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Interviewee: Ronnie "Ronnie Mac" McFarland (RM)

Interviewer: Tom Martin (TM)

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TM: Today is Thursday, August 4, 2022. This is Part 3 of a Grand Canyon oral history interview with Ronnie Mac McFarland. My name is Tom Martin. Good evening Ronnie Mac. How are you today?

RM: I'm doing good, sir. How about yourself?

TM: Very good, thank you. Ronnie Mac, may we have your permission to record this oral history over the telephone?

RM: Yes, sir.

TM: Thank you so much. At the end of our second interview, you were just getting ready to come out to the Navajo Bridge. How did you first hear about that job?

RM: I'd gotten a call from Jay Rollins who was bridge superintendent or division manager for Traylor Brothers. And Jay used to be with the John F. Beasley Construction Company, and when Traylor Brothers had bought the bridge division from Bill Landfair, Frank Williams, that's when Jay went to work for them. And Jay had called a good friend of mine, Rick Peters, to come out and run the phones for him. But Rick was busy on another job, and Rick had told Jay to call me. So then Jay called me, and that's how I got involved in the bridge.

TM: And Ronnie Mac, is that common where, you know, this is a tight-knit group of people, it sounds like. If you need somebody, you call somebody whom you know that works hard and is good. And if they can't do it, they might refer to somebody else. Is that how that kind of works out?

RM: Yes, a lot more than what you would think. And the guys that do the big bridges, you know, like Ed Kent, Jay Rollins, Rick Peters, Bob Peters, Ed Cross, David Meche, myself, and others, you know, the guys that do the bigger, more complicated projects, you just keep running into the same guys. You might not see some guys for ten years, and then you'll be on a big project and you'll run into them again. But as far as, like, on the bridge side, usually when those guys are needing help, they'll call somebody to get help. If they're busy and can't go, well, they'll know somebody that's still part of that group that had worked together in the past. You know, they

just keep going down the list until they find somebody that can go. But the trouble with the really good help is they're always busy. It's kind of a double-edged sword. I might be working on one project and, say, Ed Kent needed me. Well, and if I wasn't real happy with the people I was working for, you know, you'd be more than happy to go. If I was happy where I was at, well, then Ed would need to find somebody else or then offer me more money than what I was making there to get me to go over. But you have to kind of watch how you do that because you don't want to burn too many bridges because somewhere down the road, you're going to need a job.

TM: Right. So it sounds like kind of a tricky business.

RM: Yeah. And I've had people, you know, that would get mad at me and be like, "You'll never work for me again." And my comments have always been "Until you need me again." A year or two down the road, they're calling, "I know I said you'd never worked for me again, but I need you."

TM: Interesting. When Jay got in touch with Rick, and then Rick got in touch with you, or Rick told Jay to get in touch with you, did you know Ed Kent was going to be working on the job?

RM: I didn't even really know anything about the job until Jay had called. I was working for DCCI, like, a year or so before this. Danny's Construction Company out of Shakopee, Minnesota. And I know they had bid on the project but we wasn't a successful bidder. I usually never asked about which projects they're bidding on because they'll bid 300 jobs to get one. So I never worry about, you know, what they're bidding on. Just let me know what you actually have.

TM: It sounds like it's pretty competitive. There's a lot of companies out there bidding for bridges.

RM: Well, I mean, not so much on the bridges but, like, normal buildings, you know, that's a lot more competitive. But in the bridge market, especially the bigger, more complicated bridges, there's not that many players.

TM: Okay. Thank you.

RM: You know, there's American Bridge, Traylor Brothers. Then you have, like, the Kiewits and the Kraemers and the Walshes. And the general contractor side and most of them have gotten anymore to where they try to have their own erection division because guys like Ed Kent are harder and harder to find. All them old what I call superstar bridgeman like Ed and Lamar Kent, and Ed Cross, and those guys, well, they're all dead and gone. You know, Ed Kent's nephew, Jerry Kent, he's 69. Well, he's still building bridges, but he works for American Bridge. Now, he worked for Beasley for years, and then whenever Beasley sold their bridge division, that's when Jerry went to work for American Bridge. He's been with them ever since.

TM: Alright. Do you remember roughly what month it was that you got that call to come on out to Navajo?

RM: I wanna say it was either in May or the first part of June.

TM: And that's 1994.

RM: I think so. Yeah, that's correct.

TM: Okay. Alright. We've talked already about what a phone operator does, but I want to get into that once you get out on the bridge and start getting going there. When you first showed up on the bridge, when you first showed up to Marble Canyon Lodge and crossed on the old bridge, I suppose drove over there. What were your thoughts?

RM: Uh, it was like, that's a long way to the water.

TM: Yeah! When you got there, was there still blasting going on on the Marble Canyon Lodge side of the canyon?

RM: I think they were done with most of the blasting by the time I got there. They were working on putting the foundation and the tiebacks and stuff in when I first got there.

TM: So the foundation and tiebacks on the Marble Canyon Lodge side?

RM: Yep.

TM: Okay. And how far out had the Flagstaff side bridge, half bridge, I guess it's called. Is that right?

RM: Yeah. From the Flagstaff side, I think they were three panel points out when I got there. And what I mean by panel point is for every plumb post— So if you look at the picture, you got the first plumb post just right at the abutment and the shoes. And you go out about 30 feet, well, then there's a vertical plumb post. So they was at the third, working on the, I think, the third to the fourth— I think I finished the third set, and then we continued on there. So they was out three panel points whenever I got there.

TM: Okay. Can you recall for me and recount your typical day? What time did you get up? Where did you eat breakfast? Where were you living? What was your commute like? Who'd you report to when you got to work? And what was your day like on the bridge?

RM: Well, I mean, I always got up early, so I probably got up at 4 a.m., fixed me a lunch. Don't eat breakfast. We were staying in Page, me and Greg Reese, who was our engineer. Me and him were living in a trailer house together. And then one week I would drive and then the next week he would drive. So we'd leave Page. You'd have to drive back toward Flagstaff to Bitter Springs and then turn and then backtrack back up to Marble Canyon to get to the bridge. Cross the bridge and there was a small office-type building to the west side of the lodge. And I forget, it seemed like there was an insurance company in there and something else. But anyway, Traylor Brothers had a section of that rented, and that's where the office was at, and that's where we would meet at. Every morning, you'd get ice water and all that made-up and ready so when we left and went back out to the bridge, we would have all that with us. And on a normal day, I mean, you just pick up wherever you left off the day before. And we tried to get it to where we had the traveler moved out and ready, so we'd just start erecting the next panel point first thing that morning. So first item of business would be to set the two bottom chord members. So

you'd set, say, a bottom chord on the upstream side and then put the diagonal in that would help hold that bottom chord up. Then you'd go the other side and put that bottom chord in and get it made up and put that diagonal in. And then once you had those set, then you'd put the net beam in out at the end of the bottom chord you just set and then pull the net up to where you had the net underneath you. Then we would put the bottom chord star bracing in. And then we would stand the two plumb posts up out at the end of the girders that we had just set, and they had some bracing in them. We would get it set and go up and do the top chords and then the floor beams. Move track beams out. Get ready to move traveler ahead.

Once the traveler was moved out, then if we had time left in the day, we would reach back behind us, and everywhere the bolt-up crew had tightened the points up, we would shove those floats out that we worked off of to have them ready for the next day. We would just keep, you know, put floats on the pieces that we were setting so we have something to work off of. And then we'd leave the floats hanging there for the bolt-up crew. And when they was finished, then we would reach back behind, jump all them floats back out. So we'd just keep recycling them.

TM: Okay, I got a ton of questions. We need to go way back to— So you're living in Page in a trailer, and you would share the commute out with Greg. Were there people living there at the job site? Were there people living there at Marble Canyon Lodge?

RM: Ed Kent stayed there at the lodge. Ed Cross had an RV that he had parked west of the lodge, maybe a mile or two from somebody he had met there, whatever. But at any rate, Ed had his RV parked up there. Me and Greg stayed in the trailer there in Page. And then David Meche had a trailer rented there in Page or a house, I don't remember which it was, because once his kids were out of school, his wife and kids come out and spend the summer there.

TM: Right. He said he rented a house that summer for the family, so they just spent every day swimming out there in Lake Powell. A great time doing that. Do you remember anybody just living out there right there at the—

RM: A lot of the Navajo guys that worked there, about all of them had a camper on their truck, and they would just, like, park out on the canyon rim and spend the night. After work they would drive down by Lees Ferry. There's a place down there they could take a shower. They'd take a shower and clean up and then go to the lodge and eat or whatever. And then they'd just drive across the canyon over there. You know, there'd be 7, 8, 10 pickups lined up for those guys who'd spend the night there. Then they'd come to work the next day. Then that's kind of the deal. But we was only working four 10-hour days to allow the trucking company time to keep up with having to truck everything from Evansville, Indiana there to Marble Canyon. So then Thursday night after work, all the Navajo guys would go back home, you know, to wherever they lived at. You know, some of them was down by Tuba City and some of them were down by Winslow or Gallup or Flagstaff or wherever they lived at. They'd just go back home and then show back up Monday morning.

TM: So you've got a nice three-day weekend there. Take off Thursday evening, try to get home and then come back on Monday morning early.

RM: And a lot of times what I would do is, like, Thursday after work— A lot of times I would just drive myself that day, and then after work, I would either usually head back toward the North

Rim towards Fredonia, come up through Kanab, Perkin, Cedar City. I'd come back up this way kind of, like, Saint George where I'm at now. I'd even drive down to Mesquite, spend the night you know, just to have something to do and get away from Page because you's pretty limited to what you could do in Page. I mean, I wouldn't do it every weekend but probably about, like, every other weekend. I'd either run to Mesquite, or I'd run to Vegas, or I liked to go up to Cedar City. They had a pretty nice Western store. I'd drive out west of Cedar City. There's big alfalfa farms and I'd drive out there and just smell the fresh cut hay.

TM: Nice.

RM: Just do something like that just to break the monotony, just— It gets hot in Page and that trailer that me and Greg was living in, they didn't have air conditioning. All it had was a swamp cooler, so it'd usually be about 10 o'clock at night before it actually cooled down and that you can kind of stand to be in it. So that's usually why on the weekends I'd go somewhere where they had conditioned air.

TM: Okay. And then do you remember the names of— Well, let's go through just all the names of people you remember working on that job. There's Ed Kent. You mentioned him. Greg Reese, you mentioned Greg. David Meche, you mentioned David. Who else was out there?

RM: Ed Cross.

TM: And what was Ed's job?

RM: Ed was in charge of the bolt-up crew.

TM: OK. So was he the bolt-up crew foreman?

RM: Yeah.

TM: All right. And who was working for him?

RM: Uh, you know, I don't remember a lot. I know I remember George White Hair worked for him. But a lot of the other guys that work for Ed, I wasn't around them very much, so I didn't remember, you know, very many of them's names. That's been 30 years ago or whatever. But I remember George White Hair.

TM: What do you remember about George?

RM: Mainly just the name. He was kind of— He was a man of stature between the Navajo people. Not to say he was, like, a medicine man or a holy man, but he was a looked-up-to elder with the Navajo people. I'm not really sure what his official status was, but he was a man of importance among his people, and he was a good ironworker.

TM: Nice.

RM: Because I know Ed Cross was— You know, if they had a hard point that the other guys were having a hard time on, Ed Cross would always be like, “Alright. Don't worry about it. I'll send George. He'll take care of it.”

TM: And who else was out there?

RM: Well, Mike Charley, Louie Begay. We had another guy that worked with us, but I can't remember his name to save my life. And I don't remember if he was a Begay or a Chee or— But Begay's a pretty common name among the Navajos. And he lived in Tuba City. And he was kind of a cowboy type. I don't remember if he roped or if he had rode broncs or bulls, but, you know, he was a cowboy. An Indian cowboy. Kind of made it the best of both worlds. He could play cowboys and Indians by himself.

TM: Was there a lot of joking going on on the job?

RM: Oh, yeah. Of course, you know, most of them guys didn't know me when I first got there because they've never been around me, so you'd have a lot of white-eyed jokes. And, you know, a lot of “What are you doing on my reservation?” Of course, I wouldn't take no shit off of none them. I just come back there, say, “Well, somebody had to come out here and keep an eye out on y'all.”

TM: So lots of good-natured kind of fun.

RM: And then once we got to working together, got along, and I'd pick at them. I was like, “I'm the only white-eyed Indian out here.”

TM: Nice. And so Louie Begay and Mike Charley and you were on the erection team then.

RM: Yes, sir.

TM: You're the phone guy. You know, I've seen in pictures there's some sort of small handheld— looks like a hydraulic tool—and I wondered if it was used to kind of spread some of the flanges to help things, kind of, fit together. I haven't a clue what this thing is.

RM: I'd use a porta power, but most the time the only thing we used the porta power for would be when you'd hang the bottom chord, and you'd bolt the splice up and tighten the bolts. The bottom chord was so heavy that when you cut them loose from the crane, I mean, they would drop down about a foot out at the end, just from the weight of the girder. And then when we'd go to hang the diagonal in there, I'd be out on the bottom chord. The diagonal would come around, and I'd help guide it to the guys up at the top chord where the diagonal would fit in between the splice plates, and I'd let them get it made. And then they'd get a couple of bolts and a couple of pins.

Well, then I'd take a long-ram porta power, set on the bottom chord and come up and catch the web of that diagonal to hold it at height. And then I would climb up the diagonal, cut it loose, cut the rigging loose. And I'd slide back down the diagonal, move the crane down to the end of the bottom chord, and I'd shackle it into to the plumb post splice plates. Then I'd tell the operator start getting up on the load. And as he would pick the bottom chord up, I would come

off on the porta power to let the diagonal come down as the bottom chord was coming up until the holes lined up. Then I'd shove two pins in there real fast and then get me a couple of bolts and my pins drove. And I'd cut the crane loose, send it over to the other side, you know, back around to the work platform so you could hook on to the next piece. A lot of what you probably see with the hose or whatever was probably the air impacts that we used to tighten the bolts with.

TM: Right. This looked different. This was some sort of a tool, looked like a foot or foot-and-a-half long, maybe four inches in diameter. I'll send you a photo if I see it.

RM: That was probably a porta power pump.

TM: Okay. What would you do with that?

RM: That's what worked the porta power jack. You would pump it, and it would make the ram in the jack come out. And it has a little hand valve on it up at the end by where the pump is that. You could tighten it and bleed it off, and that would make the jack go up and down.

TM: Right. Okay. And while you're doing this, while you're putting out the—and again, help me with the terminology—you put out the bottom chord and then the diagonal. That stuff's not going to want to fit together super well because it's kind of hanging in space. So you'd use the crane to kind of pull it up to kind of get it so it—the diagonal would come in, and then you could bolt it up at the top and out at the end of the lower chord.

RM: Well, you could get the top fit in pretty easy because we'd have two floats hanging up there, and Mike would be on one, and Louie would be on the other one. And I'd get ahold of it on the lower end. I could guide it to him to where I could get it shoved up inside there, inside the splice plate where they could spud a hole and then get a bolt and a pin to get it started. And once they were made, then I would catch the bottom end of it with that long-ram porta power because the bottom chord member that I'm standing on, you know, it's dropped down a foot or so lower than what it needs to be. So I had to use that long-ram porta power to catch the bottom of the diagonal to hold it so I could get up there to cut it loose on the crane. And then once I cut the diagonal loose from the crane, then I'd boom the crane down to the end of the bottom chord, shackle into the splice plates for the plumb post. And as he started lifting it up, I'd come off on that porta power to let the two meet together.

TM: Got it.

RM: It sounds complicated, but it works really slick.

TM: Okay. And so that would tie in the bottom of the diagonal with the bottom chord.

RM: Yeah, to the end of the bottom chord, and that would hold it into proper elevation.

TM: Right. Right. Once those two pieces were bolted together, it wouldn't sag down anymore. It would be up where it needed to be.

RM: And then time you did that on both sides, you'd have both bottom chords and diagonals made, you'd have a bottom chord horizontal beam that would go in in-line with where the plumb post would hook up at. Then you'd get it put in there—

TM: And would it hook the two bottom chords together across the width of the bridge then?

RM: Yeah. But we'd also on that beam, we would also have the net hooked to it and the overhang brackets hooked to them, so it would come around all in one. You'd have the net plus that beam rigged to it and the net would just be hanging down vertically. Once you had that beam made, then we had ropes tied to the bottom of the net up to the top at the beam level. We'd take those ropes loose and go back to the panel point behind us and then pull the net up so we could hook it off to that beam. Then that gave you a net all the way, you know, kept a net below you as you went out.

TM: So it sounds like when you put the bottom chord out and put the diagonal out, you didn't have a net.

RM: No.

TM: What were you doing for safety? Were you tied in any way somehow?

RM: Well, we were supposed to be, but not very often.

TM: Okay. That's a long way down there.

RM: Well, that's a good incentive not to fall.

TM: Yes, sir. No kidding. So you guys would get roughly how many bolts in a joint before you moved on?

RM: Well, if it was a chord member, say, like a bottom chord or top chord, you had to have 50% pins and 50% bolts, so you have something in every hole.

TM: Oh, wow. Okay, so the bolt-up guys would come in, and they would knock the pins out and replace those pins with bolts.

RM: Yes. And the bolts that we stuffed when we were hanging it, we would tighten them up before we cut loose. So when the bolt-up crew come by, all they had to do was knock pins out and stick bolts in the holes. Now, on the diagonals and the bottom chord star bracing and the secondary members, we'd usually put, you know, say, four bolts a side in the diagonal, maybe eight bolts and three or four pins per side and cut loose and go on. Then the bolt-up crew would take care of that whenever they come by.

TM: Okay, so you guys would have to do, you know, 50% pins and 50% bolts on some of the joints, but you wouldn't have to do that much on others.

RM: Yep.

TM: So the bolt-up guys would be scrambling to kind of, or could be scrambling to keep up with you.

RM: Yeah, but they had about 12 guys in the bolt-up crew.

TM: Okay, so that way they could keep up.

RM: 'Cause they would be paired up. You'd have, like, two guys per point. So you'd have two guys, two guys, two guys, two guys, two guys. So they'd be working, like, six points or whatever at a time.

TM: Okay. And then how many guys do you remember were on the erection crew?

RM: Well, you had David was the foreman, and he had a guy that was helping him hook on. I can't remember that boy's name. He was kind of a young Navajo guy. And you had Andy, he was the crane operator. Then you had me running the phones, Mike and Louie and that other boy, so there was, like, seven of us in the erection crew, counting the operator.

TM: It's funny, when I think of phone operator, I sort of think you're sort of standing around all day, talking on a radio, but you weren't doing that at all. You were moving. You were up and down and hooking things together and talking on the phone.

RM: No, I'd be right in there with them, help them get it made, show them how to hook the come-alongs up to get it pulled in there. And once it was pulled in there. I mean, I was driving pins and stuffing bolts just like they were.

TM: And Andy, the crane operator, he would, what, get back to reading his book? What would he do? Because he would be moving stuff, but then there'd be a while he'd be parked for a bit.

RM: Well, once we got it down in there, we was working on it, I'd tell him, "Alright, we're in and made." I mean, we just got to do our normal thing. You know, he'd still have to sit in the seat because he had something on the hook. But he could kind of relax because he knows that nothing was going to be happening for a while. And then when we got close, I'd say, "Alright, Andy, get ready. Because we're gonna be cutting loose here in a minute." Well, then that would give him time to, you know, get ready because he'd know something was fixing to start happening.

TM: Right. Start paying attention. Would Andy move the crane back and pick up steel to bring it back out? How did you guys keep Andy fed with steel?

RM: Well, we had that work platform that would run on the same tracks that the crane run on. But we would, like, at the end of the day, we would take the work platform all the way back to the bank, and then we would load it with the next day's panel point worth of iron, everything we needed. And then the next morning when we would go out, we'd bring that platform out with us. And we had two air tuggers rigged up that would pull it out, pull it each way.

TM: Okay. Pull it out and then pull it back.

RM: Yeah. So we'd get it rolled out there so all Andy had to do was just swing around behind him and get the next piece and just swing back around to us. And then we would put it where it belonged. And then when it was time to move the crane ahead another panel point, well, we'd hook up a kind of like a jump line that would hook up out at the end of the top chord, come back to the traveler snatch block, go up to the low blocker through a snatch block. And the same thing on the other side. When we cut all the stops and everything to lose, I'd have Andy just start working up on the big load. And as he tied that cable up, it would just move the traveler ahead till we got to our next point where we was going to lock it down. And I'd just say, "Now hold it right there." And we'd start putting all the stops and tie downs and all that back on it. Then we'd cut that jump line loose, get it laid out of the way. It would be ready to go for the next day's business.

TM: Okay. And you would do that for every panel?

RM: Every panel point.

TM: Okay, yeah. As you went out, the panels are getting shorter and shorter from top to bottom.

RM: Yep.

TM: But there's still the same number of connections.

RM: Yep.

TM: So it seems like you wouldn't have to take as long to go from one connection area to another. But there's still the same number. Did the speed increase as you moved out, or was it still kind of the same, or were you putting in more panels of a day? How'd that go?

RM: It would start going a little faster as you moved out because you had more vertical brace pieces at the plumb post closer to the bank because it's taller. So that would be, say, maybe another 10, 12 pieces. You know, and that don't sound like a whole lot, but, say, it takes you 10 minutes a piece to set them. Well, that's over an hour. So as you kept moving out, those pieces come become fewer and fewer so, you know, it would speed up. And, like, when we finished the Flagstaff side, brought everything back to the bank and moved over to the lodge side to start that half, the first three panel points, we'd be about two days a piece to set those because there's a lot of pieces in them.

TM: Okay. Yeah, there's like two decks or two— That's not the right word, but it's almost like there was a midline of steel in there.

RM: On the tall bays, it's like three. And then it moved down to two, then one, and then it was just the bottom chord and top chord for, like, the last, you know, five or six panel points.

TM: Okay. Alright.

RM: But after we got out one, two, three, you know, usually on about on the fourth panel point out, from that point on, you know, we'd do a panel point a day pretty easy, jump all the floats

ahead, come back to the bank, get all of our iron loaded back up for the next day's work, get bolts loaded on there for Ed Cross's guys. And then if we still had time, a lot of times we would go back out and help the bolt-up crew if they needed help, just to finish out the day. Because they had to be bolted up on the bay that we're going to move the crane to. So the crane stayed, like, two panel points back from where we was erecting at. But before we could move the traveler ahead, we had to be bolted up and tight in the bay that we was moving it to because of the reactions the crane had on the bridge and all that.

TM: Makes sense. Yeah, the crane, I imagine, was pretty heavy.

RM: I don't remember now just how many total pounds it was, but it was probably, you know, with the counterweights and the crane and the traveler and all that, we was probably up around 400,000.

TM: Okay. Alright. What's a float?

RM: A float is made out of three-quarter inch thick plywood, which is 4 feet wide and 6 feet long, and they're reinforced around the edge either with 2 x 4s or 1 x's. I like using 1 x's because it just makes the float lighter. And you'll have an inch and a quarter hole drilled in each corner. And you got a one-inch hemp rope that'll go— And most of them float ropes are, say, 75 feet. But one float rope will, like, go down through a hole in the corner and then come up the opposite corner on the other side of the float. It kind of makes an X on the bottom if you was at the bottom looking up at the float. The ropes come through there and make an X. And you tie a knot in the rope on each side of the float so if something happened, uh, if one rope come loose or whatever, you still have that— It wouldn't just overhaul back through and dump you off.

TM: What were these things? Were they laying on the steel members then? What kept them in place?

RM: Well, the ropes, you would tie the ropes off to the bridge. And, say, you got this 4 x 6 float, and you go to hang it, and the six-foot wide part is running parallel with the bridge. Well, the two inside ropes, you would tie them at a certain level. And then the two outside ropes to the outside edge of the float, you would raise those about six inches higher than the front side. So when you climb out on the float and was working off the float, that kept it leaning in toward the bridge so when you were swinging the beater, driving the pin or whatever, the float didn't want to flip over backwards where it could dump you off of it. It kind of kept you leaning back towards the bridge. And six inches was kind of about the ideal pitch. If you hitched it up any more than that, well, then it had you leaning too hard in. And if you tried to do it too flat, it would want to flip over backward with you if you step toward the outboard edge of the float. So you could set the outside about 6 inches higher than the inside, and when your weight was on it, that was about the right ratio so the float would hardly move at all with you standing on it and even swinging the beater and working.

TM: That makes sense. Just your weight alone helps hold that thing, so it keeps leaning into the bridge and doesn't flip out back.

RM: And then we would also take smaller ropes and tie them around the float ropes back to the bridge just to keep them from wanting to swing and rock and all that. And the float ropes were

hanging down below a chord, a lot of times we'd just take a short rope and tie the two floats together, just to keep them from moving around very much.

TM: Was it ever windy out there?

RM: Oh, you'd have some wind, but most of the time the wind would come later in the day, like, closer toward quitting time. But kind of being down in that canyon the way we was, most of the time the wind would bother the crane more than it would bother us because the boom was up there, catching the wind.

TM: Got it.

RM: And we didn't really notice it down where we was because the canyon walls would kind of block a lot of that wind from us.

TM: Okay. So there were a bunch of river trips that were launching up at Lee's Ferry, heading into Grand Canyon, and they would float through the job site every day. Would you guys get a couple hours for lunch to let those people run through there? How did that work out?

RM: What we would do is we had a guy, a safety guy, in a boat. And I don't even remember his name. But he had one of our radios, and he would stay upstream, kind of about halfway between Lees Ferry and the bridge. He would let us know whenever we had a canoer or a kayaker, rafting trip, anybody coming down. And we'd have to stop all work until they got past us. There was a lot of times I might have a bottom chord hanging out there and we're trying to get it pulled into the slots where we could start bolting it together, and we just have to go into holding pattern until they get down past us.

TM: And they wouldn't realize that you've got this big chunk of steel just barely hanging up there on the crane. Oh, boy.

RM: And, like, the rafting trips, well, those guys are professional. They know the river, you know, they don't have a problem. But you'd get canoers that were kind of novices, and there was a swirl right underneath us on the lodge side. And those people that wasn't really experienced would get hung up in that swirl and just be going around and around and around and around.

TM: Oh, so they'd get in that eddy, and they wouldn't get out of it.

RM: They'd have to call the guy in the safety boat. He'd have to run down, help them get out. And after he got them out, and when they was going on down the river, and once he got back up towards his little normal perch area, then we'd go back to work.

TM: Alright. That guy down there, his name was Dick Clark.

RM: Not the American Bandstand Dick Clark.

TM: Same name, different guy. He's well known in the river community. Good guy. Okay, so then when would you guys break for lunch? Whenever it seemed like a good time to take a break or was there a set time for that? How did that work out?

RM: We would take lunch between 12:00 to 12:30. We were starting at 7 a.m., so that would be the halfway point. And then we'd get off at 5:30.

TM: Okay. Did you ever drop anything?

RM: Not that I can remember. I'm sure they probably dropped a washer or nut or something. Most of the time the nets caught them because the nets were a two-net system. You had the the normal safety net on the bottom side, and it had a debris net on the top side. So the debris net was fine-meshed enough that a nut, washer, bolt impact, you know, nothing would fall through it. If you dropped a washer, it would be because it hit a float or it bounced off a float or something.

TM: Yep. Okay, so fine mesh like maybe ½-inch hole?

RM: Probably less than that. Probably like a quarter-inch opening. I mean, it was pretty tiny.

TM: And then there's another net underneath that one?

RM: Yeah. The normal safety net is made out of rope that's probably about as big around as your little finger, say, probably a 3/8 rope. And that's kind of woven together in, like, a four-inch diamond kind of shape the way they're made. And the old net years ago were all hand tied together when they make it, but the newer ones anymore have a hard plastic piece that blocks the two ropes together where they make the X for the diamond shape. But you have one set of ropes running in this angle and another set of ropes running another angle. But once you had it pulled out, they were just in a diamond kind of shape.

TM: Is it normal for netting to have these two types of mesh systems, to have the fine mesh on top of the normal safety net?

RM: Well, most of that come along—The mesh kind of come along, you know, later in the career. It was a job requirement on that bridge because of all the river traffic. On most other bridges, for just normal barge traffic, and you don't have that much pedestrian traffic, we'd just use, like, the normal safety netting. But when all the— In the early '90s when all the safety started changing and getting more strict, that's when the debris net inside the other net started becoming more commonplace.

TM: Okay, so the first net, yeah, it's called the debris net. Got it. And these nets would hang out on some sort of cross tubing. I mean, it just sounds like it's kind of a hassle to get the thing in place there.

RM: Well, I mean, you had outrigger beams that would clamp on to the bottom chord beam that went between the plumb post where these brackets would hang down below it and cantilever out so you had coverage out away from the chord so if, say, if you fell off the outside edge of a bridge, you'd still hit in the net. And then you'd have a cable run on each side of that beam from one end to the other where that net hooked to that cable and then you pull it back to the beam behind you. Then when you set the next one, you pull the other end of the next net up to the cable that's on that side of the beam. And the way you hooked them up, you'd pull it up in there

till you had—there's a little snaps on the end of that net—snap off to that cable and after you got, say, three or four or five of them kind of hooked up there, the easiest way to hook them up would be, like, climbing the net that you're hooking up, grab the next hook and kind of bounce your weight like a trampoline and hang on to the cable with one hand and that net hook with the other one. You'd bounce and come up, you snap it, but then you just move over grab the next one. You could run down through there and zip that thing together in just a heartbeat. A lot of them guys were nervous about getting over in the net.

TM: Because?

RM: Just because they weren't used to doing it 500-plus feet above the water. They just weren't sure of it. I'd always climb over in it, you know, and of course I'd be fucking with them. You know, "Come on! I thought you native people weren't scared of nothing. Let me show you how the white eyes do this." Well, I'd go snapping them off in there. Mike Charley would get in there and help me but he's about the only one. The others were just like, "Oh, that just ain't natural.

TM: I imagine just the visual on that. You're looking at the river many hundreds of feet below you right through this net. That's all you got. And I'm assuming you're not roped to anything. Is that right? When you're hooking that net up, are you clipped into anything?

RM: Well, on that job we had to because that's, like, when they really first started getting strict on the safety, so we had a— Off the end of the crane traveler, we had a beam that kind of stuck out there, and we'd have what's called retractables that we would have to hook off to while we was doing that till we got the net and all that in place. And then once the netting was up, then they would kind of latch back on some of the tiles, but they still monitored it pretty close.

TM: Okay, yeah.

RM: Safety lines would get on the Ed Kent the most. "Now, Ed, you gotta be tied off. [Laughter] But he didn't wanna tie off. And he would just be like, "I've been doing this my whole life. You know, built bridges for 40 years before they ever come up with that."

TM: Yeah, it's tough when the bridge supervisor isn't tied up, and the bolt-up crew and the erection crew were looking at him walking around all over the place without a harness rope on. Well, he's like, "I've been doing this for 40 years." And I'm like, "Yeah, okay." Interesting.

RM: Yeah, but Ed Kent was kind of like a god among bridgemen. I mean, he'd been on so many bridges, him and his brother Lamar both that they had forgotten more about building bridges than most people will ever know. And that's why it was, like, such an honor to work with guys like them. When they told you something, you best be listening, because they've been there, done that. They know. Because it ain't something you can go take a college course and become an Ed Kent. I mean, that's years of working in the gang, then becoming a foreman, then becoming a general foreman, then becoming the superintendent. I mean, it's a process and not everybody can do it.

TM: Right. David Meche had a story of— Ed Kent had a rock he would sit on.

RM: Yep.

TM: What do you remember about that?

RM: He had one on each side of the canyon. He would just, like, when we was on the Flagstaff side, he would drive to the job, and he had a rock on the downstream side of the bridge. He'd just go out there and stand on that rock, and he had one of our radios. He'd be monitoring us. And he'd just be watching. And lot of times he set there about all day. He'd come back to the bank, you know, at quitting time. And he'd be up there, you know, if he didn't like the way somebody was doing something he would say something to him about it, or he'd be like, "Yeah, it's good day's work, guys." And then when we went over and moved everything over to the lodge side and started that half of the bridge where he had a rock over there, he just liked to sit there and watch. It was a good observation point.

TM: So he'd just be kind of overseeing and watching everything that was going on.

RM: Yeah.

TM: Nice. Okay.

RM: And then, say, we was working on a chord splice and it wasn't going as fast as what Ed thought it should or whatever, he'd holler at me. He'd say, "What's the problem?" And then I'd explain to him, "We's off a little bit on the rig, and the chords got a little bit of a roll to it. Well, I'd have to hook another come-along up to compensate for the roll. And then once he knew what the problem was, well, then he understood. And then most of the time he would never say nothing else, you know.

TM: Okay. And he would give feedback at the end of the day.

RM: Oh, he'd give you feedback *throughout* the day, whether it would be to Ed Cross or David or me or Greg Reese if he needed to shock or something. You know, he'd tell Greg, "Alright, you better get out here and get that shock." Of course, Greg's always been "Well, I'm trying to finish up this paperwork." And Ed would get on the phone. You'd hear him on the radio, "You don't have that God-damn much paperwork. Get your ass out here."

TM: [Laughs]

RM: But they had air conditioning in the office. That's why I was always kidding. At the end of the day me and David Meche and Ed Cross would always be giving Greg a hard time. Of course, Ed Kent would be chewing on his ass. I'm just like, "Oh, now Ed, you know Greg is just accustomed to conditioned air." Ed's just, "I don't give a shit about that because I sat out there all day long, watching y'all work."

TM: And this was June into July and August. It's hot.

RM: August, September. Oh yeah, it's the hottest part of the summer.

TM: Would the steel get hot? Would the steel get too hot to touch?

RM: It would get so hot my kneecaps turned brown like a brown pair of boots or shoes, especially on the top chords because you'd have to go out and get down on your hands and knees to drive the pins on the top side of that chord. And it was always, like, lunchtime or after by the time we would set the top chords. So it was, you know, that iron would be 130 degrees and you'd get down on it, and I mean, it was just burning fire out of them. I finally got to where I went and got me a set of them knee pads. And whenever we'd get to that chord, I put them knee pads on. The first time them guys was just giving me a hard time, I'd be like, "Money well spent, guys. Money well spent!" And before you knew it, they all had them a pair of them that they'd just keep handy for when that iron got hot.

TM: Yeah, I bet that would be really— Knee pads would be really handy just for insulation. Then one question I've got for you, there were some inspectors from ADOT, I think it was ADOT, and they were inspecting the bolts to make sure they were tight enough.

RM: Yep.

TM: How did they do that?

RM: Well, on a lot of bridges, especially that one, they used what's called LIWs, load-indicating washers. And what that consists of is you had your regular flat washer and you have an additional washer that's got little bitty ribs on it that's kind of just dome shape. And those are designed when you tighten that bolt up, it flattens those ribs out down flat. And they'll take a feeler gauge and feel between the head of the bolt and that load indicate washer, and if they can't get that feeler gauge in there for at least 2/3 of the way around the diameter of that washer, well, then that's considered tight enough. And that's how they would check them. And, like, this bridge I'm doing here we're not using LIWs. We're using what's called turn-of-the-nut method. And the turn-of-the-nut method is once you have snug-tight iron, depending on the length of your bolt, you have to turn that nut, say, anywhere from a third of a turn to half of a turn to two-third of a turn. The longer the bolt, the more you have to turn the nut to get to the proper tightness. And the whole deal on the turn-of-the-nut method being the best one is it keeps you from over tensioning bolts. Where with the LIWs, the load-indicating washers, a lot of times you'll twist of bolt in two before you can get that load-indicating washer to flattened out enough to where it passed inspection. I think the turn-of-the-nut method is the best myself, but all that comes down to the engineer of record's preference.

TM: In my ignorance, I would just think about a torque wrench, which I use when I'm working on my car, you know, working on some bolts somewhere. It's got a specification, and I pull on this thing and it goes click, click, and I know I'm good enough.

RM: Now, on the turn-of-the-nut method like I'm doing on this bridge I'm doing now, that's what we do. We'll tighten them the required turn-of-the-nut method but then we come back behind with the torque wrench to make sure they're at the proper torque.

TM: And those guys with their feeler gauges looking at the load-indicator washers, would they check, like, every bolt, or were they just looking at 10% or 20%? How did that work?

RM: Usually when you first start out, they'd check about every one. But they would look at every bolt. They might not feeler gauge all of them, but if you could visually see that it was down flat,

they wouldn't. But if there was one in question, then they pull that feeler gauge out and check it to make sure it's a proper tightness.

TM: And if they found one that was loose, would they just whip out their wrenches and tighten it up, or would they call you guys back?

RM: They'd just mark it and let Ed Cross know. He'd have to send somebody back to tighten it. There would be very few of them they'd have to go back for because Ed was pretty adamant about making sure that they checked all that before they left the point to make sure that they were right.

TM: Okay. Yeah, it seems like you would lose a lot of time if you had to go back and send somebody back there tighten stuff up. Might as well just do it right the first time.

RM: Oh, and I've had to send my guys back about three times on this one. It drives me nuts. Missed one in a sway frame connection. I'm like, "How do you do that, guys? I mean, if you can't remember where you was at from one day to the next, that's bad." I said, "Hell, I shouldn't have to remind you every day to make sure you tighten all the bolts. That should be just like breathing. It should be automatic." And I had the inspector yesterday found the couple spots that they didn't tighten.

TM: Oh. Oops.

RM: And then my guys... you know, the workforce today ain't like the workforce it was that when I started out. I get on their ass, and then they get all butt hurt, like, "I'm tired of you chewing on my ass. And, of course, my comment is "Well, stop doing stupid shit, and I won't be chewing on your ass."

TM: It reminds me of some of the history books I read about the Romans building their aqueducts, complaining about the construction stonemason guys not doing a good enough job. It seems like that's been going on for a long time in history.

RM: Oh, yeah. Since the beginning of time.

TM: Yeah. Ronnie Mac, we have been happily yik yakking for well over an hour here.

RM: I had to make up some for last week because I petered out on you. I needed to sleep more than I needed to talk about bridge building last week.

TM: And I'm so thrilled that you took a doze, because you're building a bridge, and that bridge needs to be built well. I'd much rather have you do a good job out there than yik yak to me on the phone. Not a problem.

RM: Well, I'm gonna do good job when I'm at work. You don't have to worry about that.

TM: Alright. Well, maybe this is a good time to put another comma here in this, because I think in the next interview, I want to hear all about how you finished the first side and then went over

and got the second side going. Is there anything else you wanna bring in that we didn't talk about on this building out the Flagstaff side?

RM: No. I mean, it's just a repeat. You know, we went to the halfway point. Then we brought the crane and all that back to the banks where we could disassemble it. I mean, it's just do one half and then move to the other side. Same procedure, same drill.

TM: Right. There's a story, though, I'm going to ask you about to start next time that you told me about already, and so we'll start out with that one.

RM: Yeah, taking that hydro crane across that old bridge.

TM: Don't tell me that story yet. Just a minute. [Laughs] Okay. Well, with that, let's go ahead and wrap up Part 3 here. Today is August 4, 2022. This will conclude Part 3 of a Grand Canyon oral history interview with Ronnie Mac. My name is Tom Martin. And Ronnie Mac, thank you so very much.

RM: Well, you're welcome, sir. We'll continue this next Thursday.