

ANCHORAGE PORT FACILITIES . . .

HISTORICAL BACKGROUND

The City of Anchorage, a strategically located seaport and the largest city in Alaska, has long needed a deepwater cargo terminal to reduce shipping costs. The Port's only deepwater pier, Ocean Dock, is now operated by the U.S. Army for the receipt of military freight principally petroleum products. The Dock, built in 1917, is small and functionally inadequate for the efficient handling of large volumes of civilian cargoes. At present, most cargoes destined to Anchorage are shipped to Seward and then transshipped 114 miles by rail or truck at additional cost. While some freight is shipped directly to Anchorage by barge, the cost of barged cargoes, which are handled at small bulkhead terminals, is relatively high.

The advantages of direct shipments to Anchorage in deep-draft vessels and the possibility of thereby reducing shipping costs were long foreseen. As early as 1946, the City of Anchorage created a Port Commission for the purpose of promoting port development and to administer operation of port facilities at Knik Arm. In 1952, a preliminary study of port requirements was made by George T. Treadwell who was then Chief Engineer of the Port of Seattle. These studies, made for the Port Commission, indicated the feasibility of constructing a deep-

water cargo terminal at Anchorage. The Port Commission, working together with the Corps of Engineers, U.S. Army, attempted to have the Federal Government build the port facilities. After protracted negotiations, local assistance was offered to the Federal Government when on October 5, 1954 the people of Anchorage approved the issue of \$2,000,000 of general obligation bonds for port improvements. When, after another year of negotiations, it became evident that the necessary additional funds would not be made available by the Federal Government, the City retained in 1955 two private consulting firms to determine the feasibility of financing the port facilities with revenue bonds. One of the firms, Coverdale and Colpitts - Consulting Engineers of New York - investigated the economic feasibility of the project. The firm of Tippetts-Abbett-McCarthy-Stratton - Engineers and Architects - made the engineering studies which included the preparation of a master plan for long-range development of the port as well as preliminary designs and cost estimates for construction of the first stage facilities consisting of a one berth cargo wharf. The results of these studies indicated that the first stage development could be constructed and operated on a self-supporting basis from terminal revenues. Based on these favorable reports, the people of Anchorage

then authorized the issue of an additional \$6,800,000 in revenue bonds during the bond election of May 29, 1956 for construction of the first stage facilities. In September 1957, Tippetts-Abbett-McCarthy-Stratton was again retained by the City to prepare final designs, plans and specifications and to supervise the construction work. Construction bids received in June 1958 verified the cost estimates of the feasibility studies and bonds for financing the first-stage work were under-written during July and August by a group of investment bankers headed by Ira Haupt & Co. of New York. On August 18, 1958 funds from the sale of \$6,200,000 of Anchorage port and Terminal Facility Revenue Bonds and \$2,000,000 of Anchorage Port General Obligation Bonds became available. Immediately, notice to proceed was given to the successful bidders - the DeLong Corporation of New York for construction of the port facilities and the Washington Iron Works of Seattle for fabrication of dockside cargo cranes.

THE PORT FACILITIES

The initial stage development, now under construction, consists of a 600-foot long and 271-foot wide marginal wharf with a 150- by 350-foot transit shed, four dockside travelling cranes, railroad tracks and an access roadway. The wharf and its approach trestle consist of a reinforced concrete deck supported on 1150 steel piles. Two railroad tracks are provided on the 46-foot wide apron at the outboard side of the wharf for direct loading of cargo from ship to rail cars. Landward of the transit shed, which will be used for temporary storage, sorting and processing of cargoes, two additional railroad tracks and truck loading accommodations are

provided for pick-up and delivery of cargo. For transfer of cargo between ships and the wharf, two 40-ton cranes with 5-ton level-luffing jibs and two 7-1/2-ton level-luffing cranes built for high-speed operation will be installed on the wharf apron. The 40-ton cranes will be used for the handling of truck-trailers, heavy containers and other heavy lifts. When not so used, their jibs will be used together with the 7-1/2-ton cranes for handling general cargo. The use of high-speed dockside cranes was considered to be essential for efficient operations at the wharf inasmuch as ship's gear, used at most mainland ports, could be used only a few hours a day because of the large tidal variations at Anchorage. Also with these cranes, turn-around time can be cut to about one-half of that at most other United States ports where high-speed dockside cranes are not generally available. The fully mechanized wharf is expected to be able to handle 2000 tons of general cargo per work day of two ten-hour shifts.

Environmental conditions posed unusual problems for design of the port facilities. Since the maximum tidal range in Knik Arm is about 40 feet, and 30 feet of water had to be provided alongside the wharf for berthing fully loaded ships at low tide, the wharf deck had to be set at about 75 feet above harbor bottom - equivalent to the height of a seven-story building. During the winter, large ice floes will impinge against the wharf. Ice is also expected to "deep-freeze" the piles in a block as much as 30 feet in thickness, imposing additional loads on the piles. It was necessary, therefore, to design the wharf foundations for higher loads than would be carried by most wharves. Difficult soil conditions compounded the

problems and extensive soil boring and pile test programs were necessary to develop safe designs. As a result of these investigations, it was possible to employ a unique and relatively economical pile design.

The piles supporting the wharf consist of cylindrical steel pipes or caissons ranging in diameter from 16 inches to 42 inches with annular bearing plates near the bottom of the piles to spread the loads in the manner of a footing, thereby minimizing stresses in the soil. The piles along the perimeter of the wharf will be filled with concrete and all other piles will be filled with sand to prevent damage by ice. The outboard row of piles will be fendered with low-cost floating "camels" which will be counterweighted to rise and fall with the tide.

STATUS OF THE WORK

The construction schedule for the port follows:

August 1958:

Start of construction

December 1959:

40% Completed

November 1960:

Substantially completed

Spring 1961:

Full scale operation

Under the Master Plan, provision is made for the ultimate development of three cargo berths, each 600 feet long and each with a transit shed 150 feet by 500 feet. The Master Plan provides also for a separate wharf to accommodate oil tankers as well as facilities to store and ship coal.

In connection with the port development, the city has acquired approximately 55 acres of land adjacent to the wharf to be used for open storage of cargo and to be leased to private concerns for commercial and industrial development. A Land Use Plan for the entire Anchorage harbor

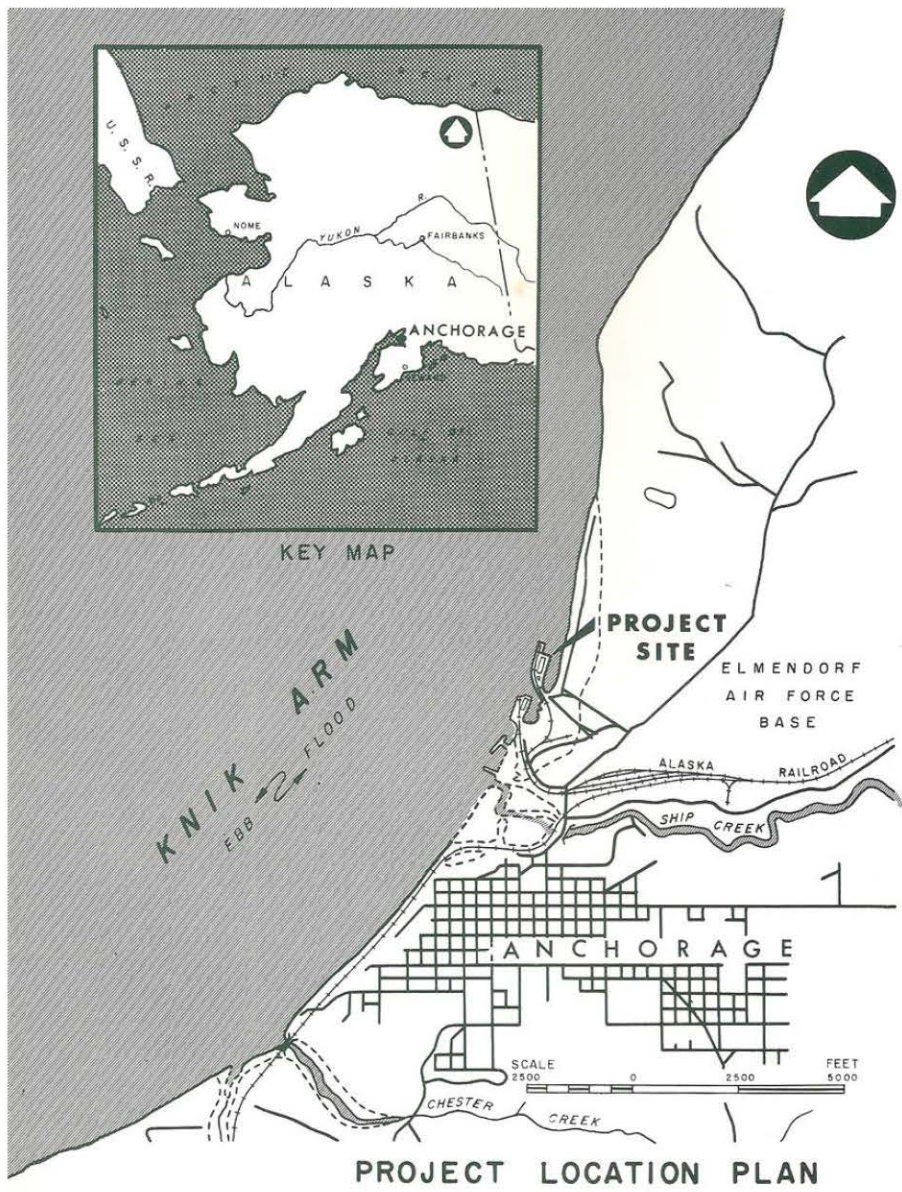
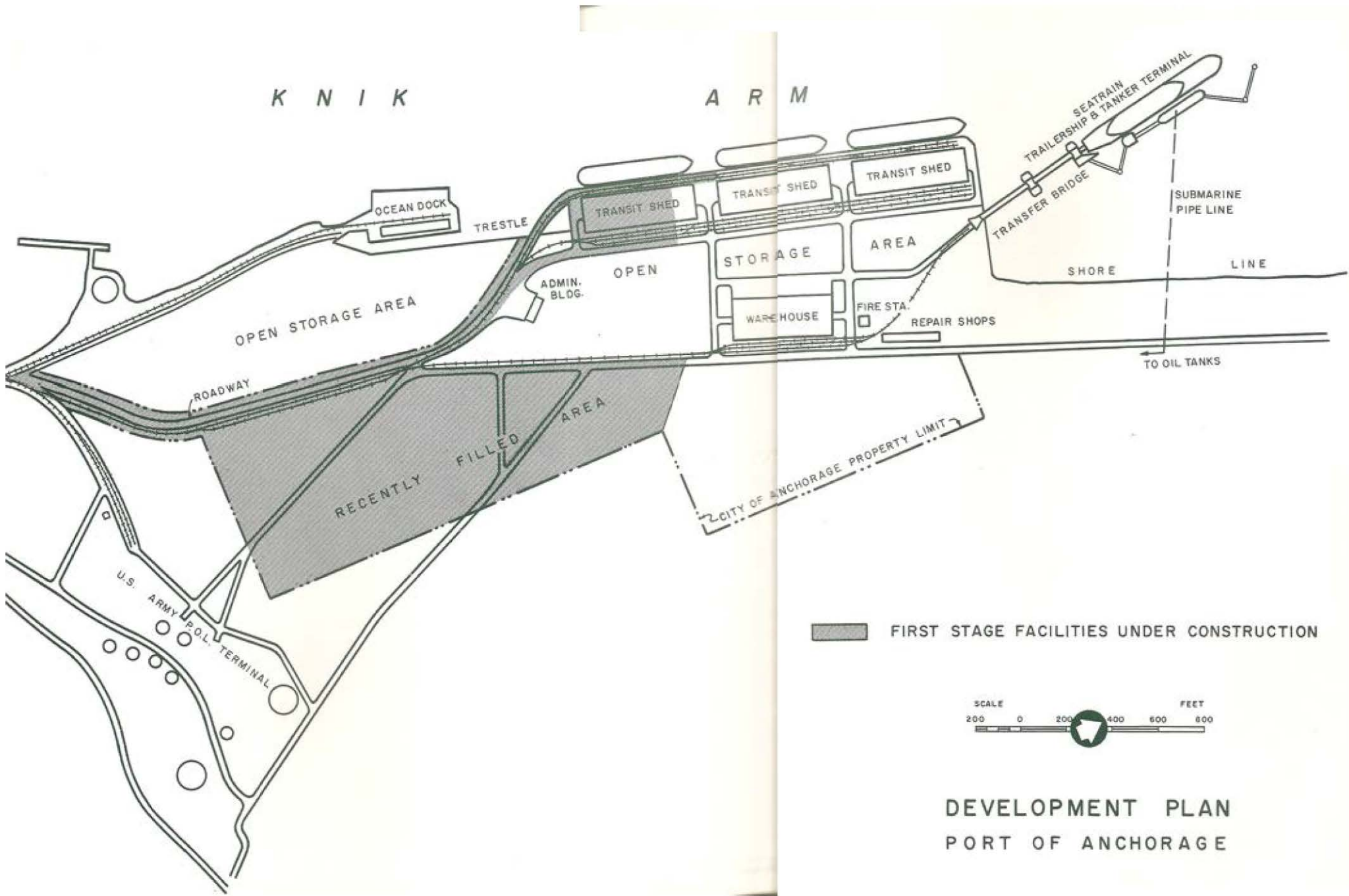
area, prepared by Tippetts-Abbett-McCarthy-Stratton, serves as a guide for future development of the tide-lands and for the city's acreage. Four-lane road access to the port will become a part of the State Highway System.

The organization and administration of the port places ultimate responsibility in the hands of the City Council. The City Council depends upon an appointed Port Commission to recommend policy and assist the City Manager and the Port Director in operating the facility as a department of the City Government.

BENEFITS TO BE EXPECTED FROM THE NEW PORT

Feasibility studies by the firm of Coverdale and Colpitts made in 1956, and brought up to date in 1958, were based on operation of the port during eight months of the year. It was also considered that Anchorage would receive a large share of the Fairbanks freight because of the economies which would result from efficient port operations at Anchorage. These studies showed that for an anticipated tonnage of approximately 200,000 tons in the first year of operation, net savings of about \$19 per ton would be realized in shipping costs. Thus in addition to faster service, the monetary benefits to be derived will in the aggregate exceed \$3,000,000 per year.

Recent experimentation with an ice-breaking tug indicates that in the near future the Port of Anchorage may be operating the year around. This prospect and the firm belief of the Port Commission and City Council that the development of the Port and the lowering of transportation costs will make the commercial exploitation of our natural resources feasible, point to a bright future for the Port of Anchorage.



FACTS - FIRST STAGE FACILITIES

Length of dock - 600 feet
Width of apron - 46 feet
Dimensions of transit shed - 150 by 350 feet
Construction - concrete deck on steel piling
Transit shed fully heated
Transit shed fully sprinklered
For cargo handling - two 40-ton cranes with 5-ton level-luffing jibs and two 7-1/2 ton level-luffing cranes built for high-speed operation
Loading pier at the rear of transit shed for truck and rail
Depth at the face of the wharf - 35 feet below mean low water
Extreme tidal range in Knik Arm - minus 4 and plus 35
Total cost of project - \$8,200,000
Ice-free port operation 8 months per year
Expected tonnage - in excess of 200,000 per year

THE COVER....

Rendering of first stage of Port Facilities now under construction at Anchorage.