you know, that's -- if they were referring to that, that was the next step, we were supposed to do that.
Q. Okay. And the cracks then would be a -- it was from this PowerPoint presentation, that the cracks would be addressed as part of that pylon?

A. I know that was discussed, right, that the cracks were going to be -- of course, they might be addressed before that pour, but it was going to be addressed about, you know, about that same time.

Q. Okay. And do you believe with that pylon pour, would that have added additional redundancy to the bridge?

A. I think it would have added additional anchorages, you know, probably tying that structure at the pylon. So that's what I think, yeah, it would have happened. You know, and that's how -- why we -- you know, that was the next step. It was just to connect that, even though, you know, that was considered-- it was one of the steps that was considered in the design and analysis of the bridge.

Q. And was that the understanding of Mr. Denney Pate as well?A. Yes, yes.

MR. WALSH: I have no further questions.

MR. LEON: Okay. Thank you.

BY MR. HOLT:

Q. Reggie Holt, Federal Highway. And I have questions that fall on two different themes: One is going to be on the design side; one is going to be on the field visits and field issues.

A. Okay.

Q. So I'm going to start on the design side first.

A. Yes, sir.

Q. So I guess first is dealing with the makeup of the design

team. So I understand that you were, you know, directly under Manuel and Dwight?
A. Um-hum.
Q. I guess my question is which one of those two did you report to the most, and which one essentially directed which work you worked on and in what capacity?
A. That was Manuel Feliciano.
Q. Huh?
A. Manuel Feliciano.
Q. Manuel?
A. Yes. I reported to him the most.
Q. I guess another -- the next question is again on the redundancy issue. I mean, we're going to get that --
A. Sure, sure.
Q. So you stated that you don't recall -- well, let me restate my question. What is a redundancy -- do you recall redundancy ever being discussed?
A. I don't recall that.
Q. Don't recall that? You said that the design followed AASHTO, and AASHTO has a provision where you can address ductility, importance, and redundancy, and make adjustments based on various levels of redundancy both on the high end and the low end. You don't recall adjusting that factor for this bridge? It's called the eta factor, if it --
A. I don't recall at this moment if we --

Q. Do you recall any requirements given to you to include a minimum number of components within various elements to provide internal redundancy or other similar type details?
A. No, I don't recall that minimum requirement.
Q. All right. I guess the next question is dealing more with the design of the connection between the verticals and diagonals to the deck.
A. Okay.
Q. So we noticed from the calculations that were you involved in the interface shear calculation there?
A. Um-hum.
Q. Can you provide background or reasons that a solids model was used to generate those force effects versus a more traditional 2D or 3D analysis?
A. Yes. As far as I remember, I know that those shear forces were given to me from a 3D element model, which was the LUSAS, was the software that it was used in the firm to analyze this bridge. And we used those forces, I guess, to, you know, to come up with the demand for the reinforcement made on those node regions. But right now that's all I can remember that we did. You know, we did grab the forces from that finite element model instead of the LARSA model that we were using.
Q. So you did not generate the forces from the LUSAS? Somebody else --
A. Somebody else was working under LUSAS model, correct.

Q. And who provided you those force effects from the LUSAS?
A. That was David Hall.
Q. Were you aware of what processes they used to take those stress contours from the LUSAS and develop force effects for AASHTO?
A. I think he was telling me that, in LUSAS, that he was able to pull out stresses and use the area of the elements to come up with the forces. I think that was the way that he was doing in order to bring up to the forces to me or to us. However, I don't know if he -- you know, if there is another way that he has learned to do it now, to grab straight forces or -- I'm not sure about that. I'm not familiar with that LUSAS program.
Q. Were you given or heard the reason why they didn't use your 2-dimensional, 3-dimensional analysis to get these force effects and opted for a more rigorous LUSAS model?
A. No. The only reason I think it was discussed is because, you know, in the LUSAS model, all the stress in sequence was incorporated. So we were thinking that it would be more accurate to grab it from there than in my model. My model, you know, we also had that in there, but it was more like a general, and there he had like step by step.
Q. Was that same process used on span 2, the back span?
A. As far as my knowledge, I think it was just span 1, but --
Q. So you had the same connection on the yet to be completed span, span 2, over the canal. So did you change your design

methodology for that connection for the second span?
A. I think so. And I think what happened is that, you know, we were always trying to correlate the forces that we're getting from LUSAS with the LARSA model. And again, yes, I guess, you know, as far as I could remember, there was only a LUSAS model created for the main span that -- where we grabbed those forces, those shear forces.
Q. So you performed the same calculations on span 2 but used your LARSA model, the 2D, and not the LUSAS 3D?
A. I'm guessing so. I would have to look back at my calculations, but since I remember there was not a model created for that, then that would have been the case.
Q. And you don't recall a reason for that change in design methodology?
A. I don't recall that.
Q. Again, on the same region, I noticed in the calculations that you assume that the surface was intentionally roughened?
A. Um-hum.
Q. I guess my question to you is do you recall how that construction process was communicated to the contractor? How do they know it intentionally roughens the surface?
A. And I would have to look at the plans, but -- I don't know if there was a note in our plans, but I would have to look back at the plan sets to -- but I would think there was a note in our plan set.

Q. So in your experience, when you intentionally roughen a surface, there's usually a call-out in the plan --
A. Yes.
Q. -- that tells you to intentionally roughen that surface?
A. That's been -- that's what I have seen before, yes.
Q. The next part of the design is the -- how the voids were accounted for from the, I guess the penetrations from the horizontal drain pipe. And again, this is in the nodal region of 11-12 and diaphragm 2. So you had a horizontal drain pipe, and you had four vertical PVC sleeves to accept a number 11 bar, I think, and a PT -- and two PT bars.

Do you recall in your design accounting for these voids within that region?
A. I remember -- and either this came from Erika or Manuel, but I remember rechecking the section that had -- I guess, that as soon as we knew that the contractor was putting some pipes in there or some utilities. I do remember rechecking a section and rerunning an analysis to make sure that it was okay. What I don't remember is for which members I did that. I don't recall right now. I would have to look back at the calculations.
Q. Did that rechecking happen before or after submission of your final calculations?
A. I guess what I'm thinking right now, I don't know if that happened between final and RFC. I don't remember if there was a final and then an RFC set of plans right now for sure, but it

would have happened before, of course before construction.
Q. So it would have happened before RFC?
A. Yes.
Q. And was there an RFC submission of calculations or just plans?
A. I think there was an RFC package that was put together.
Q. That actually did calculations? Do you recall the approximate month that the RFC --
A. I wouldn't recall that.
Q. Next is pertaining to the independent review from Louis Berger.
A. Okay.
Q. Do you recall any comment that resulted in changes to the bridge from the independent review?
A. I remember there was one comment, and I believe it was the canopy connection to the -- with the pipe where we had that blister. I think in the first connection closer to the south end of the bridge, I think he suggested to add additional bars there, reinforcement, and we did. That's the only one that I could remember.
Q. When you say bars, in connecting the blister to the canopy?
A. Yes.
Q. Okay. So I guess the next question is pertaining to the mix design that was developed for this bridge, concrete mix.
A. Okay.

Q. Were you involved or aware of the procedures or some of the requirements that were intended to be met with this mix?
A. No, sir, I was not involved in that other than just getting the concrete strength and use it for the design, but I wasn't part of the mix design.
Q. Do you know who was, who within FIGG worked with your subcontractor in developing this mix?
A. I wouldn't know for sure, no, sir. I don't know if it was Erika Hango or Manuel. I don't know who was dealing with them.
Q. Okay. I think I've finished up design. I guess now I'm going to talk about field visits and some --
A. Yes, sir.
Q. -- field issues that were observed. So first, in general, I mean, were you involved in any way in assessing the cause of the cracking or the severity of the cracking in these correspondences?
A. Not in assessing. You know, that was all Denney, Denney assessing, I guess, his opinion on that. But we talked about them, but, you know, he was in charge of that.
Q. Did he have any discussions with you on possible causes that generated these -- this cracking?
A. No, because as far as I remember -- and he shared this during the March 15 meeting, is that he couldn't replicate what was happening in the field with his calculations. So, you know, so he still had questions, I guess, that day.
Q. So still didn't totally understand the cause of cracking?

A. Right. He was still brainstorming and trying to figure out what happened, what was causing that.
Q. Go back from notes earlier. So you visited the site, you said, twice or three times?
A. Twice prior to the move, and then the other one was March 15 with Denny Pate.
Q. Okay. Oh, so you were there for a while? You were there for a week before the move all the way till the time of the move?
A. No. I left that Sunday, a day after the move.
Q. Um-hum.
A. And then I came back with Denney on March 15.
Q. So when did you arrive on the first trip?
A. I believe it was March 7. It was a Wednesday.
Q. Okay. So it was a long -- okay.
A. Yeah.
Q. So you were there for a long period of time?
A. Yes, I was --
Q. That was two trips. That -- so you got there a week prior and stayed all the way to the move. Okay.
A. And I stayed there all the way to the day after the move, right. And then I left, and then I came back with Denney, right.
Q. So when Barnhart arrived, did they do any pre-move assessment of the bridge? Did --
A. I guess, as I mentioned before, the only thing I know they did was pre-lift, but that was the night before the actual move.

I don't know if they did something additional to that, but definitely not when we were there, when me and Franklin got there. But they were finishing up setting up their equipment.

Q. Okay. And you were there after they set the bridge?

A. Yes, I was there, I guess, until we all left on the 15th, which probably was maybe a hour at most after the bridge was actually set there.

Q. So I understand that FIGG -- I think Franklin Hines and maybe you, that there was a quick assessment afterwards done by FIGG after it was placed on the shims?

A. It was done by Franklin Hines. I did not get on the deck after the bridge was set on the -- on its final location. My -- I know for sure Franklin Hines went on the deck, and I think I recall him going with one of the BPA guys as well.

Q. Were any photographs or any kind of --

A. I don't know.

Q. -- permanent documentation made during that assessment?

A. I don't know if Franklin Hines took some pictures when he was up there, but the only thing that he reported back to us on the ground, it was that he didn't see any new cracks develop at that moment in time. And I think that was confirmed by one of the BPA guys when they both went up there together.

Q. So the path going forward after the cracking was discovered, I guess there was a decision to re-tension the bars?

A. Um-hum.

Q. Were you involved in any kind of analysis in assessing the benefit of re-tensioning?
A. No, sir. I was not involved in the decisions.
Q. And who was involved in the decision to re-tension those bars?
A. I was on the phone with Denney when they started discussing that. However, you know, I guess hang up, and then I guess they did finally make that decision. But I'm not sure who it was that he made a decision with. But I was on the phone talking to him when they were starting brainstorming about that decision. And that was based on the information, I guess, that we received from the contractor, saying that, you know, that those cracks got, they said, a little worse after they de-stressed the bars.
Q. You said you were on the phone. You were not in Tallahassee?
A. I was not in Tallahassee.
Q. So I guess next is, again, this assessment. So you were or were not involved in the assessment portrayed in the presentation?
A. I was not.
Q. You were not? Have you seen the presentation?
A. Yeah, yeah. I saw it, you know, during the meeting. Like I said, Denney was very protective of that information, but -- so I saw it during the meeting when he shared it with the, I guess, with the team that was present there.
Q. So did you notice that the design methodology that he assumed was fairly different than those included in the submitted design

calculations for the nodal region?
A. No. I know he did some independent calculation, trying to see if he was going to find something. One thing that he did ask me to do was to see what was the original calculations in relation to the diaphragm, I guess, is what I was looking at. So the only thing I did is just going back to the original calculations and provide that to him, that section that was done in those element -- on that element and show it to him, this is what was done on that element. But that was all my involvement with that.
Q. And that design, was that the diaphragm design to support the weight of the bridge on the shims calculation?
A. It was the diaphragm design on the north end, on the pylon end, yes.
MR. HOLT: That's the last question. Thank you.
MR. LEON: Thank you.
BY MR. ACETTA:
Q. Yes, this is Robert Acetta with the NTSB. Again, we have a situation where if he had some documents to refer to, he could answer some of the questions. So if you have an opportunity to do that, we'll coordinate that with you again.
A. Yes.
Q. I got a real open-ended question. It's kind of odd. Is there anything you'd like to add or any questions we didn't ask that you think we should have?
A. No. I think, you know, most of the information that I had,

it was related to, you know, to that, I guess, prior to the move and the day that I was there. But I think I have shared -- or I have -- I think throughout the questions, I think I have shared everything that I think I know of what happened that day.

Q. Okay.

BY MR. BRAGG:

Q. I have a couple questions.

A. Yes, sir.

Q. This is about the meeting before the move, and this is Kenny Bragg again. So the meeting was held the day of the collapse?

A. Yes.

Q. In the morning?

A. That morning.

Q. That morning. And you hadn't seen the presentation prior to, you said --

A. No, sir.

Q. And you described it as -- you described him as being protective of the presentation?

A. Um-hum.

Q. Did he distribute the presentation to team members that were in the meeting?

A. No.

Q. Have you had the opportunity to review the presentation after the meeting, since then?

A. No.

Q. No. Where were you at when the collapse occurred?
A. We were landing in Tallahassee when we found out the news.
Q. Okay. So you had --
A. Maybe in the air.
MR. BRAGG: Okay. That's all the question I had.
BY MR. WALSH:
Q. I just have a few follow-up questions and then --
A. Yes, sir.
Q. I know you mentioned that Denney Pate said he could not replicate what was the cause of the cracking?
A. Um-hum.
Q. Did that upset him in any way, that he could not replicate?
A. It did.
Q. It did?
A. It did. You know, he really wanted to find what was happening.
Q. Yeah.
A. And that was a direct -- you know, I guess that was a conclusion after that meeting. He was -- and that's why we, you know, we were going back to Tallahassee, because he was going back to the office to keep doing more calculations and to try to figure out what was happening.
Q. Was there any consideration or discussion of closing the bridge during that discussion because he could not replicate the cause of the cracking?

A. Not to my knowledge, sir, at least not with me.
Q. That was not a topic of discussion?
A. Like I said, at least not with me. I don't know if that was discussed between him and somebody else, but not with me.
Q. Did you go -- I know that Mr. Pate observed the cracking at diagonal number 11 --
A. Sure.
Q. -- and vertical number 12 prior to the meeting. Were you with him?
A. I was with him up there.
Q. Okay.
A. Yeah, that was the first thing that we did once we got to the site.
Q. And what was that -- what was the discussion? Was there any discussion about --
A. There was. I guess he showed a sign of concern once he actually was there looking at the real picture. And again, I guess we go back to that because the pictures weren't really clearly labeled or stuff. So once he got there, I did see his concern and myself, too, and that was addressed during that presentation.
Q. Was there any measurements taken?
A. Not from us. Not from us. I think I did see one of CEI members taking measurements, or I know he was putting some kind of leveling thing on the vertical member, but not from us.

Q. And was there any discussion of closing the bridge at that time?
A. Not at that time. At least I didn't hear anything.
MR. LEON: Yes, sir?
MR. BRAGG: Mr. Holt?
BY MR. HOLT:
Q. Reggie Holt. I just got one more question. So after the correspondence has started --
A. Okay.
Q. -- with the stress seen after placement, you re-tension the bars and you added shims directly underneath the vertical -- the middle of the diaphragm, I guess, were two remedial measures that were described over email or phone to --
A. Actually, the first measure was to put the shims. And the stressing didn't happen until after we left. When we left, myself and Denney, when we left the site that day, we saw that actually the VSL guys were setting up for the re-stressing of that bar, and that's the last thing we saw. But the first measure was installing those shims underneath there.
Q. Leaving that meeting, you stated that, you know, you were -- Denney was anxious to investigate this further. Were there planned -- were there additional remedial measures planned?
A. One of the other action items was for him to go back and propose a remediate action, I guess.
Q. A what?

A. Something to correct -- or to correct, I guess, the cracking. I know that was also mentioned during the meeting.
Q. So in the meeting he mentioned future measures to address the cracking.
A. Yes. Yeah, he said he was going to work on that.
Q. Was (indiscernible) a formal submittal outlining these measures and the analysis behind these measures discussed?
A. Yeah, I don't know if there was, you know, if there was supposed to be a formal submittal, but I know he said that he was going to be preparing something for the contractor to take a look at, and that's all I remember from that meeting.
Q. So the two remedial measures that were made --
A. Sure.
Q. -- the shims, how was that communicated to the contractor and to the owner?
A. I think it was Dwight Dempsey that communicated that to MCM about the shims.
Q. Was that a letter, signed and sealed? Was that a simple email, phone call?
A. I'm not sure about that. I don't recall right now if it was an email or just a formal submittal. I would have to look back on the emails to see if I was copied on one of those.
Q. Were you intended to be a part of the future analysis for future remedial measures?
A. I guess that would have been up to Denney, but he was the one

in charge, so he didn't mention anything --

Q. He didn't mention it to you --

A. No.

MR. HOLT: That's my last one.

MR. BRAGG: Robert?

BY MR. ACETTA:

Q. This is Robert Acetta. I had a question. You may have mentioned this earlier in the interview. Did you return to the site after the collapse?

A. After the collapse, no, sir.

Q. No, you did not?

A. I wasn't involved in that.

Q. All right. That was it. I just wanted to know if you came back.

MR. BRAGG: Okay. The time is now 11:09 a.m. We will conclude the interview. Thank you for your participation.

MR. LEON: Thank you very much.

(Whereupon, at 11:09 a.m., the interview was concluded.)

CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF:	PEDESTRIAN BRIDGE COLLAPSE MIAMI, FLORIDA MARCH 15, 2018 Interview of Eddy Leon
ACCIDENT NO.:	HWY18MH009
PLACE:	Miami, Florida
DATE:	June 28, 2018

was held according to the record, and that this is the original, complete, true and accurate transcript which has been transcribed to the best of my skill and ability.

[redacted]

Danielle VanRiper
Transcriber

UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

* * * * * * * * * * * * * * * * * *
Investigation of: *
*
PEDESTRIAN BRIDGE COLLAPSE *
MIAMI, FLORIDA * Accident No.: HWY18MH009
MARCH 15, 2018 *
*
* * * * * * * * * * * * * * * * * *

Interview of: DENNEY PATE
Figg Bridge Engineers

Florida International University
Miami, Florida

Tuesday,
March 20, 2018

APPEARANCES:

KENNETH BRAGG, Senior Highway Accident Investigator
National Transportation Safety Board

DAN WALSH, Highway Factors Investigator
National Transportation Safety Board

REGGIE HOLT, Senior Bridge Engineer - Concrete Specialist
Federal Highway Administration

JAY O'SULLIVAN, Attorney
(On behalf of Figg Bridge Engineers)

I N D E X

I N T E R V I E W

(1:50 p.m.)

MR. BRAGG: Today is Tuesday, March 20, 2018. It's 1:50 p.m., and we are at the site of FIU. This interview is in regard to the FIU bridge collapse in Miami, Florida.

My name is Kenneth Bragg. I'm senior highway investigator of Highway Safety. And to my left I have seated?

MR. HOLT: Reggie Holt, Federal Highway.

MR. WALSH: Dan Walsh, highway bridge engineer with the National Transportation Safety Board.

MR. BRAGG: And, sir, your name is?

MR. PATE: Denney Pate.

MR. BRAGG: Could you spell your first and last name please?

MR. PATE: D-e-n-n-e-y, last name Pate, P-a-t-e.

MR. BRAGG: Okay. And representing you today you have?

MR. O'SULLIVAN: Jay O'Sullivan, attorney for Figg.

INTERVIEW OF DENNEY PATE

BY MR. BRAGG:

Q. Okay. So let's go ahead and we'll start by talking a little bit about your function with the company. And you work for what company?

A. I work for Figg Bridge Engineers.

Q. Okay. And what's your official position?

A. My title is principal bridge engineer.

Q. And how long have you served in that capacity?

A. I've been with Figg for 38 years. I'm not sure exactly how long I've had that title, probably 10 years, maybe more.
Q. Temporary employee?
A. No.
Q. I'm sorry. That's impressive time. So, and how long have you served in your present position?
A. For many years --
Q. My assumption is that you didn't start off doing the same thing 38 years ago. So at some point --
A. Well, super brief history.
Q. Okay.
A. I'll try not to go into too much detail. I joined the firm Figg right out of school when I was graduated with my master's degree and have been with them ever since. Obviously started out as a, you know, fresh out of school young engineer. Obviously Figg only works on bridges, so that's literally the only thing I've done for my entire career, and have worked on a whole variety of structures around the State of Florida and around the nation. And most recently one of the structures, obviously the FIU pedestrian bridge.
Q. And how long have you been on that project?
A. FIU, oh, it really depends on when you say we start. Back when we were doing -- it's probably over 2 years when we started forming the team with MCM and trying to pursue the project. Obviously the design activities were later than that once the

official RFP was out on the streets, and I'm sure we can find the dates for that. I don't recall specifically.
Q. What has been your function on this project?
A. I would say lead engineer for the design team on the bridge.
Q. Okay.
A. Obviously there's other engineering disciplines.
Q. Okay. I'm going to go back to the day when you first began to move.
A. Okay. Day we moved. Okay.
Q. What was your involvement on that process?
A. I was here principally as an observer. In the event that something came up or there was questions, I was here to help, you know, if that condition arose. So I was basically observer during some of the night activities and then subsequently in the morning when the physical move took place.
Q. Okay. And what time did the move begin?
A. Physically the actual movement started at about 4:45 a.m.
Q. Uh-huh. And tell me -- and just describe what took place.
A. Well, maybe -- it might be helpful to back up just one tiny step.
Q. Sure.
A. The night before the span had been sitting on the end parts of the falsework basically as temporary piers. So it was fully self-supported on the two ends and had been that way for, I don't know, 7, 8 days, something of that scale. Then the night before

the move, which would have been a Friday night, the company responsible for the picking and moving and the monitoring company, they came in, got final setup, and lifted the span from the initial supports onto the SPMT's they call them jack stands or the lifters, so at that point the span was now carried by the lifters. And that was the principal activity that took place on Friday evening in preparation for the move.

And then they basically were, you know, waiting until early in the morning. And then we got back, and at 4:45 they sounded the horns and started physically the walk forward and the turn with the SPMTs carrying the span.

Q. Okay. And did anything remarkable happen during the move?

A. No. It actually was quite smooth. As we moved the lifters -- obviously the ground has little bit of deformation or, you know, shape to it. They were going over the curbs. And so, we had established limits on certain of the key parameters. Primary was twist in the span, had a limit on that. There was a very sophisticated instrumentation package on the span that was done by a company called BDI, which I think is Bridge Diagnostics Incorporated or something close to that. BDI was their, you know, the acronym. And so, they were monitoring in real time these very, very, very sensitive, you know, instruments.

And as we began to move -- and again, this is a very slow, kind of creepy crawly machine. We get to roughly two-thirds of that limit and the Barnhardt people who were the movers, obviously

standing with the instrumentation guy looking at the computer readout, and it was a graphic thing so you could tell where you were within the tolerance, and they get to about two-thirds, they'd stop, re-level the hydraulics, take any of the twist or tilt out, and then they'd start again.

The move itself actually was totally uneventful. They did have some issues with the Wi-Fi signals for some of the sensors. And so, anytime -- and it was obvious as soon as the signal would be lost, you know, the computer would tell the operator that, hey, I'm not talking to all my sensors. And so he would immediately stop and they would play around with the Wi-Fi or whatever to make it happy again and then we'd move some more.

I don't think they ever really understood exactly what the interference was but it was suspected it was these powerlines overhead, you know, interference from them. But I don't think anybody really knew. But at any rate, anytime there was a loss of signal, they were to stop until they could resolve it and then they would move forward.

Q. Okay. And how long did the move take?

A. Oh, well, we started at 4:45. There were several of these intermittent waiting periods while they were trying to resolve the Wi-Fi issues. Sometime approximately 10:00, I would say. I was more focused on what was going on as opposed to the timeline, but roughly 10:00 I'd say the span was effectively in position over the two piers, the south end and the north end. And then, you

know, at that point it was in basically the final position and they started the operations for setting it down,

Q. Okay. And did you inspect the bridge prior to it being set down? Once it was over the piers were there inspections before it was set down?

A. There were inspectors prior to the move.

Q. Prior to it.

A. There were no -- I mean, it was on the active lifters. No one was on the span while it was carried by the lifters, at least to my knowledge. And so, I don't think from that standpoint -- I mean, everybody was watching it and looking at it, but I don't think there was any, I'll call it hands-on sort of access during that period of time.

Q. Okay. So once it was -- it was lowered down on to the piers?

A. Yeah, there was a very careful procedure that was followed in terms of lowering it down. It had been talked through for the, you know, the last couple of days prior to the actual operations to make sure that they -- everybody knew exactly what the details were going to be, exactly what the protocols for that were going to be to set it down basically.

And so, briefly, and I can give more details if you would like, but they started by -- the permanent neoprene bearings are on the south end. And so, we lowered the span down within some fraction of an inch of those bearings, re-leveled all the hydraulics, got everything, you know, basically back to zeros.

And then they lowered it down until there was just a credit card or a business card gap above the bearings, air gap. At that point they again re-leveled all the hydraulics. They -- on the south end, the pylon end -- excuse me -- north end, the pylon end, they installed the final shim stacks and lowered the span down and verified that we were going to get -- you know, the load would be transferred to all the shims basically at the same time, equal air gaps, if you will; again, this business card sort of environment.

There was an inspector up on manlift basically at eye level with the shim stacks. So, I mean, literally, you know, this close to it to verify that everything looked good before they sat it down. Obviously lowered it very, very slowly onto the shims and at the same time transferred the remaining portion of the load onto the south end neoprene bearings. So at that point the span was fully self-supporting and on the two pier locations. And at that point we looked at the instrumentation in terms of the final data from the span and determined we thought it was good to go, and that was basically the end of the move.

Q. Okay. So once it was self-supporting on the piers, then what occurred?

A. Well, for me personally, I was just on the ground. There was an inspector from Figg who had been part of the move. He had been down here a couple of days in advance.

Q. What was his name?

A. His name is Franklin Hines. And he was the -- one of the

individuals up on the manlift looking at the shims on the north end when they sat it down. So he was, you know, basically eye level to the shims and a diaphragm area at the time the load was transferred.

Then as soon as that operation was completed he, you know, came down off the manlift, went to the south side, went up the staircase and onto the span and looked at, you know, basically all the areas, paying particular closer attention to, you know, the end areas. There were -- I don't know exactly how many, but at least a couple, maybe three of the BPA guys who were up there similarly looking at things. And, you know, at that point everybody was, oh, great, everything is wonderful. And I was actually on the phone with Franklin as he was walking around and said, hey, what are you seeing? He saw, you know, just the teeny tiny hairline stuff that was known before, nothing new basically.

Q. Uh-huh.

A. And so at that point everybody was, you know, pleased with how the operations had gone.

Q. You said you observed these hairline fractures before the move, correct?

A. Well, I mean, concrete always has little hairline cracks in it, and so there's some documentation on some of those that were known before the span was even picked, when it was just self-supporting, and they looked at that all again after it was lifted. I mean, there's documentation. I don't have it, the speciifics

you know, but basically no one saw anything of any significance. And so, everybody was just in good shape at that point.

Q. So would you say that the span was in the same condition after the move than before?

A. I would, yeah.

Q. Okay. So then what was the next procedure?

A. Well, at that point the Figg people who were on-site, myself included, either left to go to the hotel and get some sleep because they had been up all night, you know, preparing for the thing or left to go back to Tallahassee or other locations.

Q. What time was that, did you leave the site?

A. Oh, I think we left the site just after noon. We went and got a bite to eat and then we got on a plane and went home, or I did.

Q. Okay.

A. Like I said, certain of the staff I think they overnighted to get some sleep before they started their travels.

Q. Okay. So then what was your next communication about the bridge?

A. My next communication?

Q. This is after you left.

A. This is after I left.

Q. Uh-huh.

A. Really, personally, the next communication I had was -- let me get my days right. First thing Tuesday morning when I walked

in the door, literally, I was alerted to the fact that there was this email that had been provided from MCM that had pictures of, you know, the cracking of the north diaphragm area.
Q. Um-hum.
A. And so, obviously then I immediately began to look at that. But that was the next communication I had about the bridge after I left.
Q. And who was that email from?
A. Rodrigo -- I won't try his last name -- project manager for MCM.
Q. Isaza?
A. Him, Isaza.
Q. You said the email contained pictures of the cracks?
A. Correct.
Q. And about how many pictures?
A. Oh, I don't know; 12 or 13, something of that scale.
Q. Okay.
A. It's a PDF document that was attached to an email.
Q. So after learning of these cracks in this email, what was your next action?
A. Well, the email basically said, you know, hey, take a look at these and, you know, make -- tell us what your initial thoughts are. So I spent better part of the day looking at the photos, doing some hand calculations to try to, you know, determine if -- you know, what the structural forces would be that might be

consistent or inconsistent with those cracks.
Q. So basically you were trying to determine mathematically what caused the cracks?
A. Well, I was looking for -- did what we saw, was it -- could I in some way, you know, validate that it made sense or not.
Q. Okay.
A. And so that was the primary activity on all day Tuesday.
Q. And what did you determine at that time?
A. Based on the pictures and the information that I had at that time, you know, I concluded that there was no immediate safety problem and that -- we, you know, had been asked to look at these, so I made arrangements to come down and, you know, see firsthand, as opposed to just in pictures, and to learn a little bit -- you know, talk to the inspector people and the contractor people and try to learn a little bit more about what they saw and when they saw it.
Q. Okay. When did you arrive?
A. I got in on Wednesday night, overnighted, and was here at the site Thursday morning, I don't know -- I'll call it 7:45-ish.
Q. What did you do when you arrived on-site?
A. Well, we were in the MCM trailer. We had a brief meeting with BP and MCM and then -- I'll call it 5 minutes, and then we proceeded out to the site to look at things.
Q. What was the meeting about?
A. Oh, just that we were going to go out and take a look at that

area.
Q. Okay. Then after meeting?
A. Say again?
Q. After the meeting?
A. Well, we walked out to the project site and then initially -- first thing we did is we went up on the span. It was myself, I know Rodrigo was there, another couple of people from MCM, some of the BPA people, at least a couple of them. Jose Morales -- is that the right name? I'm bad with names. One of the BP guys, BPA guys, he was up there and we looked, you know, all of the span, obviously paying particular attention to what we could observe at that north end of the span.
Q. Okay. Then what did you do? What conclusion did you come up with?
A. Well, at that point I really wasn't trying to draw conclusions. I was just trying to get a visual understanding of how -- sometimes you can see a picture and what you see in person can have a little different feel for it. So I was trying to gather that information to, you know, do further assessments with. And we were on the span, I'm not sure exactly how long, call it maybe 15 minutes. We then went, all of us collectively, the MCM, BP people, and myself, went to the north pier on the ground.
One of the MCM people took me up in the manlift, you know, so I could look at the diaphragm initially on the southern side, the side underneath the span. Looked at that, and then subsequently

moved the manlift around so not quite at the same range because of the geometry of where you could get the lift, but reasonably close, I got to the span to look at those crack patterns that were on that south diaphragm. And they looked very similar to what the pictures were.

Q. Okay. And what was your response to the cracks? How did you arrive at the conclusion that you were going to do something with those cracks?

A. Well, I mean, there's obviously a standard criterion that FDOT has about different cracks of different sizes and depending on, you know, how big they are in certain areas, and then there's certain established procedures to deal with those cracks.

Q. Uh-huh.

A. And so, obviously, we were going to, you know, have the data of the exact crack widths and so forth, so that exactly what needed to be done to which crack size could be, you know, addressed appropriately and consistent with the specs. And so that was the plan at that time.

Q. Okay. And did you guys have a group meeting to discuss the plan of action?

A. After we were at the -- we left the physical site of the pier, we walked back over here actually to the other trailer, MCM's trailer, and there was a meeting that was well attended. I don't know exactly how many people were there, but I would say 12 to 14 would be a guess.

Q. Okay.
A. There was the FIU representative was there, a gentleman from FDOT was there. I'm telling you I'm bad with names. I read these people's names about four times today and now I can't tell you what their names are. I hate that about myself. Obviously, the records are there of who they were. Anyway, then there was a whole group of MCM people and BP people -- BPA people.
Q. And who ran the meeting?
A. Well, I think initially Rodrigo, the project manager, sort of set the stage of we're here to, you know, sort of talk about this situation and, you know, hear what each party has to say. And, you know, obviously I basically got to go first, if you will, to share what I had been doing over the last day or day and a half to look at that situation, and that was the subject of a presentation that was given.
Q. Okay.
A. And then we -- once I was through with all of that -- we had some discussion in the middle, but to a large degree people held their questions and comments, I guess, until I got to the end. And then there was a group discussion about, you know, certain aspects of the presentation and that sort of thing.
Q. Okay. And who prepared the presentation?
A. I did.
Q. You did. And what was the theme of the --
A. It was basically a visual presentation of the calculations I

had done.
Q. Okay. Did you provide a copy of the presentation to anyone?
A. I did not. In the presentation there were -- because it was prepared kind of quickly, there were a couple of spelling errors and missing parenthesis, really tiny stuff, and the agreement was I was going to, you know, make a couple of corrections for that and then was going to give them a copy. That was --
Q. Uh-huh. Did you ever send them out?
A. I did not.
Q. Okay.
A. Obviously ---
Q. Well, we're going to request a copy of that presentation --
A. I understand.
Q. -- but we don't want it corrected. We want it as it was.
A. I understand, and it's not been.
Q. Okay.
A. It is unaltered from what was shown.
Q. Okay. Did the presentation have any discussions about how to deal with the crack?
A. No.
Q. No. And what was your conclusion of those cracks?
A. Well, there was discussion that was had that --
Q. Describe the discussion in detail.
A. Yeah. In some detail. I will do that.
Q. Okay.

A. A group discussion, you know, to a large degree with me talking more than others, that, you know, based on the calculations that we saw, certain aspects of the cracking was, you know, in a general sense consistent with what we would be anticipating in terms of the shape and sort of general orientations of those. I made the point quite clearly more than once that, you know, there were certain aspects of the cracking that we saw that were not really consistent with this initial evaluation and we were, you know, going to continue looking into that and try to understand what the sources of those differences might be.

Q. Okay. And so, what did you -- what procedure did you come up with to address the cracks, if any, if anything?

A. Well, unfortunately, it didn't get to that step. We had, you know, the group discussion about basic, I'll call it, next steps of what was going to happen. And the at that point I left the site.

Q. Okay. So what procedure was being performed on the bridge when it collapsed?

A. Well, I wasn't here so I can't give great specifics, but it's my understanding they were implementing the restressing operation of the prestressing bars in member 11.

MR. BRAGG: Okay. This is kind of getting into Dan's area. So, Dan I'm going to let you go ahead and jump in here.

MR. WALSH: Okay. Dan Walsh with NTSB.

BY MR. WALSH:
Q. And let me just ask a general question. You know, obviously, we're trying to get to the bottom of the cause of the collapse and appreciate your frankness and your honesty. So I'm just going to ask you your general observation and opinion. What would you believe to be the cause of the collapse?
A. I don't know. We're here to cooperate with you guys. We're hoping you all can help figure that out because at this point we don't know.
Q. You have no hypothesis or --
A. Not at this time. You know, it's all under investigation and we have not really had much site access. So you guys have seen a whole lot more than we have at this point.
Q. Okay. You described your experience at Figg, have you been the engineer of record for this type of structure before?
A. I have been an engineer of record on precast structures, precast prestressed structures before, yes.
Q. Of this particular design?
A. This particular design, no. I mean, it's -- the bridge was intentionally unique.
Q. What makes it unique?
A. Well, that was basically the request for proposal that FIU had put out. They wanted something that was unique and world -- basically, a world class bridge, something that could be identified with their university. That was the -- one of the requirements of the

original RFP for the project.
Q. I guess my question is structurally what makes it unique?
A. I don't know that it is unique structurally. I mean, it's a truss. It has post-tensioning in certain members and it's a concrete truss. So I don't know that that's particularly unique in that sense.
Q. What about its redundancy?
A. Visually I think all the normal levels of redundancy are there. You know, obviously the members are reinforced with multiple bars, there are multiple tendons. And so, I would say that it's redundant to what normal structures would be during construction.
Q. If a member fails, does the structure come down?
A. Well, in all structures there's members that if they turn to air that, you know, that wouldn't work for the structure. So this one is no different than that, in that regard. There are critical members that have to remain intact.
Q. So in this structure, if a member fails, the entire structure collapses?
A. Not necessarily. Depends on which member and what type of failure might occur, but --
Q. If the member that was being strengthened on the day of the collapse, if that member were to fail, would the structure collapse?
A. If that member were to become completely inactive, the answer

would be yes.
Q. Okay. And can you name some of the recent bridge projects that you have designed recently?
A. Oh, I was engineer of record for the I-280 Glass City Skyway in Toledo, Ohio, big cable-stayed bridge there in Toledo, Ohio. The Harbor Bridge in Corpus Christi, Texas; that's actually still under design, design-build contracting method. The Houston Ship Channel Bridge in Houston, another cable-stayed bridge in a different part of the state of Texas. Those are probably some of the more recent ones.
Q. Great. Okay. You discussed with Mr. Bragg the movement of the structure. Would you characterize it as a smooth move?
A. Very much so.
Q. Okay.
A. Yes. I would consider it very smooth.
Q. Did you understand that there was a videotape of that move?
A. Sure, yes.
Q. There was?
A. There were cameras everywhere. Yeah, I mean, if you have seen some of the time lapse video you'll see the pauses of the system when they stopped to work on the Wi-Fi.
Q. The meeting that took place on the morning of the collapse, were minutes for that meeting taken?
A. Not to my knowledge. I certainly did not.
Q. And to your knowledge, was there any work performed on the

bridge that was not consistent with the design plan?
A. Not to my knowledge. Obviously we are not here on-site, so exactly what they did or didn't do, we don't know. To my knowledge, I would say no.
Q. Okay. And what is the relationship between Figg now and the contractor MCM? Is the contract dissolved or is a new bridge project being discussed or --
A. I don't really know the answer to that question. I know that we are still in contact with them and -- but exactly how that plays out contractually, Linda and Alan will be able to tell you that.
Q. Okay. Just questions regarding the restressing of the members on the day of the collapse. What units are used for the restressing? If you're talking about units, is it psi? Is it --
A. Maybe it would helpful to back up a smidge on those bars.
Q. Sure.
A. The bars in question were temporary bars, and they were in those members basically to be part of the move for the span to control stresses in those members during the move. Always it was the intent to detension those bars. And so, those -- that activity had taken place; MCM had detensioned those bars. There's some discussions about that, that were part of the meeting on Thursday morning.
Q. And why was the detension necessary?
A. It basically was those members under, you know, permanent

conditions they did not need that extra load in them, and so as part of design we chose to take them out, detension them, not physically remove them.

Q. At the meeting on Thursday were there any discussions about the retention calibration as it relates to the cracks?

A. No. There were no discussions about that.

Q. Okay. And then what direction was given to the specific kip amount for the retention?

A. There was an email that was provided to MCM -- again, a little bit of history I think might be helpful to you. I'll add to your question if you don't mind.

Q. Perfect.

A. On Saturday afternoon after the move was completed and after Figg had left the site, MCM undertook and destressed those bars on Thursday -- excuse me -- Saturday afternoon sometime. I don't know the exact time. And sometime between when the span was set and the initial inspections were done, when they got back there late that afternoon to do the detensioning operation, they saw the cracks on the diaphragm and the local little edge spalls of that upper corner. And they told us this, you know, when we contacted them after we saw the pictures.

So the cracks were initially observed by MCM and BP, and at the meeting they both verbally reconfirmed, yes, we saw them before we detensioned the bars. What they told us is that -- and they reconfirmed that at the Thursday meeting, that when they

detensioned the bars nothing particularly significant happened, but some of the cracks did increase in length or width. They weren't real prescriptive on exactly what those were. But, again, that happened holistically sometime on Saturday afternoon/evening.

And then the span sat in that configuration until -- again, we got the photographs, the email is -- I'm pretty sure this is the right number -- 4:52 p.m. on Monday night or evening, if you will. I actually did not see that until about 7:45 the following morning.

And so, at that point, you know, one of the recommendations we had made after we had a conversation, are you sure that when you detension the bars things got worse? And so, the answer was, yes. And so the judgment and decision was made that the span has sat with those bars stressed for, I think, 7, 8, 9 days, whatever it was, with no destress; when the bars were detensioned, things got somewhat worse, not well defined, that it would be prudent to re-tension those bars to try to get back to as close as we could to the state of stress that had been in that member, in that zone, you know, prior to the move when it was sitting on the permanent piers in a very, very similar configuration.

Hopefully that's helpful.

Q. That's very very helpful. Thank you.

I understand from the --

A. I don't think I answered your question about units.

Q. No, you didn't.

A. You asked -- I'm sorry. I apologize for that. When I backed up I lost the question.

The units for the re-tensioning of the bars was kips, just as we had done for all the other post-tensioning and the original tensioning of those bars.

Q. Okay.

A. So the units were in kips.

Q. Thank you. And was there specific direction on the kip amount?

A. There was.

Q. And what was that?

A. Oh, I'd have to refresh my memory to be exact, but I'll tell you what I know. There was an upper limit of a number that was the same as the original tensioning force, and that we were -- the procedure was to -- there was two bars in that member -- to alternate, you know, put a little bit in this bar; move to the other one and put a little bit in that, and go, you know, sort of back and forth to avoid large imbalances in that member during the re-tensioning operation.

Q. In your mind, was the re-tensioning that was done have anything to do with the cracks that were observed?

A. The reports that we received were that the cracking of the diaphragm in that region adjacent to that area was observed prior to the bars being detensioned. And, again, that was talked about and then was reconfirmed in that Thursday morning meeting by both

BPA and MCM. And both of them originally, when we first contacted them, and when we were here in the meeting that morning or I was here in the meeting that morning, that when the detensioning was done that the cracking got somewhat more -- some cracks got a little larger or a little longer. And again, not super quantified but something in that direction was observed by those at the site at that time.

Q. Did you see a correlation between the re-tension that was done on the day of the collapse? Was there a correlation between that and the existing cracks?

A. I'm not sure I understand your question. Can you kind of rephrase that?

Q. My question is, is that with the re-tensioning and the cracking that appeared on the structure, would there have been any need to consider a different calibration for the re-tensioning in the amount of kips that were applied?

A. I don't think so.

Q. For that re-tension.

A. I don't believe so, no.

Q. So there were two separate -- in your mind there was two separate issues?

A. Obviously, the post-tensioning anchor sort of into that general area, the lower end of the bars, and since it had been reported the cracks had gotten more -- you know, longer or a little wider, it seemed prudent to try to get back to that state

of stress that we had when things were good.
Q. And that was in your mind what was being done --
A. Yes.
Q. -- was to get back to the state in which it was prior at the site of the yard?
A. And even when it was on the piers.
Q. Okay.
A. Because it was sitting on the piers and initially there was none of that. I mean that would have been known by the initial inspections. And so that wasn't there early on Saturday; it just simply wasn't there. There's no way that would have been, you know, not noticed.

And so, at some point on Saturday when they got back out there to detension the bars, they reported that they saw this cracking pattern, and that they proceeded to detension the bars and they reported that there was some cracking again. We didn't know when they were going to detension the bars and we did not know about this cracking until that email that I saw Tuesday morning that came in late Monday evening.
Q. Okay. Thank you. Are you aware that the construction engineering inspector had noticed and was documenting the amount of cracking on Monday, Tuesday and Wednesday of that week and was monitoring the growth of that cracking?
A. In the meeting that we had, the BPA personnel noted that they had implemented some sort of, I'll call it, monitoring of those

cracks. But I did not have any of that data at that time.
Q. At what time were you aware of the cracking of the day and time of the week -- in that week of the growth of the cracks, what time -- what day and time were you aware of them?
A. Well, we got, you know, the email with the pictures in it. That, obviously, was our first indication there on Tuesday morning when I saw that first thing. And while I was doing my assessment, there was some conversations between one of our individuals and the project manager and the question was what are you guys seeing out there basically. And what he was told and what was repeated to me when I got down here on Thursday morning was that they had been monitoring the cracks, there was some minor changes, but pretty much the same as it was on Saturday afternoon.
Q. So Tuesday morning, Tuesday morning was when you were --
A. Well, Tuesday morning is when I saw the cracks --
Q. When you saw the cracks.
A. -- and verbally Figg was told by -- I'm not sure exactly who it was; I believe it was Rodrigo talking to Dwight, that he would -- that would have to be followed up on, but I believe that was the communication.
Q. How big were the cracks you saw --
A. I don't have any direct records of those, just the photography. The data that BPA was collecting had not yet been provided.
Q. And that amount of cracks would not lend you to believe to

close the bridge or to initiate any precautionary measures to immediately address those cracks?
A. No. At the time we saw the cracks, obviously the steps were taken to do a separate quick hand calculation type check to see, you know, if this crack pattern and the forces from the members that were known about in that -- I'll call it the nodal region, you know, did it meet, you know, the design criteria requirements in terms of amount of steel, that sort of thing. And as best I could tell from the analysis that I did at that time, which was intended to be a bit conservative and was using I'll call it forces a little bit bigger than what the computer models ended up, you know, had shown, just because that's how I got to it with hand calcs, I concluded that there was sufficient reinforcing steel and post-tensioning forces and all of that to properly confine the node.
Q. So there wasn't any consideration to close the bridge or to --
A. In the meetings I had and in the conversations I was a part of, both here on-site and elsewhere, that was never discussed. None of the -- when we were all here together, you know, FIU didn't discuss it; FDOT didn't discuss it; MCM, Figg, no -- it just was not a discussion.
Q. Did you say at the meeting on the morning of -- where you had met with -- on the cracking issue, the morning of the collapse, did you indicate that the cracks were not a specific safety issue?

A. What I said was that when we -- and the presentation was specifically to show what we had done and what those calculations were telling us or indicating, was that the nodal region appeared to meet all the criteria and were therefore considered, you know, safe at that moment. There wasn't an imminent safety concern on my part. If there was, I would have said so.
Q. Absolutely. Thank you. Regarding the meeting -- and this was a change to the design plans, the restressing?
A. You could say that.
Q. This was not called for in the design plan. What is the normal process by which something like that is reviewed and the approval process that's given, if you can describe the approval process that's given to a change for something like that? What's the process it goes through and --
A. We didn't really consider this as a change, because we were getting back to a preexisting condition. So it was not considered a change.
Q. But getting back to the preexisting condition was not something that was called for in the design plans.
A. Correct. It was a response to the observations of what had been seen on-site.
Q. And so, the observations that were seen on-site and the proposal for that, what approval process was done for that?
A. I don't know that I have specifics to give you on that. We made a recommendation to MCM based on judgment that was getting

back to this preexisting condition, and based on what we had been told about the cracks and their history at that point, that getting back to that preexisting condition was the right thing to do. And so we advised them that that was, you know, what we were thinking.

Q. Did you reach out to anyone indicating that you were doing that, anyone else outside the meeting that you were -- did you contact the Florida Department of Transportation to indicate that you were doing that?

A. I attempted to. As I'm sure you all know, there's the voice mail that I had left for Tom Anders, and the intent was to sort of tell him what was going on and what we had done and what we had seen and what we had recommended.

Q. Did he respond to you -- did you get any response from him?

A. I did not.

Q. So was there an independent review done based on getting back to the preexisting condition?

A. No.

Q. And in your mind would that be something that would typically be done?

A. I would say no. Not if the structure was in a particular state and you -- for some reason construction needed to step back to a preexisting condition using -- basically reverting, you know, what you had just done as an operation, I don't see it as a change. You're simply getting back to that previous condition.

Q. Was there any other issue that was tied to that in terms of a -- any other decision-making processes that was tied to that? Was it a time-sensitive issue? Was it something that needed to be done quickly?

A. We expressed that its something that the contractor should implement when they could. You know, if you're doing something to try to make an improvement, that it seemed prudent to do those as quickly as, you know, might could be implemented. But we did not give specifics on that.

MR. WALSH: That's all the questions I have right now.

MR. BRAGG: Mr. Holt?

MR. HOLT: Reggie Holt, Federal Highway.

BY MR. HOLT:

Q. Sir, I just have a couple questions on a couple different themes. I guess the one item is the timeline of the cracking, whether it was getting worse, progressing, and observations were made, and whether you saw the differences were seen.

So I guess it looks like that you were orally notified of the cracking on Saturday or Sunday. You got pictures on Tuesday.

A. But we were not notified --

Q. So the first you knew there was any cracking was on Tuesday morning after you left -- flew back Saturday, there wasn't any kind of --

A. No.

Q. -- phone or email saying there was cracking?

A. No. Absolutely not.
Q. Okay. You have a CE&I person here, a Figg engineer?
A. No.
Q. Does Figg provide any construction engineering on-site?
A. We were here in advance of the move.
Q. Right. Okay. It was just for the move?
A. Right. We had a specific scope of service to be on-site to advise and coordinate with regard to the move.
Q. All right. You mentioned on-site services. I didn't capture the fact that it was just for that one --
A. Yeah, that was the sole thing.
Q. Okay. So that was the first time -- so you saw these pictures on Tuesday and you went up on Thursday. So was there a difference in what the -- was seen in the pictures and what you saw firsthand?
A. The --
Q. Increased cracking?
A. The crack patterns were the same as far as I could tell.
Q. Okay.
A. I asked the different people both in the meeting and the operator who was on the manlift when I was actually there, you know, if there was any noticeable change to anything and I was told no, that it was just what it was. And so -- but certainly when you look at something 3-dimensional like that in person you can see things --

Q. Right.
A. -- a little bit different than you saw in photographs.
Q. Agree. So you also mentioned something else, that you did your quick hand calcs and that the cracking that you saw wasn't consistent with some expected cracking behavior, I guess, from your analysis. So you couldn't really -- I guess if I'm interpreting what you were trying to say, is that you did your design checks and these design -- these failure modes occurred or cracking would be of a certain nature and you didn't observe cracking to exhibit any of those expected behaviors?
A. In the calculations that I did on Tuesday and into Wednesday morning, basically I concluded that, you know, the reinforced concrete behavior with the load on the shims there on the north end, that you would expect the reinforced concrete beam to do what reinforced concrete does, and so, in that sense the diagonal cracking pattern was consistent with what I would have expected from the calculations.

There was a difference in the sense that --

Q. When you say diagonal cracking pattern, on which element?
A. This is on the diaphragm, north end diaphragm.
Q. On the north end. So the cracking underneath, on the diaphragm?
A. On the north side surface.
Q. North side surface, okay.
A. That general crack pattern. And there was --

Q. We can't see it. It's behind the (indiscernible) --
A. Yeah. Okay. Fair enough.
Q. -- pictures. So it's --
A. So you have not seen that yet.
Q. -- it's at the top or the flexural tension zone in the bottom or --
A. Yeah, tension's in the bottom.
Q. Right. So that, I mean, was a flexural -- it was a bending cracking in the bottom?
A. Basically, yes. And because of the depth to span ratio it's basically a deep beam, strut and tie kind of thing for you.
Q. Okay.
A. And so that general pattern was expected. And it was talked about at the meeting that we would have anticipated that to be more uniform on the two sides of the diaphragm. And at that point there wasn't a good explanation for why there was a bit of a difference. Or more than that, there was a difference north side versus south side, and that we were continuing to look into that.
Q. Okay. Just to better understand some of the sequencing. So there's -- you were discussing the fact that the bridge was, I guess, in its final placement simple span condition for 7 to 9 days. So it was on supports that were underneath the two diagonals --
A. The two end diaphragms, yes.
Q. The two end diaphragms for a period of time for, I guess for

the SPMTs to come in?
A. Correct.
Q. So it was cast on the ground, right?
A. Well, it was cast elevated up on false work on top of these towers, fully supported over the full length of the span.
Q. Okay.
A. I don't know the exact height above the ground, call it 15 feet in round numbers.
Q. Okay.
A. And so that was obviously done to have the span elevated so the SPMT's teams could get under there and, you know, have enough capability with their jacks to pick it to the final elevation out over the road.
Q. So the false work fully supported cast up in the air to give you the head room. They removed --
A. All the center parts.
Q. -- all the center parts, not just two windows to get the SPMTs in --
A. Full length.
Q. Full length from bearing to bearing.
A. Except for the little end pieces --
Q. The little end pieces --
A. -- temporary piers.
Q. Okay. And that was in that condition for like 7 to 9 days or something like that?

A. Yes. Exactly.
Q. Okay.
A. That obviously was after all the transverse post-tensioning and the PT bars and the longitudinal tendons and all of that had been stressed.
Q. So that was stressed, then you moved the false work --
A. Sure. So the span could be stood up self-supporting, yes.
Q. Uh-huh. So you -- kind to get back to -- so there was -- you said your presentation didn't describe remedial measures, so I -- you know, so there was distress seen. We were told that there was some shimming done, I guess underneath the --
A. Yes.
Q. And that was not called for in the final condition. Was that something that was additive? Was that done to help address the seam distress, the shims -- the additional shims?
A. Yes.
Q. And they were put in on Tuesday. So was that -- was that part of your discussion on getting back to the as-cast condition?
A. Yes. In the as-cast condition on those temporary piers there was a essentially uniform support because it was basically the casting soffit from the underside of the diaphragm.
Q. Uh-huh.
A. So, there was a, I'll call it a more uniform support condition from at the time of casting, that you pour wet concrete on the form.

Q. Right. Right.
A. And so, it was an attempt to get back to that as best we could with the geometry of things we had out there to work with.
Q. And was that when you had the same discussion about restressing to get back to the initial conditions, all the same theme or was it --
A. Oh, well, they -- I will say they have the same theme but not the same timeline.
Q. Okay.
A. Earlier in the day on -- and you can check the exact email records of what the timeline was, but sometime fairly early in the morning on -- get my dates right -- Tuesday a recommendation to MCM was made about installing shims under that central area that was --
Q. You say Tuesday evening, was it?
A. No, morning.
Q. Tuesday morning, okay.
A. Yeah, fairly early.
Q. So soon after you saw the pictures?
A. Yes.
Q. Okay.
A. Relatively soon. Then later that day is when the recommendation to MCM was made to re-tension the bars again. Both of them under the same thing of trying to get back to as close as we could to that condition that had existed in the as-cast area.

Q. Okay. So that makes sense. You saw the picture, email, assume immediately due to your calcs maybe it's a good idea to re-tension back to the -- hone in more on the theme of getting back to the as-cast condition. Were there any other measures that were under consideration or discussed or were those to -- intended to resolve the observed cracking?

A. No.

Q. Okay.

A. Like I say, it was still under, you know, active consideration. I would say the big part of the reason I came down was to see it in person --

Q. Right.

A. -- rather than just in photographs because there can be, you know, different perceptions from them or that perspective. As part of the meeting, and those who were involved will probably remember, it was discussed that, you know, as an action item we were going to go back -- you know, the next construction steps in the plan set would add strength to this area just by the nature of what they do and the pieces that you're building in the next order, actually the next two steps in terms of adding materials or pieces, if you will.

Q. Okay.

A. And so, what -- we had a discussion with MCM as they were looking into, you know, how they could expedite that from a time standpoint as a prudent measure.

Q. Okay.
A. And we were tasked to go back and see if there were, you know, anything that we could come up with, and potentially MCM might could do even quicker that would be of value to that area.
Q. And that was just schematically talked about, you know, options --
A. Really --
Q. -- other than the fact you have future elements casting that would give it support?
A. The idea was that, you know, given what was seen, it was prudent to try to expedite doing something to that area. MCM was looking at what they could do to expedite, you know, their activities with the planned operations, and we were asked and headed to Tallahassee to actually do -- trying to come up with some potential options that MCM could consider that they could implement, you know, quickly, basically. And that was what I was tasked to do and that's why I left the site on Tuesday, I don't know, lunch time I think, maybe just before.
Q. Okay. I guess it's a bridge -- even though they are not exactly identical, but diagonal 2 is pretty similar to diagonal 11. It's larger, the slope is a little different, but they're carrying pretty much half the load, the vertical reaction, the bridge. Was there any consideration given to remedial measures or concerns over the node at diagonal 2, since --
A. No. And the reason was there was no evidence of issue at

that location. I mean, any of the real minor cracking that had been observed was really normal stuff that you would kind of think about in this kind of environment. So the north end, obviously after the south end was noted, and we asked about that what was seen on the north end -- excuse me -- the south end. I keep getting them backwards. What does the south end look like? And we were told there's nothing there.

Q. I saw Alan Phipps was here. Was he involved in the project in any way?

A. An administrative level.

Q. An administrative level. Okay.

MR. HOLT: That's it for my questioning.

MR. BRAGG: Dan you have anything further?

MR. WALSH: I do.

BY MR. WALSH:

Q. Was there any other handouts at the meeting on the morning of the collapse besides the PowerPoint presentation that was given?

A. Not to my knowledge. No.

Q. Okay. And we've already asked for a copy of that PowerPoint presentation.

A. Uh-huh.

Q. You mentioned there was an email giving direction to the restressing on the day of the collapse. Was that email from you?

A. No.

Q. Who was that email from?

A. It was from Figg's Dwight Dempsey to Rodrigo Isaza. I'm working on that.
Q. Dwight Dempsey.
A. Yes.
Q. Were you cc'd on that email?
A. Yes.
Q. Okay. We would like a copy of that email.
A. Understand.
Q. Okay. And do you recall in that email what the maximum kip amount was?
A. Not precisely. No.
Q. But it is contained in that email?
A. Yes, it is.
MR. WALSH: That's all I have.
MR. BRAGG: Okay. Anything?
MR. HOLT: No, I'm through.
MR. BRAGG: Okay. The time is now 2:56 p.m., we are going to go ahead and conclude the interview. Thank you very much for your participation.
(Whereupon, at 2:56 p.m., the interview was concluded.)

CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF:	PEDESTRIAN BRIDGE COLLAPSE MIAMI, FLORIDA MARCH 15, 2018 Interview of Denney Pate
ACCIDENT NO.:	HWY18MH009
PLACE:	Miami, Florida
DATE:	March 20, 2018

was held according to the record, and that this is the original, complete, true and accurate transcript which has been transcribed to the best of my skill and ability.

[redacted]

Letha J. Wheeler
Transcriber

UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

* * * * * * * * * * * * * * * * * *

Investigation of: *
*
PEDESTRIAN BRIDGE COLLAPSE *
MIAMI, FLORIDA * Accident No.: HWY18MH009
MARCH 15, 2018 *
*
* * * * * * * * * * * * * * * * * *

Interview of: JASON STAUFFER
FIGG

Tuesday,
August 14, 2018

APPEARANCES:

KENNETH BRAGG, Human Performance Investigator
National Transportation Safety Board

DANIEL WALSH, Senior Highway Accident Investigator
National Transportation Safety Board

ROBERT ACETTA, Investigator in Charge
National Transportation Safety Board

REGGIE HOLT
Federal Highway Administration (FHA)

PATRICIA LEID, Esq.
Clyde and Co.
(On behalf of FIGG Bridge)

I N D E X

I N T E R V I E W

(11:30 a.m.)

MR. BRAGG: Today is Tuesday, August 14, 2018. It is 11:30 a.m. This interview is in regards to the FIU bridge collapse in Miami, Florida.

My name is Kenny Bragg. I'm a human performance investigator with the Office of Highway Safety in the National Transportation Safety Board. I'm going to go around, starting to my right, and ask everyone to introduce themselves, and state your names.

MR. WALSH: Dan Walsh with the National Transportation Safety Board.

MR. HOLT: Reggie Holt, Federal Highway Administration.

MR. ACETTA: Robert Acetta with the NTSB, investigator in charge.

MS. LEID: Patricia Leid with Clyde and Co., representing FIGG Bridge.

MR. BRAGG: And I'm going to ask you to say and spell your name, please.

MR. STAUFFER: Jason Stauffer, J-A-S-O-N, S-T-A-U-F-F-E-R.

MR. BRAGG: All right, okay.

INTERVIEW OF JASON STAUFFER

BY MR. BRAGG:

Q. With whom are you currently employed?

A. FIGG.

Q. How long have you been with FIGG?

A. A total of 11 years.
Q. And what's your current role within the company?
A. I'm an engineer.
Q. Engineer? And how long have you served in that capacity?
A. All 11 years.
Q. All 11 years. Are you a professional engineer?
A. Yes.
Q. Where did you receive your training?
A. With FIGG.
Q. With FIGG?
A. Um-hum.
Q. Okay. And what school?
A. New Mexico State.
Q. New Mexico State. Okay. When did you become involved in the FIU bridge project?
A. During the design phase.
Q. Design. And what role did you play?
A. I designed the footings, substructure and stairs on the north side. And the pedestrian rail, I guess it's called, the missle guard fence.

MR. BRAGG: Okay. I'm going to have -- go ahead and let Mr. Walsh go ahead and ask you some questions regarding these issues.

MR. WALSH: Thank you, Mr. Bragg. Dan Walsh with the National Transportation Safety Board.

BY MR. WALSH:

Q. Can you indicate, Jason, who you directly reported to?

A. Manuel Feliciano.

Q. Okay. And most of your interaction was with Mr. Feliciano regarding this project in the office?

A. Feliciano and Erika Hango. We worked together on some of those items.

Q. Okay. Have you worked with these individuals on other bridge projects --

A. Yes.

Q. -- designed by FIGG? Okay. Again, can you just discuss your primary responsibilities regarding the design of the pedestrian bridge?

A. I designed the footings, substructure and the stairs on the north side.

Q. Okay. Did you have any involvement with the superstructure?

A. No.

Q. No involvement whatsoever?

A. No.

Q. Okay. Did you have any discussions with Mr. Feliciano regarding the redundancy of the bridge?

A. No.

Q. Okay. Did you have any discussions, see any photographs or see any emails regarding the cracks on the bridge?

A. No.

Q. As part of the footing design and the 11-foot shift that occurred to the north, can you describe what was the changes to the footings as a result of that 11-foot shift to the north?
A. I can't remember what, if any, changes resulted from that 11-foot shift.
Q. Okay. Was there a change in the location of the footings?
A. I can't recall that.
Q. Okay. Are you aware of the 11-foot shift to the bridge?
A. Yes.
Q. Okay. You mentioned you're a professional engineer. Are you registered in the state of Florida?
A. Yes.
Q. Okay. Did you have any involvement with the construction sequence plans for the bridge project?
A. No.
Q. And did your design of the footing, substructure and stairs go through a quality control/quality assurance plan?
A. Yes.
Q. Can you discuss that?
A. Calculations were checked by other engineers in the office. Outside of that, that's all I can recall.
Q. And who performed those calculations?
A. The checks, you mean?
Q. Yes.
A. Manuel Feliciano checked some, and Erika Hango checked some.

Q. Okay. Do you recall any comments received from them?
A. I don't recall that, no.
Q. Okay. Were you involved with the independent peer review of FIGG's design plans by Louis Berger?
A. Could you repeat the question?
Q. Were you involved with the independent peer review of FIGG's design plans by Louis Berger?
A. Not that I recall.
Q. Okay. Did Louis Berger have any comments on the footing, substructure and stairs as part of the independent review?
A. I don't know.
Q. Okay. Okay.
MR. WALSH: I have no further questions. Do you have any follow-up questions?
BY MR. BRAGG:
Q. When you contact -- when you communicate with Manuel Feliciano, how do you do so? Through your work -- through work email address?
A. Sometimes.
Q. Do you have a work cell phone number?
A. I do.
Q. What's your cell number?
A. 850 -- that's my personal. I'd have to get it to you later. I don't know it off the top of my head.
Q. Okay. Do you ever communicate with him through your personal

email?
A. Yes.
Q. You do. And I won't go on the record with that, but we'll request that as well.
MR. ACETTA: I have a question.
MR. BRAGG: Yes.
MR. ACETTA: This is Robert Acetta.
BY MR. ACETTA:
Q. I know that for the structure itself, they use software -- we discussed that earlier -- to check the design. What is the process you go through to make sure that the footings and substructures are adequate for the design of the structure that it's going to hold? What process do you go through for that design?
A. We ensure that it meets the requirements of the code.
Q. But I mean, are you giving loads that this is going to be required to be able to hold?
A. Yes.
Q. Okay, and who provides you with that information?
A. The superstructure designers.
Q. And who are the superstructure designers?
A. That I can't remember. I mean, it was a team of individuals. I can't remember the specific person that provided those.
Q. Do the individuals work within FIGG?
A. Yes.

Q. You don't know them?
A. I do know them, but for this particular project, I can't remember who was the person that provided the loads for the design of the foundations and the substructure.
Q. Is there any software that you use to double check your design besides someone else being -- looking at the calculations?
A. I remember that LARSA was used for some aspects of the substructure design. But I can't remember off the top of my head how exactly it was used.
MR. ACETTA: I don't have any other questions right now.
MR. BRAGG: Okay. Mr. Holt?
MR. HOLT: Reggie Holt, Federal Highway Administration.
BY MR. HOLT:
Q. Okay. Given the fact that you were not involved in the superstructure design, that's going to make my list of questions greatly reduced. So I guess the general one: was the same concrete mixed that was used in the superstructure also used in the substructure?
A. I can't recall that.
Q. Do you recall the concrete strength that were used in the calculations?
A. No.
Q. So you stated that you did the foundation and substructure designs. Did you use software or hand calculations? What design methods did you use?

A. There was a mixture of both hand calcs and using LARSA, the software program.
Q. The LARSA model was -- did you use the global one that was used for the overall structure, or did you generate your own LARSA model for the substructure analysis?
A. I remember generating my own for the substructure specifically.
Q. Okay, when you say substructure, are you talking about the three -- the two abutments in the central pier?
A. Those would be the substructure elements.
Q. And you did this independent model -- you had your own model of all three of those components?
A. Not all three. Just the portion I was working on, which was the north side.
Q. So the north side being the central pier and the north-most abutment on the other side of the -- the north side of the canal?
A. Not the central pier, no.
Q. So just the, just the southern -- the northernmost abutment.
A. Yes.
Q. Which is pier three or whatever. Or support 3.
A. Yeah, I can't remember the designation right now, but yes.
Q. So how did you receive these superstructure reactions? Was it generated by you, or were they given by -- to you by another designer?
A. They were given by another designer.

MR. HOLT: That's all I have.

BY MR. ACETTA:

Q. I have a follow-up. This is Robert. So your involvement was just the portion north of the canal?

A. That's correct.

Q. And who designed the pier pylon that was between the canal and the roadway and the southern end where the staircase and elevators were as well?

A, I'm not sure who designed the central pier. I believe Erika Hango did a lot of the southern side foundations and, you know, substructure.

Q. Couple of things. Can we find out who did design -- make sure who designed the south portion and that pier pylon between the roadway and the canal? And then if we can also find out some of the follow-up information about the type of concrete? Was it the same as the superstructure? Questions that both Dan and Reggie asked that you didn't have any knowledge of. I think --

MR. BRAGG: Yeah, I was going to, I was going to --

UNIDENTIFIED SPEAKER: Yeah, we'll get you a list.

MR. BRAGG: -- propose something that -- I mean, I would hate to -- I don't want to deem another interview necessary, but it's just a lot of information he doesn't remember or doesn't recall. So I don't know if it would be more helpful just to give you some indication of what we need, information that we need from him so he could bring it back with him. But it just -- you know, he

doesn't remember a lot.

MS. LEID: Well I don't know if his area of work is --

MR. BRAGG: So you --

MS. LEID: -- going to answer the questions you want. That's the --

MR. BRAGG: Okay.

MS. LEID: Could you compile a list for me or -- I wrote down a couple things.

MR. BRAGG: Yes. Yeah.

MS. LEID: You wanted an email, and you wanted some phone numbers, and you wanted who designed the center portion.

MR. ACETTA: And I guess while we're finding out who --

MS. LEID: The type of concrete.

MR. ACETTA: Yeah, what was the design parameters.

MS. LEID: For superstructure. Is there --

MR. ACETTA: Okay. The structure in the center and the southern --

MS. LEID: Southern.

MR. ACETTA: Yes. The pylon that was between the canal and the roadway. That pier.

MS. LEID: Okay.

MR. BRAGG: So when we get this interview transcribed, then what I'll do is go through and just, and --

MS. LEID: That's be fine.

MR. BRAGG: -- give you a list of information.

MS. LEID: We may be able to just give you a list of answers.

MR. BRAGG: Yeah, that would be fine. Yeah.

MR. ACETTA: I don't have anything else. Just want to make sure we followed up.

MR. BRAGG: Okay. Anyone have anything else?

All right, the time is 11:45. We will conclude the interview.

(Whereupon, at 11:45 a.m., the interview was concluded.)

CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF: PEDESTRIAN BRIDGE COLLAPSE
MIAMI, FLORIDA
MARCH 15, 2018
Interview of Jason Stauffer

ACCIDENT NO.: HWY18MH009

PLACE:

DATE: August 14, 2018

was held according to the record, and that this is the original, complete, true and accurate transcript which has been transcribed to the best of my skill and ability.

[redacted]

Eileen Gonzalez
Transcriber