

## Canadian Northern Railway Car Ferry for British Columbia.

high, built of brick, with an inner shell of fire brick 100 ft. high. There is an air space of 6 in. between the inner and outer shells; the inside diameter is 11 ft.; the top consists of a cast-iron cap; 4 lighting rods, well grounded, are provided to protect the chimney.

The length of the dock was decided on not merely in anticipation of vessels of, say, 900 ft. or over being employed on the St. Lawrence trade, which may not happen for a great number of years, but owing to the great number of applications received every fall from owners of moderate sized vessels for accommodation during the winter, so that repairs may be done at cheaper rates, and the boats be ready for traffic as soon as navigation opens.

The dock is not yet quite completed: small portions of the floor and walls at the head remain to be finished; the boilers, machinery and pumps, although in working condition, require some final adjustment before they are tested and accepted;—the rolling caisson was operated in Nov., 1917,—the contractors' floating plant was docked and the dock was pumped out. It is fully expected that everything will be entirely completed during July.

The several classes of works in connection with the construction of the dock have been accomplished in a thorough manner both in regard to materials furnished and workmanship; several minor changes which were found to be advantageous were made during construction. The contractors, in all cases, have shown their willingness to give satisfaction in every way irrespective of cost. It must be noted that the works were started shortly before the war and continued without interruption, except in winter, in spite of increased cost of materials and labor. The time required for the construction of the dock is somewhat over four years. It must, however, be remembered that the working season is only six months in each year,—concrete works have to be suspended during the first days of November and cannot be resumed until the beginning of May. The total cost of the works under contract will be approximately \$3,365,000.00. The works have been carried on by the Public Works Department, with E. D. Lafleur as Chief Engineer,—the writer as Superintending Engineer, and J. K. Laflamme as Resident Engineer,—S. Fortin, Steel Structural Engineer, has had the approval of plans submitted for the steel structures. The contractors are M. P. & J. T. Davis, and S. Woodard is their Superintending Engineer.

The foregoing paper was read before the Canadian Society of Civil Engineers in Montreal and Ottawa recently.

**U. S. Atlantic Coast Steamships.**—The Director General of U. S. Railroads, having taken possession and assumed control of steamship companies operating on the Atlantic Coast, has created the Coastwise Advisory Committee, with office at 165 Broadway, N.Y. L. J. Spence has been appointed chairman, with authority to form the committee from the officers of the following lines:—Clyde Steamship Co., Mallory Steamship Co., Merchants & Miners Transportation Co., Ocean Steamship Co., Old Dominion Steamship Co., Southern Pacific Steamship Lines, Southern Steamship Co. The chairman of the committee will report to the Manager, Marine Section, Transportation Division, U. S. Railroad Administration, and will exercise supervision and direction of all coastwise lines under control of the Railroad Administration.

The car ferry steamship Canora, which the Canadian Northern Ry. is having built to carry passengers and freight cars between Port Mann, B.C., on the south side of the Fraser River, opposite New Westminster, and Patricia Bay, Vancouver Island, from which point the company has rail connection with Victoria, will, it is expected, be launched at Lauzon, Que., on June 10. The following are the leading particulars:—

Length over all .....	308 ft.
Length between perpendiculars.....	294 ft.
Breadth moulded .....	52 ft.
Depth moulded to car deck .....	20½ ft.
Depth moulded to shelter deck .....	28½ ft.
Draft loaded .....	14½ ft.
Displacement at above draft .....	3,400 tons
Speed on service .....	14 miles
Number of cars carried .....	20

The type adopted is somewhat similar to that of the car ferries operating on the Great Lakes, with the exception of a rolling gate which will be fitted at the stern, to close in the space between decks where the railway cars will be carried. This gate will be operated by a steam winch at the fore end of the shelter deck, the gate being carried on girders on this deck. When gate is closed, the stern will be completely closed in between the car deck and shelter deck where the cars are carried.

The vessel is being constructed under the supervision of Lloyd's Register of Shipping and will be classed 100A as a train ferry for coast and river service. The construction is on the transverse framing principle, open bottom type, and the hull is subdivided into 6 main transverse water tight compartments by 5 water tight bulkheads. Water tight doors will be fitted for communication between the engine and boiler spaces and shaft tunnel. Water ballast will be provided for, in peak tanks forward and aft, and in trimming tanks on each side of the engine room.

The cars will be carried on the main, or car, deck, on three lines of tracks, one line of tracks being on the center line of the vessel and one line each side of the center. The spaces below the car deck will be devoted to machinery, crew, stores, holds, coal bunkers and steering compartments.

Above the car deck, at a height of 18 ft., there will be a complete shelter deck, extending the full length and width of the vessel, and, on this deck accommodation for passengers and officers will be provided. This accommodation will include rooms for all officers, large dining saloon, parlor, state rooms for passengers, smoking room, kitchen and pantry, bathroom and lavatories, and a large observation cabin at the forward end. The state rooms will be tastefully finished and have berths, clothes closets, wash basins, etc., in each room. The dining saloon will be finished in oak panelling and will have a large dome over the center, with borrowed lights extending all round dome.

Above this accommodation will be the pilot house, and at the stern a pilot house for use in docking the vessel. As the vessel will have to go astern for a distance on her run, she has been designed with propellers at both ends, also steering gears and rudders, and in connection with this arrangement the navigating lights, engine room telegraphs and steering standards will be arranged to automatically change over to suit this condition.

Steam heating will be provided in all rooms. The ventilation to all spaces will

be provided by natural means, through patent ventilators carried well above the roof of the shelter deck accommodation. The sanitary arrangements will provide for a complete service of fresh, salt and hot water throughout the vessel. The crew spaces will be provided with all necessary accommodation for seamen and firemen, including berths, lockers, etc. There will be a complete installation of fire extinguishing pipes. The electric generators will be placed in the engine room, the main switchboard being located conveniently thereto. Two searchlights will be fitted for use when the vessel is landing at the slips at night.

The main propelling machinery will consist of a 4-cylinder, triple expansion, surface condensing engine, balanced on the Yarrow, Schlick & Tweed system, having cylinder 24, 38, 43 and 43 in., with a stroke of 30 in., and indicating about 2,200 h.p. The engine will be arranged to drive a screw propeller at each end of the vessel, the shafting running the full length of the vessel. Steam will be supplied by 4 Scotch return tubular boilers, 11½ ft. diameter by 11½ ft. long, working at a pressure of 175 lb. a square inch, located in two boiler rooms, one on each side of ship. Each boiler will have 2 corrugated furnaces, 41 in. diameter, and a complete installation of forced draft will be fitted. The total heating surface for the 4 boilers will be 5,500 sq. ft. The surface condenser will be of the triangular type and will have a cooling surface of 2,220 sq. ft. The circulating pump for main condenser will be of the centrifugal type and will be driven by its own engine.

The auxiliary machinery will include 2 vertical boiler feed pumps, each having capacity for working the four boilers, sanitary pump, fresh water pump, bilge pump and ballast pump. There will be an evaporating and distilling plant of sufficient capacity to make up loss in feed water and for drinking and galley supply. Ash ejectors will be fitted in each boiler room. Two steam steering gears will be provided in separate compartments at each end of the vessel, the valves on the gears being operated from pedestals in pilot house, by control shafting.

The auxiliary deck machinery will include a large steam windlass, on the shelter deck, for handling the anchor cables, a windlass also being provided, with drums for handling the wire ropes for mooring. The life saving appliances will be sufficient to meet the requirements of all on board and will be in accordance with the requirements of the Canadian Government inspection. Six lifeboats will be carried on the shelter and boat decks with two davits and gear to each boat.

The vessel was designed by A. Angstrom, as Naval Architect for the C.N.R., and is being built by the Davie Shipbuilding & Repair Co., at Lauzon, Que., Jno. Inglis Co., Toronto, building the main propelling machinery.

The Miami Navigation Co., Ltd., has been incorporated under the Dominion Companies Act, with \$10,000 authorized capital and office at Chatham, Ont., to own and operate steam and other vessels, and to carry on a general navigation and transportation business on the Great Lakes. The incorporators are: T. Donovan, F. C. Granville, T. J. Stockwell, J. W. Harrington and T. M. King, Chatham, Ont.