

# Southern Pacific's computerized West Colton Classification Yard



**“To better serve our customers we must continue to develop new ideas and facilities which blend today’s advanced technology with the skills of our people.”**

B. F. Biaggini,  
*Chairman and Chief Executive Officer*

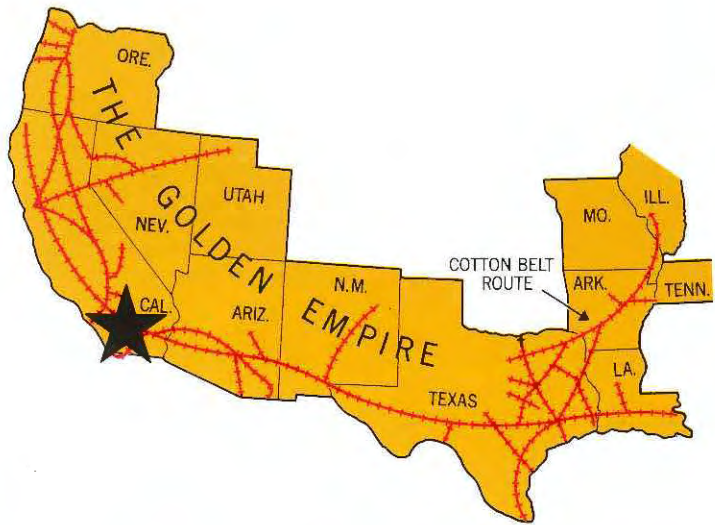


You are about to tour, through the pages of this booklet, one of the most technologically advanced railroad terminals in the world — Southern Pacific Transportation Company’s West Colton Classification Yard — located in Southern California. Here a highly trained management team and skilled personnel working with advanced computerized control systems and a unique new terminal design can handle more trains and freight cars safer and faster than any other rail terminal in existence.

Strategically located, West Colton lies at the intersection of Southern Pacific’s mainline West Coast routes to Northern California and the Pacific Northwest, and its mainline transcontinental route through the Southwest to Arizona, Texas, and the Mississippi River gateways of St. Louis, Memphis, and New Orleans. At the same time, it offers easy access to the entire Los Angeles Basin just 50 miles west.

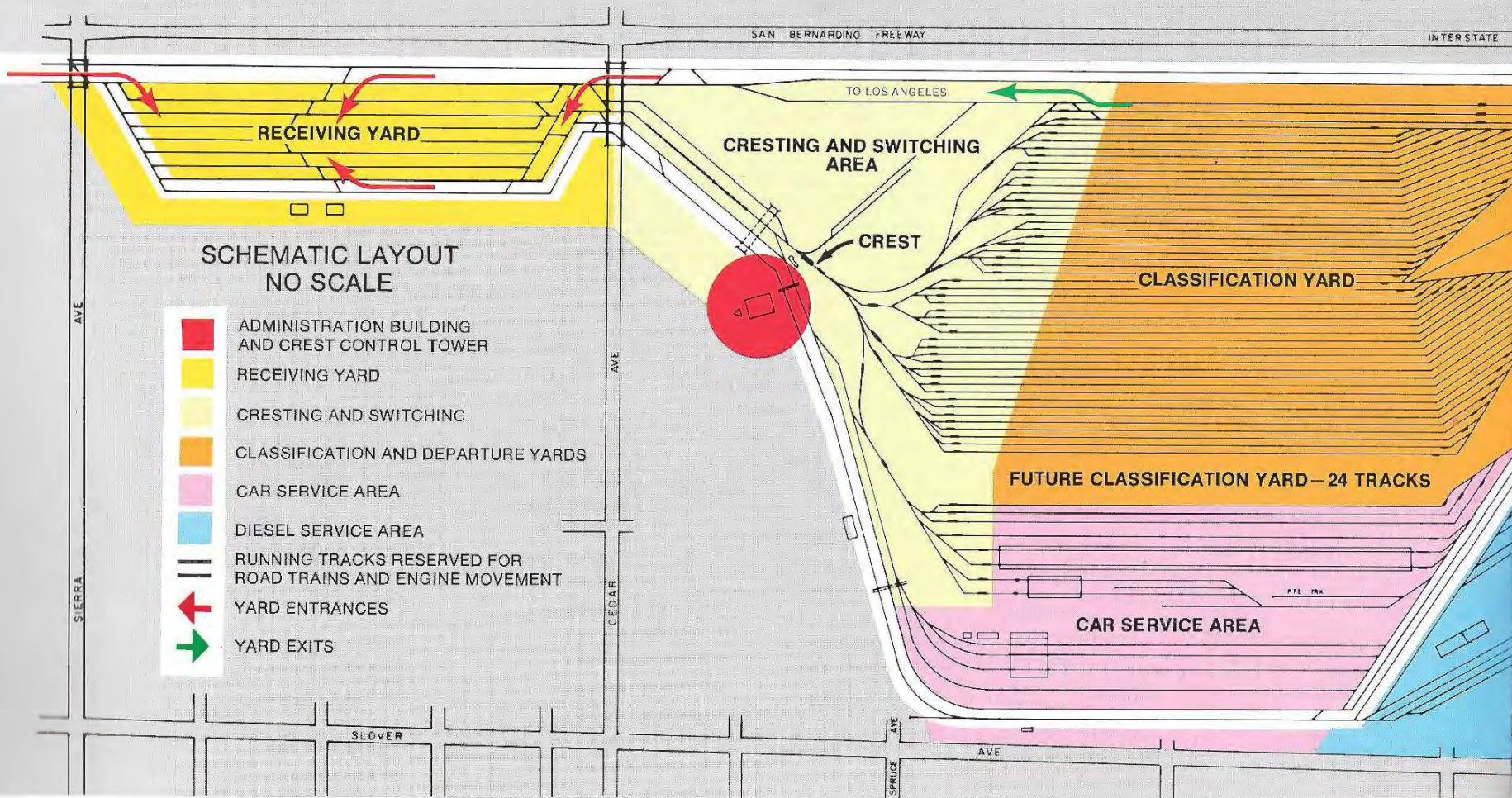
In addition to providing faster terminal service for our customers, we’ve reserved over 500 acres of land adjacent to our West Colton terminal for future industrial development. And we’ve looked out for our neighbor’s best interests, too. We designed landscaping, sound barriers and special yard equipment that help protect the surrounding environment from sight and sound penetration. And to be sure our yard waste removal systems would be non-polluting, we cooperated in the enlargement and improvement of city and county waste systems as well.

In short, this \$39 million West Colton Terminal was designed to provide the most modern freight terminal services possible, using advanced technology to insure a protected environment for our neighbors, a more efficient rail operation for us and more dependable, ever-better service for our customers.



- In the Crest Control Tower, trained personnel work with sophisticated computer programs and electronic equipment to maintain constant control over all trains entering or departing the Yard Control Area as well as planning and monitoring the classification function and other yard activities.





## Here's how Southern Pacific's computerized West Colton Classification Yard

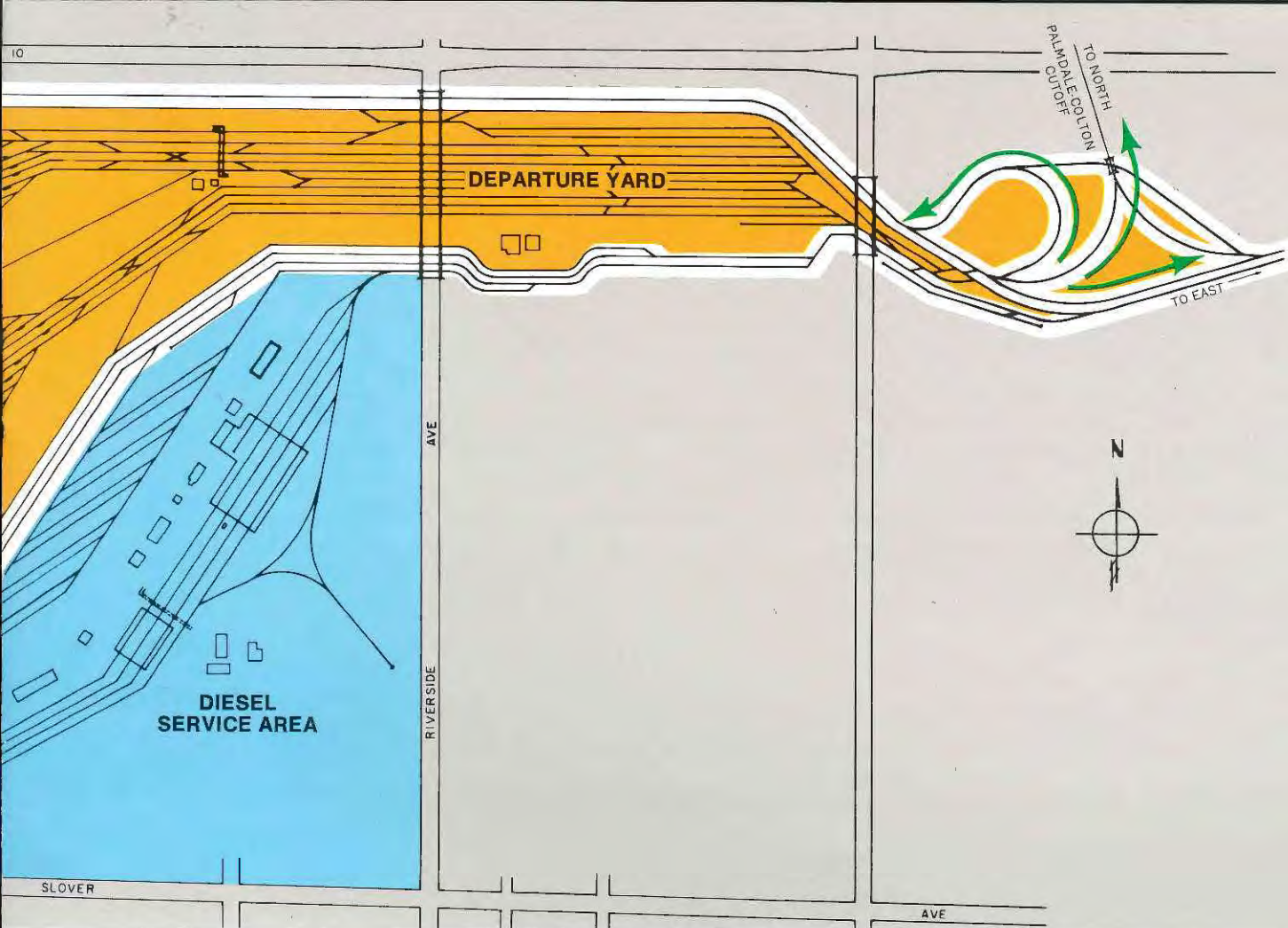
The West Colton Yard covers 560 acres, is 5.7 miles long, 1800 ft. wide, has 99 tracks totaling 96 miles and has capacity for 7,100 freight cars. Overall yard operation includes the 6 major functions that follow:

● **The Receiving Yard** allows easy entry from the north, east and west; contains nine 10,000 ft. tracks and has room for additional trackage. At full capacity it can hold up to 1800 cars. Crossovers at mid-yard permit handling of either short or long trains. Wide spacing between tracks allows mobile inspection of trains on arrival and mobile repair crews to make on-the-spot running repairs without interfering with the cresting operation. As a result, there is a drastic reduction in the number of cars normally sent to the car service area for minor repairs.

● **The Crest Control Tower and Administration Building** is the nerve center for all major yard functions. Here highly trained personnel, working with sophisticated computers and advanced electronic equipment,

maintain a constant vigil over trains entering and departing the West Colton Control Area; develop advanced planning for upcoming classification; and monitor cresting, switching and car retardation as well as real-time information on where the car is from, where it is, what's in it and where it's going.

● **The Cresting and Switching Area.** Here cars are weighed-in-motion, crested and switched to classification bowl tracks for swift makeup into departing trains. If cars require special handling or repairs that were unable to be made in the receiving yard, they will be switched to set-out tracks or to the car service area. At the crest, individual or multiple car cuts are made at the rate of up to 8 cars per minute (2 to 3 times the industry average). As the cars roll down the crest toward the classification yard a computer-controlled system of automatic switches and retarders control the free-rolling movement of cars to predetermined positions in



## General Yard Statistics

**Data System Equipment:** 3 Computers – 33 Cathode Ray Tube (CRT) message display units – 13 CRT-associated computer printers.

**Communication Equipment:** 420 Channel capacity microwave system – 7 Base radio stations – 9 Teletypes – 60 Yard talk-back speakers – 35 Miles of underground ducts carrying communications, electrical and signal cable – 14 Miles of aerial cable.

**Signal, Interlocking, Retarder and Electronic Systems:** 14 Miles of compressed air lines – 26 Miles of aerial cables – 229 Miles of multiple conductor underground cable – 207 Electronic wheel detectors – 75 Electronic train sensors – 68 Radar units – 1 Electronic coupled-in-motion freight car scale – 1 Dragging equipment indicator – 57 Power operated safety derails – 3 Hot box detectors – 3 High-wide load detectors.

**Lighting:** 31 million lumens total output.

**Environmental Protection:** 7.3 Miles of industrial waste lines – 3 Waste separator ponds – 2 Waste evaporation ponds.

## speeds freight traffic.

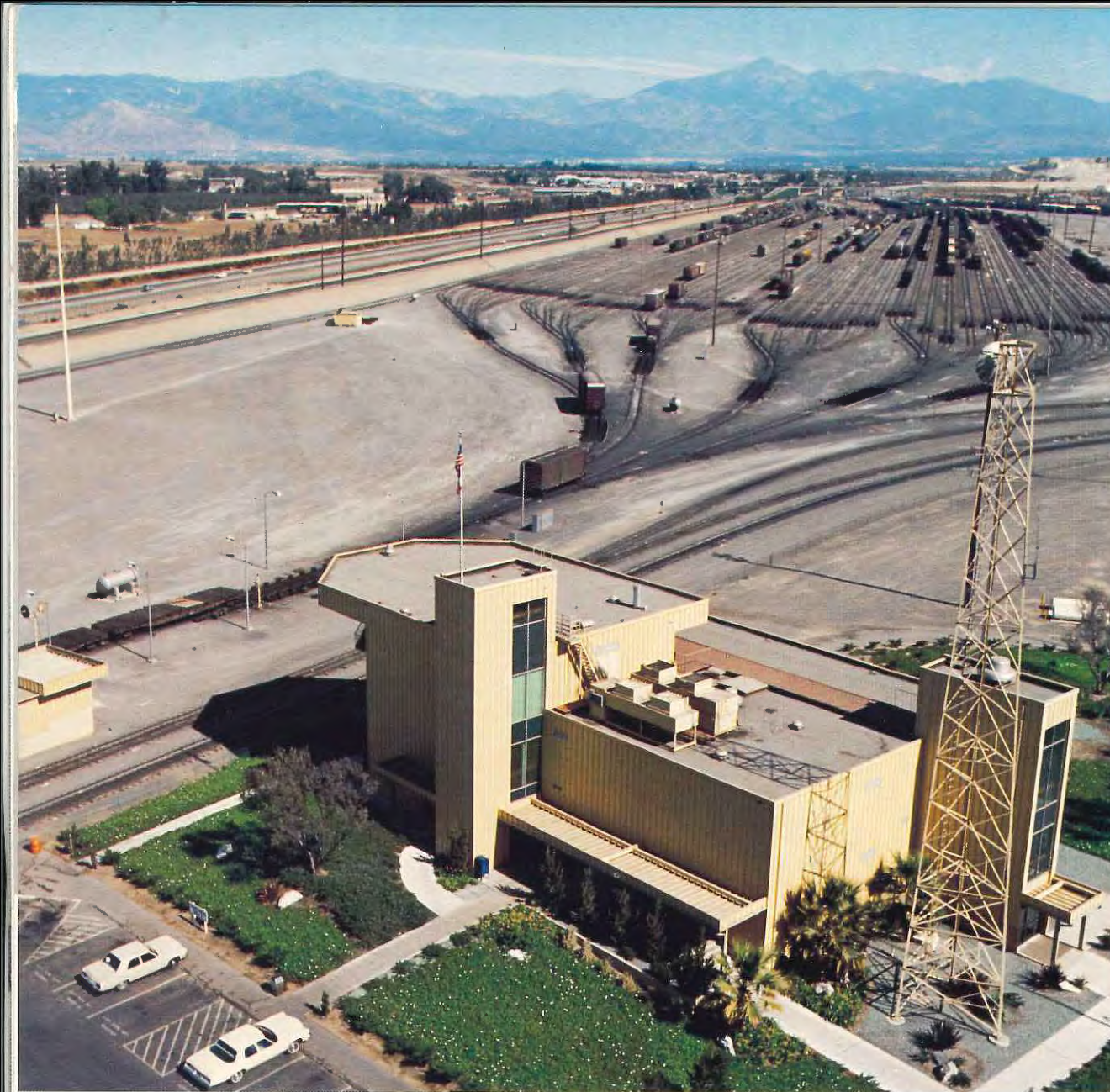
the bowl at continuously-adjusted, safe coupling speeds

● **The Car Service Area** has a capacity for 500 cars and consists of support classification tracks reserved for storing and switching cars due for upgrading; caboose service tracks; car upgrading tracks for medium running repairs and a one-spot car service facility which has specialized mobile and stationary equipment for major car repair activities. As repairs are completed, cars may be returned by yard engine for creasing without interrupting the creasing operation, or be moved directly to the departure yard for placement into outbound trains.

● **The Diesel Service Area** has a standing capacity for a total of 98 locomotives and includes: a locomotive washing facility; inspection pits; sanding towers and fuel bunkers; a laboratory with an emission spectrometer that provides a wear diagnosis of diesel engine parts and serves as a quality control for fuel and lubricants, and adjacent engine ready

tracks which hold locomotives for assignment to outbound trains. Anti-pollution industrial waste facilities are also located here.

● **The 4,800-car-capacity Classification and Departure Yard** is designed in a unique "Key Configuration" that is a combined classification/ departure yard. The yard consists of 2 twenty-four track "keys" with space reserved for another 24-track "key" to be added in the future. The center four tracks of each "key" extend 9,800 feet into the departure yard area and are on wide centers to allow mechanical inspection of trains prior to departure. Track design allows interference-free makeup of long or short trains on these tracks. Up to 2 yard engines may pull cars from each "key" into departure tracks without interfering with other classification activities. All trains leaving the departure yard have immediate access to east-bound or northbound mainlines. Westbound traffic can depart over a loop track or a westbound exit located in the northwest corner of the yard.



● The Administration Building, right foreground, contains the Crest Control Tower where all yard operations are planned, directed and monitored; operating and traffic offices and the Crest Control Computer System. The microwave tower provides a direct high-speed data link with the Terminal Control Computer housed in Southern Pacific's computer center in San Francisco. In the background is the 48-track Classification Bowl.



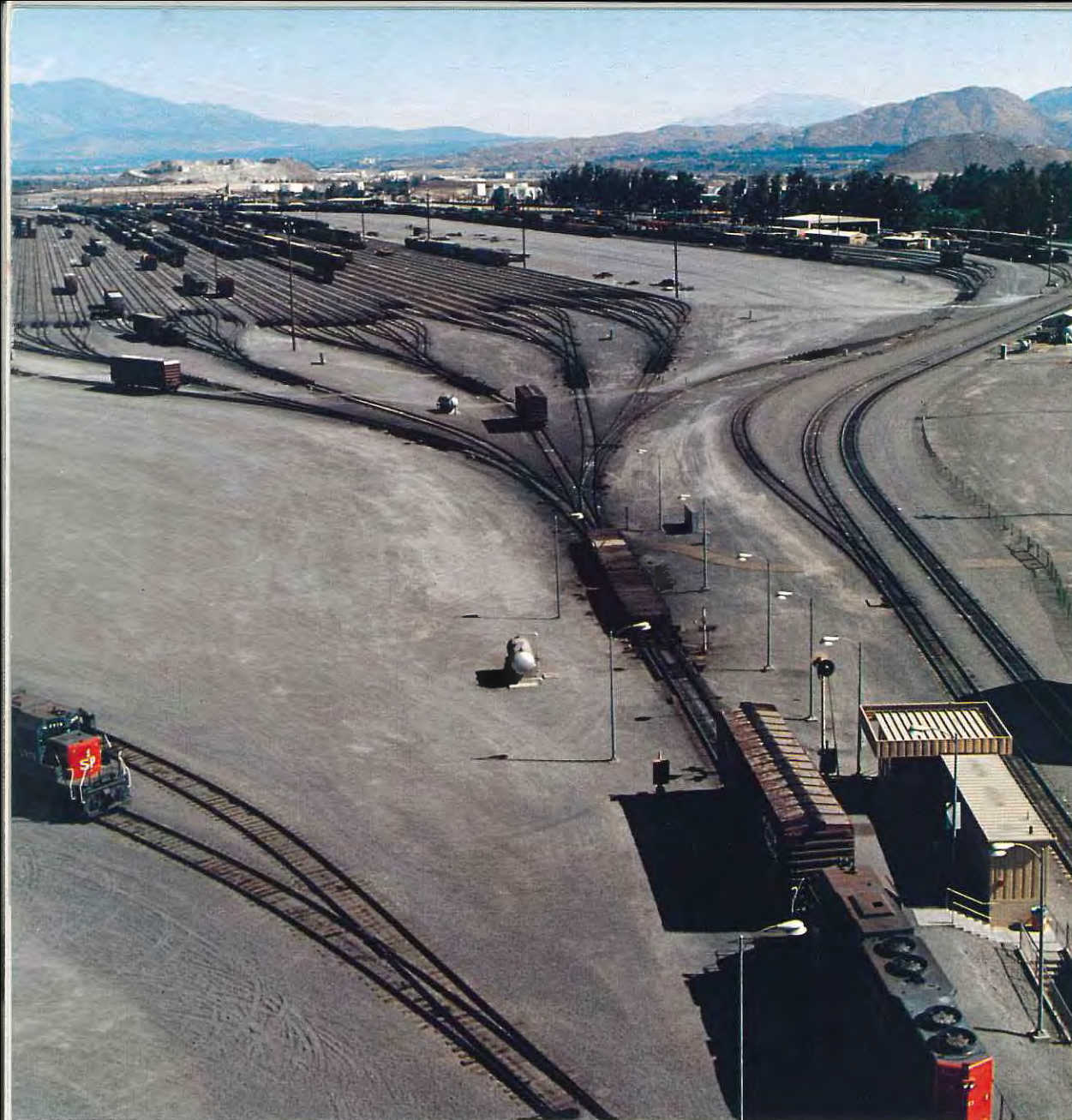
● In the Crest Control Tower, the Interlock Control Console operator, background, passes responsibility for trains entering the terminal control area to the Switch Tender Console, foreground. The Switch Tender uses his video display and receiving yard control panel to direct placement of trains in the receiving yard in preparation for cresting.



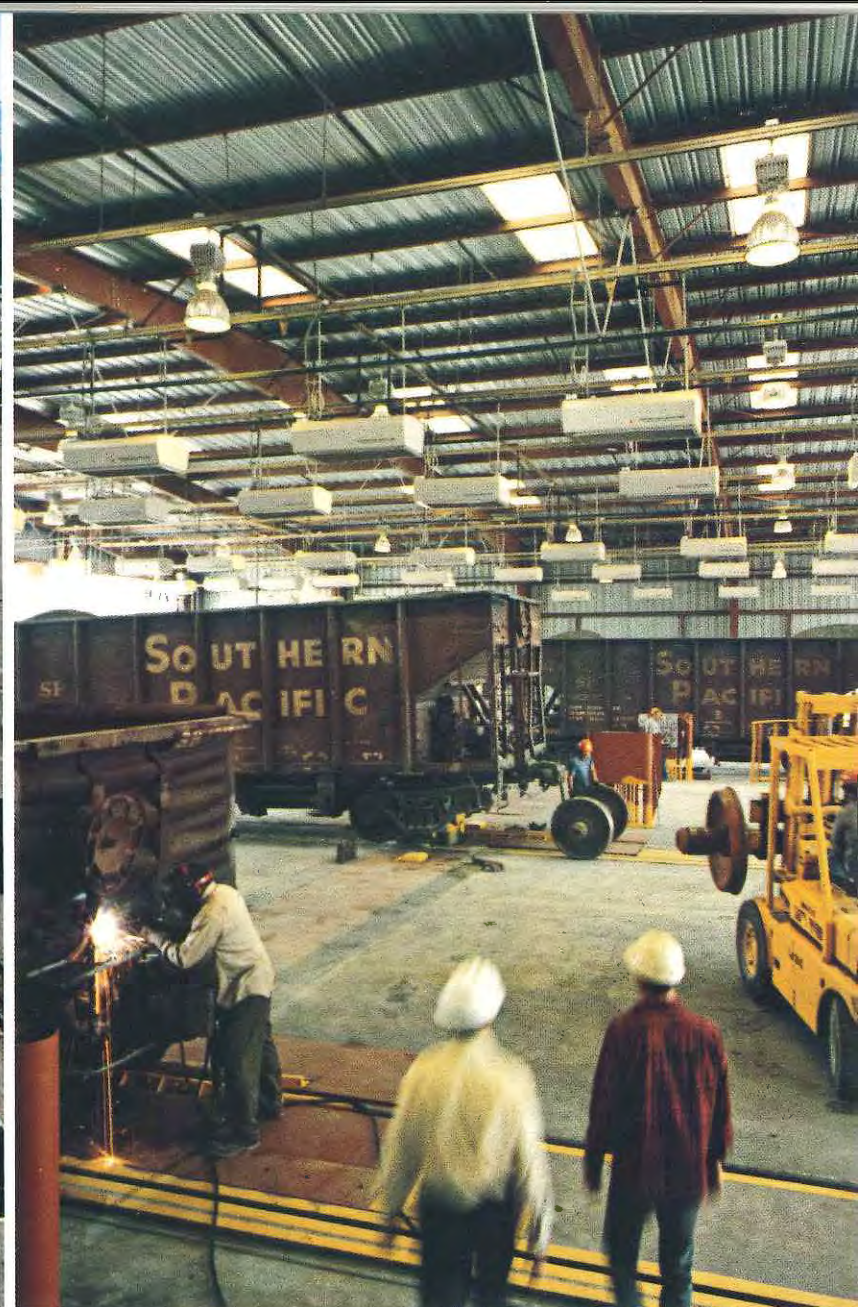
Receiving Yard tracks are widely spaced to permit mobile inspection and repair. All mobile equipment is radio-equipped and directed by the Lead Carman in the Crest Control Tower. Here, bearings are oiled, brake shoes applied, safety equipment checked, minor repairs made, and empty cars are classified for loading or upgrading.



In the Crest Conductor's Office, Engine Foremen monitor the cresting of a train. As trains are pushed up to crest, they pass over an electronic weigh-in-motion scale which also tests each car for side bearing difference in weight and for overweight condition. Any cars so detected are automatically switched to special tracks and messages are issued for correction.



As cars roll down crest into Classification Bowl tracks, the Crest Control Computer constantly measures the rollability and speed of cars and operates retarders to space cars properly and control their speed into classification tracks so coupling is effected safely with no damage to cars or lading. Cars needing repair can be switched directly from crest to Car Service Area in right background.



Cars in need of medium to heavy repairs are moved or crested into the Car Service Area which includes a "One-Spot" car repair facility, above, where heavy repairs are made. Medium running repairs are made on other tracks in this area.





Power units from incoming trains move directly from the receiving yard to the Diesel Service Area where they pass through wash facility, left background, to inspection, sanding and fueling facility, foreground. Outbound engine ready tracks are behind mechanical department observation tower, right center.



Unique "key" design of combined Classification/Departure Yard is shown above as train on left, with road power, leaves one of four center tracks of "key" for direct departure from yard. Trim engine on right pulls block of cars from a classification track into Departure Yard (running eastward behind camera position) for makeup into a longer train. Personnel in Trim Tower, (not shown), control and monitor train assembly and departure with radio-equipped mobilized mechanical forces to speed train inspection and departure.



Southern Pacific specializes in meeting its shippers' individual needs. Special incentive loading rates for forest products have attracted an increasing number of king-sized loads (above left) containing as much as 70,000 board-feet of lumber. And wide right-of-way clearances and "know-how" bring SP many high, wide and heavy shipments, too, like the 224-foot long fractionating tower (above right) delivered in Texas. The



tremendous increase in container and trailer piggyback traffic led to the enlargement of many SP Intermodal Centers like the one at Oakland, California, shown below in a 140-degree view. Here, Piggy Packers and mobile overhead cranes swiftly load and unload rail cars. Major Intermodal Centers are also located at Portland, Los Angeles, Phoenix, Houston, Dallas, New Orleans, Memphis, and East St. Louis.



As this brochure has shown you, the computerized West Colton yard was planned and built to make possible a rapid, controlled flow of cars and power — and yard and train functions which are separated and self-contained for interference-free operation. We are certain its unique design will further improve terminal operations throughout our system and lead to even greater improvement of service capabilities in our other terminals. But most important, it has helped us make a giant step forward in delivering even better service for our customers. Today Southern Pacific serves an area that covers more than one third of the United States. And not only with trains that travel over 14,000 miles of railroad. We're transportation innovators in equipment; run-through trains; rail terminal design; trucks; intermodal transport; pipelines; computer/communications services; equipment leasing and land management. We have the modern transportation plant — and the people — to do a better job for you. And we're doing it.

# Southern Pacific

*We're making tracks for the future.*



TRAINS 

TRUCKS 

PIPELINES 

INTERMODAL 





West Colton's Terminal Control Computer, which handles terminal management functions only, is housed, here, in Southern Pacific's Computer Center in San Francisco. This system provides West Colton planning personnel instantaneous information on car inventory and car movement instructions and assists in a variety of planning functions. This computer "talks" simultaneously with West Colton and the Total Operations Processing System (TOPS<sup>®</sup>) computers and data files in this same room.