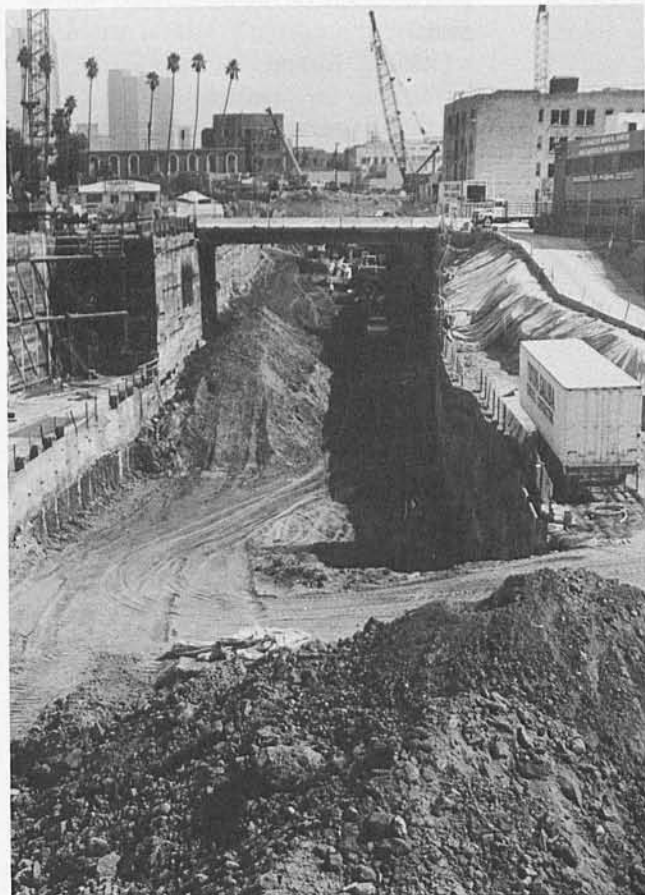




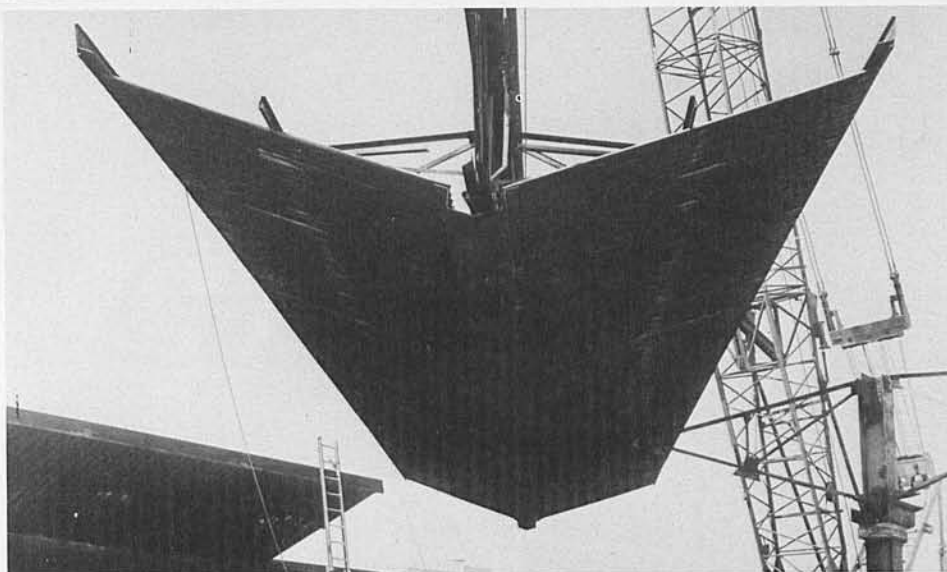
Metro News **BULLETIN**



The Red Line Takes Shape



THE RED LINE TAKES SHAPE — *Top: Excavation nears completion at the site of the future Wilshire-Alvarado Red Line station. The finished structure will have the same dimensions of a 50-story building tipped on its side and buried in the ground. Upper right: The Post Office's Terminal Annex keeps vigil over subway tunneling work being done near Union Station. Right: A piece of canopy that covered a passenger walkway at Union Station is removed to make way for construction.*



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\$18.6 MILLION STAGE TWO RED LINE STATION CONTRACT AWARDED; TWO MORE CONTRACTS TO BE COMPLETED BY YEAR'S END

The RTD Board of Directors March 23 awarded an \$18.6 million contract to Tutor-Saliba Corporation of Sylmar for Stage II work on the Seventh and Flower Street Red Line Station.

Stage II work consists of the completion work to station construction such as architectural, landscaping and final mechanical and electrical work.

The winning contractor is performing work in joint ventures on four other Red Line contracts, including tunneling and station work at the future Union Station site.

As of Feb. 24, 1989, 34 of 64 available contracts on the first 4.4-mile segment of the Red Line had been awarded at a total value to \$493.6 million.

Seven contracts have been completed. Four of them involved the clearing of land for construction; two were for various utility work and one was the completion of the Maintenance of Way building.

Of the nearly nine miles of twin tunnels to be dug for Phase 1, 15,600 tons of steel have been erected in future Red Line station sites, and more than 77,300 cubic yards of concrete have been poured.

"Before 1989 is over, we will com-

plete the tunnels between Wilshire and Alvarado, and Seventh and Flower street stations, and our main yards and shops building," said Bill Rhine, RTD's assistant general manager for transit systems development. "A color scheme has been selected for our rail cars, and manufacturing of them soon will begin."

The project was 28 percent complete at the end of February, 1989, Rhine said, with 46 percent of the anticipated \$1.25 billion in project costs expended.

There were 169 pending contract claims and 295 pending contract changes, and there have been 366 executed change orders for a combined estimated value of \$62.9 million as of Feb. 24, 1989. Settlements often are considerably less than the original amount claimed by the contractor, but the full amount of the claim is accounted for when figuring budget status.

Also, some of the pending claims and changes may be withdrawn before becoming actual change orders.

"We monitor the number of claims and changes to track the trend of such activities," Rhine said. "For a project of this size, we are on track."

A number of tunnels and stations will be excavated by the end of 1989, and manufacture of the Red Line's cars is scheduled to begin in May, Rhine said.

Other Phase 1 construction milestones for 1989 include:

- Five tunnel excavations to be completed.
- Three station excavations to be completed.
- First delivery of "contact" rail, or the "third" rail that provides electric current to subway cars, is expected.
- Manufacture to begin of rail cars and fare collection equipment.
- Contracts for Stage II work (tiling, artwork, station esthetics and final touches) at two more stations to be awarded.

Work on finalizing environmental studies for Phase 2 of the Red Line is nearing completion, and a funding contract with the federal government is anticipated by mid-year. A benefit assessment task force is holding public meetings in areas through which Phase 2 will travel. The task force will recommend assessment district boundaries to RTD's Board of Directors later this year.



The future Civic Center Red Line station at First and Hill streets will be 55 feet wide and 570 feet long.

LASER BEAMS BLAZE SUBTERRANEAN TRAIL FOR RED LINE TUNNEL DIGGERS

It wasn't long ago that diggers of tunnels used string lines to stay on course. Digging underground in a straight line always has been a particular problem. It confronted the builders of the Egyptian pyramids and California gold miners as well as Red Line engineers.

String lines used to be carefully hung within the tunnel to keep the project on course. No longer. They have given way to laser beams, ultra-modern tiny streams of red light that save engineers and construction workers worry, hassle and dollars.

"The string used to work best in a dark tunnel when there were lights shined on it," said Steve Navin, resident engineer for the RTD's Fifth and Hill tunneling project, one of several within the District's 4.4-mile subway project due to open in 1993.

By anchoring the string from surveyed locations in the crown of the tunnel and taking measurements every few feet, tunnelers stayed on course. There were inconveniences, Navin noted. Workers sometimes tripped over the string or knocked it down. Sometimes it became entangled in machinery. Frequent measurements were time consuming.

Those days are over, at least for the RTD, an agency that is building a subway system with "no strings attached."

A nondescript little black box can be seen suspended from the top of the mammoth underground tunnel behind the digging machine. It projects a pencil-thin red laser beam onto a small crossword puzzle-like grid attached to the digging machine 30 feet ahead.

Construction workers stationed in front of the "target" constantly monitor the beam to make sure the spot is directed where it's supposed to be.

To make the tunnel curve, as the RTD twin tunnels must do in several places along the alignment, workers simply move a measured amount from the beam, depending upon the sharpness of the turn.

"It's so much more convenient now," Navin said. "The only thing a tunneler has to remember while



DIGGING FOR A LIVING— The eerie, cylindrical world of tunnel diggers greets these workers each day on RTD's Red Line project. Once inside this ever-lengthening tunnel fragment (top photo) near the future Union Station subway terminal, it is impossible to tell the difference between night and day. In the bottom photo, a lone tunnel digger operator is dwarfed by the huge hydraulic hindsection of the machinery that is creating the Red Line's tunnels.

using the laser control is that steering the tunneling machine is sort of like steering a big boat. You steer the back of it, not the front."

Mistakes can be costly and cause accidents. Laser technology has practically eliminated the chance of both.

"Using the laser means you can take a measurement as often as you want," Navin said. "If an error is detected, it's a simple matter to correct it before the digging machine gets off line."

"It's a deceptively simple system, yet it saves so much time and manpower," said Sam Louis, the Red Line's director of construction management.

"Lasers can be used in so many other ways besides just tunneling. They are useful for making sure major elements of a project are on target, for guiding and aligning all facets of construction," Louis says. "We are using them above ground as well as below."

RTD CO-SPONSORS CONSTRUCTION CONTRACTOR'S SEMINAR FOR RED LINE AND BLUE LINE PROJECTS

Prospective rail project contractors and subcontractors, especially businesses owned by minorities and women, attended a construction contract seminar recently sponsored jointly by the RTD and the Los Angeles County Transportation Commission (LACTC).

The seminar, held at the Davidson Conference Center at USC, was designed to inform area contractors of upcoming contracts on the Red Line and Blue Line light rail projects and to explain the recently begun Transit Bond Guarantee Program for disadvantaged and women-owned businesses.

"Minorities and women own many businesses capable of becoming subcontractors on these projects," said Walter Norwood, RTD Assistant General Manager for Equal Opportunity. "Those who attended the conference 'learned the ropes' of the process, got their questions answered and had the chance to net-

work with contractors and others who can provide them more business."

RTD General Manager Alan Pegg, William Rhine, Assistant General Manager for Transit Systems Development, and Norwood all spoke at the conference.

The LACTC's Edward McSpedon, Director of Design and Construction for the Blue Line project, spoke on future light rail contract opportunities.

"We have an aggressive program to assure that women- and minority-owned businesses enjoy full opportunities to share in the construction of Los Angeles rail projects," Norwood said.

CIVIC CENTER STATION EXCAVATION COMPLETED

Excavation for the future Civic Center Red Line Station has been completed, marking the first of the five downtown stations along the

initial 4-4-mile alignment to reach that goal.

Construction progress of the station is on course for a 1993 opening, as is the rest of the project, said Bill Rhine, Assistant General Manager for Transit Systems Development for RTD.

"More than two years ago on the site at 1st and Hill streets, we broke ground for the Red Line," Rhine said. "Since then, it has been immensely gratifying to see the Red Line taking shape. Though the station's concrete walls haven't been completed yet, it already is an impressive sight."

When the walls of the station are in place, the dimensions will be equivalent to a 50-story building tipped on its side. The station will be 55 feet wide and 570 feet in length. Five underground stations will be connected by 4.4 miles of twin tunnels, a portion of which have been dug.

The contractor building the first stage of the Civic Center station is the joint venture of Tutor-Saliba and S.J.Groves and Sons of Sylmar. The scheduled completion date for the contract is April, 1990.



SEN. PETE WILSON PRESENTS \$96 MILLION IN FEDERAL FUNDS FOR PHASE ONE — Sen. Pete Wilson (R-Calif.), left, presented a check for \$96 million in federal funds to RTD officials in October to be put toward the construction of the Red Line. The check, accepted by RTD Board of Directors' President Gordana Swanson and RTD General Manager Alan F. Pegg, represented the final installment of the federal commitment of nearly \$700 million to help pay for the project's \$1.24-billion first phase.