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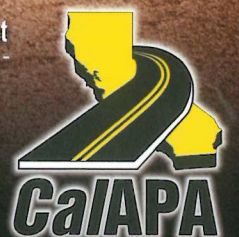
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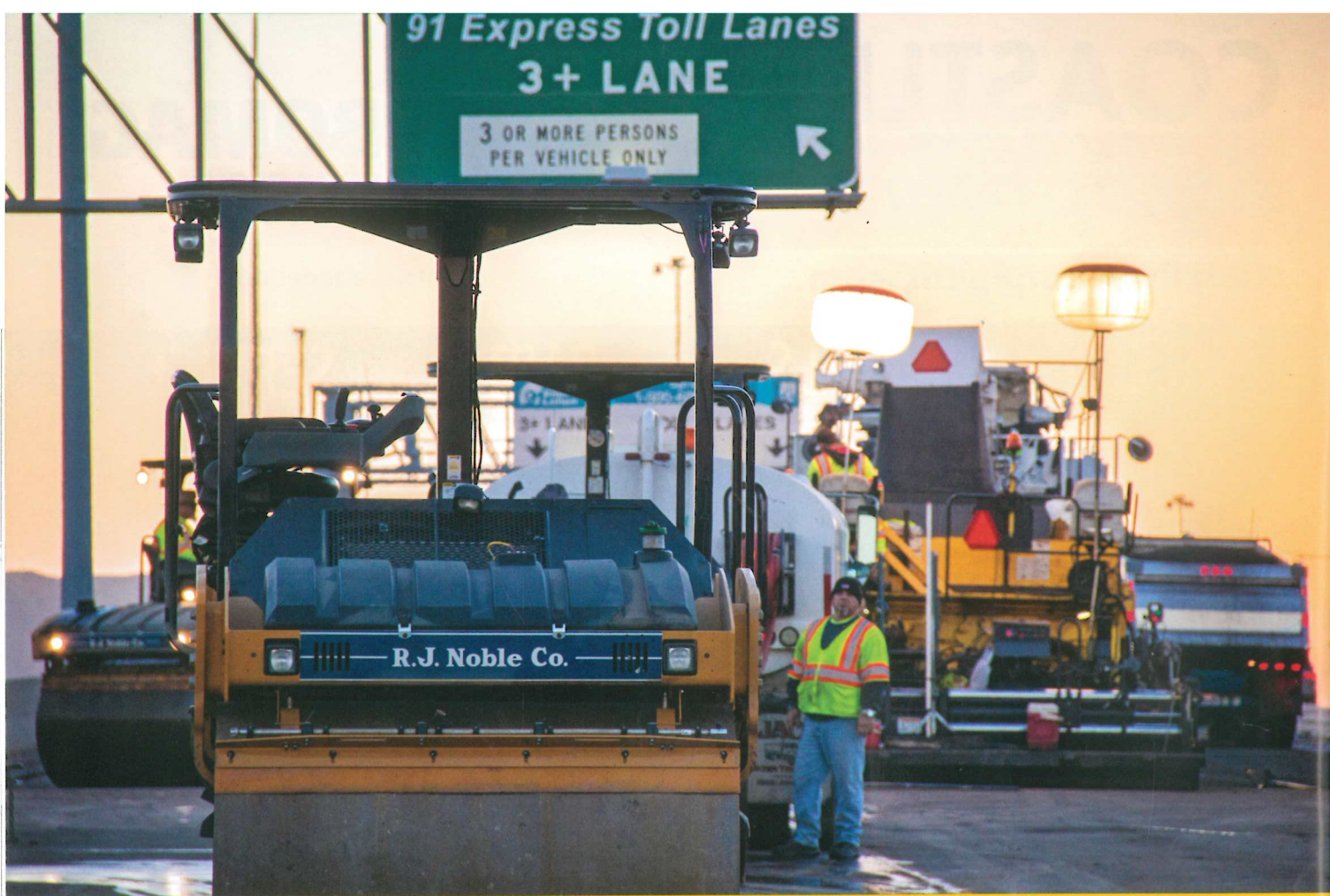
R.J. Noble Co.'s 91 Express Lanes project

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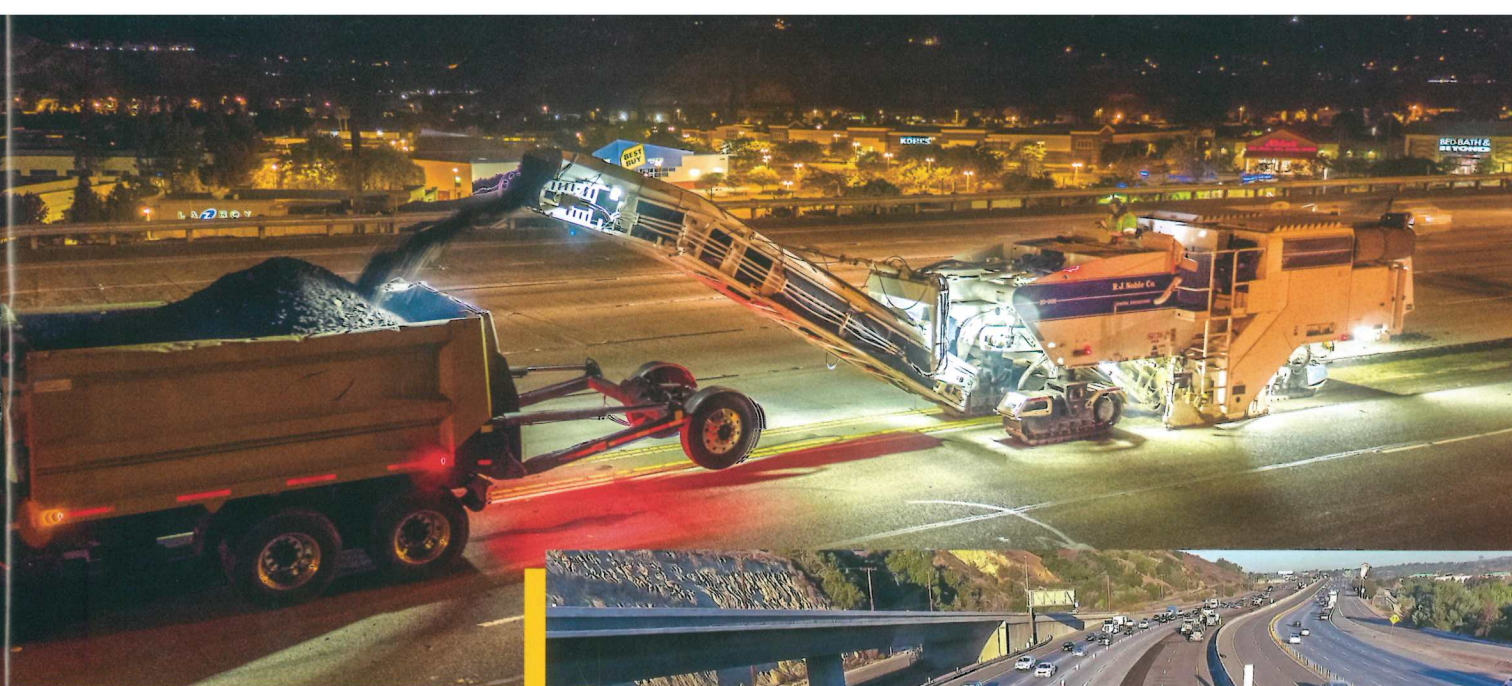
THE R.J. NOBLE COMPANY PUTTING THE FINISHING TOUCHES ON THE 91 EXPRESS LANES WEEKEND SHIFT PROJECT

By Brian Hoover

The State Route (SR) 91 is arguably one of the most congested freeways in the United States and certainly in Southern California. According to the Riverside County Transportation Commission (RCTC) website, approximately 300,000 vehicles utilize SR-91 each day, with estimates of 425,000 per day by 2025. The section of SR-91 located east of Interstate 5 (Santa Ana Freeway) is designated as the

Riverside Freeway and was originally built in stages from 1963 to 1975. It serves as a major corridor connecting the coastal areas of Southern Los Angeles County and inland Orange County with the Inland Empire. Express lanes were added in 1995 by private enterprise to ease traffic congestion in both directions. The four-lane, 10-mile toll road was taken over by the Orange County Transportation

Authority (OCTA) in 2003, making a move from for-profit to a public asset. The 91 Express Lanes are now in the 11th year of a 30-year plan where around \$2 billion has already been spent or is earmarked for expansion and maintenance. Approximately \$430 million is currently available to improve SR-91, thanks to the extension of Measure A, which is powered by a Riverside County half-cent



Above: R.J. Noble uses Roadtec RX-900 3-track cold milling machine to grind westbound on 91 Express Lane.

Right: R.J. Noble uses Roadtec 1,000 hp cold milling machine to grind eastbound on 91 Express Lane.

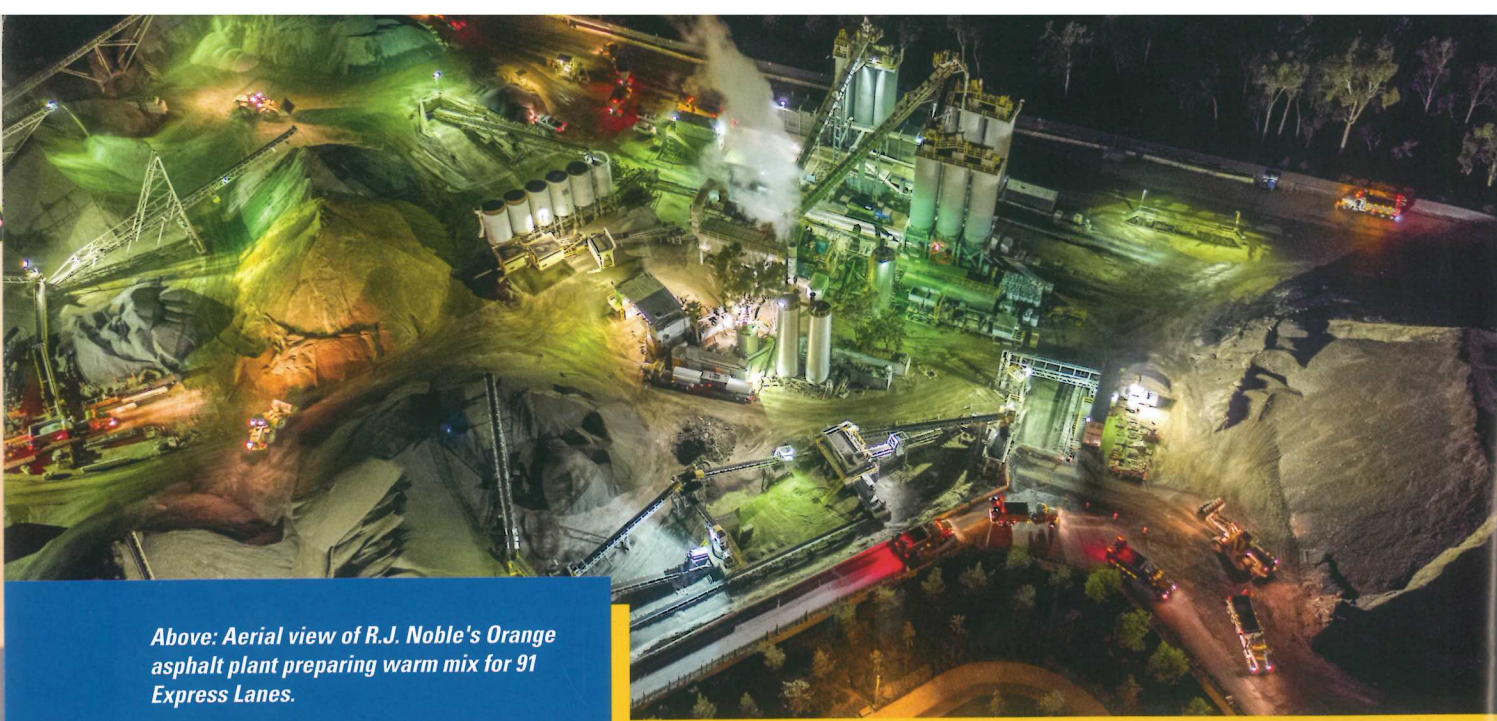


transportation sales tax. These toll lanes bring relief to millions of commuters each year, and the 91 Express Lanes recently received a brand new lease on life with the installation of new asphalt pavement and other upgrades.

The R.J. Noble Company (R.J. Noble) was awarded the contract by Caltrans on behalf of OCTA. The \$12,193,519 project has a very long technical name, but it is mostly known as simply the 91 Express Lanes Weekend Shift Project. Ryan Overman is the project manager overseeing this job for R.J. Noble, and he makes

it clear that it represents the most unique and challenging job for the company to date. "This project could have been scheduled on weeknights, but that would only allow for short shifts and not much time to reopen the roadway to traffic each morning," says Overman. "Because this is a toll lane project, there are strict guidelines and requirements in place on when and how we can shut down these express lanes." Overman points out that the specifications allow for (10) 56-hour weekend closures, which would account for five weekends for both the

east and westbound sides. The job began in June 2016, but the first weekend of paving did not start until Sept. 9 and was completed Dec. 3. "We have had some downtime due to the rain and a holiday or two thrown in there, but we were still able to finish all grinding and paving operations two weeks early," says Overman. "We began our weekend shift on a Friday, but closure times differed according to traffic flow. When working on the westbound lanes, it was imperative to be open for morning traffic much earlier. On the other hand, it was



Above: Aerial view of R.J. Noble's Orange asphalt plant preparing warm mix for 91 Express Lanes.

necessary to begin work much later (11 p.m.) on the eastbound lanes, so as not to disturb the commute home."

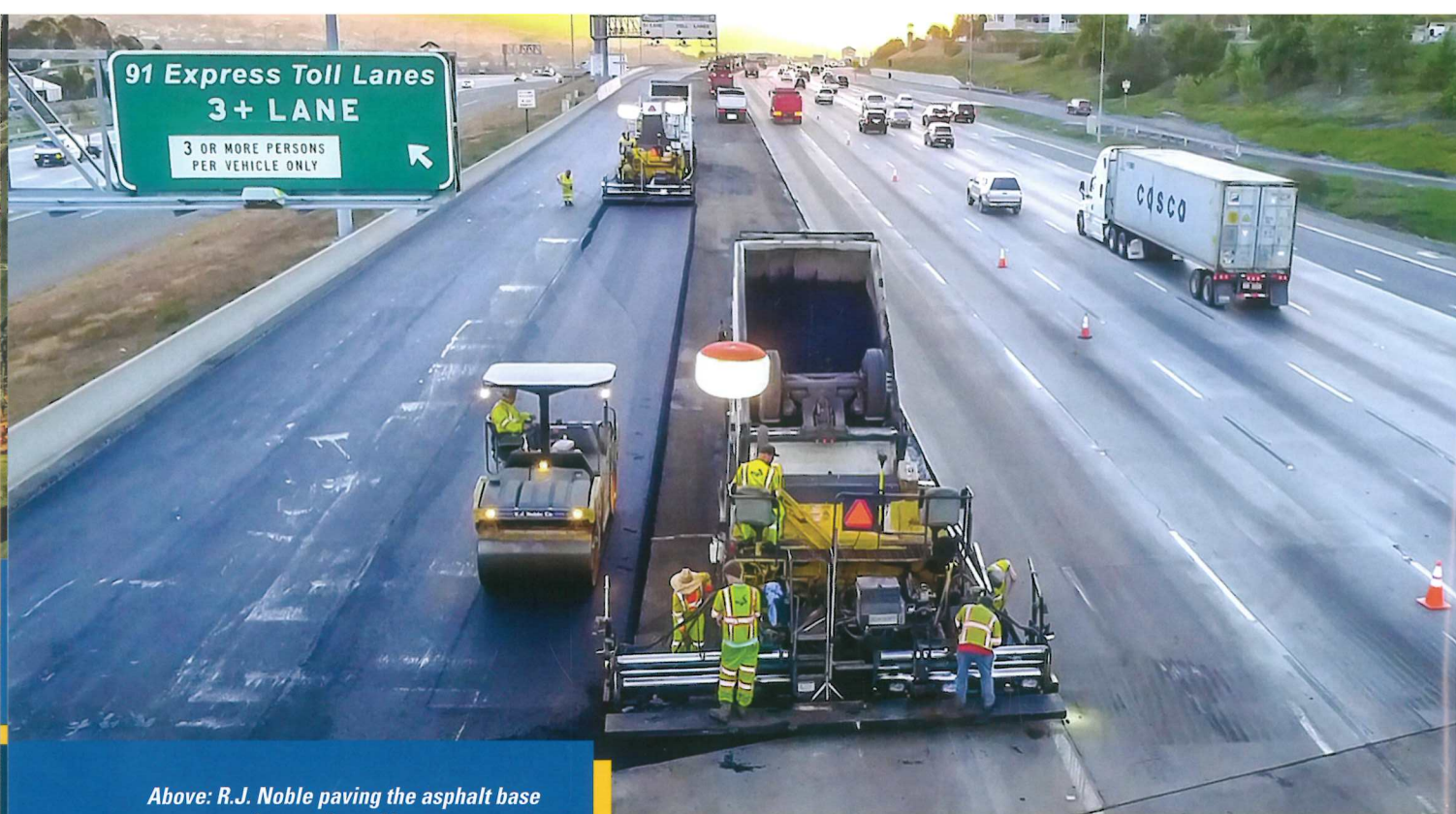
The weekend work began each Friday night with the milling operation that ran between 14 and 16 hours. R.J. Noble utilized their Roadtec 1,000 hp cold milling machines to remove 45 hundredths (5.4 inches) of asphalt. The three milling machines were configured to grind off a 7-foot 6-inch wide path, starting out up against the concrete on the right-hand side. One machine would follow another, spaced apart in a staggered pattern. After finishing an estimated 390,000 square feet of pavement, one of the milling machines would circle back around to mill off any remaining asphalt. "We milled off around 12,500 tons of asphalt during each of the eight-weekend closures," says Overman. That comes to over 600 truckloads of material milled off during each weekend closure. Our

grinding superintendent, Cliff Szablewski and his crews did an outstanding job getting this large amount of asphalt removed safely in such a relatively short period of time."

The asphalt removals were trucked to the R.J. Noble plant in Orange for recycling purposes. 100 percent of the asphalt grindings will be reused in a recycled asphalt mix at either the R.J. Noble Orange or Corona facilities. Per the specifications, approximately 25 percent of the grindings harvested from the 91 Express Lanes were re-introduced into the Superpave mix design to create a recycled asphalt product (RAP). A ¾-inch warm mix was chosen for this particular job for its strength and durability. "The ¾-inch Superpave warm mix design was created with Astec foaming technology. We have an Astec double barrel green asphalt plant in Orange that puts out a warm mix material that we are very proud of," says Overman. "You don't have to use as much

gas to heat up the asphalt, and it foams the oil, which is what allows the material to be delivered at a lower temperature. The warm mix is produced at around 265 degrees, which uses around 20 percent less natural gas. This process saves money, resources, and, of course, reduces the carbon footprint by emitting less greenhouse gas." According to Overman, the plant remained in continuous production for around 34 hours for each weekend closure, generating on average 400 tons per hour. "Our general manager of operations at the Orange plant is Terry McGill, and he has done a great job efficiently managing production on this project, as well as keeping his team safe throughout the manufacturing process and heavy truck traffic," says Overman. "All of the grindings are coming in at the same time that the new warm mix is going out, with around 10,000 tons of aggregate and 500 tons

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Above: R.J. Noble paving the asphalt base course on the westbound lanes.

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of asphalt oil being delivered simultaneously. The worksite could have very easily been a logistical nightmare, but Terry and his crews did an incredible job managing the entire process.”

According to Overman, the same amount of warm mix asphalt (100,000 tons) is trucked back to the job site where it is installed in two lifts. “We put down 25 hundredths of an inch of warm mix base course, followed by a layer of Petromat® fabric, and then a two-tenths cap on top of the fabric,” says Overman. “We finished each weekend closure by putting down temporary striping before opening up the finished section to traffic Monday morning.” Overman points out that the contract with Caltrans and OCTA included a stringent liquidated

damages clause should the 91 Express Lanes not open on time. “The fines for not meeting the schedule were pretty substantial, but we managed to complete our work with plenty of time to spare on each of the five-weekend closures,” says Overman. “A project like this rarely comes around, and I don’t know of any other job that has required this much material to be removed and replaced within a single weekend. This job was certainly a first for our company.”

According to Overman, preparing for this monumental task required many meetings, where every detail was worked out down to the hour. “Everything had to be scheduled down to the most minute detail, with contingency plans ready to be implemented for almost every aspect of the job,” says

Overman. “We had oil tankers coming and going, crushers processing rock, and virgin rock coming in from the quarry, as well as crews installing fabric and asphalt trucks coming in and out of the job site feeding the Shuttle Buggy® and pavers. It was a fun, logistical challenge and most importantly it was a zero loss job, completed without any reportable incident.”

The grinding process was completed at a much faster pace compared to the paving operations, which required two crews that alternated work schedules due to the length of time needed to complete the paving. “The paving took almost twice as long as the grinding, and while we used two paving machines to pave the base course, we utilized just one paver with a Shuttle Buggy® to put down the cap,” says Overman.



Left: R.J. Noble's Shuttle Buggy on the 91 Express Lanes.

Below: Three double drum rollers and one rubber tire roller compacting asphalt base course on eastbound 91 Express Lanes.



According to Overman, Caltrans commented on how impressed they were with the consistency of the material. The traffic control required to keep everyone safe on SR-91 was also a notable challenge. "Our general superintendent, Chuck Spiers, and his crews did an excellent job managing the shutdown of three lanes on one of the busiest freeways in Southern California," says Overman. They closed both express lanes, as well as the No. 1 lane and according to Overman, safety was by far the number one concern for both the construction crew and the general public.

Although all of the paving was completed by early December 2016, R.J. Noble is still putting the finishing touches on another portion of the contract. "We are currently in the process of installing six new electrical message boards. Two in Riverside County where the new RCTC Express Lanes are being constructed, two going northbound on SR-55, and two on the SR-91 eastbound, right around the Kramer and Tustin ramps," says Overman. One of the signs at each entrance is used for

advisory messages, while the other is utilized for posting the current price for using the toll lanes. "Once everything is working properly, we will remove the old signs their foundations. We should have the entire job completed by the end of April 2017."

The R.J. Noble Company has been a leader in the Southern California general engineering construction industry for more than 65 years. They specialize in the production and installation of a variety of asphalt products, as well as recycling capabilities. They currently own and operate two large multiple-resource plants that produce around 1 million tons of asphalt each year, and recycles another half million. They are a major supplier to the state of California, supplying counties, cities, municipalities and private enterprise. The R.J. Noble Company contracts primarily in Orange and Riverside counties and has also worked in Los Angeles, San Bernardino, and San Diego counties. "The 91 Express Lanes represent the best of

what all of us at R.J. Noble have to offer," says Overman. "This was truly a team effort, and on behalf of the company, I would like to thank everyone for their tireless work and dedication to this project. I would like to specifically thank Caltrans and OCTA for their guidance, trust, and encouragement on this difficult project. I would also like to recognize Bill Wright, our main project superintendent, Cliff Szablewski, our grinding superintendent, Isaac Mendoza, our paving superintendent, and our general superintendent, Chuck Spiers. The work of these men and their crews on this project will be appreciated for many years to come, as Southern California motorists enjoy the 40-plus lane miles of new smooth riding asphalt pavement."

For more information on The R.J. Noble Company, please visit their website at www.RJNobleCompany.com. **CA**