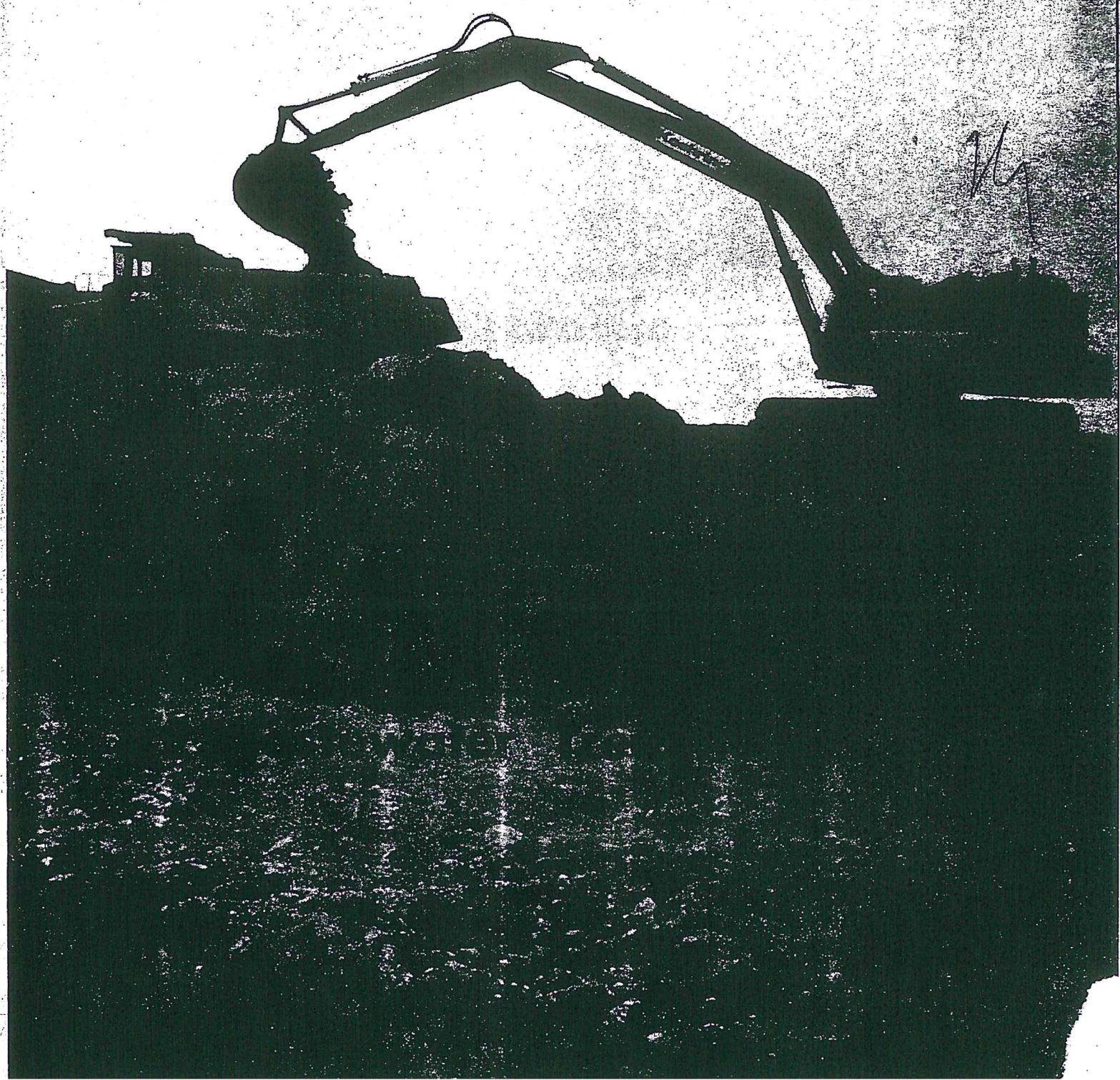


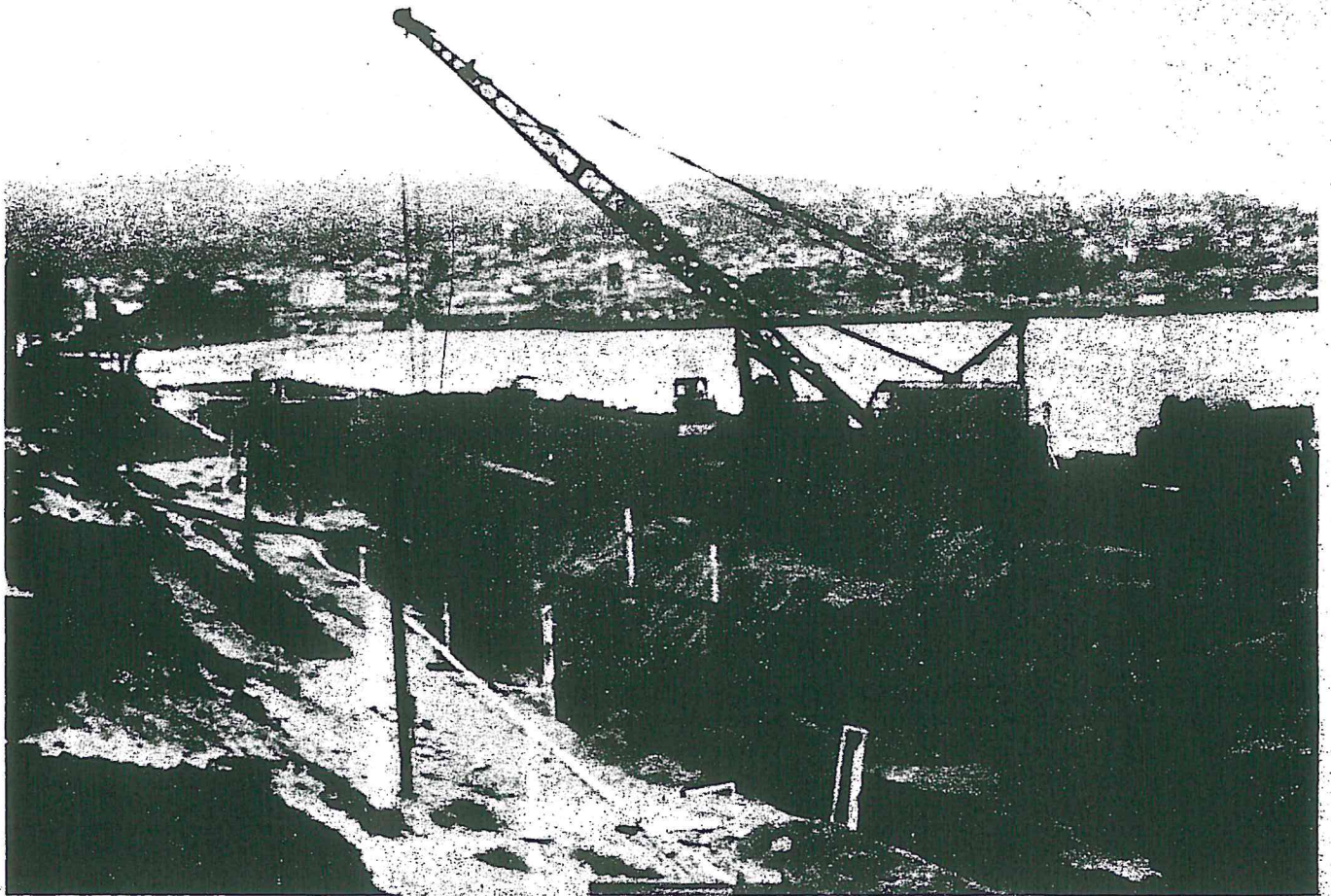
Associated
Construction
Publications 

CB&E

CALIFORNIA BUILDER & ENGINEER

APRIL 14, 1978 — PUBLISHED TWICE A MONTH — \$2.00





Excavating and pipelaying equipment worked from the top of a sand barrier that was constructed to shield the trench area from the ocean. A scraper was used to excavate the first eight feet of the trench, then a Cat 235 backhoe finished the trench.

Barrier Protects Trench from Ocean

Ingenuity Solves "Sensitive" Sewer Project

When the State Water Quality Board and the federal EPA decided that there was an urgent need to bring the waste flow of Pacific Grove to the City of Monterey Treatment Plant, many contractors must have shaken their heads at the futility. Not only would this pipeline be subject to the usual environmental restrictions but the path of construction would go directly through some extremely sensitive areas, particularly Monterey's Fisherman's Wharf and Cannery Row of author John Steinbeck fame. Just about perfect conditions for a good contractor's nightmare.

In spite of all this the project was given clearance. Engineering Science, Inc., consulting engineer to Pacific Grove, was assigned as Project Engineer and given the task of designing pump stations, force mains and the conversion of the Pacific Grove

Treatment Plant into a large pumping station. Trotter, Yoder and Associates of Lafayette, consultants to the City of Monterey, were given responsibility to design the transmission lines from Pacific Grove city limits to the Monterey Treatment Plant and Monterey pumping station.

IRON & CLAY PIPE SELECTED

In pressure mains there can be considerable sulphide build-up, and when the pumps begin to operate, the heavy sulphide concentration must be discharged into a gravity sewer. Ductile Iron pipe was selected for the pressure lines and extra strength vitrified clay pipe for the gravity sewer because of its resistance to corrosion and long service life.

After the plans and specifications were approved the project was put out to bid. The contracts were awarded to Sully Miller of Long Beach for pump stations and wastewater treatment plant consolidation and to Piombo Corporation of San Carlos for the transmission lines from the Pacific Grove Pump Station to the Monterey plant.

Piombó Corp. faced an incredible challenge considering the environmental and logistical problems. They had to install over 16,000 lineal feet of force main and 11,000 feet of gravity sewer in granite, water, sand and silt while maintaining the status quo of the environment, past and present. The sensitivity of the area required painstaking planning to minimize traffic obstruction through one of the most densely concentrated restaurant areas anywhere.

of the most densely concentrated restaurant areas anywhere.

Bart Bruno, project manager for Piombo, decided to begin with a strong public relations move. So notification was sent out to all residences and business people in the area outlining the course of their project and assuring everyone that every effort would be made to minimize disruption to traffic and parking.

SCHEDULING RELIEVES TRAFFIC

Construction was begun in the parking area of Cannery Row so that they would be out of the critical downtown area as soon as possible. Trenches were backfilled each day and temporary pavement laid by 4:30 p.m. each day so that there would be no interference with heavy traffic periods.

Piombo then moved the operation over to the beach area and started at the Monterey Treatment Plant. Their task was to begin by laying 1500-ft. of 42-in. reinforced concrete pipe with a T-lock liner in depths to 40-ft., to be followed with 2800-ft. of 42-in. vitrified clay sewer pipe and 2700-ft. of 36-in. VCP; 16-ft. below sea level at a slope of 0.0008, obviously a very critical grade. This required laying 1000 joints of VCP while holding to a 4-ft. total grade change. This was accomplished by using a laser beam and meticulous construction methods. Manhole structures were to be installed approximately 500-ft. apart. These were no simple manholes, but 30 cu. yd. structures, 7-ft. square, standing on an 11-ft. x 14-ft. base. A tight schedule required these large

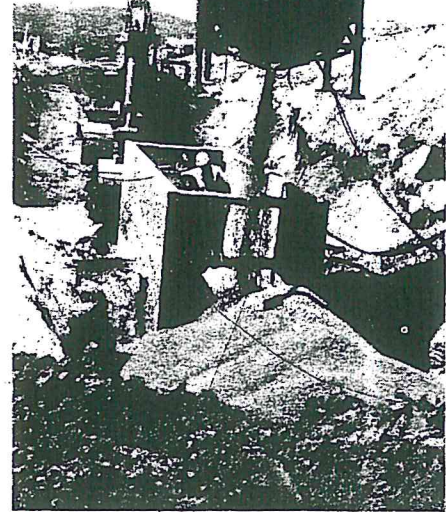
structures to be completed and back-filled within five working days.

Meeting this deadline was accomplished by precasting the base on the beach and tying the steel wall in advance. As soon as the hole for the structure was excavated the 16 tons of steel and concrete were lowered into place by the pipe crew. Meanwhile, forms and top deck were prefabricated in a single unit and slipped inside the steel cage. This left only the outside forms and top deck steel to install and the complete structure was poured.

BARRIER PROTECTION FROM OCEAN

The nearby Pacific Ocean presented problems of hundreds of thousands of tons of sand, impervious lens of silty sand, separating ocean seepage on top and clear, non-saline ground water below. The first step was to protect the construction area from the unrelenting ocean surf. It was necessary to dissipate the ocean's tremendous energy created by the wave action on the beach. Several suggestions were made and tried without success until a slot was made on the beach and a berm started utilizing highway barriers to protect the sand barrier. Sand from excavation was used to build up the barrier along the beach which also served as an access road stockpile area for pipe, drain rock and pipelaying equipment.

A twin engine scraper was used to excavate the first eight feet of trench and a Cat 235 backhoe then took over the remaining excavation. Cat D-7 dozers were used in sand removal and on the barrier as was an International crawler loader.



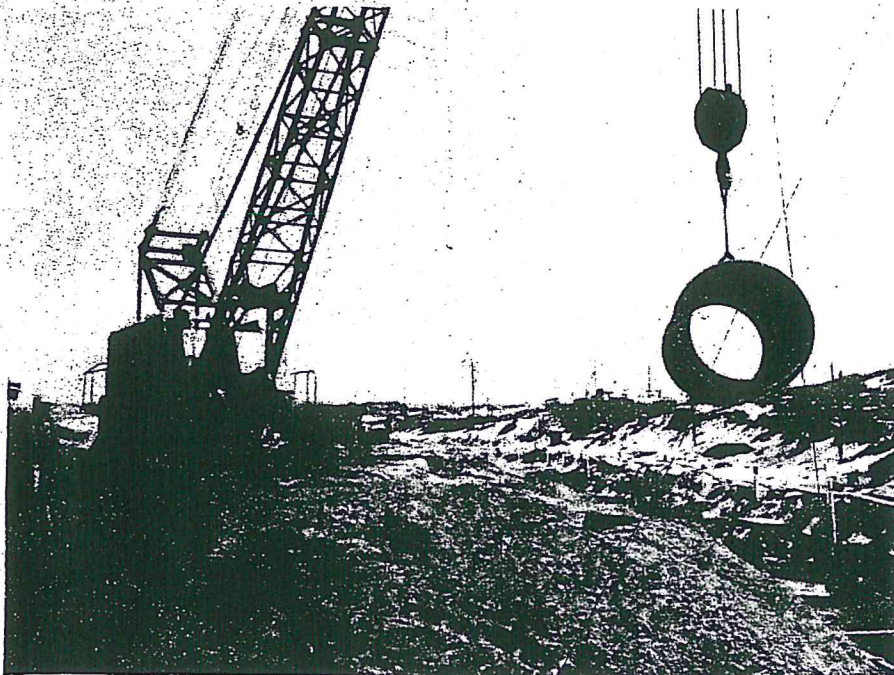
Half-inch drain rock from a crane-suspended hopper was used to build the base for the pipe and to backfill to a level one foot above the pipe.

As the trench was prepared a shield was pulled into place. Half-inch drain rock carried in a hooper suspended by an 80-ton P&H 1055B was poured into the trench. After placing one and a half feet of drain rock on the trench bottom inspected pipe was lowered into place by the P&H crane and seated by the back of the backhoe bucket. The trench was then back-filled with drain rock to a level of one foot above the pipe. The 6-ft. length of vitrified clay pipe was of particular advantage to Piombo for working within the confines of the shield.

WELLS ASSIST DEWATERING

During construction seepage and ground water and mountains of sand required constant attention to insure both the safety of the workers and stable trench conditions. Thirty feet deep wells were spaced 50-ft. apart. After the 12-in. well casing was jetted into place, a 6-in. plastic casing was forced inside and gravel poured between the two. Then the 12-in. casing was removed, pumps were installed, and pumping started. This work was performed by C.K. Pump and Dewatering of Long Beach.

In spite of the overwhelming odds, which include a three month work stoppage to allow for archeological excavations, Piombo Corp. was able to successfully complete the transmission line. Careful study and planning, hard work and a little bit of luck (the day after the beach operation was finished, 15-ft. waves covered the construction area) paid off in the course of the project.



A P&H 1055B crane lowers a 6' section of vitrified clay pipe into the trench where it is seated by the back of the excavator bucket. The 6' pipe lengths were helpful in working within the trench shoring shield.