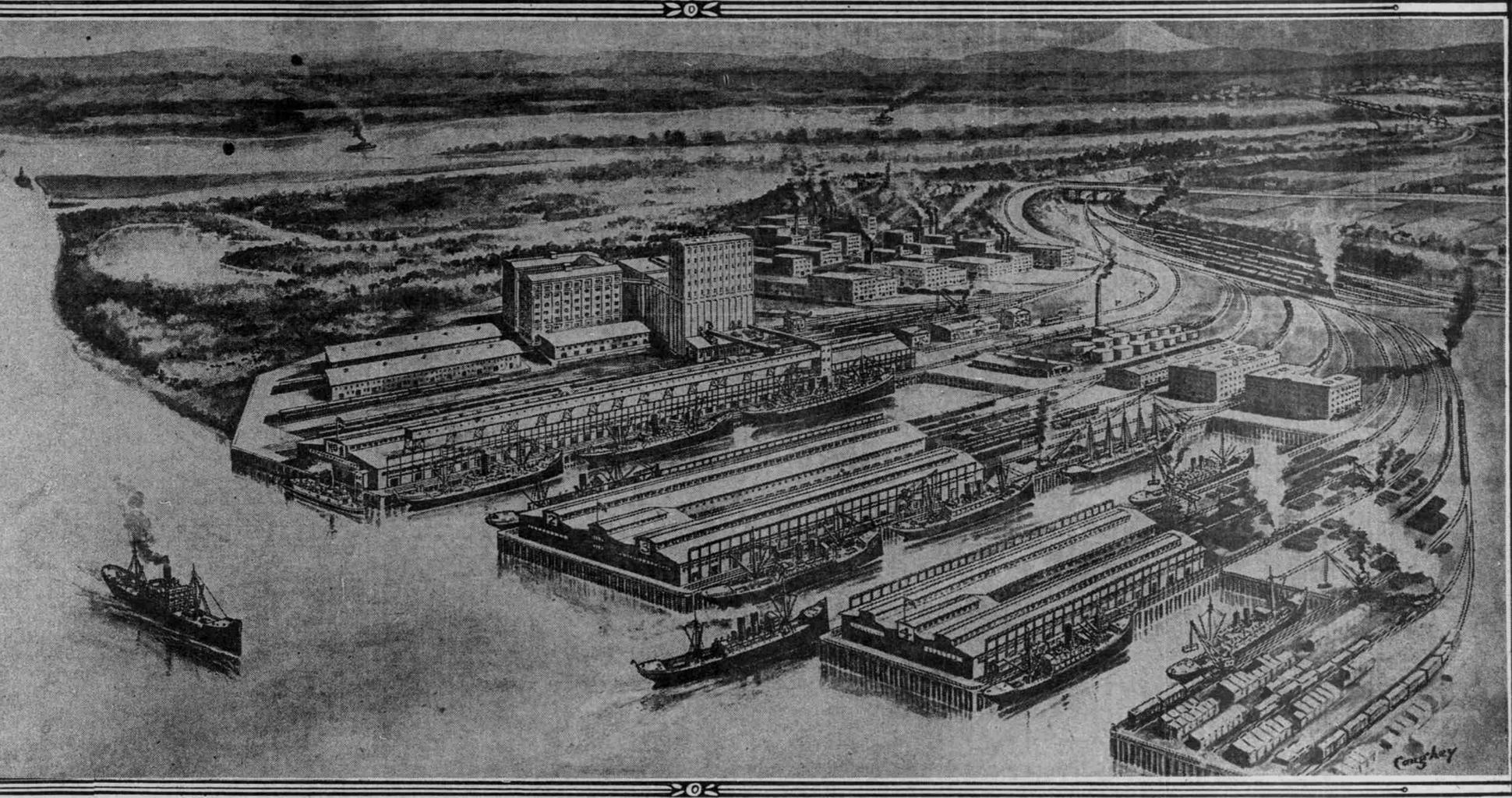


# TERMINAL DEVELOPMENT MARKS EPOCH FOR CITY, WORLD SHIPPING CENTER

Portland Commission of Public Docks Makes Rapid Progress on Modern Rail-and-Water Facilities, Including Piers, Elevators, Warehouse and All Conveniences—New Dry Dock Ordered to Handle Large Vessels



THE PORTLAND COMMISSION OF PUBLIC DOCKS IS RUSHING TO COMPLETION THE TERMINAL PROJECT AT ST. JOHNS, WHICH THE ABOVE ILLUSTRATION DEPICTS AS IT WILL APPEAR WHEN FINISHED.

By G. B. Hegardt, Secretary, Commission of Public Docks, Portland.

**B**EFORE the city of Portland began the construction of municipal, commercial water terminal facilities for the port, there had been developed, by private interests, a harbor frontage of about four and one-half miles in length, which was being used by vessels ranging from the usual type of river steamers and coasters to the large ocean-going carriers. This waterfront development included also such docks as were being utilized in connection with industrial plants.

But with the construction and early completion of the Panama canal a general movement began among the principal north Pacific coast ports to enlarge and modernize their terminal facilities. The near completion of this waterway and the establishment of an important new trade route for world shipping, undoubtedly was the more direct and controlling factor which directed the attention of these port authorities to the necessity of preparing for the increased ocean commerce expected on account of the opening of the canal, as well as for the rapidly expanding oriental traffic, for which

the existing port facilities were then wholly inadequate.

As this movement developed and assumed definite shape it soon became evident that private capital could not be depended upon or expected to undertake work of such magnitude, for the more the subject was gone into, the greater became the reconstruction programme. Each port naturally was ambitious that its added facilities should fully measure up to the requirements of its prospective business and that their provision should be undertaken without delay.

**Municipal Terminal Development.**

The St. Johns municipal terminal will be one of the most modern joint rail-and-water terminals in the country, where freight can be handled and interchanged between rail and water carriers with economy and dispatch, equipped with modern mechanical freight-handling machinery, with trackage facilities which will permit of all necessary switching operations of freight cars to be performed on the premises, with surplus trackage for car storage.

When fully completed, it will have space for berthing at one time of 14 100-foot vessels and a trackage serving the piers and elevator

of 15 miles. The trackage now constructed for the elevator and piers 1 and 2 is close to seven miles.

In acquiring this extensive site for the St. Johns municipal terminal, the commission had in mind the desirability of being able to furnish cheap and convenient locations for such industries as more particularly require the combination of rail and water transportation. There are about 50 acres available for this purpose. The location of this terminal is in the widest part of the harbor, the channel being 1600 feet in front of the site. Both the channel and the slips are dredged to 30 feet at extreme low water.

Pier and slip construction is contemplated for the entire terminal and will be undertaken to meet the transportation needs of the country. This further improvement will probably not only provide much deeper and more easily navigable channels, but also great hydro-electric power.

Portland, situated in a bay, has a point where logically produce brought from the interior waters should be transferred direct to seagoing vessels or first turned into manufactured articles and then transferred. Similar locations, according to students of water transportation and development, have played no small part in the development of great manufacturing centers in Europe and the United States in the past, and even greater development seems possible for Portland, since the same works that would provide much better channels would also provide cheap power, as compared with what steam power of the future from a diminishing supply of coal and oil will probably cost.

Portland should therefore not only lay plans to become a great seaport, but should also plan to become a great river port and a great manufacturing center. The mere transfer of raw material from train or river boat to ocean carrier is of small benefit to a port compared with the benefits that accrue from taking this raw produce and converting it into manufactured articles and then shipping

time. This pier is provided with automatic sprinkler systems.

Pier No. 2, if used for lumber alone, has a storage capacity in excess of 10,000,000 feet.

The mechanical equipment now provided for piers 1 and 2 consists of one 15-ton and one 40-ton locomotive crane, cargo masts, electric trucks, tractors and crane, electric elevators and conveyors.

A fire-proof elevator for handling grain in bulk, having a capacity of 1,000,000 bushels; but the operating house of the elevator has been designed with the view of handling grain from a 1,000,000-bushel extension to the elevator.

An initial installation of six steel tanks, with pipe lines, compressed air and heating pipes, pumps, bulking tables, etc., for the handling and storage of vegetable oils and molasses in bulk or in cases. In connection with the oil and molasses tanks, there are being constructed three large storage tanks for lighters, provided with tanks for the bulking and storage of these commodities.

**New Dry Dock Ordered.**

The commission has authorized the construction of a 12,000-ton floating dry dock, and plans for same are now being prepared.

Slip No. 2 at the St. Johns municipal terminal, serving piers 3 and 4, is

now being excavated to permit of the early construction of pier No. 3, 1500 feet long and 225 feet wide.

With funds voted in 1918 the following general cargo terminals were constructed:

A quay dock 955 feet in length, 300 feet of which has two levels. This dock is covered with a transit shed 925 feet in length and 100 feet in width.

A slip at the north end of the quay dock, 150 feet in width and 484 feet in length, with a transit shed the full length of the slip, 60 feet in width.

A warehouse in the rear of the quay dock 190x200 feet.

A warehouse along the open pier 175x330 feet.

This complete installation furnishes a very compact terminal, adequately served by rail facilities, accommodating at one time 70 40-foot cars and 100 20-foot cars, and 250 500-foot and two 450-foot vessels.

The mechanical equipment at this terminal consists of one 20-ton locomotive crane, electric dock winches, trucks and conveyors, cargo hoists and freight elevator.

A two-level quay dock 526 feet in length, covered with a transit shed 100 feet in width the full length of the dock. The trackage of the dock has placement for 20 40-foot cars. This dock is provided with cargo hoists,

electric freight piling machines and are protected with automatic sprinkler systems, giving a very low insurance rate.

A quay dock 540 feet in length, covered with a transit shed 100x120 feet, leaving a space of 100x120 feet for open storage. The tracks have accommodation for 37 cars. This dock came under the control of the commission when the former city of St. Johns was annexed to Portland. It has been greatly improved and provided with trackage facilities by the commission.

These three terminals have a combined berthing space for vessels of 2550 lineal feet, with storage under shed of 358,400 square feet, capable of handling at one time 34,000 tons of general cargo.

**Private Equipment Detailed.**

Having described in considerable detail the publicly-owned and operated terminals of the port as being more recent, attention is now directed to modern construction, mention is here made of similar facilities provided by private interests, exclusive of docks used wholly for industrial, shipbuilding and ship outfitting purposes. They are as follows:

The large sawmill establishments located in the harbor which are well supplied with facilities for the shipment of lumber by water. There are

eight large lumber docks, varying from 450 to 1012 feet in length, their total berthing space being 4742 lineal feet. Each dock had rail connection with the railroads serving the port, both in the yards and along the mills.

Four fuel oil docks, each about 450 feet in length, with a combined crude oil storage of 422,915 barrels and refined oil of 156,250 barrels, are Standard Oil company, Union Oil company of California, Associated Oil company and Shell company.

A modern gravity discharge, ship-loading plant, with capacity of 300 tons an hour, loading from 5000-ton storage bins with reserve ground storage of 10,000 tons. This plant is owned and operated by the Pacific Coast Coal company.

Grain being one of the principal commodities handled through the port, rather extensive facilities have been provided for its efficient accommodation. The nine grain docks of the port are: Portland Flouring Mills company, 580 feet long; Pacific Coast Elevator company, 460 feet; Albina dock No. 2, 550 feet; Crown Mills dock, 300 feet; Irving dock, 400 feet; Marney dock, 235 feet; Spokane, Portland & Seattle railway dock (one-half of the dock), 500 feet; Columbia dock No. 1, 355 feet; Albers dock Nos. 2 and 3, 465 feet; Albers dock No. 1, 305 feet; Ainsworth dock (Union Pacific), 1000 feet; Couch-street dock, 260 feet.

A seven river steamer docks, with a total berthing space of 1510 lineal feet, and general cargo capacity of 14,500 tons.

It will therefore, be seen that private interests and the municipality have well prepared for and are in the very best position to handle a large volume of foreign and domestic commerce, and these extensive terminal facilities, representing less than 170 acres of waterfront, have been readily accommodated by the port.

North Portland harbor and the Washington hulls anchored on Lake Union. The hulls are being taken by men who know wood ships as built on the Pacific coast. They have tried and tested them in other years. They are not one-wayed by tales of prejudice as to the work of carriers formed of the famed fir of the northwest and see in the offer of the government opportunity to acquire valued tonnage, represents less than 170 acres of waterfront, have been readily accommodated by the port.

**Fifteen Vessels Sold.**

Since November 15 sales of vessels, equipment and material on the Pacific coast have exceeded in value what might be mentioned in passing that Uncle Sam is not sacrificing his stores of surplus property. The government class articles form the stocks, therefore they are not being moved at "junk" quotations. At the same time the government officials have in mind industrial conditions of the period and in seeking to realize in most cases a fair percentage of what property cost the government, sanction no interference with normal jobbing and manufacturing.

Already much of the property sold has figured in exports from the coast to the Orient, and, with more agents on the other side requesting lists of what remains, it is not improbable that 1919 exports will be overshadowed by those of 1920. What stocks are purchased for export invariably move in large quantities an instance early in December was the purchase of 175 water tube boilers, all of the standard type held on the coast, so buyers on the opposite side of the Pacific are evidently keenly alive to the chance, the emergency fleet corporation offers for the fitting out of ships economically.

## PORTLAND IS HELD LOGICAL SHIPPING CENTER

With Improvement of Harbor and Rivers, City Should Also Plan to Become Great Manufacturing and Distributing Point, Declares United States Engineer.

By Major J. R. Slattery, Corps of Engineers.

**B**EFORE improvement of the mouth of the Columbia was obstructed by a shifting bar, through which there were from one to three channels, affording depths of only 19 to 21 feet at mean lower low water. From the mouth to the Cascades the river was obstructed by numerous bars over which there were limiting depths of from 10 to 15 feet below the mouth of the river. At the mouth of the Willamette and Vancouver, Wash., and of about five feet from Vancouver to the Cascades.

At the Cascades the river flows for about 4 1/2 miles through a narrow gorge in the mountains. In the upper half mile of this reach there is a fall of 24 feet, and a half mile lower down there is a fall of six feet in a distance of 1600 feet. Again between the Dalles and Celilo the river was originally effectively blocked so far as navigation was concerned by rapids, having in the 9 1/2 miles between these points a total fall of 81 feet at low and 40 feet at high water, of which 35 feet occurred in a distance of 4500 feet.

Before improvement, freight was portaged around both of these reaches first by teams and afterward by steam railroads. From Celilo to the mouth of the Snake river there was a channel three feet in depth, but it was crooked and abounded in rapids, shoals, projecting ledges of rock and isolated boulders. Similar conditions existed up to the head of steamboat navigation at Priest rapids, 37 miles above the mouth of the river.

The Willamette river, on which the city of Portland is located, 14 miles above its junction with the Columbia, was originally obstructed by bars over which there were depths of only from 10 to 15 feet below Portland, of about five feet thence to the Oregon City falls, which completely blocked navigation. Above these falls there were available depths of 2 1/2 feet to the mouth of the Yamhill and one foot thence to Harrisburg, but these channels were much obstructed by drift, snags and rock ledges.

The first work looking to the improvement of these waterways was

undertaken in 1856. Since then jetties of great length have been constructed on both sides of the entrance to the Columbia; the channel has been dredged, and contraction works placed at the most troublesome localities; lock canals have been constructed around the Cascades, the Dalles and the falls of Oregon City, and snags and other obstacles have been removed. As a result of this work there has been a marked improvement in the mouth of the Willamette, 4 1/2 feet deep and 1200 feet wide across the bar, 40 feet deep and 3000 feet wide thence to the falls at Stevens, and 30 feet deep and 300 feet wide thence to Portland.

Above the mouth of the Willamette the channel in the Columbia is 20 feet deep and 300 feet wide up to Vancouver, Wash.; seven feet deep and 200 feet wide thence to Celilo, and 4 1/2 feet deep thence to the mouth of the Snake. In the Willamette above Portland the channel is six feet deep and not less than 100 feet wide to Oregon City and 3 1/2 feet deep thence to Corvallis. The work of improvement is still in progress and every year the channels become a little better.

Commerce has largely disappeared from the Columbia above Vancouver and from the Willamette above Oregon City, but as the country tributary to these streams develops and becomes more densely populated, this system of waterways is believed to be destined to play a great part in transportation. Now the improvement is somewhat in advance of the needs of the vast territory served, but there will come a time when much more commerce will be developed.

extensive improvements than could be considered at the present time must be undertaken to meet the transportation needs of the country. This further improvement will probably not only provide much deeper and more easily navigable channels, but also great hydro-electric power.

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## MOTORBOATING GREAT SPORT

Columbia and Willamette Rivers Afford Ample Opportunity for Devotees, Who Have Fine Organization.

By George J. Kelly.

**P**ORTLAND has a wonderful playground for its motorboaters. The Columbia and Willamette rivers, with the many smaller streams and sloughs that empty into them, afford unlimited possibilities for cruising along a shore line that is ever-changing in its variety. One may take a cruise for

a few hours to a nearby island or other wooded picnic spot, or may cruise for weeks along these waterways, amid the same great rocky cliffs and wooded hills and lowlands that Lewis and Clark, in their diary of over 100 years ago so vividly described.

The joyous healthfulness of the cruising sport must be tried to be appreciated—anchoring at dusk in

some sheltered cove, pitching the camp on the nearby beach and coaxing a few game fish out of the water into the sizzling frying pan, and after supper the old jimmy pipe around the campfire—and all this with the carefree joy of doing what you please when you want to, makes one feel that life has a few bright spots left, after all.

Then a plunge in the creek in the morning, a dip in the bathtub, the adventures of the day, with all kinds of fish waiting over the side of the ship to be caught, and green stuff, fruit and vegetables to be had at some lowland farmhouse almost for the asking—surely this is the life to make almost any old "kill-joy" human in a week.

Recognizing the great recreation possibilities of the beautiful waterways adjacent to Portland, about ten years ago a group of water enthusiasts, who are now known as the Portland Motorboat club, now a thriving, enthusiastic institution of about 200 members, with a mosquito fleet of nearly 100 craft, the club occupies its own clubhouse on leased ground on the eastern bank of the Willamette in the southern part of Portland. Recently the club purchased a ten-acre site on a nearby island and plans soon to erect a modern home and moorage ground for the rapidly-increasing fleet.

## PORTLAND IS SALES AND SUPPLY HEADQUARTERS

Emergency Fleet Corporation Makes City Western Center of Division Having in Charge Disposal of Large Fleet and Property Used During War Period.

By W. E. Mahoney.

**P**ORTLAND acquired additional prestige in a maritime way during the last half of the period ending December 31, 1919, when the city was designated the headquarters in the west for the supply and sales division of the emergency fleet corporation, an organization that is charged with the disposition of what remains from the feverish and highly productive work of building ships to offset the submarine scores of the Germans.

Hence the metropolis of the state temporarily became the hub of the largest organization the Pacific coast has known for fitting out vessels and furnishing industrial projects with equipment and material. With its outlets on the ocean and having agencies at the principal ports, the supply and sales division not alone handles surplus property remaining at the scenes of shipbuilding, but draws also from interior points as far as Denver, where no small assistance was lent by machinery manufacturers during the war. Spokane also contributed needed gear and there were other cities away from the coast.

places where it was found certain valuable facilities were not fully operated, owing to changes wrought commercially, so the government ordered machinery in such amounts that the interior plants could receive their output on a regular basis.

Now with the work of building ships halted by the shipping board as far as the actual war tonnage figures, the emergency fleet corporation, through it is the eye of a new programme for permanent commercial carriers, the material and finished appurtenances that were gotten out to speed the gigantic merchant fleet that sickened the Huns, is being offered private interests with which to build in varied industrial and commercial avenues and for general purposes, for, while originally intended for vessels, the stocks are so varied that parts of them have been fitted into plants and institutions far removed from the realm of maritime construction.

**Sales Force Organized.**

Less than six months ago C. O. Younkum, selected by executives of the emergency fleet corporation as general manager of the western district, came to the coast to direct the formation of a sales force with 17th attendant warehouse sections. Part of Mr. Younkum's previous experience had been in launching a gulf coast yard, so he lost no time in preliminaries for the vast selling body. Jay S. Hamilton, who was in charge of the production board's responsibilities in the northwest during the war, accepted the billet of assistant to Mr. Younkum in charge of sales and J. H. Wood, identified with the wood construction division in the Oregon district, became another assistant in charge of the material section. Following immediately was the work of gathering experienced men for all departments and the opening of sub-offices at San Francisco and Seattle.

The details of opening concentration warehouses, into which was moved surplus stocks from various shipyards that had finished government contracts, were entrusted to impetus. The Grant Smith-Porter ship company's plant at St. Johns was selected for the Oregon concentration yard and warehouse;

the Liberty yard, at Alameda, became the assembling point for California and the Seaboard yard, at Tacoma, was designated as the concentration yard and warehouse for Washington.

Today those establishments, though lacking much of the surplus equipment and material housed there a few months ago, for selling has been active and in unusual quantities, are models in warehousing. Prospective purchasers are piloted through the properties and given opportunity to make selections of stocks, inspecting and investigating before purchase, and, with the same shipping facilities as any jobbers offer, either railroad or water transportation being accessible, goods are moved promptly and in any amount.

As the disposition of property is directed from Portland, so do the proceeds find their way through the financial division here, with the result that millions have been handled.

As the supply and sales division offers all fittings for ships, from the tiniest tack to anchors and chains and from main engines and boilers to a coffee urn for the galley, it is no wonder sales are climbing.

Then, too, during the past few weeks the division has been given authority to sell all of the wood hulls remaining on the coast, which includes the California fleet at Alameda, the Oregon-built hulls moored in

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## PORT OF PORTLAND AND COMMISSION ON PUBLIC DOCKS CO-OPERATING ON SWAN ISLAND PROJECT.

What to do with Swan Island, lying in the lower Willamette river, is a subject of much interest in the harbor development of Portland.

Some favor its complete removal and others believe it should be dammed and a park made of it. As a means of adjusting these conflicting views and of arriving at a conclusion as to the best course to pursue, the Port of Portland commission and the commission of public docks have appointed George W. Boschke, designer of the famous Galveston seawall, to work out a feasible plan and to present it as soon as possible.

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## TERMINAL EQUIPMENT IS OF BEST.

When fully completed the terminals now being constructed by the Portland commission of public docks will accommodate 14 100-foot vessels at a time.

Trackage serving the piers and elevators will be 15 miles long.

Latest type freight-handling machinery, with trackage facilities, will be a feature.

There is provided combined storage of 358,400 square feet of handling at one time 34,000 tons.

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