II. Specification

The capricious CAPITALISATION in the document has been followed in the transcription.

Admiralty
1st July 1867

Specification for a twin Screw Iron Armour-clad Turret Ship of 2107 Tons, With Monitor Deck and Raised Breastwork, for Melbourne.

Principal Dimensions.

		Feet	In
Length	Between the Perpendiculars	226	6
do	Of the Keel for Tonnage	195	7
Breadth	Extreme and for Tonnage	45	0
Depth	In Hold	16	6
Burthen	In Tons O.M. The greatest amount to be paid for is:	2107 23/94	

The Hull of the Ship is to be built, armoured-plated, fitted, and made complete in all respects, with Cabins, Mess Rooms, and Store Rooms of every description, and with all Drainage, Pumping, and Ventilating Arrangements, as herein-after described.

The Turrets, the Pilot House, and all Armament and Ammunition Fittings (exclusive of Guns and Carriages) are to be provided and fitted complete by the Contractors.

All Boats and their Fittings, with all necessary Gear of every description connected with them, to be supplied by the Contractors; the number and size as hereafter described.

All Capstans and other Appliances and Gear of every description necessary for working, stowing and serving the Anchors and Cables, including Spare Fittings, are also to be provided and completely fitted by the Contractors; the Anchors and Cables are also to be found and fitted by the Contractors.

All Water, Oil, and other Tanks of every description, including the Main Water Tanks and the Tanks for Engineers Stores, are to be provided and fitted complete with all needful appliances by the Contractors.

The Details of the Ship's Construction are to be as follow [sic]: –

KEEL .....To be formed as shown on the Midship Section, the vertical Keel Plate to be 27½ inches deep and ½ inch thick in the double bottom, before and abaft which the depth is to be reduced as shown upon the Profile. The flat Keel Plates are to be worked in two thicknesses as shown in the Midship Section. The Angle Bars connecting the vertical Keel Plate with the flat Keel Plates are to be 4″ x 4″ x 5/16″ riveted with 7/8-inch rivets through the vertical Keel Plate, and 1-inch rivets through the flat Keel Plates. All the Plates and Angle Bars are to be worked in the greatest lengths procurable, and the Butts are to be well fitted to the satisfaction of the Overseer. The vertical Keel Plate is to extend from the upper part of [the] Stem to the extreme after part of the Vessel, the after end is to be attached to the Stern Post with Angle Irons and is to be bent in wake of [the] Rudder Head, as may be directed by the Overseer; the fore end is to run up the Stem and be connected with it in a satisfactory manner. The Butts of the Plates forming the vertical Keel Plate are to have Double Straps, each 3/16 inch thick, treble, riveted with 5/8-inch Steel Rivets.

At the Butts of each of the flat Keel Plates short Butt Straps of ½ inch thickness are to be introduced on each side of the Keel Angle Bars, these Butt Straps are to be treble chain-riveted, and their breadth to be 16 times the diameter of the rivets.

The Butts of the Keel Angle Bars are to have Butt Straps of 9/16 inch thickness. The rivet holes through these Butt Straps and Keel Angle Bars are to be drilled; the faying surfaces are to be carefully scraped and cleaned, and, if directed, planed before being worked.

The edges of the inner Keel Plate are to be single-riveted to the outer Keel Plate with rivets ¾ inch in diameter.

The vertical Keel will require to be carefully caulked, so that it may divide the double bottom into two separate water-tight compartments.

At the fore and after extremities of the ship where the Keel Plates are discontinued, forgings are to be introduced forming the lower part of the Stem and Stern Frames agreeably to Sketches that will be furnished.

ANGLE BARS ON TOP OF VERTICAL KEEL PLATE The Angle Bars on the upper edge of the vertical Keel Plate to be 3″ x 3½″ x ½″, worked in short lengths. Before and abaft the double bottom, commencing from where the vertical Keel Plate is reduced in depth, these Angle Bars are to be continuous.

STERN POST .....The Stern Post and the after part of Keel to be in one Forging of the best hammered Scrap Iron; the Stern Post is to run up the Counter in a flattened form beyond the Rudder Head, and to form an arm on each side; the Rudder Head is to pass through the flat portion. The form and dimensions of the Forging will be described by a Sketch that will be furnished.

SHAFT TUBES.....Two Wrought-iron Tubes, one under each quarter, to be formed for supporting the Propeller Shafts. The fore part where they leave the run of the ship to be supported by the frame-work of the ship, which is to be bossed out in a suitable form for the purpose, and the after part by Struts, as may be directed.

The whole to be completed to the satisfaction of the Overseer, and in accordance with a Sketch that will be furnished.

STEM.....To be Forged in one length of the best hammered Scrap Iron; the form and dimensions to be described by a Sketch that will be furnished.

LONGITUDINAL FRAMES.....To have Longitudinal Frames formed of continuous Steel Plates and of Steel Angle Bars of the following dimensions:-

		Angle Bars	
	Plate	On Inner Edge	On Outer Edge
	″ ″	″ ″ ″	″ ″ ″
1st from Keel	27 x ⅜	3 x 3 x 7/16	3 x 3 x ½
2nd from Keel	do	do	do
3rd from Keel	46 x ¾	do	do
Plate to recess for armour (of iron)	48 x ½	do	5 x 5 x 9/16 (of iron)

The Longitudinals are to be made of one depth of plate, and the plates and outer angle bars composing them are to be worked in the greatest lengths practicable, and great care is to be taken that the butts are well fitted.

The Plates are to be the whole breadth of the frame in the double bottom, but before and abaft this N°s 1 and 2 are to be reduced on their inner edges by the depth of the inner angle bar, i.e. by 3 inches, and N°s 3 and 4 are to be reduced to the extent shown on the section of the ship before and abaft double bottom. Care is to be taken to preserve the continuous strength where the longitudinals are altered in depth.

The angle bars on the outer edges of the Longitudinals as well as the Plates are to pass unbroken through the water-tight frames, the surrounding joints being carefully caulked and made water-tight. The outer angle bars are to be continuous, and the butt straps to bottom plates are to be cut off in their wake, bending up over the flange of the angle bar to receive rivets.

The Inner Angle Irons on the Longitudinals are to be worked in short lengths between the frames in the double bottom, and are to be continuous before and abaft it.

The Longitudinals are to be placed in such a direction throughout their length as to clear all the fore and aft joints of the outside plating, and their surfaces are to be twisted, if practicable, so as always to be square with the outside of the frames.

The Plates forming the Longitudinal frames are to taper in breadth before and abaft the double bottom, as may be deemed necessary.

The First Longitudinal out from the Keel is to be continuous from the stem to the stern post, if practicable; The Second, from the stem to the stuffing-box bulkhead; and the Third, from about Station 4 until it meets the continuous transverse frames which come on the flat part of the counter; between which frames, and

right aft to the stern it is to be worked 'inter-costal', the plates being deep enough to admit of a continuous angle iron 3″ x 3″ x 7/16″ being worked on their upper edge, and on top of the frames.

The Fourth Longitudinal or Recess Plate is to be continuous from the stem to about Station 52, where it is to be stopped and bent down and riveted to the bottom plating; the Angle Irons on the underside of the Recess Plate are to be continued as far aft as they can be worked; the Angle Iron on the upper side is to be continued all round the stern to connect the bottom plating to the skin plating.

The arrangement connected with the ending of the after part of the Recess Plate is to be to the entire satisfaction of the Overseer.

The butts of the Plates forming the First and Second Longitudinals out from the Keel are to be secured by Double Butt Straps, each slightly exceeding half the thickness of the plates they connect, and double chain-riveted. The Butts of the Plates of the Third and Fourth Longitudinals out from the Keel are to be secured by Double Butt Straps, each 1/16 inch more than half the thickness of the plates they connect, and treble chain-riveted. The Butts of all the Angle Bars to all the Longitudinals are to supported by Straps or covering Angle Bars.

The Plates of the First and Second Longitudinal Frames out from the Keel are to be lightened by being pierced with Holes in alternate spaces in the double bottom, and as far forward and aft as may be considered desirable. No Holes are to be cut where the Plates of the Longitudinals butt, and the holes of the two longitudinals should be in different frame spaces.

The Third and Fourth Longitudinals out from the Keel are to be made water-tight.

TRANSVERSE FRAMING BEHIND ARMOUR Behind armour on Sides from one end of the ship to the other the Transverse Frames are to be 3 feet apart; those within the limits of the Double Bottom, except those which are attached to the 12-inch beams which are under turrets, are to be formed by turning down the ends of the Upper Deck Beams, as shown in the Midship Section; the 3″ x 3″ x ½″ Angle Irons on the outside being turned at the heel and secured to the Upper Deck Longitudinals, and to the Frames in the double bottom by Bracket Plates 3/8 inch thick, as shown in the Midship Section. The Frames which are attached to the 12-inch Beams under Turrets, are to be formed of a plate 9″ x 7/16″, with two Angle Irons on the outside, each 3″ x 3½″ x ½″, the Heels to be secured with 3/8 inch Bracket Plates, as before described. Double Reverse Irons will be formed on these Plates by continuing the lower Angle Irons of the Beams down them. Where the frames behind armour are not over the Frames of the Double Bottom, but come midway between them (and there only), and Angle Iron 7″ x 3½″ x 3/8″ is to be worked under the Heel within the Double Bottom, as shown in the Midship Section.

Before and abaft the Double Bottom the Frames behind Armour are to be formed of an Angle Iron 9″ x 3½″ x 7/16″, with two Angle Irons on the outside, each 3″ x 3½″ x ½″; these Frames are to be continued down far enough to scarph with the inner angle irons of the Transverse Frames below, between the Second and Third Longitudinal out from the Keel, as shown upon the Section showing the mode of framing before and abaft the Double Bottom; the position of this scarph will vary at the extremities of the ship, as the Overseer may direct. The 9-inch frames are to taper, as is shown upon the Section just referred to. The 3″ x 3½″ x ½″ Angle Irons are to be continued below the Recess, as shown upon the Section, the longer one taking the Rivets of the second Bracket Plate.

The Frames behind armour on the Breastwork are to be formed of an Angle Iron 10″ x 3½″ x 7/16″, with two Angle Irons on the outside, each 3″ x 3½″ x ½″. Throughout the Midship Section of the Breastwork, where shown upon the Plan of the Upper Deck, the Heels of these frames are to be secured to the deck plating and beams by Bracket Plates 3/8 inch thick, the 3″ x 3½″ x ½″ Angle Irons being turned at the heel, as shown on the Midship Section; in the Wake of the Turrets, however, the 10 inch flange of these Frames is to be worked through the deck plating and riveted to the beams below, the angle irons being turned, as shown in the Section abreast Turret. Carlings or Bracket Plates are to be introduced for securing the heels of these frames under the deck whenever required.

EXTERNAL LONGITUDINAL GIRDERS AND ANGLE IRONS ON SIDE AND BREASTWORK: Girders or Ribs are to be worked behind the Armour Plates and attached to the

Plating behind Armour, as shown in the Sections, and their spacing forward and aft is to be such that they may run along the Strakes of Armour at as nearly as possible the same distance from the edges as shown in the Sections, in order to clear the bolts. The Girders are to be formed of Angle Iron 9″ x 3½″ x 7/16″, except the one behind the 8-inch Strake of Armour on the side, which is to be 8″ x 3½″ x 7/16″.

The external Longitudinal Angle Irons at the upper and lower part of the Plating behind Armour, and the Angle Iron round the front of the Breastwork at its base are to be 3″ x 3½″ x 7/16″.

The whole of the Longitudinal Girders and Angle Irons are to be worked in the longest lengths procurable, and either Welded together or Butt-strapped as may be directed.

TRANSVERSE FRAMES IN DOUBLE BOTTOM The Transverse Frames in the double bottom consist of Solid Frames spaced as shown in the Profile, to be made perfectly water-tight, and of intermediate Bracket Frames 4 feet apart.

The Solid Frames are to be formed of Plates 5/16 inch thick, fitted between the longitudinals and the inner and outer bottoms, and supported on their inner edges by continuous single Angle Irons 3″ x 3½″ x 3/8″, and on their inner edges and ends by Single Staple [sic] Angle Irons 3″ x 3½″ x ½″ worked between the longitudinals.

The Bracket Frames are to be formed as shown in the Midship Section of Plate 3/16 inch thick of a continuous Single Angle Iron on inner edge 3″ x 3½″ x 3/8″ (these Angle Irons are not to be worked in more than two lengths, the Butts being well shifted and covered to the satisfaction of the Overseer), and of single Angle Irons 4″ x 3½″ x ½″ on the outer edge worked in short lengths between the Longitudinals, and turned up the vertical Keel Plate, as shown in the Midship Section. The short Angle Irons connecting the Bracket Plates to the Longitudinals are to be Single 3″ x 3″ x 3/8″.

Beneath the Engine and Boiler Bearers, Frame Plate lightened by means of Holes are to be substituted for Bracket Frames if directed, the Angle Irons in these cases being the same as in other solid Frames.

TRANSVERSE FRAMES BEFORE AND ABAFT THE DOUBLE BOTTOM These frames are to be 3 feet apart formed, as shown in the Section, of Bracket Plates, 3/8 inch thick, of Single Angle Irons on the inner edges 3″ x 3½″ x 3/8″ riveted to the Bracket Plates, and running continuously on the inside of the Longitudinal Frames, from the point where they scarph with the Frames behind Armour on one side of the ship to the same height on the other; of Single Angle Irons on the outer edges 4″ x 3½″ x ½″. Worked in short lengths between the Longitudinals, and turned up the vertical Keel Plate, as shown in the Section, and of short Single Angle Irons 3″ x 3″ x 3/8″ connecting the Bracket Plates to the Longitudinals.

The general arrangement of these Frames is to be to the complete satisfaction of the Overseer, and a sketch of it is to be submitted for approval before the work is commenced.

REVERSE ANGLE IRONS.....To be worked wherever required by the Overseer.

INNER BOTTOM PLATING.... A Water-tight Bottom is to be wrought inside the ship, as shown in the Midship Section, extending from Station 15 to Station 44, and from the height of the Armour Shelf on one side of the ship to the same height on the other. The Plating is to be 3/16 inch thick, except on the flat portion of the Engine and Boiler Rooms, where it is to be 3/8 inch thick; the whole is to be worked flush with the Edge Strips and Butt Straps on the other side, to be Single Riveted on the edges, and Double Chain Riveted at the Butts, or worked with Lap Joints or Short Taper Liners as may be directed.

The space between the two Bottoms is to be enclosed at the upper part by the recess longitudinal, the inner edge of which is to drop slightly below the horizontal, as shown in the Midship Section, either with or without an angle.

The whole of the above is to be carefully caulked and made water-tight to the satisfaction of the Overseer.

A Man-hole with a water-tight Cover or sliding water-tight Door, as may be required, is to be fitted so as to give access to each compartment enclosed by the water-tight transverse Frames and the two Bottoms.

Those in the Plating on the floors are to be raised above the flat.

OUTSIDE PLATING.....To be worked lap jointed, as shown in the Midship Section, and to be ½ inch thick throughout (the Keel Plate to be double). The Plates are to be in lengths of about 12 feet; but the

Overseer is to be at liberty to increase the length of any of these Plates to 16 feet, if it is desirable, for the purpose of obtaining a good shift of Butts. The Butts of the Plates are to be as nearly as possible in the middle of the openings between the Frames, and there are to be in all cases two Plates between Butts vertically over each other. The whole arrangement of the Butts &.c, is to be submitted to the Overseer, and approved by him before the work is commenced, and no deviation is to be allowed therefrom without his consent having been first obtained.

The Plates are to be generally arranged as shown in the Section, every other Strake being fitted close home to the Frames, the remainder to be fitted wholly outside them, the spaces between the outer Plates and the Frames to be fitted with solid liners carefully fitted.

The Butt Straps of all Plating is to be of the same thickness as the Plates, and to have the fibre in the same direction; those on the inner Plates are to extend the whole breadth of the Plates, those on the outer Plates are to be carefully fitted between the laps. The Butts are to be double chain riveted, the straps being 11 diameters wide.

All joints of outside Plating to be double riveted.

The Plating ending on the Post is to be treble riveted to it.

The Plating forward is to terminate on the Stem in a rabbet taken out to receive it, or as shall be directed.

All Laps, Butt Straps, and Faying surfaces of the Plates are to be cleaned from rust before being worked. The Plates are to be truly fitted at the Edges and Butts, as no pieces will be allowed to be put in and caulked over, and all joints are to be caulked in the most careful manner to the satisfaction of the Overseer, and no canvas, red lead, or other substance is on any account to be inserted in the seams, but all is to be caulked metal to metal.

The punching and countersinking is to be carefully executed, and the rivet holes carefully rimed out wherever required by the Overseer.

PLATING BEHIND ARMOUR..The Plating behind Armour to be 1¼ inch thick on Sides, and 1 inch thick on Breastwork. The whole is to be worked in two thicknesses, and generally without edge strips and butt straps, and to be caulked and made water-tight. Butt straps and edge strips are, however, to be supplied wherever required by the Controller of the Navy. As the Butts are not to be strapped, they are to be placed on Frames wherever practicable.

TRANSVERSE WATER-TIGHT BULKHEADS To be placed where shown in the Profile and to be bounded throughout the length of the Double bottom by the inner bottom, not passing though it. The Bulkheads before and abaft the double bottom to lap on to solid Frames and to be single riveted to them.

The Plates for all the Bulkheads, except for those at fore and after ends of the Boiler Room, the after end of the Engine Room, and the Stuffing Box Bulkhead, to be 1¼ inch thick lap jointed single riveted, and supported by angle irons 3″ x 2½″ x ⅜″ placed vertically 2 feet apart.

The Plates for the Bulkheads at the fore and after ends of the Boiler Room, and the after end of the Engine Room, to be ⅜ inch thick jump-jointed single riveted, and the joints covered by T irons 4½″ x 3″ x ⅜″, and having angle irons on the opposite side 3″ x 3″ x ½″, placed vertically 3 feet apart. The Plates of the Stuffing Box Bulkhead are to be ⅜ inch thick in the Midship Portion, but at the sides in wake of the shaft tubes the Plates are to be increased in thickness as may be directed.

Small partial Bulkheads are to be introduced in wake of the Stern Tubes, if required, or any other method is to be adopted to strengthening the Vessel in this part as the Overseer may direct.

The edges of all the Bulkheads bounded by the inner bottom are to be attached to the Internal Plating by single angle irons 3″ x 3″ x 7/16″.

All the Bulkheads are to have suitable angle irons for connection with the Decks and the Flats in the Hold.

The whole of the above work is to be carefully caulked and made water-tight to the satisfaction of the Overseer.

WATER-TIGHT DOORS, SLUICE VALVES, MANHOLES, &C. Water-tight Doors and Man-holes of an approved pattern are to be fitted in the Bulkheads where shown in the Drawings, or where directed, round which screen Bulkheads with Doors are to be fitted. [sic].

A Sounding Tube is to be fitted to every Compartment or water-tight space; also a Sluice Valve or Cock wherever directed, fitted with Levers or Rods for opening and closing them; such rods to pass through stuffing boxes as may be directed. The Rods where connected together are to have Metal Bolts, and all levers are to be metal bushed.

Sea-cocks are to be fitted through the side where directed with Copper Pipes and Cocks leading therefrom for the purpose of admitting sea water to any of the Compartments, and for flooding Magazines, Shell Rooms, Spirit Rooms &c. The Pipes are to be cased with Wood, or with Iron Plating wherever directed.

The arrangements for opening and shutting the water-tight Doors, Sluice Valves, Cocks, &c. are to be to the entire satisfaction of the Overseer, and all necessary levers &c. are to be provided for this purpose, and are to be stowed near their work.

HOLES IN BULKHEADS FOR ENGINEERS' PIPES All Holes in bulkheads (wood or iron) for passing Engineers' Pipes through, to be cut by the builder, and the Holes to be made water-tight round the Pipes where directed.

WATER-TIGHT COMPARTMENTS TO BE TESTED All water-tight Bulkheads and Flats to be tested by filling the Compartments with water, and when all defects discovered are made good, the work is to be re-tested.

SHAFT PASSAGE BULKHEADS .....To be formed as may be directed of Plates ¼ inch thick, and Angle Irons 3″ x 2½″ x ⅜″ placed 30 inches apart.

These Bulkheads are to be made water-tight and are to extend as shown in the Plan of Hold. They are to have suitable air tubes fitted at their after ends together with water-tight Manholes for getting into the Bilges. Metal water-tight valves are to be fitted in the Flat for letting the water into the Bilges, and also means for drawing water from the bearers by Copper or other Pipes, as may be directed.

ENGINE, BOILER AND SHAFT BEARERS To be fitted as required by the Engineers. Tubes are to be fitted through the Bearers for watercourses, and water-tight sluice valves are to be fitted for letting any water that may get into them run into the bilges.

DECK BEAMS, CARLINGS &C The upper Deck Beams, except those under the Turrets, are to be formed of bulb-iron, to be 9 inches deep and ½ inch thick with two angle irons on the upper edge 3″ x 3½″ x ½″. Under the Turrets, as shown upon the Profile, the beams are to be formed of a plate 12 inches deep and ½ inch thick with two angle irons on the upper edge 3″ x 3½″ x ½″ and two angle irons on the lower edge 2½″ x 2½″ x 7⁄16″. These last named angle irons are to run down, and form double reverse irons on the frames below.

The Lower Deck Beams are to be of bulb T-iron 6 inches deep, and 3⁄16″ thick, with 5-inch top flange, or of approved bulb angle iron.

The Beams over Breastwork are to be 7 inches deep and ½ inch thick.

The Beams of the Flying Deck are to be composed of T-Iron 5″ x 4″ x 3⁄16″.

The Beams on all Decks are to be spaced as shown on the Drawings, and the Half Beams and Carlings on all Decks are to be of the same depth and section as the Beams, unless otherwise directed.

All the Beams and Half Beams are to have solid Welded Knees, as shown in the Sections, or as may be directed.

The whole of the Bulb and T-iron Beams are to be supplied in one length, and the Plates and Angle Irons composing the main Beams are to be in the greatest lengths procurable.

The Section of all Beams to be submitted for the approval of the Controller of the Navy before the Beams are ordered.

SUPPORTS TO FLYING DECKThe continuous Longitudinal Carlings shown on the Plan of this Deck are to be of I-iron 10 inches deep and 7⁄16 inch thick, lightened by holes where directed. These Carlings are to be secured to Plate and Angle Iron Supports, formed as shown upon the Drawings, of Plate 7⁄16 inch thick and Angle Irons 3″ x 3½″ x 7⁄16″, and otherwise, as will be directed; some of these Supports will run down to, and be connected with the Plating on the Deck over Breastwork; others will be attached to the Pilot House, and to the Funnel Casing, and Ventilating Shaft which will be

strongly built for the purpose of receiving them. The spread of the Heels of the Supports which run down to the Deck is to be arranged as to clear the inside Fire of the Turret Guns. The construction of this Flying Deck is to be modified as directed, if required.

In addition to the Supports just described, the Flying Deck is to be stiffened and supported by Portable Pillars, Diagonal Tie Plates &c., entirely to the satisfaction of the Overseer, and plating is to be introduced as directed in wake of the Fire of the Guns, and elsewhere.

DECK PLATING.....The surface of the Upper Deck outside the Breastwork is to be covered with two thicknesses ¾-inch Plating worked on the Beams; this Plating is to be worked without Edge Strips or Butt Strips except in certain places, and is to be caulked and made perfectly water-tight. The under thickness of this Plating (viz. One thickness of ¾ inch each [sic] Plating) is to be worked under the Armour, &c. of the Breastwork, as far as the inside of the heels of the Frames; the remaining Portion of the Deck within this is to be covered with ⅜-inch roughed Iron worked with Edge Strips, and Butt Straps on the under side, and caulked and made perfectly water-tight, or, if directed, plank between the beams is to be worked in lieu of plating.

The surface of the Deck over Breastwork is to be covered with two thicknesses of ½ inch Plating worked on the Beams and extending to the Glacis Plates round the Turrets to which it is to be connected, as will be described by a Sketch to be furnished. This Plating is to be worked, like the Upper Deck Plating, without either Edge Strips or Butt Straps and is to be caulked and made water-tight. The Hatchways on this Deck are to be fitted with Iron Shutters of the same strength as the Deck, and the Ventilating Shaft, Funnel, and Funnel Hatches are to be fitted with Iron Bars to keep out Shot and Shell, as may be directed.

The Plating on the Upper Deck and on the Deck over Breastwork which is worked in two thicknesses is to be single riveted at the Edges and Butts, and the ⅜-inch Plating within the Breastwork is to be single riveted at the Edges and at the Butts, with suitable straps to both on the underside.

The surface of the Flying Deck is to be plated with ⅜-inch plating wherever directed.

An arrangement of Butts for all the Plating on Decks is to be submitted to the Overseer for approval, the unstrapped Butts being placed upon Beams where practicable, after which no deviation therefrom will be allowed without his sanction.

GLACIS PLATES..... A Glacis Plate is to be worked round each of the Turrets on this Deck of the form shown in the Section, to be 3 inches thick in the middle, tapering to 2 inches on the inside and 1½ inches on the outside. The foremost portion of the Glacis Plate to the after Turret and the aftermost portion of that to the foremost Turret are to be supported on Carlings formed of plates ½ inch thick and 7 inches deep with two Angle Irons on the upper edge 3″ x 3½″ x ½″ and two on the lower edge 2″ x 2½″ x 7/16″; these Carlings are to be spaced as shown upon the Plan of Deck and well secured to the Beams and Frames. Intercostal Carlings of the same size are to be worked between these Carlings until they meet the side; the intercostal carlings are to be connected together by a continuous Plate 9″ wide and ½ inch thick, which is to be riveted to their lower edges, the whole to be well pillared as will be directed.

LOWER DECK STRINGER.....To be 14 inches wide worked as shown on the Section and Plan. The Angle Irons connecting the Stringer to the Frames to be 3″ x 3″ x ⅜″.

WATERWAY ON LOWER DECK To be composed of East India Teak, worked as shown in the Section.

DECK FLATS.....FLYING DECK. To be covered with Dantzic Fir 2½ inches thick, except over the Turrets, where Gratings of Wood or Iron are to be fitted, in lieu of Deck Deals, if required. Plank to be tie-bolted.

DECK OVER BREASTWORK. The surface of this Deck on top of the Plating is to be covered with Dantzic Oak 3½ inches thick.

UPPER DECK. The surface of this Deck outside the Breastwork and on top of the Plating is to be covered with Dantzic Oak 4 inches thick.

LOWER DECK. To be of Dantzic Fir 2½ inches thick.

The underside of the Deck Deals to be well fitted to the Deck Plating, and where there is no Plating they are to be trimmed straight and fair: the edges are to be planed before being laid so as to leave a proper seam for caulking.

The Decks are to be thoroughly caulked with the number of Threads of Oakum used in H.M. Service and made perfectly water-tight; and if it should be considered necessary by the Overseer before the ship is delivered up by the Contractors to the Admiralty, to recaulk the several Decks, the same is to be done by and at the Expense of the Contractors; and if any portion or the whole of the Caulking should be found on final survey at H.M. Dockyard not to be done in such an efficient manner as is usual in H.M. Service the same is to be recaulked, and the Expense thereof deducted from the Contractors' final Bill.

The Seams of the Decks are to be payed with Jeffery's Marine Glue or with Resin or Pitch, as may be directed.

The underside of the Decks in contact with the Iron is to be thickly coated with Red Lead or other approved Material.

The Decks are to be secured with Nuts and Screw Bolts as will be directed, and the whole of the Material is to be well seasoned and free from all objectionable Knots, Sap, and other Defects.

The whole of the Decks and Cabin Flats are to be planed, if required, both on the upper and lower Sides.

FRAMINGS AND HEAD-LEDGES ON THE SEVERAL DECKS To be of Iron, Teak, Cuba Mahogany, or African Timber, as may be directed, and of the dimensions required by the Overseer; to be well secured to the Framework of the Deck.

PILLARS IN HOLD AND BETWEEN DECKS Every Beam is to be pillared, trussed, or otherwise supported, with such exceptions only as shall be directed.

Those between Decks forward and aft to be Wrought Iron Tubes 4 inches in diameter and 3/16 inch thick with heads and heels welded in solid and firmly secured to the Beams.

Under the Breastwork and Turrets wherever practicable solid or wrought-iron Tubular Pillars are to be fitted as the Overseer may direct.

BREAST HOOKS.....The arrangement of Breast-hooks for the support of the Stem on the ends of the Longitudinals, and at such other places as may be deemed necessary to be in accordance with a Sketch which will be furnished.

ARMOUR PLATING.....The Armour Plates are to be worked as shown in the Midship Section and Sheer Plan; the upper Strake on the Ship's side is to be 8 inches and the lower Strake 6 inches thick. The Plates are to be worked their full thickness from Station 15 to Station 43, before and abaft which stations the Plates are gradually to taper in thickness, the upper Strake is to taper from 8 inches to 5½ inches at the extremities, and to the lower Strake from 6 inches to 4 inches. The Plates forming the tapered portions of the Armour are not to taper individually, but each Plate is to be of the same thickness throughout, that thickness being the mean thickness of the Plate supposing it were to taper; these Plates will have to be let into the Backing in Steps.

The Armour on the Breastwork is to be 8 inches thick in the midship portion, and 9 inches thick in wake of the Turrets, as shown on the Plan of Upper Deck. The height of this Armour is to be as shown in the Midship Section.

The Armour Plates are to fastened with conical-headed Iron Bolts, those in the 8- and 9-inch plating to be 3 inches in diameter, and those in the 6-inch plating 2½ inches in diameter.

The counter-sinking in the plates to receive the heads of the bolts is to extend one half through the plates; the bolts are to pass through the Backing and Skin, and their points are to be secured with Nuts and Elastic Washers, in accordance with a sketch which will be furnished; or the Bolts are to be formed on Major Palliser's Plan, if so directed. There are to be two bolts in each plate between every two frames, and three in each butt; they are to be placed 9 inches from the edges, and the two outer ones 1 foot, and the inner one 16 inches from the butts.

The above description as to the number of bolts between every two frames is for the plates of 6 inches and above, where the plates are thinner the bolts are to reduce in diameter, as the Overseer may direct.

The Armour Bolts to be of Bowling, Lowmoor, Farnley, or other iron approved by the Controller of the Navy.

All the Butts in the Armour Plates are to be on the frames, not between them, and the edges and butts are to be well planed and fitted to the satisfaction of the Overseer. A sketch showing the whole arrangement of edges and butts

of armour, the thickness of each plate, the position of girders, and the disposition of Armour and Backing, is to be approved by the Overseer, after which no deviation therefrom will be allowed without his sanction.

Before the Overseer sanctions the arrangement shown on the Sketch, however, he is to forward a sketch to the Controller of the Navy for remarks, showing the exact dimensions of the armour plates, particularly in regard to thickness, giving the same for each plate in the tapered portions forward and aft.

The Armour Plates are to be rolled and of the best description, the names of the Makers to be submitted to the Controller of the Navy for approval. Samples of the Armour Plates to be selected as often as may be required for testing in any manner the Admiralty or their Officers may think proper.

If the tests are satisfactory the entire cost of the plates tested will be borne by the Government, if unsatisfactory, by the Contractors.

WOOD BACKING.....To be in thickness amidships as shown in figures on the Sections, tapering in proportion to the thickness of the Armour at the extremities of the ship.

To be composed of East India Teak, free from all defects, worked in a recess, as shown in the sections, and to be secured to the skin of the ship with flat-headed Bolts ⅞ inch diameter amidships and ¾ inch forward and aft, spaced one between every two frames, or as may be directed, and screwed up on the inside of the plating behind Armour with Nuts and Grummets.

Great care is to be taken that the wood backing is well fitted to the sides of the ship, and all faying surfaces are to be thickly coated with Red Lead, Waterproof Glue, or other approved materials as may be directed. All the joints are also to be caulked and made water-tight to the satisfaction of the Overseer, the number of threads of Oakum and Spun Yarn being as is usual in H.M. Service for similar thicknesses. The outer surface of the Backing is to be completely coated with Hay's Waterproof Glue before the armour plating is put on.

As more than ordinary care will be required to prevent leakage between the Shelf Plate to recess and the wood backing, the Overseer will have authority to introduce additional means for effecting this object without additional charge.

COAL BUNKERS.....To be built complete by the Contractors of the required capacity, the thickness of Plates, size of Angle Irons, and general arrangement to be as may be directed; the Plates are to be carefully caulked, and made water-tight as required. Flats to be of wood or iron, as may be directed. Doors to be fitted where required (water-tight, as ordered).

MAGAZINE, HANDING ROOM, AND LIGHT ROOM BULKHEADS The Iron Bulkheads forming the Magazines are to be composed of ¼-inch Plate, worked lap-jointed, and stiffened by Angle Irons 3″ x 2½″ x ⅜″ placed vertically 30 inches apart; these bulkheads are to be lined with two thicknesses of 1-inch Teak, rabbeted or tongued and grooved, and one thickness of Deal well secured to them, as may be directed, by the Overseer.

The remaining Bulkheads, including those of the Handing Rooms, Light Rooms &c., also the Flat and Crown of the Magazines are to be of 4-inch Teak; the whole to be caulked and made water-tight, and the Bulkheads where required by the Overseer are to have linings similar to the Magazine Bulkheads.

SHOT, SHELL, AND SPIRIT ROOMS The Bulkheads of the Shot, Shell, and Spirit Rooms are to be of ¼-inch Plate, properly stiffened with Angle Irons, to be well fitted, caulked and made water-tight where required; Wood or Iron Flats are to be laid as directed.

The Iron Bulkheads forming the Shell Rooms are to be composed of the same thickness of Plates and size of Angle Iron as those for the Magazines. The bulkheads and also the Flats and Crowns are to be lined with two thicknesses of 1-inch Teak similarly to the Magazines; and the whole to be lined with one thickness of Deal, and to be fitted with Stanchions &c., as may be directed. A Light Room is also to be fitted to each Shell Room, fitted with Illuminators &c., as may be directed.

CHAIN LOCKERS.....The bulkheads of the Chain Lockers are to be made of ⅛-inch Plate properly stiffened with Angle Irons, the Plates to be well fitted and made water-tight. A water-tight man-hole door is to be fitted in the side of the lockers at the upper part to admit men to trim the chain; also Iron steps where directed. The lockers are not to have more capacity than is necessary for stowing the cables.

Provision is to be made for securing the clench of the Cables either by Forgings, Plates, or otherwise, as may be directed by the Overseer.

CEILING BETWEEN UPPER AND LOWER DECKS To be of Teak, 1¼ inches thick, tongued and grooved, and fastened to the frames as shall be directed.

LINING INSIDE BREASTWORK The Midship portion of the inside of the Breastwork is to be lined with 1¼-inch Teak, tongued and grooved, the Fore and After parts in wake of the Turrets are to be lined with thin Iron if directed.

PROVISION ROOMS.....The Bulkheads of the Provision Rooms are to be battened or lined, as may be required by the Overseer.

STORE ROOMS AND FITTINGS The Store Rooms are to be as shown on Plan of Hold, the Bulkheads where they are of Iron to be protected with battens or cased with Deal as may be directed by the Overseer. All the Store Rooms are to be fitted complete with Bins, Racks, Drawers, Shelves, and Battens between the Beams, as may be directed, and Partitions are to be fitted in them where required for the purpose of separating the Wines and Spirits from other Stores.

WARRANT OFFICERS' STORE ROOM AND FITTINGS To be fitted complete with all Bins, Racks, Cordage Reels, Drawers, Shelves, Battens between the Beams, Tables, Desks, &c., as is usual in H.M. Service, also Oil, Paint, and Tallow Tanks; the Tanks to be supplied as well as fitted by the Contractors. The Bins, Cupboards, and Drawers in all Store Rooms to be fitted with locks as usual in H.M. Service.

ENGINEERS' STORE ROOM &C. The Engineers' Store Room to be built where shown in Plan of Hold; to be fitted complete with Lockers, Cupboards, Shelves, Drawers, Battens between the Beams, Racks for Spanners, Vice, Benches, &c.

Tanks for holding the required quantity of Oil, Tallow, India-rubber Valves, Paint, and Oakum, are to be supplied and fitted by the Contractors in the Store Rooms, Shaft Passages, or wherever directed.

The Tanks which are not in the Store Rooms are to be fitted with means of locking or securing them.

ENGINEERS' SEA MESS STORE To be fitted with all Racks, Bins, Drawers, Cupboards, Battens between Beams &c.

PAYMASTERS' SLOP ROOM....To be built where shown upon the Plan of Hold and fitted as may be directed.

ENGINEERS' MESS ROOM.....To be fitted with Lockers, &c., as may be directed.

SICK BERTH.....To be fitted with Mess Tables, Stools, Lockers, Shelves, Cupboards, Dispensary if required, Hammock or Cot Hangings, Cisterns, Water-closet, and baths as directed; the baths to be supplied with fresh and salt water.

A Lift Pump with Pipes to be fitted for filling and emptying the Baths. The whole to be to the satisfaction of the Overseer.

DISPENSARY.....To be fitted complete with all Racks, Shelves, Cupboards, Drawers, Washhand [sic] Stand, Cistern &c., as may be directed.

PRISON.....To be built, fitted, and ventilated, as may be directed.

CABIN BULKHEADS.....To be built as shown on the Plans, and framed, as usual in H.M. Service.

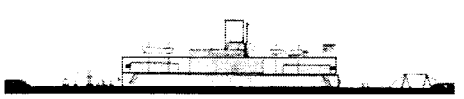
The Bulkheads are to be of Fir, panelled, with shifting or fixed Jalousie Blinds of Mahogany, and Shutters thereto, as may be directed; the Slides, Hinges, Locks, and other Fittings, to be of the same quality and pattern as those in H.M. Service; patterns of these articles will be furnished. The Ward Room is to be fitted with the usual Side Boards, Glass Racks, Drawers &c.

BEDS FOR TURRET AND AUXILIARY ENGINES To be fitted as may be directed.

Shipwrights to attend on Engineers as may be required. Guard Rails to be fitted round these Engines as may be required.

WATER-TIGHT TRUNKS ENCLOSING LADDERWAYS To be formed of Plates ¼ inch thick, worked vertically; to be lap-jointed and single riveted; to be supported by angle irons as may be directed.

The Trunks to be fitted with water-tight Doors on the Deck over Breastwork.



The Turrets

The Turrets are to be built, armour-plated, fitted and made complete in all respects in accordance with the Drawings and as herein-after described, and are to be furnished with efficient and approved means of keeping the joints around them water-tight, and with all needful Chocks, Slides, and other like fittings to receive guns and carriages.

VERTICAL FRAMES.....To be in number as shown upon Plan of Turret, and formed by a Plate 10 inches wide and 7/16 inch thick, bent as shown in the Section of Turret, with a Corner Piece welded on the inner part, and having two Angle Irons on the inner edge 3″ x 3½″ x ½″, and two on the lower part of the outer edge 3″ x 3″ x ½″, worked as shown on the Section. The Intermediate vertical Frames which do not come to the Beams of the bottom are to be connected to the outside Stringer Plate at the Heels by a Bracket Plate 7/16 inch thick as shown in the Marginal Sketch on the Turret Drawing.

The short Angle Iron connecting the Heads of the Vertical Frames to the Top Plating to be 3″ x 3″ x ½″.

RECESS OR SHELF PLATE.....To be ½ inch thick scored over the vertical Frames, and having an Intercostal Angle Iron worked round on its inner edge 3″ x 3″ x ½″ uniting it to the Skin Plating, and a continuous Angle Iron 4″ x 3″ x ½″ on its outer edge connected it to the outside Plating of the Turret. The Plates forming the Recess Plate to be worked in as long lengths as possible, the Butts being well fitted and to have Butt Straps on the under side of the same thickness as the Plates and double riveted.

HORIZONTAL FRAMES.....To be 8″ x 3½″ x ½″ spaced as shown on the section, and having a single reverse L-Iron 3″ x 3½″ x ½″ on their inner edge.

The Horizontal Angle Iron at the upper part connecting the Skin Plating to the Plating of the top to be 3½″ x 3½″ x ½″. These Frames and Angle Irons are to be worked in the longest lengths and the Butts are to be well fitted and covered with Butt Straps to the satisfaction of the Overseer.

SKIN PLATING.....To be in two thicknesses each ½ inch thick worked without edge Strips or Butt Straps.

OUTSIDE PLATING BELOW ARMOUR SHELFTo be ½ inch thick worked flush on the outside, and having the Edge Strips and Butt Straps on the inside as will be directed.

BEAMS OF BOTTOM.....To be spaced as shown on the Plan of the Bottom, to be formed of Plate ½ inch thick and 12 inches deep with two Angle Irons on the upper and lower edges 3″ x 3″ x ½″.

The outer ends of these Beams to be riveted to the vertical frames, the Angle Irons on the upper edge being turned down as shown in the Section, and riveted to the inside Plating and to the Angle Irons on the vertical Frames, the inner ends to be secured by Tap Rivets and Screw Bolts to the casting which revolves on the Centre Spindle. The whole to be completed to the satisfaction of the Overseer.

If directed, Friction Rollers are to be introduced on the outside of the Centre Spindle, a Plan of which will be furnished.

BEAMS OF TOP.....To be of Tee-bulb Iron 6 ins. deep arranged as shown on the Plan of the Top having the ends turned down to form Knees as shown in the Section. These Beams are to be riveted to the skin Plating and to the Frames (where practicable) as the Overseer may direct.

PLATING ON BOTTOM.....To be ½ inch thick except the Stringer Plate which is to be 1 inch thick and 18 inches wide, the Plates to be fastened together with Single Riveted Edge Strips, and the Butts to be well fitted, and covered with Single Riveted Butt Straps.

The Edge Strips and Butt Straps to be on the under side.

PLATING ON TOP.....The Plating on the Top to be ¾ inch thick worked flush on the under side, and having Single Riveted Edge Strips and Single Riveted Butt straps on the upper side. The whole to be riveted to the Beams as the Overseer may direct.

IRON LINING INSIDE TURRETS The inside Plating is to be ½ inch thick to the height of the first Horizontal Frame, where it is to be ¼ inch thick, the whole to be worked lap-jointed. The Angle Iron connecting the inside Plating to the Plating of Top is to be 2″ x 2″ x ⅜″, and the Angle Irons connecting it to the Plating of Bottom, and to the outside Stringer Plate are to be 3″ x 3″ x ½″.

WOOD BACKING To be of East India teak 10 and 11 inches thick worked between the Vertical Frames, to be secured to the Skin Plating with flat-headed Bolts ⅞ inch diameter screwed up on the inside with Nuts and Grummets. The backing is to be fitted,

caulked, payed with glue, &c., in the manner already described under the heading of Wood Backing.

ARMOUR PLATING.....To be 10 inches thick on the front, and 9 inches on the back as shown upon the Plan of Turret, the Plates to be worked horizontally and fastened with Iron Bolts 3½" diameter having conical heads.

The Armour Plates are to be secured in the same manner, and are to be subject to all the conditions, before described, under the heading of Armour Plating.

Flash Plates Round Turrets on Deck To be ½ inch thick, worked as shown in the Section.

PORTS.....To be formed by an Iron Tube 1 inch thick; to be well secured to the Frames as may be directed.

STRINGER ON UNDER SIDE OF TURRET OVER ROLLER PATH To be 2 feet 6 inches wide and ¾ inch thick, with two Angle Irons 4" x 3½" x ½" on its under side to support the Bed of the Upper Roller Path, as show in the Section. This Stringer is to have double-riveted Butt Straps worked on the upper side between the Beams.

INTERCOSTAL CARLINGS OVER ROLLER PATH Intercostal Carlings are to be worked over the Roller Path all round its inner edge, as upon the Drawing of Turret; these Carlings are to be formed of Plates ⅜ inch thick, and Angle Irons on upper and lower edges 3" x 3" x ½".

ROLLERS AND ROLLER PATH The Turrets are to run upon Rollers of Iron or Brass as may be directed 11 inches in diameter, spaced as shown upon the Plan, the Rollers being kept in position by two Plate Rings 5 inches wide and ¾ inches thick, and by Iron Rods 2 inches in diameter, which pass through the Iron Rings and the Rollers, and are hove up by Nuts on the Iron Rings and on the Metal Casting at the centre, as shown upon the Plan of Rollers

The Roller Paths are to be of Cast-iron 10 inches broad and 2½ inches thick on the inside and 2 inches thick on the outside. The Plates forming the Roller Paths are to have Lugs on their edges, as shown upon the Plan, and great care is to be taken that they are well bedded on the wood, and that their outer surfaces are perfectly smooth and fair.

CENTRE SPINDLE .....The Hollow Spindle on which the Turrets revolve is to be of hammered Scrap Iron 2 inches thick, and having an external diameter of 26 inches. The outer surface of this Spindle to be sheathed with Brass, ⅜ inches thick.

CASTINGS OUTSIDE CENTRAL SPINDLE The Iron Casting to receive the ends of the Beams of the bottoms of the Turrets to be formed as shown on the Section, and to be turned to fit the Spindle. The Iron Casting for securing the centre Spindle to the Deck Beams is to be formed as shown on the Section, and secured to the Beams and Spindle as may be directed.

ENTRY PORTS AND PORTS FOR PASSING AMMUNITION INTO TURRETS To be placed where shown on the Plan of Turrets, and to be of the depth shown in the Section. These Ports are to be framed as may be directed, the Plating of the bottom and the Angle Iron round its outer edge being beaten down to give sufficient depth, as may be directed.

FITTINGS FOR LIFTING AND LOWERING GUNS The Gun Slides will be provided and fitted by the Contractors complete with Screws or other machinery for Lifting and Lowering them, as will be described by a Sketch which will be furnished.

HOLES IN TOP OF TURRETS FOR VENTILATION AND FOR SIGHTING GUNS To be fitted as may be directed by the Overseer, or as per Sketch that will be furnished.

MODE OF TURNING.....The small engines placed, as shown upon the Drawings, are to be fitted to each Turret; each Engine to be capable of turning the Turret at the rate of [blank in the original document] revolutions per minute.

The Engines are to be supplied by any one of the main Boilers.

All necessary Fittings which will require to be attached to the Turrets to be supplied and fitted by the Contractors as may be directed.

Hand gear is to be provided and fitted in addition to the steam turning gear.

GENERAL FITTINGS.....The Turrets are to be fitted complete with Buffers at front and rear of Guns, Shot Whips, Shot racks, Sponges and Rammers, Cranks, Screens between Guns, Protection for men's heads at Sights, Ventilating Cowls, and all necessary Fittings as may be directed.

Pilot House

The Pilot House is to be built, armour plated, and made complete in all respects as herein-after described, or as may be directed.

VERTICAL FRAMES.....To be of Angle Iron 8½″ x 3½″ x ½″ spaced as shown upon the Plans. Some of these Frames are to be run down to the Upper Deck as pillars, and the whole are to be strongly secured to the breastwork deck by Bracket Plates &c., as the Overseer may direct.

BEAMS OF TOP.....To be of Bar Iron, 3 inches wide and 2 inches deep, worked as may be directed. A Scuttle is to be formed in the Roof of the Pilot House sufficiently large for a man to pass through.

PLATING ON TOP.....To be ¾ inches thick, worked home to the Skin Plating, to which it is to be attached by a Horizontal L-Iron 3½″ x 3½″ x ¾″.

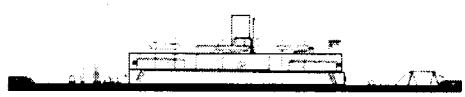
SKIN PLATING.....To be in two thicknesses, each ½ inch thick, worked without edge strips or butt straps.

ARMOUR PLATING.....To be 8 inches and 9 inches thick, as shown upon the Plans, worked and secured as may be directed; and to be subject to all the Conditions before described under the heading of Armour Plating.

WOOD BACKING.....To be of East India Teak, 8 and 9 inches thick, worked between the frames, to be secured to the Skin Plating with Flat-headed Bolts ⅞-inch diameter, secured upon the inside with Nuts and Grummets. The backing to be fitted, caulked, payed with glue, &c., as before described for Wood Backing.

SIGHT-HOLES.....To be cut in the Pilot House where shown upon the Drawings, as may be directed.

NUTS ON POINTS OF ARMOUR BOLTS TO BE COVERED OVER The Nuts on the Points of the Armour Bolts are to be shut in by Iron Plating bent over them, as may be directed.



The Armament and Ammunition Fittings

A general Detail of which is given below, are to be completed in all respects as is usual in H.M. Service, or as shall be directed by the Overseer.

MAGAZINE FITTINGS. The Magazine to be fitted complete with Racks, Dunnage Battens, Supply and Return Scuttles with Flaps, Fearnaught Bags, Metal Hooks for hanging up powder cases, metal Eyebolts for stowing the same, Brass Locks and Stays to Doors, Ladders in Handing Rooms, Whips, Eyebolts, and all usual and necessary Fittings. The Flat of the Handing Rooms is to be covered with 8 lb. lead turned up at the edges as usual in H.M. Service.

THE LIGHT ROOMS are to be fitted with Illuminators and lined with Copper where required. The Lamps to be supplied and fitted in cisterns by the Contractors.

SNIDER MAGAZINE. To be fitted complete with Light Room &c., as shown in the Plan of Hold, and as may be directed.

SHOT RACKS. Of Wood or Iron, to be fitted wherever required.

LOCKS AND LAMPS TO MAGAZINES AND SHELL ROOMS. To be supplied, and fitted by the Contractors according to Pattern.

TELEGRAPH TO MAGAZINES.

CRANKS AND HOOKS FOR ARMAMENT. For Shells, Wads, Powder Cases, Muskets, Pistols, Cutlasses, Tomahawks, Fire Buckets &c.

HOOKS AND RACKS FOR GRAPE AND CANISTER BOXES.

RACKS FOR BOARDING PIKES.

ARM STANDS. To be fitted as is usual in H.M. Service, and in proportion to the complement of men.

CARTOUCH BOXES.

PERCUSSION CAP AND TUBE BOXES. To be made and lined with Copper throughout.

FITTINGS FOR FIRE ROCKETS.

BRACKETS FOR FIGHTING LANTERNS.

ARMOURER'S BENCH.

Boats

Boats to be supplied by the Contractors, built and fitted as is usual in H.M. Service in accordance with Drawings and Specifications which will be furnished, and to be in the number and size which follows, viz.,—

N°	Feet	
1	28	Cutter Life Boat
1	25	Cutter
2	23	Cutter
1	22	Gig
1	14	Dingy [sic]

Anchors and cables

The Vessel is to be supplied by the Contractors with Anchors and Cables in number and size as given below, and in accordance with Admiralty Patterns, or otherwise, as may be directed, and the following appliances necessary for the proper working of them are to be completed as is usual in H.M. Service, and entirely to the satisfaction of the Overseer.

Anchors. To be supplied with 3 60-cwt bowers, 1 18-cwt stream, 1 8-cwt kedge, and 1 4-cwt kedge. The whole to be tested as usual in Her Majesty's Service.

Cables. To be supplied with 3⅞-inch bowers and 1 1¼-inch stream. The whole to be tested as usual in Her Majesty's Service.

Capstans and Fittings. To have a Brown and Harfield's Patent wrought-iron capstan to work on the Lower Deck, having a wrought-iron Cable Holder on the Upper Deck. The whole to be fitted in accordance with a Sketch which will be furnished, and to be complete with all necessary fittings.

The Capstan is to be fitted to work by steam if directed.

Riding Bitts. To be of wrought iron, placed where shown upon the Drawings, or as may be directed.

Hawse Pipes and Stern Mooring Pipes. To be fitted where shown upon the drawings, or as may be directed.

Deck Pipes, Compressors, &c. Cast-iron Pipes and Compressors, or Brown's Deck Stoppers, or both, are to be fitted as the Overseer may direct (if Compressors be fitted they are to be worked by a bar moving in a water-tight stuffing-box, as may be directed).

The size and thickness of the Deck Pipes and Stoppers to be as directed by the Overseer.

Iron water-tight covers are to be fitted to the Deck Pipes.

Catheads. To have two portable catheads forward and one aft, to be placed where shown upon the Drawings, or as may be directed; and made and fitted in accordance with a Sketch that will be furnished.

Fittings for Anchors. To have all necessary Bollards, Eye Bolts, Lashing Bolts, Slip Stoppers, Tumblers, &c. The whole to be completed as is usual in Her Majesty's Service.

Plating in Way of Anchors. The deck to be plated in wake of Anchors as the Overseer may direct.

Portable Pillars. The Pillars on the Lower Deck situated within the range of the Capstan Bars are to be made portable, and fitted with Screws for setting them up.

Ring and Eye bolts to be Tested. All Ring and Eye Bolts for securing the Cables are to be tested up to the proof strain as is usual in H.M. Service at the expense of the Contractors. Caps to be fitted over the nuts of the bolts if directed.

The arrangements for Ventilating, Draining, and Pumping out the Ship are to be completed in all aspects in thorough accordance with the following directions, or with such other directions as the Overseer may give.

General Mode of Ventilation. As the Ventilation of the Vessel must be almost entirely effected by artificial means, no pains must be spared to make the system as perfect as possible.

A Drawing will be furnished showing the details of the arrangement to be carried out, and the Contractors are to fit all Pipes, Cowls, &c., and all other Fittings which may be necessary to complete the Ventilation in accordance with the Drawing and to the satisfaction of the Overseer.

The following is an outline of the arrangements intended to be furnished, viz:–

THE FRESH AIR WILL BE ADMITTED into the Vessel by means of the Ventilating Shaft, the Ash Shoot [sic], and the openings in the Decks over Stoke-hole. There will be a Fan at the bottom of the ventilating shaft, and another at the fore end of the Boiler Room between coal bunkers, both fans to be worked by steam. The air will be led forward and aft through main pipes under the Lower Deck, those forward will be led round the sides of the ship, and those aft along the upper part of the shaft passage. Branch pipes will be connected to these main pipes for leading the air in any required direction. The main pipes where they pass through the water-tight bulkheads are to pass through stuffing boxes.

AT EACH OF THE WATER-TIGHT BULKHEADS a water-tight valve, a Sketch of which is to be submitted for approval by the Controller of the Navy, is to be fitted in the main pipes, and so constructed so as not to interfere with the passage of the air through the pipes, but which may be used in case of any one compartment of the Vessel becoming filled with water to close the pipes, and thereby prevent the water from entering any other compartment by means of the air outlets.

THE MAIN AND OTHER PIPES to be of galvanised iron or copper, as directed, and put together and secured as the Overseer may direct.

THE FOUL AIR will escape through the Turrets, up after Ladder Way, and through holes that are to be cut in the Upper Deck within breastwork wherever required. Doors may also be cut in the funnel casing, if required, to assist the escape of foul air. The spaces round Engine and Boiler hatches to be cased and glazed as directed between decks.

DRAINAGE AND PUMPING ARRANGEMENTS. Between the inner and outer bottoms, on one side of the vessel, a wrought-iron water-tight drain pipe, 12 inches in diameter, is to be fitted throughout the length of the double bottom, the diameter being reduced at the extremities if directed.

THE WATER WILL BE PUMPED from the drain-pipe by the Steam Pump which is to connect with the underside of the pipe at its lowest point, near the middle of the ship.

THE DRAIN-PIPE TO BE ¼ INCH THICK, jointed together with common angle-iron flanges. The angle irons to the bulkheads and to connect the lengths of pipe are to be 2½" x 2½" x ¼". It is desirable that the lengths should be arranged so that the middle piece in each water-tight compartment may be easily removed at intervals for the purpose of cleansing the drain pipe.

TWO WATER-TIGHT MUD-HOLES to be made one before and one abaft the lowest part of the drain pipe for cleansing out all deposits of dirt, &c.

AT INTERVALS along the inner bottom there are to be drains or cisterns communicating with the common drain pipe, so that the water will pass immediately from all parts of the inner bottom through the drains into the common drain pipe. The position of these drains to be described by a Sketch which will be furnished.

THE DRAIN PIPE is to be very firmly secured to the Bulkheads and to every Floor Plate.

EACH OPENING FROM THE DRAINS into the common Drain Pipe is to have a self-acting Valve at the lower part. As a precaution in case these self-acting Valves should not act so as completely prevent the water escaping out of one compartment through the Drain Pipe into another compartment, other Valves are to be fitted worked by rods, as may be directed, and furnished with Indicators.

THE OPENINGS TO THE DRAINS are to be protected by perforated iron Boxes or Strainers above the inner bottom; one side of each of these Strainers is to be hung with a hinge for clearing the Drain when necessary.

THE VERTICAL DRAINS are to be fitted as close to the Bulkheads as practicable, so that the rods for opening and shutting the Valves may run up close to the Bulkheads.

A SUCTION FROM THE STEAM PUMP is to be connected with the underside of this Drain Pipe.

TWO SUCTIONS are also to be led from the Downton's Pumps (fitted as may be directed) to be used for pumping out the Drain Pipe when steam is not up.

SUCTION PIPES leading into the Drain Pipe are to have their extremities enlarged and Strainers fitted over them opening into the Drain Pipe to prevent choking.

PROVISION IS TO BE MADE for filling and emptying each compartment. In some convenient place at the after end of each water-tight compartment a short Stand Pipe is to be led from the inner bottom to within an inch or two from the outer bottom; this Stand Pipe is to have a Cock on the upper end above the double bottom, so arranged that a hose from the Downton's Pumps may be connected with it above the cock. The

Pumps will thus be able to fill or empty the compartments as may be required. The bottoms of the Stand Pipes are to be enlarged, but will not require roses.

A DRAWING showing the positions and giving a full description of Sea-cocks, Suction and Discharge Pipes, Sluice Valves, &., with all necessary details will be furnished.

WATERCOURSE IN HOLD. Watercourses are to be fitted throughout the Engine and Boiler Rooms, Coal Bunkers, and such other places as the Overseer may direct.

TUBES are to be fitted in connection with the Sluice Valves wherever directed.

PUMPS, PIPES &C. To have 2 9-inch and 2 7-inch improved Downton's Pumps complete with all Copper pipes, mixed metal Valves, Cocks, and all other fittings, the whole to be supplied and fitted by the Contractors; also 2 additional Pumps for general purposes connected with Condensers, Tanks, Galley, &c.

A SKETCH WILL BE FURNISHED showing the position of the Pumps, size and direction of Copper Pipes, &c.

THE DOWNTON'S PUMPS are to be adapted for extinguishing Fire, as may be directed.

ALL PUMPS AND LEAD PIPES for salt and fresh water, and for general purposes, are to be supplied and fitted by the Contractor.

THE GEARING for working the Pumps to be of the most approved plan, and to be fitted and stowed where directed. All necessary Eye-bolts, Valves in Deck, &c., are to be fitted for drawing the Boxes of the Pumps; also all spare Gear, lockers for stowing spare Gear, and cranks for stowing Hoses to be fitted where directed. Access to be given to all Cocks and Valves.

LIFT PUMPS for filling cisterns to Waterclosets, Baths, &c., to be fitted where directed.

THE WHOLE OF THE LEAD AND COPPER PIPES necessary for these Pumps to be fitted and cased as shall be directed.

SCUPPERS, &C. Scuppers are to be fitted, if required, in number and position as shall be directed.

It is to be distinctly understood that the Contractors are to supply, fit and complete in every respect to the entire satisfaction of the Overseer all other detailed Fittings, including the following:–

RUDDERS AND STEERING APPARATUS. The Rudder frame to be of the Best Hammered Scrap Iron, the head to be 8 inches in diameter and to taper towards the heel if required. To be plated with ¼ inch Iron Plates and fitted so as to unship afloat. To be complete with Tiller blocks, Chains, Rudder Pendants, Ring Plates, Stop Cleats, Stuffing Boxes, Rudder Cant, Holes for Guys for Hanging Rudder, and Screw Bolts in the head of Rudder, and all other means of unshipping, also suitable means for locking the rudder, with such other Fittings as are required to complete the Steering Apparatus to the entire satisfaction of the Controller of the Navy, to whom a drawing, showing the details of the arrangement is to be submitted for approval. Spare steering Gear of every kind is to be supplied, including Tiller, Rudder Chains, &c.

STEERING WHEELS AND STANCHIONS. To be fitted complete as is usual in H.M. Service, with Slide Boxes for Tiller Ropes, Metal Knees to Wheel Stanchions, Index, Tiller Rope Casings, and all other usual and necessary fittings, as may be directed by the Overseer. Arrangements to be completed for having both Wheels connected with the Tiller at the same time.

SPARE BLADES TO PROPELLERS. To be stowed and secured as may be directed.

BITTACLES AND STANDARD COMPASSES. To be supplied according to pattern and fitted by the Contractors, as the Overseer may direct.

CHRONOMETER ROOM AND COMPASS CARD BOXES. To be fitted as may be directed.

CHART HOUSE. To be fitted as may be directed.

DISTILLING APPARATUS. The Distilling Apparatus and Kingston's Valves and Cocks through the bottom, to be in accordance with the Government Pattern and to be supplied, fitted, and enclosed in Bulkheads by the Contractors. The whole of the work connected with Kingston's Valves and Cocks through the bottom is to be performed by the Contractors unless otherwise arranged by the Government. All the Copper Pipes connecting the Receiving Tanks with the Condenser, Cocks, and Air Pipes from Condenser, the Copper Pipes leading from the Receiving Tank, and the Receiving Tank are to be supplied and fitted by the Contractor in the same manner as is usual in H.M. Service. The Pipes connecting the Distilling Apparatus with the Boilers to be supplied by the Contractor, and the Pipes to be Stayed and cased where directed by the Overseer.

TANKS. Iron Tanks to be fitted in Officers' Mess Berths, Sick Bay, Dispensary, Gunner's and Boatswain's Store Rooms for Tar and Paint, in Handing Rooms to Magazines, and wherever usual in H.M. Service. Tanks in Hold for Fresh Water to be provided and fitted by the Contractors, they are to be connected with each other by means of 2-inch wrought-iron Pipes with Screw Check Nuts and Leather Washers at their upper parts.

WATER CLOSETS. To be fitted where shown upon the Drawings, or where directed by the Overseer, to have Force Pumps and all fittings necessary for clearing the soil. The Water Closets on the Upper Deck are to be very strongly built, as may be directed, to enable them to withstand the explosion of the guns firing over them, and to be screened from the wash of water, as shown on the Plans. The soil is to be forced through Pipes leading across the deck and over the side, and all necessary Pipes, Scuppers, Flaps, &c., for draining and cleansing the Closet, to be fitted to the satisfaction of the Overseer. The Oak Deck is to be stopped short at the Closets in order to give sufficient height.

BATH ROOMS. Separate Baths are to be fitted for the Engineers, Seamen, and Stokers. The Baths to have Tops and False Tops. Lockers, Drawers, and Cupboards, to be fitted where directed. The Flat of the Bathrooms to be lined with Lead. Steam Pipes to heat the Water to be fitted; and all Pipes and Pumps to be cased where directed.

STEWARDS' BERTHS. To be fitted with the usual Lockers, Drawers, Bins, Glass and Plate Racks, Hooks, Sideboards, Shelves, Desks, Iron Tanks for Provisions, &c.

CAPTAIN'S SLEEPING CABIN. To be fitted complete with Water-closet, Bath, &c., as is usual in H.M. Service, or such conveniences in lieu thereof as may be directed.

SEAMENS' LIBRARY. To be made and fitted where directed.

LAMPS. Of an approved pattern to be supplied in sufficient number to properly light the vessel between decks forward and aft.

LAMP ROOM. To be fitted where shown upon the Drawings.

FIXED FURNITURE. All Fixed Tables and Brackets, Swinging or other Tables, Lamps, and Book Shelves in all Cabins, Bed Places fitted with Drawers under, Wash Stands with Cupboards under, in Warrant Officers' and Stewards' Cabins, or in any other Cabins where directed, Brass Hat and Coat Pegs in all Cabins, Buffets and Bookcases in Captain's Cabin, &c., are to be fitted by the Contractors.

SIGNAL LOCKERS.

LOCKERS FOR BOATSWAIN'S WASH GEAR.

LOCKERS FOR STOKERS CLOTHES, COAL SACKS, AND FIREWOOD. To be fitted in or near the Stokehole.

COOK'S DRESSER. To be fitted complete with Cranks as directed, and to be stowed between the Beams if ordered.

COOK'S CUPBOARDS.

CHOPPING BLOCK.

COAL BOX FOR GALLEY. To be made of Plate iron.

MEAT SAFES AND SCREENS. To be fitted round the Galley and other places, as usual in H.M. Service. Also Bars and Hooks for hanging up Meat, &c., wherever directed.

BOXES FOR MARINES' HATS.

RACKS FOR SEAMEN'S HATS AND DITTY BOXES.

BAG RACKS. To be formed of either Wood Quartering or Battens, or Iron Bars, as usual in H.M. Service, and fitted where shown on the Plans, and wherever the Overseer may direct.

MESS TABLES AND STOOLS. To be in number and dimensions as may be directed, made, fitted, and stowed, as usual in H.M. Service. The Iron Cranks for the Tables and Legs for the Stools are to be in accordance with Patterns to be supplied.

SHELVES, LOCKERS, &C. To be fitted along the Side for Seamen and in Wardroom and Warrant Officer's Mess Berth, as may be directed by the Overseer.

HAMMOCK BOXES. To be fitted where directed.

HAMMOCK HOOKS, &C.

COALING SCUTTLES. Coaling Scuttles to be fitted where shown upon the Drawings, those on the deck over Breastwork to have water-tight covers of the same strength as the Deck fitted on the Deck Plating; in addition to which they are to have common cast-iron covers to screw on flush with the upper part of the wooden Deck; the cast-iron covers to be glazed if required. Portable Shoots [sic] to be fitted between Decks and stowed where directed.

Gratings, Cap Scuttles, &c. Gratings, or Cap Scuttles, or both, are to be fitted to all Hatchways, Ladderways, and Scuttles. Gratings to be either of wood or iron; the whole to be completed and stowed as may be directed.

Ash Shoot. To be fitted where shown upon the Drawings, complete with Hoisting Gear, and Ventilating Cowl on top (Hoisting Gear to be worked by steam if required).

Carlings Between Deck Beams. To be fitted in such places and of such materials as the Overseer may direct.

Boats Davits and Other Fittings for Boats. To be in Number, Size, and Position as shown upon the Drawings, or as may be required, complete with Blocks, Chain Guys, Metal Sheaves, Topping Lifts, Slips, Crutches, Eye Bolts, and all other Fittings requisite for Raising, Lowering, Stowing, and Securing all the Boats. The Boats' Davits are to hinge and swivel at the Heel as may be directed.

Crane. For getting Provisions and Stores on board.

Awning Stanchions.

Guard Rails or Rods, or Ropes. To be fitted all round the Upper Deck, the Deck over breastwork, and the Flying Deck.

Guard Rails Round Engines.

Brass or Iron Handrails to Ladderways.

Life Buoys and Guards. To be fitted as usual in Her Majesty's Service.

Iron Steps or Handholds. To be fitted where directed for getting up and down in the several compartments.

Stays to Funnel. Eye Bolts to be fitted for Stays where directed.

Towing and Lashing Bollards. To be fitted if required.

Cordage Reels.

Lumber Irons.

Watch Bell. Of an approved kind to be fitted where directed.

Voice Pipes. Voice Pipes to Steering Wheels, Engine Room, Stoke Hole, Magazines, &c., to be made of Copper, with Mouth-pieces and Whistles, and fitted wherever directed. The pipes are to be cased if required.

Firehearths, &c. A firehearth of sufficient size to meet the requirements of 150 men, and in accordance with Government pattern, is to be supplied by the Contractors; also a small one for Officers' use if required. Cants to be fitted enclosing the spaces allotted to the Firehearths, and the space between them to be lined as may be directed.

Transporting Chocks. To be as shown on the Drawings.

Bow Lights and Shades. To be fitted as usual in H.M. Service.

Air Pipes in Double Bottom. To be fitted where directed with Metal Stop-cocks complete.

Cabin and Other Stoves. To be supplied by the Contractors and fitted complete with the necessary Copper and other Funnels, and all Fittings, including Backs for the Stoves lined with Lead and Copper Metal Rims, and water-tight Covers for passing the Funnels through the Deck. The water-tight Covers to be of the same strength as the Deck, and fitted as may be directed.

Illuminators in Decks. On the Deck over Breastwork, and on Upper Deck, if required very thick Glass Illuminators are to be fitted wherever directed with Iron water-tight Covers of the same strength as the Deck, and having Metal or Cast-iron Covers in addition, as may be directed. A Sketch of these Illuminators and Covers to be submitted for approval.

Armour-plated Skylights on Upper Deck. To be 3 in number, placed where shown on the Drawings, each being formed by an Armour Plate 3 feet 6 inches wide and 6 inches thick, turned and welded as shown on the Plans, and secured to the 1½-inch Deck Plating by and Angle Iron 9′ x 9′ x 1′. A Glacis Plate is also to be worked round the outside of these Skylights, 2 inches thick on the outside and 5 inches thick on the inside, properly secured to the Deck Plating and Beams, as will be directed. An Iron Cover, 1½ inch thick, is to be worked on top of these Skylights, as well as a Metal or Iron glazed Cover. Both Covers to be made water-tight.

Locks, Keys, &c. All Locks, Keys, and other Fastenings to be of approved patterns.

All Keys to be furnished with Brass Tallies, marked in a legible manner.

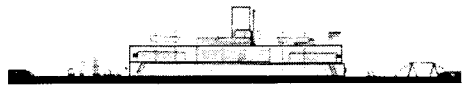
Brass Label Plates. To be fitted wherever necessary for showing the position of all Cocks and Valves in the bottom of the Ship, also on Cabins, Store Rooms, &c.

PLUGS TO DISCHARGE PIPES. To be fitted complete with all Outriggers, &c., as is usual in H.M. Service.

THERMOMETER TUBES. To be fitted to the Coal Bunkers, as may be directed.

ACCOMMODATION LADDERS.

FLAG STAFFS AND DRYING POLES.



The following conditions are also to be observed, viz.:–

ATTENDANCE ON ENGINEERS, &C. Shipwrights and other workmen are to attend as usual on the Engineers, to chock the boilers at their fore and aft ends, at the upper and lower parts, and also at the front and back, stow all spare and other gear, supply and fit all eye-bolts, for getting spare gear into place, and for lifting the screw shafts, lay all necessary Flats in the Engine and Boiler Rooms, and complete all Fittings required by the Overseer and Engineers.

CLEARING CHIPS FROM BILGES AND COMPARTMENTS. Chips, &c., to be cleaned out from Bilges and every compartment before the Ship is delivered up by the Contractors; also during the progress of work chips, shavings, dirt, &c., are to be cleaned out daily to the satisfaction of the Overseer.

VARNISHING DECKS.....The Upper Deck and the Deck over Breastwork to be varnished where considered necessary by the Overseer for protection during the progress of the work.

PREPARATION OF SKETCHES.The Contractors are to prepare all Sketches for the several Details of Work which the Overseer may deem necessary to submit for approval before proceeding with the Work.

GENERAL FASTENINGS AND QUALITIES OF MATERIAL. All Rivets for Iron Plates are to be of Lowmoor, Bowling, Farnley, or other Iron, approved by the Controller of the Navy; all above ⅝-inch in diameter to have Conical Heads; all Rivets for Steel Plates to be of Steel. The joints of the Outside Plates to be Double Chain Riveted; all the remaining Joints, where not otherwise specified, are to be Single Riveted. The breadths of the Edge Strips and Butt Straps, and the size, form, and pitch of Rivets to be as may be directed by the Overseer.

The Riveting to be executed in a careful and workman-like manner, the Rivets thoroughly fitting the holes, and the greatest care is to be taken in Punching to prevent unfair holes; all such holes are to be rimed out before riveting. The Counter-sinking is also to be carefully done. All Steel work, without exception, to be drilled.

The Overseer may require any holes to be drilled and Bolts turned for them, or he may substitute Bolts for Rivets, or make other changes of this kind wherever he may think desirable without additional charge. The whole of the remaining Bolts and Screw Fastenings throughout the Ship are to be of the very best materials and workmanship; to have Copper or Mixed Metal Fastenings where usual (in the internal or other Fittings) in Her Majesty's Service. The whole to be to the entire satisfaction of the Overseer.

The Plates and Angle Bars forming the vertical Keel Plate and the Longitudinals, except the Recess Plate and the plating of the inner bottom to be of Steel. The Upper and Lower Keel Strakes, having a considerable flange, the after Plates in the vicinity of the Screw Shafts, and the outer Angle Iron under the recess for the Armour Plates to be of Lowmoor, Bowling, or Farnley Iron, or other iron approved by the Controller of the Navy.

The Frame of the Ship, all Bulkheads, and Plate Beams are to be of 'Best' Boiler Plate.

The remaining portion of the Iron to be of 'Best Best' Boiler Plate unless otherwise specified.

The names of the Makers of whom it is proposed to purchase to be submitted to the Controller of the Navy for his approval, and the whole to be attested by the Certificates or Invoices of the Firm supplying the same, if required, and to have the Maker's name stamped in a legible manner upon each Bar or Plate.

The Overseer will test the strength, ductility, and other qualities of the Iron and Steel in accordance with the Codes of Tests [missing] accompanying this Specification.

Samples of both Iron and Steel will be selected by the Overseer to be torn asunder and otherwise tested in his presence, and should they break with less than the prescribed

force on the square inch, or prove otherwise defective or of inferior quality, the lot from which the sample has been selected may be rejected.

A Lever Machine for pulling asunder the samples, with means of practically proving its accuracy, as well as Apparatus for otherwise testing the quality of the material, are, together with the samples themselves, to be provided by the Contractors on their own premises, and at their own expense, and they are to find all assistance necessary for the process of testing, or for any other experiment the Overseer may desire to try upon the work.

TESTING FORGED WORK.....The Securities for receiving the Clenches of the Cables, all Ring and Eye-bolts, Stopper-bolts, &c., to be tested as is usual in Her Majesty's Service.

WEIGHT OF HULL.....In order that the weight of the Hull may not exceed the Estimate, the Overseer is authorized to insist that the weight of the Iron and Steel shall not exceed that due to the Scantlings specified, but it may fall as much as 5 percent below it. All Iron and other material worked into the Hull to be carefully weighed, and the weight so obtained regularly reported to the Overseer.

CLEANING, GALVANIZING, PAINTING, AND OTHERWISE COATING IRON WORK. All Iron Work is to be carefully scraped and cleaned before being painted, and each portion of it that is turned out of hand is to have a coat of thin Red Lead or other substance as may be directed, as soon as it is sufficiently completed to receive it in order to prevent as far as possible the Iron Work from becoming in any degree oxidised during the progress of the work.

The Overseer is to cause Iron Awning Stanchions and Rails, Gratings, Bolts, and other such Iron Fittings to be galvanized as may be directed.

Between the two thicknesses of Skin Plating behind Armour the surfaces are to be well painted with red Lead or other approved material.

The Bottom Plating is to be coated with four thick coats of Hay's Protective Varnish or other approved compositions as may be directed.

The remaining portion of the ship, both inside and out, including the plating behind the Wood Backing, and all iron surfaces covered with wood, is to have three coats of the best oil paint.

The inside of the bottom is to be coated with Red Lead or other approved composition, and with Enamel or other cement approved by the Controller of the Navy.

A coating of Cement or Composition approved by the Controller of the Navy is to be placed on the inside of the Bottom Plates, and wherever else directed, of the necessary form and thickness for carrying the water to the pumps. The Plating is to be painted and varnished before the Cement is put on if directed.

PAINTING, GRAINING, AND POLISHING WOOD-WORK. All the Wood-work is to be painted in the best manner with three coats of good oil paint of such a colour, and with such portions varnished and grained as the Overseer may direct. All Mahogany, Teak, Cabin Bulkheads, Doors, or Fittings to be French polished if directed.

DEVIATIONS.....Should any slight Deviations from the Drawings or Specification be considered necessary during the progress of the work, the Overseer shall have the power to order the same to be performed without additional charge, and the Contractors shall attend to and forthwith execute all such directions as may from time to time be given by the Overseer.

No additional charge shall be made for Deviations or Additions of any kind, except in cases where an extra payment shall have been previously agreed to in writing.

INSPECTION.....The Contract is to be executed in every respect to the satisfaction of the Controller of the Navy, who will, as he may see fit, appoint officers to inspect the manufacture of the iron, and also to test it in any way he and they may think proper, and to inspect the workmanship during the progress of building and fitting the ship.

These persons shall have the power to reject all such portions as are in their opinion inferior in strength, quality of materials, or workmanship, and the decision of the Controller of the Navy in such matters shall be final and binding on the Contractor.

COMPLETION.....The contract is intended to include the entire completion of the built and fitted Hull [illegible] for sea, as is usual in H.M. Service.

It is therefore to be expressly understood that all minor fittings which may not be shown on the Drawings or mentioned in the Specification(s), but which may be considered by the Overseer and Controller of the Navy as requisite for the

proper completion of the Hull for sea, are to be provided by the Contractors without additional charge. It is also to be expressly understood that if any omissions be discovered in the Specifications or Drawings such omissions are to be supplied by the Controller of the Navy, and the Contractors are bound to comply with the parts thus specified without extra charge in the same manner as if they had formed part of the original Specifications or Drawings.

If any doubt arise respecting the meaning of any part of the Specifications or Drawings, or any appeal be made respecting to matters of any kind relating to the carrying out of the Contract about which there may be any dispute or difference of opinion between [illegible] Officers, and the Contractors, the Controller of the Navy is to decide, and his decision is to be final.

The ship is to be launched (or if built in a Dock) floated by the Contractors at their own risk and cost, and sent at their own cost to such place or places to receive her machinery &c., as shall be previously approved by the Controller of the Navy, and until the ship is completed according to the Contract and delivered up into the charge of such Admiralty Officers as may be appointed to receive her, the Contractors are to pay all Dock and Harbour Dues and Charges.

SURETIES.....The Contractors are to provide Security in a Bond of ...[no figure inserted]... for the due performance of the Contract in the manner and at the time specified therein.

PATENT RIGHTS.....The Contractors are to be responsible for the payment of Patentees should there be any infringement of Patent Rights in the construction of the ship.

(signed)

E. J. Reed