

Specifications of Auxiliary Engine Room Machinery for Standard Wooden Steamships for British Government.

Canadian Railway and Marine World for January contained a very full summary of the specifications for the hulls of wooden steamships being built in Canada for the British Government, under orders placed by the Imperial Munitions Board at Ottawa, together with plans, and the February issue contained the full specifications for the marine engines for these vessels, together with plans. Following are the specifications for the auxiliary engine room machinery:—

Independent Feed Pumps.—To be of the long stroke Simplex type, generally known as the Weir type, having steam cylinder 10 in., pump 6 in. diam. by 12 in. stroke, and capable of discharging 20,000 lb. of water per hour, at not more than 12 double strokes per minute, against a boiler pressure of 180 lb. to the sq. in., when driven by steam at the same pressure. The cylinder to be of cast iron, fitted with piston of cast iron, having Ramsbottom packing rings or a single deep packing ring with cod piece. The steam valve gear to be of shuttle or similar type, designed for positive starting from rest and against full load. Piston rods and all valve gear of steam end to be of polished steel of approved design, and to be fitted with adjustable bearings on all principal pins.

Pump end to have cast iron body and valve chest, the valve chest being preferable in separate casting from the body of the pump. Pump cylinder to be fitted with a hard gun metal liner of approved quality appropriately secured. The valve chest to be fitted with suction and discharge valves of the triple disc type, or similar valves fitted with guards and adjusting gear. The whole of these parts, including the seats, to be of gun metal.

The pump should be designed with a suction and discharge branch, provided at either side for convenient arrangement of piping, and must be fitted with a control tank, having float control to steam valve, except in the case in which a filter of the gravity or tank type is fitted, in which event the control float should be attached to the filter. Pump rods to be of rolled brass or Muntz metal.

In cases where two pumps are fitted, they are to be supplied with a discharge valve, manifold box, having connection with the main and auxiliary feed lines on boilers, and so arranged that either pump can work on either line of feed piping. Where a single pump is fitted, this box will consist of a double valve chest arranged in a similar manner. These valve boxes are to be of cast iron, with brass fittings and screw down stop valves. This pump, or pair of pumps, to be fitted with the usual manifold boxes for steam valves, permitting same to be supplied either from the control or direct steam supply pipes, and straight through shut-off valves of gun metal are to be fitted on exhaust.

In these ships fitted with the standard engine supplied by the board, one only of these pumps will be fitted, as the standard engine is already supplied with ram feed pumps driven from the air pump levers. For ships fitted with the Polson engine this pump will be supplied by the Polson Co. For ships fitted with the Inglis engine, a pair of the above pumps will require to be supplied by the board, as this engine is not supplied with the ram feed pumps driven from the air pump levers. Plan of the pump and gear and

specification in detail proposed to be supplied must be submitted by each pump contractor for the approval of the board's technical adviser.

General Service Pump.—A vertical duplex pump, having cylinders 6 in. diam., pump 4 in. diam. by 6 in. stroke, or equivalent pump capacity and ratio of cylinder to pump, to be fitted and arranged for general service, which includes boiler feed circulating, deck, fire and sanitary service. This pump is to be of the type generally known as the Worthington, in which the valve gear of the one side is driven by the movement of the engine on the other side.

The cylinders to be of best cast iron. The valves to be of the flat type and arranged with compression valves, to ensure start and continuous working. The piston to be fitted with Ramsbottom rings, piston rod to be of wrought iron or steel and the valve gear of wrought iron or steel; all the part to be of the most substantial design, to approval.

The pump end to have cast iron cylinders and valve chest, fitted with a hard brass or gun metal liner and brass valve seats, valve guards, etc., the valves being of the Kinghorn triple disc type. The pump rods to be of hard rolled brass, or Muntz metal, and the pump pistons to be of brass with water-grooves, or of cast iron fitted with brass liners of the same type. These pumps to be fitted with steam and exhaust valves of brass.

A duplex ballast pump for low pressure service, capable of pumping about 100 tons of water an hour, and having a steam cylinder 7½ in. diam., pump 9 in. diam., and with stroke of 10 in., to be fitted in the engine room. Cylinder to be of hard cast iron fitted with piston having Ramsbottom rings, piston rod of wrought iron or steel, valve gear of substantial design of wrought iron or steel, having main pins fitted with adjustable bearings. The pump end of cast iron fitted with brass liner and cast iron valve chest fitted with brass valve seats and guards, etc. Valves to be of rubber. Pump rods to be of rolled brass or gun metal and the pump pistons of brass with water grooves or of cast iron with brass liners and water grooves as may be approved. Pumps to be fitted with steam exhaust valves of brass.

Pumps in general are to be of the type specially designed for service at sea, and to be fitted with all necessary drain cocks, pipes, lubricator cocks, etc. In each case full detailed plans and specifications of the article proposed to be supplied, showing the size of the various principal parts are to be submitted for the approval of the board's technical adviser before contract be entered into.

Auxiliary condenser to be of the surface atmospheric type, having approximately 400 sq. ft. of cooling surface, to be capable of condensing steam from five 7 x 12 inches, and the electric light plant, at one time. The condenser shell to be of cast iron or wrought iron; the water boxes and covers to be of cast iron; the tube sheets to be of rolled brass, carried out to the edges of the water and flanges. Tubes to be of brass and to be fitted with brass ferules, collared at one end, packed with cotton packing. Condenser to have exhaust pipe led into the main waste steam pipe via funnel, having an area of one and a half times the total area of the exhaust pipes led into the condenser. The

drain from this condenser to lead to the gravity filter, if this type be fitted, or alternately to a small drain tank placed in the engine room, described in the engine specifications.

The feed heater to be of the exhaust surface type, of sufficient heating surface to deal with 25,000 lb. of feed water an hour, from a temperature corresponding to a vacuum of 25 in. to atmospheric boiling point or thereabouts. The heating surface to consist of straight copper tubes arranged in an approved manner, secured to the heads in such a way as to obviate expansion troubles. The heater body to be of cast iron, as also the heads and covers. Heater preferably to be placed horizontally and to be fitted with air extraction pipes, drain cocks, steam valve for cleaning and supplying live steam in case of necessity. Safety valve and pressure gauges to be fitted as required by classification societies.

Feed water filter of the gravity type to deal with about 25,000 lb. of feed water per hour. This tank will be placed on the suction side of the feed pumps, on the discharge side of the air pump, and to be fitted with buckets containing coke or coir matting, to extract grease and dirt from the water. The design of this tank to be approved by board's representatives, as also the size. The necessary inlet and outlet, and by-pass valves for feed water, to be fitted and also wrought iron covers. Float to be arranged in a portion of the tank to control the independent feed pumps. Alternately, quotations to be given for a pressure feed filter to be placed between the feed pumps and the main boilers, of a type which consists of cages or discs covered with huck toweling, or other similar material, to extract the grease from the water. Filter of ample size to deal with 25,000 lb. of feed water an hour. Body to be of cast iron, cages or discs to be of wrought iron. All necessary valves and fittings to be supplied.

Evaporator.—Evaporator to be supplied capable of evaporating 15 tons of sea water a day at a pressure not exceeding 10 lb. by gauge. The evaporator shell to be of cast iron; heating surface to consist of copper tubes conveniently arranged for accessibility and removal for cleaning. Vapor valves, steam valve, brine valve and blowdown to be fitted as usual. To be lined with non-conducting composition clad with sheet iron.

Full details of the above fittings, including specifications and detail plans of what is proposed to be supplied are to be furnished by the contractors with tender. No tender will be considered which does not give fullest possible details of the appliances which it is proposed to supply. Quotations should be detailed, so that a comprehensive price is quoted for each of the above mentioned items, and the plans should be to scale, so that they may be used by the board's drafting staff for engine room arrangement purposes.

The New York State Barge Canal. from Lake Erie to the Hudson River, will, according to a report by the State Engineer, be opened for traffic by May 15. Some comparatively minor contracts still remain uncompleted, but he states that a carefully prepared statement shows the rate of progress to be maintained up to May 15, which, if adhered to, leaves no doubt as to the opening date.