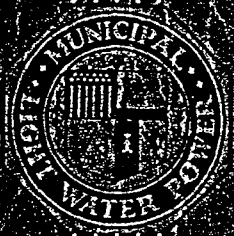


Thirtieth Yearly
Annual Report
of the

**Board of Water and Power
Commissioners**

of the
City of Los Angeles

60-CH



fiscal year ending June 30, 1940

Major Construction Division

H. L. JACQUES, *Engineer*

CONSTRUCTION

ON April 24, 1940, approximately 65 c.f.s. of Rush Creek Water was diverted through the Grant Lake Outlet Tunnel to the Grant Lake to Mono Craters Conduit and thence through the Mono Craters tunnel to the Owens River. This marked the first Mono Basin water to be made available to the Los Angeles Aqueduct.

During the year ending June 30, 1940, Department forces virtually completed the construction of the Mono Craters Tunnel. There remains only a small amount of work to be done, that of completing the concrete lining of Shaft No. 3. Work done during the year consisted mainly of the following:

Fourteen thousand, eight hundred sixty-six feet of tunnel floor and 27,948 feet of sides and arch were concreted, and 278 feet of sides and arch at Shaft No. 2 were gunited to complete the tunnel lining.

One thousand and twenty-nine and 599 cubic yards of concrete were placed to complete the linings of Shafts Nos. 1 and 2 respectively. Shaft No. 1 was closed at the bottom with a reinforced concrete wall and was covered at the collar with a reinforced concrete slab. Shaft No. 2 was covered at the collar with a concrete slab, but was left open at the bottom and the walls and arch of the station at tunnel level gunited for permanency. Five hundred forty-three cubic yards of concrete were placed in lining 312 feet of Shaft No. 3, this work being 62% complete at the end of the year.

A Parshall Flume for measuring the flow of water through the tunnel was constructed at East Portal, and approximately 14,600 feet of track were removed and floor cleaned preparatory to operation of the tunnel.

Department forces constructed the Grant Lake to Mono Craters Conduit during the year, accomplishing the following work in so doing:

A total of 179,480 cubic yards of material, 32,316 of which were classified as rock, were excavated in open cut. Following excavation, 18,741 cubic yards of concrete were poured to construct 15,132 feet of horseshoe shaped conduit.

Required appurtenances, such as manways, passholes, transitions and overflow, diversion and drainage structures, were built and the conduit and structures were backfilled with 119,194 cubic yards of material to complete the job.

On April 18, 1940, construction work on the Leevining Creek to Grant Lake Conduit was started by A. Teichert & Son, Inc., of Sacramento, California. Work done by June 30, 1940 was featured by the excavation in open cut of 194,801 cubic yards of material, the placement of 2,934 cubic yards of concrete and 102,714 pounds of reinforcing steel in horseshoe shaped conduit, and the driving of 1,366 feet of tunnel. A survey of all work done showed the contractor to be on schedule with completion of the entire job looked for in December of 1940.

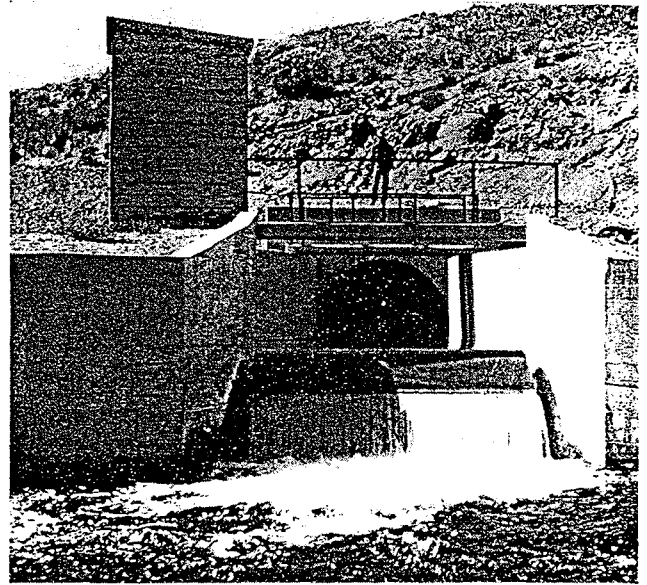
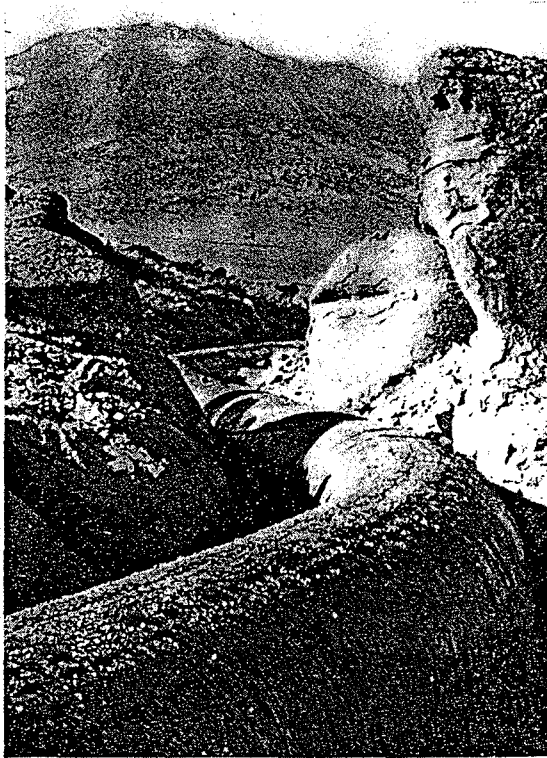
On May 1, 1940, work on the completion of the Grant Lake Dam was started by the Macco Construction Company of Clearwater, California. By June 30, 76,740 of a required 432,000 cubic yards of material were placed in the dam and compacted. Completion of the dam is expected in October, 1940.

ENGINEERING

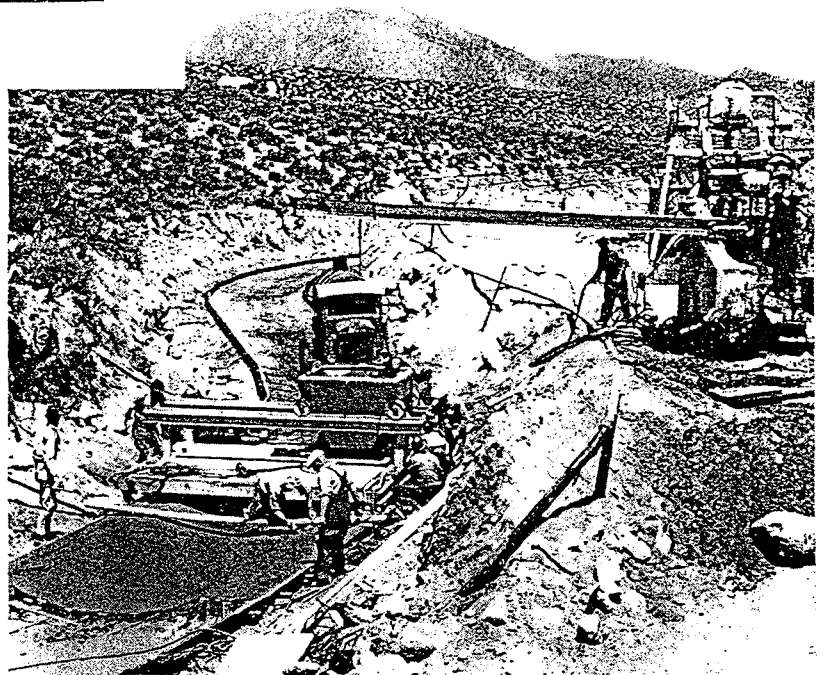
Engineering work done by this Division during the year ending June 30, 1940, consisted of the following:

Line and grade for trimming and concreting operations in the Mono Craters Tunnel were established, and designs and drawings for structures appurtenant to the tunnel were made. All concrete, gunite, and grout work done on the tunnel was inspected during placement. Samples of concrete were taken and breaking tests made. Analyses of the air and water in the tunnel to determine carbon dioxide content were made at least once weekly. The flow of carbon dioxide gas into the tunnel did not diminish materially from the 500 cubic feet per minute flow reported at the end of June, 1939. Accordingly the tunnel was ventilated as long as construction forces were at work there, and necessary equipment to provide ventilation for anyone entering the tunnel in the future was left installed at Shaft No. 3.

Location surveys, computations, maps, hydraulic studies, designs, drawings, and construction specifications for the Grant Lake to Mono Craters Conduit and the Leevining Creek to Grant Lake Conduit and their appur-



Horseshoe shaped conduit, extending from Grant Lake to Mono Craters Tunnel, completed and ready to be backfilled (above, left). Water discharging from Parshall flume at east portal of Mono Craters Tunnel is shown above, right. (Right) Concreting crew placing floor of Leevining Creek to Grant Lake conduit.



tenant structures were continued and completed. Final line and grade were established, and inspection furnished for construction work on the two conduits. Engineering supervision was also furnished for construction work on the Grant Lake Dam.

Daily and monthly progress of all construction work on the Mono Basin Project, done during the year, was taken and recorded.

This division also carried on salvage work on Department-owned construction equipment and buildings located in Mono Basin.

Field Engineering, Inspection and Major Design

R. R. PROCTOR, *Field Engineer*

FIELD ENGINEERING

THE duties of the Field Engineering Division for the past year were as follows: Engineering supervision and inspection of construction; all field surveys south of Haiwee Reservoir that were required for the Bureau of Water Works and Supply; major designs, estimates and specifications in connection with the extension of and betterment to the Water System; and miscellaneous field and office investigations to obtain data for the operation of the system and for the design of new units.

FIELD SURVEYS

During the first half of the year there were six field parties, which were increased to ten because of additional construction work near the end of the year. The work accomplished by these field parties included the following: Fifteen miles of pipe, twelve inches and over, was located and profiled; thirty-nine miles of pipe, under twelve inches, was staked out and located; three hundred and seventy-five acres of ground were topographically mapped, covering Department property, right of ways, reservoir and tank sites, etc.; sixteen dams and two tanks were checked monthly for any settlement or position change; surveys for the installation of street mains, extensions, fire hydrants and house services were made as requested; topographic maps were made, for a proposed reservoir in Stone Canyon, for the Firenze Ave., the Roscomare, the Vista Oak and the Rosita proposed tank sites, along the Chatsworth conduit, the slide area at Paseo-Miramar, for the proposed Chatsworth Highline pumping plant, for the Baldwin Hills Reservoir site, of the area near roads on both sides of Hollywood Reservoir, of the area on both sides of Upper and Lower San Fernando Reservoirs for proposed drainage conduits, and of the area below Encino Dam; property surveys were made and corner monuments set at the Sanborn Ave. and the Manhattan Pumping plants, and along the north boundary of Chatsworth Reservoir; construction surveys as required were made for the Verdugo tank, the Baldwin Hills Reservoir, Upper Franklin Storm water diversion, Rowena Ave. pipe line, Stone Canyon inlet and outlet pipe lines, the Elysian tunnel and shaft, the Upper and Lower San Fernando sanitary protection, and the Lower Franklin proposed sanitary protection; levels were run to determine elevations of pressure gauges at various locations, and numerous wells in the San Fernando Valley to aid in underground water studies; investigations were made at Chatsworth Reservoir in the gas seepage areas for evidence of oil accumulation; a retracement survey was made of the Hollywood inlet tunnel; water mains, drains, tunnels, sewer lines, etc., were located at Buena Vista Reservoir; along the Los Angeles Aqueduct, surveys were made for relocation of several steel siphons.

FIELD ENGINEERING LABORATORY

SOIL AND CONCRETE SECTION

Soil samples from Long Valley and Grant Lake Dams were received and compaction consolidation-percolation and shear tests were completed. Transverse and tension tests of cast iron and bronze samples for the Water Distribution Division were completed. Compression tests were made of concrete meter boxes and center pieces for the Stores Section. Samples of small diameter galvanized steel pipe were tested. Sugar solubility tests were made of Mono Basin cements. Miscellaneous, cement, concrete aggregates, and concrete samples were tested. Tests were made of bentonite cement mixes in connection with grouting at Long Valley Dam. Samples of porous concrete were made and tested for use in storm drain conduits. Concrete aggregates, reinforcing steel, and concrete samples were tested during construction of the Van Nuys Warehouse. Inspection trips were made to various pipe and manufacturing plants. Miscellaneous soil research tests were conducted, and improvements to equipment were made.