Port of Los Angeles Centennial Oral History Project
Ron Reddick Oral History
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Male Speaker: Okay, and one more time.

Ron Reddick: Ron Reddick, R-O-N, R-E-D-D-I-C-K.

MS: Terrific. Another hard question, what year were you born and where?

RR: I was born in Long Beach, California in 1944.

MS: All right. You're born in Long Beach. So, you were not too far from San Pedro when you were growing up in the harbor, the Port of LA. Do you have any early memories as growing up about the port and San Pedro?

RR: I remember when I grew up, not knowing what I wanted to be when I became an adult, that even going to school, I remember coming down to the Port of Los Angeles on a bus to go to the banana terminal. We watched – I was in elementary school. We got to watch the bananas come off. At that time, they came off in bunches, not even in boxes. There were there longshoremen carrying these banana bunches on their shoulders. There would be spiders in there and everything else. It was an interesting sighting, and this was really my first take with the port and seeing big ships and other things like this. It was really intriguing to me.

MS: What about just the idea of the mechanics of it all? You became an engineer. Was that sort of exciting, how all this machinery worked together?

RR: Well, as far as becoming an engineer later in life, when I decided to do that, it was really interesting coming to the port. Because it's a port, as an engineer, you've got to work on all types of engineering. There was paving. There were storm drains. There were sewers. There were container cranes. There were buildings. You got a broad experience. Working for a government agency, I couldn't think of any one thing better to work at than at the port. Because other agencies only did one thing. The port did many things.

MS: Terrific.

RR: Is that what you wanted?

MS: That's wonderful. Perfect. Really. That's exactly what I wanted. How did you get first involved with the Port of Los Angeles? Tell me that story.

RR: Well, my first involvement with the port was, I started off with the City of Los Angeles in the Department of Public Works. I worked at the San Pedro Public Works office, which was just pretty much across the street from the port headquarters. When I was hired, there was no opening over here. But later on, the port hired Public Works to do a complete sewer job of the port. Because this is way back when they did not have complete sewers in the Harbor Department. So, we got to lay out and do it. Then my familiarity with the port increased, and I got intrigued. I actually took a demotion in title to come to the port, just to work over at the port and all the new and exciting things over here.

MS: What was particularly exciting in those days? What was going on that intrigued you and got you excited about working at the port?

RR: Well, the exciting thing was, like I indicated earlier, the multiplicity of the types of engineering work that an engineer would do. It was not like this putting the same widget in the same position on the apparatus. But it was the whole range of engineering and also the opportunity to work in an environment of private enterprise. Because working at the port, as with airports and Department of Water and Power, they are proprietary department where they get their own revenues. Therefore, you have to do things quick, fast. You have to do them well so that you could get customers. The Port of Los Angeles was competing with the Port of Long Beach as with San Francisco and Seattle. Because much of the cargo was discretionary. They could go anywhere. So, we had to be service oriented, but yet I got to learn all the different facets of engineering.

MS: Was it also just exciting realizing that these projects, which you were working on, had this kind of international implication? I mean, this is a place that was connected in some ways to the world. Was that a part of it at all too?

RR: Well, and a big part of doing the engineering here, when – with the multifaceted of seeing all the ships from all over the world – was getting involved in meetings with these international customers that would come here. They would have their ideas of what they wanted in their terminals, for ourselves that designed for them. We had talked with them and worked with them. It was interesting trying to understand their customs. Depending on the rank and the level of the individual from the company from overseas, how you would address them, and in many cases even bow. So, I found that really intriguing?

MS: Any specific stories over the meetings that you had, or individuals you dealt with?

RR: There's not a lot of them. But I remember later in my career, when I was involved in negotiating teams with customers from Asia, that oftentimes, we'd be on opposite sides of the table. They'd be voicing something. You'd look at their expressions on their face and try and figure it out, what they were trying to say, or their expressions to our response to whether it was a negative or a positive. Because many times, courteousness was a key to their culture. You weren't sure where they were coming from. But yet they were very shrewd. They knew what they wanted, and you had to be sharp on it. So, that was a lot of fun for an engineer, actually being outside of engineering but being part of the negotiating team. Because we had to provide costs and other things to the negotiators. So, they knew what to negotiate for and getting a rate of return back from the customer.

MS: Great. Good answer. First of all, answer this question. What does the Engineering Department do at a port? Give me an overview.

RR: Well, as the Engineering Department, I can only speak for the Port of Los Angeles, having worked only here. This did a wide range of things. I mean, most of the things we're involved in all new capital improvements, which was, if you got a new client coming in, would be developing a wharf, the backland, the cranes, and buildings and everything for that customer. It

would be involved in both doing design, in-house staff, and also managing outside consultants who were doing work – because we were only staffed at a certain level, and depending on the timeframe, which was negotiated in the agreement, we had to provide. So, we did both civil, mechanical, electrical, architectural, structural. And we handle all the permits and everything else for the whole department. So, we were a broad engineering division at the time.

MS: Was there a single activity that was most challenging, most complex that you had to deal with of all these different things?

RR: One of the most complex tasks that we had to perform in engineering was during – oh, about 1988 to 1994. We had a program where we negotiate agreements with customers, and we pretty much rebuilt all of Terminal Island. We built all the new railroad links. We built new bridges. So, there'll be great separations. So, cargo could move, and trains can move at the same time. There was about $750 million of construction contracts during that period of time, of which we had to coordinate and make sure they all came together, make sure they were ready for the customer. The customer bought his own cranes. We had to make sure the dock was ready to receive those cranes when they arrived. So, this was such an exciting time that I remember, I was chief of design at the time. I had engineers coming in on the weekends that weren't even charging their time. They were so excited about the fun. It's fun for an engineer to do a broad range of things. This was probably the most – biggest building program in the port since the twenties, rebuilding whole areas of the port. It was really exciting.

MS: Any particular part of that job that was the most complex? Was it the rail lines? Was it the buildings? What was it that really was particularly challenging, particularly fun mainly for what you were doing?

RR: Probably the most challenging and fun part of that whole program was probably the rails and the bridges and the great separations, bringing in. We had designed container terminals before. So, that wasn't new. But this was a new area of which we had this sort of done – touched on those areas. But now, we were really getting into the program of actually designing the railroad tracks, managing consultants who were designing them, understanding more of those elements. So, actually, it was exciting because it was a new element of engineering that I was learning that I really didn't have in my repertoire before.

MS: So, when you face these things, was it a constant learning thing for you? Was that exciting?

RR: Oh, yes. This is why the Engineering Department gets so exciting in that there was always learning going on because technologies were always changing. The greatest change was when they went from just general cargo, when I talked earlier about seeing bananas coming off in bunches on somebody's shoulders, longshore shoulders, to coming in containers. That was so innovative that we had to change the whole design of the port, make deeper channels, get the cranes, and the port – if you stay around at least twenty years, you'll see what you just designed and built, being torn down to rebuild for the new technology and the new customers' needs. This is why it's a dynamic world here at the port, and it's a lot of fun.

MS: It's great. These are great answers. Thank you. You're negotiating contracts with APL at one point, right? $750 million of improvements, I understand.

RR: [affirmative]

MS: Is that true? If that's true, give that back to me.

RR: Okay. One of the things during that program was a $750 million dollar capital improvement that took a period –

MS: You can't refer to something you said before. We may not have used that.

RR: Oh, okay. Actually, in 1988 to 1994, when we were doing a $750 million program, one of the most exciting challenges was for the APL customer, which we were negotiating with at the time – a lot of these improvements were for them, to provide the transportation system they needed, as well as the facility – was early on, I was – this was when they first started doing that. The Property Management Division and the Marketing Division included Engineering as part of their team. I was selected to be a part of the APL team. We would go up to San Francisco, to the Auckland office, and talk with them about what they wanted in the facility. Before this property, they would just negotiate something, and they say, "Okay, it's going to cost you this much to move to the port." Or they'd have to come back to the port and ask the engineers what's it going to cost to build what they wanted. But now, I was there, and I was able to, when we recess during the sessions, to tell them, "Well, better be careful here because we can't provide that. Or we can provide it. It was going to cost X. So, you might want to veer them, steer them a little different in this one area or whatever because it's in the best – port's best interest or in some cases, in the customer's best interest too." We want to provide them with the best facility for what they really needed. Also, we knew what we could provide. So, I was a part of that team, and I was – got to contribute. I felt very good about that.

MS: Good. I want you to tell me that APL story again. Tell me that story again about why that project was interesting, and what's satisfying for you as an engineer, working and planning and getting this thing done?

RR: Well, one of the interesting things back in the 1980 to 1994 frame was, when you're doing a $750 million of capital improvements primarily for one customer, which was APL, and being part of a negotiating team to provide them the best facilities, was sitting in on the meeting with the many of the managers of APL in the Oakland office, as well as our Property Division and Marketing Division and talking about what they needed and what we could provide for them. In some cases, layouts, they say, "Oh, I don't know if this is going to work." But we were able to – in between those negotiations, I was able to lay out new layouts for them, of which the customer looked at and said, "Oh, that's ideal for us," and really piqued their enthusiasm to be a customer of the Port of Los Angeles that, ultimately, they decided – I feel confident that because of Engineering providing facilities for them, that they will wanted to be here at this port. Then at the same time, getting to work with their chief engineer and things like this throughout the whole design process. Even during that process, there was an instance over in the Port of Long Beach where a customer over there – it was Maersk at this time, it was over at Long Beach – that they

had built Pier J for them. The ships, during hurricanes off Baja, was in surge up this way that they were called long-period waves, which I didn't really understand that much about at the time, that don't break like other waves. But they go right through breakwaters. So, they would go right in there, and a big container ship,1,000 feet long, sitting at the dock, would be like in a bathtub, which would go back and forth. The container crane with the operator was trying to hit a moving target. He couldn't find the containers because they kept shifting on him. So, based on this, APL was very concerned about what water they were going to get at Pier 300. Because this was a new landfill facility, and we were building new. We took them back to Vicksburg, Mississippi to the model of the San Pedro Bay ports, where we had modeled this and actually laid out the breakwaters and everything. We had them float little Styrofoam chips in front of their facility and watch as a wave generator would send waves in and see if the ships would move. They compared this with the Pier J which is on the same model. They saw that they were sitting in a quiet little pond. So, this really helped convince them that this was their facility.

MS: That's great. That modeling facility and how that worked and helped in the design and the reconstruction of the port.

RR: The Port of Los Angeles as Port Long Beach funds a facility down in Vicksburg, Mississippi, that is an actual – it's almost a one-acre-size model of the Port of Los Angeles and Long Beach. Whenever engineering is going to create new landfills or even dredge deeper channels, this changes the currents. It also changes as far as in the outer harbor, exposure to storms that may appear from the Gulf of Alaska or off Baja California. So, we would always go down to Vicksburg to have them – we'd pay for them to lay out – this is the Army Corps of Engineers facility down there. They would then have wave generators. They'd send different ways from different angles and see how the port responded – the water – at each facility. So, we do this with all our facilities. Especially, like when we designed the most recent landfill, Pier 400, it was all modeled down there to see what – and then that model indicated on phase D, which is the landfill that was facing the open Angel's gate, the entrance to the harbor, that during certain storms that we actually put 10-ton rock on that phase, about 40 feet above the water, because of overtopping and wave action that could cause a problem. That was all done because of this model down in Vicksburg, Mississippi.

MS: Terrific. Describe the atmosphere that – I think you described as like a family when you were in this particular period of late-eighties and the 1990s. What was the feeling of the staff and engineers and how you worked together in this exciting period?

RR: In 1988 to 1994, when we were in the middle of a $750-million capital improvement program, the whole atmosphere in the department was electric in the sense that there were timelines to meet. Every division had a role in this program. The building was primarily engineering, but the whole – it was like a family because everybody wanted to see things happen and get done. So, people did not shelve things or whatever, anything related to this program. Everything was pushed. It was actually led by the executive director who really wanted to see it get built and the whole management team. It was so much fun for an engineer because of the diversity in what we were designing and what we were doing. So, speaking from engineering, I mean, the people just were all ready to help another engineer if they got bogged down on something or if they had more challenges. We would troubleshoot these challenges and find out

solutions. Then we get them designed and built. If they had to be modeled, we would take them back to Vicksburg, Mississippi and remodel them. But it was so much fun that people would be coming in on weekends even, not even charging their time. It was just something that you really enjoyed. Because you felt that you were needed, and being needed was a key thing. Engineering was really ecstatic building these projects.

MS: Great. Also, one of the things about engineering is that you're doing things that aren't going to be seen for so many years. What's that like, knowing that it's not as if you design something, and next week they build it? I mean, is that part of the excitement of realizing and building for this long-term kind of development?

RR: Well, one of the things that's really exciting about the port, when I – one of the reasons I even came here was I remember when I worked in public works as a young engineer for the city, that they were based on gas tax or tax monies to come in to build things. Oftentimes, we would design something in public works, and it would sit on the shelf for fifteen, twenty years and never get built. One of the exciting things about coming to the port was the port generated its own revenues, and the customers wanted things quickly. Coming to the port meant that, as an engineer, you could see your product built much quicker and – in your lifespan anyway. In many cases, we'd do the design. As soon as it got done, it went out to bid. You would see, within six months, a shovel of dirt being turned, and the project started. You could actually work then as part of the field engineering team, watching your project be built, and actually learn from that too. Because you learn from the contractor, constructability. I mean, an engineer can design anything. But if you can't build it, it's not worth much. Actually, since we built things quickly, engineers learned how to design better too, because we could build a more constructible project.

MS: Let's go through some of the specific issues that were part of the reconstruction process. I mean, containerization had started earlier. But talk about some of the engineering challenges and the fun of making this even more of a container port in the eighties and nineties period, for you. What was the impact of that and the importance of that, and what were the engineering challenges?

RR: I remember some of the engineering challenges that I had to face during these years, especially when the port was just really changing. Containerization had already come on board before I came to the Harbor Department. But one of the things that came on while I was here was the unit trains, container trains. These trains could be 2 miles long. The Port of Long Beach took pretty much the lead on this, and I think we learned a lot from them. Because terminals at that time, a large container terminal could have been 50 acres. But when you look at a train a couple of miles long and trying to figure out how to work, that is a really interesting challenge, is trying to put too much in, you know, a 1-square-foot hole. Long Beach had designed rail yards in their small terminals. But over here, we would talk amongst ourselves, and we would find that not very efficient, not productive. We thought, if you're going to do something like that, it'd be better to build a bigger yard and let them share in it. One of the things the port did here was build the ICTF early on. That was our first real container yard. That was exciting time back in the seventies, when we built that. The customers that (strayed?) their cargoes, their containers up there, and they could put together these unit trains on a facility that was over half a mile long. Well, actually, more than that. It's closer to three quarters of a mile in length, each working

track. So, they could really load to trains and get them out. Well, we looked at that, and we looked at what Long Beach was doing. We thought, the tenants kept wanting more rail in their facility as a marketing thing. Because the people that we were negotiating with, they noticed the clients always wanted to tell their customers, "We have rail on our dock. We can take your cargo inland in the U.S. without dragging it any distance." So, we saw that happening. So, what we decided to do was, what could – how could we lay out facilities in our port? APL was the first one in the early nineties that – it was laid out in the 1980s, but we construct in early 1990s. It was the one where, during negotiations, they saw how beneficial it could be. Because we laid out where one unit train could be split into three pieces and fit in their terminal. Then they could load it with automatic rail-mounted gantry cranes and all. Then we started building larger rail facilities, which was now what everybody wanted. Actually, during that process, we even looked at Long Beach, and we said, "If we were them, how would we re-lay out our land?" We'd lay it out a little bit differently. Now, to this day, the Port of Long Beach is filling their land right now to create bigger parcels so that they could put large rail facilities in theirs. So, that was a real transition, to get the trucks off the freeways and get the containers right on the trains in the port. Because 50 percent of the cargo in the Port of Los Angeles, Long Beach is headed for destination in the Midwest or East Coast.

MS: This engineering learning-competing relationship with Long Beach, talk about that. I mean, there's these two big ports, side by side. What impact does that have on the engineering and the solutions in general?

RR: Being Port of Los Angeles and having, to the public, looks like one port with the Port of Long Beach – because we're both in San Pedro Bay. Nobody knows where one stops and the other one starts. As far as competing, in Engineering, we didn't have a competitive thing with them. We actually knew a lot of the engineers over there, and we tried to work together. Also, we all use the same highway system and rail network. So, we had to work together to a degree. But at the same time, we had to be sensitive to try to entice customers from the other over here, which was more a marketing focus to do that. We were trying to provide marketing with those tools of what we could provide that could be a little better and a little different than the Port of Long Beach and bring a customer over here. An interesting one would be Maersk from Pier 400. They were a Long Beach customer.

MS: Say, "Maersk was –"

RR: Maersk was a Port of Long Beach customer. We were able to work with them and lay out a facility on the new 600 acres of land we created to fit their facility for a full rail facility, multiple berths, backland, of where they could put in the latest technology and move cargo the most efficient way they could. Being out there too, would not hinder their ships too, as the ships are getting bigger. Some of the bridges in the port are a problem. Like, if you're in the Inner Harbor in either Port of Long Beach or Port of LA, in the Port of Long Beach would be the Gerald Desmond bridge. The height of that is such that the new generation containerships cannot fit underneath the bridge. To most people, they look at that bridge and say, "That's not possible." But it is. The ships can go as high as 190, 200 feet. So, there's a big concern about height.

MS: Alameda Corridor, what was that? How did you work on that? What was challenging and

fun about that?

RR: I didn't really work on – much on the Alameda Corridor. I was familiar with it. For the Alameda Corridor, you could get Art Goodwin. Also, he's good on ICTF.

MS: What about Pier 400? Tell us about Pier 400. How did it contribute to the port, and what was it as an engineering challenge?

RR: Pier 400 was an interesting project. Before I touch on that, Pier 300, I want to go back and touch on it. Pier 300 was created based on deepening the channels from 35 feet to 45 feet. That was because the container ships and other ships were getting – their draft was so great that we had to deepen the harbor, and we had to find a place to dispose of the material that was dredging. So, Pier 300 was – rock dikes were created. Rock was brought in from Catalina quarries. Then the material that was dredged was pumped through dredge pipes, back there to create the land. But what was interesting on Pier 300, this was not engineered fill. This fill, when it was dredged, was pumped in at random. What happened was there was so much silt and other stuff and pockets and – that we had to expend a lot of money consolidating the area. Because it was like quicksand. It was not drying out. It was very poor-quality material. So, we learned from that. When we designed Pier 400, we designed it with the intent of two things; one, to provide way protection for Pier 300 – because it was just outside of it – also to create land for a new terminal on Pier 400. So, this was laid out in Vicksburg, Mississippi, where it was modeled, at the Army Corps of Engineers facility. When we did this dredging, we actually made Swiss cheese of the harbor bottom. Because we are also building an 80-foot-deep bulk cargo carrying facility and also for large oil tankers that could come in. So, we had to go significantly outside the breakwater, and we had a lot of material to dispose of. So, all this material where we had to dredge, we studied and analyzed this material to a great degree to find out where the sands were and where the silt was. So, that when we dredged, we could place – we could take the silts and bury them deep in the new fill and put the sand layers near the surface so that you could actually drive a bulldozer right on it right away, right at the dredge pipe. Because it's all sand, it's just like walking in the surf zone on a beach. It was something that was just firm, and you could just do things. So, we could actually build on this very quickly. So, we learned a lot from Pier 300 in doing Pier 400.

MS: I'm not sure I understand that. Go over that again. What did you discover from Pier 300 as far as the materials that were used, and how did you apply that to Pier 400 to make that a more firm surface?

RR: Dredging is an interesting art in that when you dredge, your bottom is not homogeneous in nature in the sense that you have all types of materials. You have this silts and muds. You have very dense sands. You can actually have rock or others. Like, I know in the Port of New York, when they create new facilities, they actually have to blast because they're on bedrock. These new container ships, to get them in, they're past the old riverbed bottoms. Then they're down to the actual rock line. They have to actually blast or do other types of material to get it out. On the Port of LA, we don't have bedrock issues, but we do have a lot of different materials. Because LA River as always, well, gone out through this area and cut different channels and deposited different materials on the bottom. So, over geological time, when we dredge, we find

sand. We find silt and different types of gradations in between. So, on Pier 300, since it was just a dredging job to make the channels deeper from 35 to 45 feet, they just dredged randomly. They didn't pick one spot. They just started at one end and then just went through and pumped this material and discharged it into the disposal site, which was Pier 300. The sand settled out early. The silts all traveled longer in the water areas until they settle out. Some areas were a little denser. Some were very soft that you could not even walk on two years later. It was like quicksand. So, we had to consolidate all that and build pads and do all kinds of things, which cost a lot of money to do. Pier 400, when we were going to do that, we identified where the material was going to come from. We did a lot of borings, the deep borings, under the water to find out what quality material was there. So, we would then be able to dredge the poor grades material, which was the silts and the muds, put them very deep in the landfill and put better quality material on top. The better-quality material densified or consolidated the silts and the muds on the bottom. We could get on top of it quicker. We could build a terminal quicker. So, we call that an engineered fill because we did not just randomly place the dredge material, we selectively placed the dredge material.

MS: Perfect. Environmental issues, which often weren't concerns in engineering in the past, more recently are becoming increasing concerns. Talk about the environmental challenges and engineering challenges and your response and involvement with that.

RR: Well, the environmental challenges that affect engineering and the port are significant in that, what it is there's any more the port is trying to build green terminals. That's to get away from – and a lot of this green terminal's, in a sense, operating side, which would be the customer, having clean vehicles and operating equipment. The port's container cranes have always been electrified. So, that was not an issue. They were not diesel operated. But we had to look at the type of asphalt paving. Asphalt paving had gone through a cycle where, because of air quality management, you could use certain emotions and certain things that caused asphalt to become denser and harder and carry the bigger loads to ports. Pavement carries 100,000-pound wheel-loads, where it's greater than any highways that are designed by the state, because of the big types of equipment that they use, like the rubber tire gantry cranes. So, we had to then go through and engineer new types of paving systems that could work in the port. That was interesting because we have many universities from the East Coast and the West Coast and in between, come out and talk with us, and we talk with them about what they could do and how we could find better paving. So, we engineered many different types of payment. Our pavement consists of very large rocks in it. Because we found rocks would the load, and when they changed the asphalt and pavement, we found it made like regular river run rock and stuff which get – when it's in the river, rock starts to get rounded edges and looks like marbles – that it would flow on hot days and cause rutting for the container crane – I mean, the rubber tire gantry cranes. So, we started going with all crushed rock to add to the asphalt because of the way it was. The buildings are now green in the sense of how they use energy. So, we use the latest energy in the buildings. Also, during the design phase, we worked closely with Environmental because there's some engineering aspects that you can't get rid of. We worked with them to see, how can we better improve upon that, to build a terminal that is as green as possible but yet as efficient that can compete – that can be for the customer so that he can operate here and be competitive with other container terminals elsewhere in the world.

MS: What about the California Least Tern issue on Pier 400? Was those things that got you involved in the engineering?

RR: One interesting aspect of building Pier 400 – and this goes back to in the seventies – an endangered species, the California Least Tern, nested originally on Reeves Field, which was an abandoned naval airfield on Terminal Island. It was actually there was a little bit of sand on top of asphalt pavement, and these birds do not like grass or whatever. So, they nested, and pretty soon, through the National Marine Fisheries, U.S. Fish and Game, and Fish and Wildlife Service, we had to build a 15-acre sanctuary for them. There was a big concern early on when we wanted to build stuff, we couldn't move them. But after a while, we found that if we built a better house or a better nesting place for the birds, that when they come back, they weren't necessarily entrenched in one site. They would move and find a new site. Actually, during construction of our projects, we have to make sure that we don't leave an area idle too long, or else the contractor may have to delay his work where the birds are nesting. Because they're just going to nest on barren ground. Oftentimes, during a construction project on large areas like we build, we create a lot of barren ground that's barren for a while before we put the asphalt on. So, we have to be very careful of what we do. But we have moved the Least Tern numerous times. Now, they're out there on Pier 400, and they're doing very well out there. I even remember stories where another endangered species created a problem with the Endangered Species Lease Turn, peregrine falcon. They started nesting on container cranes, up in the apex of the cranes, because they like high spaces. They would eat the chicks of the Least Tern. So, that created a problem. The environmental group, along with the Fish and Wildlife Service, found a way where they would put a few little roughing tiles around so that the little chicks, when they start running around, they can run underneath those little nesting tiles to hide from the peregrine falcons. Because what do you do when you have two endangered species? You try and keep them both going. So, I found that interesting. But we have moved them numerous times.

MS: As an engineer, did you think that added to your resume, would be building environments for endangered birds? Is that something you add to your list now?

RR: Well, that's on my list. I mean, when you work at the port, your list and your resume gets quite extensive. Actually, working here is a very marketable thing. Because many people have worked here. I've gone to the consulting field because of their expertise and because the ports are on the cutting edge of technology.

MS: One last question. This is not a big deal to you. But some people are surprised to learn that all the electrical is buried here. Maybe that's not a big deal. I mean, if it is a big deal or isn't a big deal, talk about the electrical systems here. Any particular engineering challenges? Or is it just basically part of the system here?

RR: One of the things that's interesting at the Port of Los Angeles is the way we design terminals and the way we provide infrastructure for terminals. For instance, all container terminals, we try to build them as if all of Terminal Island is one container terminal. There is no difference in elevation between them. It's just a matter of a fence that separates one from another. Because we – customers come and go. So, we have to be ready to, if another customer comes in, he wants more land. Or an existing one is there and they're expanding, and the other

one is not. We can move the fence over, and without missing a step, we can go. This is true of what we found with our electrical system, why we underground it. Because working in these backlands these – they cannot have overhead wires. You think about trucks serving the container terminals. Well, actually, in the container terminals are rubber tire gantry cranes that stack containers as much as, oh, 4, 5, 6 high. In Asia, they go as much as 10, 12 high. So, you have to be able to operate underneath them. So, if you're going to be flexible and move your fence lines, and sometimes move your roads where the power lines are usually right along your road edge, you're going to have to keep moving them. So, the easiest thing to do is put all your overhead in underground electrical systems. Anything else that would be overhead, you put it underground, so that you can be quick to expand and change your roadways around. A road in the port is not a dedicated roadway that it's going to stay there forever in one spot. They move around just like a snake would move around. It's this – to fit the customer's needs.

MS: One last question. From an engineering point of view, what do you see as the future of the Port of Los Angeles? Where are we going? How is engineering going to be involved in that? How's the engineering going to be changed and the port changed by future developments?

RR: Oh, one big thing I see in the future – and it's going to be for the new engineers and the young engineers that are there – I just like I saw that. The containerization came along before I got here. That was a revolution within the port industry. When I was here, trains on dock came into being, and that was a big revolution. But down the road, what we're going to see is these greener and greener terminals. We're going to see how to move cargo cleaner and more efficiently. If the ports are to continue in this environment where they're surrounded by communities and sensitive areas, they're going to have to find cleaner ways and quicker ways to move freight and not cause pollution and congestion on the roads and other things. So, Alameda Corridor was a step in that direction to help with the trains. When you build these things, it's sort of like, they will come. Then things get clogged up again. So, there's always evolution of change. A port is going to have to -- Engineering are going to have to stay on the cutting edge to move cargo and move freight to keep this country great and to move cargo across this region.

MS: Terrific. Did I cover everything?

RR: You did. I'm running out of words.

[laughter]

MS: Let me take another picture of you here.

[end of transcript]