Enclosure to Director General of Railways' Circular No. 6 of 1888.

RATE LIST.

CLASS B.

ENGINEER'S PLANT

(EXCLUDING PETTY TOOLS).

FOR 1886.

Enclosure to Director General of Railways' Circular No. 6 of 1888.

RATE LIST.

CLASS B.

ENGINEER'S PLANT

(EXCLUDING PETTY TOOLS)

FOR 1886.

Enclosure to Director General of Railways' Circular No. 6 of 1888.

INDIAN STATE RAILWAYS.

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS). CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS)

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886.

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office Drawings (if any). Original B.	India Office Drawings (if any). Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per contract. Amount. £ s. d.	Rate F. O. B. in England as per contract. Unit.	Gross weight. Weight. T. c. q.	Gross weight. Unit.	Entire sea freight per ton to port. Rate. s. d.	Entire sea freight per ton to port. Port.	Remarks.
152	22nd April 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).	Accumulator.	Hydraulic, 4″ × 6′, complete with fittings.	...	...	No. 1	130 0 0	Each	Not known		22 0	K.	
153	28th April 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).	Blocks.	Differential, pulley, with chain complete to lift 4 tons.	...	...	No. 4	9 2 6	Each	Not known		16 6	K.	
					4½″ (single, double, treble and snatch)	...	...	Sets 4	9 10 0	Set	1 6 0 (a)	Total	20 0	K.	(a) Includes the gross weight of 9″ blocks on this contract (see below).
					6″, one sheave	...	...	„ 4	15 10 0	„	1 3 2	„	20 0	K.	
					6″, two „										
					6″, three „										
					6″, snatch										
					9″, one sheave	...	...	„ 1	28 10 0	„	Included in (a)	...	20 0	K.	
					9″, two „										
					9″, three „										
					9″, snatch										
164	7th September 1886...	69 of 1885	Northern Bengal ...	Boats, Cargo.	Built in steel, galvanised and of the following dimensions:— Feet. Inches. Length on main deck ... 130 0; Beam, moulded... 29 0; Depth at centre from top of beam to top of keel ... 4 8; Draught of water with all stores and general equipment on board ... about 0 11. The plating is of mild steel, Seimen's Martin.	169	...	No. 2	1,680 0 0	Each	116 14 2	Total	20 0	C.	The total cost of each of these Boats ready for service was approximately Rs. 33,700.

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office Drawings (if any). Original B.	India Office Drawings (if any). Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per contract. Amount.	Rate F. O. B. in England as per contract. Unit.	Gross weight. Weight.	Gross weight. Unit.	Entire sea freight per ton to port. Rate.	Entire sea freight per ton to port. Port.	Remarks.
						B.	B.		£ s. d.		T. c. q.		s. d.		
163	9th September 1886...	82 of 1885	Sind-Sagar ...	Boats, Cargo—*concld.*	(Or Barges). Built in steel, galvanized and of the following dimensions :— Feet. Inches. Length on deck 82 0; Beam moulded ... 16 0; Depth at centre from top of beam to top of keel ... 4 0; Draught of water with all necessary equipment and 20 tons of cargo on board 1 4. The plating is of mild steel, Seimen's Martin.	170	209	No. 8	399 0 0	Each	124 19 1	Total	35 0	K.	
143	23rd February 1886...	74 of 1885	Wardha Coal ...	Boilers, steam.	Complete with iron fire-box, 25 H.P. nominal, semi-portable, locomotive type, with solid iron-bar, foundation ring, Ramsbottom safety valves, two spare fire-boxes and 50 spare tubes, iron, lap-welded. The boiler shell is fitted with a large dome and the internal steam pipe provided with a special arrangement to prevent priming. The steam pipe branch is of the usual size for the boiler, but it is fitted with a flange to connect to a wrought-iron gas pipe of 2″ bore. Contract was let for "Steel shell" and "Lowmoor fire-box."	..	171 1—4 and photo.	No. 2	470 0 0	Each	25 11 2	Total	£ s. d. 35 17 8 Total. (Paid in England in full.)	B.	

INDIAN STATE RAILWAYS.

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office Drawings (if any). Original B.	India Office Drawings (if any). Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per contract. Amount.	Rate F. O. B. in England as per contract. Unit.	Gross weight. Weight.	Gross weight. Unit.	Entire sea freight per ton to Port. Rate.	Entire sea freight per ton to Port. Port.	Remarks.
						B.	B.		£ s. d.		T. c. q.		s. d.		
157	3rd August 1886 ...	68 of 1884	Cawnpore-Kalpi ...	Boilers, steam; Fire-boxes for—	Of Lowmoor iron with foundation ring for each fire-box, for boilers supplied with 5-ton steam hoist under Contract B116, dated 13th January 1885, (*vide* Rate List, Class B, for 1885). The boilers for which these fire-boxes are required are vertical, and are each 3 feet 9 inches diameter, and 8 feet 6 inches high, with a fire-box 3 feet 5 inches diameter and 4 feet 8 inches high.	...	177	No. 2	31 0 0	Each	10 4 0	Total	21 0	C.	
175	24th December 1886	1 of 1886	Toungoo-Mandalay Railway.	Cranes.	Portable, 3 ton, handpower, with wrought iron trucks and steel crane framings. The crane is carried on a wrought iron truck to run on metre gauge railway, to lift and slue a weight of 3 tons at a maximum radius of 14 feet and a height of 14 feet from the rail with a loose link motion for lowering the Jib. The frame of the truck is 9′-6″ long, 5′-6″ wide, 12″ deep, made of channel iron 12″ × 3½″ × ⅝″ and the sides of truck have wrought iron outside brackets for supporting planking. The truck is carried on 4 cast iron wheels 1′-6″ diameter, turned on the tread, keyed on to steel axles 4″ diameter in the middle. The framing is fitted with a cast iron balance box, mounted on four cast iron wheels. The chain is of Lowmoor iron $\frac{9}{16}$ inch diameter fitted with swivel hook and return block and of sufficient length for a lift of 30 feet. The crane is tested with a weight 25 per cent. more than that which it is intended to lift.	...	211 1—7	No. 2	165 0 0	Each	13 7 1	Total	40 0	R.	

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

Contract. Number. B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office drawings (if any). Original B.	India Office drawings (if any). Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per contract. Amount. £	s.	d.	Unit.	Gross weight. Weight. T.	c.	q.	Unit.	Entire sea freight per ton to port. Rate. s.	d.	Port.	Remarks.
153	28th April 1886	36 of 1883	Indus Valley (Sukkur Bridge).	Cranes—*concld.*	Portable, 6 ton, handpower, on low lorries, 5′ 6″ gauge, with 16 feet radius, all in wrought iron.	...	...	No. 2.	254	0	0	Each	19	17	0	Total	16	0	K.	Net weight.
175	24th December 1886.	1 of 1886	Toungoo-Mandalay Railway.		Travelling, 5 ton, steam. The crane is mounted on a wrought iron carriage made to run on a metre gauge railway and made to hoist and lower through a distance of 60 feet, and revolve and traverse a weight of five tons at a maximum radius of Jib of 16 feet from the centre of the pillar to the centre of the load and a maximum height at work of 14 feet from the rail level to the sheave in the Jib-head. The crane is fitted with tension rods and links for lowering the Jib to a total fixed height not exceeding 10 feet 6 inches from the rail level. A pair of engines of the most approved type are fitted to the crane with vertical boiler, tank and coal box on the working platform. The leading dimensions of the crane are as follows:—	1095 E/1 and 1095 E/2	216/1–3	No. 1	730	0	0	Each.	27	11	0	Each.	38	6	R.	Net weight 20 12 1 27 *T. c. q. lbs.*

	Feet.	Inches.
Diameter of each cylinder		6
Length of piston stroke		10
Diameter of crank shaft		2 7/8
Length of boiler barrel ...	6	6
Diameter of boiler barrel ...	3	6
Length of fire-box	3	5
Mean diameter of fire-box ...	3	3
Size of chain		1 1/16

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office drawings (if any). Original B.	India Office drawings (if any). Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per contract. Amount. £	s.	d.	Unit.	Gross weight. Weight. T.	c.	q.	Unit.	Entire sea freight per ton to port. Rate. s.	d.	Port.	Remarks.
153	28th April 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).	Derricks.	Iron work only for safety hand Derricks to lift 6 tons with 35 feet radius for wire rope gear to lift from 40 feet below ground line.	...	...	Sets 2	81	0	0	Set	6	3	3	Total	16	0	K.	Net weight.
,,	,, ,,	,, ,,	,, ,,		Special twin Derrick for erecting No. 3 Strut, Sukkur Bridge.	...	198/1—6	No. 1	315	0	0	each	9	15	3	Total	20	0	K.	
166	12th October 1886 ...	30 of 1886	Sind-Sagar (Jhelum Bridge).		Portable with supporting clips (for the erection of Sullivan's staging, *vide* page 14).	...	...	,, 2	12	0	0	Total	Included in that of staging under this contract (*vide* page 14).				15	0	K.	
158	11th August 1886	41 of 1885	Wardha Coal ...	Differential gear.	Davey's patent, for Warora Colliery Works, as per ferro. No. B152.	...	...	Sets 2 (one right and one left).	400	0	0	Total	1	12	0	Total	10	0	B.	
153	28th April 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).	Drifts.	Parallel, steel ... $6\frac{1}{4}''\times1''$ ...	...	...	No. 7764	18	0	0	Ton	5	11	0	Total	22	0	K.	Drifts are classified in the Nomenclature and Classification of State Railway Stores under Class G—a—Tools.
					$5\frac{3}{4}''\times1''$ ...	...	...	,, 1262				Tons 5								
					$7\frac{3}{4}''\times1''$ ...	...	...	,, 120												

INDIAN STATE RAILWAYS.

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

Contract. Number. B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office drawings. (If any.) Original B.	India Office drawings. (If any.) Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per contract. Amount. £ s. d.	Rate F. O. B. in England as per contract. Unit.	Gross weight. Weight. T. c. q.	Gross weight. Unit.	Entire sea freight per ton to port. Rate. s. d.	Entire sea freight per ton to port. Port.	Remarks.
E 1111	4th December 1886	1 of 1886	Toungoo-Mandalay Railway.	Earth-wagons.	Ironwork only for earth-wagons, end tip, metre gauge, to hold 2 yards, including complete set of bolts and nuts for each wagon with 20 per cent. extra.	..	...	Sets 6	18 15 0	Set	58 3 2	Total	25 0	R.	
					Ironwork only for earth-wagons, side tip, metre gauge, to hold 2 yards, including complete set of bolts and nuts for each wagon with 20 per cent. extra.	...	...	„ 48	18 15 0	„					
171	1st December 1886	1 of 1886	Toungoo-Mandalay Railway.	Engine, steam, portable.	12 H. P., double cylinder, not reversible.	...	202 1—9 and photo.	No. 1.	299 0 0	Each	10 6 1	Each	30 0	R.	T. c. q. lbs. Net weight 8 16 0 25
153	28th April 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).	Expanders, Strut.	Special as per drawing ...	...	193	No. 4.	6 0 0	Each	Not known		Not known	K.	
172	29th November 1886	1 of 1886	Toungoo-Mandalay Railway.	Forges, portable.	24 inches. All days' patent, similar to those supplied under Contract C 298, dated 21st December 1883, except that the blower is attached to the back of the forge without chain or belt driving gear.	...	213 1—2	No. 6.	10 5 0	Each	2 13 2	Total	27 6	R.	Net weight of each cwt. 4 qr. 1 lbs. 23.
					6 photos and 3 tracings.	...	...	...	2 2 6	Total					

INDIAN STATE RAILWAYS.

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS)

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

Contract. Number. B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details	India Office drawings (If any.) Original B.	India Office drawings (If any.) Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per contract. Amount. £ s. d.	Rate F. O. B. in England as per contract. Unit.	Gross weight. Weight. T. c. q.	Gross weight. Unit.	Entire sea freight per ton to port. Rate. s. d.	Entire sea freight per ton to port. Port.	Remarks.
161	12th August 1886	36 of 1883	Indus Valley (Sukkur Bridge).	Gauge, pressure, hydraulic.	In box, suppplied by Messrs. Westwood & Co.	...	...	No. 1.	2 12 6	Each	Not known	...	22 0	K	
175	24th December 1886	1 of 1886	Toungoo-Mandalay Railway.	Hoists, steam.	Each to lift 3 tons by direct pull from the barrel. The Steam Hoists are of the description known as "ships" and are each fitted with two steam cylinders and link-reversing gear fixed to a vertical boiler. The lifting gear is double purchase. The barrel is fitted with two capstan ends, chain wheel for messenger chains and hand shaft. Each Hoist and boiler is mounted on a wrought iron carriage, part of which is fitted as a water-tank for feeding the boiler. The carriage is mounted on four cast-iron wheels. Each tested with a load of 25 per cent. more weight than they are specified to lift.	...	215 1—15	No. 2	340 0 0	Each	29 18 0	Total	38 6	R.	T. c. q. lbs. Net weight 13 10 3 4
					The following are the leading dimensions of the hoists :— Feet. Inches. Diameter of each cylinder ... 0 6; Length of piston stroke ... 0 10; Diameter of crank shaft .. 0 2⅞; Length of boiler barrel ... 7 0; Diameter of ditto 3 2; Length of fire-box 3 10; Mean diameter of fire-box ... 2 9										

INDIAN STATE RAILWAYS.

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office Drawings (if any). Original B.	India Office Drawings (if any). Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per contract. Amount. £ s. d.	Rate F. O. B. in England as per contract. Unit.	Gross Weight. Weight. T. c. q.	Gross Weight. Unit.	Entire sea freight per ton to port. Rate. s. d.	Entire sea freight per ton to port. Port.	Remarks.
162	18th August 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).	Hoists, steam—*contd.*	Each to lift 4 tons by direct pull from the barrel.	...	196 / 1—14	No. 2	480 0 0	Each	26 7 2	Total	16 0	K.	
173	6th December 1886 ...	32 of 1886	Bellary-Kistna ...		Hydraulic, lifting and traversing, with cast steel cylinders, to lift 60 tons each. The bases and screws of the traversing jacks are of forged steel or puddled iron bars.	...	...	No. 6	19 0 0	Each	1 14 1	Total	22 0	M.	
173	6th December 1886 ...	32 of 1886	Bellary-Kistna ...		Hydraulic, ship, with cast steel cylinders and safety valves to lift 200 tons each.	...	...	„ 4	19 10 0	„	1 4 1	„	22 0	M.	
159	9th August 1886 ...	2 of 1886	North-Western ...	Jacks.	Screw, traversing, 10 tons, (Traversing screw Bottle Jacks with levers, *as per report on completion of contract*).	...	...	„ 40	160 0 0	Total	2 17 0	„	12 6	K.	
165	22nd September 1886	3 of 1886	North-Western ...		Screw, traversing, 12 tons. The Jacks are of the pattern known as bottle-traversing, and each has a traverse of 12 inches by screw and ratchet lever.	172	...	„ 90	3 16 6	Each	7 14 0	„	14 8 / 16 0 / 16 6	K.	
149	25th March 1886 ...	72 of 1885	Punjab Northern ...		Screw, traversing, to lift 30 tons ...	...	...	„ 2	5 17 6	„	0 5 3	„	12 0	K.	
G 1536	6th July 1886 ...	3 of 1886	Eastern Bengal ...		Jacks, screw, traversing; spare ratchet handles for :— With 1 inch square holes ...	...	...	„ 24	0 4 9	„	Not known		Not known		Net weight ... 0 1 0 8
					With ⅞ inch ditto ...	...	...	„ 24	0 3 6	„					„ „ ... 0 0 3 12
165	22nd September 1886	5 of 1886	Eastern Bengal ...		With 1 inch ditto ...	...	...	„ 24	0 4 6	„	0 3 0	„	21 0	C.	
					With ⅞ inch ditto ...	...	...	„ 24	0 3 6	„					

INDIAN STATE RAILWAYS.

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office Drawings (if any). Original B.	India Office Drawings (if any). Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per contract. Amount. £ s. d.	Rate F. O. B. in England as per contract. Unit.	Gross Weight. Weight. T. c. q.	Gross Weight. Unit.	Entire sea freight per ton to port. Rate. s. d.	Entire sea freight per ton to port. Port.	Remarks.
150	1st April 1886 ...	72 and 79 of 1885.	Punjab Northern and Nagpur Chhattisgurh.	Jimcrows.	With levers for 41¼ lb. rails ...	...	...	No. 4	2 5 0	Each	0 1 ¼*	Each	16 6 / 15 0	K. / B.	* Net weight.
170	17th November 1886	1 of 1886.	Toungoo-Mandalay Railway.		With screws and levers for 50 lb. flat-footed rails.	...	...	„ 4	2 10 6	„	0 5 3	Total	15 0	R.	
150	1st April 1886 ...	16 of 1885 (from Chief Storekeeper).	Sind, Punjab and Dehli.		With levers for 60 lb. rails ...	...	...	„ 6	3 7 6	„	... ...	...	...	K.	Weight and rate of sea freight not known.
„	„	72 of 1885.	Punjab Northern ...		With levers for 62 lb. rails ...	...	...	„ 6	3 7 6	„	... 1 2¼*	Each	16 6	K.	
168	27th October 1886 ...	28 of 1886.	Sind-Sagar ...		With levers for bending 75 lb. steel flat-footed rails and strong enough to bend rails weighing up to 90 lbs. per yard.	...	...	„ 25	2 18 6	„	3 12 1	Total	18 6	K.	
153	28th April 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).	Ladders.	.....	...	...	L. ft. 500	0 1 0	Foot	Not known		16 6	K.	

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

CONTRACT. Number B.	CONTRACT. Date.	Number of Indent.	For what Railway.	Articles.	Details.	INDIA OFFICE DRAWINGS (IF ANY). Original B.	INDIA OFFICE DRAWINGS (IF ANY). Completion. B.	Quantity contracted for.	RATE F. O. B. IN ENGLAND AS PER CONTRACT. Amount. £ s. d.	Unit.	GROSS WEIGHT. Weight. T. c. q.	Unit.	ENTIRE SEA FREIGHT PER TON TO PORT. Rate. s. d.	Port.	Remarks.
152	22nd April 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).	Lifts.	Hydraulic, 2 feet lift ...	...	...	No. 6	20 0 0	Each	Not known		22 0	K.	
167	15th October 1886 ..	6 of 1883	Indus Valley (Sukkur Bridge),	Light, Lucigen; Apparatus for—	Belt driven compressor and receiver for 7 lights.	...	...	No. 2	94 10 0	Total					
					Small lamps, 2 angle and 1 straight	...	...	„ 3	28 7 0	„					
					Large lamps, 2 angle and 1 straight	...	...	„ 3	41 5 0	„					
					Main pipe to convey the first discharge of compressor 400 feet for distribution from the end including 7 tees 1¼″ × ¼″.	...	...	L. ft. 400	7 19 6	„					
					Flexible pipe to each lamp, 3 ply ...	...	...	„ 300	15 10 0	„	3 0 0	Total	17 6	K.	
					Unions to take off lamps where required with blank flanges when not in use including hand lamp and wire gauze filler for oil tank.	...	...	No. 7	2 2 6	„					
					Freight, Dock Dues, &c. ...	...	...	...	5 15 6	„					
					Total ...	...	...	...	195 9 6						
152	22nd April 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).	Machines, rivetting (or Rivetters).	Hydraulic 18″ × 24″, (Tweddell's) having gaps of 18″ and fitted with patent hanging gear.	...	210 1—6	No. 6	100 0 0	Each	Not known	...	22 0	K.	
152	22nd April 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).		Rivet Carriers ...	...	...	No. 6	1 10 0	Each					
169	6th December 1886 ...	„	Indus Valley (Sukkur Bridge).		Snaps, spare for 1″ rivets for above machine.	...	...	Sets 6	12 0 0	Total	Not known	...	22 0	K	
„	„	„	Indus Valley (Sukkur Bridge).		Stop valves for ditto ...	...	...	No. 8	20 0 0	„					

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

CLASS B—ENGINEER'S PLANT (EXCLUDING PETTY TOOLS).

CONTRACT. Number. B.	CONTRACT. Date.	Number of Indent.	For what Railway.	Articles.	Details.	INDIA OFFICE DRAWINGS (IF ANY). Original B.	INDIA OFFICE DRAWINGS (IF ANY). Completion B.	Quantity contracted for.	RATE F. O. B. IN ENGLAND AS PER CONTRACT. Amount. £ s. d.	Unit.	GROSS WEIGHT. Weight. T. c. q.	Unit.	ENTIRE SEA FREIGHT PER TON TO PORT. Rate. s. d.	Port.	Remarks.
152	22nd April 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).	Mains.	Hydraulic, flexible, copper, with couplings by Tweddell.	...	...	...	308 0 0	Total	Not known	...	22 0	K.	
160	9th August 1886 ...	4 of 1885-86.	Wardha Coal ...	Mill, pulverising fire clay.	Fitted with self acting feed and delivery arrangements and supplied with 4 spare screens with meshes. This mill was preferred by Sir A. M. Rendel to Carr's Disintegrator No. 4 asked for on Wardha Coal State Railway indent No. 4 of 1885-86.	...	181 1—7 & photo.	No. 1	313 0 0	Each	13 19 3	Each	15 0	B.	
G.1538	12th July 1886 ...	2 of 1886	Northern Bengal ...	Oars, Ash.	14 ft. long, at 6½d. per lineal ft. ...	...	...	No. 24	9 2 0	Total	0 9 2	Total	21 0	C.	
E. 1042	22nd July 1886 ...	5 of 1886	Wardha Coal ...	Pit tubs.	Cast steel wheels and axles for pit tubs without pedestals, diameter of wheel overtread 10″, gauge clear 1′ 10″, Hadfield's patent.	...	E. 2046	Pairs 100	0 12 6	Pair	1 17 2	Total	16 0	B.	T. c. q. lbs. Net weight ... 1 17 2 6
161	12th August 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).	Plant, Miscellaneous, for the erection of Sukkur Bridge.	Netting, Manilla, safety, 12 feet wide in convenient lengths.	...	...	L. ft. 300	30 0 0	Total	Not known	...	22 0	K.	
					Netting wire, Galvanized 12′×6′, No. 16 gauge, 1″ mesh.	...	...	Pieces 20	15 0 0	„	2 0 0	Total	22 0	K.	
					Wire, binding, galvanized 16 B.W.G.	...	...	Yards 200	0 5 0	„					
174	6th December 1886 ...	36 of 1886	Indus Valley (Sukkur Bridge).		Engine driving belt (cotton) ...	...	...	Ft. 120	0 1 9	Foot					
					Winch „ „ „ ...	...	...	„ 300							
					Rope driving belt „ ...	...	...	„ 2,400	0 0 6	„					
								T.c. q. lbs.							
					W. I. Countershafts No. 4	...	...	0 12 1 8	30 0 0	Ton					
					„ driving shafts „ 2	...	...	0 7 1 6							
					„ Winch shafts „ 6	...	...	0 3 1 2	60 0 0	„					
					„ Winch shafts „ 2	...	...	0 1 1 4							
					Bolts and nuts for bearing blocks „ 6	...	...	0 0 2 4	60 0 0	„					
					Straps for guide pulleys „ 16	...	...	0 13 2 8	38 0 0	„					
					Turned pins for guide pulleys „ 16	...	...	0 0 3 12	50 0 0	„					
					Collars and set screws „ 28	...	...	0 0 3 14	100 0 0	„					
					C. I. bearing blocks counter shafts „ 12	...	...	0 2 2 8	80 0 0	„					
					C. I. bearing blocks driving shafts. „ 6	...	...	0 1 3 26							

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office Drawings (if any). Original B.	India Office Drawings (if any). Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per Contract. Amount.			Unit.	Gross weight. Weight.	Gross weight. Unit.	Entire sea freight per ton to port. Rate.	Entire sea freight per ton to port. Port.	Remarks.
								T. c. q. lbs.	£	*s.*	*d.*				*s. d.*		
174	6th December 1888...	36 of 1883	Indus Valley (Sukkur Bridge).	Plant, Miscellaneous for the erection of Sukkur Bridge—*concld.*	C. I. rope pulleys 4 ft. No. 6	...	...	0 12 2 22	40	0	0	Ton.	Not known.		Not known.	K	
					„ guide „ 2 „ „ 16	...	...	0 15 1 14	32	0	0	„					
					„ driving „ 18 inch „ 2	...	...	0 1 2 0									
					„ counter „ 15 „ „ 8	...	...	0 10 0 24	50	0	0	„					
					„ Winch „ 3 ft. „ 24	...	...	1 6 3 4									
					Gun metal bearings for counter-shafts Sets 12	...	...	0 0 2 14									
					Gun metal bearings for driving shafts „ 6	...	...	0 0 1 4	0	2	6	lb.					
					Gun metal bushes for guide pulleys No. 16	...	...	0 0 2 8									
					Needle lubricators	...	...	No. 18	0	2	0	Each					
					Super fire tiles 30″×12″×2″ ...	...	...	ft. 400	0	1	6	Foot					
161	12th August 1886.	36 of 1883	Indus Valley (Sukkur Bridge).	Plumbobs.	In boxes, 50 lbs. each with 400 feet patent flexible steel wire sash cord ⅜″ with 2 wire clips.	...	...	No. 2	3	0	0	Total.	Not known	... ...	22 0	K.	
153	28th April 1886.	36 of 1883	Indus Valley (Sukkur Bridge).	Pullers.	Hydraulic, Tangye's 8 tons pull, 4 feet stroke.	...	...	No. 4	21	0	0	Each.	Not known.	... ...	Not known.		
152	22nd April 1886.	36 of 1883	Indus Valley (Sukkur Bridge)	Pump.	Hydraulic, 2″×5,″ driven by Belting, with fast and loose pulleys.	...	...	No. 1	125	0	0	Each.	Not known	... ...	22 0	K.	

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office Drawings (if any). Original B.	India Office Drawings (if any). Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per Contract. Amount.			Unit.	Gross weight. Weight.			Gross weight. Unit.	Entire sea freight per ton to port. Rate.	Entire sea freight per ton to port. Port.	Remarks.
									£	*s.*	*d.*		*T.*	*c.*	*q.*		*s. d.*		
141	29th January 1886.	74 of 1885	Wardha Coal.	Pump, bucket; spare materials for—	Brass linings for bucket pump working barrels 12″ diameter inside, 4 feet long, 12¾″ outside diameter.	...	...	No. 4	70	5	10	Total							
													2	11	0	Total	9 9	B.	Net weight *T. c. q. lbs.* 1 2 2 20
„	„	„	„		Brass linings for bucket pump working barrels 12″ inside diameter, 5 feet long, turned outside.	...	...	No. 4	102	1	3	„							
155	22nd July 1886 ...	5 of 1886	Wardha Coal.	Rope, wire, steel.	Conductor, 3½″ circumference and each 275 feet long. These ropes are hosed at one end only, and made of Siemen's Martin steel wire core ⅜″ rod, round which six $\frac{5}{16}$″ rods are wound.	...	...	No. 10	57	0	0	Total	3	11	2*	Total	Not known.	B.	* Net weight.
151 & 156	15th April 1886, and 17th August 1886.	36 of 1883	Indus Valley (Sukkur Bridge).	Ropes, wire, steel, with special appliances.	To take 60 tons breaking strain each 225′ with special fittings in each end of each.	...	...	No. 8	For cost, weight, &c., see page 14										
					To take 60 tons breaking strain each 270′-3″, with special fittings in each end of each.	...	...	„ 12											
					To take 36 tons breaking strain each 800′ with fittings at each end.	...	...	„ 6											
					To take 36 tons breaking strain each 1,000′ with fittings at each end.	...	...	2											Detailed cost is not known.
					To take 36 tons breaking strain each 510′ with fittings at each end.	...	...	„ 2											
					To take 36 tons breaking strain each 37′ with fittings at each end.	...	...	„ 2											
					To take 36 tons breaking strain each 150′ with fittings at each end	...	...	„ 2											

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office drawings (if any). Original B.	India Office drawings (if any). Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per contract. Amount. £ s. d.	Rate F. O. B. in England as per contract. Unit.	Gross weight. Weight. T. c. q.	Gross weight. Unit.	Entire sea freight per ton to port. Rate. s. d.	Entire sea freight per ton to port. Port.	Remarks.
151 & 156	15th April 1886 and 17th August 1886.	36 of 1883.	Indus Valley (Sukkur Bridge).	Ropes wire, steel, with special appliances—*contd.*	To take 36 tons breaking strain, sling 12′.	...	...	No. 1							
					To take 7 tons breaking strain each 210′ long fitted with thimble and hook in one end and thimble in the other.	...	...	„ 10							
					Hawsers, steel, wire, Bullivant's patent, flexible, each 180 fathoms, 4½″, with an improved patent Automatic Nipper for each.	...	...	„ 4							
					Strops	...	...	„ 4							
					Hawsers, each 80 fms., 4″ circumference.	...	...	„ 2	1,587 0 0	Total	31 10 3	Total	22 4	K.	The figures shown here include the cost and weight of the ropes on page 13. Detailed cost is not known.
					Hawsers, each 60 fms., 4″ circumference.	...	...	„ 2							
					Clamps special for main ties ...	...	...	Sets 8							
					Clamps special for suspension ties ...	...	...	„ 8							Sets of 3 blocks.
					Couplings, screw, special ...	...	...	No. 8							Sets of 3 blocks for tails.
					Tongs special for Hydraulics ...	...	...	„ 4							
156	17th August 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).		Head pulleys for 8 tons ...	...	...	No. 10	19 10 0	Each	Included in above		22 4	K.	
					Travellers for 5½ tons ...	...	...	„ 6	19 10 0	„					
					Sling pulley for 10½ tons ...	...	...	„ 1	25 0 0	„					
153	28th April 1886 ...	36 of 1883	Indus Valley (Sukkur Bridge).	Screws, stretching.	1½″ diameter	...	...	No. 6	2 0 0	Each	Not known		Not known.		
166	12th October 1886 ...	30 of 1886	Sind-Sagar (Jhelum Bridge).	Staging, Sullivant's, for erecting Bridge.	Wrought iron, for erection of girders 150 feet span, complete in all respects with necessary fittings and spare parts and with one extra base. (*For schedule of quantities required, vide appendix A.*)	...	183 1—5	Groups 8	1,262 0 0	Total	63 13 0*	Total	15 0	K	* Includes the weight of two Derricks—(*vide* page 5). ♦ Detailed cost not known.

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886.

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office drawings (if any). Original B.	India Office drawings (if any). Completion. B.	Quantity contracted for	Rate F. O. B. in England as per contract. Amount. £ s. d.	Rate F. O. B. in England as per contract. Unit.	Gross weight. Weight. T. c. q.	Gross weight. Unit.	Entire sea freight per ton to port. Rate. s. d.	Entire sea freight per ton to port. Port.	Remarks.
154	6th July 1886 ...	82 of 1885	Sind-Sagar ...	Steamers, stern wheel paddle.	With surface high pressure non-condensing engines and boilers and fittings complete. The vessels are not to exceed 150 feet in length exclusive of the wheel, or 30 feet in breadth, and it is essential that they shall be capable of steaming at least 12 statute miles per hour, and that their draught with boilers full and with 60 tons of cargo on board shall be as little above 1 foot 6 inches as possible, having regard to the requisite speed and strength of the boats. The fuel used with these boats will be wood, and a sufficient quantity for 12 hours will have to be carried at this draught. Steamer to be able to steam ahead or astern with two flats alongside against a current of 10 miles an hour. All fittings of every kind except wood work are to be supplied.	...	203 204 & 205	No. 4	4,800 0 0	Each	125 9 3	Each	18 6	K.	In addition to £ 4,800, £ 200 was paid for increased size of boiler and £ 133-11-2 for additional weight of steel used for each steamer.
154	6th July 1886 ...	69 of 1885	Northern-Bengal ...		With compound surface condensing engines and boilers and fittings complete. The vessel is to be about 137 feet over all, 120 feet between the perpendiculars, 24 feet breadth moulded, and 29 feet breadth extreme. It is essential that her draught, light with waters in boilers and coal for 12 hours steaming on board and generally in complete working order, but without paying load shall be as little in excess of 15 inches as the requisite strength of the vessel, and a speed of not less than 12 statute miles per hour when loaded for a depth of 9 inches below her light load line will	...	206 207 & 208	No. 1	4,300 0 0	Each	115 2 2	Each	42 6	C.	Cost f. o. b. of the steamer including a model as per Invoice was £4,531-7-2 and the total cost ready for service was approximately Rs. 85,400.

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office drawings (if any). Original B.	India Office drawings (if any). Completion. B.	Quantity contracted for.	Rate. F. O. B. in England as per Contract. Amount.			Rate. F. O. B. in England as per Contract. Unit.	Gross weight. Weight.	Gross weight. Unit.	Entire sea freight per ton to port. Rate.	Entire sea freight per ton to port. Port.	Remarks.
154	6th July 1886 ...	69 of 1885	Northern Bengal ...	Steamer, stern wheel paddle—*concld.*	permit. The fuel used with this boat will be coal. The paddle wheel of the vessel must be radial, and the vessel is to be supplied with a hurricane deck and sun awning.										*s.* *d.*		
147	27th February 1886	Bengal Marine Indent No. 121 of 1885.	Eastern Bengal State Railway (for despatch service between Goalundo and Naraingan j).	Steamers, paddle wheel; materials for—	Engines, paddle wheel, compound diagonal direct acting, fitted with surface condensers and feathering wheels with independent centrifugal pumps for circulating water in condensers—cylinders to be two in number for each pair of engine, the high pressure cylinder to be 28 inches in diameter and the low pressure cylinder 53 inches in diameter, both cylinders arranged for a 48 inches stroke. The diameter of paddle wheel to centre of motion to be 14 feet. The working pressure on boiler to be 90 lbs. per square inch. For a list of spare gear and spare tools sufficient in quantity for two pairs of Engines supplied under this contract, *see Appendix B.*	...	178 179 & 180	Pairs 2 (one pair to be placed in each vessel.)	£ 5,000	s. 0	d. 0	Pair in Glasgow.	Not known.			Not known.	
145	3rd March 1886 ...	Ditto	Ditto	...	Iron bars, half-round, segmental ...	...	...	*T. c. q. lbs.* 61 5 1 9	563	3	6	Total					
					Iron bars, round, for bolt staves ...												
					Iron plates, Boiler												
144	1st April 1886 ...	Ditto	Ditto	...	Iron bars, round	...	...	13 19 2 1	1,064	2	5	„					
					Iron plate, Boiler	...	..	31 13 0 2									
					Iron rivets	...	...	9 8 0 0									
146	Ditto ...	Ditto	Ditto	...	Iron, rivets, panheaded and straight neck 1″ × $\frac{3}{8}$″ diameter.	...	...	0 3 0 0	16	2	0	„					
					Iron, rivets, panheaded and straight neck $\frac{5}{8}$″ × $\frac{3}{8}$″ diameter.	...	...	1 0 0 0									

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—contd.

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office drawings (if any). Original B.	India Office drawings (if any). Completion. B.	Quantity contracted for.	Rate. F. O. B. in England as per Contract. Amount.			Rate. F. O. B. in England as per Contract. Unit.	Gross weight. Weight.	Gross weight. Unit.	Entire sea freight per ton to Port. vRt e.	Entire sea freight per ton to Port. Port.	Remarks.
148	6th March 1886 ...	Bengal Marine Indent No. 121 of 1885.	Eastern Bengal State Railway (for despatch service between Goalundo and Naraingan j).	Steamers, paddle wheel; materials for—*concld.*	Steel plates, mild, assorted	...	...	No. 1,354	£ 1,963	s. 5	d. 7	Total	Not known.		Not known.		
					„ angles	...	...	„ 1,664									
					„ Tees	...	...	„ 16									

The size and capacity for both passengers and goods on board the two steamers for which the above materials are required are given below. The two steamers were built at the Kidderpore Dockyard.

Description.	Size or clear space.	No. of passengers and quantity of goods.
Lower deck saloon	17′×10′	19 1st class passengers.
Upper ditto	32′×14′	49 1st class passengers.
Lower deck cabin ...	2′×7′×11′	17 Reserved.
Lower deck ...	4,143 sq. ft.	926 deck passengers.
Upper deck ...	4,190 sq. ft.	
Capacity for aft hold	60′×24′×6′ = 8,640 c. ft.	161·28 tons of goods.
Ditto for fore hold	52′×24′×6′ = 7,488 c. ft.	

Statement showing rates free on Board in England, gross weight and rate of sea freight per ton of articles contracted for by the India Office from January to December 1886—concld.

Contract. Number B.	Contract. Date.	Number of Indent.	For what Railway.	Articles.	Details.	India Office drawings (if any). Original B.	India Office drawings (if any). Completion. B.	Quantity contracted for.	Rate F. O. B. in England as per Contract. Amount.	s.	d.	Unit.	Gross weight. Weight. T.	c.	q.	Unit.	Entire sea freight per ton to port. Rate. s.	d.	Port.	Remarks.
B 142	25th February 1886	59 of 1885	Wardha Coal ...	Tools, well boring.	As per list *vide* appendix C. Extra cost of thicker pipes.	157	...	As per list.	858	0	0	Total								
									57	0	0	"								
B142 Extension.	15th April 1886 ...	Ditto	Ditto		Driving collars for 3½" pipes ...	...	...	ring No. 2	1	8	0	"								
					" " " 4½" " ...	...	...	" 2	1	12	0	"								
					" " " 5½" " ...	...	...	" 2	2	0	0	"	9	12	0	Total	10	0	B.	
					" " " 6½" " ...	...	...	" 2	2	10	0	"								
					" " " 7½" " ...	...	...	" 2	3	0	0	"								
E1113	6th December 1886...	1 of 1886	Toungoo-Mandalay Extension (Metre Gauge).	Trollies.	Sets of ironwork complete for Platelayers' trollies, with heavy wheels with cast steel bea s, exactly to drawing E 439.	E 439	...	Sets 36(*a*)	6	9	8	Set.	35	9	2	Total	27	6	R.	The wheels are of cast steel. T. c. q. lbs. (*a*) Net weight 5- 5-1-20 (*b*) " " 1-13-1- 8. (*c*) " " 0-18-2-18.
					Ditto ditto with light wheels with cast steel bearings, exactly to drawing E 439.	E 439	...	" 12(*b*)	6	5	0	"	11	16	2	"	27	6	R	
E1103	22nd November 1886	4 of 1886	Northern Bengal ...		Wheels, steel, on axles for Platelayers' light trollies. Diameter on tread 15⅝" ... Width of tread 2½" ... Depth of flange 1" ... Width of flange ¾" ...	...	...	Sets 10 (*c*) (or Pairs 20).	4	13	3	Set	9	17	0	"	21	0	C.	For trollies see also E class rate list for 1886.
B153	28th April 1886 ...	36 of 1883	Indus valley (Sukkur Bridge).	Winches.	To lift 6 tons as per drawing (2 for 400 feet wire rope and 6 for 200 feet wire rope). For materials for the winches under contracts B 153 and B 174, see Appendix D.	...	186 and 187	No. 8	90	0	0	Each	Not known			...	Not known			

Note—B. Bombay, C. Calcutta, K. Kurrachee, M. Madras, R. Rangoon. F. O. B. Free on board. For rates for landing State Railway Stores at the different ports in India *vide* Director General of Railways' Circular No. 22, dated 16th December 1885.

G. F. WILSON, Captain, R.E.,

for Director General of Railways.

Appendix A.

Schedule of quantities required for Sullivan's Staging for the erection of Jhelum Bridge girders 150-feet span (Contract B 166).

Tubes 5" outside diameter, $\frac{7}{16}$" thick, each 5′ 2" long, wrought-iron. Tubes thickened up at ends and bored out to instructions with collar 2⅞" × ⅝" shrunk on each end	...	144 in No.
Tubes 2½" outside diameter, 2" bore, each 9 feet long, wrought-iron, faced at ends	...	124 " "
Malleable 2 way castings	...	72 " "
Do. 3 " "	...	36 " "
Do. bottom "	...	58 " "
Do. top "	...	48 " "
Wrought-iron cleats, 4" hole, rivetted joints	...	96 " "
Do. " 5" " "	...	96 " "
Do. rings ...	...	170 " "
Bottom plates ...	...	54 " "
Top " ...	...	48 " "
Bolts with 2 nuts ...	...	140 " "
Do. head and nut ...	...	140 " "
Set eye bars for 6 feet stage, 5 feet long	...	884 " "
Straight " " 5′ 3½" "	...	192 " "
1" rods 14′ 2" long, 2 nuts on each	...	72 " "
Joists 12" × 5" × 29′ 6" for bases	...	36 " "
Do. 10" × 4½" × 9′ 0" " "	...	27 " "
Do. 10" × 5" × 26′ 0" " tops	...	16 " "
Do. 8" × 4" × 9′ 5½" " "	...	24 " "
⅞" bolts and nuts, 2¾" long for tops and bottoms	...	425 " "
¾" " " 7¼" " bottom cleats	...	216 " "
¾" " " 6½" " distance pieces	...	216 " "
¾" " " 2¼" " top cleats	...	192 " "
¾" rivets, 2½" long, for bottom plates	...	648 " "
¾" " 2¼" " top "	...	385 " "
Cast-iron distance pieces	...	108 " "
¾" rivets, 2¾" long, used in rivetting cleats to joists	...	270 " "

Appendix B.

List of spare gear and spare tools supplied with each pair of Paddle-wheel Engines for Steamers (*Contract B. 147*).

List of Spare Gear.

1	Spare	connecting rod, complete.
1	„	piston rod, complete.
1	„	slide rod, for each engine.
1	„	set junk ring bolts.
½	„	set of piston springs.
1	„	paddle float with brackets, pins, &c., complete.
2	„	paddle arms.
2	„	wheel radius rods.
1	„	air-pump plunger rod.
2	„	quadrant blocks.

List of Spare Tools.

Ratchet braces	2	in No.
Drills, of sorts	12	„ „
Iron bench, with two vices	1	„ „
Small drilling post for bench	1	„ „
Engine-room lamps	8	„ „
Stoke-hole lamps	4	„ „
Engine-room globe hanging lamps	2	„ „
Hand-lamps, stoke-hole	6	„ „
Hand oil-feeders	8	„ „
Gallon measure, stamped	1	„ „
Half gallon measure, stamped	1	„ „
Filler, medium	1	„ „
Do. small	1	„ „
Oil-feeder pan, with loose perforated tray	2	„ „
Hand vices	2	„ „
Blocks, three and two, with 4 inch fall	1	pair.
Do. „ „ „ 3 inch „	1	„
Water Bucket, galvanized	8	in No.
Screw-drivers	2	„ „
Copper hammers, 5 lbs. and 10 lbs. each	2	„ „
Chipping hammers	4	„ „
Sledge hammers, 14 lbs.	2	„ „
Flogging hammers, 7 lbs.	2	„ „
Coal hammers, 7 lbs.	4	„ „
Chisels and cross cuts	12	„ „
Crow bars	2	„ „
Tommies, steel	2	„ „
Mallets, wood	2	„ „
Plane, jack	1	„ „
Chisels, carpenters'	4	„ „
Saw hand	1	„ „

Appendix B.

List of spare gear and spare tools supplied with each pair of Paddle-wheel Engines for Steamers (*Contract B. 147*).

List of Spare Gear.

1	Spare connecting rod, complete.	
1	„ piston rod, complete.	
1	„ slide rod, for each engine.	
1	„ set junk ring bolts.	
½	„ set of piston springs.	
1	„ paddle float with brackets, pins, &c., complete.	
2	„ paddle arms.	
2	„ wheel radius rods.	
1	„ air-pump plunger rod.	
2	„ quadrant blocks.	

List of Spare Tools.

Ratchet braces	2	in No.
Drills, of sorts	12	„ „
Iron bench, with two vices	1	„ „
Small drilling post for bench	1	„ „
Engine-room lamps	8	„ „
Stoke-hole lamps	4	„ „
Engine-room globe hanging lamps	2	„ „
Hand-lamps, stoke-hole	6	„ „
Hand oil-feeders	8	„ „
Gallon measure, stamped	1	„ „
Half gallon measure, stamped	1	„ „
Filler, medium	1	„ „
Do. small	1	„ „
Oil-feeder pan, with loose perforated tray	2	„ „
Hand vices	2	„ „
Blocks, three and two, with 4 inch fall	1	pair.
Do. „ „ „ 3 inch „	1	„
Water Bucket, galvanized	8	in No.
Screw-drivers	2	„ „
Copper hammers, 5 lbs. and 10 lbs. each	2	„ „
Chipping hammers	4	„ „
Sledge hammers, 14 lbs.	2	„ „
Flogging hammers, 7 lbs.	2	„ „
Coal hammers, 7 lbs.	4	„ „
Chisels and cross cuts	12	„ „
Crow bars	2	„ „
Tommies, steel	2	„ „
Mallets, wood	2	„ „
Plane, jack	1	„ „
Chisels, carpenters'	4	„ „
Saw hand	1	„ „

List of spare Tools—*concld.*

Hatchet	1 in No.
Augers, of sorts	6 „ „
Brace and bits, carpenters', complete	1 „ „
Packing screws	2 sets.
Do. Sticks	2 „
Do. Knives	4 in No.
Spanners, polished	1 set.
Spanner racks, polished	1 in. No.
Eye bolts to suit engines	2 sets.
Thermometers	2 in. No.
Lubricating pipes	2 sets.
Taps and dies with box, complete, ¼ inch up to 1 inch ...	1 set
English screw plate with taps	1 in No.
Buckets, ash, small	4 „ „
Shovels, trimming	8 „ „
Do. firing	8 „ „
Differential blocks, 2 tons (Weston's)	1 „ „
Indicators, complete, with springs (6 in No.) ...	2 „ „
Engine counters and gear (6 figures)	2 „ „
Injectors No. 8, of the latest improved design ...	2 „ „
Bilge ejectors	2 „ „

Appendix C.

SCHEDULE OF WELL-BORING TOOLS SUPPLIED UNDER CONTRACT B. 142.

Description of Work.	No. required.
Augers, clay, 2 feet long, for 8-inch holes	3
„ „ „ „ „ 7 „ „	3
„ „ „ „ „ 6 „ „	3
„ „ „ „ „ 5 „ „	2
„ „ „ „ „ 4 „ „	1
„ „ „ „ „ 3 „ „	1
Augers, shell or wimple scoup, 2 feet long, for 8-inch hole...	3
„ „ 2 feet long, for 7-inch hole ...	3
„ „ „ „ „ 6 „ „	3
„ „ „ „ „ 5 „ „	2
„ „ „ „ „ 4 „ „	1
„ „ „ „ „ 3 „ „	1
Augers, shell, another type, 2 feet long, for 8-inch hole ...	2
„ „ 2 feet long, for 7-inch hole	2
„ „ „ „ „ 6 „ „	2
„ „ „ „ „ 5 „ „	1
„ „ „ „ „ 4 „ „	1
„ „ „ „ „ 3 „ „	1
Augers, worm, short, 2 feet long, for 8-inch hole	2
„ „ „ „ „ 7 „ „	2
„ „ „ „ „ 6 „ „	2
„ „ „ „ „ 5 „ „	1
„ „ „ „ „ 4 „ „	1
„ „ „ „ „ 3 „ „	1
Augers, worm, long, 2, feet long, for 8-inch hole ...	2
„ „ „ „ 7 „ „ ...	2
„ „ „ „ 6 „ „ ...	2
„ „ „ „ 5 „ „ ...	1

Schedule of well boring Tools supplied under contract B 142—*contd.*

Description of Work.	No. required.
Augers, worm, long, 2 feet long, for 4-inch hole ...	1
" " " " " 3 " " ...	1
Ball valve sludger, 2 feet long, for 7½-inch hole ...	1
" " " " " 6½ " " ...	1
" " " " " 5½ " " ...	2
" " " " " 4½ " " ...	2
" " " " " 3½ " " ...	2
" " " " " 2½ " " ...	2
" " " auger, 2 feet long, for 7½-inch hole ...	3
" " " " " 6½ " " ...	3
" " " " " 5½ " " ...	2
" " " " " 4½ " " ...	2
" " " " " 3½ " " ...	2
" " " " " 2½ " " ...	2
Bell screw, or screw box, 2 feet long, for 7½-inch hole ...	1
" " " " 6½ " " ...	1
" " " " 5½ " " ...	1
" " " " 4½ " " ...	1
" " " " 3½ " " ...	1
" " " " 2½ " " ...	1
Bottles for samples of stone from bore hole, capacity 4 oz., wide cork mouthed, 3½ inches high, about 2¼ inches diamter	600
Chisels, flat or straight bits, 2 feet long, for 8-inch hole ...	1
" " " " " 7 " " ...	1
" " " " " 6 " " ...	2
" " " " " 5 " " ...	2
" " " " " 4 " " ...	4
" " " " " 3 " " ...	4
Chisels, T, 2 feet long, for 8-inch hole	1
" " " 7 " "	1
" " " 6 " "	2
" " " 5 " "	2
" " " 4 " "	3

Schedule of well-boring Tools supplied under contract B 142—*contd.*

Description of Work.	No. required.
Chisels, T, 2 feet long, for 3-inch hole ...	3
" double T, 2 feet long, for 6 " " ...	1
" " " 5 " " ...	1
" " " 4 " " ...	2
" " " 3 " " ...	2
" V, or diamond point drill, 2 feet long, for 6-inch holes.	2
" " " " 5 " " ...	2
" " " " 4 " " ...	4
" " " " 3 " " ...	4
Common clack sludger, 2 feet long, for 7½-inch holes ...	1
" " " " 6½ " " ...	1
" " " " 5½ " " ...	2
" " " " 4½ " " ...	2
" " " " 3½ " " ...	2
" " " " 2½ " " ...	2
Crow's feet, 2 feet long, for 7½-inch holes	1
" " " 6½ " "	1
" " " 5½ " "	1
" " " 4½ " "	1
" " " 3½ " "	1
" " " 2½ " "	1
Dogs, hand, to fit 1¼-inch square rods	4
" lifting " " "	6
Frame broaching bit, 2 feet long, for 8-inch holes ...	1
" " " " 7 " " ...	1
" " " " 6 " " ...	1
" " " " 5 " " ...	1
" " " " 4 " " ...	1
" " " " 3 " " ...	1
Kind's plug to raise tubes, 7-inch hole	1
" " " 6 " "	1
" " " 5 " "	1
" " " 4 " "	1
" " " 3 " "	1

Schedule of well-boring Tools supplied under contract B 142—*contd.*

Description of Work.	No. required.
Lengthening pieces of 1½-inch square iron, with loop swivel top: one 1 ft., one 2 ft., one 4 ft., one 6 ft., and one 8 ft. long	5
Nipping forks or tigers, to fit 1¼-inch square rods ...	4
Pipe clamps, 7½-inch	2
„ „ 6½ „	2
„ „ 5½ „	2
„ „ 4½ „	2
„ „ 3½ „	2
Pipes, swivel tops, with loop hook to hang on rope, 7½-inch	2
„ „ „ „ „ „ „ 6½ „	2
„ „ „ „ „ „ „ 5½ „	2
„ „ „ „ „ „ „ 4½ „	2
„ „ „ „ „ „ „ 3½ „	2
Rods, 1¼-inch square, mild steel, each 10 ft. long ...	700 feet
Ropes, Craddock's, best plough steel, patent laid rope, ¾-inch circumference	800 „
Ropes, Craddock's, best plough steel, patent laid rope, 1½-inch circumference	300 „
Solid broaching bit, 2 ft. long, for 8-inch hole ...	1
„ „ „ „ „ 7 „ „	1
„ „ „ „ „ 6 „ „	1
„ „ „ „ „ 5 „ „	1
„ „ „ „ „ 4 „ „	1
„ „ „ „ „ 3 „ „	1
Stone breaker, 2 ft. long, for 8-inch hole	1
„ „ „ „ 7 „ „	1
„ „ „ „ 6 „ „	1
„ „ „ „ 5 „ „	1
„ „ „ „ 4 „ „	1
„ „ „ „ 3 „ „	1
* Steel shoes to fix in end of tubes, 7½-inch holes ...	2
„ „ „ „ 6½ „ „	2
„ „ „ „ 5½ „ „	2
„ „ „ „ 4½ „ „	2

* The shoes are required for the tubes, in order to pierce the strata when lining the bore hole.

Schedule of well-boring Tools supplied under contract B 142—*concld.*

Description of Work.	No. required.
Steel shoes to fix in end of tubes, 3½-inch holes ...	2
Sliding joint or free fall	2
Stirrups, with one foot of clear running screw... ...	2
Tillers or brace head, to fit 1¼-inch square rods ...	2
Tube cutter, 7½-inch	1
„ „ 6½ „	1
„ „ 5½ „	1
„ „ 4½ „	1
„ „ 3½ „	1
Tubes, flush outside, screw joints, in 10-ft. lengths, 7½-inch external diameter	100 feet
Ditto ditto, 6½-inch external diameter ...	200 „
„ „ 5½ „ „ „ ...	200 „
„ „ 4½ „ „ „ ...	100 „
„ „ 3½ „ „ „ ...	100 „
Wad coil, 2 ft. long, for 7½-inch holes	1
„ „ „ 6½ „ „	1
„ „ „ 5½ „ „	1
„ „ „ 4½ „ „	1
„ „ „ 3½ „ „	1
„ „ „ 2½ „ „	1
Wad coil, long, 2 ft. long, for 7½-inch holes	1
„ „ „ „ 6½ „ „	1
„ „ „ „ 5½ „ „	1
„ „ „ „ 4½ „ „	1
„ „ „ „ 3½ „ „	1
„ „ „ „ 2½ „ „	1
Wimble, with auger point, 2 ft. long, for 8-inch holes ...	3
„ „ „ „ „ 7 „ „ ...	3
„ „ „ „ „ 6 „ „ ...	3
„ „ „ „ „ 5 „ „ ...	1
„ „ „ „ „ 4 „ „ ...	1
„ „ „ „ „ 3 „ „ ...	1

Note—All dimensions are outside diameters.

Rate List, Class B., Engineers' Plant (excluding Petty Tools), for 1886.

APPENDIX D.

Materials for the Winches for the Sukkur Bridge, under contracts B 153 and B 174, as per invoices of S. S. "Westborne" *and* "Kangra."

Description.	Quantity.	Cost f. o. b.	Remarks.
	Tons cwt. qrs. lbs.	£ s. d.	
Two Winches for 400 foot wire rope—			
Cast-iron ...	6 11 3 10	210 18 10	
Wrought-iron shafts at £50 per ton	0 10 1 6	25 15 2	
Brass bearings at 2*s.* 6*d.* per lb. ...	0 1 0 22	16 15 0	
Extra cost of two new worms and turning, including new pattern ...	.....	9 15 0	Gross weight including that of the additional gearing for supplying steam-power (*see below*) is Tons 8, cwt. 1.
Spare gear—			
Cast-iron	0 5 0 24	14 12 0	
Wrought-iron	0 1 1 22	4 6 9	
		282 2 9	
Six Winches for 200 foot wire rope—			
Cast-iron	17 2 3 24	548 14 10	
Wrought-iron shafts, &c. ...	1 5 0 20	62 18 11	
Brass bearings	0 3 2 10	50 5 0	
Extra for turning worms, including new casting and pattern ...	.....	29 5 0	
Spare gear—			Gross weight:— Tons 22, cwt. 0, qr. 1.
Cast-iron	0 16 0 14	45 3 0	
Wrought-iron	0 3 2 22	11 1 9	
Best cotton driving rope, 2,400 feet, at 6*d.* per foot	.....	60 0 0	
		807 8 6	
Additional gearing for suppyling steam-power to Winches (Contract B 174)	.....	218 8 5	

[*General Distribution.*]

Circular No 6.

FROM

THE DIRECTOR GENERAL OF RAILWAYS,

TO

THE DIRECTOR, NORTH-WESTERN RAILWAY.

THE ENGINEERS-IN-CHIEF, SIND-PISHIN STATE RAILWAY AND BANNU RAILWAY SURVEY.

THE SUPERINTENDENT OF WAY AND WORKS, CUDDAPAH-NELLORE STATE RAILWAY.

THE PORT STOREKEEPERS, STATE RAILWAY DEPARTMENT, CALCUTTA AND BOMBAY.

Simla, the 22nd June, 1888.

SIR,

I have the honour to forward, for information and guidance, a printed statement showing the rates free on board in England, the gross weight and the entire sea-freight per ton for B class State Railway Stores "Engineer's Plant (excluding Petty Tools)" contracted for by the India Office from January to December 1886.

2. The rates for landing State Railway Stores from vessels at the several ports in India are given in Director General of Railways' Circular No. 22, dated 16th December 1885.

3. The official rate of exchange during the financial year 1886-87 was 1*s.* 6*d.* per rupee.

4. In order to arrive at the total cost of materials landed at Port, an Insurance charge of one per cent. on the original cost *plus* entire sea-freight should be added in addition to the other incidental charges.

5. In ordering stores only four-fifths of the entire sea-freight should be entered in Indents as payable in England.

I have the honour to be,

SIR,

Your most obedient Servant,

G. F. WILSON, Captain, R.E.,

for Director General.

Document accompanying.

Rate List, class B.—"Engineer's Plant (excluding Petty Tools)," for 1886.

The Secretaries to the Governments of Madras, Bombay, Bengal, the North-Western Provinces and Oudh, and the Punjab, Public Works Department.
The Secretaries to the Chief Commissioners of the Central Provinces, Burma, Assam, and Coorg, Public Works Department.
The Secretaries to the Residents, Hyderabad and Mysore, Public Works Department.
The Secretaries to the Agents to the Governor General, Rajputana, Central India, and Baluchistan, Public Works Department.
The Superintendent of Port Blair and Chief Commissioner, Andaman and Nicobar Islands.
The Director General of Telegraphs.
The Inspector General of Military Works.
The Superintendent of Works, Simla Imperial Circle.
The Accountant General, Public Works Department.
The Director, Persian Gulf Telegraph.
The Comptroller General.
The Accountant General, Bengal.
The Consulting Engineers for Railways, Madras and Bombay.
The Consulting Engineers to the Government of India for Railways, Calcutta and Lucknow.
The Consulting Engineer to the Government of India for Railways, Central Division, Jubbulpore.
The Agent and General Manager, Assam Railways and Trading Company, Limited.

Copy forwarded to the Local Governments, Administrations and Officers, noted on the margin, for information.

L. J. Wilson Captain, R.E.,
for Director General.

Hera 16/7/88

To,
The Secretary to the
Government of Madras
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FROM

THE DIRECTOR GENERAL
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TO

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INDIAN STATE RAILWAYS.

Rate List, class B.—"Engineer's Plant (excluding Petty Tools)," for 1886.

G. C. Press, Simla.—No. 351 P. W. D.—4-7-88.—1,200.

Communicated to officers of the S.W. Dept for information, in continuation of G.O. no 403 R d/15th May 1888 & 82 W d/10th January 1888.

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GOVERNMENT OF MADRAS.

MILITARY DEPARTMENT.

Read the following

No. 217. *Extract of* *Secretary of State for I* *f India in Council; dated*

Para. 3. Extra ex the early despatch of stores urge that orders may be issued to inden ch words as "emergent" or "urge in them are actually urgently req instruct the indenting departments possible, to be avoided by adequat and that you will point out that th bly to defeat the object which they

Furnished.
Frank D. Bird
Ag First Assistant A

Indents and Estimates.

Copy of the abo the Secretary to the Government nation of His Excellency the Gove

*

SIMLA,
21st *May* 1888.

TCHARD,
ovt. of India.

Mily Dept.
3rd August 1888

No. 218.

Communicat guidance.

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to Government.

To the Commissary
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Exd. E. C. Shunker.