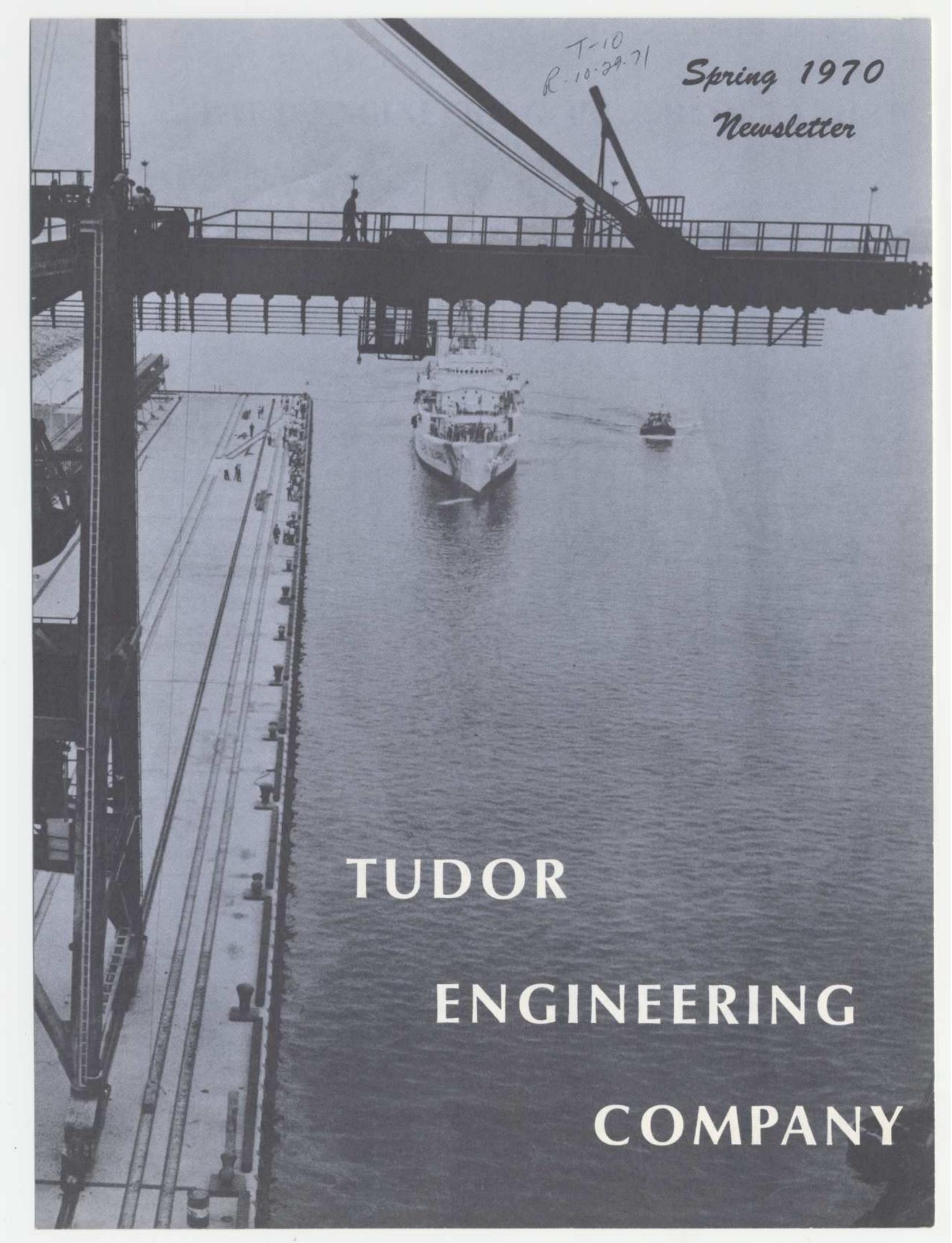


T-10
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Spring 1970

Newsletter



TUDOR

ENGINEERING

COMPANY

THE PORT OF STOCKTON

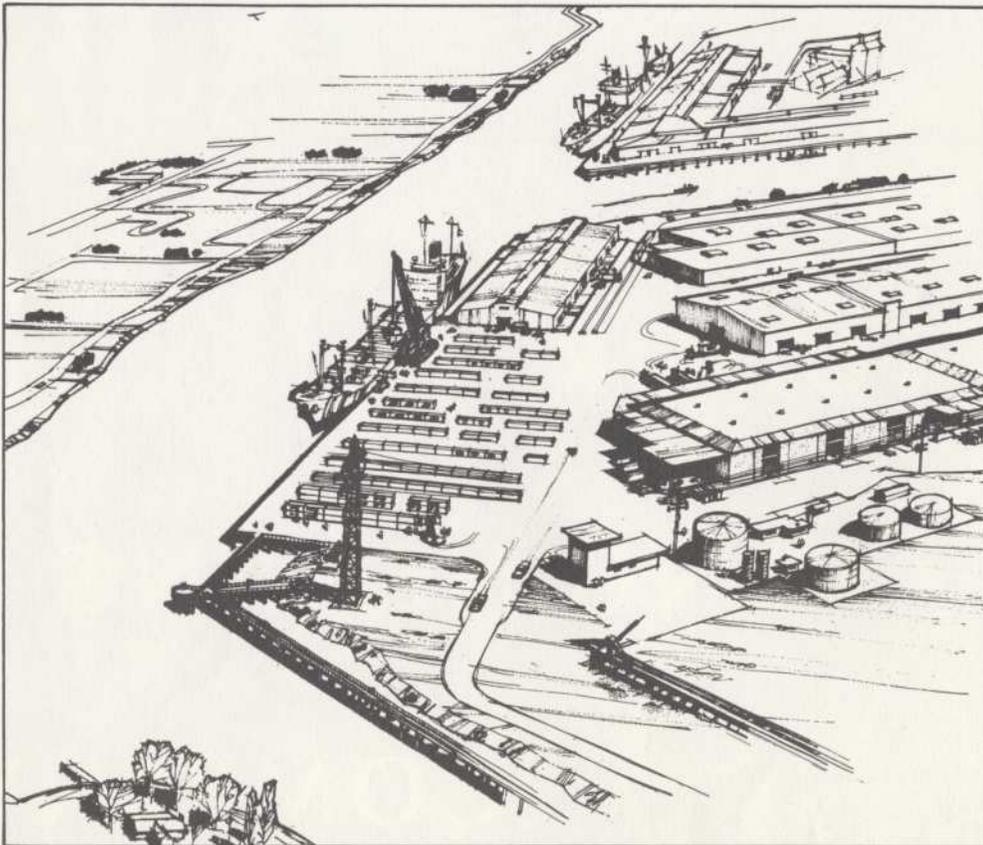
In November, 1968, Tudor Engineering Company was retained by the Stockton Port District to undertake a master planning study for staged improvement and development of the Port to meet future trends in shipping operations and cargo handling techniques. The study and subsequent report, which entailed a comprehensive analysis of all the Port's activities, was completed and submitted to the Port's Board of Port Commissioners in October, 1969. The next two pages briefly describe the three improvement programs which were formulated to respond to the Port of Stockton's role as an inland port and distribution center.

THE 1970 IMPROVEMENT PROGRAM

Prior to the time the master planning study commenced, the Stockton Port District had foreseen the need for expanding its container operations. While the Port presently provides container services, the increasing demand of shippers towards containerization led the Port District to take positive steps towards its realization. In October, 1968, under a separate contract with the Port District, Tudor Engineering Company proceeded with design studies while the master planning study examined potential demand and layout options. The combined effort of planning and design defined a fully integrated container freight terminal capable of handling both containerized and unitized cargo. The terminal facilities include an 812-foot continuous reinforced concrete marginal wharf; rehabilitation of an existing warehouse to serve as a container freight station for stripping and stuffing containers; and a container storage yard capable of storing 550 standard-sized containers by double stacking.



Existing facilities at the site of the new container terminal



Artist's rendering of the Port of Stockton's \$3.4 million container freight terminal

Design and preparation of contract plans and specifications for the terminal facility were completed in July, 1969. Subsequent to the issuance of \$2,100,000 worth of general obligation bonds by the Stockton Port District and approval of the contract award by the Economic Development Administration, Peter Kiewit Sons Company was given notice to proceed with construction in mid-January, 1970. Financing of the \$3.4 million improvement program was obtained through a federal grant from the Economic Development Administration, from proceeds of the bond issue and available reserve funds of the Port District.

Under the terms of the design contract, Tudor Engineering Company is providing construction supervision services for the Port District. In early January, a field office and staff were established at the Port to carry out the required supervision services. The container terminal is scheduled to be in operation in early 1971.

THE 1975 IMPROVEMENT PROGRAM

By the end of 1975, the impact of container ships, LASH (Lighter Aboard Ship Handling) vessels, side port vessels and "bulklers" will have been felt at the Port of Stockton. To meet this impact, the 1975 Improvement Program proposes to provide an improved dry bulk terminal to consolidate storage and transfer operations; provisions toward eventual relocation of open bulk stockpiles by providing 25 acres of open storage area and new facilities for handling bulk cargo; a freight sorting station which will centralize container stripping and sorting operations for cargoes ultimately to be warehoused within the Port; and a road improvement program which will provide better access and mobility to existing and newly proposed facilities.

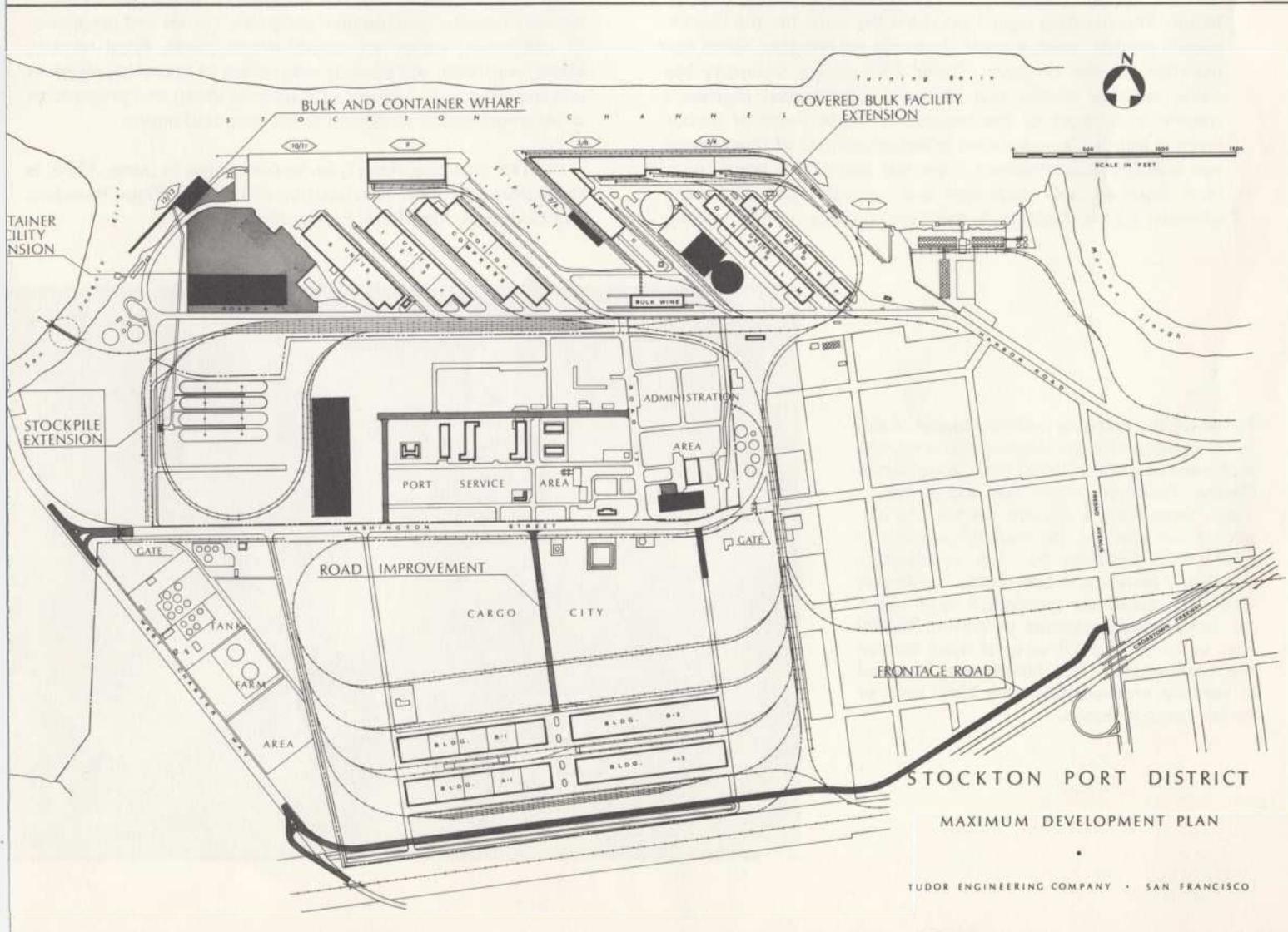
By 1972, LASH service promises to be a substantial factor in the growth of San Francisco Bay Area's waterborne commerce. This growth will be felt at the Port of Stockton through the increased volume of lighter traffic bringing a variety of inbound cargoes and moving outbound shipments of bulk cargoes and other commerce. What cargoes will be shipped by lighters will depend ultimately on the frequency of service and on the adaptability of lighters for bulk cargo movements. Because of the uncertainty about the type of commerce being moved by lighters, facilities must be provided for handling a variety of cargoes. The 1975 Improvement Program proposes that an initial step be taken towards establishing a LASH terminal. This can be accomplished by utilizing an existing berth or berths and transit shed for lighter operations and storage and improving the terminal facility by installing appropriate mooring equipment.

THE MAXIMUM DEVELOPMENT PROGRAM

The 1970 Improvement Program provided guidance in the development of facilities required now, and the 1975 Improvement Program proposed initial steps towards preparing the Port for the impact of things to come. The Maximum Development Program is intended to guide the Port in long-range development rather than set a tentative schedule for such development. Any program which looks beyond 1975 must be regarded as a flexible guide which should be revised and updated as new technology develops and new trends appear.

In this light, the Maximum Development Program proposes effective utilization of the Port District's present land holdings by concentrating and segregating various types of storage facilities in selected locations, and by acquiring or annexing certain properties under the jurisdiction of the Port. The program also proposes that a certain area be designated for the development of a cargo city for the processing and distribution of commercial cargoes which in effect would stimulate cargo-related industries to locate within the Port. Other development in this area would include port services and administration centers. As initiated by the previous development programs, the Maximum Development Program outlines future requirements for expanding the container facility, LASH and dry bulk terminals, the stockpile area, and road improvements.

Assisting Vice President Carl W. Otto on the project were Project Managers R. K. O'Neil (planning report) and F. H. Fenger (container facility design and construction supervision).



THE PORT OF LOS ANGELES



The Port of Los Angeles is one of the world's largest man-made harbors. Spread over more than 7,000 acres of land and water areas are the Port's facilities which represent an investment of approximately \$200 million. In terms of total quantity of cargo handled, the Port is the largest port on the Pacific Coast, and the 14th largest in the United States. A major gateway for the receipt of foreign merchandise, the Port of Los Angeles is exceeded only by the Port of New York in the dollar value of imports from foreign countries

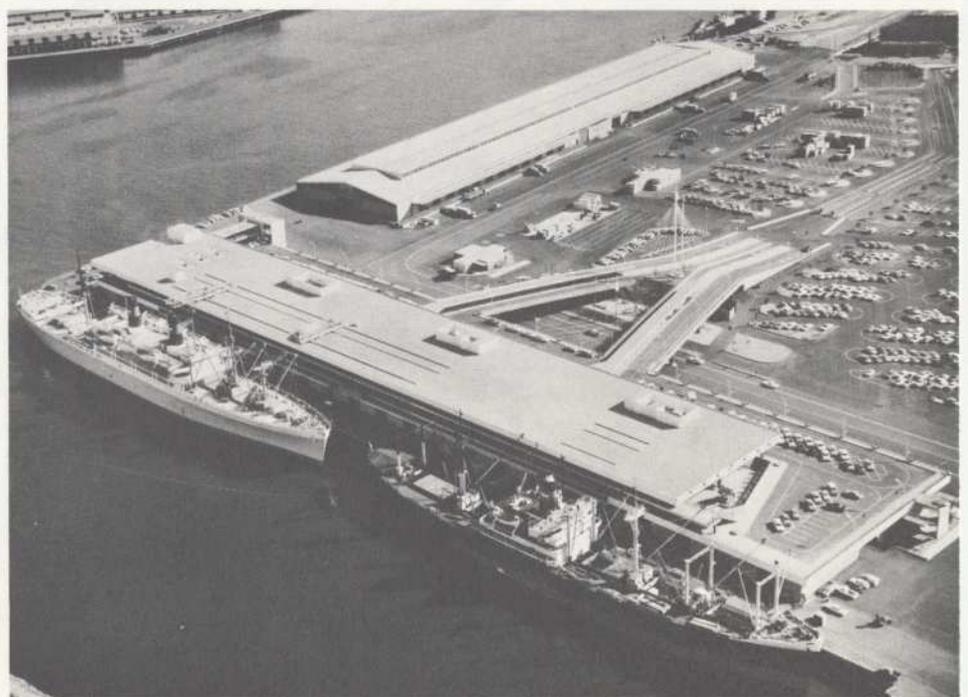
Since 1959, Tudor Engineering Company has served the Harbor Department of the City of Los Angeles as the independent engineer in connection with the issuance of revenue bonds for financing port development and improvement projects. In 1959, a study was made of the Port's operations and prospects, including estimates of future revenues and expenses, to ascertain the Harbor Department's capabilities for issuing revenue bonds. The resulting report provided the basis for the Department's present revenue bond improvement program. Since formulation of the program, Tudor Engineering Company has made separate studies and prepared independent engineer's reports in support of the issuance of three series of harbor revenue bonds. The combined principal amount of these bonds was \$39,000,000. Proceeds from the sale of the bond issues have financed new passenger and general cargo terminals, wharves, transit sheds, bulk handling equipment and facilities,

grain and container terminals, scrap metal facilities, and staged construction programs for general expansion and improvement.

In January, 1970, Tudor Engineering Company commenced studies for the proposed fourth issue of revenue bonds in the principal amount of \$15,000,000. Studies and related work include inspection and evaluation of present facilities; review of capital development programs; review and projection of commerce; review of capital expenditures, fiscal records, leases, contracts, and permits; estimation of operating revenues and expenses; compilation of a balance sheet; and preparation of an amortization schedule for the proposed bonds.

The resulting report, to be completed in June, 1970, is being prepared under the direction of **Louis W. Riggs**, President and **Douglas J. Mansfield**, Project Manager.

Rated by the shipping industry as one of the finest combination passenger-cargo terminals in the world is the \$15,000,000 Consolidated Marine Terminal which was completed in 1963. Occupying a 50-acre site on the harbor's main channel, the facility provides simultaneous berthing for five ocean-going vessels and includes, in addition to the double deck cargo-passenger terminal, a cargo terminal (background) capable of storing 35,000 tons of cargo and 18 acres of open storage and parking area. The facility was financed in part by proceeds from the 1960 issue of harbor revenue bonds.



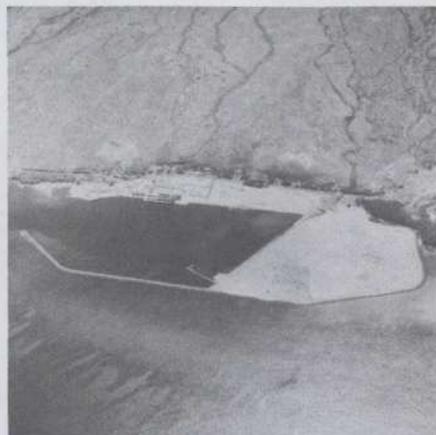
HAWAII HARBORS CONSULTING SERVICES



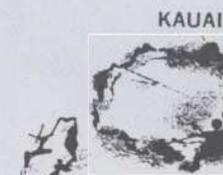
NAWILIWILI



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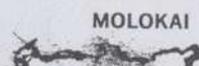


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OAHU



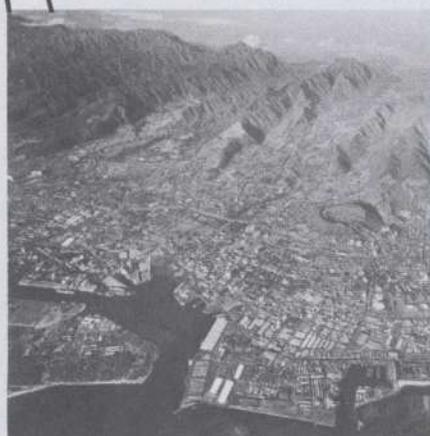
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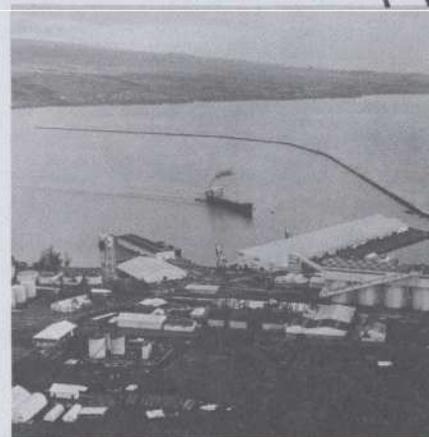
KAHOOLAWE



HAWAII



HONOLULU



HILO

Since 1967, Tudor Engineering Company has been retained by the State of Hawaii as Consulting Engineer to the Department of Transportation. Fulfilling the requirements of the "Certificate of the Director of Transportation Providing for the Issuance of State of Hawaii Harbor Capital Improvement Revenue Bonds," dated as of September 1, 1967, Tudor Engineering Company serves as the State's consultant for the development, maintenance, operation and management of all commercial harbor facilities in the State.

The tasks required to be performed on a fiscal year basis include physical inspection of facilities; examination of operations; review of operating budget; review of capital improvement programs; review of property dispositions; and preparation of reports and certificates as documentation of accomplishment of the tasks.

Among the commercial harbor facilities which are reviewed annually are Honolulu, Island of Oahu; Nawiliwili and Port Allen, Island of Kauai; Kalaupapa and Kaunakakai, Island of Molokai; Kahului, Island of Maui; and Hilo, Kawaihae, and Kailua-Kona, Island of Hawaii. These consulting services are performed each spring under the direction of Stanley H. Froid, Vice President.

WASHINGTON STATE FERRY SYSTEM CONSULTING SERVICES

In November, 1969, Tudor Engineering Company was retained by the Washington State Highway Commission, Department of Highways, to act as the consulting engineer for the Washington State Ferry System.

Ferries have operated on Puget Sound since the turn of the century. Privately-owned vessels first carried only passengers and freight, but by the 1920's the automobile had become the dominating factor in ferry traffic. As the Seattle area grew, so did the demands upon the ferry system. Just prior to World War II, vessels retired from duty on San Francisco Bay came into service on Puget Sound, and were able to handle the growth of traffic during the wartime years. After the war, however, with ever-increasing labor costs, the ferry operators faced a severe capital shortage. Purchase of new vessels and terminal improvements were deferred, and patrons began to express dissatisfaction with the declining quality of service and increasing rates charged on the ferries. This situation led eventually to the State of Washington's assumption of the ferry system in 1951.

Today, the State of Washington operates a fleet of 20 automobile ferries serving seven routes on Puget Sound. The ferries connect the greater Seattle area with communities west of the Sound, and also afford access to the Olympic Peninsula and San Juan Islands for the many people who take advantage of the opportunity of recreation in forest and waterfront parkland. The ferry system is presently a multimillion dollar operation, with assets valued at \$67 million, and annual revenue of \$13 million. Vehicle and passenger tolls cover the greater part of the system's annual costs, and are supplemented by contributions from State gas tax funds.

The population expansion of the Puget Sound region has been a spectacular phenomenon in recent years. This growth has had its impact upon the Washington State Ferry System. Vehicular traffic has increased at an annual rate close to 10 percent during the past few years. The increasing traffic demand, combined with escalating operating costs once again requires a critical review of services and operations.

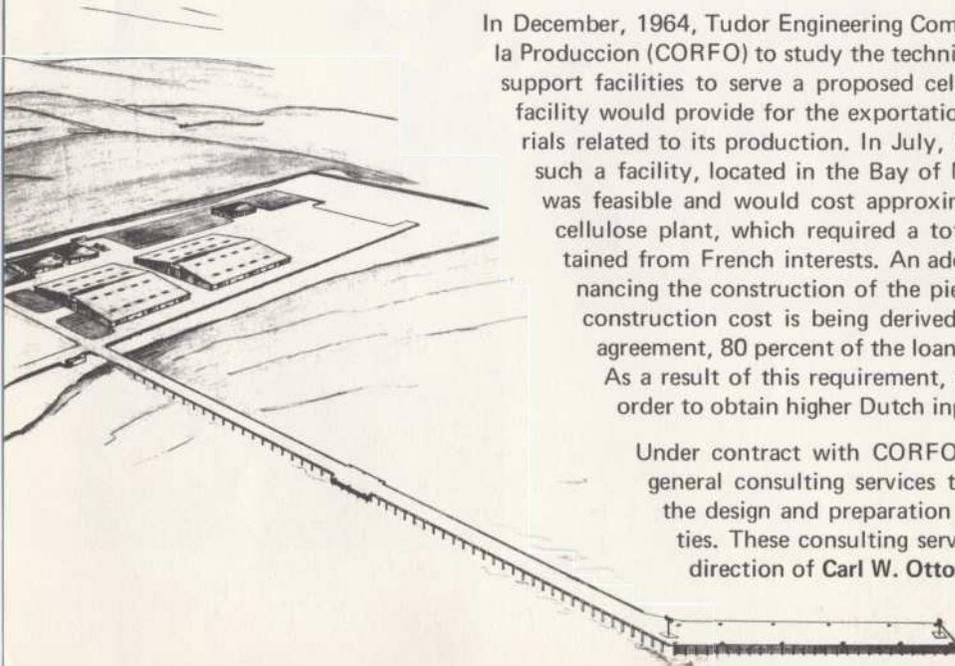


Since November, the Seattle office of Tudor Engineering Company, under the direction of Vice President **Robert N. Janopaul**, has been actively engaged on a variety of special study assignments relating to the improvement of services and operations. These special studies have included evaluation of a proposed integration of service on two cross-Sound routes; means to improve and to economize toll collection processes; engineering studies to recommend a method for disposal of sewage and waste discharges from the ferry vessels; and means to improve ferry landing facilities and structures. Additional studies resulting from State legislative action in January, 1970 involve a vessel acquisition program. The initial phase of this work entails traffic projection studies from which the capacity and speed of the required vessels can be ascertained. In addition, operational characteristics and economies of alternative vessels will be examined and an evaluation of the System's long-term capital requirements for new vessels will be determined.

PORT OF CONSTITUCION CONSULTING SERVICES

In December, 1964, Tudor Engineering Company was retained by the Corporacion de Fomento de la Produccion (CORFO) to study the technical and economic feasibility of constructing a pier and support facilities to serve a proposed cellulose plant near Constitucion, Chile. Principally, the facility would provide for the exportation of baled cellulose and the importation of raw materials related to its production. In July, 1965, the studies and resulting report concluded that such a facility, located in the Bay of Maguellin about six kilometers south of Constitucion, was feasible and would cost approximately four million dollars. In 1969, financing of the cellulose plant, which required a total investment of approximately \$40 million, was obtained from French interests. An additional \$2.6 million was obtained from Holland for financing the construction of the pier and support facilities. The remaining balance of the construction cost is being derived from Chilean sources. Under the terms of the loan agreement, 80 percent of the loan proceeds are to be spent on Dutch goods and services. As a result of this requirement, the pier will have a structural steel support system in order to obtain higher Dutch input.

Under contract with CORFO, Tudor Engineering Company is presently providing general consulting services to develop design criteria and to supervise and review the design and preparation of contract documents for the pier and support facilities. These consulting services are being performed in the Lima office under the direction of **Carl W. Otto**, Vice President.





TUDOR ENGINEERING COMPANY MOVES ITS HEADQUARTERS OFFICES

In mid-February, the Company moved its headquarters offices to the recently acquired Tudor Engineering Company building at 149 New Montgomery Street. Occupying almost three floors of the six-story building, the Company's San Francisco offices are now located in one building. In addition to providing new executive, administrative, and engineering and planning offices of the Company, the building also provides office space for the Caracas Metro Consultants (the joint venture team of Parsons Brinckerhoff-Tudor-Bechtel), and the Alaska Transportation Corridor Consultants (the joint venture team of Tudor-Kelly-Shannon).

Allowing sufficient time to settle into the new building, families of the San Francisco office staff were invited to see the new offices in the afternoon of Sunday, April 5.



THIS ISSUE'S COVER

. . . . of the Tudor Engineering Company Spring, 1970 Newsletter shows the bulk ore and steel handling facility in the Bay of Ferrol at Chimbote, Peru. Completed in 1968 at a cost of \$6,250,000, the facility principally handles inbound cargoes of iron ore and coke, and outbound cargoes of finished steel products for the nearby steel mill in Chimbote.

When the owners, Sociedad Siderurgica de Chimbote, S.A. (SOGESA), decided to expand their steel mill operations, they were immediately confronted with the problem of expanding their port facilities to handle the increased volume of inbound and outbound cargoes. Because existing facilities in Ferrol Bay were being used to capacity, and because these facilities were inadequate to serve as a suitable waterfront facility for this expansion program, it was necessary that a study be undertaken to determine the most suitable location and type of facility to be constructed.

In May, 1962, Tudor Engineering Company, in joint venture with a Peruvian firm, was retained to undertake the study and prepare a report and preliminary designs and cost estimates for a new and separate port facility in Ferrol Bay. As a part of the study, extensive field surveys were performed to obtain hydrographic and oceanographic data of the Bay. In addition, investigations and analyses were conducted on bay bottom soil conditions, wave action, structural systems for waterfront construction and fendering systems. Because wave action, particularly the effect of surge, affected the handling of vessels calling at Ferrol Bay, special studies were undertaken to determine the probable effect of varying sea conditions at different locations and on various types of waterfront construction.

In late 1962, the studies and resulting report were completed and submitted to the client. The report recommended the construction of a 63-foot by 1,425 foot marginal wharf utilizing precast, prestressed elements in combination with conventional cast-in-place reinforced concrete construction. The wharf would be of open type construction, backed by a filled area of reclaimed spoil material obtained from dredging vessel access and maneuvering areas in the vicinity of the wharf site. The reclaimed land, contained by a perimeter dike, would serve as a large staging area for storing incoming and outgoing cargoes. Recommended support facilities included access roads, railroad spur connections, administration building, parking areas, utilities, material handling facilities such as gantries and conveyor systems, and a mooring dolphin.

In early 1963, Tudor Engineering Company, in association with its Peruvian joint venture firm, entered into a second contract to prepare preliminary designs and cost estimates for various wharf alternatives based upon the concepts developed by the previous studies and report. As elected by the client, SOGESA, it was decided that in lieu of providing simultaneous berthing capacity for one large bulk carrier and one ocean freighter, the wharf facility should be designed and constructed in increments so that initially the facility could accommodate a 550-foot bulk carrier of 20,000 long tons displacement. As a result, the facility was designed and constructed to provide an 84-foot by 870-foot marginal wharf and a 695-foot long breakwater to shelter the docking basin from direct exposure to the Pacific Ocean. The breakwater, as designed, can be utilized as a part of the wharf's structural system when the facility is expanded to accommodate the berthing of two vessels.

Final design and preparation of contract documents were performed in the San Francisco and Lima offices of Tudor Engineering Company under the direction of Carl W. Otto, Vice President.

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NEWSLETTER
James C. Albert

SPRING 1970
Editor

TUDOR ENGINEERING COMPANY

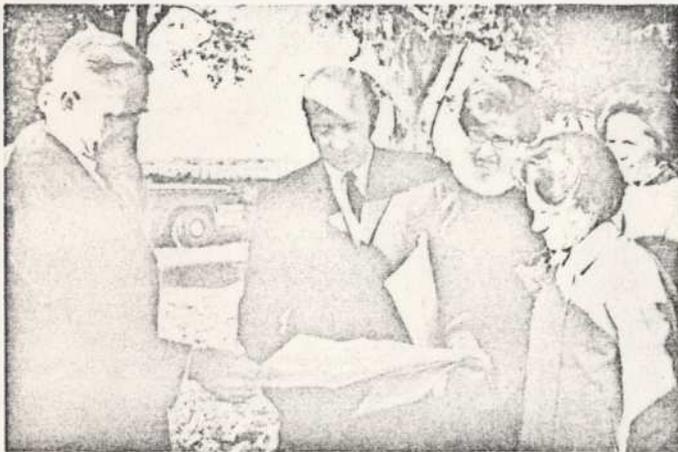
Staff News

Spring 1970

The Montevideo Office reports

. . . . contract documents for the International Bridge project were completed and submitted to COMPAU the latter part of January, following which the Montevideo staff of Tudor Engineering Company was reduced by 50 percent (i.e., Mike Viarnes returned to the United States). Since that time, the remaining staff (i.e., Randy) has been concerned with refinements to the contract documents and consultation with the client regarding various questions pertaining to the design and specifications. Once the client's comments are received, final changes will be made and resubmitted for final approval.

. . . . in May, Randy and Jeannine went to Fray Bentos to assist in the hosting of the American Ambassador's visit to the bridge site. At the time, Ambassador Adair was on a general tour of the western portion of Uruguay. The occasion gave Randy and Jeannine an opportunity to do a little socializing with the Ambassador and his wife. As the "official" representative of COMPAU and the Joint Venture, Randy is pictured below showing the bridge plans to (left to right) Ambassador Charles W. Adair, Jeannine, Mrs. Adair and Mrs. Harry A. Cahill, wife of the Commercial Attache of the United States Embassy in Montevideo.



. . . . as previously mentioned, Mike Viarnes arrived in Uruguay the latter part of November and remained until the end of January. Paul Potter also visited Montevideo in December. Carl Otto has managed to arrange visits at about monthly intervals in connection with both the International Bridge projects and the work being performed in Argentina for "Obras Sanitarias."

. . . . Randy and Jeannine have had one brief trip out of the country to Paraguay. They stayed in Asuncion, and were quite pleased at the prosperity and good appearance of what has often been called one of the most underdeveloped countries of Latin America.

. . . . their daughters, Amanda and Sarah, are thriving. Sarah's favorite baby food -- in true Uruguayan tradition -- is developing to be beef, as compared to Amanda's preference for fish, which she acquired when she was a baby in Portugal.

. . . . concluding, Randy states, "It seems strange that for you in the U.S. it is spring and Eastertide, while here it is fall and the leaves are falling off the trees -- Amanda is returning to school and our summer is definitely over -- the beaches are now deserted and all the tourists have left Uruguay."

The Seattle Office reports

. . . . in mid-October of last year, the Seattle office made the big move into new headquarters in the Dexter Horton Building. From the 14th floor carpeted penthouse atop the building, there is a commanding view of Puget Sound with the snow-capped Olympic Cascades in the background. Furnishings have been slow in arriving, but eventually the empty spaces are being filled in and are proving to make very comfortable surroundings.

. . . . the office has grown in size, what with 15 people aboard as of the April 1 census. The list of Washington State registrations keeps growing too, with Bob Janopaul, Steve Stevlingson and Jim MacIsaac displaying shingles; Bob Myrdal awaiting word on the outcome of his recent Washington registration exam, and Mike Harrington and Einer Handeland being well on their way with valid E.I.T. certificates. The office is still small enough so that all of the husbands, wives, secretaries and friends can get together for a party on a regular schedule -- the latest being a gathering of the clan at Bryce and Judy Ecklein's home high atop Queen Anne Hill. The function previous to this was held at Jim MacIsaac's "Quorum" -- the "singles" paradise.

. . . . the type of projects in the office are far from routine and manage to keep everyone moving at a pretty good pace. In mid-April, Keith Bull arrived (with skis) to take on a study of the Washington State Ferry Terminal dock facilities. Visitors from San Francisco lately have included Louis Riggs, Stan Froid, Dick Fischer, and Fred Estep. Gary Chapman from Boise is a frequent visitor, as we manage to keep finding jobs in Tacoma for Aerial Mapping Company.

. . . . the Janopaul family made the long trip from Seattle to the Bay Area for the Christmas Holidays. Visiting with friends and relatives left little time for a relaxing vacation. Back home to Seattle following the Holidays meant the start of the ski season in the Cascades. The two oldest daughters, Evie and Nina, fast learned to out-ski their father, and by the end of the season the daughters were giving dad helpful advice concerning the finer points of a stem christie and a parallel turn. So who wants to take a run at Jean Claude Killey?

. . . . Wil Pacheco finally made it! Almost six years ago to the day Wil bought a new set of golf clubs, two dozen golf balls